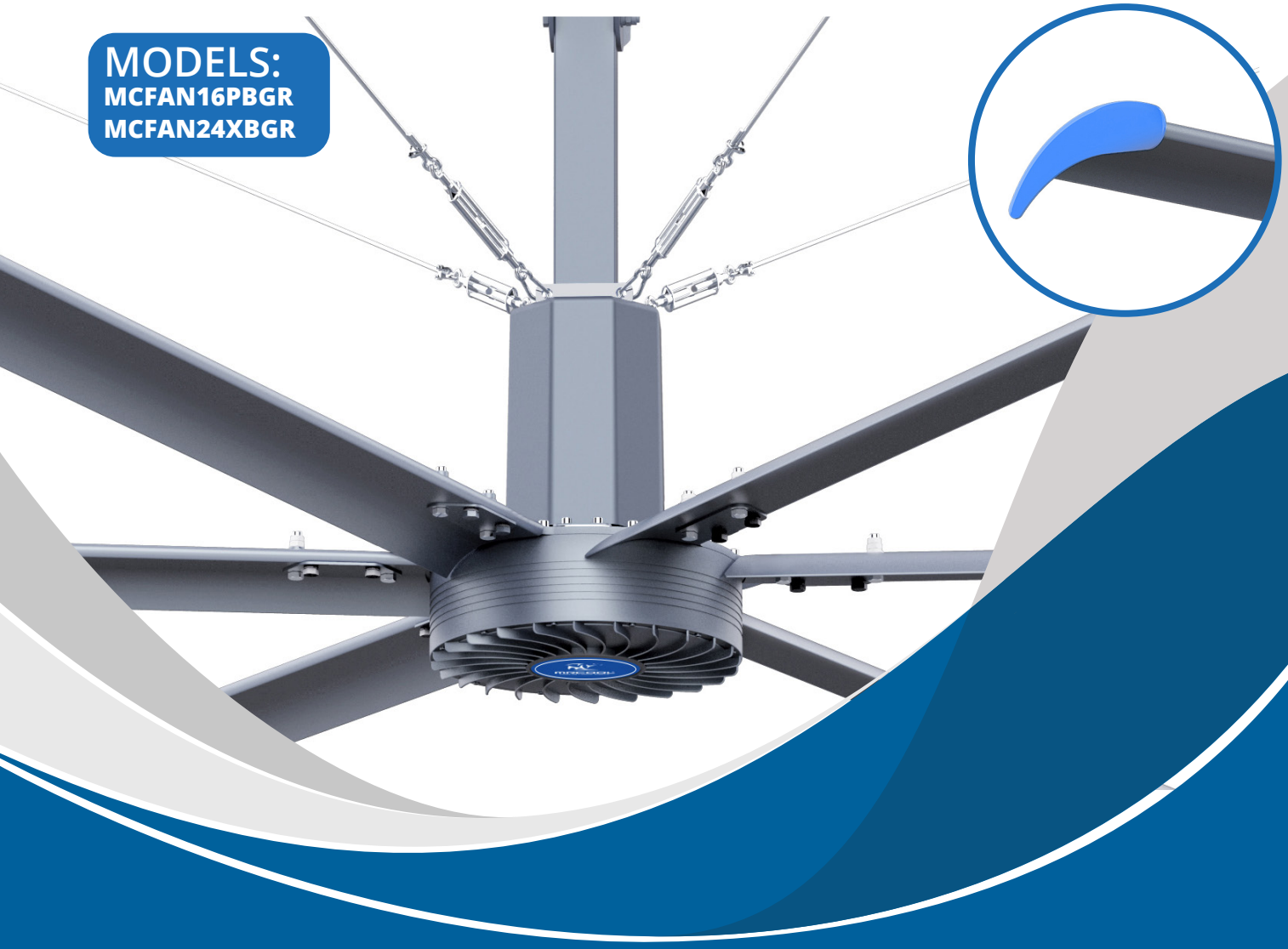
Industrial HVLS Fan

Installation & Owner's Manual

MODELS:
MCFAN16PBGR
MCFAN24XBGR



Read this manual carefully before installation and keep it where the operator can easily find it for future reference.

Due to updates and constantly improving performance, the information and instructions within this manual are subject to change without notice.

Version Date: 10/23/2024
Please visit www.mrcool.com/documentation to ensure you have the latest version of this manual.

MRCOOL®
COMFORT MADE SIMPLE

CONTENTS

1 SAFETY PRECAUTIONS 1
2 UNIT OVERVIEW 2
2.1 Product Summary 2
2.2 Technical Parameters 2
2.3 Installation Data 2
2.4 Exploded View Unit Diagrams 3
2.5 Packing Lists 4
3 16-FOOT FAN INSTALLATION 6
4 24-FOOT FAN INSTALLATION 11
5 CONTROL PANEL OPERATION 17
6 TROUBLESHOOTING 18

Safety Precautions

Read Before Using

Incorrect usage may cause serious damage or injury.

The symbols below are used throughout this manual to indicate instructions that should be followed closely or actions that should be avoided to prevent death, injury, and/or property damage.

WARNING Indicates the possibility of personal injury or loss of life.

CAUTION Indicates the possibility of property damage or serious consequences.

WARNING

1. Read this manual carefully before installation in order to prevent potential damage or injury.
2. Nonprofessionals are not allowed to repair, inspect, or replace parts.
3. In order to reduce the risk of electric shock, do not carry out wiring work within 1 minute of switching the power on or off. (The capacitor will also retain power for a short time after power is switched off.)
4. When replacing or moving the power supply, cut off the power and wait for all indicators to be off for 1 minute before operation.
5. If there is unusual oscillating movement, immediately stop the ceiling fan and contact MRCOOL, or a qualified service professional. The means of attachment to the ceiling, such as hooks or other devices, must be fixed with a sufficient strength to withstand 4 times the weight of the ceiling fan.

CAUTION

1. Use the correct controller according to the product model. Do not use an unmatched controller, which may cause damage to the motor or controller.
2. Confirm whether the power is connected according to the marks and that there is no obstacle within the operating range of the product before operation.
3. After operation, check whether the rotation direction of the product is correct (clockwise, when viewed from below).
4. This product should not be operated in freezing, corrosive, explosive, and severely dusty environment.
5. The installation and maintenance must be carried out by professionally trained or experienced personnel with electrical certifications.

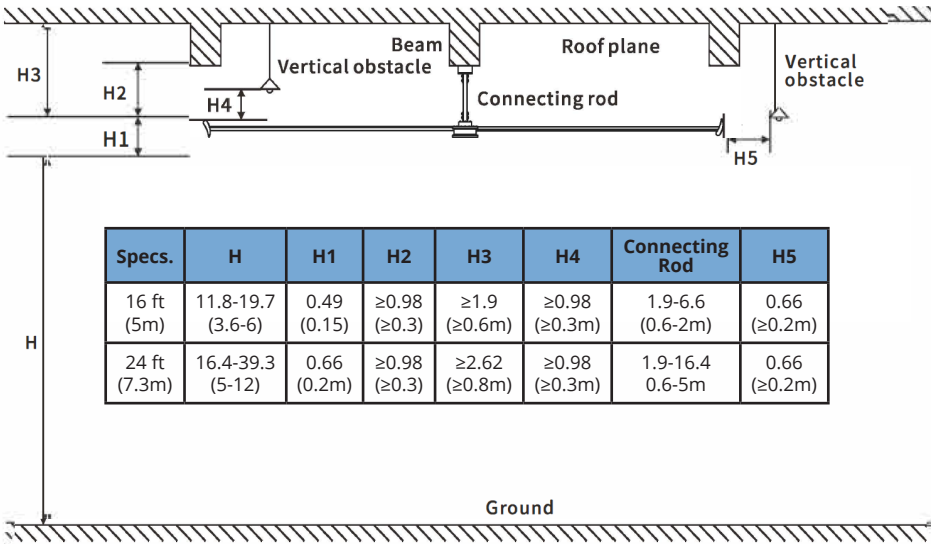
2.1 Product Summary

The MRCOOL® Industrial HVLS fan with permanent magnet frequency conversion is specifically developed to save energy, reduce consumption, and create a comfortable work environment. The independently designed permanent magnet motor features a small, light weight size, high efficiency, low noise, and variable frequency speed regulation. This new type of ceiling fan is widely used in industrial plants, logistics warehouses, waiting rooms, exhibition halls, gyms, and supermarkets for both ventilation and cooling. The fan can produce a large amount of airflow to create effective overall air circulation.

