

COMPRESSOR DEFINITION

| | |
|---------------------------|----------------|
| Designation | EM 45HNR |
| Nominal Voltage/Frequency | 220 V 50-60 Hz |
| Engineering Number | 513307359 |

A - APPLICATION / LIMIT WORKING CONDITIONS

| | | | |
|------------------------------------|-----------------------------------|-----------------------------------|--------------|
| 1 Type | Hermetic reciprocating compressor | | |
| 2 Refrigerant | R-134a | | |
| 3 Nominal voltage and frequency | 220 / 50-60 | [V / Hz] | |
| 4 Application type | Low-Medium Back Pressure | | |
| 4.1 Evaporating temperature range | -35°C to -5°C | (-31°F to 23°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/Fan | 187 to 242 V | 187 to 242 V |
| 8.2 LBP (43°C Ambient temperature) | Static/Fan | 187 to 242 V | 187 to 242 V |
| 8.3 HBP (32°C Ambient temperature) | - | - | - |
| 8.4 HBP (43°C Ambient temperature) | - | - | - |
| 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 | 1/8 | [hp] |
| 2 Displacement | 3.77 | [cm ³] (0.230 cu.in) |
| 2.1 Bore [mm] | 19.000 | |
| 2.2 Stroke [mm] | 13.300 | |
| 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) | 7.52 | [kg] (16.58 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 | 220 V 50-60 Hz 1 ~ (Single phase) | |
| 2 Starting device type | Current Relay | |
| 2.1 Starting device | 213514130/213515004 | |
| 3 Start capacitor | 38-46(220) | [µF(VAC minimum)] |
| 4 Run capacitor | - | [µF(VAC minimum)] |
| 5 Motor protection | 5TM718MFBYY-53 | |
| 6 Start winding resistance | 38.00 | [Ω at 25°C (77°F)] +/- 8% |
| 7 Run winding resistance | 20.50 | [Ω at 25°C (77°F)] +/- 8% |
| 8 LRA - Locked rotor amperage (50/60 Hz) | 9.50/9.00 | [A] - Measured according to UL 984 |
| 9 FLA - Full load amperage L/MBP (50/60 Hz) | 1.05/0.90 | [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 | CE - UKCA - UL | |

D - PERFORMANCE - CHECK POINT DATA

| | | | | | | | | |
|-------------------------------|----------|-----|--------------------------------|----------------------------------|--|---------------------------|--|-------|
| TEST CONDITIONS: @220V50Hz | | | 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] |
| 330 | 83 | 97 | 100 | 0.87 | 1.88 | 3.30 | 0.83 | 0.97 |

| | | | | | | | | |
|-------------------------------|----------|-----|--------------------------------|----------------------------------|--|---------------------------|--|-------|
| TEST CONDITIONS: @220V60Hz | | | 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] |
| 420 | 106 | 123 | 107 | 0.76 | 2.39 | 3.93 | 0.99 | 1.15 |

E - PERFORMANCE - CURVES

| | | | | | | | | | |
|-------------------------------|----------------------------|----------|--------------------|--------------------------------|--|----------------------------|---------------------------|-----------|-------|
| TEST CONDITIONS: @220V50Hz | | | 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) | 172 | 43 | 51 | 73 | 0.84 | 0.98 | 2.36 | 0.60 | 0.69 |
| -30 (-22) | 244 | 62 | 72 | 82 | 0.85 | 1.38 | 2.98 | 0.75 | 0.87 |
| -25 (-13) | 324 | 82 | 95 | 90 | 0.86 | 1.84 | 3.62 | 0.91 | 1.06 |
| -20 (- 4) | 424 | 107 | 124 | 98 | 0.87 | 2.41 | 4.34 | 1.09 | 1.27 |
| -15 (+ 5) | 555 | 140 | 163 | 107 | 0.89 | 3.17 | 5.18 | 1.30 | 1.52 |
| -10 (+14) | 730 | 184 | 214 | 117 | 0.91 | 4.18 | 6.19 | 1.56 | 1.81 |
| -5 (+23) | 958 | 241 | 281 | 129 | 0.95 | 5.51 | 7.43 | 1.87 | 2.18 |

| | | | | | | | | | |
|-------------------------------|----------------------------|----------|--------------------|--------------------------------|--|----------------------------|---------------------------|-----------|-------|
| TEST CONDITIONS: @220V50Hz | | | 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) | 140 | 35 | 41 | 71 | 0.84 | 0.79 | 1.98 | 0.50 | 0.58 |
| -30 (-22) | 217 | 55 | 64 | 82 | 0.86 | 1.23 | 2.64 | 0.66 | 0.77 |
| -25 (-13) | 297 | 75 | 87 | 92 | 0.87 | 1.69 | 3.26 | 0.82 | 0.95 |
| -20 (- 4) | 392 | 99 | 115 | 102 | 0.88 | 2.23 | 3.89 | 0.98 | 1.14 |
| -15 (+ 5) | 513 | 129 | 150 | 112 | 0.90 | 2.93 | 4.58 | 1.15 | 1.34 |
| -10 (+14) | 671 | 169 | 197 | 124 | 0.92 | 3.84 | 5.39 | 1.36 | 1.58 |
| -5 (+23) | 878 | 221 | 257 | 137 | 0.96 | 5.05 | 6.36 | 1.60 | 1.86 |

