

### COMPRESSOR DEFINITION

Designation	VES C9C
Nominal Voltage/Frequency	230 V 40-150 Hz
Engineering Number	513907167

### 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>CECOMAFLBP</b> <b>Static</b>		Evaporating temperature (Condensing temperature)		<b>-25°C (-13°F)</b> <b>55°C (131°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]
167	42	49	35	0.25	0.64	4.81	1.21	1.41

TEST CONDITIONS: <b>@220V1600RPM</b>			<b>CECOMAFLBP</b> <b>Static</b>		Evaporating temperature (Condensing temperature)		<b>-25°C (-13°F)</b> <b>55°C (131°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]
209	53	61	42	0.31	0.80	5.01	1.26	1.47

TEST CONDITIONS: <b>@220V2000RPM</b>			<b>CECOMAFLBP</b> <b>Static</b>		Evaporating temperature (Condensing temperature)		<b>-25°C (-13°F)</b> <b>55°C (131°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]
272	69	80	54	0.40	1.04	5.04	1.27	1.48

TEST CONDITIONS: <b>@220V3000RPM</b>			<b>CECOMAFLBP</b> <b>Static</b>		Evaporating temperature (Condensing temperature)		<b>-25°C (-13°F)</b> <b>55°C (131°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]
413	104	121	82	0.61	1.57	5.01	1.26	1.47

TEST CONDITIONS: <b>@220V4500RPM</b>			<b>CECOMAFLBP</b> <b>Static</b>		Evaporating temperature (Condensing temperature)		<b>-25°C (-13°F)</b> <b>55°C (131°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]
595	150	174	125	0.85	2.27	4.74	1.19	1.39

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V1300RPM		CECOMAF 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)	135	34	39	23	0.17	0.43	5.96	1.50	1.75	
-30 (-22)	179	45	53	26	0.22	0.58	6.85	1.73	2.01	
-25 (-13)	235	59	69	30	0.25	0.75	7.85	1.98	2.30	
-20 (- 4)	303	76	89	34	0.27	0.97	8.96	2.26	2.63	
-15 (+ 5)	384	97	113	38	0.29	1.24	10.23	2.58	3.00	
-10 (+14)	480	121	141	41	0.31	1.55	11.67	2.94	3.42	

TEST CONDITIONS: @220V1300RPM		CECOMAF 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)	109	28	32	23	0.20	0.38	4.86	1.23	1.42	
-30 (-22)	152	38	44	28	0.23	0.53	5.51	1.39	1.61	
-25 (-13)	205	52	60	33	0.25	0.71	6.21	1.57	1.82	
-20 (- 4)	269	68	79	38	0.28	0.94	7.00	1.76	2.05	
-15 (+ 5)	346	87	101	44	0.31	1.21	7.89	1.99	2.31	
-10 (+14)	438	110	128	49	0.36	1.53	8.92	2.25	2.61	

TEST CONDITIONS: @220V1300RPM		CECOMAF 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)	87	22	26	24	0.18	0.33	3.63	0.92	1.06	
-30 (-22)	122	31	36	29	0.21	0.46	4.21	1.06	1.23	
-25 (-13)	167	42	49	35	0.25	0.64	4.81	1.21	1.41	
-20 (- 4)	223	56	65	41	0.30	0.85	5.45	1.37	1.60	
-15 (+ 5)	292	73	85	47	0.38	1.12	6.16	1.55	1.80	
-10 (+14)	374	94	110	54	0.48	1.44	6.96	1.75	2.04	

TEST CONDITIONS: @220V1600RPM		CECOMAF 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)	169	43	50	28	0.22	0.54	6.04	1.52	1.77	
-30 (-22)	225	57	66	33	0.26	0.72	6.86	1.73	2.01	
-25 (-13)	292	74	86	38	0.30	0.94	7.78	1.96	2.28	
-20 (- 4)	374	94	110	42	0.34	1.20	8.83	2.23	2.59	
-15 (+ 5)	473	119	139	47	0.38	1.52	10.06	2.53	2.95	
-10 (+14)	593	149	174	52	0.41	1.91	11.49	2.89	3.37	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V1600RPM		CECOMAF 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)	137	35	40	28	0.23	0.48	4.95	1.25	1.45
-30	(-22)	192	48	56	34	0.26	0.67	5.61	1.41	1.64
-25	(-13)	257	65	75	41	0.30	0.89	6.31	1.59	1.85
-20	(- 4)	336	85	98	47	0.35	1.17	7.07	1.78	2.07
-15	(+ 5)	431	109	126	54	0.40	1.51	7.95	2.00	2.33
-10	(+14)	546	138	160	61	0.45	1.91	8.96	2.26	2.63

TEST CONDITIONS: @220V1600RPM		CECOMAF 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)	112	28	33	29	0.22	0.43	3.79	0.95	1.11
-30	(-22)	156	39	46	35	0.25	0.59	4.41	1.11	1.29
-25	(-13)	209	53	61	42	0.31	0.80	5.01	1.26	1.47
-20	(- 4)	275	69	81	49	0.38	1.05	5.61	1.41	1.64
-15	(+ 5)	357	90	105	57	0.46	1.37	6.26	1.58	1.83
-10	(+14)	457	115	134	65	0.55	1.76	6.99	1.76	2.05

TEST CONDITIONS: @220V2000RPM		CECOMAF 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)	210	53	62	35	0.27	0.67	5.92	1.49	1.73
-30	(-22)	282	71	83	42	0.31	0.91	6.78	1.71	1.99
-25	(-13)	370	93	108	48	0.36	1.19	7.72	1.95	2.26
-20	(- 4)	475	120	139	54	0.41	1.53	8.76	2.21	2.57
-15	(+ 5)	601	151	176	60	0.45	1.93	9.95	2.51	2.92
-10	(+14)	750	189	220	66	0.50	2.42	11.33	2.86	3.32

