

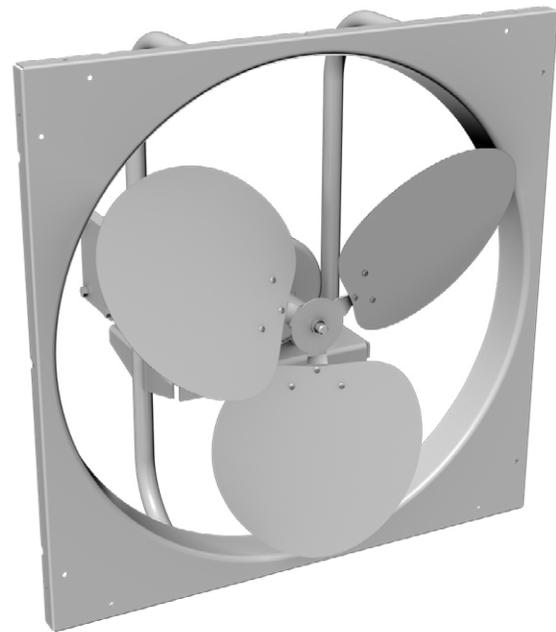
Breezex (BX)

Heavy Duty Reversible Supply/Exhaust Fans
with Reversing Switch

OPERATION & MAINTENANCE MANUAL



PENNBARRY™



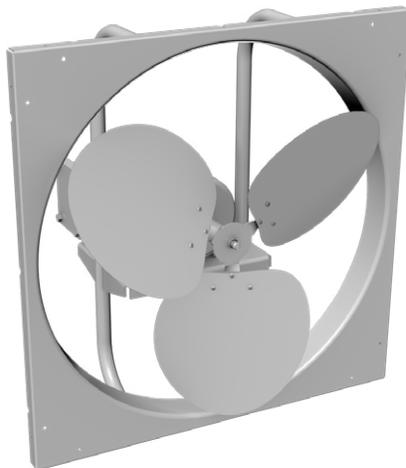
IMPORTANT! Read before proceeding!

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.

TABLE OF CONTENTS

INTRODUCTION	3-4
INSTALLATION	5-7
MAINTENANCE	8
TROUBLESHOOTING CHECKLIST	9-10

INTRODUCTION



Description

The PennBarry Model BX Heavy Duty Reversible Supply/Exhaust Fan for wall and duct mounting is designed for use in commercial and industrial applications. Each fan is equipped with a ball bearing, totally enclosed, automatic thermal overload protected, electrically reversible motor. Unit is furnished with painted steel venturi and aluminum propeller.

Receiving and Handling

PennBarry fans are carefully inspected before leaving the factory. When the unit is received, inspect 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. If units are damaged in transit, it is the responsibility of the receiver to make all claims against the carrier. 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 finishes. If the unit is scratched due to mishandling, the protective coating may be damaged.

Incorrect lifting may damage the fan and void the warranty.

Storage

Long-term storage requires special attention. Store units on a level, solid surface, preferably indoors. If outside storage is necessary, protect the units against moisture and dirt by encasing them in plastic or in some similar weatherproof material. Periodically inspect units and rotate wheels to spread bearing lubricant. Failure to rotate wheels results in reduced bearing life and may void the manufacturer's warranty. If the unit will be stored for an extended time, remove belts. Belts that remain under tension in a stationary position for extended periods are likely to have a reduced operating life.

General Safety Information



Disconnect power before servicing or installing.



This fan should be assembled and installed by a qualified technician.

INTRODUCTION

1. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
2. Motor must be properly grounded.
3. Lock and tag power service switch to prevent resumption of power during maintenance.
4. Guard all moving parts.
5. Be careful when touching the exterior of an operating motor; it may be hot enough to be painful or cause injury. With modern motors this condition is normal if operated at rated load and voltage. Modern motors are built to operate at higher temperatures.
6. Protect the power cable from coming in contact with sharp objects.
7. Do not kink power cable and never allow the cable to come in contact with oil, grease, hot surfaces, or chemicals.
8. Make certain that the power source conforms to the requirements of your equipment.
9. Keep cleaning rags and other flammable waste materials in a tightly closed metal container and dispose of later in the proper fashion.
10. Use an approved cleaning agent, such as dry cleaning solvent, for cleaning electrical or electronic equipment.

