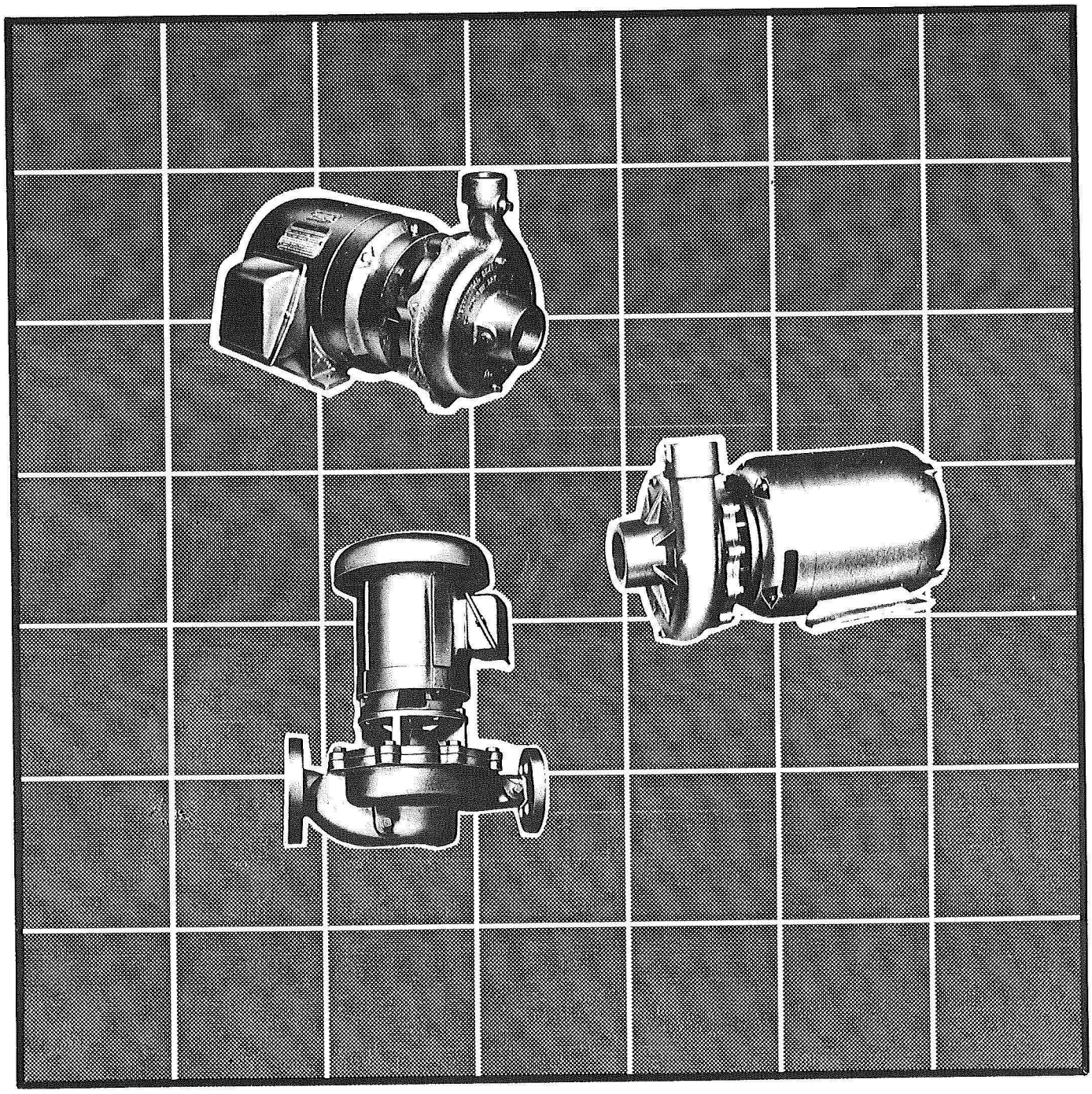
Form 3621

Centrifugal Pump, Type A7, A9 & PM7
Installation, Operation and Maintenance Instructions



MEPCO

3695 44th Street SE - Grand Rapids, MI 49512 (P) 616-971-3420 (F) 616-971-3421 - www.mepcollc.com

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Introduction

The MEPCO Type **A7** and **A9** are radially split, single stage, motor mounted centrifugal pumps. The **PM7** is a radially split, single stage, close coupled pipe mounted centrifugal pump. These pumps are supplied with an end face mechanical shaft seal installed, which is especially selected for reliability and life on the particular pump application. All pumps are supplied as complete units including motor.

SECTION – 1
PUMP INSTALLATION

A. LOCATION

1. For satisfactory operation of any centrifugal pump it is necessary that adequate "Net Positive Suction Head" (NPSH) be available at the pump suction connection (NPSH is the total head in feet absolute, less the vapor pressure of the liquid in feet absolute, available to the pump). For this reason the pump should be located as close to the liquid source as possible.
2. Adequate head room should be provided for the use of installing equipment.
3. Adequate space should be allowed for inspection during pump operation.

B. FOUNDATION

1. The foundation must be solid and substantial enough to absorb mechanical vibration. In general concrete foundations are the most satisfactory and when used, bolts should be supplied which are imbedded for pump footing. Bolts should be long enough to insure proper tightening (minimum of six (6) threads should protrude beyond nut), and it is recommended that each bolt (standard or "J" type) be fitted with a pipe sleeve that is approximately 2½ times the bolt diameter and whose length is twice the inside diameter of the sleeve. When using a standard bolt (figure 1) a washer should be used to support the head of the bolt in the sleeve. After the concrete foundation has been poured, the pipe sleeve remains in place allowing for alignment with the holes in the motor feet.
2. When "J" type bolts (figure 2) are used the same procedure is used except that no washer is needed.
3. If the foundation has been laid, holes may be drilled and expansion bolts used to anchor the pump to the foundation.

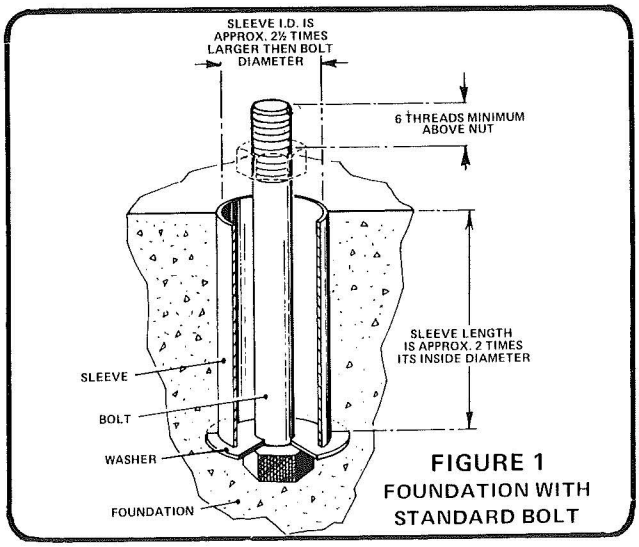


FIGURE 1
FOUNDATION WITH STANDARD BOLT

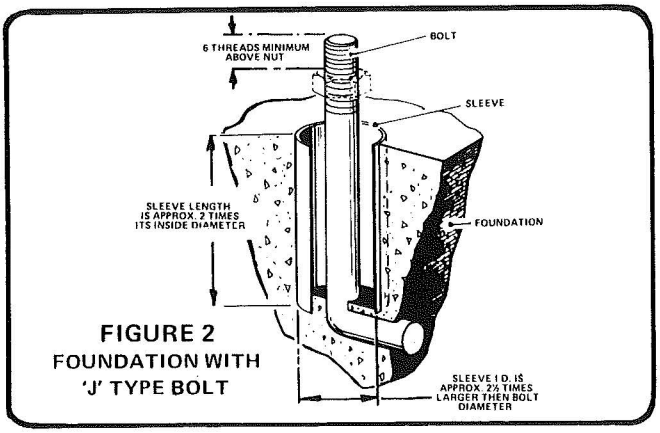


FIGURE 2
FOUNDATION WITH 'J' TYPE BOLT

C. MOUNTING PUMP

Foot Mounted

1. Uncrate the pump leaving all instructions attached and install at its' place of operation.
2. Locate the leveling plates and shims at each foundation bolt.
3. Level the motor perpendicular to shaft, shimming as necessary.
4. Level the motor parallel to shaft and tighten the nuts on the foundation bolts evenly.

Pipe Mounted

1. Horizontal Lines – Normally the pump is mounted with the motor perpendicular to the ground with the motor end up. The piping must be adequate to support both the piping and pump.
2. Vertical Lines – The motor will be parallel to the floor and may require additional support other than that offered by the piping.

D. PIPING

1. Both suction and discharge piping should be as short and as direct as possible. There should be as few fittings and bends as possible. Bends, where used should be of the long radius variety.
2. Piping should be supported near the pump to prevent strains from being transmitted to the pump, and piping at the pump suction and discharge should be as large or larger than the openings in the pump.
3. Gate valves and pressure gages should be installed in both the suction and discharge line to facilitate pump maintenance and performance checks.

E. SUCTION PIPING

1. Suction piping must be free of vapor trapping pockets
2. In horizontal piping leading to the pump only eccentric-reducers should be used (See Fig. 3 and 4).
3. The suction pipe must be free from air leaks and provisions should be made for the expansion of hot lines.

F. DISCHARGE PIPING

1. On some installations, a check valve and balancing cock in addition to a gate valve may be required in the discharge piping. The check valve would be used to prevent liquid from running back through the pump in case of failure of the motor. The balancing cock is used to control the pumps' operating capacity by providing a changeable control in the piping system. The gate valve would be used in priming, starting and shutting down the pump.
2. When valves are required in the discharge line, they should be located as near as possible to the pump.

3. In some applications when the pump may be operated with zero flow, provisions should be made for recirculating a portion of the liquid from the discharge to the suction of the pump to reduce the possibility of overheating.
4. It is recommended that a strainer be installed near the pump suction inlet to catch scale or other foreign material. A pressure gage installed on each side of the strainer can be used for measuring the pressure drop across the strainer.
5. If a strainer or foot valve is to be used on the inlet end of the suction line, the free area through the strainer or valve should be approximately 2½ to 4 times the area of the suction pipe.

G. PIPING FOR SPARE PUMPS

Spare pumps in high temperature service should be piped so that hot liquid from the discharge of the operating pump circulates continuously through a by-pass to the spare pump and back to the suction of the operating pump. This can greatly reduce thermal shock when the spare pump is started.

H. INSTALLING PUMP

1. Make up the piping to the suction and discharge connections of the pump. All piping must be properly supported by hangers and not by the pump. PM7 pumps must be supported within 18" of pump suction and discharge connections.
2. Wire the pump motor for the voltage required as specified on the wiring diagram located on the motor nameplate, or in cover of the motor terminal box. All wiring must be in accordance with local regulations. If the motor is damaged due to improper wiring, the guarantee is void.

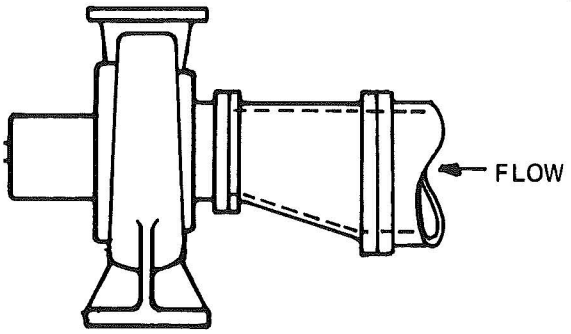


FIGURE 3
CORRECT SUCTION PIPING FOR ECCENTRIC REDUCER

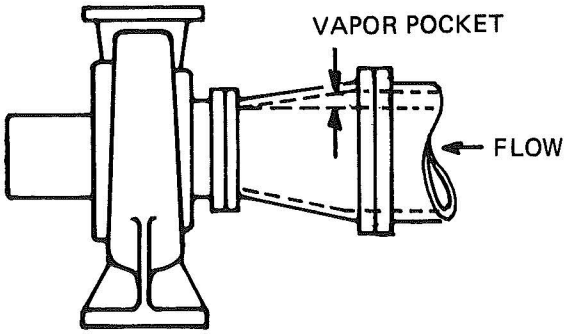


FIGURE 4
INCORRECT SUCTION PIPING FOR ECCENTRIC REDUCER

SECTION – 2
PUMP OPERATION

A. STARTING PUMP

1. Open the suction and discharge valves to the pump. These pumps have a mechanical seal and must NOT be run dry. Open the cock at the top of the pump case to vent out any air.

   NOTE: a. If the pump is above the level of the liquid to be pumped, close the discharge valve. If the pump is below the level of the liquid, open the discharge valve 1½ to 2 turns.

   b. Prime the pump. All air and vapor must be removed. The pump case and suction pipe must be filled with liquid before the pump is started.

2. Rotate the pump shaft by hand (if possible) to be sure the pump is not binding. On some models the end of the motor shaft has a screwdriver slot. It may be used to turn the shaft. A check for sticking of the shaft should also be made after a prolonged pump shutdown.
3. Start the pump and check for correct rotation according to the arrow on the case. If it is running in the wrong direction on three phase current, change any two leads to the motor. You must disconnect the power before changing the wiring.
4. Lack of capacity and head may indicate the passageways of the pump impeller have become clogged with foreign matter or that the motor speed is low. If speed of the motor is low, the wiring connections at the motor should be checked for miswiring or looseness. If the pump is wired for 460 volt current, but is actually operating on 230 volt current, the motor will never come up to proper speed and may burn out. If low voltage occurs, notify local power company. Slugging of air is another cause of low capacity and head on a closed system. Be sure the system is properly vented of all air – See further notes under Trouble Shooting – Section IV.
   WARNING - DO NOT ATTEMPT TO OPERATE PUMP WITH SUCTION VALVE CLOSED!
5. As soon as the pump is up to full speed, slowly open

the discharge valve until it is completely open. Do not let the pump run with the discharge valve closed.

6. Check the pressure gages on each side of the strainer in the suction line. A pressure drop across the strainer indicates it is becoming clogged with dirt or scale. In this case, the pump should be shut down and the strainer screen cleaned or replaced. A clogged strainer can cause damage to the pump.

7. The pump should be shut down if motor bearings overheat, if there is undue vibration or noise, or if it fails to develop its rated discharge pressure at operating speed.

B. OPERATING AT REDUCED CAPACITY

If the pump is connected to a constant speed driver or motor, the capacity of the pump can be reduced by throttling the discharge. When throttling the discharge, a by-pass connection may be used to by-pass sufficient liquid back to the suction inlet to prevent overheating.

C. OPERATING ROUTINE

1. Check the bearing temperatures periodically. If there is overheating, check the motor to insure adequate lubrication. Normal inspection consists of periodic checks of motor lubrication.

