

Condensate pump and receiver

Type AVC

Instructions

- Installation
- Operation
- Maintenance

Read this entire book

before attempting to install, operate or repair this pump. Properly installed, your Peerless Pump will give you satisfactory, dependable service. We urge that you read carefully these step-by-step instructions, to simplify any problems of installation, operating or repair.

Failure to read and comply with installation and operating instructions will void the responsibility of

the manufacturer and may also result in bodily injury as well as property damage.

This book is intended to be a permanent part of your pump installation and should be preserved in a convenient location for ready reference. If these instructions should become soiled obtain a new copy from Peerless Pump. Include pump model and/or serial number with your request.

WARRANTY

New equipment manufactured by Seller is warranted to be free from defects in material and workmanship under normal use and service for a period of one year from date of shipment; Seller's obligation under this warranty being limited to repairing or replacing at its option any part found to its satisfaction to be so defective provided that such part is, upon request, returned to Seller's factory from which it was shipped, transportation prepaid. This warranty does not cover parts damaged by decomposition from chemical action or wear caused by abrasive materials nor does it cover damage resulting from misuse, accident, neglect, or from improper operation, maintenance, installation, modification or adjustment. This warranty does not cover parts repaired outside Seller's factory without prior written approval. Seller makes no warranty as to starting equipment, electrical apparatus or other material not of its manufacture, since the same are usually covered by warranties of the respective manufacturers thereof.

In the event, notwithstanding the terms of this agreement, it is determined by a court of competent jurisdiction that an express warranty has been given by Seller to Purchaser with respect to the head, capacity or other like performance characteristics of said equipment, Seller's liability for breach of the same shall be limited to accepting return of such equipment F.O.B. plant of manufacture, refunding any amount paid thereon by Purchaser (less depreciation at the rate of 15% per year if Purchaser has used equipment for more than thirty (30) days) and cancelling any balance still owing on the equipment.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, AND SELLER SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.



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IMPORTANT SAFETY PRECAUTIONS

Pump parts, and the tools and lifting equipment used in installation are heavy and may easily cause personal injury if dropped or carelessly handled. The normal precautions and safety rules associated with the installation or repair of heavy machinery, in regard to manual lifting, use of power equipment, and handling of tools, must be observed in the installation of this pump.

Petroleum-base cleaning solvents are flammable. Smoking by personnel, open flame, or other activity which could ignite vapors in the vicinity of these solvents is extremely hazardous and must not be permitted.

Do not work under a heavy suspended object unless there is a positive support under it to stop its fall in event of sling or hoist failure.

Before attempting examination, handling or repair, be certain that the electrical current to the motor is shut off. An electrical shock from contact with live wires or cords can be fatal.

Before attempting examination or repairs to pump open the disconnect switch to electric motor. This prevents accidental running of pump motor. Starting motor during examination or repair activities could damage pump and may cause personal injury.

WARNING

The pumps described in this bulletin must not be installed in any manner except as specified herein, and must not be operated with different electrical power supplies than listed on the motor nameplate, or at steam condensate pressures other than 10 inches of mercury vacuum to 30 psig or at

temperature above 180°F [82°C].

Violation of this warning will void the warranty and may result in serious property damage or grave personal injury.

INTRODUCTION

UPON RECEIPT OF PUMP EQUIPMENT: Check carefully to see that all of the equipment has been received. Report immediately any shortages or damages to the transportation company handling the shipment, noting the extent of the damage or shortage on the freight bill and bill of lading. Do not leave the unit exposed to weather or construction hazards. The pump may become mechanically damaged. This pump is a well designed and carefully manufactured unit. It should be given the same

attention accorded to any precision machine.

The satisfactory operation of a pump depends to a large extent upon proper installation. These instructions cannot answer every question that may arise as each installation will be different. The installer and the operator of this equipment must use good judgement to adapt these procedures to the installation.

INSTALLATION

WARNING

Do not work under a suspended object unless there is a positive support under it to stop its fall in event of sling or hoist failure. Disregard of this warning could result in grave personal injury.

