

### COMPRESSOR DEFINITION

|                           |                    |
|---------------------------|--------------------|
| Designation               | <b>F FC110HBK</b>  |
| Nominal Voltage/Frequency | <b>220 V 60 Hz</b> |
| Engineering Number        | <b>513202016</b>   |

### A - APPLICATION / LIMIT WORKING CONDITIONS

|                                    |                                   |                                   |              |
|------------------------------------|-----------------------------------|-----------------------------------|--------------|
| 1 Type                             | Hermetic reciprocating compressor |                                   |              |
| 2 Refrigerant                      | R-134a                            |                                   |              |
| 3 Nominal voltage and frequency    | 220 / 60                          | [ V / Hz ]                        |              |
| 4 Application type                 | High Back Pressure                |                                   |              |
| 4.1 Evaporating temperature range  | -5°C to 15°C                      | (23°F to 59°F)                    |              |
| 5 Motor type                       | RSIR                              |                                   |              |
| 6 Starting torque                  | LST - Low Starting Torque         |                                   |              |
| 7 Expansion device                 | Capillary tube                    |                                   |              |
| 8 Compressor cooling               |                                   | Operating voltage range           |              |
|                                    |                                   | 50 Hz                             | 60 Hz        |
| 8.1 LBP (32°C Ambient temperature) | -                                 | -                                 | -            |
| 8.2 LBP (43°C Ambient temperature) | -                                 | -                                 | -            |
| 8.3 HBP (32°C Ambient temperature) | Static                            | -                                 | 198 to 264 V |
| 8.4 HBP (43°C Ambient temperature) | Static                            | -                                 | 198 to 264 V |
| 9 Maximum condensing temperature   |                                   |                                   |              |
| 9.1 Operating                      | 14.2                              | [kgf/cm <sup>2</sup> ] (202 psig) | / °C - °F    |
| 9.2 Peak                           | 15.9                              | [kgf/cm <sup>2</sup> ] (226 psig) | / °C - °F    |
| 10 Maximum winding temperature     | 130                               | [ °C ]                            |              |

### B - MECHANICAL DATA

|                               |               |  |
|-------------------------------|---------------|--|
| 1 Commercial designation      | 1/3+          | [hp]                                       |
| 2 Displacement                | 9.50          | [cm <sup>3</sup> ] (0.580 cu.in)           |
| 2.1 Bore [mm]                 | 24.000        |  |
| 2.2 Stroke [mm]               | 21.000        |  |
| 3 Lubricant charge            | 280           | [ml] (9.47 fl.oz.)                         |
| 3.1 Lubricants approved       |               |  |
| 3.2 Lubricants type/viscosity | ESTER / ISO22 |  |
| 4 Weight (with oil charge)    | 10.45         | [kg] (23.04 lb.)                           |
| 5 Nitrogen charge             | 0.2 to 0.3    | [kgf/cm <sup>2</sup> ] (2.84 to 4.27 psig) |

### C - ELETRICAL DATA

|  |                                |                                    |
|--|--------------------------------|------------------------------------|
| 1 Nominal Voltage/Frequency/Number of Phases | 220 V 60 Hz 1 ~ (Single phase) |                                    |
| 2 Starting device type                       | Current Relay                  |                                    |
| 2.1 Starting device                          | 213516477                      |                                    |
| 3 Start capacitor                            | -                              | [µF(VAC minimum)]                  |
| 4 Run capacitor                              | -                              | [µF(VAC minimum)]                  |
| 5 Motor protection                           | 4TM757UFBYY-53                 |                                    |
| 6 Start winding resistance                   | 19.36                          | [Ω at 25°C (77°F)] +/- 8%          |
| 7 Run winding resistance                     | 6.62                           | [Ω at 25°C (77°F)] +/- 8%          |
| 8 LRA - Locked rotor amperage (60 Hz)        | 21.00                          | [A] - Measured according to UL 984 |
| 9 FLA - Full load amperage L/MBP (60 Hz)     | 3.00                           | [A] - Measured according to UL 984 |
| 10 FLA - Full Load Amperage HBP (60 Hz)      | 3.45                           | [A] - Measured according to UL 984 |
| 11 Approval boards certification             | UL                             |                                    |

