

### COMPRESSOR DEFINITION

Designation	EM 2U3111U
Nominal Voltage/Frequency	220-240 V 50-60 Hz
Engineering Number	513305613

### A - APPLICATION / LIMIT WORKING CONDITIONS

1 Type	Hermetic reciprocating compressor		
2 Refrigerant	R-290		
3 Nominal voltage and frequency	220-240 / 50-60	[ V / Hz ]	
4 Application type	Low-Medium Back Pressure (Light Commercial)		
4.1 Evaporating temperature range	-35°C to 0°C	(-31°F to 32°F)	
5 Motor type	RSCR		
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	198 to 255 V	198 to 255 V
8.2 LBP (43°C Ambient temperature)	Static	198 to 255 V	198 to 255 V
8.3 HBP (32°C Ambient temperature)	-	-	-
8.4 HBP (43°C Ambient temperature)	-	-	-
9 Maximum condensing temperature			
9.1 Operating	18.4	[kgf/cm <sup>2</sup> ] (262 psig)	/ °C - °F
9.2 Peak	20.6	[kgf/cm <sup>2</sup> ] (293 psig)	/ °C - °F
10 Maximum winding temperature	130	[ °C ]	

### B - MECHANICAL DATA

1 Commercial designation	1/6	[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	150	[ml] (5.07 fl.oz.)
3.1 Lubricants approved		
3.2 Lubricants type/viscosity	ALQUILB / ISO22	
4 Weight (with oil charge)	7.54	[kg] (16.62 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	220-240 V 50-60 Hz 1 ~ (Single phase)	
2 Starting device type	PTC	
2.1 Starting device	7M220MD3/8EA17C3/QPS2-A22MD3/QPS2-A22MD3 091	
3 Start capacitor	-	[µF(VAC minimum)]
4 Run capacitor	5(305)	[µF(VAC minimum)]
5 Motor protection	5TM189KFBYY-53	
6 Start winding resistance	18.77	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	24.13	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (50/60 Hz)	4.41/4.01	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (50/60 Hz)	-	[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]	
472	119	138	87	0.40	1.40	5.41	1.36	1.59	

TEST CONDITIONS: @220V50Hz			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]	
484	122	142	88	0.41	1.44	5.50	1.39	1.61	

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]	
567	143	166	101	0.48	1.69	5.60	1.41	1.64	

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]	
583	147	171	103	0.48	1.73	5.67	1.43	1.66	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V50Hz		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]
-35	(-31)	328	83	96	65	0.31	0.97	5.01	1.26	1.47
-30	(-22)	425	107	124	72	0.33	1.26	5.87	1.48	1.72
-25	(-13)	533	134	156	78	0.36	1.59	6.81	1.72	2.00
-20	(- 4)	658	166	193	84	0.39	1.96	7.87	1.98	2.30
-15	(+ 5)	802	202	235	89	0.41	2.40	9.08	2.29	2.66
-10	(+14)	970	244	284	93	0.43	2.92	10.49	2.64	3.07
-5	(+23)	1165	294	341	96	0.45	3.52	12.15	3.06	3.56
0	(+32)	1391	351	408	98	0.45	4.23	14.10	3.55	4.13

