

COMPRESSOR DEFINITION

Designation	VNE K213U
Nominal Voltage/Frequency	100-300 V 33-75 Hz
Engineering Number	860AX71

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)	11.6	[kg] (25.57 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	MST26GL-3166	
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	VDE	

D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS: @220V2000RPM			ASHRAELBP32 Fan		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]
1431	361	419	290	1.33	4.26	4.93	1.24	1.44

TEST CONDITIONS: @220V2400RPM			ASHRAELBP32 Fan		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]
1705	430	500	346	1.60	5.07	4.93	1.24	1.44

TEST CONDITIONS: @220V3000RPM			ASHRAELBP32 Fan		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]
2116	533	620	431	1.98	6.30	4.91	1.24	1.44

TEST CONDITIONS: @220V3600RPM			ASHRAELBP32 Fan		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]
2532	638	742	524	2.37	7.54	4.83	1.22	1.42

TEST CONDITIONS: @220V4500RPM			ASHRAELBP32 Fan		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]
3100	781	908	670	3.00	9.23	4.63	1.17	1.36

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V2000RPM		ASHRAE32 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)	691	174	203	169	0.81	2.04	4.11	1.03	1.20	
-35 (-31)	904	228	265	194	0.92	2.68	4.65	1.17	1.36	
-30 (-22)	1174	296	344	219	1.03	3.48	5.37	1.35	1.57	
-25 (-13)	1502	379	440	242	1.14	4.47	6.22	1.57	1.82	
-20 (- 4)	1888	476	553	264	1.24	5.63	7.16	1.80	2.10	
-15 (+ 5)	2331	588	683	286	1.34	6.98	8.17	2.06	2.39	
-10 (+14)	2832	714	830	307	1.44	8.52	9.19	2.32	2.69	

TEST CONDITIONS: @220V2000RPM		ASHRAE32 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)	630	159	184	180	0.84	1.86	3.51	0.88	1.03	
-35 (-31)	810	204	237	206	0.97	2.40	3.93	0.99	1.15	
-30 (-22)	1058	267	310	233	1.09	3.14	4.52	1.14	1.33	
-25 (-13)	1373	346	402	260	1.22	4.08	5.25	1.32	1.54	
-20 (- 4)	1756	443	515	289	1.35	5.24	6.08	1.53	1.78	
-15 (+ 5)	2207	556	647	318	1.49	6.61	6.96	1.75	2.04	
-10 (+14)	2725	687	798	348	1.62	8.20	7.86	1.98	2.30	

TEST CONDITIONS: @220V2000RPM		ASHRAE32 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)	677	171	198	184	0.83	2.00	3.66	0.92	1.07	
-35 (-31)	812	205	238	213	0.97	2.40	3.85	0.97	1.13	
-30 (-22)	1024	258	300	245	1.12	3.03	4.21	1.06	1.23	
-25 (-13)	1313	331	385	279	1.28	3.90	4.71	1.19	1.38	
-20 (- 4)	1679	423	492	316	1.45	5.01	5.30	1.34	1.55	
-15 (+ 5)	2123	535	622	356	1.63	6.36	5.95	1.50	1.74	
-10 (+14)	2644	666	775	399	1.82	7.95	6.62	1.67	1.94	

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V2400RPM		ASHRAE32 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)	839	211	246	207	0.97	2.48	4.05	1.02	1.19	
-35 (-31)	1116	281	327	236	1.10	3.30	4.72	1.19	1.38	
-30 (-22)	1452	366	426	265	1.23	4.31	5.48	1.38	1.61	
-25 (-13)	1851	466	542	293	1.36	5.50	6.32	1.59	1.85	
-20 (- 4)	2312	583	677	320	1.48	6.90	7.22	1.82	2.12	
-15 (+ 5)	2838	715	832	348	1.61	8.50	8.17	2.06	2.39	
-10 (+14)	3431	865	1005	375	1.73	10.32	9.15	2.31	2.68	

