4. If there is still no voltage at the actuator, make sure all the appropriate contacts in the thermostat (or controller), limit(s), and flame safeguard control are closed. If one or more is open, determine the cause(s) and correct the con-dition(s) before proceeding.
5. If there is proper voltage at the valve actuator but the valve still does not open, first check that the gas pressure at the valve is normal. Then make sure that the bleed line is unobstructed.
6. If the gas pressure and bleed line are okay but the valve still does not open, replace the coil assembly. (Refer to the Specifications section for the proper part number, and to the Service Information section for the proper procedure.)
7. If you replace the coil assembly and the valve still does not open, replace the valve.

If the valve will not close when one or more of the appropriate contacts in the thermostat (or controller), limit(s), or flame safeguard control is open:

1. Make sure that the gas flow is in the direction of the arrow on the valve body.
2. Make sure the valve actuator is wired in the correct circuit. Open the master switch to remove power from the valve actuator. If the valve closes now, the actuator may not be wired properly.
3. Look for a short in the electrical circuit.

SERVICE INFORMATION

⚠ WARNING

Electrical Shock Hazard.
Can cause severe injury or death.

1. Only qualified service technicians should attempt to service or repair flame safeguard controls and burner systems.
2. Open the master switch before replacing the coil assembly or the valve. Line voltage is present in the electrical circuits to the valve.

Scheduled Inspection and Maintenance

A schedule should be set up and followed for periodic inspection and maintenance for the burner and all other controls and the valve(s). Refer to the instructions for the flame safeguard control for more information.

Replacing the coil assembly (Figs. 12 through 15)

1. Open the master switch to disconnect all power to the valve actuator.
2. Loosen the cover screw in the front of the actuator housing (Fig. 12) and remove the housing cover.
3. Disconnect the external wires from the two internal black leadwires (Fig. 12).
4. Remove the two torx screws inside the actuator housing (Fig. 13) and lift off the housing.
5. Remove the holding nut from the top of the coil assembly (Fig. 13).
6. Lift the coil assembly straight up and off the plunger tube assembly (Fig. 14).
7. Snap out the wraparound metal cover and remove the metal base (Fig. 15). Save these parts for the replacement coil.
8. Carefully unhook the cardboard insulator (Fig. 15) and remove it. Save the insulator for the replacement coil.
9. Make sure the new coil assembly has the same part number as the old one; then discard the old coil assembly.
10. Wrap the cardboard insulator around the new coil assembly and carefully hook it together around the two black leadwires (Fig. 15).
11. Insert the two black leadwires through the opening in the metal base, and insert the new coil assembly into the metal base (Fig. 15).
12. Snap the wraparound metal cover into place around the new coil assembly (Fig. 15).
13. Slip the new coil assembly over the plunger tube assembly (Fig. 14).
14. Replace the holding nut on top of the coil assembly (Fig. 13) and tighten it securely.
15. Replace the actuator housing and tighten the two torx screws holding it in place (Fig. 13).
16. Reconnect the external wires to the two internal black leadwires (Fig. 12).
17. Replace the housing cover, and tighten the cover screw holding it to the actuator housing (Fig. 12).
18. Close the master switch.
19. Test the valve to make sure it opens and closes as described in the Operation section.
20. Verify proper operation after servicing.

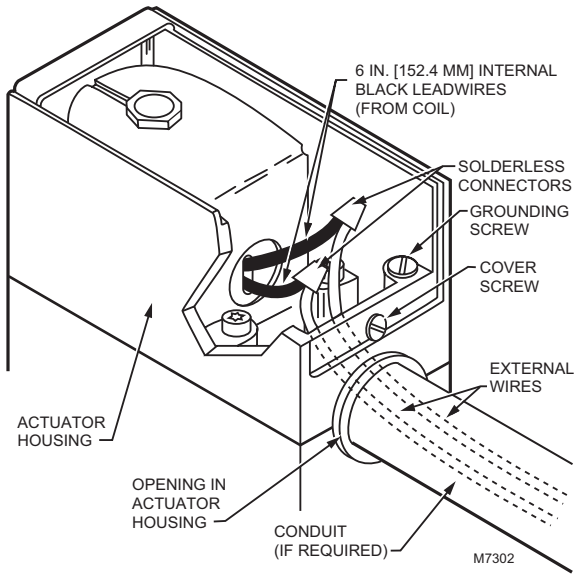

Fig. 12. Wiring connections and actuator housing.

