COMPRESSOR DEFINITION

Designation	**VES A5C**
Nominal Voltage/Frequency	**230 V 40-150 Hz**
Engineering Number	**513907217**

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 Expantion device	Capillary tube		
8 Compressor cooling		Operating voltage range	
		50 Hz	60 Hz
8.1 LBP (32ºC Ambient temperature)	Static	187 to 255 V	187 to 255 V
8.2 LBP (43ºC Ambient temperature)	Static	187 to 255 V	187 to 255 V
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	5.19	[cm³] (0.317 cu.in)
2.1 Bore [mm]	21.000	
2.2 Stroke [mm]	15.000	
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/cm²]

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 25ºC (77ºF)] +/- 8%
7 Run winding resistance	11.50	[Ω at 25ºC (77ºF)] +/- 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 - 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]
112	28	33	19	0.18	0.35	5.77	1.45	1.69

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]
142	36	42	24	0.21	0.45	6.04	1.52	1.77

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]
182	46	53	30	0.25	0.57	6.11	1.54	1.79

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]
274	69	80	46	0.37	0.86	6.02	1.52	1.76

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]
400	101	117	71	0.56	1.26	5.63	1.42	1.65

E - PERFORMANCE - CURVES

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

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)**	56	14	16	13	0.12	0.17	4.53	1.14	1.33
-30	**(-22)**	92	23	27	15	0.14	0.29	6.12	1.54	1.79
-25	**(-13)**	127	32	37	17	0.17	0.40	7.35	1.85	2.15
-20	**(- 4)**	164	41	48	19	0.18	0.52	8.45	2.13	2.48
-15	**(+ 5)**	209	53	61	22	0.20	0.66	9.68	2.44	2.84
-10	**(+14)**	267	67	78	24	0.21	0.84	11.28	2.84	3.30
-5	**(+23)**	343	86	101	25	0.22	1.08	13.50	3.40	3.96

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

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)**	52	13	15	12	0.12	0.16	4.07	1.03	1.19
-30	**(-22)**	85	21	25	15	0.15	0.27	5.45	1.37	1.60
-25	**(-13)**	116	29	34	18	0.17	0.37	6.41	1.62	1.88
-20	**(- 4)**	151	38	44	21	0.19	0.48	7.20	1.82	2.11
-15	**(+ 5)**	194	49	57	24	0.21	0.61	8.08	2.04	2.37
-10	**(+14)**	250	63	73	27	0.23	0.79	9.28	2.34	2.72
-5	**(+23)**	325	82	95	29	0.25	1.03	11.06	2.79	3.24

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

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)**	38	9	11	12	0.12	0.12	3.23	0.81	0.95
-30	**(-22)**	69	17	20	15	0.14	0.22	4.59	1.16	1.34
-25	**(-13)**	100	25	29	18	0.17	0.31	5.48	1.38	1.61
-20	**(- 4)**	134	34	39	22	0.20	0.42	6.16	1.55	1.80
-15	**(+ 5)**	177	44	52	26	0.24	0.56	6.88	1.73	2.02
-10	**(+14)**	233	59	68	29	0.28	0.74	7.88	1.99	2.31
-5	**(+23)**	308	78	90	33	0.33	0.97	9.41	2.37	2.76

E - PERFORMANCE - CURVES

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

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)**	78	20	23	16	0.15	0.24	5.01	1.26	1.47
-30	**(-22)**	114	29	33	18	0.17	0.36	6.22	1.57	1.82
-25	**(-13)**	156	39	46	21	0.19	0.49	7.40	1.87	2.17
-20	**(- 4)**	206	52	60	24	0.21	0.65	8.64	2.18	2.53
-15	**(+ 5)**	265	67	78	26	0.23	0.83	10.02	2.53	2.94
-10	**(+14)**	337	85	99	29	0.25	1.06	11.66	2.94	3.42
-5	**(+23)**	423	107	124	31	0.26	1.34	13.64	3.44	4.00

