SERVICE INSTRUCTIONS FOR THE

CHICAGO PUMP® Type VOS, VPM And HBB Non-Clog Pumps

FRAMES: 5556, 5656, 5856, LM3, LMC4, LL3, & LLC4

READ INSTRUCTIONS THOROUGHLY BEFORE INSTALLING OR OPERATING THIS UNIT. KEEP THIS BOOKLET IN THE INSTRUCTION ENVELOPE. *DO NOT DESTROY.*

If these instructions should be lost or soiled, a new copy may be procured from the Yeomans Chicago Corp., by writing for it and stating number of the unit as indicated on the pump nameplate. For part numbers and names of parts, see parts lists and illustrations.

UPON RECEIPT OF PUMP EQUIPMENT: Check carefully to see that all equipment has been received and is in good condition. Immediately report any shortage or damage to the transportation company handling the shipment noting the extent of damage and/or shortage on the freight bill and bill of lading. Do not leave the unit exposed to construction or weather hazards where pump may be damaged mechanically or motor and ball bearings become wet. This pump is well designed, skillfully built and rugged, but must be given the same careful attention that is accorded any precision machine.

NOTE: If the pump is to be stored for a prolonged period before installation, rotate the pump shaft manually every two weeks until the unit is placed in operation.

INSTALLATION

LOCATION: Both pump and motor should be located in a clean drained area where they are accessible for installation, inspection and maintenance. This location should be dry and well ventilated. Overhead room and facilities must allow for installing and removing the pump or motor for repairs.

PUMP FOUNDATIONS: For permanence and quiet operation, it is important that the pump be firmly bolted down. Fig. 2 (page 2) illustrates the generally accepted method of anchorage. This system traps the bolt for anchorage, at the same time permits the bolt to move within the sleeve for aligning with the holes in the pump base. The bolts are fastened to a template form, usually made of wood, and spaced to conform accurately with the pedestal anchor bolt holes. The form is carefully located so that the pump will stand exactly in its specified position as to elevation, shaft plumb, and suction-discharge pipe connections; then the concrete is poured. Before fixing foundation bolt into the form, plug top and bottom of the sleeves with oakum as illustrated, and be certain that sleeves are held rigidly against square plates.

This permits the bolts to be adjusted slightly after concrete has set allowing the bolts to conform accurately with pedestal bolt holes. This prevents strains or difficulties arising from slight dimensional discrepancies. Pipe sleeve should be about two and one half diameters larger than the bolts used, and the bolts must be long enough to permit the pump to be raised 1" for grouting. If a raised foundation is

