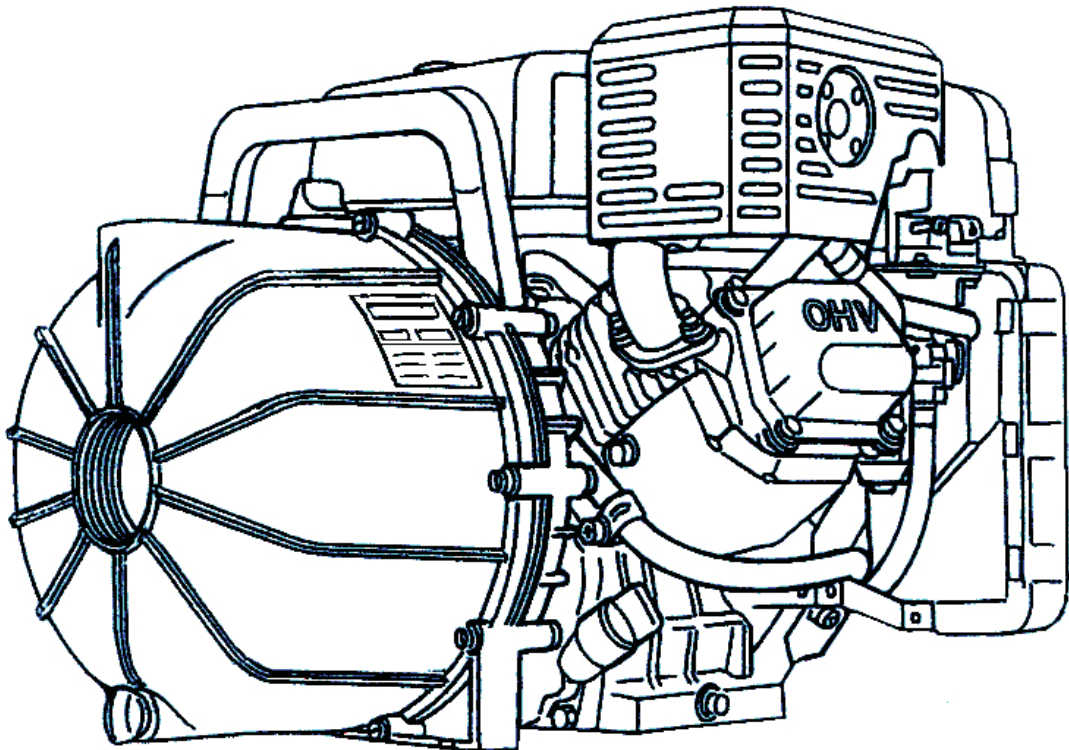


ASSEMBLY INSTRUCTIONS

for

'S' Series Self-Priming Centrifugal Pumps



ASSEMBLY INSTRUCTIONS for 'S' Series Self-Priming Centrifugal Pumps

**REFER TO PAGES 5/6 OF THE PUMP OPERATOR'S MANUAL
FOR EXPLODED VIEW PARTS DIAGRAM AND PARTS LIST.**

The impeller (Ref. #15) is normally supplied with the mechanical seal (Ref. #14) installed. If you are installing the seal into the impeller, follow these steps: Lightly lubricate the sides of the impeller seal seat with liquid vegetable oil. Press the seal firmly into the impeller recess making sure to protect the smooth seal surface. A #0 arbor press with a flat/smooth pressing head is best for this operation (Fig. 1). If the seal is tilted, gently remove with a small screwdriver and re-install.

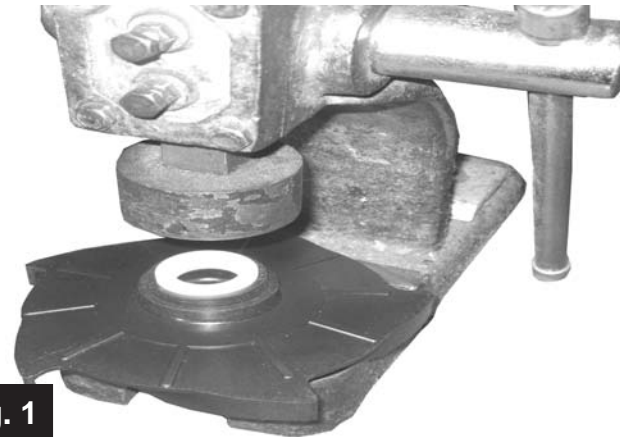


Fig. 1

The bracket (Ref. #6) is normally supplied with the mechanical seal (Ref. #13), seal o-ring (Ref. #11) and o-ring segment (Ref. #10) installed. If you are installing, follow these steps: Lightly lubricate the seal o-ring with liquid vegetable oil. Place o-ring onto the outside diameter of the seal retainer until it rests against the flange of the retainer (Fig. 2)

