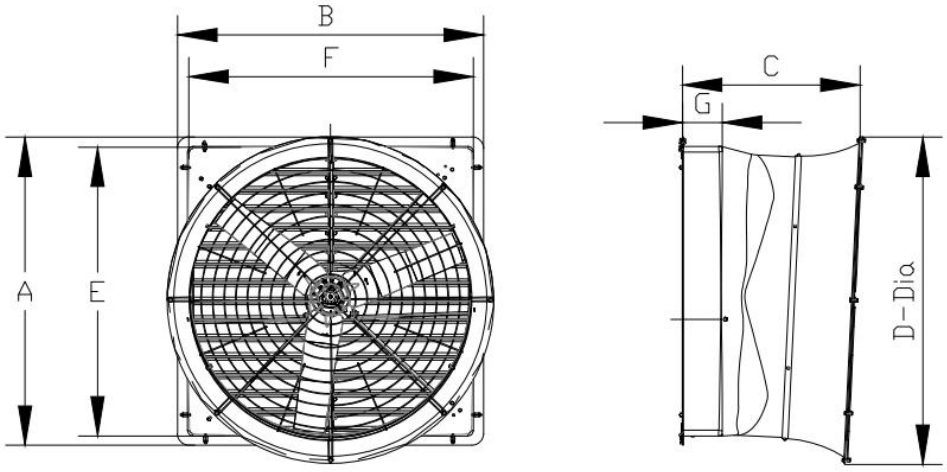
PACIFIC
INTEGRATED MANUFACTURING SOLUTIONS

55" Exhaust Fan Installation Manual

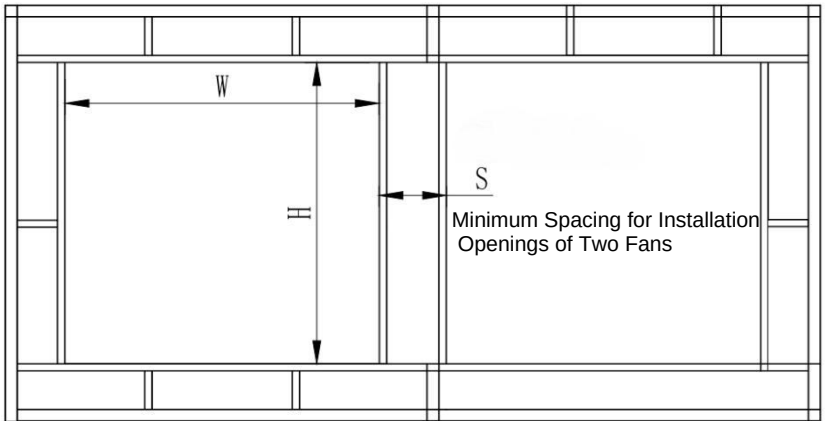
Chapter 1 - Product Information and Tools

1.1 Fan size



Fan Model	Dimension							Power Supply
	A	B	C	D	E	F	G	
55"	1620	1600	915	1689	1500	1480	200	230V/460V 60 Hz

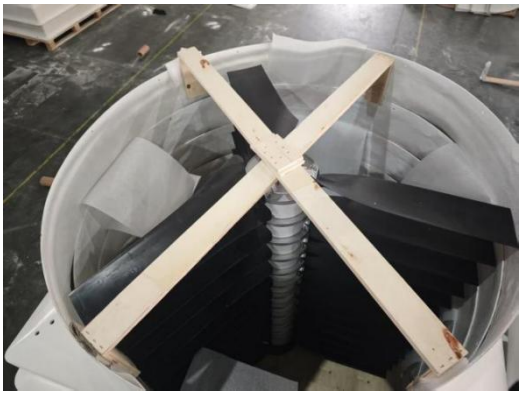
1.2 Size of wall opening



Fan Model	Wall opening size (mm)		Fan installation distance (mm)
	Width - W	Height - H	S
55"	1510	1525	Recommended ≥750, 500 Minimum

Note: If the fans are to be installed in the brick-concrete wall opening, the walls need to be plastered before they are ready for installation. The left, right, and bottom sides of the fan opening need to be solid concrete or solid brick. Before installation, the wall opening size must be checked according to the table above. The recommended wall thickness of the wall opening for the fan installation should not be less than 120mm.

1.3 Packing of fan components



Blade



Shutters



Motors



Guards



Housing



Bracket

1.4 Fan unloading and storage

Note: When unloading the packing of fan components from transportation vehicles on site, it is recommended to unload them with a forklift or truck crane, considering each packing is heavy and valuable. It is not recommended to manually unpack and unload the goods from transportation vehicles inefficiently, as it might damage the fan components during the unloading process, on-site transfer, and storage.

1.5 Tools for assembly and installation

No.	Tools & Description	Picture	QTY
1	13mm open-end wrench X1 17mm open-end wrench X1 Rechargeable electric wrench (with13mm,17mm Hex socket)		1
2	5~25N Torque wrench #5 Allen key with hex socket #4 Allen key with hex socket (for mounting impeller with motor and taper lock)		1
3	Hammer drill (with φ12mm drilling bit)		1
4	Rubber hammer		1

The above is a list of tools for assembly and installation, and tools must be prepared before installation. In addition, the sealing foaming agent needed for installation will not be included with fans' delivery. It has to be prepared on site in advance.