E - PERFORMANCE - CURVES

| TEST CONDITIONS: @220V50Hz | | 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) | 76 | 19 | 22 | 66 | 0.83 | 0.43 | 1.16 | 0.29 | 0.34 | |
| -30 (-22) | 165 | 42 | 48 | 79 | 0.85 | 0.94 | 1.98 | 0.50 | 0.58 | |
| -25 (-13) | 252 | 63 | 74 | 92 | 0.87 | 1.43 | 2.70 | 0.68 | 0.79 | |
| -20 (- 4) | 347 | 88 | 102 | 103 | 0.89 | 1.98 | 3.37 | 0.85 | 0.99 | |
| -15 (+ 5) | 464 | 117 | 136 | 116 | 0.91 | 2.65 | 4.04 | 1.02 | 1.18 | |
| -10 (+14) | 613 | 154 | 180 | 129 | 0.94 | 3.51 | 4.76 | 1.20 | 1.40 | |
| -5 (+23) | 805 | 203 | 236 | 144 | 0.98 | 4.63 | 5.58 | 1.41 | 1.64 | |

| TEST CONDITIONS: @220V60Hz | | 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) | 206 | 52 | 60 | 74 | 0.68 | 1.17 | 2.79 | 0.70 | 0.82 | |
| -30 (-22) | 294 | 74 | 86 | 86 | 0.71 | 1.67 | 3.44 | 0.87 | 1.01 | |
| -25 (-13) | 409 | 103 | 120 | 97 | 0.74 | 2.32 | 4.20 | 1.06 | 1.23 | |
| -20 (- 4) | 549 | 138 | 161 | 109 | 0.77 | 3.12 | 5.03 | 1.27 | 1.47 | |
| -15 (+ 5) | 712 | 179 | 209 | 121 | 0.81 | 4.06 | 5.89 | 1.48 | 1.72 | |
| -10 (+14) | 896 | 226 | 262 | 133 | 0.85 | 5.13 | 6.73 | 1.70 | 1.97 | |
| -5 (+23) | 1099 | 277 | 322 | 147 | 0.90 | 6.32 | 7.51 | 1.89 | 2.20 | |

| TEST CONDITIONS: @220V60Hz | | 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) | 172 | 43 | 50 | 72 | 0.67 | 0.97 | 2.36 | 0.59 | 0.69 | |
| -30 (-22) | 254 | 64 | 74 | 86 | 0.71 | 1.44 | 2.98 | 0.75 | 0.87 | |
| -25 (-13) | 362 | 91 | 106 | 99 | 0.74 | 2.06 | 3.68 | 0.93 | 1.08 | |
| -20 (- 4) | 495 | 125 | 145 | 113 | 0.78 | 2.82 | 4.42 | 1.11 | 1.29 | |
| -15 (+ 5) | 651 | 164 | 191 | 127 | 0.82 | 3.72 | 5.15 | 1.30 | 1.51 | |
| -10 (+14) | 829 | 209 | 243 | 142 | 0.87 | 4.75 | 5.84 | 1.47 | 1.71 | |
| -5 (+23) | 1025 | 258 | 300 | 158 | 0.93 | 5.90 | 6.45 | 1.62 | 1.89 | |

E - PERFORMANCE - CURVES

| TEST CONDITIONS: @220V60Hz | | 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) | 99 | 25 | 29 | 65 | 0.64 | 0.56 | 1.56 | 0.39 | 0.46 |
| -30 | (-22) | 186 | 47 | 55 | 81 | 0.69 | 1.05 | 2.27 | 0.57 | 0.67 |
| -25 | (-13) | 300 | 76 | 88 | 97 | 0.73 | 1.70 | 3.04 | 0.77 | 0.89 |
| -20 | (- 4) | 438 | 110 | 128 | 114 | 0.78 | 2.49 | 3.81 | 0.96 | 1.12 |
| -15 | (+ 5) | 599 | 151 | 176 | 132 | 0.84 | 3.42 | 4.55 | 1.15 | 1.33 |
| -10 | (+14) | 781 | 197 | 229 | 150 | 0.90 | 4.47 | 5.22 | 1.32 | 1.53 |
| -5 | (+23) | 982 | 248 | 288 | 170 | 0.98 | 5.65 | 5.77 | 1.45 | 1.69 |

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 | | |