Circulator Service

Always Think Safety!

Personal
- Your own
- Others’

Hydraulic

Electrical

System

Work Environment

Shutdown

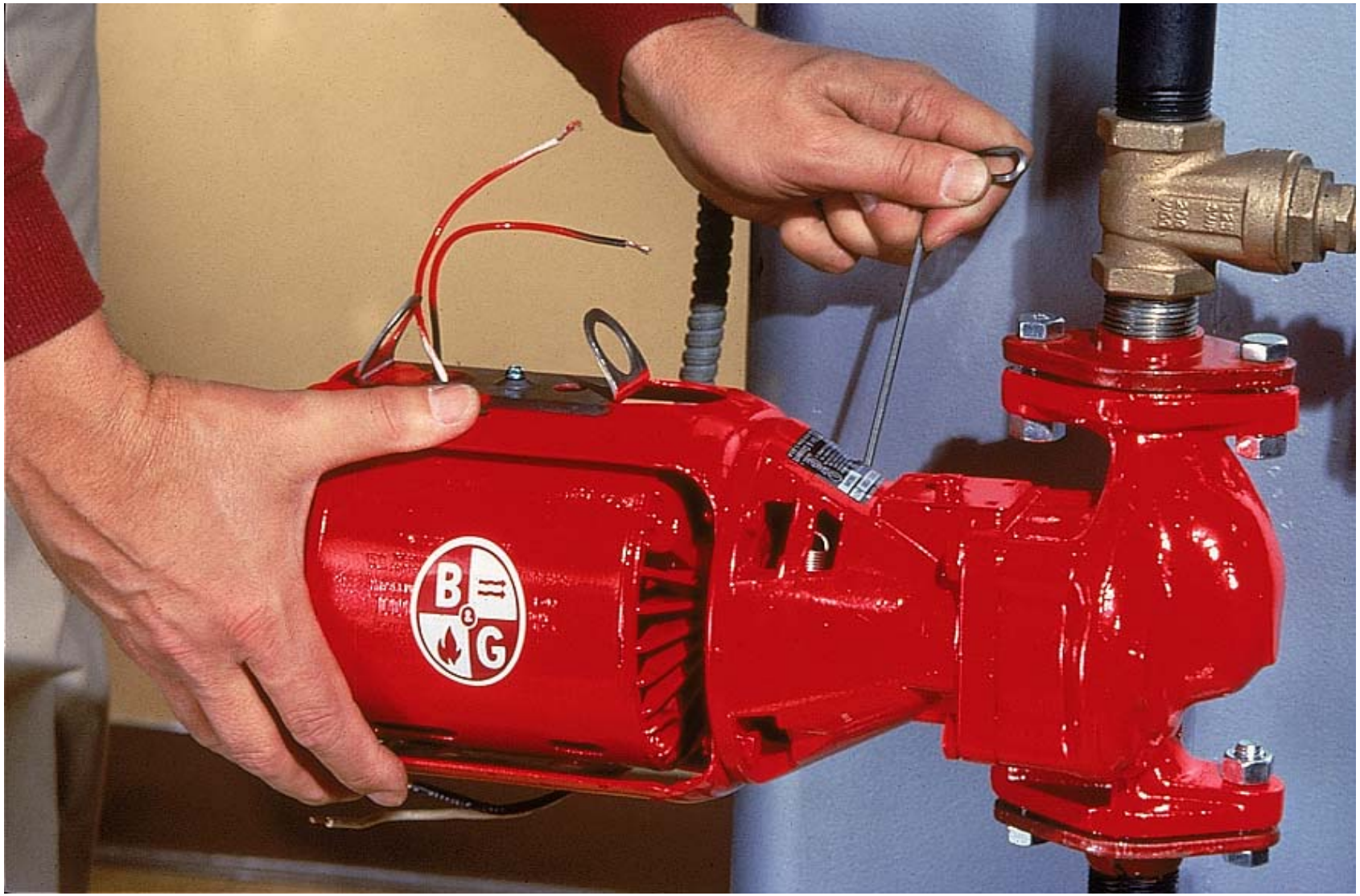
- Shut down and tag out the pump driver.
- Close and tag out the suction and discharge service valves.
  - Note Triple Duty Valve stem position.
- Close external flush lines if the pump must be drained.
- Open casing drains and vents.
- If necessary, allow the pump to cool down.

Removing the Conduit Box Cover

WARNING: Electrical Shock Hazard
- Disconnect and lockout the power before servicing.
- Be certain the electrical power is not present at the motor leads before continuing

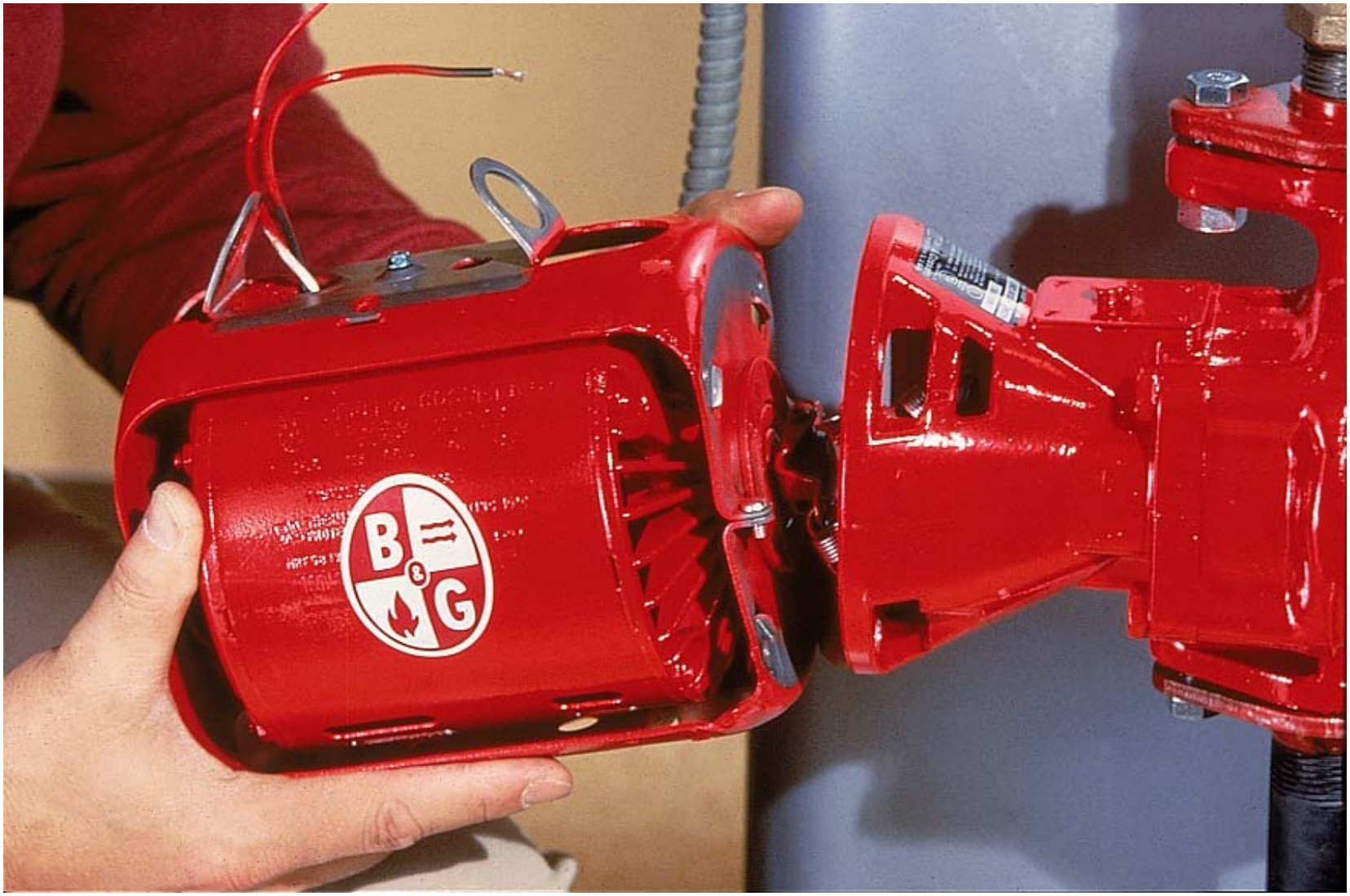
- Remove conduit box and disconnect all electrical wires prior to separating the motor from the assembly.

