COMPRESSOR DEFINITION

Designation	**VES F9C**
Nominal Voltage/Frequency	**230 V 32-150 Hz**
Engineering Number	**513907291**

A - APPLICATION / LIMIT WORKING CONDITIONS

1 Type	Hermetic reciprocating compressor		
2 Refrigerant	R-600a		
3 Nominal voltage and frequency	230 / 32-150	[V / Hz]	
4 Application type	Low-Medium Back Pressure (Fullmotion Compressors)		
4.1 Evaporating temperature range	-35°C to 0°C	(-31°F to 32°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)	Static	-	103 to 140 V
8.2 LBP (43ºC Ambient temperature)	Static	-	103 to 140 V
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	9.04	[cm³] (0.552 cu.in)
2.1 Bore [mm]	24.000	
2.2 Stroke [mm]	20.000	
3 Lubricant charge	205	[ml] (6.93 fl.oz.)
3.1 Lubricants approved		
3.2 Lubricants type/viscosity	ALQUILB / ISO5	
4 Weight (with oil charge)	6.7	[kg] (14.77 lb.)
5 Nitrogen charge	-	[kgf/cm²]

C - ELETRICAL DATA

1 Nominal Voltage/Frequency/Number of Phases	230 V 31.7-150 Hz 3~ (Three phase)	
2 Starting device type	Inverter	
2.1 Starting device	VCC3 1156 XXXXX	
3 Start capacitor	-	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	VCC3 1156 XX	
6 Start winding resistance	9.30	[Ω at 25ºC (77ºF)] +/- 8%
7 Run winding resistance	9.30	[Ω at 25ºC (77ºF)] +/- 8%
8 LRA - Locked rotor amperage (32/150 Hz)	-	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (32/150 Hz)	-	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (32/150 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]
225	57	66	35	0.57	0.71	6.52	1.64	1.91

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]
361	91	106	55	0.84	1.13	6.58	1.66	1.93

TEST CONDITIONS: **@115V4000RPM**			**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]
641	162	188	106	1.55	2.01	6.08	1.53	1.78

E - PERFORMANCE - CURVES

TEST CONDITIONS: **@115V1300RPM** — **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)**	139	35	41	21	0.34	0.43	6.50	1.64	1.91
-30	**(-22)**	184	46	54	25	0.39	0.58	7.32	1.84	2.14
-25	**(-13)**	241	61	71	29	0.44	0.76	8.32	2.10	2.44
-20	**(- 4)**	311	78	91	33	0.49	0.98	9.53	2.40	2.79
-15	**(+ 5)**	396	100	116	36	0.54	1.24	10.96	2.76	3.21
-10	**(+14)**	496	125	145	39	0.59	1.57	12.63	3.18	3.70
-5	**(+23)**	615	155	180	42	0.64	1.94	14.55	3.67	4.26
0	**(+32)**	753	190	221	45	0.70	2.39	16.73	4.22	4.90

E - PERFORMANCE - CURVES

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **45ºC (+113ºF))**
@115V1300RPM **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)**	123	31	36	22	0.35	0.39	5.63	1.42	1.65
-30	**(-22)**	169	43	49	26	0.41	0.53	6.36	1.60	1.86
-25	**(-13)**	225	57	66	31	0.47	0.71	7.20	1.81	2.11
-20	**(- 4)**	294	74	86	36	0.53	0.92	8.16	2.06	2.39
-15	**(+ 5)**	377	95	110	41	0.59	1.19	9.25	2.33	2.71
-10	**(+14)**	475	120	139	45	0.65	1.50	10.50	2.65	3.08
-5	**(+23)**	591	149	173	50	0.72	1.87	11.92	3.00	3.49
0	**(+32)**	725	183	212	54	0.79	2.30	13.52	3.41	3.96

