



GM-7000 Series Multi-Function Gas Control Valve

Applications


The GM-7000 Series multi-function gas valve works in conjunction with an electronic sequence control unit to provide fully automatic control for residential and light commercial heating, cooking, drying, and other light commercial applications.


Typical applications include freestanding and wall hung boilers for residential hydronic heating, commercial cooking appliances, and commercial tumbler dryers.


Installation

IMPORTANT: Only qualified personnel should install or service BASO Gas Products® products. These instructions are a guide for such personnel. Carefully follow all instructions in this document and all instructions for the appliance.

IMPORTANT: Make all gas installations in accordance with applicable local, national, and regional regulations.

 **CAUTION: Risk of Electric Shock.** Disconnect power supply before making electrical connections to avoid electric shock.

 **WARNING: Risk of Explosion or Fire.** Shut off the gas supply at the main manual shutoff valve before installing or servicing the GM-7000. Failure to shut off the gas supply can result in the release of gas during installation or servicing, which can lead to an explosion or fire, and may result in severe personal injury or death.

 **WARNING: Risk of Explosion, Fire, or Electric Shock.** Label all wires before they are disconnected when replacing or servicing the GM-7000. Wiring errors can cause improper or dangerous operation and may result in an explosion, fire, or electric shock leading to severe personal injury or death.

IMPORTANT: Verify that the valve is installed only in applications where the specified maximum ambient (surface) temperature and maximum operating pressures do not exceed the limits in the *Technical Specifications* section.

To install the GM-7000 valve:

1. Shut off power to the appliance.
2. Shut off the gas at the main manual shutoff valve.
3. Label each wire with the correct terminal designation prior to disconnection.
4. Compare the voltage on the valve with the power source voltage to ensure the correct unit is being installed.
5. Mount the valve. The GM-7000 valve may be mounted on a horizontal manifold with the magnetic operators (solenoid coils) pointed up (vertical) or in any position not exceeding 90° from the vertical (Figure 1). The valve may also be mounted on a vertical manifold in any position around its axis. Do not install the solenoid coils upside down.

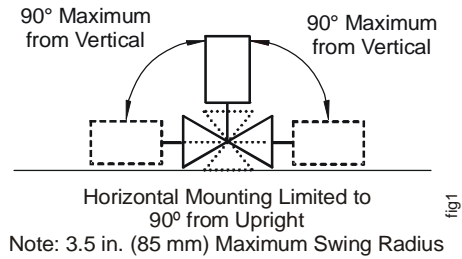


Figure 1: GM-7000 Mounting Positions

6. Install the valve on the manifold, ensure the gas flows through the valve body in the direction indicated by the arrow on the body. If the valve is installed with the gas flow in the opposite direction of the arrow, leakage can occur.

Note: If installing a valve with threaded connections, use an approved pipe joint sealing compound on the male threads before assembly. An optional thread lubricant may have been factory applied to the first two or three threads of the inlet and outlet to avoid galling. Make sure that excess compound is removed after mounting. Threads of pipe and nipples must be smooth and free of tears and burrs. Steam clean all piping to remove foreign substances such as cutting oil or thread chips.

7. Connect the pilot tubing (when necessary) to the threaded pilot connection on the underside of the valve body (Figure 2) and run the tube to the pilot burner within the appliance. Connect the pilot tube to the valve with an optional compression fitting.

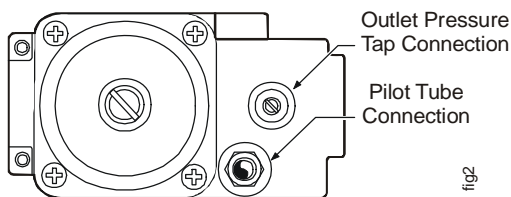


Figure 2: Underside of Valve with Direct-Acting Regulator

8. Check for leakage before making any valve adjustments.
 - a. Shut off the gas at the main manual shutoff valve and open the pressure connection between the manual shutoff valve and the GM-7000 valve.
 - b. Connect air tubing with a maximum pressure of 1-1/2 times the valve's maximum operating pressure (as indicated on the valve) to the opened pressure connection.

