

COMPRESSOR DEFINITION

Designation	VES D13C
Nominal Voltage/Frequency	230 V 43-150 Hz
Engineering Number	513907498

A - APPLICATION / LIMIT WORKING CONDITIONS

1 Type	Hermetic reciprocating compressor		
2 Refrigerant	R-600a		
3 Nominal voltage and frequency	230 / 43-150	[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	-	-
8.2 LBP (43°C Ambient temperature)	-	-	-
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	1/4	[hp]
2 Displacement	13.27	[cm ³] (0.810 cu.in)
2.1 Bore [mm]	26.000	
2.2 Stroke [mm]	25.000	
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 - ELECTRICAL DATA

1 Nominal Voltage/Frequency/Number of Phases	230V 43-150 Hz 3~ (Three phase)	
2 Starting device type	Inverter	
2.1 Starting device	VCC32456UXXX	
3 Start capacitor	-	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	VCC32456XXXXX	
6 Start winding resistance	7.29	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	7.29	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (40/150 Hz)	-	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (40/150 Hz)	-	[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	UL - 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 (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
348	88	102	54	0.43	1.09	6.44	1.62	1.89

TEST CONDITIONS: @220V1600RPM			ASHRAELBP32 Static		Evaporating temperature (Condensing temperature)		-23.3°C (-9.94°F) 54.4°C (129.92°F)	
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
423	107	124	64	0.52	1.33	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 (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
539	136	158	82	0.65	1.69	6.58	1.66	1.93

TEST CONDITIONS: @220V3000RPM			ASHRAELBP32 Static		Evaporating temperature (Condensing temperature)		-23.3°C (-9.94°F) 54.4°C (129.92°F)	
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
795	200	233	127	0.98	2.50	6.28	1.58	1.84

TEST CONDITIONS: @220V4500RPM			ASHRAELBP32 Static		Evaporating temperature (Condensing temperature)		-23.3°C (-9.94°F) 54.4°C (129.92°F)	
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
1109	279	325	197	1.48	3.48	5.63	1.42	1.65

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V2000RPM		ASHRAE32 Static			(Condensing temperature 35°C (+95°F))					
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
	°C	(°F)	[Btu/h]				[kcal/h]	[W]	[Btu/Wh]	[kcal/Wh]
-35	(-31)	302	76	89	49	0.42	0.95	6.31	1.59	1.85
-30	(-22)	429	108	126	59	0.50	1.34	7.17	1.81	2.10
-25	(-13)	605	152	177	72	0.57	1.90	8.24	2.08	2.42
-20	(- 4)	810	204	237	84	0.66	2.55	9.43	2.38	2.76
-15	(+ 5)	1026	258	301	96	0.75	3.23	10.62	2.68	3.11
-10	(+14)	1232	310	361	106	0.87	3.88	11.74	2.96	3.44

TEST CONDITIONS: @220V2000RPM		ASHRAE32 Static			(Condensing temperature 45°C (+113°F))					
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
	°C	(°F)	[Btu/h]				[kcal/h]	[W]	[Btu/Wh]	[kcal/Wh]
-35	(-31)	284	72	83	51	0.43	0.89	5.65	1.42	1.66
-30	(-22)	360	91	106	60	0.50	1.13	6.23	1.57	1.82
-25	(-13)	501	126	147	72	0.58	1.57	7.04	1.77	2.06
-20	(- 4)	686	173	201	85	0.67	2.16	8.00	2.02	2.35
-15	(+ 5)	897	226	263	99	0.77	2.82	9.02	2.27	2.64
-10	(+14)	1114	281	326	111	0.91	3.51	9.99	2.52	2.93

TEST CONDITIONS: @220V2000RPM		ASHRAE32 Static			(Condensing temperature 55°C (+131°F))					
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
	°C	(°F)	[Btu/h]				[kcal/h]	[W]	[Btu/Wh]	[kcal/Wh]
-35	(-31)	285	72	84	53	0.44	0.89	5.20	1.31	1.52
-30	(-22)	322	81	94	61	0.51	1.01	5.53	1.39	1.62
-25	(-13)	439	111	129	74	0.60	1.38	6.14	1.55	1.80
-20	(- 4)	615	155	180	89	0.70	1.93	6.93	1.75	2.03
-15	(+ 5)	832	210	244	106	0.84	2.62	7.81	1.97	2.29
-10	(+14)	1070	270	314	123	1.00	3.38	8.69	2.19	2.55

