

**PLEASE READ AND SAVE THESE INSTRUCTIONS.**

PENN BARRY

Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

Zephyr Ceiling/Wall Ventilating Fans Model Z1



Receiving and Handling

PennBarry fans are carefully inspected before leaving the factory. When the unit is received, inspect the carton for any signs of tampering. Inspect the unit for any damage that may have occurred during transit and check for loose, missing or damaged parts. Mishandled units can void the warranty provisions. PennBarry is not responsible for damages incurred during shipment.

Avoid severe jarring and/or dropping. Handle units with care to prevent damage to components or special finishes.

Storage

Long-term storage requires special attention. Units should be stored on a level, solid surface, preferably indoors. If outside storage is necessary, protect the units against moisture and dirt by encasing the cartons in plastic or some similar weatherproof material.

Unpacking

Place carton in an upright position and remove staples or use a sharp (knife edge) tool to CAREFULLY cut or scribe the sealing tape on both sides at the top of the carton. Open carton flaps. Remove any cardboard and wooden filler pieces, as well as loose components or accessories shipped with the unit.

Carefully remove the unit from the carton. Inspect the unit for any damage that may have occurred during transit and check for loose, missing or damaged parts.

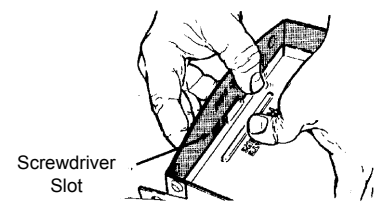
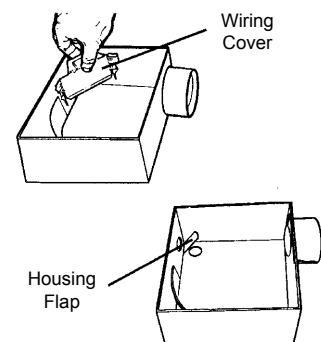
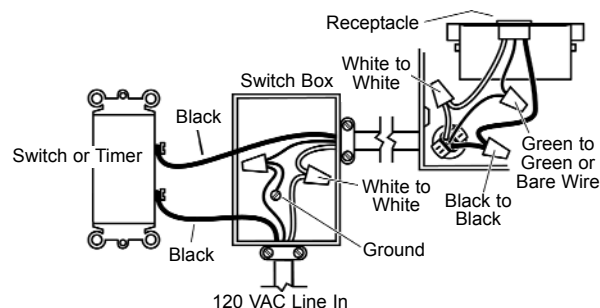
Installation

WARNING

To reduce the risk of fire, electrical shock, or injury to persons, observe the following:

1. Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer at the address or telephone number listed in the warranty.
2. Before servicing or cleaning unit, switch power off at service panel and lock service panel to prevent power from being switched on accidentally.
3. Installation work and electrical wiring must be done by a qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction codes and standards.

4. Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent back-drafting. Follow the heating equipment manufacturer's guideline and safety standards such as those published by the National Fire Protection Association (NFPA), and the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), and the local code authorities.
5. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
6. Ducted fans must always be vented to the outdoors.
7. Acceptable for use over a bathtub or shower when installed in a GFCI protected branch circuit.
8. Install fan at least five feet (1.52m) above floor.
9. Never place a switch where it can be reached from a tub or shower.
10. This unit must be grounded.

Figure 1**Figure 2****Figure 3: Wiring Diagram**

CAUTION

1. For general ventilating use only. Do not use to exhaust hazardous or explosive materials and vapors.
2. To avoid motor bearing damage and noisy and/or unbalanced impellers, keep drywall spray, construction dust, etc. off power unit.
3. Please read specification label on product for further information and requirements.

INSTALLATION

1. Remove motor plate from housing by pushing down on rib in plate while pulling out on side of housing. Motor plate may also be removed by inserting a straight-blade screw driver into slot in housing and twisting screw driver (Figure 1).
2. Remove wiring cover from housing by pulling straight out. Unit is shipped ready to wire through the top of housing. To wire through the side, bend housing flap to cover top hole and expose side hole. **DO NOT BREAK OFF FLAP.** If flap breaks, plug unused hole using standard electrical hole plug (Figure 2).
3. Turn off electrical power at service entrance and connect power cable to housing using appropriate connector. Wire black to black, white to white, green to green or bare wire.

Push all wiring up into corner of unit and replace wiring cover. Make sure cover holds housing flap in place against side or top of housing.

CAUTION Do not allow wires to extend outside of the wiring box. Wire left exposed will become pinched or cut when motor plate is installed. Electrical shock may result (Figure 3).

4. Choose the location for your fan. For best performance, use the shortest possible duct run and a minimum number of elbows. For wall installations: position unit so damper flap closes when unit is off.