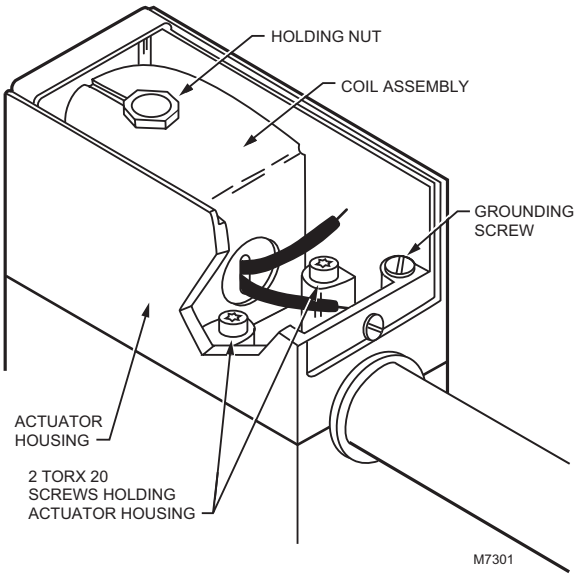

Fig. 13. Internal view of actuator housing.

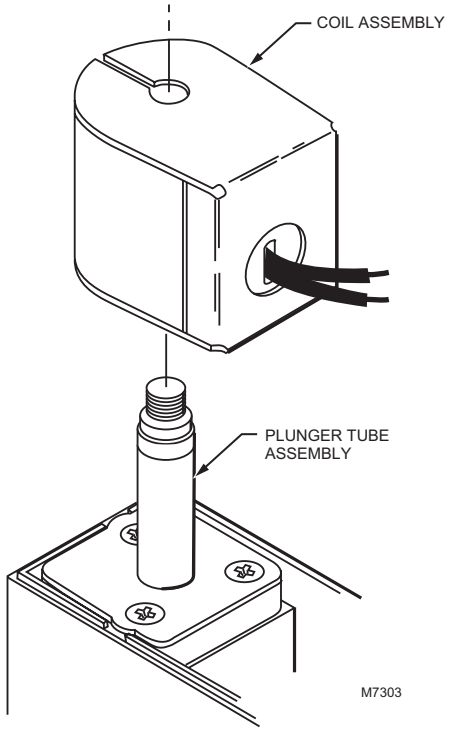

Fig. 14. Coil assembly fits on plunger tube assembly.

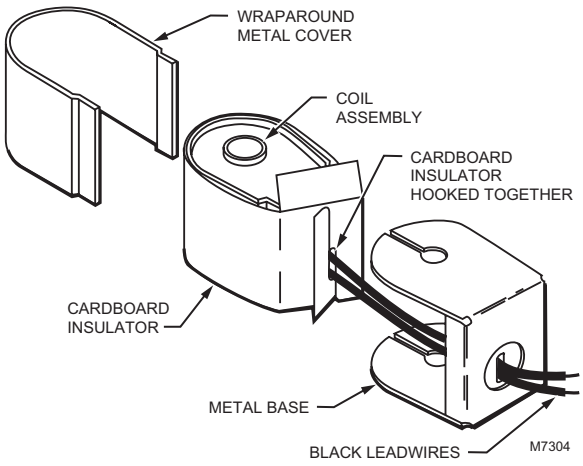

Fig. 15. Coil assembly, insulator, and cover.

⚠ CAUTION

Equipment Damage Hazard.
Operation without proper checkout can damage the equipment.

1. Do not put the system into service until you have satisfactorily completed the following Valve Leak Test, all applicable tests described in the Checkout section of the Instructions for the flame safeguard control, and any other tests required by the burner manufacturer.
2. All tests must be performed by a trained, experienced flame safeguard control technician.
3. Close all manual fuel shutoff valves as soon as trouble occurs.