Chapter 2 - Instruction of Fan Assembly

2.1 Assembly of fan

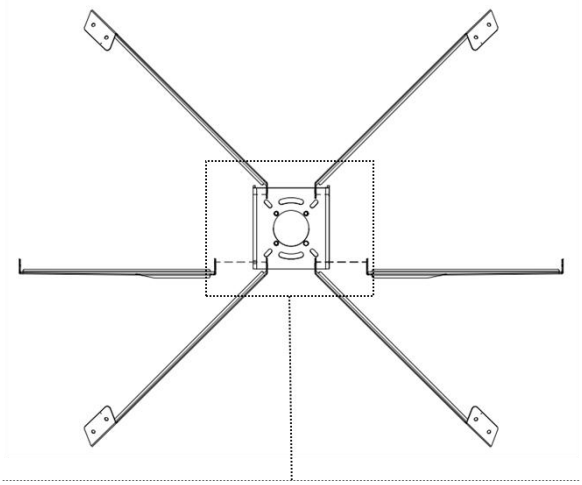
Before assembling the fan, prepare and check the materials used in the following steps according to the relevant fan parts list below. Prepare the tools used in the assembly work according to the tool list in the previous chapter, especially the torque wrench and the Allen keys with hex sockets.

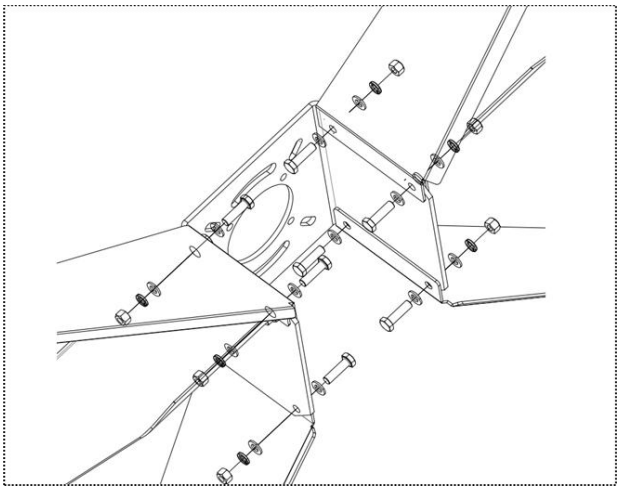
2.1.1 Assembly of sheet metal and bracket

Parts and fasteners list

No.	Part	Name	Type	Qty
1	Sheet metal and bracket	Bolt	M10*35	8
		Nut	M10	8
		Spring pad	Q10	8
		Flat cushion	10*25	16
2		Bracket	-	1 set (6 pcs)
3		Sheet Metal	-	1

Note: There is a total of 8 sets of fasteners. The sequence for the fasteners is as follows: Bolt M10*35 + Flat cushion 10*25 → Flat cushion 10*25 + Spring pad Q10 + Nut M10. Use a 17# wrench to secure them.

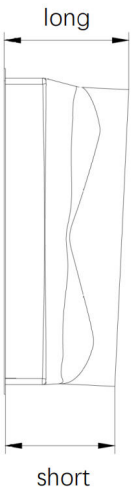




2.1.2 Assembly of housing and sheet metal

Fan housing should be stacked before assembly, as in the picture below, and it is strictly forbidden to stand up after unpacking to prevent housing deformation.

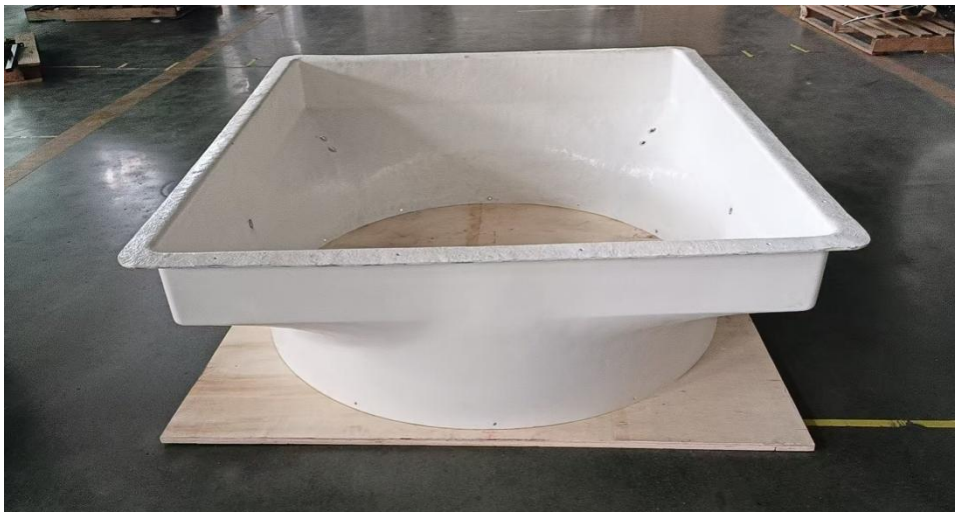




The housing top part is slightly longer than the bottom part, it could be distinguished, just as shown in the figure.

The fan assembly must be carried out on flat ground, with wooden boards or other protective materials on the ground, to prevent damage to the surfaces of the fan housing.

