SPECIFICATION FOR APPROVAL

Customer :

Customer Part No:

Description: Thermal module

JARO Model No: JCC00173 **REV:** 0

Sample Issue No:

Sample Issue Date :

Specification Status: V **Preliminary** ___ **Formal**

PLEASE SEND ONE COPY OF THIS SPECIFICATION BACK AFTER YOU SIGNED APPROVAL FOR PRODUCTION PRE-ARRANGEMENT.

APPROVED BY CUSTOMER:_____

DATE :_____

JARO Thermal USA office
4800 T-Rex Avenue Suite 265.
Boca Raton, FL 33431
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Ph: 561-241-6700
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PREPARED BY :	**Franco Huang**	**DATE :**	**01/07/2026**
CHECKED BY :	**Chris Hsu**	**DATE :**	**01/07/2026**
APPROVED BY :	**Chris Hsu**	**DATE :**	**01/07/2026**

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JARO MODEL NUMBER
JCC00173

Revision of Spec History

Revision	Change Content	Change page	DATE	BY
0	Created SPEC		01/07/2026	Franco Huang

Notice:

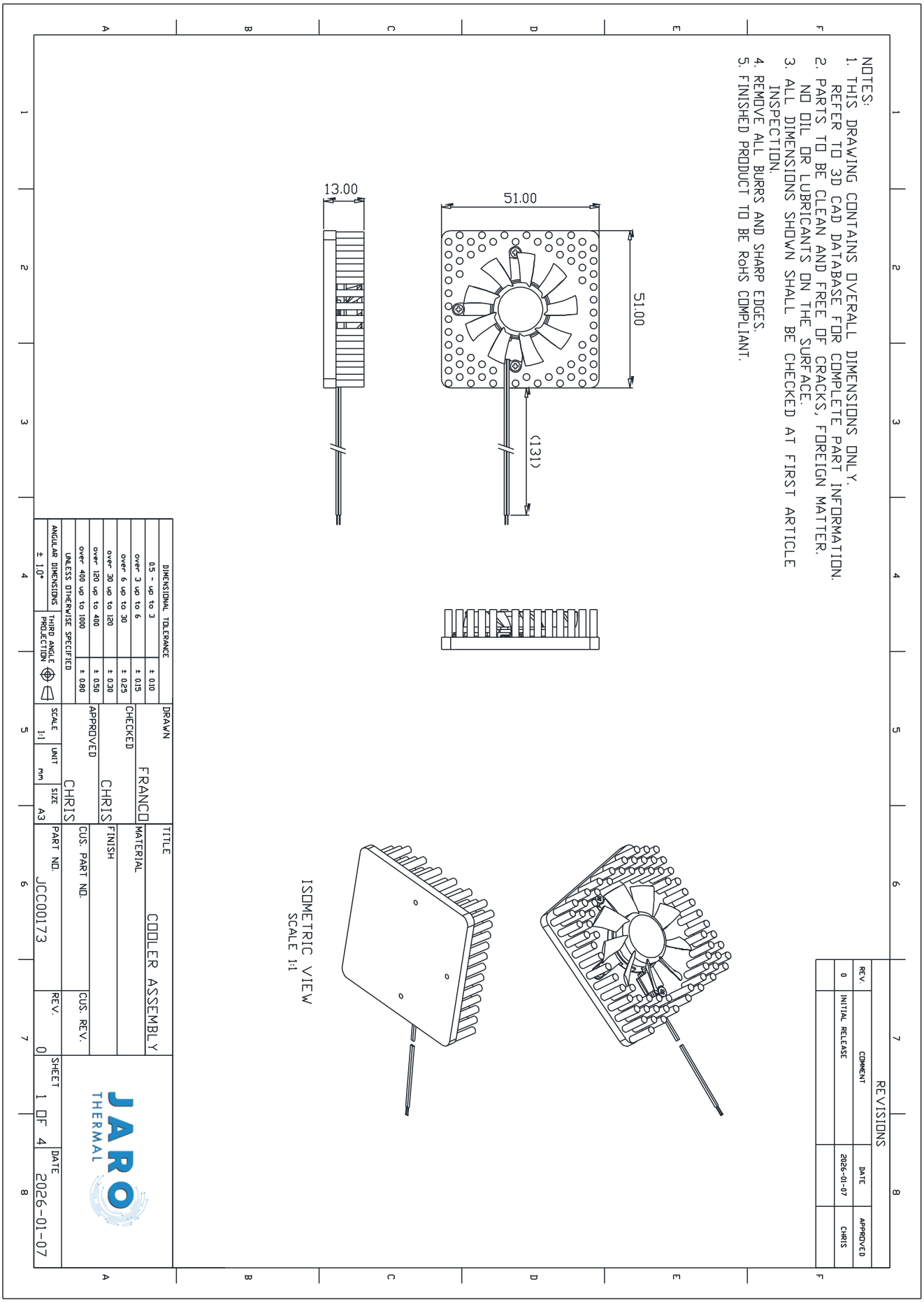
1. This specification will be changed based on Jaro Thermal ‘s notification. Please refer to update revision of spec by contacting Jaro Thermal.

