

### COMPRESSOR DEFINITION

Designation	EM 2X3121U
Nominal Voltage/Frequency	220-240 V 50-60 Hz
Engineering Number	513304101

### 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 - Curves until T.Evap -4		
4.1 Evaporating temperature range	-40°C to 0°C	(-40°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/Fan	198 to 255 V	198 to 255 V
8.2 LBP (43°C Ambient temperature)	Static/Fan	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	180	[ml] (6.09 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 - 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	8EA17C3/8EA17E61/8EA17E62/8EA17E63/QPS2-A22MD3	
3 Start capacitor	-	[µF(VAC minimum)]
4 Run capacitor	5(450)	[µF(VAC minimum)]
5 Motor protection	4TM232RFBYY-53	
6 Start winding resistance	20.68	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	14.06	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (50/60 Hz)	8.10/7.50	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (50/60 Hz)	1.00/0.72	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (50/60 Hz)	1.29/0.98	[A] - Measured according to UL 984
11 Approval boards certification	IRAM - TUV	

### D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS: <b>@220V50Hz</b>			<b>ASHRAELBP32</b> <b>Static</b>		Evaporating temperature (Condensing temperature		<b>-23.3°C (-9.94°F)</b> <b>54.4°C (129.92°F)</b>		
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]	
961	242	282	164	0.83	2.86	5.86	1.48	1.72	

TEST CONDITIONS: <b>@220V50Hz</b>			<b>ASHRAELBP32</b> <b>Fan</b>		Evaporating temperature (Condensing temperature		<b>-23.3°C (-9.94°F)</b> <b>54.4°C (129.92°F)</b>		
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]	
988	249	290	165	0.84	2.94	5.99	1.51	1.76	

TEST CONDITIONS: <b>@220V60Hz</b>			<b>ASHRAELBP32</b> <b>Static</b>		Evaporating temperature (Condensing temperature		<b>-23.3°C (-9.94°F)</b> <b>54.4°C (129.92°F)</b>		
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]	
1169	295	343	192	0.88	3.48	6.09	1.53	1.78	

TEST CONDITIONS: <b>@220V60Hz</b>			<b>ASHRAELBP32</b> <b>Fan</b>		Evaporating temperature (Condensing temperature		<b>-23.3°C (-9.94°F)</b> <b>54.4°C (129.92°F)</b>		
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]	
1199	302	351	193	0.89	3.57	6.21	1.56	1.82	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: <b>@220V50Hz</b>		<b>ASHRAE32</b> <b>Fan</b>					(Condensing temperature <b>35°C (+95°F)</b> )			
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]
<b>-40</b>	<b>(-40)</b>	543	137	159	107	0.64	1.60	5.03	1.27	1.47
<b>-35</b>	<b>(-31)</b>	671	169	197	120	0.67	1.99	5.59	1.41	1.64
<b>-30</b>	<b>(-22)</b>	830	209	243	132	0.71	2.46	6.29	1.58	1.84
<b>-25</b>	<b>(-13)</b>	1024	258	300	144	0.76	3.05	7.13	1.80	2.09
<b>-20</b>	<b>(- 4)</b>	1255	316	368	155	0.81	3.75	8.14	2.05	2.38
<b>-15</b>	<b>(+ 5)</b>	1528	385	448	165	0.86	4.58	9.30	2.34	2.73
<b>-10</b>	<b>(+14)</b>	1844	465	540	174	0.90	5.55	10.64	2.68	3.12
<b>-5</b>	<b>(+23)</b>	2208	556	647	182	0.93	6.68	12.15	3.06	3.56
<b>0</b>	<b>(+32)</b>	2622	661	768	189	0.95	7.97	13.84	3.49	4.05

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V50Hz		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]	[W/W]
-40	(-40)	493	124	144	109	0.65	1.46	4.52	1.14	1.32
-35	(-31)	623	157	182	124	0.69	1.84	5.03	1.27	1.47
-30	(-22)	781	197	229	138	0.74	2.32	5.64	1.42	1.65
-25	(-13)	972	245	285	152	0.79	2.89	6.35	1.60	1.86
-20	(- 4)	1199	302	351	166	0.85	3.58	7.17	1.81	2.10
-15	(+ 5)	1464	369	429	180	0.91	4.39	8.11	2.04	2.38
-10	(+14)	1772	446	519	193	0.97	5.33	9.17	2.31	2.69
-5	(+23)	2124	535	622	205	1.02	6.42	10.37	2.61	3.04
0	(+32)	2525	636	740	217	1.07	7.68	11.70	2.95	3.43

TEST CONDITIONS: @220V50Hz		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]	[W/W]
-40	(-40)	438	110	128	111	0.67	1.29	3.97	1.00	1.16
-35	(-31)	568	143	166	127	0.71	1.68	4.48	1.13	1.31
-30	(-22)	724	183	212	143	0.76	2.15	5.05	1.27	1.48
-25	(-13)	911	230	267	160	0.82	2.71	5.68	1.43	1.66
-20	(- 4)	1131	285	331	177	0.89	3.37	6.37	1.61	1.87
-15	(+ 5)	1388	350	407	193	0.96	4.16	7.14	1.80	2.09
-10	(+14)	1684	424	493	210	1.04	5.07	7.99	2.01	2.34
-5	(+23)	2023	510	593	226	1.11	6.12	8.92	2.25	2.61
0	(+32)	2409	607	706	243	1.18	7.32	9.95	2.51	2.92