Disconnect the Coupler from the Pump Shaft



- Loosen the set screw with an Allen wrench and back it off at least 1/8”.
- Release coupler from the pump shaft.

Separate the Motor from the Bearing Assembly



- Use a box wrench to remove motor cap screws.
- Separate motor from the bearing assembly.

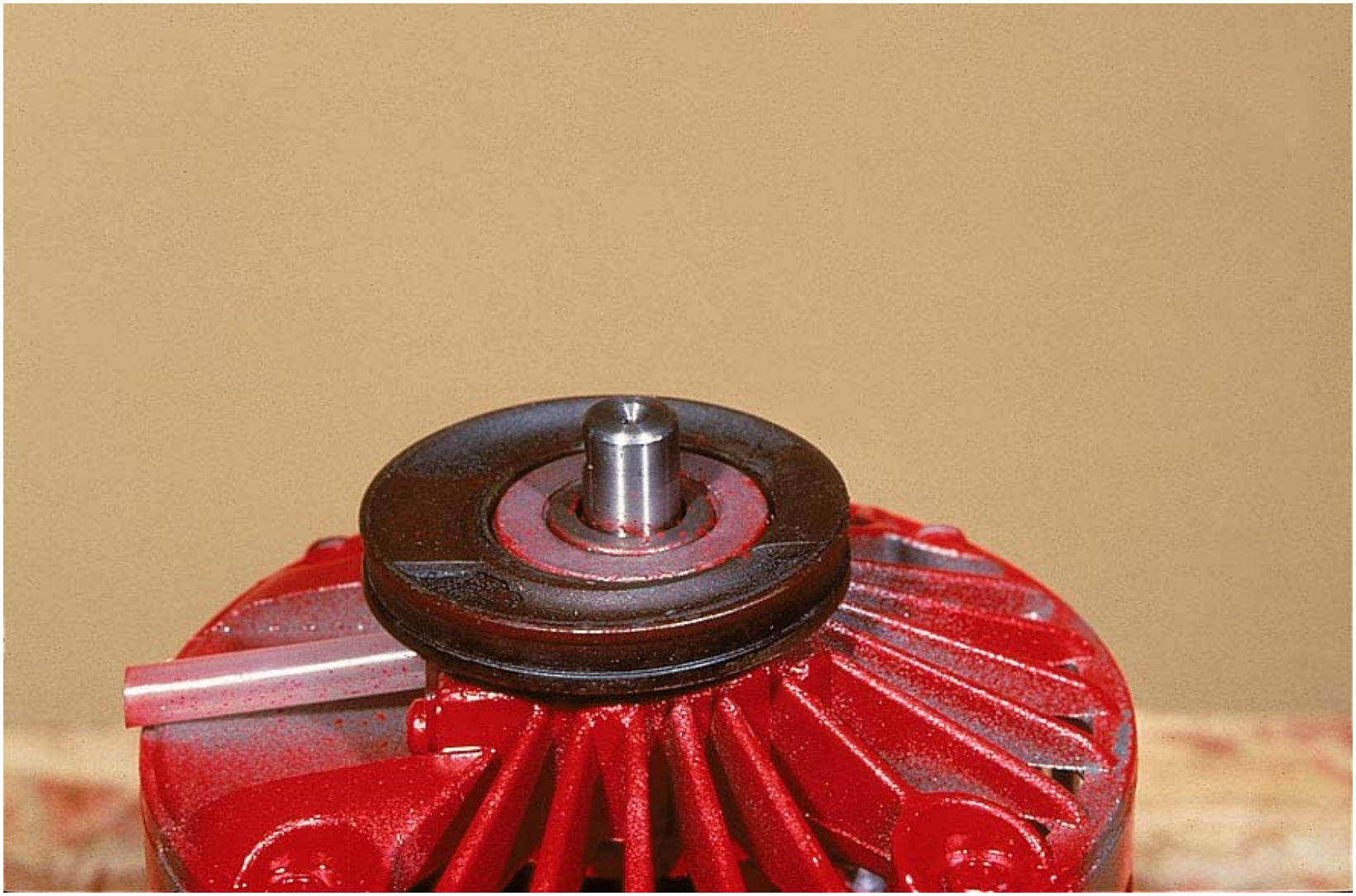
Removing and Replacing the Coupler

- Separate the coupler from the motor shaft by loosening the set screw with an Allen wrench.
- Install new coupler by reversing the removal operation.

Motor Mount Replacement

- Remove clamp screws and separate the brackets.
- Remove brackets prior to servicing the motor mounts.

Inspect Motor Mount Wear and Damage



- Visually inspect the motor mounts for cause of operational problem or failure.

Note: The motor mount in the photograph displays effects of over-oiling. Always replace both motor mounts when either one shows sign of sagging. Single replacements will only result in misalignment of pump and motor shafts.