2. This specification clarify all the mechanical & electrical characteristics of DC brushless fans & AC brushless fans & heatsink.

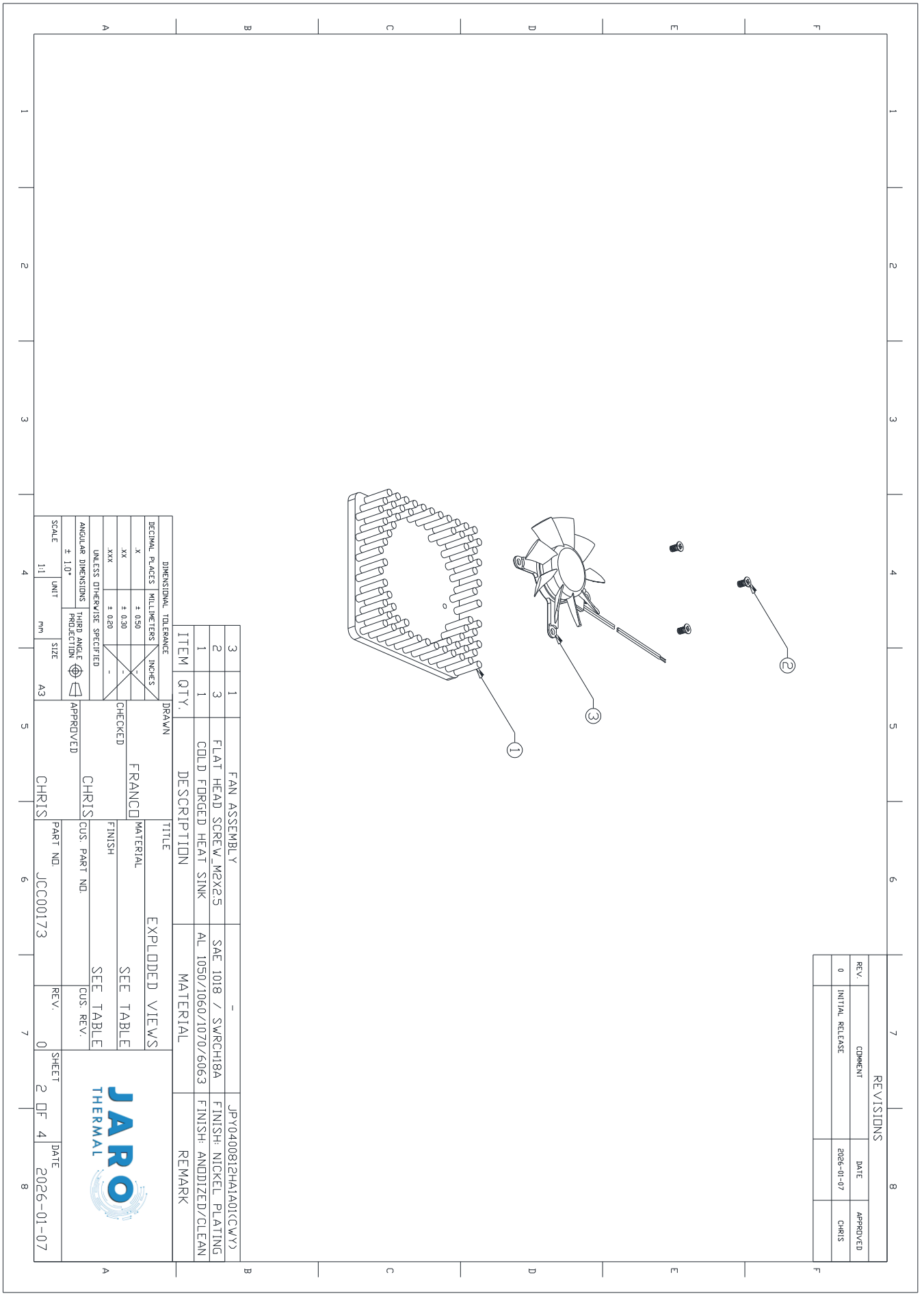
3. The specification of this product is described in detailed document. Please contact Jaro Thermal if you have special requirement which is not listed on this specification.

