



April 2004

1/20 through 5 HP Ratings

New information

NEMA 42, 48, 56 and 140 Frame Sizes

General Purpose and Specialty Motors

Your A.O. Smith Motor

An A.O. Smith motor is a quality product. Proper installation and maintenance will assure long life, safe operation and dependable service.

Warning: Failure to follow Instructions and Safe Electrical Procedures Could Result in Serious Injury.

Inspect Before Installation

1. Examine motor thoroughly to be sure it was not damaged in shipment.

2. Check the motor shaft which should rotate freely when turned by hand.

3. Check nameplate rating. Voltage and frequency must match the power source. Motor hp, speed and rotation must be suitable for the intended use.

4. If wet, damp or removed from a damp location, allow motor to dry before installing.

Safety Precautions to Avoid Personal Injury

1. Disconnect power source before working on or near a motor or its connected load.

2. Remove shaft key before energizing or bench testing a motor with keyway and key.

3. Install all wiring, fusing and grounding in accordance with National Electrical Code and local requirements.

4. Wire size from service box to power supply outlet for motor should never be smaller than #14 AWG.

5. Keep all parts of body and loose clothing clear of belts, pulleys and other exposed moving parts at all times.

6. Cover or guard all moving parts that could be hazardous.

7. Be careful when touching a motor that could be at or above its normal operating temperature. The external motor surface could be hot enough to be painful or to cause injury.

8. Do not insert any object into motor at any time.

9. Do not operate motor near flammable or explosive material unless UL listed for hazardous locations.

10. Do not use a motor with an automatic-reset thermal protector where automatic restarting of the motor could be hazardous.

Thermal Protection

Use a "Thermally Protected" motor wherever required by safety regulations or an Underwriters' Laboratories Standard, or where severe overloading, jamming or other abnormal operating conditions may occur.

1. Use a motor with a manual reset protector for applications such as compressors, conveyers, farm equipment, power tools, etc. where automatic restarting could be hazardous.

2. A motor with a manual reset protector will have a red button which will pop out when the protector operates. After about a five-minute cool-down period, the protector can be reset by depressing the red button.

3. Frequent operation of a thermal protector is an indication of an abnormal condition that should be corrected to avoid premature motor failure.

Location

1. Open motors are intended for use where the environment is relatively clean, dry and noncorrosive.

2. Totally Enclosed motors are intended for use in dirty, damp or oily locations.

3. Explosion-Proof motors are required for use in hazardous locations and specifically where the atmosphere or motor environment may be explosive.

4. Ambient temperature around the motor should not exceed nameplate rating.

5. If installation is outdoors, protect motor with a cover but install cover so that it does not restrict airflow around motor.

6. Do not operate motor in a confined non-ventilated area.

Installation

1. Recheck motor nameplate to be sure that motor type and motor hp, voltage and speed rating are suitable for the intended use.

2. The words "Air Over" on the nameplate indicate that the motor is suitable for use only on a direct-drive fan or blower where the motor is mounted in the air stream. Other usage of such a motor could cause overheating and premature failure.

3. Check direction of rotation before connecting the motor to the load by clamping motor securely and then momentarily applying power to the motor terminals and observing shaft movement.

4. Fasten motor securely to a rigid base, mounting pad or other means for mounting the motor using the largest bolts that will fit through the mounting holes.

5. Use only the capacitor rating specified for the motor when one is required.

6. Direct-Drive Applications:

a. Locate fan, blower or other direct-connected load for proper running clearances and then fasten securely.

b. Align shafts accurately when a coupling is used and then fasten coupling securely to both the motor shaft and the driven shaft.

c. Clean all mating surfaces if motor to be face mounted. The assembly should turn freely when parts are properly seated and aligned.

7. Belt-Drive Applications:

a. Use pulley size that will produce the desired machine speed without overloading the motor.

b. Mount motor pulley as close as possible to bearing housing to minimize bearing loading, but allow sufficient clearance for rotor end play.

c. Align pulleys carefully, then fasten securely.

d. Mount a sleeve-bearing motor so that the direction of belt pull is opposite the oil well holes- (or bearing window) to avoid premature bearing failure.

e. Tighten belt only enough to prevent slippage. A properly adjusted belt will deflect about 1/2 inch when light finger pressure is applied midway between the pulleys.

Electrical Connections

1. Disconnect power source and tag or lock open before starting.

2. Refer to connection diagram on nameplate or on inside of terminal cover to determine proper connections for the voltage source and to obtain the desired speed and direction of rotation. (Rotation of a three-phase motor can be reversed by interchanging any two line leads.)

3. Use a separate branch circuit with adequate capacity for each motor to keep voltage drop to a minimum and to avoid reduced performance and possible overheating of the motor.

4. Grounding:

a. Connect motor frame to the electrical service ground in accordance with local or National Electrical Code requirements.

b. Use the green lead or the green screw in the conduit box area, depending on which is provided, for the grounding connection.

c. Use a size 16AWG or larger wire for grounding.

d. Connect a separate ground wire to the driven equipment unless there is solid metal-to-metal contact between the motor and the equipment housing.

