BASO Gas Products LLC

BGD278 Series BASOTROL®
CE Approved 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: Risk of Fire or Explosion.
The system must meet all applicable local, national, and regional regulations. Improper installation may cause gas leaks, explosions, property damage, and injuries.

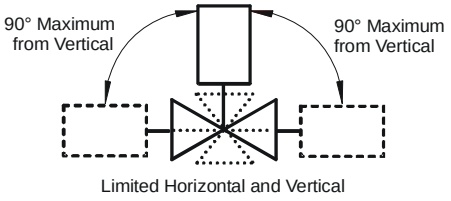
WARNING: Risk of Fire or Explosion.
To prevent leakage of upstream gas, shut off the gas supply at the main manual shutoff valve before installing or servicing the BGD278 valve. Failure to shut off the gas supply can result in the release of gas during installation or servicing, which can lead to an explosion or fire, and may result in severe personal injury or death.

Mounting

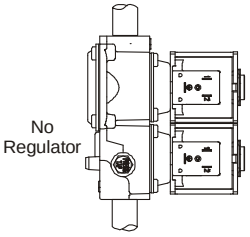
CAUTION: Risk of Equipment Damage.
To prevent damage to the valve when mounting to pipework, do not use a wrench on any surface other than the casting flats provided at the inlet and outlet ends of the valve body.

To install the BGD278 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 BGD278 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.



Limited Horizontal and Vertical



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

Figure 1: BGD278 Valve Mounting Positions

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.
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 BGD278 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 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.
10. 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.

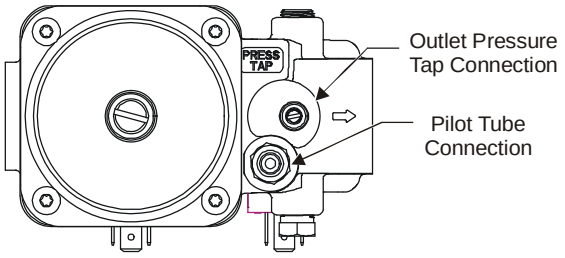


Figure 2: Underside of Valve

11. If necessary, 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 is tight. See Figure 3.
12. Before leaving the installation, observe at least three complete operating cycles to ensure that all components are functioning correctly.

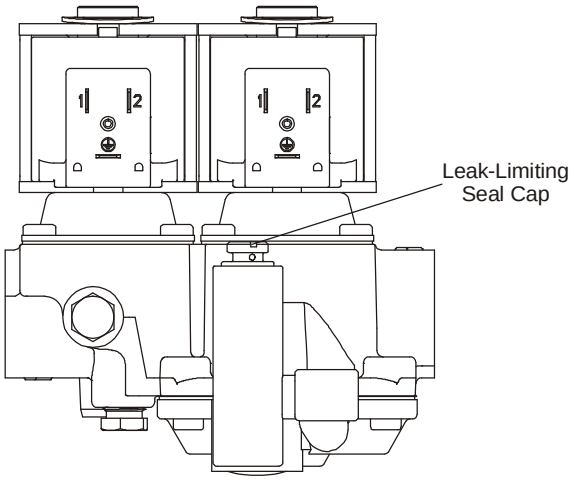


Figure 3: BGD278 Model with Left-Handed Top Adjust Regulator

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

The BGD278 valve is supplied with 3-tab or 2-tab electrical connections. The pins of the solenoid coil are male tag terminals, and electrical connections should be made using 1/4 in. (6.35 x 0.8 mm) 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 4.

Route the electrical cable for the valve solenoid from the burner sequence control to the valve and make wiring connections in accordance with Figure 4.

Note: Electrical connections can also be made using pre-wired electrical plugs DIN 43650 (available from BASO Gas Products or a BASO distributor).

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

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.

The BGD278 can have a right or left-handed top adjust spring pressure regulator. Right or 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 3). Turn the screw (using a suitable screwdriver) in a clockwise direction to increase the pressure or in a counterclockwise direction to decrease the pressure.