4. Any of change, please 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 specification.

1. Assembly drawing

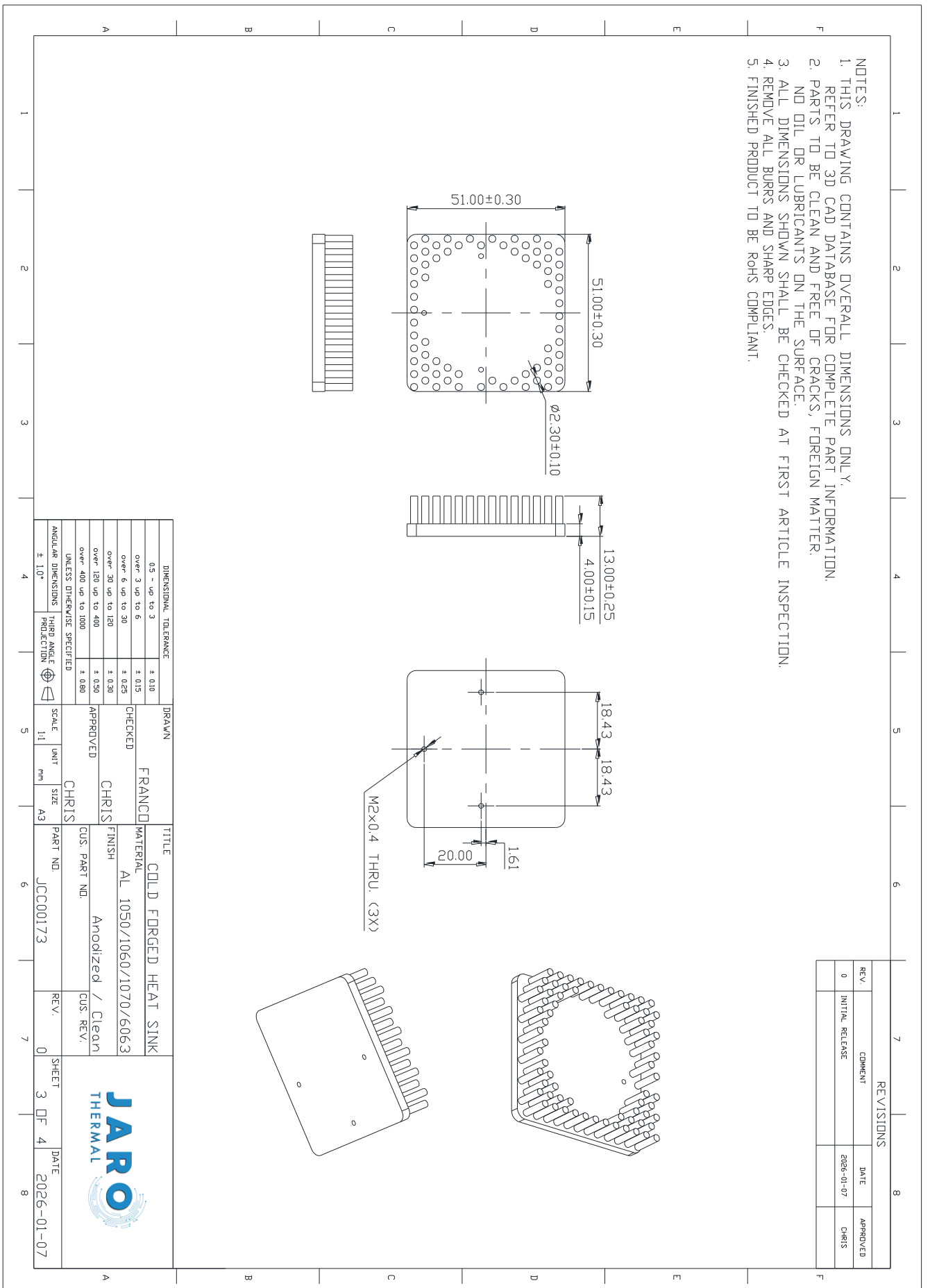


2. Exploded views



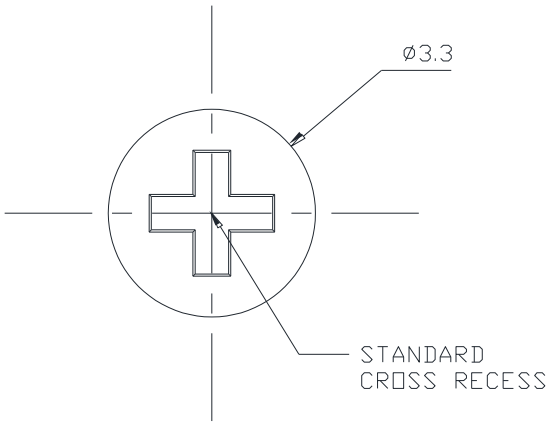
3. Individual component drawing

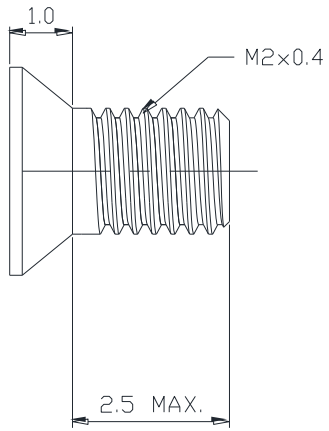
1) Cold Forged Heat Sink

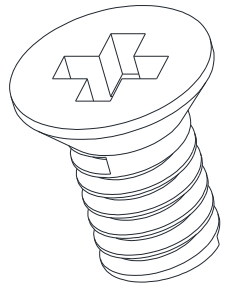


NOTES:
1. THIS DRAWING CONTAINS OVERALL DIMENSIONS ONLY.
   REFER TO 3D CAD DATABASE FOR COMPLETE PART INFORMATION.
2. PARTS TO BE CLEAN AND FREE OF CRACKS, FOREIGN MATTER.
   NO OIL OR LUBRICANTS ON THE SURFACE.
3. ALL DIMENSIONS SHOWN SHALL BE CHECKED AT FIRST ARTICLE INSPECTION.
4. REMOVE ALL BURRS AND SHARP EDGES.
5. FINISHED PRODUCT TO BE RoHS COMPLIANT.

REVISIONS			
REV.	COMMENT	DATE	APPROVED
0	INITIAL RELEASE	2026-01-07	CHRIS







ISOMETRIC VIEW
SCALE 10:1

DIMENSIONAL TOLERANCE		
DECIMAL PLACES	MILLIMETERS	INCHES
.	± 0.50	-
.X	± 0.30	-
.XX	± 0.20	-
UNLESS OTHERWISE SPECIFIED		
ANGULAR DIMENSIONS	THIRD ANGLE PROJECTION	
± 1.0°		
SCALE 10:1	UNIT mm	SIZE A4

DRAWN: FRANCO
CHECKED: CHRIS
APPROVED: CHRIS

TITLE: FLAT HEAD SCREW_M2x2.5
MATERIAL: SAE 1018 / SWRCH18A
FINISH: NICKEL PLATING
CUS. PART NO.:
CUS. REV.:
PART NO.: JSC00173
REV.: 0
