



G960 Series Multi-Functional Gas Control Valve

Installation

IMPORTANT: These instructions are intended as a guide for qualified personnel installing or servicing BASO® Gas Products products. Carefully follow all instructions in this bulletin and all instructions on the appliance. Limit repairs, adjustments, and servicing to the operations listed in this bulletin or on the appliance.



WARNING: Risk of Fire or Explosion.

The system must meet all applicable codes. Improper installation may cause gas leaks, explosions, property damage, and injuries.



WARNING: Risk of Fire or Explosion.

To prevent leakage of upstream gas, shut off the gas supply at the main manual shutoff valve before installing or servicing the G960 valve.

Mounting



CAUTION: Risk of Equipment Damage.

To prevent damage to the valve when mounting to pipework, do not use a wrench on any surface other than the casting flats provided at the inlet and outlet ends of the valve body.

To install the G960 valve:

1. Ensure that the specified maximum ambient (surface) temperature is not exceeded (see the *Technical Data* section).
2. Ensure that the power supply voltage is compatible with the required control valve voltage.

3. When installing the valve on the manifold, ensure that the gas flows through the valve body in the direction indicated by the arrow on the valve body. If the valve is installed with the gas flow in the opposite direction of the arrow, leakage can occur.
4. Shut off the gas at the main manual shutoff valve.
5. Mount the valve to the pipework. The G960 valve may be mounted on a horizontal manifold with the solenoid coils pointed up (vertical) or in any position not exceeding 90° from the vertical. The valve also may be mounted on a vertical manifold in any position around its axis (see Figure 1). Do not install the solenoid coil upside down. Install vertically wherever possible.

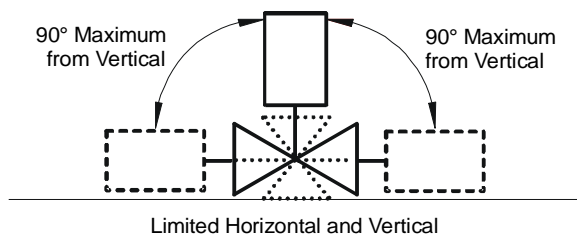


Figure 1: G960 Valve Mounting Position

6. Use an approved pipe joint sealing compound on the male threads before assembly. Remove excess compound after mounting the valve to the pipework. Threads of the 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.



WARNING: Risk of Fire or Explosion.

Avoid personal injury or property damage by ensuring that there are no gas leaks.

7. Check for leakage.
 - a. Shut off the gas at the main manual shutoff valve and open the pressure connection between the manual shutoff valve and the G960 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.
8. Make wiring connections. Refer to the *Wiring* section for specific wiring instructions.
9. Determine outlet pressure. An outlet pressure tap connection is available on the side or underside of the valve body (see Figure 2). To monitor the outlet pressure, remove the pressure tap plug and install an approved pressure monitoring fitting in the pressure connection.
10. Set the valve to the desired outlet pressure. Refer to the *Setup and Adjustments* section for specific adjustment procedures. After making valve adjustments, ensure that the leak-limiting seal cap and pressure tap plug are replaced tightly. See Figure 2.
11. Before leaving the installation, observe at least three complete operating cycles to ensure that all components are functioning correctly.

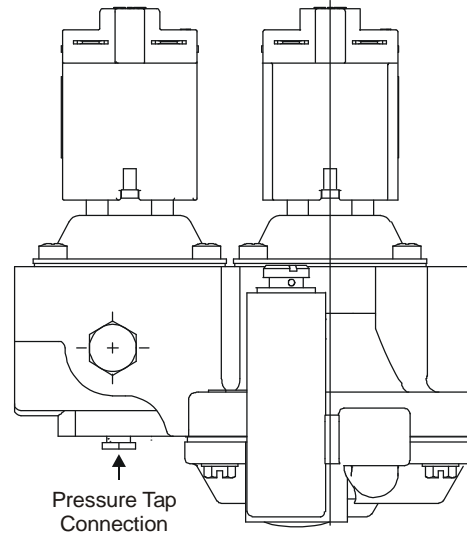


Figure 2: G960 Model with Left-Handed Top Adjustment Regulator with Bottom Pressure Tap

Wiring



WARNING: Risk of Shock.

Disconnect the power supply before making electrical connections to avoid electrical shock or equipment damage. Ensure that the operating voltage is identical to the information on the product identification label.



CAUTION: Risk of Equipment Damage.

For 24 VAC applications, the ground wire must **not** be connected to prevent possible grounding of the 24 VAC transformer secondary.