- c. Paint all valve body connections with a rich soap and water solution.

If bubbles occur, this is an indication of a leak. To stop a leak, tighten joints and connections. Replace the part if the leak cannot be stopped.

If bubbles do not occur, remove the air tubing and close the pressure connection.

9. Make wiring connections. See the *Wiring* section for specific wiring instructions.
10. Determine the outlet pressure by applying power to the valve and energizing both valve solenoids. Use the outlet pressure tap connection on the underside of the valve body to monitor the outlet pressure. The outlet pressure tap is a bleed hole with a cast spigot, sealed with a threaded brass needle screw (Figure 2). To monitor the outlet pressure, turn the screw in a counterclockwise direction one or two turns and fit a 9 mm diameter flexible tube over the cast spigot. After all valve adjustments have been made and the desired outlet pressure has been obtained, remove the flexible tube. Tighten the needle screw by turning it clockwise with a slotted screwdriver until hand tight, sealing the bleed hole.
11. Check for leakage at the bleed hole. Paint the bleed hole with a rich soap and water solution (or use acceptable gas leak detection equipment). If bubbles occur, this is an indication of a gas leak. To stop a leak, tighten the needle screw. Replace the valve if the leak cannot be stopped.

Note: If installing a valve with a pressure regulator, set the valve to the desired outlet pressure. See the *Regulator Adjustment* section for specific adjustment procedures. After setting the valve outlet pressure, ensure that the leak-limiting seal cap is replaced (Figure 3).

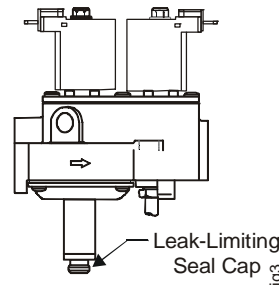


Figure 3: GM-7532 Model with Direct-Acting Regulator

12. Observe at least three complete operating cycles to ensure that all components are functioning correctly before leaving the installation.

Wiring



CAUTION: Risk of Electric Shock.

Disconnect power supply before making electrical connection to avoid electric shock.

Note: Do not connect the ground wire in 24 volt AC applications to prevent possible grounding of the 24 volt AC transformer secondary.

The GM-7_3_ is supplied with 1/4 in. (6.35 x 0.8 mm) male tag terminals, and connections should be made using 1/4 in. (6.35 x 0.8 mm) female, fully insulated push-on terminals.

Route the electrical connection for the valve solenoid actuators from the burner sequence control to the valve.

Setup and Adjustments

Checkout



WARNING: Risk of Explosion or Fire.

Follow this or an equivalent checkout procedure after installation. Before leaving the installation, verify that the gas valve functions properly and that the system has no gas leaks. Gas leaks can lead to an explosion or fire, and may result in severe personal injury or death.

Make sure all components are functioning properly by performing the following test:

1. Test all joints and connections for leaks with a soap solution.
2. Close the main upstream shutoff valve and wait at least 5 minutes for unburned gas to escape from the appliance, and then reopen the shutoff valve.
3. Turn on the main electrical power switch and close the thermostat contacts. The appliance should operate in accordance with the manufacturer's specified sequence of operation.

4. Turn the thermostat to a low dial setting to open the contacts. All burner flames should be extinguished. Repeat Steps 3 and 4 at least three times.
5. Return the thermostat to a normal setting before leaving the installation.

Regulator Adjustment



WARNING: Risk of Explosion or Fire.

Do not adjust the minimum flow rate of the valve below the minimum safe working rate of the appliance. This may cause gas leaks, which can lead to an explosion or fire and may result in severe personal injury or death.

IMPORTANT: Refer to and follow any specific instructions issued by the appliance manufacturer with regards to servicing their equipment.