LOCATION: Install pump in a clean, dry, well

ventilated and drained location accessible for inspection and care. The top of the receiver should be below the lowest return to keep the return lines dry. A foundation is not necessary as the unit is self-contained. This pump and receiver must be placed so the condensate flows by gravity into the receiver.

PIPING: (See figure 1.). Connect returns to inlet of receiver with a gate valve on each return and with a union next to the receiver. Provide a drain to sewer from each return. Connect discharge of the pump to boiler with a union, a horizontal swing check valve, and a gate valve; with the check valve as close to pump as possible. If discharge pipe is longer than 50 feet, increase diameter of pipe to next size larger. When making pipe connections care should be taken to prevent any pipe strain upon the unit.

FLOAT TIE: According to tag instructions, remove the float tie by unscrewing the temporary wood plug on top of receiver and remove tie rope. Replace wood plug with a pipe plug.

CAUTION Be sure the voltage and frequency indicated on motor nameplate are the same as service provided. If the motor has been wired at the factory note the voltage caution card. If available service is other than that indicated, consult motor and switch manufacturer's instructions accompanying unit for proper wiring changes.

WIRING: One half horsepower and smaller 230 volt, single phase motors may be connected to any two wires of a 230 volt, three phase service. Connect the electric service to the controls and make inter-control electrical connections, when necessary, according to wiring instructions accompanying the switches and motor, using conduit and wire sizes as required by local codes. It is best to include a short section of flexible conduit adjacent to the motor for conven-

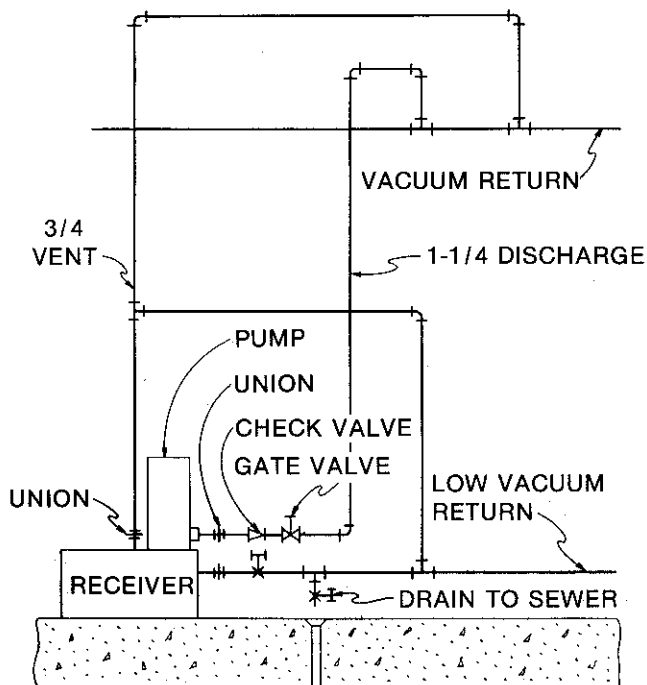
ience in pump or motor repair.

CONTROLS: If the motor horsepower and current fall within the rating of the float switch, an automatic across-the-line type starter is generally not required, depending on the electrical code and requirements of the local power company.

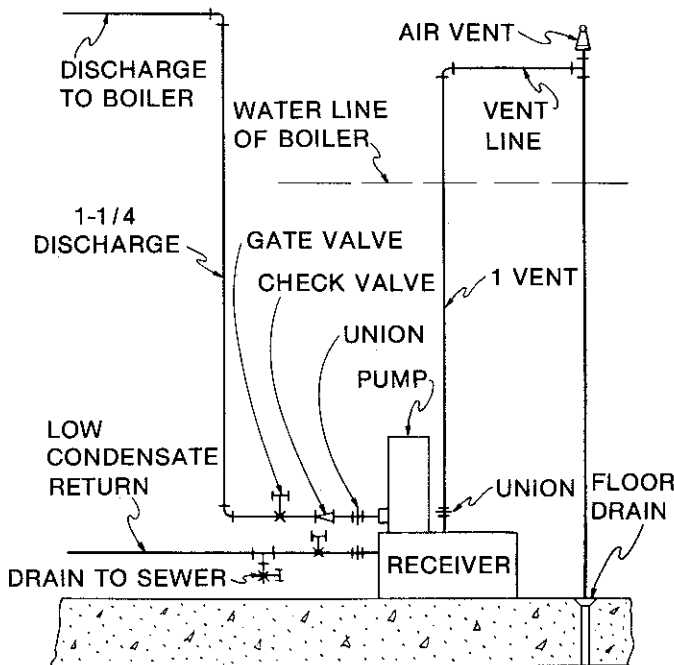
It is recommended that a suitable overload protector or an across-the-line automatic starter switch be installed in the motor circuit to prevent motor burn-outs if for some reason an overload should occur. Any three phase installation will require an across-the-line magnetic starter as the primary motor start device. The float switch is used as a magnetic starter pilot device in this instance.

