

### COMPRESSOR DEFINITION

Designation	EM IS20HHR
Nominal Voltage/Frequency	115-127 V 60 Hz
Engineering Number	513305083

### 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	-	103 to 140 V
8.2 LBP (43°C Ambient temperature)	Static	-	103 to 140 V
8.3 HBP (32°C Ambient temperature)	Fan	-	103 to 140 V
8.4 HBP (43°C Ambient temperature)	Fan	-	103 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 - ELECTRICAL 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	213514180/213515011	
3 Start capacitor	161-193(150)	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	CP4TMF180K61	
6 Start winding resistance	18.50	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	9.80	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (60 Hz)	11.62	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (60 Hz)	1.43	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (60 Hz)	1.58	[A] - Measured according to UL 984
11 Approval boards certification		

### D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS: @115V60Hz			ASHRAEHBP32 Fan		Evaporating temperature (Condensing temperature)		7.2°C (44.96°F) 54.4°C (129.92°F)		
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
1050	265	308	123	1.39		8.51	2.14	2.49	

TEST CONDITIONS: @115V60Hz			ASHRAELBP32 Static		Evaporating temperature (Condensing temperature)		-23.3°C (-9.94°F) 54.4°C (129.92°F)		
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
200	50	59	66	1.04	1.14	3.02	0.76	0.88	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @115V60Hz			ASHRAE32 Static		(Condensing temperature 35°C (+95°F))					
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	112	28	33	48	0.98	0.63	2.35	0.59	0.69	
-30 (-22)	166	42	49	54	1.01	0.95	3.02	0.76	0.88	
-25 (-13)	232	58	68	61	1.04	1.32	3.76	0.95	1.10	
-20 (- 4)	312	79	91	67	1.06	1.77	4.61	1.16	1.35	
-15 (+ 5)	409	103	120	74	1.09	2.33	5.58	1.41	1.63	
-10 (+14)	527	133	154	80	1.12	3.02	6.67	1.68	1.95	
-5 (+23)	668	168	196	85	1.15	3.84	7.90	1.99	2.32	
0 (+32)	835	210	245	91	1.18	4.83	9.29	2.34	2.72	
+5 (+41)	1031	260	302	96	1.21	6.00	10.85	2.73	3.18	
+10 (+50)	1258	317	369	100	1.24	7.38	12.59	3.17	3.69	
+15 (+59)	1520	383	445	104	1.27	8.97	14.53	3.66	4.26	

TEST CONDITIONS: @115V60Hz			ASHRAE32 Static		(Condensing temperature 45°C (+113°F))					
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	80	20	24	46	0.98	0.45	1.83	0.46	0.54	
-30 (-22)	135	34	39	53	1.00	0.77	2.53	0.64	0.74	
-25 (-13)	200	50	59	60	1.03	1.14	3.27	0.82	0.96	
-20 (- 4)	279	70	82	67	1.06	1.59	4.05	1.02	1.19	
-15 (+ 5)	374	94	110	75	1.09	2.13	4.89	1.23	1.43	
-10 (+14)	489	123	143	83	1.13	2.80	5.81	1.47	1.70	
-5 (+23)	626	158	183	91	1.18	3.60	6.82	1.72	2.00	
0 (+32)	788	199	231	99	1.23	4.56	7.94	2.00	2.33	
+5 (+41)	979	247	287	107	1.28	5.70	9.17	2.31	2.69	
+10 (+50)	1200	302	351	114	1.34	7.03	10.52	2.65	3.08	
+15 (+59)	1454	366	426	122	1.40	8.58	12.03	3.03	3.52	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @115V60Hz		ASHRAE32 Static			(Condensing temperature 55°C (+131°F) )					
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
	°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35 (-31)	50	13	15	44	0.98	0.28	1.21	0.30	0.35	
-30 (-22)	103	26	30	51	0.99	0.59	2.00	0.50	0.59	
-25 (-13)	165	42	48	58	1.02	0.94	2.77	0.70	0.81	
-20 (- 4)	240	60	70	67	1.05	1.37	3.54	0.89	1.04	
-15 (+ 5)	331	83	97	76	1.09	1.89	4.32	1.09	1.27	
-10 (+14)	441	111	129	85	1.14	2.52	5.12	1.29	1.50	
-5 (+23)	572	144	168	95	1.20	3.28	5.96	1.50	1.75	
0 (+32)	727	183	213	106	1.26	4.20	6.85	1.73	2.01	
+5 (+41)	909	229	266	117	1.34	5.29	7.80	1.97	2.29	
+10 (+50)	1122	283	329	128	1.43	6.57	8.83	2.22	2.59	
+15 (+59)	1367	344	400	139	1.52	8.07	9.95	2.51	2.92	

TEST CONDITIONS: @115V60Hz		ASHRAE32 Static			(Condensing temperature 65°C (+149°F) )					
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
	°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35 (-31)	12	3	3	40	0.97	0.06	0.31	0.08	0.09	
-30 (-22)	60	15	17	46	0.98	0.34	1.25	0.31	0.36	
-25 (-13)	117	29	34	54	1.00	0.67	2.11	0.53	0.62	
-20 (- 4)	186	47	55	64	1.03	1.06	2.92	0.74	0.86	
-15 (+ 5)	270	68	79	74	1.08	1.54	3.68	0.93	1.08	
-10 (+14)	372	94	109	85	1.14	2.13	4.42	1.11	1.29	
-5 (+23)	495	125	145	97	1.21	2.84	5.14	1.29	1.51	
0 (+32)	641	161	188	110	1.29	3.70	5.85	1.48	1.72	
+5 (+41)	813	205	238	124	1.39	4.73	6.58	1.66	1.93	
+10 (+50)	1014	256	297	138	1.50	5.94	7.33	1.85	2.15	
+15 (+59)	1248	314	366	152	1.63	7.37	8.12	2.05	2.38	

### F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal
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 30° up + 24° to Back
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	Slanted parallel BP+28°to Back
3.4 Oil cooler (Copper)	No [mm]
3.5 Connector sealing	Rubber Plugs