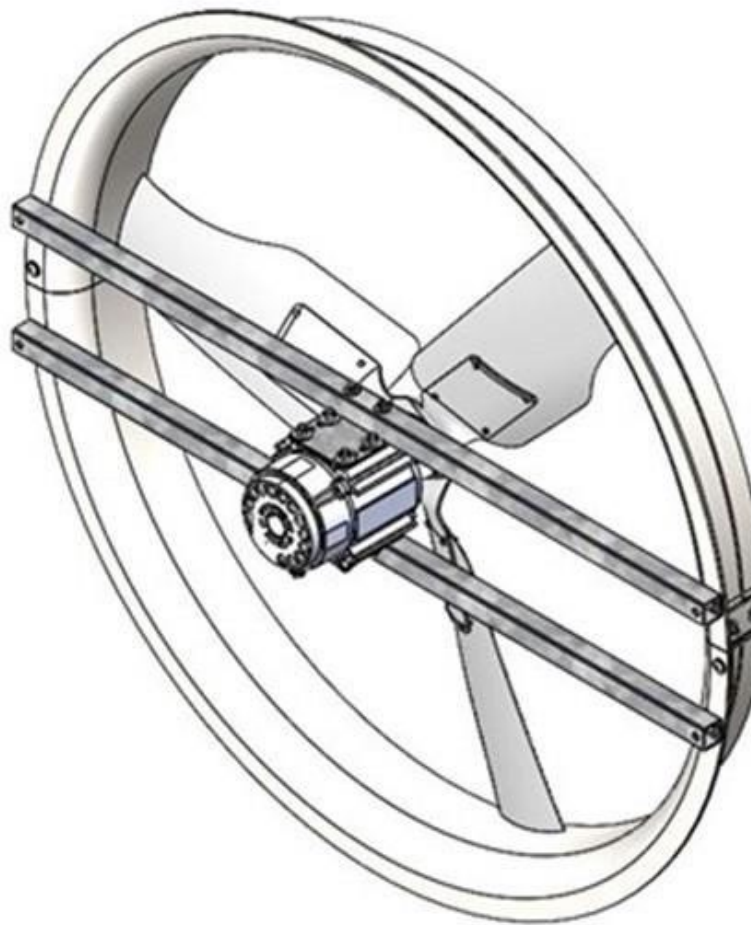


# BLT50 DIRECT DRIVE

Product Manual



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## PRODUCT NUMBERS

There are 2 different product numbers associated with this item, contingent upon the type of motor. Refer to the product numbers listed below:

Product Number	Motor Type
117800	Single-Phase Motor: 230V, 1.5HP, 1PH, 60Hz
117952	Three-Phase Motor: 460V, 1.5HP, 3PH, 60Hz

## FAN HIGHLIGHTS

The VES-Artex Blast fan is one of the most powerful and efficient fans available today. The venturi-shaped intake is designed to channel as much air as possible into the fan. The galvanized blade assembly utilizes the intake air and drives it through the balanced exhaust opening. The blast fans are available with belts and direct drive motors. The housing is constructed from fiberglass which makes each fan durable, reasonably lightweight, and easy to clean. There are two installation methods for the blast fans: 1. Beam mount, commonly used in free stall applications, along the feed lane, and in milking parlors. 2. Chain suspension which is utilized when a beam is unavailable.

## FAN FEATURES & CERTIFICATIONS

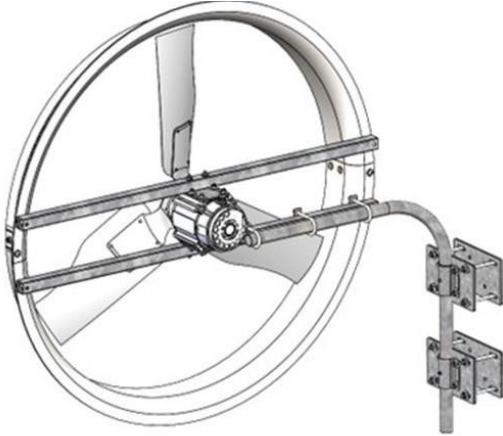


- Powerful and efficient as it is designed with a balanced exhaust opening for maximum air velocity and coverage.
- The light fiberglass construction stands up to the harshest environments.
- Perfect for industrial applications to cool and create consistent temperatures in buildings.
- Helps minimize heat stress with velocity and circulation over cows, improving reproduction and milk production.
- Target areas to concentrate air.
- An economical option for low-roof barns.
- A high-pressure fogging ring is optional for added cooling based on your climate.
- Low maintenance without belts or pulleys to replace.

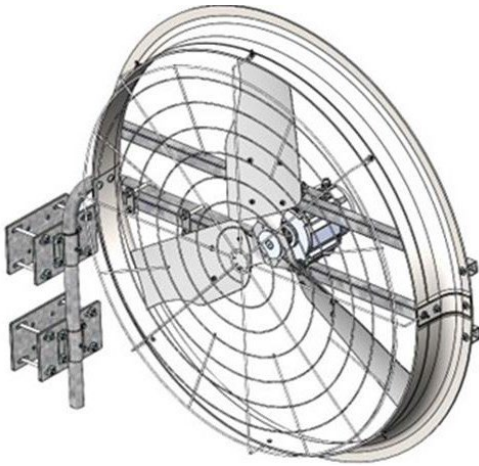
Motors are  Listed &  Certified

## ATTACHMENTS

### Post Mount



### Guard



## TARGET AUDIENCE

This guide provides information for the following audiences:

Information (see chapter)	Target audience			
	Shipping agent	Installer	Maintenance staff	User
Transport and storage	x			
Assembly and installation		x		
Commissioning		x	x	x
Maintenance			x	x
Troubleshooting		x	x	x
Decommissioning		x		

## SAFETY PRECAUTIONS

Read and understand this manual before installing or servicing your VES-Artex product.

For the safe handling of VES-Artex products, you will find the following safety words: DANGER, WARNING, CAUTION, and NOTICE throughout this manual. These will identify safety levels as described below. Failure to obey the safety measures may result in death, serious injury, or damage to the product.

Use best industry practices when handling tools and equipment. When handling VES-Artex products follow all federal, state, and local safety codes as it is related to the work being performed.

Please follow all warning guidelines, failure to do so could result in serious injury or death. Qualified professionals should carry out the assembly and installation of the fan.

### SAFETY ALERT KEY

#### DANGER

Indicates an imminently hazardous situation that, if not avoided could result in death or serious injury.

#### WARNING

Indicates a potentially hazardous situation that, if not avoided could result in death or serious injury.

#### CAUTION

Indicates a potentially hazardous situation that, if not avoided could result in minor injury or product damage.

#### NOTICE

Used to address practices not related to personal injury.

## GENERAL SAFETY

### DANGER

1. Disconnect electrical power before installing, inspecting, or servicing equipment to prevent possible electric shock or damage to equipment.
2. All electrical wiring must be done by a qualified electrician in accordance with all Local and National electrical and safety codes, as well as the National Fire Protection Agency (NFPA) where applicable.
3. Failure to properly ground the unit could result in severe electrical shock or death.
4. Verify lifting equipment is safe before fan handling.