Removing the Motor Mount - Outer Ring

- Place the screwdriver between the front mounting and the end plate of the motor, as shown.
- Tap the screwdriver to force it through the rubber.
- Pry against the inner ring to remove the outer ring.

Removing the Motor Mount - Inner Ring

- Use either a cold chisel to cut through the inner ring or a means of prying the ring from the end plate.
- Care should be taken during this operation to prevent damage to the motor itself and/or the motor end plates.

Replacing the Motor Mount

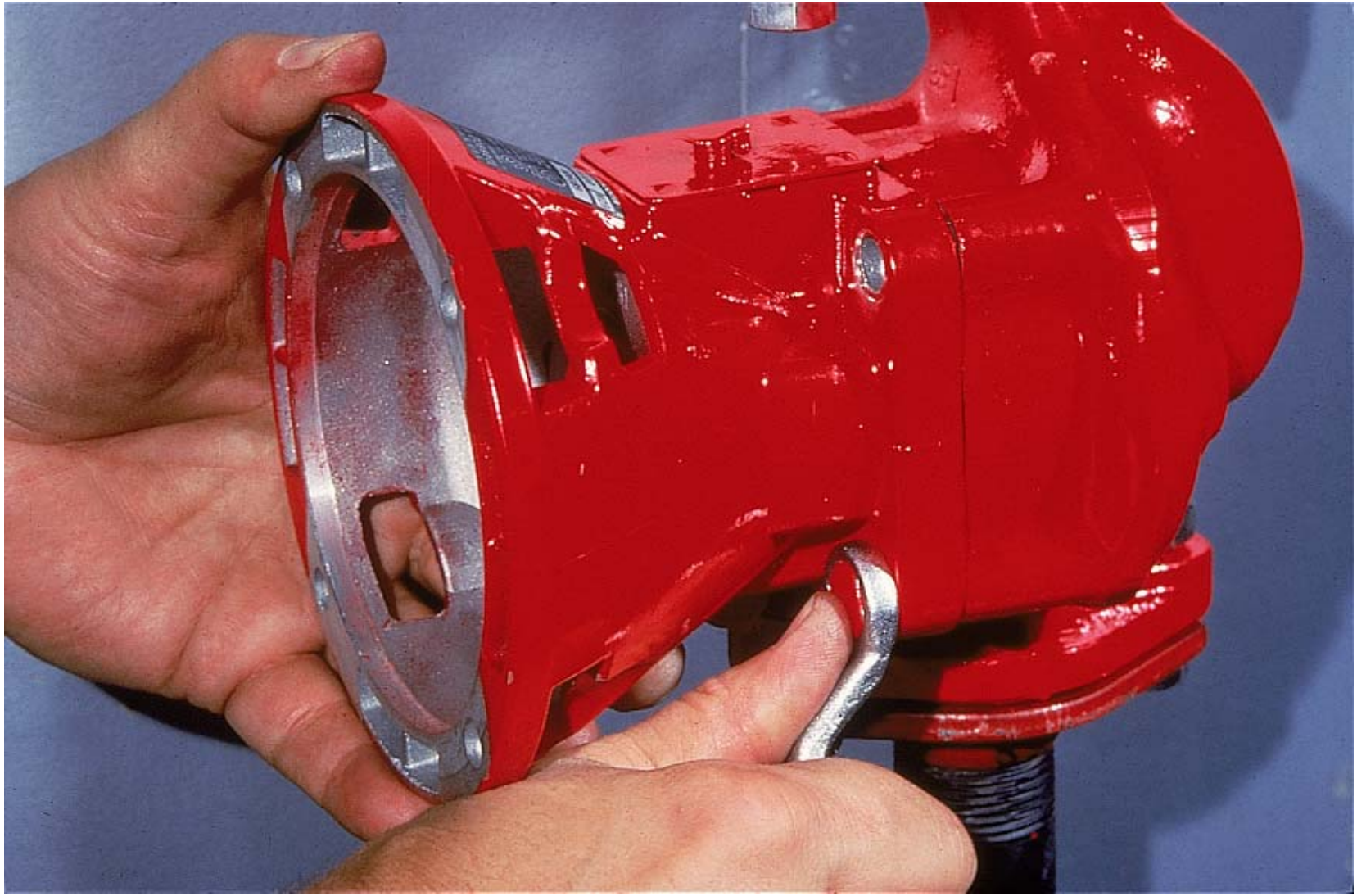
- Replace the front mount first and then the rear mount.
- Set the replacement mount square on the boss of the motor end plate as shown.
- Orient the mount so that the split along its outer diameter is aligned to the bottom of the motor (direction opposite the oil lube).
- With the mount positioned and aligned properly, use a hammer to tap around the mount until it sits flush against the end plate.
- Repeat the procedure for the rear mount.

Completing Motor Mount Service

• Wipe any debris or oil that may have settled on the over/under brackets. Set the motor into the under bracket so that the two threaded holes in the bracket's end face the same direction as the motor shaft. Pull the ground wire over the top of the rear mount as shown and place the over bracket with its tabs also facing the front of the motor. The ground wire should now extend out from between the over bracket and the motor mount.

