

Q3450, Q3453 and Q3480 SmartValve™ System Pilot Burners

INSTALLATION INSTRUCTIONS

APPLICATION

These SmartValve™ System pilot burners provide pilot flame ignition and sensing for the SV94/SV95/SV96/SV98XX Systems. They consist of a replaceable igniter-flame rod assembly, bracket assembly, pilot target, ground electrode, orifice assembly, compression fitting and spring clip. The igniter lights the pilot burner. The flame rod proves the pilot flame and the pilot flame lights the main burner.

INSTALLATION

When Installing This Product...

1. Read these instructions carefully. Failure to follow instructions can damage product or cause a hazardous condition.
2. Check ratings given in instructions and on product to make sure product is suitable for your application.
3. Make sure installer is a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

Location

1. Position pilot burner for easy access and observation. In replacement applications, replace pilot burner with an identical unit and position new pilot burner in the same location and orientation as the original one.
2. Mount pilot burner on main burner. Mounting surfaces other than the main burner can shift, bend, or warp as furnace expands and contracts while operating. See Fig. 1.

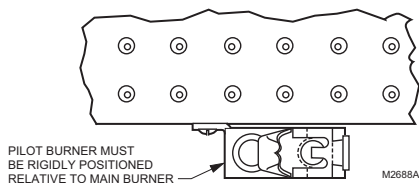


Fig. 1. Mount pilot burner on main burner.

3. Mount pilot burner so the pilot flame remains properly positioned with respect to the main burner flame. See Fig. 2.

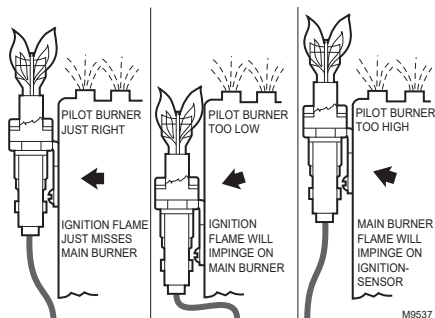


Fig. 2. Location of pilot burner.

4. Supply pilot flame with ample air which is free of combustion products.
5. Do not impinge pilot flame on adjacent parts. Do not impinge main burner flame on pilot burner.



WARNING

Fire or Explosion Hazard.
Can cause severe injury, death or property damage.

Follow these warnings exactly:

1. Disconnect power supply before wiring to prevent electrical shock or equipment damage.
2. To avoid dangerous accumulation of fuel gas, turn off gas supply at appliance service valve before starting installation and perform Gas Leak Test after completion of installation.
3. Do not bend pilot tubing at the control or pilot after compression nut is tightened. Gas leakage at the connection can result.

Follow appliance manufacturer instructions if available; otherwise, use the following instructions.

- Do not expose pilot flame to falling scale that could impair main burner ignition.
- Do not expose pilot burner to main burner rollout while igniting or extinguishing.
- Do not expose pilot flame to drafts that push or pull pilot flame away from the igniter-flame rod.

Connect Pilot Gas Tubing

- Cut tubing to desired length and bend as necessary for routing to pilot burner. Do not make sharp bends or deform tubing. Do not bend tubing at control after compression nut is tightened because this can result in gas leakage at connection.
- Square off and remove burrs from end of tubing.
- Push tubing into compression nut clearance hole until tubing bottoms.

NOTE: When replacing an ignition system control, cut off old compression fitting and replace with new compression fitting provided with new pilot burner. Never use old compression fitting because it might not provide a gas-tight seal. See Fig. 3.

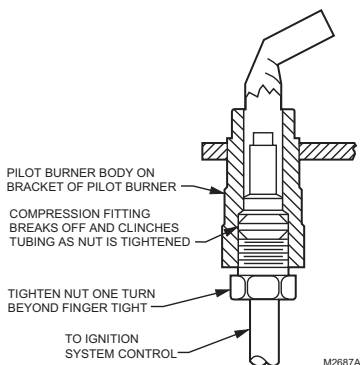


Fig. 3. Always use new compression fitting.

- While holding tubing all the way in, engage threads and turn until finger tight.
- Using a wrench, turn compression nut one turn beyond finger tight. **DO NOT OVERTIGHTEN.**
- Connect the other end of the tubing to ignition system control according to ignition system control manufacturer instructions.

Wire Pilot Burner to Ignition System Control

- Mount the igniter-flame rod assembly on the pilot burner.
- Connect the igniter-flame rod assembly keyed plug connector to its mating terminal block, labeled **IGNITER**, on the SV94/SV95/SV96/SV98XX.
- Use ceramic or plastic standoff insulators as necessary to prevent cable from contacting metal surfaces.

