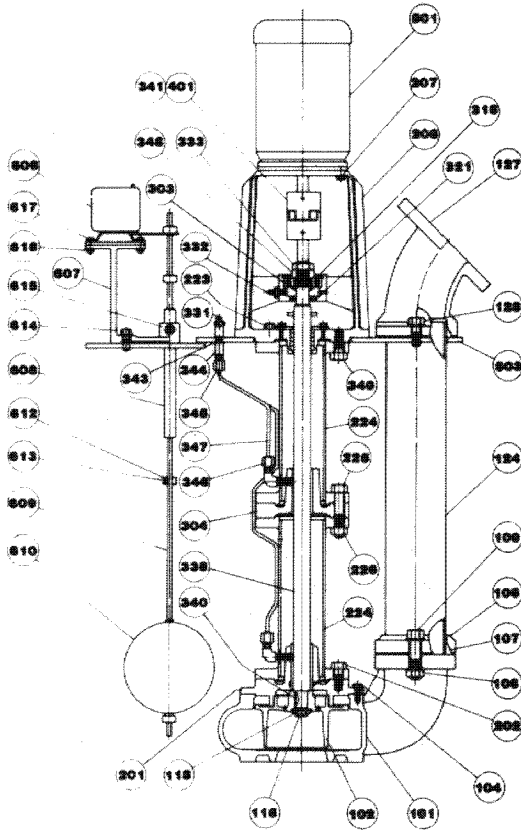


# ARMSTRONG®

## INSTALLATION AND OPERATING INSTRUCTIONS SERIES 5400 — WET PIT-TYPE SEWAGE PUMP



ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
101	Volute	331	Grease fitting
102	Impeller	332	Grease fitting
104	Volute screws	333	Locknut
106	Discharge flange	338	Shaft
107	Discharge flange gasket	340	Impeller key
108	Flange nut	341	Coupler key
109	Flange bolt	343	Pipe nipple
116	Impeller nut	344	Pipe coupling
118	Impeller washer	345	Tube connector
124	Discharge pipe	346	Connecting elbow
127	Discharge elbow	347	Lubrication tube
128	Discharge elbow screw and washer	348	Bearing collar and setscrews
201	Cover plate and lower bearing	349	Bearing frame screw
202	Cover plate capscrew	401	Coupler
206	Motor support	501	Motor
207	Motor capscrew	503	Floor plate
223	Support capscrew	606	Float switch
224	Pump leg	607	Switch stand
225	Intermediate bearing	608	Float rod guide
226	Intermediate bearing nut	609	Float rod
303	Ball bearing	610	Float
304	Intermediate bearing assembly	612	Stop
316	Snap ring	613	Stop setscrew
321	Oil seal	614	Switch stand capscrew and washer
		615	Guide capscrew
		616	Float switch capscrew and washer
		617	Float switch nut

### INSTALLATION & OPERATING INSTRUCTIONS

Armstrong centrifugal pumps, properly installed and given reasonable care and maintenance will perform satisfactorily for a long period of time. These instructions describe the procedures which should be followed to ensure trouble-free operation.

**Cleanliness:** *Ensure constant service of the installation by systematically inspecting and caring for the equipment at least once a week. Keep the interior and exterior of the motor, control devices and starting equipment free from moisture, oil and dirt. Make sure the sump is kept reasonably clean. Remove sand, muck and other refuse at regular intervals.*

**Caution:** *Particular care must be taken to check the following before the pump is started up:*

1. Rotation O.K.?
2. Lubrication O.K.?
3. Sump Clean?
4. Pipework Properly Supported?
5. Voltage Supply O.K.?
6. Overload protection O.K.?

*Armstrong warranty does not cover any damage to the equipment resulting from failure to observe the above precautions.*

### UNCRATING

After removing the pump from the crate, make sure the equipment is in good order and that all components are received as called for on the packing list. Any shortages or damage should be reported immediately to the transportation company.

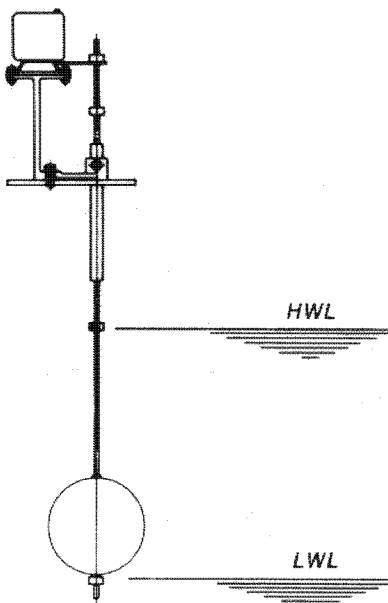
### LOCATION

Locate the pump where it is easily accessible for inspection and servicing, and provide adequate head room for pump withdrawal. Do not install in damp atmospheres unless this condition has been allowed for in the motor enclosure.

### SUMP

When installing the sump basin (or curb frame) carefully check to see that the top flange is level. This will ensure that the pumping unit, when installed, will hang vertically without strain.

The sump must be thoroughly cleaned before the pump is installed therein. Remove any sand, muck, stones, etc., and other debris which may have accumulated in the sump during building operations.



### CONTROLS

Float switches, mechanical alternators and other control devices are normally dismantled after testing and shipped loose with the pump. These items should be re-assembled and adjusted to the approximate operating levels before installing the unit.

The sequence of operation is described in the wiring diagram attached to these instructions and the following general guidelines will indicate the procedures required to obtain the correct working levels.

(a) Set the stops on the float rod below the cover plate to give a low water level approximately one (1) foot from the bottom of the sump and a high water level as high as practical to avoid short cycling of the pump.

(b) After the unit is installed in the sump, re-adjust the operating levels as necessary, by changing the location of the stops on the float rod above the cover plate.

