

COMPRESSOR DEFINITION

Designation	VES D5C
Nominal Voltage/Frequency	230 V 40-150 Hz
Engineering Number	513907163

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-Medium Back Pressure		
4.1 Evaporating temperature range	-35°C to -5°C	(-31°F to 23°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	5.19	[cm ³] (0.317 cu.in)
2.1 Bore [mm]	21.000	
2.2 Stroke [mm]	15.000	
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)	6.47	[kg] (14.26 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	VCC3 1156 XXXXX/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	13.40	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	13.40	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (46/133 Hz)	2.10/2.10	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (46/133 Hz)	2.10/2.10	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (46/133 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]
116	29	34	19	0.18	0.36	6.04	1.52	1.77

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]
144	36	42	24	0.21	0.45	6.10	1.54	1.79

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]
186	47	55	30	0.25	0.58	6.28	1.58	1.84

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]
286	72	84	46	0.38	0.90	6.19	1.56	1.81

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]
430	108	126	73	0.57	1.35	5.90	1.49	1.73

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]	[W/W]
-35 (-31)	75	19	22	13	0.12	0.23	5.55	1.40	1.62	
-30 (-22)	98	25	29	15	0.14	0.31	6.43	1.62	1.88	
-25 (-13)	128	32	38	17	0.16	0.40	7.44	1.88	2.18	
-20 (- 4)	166	42	49	19	0.18	0.52	8.66	2.18	2.54	
-15 (+ 5)	214	54	63	21	0.19	0.67	10.15	2.56	2.97	
-10 (+14)	271	68	80	23	0.20	0.86	11.95	3.01	3.50	
-5 (+23)	341	86	100	24	0.21	1.08	14.15	3.57	4.15	

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]	[W/W]
-35 (-31)	61	15	18	12	0.12	0.19	4.98	1.25	1.46	
-30 (-22)	86	22	25	15	0.14	0.27	5.81	1.46	1.70	
-25 (-13)	117	30	34	18	0.16	0.37	6.66	1.68	1.95	
-20 (- 4)	155	39	46	20	0.19	0.49	7.59	1.91	2.23	
-15 (+ 5)	202	51	59	23	0.21	0.63	8.67	2.18	2.54	
-10 (+14)	258	65	75	26	0.23	0.81	9.94	2.50	2.91	
-5 (+23)	325	82	95	28	0.24	1.03	11.48	2.89	3.36	

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)	43	11	13	12	0.12	0.13	3.64	0.92	1.07	
-30 (-22)	71	18	21	15	0.14	0.22	4.70	1.18	1.38	
-25 (-13)	103	26	30	18	0.17	0.32	5.66	1.43	1.66	
-20 (- 4)	142	36	42	22	0.20	0.45	6.58	1.66	1.93	
-15 (+ 5)	188	47	55	25	0.22	0.59	7.51	1.89	2.20	
-10 (+14)	243	61	71	28	0.25	0.77	8.53	2.15	2.50	
-5 (+23)	308	78	90	32	0.27	0.97	9.69	2.44	2.84	

E - PERFORMANCE - CURVES

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)	87	22	25	15	0.14	0.27	5.63	1.42	1.65	
-30 (-22)	117	30	34	18	0.17	0.37	6.45	1.63	1.89	
-25 (-13)	157	40	46	21	0.19	0.49	7.50	1.89	2.20	
-20 (- 4)	207	52	61	24	0.21	0.65	8.78	2.21	2.57	
-15 (+ 5)	268	68	79	26	0.23	0.84	10.33	2.60	3.03	
-10 (+14)	341	86	100	28	0.24	1.08	12.16	3.06	3.56	
-5 (+23)	427	108	125	30	0.25	1.35	14.31	3.61	4.19	

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)	80	20	23	15	0.14	0.25	5.25	1.32	1.54	
-30 (-22)	108	27	32	18	0.17	0.34	5.91	1.49	1.73	
-25 (-13)	146	37	43	22	0.19	0.46	6.71	1.69	1.97	
-20 (- 4)	194	49	57	25	0.22	0.61	7.66	1.93	2.25	
-15 (+ 5)	252	64	74	29	0.25	0.79	8.80	2.22	2.58	
-10 (+14)	322	81	94	32	0.27	1.02	10.14	2.56	2.97	
-5 (+23)	404	102	118	35	0.29	1.28	11.71	2.95	3.43	

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)	63	16	18	15	0.13	0.20	4.23	1.06	1.24	
-30 (-22)	91	23	27	18	0.16	0.28	4.97	1.25	1.46	
-25 (-13)	128	32	38	22	0.20	0.40	5.76	1.45	1.69	
-20 (- 4)	175	44	51	26	0.23	0.55	6.62	1.67	1.94	
-15 (+ 5)	233	59	68	31	0.26	0.73	7.58	1.91	2.22	
-10 (+14)	301	76	88	35	0.29	0.95	8.67	2.18	2.54	
-5 (+23)	382	96	112	39	0.32	1.21	9.90	2.49	2.90	

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)	112	28	33	19	0.17	0.35	5.75	1.45	1.68	
-30 (-22)	149	38	44	23	0.20	0.47	6.56	1.65	1.92	
-25 (-13)	199	50	58	26	0.23	0.62	7.56	1.91	2.22	
-20 (- 4)	260	66	76	30	0.25	0.82	8.79	2.21	2.57	
-15 (+ 5)	336	85	98	33	0.27	1.06	10.26	2.59	3.01	
-10 (+14)	426	107	125	36	0.29	1.34	12.01	3.03	3.52	
-5 (+23)	532	134	156	38	0.31	1.68	14.06	3.54	4.12	