Positioning and Running Power Lines

Power is normally brought from within the building through proper conduit lines to the wall opening and in turn to the (service switch, if furnished, and) motor.

When power lines are brought up to the unit, provide a generous amount of slack to allow for motor adjustments and to permit movement of motor for belt tension adjustments. Ground motor adequately and securely. Protect power lines from sharp objects. Do not kink power line or permit it to contact hot surfaces, chemicals, grease or oil. Use only UL recognized electrical parts, rated for proper voltage, load and environment.

Unpacking

When unpacking the fan, inspect carefully for any damage that may have occurred during transit. Check for possible loose parts, missing parts or damaged parts.

INSTALLATION



These fans have rotating members that require use of safety precautions during installation, operation and maintenance.



If fans are located less than 7 feet above the floor, a guard is required in accordance with OSHA (Occupational Safety and Health Act) Regulations.

1. See dimensional data on page 4.
2. The fan should be securely mounted with a rigid framework to prevent flexing or movement of the fan frame during operation. The fan frame should be equally supported on all sides within the framework, and caution should be taken to avoid twisting or cocking of the fan frame during installation.



Allowing the fan frame to flex or move during operation will create harmful vibrations which may damage the unit.

3. Fans should be mounted in an opening with a 1/4" of clearance around the perimeter of the unit. Utilizing corrosion resistant fasteners, Venturi framing should be secured to a building structure.

NOTE: Prop is protruding from front of panel, and special precautions must be taken during installation to prevent bending of the prop.

Check rotation after wiring of ventilator to be sure airflow direction corresponds to information as listed on the switch.

Dampers, if used, must be mechanically operated and clear prop by at least 2".

Fan motor could overheat if operated with damper in closed position.

Operation

With air system in full operation, measure correct input (amps) to motor in both directions and compare with nameplate rating to determine if motor is operating under safe load conditions.



When reversing directions, switch should go to the OFF position FIRST; then after prop stops, change switch to other direction.

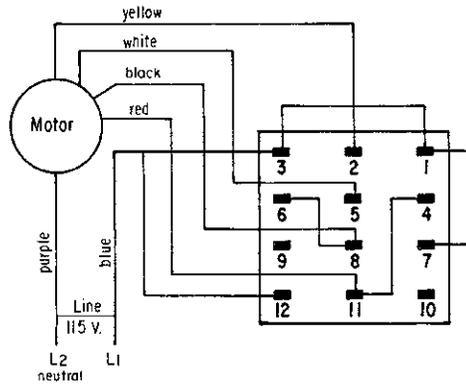
Electrical Connections

1. Review unpacking and installation on page 4 prior to any wiring.
2. Review diagrams below for wiring to the reversing switch, if supplied. The wiring varies by motor manufacturer.
3. Connect motor per nameplate to correct power supply.
4. Install all wiring, protection, and grounding in accordance with National Electrical Code and local requirements.
5. Follow all electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
6. In order to prevent motor failure, unit must be powered down and come to a complete stop before rotation is reversed.

INSTALLATION

Please note that the data contained on this page is applicable only for Totally Enclosed motors normally supplied.

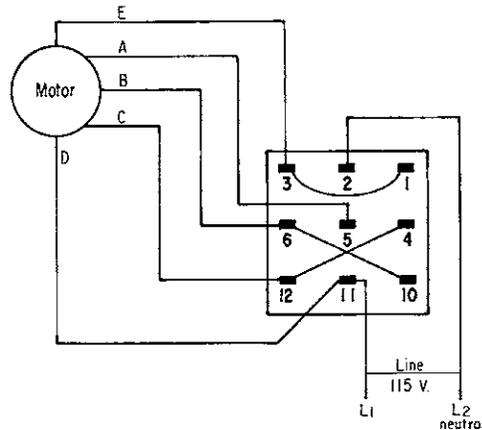
Explosion Proof motors are optional, and if supplied, the diagrams below do NOT apply. Refer to the wiring diagram on the motor nameplate for instructions.



Marathon Wiring Diagram (provided with (4) pole reversing switch)

1 PHASE

The reversing switch provided with 1 phase TE motors is factory-wired. When wired correctly, per these diagrams to the motor noted, it will reverse rotation.

