

### COMPRESSOR DEFINITION

|                           |                           |
|---------------------------|---------------------------|
| Designation               | <b>F GS90HAW</b>          |
| Nominal Voltage/Frequency | <b>220-240 V 50-60 Hz</b> |
| Engineering Number        | <b>513200211</b>          |

### A - APPLICATION / LIMIT WORKING CONDITIONS

|  |                                   |                                   |              |
|--|-----------------------------------|-----------------------------------|--------------|
| 1 Type                                     | Hermetic reciprocating compressor |                                   |              |
| 2 Refrigerant                              | R-134a                            |                                   |              |
| 3 Nominal voltage and frequency            | 220-240 / 50-60                   | [ V / Hz ]                        |              |
| 4 Application type                         | Low Back Pressure                 |                                   |              |
| 4.1 Evaporating temperature range          | -35°C to -10°C                    | (-31°F to 14°F)                   |              |
| 5 Motor type                               | RSCR                              |                                   |              |
| 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                      | 198 to 242 V |
| 8.2 LBP (43°C Ambient temperature)         | Static                            | 198 to 255 V                      | 198 to 242 V |
| 8.3 HBP (32°C Ambient temperature)         | -                                 | -                                 | -            |
| 8.4 HBP (43°C Ambient temperature)         | -                                 | -                                 | -            |
| 9 Maximum condensing pressures/temperature |                                   |                                   |              |
| 9.1 Operating (gauge)                      | 16.2                              | [kgf/cm <sup>2</sup> ] (230 psig) | / °C - °F    |
| 9.2 Peak (gauge)                           | 20.6                              | [kgf/cm <sup>2</sup> ] (293 psig) | / °C - °F    |
| 10 Maximum winding temperature             | 130                               | [ °C ]                            |              |

### B - MECHANICAL DATA

|                               |               |  |
|-------------------------------|---------------|--|
| 1 Commercial designation      | 1/4+          | [hp]                                       |
| 2 Displacement                | 7.95          | [cm <sup>3</sup> ] (0.485 cu.in)           |
| 2.1 Bore [mm]                 | 22.500        |  |
| 2.2 Stroke [mm]               | 20.000        |  |
| 3 Lubricant charge            | 335           | [ml] (11.33 fl.oz.)                        |
| 3.1 Lubricants approved       |               |  |
| 3.2 Lubricants type/viscosity | ESTER / ISO22 |  |
| 4 Weight (with oil charge)    | 11.2          | [kg] (24.69 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 50-60 Hz 1 ~ (Single phase) |                                    |
| 2 Starting device type                       | PTC                                   |                                    |
| 2.1 Starting device                          | 7M220MD3/8EA17C3/8EA5B3               |                                    |
| 3 Start capacitor                            | -                                     | [µF(VAC minimum)]                  |
| 4 Run capacitor                              | 5(330)                                | [µF(VAC minimum)]                  |
| 5 Motor protection                           | 4TM283NFBYY-53                        |                                    |
| 6 Start winding resistance                   | 14.60                                 | [Ω at 25°C (77°F)] +/- 8%          |
| 7 Run winding resistance                     | 9.70                                  | [Ω at 25°C (77°F)] +/- 8%          |
| 8 LRA - Locked rotor amperage (50/60 Hz)     | 8.50/7.00                             | [A] - Measured according to UL 984 |
| 9 FLA - Full load amperage L/MBP (50/60 Hz)  | 1.26/1.30                             | [A] - Measured according to UL 984 |
| 10 FLA - Full Load Amperage HBP (50/60 Hz)   | -                                     | [A] - Measured according to UL 984 |
| 11 Approval boards certification             | CCC                                   |                                    |