2. Lubricating the pump motor should be done in accordance with manufacturer's recommendations.

3. Check all seals for leakage.

4. Check the suction and discharge pressure gages. If the differential pressure drops critically, shut down the pump at once.

D. STOPPING

The pump should be shut down rapidly to keep liquid in the pump and to prevent the parts from seizing. After stopping the driver, close the discharge valve and then the inlet valve, in that order. When pumps are operating in parallel, it is sometimes necessary to close the discharge valve immediately after stopping the driver to prevent reverse rotation. If the pumps are to remain idle under freezing conditions, precautions, such as draining the case, should be taken to avoid damage.

SECTION – 3
MAINTENANCE INSTRUCTIONS

A9 PUMPS - SERIES B - DISASSEMBLY AND ASSEMBLY (Ref. Figures 7 & 8)

1. Disconnect the power to pump.

2. Close the valves in suction and discharge lines or drain the system.

3. Remove the 12 hex head screws (13) holding the head (8) to the case (1). Disassemble the head (8) from the case (1) by sliding the motor back.

4. Remove impeller nut (3) by turning it counter clockwise.

5. Remove impeller (2) and its key (4) from the shaft.

6. To remove head (8), mechanical seal (7), gasket (5) and sleeve (11) remove the 4 hex head cap screws (14) and pull the head (8) from the motor (9). Caution must be exercised not to scratch, mar or gouge the sleeve during this operation.

7. Remove the mechanical seal stationary seat (7a) from the head (8).

8. Remove the gasket (6) from head (8) and clean gasket surfaces on both the case (1) and head (8).

9. Clean motor shaft with solvent.

10. Lightly oil O.D. of new seal stationary seat (7a). With the sealing face towards impeller, press the seal seat firmly into the head recess, being sure the seat is level and square.

Caution: Extreme care must be exercised not to scratch, mar or gouge the sealing face of the stationary seal or leakage will occur.

11. Mount the head (8) to the motor (9) by using 4 hex head cap screws (14).

12. To assemble mechanical-seal-rotating element (7b, c, d) onto the sleeve (11):

a. Slip spring retainer (7d) over sleeve (11) with the bent edge facing away from the shoulder.

b. Place spring (7c) over sleeve.

c. Lightly lubricate I.D. of new seal boot (7b) and slide it over the sleeve with the carbon seal face away from sleeve shoulder.

13. Place a light coat of Teflon paste on I.D. of sleeve and slide it over the shaft until seal faces butt together firmly and squarely.

14. Brush both sides of gasket (5) with Teflon paste and position it on the sleeve (11).

17. Insert key (4) in keyway and replace the impeller (2) on shaft.

18. Place a small amount of Teflon paste on flat side of impeller nut (3) and replace it on the shaft. Turn the impeller to check its alignment.

19. Replace the gasket (6) and assemble the pump head (8) to the pump case (1) using 12 hex head cap screws (13).

20. Remount the motor to base.

21. Open the valves to pump and refill the system and check the pump for leaks.

22. Reconnect power to the pump.

A7/PM7 PUMP DISASSEMBLY AND ASSEMBLY (Ref. Fig. 9 & 10) WITH JM FRAME MOTOR

1. Disconnect power to pump.

2. Close the valves in suction and discharge lines or drain the system.

3. (PM7 Only). Remove the seal flush piping line (8 & 9) connected between the head (7) and pump case (11).

4. Remove 8 hex head cap screws (1), holding the head (7) to the case (11) and remove motor head assembly.

5. Remove the case gasket (10) and clean the gasket surfaces of both the head (7) and case (11).

6. Remove the impeller screw (18) by turning it counter clockwise and remove washers (19) and (20) and the gasket (15). Clean the gasket surfaces.

7. Remove the impeller (13) and its key (2) from the shaft motor.

8. Remove the mechanical seal (3) and sleeve (12) from the shaft. Remove gasket (14) from either the sleeve or impeller and clean the gasket surfaces.

9. Remove head (7) from the motor (6) by removing 4 hex head cap screws (4).

10. Clean the motor shaft with solvent.

11. Remove the stationary member (3A) of the mechanical seal from the head (7).

12. Lightly lubricate the O.D. of new mechanical seal stationary seal (3A) and press it into the recess of the head (7). Be sure that the seal is level and square.

    Caution: Extreme care must be exercised not to scratch, mar or gouge the sealing face of the stationary seal or leakage will occur.

13. Assemble the head (7) onto the motor (6) using 4 hex head cap screws (4).

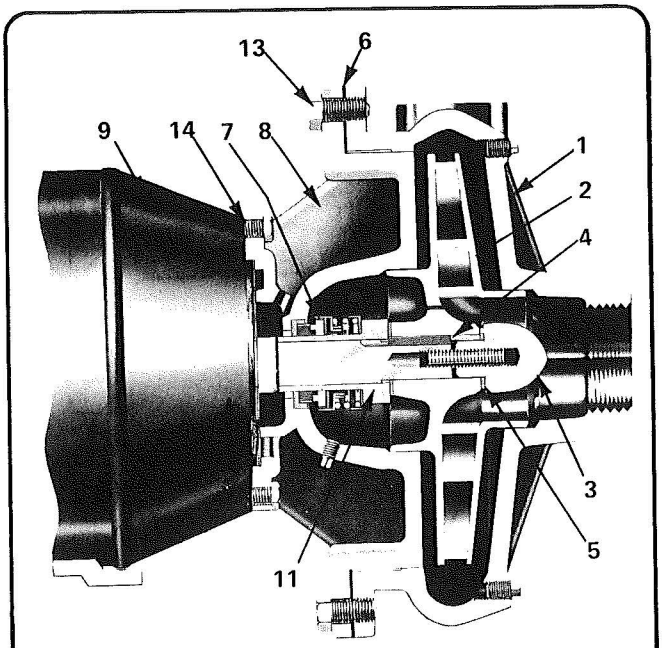


FIGURE 7
A9 PUMP

For Additional Information On Seal (7) Refer to Figure 8.

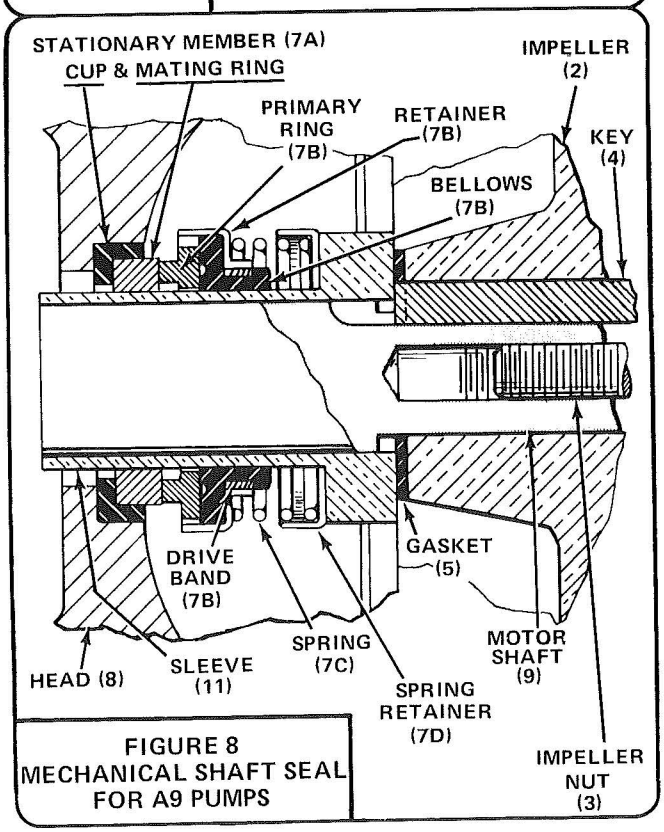


FIGURE 8
MECHANICAL SHAFT SEAL
FOR A9 PUMPS

14. **Assemble the rotating seal elements onto the sleeve (12).**

    a. Slip spring retainer (3D) over sleeve (12) with the bent edge facing away from the shoulder.

    b. Place spring (3C) over sleeve.

    c. Lightly lubricate I.D. of new seal boot (3B) and slide it over sleeve with the carbon seal face away from sleeve shoulder.

Continued

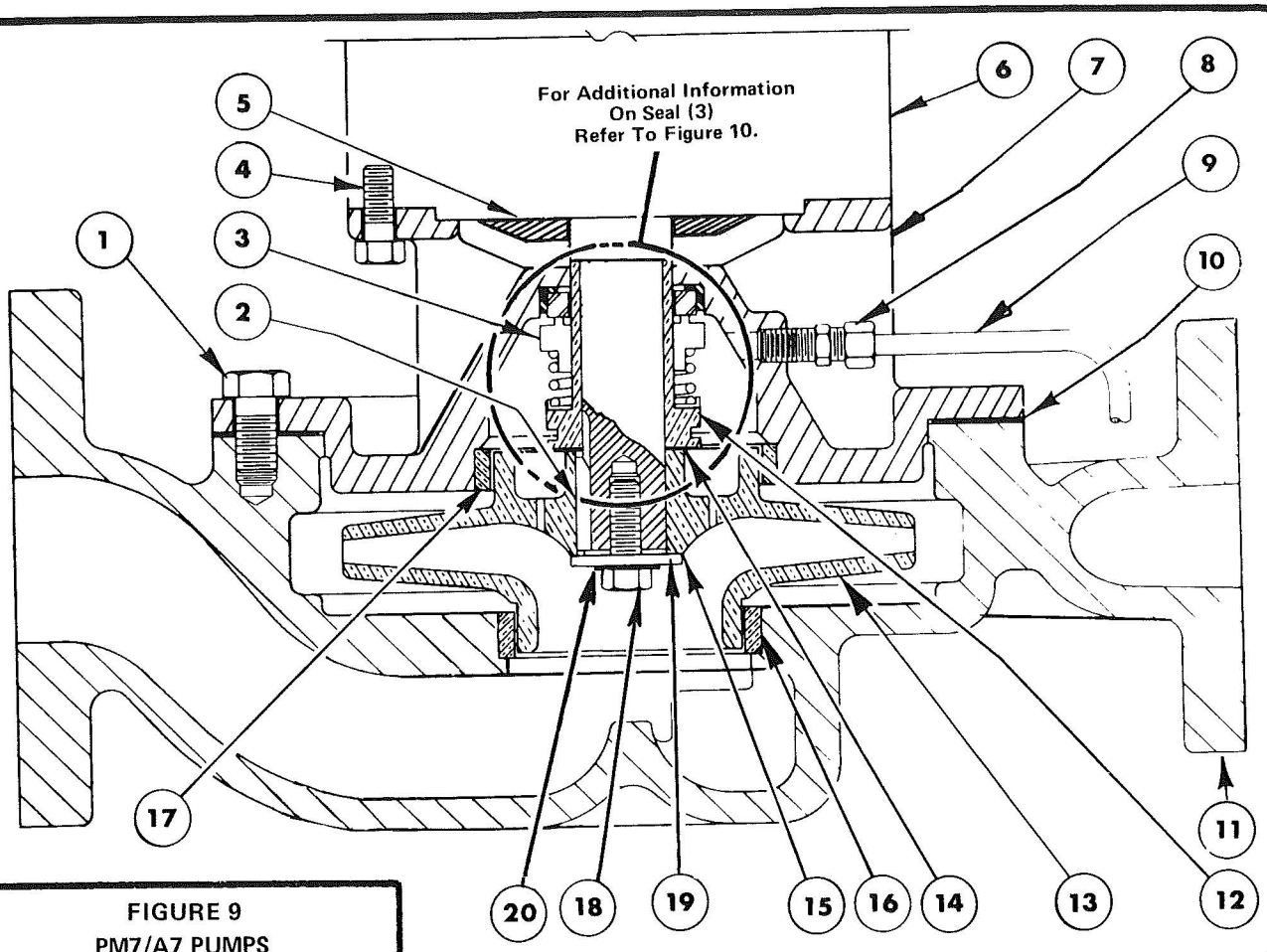


FIGURE 9
PM7/A7 PUMPS

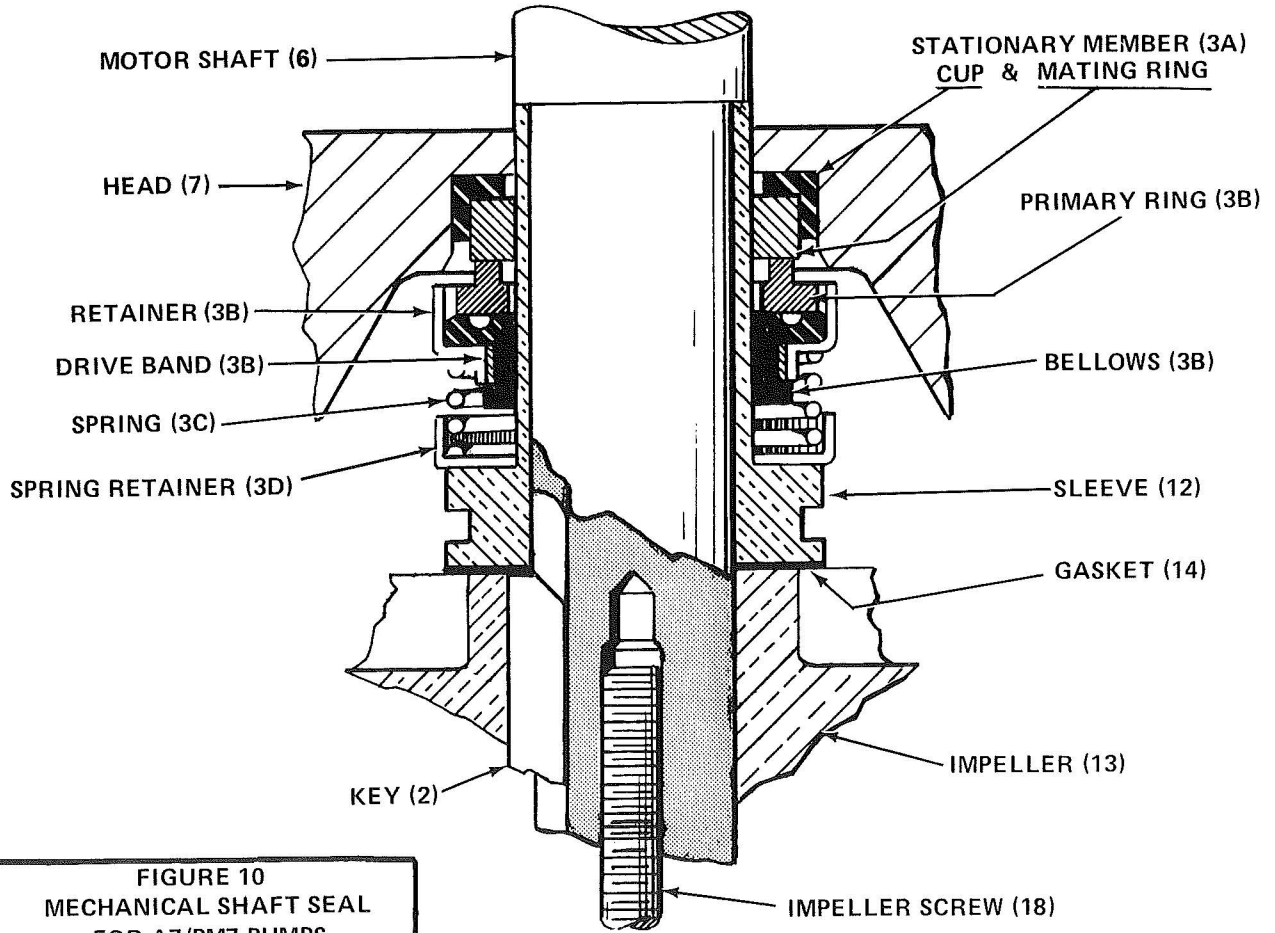


FIGURE 10
MECHANICAL SHAFT SEAL
FOR A7/PM7 PUMPS

15. Place a light coat of Teflon paste on I.D. of the sleeve and slide it over the shaft until seal faces butt together firmly and squarely.

