

### COMPRESSOR DEFINITION

Designation	VES A5C
Nominal Voltage/Frequency	230 V 40-150 Hz
Engineering Number	513907217

### 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-Medium Back Pressure		
4.1 Evaporating temperature range	-35°C to -5°C	(-31°F to 23°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	5.19	[cm <sup>3</sup> ] (0.317 cu.in)
2.1 Bore [mm]	21.000	
2.2 Stroke [mm]	15.000	
3 Lubricant charge	200	[ml] (6.76 fl.oz.)
3.1 Lubricants approved		
3.2 Lubricants type/viscosity	ALQUILB / ISO5	
4 Weight (with oil charge)	5.99	[kg] (13.21 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	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	11.50	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	11.50	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (40/150 Hz)	2.10/2.10	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (40/150 Hz)	2.10/2.10	[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	CCC - VDE	

### D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS: @220V1300RPM			CECOMAFLBP Static		Evaporating temperature (Condensing temperature		-25°C (-13°F) 55°C (131°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]
82	21	24	18	0.17	0.31	4.53	1.14	1.33

TEST CONDITIONS: @220V1600RPM			CECOMAFLBP Static		Evaporating temperature (Condensing temperature		-25°C (-13°F) 55°C (131°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]
104	26	30	22	0.20	0.40	4.66	1.17	1.37

TEST CONDITIONS: @220V2000RPM			CECOMAFLBP Static		Evaporating temperature (Condensing temperature		-25°C (-13°F) 55°C (131°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]
133	34	39	28	0.24	0.51	4.75	1.20	1.39

TEST CONDITIONS: @220V3000RPM			CECOMAFLBP Static		Evaporating temperature (Condensing temperature		-25°C (-13°F) 55°C (131°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]
199	50	58	43	0.35	0.76	4.68	1.18	1.37

TEST CONDITIONS: @220V4500RPM			CECOMAFLBP Static		Evaporating temperature (Condensing temperature		-25°C (-13°F) 55°C (131°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]
292	74	86	67	0.53	1.11	4.37	1.10	1.28

### 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)	55	14	16	13	0.12	0.17	4.44	1.12	1.30	
-30 (-22)	90	23	26	15	0.14	0.29	5.95	1.50	1.74	
-25 (-13)	123	31	36	17	0.17	0.40	7.15	1.80	2.10	
-20 (- 4)	160	40	47	19	0.18	0.52	8.25	2.08	2.42	
-15 (+ 5)	205	52	60	22	0.20	0.66	9.48	2.39	2.78	
-10 (+14)	262	66	77	24	0.21	0.84	11.05	2.79	3.24	
-5 (+23)	335	84	98	25	0.22	1.08	13.19	3.32	3.87	

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)	47	12	14	12	0.12	0.16	3.68	0.93	1.08	
-30 (-22)	76	19	22	15	0.15	0.27	4.91	1.24	1.44	
-25 (-13)	105	26	31	18	0.17	0.37	5.77	1.45	1.69	
-20 (- 4)	136	34	40	21	0.19	0.48	6.49	1.63	1.90	
-15 (+ 5)	175	44	51	24	0.21	0.61	7.28	1.83	2.13	
-10 (+14)	226	57	66	27	0.23	0.79	8.37	2.11	2.45	
-5 (+23)	292	74	86	29	0.25	1.03	9.97	2.51	2.92	

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)	31	8	9	12	0.12	0.12	2.65	0.67	0.78	
-30 (-22)	57	14	17	15	0.14	0.22	3.80	0.96	1.11	
-25 (-13)	82	21	24	18	0.17	0.31	4.54	1.14	1.33	
-20 (- 4)	110	28	32	22	0.20	0.42	5.08	1.28	1.49	
-15 (+ 5)	145	37	42	26	0.24	0.56	5.64	1.42	1.65	
-10 (+14)	191	48	56	29	0.28	0.74	6.46	1.63	1.89	
-5 (+23)	253	64	74	33	0.33	0.97	7.73	1.95	2.27	