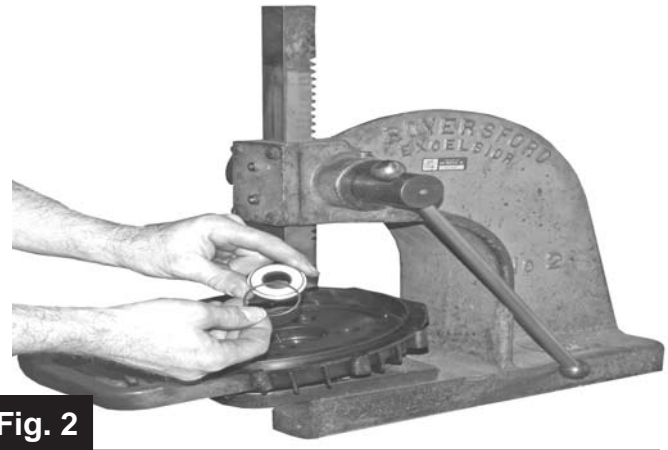


Fig. 2

Press the seal and o-ring into the bracket seal bore using a #2 arbor press with a recessed head (inside clearance 1.50"/38mm minimum) (Fig.3) or a piece of 1½" SCH 80 metal or plastic pipe, 8"/203mm long, with minimum inside clearance 1.50"/38mm, maximum outside diameter 1.90"/48mm. Press only on the flange of the seal retainer. Pressing on the seal face will cause seal damage and leakage. Watch for pinched o-rings which will squeeze out from the seal retainer flange. Pinching is caused by inadequate o-ring lubrication.



Fig. 3

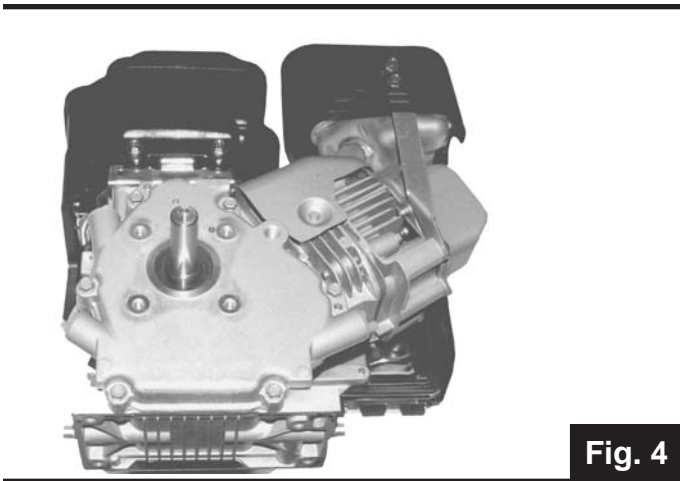



Fig. 4

Procedures:

 **CAUTION:** To prevent accidental starting, remove the spark plug wire from the plug. Drain oil and fuel from engine before standing engine on recoil starter.

1) Stand engine on the recoil starter with shaft up and bottom of the engine towards the person assembling the pump (Fig. 4).

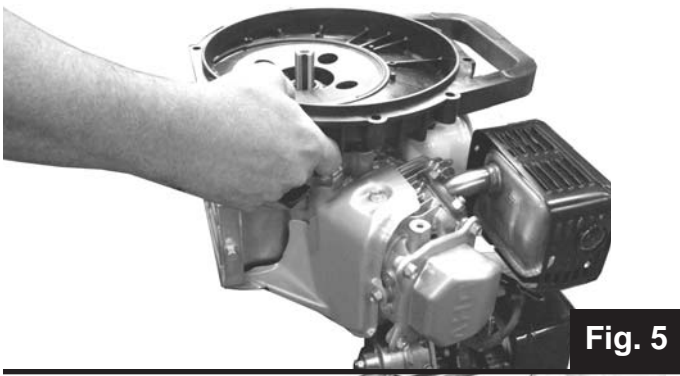


Fig. 5

2) Check *impeller key* (Ref. #27) for a free, sliding fit in the shaft keyway. File the keyway if required.