2.2 Technical Parameters

	MCFAN16PBGR	MCFAN24XBGR
Diameter-ft (m)	16 (5)	24 (7.3)
Power (kW)	0.75	1.5
Voltage (V)	1PH 220-240	1PH 220-240
Frequency (Hz)	50/60	50/60
Air Volume (m^3/min)	10000	15500
Rotating Speed (rpm)	80	60
Number of Blades (Pcs)	5	6
Noise (dB(A))	38	38
Motor Weight (kg)	22	42
Fan Weight (kg)	62	113
Coverage Area-ft^2 (m^2)	1640 (500)	5577 (1700)
Mounting Bracket	I-beam/square steel/concrete	I-beam/square steel/concrete

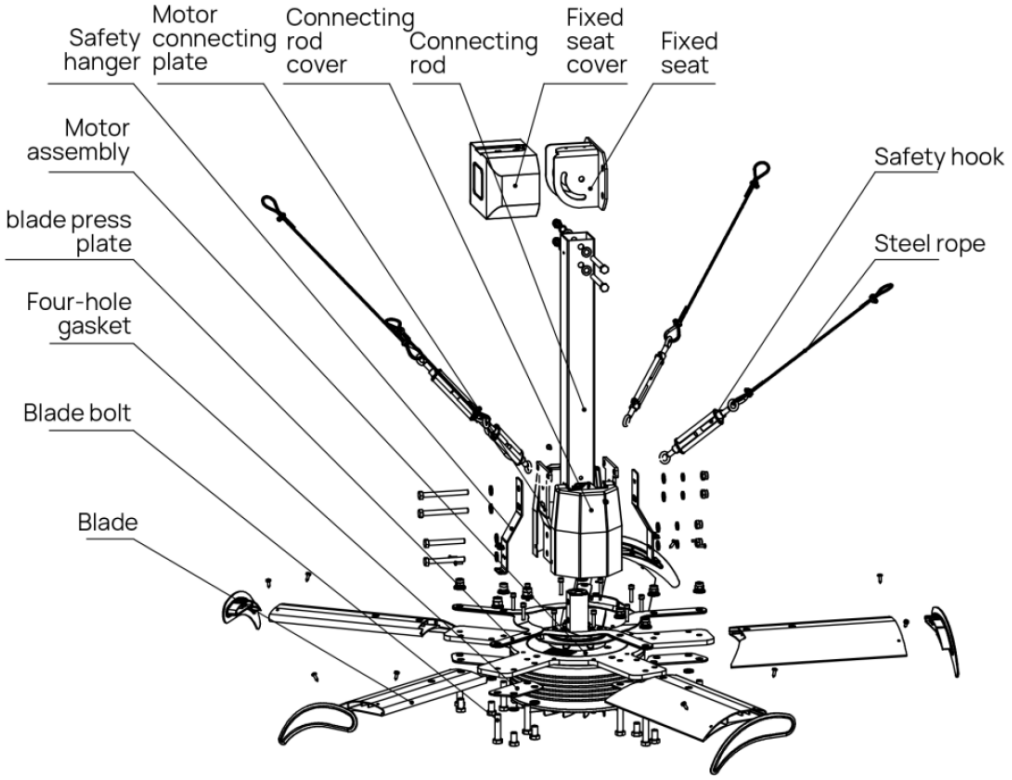
2.3 Installation Data



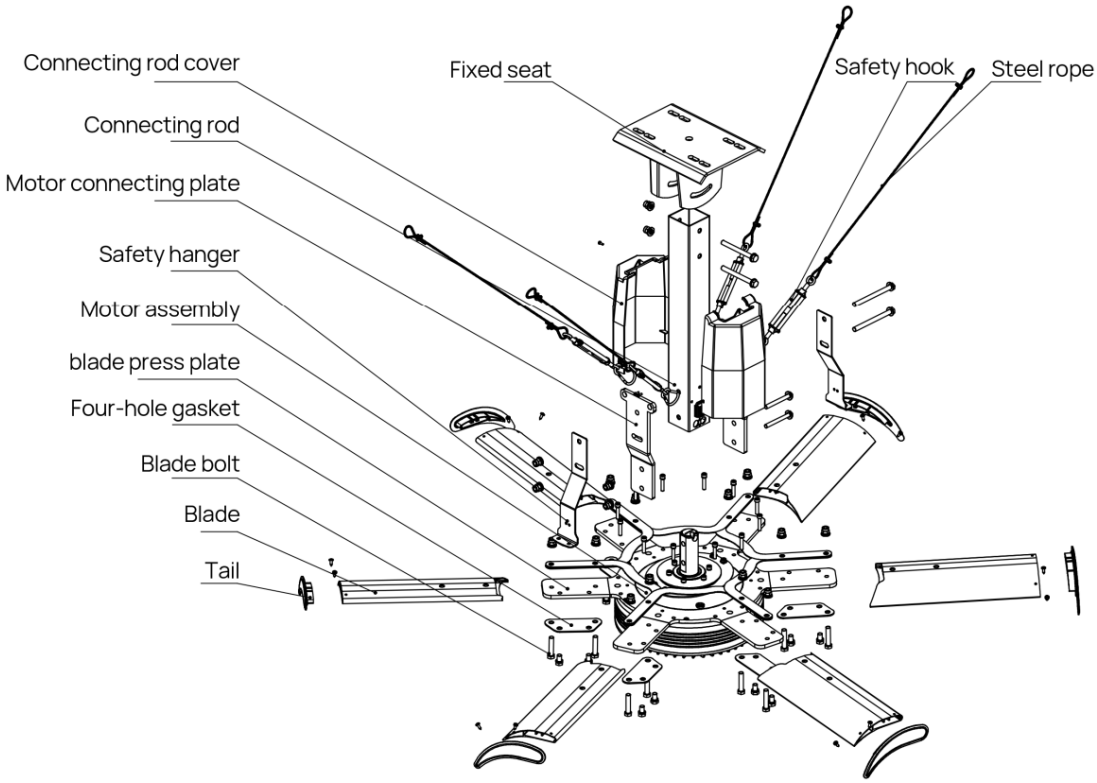
Specs.	H	H1	H2	H3	H4	Connecting Rod	H5
16 ft (5m)	11.8-19.7 (3.6-6)	0.49 (0.15)	≥0.98 (≥0.3)	≥1.9 (≥0.6m)	≥0.98 (≥0.3m)	1.9-6.6 (0.6-2m)	0.66 (≥0.2m)
24 ft (7.3m)	16.4-39.3 (5-12)	0.66 (0.2m)	≥0.98 (≥0.3)	≥2.62 (≥0.8m)	≥0.98 (≥0.3m)	1.9-16.4 0.6-5m	0.66 (≥0.2m)

2.4 Exploded View Unit Diagrams

MCFAN16PBGR



MCFAN24XBGR



2.5 Packing Lists

MCFAN16PBGR

General Accessories	
Name	**Quantity**
Motor	1
Controller	1
M12x50 Hex Bolt (Full Thread)	10
M12x16 Hex Bolt (Full Thread)	10
M12 Hex Nylon Nut	10
Φ12 Standard Spring Washer	20
Four-Hole Gasket	5
Blade	5
Blade Press Plate	5
Tail Wing	5
M5*10 Self-Tapping Screw	10
60*60 Connecting Rod	1
6-6 Quick-Connect Terminal	1
M3*16 Philip's Head Screw	2
Connecting Rod Cover	2
M4*12 Cross Stainless Steel Screw	6
Motor Connecting Plate	2
Safety Hanger	2
M10x100 Hex Bolt	4
M10x80 Hex Bolt	2
Φ10 Flat Washer	12
Φ10 Spring Washer	6
M10 Hex Nylon Nut	6
Φ6 Steel Rope	1
M6 Slide Retainer	18
M8 Turnbuckles Hook	4
Locking Pin	4
16AWG*4 Cable	20
18AWG*2 Cable	20

Concrete Structure	
Name	**Quantity**
RC Structure	1
Fixed Base Cover	1
M12x100 Expansion Screw	4
M12x100 Expansion Screw Hook	2
4*10 Knurled Hand Screw	2

