

### COMPRESSOR DEFINITION

Designation	FF US80HAK
Nominal Voltage/Frequency	220-240 V 50-60 Hz
Engineering Number	513209016

### 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			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]
686	173	201	147	1.18	3.90	4.68	1.18	1.37

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]
804	203	236	160	1.07	4.57	5.03	1.27	1.47

### 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]
-35	(-31)	400	101	117	100	1.11	2.26	4.00	1.01	1.17
-30	(-22)	531	134	156	113	1.12	3.01	4.72	1.19	1.38
-25	(-13)	697	176	204	126	1.15	3.96	5.57	1.40	1.63
-20	(- 4)	905	228	265	138	1.18	5.15	6.55	1.65	1.92
-15	(+ 5)	1161	293	340	151	1.21	6.63	7.67	1.93	2.25
-10	(+14)	1471	371	431	164	1.24	8.43	8.95	2.25	2.62
-5	(+23)	1842	464	540	177	1.27	10.60	10.37	2.61	3.04
0	(+32)	2281	575	668	191	1.30	13.18	11.96	3.01	3.50

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]
-35	(-31)	372	94	109	104	1.12	2.10	3.58	0.90	1.05
-30	(-22)	503	127	147	119	1.13	2.85	4.22	1.06	1.24
-25	(-13)	667	168	195	135	1.16	3.79	4.94	1.25	1.45
-20	(- 4)	869	219	255	151	1.20	4.95	5.76	1.45	1.69
-15	(+ 5)	1117	281	327	167	1.24	6.37	6.69	1.69	1.96
-10	(+14)	1416	357	415	183	1.29	8.11	7.73	1.95	2.26
-5	(+23)	1774	447	520	200	1.33	10.21	8.88	2.24	2.60
0	(+32)	2196	553	644	217	1.38	12.70	10.16	2.56	2.98

### 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)	325	82	95	103	1.12	1.84	3.17	0.80	0.93	
-30 (-22)	457	115	134	121	1.14	2.59	3.77	0.95	1.10	
-25 (-13)	619	156	181	140	1.17	3.52	4.41	1.11	1.29	
-20 (- 4)	817	206	239	160	1.22	4.65	5.12	1.29	1.50	
-15 (+ 5)	1058	267	310	180	1.27	6.04	5.89	1.48	1.72	
-10 (+14)	1348	340	395	200	1.33	7.72	6.73	1.70	1.97	
-5 (+23)	1693	427	496	221	1.40	9.74	7.65	1.93	2.24	
0 (+32)	2101	529	616	243	1.46	12.14	8.66	2.18	2.54	

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)	260	65	76	96	1.10	1.47	2.71	0.68	0.79	
-30 (-22)	394	99	115	118	1.13	2.23	3.30	0.83	0.97	
-25 (-13)	555	140	163	141	1.17	3.15	3.91	0.99	1.15	
-20 (- 4)	750	189	220	165	1.23	4.27	4.54	1.14	1.33	
-15 (+ 5)	985	248	289	190	1.30	5.62	5.20	1.31	1.52	
-10 (+14)	1267	319	371	215	1.38	7.25	5.90	1.49	1.73	
-5 (+23)	1601	403	469	242	1.46	9.21	6.63	1.67	1.94	
0 (+32)	1995	503	585	269	1.54	11.53	7.42	1.87	2.17	

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)	475	120	139	104	0.92	2.69	4.54	1.14	1.33	
-30 (-22)	640	161	188	122	0.97	3.63	5.25	1.32	1.54	
-25 (-13)	846	213	248	140	1.02	4.80	6.08	1.53	1.78	
-20 (- 4)	1098	277	322	157	1.07	6.25	7.03	1.77	2.06	
-15 (+ 5)	1403	354	411	174	1.13	8.01	8.07	2.03	2.36	
-10 (+14)	1766	445	517	192	1.19	10.12	9.19	2.32	2.69	
-5 (+23)	2192	552	642	211	1.26	12.61	10.39	2.62	3.05	
0 (+32)	2688	677	788	230	1.34	15.54	11.65	2.94	3.41	

### E - PERFORMANCE - CURVES

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)	421	106	123	106	0.92	2.38	4.00	1.01	1.17
-30	(-22)	585	147	171	126	0.98	3.32	4.62	1.16	1.35
-25	(-13)	788	199	231	147	1.04	4.48	5.33	1.34	1.56
-20	(- 4)	1036	261	304	169	1.10	5.90	6.12	1.54	1.79
-15	(+ 5)	1335	336	391	191	1.18	7.62	6.96	1.75	2.04
-10	(+14)	1690	426	495	214	1.27	9.68	7.86	1.98	2.30
-5	(+23)	2108	531	618	240	1.37	12.13	8.79	2.22	2.58
0	(+32)	2593	653	760	267	1.49	14.99	9.75	2.46	2.86

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)	367	92	108	104	0.92	2.08	3.57	0.90	1.05
-30	(-22)	526	133	154	127	0.98	2.98	4.14	1.04	1.21
-25	(-13)	723	182	212	151	1.04	4.11	4.76	1.20	1.40
-20	(- 4)	963	243	282	177	1.13	5.48	5.43	1.37	1.59
-15	(+ 5)	1253	316	367	204	1.22	7.15	6.12	1.54	1.79
-10	(+14)	1597	402	468	233	1.34	9.15	6.83	1.72	2.00
-5	(+23)	2002	504	587	265	1.47	11.52	7.54	1.90	2.21
0	(+32)	2473	623	725	301	1.63	14.30	8.24	2.08	2.41

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)	313	79	92	99	0.90	1.77	3.14	0.79	0.92
-30	(-22)	464	117	136	125	0.96	2.63	3.70	0.93	1.08
-25	(-13)	651	164	191	152	1.04	3.70	4.28	1.08	1.25
-20	(- 4)	880	222	258	182	1.14	5.01	4.86	1.23	1.42
-15	(+ 5)	1156	291	339	214	1.26	6.60	5.44	1.37	1.59
-10	(+14)	1486	374	435	249	1.40	8.51	6.00	1.51	1.76
-5	(+23)	1874	472	549	288	1.57	10.78	6.52	1.64	1.91
0	(+32)	2328	587	682	331	1.77	13.46	7.01	1.77	2.05

### 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		