SPECIFICATION FOR APPROVAL

Customer : STD
Description : DC FAN
Customer Part No. _____ REV. : _____
Delta Model No. : THD0612VE-00 REV. : 00
Sample Issue No. : _____
Sample Issue Date : NOV.05 2020

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

APPROVED BY:

DATE :

DELTA ELECTRONICS, INC.
TAOYUAN PLANT
252, SHANGYING ROAD, GUISHAN INDUSTRIAL ZONE,
TAOYUAN CITY 33341, TAIWAN
TEL:886-(0)3-3591968
FAX:886-(0)3-3591991

*** SAMPLE HISTORY***

CUSTOMER: STD
CUSTOMER P/N:
DELTA MODEL: THD0612VE-00

REV.	DESCRIPTION	DRAWN	CHECKED			APPROVED	ISSUE DATE
			ME	EE	CE		
00	ISSUE SPEC	ROY.JH.CHEN 陳建宏 11/04'20	ROY.JH.CHEN 陳建宏 11/04'20	ROY.JH.CHEN 張宏瑋 11/05'20		HUNTER.CHEN 陳建樺 11/05'20	11/06'20

Delta Electronics, Inc.
252, SHANGYING ROAD, GUISHAN INDUSTRIAL ZONE, TEL : 886-(0)3-3591968
TAOYUAN CITY 33341, TAIWAN FAX : 886-(0)3-3591991

STATEMENT OF DEVIATION

■ NONE

□ DESCRIPTION:

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Specification For Approval

Customer : STD

Description : DC FAN

Customer P/N : Rev. :

Delta model no. : THD0612VE-00 Delta Safety Model No.: THD0612VE-00

Sample revision. : 00 Issue no.:

Sample issue date : NOV.05 2020 Quantity :

1. SCOPE:
THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS AXIAL FLOW FAN.

2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	12VDC
OPERATION VOLTAGE	10.2 - 13.2 VDC
INPUT CURRENT(AVG.)	2.90(MAX. 3.48) A SAFETY CURRENT ON LABEL : 5.00A
INPUT POWER(AVG.)	34.8 (41.76MAX.) W
SPEED	19500 R.P.M. (±10%)
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	2.278 (MIN. 2.050) M^3 /MIN. 80.54 (MIN. 72.48) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	112.52 (MIN. 91.14) mmH_2O 4.43 (MIN. 3.58) inchH_2O
ACOUSTICAL NOISE (AVG.)	66.0 (MAX. 70.0) dB-A
INSULATION TYPE	UL: CLASS A
K Factor $K = 6 * 10^{-7}(mr^2N^2)$	m=0.046 (kg)
	r=27.8 (mm)
	N=21450 (rpm) (19500+10%)
	K=9814
Pain Factor	MS3

(continued)

PART NO:

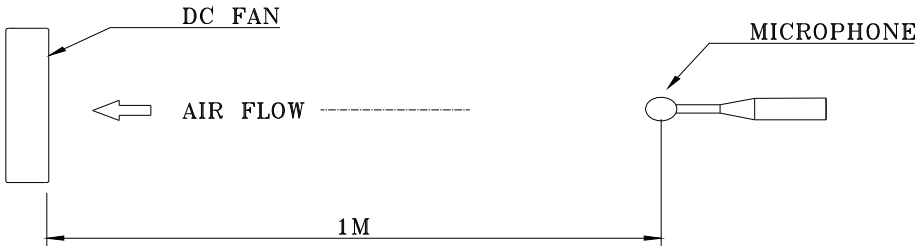
DELTA MODEL: THD0612VE-00

INSULATION STRENGTH	10 MEGOHM MIN. AT 500 VDC (BETWEEN FRAME AND (+) TERMINAL)
DIELECTRIC STRENGTH	5 mA MAX. AT 500 VAC 50/60 Hz ONE MINUTE, (BETWEEN FRAME AND (+) TERMINAL)
LIFE EXPECTANCE (L10) (AT LABEL VOLTAGE)	70,000 HOURS CONTINUOUS OPERATION AT 40 °C WITH 15~65 %RH.
ROTATION	CLOCKWISE VIEW FROM NAME PLATE SIDE
OVER CURRENT SHUT DOWN (LOCK CURRENT)	THE CURRENT WILL SHUT DOWN, WHEN ROTOR LOCKED AND FIXED.