The GM-7_3_ model has a direct-acting pressure regulator. To adjust the regulator, turn the adjusting screw to determine the compression of the regulator spring against the regulator diaphragm.

To adjust the outlet pressure, remove the leak-limiting seal cap to expose the adjusting screw (Figure 3). Turn the screw (using a suitable screwdriver) in a clockwise direction to increase or in a counterclockwise direction to decrease the outlet pressure of the valve.

Repairs and Replacement

Table 1: Replacement Solenoid Coil

Part Number	Description
R9622-1C	24 VAC; 50/60 Hz; 2-pin, 9.5 VA Coil

Do not make field repairs except for the replacement of the solenoid coil.

Any attempt to repair this assembly voids the manufacturer's warranty. For a replacement coil or gas valve, contact the original equipment manufacturer or the nearest BASO Gas Products distributor.

Troubleshooting

This procedure requires the use of a voltmeter or multimeter.

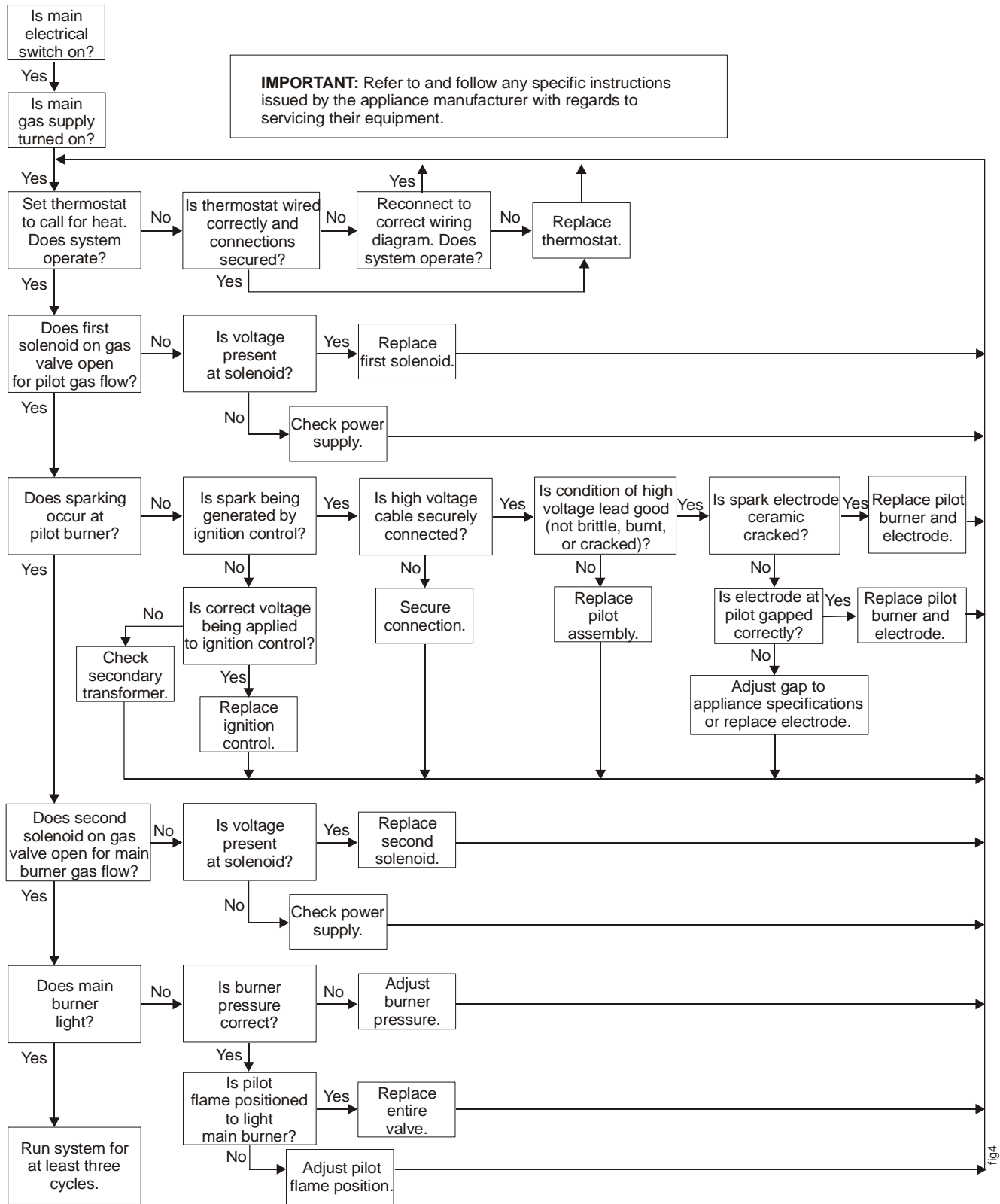


Figure 4: Burner Ignition Troubleshooting

Technical Specifications

Product	GM-7000 Series Multi-Function Gas Control Valve		
Types of Gas	Natural, Liquefied Petroleum (LP), and LP gas-air mixtures		
Maximum Operating Pressure	North America:	1/2 psi	
	Europe:	50 mbar; Class B (EN 126 and 161)	
Maximum Differential Pressure	8 in. W.C. (20 mbar)		
Reverse Pressure Rating	20 in. W.C. (50 mbar) Minimum; Class B (EN 126 and 161)		
Regulator Classification	Class C (EN 126)		
Direct-Acting Regulator Pressure Range	Natural Gas:	3 to 5 in. W.C. (7.5 to 12.5 mbar)	
	LP Gas:	9 to 12 in. W.C. (22.5 to 30 mbar)	
Permissible Ambient (Surface) Temperature	32 to 158°F (0 to 70°C)		
Body Connections	1/2 in. Rp with Flange Connection Holes (m4 x 0.7 mm pitch x 6 mm deep)		
Valve Torsion Group	Group 2 (EN 126 and 161)		
