

### COMPRESSOR DEFINITION

|                           |             |
|---------------------------|-------------|
| Designation               | EM 20BR     |
| Nominal Voltage/Frequency | 115 V 60 Hz |
| Engineering Number        | 513303670   |

### A - APPLICATION / LIMIT WORKING CONDITIONS

|                                    |                                   |                                   |             |
|------------------------------------|-----------------------------------|-----------------------------------|-------------|
| 1 Type                             | Hermetic reciprocating compressor |                                   |             |
| 2 Refrigerant                      | Blend                             |                                   |             |
| 3 Nominal voltage and frequency    | 115 / 60                          | [ 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                            | -                                 | 98 to 135 V |
| 8.2 LBP (43°C Ambient temperature) | Static                            | -                                 | 98 to 135 V |
| 8.3 HBP (32°C Ambient temperature) | Fan                               | -                                 | 98 to 135 V |
| 8.4 HBP (43°C Ambient temperature) | Fan                               | -                                 | 98 to 135 V |
| 9 Maximum condensing temperature   |                                   |                                   |             |
| 9.1 Operating                      | 14.5                              | [kgf/cm <sup>2</sup> ] (206 psig) | / °C - °F   |
| 9.2 Peak                           | 18.2                              | [kgf/cm <sup>2</sup> ] (259 psig) | / °C - °F   |
| 10 Maximum winding temperature     | 130                               | [ °C ]                            |             |

### B - MECHANICAL DATA

|                               |                 |  |
|-------------------------------|-----------------|--|
| 1 Commercial designation      | 1/12            | [hp]                                       |
| 2 Displacement                | 2.27            | [cm <sup>3</sup> ] (0.139 cu.in)           |
| 2.1 Bore [mm]                 | 19.000          |  |
| 2.2 Stroke [mm]               | 8.000           |  |
| 3 Lubricant charge            | 160             | [ml] (5.41 fl.oz.)                         |
| 3.1 Lubricants approved       |                 |  |
| 3.2 Lubricants type/viscosity | ALQUILB / ISO32 |  |
| 4 Weight (with oil charge)    | 6.77            | [kg] (14.93 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 | 115 V 60 Hz 1 ~ (Single phase) |                                    |
| 2 Starting device type                       | Current Relay                  |                                    |
| 2.1 Starting device                          | 213514024                      |                                    |
| 3 Start capacitor                            | 124-149(90)                    | [µF(VAC minimum)]                  |
| 4 Run capacitor                              | -                              | [µF(VAC minimum)]                  |
| 5 Motor protection                           | 4TM734KFBYY-53                 |                                    |
| 6 Start winding resistance                   | 24.90                          | [Ω at 25°C (77°F)] +/- 8%          |
| 7 Run winding resistance                     | 8.15                           | [Ω at 25°C (77°F)] +/- 8%          |
| 8 LRA - Locked rotor amperage (60 Hz)        | -                              | [A] - Measured according to UL 984 |
| 9 FLA - Full load amperage L/MBP (60 Hz)     | -                              | [A] - Measured according to UL 984 |
| 10 FLA - Full Load Amperage HBP (60 Hz)      | -                              | [A] - Measured according to UL 984 |
| 11 Approval boards certification             |                                |                                    |

### D - PERFORMANCE - CHECK POINT DATA

|                               |          |     |                             |                               |   |                           |                                      |       |  |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|---|---------------------------|--------------------------------------|-------|--|
| TEST CONDITIONS:<br>@115V60Hz |          |     | 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] |  |
| 920                           | 232      | 270 | 113                         | 1.26                          | 6.89  | 8.14                      | 2.05                                 | 2.39  |  |

|                               |          |     |                             |                               |   |                           |                                      |       |  |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|---|---------------------------|--------------------------------------|-------|--|
| TEST CONDITIONS:<br>@115V60Hz |          |     | 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] |  |
| 920                           | 232      | 270 | 113                         | 1.26                          | 6.89  | 8.14                      | 2.05                                 | 2.39  |  |

|                               |          |     |                             |                               |   |                           |  |       |  |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|---|---------------------------|--|-------|--|
| TEST CONDITIONS:<br>@115V60Hz |          |     | 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] |  |
| 200                           | 50       | 59  | 69                          | 0.94                          | 1.46  | 2.90                      | 0.73                                   | 0.85  |  |

|                               |          |     |                             |                               |   |                           |  |       |  |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|---|---------------------------|--|-------|--|
| TEST CONDITIONS:<br>@115V60Hz |          |     | 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] |  |
| 200                           | 50       | 59  | 69                          | 0.94                          | 1.46  | 2.90                      | 0.73                                   | 0.85  |  |