### WARNING

1. Read and follow instructions carefully. Failure to comply with instructions could result in fire, electric shock, injury to persons, and damage to equipment.
2. Keep hands and objects away from rotating fan blades.
3. Fans with blades rotating below 7 feet (2.3 meters) must be fastened with guards.
4. Heavy load. Handle fans with a safe and secure method.
5. Falling damage. Mount fans with VES-Artex-approved hardware.
6. Always wear personal protective equipment when installing and servicing VES-Artex products.

### CAUTION

1. Follow all maintenance procedures enclosed.
2. Follow all federal, state, and local safety codes as it relates to the work being performed.

### NOTICE

During transportation parts on the fan may become loose and need to be checked before, during, and after installation.

1. Ensure all hardware is tight and secure.
2. Ensure the alignment of the pulleys is correct.
3. Ensure proper belt tension is maintained.
4. Ensure fan(s) are not damaged before installation.
5. Ensure all fan parts are accounted for before installation.

## UNPACKING

### GENERAL

#### CAUTION

1. Use extreme care when unpacking the fan.
2. Do not remove zip ties (if present) during transportation and installation to prevent equipment damage or personal injury.

#### NOTICE

1. Once a VES-Artex product is received, inspect the product for any damage. It is recommended that inspection occurs immediately. If any damage is detected, file a claim with the freight carrier.
2. Use VES-Artex recommended handling techniques when moving VES-Artex products. Products damaged during installation are not covered under warranty.
3. Be sure to assemble attachments on the pallet before hoisting. Hoisting should be done with the fan still secured to the pallet.

### Recommended Tools

- Lift or ladder if applicable
- T25 Torx bit
- #2 Phillips drill bit
- Drill
- 13 mm socket wrench
- 13 mm box wrench
- 10 mm box wrench
- 16 mm socket wrench
- 16 mm box wrench
- Cutting pliers
- Reciprocating saw
- 200 lb. (90.7 kg) capacity hoisting chain

### Instructions

1. Remove each fan and motor from the packaging.
2. Remove zip ties and stabilize packing material using cutting pliers.
3. Stand the fan up so that when attaching the motor, the weight is pulling towards the ground.

## HANDLING

### GENERAL

#### DANGER

1. Ensure the fan and chains are secure to prevent falling.
2. Verify lifting equipment is safe before fan handling.

#### NOTICE

1. Be sure zip ties (if present) are removed before operation to prevent equipment damage.
2. Be aware of obstacles in the area when positioning the fan.
3. Remove the pallet from the fan after mounting is complete.

#### WARNING

1. Heavy load. Handle fans in a safe and secure method.
2. Always wear eye protection when installing and servicing VES-Artex products.

Use best industry practices when hoisting the fan to the mounting location.

### Instructions

Follow the suggested best practice installation steps:

1. Attach the Guard to the base fan. See the assembly instructions in **Mechanical Installation**.
2. Attach the Post Mount to the base fan if mounting on the Post Mount. See the assembly instructions in **Mechanical Installation**.
3. Mount the fan using the recommended methods. See the mounting instructions in Mechanical Installation.
  - a. **Post mount option**
  - b. **Chain mount option**



## MECHANICAL INSTALLATION

Note: All images in the Mechanical Installation section may not show the exact product, but the installation steps are the same.

### NOTICE

1. Be sure to follow all dimensions listed in the manual or the warranty will be void. Contact VES-Artex if you are unsure of the dimensions listed.
2. The hoisting chain must be rated to hold the 120 lb. (54.4 kg) fan.

## ATTACHMENT ASSEMBLIES

### Guard

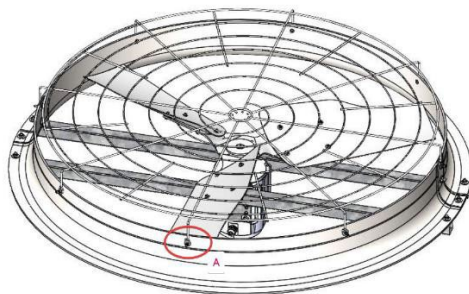
This product has 2 guards, a front and rear guard. The smaller guard with the gap for the motor is the rear guard, and the larger guard is the front guard. See **Replacement Parts** for part numbers.

### Recommended Tools

- M10 Box end wrench

### Installation Steps

1. Mount the rear/outlet guard using the supplied hardware to fasten the guard.



Detail A



No	Part Name	Description	QTY
1	Lock Nut	M6	16
2	Machine Screw	M6 x 24	16
3	Guard Clip	Φ 6mm	8
4	Washer	Φ 6 x 20mm	24

2. Ensure the guard lines up with the holes inside the fan.
3. Mount the front guard using the supplied hardware to fasten using 1 Guard Clip for each hole.
4. Once all clips are on, use the clips to secure the guard.

## BLT50 Direct Drive

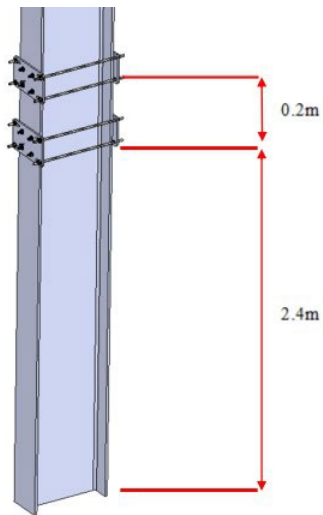
### Post Mount

#### Recommended Tools

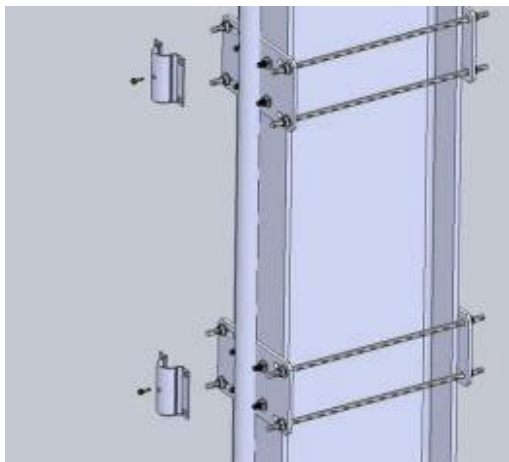
- Saw
- Wrench and socket set
- Spanner wrench
- Tape measure
- Screwdriver set
- Lift
- Hoisting chains

#### Installation Steps

1. Cut the supplied threaded rod into 8 equal-length pieces.
2. Mount the bottom post bracket first, setting it at 2.4m from the floor to the bottom of the bracket. The second plate is at a height of 2.6m above the floor.



