

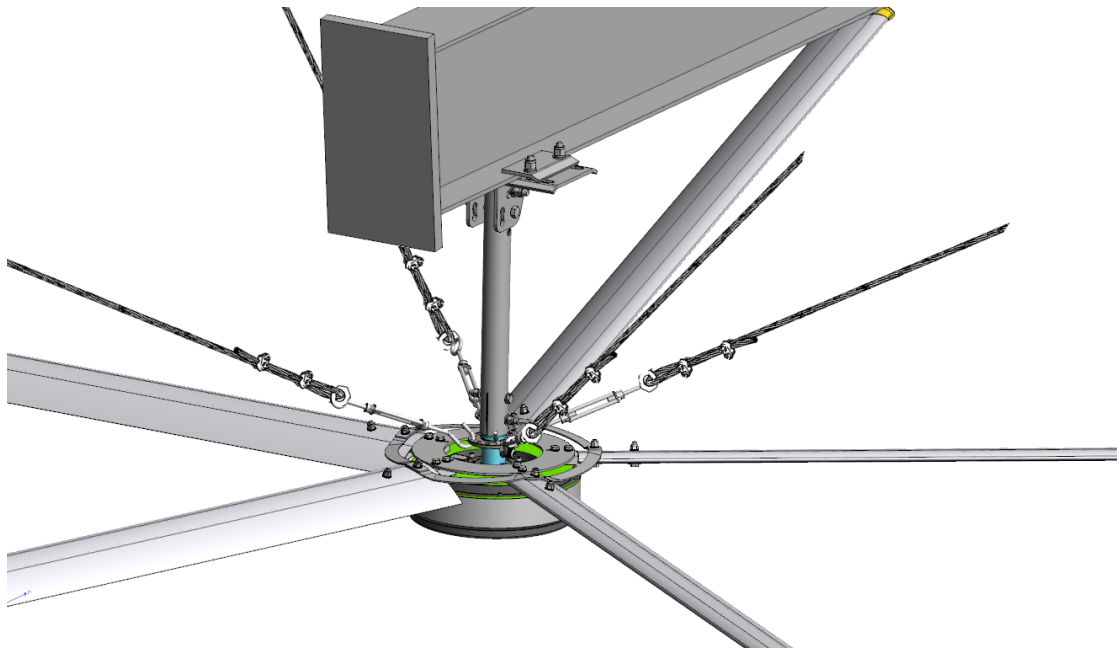
# **GAIA FANS**

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User Manual

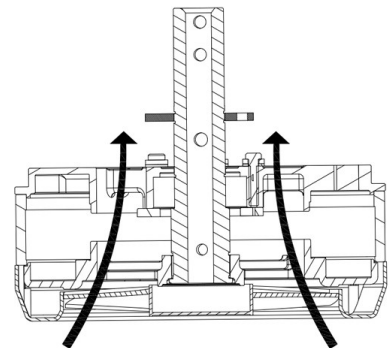
## Preface

Thank you and congratulations for purchasing GAIA GF series large fans. Now you have an efficient and affordable ventilation solution. We combined GAIA's industry-leading permanent magnet synchronous direct drive motor with modern aviation wing technology to bring you the best experience. Slowly rotating large-size fan blades drive the air to flow in all directions and generate a large area of natural circulation wind. The airflow accelerates the evaporation rate of sweat on the human body surface, dries and eliminates the temperature gradient. Intermittent wind pressure, strict noise control, creating a comfortable enjoyment of cool wind and night cicadas, and at the same time has the dual effects of ventilation and cooling. Compared with traditional HVAC or small high-speed fans or asynchronous motors with gearboxes, our products have the advantages of energy saving, quietness, beauty, large coverage, maintenance-free, long service life and so on.



The main features of GAIA PMSM HVLS fan:

1. The high-efficiency permanent magnet direct drive motor with GAIA driver's own core technology has the largest drive current (1.8kW/2.4HP, 220V 3Phase 60Hz current more than 3.4A ) and torque among products in the market.
2. Small installation height , no need to regularly add lubricating oil , maintenance-free , no gearbox , no jitter , noiseless .
3. Original wheel hub structure , forced air cooling inside the stator, low temperature rise. So that the motor does not burn, never demagnetizes, and has a long life.
4. Step shaft design . The weight of the system is entirely borne by the shaft, which is safe and reliable .



## Installation Check list

Item 1 The building structure is suitable for fan installation or approved by the structural engineer .

Please use the standard bracket to hang the fan on the angle iron or I-beam installed on the beam. Do not install the fan on a single purlin, truss or beam. For installation methods not mentioned in this manual, please consult the installation engineer. The installation structure must be able to bear the load generated by the fan's own weight and the torque generated by the fan's working. .

Item 2 Confirm that the installer is familiar with the functions of various installation equipment such as the climbing car, and promise that the fan will be installed by the installer with corresponding professional knowledge.

