

# Sentinel® Condensate Pumps

Form SCIOMA

## Installation, Operation and Maintenance Instructions



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# Introduction

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This form provides information necessary to install, operate and maintain Sentinel Condensate Pumps. This information flows from receiving to installation to maintenance. Our pumps have been tested and packaged for safe shipment. Sentinel Condensate Pumps are used for returning condensate to low pressure boilers from gravity heating systems, low pressure steam processing equipment or combinations of both. They are used where low return mains are located at elevations which do not permit gravity flow of condensate back to the boiler.

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## Installation

- A. **Receiving Inspection** When the Sentinel Condensate Pump is delivered conduct a visual inspection of the unit and any accessories included while the carrier's representative is still present. If there are any signs of damage make a notation on delivery receipt or reject shipment. Shipping damages are the responsibility of the carrier and it is your responsibility to file a claim.
- B. **Unpacking** When unpacking be sure that all instructional tags remain attached and all temporary plugs are in their tapping and stay there until unit is installed on foundation and is ready for piping connections.
- C. **Placement** Place the pump on a solid concrete foundation extending 3 to 6 inches above floor with 4 foundation bolts maybe used to secure pump to foundation. Make sure the area is well ventilated and drained. Shim pump to level before securing tightly to foundation. The top of the receiver should be below the lowest return to maintain dry return lines. If receiver is above the lowest return, the returns will be wet and system will not release itself of air.
- D. **Piping Connections** All piping connections should be tight and properly supported by hangers and **not supported by pump connections**. Remember to allow for proper piping expansion. Connect returns to inlet of receiver tank using gate valves. Connect discharge of pump to boiler or boiler feed pump using a union, swing check and gate valve. See attached typical piping connection drawing.
- E. **Wiring** Check motor nameplate to verify motor voltage corresponds correctly with voltage of current supply. Select proper wiring diagram form attached wiring drawing. All wiring should be done in compliance of local electrical regulations.

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## Preliminary Operation

Before placing the Sentinel Condensate Pump in operation, run the system for a period of time, we recommend two weeks, wasting condensate to a sewer system through draw-off to remove scale, dirt, grease and other possible foreign matter. When discharging condensate to a sewer you will need to supply make-up water to the boiler to maintain a proper water level in system. On installations with manually operated oil, coal or gas-fired boilers an automatic water feed system is recommended. A low water cut-out supply should be installed on all installations with automatically operated stoker, oil or gas-fired boilers.

# Trial Operation

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1. Shut power off to Sentinel Condensate Pump.
  2. Remove plug on rear of motor and use a large standard screwdriver to rotate shaft to ensure that it can move freely.
  3. Fill receiver tank with water until float switch closes.
  4. Open discharge gate valve.
  5. **Do not operate Sentinel Condensate Pump without water in receiving tank.** If this is done it may ruin mechanical shaft seals because they can not operate properly when pump is run dry.
  6. Put the power switch to the "ON" position. If pump is 3-phase, "BUMP" the motor to verify the motor is rotating in the direction indicated by the arrow located on pump. If it is rotating in wrong direction you will need to interchange any two wires at the starting switch to correct. The direction on a 1-phase motor is set and is not changeable.
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## Operating Points

