

### COMPRESSOR DEFINITION

Designation	VEM Z9C
Nominal Voltage/Frequency	230 V 53-150 Hz
Engineering Number	513902022

### A - APPLICATION / LIMIT WORKING CONDITIONS

1 Type	Hermetic reciprocating compressor		
2 Refrigerant	R-600a		
3 Nominal voltage and frequency	230 / 53-150	[ V / Hz ]	
4 Application type	Low Back Pressure		
4.1 Evaporating temperature range	-35°C to -10°C	(-31°F to 14°F)	
5 Motor type	BPM		
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	80 to 140 V	80 to 140 V
8.2 LBP (43°C Ambient temperature)	Static	80 to 140 V	80 to 140 V
8.3 HBP (32°C Ambient temperature)	-	-	-
8.4 HBP (43°C Ambient temperature)	-	-	-
9 Maximum condensing temperature			
9.1 Operating	6.9	[kgf/cm <sup>2</sup> ] (98 psig)	/ °C - °F
9.2 Peak	7.8	[kgf/cm <sup>2</sup> ] (111 psig)	/ °C - °F
10 Maximum winding temperature	130	[ °C ]	

### B - MECHANICAL DATA

1 Commercial designation	1/5	[hp]
2 Displacement	9.34	[cm <sup>3</sup> ] (0.570 cu.in)
2.1 Bore [mm]	26.000	
2.2 Stroke [mm]	17.600	
3 Lubricant charge	220	[ml] (7.44 fl.oz.)
3.1 Lubricants approved		
3.2 Lubricants type/viscosity	ALQUILB / ISO5	
4 Weight (with oil charge)	7.59	[kg] (16.73 lb.)
5 Nitrogen charge	-	[kgf/cm <sup>2</sup> ]

### C - ELETRICAL DATA

1 Nominal Voltage/Frequency/Number of Phases	230 V 53-150 Hz 3 ~ (Three phase)	
2 Starting device type	Inverter	
2.1 Starting device	VCC31156XXXX	
3 Start capacitor	-	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	MSP59AMN-6	
6 Start winding resistance	16.07	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	16.07	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (53/15 Hz)	-	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (53/15 Hz)	-	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (53/15 Hz)	-	[A] - Measured according to UL 984
11 Approval boards certification		

### D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS: @115V1600RPM			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]	
325	82	95	51	0.71	1.02	6.34	1.60	1.86	

TEST CONDITIONS: @115V2000RPM			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]	
366	92	107	59	0.80	1.15	6.26	1.58	1.83	

TEST CONDITIONS: @115V3000RPM			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]	
562	142	165	90	1.20	1.76	6.22	1.57	1.82	

TEST CONDITIONS: @115V4500RPM			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]	
852	215	250	147	1.75	2.68	5.80	1.46	1.70	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @115V1600RPM		ASHRAE32 Static				(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)	179	45	52	30	0.24	0.56	6.02	1.52	1.76
-30	(-22)	239	60	70	35	0.28	0.75	6.74	1.70	1.97
-25	(-13)	312	79	91	41	0.33	0.98	7.52	1.89	2.20
-20	(- 4)	399	101	117	47	0.38	1.25	8.42	2.12	2.47
-15	(+ 5)	502	127	147	53	0.42	1.58	9.49	2.39	2.78
-10	(+14)	624	157	183	58	0.45	1.97	10.80	2.72	3.16

### E - PERFORMANCE - CURVES

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 45°C (+113°F))					
@115V1600RPM		Static								
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)	166	42	49	31	0.26	0.52	5.30	1.34	1.55	
-30 (-22)	226	57	66	38	0.31	0.71	6.00	1.51	1.76	
-25 (-13)	299	75	88	45	0.36	0.94	6.68	1.68	1.96	
-20 (- 4)	386	97	113	52	0.41	1.21	7.40	1.87	2.17	
-15 (+ 5)	489	123	143	59	0.46	1.54	8.22	2.07	2.41	
-10 (+14)	610	154	179	66	0.51	1.92	9.19	2.32	2.69	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 55°C (+131°F))					
@115V1600RPM		Static								
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)	150	38	44	33	0.27	0.47	4.50	1.13	1.32	
-30 (-22)	210	53	62	40	0.32	0.66	5.30	1.34	1.55	
-25 (-13)	283	71	83	47	0.37	0.89	6.01	1.51	1.76	
-20 (- 4)	370	93	108	56	0.43	1.16	6.68	1.68	1.96	
-15 (+ 5)	473	119	139	64	0.50	1.49	7.36	1.86	2.16	
-10 (+14)	594	150	174	73	0.57	1.87	8.12	2.05	2.38	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 35°C (+95°F))					
@115V2000RPM		Static								
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)	225	57	66	37	0.30	0.70	6.07	1.53	1.78	
-30 (-22)	300	76	88	44	0.35	0.94	6.76	1.70	1.98	
-25 (-13)	390	98	114	52	0.41	1.22	7.49	1.89	2.19	
-20 (- 4)	498	126	146	60	0.47	1.57	8.32	2.10	2.44	
-15 (+ 5)	627	158	184	67	0.52	1.97	9.32	2.35	2.73	
-10 (+14)	778	196	228	74	0.57	2.45	10.54	2.66	3.09	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 45°C (+113°F))					
@115V2000RPM		Static								
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)	208	52	61	39	0.32	0.65	5.36	1.35	1.57	
-30 (-22)	283	71	83	47	0.38	0.89	6.03	1.52	1.77	
-25 (-13)	374	94	109	56	0.44	1.17	6.67	1.68	1.96	
-20 (- 4)	482	121	141	65	0.51	1.51	7.34	1.85	2.15	
-15 (+ 5)	610	154	179	75	0.58	1.92	8.11	2.04	2.38	
-10 (+14)	762	192	223	84	0.65	2.40	9.03	2.28	2.65	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @115V2000RPM		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)	189	48	55	41	0.33	0.59	4.54	1.14	1.33	
-30 (-22)	264	67	77	49	0.39	0.83	5.34	1.34	1.56	
-25 (-13)	354	89	104	59	0.46	1.11	6.02	1.52	1.77	
-20 (- 4)	462	117	136	70	0.54	1.45	6.67	1.68	1.95	
-15 (+ 5)	591	149	173	81	0.62	1.86	7.34	1.85	2.15	
-10 (+14)	742	187	217	92	0.70	2.34	8.09	2.04	2.37	

