Honeywell

393691, 396221-2 (LP) and 394588, 396222-1 (Natural) Series Gas Conversion Kits for VR82, VR83, and SV9 Series of Single Stage Combination Gas Controls

INSTALLATION INSTRUCTIONS

APPLICATION

The 393691 and 396221-2 LP Conversion Kit changes VR82, VR83, and the SV9 series of single stage combination gas controls from regulated natural gas to regulated LP gas. The 394588 and 396222-1 Natural Gas Conversion Kit changes VR82, VR83, and the SV9 series of single stage combination gas controls from regulated LP gas to regulated natural gas. The kits include a plastic pressure regulator adjustment screw, regulator spring, metal regulator cap screw, and conversion labels. To use this kit, make sure that the gas control is equipped with a standard or slow opening pressure regulator.

NOTE: Step regulator valves, convertible regulator valves, two-stage valves, and SV9570 valves cannot be converted with this kit.

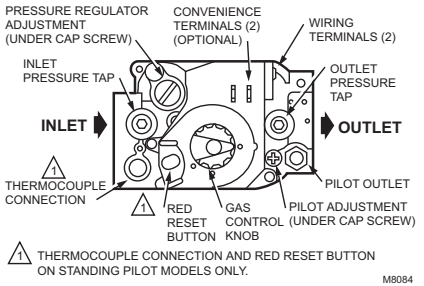


Fig. 1. Top view of VR8205 combination gas control.

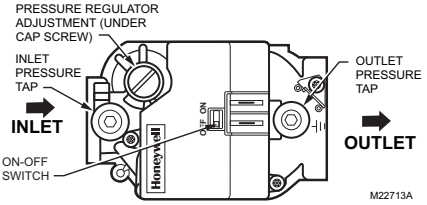


Fig. 2. Top view of VR8205S, T combination gas control.

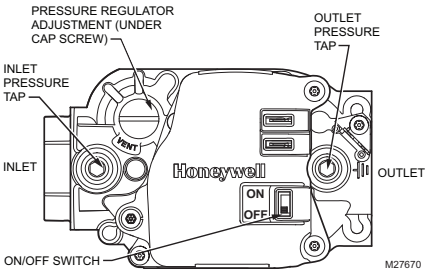


Fig. 3. Top view of VR8215S, T combination gas control.

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. The installer must be a trained, experienced service technician.
4. After installation is complete, use these instructions to check out product operation.

⚠ WARNING

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

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. Use only your hand to turn gas control knob or switch. Never use any tools. If gas control knob or switch will not operate by hand, then a qualified technician should replace the gas control. Force or attempted repair may result in fire or explosion.
4. Change main orifices to meet appliance manufacturer specifications.

To convert from one gas to another:

NOTE: Step regulator (P, C) valves, convertible regulator (R) valves, two-stage valves (Q, N), and SV9570 valves cannot be converted with this kit.

For VR82xx, VR83xx, and SV9xx A, H, K, and M series of gas valves:

1. Turn off gas supply at the appliance service valve.
2. Remove metal cap screw and plastic pressure adjustment screw. Refer to Fig. 1 to Fig. 3.
3. Remove the existing spring.
4. Insert the replacement spring. Refer to Fig. 4
5. Install the new plastic pressure regulator adjustment screw.
6. Check and adjust the regulator setting using a manometer or by clocking the gas meter. See "Check and Adjust Gas Input and Burner Ignition" on page 3.
7. Install the new metal cap screw and O-ring.
8. Mount conversion label on the gas control.
9. Install the gas control and appliance according to appliance manufacturer instructions.

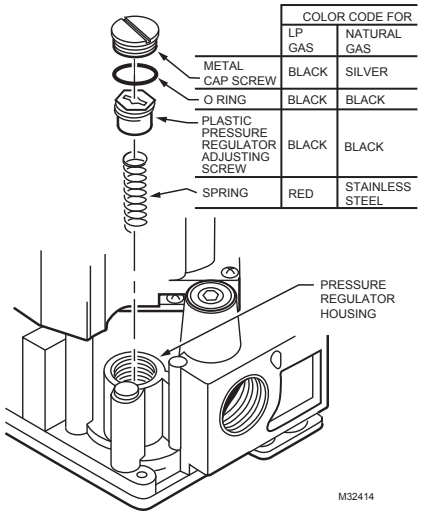


Fig. 4. Conversion kit installation in VR82xx, VR83xx, and SV9xx A, H, K, and M series of gas valves.

For VR8205S, T and VR8215S, T series gas valves:

1. Turn off gas supply at the appliance service valve.
2. Remove metal cap screw and plastic pressure adjustment screw. Refer to Fig. 1 to Fig. 3.
3. Remove the existing spring.
4. Insert the replacement spring. Refer to Fig. 5.
5. Install the new plastic pressure regulator adjustment screw.
6. Check and adjust the regulator setting using a manometer or by clocking the gas meter. See "Check and Adjust Gas Input and Burner Ignition" on page 3.
7. Replace metal cap screw.