3) Place the pump bracket/seal assembly (ref. #6,10,11 & 13) onto the engine. Position the bracket with its handle toward the top of the engine (Fig. #5).

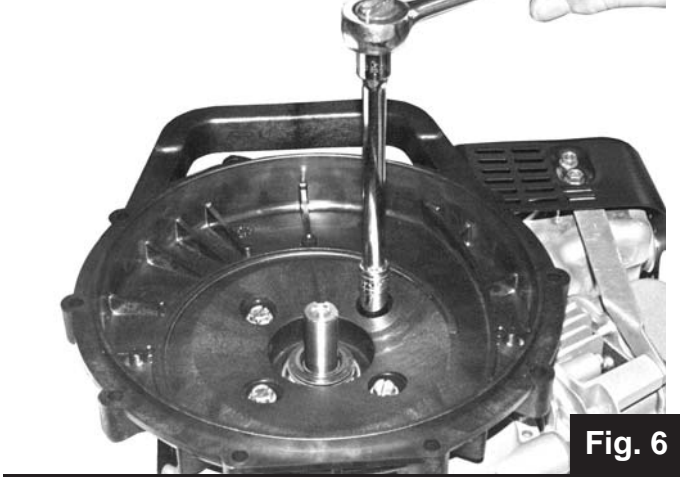


Fig. 6

4) Install an o-ring (Ref. #8) onto each 1 1/4"/32mm long screw (Ref. #9) until the o-ring is seated against the underside of the screw head. If your screw tips are not pre-coated with a locking adhesive, apply one large drop of Loctite #242 (or equivalent) to the tips of the screw threads. Drop the screws into the four holes of the bracket. With a large flat head, wide blade screwdriver or 7/16" socket, tighten the four screws. We suggest: starting one screw half way, tighten screw opposite started screw. Return to first screw and tighten. Tighten remaining two screws (Fig. 6).

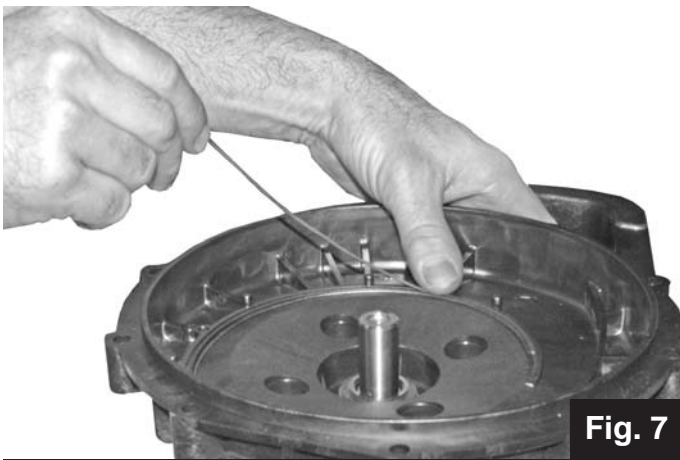
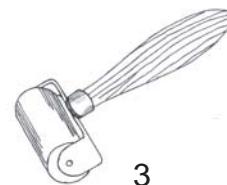


Fig. 7

5) Check that the o-ring segment (Ref. #10) is installed in the half moon shaped bracket groove. If it is loose or not installed, begin at the right side of the groove, press or roll the o-ring segment into place (a 1" wallpaper roller works well) (Fig. 7).



6) If *bracket screw plugs* (Ref. #12) are provided, press them into the hole over each bracket screw. *The hole in the plug should face up* (Fig. 8). Used only on pumps designed for non-metallic solution contact.