3. Make sure the bolts for the clamshell are installed before tightening the bracket to the post.

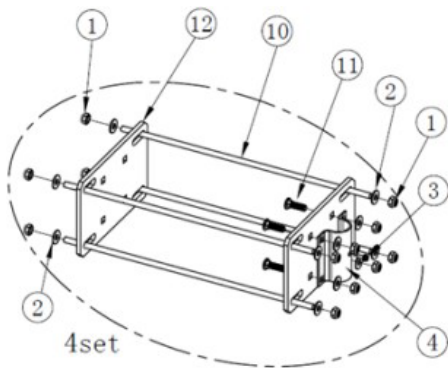


## MOUNTING

### Post Mount Option

#### Recommended Tools

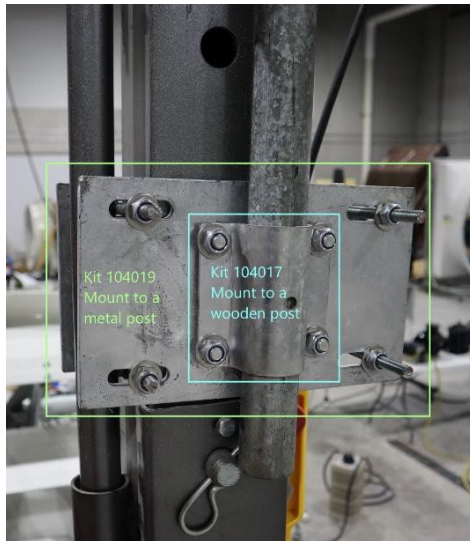
- Wrench and socket set
- Spanner wrench
- Tape measure
- Screwdriver set
- Lift
- Hoisting chains



No	Part Name	Description	QTY
1	Lock Nut	M10	68
2	Washer	Φ 10 x 25mm	70
3	Machine Screw	M5 x 25	7
4	U Clamp	3mm	7
10	Thread Rod	M10 x 1000	8
11	Carriage Bolt	Small Head	16
12	Plate Panel	8mm	8

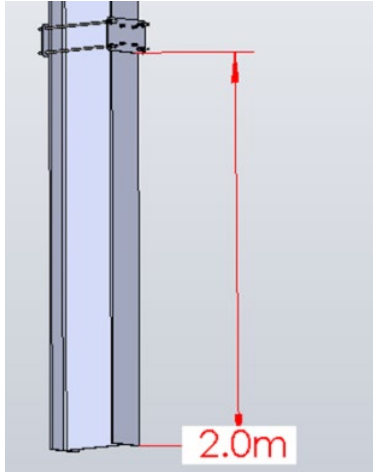
#### Installation Steps

- Utilize the appropriate kit for the installation:
  - Use the 104017 kit if mounting to a wooden post.
  - Use the 104019 kit if mounting to a steel post.

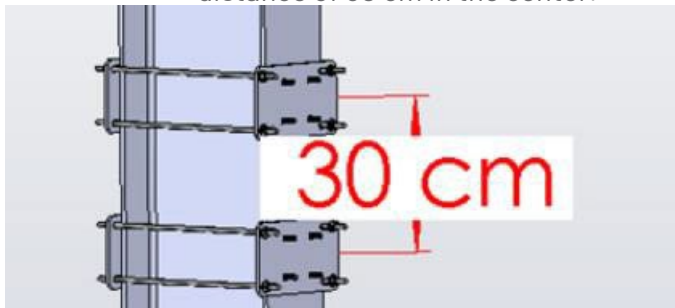


- Hold the mounting post to the installation pole or barn column and bolt it in place with either the U-clamps or brackets.
  - Mount the bottom post bracket first, setting it at a height of 2.0m from the floor to the bottom of the bracket.

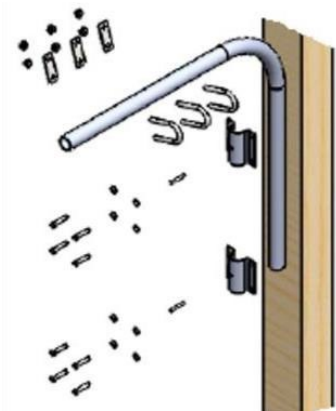
## BLT50 Direct Drive



- b. Make sure that the carriage bolts for the U-clamps are installed before tightening the bracket to the post.
- c. Mount the remaining 3 brackets, from the bottom bracket up, positioning them at a distance of 30 cm in the center.



3. Ensure the hardware is tightened completely.



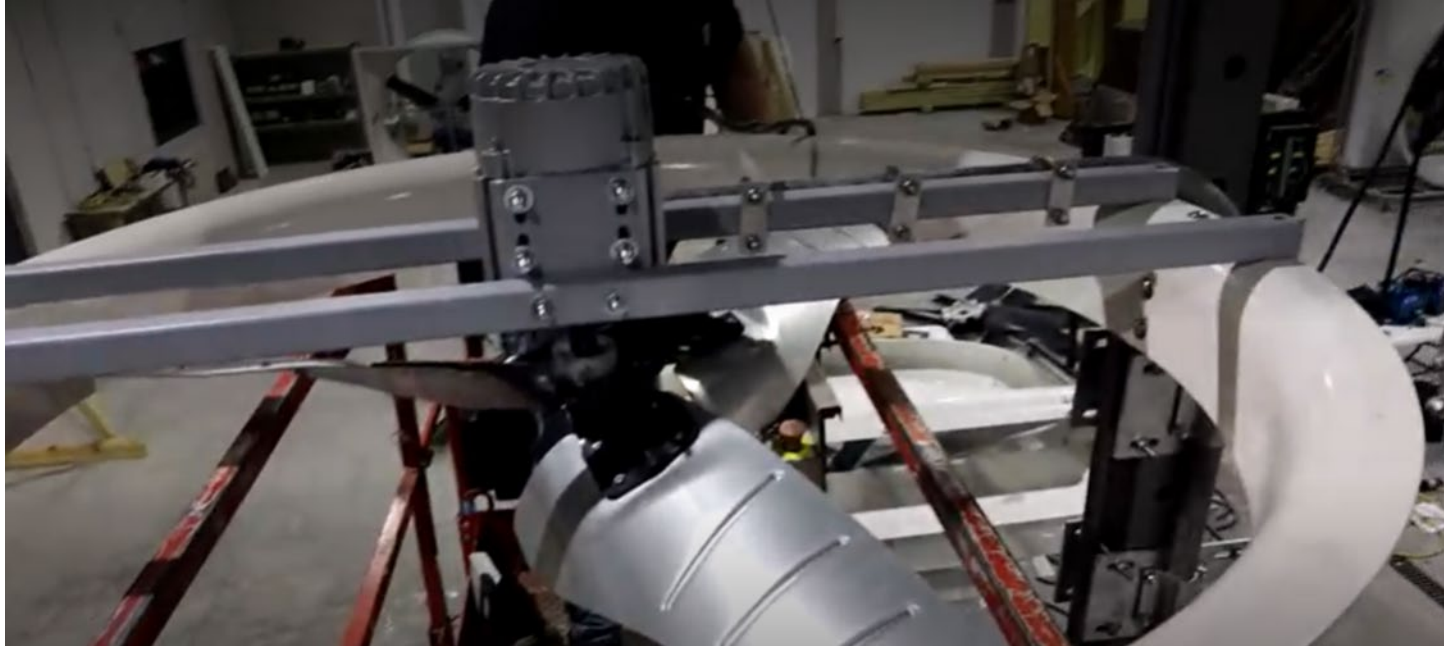
4. Lay the fan horizontally on a lift with the rear of the fan facing up towards the sky.
5. Lift the fan to the mounting post's extension.
6. Ensure the bottom mounting bracket sits flush on top of the extension pole.
7. Put the U-clamps around the mounting pole and bracket.
8. Evenly space the U-clamps along the mounting pole.
9. Slide the hardware support bar over the ends of the U-clamp to clamp the poles.