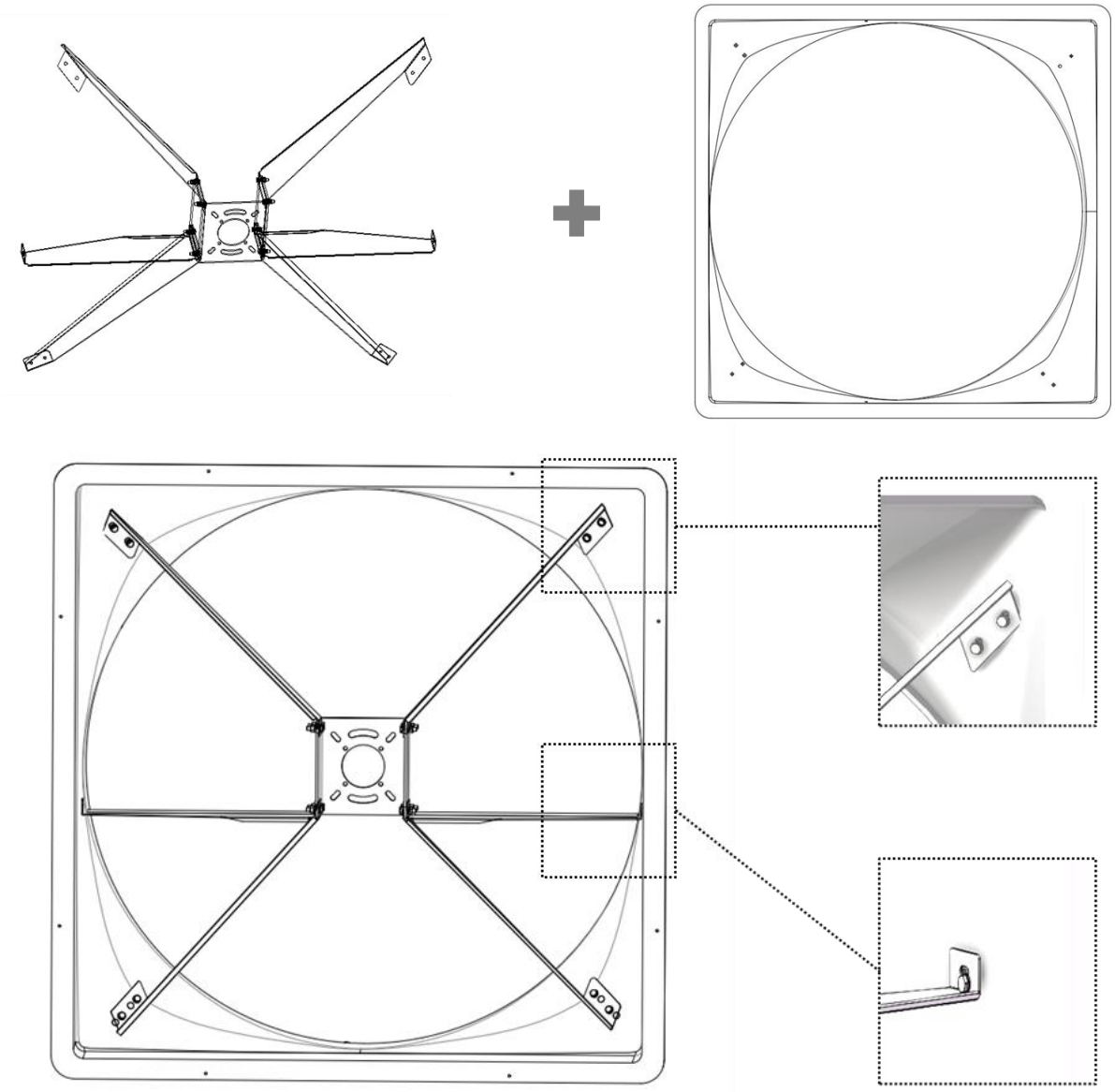
First, unpack and get the required QTY of the fan housing. Then, place the round mouth downward, as in the picture below.



Parts and fasteners list

No.	Part	Name	Type	Qty
1	Housing and brackets	Bolt	M10*35	10
		Nut	M10	10
		Spring pad	Q10	10
		Flat cushion	10*25	20
		Rubber Washer		10
2		3.1.1 Combination	-	1

Note: There is a total of 10 sets of fasteners.The sequence for the fasteners is as follows: Bolt M10*35 + Flat cushion 10*25 →RubberWasher→Flat cushion 10*25+Spring pad Q10+BoltM10. Use a 17# wrench to secure them.



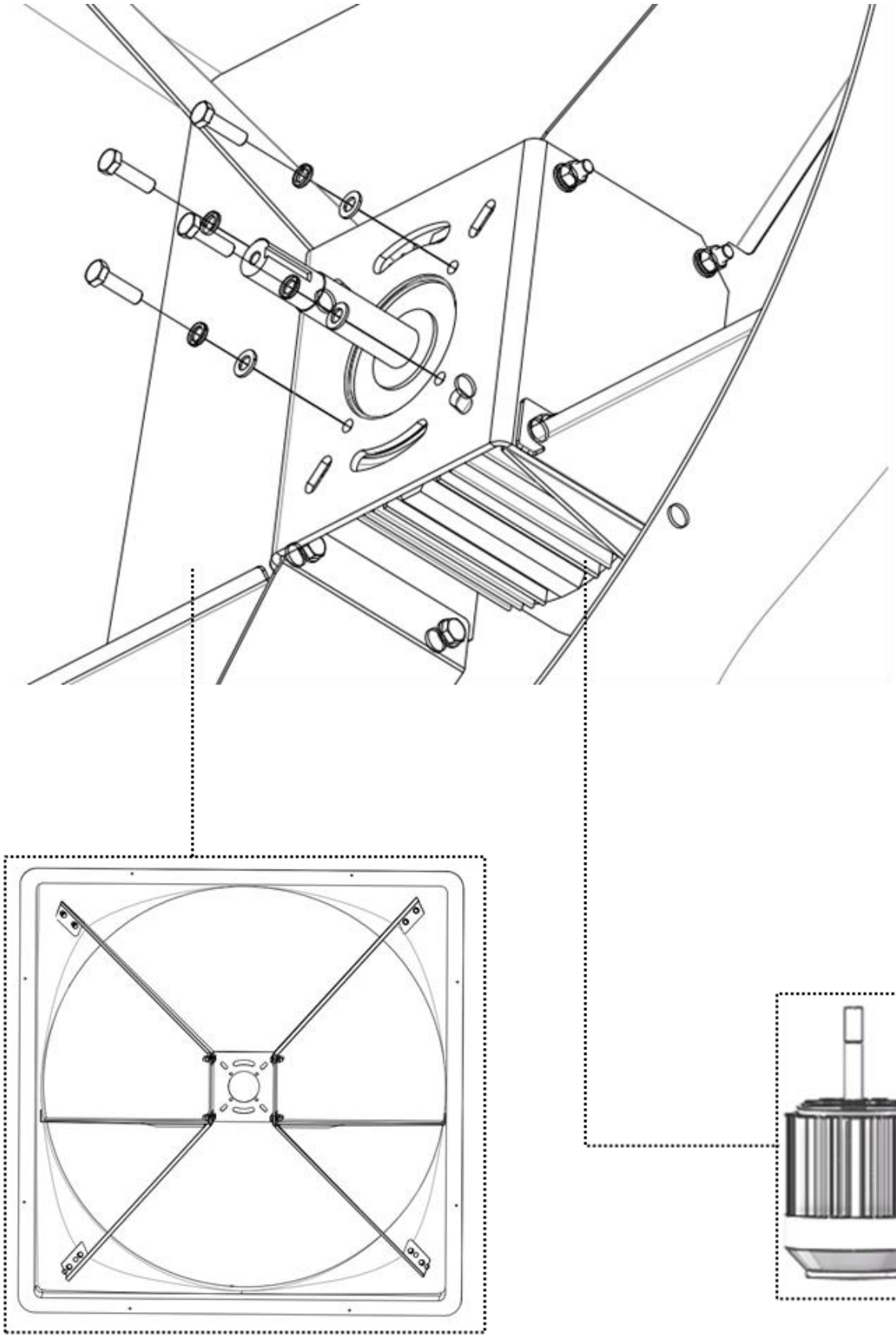
Note: The rubber washer should be placed between the sheet metal and the housing, and 10pcs for each fan.