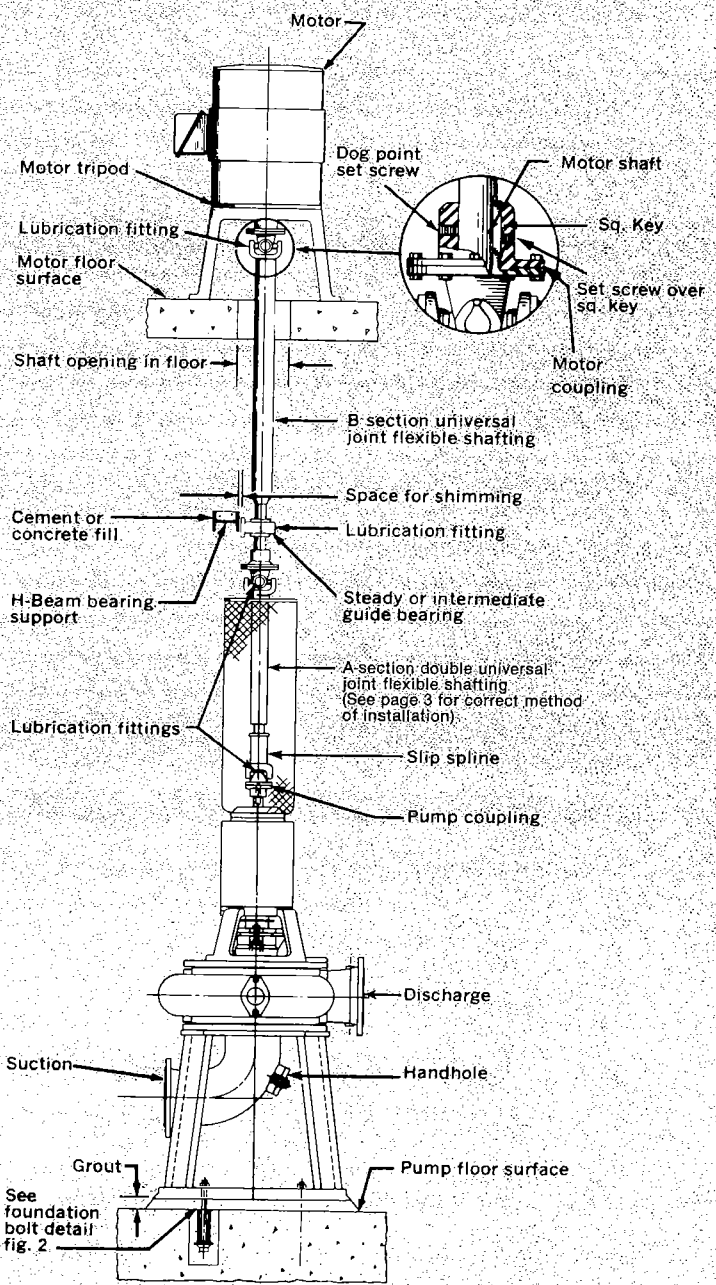


Figure 1—Typical vertical open-shaft pump installation

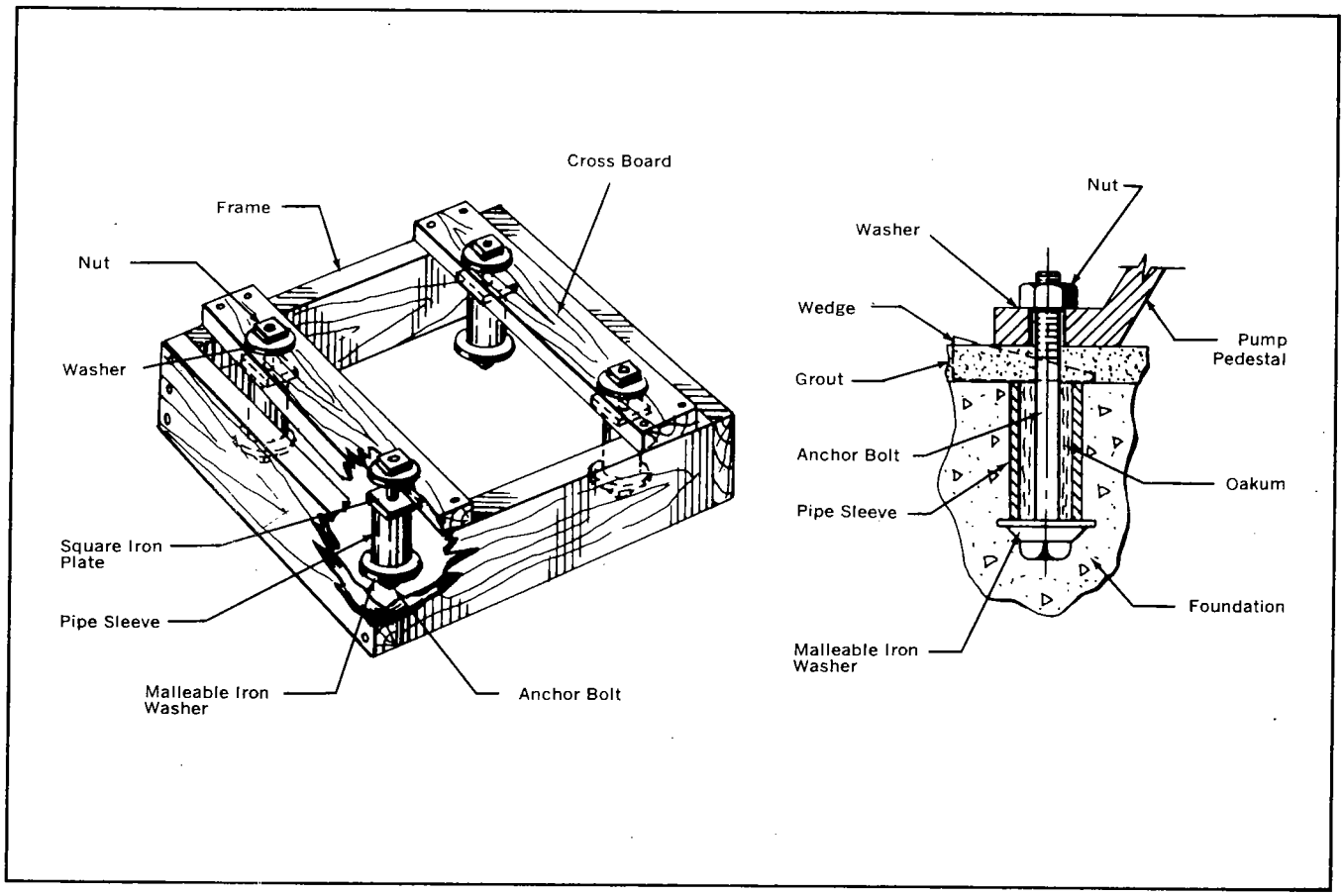


Figure 2—A Recommended System of Foundation Construction

desired, it should be at least six inches greater in length and width than the base of the pump pedestal and at least deep enough to "bury" the recommended anchorage. It should never be superficially poured over a smooth concrete floor but should be rooted by one of the following means: (a) when the concrete is newly poured, cast a shallow depression in the floor using a box form, or (b) leave reinforcement bars protruding above the floor level, (c) gouge out holes in an existing concrete floor.

SETTING THE PUMP: Set pump on the foundation over the anchor bolts, but do not bolt down. Raise the pump unit 1" and level carefully for grouting by driving wedges under the pedestal. For leveling pump, place level on face of pump coupling half and face of pump discharge flange.

GROUTING THE PUMP: After pump is raised and leveled, pour a good quality grout under the pedestal and allow it to set; to prevent distortion, do not tighten down the nuts on the foundation bolts until the grout has properly hardened. When the pump is correctly installed, bring the suction and discharge piping to the pump connections; never force pump connections to install piping.

It is important that grouting underneath the base of a horizontal pump be carried out by pouring concrete into the large opening in the center of all pump bases, otherwise the procedure is similar to the description given above for the vertical units.

PIPING: To obtain a well designed pipe system, note the following piping recommendations:

1. Make pipe connections to the pump so that there is no pipe strain upon the unit. Support the weight of piping on suitable concrete piers or on supporting pipes with flanged feet.
2. When running a pipe through a concrete wall, leave a generous, grooved, square hole and grout the pipe in only after the pump unit is set and all final connections have been made.
3. Suction and discharge pipe lines should not be smaller in size than the connections on the pump; it is preferred that they should be at least a pipe size or two larger.
4. In the suction pipe line include a gate valve near the pump, and employ flexible pipe connections (see Fig. 3) for ease in making final connections and to prevent pipe strain due to settling of concrete.

   NOTE: The gate valve's weight might produce a strain on the suction piping and therefore, the suction piping should be supported on concrete piers, support pipes or hangers.
5. On the discharge line include a suitable swing check valve and a gate valve near the pump.

   NOTE: It is common practice, where horizontal space

does not permit, to mount swing check valve in a vertical position.

6. On vertical units install a drain pipe from the connection at packing box drip pocket to the sump line. To be readily cleanable, include a union in the line near the pump; also, tees with plugs should be used rather than elbows.

TO INSTALL UNIVERSAL JOINT SHAFTING: When installing extended shafting with universal joints, always place the "A" section with the slip spline end at the bottom. When more than one section is provided, the order of connection is evident from the connection fittings provided and from the installation drawing; the opposite shafting ends are fixed to the pump and motor shafts by means of keyed couplings held with set screws. Connect the shaft sections and align them approximately, fixing the shafting temporarily but firmly to the bearing support beams by clamping the intermediate guide or steady bearings to the beams with a sufficient number of "C" clamps. Caution! One side of the intermediate bearing housing has a drilled drainage hole. Be sure when installing, that this bearing is installed properly to provide drainage of top side of bearing. When all sections are joined, align each section separately with a level as accurately as possible, starting from the bottom and using metal shims behind the steady bearings where necessary. Although universal joints will compensate for considerable misalignment, for maximum efficiency, shafting manufacture recommends an offset of $1/8$"-$3/16$" per foot of shaft length.

In making final adjustments, the slip spline should be spaced as near as possible to the midpoint of its slip or end play, there must be enough slip to separate the flexible shafting from the pump coupling. Steady bearings are of the self-aligning type, perfect leveling of the bearings is not necessary; and since steady bearings are not provided to stand end thrust, the shafting weight should be taken by the motor bearings. When alignment is completed, drill holes in the bearings supports and bolt bearings in place. Remove "C" clamps.

SETTING AND ALIGNING THE MOTOR ASSEMBLY: (See Fig. 1.) The motor is mounted on a tripod. Set the tripod over the floor hole; position the universal shafting to the motor coupling, set and shim the motor assembly so that it is level and the shafting alignment below is maintained.

