NEXTEK
Power Systems

Vari-Cyclone Ceiling Fan

Installation and User's Manual

Models:

3-Blade Vari-Cyclone
4-Blade Vari-Cyclone*

Rev 032514

Please contact Customer Support at 1-800-24VOLTS for further information.

EMerge™ ALLIANCE REGISTERED

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ABOUT NEXTEK POWER SYSTEMS

Nextek Power Systems AC/DC integration technology represents a breakthrough in on-site electrical management, combining the availability of AC power with the quality and efficiency of a DC supply.

NEXTEK PRODUCT BENEFITS

- Easy conversion of AC lighting fixtures to DC-powered units
- Easy conversion of AC grid power into DC power for commercial building applications
- Highly efficient management of peak loads
- Future-proof lighting and other systems to be developed
- Nextek Power Systems Direct Coupling® Technology, directly connects clean power generated at a building to its electronic loads inside cutting down on overall power consumption, boosts electricity generated and stored on-site, and delivers a robust renewable energy ready network.

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INTRODUCTION

Nextek Vari-Cyclone DC Powered Ceiling Fans

Features:

- Can be mounted 10" to 48" from ceiling (16" down rod included, custom rods can be made)
- Can be ordered with either 3 or 4 blades
- Can be ordered in solid white or unpainted (black body with white blades and arms)
- Body parts are made from injection molded, glass filled Valox plastic
- Blade arms are stamped steel with a white enamel finish
- Blades are injection molded white ABS plastic
- Maximum ambient operating temperature of 104°F/40°C

The Vari-Cyclone DC Powered Ceiling Fan is the perfect choice for a variety of applications, including workplaces, warehouses, businesses and many rooms in the home. The Vari-Cyclone's 60" diameter blades, designed by the Florida Solar Energy Center in cooperation with a major fan manufacturer, utilize "Gossamer Wind Technology" found only in AC powered fans until now. We are the only DC fan company allowed to use these revolutionary new fan blades. The "Gossamer Wind Technology" blades allow the fan to produce up to 40% more air flow with no increase in power consumption, making the Vari-Cyclone the most energy efficient DC powered ceiling fan available.

The Vari-Cyclone is powered by a permanent magnet, TENV (totally enclosed non-ventilated) motor with long life brushes. The Vari-Cyclone draws 0.5 amps @ 12 VDC and 0.78 amps at 24 VDC. At 12 VDC the 3-blade fan will have approximately 102 rpm moving 1,476 CFM when mounted at least 10 feet above the floor in an open room. At 24 VDC the 3-blade fan will have approximately 138 rpm moving 3,925 CFM when mounted at least 10 feet above the floor in an open room.

1.0 SAFETY

1.1 READ AND SAVE THESE INSTRUCTIONS– This manual contains important safety and operating instructions for the Nextek Vari-Cyclone Ceiling Fan.

The following symbols are used throughout this manual to indicate potentially dangerous conditions or mark important safety instructions:

DANGER:
Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING:
Indicates a potentially dangerous condition. Use extreme caution when performing this task.

CAUTION:
Indicates a critical procedure for safe and proper operation of the controller.

NOTE:
Indicates a procedure or function that is important for the safe and proper operation of the controller.

1.2 Before using the fan, read all instructions and cautionary markings.

1.3 Electrical hazards are probably the most common hazards throughout the industry. Virtually all workplaces have electrical installations and use electricity.

1.4 It is very important that all industry employees be familiar with electrical hazards and know how to protect themselves when working on, near, or with electricity. In most cases, industry electrical and electronic equipment is designed for both maximum safety and efficiency. However, potentially hazardous conditions such as inadvertent contact with hazardous voltages may exist while performing servicing and maintenance, handling materials, or cleaning.

1.5 The improper use of electrical extension cords and portable electrical equipment can result in hazardous exposure.

1.6 

WARNING - RISK OF ELECTRICAL SHOCK

Read all of the instructions and cautions in the manual before beginning installation.