5a. New Installation prior to finishing the ceiling or wall:

Make sure the housing will be flush with the finished ceiling or wall. Slotted tabs are provided to locate housing flush with 1/2" ceiling or wall material. Bend tabs outward 90° (Use a screw driver if desired) and position housing so that tabs rest against bottom edge of joists (or front of stud). Nail housing to joist or stud using four nails to ensure a solid, quiet installation. Ceiling installations: Tabs on opposite side of housing can be bent outward to rest on top of 1/2" ceiling material and provide extra stability (Figure 4).

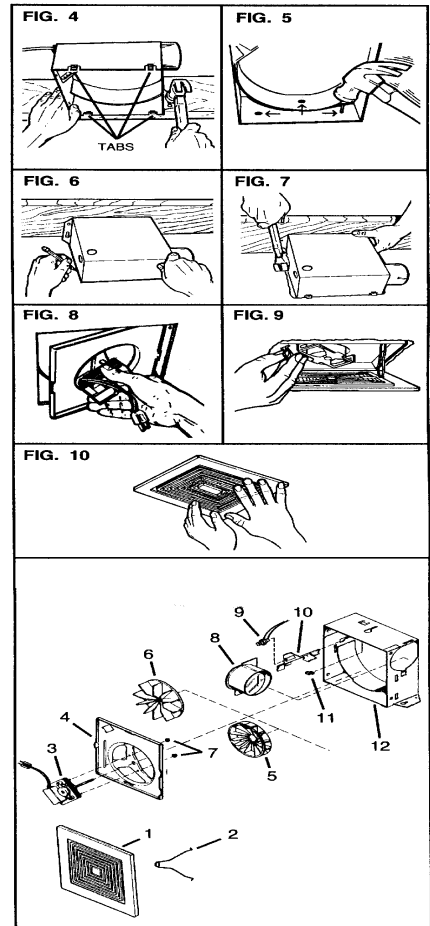
5b. Replacement Installation:

Position housing so that it is centered in existing opening. Make sure the housing will be flush with the finished ceiling or wall. After making electrical and ductwork connections (see steps 4, 5 and 6), nail housing in place. Drive nails through the housing where indicated by arrows (Figure 5).

5c. New Installation in an existing ceiling or wall:

From above ceiling or behind wall, position housing against stud or joist. Trace outline of housing on ceiling or wall material. (Fig. 6) Set housing aside and cut opening. Place housing in opening such that its bottom edge is flush with the finished ceiling or wall. 1/2" ceiling or wall material: Bend tabs outward 90° (use a screw drive if desired) to rest on top of ceiling or wall material and provide extra stability. Nail in place using four nails to ensure a solid, quiet installation (Figure 7).

6. Install 3" round duct onto damper/duct connector. If rigid ductwork is used, its seam should be positioned at top of damper/duct connector. Tape the joint and extend ducting to a wall cap or roof cap. Make sure the damper operates freely. Ceiling or wall can now be finished.
7. Replace the motor plate removed in step 1. Insert two motor plate tabs into slots in housing and then pivot motor plate up until the third tab on plate snaps into matching slot in housing. Make sure tabs hold motor plate securely in place. Plug in motor (Figure 8).
8. Squeeze grill springs together and insert springs into slots in motor plate (Figure 9). Push the grill up against ceiling or wall (Figure 10).



Parts Replacement

If replacing parts, do so with properly selected components which duplicate the original parts correctly. Incorrectly sized parts can damage the fan.

PARTS LIST

1. Grill Assembly (includes Grill Spring part #2)
2. Grill Spring (2 are required)
3. Motor (Models: 670, 671, 688 and 689)
4. Motor Plate
5. Blower Wheel (Models 670 and 671)
6. Blower Wheel (Models 688 and 689)
7. Nut #6-32 (2 are required)
8. Damper/Duct Connector
9. Receptacle
10. Wiring Cover
11. Housing Assembly

