COMPRESSOR DEFINITION

Designation	**VES C13C**
Nominal Voltage/Frequency	**230 V 40-150 Hz**
Engineering Number	**513907249**

A - APPLICATION / LIMIT WORKING CONDITIONS

1 Type	Hermetic reciprocating compressor		
2 Refrigerant	R-600a		
3 Nominal voltage and frequency	230 / 40-150	[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 Expantion device	Capillary tube		
8 Compressor cooling		Operating voltage range	
		50 Hz	60 Hz
8.1 LBP (32ºC Ambient temperature)	-	-	-
8.2 LBP (43ºC Ambient temperature)	-	-	-
8.3 HBP (32ºC Ambient temperature)	-	-	-
8.4 HBP (43ºC Ambient temperature)	-	-	-
9 Maximum condensing temperature			
9.1 Operating	6.9	[kgf/cm²] (98 psig)	/ ºC - ºF
9.2 Peak	7.8	[kgf/cm²] (111 psig)	/ ºC - ºF
10 Maximum winding temperature	130	[°C]	

B - MECHANICAL DATA

1 Commercial designation	1/5	[hp]
2 Displacement	13.27	[cm³] (0.810 cu.in)
2.1 Bore [mm]	26.000	
2.2 Stroke [mm]	25.000	
3 Lubricant charge	190	[ml] (6.42 fl.oz.)
3.1 Lubricants approved		
3.2 Lubricants type/viscosity	ALQUILB / ISO5	
4 Weight (with oil charge)	6.75	[kg] (14.88 lb.)
5 Nitrogen charge	-	[kgf/cm²]

C - ELETRICAL DATA

1 Nominal Voltage/Frequency/Number of Phases	230 V 40-150 Hz 3 ~ (Three phase)	
2 Starting device type	Inverter	
2.1 Starting device	CF02B11 L XX XX/CF02B11 M XX XX/VCC31156UXXX	
3 Start capacitor	-	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	INVERTER CF02B11 L X	
6 Start winding resistance		[Ω at 25ºC (77ºF)] +/- 8%
7 Run winding resistance		[Ω at 25ºC (77ºF)] +/- 8%
8 LRA - Locked rotor amperage (40/150 Hz)	-	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (40/150 Hz)	-	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (40/150 Hz)	-	[A] - Measured according to UL 984
11 Approval boards certification		

D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS:			**ASHRAELBP32**			Evaporating temperature		**-23.3°C (-9.94°F)**
@115V1300RPM			**Static**			(Condensing temperature		**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]
346	87	101	55	0.80	1.09	6.30	1.59	1.85

TEST CONDITIONS:			**ASHRAELBP32**			Evaporating temperature		**-23.3°C (-9.94°F)**
@115V2000RPM			**Static**			(Condensing temperature		**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]
536	135	157	82	1.16	1.68	6.51	1.64	1.91

TEST CONDITIONS:			**ASHRAELBP32**			Evaporating temperature		**-23.3°C (-9.94°F)**
@115V3000RPM			**Static**			(Condensing temperature		**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]
796	201	233	127	1.70	2.50	6.28	1.58	1.84

TEST CONDITIONS:			**ASHRAELBP32**			Evaporating temperature		**-23.3°C (-9.94°F)**
@115V4500RPM			**Static**			(Condensing temperature		**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]
1006	254	295	179	2.38	3.16	5.64	1.42	1.65

E - PERFORMANCE - CURVES

TEST CONDITIONS:		**ASHRAE32**					(Condensing temperature **35ºC (+95ºF))**			
@115V2000RPM		**Static**								
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)**	326	82	95	52	0.48	1.02	6.31	1.59	1.85
-30	**(-22)**	431	109	126	61	0.56	1.35	7.02	1.77	2.06
-25	**(-13)**	558	141	164	71	0.64	1.75	7.86	1.98	2.30
-20	**(- 4)**	713	180	209	81	0.73	2.24	8.82	2.22	2.58
-15	**(+ 5)**	900	227	264	91	0.82	2.83	9.88	2.49	2.90
-10	**(+14)**	1122	283	329	102	0.91	3.54	11.04	2.78	3.23

E - PERFORMANCE - CURVES

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **45ºC (+113ºF))**
@115V2000RPM **Static**

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)**	299	75	88	54	0.49	0.94	5.59	1.41	1.64
-30	**(-22)**	399	101	117	64	0.58	1.25	6.23	1.57	1.83
-25	**(-13)**	524	132	153	75	0.68	1.64	6.97	1.76	2.04
-20	**(- 4)**	677	171	198	86	0.77	2.13	7.81	1.97	2.29
-15	**(+ 5)**	863	218	253	99	0.88	2.72	8.73	2.20	2.56
-10	**(+14)**	1087	274	319	112	0.99	3.43	9.71	2.45	2.85

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **55ºC (+131ºF))**
@115V2000RPM **Static**

