

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	-	-
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	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)	2.10/2.10	[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	

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]
233	59	68	37	0.33	0.73	6.38	1.61	1.87

TEST CONDITIONS: @220V1600RPM			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]
288	73	84	43	0.36	0.90	6.67	1.68	1.95

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]
363	91	106	54	0.37	1.14	6.69	1.69	1.96

TEST CONDITIONS: @220V3000RPM			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]
536	135	157	82	0.65	1.68	6.51	1.64	1.91

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]
713	180	209	118	0.95	2.24	6.03	1.52	1.77

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%			+/- 5%	+/- 5%	+/- 5%	+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	142	36	42	22	0.22	0.44	6.52	1.64	1.91	
-30 (-22)	190	48	56	25	0.24	0.60	7.47	1.88	2.19	
-25 (-13)	249	63	73	29	0.28	0.78	8.50	2.14	2.49	
-20 (- 4)	319	80	94	33	0.33	1.00	9.62	2.42	2.82	
-15 (+ 5)	400	101	117	37	0.35	1.26	10.87	2.74	3.19	
-10 (+14)	490	123	144	40	0.32	1.55	12.28	3.09	3.60	

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%			+/- 5%	+/- 5%	+/- 5%	+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	129	33	38	22	0.23	0.41	5.82	1.47	1.70	
-30 (-22)	175	44	51	27	0.26	0.55	6.54	1.65	1.92	
-25 (-13)	232	59	68	32	0.31	0.73	7.32	1.85	2.15	
-20 (- 4)	302	76	88	37	0.36	0.95	8.19	2.06	2.40	
-15 (+ 5)	383	96	112	42	0.40	1.20	9.17	2.31	2.69	
-10 (+14)	474	120	139	46	0.39	1.50	10.28	2.59	3.01	

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%			+/- 5%	+/- 5%	+/- 5%	+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	114	29	34	22	0.23	0.36	5.10	1.28	1.49	
-30 (-22)	156	39	46	28	0.26	0.49	5.68	1.43	1.66	
-25 (-13)	211	53	62	34	0.32	0.66	6.31	1.59	1.85	
-20 (- 4)	279	70	82	40	0.38	0.88	7.01	1.77	2.05	
-15 (+ 5)	360	91	105	46	0.43	1.13	7.80	1.97	2.29	
-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%			+/- 5%	+/- 5%	+/- 5%	+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	174	44	51	27	0.25	0.54	6.39	1.61	1.87	
-30 (-22)	228	57	67	31	0.29	0.71	7.24	1.82	2.12	
-25 (-13)	297	75	87	36	0.33	0.93	8.20	2.07	2.40	
-20 (- 4)	383	96	112	41	0.36	1.20	9.34	2.35	2.74	
-15 (+ 5)	486	122	142	45	0.38	1.53	10.72	2.70	3.14	
-10 (+14)	607	153	178	49	0.40	1.91	12.41	3.13	3.64	

E - PERFORMANCE - CURVES

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%			+/- 5%	+/- 5%	+/- 5%	+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	161	40	47	28	0.28	0.50	5.82	1.47	1.70	
-30 (-22)	216	54	63	33	0.32	0.68	6.56	1.65	1.92	
-25 (-13)	284	72	83	39	0.36	0.89	7.31	1.84	2.14	
-20 (- 4)	367	92	108	45	0.39	1.15	8.16	2.06	2.39	
-15 (+ 5)	465	117	136	51	0.42	1.46	9.15	2.31	2.68	
-10 (+14)	580	146	170	56	0.44	1.83	10.36	2.61	3.03	

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%			+/- 5%	+/- 5%	+/- 5%	+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	139	35	41	28	0.27	0.43	4.89	1.23	1.43	
-30 (-22)	196	49	57	34	0.31	0.61	5.68	1.43	1.67	
-25 (-13)	265	67	78	41	0.36	0.83	6.41	1.62	1.88	
-20 (- 4)	346	87	101	49	0.40	1.09	7.13	1.80	2.09	
-15 (+ 5)	441	111	129	56	0.45	1.39	7.90	1.99	2.31	
-10 (+14)	550	139	161	63	0.49	1.74	8.79	2.21	2.58	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 35°C (+95°F))					
@220V2000RPM		Static								
Evaporating temperature	Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE			
	+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	220	56	65	34	0.28	0.69	6.49	1.64	1.90	
-30 (-22)	319	80	94	41	0.35	1.00	7.41	1.87	2.17	
-25 (-13)	367	93	108	46	0.38	1.15	8.07	2.03	2.36	
-20 (- 4)	437	110	128	50	0.41	1.37	8.98	2.26	2.63	
-15 (+ 5)	603	152	177	56	0.47	1.90	10.71	2.70	3.14	
-10 (+14)	939	237	275	68	0.61	2.96	13.78	3.47	4.04	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 45°C (+113°F))					
@220V2000RPM		Static								
Evaporating temperature	Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE			
	+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 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	5.73	1.44	1.68	
-30 (-22)	302	76	88	43	0.41	0.95	6.67	1.68	1.96	
-25 (-13)	351	88	103	49	0.43	1.10	7.20	1.81	2.11	
-20 (- 4)	419	106	123	54	0.45	1.32	7.85	1.98	2.30	
-15 (+ 5)	580	146	170	63	0.51	1.83	9.18	2.31	2.69	
-10 (+14)	907	229	266	78	0.64	2.86	11.71	2.95	3.43	

