

COMPRESSOR DEFINITION

| | |
|---------------------------|-----------------|
| Designation | EM IS20HHR |
| Nominal Voltage/Frequency | 115-127 V 60 Hz |
| Engineering Number | 513305043 |

A - APPLICATION / LIMIT WORKING CONDITIONS

| | | | |
|------------------------------------|-----------------------------------|-----------------------------------|--------------|
| 1 Type | Hermetic reciprocating compressor | | |
| 2 Refrigerant | R-134a | | |
| 3 Nominal voltage and frequency | 115-127 / 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 | - | 103 to 140 V |
| 8.2 LBP (43°C Ambient temperature) | Static | - | 103 to 140 V |
| 8.3 HBP (32°C Ambient temperature) | Fan | - | 103 to 140 V |
| 8.4 HBP (43°C Ambient temperature) | Fan | - | 103 to 140 V |
| 9 Maximum condensing temperature | | | |
| 9.1 Operating | 14.2 | [kgf/cm ²] (202 psig) | / °C - °F |
| 9.2 Peak | 15.9 | [kgf/cm ²] (226 psig) | / °C - °F |
| 10 Maximum winding temperature | 130 | [°C] | |

B - MECHANICAL DATA

| | | |
|-------------------------------|---------------|--|
| 1 Commercial designation | 1/12 | [hp] |
| 2 Displacement | 2.27 | [cm ³] (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 | ESTER / ISO22 | |
| 4 Weight (with oil charge) | 6.77 | [kg] (14.93 lb.) |
| 5 Nitrogen charge | 0.2 to 0.3 | [kgf/cm ²] (2.84 to 4.27 psig) |

C - ELETRICAL DATA

| | | |
|--|------------------------------------|------------------------------------|
| 1 Nominal Voltage/Frequency/Number of Phases | 115-127 V 60 Hz 1 ~ (Single phase) | |
| 2 Starting device type | Current Relay | |
| 2.1 Starting device | 213514180/213515011 | |
| 3 Start capacitor | 161-193(150) | [µF(VAC minimum)] |
| 4 Run capacitor | - | [µF(VAC minimum)] |
| 5 Motor protection | CP4TMF180K61 | |
| 6 Start winding resistance | 18.50 | [Ω at 25°C (77°F)] +/- 8% |
| 7 Run winding resistance | 9.80 | [Ω at 25°C (77°F)] +/- 8% |
| 8 LRA - Locked rotor amperage (60 Hz) | 11.62 | [A] - Measured according to UL 984 |
| 9 FLA - Full load amperage L/MBP (60 Hz) | 1.43 | [A] - Measured according to UL 984 |
| 10 FLA - Full Load Amperage HBP (60 Hz) | 1.58 | [A] - Measured according to UL 984 |
| 11 Approval boards certification | | |

D - PERFORMANCE - CHECK POINT DATA

| | | | | | | | | | |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|---|---------------------------|--------------------------------------|-------|--|
| TEST CONDITIONS: @115V60Hz | | | ASHRAEHBP32 Fan | | Evaporating temperature (Condensing temperature) | | 7.2°C (44.96°F) 54.4°C (129.92°F) | | |
| Cooling capacity +/- 5% | | | Power consumption +/- 5% | Current consumption +/- 5% | Gas flow rate +/- 5% | EFFICIENCY RATE +/- 7% | | | |
| [Btu/h] | [kcal/h] | [W] | [W] | [A] | [kg/h] | [Btu/Wh] | [kcal/Wh] | [W/W] | |
| 1050 | 265 | 308 | 123 | 1.39 | | 8.51 | 2.14 | 2.49 | |

| | | | | | | | | | |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|---|---------------------------|--|-------|--|
| TEST CONDITIONS: @115V60Hz | | | ASHRAELBP32 Static | | Evaporating temperature (Condensing temperature) | | -23.3°C (-9.94°F) 54.4°C (129.92°F) | | |
| Cooling capacity +/- 5% | | | Power consumption +/- 5% | Current consumption +/- 5% | Gas flow rate +/- 5% | EFFICIENCY RATE +/- 7% | | | |
| [Btu/h] | [kcal/h] | [W] | [W] | [A] | [kg/h] | [Btu/Wh] | [kcal/Wh] | [W/W] | |
| 200 | 50 | 59 | 66 | 1.04 | 1.14 | 3.02 | 0.76 | 0.88 | |