SHEET: 4 OF 4
DATE: 2026-01-07

JARO THERMAL

2) Flat head Screw_M2x2.5

SPECIFICATION FOR APPROVAL

Customer :

Customer Part No:

Description: DC BRACKET

JARO Model No: JPY0400812HA1A01(CWY)

Sample Issue No:

Sample Issue Date :

Specification Status: V **Preliminary** ___ **Formal**

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PREPARED BY :	**Franco Huang**	**DATE :**	**10/28/2025**
CHECKED BY :	**Ivan Chen**	**DATE :**	**10/28/2025**
APPROVED BY :	**Jay Su**	**DATE :**	**10/28/2025**

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JARO SPEC NUMBER	

Revision of Spec History

Revision	Change Content	Change page	DATE	BY
0	Created SPEC		10/28/2025	Franco Huang

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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. Please do not use the fan without proper usage. Please contact JARO Thermal if you have special requirement which is not listed on this specification.

4. Any of change, Please 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	: JPY0400812HA1A01(CWY)
Samples attached	: pcs
Safety Approval	: CE

FEATURES

[ ] FG SIGNAL	[ ] HIGH TEMP RATED	[ ] IP52 RATED
[ ] RD SIGNAL	[V] SINGLE PHASE	[V] 4-POLE
[ ] PWM	[ ] THREE PHASE	[ ] 8-POLE