E - PERFORMANCE - CURVES

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 55°C (+131°F))					
@220V2000RPM		Static								
Evaporating temperature	Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE			
	+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	175	44	51	35	0.32	0.55	5.03	1.27	1.47	
-30 (-22)	282	71	83	44	0.40	0.88	6.03	1.52	1.77	
-25 (-13)	331	83	97	51	0.43	1.04	6.49	1.64	1.90	
-20 (- 4)	396	100	116	59	0.47	1.24	6.94	1.75	2.03	
-15 (+ 5)	549	138	161	70	0.54	1.73	7.91	1.99	2.32	
-10 (+14)	866	218	254	87	0.68	2.73	9.95	2.51	2.92	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 35°C (+95°F))					
@220V3000RPM		Static								
Evaporating temperature	Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE			
	+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	323	81	95	52	0.41	1.01	6.19	1.56	1.81	
-30 (-22)	480	121	141	64	0.53	1.50	7.24	1.82	2.12	
-25 (-13)	542	137	159	70	0.57	1.70	7.79	1.96	2.28	
-20 (- 4)	629	159	184	77	0.61	1.98	8.44	2.13	2.47	
-15 (+ 5)	860	217	252	88	0.71	2.71	9.76	2.46	2.86	
-10 (+14)	1354	341	397	109	0.95	4.27	12.36	3.12	3.62	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 45°C (+113°F))					
@220V3000RPM		Static								
Evaporating temperature	Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE			
	+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	287	72	84	53	0.53	0.90	5.41	1.36	1.59	
-30 (-22)	456	115	134	66	0.62	1.43	6.53	1.65	1.91	
-25 (-13)	527	133	154	74	0.64	1.65	7.06	1.78	2.07	
-20 (- 4)	617	156	181	83	0.66	1.94	7.60	1.92	2.23	
-15 (+ 5)	848	214	248	97	0.74	2.67	8.73	2.20	2.56	
-10 (+14)	1337	337	392	122	0.96	4.22	11.03	2.78	3.23	

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 55°C (+131°F))					
@220V3000RPM		Static								
Evaporating temperature	Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE			
	+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	259	65	76	53	0.48	0.81	4.85	1.22	1.42	
-30 (-22)	433	109	127	68	0.60	1.36	5.98	1.51	1.75	
-25 (-13)	504	127	148	78	0.64	1.58	6.43	1.62	1.88	
-20 (- 4)	592	149	173	89	0.68	1.86	6.79	1.71	1.99	
-15 (+ 5)	814	205	239	106	0.79	2.56	7.66	1.93	2.24	
-10 (+14)	1291	325	378	134	1.05	4.07	9.61	2.42	2.82	

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)	437	110	128	84	1.52	1.37	5.21	1.31	1.53
-30	(-22)	638	161	187	99	1.83	2.00	6.25	1.57	1.83
-25	(-13)	749	189	220	107	2.05	2.35	7.00	1.76	2.05
-20	(- 4)	894	225	262	116	2.30	2.81	7.84	1.97	2.30
-15	(+ 5)	1196	301	351	131	2.68	3.76	9.14	2.30	2.68
-10	(+14)	1779	448	521	158	3.31	5.61	11.29	2.85	3.31

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	85	1.38	1.25	4.71	1.19	1.38
-30	(-22)	600	151	176	101	1.67	1.88	5.69	1.43	1.67
-25	(-13)	708	179	208	112	1.86	2.22	6.34	1.60	1.86
-20	(- 4)	849	214	249	122	2.07	2.67	7.06	1.78	2.07
-15	(+ 5)	1145	289	335	139	2.41	3.60	8.23	2.07	2.41
-10	(+14)	1720	433	504	168	2.99	5.42	10.22	2.57	2.99

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	83	1.24	1.10	4.22	1.06	1.24
-30	(-22)	549	138	161	102	1.50	1.72	5.13	1.29	1.50
-25	(-13)	652	164	191	114	1.67	2.05	5.70	1.44	1.67
-20	(- 4)	786	198	230	127	1.85	2.47	6.30	1.59	1.85
-15	(+ 5)	1074	271	315	147	2.15	3.38	7.33	1.85	2.15
-10	(+14)	1638	413	480	179	2.69	5.17	9.17	2.31	2.69

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		