### D - PERFORMANCE - CHECK POINT DATA

|                               |          |     |                                |                                  |  |                           |  |       |
|-------------------------------|----------|-----|--------------------------------|----------------------------------|--|---------------------------|--|-------|
| 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<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] |
| 800                           | 202      | 234 | 154                            | 0.78                             | 4.55   | 5.21                      | 1.31                                   | 1.53  |

|                               |          |     |                                |                                  |  |                           |  |       |
|-------------------------------|----------|-----|--------------------------------|----------------------------------|--|---------------------------|--|-------|
| 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] |
| 940                           | 237      | 275 | 180                            | 0.84                             | 5.34   | 5.21                      | 1.31                                   | 1.53  |

### E - PERFORMANCE - CURVES

|                               |                            |          |                    |                                |  |                            |                           |           |       |
|-------------------------------|----------------------------|----------|--------------------|--------------------------------|--|----------------------------|---------------------------|-----------|-------|
| TEST CONDITIONS:<br>@220V50Hz |                            |          | 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] |
| -35 (-31)                     | 411                        | 104      | 120                | 106                            | 0.59                                   | 2.33                       | 3.87                      | 0.98      | 1.13  |
| -30 (-22)                     | 590                        | 149      | 173                | 124                            | 0.67                                   | 3.34                       | 4.73                      | 1.19      | 1.39  |
| -25 (-13)                     | 795                        | 200      | 233                | 144                            | 0.76                                   | 4.51                       | 5.53                      | 1.39      | 1.62  |
| -20 (- 4)                     | 1034                       | 260      | 303                | 164                            | 0.85                                   | 5.88                       | 6.33                      | 1.59      | 1.85  |
| -15 (+ 5)                     | 1311                       | 330      | 384                | 183                            | 0.94                                   | 7.49                       | 7.15                      | 1.80      | 2.09  |
| -10 (+14)                     | 1635                       | 412      | 479                | 203                            | 1.02                                   | 9.37                       | 8.05                      | 2.03      | 2.36  |

|                               |                            |          |                    |                                |  |                            |                           |           |       |
|-------------------------------|----------------------------|----------|--------------------|--------------------------------|--|----------------------------|---------------------------|-----------|-------|
| TEST CONDITIONS:<br>@220V50Hz |                            |          | 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] |
| -35 (-31)                     | 366                        | 92       | 107                | 105                            | 0.59                                   | 2.07                       | 3.47                      | 0.87      | 1.02  |
| -30 (-22)                     | 538                        | 136      | 158                | 126                            | 0.67                                   | 3.05                       | 4.27                      | 1.08      | 1.25  |
| -25 (-13)                     | 737                        | 186      | 216                | 148                            | 0.77                                   | 4.18                       | 4.99                      | 1.26      | 1.46  |
| -20 (- 4)                     | 969                        | 244      | 284                | 171                            | 0.87                                   | 5.51                       | 5.68                      | 1.43      | 1.66  |
| -15 (+ 5)                     | 1240                       | 312      | 363                | 195                            | 0.97                                   | 7.08                       | 6.37                      | 1.61      | 1.87  |
| -10 (+14)                     | 1557                       | 392      | 456                | 219                            | 1.07                                   | 8.92                       | 7.12                      | 1.79      | 2.09  |

### E - PERFORMANCE - CURVES

| TEST CONDITIONS:<br>@220V50Hz |                            | 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]  |
| -35                           | (-31)                      | 304                | 76      | 89                          | 99                                     | 0.57                    | 1.72                      | 3.07 | 0.77 | 0.90 |
| -30                           | (-22)                      | 473                | 119     | 139                         | 123                                    | 0.66                    | 2.68                      | 3.85 | 0.97 | 1.13 |
| -25                           | (-13)                      | 670                | 169     | 196                         | 148                                    | 0.76                    | 3.80                      | 4.52 | 1.14 | 1.33 |
| -20                           | (- 4)                      | 900                | 227     | 264                         | 175                                    | 0.88                    | 5.12                      | 5.14 | 1.30 | 1.51 |
| -15                           | (+ 5)                      | 1170               | 295     | 343                         | 204                                    | 1.00                    | 6.68                      | 5.74 | 1.45 | 1.68 |
| -10                           | (+14)                      | 1486               | 374     | 435                         | 233                                    | 1.13                    | 8.51                      | 6.37 | 1.61 | 1.87 |