E - PERFORMANCE - CURVES

| | | | | | | | | | |
|-------------------------------|----------------------------|----------|--------------------|-----------------------------|---------------------------------------|-------------------------|---------------------------|-----------|-------|
| TEST CONDITIONS: @115V60Hz | | | ASHRAE32 Static | | (Condensing temperature 35°C (+95°F)) | | | | |
| Evaporating temperature | Cooling capacity +/- 5% | | | Power consumption +/- 5% | Current consumption +/- 5% | Gas flow rate +/- 5% | EFFICIENCY RATE +/- 7% | | |
| °C (°F) | [Btu/h] | [kcal/h] | [W] | [W] | [A] | [kg/h] | [Btu/Wh] | [kcal/Wh] | [W/W] |
| -35 (-31) | 112 | 28 | 33 | 48 | 0.98 | 0.63 | 2.35 | 0.59 | 0.69 |
| -30 (-22) | 166 | 42 | 49 | 54 | 1.01 | 0.95 | 3.02 | 0.76 | 0.88 |
| -25 (-13) | 232 | 58 | 68 | 61 | 1.04 | 1.32 | 3.76 | 0.95 | 1.10 |
| -20 (- 4) | 312 | 79 | 91 | 67 | 1.06 | 1.77 | 4.61 | 1.16 | 1.35 |
| -15 (+ 5) | 409 | 103 | 120 | 74 | 1.09 | 2.33 | 5.58 | 1.41 | 1.63 |
| -10 (+14) | 527 | 133 | 154 | 80 | 1.12 | 3.02 | 6.67 | 1.68 | 1.95 |
| -5 (+23) | 668 | 168 | 196 | 85 | 1.15 | 3.84 | 7.90 | 1.99 | 2.32 |
| 0 (+32) | 835 | 210 | 245 | 91 | 1.18 | 4.83 | 9.29 | 2.34 | 2.72 |
| +5 (+41) | 1031 | 260 | 302 | 96 | 1.21 | 6.00 | 10.85 | 2.73 | 3.18 |
| +10 (+50) | 1258 | 317 | 369 | 100 | 1.24 | 7.38 | 12.59 | 3.17 | 3.69 |
| +15 (+59) | 1520 | 383 | 445 | 104 | 1.27 | 8.97 | 14.53 | 3.66 | 4.26 |

| | | | | | | | | | |
|-------------------------------|----------------------------|----------|--------------------|-----------------------------|--|-------------------------|---------------------------|-----------|-------|
| TEST CONDITIONS: @115V60Hz | | | ASHRAE32 Static | | (Condensing temperature 45°C (+113°F)) | | | | |
| Evaporating temperature | Cooling capacity +/- 5% | | | Power consumption +/- 5% | Current consumption +/- 5% | Gas flow rate +/- 5% | EFFICIENCY RATE +/- 7% | | |
| °C (°F) | [Btu/h] | [kcal/h] | [W] | [W] | [A] | [kg/h] | [Btu/Wh] | [kcal/Wh] | [W/W] |
| -35 (-31) | 80 | 20 | 24 | 46 | 0.98 | 0.45 | 1.83 | 0.46 | 0.54 |
| -30 (-22) | 135 | 34 | 39 | 53 | 1.00 | 0.77 | 2.53 | 0.64 | 0.74 |
| -25 (-13) | 200 | 50 | 59 | 60 | 1.03 | 1.14 | 3.27 | 0.82 | 0.96 |
| -20 (- 4) | 279 | 70 | 82 | 67 | 1.06 | 1.59 | 4.05 | 1.02 | 1.19 |
| -15 (+ 5) | 374 | 94 | 110 | 75 | 1.09 | 2.13 | 4.89 | 1.23 | 1.43 |
| -10 (+14) | 489 | 123 | 143 | 83 | 1.13 | 2.80 | 5.81 | 1.47 | 1.70 |
| -5 (+23) | 626 | 158 | 183 | 91 | 1.18 | 3.60 | 6.82 | 1.72 | 2.00 |
| 0 (+32) | 788 | 199 | 231 | 99 | 1.23 | 4.56 | 7.94 | 2.00 | 2.33 |
| +5 (+41) | 979 | 247 | 287 | 107 | 1.28 | 5.70 | 9.17 | 2.31 | 2.69 |
| +10 (+50) | 1200 | 302 | 351 | 114 | 1.34 | 7.03 | 10.52 | 2.65 | 3.08 |
| +15 (+59) | 1454 | 366 | 426 | 122 | 1.40 | 8.58 | 12.03 | 3.03 | 3.52 |