1.7 

DANGER – TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, CAREFULLY FOLLOW THESE INSTRUCTIONS

1.0 SAFETY

1.7.1 Do not disassemble or attempt to repair the fan other than the troubleshooting procedures listed in this manual.

1.7.2 Disconnect power supply to the unit before installing, removing, cleaning or otherwise servicing the unit.

1.8 INSTALLATION SAFETY PRECAUTIONS

1.8.1 Mount the fan indoors. Prevent exposure to the elements and do not allow water to enter the fan.

1.8.2 The Vari-Cyclone is to be connected to DC circuits only

2.0 STANDARDS AND REQUIREMENTS

2.1 All DC cable types must meet all local and national codes

2.2 Shut off all DC circuit breakers or fuses before installing any unit into the field

3.0 INSTALLATION QUALIFICATIONS

3.1 Installation work and electrical wiring of permanently-connected power units must be performed only by qualified service personnel in accordance with National Electrical Code, ANSI/NFPA 70-1999 and all applicable codes and standards, including fire-rated construction.

4.0 SPECIFICATIONS

ETL File No: xxx-xxxx

	3-Blade Vari-Cyclone	4-Blade Vari-Cyclone
MECHANICAL		
Diameter of blade swing	60 inches (1.52 m)	60 inches (1.52 m)
Weight of fan	14 lbs. (6.35 kg)	15 lbs. (6.80 kg)
Shipping weight	17 lbs. (7.7 kg)	18 lbs. (8.2 kg)
ELECTRICAL		
Amps	0.5 @ 12 VDC 0.78 @ 24 VDC	0.5 @ 12 VDC 0.78 @ 24 VDC
Watts	2 @ 9 VDC 4 @ 12 VDC 13 @ 24 VDC	2 @ 9 VDC 4 @ 12 VDC 15 @ 24 VDC
RPM	75 @ 9 VDC 102 @ 12 VDC 138 @ 24 VDC	66 @ 9 VDC 83 @ 12 VDC 117 @ 24 VDC
CFM	852 @ 9 VDC 1,476 @12 VDC 3,925 @ 24 VDC	1,221 @ 9 VDC 1,820 @12 VDC 3,600 @ 24 VDC

The Vari-Cyclone is powered by a permanent magnet, TENV (totally enclosed non-ventilated) motor with long life brushes. The motor draws 0.5 amps at 12 VDC and 0.78 amps at 24 VDC. At 12 VDC the 3-blade fan will run at approximately 102 rpm, moving 1,476 CFM when mounted at least 10 feet above the floor in an open room. At 24 VDC the 3-blade fan will run at approximately 138 rpm, moving 3,925 CFM when mounted at least 10 feet above the floor in an open room.

5.0 NOTES AND WARNINGS

5.1 NOTES:

5.1.1 Nextek DC ceiling fans should not be operated above 24VDC.

5.1.2 For new installations: This is a low-voltage 12/24V DC-powered device. Appropriate sizing of a solar panel, battery and battery charge controller are essential for proper operation. Consult a qualified installer of DC devices to insure correct configuration.

5.1.3 For installation in existing DC power environment: Great care must be taken to ensure fan is wired properly in existing DC power environment. Warranty may be violated if attempting to operate in anything other than 12/24V DC. Please consult a qualified technician.

5.1.4 Failure to wire correctly or install in a non-recommended power environment may violate your warranty.

5.2 WARNINGS:

5.2.1 To reduce the risk of personal injury, do not bend the blade brackets when installing the brackets or cleaning the fan. Do not insert foreign objects in between rotating fan blades.

5.2.2 To reduce the risk of personal injury, install the fan only to the building structure according to these instructions, and use only the hardware supplied.

