

COMPRESSOR DEFINITION

Designation	VNE U213U
Nominal Voltage/Frequency	100-300 V 33-75 Hz
Engineering Number	860DX78

A - APPLICATION / LIMIT WORKING CONDITIONS

1 Type	Hermetic reciprocating compressor		
2 Refrigerant	R-290		
3 Nominal voltage and frequency	100-300 / 33-75	[V / Hz]	
4 Application type	Low Back Pressure R290		
4.1 Evaporating temperature range	-40°C to -10°C	(-40°F to 14°F)	
5 Motor type	BPM		
6 Starting torque	HST - Hight starting torque		
7 Expansion device	Capillary tube or Expansion valve		
8 Compressor cooling	Operating voltage range		
		50 Hz	60 Hz
8.1 LBP (32°C Ambient temperature)	-	-	-
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	18.4	[kgf/cm ²] (262 psig)	/ °C - °F
9.2 Peak	20.6	[kgf/cm ²] (293 psig)	/ °C - °F
10 Maximum winding temperature	130	[°C]	

B - MECHANICAL DATA

1 Commercial designation		[hp]
2 Displacement	13.54	[cm ³] (0.826 cu.in)
2.1 Bore [mm]	29.362	
2.2 Stroke [mm]	20.000	
3 Lubricant charge	500	[ml] (16.91 fl.oz.)
3.1 Lubricants approved		
3.2 Lubricants type/viscosity	ESTER / ISO22	
4 Weight (with oil charge)	11.4	[kg] (25.13 lb.)
5 Nitrogen charge	-	[kgf/cm ²]

C - ELETRICAL DATA

1 Nominal Voltage/Frequency/Number of Phases	100-300 V 33-75 Hz 3 ~ (Three phase)	
2 Starting device type	Inverter	
2.1 Starting device	VCCHP2456XXXXX	
3 Start capacitor	-	[μF(VAC minimum)]
4 Run capacitor	-	[μF(VAC minimum)]
5 Motor protection	T0606/07	
6 Start winding resistance	3.82	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	2.53	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (50/60 Hz)	-	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (50/60 Hz)	-	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (50/60 Hz)	-	[A] - Measured according to UL 984
11 Approval boards certification	CCC - VDE	

D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS: @220V2000RPM			EN12900LBP_HH Fan		Evaporating temperature (Condensing temperature)		-35°C (-31°F) 40°C (104°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]
894	225	262	204	0.96	2.83	4.38	1.10	1.28

TEST CONDITIONS: @220V2400RPM			EN12900LBP_HH Fan		Evaporating temperature (Condensing temperature)		-35°C (-31°F) 40°C (104°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]
1032	260	302	235	1.09	3.26	4.39	1.11	1.29

TEST CONDITIONS: @220V3000RPM			EN12900LBP_HH Fan		Evaporating temperature (Condensing temperature)		-35°C (-31°F) 40°C (104°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]
1308	330	383	300	1.39	4.14	4.36	1.10	1.28

TEST CONDITIONS: @220V3600RPM			EN12900LBP_HH Fan		Evaporating temperature (Condensing temperature)		-35°C (-31°F) 40°C (104°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]
1544	389	452	365	1.69	4.88	4.23	1.07	1.24

TEST CONDITIONS: @220V4500RPM			EN12900LBP_HH Fan		Evaporating temperature (Condensing temperature)		-35°C (-31°F) 40°C (104°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]
1958	493	574	472	2.17	6.19	4.15	1.05	1.22

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V2000RPM		EN12900HH Fan			(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]
-40 (-40)	759	191	222	177	0.84	2.29	4.28	1.08	1.25	
-35 (-31)	999	252	293	204	0.96	3.03	4.91	1.24	1.44	
-30 (-22)	1297	327	380	230	1.07	3.94	5.65	1.42	1.66	
-25 (-13)	1653	416	484	255	1.18	5.03	6.49	1.64	1.90	
-20 (- 4)	2066	521	605	278	1.29	6.31	7.43	1.87	2.18	
-15 (+ 5)	2538	640	744	301	1.39	7.79	8.43	2.13	2.47	
-10 (+14)	3068	773	899	322	1.49	9.46	9.50	2.39	2.78	

