White Rodgers

PG9A PILOT GENERATOR
750 Millivolt
INSTALLATION AND SERVICE

FAILURE TO READ AND FOLLOW ALL INSTRUCTIONS CAREFULLY BEFORE INSTALLING OR OPERATING THIS CONTROL COULD CAUSE PERSONAL INJURY AND/OR PROPERTY DAMAGE.

DESCRIPTION

The PG9A pilot generator provides both a pilot flame for ignition of gas burners and electricity generated from its heat to operate millivolt gas valves and relays.

PG9A high-power pilot generators are recommended for field replacement of PG1, PG6 and most other pilot generators, provided the relationship of the pilot flame to the main burner is maintained for safe ignition. By using an appropriate base fitting, PG9A pilot generators may be readily adapted to any gas, altitude or pilot gas connection. The generator cartridge is replaceable.

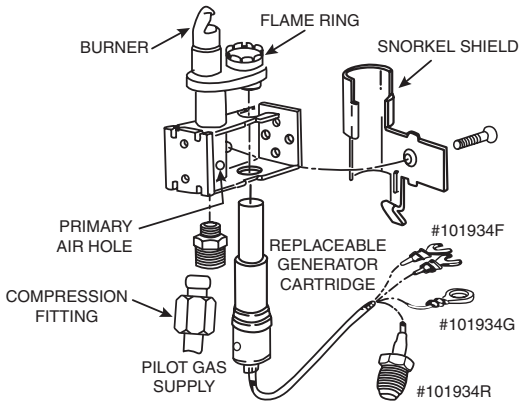


Figure 1. Typical PG9A Pilot Generator Assembly

PRECAUTIONS

⚠ WARNING

Fire/explosion hazard. If a leak is found or gas odor Is present, TURN OFF GAS, extinguish any open flame, ventilate the area, and correct the problem. Failure to comply could cause fire and explosion, resulting in personal injury, death, or property damage.

⚠ CAUTION

- **This device should only be installed by a qualified service person.**
- **TURN OFF GAS SUPPLY BEFORE INSTALLING PILOT GENERATOR.**
- **All piping must meet applicable codes and ordinances (refer to ANSI Z223.1/NFPA No. 54).**
- **All wiring connections must be clean, tight, crimped, and soldered.**
- **Ensure type, mV output, mounting, orifice, and ignition port pattern are appropriate for application.**
- **Check out complete system after installing pilot generator.**
- **Prior to Installation, verify conformance with burner manufacturer's Installation instructions.**

OPERATION

PG9A pilot burners are blue flame Bunsen-type for quiet operation and maximum stability despite variations of draft and gas pressure. The "snorkel" design primary air path incinerates dust, eliminating linting problems.

The generator cartridge contains many series-connected thermocouples, encased in a high-temperature stainless steel cover. When the top 1/2-inch of the cartridge is heated by the flame ring of the pilot burner, its thermocouples collectively generate 500 to 750 millivolts, open circuit.

ORIFICE SELECTION

The recommended gas input is 250 to 2000 BTU/hr, depending on head type. See Table 1 for suggested orifice size based on type of gas and supply pressure.

ALTITUDE CORRELATION

Installations at higher elevations require smaller orifices. For elevations of 3500 to 5000 feet, use an orifice one size smaller than that shown in Table 1 (e.g., one drill number larger). From 5000 to 6500 feet, decrease orifice by two drill sizes. Above 6500 feet, decrease 3 sizes.

Table 1. Orifice Sizes (Inch)

Pilot Type Gas Type	One Port PG9A06	Two Port PG9A41/42	Small Wing PG9A27/37	Large Wing PG9A28/38
Natural 7" W.C.	.020 # 76	.020 #76	.022 # 74	.024 # 73
Mftd 3.5" W.C.	.026 # 71	.028 # 70	.031 # 68	.033 # 66
LP 11" W.C.	.010	.011	.012	.013
LP/Air* 6" W.C.	.018 # 77	.020 # 76	.022 # 74	.024 # 73
LP Air† 6" W.C.	.030 # 69	.030 # 69	.031 # 68	.032 # 67
Mixed 6" W.C.	.020 # 76	.022 #74	.024 #73	.026 # 71

*1000 Btu/ft.^{3} (37.3 MJ/m^3) †500 Btu/ft.^{3} (18.65 MJ/m^3)

INSTALLATION

The pilot generator must be mounted so that the new PG9A ignition flame position matches that of the original.