2.1.3 Assembly of motor and sheet metal

Parts and fasteners list

No.	Part	Name	Type	Qty
1	Motor and sheet metal	Bolt	M10*30	4
		Spring pad	Q10	4
		Flat cushion	10*25	4
2		3.1.2 Combination	-	1
3		Motor	-	1

Note: There is a total of 4 sets of fasteners. The sequence for the fasteners is as follows: Bolt M10*35 + Spring pad Q10 +Flat cushion 10*25. Use a 17# wrench to secure them.

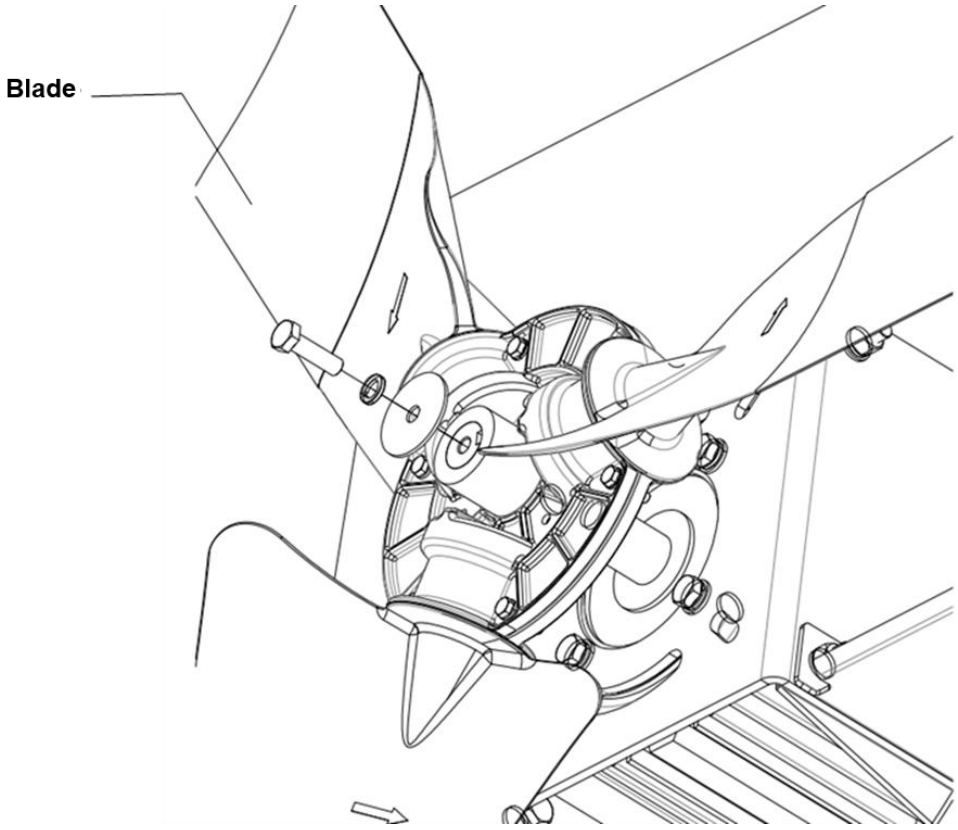


2.1.4 Assembly of motor and blade

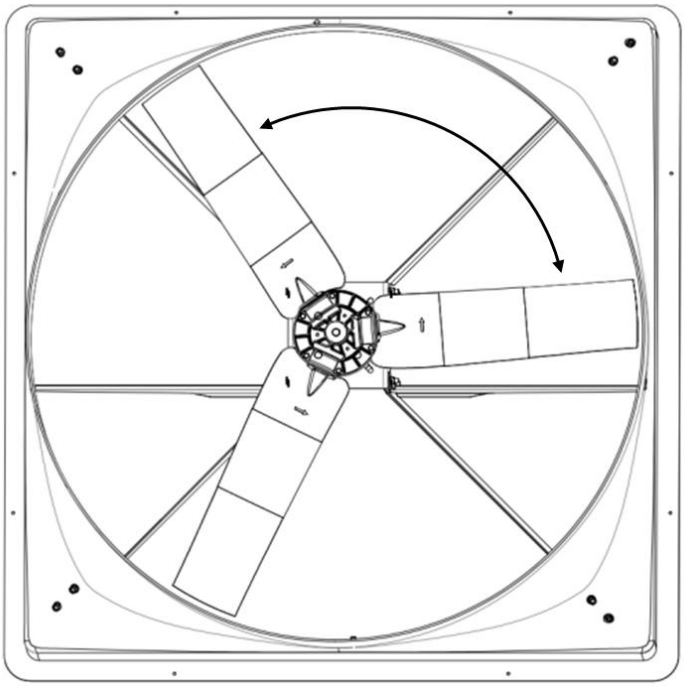
Parts and fasteners list

No.	Part	Name	Type	Qty
1	Fan blades and motors	Bolt	M10*25	1
		Spring pad	Q10	1
		Flat cushion	10*50	1
2		3.1.3 combination	-	1
3		fan blade	-	1

Note: There is a total of 1 set of fasteners. The sequence for the fasteners is as follows: Bolt M10*25(Level 8.8) + Spring pad Q10 + Flat cushion 10*50. Use a 17# wrench to secure them.



1) Inspect and ensure that the flat key matching the motor has been installed in the keyway on the motor shaft.