TEST CONDITIONS: @220V2000RPM		EN12900HH Fan			(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]
-40 (-40)	656	165	192	189	0.88	2.16	3.49	0.88	1.02	
-35 (-31)	868	219	254	217	1.01	2.87	4.00	1.01	1.17	
-30 (-22)	1131	285	331	246	1.14	3.75	4.59	1.16	1.34	
-25 (-13)	1446	364	424	276	1.27	4.81	5.23	1.32	1.53	
-20 (- 4)	1813	457	531	306	1.41	6.05	5.92	1.49	1.74	
-15 (+ 5)	2231	562	654	336	1.55	7.48	6.65	1.68	1.95	
-10 (+14)	2701	681	791	366	1.69	9.10	7.39	1.86	2.17	

TEST CONDITIONS: @220V2000RPM		EN12900HH Fan			(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]
-40 (-40)	507	128	149	195	0.90	1.85	2.60	0.65	0.76	
-35 (-31)	692	174	203	226	1.03	2.53	3.07	0.77	0.90	
-30 (-22)	922	232	270	258	1.18	3.38	3.57	0.90	1.05	
-25 (-13)	1197	302	351	293	1.34	4.40	4.09	1.03	1.20	
-20 (- 4)	1517	382	444	329	1.51	5.60	4.61	1.16	1.35	
-15 (+ 5)	1882	474	552	368	1.70	6.99	5.13	1.29	1.50	
-10 (+14)	2293	578	672	407	1.88	8.56	5.62	1.42	1.65	

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V2400RPM		EN12900HH Fan			(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]
-40 (-40)	840	212	246	202	0.95	2.53	4.16	1.05	1.22	
-35 (-31)	1114	281	326	230	1.08	3.38	4.83	1.22	1.42	
-30 (-22)	1443	364	423	258	1.21	4.39	5.59	1.41	1.64	
-25 (-13)	1833	462	537	285	1.33	5.58	6.43	1.62	1.88	
-20 (- 4)	2288	577	670	312	1.45	6.99	7.35	1.85	2.15	
-15 (+ 5)	2812	709	824	338	1.56	8.62	8.34	2.10	2.44	
-10 (+14)	3410	859	999	361	1.67	10.51	9.41	2.37	2.76	

TEST CONDITIONS: @220V2400RPM		EN12900HH Fan			(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]
-40 (-40)	729	184	213	211	0.99	2.40	3.48	0.88	1.02	
-35 (-31)	963	243	282	243	1.14	3.19	3.97	1.00	1.16	
-30 (-22)	1253	316	367	276	1.29	4.15	4.53	1.14	1.33	
-25 (-13)	1601	403	469	310	1.44	5.32	5.15	1.30	1.51	
-20 (- 4)	2012	507	590	344	1.59	6.71	5.85	1.47	1.71	
-15 (+ 5)	2492	628	730	378	1.74	8.35	6.60	1.66	1.94	
-10 (+14)	3043	767	892	411	1.89	10.25	7.42	1.87	2.18	

TEST CONDITIONS: @220V2400RPM		EN12900HH Fan			(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]
-40 (-40)	671	169	196	213	1.01	2.44	3.12	0.79	0.91	
-35 (-31)	852	215	250	249	1.17	3.12	3.43	0.86	1.01	
-30 (-22)	1087	274	319	288	1.34	3.99	3.80	0.96	1.11	
-25 (-13)	1379	348	404	328	1.51	5.07	4.22	1.06	1.24	
-20 (- 4)	1733	437	508	370	1.70	6.40	4.69	1.18	1.37	
-15 (+ 5)	2153	543	631	413	1.89	7.99	5.22	1.31	1.53	
-10 (+14)	2644	666	775	456	2.08	9.86	5.79	1.46	1.70	