I-Shaped Steel Structure	
Name	**Quantity**
Press Plate	2
M10X60 Hex Bolt (Full Thread)	4
Ø10 Large Washer	8
Ø10 Spring Washer	4
M10 Hex Nylon Nut	4

Square Steel Structure	
Name	**Quantity**
Press Plate	1
M10X150 Hex Bolt (Full Thread)	4
Ø10 Large Washer	8
Ø10 Spring Washer	4
M10 Hex Nylon Nut	4

Installation Tools	
Name	**Quantity**
13-16 Open End Wrench	2
14-17 Open End Wrench	2
Cross Screwdriver	1
Slotted Screwdriver	1
5mm Inner Hex Spanner	1

MCFAN24XBGR

General Accessories	
Name	**Quantity**
Motor	1
Controller	1
M12x50 Hex Bolt (Full Thread)	12
M12x16 Hex Bolt (Full Thread)	12
M12 Hex Nylon Nut	12
Φ12 Standard Spring Washer	24
Four-Hole Gasket	6
Blade	6
Blade Press Plate	6
Tail Wing	6
M5*10 Self-Tapping Screw	12
80*80 Connecting Rod	1
6-6 Quick-Connect Terminal	1
M3*16 Philip's Head Screw	2
Connecting Rod Cover	2
M4*12 Cross Stainless Steel Screw	6
Motor Connecting Plate	2
Safety Hanger	2
M12x140 Hex Bolt	2
M12x130 Hex Bolt	2
M12x100 Hex Bolt	2
Φ12 Flat Washer	12
Φ12 Spring Washer	6
M12 Hex Nylon Nut	6
Φ6 Steel Rope	1
M6 Slide Retainer	18
M10 Turnbuckles Hook	4
Locking Pin	4
14AWG*4 Cable	30
18AWG*2 Cable	30

Concrete Structure	
Name	**Quantity**
L-Plate 2pcs/set	2
M12X45 Hex Bolt (full thread)	4
Ø12 Large Washer	8
Ø12 Spring Washer	4
M12 Hex Nylon Nut	4
M12x100 Expansion Screw	10
M12x100 Expansion Screw Hook	4

I-Shaped Steel Structure	
Name	**Quantity**
Press Plate	2
M12X60 Hex Bolt (Full Thread)	4
Ø12 Large Washer	8
Ø12 Spring Washer	4
M12 Hex Nylon Nut	4

Square Steel Structure	
Name	**Quantity**
Press Plate	1
M12x160 Hex Bolt (Full Thread)	4
Ø12 Large Washer	8
Ø12 Spring Washer	4
M12 Hex Nylon Nut	4

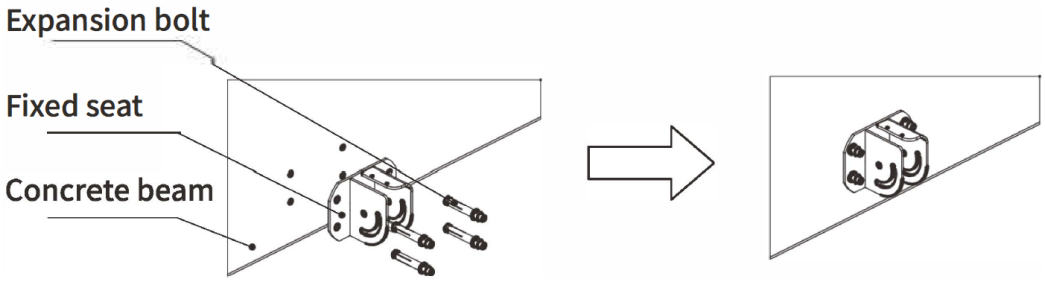
Installation Tools	
Name	**Quantity**
13-16 Open End Wrench	2
14-17 Open End Wrench	2
Cross Screwdriver	1
Slotted Screwdriver	1
5mm Inner Hex Spanner	1

3 - 16 ft. Fan Installation Steps

Step 1:

Determine the installation position of the fan, and mark it with the fixed seat. Drill the mounting hole with a 12mm drill bit (hole depth >3.15" (80mm)), then install the M10X80 expansion bolts to secure the fixed seat.

Accessories Needed:	
Name	**Qty.**
Fixed Seat	1
Expansion Bolt	4



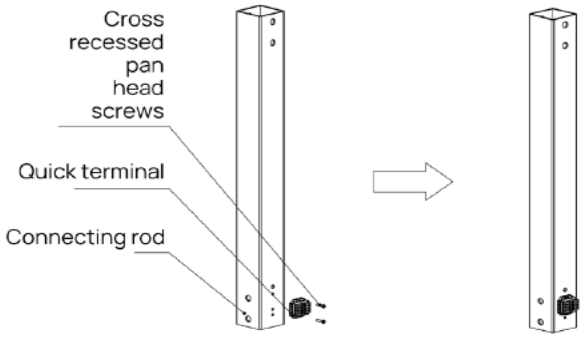
NOTE

Install expansion bolts securely.

Step 2:

Install the quick terminal on the connecting rod, screw and lock it tightly.

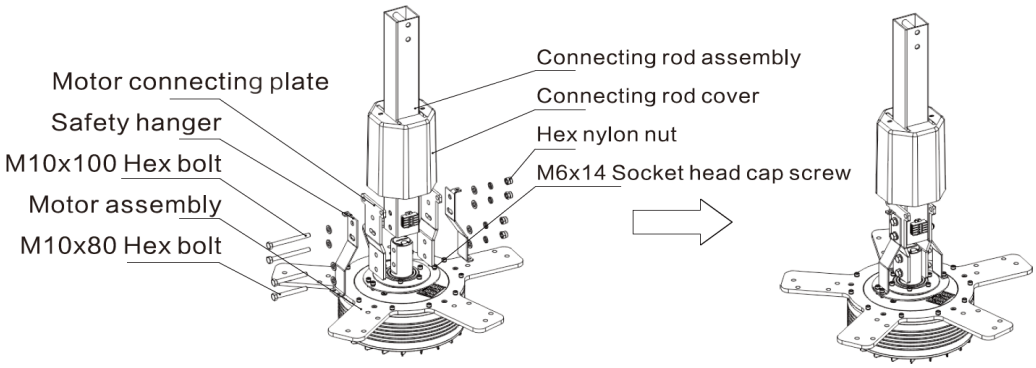
Accessories Needed:	
Name	**Qty.**
Connecting Rod	1
Quick Terminal	1
Cross Recessed Pan Head Screws M3x16	2



Step 3:

Install the connecting rod on the motor and screw it without tightening.

Accessories Needed:	
Name	**Qty.**
Motor Assembly	1
Connecting Rod Assembly	1
Motor Connecting Plate	2
Safety Hanger	2
Connecting Rod Cover	1
M5X10 Slotted Screw	2
M6X14 Hex Bolt	4
M10X100 Hex Bolt	2
M10X80 Hex Bolt	2
M10 Hex Nylon Nut	4
Ø10 Large Washer	8
Ø10 Spring Washer	4



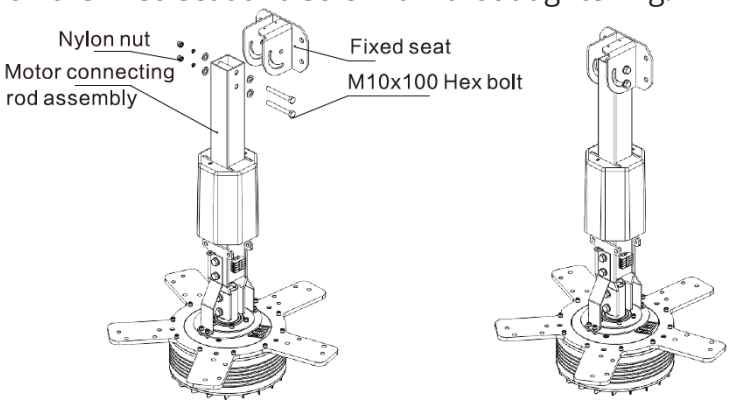
NOTE

Ensure the blade bracket on the motor assembly is installed in the correct direction. (See the figure above.)

Step 4:

Install the connecting rod motor assembly on the fixed seat and screw it without tightening.

