

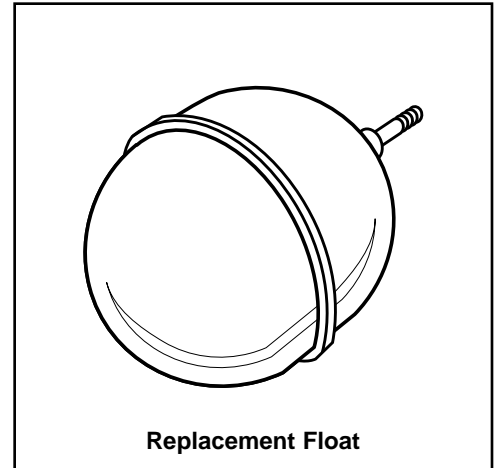


Replacement Float

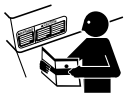


SA91-60

For Installation on Series 93/193 and
Series 94/194 Pump Controller/LWCO



WARNING



- Before using this product read and understand instructions.



- Save these instructions for future reference.



- All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of plumbing, steam, and electrical equipment and/or systems in accordance with all applicable codes and ordinances.

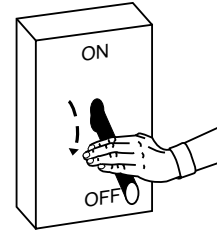


Failure to follow this warning could cause property damage, personal injury or death.



STEP 1 - Removal and Replacement Float

- a. Turn power off to boiler and all controls. Allow boiler to cool to 80°F (27°C) and reduce the pressure to 0 psi (0 bar). Drain water in the boiler to a level that is below the float chamber.

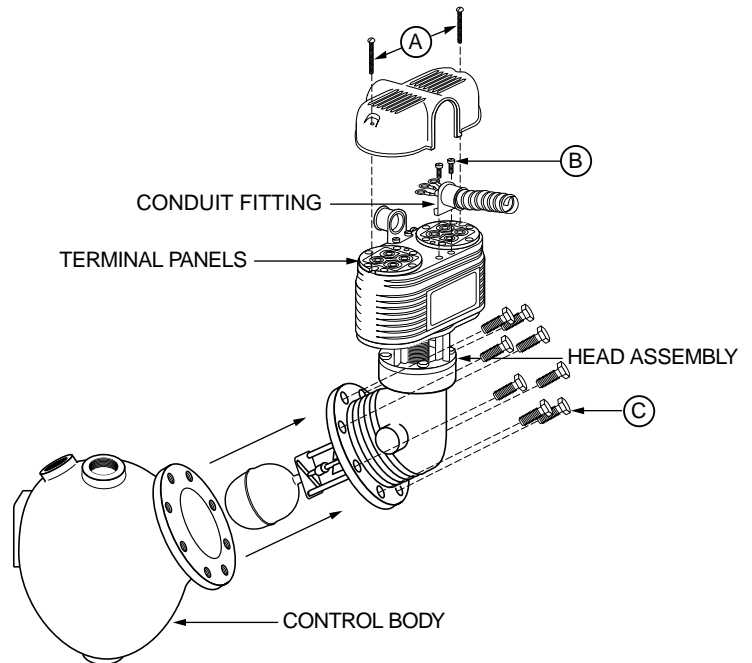


CAUTION

There may be more than one source of power to the boiler.