5. Insulate all unused leads on a motor with individual leads to avoid the possibility of electrical shock or motor burnout.

Start-up

1. Replace the terminal box cover (if motor has one) before reconnecting the power source.

2. Check direction of rotation. Stop motor and then reconnect as necessary if rotation is not correct.

3. Check operation of motor to be sure it comes up to speed, runs smoothly and is not overloaded.

4. Shut off power immediately if there is a problem and determine source of trouble before restarting.

Maintenance

CAUTION: Always disconnect power source before working on or near a motor or its connected load.

1. Motor may require periodic cleaning to prevent the possibility of overheating due to an accumulation of dust and dirt on the windings or on the motor exterior.

2. Sleeve-Bearing Motors lubricated for life require no re-oiling and are constructed without re-oiling tubing. For motors with re-oiling tubes or ports, use the following guidelines:

a. Re-oil annually after the second year of service to extend bearing life for normal duty.

b. Re-oil every two years for light intermittent duty and at least every five years for light occasional duty.

c. Add 15 to 20 drops of electric motor oil or an SE grade of SAE 10 motor oil to each bearing when re-oiling.

3. Ball bearing motors are factory lubricated and require no additional lubrication

CAUTION:

1. If motor gets wet, allow it to dry thoroughly before using.

2. Consult a qualified electrician if in doubt how to ground or connect the motor.

3. Any of the following could result in motor damage or failure and could be interpreted as abuse or misapplication of the motor and thus void any warranty that may be provided.

a. Connection to power source other than the voltage and frequency specified on the nameplate.

b. Incorrect connection.

c. Excessive or improper lubrication.

d. Dropping, carrying by the leads or otherwise mishandling the motor.

e. Insertion of an object into motor.

f. Misapplication or improper use.

g. Improper installation, excessive belt tension, etc.

h. Failure to insulate unused motor leads.

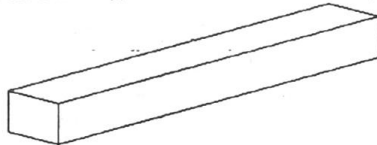
i. Use of a capacitor different than the rating specified.

When writing for information, include all information printed on the nameplate and send to:

A.O. Smith Corporation
Electrical Products Company
531 N. 4th Street, Tipp City, Ohio 45371

OPTIONAL MOTOR/PUMP PAD SPACER

Use rubber pad spacer when replacing 6 1/2 dia. motors with 5 1/2 dia. motors. Pad adds support and vibration absorption to motor.



Warranty Policy

All motors of A.O. Smith carry warranties. The nature and length of the warranty will depend upon the motor and are set forth below.

Partial Motors. Partial motors are warranted against defects in materials and workmanship observed prior to any assembly of the motor parts by the Purchaser, provided that such claim is made within 30 days of its observation and no later than one year of the date Smith manufactured the partial motor. **The Company makes no warranty and disclaims all warranties as to latent defects.**

Pool Motors. Pool motors are warranted to be free of defects in workmanship and materials for a period of 12 months from the date of installation or 24 months from the date of manufacture, **WHICHEVER COMES FIRST.** These motors must have the A.O. Smith two-compartment design or must be the 1081 designated "Centurion" brand. If the customer does not have proof of the date of installation, the warranty shall expire 24 months from the date of manufacture.

Speed engineered motors carry a two-year warranty from the date of manufacture and a one-year warranty from the date of installation.

E-Plus® motors carry a two-year warranty from the date of manufacture and a one-year warranty from the date of installation.

E-Plus® 3 motors carry a three-year warranty from the date of manufacture and a two-year warranty from the date of installation.

All other A.O. Smith motors in our catalog are warranted to be free of defects in workmanship and materials for a period of 12 months from the date of installation or 24 months from the date of manufacture, **WHICHEVER COMES FIRST.**

THIS WARRANTY IS A LIMITED WARRANTY AND SHALL BE IN LIEU OF ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO OTHER WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION OF THE FACE HEREOF. The liability of the Company arising out of its supply of said products, or their use, shall not in any case exceed the cost of correcting defects in the products as set forth above. The company shall not be liable for any costs or damage incurred by its customers in the removal or replacement of defective products from units in which the products have been assembled.

IN NO EVENT SHALL THE COMPANY BE LIABLE FOR LOSS OF PROFITS, INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES.

This warranty does not apply if the failure is caused or contributed to by any of the following: improper handling, improper storage, improper installation, abuse, unsuitable application of the product, lack of reasonable and necessary maintenance, improper packaging for return, or repairs made or attempted by other than the Company, which in the judgment of the Company adversely affects the product's performance or reliability.

No product shall be returned to the Company without its prior consent and shall be properly packaged and shipped prepaid Point of Shipment, to the Company's Authorized Service Center. The Company cannot assume responsibility or accept invoices for unauthorized repairs to its components, even though the motors may have been defective.