

# Zhejiang Daming Refrigeration Technology -Mid-Low Temp. Refrigeration & Freezing Scroll Compressor

DM50-DM260  
DF20-DF108

APPLICATION GUIDE

**SCR®II**



**SCR®II**

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## Product manual

### Adopt advanced technology to provide customers with cost-effective products.

Zhejiang Daming Refrigeration Technology Co. Ltd is a technical private enterprise specialized in researching into, designing, producing and marketing of refrigeration compressors and units. It has the semi-hermetic refrigeration compressor brand "Jinming", scroll refrigeration compressor brand "SCROLL" and semi-hermetic screw refrigeration compressor brand "RFC".

Company has the first-class refrigeration compressor production base in China, with plant more than 10,000 square meters, the introduction of a variety of imported advanced processing equipment, set up modern refrigeration compressors and condensing unit assembly line, and equipped with professional warehouse center and logistics distribution center.

The company has more than 30 years of refrigeration compressor manufacturing experience, formed an international and domestic refrigeration elite technical team, strong technical force. The company also employs professional management consulting organizations to establish a modern efficient management mode to improve the management level of enterprises.

The company aims to "Build a famous brand of China, Create a hundred years enterprise" and follow the management philosophy of "Quality-oriented, Innovation-focused". Make high-quality products with ingenuity. Seek unlimited energy with innovation. Strive to make "Daming refrigeration" a famous brand, to be the top refrigeration compressor manufacturer in China.

### Our dreams:

Ensure food safety and quality.

Reasonably reduce the operation cost of customers.

Provide high value service to customers.

Establish the sustainable and stable partnership.

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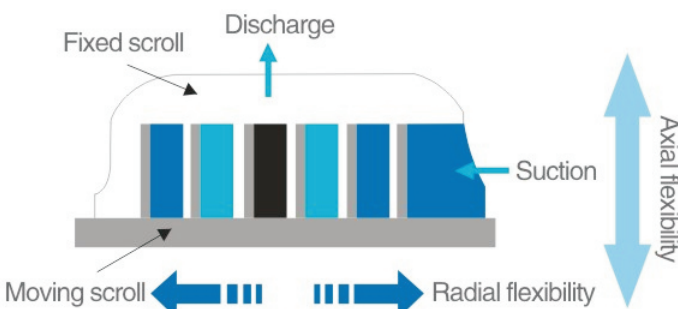
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# Features & Advantages

\*Double flexible design  
Make sure the seal between the scrolls.  
Allowing the scrolls to be radially and axially separated, Debris or Liquid can pass through the scrolls without damaging the compressor.

\*Higher usage time and reliability.  
\*Better liquid tolerance.  
\*Better impurity tolerance.



Fixed scroll

Discharge

Suction

Moving scroll

Radial flexibility

Axial flexibility

\*Lower noise & vibration levels  
Smooth sound spectrum & soft sound quality

\*Compression chamber is always symmetrical

\*Very low unbalanced stress

\*High-precision manufacturing process

\*No vibration absorption device

\*High strength metal composite bearing

\*Space-age materials

\*Porous bronze

\*PTFE coating

\*Extend the running time without full lubrication

\*Very small friction coefficient

\*Unloading startup technology  
The compressed parts are separated from each other after the shutdown to balance the internal pressure of the compressor, no need additional starting device.

## Daming—— Frozen scroll compression technology provides superior solutions for freezing applications.

Scroll compressor is the ideal choice for high reliability, high energy efficiency and compact system design.  
DM/DF series can provide products of 3hp–15hp, and its applicable refrigerants include R22, R404A, R134A, etc.

### Cooling Capacity Data

The cooling capacity data of the compressor in this catalog, no liquid subcooling degree, power frequency 50Hz(motor synchronous speed of 2900rpm).

When the compressor is running at 60Hz frequency (motor speed 3500rpm), the cooling capacity and input power will increase by 20% accordingly. Compressor should not be used outside of application.

# Model identification

Application  
M/B: Mid-temp for refrigeration  
W: Heat pump & hot water  
F: Low-temp for freezing  
H/R/E/P/J: High-temp for A/C  
SF: Semi-hermetic low-temp for freezing  
SM: Semi-hermetic mid-temp for refrigeration  
SH: Semi-hermetic high-temp for A/C  
SW: Semi-hermetic type for heat pump & hot water

Lubrication method  
M: Mineral oil  
E: Ester oil

Power:  
B: 220-1-60Hz  
C: 220-3-50Hz  
3/D: 380/420-3-50Hz or 460-3-60Hz  
2/J: 220/240-1-50Hz or 265-1-60Hz  
5: 220-3-60Hz  
7: 380-3-60Hz  
8: 575-3-60Hz

Compressor configuration code 1:  
O: No Sight Glass, Welding interface  
G: With Sight Glass, Welding interface  
S: With Sight Glass, Screw interface

Refrigerant:  
1: R404A & others for POE oil  
2: R22 & others for 3GS  
3: R134A  
4: R410A  
5: R32  
7: R407C

D: The first letter of Daming

Cooling capacity under standard working conditions.

Compressor capacity factor:  
H: 100\*W(50Hz)  
K: 1000\*Btu/h(60Hz)

Compressor motor type:  
T: Three Phase  
S: Single Phase

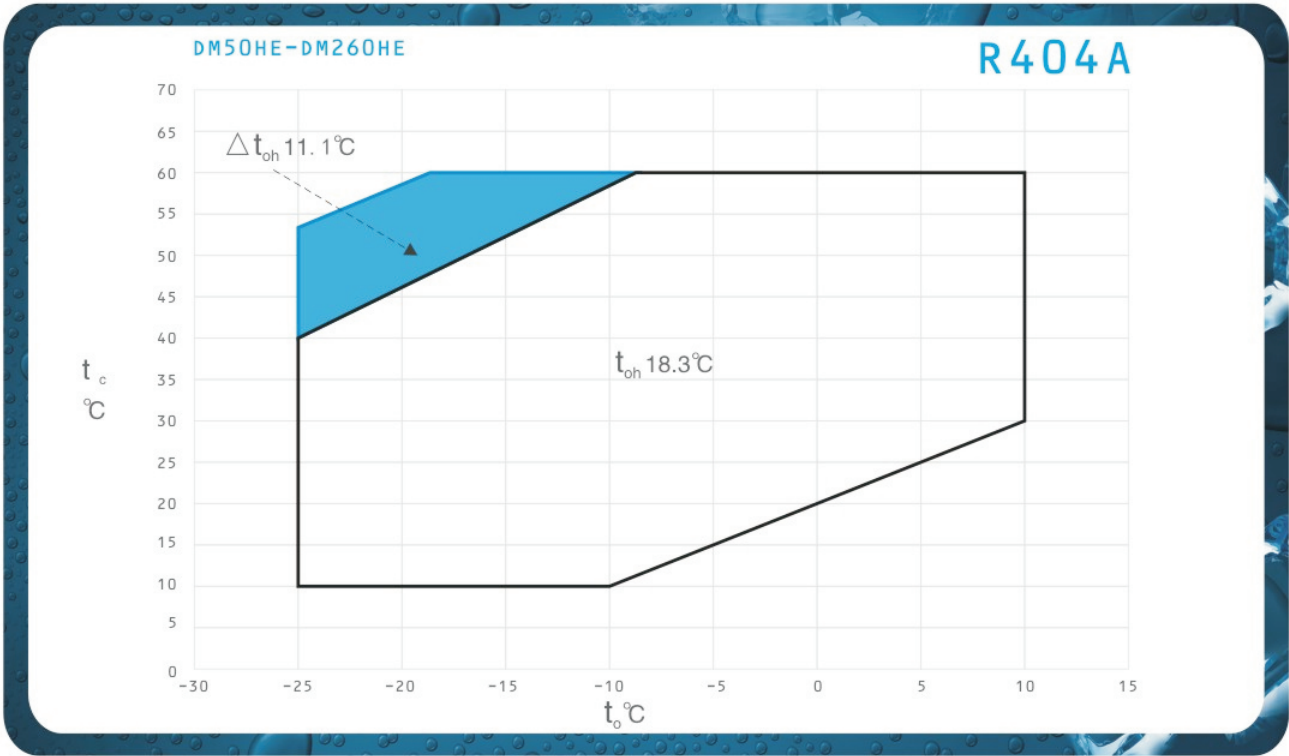
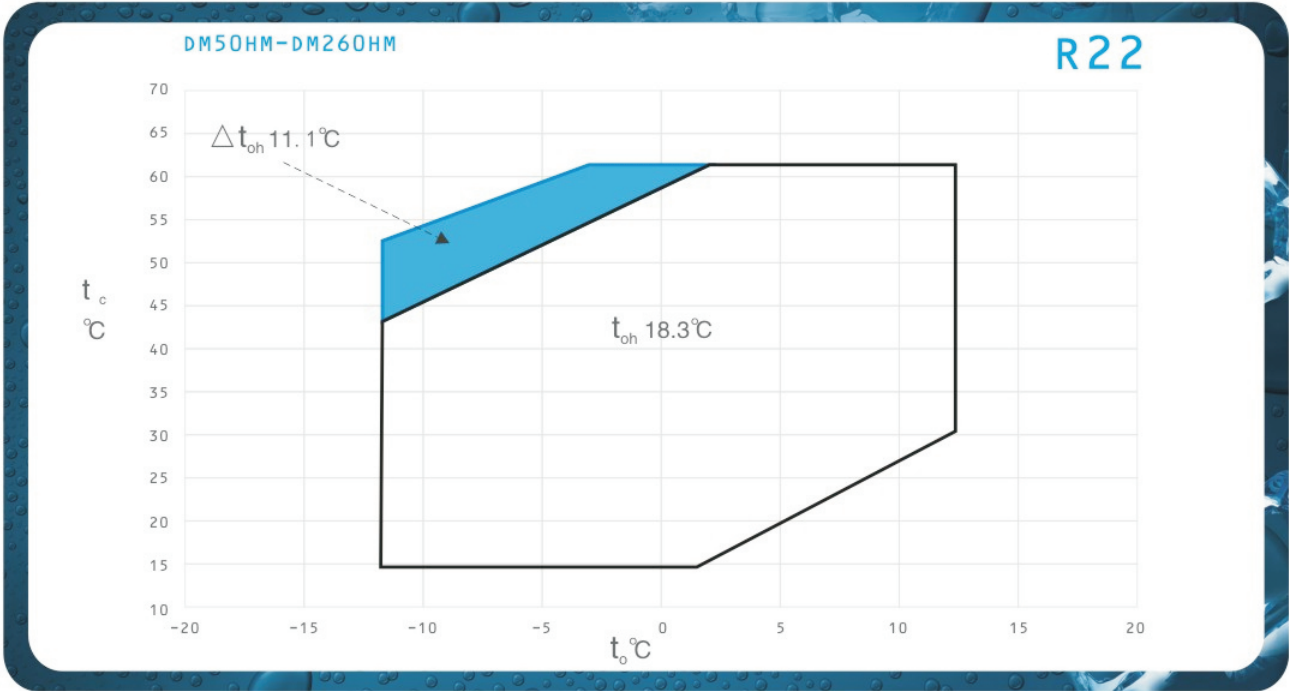
Compressor motor protection mode:  
F: Built-in thermal protector  
W: External electronic protection module

Compressor configuration code 2:  
O: No configuration  
V: EVI  
L: Hydrojet  
S: Hydrojet + Exhaust temperature sensor

**DM50HE - T3F - 001**



# DM Mid-temp.application Range



$t_o$  (°C) :Evaporating temperature(°C)  
 $t_{oh}$  (°C) :Suction gas temperature(°C)  
 $\Delta t_{oh}$  (K) :Suction superheat (K) ———— Maximum inspiratory superheat in blue wire 11.1K  
 $t_c$  (°C) :Condensing temperature(°C) ———— Return temperature in black wire frame 18.3°C