b. Remove Head Assembly

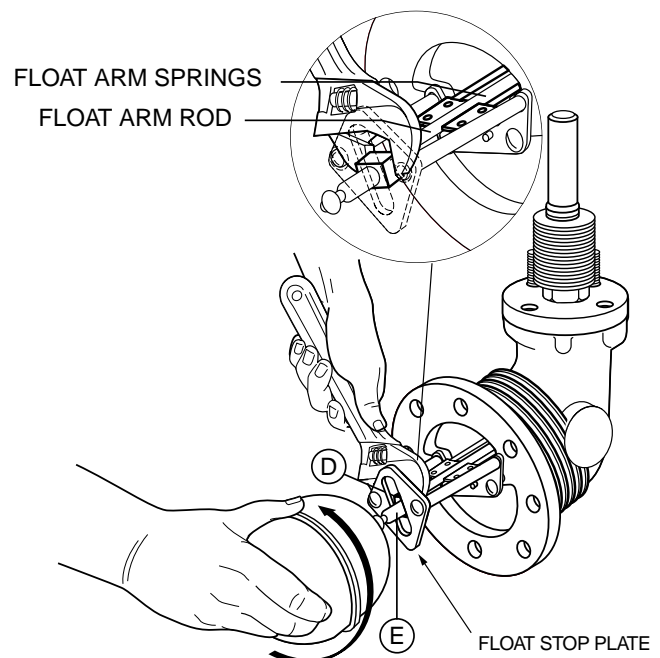
- Remove two screws (A) and lift off **switch cover**.
- Identify **terminal connections** for rewiring and then disconnect all wires from **terminal panels**.
- Remove two screws (B) and lift off **conduit fitting**. Leave wires in conduit for later reconnection.
- Remove head bolts (C). There are eight (8) on Series 93/193 and ten (10) on Series 94/194. Carefully remove **head assembly** from **control body**.
- Carefully place **head assembly** in vice where replacement work can be performed more conveniently.



c. Remove and Replace Float

- Place open end of adjustable wrench on square section of float arm (D) to keep it from turning.
- Unscrew **float ball** from arm.
- Screw new **float ball** onto float arm rod (E), holding square section of float arm nut (D) with wrench and tighten securely.

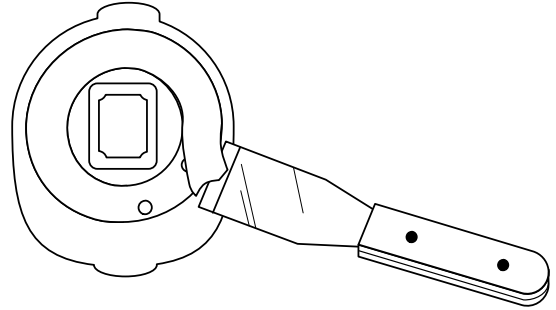
IMPORTANT: Inspect condition of float arm rod and float arm springs. If these are damaged or bent, the entire head assembly will need to be replaced.



d. Prepare Flange Surfaces

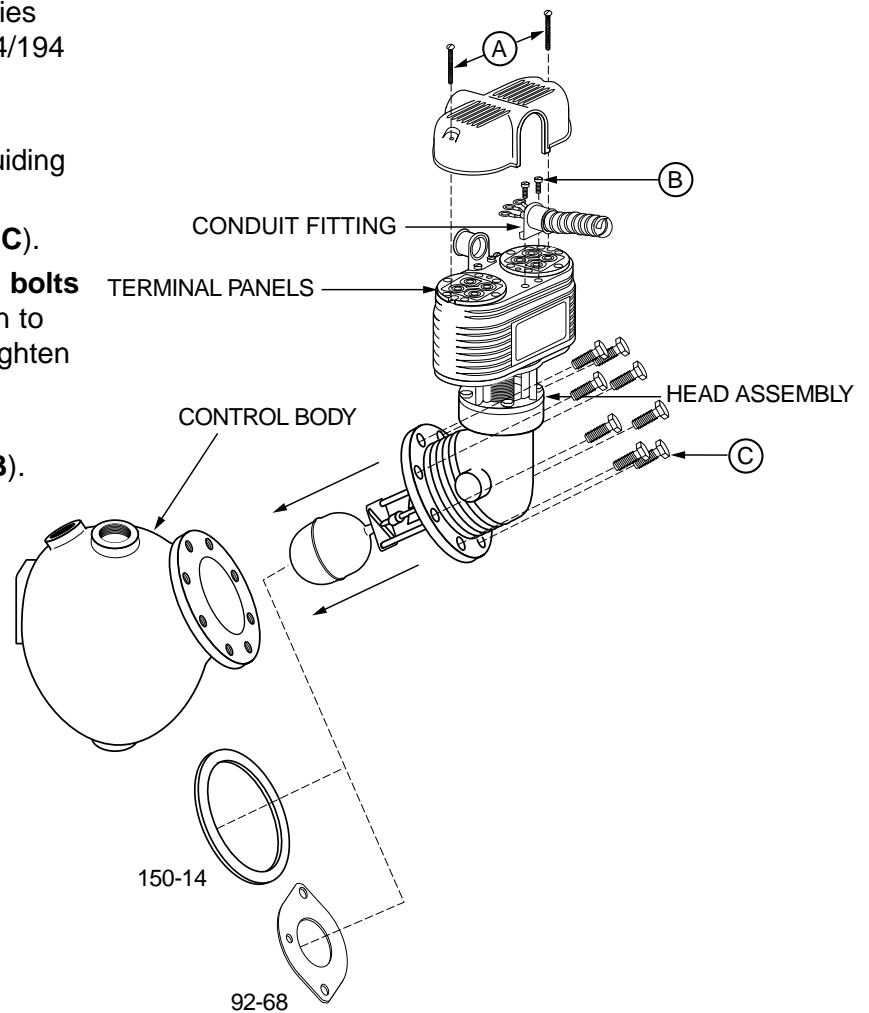
Scrape and clean flange surface on **control body** and **control head**.