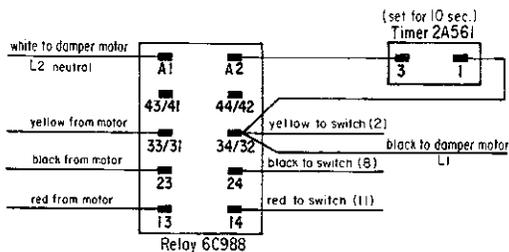


A. O Smith Wiring Diagram (provided with (3) pole reversing switch)

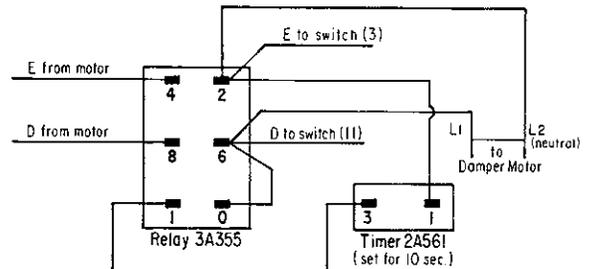
INSTALLATION

RELAY AND TIMER (OPTIONAL) FOR USE WITH 115V MOTORIZED DAMPER

NOTE: Relay and timer to be procured locally by field

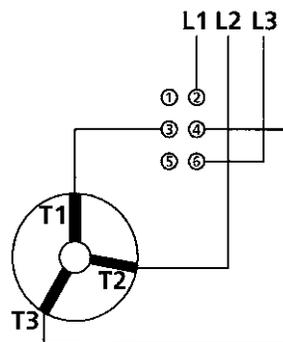


Marathon Motor
(provided with (4) pole reversing switch)



A.O Smith Motor
(provided with (3) pole reversing switch)

3 PHASE



The 3 phase reversing switch provided is suitable for any of several TE motor manufacturers. It is a general purpose reversing drum controller, suitable for several types of operation. Other diagrams shown on the switch cover are for other purposes (switching voltages, etc.) than reversing rotation. They do not pertain.

MAINTENANCE



CAUTION: Make certain that the power source is disconnected before attempting to service or disassemble any components! If the service switch is out-of-sight, lock it in the OFF position and tag to prevent application of power.

Periodically clean any guards, dampers, motors and props to prevent decrease in airflow and overheating of the motor, and make sure all bolts are tight.

INSTALLING THE WALL DAMPER

When required, level and fasten the wall damper through the mounting holes provided in the damper mounting flange. Consult Figure 1 for the proper mounting arrangements. Secure the damper to the wall opening without undo twisting which may distort the frame. Check for free operation. If dampers are motor operated type, ascertain the proper voltage is present on motor terminals.

The fan is now ready for service.

Replacement Switch Wiring Diagrams (1 Phase)

The 4 pole reversing switch is shipped from the factory, **even as a replacement part**, pre-wired for a Marathon brand motor. If you are using this switch as a replacement on a unit having an A.O. Smith motor, your unit almost certainly has a 3 pole reversing switch. Counting the number of terminals on the switch (nine for a 3 pole, or 12 for a four pole) is an easy method to determine which switch you have.

If you have a 3 pole switch, you MUST RECONFIGURE the 4 pole switch which has been supplied.

There are two ways to approach this task:

The first is easiest to explain, but **requires careful attention**. Simply stated, remove & discard all the wires from the 4 pole switch and move all the wires from the 3 pole switch to the 4 pole switch in exactly the same arrangement. Move only one wire at a time. You can match the wires to the same terminal numbers (the 3 pole switch has no connections for #7, 8 & 9). Cap any unused wires. Verify that the end result matches the diagram labeled “**RECONFIGURED 4 POLE SWITCH**”.

The second method is to follow the detailed instructions below. To do this, use only pins 1-9 of the switch; **pins 10-12 remain unused**.

1. Disconnect & cap the blue wires on pin #12 & 7, they are not used.
2. Remove the terminals with black wires from pin #8 & 6. Connect the terminal with the long black wire to pin #6 and the other terminal to pin #7.
3. Remove the terminal with the long red wire from pin #11 and connect it to pin #9.
4. You will have to connect pin #8 to neutral in the field. A wire is not provided.