# DM Cooling Capacity(C/C) R22

380V/420V, 3Phase , 50Hz

| MODEL   |            | Condensing Temp.(°C)<br>- $t_c$ | Evaporating Temperature(°C) - $t_o$ |       |       |       |       |       |
|---------|------------|---------------------------------|-------------------------------------|-------|-------|-------|-------|-------|
|         |            |                                 | -12                                 | -10   | -5    | 0     | 5     | 10    |
| DM50HM  | C/C (Kw)   | 30                              | 5.15                                | 5.61  | 6.79  | 8.15  | 9.65  | 11.45 |
|         |            | 40                              | 4.65                                | 5.05  | 6.19  | 7.45  | 8.85  | 10.49 |
|         |            | 50                              | 4.05                                | 4.39  | 5.49  | 6.65  | 7.95  | 9.45  |
|         | POWER (Kw) | 30                              | 1.61                                | 1.61  | 1.62  | 1.66  | 1.71  | 1.73  |
|         |            | 40                              | 1.99                                | 1.99  | 2.01  | 2.04  | 2.08  | 2.11  |
|         |            | 50                              | 2.48                                | 2.48  | 2.51  | 2.53  | 2.56  | 2.57  |
| DM86HM  | C/C (Kw)   | 30                              | 8.15                                | 8.91  | 11.01 | 13.39 | 16.15 | 19.05 |
|         |            | 40                              | 7.35                                | 8.05  | 9.95  | 12.21 | 14.65 | 17.35 |
|         |            | 50                              | 6.25                                | 6.95  | 8.85  | 10.81 | 13.15 | 15.65 |
|         | POWER (Kw) | 30                              | 2.49                                | 2.51  | 2.54  | 2.59  | 2.68  | 2.82  |
|         |            | 40                              | 3.11                                | 3.12  | 3.15  | 3.21  | 3.29  | 3.43  |
|         |            | 50                              | 3.88                                | 3.89  | 4.02  | 4.07  | 4.12  | 4.14  |
| DM132HM | C/C (Kw)   | 30                              | 13.35                               | 14.51 | 17.71 | 21.39 | 25.69 | 30.49 |
|         |            | 40                              | 11.79                               | 12.95 | 16.09 | 19.59 | 23.49 | 27.99 |
|         |            | 50                              | 10.15                               | 11.05 | 14.15 | 17.39 | 21.09 | 25.29 |
|         | POWER (Kw) | 30                              | 3.89                                | 3.91  | 3.92  | 3.97  | 4.05  | 4.19  |
|         |            | 40                              | 4.88                                | 4.88  | 4.88  | 4.91  | 4.96  | 5.05  |
|         |            | 50                              | 5.99                                | 6.15  | 6.09  | 6.09  | 6.09  | 6.19  |
| DM182HM | C/C (Kw)   | 30                              | 17.99                               | 19.59 | 23.79 | 28.09 | 32.99 | 38.49 |
|         |            | 40                              | 16.39                               | 17.79 | 21.69 | 25.79 | 30.49 | 35.49 |
|         |            | 50                              | 14.69                               | 15.79 | 19.49 | 23.39 | 27.69 | 32.49 |
|         | POWER (Kw) | 30                              | 4.98                                | 4.99  | 5.09  | 5.59  | 5.69  | 5.85  |
|         |            | 40                              | 6.29                                | 6.29  | 6.35  | 6.79  | 6.85  | 6.95  |
|         |            | 50                              | 7.75                                | 7.95  | 7.99  | 8.25  | 8.29  | 8.39  |
| DM200HM | C/C (Kw)   | 30                              | 20.99                               | 22.59 | 27.39 | 32.99 | 38.99 | 45.49 |
|         |            | 40                              | 18.79                               | 20.39 | 24.89 | 29.99 | 35.99 | 41.99 |
|         |            | 50                              | 16.59                               | 17.79 | 21.99 | 26.79 | 31.99 | 37.99 |
|         | POWER (Kw) | 30                              | 5.65                                | 5.69  | 5.75  | 5.89  | 6.09  | 6.39  |
|         |            | 40                              | 7.09                                | 7.15  | 7.19  | 7.29  | 7.39  | 7.59  |
|         |            | 50                              | 8.69                                | 8.95  | 9.05  | 9.09  | 9.15  | 9.25  |
| DM260HM | C/C (Kw)   | 30                              | 26.69                               | 28.99 | 35.39 | 42.49 | 50.39 | 59.29 |
|         |            | 40                              | 23.19                               | 25.49 | 31.69 | 38.49 | 46.09 | 54.49 |
|         |            | 50                              | 18.75                               | 21.91 | 26.99 | 33.69 | 40.99 | 48.89 |
|         | POWER (Kw) | 30                              | 7.75                                | 7.79  | 7.92  | 8.09  | 8.33  | 8.63  |
|         |            | 40                              | 9.61                                | 9.63  | 9.71  | 9.83  | 9.99  | 10.19 |
|         |            | 50                              | 11.07                               | 11.58 | 12.05 | 12.09 | 12.19 | 12.35 |

NOTE:1.Test Condition: Suction gas temperature18.3°C, supercooling degree 0 K  
2.The lowest evaporation temperature : -12°C  
3. ■ area: Maximum Suction superheat :11.1 K.



# DM Cooling Capacity(C/C) R404A

380V/420V, 3Phase , 50Hz

| MODEL   |            | Condensing Temp.(°C) -tc | Evaporating Temperature(°C) - to |       |       |       |       |       |       |
|---------|------------|--------------------------|----------------------------------|-------|-------|-------|-------|-------|-------|
|         |            |                          | -25                              | -20   | -15   | -10   | -5    | 0     | 5     |
| DM50HE  | C/C (Kw)   | 30                       | 3.45                             | 4.29  | 5.25  | 6.35  | 7.65  | 9.09  | 10.75 |
|         |            | 40                       | 2.99                             | 3.69  | 4.55  | 5.49  | 6.59  | 7.89  | 9.35  |
|         |            | 50                       | 2.43                             | 3.09  | 3.75  | 4.55  | 5.49  | 6.55  | 7.79  |
|         | POWER (Kw) | 30                       | 1.77                             | 1.77  | 1.77  | 1.76  | 1.76  | 1.75  | 1.75  |
|         |            | 40                       | 2.24                             | 2.24  | 2.24  | 2.23  | 2.22  | 2.21  | 2.19  |
|         |            | 50                       | 2.85                             | 2.83  | 2.83  | 2.82  | 2.81  | 2.79  | 2.77  |
| DM86HE  | C/C (Kw)   | 30                       | 5.89                             | 7.29  | 8.89  | 10.79 | 12.95 | 15.39 | 18.19 |
|         |            | 40                       | 5.09                             | 6.25  | 7.69  | 9.29  | 11.19 | 13.35 | 15.79 |
|         |            | 50                       | 3.82                             | 5.19  | 6.35  | 7.75  | 9.35  | 11.19 | 13.29 |
|         | POWER (Kw) | 30                       | 2.99                             | 2.99  | 2.99  | 2.99  | 2.97  | 2.95  | 2.92  |
|         |            | 40                       | 3.75                             | 3.76  | 3.76  | 3.76  | 3.76  | 3.74  | 3.71  |
|         |            | 50                       | 4.67                             | 4.67  | 4.68  | 4.68  | 4.68  | 4.67  | 4.65  |
| DM132HE | C/C (Kw)   | 30                       | 8.89                             | 11.25 | 13.95 | 16.99 | 20.59 | 24.59 | 29.19 |
|         |            | 40                       | 7.05                             | 9.25  | 11.69 | 14.39 | 17.49 | 20.99 | 24.89 |
|         |            | 50                       | 5.81                             | 6.89  | 9.09  | 11.49 | 14.15 | 17.09 | 20.39 |
|         | POWER (Kw) | 30                       | 4.56                             | 4.57  | 4.59  | 4.61  | 4.64  | 4.67  | 4.69  |
|         |            | 40                       | 5.85                             | 5.79  | 5.75  | 5.75  | 5.75  | 5.75  | 5.75  |
|         |            | 50                       | 6.55                             | 7.45  | 7.35  | 7.25  | 7.21  | 7.15  | 7.15  |
| DM182HE | C/C (Kw)   | 30                       | 12.39                            | 15.39 | 18.79 | 22.79 | 27.39 | 32.49 | 38.49 |
|         |            | 40                       | 10.89                            | 13.29 | 16.09 | 19.39 | 23.29 | 27.79 | 32.99 |
|         |            | 50                       | 7.45                             | 11.19 | 13.19 | 15.69 | 18.69 | 22.19 | 26.39 |
|         | POWER (Kw) | 30                       | 5.79                             | 5.89  | 5.99  | 6.05  | 6.15  | 6.25  | 6.39  |
|         |            | 40                       | 7.25                             | 7.29  | 7.39  | 7.45  | 7.49  | 7.59  | 7.69  |
|         |            | 50                       | 8.48                             | 9.15  | 9.19  | 9.25  | 9.25  | 9.31  | 9.39  |
| DM200HE | C/C (Kw)   | 30                       | 15.46                            | 17.85 | 21.56 | 26.67 | 31.79 | 37.81 | 45.61 |
|         |            | 40                       | 11.09                            | 14.75 | 19.06 | 22.99 | 27.48 | 33.36 | 38.54 |
|         |            | 50                       | 8.97                             | 11.56 | 13.24 | 17.11 | 22.02 | 27.45 | 32.49 |
|         | POWER (Kw) | 30                       | 5.99                             | 6.71  | 6.62  | 6.57  | 6.68  | 7.08  | 7.91  |
|         |            | 40                       | 7.65                             | 8.77  | 8.81  | 8.85  | 8.89  | 8.93  | 8.98  |
|         |            | 50                       | 9.67                             | 9.98  | 10.88 | 10.91 | 10.98 | 11.01 | 11.07 |
| DM260HE | C/C (Kw)   | 30                       | 17.88                            | 21.91 | 26.99 | 32.75 | 39.35 | 46.79 | 55.35 |
|         |            | 40                       | 12.87                            | 18.29 | 23.05 | 28.25 | 34.09 | 40.69 | 48.19 |
|         |            | 50                       | 10.88                            | 12.87 | 18.25 | 22.99 | 28.19 | 33.95 | 40.45 |
|         | POWER (Kw) | 30                       | 8.55                             | 8.94  | 9.05  | 9.17  | 9.31  | 9.45  | 9.61  |
|         |            | 40                       | 10.83                            | 11.22 | 11.26 | 11.31 | 11.38 | 11.47 | 11.57 |
|         |            | 50                       | 12.99                            | 13.56 | 14.19 | 14.15 | 14.12 | 14.11 | 14.13 |

NOTE:1.Test Condition: Suction gas temperature18.3°C, supercooling degree 0 K  
2.The lowest evaporation temperature : -25 °C  
3. ■ area: Maximum Suction superheat :11.1 K.

# DSM Cooling Capacity(C/C) R22

380V/420V, 3Phase , 50Hz

| MODEL    |            | Condensing Temp.(°C) -tc | Evaporating Temperature(°C) - to |       |       |       |       |       |
|----------|------------|--------------------------|----------------------------------|-------|-------|-------|-------|-------|
|          |            |                          | -12                              | -10   | -5    | 0     | 5     | 10    |
| DSM132HM | C/C (Kw)   | 30                       | 13.35                            | 14.51 | 17.71 | 21.39 | 25.69 | 30.49 |
|          |            | 40                       | 11.79                            | 12.95 | 16.09 | 19.59 | 23.49 | 27.99 |
|          |            | 50                       | 10.15                            | 11.05 | 14.15 | 17.39 | 21.09 | 25.29 |
|          | POWER (Kw) | 30                       | 3.89                             | 3.91  | 3.92  | 3.97  | 4.05  | 4.19  |
|          |            | 40                       | 4.88                             | 4.88  | 4.88  | 4.91  | 4.96  | 5.05  |
|          |            | 50                       | 5.99                             | 6.15  | 6.09  | 6.09  | 6.09  | 6.19  |
| DSM182HM | C/C (Kw)   | 30                       | 17.99                            | 19.59 | 23.79 | 28.09 | 32.99 | 38.49 |
|          |            | 40                       | 16.39                            | 17.79 | 21.69 | 25.79 | 30.49 | 35.49 |
|          |            | 50                       | 14.69                            | 15.79 | 19.49 | 23.39 | 27.69 | 32.49 |
|          | POWER (Kw) | 30                       | 4.98                             | 4.99  | 5.09  | 5.59  | 5.69  | 5.85  |
|          |            | 40                       | 6.29                             | 6.29  | 6.35  | 6.79  | 6.85  | 6.95  |
|          |            | 50                       | 7.75                             | 7.95  | 7.99  | 8.25  | 8.29  | 8.39  |
| DSM200HM | C/C (Kw)   | 30                       | 20.99                            | 22.59 | 27.39 | 32.99 | 38.99 | 45.49 |
|          |            | 40                       | 18.79                            | 20.39 | 24.89 | 29.99 | 35.99 | 41.99 |
|          |            | 50                       | 16.59                            | 17.79 | 21.99 | 26.79 | 31.99 | 37.99 |
|          | POWER (Kw) | 30                       | 5.65                             | 5.69  | 5.75  | 5.89  | 6.09  | 6.39  |
|          |            | 40                       | 7.09                             | 7.15  | 7.19  | 7.29  | 7.39  | 7.59  |
|          |            | 50                       | 8.69                             | 8.95  | 9.05  | 9.09  | 9.15  | 9.25  |
| DSM260HM | C/C (Kw)   | 30                       | 26.69                            | 28.99 | 35.39 | 42.49 | 50.39 | 59.29 |
|          |            | 40                       | 23.19                            | 25.49 | 31.69 | 38.49 | 46.09 | 54.49 |
|          |            | 50                       | 18.75                            | 21.91 | 26.99 | 33.69 | 40.99 | 48.89 |
|          | POWER (Kw) | 30                       | 7.75                             | 7.79  | 7.92  | 8.09  | 8.33  | 8.63  |
|          |            | 40                       | 9.61                             | 9.63  | 9.71  | 9.83  | 9.99  | 10.19 |
|          |            | 50                       | 11.07                            | 11.58 | 12.05 | 12.09 | 12.19 | 12.35 |

NOTE:1.Test Condition: Suction gas temperature18.3°C, supercooling degree 0 K  
2.The lowest evaporation temperature : -25 °C  
3. ■ area: Maximum Suction superheat :11.1 K.