5.3 CAUTIONS:

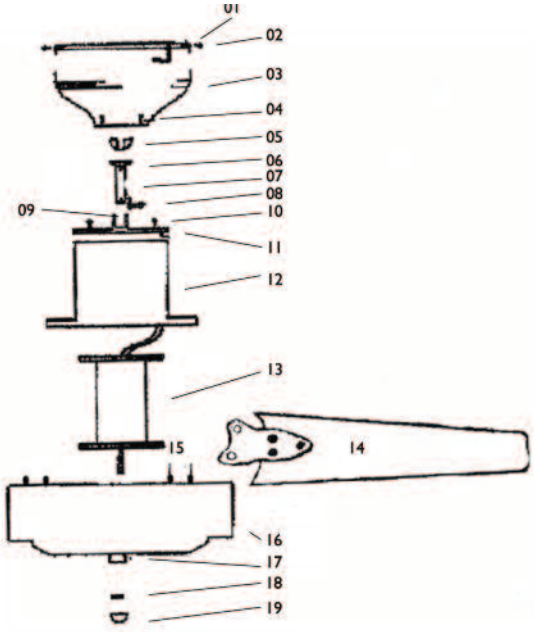
5.3.1 Read entire instructions carefully before beginning installation.

5.3.2 To avoid possible electrical shock, be certain electricity is shut off at main panel before wiring.

5.3.3 All wiring must be in accordance with national and local electrical codes. If you are unfamiliar with wiring, you should use a qualified electrician.

6.0 PARTS INFORMATION

6.1 Parts List



01	1 x Mounting Bracket
02	4 x 10/32" x 3/8" Pan Head Phillips
03	1 x Mounting cone
04	4 x 10/32" x 3/8" Pan Head Phillips
05	1 x Pivot Ball
06	1 x Retaining Pin
07	1 x Down Rod
08	1 x Pin & Clip
09	1 x 10/32" x 3/8" Pan Head Phillips
10	4 x 8/32" x 1/2" Flat Head Phillips
11	1 x Receptacle
12	1 x Motor Housing
13	1 x Fan Motor
14	Pre-assembled fan blade & arm
15	6 or 8 1/4" x 1/2" Truss Head Screw
16	1 x Hub
17	1 x 1/4" 20 set Screw
18	1 x Retaining Clip
19	1 x Retaining Knob

7.0 INSTALLATION PROCEDURE

7.1 Pre-Installation Instructions

7.1.1 Select installation site. Check to see that in normal use no object can come in contact with the rotating fan blades. The mounting site should also meet the precautions listed in Step 7.3 below.

7.1.2 Installation hardware is included for a standard drywall or plaster ceiling. You will need a 4" x 1-1/2" or a 4" x 1/2" outlet box and wire nuts (2), which can be purchased from any hardware store or electrical supply house.

7.1.3 The fan blades must be mounted at least 10 feet above the floor. For maximum efficiency, they should not have any obstruction (walls, posts, etc.) within 24" of the blade tips. See Figure 1 for mounting distances.

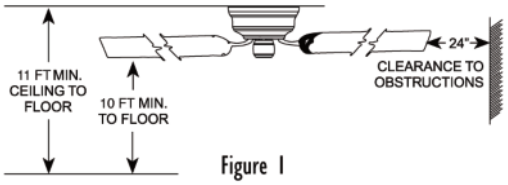


Figure 1

7.2 Inspection of Fan

7.2.1 Unpack the fan carefully to avoid any damage to the components.

7.2.2 Check for any shipping damage to the motor and the fan blades. If more than one fan is being installed, keep the matched and balanced fan blades in sets, as they were shipped. Should one of the fan blades become damaged during shipment, return all blades in the set for replacement.

7.2.3 Check contents to be certain it contains a bag of parts.

7.3 Installation of Outlet Box and Rough-In Wiring

CAUTIONS:

Installation of this Vari-Cyclone Fan is to be in accordance with National Electrical Code, and ANSI/NFPA 70-1999.

