

### COMPRESSOR DEFINITION

Designation	VES D7C
Nominal Voltage/Frequency	230 V 40-150 Hz
Engineering Number	513907031

### 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 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 pressures/temperature			
9.1 Operating (gauge)	7.7	[kgf/cm <sup>2</sup> ] (109 psig)	/ °C - °F
9.2 Peak (gauge)	9.8	[kgf/cm <sup>2</sup> ] (139 psig)	/ °C - °F
10 Maximum winding temperature	130	[ °C ]	

### B - MECHANICAL DATA

1 Commercial designation	1/5	[hp]
2 Displacement	7.23	[cm <sup>3</sup> ] (0.441 cu.in)
2.1 Bore [mm]	24.000	
2.2 Stroke [mm]	16.000	
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)	6.81	[kg] (15.01 lb.)
5 Nitrogen charge	-	[kgf/cm <sup>2</sup> ]

### 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] - 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

### 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)	106	27	31	17	0.12	0.33	6.22	1.57	1.82	
-30 (-22)	142	36	42	20	0.15	0.45	7.13	1.80	2.09	
-25 (-13)	186	47	55	23	0.18	0.58	8.10	2.04	2.37	
-20 (- 4)	240	61	70	26	0.20	0.75	9.23	2.32	2.70	
-15 (+ 5)	306	77	90	29	0.22	0.96	10.58	2.67	3.10	
-10 (+14)	386	97	113	32	0.24	1.22	12.25	3.09	3.59	

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)	90	23	27	17	0.14	0.28	5.19	1.31	1.52	
-30 (-22)	126	32	37	21	0.16	0.39	6.08	1.53	1.78	
-25 (-13)	169	43	50	24	0.19	0.53	6.95	1.75	2.04	
-20 (- 4)	222	56	65	28	0.22	0.70	7.88	1.98	2.31	
-15 (+ 5)	286	72	84	32	0.24	0.90	8.95	2.25	2.62	
-10 (+14)	364	92	107	35	0.27	1.15	10.24	2.58	3.00	

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)	66	17	19	17	0.14	0.21	3.93	0.99	1.15	
-30 (-22)	103	26	30	21	0.17	0.32	4.95	1.25	1.45	
-25 (-13)	148	37	43	25	0.20	0.46	5.86	1.48	1.72	
-20 (- 4)	201	51	59	30	0.23	0.63	6.74	1.70	1.97	
-15 (+ 5)	265	67	78	34	0.26	0.83	7.67	1.93	2.25	
-10 (+14)	342	86	100	39	0.29	1.08	8.74	2.20	2.56	

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)	127	32	37	21	0.16	0.40	5.97	1.51	1.75	
-30 (-22)	175	44	51	25	0.19	0.55	7.03	1.77	2.06	
-25 (-13)	232	58	68	29	0.21	0.73	8.12	2.05	2.38	
-20 (- 4)	300	76	88	32	0.24	0.94	9.32	2.35	2.73	
-15 (+ 5)	382	96	112	36	0.26	1.20	10.71	2.70	3.14	
-10 (+14)	480	121	141	39	0.29	1.51	12.37	3.12	3.62	

### E - PERFORMANCE - CURVES

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)	110	28	32	21	0.17	0.35	5.20	1.31	1.52
-30	(-22)	159	40	46	26	0.20	0.50	6.19	1.56	1.81
-25	(-13)	215	54	63	30	0.23	0.67	7.13	1.80	2.09
-20	(- 4)	281	71	82	35	0.26	0.88	8.10	2.04	2.37
-15	(+ 5)	360	91	105	39	0.30	1.13	9.16	2.31	2.68
-10	(+14)	454	114	133	43	0.33	1.43	10.41	2.62	3.05

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)	86	22	25	20	0.15	0.27	4.23	1.07	1.24
-30	(-22)	135	34	40	25	0.19	0.42	5.30	1.33	1.55
-25	(-13)	191	48	56	31	0.24	0.60	6.22	1.57	1.82
-20	(- 4)	257	65	75	36	0.28	0.81	7.07	1.78	2.07
-15	(+ 5)	334	84	98	42	0.32	1.05	7.95	2.00	2.33
-10	(+14)	425	107	125	48	0.36	1.34	8.92	2.25	2.61

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)	158	40	46	27	0.20	0.49	5.95	1.50	1.74
-30	(-22)	216	54	63	31	0.23	0.68	6.96	1.75	2.04
-25	(-13)	288	73	84	36	0.26	0.90	8.05	2.03	2.36
-20	(- 4)	375	95	110	41	0.30	1.18	9.27	2.34	2.72
-15	(+ 5)	479	121	140	45	0.33	1.51	10.66	2.69	3.12
-10	(+14)	600	151	176	49	0.36	1.89	12.27	3.09	3.60