After the installation is complete, cycle the valve several times with the manual fuel shutoff cock closed. Make sure the valve and actuator function properly. Also perform the Valve Leak Test that follows before putting the valve into service.

Valve Leak Test (Fig. 7)

This is a test for checking the closure tightness of a gas safety shutoff valve. It should be performed by qualified personnel during the initial startup of a burner system, or whenever the valve or valve bonnet is replaced (see Service Information section). It is recommended that this test also be included in the scheduled inspection and maintenance procedures. For a periodic inspection test, follow steps 1, 3, 4, 5, 8, 9, 10, 12, 13, 16, and 17.

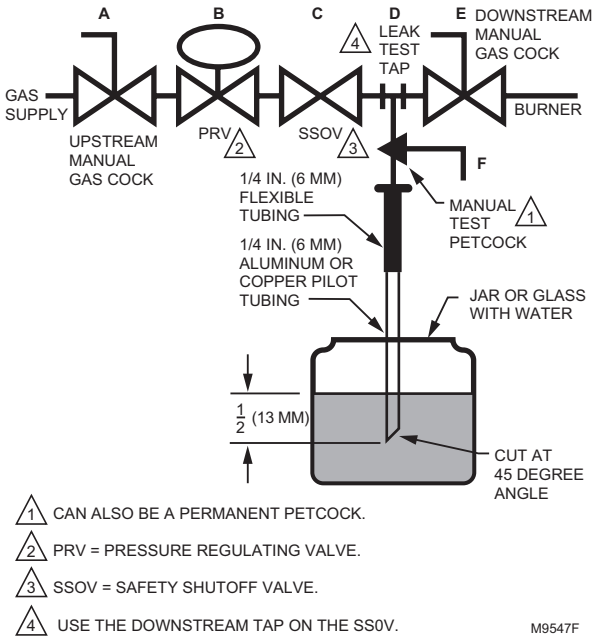

Fig. 16. Valve leak test.

1. De-energize the control system to assure that there is no power to the safety shutoff valve (**C**) shown in Fig. 7.
2. Close the upstream manual gas cock (**A**).
3. Make sure the manual test petcock (**F**) is closed in the leak test tap assembly (**D**).
4. Remove the leak test tap plug and connect the test apparatus to the Leak Tap (**D**).
5. Close the downstream manual gas cock (**E**).
6. Open the upstream manual gas cock (**A**).
7. Run the safety shutoff valve (**C**) to its fully open position (through the safety system); then immediately de-energize the system to close the valve.
8. Immerse a 1/4 in. tube vertically 1/2 in. (12.7 mm) into a jar of water.
9. Slowly open the test petcock (**F**).
10. When the rate of bubbles coming through the water stabilizes, count the number of bubbles appearing during a ten-second period. Each bubble appearing during a ten-second period represents a flow rate of approximately 0.001 cfh.

To meet U.S. requirements, leakage must not exceed the values listed in Table 5.

Table 5. Allowable Leakage for V48/V88 Valves.

V48/V88 Pipe Size (in.)	Air (cc/h)	Natural Gas (cc/h)[a]	Bubbles/10 sec.; Max @ 45 degrees[b]
3/4	266	332.5	8
1	302	377.5	9
1-1/4	442	552.5	13
1-1/2	442	552.5	13
2	650	812.5	20
2-1/2	650	812.5	20
3	650	812.5	20

[a] Natural gas: multiply air by 1.25.

[b] Bubble leakage: Divide natural gas by 573, then multiply by 14.

NOTE: For international leak test requirements, contact the office of the appropriate approval agency.

After the test:

11. Close the upstream manual gas cock (**A**).
12. Close the test petcock (**F**), remove the test apparatus, and replace the leak test tap plug (**D**).
13. Open the upstream manual gas cock (**A**) and energize the safety shutoff valve (**C**).
14. Test with soap bubbles to assure that there is no leak at the test tap (**D**).
15. De-energize the safety shutoff valve (**C**).
16. Open the downstream manual gas cock (**E**).
17. Restore the system to normal operation. If two safety shutoff valves are utilized, each V48/V88 valve is to be checked for tightness of closure.

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