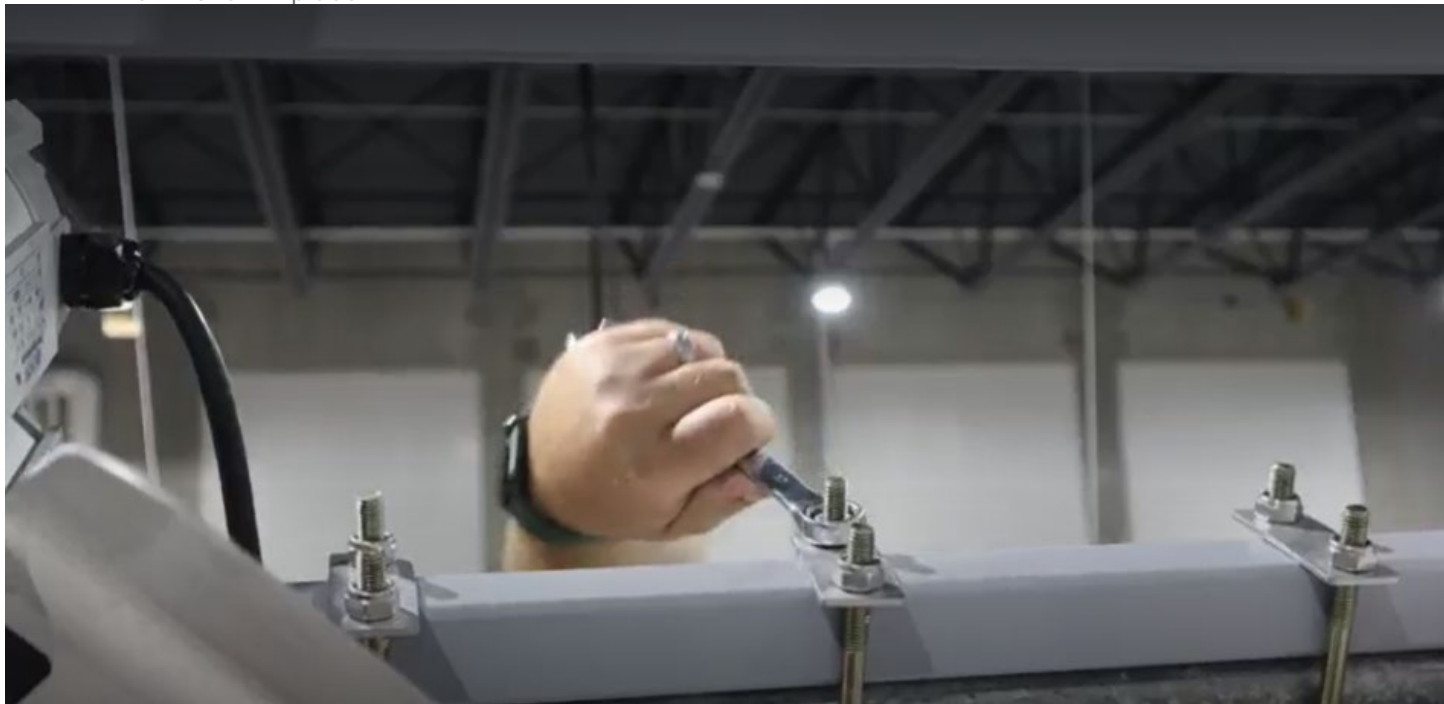
10. Thread and tighten the nuts on each end of the U-clamp.





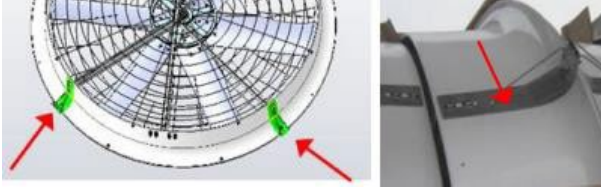


11. Lower the lift so that the fan is completely supported by the mounting pole.
12. Once the fan is secured to the post, rotate the fan to the desired operational angle (18° to 20°). Loosen the U-clamps slightly to allow rotation of the fan if required.
13. Once you have achieved the desired angle, fully tighten all the U-clamp nuts to permanently set the fan in place.

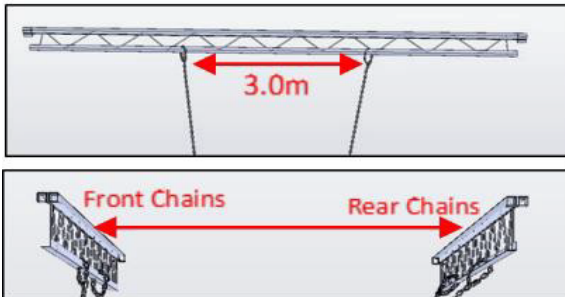


## Chain Mount Option Installation Steps

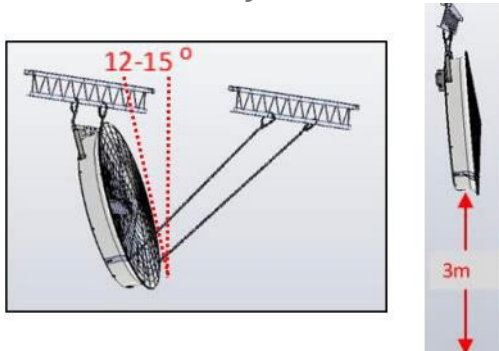
1. Install the two chain mounting brackets onto the bottom of the fans.
  - a. The chain brackets mount to the fan where the two support arms of the fan frame mount to the base fiberglass housing.



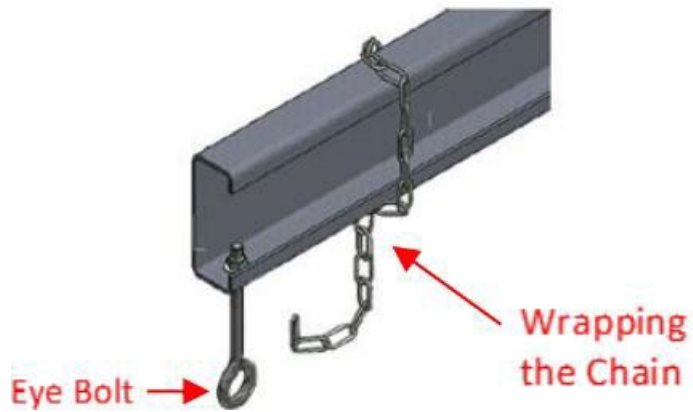
2. Determine the center where the first fan is to be hung and the height.
  - a. The chains should be attached in front and back of the fans.
  - b. Measure to determine the desired location of the hanging chains.
  - c. Mark the 4 locations on the purlin.
  - d. The front chains should be a minimum of 3m apart along the purlin.
  - e. The front chains will mount to the top of the fan using the pre-installed bracket.
  - f. The rear chains will mount to the fan using the brackets installed in step 1.



