

COMPRESSOR DEFINITION

Designation	VES A7C
Nominal Voltage/Frequency	230 V 40-150 Hz
Engineering Number	513907019

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 ²] (109 psig)	/ °C - °F
9.2 Peak (gauge)	9.8	[kgf/cm ²] (139 psig)	/ °C - °F
10 Maximum winding temperature	130	[°C]	

B - MECHANICAL DATA

1 Commercial designation	1/5	[hp]
2 Displacement	7.23	[cm ³] (0.441 cu.in)
2.1 Bore [mm]	24.000	
2.2 Stroke [mm]	16.000	
3 Lubricant charge	200	[ml] (6.76 fl.oz.)
3.1 Lubricants approved		
3.2 Lubricants type/viscosity	ALQUILB / ISO5	
4 Weight (with oil charge)	5.99	[kg] (13.21 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	11.50	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	11.50	[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)	102	26	30	17	0.15	0.32	5.86	1.48	1.72	
-30 (-22)	135	34	40	21	0.18	0.42	6.56	1.65	1.92	
-25 (-13)	180	45	53	24	0.21	0.57	7.46	1.88	2.19	
-20 (- 4)	238	60	70	28	0.24	0.75	8.57	2.16	2.51	
-15 (+ 5)	306	77	90	31	0.26	0.96	9.89	2.49	2.90	
-10 (+14)	384	97	112	34	0.29	1.21	11.43	2.88	3.35	

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)	84	21	25	18	0.16	0.26	4.73	1.19	1.39	
-30 (-22)	117	30	34	22	0.19	0.37	5.43	1.37	1.59	
-25 (-13)	163	41	48	26	0.22	0.51	6.24	1.57	1.83	
-20 (- 4)	220	56	65	31	0.26	0.69	7.17	1.81	2.10	
-15 (+ 5)	288	73	85	35	0.29	0.91	8.22	2.07	2.41	
-10 (+14)	366	92	107	39	0.32	1.15	9.39	2.37	2.75	

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)	65	16	19	17	0.15	0.21	3.80	0.96	1.11	
-30 (-22)	98	25	29	22	0.19	0.31	4.55	1.15	1.33	
-25 (-13)	142	36	42	27	0.23	0.45	5.33	1.34	1.56	
-20 (- 4)	198	50	58	32	0.27	0.62	6.13	1.54	1.80	
-15 (+ 5)	265	67	78	38	0.32	0.83	6.96	1.75	2.04	
-10 (+14)	341	86	100	44	0.36	1.07	7.83	1.97	2.29	

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)	124	31	36	22	0.19	0.39	5.74	1.45	1.68	
-30 (-22)	174	44	51	26	0.22	0.55	6.74	1.70	1.97	
-25 (-13)	231	58	68	30	0.25	0.73	7.73	1.95	2.26	
-20 (- 4)	298	75	87	34	0.28	0.94	8.81	2.22	2.58	
-15 (+ 5)	378	95	111	38	0.31	1.19	10.07	2.54	2.95	
-10 (+14)	474	119	139	41	0.34	1.50	11.59	2.92	3.40	

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%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	103	26	30	21	0.19	0.32	4.86	1.22	1.42	
-30 (-22)	153	38	45	26	0.22	0.48	5.80	1.46	1.70	
-25 (-13)	210	53	61	32	0.26	0.66	6.65	1.68	1.95	
-20 (- 4)	277	70	81	37	0.30	0.87	7.52	1.90	2.20	
-15 (+ 5)	357	90	105	42	0.34	1.12	8.49	2.14	2.49	
-10 (+14)	453	114	133	47	0.38	1.43	9.65	2.43	2.83	

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%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	79	20	23	20	0.18	0.25	3.82	0.96	1.12	
-30 (-22)	127	32	37	26	0.22	0.40	4.82	1.21	1.41	
-25 (-13)	183	46	54	32	0.27	0.57	5.65	1.42	1.66	
-20 (- 4)	249	63	73	39	0.32	0.78	6.42	1.62	1.88	
-15 (+ 5)	329	83	96	46	0.37	1.04	7.21	1.82	2.11	
-10 (+14)	424	107	124	52	0.42	1.34	8.12	2.05	2.38	

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%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	156	39	46	27	0.23	0.49	5.71	1.44	1.67	
-30 (-22)	212	53	62	32	0.27	0.67	6.66	1.68	1.95	
-25 (-13)	284	72	83	37	0.31	0.89	7.67	1.93	2.25	
-20 (- 4)	373	94	109	42	0.35	1.17	8.78	2.21	2.57	
-15 (+ 5)	478	120	140	48	0.39	1.50	10.07	2.54	2.95	
-10 (+14)	599	151	176	52	0.43	1.89	11.58	2.92	3.39	

