

### COMPRESSOR DEFINITION

Designation	VES D11C
Nominal Voltage/Frequency	230 V 40-150 Hz
Engineering Number	513907445

### 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 (Curves until T.Evap -10°C)		
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	1/4+	[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)	6.5	[kg] (14.33 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	15.60	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	15.60	[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

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]	
292	74	86	46	0.38	0.92	6.35	1.60	1.86	

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]	
455	115	133	70	0.56	1.43	6.55	1.65	1.92	

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]	
868	219	254	146	1.10	2.73	5.96	1.50	1.75	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: <b>@220V1300RPM</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)	182	46	53	28	0.27	0.57	6.49	1.64	1.90
-30	(-22)	235	59	69	33	0.32	0.74	7.21	1.82	2.11
-25	(-13)	304	77	89	37	0.37	0.95	8.12	2.05	2.38
-20	(- 4)	390	98	114	42	0.41	1.23	9.22	2.32	2.70
-15	(+ 5)	496	125	145	47	0.44	1.56	10.52	2.65	3.08
-10	(+14)	622	157	182	52	0.44	1.96	12.00	3.02	3.52

TEST CONDITIONS: <b>@220V1300RPM</b>		<b>ASHRAE32</b> <b>Static</b>				(Condensing temperature <b>45°C (+113°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	29	0.29	0.52	5.73	1.44	1.68
-30	(-22)	219	55	64	35	0.34	0.69	6.31	1.59	1.85
-25	(-13)	287	72	84	41	0.39	0.90	7.02	1.77	2.06
-20	(- 4)	371	94	109	47	0.44	1.17	7.87	1.98	2.30
-15	(+ 5)	474	119	139	54	0.48	1.49	8.84	2.23	2.59
-10	(+14)	596	150	175	60	0.50	1.88	9.95	2.51	2.92

### E - PERFORMANCE - CURVES

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]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35 (-31)	150	38	44	30	0.29	0.47	5.04	1.27	1.48	
-30 (-22)	201	51	59	36	0.34	0.63	5.54	1.40	1.62	
-25 (-13)	267	67	78	44	0.40	0.84	6.12	1.54	1.79	
-20 (- 4)	348	88	102	52	0.45	1.09	6.77	1.71	1.98	
-15 (+ 5)	447	113	131	60	0.50	1.41	7.49	1.89	2.20	
-10 (+14)	565	142	166	68	0.54	1.78	8.29	2.09	2.43	

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]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35 (-31)	220	55	64	34	0.33	0.69	6.44	1.62	1.89	
-30 (-22)	289	73	85	40	0.39	0.91	7.20	1.81	2.11	
-25 (-13)	377	95	110	46	0.45	1.18	8.14	2.05	2.39	
-20 (- 4)	483	122	142	52	0.50	1.52	9.24	2.33	2.71	
-15 (+ 5)	606	153	178	58	0.53	1.91	10.48	2.64	3.07	
-10 (+14)	745	188	218	63	0.52	2.35	11.81	2.98	3.46	

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	36	0.35	0.64	5.71	1.44	1.67	
-30 (-22)	271	68	79	43	0.41	0.85	6.38	1.61	1.87	
-25 (-13)	358	90	105	50	0.47	1.12	7.17	1.81	2.10	
-20 (- 4)	462	117	135	57	0.53	1.45	8.05	2.03	2.36	
-15 (+ 5)	584	147	171	65	0.58	1.84	8.98	2.26	2.63	
-10 (+14)	721	182	211	73	0.59	2.27	9.94	2.51	2.91	

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)	184	46	54	36	0.35	0.58	5.07	1.28	1.49	
-30 (-22)	247	62	72	44	0.40	0.78	5.66	1.43	1.66	
-25 (-13)	330	83	97	53	0.47	1.04	6.29	1.59	1.84	
-20 (- 4)	432	109	126	62	0.54	1.36	6.95	1.75	2.04	
-15 (+ 5)	550	139	161	72	0.59	1.73	7.59	1.91	2.22	
-10 (+14)	684	172	200	83	0.62	2.16	8.19	2.06	2.40	

### E - PERFORMANCE - CURVES

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)	268	68	79	43	0.41	0.84	6.31	1.59	1.85	
-30 (-22)	376	95	110	50	0.48	1.18	7.32	1.84	2.14	
-25 (-13)	478	121	140	58	0.54	1.50	8.20	2.07	2.40	
-20 (- 4)	594	150	174	65	0.60	1.86	9.11	2.30	2.67	
-15 (+ 5)	740	186	217	73	0.67	2.33	10.19	2.57	2.99	
-10 (+14)	934	235	274	81	0.74	2.95	11.58	2.92	3.39	