### E - PERFORMANCE - CURVES

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 45°C (+113°F))					
@220V50Hz		Fan								
Evaporating temperature	Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE			
	+/- 5%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	297	75	87	67	0.32	0.88	4.47	1.13	1.31	
-30 (-22)	388	98	114	74	0.35	1.15	5.22	1.31	1.53	
-25 (-13)	492	124	144	82	0.38	1.46	5.99	1.51	1.75	
-20 (- 4)	611	154	179	89	0.41	1.82	6.83	1.72	2.00	
-15 (+ 5)	750	189	220	96	0.44	2.25	7.78	1.96	2.28	
-10 (+14)	912	230	267	103	0.47	2.74	8.88	2.24	2.60	
-5 (+23)	1102	278	323	108	0.50	3.33	10.18	2.57	2.98	
0 (+32)	1322	333	387	113	0.52	4.02	11.72	2.95	3.43	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 55°C (+131°F))					
@220V50Hz		Fan								
Evaporating temperature	Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE			
	+/- 5%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	262	66	77	67	0.32	0.77	3.92	0.99	1.15	
-30 (-22)	350	88	103	75	0.35	1.04	4.64	1.17	1.36	
-25 (-13)	450	113	132	84	0.39	1.34	5.33	1.34	1.56	
-20 (- 4)	566	143	166	93	0.43	1.69	6.04	1.52	1.77	
-15 (+ 5)	701	177	205	103	0.47	2.10	6.81	1.72	2.00	
-10 (+14)	860	217	252	111	0.51	2.59	7.69	1.94	2.25	
-5 (+23)	1045	263	306	120	0.55	3.16	8.72	2.20	2.55	
0 (+32)	1262	318	370	127	0.58	3.83	9.93	2.50	2.91	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 65°C (+149°F))					
@220V50Hz		Fan								
Evaporating temperature	Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE			
	+/- 5%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	202	51	59	64	0.32	0.60	3.14	0.79	0.92	
-30 (-22)	289	73	85	74	0.35	0.86	3.91	0.98	1.14	
-25 (-13)	387	98	113	85	0.39	1.15	4.61	1.16	1.35	
-20 (- 4)	501	126	147	96	0.44	1.49	5.28	1.33	1.55	
-15 (+ 5)	634	160	186	107	0.49	1.90	5.96	1.50	1.75	
-10 (+14)	791	199	232	118	0.54	2.38	6.70	1.69	1.96	
-5 (+23)	974	245	285	129	0.59	2.94	7.54	1.90	2.21	
0 (+32)	1188	299	348	139	0.64	3.61	8.52	2.15	2.50	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V60Hz		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]
-35	(-31)	408	103	119	77	0.37	1.21	5.26	1.33	1.54
-30	(-22)	507	128	149	84	0.40	1.50	6.03	1.52	1.77
-25	(-13)	629	159	184	91	0.43	1.87	6.91	1.74	2.03
-20	(- 4)	776	196	227	98	0.46	2.32	7.95	2.00	2.33
-15	(+ 5)	951	240	279	104	0.49	2.85	9.15	2.31	2.68
-10	(+14)	1157	292	339	110	0.51	3.48	10.56	2.66	3.09
-5	(+23)	1397	352	409	115	0.53	4.22	12.20	3.07	3.57
0	(+32)	1673	422	490	118	0.55	5.09	14.08	3.55	4.13

TEST CONDITIONS: @220V60Hz		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]
-35	(-31)	364	92	107	79	0.38	1.08	4.66	1.17	1.37
-30	(-22)	466	117	136	87	0.41	1.38	5.39	1.36	1.58
-25	(-13)	587	148	172	95	0.45	1.75	6.17	1.55	1.81
-20	(- 4)	731	184	214	104	0.48	2.18	7.03	1.77	2.06
-15	(+ 5)	900	227	264	112	0.52	2.70	8.00	2.02	2.34
-10	(+14)	1098	277	322	120	0.56	3.30	9.10	2.29	2.67
-5	(+23)	1326	334	389	128	0.59	4.01	10.36	2.61	3.04
0	(+32)	1589	401	466	135	0.62	4.83	11.81	2.98	3.46

TEST CONDITIONS: @220V60Hz		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]
-35	(-31)	313	79	92	79	0.39	0.93	3.97	1.00	1.16
-30	(-22)	416	105	122	89	0.43	1.24	4.72	1.19	1.38
-25	(-13)	537	135	157	98	0.47	1.60	5.46	1.37	1.60
-20	(- 4)	677	171	198	109	0.51	2.02	6.21	1.56	1.82
-15	(+ 5)	839	212	246	119	0.56	2.51	7.00	1.76	2.05
-10	(+14)	1027	259	301	130	0.60	3.09	7.86	1.98	2.30
-5	(+23)	1244	313	364	141	0.65	3.76	8.81	2.22	2.58
0	(+32)	1492	376	437	151	0.69	4.53	9.89	2.49	2.90

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V60Hz		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]
-35	(-31)	248	62	73	79	0.40	0.73	3.10	0.78	0.91
-30	(-22)	352	89	103	89	0.44	1.04	3.94	0.99	1.16
-25	(-13)	470	119	138	100	0.48	1.40	4.70	1.18	1.38
-20	(- 4)	606	153	177	113	0.53	1.81	5.41	1.36	1.58
-15	(+ 5)	761	192	223	125	0.58	2.28	6.09	1.53	1.78
-10	(+14)	938	236	275	139	0.64	2.82	6.76	1.70	1.98
-5	(+23)	1142	288	335	153	0.69	3.45	7.47	1.88	2.19
0	(+32)	1374	346	403	167	0.75	4.18	8.23	2.07	2.41

### F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal		
2 Tray holder	No		
3 Connectors			
3.1 SUCTION	8.2 +0.12/-0.08	[mm]	(0.323" +0.005"/-0.003")
3.1.1 Material	Copper		
3.1.2 Shape	Straight		
3.2 DISCHARGE	6.5 +0.12/-0.08	[mm]	(0.256" +0.005"/-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		