NOTE: Do not use the new metal cap screw included in the kit. Reuse the old metal cap screw.

8. Mount conversion label on the gas control.
9. Install the gas control and appliance according to appliance manufacturer instructions.

START-UP

Gas Control Knob and Switch Settings

OFF: Prevents pilot and main burner gas flow.

PILOT (On standing pilot controls only): Permits pilot burner gas flow when red knob is held down or thermocouple current is above power unit dropout value.

ON: Permits gas flow into gas control. Pilot burner gas is controlled as in the PILOT position for standing pilot and intermittent pilot systems. Main burner gas flow is controlled by thermostat and automatic valve operators.

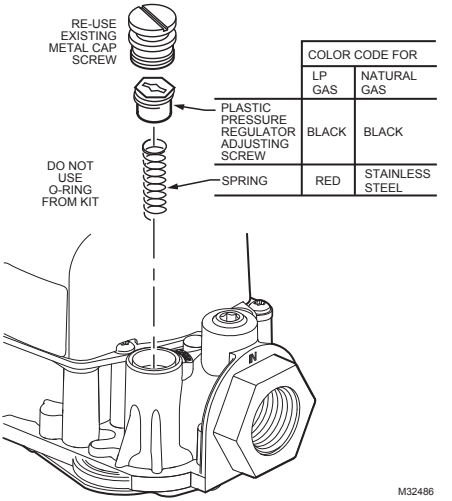


Fig. 5. Conversion kit installation in VR8205S, T and VR8215S, T series gas valves.

Perform Gas Leak Test

⚠ WARNING

Fire or Explosion Hazard.
Can cause property damage, serious injury or death.
Check for gas leaks with soap and water solution any time work is done on a gas system.

Gas Leak Test

1. Paint pipe connections upstream of gas control with rich soap and water solution. Bubbles indicate gas leak.
2. If gas leak is detected, tighten all pipe connections.
3. Stand clear of main burner while lighting to prevent injury caused from hidden leaks that could cause flashback in the appliance vestibule. Light main burner.
4. With main burner operating, paint pipe joints (including adapters) and control inlet and outlet with rich soap and water solution.
5. If another gas leak is detected, tighten adapter screws, joints, and pipe connections.
6. Replace part if gas leak can not be stopped.

Light Pilot (Standing Pilot Models)

1. Turn gas control knob clockwise to OFF. Wait five minutes to dissipate any unburned gas. Smell for gas around the appliance near the floor. Do not relight pilot flame if you smell gas.
2. Turn gas control knob counterclockwise to PILOT. Push down and hold the knob while lighting the pilot flame.
3. Hold down the gas control knob about one minute, then release.
   a. If pilot flame goes out, turn gas control knob clockwise to OFF and repeat steps 1 through 3.
   b. If pilot flame remains lit, turn gas control knob counterclockwise to ON.

Turn on System (Intermittent and Direct Ignition Systems)

Rotate the gas control knob counterclockwise to ON or slide gas control switch to ON.

Turn on Main Burner

Follow appliance manufacturer instructions or adjust thermostat setting to call for heat.

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. Refer to Fig. 6. To adjust pilot flame:

1. Remove metal cap screw. Refer to Fig. 1 to Fig. 3.
2. Turn inner plastic regulator adjustment screw clockwise to decrease or counterclockwise to increase pilot flame.
3. Always replace metal cap screw after adjustment and tighten firmly to safeguard proper operation.

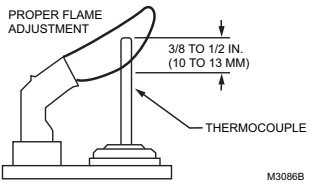


Fig. 6. Proper flame adjustment.

Check and Adjust Gas Input and Burner Ignition

⚠ WARNING

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

1. Do not exceed input rating stamped on appliance nameplate, or manufacturer recommended burner orifice pressure for size of orifice(s) used. Make certain primary air supply to main burner is properly adjusted for complete combustion. Follow appliance manufacturer instructions.
2. IF CHECKING GAS INPUT BY CLOCKING GAS METER:
   a. Make sure that the only gas flowing through the meter is for the appliance being checked.
   b. Make certain that other appliances are turned off with their pilot flames extinguished (or deduct their gas consumption from the meter reading).
   c. Convert flow rate to Btuh as described in form 70-2602, Gas Controls Handbook, and compare to Btuh input rating on appliance nameplate.
3. IF CHECKING GAS INPUT WITH MANOMETER:
   a. Be sure gas control knob or switch is in the off position before removing outlet pressure tap plug to connect manometer (pressure gauge).
   b. Shut off gas supply at the appliance service valve, or for LP gas, at the gas tank, before removing the outlet pressure tap plug and before disconnecting manometer and replacing outlet pressure tap plug.
   c. Perform the Gas Leak Test at outlet pressure tap plug.