FUSES: It is recommended that Fusetron (dual element) fuses be used if no other thermal or motor protecting device is used. The Fusetron provides for motor protection against burn-out. Care must be taken in selecting the proper size Fusetron. When a fuse blows it indicates that something is wrong either in the motor, pump, switch, fuse rating or service. Do not replace a fuse until you find and remove the cause of the blow-out.

MOTOR LUBRICATION: Lubricate the motor according to directions given in the motor instruction sheet, but avoid over-lubrication especially of the top bearing which may overflow onto the windings. Consult the specific motor manufacturer for instruction if sheet is not available.



VACUUM HEATING SYSTEM



GRAVITY HEATING SYSTEM

Figure 1. Installation of Type AVC Pump and Receiver

OPERATION

CAUTION

New or repaired heating systems should be operated several days with the returns open to sewer until water appears clear in order to thoroughly flush and clean the lines and prevent clogging of the pump when it is put into operation. This may take from four days to two weeks.

BEFORE STARTING: Check pump as follows:

1. Turn shaft by hand for free rotation. Failure of shaft to turn freely may be caused by packing plate being too tight or by impeller binding in casing.
2. See that voltage and frequency on motor nameplate are the same as service provided.
3. See that wiring conforms to motor manufacturer's instructions for voltage and phase used.
4. See that the proper fuses are installed.
5. See that the piping connections have been correctly made.
6. Check the float-switch for proper wiring.

7. Be sure the receiver is clean and system flushed.
8. Turn on power.

AFTER STARTING: Check operation as follows:

1. 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 receiver fills and is emptied by the pump. The operation of this unit should be absolutely automatic.
2. See that all pipe connections are tight.
3. See that bearings of motor do not overheat.
4. See that pump and motor rotate in a clockwise direction looking down on the motor.
5. 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.

MAINTENANCE

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

1. Sticking: See that the unit does not stand idle for very long periods. If necessary, start pump manually to see that the shaft is free.
2. Automatic equipment: Check frequency of starts and stops to see that pump is properly regulated. Check contacts of switches, cleaning them and applying vaseline if they show signs of burning. If contacts are badly burned, replace the switch before serious consequences result.
3. Motor: See that the motor comes up to speed quickly and maintains constant rotation rate.

ROUTINE CARE: Keep the interior and exterior of motor and switch apparatus free from moisture, oil and dirt.

CAUTION

Never run pump when receiver is empty, or expose unit to freezing temperature when filled with water or severe equipment damage can occur.

SHUTTING DOWN: At the end of the heating season open main line switch, close valves on return and discharge, and drain receiver and pump by removing the pipe plug at the bottom of the receiver. Cover motor and switch to protect them against dust and moisture.

WARNING

Before attempting examination or repairs to pump, open the disconnect switch to electric motor, to prevent accidental running of pump motor. Starting motor during examination or repair activities could damage pump and may cause personal injury.

PACKING RENEWAL: The packing consists of two rings of Garlock No. 951 and four rings of No. 235. The two rings No. 951 are 1/8 inch thick and are harder than the other four, and must always be placed at the top of the packing box.

Never add one or two rings of packing on top of old packing. If packing can no longer be taken up by the packing plate adjustment, remove all the old packing and install new rings.

When replacing packing, ring joints must be staggered. Packing should be drawn up snug only. Rotate shaft occasionally when packing the pump. Adjust (tighten) packing only when pump is running. Tighten screws only part of one turn at a time and wait for rings to adjust. There must be no air drawn through packing for a vacuum system (test with a little water around packing plate), or only a few drops per minute of water leakage with a pressure system.

