

COMPRESSOR DEFINITION

Designation	EM 20LHR
Nominal Voltage/Frequency	100 V 50-60 Hz
Engineering Number	513307371

A - APPLICATION / LIMIT WORKING CONDITIONS

1 Type	Hermetic reciprocating compressor		
2 Refrigerant	HFO		
3 Nominal voltage and frequency	100 / 50-60	[V / Hz]	
4 Application type	High Back Pressure		
4.1 Evaporating temperature range	-5°C to 15°C	(23°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)	-	-	-
8.2 LBP (43°C Ambient temperature)	-	-	-
8.3 HBP (32°C Ambient temperature)	Fan	85 to 110 V	85 to 110 V
8.4 HBP (43°C Ambient temperature)	Fan	85 to 110 V	85 to 110 V
9 Maximum condensing temperature			
9.1 Operating	15.72	[kgf/cm ²] (224 psig)	/ °C - °F
9.2 Peak	19.82	[kgf/cm ²] (282 psig)	/ °C - °F
10 Maximum winding temperature	130	[°C]	

B - MECHANICAL DATA

1 Commercial designation	1/12	[hp]
2 Displacement	2.27	[cm ³] (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)	6.52	[kg] (14.37 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	100 V 50-60 Hz 1 ~ (Single phase)	
2 Starting device type	Current Relay	
2.1 Starting device	213514008	
3 Start capacitor	-	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	4TM302KFBYY-53	
6 Start winding resistance	15.16	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	6.05	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (50/60 Hz)	13.00/12.10	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (50/60 Hz)	1.15/1.35	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (50/60 Hz)	1.35/1.55	[A] - Measured according to UL 984
11 Approval boards certification		

D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS: @100V50Hz			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]
894	225	262	95	1.40		9.45	2.38	2.77

TEST CONDITIONS: @100V60Hz			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]
1050	265	308	110	1.44		9.53	2.40	2.79

E - PERFORMANCE - CURVES

TEST CONDITIONS: @100V50Hz			ASHRAE32 Fan		(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]	[W/W]
-5 (+23)	620	156	182	70	1.19	0.00	8.91	2.25	2.61
0 (+32)	748	189	219	72	1.25	0.00	10.45	2.63	3.06
+5 (+41)	905	228	265	73	1.28	0.00	12.40	3.13	3.63
+10 (+50)	1089	275	319	74	1.30	0.00	14.78	3.72	4.33
+15 (+59)	1302	328	382	74	1.29	0.00	17.58	4.43	5.15

TEST CONDITIONS: @100V50Hz			ASHRAE32 Fan		(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]
-5 (+23)	579	146	170	79	1.25	0.00	7.32	1.84	2.15
0 (+32)	710	179	208	83	1.30	0.00	8.57	2.16	2.51
+5 (+41)	866	218	254	85	1.34	0.00	10.19	2.57	2.99
+10 (+50)	1048	264	307	86	1.36	0.00	12.18	3.07	3.57
+15 (+59)	1255	316	368	86	1.36	0.00	14.53	3.66	4.26

E - PERFORMANCE - CURVES

TEST CONDITIONS: @100V50Hz		ASHRAE32 Fan			(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]
-5 (+23)	534	135	157	83	1.30	0.00	6.44	1.62	1.89	
0 (+32)	664	167	195	89	1.35	0.00	7.43	1.87	2.18	
+5 (+41)	817	206	239	94	1.39	0.00	8.73	2.20	2.56	
+10 (+50)	992	250	291	96	1.42	0.00	10.35	2.61	3.03	
+15 (+59)	1189	300	348	97	1.44	0.00	12.28	3.10	3.60	

TEST CONDITIONS: @100V50Hz		ASHRAE32 Fan			(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]
-5 (+23)	487	123	143	82	1.33	0.00	5.93	1.49	1.74	
0 (+32)	612	154	179	91	1.39	0.00	6.68	1.68	1.96	
+5 (+41)	757	191	222	98	1.44	0.00	7.69	1.94	2.25	
+10 (+50)	921	232	270	103	1.49	0.00	8.96	2.26	2.63	
+15 (+59)	1104	278	324	105	1.53	0.00	10.50	2.65	3.08	

TEST CONDITIONS: @100V60Hz		ASHRAE32 Fan			(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]	[W/W]
-5 (+23)	730	184	214	80	1.19	0.00	9.13	2.30	2.68	
0 (+32)	892	225	261	84	1.22	0.00	10.60	2.67	3.11	
+5 (+41)	1081	272	317	86	1.25	0.00	12.50	3.15	3.66	
+10 (+50)	1299	327	381	88	1.27	0.00	14.82	3.74	4.34	
+15 (+59)	1545	389	453	88	1.27	0.00	17.58	4.43	5.15	

TEST CONDITIONS: @100V60Hz		ASHRAE32 Fan			(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]
-5 (+23)	698	176	205	92	1.25	0.00	7.57	1.91	2.22	
0 (+32)	851	214	249	97	1.30	0.00	8.71	2.19	2.55	
+5 (+41)	1033	260	303	101	1.34	0.00	10.25	2.58	3.00	
+10 (+50)	1243	313	364	102	1.37	0.00	12.18	3.07	3.57	
+15 (+59)	1483	374	435	102	1.40	0.00	14.52	3.66	4.25	

E - PERFORMANCE - CURVES

TEST CONDITIONS: @100V60Hz		ASHRAE32 Fan			(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]
-5	(+23)	654	165	192	98	1.30	0.00	6.65	1.68	1.95
0	(+32)	797	201	234	106	1.36	0.00	7.50	1.89	2.20
+5	(+41)	970	244	284	111	1.42	0.00	8.72	2.20	2.55
+10	(+50)	1172	295	344	114	1.48	0.00	10.29	2.59	3.02
+15	(+59)	1405	354	412	115	1.53	0.00	12.23	3.08	3.58

TEST CONDITIONS: @100V60Hz		ASHRAE32 Fan			(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]
-5	(+23)	598	151	175	98	1.33	0.00	6.08	1.53	1.78
0	(+32)	730	184	214	110	1.42	0.00	6.66	1.68	1.95
+5	(+41)	892	225	261	118	1.50	0.00	7.58	1.91	2.22
+10	(+50)	1086	274	318	123	1.58	0.00	8.82	2.22	2.59
+15	(+59)	1310	330	384	126	1.67	0.00	10.39	2.62	3.05

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	Straight		
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		