### E - PERFORMANCE - CURVES

|                               |                            |                 |         |                             |                               |                         |  |        |          |           |
|-------------------------------|----------------------------|-----------------|---------|-----------------------------|-------------------------------|-------------------------|--|--------|----------|-----------|
| TEST CONDITIONS:<br>@115V60Hz |                            | 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)                      | 85              | 21      | 25                          | 53                            | 0.85                    | 0.62                                   | 1.60   | 0.40     | 0.47      |
| -30                           | (-22)                      | 136             | 34      | 40                          | 59                            | 0.87                    | 1.00                                   | 2.31   | 0.58     | 0.68      |
| -25                           | (-13)                      | 198             | 50      | 58                          | 65                            | 0.91                    | 1.45                                   | 3.03   | 0.76     | 0.89      |
| -20                           | (- 4)                      | 273             | 69      | 80                          | 72                            | 0.95                    | 2.00                                   | 3.78   | 0.95     | 1.11      |
| -15                           | (+ 5)                      | 364             | 92      | 107                         | 79                            | 0.99                    | 2.67                                   | 4.59   | 1.16     | 1.35      |
| -10                           | (+14)                      | 472             | 119     | 138                         | 85                            | 1.04                    | 3.47                                   | 5.51   | 1.39     | 1.62      |
| -5                            | (+23)                      | 599             | 151     | 176                         | 92                            | 1.08                    | 4.43                                   | 6.57   | 1.66     | 1.93      |
| 0                             | (+32)                      | 748             | 189     | 219                         | 97                            | 1.12                    | 5.56                                   | 7.80   | 1.96     | 2.28      |
| +5                            | (+41)                      | 922             | 232     | 270                         | 101                           | 1.16                    | 6.89                                   | 9.23   | 2.32     | 2.70      |
| +10                           | (+50)                      | 1121            | 283     | 329                         | 104                           | 1.18                    | 8.43                                   | 10.89  | 2.74     | 3.19      |
| +15                           | (+59)                      | 1349            | 340     | 395                         | 104                           | 1.19                    | 10.20                                  | 12.82  | 3.23     | 3.76      |

### E - PERFORMANCE - CURVES

| TEST CONDITIONS:<br>@115V60Hz |                            | 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)                     | 75                         | 19              | 22       | 52                          | 0.85                                   | 0.54                    | 1.43                      | 0.36     | 0.42      |       |
| -30 (-22)                     | 123                        | 31              | 36       | 57                          | 0.87                                   | 0.90                    | 2.15                      | 0.54     | 0.63      |       |
| -25 (-13)                     | 180                        | 45              | 53       | 64                          | 0.90                                   | 1.32                    | 2.83                      | 0.71     | 0.83      |       |
| -20 (- 4)                     | 250                        | 63              | 73       | 72                          | 0.94                                   | 1.83                    | 3.49                      | 0.88     | 1.02      |       |
| -15 (+ 5)                     | 334                        | 84              | 98       | 80                          | 0.99                                   | 2.45                    | 4.17                      | 1.05     | 1.22      |       |
| -10 (+14)                     | 434                        | 109             | 127      | 88                          | 1.05                                   | 3.20                    | 4.90                      | 1.23     | 1.44      |       |
| -5 (+23)                      | 553                        | 139             | 162      | 96                          | 1.11                                   | 4.09                    | 5.71                      | 1.44     | 1.67      |       |
| 0 (+32)                       | 692                        | 174             | 203      | 104                         | 1.16                                   | 5.14                    | 6.64                      | 1.67     | 1.95      |       |
| +5 (+41)                      | 854                        | 215             | 250      | 110                         | 1.22                                   | 6.38                    | 7.72                      | 1.95     | 2.26      |       |
| +10 (+50)                     | 1041                       | 262             | 305      | 116                         | 1.26                                   | 7.83                    | 8.99                      | 2.27     | 2.63      |       |
| +15 (+59)                     | 1256                       | 316             | 368      | 121                         | 1.30                                   | 9.49                    | 10.47                     | 2.64     | 3.07      |       |

| TEST CONDITIONS:<br>@115V60Hz |                            | 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)                     | 44                         | 11              | 13       | 49                          | 0.83                                   | 0.32                    | 0.89                      | 0.22     | 0.26      |       |
| -30 (-22)                     | 92                         | 23              | 27       | 55                          | 0.85                                   | 0.67                    | 1.71                      | 0.43     | 0.50      |       |
| -25 (-13)                     | 148                        | 37              | 43       | 62                          | 0.89                                   | 1.08                    | 2.42                      | 0.61     | 0.71      |       |
| -20 (- 4)                     | 215                        | 54              | 63       | 71                          | 0.94                                   | 1.58                    | 3.07                      | 0.77     | 0.90      |       |
| -15 (+ 5)                     | 294                        | 74              | 86       | 81                          | 1.00                                   | 2.16                    | 3.69                      | 0.93     | 1.08      |       |
| -10 (+14)                     | 390                        | 98              | 114      | 91                          | 1.06                                   | 2.87                    | 4.30                      | 1.08     | 1.26      |       |
| -5 (+23)                      | 502                        | 126             | 147      | 101                         | 1.14                                   | 3.71                    | 4.94                      | 1.25     | 1.45      |       |
| 0 (+32)                       | 634                        | 160             | 186      | 111                         | 1.22                                   | 4.71                    | 5.65                      | 1.42     | 1.66      |       |
| +5 (+41)                      | 787                        | 198             | 231      | 121                         | 1.29                                   | 5.89                    | 6.46                      | 1.63     | 1.89      |       |
| +10 (+50)                     | 965                        | 243             | 283      | 130                         | 1.37                                   | 7.25                    | 7.41                      | 1.87     | 2.17      |       |
| +15 (+59)                     | 1168                       | 294             | 342      | 138                         | 1.44                                   | 8.83                    | 8.52                      | 2.15     | 2.50      |       |

### F - EXTERNAL CHARACTERISTICS

|                         |                               |      |                          |
|-------------------------|-------------------------------|------|--------------------------|
| 1 Base plate            | Universal EG/F/AMEM version 2 |      |                          |
| 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                        |      |                          |
| 3.1.2 Shape             | Straight                      |      |                          |
| 3.2 DISCHARGE           | 4.94 +0.08/-0.08              | [mm] | (0.194" +0.003"/-0.003") |
| 3.2.1 Material          | Copper                        |      |                          |
| 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                        |      |                          |
| 3.3.2 Shape             | Straight                      |      |                          |
| 3.4 Oil cooler (Copper) | No                            | [mm] |                          |
| 3.5 Connector sealing   | Rubber Plugs                  |      |                          |