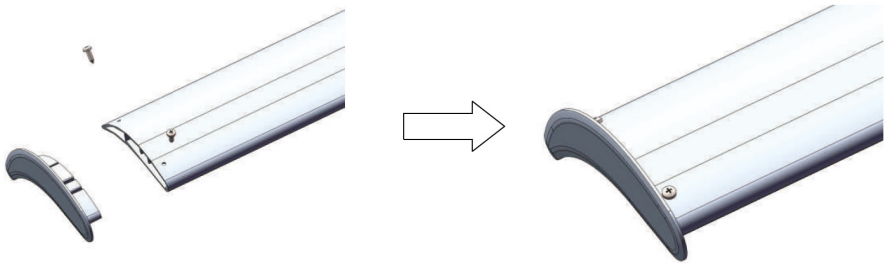
Accessories Needed:	
Name	**Qty.**
Motor Connecting Rod Assembly	1
M10X100 Hex Bolt	2
M10 Hex Nylon Nut	2
Ø10 Large Washer	4
Ø Spring Washer	2



Step 5:

Install the blade tail on the blade and lock it.

Accessories Needed:	
Name	**Qty.**
Blade	5
Tail plane	5
ST4.8X10 Self Tapping Screw	10



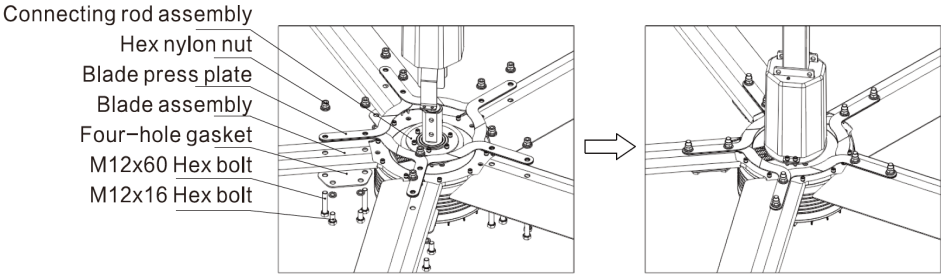
Step 6:

Install the tail blade assembly on the motor. Install the screws and pull the blade outward from the center of the motor. Install the blade screws without tightening.

Accessories Needed:	
Name	**Qty.**
Blade Assembly	5
Four-Hole Gasket	5
Blade Press Plate	5
M12X50Hex Bolt (Full Thread)	10
M12X16 Hex Bolt (Full Thread)	10
M12 Hex Nylon Nut	10
Ø12 Spring Washer	20

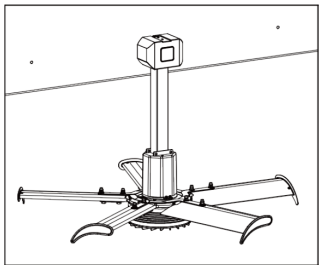
NOTE

Before tightening the fan blade screws, pull the blade outward from the center of the motor. Adjust the levelness of the motor and the verticality of the connecting rod before tightening the screws and check whether all the screws are tightened.



Step 7:

Adjust the levelness of the motor and the verticality of the connecting rod, tighten the connecting rod and blade screws, install the fixed base cover and tighten the screws.



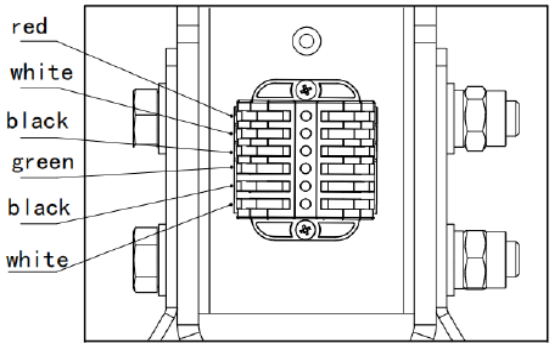
NOTE

Before tightening the fan blade screws, pull the blade outward from the center of the motor. Adjust the levelness of the motor and the verticality of the connecting rod before tightening the screws and check whether all the screws are tightened.

Step 8:

Arrange the power cable from the ceiling fan to the controller, and insert the motor lead wire and the fanpower cable into the wiring clip: From bottom to top red, white, black, green, black, white.

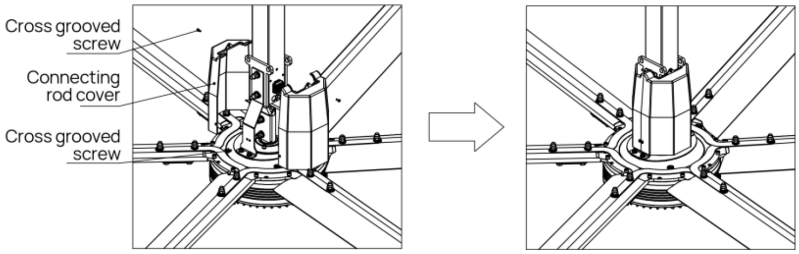
Accessories Needed:	
Name	**Qty.**
Cable 12AWGX4X20m	1
Cable18AWGX2X20M	1



Step 9:

Install the connecting rod cover, screw and lock it as shown.

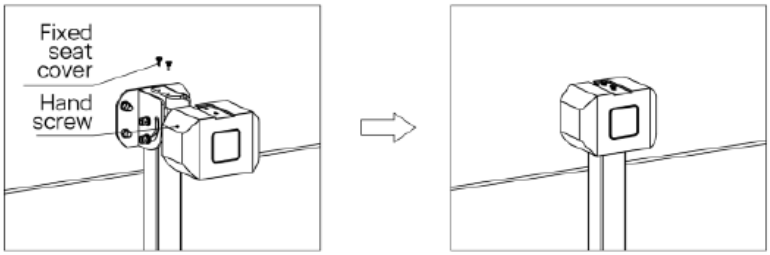
Accessories Needed:	
Name	**Qty.**
Connecting Rod Cover	2
M4X12 Cross Screw	6



Step 10:

Install the fixed seat cover as shown and lock it with the head screw.

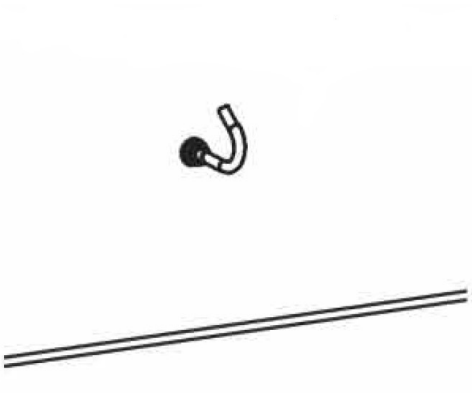
Accessories Needed:	
Name	**Qty.**
Fixed Seat Cover	1
Hand Screw M4	2

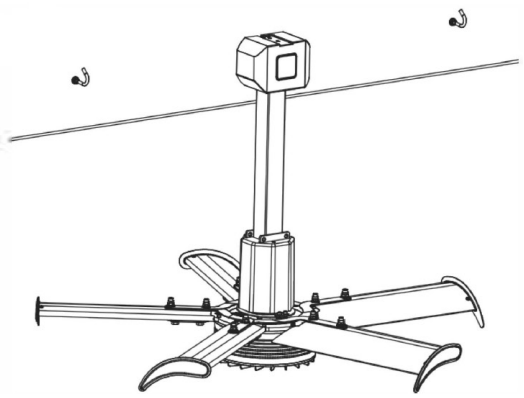


Step 11:

Determine the position of the expansion bolt hook, drill the mounting hole with a 14mm drill bit (hole depth > 80mm), install the M12X100 expansion bolt hook with the opening upward and tighten the expansion screw hook.

Accessories Needed:	
Name	**Qty.**
Expansion Bolt Hook	4

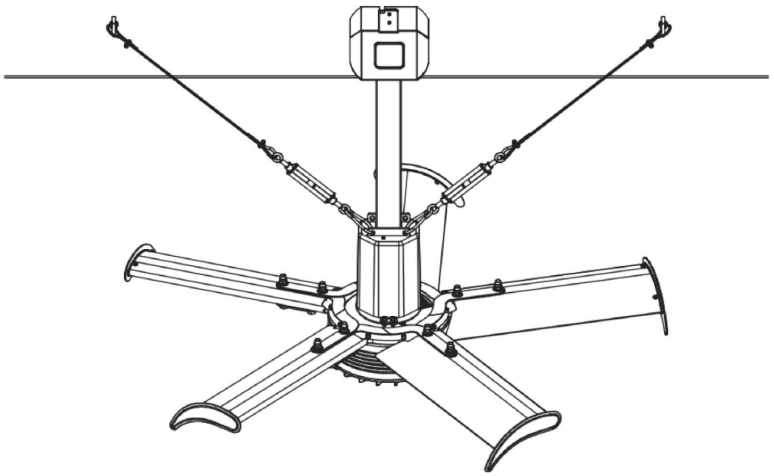




Step 12:

Fix the steel rope on the elastic hook with the steel rope clamp and fix the other end on the steel rope hook. Install the hook on the connecting plate of the ceiling fan motor. One end of the steel rope is fixed on the expansion screw hook with the steel rope clamp and adjust the tension of the steel rope with the elastic hook (until the steel rope is just straight).