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **55ºC (+131ºF))**
@115V1300RPM **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)**	106	27	31	22	0.35	0.33	4.80	1.21	1.41
-30	**(-22)**	150	38	44	27	0.43	0.47	5.52	1.39	1.62
-25	**(-13)**	205	52	60	33	0.50	0.64	6.28	1.58	1.84
-20	**(- 4)**	272	68	80	39	0.57	0.85	7.07	1.78	2.07
-15	**(+ 5)**	351	89	103	44	0.64	1.11	7.91	1.99	2.32
-10	**(+14)**	446	112	131	51	0.71	1.41	8.83	2.23	2.59
-5	**(+23)**	557	140	163	57	0.79	1.76	9.83	2.48	2.88
0	**(+32)**	686	173	201	63	0.87	2.18	10.94	2.76	3.20

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)**	198	50	58	34	0.50	0.62	5.82	1.47	1.70
-30	**(-22)**	266	67	78	40	0.58	0.84	6.72	1.69	1.97
-25	**(-13)**	354	89	104	46	0.65	1.11	7.77	1.96	2.28
-20	**(- 4)**	464	117	136	52	0.73	1.46	8.97	2.26	2.63
-15	**(+ 5)**	597	150	175	58	0.80	1.88	10.35	2.61	3.03
-10	**(+14)**	757	191	222	63	0.88	2.39	11.93	3.01	3.50
-5	**(+23)**	945	238	277	69	0.95	2.99	13.71	3.45	4.02
0	**(+32)**	1165	294	341	74	1.02	3.69	15.72	3.96	4.61

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)**	191	48	56	35	0.51	0.60	5.54	1.40	1.62
-30	**(-22)**	259	65	76	41	0.59	0.81	6.27	1.58	1.84
-25	**(-13)**	344	87	101	49	0.69	1.08	7.07	1.78	2.07
-20	**(- 4)**	448	113	131	56	0.78	1.41	7.98	2.01	2.34
-15	**(+ 5)**	574	145	168	64	0.87	1.81	8.99	2.27	2.64
-10	**(+14)**	723	182	212	71	0.96	2.28	10.14	2.56	2.97
-5	**(+23)**	899	227	264	79	1.06	2.84	11.44	2.88	3.35
0	**(+32)**	1104	278	324	86	1.15	3.50	12.91	3.25	3.78

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)**	166	42	49	34	0.50	0.52	4.88	1.23	1.43
-30	**(-22)**	236	60	69	42	0.61	0.74	5.59	1.41	1.64
-25	**(-13)**	321	81	94	51	0.71	1.01	6.32	1.59	1.85
-20	**(- 4)**	423	107	124	60	0.82	1.33	7.09	1.79	2.08
-15	**(+ 5)**	544	137	159	69	0.93	1.71	7.92	1.99	2.32
-10	**(+14)**	687	173	201	78	1.05	2.17	8.81	2.22	2.58
-5	**(+23)**	854	215	250	87	1.16	2.70	9.79	2.47	2.87
0	**(+32)**	1047	264	307	96	1.27	3.32	10.88	2.74	3.19

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)**	312	79	92	53	0.76	0.98	5.92	1.49	1.73
-30	**(-22)**	436	110	128	62	0.89	1.37	6.93	1.75	2.03
-25	**(-13)**	556	140	163	72	1.01	1.74	7.68	1.93	2.25
-20	**(- 4)**	691	174	203	83	1.13	2.17	8.37	2.11	2.45
-15	**(+ 5)**	860	217	252	94	1.25	2.71	9.23	2.33	2.70
-10	**(+14)**	1081	272	317	103	1.37	3.41	10.45	2.63	3.06
-5	**(+23)**	1373	346	402	112	1.49	4.34	12.25	3.09	3.59
0	**(+32)**	1753	442	514	119	1.60	5.56	14.85	3.74	4.35

E - PERFORMANCE - CURVES

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)**	286	72	84	54	0.77	0.90	5.30	1.34	1.55
-30	**(-22)**	406	102	119	64	0.90	1.27	6.25	1.57	1.83
-25	**(-13)**	522	132	153	76	1.04	1.64	6.89	1.74	2.02
-20	**(- 4)**	654	165	192	88	1.18	2.05	7.45	1.88	2.18
-15	**(+ 5)**	820	207	240	101	1.32	2.58	8.13	2.05	2.38
-10	**(+14)**	1038	262	304	113	1.47	3.27	9.14	2.30	2.68
-5	**(+23)**	1327	334	389	124	1.62	4.20	10.69	2.69	3.13
0	**(+32)**	1706	430	500	134	1.78	5.41	13.00	3.28	3.81

