

## RV8310D,E Millivolt Receiver/ Modulating Gas Valve

### INSTALLATION INSTRUCTIONS

## APPLICATION

The RV8310D,E Millivolt Receiver/Modulating Gas Valve is powered by thermopile generators and has a 60,000 Btuh capacity (1 in. pressure drop for straight-through configuration). The design makes it ideal for vented fireplace and space heating applications. The RT8220A Transmitter is used with this product.

## SPECIFICATIONS

**Main Gas Connection:** Valve: 3/8 in. NPT thread.

**Pilot Gas Connection and Flow:**

Connection Size: 7/16-24 UNS.

Flow: 1700 Btuh at 4.0 in. wc pressure drop.

**Thermopile Generator:** Q313 with 1/4 in. (6 mm) quick connect or spade terminals.

**Ambient Temperature Range:**

0°F to 175°F (-18°C to +79°C).

**Pressure Settings:**

Natural gas: 3.5/1.7 in. wc typical.

Liquid propane (LP): 10.0/6.3 in. typical.

**NOTE:** Both high and low settings are fixed.

**European Pressure Tap:** For both inlet and outlet pressure a check can be done by turning a captive screw and using a plastic tube at the test point.

**Voltage:**

RV8310D,E: The system uses two Q313 thermopile generators. Each generator must have a minimum of 500 mV in open circuit under all operating conditions. Contact Honeywell for test procedure.

**Fan Connection:** 120 Vac, 50/60 Hz, 2A maximum; 1/4 in. spade terminals.

**Approvals:** CSA International certificate 158158-250000102.

**Accessories:**

396206-1 Natural Gas Conversion Kit.

396206-2 LP GAs Conversion Kit.

## INSTALLATION

### When Installing this Product...

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

### **WARNING**

**Oxygen Depletion Hazard.**

**Can cause injury or death due to asphyxiation.**

Use only vented gas valve models on vented appliances. Use only unvented gas valve models on unvented appliances.

### **WARNING**

**Fire or Explosion Hazard.**

**Can cause property damage, severe injury or death.**

Follow these instructions exactly:

1. Turn off gas supply at the appliance service valve before starting installation, and perform a Gas Leak Test after the installation is complete.
2. Always install the sediment trap in the gas supply line to prevent contamination of the gas valve.
3. Do not force the gas valve control knob. Use only your hand to turn the control knob. If the knob does not operate by hand, the valve should be replaced by a qualified service technician.



## ⚠ WARNING

**Electrical Shock or Equipment Damage Hazard.**

**Can cause severe injury or death, or short equipment circuitry.**

Disconnect all power supplies before installation.

### IMPORTANT

*These gas valves are shipped with protective seals over the inlet and outlet tapings. Do not remove the seals until ready to connect the piping.*

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

### Location

Locate the combination gas valve where it cannot be affected by steam cleaning, high humidity, dripping water, corrosive chemicals, dust or grease accumulation or excessive heat. To assure proper operation, follow these guidelines:

- Locate gas valve in a well-ventilated area.
- Mount gas valve high enough to avoid exposure to flooding or splashing water.
- Make sure the ambient temperature does not exceed the ambient temperature ratings for each component.
- Cover gas valve if appliance is cleaned with water, steam, or chemicals or to avoid dust and grease accumulation.
- Avoid locating gas valve where it can be exposed to corrosive chemical fumes or dripping water.

### Install Piping to Gas Valve

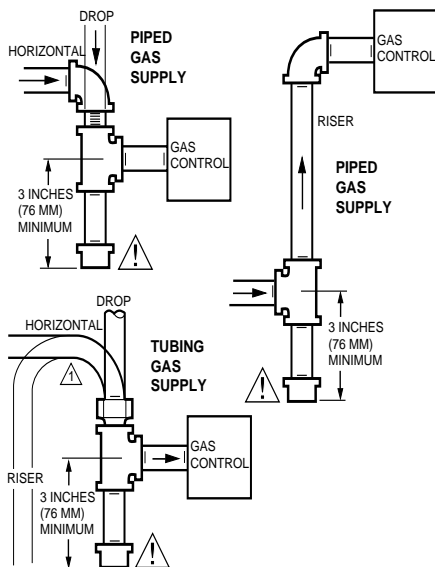
All piping must comply with local codes and ordinances or with the National Fuel Gas code (ANSI Z223.1 NFPA No. 54), whichever applies. Tubing installation must comply with approved standards and practices.