TEST CONDITIONS: @220V3000RPM		ASHRAE32 Static			(Condensing temperature 35°C (+95°F))					
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
	°C	(°F)	[Btu/h]				[kcal/h]	[W]	[Btu/Wh]	[kcal/Wh]
-35	(-31)	463	117	136	77	0.64	1.45	5.98	1.51	1.75
-30	(-22)	609	153	178	91	0.72	1.91	6.69	1.69	1.96
-25	(-13)	794	200	233	106	0.82	2.49	7.50	1.89	2.20
-20	(- 4)	1019	257	299	122	0.94	3.20	8.35	2.10	2.45
-15	(+ 5)	1285	324	377	140	1.08	4.04	9.19	2.32	2.69
-10	(+14)	1594	402	467	160	1.24	5.03	9.98	2.51	2.92

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V3000RPM		ASHRAE32 Static			(Condensing temperature 45°C (+113°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	429	108	126	79	0.62	1.34	5.47	1.38	1.60
-30	(-22)	573	144	168	95	0.72	1.80	6.07	1.53	1.78
-25	(-13)	756	191	222	112	0.84	2.37	6.78	1.71	1.99
-20	(- 4)	979	247	287	130	0.98	3.08	7.55	1.90	2.21
-15	(+ 5)	1243	313	364	149	1.14	3.91	8.34	2.10	2.44
-10	(+14)	1550	391	454	171	1.31	4.89	9.09	2.29	2.66

TEST CONDITIONS: @220V3000RPM		ASHRAE32 Static			(Condensing temperature 55°C (+131°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	393	99	115	79	0.63	1.23	4.96	1.25	1.45
-30	(-22)	532	134	156	98	0.75	1.67	5.43	1.37	1.59
-25	(-13)	709	179	208	117	0.89	2.23	6.04	1.52	1.77
-20	(- 4)	926	233	271	138	1.05	2.91	6.73	1.70	1.97
-15	(+ 5)	1185	299	347	159	1.23	3.73	7.46	1.88	2.18
-10	(+14)	1487	375	436	182	1.42	4.69	8.17	2.06	2.39

TEST CONDITIONS: @220V4500RPM		ASHRAE32 Static			(Condensing temperature 35°C (+95°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	594	150	174	114	0.87	1.86	5.21	1.31	1.53
-30	(-22)	768	194	225	136	1.06	2.41	5.70	1.44	1.67
-25	(-13)	1055	266	309	168	1.29	3.31	6.26	1.58	1.84
-20	(- 4)	1406	354	412	201	1.52	4.42	6.94	1.75	2.03
-15	(+ 5)	1777	448	521	229	1.70	5.59	7.78	1.96	2.28
-10	(+14)	2118	534	621	243	1.79	6.68	8.83	2.22	2.59

TEST CONDITIONS: @220V4500RPM		ASHRAE32 Static			(Condensing temperature 45°C (+113°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	572	144	168	115	0.87	1.79	4.98	1.25	1.46
-30	(-22)	745	188	218	138	1.07	2.33	5.46	1.38	1.60
-25	(-13)	1021	257	299	171	1.30	3.20	5.97	1.50	1.75
-20	(- 4)	1352	341	396	206	1.53	4.25	6.54	1.65	1.92
-15	(+ 5)	1692	426	496	235	1.71	5.33	7.22	1.82	2.11
-10	(+14)	1994	503	584	250	1.81	6.29	8.05	2.03	2.36

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V4500RPM		ASHRAE32 Static			(Condensing temperature 55°C (+131°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	497	125	146	114	0.88	1.56	4.39	1.11	1.29
-30	(-22)	682	172	200	139	1.08	2.14	4.97	1.25	1.46
-25	(-13)	961	242	282	174	1.31	3.02	5.51	1.39	1.62
-20	(- 4)	1286	324	377	211	1.55	4.04	6.07	1.53	1.78
-15	(+ 5)	1610	406	472	241	1.74	5.07	6.68	1.68	1.96
-10	(+14)	1886	475	553	257	1.84	5.95	7.39	1.86	2.17

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 10° 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 47° up + 59° to Back		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		