DIMENSIONS	:	40 X 40 X 8 mm
BEARING TYPE	:	AFB
MOTOR PROTECTION	:	BY IC
RATED VOLTAGE	:	12.0 VDC
OPERATING VOLTAGE RANGE	:	10.8 ~ 13.2 VDC
START - UP VOLTAGE	:	9.0 VDC , (POWER ON/OFF)
REAL CURRENT	:	0.10 Amp
REAL POWER	:	1.20 Watt
RATED CURRENT	:	0.15 Amp +10%MAX
RATED POWER	:	1.80 Watt
RATED SPEED	:	6000 RPM ± 15 %
		(IN FREE AIR AT RATED VOLTAGE)
AIR FLOW	:	8.73 CFM (min.: 7.42 CFM)
AIR FLOW	:	0.24 CMM (min.: 0.21 CMM)
		(IN FREE AIR AT RATED VOLTAGE)
STATIC AIR PRESSURE	:	0.13 InH_2O (min.: 0.09 InH_2O)
STATIC AIR PRESSURE	:	3.25 mmH_2O (min.: 2.35 mmH_2O)
		(IN FREE AIR AT RATED VOLTAGE)
NOISE LEVEL	:	30.0 dB(A) (MAX.: 34.0 dB(A))
LIFE EXPECTANCY	:	50000 Hours at 40℃ / 65% RH
NET WEIGHT	:	5 Gram

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, Please refer to environmental condition on 5-0 first. Other special request Please contact JARO Thermal for spec checking.

JARO MODEL: JPY0400812HA1A01(CWY)

1-0 MATERIAL

1-1 Frame Material - PBT OF UL94 V-0

1-2 Fan Blade Material - PBT OF UL94 V-0

1-3 Other material - See 8.0 Dimension Drawing

1-4 Environmental Standard
[V] RoHS
[V] REACH
[ ] 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.

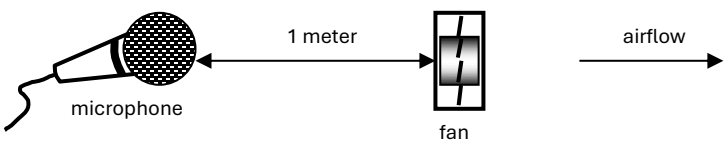
2-4 Rated Speed - Rated Speed shall be measured after 3 minutes for continuing rotation by rated voltage.

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



JARO MODEL: JPY0400812HA1A01(CWY)

3-0 FAN FUNCTION DEFINITION

3-1 Rotation Direction - Clockwise 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

-20℃ to +85℃ at humidity 5% to 90% Relative humidity.

5-2 Humidity

After 96 hours, 95% RH, 40+/-2℃ 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℃ to +85 ℃ with a 24 hour recovery period at room temperature. Humidity 5% to 95% Relative humidity

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.

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 USE WITH CAUTION

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 lf 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 staring from the date of production.

DIMENSION DRAWING

JARO MODEL: JPY0400812HA1A01(CWY)

8-0 DIMENSIONS

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

Description: DC Fan with:

Lead Wire: UL3302 , AWG#30 , 140 +/-10 mm lead length.

BLACK WIRE---------- (−)

PYELLOW WIRE---------- (+)

