

Installation & Maintenance Manual



READ THIS ENTIRE INSTRUCTION MANUAL THOROUGHLY BEFORE SERVICING PUMP.

IMPORTANT

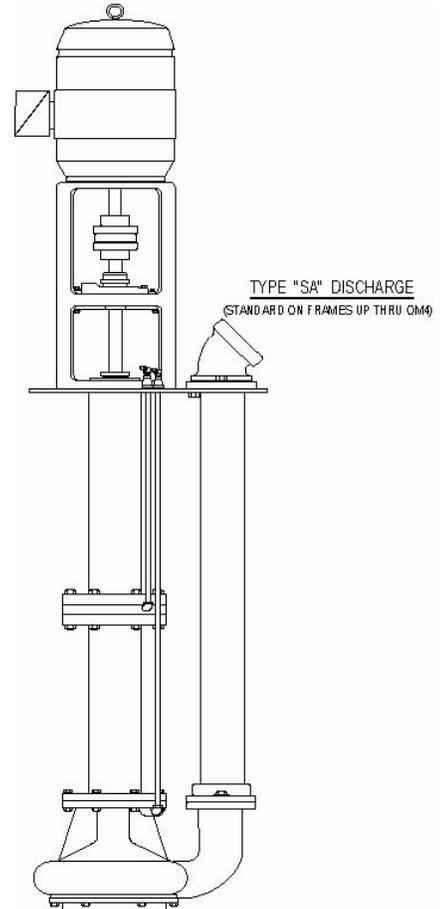
TYPE VCS

Enclosed Shaft Sump and Sewage Pumps

Frames: NS3 - NSC4 -LL3 - LLC4; LM3,
LMC4.0M4 - OMC5



Fig 1



Chicago Pump Company

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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.

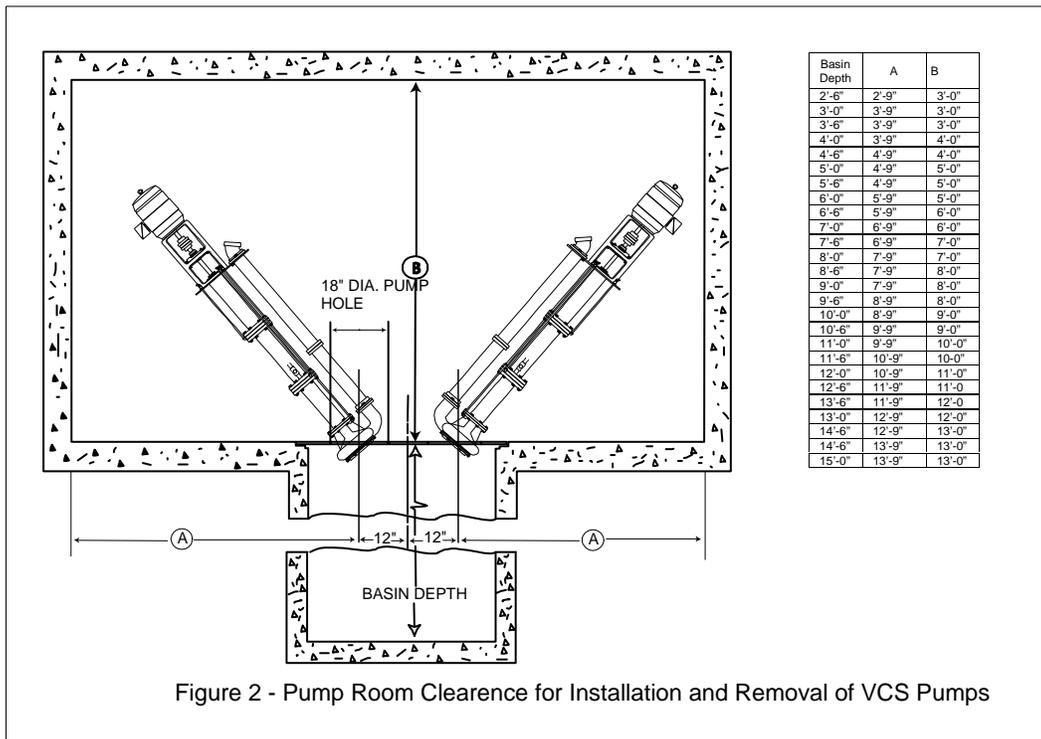
INSTALLATION

LOCATION:

The unit should be installed in a clean, dry, well ventilated place where it will be accessible for inspection and maintenance. The unit must be placed so that the liquid to be pumped flows into the receiver by gravity. When installing the receiver take care that the floor plate is not set below floor level where it can pocket water.

BASIN COVER:

A basin cover fits over the basin and may be permanently set into concrete flush with the floor level, or may be bolted to a curbing or to the flange of a metal basin. A "Chicago" basin cover is provided with a manhole and an 18" opening for the pump which is large enough to allow installation or removal of the pump unit without disturbing the basin cover. Thus the basin cover is permanently set before installing the pump itself.



BEFORE INSTALLING PUMP:

The drainage system should be flushed and the basin cleaned to prevent damage to the pump due to presence of foreign matter occasionally found in new installations.

SETTING THE PUMP:

Refer to Fig. 2 to determine pump room clearance for installation and removal of pump.