1. Use new, properly reamed pipe free from chips. When tubing is used, assure the ends are square, deburred and clean. All tubing bends must be smooth and without deformation.
2. Run pipe or tubing to the valve. If tubing is used, obtain a tube-to-pipe coupling to connect the tubing to the valve.
3. Install sediment trap in the supply line to the gas valve. See Fig. 1.

### Install Valve

1. Mount valve 0 to 90 degrees, in any direction—including vertically—from the upright position of the gas control knob.
2. Mount the valve so gas flow is in the direction of the arrow on the side of the valve.
3. If new pipe thread is needed, cut threads 9/16 on pipe.
4. Thread pipe into the valve. Do not insert deeper than 3/8 in. Valve distortion or malfunction can result if the pipe is inserted too deeply.

5. Apply a moderate amount of good quality pipe compound (do not use Teflon tape) to pipe only, leaving two end threads bare. On LP installations, use compound resistant to LP gas. See Fig. 2.
6. Remove seals over valve inlet and outlet, if necessary.
7. Connect pipe to valve inlet and outlet. Use wrench on either side of the pipe outlet. Refer to Fig. 3 through 5.



## ⚠ CAUTION

**GAS LEAKAGE HAZARD.**

**FAILURE TO FOLLOW PRECAUTIONS CAN RESULT IN A GAS-FILLED WORK AREA.**

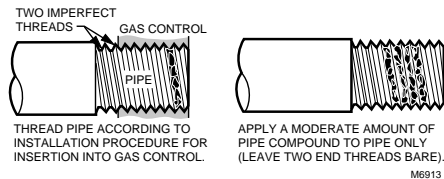
SHUT OFF THE MAIN GAS SUPPLY BEFORE REMOVING END CAP. TEST FOR GAS LEAKAGE WHEN INSTALLATION IS COMPLETE.



ALL BENDS IN METALLIC TUBING SHOULD BE SMOOTH.

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**Fig. 1. Sediment trap installation.**



**Fig. 2. Use moderate amount of pipe compound.**

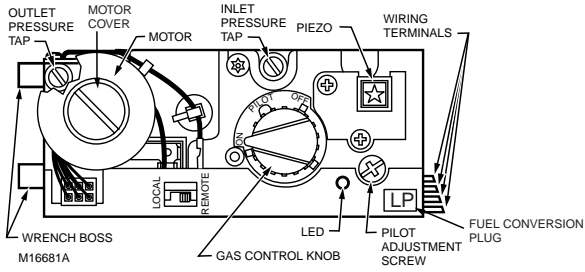


Fig. 3. Top view of gas valve.

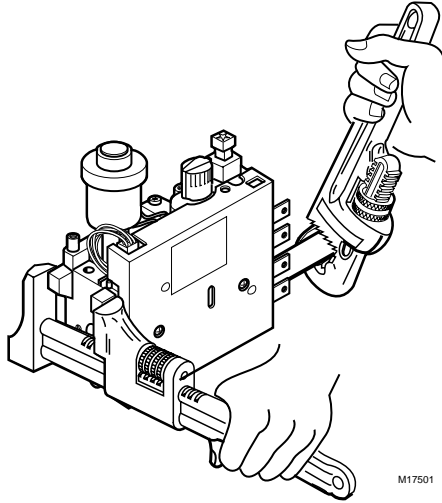


Fig. 4. Proper use of wrench on gas valve.

## WIRING

Follow the wiring instructions furnished by the appliance manufacturer, if available, or use the general instructions provided below. Where these instructions differ from the appliance manufacturer, follow the appliance manufacturer instructions. For a typical wiring diagram, see Fig. 5.

### **⚠ WARNING**

#### **Electrical Shock Hazard.**

#### **Can cause serious injury or death.**

Disconnect power supply before making wiring connections. More than one disconnect can be involved.

All wiring must comply with applicable electrical codes and ordinances.

1. Disconnect power supply before making wiring connections to prevent electrical shock or equipment damage.
2. Connect white leads of thermopile to terminals with white dots.

NOTE: This valve can be used only in a self-generating power system.

# FUEL CONVERSION

The RV8310D Millivolt Receiver/Modulating Gas Valve is not convertible between natural gas and LP.

The RV8310E Millivolt Receiver/Modulating Gas Valve is convertible between natural gas and LP. Conversion kits are available for this purpose.

