Ama Tech Ask For More

HVLS Fan Installation Manual

Helicopter Fans AH Series

AMA TECH CORP.

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CONTENTS

Pre-Installation Checklist

- I have verified the order information and all components are accounted for.
- I have read this Installation Manual carefully before operating the unit.
- I have checked the voltage requirement before using the fan.
- I have verified that the fan will be used in a flat surface that free from unauthorized objects.
- I am aware with the local safety regulations and features of the fan.
- I am aware to check the troubleshooting if there is any problem during installation process.
- I am aware to conctact AMA Tech if there is any failure during installation process.

Important Safety Instruction:
Please Read & Save These Instructions

To reduce fire hazard, electric shock or personal injury, please observe the following points:

1. Before repairing or cleaning unit, please turn off the power to the control unit, and lock the repair cut-off device in order to prevent accidental power-on. If the repair cut-off device cannot be locked, please fix warning sign on control unit (refer to label).
2. To reduce fire hazard, electric shock or personal injury, brushless large fan must be installed with control unit (compatible model is marked on package) provided with helicopter fan collectively. Other components cannot be replaced.
3. During cleaning and repairing of tester, there could be risk of fire, electrical shock or personal injury! Please turn off fan power before repairing.
4. Please stay alert and use common sense during installation. Do not install fan if fatigued or under the influence of drug, alcohol or medicine. Any carelessness during installation will cause serious personal injury.
5. This unit is not suitable for persons (including children) with reduced physical, sensory or mental capabilities or lack of relevant experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance in a safe way by those who are responsible for their safety. Children should be supervised at all times to ensure they will not misuse the unit.
6. If the unit swings unnaturally, please stop operation immediately and contact your dealer or manufacturer.
7. Only trained and authorized technician(s) should replace the safety suspension system and/or any installation fixture. Contact your dealer or manufacturer of you are concerned about your unit.
8. All installation procedures must be conducted by trained and authorized technician(s), and in accordance with local safety construction regulations.
9. Do not use this unit in conditions where there is exposure to harmful chemicals, salt water, acid rain or other corrosive elements, excessive humidity, snow, sleet, and/or strong winds.

All installations and wire connections must be conducted by qualified personnel in accordance with national regulations and standards.

1. The unit must allow a space of at least 10 feet (3.05m) from the edge of the fan blades to the ground.
2. When cutting or drilling holes in the ceiling, do not damage wires or other hidden water and electrical wiring.

3. Use this unit only in a manner instructed by the manufacturer. If you have any questions, please contact your dealer or manufacturer.
4. Installation of brushless large fan must be in accordance with requirements specified by this installation guide and abide by the requirements of National Electrical Code (NEC) and all local regulations, Finally, guaranteeing compliance is the users' responsibility. Not abiding by relevant regulations may cause personal injury or property loss.
5. When the unit is powered on, please be cautioned and use common senses. Please do not connect fan to unsafe or dangerous power supply. Please do not try to resolve circuit issues by unauthorized technicians. Please contact your dealer or manufacturer concerning issues about installation.
6. Any safety equipment that needs to be dismantled or cut during maintenance or component replacement, must be reassembled and returned to its original position.
7. Please do not bend the fan blades throughout the installation, maintenance, and/or repair procedures! Do not insert any obstruction that may prevent the unit from operating normally.
8. Some power tools will be required during installation. Please follow the safety regulation for every tool. Do not use the tools for any purpose other than those specified by the manufacturer.
9. Warranty of brushless large fan does not cover equipment damage caused by improper installation.
10. If the unit is to be used in the United States of America, it must be installed in accordance with the following National Fire Protection Association (NFPA) guidelines:
    - The unit must be located in the center of 4 fire sprinklers;
    - The vertical distance from the fan to the fire sprinklers should be at least 3 feet (91.4 cm);
    - The unit must be integrated with the fire alarm system so that the fan is automatically shut down when fire sprinklers are activated.

Please Keep This Manual!

Specifications & Components

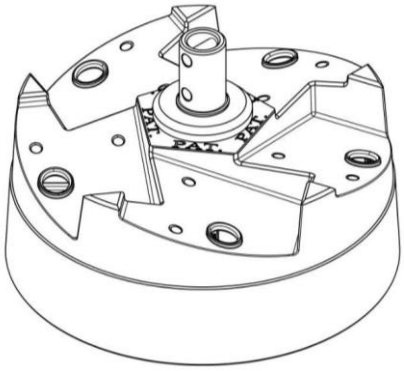
Fan specifications:

Model	AH-7	AH-6	AH-5
Fan Diameter (M)	7.15	6.15	5.15
Min/Max Speed (RPM)	25/50	25/60	25/75
Load Current (A)	0.5/3.8A	0.46/2.8A	0.43/2.0A
Single Phase Voltage (V)	220	220	220
Max. Affected Are (m^2)	1300	1000	700
Wind Volume at Max. Speed (m^3/min)	14900	12400	10900
Noise Level (dB)	<40	<40	<40
Fan Blade	5	5	5
Weight of Fan (kg)	69	60	54

Fan Components

Do not remove protective packaging on unit before hanging the fan.
If there is more than one unit, please ensure to gather the components for each fan collectively.
The diagrams shown are not to scale. All the boxes are labelled with the contents inside.
There should be FOUR boxes:
Box 1 (Main): Motor*1
Control unit*1
Box 2 (Fan blades): Fan blades*5
Box 3 (Accessories): (Top) Mounting plate*2,
(Top) Lug*1,
(Triangular) Cable-bracing base*2
Light fixture base*1,
Light fixture*1,
Winglet*5
Galvanized hex bolt M12*60 (4 PCS)
Galvanized hex bolt M12*100 (2 PCS)
Galvanized hex socket head cap screw M12*100 (2 PCS)
Galvanized hex socket head cap screw M12*110 (2 PCS)
Nylok galvanized hex bolt M12*60 (10 PCS)
Galvanized spring washer M12 (20 PCS)
Galvanized iron washer M12 (30 PCS)
Galvanized Nyloc nut M12 (10 PCS)
Self-tapping screw 4*20 (10 PCS)
Wire rope clip/clamp (16 PCS)
Turnbuckle (4 PCS),
Fan blade plate*5,
Spring steel*5
Safety steel rope (4PCS per set)
Box 4 (Extension rod): Extension rod*1

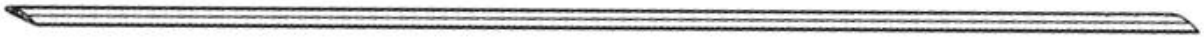
Box 1 (Main)



☐ Motor*1

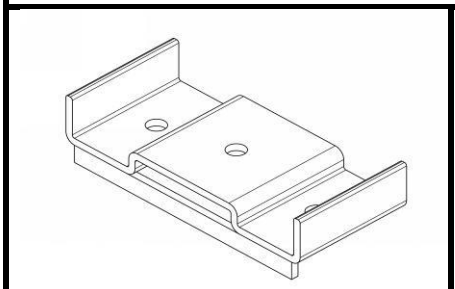
☐ Control Unit*1

Box 2 (Fan blades)