TEST CONDITIONS: @220V2400RPM		ASHRAE32 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)	766	193	224	210	0.98	2.26	3.67	0.92	1.07	
-35 (-31)	1017	256	298	245	1.14	3.01	4.16	1.05	1.22	
-30 (-22)	1332	336	390	280	1.30	3.95	4.76	1.20	1.39	
-25 (-13)	1712	431	502	315	1.46	5.09	5.43	1.37	1.59	
-20 (- 4)	2160	544	633	349	1.61	6.45	6.18	1.56	1.81	
-15 (+ 5)	2677	675	784	384	1.77	8.02	6.97	1.76	2.04	
-10 (+14)	3265	823	957	419	1.93	9.82	7.80	1.97	2.29	

TEST CONDITIONS: @220V2400RPM		ASHRAE32 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)	685	173	201	206	0.97	2.02	3.31	0.83	0.97	
-35 (-31)	907	229	266	248	1.16	2.68	3.67	0.92	1.08	
-30 (-22)	1197	302	351	290	1.35	3.55	4.13	1.04	1.21	
-25 (-13)	1557	392	456	333	1.54	4.63	4.68	1.18	1.37	
-20 (- 4)	1988	501	582	375	1.73	5.93	5.30	1.33	1.55	
-15 (+ 5)	2492	628	730	418	1.92	7.46	5.97	1.50	1.75	
-10 (+14)	3072	774	900	461	2.11	9.24	6.67	1.68	1.96	

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V3000RPM		ASHRAE32 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)	1027	259	301	258	1.19	3.03	3.98	1.00	1.17	
-35 (-31)	1365	344	400	297	1.36	4.04	4.59	1.16	1.35	
-30 (-22)	1780	449	522	335	1.53	5.28	5.31	1.34	1.56	
-25 (-13)	2271	572	666	372	1.70	6.75	6.11	1.54	1.79	
-20 (- 4)	2839	715	832	409	1.87	8.47	6.96	1.75	2.04	
-15 (+ 5)	3484	878	1021	446	2.04	10.44	7.82	1.97	2.29	
-10 (+14)	4205	1060	1232	483	2.21	12.65	8.67	2.19	2.54	

TEST CONDITIONS: @220V3000RPM		ASHRAE32 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)	948	239	278	264	1.23	2.80	3.61	0.91	1.06	
-35 (-31)	1239	312	363	307	1.42	3.67	4.03	1.01	1.18	
-30 (-22)	1620	408	475	351	1.62	4.81	4.59	1.16	1.34	
-25 (-13)	2093	527	613	396	1.82	6.22	5.26	1.33	1.54	
-20 (- 4)	2657	669	778	441	2.03	7.93	6.01	1.51	1.76	
-15 (+ 5)	3311	834	970	487	2.24	9.92	6.81	1.72	2.00	
-10 (+14)	4057	1022	1189	534	2.46	12.20	7.62	1.92	2.23	

TEST CONDITIONS: @220V3000RPM		ASHRAE32 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)	1026	259	301	268	1.27	3.03	3.79	0.96	1.11	
-35 (-31)	1226	309	359	315	1.47	3.63	3.93	0.99	1.15	
-30 (-22)	1531	386	449	364	1.68	4.54	4.24	1.07	1.24	
-25 (-13)	1942	489	569	415	1.90	5.77	4.69	1.18	1.37	
-20 (- 4)	2459	620	720	468	2.14	7.33	5.24	1.32	1.54	
-15 (+ 5)	3081	776	903	523	2.39	9.23	5.88	1.48	1.72	
-10 (+14)	3808	960	1116	580	2.65	11.46	6.57	1.65	1.92	

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V3600RPM		ASHRAE32 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)	1259	317	369	316	1.47	3.72	3.98	1.00	1.17	
-35 (-31)	1632	411	478	360	1.67	4.83	4.54	1.14	1.33	
-30 (-22)	2105	531	617	406	1.88	6.24	5.19	1.31	1.52	
-25 (-13)	2679	675	785	453	2.09	7.97	5.92	1.49	1.73	
-20 (- 4)	3352	845	982	501	2.31	10.00	6.70	1.69	1.96	
-15 (+ 5)	4127	1040	1209	550	2.53	12.36	7.51	1.89	2.20	
-10 (+14)	5001	1260	1465	600	2.76	15.05	8.33	2.10	2.44	