# DSM Cooling Capacity(C/C) R404A

380V/420V, 3Phase , 50Hz

| MODEL    |            | Condensing Temp.(°C)<br>-tc | Evaporating Temperature(°C) - to |       |       |       |       |       |       |
|----------|------------|-----------------------------|----------------------------------|-------|-------|-------|-------|-------|-------|
|          |            |                             | -25                              | -20   | -15   | -10   | -5    | 0     | 5     |
| DSM132HE | C/C (Kw)   | 30                          | 8.89                             | 11.25 | 13.95 | 16.99 | 20.59 | 24.59 | 29.19 |
|          |            | 40                          | 7.05                             | 9.25  | 11.69 | 14.39 | 17.49 | 20.99 | 24.89 |
|          |            | 50                          | 5.81                             | 6.89  | 9.09  | 11.49 | 14.15 | 17.09 | 20.39 |
|          | POWER (Kw) | 30                          | 4.56                             | 4.57  | 4.59  | 4.61  | 4.64  | 4.67  | 4.69  |
|          |            | 40                          | 5.85                             | 5.79  | 5.75  | 5.75  | 5.75  | 5.75  | 5.75  |
|          |            | 50                          | 6.55                             | 7.45  | 7.35  | 7.25  | 7.21  | 7.15  | 7.15  |
| DSM182HE | C/C (Kw)   | 30                          | 12.39                            | 15.39 | 18.79 | 22.79 | 27.39 | 32.49 | 38.49 |
|          |            | 40                          | 10.89                            | 13.29 | 16.09 | 19.39 | 23.29 | 27.79 | 32.99 |
|          |            | 50                          | 7.45                             | 11.19 | 13.19 | 15.69 | 18.69 | 22.19 | 26.39 |
|          | POWER (Kw) | 30                          | 5.79                             | 5.89  | 5.99  | 6.05  | 6.15  | 6.25  | 6.39  |
|          |            | 40                          | 7.25                             | 7.29  | 7.39  | 7.45  | 7.49  | 7.59  | 7.69  |
|          |            | 50                          | 8.48                             | 9.15  | 9.19  | 9.25  | 9.25  | 9.31  | 9.39  |
| DSM200HE | C/C (Kw)   | 30                          | 15.46                            | 17.85 | 21.56 | 26.67 | 31.79 | 37.81 | 45.61 |
|          |            | 40                          | 11.09                            | 14.75 | 19.06 | 22.99 | 27.48 | 33.36 | 38.54 |
|          |            | 50                          | 8.97                             | 11.56 | 13.24 | 17.11 | 22.02 | 27.45 | 32.49 |
|          | POWER (Kw) | 30                          | 5.99                             | 6.71  | 6.62  | 6.57  | 6.68  | 7.08  | 7.91  |
|          |            | 40                          | 7.65                             | 8.77  | 8.81  | 8.85  | 8.89  | 8.93  | 8.98  |
|          |            | 50                          | 9.67                             | 9.98  | 10.88 | 10.91 | 10.98 | 11.01 | 11.07 |
| DSM260HE | C/C (Kw)   | 30                          | 17.88                            | 21.91 | 26.99 | 32.75 | 39.35 | 46.79 | 55.35 |
|          |            | 40                          | 12.87                            | 18.29 | 23.05 | 28.25 | 34.09 | 40.69 | 48.19 |
|          |            | 50                          | 10.88                            | 12.87 | 18.25 | 22.99 | 28.19 | 33.95 | 40.45 |
|          | POWER (Kw) | 30                          | 8.55                             | 8.94  | 9.05  | 9.17  | 9.31  | 9.45  | 9.61  |
|          |            | 40                          | 10.83                            | 11.22 | 11.26 | 11.31 | 11.38 | 11.47 | 11.57 |
|          |            | 50                          | 12.99                            | 13.56 | 14.19 | 14.15 | 14.12 | 14.11 | 14.13 |

NOTE:1.Test Condition: Suction gas temperature18.3°C, supercooling degree 0 K

2.The lowest evaporation temperature : -25 °C

3. area: Maximum Suction superheat :11.1 K.

# DM Technical Data

380V/420V, 3Phase , 50Hz

| MODEL                                     |                        |      | DM50HM<br>DM50HE | DM86HM<br>DM86HE | DM132HM<br>DM132HE | DM182HM<br>DM182HE | DM200HM<br>DM200HE | DM260HM<br>DM260HE |
|---|------------------------|------|------------------|------------------|--------------------|--------------------|--------------------|--------------------|
| MOTOR TYPE                                |                        |      | 3Phase           |                  |                    |                    |                    |                    |
|   |                        |      | 1Phase           |                  |                    |                    |                    |                    |
| Nominal Power                             |                        | H.P  | 3                | 5                | 8                  | 10                 | 12                 | 15                 |
|   |                        |      |                  |                  |                    |                    |                    |                    |
| Displacement                              |                        | m³/h | 8.6              | 14.5             | 21.6               | 29.1               | 33.1               | 42.6               |
|   |                        |      |                  |                  |                    |                    |                    |                    |
| Locked-rotor ampere(LRA)                  |                        | (A)  |                  |                  |                    |                    |                    |                    |
|   |                        | 3PH  | 40               | 65.5             | 115                | 118                | 121                | 145                |
|   |                        | 1PH  | 82               |                  |                    |                    |                    |                    |
| Rated load ampere(RLA)                    |                        | (A)  |                  |                  |                    |                    |                    |                    |
|   |                        | 3PH  | 5.7              | 8.7              | 14.3               | 19.2               | 22.1               | 27.1               |
|   |                        | 1PH  | 16.4             |                  |                    |                    |                    |                    |
| Maximum continuous operating current(MCC) |                        | (A)  |                  |                  |                    |                    |                    |                    |
|   |                        | 3PH  | 8.1              | 13.5             | 19.8               | 26.9               | 31.1               | 38.2               |
|   |                        | 1PH  | 23               |                  |                    |                    |                    |                    |
| Run capacitor(1 Ph)                       |                        |      | 50µF/370V        |                  |                    |                    |                    |                    |
|   |                        |      |                  |                  |                    |                    |                    |                    |
| Crankcase heating power                   |                        | W    | 70               | 70               | 90                 | 90                 | 90                 | 90                 |
|   |                        |      |                  |                  |                    |                    |                    |                    |
| Outsside Dimension (OD)                   | Exhaust pipe (D/P)     | inch | 1 / 2            | 1 / 2            | 7/8                | 7/8                | 7/8                | 7/8                |
|   | Air suction pipe (S/P) |      | 7/8              | 7/8              | 1 1/8              | 1 1/8              | 1 1/8              | 1 1/8              |
|   |                        |      |                  |                  |                    |                    |                    |                    |
| Outsside Dimension (OD)                   | L                      | mm   | 242              | 242              | 242                | 242                | 242                | 242                |
|   | W                      |      | 242              | 242              | 242                | 242                | 242                | 242                |
|   | H                      |      | 415              | 455              | 540                | 540                | 540                | 540                |
|   |                        |      |                  |                  |                    |                    |                    |                    |
| Foot mounting dimensions.(Aperture)       |                        |      | 190×190 ( 8.5 )  |                  |                    |                    |                    |                    |
|   |                        |      |                  |                  |                    |                    |                    |                    |
| Oil Volume                                |                        | L    | 1.4              | 1.9              | 3.4                | 3.4                | 3.4                | 3.4                |
|   |                        |      |                  |                  |                    |                    |                    |                    |
| Weight                                    | Net weight             | Kg   | 28               | 37               | 54                 | 54                 | 56                 | 56                 |
|   | Gross Weight           |      | 29               | 38               | 55                 | 55                 | 57                 | 57                 |



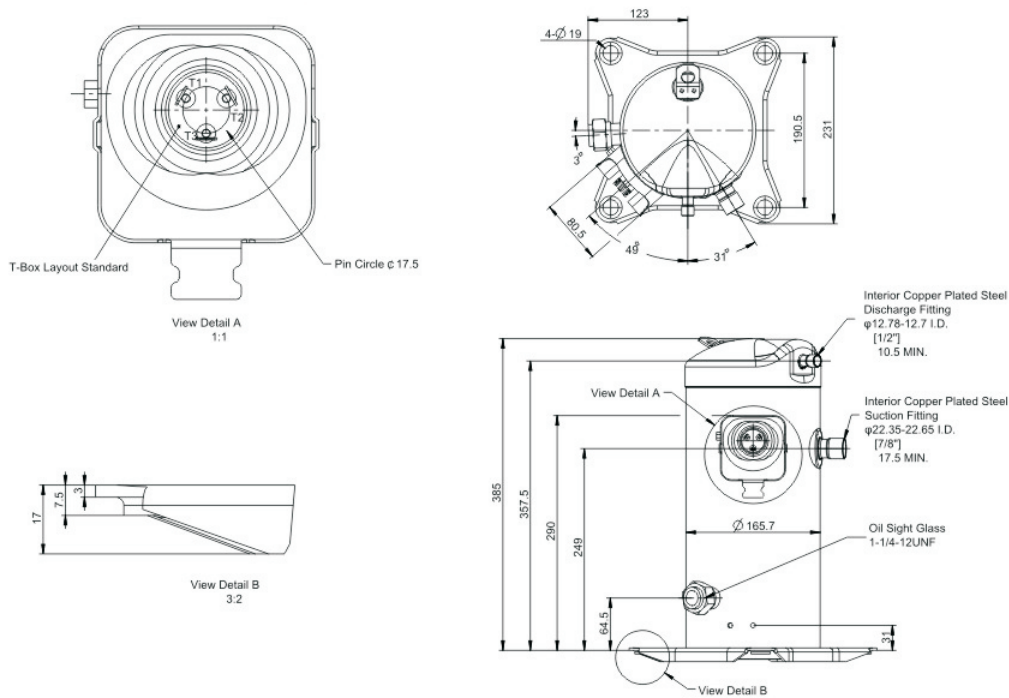
# DM Technical Data

380V/420V, 3Phase , 50Hz

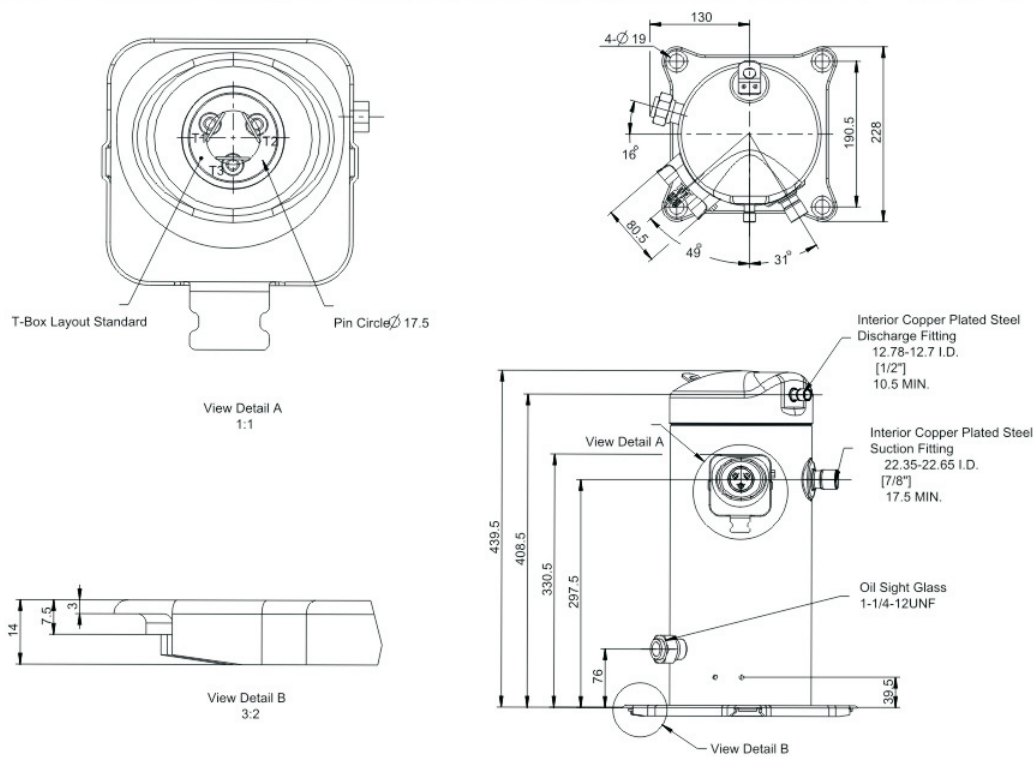
| MODEL                                     |                        |      | DSM132HM<br>DSM132HE | DSM182HM<br>DSM182HE | DSM200HM<br>DSM200HE | DSM260HM<br>DSM260HE |
|---|------------------------|------|----------------------|----------------------|----------------------|----------------------|
| MOTOR TYPE                                |                        |      | T3F(3PH)             |                      |                      |                      |
| Nominal Power                             |                        | H.P  | 8                    | 10                   | 12                   | 15                   |
|   |                        |      |                      |                      |                      |                      |
| Displacement                              |                        | m³/h | 21.6                 | 29.1                 | 33.1                 | 42.6                 |
|   |                        |      |                      |                      |                      |                      |
| Locked-rotor ampere(LRA)                  |                        | (A)  |                      |                      |                      |                      |
| 3PH                                       |                        |      | 115                  | 118                  | 121                  | 145                  |
| Rated load ampere(RLA)                    |                        | (A)  |                      |                      |                      |                      |
| 3PH                                       |                        |      | 14.3                 | 19.2                 | 22.1                 | 27.1                 |
| Maximum continuous operating current(MCC) |                        | (A)  |                      |                      |                      |                      |
| 3PH                                       |                        |      | 19.8                 | 26.9                 | 31.1                 | 38.2                 |
|   |                        |      |                      |                      |                      |                      |
| Crankcase heating power                   |                        | W    | 90                   | 90                   | 90                   | 90                   |
|   |                        |      |                      |                      |                      |                      |
| Outsside Dimension (OD)                   | Exhaust pipe(D/P)      | inch | 7/8                  | 7/8                  | 7/8                  | 7/8                  |
|   | Air suction pipe (S/P) |      | 1 3/8                | 1 3/8                | 1 3/8                | 1 3/8                |
|   |                        |      |                      |                      |                      |                      |
| Dimensions                                | L                      | mm   | 354                  | 354                  | 354                  | 354                  |
|   | W                      |      | 333                  | 333                  | 333                  | 333                  |
|   | H                      |      | 523                  | 523                  | 523                  | 523                  |
|   |                        |      |                      |                      |                      |                      |
| Foot mounting dimensions.(Aperture)       |                        |      | 190×190 ( 8.5 )      |                      |                      |                      |
|   |                        |      |                      |                      |                      |                      |
| Oil Volume                                |                        | L    | 3.4                  | 3.4                  | 3.4                  | 3.4                  |
|   |                        |      |                      |                      |                      |                      |
| Weight                                    | Net weight             | Kg   | 85                   | 87                   | 89                   | 91                   |
|   | Gross Weight           |      | 86                   | 88                   | 90                   | 92                   |