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

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)**	64	16	19	15	0.14	0.20	4.23	1.07	1.24
-30	**(-22)**	100	25	29	18	0.17	0.31	5.39	1.36	1.58
-25	**(-13)**	141	35	41	22	0.19	0.44	6.43	1.62	1.88
-20	**(- 4)**	189	48	55	25	0.22	0.59	7.43	1.87	2.18
-15	**(+ 5)**	247	62	72	29	0.25	0.78	8.50	2.14	2.49
-10	**(+14)**	318	80	93	33	0.27	1.00	9.74	2.45	2.85
-5	**(+23)**	403	101	118	36	0.30	1.27	11.23	2.83	3.29

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

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)**	51	13	15	15	0.14	0.16	3.46	0.87	1.01
-30	**(-22)**	86	22	25	18	0.17	0.27	4.68	1.18	1.37
-25	**(-13)**	126	32	37	22	0.20	0.40	5.68	1.43	1.66
-20	**(- 4)**	174	44	51	27	0.23	0.55	6.56	1.65	1.92
-15	**(+ 5)**	231	58	68	31	0.27	0.73	7.43	1.87	2.18
-10	**(+14)**	301	76	88	36	0.30	0.95	8.37	2.11	2.45
-5	**(+23)**	385	97	113	41	0.35	1.22	9.48	2.39	2.78

E - PERFORMANCE - CURVES

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

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)**	103	26	30	20	0.18	0.32	5.27	1.33	1.54
-30	**(-22)**	145	37	43	23	0.20	0.46	6.32	1.59	1.85
-25	**(-13)**	197	50	58	27	0.23	0.62	7.42	1.87	2.17
-20	**(- 4)**	260	66	76	30	0.26	0.82	8.62	2.17	2.53
-15	**(+ 5)**	335	84	98	33	0.28	1.05	10.01	2.52	2.93
-10	**(+14)**	425	107	124	36	0.30	1.34	11.66	2.94	3.42
-5	**(+23)**	530	133	155	39	0.32	1.67	13.65	3.44	4.00

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

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	19	0.17	0.26	4.46	1.12	1.31
-30	**(-22)**	128	32	37	23	0.20	0.40	5.53	1.39	1.62
-25	**(-13)**	180	45	53	27	0.24	0.56	6.54	1.65	1.92
-20	**(- 4)**	242	61	71	32	0.27	0.76	7.55	1.90	2.21
-15	**(+ 5)**	316	80	93	37	0.31	1.00	8.63	2.17	2.53
-10	**(+14)**	404	102	118	41	0.34	1.27	9.86	2.49	2.89
-5	**(+23)**	506	127	148	45	0.36	1.60	11.32	2.85	3.32

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

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	19	0.17	0.21	3.51	0.89	1.03
-30	**(-22)**	110	28	32	23	0.20	0.34	4.72	1.19	1.38
-25	**(-13)**	161	41	47	28	0.24	0.51	5.74	1.45	1.68
-20	**(- 4)**	222	56	65	34	0.28	0.70	6.66	1.68	1.95
-15	**(+ 5)**	293	74	86	39	0.32	0.92	7.55	1.90	2.21
-10	**(+14)**	377	95	111	45	0.36	1.19	8.47	2.13	2.48
-5	**(+23)**	475	120	139	50	0.40	1.50	9.51	2.40	2.79

E - PERFORMANCE - CURVES

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

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)**	156	39	46	30	0.25	0.49	5.22	1.32	1.53
-30	**(-22)**	221	56	65	35	0.29	0.69	6.23	1.57	1.83
-25	**(-13)**	302	76	89	41	0.34	0.95	7.29	1.84	2.14
-20	**(- 4)**	401	101	117	48	0.38	1.26	8.44	2.13	2.47
-15	**(+ 5)**	516	130	151	53	0.42	1.62	9.74	2.45	2.85
-10	**(+14)**	649	164	190	58	0.46	2.05	11.22	2.83	3.29
-5	**(+23)**	800	202	234	62	0.48	2.53	12.93	3.26	3.79