1. Check motor speed. If speed is low and unit is 1-phase check motor wiring connections. If it is wired for 230V but operating on 115V the motor not get up to proper speed and it may burn out.
  2. If receiver tank is filling so rapidly that float switch cut in too frequently there are several things to check: (a) a leaky check valve in the discharge line to boiler or (b) a priming boiler that should be cleaned. To check for priming boiler pull open the safety valve when boiler is carrying a few pounds of steam pressure. If clean or white steam comes out, boiler water is good. If dirty water is being discharged at safety valve the boiler should be blown off to remove the oil and sludge.
  3. Make sure boiler pressure does not exceed pressure rated of pump.
  4. Lack of capacity could be the result passageways on the pumps impeller have become clogged with foreign matter and will need to be removed.
  5. If pump does not start it may be caused by the float ball losing it's buoyancy. You can check this by operating the float head lever manually. Replace float ball if it is no longer buoyant.
  6. If after long service hours water has began to flow from around motor shaft out through the space between the pump head motor flange and the pump head case flange that indicates the mechanical seal has failed and needs to be replaced.
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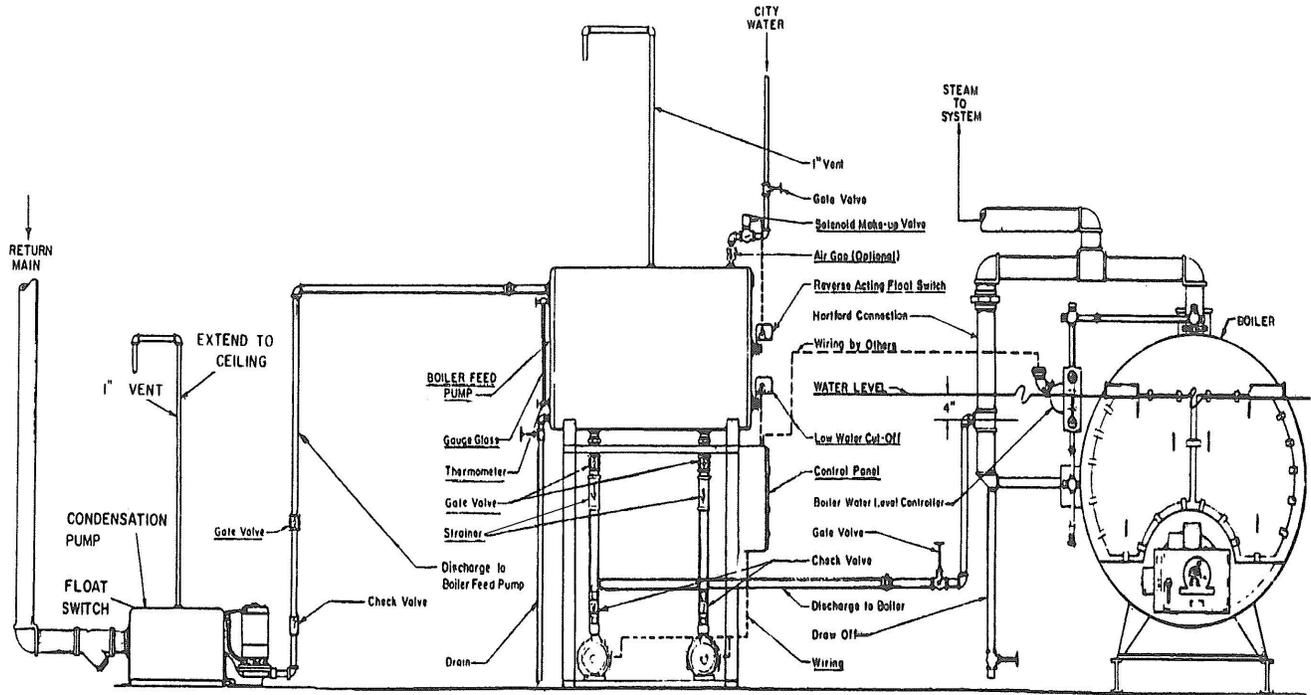
## Maintenance

Inspect Sentinel Condensate Pump unit at least once a week. Keep interior and exterior of motor and switches free from moisture, dirt and oil. Routinely examine contacts of automatic switches to make sure they make full and firm contact and break circuit quickly (float switch on simplex unit and mechanical alternator on duplex units).

Occasionally examine motor shaft and look for water leakage which should be visible on seal plate. Leakage will indicate worn seal surfaces and they will need replacing. A reminder to never operate pump when receiver tank is empty as it will damage seals. And never expose pump to freezing temperatures.

At the end of heating season it is good to open main line switch, close valves in the return line and discharge piping and drain receiver and pump. It is recommended to cover motor and switches to protect them from moisture, dirt and oil when doing this procedure.

# Typical Connections



# Wiring Diagrams

