

COMPRESSOR DEFINITION

Designation	FF US70HAK
Nominal Voltage/Frequency	220-240 V 50-60 Hz
Engineering Number	513200971

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

B - MECHANICAL DATA

1 Commercial designation	1/4	[hp]
2 Displacement	6.36	[cm ³] (0.388 cu.in)
2.1 Bore [mm]	22.500	
2.2 Stroke [mm]	16.000	
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)	10.2	[kg] (22.49 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	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	IMTRO - IRAM - TUV - 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]
634	160	186	136	1.14	3.60	4.66	1.17	1.37

TEST CONDITIONS: @220V50Hz			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]
652	164	191	135	1.14	3.70	4.83	1.22	1.42

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]
737	186	216	147	1.02	4.19	5.01	1.26	1.47

TEST CONDITIONS: @220V60Hz			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]
756	191	222	147	1.02	4.30	5.14	1.30	1.51

E - PERFORMANCE - CURVES

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%		
	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
°C (°F)									
-35 (-31)	356	90	104	88	1.05	2.01	4.02	1.01	1.18
-30 (-22)	505	127	148	102	1.07	2.86	4.91	1.24	1.44
-25 (-13)	667	168	195	116	1.09	3.79	5.78	1.46	1.69
-20 (- 4)	860	217	252	129	1.11	4.90	6.72	1.69	1.97
-15 (+ 5)	1102	278	323	141	1.14	6.29	7.81	1.97	2.29
-10 (+14)	1408	355	413	153	1.17	8.07	9.15	2.31	2.68
-5 (+23)	1797	453	527	166	1.21	10.34	10.83	2.73	3.17
0 (+32)	2285	576	670	178	1.26	13.19	12.93	3.26	3.79

E - PERFORMANCE - CURVES

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 45°C (+113°F))					
@220V50Hz		Fan								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	325	82	95	93	1.06	1.84	3.49	0.88	1.02
-30	(-22)	478	121	140	109	1.08	2.71	4.37	1.10	1.28
-25	(-13)	640	161	188	124	1.11	3.63	5.16	1.30	1.51
-20	(- 4)	827	208	242	139	1.14	4.70	5.93	1.49	1.74
-15	(+ 5)	1055	266	309	155	1.17	6.02	6.78	1.71	1.99
-10	(+14)	1343	338	394	171	1.21	7.70	7.80	1.97	2.29
-5	(+23)	1707	430	500	189	1.27	9.82	9.08	2.29	2.66
0	(+32)	2164	545	634	207	1.35	12.50	10.71	2.70	3.14

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 55°C (+131°F))					
@220V50Hz		Fan								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	265	67	78	96	1.08	1.50	2.78	0.70	0.81
-30	(-22)	422	106	124	112	1.10	2.39	3.74	0.94	1.10
-25	(-13)	581	146	170	128	1.13	3.30	4.52	1.14	1.32
-20	(- 4)	759	191	222	146	1.16	4.32	5.21	1.31	1.53
-15	(+ 5)	973	245	285	164	1.20	5.55	5.90	1.49	1.73
-10	(+14)	1240	313	363	185	1.26	7.11	6.68	1.68	1.96
-5	(+23)	1578	398	462	207	1.33	9.08	7.64	1.93	2.24
0	(+32)	2003	505	587	230	1.42	11.57	8.87	2.24	2.60

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 65°C (+149°F))					
@220V50Hz		Fan								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	177	45	52	97	1.10	1.00	1.82	0.46	0.53
-30	(-22)	335	85	98	112	1.12	1.90	2.93	0.74	0.86
-25	(-13)	490	124	144	129	1.14	2.78	3.79	0.95	1.11
-20	(- 4)	658	166	193	148	1.17	3.74	4.48	1.13	1.31
-15	(+ 5)	856	216	251	170	1.22	4.88	5.08	1.28	1.49
-10	(+14)	1101	278	323	193	1.29	6.31	5.70	1.44	1.67
-5	(+23)	1411	356	413	219	1.37	8.12	6.42	1.62	1.88
0	(+32)	1802	454	528	248	1.48	10.41	7.33	1.85	2.15