### E - PERFORMANCE - CURVES

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)	76	19	22	16	0.15	0.24	4.89	1.23	1.43	
-30 (-22)	111	28	33	18	0.17	0.36	6.07	1.53	1.78	
-25 (-13)	152	38	45	21	0.19	0.49	7.23	1.82	2.12	
-20 (- 4)	201	51	59	24	0.21	0.65	8.45	2.13	2.47	
-15 (+ 5)	259	65	76	26	0.23	0.83	9.81	2.47	2.87	
-10 (+14)	330	83	97	29	0.25	1.06	11.41	2.87	3.34	
-5 (+23)	414	104	121	31	0.26	1.34	13.33	3.36	3.90	

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)	58	15	17	15	0.14	0.20	3.82	0.96	1.12	
-30 (-22)	90	23	26	18	0.17	0.31	4.86	1.22	1.42	
-25 (-13)	127	32	37	22	0.19	0.44	5.78	1.46	1.69	
-20 (- 4)	170	43	50	25	0.22	0.59	6.69	1.69	1.96	
-15 (+ 5)	223	56	65	29	0.25	0.78	7.65	1.93	2.24	
-10 (+14)	286	72	84	33	0.27	1.00	8.77	2.21	2.57	
-5 (+23)	363	91	106	36	0.30	1.27	10.13	2.55	2.97	

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)	42	11	12	15	0.14	0.16	2.84	0.72	0.83	
-30 (-22)	71	18	21	18	0.17	0.27	3.86	0.97	1.13	
-25 (-13)	104	26	30	22	0.20	0.40	4.69	1.18	1.37	
-20 (- 4)	143	36	42	27	0.23	0.55	5.41	1.36	1.58	
-15 (+ 5)	190	48	56	31	0.27	0.73	6.11	1.54	1.79	
-10 (+14)	247	62	72	36	0.30	0.95	6.87	1.73	2.01	
-5 (+23)	316	80	93	41	0.35	1.22	7.79	1.96	2.28	

### E - PERFORMANCE - CURVES

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)	101	25	29	20	0.18	0.32	5.15	1.30	1.51	
-30 (-22)	142	36	41	23	0.20	0.46	6.17	1.55	1.81	
-25 (-13)	192	48	56	27	0.23	0.62	7.24	1.83	2.12	
-20 (- 4)	254	64	74	30	0.26	0.82	8.43	2.13	2.47	
-15 (+ 5)	328	83	96	33	0.28	1.05	9.80	2.47	2.87	
-10 (+14)	416	105	122	36	0.30	1.34	11.41	2.88	3.34	
-5 (+23)	518	130	152	39	0.32	1.67	13.33	3.36	3.91	

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)	76	19	22	19	0.17	0.26	4.03	1.02	1.18	
-30 (-22)	115	29	34	23	0.20	0.40	4.98	1.26	1.46	
-25 (-13)	162	41	47	27	0.24	0.56	5.88	1.48	1.72	
-20 (- 4)	218	55	64	32	0.27	0.76	6.79	1.71	1.99	
-15 (+ 5)	285	72	84	37	0.31	1.00	7.77	1.96	2.28	
-10 (+14)	364	92	107	41	0.34	1.27	8.89	2.24	2.60	
-5 (+23)	456	115	134	45	0.36	1.60	10.21	2.57	2.99	

TEST CONDITIONS: @220V2000RPM		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)	54	14	16	19	0.17	0.21	2.89	0.73	0.85	
-30 (-22)	90	23	26	23	0.20	0.34	3.89	0.98	1.14	
-25 (-13)	133	33	39	28	0.24	0.51	4.74	1.19	1.39	
-20 (- 4)	182	46	53	34	0.28	0.70	5.49	1.38	1.61	
-15 (+ 5)	241	61	71	39	0.32	0.92	6.21	1.56	1.82	
-10 (+14)	310	78	91	45	0.36	1.19	6.96	1.75	2.04	
-5 (+23)	391	98	114	50	0.40	1.50	7.81	1.97	2.29	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V3000RPM		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)	152	38	45	30	0.25	0.49	5.11	1.29	1.50	
-30 (-22)	216	54	63	35	0.29	0.69	6.09	1.53	1.78	
-25 (-13)	296	74	87	41	0.34	0.95	7.13	1.80	2.09	
-20 (- 4)	392	99	115	48	0.38	1.26	8.26	2.08	2.42	
-15 (+ 5)	504	127	148	53	0.42	1.62	9.53	2.40	2.79	
-10 (+14)	634	160	186	58	0.46	2.05	10.97	2.76	3.21	
-5 (+23)	782	197	229	62	0.48	2.53	12.64	3.18	3.70	