TEST CONDITIONS: @220V50Hz		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]
-40	(-40)	379	96	111	113	0.69	1.12	3.31	0.83	0.97
-35	(-31)	507	128	149	130	0.73	1.50	3.88	0.98	1.14
-30	(-22)	660	166	193	148	0.78	1.96	4.47	1.13	1.31
-25	(-13)	840	212	246	167	0.85	2.50	5.06	1.28	1.48
-20	(- 4)	1052	265	308	186	0.93	3.14	5.68	1.43	1.67
-15	(+ 5)	1298	327	380	206	1.02	3.89	6.33	1.60	1.86
-10	(+14)	1582	399	463	226	1.11	4.76	7.02	1.77	2.06
-5	(+23)	1906	480	559	246	1.20	5.76	7.75	1.95	2.27
0	(+32)	2275	573	667	266	1.29	6.91	8.52	2.15	2.50

### E - PERFORMANCE - CURVES

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 35°C (+95°F))					
@220V60Hz		Fan								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-40	(-40)	628	158	184	120	0.55	1.85	5.21	1.31	1.53
-35	(-31)	798	201	234	136	0.62	2.36	5.84	1.47	1.71
-30	(-22)	1002	252	294	153	0.70	2.97	6.54	1.65	1.92
-25	(-13)	1242	313	364	169	0.77	3.69	7.35	1.85	2.15
-20	(- 4)	1521	383	446	185	0.84	4.54	8.27	2.08	2.42
-15	(+ 5)	1841	464	539	198	0.91	5.52	9.33	2.35	2.73
-10	(+14)	2205	556	646	210	0.97	6.64	10.54	2.66	3.09
-5	(+23)	2616	659	767	220	1.01	7.91	11.93	3.01	3.50
0	(+32)	3076	775	901	226	1.04	9.35	13.51	3.40	3.96

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 45°C (+113°F))					
@220V60Hz		Fan								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-40	(-40)	569	143	167	122	0.56	1.68	4.68	1.18	1.37
-35	(-31)	739	186	216	140	0.64	2.19	5.26	1.33	1.54
-30	(-22)	941	237	276	159	0.73	2.79	5.89	1.48	1.72
-25	(-13)	1180	297	346	179	0.82	3.51	6.56	1.65	1.92
-20	(- 4)	1457	367	427	198	0.91	4.35	7.31	1.84	2.14
-15	(+ 5)	1775	447	520	217	1.00	5.32	8.15	2.05	2.39
-10	(+14)	2136	538	626	234	1.08	6.43	9.10	2.29	2.67
-5	(+23)	2544	641	745	250	1.16	7.69	10.18	2.56	2.98
0	(+32)	3000	756	879	264	1.22	9.12	11.40	2.87	3.34

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 55°C (+131°F))					
@220V60Hz		Fan								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-40	(-40)	505	127	148	124	0.57	1.49	4.11	1.04	1.20
-35	(-31)	671	169	197	143	0.65	1.98	4.71	1.19	1.38
-30	(-22)	869	219	255	164	0.75	2.58	5.30	1.34	1.55
-25	(-13)	1103	278	323	186	0.85	3.28	5.90	1.49	1.73
-20	(- 4)	1375	346	403	210	0.96	4.10	6.52	1.64	1.91
-15	(+ 5)	1687	425	494	233	1.07	5.05	7.19	1.81	2.11
-10	(+14)	2042	515	598	256	1.18	6.14	7.93	2.00	2.32
-5	(+23)	2443	616	716	279	1.29	7.39	8.75	2.20	2.56
0	(+32)	2892	729	847	300	1.39	8.79	9.67	2.44	2.83

### 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]
-40	(-40)	436	110	128	124	0.58	1.29	3.45	0.87	1.01
-35	(-31)	594	150	174	145	0.66	1.76	4.11	1.04	1.21
-30	(-22)	785	198	230	168	0.76	2.33	4.72	1.19	1.38
-25	(-13)	1010	255	296	193	0.88	3.00	5.29	1.33	1.55
-20	(- 4)	1273	321	373	220	1.01	3.80	5.84	1.47	1.71
-15	(+ 5)	1576	397	462	247	1.14	4.72	6.39	1.61	1.87
-10	(+14)	1922	484	563	276	1.28	5.78	6.97	1.76	2.04
-5	(+23)	2313	583	678	305	1.41	6.99	7.58	1.91	2.22
0	(+32)	2751	693	806	333	1.55	8.36	8.24	2.08	2.41

### F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal EUEM		
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	Slanted 42° up + 45° to Back		
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 30° up + 24° to Back		
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	Slanted 45° up + 45° to Back		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		