IMPORTANT: The motor must support the weight of the line shafting. The motor coupling half should be installed in a fixed position to carry the weight of the line shaft (see page 1). You will note that the coupling half has been provided with two set screws located at 180° apart. One set screw is directly over the keyway and locks the key in place. The other set screw MUST seat itself firmly into the motor shaft.

CONTROLS: Different kinds of motors may be used depending upon size or service of a pump and the electrical currents available at the pump location. Since motors may be direct current or single or three phase alternating current, they may vary considerably according to the system of winding employed, and are specific as to current requirements; a discussion of controls covering all types would be lengthy and is therefore not attempted.

WIRING: Connect the electric service to the controls and make inter-control electrical connections according to wiring instructions accompanying the switches and motor, using conduit and wire sizes as required by local power companies. Be certain current characteristics of voltage and frequency indicated on the motor nameplate are the same as service provided.

ROTATION: Check rotation of the motor, see that it turns in the direction indicated by the rotation arrow on pump casing; if incorrect refer to motor manufacturer's instructions for reversing.

FUSE RECOMMENDATIONS: Be certain fuses are installed and comply in size with the National Electric Code and Local Code recommendations.

LUBRICATION

MOTOR LUBRICATION: Lubricate the motor according to motor manufacturer's instruction, avoiding over lubrication.

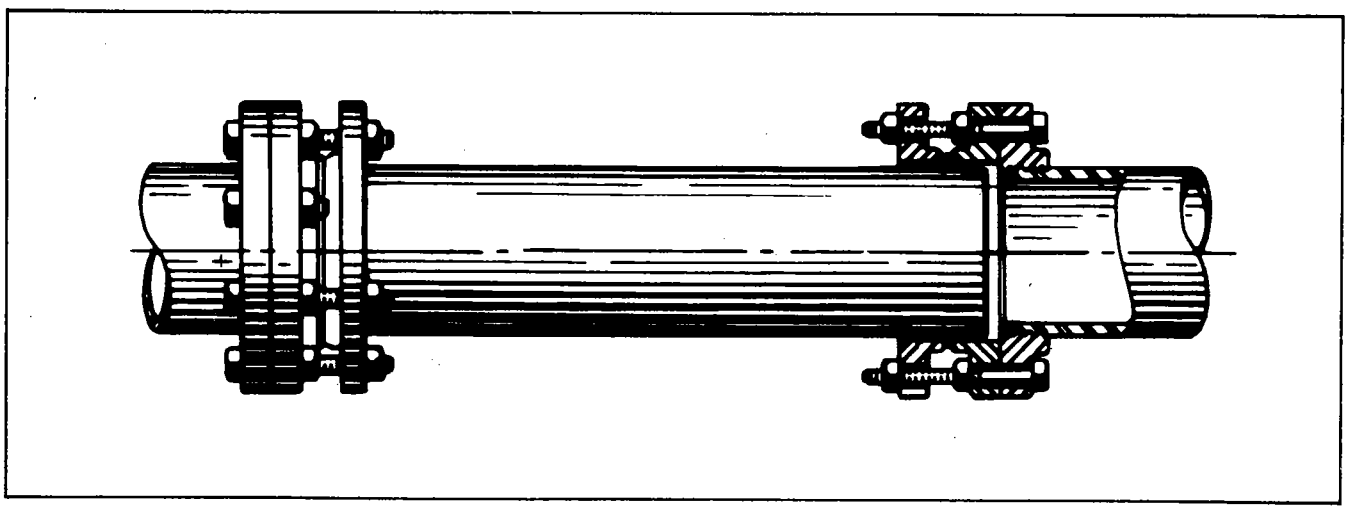


Figure 3—Flexible Pipe Connection

PUMP LUBRICATION: Chicago Pump Dry Pit Pumps are equipped with ball or roller type bearings. The bearings are packed with grease at the factory and will require additional grease approximately once every fifteen hundred hours depending on the severity of operation. When adding grease always use a good grade such as those listed below.

CAUTION—DO NOT OVER-GREASE

A ball bearing requires only a few ounces of grease a year. For most efficient operation bearings should be filled to fifty percent of their capacity.

Under no circumstances should a bearing be greased until the grease oozes out of the bearing housing. Excess grease does not in any way lubricate the bearing and acts as a dirt catcher. The grease in an overgreased bearing has a churning action which tends to overheat the bearing. In some cases, these bearings may overheat to the point where the temper is drawn from the balls rendering them soft and causing bearing failure. A bearing under normal conditions will require from 1/2 ounce to 1 ounce of grease each lubrication period.

CAUTION: Use only grease that is specified for use with ball bearings. Acids contained in other lubricants will ruin the bearings.

RECOMMENDED LUBRICANTS

Amoco	Super Permalube
Arco	Litholine E2
Mobil	Mobilux #2
Phillips	Phillips IB & RB #2
Shell	Alvania EP2
Texaco	Regal AFB2
Union	UNOBA E2

In cases where abnormal conditions exist such as very high temperatures, it is advisable to consult a lubrication engineer to determine the proper lubricant to use. If this is not practical, write to Yeomans Chicago Corporation stating your conditions, and we will procure the information for you.

PACKING BOXES, PACKING AND PACKING SEALS:

1. **Packing Boxes:** Chicago centrifugal pumps employ gland-adjusted packing boxes for sealing around shafts. These require the use of soft, water pump packing made of long fiber yarn, loosely woven with twisted core and braided jacket, thoroughly lubricated and graphite impregnated under vacuum. Packing boxes are packed before shipment.

2. **Water Seals:** On pumps handling liquids with solids, a water seal is used principally to flush the packing and prevent entrance of solids or grit which would score the shaft or shaft sleeve. It also serves to cool and lubricate packing, and in the case of suction lift applications it is required as a seal against entrance of air. Non-Clog pumps are furnished with water seals for external or outside connection to a clear water supply having a pressure approximately 3 to 10 lbs. (7 ft. to 23 ft. head) greater than the pump discharge pressure. If the available pressure is too high (20 pounds or more above the operating head of pump) or if gland leakage is excessive a pressure reducing valve should be used. If available pressure is below operating head of pump, or when required, it is often necessary to employ a small water seal pumping unit (see tag attached to water seal connection). The most economical consumption of sealing water is obtained by installing a solenoid valve in the water seal line, wired with the pump circuit to open automatically when the pump operates.

   NOTE: As a precaution against contamination, state Departments of Health do not permit connecting the water seal line of a sewage pump directly to the city supply.

3. **Grease Seals:** When water is not available, a grease seal must be used. For grease seals to be effective, a constant pressure of waterproof grease must be maintained on the packing, for which purpose a spring loaded grease cup (see Fig. 4) is usually employed. This spring loaded grease cup is designed for controlled lubrication. The cup has a knurled adjusting screw at the top that permits the operator to decrease or increase the tension on the spring and thus assures a precise regulation of a constant lubricant flow.