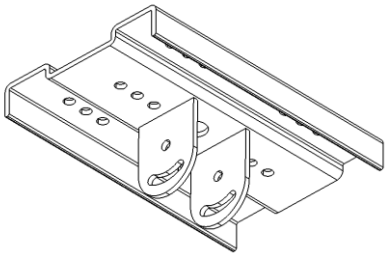


☐ Fan Blade*5

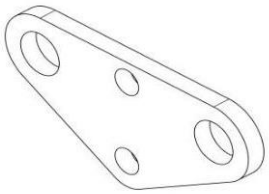
Box 3 (Accessories)- 1 of 2



☐ (Top) 3-Piece Mounting Plates*2

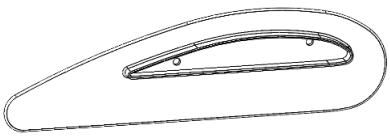


☐ (Top) Lug*1

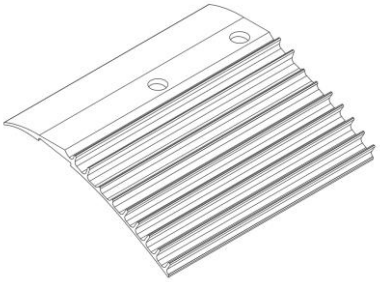


☐ (Triangular) Cable-Bracing Base*2

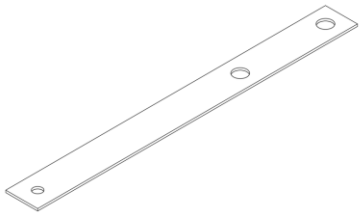
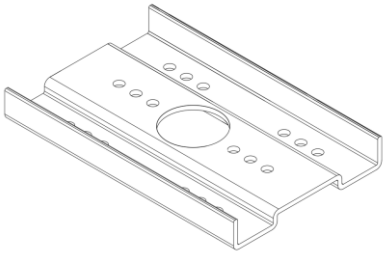
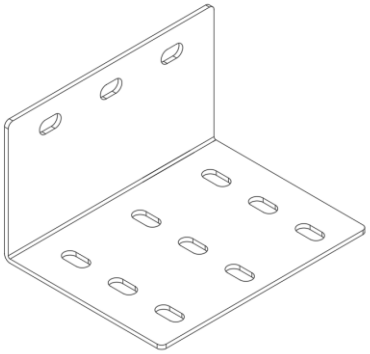
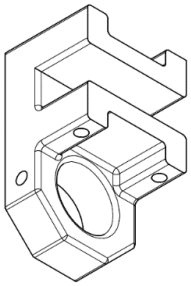
☐ Water-Proof Cap*1



☐ Winglet*5

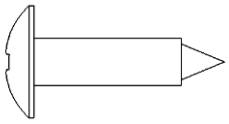
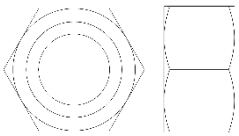


☐ Fan Blade Plate*5

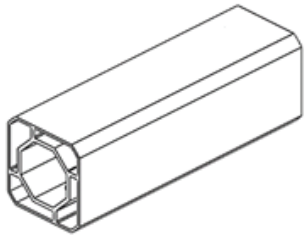
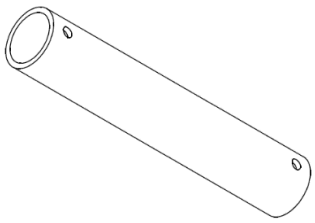
		
☐ Spring Steel*5	☐ (Top) 2-Piece Mounting Plates*1 (Optional)	☐ L-Shape Latch*2 (Optional)
		
☐ Wire Rope Support Fixed Mount*4 (Optional)	☐ Safety steel rope*4pcs per set	

Box 3 (Accessories)- 2 of 2

Hex Bolts: ☐ M12*60 (4 PCS) ; M12*100 (2PCS)

			
☐ Hex Socket Head Cap Screw (M12): M12*100 (2 PCS)	☐ Head Socket Head Cap Screw (M12): M12*110 (2 PCS)	☐ Nylok Hex Bolt: M12*60 (10 PCS)	☐ Self-Tapping Screw (M4): M4*20 (10 PCS)
			
☐ Nyloc Nut M12: M12 (10 PCS)	☐ Turnbuckle：3/8 (4 PCS)	☐ Wire Rope Clip/Clamp:	

		3/16(16PCS)

Box 4 (Extension rod)		
		
☐ Extension Rod*1	☐ Galvanized Pipes*2 (Optional)	

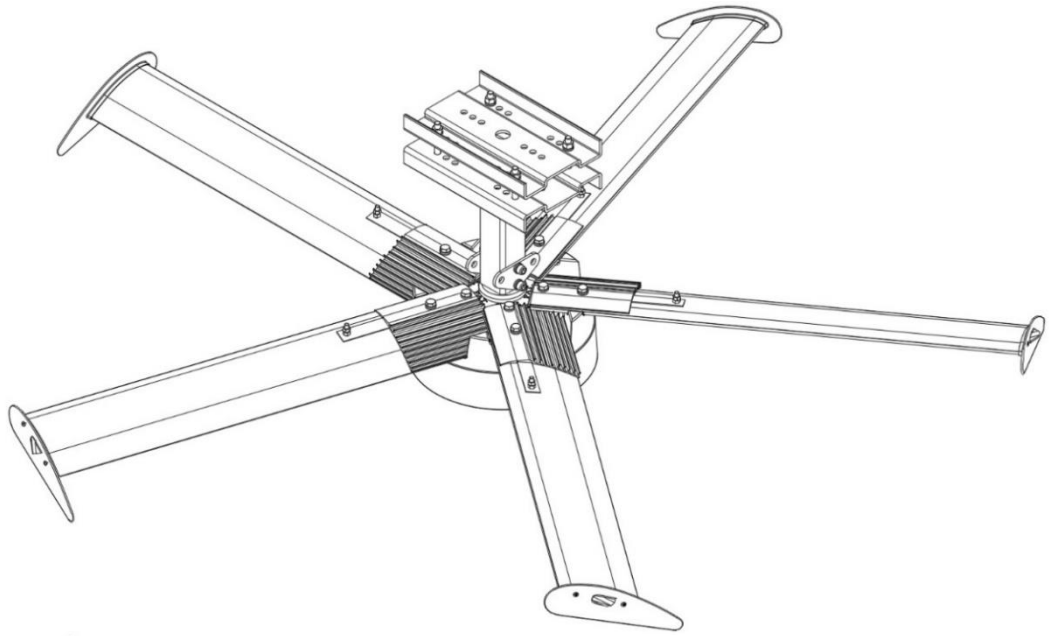
Gross weight：Approx. 90-110kg depending on unit specifications (Inclu. motor, fan blades, accessories, and extension rod boxes).