To set the pump unit, lower the pump into the basin through the hole provided, easing the unit in slowly. Bolt the floor plate firmly to the basin cover with cap screws. Three holes are provided in the floor plate for bolting the unit down. When raw sewage is handled a plastic or filler should be used to seal around the floor plate.

MOUNTING THE MOTOR:

The motor base and motor pedestal 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.

PIPING:

The discharge piping should be as short and direct as possible. It should include a union, a horizontal swing check valve, and a gate valve, all near the pump, and should be run to a point above the sewer level so as to drop into the sewer from above. This arrangement permits easy removal of the unit for repairs or cleaning and prevents the backing up of sewer water through the discharge pipe. The discharge pipe should not be smaller in size than the discharge connection on the pump. Where runs are long, they should be at least one or two sizes larger. It is important that the pipe connections to the unit be so made that there is **no pipe strain upon the pump**. When the raw sewage is handled, the basin should be vented to the atmosphere.

SEALTRODE:

For installation, operation, maintenance and typical wiring diagrams of the SEALTRODE, sealed electrode pump controller refer to Instruction Manual 4710.80B.

INSTALLING and REGULATING THE STANDARD FLOT CONTROL ASSEMBLY:

Locate the float mechanism where provided for on the basin cover. This should be so arranged that the float is not disturbed by strong water currents and the moving element is able to rise and fall freely. The usual float switch equipment consists of a float rod, float, and guide pipe for float rod, switch stand assembly and float rod adjusting buttons. See Figure 6. First, bolt the switch stand assembly to the basin cover over the hole provided. Then insert the bare float rod per instructions, see Figure 6, page 7. Slip one button onto the rod, insert the top end of the rod up through the float switch lever eye and suspend the rod on the float switch lever by fixing the second button on the float rod above the lever. From below the basin cover screw on the float lock-nut and then the float, tightening them against each other as a jam lock.

To maintain prime and insure maximum efficiency of the pump, adjust the top button to open the float switch at a water level just above the top of the discharge casing. At this low water limit or shut-off point, the bottom button should be set on the float rod at least 1 in. above the seal housing if the maximum high-low water differential setting is desired. The operation levels for the pump should be so adjusted that it runs at reasonable intervals.

FLOAT CONTROL OPERATION:

The float control provides automatic operation of the pump unit. Automatic operation is controlled by float actuated switches. The float with its rod rises and falls with the liquid in the receiver.

On liquid level rise the float carries the float rod with its fixed buttons until the lower button trips the float switch, closing the electric circuit for starting the pump. As the liquid level drops, the upper float button trips the switch to the off position, opening the electric circuit and thereby stopping the pump.

PUMP ALTERATION FOR DUPLEX UNITS:

When the pumping unit consists of two pumps in a common receiver it is desirable to provide automatic alternation of the pumps. Alternate operation of the pumps insures equal wear and keeps both units in good running condition. A pump, as in the case of any other precision machine which stands idle for long periods of time, becomes stiff from either dried out or lack of lubrication. This may result in early pump failure.

Alternate control provides alternate operation of the two pumping units on successive cycles as long as a single pump can handle the pump load. However, under peak flow conditions, when the liquid level continues to rise more rapidly than can be handled by one pump, both units are automatically placed in operation.

When duplex pumps are SEALTRODE controlled Chicago Pump offers automatic electric alternation. Both types are housed and wired as an integral part of the Sealtrode control panel. For reference refer to Instruction Manual 4710.80B.

ALTERING TYPE FLOAT SWITCH:

The alternating type float switch consists of two 2 pole float switches in a single enclosure. The float switches are mechanically connected through linkage which causes alternate operation of the two pumping units. The switch is controlled by the float which actuates the switch on rise and fall of the liquid level. The action is such that the two switches are alternated on successive cycles. If the liquid level continues to rise with one pump in operation, the switch lever arm will continue to travel upward to a further position at which point the "second" switch will operate, starting the standby pump.

CONTROLS:

Different kinds of motors may be used depending upon size or service of a pump and the electrical current available at the pump location. Since motors may be either single or three phase, the current may vary considerably according to the system and voltage available. A discussion of controls covering all types would be lengthy and is therefore not attempted. In general, always provide a fused motor disconnect switch in the motor circuit. In addition a particular system of controls must be used according to motor characteristics and application, which will satisfy the following requirements:

1. Provides adequate protection against such exigencies as high inrush starting current, low voltage, high voltage, overheating and phase failure.
2. Complies with local electrical code requirements and local power company regulations.
3. Is adapted to the make of motor and application of the pump.
4. Is safe and convenient for operation or for shutting down to repair pump or motor.
5. Employs high quality equipment with sufficiently high ratings for any reasonable emergency.

FUSE RECOMMENDATIONS:

Be sure fuses are installed and comply in size with NEC or local code recommendations.

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 codes. It is usually advisable to include a short section of flexible conduit adjacent to the motor for convenience in pump or motor repair. **Be sure the current characteristics of voltage and frequency indicated on motor nameplate are the same as service provided.**

LUBRICATION

BALL THRUST BEARING:

The pump has a ball thrust bearing located approximately 10-in. above the pump floor plate. Lubricate separately through a zerk alemite fitting located in the bearing cap. Under normal operating conditions, this bearing should be lubricated approximately every 1500 operating hours.

