



JARO THERMAL

SPECIFICATION FOR APPROVAL

Customer	_____.
Description	35.00 x 35.00 x 10.50 mm Heatsink
Part No.	_____.
Model No.	JAC00057 REV. A
Sample Issue No.	
Sample Issue Date	

<input type="checkbox"/> Preliminary Specification			
<input checked="" type="checkbox"/> Formal Specification			
PREPARED BY :	Adam Hung	DATE :	1/28/2016
CHECKED BY :	Chris Hsu	DATE :	1/28/2016
APPROVED BY :	Claire Wang	DATE :	1/28/2016

Jaro Thermal USA offices
6600 Park of Commerce Blvd.
Boca Raton, Florida 33487

www.jarothermal.com

Ph: 561-241-6700

Fx: 561-241-3328



Jaro Thermal Taiwan office
6F-5, No. 366 Bo Ai 2nd Rd., Zuoying
District, Kaohsiung City, Taiwan 81358

www.jarothermal.com

Ph: +886-7-550-7020

Fx: +886-7-550-7542



We keep the world cool™



JARO SPEC NUMBER	

Revision of Spec History

Revision	Change Content	Change page	DATE	BY
0	Created SPEC		05/14/2015	Adam Hung
update	Changed wire length from 30±5mm to 90±10mm	3,14	07/01/2015	Adam Hung
A	Change cooper push pin to nylon 66 plastic, change lead wire pin position	3,5	10/29/2015	Adam Hung
update	Added terminal type Molex 50212-8000 and 50212-8100	14	01/28/2016	Adam Hung

Notice:

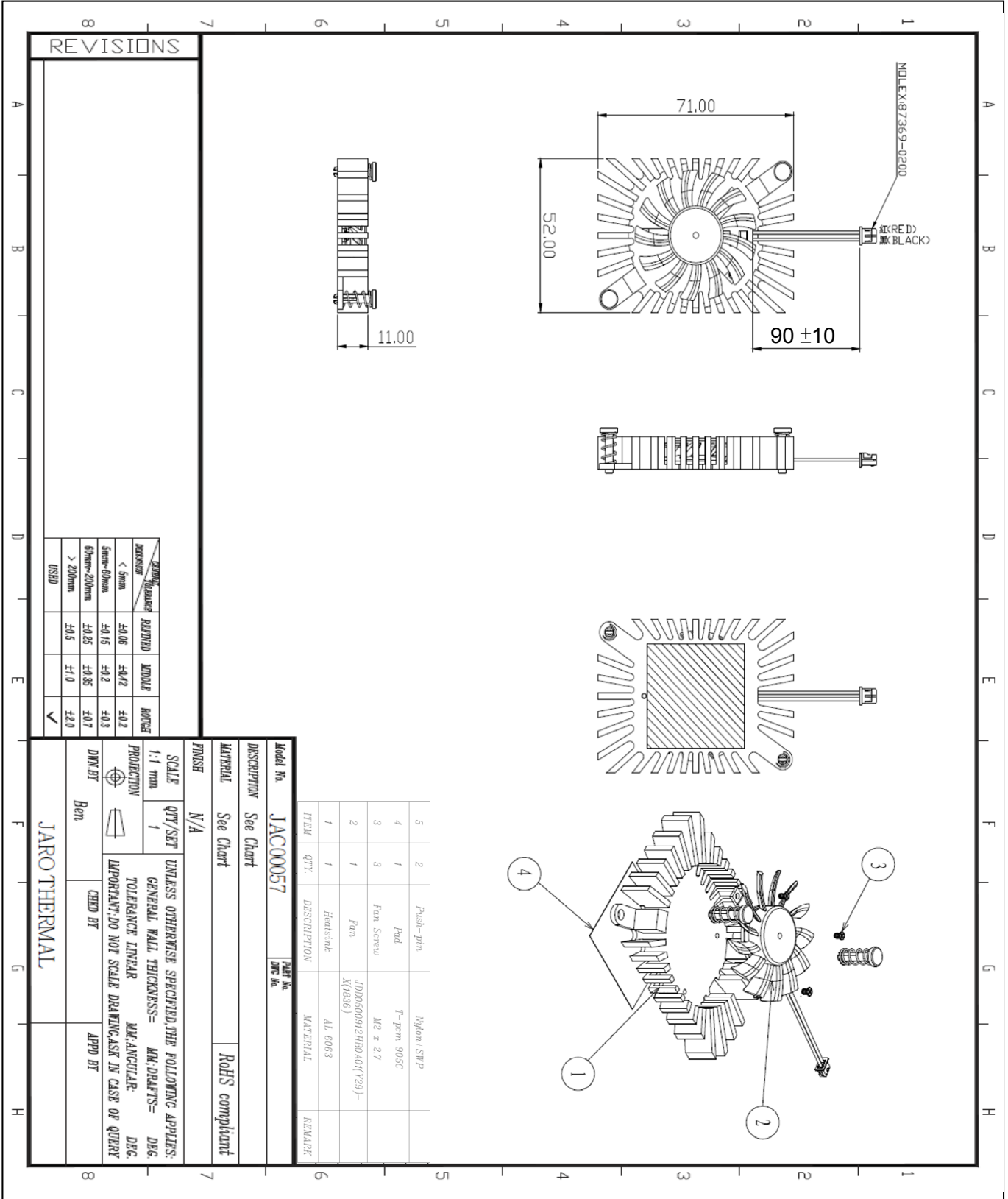
1. This specification will be changed base on Jaro Thermal 's notification. Pls refer to update revision of spec by contacting Jaro Thermal.
2. This specification clarify all the mechanical & electrical characteristics of DC brushless fans & AC brushless fans & Heatsink.
3. The specification of this product is described in detailed document. Pls do not use the fan without proper usage. Pls contact Jaro Thermal if you have special requirement which is not listed on this specification.
4. Any of change, pls contact Jaro Thermal to change the new revision in order to make sure all technical data is up to date. Any ECN change will be followed by sending new update spec.