Item 3 Clearances

After installed, there should be a space of 8.2 feet (or according to local regulations) or more from the ground to the lowest position of the fan. The clearance between airfoil members and obstacles or building structures at any position shall be at least 9.84 inches. Make sure that the fan is not affected by strong winds, usually from the HVAC system or other external equipment. If multiple fans need to be installed to form an array, the distance between the centers of each fan should not be less than 2.5 times the maximum fan diameter in the array.

Item 4 Electrical

The power supply shall be safely wired to the fan installation location and comply with local regulations. Refer to the Power Supply Guide for power circuit requirements and power wiring guidelines.

Item 5 Confirm to use the installation parts attached with this product

Check the parts list after unpacking. If there is any shortage, please contact the local dealer. Use the attached anchor wire to properly fix the fan during installation. The third party parts shall not be used without the written permission of our company.

Read and clarify the meaning of the following signs

### WARNING AND CAUTION SYMBOL



Indicates a hazard with a medium level of risk that could result in injury or death or damage to property if not avoided.

### ELECTRICAL WARNING SYMBOL



Indicates an electrical hazard with a medium level of risk that could result in death or serious injury if not avoided.

### ATTENTION SYMBOL



Indicates information critical to installation that should be read before proceeding.

Or indicates the torque specifications for the hardware in an installation step.



## WARNING

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

1. Disconnect power to the installation locations before installing the fan and controller!
2. Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction. Incorrect assembly can cause electric shock or damage the motor and the controller.
3. Installation must be in accordance with the requirements set forth by the National Electrical Code (NEC), ANSI/NFPA 70, and all national and local codes
4. The fan should NOT be installed unless the structure on which it is to be mounted is of sound construction, undamaged, and capable of supporting the load of the fan and its method of mounting. A structural engineer should verify the structure is adequate prior to installation. Verifying the stability of the mounting structure is the sole responsibility of the customer and/or end user, and GAIA Fans hereby expressly disclaims any liability arising therefrom, or arising from the use of any materials or hardware other than those supplied by GAIA Fans or otherwise specified in these installation instructions.
5. The fan must be installed with parts that are marked (on their cartons) to indicate suitability with this model. Other similar parts can not be substituted.
6. To reduce the risk of fire, electric shock, and injury to persons, GAIA Fans must be installed with GAIA Fans-supplied controllers. Other parts can not be substituted.
7. When service or replacement of a fan component requires the removal or disconnection of a safety device, the safety device is to be reinstalled or remounted as previously installed.
8. Ensure there are no persons below the fan during installation.
9. When cutting or drilling into a wall or ceiling, do not damage electrical wiring and other hidden utilities.
10. This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
11. Risk of fire, electric shock, or injury to persons during cleaning and user maintenance. Disconnect the appliance from the power supply before servicing.
12. Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means can not be locked, securely fasten a prominent warning device, such as a tag, to the service panel.
13. The fan VFD contains high voltage capacitors which take time to discharge after removal of mains supply. Before working on the VFD, ensure isolation of main supply from line inputs L1/L2/L3/N at the VFD or fan controller's disconnect. Wait three minutes for capacitors to discharge to safe voltage levels. Failure to do so may result in personal injury or death. Darkened display LEDs are not an indication of safe voltage levels.
14. Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
15. If unusual oscillating movement is observed, immediately stop using the ceiling fan and contact the manufacturer, its service agent, or suitably qualified persons.



## CAUTIONS

### **TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:**

1. The main fan unit is heavy. Use caution when raising it. A suitable means for lifting the weight of the fan, such as a scissor lift, and at least two installation personnel will be required.
2. The installation of this fan requires the use of some power tools. Follow the safety procedures found in the owner's manual for each of these tools and do not use them for purposes other than those intended by the manufacturer.
3. Do not bend the airfoils when installing, servicing, or cleaning the fan. Do not insert foreign objects between rotating airfoils.
4. Mounting of the suspension system and replacement of parts of the safety suspension system shall be performed by the manufacturer, its service agent, or suitably qualified persons.
5. Do not operate any fan with a damaged cord or plug. Discard fan or return to an authorized service facility for examination and/or repair.
6. The GAIA Driver product warranty will not cover equipment damage or failure that is caused by improper installation or use.
7. The following information is merely a guide for proper installation. GAIA Driver can not assume responsibility for the compliance or non-compliance to any code, national, local, or otherwise for the proper installation of these fan controllers, fans, or associated equipment.