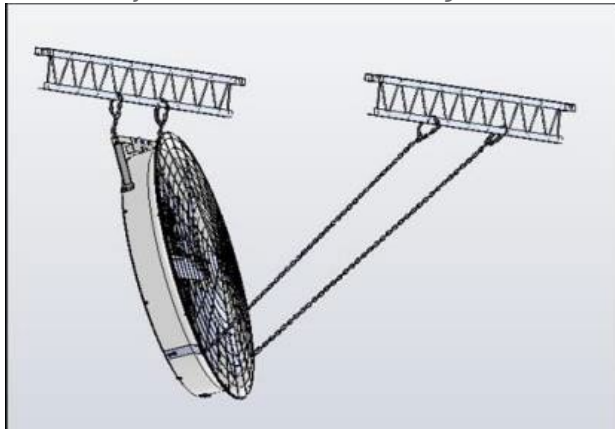
3. Determine the drop lengths required to hang the fans at the desired height.
  - a. Fans must be hung at a 12-15-degree angle.
  - b. Use the chain to pull the fan back from the purlin.
  - c. For an Open Pack or Compost Barns, the bottom of the fan should be a minimum of 3m above the ground.
  - d. The height under the fan is determined by the machinery used to groom the pack.



4. Attach the lengths of the chain to the purlins by performing one of the following options:
  - a. Wrap the chain around the purlin at each mounting point.
  - b. Drill and secure eye bolts at the marked points.



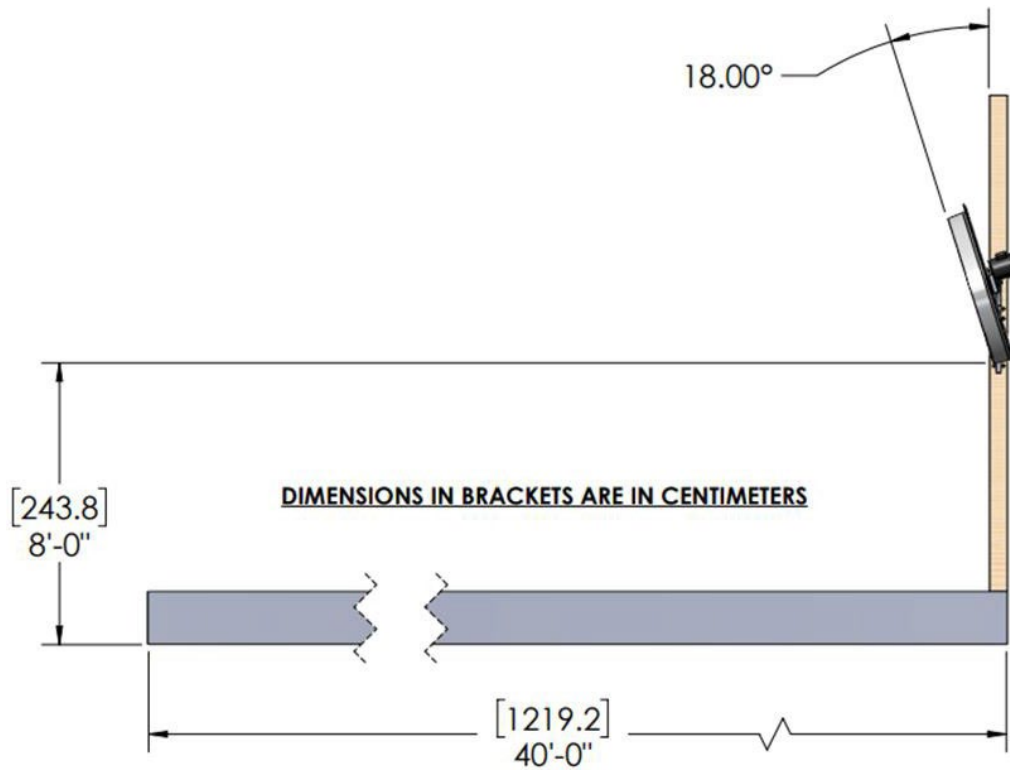
5. Lift the fan into position and connect the front chains to the preinstalled bracket on the top of the fan.
6. Pull the fan back and attach the chains to the brackets on the bottom of the fan.
  - a. Adjust the chains so the angle of the fan is  $18^{\circ}$  -  $20^{\circ}$  from the vertical.





## RECOMMENDED MOUNTING DIMENSIONS

Fan Model	Minimum Spacing from Floor	Minimum Distance Between Fans	Recommended Mounted Angle
BLT50	8' (243.8 cm)	40' (1219.2 cm)	18.0° - 20.0°



**RECOMMENDED MOUNTING WILL GIVE BEST PERFORMANCE FOR 35'-40' AIR PATTERN.**

## ELECTRICAL INSTALLATION

### DANGER

Failure to properly ground the unit could result in severe electrical shock or death.

### CAUTION

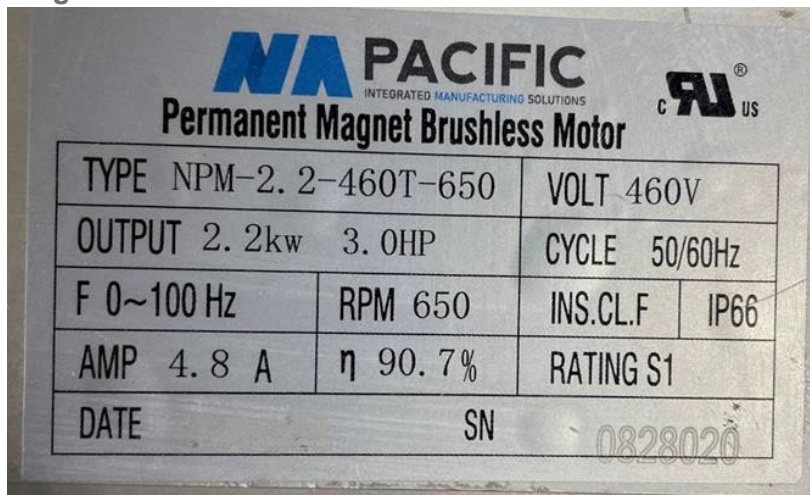
Follow all maintenance procedures enclosed.

### NOTICE

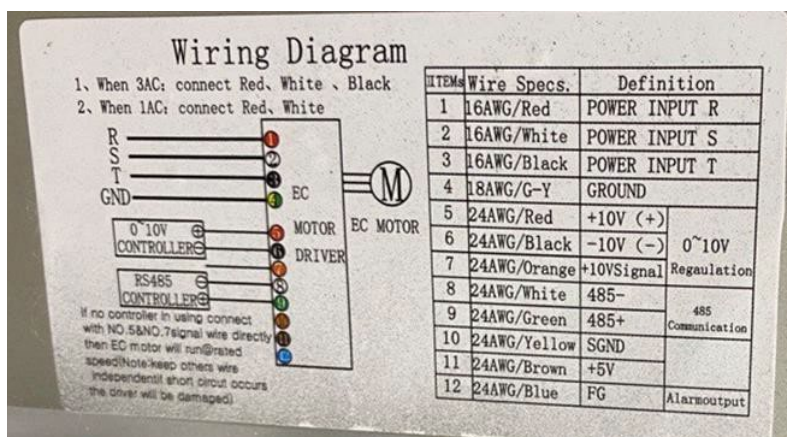
1. Disconnect the power supply before wiring connections are made to prevent possible electric shock or damage to the equipment.
2. Read and follow instructions carefully. Failure to comply with instructions could result in fire, electric shock, injury to persons, and/or damage to equipment.