Accessories Needed:	
Name	**Qty.**
M6 Steel Rope Clamp	8
30m Steel Rope	1
Elastic Hook	2
Steel Rope Hook	4



NOTE

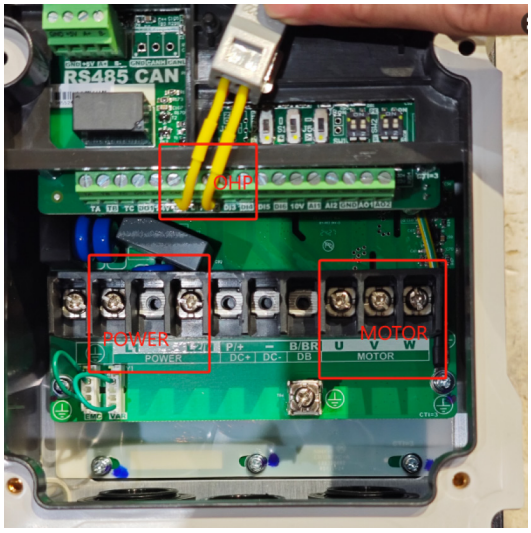
The included angle between the steel rope and the connecting rod is greater than 30° and less than 45°. The steel rope clamp shall be securely installed and the steel rope can be adjusted by the elastic hook.

Step 13:

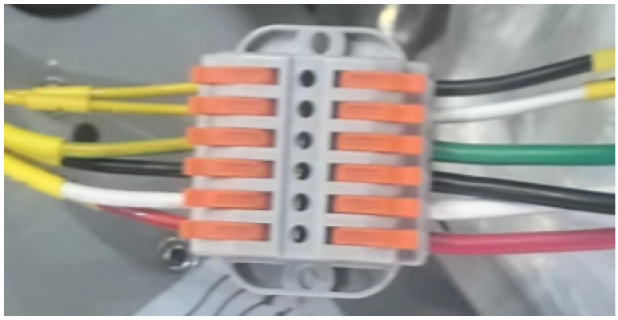
Select the location to install the controller. Connect the motor and the main power to the controller as required. Check whether there are obstacles that would interfere with operation. Control the fan according to the operation manual of the controller.

NOTE

The phase sequence of the motor connected to the controller cannot be out of order.



Accessories Needed:	
Name	**Qty.**
Permanent Magnet Motor Controller	1
Rubber Sheathed Cable	2



NOTE

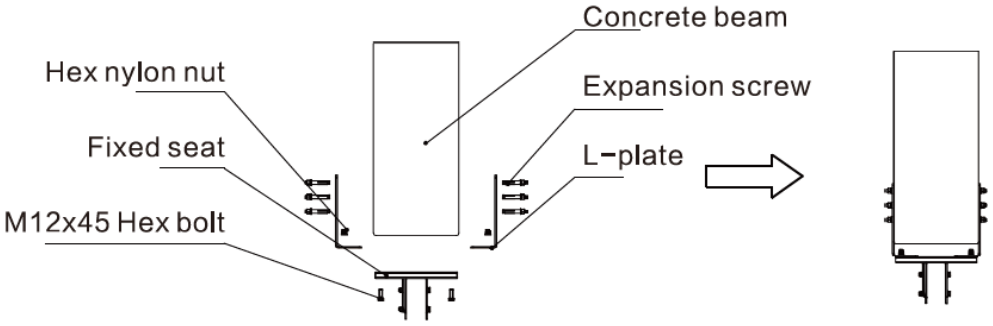
Do not connect the main power directly to the ceiling fan. Confirm whether the power voltage matches the controller voltage. After connecting the wire, pull to verify that the wire is secured. When connecting the fast terminal, the power cord should be peeled 13/16" (10mm) and inserted into the card slot as a depth of 5/8" (17mm).

4 - 24 ft. Fan Installation Steps

Step 1:

Determine the installation position of the ceiling fan, and mark it with the fixed seat L-plate. Drill the mounting hole with a 14mm drill bit (hole depth >80mm), install the M12X100 expansion screw, install the L-plate on the expansion screw, adjust the levelness of the L-plate, tighten the expansion screw and install the fixed seat under the L-plate and tighten it.

Accessories Needed:	
Name	**Qty.**
Fixed Seat	1
L-Plate	2
M12X45 Hex Bolt (Full Thread)	4
Ø12 Large Washer	8
Ø12 Spring Washer	4
M12 Hex Nylon Nut	4
M12X100 Expansion Screw	10



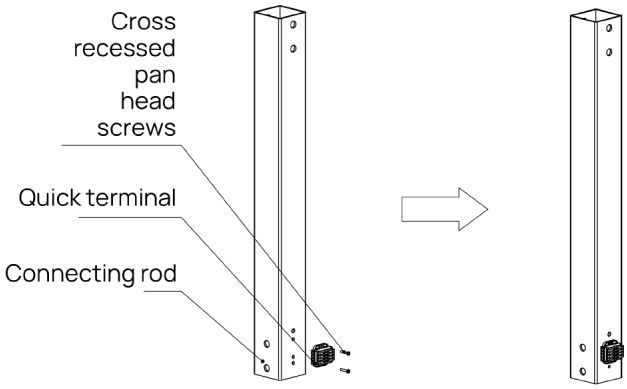
NOTE

Both the L-plate and the fixed seat shall be installed horizontally and symmetrically at both ends.

Step 2:

Install the quick terminal on the connecting rod, screw and lock it tightly.

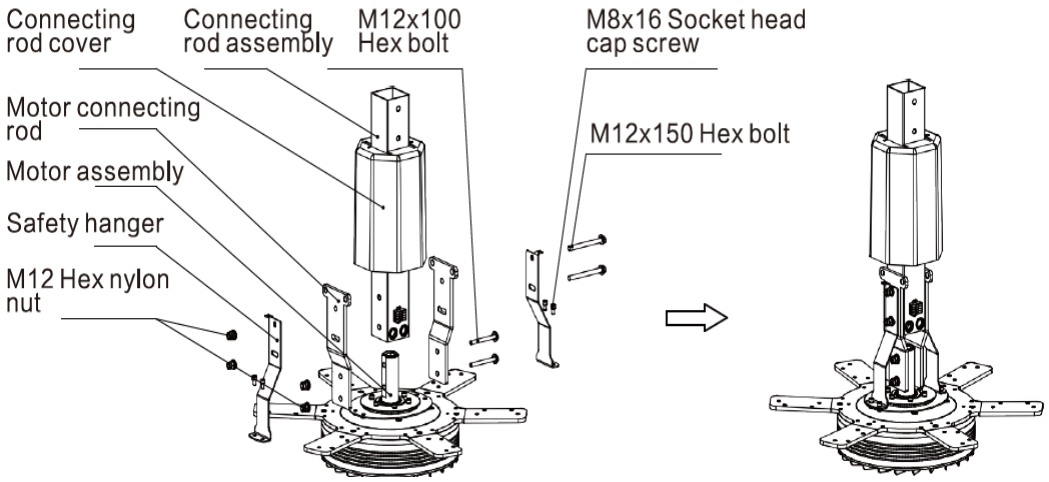
Accessories Needed:	
Name	**Qty.**
Connecting Rod	1
Quick Terminal	1
Cross Recessed Pan Head Screws M3x16	2



Step 3:

Install the connecting rod on the motor, install the connecting rod screws and safety hanger screws, and screw it without tightening.

