

COMPRESSOR DEFINITION

Designation	VES D9C
Nominal Voltage/Frequency	230 V 40-150 Hz
Engineering Number	513907283

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 ²] (98 psig)	/ °C - °F
9.2 Peak	7.8	[kgf/cm ²] (111 psig)	/ °C - °F
10 Maximum winding temperature	130	[°C]	

B - MECHANICAL DATA

1 Commercial designation	1/5	[hp]
2 Displacement	9.04	[cm ³] (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)	6.57	[kg] (14.48 lb.)
5 Nitrogen charge	-	[kgf/cm ²]

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	VCC32456XXXXX	
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: @220V1300RPM			ASHRAELBP32 Static		Evaporating temperature (Condensing temperature		-23.3°C (-9.94°F) 54.4°C (129.92°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]	
226	57	66	36	0.31	0.71	6.30	1.59	1.85	

TEST CONDITIONS: @220V2000RPM			ASHRAELBP32 Static		Evaporating temperature (Condensing temperature		-23.3°C (-9.94°F) 54.4°C (129.92°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]	
362	91	106	55	0.45	1.14	6.61	1.67	1.94	

TEST CONDITIONS: @220V4500RPM			ASHRAELBP32 Static		Evaporating temperature (Condensing temperature		-23.3°C (-9.94°F) 54.4°C (129.92°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]	
714	180	209	117	0.93	2.24	6.10	1.54	1.79	

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]	[kg/h]	[Btu/Wh]	[kcal/Wh]
-35	(-31)	142	36	42	22	0.22	0.44	6.45	1.63	1.89
-30	(-22)	190	48	56	26	0.24	0.60	7.36	1.85	2.16
-25	(-13)	249	63	73	30	0.28	0.78	8.43	2.12	2.47
-20	(- 4)	319	80	94	33	0.32	1.00	9.62	2.42	2.82
-15	(+ 5)	400	101	117	37	0.35	1.26	10.89	2.74	3.19
-10	(+14)	490	123	144	40	0.34	1.55	12.19	3.07	3.57

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]	[kg/h]	[Btu/Wh]	[kcal/Wh]
-35	(-31)	129	33	38	22	0.23	0.41	5.82	1.47	1.71
-30	(-22)	175	44	51	28	0.26	0.55	6.40	1.61	1.88
-25	(-13)	232	59	68	32	0.31	0.73	7.18	1.81	2.10
-20	(- 4)	302	76	88	37	0.36	0.95	8.11	2.04	2.38
-15	(+ 5)	383	96	112	42	0.39	1.20	9.16	2.31	2.69
-10	(+14)	474	120	139	46	0.39	1.50	10.28	2.59	3.01

E - PERFORMANCE - CURVES

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)	114	29	34	23	0.23	0.36	5.03	1.27	1.47	
-30 (-22)	156	39	46	29	0.28	0.49	5.38	1.35	1.58	
-25 (-13)	211	53	62	36	0.34	0.66	5.96	1.50	1.75	
-20 (- 4)	279	70	82	41	0.39	0.88	6.74	1.70	1.97	
-15 (+ 5)	360	91	105	47	0.43	1.13	7.67	1.93	2.25	
-10 (+14)	452	114	132	52	0.44	1.42	8.71	2.20	2.55	

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)	170	43	50	27	0.25	0.53	6.19	1.56	1.81	
-30 (-22)	225	57	66	32	0.29	0.70	7.07	1.78	2.07	
-25 (-13)	291	73	85	36	0.32	0.91	7.99	2.01	2.34	
-20 (- 4)	373	94	109	41	0.36	1.17	9.06	2.28	2.66	
-15 (+ 5)	473	119	139	46	0.38	1.49	10.41	2.62	3.05	
-10 (+14)	596	150	175	49	0.40	1.88	12.15	3.06	3.56	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 45°C (+113°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)	145	36	42	28	0.28	0.45	5.19	1.31	1.52	
-30 (-22)	195	49	57	33	0.32	0.61	5.88	1.48	1.72	
-25 (-13)	255	64	75	39	0.36	0.80	6.51	1.64	1.91	
-20 (- 4)	326	82	96	45	0.39	1.02	7.21	1.82	2.11	
-15 (+ 5)	414	104	121	51	0.42	1.30	8.09	2.04	2.37	
-10 (+14)	520	131	152	56	0.44	1.64	9.27	2.34	2.72	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 55°C (+131°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)	115	29	34	29	0.27	0.36	4.01	1.01	1.17	
-30 (-22)	164	41	48	35	0.31	0.51	4.71	1.19	1.38	
-25 (-13)	219	55	64	42	0.36	0.69	5.27	1.33	1.55	
-20 (- 4)	284	71	83	49	0.41	0.89	5.81	1.46	1.70	
-15 (+ 5)	361	91	106	56	0.45	1.14	6.43	1.62	1.88	
-10 (+14)	455	115	133	63	0.49	1.44	7.26	1.83	2.13	