The 396206-1 Natural Gas Conversion Kit changes the RV8310E from regulated LP gas to regulated natural gas. The 396206-2 LP Conversion Kit changes the RV8310E from regulated natural gas to regulated LP gas. Kits include a fuel conversion plug (blue for natural gas, red for LP gas) and a conversion label.

## ⚠ WARNING

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

Turn off the gas supply at the appliance service valve before beginning conversion.

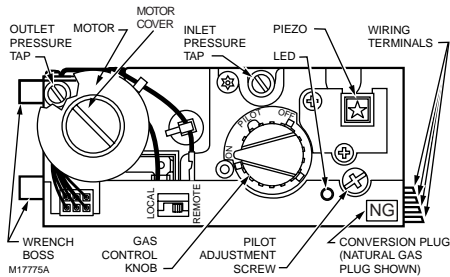


Fig. 5. RV8310E top view, showing motor cover and conversion plug location.

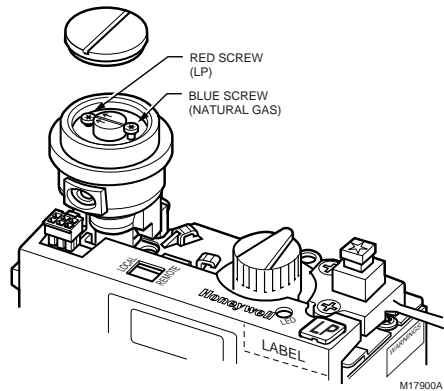


Fig. 6. Gas selector switch under motor cover.

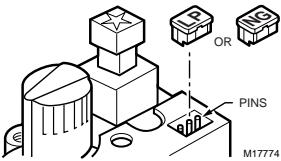


Fig. 7. Insertion of LP or Natural Gas conversion plug.

## Converting to LP Gas

1. Turn off gas supply at the appliance service valve.
2. Remove cover from motor, exposing the gas selector.
3. Using a standard screwdriver, push the gas selector down and rotate until the arrows point to the red-colored screw.
4. Insert the LP Fuel Conversion Plug (red).
5. Attach the LP conversion label to the valve.
6. Replace cover on the motor.

## Converting to Natural Gas

1. Turn off gas supply at the appliance service valve.
2. Remove cover from motor, exposing the gas selector.
3. Using a standard screwdriver, push the gas selector down and rotate until the arrows point to the blue-colored screw.
4. Insert the Natural Gas Fuel Conversion Plug (blue).
5. Attach the Natural Gas conversion label to the valve.
6. Replace cover on the motor.

NOTE: The high and low outlet pressure settings for natural gas and LP cannot be changed.

## OPERATION

1. Turn the gas control knob counterclockwise from OFF to the PILOT position.
2. Push the knob down and hold in position. The pilot valve opens and allows gas to flow to the pilot burner.
3. Push the plunger on the piezo until the pilot burner is lit. When the pilot burner is lit, the LED on the control will come on after approximately 60 seconds and will blink continuously.
4. Release the gas control knob. The shaft moves upward and the pilot burner stays burning. If the pilot burner goes out, repeat steps 2 and 3.
5. Turn the gas control knob counterclockwise to the ON position. If the manual switch is in the LOCAL position, the main burner will turn on immediately.

On the initial use of a transmitter, a recognition operation is required between the receiver/valve and the transmitter.

## ⚠ WARNING

### Fire Hazard.

#### Can cause severe injury or death.

Moving the LOCAL/REMOTE switch can cause the main burner to come on immediately. Stand away from the main burner when moving the LOCAL/REMOTE switch.

1. Turn the gas control knob to the PILOT position.
2. Move the LOCAL/REMOTE switch to the LOCAL position for at least two seconds; then move the switch to the REMOTE position.
3. Press the FAN or FLAME button on the transmitter within 30 seconds of the switch change.
4. Turn the gas control knob to the ON position.

The LED will blink indicating that the transmitter will now work with the receiver/valve. If the switch stays in the REMOTE position, the RT8220A Transmitter will control the main valve, flame modulation level and fan control.

If the LOCAL/REMOTE switch is in the LOCAL position, the receiver/valve will be at the highest fixed pressure setting.

