

DC FAN LIFE EXPERIMENT REPORT

Available for these models with lower speed and same	BFB0712H	BFB0712M	BFB0712L				
physical structure. All model may be followed by Rxx or Fxx	BFB0724H	BFB0724M	BFB0724L				
series suffixes. This test report applies to BFB 75x75x30 mm							
series as the right table							
Representative Test P/N : BFB0712H							
Instruments used: 1.Oven: F00-5, E24-T060 2. DC Source: GW GPC-3060D On/Off Cycles: Every 500 hours							

© L_{10} Expectancy: 50,000 hours minimum @ fan rated voltage and the temperature of 40°C According to the equation for Weibull distribution, MTTF = 7×L10 = 350,000 hours And we rely on a zero failure Weibull test strategy and accelerated testing technique, to determine the total test time (t) for verifying the above life estimation by the equations,

$$t = 1.036 \times MTTF \times [(B_{r;c}) \div n]^{0.91} \div A_F$$
, and $A_F = 2^{(Ts-Tu)/10}$

where, $(B_{r,c})$ is Poisson distribution factor with the failure number of r equal to 0 and the decimal confidence level of c equal to 0.90(90%), and

Temp	Elevated perature	Unstress Temperature Tu (℃)	Acceleration Factor A _F	Quantity of Test Devices n (pcs)	$\begin{array}{c} Poisson \\ Distribution \\ Factor \\ B_{r;c} \end{array}$	Required test time with zero failure t (hours)	Actual test time with zero failure t (hours)	Verified MTTF (hours)	$\begin{array}{c} \text{Verified L}_{10} \\ \text{(hours)} \end{array}$
	70	40	8.00	13	2.303	9,383	28,762	1,072,878	153,268

Test Progress:

Date for Test	Date for Test	Current Test Status			Current Total Test	
Beginning	Termination (at least)				Time (hours)	
1996/5/30 9:00 AM	1997/6/25 7:53 AM	In process	In process (exceed requested)	✓ Termination	28762.0	

Herewith, we could assume as right on the basis of above test result. Temperature for Acceleration Estimated Estimated L₁₀ MTTF Estimation Factor Besides, if the actual test time exceed the required, it comes out that MTTF (hours) (hours) (°C) those fans' L_{10} expectancy and MTTF are greater than the warrant. (MTTF: means Mean Time To Failures, it should be used in a non-25 22.63 3,034,557 433,508 repairable system setting. Now we show the MTTF in our life report, 30 2,145,756 306,537 16.00 that's because we will not repair the failed fans during life experiment. MTBF: means Mean Time Between failures, it should be used in a 40 8.00 1,072,878 153,268 repairable system setting. Basically, MTBF is equal to MTTF, they 50 use same formula to work out a life data.) 4.00 536,439 76,634 Fan permission criteria for the measurement after test: 60 2.00 268,219 38,317 1. For current, the limit is less than spec.(max.). 70 134,110 1.00 19,159 2. For speed, the allowable descrease is less than 15%. 3. For noise, the limit is less than spec.(max.). + 3 dB

QE File No.	Time-out for function test or others (hours)	Issued Date	Reported By	Approved By
A009L	5276.00	2000/4/17 3:00 PM	Bomico Chang	Poter Sun

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DC FAN FUNCTION TEST RECORD FOR LIFE EXPERIMENT

A009L				73:00 PM Bomico		Cloud	Poter Sur			
QE File No.		Time-out for function test or others (hrs)		Issue			ted By	Approved By		
σ	0.004	0.019	-	42.334	120.058	-				
X-Bar	0.212	0.208	-	2906	3093	-				
									<u> </u>	
									 	
									-	
13	0.22	0.27	22.7	2973	2703	-9.1	38.5	40.5	5.1	
12	0.22	0.21	-4.5	2867	3125	9.0	37.8	40.6	7.5	
10	0.21	0.20	0.0	2930	3061	5.3	38.1	40.9	5.6	
9 10	0.21 0.21	0.21	0.0 -4.8	2910 2930	3093 3158	6.3 7.8	38.1 38.2	40.4	6.1 7.0	
8	0.21	0.21	0.0	2838	3158	11.3	37.5	40.9	9.0	
7	0.21	0.20	-4.8	2828	3125	10.5	37.5	40.5	8.1	
6	0.21	0.20	-4.8	2936	3125	6.4	38.3	40.7	6.4	
5	0.21	0.20	-4.8	2938	3158	7.5	38.3	40.0	4.5	
4	0.21	0.20	-4.8	2913	3125	7.3	38.1	40.9	7.4	
3	0.22	0.20	-9.1	2944	3125	6.1	38.3	40.8	6.5	
2	0.21	0.20	-4.8	2879	3125	8.5	37.8	40.6	7.3	
1	0.21	0.20	-4.8	2913	3125	7.3	38.1	40.6	6.6	
110.	0.36 Max.	0.36 Max.	(/0)	2900 Ref.	2900-15%	(/0)	45.0 Max.	48.0 Max.	(/0)	
No.	Current Spec. (A)	Current Spec. (A)	(%)	Speed Spec. (RPM)	Speed Spec. (RPM)	(%)	Noise Spec. (dB A)	Noise Spec. (dB A)	(%)	
Sample	Initial Test	Final Test	Deviation	Initial Test	Final Test	Deviation	Initial Test	Final Test	Deviation	
ample P/N:	BFB0712H	1			1	ı		1	1	
		<u>I</u>	est Data B	etween In	itiai 1 est a	nd Final Te	St			
instrument	165 G5CG. 1.0V							105. Every 50	o nours	
Instrumen	nts used: 1.0v	ren: F00-5	F24-T060	2 DC So	urce: GW (GPC-3060D	•	les: Every 50		
presentati	presentative Test P/N: BFB0712H				Current Test Stat		In process	In process (exceed requested)	✓ Termination	
7,505 15750 7.00 MM				19977072	, , , o o i i i i i	13			Т	
9,383		1996/5/30 9:00 AM		1997/6/25 7:53 AM		13	0 2870		, ,	
(hrs)		Begir	Beginning		ination	(pcs):	(pcs):	Time (Time (hrs)	
Required Test Time		Date fo	Date for Test		or Test	Sample Size	Failure	Current T	otal Test	
This test repo	ort applies to BI I	7 75 X 7 5 X 5 0 11 11 1	i series as the	rigin tuoic						
	I model may be fort applies to BFE									
	r these models wi				BFB0724H	BFB0724M	BFB0724L			
					BFB0712H	BFB0712M	BFB0712L			