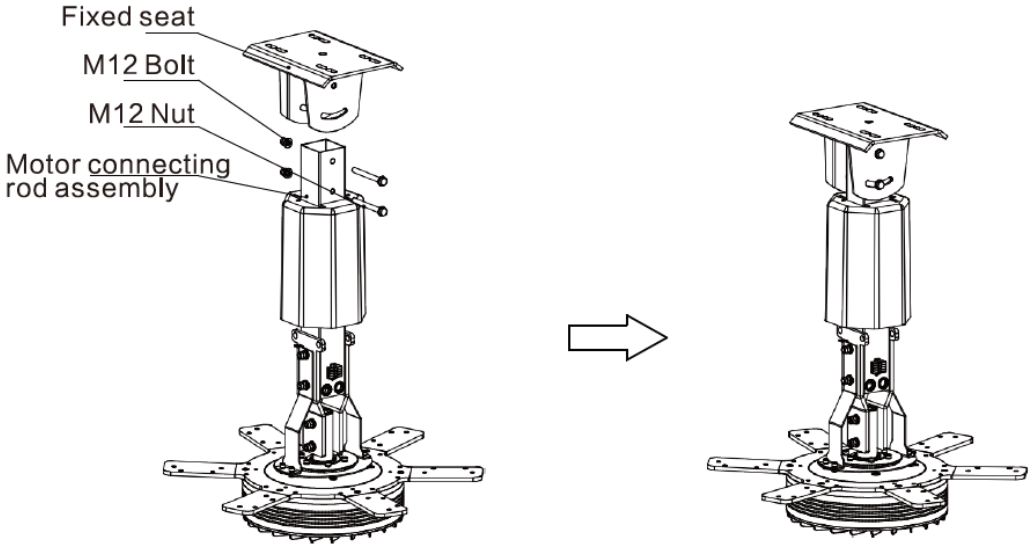
Accessories Needed:	
Name	**Qty.**
Motor Assembly	1
Connecting Rod Assembly	1
Motor Connecting Plate	2
Bracket Connecting Plate	2
Connecting Rod Cover	2
M5X10 Cross Recessed Screw	2
M8X20 Socket Heat Cap Screw	4
M12X150 Hex Bolt	2
M12X100 Hex Bolt	2
Ø12 Large Washer	8
Ø12 Standard Spring Washer	4
M12X100 Hex Bolt	4



Step 4:

Install the mounted motor connecting rod assembly on the fixed seat and screw it without tightening.

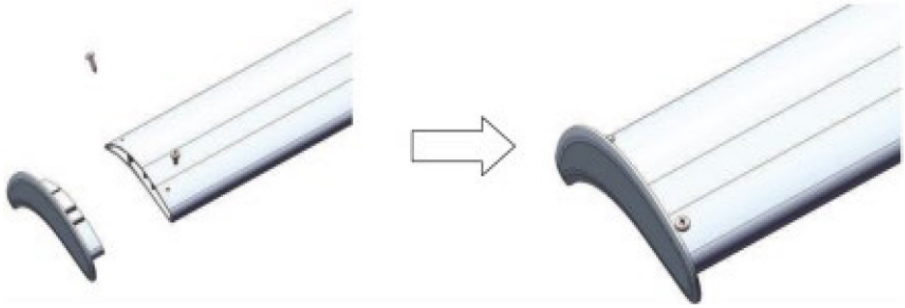
Accessories Needed:	
Name	**Qty.**
Motor Connecting Rod Assembly	1
M12X130 Hex Bolt	2
Ø12 Large Washer	4
Ø12 Standard Spring Washer	2
M12 Hex Nylon Nut	2



Step 5:

Install the blade tail on the blade and lock it.

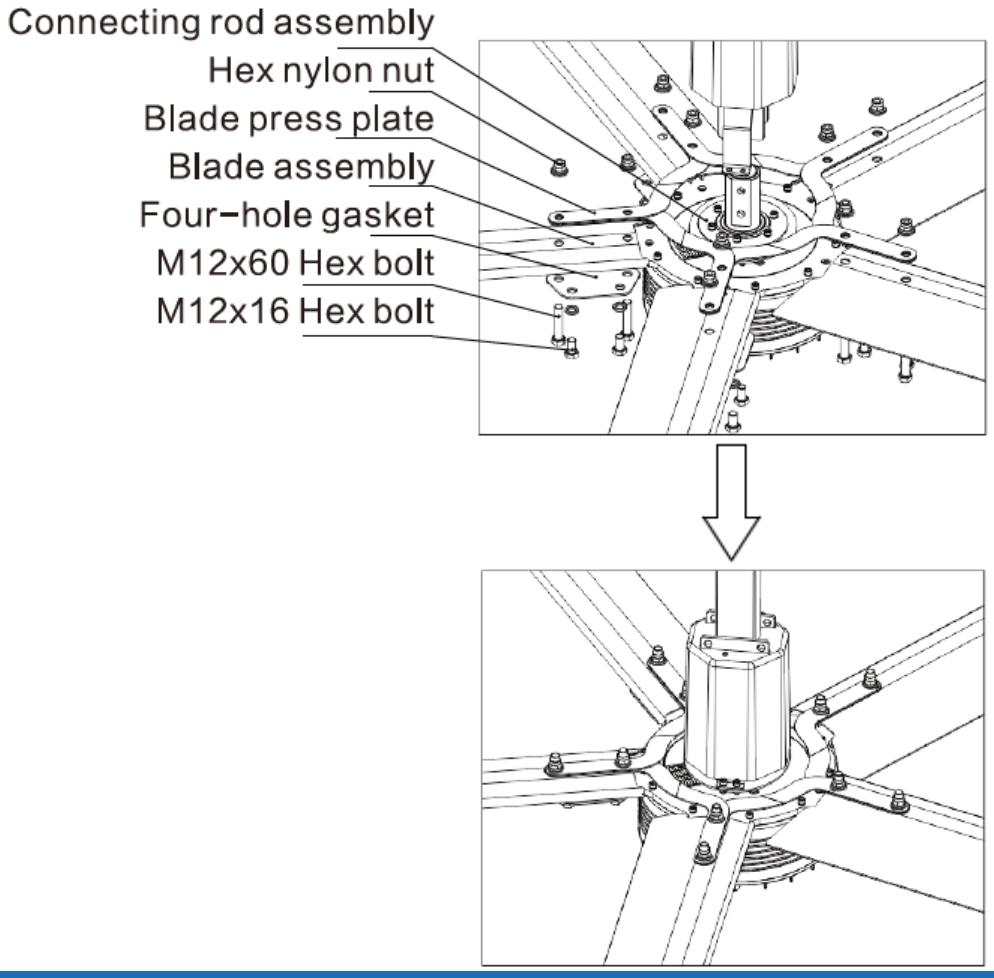
Accessories Needed:	
Name	**Qty.**
Blade	6
Tail Plane	6
ST4.8x16 Self Tapping Screw	12



Step 6:

Install the tail blade assembly on the motor, install the screws and pull the blade outward from the center of the motor. Screw the blade without tightening.

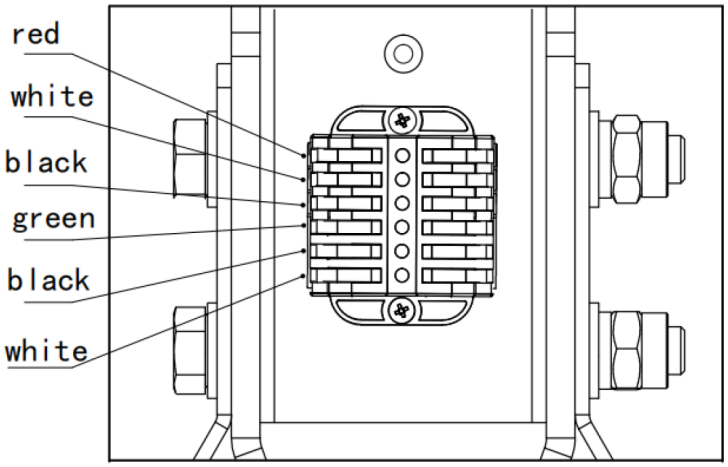
Accessories Needed:	
Name	**Qty.**
Blade Assembly	6
M12X50 Hex Bolt (Full Thread)	12
M12X16 Hex Bolt (Full Thread)	12
Blade Press Plate	6
Four-Hole Gasket	6
M12 Hex Bolt	12
Ø12 Spring Washer	24
Ø12 Flat Washer	12



Step 7:

Arrange the wiring from the ceiling fan to the controller, insert the motor lead wire and the fan power wire into the wiring clip. Arrange from bottom to top according to the diagram: red, white, black, green, black, white.