DIMENSION DRAWING



JARO MODEL: JAC00057

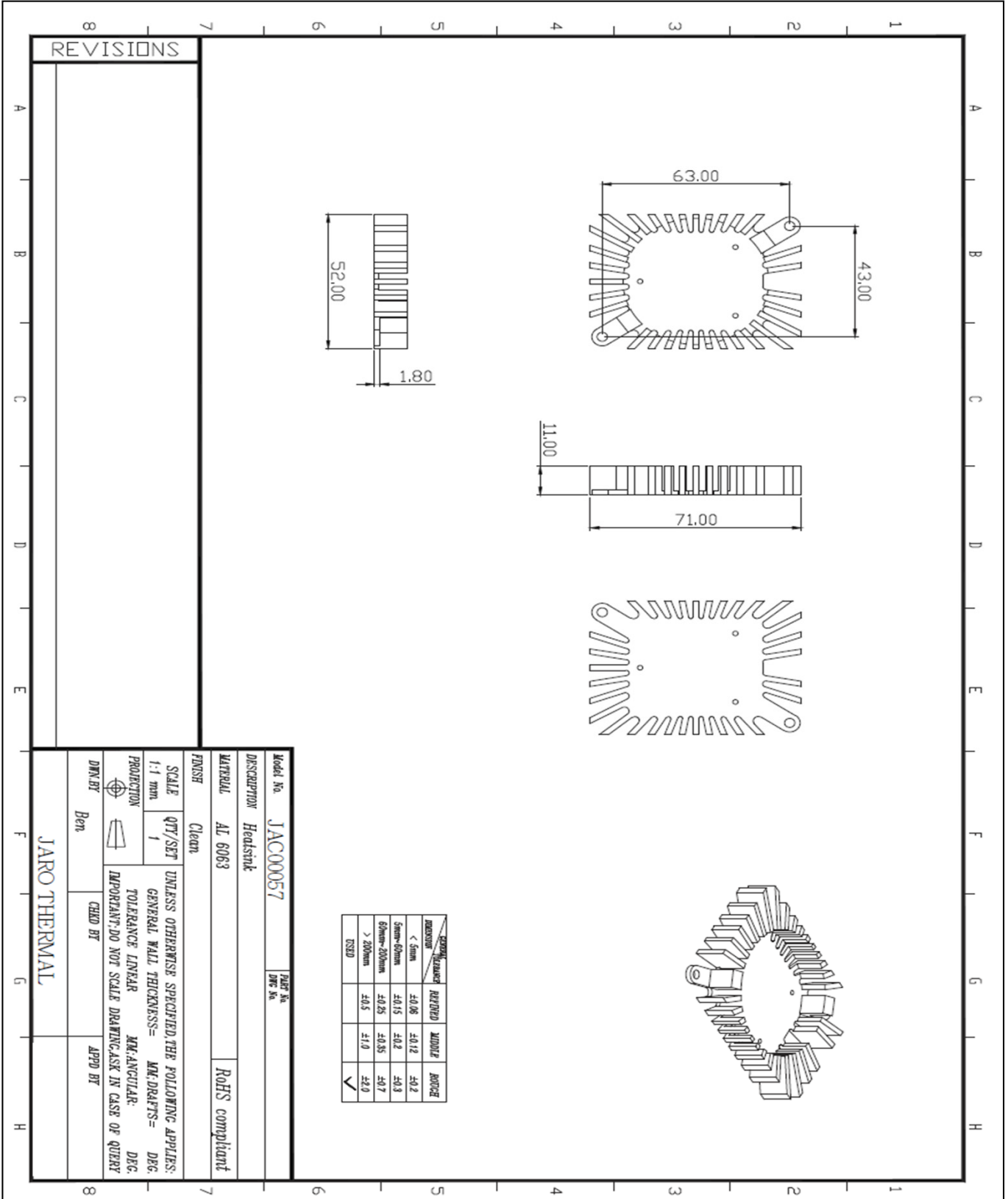




DIMENSION DRAWING



JARO MODEL: JAC00057_A

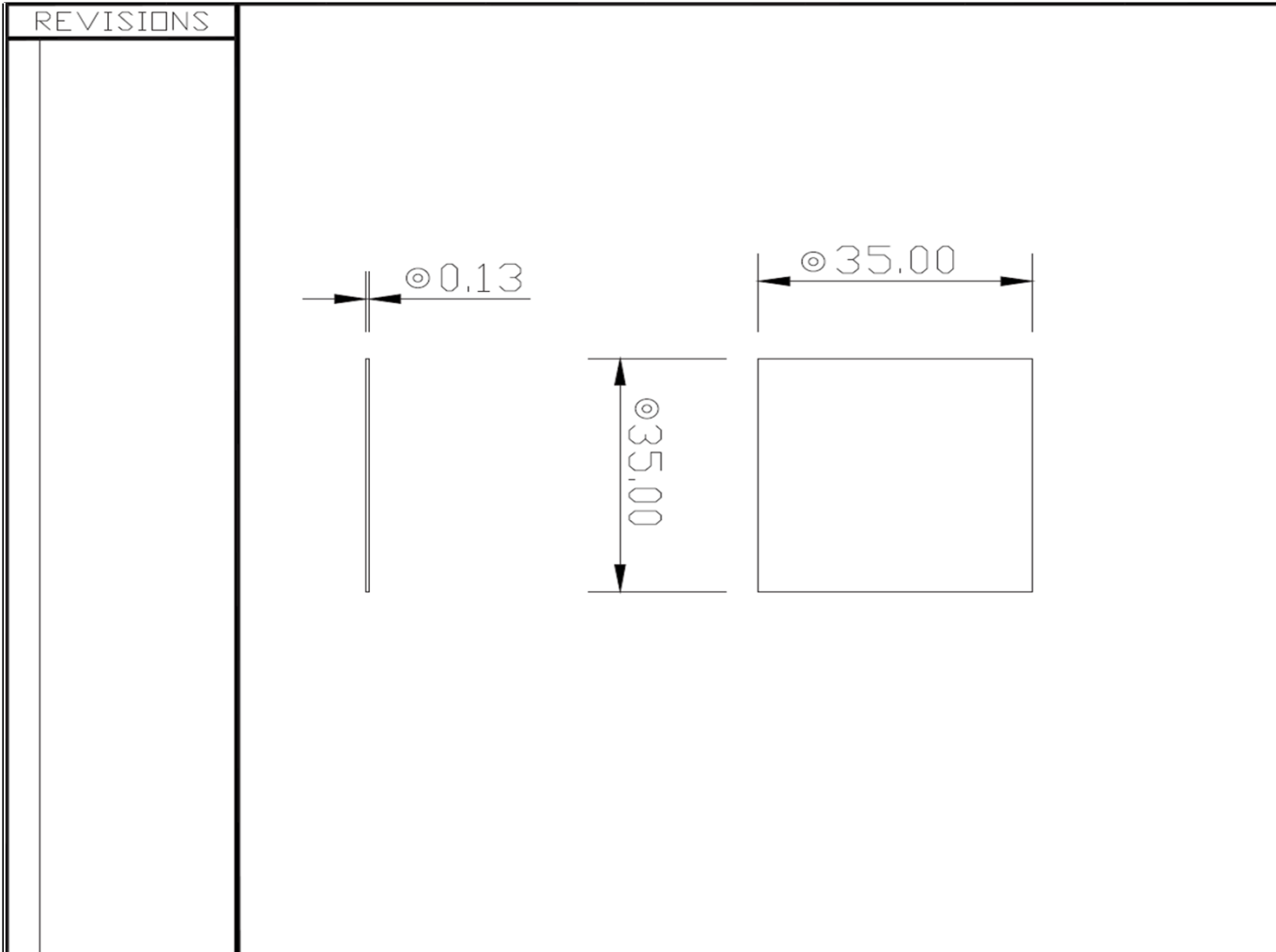




DIMENSION DRAWING



JARO MODEL: JAC00057_A



Model No. JAC00057		PART No. DRG No.	
DESCRIPTION Thermal Pad		RoHS compliant	
MATERIAL Tpcm 905C			
FINISH N/A			
SCALE 1:1 mm	QTY/SET 1	UNLESS OTHERWISE SPECIFIED, THE FOLLOWING APPLIES:	
PROJECTION		GENERAL WALL THICKNESS=	MM.DRAFTS=
		TOLERANCE LINEAR	MM.ANGULAR=
DRAWN BY Ben		IMPORTANT: DO NOT SCALE DRAWING. ASK IN CASE OF QUERY	
CHKD BY		APPD BY	
JARO THERMAL			