Tools Required

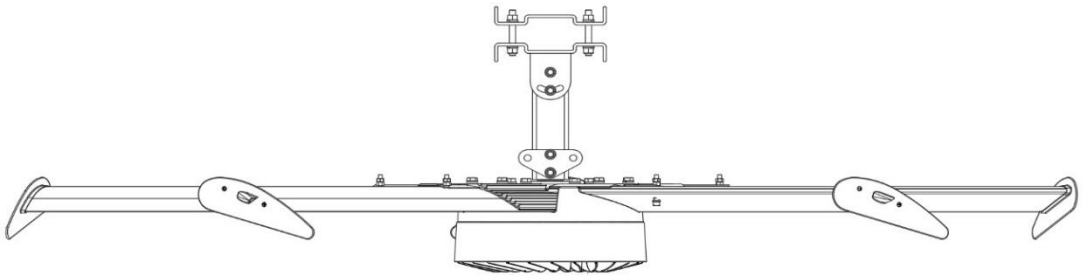
Mechanical Installation	Electrical Installation
Standard metric wrench set	Phillips-head screwdriver and flat-head screwdriver
Standard metric screw and socket wrench set	Wire stripper; 10-14 AWG
Standard metric universal wrench set	Slip joint plier
60 Torque wrench	Multimeter
Phillips-head screwdriver and flat-head screwdriver	
Standard metric universal hex socket head cap screw	
Drilling machine	
Hacksaw	
Spirit level*2	
Tape measure	

Product Overview

Kindly refer to below for the overview picture if you have successfully installed our product Helicopter Fan (AH Series):



Up View



Side View

Installation Instructions

After assembly, secure the fan unit with appropriate supports and fixtures. Please ensure that the installation is in accordance with local safety regulations. All electrical installation must be performed by a qualified electrician and comply with all local, state, and national regulations.

1. Installation Structure

• H-Beam (Standard Type)

A. Items required:
(Top) Mounting plate*2,
(Top) Lug*1,
Extension rod*1,
Hex bolt M12*60 (4PCS),
Hex bolt M12*100 (2PCS),
Nyloc nut,
Washer,
Spring washer
(Based on site specifications and requirements)

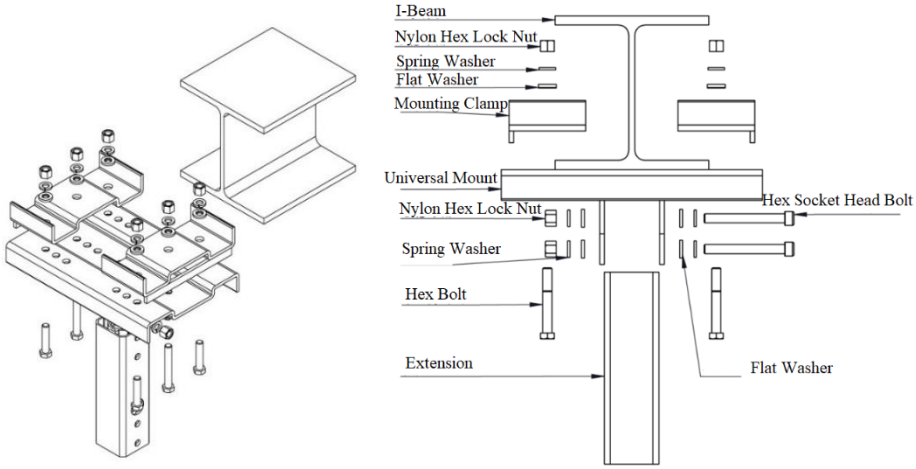
B. Installing Steps

1. Insert extension rod into (top) lug and gently secure with hex socket head cap screw M12*100 (2PCS).
2. Once confirmed installation location, secure (top) lug underneath H-beam. Place one piece of (top) mounting plate above H-beam, pass hex bolt underneath (top) lug and through (top) mounting plate, and gently secure washer, spring washer, and Nyloc nut. Repeat the same procedure on opposite side. Apply anaerobic adhesives on all screws and tighten with 60NM torque. (See diagram 1) (Elevated operations)

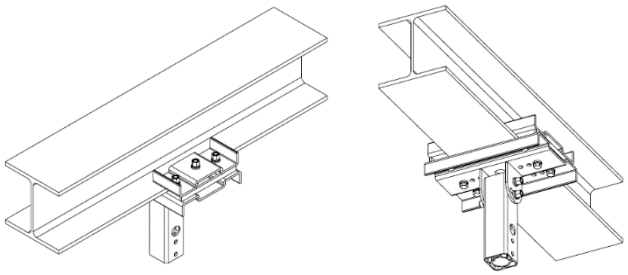
C. Caution

When working in elevated heights, ensure that safety helmet, safety vest, safety cable, and necessary safety accessories are equipped and approved for elevated operations.

D. Technical Drawing (Diagram 1)



Installation diagram of a completed unit:



● Rectangular Hollow Section (Optional)

A. Items required:

(Top) 2-Piece mounting plates*1,
(Top) Lug*1,
Extension rod*1,
Threaded rod (stud) M12 Washer,
Spring washer,
Nyloc nut
(Based on site specifications and requirements)

B. Installing Steps

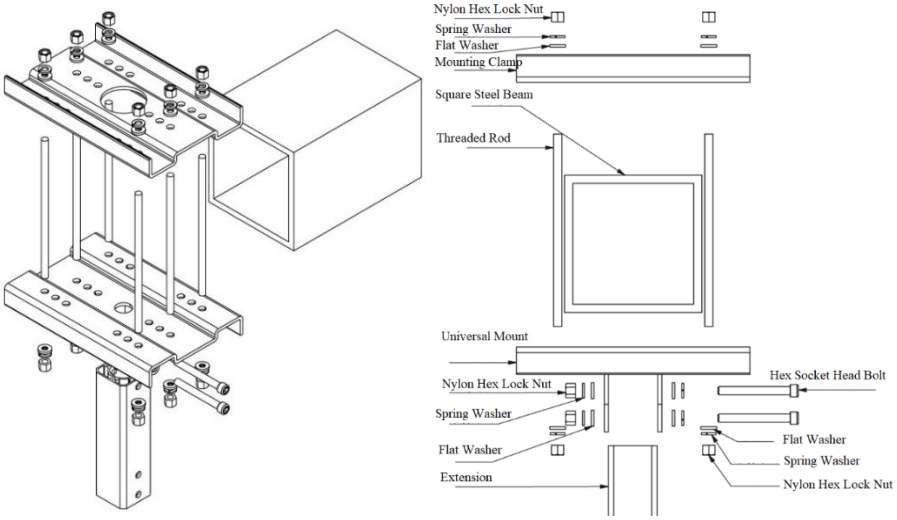
1. Insert extension rod into (top) lug and gently secure with hex socket head cap screw M12*100 (2 PCS).