## Product Specification Sheet

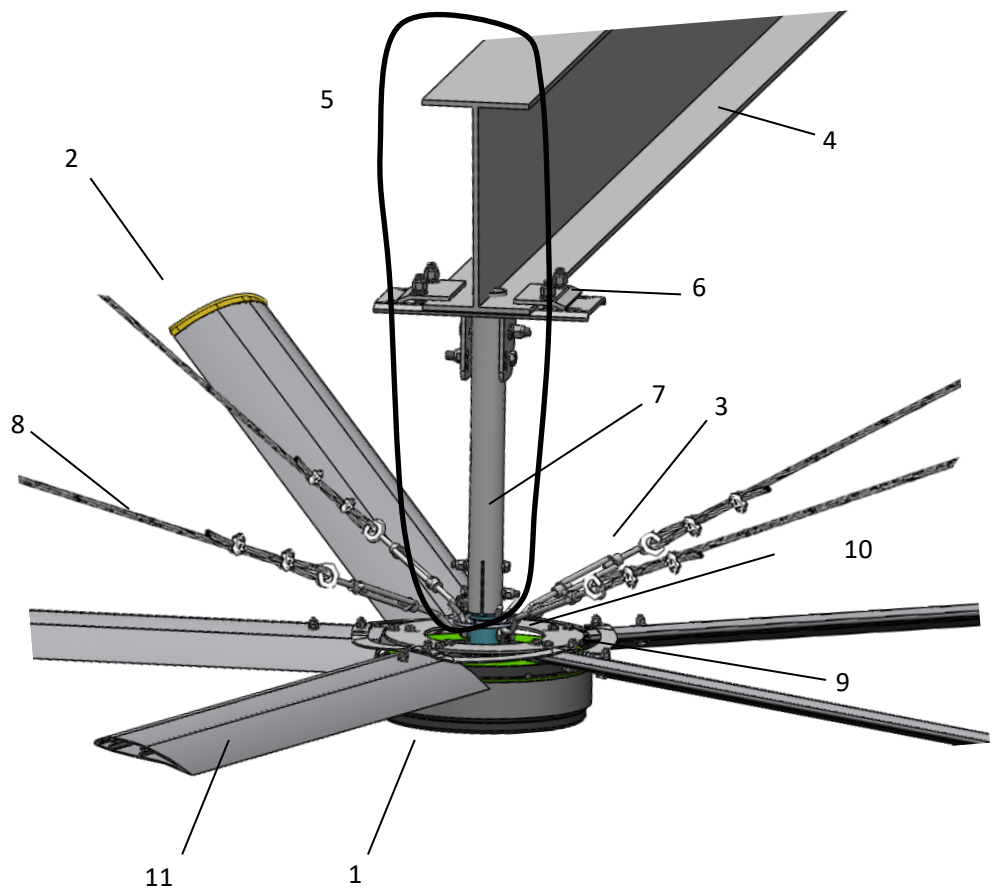
Technical Specifications	16ft(4.9m)	18ft (5.5m)	20ft (6.1m)	24ft (7.3m)	24ft (7.3m)
Model	GF4935	GF5535	GF6135	GF7335	GF7336
Blades Quantity	5	5	5	5	6
Air disp.@Max speed	300,172c.f./min	370804c.f./min	423776c.f./min	512063c.f./min	565035c.f./min
Maximum speed	0~75rpm	0~66rpm	0~60rpm	0~57rpm	0~55rpm
Fan Weight	176lb	189lb	220lb	227lb	253lb
Motor Power	1HP/0.75Kw	1HP/0.75Kw	2HP/1.5Kw	2HP/1.5Kw	2.4HP/1.8Kw
Full Load amps	1.8Amps/220V	1.8Amps/220V	2.8Amps/220V	3.0Amps/220V	3.4Amps/220V

### Description

1. Weight : The product weight does not include the control box, upper connecting brackets, etc.
2. Dimensions :The product dimensions listed above are standard products, and other specifications and dimensions can be customized.
3. Noise : The sound level meter is 1m away from the motor, and the noise is below 40dB (A)
4. Package : Standard wooden box
5. Input : Three phase 220V  
(220V 50Hz/60Hz)

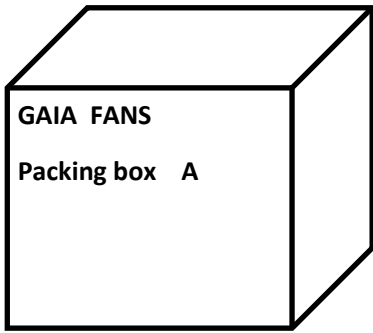
### Product Structure Diagram

- 1-Electric Motor Assembly
- 2-Tail
- 3-Turnbuckle
- 4-I Beam
- 5-Upper Safety Cable
- 6-Mount Brackets
- 7-Extension Tube
- 8-Lower Safety Cable
- 9-Airfoil Retainers
- 10-Safety ring
- 11-Blades