   The reservoir of the cup is filled with lubricant through the Alemite fitting located at the cup base. As the lubricant is forced into the reservoir, the cup leather and the pressure spring are elevated until the spring stops at the safety shoulders where the top of the cup slopes inward. The pressure is then extended downward through the cup channel, flushing the packing and refilling it with fresh, clean lubricant. The cup is fitted with a special type tapered valve stem which moves in a tapered delivery channel. As the spring expands by its own tension, the valve stem descends. This combination of tapered stem and tapered channel automatically compensates for the decreasing tension of the spring and an exact uniform pressure of lubricant is effected.

   When the spring loaded grease cup is used for this purpose, the cup must be kept loaded at all times with special grease, Arco Litholine Multipurpose Grease or equal. It is imperative that grease be forced through the packing at a rate of at least 1 oz. per day. For high head pumps (over 100 ft. head) more grease is required.

   An alternate method of providing grease to the packing is by a Z & F lubricator (Fig. 4). The Z & F lubricator is factory assembled to the pump and ready to be placed into operation.

   To put the unit into operation, first open shut-off cock and adjusting thumb screw and fill the cylinder with water. Close the adjusting thumb screw and fill the cylinder with grease using an ordinary grease gun applied to the Alemite fitting on the grease seal unit. A sample of the grade and type of grease recommended to be used in this unit is included in a 1 lb. friction top can. When the cylinder has been filled with grease, open the adjusting screw. It is recommended that the unit be observed during the first few days of operation to determine the proper rate of flow of grease and that necessary adjustments be made using the adjusting screw on the unit. Proper greasing requirements should consume approximately ¼" of grease in cylinder per day. Slightly more may be required on large high speed units or to prevent excessive gland leakage.

   If the high pressure tubing should become clogged, close the shut-off cock, and disconnect the end of the high pressure tubing from the shut-off cock. Close adjusting thumb screw and fill the cylinder with grease, forcing water and any clogged solids out through the open end of the disconnected tubing. With the tubing thus clear, reconnect tubing to shut-off cock and put the unit back into operation.

   CAUTION: It is highly important that the correct specifica-

tions of lubricant is followed for the satisfactory performance, Shell Alvania EPRO 71030 grease or equal is recommended.

4. **Gland Adjustment:** Packing boxes should be watched for leakage of sealing water. A "weep" from the packing boxes while pump is running is necessary to keep packing cool and in good condition. If serious leakage or no leakage is noted, the packing gland should be tightened or loosened as required by turning the packing gland nuts evenly a few turns only. Do not draw packing glands too tight. After adjusting packing glands, turn the shaft by hand to be certain it rotates freely. If serious leakage will not stop, packing is probably burnt, worn, dried out or hard and should be replaced. (Remember that when replacing packing, replace all of the packing both above and below the lantern ring.) All packing should be renewed periodically to prevent scoring of shaft or shaft sleeve; see paragraph on "Packing Boxes, Packing, and Packing Seals" on Page 4.

   NOTE: If upon removing the old packing, the shaft or shaft sleeve is found to be scored, then it will become necessary to replace the shaft or shaft sleeve before installing new packing.

5. **Mechanical Seal:** (When furnished) For optimum life of the mechanical seals, the use of water lubrication is required. The water enters the seal chamber from the power frame end. The double seal housing should be vented using the petcock prior to starting the pump. This will insure that no air is trapped within the mechanical seal chamber. CAUTION: Never run the mechanical seal dry as damage will result.

   The water used for lubrication must be filtered prior to entering the mechanical seal housing. Therefore, the water drained through the petcock should be clean. If sand is present in this water, the filter insert requires replacement. If the water from the petcock is dark in color, check the seal faces and replace entire seal if one or more seal faces are damaged.

   As the seal is a precision made product, care must be taken in handling. The carbon and ceramic parts should be safeguarded from drops or severe blows. Particular care should be taken to avoid scratching the capped faces on the washer and floating seal.

STEADY OR INTERMEDIATE GUIDE BEARINGS: (See Fig. 1) Steady bearings are provided with Alemite fittings for grease lubrication, and should be lubricated with grease having the same consistency as the lubricant recommended for the pump. Steady bearings ordinarily need greasing every 3 to 6 months.