2) Align the fan blade and slide it onto the shaft.
3) Place a flat cushion and a spring pad then tighten the bolt (M10*25).
4) Rotate the fan blade to confirm that there is no interference between the blade and the housing.
5) Maintain a gap of 7mm ± 2.5mm between the fan blade and the circular opening of the housing.

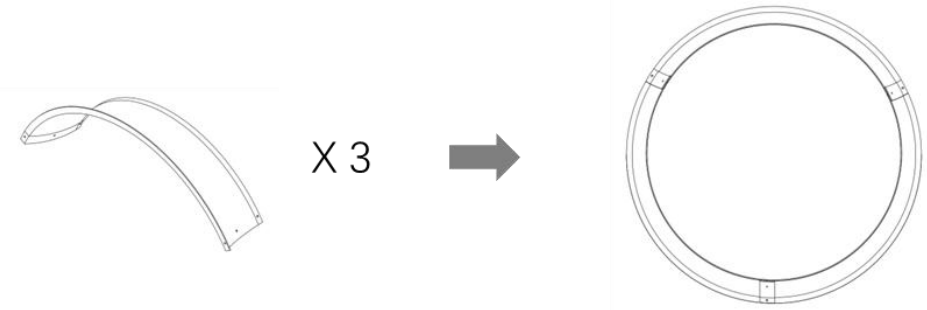


2.1.5 Assembly of cone

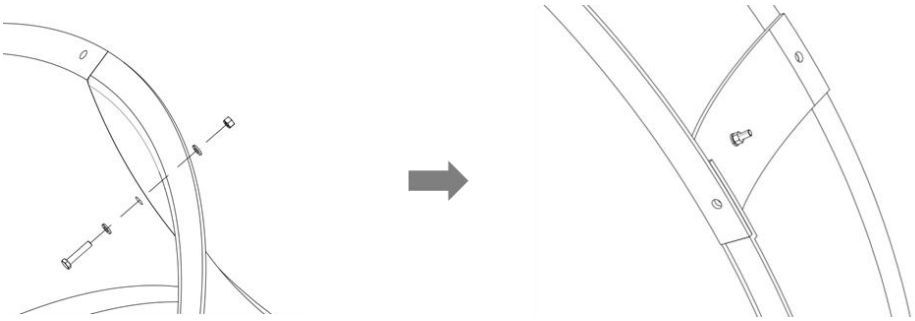
Parts and fasteners list

No.	Part	Name	Type	Qty
1	Cone	Bolt	M6*25	3
		Nut	M6	3
		Flat cushion	6*25	6
2		Cone	-	3

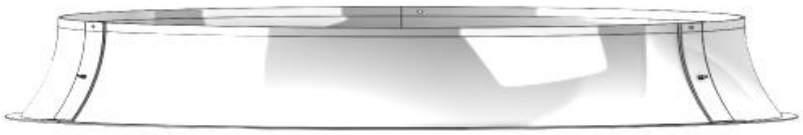
Note: There is a total of 3 set of fasteners. The sequence for the fasteners is as follows: Bolt M6*25 + Flat cushion 6*25 → Flat cushion 6*25 + Nut M6. Use a 10# wrench to secure them.



Form the cone into a circle, place it flat on a level surface, and begin by installing two pieces.



Proceed to install the third piece.