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)	137	35	40	27	0.21	0.43	5.17	1.30	1.52
-30	(-22)	195	49	57	32	0.24	0.61	6.11	1.54	1.79
-25	(-13)	266	67	78	38	0.28	0.83	7.06	1.78	2.07
-20	(- 4)	353	89	103	44	0.32	1.11	8.08	2.03	2.37
-15	(+ 5)	456	115	134	49	0.36	1.44	9.20	2.32	2.69
-10	(+14)	577	145	169	55	0.40	1.82	10.46	2.64	3.07

### 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%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	116	29	34	26	0.21	0.36	4.44	1.12	1.30	
-30 (-22)	171	43	50	32	0.24	0.54	5.39	1.36	1.58	
-25 (-13)	241	61	71	38	0.28	0.76	6.29	1.58	1.84	
-20 (- 4)	326	82	95	45	0.33	1.02	7.18	1.81	2.10	
-15 (+ 5)	427	108	125	53	0.39	1.35	8.12	2.05	2.38	
-10 (+14)	547	138	160	60	0.44	1.72	9.13	2.30	2.68	

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%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	233	59	68	41	0.31	0.73	5.72	1.44	1.67	
-30 (-22)	326	82	95	49	0.35	1.02	6.68	1.68	1.96	
-25 (-13)	439	111	129	57	0.41	1.38	7.73	1.95	2.26	
-20 (- 4)	574	145	168	65	0.47	1.80	8.88	2.24	2.60	
-15 (+ 5)	735	185	215	73	0.52	2.31	10.16	2.56	2.98	
-10 (+14)	921	232	270	80	0.58	2.91	11.59	2.92	3.40	

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%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	211	53	62	41	0.32	0.66	5.13	1.29	1.50	
-30 (-22)	297	75	87	50	0.37	0.93	5.97	1.50	1.75	
-25 (-13)	404	102	118	59	0.43	1.27	6.87	1.73	2.01	
-20 (- 4)	536	135	157	68	0.50	1.69	7.85	1.98	2.30	
-15 (+ 5)	695	175	204	78	0.57	2.19	8.93	2.25	2.62	
-10 (+14)	882	222	259	87	0.63	2.78	10.13	2.55	2.97	

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%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	193	49	56	42	0.31	0.60	4.62	1.16	1.35	
-30 (-22)	268	67	78	50	0.37	0.84	5.36	1.35	1.57	
-25 (-13)	367	92	108	60	0.44	1.15	6.15	1.55	1.80	
-20 (- 4)	493	124	144	71	0.52	1.55	6.99	1.76	2.05	
-15 (+ 5)	647	163	190	82	0.60	2.04	7.90	1.99	2.32	
-10 (+14)	832	210	244	93	0.68	2.63	8.92	2.25	2.61	

### 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]
-35	(-31)	372	94	109	67	0.49	1.16	5.51	1.39	1.61
-30	(-22)	497	125	146	78	0.56	1.56	6.38	1.61	1.87
-25	(-13)	634	160	186	88	0.62	1.99	7.27	1.83	2.13
-20	(- 4)	797	201	234	97	0.68	2.50	8.24	2.08	2.41
-15	(+ 5)	1001	252	293	107	0.74	3.15	9.33	2.35	2.73
-10	(+14)	1260	318	369	118	0.81	3.97	10.60	2.67	3.10

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]
-35	(-31)	331	83	97	66	0.49	1.04	4.98	1.26	1.46
-30	(-22)	469	118	137	80	0.58	1.47	5.82	1.47	1.71
-25	(-13)	615	155	180	93	0.66	1.93	6.64	1.67	1.95
-20	(- 4)	784	198	230	105	0.73	2.46	7.48	1.88	2.19
-15	(+ 5)	989	249	290	118	0.80	3.11	8.40	2.12	2.46
-10	(+14)	1246	314	365	131	0.87	3.93	9.47	2.39	2.77

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]
-35	(-31)	274	69	80	62	0.46	0.86	4.45	1.12	1.30
-30	(-22)	420	106	123	78	0.58	1.32	5.29	1.33	1.55
-25	(-13)	570	144	167	94	0.68	1.79	6.07	1.53	1.78
-20	(- 4)	739	186	216	108	0.76	2.32	6.82	1.72	2.00
-15	(+ 5)	940	237	276	124	0.85	2.96	7.62	1.92	2.23
-10	(+14)	1189	300	348	140	0.93	3.75	8.51	2.15	2.49

### F - EXTERNAL CHARACTERISTICS

1 Base plate	European Standard VES		
2 Tray holder	No		
3 Connectors			
3.1 SUCTION	6.2 +0.05/+0.05	[mm]	(0.244" +0.002"/+0.002")
3.1.1 Material	Copper		
3.1.2 Shape	Slanted 5° out + 63° up		
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	6.2 +0.05/+0.05	[mm]	(0.244" +0.002"/+0.002")
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		