

COMPRESSOR DEFINITION

Designation	EM 20BR
Nominal Voltage/Frequency	220 V 60 Hz
Engineering Number	513307950

A - APPLICATION / LIMIT WORKING CONDITIONS

1 Type	Hermetic reciprocating compressor		
2 Refrigerant	Blend		
3 Nominal voltage and frequency	220 / 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	-	187 to 242 V
8.2 LBP (43°C Ambient temperature)	Static	-	187 to 242 V
8.3 HBP (32°C Ambient temperature)	Fan	-	187 to 242 V
8.4 HBP (43°C Ambient temperature)	Fan	-	187 to 242 V
9 Maximum condensing temperature			
9.1 Operating	14.5	[kgf/cm ²] (206 psig)	/ °C - °F
9.2 Peak	18.2	[kgf/cm ²] (259 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	200	[ml] (6.76 fl.oz.)
3.1 Lubricants approved		
3.2 Lubricants type/viscosity	MINERAL / ISO32	
4 Weight (with oil charge)	6.5	[kg] (14.33 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	220 V 60 Hz 1 ~ (Single phase)	
2 Starting device type	Current Relay	
2.1 Starting device	213514032	
3 Start capacitor	72-88(150)	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	4TM189NFBYY-53	
6 Start winding resistance	50.30	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	31.80	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (60 Hz)	6.00	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (60 Hz)	0.60	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (60 Hz)	0.70	[A] - Measured according to UL 984
11 Approval boards certification		

D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS: @220V60Hz			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]	
920	232	270	113	0.66	6.89	8.14	2.05	2.39	

TEST CONDITIONS: @220V60Hz			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]	
920	232	270	113	0.66	6.89	8.14	2.05	2.39	

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]	
200	50	59	69	0.50	1.46	2.90	0.73	0.85	

TEST CONDITIONS: @220V60Hz			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]	
200	50	59	69	0.50	1.46	2.90	0.73	0.85	

E - PERFORMANCE - CURVES

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)	85	21	25	53	0.45	0.62	1.60	0.40	0.47
-30	(-22)	136	34	40	59	0.47	1.00	2.31	0.58	0.68
-25	(-13)	198	50	58	65	0.50	1.45	3.03	0.76	0.89
-20	(- 4)	273	69	80	72	0.52	2.00	3.78	0.95	1.11
-15	(+ 5)	364	92	107	79	0.55	2.67	4.59	1.16	1.35
-10	(+14)	472	119	138	85	0.58	3.47	5.51	1.39	1.62
-5	(+23)	599	151	176	92	0.60	4.43	6.57	1.66	1.93
0	(+32)	748	189	219	97	0.62	5.56	7.80	1.96	2.28
+5	(+41)	922	232	270	101	0.63	6.89	9.23	2.32	2.70
+10	(+50)	1121	283	329	104	0.64	8.43	10.89	2.74	3.19
+15	(+59)	1349	340	395	104	0.64	10.20	12.82	3.23	3.76

E - PERFORMANCE - CURVES

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)	75	19	22	52	0.45	0.54	1.43	0.36	0.42
-30	(-22)	123	31	36	57	0.47	0.90	2.15	0.54	0.63
-25	(-13)	180	45	53	64	0.49	1.32	2.83	0.71	0.83
-20	(- 4)	250	63	73	72	0.52	1.83	3.49	0.88	1.02
-15	(+ 5)	334	84	98	80	0.55	2.45	4.17	1.05	1.22
-10	(+14)	434	109	127	88	0.58	3.20	4.90	1.23	1.44
-5	(+23)	553	139	162	96	0.61	4.09	5.71	1.44	1.67
0	(+32)	692	174	203	104	0.64	5.14	6.64	1.67	1.95
+5	(+41)	854	215	250	110	0.66	6.38	7.72	1.95	2.26
+10	(+50)	1041	262	305	116	0.68	7.83	8.99	2.27	2.63
+15	(+59)	1256	316	368	121	0.70	9.49	10.47	2.64	3.07

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)	44	11	13	49	0.44	0.32	0.89	0.22	0.26
-30	(-22)	92	23	27	55	0.46	0.67	1.71	0.43	0.50
-25	(-13)	148	37	43	62	0.49	1.08	2.42	0.61	0.71
-20	(- 4)	215	54	63	71	0.52	1.58	3.07	0.77	0.90
-15	(+ 5)	294	74	86	81	0.55	2.16	3.69	0.93	1.08
-10	(+14)	390	98	114	91	0.59	2.87	4.30	1.08	1.26
-5	(+23)	502	126	147	101	0.63	3.71	4.94	1.25	1.45
0	(+32)	634	160	186	111	0.67	4.71	5.65	1.42	1.66
+5	(+41)	787	198	231	121	0.70	5.89	6.46	1.63	1.89
+10	(+50)	965	243	283	130	0.74	7.25	7.41	1.87	2.17
+15	(+59)	1168	294	342	138	0.77	8.83	8.52	2.15	2.50

F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal AMEM		
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		