

COMPRESSOR DEFINITION

Designation	VES D9C
Nominal Voltage/Frequency	230 V 40-150 Hz
Engineering Number	800CY02

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 254 V	187 to 254 V
8.2 LBP (43°C Ambient temperature)	Static	187 to 254 V	187 to 254 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)	6.75	[kg] (14.88 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	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]
10 FLA - Full Load Amperage HBP (40/150 Hz)	-	[A]
11 Approval boards certification	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	0.28	0.71	6.35	1.60	1.86

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]
282	71	83	43	0.32	0.89	6.57	1.66	1.93

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]
365	92	107	55	0.42	1.15	6.62	1.67	1.94

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]
555	140	163	85	0.63	1.74	6.53	1.65	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]
783	197	229	128	0.88	2.46	6.11	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)	136	34	40	22	0.18	0.43	6.21	1.56	1.82
-30	(-22)	183	46	54	25	0.21	0.57	7.18	1.81	2.10
-25	(-13)	241	61	71	29	0.24	0.76	8.26	2.08	2.42
-20	(- 4)	312	79	91	33	0.27	0.98	9.47	2.39	2.77
-15	(+ 5)	395	100	116	37	0.29	1.24	10.82	2.73	3.17
-10	(+14)	493	124	144	40	0.32	1.55	12.33	3.11	3.61

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)	124	31	36	22	0.19	0.39	5.56	1.40	1.63
-30	(-22)	168	42	49	27	0.22	0.53	6.27	1.58	1.84
-25	(-13)	225	57	66	32	0.26	0.71	7.07	1.78	2.07
-20	(- 4)	295	74	86	37	0.29	0.93	7.95	2.00	2.33
-15	(+ 5)	379	95	111	42	0.33	1.19	8.94	2.25	2.62
-10	(+14)	476	120	140	47	0.37	1.50	10.07	2.54	2.95

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]
-35	(-31)	104	26	31	23	0.18	0.33	4.51	1.14	1.32
-30	(-22)	147	37	43	28	0.22	0.46	5.25	1.32	1.54
-25	(-13)	204	51	60	34	0.26	0.64	6.04	1.52	1.77
-20	(- 4)	274	69	80	40	0.31	0.86	6.88	1.73	2.02
-15	(+ 5)	358	90	105	46	0.36	1.13	7.81	1.97	2.29
-10	(+14)	457	115	134	52	0.41	1.44	8.83	2.22	2.59

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]
-35	(-31)	171	43	50	27	0.23	0.53	6.29	1.58	1.84
-30	(-22)	229	58	67	32	0.26	0.72	7.17	1.81	2.10
-25	(-13)	300	76	88	37	0.29	0.94	8.19	2.06	2.40
-20	(- 4)	386	97	113	41	0.33	1.21	9.36	2.36	2.74
-15	(+ 5)	488	123	143	46	0.36	1.54	10.70	2.70	3.14
-10	(+14)	609	153	178	50	0.40	1.92	12.23	3.08	3.58

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)	156	39	46	28	0.22	0.49	5.68	1.43	1.66	
-30 (-22)	213	54	62	33	0.26	0.67	6.38	1.61	1.87	
-25 (-13)	283	71	83	39	0.31	0.89	7.17	1.81	2.10	
-20 (- 4)	368	93	108	46	0.35	1.16	8.05	2.03	2.36	
-15 (+ 5)	471	119	138	52	0.40	1.48	9.04	2.28	2.65	
-10 (+14)	592	149	174	58	0.45	1.87	10.15	2.56	2.97	

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)	134	34	39	28	0.22	0.42	4.69	1.18	1.38	
-30 (-22)	187	47	55	34	0.26	0.59	5.47	1.38	1.60	
-25 (-13)	255	64	75	41	0.31	0.80	6.26	1.58	1.83	
-20 (- 4)	338	85	99	48	0.37	1.06	7.09	1.79	2.08	
-15 (+ 5)	438	110	128	55	0.42	1.38	7.98	2.01	2.34	
-10 (+14)	559	141	164	63	0.48	1.76	8.93	2.25	2.62	

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)	215	54	63	34	0.27	0.67	6.25	1.57	1.83	
-30 (-22)	289	73	85	40	0.31	0.91	7.16	1.81	2.10	
-25 (-13)	378	95	111	46	0.36	1.19	8.15	2.05	2.39	
-20 (- 4)	486	122	142	53	0.40	1.53	9.25	2.33	2.71	
-15 (+ 5)	615	155	180	59	0.45	1.93	10.51	2.65	3.08	
-10 (+14)	767	193	225	64	0.49	2.42	11.98	3.02	3.51	