16. Brush both sides of gasket (14) with Teflon paste and position it on the sleeve (12).

17. Replace key (2) in keyway and slide impeller (13) onto shaft.

18. Brush both sides of gasket (15) with Teflon paste and place on impeller. Place the sealing washer (19) and washer (20) on the impeller cap screw (18) and tighten onto the shaft.

19. Place gasket (10) on head (7) and assemble it to the case (11) using 9 hex head cap screws (1).

20. Replace the seal flush piping (8 & 9).

21. Open the valves to the pump or refill system and check pump for leaks.

22. Reconnect power to pump and check again for leaks.

D. A7A/PM7A PUMP DISASSEMBLY AND ASSEMBLY (REF. FIG. 11 & 12) WITH JET PUMP MOTOR

(next page)

1. Disconnect power to pump.

2. Close the valves in the suction and discharge piping or drain the system.

3. (PM7A Only) Remove the seal flush piping line (8 & 9).

4. Remove 8 hex head cap screws (1) holding the head (7) to case (11) and remove the motor-head assembly.

5. Remove the case gasket (10) and clean the gasket surfaces of both the head (7) and the case (11). Remove drip cover from top of motor along with bearing cap.

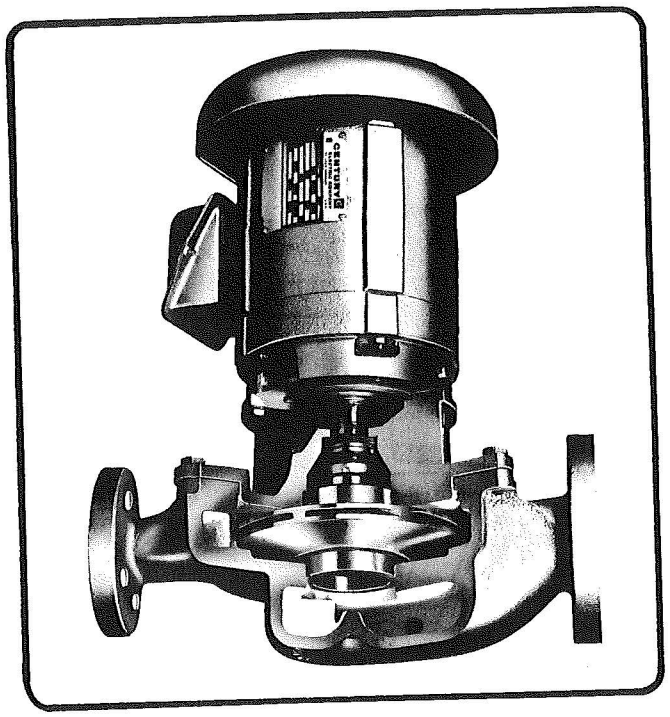
6. Loosen 4 hex screws (4) between the motor and head and remove the retainer clips (3). Remove head (7) from motor (6).

7. Remove slinger (5) from the motor shaft and clean shaft with a solvent. Inspect it for scratches and lightly polish it if necessary to remove blemishes.

8. Remove mechanical stationary seal (2A) from head (7), and clean with emery paper or equivalent.

9. Lightly lubricate the O.D. of a new mechanical stationary seal (2A) and press into recess of head (7) making sure that the seal is level and square. **Caution: Extreme care must be exercised not to scratch, mar or gouge the face of the stationary seal as seal leakage will result.**

10. Replace slinger (5) on the shaft and assemble the head (7) to the motor (6) by replacing the 4 retainer clips (3) on shank of cap screws (4). Tighten the cap screws.



TYPE PM7 AND PM7A PUMPS

11. Assemble rotating seal elements onto shaft.

    a. Lightly lubricate the I.D. of new seal boot with water (2B) and slide it over the shaft with the carbon seal face towards the stationary seal face.

    b. Place spring (2C) over shaft.

12. Apply loctite #242 on both motor shaft and impeller, then thread impeller on shaft until hand tight.

13. Next, install set screw using loctite #242 threading it into the impeller, then torque to 15 ft. lbs.

14. Place the gasket (10) on head (7) and assemble it to the case (11) using 8 hex head screws.

15. Replace the seal flush line (8 and 9).

16. Open valves to the pump and refill the system. Check the pump for leaks.

17. Reconnect power to pump and check again for leaks.

18. On a three-phase unit, pump rotation should be checked. Looking down on pump the rotation must be in a clockwise direction.

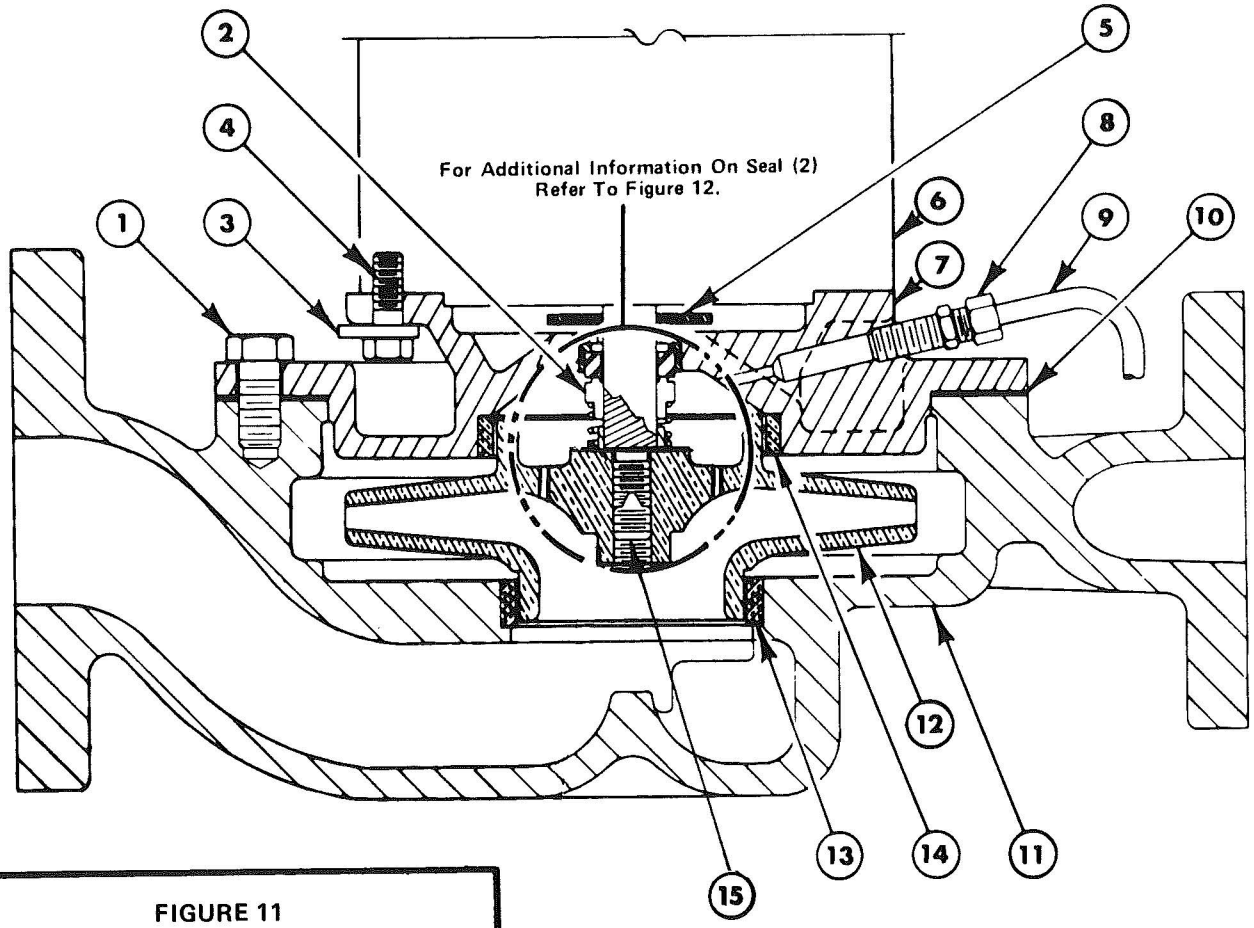


FIGURE 11
A7A/PM7A PUMP WITH JET PUMP MOTOR

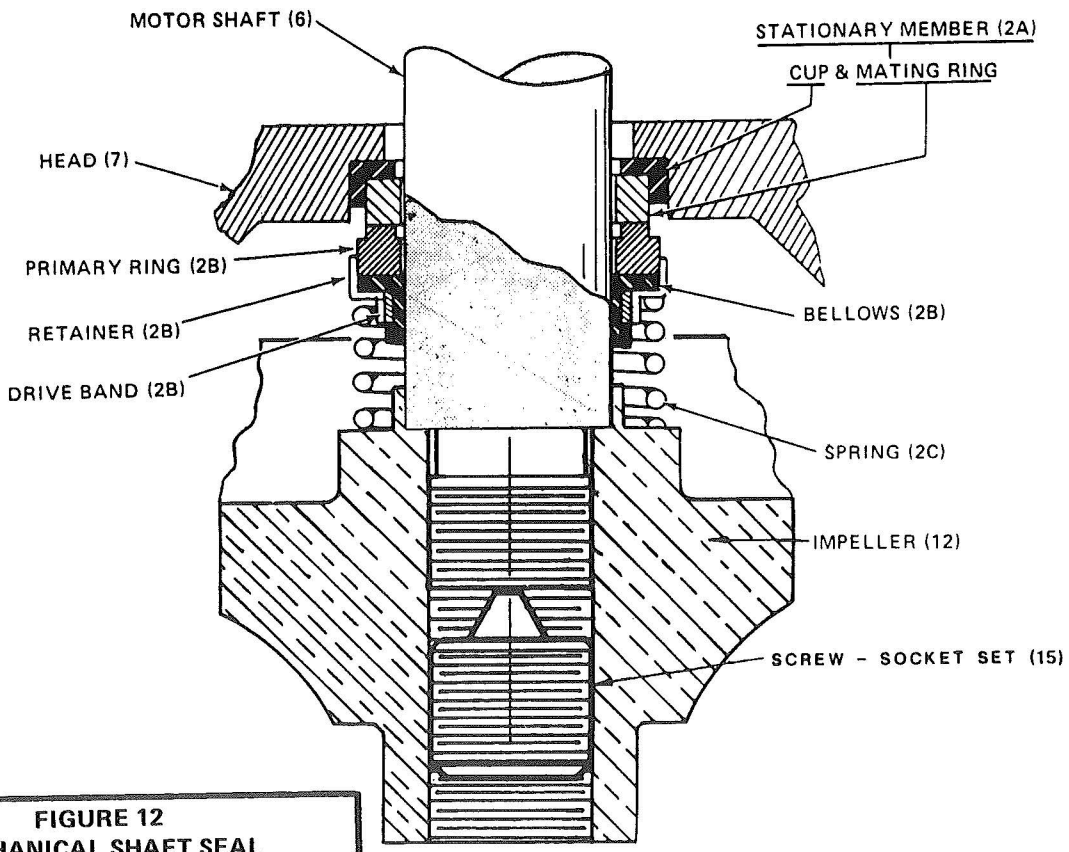


FIGURE 12
MECHANICAL SHAFT SEAL
FOR A7A/PM7A PUMPS

SECTION IV - TROUBLE SHOOTING

Operating troubles and their probable causes are as follows:

A. INSUFFICIENT OR NO DISCHARGE

1. Wrong direction of rotation.
2. Pump not primed.
3. Suction line is not full of liquid.
4. Air or vapor in suction line.
5. Suction pipe not submerged enough.
6. Available NPSH not sufficient.
7. Pump not up to rated speed.
8. Too much system head.

B. INSUFFICIENT PRESSURE

1. Wrong direction of rotation.
2. Suction line not full of liquid.
3. Air or vapor in liquid.
4. Air leaks in suction line.
5. Suction line not submerged enough.
6. Available NPSH not sufficient.
7. Pump not up to rated speed.
8. Mechanical defects:
   a. Impeller damaged.
   b. Internal leakage (clearances).

C. CAVITATION AND NOISE

1. Air or gas in liquid.
2. Suction line not filled with liquid.
3. Suction line not submerged enough.
4. Available NPSH not sufficient.

D. PUMP LOSES SUCTION AFTER STARTING

1. Suction line not full of liquid.
2. Air leaks in suction line.
3. Air or vapor in liquid.
4. Air or vapor in suction line.
5. Suction line not submerged enough.
6. Available NPSH not sufficient.

E. EXCESSIVE POWER CONSUMPTION

1. Speed too high
2. Insufficient head.
3. Mechanical Defects:
   a. Shaft bent.
   b. Rotating element dragging.
   c. Piping improperly supported.

F. VIBRATION

1. Suction line not full of liquid.
2. Air or vapor in suction line.
3. Worn or loose motor bearings.
4. Rotating element out of balance.
   Shaft bent.
5. Foundation not rigid.
6. Vibration in the driver.
7. Wrong location of control valve.
8. Piping improperly supported.