Troubleshooting Checklist

Symptom	Possible Cause(s)	Corrective Action
Excessive noise	<ol style="list-style-type: none"> 1. Defective or loose motor bearings 2. Ventilator base not securely anchored 3. Loose or unbalanced wheel/propeller 4. Misaligned pulleys or shaft 5. Loose or damaged wheel/propeller 6. Wheel running in wrong direction 	<ol style="list-style-type: none"> 1. Replace motor with same frame size, RPM, HP 2. Reset properly 3. Tighten screws, remove build-up, balance wheel/propeller 4. correct alignment 4. Replace wheel/propeller 6. Reverse direction
Fan inoperative	<ol style="list-style-type: none"> 1. Blown fuse or open circuit breaker 2. Loose or disconnected wiring 3. Defective motor 4. Broken belts 	<ol style="list-style-type: none"> 1. Replace fuses or circuit breaker 2. Shut off power and check wiring for proper connections 3. Repair or replace motor 4. Replace belts
Insufficient airflow	<ol style="list-style-type: none"> 1. Open access doors or loose sections of ducts 2. Clogged filters 3. Operation in wrong direction 4. Insufficient make-up air direction 	<ol style="list-style-type: none"> 1. Check for leakage 2. Clean filters 3. Correct rotation of wheel/propeller 4. Add make-up fan or louver opening
Water leaking into ductwork or collection of grease under fan	<ol style="list-style-type: none"> 1. Fan installed with slope in the wrong direction 2. Clogged drain spout 3. Cooling tube or motor dome top removed 4. Grease container full 	<ol style="list-style-type: none"> 1. Slope should be fitted in the direction of the drainage opening or grease collection box and drain spout 2. Clean drain spout 3. Install new cooling tube with gasket and dome top 4. Empty grease box
Motor overheating	<ol style="list-style-type: none"> 1. Belt slippage 2. Overvoltage or under voltage 3. Operation in wrong direction 4. Fan speed too high 5. Incorrect motor (service factor 1.0, low ambient temperature) 6. Blocked cooling tube or leaky gasket 7. Insufficient airflow to kitchen hood fan operating on low speed with kitchen in full operation 8. Undersized motor 	<ol style="list-style-type: none"> 1. Adjust tension or replace bad belts 2. Contact power supply company 3. Reverse direction of motor 4. Slow down fan by opening variable pitch pulley on motor shaft 5. Replace motor with correct open, NEMA service factors (1.15 or higher) with 40 degrees ambient 6. Remove blockage and seal cooling tube in place 7. Check airflow under hood and adjust kitchen equipment output 8. Check motor ratings with catalog speed and air capacity chart

Note: Care should be taken to follow all local electrical, safety and building codes. Provisions of the National Electric Code (NEC), as well as the Occupational Safety and Health Act (OSHA) should be followed.

All motors are checked prior to shipment. If motor defects should develop, prompt service can be obtained from the nearest authorized service station of the motor manufacturer while under warranty. Exchange, repair or replacement will be provided on a no charge basis if the motor is defective within the warranty period. The PennBarry representative in your area will provide a name and address of an authorized service station if requested. **WARNING:** Motor guarantee is void unless overload protection is provided in motor wiring circuit.

Limited Warranty

What Products Are Covered

PennBarry Fans and Ventilators (each, a "PennBarry Product")

One Year Limited Warranty For PennBarry Products

PennBarry warrants to the original commercial purchaser that the PennBarry Products will be free from defects in material and workmanship for a period of one (1) year from the date of shipment.

Exclusive Remedy

PennBarry will, at its option, repair or replace (without removal or installation) the affected components of any defective PennBarry Product; repair or replace (without removal or installation) the entire defective PennBarry Product; or refund the invoice price of the PennBarry Product. In all cases, a reasonable time period must be allowed for warranty repairs to be completed.

What You Must Do

In order to make a claim under these warranties:

1. You must be the original commercial purchaser of the PennBarry Product.
2. You must promptly notify us, within the warranty period, of any defect and provide us with any substantiation that we may reasonably request.
3. The PennBarry Product must have been installed and maintained in accordance with good industry practice and any specific PennBarry recommendations.

Exclusions

These warranties do not cover defects caused by:

1. Improper design or operation of the system into which the PennBarry Product is incorporated.
2. Improper installation.
3. Accident, abuse or misuse.
4. Unreasonable use (including any use for non-commercial purposes, failure to provide reasonable and necessary maintenance as specified by PennBarry, misapplication and operation in excess of stated performance characteristics).
5. Components not manufactured by PennBarry.

Limitations

1. In all cases, PennBarry reserves the right to fully satisfy its obligations under the Limited Warranties by refunding the invoice price of the defective PennBarry Product (or, if the PennBarry Product has been discontinued, of the most nearly comparable current product).
2. PennBarry reserves the right to furnish a substitute or replacement component or product in the event a PennBarry Product or any component of the product is discontinued or otherwise unavailable.
3. PennBarry's only obligation with respect to components not manufactured by PennBarry shall be to pass through the warranty made by the manufacturer of the defective component.

General

The foregoing warranties are exclusive and in lieu of all other warranties except that of title, whether written, oral or implied, in fact or in law (including any warranty of merchantability or fitness for a particular purpose).

PennBarry hereby disclaims any liability for special, punitive, indirect, incidental or consequential damages, including without limitation lost profits or revenues, loss of use of equipment, cost of capital, cost of substitute products, facilities or services, downtime, shutdown or slowdown costs.

The remedies of the original commercial purchaser set forth herein are exclusive and the liability of PennBarry with respect to the PennBarry Products, whether in contract, tort, warranty, strict liability or other legal theory shall not exceed the invoice price charged by PennBarry to its customer for the affected PennBarry Product at the time the claim is made.

Inquiries regarding these warranties should be sent to: PennBarry, 1401 North Plano Road, Richardson, TX 75081.