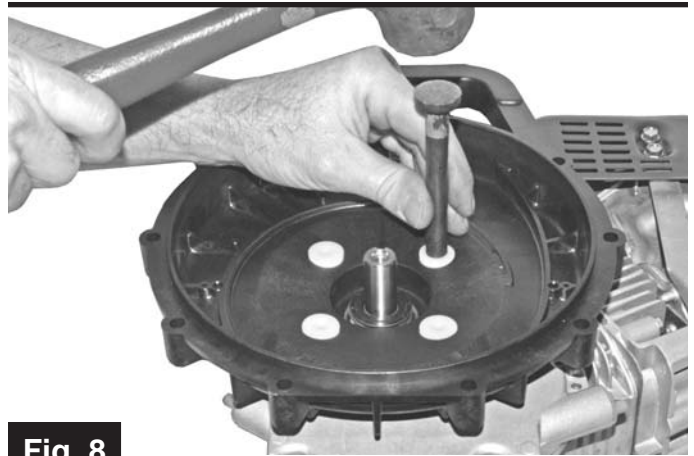


Fig. 8



Fig. 9

7) Lubricate the seal ring of your impeller with vegetable oil. Place the impeller completely onto the shaft by placing pressure onto the impeller hub. With full pressure applied, slowly rotate the impeller to insure that it does not touch the bracket. If the impeller touches the bracket, add one or more impeller shims (Ref. #30) under the impeller hub until clearance is obtained. Remove the impeller, insert the key into the impeller keyway and slide the impeller onto the shaft (Fig. 9, 10, & 11). Note: A small dab of Crisco vegetable shortening on the key will help hold it in place during assembly.

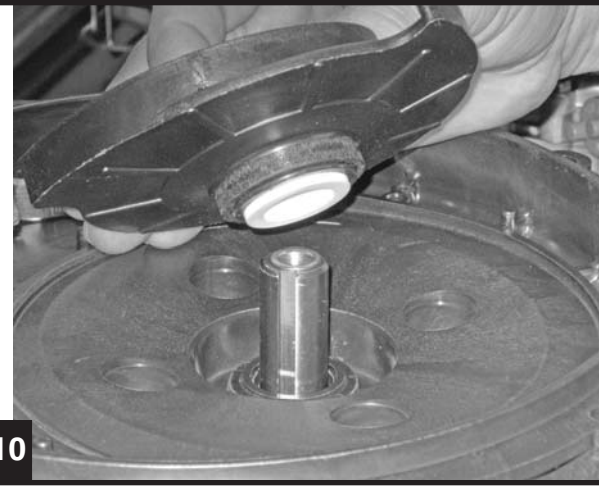


Fig. 10

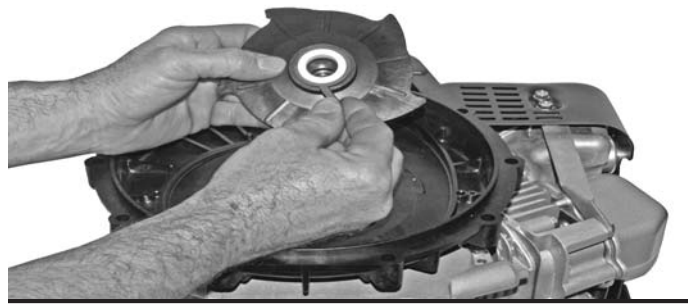


Fig. 11

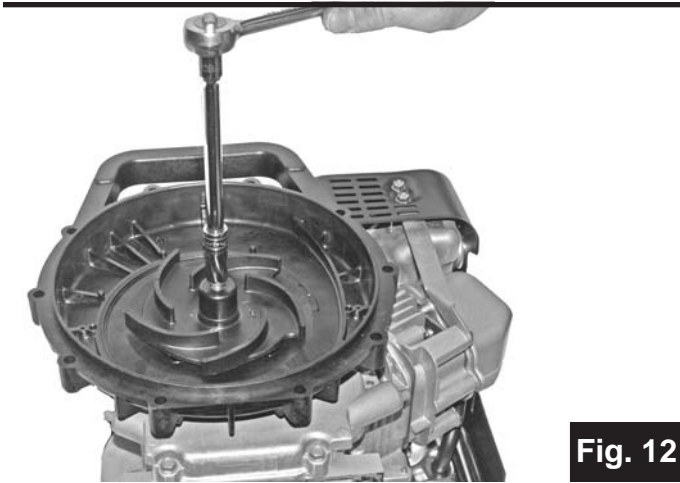


Fig. 12

8) Use the fine threaded $\frac{3}{4}$ "/19mm screw (Ref. #16) to fasten the impeller to the shaft (Fig. 12) Check that a small o-ring is under the screw head (Ref. #8). Tighten the screw as much as possible by hand with a large, flat head, wide blade screwdriver or 7/16" socket. Hold the impeller with your free hand to keep the impeller from turning while tightening the screw.

