COMPRESSOR DEFINITION

Designation	**VES A11C 2**
Nominal Voltage/Frequency	**230 V 40-150 Hz**
Engineering Number	**513907453**

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 Expantion device	Capillary tube		
8 Compressor cooling		Operating voltage range	
		50 Hz	60 Hz
8.1 LBP (32ºC Ambient temperature)	Static	-	-
8.2 LBP (43ºC Ambient temperature)	-	-	-
8.3 HBP (32ºC Ambient temperature)	-	-	-
8.4 HBP (43ºC Ambient temperature)	-	-	-
9 Maximum condensing temperature			
9.1 Operating	6.9	[kgf/cm²] (98 psig)	/ ºC - ºF
9.2 Peak	7.8	[kgf/cm²] (111 psig)	/ ºC - ºF
10 Maximum winding temperature	130	[°C]	

B - MECHANICAL DATA

1 Commercial designation	1/5	[hp]
2 Displacement	11.14	[cm³] (0.680 cu.in)
2.1 Bore [mm]	26.000	
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)	6.15	[kg] (13.56 lb.)
5 Nitrogen charge	-	[kgf/cm²]

C - ELECTRICAL 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		[Ω at 25ºC (77ºF)] +/- 8%
7 Run winding resistance		[Ω at 25ºC (77ºF)] +/- 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	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 (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]
288	73	84	46	0.38	0.90	6.31	1.59	1.85

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]
364	92	107	57	0.45	1.14	6.38	1.61	1.87

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]
454	114	133	70	0.55	1.42	6.45	1.63	1.89

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]
682	172	200	109	0.84	2.14	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]
938	236	275	162	1.24	2.95	5.80	1.46	1.70

E - PERFORMANCE - CURVES

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **35ºC (+95ºF))**
@220V1300RPM **Static**

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)**	177	45	52	28	0.22	0.56	6.29	1.59	1.84
-30	**(-22)**	237	60	69	33	0.26	0.74	7.14	1.80	2.09
-25	**(-13)**	309	78	90	38	0.29	0.97	8.06	2.03	2.36
-20	**(- 4)**	396	100	116	44	0.33	1.24	9.10	2.29	2.67
-15	**(+ 5)**	499	126	146	49	0.36	1.57	10.31	2.60	3.02
-10	**(+14)**	621	156	182	53	0.39	1.96	11.75	2.96	3.44

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **45ºC (+113ºF))**
@220V1300RPM **Static**

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)**	163	41	48	29	0.23	0.51	5.58	1.41	1.64
-30	**(-22)**	220	56	65	35	0.27	0.69	6.33	1.60	1.85
-25	**(-13)**	291	73	85	41	0.32	0.91	7.09	1.79	2.08
-20	**(- 4)**	377	95	110	48	0.36	1.18	7.90	1.99	2.32
-15	**(+ 5)**	479	121	140	54	0.40	1.51	8.83	2.23	2.59
-10	**(+14)**	600	151	176	60	0.44	1.89	9.92	2.50	2.91

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **55ºC (+131ºF))**
@220V1300RPM **Static**

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)**	145	36	42	30	0.23	0.45	4.80	1.21	1.41
-30	**(-22)**	199	50	58	36	0.27	0.62	5.50	1.39	1.61
-25	**(-13)**	266	67	78	43	0.32	0.84	6.16	1.55	1.80
-20	**(- 4)**	349	88	102	51	0.37	1.10	6.81	1.72	2.00
-15	**(+ 5)**	449	113	131	60	0.43	1.41	7.52	1.90	2.20
-10	**(+14)**	567	143	166	68	0.48	1.79	8.33	2.10	2.44

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **35ºC (+95ºF))**
@220V1600RPM **Static**

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)**	215	54	63	35	0.27	0.67	6.24	1.57	1.83
-30	**(-22)**	289	73	85	41	0.31	0.91	7.08	1.78	2.07
-25	**(-13)**	381	96	112	47	0.36	1.20	8.01	2.02	2.35
-20	**(- 4)**	491	124	144	54	0.40	1.54	9.06	2.28	2.65
-15	**(+ 5)**	622	157	182	61	0.44	1.96	10.27	2.59	3.01
-10	**(+14)**	776	196	227	67	0.48	2.45	11.70	2.95	3.43

E - PERFORMANCE - CURVES

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **45ºC (+113ºF))**
@220V1600RPM **Static**

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)**	204	51	60	36	0.29	0.64	5.62	1.42	1.65
-30	**(-22)**	273	69	80	43	0.33	0.86	6.32	1.59	1.85
-25	**(-13)**	359	91	105	51	0.38	1.13	7.05	1.78	2.07
-20	**(- 4)**	465	117	136	59	0.43	1.46	7.86	1.98	2.30
-15	**(+ 5)**	593	149	174	67	0.48	1.87	8.79	2.21	2.57
-10	**(+14)**	743	187	218	75	0.53	2.34	9.87	2.49	2.89

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **55ºC (+131ºF))**
@220V1600RPM **Static**

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)**	185	47	54	37	0.29	0.58	4.95	1.25	1.45
-30	**(-22)**	249	63	73	45	0.34	0.78	5.61	1.41	1.64
-25	**(-13)**	332	84	97	53	0.39	1.04	6.24	1.57	1.83
-20	**(- 4)**	435	110	127	63	0.46	1.37	6.91	1.74	2.02
-15	**(+ 5)**	560	141	164	73	0.52	1.76	7.64	1.93	2.24
-10	**(+14)**	710	179	208	84	0.59	2.24	8.48	2.14	2.48

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **35ºC (+95ºF))**
@220V2000RPM **Static**