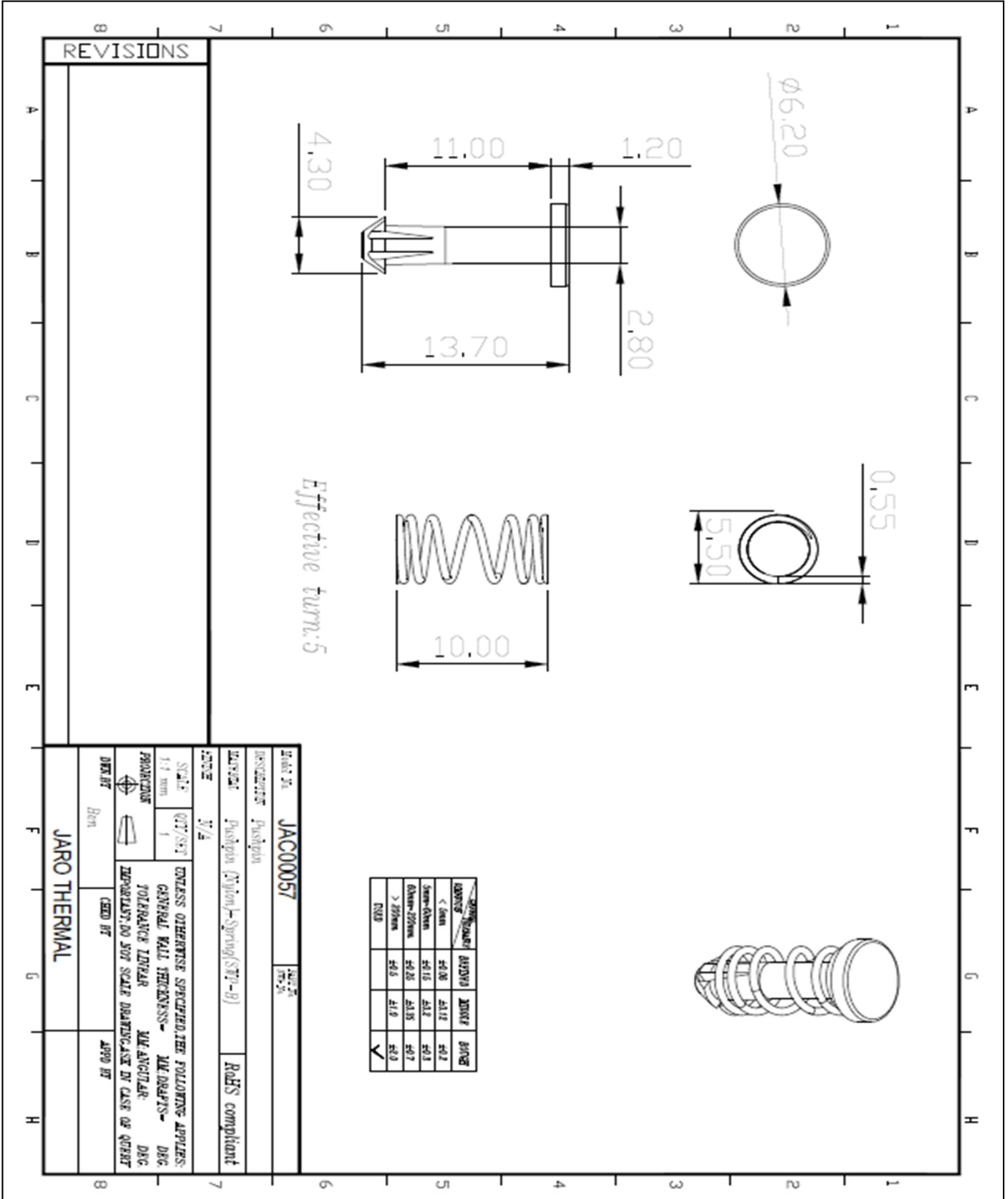
GENERAL TOLERANCE DIMENSION	REFINED	MIDDLE	ROUGH
< 5mm	±0.06	±0.12	±0.2
5mm-60mm	±0.15	±0.2	±0.3
60mm-200mm	±0.25	±0.35	±0.7
> 200mm	±0.5	±1.0	±2.0
USED			✓



DIMENSION DRAWING



JARO MODEL: JAC00057_A



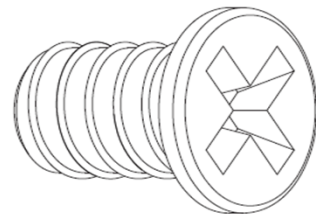
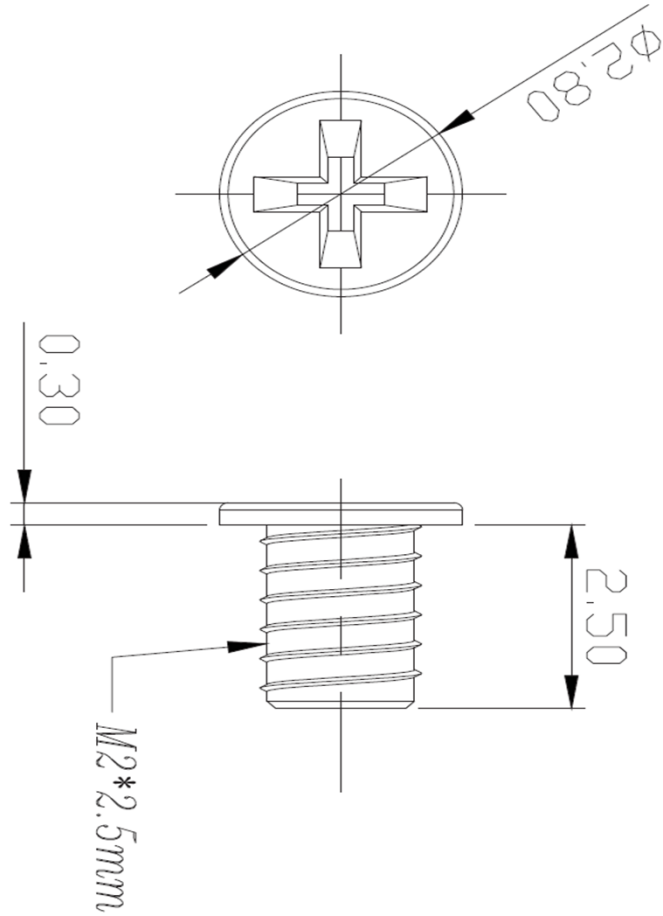


DIMENSION DRAWING



JARO MODEL: JAC00057_A

REVISIONS



GENERAL TOLERANCE DIMENSION	REFINED	MIDDLE	ROUGH
< 5mm	±0.06	±0.12	±0.2
5mm~50mm	±0.15	±0.2	±0.3
50mm~200mm	±0.25	±0.35	±0.7
> 200mm	±0.5	±1.0	±2.0
UNSD			✓

Model No.	JAC00057	PART No.	
DESCRIPTION	Screw	DATE	
MATERIAL	SAE 1018	ROHS	compliant
FINISH	Nickel		
SCALE	1:1 mm	QTY/SET	1
PROJECTION		UNLESS OTHERWISE SPECIFIED THE FOLLOWING APPLIES: GENERAL WALL THICKNESS= MM;DRAFTS= DEG. TOLERANCE LINEAR MM;ANGULAR: DEG. IMPORTANT,DO NOT SCALE DRAWING,ASK IN CASE OF QUERY	
DWN.BY	Ben	CHKD BY	APPD BY
JARO THERMAL			