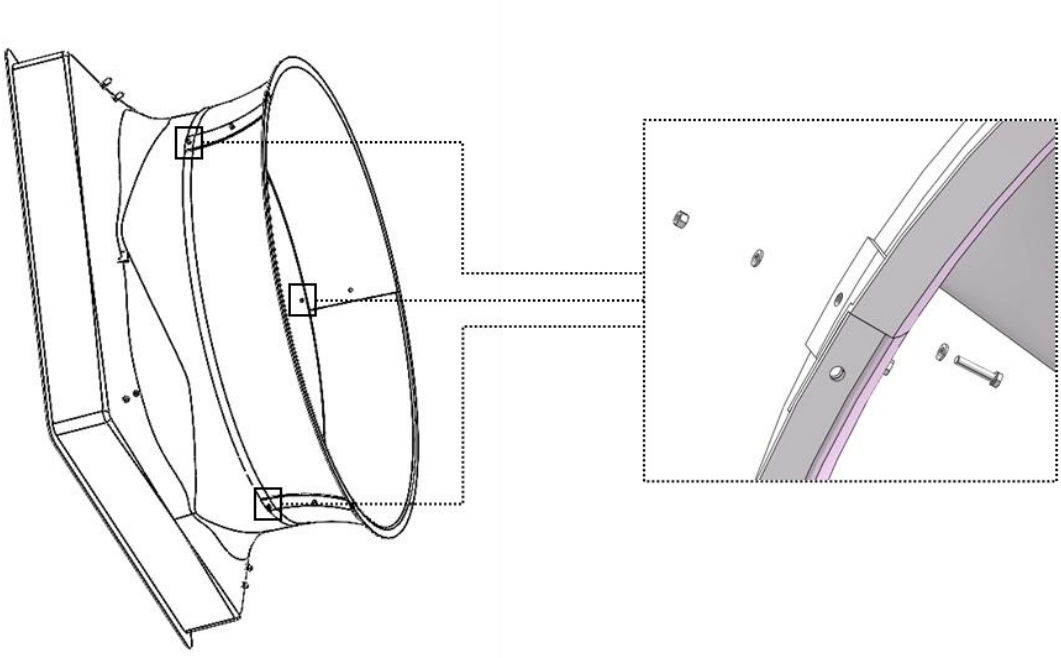


2.1.6 Assembly of cone and housing

Parts and fasteners list

No.	Part	Name	Type	Qty
1	Cone	Bolt	M6*25	3
		Nut	M6	3
		Flat cushion	6*25	6
2		3.1.4 Installation combination	-	1
3		3.1.5 Installation combination	-	1

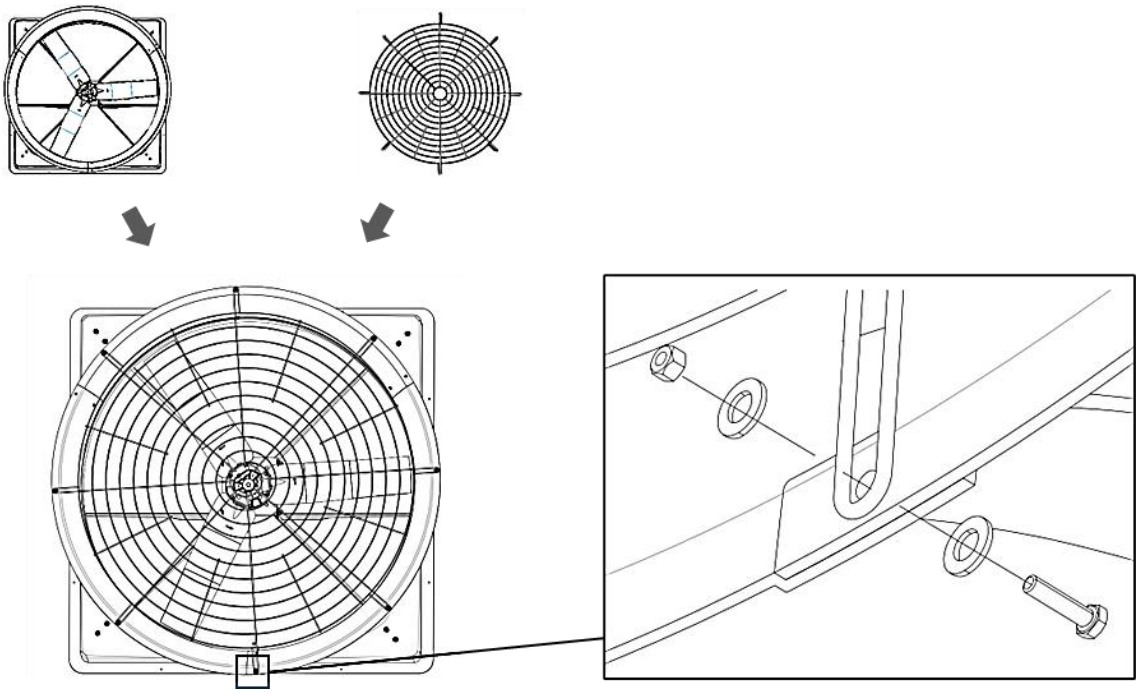
Note: There is a total of 3 set of fasteners. The sequence for the fasteners is as follows: Bolt M6*25 + Flat cushion 6*25 → Flat cushion 6*25 + Nut M6. Use a 10# wrench to secure them.



