

COMPRESSOR DEFINITION

Designation	VES D10C
Nominal Voltage/Frequency	230 V 40-150 Hz
Engineering Number	513907052

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)	-	-	-
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	9.50	[cm ³] (0.580 cu.in)
2.1 Bore [mm]	24.000	
2.2 Stroke [mm]	21.000	
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)	6.79	[kg] (14.97 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)	2.10/2.10	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (40/150 Hz)	2.10/2.10	[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	

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]
245	62	72	37	0.29	0.77	6.69	1.69	1.96

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]
294	74	86	45	0.34	0.92	6.59	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]
372	94	109	57	0.43	1.17	6.55	1.65	1.92

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]
552	139	162	86	0.64	1.73	6.39	1.61	1.87

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]
705	178	207	119	0.88	2.21	5.95	1.50	1.74

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)	141	36	41	23	0.44	0.44	6.16	1.55	1.80	
-30 (-22)	189	48	55	27	0.48	0.59	7.07	1.78	2.07	
-25 (-13)	250	63	73	31	0.47	0.78	8.10	2.04	2.37	
-20 (- 4)	325	82	95	35	0.43	1.02	9.31	2.35	2.73	
-15 (+ 5)	414	104	121	39	0.38	1.30	10.72	2.70	3.14	
-10 (+14)	518	131	152	42	0.35	1.63	12.37	3.12	3.62	
-5 (+23)	638	161	187	45	0.36	2.02	14.29	3.60	4.19	

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)	125	31	37	24	0.21	0.39	5.31	1.34	1.56	
-30 (-22)	171	43	50	28	0.29	0.54	6.11	1.54	1.79	
-25 (-13)	230	58	67	33	0.32	0.72	6.97	1.76	2.04	
-20 (- 4)	301	76	88	38	0.32	0.95	7.91	1.99	2.32	
-15 (+ 5)	387	97	113	43	0.32	1.22	8.97	2.26	2.63	
-10 (+14)	487	123	143	48	0.35	1.54	10.19	2.57	2.99	
-5 (+23)	602	152	176	52	0.42	1.90	11.61	2.93	3.40	

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)	106	27	31	24	0.21	0.33	4.44	1.12	1.30	
-30 (-22)	152	38	45	29	0.29	0.48	5.26	1.32	1.54	
-25 (-13)	209	53	61	35	0.32	0.66	6.04	1.52	1.77	
-20 (- 4)	279	70	82	41	0.33	0.88	6.83	1.72	2.00	
-15 (+ 5)	362	91	106	47	0.34	1.14	7.67	1.93	2.25	
-10 (+14)	458	116	134	53	0.38	1.45	8.57	2.16	2.51	
-5 (+23)	570	144	167	59	0.47	1.80	9.60	2.42	2.81	

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)	179	45	52	28	0.35	0.56	6.33	1.60	1.86	
-30 (-22)	240	61	70	33	0.40	0.75	7.21	1.82	2.11	
-25 (-13)	314	79	92	38	0.43	0.98	8.17	2.06	2.40	
-20 (- 4)	403	102	118	43	0.43	1.27	9.29	2.34	2.72	
-15 (+ 5)	511	129	150	48	0.43	1.61	10.61	2.67	3.11	
-10 (+14)	640	161	187	52	0.43	2.02	12.23	3.08	3.58	
-5 (+23)	794	200	233	56	0.45	2.51	14.19	3.58	4.16	

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)	159	40	46	29	0.25	0.50	5.49	1.38	1.61	
-30 (-22)	218	55	64	35	0.31	0.68	6.27	1.58	1.84	
-25 (-13)	288	73	85	41	0.35	0.90	7.06	1.78	2.07	
-20 (- 4)	374	94	110	47	0.38	1.18	7.92	2.00	2.32	
-15 (+ 5)	478	121	140	53	0.41	1.51	8.92	2.25	2.61	
-10 (+14)	604	152	177	59	0.45	1.90	10.13	2.55	2.97	
-5 (+23)	754	190	221	65	0.51	2.38	11.61	2.92	3.40	

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)	134	34	39	29	0.25	0.42	4.58	1.15	1.34	
-30 (-22)	192	48	56	35	0.31	0.60	5.41	1.36	1.58	
-25 (-13)	261	66	77	43	0.36	0.82	6.16	1.55	1.81	
-20 (- 4)	346	87	101	50	0.39	1.09	6.91	1.74	2.02	
-15 (+ 5)	448	113	131	58	0.43	1.41	7.72	1.95	2.26	
-10 (+14)	571	144	167	66	0.49	1.80	8.66	2.18	2.54	
-5 (+23)	719	181	211	73	0.57	2.27	9.79	2.47	2.87	

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)	218	55	64	36	0.30	0.68	6.12	1.54	1.79	
-30 (-22)	291	73	85	42	0.35	0.91	6.92	1.74	2.03	
-25 (-13)	386	97	113	49	0.40	1.21	7.91	1.99	2.32	
-20 (- 4)	502	127	147	55	0.45	1.58	9.08	2.29	2.66	
-15 (+ 5)	641	161	188	62	0.50	2.02	10.43	2.63	3.06	
-10 (+14)	801	202	235	67	0.55	2.53	11.95	3.01	3.50	
-5 (+23)	984	248	288	72	0.59	3.11	13.64	3.44	4.00	