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)**	254	64	74	54	0.76	0.79	4.67	1.18	1.37
-30	**(-22)**	372	94	109	66	0.92	1.17	5.61	1.41	1.64
-25	**(-13)**	488	123	143	79	1.10	1.53	6.21	1.56	1.82
-20	**(- 4)**	619	156	182	93	1.29	1.95	6.68	1.68	1.96
-15	**(+ 5)**	785	198	230	108	1.49	2.47	7.24	1.82	2.12
-10	**(+14)**	1004	253	294	123	1.70	3.17	8.10	2.04	2.37
-5	**(+23)**	1293	326	379	137	1.91	4.09	9.46	2.38	2.77
0	**(+32)**	1673	422	490	150	2.14	5.30	11.54	2.91	3.38

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)**	448	113	131	82	1.13	1.40	5.43	1.37	1.59
-30	**(-22)**	585	147	171	93	1.27	1.83	6.25	1.58	1.83
-25	**(-13)**	754	190	221	107	1.44	2.36	7.03	1.77	2.06
-20	**(- 4)**	958	241	281	123	1.62	3.01	7.81	1.97	2.29
-15	**(+ 5)**	1200	302	352	138	1.80	3.78	8.68	2.19	2.54
-10	**(+14)**	1486	374	435	153	1.98	4.69	9.70	2.45	2.84
-5	**(+23)**	1817	458	532	166	2.13	5.74	10.94	2.76	3.21
0	**(+32)**	2198	554	644	175	2.25	6.97	12.46	3.14	3.65

E - PERFORMANCE - CURVES

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)**	396	100	116	87	1.16	1.24	4.56	1.15	1.34
-30	**(-22)**	531	134	156	98	1.30	1.67	5.42	1.37	1.59
-25	**(-13)**	695	175	204	112	1.48	2.18	6.20	1.56	1.82
-20	**(- 4)**	890	224	261	128	1.67	2.80	6.95	1.75	2.04
-15	**(+ 5)**	1120	282	328	145	1.87	3.53	7.74	1.95	2.27
-10	**(+14)**	1390	350	407	161	2.08	4.38	8.65	2.18	2.53
-5	**(+23)**	1702	429	499	175	2.26	5.38	9.73	2.45	2.85
0	**(+32)**	2060	519	604	186	2.43	6.53	11.06	2.79	3.24

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)**	365	92	107	94	1.25	1.14	3.90	0.98	1.14
-30	**(-22)**	502	127	147	104	1.38	1.58	4.82	1.22	1.41
-25	**(-13)**	665	167	195	118	1.54	2.09	5.62	1.42	1.65
-20	**(- 4)**	855	215	251	134	1.74	2.69	6.36	1.60	1.86
-15	**(+ 5)**	1077	271	316	152	1.95	3.39	7.10	1.79	2.08
-10	**(+14)**	1335	336	391	169	2.17	4.21	7.92	1.99	2.32
-5	**(+23)**	1631	411	478	184	2.39	5.16	8.87	2.23	2.60
0	**(+32)**	1970	497	577	197	2.58	6.25	10.02	2.53	2.94

F - EXTERNAL CHARACTERISTICS

1 Base plate	European Standard VES		
2 Tray holder	Yes		
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 45° up + 15° to Back		
3.2 DISCHARGE	5.1 +0.10/+0.00	[mm]	(0.201" +0.004"/+0.000")
3.2.1 Material	Copper		
3.2.2 Shape	Slanted 47° up + 24° to Back		
3.3 PROCESS	6 +0.08/-0.08	[mm]	(0.236" +0.003"/-0.003")
3.3.1 Material	Copper(OD)		
3.3.2 Shape	Slanted 47° up + 59° to Back		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		