

### COMPRESSOR DEFINITION

Designation	FF US80HAK
Nominal Voltage/Frequency	220-240 V 50-60 Hz
Engineering Number	513209001

### 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)	Static	187 to 255 V	198 to 242 V
8.2 LBP (43°C Ambient temperature)	Static	187 to 255 V	198 to 242 V
8.3 HBP (32°C Ambient temperature)	-	-	-
8.4 HBP (43°C Ambient temperature)	-	-	-
9 Maximum condensing temperature			
9.1 Operating	14.2	[kgf/cm <sup>2</sup> ] (202 psig)	/ °C - °F
9.2 Peak	15.9	[kgf/cm <sup>2</sup> ] (226 psig)	/ °C - °F
10 Maximum winding temperature	130	[ °C ]	

### B - MECHANICAL DATA

1 Commercial designation	1/4+	[hp]
2 Displacement	6.76	[cm <sup>3</sup> ] (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)	9.9	[kg] (21.83 lb.)
5 Nitrogen charge	0.2 to 0.3	[kgf/cm <sup>2</sup> ] (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	213516256/213516493	
3 Start capacitor	189-227(90)	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	4TM283NFBYY-53	
6 Start winding resistance	38.05	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	14.81	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (50/60 Hz)	14.50/12.10	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (50/60 Hz)	2.33/2.21	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (50/60 Hz)	2.49/2.36	[A] - Measured according to UL 984
11 Approval boards certification	CE - IMTRO - IRAM - TUV - UKCA - VDE	

### D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS: @220V50Hz			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]
1464	369	429	212	1.37		6.92	1.74	2.03

TEST CONDITIONS: @220V60Hz			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]
1749	441	512	252	1.42		6.93	1.75	2.03

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V50Hz		ASHRAE46 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)	375	94	110	100	1.11	0.40	3.74	0.94	1.09
-30	(-22)	498	126	146	112	1.13	- 0.12	4.44	1.12	1.30
-25	(-13)	655	165	192	125	1.15	0.70	5.24	1.32	1.54
-20	(- 4)	849	214	249	138	1.17	2.47	6.16	1.55	1.80
-15	(+ 5)	1084	273	318	151	1.20	4.79	7.18	1.81	2.10
-10	(+14)	1363	343	399	164	1.23	7.25	8.33	2.10	2.44
-5	(+23)	1690	426	495	176	1.26	9.47	9.60	2.42	2.81
0	(+32)	2068	521	606	188	1.30	11.03	10.99	2.77	3.22

TEST CONDITIONS: @220V50Hz		ASHRAE46 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)	338	85	99	102	1.12	- 1.48	3.33	0.84	0.97
-30	(-22)	460	116	135	117	1.14	- 1.25	3.93	0.99	1.15
-25	(-13)	614	155	180	133	1.16	0.24	4.62	1.16	1.35
-20	(- 4)	806	203	236	149	1.20	2.59	5.39	1.36	1.58
-15	(+ 5)	1039	262	304	166	1.24	5.41	6.25	1.57	1.83
-10	(+14)	1315	331	385	182	1.28	8.29	7.20	1.82	2.11
-5	(+23)	1639	413	480	199	1.33	10.83	8.26	2.08	2.42
0	(+32)	2014	508	590	214	1.38	12.64	9.41	2.37	2.76

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V50Hz		ASHRAE46 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)	304	77	89	101	1.11	0.49	3.04	0.77	0.89	
-30 (-22)	420	106	123	118	1.13	0.46	3.57	0.90	1.05	
-25 (-13)	570	144	167	137	1.17	1.60	4.16	1.05	1.22	
-20 (- 4)	757	191	222	157	1.21	3.53	4.80	1.21	1.41	
-15 (+ 5)	984	248	288	177	1.27	5.83	5.52	1.39	1.62	
-10 (+14)	1254	316	368	198	1.33	8.11	6.30	1.59	1.85	
-5 (+23)	1572	396	461	219	1.39	9.97	7.16	1.80	2.10	
0 (+32)	1941	489	569	240	1.46	11.01	8.10	2.04	2.37	

