

COMPRESSOR DEFINITION

Designation	FF US80HAK
Nominal Voltage/Frequency	115-127 V 60 Hz
Engineering Number	513209000

A - APPLICATION / LIMIT WORKING CONDITIONS

1 Type	Hermetic reciprocating compressor		
2 Refrigerant	R-134a		
3 Nominal voltage and frequency	115-127 / 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)	Static/Fan	-	103 to 140 V
8.2 LBP (43°C Ambient temperature)	Static/Fan	-	103 to 140 V
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	1/4+	[hp]
2 Displacement	6.76	[cm ³] (0.413 cu.in)
2.1 Bore [mm]	22.500	
2.2 Stroke [mm]	17.000	
3 Lubricant charge	230	[ml] (7.78 fl.oz.)
3.1 Lubricants approved		
3.2 Lubricants type/viscosity	ESTER / ISO10	
4 Weight (with oil charge)	10	[kg] (22.05 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	115-127 V 60 Hz 1 ~ (Single phase)	
2 Starting device type	Current Relay	
2.1 Starting device	213516094/213516132	
3 Start capacitor	233-280(140)	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	MSP36ALZ-5590	
6 Start winding resistance	6.99	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	3.45	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (60 Hz)	32.00	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (60 Hz)	5.08	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (60 Hz)	5.52	[A] - Measured according to UL 984
11 Approval boards certification	IMTRO - TUV	

D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS: @115V60Hz			ARIMBP Fan		Evaporating temperature (Condensing temperature		-6.7°C (19.94°F) 48.9°C (120.02°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]	
1886	475	553	236	2.80		7.98	2.01	2.34	

TEST CONDITIONS: @115V60Hz			ASHRAECBP46 Fan		Evaporating temperature (Condensing temperature		-6.7°C (19.94°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]	
1720	433	504	253	2.91		6.81	1.72	2.00	

TEST CONDITIONS: @115V60Hz			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]	
807	203	236	164	2.35	4.59	4.91	1.24	1.44	

E - PERFORMANCE - CURVES

TEST CONDITIONS: @115V60Hz		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)	489	123	143	111	2.13	2.77	4.37	1.10	1.28
-30	(-22)	652	164	191	128	2.19	3.70	5.08	1.28	1.49
-25	(-13)	857	216	251	145	2.26	4.87	5.92	1.49	1.74
-20	(- 4)	1110	280	325	162	2.35	6.32	6.89	1.74	2.02
-15	(+ 5)	1418	357	415	179	2.45	8.09	7.97	2.01	2.33
-10	(+14)	1787	450	524	195	2.55	10.24	9.17	2.31	2.69
-5	(+23)	2225	561	652	212	2.65	12.80	10.48	2.64	3.07
0	(+32)	2738	690	802	229	2.75	15.83	11.91	3.00	3.49

E - PERFORMANCE - CURVES

TEST CONDITIONS: @115V60Hz		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)	429	108	126	112	2.13	2.43	3.85	0.97	1.13
-30	(-22)	591	149	173	131	2.19	3.35	4.49	1.13	1.32
-25	(-13)	793	200	232	151	2.28	4.50	5.22	1.31	1.53
-20	(- 4)	1042	263	305	172	2.39	5.93	6.03	1.52	1.77
-15	(+ 5)	1345	339	394	193	2.52	7.68	6.92	1.74	2.03
-10	(+14)	1708	430	500	216	2.66	9.78	7.89	1.99	2.31
-5	(+23)	2137	539	626	239	2.82	12.30	8.94	2.25	2.62
0	(+32)	2640	665	774	263	2.98	15.26	10.07	2.54	2.95

TEST CONDITIONS: @115V60Hz		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)	375	94	110	112	2.12	2.12	3.39	0.86	0.99
-30	(-22)	531	134	156	133	2.20	3.01	3.99	1.00	1.17
-25	(-13)	726	183	213	156	2.31	4.13	4.63	1.17	1.36
-20	(- 4)	967	244	283	181	2.44	5.50	5.32	1.34	1.56
-15	(+ 5)	1260	317	369	207	2.61	7.19	6.05	1.52	1.77
-10	(+14)	1611	406	472	235	2.80	9.23	6.82	1.72	2.00
-5	(+23)	2028	511	594	265	3.00	11.67	7.63	1.92	2.24
0	(+32)	2517	634	738	297	3.23	14.55	8.48	2.14	2.49