1. Screw appropriate orifice (see Table 1) into the pilot burner base. Do not overtorque.
2. Mount pilot generator securely with respect to the main burner. Main burner flame must not hit generator cartridge or pilot burner. Pilot burner ignition port must be positioned to ignite burner when main gas valve opens.
3. Connect pilot gas tubing between valve and pilot gas orifice (Figure 1). To prevent damage to pilot generator, use a second restraining wrench on orifice base while tightening compression nut. Do not overtorque.
4. Turn thermostat off or to lowest setting.
5. Turn on gas supply and light pilot according to appliance manufacturer's instructions. A blue, non-blowing flame must surround generator cartridge. Check for leaks at all gas supply connections with rich soap and water solution.

⚠ WARNING

Fire/explosion hazard. If a leak is found or gas odor Is present, TURN OFF GAS, extinguish any open flame, ventilate the area, and correct the problem. Failure to comply could cause fire and explosion, resulting in personal injury, death, or property damage.

6. Turn on gas supply and light pilot according to appliance manufacturer's instructions. Turn thermostat on (contacts closed), calling for heat. If main burner does not ignite within 4 seconds, turn off and wait five minutes for excess gas to disperse before attempting to correct the problem.
7. Verify proper wiring and gas connections, pilot flame, and pilot generator position, then perform millivoltmeter tests. It may be necessary to reposition the pilot and retest for proper ignition several times.
8. Test for minimum pilot flame condition: With manual valve in pilot position, lower pilot flame by closing pilot valve adjustment to smallest flame that will (a) hold safety valve open (combination valves or gas trains with safety shutoff valve), or (b) actuate main burner valve on systems without safety shutoff feature. Turn manual valve to main burner position. Energize main valve. Pilot must ignite main burner within 4 seconds, without excessive roll out.
9. Reposition pilot generator, if necessary so that pilot ignition flame most effectively impinges on main gas flow for safe ignition. Readjust pilot for a normal blue, non blowing flame completely surrounding generator cartridge.
10. Adjust thermostat to desired setting.

MILLIVOLTMETER TEST

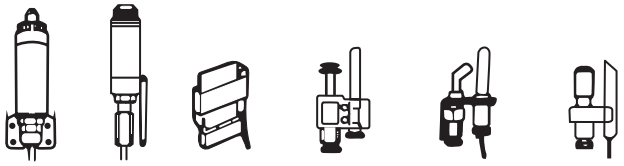
The most effective test of a pilot generator requires a millivoltmeter with a 0-500 or 0-1000 millivolt (mV) scale.

1. Verify proper wiring connections. Take all readings with the pilot burning and the thermostat contacts closed, calling for heat.
2. Connect the meter leads to the valve or relay terminals to which the pilot generator wires are attached. If the meter needle moves to left of zero or no reading is indicated, reverse meter probes.
3. Meter must read 220 mV or more for systems equipped with anticipator, or 185 mV for those without anticipator. If the reading is lower, confirm proper wiring and connections, sufficient pilot flame, and no blockage of pilot burner. If necessary, replace generator cartridge.
4. Limit Switch. If the system is equipped with a limit switch, voltage drop across the switch should be 20 mV or less. If not, check wiring connections, clean switch contacts, or replace limit switch, as necessary.
5. Thermostat. Potential across valve should be 140 mV or more. If it is, yet valve does not open, replace valve. If the potential is less that the minimum, check thermostat and limit control wiring connections and clean switch contacts. Replace limit controls or thermostat as required.

The potential across the two thermostat terminals on the valve should read 20 mV or less without anticipation or 60 mV or less with anticipation. If higher, check all wiring, contacts, and terminals, then replace thermostat if necessary.

REPLACEMENT OF OTHER PILOT GENERATORS

The high power PG9A maybe used as a field replacement for old style PG1 and PG6 pilot generators as well as generators produced by other manufacturers.



GC PG1 GC PG6 MH CS82 MH CS893/4 MH 0314-Q313 MH Q182A

Figure 2. Pilot Generators Replaceable with PG9A

On any field replacement, the PG9A pilot generator must be mounted so the ignition flame position from the new burner matches the ignition flame position of the original pilot. Perform field test for safe ignition.

NOTE: Honeywell valves, such as VS887, having one small and one large generator terminal, require polarized connection. Reverse PG9A leads if necessary.

SERVICE

If top 1/2 of cartridge is not heated sufficiently by a well defined blue ring of flame, complete control system may operate sluggishly. Remove snorkel to clean out primary air hole (Figure 1). The pilot orifice may be removed for cleaning or changing by unscrewing the orifice base fitting. On old style units, a clip holds orifice in place. In the event of damage, replace generator cartridge. Be sure replacement cartridge is fully inserted when clip is reassembled.

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