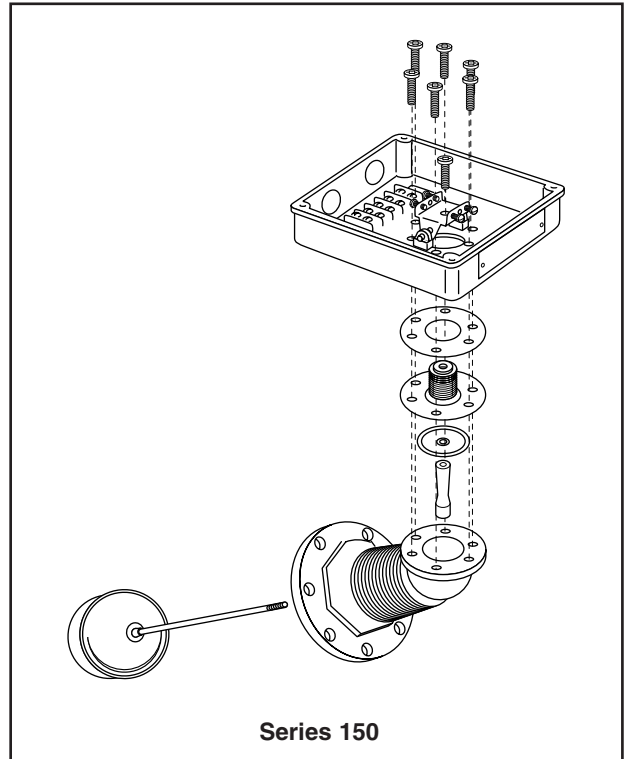
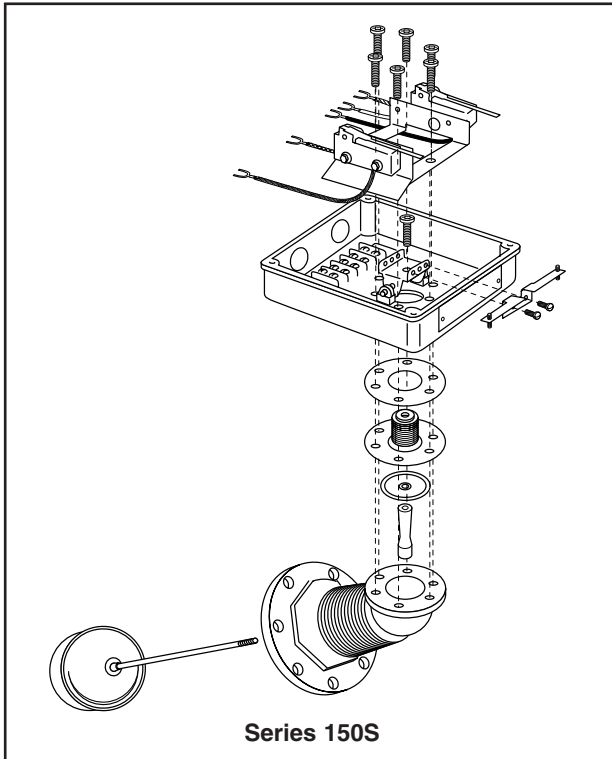




ITT

Series 150, 150S, 157, 157S Bellows Replacement

McDonnell & Miller
Installation & Maintenance
Instructions
MM-711(A)



WARNING



- Before using 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.



- To prevent electrical shock, turn off the electrical power before making electrical connections.

- To prevent serious burns release all pressure and let boiler cool down to 80°F (27°C).

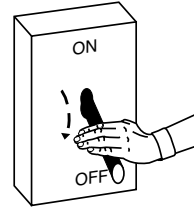
- Drain water level down below the float bowl chamber before taking the head mechanism out of the body.