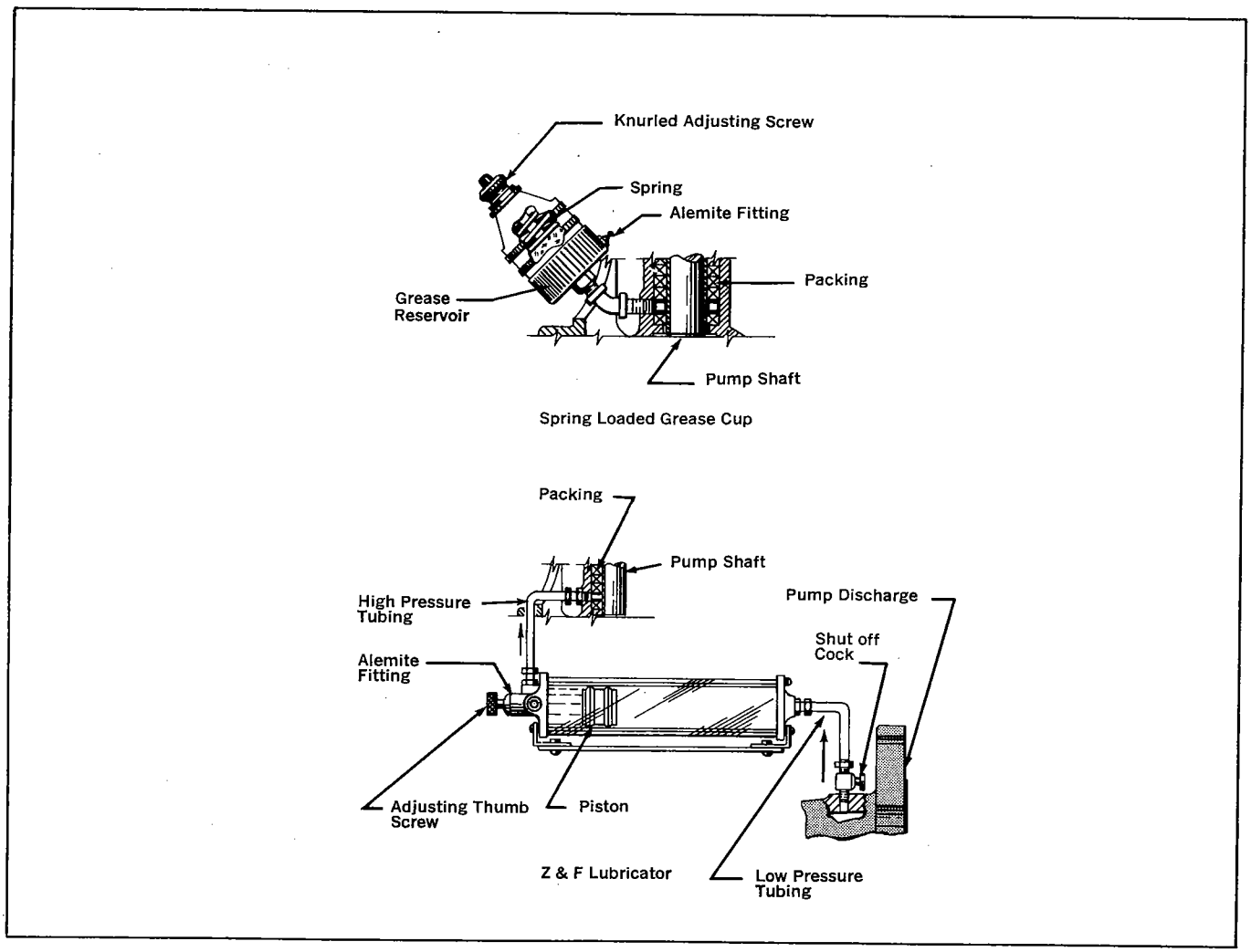


Figure 4—Grease Seals

UNIVERSAL JOINT COUPLINGS: (See Fig. 1) Universal joint bearings and slip splines are provided with Alemite fittings for grease lubrication, and may be lubricated with the same grease recommended for steady bearings. They need greasing only rarely, once a year usually being sufficient.

CAUTION: Pull motor disconnect before lubricating.

OPERATION

CHECK THE FOLLOWING ITEMS BEFORE STARTING UNIT:

1. Be certain all equipment has been lubricated as per lubrication instructions.
2. Turn the shaft by hand to see that it rotates freely. If it sticks or turns with difficulty, refer to "Repair" section of these instructions.
3. See that current characteristics of voltage and frequency on motor nameplate coincide with service provided.
4. See that all thermal units are "set" and the selector switch (when used) is on "off" position.
5. See that gate valves on the suction and discharge lines are open.
6. Vent air from the pump volute.

Starting: To start the pump, engage the motor disconnect switch and set the selector switch (if used) to the automatic position. The pump will not operate unless the float switch is closed. If a selector switch is used, the pump may be run independently of the float control by turning it to the "Hand" or manual position.

AFTER STARTING THE UNIT:

1. See that shaft rotates in the direction indicated by the rotation arrow on the pump casing and that pump is delivering water.
2. See that all pipe connections are tight and the check valves are functioning.
3. Note operation of automatic control mechanism, observing a complete start-stop cycle; see that the float switch functions properly as wet basin fills and is emptied by the pump. Check high-low water level adjustment.
4. Observe the extended line shafting, see that incorrect installation has not resulted in its vibrating or "whipping."
5. See that there is the desired water "weepage" from stuffing box (refer to paragraph under "Maintenance" for details).
6. See that bearings (6) (10) do not overheat due either to over or under lubrication.
7. Observe operation of pump closely for the first day and at regular intervals for two weeks. A new machine is frequently stiff or initial float control regulation may be incorrect; therefore, the unit should be watched to note performance. (See Periodic Inspection.)

MAINTENANCE:

1. **Lubrication**—At regular intervals, lubricate motor, pump, steady bearings and universal shaft joints as per lubrication instructions.
2. **Grease Seal**—To be effective, grease seals must maintain constant and sufficient grease pressure upon the packing.
3. **General Cleanliness**—Keep the interior and exterior of motor and controls free from moisture, oil and dirt. When necessary, blow out their interiors using a bellows. When switch contacts show signs of wear or pitting, they should be replaced.
4. **Packing Box**—Occasionally observe the packing glands (49) for leakage. A slight leakage of seal water, say 60 drops per minute (large pumps may require more), from the packing box when pump is running, acts as a lubricant and also keeps packing (51) cool and in good condition. If serious leakage is noted, tighten the two gland nuts (47) evenly a few turns only; do not draw glands too tight. After adjusting packing glands, turn the shaft by hand to be certain it rotates freely. If serious leakage will not stop, refer to "Repair" instructions for packing renewal.

PERIODIC INSPECTION: To insure the best operation of the pump, make a systematic inspection at least once a week:

1. See that automatic float controls responds to rising water level in the basin.
2. See that unit starts when the float switch makes contact and that pump shuts off at the low water level.
3. See that motor comes up to speed quickly and maintains constant rotation rate. If motor is brush type, see that it does not spark profusely while running or starting.

Shutting Down: When shutting down the pump for an extended period, the motor disconnect switch should be opened, all valves on suction, discharge and packing lubrication lines shut tight, and the pump completely drained of water by removal of vent and drain plugs until water has run out. This protects pump against sedimentation and freezing. It is also a good policy at this time to inspect the pump and bearings thoroughly so that all necessary servicing may be done during the inactive period. Relubricate bearings in power frame per instructions. Rotate shaft every two weeks.

LOCATING TROUBLE

IF PUMP FAILS TO OPERATE:

1. Check fuses and thermal overload units, see if fuse is blown, thermal overload tripped or loose. Before replacing a blown fuse, be certain cause for blowing is determined and corrected. Before resetting a tripped thermal unit, allow it to cool.
2. Be certain the shaft rotates, try turning by hand. If it will not turn, or is unusually stiff, see that the pump is not clogged; that motor, pump or steady bearings are not worn, dry or jammed by corrosion; that the shaft is properly aligned; and that packing glands (49) are not too tightly or unevenly adjusted.
3. See that switch contacts are not corroded, shorted or terminal connections broken anywhere in the circuit.
4. See if the automatic float control mechanism is functioning.
5. See if motor is shorted or burnt, or if brushes (when present) are stuck or worn.
6. See that wiring hook-up and service provided are correct and that all switches are set for operation.

IF NO WATER IS DELIVERED:

CHECK:

1. If the water level is so low that pump is not primed.
2. Pump to see if it is air bound by enting casing at plug (22) or (53).
3. Whether the gate valve in discharge line is shut or check valve is jammed.
4. Whether the suction pipe or inlet is clogged or gate valve is closed.
5. TDH, see if beyond pump rating.
6. If pump rotation is reversed.
7. If the impeller is badly worn.
8. If the motor speed is too slow.

IF NOT ENOUGH WATER IS DELIVERED:

CHECK:

1. If there are air leaks in the suction line or stuffing box.
2. If motor speed is too slow.
3. If the TDH is higher than anticipated.
4. If the impeller is worn or plugged.

