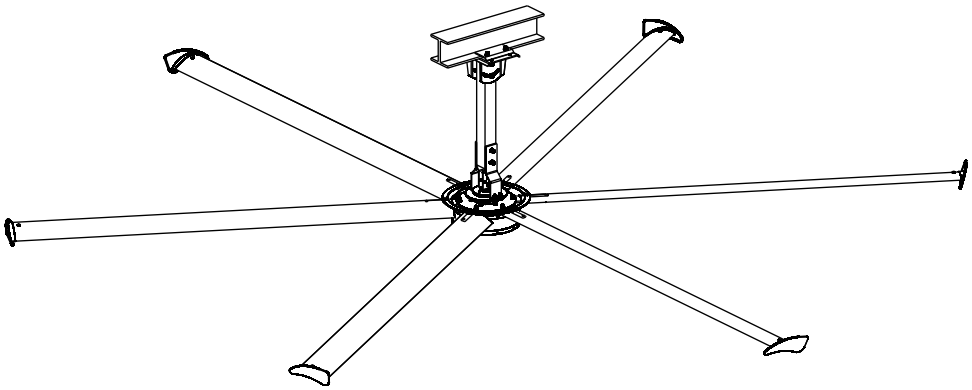
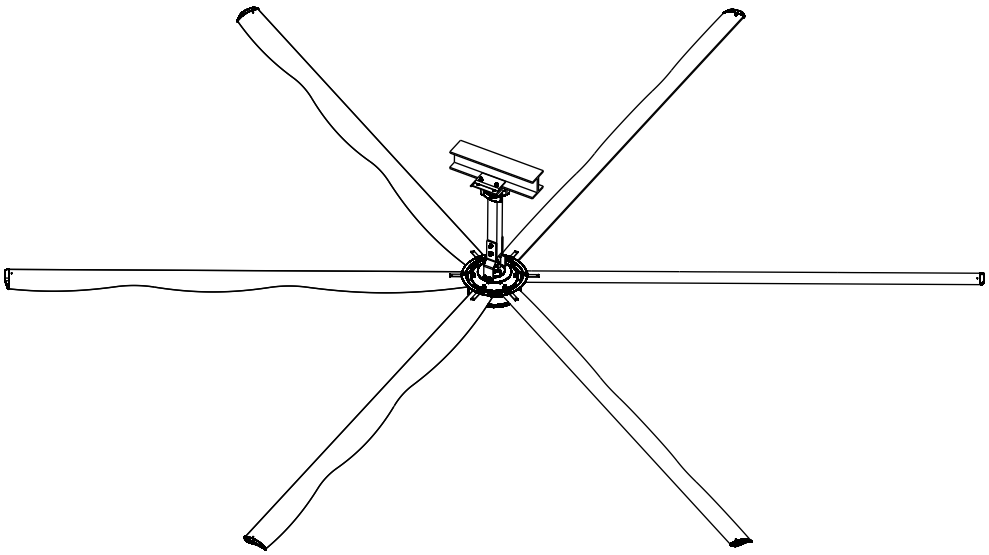
Permanent Magnet DC Brushless (PMSM)

HVLS Large Industrial Ceiling Fan





IMPORTANT:

For your safety, read this manual carefully before using your device. Keep it carefully and consult it whenever necessary.
The responsibility of the Company cannot be engaged in the event of non-compliance with the instructions indicated below or in the event of incorrect use.

IEC EMC LVD CE

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Model	Voltage	Max Power	Max. Rotation Speed	Dia.	Max. Air Volume	Blade Qty	N.W.
DS-AS7320M 6B	110V	1.5KW	50r/min	7.32M /24ft	14900m³/min	6 pcs	121kg
DS-AS6720M 6B	110V	1.4KW	55r/min	6.72M /22ft	13500m³/min	6 pcs	117kg
DS-AS6120M 6B	110V	1.2KW	60r/min	6.12M /20ft	12200m³/min	6 pcs	105kg
DS-AS5520M 6B	110V	1.0KW	65r/min	5.52M /18ft	11900m³/min	6 pcs	100kg
DS-AS7320M CO	110V	1.5KW	50r/min	7.32M /24ft	14950m³/min	6 pcs	114kg
DS-AS6720M CO	110V	1.5KW	55r/min	6.72M /22ft	13500m³/min	6 pcs	111kg
DS-AS6120M CO	110V	1.2KW	60r/min	6.12M /20ft	12700m³/min	6 pcs	108kg
DS-AS5520M CO	110V	1.2KW	65r/min	5.52M /18ft	11400m³/min	6 pcs	105kg

Outline

Thank you for purchasing Permanent Magnet DC brushless industrial fan (hereinafter referred to as fan). This manual describes how to use this product correctly.Before using (installation, wiring, operation, maintenance, inspection, etc.), please read this instruction carefully. In addition, please understand the safety notes of the product.Also, use the product after understanding the safety precautions of the product.

