

COMPRESSOR DEFINITION

Designation	FF US100HAK
Nominal Voltage/Frequency	220-240 V 50-60 Hz
Engineering Number	513200941

A - APPLICATION / LIMIT WORKING CONDITIONS

1 Type	Hermetic reciprocating compressor		
2 Refrigerant	R-134a		
3 Nominal voltage and frequency	220-240 / 50-60	[V / Hz]	
4 Application type	Low-Medium Back Pressure (Light Commercial)		
4.1 Evaporating temperature range	-35°C to 0°C	(-31°F to 32°F)	
5 Motor type	RSIR-CSIR		
6 Starting torque	LST - Low Starting Torque		
7 Expansion device	Capillary tube		
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 pressures/temperature			
9.1 Operating (gauge)	16.2	[kgf/cm ²] (230 psig)	/ °C - °F
9.2 Peak (gauge)	20.6	[kgf/cm ²] (293 psig)	
10 Maximum winding temperature	130	[°C]	

B - MECHANICAL DATA

1 Commercial designation	1/3	[hp]
2 Displacement	7.95	[cm ³] (0.485 cu.in)
2.1 Bore [mm]	22.500	
2.2 Stroke [mm]	20.000	
3 Lubricant charge	350	[ml] (11.84 fl.oz.)
3.1 Lubricants approved		
3.2 Lubricants type/viscosity	ESTER / ISO10	
4 Weight (with oil charge)	10.58	[kg] (23.32 lb.)
5 Nitrogen charge	0.2 to 0.3	[kgf/cm ²] (2.84 to 4.27 psig)

C - ELETRICAL DATA

1 Nominal Voltage/Frequency/Number of Phases	220-240 V 50-60 Hz 1 ~ (Single phase)	
2 Starting device type	Current Relay	
2.1 Starting device	213516442/213516469	
3 Start capacitor	88-108(180)	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	MSP36ALZ-5590	
6 Start winding resistance	34.00	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	8.80	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (50/60 Hz)	17.55/16.64	[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		

D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS: @220V50Hz			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]
847	213	248	173	1.43	4.81	4.89	1.23	1.43

TEST CONDITIONS: @220V60Hz			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]
1006	254	295	194	1.30	5.72	5.20	1.31	1.52

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V50Hz		ASHRAE32 Static				(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]
-35 (-31)	501	126	147	117	1.36	2.83	4.29	1.08	1.26
-30 (-22)	664	167	195	132	1.37	3.76	5.04	1.27	1.48
-25 (-13)	866	218	254	147	1.39	4.92	5.90	1.49	1.73
-20 (- 4)	1116	281	327	162	1.41	6.35	6.89	1.74	2.02
-15 (+ 5)	1423	358	417	178	1.44	8.12	8.00	2.02	2.34
-10 (+14)	1795	452	526	194	1.48	10.28	9.25	2.33	2.71
-5 (+23)	2242	565	657	211	1.53	12.90	10.63	2.68	3.11
0 (+32)	2772	699	812	228	1.59	16.03	12.15	3.06	3.56

TEST CONDITIONS: @220V50Hz		ASHRAE32 Static				(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]
-35 (-31)	462	116	135	121	1.35	2.61	3.80	0.96	1.11
-30 (-22)	625	158	183	140	1.37	3.55	4.46	1.12	1.31
-25 (-13)	825	208	242	158	1.40	4.68	5.21	1.31	1.53
-20 (- 4)	1069	269	313	177	1.44	6.09	6.05	1.52	1.77
-15 (+ 5)	1368	345	401	196	1.48	7.81	6.98	1.76	2.05
-10 (+14)	1729	436	506	215	1.54	9.90	8.02	2.02	2.35
-5 (+23)	2161	545	633	236	1.61	12.43	9.16	2.31	2.68
0 (+32)	2674	674	783	257	1.69	15.46	10.41	2.62	3.05

