COMPRESSOR DEFINITION

Designation	**VES D13C**
Nominal Voltage/Frequency	**230 V 43-150 Hz**
Engineering Number	**513907257**

A - APPLICATION / LIMIT WORKING CONDITIONS

1 Type	Hermetic reciprocating compressor		
2 Refrigerant	R-600a		
3 Nominal voltage and frequency	230 / 43-150	[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		[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	230V 43-150 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	VCC31156XXXXX	
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: **@115V1300RPM**			**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]
353	89	103	54	0.79	1.11	6.50	1.64	1.90

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]
544	137	159	82	1.14	1.71	6.62	1.67	1.94

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]
797	201	234	127	1.58	2.50	6.29	1.59	1.84

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]
1022	258	299	182	2.33	3.21	5.62	1.42	1.65

E - PERFORMANCE - CURVES

TEST CONDITIONS: **@115V2000RPM**				**ASHRAE32** **Static**			(Condensing temperature **35ºC (+95ºF))**			
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)**	325	82	95	51	0.48	1.02	6.39	1.61	1.87
-30	**(-22)**	431	108	126	60	0.56	1.35	7.12	1.80	2.09
-25	**(-13)**	558	141	164	70	0.64	1.75	7.98	2.01	2.34
-20	**(- 4)**	713	180	209	80	0.73	2.24	8.94	2.25	2.62
-15	**(+ 5)**	899	227	263	90	0.82	2.83	10.01	2.52	2.93
-10	**(+14)**	1121	283	329	100	0.91	3.54	11.17	2.81	3.27

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	53	0.49	0.94	5.69	1.43	1.67
-30	**(-22)**	400	101	117	63	0.58	1.25	6.34	1.60	1.86
-25	**(-13)**	524	132	154	74	0.68	1.64	7.09	1.79	2.08
-20	**(- 4)**	677	171	198	85	0.77	2.13	7.92	2.00	2.32
-15	**(+ 5)**	863	217	253	98	0.88	2.72	8.82	2.22	2.59
-10	**(+14)**	1087	274	318	111	0.99	3.43	9.79	2.47	2.87

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)**	284	72	83	54	0.51	0.89	5.26	1.32	1.54
-30	**(-22)**	377	95	111	65	0.61	1.18	5.83	1.47	1.71
-25	**(-13)**	496	125	145	77	0.71	1.56	6.46	1.63	1.89
-20	**(- 4)**	645	162	189	90	0.83	2.03	7.16	1.80	2.10
-15	**(+ 5)**	828	209	243	105	0.95	2.61	7.90	1.99	2.31
-10	**(+14)**	1051	265	308	121	1.08	3.32	8.68	2.19	2.54

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)**	477	120	140	79	0.73	1.49	6.07	1.53	1.78
-30	**(-22)**	631	159	185	93	0.85	1.98	6.77	1.70	1.98
-25	**(-13)**	807	203	237	108	0.98	2.53	7.47	1.88	2.19
-20	**(- 4)**	1016	256	298	124	1.11	3.19	8.20	2.07	2.40
-15	**(+ 5)**	1268	320	372	141	1.25	3.99	8.94	2.25	2.62
-10	**(+14)**	1574	397	461	162	1.42	4.96	9.71	2.45	2.85

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)**	446	112	131	81	0.74	1.40	5.53	1.39	1.62
-30	**(-22)**	606	153	178	98	0.89	1.90	6.17	1.55	1.81
-25	**(-13)**	784	198	230	115	1.03	2.46	6.82	1.72	2.00
-20	**(- 4)**	992	250	291	133	1.18	3.12	7.47	1.88	2.19
-15	**(+ 5)**	1240	312	363	152	1.34	3.90	8.15	2.05	2.39
-10	**(+14)**	1538	388	451	174	1.52	4.85	8.84	2.23	2.59

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)**	406	102	119	80	0.74	1.27	5.05	1.27	1.48
-30	**(-22)**	569	143	167	100	0.91	1.78	5.65	1.42	1.66
-25	**(-13)**	747	188	219	120	1.07	2.35	6.25	1.57	1.83
-20	**(- 4)**	951	240	279	139	1.24	2.99	6.84	1.72	2.01
-15	**(+ 5)**	1191	300	349	160	1.41	3.75	7.45	1.88	2.18
-10	**(+14)**	1478	372	433	183	1.60	4.66	8.08	2.04	2.37

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)**	605	153	177	115	0.93	1.89	5.27	1.33	1.54
-30	**(-22)**	776	196	227	132	1.02	2.43	5.92	1.49	1.73
-25	**(-13)**	1039	262	305	161	1.25	3.26	6.44	1.62	1.89
-20	**(- 4)**	1363	343	399	196	1.56	4.28	6.95	1.75	2.04
-15	**(+ 5)**	1714	432	502	227	1.86	5.39	7.55	1.90	2.21
-10	**(+14)**	2061	519	604	248	2.08	6.50	8.35	2.10	2.45

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	118	0.98	1.80	4.86	1.22	1.42
-30	**(-22)**	750	189	220	138	1.10	2.35	5.48	1.38	1.61
-25	**(-13)**	1007	254	295	168	1.34	3.16	6.01	1.51	1.76
-20	**(- 4)**	1315	331	385	201	1.63	4.13	6.54	1.65	1.92
-15	**(+ 5)**	1640	413	481	229	1.89	5.16	7.18	1.81	2.10
-10	**(+14)**	1951	492	572	245	2.04	6.15	8.03	2.02	2.35

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	113	0.92	1.59	4.51	1.14	1.32
-30	**(-22)**	692	174	203	139	1.09	2.17	5.03	1.27	1.48
-25	**(-13)**	947	239	278	173	1.37	2.97	5.48	1.38	1.60
-20	**(- 4)**	1243	313	364	208	1.66	3.91	5.94	1.50	1.74
-15	**(+ 5)**	1546	390	453	235	1.91	4.87	6.54	1.65	1.92
-10	**(+14)**	1826	460	535	248	2.02	5.76	7.38	1.86	2.16

F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal VES		
2 Tray holder	No		
3 Connectors			
3.1 SUCTION	6.1 +0.10/+0.00	[mm]	(0.240" +0.004"/+0.000")
3.1.1 Material	Copper		
3.1.2 Shape	Slanted 5° out + 63° up		
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	6.2 +0.05/+0.05	[mm]	(0.244" +0.002"/+0.002")
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		