

### COMPRESSOR DEFINITION

|                           |                 |
|---------------------------|-----------------|
| Designation               | EM T45HDR       |
| Nominal Voltage/Frequency | 220-240 V 50 Hz |
| Engineering Number        | 513306045       |

### A - APPLICATION / LIMIT WORKING CONDITIONS

|  |                                   |                                   |           |
|--|-----------------------------------|-----------------------------------|-----------|
| 1 Type                                     | Hermetic reciprocating compressor |                                   |           |
| 2 Refrigerant                              | R-134a                            |                                   |           |
| 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                               | CSIR                              |                                   |           |
| 6 Starting torque                          | HST - Hight starting torque       |                                   |           |
| 7 Expansion device                         | Capillary tube or Expansion valve |                                   |           |
| 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)         | Static                            | 187 to 255 V                      | -         |
| 8.4 HBP (43°C Ambient temperature)         | Static                            | 187 to 255 V                      | -         |
| 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      |               | [hp]                                       |
| 2 Displacement                | 3.97          | [cm <sup>3</sup> ] (0.242 cu.in)           |
| 2.1 Bore [mm]                 | 19.000        |  |
| 2.2 Stroke [mm]               | 14.000        |  |
| 3 Lubricant charge            | 180           | [ml] (6.09 fl.oz.)                         |
| 3.1 Lubricants approved       |               |  |
| 3.2 Lubricants type/viscosity | ESTER / ISO10 |  |
| 4 Weight (with oil charge)    | 7.64          | [kg] (16.84 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                          | MTRP-0036                          |                                    |
| 3 Start capacitor                            | 64-77(280)                         | [µF(VAC minimum)]                  |
| 4 Run capacitor                              | -                                  | [µF(VAC minimum)]                  |
| 5 Motor protection                           | T0043/G5                           |                                    |
| 6 Start winding resistance                   | 18.10                              | [Ω at 25°C (77°F)] +/- 8%          |
| 7 Run winding resistance                     | 16.25                              | [Ω at 25°C (77°F)] +/- 8%          |
| 8 LRA - Locked rotor amperage (50 Hz)        | 8.80                               | [A] - Measured according to UL 984 |
| 9 FLA - Full load amperage L/MBP (50 Hz)     | 1.18                               | [A] - Measured according to UL 984 |
| 10 FLA - Full Load Amperage HBP (50 Hz)      | 1.37                               | [A] - Measured according to UL 984 |
| 11 Approval boards certification             | IMQ                                |                                    |

### 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<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] |
| 1633                          | 412      | 479 | 168                            | 1.08                             |  | 9.70                      | 2.44                                 | 2.84  |

### E - PERFORMANCE - CURVES

|                               |       |                            |          |     |                                |  |                            |                           |           |       |
|-------------------------------|-------|----------------------------|----------|-----|--------------------------------|--|----------------------------|---------------------------|-----------|-------|
| TEST CONDITIONS:<br>@220V50Hz |       | ASHRAE32<br>Static         |          |     |                                | (Condensing temperature 35°C (+95°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) | 281                        | 71       | 82  | 67                             | 0.00                                   | 1.59                       | 4.23                      | 1.06      | 1.24  |
| -30                           | (-22) | 375                        | 94       | 110 | 74                             | 0.00                                   | 2.13                       | 4.93                      | 1.24      | 1.44  |
| -25                           | (-13) | 477                        | 120      | 140 | 83                             | 0.00                                   | 2.71                       | 5.66                      | 1.43      | 1.66  |
| -20                           | (- 4) | 594                        | 150      | 174 | 91                             | 0.00                                   | 3.38                       | 6.45                      | 1.62      | 1.89  |
| -15                           | (+ 5) | 731                        | 184      | 214 | 100                            | 0.00                                   | 4.17                       | 7.32                      | 1.84      | 2.14  |
| -10                           | (+14) | 895                        | 226      | 262 | 108                            | 0.00                                   | 5.12                       | 8.31                      | 2.09      | 2.43  |
| -5                            | (+23) | 1093                       | 275      | 320 | 117                            | 0.00                                   | 6.28                       | 9.44                      | 2.38      | 2.77  |
| 0                             | (+32) | 1329                       | 335      | 389 | 125                            | 0.00                                   | 7.68                       | 10.75                     | 2.71      | 3.15  |
| +5                            | (+41) | 1610                       | 406      | 472 | 132                            | 0.00                                   | 9.37                       | 12.26                     | 3.09      | 3.59  |
| +10                           | (+50) | 1943                       | 490      | 569 | 139                            | 0.00                                   | 11.39                      | 14.01                     | 3.53      | 4.10  |
| +15                           | (+59) | 2332                       | 588      | 683 | 145                            | 0.00                                   | 13.77                      | 16.01                     | 4.04      | 4.69  |