### D - PERFORMANCE - CHECK POINT DATA

|                               |          |      |                                |                                  |  |                           |                                      |       |  |
|-------------------------------|----------|------|--------------------------------|----------------------------------|--|---------------------------|--------------------------------------|-------|--|
| TEST CONDITIONS:<br>@220V60Hz |          |      | ASHRAEHBP32<br>Static          |                                  | Evaporating temperature<br>(Condensing temperature |                           | 7.2°C (44.96°F)<br>54.4°C (129.92°F) |       |  |
| Cooling capacity<br>+/- 5%    |          |      | Power<br>consumption<br>+/- 5% | Current<br>consumption<br>+/- 5% | Gas flow<br>rate<br>+/- 5%                         | EFFICIENCY RATE<br>+/- 7% |                                      |       |  |
| [Btu/h]                       | [kcal/h] | [W]  | [W]                            | [A]                              | [kg/h]   | [Btu/Wh]                  | [kcal/Wh]                            | [W/W] |  |
| 4709                          | 1187     | 1380 | 487                            | 2.71                             |  | 9.67                      | 2.44                                 | 2.83  |  |

|                               |          |     |                                |                                  |  |                           |  |       |  |
|-------------------------------|----------|-----|--------------------------------|----------------------------------|--|---------------------------|--|-------|--|
| TEST CONDITIONS:<br>@220V60Hz |          |     | ASHRAELBP32<br>Static          |                                  | Evaporating temperature<br>(Condensing temperature |                           | -23.3°C (-9.94°F)<br>54.4°C (129.92°F) |       |  |
| Cooling capacity<br>+/- 5%    |          |     | Power<br>consumption<br>+/- 5% | Current<br>consumption<br>+/- 5% | Gas flow<br>rate<br>+/- 5%                         | EFFICIENCY RATE<br>+/- 7% |  |       |  |
| [Btu/h]                       | [kcal/h] | [W] | [W]                            | [A]                              | [kg/h]   | [Btu/Wh]                  | [kcal/Wh]                              | [W/W] |  |
| 1110                          | 280      | 325 | 223                            | 1.80                             | 6.31   | 4.97                      | 1.25                                   | 1.46  |  |

### E - PERFORMANCE - CURVES

|                               |                            |          |                    |                                |  |                            |                           |           |       |  |
|-------------------------------|----------------------------|----------|--------------------|--------------------------------|--|----------------------------|---------------------------|-----------|-------|--|
| TEST CONDITIONS:<br>@220V60Hz |                            |          | ASHRAE32<br>Static |                                | (Condensing temperature 45°C (+113°F)) |                            |                           |           |       |  |
| Evaporating<br>temperature    | Cooling capacity<br>+/- 5% |          |                    | Power<br>consumption<br>+/- 5% | Current<br>consumption<br>+/- 5%       | Gas flow<br>rate<br>+/- 5% | EFFICIENCY RATE<br>+/- 7% |           |       |  |
| °C (°F)                       | [Btu/h]                    | [kcal/h] | [W]                | [W]                            | [A]                                    | [kg/h]                     | [Btu/Wh]                  | [kcal/Wh] | [W/W] |  |
| -5 (+23)                      | 2644                       | 666      | 775                | 345                            | 2.21                                   | 15.21                      | 7.68                      | 1.93      | 2.25  |  |
| 0 (+32)                       | 3506                       | 883      | 1027               | 383                            | 2.35                                   | 20.25                      | 9.14                      | 2.30      | 2.68  |  |
| +5 (+41)                      | 4462                       | 1124     | 1307               | 422                            | 2.50                                   | 25.95                      | 10.55                     | 2.66      | 3.09  |  |
| +10 (+50)                     | 5514                       | 1389     | 1616               | 463                            | 2.66                                   | 32.31                      | 11.91                     | 3.00      | 3.49  |  |
| +15 (+59)                     | 6660                       | 1678     | 1952               | 504                            | 2.84                                   | 39.32                      | 13.21                     | 3.33      | 3.87  |  |