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

STEP 1 - Preparation

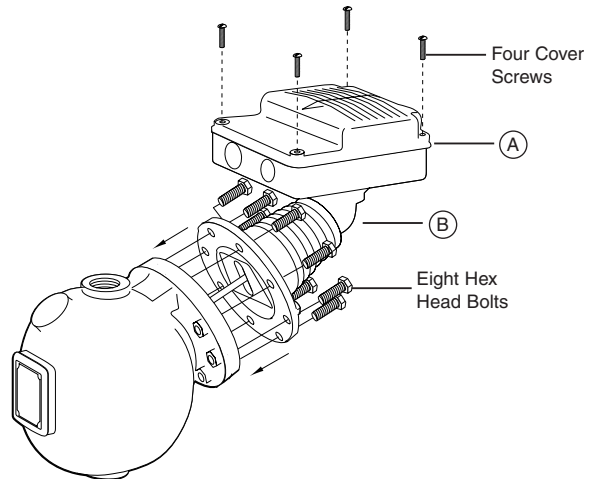
- a. To prevent electrical shock turn off all electrical power to the boiler.
CAUTION: There may be more than one source of power to the boiler.



- b. Release all pressure from the boiler and let it cool down to 80°F (27°C). Drain the water level down below the float chamber.

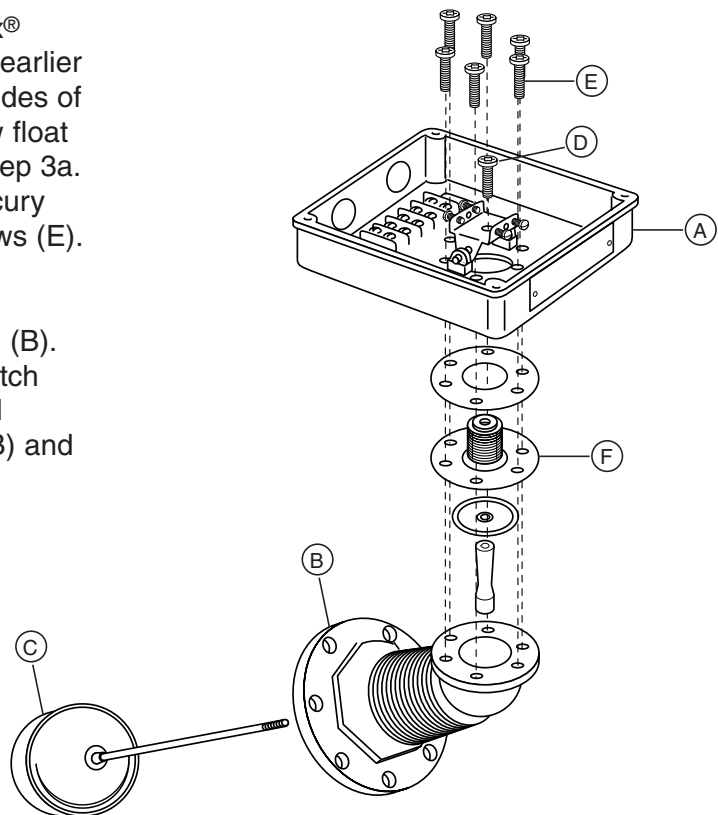
- c. Remove the four screws that hold the cover on the switch housing (A) and remove the cover. Mark all electrical supply wires so they can be returned to the proper terminals. Remove the wires and conduit connections from switch housing (A).

- d. Remove eight hex head bolts holding head mechanism (B) to float chamber. Carefully remove head mechanism (B) from float chamber and place in a vise.



- e. Holding float (C) firmly, unscrew Allen® or Torx® fastener (D). (Units with date codes of E99 or earlier will have Allen® head fasteners. Those with codes of F99 or later will have Torx® fastener). Unscrew float and float rod (C). For snap switch units see Step 3a. For mercury switch units remove the two mercury switches. Remove six (6) Allen® or Torx® screws (E).

- f. Remove switch housing (A) from head casting (B). The bellows assembly (F) may stick to the switch housing (A). Remove bellows assembly (F) and clean gasket surfaces on both head casting (B) and switch housing (A).