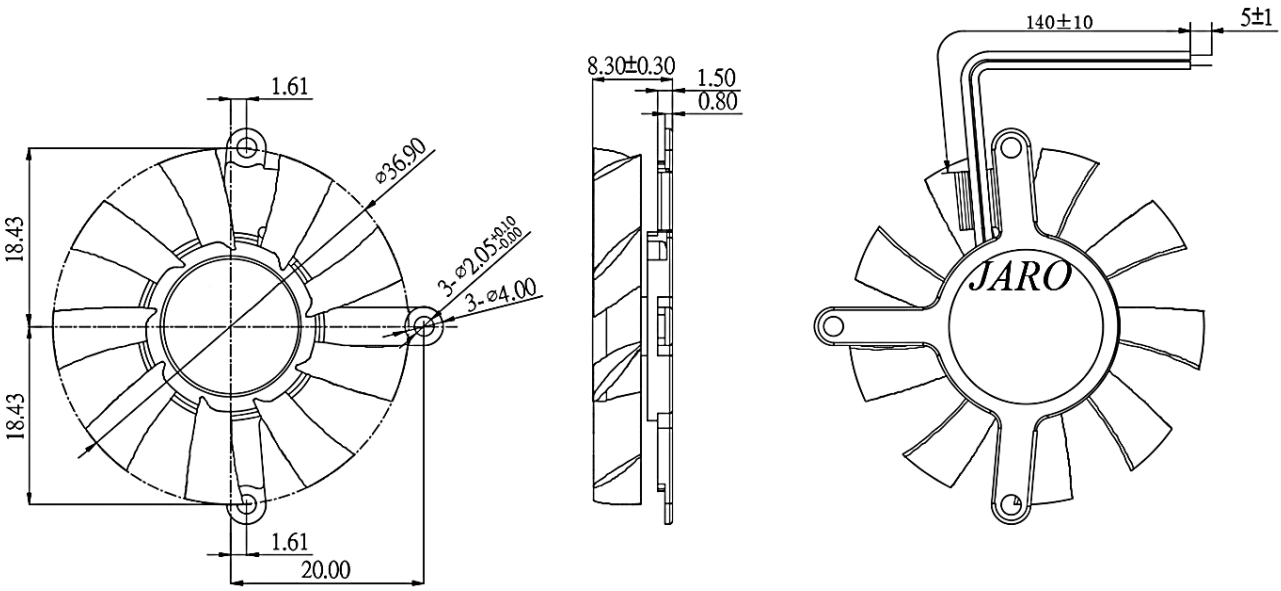


DIAGRAM OF DIMENSIONS: Dimensions in millimeters
NOT TO SCALE. ALL COMPONENTS MUST BE RoHS/REACH COMPLIANT.

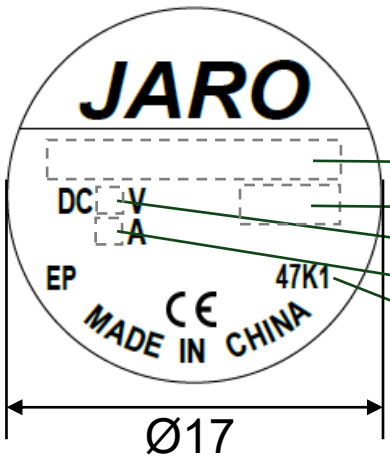
Drawing Note: N/A

Safety : CE

LABEL DRAWING

JARO MODEL: JPY0400812HA1A01(CWY)

Label Drawing



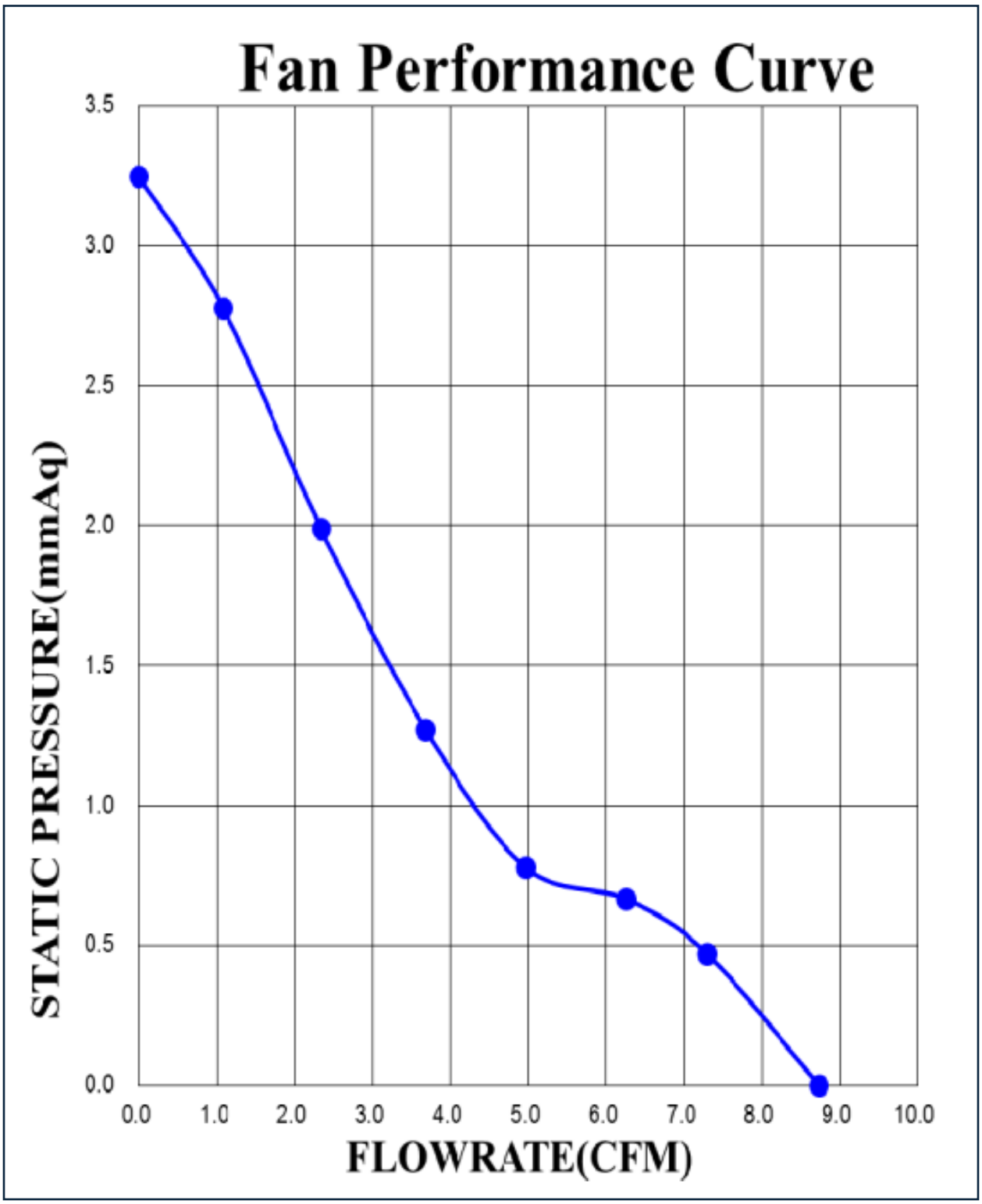
MODEL: **JPY0400812HA1A01**
MODEL: **(CWY))**
RATED VOLTAGE: **12**
RATED CURRENT: **0.15**
DATECODE: 47K1 (example)