NOMENCLATURE

A = 3/4"
B = 1"
C = 1-1/4"
D = 1-1/2"
E = 2"

chart

1 HP - B x D A7B2

HORSEPOWER

DISCHARGE (see chart)

SUCTION (see chart)

TYPE MODEL

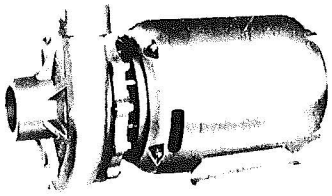
ORDERING PROCEDURE

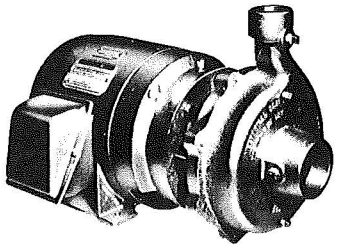
1. Complete part number and description is required when ordering.
2. When a part number is not known or shown in the parts catalog, the complete model and serial number of the unit on which the part is to be used must be given.
3. Send all orders to:

   MEPCO 3695 44th Street SE, Grand Rapids, MI 49512

4. Prices can be found in the latest revision of Form 17448 and are for one item or kit as applicable.
5. Minimum billing is $50.00.
6. All prices are subject to federal, state, local or other taxes which may be applicable.
7. The Sales Dept. reserves the right to substitute parts if they are interchangeable with those ordered. The invoice will reflect the cost of the actual part shipped.
8. Refer to the latest revision of Form 1278 for terms of sale.

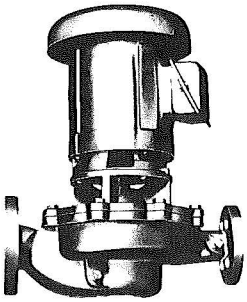
TYPE A9B PUMP



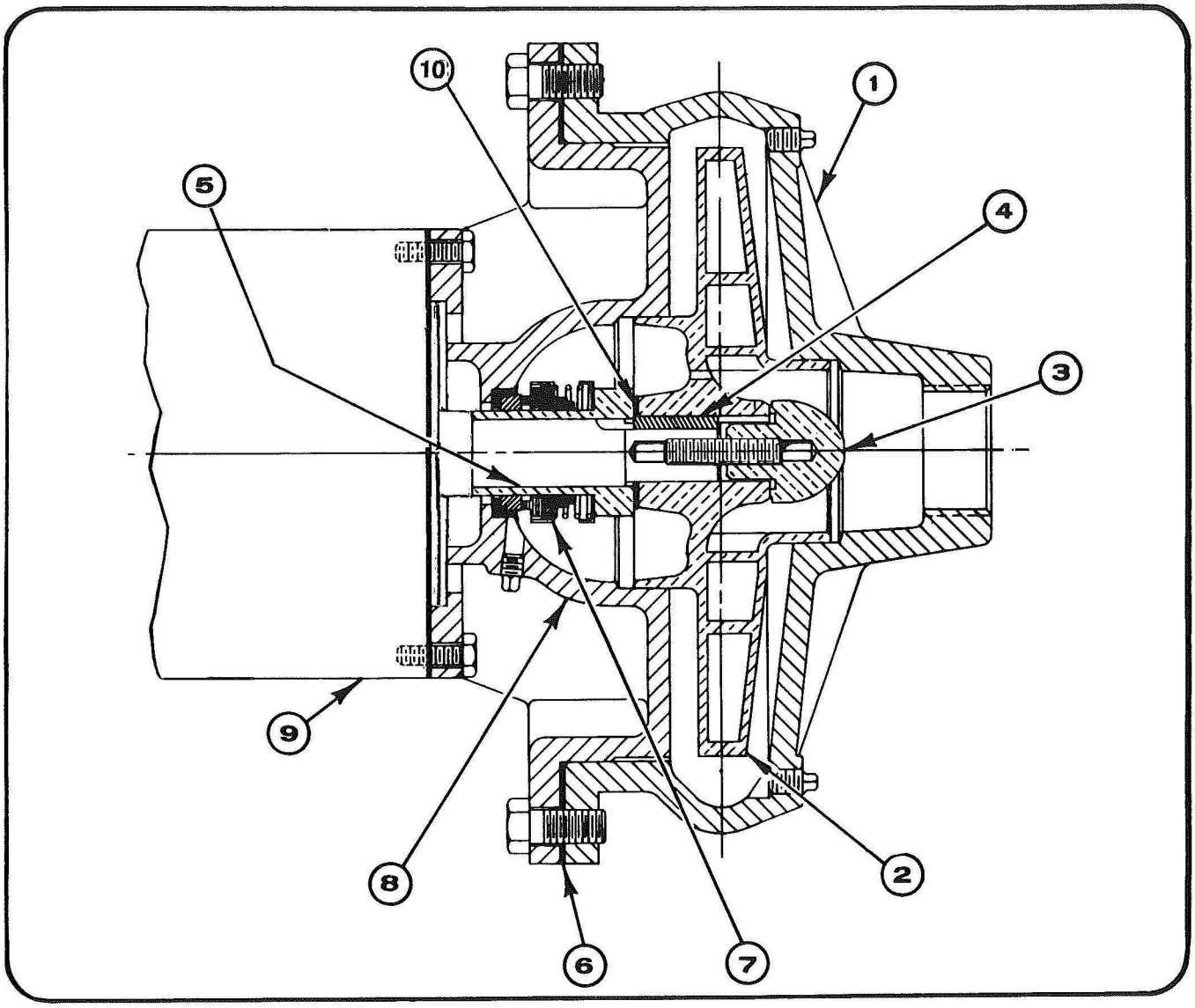


TYPE A7A AND A7 PUMPS

TYPE PM7 AND PM7A PUMPS



Represented by:



A9 PUMP AND PARTS LIST

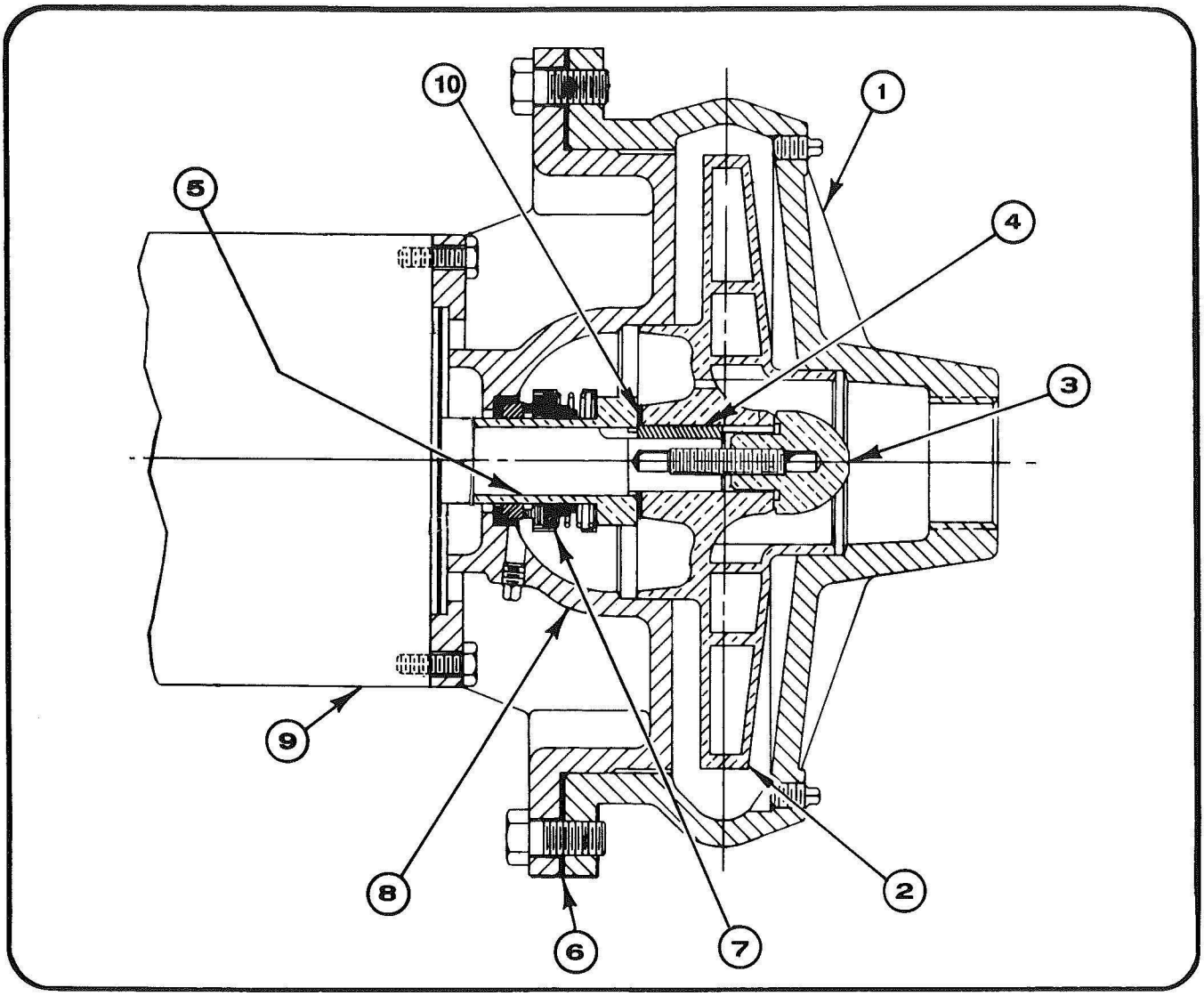
SERIES B - ½ HP, ¾ HP AND 1 HP

	PART NUMBER AND DESCRIPTION	½ HP 1" 1ϕ & 3ϕ A9C1B	¾ HP 1" 1ϕ & 3ϕ A9C1B	¾ HP 1¼" 1ϕ & 3ϕ A9D1B	1 HP 1" 1ϕ & 3ϕ A9C1B	1 HP 1¼" 1ϕ & 3ϕ A9D1B	1 HP 2" 1ϕ & 3ϕ A9D1B
1	CASE (CAST IRON) CASE (BRONZE)	F541 D2-76	F541 D2-76	F540 D2-74	F541 D2-76	F540 D2-74	F544 D2-80
2	IMPELLER (BRONZE)	C2-3211	C2-3211	C2-3213	C2-3211	C2-3213	C2-3214
3	STUD & NUT	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898
4	KEY	C7763	C7763	C7763	C7763	C7763	C7763
5	SLEEVE *	A2-3905	A2-3905	A2-3905	A2-3905	A2-3905	A2-3905
6	GASKET *	D5450	D5450	D5450	D5450	D5450	D5450
7	SHAFT SEAL *	3179	3179	3179	3179	3179	3179
8	HEAD (CAST IRON) HEAD (BRONZE)	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480
9	MOTOR	Contact MEPCO					
10	GASKET *	A2-3020	A2-3020	A2-3020	A2-3020	A2-3020	A2-3020

NOTES: 1) When ordering repair parts, refer to page 11 of this manual.

2) * = These parts are required when replacing shaft seal.

3) Manufacture of Series B began 8/91.

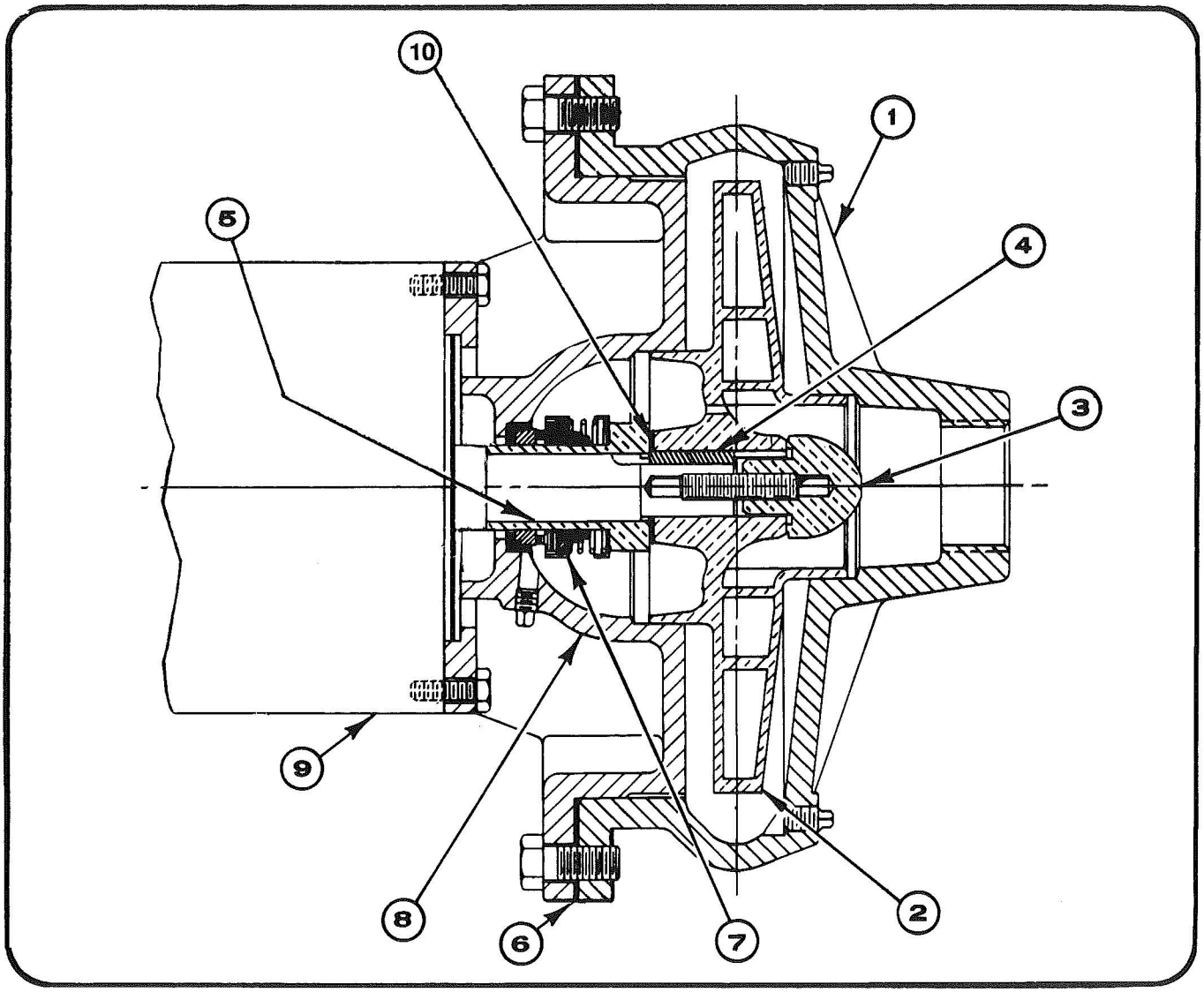


A9 PUMP AND PARTS LIST

SERIES B – 1½ HP

PART NUMBER AND DESCRIPTION		1½ HP 1" 1ϕ & 3ϕ A9C1B	1½ HP 1¼" 1ϕ & 3ϕ A9D1B	1½ HP 2" 1ϕ & 3ϕ A9D1B	1½ HP 2½" 1ϕ & 3ϕ A9D1B
1	CASE (CAST IRON) CASE (BRONZE)	D541 D2-76	F540 D2-74	F544 D2-80	F545 D2-79
2	IMPELLER (BRONZE)	C2-3211	C2-3213	C2-3214	C2-3215
3	STUD & NUT	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898
4	KEY	C7763	C7763	C7763	C7763
5	SLEEVE *	A2-3905	A2-3905	A2-3905	A2-3905
6	GASKET *	D5450	D5450	D5450	D5450
7	SHAFT SEAL *	3179	3179	3179	3179
8	HEAD (CAST IRON) HEAD (BRONZE)	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1479	D2-1478 D2-1480
9	MOTOR	Contact MEPCO			
10	GASKET *	A2-3020	A2-3020	A2-3020	A2-3020

NOTES: 1) When ordering repair parts, refer to page 11 of this manual.
2) * = These parts are required when replacing shaft seal.
3) Manufacture of Series B began 8/91.