JARO THERMAL

SPECIFICATION FOR APPROVAL

Customer
Description
Part No. _____
Model No. <u>JDD0500912HB0A01(Y29)-X(1836)</u> REV. <u>A</u>
Sample Issue No.
Sample Issue Date

<input type="checkbox"/> Preliminary Specification
<input checked="" type="checkbox"/> Formal Specification

PREPARED BY :	Adam Hung	DATE :	01/28/2016
CHECKED BY :	Jay Su	DATE :	01/28/2016
APPROVED BY :	Claire Wang	DATE :	01/28/2016

Jaro Thermal USA offices
 6600 Park of Commerce Blvd.
 Boca Raton, Florida 33487

www.jarothermal.com

Ph: 561-241-6700

Fx: 561-241-3328



Jaro Thermal Taiwan office
 6F-5, No. 366 Bo Ai 2nd Rd., Zuoying
 District, Kaohsiung City, Taiwan 81358

www.jarothermal.com

Ph: +886-7-550-7020

Fx: +886-7-550-7542



We keep the world cool™



JARO SPEC NUMBER	

Revision of Spec History

Revision	Change Content	Change page	DATE	BY
0	Created SPEC		05/14/2015	Adam Hung
update	Changed wire length from 30±5mm to 90±10mm	3,14	07/01/2015	Adam Hung
A	Change connector pin position, pin 1 black (-), pin 2 red (+)	14	10/30/2015	Adam Hung
update	Added terminal type Molex 50212-8000 and 50212-8100	14	01/28/2016	Adam Hung

Notice:

1. This specification will be changed base on Jaro Thermal 's notification. Pls refer to update revision of spec by contacting Jaro Thermal.
2. This specification clarify all the mechanical & electrical characteristics of DC brushless fans & AC brushless fans & Heatsink.
3. The specification of this product is described in detailed document. Pls do not use the fan without proper usage. Pls contact Jaro Thermal if you have special requirement which is not listed on this specification.
4. Any of change, pls contact Jaro Thermal to change the new revision in order to make sure all technical data is up to date. Any ECN change will be followed by sending new update spec.



SPECIFICATION



Jaro Model	: JDD0500912HB0A01(Y29)-X(1836)
Samples attached	: pcs
Safety Approval	: CE

Description

DIMENSIONS	: 50 x 50 x 09 mm
BEARING TYPE	: BALL
MOTOR PROTECTION	: BY IMPEDANCE
RATED VOLTAGE	: 12.0 VDC
OPERATING VOLTAGE	: 10.8 VDC – 13.2 VDC
START-UP VOLTAGE	: 9.0 VDC , NORMAL
REAL CURRENT	: 0.10 Amp
REAL POWER	: 1.20 Watt
RATED CURRENT	: 0.11 Amp + 10 %MAX
RATED POWER	: 1.32 Watt
RATED SPEED	: 5000 RPM ± 15%
	(IN FREE AIR AT RATED VOLTAGE)
AIR FLOW	: 10.100 CFM (min.: 8.585 CFM)
AIR FLOW	: 0.285 CMM (min.: 0.242 CMM)
	(IN FREE AIR AT RATED VOLTAGE)
STATIC AIR PRESSURE	: 0.089 Inch H ₂ O (min.: 0.064 Inch H ₂ O)
STATIC AIR PRESSURE	: 2.260 mm H ₂ O (min.: 1.632 mm H ₂ O)
	(IN FREE AIR AT RATED VOLTAGE)
NOISE LEVEL	: 34.3 dB (A) (max.: 38.3 dB(A))
LIFE EXPECTANCY	: 70000 Hours at 40°C / 65%
NET WEIGHT	: 8 Gram.
PACKING	: pcs. Per Export Carton.



The standard of Jaro Thermal's fan relative humidity is 65%, and the temperature is 25°C for the standard testing. If you have any question, pls refer to environmental condition on 5-0 first. Other special request pls contact Jaro Thermal for spec checking.



SPECIFICATION

JARO MODEL: JDD0500912HB0A01(Y29)-X(1836)

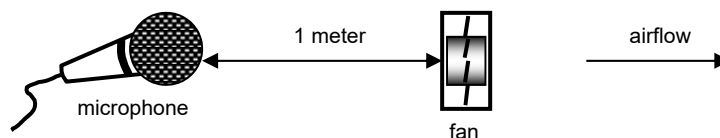
1-0 MATERIAL

- 1-1 Frame Material - UL94V-0 Glass Filled polyester (P.B.T)
- 1-2 Fan Blade Material - UL94V-0 Glass Filled polyester (P.B.T)
- 1-3 Other material – See 8.0 Dimension Drawing
- 1-4 Environmental Standard
 - [V] ROHS
 - [] Halogen Free

2-0 FAN VOLTAGE CURRENT, LOCK ROTOR, AIR FLOW, STATIC PRESSURE & NOISE DEFINITION

- 2-1 Start Voltage - By sudden switching ON fan is start to rotate.
- 2-2 Input Power - Input Power shall be measured after 3 minutes for continuing rotation by rated voltage.
- 2-3 Rated Current - Rated Current shall be measured after 3 minutes by continuing rotation by rated voltage.
- 2-4 Rated Speed - Rated Speed shall be measured after 3 minutes for continuing rotation by rated voltage.
- 2-5 Locked Rotor Current : Locked current shall be measured within one minute of rotor locked, after 3 minutes by continuing rotation at rated voltage in clean air.
- 2-6 Air Flow & Static Pressure : The air flow data and static pressures should be determined in accordance with AMCA-210 standard or DIN24163 specification in chamber testing and record the test record.
- 2-7 Noise Level : The measurement of noise level is carried out with reference to CNS8753 in an anechoic chamber with the microphone positioned 1 meter from the air intake. Testing fan shall be hung in clean air .