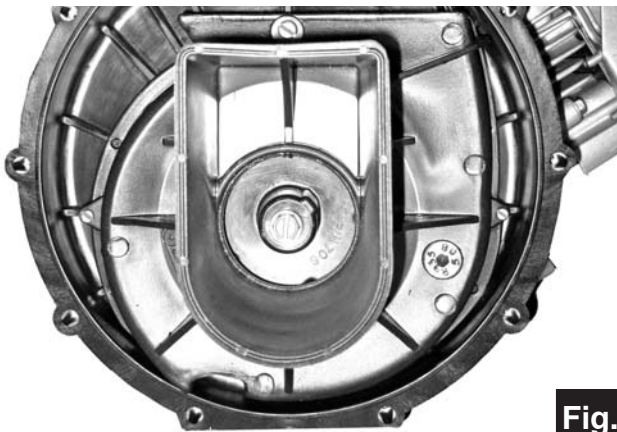


Fig. 13

9) Position the volute (Ref. #17) over the impeller so that the bracket dowels fit the holes in the volute. Install the two small self-tapping side volute screws (Ref. #18) and the large self-tapping top volute screw (Ref. #19). Tighten these screws just enough to pull the volute against the bracket (Fig. 13). Over tightening these screws can strip the threads.

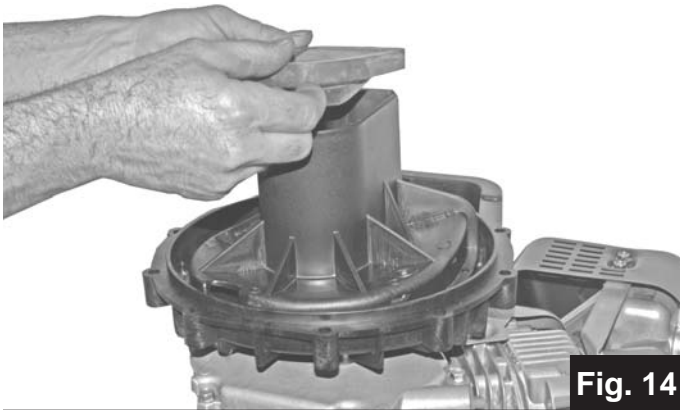


Fig. 14

10) Place the rubber *check valve* (Ref. #20) onto the volute (Fig. 14). Press firmly around the edges to make certain it is seated.



Fig. 15

11) Coat the large *body o-ring* (Ref. #7) with a thin film of vegetable oil and install onto bracket flange (Fig. 15). Make sure there is no dirt, lint, hair, etc. on the o-ring or bracket flange.

12) Place the *pump body* (Ref. #42) onto the bracket so the *discharge opening* (large hole on side of body) is toward the bracket handle (Fig. #16). Install the ten *body screws* (Ref. #21). You will need a 3/8" socket or flat head screwdriver for the screw head.

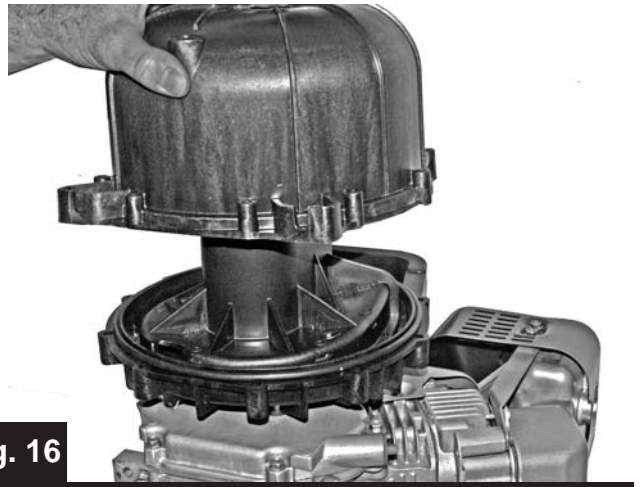


Fig. 16

13) Tighten the screws in a *clockwise* rotation around the pump (Fig. 17). Start at the screw just to the left of the drain plug (Ref. #23). Tightening in this sequence helps prevent pinching the check valve and body o-ring.