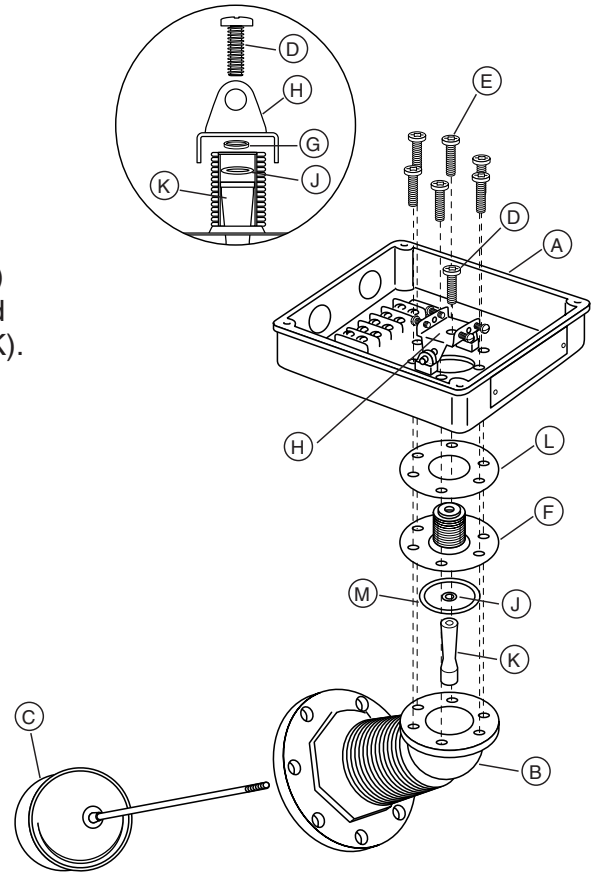
STEP 2 - Changing the Bellows for Mercury Switch Units (For Snap Switch See STEP 3)

a. **NOTE:** On units that have Allen® head screws they should be replaced with Torx® screws (furnished).

b. Take the new bellows assembly (F) and disassemble it noting the order of the parts. Put sealing washer (J) on top of float arm (K) and insert into inside of bellows (F). Place gasket (L) over bellows (F). Insert this assembly into switch housing (A) and bracket (H). If the screw (D) was an Allen® screw, the spacer washer (G) will have to be put in the top hole of bracket (H). Take Torx® screw (D) (furnished) and insert it into hole on top of bracket (H) and spacer washer (G) (if needed) and screw into float arm (K). Hand tighten only.

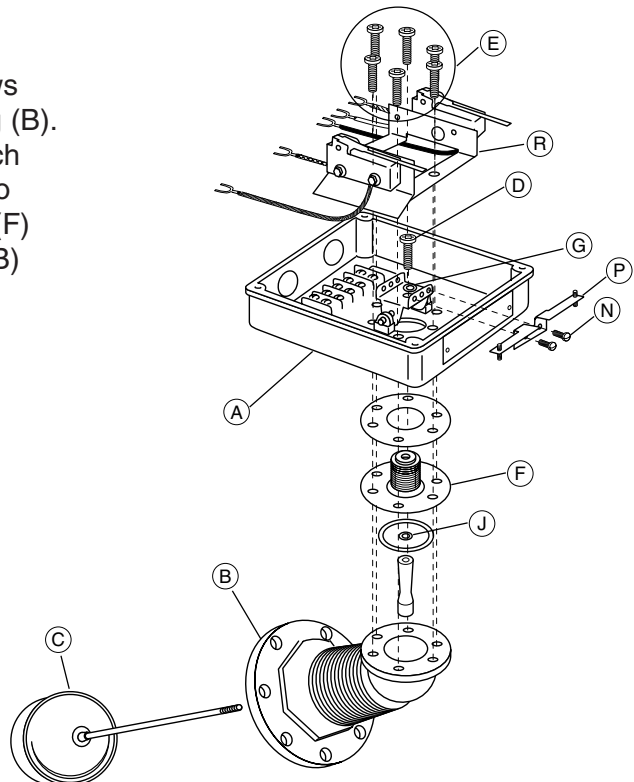
c. Make sure tapped hole on float arm (K) is facing the correct way, so the float and float rod (C) can be screwed into it when bellows assembly is assembled on the head casting. Place gasket (M) on casting (B). Center the gasket and place the bellows assembly (F) and switch housing (A) on head casting (B). Insert and tighten six (6) Torx® screws (E) to 125 in. lbs. (14 N•m).

d. Screw float and float rod (C) into float arm (K) and hand tighten. Center the float rod in the float rod guide (not shown) and tighten Torx screw (D) to 125 in. lbs. (14 N•m). Make sure you hold the float in place while tightening screw (D). Move the float up and down, making sure there is no binding and that the float rod is still centered.