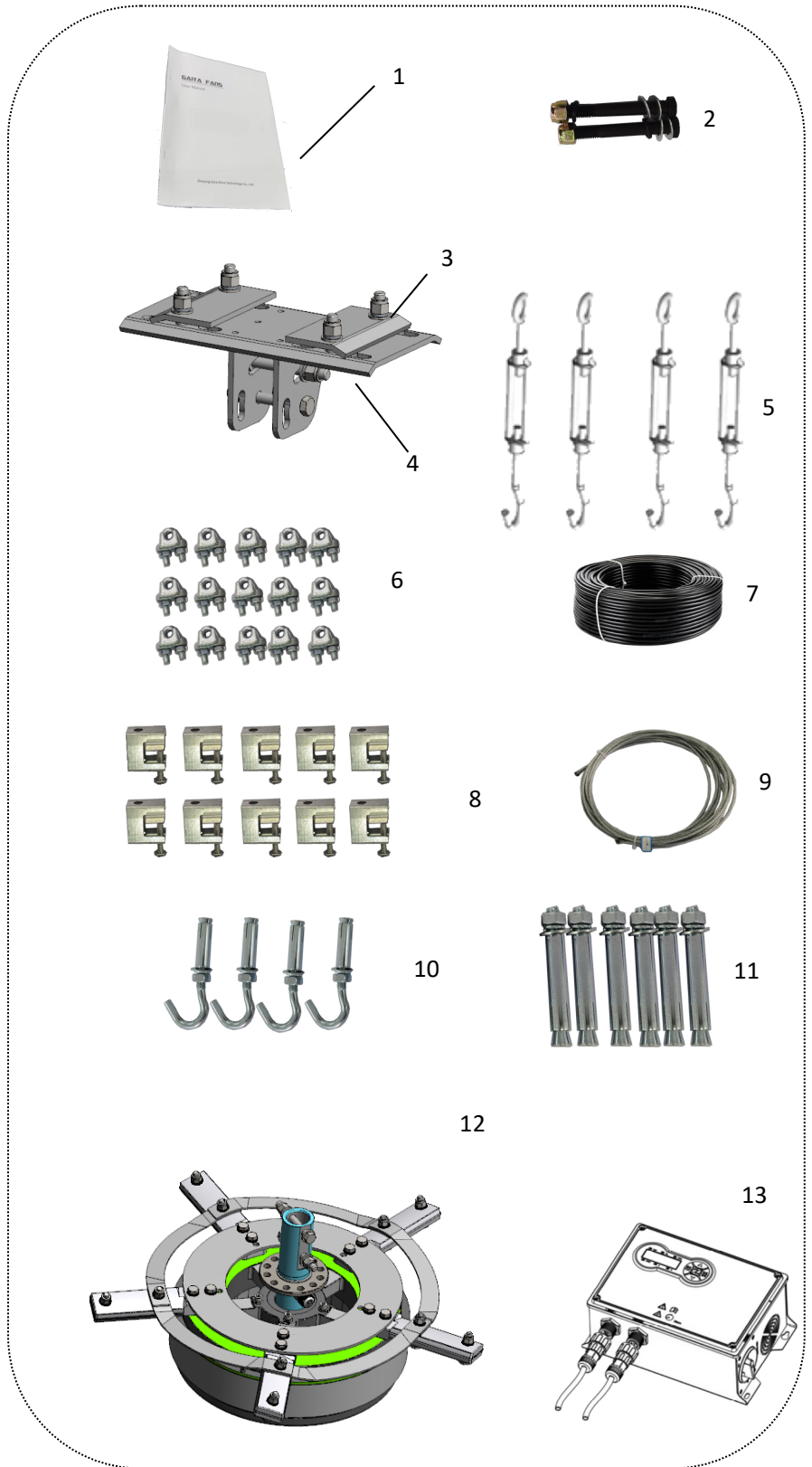
# Packing list

## 1、Box A



### Box A packing list

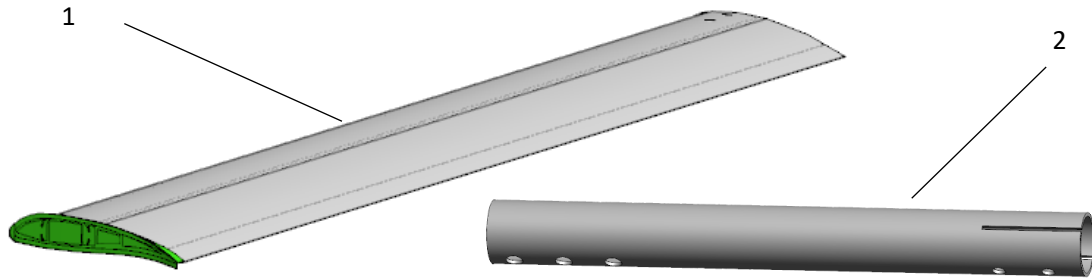
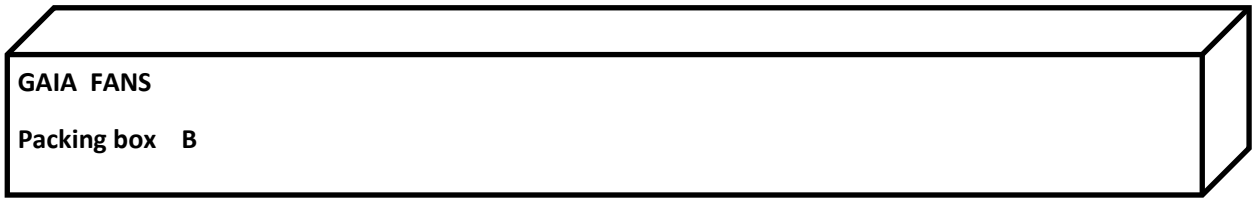
No.	Description
1	Manual
2	Extensong Tube Bolt
3	Flat Baskets
4	York Baskets
5	Turnbuckle
6	U-type wire fastener
7	Power Cable
8	Cable Fixing Baskets
9	Upper & Lower Safety Cable
10	Expension Anchors for use in concrete- hook type
11	Expension Anchors for use in concrete
12	Electric Motor Assembly
13	Control Box
14	Flexible metal conduit
15	Latch
16	Expansion pipe
17	Drywall Screw
18	Insulating tape