Caution: Over-greasing is harmful to a ball bearing. Lubricate with a high grade of grease equal in consistency to any of the following: Arco-Litholine E.P. #2, Mobil-Mobilux #2 or ShellAlvania E.P. #2.

GUIDE BEARINGS:

Lubricate the guide bearings before starting the pump and at regular intervals thereafter, depending upon severity of service. Standard units are fitted with Zerk Alemite fittings (9), located on the floor plate (12) under the bearing pedestal (6), for high pressure grease lubrication. Use a clean, high-grade, light, Lithium-based grease with a consistency comparable to a No. 2 grease.

CUTLESS RUBBER CASING BEARING:

When the pump casing has been provided with a cutlass rubber bearing, the seal ring (20) is not furnished and should not be used.

The lower cap protector (48) in the hanger pipe (14) just above the discharge casing should be removed before installation.

To prolong shaft and bearing life, it is recommended that clear water be supplied to the lower cutlass bearing at a pressure of 3 to 5 pounds in excess of the pump discharge pressure. The opening left by the removal of the protector cap; acts as a flushing relief port for the liquid which lubricates the rubber bearing.

Pumps furnished with rubber casing bearings are provided with stainless steel shafts. Do not use a rubber casing bearing with steel shafting.

Rubber casing bearings are generally furnished when the liquid being pumped contains some sand or other similar abrasive materials.

FLOAT ROD SEAL HOUSING:

Saturate the felt washer (80) in the top of the seal housing with SAE #30 oil once a month.

OPERATION

CHECK THE FOLLOWING ITEMS BEFORE STARTING UNIT:

1. Turn shaft by hand and see that it rotates freely. Failure of shaft to turn freely may be caused by packing glands being too tightly drawn or by impeller binding in casing (refer to instruction on how to adjust impeller, page 5).
2. See that current characteristics of voltage and frequency on motor nameplate are the same as service provided.
3. Most motors are of the dual voltage type. Be sure motor leads are wired for the voltage used.
4. See that the proper fuses are installed.
5. See that switches are regulated for operation and that thermal units are "set."
6. Check motor rotation direction by momentary switch contact. Motor must rotate in same direction as arrow Indicated on the motor support.

Starting: To start the pump, close the discharge gate valve and the motor disconnect switch. The pump will not operate unless the water level control switch circuit is closed.

AFTER STARTING THE UNIT:

1. Slowly open the discharge gate valve.
2. Note operation of the control mechanism. Observe a complete start-stop cycle for freedom of float. See that float switch throws in and out properly as basin fills and is emptied by the pump. The operation of the unit should be absolutely automatic.
3. See that all pipe connections are tight.
4. See that the bearings of the motor do not overheat.
5. See that the pump and motor rotate in a clockwise direction when looking down on the motor.
6. Observe operation of pump closely for the first day and at regular intervals for ten days. A new machine is frequently stiff and tight, and therefore the unit should be watched to note performance.

LOCATING TROUBLE

FAILURE OF THE PUMP TO OPERATE MAY BE CAUSED BY:

1. A blown fuse or tripped or loose thermal unit.
2. Shaft binding or impeller blocked.
3. Switch contacts corroded, circuit shorted, or terminal connections broken somewhere in circuit.
4. Float control mechanism not functioning, or float waterlogged.
5. Wiring hook-up or service provided incorrect, or switches not "set" for operation.
6. Motor grounded or burnt, or brushes (when present) stuck or worn.
7. Service or phase failure.
8. Float rod buttons may be improperly adjusted or slipping on float controlled pumps.
9. For SEALTRODE controlled pumps refer to Sealtrode Manual 4710.808.

IF FUSES BLOW OR THERMAL UNITS TRIP

1. Fuse or thermal unit rating used incorrect.
2. Shaft stuck or not rotating freely.
3. Loose connection somewhere in circuit.
3. Controls worn or arcing.
4. Motor grounded or partially burnt out.
5. Brushes (when present) sparking profusely or sticking; commutator scored or brushes worn.
6. Motor overloading.
7. Fuse or thermal unit location too hot.
8. Short circuit in wiring.
9. Discharge head is lower than anticipated.

MAINTENANCE

CARE OF EQUIPMENT:

Life of a pump can be considerably prolonged by following a few simple rules:

1. Maintain proper adjustment of the packing plate; change packing when deteriorated.
2. Keep inside and outside of motor and controls free of moisture, oil and dirt. If necessary, blow out their interiors with a bellows. If switch contacts become corroded or pitted they should be smoothed and treated with vaseline or replaced. If motor is brush type, replace the brushes when necessary.
3. See that the unit does not stand idle for very long periods. If necessary, start pump manually to see that the shaft is free.

PERIODIC INSPECTION:

To insure the best operation of the unit, make a systematic inspection at least once a week, and check the following:

1. See that the unit starts when the float or SEALTRODE controller makes contact, and that the pump empties the sump.
2. See that the float or SEALTRODE controls respond properly to rising and falling water levels in the sump.
3. See that the motor comes quickly up to speed, maintains a constant rotation rate, and does not spark profusely in starting or running.
4. See that the operation of the unit is not excessively noisy.

PACKING RENEWAL:

Never add one or two rings of packing on top of old packing. If packing can no longer be taken up by the packing gland adjustment, a complete packing job is essential. Remove all old packing. When replacing packing, ring joints must be staggered. Packing should be drawn up snug only to seal. Rotate shaft occasionally when packing the pump to insure free movement.