Safety Precautions

General Considerations

- In order to explain the details of the product, the illustrations in this manual sometimes show the state with the cover or safety cover removed. When running this product, be sure to install the cover according to the regulations and operate it according to the contents of the instruction manual.
- Due to product improvement or specification change, and in order to improve the convenience of the instructions, this instructions may be changed without notice.
- If you need to order the instruction manual due to damage or loss, please contact our sales and inform us of the data number on the cover.

⚠ DANGER

- Please pay attention to all information about safety in this instruction manual.
  Caution: Failure to follow warnings may result in death or serious injury. The company will not be held responsible for any injury or equipment damage caused by the customer's failure to comply with this instruction manual.

In order to prevent electric shock

- Non-professionals should not perform maintenance, inspection or parts replacement.
  Otherwise there will be electric shock or other hazards.
- Do not operate with the controller cover removed.
  Otherwise there will be electric shock or other hazards.
- Do not perform wiring work when the power is on, otherwise there is a risk of electric shock.
  Disconnect power to all equipment before performing inspections. However, even if the power is turned off, there is still residual voltage in the internal capacitor. When the DC voltage of the main circuit drops below 50V, after confirming that all indicators are off and the DC voltage of the main circuit has dropped to a safe level, wait for more than 1 minute before operating.

⚠ WARNING

Safety measures for restarting industrial fans

- Industrial fans may suddenly operate when they are energized, causing danger of death or serious injury.
  Before turning on the power supply of the industrial fan, please make sure that there are no people near the industrial fan and no other objects blocking the touch.
  Before turning on the power supply of the fan, please make sure that all the screws of the fan accessories are locked, and that there are no people or other objects within the reach of the fan blades when they rotate.
  In addition, ensure that personnel are more than 1 meter away from the fan blades.

In order to prevent electric shock

- It is strictly forbidden to modify the industrial fan controller
  Otherwise there is a risk of electric shock or physical injury. If the customer modifies the product, the company will not bear any consequences.
- Do not remove the cover of the controller or the key operation panel or touchpad while the power is on
  Otherwise there is a risk of electric shock and affect the operation of the industrial fan.

In order to prevent fire

- Before powering on, please confirm whether the rated voltage of the industrial fan is consistent with the power supply voltage.
  If the main circuit power supply voltage is used incorrectly, the product will definitely be damaged and there will be a risk of fire.

Important

- the Use Environment of the Product

  The maximum temperature of the surrounding environment when using this product is +40°C; the maximum relative humidity of the surrounding air is 90% (+25°C);Altitude: <=1000 meters, not suitable for places with corrosive gas, dust, steam or flammable and explosive gas.

- Please check the following precautions before installation

  1. After unpacking, check whether all accessories are complete (please refer to the list of accessories and names)
  2. Check whether the voltage and frequency are in line with the local power supply.
  3. Check whether the fan head is flexible and whether the fan blades are deformed or not.

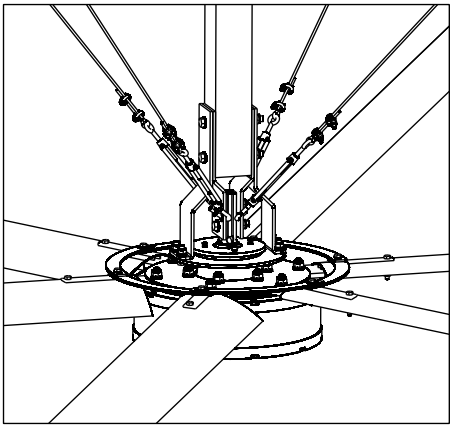
2
Components and Installation

2. 1 Each Part Name

◆ I - Beam Installation

the diagram after the installation of the I - Beam

you can choose suitable holes to clamp and fix according to the width of the I - Beam



the diagram after the installation of security piece and steel wire rope turnbuckles

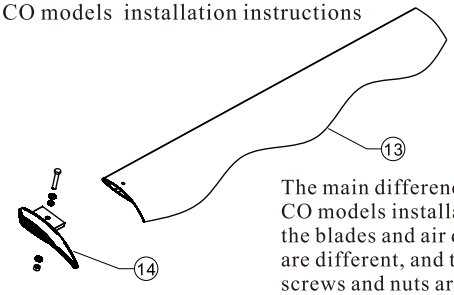
Ground wire

U V W

Ground wire
Attach the safety ring

Motor wire

CO models installation instructions



The main difference between CO models installation is that the blades and air deflectors are different, and the other screws and nuts are the same

