

**PLEASE READ AND SAVE THESE INSTRUCTIONS.**

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.

PENN BARRY

Zephyrette & Zephyr Jr. Ceiling Exhaust Ventilators



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.

Description

PennBarry ceiling exhaust ventilators employ direct drive centrifugal blower wheels powered by a 1200 RPM, 115V, 60 Hz sleeve bearing shaded pole motor. See specifications for CFM and sone ratings. Air deliveries are based on AMCA test codes. Units have molded plastic grill and shatterproof backdraft damper. Motor and blower assembly can be removed from heavy gauge steel housing for cleaning. Adjustable mounting brackets and hardware included. UL and CSA listed.

Installation

WARNING

CAUTION To reduce the risk of fire, electric shock, or injury to persons - observe the following:

- Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
- Before servicing or cleaning unit, switch power off at service panel and lock the service panel to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.

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

- Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire rated construction.
- 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),

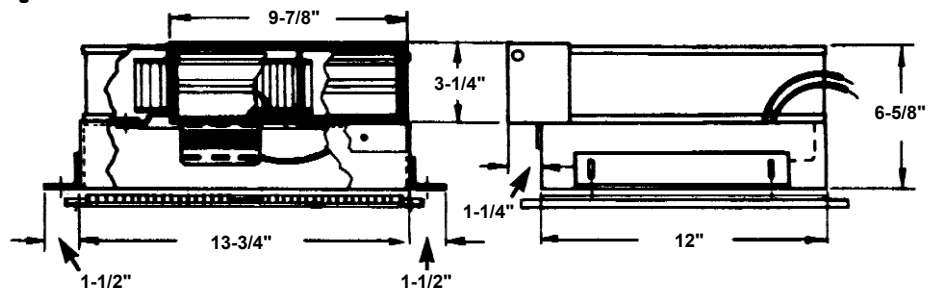
the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), and the local code authorities.

- When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
- Duct fans must always be vented to the outdoors.
- If this unit is to be installed over a tub or shower it must be marked as appropriate for this application.
- Never place a switch where it can be reached from a tub or shower.

CAUTION For general ventilating use only. This product is not to be used to exhaust hazardous or explosive materials and vapors.

- Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
- Always disconnect the power source before working on or near a fan or motor.

Figure 1: Dimensions



5. Make certain the power source conforms to the requirements shown in the performance chart.
6. Protect the power cord from coming in contact with sharp edges or other objects.
7. Do not kink the power cord or allow it to come in contact with oil, grease, hot surfaces or chemicals.

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.

ELECTRICAL CONNECTIONS

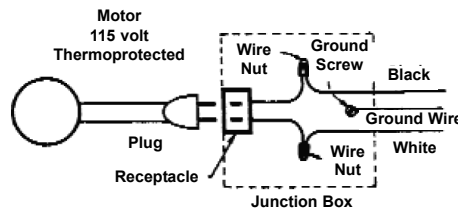
1. Connect motor per nameplate to correct power supply.
2. Install all wiring, protection and grounding in accordance with the National Electrical Code (NEC) and all local requirements.
3. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).

CAUTION Make the necessary connections by using two wire nuts. A separate ground wire must be connected to the grounding screw. Replace the cover of the junction box.

CAUTION To reduce the risk of injury of person, install fan at least seven feet above the floor, if no guard or grill is supplied.

BEFORE A CEILING IS INSTALLED WITH ACCESS FROM BELOW

Figure 2: Wiring Diagram



1. Disconnect motor cord and plug from internal terminal and receptacle before starting installation (see figure 2).
2. Assemble adjustable flanges to fan housing with four self-tapping metal screws (provided). Adjustable flanges should be located as illustrated in Figure 3.
3. Secure the adjustable flanges to each joist. Attach a properly sized duct to the duct sleeve mounted on the fan housing. Connect this duct system to the appropriate size wall cap or roof cap (see Figure 3).
4. Before wiring is attempted, Always lock out the primary and secondary power source. Utilizing the pre-punched hole found at the terminal box on the fan housing, insert a 3/8" electrical connector. All wiring should be in strict accordance with the National Electrical Code and local, state and federal standards.
5. If building out is necessary, an appropriate piece(s) of wood should be utilized. Nail wood spacer(s) to joist(s) at the point where the fan will be installed; the fan housing should fit between the two joists (or between the built-out spacers) with approximately 1/2" clearance. spacers should be sized according to the fan housing dimensions (see Figure 4).