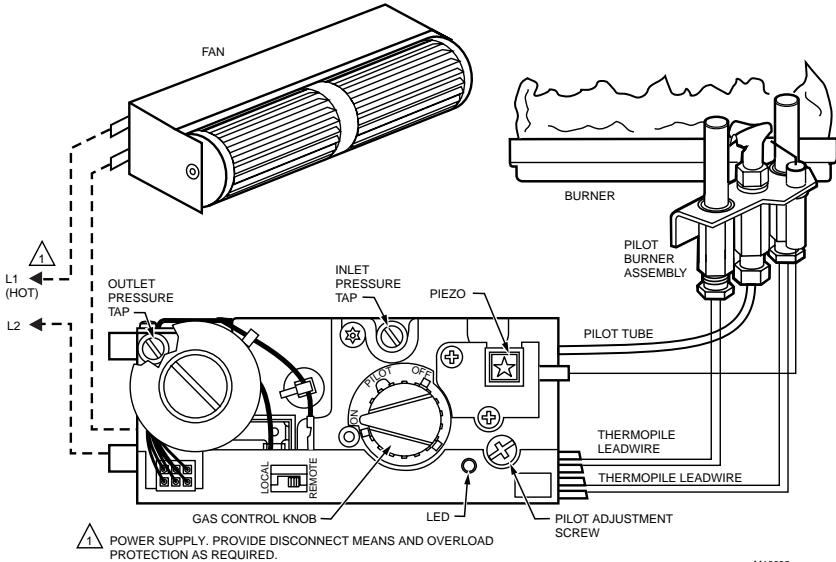


Fig. 8. Millivolt system wiring diagram.

## Shut-Off Procedure

If the manual switch is in the REMOTE position, the RT8220A transmitter can shut off the main burner and fan. However, the control is still on and a command from the transmitter can turn on the main burner and fan.

To shut off the system:

Turn the gas control knob clockwise to the OFF position. This closes the main gas and safety valves. The transmitter cannot turn on the main burner or the fan.

## CHECKOUT

### WARNING

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

Do not force the gas control knob on the appliance. Use only your hand to turn the gas control knob. If the knob does not operate by hand, the valve should be replaced by a qualified service technician.

## Gas Control Knob Settings

Gas control knob settings are as follows:

OFF: Prevents main gas flow through the valve.

ON: Permits main burner and pilot gas flow. Gas valve and RT8220A Transmitter control main burner gas flow.

PILOT: Opens pilot valve and allows gas flow to the pilot burner.

NOTE: Valves are shipped with the gas control knob in the ON position.

## Perform Gas Leak Test

### WARNING

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

Stand away from the main burner while lighting. Hidden gas leaks can cause flashbacks in the appliance vestibule. Check for gas leaks with rich soap and water solution any time work is done on a gas system.

## Gas Leak Test

1. Paint the pipe connections upstream of the gas valve with a rich soap and water solution. Bubbles indicate a gas leak.
2. If a leak is detected, tighten the pipe connections.
3. Light the main burner.
4. With the main burner in operation, paint the pipe joints (including adapters) and valve inlet and outlet with a rich soap and water solution.
5. If another leak is detected, tighten the adapter screws, joints, and pipe connections.
6. Replace the part if the leak cannot be stopped.

## Turn on System



Rotate the gas control knob counterclockwise to ON.

## Turn on Main Burner

Follow the instructions provided with the RT8220A Transmitter or by the appliance manufacturer.

## Adjust Pilot Flame

the pilot flame should envelop 3/8 to 1/2 in. (10 to 13 mm) of the thermocouple or igniter-sensor tip. See Fig. 9.

1. Remove pilot adjustment cap screw. See fig. 1.
2. Turn inner adjustment screw clockwise  to decrease or counterclockwise  to increase pilot flame.
3. Always replace cap screw after adjustment and tighten firmly to safeguard proper operation.

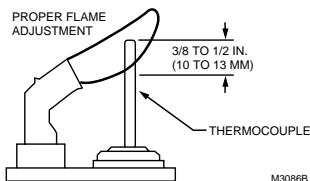


Fig. 9. Proper flame adjustment. (M3086B)

## Check and Adjust Gas Input and Burner Ignition

### IMPORTANT

*Do not exceed the input rating stamped on the appliance nameplate, or the manufacturer recommended burner orifice pressure for size orifice(s) used.*

### IMPORTANT

*For complete combustion, be sure the primary air supply to the main burner is adjusted properly. Follow the instructions of the appliance manufacturer.*

### CHECKING GAS INPUT BY CLOCKING GAS METER

1. Be sure there is no gas flow through the meter except to the appliance being checked.

NOTE: Other appliances must remain off with the pilots extinguished, or the consumption must be deducted from the meter reading.