NOTES: 1. ALL READINGS ARE MEASURED AFTER STABLY WARMING UP THROUGH 10 MINUTES.

2. STANDARD AIR PROPERTY IS AIR AT (Td) 25°C TEMPERATURE, (RH) 65% RELATIVE HUMIDITY , AND (Pb) 760 mmHg BAROMETRIC PRESSURE.

3. ACOUSTICAL NOISE MEASURING CONDITION:



NOISE IS MEASURED AT RATED VOLTAGE IN FREE AIR IN ANECHOIC CHAMBER WITH MICROPHONE AT A DISTANCE OF ONE METER FROM THE FAN INTAKE.

3.MECHANICAL:

3-1. DIMENSIONS----------SEE DIMENSIONS DRAWING
3-2. FRAME---------- PLASTIC UL: 94V-0
3-3. IMPELLER---------- PLASTIC UL: 94V-0
3-4. BEARING SYSTEM---------- TWO BALL BEARINGS
3-5. WEIGHT---------- 130 GRAMS(REF.)
3-6. ROTOR WEIGHT---------- 46 GRAMS(REF.)

4. ENVIRONMENTAL:

4-1. OPERATING TEMPERATURE---------- -40 TO +70 DEGREE C
4-2. STORAGE TEMPERATURE---------- -40 TO +85 DEGREE C
4-3. OPERATING HUMIDITY---------- 5 TO 90 % RH
4-4. STORAGE HUMIDITY---------- 5 TO 95 % RH

5. PROTECTION:

5-1. LOCKED ROTOR PROTECTION
IMPEDANCE OF MOTOR WINDING PROTECTS MOTOR FROM FIRE IN 96 HOURS OF LOCKED ROTOR CONDITION AT THE RATED VOLTAGE.

5-2. POLARITY PROTECTION
BE CAPABLE OF WITHSTANDING IF REVERSE CONNECTION FOR POSITIVEAND NEGATIVE LEADS.

5-3. EOS & ESD PROTECTION
EOS : BE CAPABLE OF WITHSTANDING 24VDC FOR 2MINUTE.
ESD : CLASS 1B (<1000V).

6. RE OZONE DEPLETING SUBSTANCES:

6-1. NO CONTAINING PBBs, PBBOs, CFCs, PBBEs, PBDPEs AND HCFCs.

7. PRODUCTION LOCATION

7-1. PRODUCTS WILL BE PRODUCED IN CHINA OR THAILAND.