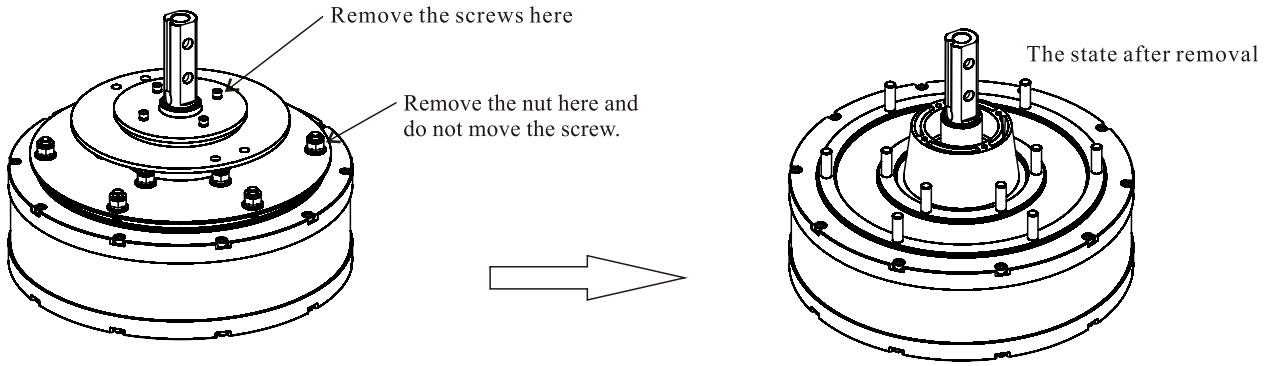
NO	Name	QTY
1	I - Beam	
2	Press Plate	2
3	Fix Plate	1
4	Square Extension	1
5	Folded Plate	2
6	Security Folded Plate	2
7	Blade Security Piece	6
8	Security Ring	2
9	Motor Upper Cap	1
10	The Press Plate ofNO.11	1
11	The Connecting Rod between Blisk and Blade	6
12	Motor	1
13	Blade	6
14	Wind Deflector	6

NO	Name	QTY
15	Security Steel Wire Rope	4
16	Steel Wire Rope Clamp	2
17	Outer Hexagon Bolt M12*45	4
18	Outer Hexagon Bolt M12*110	2
19	Outer Hexagon Bolt M12*130	2
20	Outer Hexagon Bolt M12*70	2
21	Outer Hexagon Bolt M8*50	6
22	Outer Hexagon Bolt M8*45	6
23	Outer Hexagon Bolt M8*40	6
24	Outer Hexagon Bolt M10*30	4
25	Blade Fix Gasket	12
26	Steel Wire Rope Turnbuckles	4
27	Nut M12	22
28	Security ring	1

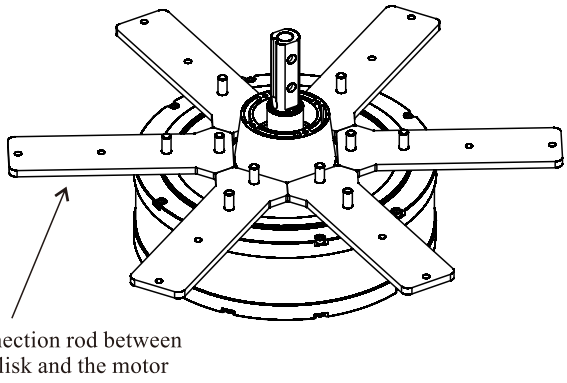
MOTOR INSTALLATION INSTRUCTION

Attention: Every step must be locked tightly FOR SAFETY□

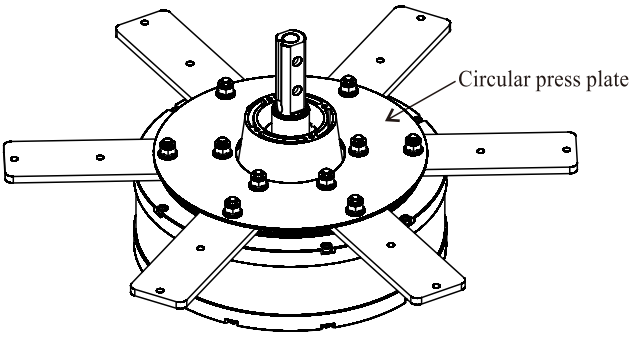
1、After unpacking and taking out the motor,
remove the screws and nuts as shown in the picture below and take out the accessories.



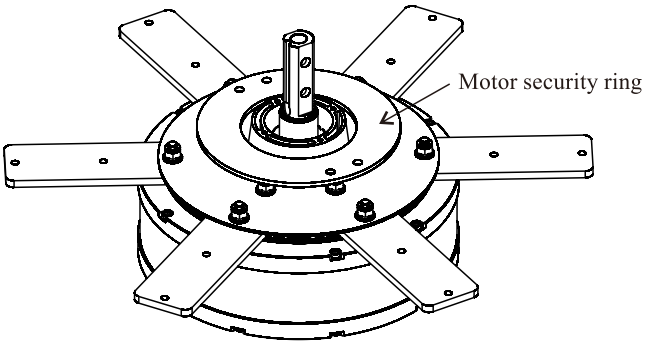
2、Place the connection rod which is between
the blisk and the motor onto the motor
screws as shown in the picture below.



