

### COMPRESSOR DEFINITION

Designation	VES F9C
Nominal Voltage/Frequency	230 V 32-150 Hz
Engineering Number	513907351

### 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 Expansion device	Capillary tube		
8 Compressor cooling	Operating voltage range		
		50 Hz	60 Hz
8.1 LBP (32°C Ambient temperature)	-	-	-
8.2 LBP (43°C Ambient temperature)	-	-	-
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	9.04	[cm <sup>3</sup> ] (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)	6.8	[kg] (14.99 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	230 V 31.7-150 Hz 3~ (Three phase)	
2 Starting device type	Inverter	
2.1 Starting device	PFC CF02D02 M	
3 Start capacitor	-	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	PFC CF02D02 M	
6 Start winding resistance	9.30	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	9.30	[Ω at 25°C (77°F)] +/- 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	CCC - VDE	

### D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS: <b>@220V950RPM</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]	
160	40	47	25	0.24	0.50	6.48	1.63	1.90	

TEST CONDITIONS: <b>@220V1300RPM</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]	
225	57	66	34	0.30	0.71	6.62	1.67	1.94	

TEST CONDITIONS: <b>@220V2000RPM</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]	
362	91	106	55	0.44	1.14	6.63	1.67	1.94	

TEST CONDITIONS: <b>@220V4000RPM</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]	
641	162	188	105	0.81	2.01	6.10	1.54	1.79	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: <b>@220V1600RPM</b>		<b>ASHRAE32</b> <b>Static</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]
-35	(-31)	167	42	49	27	0.22	0.52	6.07	1.53	1.78
-30	(-22)	216	55	63	32	0.25	0.68	6.86	1.73	2.01
-25	(-13)	282	71	83	36	0.27	0.88	8.01	2.02	2.35
-20	(- 4)	372	94	109	39	0.29	1.17	9.52	2.40	2.79
-15	(+ 5)	497	125	146	43	0.32	1.56	11.42	2.88	3.35
-10	(+14)	664	167	195	48	0.35	2.09	13.71	3.46	4.02
-5	(+23)	883	222	259	54	0.39	2.79	16.42	4.14	4.81
0	(+32)	1162	293	340	62	0.43	3.68	19.56	4.93	5.73

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V1600RPM		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)	153	38	45	26	0.22	0.48	5.94	1.50	1.74
-30	(-22)	213	54	63	32	0.25	0.67	6.59	1.66	1.93
-25	(-13)	284	72	83	38	0.29	0.89	7.35	1.85	2.15
-20	(- 4)	373	94	109	45	0.33	1.17	8.25	2.08	2.42
-15	(+ 5)	490	123	144	52	0.38	1.54	9.29	2.34	2.72
-10	(+14)	643	162	188	61	0.45	2.03	10.49	2.64	3.07
-5	(+23)	841	212	247	72	0.53	2.66	11.86	2.99	3.48
0	(+32)	1094	276	321	85	0.62	3.47	13.43	3.38	3.94

TEST CONDITIONS: @220V1600RPM		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)	138	35	41	28	0.24	0.43	4.97	1.25	1.46
-30	(-22)	202	51	59	34	0.27	0.63	5.87	1.48	1.72
-25	(-13)	268	68	79	40	0.30	0.84	6.66	1.68	1.95
-20	(- 4)	347	87	102	48	0.36	1.09	7.33	1.85	2.15
-15	(+ 5)	447	113	131	57	0.43	1.41	7.92	2.00	2.32
-10	(+14)	578	146	169	69	0.52	1.82	8.43	2.12	2.47
-5	(+23)	747	188	219	83	0.63	2.36	8.88	2.24	2.60
0	(+32)	964	243	283	100	0.76	3.06	9.28	2.34	2.72

TEST CONDITIONS: @220V2000RPM		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)	209	53	61	33	0.26	0.65	6.23	1.57	1.82
-30	(-22)	279	70	82	39	0.30	0.87	7.18	1.81	2.10
-25	(-13)	365	92	107	44	0.33	1.14	8.22	2.07	2.41
-20	(- 4)	468	118	137	50	0.37	1.47	9.38	2.36	2.75
-15	(+ 5)	594	150	174	56	0.41	1.87	10.71	2.70	3.14
-10	(+14)	745	188	218	61	0.45	2.35	12.23	3.08	3.58
-5	(+23)	926	233	271	66	0.48	2.93	13.99	3.52	4.10
0	(+32)	1139	287	334	71	0.51	3.61	16.01	4.03	4.69

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V2000RPM		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)	197	50	58	34	0.27	0.62	5.73	1.44	1.68
-30	(-22)	267	67	78	41	0.31	0.84	6.52	1.64	1.91
-25	(-13)	351	88	103	48	0.35	1.10	7.35	1.85	2.15
-20	(- 4)	452	114	132	55	0.40	1.42	8.28	2.09	2.43
-15	(+ 5)	574	145	168	61	0.45	1.81	9.33	2.35	2.73
-10	(+14)	721	182	211	68	0.50	2.28	10.54	2.66	3.09
-5	(+23)	897	226	263	75	0.56	2.84	11.95	3.01	3.50
0	(+32)	1104	278	323	82	0.62	3.50	13.58	3.42	3.98