Case No.	External dimensions (Inch) L*W*H	Volume c.f.	Gross weight lb	Remark
A				

# Packing list

## 1、 Box B



## Descriiption

No.	Description
1	Blades
2	Extension Tube

## Packing specification

Case No.	External dimensions ( Inch) L*W*H	Volume c.f.	Gross weight lb	Remark
B				



When installing multiple fans, it is important to avoid mixing and matching fan components.



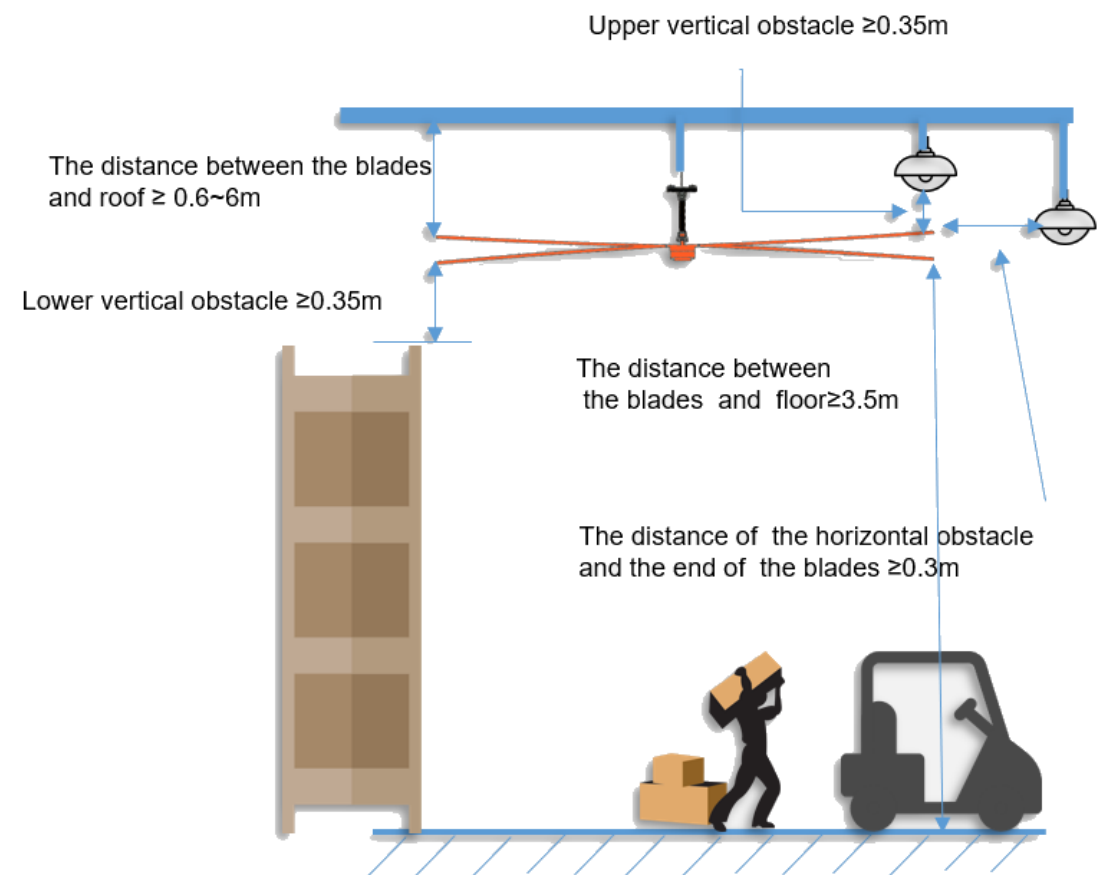
**TOOLS AND EQUIPMENT**

A suitable means for lifting the weight of the fan, such as a scissor lift or scaffolding, at least two personnel, and the following tools will be needed. Depending on your application, additional tools may be required.

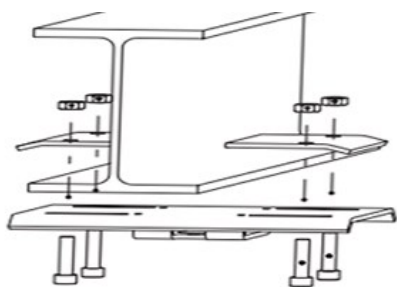
			
<p>Standard socket set and ratchet</p>	<p>Churn drill &amp; power wrench (10/16/18/24)</p>	<p>Cross screwdriver</p>	<p>External hexagonal wrench</p>
			
<p>Gradiometer</p>	<p>Vice</p>	<p>Avometer</p>	<p>Perambulator</p>
			
<p>Wire pliers</p>	<p>Safety helmet</p>	<p>Safety belt</p>	<p>Height lifting equipment Scissor lift or Scaffolding</p>

