

### COMPRESSOR DEFINITION

Designation	VES D11C
Nominal Voltage/Frequency	230 V 40-150 Hz
Engineering Number	513907040

### 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 pressures/temperature			
9.1 Operating (gauge)	7.7	[kgf/cm <sup>2</sup> ] (109 psig)	/ °C - °F
9.2 Peak (gauge)	9.8	[kgf/cm <sup>2</sup> ] (139 psig)	/ °C - °F
10 Maximum winding temperature	130	[ °C ]	

### B - MECHANICAL DATA

1 Commercial designation	1/5	[hp]
2 Displacement	11.14	[cm <sup>3</sup> ] (0.680 cu.in)
2.1 Bore [mm]	26.000	
2.2 Stroke [mm]	21.000	
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)	6.75	[kg] (14.88 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	9.60	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	9.60	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (40/150 Hz)	2.10	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (40/150 Hz)	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

### E - PERFORMANCE - CURVES

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 35°C (+95°F))					
@220V1300RPM		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)	177	45	52	28	0.22	0.56	6.43	1.62	1.88	
-30 (-22)	237	60	69	32	0.26	0.74	7.30	1.84	2.14	
-25 (-13)	309	78	90	37	0.29	0.97	8.26	2.08	2.42	
-20 (- 4)	396	100	116	42	0.33	1.24	9.36	2.36	2.74	
-15 (+ 5)	499	126	146	47	0.36	1.57	10.64	2.68	3.12	
-10 (+14)	621	156	182	51	0.39	1.96	12.15	3.06	3.56	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 45°C (+113°F))					
@220V1300RPM		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)	163	41	48	29	0.23	0.51	5.71	1.44	1.67	
-30 (-22)	220	56	65	34	0.27	0.69	6.47	1.63	1.89	
-25 (-13)	291	73	85	40	0.32	0.91	7.26	1.83	2.13	
-20 (- 4)	377	95	110	46	0.36	1.18	8.14	2.05	2.38	
-15 (+ 5)	479	121	140	52	0.40	1.51	9.13	2.30	2.68	
-10 (+14)	600	151	176	58	0.44	1.89	10.30	2.60	3.02	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 55°C (+131°F))					
@220V1300RPM		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)	145	36	42	29	0.23	0.45	4.89	1.23	1.43	
-30 (-22)	199	50	58	36	0.27	0.62	5.60	1.41	1.64	
-25 (-13)	266	67	78	43	0.32	0.84	6.29	1.58	1.84	
-20 (- 4)	349	88	102	50	0.37	1.10	7.00	1.76	2.05	
-15 (+ 5)	449	113	131	58	0.43	1.41	7.78	1.96	2.28	
-10 (+14)	567	143	166	65	0.48	1.79	8.68	2.19	2.54	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 35°C (+95°F))					
@220V1600RPM		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)	215	54	63	34	0.27	0.67	6.39	1.61	1.87	
-30 (-22)	289	73	85	40	0.31	0.91	7.25	1.83	2.13	
-25 (-13)	381	96	112	46	0.36	1.20	8.23	2.07	2.41	
-20 (- 4)	491	124	144	53	0.40	1.54	9.34	2.35	2.74	
-15 (+ 5)	622	157	182	59	0.44	1.96	10.63	2.68	3.12	
-10 (+14)	776	196	227	64	0.48	2.45	12.14	3.06	3.56	

### 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)	204	51	60	35	0.29	0.64	5.76	1.45	1.69	
-30 (-22)	273	69	80	42	0.33	0.86	6.47	1.63	1.90	
-25 (-13)	359	91	105	49	0.38	1.13	7.25	1.83	2.12	
-20 (- 4)	465	117	136	57	0.43	1.46	8.12	2.05	2.38	
-15 (+ 5)	593	149	174	65	0.48	1.87	9.12	2.30	2.67	
-10 (+14)	743	187	218	72	0.53	2.34	10.29	2.59	3.01	

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)	185	47	54	36	0.29	0.58	5.06	1.28	1.48	
-30 (-22)	249	63	73	44	0.34	0.78	5.73	1.44	1.68	
-25 (-13)	332	84	97	52	0.39	1.04	6.40	1.61	1.88	
-20 (- 4)	435	110	127	61	0.46	1.37	7.13	1.80	2.09	
-15 (+ 5)	560	141	164	71	0.52	1.76	7.93	2.00	2.32	
-10 (+14)	710	179	208	80	0.59	2.24	8.86	2.23	2.60	

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)	272	69	80	43	0.33	0.85	6.26	1.58	1.83	
-30 (-22)	363	91	106	51	0.38	1.14	7.13	1.80	2.09	
-25 (-13)	476	120	140	59	0.44	1.49	8.08	2.04	2.37	
-20 (- 4)	614	155	180	67	0.50	1.93	9.14	2.30	2.68	
-15 (+ 5)	778	196	228	75	0.55	2.45	10.34	2.61	3.03	
-10 (+14)	968	244	284	83	0.60	3.05	11.73	2.95	3.44	

