

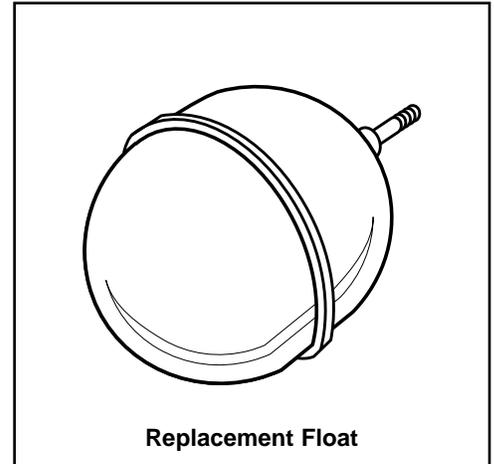


## Replacement Float



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.

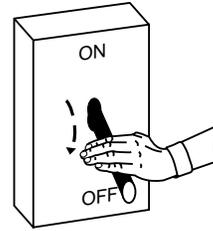


Failure to follow this warning could cause property damage, personal injury or death.



## 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.

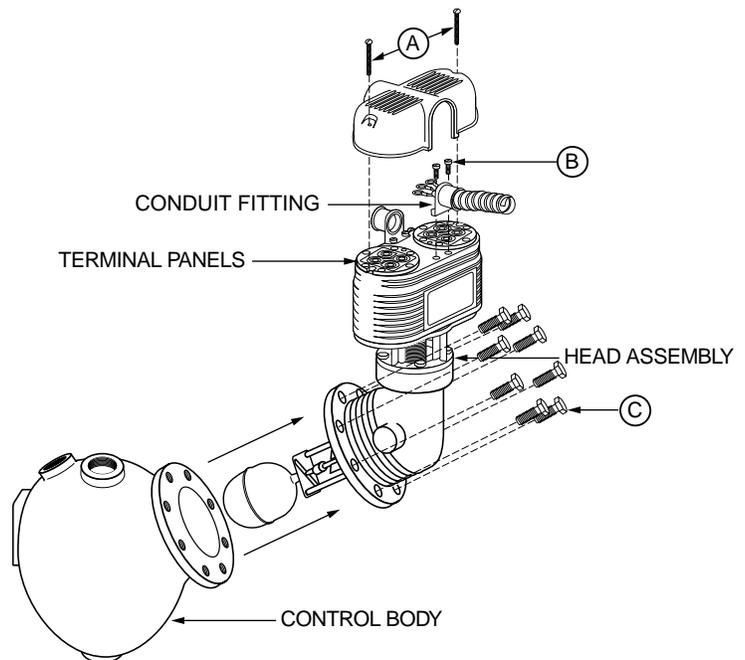


### CAUTION

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

### b. Remove Head Assembly

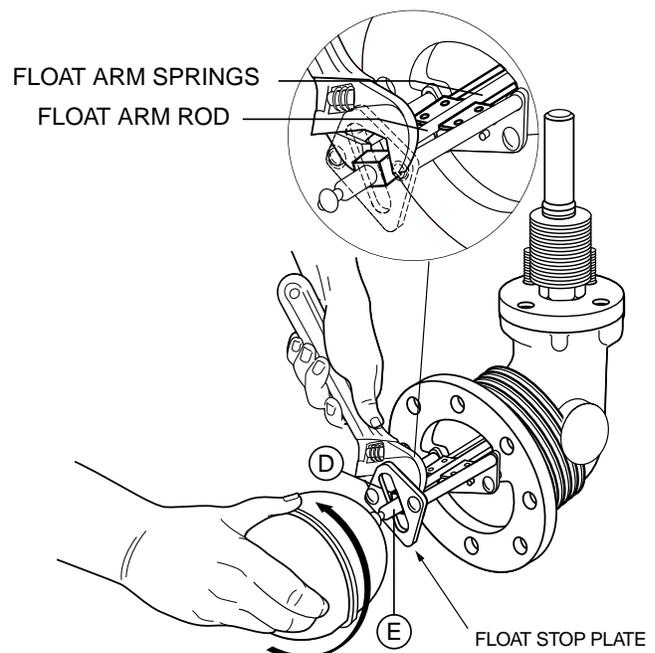
- Remove two screws (A) and lift off **switch cover**.
- Identify **terminal connections** for rewiring and then disconnect all wires from **terminal panels**.
- Remove two screws (B) and lift off **conduit fitting**. Leave wires in conduit for later reconnection.
- Remove head bolts (C). There are eight (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.