# Installation conditions and methods

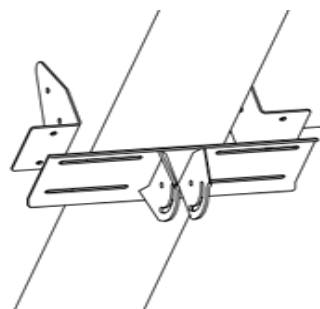
## 1、 Clearance Installation diagram



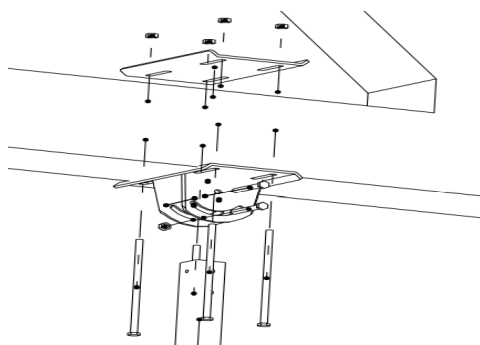
## 2、 Schematic diagram of installation for different occasions .



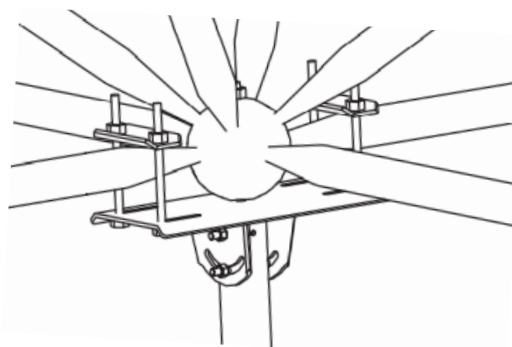
I-beam steel structure



Concrete structure



Bent structure



Tubular structure

## Installation process

Preparation before installation Confirm that all tools, climbing equipment and safety measures (safety belts, helmets, etc.) are in place, and the number and model of product parts are correct.

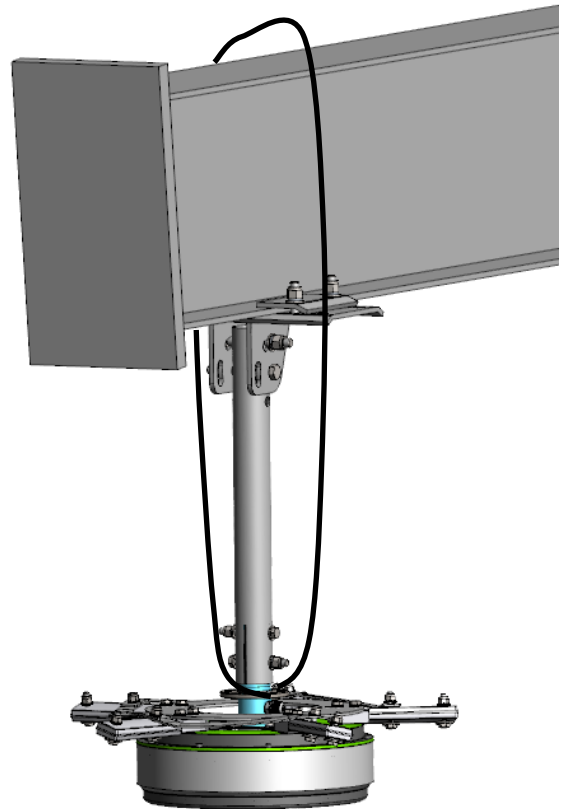
Site investigation Confirm the following information: 1. Installation position and height of fan 2. Whether there are obstacles (such as traveling crane, lighting lamp, cable, fire protection, camera, etc.) 3. Location of control box 4. Layout of power supply and power cable 5. Hoisting position of safety cable

Fasten baskets The yolk baskets and the beam shall be horizontal and vertical, and the flat baskets shall be completely combined with the I-beam. Other fixed installation methods shall meet the same standards.

Install extension tube Use a Perambulator to measure and ensure that the extension tube is 90 degrees perpendicular to the horizontal line.

Install Motor Assembly Use a Perambulator to measure and ensure that the upper or lower plane of the motor should be horizontal

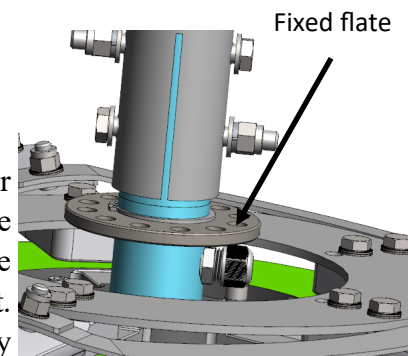
Secure upper safety cable Pay attention to the safety wire rope should be pass through at least one hole in the fixed plate of the motor and be wrapped on the bearing beam. Make sure that even if the extension tube or basket is loosened with screws, the motor will not fall.