STARTUP AND CHECKOUT

Perform Gas Leak Test



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Check for gas leaks with soap and water solution any time work is done on a gas system.

Gas Leak Test:

- Make sure that gas supply is turned on at the appliance service valve.
- Paint pipe connections upstream of pilot burner with rich soap and water solution. Bubbles indicate gas leak.
- If leak is detected, tighten pipe connections.
- Set thermostat to call for heat to light main burner.
- With main burner in operation, paint pipe joints (including adapters) and ignition system control inlet and outlet with rich soap and water solution.
- If another leak is detected, tighten adapter screws, joints, and pipe connections.
- Replace part if leak can not be stopped.

Adjust Pilot Flame

The pilot flame should envelop approximately 3/8 in. (10 mm) of the sensor tip. See Fig. 4.

To adjust pilot flame:

- Turn off system by setting thermostat below the temperature to call for heat.
- Disconnect lead to MV terminal on the SV94/SV95/SV96/SV98XX.
- Light pilot by setting the thermostat to call for heat.
- Remove the pilot adjustment cover screw from the gas control.
- Turn inner pilot adjustment screw clockwise to decrease or counterclockwise to increase pilot flame.
- Always replace pilot adjustment cover screw and tighten firmly after completing adjustment to assure proper operation.

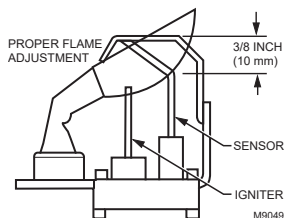


Fig. 4. Sensor tip must be in pilot flame.

SERVICE



WARNING

Fire or Explosion Hazard.

Can cause severe injury, death or property damage.

Perform Gas Leak Test anytime work is done to the system.

- (1) Turn off furnace at circuit breaker or fuse box.
- (2) Clean the flame rod with emery cloth.
- (3) Make sure electrical connections are clean and tight.
- (4) Check for cracked ceramic insulator, which can cause short to ground, and replace igniter-flame rod assembly if necessary.
- (5) Turn on power and set thermostat to call for heat. The pilot should light and then the main burner should light.

Pilot Outage

1. If pilot flame goes out during ignition, but is properly adjusted, recheck mounting and location instructions in Location section.
2. If all mounting and location instructions are followed but pilot continues to go out, construct a shield to protect pilot flame from main burner ignition, extinction and drafts. See Fig. 5.

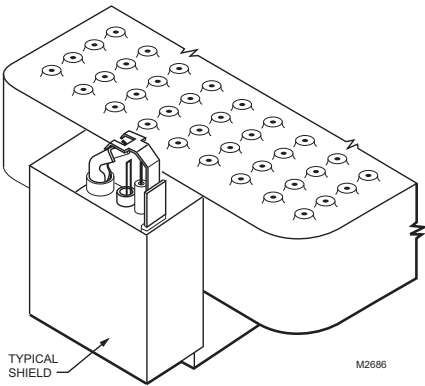


Fig. 5. Proper shielding of pilot flame.

3. Check pilot and main burner lightoff.
 - a. Set the thermostat to call for heat.
 - b. Watch the pilot burner during the ignition sequence to determine if:
 - (1) Igniter continues to glow red after the pilot is lit.
 - (2) The pilot lights and the igniter stops glowing red, but main burner does not light.
 - c. If pilot burner is functioning correctly, ensure adequate flame current as follows:

Replace Igniter-Flame Rod Assembly

1. Turn off furnace at circuit breaker or fuse box.
2. Remove spring clip, then igniter-flame rod assembly from the pilot burner.
3. Disconnect the igniter-flame rod assembly keyed plug from the igniter connection on the SV94/SV95/SV96/SV98XX.
4. Remove the igniter-flame rod assembly from the furnace.
5. Install replacement igniter-flame rod assembly in the pilot burner and secure with spring clip.
6. Connect igniter-flame rod assembly keyed plug to igniter connection on the SV94/SV95/SV96/SV98XX.
7. Turn on power and set thermostat to call for heat. The pilot should light and then the main burner should light.

Check Ignition Cable

1. Make sure that ignition cable is not in contact with metal surfaces.
2. Make sure that ignition cable is not more than 3 ft (1m) long.
3. Check electrical continuity of ignition cable.

Check Grounding

1. If ground is poor or erratic, safety shutdown will occur. Therefore, if frequent shutdowns are reported, check that ground is made through the pilot tubing.
2. Excessive temperature at the ceramic flame rod insulator will permit electrical leakage to ground. Check for the following:
 - (a) If bracket is bent, bend it back to correct position.
 - (b) If insulator is cracked, replace igniter-flame rod assembly (Q3400A or Q3405 for SV9580/SV9581 System).



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