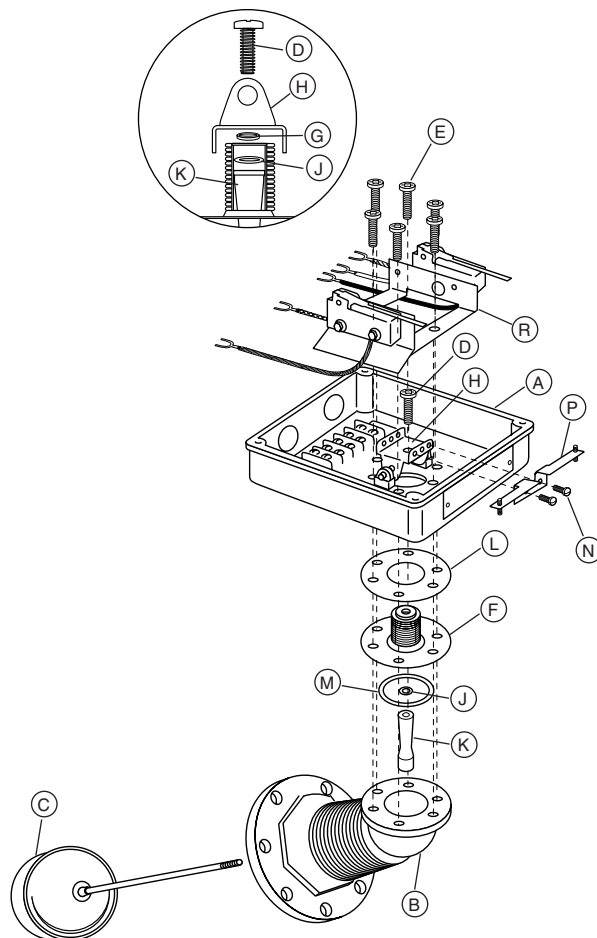
Step 3 - Changing the Bellows for Snap Switch Units

a. Clean out sealant and remove two (2) screws (N) and bracket (P). Remove (6) Allen® or Torx® screws (E). Remove switch housing (A) from head casting (B). The switch bracket (R) will come out with the switch housing (A). The bellows assembly (F) may stick to the switch housing (A). Remove bellows assembly (F) and clean gasket surfaces on both head casting (B) and switch housing (A).



Step 3 - Changing the Bellows for Snap Switch Units cont'd

- b. NOTE:** On units that have Allen® head screws they will be replaced with Torx® screws (furnished).
- c.** Take the new bellows assembly (F) and disassemble it noting the order of parts. Put sealing washer (J) on top of float arm (K) and insert into inside of bellows (F). Place gasket (L) over bellows (F). Insert this assembly into switch housing (A) and bracket (H). If the screw (D) was an Allen® screw, the spacer washer (G) will have to be put in the top hole of bracket (H). Take Torx® screw (D) (furnished) and insert it into hole on top of bracket (H) and spacer washer (G) (if needed) and screw into float arm (K). Hand tighten only.
- d.** Make sure the tapped hole on float arm (K) is facing the correct way, so the float and float rod (C) can be screwed into it when bellows assembly is assembled on the head casting. Place gasket (M) on head casting (B). Center the gasket and place the bellows assembly (F) and the switch housing (A) on head casting (B). Insert and tighten the six (6) Torx® screws (E) to 125 in. lbs. (14N•m). Make sure that two (2) of the screws capture the switch bracket (R).
- e.** Screw float and float rod (C) into float arm (K) and hand tighten. Center the float rod in the float rod guide (not shown) and tighten Torx® screw (D) to 125 in. lbs. (14N•m). Make sure you hold the float in place while tightening screw (D). Move the float up and down, making sure there is no binding and that the float rod is still centered. Install bracket (P) using screws (N), tighten to 40 in. lbs. (4.5 N•m).



STEP 4 - Assembling the Head to the Body and Test for Proper Operation

- a.** Clean the gasket surface on head casting (B) and the body casting. Using a new gasket (furnished) mount the head mechanism to the body casting. Tighten the eight (8) bolts to 18 ft. lbs. (24N•m). Reattach conduit connectors and connect wires to the proper terminals. Turn on electrical power to the boiler.
- b.** Run the unit through several cycles of operation, noting the operating points. On the snap switch controls it may be necessary to readjust the switches. If this is necessary follow the enclosed instructions. (See attached for reference only, MM-235).