Connecting the power cable

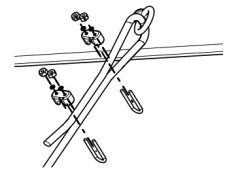
### Cautions:

1. The cable shall not be scratched and the copper wire shall not be cut. 2. The motor UVW line and the ground wire (yellow green line) shall be connected correctly and shall be in good contact. 3. The power cable to the motor shall be properly tied to the extension tube and the motor fixed plate, and shall not pass through or be tied to any rotatable part, so as to avoid breaking the cable when the fan is running, causing a safety accident



Secure lower safety cable

When connecting the safety cable, ensure that the four cables are symmetrical and evenly stressed at equal distance, and ensure that the U-type wire fastener and Turnbuckle are fastened.

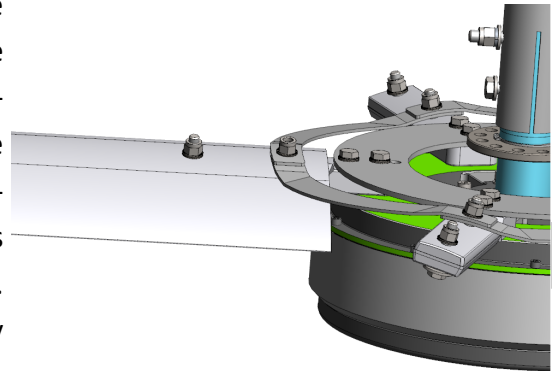


Layout Power Cable

Ensure that the power cable and motor U/V/W are well connected and comply with safety regulations.

Install blades

Two persons cooperate. One person aim at the plug-in on the motor at the front, and the other person lift the fan blade at the back to help insert it horizontally. The surface of the airfoils should be free of scratches. After installing a airfoil, manually rotate the motor to the opposite side, install diagonal one, and so on. The fastening screws and lock washers on the fan blades must be fastened in place.



Check all fasteners

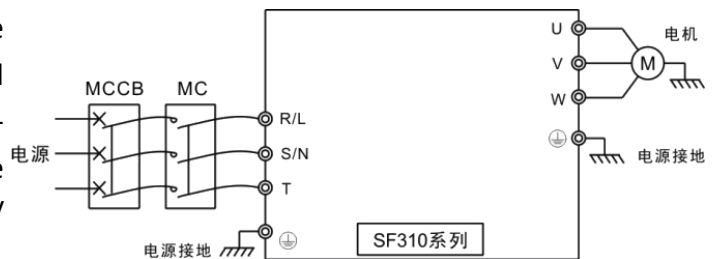
Recheck all fasteners in the following order: all fasteners on the basket>all fasteners on the extension tube>all fasteners on the motor for installing the blade plug-in>all fasteners on the airfoils>all fasteners on the safety cable. Confirm that the motor is horizontal again。 It is very important

Check power cable

Recheck that the connection between the motor U/V/W and power cable are reliable and free of skin damage. After that, finish the lifting operation and remove the lifting equipment.

Install control box

The control box is 45"~55" away from the ground. The control box shall be reliably fixed on the wall or column, and the shell shall be reliably grounded. The power input and U/V/W output of the control box must be connected correctly, otherwise the inverter will be burnt!



Test running

All the screws of the R/S/T and grounding power line terminals of the power supply box , the R/S/T input , U/V/W output terminals and grounding terminal of the fan control box must be tightened reliably and contacted with the wire effectively. No any virtual connection allowed, otherwise the terminal will be burned or the controller and motor will be damaged!

The customer confirms the acceptance and the installation is completed

Clean the installation site Reconfirm that there are no missing components. Deliver the manual and certificates, explain the use methods and precautions to the customer, and the customer signs.

## Control system panel and display description

- 1、 Connect the supplied aviation plugs sockets to the input and output cables. Insert it according to the silk screen mark on the machine.



2. Instructions for the use of power cut-off switch for industrial fan all-in-one machine. The industrial fan all-in-one machine controls the power supply of the all-in-one machine through the red power cut-off switch on the right (as shown in the figure). When the power switch points to "ON", the machine is powered on; when the power switch points to "OFF", the machine is powered off. This switch has load arc extinguishing capability, but it does not support frequent power cut off under load. If the user wants to turn off the power, please turn the speed control knob on the panel to the "OFF" scale and waiting the motor stop and then cut off the power.◦

### Industrial fan all-in-one machine keyboard menu button function and keyboard operation mode

- ① Press the "MODE" button to display the current, speed, inverter bus voltage and other operating status information in turn.
  - Press the "Start/Stop" button to start or stop the fan operation. Press the "^" key to increase the operating speed, and press the "V" key to decrease the operating speed.
  - After reporting a fault, after confirming that the cause of the fault has been eliminated, click the "Start/Stop" button, and the fault code disappears.