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)**	285	72	83	55	0.51	0.89	5.21	1.31	1.53
-30	**(-22)**	377	95	111	66	0.61	1.18	5.75	1.45	1.69
-25	**(-13)**	496	125	145	78	0.71	1.56	6.37	1.61	1.87
-20	**(- 4)**	645	163	189	91	0.83	2.03	7.06	1.78	2.07
-15	**(+ 5)**	829	209	243	106	0.95	2.61	7.80	1.97	2.29
-10	**(+14)**	1052	265	308	122	1.08	3.32	8.59	2.16	2.52

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **35ºC (+95ºF))**
@115V3000RPM **Static**

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)**	475	120	139	80	0.73	1.49	5.91	1.49	1.73
-30	**(-22)**	634	160	186	95	0.85	1.99	6.69	1.69	1.96
-25	**(-13)**	811	204	238	109	0.97	2.54	7.43	1.87	2.18
-20	**(- 4)**	1018	256	298	125	1.10	3.20	8.14	2.05	2.39
-15	**(+ 5)**	1267	319	371	143	1.25	3.99	8.86	2.23	2.60
-10	**(+14)**	1572	396	461	163	1.42	4.96	9.62	2.42	2.82

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **45ºC (+113ºF))**
@115V3000RPM **Static**

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)**	450	113	132	82	0.74	1.41	5.48	1.38	1.61
-30	**(-22)**	615	155	180	99	0.88	1.93	6.17	1.56	1.81
-25	**(-13)**	794	200	233	117	1.03	2.49	6.82	1.72	2.00
-20	**(- 4)**	999	252	293	134	1.18	3.14	7.45	1.88	2.18
-15	**(+ 5)**	1243	313	364	154	1.34	3.91	8.08	2.04	2.37
-10	**(+14)**	1539	388	451	176	1.52	4.86	8.75	2.20	2.56

E - PERFORMANCE - CURVES

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **55ºC (+131ºF))**
@115V3000RPM **Static**

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)**	403	102	118	82	0.74	1.26	4.93	1.24	1.45
-30	**(-22)**	573	144	168	102	0.91	1.80	5.58	1.41	1.64
-25	**(-13)**	752	190	220	121	1.07	2.36	6.18	1.56	1.81
-20	**(- 4)**	954	240	279	141	1.24	3.00	6.77	1.71	1.98
-15	**(+ 5)**	1191	300	349	162	1.41	3.75	7.36	1.85	2.16
-10	**(+14)**	1476	372	433	185	1.60	4.66	7.98	2.01	2.34

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **35ºC (+95ºF))**
@115V4500RPM **Static**

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)**	606	153	178	118	0.93	1.90	5.15	1.30	1.51
-30	**(-22)**	777	196	228	134	1.02	2.43	5.83	1.47	1.71
-25	**(-13)**	1040	262	305	162	1.25	3.26	6.39	1.61	1.87
-20	**(- 4)**	1363	343	399	196	1.56	4.28	6.93	1.75	2.03
-15	**(+ 5)**	1714	432	502	227	1.86	5.39	7.54	1.90	2.21
-10	**(+14)**	2061	519	604	249	2.07	6.50	8.32	2.10	2.44

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **45ºC (+113ºF))**
@115V4500RPM **Static**

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)**	575	145	169	121	0.97	1.80	4.75	1.20	1.39
-30	**(-22)**	751	189	220	141	1.09	2.35	5.38	1.36	1.58
-25	**(-13)**	1008	254	295	171	1.34	3.16	5.91	1.49	1.73
-20	**(- 4)**	1315	331	385	204	1.63	4.13	6.44	1.62	1.89
-15	**(+ 5)**	1640	413	481	232	1.89	5.16	7.07	1.78	2.07
-10	**(+14)**	1951	492	572	249	2.05	6.15	7.89	1.99	2.31

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **55ºC (+131ºF))**
@115V4500RPM **Static**

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)**	508	128	149	114	0.92	1.59	4.44	1.12	1.30
-30	**(-22)**	692	174	203	141	1.10	2.17	4.97	1.25	1.46
-25	**(-13)**	948	239	278	175	1.37	2.98	5.43	1.37	1.59
-20	**(- 4)**	1244	313	364	210	1.67	3.91	5.90	1.49	1.73
-15	**(+ 5)**	1547	390	453	238	1.91	4.87	6.49	1.64	1.90
-10	**(+14)**	1827	460	535	252	2.02	5.76	7.29	1.84	2.14

F - EXTERNAL CHARACTERISTICS

1 Base plate	European Standard VES		
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 45° up + 49° to Back		
3.2 DISCHARGE	4.9 +0.10/-0.05	[mm]	(0.193" +0.004"/-0.002")
3.2.1 Material	Copper		
3.2.2 Shape	Slanted 0° 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 47° up + 59° to Back		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		