## MOTOR LABEL

### Single-Phase Motor Label



### Three-Phase Motor Label



## MOTOR WIRING

VES-Artex does not supply the motor-to-control interconnecting wires. These must be supplied by the installer.

All Electrical work must be completed by a licensed electrician in accordance with all Local and National electrical and safety codes, as well as the National Fire Protection Agency (NFPA) where applicable. Check and make sure all electrical power supplied to the motor is disconnected before completing any work on the fan.

- Ensure that the power to be supplied to the motor matches what is specified on the motor nameplate.
- Remove the motor access cover and follow the wiring diagram located on the motor nameplate or the inside of the motor access cover. If the motor is dual voltage, please follow the wiring instructions that are associated with the power to be supplied to the motor.

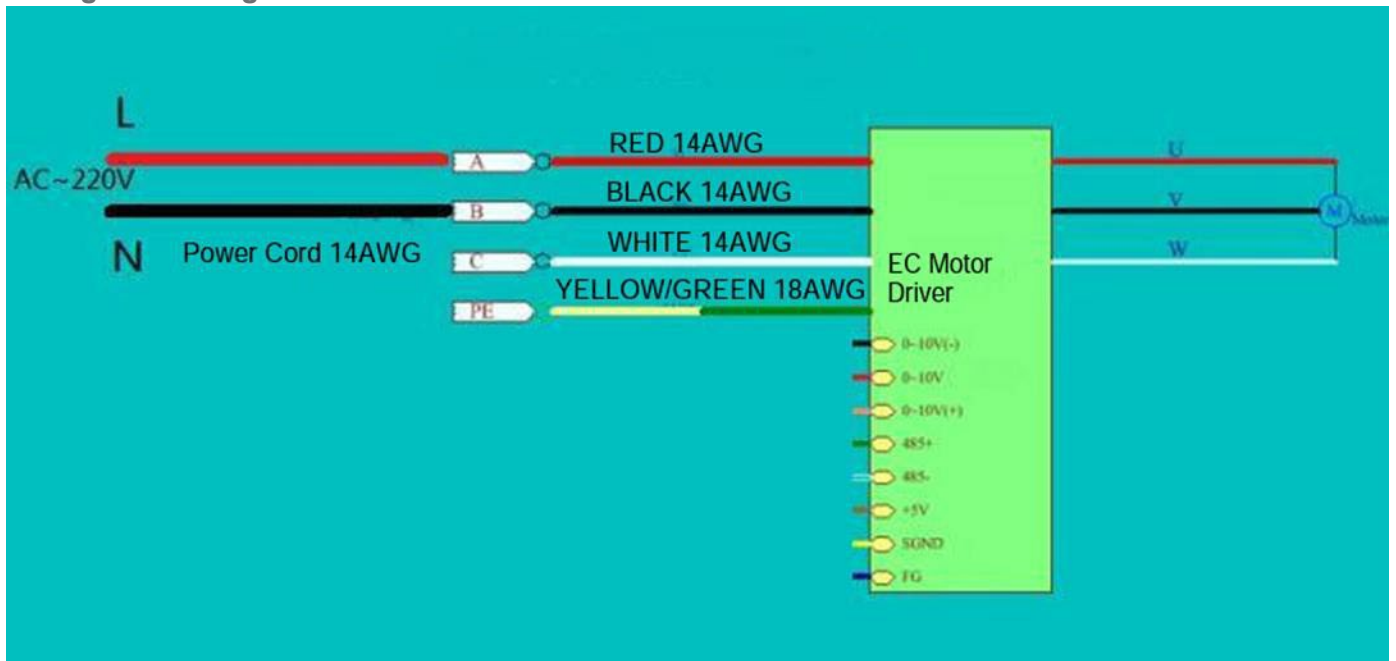
### DANGER

Any work on the device must only be carried out in a de-energized state and by qualified and skilled personnel.

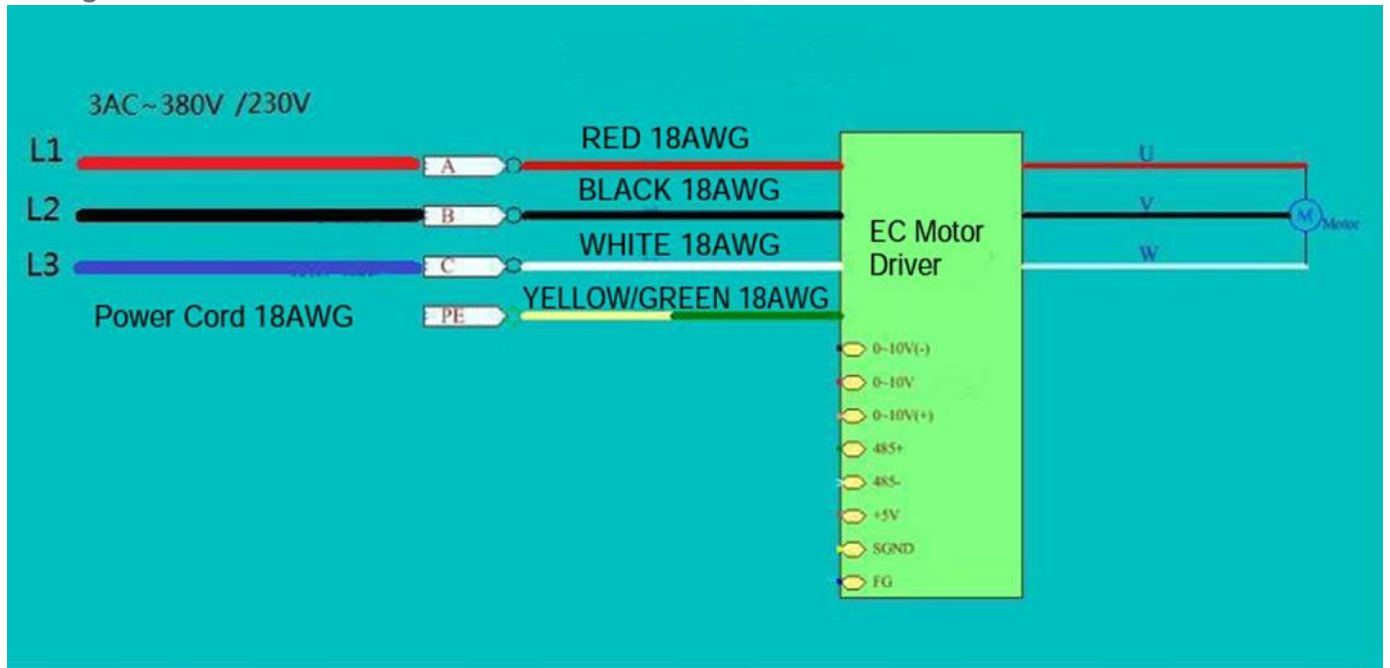
### WARNING

Be sure to create a drip loop in the power line to prevent water from being introduced to the controller from the fan.