WARNING

Before attempting examination, handling or repair, be certain that the electrical current to the motor is shut off. An electrical shock from contact with live wires or cords can be fatal.

IF PUMP FAILS TO OPERATE:

1. Check fuses or thermal units, see if blown, thrown, or loose. Before replacing or resetting be sure the cause for blowing is determined and corrected.
2. See if shaft rotates freely, try turning by hand.
3. See that switch contacts are not corroded, shorted, or electrical service broken anywhere in the circuit.
4. Check power supply and compare with motor characteristics.
5. Have motor examined for winding failure.

IF PUMP OPERATES BUT FAILS TO EMPTY RECEIVER:

1. Check rotation of pump.
2. See if check valve in discharge line is stuck.
3. Check discharge pressure, see if beyond pump rating.
4. Check influent rate to basin; see if inflow is

excessive.

5. See if shaft is intact and if the impeller rotates.

DISASSEMBLY: Proceed as follows (see figure 2):

1. Open the electrical circuit, close gate valves in the suction and discharge lines.
2. Remove cap screws (19) and loosen the two set screws (3) in coupling (4).
3. Disconnect wires, remove motor (20), motor ring (1) (if furnished) and coupling (4).
4. Disconnect discharge pipe at the union.
5. Remove hex. nuts (16) and lift out pump assembly from the receiver.
6. Remove cap screws (8), (14), and lower casing (10).
7. Pull out shaft assembly and remove upper casing (7).
8. Remove cap screws (18), packing plate (17), and packing (5).
9. Remove rotor nuts (12), rotor (9), and woodruff key (11).

WARNING

Petroleum-base cleaning solvents are flammable. Smoking or open flame in the vicinity of these solvents is extremely hazardous and must not be permitted. Disregard of this warning could result in grave personal injury.

CLEANING: Clean casing and impeller with a solvent.

1. Use a bristle brush (not metal or wire) to remove tightly adhering deposits.
2. A fiber scraper may be used, if necessary, to remove gasket material from flange joint surfaces.
3. Blow parts dry with clean, dry compressed air.

INSPECTION: Visually inspect parts for damage affecting serviceability or sealing.

1. Examine impeller for cracks, dents, gouges or embedded material.
2. Manually actuate float switch. Switch should click when opening or closing. When switch is closed, check motor circuit with a continuity meter. If circuit is open when switch is closed, switch should be repaired or replaced.

REPAIR: Remove burrs, nicks or scratches from non-critical areas with a fine stone or crocus cloth and make other minor repairs that will not affect serviceability or sealing.

Replace all worn parts; order parts by name and index number shown on figure 2, and give the pump serial number stamped on name plate.

REASSEMBLY: Reverse the disassembly procedure, but observe the following:

1. Replace pedestal gasket (25) (not shown). Be sure gasket mounting surfaces are clean.

NOTE: When assembling lower casing (10) and upper casing (7) to pedestal (2) be sure that the discharge openings are in line.

2. For repacking the pump, refer to Packing Renewal.

3. With the motor in place, adjust rotor clearance by setting the pump in a vertical position and placing a

0.004-inch thickness gauge in the suction opening so that it lies between the lower casing (10) and the rotor (9). With the gauge in this position, tighten the set screws (3) in coupling (4) and remove the thickness gauge.