2. Once confirmed installation location, secure (top) lug underneath rectangular hollow section. Pass threaded rod (stud) M12 under (top) lug through (top) mounting plate, and gently secure washer, spring washer, and Nyloc nut. Repeat the same procedure on opposite side. Apply anaerobic adhesives on all screws and tighten with 60NM torque. (See diagram 2) (Elevated operations)

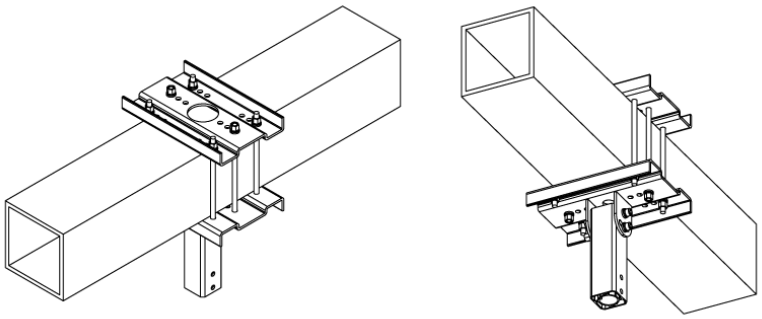
C. Caution

When working in elevated heights, ensure that safety helmet, safety vest, safety cable, and necessary safety accessories are equipped and approved for elevated operations.

D. Technical Drawing (Diagram 2)



E. Illustration diagram of a completed unit:



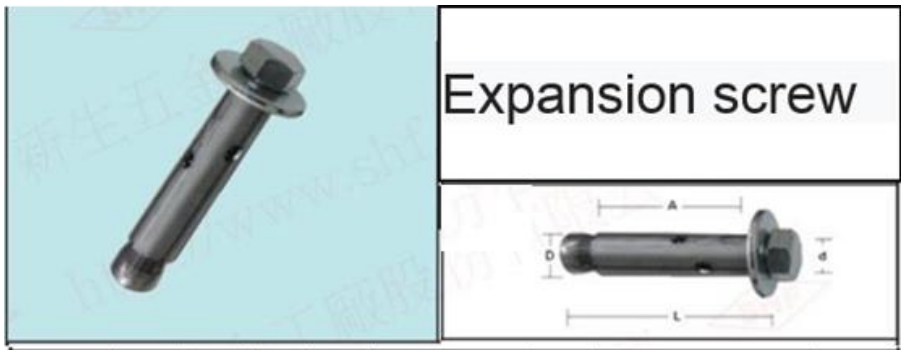
Concrete Beam (Optional)

A. Items required:

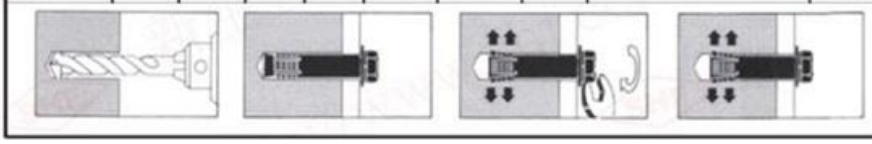
L-shape latch*2,
(Top) Lug*1,
Extension rod*1,
Expansion bolt (Not provided),
Washer,
Spring washer,
Nyloc nut,
Hex bolt
(Based on site specifications and requirements)

B. Installing Steps

1. Insert extension rod into (top) lug and gently secure with hex socket head cap screw M12*100 (2 PCS)
2. Once confirmed the location of L-plate, drill hole and insert expansion bolt 3/8" accordingly. Please refer to information about expansion bolt.



	d	D mm	L mm	A mm	Drillng Dia. mm	Drilling Depth mm	Fixture Thickness mm		
SHF325A	3/8"	12.5	50	40	12.7	50	6		:
SHF330A	3/8"	12.5	75	55	12.7	75	15		:

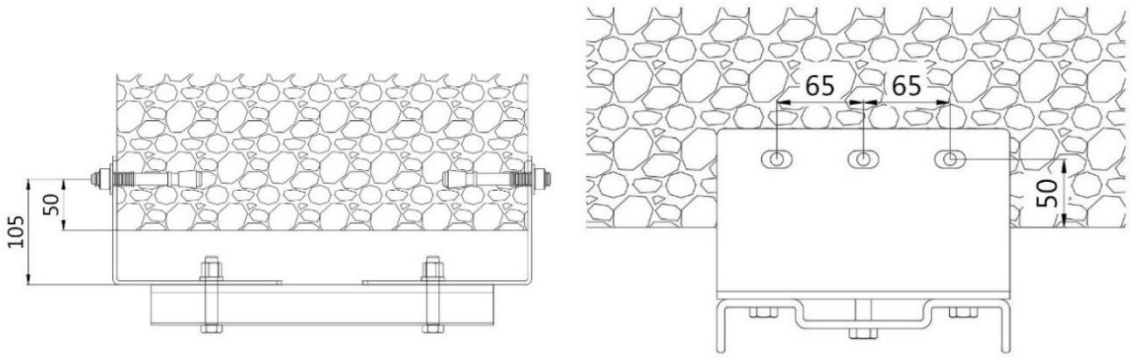


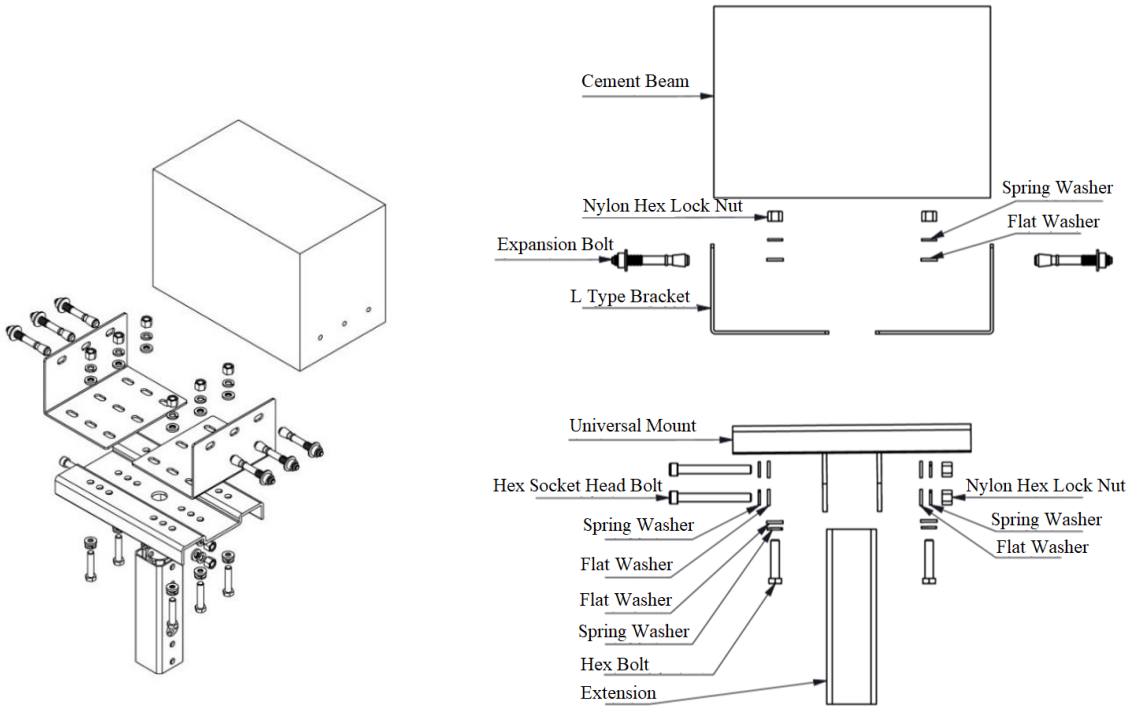
3. Place L-shape latch on side of beam and tighten with expansion bolts. Repeat the same procedure on opposite side. (Ensure that both sides are levelled). Secure (Top) Lug at base of L-shape latch and tighten with hex bolts. Apply anaerobic adhesives on all screws and tighten with 60NM Torque.
(Elevated operations) (Expansion bolt specification; hole diameter, hole depth)
(Refer to H-beam installation procedure)