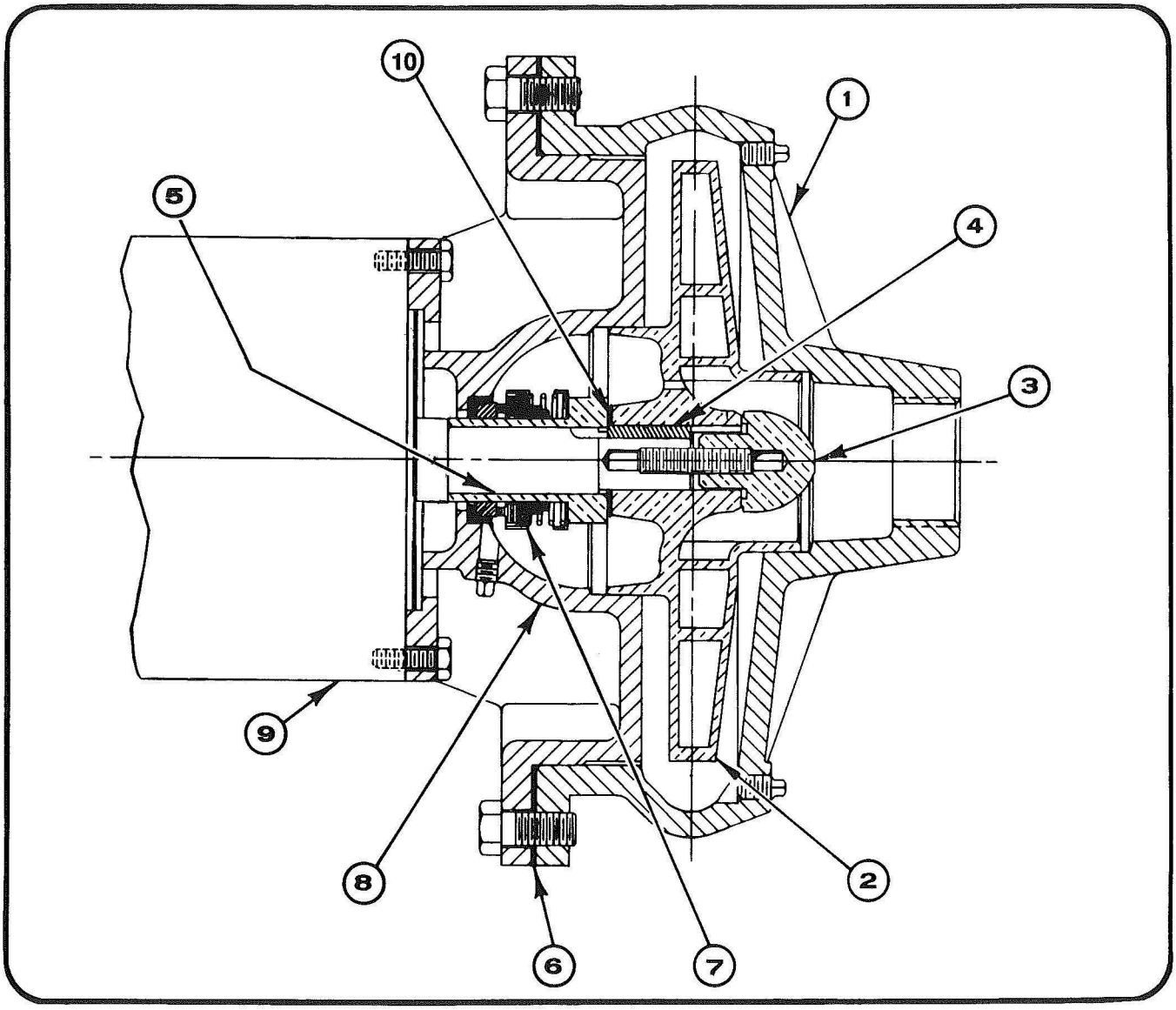
A9 PUMP AND PARTS LIST
SERIES B - 2 HP

	PART NUMBER AND DESCRIPTION	2 HP 1" 1ϕ A9C1B	2 HP 1" 3ϕ A9C1B	2 HP 1¼" 1ϕ A9D1B	2 HP 1¼" 3ϕ A9D1B	2 HP 2" 1ϕ D9D1B	2 HP 2" 3ϕ A9D1B	2 HP 2½" 1ϕ A9D1B	2 HP 2½" 3ϕ A9D1B
1	CASE (CAST IRON) CASE (BRONZE)	F541 D2-76	F541 D2-76	F540 D2-74	F540 D2-74	F544 D2-80	F544 D2-80	F545 D2-79	F545 D2-79
2	IMPELLER (BRONZE)	C2-3211	C2-3211	C2-3213	C2-3213	C2-3214	C2-3214	C2-3215	C2-3215
3	STUD & NUT	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898
4	KEY	C7763	C7763	C7763	C7763	C7763	C7763	C7763	C7763
5	SLEEVE *	A2-3905	A2-3905	A2-3905	A2-3905	A2-3905	A2-3905	A2-3905	A2-3905
6	GASKET *	D5450	D5450	D5450	D5450	D5450	D5450	D5450	D5450
7	SHAFT SEAL *	3179	3179	3179	3179	3179	3179	3179	3179
8	HEAD (CAST IRON) HEAD (BRONZE)	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480
9	MOTOR	Contact MEPCO							
10	GASKET *	A2-3020	A2-3020	A2-3020	A2-3020	A2-3020	A2-3020	A2-3020	A2-3020

NOTES: 1) When ordering repair parts, refer to page 11 of this manual.

2) * = These parts are required when replacing shaft seal.

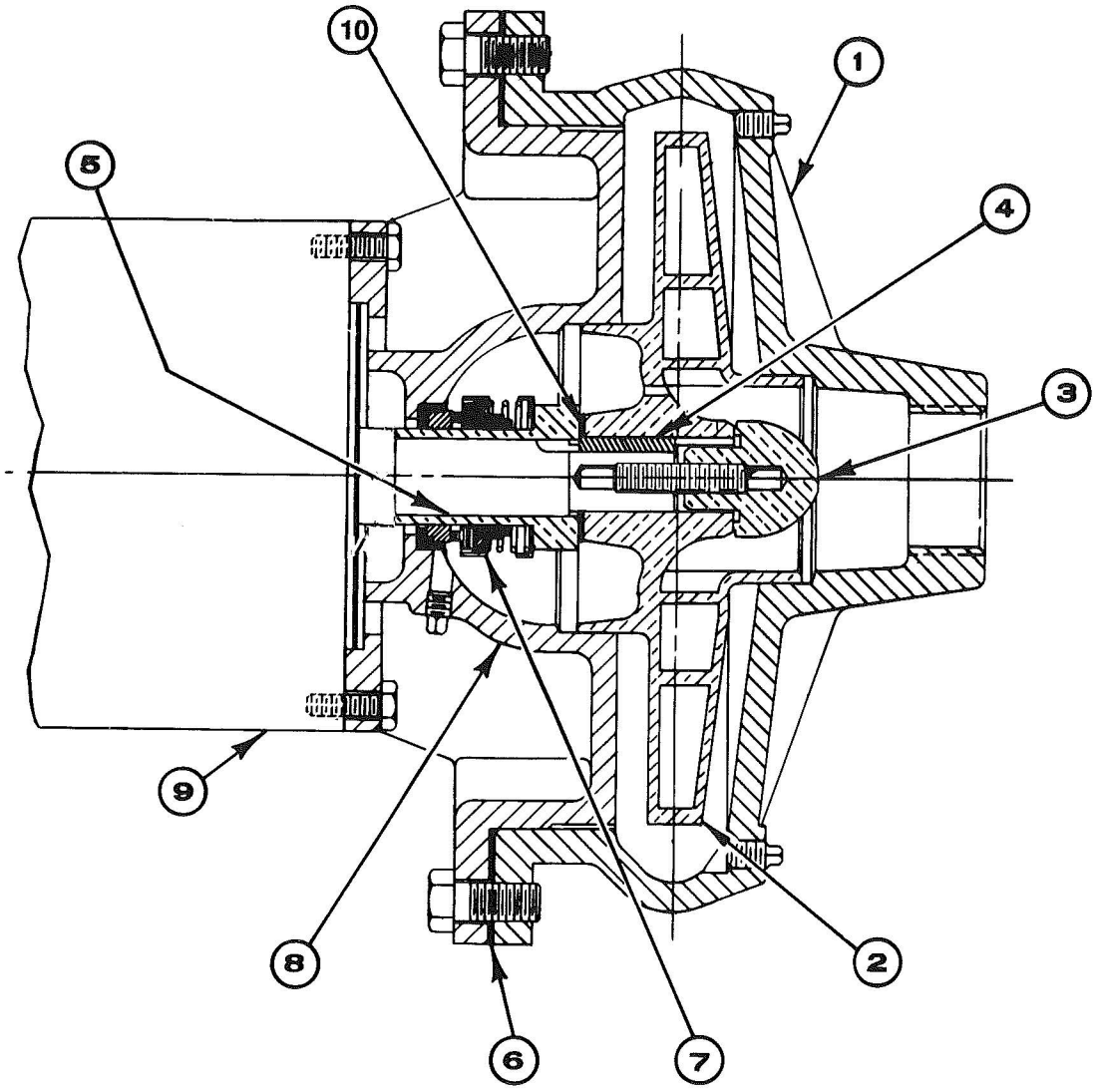
3) Manufacture of Series B began 8/91.



A9 PUMP AND PARTS LIST SERIES B - 3 HP

PART NUMBER AND DESCRIPTION	3 HP 1" 3ϕ A9D2B	3 HP 1" 3ϕ A9C2B	3 HP 1¼" 3ϕ A9D1B	3 HP 1¼" 3ϕ A9D2B	3 HP 2" 3ϕ A9D1B	3 HP 2½" 3ϕ A9D1B
1 CASE (CAST IRON) CASE (BRONZE)	F541 D2-76	F541 D2-76	F540 D2-74	F540 D2-74	F544 D2-80	F545 D2-79
2 IMPELLER (BRONZE)	C2-3212	C2-3211	C2-3213	C2-3213	C2-3214	C2-3215
3 STUD & NUT	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898
4 KEY	C7763	C7763	C7763	C7763	C7763	C7763
5 SLEEVE *	A2-3905	A2-3905	A2-3905	A2-3905	A2-3905	A2-3905
6 GASKET *	D5450	D5450	D5450	D5450	D5450	D5450
7 SHAFT SEAL *	3179	3179	3179	3179	3179	3179
8 HEAD (CAST IRON) HEAD (BRONZE)	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480
9 MOTOR	Contact MEPCO					
10 GASKET *	A2-3020	A2-3020	A2-3020	A2-3020	A2-3020	A2-3020

NOTES: 1) When ordering repair parts, refer to page 11 of this manual.
2) * = These parts are required when replacing shaft seal.
3) Manufacture of Series B began 8/91.