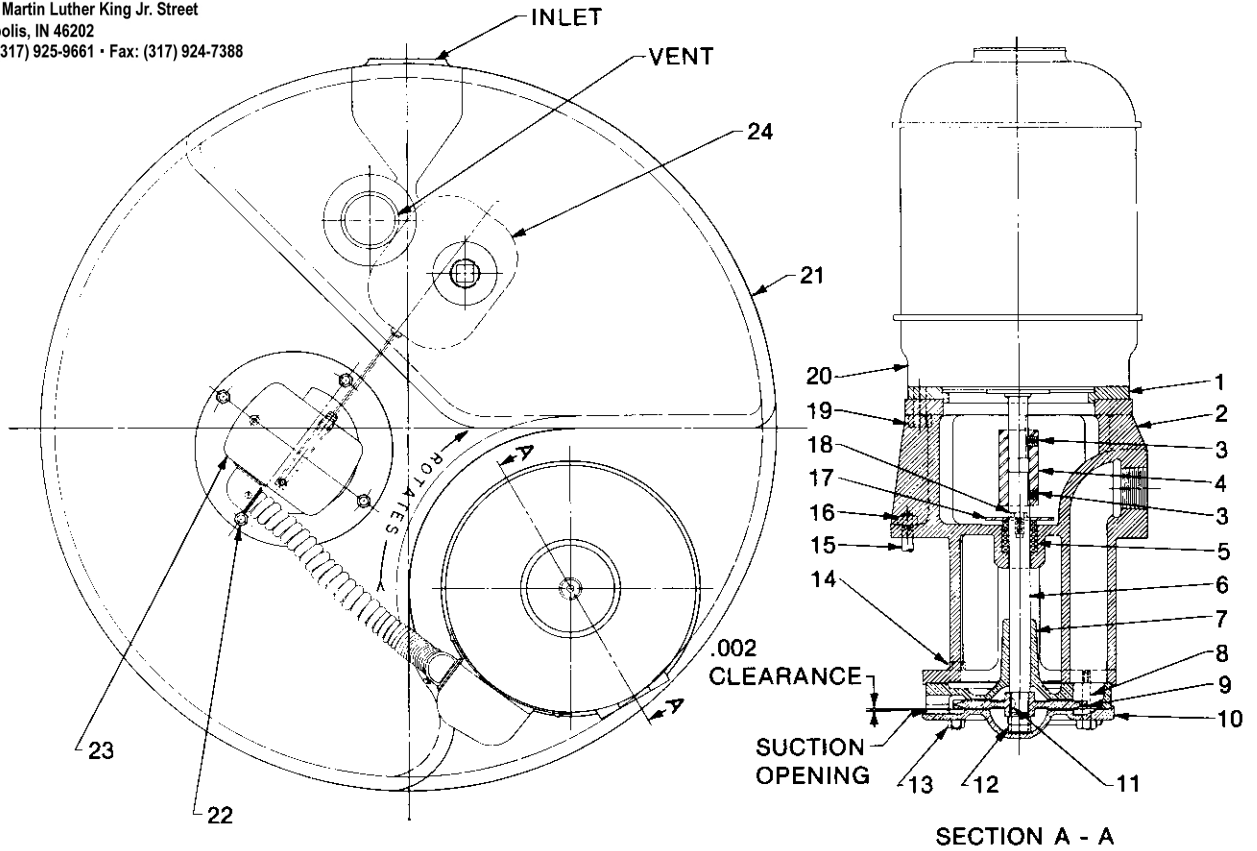
After gauge has been removed the end play in the motor ball thrust bearing will give a clearance of approximately 0.002 inch as shown in figure 2.

4. If the electrical wiring was disconnected, be sure that the motor rotates in the same direction as indicated by the arrow on the receiver (21).

5. Follow instructions for installation to reinstall pump at its location.

Notice; Materials of construction, specifications, dimensions, design features, and application information, where shown in this bulletin, are subject to change and/or modification without notice by Peerless Pump at their option.

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|--|-------------------|--|
| 1. Motor adapter ring (not all models) | 11. Woodruff key | 21. Tank |
| 2. Pedestal | 12. Impeller nut | 22. Hex. nut |
| 3. Set screw | 13. Hex. nut | 23. Float switch |
| 4. Coupling | 14. Cap screw | 24. Float |
| 5. Packing | 15. Stud | 25. Gasket pedestal
(not shown) |
| * 6. Shaft | 16. Hex.nut | 26. Gasket switch plate
(not shown) |
| † 7. Upper casing | 17. Packing plate | |
| 8. Cap screw | 18. Cap screw | |
| * 9. Rotor | 19. Cap screw | |
| † 10. Lower casing | 20. Motor | |

* Parts (6) & (9) must be ordered together. They are not furnished separately.

† Parts (7) & (10) must be ordered together. They are not furnished separately.

Figure 2. Type AVC Condensate Pump and Receiver