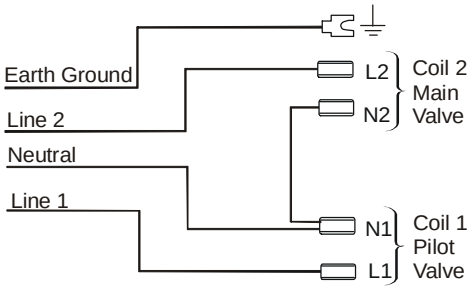
Repairs and Replacement

Table 1: Replacement Solenoid Coil

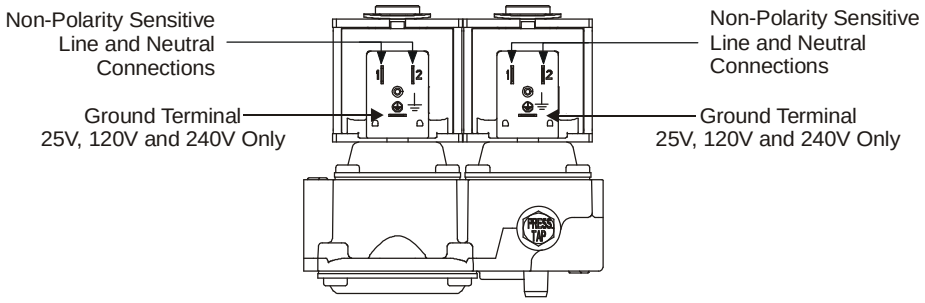
Part Number	Description
RSDA16A-12	12 VDC; 50/60 Hz; 2-pin 15 VA Coil
RSDA16A-25	25 VAC; 50/60 Hz; 3-pin 15 VA Coil
RSDA16A-120	120 VAC; 50/60 Hz; 3-pin 15 VA Coil
RSDA16A-240	240 VAC; 50/60 Hz; 3-pin 15 VA Coil

Field repairs other than solenoid coil replacement **must not** be made to the BGD278 valve.

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



Twin Solenoid Wiring Using 4-Wire Cable



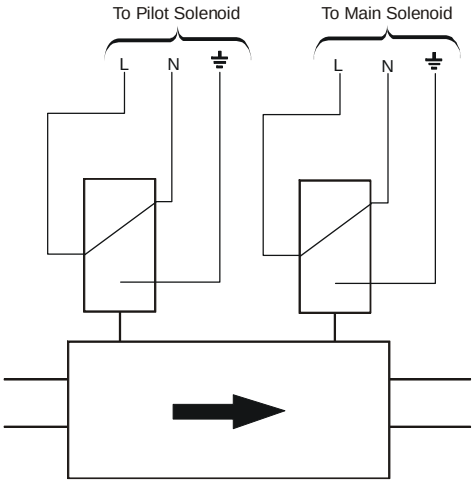


Figure 4: 3-Pin Electrical Connections

Technical Data

Product	BGD278 Series BASOTROL CE Approved Gas Valve			
Types of Gas	2nd (Natural Gas), and 3rd (LP Gas) Family Gases			
Permissible Ambient (Surface) Temperature	-20 to 175°F (-29 to 79°C)			
Electrical Ratings	12 VDC, 1.0A 25 VAC, 50/60 Hz, 0.595A 120 VAC, 50/60 Hz, 0.13A 240 VAC, 50/60 Hz, 0.063A			
Maximum Operating Pressure	North America: Europe:	0.5 psi 100 mbar		
Maximum Differential Pressure	8 in. W.C. (20 mbar [2 kPa])			
Reverse Pressure Ratings	20 in. W.C. (50 mbar [5 kPa]) Minimum; Class B (EN 126 and 161)			
Regulator Classification	Class C (EN 126)			
Regulator Setting	Factory set to customer's specification			
Regulator Adjustment Range	Bottom Adjust Regulators: Top Adjust Regulators: 	3 to 6 in. W.C. (7.5 to 15 mbar) 8 to 12 in. W.C. (20 to 30 mbar) 3 to 6 in. W.C. (7.5 to 15 mbar) 6 to 12 in. W.C. (15 to 30 mbar)		
Inlet Pipe Size	1/2 in. Rp or 1/2 in. NPT			
Outlet Pipe Size	1/2 in. Rp, 1/2 in. NPT or 3/4 NPT			
Valve Torsion Group	Group 2 (EN 126 and EN 161)			
Pressure Connection	1/8 in. Rp or 1/8 in. NPT Outlet Tap			
Pilot Connections	1/8 in. Rp or 1/8 in. NPT Left-hand and Right-hand			
Dirt Strainer	0.036 in. (0.9 mm) Mesh			
Operating Time Rating	100% Continuous			
Valve Timings	Closing Time Opening Time Dead Time	≤1 Second ≤1 Second ≤1 Second		
Power Ratings	15 VA per Coil			
Electrical Connections	3-Tab Solenoid Coil 2-Tab Solenoid Coil	2 x 1/4 in (6.35 mm) Terminals + 1/4 in. (6.35 mm) Earth Ground Terminal 2 x 1/4 in. (6.35 mm) Terminals		
Coil Insulation Class	Class F			
Type of Gas	2nd (Natural Gas), and 3rd (LP Gas) Family Gases			
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
		Non-Regulation:	Top or Bottom Adjust Regulator	Y71AA-5
Packaging	Bulk pack supplied to original equipment manufacturer (individual pack optional).			
Bulk Pack Quantity	32 per carton			
Bulk Pack Weight	82 lb (37 kg) per carton			

Technical Data (continued)

Agency Listings	CSA (AGA/CGA) Certificate Number 229521-1656041
	EC Type Examination Certificate Number EC-87/94/58
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 CAN1-6.20

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 *BGD278 Series CE Approved Gas Valve Product Bulletin (BASO-PB-BGD278)* for necessary information on operating and performance specifications of this product.

1007 South 12th Street
PO Box 170
Watertown, WI 53094
1-877-227-6427 (1-877-BASOGAS)

www.baso.com
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