

### COMPRESSOR DEFINITION

Designation	EM 45HNR
Nominal Voltage/Frequency	220 V 50-60 Hz
Engineering Number	513307098

### 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-Medium Back Pressure		
4.1 Evaporating temperature range	-35°C to -5°C	(-31°F to 23°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/Fan	187 to 242 V	187 to 242 V
8.2 LBP (43°C Ambient temperature)	Static/Fan	187 to 242 V	187 to 242 V
8.3 HBP (32°C Ambient temperature)	-	-	-
8.4 HBP (43°C Ambient temperature)	-	-	-
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	1/8	[hp]
2 Displacement	3.77	[cm <sup>3</sup> ] (0.230 cu.in)
2.1 Bore [mm]	19.000	
2.2 Stroke [mm]	13.300	
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)	7.52	[kg] (16.58 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	213514130/213515004	
3 Start capacitor	38-46(220)	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	4TM718MFBYY-53	
6 Start winding resistance	38.00	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	20.50	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (50/60 Hz)	9.50/9.00	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (50/60 Hz)	1.05/0.90	[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	CE - IRAM - TUV - UKCA - UL	

### 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]
330	83	97	100	0.87	1.88	3.30	0.83	0.97

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]
420	106	123	107	0.76	2.39	3.93	0.99	1.15

### 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)	172	43	51	73	0.84	0.98	2.36	0.60	0.69
-30	(-22)	244	62	72	82	0.85	1.38	2.98	0.75	0.87
-25	(-13)	324	82	95	90	0.86	1.84	3.62	0.91	1.06
-20	(- 4)	424	107	124	98	0.87	2.41	4.34	1.09	1.27
-15	(+ 5)	555	140	163	107	0.89	3.17	5.18	1.30	1.52
-10	(+14)	730	184	214	117	0.91	4.18	6.19	1.56	1.81
-5	(+23)	958	241	281	129	0.95	5.51	7.43	1.87	2.18

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)	140	35	41	71	0.84	0.79	1.98	0.50	0.58
-30	(-22)	217	55	64	82	0.86	1.23	2.64	0.66	0.77
-25	(-13)	297	75	87	92	0.87	1.69	3.26	0.82	0.95
-20	(- 4)	392	99	115	102	0.88	2.23	3.89	0.98	1.14
-15	(+ 5)	513	129	150	112	0.90	2.93	4.58	1.15	1.34
-10	(+14)	671	169	197	124	0.92	3.84	5.39	1.36	1.58
-5	(+23)	878	221	257	137	0.96	5.05	6.36	1.60	1.86

### 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]
-35	(-31)	76	19	22	66	0.83	0.43	1.16	0.29	0.34
-30	(-22)	165	42	48	79	0.85	0.94	1.98	0.50	0.58
-25	(-13)	252	63	74	92	0.87	1.43	2.70	0.68	0.79
-20	(- 4)	347	88	102	103	0.89	1.98	3.37	0.85	0.99
-15	(+ 5)	464	117	136	116	0.91	2.65	4.04	1.02	1.18
-10	(+14)	613	154	180	129	0.94	3.51	4.76	1.20	1.40
-5	(+23)	805	203	236	144	0.98	4.63	5.58	1.41	1.64

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]
-35	(-31)	206	52	60	74	0.68	1.17	2.79	0.70	0.82
-30	(-22)	294	74	86	86	0.71	1.67	3.44	0.87	1.01
-25	(-13)	409	103	120	97	0.74	2.32	4.20	1.06	1.23
-20	(- 4)	549	138	161	109	0.77	3.12	5.03	1.27	1.47
-15	(+ 5)	712	179	209	121	0.81	4.06	5.89	1.48	1.72
-10	(+14)	896	226	262	133	0.85	5.13	6.73	1.70	1.97
-5	(+23)	1099	277	322	147	0.90	6.32	7.51	1.89	2.20

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]
-35	(-31)	172	43	50	72	0.67	0.97	2.36	0.59	0.69
-30	(-22)	254	64	74	86	0.71	1.44	2.98	0.75	0.87
-25	(-13)	362	91	106	99	0.74	2.06	3.68	0.93	1.08
-20	(- 4)	495	125	145	113	0.78	2.82	4.42	1.11	1.29
-15	(+ 5)	651	164	191	127	0.82	3.72	5.15	1.30	1.51
-10	(+14)	829	209	243	142	0.87	4.75	5.84	1.47	1.71
-5	(+23)	1025	258	300	158	0.93	5.90	6.45	1.62	1.89

### E - PERFORMANCE - CURVES

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)	99	25	29	65	0.64	0.56	1.56	0.39	0.46
-30	(-22)	186	47	55	81	0.69	1.05	2.27	0.57	0.67
-25	(-13)	300	76	88	97	0.73	1.70	3.04	0.77	0.89
-20	(- 4)	438	110	128	114	0.78	2.49	3.81	0.96	1.12
-15	(+ 5)	599	151	176	132	0.84	3.42	4.55	1.15	1.33
-10	(+14)	781	197	229	150	0.90	4.47	5.22	1.32	1.53
-5	(+23)	982	248	288	170	0.98	5.65	5.77	1.45	1.69

### 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		