# DM/DSM Dimension Drawing

## DM50HM-T3F-G01 Welding interface & Oil sight glass



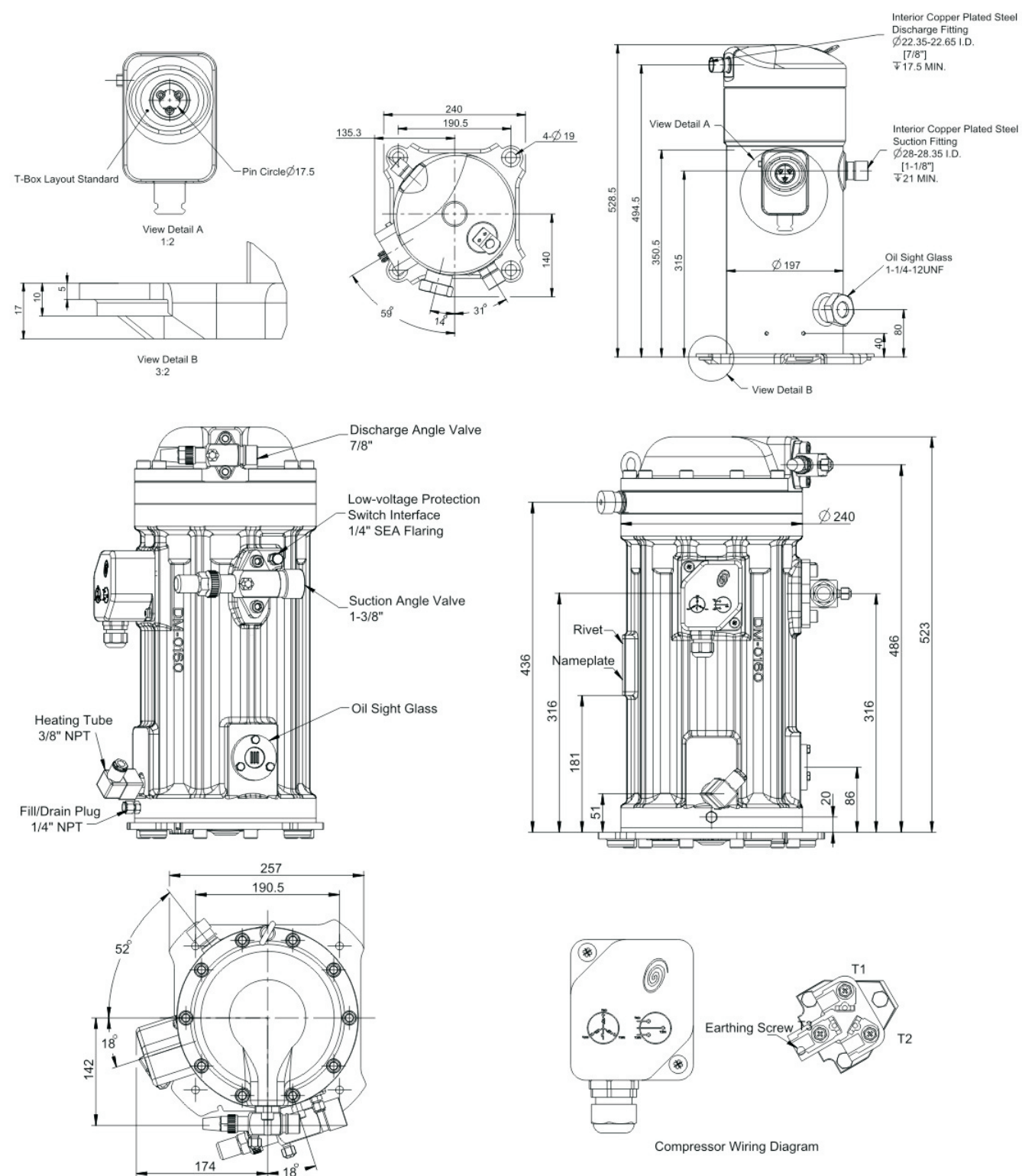
## DM86HM-T3F-G01 Welding interface & Oil sight glass





# DM/DSM Dimension Drawing

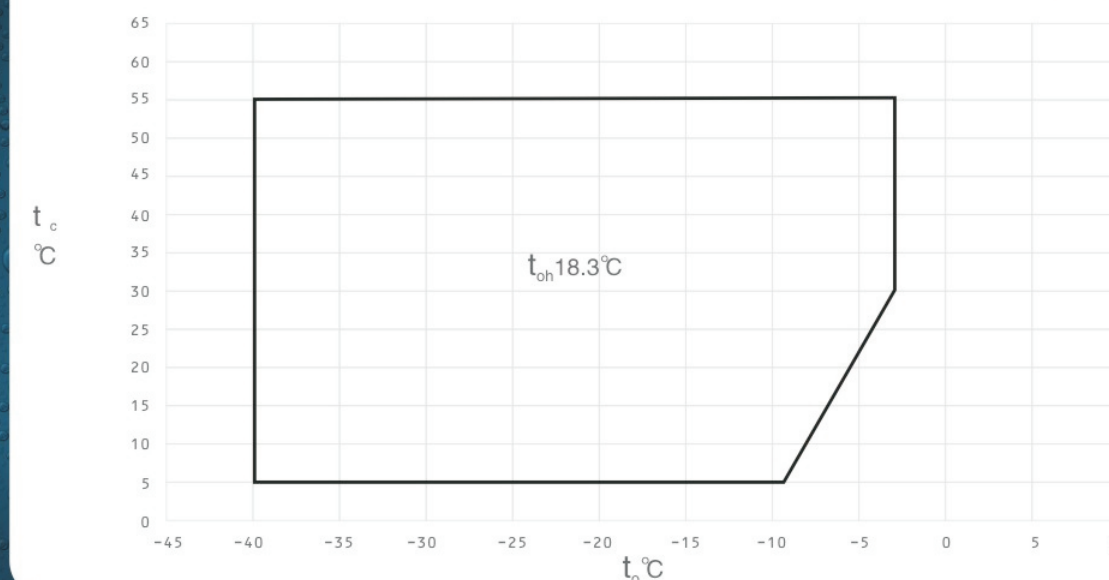
## DM132HM-DM260HM/DSM132HM-DSM260HM Welding interface & Oil sight glass



# DF Low-temp.application Range

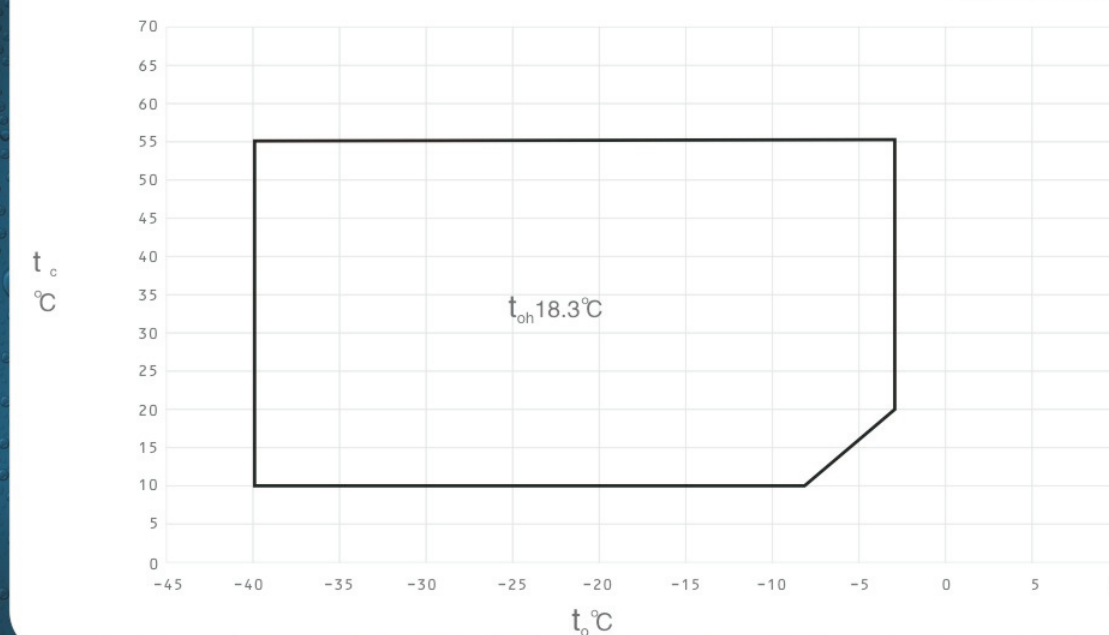
DF20HM-DF108HM Liquid Injection

R22



DF20HE-DF108HE

R404A



$t_o$  (°C) : Evaporating temperature (°C)  
 $t_{oh}$  (°C) : Suction gas temperature (°C)  
 $t_c$  (°C) : Condensing temperature (°C)  
 ——— Return temperature in black wire frame 18.3°C



# DF Cooling Capacity(C/C) R22

380V/420V, 3Phase, 50Hz

| MODEL   |            | Condensing Temp. (°C) -tc | Evaporating Temperature(°C) - to |      |       |       |       |       |       |       |
|---------|------------|---------------------------|----------------------------------|------|-------|-------|-------|-------|-------|-------|
|         |            |                           | -40                              | -35  | -30   | -25   | -20   | -15   | -10   | -5    |
| DF20HM  | C/C (Kw)   | 30                        | 1.59                             | 2.01 | 2.49  | 3.09  | 3.78  | 4.58  | 5.51  | 6.58  |
|         |            | 40                        | 1.46                             | 1.85 | 2.31  | 2.84  | 3.48  | 4.22  | 5.07  | 6.06  |
|         |            | 50                        | 1.34                             | 1.69 | 2.11  | 2.59  | 3.16  | 3.83  | 4.61  | 5.51  |
|         | POWER (Kw) | 30                        | 1.52                             | 1.57 | 1.61  | 1.67  | 1.72  | 1.79  | 1.86  | 1.94  |
|         |            | 40                        | 1.81                             | 1.85 | 1.91  | 1.95  | 2.01  | 2.07  | 2.14  | 2.22  |
|         |            | 50                        | 2.11                             | 2.16 | 2.22  | 2.28  | 2.34  | 2.41  | 2.48  | 2.56  |
| DF35HM  | C/C (Kw)   | 30                        | 2.79                             | 3.52 | 4.39  | 5.42  | 6.63  | 8.03  | 9.63  | 11.47 |
|         |            | 40                        | 2.57                             | 3.25 | 4.05  | 5.01  | 6.12  | 7.42  | 8.91  | 10.62 |
|         |            | 50                        | 2.24                             | 2.95 | 3.68  | 4.54  | 5.56  | 6.74  | 8.11  | 9.68  |
|         | POWER (Kw) | 30                        | 2.47                             | 2.53 | 2.61  | 2.71  | 2.82  | 2.95  | 3.11  | 3.29  |
|         |            | 40                        | 2.89                             | 2.97 | 3.06  | 3.15  | 3.27  | 3.41  | 3.55  | 3.74  |
|         |            | 50                        | 3.38                             | 3.47 | 3.58  | 3.68  | 3.81  | 3.94  | 4.11  | 4.28  |
| DF55HM  | C/C (Kw)   | 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 |
|         | POWER (Kw) | 30                        | 3.93                             | 3.99 | 4.07  | 4.17  | 4.31  | 4.45  | 4.63  | 4.88  |
|         |            | 40                        | 4.62                             | 4.71 | 4.79  | 4.91  | 5.04  | 5.19  | 5.38  | 5.59  |
|         |            | 50                        | 5.41                             | 5.51 | 5.62  | 5.76  | 5.92  | 6.09  | 6.29  | 6.52  |
| DF76HM  | C/C (Kw)   | 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  | 12.01 | 14.59 | 17.58 | 20.99 |
|         |            | 50                        | 4.22                             | 5.51 | 7.03  | 8.79  | 10.84 | 13.22 | 15.95 | 19.06 |
|         | POWER (Kw) | 30                        | 4.32                             | 4.51 | 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  |
| DF91HM  | C/C (Kw)   | 30                        | 6.35                             | 8.03 | 10.03 | 12.41 | 15.21 | 18.48 | 22.26 | 26.61 |
|         |            | 40                        | 5.81                             | 7.41 | 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 |
|         | POWER (Kw) | 30                        | 5.24                             | 5.49 | 5.75  | 6.01  | 6.27  | 6.53  | 6.81  | 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  | 8.91  | 9.26  | 9.61  |
| DF108HM | C/C (Kw)   | 30                        | 7.81                             | 9.82 | 12.31 | 15.28 | 18.78 |       |       |       |
|         |            | 40                        | 7.11                             | 8.99 | 11.31 | 14.08 | 17.33 |       |       |       |
|         |            | 50                        | 6.23                             | 8.01 | 10.16 | 12.72 | 15.71 |       |       |       |
|         | POWER (Kw) | 30                        | 6.48                             | 6.68 | 6.94  | 7.25  | 7.59  |       |       |       |
|         |            | 40                        | 7.52                             | 7.73 | 8.08  | 8.45  | 8.86  |       |       |       |
|         |            | 50                        | 8.78                             | 9.07 | 9.43  | 9.86  | 10.32 |       |       |       |

