

### COMPRESSOR DEFINITION

Designation	EM 20HBR
Nominal Voltage/Frequency	115 V 60 Hz
Engineering Number	513307998

### 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 <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)	6.69	[kg] (14.75 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 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	4TM734KFBYY-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	IRAM - 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		