ITT

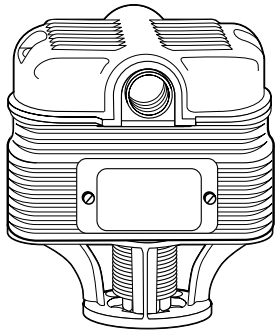
McDonnell & Miller

Installation & Maintenance Instructions
MM-706(A)

Replacement Switch Assembly

5	**Burner/Pump Control**
5-M	**Burner/Pump Control – Manual Reset**
7B	**Proportional Control**
7B-M	**Proportional Control – Manual Reset**

For Series:
93 94
193 194
Pump Controller/Low Water Cut-Off



Replacement Switch

Electrical Ratings

Models with 5 and 5-M Switch

Voltage	Pump and Burner Switch Contact Ratings Pilot Duty Only
120 VAC 240 VAC	345 VA

Models with 7B and 7B-M Switch

Switch Ratings		
Burner		**Valve**
120 VAC 240 VAC	345 VA	0 - 135 ohms @ 24 VAC

⚠ WARNING





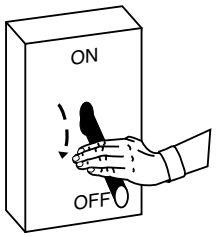
- **Before using this product read and understand instructions.**
- **Save these instructions for future reference.**
- **All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of plumbing, steam, and electrical equipment and/or systems in accordance with all applicable codes and ordinances.**
- **To prevent a fire, do not exceed the switch contact rating.**

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

Engineered for life

STEP 1 - Removal and Replacement of Contacts and Terminal Panels

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).

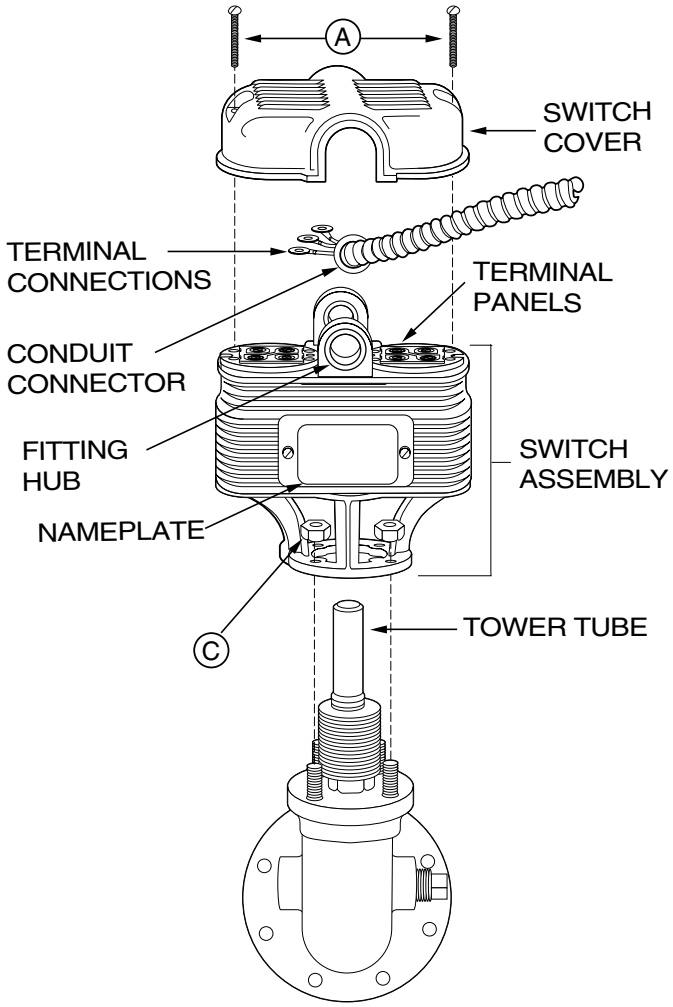


⚠ CAUTION

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

b. Remove and Replace Switch Assembly

- Remove two screws (**A**) and lift off **switch cover.**
- Identify **terminal connections** for rewiring and then disconnect all wires from **terminal panels.**
- Remove **conduit connector** and wires from the integral **fitting hub.**
- Remove four hex nuts (**B**) and carefully lift **switch assembly** up and off **tower tube.**
- Carefully slide new **switch assembly** over **tower tube** and secure with four hex nuts (**B**). Make sure **nameplate** is in same position as old unit.
- Remove two screws (**A**) and lift **switch cover** off new unit.
- Install **conduit fitting** from old unit with attached wires on **switch assembly**.
- Reconnect wiring to **terminal panel** in exactly the same position as removed.
- Replace **switch cover** and fasten with two screws (**A**).



Proceed to Step 2 to Test Control

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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