NOTE:1. Test Condition: Suction gas temperature 18.3°C, supercooling degree 0 K  
2. The lowest evaporation temperature : -40 °C

# DSF Cooling Capacity(C/C) R22

380V/420V, 3Phase, 50Hz

| MODEL    |            | Condensing Temp. (°C) -tc | Evaporating Temperature(°C) - to |      |       |       |       |       |       |       |
|----------|------------|---------------------------|----------------------------------|------|-------|-------|-------|-------|-------|-------|
|          |            |                           | -40                              | -35  | -30   | -25   | -20   | -15   | -10   | -5    |
| DSF55HM  | C/C (Kw)   | 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 |
|          | POWER (Kw) | 30                        | 3.93                             | 3.99 | 4.07  | 4.17  | 4.31  | 4.45  | 4.63  | 4.88  |
|          |            | 40                        | 4.62                             | 4.71 | 4.79  | 4.91  | 5.04  | 5.19  | 5.38  | 5.59  |
|          |            | 50                        | 5.41                             | 5.51 | 5.62  | 5.76  | 5.92  | 6.09  | 6.29  | 6.52  |
| DSF76HM  | C/C (Kw)   | 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  | 12.01 | 14.59 | 17.58 | 20.99 |
|          |            | 50                        | 4.22                             | 5.51 | 7.03  | 8.79  | 10.84 | 13.22 | 15.95 | 19.06 |
|          | POWER (Kw) | 30                        | 4.32                             | 4.51 | 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  |
| DSF91HM  | C/C (Kw)   | 30                        | 6.35                             | 8.03 | 10.03 | 12.41 | 15.21 | 18.48 | 22.26 | 26.61 |
|          |            | 40                        | 5.81                             | 7.41 | 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 |
|          | POWER (Kw) | 30                        | 5.24                             | 5.49 | 5.75  | 6.01  | 6.27  | 6.53  | 6.81  | 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  | 8.91  | 9.26  | 9.61  |
| DSF108HM | C/C (Kw)   | 30                        | 7.81                             | 9.82 | 12.31 | 15.28 | 18.78 |       |       |       |
|          |            | 40                        | 7.11                             | 8.99 | 11.31 | 14.08 | 17.33 |       |       |       |
|          |            | 50                        | 6.23                             | 8.01 | 10.16 | 12.72 | 15.71 |       |       |       |
|          | POWER (Kw) | 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 |       |       |       |

NOTE:1. Test Condition: Suction gas temperature 18.3°C, supercooling degree 0 K  
2. The lowest evaporation temperature : -40 °C



# DF Cooling Capacity(C/C) R404

380V/420V, 3Phase, 50Hz

| MODEL   |            | Condensing Temp. (°C) -tc | Evaporating Temperature(°C) - to |       |       |       |       |       |       |       |
|---------|------------|---------------------------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|
|         |            |                           | -40                              | -35   | -30   | -25   | -20   | -15   | -10   | -5    |
| DF20HE  | C/C (Kw)   | 30                        | 1.71                             | 2.17  | 2.71  | 3.35  | 4.11  | 4.97  | 5.97  | 7.13  |
|         |            | 40                        | 1.53                             | 1.94  | 2.41  | 2.96  | 3.61  | 4.35  | 5.23  | 6.23  |
|         |            | 50                        | 1.32                             | 1.67  | 2.07  | 2.52  | 3.06  | 3.69  | 4.42  | 5.27  |
|         | POWER (Kw) | 30                        | 1.46                             | 1.48  | 1.52  | 1.57  | 1.65  | 1.74  | 1.84  | 1.96  |
|         |            | 40                        | 1.77                             | 1.78  | 1.81  | 1.86  | 1.92  | 2.01  | 2.11  | 2.21  |
|         |            | 50                        | 2.16                             | 2.16  | 2.18  | 2.22  | 2.27  | 2.34  | 2.43  | 2.53  |
| DF35HE  | C/C (Kw)   | 30                        | 3.01                             | 3.89  | 4.91  | 6.08  | 7.44  | 9.01  | 10.82 | 12.89 |
|         |            | 40                        | 2.66                             | 3.42  | 4.29  | 5.31  | 6.47  | 7.84  | 9.43  | 11.26 |
|         |            | 50                        | 2.36                             | 2.95  | 3.64  | 4.44  | 5.41  | 6.53  | 7.86  | 9.41  |
|         | POWER (Kw) | 30                        | 2.21                             | 2.33  | 2.45  | 2.58  | 2.73  | 2.91  | 3.09  | 3.31  |
|         |            | 40                        | 2.68                             | 2.82  | 2.95  | 3.09  | 3.24  | 3.41  | 3.61  | 3.81  |
|         |            | 50                        | 3.26                             | 3.42  | 3.58  | 3.73  | 3.91  | 4.07  | 4.25  | 4.45  |
| DF55HE  | C/C (Kw)   | 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 | 16.21 |
|         |            | 50                        | 3.63                             | 4.45  | 5.51  | 6.79  | 8.28  | 9.96  | 11.81 | 13.82 |
|         | POWER (Kw) | 30                        | 3.03                             | 3.31  | 3.54  | 3.76  | 4.01  | 4.31  | 4.67  | 5.16  |
|         |            | 40                        | 3.43                             | 3.81  | 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  |
| DF76HE  | C/C (Kw)   | 30                        | 6.03                             | 7.72  | 9.67  | 11.94 | 14.57 | 17.62 | 21.16 | 25.23 |
|         |            | 40                        | 5.31                             | 6.82  | 8.54  | 10.51 | 12.79 | 15.44 | 18.51 | 22.06 |
|         |            | 50                        | 4.47                             | 5.79  | 7.25  | 8.91  | 10.81 | 13.01 | 15.59 | 18.58 |
|         | POWER (Kw) | 30                        | 4.18                             | 4.41  | 4.67  | 4.93  | 5.22  | 5.53  | 5.85  | 6.21  |
|         |            | 40                        | 4.85                             | 5.16  | 5.46  | 5.77  | 6.08  | 6.41  | 6.73  | 7.07  |
|         |            | 50                        | 5.66                             | 6.04  | 6.41  | 6.77  | 7.13  | 7.48  | 7.82  | 8.16  |
| DF91HE  | C/C (Kw)   | 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 | 18.91 | 22.64 | 26.99 |
|         |            | 50                        | 5.65                             | 7.29  | 9.06  | 11.04 | 13.31 | 15.96 | 19.05 | 22.68 |
|         | POWER (Kw) | 30                        | 5.07                             | 5.41  | 5.75  | 6.11  | 6.48  | 6.88  | 7.31  | 7.75  |
|         |            | 40                        | 5.95                             | 6.33  | 6.72  | 7.12  | 7.52  | 7.94  | 8.36  | 8.81  |
|         |            | 50                        | 6.95                             | 7.41  | 7.85  | 8.29  | 8.74  | 9.18  | 9.63  | 10.09 |
| DF108HE | C/C (Kw)   | 30                        | 9.14                             | 11.54 | 14.39 | 17.75 | 21.67 |       |       |       |
|         |            | 40                        | 8.07                             | 10.21 | 12.72 | 15.65 | 19.05 |       |       |       |
|         |            | 50                        | 6.81                             | 8.66  | 10.81 | 13.27 | 16.14 |       |       |       |
|         | POWER (Kw) | 30                        | 6.24                             | 6.53  | 6.91  | 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 |       |       |       |

NOTE:1.Test Condition: Suction gas temperature18.3°C, supercooling degree 0 K  
2.The lowest evaporation temperature : -40 °C

# DSF Cooling Capacity(C/C) R404

380V/420V, 3Phase, 50Hz

| MODEL    |            | Condensing Temp. (°C) -tc | Evaporating Temperature(°C) - to |       |       |       |       |       |       |       |
|----------|------------|---------------------------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|
|          |            |                           | -40                              | -35   | -30   | -25   | -20   | -15   | -10   | -5    |
| DSF55HE  | C/C (Kw)   | 30                        | 4.59                             | 5.81  | 7.32  | 9.08  | 11.09 | 13.32 | 15.75 | 18.37 |
|          |            | 40                        | 4.19                             | 5.12  | 6.42  | 7.96  | 9.73  | 11.71 | 13.87 | 16.21 |
|          |            | 50                        | 3.63                             | 4.45  | 5.51  | 6.79  | 8.28  | 9.96  | 11.81 | 13.82 |
|          | POWER (Kw) | 30                        | 3.03                             | 3.31  | 3.54  | 3.76  | 4.01  | 4.31  | 4.67  | 5.16  |
|          |            | 40                        | 3.43                             | 3.81  | 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  |
| DSF76HE  | C/C (Kw)   | 30                        | 6.03                             | 7.72  | 9.67  | 11.94 | 14.57 | 17.62 | 21.16 | 25.23 |
|          |            | 40                        | 5.31                             | 6.82  | 8.54  | 10.51 | 12.79 | 15.44 | 18.51 | 22.06 |
|          |            | 50                        | 4.47                             | 5.79  | 7.25  | 8.91  | 10.81 | 13.01 | 15.59 | 18.58 |
|          | POWER (Kw) | 30                        | 4.18                             | 4.41  | 4.67  | 4.93  | 5.22  | 5.53  | 5.85  | 6.21  |
|          |            | 40                        | 4.85                             | 5.16  | 5.46  | 5.77  | 6.08  | 6.41  | 6.73  | 7.07  |
|          |            | 50                        | 5.66                             | 6.04  | 6.41  | 6.77  | 7.13  | 7.48  | 7.82  | 8.16  |
| DSF91HE  | C/C (Kw)   | 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 | 18.91 | 22.64 | 26.99 |
|          |            | 50                        | 5.65                             | 7.29  | 9.06  | 11.04 | 13.31 | 15.93 | 19.05 | 22.68 |
|          | POWER (Kw) | 30                        | 5.07                             | 5.41  | 5.75  | 6.11  | 6.48  | 6.88  | 7.31  | 7.75  |
|          |            | 40                        | 5.95                             | 6.33  | 6.72  | 7.12  | 7.52  | 7.94  | 8.36  | 8.81  |
|          |            | 50                        | 6.95                             | 7.41  | 7.85  | 8.29  | 8.74  | 9.18  | 9.63  | 10.09 |
| DSF108HE | C/C (Kw)   | 30                        | 9.14                             | 11.54 | 14.39 | 17.75 | 21.67 |       |       |       |
|          |            | 40                        | 8.07                             | 10.21 | 12.72 | 15.65 | 19.05 |       |       |       |
|          |            | 50                        | 6.81                             | 8.66  | 10.81 | 13.27 | 16.14 |       |       |       |
|          | POWER (Kw) | 30                        | 6.24                             | 6.53  | 6.91  | 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 |       |       |       |

NOTE:1.Test Condition: Suction gas temperature18.3°C, supercooling degree 0 K  
2.The lowest evaporation temperature : -40 °C



# DF Technical Data

380V/420V, 3Phase , 50Hz

| MODEL  |                   |       | DF20HM<br>DF20HE | DF35HM<br>DF35HE | DF55HM<br>DF55HE | DF76HM<br>DF76HE | DF91HM<br>DF91HE | DF108HM<br>DF108HE |
|--|-------------------|-------|------------------|------------------|------------------|------------------|------------------|--------------------|
| Nominal Power                                    |                   | HP    | 3                | 5                | 8                | 10               | 12               | 15                 |
| Displacement                                     |                   | m³/hr | 8.6              | 14.5             | 21.4             | 29.1             | 33.1             | 42.4               |
| MOTOR TYPE                                       |                   |       |                  |                  |                  |                  |                  |                    |
| 50Hz 380-420V 3P                                 |                   |       | T3F              | T3F              | T3F              | T3F              | T3F              | T3F                |
| 60Hz 460V 3P                                     |                   |       | T3F              | T3F              | T3F              | T3F              | T3F              | T3F                |
| Locked-rotor ampere (LRA)                        |                   |       |                  |                  |                  |                  |                  |                    |
| 50Hz TFD Amps                                    |                   |       | 40               | 64               | 102              | 100              | 118              | 139                |
| 60Hz TFD Amps                                    |                   |       | 36               | 75               | 99               | 100              | 125              | 139                |
| Maximum operating current (MOC)                  |                   |       |                  |                  |                  |                  |                  |                    |
| 50Hz TFD Amps                                    |                   |       | 6                | 10               | 13.7             | 25               | 29               | 30                 |
| 60Hz TFD Amps                                    |                   |       | 6                | 10               | 13.7             | 25               | 29               | 30                 |
| Maximum continuous operating current (MCC)       |                   |       |                  |                  |                  |                  |                  |                    |
| 50Hz TFD Amps                                    |                   |       | 6.5              | 12               | 16.6             | 25               | 27               | 28.3               |
| 60Hz TFD Amps                                    |                   |       | 7                | 12.5             | 16.6             | 25               | 27               | 28.3               |
| Rated load ampere(RLA=MCC/1.4)                   |                   |       |                  |                  |                  |                  |                  |                    |
| 50Hz TFD Amps                                    |                   |       | 4.6              | 8.6              | 11.9             | 17.9             | 19.3             | 20.2               |
| 60Hz TFD Amps                                    |                   |       | 5                | 8.9              | 11.9             | 17.9             | 19.3             | 20.2               |
| Crankcase heating power                          |                   | Watt  | 70               | 70               | 70               | 90               | 90               | 90                 |
|  |                   |       |                  |                  |                  |                  |                  |                    |
| Outer diameter<br>dimension of<br>threaded joint | air suction pipe  | inch  | 31.75[1.25-12]   |                  |                  | 44.45[1.75-12]   |                  |                    |
|  | exhaust pipe      |       | 25.4[1.00-14]    |                  |                  | 31.75[1.25-12]   |                  |                    |
|  | injection orifice |       | 11/16            | 11/16            | 11/16            | 11/16            | 11/16            | 11/16              |
| Outside<br>diameter of<br>welded joint           | air suction pipe  | inch  | 7/8              | 7/8              | 7/8              | 7/8              | 7/8              | 7/8                |
|  | exhaust pipe      |       | 1/2              | 1/2              | 1 1/8            | 1 1/8            | 1 1/8            | 1 1/8              |
|  | injection orifice |       | 11/16            |                  |                  |                  |                  |                    |
|  |                   |       |                  |                  |                  |                  |                  |                    |
| Dimensions                                       | L                 | mm    | 231              | 228              | 239.5            | 239.5            | 239.5            | 239.5              |
|  | W                 |       | 231              | 228              | 239.5            | 239.5            | 239.5            | 239.5              |
|  | H                 |       | 385              | 440              | 526.5            | 526.5            | 526.5            | 526.5              |
|  |                   |       |                  |                  |                  |                  |                  |                    |
| Foot mounting dimensions(aperture)               |                   |       | 190×190 ( 8.5 )  |                  |                  |                  |                  |                    |
|  |                   |       |                  |                  |                  |                  |                  |                    |
| Oil Volume                                       |                   | L     | 1.3              | 1.9              | 3.4              | 3.4              | 3.4              | 3.4                |
|  |                   |       |                  |                  |                  |                  |                  |                    |
| weight   | Net weight        | Kg    | 28               | 37               | 54               | 54               | 56               | 56                 |
|  | Gross Weight      |       | 29               | 38               | 55               | 55               | 57               | 57                 |