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)	262	66	77	45	0.42	0.82	5.76	1.45	1.69	
-30 (-22)	349	88	102	53	0.50	1.09	6.45	1.63	1.89	
-25 (-13)	439	111	129	62	0.58	1.38	7.08	1.78	2.08	
-20 (- 4)	552	139	162	71	0.66	1.73	7.79	1.96	2.28	
-15 (+ 5)	704	178	206	81	0.74	2.22	8.73	2.20	2.56	
-10 (+14)	915	230	268	91	0.83	2.88	10.04	2.53	2.94	

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)	233	59	68	46	0.43	0.73	5.10	1.28	1.49	
-30 (-22)	315	79	92	56	0.52	0.99	5.67	1.43	1.66	
-25 (-13)	411	103	120	66	0.61	1.29	6.24	1.57	1.83	
-20 (- 4)	537	135	157	77	0.71	1.69	6.96	1.75	2.04	
-15 (+ 5)	712	179	209	89	0.81	2.24	7.95	2.00	2.33	
-10 (+14)	954	240	280	102	0.91	3.01	9.38	2.36	2.75	

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)	405	102	119	67	0.61	1.27	6.06	1.53	1.78	
-30 (-22)	536	135	157	78	0.71	1.68	6.84	1.72	2.01	
-25 (-13)	686	173	201	90	0.81	2.15	7.64	1.93	2.24	
-20 (- 4)	867	218	254	102	0.92	2.72	8.48	2.14	2.48	
-15 (+ 5)	1089	274	319	116	1.03	3.43	9.38	2.36	2.75	
-10 (+14)	1363	343	399	131	1.16	4.30	10.38	2.62	3.04	

### 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)	375	94	110	69	0.63	1.17	5.45	1.37	1.60
-30	(-22)	515	130	151	83	0.75	1.61	6.17	1.55	1.81
-25	(-13)	670	169	196	97	0.87	2.10	6.88	1.73	2.02
-20	(- 4)	852	215	250	112	1.00	2.68	7.62	1.92	2.23
-15	(+ 5)	1071	270	314	128	1.13	3.37	8.40	2.12	2.46
-10	(+14)	1338	337	392	145	1.27	4.22	9.25	2.33	2.71

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)	341	86	100	70	0.64	1.07	4.90	1.23	1.44
-30	(-22)	483	122	141	86	0.78	1.51	5.56	1.40	1.63
-25	(-13)	636	160	186	103	0.92	2.00	6.19	1.56	1.81
-20	(- 4)	811	204	238	119	1.06	2.55	6.82	1.72	2.00
-15	(+ 5)	1020	257	299	137	1.20	3.21	7.47	1.88	2.19
-10	(+14)	1272	321	373	155	1.36	4.01	8.18	2.06	2.40

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)	559	141	164	101	0.76	1.75	5.51	1.39	1.62
-30	(-22)	698	176	204	113	0.83	2.19	6.23	1.57	1.83
-25	(-13)	912	230	267	130	0.96	2.86	7.00	1.76	2.05
-20	(- 4)	1176	296	345	150	1.12	3.69	7.81	1.97	2.29
-15	(+ 5)	1463	369	429	169	1.30	4.60	8.66	2.18	2.54
-10	(+14)	1747	440	512	183	1.48	5.51	9.54	2.40	2.80

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)	507	128	149	102	0.78	1.59	4.98	1.25	1.46
-30	(-22)	663	167	194	119	0.89	2.08	5.64	1.42	1.65
-25	(-13)	880	222	258	139	1.02	2.76	6.35	1.60	1.86
-20	(- 4)	1130	285	331	159	1.15	3.55	7.12	1.79	2.09
-15	(+ 5)	1389	350	407	176	1.27	4.37	7.92	2.00	2.32
-10	(+14)	1630	411	478	186	1.36	5.14	8.76	2.21	2.57

### E - PERFORMANCE - CURVES

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)	455	115	133	100	0.74	1.42	4.55	1.15	1.33
-30	(-22)	624	157	183	122	0.92	1.95	5.13	1.29	1.50
-25	(-13)	837	211	245	145	1.09	2.63	5.77	1.45	1.69
-20	(- 4)	1070	270	313	165	1.23	3.36	6.46	1.63	1.89
-15	(+ 5)	1295	326	379	180	1.33	4.08	7.19	1.81	2.11
-10	(+14)	1487	375	436	187	1.36	4.69	7.97	2.01	2.33

### 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 + 49° 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	8.2 +0.12/-0.08	[mm]	(0.323" +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		