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V50Hz		ASHRAE32 Static			(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]
-35 (-31)	404	102	118	120	1.34	2.29	3.37	0.85	0.99	
-30 (-22)	570	144	167	143	1.38	3.23	3.98	1.00	1.17	
-25 (-13)	769	194	225	165	1.41	4.37	4.65	1.17	1.36	
-20 (- 4)	1010	255	296	188	1.46	5.75	5.39	1.36	1.58	
-15 (+ 5)	1302	328	381	211	1.52	7.43	6.19	1.56	1.81	
-10 (+14)	1653	417	484	234	1.59	9.47	7.06	1.78	2.07	
-5 (+23)	2073	522	607	259	1.68	11.93	8.00	2.02	2.34	
0 (+32)	2570	648	753	285	1.78	14.86	9.02	2.27	2.64	

TEST CONDITIONS: @220V50Hz		ASHRAE32 Static			(Condensing temperature 65°C (+149°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]
-35 (-31)	328	83	96	113	1.35	1.85	2.90	0.73	0.85	
-30 (-22)	498	126	146	140	1.39	2.83	3.51	0.89	1.03	
-25 (-13)	699	176	205	167	1.43	3.97	4.16	1.05	1.22	
-20 (- 4)	938	236	275	194	1.49	5.34	4.83	1.22	1.42	
-15 (+ 5)	1225	309	359	222	1.56	6.99	5.54	1.40	1.62	
-10 (+14)	1569	395	460	250	1.65	8.99	6.29	1.58	1.84	
-5 (+23)	1978	499	580	280	1.75	11.38	7.07	1.78	2.07	
0 (+32)	2462	620	721	311	1.87	14.23	7.91	1.99	2.32	

TEST CONDITIONS: @220V50Hz		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]
-35 (-31)	513	129	150	116	1.33	2.90	4.40	1.11	1.29	
-30 (-22)	667	168	195	132	1.35	3.78	5.08	1.28	1.49	
-25 (-13)	877	221	257	147	1.37	4.98	5.97	1.51	1.75	
-20 (- 4)	1143	288	335	163	1.41	6.51	7.03	1.77	2.06	
-15 (+ 5)	1467	370	430	178	1.45	8.37	8.23	2.07	2.41	
-10 (+14)	1849	466	542	194	1.49	10.59	9.51	2.40	2.79	
-5 (+23)	2289	577	671	211	1.54	13.17	10.84	2.73	3.18	
0 (+32)	2789	703	817	229	1.59	16.12	12.19	3.07	3.57	

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V50Hz		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]
-35	(-31)	470	119	138	122	1.33	2.66	3.85	0.97	1.13
-30	(-22)	621	157	182	140	1.36	3.52	4.44	1.12	1.30
-25	(-13)	827	208	242	159	1.39	4.70	5.22	1.31	1.53
-20	(- 4)	1088	274	319	177	1.44	6.19	6.14	1.55	1.80
-15	(+ 5)	1404	354	411	196	1.49	8.01	7.17	1.81	2.10
-10	(+14)	1777	448	521	215	1.55	10.18	8.26	2.08	2.42
-5	(+23)	2207	556	647	235	1.61	12.70	9.39	2.37	2.75
0	(+32)	2695	679	790	257	1.69	15.58	10.50	2.65	3.08

TEST CONDITIONS: @220V50Hz		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]
-35	(-31)	418	105	122	121	1.33	2.36	3.45	0.87	1.01
-30	(-22)	567	143	166	143	1.36	3.21	3.97	1.00	1.16
-25	(-13)	769	194	225	165	1.41	4.37	4.66	1.17	1.36
-20	(- 4)	1025	258	300	187	1.47	5.83	5.46	1.38	1.60
-15	(+ 5)	1335	336	391	210	1.53	7.62	6.36	1.60	1.86
-10	(+14)	1700	428	498	233	1.61	9.74	7.29	1.84	2.14
-5	(+23)	2121	534	621	258	1.69	12.20	8.23	2.08	2.41
0	(+32)	2598	655	761	284	1.78	15.02	9.14	2.30	2.68