# DSF Technical Data

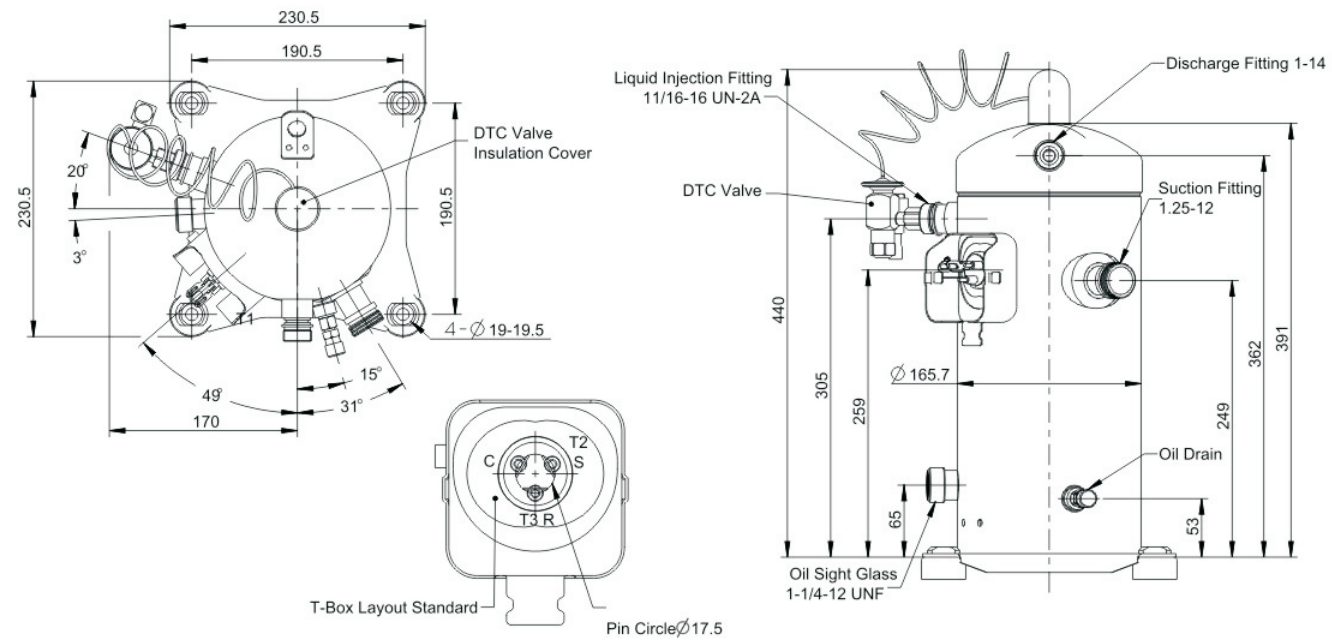
380V/420V, 3Phase, 50Hz

| MODEL  |                   |       | DF55HM<br>DF55HE | DF76HM<br>DF76HE | DF91HM<br>DF91HE | DF108HM<br>DF108HE |
|--|-------------------|-------|------------------|------------------|------------------|--------------------|
| Nominal Power                                    |                   | HP    | 8                | 10               | 12               | 15                 |
| Displacement                                     |                   | m³/hr | 21.4             | 29.1             | 33.1             | 42.4               |
| MOTOR TYPE                                       |                   |       |                  |                  |                  |                    |
| 50Hz 380-420V 3P                                 |                   |       | T3F              | T3F              | T3F              | T3F                |
| 60Hz 460V 3P                                     |                   |       | T3F              | T3F              | T3F              | T3F                |
| Locked-rotor ampere (LRA)                        |                   |       |                  |                  |                  |                    |
| 50Hz TFD Amps                                    |                   |       | 102              | 100              | 118              | 139                |
| 60Hz TFD Amps                                    |                   |       | 99               | 100              | 125              | 139                |
| Maximum operating current (MOC)                  |                   |       |                  |                  |                  |                    |
| 50Hz TFD Amps                                    |                   |       | 13.7             | 25               | 29               | 30                 |
| 60Hz TFD Amps                                    |                   |       | 13.7             | 25               | 29               | 30                 |
| Maximum continuous operating current (MCC)       |                   |       |                  |                  |                  |                    |
| 50Hz TFD Amps                                    |                   |       | 16.6             | 25               | 27               | 28.3               |
| 60Hz TFD Amps                                    |                   |       | 16.6             | 25               | 27               | 28.3               |
| Rated load ampere (RLA=MCC/1.4)                  |                   |       |                  |                  |                  |                    |
| 50Hz TFD Amps                                    |                   |       | 11.9             | 17.9             | 19.3             | 20.2               |
| 60Hz TFD Amps                                    |                   |       | 11.9             | 17.9             | 19.3             | 20.2               |
| Crankcase heating power                          |                   | W     | 70               | 90               | 90               | 90                 |
|  |                   |       |                  |                  |                  |                    |
| Outer diameter<br>dimension of<br>threaded joint | air suction pipe  | inch  | 31.75[1.25-12]   | 44.45[1.75-12]   | 44.45[1.75-12]   | 44.45[1.75-12]     |
|  | exhaust pipe      |       | 25.4[1.00-14]    | 31.75[1.25-12]   | 31.75[1.25-12]   | 31.75[1.25-12]     |
|  | injection orifice |       | 11/16            | 11/16            | 11/16            | 11/16              |
| Outside<br>diameter of<br>welded joint           | air suction pipe  | inch  | 7/8              | 7/8              | 7/8              | 7/8                |
|  | exhaust pipe      |       | 1 1/8            | 1 1/8            | 1 1/8            | 1 1/8              |
|  | injection orifice |       | 11/16            |                  |                  |                    |
|  |                   |       |                  |                  |                  |                    |
| Dimensions                                       | L                 | mm    | 239.5            | 239.5            | 239.5            | 239.5              |
|  | W                 |       | 239.5            | 239.5            | 239.5            | 239.5              |
|  | H                 |       | 526.5            | 526.5            | 526.5            | 526.5              |
|  |                   |       |                  |                  |                  |                    |
| Foot mounting dimensions (aperture)              |                   |       | 190×190 ( 8.5 )  |                  |                  |                    |
|  |                   |       |                  |                  |                  |                    |
| Oil Volume                                       |                   | L     | 3.4              | 3.4              | 3.4              | 3.4                |
|  |                   |       |                  |                  |                  |                    |
| weight   | Net weight        | Kg    | 85               | 87               | 89               | 91                 |
|  | Gross Weight      |       | 86               | 88               | 90               | 92                 |

