

### COMPRESSOR DEFINITION

|                           |                        |
|---------------------------|------------------------|
| Designation               | <b>F F10BK</b>         |
| Nominal Voltage/Frequency | <b>220-240 V 50 Hz</b> |
| Engineering Number        | <b>513200184</b>       |

### A - APPLICATION / LIMIT WORKING CONDITIONS

|  |                                   |                                   |           |
|--|-----------------------------------|-----------------------------------|-----------|
| 1 Type                                     | Hermetic reciprocating compressor |                                   |           |
| 2 Refrigerant                              | Blend                             |                                   |           |
| 3 Nominal voltage and frequency            | 220-240 / 50                      | [ V / Hz ]                        |           |
| 4 Application type                         | Low-Medium-High Back Pressure     |                                   |           |
| 4.1 Evaporating temperature range          | -35°C to 15°C                     | (-31°F to 59°F)                   |           |
| 5 Motor type                               | RSIR/CSIR                         |                                   |           |
| 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)         | Static                            | 198 to 255 V                      | -         |
| 8.2 LBP (43°C Ambient temperature)         | Static                            | 198 to 255 V                      | -         |
| 8.3 HBP (32°C Ambient temperature)         | Fan                               | 198 to 255 V                      | -         |
| 8.4 HBP (43°C Ambient temperature)         | Fan                               | 198 to 255 V                      | -         |
| 9 Maximum condensing pressures/temperature |                                   |                                   |           |
| 9.1 Operating (gauge)                      | 14.5                              | [kgf/cm <sup>2</sup> ] (206 psig) | / °C - °F |
| 9.2 Peak (gauge)                           | 18.2                              | [kgf/cm <sup>2</sup> ] (259 psig) | / °C - °F |
| 10 Maximum winding temperature             | 130                               | [ °C ]                            |           |

### B - MECHANICAL DATA

|                               |                 |  |
|-------------------------------|-----------------|--|
| 1 Commercial designation      | 1/4+            | [hp]                                       |
| 2 Displacement                | 9.04            | [cm <sup>3</sup> ] (0.552 cu.in)           |
| 2.1 Bore [mm]                 | 24.000          |  |
| 2.2 Stroke [mm]               | 20.000          |  |
| 3 Lubricant charge            | 350             | [ml] (11.84 fl.oz.)                        |
| 3.1 Lubricants approved       |                 |  |
| 3.2 Lubricants type/viscosity | MINERAL / ISO32 |  |
| 4 Weight (with oil charge)    | 10.65           | [kg] (23.48 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 | 220-240 V 50 Hz 1 ~ (Single phase) |                                    |
| 2 Starting device type                       | Current Relay                      |                                    |
| 2.1 Starting device                          | 213516078/213516256                |                                    |
| 3 Start capacitor                            | 108-130(180)                       | [µF(VAC minimum)]                  |
| 4 Run capacitor                              | -                                  | [µF(VAC minimum)]                  |
| 5 Motor protection                           | MRP59AML-5590                      |                                    |
| 6 Start winding resistance                   | 31.95                              | [Ω at 25°C (77°F)] +/- 8%          |
| 7 Run winding resistance                     | 9.30                               | [Ω at 25°C (77°F)] +/- 8%          |
| 8 LRA - Locked rotor amperage (50 Hz)        | 14.00                              | [A] - Measured according to UL 984 |
| 9 FLA - Full load amperage L/MBP (50 Hz)     | 2.00                               | [A] - Measured according to UL 984 |
| 10 FLA - Full Load Amperage HBP (50 Hz)      | -                                  | [A] - Measured according to UL 984 |
| 11 Approval boards certification             | IRAM - UL                          |                                    |

### D - PERFORMANCE - CHECK POINT DATA

|                               |          |     |                             |                               |   |                           |                                      |       |  |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|---|---------------------------|--------------------------------------|-------|--|
| TEST CONDITIONS:<br>@220V50Hz |          |     | 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 consumption<br>+/- 5% | Current consumption<br>+/- 5% | Gas flow rate<br>+/- 5%                             | EFFICIENCY RATE<br>+/- 7% |                                      |       |  |
| [Btu/h]                       | [kcal/h] | [W] | [W]                         | [A]                           | [kg/h]  | [Btu/Wh]                  | [kcal/Wh]                            | [W/W] |  |
| 2797                          | 705      | 820 | 400                         | 2.11                          | 20.94   | 6.99                      | 1.76                                 | 2.05  |  |