2. Convert the flow rate to Btuh as described in the Gas Controls Handbook, form 70-2602.
3. Compare to the Btuh input rating on the appliance

## CHECKING GAS INPUT WITH MANOMETER

NOTE: NOTE:Both the inlet and outlet pressure taps have a captive screw.

1. Be sure the gas control knob is in the PILOT position.
2. Loosen, but do not remove the outlet tap captive screw.
3. Attach a plastic tube with a 1/4 in. shell ID and connect the manometer.
4. Turn the gas control knob to the ON position.
5. Check the outlet tap pressure.
6. Turn the gas control knob to the OFF position.
7. Shut off the gas supply at the manual valve in the gas piping to the appliance or, for LP, at the tank.
8. Loosen, but do not remove the inlet tap captive screw.
9. Attach a plastic tube with a 1/4 in. shell ID and connect the manometer.
10. Turn on the gas supply at the manual valve.
11. Check the inlet tap pressure.
12. Turn the gas control knob to the OFF position.
13. Repeat the Gas Leak Test at the pressure tap with the main burner operating.
14. Always tighten the screws in the pressure taps after disconnecting the plastic tubes.

## Check Safety Shutdown Performance

 **WARNING**

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

Perform the safety shutdown test any time work is done on a gas system.

1. Place gas control knob in PILOT position. Main burner should go off and pilot should remain lit.
2. Extinguish pilot flame. The RV8310D pilot gas flow stops within thirty seconds. Pilot gas safety shutoff proves complete shutdown because the safety shutoff valve prohibits main burner and pilot gas flow.
3. Relight pilot burner and operate the system through one complete cycle to ensure all controls operate properly.

## MAINTENANCE

 **WARNING**

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

Do not attempt to take apart the gas valve or clean it. Improper assembly and cleaning can cause unreliable operation.

Regular preventive maintenance is important in applications that place a heavy load on system controls. Exposure to water, dirt, chemicals and heat can damage the gas valve and shut down the control system.

The maintenance program should include regular system checkout as outlined in the Checkout section, and checkout of the control system as described in the appliance manufacturer literature.

Maintenance frequency must be determined individually for each application:

- Cycling frequency—Appliances that cycle 20,000 times annually should be checked monthly.
- Intermittent use—Appliances that are used seasonally should be checked before shutdown and again before the next use.
- Consequence of unexpected shutdown—Where the cost of an unexpected shutdown would be high, the system should be checked more often.
- Dusty, wet, or corrosive environment—Because these environments can cause the gas valve to deteriorate more rapidly, the system should be checked more often.

Any valve should be replaced if it does not perform properly on checkout or service. In addition, replace any module if it is wet or looks like it has ever been wet.

## SERVICE

### WARNING

**Fire or Explosion Hazard.**

**Attempted disassembly or repair can cause property damage, serious injury or death.**

Do not disassemble the gas valve; it contains no replaceable components.

If main burner does not come on, follow the instructions in the Operation section.

### Warning To The Appliance Owner. For Your Safety, Read Before Lighting Appliance.

### WARNING

**Fire or Explosion Hazard.**

**Can cause property damage, serious injury or death.**

Exactly follow the instructions for Pre-Lighting Checks.

#### Pre-Lighting Checks

1. Before lighting, smell around the appliance area for gas. If the appliance uses LP gas, be sure to smell next to the floor because LP gas is heavier than air.
2. If you smell gas, immediately shut off the manual valve in the gas piping to the appliance or, on LP, at the tank. Leave the building immediately and call your gas supplier. If your gas supplier cannot be reached, call the fire department.
3. Do not force the gas valve control knob. Use only your hand to turn the control knob.
4. If the knob does not operate by hand, the valve should be replaced by a qualified service technician.
5. The gas valve must be replaced if it was flooded with water. Call a qualified service technician.
6. The gas valve is a safety device. It must be replaced in the event of any physical damage such as bent terminals, missing or broken parts, stripped threads, or evidence of exposure to heat.

#### IMPORTANT

*Follow the operating instructions provided by the manufacturer of your heating appliance.*

## Honeywell

**Home and Building Control**

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