

COMPRESSOR DEFINITION

| | |
|---------------------------|-------------|
| Designation | EM 20HBR |
| Nominal Voltage/Frequency | 115 V 60 Hz |
| Engineering Number | 513307103 |

A - APPLICATION / LIMIT WORKING CONDITIONS

| | | | |
|------------------------------------|-----------------------------------|-----------------------------------|-------------|
| 1 Type | Hermetic reciprocating compressor | | |
| 2 Refrigerant | R-134a | | |
| 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 | | |
| 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 140 V |
| 8.2 LBP (43°C Ambient temperature) | Static | - | 98 to 140 V |
| 8.3 HBP (32°C Ambient temperature) | Fan | - | 98 to 140 V |
| 8.4 HBP (43°C Ambient temperature) | Fan | - | 98 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) | 6.69 | [kg] (14.75 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 V 60 Hz 1 ~ (Single phase) | |
| 2 Starting device type | Current Relay | |
| 2.1 Starting device | 213514180 | |
| 3 Start capacitor | - | [µF(VAC minimum)] |
| 4 Run capacitor | - | [µF(VAC minimum)] |
| 5 Motor protection | 5TM734KFBYY-53 | |
| 6 Start winding resistance | 18.20 | [Ω at 25°C (77°F)] +/- 8% |
| 7 Run winding resistance | 10.40 | [Ω at 25°C (77°F)] +/- 8% |
| 8 LRA - Locked rotor amperage (60 Hz) | 9.50 | [A] - Measured according to UL 984 |
| 9 FLA - Full load amperage L/MBP (60 Hz) | 1.15 | [A] - Measured according to UL 984 |
| 10 FLA - Full Load Amperage HBP (60 Hz) | - | [A] - Measured according to UL 984 |
| 11 Approval boards certification | UL | |

D - PERFORMANCE - CHECK POINT DATA

| | | | | | | | | | |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|---|---------------------------|--------------------------------------|-------|--|
| TEST CONDITIONS: @115V60Hz | | | ASHRAEHBP32 Static | | 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] | |
| 985 | 248 | 289 | 122 | 1.31 | | 8.07 | 2.03 | 2.36 | |

| | | | | | | | | | |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|---|---------------------------|--------------------------------------|-------|--|
| 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] | |
| 985 | 248 | 289 | 122 | 1.31 | | 8.07 | 2.03 | 2.36 | |

| | | | | | | | | | |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|---|---------------------------|--|-------|--|
| 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] | |
| 180 | 45 | 53 | 66 | 0.94 | 1.02 | 2.73 | 0.69 | 0.80 | |

| | | | | | | | | | |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|---|---------------------------|--|-------|--|
| TEST CONDITIONS: @115V60Hz | | | ASHRAELBP32 Fan | | 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] | |
| 180 | 45 | 53 | 66 | 0.94 | 1.02 | 2.73 | 0.69 | 0.80 | |

E - PERFORMANCE - CURVES

| | | | | | | | | | | |
|-------------------------------|----------------------------|--------------------|---------|-----------------------------|-------------------------------|-------------------------|--|--------|----------|-----------|
| 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] |
| -35 | (-31) | 522 | 131 | 153 | 35 | 0.83 | 3.43 | 5.93 | 1.49 | 1.74 |
| -30 | (-22) | 445 | 112 | 131 | 46 | 0.87 | 2.86 | 5.43 | 1.37 | 1.59 |
| -25 | (-13) | 407 | 103 | 119 | 57 | 0.92 | 2.53 | 5.20 | 1.31 | 1.52 |
| -20 | (- 4) | 406 | 102 | 119 | 67 | 0.96 | 2.44 | 5.22 | 1.32 | 1.53 |
| -15 | (+ 5) | 444 | 112 | 130 | 76 | 1.00 | 2.59 | 5.51 | 1.39 | 1.61 |
| -10 | (+14) | 519 | 131 | 152 | 84 | 1.05 | 2.99 | 6.05 | 1.52 | 1.77 |
| -5 | (+23) | 631 | 159 | 185 | 92 | 1.09 | 3.63 | 6.86 | 1.73 | 2.01 |
| 0 | (+32) | 782 | 197 | 229 | 99 | 1.13 | 4.52 | 7.93 | 2.00 | 2.32 |
| +5 | (+41) | 970 | 245 | 284 | 105 | 1.18 | 5.64 | 9.25 | 2.33 | 2.71 |
| +10 | (+50) | 1196 | 301 | 351 | 110 | 1.22 | 7.01 | 10.84 | 2.73 | 3.18 |
| +15 | (+59) | 1460 | 368 | 428 | 115 | 1.27 | 8.62 | 12.69 | 3.20 | 3.72 |