Pump Model NS3 and NS4-packing consists of 2-1/8" thick gaskets Garlock Style #524 and 2-5/16" sq. packing Garlock Style #118.

Pump Models LM3, LMC4, LL3, LLC4, OM4 and OMC5-packing consists of 3-3/8" sq. packing Garlock Style #233. All packing is cut on one side to slip around the pump shaft.

REPAIRS

SERVICE:

For repair service or parts, contact your local Chicago Pump authorized representative.

Ordering parts: When ordering parts always furnish pump number stamped on the nameplate attached to unit. State item or part number with description as listed in parts list.

NOTE: For two section pump see instructions "To Dismantle Two Section Pump".

To dismantle pump, refer to cross section drawing Figure 5, page 7.

IMPORTANT

Read Instructions through carefully at least once before starting to dismantle pump.

Whenever attempting to repair or dismantle a pump, proper tools should be used. These should include a hammer, alien wrenches, screwdriver, set of standard wrenches, retaining ring pliers, several good blocks of hardwood and a piece of steel rod to drive out sleeve bearings.

As with any piece of machinery, cleanliness is of prime importance. It is imperative that no dirt or grit be allowed to get into the bearings or on the shaft.

Follow operations in order given below and refer to cross-section drawings for part number.

1. Remove motor from motor support (1).
2. Take off cap screws or nuts holding floor plate (12) and lift pump out of sump.
3. Remove cap screws (17) holding the discharge elbow (37) to the floor plate, and lift elbow and rubber jam washer (38) from discharge pipe.
4. A & B.
 - 4a. Mark pump column at intermediate bearing plate assemblies with a file or paint to facilitate the reassembly of the pump so that grease lines will be positioned properly. It is also important to mark the hanger pipes so that they may be reassembled in their original positions since they are not always the same length.
 - 4b. Remove grease lines (15). Take care to mark the lines to facilitate reassembly.
5. Remove pump half coupling (52) by loosening set screw and sliding it off shaft.
6. Unfasten and remove the suction plate (46).
7. To remove pump shaft (2) and impeller (23):
 - a. Bend prong of lockwasher (36) out of slot in locknut (3) and remove both parts.
 - b. Hold shaft securely and unscrew bearing collar (27).
 - c. Shaft and Impeller may now be removed by pulling out through the bottom of the pump.

Proceed with the disassembly as with any other pump.

8. To remove the impeller from the shaft, loosen the set screw in the impeller (if furnished), or remove impeller screw and slide the Impeller off the shaft.
9. To dismantle the remainder of the pump, remove nuts, bolts or cap screws from mating pieces and all the parts are easily dismantled.
10. Sleeve bearings in guide bearing (16) and pump bearing (43) are pressed into place. To replace, drive out old bearing and press in new bearing.

NOTE: When driving out old bearings, use a piece of rod or pipe with an outside diameter approximately the same as that of the bearing being replaced.

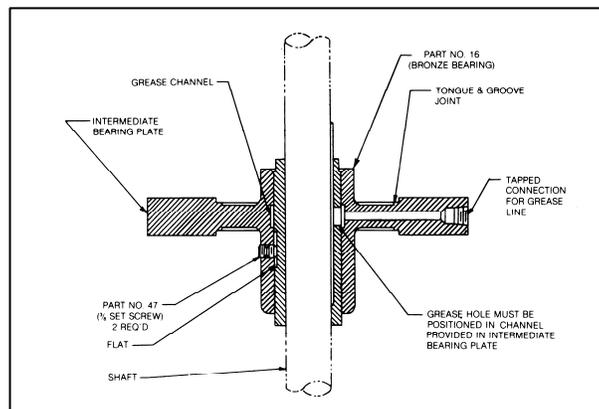


Figure 3 – Installation of Sleeve Bearings

REPLACING BALL THRUST BEARING

To replace ball thrust bearing (5) proceed as follows:

1. Remove motor.
2. Remove pump half coupling (52).
3. Bend prong of lockwasher (36) out of slot in locknut (3) and remove both parts.
4. Remove retaining ring (7).
5. Hold shaft securely and unscrew bearing collar (27).
6. Remove cap screws, nuts and washers (17) and remove complete bearing housing (6).
7. Bearing collar (27) and ball thrust bearing (5) may now be removed from the bearing housing.
NOTE: A slight tapping may be required to remove bearing from the housing.
8. Remove retaining ring (32). Bearing collar (27) and ball thrust bearing (5) may now be separated.
9. Before reassembling, clean all parts thoroughly.
10. To reassemble, place new ball thrust bearing with the metal seat side of bearing against the shoulder of the bearing collar and reverse the above disassembly operations.
NOTE: The bearing collar is pressed to the bearing first, and then both items are placed into the bearing housing. A slight tapping may be required to seat the bearing into the housing.

REASSEMBLY

Before reassembling any pump, all parts should be thoroughly cleaned. Take care to observe the following when assembling sleeve bearing.

- a. Thoroughly clean bore of bearing housing, avoid using abrasives.
- b. Remove all burrs from housing bore and the registers for tongue and groove connection with hanger pipe assemblies.
- c. Set guide bearing on shouldered arbor and place in housing bore perpendicular to support face.