TEST CONDITIONS: @220V50Hz		ASHRAE46 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)	272	69	80	96	1.10	0.28	2.82	0.71	0.83	
-30 (-22)	381	96	112	116	1.13	- 1.03	3.29	0.83	0.96	
-25 (-13)	523	132	153	139	1.17	- 1.24	3.79	0.96	1.11	
-20 (- 4)	701	177	205	163	1.23	- 0.76	4.34	1.09	1.27	
-15 (+ 5)	919	232	269	187	1.30	0.01	4.92	1.24	1.44	
-10 (+14)	1181	298	346	213	1.37	0.68	5.55	1.40	1.63	
-5 (+23)	1490	376	437	239	1.46	0.84	6.24	1.57	1.83	
0 (+32)	1850	466	542	265	1.55	0.10	6.97	1.76	2.04	

TEST CONDITIONS: @220V60Hz		ASHRAE46 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)	464	117	136	107	0.92	0.47	4.31	1.09	1.26	
-30 (-22)	599	151	176	122	0.96	- 0.16	4.93	1.24	1.44	
-25 (-13)	780	197	229	139	1.01	0.83	5.64	1.42	1.65	
-20 (- 4)	1008	254	295	157	1.07	2.94	6.47	1.63	1.90	
-15 (+ 5)	1287	324	377	174	1.13	5.70	7.40	1.87	2.17	
-10 (+14)	1618	408	474	192	1.19	8.62	8.44	2.13	2.47	
-5 (+23)	2004	505	587	209	1.25	11.23	9.59	2.42	2.81	
0 (+32)	2447	617	717	225	1.32	13.05	10.85	2.73	3.18	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @220V60Hz		ASHRAE46 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)	399	101	117	106	0.92	- 1.75	3.77	0.95	1.10
-30	(-22)	541	136	159	125	0.97	- 1.48	4.35	1.10	1.27
-25	(-13)	726	183	213	145	1.03	0.29	4.99	1.26	1.46
-20	(- 4)	957	241	280	167	1.10	3.09	5.69	1.43	1.67
-15	(+ 5)	1236	311	362	190	1.18	6.44	6.46	1.63	1.89
-10	(+14)	1565	394	459	214	1.27	9.85	7.30	1.84	2.14
-5	(+23)	1947	491	571	237	1.36	12.85	8.21	2.07	2.40
0	(+32)	2384	601	699	261	1.46	14.96	9.18	2.31	2.69

TEST CONDITIONS: @220V60Hz		ASHRAE46 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)	341	86	100	104	0.92	0.58	3.31	0.83	0.97
-30	(-22)	484	122	142	125	0.97	0.53	3.88	0.98	1.14
-25	(-13)	669	169	196	149	1.04	1.89	4.47	1.13	1.31
-20	(- 4)	897	226	263	175	1.13	4.18	5.09	1.28	1.49
-15	(+ 5)	1170	295	343	203	1.23	6.92	5.73	1.44	1.68
-10	(+14)	1492	376	437	233	1.34	9.62	6.39	1.61	1.87
-5	(+23)	1864	470	546	263	1.47	11.81	7.09	1.79	2.08
0	(+32)	2289	577	671	294	1.60	13.01	7.81	1.97	2.29

TEST CONDITIONS: @220V60Hz		ASHRAE46 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)	291	73	85	101	0.91	0.34	2.86	0.72	0.84
-30	(-22)	430	108	126	124	0.97	- 1.22	3.45	0.87	1.01
-25	(-13)	608	153	178	151	1.05	- 1.47	4.03	1.02	1.18
-20	(- 4)	827	208	242	181	1.15	- 0.89	4.59	1.16	1.34
-15	(+ 5)	1090	275	319	214	1.27	0.03	5.13	1.29	1.50
-10	(+14)	1398	352	410	249	1.41	0.83	5.66	1.43	1.66
-5	(+23)	1755	442	514	285	1.56	1.01	6.17	1.55	1.81
0	(+32)	2163	545	634	323	1.73	0.10	6.67	1.68	1.95

### 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		