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) | 363 | 91 | 106 | 29 | 0.68 | 2.47 | 4.32 | 1.09 | 1.27 |
| -30 | (-22) | 317 | 80 | 93 | 42 | 0.76 | 2.08 | 4.16 | 1.05 | 1.22 |
| -25 | (-13) | 303 | 76 | 89 | 54 | 0.84 | 1.91 | 4.18 | 1.05 | 1.22 |
| -20 | (- 4) | 322 | 81 | 94 | 66 | 0.91 | 1.94 | 4.35 | 1.10 | 1.28 |
| -15 | (+ 5) | 374 | 94 | 110 | 77 | 0.98 | 2.19 | 4.70 | 1.18 | 1.38 |
| -10 | (+14) | 458 | 115 | 134 | 88 | 1.06 | 2.64 | 5.21 | 1.31 | 1.53 |
| -5 | (+23) | 575 | 145 | 169 | 98 | 1.13 | 3.31 | 5.88 | 1.48 | 1.72 |
| 0 | (+32) | 725 | 183 | 212 | 108 | 1.20 | 4.19 | 6.72 | 1.69 | 1.97 |
| +5 | (+41) | 907 | 229 | 266 | 117 | 1.27 | 5.28 | 7.73 | 1.95 | 2.26 |
| +10 | (+50) | 1123 | 283 | 329 | 126 | 1.34 | 6.58 | 8.90 | 2.24 | 2.61 |
| +15 | (+59) | 1370 | 345 | 402 | 134 | 1.41 | 8.09 | 10.24 | 2.58 | 3.00 |

| 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) | 266 | 67 | 78 | 24 | 0.54 | 1.88 | 2.31 | 0.58 | 0.68 |
| -30 | (-22) | 238 | 60 | 70 | 38 | 0.65 | 1.60 | 2.58 | 0.65 | 0.76 |
| -25 | (-13) | 237 | 60 | 69 | 51 | 0.76 | 1.51 | 2.92 | 0.74 | 0.86 |
| -20 | (- 4) | 264 | 67 | 77 | 64 | 0.86 | 1.60 | 3.33 | 0.84 | 0.98 |
| -15 | (+ 5) | 319 | 80 | 93 | 77 | 0.96 | 1.86 | 3.82 | 0.96 | 1.12 |
| -10 | (+14) | 401 | 101 | 117 | 90 | 1.06 | 2.31 | 4.37 | 1.10 | 1.28 |
| -5 | (+23) | 510 | 129 | 150 | 102 | 1.16 | 2.94 | 5.00 | 1.26 | 1.46 |
| 0 | (+32) | 648 | 163 | 190 | 114 | 1.26 | 3.74 | 5.69 | 1.43 | 1.67 |
| +5 | (+41) | 812 | 205 | 238 | 126 | 1.35 | 4.72 | 6.46 | 1.63 | 1.89 |
| +10 | (+50) | 1005 | 253 | 294 | 138 | 1.44 | 5.89 | 7.30 | 1.84 | 2.14 |
| +15 | (+59) | 1224 | 309 | 359 | 149 | 1.53 | 7.23 | 8.21 | 2.07 | 2.41 |

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 | | |