Checking Gas Pressure Using Meter Clocking Method

NOTE: Use this method when manometer is not available or when manifold pressure is not specified in in. wc (kPa) by the burner manufacturer.

1. Make sure that the only gas flowing through the meter is for the appliance being checked.
2. Make certain that other appliances are turned off with their pilot flames extinguished (or deduct their gas consumption from the meter reading).
3. Turn gas control knob or switch to ON position.
4. To obtain an accurate outlet pressure reading, cycle main burner on and off several times to stabilize the pressure regulator diaphragm.
5. Using a watch with a second hand, carefully clock the gas meter to determine the time per revolution. Use Table 1 to determine the exact main burner gas flow rate in cubic feet per hour (cfh).
6. Compare actual input with burner manufacturer recommended input (stamped on burner nameplate). To convert Btuh rating to cfh (m3/hr) use the following formula:

   Input Rating in BTuh = (cfh) x (BTU content of the gas)

7. If necessary, adjust pressure regulator to match appliance rating.
   a. Remove metal cap screw.
   b. Using a screwdriver, turn inner plastic regulator adjustment screw clockwise to increase or counterclockwise to decrease gas pressure to main burner.
   c. Always replace metal cap screw and tighten firmly to prevent gas leakage.
8. Turn gas supply back on to other appliances and relight all pilot flames according to appliance manufacturer instructions.
9. Proceed to Checkout section.

Checking Gas Pressure Using a Manometer (Pressure Gauge)

1. Turn gas control knob to PILOT for standing pilot systems or turn gas control knob or slide switch to OFF for intermittent and direct ignition systems.
2. Remove outlet pressure tap plug from gas control and connect pressure gauge. Refer to Fig. 1 to Fig. 3.
3. Turn gas control knob or slide gas control switch to ON position.
4. To obtain an accurate outlet pressure reading, main burner must be cycled on and off several times to stabilize the pressure regulator diaphragm.
5. Light main burner and read pressure gauge.
6. If necessary, adjust pressure regulator to match appliance rating.
   a. Remove metal cap screw.
   b. Using a screwdriver, turn inner plastic regulator adjustment screw clockwise to increase or counterclockwise to decrease gas pressure to main burner.
   c. Always replace metal cap screw and tighten firmly to prevent gas leakage.
7. Turn gas control knob to PILOT for standing pilot systems or turn gas control knob or slide switch to OFF for intermittent and direct ignition systems.
8. Remove pressure gauge and replace outlet pressure tap plug and metal cap screw.
9. Proceed to Checkout section.
   a. For one ft^3 per revolution gas meter dials, use Table 1 directly.
   b. For 1/2 ft^3 per revolution gas meter dials:
      (1) Determine time for two dial revolutions
      (2) Use Table 1 directly.
   c. For two ft3 per revolution gas meter dials:
      (1) Determine time for one complete dial revolution.
      (2) Divide time by two.
      (3) Use Table 1 directly.

CHECKOUT

1. Make certain the primary air supply to the main burner is properly adjusted for complete combustion at final pressure regulator setting. Main burner must light reliably under all conditions.
2. Place system in operation and observe through at least one complete cycle to assure all controls are operating properly.
3. If manometer (pressure gauge) method is used, perform Gas Leak Test at outlet pressure tap plug.
4. Apply the conversion label in the conversion kit to the gas control, heating appliance, and any other controls to show conversion to a new type of gas.

Table 1. Converting Gas Flow Rate.

Time (sec)	Flow (cfh)	Flow (m^3/hr)
40	90	2.55
41	88	2.50
42	86	2.44
43	84	2.38
44	82	2.32
45	80	2.27
46	78	2.21
47	77	2.18
48	75	2.12
49	73	2.07
50	72	2.04
51	71	2.01
52	69	1.95
53	68	1.93
54	67	1.90
55	65	1.84
56	64	1.81
57	63	1.78
58	62	1.76
59	61	1.73
60	60	1.70
62	58	1.64
64	56	1.59
66	54	1.53
68	53	1.50
70	51	1.44
72	50	1.42
74	49	1.39
76	47	1.33
78	46	1.30
80	45	1.27
84	43	1.22
88	41	1.16
92	39	1.10
96	38	1.08
100	36	1.02
105	34	0.96
110	33	0.93
115	31	0.88
120	30	0.85
130	28	0.79
135	27	0.76
140	26	0.74
150	24	0.68
160	23	0.65
170	21	0.59
180	20	0.57

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