COMPRESSOR DEFINITION

Designation	**VES D5C**
Nominal Voltage/Frequency	**230 V 40-150 Hz**
Engineering Number	**513907069**

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	190	[ml] (6.42 fl.oz.)
3.1 Lubricants approved		
3.2 Lubricants type/viscosity	ALQUILB / ISO5	
4 Weight (with oil charge)	6.45	[kg] (14.22 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	VCC3 1156 XXXXX/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	13.40	[Ω at 25ºC (77ºF)] +/- 8%
7 Run winding resistance	13.40	[Ω at 25ºC (77ºF)] +/- 8%
8 LRA - Locked rotor amperage (46/133 Hz)	2.10/2.10	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (46/133 Hz)	2.10/2.10	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (46/133 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]
116	29	34	19	0.18	0.36	6.04	1.52	1.77

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]
144	36	42	24	0.21	0.45	6.10	1.54	1.79

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]
186	47	55	30	0.25	0.58	6.28	1.58	1.84

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]
286	72	84	46	0.38	0.90	6.19	1.56	1.81

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]
430	108	126	73	0.57	1.35	5.90	1.49	1.73

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)**	75	19	22	13	0.12	0.23	5.55	1.40	1.62
-30	**(-22)**	98	25	29	15	0.14	0.31	6.43	1.62	1.88
-25	**(-13)**	128	32	38	17	0.16	0.40	7.44	1.88	2.18
-20	**(- 4)**	166	42	49	19	0.18	0.52	8.66	2.18	2.54
-15	**(+ 5)**	214	54	63	21	0.19	0.67	10.15	2.56	2.97
-10	**(+14)**	271	68	80	23	0.20	0.86	11.95	3.01	3.50
-5	**(+23)**	341	86	100	24	0.21	1.08	14.15	3.57	4.15

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)**	61	15	18	12	0.12	0.19	4.98	1.25	1.46
-30	**(-22)**	86	22	25	15	0.14	0.27	5.81	1.46	1.70
-25	**(-13)**	117	30	34	18	0.16	0.37	6.66	1.68	1.95
-20	**(- 4)**	155	39	46	20	0.19	0.49	7.59	1.91	2.23
-15	**(+ 5)**	202	51	59	23	0.21	0.63	8.67	2.18	2.54
-10	**(+14)**	258	65	75	26	0.23	0.81	9.94	2.50	2.91
-5	**(+23)**	325	82	95	28	0.24	1.03	11.48	2.89	3.36

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)**	43	11	13	12	0.12	0.13	3.64	0.92	1.07
-30	**(-22)**	71	18	21	15	0.14	0.22	4.70	1.18	1.38
-25	**(-13)**	103	26	30	18	0.17	0.32	5.66	1.43	1.66
-20	**(- 4)**	142	36	42	22	0.20	0.45	6.58	1.66	1.93
-15	**(+ 5)**	188	47	55	25	0.22	0.59	7.51	1.89	2.20
-10	**(+14)**	243	61	71	28	0.25	0.77	8.53	2.15	2.50
-5	**(+23)**	308	78	90	32	0.27	0.97	9.69	2.44	2.84

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)**	87	22	25	15	0.14	0.27	5.63	1.42	1.65
-30	**(-22)**	117	30	34	18	0.17	0.37	6.45	1.63	1.89
-25	**(-13)**	157	40	46	21	0.19	0.49	7.50	1.89	2.20
-20	**(- 4)**	207	52	61	24	0.21	0.65	8.78	2.21	2.57
-15	**(+ 5)**	268	68	79	26	0.23	0.84	10.33	2.60	3.03
-10	**(+14)**	341	86	100	28	0.24	1.08	12.16	3.06	3.56
-5	**(+23)**	427	108	125	30	0.25	1.35	14.31	3.61	4.19

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)**	80	20	23	15	0.14	0.25	5.25	1.32	1.54
-30	**(-22)**	108	27	32	18	0.17	0.34	5.91	1.49	1.73
-25	**(-13)**	146	37	43	22	0.19	0.46	6.71	1.69	1.97
-20	**(- 4)**	194	49	57	25	0.22	0.61	7.66	1.93	2.25
-15	**(+ 5)**	252	64	74	29	0.25	0.79	8.80	2.22	2.58
-10	**(+14)**	322	81	94	32	0.27	1.02	10.14	2.56	2.97
-5	**(+23)**	404	102	118	35	0.29	1.28	11.71	2.95	3.43

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)**	63	16	18	15	0.13	0.20	4.23	1.06	1.24
-30	**(-22)**	91	23	27	18	0.16	0.28	4.97	1.25	1.46
-25	**(-13)**	128	32	38	22	0.20	0.40	5.76	1.45	1.69
-20	**(- 4)**	175	44	51	26	0.23	0.55	6.62	1.67	1.94
-15	**(+ 5)**	233	59	68	31	0.26	0.73	7.58	1.91	2.22
-10	**(+14)**	301	76	88	35	0.29	0.95	8.67	2.18	2.54
-5	**(+23)**	382	96	112	39	0.32	1.21	9.90	2.49	2.90

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)**	112	28	33	19	0.17	0.35	5.75	1.45	1.68
-30	**(-22)**	149	38	44	23	0.20	0.47	6.56	1.65	1.92
-25	**(-13)**	199	50	58	26	0.23	0.62	7.56	1.91	2.22
-20	**(- 4)**	260	66	76	30	0.25	0.82	8.79	2.21	2.57
-15	**(+ 5)**	336	85	98	33	0.27	1.06	10.26	2.59	3.01
-10	**(+14)**	426	107	125	36	0.29	1.34	12.01	3.03	3.52
-5	**(+23)**	532	134	156	38	0.31	1.68	14.06	3.54	4.12

