



G960 Series BASOTROL® Gas Valve

Installation

IMPORTANT: These instructions are intended as a guide for qualified personnel installing or servicing BASO Gas 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: Fire or Explosion Hazard.

The system must meet all applicable local, national, and regional regulations. Improper installation may cause gas leaks, explosions, property damage, and injuries.



WARNING: Fire or Explosion Hazard.

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

Mounting

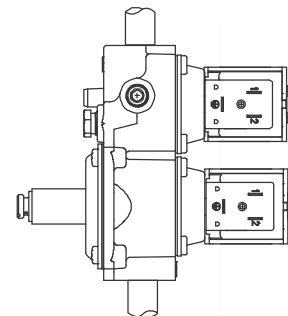
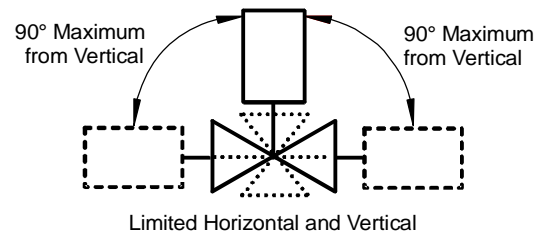


CAUTION: Equipment Damage Hazard.

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. 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 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 (see 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.



Vertical mounting may be 360° around its axis with the gas flow either up or down, but always in the direction of the arrow.

Figure 1: G960 Mounting Positions

6. Thread pipe (the amount shown in Table 1) for insertion into the control. Do not thread the pipe too far. Valve distortion or malfunction may result if the pipe is inserted too deeply.

Table 1: NPT Pipe Thread Length into Valve

Pipe Size (NPT)	Thread Pipe Amount (in.)	Maximum Depth Pipe (in.)
1/2	3/4	1/2
3/4	13/16	3/4

7. For any threaded connections, threads of pipe and nipples must be smooth and free of tears and burrs. Steam clean all piping inside diameter to remove foreign substances such as cutting oil or thread chips before installing into the valve. Apply a moderate amount of good quality pipe compound (do not use Teflon tape) to pipe only, leaving two end threads bare (see Figure 2). On LP installations, use compound resistant to LP gas.

CORRECT



APPLY A MODERATE AMOUNT OF PIPE COMPOUND TO PIPE ONLY (LEAVE TWO END THREADS BARE),

WRONG

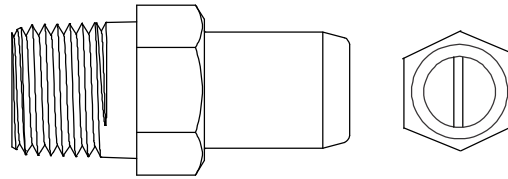


CAUTION: EXCESSIVE COMPOUND MAY BLOCK DISC OFF VALVE SEAT CAUSING LEAKS.

Figure 2: Use a Moderate Amount of Pipe Compound

8. 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. Connect pipe to gas control inlet and outlet. Use a wrench on the square ends of the control. If a flange is used, place the wrench on the flange rather than on the controls. **This process should be used for both the install and removal of the valve in a gas system,** (see Figure 5).

9. If you desire to measure the outlet pressure, use the bottom cast pressure test fitting (see Figure 4) or use the Y99AX pressure test fitting (see Figure 3) and an approved pipe joint compound on the male threads and replace the marked pressure tap plug, which is optional on the inlet or outlet of the valve body. Screw the fitting into threaded port of the valve, which replaces the pressure tap plug.



**Figure 3: Y99AX-1 (1/8-27 NPT) Pressure Test Fitting
Y99AX-2 (1/8-28 BSPT) Pressure Test Fitting**

10. Cut tubing to appropriate length and square off ends and remove burrs. Connect the pilot tubing (when necessary) to the threaded pilot connection on the underside of the valve body (see Figure 4) and run the tube to the pilot burner within the appliance. Connect the pilot tube to the valve with an optional compression fitting.