6. Complete installation by cutting an 11-7/8" x 13-3/4" ceiling opening for the unit. Use care not to exceed this dimension when installing the fan.
7. The egg crate ceiling grill should be installed by screwing the grill into the fan housing using the two 2" plastic bolts supplied with each unit.
8. Automatically operated thermal protector to reduce risk of injury; disconnect power supply before servicing.

WITH CEILING IN PLACE

1. Disconnect motor cord and plug from internal terminal box and receptacle before starting installation.
2. Assemble adjustable flanges to fan housing with four self-tapping metal screws (provided). Adjustable flanges should be located as illustrated in Figure 5. Install the duct and electrical service in accordance with the instructions listed in the previous section.

SUSPENDED CEILING SYSTEMS

Installation of ceiling fans in suspended ceiling systems require a minimum 10 gauge solid wire for hanging or suspending the ceiling fan. Four wires per unit should be connected to the pre-punched holes of the adjustable mounting flanges (after the flanges have been mounted to the fan housing as outlined above).

Figure 4: Using Spacers

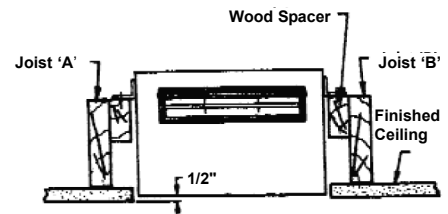
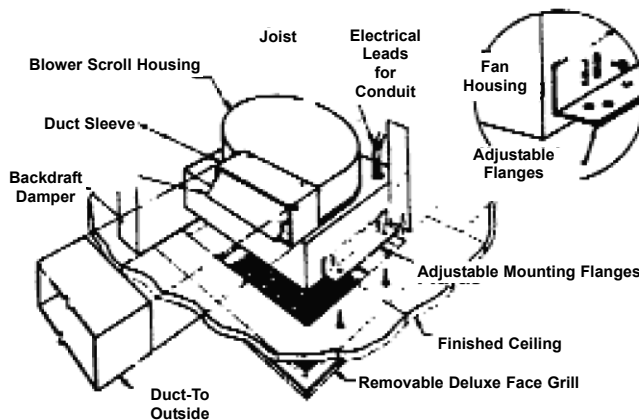


Figure 3: Typical Ceiling Installation



Maintenance

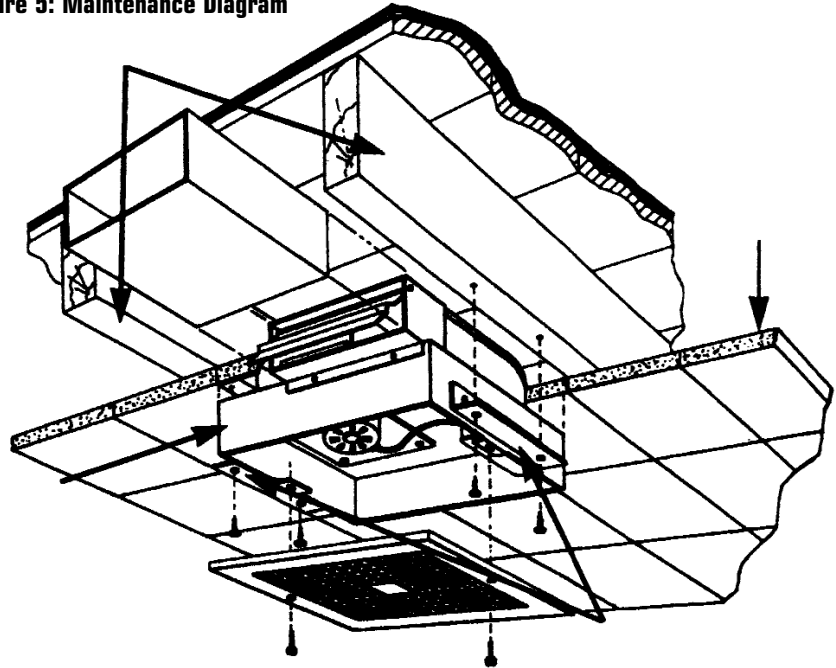
CAUTION Disconnect power source before working on unit. Maintenance should be done yearly or as conditions warrant.

