

COMPRESSOR DEFINITION

| | |
|---------------------------|--------------------|
| Designation | EM 30HHR |
| Nominal Voltage/Frequency | 220-240 V 50-60 Hz |
| Engineering Number | 513307291 |

A - APPLICATION / LIMIT WORKING CONDITIONS

| | | | |
|------------------------------------|-----------------------------------|-----------------------------------|--------------|
| 1 Type | Hermetic reciprocating compressor | | |
| 2 Refrigerant | R-134a | | |
| 3 Nominal voltage and frequency | 220-240 / 50-60 | [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 | 187 to 255 V | 187 to 242 V |
| 8.2 LBP (43°C Ambient temperature) | Static | 187 to 255 V | 187 to 242 V |
| 8.3 HBP (32°C Ambient temperature) | Fan | 187 to 255 V | 187 to 242 V |
| 8.4 HBP (43°C Ambient temperature) | Fan | 187 to 255 V | 187 to 242 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 | 1/10 | [hp] |
| 2 Displacement | 3.00 | [cm ³] (0.183 cu.in) |
| 2.1 Bore [mm] | 19.000 | |
| 2.2 Stroke [mm] | 10.600 | |
| 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) | 7.49 | [kg] (16.51 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 | 220-240 V 50-60 Hz 1 ~ (Single phase) | |
| 2 Starting device type | Current Relay | |
| 2.1 Starting device | 213514059 | |
| 3 Start capacitor | - | [µF(VAC minimum)] |
| 4 Run capacitor | - | [µF(VAC minimum)] |
| 5 Motor protection | 4TM189RHBYY-53 | |
| 6 Start winding resistance | 47.80 | [Ω at 25°C (77°F)] +/- 8% |
| 7 Run winding resistance | 23.10 | [Ω at 25°C (77°F)] +/- 8% |
| 8 LRA - Locked rotor amperage (50/60 Hz) | 8.50/8.00 | [A] - Measured according to UL 984 |
| 9 FLA - Full load amperage L/MBP (50/60 Hz) | - | [A] - Measured according to UL 984 |
| 10 FLA - Full Load Amperage HBP (50/60 Hz) | 1.20/1.10 | [A] - Measured according to UL 984 |
| 11 Approval boards certification | CCC - CE - TUV - UKCA - UL - VDE | |

D - PERFORMANCE - CHECK POINT DATA

| | | | | | | | | |
|-------------------------------|----------|-----|--------------------------------|----------------------------------|---|---------------------------|--------------------------------------|-------|
| TEST CONDITIONS: @220V50Hz | | | 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] |
| 1170 | 295 | 343 | 140 | 0.95 | | 8.36 | 2.11 | 2.45 |

| | | | | | | | | |
|-------------------------------|----------|-----|--------------------------------|----------------------------------|---|---------------------------|--------------------------------------|-------|
| TEST CONDITIONS: @220V50Hz | | | 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] |
| 1170 | 295 | 343 | 140 | 0.95 | | 8.36 | 2.11 | 2.45 |

| | | | | | | | | |
|-------------------------------|----------|-----|--------------------------------|----------------------------------|---|---------------------------|--------------------------------------|-------|
| TEST CONDITIONS: @220V60Hz | | | 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] |
| 1380 | 348 | 404 | 160 | 0.95 | | 8.63 | 2.17 | 2.53 |

| | | | | | | | | |
|-------------------------------|----------|-----|--------------------------------|----------------------------------|---|---------------------------|--------------------------------------|-------|
| TEST CONDITIONS: @220V60Hz | | | 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] |
| 1380 | 348 | 404 | 160 | 0.95 | | 8.63 | 2.17 | 2.53 |

| | | | | | | | | |
|-------------------------------|----------|-----|--------------------------------|----------------------------------|---|---------------------------|--|-------|
| 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] |
| 260 | 66 | 76 | 86 | 0.60 | 1.48 | 3.02 | 0.76 | 0.88 |

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|-------------------------------|----------|-----|--------------------------------|----------------------------------|---|---------------------------|--|-------|
| TEST CONDITIONS: @220V50Hz | | | 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] |
| 260 | 66 | 76 | 86 | 0.60 | 1.48 | 3.02 | 0.76 | 0.88 |

D - PERFORMANCE - CHECK POINT DATA

| | | | | | | | | |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|--|---------------------------|--|-------|
| 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] |
| 310 | 78 | 91 | 90 | 0.70 | 1.76 | 3.44 | 0.87 | 1.01 |

| | | | | | | | | |
|-------------------------------|----------|-----|-----------------------------|-------------------------------|--|---------------------------|--|-------|
| TEST CONDITIONS: @220V60Hz | | | 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] |
| 310 | 78 | 91 | 90 | 0.70 | 1.76 | 3.44 | 0.87 | 1.01 |

