

### COMPRESSOR DEFINITION

Designation	EM 20HHR
Nominal Voltage/Frequency	115-127 V 60 Hz
Engineering Number	513307311

### 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	-	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 <sup>2</sup> ] (202 psig)	/ °C - °F
9.2 Peak	15.9	[kgf/cm <sup>2</sup> ] (226 psig)	/ °C - °F
10 Maximum winding temperature	130	[ °C ]	

### B - MECHANICAL DATA

1 Commercial designation	1/12	[hp]
2 Displacement	2.27	[cm <sup>3</sup> ] (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 <sup>2</sup> ] (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	213514024	
3 Start capacitor	124-149(90)	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	4TM734KFBYY-53	
6 Start winding resistance	24.90	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	8.15	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (60 Hz)	9.00	[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)	1.30	[A] - Measured according to UL 984
11 Approval boards certification	CE - TUV - UKCA - 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]	
1020	257	299	118	1.28		8.64	2.18	2.53	

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]	
1020	257	299	118	1.28		8.64	2.18	2.53	

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	0.91	1.14	3.03	0.76	0.89	

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]	
200	50	59	66	0.91	1.14	3.03	0.76	0.89	

### 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]
-35	(-31)	7	2	2	- 2	- 0.01	0.04	0.00	0.00	0.00
-30	(-22)	- 9	- 2	- 3	- 2	- 0.01	- 0.04	- 0.13	- 0.03	- 0.04
-25	(-13)	- 22	- 6	- 7	- 1	- 0.01	- 0.12	- 0.22	- 0.06	- 0.07
-20	(- 4)	- 33	- 8	- 10		0.00	- 0.19	- 0.29	- 0.07	- 0.09
-15	(+ 5)	- 39	- 10	- 11		0.00	- 0.23	- 0.32	- 0.08	- 0.09
-10	(+14)	- 40	- 10	- 12	1	0.00	- 0.25	- 0.30	- 0.08	- 0.09
-5	(+23)	- 34	- 9	- 10	2	0.01	- 0.22	- 0.23	- 0.06	- 0.07
0	(+32)	- 20	- 5	- 6	2	0.01	- 0.14	- 0.10	- 0.03	- 0.03
+5	(+41)	4	1	1	2	0.01	0.01	0.09	0.02	0.03
+10	(+50)	38	10	11	1	0.01	0.22	0.35	0.09	0.10
+15	(+59)	85	21	25	- 1	0.00	0.53	0.69	0.17	0.20

### E - PERFORMANCE - CURVES

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 45°C (+113°F))					
@115V60Hz		Static								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	152	38	45	56	0.86	0.86	2.63	0.66	0.77
-30	(-22)	214	54	63	60	0.89	1.22	3.28	0.83	0.96
-25	(-13)	284	72	83	66	0.92	1.63	3.97	1.00	1.16
-20	(- 4)	363	91	106	72	0.96	2.09	4.69	1.18	1.38
-15	(+ 5)	453	114	133	78	0.99	2.61	5.47	1.38	1.60
-10	(+14)	554	140	162	84	1.03	3.20	6.29	1.59	1.84
-5	(+23)	669	169	196	90	1.07	3.87	7.18	1.81	2.10
0	(+32)	799	201	234	96	1.11	4.63	8.13	2.05	2.38
+5	(+41)	944	238	277	101	1.16	5.50	9.15	2.31	2.68
+10	(+50)	1107	279	324	106	1.20	6.48	10.26	2.58	3.01
+15	(+59)	1288	324	377	111	1.24	7.58	11.44	2.88	3.35

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 55°C (+131°F))					
@115V60Hz		Static								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	- 42	- 11	- 12	45	0.79	- 0.27	0.48	0.12	0.14
-30	(-22)	27	7	8	53	0.83	0.13	1.31	0.33	0.38
-25	(-13)	111	28	32	61	0.88	0.61	2.18	0.55	0.64
-20	(- 4)	210	53	62	69	0.93	1.19	3.11	0.78	0.91
-15	(+ 5)	327	82	96	78	0.99	1.86	4.09	1.03	1.20
-10	(+14)	461	116	135	88	1.05	2.65	5.13	1.29	1.50
-5	(+23)	616	155	180	97	1.11	3.55	6.23	1.57	1.83
0	(+32)	791	199	232	107	1.18	4.59	7.42	1.87	2.17
+5	(+41)	989	249	290	116	1.25	5.76	8.68	2.19	2.54
+10	(+50)	1210	305	354	125	1.32	7.09	10.02	2.53	2.94
+15	(+59)	1456	367	427	133	1.39	8.59	11.47	2.89	3.36

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 65°C (+149°F))					
@115V60Hz		Static								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	105	26	31	45	0.81	0.62	1.44	0.36	0.42
-30	(-22)	112	28	33	53	0.85	0.65	1.85	0.47	0.54
-25	(-13)	141	35	41	61	0.89	0.80	2.32	0.59	0.68
-20	(- 4)	191	48	56	71	0.95	1.08	2.85	0.72	0.83
-15	(+ 5)	265	67	78	80	1.01	1.50	3.44	0.87	1.01
-10	(+14)	363	92	106	91	1.08	2.06	4.10	1.03	1.20
-5	(+23)	488	123	143	102	1.15	2.79	4.83	1.22	1.42
0	(+32)	639	161	187	112	1.23	3.69	5.65	1.42	1.66
+5	(+41)	820	207	240	123	1.31	4.77	6.55	1.65	1.92
+10	(+50)	1030	260	302	134	1.39	6.04	7.55	1.90	2.21
+15	(+59)	1272	320	373	145	1.48	7.51	8.65	2.18	2.54

### 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		