C. Caution

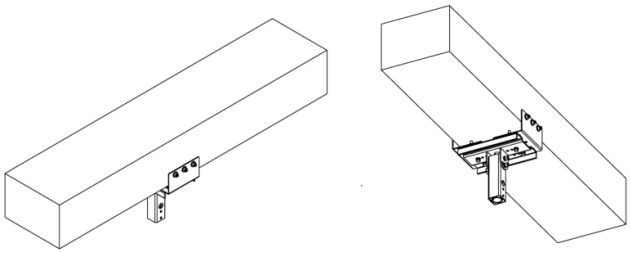
When working in elevated heights, ensure that safety helmet, safety vest, safety cable, and necessary safety accessories are equipped and approved for elevated operations.

D. Technical Drawing (L-shape latch drill hole positions) (Diagram 3) (Unit: mm)





E. Illustration diagram of a completed unit:



● Circular Hollow Section (Optional)

A. Items required:

U-shaped ring*3,
(Top) Lug*1,
Extension rod*1,
Washer,
Spring washer,
Nyloc nut.
(Based on site specifications and requirements)

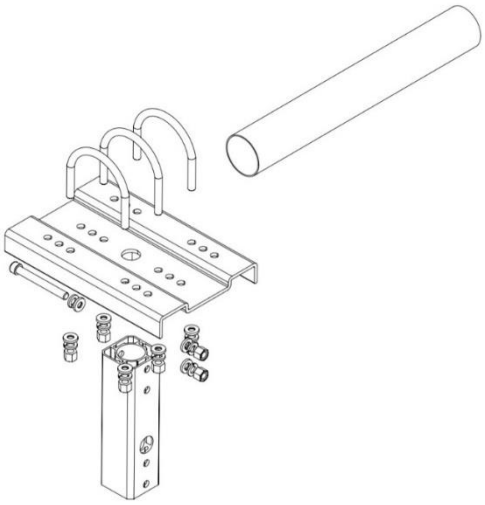
B. Installing Steps

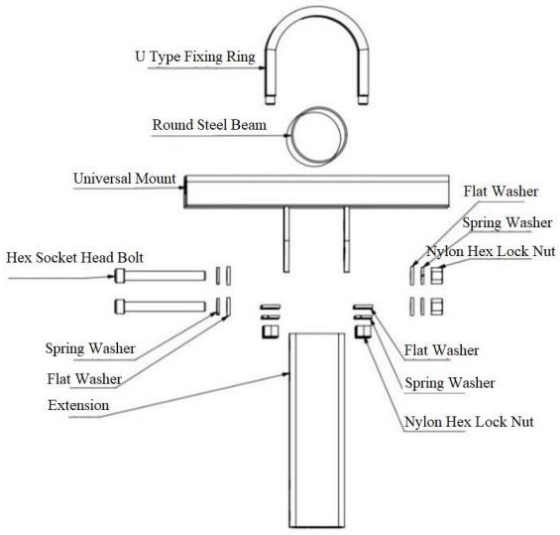
1. Insert extension rod into (top) lug and gently secure with hex socket head cap screw M12*100 (2 PCS)
2. Once confirmed installation location, secure (Top) lug with circular hollow section. Pass U-shaped ring through circular hollow section and fasten all screws on extension rod. Apply anaerobic adhesives on all screws and tighten with 60NM Torque. (Elevated operations).

C. Caution

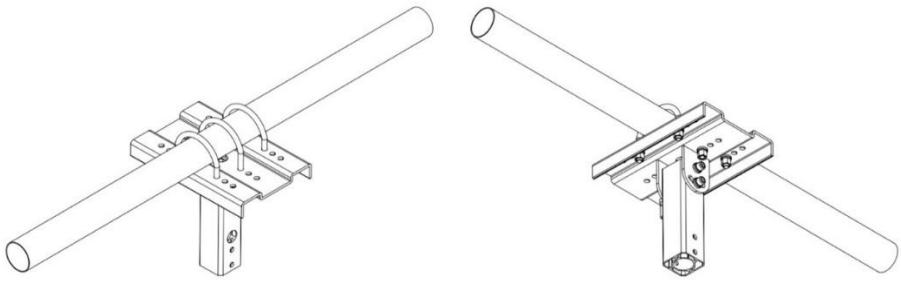
When working in elevated heights, ensure that safety helmet, safety vest, safety cable, and necessary safety accessories are equipped and approved for elevated operations.

D. Technical Drawing





E. Illustration diagram of a completed unit:



2. Installing the Motor: Fan Motor

A. Items required:

Extension rod*1,
(Triangular) Cable-bracing base*1,
Motor*1,
Hex socket head cap screw M12*80 (2 PCS),
M8*16 (4 PCS),
Nut, Washer, Spring washer M12 (2 PCS),
Turnbuckle 3/8 (4 PCS),
Wire rope clip/clamp 3/16 (18 PCS),
Wire rope support fixed mount (Optional; 4 PCS),
Galvanized Pipe (Optional; 2 PCS),
Stainless steel screw,
M8*30 (Not provided; 12 PCS),
Carabiner (Not provided; 4 PCS),
Expansion bolt and ring (Not provided; 4 SETS)

B. Installing Steps

1. At least two people are required to complete this procedure. Check that the unit is intact and free of abnormalities. Insert fan into extension rod, and place washers on both (Triangular) cable-bracing base located on both sides of the fixture. Insert hex socket head cap screw and tighten nut with 42.14 N/m torque. (Elevated operations). Reference Figure 4-1 and 4-2.
2. Wire rope installation:

- ***Applicable for H-beam structures (or as appropriate)***.

  Secure wire rope support fixed mount on H-beam (Figure 5-1), ensure that both sides are even then pass steel pipe through wire rope support fixed mount and lock accordingly (Figure 5-2). Use wire rope clamps on the cables (Figure 5-3). Pass one end of turnbuckle through (triangular) cable-bracing base, and the other end through cable ring (Figure 5-4). Use carabiner to clamp cable onto steel pipe (Figure 5-1), and use spirit level to measure with the extension rod perpendicular to the ground (Figure 5-5). Adjust and secure safety cable accordingly. Ensure both (triangular) cable-bracing bases are tightened with nut at 42.14 N/m torque. (Elevated operations). Repeat same procedure on three other cable installations. Alternatively, when unable to execute Figure 5-1, please proceed with the following options.

- ***When the installation structure is rectangular hollow section***.