| TEST CONDITIONS:<br>@220V60Hz |                            | ASHRAE32<br>Static |         |                             | (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]  |
| -35                           | (-31)                      | 474                | 119     | 139                         | 114                                    | 0.56                    | 2.68                      | 4.14 | 1.04 | 1.21 |
| -30                           | (-22)                      | 684                | 172     | 200                         | 137                                    | 0.66                    | 3.88                      | 4.96 | 1.25 | 1.45 |
| -25                           | (-13)                      | 922                | 232     | 270                         | 162                                    | 0.77                    | 5.24                      | 5.69 | 1.43 | 1.67 |
| -20                           | (- 4)                      | 1202               | 303     | 352                         | 189                                    | 0.89                    | 6.84                      | 6.39 | 1.61 | 1.87 |
| -15                           | (+ 5)                      | 1536               | 387     | 450                         | 216                                    | 1.03                    | 8.77                      | 7.11 | 1.79 | 2.08 |
| -10                           | (+14)                      | 1937               | 488     | 567                         | 245                                    | 1.16                    | 11.10                     | 7.90 | 1.99 | 2.31 |

| TEST CONDITIONS:<br>@220V60Hz |                            | ASHRAE32<br>Static |         |                             | (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]  |
| -35                           | (-31)                      | 394                | 99      | 115                         | 111                                    | 0.53                    | 2.23                      | 3.59 | 0.90 | 1.05 |
| -30                           | (-22)                      | 594                | 150     | 174                         | 136                                    | 0.64                    | 3.36                      | 4.35 | 1.10 | 1.27 |
| -25                           | (-13)                      | 824                | 208     | 241                         | 164                                    | 0.77                    | 4.68                      | 5.02 | 1.26 | 1.47 |
| -20                           | (- 4)                      | 1097               | 276     | 321                         | 194                                    | 0.91                    | 6.24                      | 5.64 | 1.42 | 1.65 |
| -15                           | (+ 5)                      | 1426               | 359     | 418                         | 227                                    | 1.07                    | 8.14                      | 6.28 | 1.58 | 1.84 |
| -10                           | (+14)                      | 1824               | 460     | 534                         | 261                                    | 1.24                    | 10.45                     | 6.97 | 1.76 | 2.04 |

| 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]  |
| -35                           | (-31)                      | 317                | 80      | 93                          | 99                                     | 0.52                    | 1.79                      | 3.19 | 0.80 | 0.93 |
| -30                           | (-22)                      | 502                | 127     | 147                         | 128                                    | 0.62                    | 2.85                      | 3.90 | 0.98 | 1.14 |
| -25                           | (-13)                      | 719                | 181     | 211                         | 160                                    | 0.75                    | 4.08                      | 4.50 | 1.13 | 1.32 |
| -20                           | (- 4)                      | 981                | 247     | 288                         | 195                                    | 0.91                    | 5.58                      | 5.05 | 1.27 | 1.48 |
| -15                           | (+ 5)                      | 1301               | 328     | 381                         | 233                                    | 1.09                    | 7.43                      | 5.59 | 1.41 | 1.64 |
| -10                           | (+14)                      | 1691               | 426     | 496                         | 273                                    | 1.29                    | 9.69                      | 6.18 | 1.56 | 1.81 |

### 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             | Straight            |      |                          |
| 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             | Straight            |      |                          |
| 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             | Straight            |      |                          |
| 3.4 Oil cooler (Copper) | 4.9 +0.02/-0.05     | [mm] | (0.193" +0.001"/-0.002") |
| 3.5 Connector sealing   | Rubber Plugs        |      |                          |