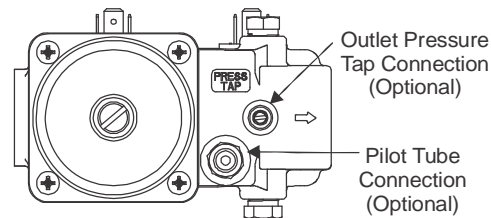


Figure 4: Underside of Valve with Bottom Adjust Regulator

APPLY WRENCH TO THE FLATS
FROM THE BOTTOM OF THE
GAS CONTROL VALVE

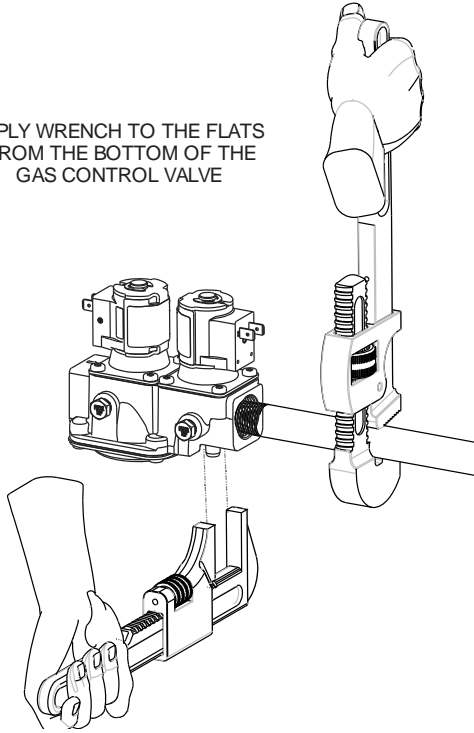


Figure 5: Proper Use of Wrench on Gas Control

11. 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 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.

12. Make wiring connections. See the *Wiring* section for specific wiring instructions.
13. To measure the outlet pressure, apply 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 4). To measure 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 (9-12 in/lbs. torque).

14. 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 (see Figure 6).

15. 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 or equipment damage. Ensure that the operating voltage is identical to the information on the product identification label.

The G960 valve is supplied with 3-tab or 2-tab electrical connections. The solenoid coils are male tabs and electrical connections should be made using 6.35 x 0.8 mm (1/4 in.) female, fully insulated push-on terminals. The earth ground is clearly labeled.

The electrical wiring to a twin solenoid valve from an electronic intermittent proven pilot ignition system is comprised of two lines; a common and an independent earth ground. Wiring can be done using a single 4-wire cable. The wiring connections for a 4-wire cable are shown in Figure 6.

Route the electrical cable for the valve solenoid actuators from the burner sequence control to the valve and make wiring connections in accordance with (see Figure 6).

Note: Electrical connections can also be made using electrical plugs (DIN 43650 Form B [ISO 4400]). Available from a BASO Gas Products distributor.

Note: All wiring must be in accordance with national and local electrical codes and regulations.

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

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 Explosion or Fire.

The minimum flow rate of the valve must not be adjusted 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.

The G960 can have a bottom adjust, right or left-handed top-adjust spring pressure regulator. Right of left-hand orientation is determined by the position of the adjustment when looking into the inlet connection of the valve.

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 6). 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.

Table 2: Replacement Solenoid Coil

Part Number	Description
RSDA95A-12	12 VDC; 2-tab 10.5 VA Coil
RSDA95A-25V	25 VDC; 3-tab 11.5 VA Coil
RSDA95A-25	25 VAC; 50/60 Hz; 3-tab 10.5 VA Coil
RSDA95A-25A	25 VAC; 50/60 Hz; 2-tab 10.5 VA Coil
RSDA95A-120	120 VAC; 60/60 Hz; 3-tab 10.5 VA Coil
RSDA95A-240	240VAC; 50/60 Hz; 3-tab 10.5 VA Coil

Do not make field repairs except for the replacement of the solenoid coil. Must use genuine BASO solenoid coils for proper performance.

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.



CAUTION: Risk of Equipment Damage.

For 12 VDC, 25 VDC and 25 VAC applications, the ground wire must not be connected to prevent possible grounding of the 12 VDC or 25 VEC power supply or 25 VAC transformer secondary.

Maintenance Schedule

Preventive maintenance programs are an important part of maintaining optimum and safe function of your BASO products. Commercial cooking and other heating equipment can be a heavy cycling demand on gas safety controls.

The maintenance programs should include frequent checkout of the gas controls. Review the procedure as described in the setup and adjustments and check for leakage section of the instructions.

Exposure to water, chemicals, dirt, heat and grease can all contribute to premature shut down of the gas controls.

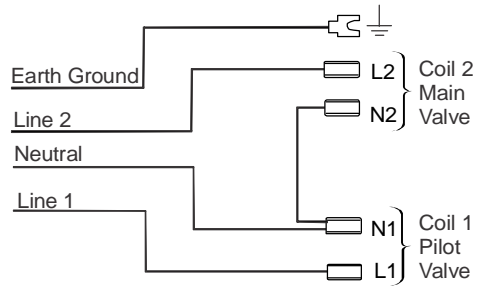
The frequency of the maintenance must be determined by the appliance manufacturer where the controls are installed and the end user for each individual application.