  Use wire rope clams on the cables (Figure 5-3). Pass one end of turnbuckle through (triangular) cable-bracing base, and the other end through cable ring (Figure 5-4). If feasible, wrap the cable around the crossbeam and secure with wire rope clamps, or fasten the cable on the beam (structure). Use spirit level to measure with the extension rod perpendicular to the ground (Figure 5-5). Adjust and secure safety cable accordingly. Ensure both (triangular) cable-bracing bases are lightened with nut at 42.14 N/m Torque. (Elevated operations). Repeat same procedure on three other cable installations.

- **When the structure is concrete beam**.

Use wire rope clamps on the cables (Figure 5-3). Pass one end of turnbuckle through (triangular) cable-bracing base, and the other end through cable ring (Figure 5-4). Use expansion bolt and ring to fasten cable on concrete wall (Figure 5-6). Use spirit level to measure with the extension rod perpendicular to the ground (Figure 5-5). Adjust and secure safety cable accordingly. Ensure both (triangular) cable-bracing bases are tightened with nut at 42.14N/m torque. (Elevated operations). Repeat same procedure on three other cable installations.

- ***When the structure is circular hollow section***,

  Use wire rope clamps on the cables (Figure 5-3). Pass one end of turnbuckle through (triangular) cable-bracing base, and the other end through cable ring (Figure 5-4). If feasible, fasten cable on beam. Use spirit level to measure with the extension rod perpendicular to the ground (Figure 5-5). Adjust and secure safety cable accordingly. Ensure both (triangular) cable-bracing bases are tightened with nut at 42.14N/m torque. (Elevated operations). Repeat same procedure on three other cable installations.

C. Apply anaerobic adhesives on all screws (Elevated Operations)

Figure. 4-1

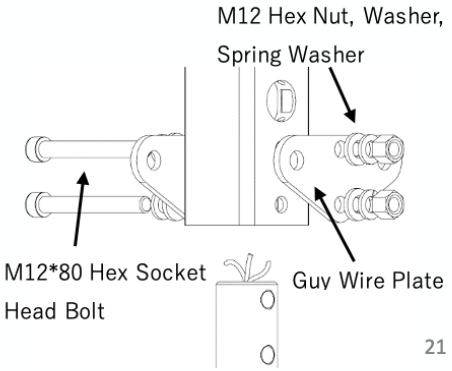


Figure. 4-2

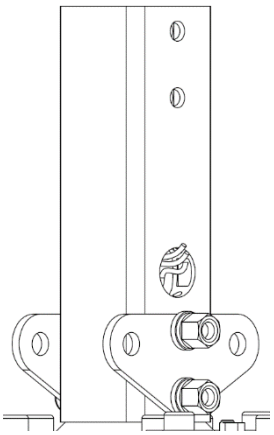


Figure. 5-1

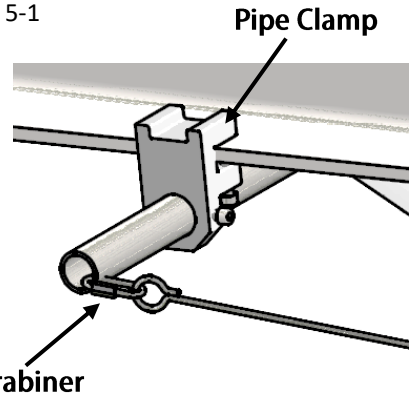


Figure. 5-2

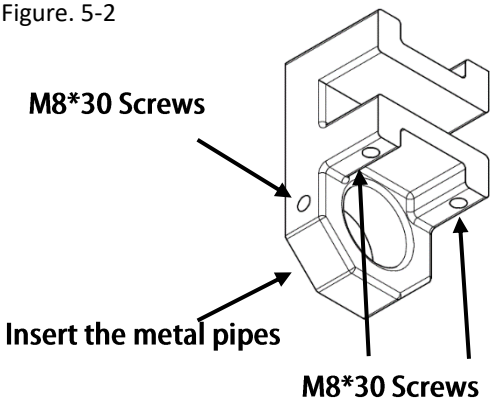


Figure. 5-3

Figure. 5-4

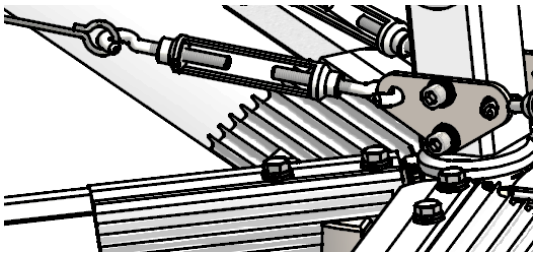
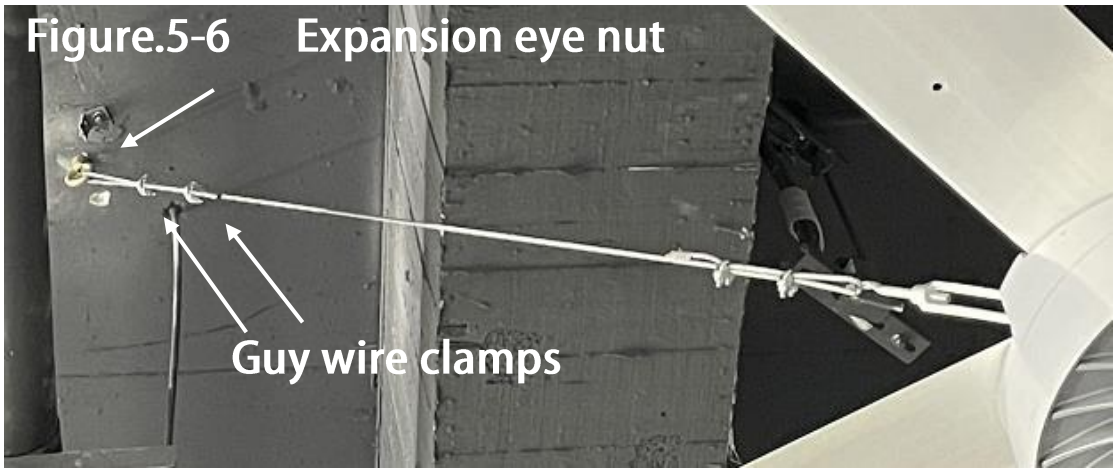


Figure. 5-5



3 . Installing the Fan Blades: Fan Blades Installation

A. Items required:

Fan blades*5,
Winglet*5,
Aluminum plate*5,
Aluminum plate padding*5,
Self-tapping screw M4*20 (10 PCS)

B. Installing Steps

1. Check that the unit is intact and free of abnormalities. Contact your dealer or manufacturer if the unit is damaged.
2. Secure winglet to edge of fan blade with self-tapping screw and tighten with 3.5N/m torque (Diagram 6). On technical drawing (Diagram 7) of elevated operations and fan unit, do not scratch surface of fan blade during installation. Apply anaerobic adhesives on all screws. Diagram 7 requires technical drawing. Instructions must be detailed. Components need screws.

Caution:

At least two people are required to complete this procedure. During installation, one person is required to support the edge of fan blade to prevent drop. Ensure to carry fan blade on both edges during maneuver and installation.

Ensure to allow at least 30cm of clearance space above and under the edge of fan blade. Ensure to allow a minimum of 1m of clearance space between edge of fan blade and nearest obstacle.