Your ceiling fan, when operating, can have a weight plus downdraft of up to 35 lbs. The following precautions must be taken for safety and to ensure that your fan is securely mounted to the ceiling.

Be certain electricity is “off” at fuse panel when inspecting or repairing installation site.

All wiring must meet local and national electrical codes.

7.0 INSTALLATION PROCEDURE

Do not mount directly to an unsupported ceiling or to an electrical outlet box. Mounting must support a total weight of 35 lbs.

7.3.1 Secure metallic outlet box 4" x 1-1/2" or 4" x 1/2" deep to 2 x 4 cross brace between two ceiling joists as shown in Figure 2. The outlet box must be recessed into the ceiling by 1/16" minimum. Secure the outlet box to the cross brace by drilling (2) pilot holes no larger than the minor diameter of the wood screws (5/64") and use two #8 x 1-1/2" wood screws and washers. Use the innermost holes for securing the box. Orient the box so the outermost holes will be used in Step 7.3.2.

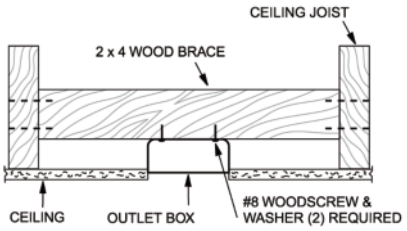


Figure 2

CAUTION:

Do not use a lubricant on screws.

7.3.2 Bring electrical cable into the outlet. Remove the 4 pan head screws (#04) box and attach with an approved connector around the receptacle (#11) end of the connector. Make certain that wiring motor assembly meets all national and local electrical codes. Wire leads should extend at least 6" beyond outlet box for ease in making connections. See Figure 3. Wires should be spread apart with the grounded conductor and equipment-grounding conductor on one side of the outlet box and the undergrounded conductor on the other side of the outlet box. After the splices have been made, they need to be turned upward and carefully pushed up into the outlet box.

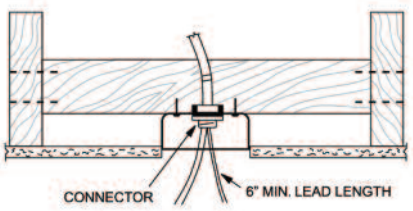
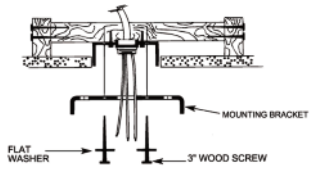


Figure 3

7.4 Fan Assembly Close Mount Version

7.4.1 Remove mounting bracket (#01) from bracket. mounting cone. (#03) Leave the screws in the bracket that match up with the open hole on each side of mounting cone.

7.4.2 Attach mounting bracket to junction box or directly to ceiling using screws taped to mounting bracket. Lead wires through center hole in bracket.

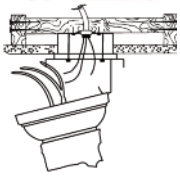


7.0 INSTALLATION PROCEDURE

7.4.3 Remove the 4 pan head screws (#04) around the receptacle (#11) end of the motor assembly.

7.4.4 Attach the mounting cone (#03) to the receptacle end of the motor assembly using the 4 screws (#04) just removed.

7.4.5 Lift completed motor assembly to the mounting bracket attached to the ceiling, and slip one hole on the side of the mounting cone over the hook on bracket.



7.4.6 With motor and assembly hanging from hook, connect fan wires to the house wires using three 93) wire nuts included with fan. Fan should only be operated in a counter-clockwise direction. Connect white wire of fan to the negative power house wire and the black wire of the fan to the positive power house wire. The green wire should be connected to the ground wire on the mounting bracket.

7.4.7 After wires are connected, remove fan from hook, and slip mounting cone (#03) over mounting bracket (#01). Align the open holes of cone with the two screws (#02), and rotate until cone will stay in place. Then replace the other two screws in cone and tighten all four screws firmly.