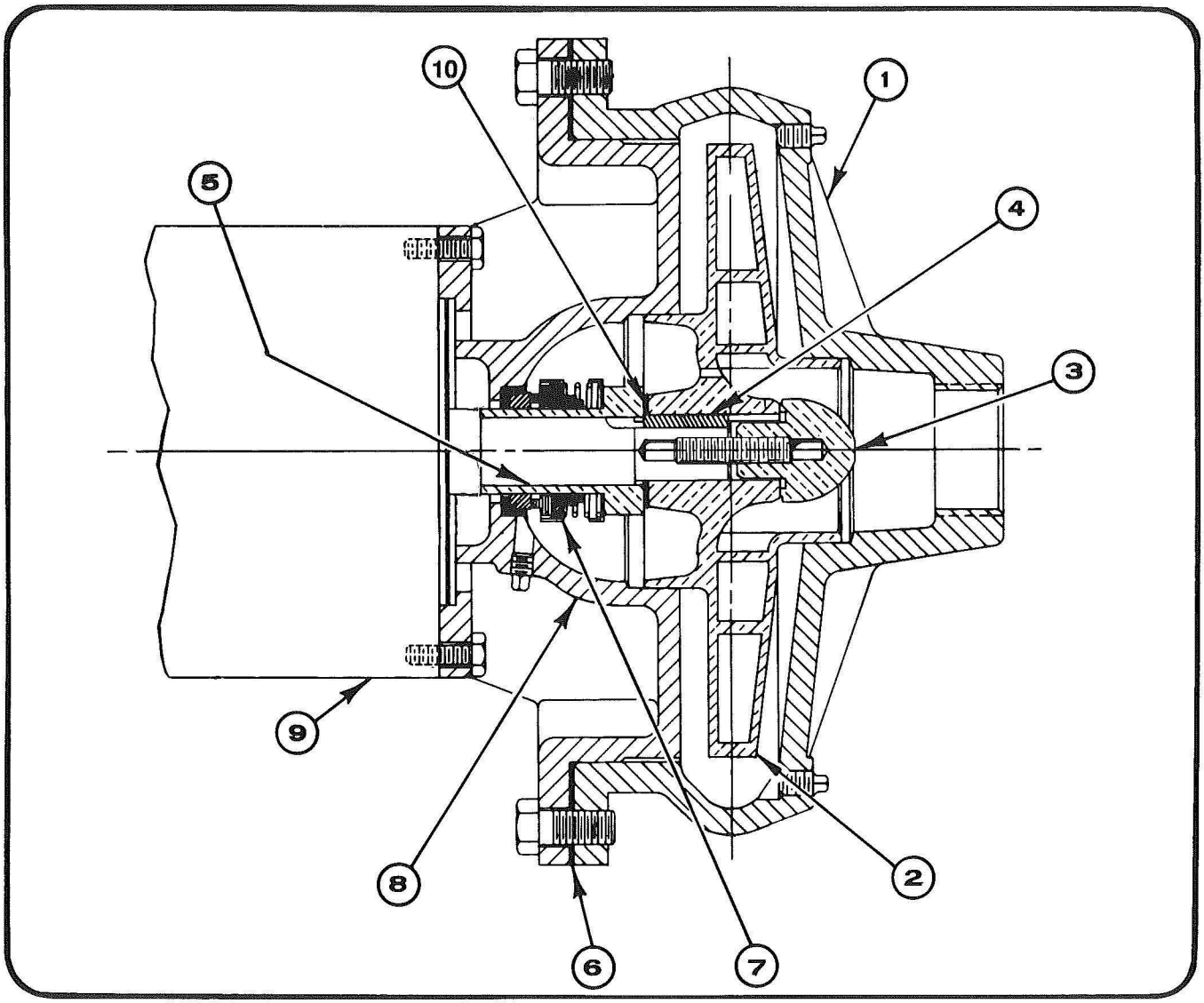
A9 PUMP AND PARTS LIST SERIES A - 5 HP

PART NUMBER AND DESCRIPTION		5 HP 1" 3ϕ A9C2B	5 HP 1" 3ϕ A9D2B	5 HP 1¼" 3ϕ A9D2B	5 HP 2" 3ϕ A9D1B	5 HP 2" 3ϕ A9D2B	5 HP 2½" 3ϕ A9D1B	5 HP 2½" 3ϕ A9D2B
1	CASE (CAST IRON) CASE (BRONZE)	F541 D2-76	F541 D2-76	F540 D2-74	F544 D2-80	F544 D2-80	F545 D2-79	F545 D2-79
2	IMPELLER (BRONZE)	C2-3211	C2-3212	C2-3213	C2-3214	C2-3214	C2-3215	C2-3215
3	STUD & NUT	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898
4	KEY	C7763	C7763	C7763	C7763	C7763	C7763	C7763
5	SLEEVE *	A2-3905	A2-3905	A2-3905	A2-3905	A2-3905	A2-3905	A2-3905
6	GASKET *	D5450	D5450	D5450	D5450	D5450	D5450	D5450
7	SHAFT SEAL*	3179	3179	3179	3179	3179	3179	3179
8	HEAD (CAST IRON) HEAD (BRONZE)	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480	D2-1478 D2-1480
9	MOTOR	Contact MEPCO						
10	GASKET *	A2-3020	A2-3020	A2-3020	A2-3020	A2-3020	A2-3020	A2-3020

NOTES: 1) When ordering repair parts, refer to page 11 of this manual.

2) * = These parts are required when replacing shaft seal.

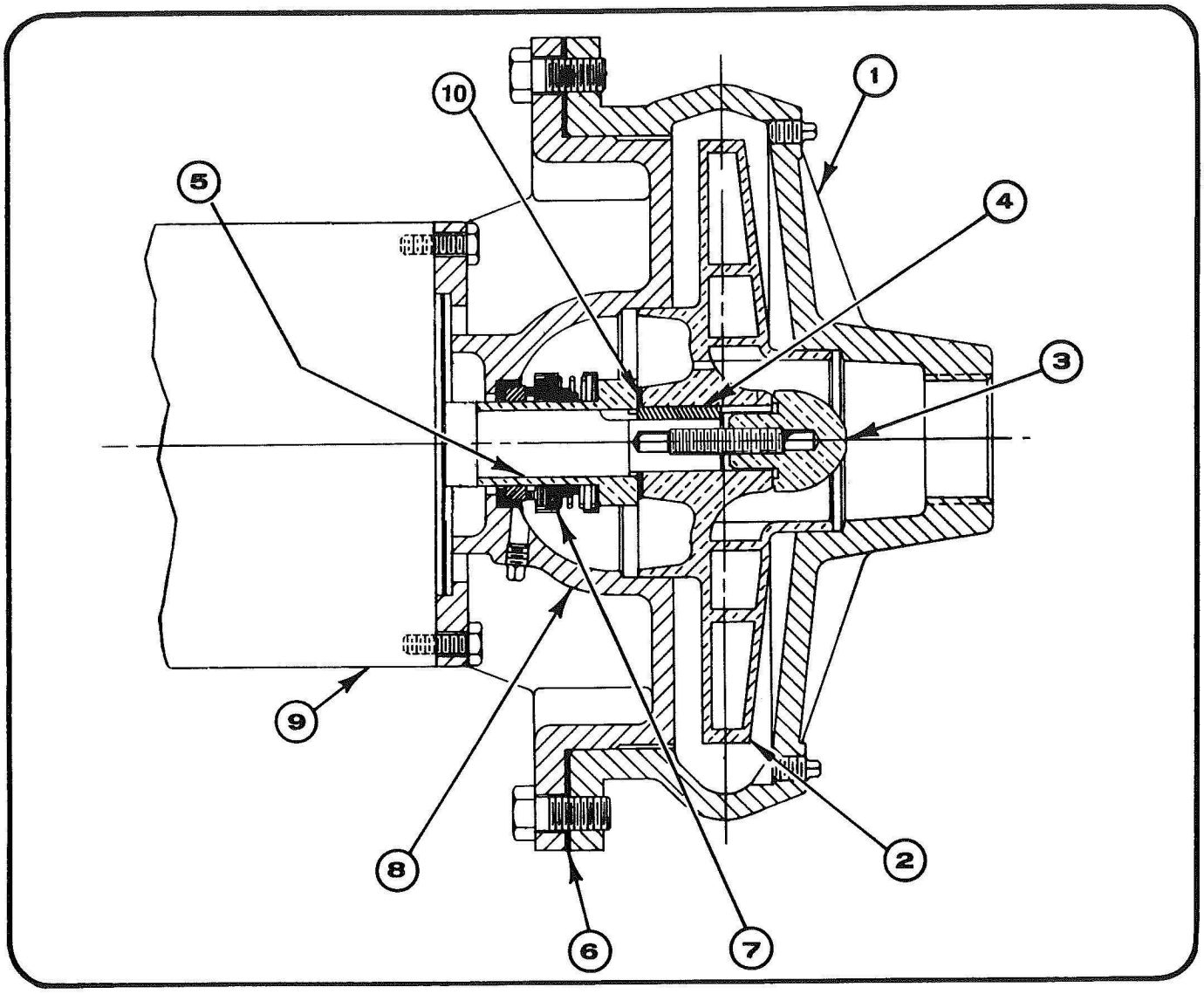
3) Manufacture of Series B began 8/91.



A9 PUMP AND PARTS LIST
SERIES B - 7½ HP

	PART NUMBER AND DESCRIPTION	7½ HP 1¼" 3ϕ A9D2B	7½ HP 2" 3ϕ A9D2B	7½ HP 2½" 3ϕ A9D1B	7½ HP 2½" 3ϕ A9C2B
1	CASE (CAST IRON) CASE (BRONZE)	F540 D2-74	F544 D2-80	F545 D2-79	F545 D2-79
2	IMPELLER (BRONZE)	C2-3213	C2-3214	C2-3215	C2-3215
3	STUD & NUT	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898
4	KEY	C7763	C7763	C7763	C7763
5	SLEEVE *	A2-3905	A2-3905	A2-3905	A2-3905
6	GASKET *	D5450	D5450	D5450	D5450
7	SHAFT SEAL*	3179	3179	3179	3179
8	HEAD (CAST IRON) HEAD (BRONZE)	D2-1478 D2-1480	D2-1478 D2-1480	D2-1481 D2-1483	D2-1478 D2-1480
9	MOTOR	Contact MEPCO			
10	GASKET *	A2-3020	A2-3020	A2-3020	A2-3020

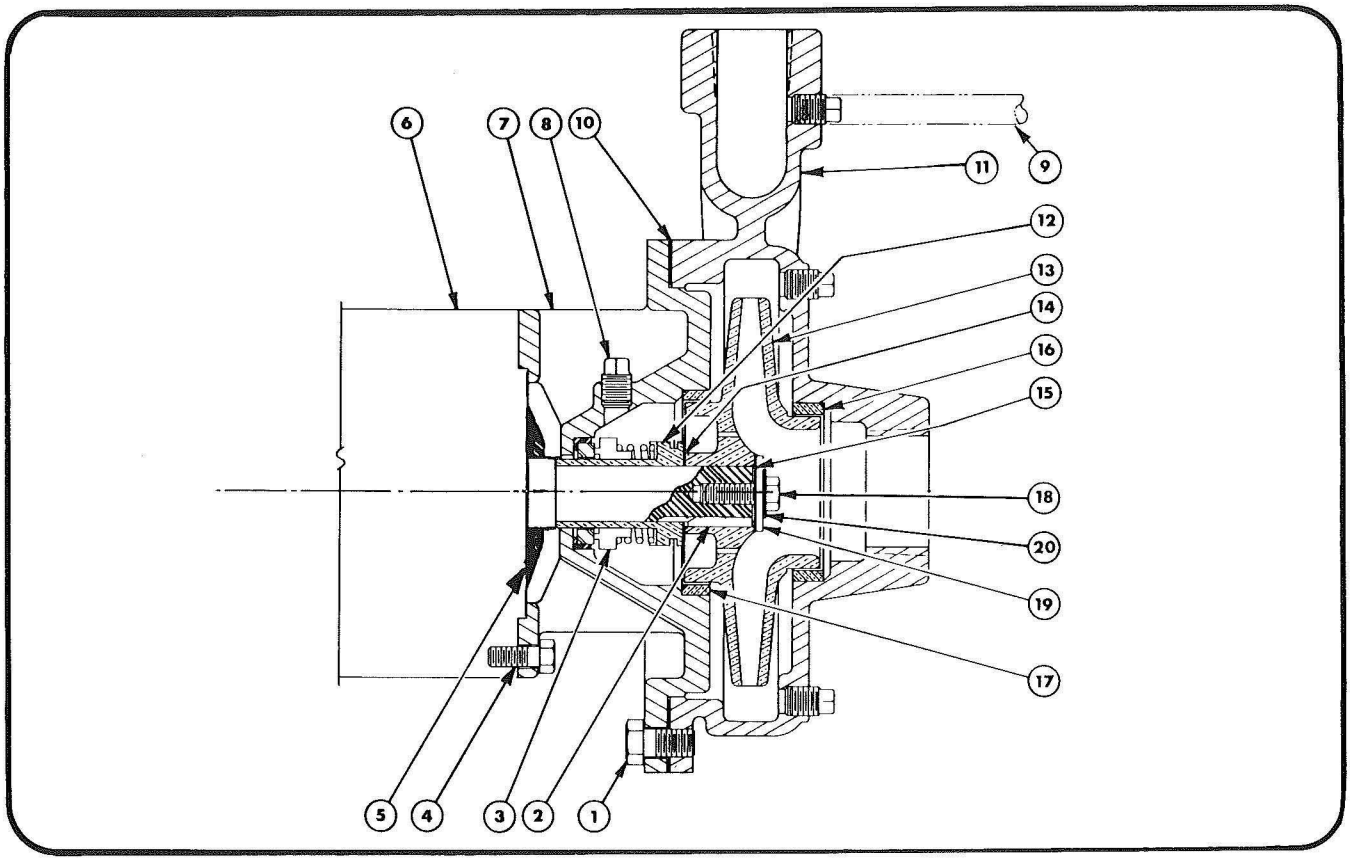
NOTES: 1) When ordering repair parts, refer to page 11 of this manual.
2) * = These parts are required when replacing shaft seal.
3) Manufacture of Series B began 8/91.



A9 PUMP AND PARTS LIST
SERIES B – 10 HP AND 15 HP

	PART NUMBER AND DESCRIPTION	10 HP 1¼" 3ϕ A9D2B	10 HP 2" 3ϕ A9D2B	10 HP 2½" 3ϕ A9D2B	15 HP 2" 3ϕ A9D2B	15 HP 2½" 3ϕ A9D2B
1	CASE (CAST IRON) CASE (BRONZE)	F540 D2-74	F544 D2-80	F545 D2-79	F544 D2-80	F544 D2-80
2	IMPELLER (BRONZE)	C2-3213	C2-3214	C2-3215	C2-3214	C2-3215
3	STUD & NUT	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898	C10035 A2-3898
4	KEY	C7763	C7763	C7763	C7763	C7763
5	SLEEVE *	A2-3905	A2-3905	A2-3905	A2-3905	A2-3905
6	GASKET *	D5450	D5450	D5450	D5450	D5450
7	SHAFT SEAL *	3179	3179	3179	3179	3179
8	HEAD (CAST IRON) HEAD (BRONZE)	D2-1481 D2-1483	D2-1481 D2-1483	D2-1481 D2-1483	D2-1481 D2-1483	D2-1481 D2-1483
9	MOTOR	Contact MEPCO				
10	GASKET *	A2-3020	A2-3020	A2-3020	A2-3020	A2-3020

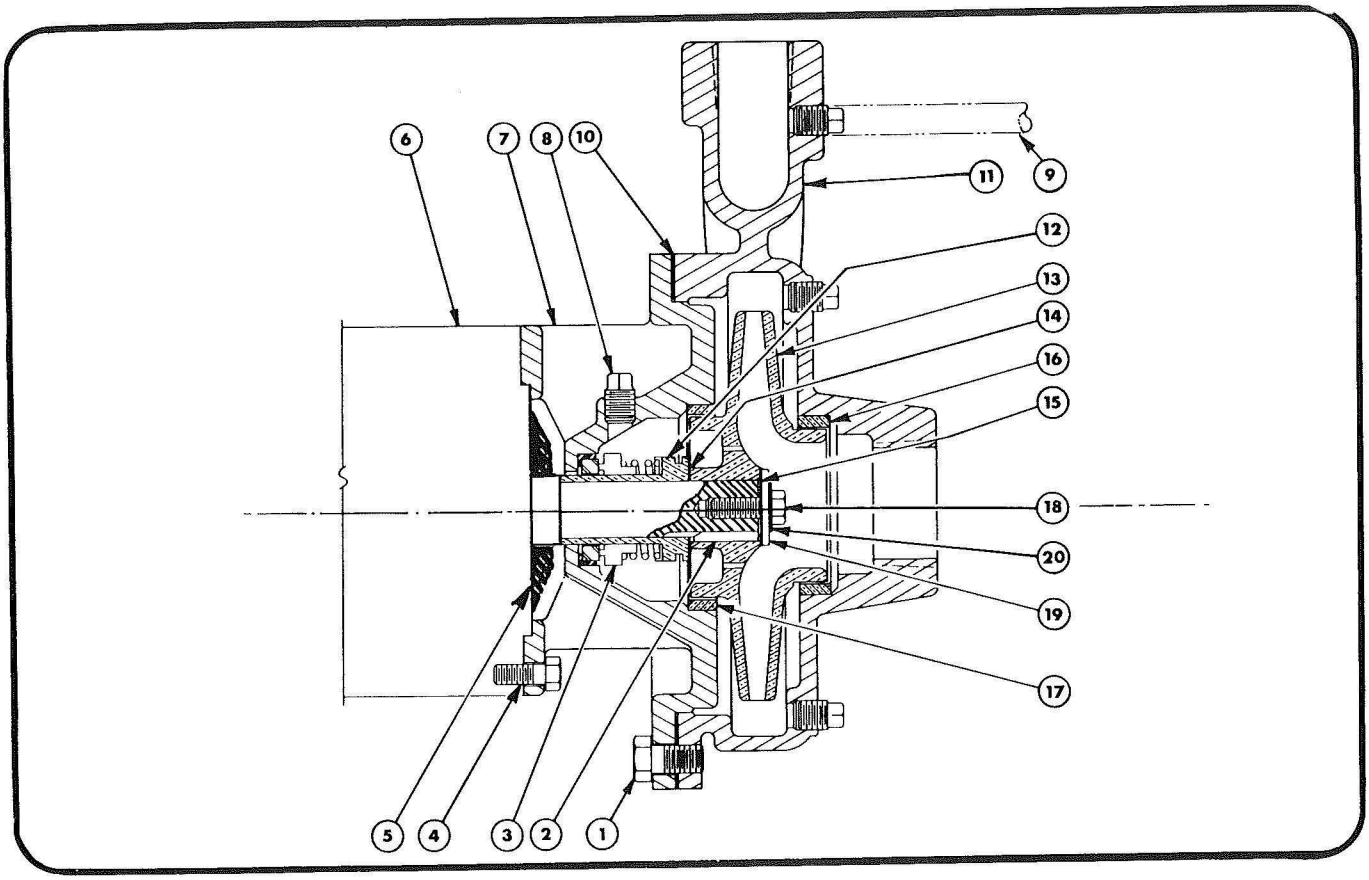
NOTES: 1) When ordering repair parts, refer to page 11 of this manual.
2) * = These parts are required when replacing shaft seal.
3) Manufacture of Series B began 8/91.