|                               |          |     |                             |                               |   |                           |                                      |       |  |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|---|---------------------------|--------------------------------------|-------|--|
| TEST CONDITIONS:<br>@220V50Hz |          |     | ASHRAEHBP32<br>Fan          |                               | Evaporating temperature<br>(Condensing temperature) |                           | 7.2°C (44.96°F)<br>54.4°C (129.92°F) |       |  |
| Cooling capacity<br>+/- 5%    |          |     | Power consumption<br>+/- 5% | Current consumption<br>+/- 5% | Gas flow rate<br>+/- 5%                             | EFFICIENCY RATE<br>+/- 7% |                                      |       |  |
| [Btu/h]                       | [kcal/h] | [W] | [W]                         | [A]                           | [kg/h]  | [Btu/Wh]                  | [kcal/Wh]                            | [W/W] |  |
| 2797                          | 705      | 820 | 400                         | 2.11                          | 20.94   | 6.99                      | 1.76                                 | 2.05  |  |

|                               |          |     |                             |                               |   |                           |  |       |  |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|---|---------------------------|--|-------|--|
| TEST CONDITIONS:<br>@220V50Hz |          |     | 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 consumption<br>+/- 5% | Current consumption<br>+/- 5% | Gas flow rate<br>+/- 5%                             | EFFICIENCY RATE<br>+/- 7% |  |       |  |
| [Btu/h]                       | [kcal/h] | [W] | [W]                         | [A]                           | [kg/h]  | [Btu/Wh]                  | [kcal/Wh]                              | [W/W] |  |
| 793                           | 200      | 232 | 208                         | 1.33                          | 5.80  | 3.81                      | 0.96                                   | 1.12  |  |

|                               |          |     |                             |                               |   |                           |  |       |  |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|---|---------------------------|--|-------|--|
| TEST CONDITIONS:<br>@220V50Hz |          |     | ASHRAELBP32<br>Fan          |                               | Evaporating temperature<br>(Condensing temperature) |                           | -23.3°C (-9.94°F)<br>54.4°C (129.92°F) |       |  |
| Cooling capacity<br>+/- 5%    |          |     | Power consumption<br>+/- 5% | Current consumption<br>+/- 5% | Gas flow rate<br>+/- 5%                             | EFFICIENCY RATE<br>+/- 7% |  |       |  |
| [Btu/h]                       | [kcal/h] | [W] | [W]                         | [A]                           | [kg/h]  | [Btu/Wh]                  | [kcal/Wh]                              | [W/W] |  |
| 793                           | 200      | 232 | 208                         | 1.33                          | 5.80  | 3.81                      | 0.96                                   | 1.12  |  |

### E - PERFORMANCE - CURVES

|                               |                            |                 |         |                             |                               |  |                           |        |          |           |
|-------------------------------|----------------------------|-----------------|---------|-----------------------------|-------------------------------|--|---------------------------|--------|----------|-----------|
| TEST CONDITIONS:<br>@220V50Hz |                            | ASHRAE32<br>Fan |         |                             |                               | (Condensing temperature 45°C (+113°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] |
| -35                           | (-31)                      | 444             | 112     | 130                         | 148                           | 1.17                                   | 3.23                      | 2.99   | 0.75     | 0.88      |
| -30                           | (-22)                      | 616             | 155     | 180                         | 168                           | 1.22                                   | 4.51                      | 3.62   | 0.91     | 1.06      |
| -25                           | (-13)                      | 805             | 203     | 236                         | 190                           | 1.29                                   | 5.89                      | 4.21   | 1.06     | 1.23      |
| -20                           | (- 4)                      | 1018            | 257     | 298                         | 214                           | 1.36                                   | 7.46                      | 4.76   | 1.20     | 1.40      |
| -15                           | (+ 5)                      | 1264            | 319     | 370                         | 239                           | 1.45                                   | 9.28                      | 5.31   | 1.34     | 1.56      |
| -10                           | (+14)                      | 1551            | 391     | 454                         | 266                           | 1.54                                   | 11.42                     | 5.87   | 1.48     | 1.72      |
| -5                            | (+23)                      | 1887            | 476     | 553                         | 294                           | 1.65                                   | 13.96                     | 6.45   | 1.63     | 1.89      |
| 0                             | (+32)                      | 2280            | 575     | 668                         | 322                           | 1.76                                   | 16.95                     | 7.08   | 1.79     | 2.08      |
| +5                            | (+41)                      | 2738            | 690     | 802                         | 352                           | 1.89                                   | 20.46                     | 7.78   | 1.96     | 2.28      |
| +10                           | (+50)                      | 3270            | 824     | 958                         | 382                           | 2.02                                   | 24.58                     | 8.55   | 2.16     | 2.51      |
| +15                           | (+59)                      | 3883            | 978     | 1138                        | 411                           | 2.15                                   | 29.36                     | 9.43   | 2.38     | 2.76      |