Label Material	Dimension	Background color
PET	Ø=17mm	Silver

PERFORMANCE CURVE

JARO MODEL: JPY0400812HA1A01(CWY)

9-0 PERFORMANCE CURVE



LIFE EXPECTANCY

JARO MODEL: JPY0400812HA1A01(CWY)

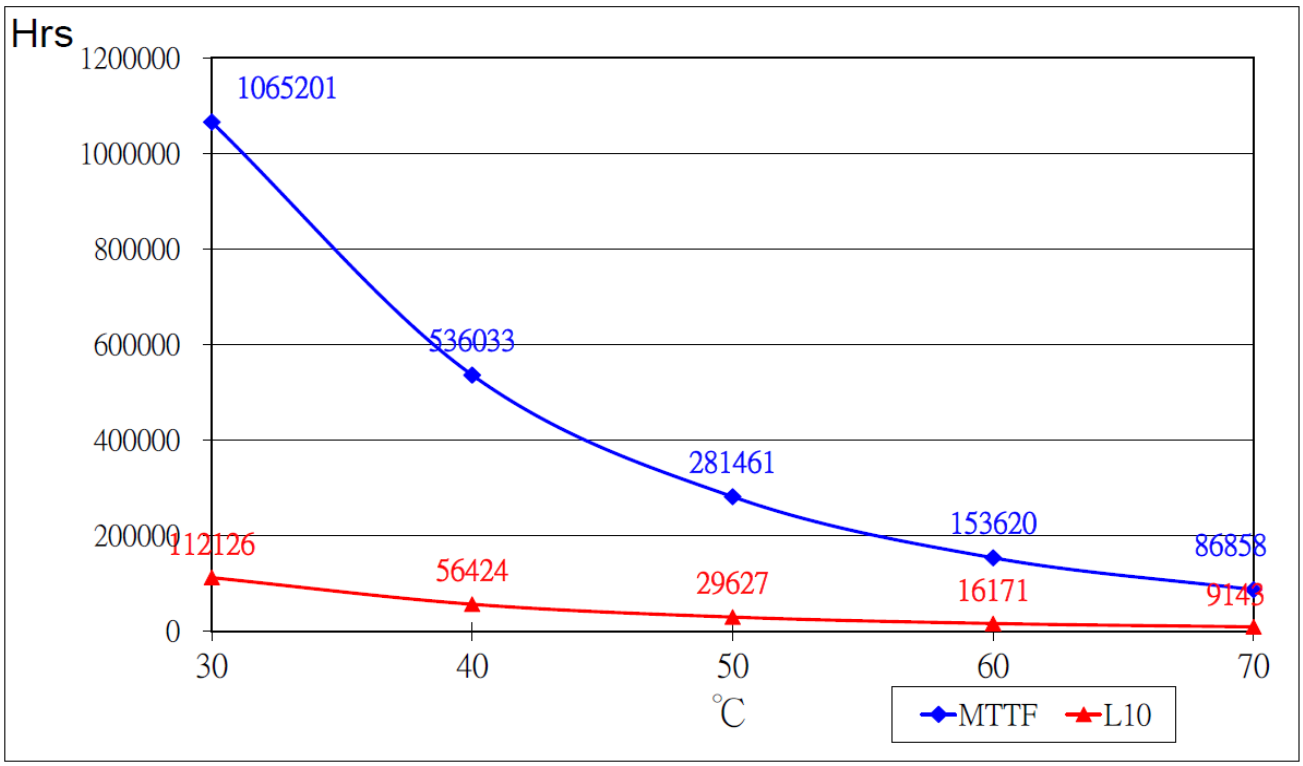
10-0 LIFE EXPECTANCY

故障定義 Product Specification & Faiure Definiton	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.轉速超出規格±15% (Speed Over ±15% Origin) 2.電流超出規格+15% (Current Over +15% Origin) 3.噪音超出規格+3dBA 或異音 (Noise Over +3dBA Origin or abnormal noise) 4.振動超出規格 (Vibration Over Specification)	・溫度加速因子 TEMP A.F = $e^{(\Delta H/K) \times (\frac{1}{273+Tl} - \frac{1}{273+Th})}$ ・總試驗時間 Total Test Time = 200000 HRS. ・查表 (MTTF By GEM Table), 70℃ / MTTF = 86858 HRS.
Description： 1.性能測試時點 The Time Of Check Point Start： 0Hr, 500Hrs, 1000Hrs And Finshed $70℃\ MTTF = \frac{\text{Total test time (T)}}{\text{Total failure (r)}}$ 2. **GEM TABLE** Generalized Exponential Model (for Time-Terminated Test)	・溫度 / TEMP. / MTTF / L10

r	0	1	2	3	4	5
M	2.3026	3.8897	5.3223	6.6808	7.99364	9.2747
r	6	7	8	9	10	
M	10.5321	11.7709	12.9947	14.2060	15.4066	

溫度 TEMP.	信賴水準90% CONFIDENCE LEVEL MTTF	L10
30 ℃	1065201	112126
40 ℃	536033	56424
50 ℃	281461	29627
60 ℃	153620	16171
70 ℃	86858	9143

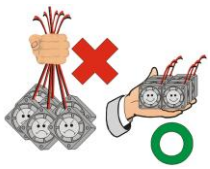
3.Herewith, we could assume as right on the basis of above test result. Besides, if the actual test time exceed the required, it comes out that those fans' L_{10} expectancy and MTTF are greater than the warrant.
MTTF: Mean Time To Failures. It should be used in a non-reqairable system setting. Now we 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.



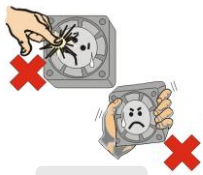
APPLICATION NOTE

JARO MODEL: JPY0400812HA1A01(CWY)

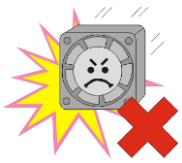
NOTICE FOR OPERATION



1



2



3

4

1. Hold the fan by frame side.
   Do not hold lead wires.(Fig.1)
2. Do not touch or press on the impeller.
   Do not crush the frame. (Fig.2)
3. Do not drop the fan on the ground.
   Hit the frame may cause the fan damaged. (Fig.3)
4. Connect the power cord properly and apply voltage according to specification. (Fig.4)