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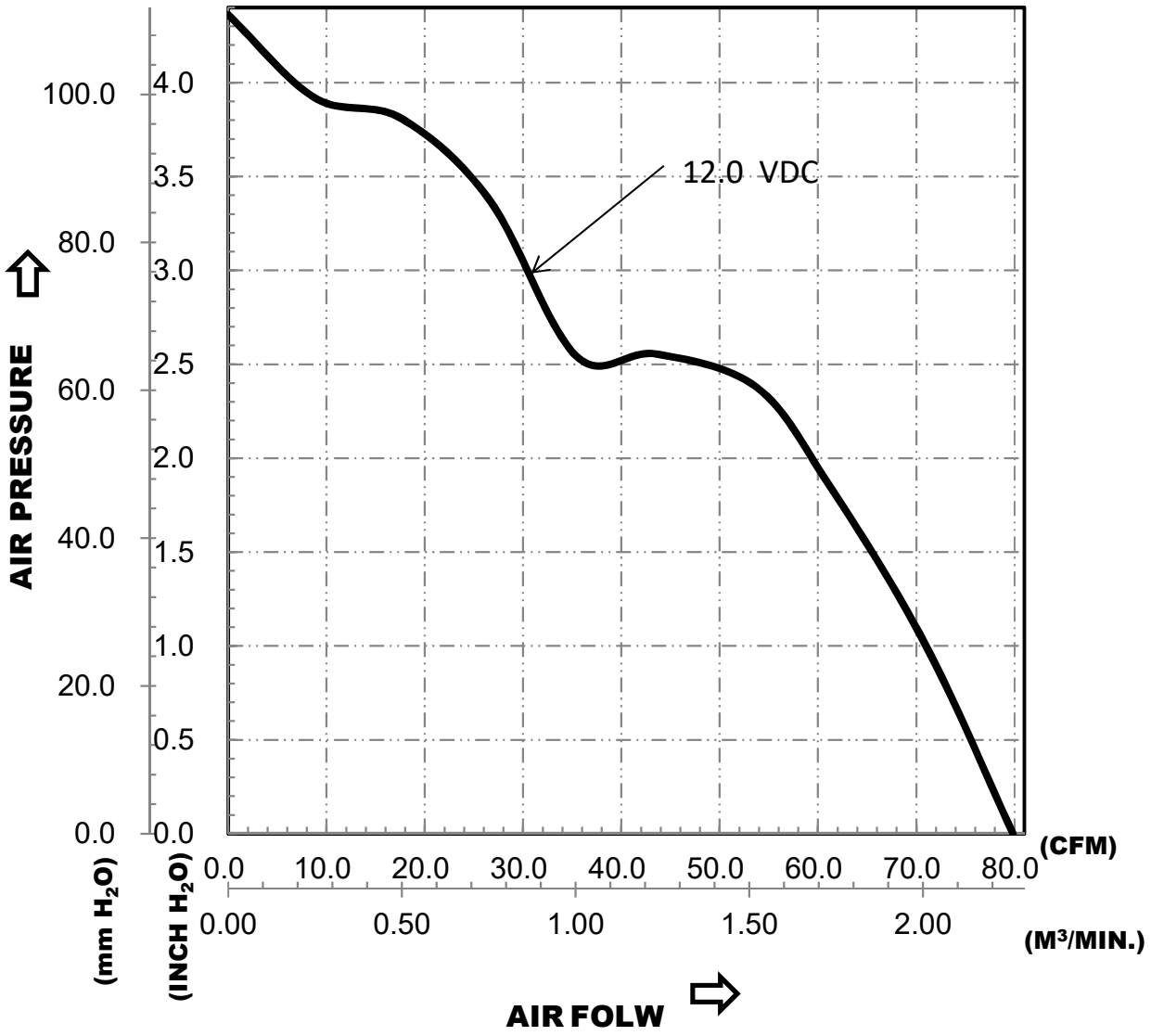
8. P & Q CURVE:



*TEST CONDITION: INPUT VOLTAGE-----OPERATION VOLTAGE
TEMPERATURE-----ROOM TEMPERATURE
HUMIDITY-----65%RH

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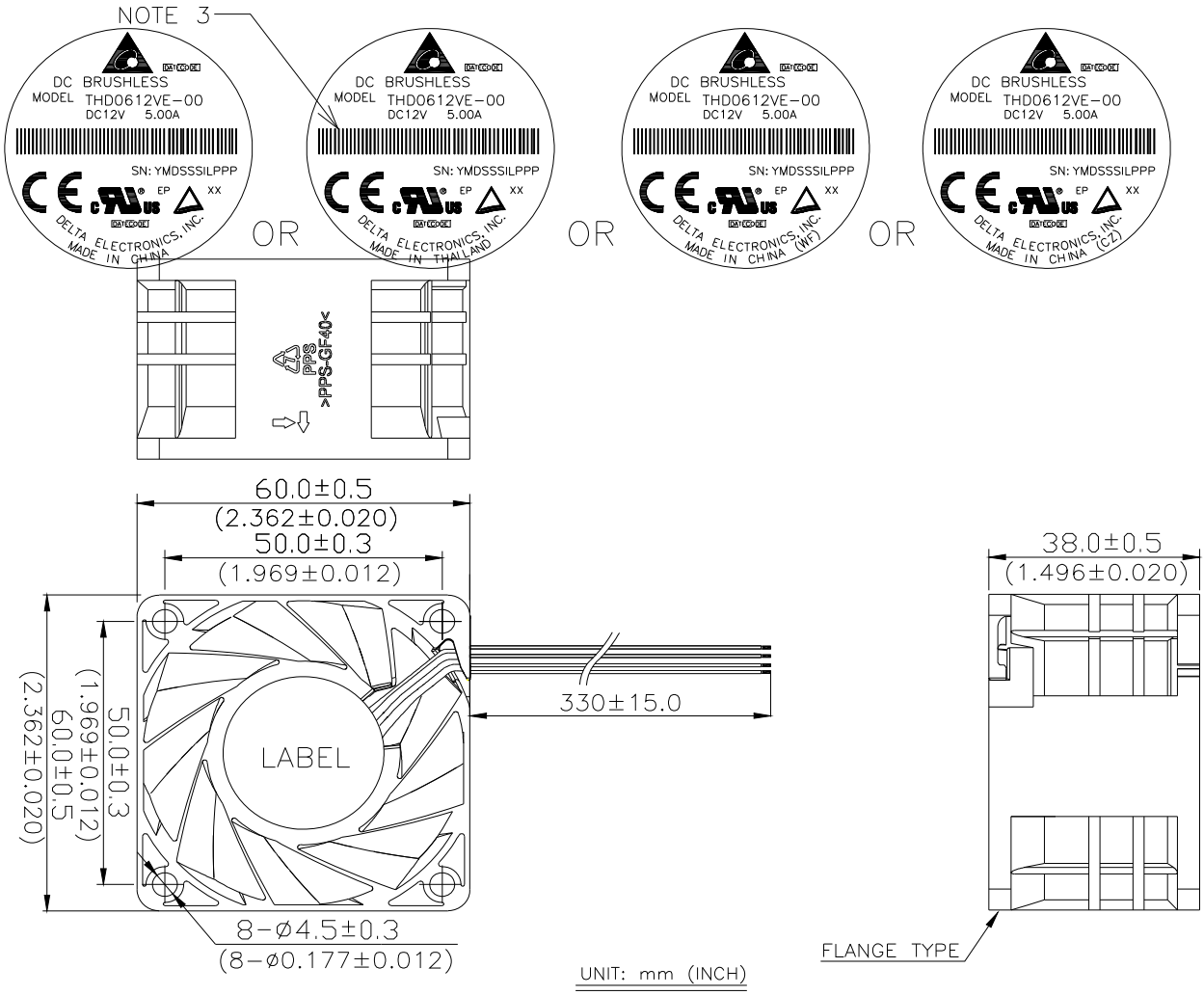
9. DIMENSION DRAWING:

LABEL: (DATECODE IS SHOWN AT ONE OF APPROX. POSITION AS FOLLOWING DRAWINGS.)



NOTES:

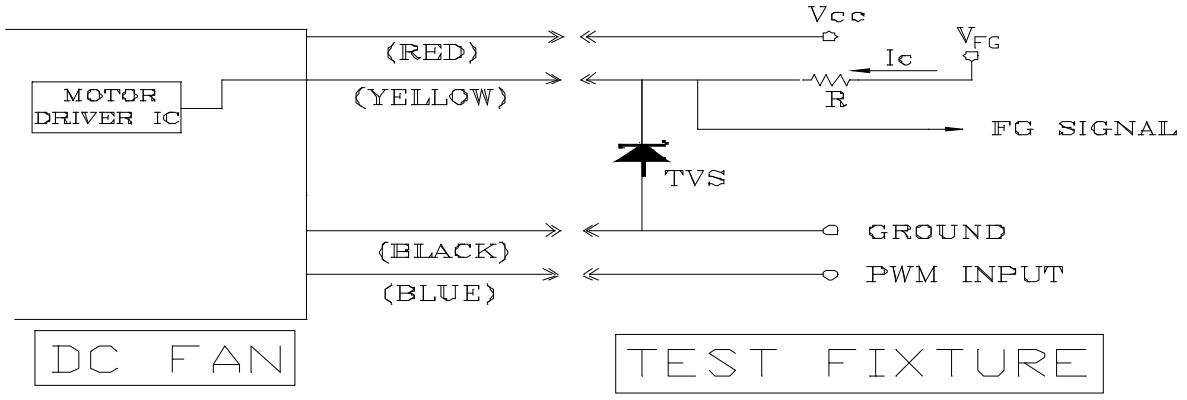
1. MATERIAL:
   LEAD WIRE : UL1007 AWG#26
   BLACK WIRE (GND)--------(AWG#26)
   RED WIRE (+12V))--------(AWG#26)
   YELLOW WIRE (TACH RPM))--------(AWG#26)
   BLUE WIRE (PWM))--------(AWG#26)
2. THIS PRODUCT IS RoHS COMPLIANT.
3. SN BARCODE ARE NOT AVAILABLE ON ENGINEERING SAMPLE.