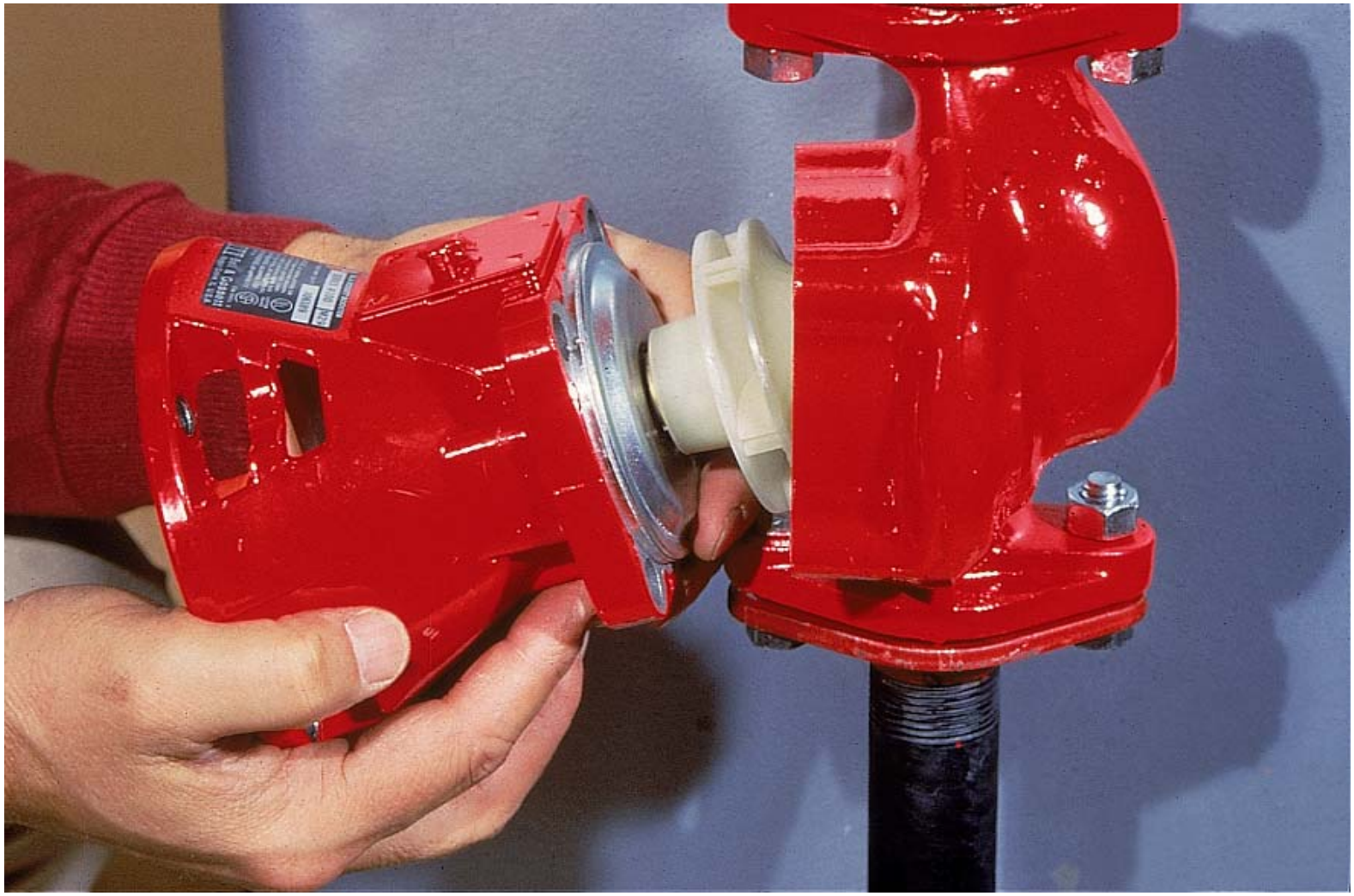
• Place and tighten the four bracket screws so the motor fits securely between them. It should not be possible to rotate the motor once it is mounted in the brackets.

Removing the Bearing Assembly



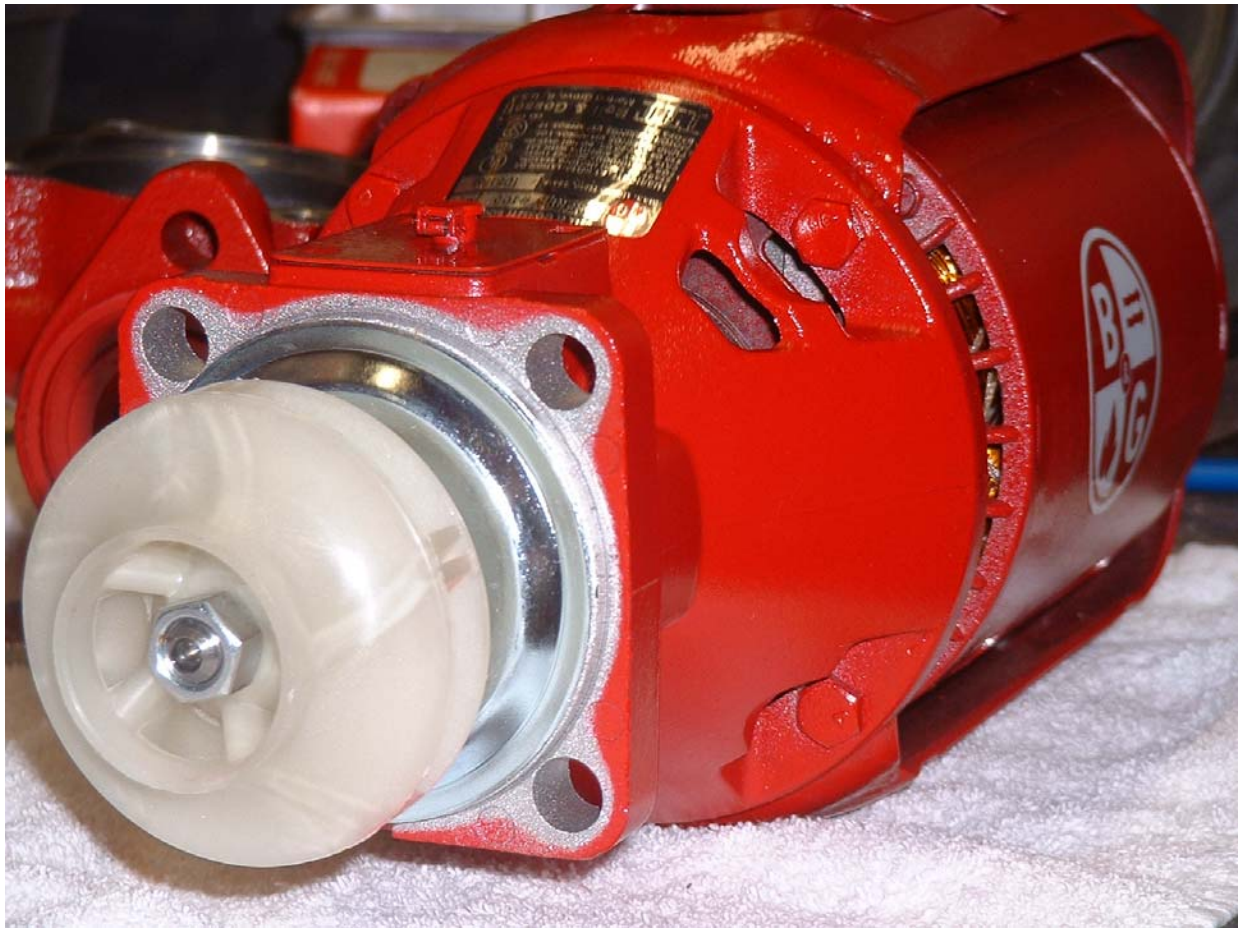
- Loosen the bolts evenly while shifting the assembly to relieve any pressure existing in the pump body.

Disengage the Bearing Assembly



• To separate the bearing assembly from the pump body, grasp the assembly on both sides and pull straight back. If the two bodies adhere to each other, insert a screwdriver between the faces and gently pry around the surfaces to break the seal.