|                               |       |                            |          |     |                                |   |                            |                           |           |       |
|-------------------------------|-------|----------------------------|----------|-----|--------------------------------|---|----------------------------|---------------------------|-----------|-------|
| 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) | 235                        | 59       | 69  | 67                             | 0.00                                    | 1.33                       | 3.63                      | 0.91      | 1.06  |
| -30                           | (-22) | 331                        | 83       | 97  | 75                             | 0.00                                    | 1.88                       | 4.34                      | 1.09      | 1.27  |
| -25                           | (-13) | 434                        | 109      | 127 | 84                             | 0.00                                    | 2.47                       | 5.06                      | 1.27      | 1.48  |
| -20                           | (- 4) | 551                        | 139      | 162 | 94                             | 0.00                                    | 3.14                       | 5.80                      | 1.46      | 1.70  |
| -15                           | (+ 5) | 689                        | 174      | 202 | 104                            | 0.00                                    | 3.93                       | 6.60                      | 1.66      | 1.93  |
| -10                           | (+14) | 852                        | 215      | 250 | 114                            | 0.00                                    | 4.87                       | 7.48                      | 1.89      | 2.19  |
| -5                            | (+23) | 1048                       | 264      | 307 | 124                            | 0.00                                    | 6.02                       | 8.48                      | 2.14      | 2.49  |
| 0                             | (+32) | 1282                       | 323      | 376 | 134                            | 0.00                                    | 7.41                       | 9.63                      | 2.43      | 2.82  |
| +5                            | (+41) | 1561                       | 393      | 457 | 143                            | 0.00                                    | 9.08                       | 10.94                     | 2.76      | 3.21  |
| +10                           | (+50) | 1890                       | 476      | 554 | 152                            | 0.00                                    | 11.08                      | 12.46                     | 3.14      | 3.65  |
| +15                           | (+59) | 2277                       | 574      | 667 | 160                            | 0.00                                    | 13.44                      | 14.22                     | 3.58      | 4.17  |

### E - PERFORMANCE - CURVES

| TEST CONDITIONS:<br>@220V50Hz |                            | 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]                       | [kg/h] | [Btu/Wh] | [kcal/Wh] |
| -35                           | (-31)                      | 199                | 50      | 58                          | 68                                     | 0.00                    | 1.12                      | 3.01   | 0.76     | 0.88      |
| -30                           | (-22)                      | 293                | 74      | 86                          | 77                                     | 0.00                    | 1.66                      | 3.71   | 0.94     | 1.09      |
| -25                           | (-13)                      | 394                | 99      | 115                         | 88                                     | 0.00                    | 2.24                      | 4.39   | 1.11     | 1.29      |
| -20                           | (- 4)                      | 508                | 128     | 149                         | 99                                     | 0.00                    | 2.89                      | 5.06   | 1.27     | 1.48      |
| -15                           | (+ 5)                      | 642                | 162     | 188                         | 111                                    | 0.00                    | 3.66                      | 5.76   | 1.45     | 1.69      |
| -10                           | (+14)                      | 801                | 202     | 235                         | 123                                    | 0.00                    | 4.58                      | 6.51   | 1.64     | 1.91      |
| -5                            | (+23)                      | 993                | 250     | 291                         | 135                                    | 0.00                    | 5.70                      | 7.35   | 1.85     | 2.15      |
| 0                             | (+32)                      | 1222               | 308     | 358                         | 147                                    | 0.00                    | 7.06                      | 8.31   | 2.09     | 2.43      |
| +5                            | (+41)                      | 1495               | 377     | 438                         | 159                                    | 0.00                    | 8.70                      | 9.41   | 2.37     | 2.76      |
| +10                           | (+50)                      | 1818               | 458     | 533                         | 171                                    | 0.00                    | 10.65                     | 10.68  | 2.69     | 3.13      |
| +15                           | (+59)                      | 2197               | 554     | 644                         | 181                                    | 0.00                    | 12.97                     | 12.16  | 3.06     | 3.56      |