E - PERFORMANCE - CURVES

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 35°C (+95°F))					
@220V60Hz		Fan								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	422	106	124	95	0.87	2.39	4.41	1.11	1.29
-30	(-22)	590	149	173	112	0.92	3.34	5.26	1.33	1.54
-25	(-13)	792	200	232	130	0.97	4.50	6.11	1.54	1.79
-20	(- 4)	1036	261	304	149	1.03	5.90	7.01	1.77	2.05
-15	(+ 5)	1331	335	390	167	1.09	7.60	8.01	2.02	2.35
-10	(+14)	1685	425	494	184	1.14	9.66	9.18	2.31	2.69
-5	(+23)	2107	531	617	199	1.20	12.12	10.56	2.66	3.09
0	(+32)	2605	656	763	212	1.26	15.05	12.20	3.08	3.58

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 45°C (+113°F))					
@220V60Hz		Fan								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	367	92	107	97	0.89	2.07	3.79	0.96	1.11
-30	(-22)	537	135	157	115	0.93	3.04	4.64	1.17	1.36
-25	(-13)	738	186	216	135	0.99	4.19	5.43	1.37	1.59
-20	(- 4)	980	247	287	157	1.06	5.58	6.21	1.56	1.82
-15	(+ 5)	1271	320	372	180	1.13	7.26	7.03	1.77	2.06
-10	(+14)	1619	408	474	203	1.22	9.28	7.95	2.00	2.33
-5	(+23)	2032	512	595	226	1.31	11.69	9.02	2.27	2.64
0	(+32)	2519	635	738	248	1.40	14.55	10.30	2.60	3.02

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 55°C (+131°F))					
@220V60Hz		Fan								
Evaporating temperature		Cooling capacity			Power consumption	Current consumption	Gas flow rate	EFFICIENCY RATE		
		+/- 5%			+/- 5%	+/- 5%	+/- 5%	+/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	310	78	91	98	0.92	1.75	3.19	0.80	0.94
-30	(-22)	478	120	140	116	0.95	2.71	4.10	1.03	1.20
-25	(-13)	676	170	198	138	1.00	3.84	4.87	1.23	1.43
-20	(- 4)	911	230	267	163	1.07	5.19	5.58	1.41	1.64
-15	(+ 5)	1194	301	350	190	1.16	6.82	6.27	1.58	1.84
-10	(+14)	1532	386	449	218	1.27	8.78	7.00	1.76	2.05
-5	(+23)	1933	487	566	247	1.39	11.12	7.82	1.97	2.29
0	(+32)	2406	606	705	277	1.53	13.90	8.79	2.21	2.57

E - PERFORMANCE - CURVES

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)	253	64	74	99	0.94	1.43	2.54	0.64	0.74
-30	(-22)	415	104	121	116	0.96	2.35	3.55	0.89	1.04
-25	(-13)	604	152	177	139	1.01	3.43	4.37	1.10	1.28
-20	(- 4)	830	209	243	165	1.08	4.72	5.06	1.28	1.48
-15	(+ 5)	1101	277	323	195	1.18	6.28	5.67	1.43	1.66
-10	(+14)	1425	359	417	228	1.30	8.16	6.26	1.58	1.83
-5	(+23)	1810	456	530	262	1.45	10.41	6.88	1.73	2.02
0	(+32)	2265	571	664	299	1.62	13.09	7.58	1.91	2.22

F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal EG/F/AMEM version 2		
2 Tray holder	No		
3 Connectors			
3.1 SUCTION	6.5 +0.12/-0.08	[mm]	(0.256" +0.005"/-0.003")
3.1.1 Material	Copper		
3.1.2 Shape	Slanted		
3.2 DISCHARGE	4.94 +0.08/-0.08	[mm]	(0.194" +0.003"/-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		