Impeller



Removing the Impeller

- Remove the nut with a socket wrench or an offset box wrench .
- Lift the impeller. If it adheres to the shaft, gently tap the shaft with a screwdriver handle while pulling upward on the impeller.

About the Impeller, Washer and Spring

• An improved two-piece plastic impeller has replaced the steel impeller on some earlier models. When changing from the steel to the plastic impeller, discard the washer that sits between the spring top and the impeller bottom (**Note:** Not all steel impellers are equipped with this washer). Use of the washer is not required with plastic impellers.

• It should be possible to easily lift the seal spring from the shaft. This spring is important to the operation of the seal for it maintains the contact between the sealing faces.

Removing the Mechanical Seal

- Remove the compression ring from the seal collar by inserting a small screwdriver underneath the compression ring and gently applying an upward prying force.
- Remove the remaining seal parts.

Mechanical Seal Components

Removing the Oil Cover

- Remove the oil cover by placing a screwdriver in the cover’s recess and applying a small prying force.

Removing the Oil Wick

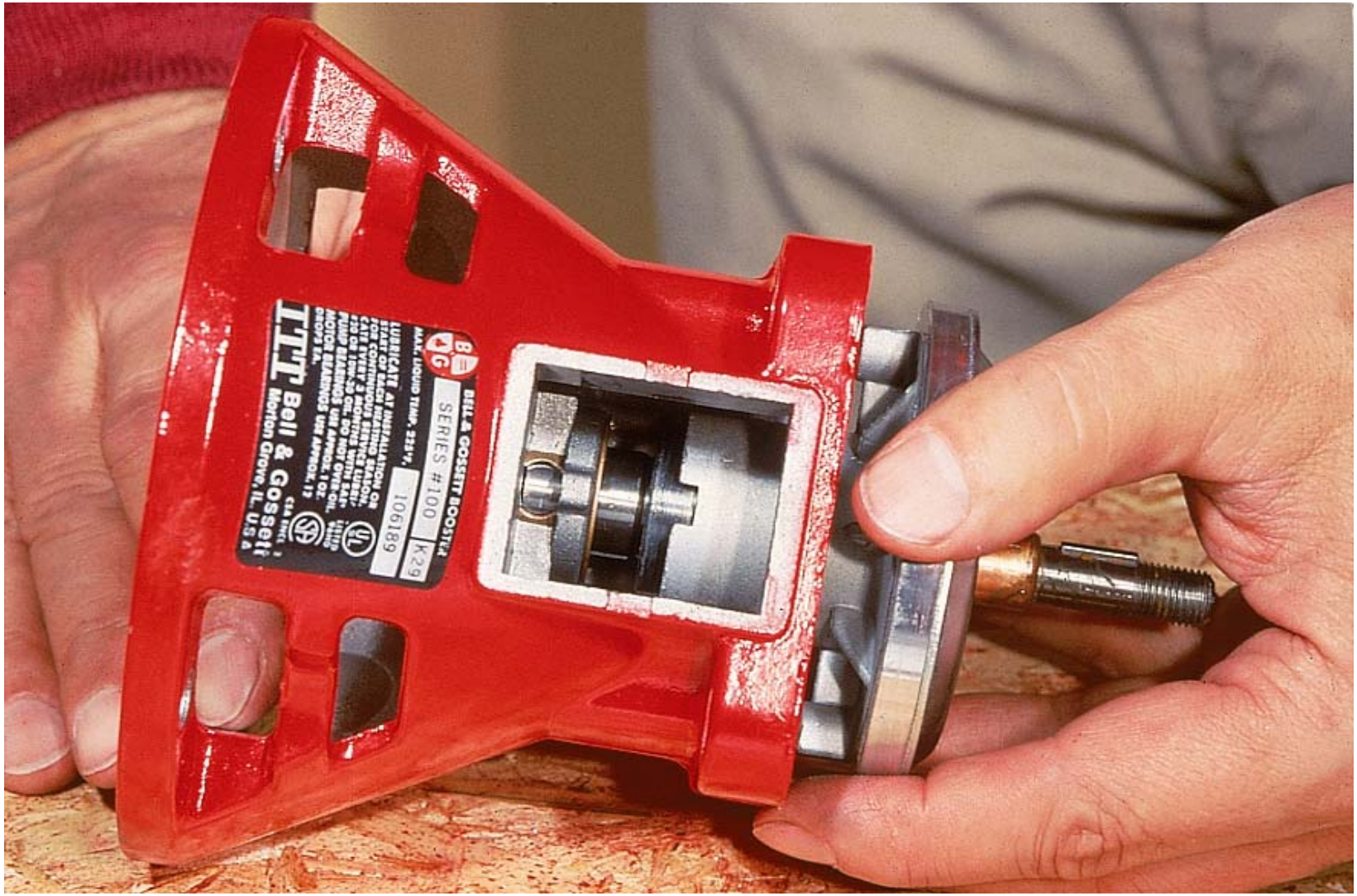
- Remove the oil wick* from the oil reservoir by using a pair of long-nose pliers or screwdriver.
- If the wick has deteriorated or has become discolored, then it must be replaced.

* Boosters other than Series 100 contain two (2) oil wicks.

Beginning Disassembly of the Front Bearing

• Remove the two long screws found in the rear of the assembly to unfasten the front bearing from its frame.

Removing the Front Bearing



- Pull the front bearing from the bearing assembly.
- Do not attempt to remove the rear bearing. If the rear bearing has failed, replace the entire housing and bearing subassembly.

Examine the Bearing and Pump Shaft

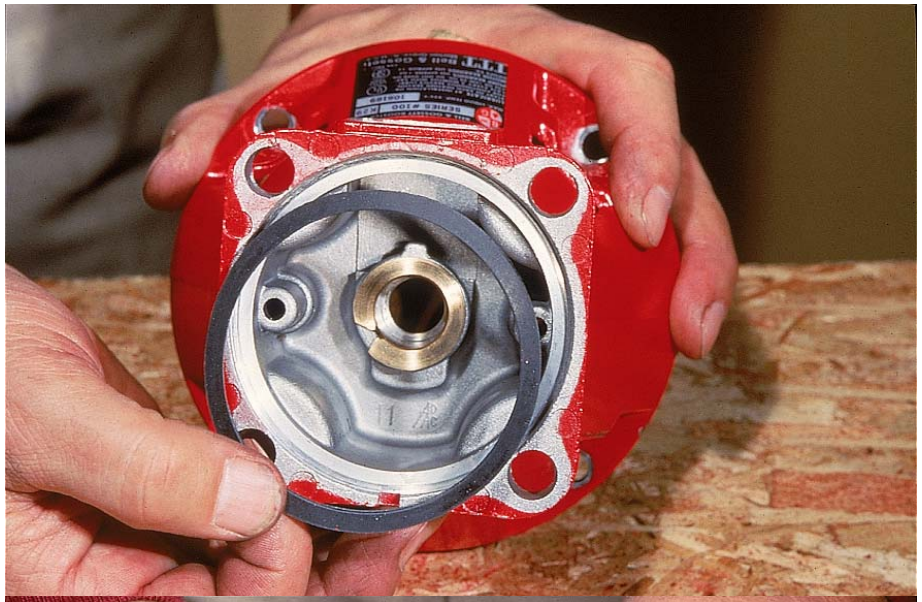
- Remove the pump shaft and inspect for wear.
- If the marks along the shaft and front bearing surfaces are excessive, they must be replaced.