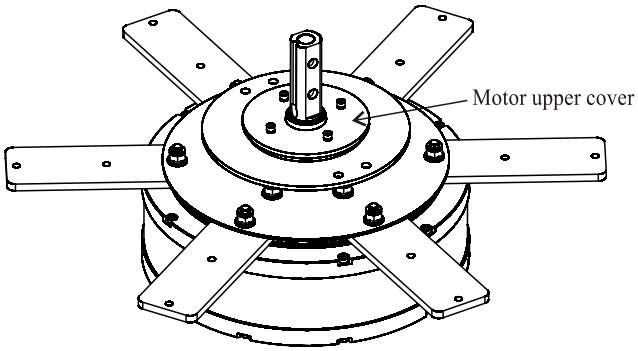
3、Cover the circular press plate , install the M12 flat washer,
M12 spring washer, and M12 nut,
and lock them, as shown in the figure below.



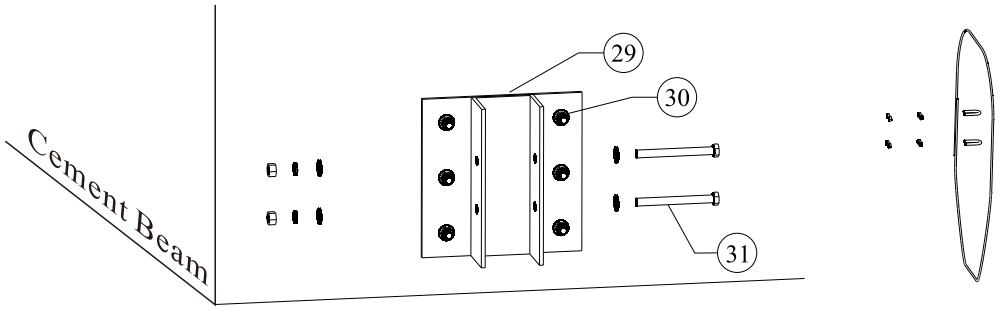
4、Put on the motor security ring, as shown in the picture below.

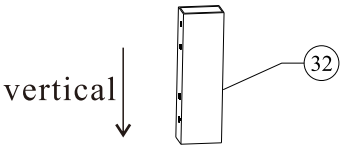


5、Install the motor upper cap and secure it with
M6 screws, as shown in the figure below.



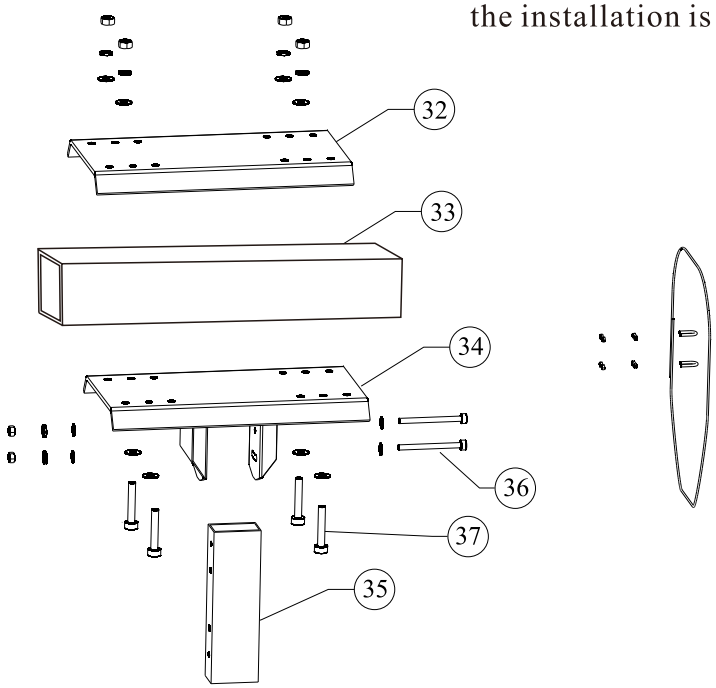
◆ Vertical Cement Beam Installation



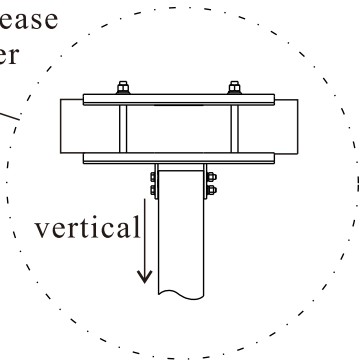


NO	Name	QTY
29	U Plate	1
30	M12 Expansion Screw	6
31	Outer Hexagon Bolt M12*110	2
32	Square Extension	1

◆ 口 - Steel Structure Installation



When installing the tray support please use a spirit level to measure whether the installation is vertical



the diagram after installation

NO	Name	QTY
33	Bracket Top Plate	
34	口 - Steel	1
35	Bracket Clamp Plate	1
36	Square Extension	1
37	Outer Hexagon Bolt M12*110	2
38	Outer Hexagon Bolt M12*110	6