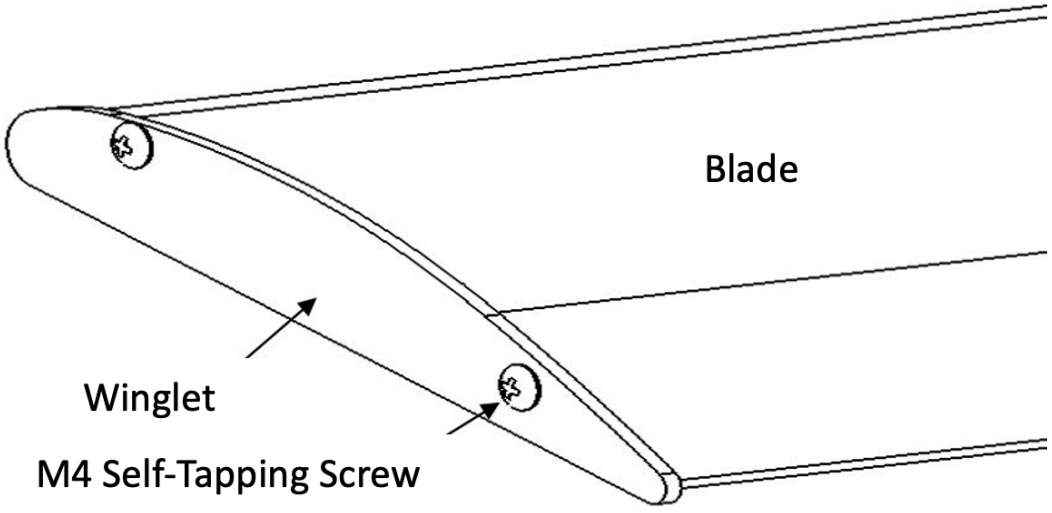


Diagram. 6

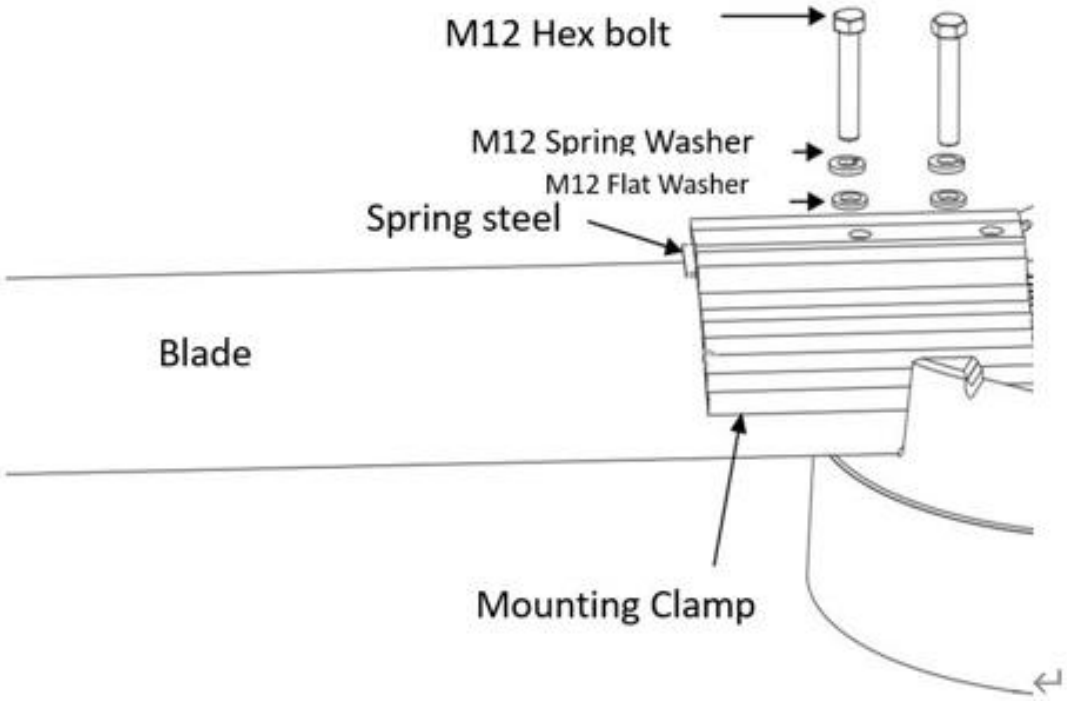


Diagram. 7

4. Installing the Electrical Wiring: Connection with the motor and establish circuit systems

A. Items required:

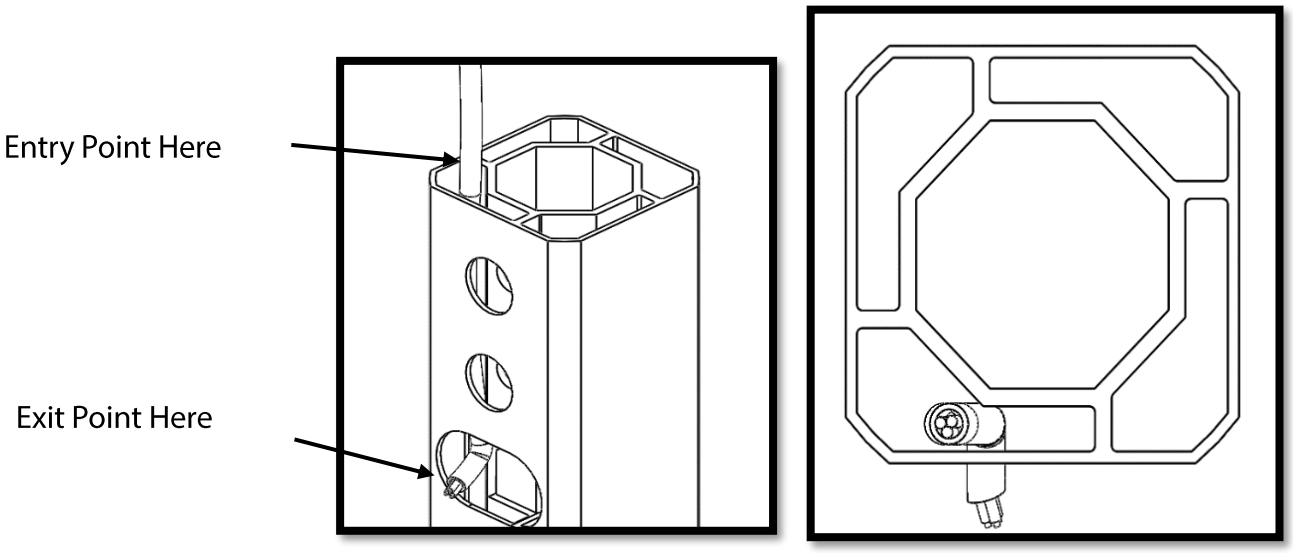
Electrical wiring,
Wire clip,
Electrical tape,
O Connector

B. Installing Steps

Do not cut copper wire when stripping. Match the wire colors on fan unit and connect via Euro block. Ensure to organize wiring neatly and tidily. One wire clip is required every 1.5m. (Ground and elevated operations).

