

### COMPRESSOR DEFINITION

Designation	EM 2X3121U
Nominal Voltage/Frequency	220-240 V 50-60 Hz
Engineering Number	513304059

### 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	1/3	[hp]
2 Displacement	5.54	[cm <sup>3</sup> ] (0.338 cu.in)
2.1 Bore [mm]	21.000	
2.2 Stroke [mm]	16.000	
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)	8.05	[kg] (17.75 lb.)
5 Nitrogen charge	0.2 to 0.3	[kgf/cm <sup>2</sup> ] (2.84 to 4.27 psig)

### C - ELECTRICAL 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	8EA17C3/8EA17E61/8EA17E62/8EA17E63/QPS2-A22MD3	
3 Start capacitor	-	[µF(VAC minimum)]
4 Run capacitor	5(450)	[µF(VAC minimum)]
5 Motor protection	4TM302KFBYY-53	
6 Start winding resistance	20.80	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	11.70	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (50/60 Hz)	8.20/7.80	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (50/60 Hz)	1.80/1.70	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (50/60 Hz)	2.00/1.90	[A] - Measured according to UL 984
11 Approval boards certification	CE - IMTRO - IRAM - ISI - TUV - UKCA - VDE	

### 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 (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
918	231	269	165	0.83	2.73	5.58	1.41	1.64	

TEST CONDITIONS: @220V50Hz			ASHRAELBP32 Fan		Evaporating temperature (Condensing temperature)		-23.3°C (-9.94°F) 54.4°C (129.92°F)		
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
984	248	288	167	0.84	2.93	5.88	1.48	1.72	

TEST CONDITIONS: @220V60Hz			ASHRAELBP32 Static		Evaporating temperature (Condensing temperature)		-23.3°C (-9.94°F) 54.4°C (129.92°F)		
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
1123	283	329	197	0.90	3.34	5.72	1.44	1.68	

TEST CONDITIONS: @220V60Hz			ASHRAELBP32 Fan		Evaporating temperature (Condensing temperature)		-23.3°C (-9.94°F) 54.4°C (129.92°F)		
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
1186	299	348	199	0.91	3.53	5.95	1.50	1.74	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V50Hz		ASHRAE32 Fan				(Condensing temperature 35°C (+95°F))				
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
	°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]
-35	(-31)	600	151	176	116	0.62	1.77	5.17	1.30	1.51
-30	(-22)	781	197	229	129	0.68	2.32	6.02	1.52	1.76
-25	(-13)	981	247	288	142	0.73	2.92	6.92	1.74	2.03
-20	(- 4)	1211	305	355	153	0.78	3.61	7.92	2.00	2.32
-15	(+ 5)	1481	373	434	164	0.82	4.44	9.05	2.28	2.65
-10	(+14)	1802	454	528	174	0.86	5.43	10.34	2.61	3.03
-5	(+23)	2186	551	641	185	0.91	6.61	11.83	2.98	3.47
0	(+32)	2643	666	774	195	0.96	8.04	13.56	3.42	3.97

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V50Hz		ASHRAE32 Fan			(Condensing temperature 45°C (+113°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	582	147	171	123	0.65	1.72	4.74	1.19	1.39
-30	(-22)	761	192	223	139	0.72	2.26	5.47	1.38	1.60
-25	(-13)	954	240	279	153	0.78	2.84	6.22	1.57	1.82
-20	(- 4)	1172	295	343	167	0.83	3.50	7.04	1.77	2.06
-15	(+ 5)	1426	359	418	180	0.89	4.27	7.94	2.00	2.33
-10	(+14)	1728	435	506	192	0.94	5.20	8.97	2.26	2.63
-5	(+23)	2087	526	612	205	1.00	6.31	10.16	2.56	2.98
0	(+32)	2515	634	737	218	1.06	7.65	11.55	2.91	3.39

TEST CONDITIONS: @220V50Hz		ASHRAE32 Fan			(Condensing temperature 55°C (+131°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	534	135	156	126	0.66	1.58	4.25	1.07	1.25
-30	(-22)	713	180	209	144	0.74	2.12	4.93	1.24	1.45
-25	(-13)	902	227	264	161	0.81	2.68	5.59	1.41	1.64
-20	(- 4)	1112	280	326	178	0.88	3.32	6.27	1.58	1.84
-15	(+ 5)	1354	341	397	193	0.95	4.06	7.01	1.77	2.05
-10	(+14)	1639	413	480	209	1.02	4.93	7.83	1.97	2.30
-5	(+23)	1977	498	579	225	1.09	5.98	8.78	2.21	2.57
0	(+32)	2380	600	697	241	1.17	7.23	9.90	2.49	2.90