Align flat on bearing with threaded set screw hole in bearing housing. See Figure 3. Blow air through grease line opening in bearing housing to insure that grease lubrication hole in bearing is positioned within the channel of the bearing housing. It may be necessary to adjust position of bearing within the housing to obtain free flow of air through the bearing grease hole. When bearing is properly positioned, lock bearing in housing using two 3/8" hollow head cup point set screws. Screws should be placed one on top of the other. Take care in locking so that bearing inside diameter will not be indented at the lock screw area. Check fit of bearing to shaft, be sure they do not bind. If it binds, check set screw, they may be drawn up too tight. (NOTE: On some pumps, the discharge casing bearing is not interchangeable with the intermediate sleeve bearings because of the location of grease lubrication hole in relation to the end of the bearing. In those cases, to determine correct casing bearing, examine replacement bearing and select the one which has its lubrication hole located the shortest distance from the end opposite the bearing shoulder.)

To reassemble pump, reverse the previous mentioned disassembly instructions. If there is more than one section, always start at the bottom most section and work upwards to the top section.

All parts with the exception of the discharge pipe have tongue and groove joints and are indexed for accurate assembly.

The final reassembling operation is to connect the discharge pipe, discharge elbow, rubber jam washers and flange to the pump making sure that the pump has not been distorted by uneven tightening of the discharge pipe parts. This can be checked by turning the shaft by hand while tightening the bolts and cap screw. Shaft should turn freely.

When assembly of unit is complete, rotate shaft by hand to see that it is free and that impeller does not rub. If impeller rubs, refer to instructions on how to adjust impeller.

Place the pump into the pit.

ADJUSTMENT OF IMPELLER

Impeller clearance should be checked periodically. When pumping clean liquid, the Impeller may not have to be adjusted but once every three months when pumping liquid containing sand, grit, fly ash, or other abrasive material, the pump may have to be adjusted every week.

When adjusting Impeller, the following procedure should be followed:

1. Bend prong on lockwasher (6) out of slot in locknut (3).
2. With spanner wrench, turn bearing collar (27) counterclockwise until impeller lightly touches suction plate (46). The shaft should be rotated during this adjustment in order to feel when Impeller begins to rub.
3. When impeller rubs, turn bearing collar (27) slowly clockwise until impeller is free. This method of adjustment will give approximate impeller clearance of .010" to .012" as illustrated in Figure 5.

TO DISMANTLE TWO SECTION PUMP

1. Refer to Figures 4 and 5.
2. Block pump up with a suitable support between discharge casing and basin floor to hold the lower section firm while dismantling it from the upper section.
3. Disconnect and remove all grease line piping to prevent damage when handling the pump. Be sure to mark grease line to facilitate their reassembly. Plug all grease line openings so that no dirt gets into lines and bearings.
Important: Mark all hanger pipe connections so that they may be reassembled in their original position in relation to their position to the grease line and location in the pump column.
4. Remove the two cap plug protectors (48) from the hanger pipe (14). The two cap protectors are located 180° apart and are at the point where the shaft is coupled together near the middle of the pump.
5. Turn the upper shaft (71) until the small end of the taper pin (72) in the shaft coupling (73) is in line with one of the holes in the hanger pipe.
6. Drive the taper pin from its small end until it can be removed from the opposite hole in the hanger pipe.
7. Refer to Figure 5. Remove cap screws (29) from the bearing cap (30). Do not disturb setting of lock nut (3) and bearing adapter (27).
8. Raise shaft approximately 4" so that the lower end of the upper shaft (7.1) of Figure 4 clears the top of the coupling (73). Block in place with a 4" piece of wood between the bottom of the bearing (5) and the bearing pedestal (6) to keep shaft in a raised position.
9. Unbolt the flange connection in the pump discharge line at point "B."
10. Remove lower section of discharge pipe (74) from flexible connector (44) Figure 5 by using a pulling twisting motion.
11. At hanger pipe connection "A" (which is the joint closest to the opening left by the removal of the cap protectors (48) remove bolts (17 & 19) joining hanger pipe and intermediate bearing assembly and remove lower section of pump.
12. To remove upper section of discharge pipe from discharge ell (75), unscrew with counter-clockwise turns as viewed from point B.