2. 2 Installation Steps

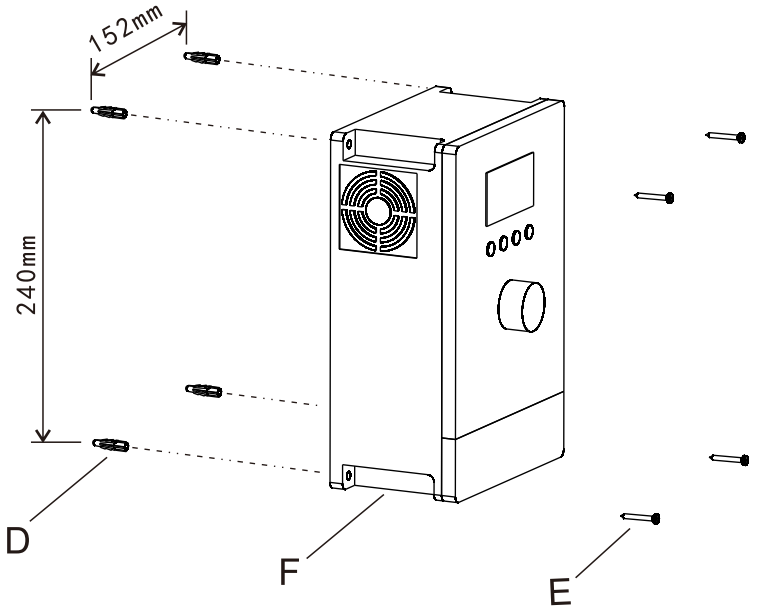
◆ I - Beam Installation Steps

Numbers appear in the following installation steps, please refer to "2.1 each part name" (page 2).

1. First of all, on the ground, you should install [14] into [13] and lock them with bolts.
2. When working on the ground, install [11][10][8][9] on the motor [12] in sequence and secure them with nuts and screws.
3. When working at heights, please pay attention to safety and wear various safety equipment. Non-professionals are not allowed to install. First, place [3] under the I-beam [1], clamp it in place with [2], and then lock it with screws. Please refer to the completed structural diagram of I-beam installation.
4. Clamp [5] to the two holes of the motor shaft of [12] in sequence, install [6] to the four holes of [8] on the left and right, and put [4] into [5][6] in the middle, and then tighten all screws. After the whole assembly is completed, install the whole body under [3] and lock it with screws.
5. Pass [15] above [1] and below [3], and then lock it with [16].
6. Install [13] into [11] side by side, then place [7] on top of [13], tighten with screws in turn, and check the tightening of all bolts.
7. Connect the wires at high altitude. The wires must be fixed along the inner edge of the I-beam and cannot be hung randomly.
8. Fix the [26] connecting wire rope in 4 directions, then hook it on the hole of [5] and adjust it to the appropriate tightness.
9. Install the control box at the appropriate location and connect the wires.
10. The motor wire is connected to the UVW terminals inside the controller, and the power wire is connected to the RST/LN terminals in the control box. The wiring will be introduced in detail in the wiring part.
11. For vertical cement beams and -口 structure and other complex structures, please refer to the diagram to understand

◆ Schematic diagram of control box installation

1. There are 4 holes on the bottom plate of the controller (as shown in the figure below), according to the positions of the 4 holes, drill a holedia(6mm) on the installation wall, and insert D into the hole;
2. Then use E to install the controller on the wall, and align it with D when installing.
3. Notice: expansion bolts cannot be used when it is not installed on a cement wall.such as a steel installation surface. It can be fixed with drilling screws and then installed in the control box.

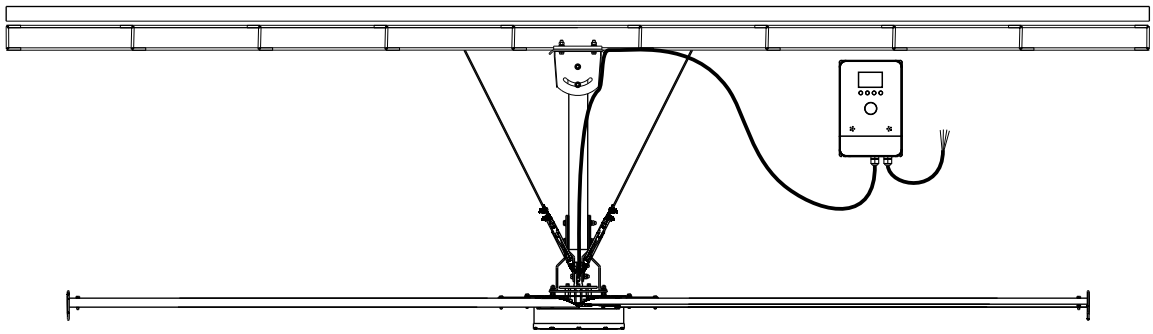


D - Plastic expansion plug
E - Phillips drywall screws M4x35
F - Controller

3 Controller Wiring

◆ External Wiring

External wiring as shown in the following diagram



◆ Internal Wiring

The internal wiring of the ceiling fan is shown in the figure, the controller power input terminal wiring is R, S, T(380V)or L, N(110V), and the motor output terminal is U, V, W, regardless of the order.If the fan reverses after the installation is complete, please turn off the power, wait for the indicator lights and the display screen to go out, and replace any 2 of U, V, W.

4
Controller Operation Instructions

If the inverter shows following code, please contact us to repair.