Cleaning the Shaft's Copper Sleeve

- Remove the deposits, if present, with emery cloth. If corrosion is present in the sealing area, the shaft must be replaced.
- Lubricate the shaft bearing lightly after it has been sanded and cleaned.
- Slide the shaft back into the front bearing.

Beginning the Reassembly of the Bearing

- Place a new front bearing gasket in the recess and reseat the front bearing in the assembly.
- It is very important that the oil slot be directed upward toward the opening of the oil reservoir.
- To assist in the proper alignment, the indexing lug must fit into the recess of the front bearing.



Securing the Front Bearing

- Replace the two long screws removed during disassembly.
- Do not over tighten the screws. Typically, 15-20 in-lbs. of torque is sufficient.

Installation of the Oil Wick

- If a new wick is to be used, it must first be moderately saturated with #20 mineral oil before installing.
- Use a screwdriver to push the wicking firmly against the bearing. Make certain the wick's ends are lying on the bottom of the reservoir.
- Replace oil cover.

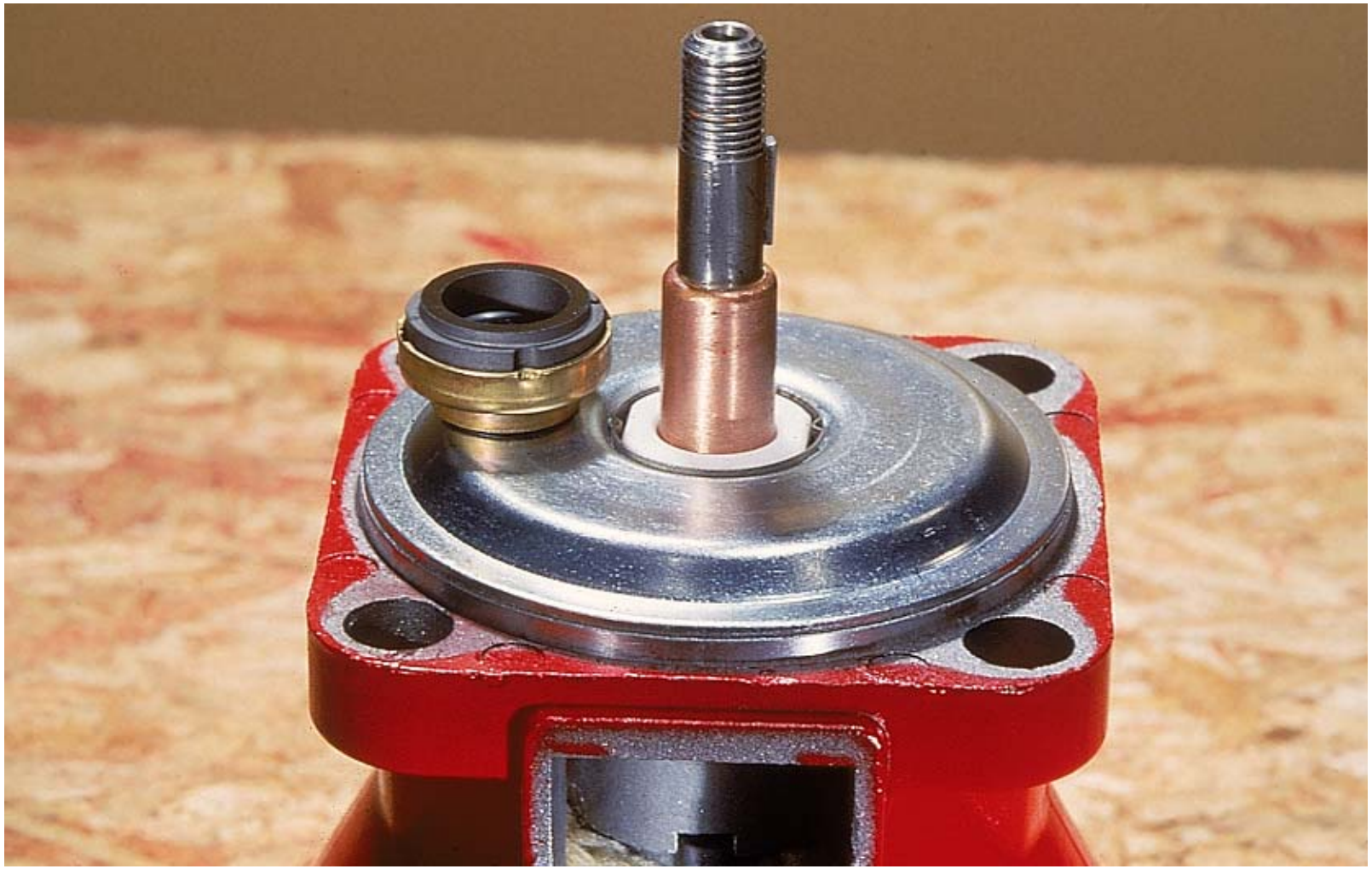
Replacing the Mechanical Seal

• Bell and Gossett seals consist of an insert retainer, rubber gasket, ceramic insert, carbon seal ring, rubber collar, brass collar, and compression ring. Each of these components must be placed when replacing the mechanical seal.

Clean the Seat of the Mechanical Seal

- Using a clean, lint free rag, remove any debris that may have accumulated in the seal recess.

Installing the Mechanical Seal



- Seat the replacement retainer flush against the bearing assembly.
- Place the thin rubber gasket in the recess and set the ceramic insert on top of the gasket. The grooves on the ceramic should face downward toward the rubber gasket.
- Push the shaft to its forward-most position.

Final Assembly of the Seal

- Lubricate the rubber seal collar with soapy water.
- Push the entire rotating assembly onto the shaft as a unit.
- The notches in the brass collar should be aligned with recesses found on each side of the carbon insert.
- Press the brass compression ring tightly to the upper end of the rubber collar.