TEST CONDITIONS: @220V3000RPM		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)	124	31	36	30	0.26	0.43	4.12	1.04	1.21	
-30 (-22)	178	45	52	36	0.30	0.62	4.97	1.25	1.46	
-25 (-13)	249	63	73	43	0.35	0.86	5.81	1.46	1.70	
-20 (- 4)	335	84	98	50	0.40	1.17	6.69	1.69	1.96	
-15 (+ 5)	437	110	128	57	0.45	1.53	7.65	1.93	2.24	
-10 (+14)	556	140	163	64	0.49	1.95	8.73	2.20	2.56	
-5 (+23)	692	174	203	70	0.53	2.43	9.97	2.51	2.92	

TEST CONDITIONS: @220V3000RPM		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)	95	24	28	30	0.26	0.36	3.14	0.79	0.92	
-30 (-22)	140	35	41	36	0.30	0.53	3.94	0.99	1.15	
-25 (-13)	199	50	58	43	0.35	0.76	4.68	1.18	1.37	
-20 (- 4)	275	69	81	51	0.41	1.05	5.39	1.36	1.58	
-15 (+ 5)	366	92	107	60	0.47	1.40	6.13	1.54	1.80	
-10 (+14)	473	119	139	68	0.53	1.82	6.93	1.75	2.03	
-5 (+23)	597	151	175	76	0.58	2.30	7.83	1.97	2.29	

### 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)	223	56	65	48	0.38	0.71	4.69	1.18	1.37	
-30 (-22)	310	78	91	56	0.44	1.00	5.55	1.40	1.63	
-25 (-13)	418	105	122	65	0.50	1.34	6.44	1.62	1.89	
-20 (- 4)	550	139	161	74	0.57	1.77	7.41	1.87	2.17	
-15 (+ 5)	712	179	209	83	0.64	2.29	8.52	2.15	2.50	
-10 (+14)	910	229	267	92	0.70	2.93	9.81	2.47	2.87	
-5 (+23)	1149	290	337	102	0.76	3.72	11.33	2.85	3.32	

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)	189	48	55	48	0.40	0.65	3.91	0.99	1.15	
-30 (-22)	268	68	79	58	0.46	0.93	4.68	1.18	1.37	
-25 (-13)	363	91	106	68	0.53	1.26	5.42	1.37	1.59	
-20 (- 4)	478	120	140	78	0.61	1.67	6.17	1.55	1.81	
-15 (+ 5)	620	156	182	89	0.68	2.16	6.98	1.76	2.05	
-10 (+14)	793	200	232	100	0.75	2.77	7.92	2.00	2.32	
-5 (+23)	1003	253	294	111	0.82	3.52	9.02	2.27	2.64	

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)	123	31	36	43	0.35	0.47	2.80	0.71	0.82	
-30 (-22)	202	51	59	55	0.44	0.77	3.63	0.92	1.06	
-25 (-13)	292	74	86	67	0.53	1.11	4.36	1.10	1.28	
-20 (- 4)	399	101	117	80	0.62	1.53	5.04	1.27	1.48	
-15 (+ 5)	528	133	155	93	0.71	2.02	5.72	1.44	1.68	
-10 (+14)	685	173	201	106	0.81	2.63	6.45	1.63	1.89	
-5 (+23)	874	220	256	120	0.90	3.36	7.29	1.84	2.14	

### 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 0° 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		