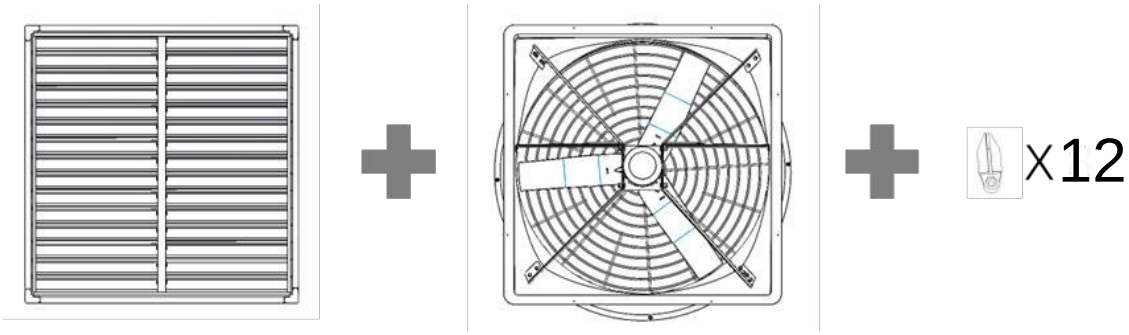
2.1.7 Assembly of cone and guard

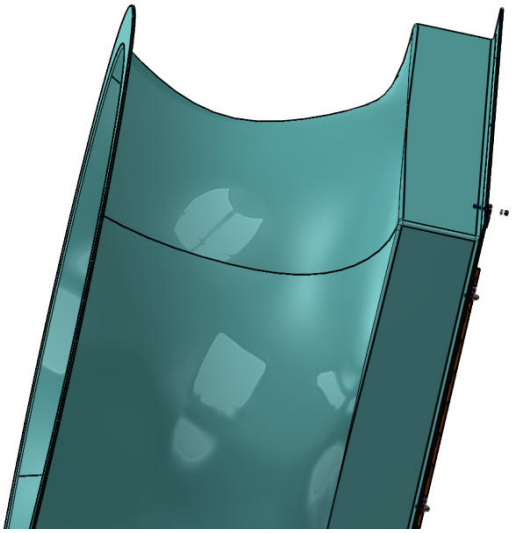
Parts and fasteners list

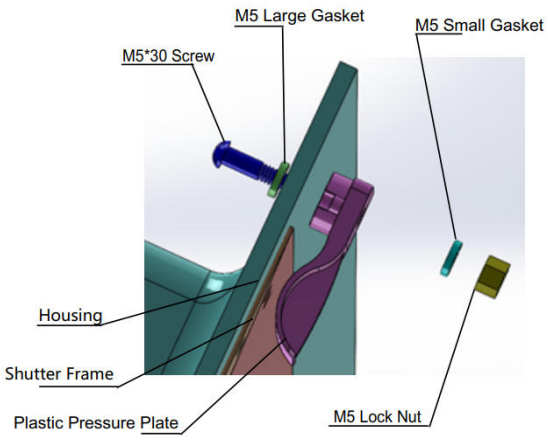
No.	Part	Name	Type	Qty
1	Cone	Bolt	M6*25	8
		Nut	M6	8
		Flat cushion	6*25	16
2		3.1.6 Installation combination	-	1
3		Guard	-	1



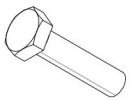
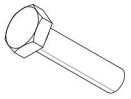
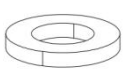
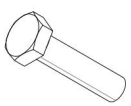
2.1.8 Assembly of shutters and housing

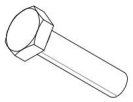
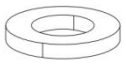
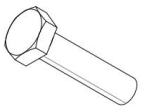
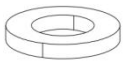
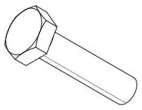
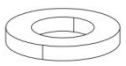
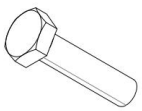


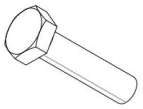
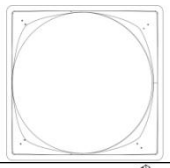
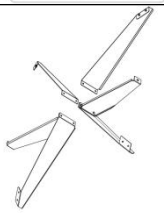
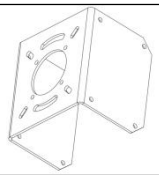


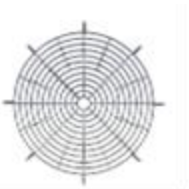
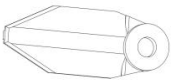


2.2 Accessories list

No.	Part	Name	Type	Qty	picture
1	Sheet metal and bracket	Bolt	M10*35	8	
		Nut	M10	8	
		Spring pad	Q10	8	
		Flat cushion	10*25	16	
2	Housing and brackets	Bolt	M10*65	10	
		Nut	M10	10	
		Spring pad	Q10	10	
		Flat cushion	10*25	20	
3	Motor and sheet metal	Bolt	M10*30	4	

		Spring pad	Q10	4	
		Flat cushion	10*25	4	
4	Fan blades and motors	Bolt	M10*25	1	
		Spring pad	Q10	1	
		Flat cushion	10*50	1	
5	Cone	Bolt	M6*25	3	
		Nut	M6	3	
		Flat cushion	6*25	6	
6	Cone and housing	Bolt	M6*25	3	
		Nut	M6	3	
		Flat cushion	6*25	6	
7	Cone and guard	Bolt	M6*25	8	
		Nut	M6	8	

		Flat cushion	6*18	16	
8	Shutters and housing	Bolt	M5*25	8	
		Nut	M5	8	
		Flat cushion	5*18	16	
9	-	Housing	-	1	
10	-	Bracket	-	1 set	
11	-	Sheet Metal	-	1	
12	-	Motor	-	1	
13	-	Cone	-	1 set (3 pcs)	
14	-	Blade	-	1 set	

15	-	Shutters	-	1	
16	-	Guard	-	1	
17	-	Plastic Pressure Plate & screw kits	-	12	

2.3 Pasting safety sticker

According to the position shown in the picture below, paste the safety sticker on the side of the fan.





2.4 Check all fasteners

Check that all fan fasteners are fully tightened up.

2.5 Power-on and testing

Note: Before powering on, the blade must be manually rotated and checked for any possible interference between the rear of the blade hub and the motor. Also, ensure that there is no friction or interference between the tip of the fan blades and the internal surface of the fan housing. Furthermore, it is important to check and clean the internal of the fan to ensure that there are no objects that may get sucked in and damage the rotating fan blades, such as fasteners, paper, tape, or packaging material.

2.5.1 Power on to check the rotating direction

If facing the fan outlet, the fan will rotate clockwise. If the fan rotates in the wrong direction, replace any two phases of the motor's three-phase power supply wiring and change the motor's rotation.

2.5.2 Power on and start the fan to inspect vibration and abnormal noise

If the blade rotating direction is correct, start up the fan and run it for 5 minutes to check whether there is any abnormal vibration or noise. If there is no abnormality, start the fan running for 1 hour, and check whether the fan has abnormal vibration and abnormal noise. Once the test is complete, please check all the fasteners to ensure they are secure.
Note: During the trial operation of the fan, the shutters and the safety guard must be installed.