TEST CONDITIONS: @220V50Hz		ASHRAE32 Fan			(Condensing temperature 65°C (+149°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]
-35	(-31)	357	90	105	115	1.32	2.02	3.12	0.79	0.91
-30	(-22)	505	127	148	141	1.36	2.87	3.60	0.91	1.05
-25	(-13)	705	178	207	167	1.42	4.00	4.22	1.06	1.24
-20	(- 4)	957	241	280	193	1.49	5.45	4.94	1.24	1.45
-15	(+ 5)	1262	318	370	221	1.57	7.20	5.72	1.44	1.68
-10	(+14)	1620	408	475	249	1.66	9.28	6.52	1.64	1.91
-5	(+23)	2033	512	596	279	1.76	11.69	7.30	1.84	2.14
0	(+32)	2500	630	733	311	1.87	14.45	8.03	2.02	2.35

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V60Hz		ASHRAE32 Static			(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]
-35 (-31)	597	151	175	123	1.11	3.38	4.82	1.21	1.41	
-30 (-22)	796	201	233	144	1.15	4.51	5.54	1.39	1.62	
-25 (-13)	1043	263	305	165	1.21	5.92	6.33	1.60	1.86	
-20 (- 4)	1344	339	394	187	1.28	7.65	7.22	1.82	2.12	
-15 (+ 5)	1710	431	501	208	1.35	9.76	8.22	2.07	2.41	
-10 (+14)	2148	541	629	230	1.43	12.30	9.34	2.35	2.74	
-5 (+23)	2665	672	781	252	1.52	15.34	10.59	2.67	3.10	
0 (+32)	3271	824	958	272	1.61	18.91	11.99	3.02	3.51	

TEST CONDITIONS: @220V60Hz		ASHRAE32 Static			(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]
-35 (-31)	538	135	158	127	1.11	3.04	4.23	1.07	1.24	
-30 (-22)	738	186	216	151	1.17	4.18	4.87	1.23	1.43	
-25 (-13)	983	248	288	176	1.24	5.58	5.56	1.40	1.63	
-20 (- 4)	1282	323	376	202	1.32	7.29	6.31	1.59	1.85	
-15 (+ 5)	1641	414	481	229	1.42	9.37	7.14	1.80	2.09	
-10 (+14)	2070	522	607	257	1.53	11.86	8.05	2.03	2.36	
-5 (+23)	2576	649	755	284	1.64	14.82	9.06	2.28	2.66	
0 (+32)	3168	798	928	312	1.77	18.31	10.19	2.57	2.99	

TEST CONDITIONS: @220V60Hz		ASHRAE32 Static			(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]
-35 (-31)	470	118	138	125	1.11	2.66	3.77	0.95	1.11	
-30 (-22)	670	169	196	153	1.17	3.80	4.37	1.10	1.28	
-25 (-13)	912	230	267	183	1.26	5.18	4.99	1.26	1.46	
-20 (- 4)	1205	304	353	214	1.36	6.86	5.63	1.42	1.65	
-15 (+ 5)	1556	392	456	246	1.48	8.88	6.31	1.59	1.85	
-10 (+14)	1974	497	578	279	1.62	11.31	7.05	1.78	2.07	
-5 (+23)	2467	622	723	313	1.76	14.19	7.86	1.98	2.30	
0 (+32)	3043	767	892	348	1.92	17.59	8.75	2.21	2.56	

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V60Hz		ASHRAE32 Static			(Condensing temperature 65°C (+149°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]
-35 (-31)	395	100	116	118	1.08	2.23	3.34	0.84	0.98	
-30 (-22)	592	149	174	150	1.16	3.36	3.93	0.99	1.15	
-25 (-13)	829	209	243	184	1.27	4.71	4.51	1.14	1.32	
-20 (- 4)	1114	281	326	220	1.39	6.34	5.08	1.28	1.49	
-15 (+ 5)	1455	367	426	258	1.53	8.30	5.66	1.43	1.66	
-10 (+14)	1860	469	545	298	1.69	10.65	6.26	1.58	1.83	
-5 (+23)	2337	589	685	339	1.87	13.44	6.89	1.74	2.02	
0 (+32)	2895	730	848	381	2.06	16.73	7.58	1.91	2.22	