Things to consider when determining a preventive maintenance program:

- Number of cycles a gas control will see annually (more than 20,000 cycles). The gas control should be checked monthly.
- Gas controls used less than 20,000 cycles should be checked before every shutdown and restart process.
- Heavy grease, high heat, wash down exposure, corrosive environment areas should be checked with a higher frequency to prevent premature shutdown from rapid deterioration.

Simply doing a scheduled maintenance program will help remove the chances of a costly unexpected shutdown.

Never try to repair or replace a gas control unless you are an authorized licensed gas contractor as this will void the manufactures warranty. In all cases, use an authorized licensed gas contractor for any gas control replacement.



Twin Solenoid Wiring Using 4-Wire Cable

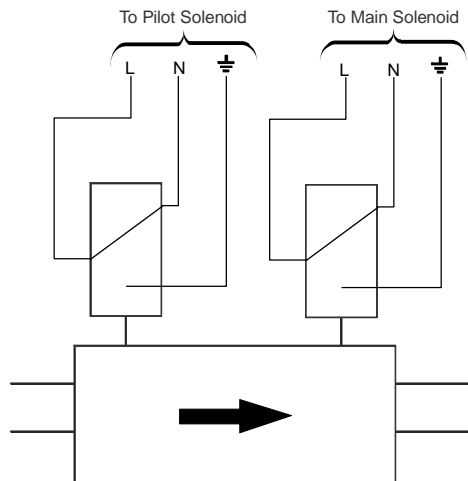
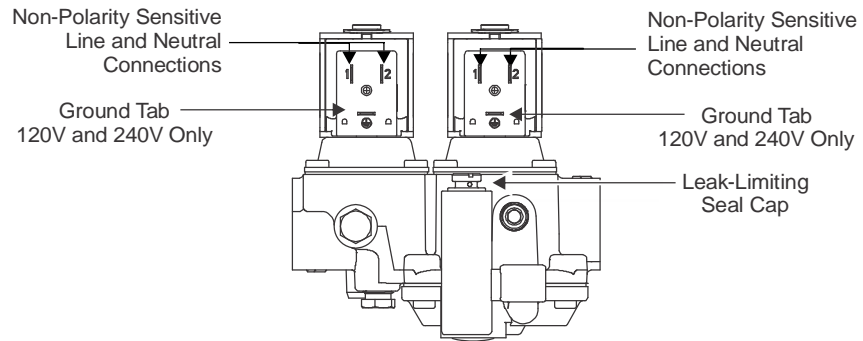


Figure 6: 3-Tab Electrical Connections

Technical Specifications

Product	G960 Series Gas 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 / 2 kPa)		
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 Temperature (Min./Max)	-20 to 175°F (-29 to 79°C)		
Body Connections	Inlet:	1/2 NPT or 1/2 BSPP	
	Outlet	1/2 NPT or 1/2 BSPP	
Valve Torsion Group	Group 2 (EN 126 and EN 161)		
Pressure Connection	1/8 NPT or 1/8 BSPP Outlet Tap Bottom, Left-Hand or Right-Hand		
Pilot Connection	1/8 NPT or 1/8 BSPP Left-Hand or Right Hand		
Materials	Body:	Die-cast Aluminum	
	Diaphragms and Seals:	Nitrile Rubber	
Dirt Strainer	0.9 mm (0.036 in.) mesh (upon request)		
Operating Time Rating	100% Continuous		
Valve Timings	Closing Time:	≤ 1 Second	
	Opening Time:	≤ 1 Second	
	Dead Time:	< 1 Second	
Power Rating	25 VAC, 50/60 Hz. 10.5 VA per coil		
Electrical Connection	3-Tab Solenoid Coil: 2 x 6.35 mm (1/4 in.) + 6.35 mm (1/4 in.) Earth Ground		
Coil Insulation Class	Class F		
Packaging	Bulk pack supplied to original equipment manufacturer (individual pack optional).		
Bulk Pack Quantity	32 per carton		
Bulk Pack Weight	24 kg (52 lb) per carton		
Accessories	Conversion Kits	Natural Gas to LP Gas:	Top Adjust Regulator Y71GF-4
			Bottom Adjust Regulator Y71GF-3
		LP Gas to Natural Gas:	Top Adjust Regulator Y71QH-2
			Bottom Adjust Regulator Y71QH-3
		Regulated to non-regulated:	Top or Bottom Adjust Regulator Y71AA-5
Agency Listings	CSA (AGA/CGA) Certificate Number 229521-1656041		
Specification Standards	Standards Complying with the Directive Standards Complying with the Low Voltage Directive Canadian Standards 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.

450 East Horseshoe Road
PO Box 170
Watertown, WI 53094
1-877-227-6427 (1-877-BASOGAS)

www.baso.com
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