| 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]                       | [kg/h] | [Btu/Wh] | [kcal/Wh] |
| -35                           | (-31)                      | 178                | 45      | 52                          | 66                                     | 0.00                    | 1.00                      | 2.71   | 0.68     | 0.79      |
| -30                           | (-22)                      | 267                | 67      | 78                          | 77                                     | 0.00                    | 1.52                      | 3.38   | 0.85     | 0.99      |
| -25                           | (-13)                      | 362                | 91      | 106                         | 89                                     | 0.00                    | 2.06                      | 3.99   | 1.01     | 1.17      |
| -20                           | (- 4)                      | 471                | 119     | 138                         | 103                                    | 0.00                    | 2.68                      | 4.57   | 1.15     | 1.34      |
| -15                           | (+ 5)                      | 598                | 151     | 175                         | 117                                    | 0.00                    | 3.41                      | 5.15   | 1.30     | 1.51      |
| -10                           | (+14)                      | 750                | 189     | 220                         | 132                                    | 0.00                    | 4.29                      | 5.75   | 1.45     | 1.68      |
| -5                            | (+23)                      | 933                | 235     | 274                         | 147                                    | 0.00                    | 5.36                      | 6.41   | 1.61     | 1.88      |
| 0                             | (+32)                      | 1154               | 291     | 338                         | 162                                    | 0.00                    | 6.67                      | 7.15   | 1.80     | 2.09      |
| +5                            | (+41)                      | 1418               | 357     | 416                         | 177                                    | 0.00                    | 8.25                      | 8.00   | 2.02     | 2.35      |
| +10                           | (+50)                      | 1732               | 436     | 507                         | 192                                    | 0.00                    | 10.15                     | 9.00   | 2.27     | 2.64      |
| +15                           | (+59)                      | 2101               | 529     | 616                         | 206                                    | 0.00                    | 12.40                     | 10.18  | 2.56     | 2.98      |

### F - EXTERNAL CHARACTERISTICS

|                         |                                |      |                          |
|-------------------------|--------------------------------|------|--------------------------|
| 1 Base plate            | European Standard EUEM         |      |                          |
| 2 Tray holder           | Yes                            |      |                          |
| 3 Connectors            |                                |      |                          |
| 3.1 SUCTION             | 6.1 +0.10/+0.00                | [mm] | (0.240" +0.004"/+0.000") |
| 3.1.1 Material          | Copper                         |      |                          |
| 3.1.2 Shape             | Slanted 42° up + 45° to Back   |      |                          |
| 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 parallel BP+24°to Back |      |                          |
| 3.3 PROCESS             | 6.1 +0.10/+0.00                | [mm] | (0.240" +0.004"/+0.000") |
| 3.3.1 Material          | Copper                         |      |                          |
| 3.3.2 Shape             | Slanted 45° up + 45° to Back   |      |                          |
| 3.4 Oil cooler (Copper) | No                             | [mm] |                          |
| 3.5 Connector sealing   | Rubber Plugs                   |      |                          |