### E - PERFORMANCE - CURVES

| TEST CONDITIONS:<br>@220V50Hz |       | ASHRAE32<br>Fan            |          |      | (Condensing temperature 55°C (+131°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] |
| -35                           | (-31) | 366                        | 92       | 107  | 146                                    | 1.16                          | 2.66                    | 2.55                      | 0.64      | 0.75  |
| -30                           | (-22) | 534                        | 135      | 156  | 170                                    | 1.22                          | 3.91                    | 3.11                      | 0.78      | 0.91  |
| -25                           | (-13) | 716                        | 180      | 210  | 196                                    | 1.30                          | 5.25                    | 3.62                      | 0.91      | 1.06  |
| -20                           | (- 4) | 920                        | 232      | 270  | 224                                    | 1.40                          | 6.75                    | 4.10                      | 1.03      | 1.20  |
| -15                           | (+ 5) | 1155                       | 291      | 338  | 253                                    | 1.50                          | 8.48                    | 4.57                      | 1.15      | 1.34  |
| -10                           | (+14) | 1427                       | 360      | 418  | 284                                    | 1.62                          | 10.51                   | 5.04                      | 1.27      | 1.48  |
| -5                            | (+23) | 1746                       | 440      | 512  | 316                                    | 1.75                          | 12.92                   | 5.53                      | 1.39      | 1.62  |
| 0                             | (+32) | 2120                       | 534      | 621  | 350                                    | 1.89                          | 15.75                   | 6.06                      | 1.53      | 1.77  |
| +5                            | (+41) | 2556                       | 644      | 749  | 383                                    | 2.04                          | 19.10                   | 6.64                      | 1.67      | 1.95  |
| +10                           | (+50) | 3063                       | 772      | 897  | 418                                    | 2.20                          | 23.02                   | 7.31                      | 1.84      | 2.14  |
| +15                           | (+59) | 3649                       | 919      | 1069 | 453                                    | 2.36                          | 27.59                   | 8.07                      | 2.03      | 2.36  |

| TEST CONDITIONS:<br>@220V50Hz |       | ASHRAE32<br>Fan            |          |     | (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] |
| -35                           | (-31) | 319                        | 80       | 94  | 141                                    | 1.17                          | 2.32                    | 2.29                      | 0.58      | 0.67  |
| -30                           | (-22) | 478                        | 121      | 140 | 168                                    | 1.23                          | 3.51                    | 2.80                      | 0.70      | 0.82  |
| -25                           | (-13) | 649                        | 164      | 190 | 198                                    | 1.31                          | 4.76                    | 3.24                      | 0.82      | 0.95  |
| -20                           | (- 4) | 839                        | 211      | 246 | 229                                    | 1.40                          | 6.16                    | 3.65                      | 0.92      | 1.07  |
| -15                           | (+ 5) | 1057                       | 266      | 310 | 263                                    | 1.50                          | 7.77                    | 4.04                      | 1.02      | 1.18  |
| -10                           | (+14) | 1310                       | 330      | 384 | 298                                    | 1.62                          | 9.65                    | 4.42                      | 1.11      | 1.30  |
| -5                            | (+23) | 1607                       | 405      | 471 | 334                                    | 1.75                          | 11.89                   | 4.82                      | 1.22      | 1.41  |
| 0                             | (+32) | 1956                       | 493      | 573 | 372                                    | 1.89                          | 14.54                   | 5.26                      | 1.32      | 1.54  |
| +5                            | (+41) | 2365                       | 596      | 693 | 410                                    | 2.05                          | 17.68                   | 5.74                      | 1.45      | 1.68  |
| +10                           | (+50) | 2843                       | 716      | 833 | 450                                    | 2.21                          | 21.37                   | 6.30                      | 1.59      | 1.85  |
| +15                           | (+59) | 3396                       | 856      | 995 | 489                                    | 2.39                          | 25.69                   | 6.95                      | 1.75      | 2.04  |

### F - EXTERNAL CHARACTERISTICS

|                         |                     |      |                          |
|-------------------------|---------------------|------|--------------------------|
| 1 Base plate            | Universal EG/F      |      |                          |
| 2 Tray holder           | No                  |      |                          |
| 3 Connectors            |                     |      |                          |
| 3.1 SUCTION             | 6.5 +0.12/-0.08     | [mm] | (0.256" +0.005"/-0.003") |
| 3.1.1 Material          | Copper plated steel |      |                          |
| 3.1.2 Shape             | Slanted             |      |                          |
| 3.2 DISCHARGE           | 5 +0.18/-0.06       | [mm] | (0.197" +0.007"/-0.002") |
| 3.2.1 Material          | Copper plated steel |      |                          |
| 3.2.2 Shape             | Slanted             |      |                          |
| 3.3 PROCESS             | 6.5 +0.12/-0.08     | [mm] | (0.256" +0.005"/-0.003") |
| 3.3.1 Material          | Copper plated steel |      |                          |
| 3.3.2 Shape             | Slanted             |      |                          |
| 3.4 Oil cooler (Copper) | No                  | [mm] |                          |
| 3.5 Connector sealing   | Rubber Plugs        |      |                          |