

### COMPRESSOR DEFINITION

Designation	VES C9C
Nominal Voltage/Frequency	230 V 40-150 Hz
Engineering Number	513907172

### 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 Expansion device	Capillary tube		
8 Compressor cooling		Operating voltage range	
		50 Hz	60 Hz
8.1 LBP (32°C Ambient temperature)	Static	187 to 255 V	187 to 255 V
8.2 LBP (43°C Ambient temperature)	Static	187 to 255 V	187 to 255 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	9.04	[cm <sup>3</sup> ] (0.552 cu.in)
2.1 Bore [mm]	24.000	
2.2 Stroke [mm]	20.000	
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)	6.45	[kg] (14.22 lb.)
5 Nitrogen charge	-	[kgf/cm <sup>2</sup> ]

### 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	VCC3 1156 XXXXX/VES 2456 XX X X	
3 Start capacitor	-	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	INVERTER VES 2456X	
6 Start winding resistance	13.40	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	13.40	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (46/133 Hz)	2.10/2.10	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (46/133 Hz)	2.10/2.10	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (46/133 Hz)	-	[A] - Measured according to UL 984
11 Approval boards certification	CCC - VDE	

### D - PERFORMANCE - CHECK POINT DATA

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]
226	57	66	37	0.26	0.71	6.14	1.55	1.80

TEST CONDITIONS: <b>@220V1600RPM</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]
282	71	83	44	0.33	0.89	6.37	1.61	1.87

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]
365	92	107	57	0.42	1.15	6.41	1.62	1.88

TEST CONDITIONS: <b>@220V3000RPM</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]
555	140	163	87	0.65	1.74	6.37	1.61	1.87

TEST CONDITIONS: <b>@220V4500RPM</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]
784	198	230	130	0.88	2.46	6.01	1.51	1.76

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V1300RPM		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]
-35	(-31)	138	35	40	23	0.17	0.43	6.09	1.54	1.79
-30	(-22)	184	46	54	26	0.22	0.58	7.01	1.77	2.06
-25	(-13)	240	61	70	30	0.25	0.75	8.03	2.02	2.35
-20	(- 4)	310	78	91	34	0.27	0.97	9.17	2.31	2.69
-15	(+ 5)	393	99	115	38	0.29	1.24	10.46	2.64	3.07
-10	(+14)	491	124	144	41	0.31	1.55	11.93	3.01	3.50

TEST CONDITIONS: @220V1300RPM		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]
-35	(-31)	121	31	36	23	0.20	0.38	5.39	1.36	1.58
-30	(-22)	168	42	49	28	0.23	0.53	6.11	1.54	1.79
-25	(-13)	227	57	66	33	0.25	0.71	6.90	1.74	2.02
-20	(- 4)	298	75	87	38	0.28	0.94	7.77	1.96	2.28
-15	(+ 5)	384	97	113	44	0.31	1.21	8.76	2.21	2.57
-10	(+14)	486	123	142	49	0.36	1.53	9.90	2.49	2.90

TEST CONDITIONS: @220V1300RPM		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]
-35	(-31)	106	27	31	24	0.18	0.33	4.42	1.11	1.29
-30	(-22)	148	37	43	29	0.21	0.46	5.11	1.29	1.50
-25	(-13)	203	51	59	35	0.25	0.64	5.84	1.47	1.71
-20	(- 4)	271	68	80	41	0.30	0.85	6.62	1.67	1.94
-15	(+ 5)	355	89	104	47	0.38	1.12	7.49	1.89	2.19
-10	(+14)	455	115	133	54	0.48	1.44	8.47	2.13	2.48

TEST CONDITIONS: @220V1600RPM		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]
-35	(-31)	173	44	51	28	0.22	0.54	6.18	1.56	1.81
-30	(-22)	230	58	68	33	0.26	0.72	7.02	1.77	2.06
-25	(-13)	299	75	88	38	0.30	0.94	7.96	2.01	2.33
-20	(- 4)	383	96	112	42	0.34	1.20	9.04	2.28	2.65
-15	(+ 5)	484	122	142	47	0.38	1.52	10.29	2.59	3.01
-10	(+14)	607	153	178	52	0.41	1.91	11.75	2.96	3.44

### 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)	152	38	45	28	0.23	0.48	5.48	1.38	1.61
-30	(-22)	213	54	62	34	0.26	0.67	6.22	1.57	1.82
-25	(-13)	285	72	84	41	0.30	0.89	7.00	1.76	2.05
-20	(- 4)	373	94	109	47	0.35	1.17	7.86	1.98	2.30
-15	(+ 5)	479	121	140	54	0.40	1.51	8.83	2.22	2.59
-10	(+14)	607	153	178	61	0.45	1.91	9.96	2.51	2.92

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)	136	34	40	29	0.22	0.43	4.61	1.16	1.35
-30	(-22)	189	48	55	35	0.25	0.59	5.35	1.35	1.57
-25	(-13)	254	64	74	42	0.31	0.80	6.07	1.53	1.78
-20	(- 4)	334	84	98	49	0.38	1.05	6.81	1.72	2.00
-15	(+ 5)	434	109	127	57	0.46	1.37	7.62	1.92	2.23
-10	(+14)	557	140	163	65	0.55	1.76	8.51	2.15	2.49

