

### COMPRESSOR DEFINITION

Designation	EM 28HNR
Nominal Voltage/Frequency	220 V 50-60 Hz
Engineering Number	513303650

### A - APPLICATION / LIMIT WORKING CONDITIONS

1 Type	Hermetic reciprocating compressor		
2 Refrigerant	R-134a		
3 Nominal voltage and frequency	220 / 50-60	[ V / Hz ]	
4 Application type	Low Back Pressure		
4.1 Evaporating temperature range	-35°C to -10°C	(-31°F to 14°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)	-	-	-
8.4 HBP (43°C Ambient temperature)	-	-	-
9 Maximum condensing pressures/temperature			
9.1 Operating (gauge)	16.2	[kgf/cm <sup>2</sup> ] (230 psig)	/ °C - °F
9.2 Peak (gauge)	20.6	[kgf/cm <sup>2</sup> ] (293 psig)	/ °C - °F
10 Maximum winding temperature	130	[ °C ]	

### B - MECHANICAL DATA

1 Commercial designation	1/10	[hp]
2 Displacement	3.00	[cm <sup>3</sup> ] (0.183 cu.in)
2.1 Bore [mm]	19.000	
2.2 Stroke [mm]	10.600	
3 Lubricant charge	170	[ml] (5.75 fl.oz.)
3.1 Lubricants approved		
3.2 Lubricants type/viscosity	ESTER / ISO10	
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	220 V 50-60 Hz 1 ~ (Single phase)	
2 Starting device type	Current Relay	
2.1 Starting device	213514016	
3 Start capacitor	53-64(220)	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	4TM718MFBYY-53	
6 Start winding resistance	34.20	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	23.55	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (50/60 Hz)	9.00/8.50	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (50/60 Hz)	0.80/0.85	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (50/60 Hz)	-	[A] - Measured according to UL 984
11 Approval boards certification	TUV	

### D - PERFORMANCE - CHECK POINT DATA

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]
245	62	72	76	0.75	1.39	3.22	0.81	0.94

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]
280	71	82	78	0.65	1.59	3.59	0.90	1.05

### 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)	115	29	34	61	0.76	0.65	0.00	0.00	0.00
-30 (-22)	173	44	51	70	0.80	0.98	0.00	0.00	0.00
-25 (-13)	249	63	73	74	0.79	1.42	0.00	0.00	0.00
-20 (- 4)	344	87	101	76	0.76	1.96	0.00	0.00	0.00
-15 (+ 5)	455	115	133	81	0.74	2.60	0.00	0.00	0.00
-10 (+14)	582	147	171	91	0.78	3.34	0.00	0.00	0.00

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)	76	19	22	53	0.67	0.43	0.00	0.00	0.00
-30 (-22)	134	34	39	69	0.83	0.76	0.00	0.00	0.00
-25 (-13)	209	53	61	78	0.88	1.19	0.00	0.00	0.00
-20 (- 4)	299	75	88	83	0.87	1.70	0.00	0.00	0.00
-15 (+ 5)	403	102	118	87	0.84	2.30	0.00	0.00	0.00
-10 (+14)	520	131	153	92	0.80	2.98	0.00	0.00	0.00

### 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]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35 (-31)	34	9	10	4	0.06	0.19	0.00	0.00	0.00	
-30 (-22)	94	24	27	39	0.44	0.53	0.00	0.00	0.00	
-25 (-13)	167	42	49	62	0.68	0.95	0.00	0.00	0.00	
-20 (- 4)	252	63	74	78	0.80	1.43	0.00	0.00	0.00	
-15 (+ 5)	349	88	102	90	0.86	1.99	0.00	0.00	0.00	
-10 (+14)	457	115	134	102	0.87	2.62	0.00	0.00	0.00	

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]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35 (-31)	136	34	40	55	0.60	0.77	2.48	0.63	0.73	
-30 (-22)	205	52	60	65	0.62	1.16	3.20	0.81	0.94	
-25 (-13)	299	75	87	75	0.65	1.69	3.98	1.00	1.17	
-20 (- 4)	414	104	121	86	0.69	2.36	4.80	1.21	1.41	
-15 (+ 5)	549	138	161	97	0.72	3.13	5.63	1.42	1.65	
-10 (+14)	699	176	205	109	0.76	4.00	6.44	1.62	1.89	

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]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35 (-31)	83	21	24	56	0.60	0.47	1.49	0.37	0.44	
-30 (-22)	152	38	44	67	0.62	0.86	2.29	0.58	0.67	
-25 (-13)	246	62	72	79	0.65	1.39	3.11	0.78	0.91	
-20 (- 4)	361	91	106	92	0.69	2.06	3.91	0.98	1.14	
-15 (+ 5)	495	125	145	106	0.74	2.83	4.66	1.17	1.37	
-10 (+14)	645	162	189	121	0.78	3.69	5.34	1.35	1.57	

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)	26	6	8	50	0.60	0.15	0.53	0.13	0.16	
-30 (-22)	91	23	27	62	0.62	0.52	1.47	0.37	0.43	
-25 (-13)	181	46	53	75	0.65	1.03	2.37	0.60	0.70	
-20 (- 4)	292	74	86	91	0.68	1.66	3.20	0.81	0.94	
-15 (+ 5)	421	106	123	107	0.73	2.40	3.93	0.99	1.15	
-10 (+14)	566	143	166	125	0.77	3.24	4.54	1.14	1.33	

### 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 plated steel		
3.1.2 Shape	Straight		
3.2 DISCHARGE	5 +0.18/-0.06	[mm]	(0.197" +0.007"/-0.002")
3.2.1 Material	Copper plated steel		
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 plated steel		
3.3.2 Shape	Straight		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		