PART NO:

DELTA MODEL: THD0612VE-00

10.FREQUENCY GENERATOR (FG) SIGNAL:

10- 1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



REMARK: TVS VOLTAGE DEFINE BY FACTORY.

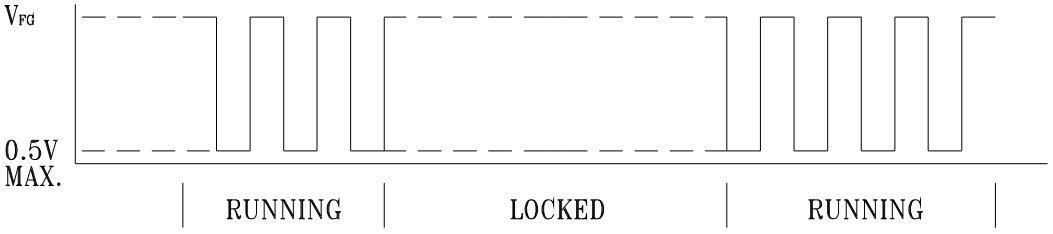
CAUTION: THE FG SIGNAL LEAD WIRE MUST BE KEPT AWAY FROM "+" LEAD WIRE & "-" LEAD WIRE.

10-2. SPECIFICATION:

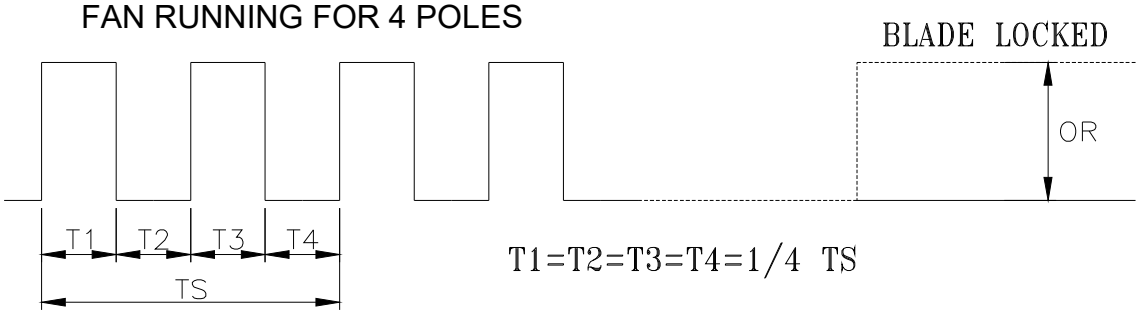
V_{CE} (sat)=0.5V MAX V_{FG} =13.2VDC MAX.

I_C =5mA MAX. $R \geqq V_{FG} / I_C$

10-3. FREQUENCY GENERATOR WAVEFORM:



FAN RUNNING FOR 4 POLES



T1=T2=T3=T4=1/4 TS

N=R.P.M

TS=60/N(SEC)

*VOLTAGE LEVEL AFTER BLADE LOCKED

*4 POLES

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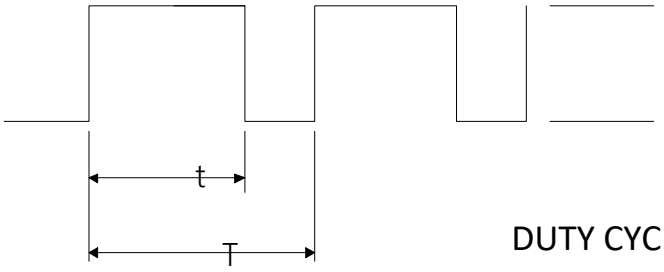
11.PWM CONTROL SIGNAL:
SIGNAL VOLTAGE RANGE:



HIGH SIGNAL: 13.2 VDC MAX. 2.8 VDC MIN.