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)	215	54	63	35	0.27	0.67	6.05	1.53	1.77
-30	(-22)	289	73	85	42	0.31	0.91	6.94	1.75	2.03
-25	(-13)	378	95	111	48	0.36	1.19	7.90	1.99	2.31
-20	(- 4)	486	122	142	54	0.41	1.53	8.96	2.26	2.63
-15	(+ 5)	615	155	180	60	0.45	1.93	10.18	2.56	2.98
-10	(+14)	767	193	225	66	0.50	2.42	11.59	2.92	3.40

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)	198	50	58	37	0.28	0.62	5.41	1.36	1.58
-30	(-22)	271	68	79	44	0.33	0.85	6.18	1.56	1.81
-25	(-13)	358	90	105	51	0.38	1.12	6.98	1.76	2.04
-20	(- 4)	464	117	136	59	0.44	1.46	7.84	1.98	2.30
-15	(+ 5)	590	149	173	67	0.49	1.86	8.82	2.22	2.59
-10	(+14)	739	186	217	74	0.54	2.33	9.96	2.51	2.92

### E - PERFORMANCE - CURVES

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)	173	44	51	37	0.27	0.54	4.68	1.18	1.37	
-30 (-22)	244	61	72	45	0.34	0.76	5.41	1.36	1.58	
-25 (-13)	330	83	97	54	0.40	1.04	6.11	1.54	1.79	
-20 (- 4)	434	109	127	63	0.47	1.36	6.85	1.73	2.01	
-15 (+ 5)	558	141	163	73	0.53	1.76	7.66	1.93	2.24	
-10 (+14)	705	178	206	82	0.59	2.22	8.58	2.16	2.51	

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)	319	80	94	54	0.40	1.00	5.86	1.48	1.72	
-30 (-22)	438	110	128	65	0.47	1.37	6.76	1.70	1.98	
-25 (-13)	578	146	169	75	0.54	1.81	7.68	1.94	2.25	
-20 (- 4)	743	187	218	86	0.62	2.33	8.65	2.18	2.53	
-15 (+ 5)	935	236	274	97	0.70	2.94	9.67	2.44	2.83	
-10 (+14)	1158	292	339	108	0.76	3.65	10.78	2.72	3.16	

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)	287	72	84	55	0.42	0.90	5.25	1.32	1.54	
-30 (-22)	404	102	118	67	0.49	1.27	6.03	1.52	1.77	
-25 (-13)	542	137	159	79	0.58	1.70	6.83	1.72	2.00	
-20 (- 4)	706	178	207	92	0.66	2.22	7.67	1.93	2.25	
-15 (+ 5)	900	227	264	105	0.75	2.83	8.56	2.16	2.51	
-10 (+14)	1125	284	330	118	0.83	3.55	9.53	2.40	2.79	

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)	258	65	76	55	0.40	0.81	4.68	1.18	1.37	
-30 (-22)	368	93	108	69	0.50	1.15	5.37	1.35	1.57	
-25 (-13)	501	126	147	82	0.61	1.57	6.08	1.53	1.78	
-20 (- 4)	660	166	194	97	0.73	2.08	6.81	1.72	2.00	
-15 (+ 5)	851	214	249	112	0.84	2.68	7.60	1.92	2.23	
-10 (+14)	1074	271	315	127	0.96	3.39	8.45	2.13	2.48	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V4500RPM		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)	458	115	134	85	0.61	1.43	5.39	1.36	1.58	
-30 (-22)	605	152	177	98	0.69	1.90	6.14	1.55	1.80	
-25 (-13)	768	193	225	111	0.76	2.41	6.94	1.75	2.03	
-20 (- 4)	964	243	283	124	0.83	3.03	7.81	1.97	2.29	
-15 (+ 5)	1214	306	356	139	0.91	3.82	8.74	2.20	2.56	
-10 (+14)	1537	387	450	157	1.00	4.85	9.76	2.46	2.86	

TEST CONDITIONS: @220V4500RPM		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)	445	112	130	88	0.64	1.39	5.04	1.27	1.48	
-30 (-22)	592	149	174	104	0.73	1.86	5.68	1.43	1.66	
-25 (-13)	751	189	220	118	0.82	2.36	6.37	1.61	1.87	
-20 (- 4)	940	237	275	133	0.89	2.95	7.12	1.80	2.09	
-15 (+ 5)	1178	297	345	149	0.97	3.71	7.94	2.00	2.33	
-10 (+14)	1486	374	435	168	1.06	4.69	8.83	2.23	2.59	

TEST CONDITIONS: @220V4500RPM		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)	394	99	116	88	0.63	1.24	4.54	1.14	1.33	
-30 (-22)	553	139	162	107	0.75	1.73	5.12	1.29	1.50	
-25 (-13)	720	181	211	125	0.85	2.26	5.74	1.45	1.68	
-20 (- 4)	913	230	268	142	0.94	2.87	6.42	1.62	1.88	
-15 (+ 5)	1152	290	338	161	1.03	3.63	7.16	1.80	2.10	
-10 (+14)	1456	367	427	183	1.12	4.60	7.97	2.01	2.34	

### F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal VES		
2 Tray holder	No		
3 Connectors			
3.1 SUCTION	6.2 +0.05/+0.05	[mm]	(0.244" +0.002"/+0.002")
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		