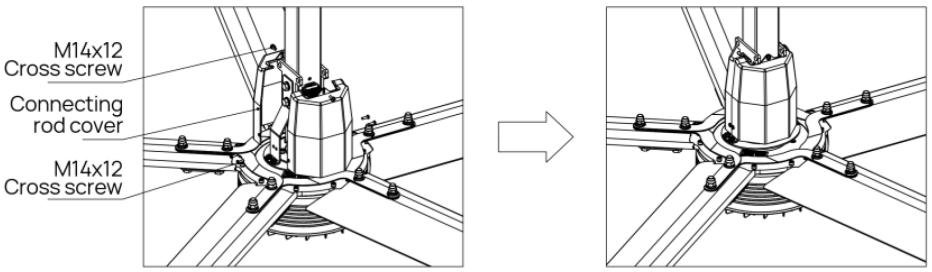
Accessories Needed:	
Name	**Qty.**
Cable14AWGX4X30M	1
Cable18AWGX2X30M	1



Step 8:

Install the connecting rod cover, screw and lock as shown below.

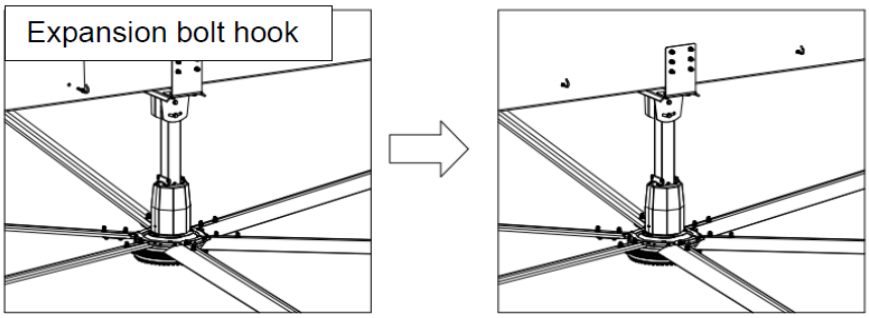
Accessories Needed:	
Name	**Qty.**
Connecting Rod Cover	2
M4X12 Cross Screw	6



Step 9:

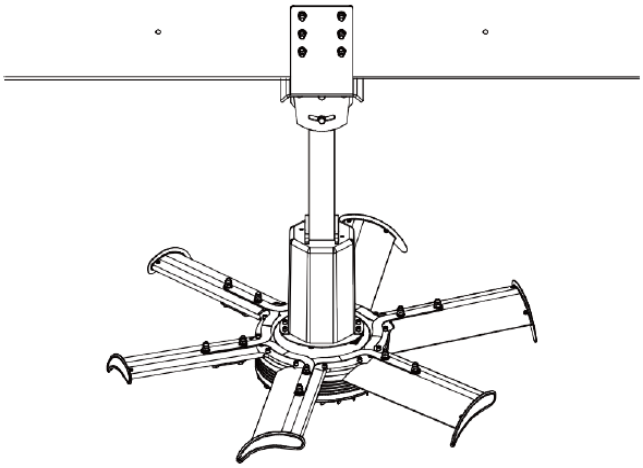
Determine the position of the expansion bolt hook, drill the mounting hole with a 14mm drill bit (hole depth 80mm), install the M12X100 expansion bolt hook with the opening upward and tighten the expansion screw hook.

Accessories Needed:	
Name	**Qty.**
Expansion Bolt Hook	4



Step 10:

Adjust the levelness of the motor and the verticality of the connecting rod, tighten the connecting rod and blade screws, install the fixed seat cover, and tighten the screws.



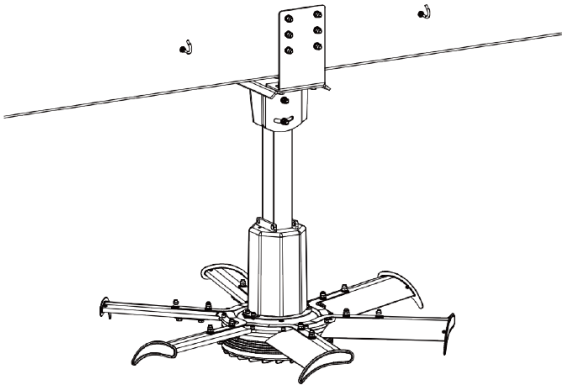
NOTE

Before tightening the blade screws, pull the blade outward from the center of the motor. Adjust the levelness of the motor and the verticality of the connecting rod before tightening the screws and check whether all the screws are tightened.

Step 11:

Determine the position of the expansion screw hook, drill the mounting hole with a 14mm drill bit (hole depth >80mm), install the M12X100 expansion screw hook with the opening upward and tighten the expansion screw hook.

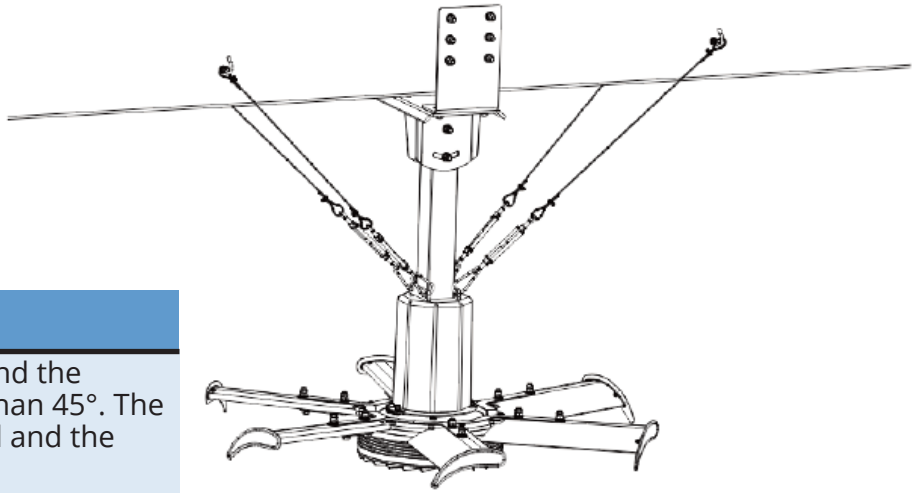
Accessories Needed:	
Name	**Qty.**
Expansion Screw Hook	4



Step 12:

Fix the steel rope on the O end of the turn buckle with the steel rope clamp. Install the end of the turn buckle on the connecting plate of the fan motor, fix the end of the steel rope on the expansion screw hook with the steel rope clamp, and adjust the tightness of the steel rope with the turn buckle (the steel rope is just straight).

Accessories Needed:	
Name	**Qty.**
M6 Steel Rope Clamp	16
6X10S+FC-6 30m Steel Rope	1
Elastic Hook	4
Steel Rope Hook	4



NOTE

The included angle between the steel rope and the connecting rod is greater than 30° and less than 45°. The steel rope clamp should be securely installed and the steel rope can be adjusted by the turn hook.

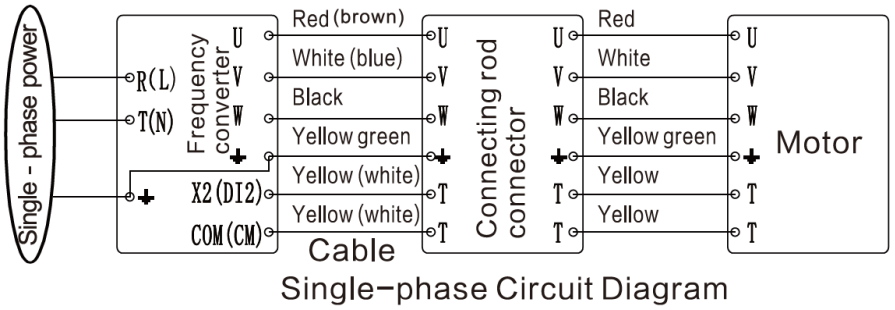
Step 13:

Select the location to install the controller. Connect the motor and the main power to the controller as required. Check whether there are obstacles around the fan to affect its operation and operate the fan according to the operation manual of the controller.