TEST CONDITIONS: @115V3000RPM		ASHRAE32 Static			(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]	[W/W]
-35 (-31)	338	85	99	55	0.44	1.06	6.13	1.54	1.80	
-30 (-22)	450	113	132	67	0.52	1.41	6.73	1.70	1.97	
-25 (-13)	585	147	171	80	0.61	1.84	7.35	1.85	2.15	
-20 (- 4)	747	188	219	93	0.71	2.35	8.06	2.03	2.36	
-15 (+ 5)	939	237	275	105	0.80	2.95	8.91	2.25	2.61	
-10 (+14)	1165	294	341	117	0.88	3.67	9.97	2.51	2.92	

TEST CONDITIONS: @115V3000RPM		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)	314	79	92	58	0.46	0.98	5.46	1.38	1.60	
-30 (-22)	426	107	125	70	0.55	1.34	6.10	1.54	1.79	
-25 (-13)	562	142	165	84	0.65	1.76	6.68	1.68	1.96	
-20 (- 4)	723	182	212	99	0.76	2.27	7.27	1.83	2.13	
-15 (+ 5)	915	231	268	115	0.87	2.88	7.92	1.99	2.32	
-10 (+14)	1141	287	334	131	0.98	3.60	8.69	2.19	2.55	

TEST CONDITIONS: @115V3000RPM		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)	286	72	84	62	0.49	0.90	4.63	1.17	1.36	
-30 (-22)	398	100	117	73	0.57	1.25	5.44	1.37	1.59	
-25 (-13)	533	134	156	87	0.67	1.67	6.10	1.54	1.79	
-20 (- 4)	695	175	204	104	0.79	2.18	6.68	1.68	1.96	
-15 (+ 5)	887	224	260	123	0.92	2.79	7.24	1.83	2.12	
-10 (+14)	1113	280	326	142	1.06	3.51	7.85	1.98	2.30	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @115V4500RPM		ASHRAE32 Static			(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]	[W/W]
-35 (-31)	483	122	142	85	0.65	1.51	5.65	1.42	1.66	
-30 (-22)	653	165	191	105	0.79	2.05	6.22	1.57	1.82	
-25 (-13)	857	216	251	126	0.95	2.69	6.80	1.71	1.99	
-20 (- 4)	1101	277	323	148	1.11	3.46	7.44	1.88	2.18	
-15 (+ 5)	1390	350	407	169	1.26	4.37	8.22	2.07	2.41	
-10 (+14)	1731	436	507	189	1.40	5.46	9.18	2.31	2.69	

TEST CONDITIONS: @115V4500RPM		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)	440	111	129	88	0.67	1.38	5.01	1.26	1.47	
-30 (-22)	609	154	179	108	0.82	1.91	5.63	1.42	1.65	
-25 (-13)	813	205	238	131	0.99	2.55	6.18	1.56	1.81	
-20 (- 4)	1057	266	310	157	1.18	3.32	6.72	1.69	1.97	
-15 (+ 5)	1346	339	394	184	1.37	4.24	7.31	1.84	2.14	
-10 (+14)	1687	425	494	210	1.56	5.32	8.01	2.02	2.35	

TEST CONDITIONS: @115V4500RPM		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)	388	98	114	92	0.70	1.22	4.20	1.06	1.23	
-30 (-22)	557	140	163	111	0.84	1.75	4.99	1.26	1.46	
-25 (-13)	761	192	223	135	1.01	2.39	5.63	1.42	1.65	
-20 (- 4)	1005	253	294	163	1.22	3.16	6.18	1.56	1.81	
-15 (+ 5)	1294	326	379	194	1.44	4.07	6.70	1.69	1.96	
-10 (+14)	1634	412	479	225	1.67	5.16	7.25	1.83	2.12	

### 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	4.94 +0.08/-0.08	[mm]	(0.194" +0.003"/-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		