Replacing the Impeller

IMPORTANT: PART COMPATIBILITY NOTE.
When changing from the steel to the plastic impeller, discard the washer that sits between the spring top and the impeller bottom.

- Place the seal spring on the shaft, resting on top of the brass collar.
- Place the impeller and if required, the lock washer (not used with plastic impellers) on the shaft.
- Thread the impeller nut to the shaft and tighten with a socket wrench or an offset box wrench.

Inspect and Clean the Pump Body

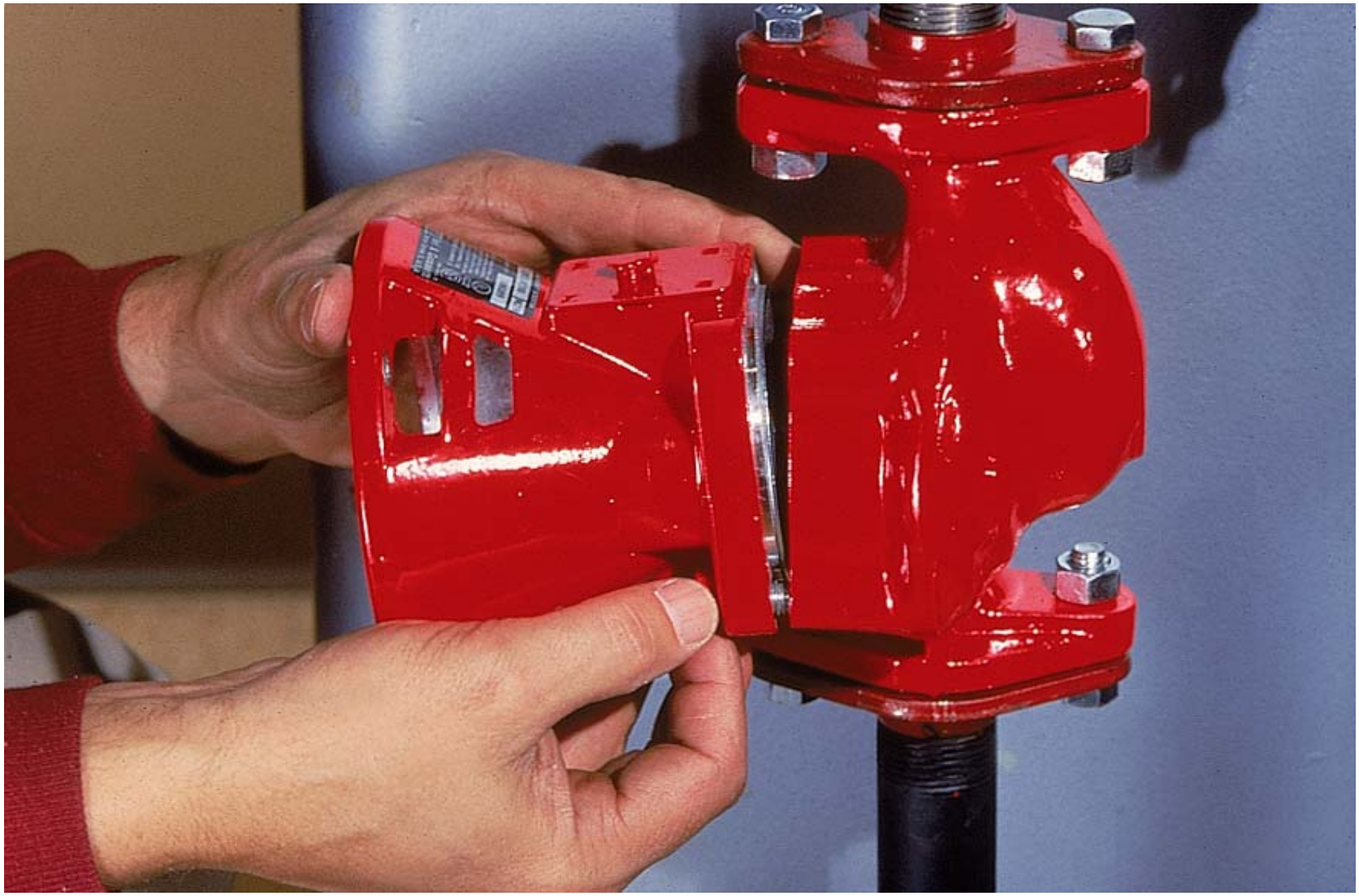
• The pump must be cleaned. Excess debris found in the pump body must be removed.

Installing a New Pump Body Gasket

WARNING: Hot Water Hazard
Whenever the bearing assembly is removed form the pump body, use a new gasket when re-installing.