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V3000RPM		EN12900HH Fan			(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]
-40 (-40)	1053	265	309	256	1.20	3.18	4.11	1.04	1.20	
-35 (-31)	1375	347	403	291	1.36	4.17	4.73	1.19	1.39	
-30 (-22)	1785	450	523	327	1.52	5.42	5.46	1.38	1.60	
-25 (-13)	2283	575	669	363	1.68	6.95	6.29	1.59	1.84	
-20 (- 4)	2868	723	841	399	1.84	8.77	7.19	1.81	2.11	
-15 (+ 5)	3541	892	1038	435	2.00	10.87	8.14	2.05	2.38	
-10 (+14)	4302	1084	1261	472	2.16	13.26	9.11	2.30	2.67	

TEST CONDITIONS: @220V3000RPM		EN12900HH Fan			(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]
-40 (-40)	906	228	266	265	1.24	2.99	3.42	0.86	1.00	
-35 (-31)	1186	299	348	306	1.42	3.92	3.88	0.98	1.14	
-30 (-22)	1545	389	453	347	1.61	5.12	4.45	1.12	1.30	
-25 (-13)	1982	499	581	390	1.80	6.59	5.08	1.28	1.49	
-20 (- 4)	2497	629	732	433	1.99	8.33	5.77	1.45	1.69	
-15 (+ 5)	3091	779	906	477	2.19	10.36	6.49	1.63	1.90	
-10 (+14)	3763	948	1103	522	2.39	12.68	7.22	1.82	2.11	

TEST CONDITIONS: @220V3000RPM		EN12900HH Fan			(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]
-40 (-40)	770	194	226	269	1.26	2.81	2.86	0.72	0.84	
-35 (-31)	1018	257	298	316	1.46	3.72	3.22	0.81	0.94	
-30 (-22)	1336	337	391	365	1.68	4.90	3.66	0.92	1.07	
-25 (-13)	1723	434	505	415	1.91	6.34	4.15	1.05	1.22	
-20 (- 4)	2179	549	639	467	2.15	8.05	4.67	1.18	1.37	
-15 (+ 5)	2705	682	793	520	2.39	10.04	5.21	1.31	1.53	
-10 (+14)	3300	832	967	574	2.63	12.32	5.74	1.45	1.68	

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V3600RPM		EN12900HH Fan			(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]
-40 (-40)	1275	321	374	311	1.45	3.86	4.08	1.03	1.20	
-35 (-31)	1670	421	489	356	1.65	5.06	4.69	1.18	1.37	
-30 (-22)	2163	545	634	401	1.85	6.57	5.40	1.36	1.58	
-25 (-13)	2756	695	808	446	2.06	8.39	6.18	1.56	1.81	
-20 (- 4)	3449	869	1011	492	2.26	10.54	7.01	1.77	2.05	
-15 (+ 5)	4241	1069	1243	538	2.47	13.01	7.88	1.99	2.31	
-10 (+14)	5132	1293	1504	585	2.69	15.82	8.77	2.21	2.57	

TEST CONDITIONS: @220V3600RPM		EN12900HH Fan			(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]
-40 (-40)	1073	270	314	321	1.50	3.54	3.35	0.84	0.98	
-35 (-31)	1423	359	417	372	1.72	4.71	3.83	0.96	1.12	
-30 (-22)	1864	470	546	424	1.95	6.18	4.39	1.11	1.29	
-25 (-13)	2394	603	702	477	2.18	7.96	5.01	1.26	1.47	
-20 (- 4)	3015	760	883	531	2.42	10.06	5.67	1.43	1.66	
-15 (+ 5)	3725	939	1092	586	2.67	12.49	6.36	1.60	1.86	
-10 (+14)	4526	1141	1326	642	2.93	15.25	7.05	1.78	2.07	