## Wiring with a Single-Phase Motor



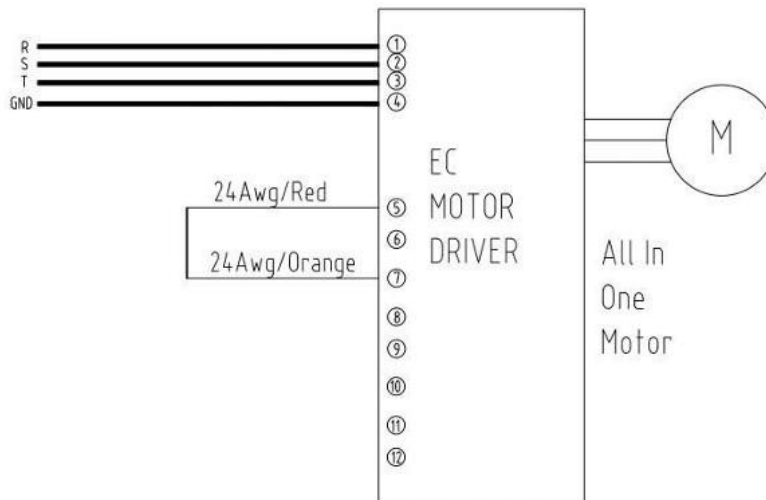
**Wiring with a Three-Phase Motor**



**WIRING FOR EXTERNAL WIRES**

**Wiring Method for Rated Speed Running**

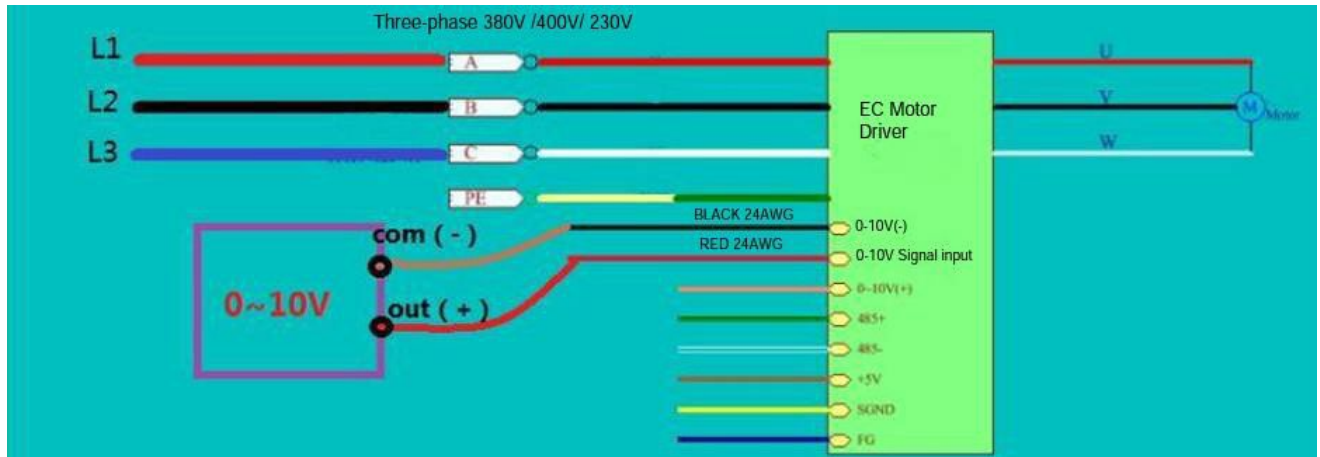
Short connect the control signal wires - red wire 24AWG and orange wire 24AWG, and the rest of the signal wires are to be insulated and suspended. Switch on the power of the motor, and the motor will operate at rated speed.



If no controller in using, connect with NO.5&NO.7 signal wire directly, then EC motor will run @ rated speed, (Note:keep others wire independent, if short circuit occurs,the driver will be damaged.)

### Wiring for Separate External 0-10V Analog Controller

The Analog controller COM terminal is connected to the motor black signal wire, OUT+ terminal is connected to the motor red signal wire (analog signal input). As shown below. In this way, the analog controller can automatically adjust the motor speed.

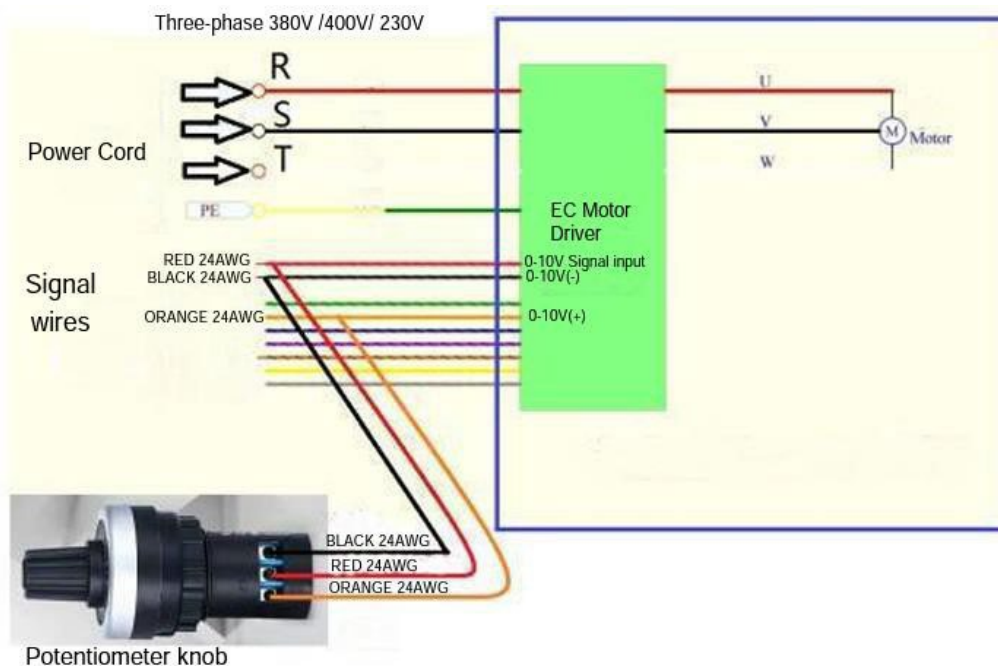


### Wiring for External Potentiometer

Note: The single-phase and three-phase motor control mode is the same.

The red signal wire is connected to the middle terminal of the potentiometer. Connect the black and orange signal wires to both ends. When the speed is opposite to the speed indicated by the potentiometer, switch the position of the black and orange signal wires. In this way, the motor speed can be adjusted through the potentiometer knob position.

Note: The red signal wire must be connected to the middle terminal of the potentiometer.



## **MOTOR-STOPPING METHODS**

When there is no external controller:

- Method 1: Disconnect the red and orange signal, and the motor stops running (note that the driver is in standby power-on state at this time, which consumes a small amount of electric energy).
- Method 2: Cut off the power, the motor stops running.