Noise Level Measure





SPECIFICATION

JARO MODEL: JDD0500912HB0A01(Y29)-X(1836)

3-0 FAN FUNCTION DEFINITION

3-1 Rotation Direction - Counterclockwise from impeller side.

3-2 Lock Rotor Condition

No damage for winding or electronic in locked rotor condition. And no damage after 72hrs continuing for lock rotor condition.

3-3 Auto Restart

Fan will automatic restart without any abnormal usage.

3-4 Dead Angle

Switch the fan change from off to on condition. Restart the fan, it will automatic restart by fan power on.

3-5 Polarity

Check the voltage and polarity before turn on the power to the fan.

3-6 Insulation Resistance

Do not use < 10M ohm between housing and positive end of lead wire (red) at 500V DC.

3-7 Dielectric Strength

No damage should be found at 500 VAC for 60 seconds, measured with 1mA trip current between housing and positive end of lead wire.

4-0 FAN PACKAGE TEST

4-1 Free Drop Shock

Base on Jaro Thermal's standard package, the fan package will test and drops on any three faces - Test standard is 30cm height. The base is wood board for 10mm thick.

5-0 FAN ENVIRONMENTAL CONDITION

5-1 Operating Temperature / Humidity

-10°C to +70°C at humidity 65%+/-20% Relative humidity.

5-2 Humidity

After 96 hours, 95% RH, 40+/-2°C per MIL-STD-202F, method 103B humidity test, the measured data on insulation resistance and dielectric strength shall meet the specification.

5-3 Storage Temperature

All function shall be normal after 500 hours storage at -40°C to +70 °C with a 24 hour recovery period at room temperature.

- **5-4** Do not store this fan in an environment with high humidity. This fan must be stored in accordance with the storage temperature. Do not store the fan for over 6 months; If this fan is stored for more than 6 months, JARO THERMAL recommends functional testing before using



SPECIFICATION

JARO MODEL: JDD0500912HB0A01(Y29)-X(1836)

5-5 Improper way to disassembled fan will cause the fan get into dust or dip into water. Which will in defects is not covered in the warranty. Do not use the fan in the environment with corrosive air or liquid.

6-0 MASS PRODUCTION SAMPLE PLAN INSPECTION

All fans shall meet the quality inspection under MIL-STD-105E standard list as follow:

Critical 0.25%

Major 1.00%

Minor 2.50%

7-0 FAN USAGE PRECAUTION

7-1 Please do not stick a grease and/or an oil to the fan housing or blade which may have a harmful influence by a chemical reaction at high humidity.

7-2 If the fan is reinstalled, please pay special attention to the noise due to the vibration (or resonance).

7-3 During the testing of the fan, please make sure the finger guard is use for your safety.

- 7-4 While the fan is running, please do not lock the fan intentionally for a long time. This will cause overheating by long period locking status. This action will damage the fan.

7-5 Please do not touch and push Fan Blade with fingers or others, fan blade and ball bearings may be damaged and it causes noise defect.

7-6 Do not carry the fan by its lead wires.

7-7 If the fan does not have the polarity protection function, the connection of the colored wires should be red + red, and black + black, or else the fan will be damaged in no time.

7-8 For the models without reverse connection of polarity protection, please do not connect the lead wire in reverse position.

7-9 Please don't install this fan in series with 2x voltage inputs. For example, if a single fan rated at 12V, then don't install two of them in series with 24V input.

7-10 Every specific fan is designed for its certain application (project). Therefore, if you want to use this fan in other application (project), please inform JARO first so that we can confirm whether there is any issue which might be incurred from the reason of this different application (project) or not.

7-11 The "Life Expectancy" of this fan has not been evaluated for use in combination with any end application. Therefore, the Life Expectancy in the Test Reports (L10 and MTTF Report) that relate to this fan is for reference only and shall not construe any kind of warranty of JARO to the life of any specific fan, either expressed or implied.

7-12 The period of product warranty, unless otherwise agreed by JARO in written, shall be 12 months starting from the date of production.



DIMENSION DRAWING

JARO MODEL: JDD0500912HB0A01(Y29)-X(1836)

8-0 DIMENSIONS

All dimensions, Direction of rotation and air flow were specified as per drawing attached.

Description: DC Fan with:

Lead Wire: UL1571 , AWG # 28 , 90 ± 10 mm lead length

HOUSING: MOLEX 87369-0200

TERMINALS: MOLEX 50212-8000 and 50212-8100

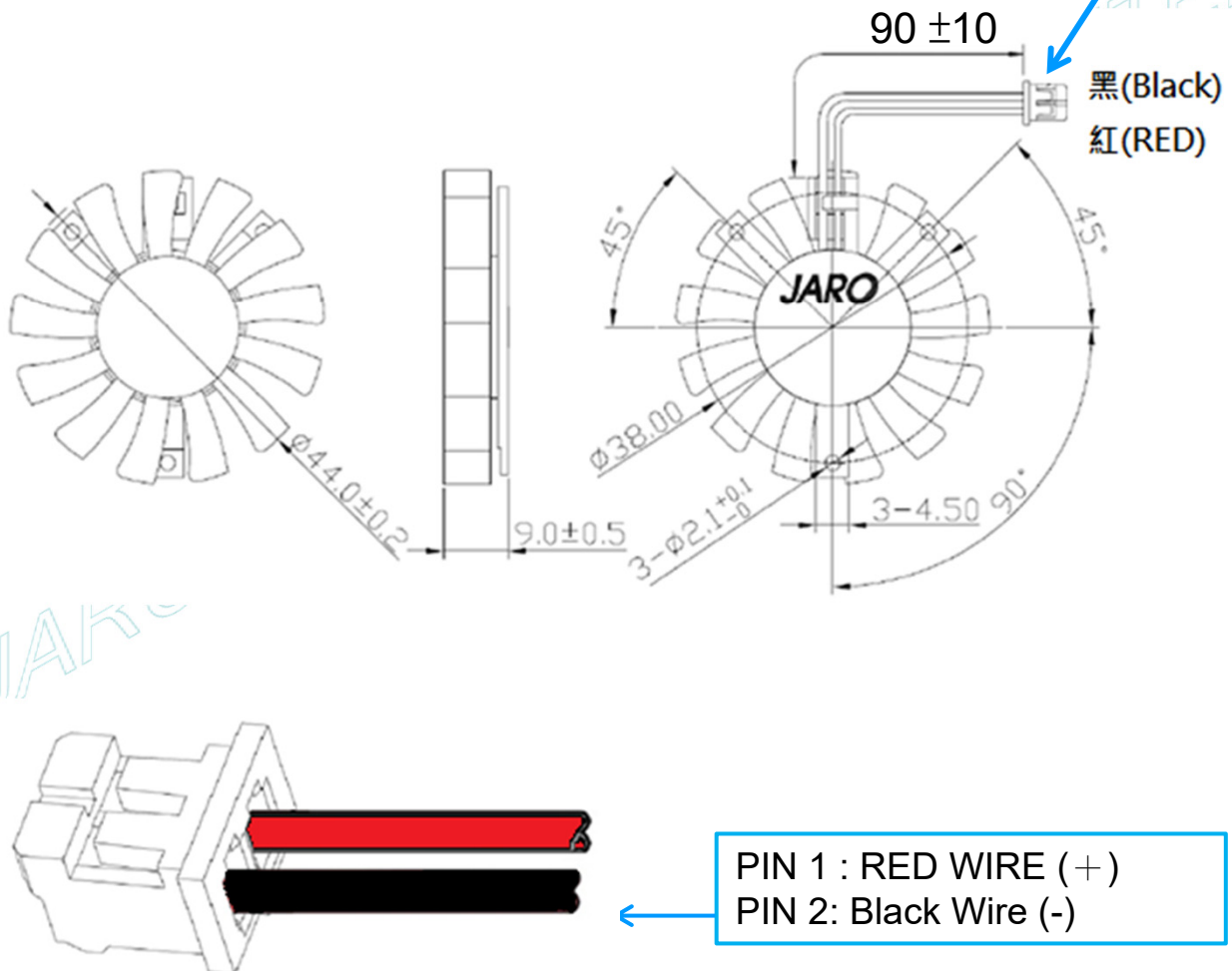


DIAGRAM OF DIMENSIONS: Dimensions in millimeters
NOT TO SCALE. ALL COMPONENTS MUST BE ROHS COMPLIANT.