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)	254	64	74	45	0.34	0.80	5.68	1.43	1.66	
-30 (-22)	341	86	100	53	0.40	1.07	6.43	1.62	1.89	
-25 (-13)	452	114	132	63	0.47	1.42	7.22	1.82	2.12	
-20 (- 4)	587	148	172	72	0.54	1.84	8.08	2.04	2.37	
-15 (+ 5)	747	188	219	83	0.61	2.35	9.04	2.28	2.65	
-10 (+14)	935	236	274	92	0.67	2.95	10.14	2.55	2.97	

### 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)	229	58	67	45	0.35	0.72	5.03	1.27	1.47	
-30 (-22)	314	79	92	55	0.41	0.99	5.74	1.45	1.68	
-25 (-13)	423	107	124	66	0.49	1.33	6.45	1.63	1.89	
-20 (- 4)	557	140	163	77	0.57	1.75	7.19	1.81	2.11	
-15 (+ 5)	716	180	210	89	0.65	2.25	7.99	2.01	2.34	
-10 (+14)	903	227	265	101	0.73	2.85	8.88	2.24	2.60	

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)	414	104	121	69	0.52	1.30	6.01	1.52	1.76	
-30 (-22)	551	139	161	80	0.59	1.73	6.85	1.73	2.01	
-25 (-13)	720	181	211	93	0.68	2.26	7.71	1.94	2.26	
-20 (- 4)	925	233	271	107	0.78	2.91	8.62	2.17	2.53	
-15 (+ 5)	1168	294	342	122	0.87	3.67	9.58	2.41	2.81	
-10 (+14)	1451	366	425	137	0.97	4.58	10.60	2.67	3.11	

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)	379	96	111	70	0.52	1.19	5.40	1.36	1.58	
-30 (-22)	515	130	151	84	0.61	1.61	6.15	1.55	1.80	
-25 (-13)	682	172	200	99	0.71	2.14	6.91	1.74	2.03	
-20 (- 4)	883	223	259	115	0.82	2.78	7.71	1.94	2.26	
-15 (+ 5)	1121	282	328	131	0.94	3.53	8.55	2.16	2.51	
-10 (+14)	1397	352	409	148	1.05	4.41	9.45	2.38	2.77	

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)	340	86	100	69	0.52	1.06	4.89	1.23	1.43	
-30 (-22)	475	120	139	85	0.62	1.49	5.57	1.40	1.63	
-25 (-13)	641	161	188	102	0.74	2.01	6.26	1.58	1.83	
-20 (- 4)	838	211	246	120	0.86	2.63	6.97	1.76	2.04	
-15 (+ 5)	1071	270	314	139	0.99	3.37	7.71	1.94	2.26	
-10 (+14)	1340	338	393	158	1.12	4.23	8.49	2.14	2.49	

### 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)	567	143	166	104	0.74	1.78	5.45	1.37	1.60	
-30 (-22)	743	187	218	120	0.81	2.33	6.15	1.55	1.80	
-25 (-13)	938	236	275	136	0.91	2.94	6.90	1.74	2.02	
-20 (- 4)	1182	298	346	153	1.02	3.71	7.73	1.95	2.27	
-15 (+ 5)	1507	380	442	173	1.11	4.74	8.70	2.19	2.55	
-10 (+14)	1945	490	570	197	1.18	6.13	9.84	2.48	2.88	

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)	537	135	157	107	0.77	1.68	5.03	1.27	1.47	
-30 (-22)	707	178	207	124	0.85	2.22	5.67	1.43	1.66	
-25 (-13)	899	227	263	142	0.96	2.82	6.33	1.60	1.86	
-20 (- 4)	1144	288	335	162	1.07	3.59	7.07	1.78	2.07	
-15 (+ 5)	1473	371	432	185	1.17	4.64	7.93	2.00	2.32	
-10 (+14)	1917	483	562	213	1.23	6.05	8.96	2.26	2.63	

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)	514	130	151	110	0.78	1.61	4.66	1.17	1.36	
-30 (-22)	677	171	199	129	0.88	2.12	5.23	1.32	1.53	
-25 (-13)	865	218	254	149	1.00	2.72	5.82	1.47	1.71	
-20 (- 4)	1109	280	325	172	1.11	3.49	6.48	1.63	1.90	
-15 (+ 5)	1440	363	422	199	1.21	4.53	7.24	1.82	2.12	
-10 (+14)	1889	476	554	231	1.26	5.96	8.16	2.06	2.39	

### 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	Straight		
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 + 59° 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 0° up + 24° to Back		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		