

Fasco Fan and Blower Motors

Motor Installation and Safety Information

The enclosed information is for your safety as well as others who depend on you to understand and observe the safety and installation instructions included in this manual. Please read and save this information.



- **High voltage** and moving parts around motors and other electrical equipment can cause **serious** or **fatal injury**.
- **Always disconnect** the power source before working on electrical equipment.
- **Always guard** all moving parts to prevent incidental contact with fingers or foreign objects.
- **Always remove** the shaft key if a motor is to be operated without a load connected to the shaft.
- **Never handle** a motor when it is connected to a power source.
- **Never use** motors equipped with automatic reset protectors (**most Fasco Motors**) in equipment, such as food slicers, wood saws, etc., where a sudden and unexpected start of the motor would cause a hazard. Never handle such equipment that has stopped if still connected to a power source.
- **Be aware** that the surface of a motor may be very hot when running under normal load conditions or even when it is not operational. Touching a motor frame may cause **severe burns**.
- **Wait** for rotating parts to completely stop.
- **Discharge** any charge of electricity in any motor start or run capacitors before servicing motors or blowers to prevent an electrical shock hazard.
- **Do not use** this motor in a **hazardous or explosive location** as defined by Article 500 of the National Electrical Code.
- **If** the motor has been wet, it should be inspected and serviced by a qualified repair shop before operating.
- **Never** substitute "Look-alike" draft inducer blowers in high efficiency gas furnaces. Replacement blowers must be identical in all respects to the original equipment blower.
- **Motor installation must conform** to all OSHA requirements and the National Electrical Code as well as any local codes.

Initial Motor Inspection:

- After opening the shipping carton, check the nameplate and general construction features to confirm the correct motor or blower was received.
- Inspect the motor for damage. If damage is detected, the motor should be placed back in the shipping carton, and a claim filed with the carrier immediately. Do not attempt to install or use a damaged motor.

Electrical:

- **CAUTION** This motor must be securely and adequately grounded by wiring with a grounded metallic conduit or other grounding means approved by local and NEC Codes.
- Insulate all wire connections to prevent short circuits or grounding.
- Reinstall any conduit box covers. Do not force connections into the conduit box.
- When connecting any motor to the power source, connect the common lead first.
- Voltage, frequency and phase of the power supply must correspond to that shown on the motor nameplate. Incorrect voltage or frequency may cause overheating.

Thermal Protection:

- Use thermally protected motors where required by safety regulations such as NEC in the US, CSA in Canada, etc; **or** where a blocked shaft, overloading or other abnormal load condition may occur.

Location:

- **WARNING** Fasco motors marked "**OSB**", those that include an "**S**" in the Type number, or any totally enclosed models (those with no vent openings), **are suitable** in fan products that are built into a structure or installed in unattended locations, such as bathroom exhaust fans, ceiling insert fans, attic exhaust fans, wall insert fans, whole house fans and duct fans. Fasco motors without these special markings and with ventilation openings may present a **fire hazard** in equipment where an inoperable motor would not immediately come to someone's attention. (Ref. UL Standard 507).
- **WARNING** Fasco motors without ventilation openings are **not** waterproof and should not be used in damp or dirty environments. Use only UL Listed Hazardous Duty motors in hazardous locations as described in Article 500 of the National Electrical Code.
- **Use a motor with Open Vents or a Drip proof Vent pattern** in clean, dry, accessible locations.
- **Use Totally Enclosed Motors** in damp or dirty environments or inaccessible locations.
- If the motor nameplate includes "Air-Over", "AO" or "TEAO", it must be mounted in the air stream of an air-moving appliance.

Motor Control Devices:

- **WARNING** Motors/blowers are not designed for use with solid state speed controls. The use of electronic speed controls may cause a **fire or burn hazard**.
- **CAUTION** Supply lines must have fuses or circuit breakers to provide short circuit protection for the motor and any motor controls.
- Any switching device used to control the motor driven appliance must have a horsepower rating equal to or greater than the horsepower rating of the motor.

Motor Mounting:

- **WARNING** Special screws are provided with motors that have screw holes in the frame. Screws other than those provided may contact the motor coils and create a **shock hazard**.
- Motors or blowers must be securely mounted to an appliance to prevent objectionable noise or vibration.
- Condenser motors typically have condensate drain plugs on both endplates. Depending on the mounting position, the plug must be removed from the lowermost endplate.

Connecting Power to the Motor:

- **CAUTION** Connecting line voltage to two of the "Speed" lead wires, i. e., the High Speed and the Low Speed, will burn the motor windings creating a **fire or shock hazard**. Should this occur, even for a short period, the motor must be thoroughly inspected for damaged coils by a qualified motor service shop before being put into use.
- **CAUTION** Make sure lead wires are secured to prevent contact with moving parts in the equipment.
- Never connect multi-speed motors in parallel in a system requiring more than one motor.
- Refer to the connection diagram and nameplate for proper voltage, speed and rotation direction.
- On PSC Motors, make sure the run capacitor matches the rating on the motor nameplate. It is recommended to replace the motor capacitor when replacing a defective motor.
- Prevent motor or blower power input cables from kinking, or contacting chemicals, oils, greases, hot surfaces or sharp objects.

CAUTION All aspects of the installation must conform to the requirements of the NEC and all local codes. Wherever possible, each motor should be powered from a separate circuit of adequate capacity to keep voltage drop to a minimum during starting and running. Increase wire size where the motor is located a distance from the power source. Wire size must be adequate to minimize voltage drop during starting and running. Refer to Minimum Wire Size Table for suggested wire sizes. Distances are one-way between the source and the motor. Portable cords should be as short as possible to minimize voltage drop. Long or inadequately sized cords can cause motor failure. All electrical connections in a system must be secure to prevent voltage drop and localized heating.

Minimum Wire Sizes for Fractional HP, PSC and Shaded Pole Motors

Motor HP	Up to 25 Ft		26 to 50 Ft		51 to 100 Ft		101 to 150 Ft		151 to 200 Ft	
	115 Volts	230 Volts	115 Volts	230 Volts	115 Volts	230 Volts	115 Volts	230 Volts	115 Volts	230 Volts
1/12	14	14	14	14	14	14	14	14	12	14
1/10	14	14	14	14	14	14	12	14	12	14
1/8	14	14	14	14	4	14	12	14	10	14
1/6	14	14	14	14	14	14	12	14	10	14
1/5	14	14	14	14	12	14	12	14	10	14
1/4	14	14	14	14	12	14	10	14	8	12
1/3	14	14	14	14	10	14	10	14	8	12
1/2	14	14	14	14	10	14	8	12	8	10
3/4	14	14	12	14	8	12	6	10	6	10
1.0	14	14	10	12	8	10	6	10	4	8

Example: If a 1/4 HP, 115 Volt motor is 125 feet from the main power source, the circuit supplying the motor should be #10 copper wire minimum.

NOTE: Above wire sizes are based on copper conductors and 75Degree C, THHW, THW, THWN, RH, RHW Insulation. For aluminum wire, increase the wire by 2 sizes minimum, See NEC Article 310 for ampacities of aluminum conductors.