IF FUSES BLOW OUT:

1. Check fuse rating used.
2. Turn shaft by hand to see that it rotates freely. If it sticks or turns with difficulty, see paragraph 2 under LOCATING TROUBLE.
3. Check wiring and controls. Test for loose connections.
4. See that controls are not worn or arcing.
5. See that motor is not grounded or partially burnt out.
6. Check brushes (when present) for sparking while running or starting, or for sticking.
7. Observe if motor is overheating from overload or lack of proper ventilation.
8. See if fuse location is too hot.

REPAIRS

IF PUMP REQUIRES CLEANING. Hand holes are provided both in the discharge casing (58) and in the suction elbow (31). By closing suction and discharge gate valves, draining the pump and removing the hand hole plates, (57 and 33), easy access to the pump interior is possible.

TO DISMANTLE THE PUMP:

1. Open the electric circuit, **LOCK** disconnect switch in "OFF" position, close all gate valves on suction, discharge and water seal lines. Drain the pump of water by removing the discharge casing drain plug (22).
2. Disconnect the bottom end of the lowest shaft section at flange or yoke (See Fig. 1). The bottom or "A" section of universal joint shafting is easily swung aside to permit pump removal. Where more than one shaft section is used, the remaining sections need not be disturbed.
3. Disconnect water seal and drip pocket lines from the pump.
4. When extension grease lines are present, disconnect lines serving the pump.
5. Loosen gland nuts (47) and remove packing gland (49).
6. Removing casing cover nuts (18) separating discharge casing (58) from pump assembly.
7. Hoist or lift upper pump assembly off of discharge casing.
8. Remove impeller screw (23) and washer (24). If impeller cannot be removed easily, warm the impeller near the shaft with a torch. Pry the impeller carefully and evenly with two large screwdrivers on opposite sides of the backplate. Care should be exercised in prying so as not to bend the shaft. Though prying without heating is possible, it is recommended that heat be applied to prevent enlarging the impeller bore. Remove the impeller key (21).
9. Remove casing cover (55) from upper pump assembly and pick out packing rings (51) and water seal ring (15) carefully noting the number of packing rings used above and below the water seal ring.
10. Remove the pump coupling. Retain coupling key (1). Release screws (40), remove the bearing cap (37).
11. Pry the locking ear of lock washer (39) from the slot in ball bearing nut (38) and remove lock washer (39) from the shaft.
12. Using spanner wrench or hammer and drift, unscrew and remove bearing assembly consisting of bearing adapter (5), ball bearing (6), lock washer (41) and nut (7) from shaft by rotating in a counter-clockwise direction.
13. Remove lock washer (41) and ball bearing nut (7) from bearing assembly and slide off thrust bearing (6). IMPORTANT: Keep bearing (6) free from dirt and grit.
14. Slide off deflector ring (11) from shaft.
15. On the 5556, 5656 and 5856 pumps (Figs. 6 & 8) unscrew cap screws (46) and remove the lower bearing plate (45). Bearing (10) may be removed from shaft after shaft has been pulled from housing.
16. Pull shaft (9) out of the bearing housing (8) from the impeller end.
17. On the LLC4 and LMC4 pumps (Figs. 5 & 7) the lower bearing (10) may be removed (be sure to mark its location on the shaft before removal) by releasing the set screw in eccentric collar (67). Turn collar until it releases from the bearing. To remove bearing, lightly tap on inner race of bearing.
18. Clean all parts before replacing.

TO ASSEMBLE THE PUMP: To rebuild the pump reverse the above procedure, but observe the following precautions:

1. File off all burrs made on machined surfaces.
2. Grease all paper gaskets and use only .012 inch Manila paper.
3. When felt washer (43) shows signs of wear, replace it.
4. Be sure to set on the lower bearing retaining plate (45, when used), deflector ring (11), and water seal ring (15) before mounting the casing cover.
5. The proper clearance between impeller and suction casing face is .012" to .014". Clearance adjustment is made by the micrometer adjustment on the bearing adapter (5). Unscrewing in a counter-clockwise direction reduces clearance, while clockwise rotation increases clearance.
6. When wearing rings are used the proper clearance between them is .011".
7. Replace the **packing** (51). Use only the proper size soft, square, braided graphite impregnated packing cut into individual rings; dip them in oil before inserting. Recommended type of packing: Anchor #318 or equivalent. Be sure the water seal and packing rings are replaced in the order they were originally found so that the water seal ring (15) is aligned with the water or grease seal inlet (16). The spliced ends of the packing rings should be staggered to insure a perfect seal.

PARTS LIST

1. Coupling key
3. Bearing cap half
4. Alemite fitting
5. Bearing adapter
6. Ball bearing
7. Ball bearing lock nut
8. Bearing housing
9. Shaft
10. Lower bearing
11. Deflector ring
12. Gland bolt washer
14. Gland bolt
15. Water seal ring
16. Water seal connection
17. Nut
18. Nut
19. Stud
20. Stud
21. Key
22. Pipe plug
23. Impeller screw or nut
24. Impeller washer
25. Impeller
26. Nut
27. Stud
28. Nut
29. Bolt
30. Pedestal
31. Suction ell
32. Gasket
33. Hand hole cover
34. Yoke
35. Yoke screw
37. Bearing cap half
38. Ball bearing nut
39. Lock washer
40. Cap screw
41. Lock washer
42. Gland bolt
43. Felt washer
44. Pipe plug
45. Bearing cap
46. Cap screw
47. Nut
48. Nut
49. Packing gland
50. Nut
51. Packing
52. Shaft sleeve
53. Vent connection
54. Gauge connection
55. Casing cover
56. Gasket
57. Handhole cover
58. Discharge casing
59. Gasket handhole cover
60. Cap screw
61. Gasket
62. Suction casing
63. Gasket
64. Pipe plug
65. Gauge connection
66. Cap screw
67. Ball bearing locking collar
71. Casing wearing ring (not shown)
72. Impeller wearing ring (not shown)
73. Motor coupling half
74. Coupling set screw
75. Coupling disc
76. Pump coupling half
77. Motor pedestal

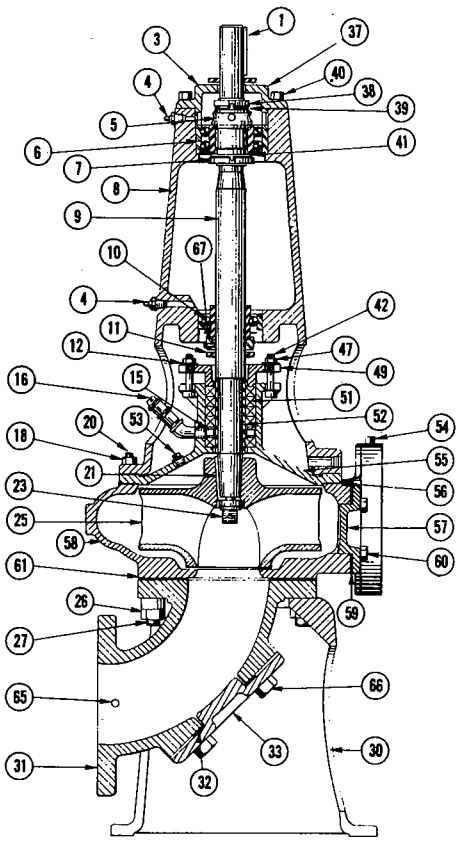


Fig. 5—Cross section of the LM3, LMC4, LL3 and LLC4, Styles VOS and VPM non-clog pumps.