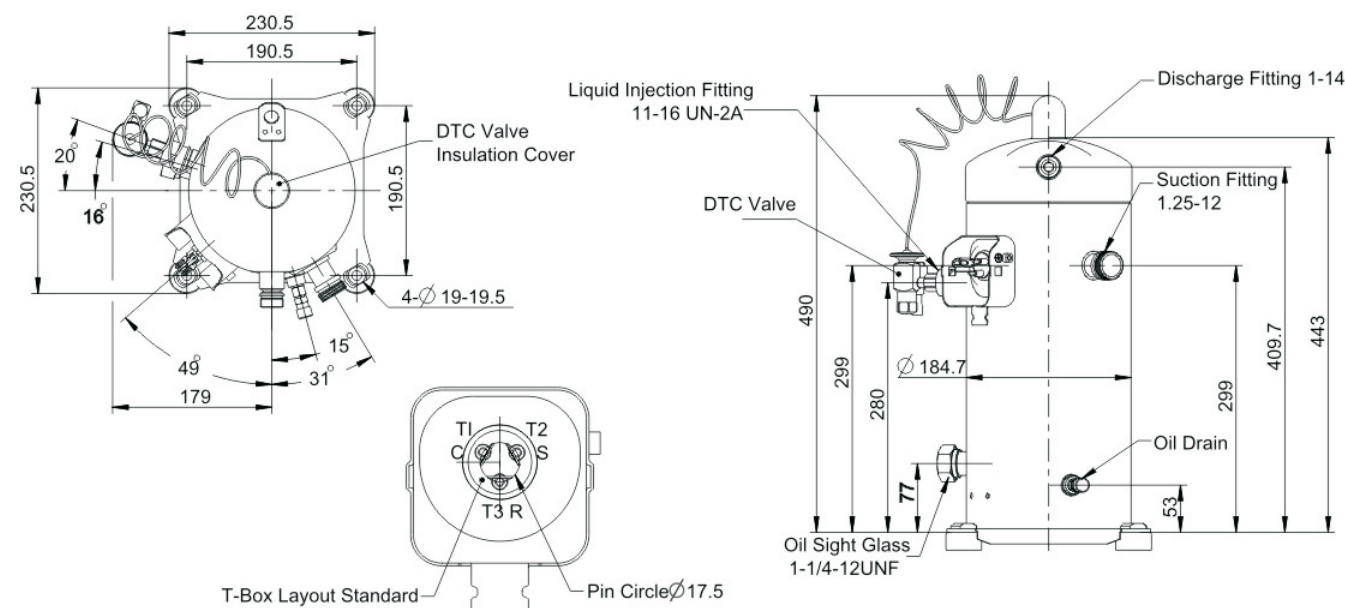


## DF/DSF Dimension Drawing

### DF20HM-T3F-G01 Welding interface & Oil sight glass

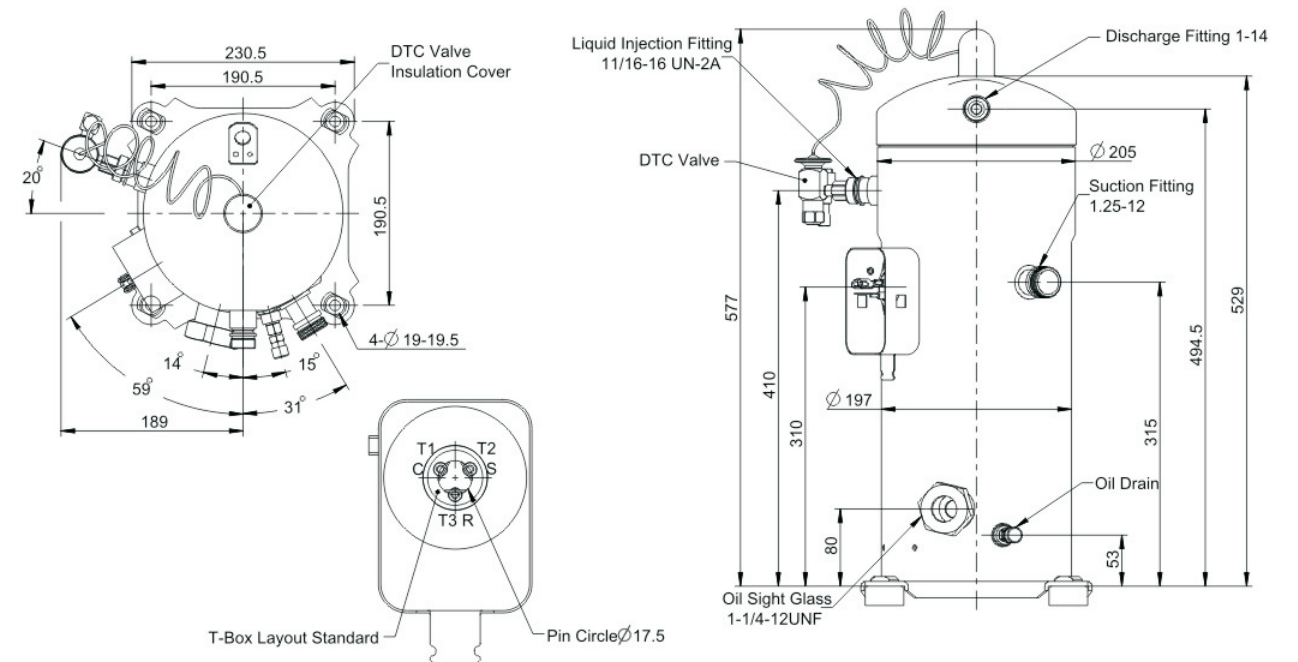


### DF35HM-T3F-G01 Welding interface & Oil sight glass

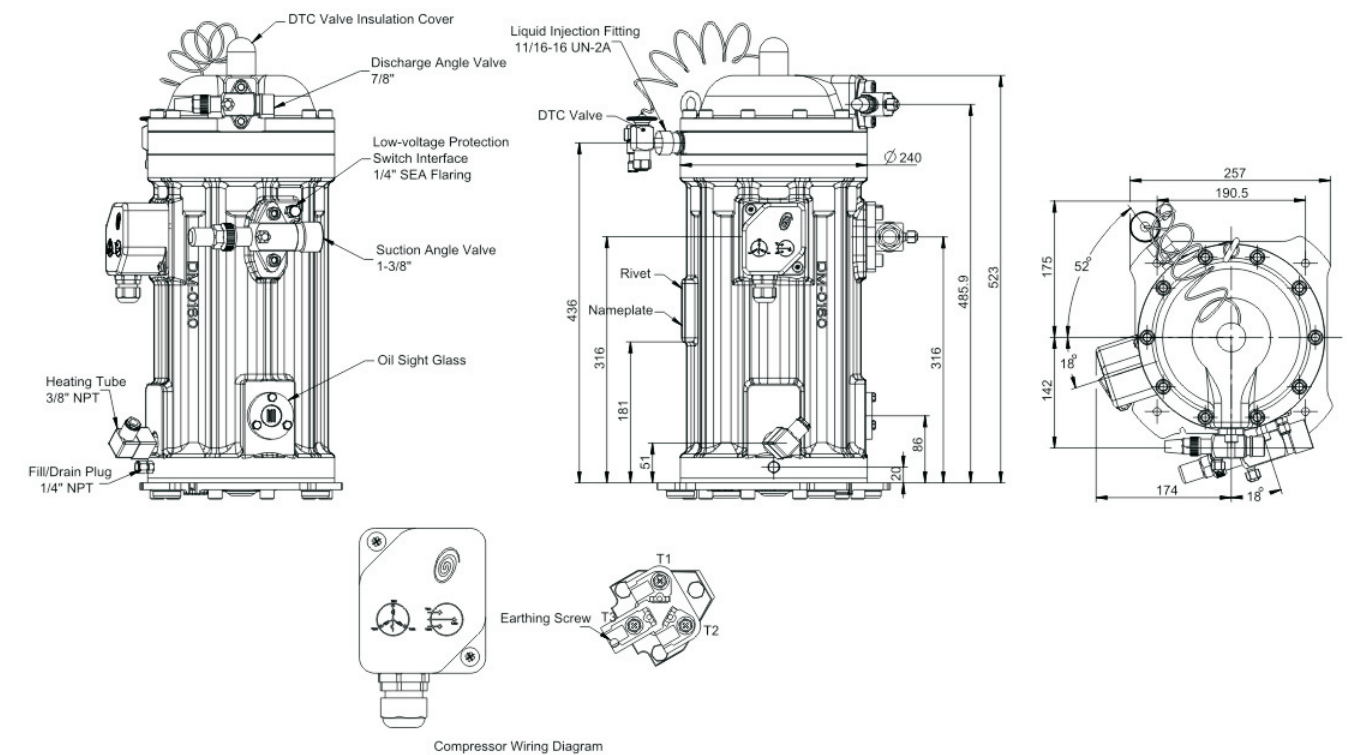


## DF/DSF Dimension Drawing

### DF55HM-DF108HM Welding interface & Oil sight glass



### DSF55HM-DSF108HM Welding interface & Oil sight glass





# Application Guide

## The working principle of scroll compressor

The simple concept of scroll was first invented in 1905 year. The scroll is an involute spiral that meshes with the mating scroll as shown above to create a series of increasingly enlarged spaces that exist between the two components. When compressed, one scroll remains stationary (fixed scroll) while the other scroll (orbiting scroll) is allowed to move around the first disk (but not rotate). When this movement occurs, the space between the two discs is slowly moved to the center of the two scrolls while at the same time the volume is also reduced. When the space reaches the center of the scroll, the gas at a high pressure is discharged through the centrally located passage. During compression, several chambers are simultaneously compressed, forming a very smooth process. The gas suction process (the outer part of the scroll) and the gas discharge process (the inner part) are continuous.



The pressure of the scroll compressor is due to the interaction between the scroll disks of the planetary motion. When one of the scrolls is a planetary motion, the gas comes in from the outside.



After the gas enters the scrolls, the opening is closed.



As the scroll continued planetary motion, the gas is pressed into smaller and smaller spaces.



When the gas reaches the center, it reaches the discharge gas pressure.



In fact, in operation, all six gas channels are in different compression stages to ensure that the gas suction and discharge processes are basically continuous without interruption.

| DM/DB Scroll compressor configuration |                                |                    |
|---------------------------------------|--------------------------------|--------------------|
| Model                                 | Built-in pressure relief valve | Motor protector    |
| DM50/DB21                             | IPR                            | Midpoint protector |
| DM86/DB38                             | IPR                            | Midpoint protector |
| DM260/DB114                           | IPR                            | Midpoint protector |

### Built-in pressure relief valve – IPR valve

The built-in pressure relief valve is located between the high-pressure side of the compressor and the low pressure side. When the pressure difference between the high pressure side and the low pressure side is over 26–32bar, it is opened. When the built-in pressure relief valve is opened, the hot discharge gas contacts the temperature sensor of the motor protector, and the motor midpoint protector jumps.

# Application Guide

## Minimum running time

There is no definite answer to how many times the scroll compressor can start and stop in an hour, because it depends heavily on the configuration of the system.

Because the scroll compressor is started under the unloading condition, even under unbalanced pressure, it is started under the unloading condition, so there is no provision for minimum downtime.

The most critical consideration is the minimum running time required to return the oil to the compressor after startup.

The easiest way to do this is to use a prototype with a glass mirror, and to connect the longest connected pipe that the system allows.

The shortest running time is when the compressor is started and the oil is returned to the oil tank to restore the normal oil level in the mirror.

If the compressor is stopped at a shorter time interval than the time interval, for example, to maintain a very accurate temperature control, it will gradually lose the lubricant and damage the compressor.

## Discharge temperature protection device

If the system design does not guarantee that the compressor runs in the operating condition of the table column, that is, the operating condition of the compressor is exceeded;

Or improper system layout, can produce very high discharge temperature, resulting in lubricating oil carbon, at this time should be in the control loop to install the discharge temperature protection device.

The installation position of the discharge temperature sensor is installed on the exhaust pipe at 178mm from the exhaust outlet when the compressor is not equipped with the stop valve.

The compressor belt globe valve is installed on the 127mm discharge pipe from the cut-off valve interface.

The discharge temperature sensor probe is attached to the surface of the discharge pipe and is fixed with the fixed clip in the assembly.

## Liquid injecting cooling

In a low-temperature scroll compressor (DF series), a spray interface, compressor internal structure makes the spray mouth is connected to the scroll dish medium pressure chamber, and breathe in and the medium pressure cavity is isolated, such structure makes the spray will not lead to a loss of cold energy.

The discharge temperature control valve (DTC valve) is controlled by the spray cooling of low temperature application.

The beat of the valve to open fixed point was  $89.4 \pm 2.8$  °C.

The DTC valve supply pipe diameter requires 3/8" (9.5mm) to connect to the system liquid tube filter. There must be sufficient continuous liquid supply, and the liquid requires at least 2K overcooling.

When replacing the compressor of DTC valve, it is strongly recommended to replace the DTC valve simultaneously.

If you still want to use the original DTC valve, you must remove the inner filter of the valve body for cleaning.

When replacing the DTC valve, the liquid tube filter must be checked to ensure that it is not blocked and replaced when necessary.

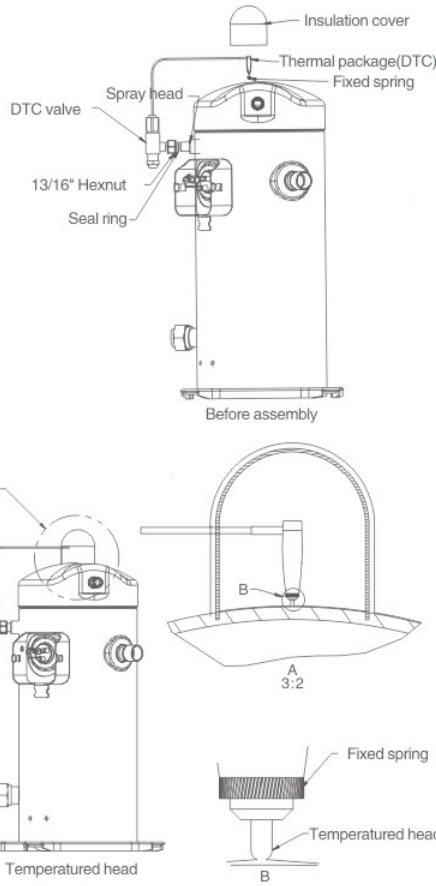
## Installation precautions:

1. Confirm that the fixed spring is in the slot in the thermal package.
2. DTC valve tightening torque: 24–27Nm
3. When the DTC temperature package is inserted into the mounting hole of the compressor top cover, it is required to be inserted into the hole bottom.
4. When the DTC valve is properly installed, the length of the exposed top cover of the compressor is about 3.2mm.

## \*Crankcase heater

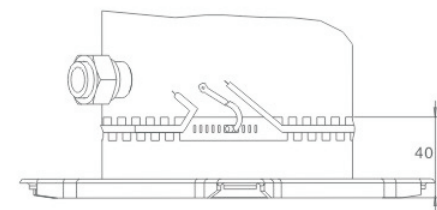
Single-phase scroll compressor does not need to use crankcase heater.

For the three-phase compressor, the crankcase heater should be used when the refrigerant charge is higher than the following table, or when the refrigerant is filled in the field.





# Application Guide



Installation of crankcase heater

## \*Pressure controller

In order to ensure the safe operation of the refrigeration system, it is recommended that all systems should be equipped with high voltage switch and low voltage switch, and the recommended cut-off value is shown in the table below(GP:bar):

| MODEL |                     | R22  | R404A |
|-------|---------------------|------|-------|
| DM    | High pressure(Max.) | 26.8 | 31.9  |
|       | Low pressure(Min.)  | 1.3  | 1.2   |
| DF    | High pressure(Max.) | 28   | 28    |
|       | Low pressure(Min.)  | 0    | 0.3   |

## \*Gas-liquid separator

Because of the inherent characteristics of the scroll compressor, it has strong anti-liquid strike capability.

In most systems, the gas-liquid separator is not used.

However, if the system has a large amount of liquid refrigerant to return to the compressor during normal shutdown time or during defrost or load fluctuation.

No matter how much is the amount of filling system, if they have long back to liquid or liquid to start not to control, due to the effect on the lubricating oil dilution, bearing would occur due to inadequate lubrication and wear.

In this case, the gas-liquid separator is recommended.

If the system uses gas-liquid separator, it is recommended that the size range of the return oil hole should be 1-1.9mm.

Need a large-area protection with mesh, not fine to 30 x 30 net surface (0.6 mm diameter, anywhere in the system is not recommended to use in 30 x 30 net surface mesh), in order to protect avoid fouling due to dirt system through the holes.

## \*Dry filter and humidity indicator

The drying filter installed in the liquid pipe shall have sufficient capacity and is suitable for continuous operation, and its selection shall be based on the flow of refrigerant.

You cannot use a desiccant, such as potassium chloride, that absorbs a large amount of moisture and becomes a liquid state.

It is recommended to use porous block desiccant to absorb moisture and acid to prevent dirt and metal debris.

The installation of the drying filter must be carried out after the second evacuation procedure.

The visual mirror of the humidity indicator should be installed in the easy-to-observe part of the liquid pipe to check the purpose of refrigerant flow.

## \*Oil separator

When installing the oil separator, which must be pre lubrication to the beginning of the overflow valve open, must always keep the oil in the oil separator, otherwise the lubricating oil in compressor will be remove and reduce the oil separator.

The pre-injection quantity can refer to the manufacturer's manual of oil separator.

## \*Refrigerant and frozen oil

The DM/DF scroll compressor can be used for compressor type and use R22,R404A and other refrigerant.

When using an environmentally friendly refrigerant such as R404A, it is necessary to use ester oil (POE oil).

The system using POE lubricating oil requires that the residual moisture content must be lower than 50ppm, and the determination must be carried out 48 hours after the system runs.

One of the corresponding measures is to install a filter dryer with sufficient capacity for different systems and refrigerants.

This kind of system also requires the proper evacuation process in the trial operation and maintenance.

The selection of parts to run the new refrigerant system must conform to the characteristics of the new refrigerant(specific consulting parts manufacturer) :

# Application Guide

\*The expansion valve compatible with the new refrigerant must be used.

\*A dry filter with sufficient capacity that is compatible with a new refrigerant must be used.

\*The quality flow of the new refrigerant such as R404A must be considered when selecting the valve controller.

Mineral oil cannot be used in the refrigeration system of HFC new refrigerant because mineral oil cannot be mixed with such refrigerant. POE lubricants have been proven to replace mineral oils and are well used for such occasions.

In order to ensure the service life, special attention must be paid to the properties and characteristics of the polyester oil.