## INSTALLATION

Set the assembled pumping unit in place on top of the sump basin (or curb frame) making sure the matching flanges are perfectly clean. Line up the bolt holes and tighten down securely to avoid vibration and noise. The cover plate should be positioned on the sump basin (or curb frame) with the following considerations in mind:

- (i) The discharge piping should be short, simple and as direct as possible.
- (ii) Wherever possible, it is preferable to keep the floats away from the direct path of the incoming flow.

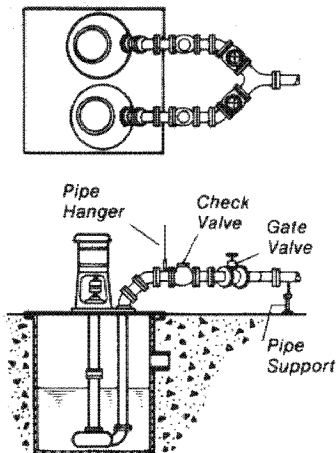
## PIPING

The discharge piping must line up naturally with the pump connection. Do not force piping into position. Use pipe hangers and/or pipe supports to insure that the pipework is supported independently of the pump.

Do not use piping of a smaller size than the pump connection. If the run of piping is over 30 feet in length, it is advisable to use one pipe size larger than the pump discharge to avoid excessive friction loss.

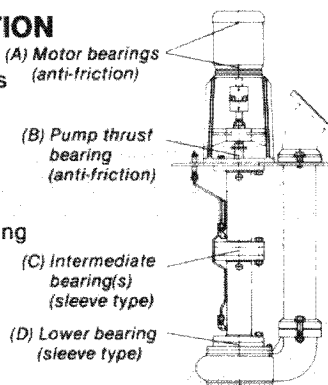
Provide a check valve and gate valve at the pump discharge. The gate valve may be either horizontal or vertical, but the check valve should always be installed horizontally for best results.

A typical piping layout for a duplex installation is shown below.



## LUBRICATION

The location (A) Motor bearings of the various bearings provided on the pumping unit is illustrated in the following sketch.



(A) The motor is provided with pre-lubricated, sealed bearings. No further lubrication is required during the life of the bearings.

(B) The pump thrust bearing is lubricated at the factory before the unit is shipped and does not require lubrication prior to the initial startup. When the unit is in operation, the bearing should be greased at approximately one month intervals. Use high temp. water resistant grease. The bearing should not be more than two-thirds full. Do not over grease.

(C)/(D) The pump lower bearing and intermediate bearing(s), where fitted, are either grease lubricated or oil lubricated. No harm will result if these bearings are over-lubricated. Grease lubrication: Alemite fittings are provided at the pump floor plate with a separate feed line leading to each bearing. Lubricant should be added every 7 to 10 days. Use high temp. water resistant grease.

Oil lubrication: The oiler is provided with an individual feed line, sight glass and regulating screw for each of the bearings lubricated. All lubricators are shipped from the factory with the feed(s) off and the regulating screw on each feed must be adjusted on site to supply the desired amount of oil. Approximately 2 drops per minute per bearing will normally be adequate. A good grade of No. 30 oil is recommended. Standard oilers are fitted with a lever which permits the oil to be shut off without disturbing the feed setting. Automatic oilers incorporate a solenoid valve interlocked with the motor circuit, thus permitting oil flow only when the pump is operating.

## ELECTRICAL WIRING

If the starting equipment and controls have not been pre-wired at the factory, refer to the wiring diagram attached to these instructions and make the necessary connections as shown.

Check to see that the electrical characteristics stamped on the motor nameplate are the same as the power supply available at the installation.

Refer to the motor wiring diagram (normally located inside the motor terminal box) and check that the motor leads are properly connected.

Inspect the circuit fuses and/or heater elements to make sure they are correctly sized for the application.

## ROTATION

Rotate the pump shaft by hand at the coupling to see that it turns freely. Energise the motor briefly and check the rotation of the pump. This should correspond to the directional arrow cast on the motor pedestal: i.e. clockwise when looking down on the top of the motor. To reverse the rotation of a three-phase motor, interchange two of the leads.

## INITIAL RUNNING

It is possible to test the installation before drainage to the sump commences since the pump can be run "dry" for short periods provided all bearings have been properly lubricated.

After all electrical connections have been completed, the circuitry can be checked by manual operation of the lever arm on the float switch or mechanical alternator.

Note that a mechanical alternator has three operating positions. The lower two provide stop, start and alternation while the upper position will cause both pumps to operate in parallel.

When drainage to the sump commences, the initial operating cycles of the pump should be carefully observed to check the following:

- (A) No undue noise or vibration.
- (B) Motor amperage satisfactory.
- (C) Operating levels O.K. Re-adjust if necessary by changing the location of the stops on the float rod.

## WARRANTY

Armstrong Pumps Inc. warrants Armstrong Products to be free from factory defects in material and workmanship under normal use and service for a period of one year from date of shipment. Our obligation shall be limited to the repair of parts or replacement of any parts at our option, f.o.b. factory, which may prove defective under normal use and service during the warranty period and which our examination shall disclose to be defective. This warranty shall not apply to any part which has been subject to accident, alteration, abuse, misuse, damage by flood, fire or act of God, or where the product has been improperly installed, maintained or subjected to certain types and/or improperly-applied water treatment or other system additives.

Armstrong Pumps Inc. shall not be liable for service, labor or transportation charges or for damages for delay caused by defective material or workmanship or for personal injuries or damage to property caused directly or indirectly by any Armstrong Product or by its use or operation.

The above warranties are in lieu of all other warranties expressed or implied. No representative or other person is authorized or permitted to make any warranty or assume for us any liability not strictly in accordance with the foregoing.

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