LOW SIGNAL: 0.5 VDC MAX. 0 VDC MIN.

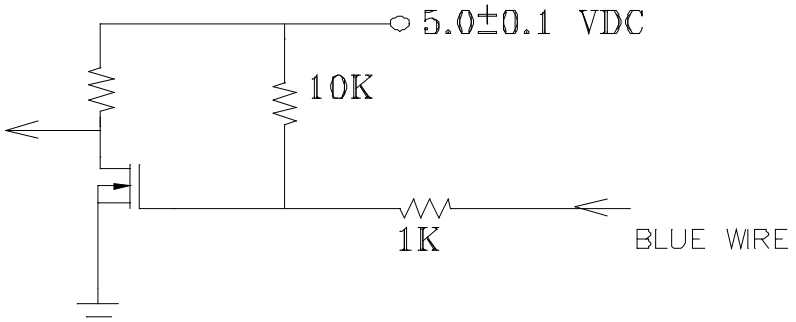
DUTY CYCLE= $\frac{t}{T}$ *100(%)

- THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT AT 20KHZ~25KHZ(REF.) WITH DIFFERENT SPEED PERFORMANCE.
- THE PERERRED OPERATION POINT FOR THE FAN IS 25K HZ.
- AT 100% DUTY CYCLE, & 12VDC ,THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% DUTY CYCLE, & 12VDC ,THE ROTOR WILL SPIN AT MINIMUM SPEED.
- WITH CONTROL SIGNAL LEAD DISCONNECTED, THE FAN WILL SPIN AT MAXIMUM SPEED.