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) | 143 | 36 | 42 | 65 | 0.81 | 0.81 | 2.17 | 0.55 | 0.63 |
| -30 (-22) | 200 | 50 | 59 | 73 | 0.82 | 1.13 | 2.76 | 0.69 | 0.81 |
| -25 (-13) | 271 | 68 | 79 | 81 | 0.83 | 1.54 | 3.39 | 0.85 | 0.99 |
| -20 (- 4) | 359 | 91 | 105 | 88 | 0.85 | 2.04 | 4.09 | 1.03 | 1.20 |
| -15 (+ 5) | 466 | 117 | 137 | 96 | 0.86 | 2.66 | 4.87 | 1.23 | 1.43 |
| -10 (+14) | 594 | 150 | 174 | 104 | 0.87 | 3.40 | 5.76 | 1.45 | 1.69 |
| -5 (+23) | 745 | 188 | 218 | 110 | 0.89 | 4.28 | 6.77 | 1.71 | 1.98 |
| 0 (+32) | 921 | 232 | 270 | 117 | 0.90 | 5.32 | 7.92 | 1.99 | 2.32 |
| +5 (+41) | 1124 | 283 | 329 | 122 | 0.91 | 6.54 | 9.22 | 2.32 | 2.70 |
| +10 (+50) | 1356 | 342 | 397 | 127 | 0.92 | 7.95 | 10.71 | 2.70 | 3.14 |
| +15 (+59) | 1619 | 408 | 474 | 130 | 0.93 | 9.56 | 12.39 | 3.12 | 3.63 |

| | | | | | | | | | |
|-------------------------------|----------------------------|----------|--------------------|-----------------------------|--|-------------------------|---------------------------|-----------|-------|
| 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) | 107 | 27 | 31 | 68 | 0.82 | 0.60 | 1.57 | 0.40 | 0.46 |
| -30 (-22) | 168 | 42 | 49 | 75 | 0.83 | 0.95 | 2.26 | 0.57 | 0.66 |
| -25 (-13) | 241 | 61 | 71 | 83 | 0.84 | 1.37 | 2.94 | 0.74 | 0.86 |
| -20 (- 4) | 329 | 83 | 96 | 91 | 0.86 | 1.87 | 3.63 | 0.91 | 1.06 |
| -15 (+ 5) | 434 | 109 | 127 | 99 | 0.87 | 2.48 | 4.35 | 1.10 | 1.27 |
| -10 (+14) | 559 | 141 | 164 | 108 | 0.89 | 3.20 | 5.12 | 1.29 | 1.50 |
| -5 (+23) | 704 | 177 | 206 | 117 | 0.91 | 4.05 | 5.96 | 1.50 | 1.75 |
| 0 (+32) | 872 | 220 | 256 | 126 | 0.93 | 5.04 | 6.89 | 1.74 | 2.02 |
| +5 (+41) | 1066 | 269 | 312 | 134 | 0.95 | 6.20 | 7.92 | 2.00 | 2.32 |
| +10 (+50) | 1287 | 324 | 377 | 142 | 0.97 | 7.54 | 9.08 | 2.29 | 2.66 |
| +15 (+59) | 1537 | 387 | 450 | 149 | 0.98 | 9.07 | 10.39 | 2.62 | 3.04 |

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] |
| -35 | (-31) | 69 | 17 | 20 | 70 | 0.83 | 0.39 | 0.94 | 0.24 | 0.28 |
| -30 | (-22) | 131 | 33 | 38 | 77 | 0.84 | 0.75 | 1.75 | 0.44 | 0.51 |
| -25 | (-13) | 205 | 52 | 60 | 84 | 0.85 | 1.17 | 2.49 | 0.63 | 0.73 |
| -20 | (- 4) | 291 | 73 | 85 | 93 | 0.86 | 1.66 | 3.20 | 0.81 | 0.94 |
| -15 | (+ 5) | 393 | 99 | 115 | 102 | 0.88 | 2.24 | 3.88 | 0.98 | 1.14 |
| -10 | (+14) | 512 | 129 | 150 | 113 | 0.90 | 2.93 | 4.55 | 1.15 | 1.33 |
| -5 | (+23) | 650 | 164 | 190 | 123 | 0.92 | 3.73 | 5.25 | 1.32 | 1.54 |
| 0 | (+32) | 809 | 204 | 237 | 134 | 0.95 | 4.68 | 5.97 | 1.51 | 1.75 |
| +5 | (+41) | 992 | 250 | 291 | 146 | 0.98 | 5.77 | 6.75 | 1.70 | 1.98 |
| +10 | (+50) | 1200 | 302 | 352 | 157 | 1.00 | 7.03 | 7.60 | 1.92 | 2.23 |
| +15 | (+59) | 1435 | 362 | 421 | 168 | 1.04 | 8.47 | 8.55 | 2.15 | 2.50 |