A7 PUMP AND PARTS LIST – ¾", 1¼" AND 1½" DIA. DISCHARGE

	PART NUMBER & DESCRIPTION	¾" A7B	1¼" A7B	1¼" A7C	1½" A7B	1½" A7C
1.	Screw – Cap	P - 150				
2.	Key – Impeller	Supplied with Motor				
3.	Seal – Mechanical *	3179	3179	3179	3179	3179
4.	Screw – Cap	P-142	P-142	P-150	P-142	P-150
5.	Slinger	Supplied with Motor				
6.	Motor	Contact MEPCO				
7.	Head, C.I.	C2-2336	C2-2336	C2-2337	C2-2336	C2-2337
	Head, Bronze	C2-2660	C2-2660	C2-2661	C2-2660	C2-2661
	Head, C.I. w/wear Rings	C2-2345	C2-2345	C2-2346	C2-2345	C2-2346
8.	Fitting – Compression Straight	P - 194 (Optional)				
	Fitting – Elbow, Not shown	P - 195 (Optional)				
	Plug – Pipe	(5) P - 196				
9.	Tube	1/8" OD				
10.	Gasket – Case *	C2-2343				
11.	Case, C.I.	C2-2390	C2-2335		C2-2377	
	Case, (Bronze)	C2-2665	C2-2666		C2-2667	
	Case, C.I. w/wear Rings	C2-2389	C2-2347		C2-2376	
12.	Sleeve *	A2-3018	A2-3018	A2-3018	A2-3018	A2-3018
13.	Impeller	C2-2378	C2-2340	C2-2340	C2-2380	C2-2380
14.	Gasket (Impeller – Sleeve) *	A2-3020	A2-3020	A2-3020	A2-3020	A2-3020
15.	Gasket (Impeller – Head) *	A2-3022-1				
16.	Ring – Case Wear Ring	A2-3026	A2-3015		A2-3027	
17.	Ring – Head Wear Ring	A2-3016				
18.	Screw – Impeller	102D05A3				
19.	Washer – Impeller	A2-3021-1				
20.	Washer – Sealing	3313	3313	3313	3313	3313

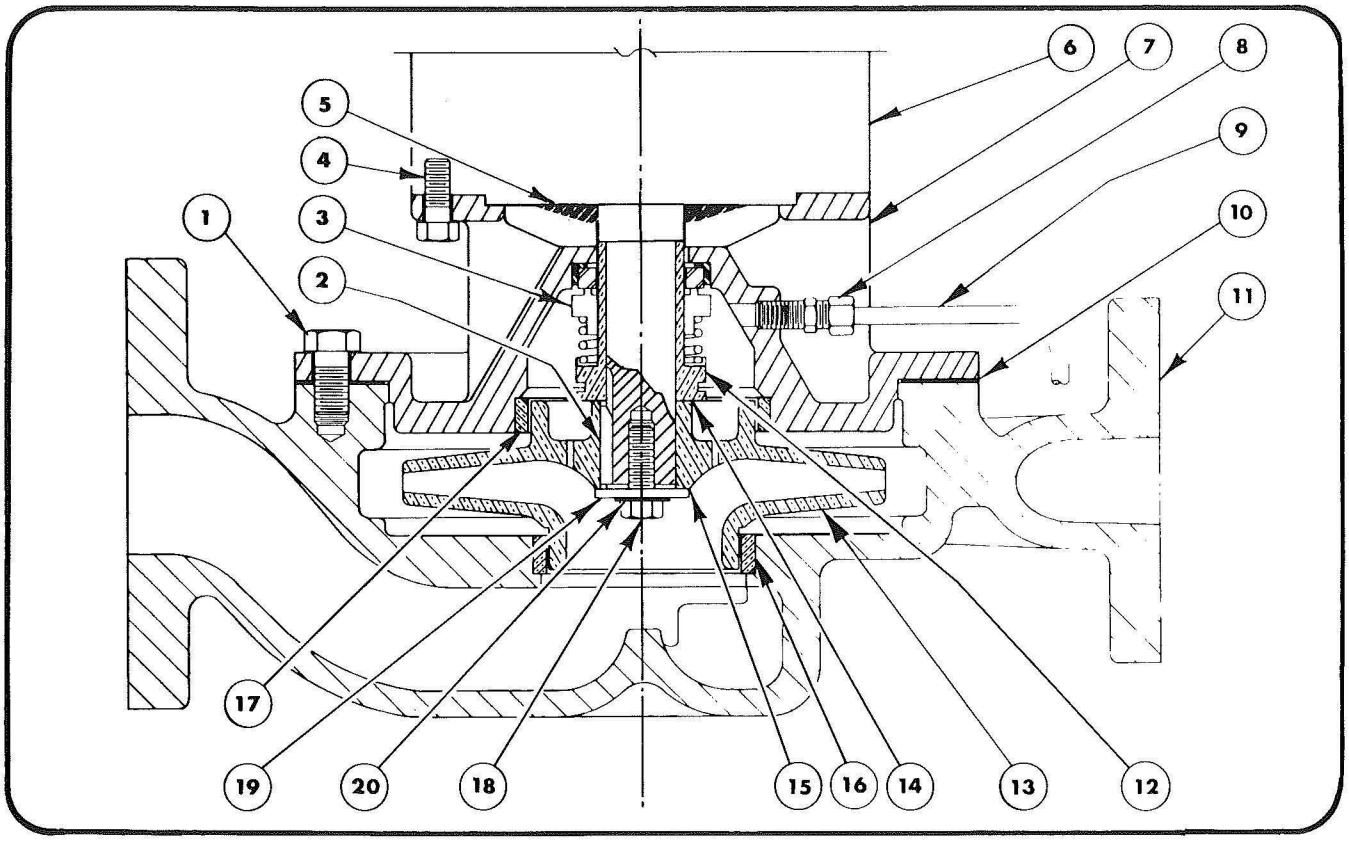
NOTES: 1. NON-STANDARD pump parts are not shown. When ordering repair parts, refer to page 10 of this catalog.
2. * = These parts are required when replacing shaft seal.



A7 PUMP AND PARTS LIST – 2" AND 2½" DIA. DISCHARGE

	PART NUMBER & DESCRIPTION	2" A7D	2" A7E	2" A7F	2½" A7D	2½" A7E	2½" A7E H.C.	2½" A7F
1.	Screw – Cap	P - 150						
2.	Key – Impeller	Supplied with Motor						
3.	Seal – Mechanical *	3179	3179	3291	3179	3179	3179	3291
4.	Screw – Cap	P - 142	P - 150	P - 150	P - 142	P - 150	P - 150	P - 150
5.	Slinger	Supplied with Motor						
6.	Motor	Contact MEPCO						
7.	Head, C.I.	C2-2384	C2-2386	C2-2388	C2-2384	C2-2386	C2-2386	C2-2388
	Head, Bronze	C2-2662	C2-2663	C2-2664	C2-2662	C2-2663	C2-2663	C2-2664
	Head, C.I. w/wear rings	C2-2383	C2-2385	C2-2387	C2-2383	C2-2385	C2-2385	C2-2387
8.	Fitting – Compression Straight	P - 194 (Optional)						
	Fitting – Elbow, Not shown	P - 195 (Optional)						
	Plug – Pipe	(5) P - 196						
9.	Tube	1/8" OD						
10.	Gasket – Case *	C2-2343						
11.	Case, C.I.	D2-1274			D2-1276			
	Case, (Bronze)	D2-1352			D2-1355			
	Case, C.I. w/wear rings	D2-1273			D2-1275			
12.	Sleeve *	A2-3018	A2-3018	A2-3025	A2-3018	A2-3018	A2-3018	A2-3025
13.	Impeller	C2-2381	C2-2381	C2-2382	C2-2381	C2-2381	C2-2392	C2-2382
14.	Gasket (Impeller – Sleeve) *	A2-3020	A2-3020	A2-3029	A2-3020	A2-3020	A2-3020	A2-3029
15.	Gasket (Impeller – Head) *	A2-3021-1		A2-3022-2	A2-3022-1			A2-3022-2
16.	Ring – Case Wear Ring	A2-3028						
17.	Ring – Head Wear Ring	A2-3016						
18.	Screw – Impeller	102D05A3		3292	102D05A3			3292
19.	Washer – Impeller	A2-3021-1		A2-3021-2	A2-3021-1			A2-3021-2
20.	Washer – Sealing	3313	3313	3293	3313	3313	3313	3293

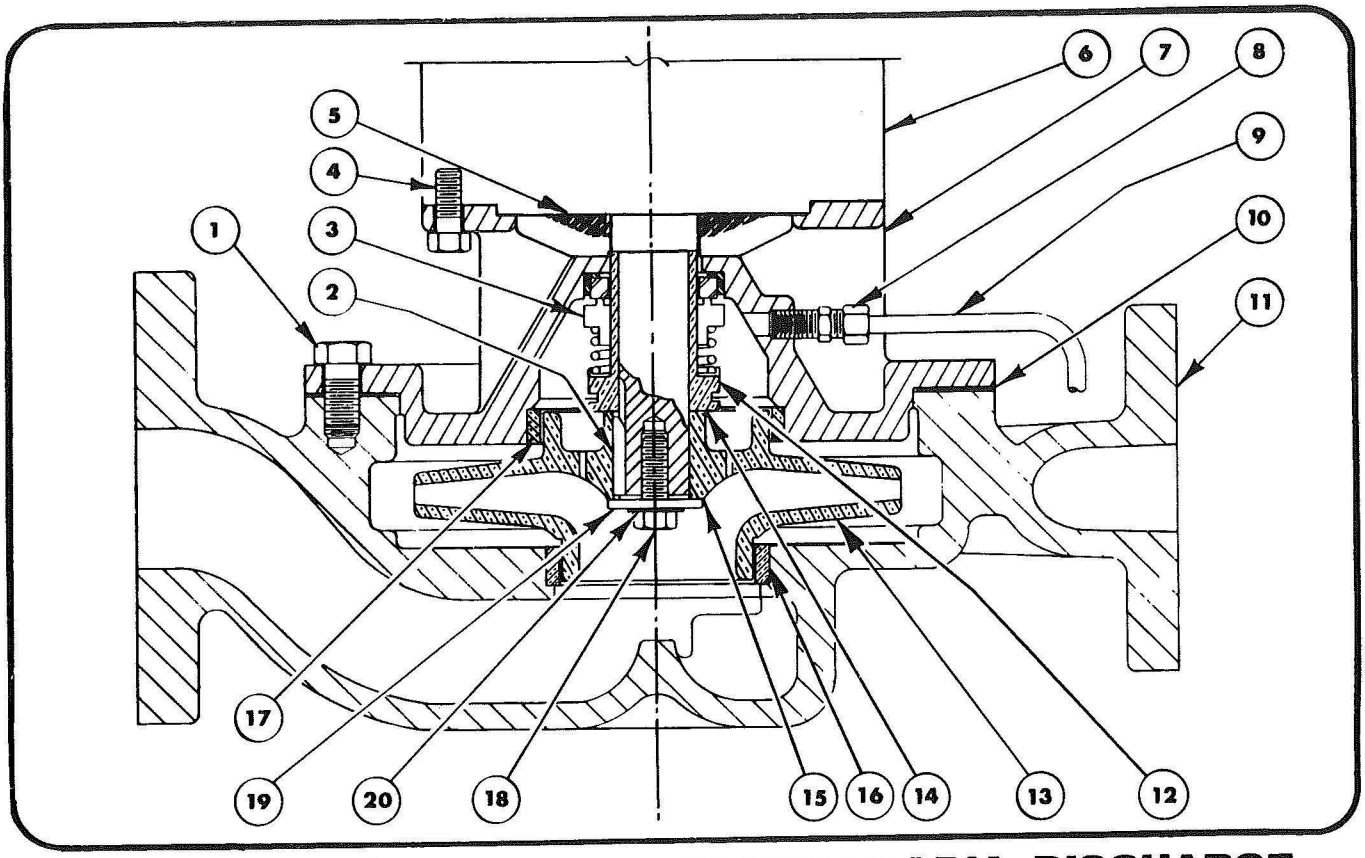
NOTES: 1. NON-STANDARD pump parts are not shown. When ordering repair parts, refer to page 10 of this catalog.
2. * = These parts are required when replacing shaft seal.