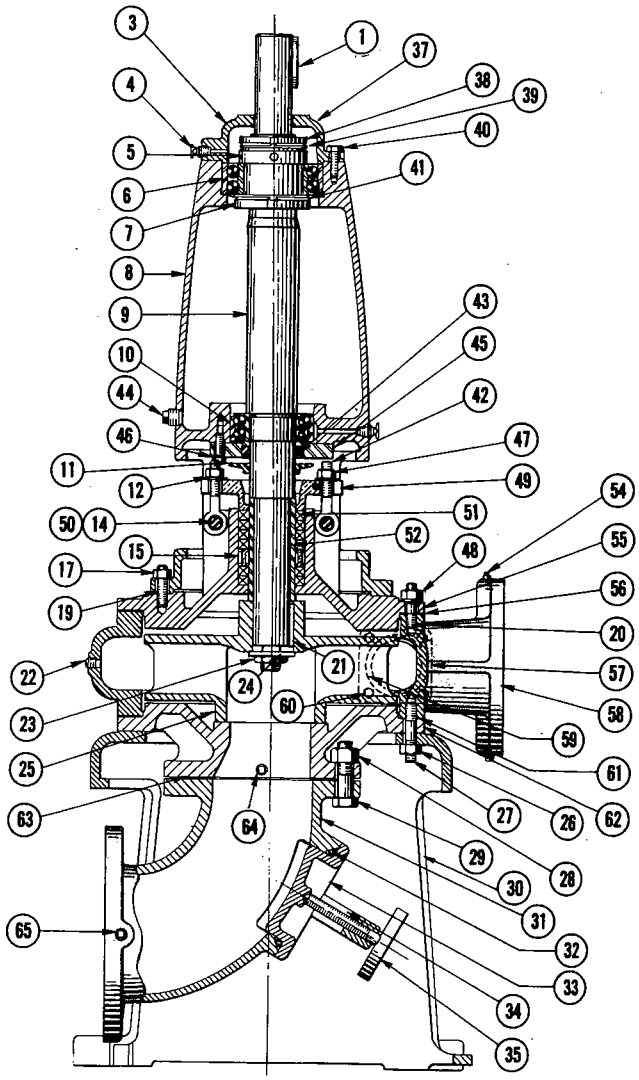


Fig. 6—Cross section of the 5556 and 5656 Styles VOS and VPM non-clog pumps.