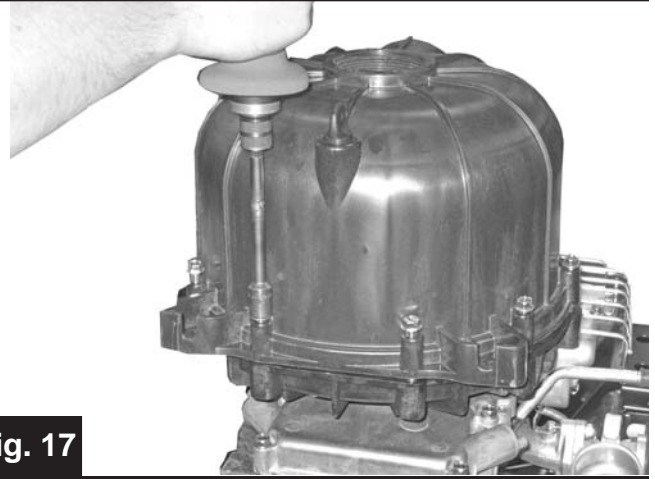


Fig. 17

14) Place o-rings (Ref. #25 & 22) on the *filler plug* (Ref. #24) and *drain plug* (Ref. #23).

15) Install the drain plug and filler plug (Fig. 18). Tighten only hand tight. **DO NOT USE A WRENCH.**

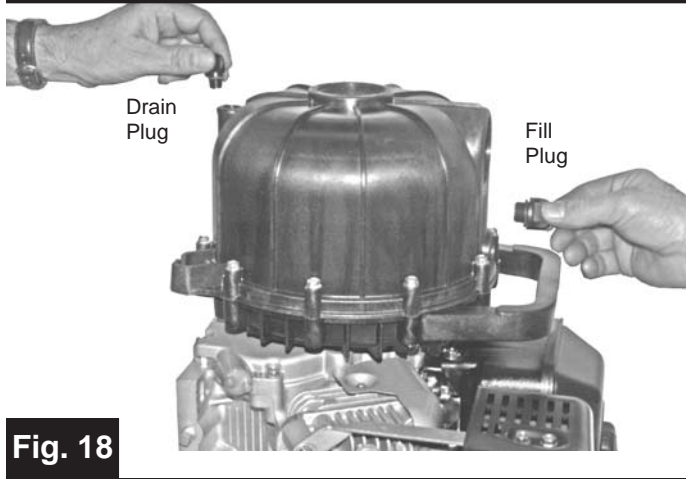


Fig. 18

16) Apply the appropriate labels to the pump. The red, white & black warning label should be applied on the left side of the pump body. The pump model number label should be applied on the right side of the pump body.

17) With pump fully assembled, turn the drive shaft to insure clearance of impeller between the bracket and volute face. Should you hear an internal scraping noise, disassemble the pump to the impeller. Adjust amount of impeller shims to correct the problem. Reassemble and check for clearance one more time.

18) Use Teflon tape when installing *threaded fittings or elbows* in the pump discharge and suction. 1½" or 2 fittings - 10-12 wraps of Teflon® tape on the suction fittings and elbow, 6 wraps on discharge nipple. 3" fittings - 15 wraps with ¾" Teflon® tape on suction, discharge and elbow fittings; 6 wraps on discharge nipple.

DO NOT OVERTIGHTEN. ONE FULL TURN WITH A WRENCH PAST HAND TIGHT is usually sufficient to prevent leakage.

19) After pump assembly, refer to pump operator's manual for proper operating procedures.

Pump to Pedestal Assembly Procedures

A. For pumps assembled to molded plastic pedestal assemblies (Ref. #55/56).



1. If utilizing the plastic shaft sleeve (Ref. #46) follow procedure #2 found on page 3 of this assembly manual. (If the sleeve is not preapplied at the factory.
2. For pedestals with carbon steel shafts (58-2053 01), install the slinger (Ref. #47) as per procedure 3/ Fig. 6 on page 3. Do not install a slinger on pedestal assemblies which have stainless steel or titanium shaft sleeves.
3. Place your pump bracket assembly onto the pedestal. Position the bracket with its handle opposite (180°) from the flat, bottom of the pedestal.
4. Install an o-ring onto each 1½"/38mm long coarse threaded screw. Apply one large drop of Loctite #242 to the tips of the screw threads. Drop the screws through the four holes of the bracket and pedestal. Thread four kep nuts (Ref. #33) onto the screws. Tighten the screws and nuts using a large flat head screwdriver and ½" socket wrench.
5. Follow procedures 6-20 to complete your pump assembly.

B. For pumps assembled to cast iron pedestal assemblies (Ref. #48)



1. Do not install a plastic shaft sleeve (Ref. #46) or slinger (Ref. #47) onto your cast iron pedestal assembly.
2. Place your bracket assembly onto the pedestal. Position the bracket with its handle opposite (180°) from the flat bottom of the pedestal.
3. Follow procedures 5-20 to complete your pump assembly.