12. SPEED VS PWM CONTROL SIGNAL:(AT 12VDC & F=25KHZ & TEMP=25°C)

DUTY CYCLE (%)	SPEED R.P.M. (REF.)	CURRENT (A) REF.
100	19500 ±10%	2.9
0~20	3900 ±10%	0.2

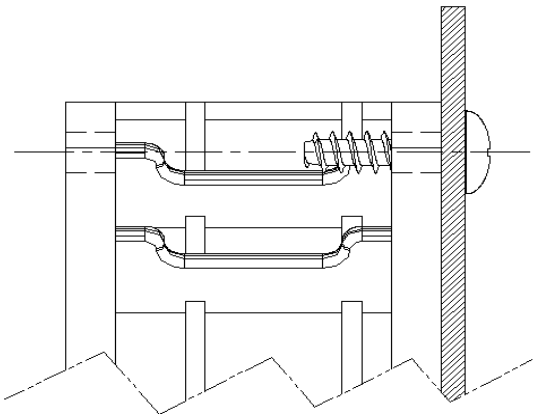
13. PWM CONTROL WIRE INPUT IMPEDANCE



Fan Characteristics Informations for Reference

INSTALLATION INSTRUCTION

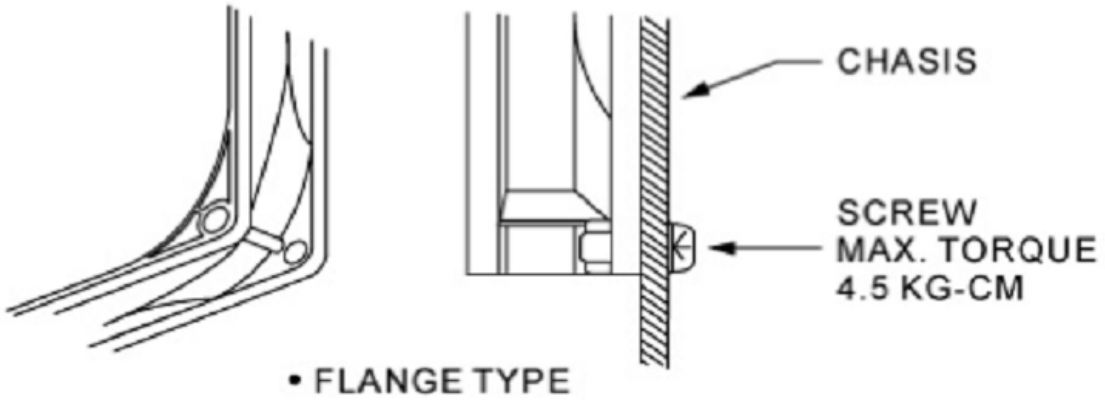
SELF-TAPPING SCREW



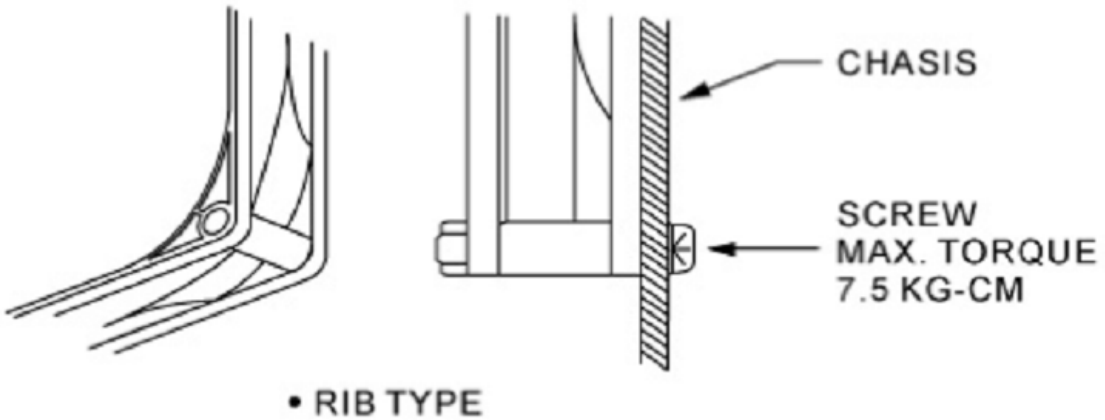
• FLANGE TYPE

MOUNTING HOLE DIAMETER	SCREW TYPE	SCREW SPEC.	RECOMMENDED MAX. TORQUE(kgf-cm)	
			FLANGE TYPE	RIB TYPE
ø3.5	SELF-TAPPING	ST4.0x1.41	4.5	
ø4.5	SELF-TAPPING	ST4.9x1.6	5.5	

MACHINE SCREW



• FLANGE TYPE



• RIB TYPE

Application Notice

1. Delta will not guarantee the performance of the products if the application condition falls outside the parameters set forth in the specification.
2. A written request should be submitted to Delta prior to approval if deviation from this specification is required.
3. Please exercise caution when handling fans. Damage may be caused when pressure is applied to the impeller, if the fans are handled by the lead wires, or if the fan was hard-dropped to the production floor.
4. Except as pertains to some special designs, there is no guarantee that the products will be free from any such safety problems or failures as caused by the introduction of powder, droplets of water or encroachment of insect into the hub.
5. The above-mentioned conditions are representative of some unique examples and viewed as the first point of reference prior to all other information.
6. lt is very important to establish the correct polarity before connecting the fan to the power source. Positive (+) and Negative (-). Damage may be caused to the fans if connection is with reverse polarity, if there is no foolproof method to protect against such error specifically mentioned in this spec.
7. Delta fans without special protection are not suitable where any corrosive fluids are introduced to their environment.
8. Please ensure all fans are stored according to the storage temperature limits specified. Do not store fans in a high humidity environment. We highly recommend performance testing is conducted before shipping, if the fans have been stored over 6 months.
9. Not all fans are provided with the Lock Rotor Protection feature. If you impair the rotation of the impeller for the fans that do not have this function, the performance of those fans will lead to failure.
10. Please be cautious when mounting the fan. Incorrect mounting of fans may cause excess resonance, vibration and subsequent noise.
11. It is important to consider safety when testing the fans. A suitable fan guard should be fitted to the fan to guard against any potential for personal injury.
12. Except where specifically stated, all tests are carried out at room (ambient) temperature and relative humidity conditions of 25°C, 65% RH. The test value is only for fan performance itself.
13. Be certain to connect an " 4.7μF or greater" capacitor to the fan externally when the application calls for using multiple fans in parallel, to avoid any unstable power.