C. Caution

- Wire connections must match the SAME COLOR (e.g., Yellow to yellow, red to red, etc.);
- Use electrical tape to protect electrical wiring connections and conceal them inside fan unit to prevent short circuit or any anomaly.
- Please refer to the diagram below for instructions on passing electrical wiring through the extension rod. Ensure the electrical circuit avoids contacting any screws.



5 . Installing the Control Unit: Preparation, Installation, and Testing

A. Items required:

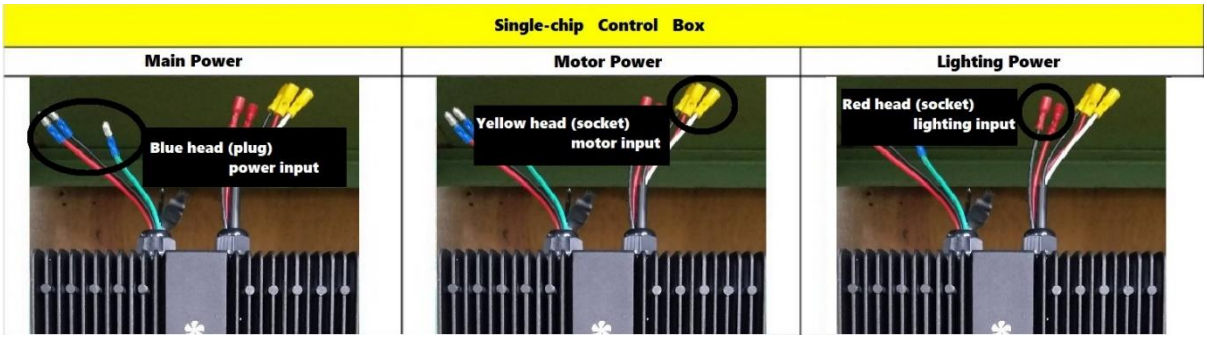
Control unit,
Spirit level,
Drilling machine,
Multimeter

B. Installing Steps

1. Install and secure control unit on wall. Use spirit level to mark and drill hole accurately.
2. Stripping electrical wiring and connection to control unit, and color-match connections.
3. Use multimeter to commence testing. Switch ON circuit breaker and turn ON fan unit. The positive rotation should be ANTI-CLOCKWISE. Allow the unit to operate for at least 15 minutes. Observe and listen for any anomalous sounds. Check that the current is within safe and standard ranges, and ensure that there is adequate clearance space between the edges of the fan and nearest obstacles. (Ensure to allow at least 30cm of clearance space above and under the edge of fan blade. Ensure to allow a minimum of 1m of clearance space between edge of fan blade and nearest obstacle).

C. Caution

Please refer to Installation Guide regarding electrical wiring connections for different settings.



Control Unit Error Signals

Drive board protection	Protection instructions	Checks & Troubleshooting
Hardware overcurrent protection	If the secondary side current exceeds 20A, the unit will enter permanent standby mode and will need to be re-powered in order to reset.	Contact your dealer or manufacturer.
Phase failure protection	If the secondary side encounters an open circuit during operation, the unit will enter permanent standby mode and will need to be re-powered in order to reset.	Double check whether the motor wiring is intact or has bad wire connection.
Overheating protection	The unit will enter standby mode if the temperature exceeds 80°C (= 176°F). The unit will return to operable state once its temperature lowers to 60°C (= 140°F) or under.	If the control unit's temperature is slightly elevated, allow it to cool down for several minutes before turning it back on again.
Current-blocking protection	If the current-blocking protection is activated more than FIVE times, the unit will enter permanent standby mode and will need to be re-powered in order to reset.	Check for interference at motor end load.
Overvoltage protection	The unit will enter standby mode at 130/260VAC overvoltage protection. The unit system will reset once it reaches below 250VAC.	Conduct voltage testing.
Undervoltage protection	The unit will enter standby mode at 90/180VAC overvoltage protection. The unit system will reset once it reaches above 185VAC.	Conduct voltage testing.
AC Primary-side power system protection	The unit will enter standby mode if the primary-side power system is interrupted. The unit system will reset once the primary-side power system is stable.	Conduct voltage testing.

Operating Conditions

Environment	Conditions
Installation Site	**Indoor**
Environmental Temperature	**0~40°C (= 32~104°F)** To increase product reliability, please refrain from using this product where temperature fluctuation is high
Humidity	**Below 95%RH**
Environment	**Avoid corrosive chemicals and/or flammable gas**
Altitude	**Below 1000m**

- **Site preparation: organize and tidy the environment**

Check and pack up all tools. Ensure environment is neat and tidy.

Operating Instructions

Please read manual carefully before operating the unit. Clear all obstacles in the vicinity of the unit to ensure safe distances and efficient ventilation.

WARNING: Disconnect all power before maintenance. All maintenance operations are to be conducted by authorized technicians only.

Control unit - Reference

(I) Power button: Turns the unit ON/OFF

1. Ensure that there are no obstacles or potential hazards in the operating space.
2. Check mains electricity and unit specification are compatible.
3. Ensure that the fan speed dial is set on slow (speed dial pointing towards bottom left)
4. Press Power Button to start the unit.
5. To turn OFF the unit when it is on, press Power Button.
6. Do not disconnect power supply when unit is operating. Turn ON or turn OFF the unit by pressing Power Button only.
7. Do not turn ON unit until the fan blades have completely stopped.

(2) LED Light button: Turns the light ON/OFF

1. Press LED Light button to turn ON light.
2. To turn OFF light when it is on, press LED Light button.
3. Light can be turned ON simply by pressing LED Light button (i.e., The Power button does not need to be turned ON).

(3) Speed control: Fan speed dial

1. Fan speed is adjustable only AFTER the unit has been turned ON for at least TWO minutes, otherwise it may come to an emergency stop.
2. After TWO minutes of operation, user can adjust fan speed.

Warranty & Repair

AMA Tech will ensure to replace any defective part (s), component (s), unit (s) within 7~21 working days from the arrival date as per the freight forwarder's shipping details. The terms and conditions are as follow:

1.1Return Merchandise Packaging:

A "Re-packaging fee" will be incurred if the contents are not returned in its original packaging.

1.2 Dead on Arrival（DOA）:

1.2.1 Units are deemed DOA if the defect (s) are not the result of improper operation, damage during freight transport, or unauthorized repair.

1.2.2 AMA Tech has full authority to determine whether a defect is of natural causes, misuse, unauthorized modification or repair, or external forces (e.g., power interference, motor failure, improper installation, incorrect wire connection, etc...) at our discretion. These cases or alike shall be processed as standard unit maintenance service cases, and abide by the procedures pertaining to as such.

1.3 Freight Charge:

1.3.1 If the goods are deemed DOA, AMA Tech will arrange and cover the two-way freight charge.

1.3.2 If the defect is not deemed DOA, it shall be processed as standard unit maintenance service and repair, thus, standard charges will apply, and the two-way freight charges are to be covered by the dealer/buyer.

1.4 Maintenance Fee:

An invoice will be issued in advance to the dealer/buyer should such service be required.