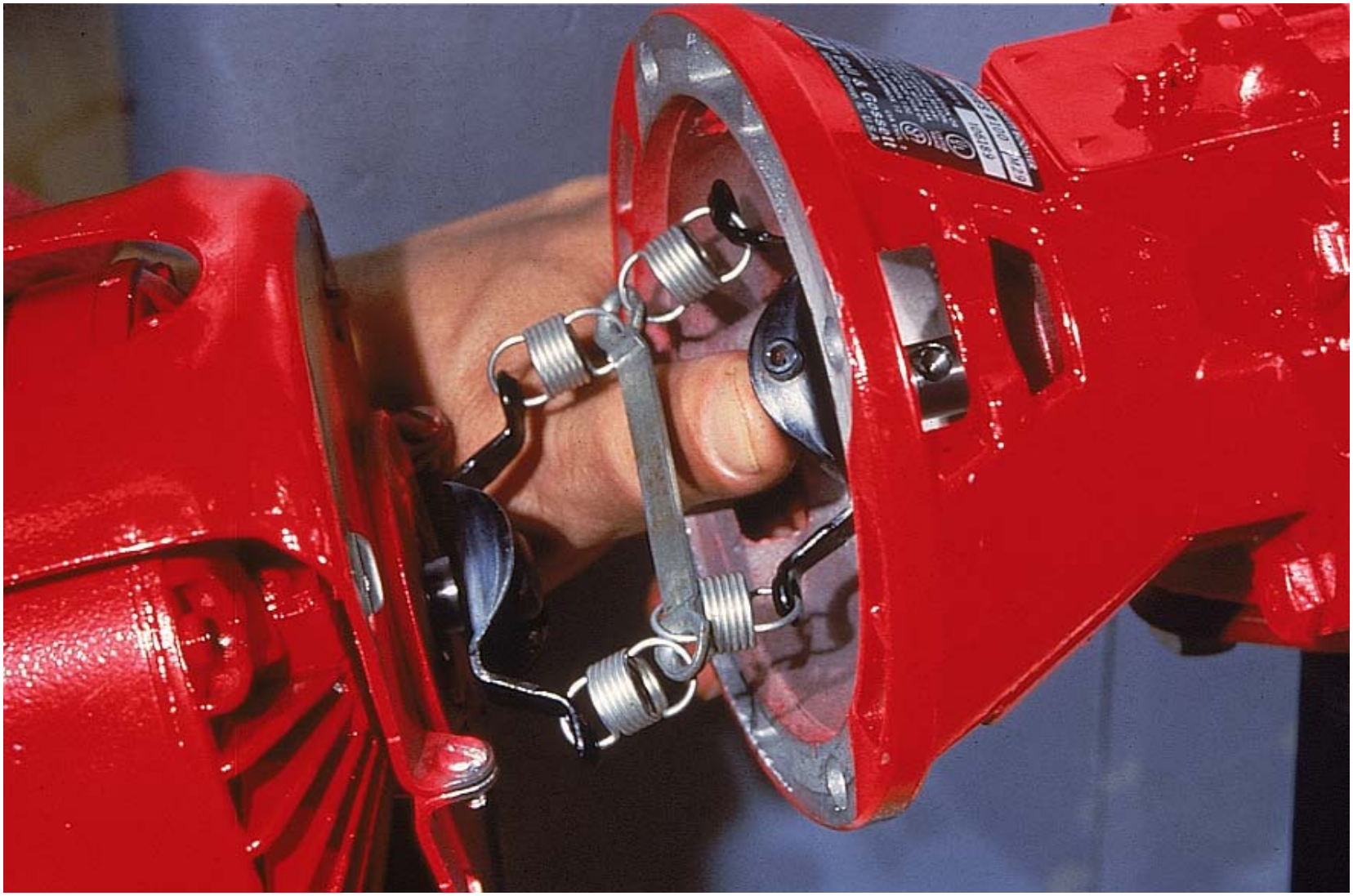
- Place the new gasket in the recess of the pump body.
- Use several drops of oil or anti-freeze compound on the back side of the gasket to hold it in place during reassembly.

Aligning the Bearing Assembly



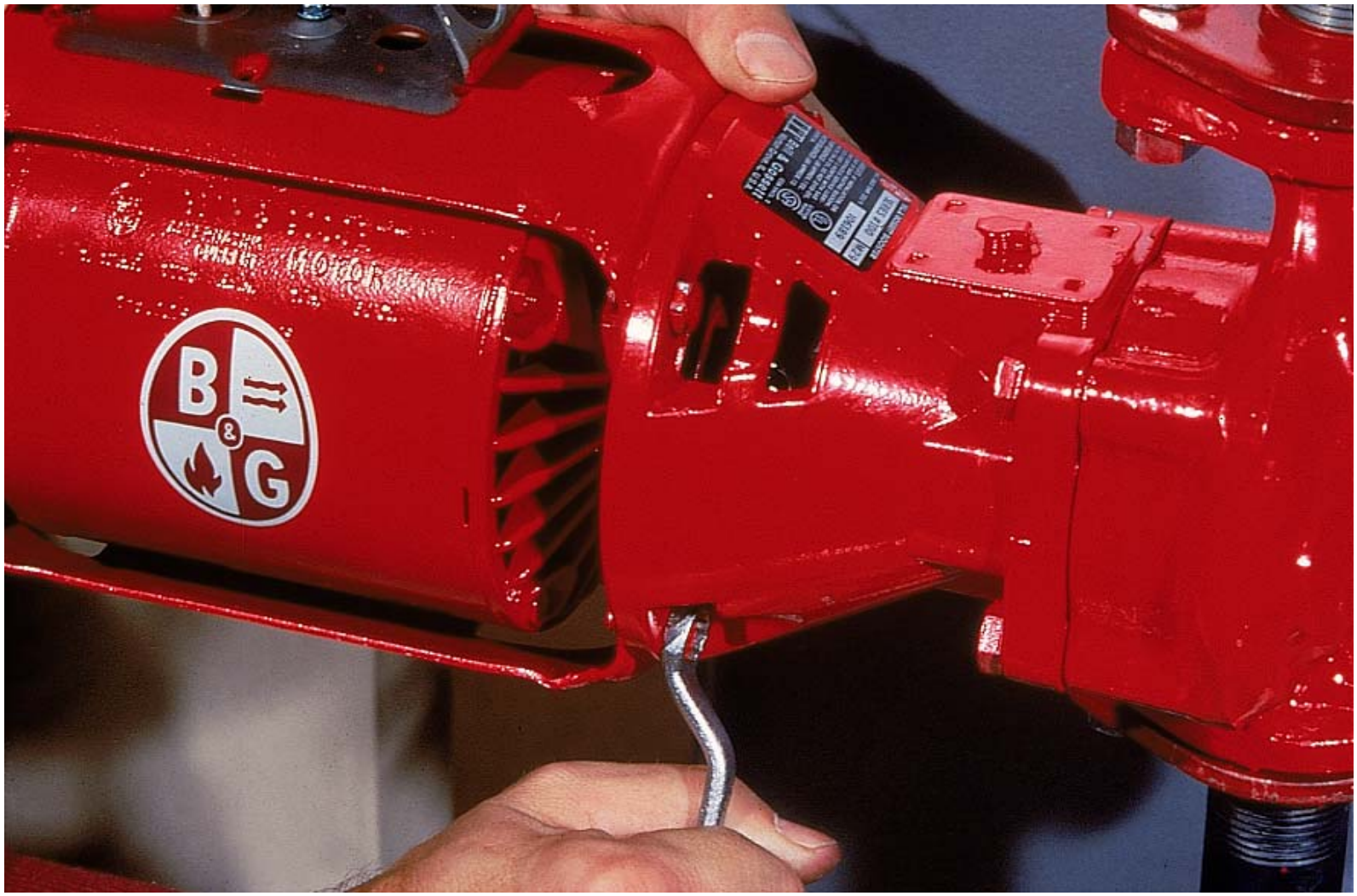
- Replace the bearing assembly by inserting the impeller in the pump body.
- Tighten the bolts evenly.

Attaching the Coupler



- Hold the motor with one hand and use the thumb of the other to push the bore of the coupler onto the pump shaft.
- Use an Allen wrench to tighten the set screw; it should seat in the shaft recess.

Installing the Motor



- Check to insure that the plastic oil tubes of the motor face upward.
- Replace the four cap screws that are placed through the bearing assembly and into the motor mounting bracket. Evenly tighten each cap screw.