7.4.8 Turn on power, and check that motor shaft is turning in a counter clockwise direction. Turn power off.

7.4.9 Take pre-assembled blade/arm sets (#14) and attach them to the hub. (#16) Only remove one pair of the truss head screws (#15) at a time on the top of the hub attach a blade/arm set then move to the next set of screws. To insure that blades are being installed correctly, make sure that the blade arm and nuts are facing the ceiling (see Figures A and B).

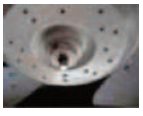
A - Right

B - Wrong

7.4.10 Lift assembled hub with blades up to motor shaft (#13). Align the flat side of the motor shaft to the Allen Screw hole. Push hub onto shaft until 3/8” (1cm) of the shaft protrudes from the hub. Tighten set screw using Allan Wrench included with fan.

NOTE: To prevent wobble, make sure the FLAT of the motor shaft is aligned with the FLAT of the center of hub. The set screw should be tightened against the center of the FLAT of the motor shaft.

7.4.11 Push retaining clip onto motor shaft unit until it is firmly against the hub.



7.0 INSTALLATION PROCEDURE

WARNING: Failure to install the retain clip tightly against the hub as described may cause separation of the hub during fan operation. Serious injury may result. Consult a qualified installer if in any doubt about installation procedures.

7.4.12 Push retaining knob onto motor shaft until it is firmly against the hub.

7.4.13 Your fan is ready to run.

7.4.14 If wired and installed properly, fan blades will rotate counter-clockwise and produce downward draw.

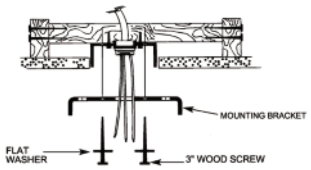
7.4.15 For reverse or upward draw operation, blades need to be removed, inverted and re-attached. Blades should then rotate clockwise.

7.5 Fan Assembly Down Rod Version

Follow the instructions below for installation of down rod ceiling fan.

7.5.1 Remove mounting bracket (#01) from mounting cone. (#03) Leave the screws in the bracket that match up with the open hole on each side of mounting cone.

7.5.2 Attach mounting bracket to junction box or directly to ceiling using screws taped to mounting bracket. Lead wires through center hole in bracket.



7.5.3 Put down rod (#07) through mount cone (#03) (pivot ball end of rod remains in cone). Please Note: Down Rod can be shortened by cutting to length desired and drilling a 9/32 hole ½' (13mm) from end of down rod.

7.5.4 Remove pin and clip (#08) from receptacle.

7.5.5 Feed wires from receptacle (#11) through bottom of down rod (#07) and out through the pivot ball end.

7.5.6 Slip down rod into receptacle, and align holes of rod with hole in receptacle.

7.0 INSTALLATION PROCEDURE

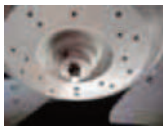
7.5.7 Insert pin (#08) through receptacle/ down rod assembly and attach clip.

7.5.8 Tighten screw on side of receptacle.

7.5.9 Align the hub (#16) with the motor shaft, be sure the flat side of the motor shaft matches up with the flat side of the hole in the center of the hub. Press hub onto shaft until 3/8" (1cm) of the motor shaft protrudes from the hub. Tighten set screw with Allen Wrench included with the fan.

NOTE: To prevent wobble, make sure the FLAT of the motor shaft is aligned with the FLAT of the center of hub. The set screw should be tightened against the center of the FLAT of the motor shaft.

7.5.10 Push retaining clip (#18) onto motor shaft (#13) until it is firmly against the hub.



WARNING: Failure to install the retain clip tightly against the hub as described may cause separation of the hub during fan operation. Serious injury may result. Consult a qualified installer if in any doubt about installation procedures.