PM7 PUMP AND PARTS LIST – 1", 1¼" AND 1½" DIA. DISCHARGE

PART NUMBER & DESCRIPTION		1" PM7B	1¼" PM7B	1¼" PM7C	1½" PM7B	1½" PM7C
1.	Screw - Cap	P - 150				
2.	Key - Impeller	Supplied with Motor				
3.	Seal - Mechanical *	3179	3179	3179	3179	3179
4.	Screw - Cap	P - 142	P - 142	P - 150	P - 142	P - 150
5.	Slinger	Supplied with Motor				
6.	Motor	Contact MEPCO				
7.	Head, C.I.	C2-2336	C2-2336	C2-2337	C2-2336	C2-2337
	Head, (Bronze)	C2-2660	C2-2660	C2-2661	C2-2660	C2-2661
	Head, C.I. w/wear rings	C2-2345	C2-2345	C2-2346	C2-2345	C2-2346
8.	Fitting - Compression Straight	P-194				
	Fitting - Elbow – Not shown	P-195				
	Plug - Pipe	(1) P-196				
9.	Tube	1/8" OD				
10.	Gasket - Case *	C2-2343				
11.	Case, C.I.	D2-1268	D2-1256	D2-1256	D2-1266	D2-1266
	Case, (Bronze)	D2-1346	D2-1348	D2-1348	D2-1350	D2-1350
	Case, C.I. w/wear rings	D2-1267	D2-1255	D2-1255	D2-1265	D2-1265
12.	Sleeve *	A2-3018	A2-3018	A2-3018	A2-3018	A2-3018
13.	Impeller	C2-2379	C2-2340	C2-2340	C2-2380	C2-2380
14.	Gasket (Impeller - Sleeve) *	A2-3020	A2-3020	A2-3020	A2-3020	A2-3020
15.	Gasket (Impeller - Head) *	A2-3022-1				
16.	Ring - Case Wear Ring	A2-3026	A2-3015	A2-3015	A2-3027	A2-3027
17.	Ring - Head Wear Ring	A2-3016				
18.	Screw - Impeller	102D05A3				
19.	Washer - Impeller	A2-3021-1				
20.	Washer - Sealing	3313				

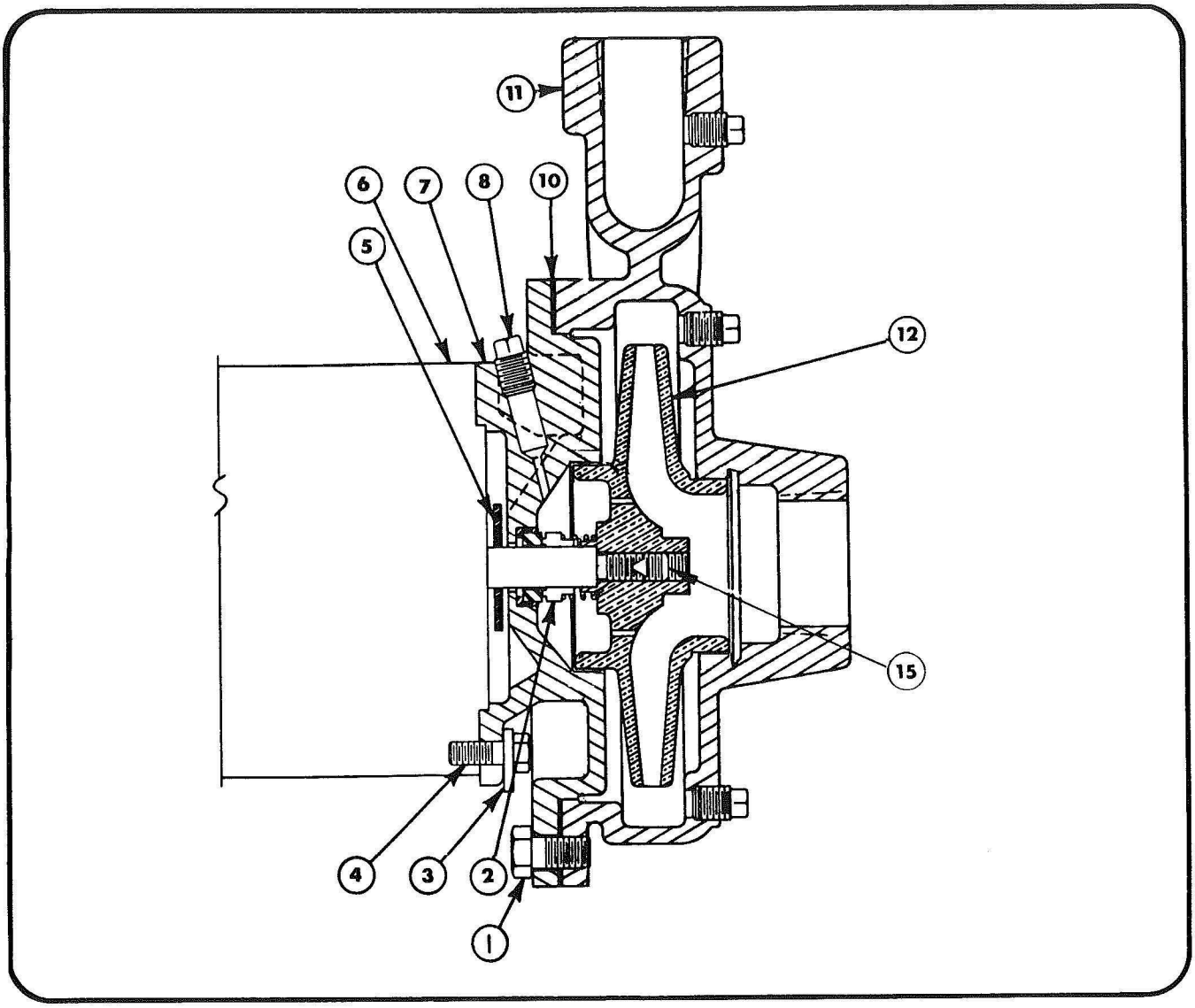
NOTES: 1. NON-STANDARD pump parts are not shown. When ordering repair parts, refer to page 10 of this catalog.
2. * = These parts are required when replacing shaft seal.



PM7 PUMP AND PARTS LIST – 2" AND 2½" DIA. DISCHARGE

	PART NUMBER & DESCRIPTION	2" PM7D	2" PM7E	2" PM7F	2½" PM7D	2½" PM7E	2½" PM7E H.C.	2½" PM7F
1.	Screw - Cap	P - 150						
2.	Key - Impeller	Supplied with Motor						
3.	Seal - Mechanical *	3179	3179	3291	3179	3179	3179	3291
4.	Screw - Cap	P - 142	P - 150	P - 150	P - 142	P -150	P - 150	P -150
5.	Slinger	Supplied with Motor						
6.	Motor	Contact MEPCO						
7.	Head, C.I.	C2-2384	C2-2386	C2-2388	C2-2384	C2-2386	C2-2386	C2-2388
	Head, (Bronze)	C2-2662	C2-2663	C2-2664	C2-2662	C2-2663	C2-2663	C2-2664
	Head, C.I. w/wear rings	C2-2383	C2-2385	C2-2387	C2-2383	C2-2385	C2-2385	C2-2387
8.	Fitting - Compression Straight	P-194						
	Fitting - Elbow — Not Shown	P-195						
	Plug - Pipe	(1) P-196						
9.	Tube	1/8" OD						
10.	Gasket - Case *	C2-2343						
11.	Case, C.I.	D2-1270			D2-1272			
	Case, (Bronze)	D2-1353			D2-1356			
	Case, C.I. w/wear rings	D2-1269			D2-1271			
12.	Sleeve *	A2-3018	A2-3018	A2-3025	A2-3018	A2-3018	A2-3018	A2-3025
13.	Impeller	C2-2381	C2-2381	C2-2382	C2-2381	C2-2381	C2-2392	C2-2382
14.	Gasket (Impeller - Sleeve) *	A2-3020	A2-3020	A2-3029	A2-3020	A2-3020	A2-3020	A2-3029
15.	Gasket (Impeller - Head)	A2-3022-1		A2-3022-2	A2-3022-1			A2-3022-2
16.	Ring - Case Wear Ring	A2-3028						
17.	Ring - Head Wear Ring	A2-3016						
18.	Screw - Impeller	102D05A3		3292	102D05A3			3292
19.	Washer - Impeller	A2-3021-1		A2-3021-2	A2-3021-1			A2-3021-2
20.	Washer - Sealing	3313		3293	3313			3293

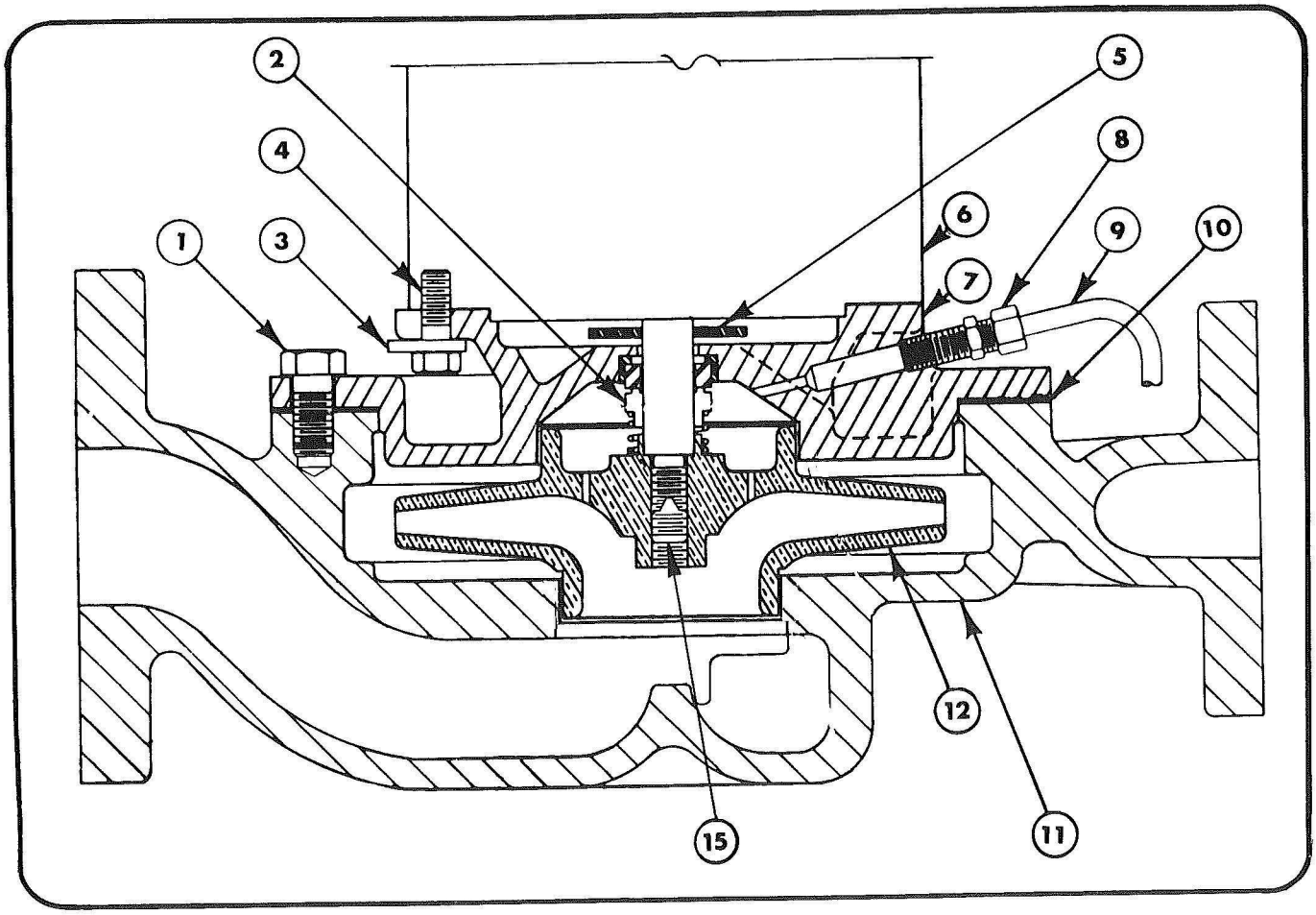
NOTES: 1. NON-STANDARD pump parts are not shown. When ordering repair parts, refer to page 10 of this catalog.
2. * = These parts are required when replacing shaft seal.



A7A PUMP AND PARTS LIST– ¾", 1¼" AND 1½" DIA. DISCHARGE

	PART NUMBER & DESCRIPTION	¾" A7A	1¼" A7A	1½" A7A
1.	Screw—Cap	P - 150	P - 150	P - 150
2.	Seal—Mechanical *	472	472	472
3.	Retainer—Head	A2-3023	A2-3023	A2-3023
4.	Screw—Cap	P - 142	P - 142	P - 142
5.	Slinger	C8854	C8854	C8854
6.	Motor	Contact MEPCO		
7.	Head, C.I.	C2-2342	C2-2342	C2-2342
	Head, Bronze	C2-2659	C2-2659	C2-2659
8.	Fitting – Compression Straight	P - 194 (Optional)		
	Fitting – Elbow (Not Shown)	P - 195 (Optional)		
	Plug—Pipe	(5) P - 196		
9.	Tube	1/8" OD		
10.	Gasket—Case *	C2-2343	C2-2343	C2-2343
11.	Case, C.I.	C2-2390	C2-2335	C2-2377
	Case, Bronze	C2-2665	C2-2666	C2-2667
12.	Impeller	C2-4208	C2-4211	C2-4212
13.				
14.				
15.	Screw - Socket Set	A2-4120	A2-4120	A2-4120

NOTES: 1. NON-STANDARD pump parts are not shown. When ordering repair parts, refer to page 10 of this catalog.
2. * = These parts are required when replacing shaft seal.



PM7A PUMP AND PARTS LIST
1", 1¼" AND 1½" DIA. DISCHARGE

PART NUMBER & DESCRIPTION		1" PM7A	1¼" PM7A	1½" PM7A
1.	Screw—Cap	P - 150	P - 150	P - 150
2.	Seal—Mechanical *	472	472	472
3.	Retainer—Head	A2-3023	A2-3023	A2-3023
4.	Screw—Cap	P - 142	P - 142	P - 142
5.	Slinger	C8854	C8854	C8854
6.	Motor	Contact MEPCO		
7.	Head, C.I.	C2-2342	C2-2342	C2-2342
	Head, Bronze	C2-2659	C2-2659	C2-2659
8.	Fitting—Compression Straight	P - 194		
	Fitting—Elbow (Not Shown)	P - 195		
	Plug—Pipe	(1) P - 196		
9.	Tube	1/8" OD		
10.	Gasket—Case *	C2-2343	C2-2343	C2-2343
11.	Case, C.I.	D2-1268	D2-1256	D2-1266
	Case, Bronze	D2-1346	D2-1348	D2-1350
12.	Impeller	C2-4208	C2-4211	C2-4212
15.	Screw - Socket Set	A2-4120	A2-4120	A2-4120

NOTES: 1. NON-STANDARD pump parts are not shown. When ordering repair parts, refer to page 10 of this catalog.
2. * = These parts are required when replacing shaft seal.