If the inverter system fails during operation, the inverter will stop output immediately to protect the motor. At the same time, the inverter fault relay acts. The inverter panel displays fault codes. The following table lists the fault types and common solutions corresponding to the fault codes.

The list in the table is for reference only. Do not repair or modify it without authorization. If you can't troubleshoot, please ask the supplier for technical support.

Fault Name	Display	Possible Causes	Solutions
Inverter Unit Protection	Err01	1. The output circuit is grounded or short circuited 2. The connecting cable of the motor is too long 3. The module overheats 4. The internal connections become loose 5. The main control board is faulty 6. The drive board is faulty 7. The inverter module is faulty	1. Eliminate external faults 2. Install a reactor or an output filter 3. Check the air filter and the cooling fan 4. Connect all cables properly 5. Contact for technical support 6. Contact for technical support 7. Contact for technical support
Overcurrent During Acceleration	Err02	1. The output circuit is grounded or short circuited 2. The control method is vector and no parameter identification 3. The acceleration time is too short 4. Manual torque boost or V/F curve is not appropriate 5. The voltage is too low 6. The startup operation is performed on the rotating motor. 7. A sudden load is added during acceleration 8. The inverter model is of too small power class	1. Eliminate external faults 2. Perform the motor auto-tuning 3. Increase the acceleration time 4. Adjust the manual torque boost or V/F curve 5. Adjust the voltage to normal range 6. Select rotational speed tracking restart or start the motor after it stops 7. Remove the added load. 8. Select higher power rating inverter
Overcurrent During Deceleration	Err03	1. The output circuit is grounded or short circuited 2. The control method is vector and no parameter identification 3. The deceleration time is too short 4. The voltage is too low 5. A sudden load is added during deceleration 6. The braking unit and braking resistor are not installed	1. Eliminate external faults 2. Perform the motor auto-tuning 3. Increase the deceleration time 4. Adjust the voltage to normal range 5. Remove the added load. 6. Install the braking unit and braking resistor

Overcurrent at Constant Speed	Err04	1. The output circuit is grounded or short circuited 2. The control method is vector and no parameter identification 3. The voltage is too low 4. A sudden load is added during deceleration 5. The inverter model is of too small power class	1. Eliminate external faults 2. Perform the motor auto-tuning 3. Adjust the voltage to normal range 4. Remove the added load. 5. Select higher power rating inverter
Overvoltage During Acceleration	Err05	1. The input voltage is too high 2. An external force drives the motor during acceleration 3. The acceleration time is too short 4. The braking unit and braking resistor are not installed	1. Adjust the voltage to normal range 2. Cancel the external force or install a braking resistor 3. Increase the acceleration time 4. Install the braking unit and braking resistor
Inverter Overload	Err10	1. The load is too heavy or locked-rotor occurs on the motor 2. The inverter model is of too small power class	1. Reduce the load and check the motor and mechanical condition 2. Select an inverter of higher power class
Motor Overload	Err11	1. Parameter is set improperly 2. The load is too heavy or locked-rotor occurs on the motor 3. The inverter model is of too small power class	1. Set protection parameter correctly 2. Reduce the load and check the motor and mechanical condition 3. Select higher power rating inverter
Power Output Phase Loss	Err13	1. The cable connecting the inverter and the motor is faulty 2. The inverter's three-phase outputs are unbalanced when the motor is running 3. The drive board is faulty 4. The module is faulty	1. Eliminate external faults 2. Check whether the motor three-phase winding is normal 3. Contact for Technical support 4. Contact for Technical support
Module Overheat	Err14	1. The ambient temperature is too high 2. The air filter is blocked 3. The fan is damaged 4. The thermally sensitive resistor of the module is damaged 5. The inverter module is damaged	1. Lower the ambient temperature 2. Clean the air filter 3. Replace the damaged fan 4. Replace the damaged thermally sensitive resistor 5. Replace the inverter module

The following faults may be encountered during the use of the inverter. Refer to the following table for simple fault analysis:

SN	Fault	Possible Causes	Solutions
1	There is no display at power-on	1. There is no power supply to the inverter or the power input to the inverter is too low 2. The power supply of the switch on the drive board of the inverter is faulty 3. The rectifier bridge is damaged 4. The buffer resistor is faulty 5. The control board or the operation panel is faulty 6. The cable connecting the control board and the drive board and the operation panel breaks	1. Check the power supply 2. Check the DCbus voltage 3. Re-connect the cables 4~6. Contact us for technical support
2	"Err23" is displayed at power-on	1. The motor or the motor output cable is short circuited to the ground 2. The inverter is damaged	1. Measure the insulation of the motor and the output cable with a megger 2. Contact us for technical support
3	Err14 (Module overheat) fault alarm frequently	1. The setting of switching frequency is too high 2. The cooling fan is damaged or the air filter is blocked 3. Components inside the inverter are damaged (thermocouple or other)	1. Reduce the switching frequency (F0-14) 2. Replace the fan and clean the air filter 3. Contact us for technical support
4	The motor does not rotate after the inverter runs	1. Check the motor and the motor cables 2. The inverter parameters are set improperly (Motor parameters) 3. The cable between the drive board and the control board is in poor contact 4. The drive board is faulty	1. Ensure the cable between the inverter and the motor is normal 2. Replace the motor or clear mechanical faults 3. Check the re-set motor parameters 4. Contact us for technical support
5	The DIterminals are disabled	1. The parameters are set incorrectly 2. The external signal is incorrect 3. The control board is faulty	1. Check and reset the parameters in group F2 2. Re-connect the external signal cables 3. Contact us for technical support
6	The inverter overcurrent and overvoltage frequently	1. The motor parameters are set improperly 2. The acceleration/deceleration time is improper 3. The load fluctuates	1. Re-set motor parameters or re-perform the motor auto-tunning 2. Set proper acceleration/deceleration time 3. Contact us for technical support