7.5.11 Push retaining knob onto motor shaft until it is firmly against the hub.

7.5.12 Insert retaining pin (#06) into upper down rod holes. Then slide pivot ball (#05) up and over retaining pin.

7.5.13 Align mounting cone (#03) slot with pivot ball key.

7.5.14 Lift completed motor and hub assembly to mounting bracket on ceiling, and slip one hole on side of mounting cone over hook on bracket.

7.5.15 With motor and assembly hanging from hook, connect fan wires to the house wires using the three (3) wire nuts included with fan.
White = positive
Black = negative
Green = ground

7.0 INSTALLATION PROCEDURE

NOTE: Fan should only be operated in a counter clockwise direction, connect white wire of fan to the negative power wire, and the black wire of fan to the positive power wire. The green wire should be connected to the ground wire on the mounting bracket.

7.5.16 After wires are connected, remove fan from hook, and slip mounting cone over mounting bracket. Align the open holes of cone with the two screws, and rotate until cone will stay in place. Then replace the other two screws in cone and tighten all four screws firmly.

7.5.17 Turn on power, check that the hub is turning in a counter clockwise direction. Turn power off.

7.5.18 Take pre-assembled blade/arm sets (#14) and attach them to the hub. (#16) Only remove one pair of the truss head screws (#15) at a time on the top of the hub attach a blade/arm set then move to the next set of screws (be sure the blade/arm set is attached with the notice “This side up” facing the ceiling).

7.5.19 Your fan is ready to use.

7.5.20 If wired and installed properly, fan blades will rotate counter-clockwise and produce downward draw.

8.0 PAINTING

8.1 Painting

8.1.1 The Vari-Cyclone can be easily painted using an acrylic based spray paint.

8.1.2 Dark colors (red, blue, green, or brown) should take only one coat of paint.

8.1.3 Light colors (white, yellow, or pastels) may take two or more coats. Follow the instructions on the can of spray paint for applying multiple coats.

8.1.4 To disassemble the Vari-Cyclone, look at the exploded drawing in Parts Information. This will show you how the fan comes apart. Be sure to use a bag or cup for storing screws and pins.

8.1.5 There are four (4) parts that are normally painted: the mounting cone (part #03), the down rod (part #07), motor housing (part #12), and the hub (part #14). Be sure to remove the set screw from the hub.