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)**	272	69	80	45	0.33	0.85	6.11	1.54	1.79
-30	**(-22)**	363	91	106	52	0.38	1.14	6.95	1.75	2.04
-25	**(-13)**	476	120	140	60	0.44	1.49	7.87	1.98	2.31
-20	**(- 4)**	614	155	180	69	0.50	1.93	8.89	2.24	2.60
-15	**(+ 5)**	778	196	228	78	0.55	2.45	10.05	2.53	2.94
-10	**(+14)**	968	244	284	85	0.60	3.05	11.38	2.87	3.34

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **45ºC (+113ºF))**
@220V2000RPM **Static**

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)**	254	64	74	46	0.34	0.80	5.53	1.39	1.62
-30	**(-22)**	341	86	100	55	0.40	1.07	6.27	1.58	1.84
-25	**(-13)**	452	114	132	64	0.47	1.42	7.03	1.77	2.06
-20	**(- 4)**	587	148	172	75	0.54	1.84	7.85	1.98	2.30
-15	**(+ 5)**	747	188	219	85	0.61	2.35	8.77	2.21	2.57
-10	**(+14)**	935	236	274	95	0.67	2.95	9.83	2.48	2.88

E - PERFORMANCE - CURVES

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **55ºC (+131ºF))**
@220V2000RPM **Static**

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)**	229	58	67	47	0.35	0.72	4.90	1.23	1.43
-30	**(-22)**	314	79	92	56	0.41	0.99	5.60	1.41	1.64
-25	**(-13)**	423	107	124	67	0.49	1.33	6.29	1.59	1.84
-20	**(- 4)**	557	140	163	80	0.57	1.75	7.00	1.76	2.05
-15	**(+ 5)**	716	180	210	92	0.65	2.25	7.76	1.95	2.27
-10	**(+14)**	903	227	265	105	0.73	2.85	8.61	2.17	2.52

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **35ºC (+95ºF))**
@220V3000RPM **Static**

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)**	414	104	121	70	0.52	1.30	5.94	1.50	1.74
-30	**(-22)**	551	139	161	82	0.59	1.73	6.75	1.70	1.98
-25	**(-13)**	720	181	211	95	0.68	2.26	7.58	1.91	2.22
-20	**(- 4)**	925	233	271	109	0.78	2.91	8.45	2.13	2.48
-15	**(+ 5)**	1168	294	342	125	0.87	3.67	9.36	2.36	2.74
-10	**(+14)**	1451	366	425	140	0.97	4.58	10.33	2.60	3.03

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **45ºC (+113ºF))**
@220V3000RPM **Static**

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)**	379	96	111	71	0.52	1.19	5.33	1.34	1.56
-30	**(-22)**	515	130	151	85	0.61	1.61	6.05	1.53	1.77
-25	**(-13)**	682	172	200	100	0.71	2.14	6.79	1.71	1.99
-20	**(- 4)**	883	223	259	117	0.82	2.78	7.55	1.90	2.21
-15	**(+ 5)**	1121	282	328	134	0.94	3.53	8.34	2.10	2.44
-10	**(+14)**	1397	352	409	152	1.05	4.41	9.19	2.31	2.69

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **55ºC (+131ºF))**
@220V3000RPM **Static**

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)**	340	86	100	70	0.52	1.06	4.83	1.22	1.42
-30	**(-22)**	475	120	139	87	0.62	1.49	5.49	1.38	1.61
-25	**(-13)**	641	161	188	104	0.74	2.01	6.15	1.55	1.80
-20	**(- 4)**	838	211	246	123	0.86	2.63	6.82	1.72	2.00
-15	**(+ 5)**	1071	270	314	143	0.99	3.37	7.52	1.89	2.20
-10	**(+14)**	1340	338	393	163	1.12	4.23	8.25	2.08	2.42

E - PERFORMANCE - CURVES

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **35ºC (+95ºF))**
@220V4500RPM **Static**

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)**	559	141	164	102	0.78	1.75	5.46	1.37	1.60
-30	**(-22)**	715	180	210	117	0.89	2.24	6.16	1.55	1.81
-25	**(-13)**	948	239	278	138	1.04	2.97	6.86	1.73	2.01
-20	**(- 4)**	1234	311	362	163	1.23	3.88	7.57	1.91	2.22
-15	**(+ 5)**	1552	391	455	187	1.43	4.88	8.32	2.10	2.44
-10	**(+14)**	1878	473	550	206	1.63	5.92	9.14	2.30	2.68

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **45ºC (+113ºF))**
@220V4500RPM **Static**

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)**	498	125	146	100	0.78	1.56	4.97	1.25	1.46
-30	**(-22)**	669	169	196	119	0.92	2.10	5.62	1.42	1.65
-25	**(-13)**	905	228	265	144	1.10	2.84	6.29	1.58	1.84
-20	**(- 4)**	1182	298	346	169	1.29	3.72	6.98	1.76	2.05
-15	**(+ 5)**	1479	373	433	192	1.48	4.66	7.73	1.95	2.26
-10	**(+14)**	1772	447	519	208	1.66	5.59	8.56	2.16	2.51

TEST CONDITIONS: **ASHRAE32** (Condensing temperature **55ºC (+131ºF))**
@220V4500RPM **Static**

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)**	449	113	132	99	0.75	1.41	4.55	1.15	1.33
-30	**(-22)**	629	159	184	123	0.94	1.97	5.12	1.29	1.50
-25	**(-13)**	863	217	253	151	1.15	2.71	5.70	1.44	1.67
-20	**(- 4)**	1126	284	330	177	1.35	3.54	6.33	1.60	1.86
-15	**(+ 5)**	1396	352	409	199	1.54	4.40	7.03	1.77	2.06
-10	**(+14)**	1651	416	484	212	1.69	5.21	7.82	1.97	2.29

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 63° up + 5° to Front		
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 47° 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		