TEST CONDITIONS: @220V2000RPM		CECOMAF 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)	179	45	52	37	0.28	0.62	4.88	1.23	1.43
-30	(-22)	244	62	72	44	0.33	0.85	5.57	1.40	1.63
-25	(-13)	323	81	95	51	0.38	1.12	6.29	1.58	1.84
-20	(- 4)	418	105	122	59	0.44	1.46	7.06	1.78	2.07
-15	(+ 5)	531	134	156	67	0.49	1.86	7.94	2.00	2.33
-10	(+14)	666	168	195	74	0.54	2.33	8.97	2.26	2.63

### E - PERFORMANCE - CURVES

TEST CONDITIONS:		CECOMAF			(Condensing temperature 55°C (+131°F))					
@220V2000RPM		Static								
Evaporating temperature	Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE			
	+/- 5%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	142	36	42	37	0.27	0.54	3.85	0.97	1.13	
-30 (-22)	201	51	59	45	0.34	0.76	4.46	1.12	1.31	
-25 (-13)	272	69	80	54	0.40	1.04	5.04	1.27	1.48	
-20 (- 4)	357	90	105	63	0.47	1.36	5.64	1.42	1.65	
-15 (+ 5)	458	116	134	73	0.53	1.76	6.30	1.59	1.85	
-10 (+14)	579	146	170	82	0.59	2.22	7.05	1.78	2.07	

TEST CONDITIONS:		CECOMAF			(Condensing temperature 35°C (+95°F))					
@220V3000RPM		Static								
Evaporating temperature	Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE			
	+/- 5%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	312	79	91	54	0.40	1.00	5.73	1.44	1.68	
-30 (-22)	428	108	126	65	0.47	1.37	6.61	1.67	1.94	
-25 (-13)	565	142	166	75	0.54	1.81	7.51	1.89	2.20	
-20 (- 4)	726	183	213	86	0.62	2.33	8.45	2.13	2.48	
-15 (+ 5)	914	230	268	97	0.70	2.94	9.46	2.38	2.77	
-10 (+14)	1132	285	332	108	0.76	3.65	10.54	2.66	3.09	

TEST CONDITIONS:		CECOMAF			(Condensing temperature 45°C (+113°F))					
@220V3000RPM		Static								
Evaporating temperature	Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE			
	+/- 5%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	259	65	76	55	0.42	0.90	4.73	1.19	1.39	
-30 (-22)	364	92	107	67	0.49	1.27	5.44	1.37	1.59	
-25 (-13)	489	123	143	79	0.58	1.70	6.16	1.55	1.80	
-20 (- 4)	637	160	187	92	0.66	2.22	6.91	1.74	2.02	
-15 (+ 5)	810	204	237	105	0.75	2.83	7.71	1.94	2.26	
-10 (+14)	1013	255	297	118	0.83	3.55	8.58	2.16	2.51	

TEST CONDITIONS:		CECOMAF			(Condensing temperature 55°C (+131°F))					
@220V3000RPM		Static								
Evaporating temperature	Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE			
	+/- 5%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	213	54	62	55	0.40	0.81	3.85	0.97	1.13	
-30 (-22)	304	77	89	69	0.50	1.15	4.43	1.12	1.30	
-25 (-13)	413	104	121	82	0.61	1.57	5.01	1.26	1.47	
-20 (- 4)	543	137	159	97	0.73	2.08	5.61	1.41	1.64	
-15 (+ 5)	699	176	205	112	0.84	2.68	6.25	1.57	1.83	
-10 (+14)	882	222	259	127	0.96	3.39	6.94	1.75	2.03	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V4500RPM		CECOMAF 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)	447	113	131	85	0.61	1.43	5.27	1.33	1.54	
-30 (-22)	590	149	173	98	0.69	1.90	6.01	1.51	1.76	
-25 (-13)	749	189	220	111	0.76	2.41	6.79	1.71	1.99	
-20 (- 4)	943	238	276	124	0.83	3.03	7.63	1.92	2.24	
-15 (+ 5)	1188	299	348	139	0.91	3.82	8.55	2.15	2.50	
-10 (+14)	1504	379	441	157	1.00	4.85	9.54	2.40	2.80	

TEST CONDITIONS: @220V4500RPM		CECOMAF 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)	401	101	118	88	0.64	1.39	4.54	1.14	1.33	
-30 (-22)	535	135	157	104	0.73	1.86	5.12	1.29	1.50	
-25 (-13)	677	171	198	118	0.82	2.36	5.75	1.45	1.68	
-20 (- 4)	847	213	248	133	0.89	2.95	6.42	1.62	1.88	
-15 (+ 5)	1061	267	311	149	0.97	3.71	7.15	1.80	2.10	
-10 (+14)	1338	337	392	168	1.06	4.69	7.96	2.00	2.33	

TEST CONDITIONS: @220V4500RPM		CECOMAF 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)	324	82	95	88	0.63	1.24	3.73	0.94	1.09	
-30 (-22)	458	115	134	107	0.75	1.73	4.22	1.06	1.24	
-25 (-13)	595	150	174	125	0.85	2.26	4.73	1.19	1.39	
-20 (- 4)	751	189	220	142	0.94	2.87	5.28	1.33	1.55	
-15 (+ 5)	945	238	277	161	1.03	3.63	5.89	1.48	1.72	
-10 (+14)	1195	301	350	183	1.12	4.60	6.55	1.65	1.92	

### F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal 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 + 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 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		