E - PERFORMANCE - CURVES

| TEST CONDITIONS: @115V60Hz | | ASHRAE32 Static | | | (Condensing temperature 55°C (+131°F)) | | | | | |
|-------------------------------|-------|----------------------------|----------|-----|---|-------------------------------|-------------------------|---------------------------|-----------|-------|
| Evaporating temperature | | Cooling capacity +/- 5% | | | Power consumption +/- 5% | Current consumption +/- 5% | Gas flow rate +/- 5% | EFFICIENCY RATE +/- 7% | | |
| °C | (°F) | [Btu/h] | [kcal/h] | [W] | [W] | [A] | [kg/h] | [Btu/Wh] | [kcal/Wh] | [W/W] |
| -35 | (-31) | 50 | 13 | 15 | 44 | 0.98 | 0.28 | 1.21 | 0.30 | 0.35 |
| -30 | (-22) | 103 | 26 | 30 | 51 | 0.99 | 0.59 | 2.00 | 0.50 | 0.59 |
| -25 | (-13) | 165 | 42 | 48 | 58 | 1.02 | 0.94 | 2.77 | 0.70 | 0.81 |
| -20 | (- 4) | 240 | 60 | 70 | 67 | 1.05 | 1.37 | 3.54 | 0.89 | 1.04 |
| -15 | (+ 5) | 331 | 83 | 97 | 76 | 1.09 | 1.89 | 4.32 | 1.09 | 1.27 |
| -10 | (+14) | 441 | 111 | 129 | 85 | 1.14 | 2.52 | 5.12 | 1.29 | 1.50 |
| -5 | (+23) | 572 | 144 | 168 | 95 | 1.20 | 3.28 | 5.96 | 1.50 | 1.75 |
| 0 | (+32) | 727 | 183 | 213 | 106 | 1.26 | 4.20 | 6.85 | 1.73 | 2.01 |
| +5 | (+41) | 909 | 229 | 266 | 117 | 1.34 | 5.29 | 7.80 | 1.97 | 2.29 |
| +10 | (+50) | 1122 | 283 | 329 | 128 | 1.43 | 6.57 | 8.83 | 2.22 | 2.59 |
| +15 | (+59) | 1367 | 344 | 400 | 139 | 1.52 | 8.07 | 9.95 | 2.51 | 2.92 |

| TEST CONDITIONS: @115V60Hz | | ASHRAE32 Static | | | (Condensing temperature 65°C (+149°F)) | | | | | |
|-------------------------------|-------|----------------------------|----------|-----|---|-------------------------------|-------------------------|---------------------------|-----------|-------|
| Evaporating temperature | | Cooling capacity +/- 5% | | | Power consumption +/- 5% | Current consumption +/- 5% | Gas flow rate +/- 5% | EFFICIENCY RATE +/- 7% | | |
| °C | (°F) | [Btu/h] | [kcal/h] | [W] | [W] | [A] | [kg/h] | [Btu/Wh] | [kcal/Wh] | [W/W] |
| -35 | (-31) | 12 | 3 | 3 | 40 | 0.97 | 0.06 | 0.31 | 0.08 | 0.09 |
| -30 | (-22) | 60 | 15 | 17 | 46 | 0.98 | 0.34 | 1.25 | 0.31 | 0.36 |
| -25 | (-13) | 117 | 29 | 34 | 54 | 1.00 | 0.67 | 2.11 | 0.53 | 0.62 |
| -20 | (- 4) | 186 | 47 | 55 | 64 | 1.03 | 1.06 | 2.92 | 0.74 | 0.86 |
| -15 | (+ 5) | 270 | 68 | 79 | 74 | 1.08 | 1.54 | 3.68 | 0.93 | 1.08 |
| -10 | (+14) | 372 | 94 | 109 | 85 | 1.14 | 2.13 | 4.42 | 1.11 | 1.29 |
| -5 | (+23) | 495 | 125 | 145 | 97 | 1.21 | 2.84 | 5.14 | 1.29 | 1.51 |
| 0 | (+32) | 641 | 161 | 188 | 110 | 1.29 | 3.70 | 5.85 | 1.48 | 1.72 |
| +5 | (+41) | 813 | 205 | 238 | 124 | 1.39 | 4.73 | 6.58 | 1.66 | 1.93 |
| +10 | (+50) | 1014 | 256 | 297 | 138 | 1.50 | 5.94 | 7.33 | 1.85 | 2.15 |
| +15 | (+59) | 1248 | 314 | 366 | 152 | 1.63 | 7.37 | 8.12 | 2.05 | 2.38 |

F - EXTERNAL CHARACTERISTICS

| | | | |
|-------------------------|---------------------------------------|------|--------------------------|
| 1 Base plate | European Standard 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 | | |