#### 4、 Error code

Error code	Error Description	Error code	Error Description
E. OC1	Overcurrent during acceleration	E.CUr	Current detection error
E. OC2	Overcurrent during deceleration	E. LU	Undervoltage during operation
E.OC3	Overcurrent during operation	E.OH	Inverter overheating
E.OC4	Software Overcurrent	E.SP0	Output phase loss
E.OU1	Overvoltage during acceleration	E.EEP	Output phase loss
E.OU2	Overvoltage during deceleration	E.485	RS485 communication failure
E.OU3	Overvoltage during operation	E.doG	interference
E.OL1	Inverter overload	E.OC5	Hardware overcurrent circuit failure
E.OL2	Motor overload		

#### 5、 Safety Operating



Cautions: Before operating the device, please read the manual carefully, and remove obstacles in the operating area to ensure that there is an enough safe distance for the fan to working.

Warning: Before doing any electrical and fan maintenance, make sure to turn off the power



first, and have it operated by a professional to avoid electric shock ! ! !

##### Start up

Confirm that there are no obstacles and potential dangers in the fan working space.

Confirm power supply meet the requirements.

Confirm the fan is stopped

Press the "Start/Stop" button to start the fan.

After the fan starts, adjust the speed with the up and down keys to achieve the best effect

##### Stop

1、 Press the "Start/Stop" button to stop the fan

2、 When the fan is running normally, power-off is prohibited



Warning

Installation and circuit wiring work must be carried out by professionally qualified personnel. Please use the parts specified by our company. Do not cut off the power supply when the fan is running, otherwise it will cause damage to the fan.

The power should be turned off with the fan completely stopped.



## Safety Precautions

Do not bend the fan blades when installing, adjusting, or cleaning the fan, otherwise it will damage the device or affect the effort of the device. Before powering on, please confirm whether the input voltage of the fan is consistent with the power supply voltage. Do not carry out maintenance work when the power is turned on to prevent electric shock. Do not modify the structure and installation position of the fan without authorization. Do not open the electrical control box when powered on, otherwise there will be a risk of electric shock. Do not operate the damaged equipment, otherwise it will bring unexpected and serious consequences. Do not change the structure or modify the parameters of the controller, otherwise it may cause equipment damage or unexpected accidents. Do not run with insufficient fan safety clearance. Do not work within the range of the fan working space, please check whether there are obstacles before starting the machine. Wait three minutes after disconnecting before servicing!

## Troubleshooting

### Common Causes of Fans Not Operating Properly:

#### Invalid power supply

It is in an abnormal state after the previous operation. The controller must reset first. After confirming that the cause of the fault has been eliminated, click "Start/Stop" button, so the fault code disappears. Press the "Start/Stop" button to start the fan

2, If the fan still does not run, please check whether the speed command is at the minimum (the frequency command is 0 or close to 0). If it still cannot be turned on, please contact Zhejiang Gaiya Drive Technology Co., Ltd. Non-professionals should not open the electrical control box. For maintenance or adjustment, please contact GAIA Drive Technology Co., Ltd. If you find that the equipment is damaged or abnormal sound, etc., please stop the operation as soon as possible, cut off the power supply, and contact our company's after-sales service department.

## Product technical support

### Conditions

environment	conditions
installation site	Indoor
Temperature	14°F~122 °F derating above 104°F
Humidity	5%-85% (95% no dewfall)
environment	free of corrosive gases and flammable gases No particles entering the controller housing less salt corrosion
Sea level elevation	5280Inch derating above 5280Inc

### Quality assurance

The quality guarantee period is calculated from the date of final acceptance. If there are still quality problems that have not been rectified at the time of handover, the quality guarantee period is calculated from the date of rectification. If the product breaks down during the quality guarantee period, our company will provide free consultation and maintenance services (including free replacement of vulnerable spare parts). Damage caused by the following reasons is not covered by the warranty: ① The product is damaged by the user due to improper use, maintenance or storage; ② The product is damaged due to disassembly and movement by the user; ③ The product is damaged due to irresistible factors (lightning, earthquake, typhoon, etc.).



## Repair and Maintenance

Our product design is maintenance-free, but in order to ensure the long life of the fan and normal operation, the fan should also be maintained, especially in harsh environments. For any maintenance on the fan or controller, please make sure that the fan stopped and the controller power off to protect the safety of personnel.

test run : Check for unusual sounds or vibrations

Every 2500 hours of work: Airfoils dust removal, controller air duct cleaning

Every 5000 hours of work: Check mechanical fasteners for looseness; Check the safety cables to make sure there is no slack and no damage; Check for unusual sounds or vibrations

## Warranty

Warranty period: 36 months for the motor and other mechanical parts, 12 months for the controller  
For the faults that occur within the warranty period, please do not try to solve them yourself, please contact our professional technicians on-site service or remote guidance.

However, the following are paid services:

- ☒ Faults caused by incorrect use by your company.
- ☒ Occasions where failures are caused by your company's unauthorized modification of our products.
- ☒ Occasions where failures are caused by natural disasters or fires.
- ☒ When the warranty period is exceeded.
- ☒ Occasions where failures are caused by other reasons that are not the responsibility of the company.

This product is produced under strict quality management, and each set of products has passed a rigorous testing process before leaving the factory. When it is used in occasions where major accidents or losses may occur due to the failure of this product, please configure relevant safety measures

# **GAIA FANS**

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