Drawing Note: N/A

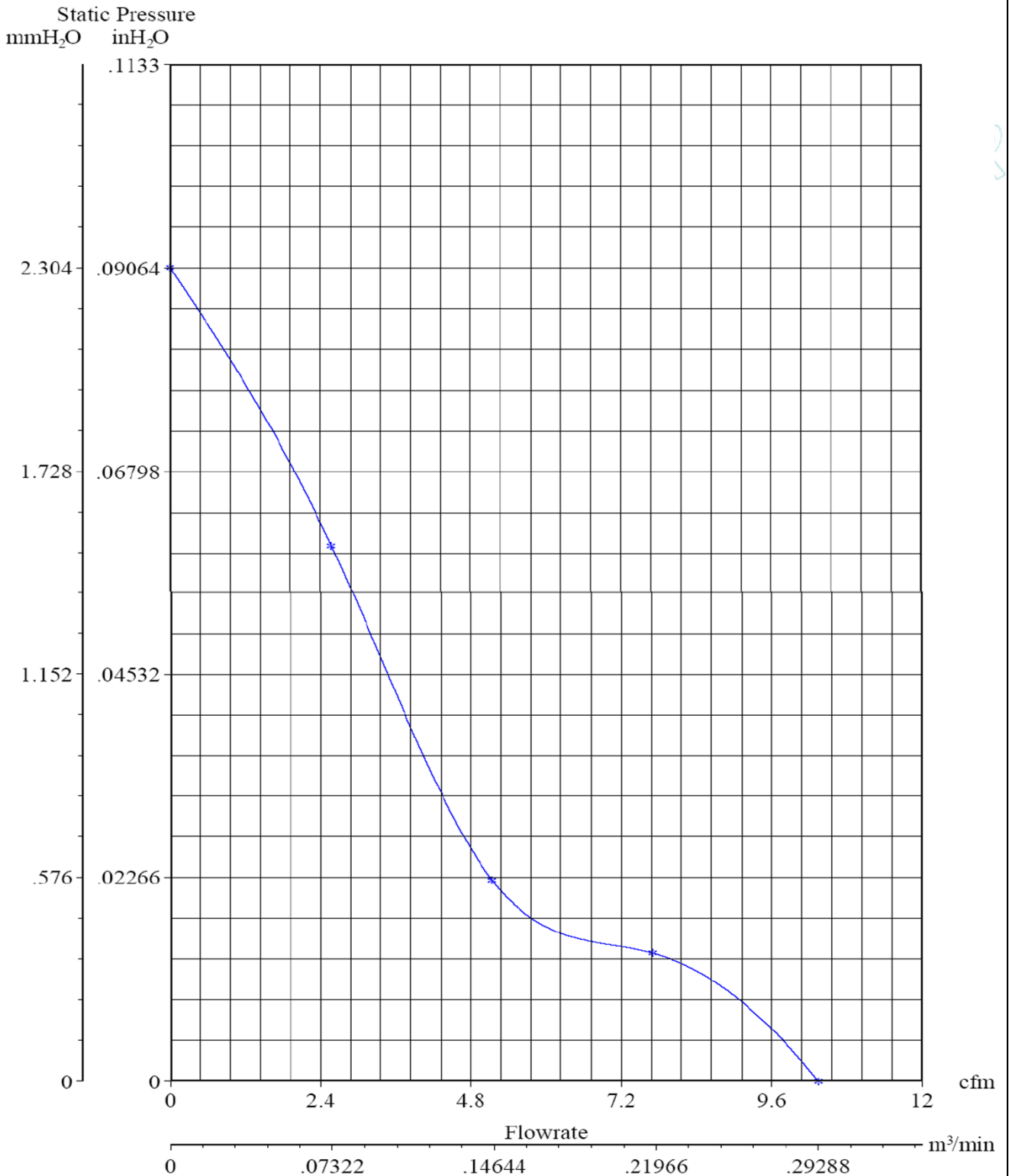
Safety : CE



PERFORMANCE CURVE

JARO MODEL: JDD0500912HB0A01(Y29)-X(1836)

9-0 Performance Curve





LIFE DATA

JARO MODEL: JDD0500912HB0A01(Y29)-X(1836)

10-0 LIFE EXPENTANCY

故障定義 Product Specification & Failure Definition	試驗結果：包含故障時間、數據、統計、...等 Test Result : Including Time Of Failure、Datum、Statistics、... ect.																																														
1.風扇不轉 (Fan Not Work) 2.轉速超出規格30% (Speed Over 30% Origin) 3.電流超出規格30% (Current Over 30% Origin)	$(\Delta H / K) \times \left(\frac{1}{273+T_l} - \frac{1}{273+T_h} \right)$ • 溫度加速因子 TEMP A.F = • 總試驗時間 Total Test Time = 200000 HRS. • 查表得 (MTTF By GEM Table) MTTF = 86858 HRS.																																														
Description : 1.性能測試時點 The Time Of Check Point Start : 0Hr, 500Hrs, 1000Hrs And Finished $70^{\circ}\text{C MTTF} = \frac{\text{Total test time (T)}}{\text{Total failure (r)}}$ 2. Generalized Exponential Model (for Time-Terminated Test) <table border="1" data-bbox="172 969 545 1066"> <tr> <td>r</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>M</td> <td>2.3026</td> <td>3.8897</td> <td>5.3223</td> <td>6.6808</td> <td>7.99384</td> <td>9.2747</td> </tr> <tr> <td>r</td> <td>6</td> <td>7</td> <td>8</td> <td>9</td> <td>10</td> <td></td> </tr> <tr> <td>M</td> <td>10.5321</td> <td>11.7709</td> <td>12.9947</td> <td>14.2080</td> <td>15.4086</td> <td></td> </tr> </table>	r	0	1	2	3	4	5	M	2.3026	3.8897	5.3223	6.6808	7.99384	9.2747	r	6	7	8	9	10		M	10.5321	11.7709	12.9947	14.2080	15.4086		• 溫度 / TEMP. / MTTF / L10 <table border="1" data-bbox="762 835 1353 1070"> <thead> <tr> <th>溫度TEMP. / MP.</th> <th>信賴水準90% CONFIDENCE LEVEL</th> <th>L10</th> </tr> </thead> <tbody> <tr> <td>30 °C</td> <td>1559455</td> <td>164153</td> </tr> <tr> <td>40 °C</td> <td>706937</td> <td>74414</td> </tr> <tr> <td>50 °C</td> <td>336561</td> <td>35427</td> </tr> <tr> <td>60 °C</td> <td>167535</td> <td>17635</td> </tr> <tr> <td>70 °C</td> <td>86858</td> <td>9143</td> </tr> </tbody> </table>	溫度TEMP. / MP.	信賴水準90% CONFIDENCE LEVEL	L10	30 °C	1559455	164153	40 °C	706937	74414	50 °C	336561	35427	60 °C	167535	17635	70 °C	86858	9143
r	0	1	2	3	4	5																																									
M	2.3026	3.8897	5.3223	6.6808	7.99384	9.2747																																									
r	6	7	8	9	10																																										
M	10.5321	11.7709	12.9947	14.2080	15.4086																																										
溫度TEMP. / MP.	信賴水準90% CONFIDENCE LEVEL	L10																																													
30 °C	1559455	164153																																													
40 °C	706937	74414																																													
50 °C	336561	35427																																													
60 °C	167535	17635																																													
70 °C	86858	9143																																													
3. Herewith, we could assume as right on the basis of above test result. Besides, if the actual test time exceed the required, it comes out that those fans' L ₁₀ expectancy and MTTF are greater than the warrant. MTTF: Mean Time To Failures. It should be used in a non-repairable system setting. Now we show the MTTF in our life report, that's because we will not repair the failed fans during life experiment. MTBF: Mean Time Between Failures. It should be used in a repairable system setting. Basically, MTBF is equal to MTTF, they use same formula to work out a life data.																																															