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

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	30	0.26	0.43	4.56	1.15	1.34
-30	**(-22)**	198	50	58	36	0.30	0.62	5.51	1.39	1.61
-25	**(-13)**	275	69	81	43	0.35	0.86	6.45	1.62	1.89
-20	**(- 4)**	371	93	109	50	0.40	1.17	7.43	1.87	2.18
-15	**(+ 5)**	485	122	142	57	0.45	1.53	8.50	2.14	2.49
-10	**(+14)**	617	156	181	64	0.49	1.95	9.69	2.44	2.84
-5	**(+23)**	768	194	225	70	0.53	2.43	11.06	2.79	3.24

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

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)**	115	29	34	30	0.26	0.36	3.82	0.96	1.12
-30	**(-22)**	169	43	50	36	0.30	0.53	4.78	1.20	1.40
-25	**(-13)**	242	61	71	43	0.35	0.76	5.67	1.43	1.66
-20	**(- 4)**	334	84	98	51	0.41	1.05	6.55	1.65	1.92
-15	**(+ 5)**	445	112	130	60	0.47	1.40	7.46	1.88	2.18
-10	**(+14)**	576	145	169	68	0.53	1.82	8.44	2.13	2.47
-5	**(+23)**	727	183	213	76	0.58	2.30	9.53	2.40	2.79

E - PERFORMANCE - CURVES

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

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	48	0.38	0.71	4.80	1.21	1.41
-30	**(-22)**	319	80	93	56	0.44	1.00	5.68	1.43	1.67
-25	**(-13)**	428	108	125	65	0.50	1.34	6.59	1.66	1.93
-20	**(- 4)**	562	142	165	74	0.57	1.77	7.57	1.91	2.22
-15	**(+ 5)**	727	183	213	83	0.64	2.29	8.70	2.19	2.55
-10	**(+14)**	929	234	272	92	0.70	2.93	10.02	2.53	2.94
-5	**(+23)**	1176	296	345	102	0.76	3.72	11.60	2.92	3.40

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

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	48	0.40	0.65	4.33	1.09	1.27
-30	**(-22)**	298	75	87	58	0.46	0.93	5.20	1.31	1.52
-25	**(-13)**	403	102	118	68	0.53	1.26	6.02	1.52	1.76
-20	**(- 4)**	531	134	156	78	0.61	1.67	6.85	1.73	2.01
-15	**(+ 5)**	687	173	201	89	0.68	2.16	7.76	1.95	2.27
-10	**(+14)**	879	222	258	100	0.75	2.77	8.79	2.21	2.58
-5	**(+23)**	1113	281	326	111	0.82	3.52	10.01	2.52	2.93

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

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)**	149	37	44	43	0.35	0.47	3.40	0.86	1.00
-30	**(-22)**	245	62	72	55	0.44	0.77	4.41	1.11	1.29
-25	**(-13)**	355	89	104	67	0.53	1.11	5.29	1.33	1.55
-20	**(- 4)**	485	122	142	80	0.62	1.53	6.13	1.54	1.79
-15	**(+ 5)**	643	162	188	93	0.71	2.02	6.96	1.75	2.04
-10	**(+14)**	833	210	244	106	0.81	2.63	7.85	1.98	2.30
-5	**(+23)**	1063	268	312	120	0.90	3.36	8.87	2.23	2.60

F - EXTERNAL CHARACTERISTICS

1 Base plate	European Standard VES		
2 Tray holder	Yes		
3 Connectors			
3.1 SUCTION	6.1 +0.10/+0.00	[mm]	(0.240" +0.004"/+0.000")
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 +0.08/-0.08	[mm]	(0.236" +0.003"/-0.003")
3.3.1 Material	Copper(OD)		
3.3.2 Shape	Slanted 47° up + 59° to Back		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		