TEST CONDITIONS: @115V60Hz		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)	327	82	96	109	2.11	1.85	2.96	0.75	0.87
-30	(-22)	473	119	139	134	2.20	2.68	3.53	0.89	1.03
-25	(-13)	657	165	192	160	2.33	3.73	4.11	1.04	1.21
-20	(- 4)	884	223	259	189	2.50	5.03	4.70	1.19	1.38
-15	(+ 5)	1162	293	341	221	2.70	6.63	5.30	1.34	1.55
-10	(+14)	1498	378	439	255	2.94	8.58	5.90	1.49	1.73
-5	(+23)	1898	478	556	292	3.20	10.92	6.50	1.64	1.90
0	(+32)	2368	597	694	332	3.50	13.69	7.10	1.79	2.08

E - PERFORMANCE - CURVES

TEST CONDITIONS: @115V60Hz		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)	503	127	147	112	2.24	2.85	4.45	1.12	1.30	
-30 (-22)	658	166	193	129	2.16	3.73	5.12	1.29	1.50	
-25 (-13)	868	219	254	146	2.19	4.93	5.98	1.51	1.75	
-20 (- 4)	1133	285	332	163	2.29	6.45	6.99	1.76	2.05	
-15 (+ 5)	1452	366	426	179	2.43	8.29	8.12	2.05	2.38	
-10 (+14)	1825	460	535	196	2.58	10.46	9.34	2.35	2.74	
-5 (+23)	2252	567	660	213	2.70	12.96	10.61	2.67	3.11	
0 (+32)	2731	688	800	229	2.76	15.79	11.90	3.00	3.49	

TEST CONDITIONS: @115V60Hz		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)	436	110	128	114	2.07	2.47	3.86	0.97	1.13	
-30 (-22)	588	148	172	133	2.10	3.33	4.45	1.12	1.30	
-25 (-13)	795	200	233	152	2.21	4.51	5.20	1.31	1.52	
-20 (- 4)	1057	266	310	173	2.39	6.01	6.06	1.53	1.78	
-15 (+ 5)	1373	346	402	194	2.59	7.84	7.02	1.77	2.06	
-10 (+14)	1743	439	511	216	2.78	9.98	8.03	2.02	2.35	
-5 (+23)	2166	546	635	239	2.92	12.46	9.07	2.28	2.66	
0 (+32)	2642	666	774	263	2.98	15.27	10.09	2.54	2.96	

TEST CONDITIONS: @115V60Hz		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)	383	96	112	113	2.11	2.16	3.42	0.86	1.00	
-30 (-22)	527	133	154	134	2.19	2.99	3.97	1.00	1.16	
-25 (-13)	726	183	213	156	2.34	4.12	4.63	1.17	1.36	
-20 (- 4)	980	247	287	181	2.54	5.58	5.39	1.36	1.58	
-15 (+ 5)	1288	325	377	206	2.74	7.35	6.20	1.56	1.82	
-10 (+14)	1650	416	483	234	2.91	9.45	7.04	1.77	2.06	
-5 (+23)	2065	520	605	263	3.02	11.88	7.86	1.98	2.30	
0 (+32)	2533	638	742	293	3.04	14.64	8.65	2.18	2.53	

E - PERFORMANCE - CURVES

TEST CONDITIONS: @115V60Hz		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)	343	86	101	111	2.15	1.94	3.06	0.77	0.90
-30	(-22)	474	120	139	133	2.23	2.69	3.58	0.90	1.05
-25	(-13)	661	167	194	158	2.37	3.75	4.20	1.06	1.23
-20	(- 4)	902	227	264	186	2.53	5.13	4.87	1.23	1.43
-15	(+ 5)	1198	302	351	216	2.68	6.84	5.57	1.40	1.63
-10	(+14)	1547	390	453	248	2.79	8.86	6.26	1.58	1.83
-5	(+23)	1949	491	571	283	2.82	11.21	6.91	1.74	2.02
0	(+32)	2404	606	704	320	2.73	13.90	7.49	1.89	2.19

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	Straight		
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	Straight		
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	Straight		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		