The G960 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

IMPORTANT: All adjustments must be made in conjunction with the gas appliance and in accordance with the appliance manufacturer's instructions. Only authorized personnel should make adjustments.



WARNING: Risk of Fire or Explosion.

The minimum flow rate of the valve must not be adjusted below the minimum safe working rate of the appliance.

No Regulator Adjustment

The G960 has a blank plate mounted onto the bottom of the body casting for applications where regulator adjustment control is not needed or for applications where separate adjustment control is already provided.

Regulator Adjustment

Top adjustment models have a lever-acting spring pressure regulator on either the right or left hand side of the valve. Right or left hand orientation is determined by the position of the adjustment when looking into the inlet connection of the valve. The pressure regulator is adjusted from the top of the valve when the valve is in the upright position (solenoid coils on top). Bottom adjustment models have a direct-acting spring pressure regulator on the bottom of the valve. Adjustment of the regulator is made from the bottom of the valve when the valve is in the upright position. (solenoid coils on top).

The regulator controls the gas pressure at the valve outlet by positioning the regulator poppet for selected throughput flow and pressure. This is achieved by the valve outlet pressure acting on the regulator diaphragm, which balances against the preset regulator spring. Adjustment of the spring compression determines the valve outlet pressure and the throughput flow rate.

To adjust the outlet pressure, remove the leak-limiting seal cap to expose the adjusting screw (see Figure 2). Turn the screw (using a suitable screwdriver) in a clockwise direction to increase the pressure or in a counterclockwise direction to decrease the pressure.

Repairs and Replacement

Field repairs **must not** be made to the G960 valve. For a replacement valve, contact the original equipment manufacturer or the nearest BASO Gas Products distributor.

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. If the product is exposed to water (dripping, spraying, rain, etc.) or other harsh environments, it must be protected. The original equipment manufacturer or end user is responsible for the correct application of BASO products. For questionable applications, please consult BASO Gas Products LLC. BASO Gas Products LLC shall not be liable for damages or product malfunctions resulting from misapplication or misuse of its products.

Refer to the *G960 Series Multi-Functional Gas Control Valve Product Bulletin (BASO-PB-G960)* for necessary information on operating and performance specifications for this product.

Technical Data

Product	G960 Series Multi-Function Gas Control Valve		
Types of Gas	2nd (Natural Gas) and 3rd (LP Gas) Family Gases		
Maximum Operating Pressure	North America:	0.5 psi	
	Europe:	50 mbar	
	Australia:	3.45 kPa	
Maximum Differential Pressure	8 in. W.C (20 mbar / 2kPa)		
Reverse Pressure Ratings	20 in W.C. (50 mbar / 5 kPa) Class B (EN 161 and 126)		
Regulator Classification	Class C (EN 126)		
Regulator Pressure Range	Natural Gas:	3 to 6 in. W.C (7.5 to 15 mbar / 0.75 to 1.5 kPa) Top or Bottom Adjust	
	LP Gas:	8 to 12 in W.C. (20 to 30 mbar / 2.0 to 3.0 kPa) Bottom Adjust	
		6 to 12 in. W.C. (15 to 30 mbar / 1.5 to 3.0 kPa) Top Adjust	
Permissible Ambient (Surface) Temperature	-20 to 175°F (-29 to 79°C)		
Body Connections	Inlet:	1/2 in. NPT or 1/2 in. Rp	
	Outlet:	1/2 in. NPT or 1/2 in. Rp	
Valve Torsion Group	Group 2 (EN 126 and EN 161)		
Pressure Connections	1/8 in. NPT or 1/8 in. Rp Outlet Tap Bottom, Left-Hand or Right-Hand		
Pilot Connection	1/8 in. NPT or 1/8 in. Rp Left-Hand or Right-Hand		
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 Ratings	24 VAC, 50/60 Hz, 9.5 VA		
Electrical Connections	2-Pin Solenoid Coil:	2 x 1/4 in. (6.35 mm) Terminals	
Accessories	Conversion Kits:	Nonregulation:	Y71AA-5
		Natural Gas to LP Gas (Top Adjust):	Y71GF-4
		Natural Gas to LP Gas (Bottom Adjust):	Y71GF-3
		LP Gas to Natural Gas (Top Adjust):	Y71QH-2
		LP Gas to Natural Gas (Bottom Adjust):	Y71QH-3
Agency Listings	CSA Certificate Number 229521-1656041 EC Type Examination Certificate Number EC-87/06/052		
Specification Standards	EN 126 and EN 161 Standards Complying with EMC Directive Standards Complying with Low Voltage Directive ANSI Standards Z21.21 and Z21.78 Canadian Standards CAN1-6.5 and 1-6.20		

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