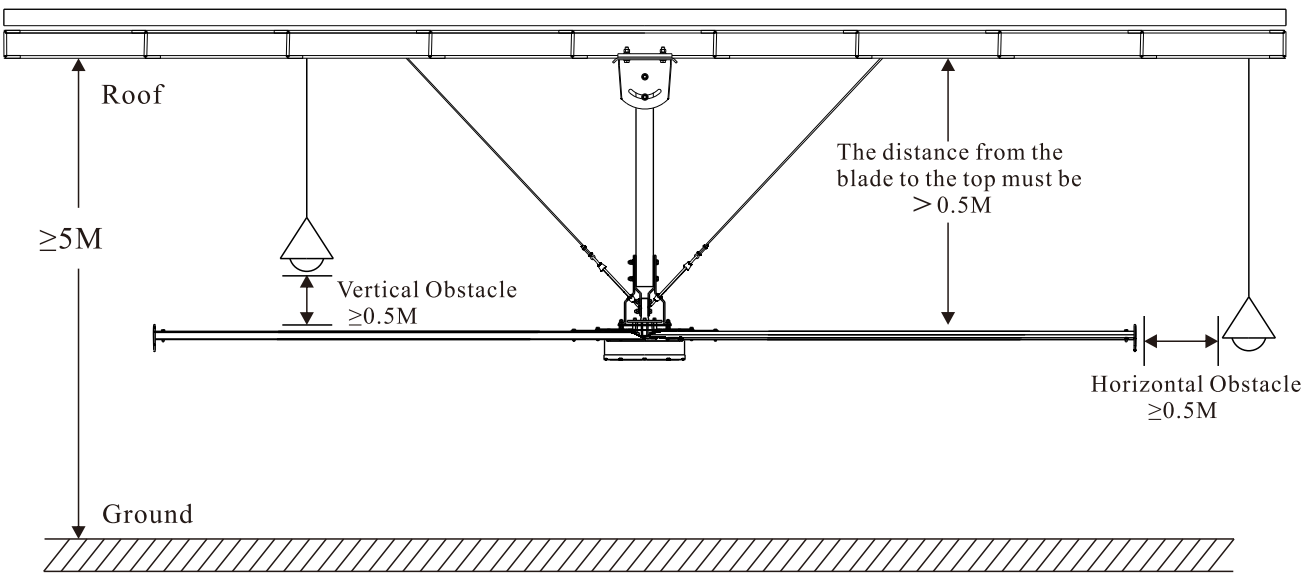
5
Regular Inspection and Maintenance

Electronic equipment and other components cannot be used permanently. Even under normal working conditions, if it exceeds service life, malfunctions will occur. In order to prevent such failures, regular inspections must be carried out.
It is recommended that after the machine is installed, an inspection should be carried out every 3 or 4 months. Before inspection, please turn off the power supply!

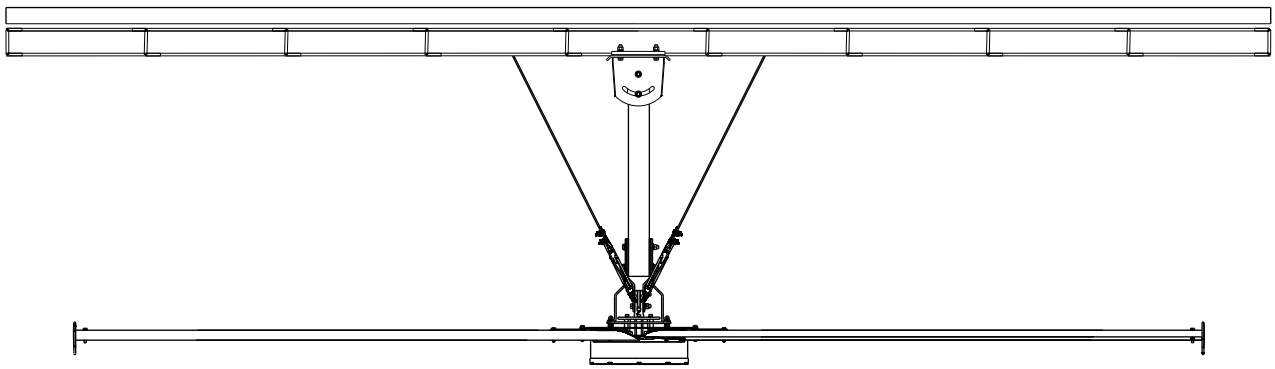
Regular Inspection and Maintenance Chart