When only connecting with the potentiometer:

- Method 1: Turn the potentiometer to zero potential, and the motor stops running (note that the driver is in standby power-up state at this time, which consumes a small amount of electric energy).
- Method 2: Cut off the power, the motor stops running.

When only connecting with the 0-10V analog controller:

- Method 1: When the analog output is lower than 0.9V, the motor stops running (note that the driver is in standby power-up state at this time, which consumes a small amount of electric energy).
- Method 2: Cut off the power, the motor stops running.

When only connecting with a 485 controller or control panel:

- Method 1: If the speed is set below 200rpm, the motor will stop running (note that the driver is in standby power-on state at this time, which consumes a small amount of electric energy).
- Method 2: Cut off the power, the motor stops running.

When combining control with 485 controller and potentiometer:

- Method 1: Set the speed below 200rpm, or turn the potentiometer to zero potential, and the motor stops running (note that the driver is in standby power state at this time, which consumes a small amount of electric energy).
- Method 2: Cut off the power, the motor stops running.

When combining control with 485 controller and 0-10V analog controller:

- Method 1: Set the speed below 200rpm, the motor will stop running. (note that the driver is in standby power-on state at this time, which consumes a small amount of electric energy).
- Method 2: Turn off/cut off the 485-signal line, set the 0-10V analog output below 0.9V, and the motor stops running (note that the driver is in a standby power-on state at this time, which consumes a small amount of electric energy). Method 3: Cut off the power, the motor stops running.



## MAINTENANCE SCHEDULE

### DANGER

1. Before any further action is taken, ensure the power is disconnected from the fans requiring a blade switch.
2. Handle fan blades with more than one person due to the risk of serious injury.

### CAUTION

Take caution in removing and installing fans. Make sure all work platforms are stable before working on the fans.

Component	Duration	Task
<b>Fan</b>	Daily	Check that all fans are working.
	Monthly	Start up all the fans and check for irregular noise or vibration.
	6 Months	Clear cone and housing of any debris.
		General cleaning: clean the surface so air can flow over smoothly.
	Check hardware for loose connections.	
	Inspect for damage. Repair or replace.	
<b>Blades</b>	6 Months	General cleaning: Wipe blade surfaces.
		<b>WARNING</b>
		To avoid shock injury or catastrophic electrical damage to VES-Artex products, do not use pressurized water on the motor or control. Introducing pressurized water will void the warranty.
		Inspect blades for any irregularities.
	Inspect the hub for signs of fatigue or wear.	
<b>Guard</b>	6 Months	Clear guard of any debris.
		Clean surface from both sides.
		Check hardware for loose connections.
		Inspect for damage. Repair or replace.
<b>Control</b>	6 Months	Remove dust from the heat sink.
		<b>WARNING</b>
	To avoid shock injury or catastrophic electrical damage to VES-Artex products, do not use pressurized water on the motor or control. Introducing pressurized water will void the warranty.	
<b>Wiring</b>	12 months	<b>NOTICE</b>
		<b>All electrical work must be done by a certified electrician.</b> Check the integrity of the electrical wiring. Pay particular attention to cut, split, or loose wiring. Repair or replace as needed.

## MAINTENANCE GUIDELINES

These fans are rated for industrial use and are very durable under normal circumstances. It is still necessary to inspect the fans carefully, especially before spring start-up, for any loose, bent, or missing parts.

- Report any discrepancies to your local dealer so replacement parts can be ordered and installed.
- Ensure that the wiring is sound and has not been impacted.

### ROUTINE MAINTENANCE

Check all fasteners/hardware regularly.

Make drive inspections periodically:

- High temperatures are harmful to motor performance. For this reason, avoid tight-fitting mounting and safety guards that may obstruct the ventilation openings.
- Prevent obstructions from fan inlets and outlets that haven't been designed by VES-Artex.
- Check carefully that no animals, personnel, or machinery can interfere or come in contact with the equipment during normal operation.

## REPAIR GUIDELINES

Review **Replacement Parts** for information to replace parts as needed.

Replace necessary parts if a part defaults or breaks. Be sure to review the warranty information to determine warranty qualifications. Purchase new parts from a VES-Artex supplier by reviewing our **list of certified dealers**.

## DISPOSAL

If pollutants are not disposed of properly, they may cause long-term damage to human health and the environment. Electrical and electronic equipment must be collected separately from unsorted municipal waste to be recycled or disposed of properly.

Dispose of eWaste with specialized waste management companies. More detailed information on disposal can be obtained from the corresponding specialist firms and the competent authorities.

Dispose of packaging separately. Recycle paper, cardboard, and plastic.



## TROUBLESHOOTING

Symptom	Cause	Solution
<b>FAN WILL NOT START</b>	Blown or bad fuse or circuit breaker	Check fuses and circuit breakers.
	Bad connection	Check wire connections to the motor.
	Over or under-voltage	Check the voltage at the fan connection.
<b>FAN TOO FAST/SLOW</b>	Over or under-voltage	Check the voltage at the motor. Ensure the motor is wired for the correct voltage.
	Setting not correct	Check environmental control settings.
<b>FAN MAKES NOISE</b>	Loose hardware or attachments	Check the motor case to make certain all visible screws are snug.
		Check to make certain that all blade bracket screws are tight.
		Check to make sure the fan/guards are secured.
	Bad/worn bearing or bent shaft	Check the bearing shaft to ensure the blade spins freely with no noise
Debris		
<b>FAN WOBBLES/VIBRATES</b>	Loose hardware	Check that all blade paddles are screwed firmly to the Spyder.
	Damaged blades Debris	Run the fan without the blade, if the motor does not wobble, then the motor is not defective, but the blades may be damaged.

## GLOSSARY

Abbreviation/Term	Meaning
" (in)	Inch (= 25.4 mm)
°	Degrees (indication of angle)
°C	Degrees Celsius
A	Ampere (amperage)
AIE	Error acknowledgment ("Acknowledge in Error")
BLT	Blast Recirculation Fan: Thin panel fan used to circulate air without much control or direction
Cm	Centimeter
g	Gram
Kg	Kilogram
kPa	Kilopascal
Kw	Kilowatt
m	Meter
minus	Minute
Mm	millimeter
mm <sup>2</sup>	Square millimeters
mm <sup>3</sup>	Cubic millimeters
OFF state	Signal status of the safety sensor when it triggers or responds
QSP	Quick stop
s	Second
V	Volt (voltage)
WSL	Wide-top Self Lock (Artex)
Suffix D	Direct Drive. The blade is connected directly to the motor shaft (72" Direct Drive and 55" Direct drive all configurations)
Suffix S	Designates a fan model using the SMC housing (72" and 55" all versions)
Suffix T	Turbo Cone (72" ECVS and 72" ECVD series only)
Suffix V	Designates a fan model using the GenV housing shape (72" AFR Direct Drive and 36" fans only)

## WARRANTY

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**LIMITED WARRANTY & RETURN POLICY**  
**THERE ARE NO WARRANTIES THAT EXTEND**  
**BEYOND THE DESCRIPTION ON THE FACE HEREOF.**

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