NOTICE FOR ASSEMBLY AND AMBIENT CONDITIONS

1. When applying our fan your device, please check thoroughly any variation of EMC, temperature rise, life data, quality, etc. of this product by shock/drop/vibration testing, etc. If there is any problem or accident in connection with this product, it should be mutually discussed and checked by both parties.
2. Take proper care for handling this fan. Components such as fan holders or bearings may be damaged by fingers touch or other objects. Additionally, static electricity (ESD) may damage the internal circuits of the fan.
3. DO NOT operate this fan in proximity to hazardous materials such as organic silicon, cyanogen, formalin, phenol, or corrosive gas environments. Any hazardous materials flow to the fan side may cause damaged or malfunction.
4. JARO recommends that you protect this fan from exposure to outside elements such as dust, condensation, humidity or insects.
   Exposure of this fan to outside elements such as dust, condensation, humidity or insects may affect its performance and may cause safety hazards. JARO does not guarantee the damage to the product caused by outside elements.
5. This fan must be installed properly and securely. Improper mounting may cause harsh resonance, vibration, and noise. If you have any question about fan mounting, please discuss with JARO if you are not sure the correct mounting method.
6. DO NOT use or store the fan with higher humidity and temperature specified in spec.
   The fan must be stored with the attached specifications regarding storage temperature. If this fan is stored for more than 6 months, JARO recommends to perform functional testing before using. Please contact JARO if you are not sure how to perform functional test.
7. The “Life Expectancy” of this fan has not been evaluated for use in combination with any end application. Therefore, the Life Expectancy Test Reports (L10 and MTTF Report) that relate to this fan are only for reference.
8. Fan guards may prevent injury during handling or installation of the fan.