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)	101	26	30	20	0.17	0.32	5.21	1.31	1.53	
-30 (-22)	138	35	41	23	0.21	0.43	5.93	1.49	1.74	
-25 (-13)	186	47	55	27	0.24	0.58	6.76	1.70	1.98	
-20 (- 4)	247	62	72	32	0.27	0.78	7.73	1.95	2.27	
-15 (+ 5)	321	81	94	36	0.30	1.01	8.87	2.23	2.60	
-10 (+14)	409	103	120	40	0.32	1.29	10.20	2.57	2.99	
-5 (+23)	512	129	150	44	0.35	1.62	11.75	2.96	3.44	

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)	85	21	25	19	0.17	0.26	4.39	1.11	1.29	
-30 (-22)	120	30	35	23	0.21	0.38	5.15	1.30	1.51	
-25 (-13)	166	42	49	28	0.24	0.52	5.94	1.50	1.74	
-20 (- 4)	224	56	66	33	0.28	0.70	6.78	1.71	1.99	
-15 (+ 5)	295	74	87	38	0.31	0.93	7.71	1.94	2.26	
-10 (+14)	381	96	112	43	0.35	1.20	8.76	2.21	2.57	
-5 (+23)	481	121	141	48	0.39	1.52	9.94	2.50	2.91	

E - PERFORMANCE - CURVES

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)	167	42	49	30	0.26	0.52	5.54	1.40	1.62	
-30 (-22)	230	58	67	35	0.29	0.72	6.52	1.64	1.91	
-25 (-13)	310	78	91	41	0.34	0.97	7.57	1.91	2.22	
-20 (- 4)	408	103	120	47	0.38	1.28	8.73	2.20	2.56	
-15 (+ 5)	523	132	153	52	0.42	1.65	10.02	2.53	2.94	
-10 (+14)	655	165	192	57	0.45	2.07	11.50	2.90	3.37	
-5 (+23)	805	203	236	61	0.48	2.54	13.20	3.33	3.87	

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)	148	37	43	30	0.25	0.46	4.90	1.24	1.44	
-30 (-22)	207	52	61	36	0.30	0.65	5.79	1.46	1.70	
-25 (-13)	285	72	84	42	0.35	0.90	6.70	1.69	1.96	
-20 (- 4)	381	96	112	49	0.40	1.20	7.68	1.94	2.25	
-15 (+ 5)	495	125	145	56	0.45	1.56	8.77	2.21	2.57	
-10 (+14)	626	158	183	63	0.49	1.97	9.99	2.52	2.93	
-5 (+23)	775	195	227	68	0.53	2.45	11.39	2.87	3.34	

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)	126	32	37	30	0.26	0.39	4.18	1.05	1.22	
-30 (-22)	181	46	53	36	0.31	0.57	5.02	1.26	1.47	
-25 (-13)	254	64	75	44	0.36	0.80	5.85	1.47	1.71	
-20 (- 4)	347	87	102	52	0.42	1.09	6.70	1.69	1.96	
-15 (+ 5)	457	115	134	60	0.47	1.44	7.62	1.92	2.23	
-10 (+14)	586	148	172	68	0.53	1.85	8.64	2.18	2.53	
-5 (+23)	734	185	215	75	0.58	2.32	9.80	2.47	2.87	

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)	258	65	76	50	0.39	0.81	5.19	1.31	1.52	
-30 (-22)	344	87	101	57	0.45	1.08	6.00	1.51	1.76	
-25 (-13)	452	114	132	66	0.51	1.42	6.89	1.74	2.02	
-20 (- 4)	583	147	171	74	0.57	1.83	7.88	1.99	2.31	
-15 (+ 5)	744	188	218	82	0.63	2.34	9.02	2.27	2.64	
-10 (+14)	939	237	275	91	0.69	2.96	10.31	2.60	3.02	
-5 (+23)	1170	295	343	99	0.75	3.70	11.80	2.97	3.46	

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)	228	58	67	49	0.39	0.71	4.67	1.18	1.37	
-30 (-22)	319	80	93	59	0.46	1.00	5.43	1.37	1.59	
-25 (-13)	427	108	125	69	0.54	1.34	6.24	1.57	1.83	
-20 (- 4)	557	140	163	79	0.61	1.75	7.11	1.79	2.08	
-15 (+ 5)	714	180	209	88	0.68	2.25	8.08	2.04	2.37	
-10 (+14)	902	227	264	98	0.75	2.85	9.17	2.31	2.69	
-5 (+23)	1125	284	330	108	0.82	3.56	10.41	2.62	3.05	

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)	176	44	52	44	0.35	0.55	3.99	1.01	1.17	
-30 (-22)	272	69	80	56	0.45	0.85	4.79	1.21	1.40	
-25 (-13)	385	97	113	69	0.54	1.21	5.58	1.41	1.64	
-20 (- 4)	517	130	151	81	0.63	1.62	6.41	1.61	1.88	
-15 (+ 5)	673	170	197	93	0.71	2.12	7.28	1.84	2.13	
-10 (+14)	858	216	251	104	0.79	2.71	8.24	2.08	2.42	
-5 (+23)	1075	271	315	116	0.87	3.40	9.31	2.35	2.73	

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 + 15° 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 47° up + 59° to Back		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		