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)**	101	26	30	20	0.17	0.32	5.21	1.31	1.53
-30	**(-22)**	138	35	41	23	0.21	0.43	5.93	1.49	1.74
-25	**(-13)**	186	47	55	27	0.24	0.58	6.76	1.70	1.98
-20	**(- 4)**	247	62	72	32	0.27	0.78	7.73	1.95	2.27
-15	**(+ 5)**	321	81	94	36	0.30	1.01	8.87	2.23	2.60
-10	**(+14)**	409	103	120	40	0.32	1.29	10.20	2.57	2.99
-5	**(+23)**	512	129	150	44	0.35	1.62	11.75	2.96	3.44

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)**	85	21	25	19	0.17	0.26	4.39	1.11	1.29
-30	**(-22)**	120	30	35	23	0.21	0.38	5.15	1.30	1.51
-25	**(-13)**	166	42	49	28	0.24	0.52	5.94	1.50	1.74
-20	**(- 4)**	224	56	66	33	0.28	0.70	6.78	1.71	1.99
-15	**(+ 5)**	295	74	87	38	0.31	0.93	7.71	1.94	2.26
-10	**(+14)**	381	96	112	43	0.35	1.20	8.76	2.21	2.57
-5	**(+23)**	481	121	141	48	0.39	1.52	9.94	2.50	2.91

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)**	167	42	49	30	0.26	0.52	5.54	1.40	1.62
-30	**(-22)**	230	58	67	35	0.29	0.72	6.52	1.64	1.91
-25	**(-13)**	310	78	91	41	0.34	0.97	7.57	1.91	2.22
-20	**(- 4)**	408	103	120	47	0.38	1.28	8.73	2.20	2.56
-15	**(+ 5)**	523	132	153	52	0.42	1.65	10.02	2.53	2.94
-10	**(+14)**	655	165	192	57	0.45	2.07	11.50	2.90	3.37
-5	**(+23)**	805	203	236	61	0.48	2.54	13.20	3.33	3.87

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)**	148	37	43	30	0.25	0.46	4.90	1.24	1.44
-30	**(-22)**	207	52	61	36	0.30	0.65	5.79	1.46	1.70
-25	**(-13)**	285	72	84	42	0.35	0.90	6.70	1.69	1.96
-20	**(- 4)**	381	96	112	49	0.40	1.20	7.68	1.94	2.25
-15	**(+ 5)**	495	125	145	56	0.45	1.56	8.77	2.21	2.57
-10	**(+14)**	626	158	183	63	0.49	1.97	9.99	2.52	2.93
-5	**(+23)**	775	195	227	68	0.53	2.45	11.39	2.87	3.34

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)**	126	32	37	30	0.26	0.39	4.18	1.05	1.22
-30	**(-22)**	181	46	53	36	0.31	0.57	5.02	1.26	1.47
-25	**(-13)**	254	64	75	44	0.36	0.80	5.85	1.47	1.71
-20	**(- 4)**	347	87	102	52	0.42	1.09	6.70	1.69	1.96
-15	**(+ 5)**	457	115	134	60	0.47	1.44	7.62	1.92	2.23
-10	**(+14)**	586	148	172	68	0.53	1.85	8.64	2.18	2.53
-5	**(+23)**	734	185	215	75	0.58	2.32	9.80	2.47	2.87

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)**	258	65	76	50	0.39	0.81	5.19	1.31	1.52
-30	**(-22)**	344	87	101	57	0.45	1.08	6.00	1.51	1.76
-25	**(-13)**	452	114	132	66	0.51	1.42	6.89	1.74	2.02
-20	**(- 4)**	583	147	171	74	0.57	1.83	7.88	1.99	2.31
-15	**(+ 5)**	744	188	218	82	0.63	2.34	9.02	2.27	2.64
-10	**(+14)**	939	237	275	91	0.69	2.96	10.31	2.60	3.02
-5	**(+23)**	1170	295	343	99	0.75	3.70	11.80	2.97	3.46

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)**	228	58	67	49	0.39	0.71	4.67	1.18	1.37
-30	**(-22)**	319	80	93	59	0.46	1.00	5.43	1.37	1.59
-25	**(-13)**	427	108	125	69	0.54	1.34	6.24	1.57	1.83
-20	**(- 4)**	557	140	163	79	0.61	1.75	7.11	1.79	2.08
-15	**(+ 5)**	714	180	209	88	0.68	2.25	8.08	2.04	2.37
-10	**(+14)**	902	227	264	98	0.75	2.85	9.17	2.31	2.69
-5	**(+23)**	1125	284	330	108	0.82	3.56	10.41	2.62	3.05

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)**	176	44	52	44	0.35	0.55	3.99	1.01	1.17
-30	**(-22)**	272	69	80	56	0.45	0.85	4.79	1.21	1.40
-25	**(-13)**	385	97	113	69	0.54	1.21	5.58	1.41	1.64
-20	**(- 4)**	517	130	151	81	0.63	1.62	6.41	1.61	1.88
-15	**(+ 5)**	673	170	197	93	0.71	2.12	7.28	1.84	2.13
-10	**(+14)**	858	216	251	104	0.79	2.71	8.24	2.08	2.42
-5	**(+23)**	1075	271	315	116	0.87	3.40	9.31	2.35	2.73

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	5.1 +0.10/+0.00	[mm]	(0.201" +0.004"/+0.000")
3.2.1 Material	Copper		
3.2.2 Shape	Slanted 47° 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		