TO REASSEMBLE TWO SECTION PUMP

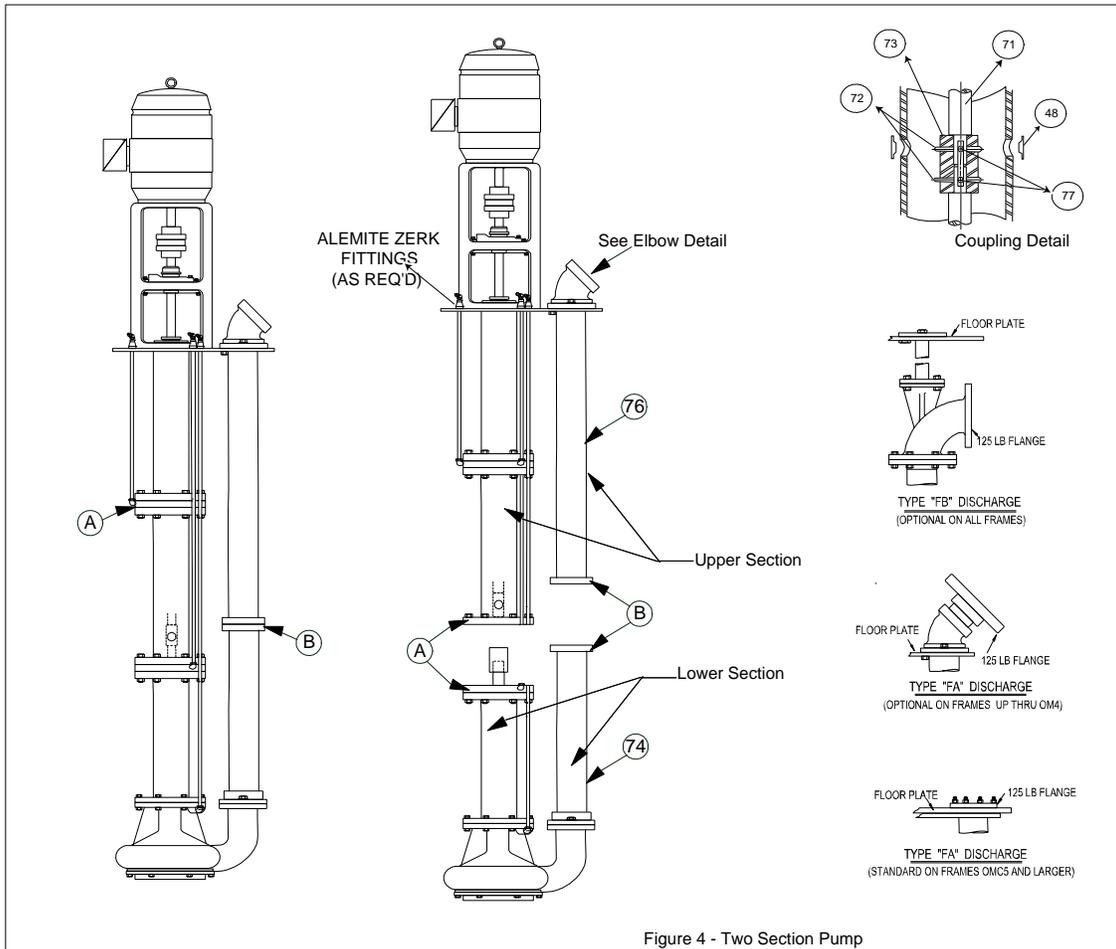
1. Lower the bottom section of the pump and the discharge pipe into the sump and set to one side.
2. Lower the top section of the pump into position and bolt down at the floor plate.
3. Place a 4" block between the bottom of the bearing (5) and the motor support (1) to keep the shaft in a raised position.
4. Move the lower section into position, making sure that the flanges have the same relative position as they did before being separated (see step 3 to dismantle two section pump). See that the faces of the flanges are clean and free from burrs before bolting together. Be careful that the tongue and groove on the flanges line up and that the tightening of the bolts does not cock them if they are out of line.
5. Block up the lower shaft at the impeller through opening in suction plate.
6. Lower the upper shaft until the taper pin holes in the coupling (73) are in line with the holes in the upper shaft (71). Care should be taken when lowering the upper shaft into the coupling so that the positioning pin (77) lines up with the machined groove in the shaft. To line up the pin with the slot in the shaft, rotate shaft slowly when lowering.
7. When taper pin holes in coupling are in line with holes in shaft, insert small end of taper pin into larger end of hole in coupling.
8. Set taper pin up tight by lightly tapping in place.
9. Remove blocking support from impeller.
10. Reassemble bearing cap (30) to motor support (1).
11. Remove bolts (17) and flange (44) from discharge casing (24).
12. Slip flange (44) on lower end of discharge pipe by using a rotary pushing motion. A little clean light engine oil may be used on end of discharge pipe to facilitate the assembly.
13. Screw upper section into discharge ell (75).
14. Bolt both sections of discharge pipe together making sure to place the rubber gasket between the flanged connections.
15. Bolt flange (44) to discharge casing (24). Be sure to insert gasket (39) before bolting secure.
16. Rotate pump shaft by hand to see that it is free and impeller does not rub. If impeller rubs, refer to paragraph on Impeller adjustment.

PARTS LIST

#	Description	#	Description	#	Description	#	Description	#	Description
1	Motor Support	18	Street Ell	37	Discharge Ell	52	Pump Coupling Half	67	Switch Stand Assembly
2	Shaft	19	Hex Nut	38	Packing Gasket	53	Coupling Disc	68	Lock Washer
3	Elastic Stop Nut	20	Perfect Seal Ring	39	Rubber Gasket	54	Motor Coupling Half	69	Round Head Machine Screw
4	Grease Fitting	21	Impeller Lock Screw	40	Adapter	55	Float Rod Button	70	Float Switch
5	Bearing, Bal I	22	Impeller Set Screw	41	Intermediate Bearing Plate	56	Hollow Head Set Screw	71	* Upper Shaft
6	Bearing Housing	23	Impeller (Part No. 78)	42	Discharge Pipe	57	Float Rod	72	* Taper Pin
7	Truarc Retaining Ring	24	Discharge Casing	43	Discharge Casing Bearing	59	Float Rod Seal Hsng	73	* Auxiliary Coupling
8	Packing Gland Stud (Not Shown)	25	Suction Gasket	44	Packing Ring Flange	60	Cap, Float Rod Seal	74	* Lower Discharge Pipe
9	Grease Fitting	26	Hex Head Cap Screw	45	Impeller Key	61	Hex Head Cap Screw	75	* Discharge Elbow
12	Floor Plate	27	Bearing Adapter	46	Suction Cover	62	Reducing Coupling	76	* Upper Discharge Pipe
14	Hanger Pipe	28	Pump Coupling Key	47	Hollow Head Cup Point Set Screw	63	Float Rod Guide Pipe	77	* Positioning Pins
15	Grease Line	34	Hex Nut	48	Cap Plug Protector	64	Float	78	Impeller Wearing Ring Furnished only when specified
16	Bronze Sleeve Bearing	35	Split Packing Gland	49	Packing	65	Float Lock Nut	79	Casing Wearing Ring Furnished only when specified
17	Hex Head Cap Screw	36	Lock Washer	51	Set Screw Coupling	66	Float Rod Seals	80	Felt Washer, Float Rod Seal
								81	Slinger