Certified ester oils, which can be used in R404A,R407C and R134A systems, can be used in combination with each other.

In order to prevent the mineral oil and diverse ester oil pollution, each other should be used for corresponding traditional refrigerants and all sorts of new refrigerant components such as vacuum pump, pipe fittings, filling and recycling equipment and parts such as strictly used separately.

Ester oil has a strong hygroscopic property, which can affect the chemical stability of lubricants after inhalation of moisture.

In the process of storage of the compressor, it is necessary to fill the dry nitrogen to avoid moisture entering.

In the process of installation, it is necessary to shorten the opening time of the compressor suction and discharge opening.

## \*Suction strainer

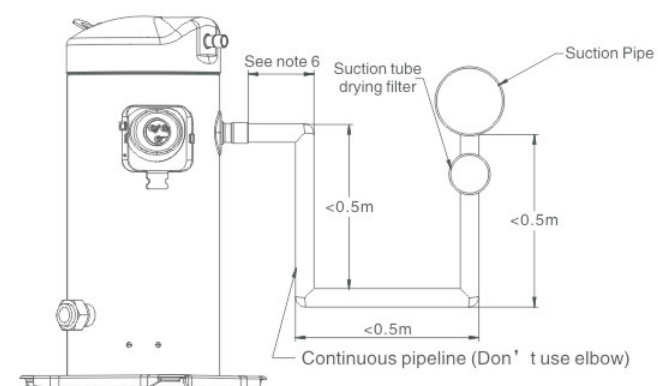
In order to avoid compressor failure, all impurities (dirt, welding oxide skin, borax, metal chip, etc.) must be removed from the system before operation.

Many impurities are very small and can be entered through the microporous filter into the suction side of the compressor.

When assembling or failing to ensure all cleanliness, it is recommended to use a large capacity inhalation tube filter (with minimal pressure drop).

The pressure gauge interface should be set in front of the filter to detect the pressure drop caused by the filter.

## \*Typical suction pipe arrangement



### NOTE:

1. The above piping layout is designed to minimize pipe stress.
2. The discharge pipe or the return pipe should also be arranged according to this principle.
3. If the tube length is greater than 0.5 m, fixed measures should be taken.
4. If there are heavy parts (such as drying strainers) on the road, you must take fixed measures.
5. The pipe length is less than 0.2 meters.
6. The pipe shall be as short as possible (50mm or shorter) and sufficient welding length shall be ensured.

## \*Foot installation

Single compressor condensing unit is installed with soft sole.

When the compressor is used in parallel units, use the special hard sole to install.

## \*The pipe

Piping installation in refrigeration equipment requires very careful and high cleanliness.

In principle, only clean, dry, non-oxidized skin, no rust, and no phosphate layer can be used.

The pipe must be filled with dry nitrogen when welding.

In order to prevent dirt from welding in the pipe, the degree of material melting must be controlled as far as possible.

Do not weld on the pipe with refrigerant (even if the refrigerant is in non-pressure condition).

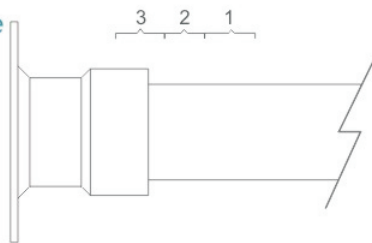
Because heated refrigerants, oils and air can form toxic gases.

The piping design must be able to ensure that the gas in the suction pipe and the discharge pipe can be guaranteed to return to oil even at a partial load.



# Application Guide

## \*Welding of scroll compressor tube



## \*For the first time to install

\*The copper suction pipe of the scroll compressor can be welded like other copper tubes.

\*Recommended welding materials: any copper and silver alloy material can be used, preferably with at least 5% silver.

\*Before installation, make sure both the inner & outer diameter of the suction pipes are clean.

\*Use a double – mouth gun to heat the zone 1.

After the tube temperature is close to the welding temperature, remove the torch flame to zone 2.

\*Move up and down until the heating zone 2 is up to the welding temperature, welding torch, turn round tube, when necessary to evenly heating pipe, in the add solder joint, and at the same time around the joint rotation welding torch, flowing solder in the surrounding.

\*Move the welding gun to zone 3 after the solder flow is around the joint.

This allows the solder to enter the joint, and the shortest time for heating zone 3.

\*Excessive heating can have undesirable effects on any welded joint.

## \*Control of oil in parallel operation

The frozen scroll compressor can be operated in parallel.

In parallel systems, a good oil management system is required to ensure sufficient oil level in the compressor.

## \*Electrical connections

### Supply voltage and terminal

Please pay attention to the direction of the terminal in the junction box cover. To ensure the normal start and operation of the compressor, the supply voltage shall not be less than 10% of the rated voltage of the compressor.

### The starting characteristics of single-phase compressor

The single-phase scroll compressor uses a permanent sub-capacitance motor (PSC), which does not require an auxiliary starter in most applications.

In some applications, such as low voltage at startup, you need an auxiliary starter, such as starting capacitors and auxiliary relays to help start up.

### The rotation direction of the three-phase compressor

Scroll compressors can only be compressed in one rotation direction. Single-phase compressors always start and run in the right direction (except in the case of instant power outages).

The rotation direction of the three-phase compressor is determined by the power phase sequence, so the compressor has a 50% chance of "inversion".

When installing on site, it is possible to judge the compressor rotation in the correct direction according to the decrease of suction pressure and the increase of discharge pressure. In addition, if the compressor is inverted, the compressor noise is abnormal, and the running current is significantly lower than the normal operation.

Short time reversal is not harmful to the compressor, but long time anti – transfer damage compressor.

The device manufacturer can set the phase sequence protection module in the control loop to ensure that the phase sequence is not running.

### Instantaneous power failure

Instantaneous power failure (less than 0.5 seconds) may cause the rotation direction of the single-phase compressor to change. The compression opportunity will continue to run for a few minutes on the reverse side until the compressor motor protector moves.

This has no effect on the compressor, and the motor protector is reset and the compression opportunity is restarted and operated in the correct direction.

It is suggested to use a relay that can sense the instantaneous power failure. When the instantaneous power failure occurs, the compressor will be locked for two minutes before allowing the compressor to restart.

# Application Guide

The three-phase compressor does not need to use this relay.

## High voltage resistance testing

The motor of the frozen scroll compressor is in the lower part of the shell, and the motor may be immersed in the refrigerant liquid after the system is filled with refrigerant.

When the liquid level of refrigerant in the shell is high, the high conductivity value of the refrigerant liquid is higher than that of gas or lubricating oil, and the high-voltage test may show higher leakage value.

This phenomenon occurs when all motors are immersed in a liquid refrigerant compressor, and there is no safety hazard.

To reduce the leakage value of the reading, the short running system, and ensure that no refrigerant liquid return to the compressor housing and retest.

## \*Vacuum (dry)

The system must vacuum after leak testing. Vacuum pump must be used in vacuum pump, not allow the compressor to vacuum. In order to facilitate the vacuum operation, it is recommended to install the vacuum valve in the suction pipe and the liquid pipe.

The inner diameter of the connecting pipe between the vacuum valve and the vacuum pump is at least 8mm, and the interface section of the vacuum valve should not be less than the cross section of the connecting pipe. The sum of all connecting pipe sections shall not be less than the suction section of the vacuum pump.

The connection tube of the vacuum pump (high pressure rubber hose or 10 x 1mm copper tube) should be as short as possible, and there should be no narrow or sharp bend. The vacuum can be significantly reduced by narrow interfaces and connections. Also should pay attention to is due to the vacuum gauge on the vacuum pump, usually the indicated value is difficult to match at the end of the vacuum system, so should add additional vacuum time, so that the parts are at the same vacuum system.

A vacuum pump with a pumping rate of 40–50l/min is sufficient for small and medium sized machines.

Large equipment shall be equipped with a connecting pipe with a diameter of 10mm or above and a copper tube with a diameter of 12 x 1mm, and a large sized vacuum valve and vacuum pump shall be used, and a double-stage vacuum pump may also be necessary.

Vacuum gauges cannot be measured using a conventional pressure gauge. The system should be vacuumed to 2mbar(1.5torr) twice, so that some operation failure can be avoided.

Join the refrigerant used between two vacuum (can absorb a large number of gaseous water) to table 0.15 bar pressure. And then filling dry gas, then the whole system, including compressor unit or third vacuum 0.7 mbar (about 0.5 torr).

Finally, close the vacuum pump and add the refrigerant to the system to 0.15bar.

**Note: it is not allowed to start the compressor in the vacuum state and conduct insulation strength test to avoid damaging the motor. No compressor is allowed to operate in a vacuum.**

Vacuum and drying operation should be particularly careful and accurate, because the left when the installation of the equipment in the system of air will lead to discharge temperature, the lubricating oil and carbon and affects the quality of lubricating oil and cause to a bad compressor.

The moisture that enters the air at the same time produces acid and corrosive metals and deteriorates the lubricant under the action of acid, which will be accelerated under the influence of high temperature and pressure gases.

## The filling of refrigerant

Refrigeration equipment can only be added to its design choice of refrigerant. The energy efficiency of refrigeration or air conditioning unit depends on the correct filling amount of refrigerant. If the refrigerant is insufficient, the evaporator will not be refrigerant. Reduce the suction pressure and discharge efficiency, and may cause the motor to overheat. If the refrigerant is overcharged, there is too much liquid in the condenser, which can cause the condensation pressure too high and the evaporator return fluid, which may damage the compressor.

It is necessary to fill the refrigerant liquid at the high and low pressure side of the scroll compressor, and most of the filling should be placed on the high side of the system.

Before and after the injection should be weighed refrigerant cylinder to determine the actual filling amount.

The basic method of liquid refrigerant injection is to add the refrigerant through a dry strainer on the liquid pipe and add the stop-valve or the filling valve with the filler on the reservoir.

The most common method to determine the filling amount of refrigerant is to observe the flow of refrigerant in liquid pipeline. As the normal operation of the expansion valve must depend on the continuous supply of refrigerant liquid, it can be assumed that the refrigerant has been correctly added when the liquid flow is clearly visible.



## Application Guide

The appearance of bubbles or bubbles usually indicates a shortage of refrigerants. But must pay attention to, and sometimes even though filling a sufficient quantity of refrigerant, depending on the fluid bubbles may also be seen in the mirror, one of the reasons is the mirror of the liquid tube bundle of mouth, the refrigerant pressure drop and the sudden evaporation. In addition, the rapid change of condensation temperature, such as the opening of a condensing fan, can also cause this sudden evaporation.

Therefore, although it can be used as an effective tool to determine the dosage of refrigerant, it is still not sufficient to determine the correct amount of refrigerant by observing the flow of refrigerant. The criterion for determining whether the refrigerant is suitable is that the system returns to excess heat and the liquid is too cold.

### Shell temperature

When the compressor runs, the discharge cavity, including the discharge pipe, will be very hot. Be careful not to touch these parts with wires or other materials that are easily damaged by high temperature. And pay attention to personal safety. Do not touch the discharge cavity or discharge pipe with your hands or other body parts.

### Weld the system parts

Be careful! In front of the open system, refrigerant must be released from the high side and low voltage side and at the same time, with the pressure gauge to confirm the pressure on both sides of the high and low voltage to zero (table), then under the welding work, or to cut off the line.

### Replace compressor

When you meet the motor burn out part of contaminated oil will be replaced with damage to the compressor and the rest of the oil can be through the use of suction pipe and the liquid line filter driers for cleaning. It is recommended to use 100% active aluminum inhalation dry filter, but must be removed after 72 hours. If there is a gas-liquid separator on the system, it is strongly recommended to replace it. This is due to the possibility of blockage of the back oil hole or filter in the gas-liquid separator in the short time after the compressor is damaged. This may lead to a new compressor that is damaged due to lack of oil.

### Scroll compressor function test

The performance of the compressor can not be tested by closing the suction valve to check the minimum numerical value of the suction pressure. This kind of experiment can damage the scroll compressor.

The following diagnostic methods can be used to determine whether a scroll compressor functions properly:

\*Check whether the power supply voltage is normal.

\*Motor winding conductance and regular inspection of the ground short circuit shall be carried out to determine whether the motor winding is short or short.

The compressor must be cooled sufficiently to make the protector reclosed if the motor midpoint protector trips.

\*Check whether the evaporator fan and condenser fan are working properly.

\*Connect the pressure gauge to the discharge side and connect the compressor power.

If the suction pressure is lower than normal, it may be a small amount of filling or a blockage within the system.

\*For three-phase compressor, if you don't fall in inspiratory pressure, discharge pressure rise less than normal, changing any two terminal of the compressor of the power cord, to ensure the compressor running in the right direction. If the compressor's pressure is still not up to normal, the compressor may be damaged.

\*In order to test whether the compressors discharge gas normally, it is necessary to compare the current of the compressor consumption with the reported performance curve of the compressor under the same operating pressure and system voltage.

If the average current and published value deviation of the measurement are above or minus 15%, it may indicate that the voltage imbalance should be further examined.

\*Before replacing or returning the compressor, it must be determined that the compressor is truly damaged.

At least the high voltage test, the motor winding resistance and the starting ability are reviewed before returning.

## Disclaimer

Technical data has been proofread before printing, and there is a possibility of updating after printing.

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The information is expected to be used by people with appropriate professional knowledge and skills to judge and assess risks on their own.

This catalog product is designed for fixed site applications. The manufacturer needs to do the corresponding tests to confirm whether it is suitable for mobile transportation.

### NOTE:

The parts listed in this catalog cannot be used in conjunction with corrosive, toxic or combustible materials.

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