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)	220	55	64	35	0.28	0.69	6.36	1.60	1.86	
-30 (-22)	286	72	84	40	0.33	0.90	7.14	1.80	2.09	
-25 (-13)	370	93	108	46	0.38	1.16	8.10	2.04	2.37	
-20 (- 4)	474	120	139	51	0.42	1.49	9.24	2.33	2.71	
-15 (+ 5)	602	152	176	57	0.47	1.90	10.56	2.66	3.10	
-10 (+14)	756	191	222	63	0.53	2.38	12.07	3.04	3.54	

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	35	0.35	0.62	5.68	1.43	1.66	
-30 (-22)	266	67	78	42	0.39	0.83	6.36	1.60	1.86	
-25 (-13)	351	88	103	49	0.43	1.10	7.17	1.81	2.10	
-20 (- 4)	455	115	133	56	0.47	1.43	8.10	2.04	2.37	
-15 (+ 5)	580	146	170	63	0.51	1.83	9.15	2.31	2.68	
-10 (+14)	730	184	214	71	0.56	2.30	10.33	2.60	3.03	

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)	176	44	52	35	0.32	0.55	5.03	1.27	1.47	
-30 (-22)	245	62	72	43	0.38	0.77	5.66	1.43	1.66	
-25 (-13)	329	83	96	52	0.43	1.03	6.37	1.60	1.87	
-20 (- 4)	430	108	126	60	0.48	1.35	7.13	1.80	2.09	
-15 (+ 5)	552	139	162	69	0.54	1.74	7.97	2.01	2.34	
-10 (+14)	696	175	204	78	0.60	2.20	8.87	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)	323	81	95	53	0.41	1.01	6.13	1.55	1.80	
-30 (-22)	425	107	125	61	0.49	1.33	6.93	1.75	2.03	
-25 (-13)	541	136	159	70	0.56	1.70	7.72	1.95	2.26	
-20 (- 4)	681	172	200	79	0.62	2.14	8.59	2.16	2.52	
-15 (+ 5)	857	216	251	89	0.70	2.70	9.62	2.42	2.82	
-10 (+14)	1079	272	316	99	0.81	3.40	10.89	2.74	3.19	

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)	288	73	84	54	0.53	0.90	5.37	1.35	1.57
-30	(-22)	403	101	118	64	0.59	1.26	6.23	1.57	1.83
-25	(-13)	527	133	154	75	0.64	1.65	7.01	1.77	2.05
-20	(- 4)	671	169	197	86	0.68	2.11	7.80	1.97	2.29
-15	(+ 5)	847	213	248	97	0.74	2.67	8.68	2.19	2.54
-10	(+14)	1065	268	312	109	0.83	3.36	9.74	2.46	2.86

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)	257	65	75	54	0.49	0.80	4.77	1.20	1.40
-30	(-22)	378	95	111	67	0.57	1.19	5.63	1.42	1.65
-25	(-13)	505	127	148	79	0.64	1.59	6.36	1.60	1.86
-20	(- 4)	648	163	190	93	0.71	2.04	7.03	1.77	2.06
-15	(+ 5)	819	206	240	106	0.79	2.58	7.72	1.95	2.26
-10	(+14)	1028	259	301	120	0.90	3.24	8.53	2.15	2.50

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)	437	110	128	85	0.77	1.37	5.15	1.30	1.51
-30	(-22)	579	146	170	96	0.87	1.81	6.02	1.52	1.76
-25	(-13)	751	189	220	108	0.96	2.36	6.97	1.76	2.04
-20	(- 4)	956	241	280	120	1.06	3.00	7.99	2.01	2.34
-15	(+ 5)	1195	301	350	132	1.16	3.76	9.06	2.28	2.66
-10	(+14)	1469	370	430	145	1.27	4.63	10.17	2.56	2.98

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)	400	101	117	86	0.77	1.25	4.67	1.18	1.37
-30	(-22)	539	136	158	99	0.89	1.69	5.45	1.37	1.60
-25	(-13)	709	179	208	112	1.00	2.22	6.30	1.59	1.85
-20	(- 4)	910	229	267	126	1.11	2.86	7.22	1.82	2.12
-15	(+ 5)	1144	288	335	140	1.23	3.60	8.18	2.06	2.40
-10	(+14)	1414	356	414	154	1.35	4.46	9.18	2.31	2.69

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)	352	89	103	84	0.76	1.10	4.18	1.05	1.23
-30	(-22)	487	123	143	100	0.89	1.53	4.88	1.23	1.43
-25	(-13)	651	164	191	115	1.02	2.04	5.64	1.42	1.65
-20	(- 4)	847	213	248	131	1.15	2.66	6.46	1.63	1.89
-15	(+ 5)	1075	271	315	147	1.28	3.39	7.33	1.85	2.15
-10	(+14)	1339	337	392	163	1.42	4.22	8.21	2.07	2.41

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