8.1.6 The receptacle (part #11) and the pivot ball (part #5) are normally left black.

8.1.7 Using soft wire, make 4 long “S” hooks so each piece may be hung while painting and drying.

8.1.8 Follow the instructions on your can of spray paint for proper spraying technique and drying times required.

8.1.9 Once the painted parts are dry, you may re-assemble the fan following the diagram in Parts Information.

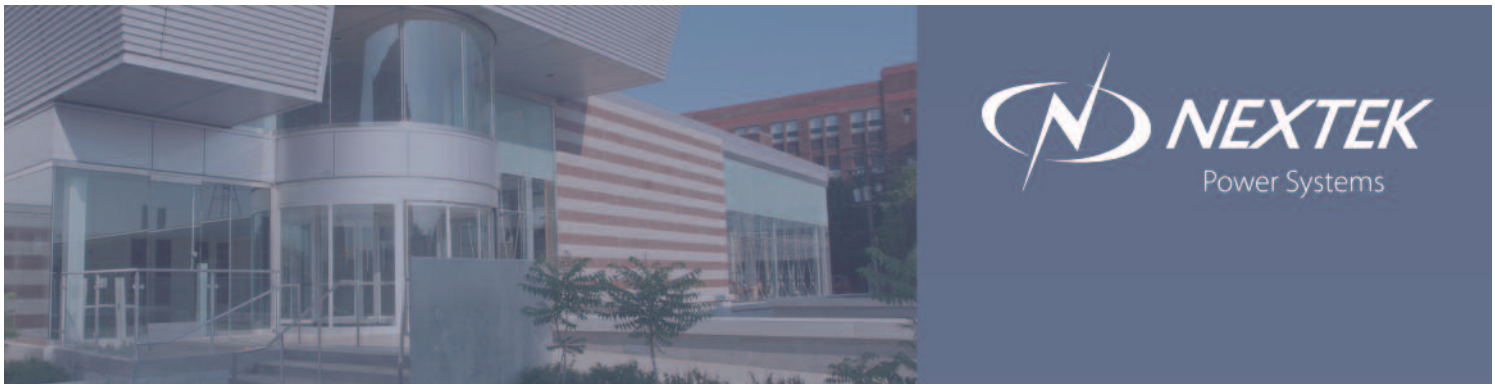
9.0 TROUBLESHOOTING

The following are tips that may help fix a problem that you are having with a Nextek Power Systems Fanworks DC powered ceiling fan.

PROBLEM	PROCEDURE
FAN DOESN'T RUN	Check all connections to make sure you have power, use a volt meter or multi tester to confirm that the voltage is correct. If fan still doesn't run, try connecting the fans leads directly to the battery (with no switches or speed controls) If fan still won't run, please contact Nextek Power Systems Fanworks, not your dealer.
FAN MOTOR IS HOT TO THE TOUCH	Turn off fan immediately, and contact Nextek Power Systems Fanworks.
FAN MAKES "CLICKING" NOISE	The "clicking" noise is usually a bur on one or both brushes. First try reversing the fan (i.e.: make it run backwards) this can be done by reversing the polarity of the fans wires at the battery. If your fan has a speed control but no reversing switch, reverse the leads that run from the speed control to the fan. In either case, let the fan run at least 24 hours in reverse, then try running the fan in forward and see if the noise stops. A second option, if your fan is not too high up, is to take a broom handle and give a sharp upward rap to the decorative nut at the center of the fan hub. (Do this while the fan is running) Please note: Fans in summer cottages or in places where the fan is not run for long periods of time are more prone to developing a burr on the brushes. Before starting fan, gently spin the blades by hand, and then turn on fan. If problem persists, please contact Nextek Power Systems Fanworks.
MY FAN WOBBLES WHEN RUNNING	Most fans mounted with a down rod will have a slight wobble (less than 1 inch from the center) depending on how long the down rod is. All Nextek Power Systems Fanworks fans come from the factory with balanced blades and blade arms. Make sure that the when the hub was placed on the fan shaft, the flat on the shaft matched the flat on the hub's center hole. Check that all the blade arms have the same pitch. (Lay them in line on a flat surface and check that all the blade arms lay at the same angle.) If the pitch on one of the blade arms is different, try twisting the arm until it matches the rest of the arms. Most large hardware stores—Home Depot, Lowes, Ace, etc, that sell ceiling fans—have blade balancing kits. These are inexpensive and have easy-to-understand instructions, and may be an alternative if the above ideas don't work.

10.0 TROUBLESHOOTING

PROBLEM	PROCEDURE
MY FAN MAKES A RUBBING SOUND WHEN RUNNING	Turn your fan off, and when the blades have stopped turning, spin the fan with your hand, if you hear the rubbing sound, it is most likely that the fan's hub is rubbing against the motor housing. Loosen the hub's set screw; remove the decorative knob covering the fan's motor shaft. Using a flat bladed screwdriver, pry the safety push nut away from the hub (about 1/8 inch) Try spinning the fan again, if the rubbing sound is gone, then re-tighten the set screw and replace the decorative knob.
MY FAN'S BLADES SEEM TO GO UP AND DOWN AS THE FAN SPINS	Turn fan off, gently rotate hub by hand, look for the high and low movement of the blades. Grab the hub at the high spot with one hand, with your other hand, grab the low spot, then "gently" push the low side of the hub up while pulling down on the high side. Spin the hub again and see if the up/down wobble is gone, if not, repeat the procedure until problem is fixed.



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