CLEANING BLOWER WHEEL, HOUSING & GRILL

1. The blower wheel, housing and grill can be cleaned of dust and grease if required.
 - a. Remove the grill. Using a vacuum cleaner with appropriate attachments, vacuum dust from the grill. Wash the grill with a warm, soapy solution of water. Allow the grill to dry thoroughly before re-installing.
 - b. To clean blower wheel(s) and housing, unplug blower motor from integral terminal box. Unscrew the self-tapping screws which secure the motor and blower support plate. Carefully remove entire blower/motor assembly. Vacuum blower wheel. If necessary, the wheel can be washed. Wipe blower wheel dry with an absorbent cloth. Before replacing blower/motor assembly, wipe out interior of housing. Replace blower/motor assembly and secure with self-tapping screws. Plug in blower motor to terminal box.

CAUTION Do not allow water to enter motor.

Figure 5: Maintenance Diagram



MOTOR LUBRICATION

Oil every six months with 2 drops of SAE 20 oil.

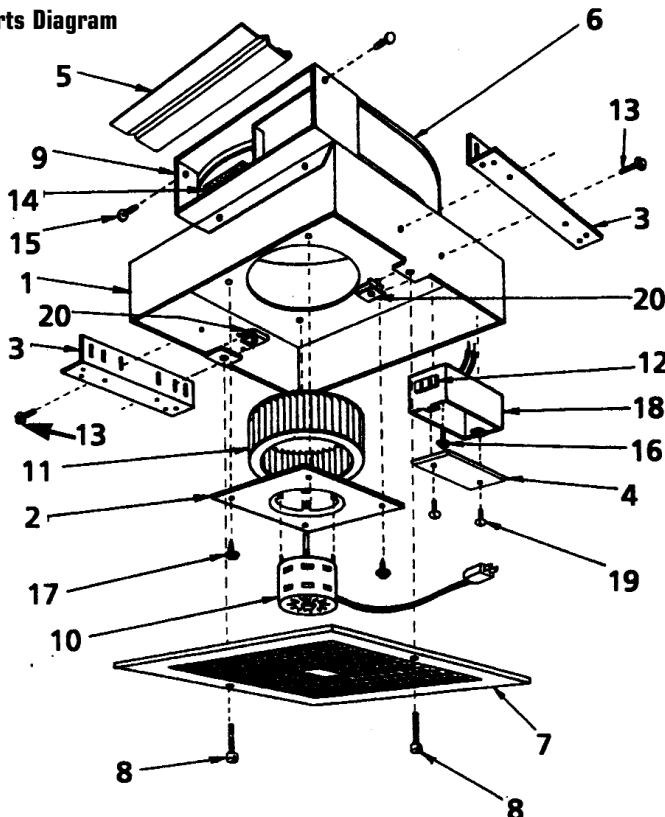
Parts Replacement

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

PARTS LIST (SEE FIGURE 6)

1. Main Housing
2. Venturi (motor support plate)
3. Housing Bracket
4. Cover Plate (junction box)
5. Damper
6. Blower Housing
7. Grill
8. 1/4" - 20 x 2" Nylon Bolt
9. Duct Sleeve
10. Motor and Plug / Disconnect
11. Wheel
12. Electric Receptacle Device
13. 1/4" x 3/4" Screw (housing bracket)
14. Polyurethane Damper Stop
15. Damper Pivot Pin
16. Electric Grounding Screw
17. #14-1/2" Screw SM
18. Junction Box
19. #8-1/4" Screw SM
20. U-Clip Speed Nut

Figure 6: Parts Diagram



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.

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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.