TEST CONDITIONS: @220V50Hz		ASHRAE32 Fan			(Condensing temperature 65°C (+149°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	456	115	134	125	0.66	1.35	3.66	0.92	1.07
-30	(-22)	639	161	187	146	0.75	1.90	4.34	1.09	1.27
-25	(-13)	828	209	243	166	0.83	2.46	4.96	1.25	1.45
-20	(- 4)	1033	260	303	186	0.92	3.08	5.57	1.40	1.63
-15	(+ 5)	1266	319	371	205	1.00	3.79	6.19	1.56	1.81
-10	(+14)	1537	387	451	224	1.08	4.62	6.87	1.73	2.01
-5	(+23)	1858	468	544	243	1.17	5.62	7.63	1.92	2.24
0	(+32)	2239	564	656	263	1.27	6.80	8.52	2.15	2.50

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V60Hz		ASHRAE32 Fan			(Condensing temperature 35°C (+95°F) )					
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
	°C	(°F)	[Btu/h]				[kcal/h]	[W]	[Btu/Wh]	[kcal/Wh]
-35	(-31)	729	184	214	136	0.62	2.16	5.34	1.35	1.56
-30	(-22)	945	238	277	154	0.71	2.80	6.13	1.55	1.80
-25	(-13)	1183	298	347	170	0.78	3.52	6.98	1.76	2.04
-20	(- 4)	1452	366	426	184	0.85	4.33	7.91	1.99	2.32
-15	(+ 5)	1764	445	517	197	0.90	5.28	8.95	2.26	2.62
-10	(+14)	2129	536	624	210	0.95	6.41	10.15	2.56	2.97
-5	(+23)	2557	644	749	222	1.00	7.74	11.53	2.91	3.38
0	(+32)	3060	771	897	233	1.04	9.30	13.14	3.31	3.85

TEST CONDITIONS: @220V60Hz		ASHRAE32 Fan			(Condensing temperature 45°C (+113°F) )					
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
	°C	(°F)	[Btu/h]				[kcal/h]	[W]	[Btu/Wh]	[kcal/Wh]
-35	(-31)	695	175	204	143	0.65	2.06	4.87	1.23	1.43
-30	(-22)	914	230	268	163	0.75	2.71	5.58	1.41	1.63
-25	(-13)	1149	290	337	182	0.84	3.42	6.30	1.59	1.85
-20	(- 4)	1412	356	414	200	0.92	4.21	7.05	1.78	2.07
-15	(+ 5)	1712	431	502	217	1.00	5.13	7.88	1.99	2.31
-10	(+14)	2061	519	604	233	1.07	6.20	8.82	2.22	2.59
-5	(+23)	2469	622	724	249	1.14	7.47	9.91	2.50	2.90
0	(+32)	2947	743	864	264	1.21	8.96	11.17	2.81	3.27

TEST CONDITIONS: @220V60Hz		ASHRAE32 Fan			(Condensing temperature 55°C (+131°F) )					
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
	°C	(°F)	[Btu/h]				[kcal/h]	[W]	[Btu/Wh]	[kcal/Wh]
-35	(-31)	624	157	183	144	0.66	1.85	4.33	1.09	1.27
-30	(-22)	849	214	249	168	0.77	2.52	5.02	1.27	1.47
-25	(-13)	1086	274	318	191	0.88	3.23	5.67	1.43	1.66
-20	(- 4)	1346	339	394	213	0.98	4.01	6.31	1.59	1.85
-15	(+ 5)	1639	413	480	235	1.08	4.91	6.99	1.76	2.05
-10	(+14)	1976	498	579	255	1.18	5.94	7.73	1.95	2.26
-5	(+23)	2368	597	694	276	1.28	7.16	8.56	2.16	2.51
0	(+32)	2824	712	828	296	1.38	8.58	9.54	2.40	2.79

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V60Hz		ASHRAE32 Fan			(Condensing temperature 65°C (+149°F) )					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	516	130	151	141	0.66	1.53	3.67	0.93	1.08
-30	(-22)	751	189	220	169	0.78	2.23	4.39	1.11	1.29
-25	(-13)	994	250	291	197	0.90	2.96	5.03	1.27	1.47
-20	(- 4)	1255	316	368	224	1.03	3.74	5.62	1.42	1.65
-15	(+ 5)	1544	389	452	250	1.15	4.62	6.20	1.56	1.82
-10	(+14)	1873	472	549	276	1.27	5.63	6.79	1.71	1.99
-5	(+23)	2252	567	660	302	1.40	6.81	7.44	1.88	2.18
0	(+32)	2691	678	789	329	1.53	8.18	8.19	2.06	2.40

### F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal EUEM		
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		