TEST CONDITIONS: @220V3600RPM		EN12900HH Fan			(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]
-40 (-40)	896	226	263	324	1.52	3.27	2.76	0.70	0.81	
-35 (-31)	1194	301	350	381	1.76	4.37	3.13	0.79	0.92	
-30 (-22)	1573	396	461	440	2.02	5.77	3.57	0.90	1.05	
-25 (-13)	2033	512	596	501	2.29	7.48	4.06	1.02	1.19	
-20 (- 4)	2573	648	754	563	2.57	9.51	4.58	1.15	1.34	
-15 (+ 5)	3194	805	936	627	2.87	11.86	5.10	1.29	1.50	
-10 (+14)	3896	982	1142	693	3.17	14.54	5.62	1.42	1.65	

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V4500RPM		EN12900HH Fan			(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]
-40 (-40)	1587	400	465	396	1.82	4.80	4.01	1.01	1.17	
-35 (-31)	2075	523	608	453	2.08	6.29	4.58	1.16	1.34	
-30 (-22)	2655	669	778	512	2.34	8.06	5.19	1.31	1.52	
-25 (-13)	3327	839	975	572	2.61	10.13	5.82	1.47	1.71	
-20 (- 4)	4093	1031	1199	632	2.88	12.51	6.48	1.63	1.90	
-15 (+ 5)	4951	1248	1451	692	3.15	15.19	7.15	1.80	2.10	
-10 (+14)	5902	1487	1729	751	3.42	18.19	7.85	1.98	2.30	

TEST CONDITIONS: @220V4500RPM		EN12900HH Fan			(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]
-40 (-40)	1331	335	390	406	1.86	4.39	3.29	0.83	0.96	
-35 (-31)	1793	452	525	472	2.17	5.93	3.80	0.96	1.11	
-30 (-22)	2345	591	687	541	2.48	7.77	4.33	1.09	1.27	
-25 (-13)	2985	752	875	611	2.80	9.92	4.88	1.23	1.43	
-20 (- 4)	3714	936	1088	682	3.12	12.39	5.45	1.37	1.60	
-15 (+ 5)	4533	1142	1328	752	3.45	15.19	6.03	1.52	1.77	
-10 (+14)	5441	1371	1594	821	3.77	18.33	6.63	1.67	1.94	

TEST CONDITIONS: @220V4500RPM		EN12900HH Fan			(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]
-40 (-40)	1044	263	306	404	1.86	3.80	2.58	0.65	0.76	
-35 (-31)	1457	367	427	482	2.22	5.33	3.02	0.76	0.89	
-30 (-22)	1955	493	573	561	2.58	7.17	3.48	0.88	1.02	
-25 (-13)	2539	640	744	642	2.94	9.34	3.95	1.00	1.16	
-20 (- 4)	3208	808	940	724	3.31	11.85	4.43	1.12	1.30	
-15 (+ 5)	3962	998	1161	806	3.69	14.71	4.92	1.24	1.44	
-10 (+14)	4802	1210	1407	887	4.06	17.92	5.41	1.36	1.59	

F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal		
2 Tray holder	Yes		
3 Connectors			
3.1 SUCTION	8.1 +0.10/+0.00	[mm]	(0.319" +0.004"/+0.000")
3.1.1 Material	Copper		
3.1.2 Shape	Slanted 42°		
3.2 DISCHARGE	6.45 +0.10/+0.00	[mm]	(0.254" +0.004"/+0.000")
3.2.1 Material	Copper		
3.2.2 Shape	Slanted parallel to Base Plate		
3.3 PROCESS	6.45 +0.10/+0.00	[mm]	(0.254" +0.004"/+0.000")
3.3.1 Material	Copper		
3.3.2 Shape	Slanted 42°		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		