TEST CONDITIONS: @220V2000RPM		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)	180	45	53	34	0.28	0.57	5.27	1.33	1.54
-30	(-22)	249	63	73	42	0.31	0.78	5.94	1.50	1.74
-25	(-13)	331	83	97	50	0.36	1.04	6.64	1.67	1.95
-20	(- 4)	429	108	126	58	0.42	1.35	7.39	1.86	2.16
-15	(+ 5)	548	138	161	67	0.48	1.73	8.22	2.07	2.41
-10	(+14)	691	174	202	75	0.56	2.18	9.18	2.31	2.69
-5	(+23)	861	217	252	84	0.65	2.72	10.30	2.60	3.02
0	(+32)	1062	268	311	92	0.74	3.37	11.61	2.93	3.40

TEST CONDITIONS: @220V3000RPM		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)	306	77	90		0.00	0.96	0.00	0.00	0.00
-30	(-22)	413	104	121		0.00	1.30	0.00	0.00	0.00
-25	(-13)	540	136	158		0.00	1.69	0.00	0.00	0.00
-20	(- 4)	691	174	203		0.00	2.17	0.00	0.00	0.00
-15	(+ 5)	872	220	256		0.00	2.74	0.00	0.00	0.00
-10	(+14)	1088	274	319		0.00	3.43	0.00	0.00	0.00
-5	(+23)	1344	339	394		0.00	4.25	0.00	0.00	0.00
0	(+32)	1645	415	482		0.00	5.21	0.00	0.00	0.00

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V3000RPM		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)	288	73	85		0.00	0.90	0.00	0.00	0.00
-30	(-22)	393	99	115		0.00	1.23	0.00	0.00	0.00
-25	(-13)	519	131	152		0.00	1.63	0.00	0.00	0.00
-20	(- 4)	669	169	196		0.00	2.10	0.00	0.00	0.00
-15	(+ 5)	851	214	249		0.00	2.68	0.00	0.00	0.00
-10	(+14)	1068	269	313		0.00	3.37	0.00	0.00	0.00
-5	(+23)	1327	334	389		0.00	4.19	0.00	0.00	0.00
0	(+32)	1632	411	478		0.00	5.17	0.00	0.00	0.00

TEST CONDITIONS: @220V3000RPM		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)	268	67	78		0.00	0.84	0.00	0.00	0.00
-30	(-22)	367	92	107		0.00	1.15	0.00	0.00	0.00
-25	(-13)	487	123	143		0.00	1.53	0.00	0.00	0.00
-20	(- 4)	634	160	186		0.00	1.99	0.00	0.00	0.00
-15	(+ 5)	813	205	238		0.00	2.56	0.00	0.00	0.00
-10	(+14)	1029	259	302		0.00	3.25	0.00	0.00	0.00
-5	(+23)	1288	325	377		0.00	4.07	0.00	0.00	0.00
0	(+32)	1594	402	467		0.00	5.05	0.00	0.00	0.00

TEST CONDITIONS: @220V4000RPM		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)	432	109	126	73	0.52	1.35	5.86	1.48	1.72
-30	(-22)	544	137	159	86	0.65	1.70	6.39	1.61	1.87
-25	(-13)	702	177	206	98	0.76	2.20	7.15	1.80	2.09
-20	(- 4)	900	227	264	111	0.88	2.83	8.06	2.03	2.36
-15	(+ 5)	1133	286	332	125	0.99	3.57	9.07	2.29	2.66
-10	(+14)	1398	352	410	138	1.12	4.41	10.10	2.55	2.96
-5	(+23)	1689	426	495	153	1.25	5.34	11.09	2.80	3.25
0	(+32)	2001	504	586	168	1.41	6.34	11.98	3.02	3.51

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V4000RPM		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)	358	90	105	74	0.54	1.12	4.89	1.23	1.43
-30	(-22)	487	123	143	88	0.68	1.53	5.63	1.42	1.65
-25	(-13)	657	165	192	101	0.80	2.06	6.52	1.64	1.91
-20	(- 4)	861	217	252	115	0.91	2.71	7.52	1.89	2.20
-15	(+ 5)	1097	276	321	128	1.03	3.45	8.54	2.15	2.50
-10	(+14)	1359	342	398	142	1.15	4.29	9.54	2.40	2.79
-5	(+23)	1642	414	481	157	1.28	5.19	10.42	2.63	3.05
0	(+32)	1941	489	569	171	1.44	6.15	11.15	2.81	3.27

TEST CONDITIONS: @220V4000RPM		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)	278	70	82	74	0.54	0.87	3.74	0.94	1.10
-30	(-22)	426	107	125	90	0.69	1.34	4.68	1.18	1.37
-25	(-13)	609	153	178	105	0.82	1.91	5.72	1.44	1.68
-20	(- 4)	822	207	241	121	0.95	2.58	6.80	1.71	1.99
-15	(+ 5)	1062	268	311	136	1.07	3.34	7.85	1.98	2.30
-10	(+14)	1322	333	387	151	1.20	4.17	8.81	2.22	2.58
-5	(+23)	1599	403	468	167	1.34	5.06	9.60	2.42	2.81
0	(+32)	1887	476	553	183	1.50	5.99	10.17	2.56	2.98

### 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	4.9 +0.10/-0.05	[mm]	(0.193" +0.004"/-0.002")
3.2.1 Material	Copper		
3.2.2 Shape	Slanted 47° up + 59° 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 0° up + 24° to Back		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		