Pressure Taps	M5 x 0.8 Thread		
Pilot Connection	1/4 in. Blank Plug		
Materials	Body:	Die-Cast Aluminum	
	Diaphragms and Seals:	Nitrile Rubber	
Dirt Strainer	0.036 in. (0.9 mm) mesh		
Operating Time Rating	100% Continuous		
Valve Timings	Closing Time:	≤ 1 Second	
	Opening Time:	≤ 1 Second	
	Dead Time:	< 1 Second	
Power Rating	9.5 VA per Coil		
Electrical Connection	2-Pin Solenoid Coil: 1/4 in. (2 x 6.35 mm) Terminals		
Accessories	Conversion Kits	Natural gas to LP gas:	GM-70-CLP
		LP gas to natural gas:	GM-70-CNG
		Regulated to non-regulated	GM-70-CBP
Agency Listings	CSA (AGA/CGA) Certificate Number 229521-1656114 EC Certificate Number EC-87/94/57		
Specification Standards	EN 126 and 161 Standards Complying with the Directive Standards Complying with the Low Voltage Directive Canadian Standard CSA 6.5 and 6.20 ANSI Standards Z21.21 and Z21.78		

Performance specifications are nominal and conform to acceptable industry standards. All agency certification of BASO products is performed under dry and controlled indoor environmental conditions. Use of BASO products beyond these conditions is not recommended and may void the warranty. Product must be protected if exposed to water (dripping, spraying, rain, etc.) or other harsh environments. The original equipment manufacturer or end user is responsible for the correct application of BASO products. Consult BASO Gas Products LLC for questionable applications. BASO Gas Products LLC shall not be liable for damages or product malfunctions resulting from misapplication or misuse of its products.

Refer to the *GM-7000 Series Multi-function Gas Control Valve Product Bulletin (BASO-PB-GM7000)* for necessary information on operating and performance specifications for this product.



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