NOTES

* For Part No's 71 thru 77 refer to Figure 4 for location in assembly



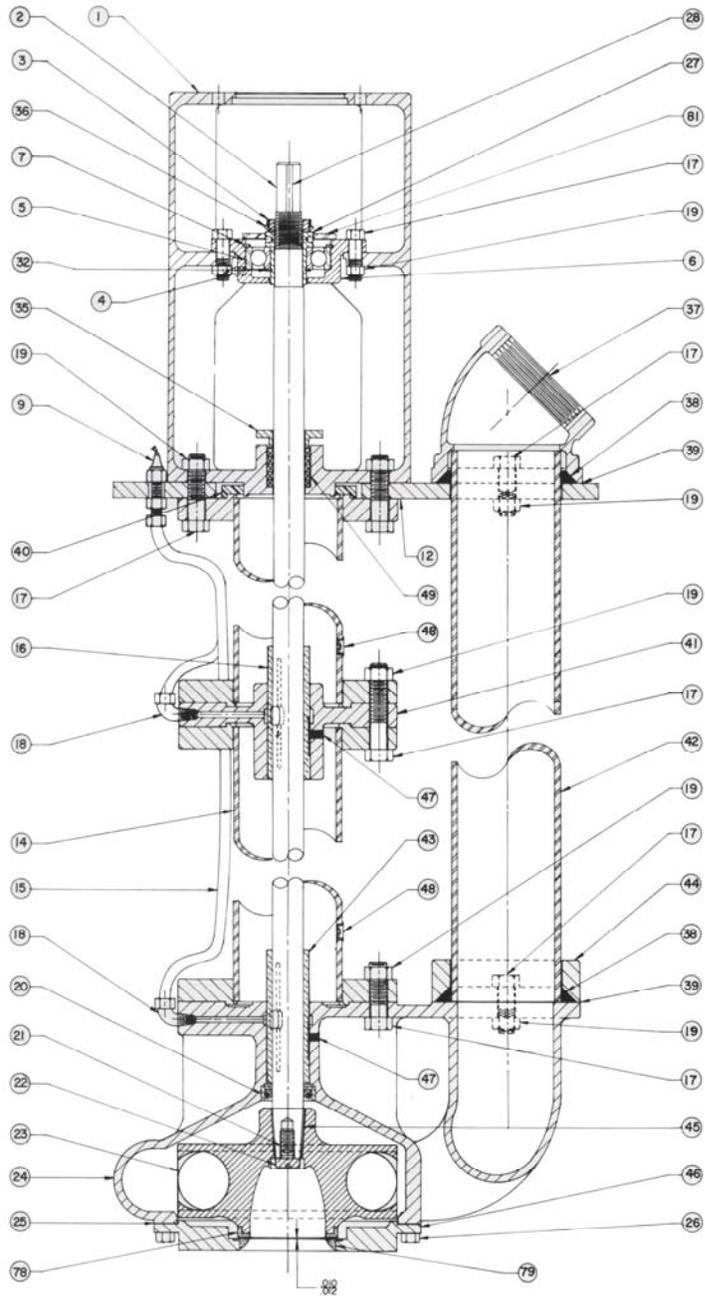
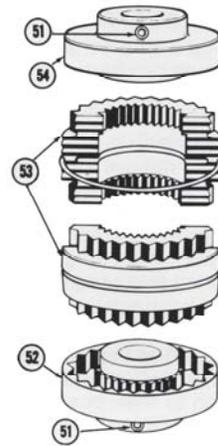