TEST CONDITIONS: @220V3600RPM		ASHRAE32 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)	1119	282	328	321	1.47	3.30	3.50	0.88	1.02	
-35 (-31)	1488	375	436	373	1.71	4.40	3.99	1.01	1.17	
-30 (-22)	1955	493	573	427	1.95	5.80	4.57	1.15	1.34	
-25 (-13)	2520	635	738	483	2.20	7.49	5.21	1.31	1.53	
-20 (- 4)	3184	802	933	540	2.46	9.50	5.89	1.48	1.73	
-15 (+ 5)	3946	994	1156	599	2.72	11.82	6.60	1.66	1.93	
-10 (+14)	4807	1211	1409	659	2.99	14.46	7.30	1.84	2.14	

TEST CONDITIONS: @220V3600RPM		ASHRAE32 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)	993	250	291	320	1.47	2.93	3.10	0.78	0.91	
-35 (-31)	1336	337	392	379	1.73	3.95	3.53	0.89	1.04	
-30 (-22)	1776	448	520	440	2.00	5.27	4.04	1.02	1.18	
-25 (-13)	2312	583	678	503	2.28	6.87	4.60	1.16	1.35	
-20 (- 4)	2945	742	863	568	2.57	8.79	5.19	1.31	1.52	
-15 (+ 5)	3675	926	1077	635	2.87	11.01	5.79	1.46	1.70	
-10 (+14)	4502	1134	1319	705	3.18	13.54	6.38	1.61	1.87	

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V4500RPM		ASHRAE32 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)	1540	388	451	404	1.86	4.55	3.80	0.96	1.11	
-35 (-31)	1972	497	578	461	2.12	5.84	4.29	1.08	1.26	
-30 (-22)	2518	634	738	519	2.38	7.47	4.86	1.22	1.42	
-25 (-13)	3175	800	930	579	2.66	9.44	5.48	1.38	1.61	
-20 (- 4)	3945	994	1156	641	2.94	11.77	6.15	1.55	1.80	
-15 (+ 5)	4828	1217	1415	705	3.23	14.46	6.85	1.73	2.01	
-10 (+14)	5823	1467	1706	770	3.53	17.52	7.56	1.91	2.22	

TEST CONDITIONS: @220V4500RPM		ASHRAE32 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)	1375	347	403	405	1.82	4.06	3.40	0.86	1.00	
-35 (-31)	1828	461	536	474	2.13	5.41	3.86	0.97	1.13	
-30 (-22)	2385	601	699	545	2.45	7.07	4.37	1.10	1.28	
-25 (-13)	3047	768	893	617	2.77	9.06	4.93	1.24	1.45	
-20 (- 4)	3815	961	1118	690	3.10	11.38	5.53	1.39	1.62	
-15 (+ 5)	4687	1181	1374	764	3.44	14.04	6.14	1.55	1.80	
-10 (+14)	5665	1428	1660	839	3.78	17.04	6.76	1.70	1.98	

TEST CONDITIONS: @220V4500RPM		ASHRAE32 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)	1190	300	349	395	1.78	3.51	3.01	0.76	0.88	
-35 (-31)	1643	414	481	477	2.14	4.86	3.44	0.87	1.01	
-30 (-22)	2194	553	643	560	2.51	6.51	3.91	0.99	1.15	
-25 (-13)	2843	716	833	643	2.88	8.45	4.42	1.11	1.30	
-20 (- 4)	3589	904	1052	726	3.25	10.71	4.95	1.25	1.45	
-15 (+ 5)	4433	1117	1299	809	3.62	13.28	5.49	1.38	1.61	
-10 (+14)	5375	1354	1575	892	4.00	16.17	6.02	1.52	1.76	

F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal		
2 Tray holder	No		
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		