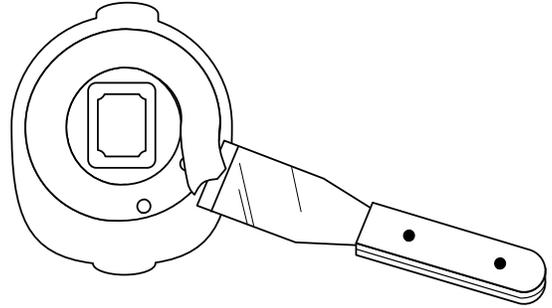
**IMPORTANT:** Inspect condition of float arm rod and float arm springs. If these are damaged or bent, the entire head assembly will need to be replaced.



#### d. Prepare Flange Surfaces

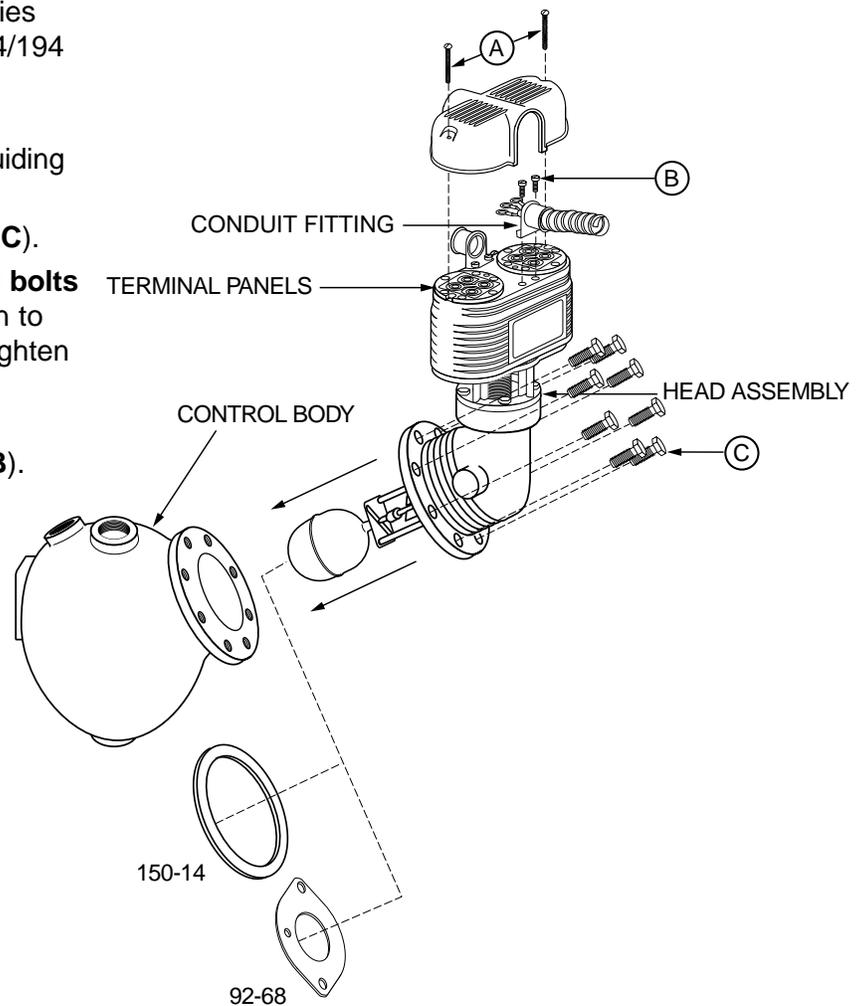
Scrape and clean flange surface on **control body** and **control head**.

**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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