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	36	0.28	0.62	5.57	1.40	1.63	
-30 (-22)	271	68	79	42	0.33	0.85	6.38	1.61	1.87	
-25 (-13)	358	90	105	50	0.38	1.12	7.20	1.82	2.11	
-20 (- 4)	464	117	136	57	0.43	1.46	8.10	2.04	2.37	
-15 (+ 5)	590	149	173	65	0.49	1.86	9.12	2.30	2.67	
-10 (+14)	739	186	217	72	0.54	2.33	10.29	2.59	3.02	

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)	173	44	51	36	0.27	0.54	4.82	1.22	1.41	
-30 (-22)	244	61	72	44	0.34	0.76	5.58	1.41	1.64	
-25 (-13)	330	83	97	52	0.40	1.04	6.33	1.59	1.85	
-20 (- 4)	434	109	127	61	0.46	1.36	7.09	1.79	2.08	
-15 (+ 5)	558	141	163	70	0.52	1.76	7.93	2.00	2.32	
-10 (+14)	705	178	206	79	0.58	2.22	8.89	2.24	2.60	

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)	319	80	94	53	0.40	1.00	5.97	1.51	1.75	
-30 (-22)	438	110	128	63	0.47	1.37	6.90	1.74	2.02	
-25 (-13)	578	146	169	74	0.55	1.81	7.85	1.98	2.30	
-20 (- 4)	743	187	218	84	0.62	2.33	8.86	2.23	2.60	
-15 (+ 5)	935	236	274	94	0.69	2.94	9.93	2.50	2.91	
-10 (+14)	1158	292	339	105	0.76	3.65	11.09	2.80	3.25	

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	54	0.41	0.90	5.35	1.35	1.57	
-30 (-22)	404	102	118	65	0.49	1.27	6.16	1.55	1.80	
-25 (-13)	542	137	159	77	0.57	1.70	6.99	1.76	2.05	
-20 (- 4)	706	178	207	90	0.66	2.22	7.87	1.98	2.31	
-15 (+ 5)	900	227	264	102	0.74	2.83	8.81	2.22	2.58	
-10 (+14)	1125	284	330	115	0.82	3.55	9.82	2.48	2.88	

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)	258	65	76	54	0.40	0.81	4.77	1.20	1.40	
-30 (-22)	368	93	108	67	0.50	1.15	5.49	1.38	1.61	
-25 (-13)	501	126	147	80	0.60	1.57	6.23	1.57	1.82	
-20 (- 4)	660	166	194	94	0.70	2.08	7.00	1.76	2.05	
-15 (+ 5)	851	214	249	108	0.80	2.68	7.83	1.97	2.29	
-10 (+14)	1074	271	315	123	0.89	3.39	8.73	2.20	2.56	

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)	452	114	132	83	0.61	1.41	5.46	1.37	1.60
-30	(-22)	616	155	181	97	0.69	1.93	6.32	1.59	1.85
-25	(-13)	779	196	228	109	0.76	2.44	7.15	1.80	2.10
-20	(- 4)	967	244	283	121	0.83	3.04	8.00	2.02	2.34
-15	(+ 5)	1208	304	354	135	0.91	3.80	8.92	2.25	2.61
-10	(+14)	1527	385	447	152	1.00	4.82	9.97	2.51	2.92

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)	447	113	131	86	0.64	1.40	5.15	1.30	1.51
-30	(-22)	601	152	176	102	0.73	1.89	5.84	1.47	1.71
-25	(-13)	755	190	221	116	0.82	2.37	6.52	1.64	1.91
-20	(- 4)	934	235	274	130	0.89	2.93	7.24	1.82	2.12
-15	(+ 5)	1164	293	341	145	0.97	3.67	8.05	2.03	2.36
-10	(+14)	1474	371	432	163	1.06	4.65	9.01	2.27	2.64

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)	398	100	117	86	0.63	1.25	4.63	1.17	1.36
-30	(-22)	552	139	162	105	0.75	1.73	5.18	1.31	1.52
-25	(-13)	704	177	206	123	0.85	2.21	5.74	1.45	1.68
-20	(- 4)	882	222	259	139	0.94	2.77	6.35	1.60	1.86
-15	(+ 5)	1113	280	326	157	1.03	3.50	7.09	1.79	2.08
-10	(+14)	1422	358	417	177	1.12	4.49	7.99	2.01	2.34

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	4.94 +0.08/-0.08	[mm]	(0.194" +0.003"/-0.003")
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		