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)	202	51	59	37	0.31	0.63	5.51	1.39	1.62	
-30 (-22)	271	68	79	44	0.36	0.85	6.20	1.56	1.82	
-25 (-13)	362	91	106	52	0.41	1.14	7.01	1.77	2.05	
-20 (- 4)	477	120	140	60	0.47	1.50	7.95	2.00	2.33	
-15 (+ 5)	613	155	180	68	0.53	1.93	9.02	2.27	2.64	
-10 (+14)	773	195	227	76	0.58	2.44	10.20	2.57	2.99	
-5 (+23)	956	241	280	83	0.63	3.02	11.49	2.89	3.37	

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)	175	44	51	37	0.31	0.55	4.67	1.18	1.37	
-30 (-22)	240	60	70	45	0.37	0.75	5.36	1.35	1.57	
-25 (-13)	328	83	96	54	0.43	1.03	6.13	1.54	1.80	
-20 (- 4)	440	111	129	63	0.49	1.38	6.97	1.76	2.04	
-15 (+ 5)	575	145	168	73	0.56	1.81	7.87	1.98	2.31	
-10 (+14)	734	185	215	83	0.63	2.32	8.83	2.23	2.59	
-5 (+23)	916	231	268	93	0.69	2.90	9.85	2.48	2.89	

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]
-35	(-31)	317	80	93	55	0.35	0.99	5.81	1.46	1.70
-30	(-22)	435	110	128	65	0.39	1.36	6.65	1.68	1.95
-25	(-13)	579	146	170	76	0.48	1.82	7.57	1.91	2.22
-20	(- 4)	752	189	220	88	0.61	2.36	8.57	2.16	2.51
-15	(+ 5)	954	240	279	99	0.74	3.00	9.65	2.43	2.83
-10	(+14)	1188	299	348	110	0.86	3.75	10.82	2.73	3.17
-5	(+23)	1455	367	426	120	0.94	4.60	12.08	3.04	3.54

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]
-35	(-31)	296	74	87	56	0.44	0.93	5.25	1.32	1.54
-30	(-22)	408	103	120	68	0.50	1.28	5.99	1.51	1.75
-25	(-13)	549	138	161	81	0.60	1.72	6.79	1.71	1.99
-20	(- 4)	719	181	211	94	0.73	2.26	7.65	1.93	2.24
-15	(+ 5)	922	232	270	107	0.86	2.90	8.58	2.16	2.51
-10	(+14)	1157	292	339	121	0.95	3.65	9.58	2.41	2.81
-5	(+23)	1429	360	419	134	0.99	4.52	10.65	2.68	3.12

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]
-35	(-31)	265	67	78	56	0.46	0.83	4.72	1.19	1.38
-30	(-22)	368	93	108	69	0.52	1.15	5.37	1.35	1.57
-25	(-13)	501	126	147	83	0.63	1.57	6.07	1.53	1.78
-20	(- 4)	665	168	195	98	0.74	2.09	6.82	1.72	2.00
-15	(+ 5)	864	218	253	113	0.84	2.72	7.61	1.92	2.23
-10	(+14)	1098	277	322	130	0.90	3.46	8.45	2.13	2.48
-5	(+23)	1369	345	401	146	0.89	4.33	9.35	2.36	2.74

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)	441	111	129	82	0.40	1.38	5.39	1.36	1.58	
-30 (-22)	577	145	169	93	0.48	1.81	6.21	1.56	1.82	
-25 (-13)	721	182	211	103	0.60	2.26	7.01	1.77	2.06	
-20 (- 4)	890	224	261	113	0.75	2.79	7.86	1.98	2.30	
-15 (+ 5)	1096	276	321	125	0.91	3.45	8.78	2.21	2.57	
-10 (+14)	1356	342	397	138	1.05	4.28	9.81	2.47	2.87	
-5 (+23)	1684	424	493	153	1.17	5.32	11.00	2.77	3.22	

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)	428	108	125	87	0.68	1.34	4.89	1.23	1.43	
-30 (-22)	562	142	165	99	0.72	1.76	5.62	1.42	1.65	
-25 (-13)	704	177	206	111	0.81	2.21	6.35	1.60	1.86	
-20 (- 4)	869	219	255	122	0.92	2.73	7.12	1.79	2.09	
-15 (+ 5)	1071	270	314	134	1.03	3.37	7.97	2.01	2.34	
-10 (+14)	1325	334	388	148	1.13	4.18	8.94	2.25	2.62	
-5 (+23)	1646	415	482	164	1.21	5.21	10.06	2.54	2.95	

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)	394	99	115	88	0.68	1.23	4.49	1.13	1.32	
-30 (-22)	524	132	154	102	0.74	1.64	5.10	1.28	1.49	
-25 (-13)	662	167	194	116	0.84	2.08	5.71	1.44	1.67	
-20 (- 4)	821	207	240	130	0.96	2.58	6.36	1.60	1.86	
-15 (+ 5)	1016	256	298	143	1.09	3.20	7.10	1.79	2.08	
-10 (+14)	1262	318	370	158	1.20	3.98	7.95	2.00	2.33	
-5 (+23)	1575	397	461	175	1.28	4.98	8.98	2.26	2.63	

F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal 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		