

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 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%		
	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
°C (°F)									
-35 (-31)	350	88	102	90	1.05	1.98	3.87	0.98	1.13
-30 (-22)	487	123	143	105	1.07	2.76	4.65	1.17	1.36
-25 (-13)	647	163	190	117	1.09	3.67	5.55	1.40	1.63
-20 (- 4)	842	212	247	129	1.11	4.79	6.57	1.65	1.92
-15 (+ 5)	1082	273	317	140	1.14	6.18	7.72	1.95	2.26
-10 (+14)	1380	348	404	153	1.17	7.91	9.01	2.27	2.64
-5 (+23)	1746	440	512	167	1.21	10.04	10.44	2.63	3.06
0 (+32)	2191	552	642	184	1.26	12.66	12.03	3.03	3.52

E - PERFORMANCE - CURVES

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 45°C (+113°F))					
@220V50Hz		Static								
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)	321	81	94	92	1.06	1.82	3.51	0.88	1.03
-30	(-22)	457	115	134	109	1.08	2.59	4.18	1.05	1.22
-25	(-13)	615	155	180	124	1.11	3.49	4.93	1.24	1.45
-20	(- 4)	806	203	236	139	1.14	4.59	5.78	1.46	1.69
-15	(+ 5)	1042	262	305	154	1.17	5.95	6.73	1.70	1.97
-10	(+14)	1333	336	391	171	1.22	7.64	7.79	1.96	2.28
-5	(+23)	1691	426	496	189	1.27	9.73	8.97	2.26	2.63
0	(+32)	2128	536	624	211	1.34	12.29	10.27	2.59	3.01

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 55°C (+131°F))					
@220V50Hz		Static								
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)	288	73	84	93	1.07	1.63	3.14	0.79	0.92
-30	(-22)	419	105	123	111	1.09	2.37	3.74	0.94	1.09
-25	(-13)	570	144	167	129	1.12	3.23	4.40	1.11	1.29
-20	(- 4)	753	190	221	147	1.15	4.28	5.12	1.29	1.50
-15	(+ 5)	979	247	287	165	1.20	5.59	5.92	1.49	1.73
-10	(+14)	1260	317	369	185	1.25	7.22	6.80	1.71	1.99
-5	(+23)	1606	405	471	207	1.32	9.24	7.76	1.96	2.27
0	(+32)	2030	512	595	233	1.41	11.72	8.82	2.22	2.58

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 65°C (+149°F))					
@220V50Hz		Static								
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)	250	63	73	93	1.08	1.41	2.68	0.67	0.78
-30	(-22)	370	93	109	113	1.10	2.10	3.26	0.82	0.95
-25	(-13)	510	129	149	132	1.13	2.90	3.87	0.97	1.13
-20	(- 4)	681	172	199	152	1.17	3.87	4.52	1.14	1.32
-15	(+ 5)	893	225	262	172	1.22	5.10	5.21	1.31	1.53
-10	(+14)	1159	292	340	195	1.29	6.64	5.95	1.50	1.74
-5	(+23)	1490	375	437	220	1.37	8.57	6.75	1.70	1.98
0	(+32)	1896	478	556	250	1.47	10.95	7.61	1.92	2.23

E - PERFORMANCE - CURVES

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 35°C (+95°F))					
@220V60Hz		Static								
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)	398	100	117	92	0.86	2.25	4.31	1.09	1.26
-30	(-22)	570	144	167	110	0.92	3.23	5.17	1.30	1.51
-25	(-13)	767	193	225	128	0.97	4.36	6.00	1.51	1.76
-20	(- 4)	1003	253	294	147	1.02	5.71	6.87	1.73	2.01
-15	(+ 5)	1290	325	378	164	1.07	7.37	7.85	1.98	2.30
-10	(+14)	1642	414	481	182	1.13	9.41	9.02	2.27	2.64
-5	(+23)	2073	522	607	198	1.19	11.93	10.43	2.63	3.06
0	(+32)	2595	654	760	214	1.26	14.99	12.16	3.07	3.56

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 45°C (+113°F))					
@220V60Hz		Static								
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)	356	90	104	96	0.87	2.01	3.69	0.93	1.08
-30	(-22)	527	133	154	115	0.92	2.99	4.56	1.15	1.34
-25	(-13)	721	182	211	135	0.98	4.09	5.34	1.34	1.56
-20	(- 4)	951	240	279	156	1.05	5.41	6.08	1.53	1.78
-15	(+ 5)	1229	310	360	178	1.12	7.02	6.87	1.73	2.01
-10	(+14)	1570	396	460	202	1.20	9.00	7.76	1.96	2.27
-5	(+23)	1986	501	582	226	1.30	11.43	8.83	2.23	2.59
0	(+32)	2491	628	730	250	1.41	14.39	10.15	2.56	2.98

TEST CONDITIONS:		ASHRAE32			(Condensing temperature 55°C (+131°F))					
@220V60Hz		Static								
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)	296	75	87	99	0.88	1.68	3.01	0.76	0.88
-30	(-22)	468	118	137	117	0.93	2.65	3.97	1.00	1.16
-25	(-13)	660	166	193	138	0.99	3.75	4.76	1.20	1.40
-20	(- 4)	885	223	259	162	1.07	5.04	5.46	1.37	1.60
-15	(+ 5)	1156	291	339	189	1.16	6.60	6.12	1.54	1.79
-10	(+14)	1486	375	436	217	1.26	8.52	6.82	1.72	2.00
-5	(+23)	1890	476	554	248	1.39	10.87	7.62	1.92	2.23
0	(+32)	2379	600	697	280	1.54	13.74	8.60	2.17	2.52

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)	219	55	64	100	0.90	1.24	2.18	0.55	0.64
-30	(-22)	393	99	115	117	0.94	2.23	3.30	0.83	0.97
-25	(-13)	584	147	171	139	1.00	3.32	4.19	1.06	1.23
-20	(- 4)	805	203	236	165	1.08	4.58	4.90	1.24	1.44
-15	(+ 5)	1070	270	314	195	1.18	6.11	5.51	1.39	1.62
-10	(+14)	1392	351	408	229	1.31	7.97	6.09	1.54	1.78
-5	(+23)	1783	449	522	265	1.46	10.26	6.70	1.69	1.96
0	(+32)	2258	569	662	306	1.64	13.04	7.42	1.87	2.17

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		