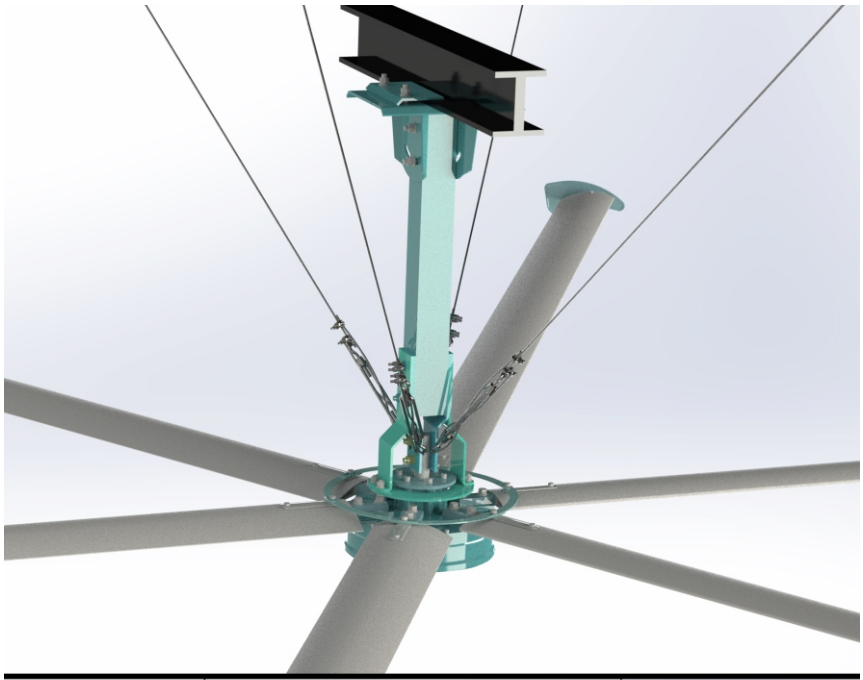
Inspection Part	Inspection Contents	Countermeasures
the Whole Fan	•Are there any parts that have discolored due to aging? •Whether the parts are damaged or deformed? •Whether there is dirt, dust?	•Replace damaged parts •Contact our after-sales service department •Use a dry towel to remove dust and garbage, do not wash with water
Motor	•Whether there is abnormal vibration or abnormal sound when fan is running?	•Turn off the fan, consult our after-sales service department Check the condition of the components and tighten the connection, and press all the fastener screws
Control Box	•Check whether the fan is dusty or dirty •Check whether the power and motor wires, internal connecting wires are discolored, damaged or dropped •Check whether the cladding of the wire is damaged, cracked or discolored •Check connection terminals are damaged, in loose •Check whether the capacitor is swollen, leaking, discolored or cracked	•Clean or replace fan •Repair or replace damaged wires and connections •Contact our company for after-sales service, if it cannot be replaced or repaired, replace the entire controller

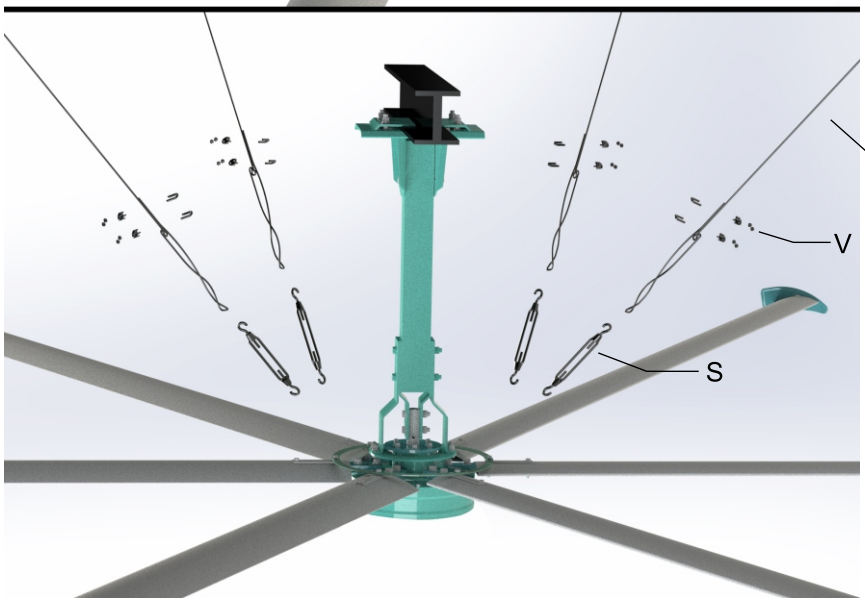
6
Installation Requirements



◆ Steel Wire Rope reinforced structure







NO	Name	QTY
R	Steel Wire Rope	4
S	Steel Wire Rope Basket Tightening Device	4
V	Steel Wire Rope Clamp	12