|                               |                            |          |                    |                                |  |                            |                           |           |       |  |
|-------------------------------|----------------------------|----------|--------------------|--------------------------------|--|----------------------------|---------------------------|-----------|-------|--|
| TEST CONDITIONS:<br>@220V60Hz |                            |          | ASHRAE32<br>Static |                                | (Condensing temperature 55°C (+131°F)) |                            |                           |           |       |  |
| Evaporating<br>temperature    | Cooling capacity<br>+/- 5% |          |                    | Power<br>consumption<br>+/- 5% | Current<br>consumption<br>+/- 5%       | Gas flow<br>rate<br>+/- 5% | EFFICIENCY RATE<br>+/- 7% |           |       |  |
| °C (°F)                       | [Btu/h]                    | [kcal/h] | [W]                | [W]                            | [A]                                    | [kg/h]                     | [Btu/Wh]                  | [kcal/Wh] | [W/W] |  |
| -5 (+23)                      | 2964                       | 747      | 869                | 370                            | 2.30                                   | 17.05                      | 7.98                      | 2.01      | 2.34  |  |
| 0 (+32)                       | 3576                       | 901      | 1048               | 415                            | 2.47                                   | 20.65                      | 8.65                      | 2.18      | 2.54  |  |
| +5 (+41)                      | 4335                       | 1092     | 1270               | 462                            | 2.65                                   | 25.20                      | 9.41                      | 2.37      | 2.76  |  |
| +10 (+50)                     | 5241                       | 1321     | 1536               | 511                            | 2.85                                   | 30.71                      | 10.27                     | 2.59      | 3.01  |  |
| +15 (+59)                     | 6295                       | 1586     | 1845               | 561                            | 3.07                                   | 37.17                      | 11.21                     | 2.83      | 3.29  |  |

### E - PERFORMANCE - CURVES

| TEST CONDITIONS:<br>@220V60Hz |       | ASHRAE32<br>Static         |          |      | (Condensing temperature 65°C (+149°F) ) |                               |                         |                           |           |       |
|-------------------------------|-------|----------------------------|----------|------|---|-------------------------------|-------------------------|---------------------------|-----------|-------|
| Evaporating temperature       |       | Cooling capacity<br>+/- 5% |          |      | Power consumption<br>+/- 5%             | Current consumption<br>+/- 5% | Gas flow rate<br>+/- 5% | EFFICIENCY RATE<br>+/- 7% |           |       |
| °C                            | (°F)  | [Btu/h]                    | [kcal/h] | [W]  | [W]                                     | [A]                           | [kg/h]                  | [Btu/Wh]                  | [kcal/Wh] | [W/W] |
| -5                            | (+23) | 2883                       | 727      | 845  | 394                                     | 2.38                          | 16.58                   | 7.33                      | 1.85      | 2.15  |
| 0                             | (+32) | 3376                       | 851      | 989  | 450                                     | 2.60                          | 19.49                   | 7.55                      | 1.90      | 2.21  |
| +5                            | (+41) | 4068                       | 1025     | 1192 | 508                                     | 2.84                          | 23.66                   | 8.00                      | 2.02      | 2.34  |
| +10                           | (+50) | 4960                       | 1250     | 1453 | 568                                     | 3.10                          | 29.07                   | 8.69                      | 2.19      | 2.55  |
| +15                           | (+59) | 6052                       | 1525     | 1773 | 630                                     | 3.38                          | 35.73                   | 9.61                      | 2.42      | 2.82  |

### F - EXTERNAL CHARACTERISTICS

|                         |                               |      |                          |
|-------------------------|-------------------------------|------|--------------------------|
| 1 Base plate            | Universal EG/F/AMEM version 2 |      |                          |
| 2 Tray holder           | No                            |      |                          |
| 3 Connectors            |                               |      |                          |
| 3.1 SUCTION             | 8.2 +0.12/-0.08               | [mm] | (0.323" +0.005"/-0.003") |
| 3.1.1 Material          | Copper                        |      |                          |
| 3.1.2 Shape             | Slanted                       |      |                          |
| 3.2 DISCHARGE           | 6.5 +0.12/-0.08               | [mm] | (0.256" +0.005"/-0.003") |
| 3.2.1 Material          | Copper                        |      |                          |
| 3.2.2 Shape             | Slanted                       |      |                          |
| 3.3 PROCESS             | 8.2 +0.12/-0.08               | [mm] | (0.323" +0.005"/-0.003") |
| 3.3.1 Material          | Copper                        |      |                          |
| 3.3.2 Shape             | Slanted                       |      |                          |
| 3.4 Oil cooler (Copper) | No                            | [mm] |                          |
| 3.5 Connector sealing   | Rubber Plugs                  |      |                          |