TEST CONDITIONS: @220V60Hz		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]
-35 (-31)	623	157	182	128	1.11	3.52	4.84	1.22	1.42	
-30 (-22)	806	203	236	148	1.16	4.57	5.50	1.39	1.61	
-25 (-13)	1060	267	311	168	1.22	6.02	6.33	1.59	1.85	
-20 (- 4)	1381	348	405	189	1.29	7.86	7.30	1.84	2.14	
-15 (+ 5)	1763	444	517	210	1.36	10.06	8.39	2.11	2.46	
-10 (+14)	2202	555	645	230	1.44	12.62	9.58	2.41	2.81	
-5 (+23)	2693	679	789	249	1.51	15.50	10.84	2.73	3.18	
0 (+32)	3232	814	947	266	1.58	18.69	12.14	3.06	3.56	

TEST CONDITIONS: @220V60Hz		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]
-35 (-31)	552	139	162	130	1.11	3.12	4.25	1.07	1.25	
-30 (-22)	734	185	215	153	1.17	4.16	4.83	1.22	1.41	
-25 (-13)	987	249	289	178	1.24	5.60	5.54	1.40	1.62	
-20 (- 4)	1304	329	382	204	1.33	7.42	6.36	1.60	1.86	
-15 (+ 5)	1683	424	493	230	1.43	9.60	7.27	1.83	2.13	
-10 (+14)	2117	534	620	256	1.53	12.13	8.25	2.08	2.42	
-5 (+23)	2603	656	763	282	1.64	14.98	9.25	2.33	2.71	
0 (+32)	3136	790	919	306	1.74	18.13	10.27	2.59	3.01	

E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V60Hz		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]
-35	(-31)	480	121	141	127	1.11	2.71	3.79	0.96	1.11
-30	(-22)	661	167	194	154	1.17	3.75	4.33	1.09	1.27
-25	(-13)	911	230	267	183	1.26	5.17	4.98	1.25	1.46
-20	(- 4)	1226	309	359	214	1.37	6.97	5.70	1.44	1.67
-15	(+ 5)	1600	403	469	246	1.49	9.13	6.47	1.63	1.90
-10	(+14)	2030	512	595	279	1.62	11.63	7.27	1.83	2.13
-5	(+23)	2511	633	736	311	1.76	14.44	8.07	2.03	2.36
0	(+32)	3037	765	890	344	1.90	17.56	8.84	2.23	2.59

TEST CONDITIONS: @220V60Hz		ASHRAE32 Fan			(Condensing temperature 65°C (+149°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]
-35	(-31)	405	102	119	120	1.09	2.29	3.36	0.85	0.99
-30	(-22)	584	147	171	150	1.17	3.31	3.91	0.99	1.15
-25	(-13)	832	210	244	184	1.27	4.73	4.53	1.14	1.33
-20	(- 4)	1144	288	335	220	1.40	6.51	5.20	1.31	1.52
-15	(+ 5)	1515	382	444	258	1.54	8.64	5.87	1.48	1.72
-10	(+14)	1940	489	568	298	1.70	11.11	6.54	1.65	1.92
-5	(+23)	2415	609	708	338	1.88	13.89	7.18	1.81	2.10
0	(+32)	2935	740	860	378	2.06	16.97	7.75	1.95	2.27

F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal EG/F/AMEM version 2		
2 Tray holder	No		
3 Connectors			
3.1 SUCTION	8.2 +0.12/-0.08	[mm]	(0.323" +0.005"/-0.003")
3.1.1 Material	Copper		
3.1.2 Shape	Slanted		
3.2 DISCHARGE	6.5 +0.12/-0.08	[mm]	(0.256" +0.005"/-0.003")
3.2.1 Material	Copper		
3.2.2 Shape	Slanted		
3.3 PROCESS	6.5 +0.12/-0.08	[mm]	(0.256" +0.005"/-0.003")
3.3.1 Material	Copper		
3.3.2 Shape	Slanted		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		