2.5.3 Repeatedly start and stop the fan to inspect shutters

To test the fan with the shutter, start and stop the fan ten times. Observe if all the blades of the shutter are opening and closing smoothly and if they're closing completely when the fan is stopped. Check that there are no gaps in between each blade when they overlap, and make sure that the blades are not stuck in the housing and can be reset after stopping.

Chapter 3 - Fan Maintenance and Inspection

3.1 Fan Maintenance

The fan is designed with a fully direct-drive, maintenance-free system, eliminating the need for external bearing housing, drive belts, pulleys, or tensioners. The internal bearings in the motor are also maintenance-free and do not require lubrication.

Regularly remove dust from the louvers and fan blades, as accumulated dust can significantly impair the fan's performance. Use low-pressure water or compressed air for cleaning. Do not use high-pressure washing systems directly on the fan, as this may cause water ingress into the motor, leading to complete fan failure.

3.2 Routine Periodic Inspection

Perform routine periodic inspections on the fan according to the following schedule:

Routine Periodic Inspection Checklist

No.	Inspection Item	Inspection Frequency
1	Check and tighten all the fasteners on the fan	First inspection after 1 month of operation, then every 6 months
2	Check motor supply voltage and operating current	Every 6 months
3	Check for abnormal vibration and noise in the fan	Every 6 months
4	Check for abnormal noise in the motor bearings	Every 6 months
5	Check the opening/closing of louvers and the tightness of the blades	Every 6 months
6	Inspect the connection between the fan hub, taper sleeve, and motor shaft	First inspection after 1 month of operation, then every 12 months

3.3 Fan Motor Fails to Start

Follow the steps below to troubleshoot:

No.	Inspection Item	Action
1	Check if the fan blade is stuck	Remove any foreign objects, repair or replace damaged blades or housing
2	Check the power circuit continuity from the distribution box	Ensure the power circuit is continuous
3	Check the three-phase voltage at the motor cable connection	Ensure the voltage is normal
4	Inspect the control wiring, including the signal lines from the controller to the drive end for any miswiring or damage	Ensure the signal is normal
5	Measure the motor's three-phase current	If the current exceeds the rated value, proceed to section 4.4

3.4 Fan Motor Current Exceeds Rated Current

Follow the steps below to troubleshoot:

No.	Inspection Item	Action
1	Check the supply voltage	Ensure the voltage is within the allowable fluctuation range, with no phase loss or imbalance
2	Check if the louvers fail to open	Repair the louver mechanism
3	Check for excessive dust or damage on the fan blades and louvers	Clean or replace the blades/louvers
4	Check the negative pressure on the louver side of the building when the fan is running at high current	Excessive negative pressure may cause the motor current to exceed the rated value
5	Remove the fan blade from the motor shaft and run the motor without load to check the current	If the current remains high, repair or replace the motor

3.5 Abnormal Noise During Fan Operations

Follow the steps below to troubleshoot:

No.	Inspection Item	Action
1	Check for foreign objects in the fan duct and ensure the louvers are functioning properly	Remove foreign objects or repair the louvers
2	Check if the fan blade is rubbing against the fiberglass housing during operation	Repair or replace the housing if deformed
3	Check the cable fixation to ensure it is not rubbing against the fan blade	Secure the cable to the aluminum profile
4	Check the connection between the fan hub, taper sleeve, and motor shaft	Tighten the blade and taper sleeve using a torque wrench
5	Remove the fan blade from the motor shaft and check for abnormal noise when the motor runs without load	Repair or replace the motor

3.6 Excessive Fan Vibration

Follow the steps below to troubleshoot:

No.	Inspection Item	Action
1	Check if excessive dust or damage on the fan blade has disrupted its balance	Clean or replace the blade
2	Check if the fan blade is rubbing against the fiberglass housing or other obstructions during operation	Repair or replace the housing if deformed
3	Check the connection between the fan hub, taper sleeve, and motor shaft	Tighten the blade and taper sleeve using a torque wrench
4	Replace the fan blade and check if the vibration persists	If the new blade does not vibrate, replace the old blade
5	Remove the fan blade from the motor shaft and check for vibration when the motor runs without load	Repair or replace the motor
6	Check if there is a phase loss in the power supply	Repair the power circuit

3.7. Loose Connection Between Fan Hub, Taper Sleeve, and Motor Shaft

Follow the steps below to troubleshoot:

No.	Inspection Item	Action
1	Remove the fan hub and check if the loose taper sleeve is damaged	Replace the taper sleeve
2	Check if the stainless steel end cap on the motor shaft is missing a double-stacked self-locking washer	Install the double-stacked self-locking washer
3	Check the single high-strength bolt securing the hub to the motor shaft	Tighten to **12 N·m** using a torque wrench
4	Check the three stainless steel bolts securing the hub to the taper sleeve	Tighten to **8 N·m** using a torque wrench

3.8. Louvers Fail to Close Completely After Shutdown

Follow the steps below to troubleshoot:

No.	Inspection Item	Action
1	Check if the louver blades are deformed or damaged	Replace the louver blades
2	For synchronized louvers, check if all blades are failing to close simultaneously	Repair any issues with the synchronization linkage on both sides
3	Check if the length of the non-closing louver blade exceeds that of other blades	Replace the over-length louver blade
4	Check if the louver frame and central column are deformed	Straighten the frame and central column, and reinforce the back rods

3.9. Fan Blade Removal and Replacement

Note: Before removing or replacing the fan blade, ensure the power supply is disconnected. Place a clear warning sign or take protective measures at the power disconnect location to prevent accidental re-energization, which could result in serious injury. Maintenance personnel must be trained in fan maintenance and use appropriate tools. Damage caused by improper disassembly is not covered under the product warranty.