Figure 5



† FOR CORRECT PART NUMBERS
ON TWO SECTION PUMPS
REFER TO FIGURE 4

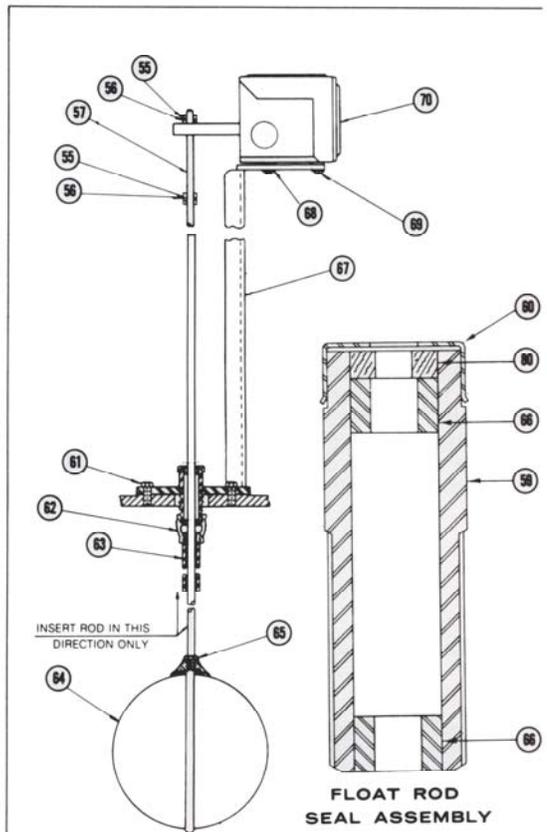
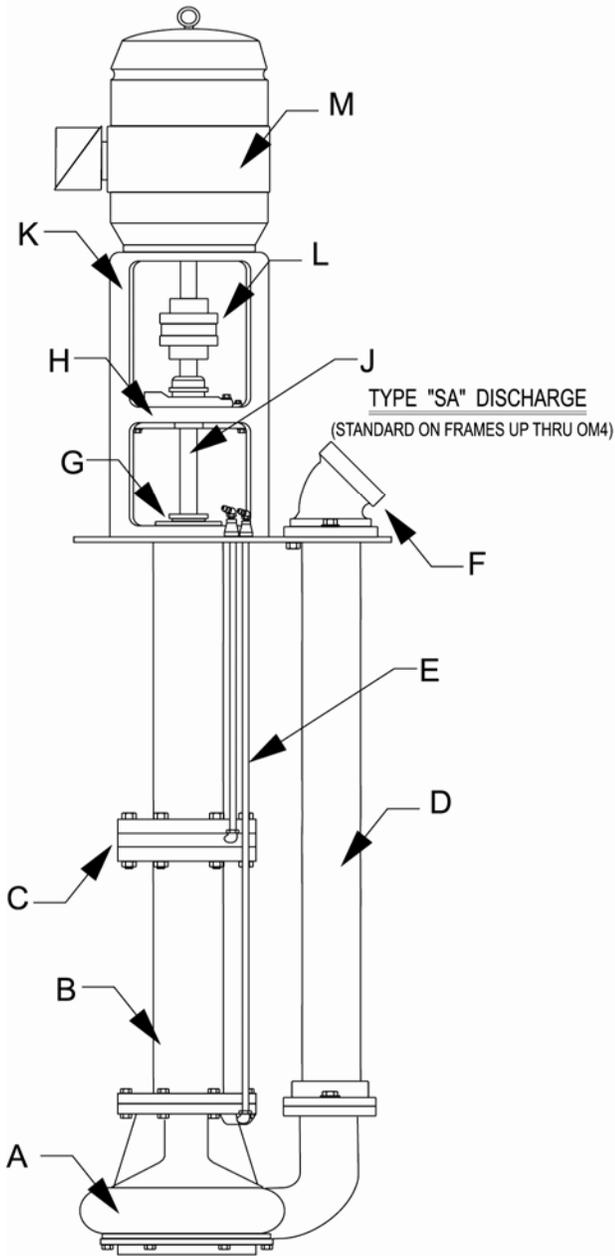


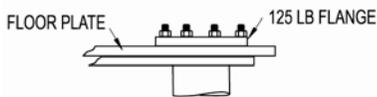
Figure 6—Float Assembly Detail

VERTICAL WET-PIT SOLIDS-HANDLING WASTEWATER PUMPS

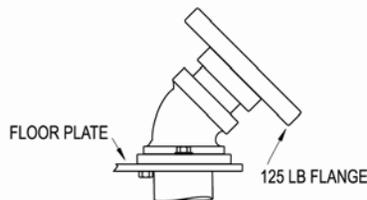


COMPLETE VCS PUMP INCLUDES:

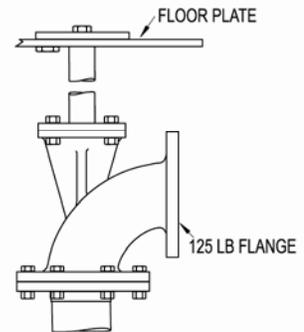
- A. DISCHARGE CASING w/ SUCTION COVER**
- B. HANGER PIPE**
- C. INTERMEDIATE BEARING(S)**
- D. DISCHARGE PIPE**
- E. GREASE LINES**
- F. FLOOR PLATE w/ DISCHARGE CONNECTION**
- G. PACKED STUFFING BOX / FELT SEAL RING**
- H. BEARING PEDESTAL w/ THRUST BEARING & MICROMETER ADJUSTMENT ASSEMBLY**
- J. SHAFT ASSEMBLY w/ IMPELLER (NOT SHOWN)**
- K. MOTOR PEDESTAL**
- L. COUPLING**
- M. MOTOR**



TYPE "FA" DISCHARGE
(STANDARD ON FRAMES OMC5 AND LARGER)



TYPE "FA" DISCHARGE
(OPTIONAL ON FRAMES UP THRU OM4)



TYPE "FB" DISCHARGE
(OPTIONAL ON ALL FRAMES)