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%						+/- 7%			
°C (°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
-35 (-31)	134	34	39	27	0.23	0.42	4.97	1.25	1.46	
-30 (-22)	190	48	56	32	0.27	0.59	5.86	1.48	1.72	
-25 (-13)	262	66	77	39	0.32	0.82	6.73	1.69	1.97	
-20 (- 4)	350	88	103	46	0.37	1.10	7.63	1.92	2.24	
-15 (+ 5)	455	115	133	53	0.42	1.43	8.64	2.18	2.53	
-10 (+14)	577	145	169	59	0.47	1.82	9.80	2.47	2.87	

E - PERFORMANCE - CURVES

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)	110	28	32	26	0.22	0.34	4.16	1.05	1.22	
-30 (-22)	164	41	48	33	0.27	0.52	5.07	1.28	1.49	
-25 (-13)	235	59	69	40	0.32	0.74	5.90	1.49	1.73	
-20 (- 4)	322	81	94	48	0.38	1.01	6.70	1.69	1.96	
-15 (+ 5)	425	107	125	57	0.45	1.34	7.52	1.89	2.20	
-10 (+14)	545	137	160	65	0.51	1.72	8.42	2.12	2.47	

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)	228	57	67	42	0.34	0.71	5.48	1.38	1.61	
-30 (-22)	327	82	96	50	0.39	1.02	6.43	1.62	1.88	
-25 (-13)	445	112	130	59	0.45	1.40	7.51	1.89	2.20	
-20 (- 4)	583	147	171	67	0.52	1.83	8.70	2.19	2.55	
-15 (+ 5)	743	187	218	75	0.59	2.34	9.99	2.52	2.93	
-10 (+14)	926	233	271	82	0.64	2.92	11.36	2.86	3.33	

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)	209	53	61	42	0.35	0.65	5.02	1.27	1.47	
-30 (-22)	297	75	87	51	0.40	0.93	5.80	1.46	1.70	
-25 (-13)	408	103	119	61	0.47	1.28	6.68	1.68	1.96	
-20 (- 4)	542	137	159	71	0.55	1.70	7.65	1.93	2.24	
-15 (+ 5)	702	177	206	81	0.63	2.21	8.70	2.19	2.55	
-10 (+14)	888	224	260	91	0.71	2.80	9.81	2.47	2.87	

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)	189	48	55	42	0.35	0.59	4.44	1.12	1.30	
-30 (-22)	263	66	77	52	0.40	0.82	5.13	1.29	1.50	
-25 (-13)	363	92	106	62	0.48	1.14	5.91	1.49	1.73	
-20 (- 4)	491	124	144	73	0.56	1.54	6.75	1.70	1.98	
-15 (+ 5)	648	163	190	85	0.65	2.04	7.65	1.93	2.24	
-10 (+14)	835	211	245	97	0.74	2.64	8.59	2.17	2.52	

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)	364	92	107	67	0.53	1.14	5.42	1.37	1.59	
-30 (-22)	496	125	145	79	0.60	1.56	6.25	1.57	1.83	
-25 (-13)	650	164	190	91	0.69	2.04	7.13	1.80	2.09	
-20 (- 4)	833	210	244	103	0.78	2.62	8.08	2.04	2.37	
-15 (+ 5)	1054	266	309	116	0.88	3.32	9.11	2.29	2.67	
-10 (+14)	1322	333	387	129	0.99	4.17	10.21	2.57	2.99	

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)	324	82	95	66	0.53	1.01	4.93	1.24	1.44	
-30 (-22)	457	115	134	80	0.62	1.43	5.68	1.43	1.67	
-25 (-13)	610	154	179	94	0.72	1.92	6.47	1.63	1.90	
-20 (- 4)	792	200	232	109	0.83	2.49	7.31	1.84	2.14	
-15 (+ 5)	1011	255	296	123	0.94	3.18	8.19	2.06	2.40	
-10 (+14)	1274	321	373	139	1.05	4.02	9.13	2.30	2.68	

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)	264	67	77	62	0.49	0.83	4.28	1.08	1.25	
-30 (-22)	397	100	116	79	0.61	1.25	5.02	1.27	1.47	
-25 (-13)	550	139	161	95	0.73	1.72	5.78	1.46	1.69	
-20 (- 4)	729	184	214	112	0.85	2.29	6.55	1.65	1.92	
-15 (+ 5)	944	238	277	129	0.98	2.97	7.35	1.85	2.15	
-10 (+14)	1204	303	353	147	1.11	3.80	8.17	2.06	2.40	

F - EXTERNAL CHARACTERISTICS

1 Base plate	European Standard VES		
2 Tray holder	Yes		
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		