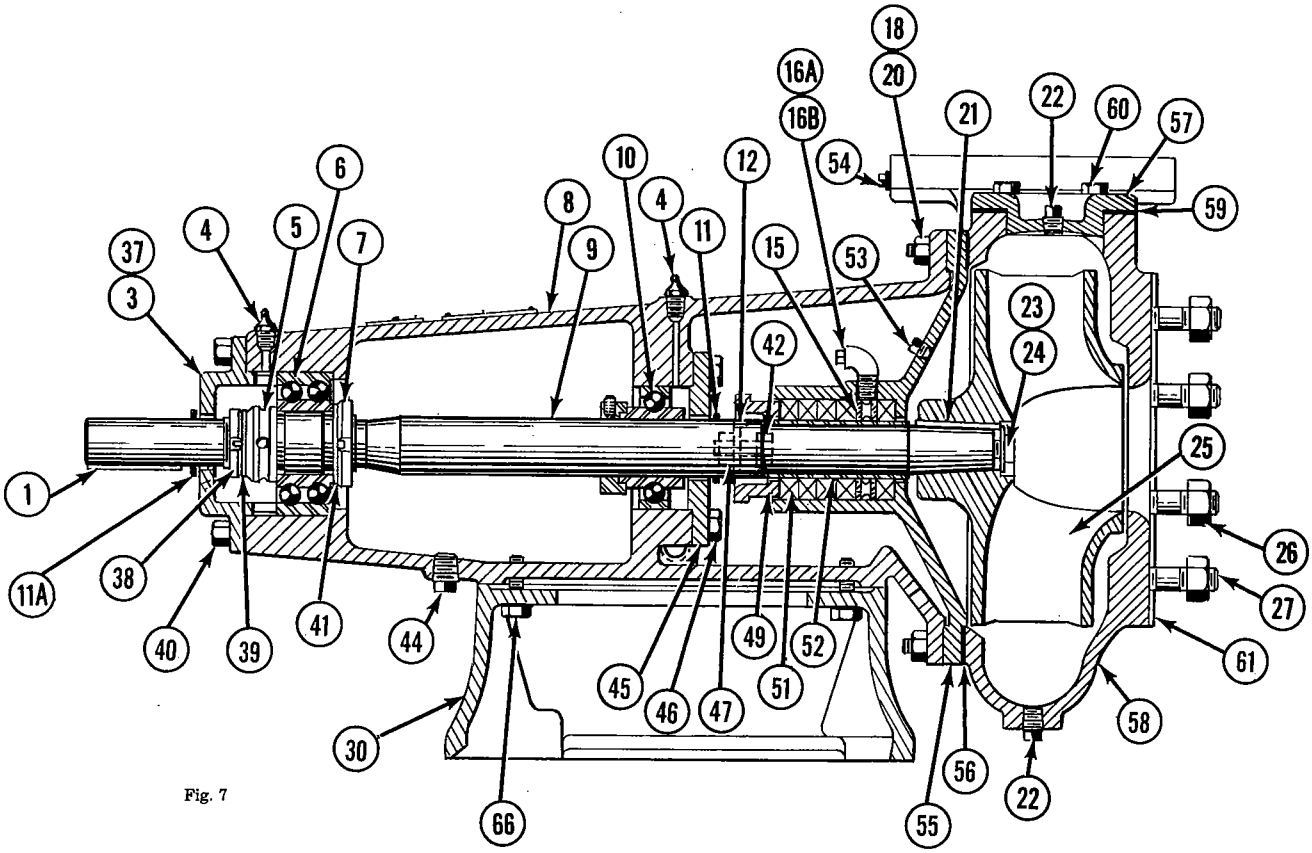


Fig. 7

HBB LM3, LMC4, LL3, LLC4

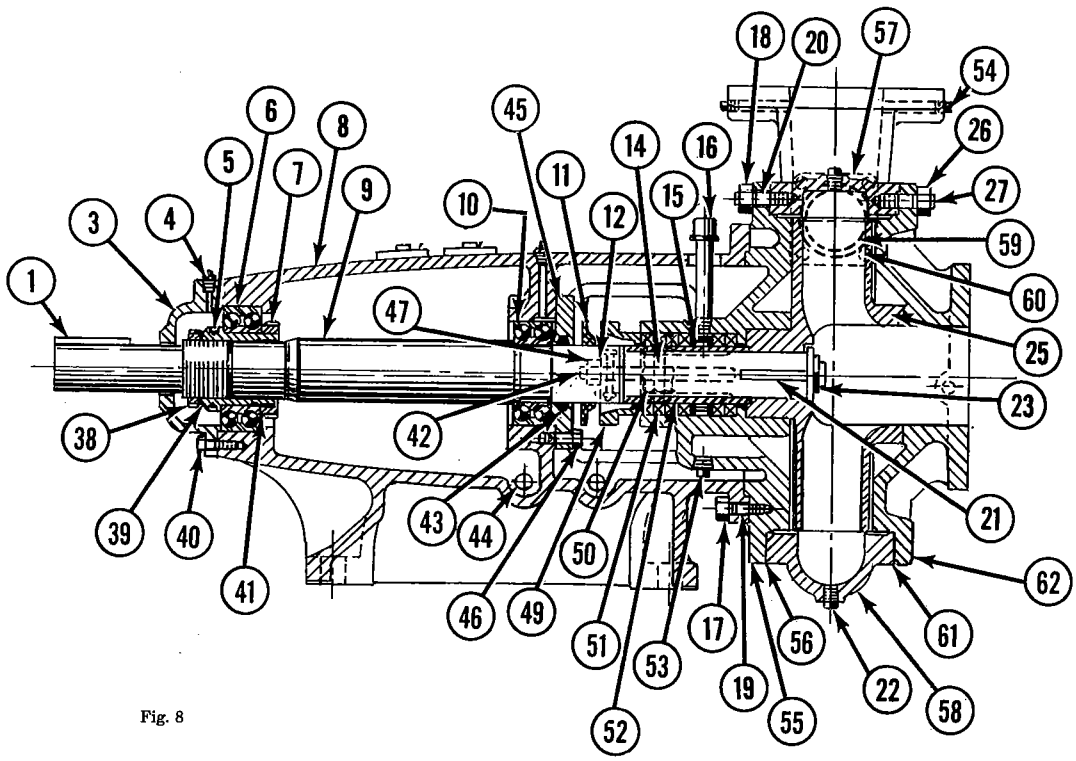


Fig. 8

HBB 5856

Vertical Pedestal-Mounted Pumps

GENERAL DIRECTIONS: Vertical pedestal-mounted non-clog pumps have the same general design as do vertical open-shaft pumps, with the exception that they employ machined pedestals to support the motors and are connected to motors through flexible couplings. The preceding general facts concerning vertical open shaft pumps therefore apply as well to these units.

PARTS LIST: Figures 5 and 6 with related parts list for open-shaft pumps on page 8 apply to pedestal-mounted pumps. Additional items are listed below.

FLOODING: When pedestal-mounted pumps are installed in basins, suitable means for manual, or preferably automatic, drainage should be provided.

MOUNTING THE MOTOR AND SETTING THE COUPLING: The flexible coupling has already been regulated for clearance and rarely needs further adjustment. Coupling buffers are easily put on at the time motors are mounted. The motor and motor pedestal or adaptor ring are provided with self-aligning tongue-and-groove surfaces. Clean them before mounting the motor. See that motor surface fits snugly on the pedestal, then fasten down with motor bolts.

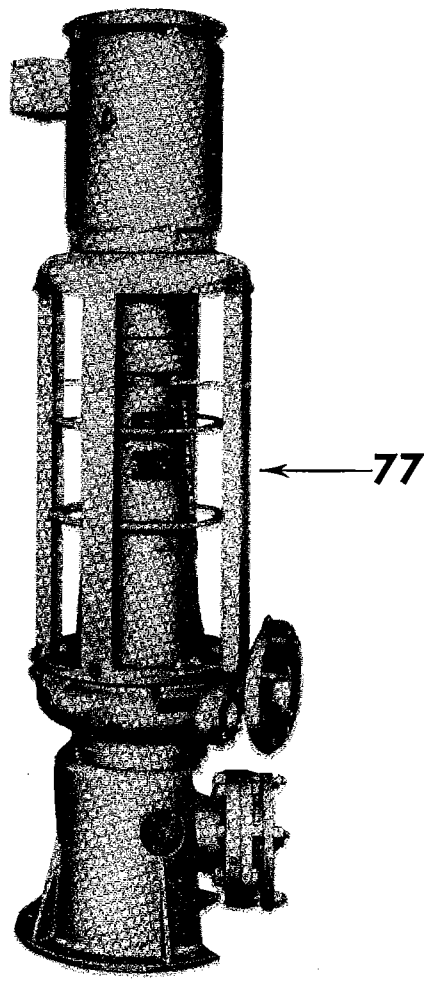
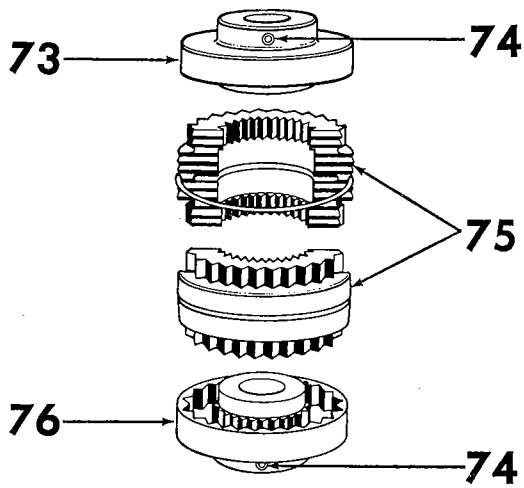


Fig. 9
Pedestal Mounted Pump



Disc Type Flexible Coupling

73. Motor coupling half
74. Coupling set screw
75. Coupling disc
76. Pump coupling half
77. Motor pedestal

ORDERS FOR REPLACEMENT AND SPARE PARTS: Always furnish the following information when ordering parts:
1. Unit Serial Number from Nameplate.
2. Description from Parts List.
3. Item Number from Cross Sections.

Send order to authorized Chicago Pump Representative in your area, or to:

Glenn Miner
Sales Manager
Aftermarket & Customer Service

Yeomans Chicago Corporation
3905 Enterprise Court
P.O. Box 6620
Aurora, IL 60598-0620

gminer@yccpump.net
www.yccpump.com
630-499-6933
Fax 630-236-5511

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