IMPORTANT: Care must be taken not to damage flange surfaces. Nicks, scrapes or gouges may cause the flange to leak when in service.



e. Replace Head Assembly

- Slide **flange gasket (150-14** for Series 93/193 units and **92-68** for Series 94/194 units) over **float ball** and **float stop plate**.
- Insert **head assembly** by carefully guiding **float ball** into **control body**.
- Align Gasket and install head bolts (**C**).
- Using a torque wrench, tighten **head bolts** in an alternating star pattern. Tighten to 14-20 ft•lbs for Series 93 models. Tighten to 17-21 ft•lbs for Series 94 models.
- Install **conduit fitting** with attached wires and secure with two screws (**B**).
- **Reconnect wiring to terminal panels** in exactly the same position as removed.
- Replace **switch cover** and fasten with two screws (**A**).



STEP 2 - Testing

- Dimensions shown are typical.
- The following testing procedure is only meant to serve as a verification of proper operating sequence.

a. Turn on power to boiler and pump circuits.

With the boiler empty, the pump should turn on (5 or 5-M switch models) or the valve open (7B or 7B-M switch models). The burner should remain off and boiler should begin to fill with water.

 **CAUTION**

Immediately turn off all power if the burner turns on with no water in the gauge glass. Investigate further before continuing procedure.

b. For Automatic Reset Models

When water level in the gauge glass is approximately 1 3/8" (35mm) above the horizontal cast line, the burner should turn on.

For Manual Reset Models

When water level in the gauge glass is approximately 1 3/8" (35mm) above the horizontal cast line, press the manual reset button and the burner should turn on.

c. For 5 or 5-M Switch Models

When water level in the gauge glass is approximately 2 1/8" (54mm) above the horizontal cast line, the pump should turn off.

For 7B or 7B-M Switch Models

When water level in the gauge glass is approximately 2 11/16" (68mm) above the horizontal cast line, the valve should be closed.

 **CAUTION**

If pump does not turn off or valve close, turn off water supply to boiler. Investigate further before continuing procedure.

- d. With the water in the boiler at its normal level and burner on, SLOWLY open the blow-down valve until it is fully open. As the water level in the gauge glass begins to drop, verify that the following occurs.

For 5 or 5-M Switch Models

When water level drops to approximately 1 1/8" (29mm) above the horizontal cast line, the pump should turn on.

When water level drops to the horizontal cast line, the burner should turn off.

For 7B or 7B-M Switch Models

As the water level drops, the valve should begin to open.

When the water level drops to approximately 7/8" (22mm) above the horizontal cast line, the valve should be full open.

When the water level drops to the horizontal cast line, the burner should turn off.

- e. Close the blow-down valve after burner turns off and restore water level to normal operating level.
- f. Repeat testing procedure several times to ensure proper operation of control.
- g. After testing and verification of control operation, the boiler can be returned to service.

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