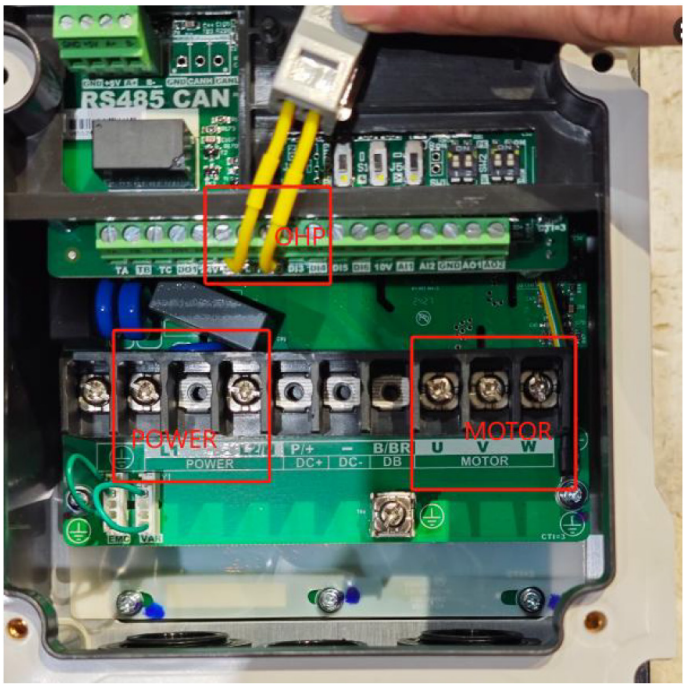
NOTE

The phase sequence of the motor connected to the controller cannot be incorrect.

Accessories Needed:	
Name	**Qty.**
Permanent Magnet Motor Controller	1
Rubber Sheathed Cable	2

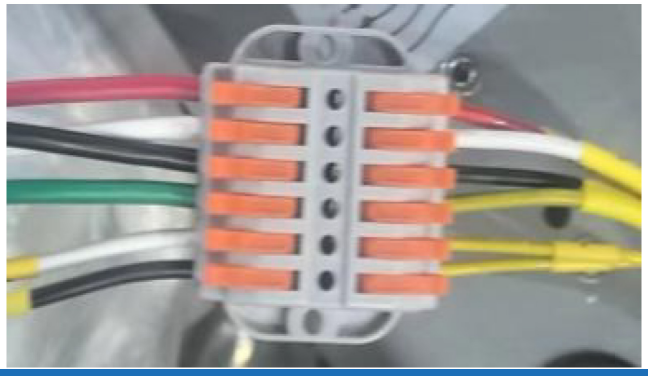


Single-phase Circuit Diagram



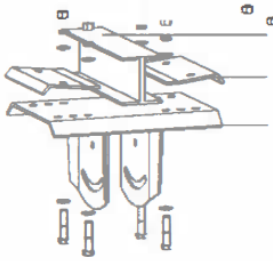
NOTE

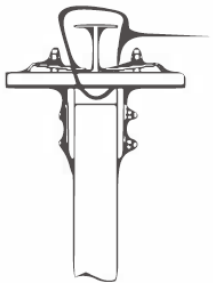
Do not connect the main power directly to the ceiling fan. Confirm whether the power voltage matches the controller voltage. After connecting the power cord, pull to verify the power cord is reliable. When connecting the fast terminal, the power cord should be peeled 10mm and inserted into the card slot at a depth of 17mm.



I-Shaped Steel Structure Installation Diagram:

(The rest are the same as 16 ft. fan.) Expansion screw hook is not available and the end of the steel rope can be tied to the I-beam with the steel rope clamp.



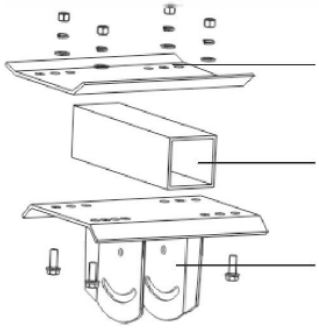


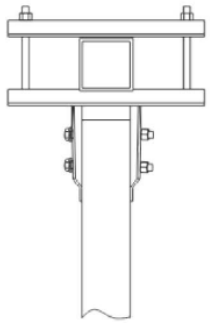
Put steel rope through the hanger and the I–shaped steel, and tighten with horn buckle

Please measure the verticality with level ruler when installing the bracket

Square-Steel Structure Installation Diagram:

(The rest are the same as 16 ft. fan.) Expansion screw hook is not available and the end of the steel rope can be tied to the square steel beam with the steel rope clamp.

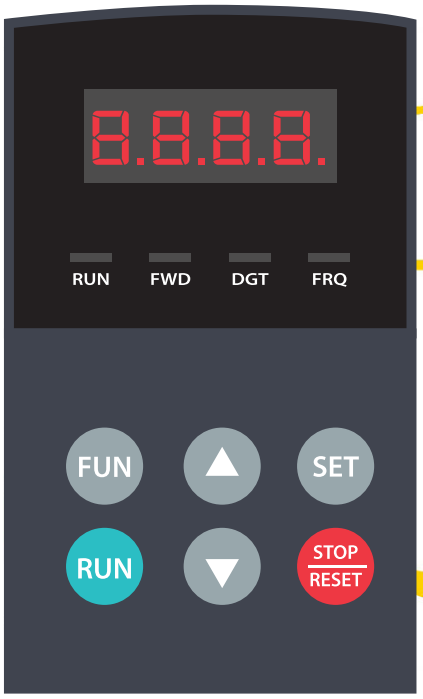




Measure the verticality with level ruler when installing the bracket

5 - Control Panel Operation

The panel covers three sections: data display section, status indicating section, and keypad operating section.



LED shows running frequency, flashing target frequency, function code, parameter value, or fault code.

4 LEDs indicate working status. RUN is lit when running. FWD is lit when working forward. FRQ is lit when showing.

Press "Fun" for function code, and "Set" for original parameters. Up and down arrow keys can be used to select function codes and parameters. Press "Set" again to confirm. In keypad control mode, the up and down keys can also be used for dynamic speed control. "Run" and "Stop/Reset" keys control start and stop. Press "Stop/Reset" key to reset inverter to fault status.

6 - Troubleshooting

Fault Code	Description	Causes	Solutions
OC	Over-current protection	-Short circuit at output side -Motor is locked or overloaded	-Check whether the motor cable is damaged -Check whether the motor is stuck
OE	DC over-voltage protection	-Power voltage is too high -Deceleration inertia is too large	-Check whether the rated voltage is input -Increase deceleration time
PF1	Input phase loss protection	-Phase loss of input power	-Check whether the power input is normal
OL1	Converter overload protection	Overload	-Reduce load -Increase the capacity of converter
OL2	Motor overload protection	Overload	-Reduce load -Check mechanical devices -Increase the capacity of converter
LU	Under-voltage protection	Input voltage is too low	Check whether the power voltage is normal
OH	Converter overheat protection	-The fin is too dirty -The fan is damaged -Ambient temperature is too high	-Clean the air inlet and fin -Replace the fan -Increase ventilation
ESP	External fault	External emergency stop terminal functions	Check the external terminal fault signal
Err2	Parameter measurement error	Motor is not connected during parameter	Connect the motor correctly
Err3	Current fault before operation	There is current alarm signal before operation	-Check whether the cable is securely connected -Contact the manufacturer
Err4	Current zero deviation fault	-Cable is loose -The current detection device is damaged	-Check and connect the cable again -Contact the manufacturer
PFO	Output phase loss	-Motor is disconnected -Motor is broken -Frequency converter has fault	-Check the motor connecting wire carefully -Replace the motor -Contact the manufacturer
GP	Grounding Protection	-Motor cable is damaged & short-circuited to the ground -The motor insulation is damaged & short-circuited to the ground -Frequency converter has fault	-Replace the cable -Repair the motor -Contact the manufacturer
PCE	PMSM maladjustment fault	-Acceleration time is too short -Overload -Motor is locked	-Increase the acceleration time -Check whether the motor is overloaded
ALM on	Faulty	Report fault	Stop/Reset
OH1	Motor overheat protection	-Ambient temperature is too high -Open circuit of temperature control circuit -Motor temperature is too high	-Increase ventilation -Repair the temperature control circuit -Increase motor heat dissipation
Key Failure	Instruction is invalid	-Cable is loose -Frequency converter has fault	-Plug the cable securely -Turn off the power and power on again -Contact the manufacturer

MRCOOL®

COMFORT MADE SIMPLE

Industrial HVLS Fan