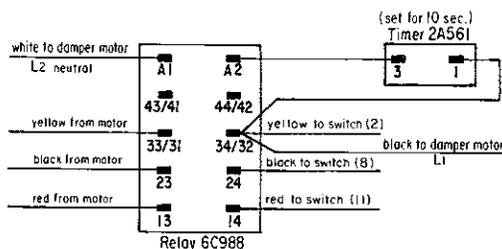


Figure 1: 4 pole reversing switch for use with Marathon motors

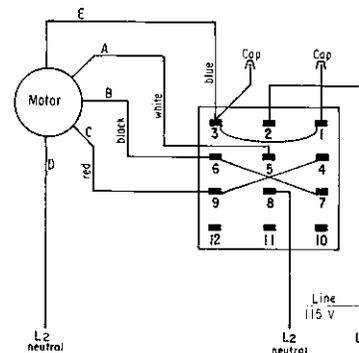
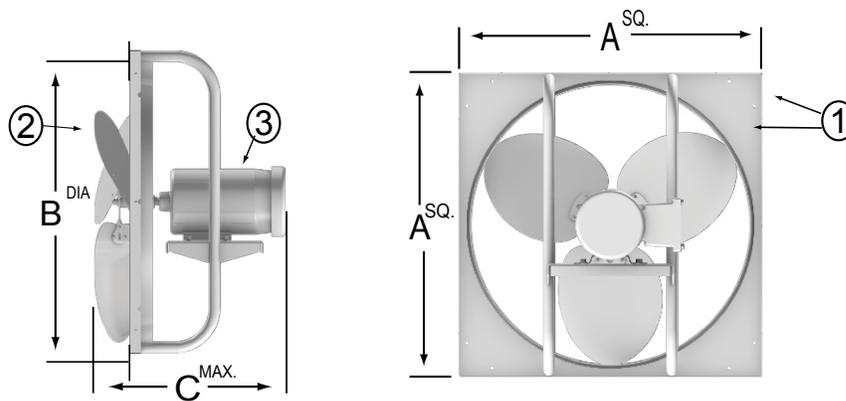


Figure 2: Reconfigured 4 pole reversing switch for use with A.O. Smith motors

TROUBLESHOOTING CHECKLIST

Symptom	Possible Cause	Corrective Action
Excessive noise	1. Defective or loose motor bearings	1. Replace motor with same frame size, RPM, HP
	2. Crooked or damaged prop	2. Replace prop
	3. Motor not securely fastened	3. Tighten motor
	4. Loose propeller	4. Align and tighten prop to motor shaft
Fan inoperative	1. Blown fuse or open circuit breaker	1. Replace fuses or circuit breaker
	2. Loose or disconnected wiring	2. Shut off power and check wiring for proper connections
	3. Defective motor	3. Repair or replace motor



Dimensions

Model NO.	A	B	C MAX.
BX12Q	14 1/2	12 3/4	12
BX14Q	16 1/2	14 3/4	12
BX16Q	19	16 3/4	12 1/2
BX16T	19	16 3/4	12 1/2
BX18Q	21	18 3/4	12 3/4
BX18T	21	18 3/4	12 3/4
BX20Q	23	20 3/4	13 1/2
BX20T	23	20 3/4	13 1/2
BX24Q	27	24 3/4	13 1/2
BX24T	27	24 3/4	13 1/2

All dimensions inches.

TROUBLESHOOTING CHECKLIST

Replacement Parts List

REF NO.	DESCRIP-TION	PART NO. FOR MODEL									
		BX12-Q	BX14-Q	BX16-Q	BX16-T	BX18-Q	BX18-T	BX20-Q	BX20-T	BX24-Q	BX24-T
1	Painted Steel Panel	26312-3	26313-3	26314-3	26314-3	26315-3	26315-3	26316-3	26316-3	26317-3	26317-3
2	Propeller	50521-0	50729-0	50730-0	50564-0	50522-0	50731-0	50523-0	50566-0	50567-0	50568-0
3	Totally Enclosed Motor 1 Phase	60288-0	60288-0	60291-0	60289-0	60291-0	60290-0	60291-0	60290-0	60293-0	60292-0

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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PennBarry is proud to be your preferred manufacturer of commercial and industrial fans and blowers. Learn how PennBarry can assist you in your next application by contacting your PennBarry Representative or visiting us on the web at www.pennbarry.com.

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PennBarry reserves the right to make changes at any time, without notice, to models, construction, specifications, options and availability. This manual illustrates the appearance of PennBarry products at the time of publication.

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