| 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] |
| -35 | (-31) | 158 | 40 | 46 | 64 | 0.67 | 0.89 | 2.37 | 0.60 | 0.69 |
| -30 | (-22) | 240 | 61 | 70 | 74 | 0.69 | 1.37 | 3.19 | 0.81 | 0.94 |
| -25 | (-13) | 331 | 84 | 97 | 83 | 0.70 | 1.89 | 3.98 | 1.00 | 1.17 |
| -20 | (- 4) | 437 | 110 | 128 | 93 | 0.72 | 2.48 | 4.76 | 1.20 | 1.39 |
| -15 | (+ 5) | 561 | 141 | 164 | 102 | 0.75 | 3.20 | 5.55 | 1.40 | 1.63 |
| -10 | (+14) | 708 | 178 | 208 | 112 | 0.77 | 4.05 | 6.39 | 1.61 | 1.87 |
| -5 | (+23) | 884 | 223 | 259 | 122 | 0.80 | 5.08 | 7.31 | 1.84 | 2.14 |
| 0 | (+32) | 1093 | 276 | 320 | 131 | 0.83 | 6.32 | 8.32 | 2.10 | 2.44 |
| +5 | (+41) | 1341 | 338 | 393 | 141 | 0.86 | 7.80 | 9.47 | 2.39 | 2.78 |
| +10 | (+50) | 1631 | 411 | 478 | 151 | 0.90 | 9.56 | 10.78 | 2.72 | 3.16 |
| +15 | (+59) | 1968 | 496 | 577 | 160 | 0.93 | 11.62 | 12.27 | 3.09 | 3.60 |

| 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] |
| -35 | (-31) | 108 | 27 | 32 | 66 | 0.67 | 0.61 | 1.67 | 0.42 | 0.49 |
| -30 | (-22) | 196 | 49 | 57 | 77 | 0.69 | 1.11 | 2.51 | 0.63 | 0.74 |
| -25 | (-13) | 291 | 73 | 85 | 87 | 0.71 | 1.66 | 3.29 | 0.83 | 0.97 |
| -20 | (- 4) | 398 | 100 | 117 | 98 | 0.74 | 2.27 | 4.04 | 1.02 | 1.18 |
| -15 | (+ 5) | 522 | 132 | 153 | 109 | 0.77 | 2.98 | 4.78 | 1.21 | 1.40 |
| -10 | (+14) | 668 | 168 | 196 | 120 | 0.81 | 3.82 | 5.55 | 1.40 | 1.63 |
| -5 | (+23) | 840 | 212 | 246 | 132 | 0.84 | 4.83 | 6.37 | 1.61 | 1.87 |
| 0 | (+32) | 1043 | 263 | 306 | 143 | 0.88 | 6.03 | 7.27 | 1.83 | 2.13 |
| +5 | (+41) | 1283 | 323 | 376 | 154 | 0.92 | 7.47 | 8.28 | 2.09 | 2.43 |
| +10 | (+50) | 1564 | 394 | 458 | 165 | 0.96 | 9.17 | 9.42 | 2.37 | 2.76 |
| +15 | (+59) | 1891 | 476 | 554 | 177 | 1.00 | 11.16 | 10.74 | 2.71 | 3.15 |

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) | 79 | 20 | 23 | 68 | 0.68 | 0.44 | 1.21 | 0.30 | 0.35 |
| -30 | (-22) | 168 | 42 | 49 | 80 | 0.70 | 0.96 | 2.05 | 0.52 | 0.60 |
| -25 | (-13) | 261 | 66 | 77 | 92 | 0.73 | 1.49 | 2.81 | 0.71 | 0.82 |
| -20 | (- 4) | 365 | 92 | 107 | 104 | 0.76 | 2.08 | 3.51 | 0.88 | 1.03 |
| -15 | (+ 5) | 484 | 122 | 142 | 116 | 0.80 | 2.76 | 4.18 | 1.05 | 1.23 |
| -10 | (+14) | 623 | 157 | 183 | 129 | 0.84 | 3.57 | 4.86 | 1.22 | 1.42 |
| -5 | (+23) | 787 | 198 | 231 | 142 | 0.88 | 4.52 | 5.57 | 1.40 | 1.63 |
| 0 | (+32) | 980 | 247 | 287 | 154 | 0.92 | 5.66 | 6.33 | 1.60 | 1.85 |
| +5 | (+41) | 1207 | 304 | 354 | 167 | 0.97 | 7.03 | 7.18 | 1.81 | 2.10 |
| +10 | (+50) | 1474 | 371 | 432 | 180 | 1.02 | 8.64 | 8.15 | 2.05 | 2.39 |
| +15 | (+59) | 1785 | 450 | 523 | 193 | 1.07 | 10.53 | 9.26 | 2.33 | 2.71 |

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 | | |