



BASO Gas Products LLC

Installation Instructions  
Issue Date

BGF378  
December 9, 2020

## BGF378 Series Hi/Lo Solenoid Operated Lo Fire 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 BGF378 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

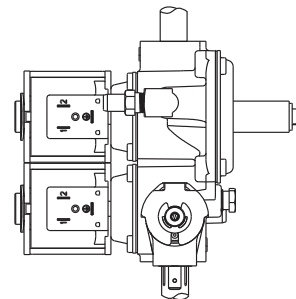
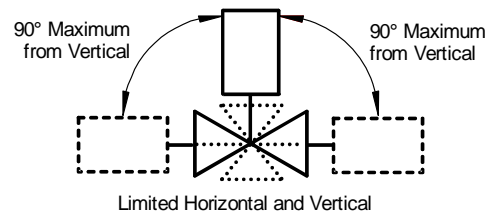


**CAUTION: Equipment Damage Hazard.**

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 BGF378 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 BGF378 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. Install vertically wherever possible.



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: BGF378 Mounting Positions**

6. Thread pipe (the amount shown in Table 1) for insertion into the control. Do not thread the pipe too far. Valve distortions 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

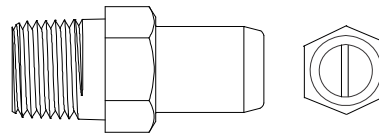
7. For any threaded connections, threads of pipe and nipples must be smooth and free of tears and burrs. Steam clean all piping inside diameter to remove foreign substances such as cutting oil or thread chips before installing into the valve. Apply a moderate amount of good quality pipe compound (do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



**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 body of the valve. **This process should be used for both the install and removal of the valve in a gas system** (see Figure 7). **Do not use the solenoids as leverage.**
9. Connect the pilot tubing (when necessary) to the threaded pilot connection on the underside of the valve body (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.

10. Optional lo flow adjusting screw in the end of the solenoid (see Figure 4) Adjust clockwise to restrict the flow and counter clockwise to open the flow. To prevent damage to the seal, do not over tighten when turning clockwise.
11. If you desire to measure the outlet pressure, use the (optional) bottom cast pressure test fitting (see Figure 4) or use the (optional) Y99AX pressure test fitting (see Figure 3) located on the side of the valve using 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.

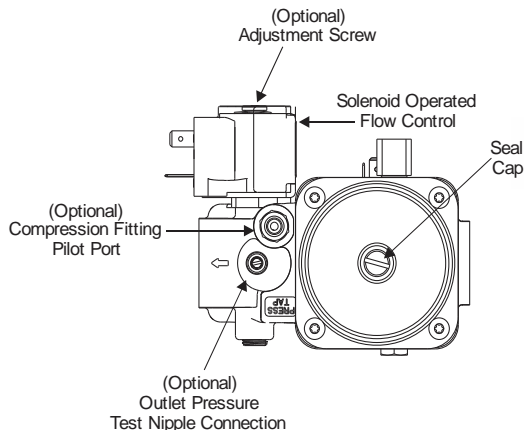


**Figure 3: Y99AX-1 (1/8-27 NPT) Pressure Test Fitting**

12. 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 BGF378 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. Refer to the *Wiring* section for specific wiring instructions.
13. Check for leakage at the pressure test nipple. 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.
14. Observe at least three complete operating cycles to ensure that all components are functioning correctly before leaving the installation.



**Figure 4: Underside of Valve with Bottom Adjust Regulator**

1. (Optional) Lo flow adjusting screw in the end of the solenoid (see Figure 4). Adjust clockwise to restrict the flow and count clockwise to open the flow. To prevent damage to the seal, do not over tighten when turning clockwise.
2. 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 4).

## 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.

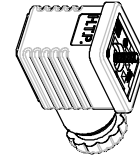
The BGF378 valve is supplied with 2-tab or 3-tab electrical connections. The solenoid coils are male tabs and electrical connections should be made using 6.35 x 0.8 mm (1/4 in.) female, fully insulated push-on terminals. The earth ground is clearly labeled on the face of the solenoid.

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 8.

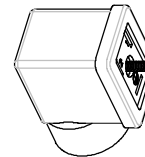
Route the electrical cable for the valve solenoid actuators from the burner sequence control to the valve and make wiring connections in accordance with (see Figure 8).

**Note:** Electrical connections can also be made using pre-wired electrical plugs (DIN 43650 Form B [ISO 4400]).

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



**Figure 5: SVC200 Wire Connect Strain Relief DIN Type Connector**



**Figure 6: SVC210 Conduit 1/2 NPT DIN Type Connector**

## 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 BGF378 can have a bottom adjust, 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 4). 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.

## Repair and Replacement

**Table 1: Replacement Solenoid Coil**

Part Number	Description
<b>RSDA95A-12</b>	12 VDC; 2-tab 10.5 VA Coil
<b>RSDA95A-25V</b>	25 VDC; 3-tab 11.5 VA Coil
<b>RSDA95A-25</b>	25 VAC; 50/60 Hz; 3-tab 10.5 VA Coil
<b>RSDA95A-25A</b>	25 VAC; 50/60 Hz; 2-tab 10.5 VA Coil
<b>RSDA95A-120</b>	120 VAC; 60/60 Hz; 3-tab 10.5 VA Coil
<b>RSDA95A-240</b>	240VAC; 50/60 Hz; 3-tab 10.5 VA Coil
<b>RSDA16A-12</b>	12 VDC; 2-tab 15 VA Coil
<b>RSDA16A-25V</b>	12 VDC; 2-tab 17 VA Coil
<b>RSDA16A-25</b>	25 VAC; 50/60 Hz; 3-tab 15 VA Coil
<b>RSDA16A-25A</b>	25 VAC; 50/60 Hz; 2-tab 15 VA Coil
<b>RSDA16A-120</b>	120 VAC; 50/60 Hz; 3-tab 15 VA Coil
<b>RSDA16A-240</b>	240 VAC; 50/60 Hz; 3-tab 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.

## 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.

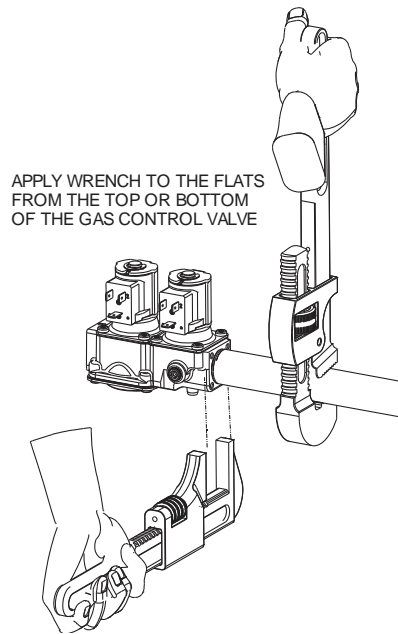
The frequency of the maintenance must be determined by the appliance manufacturer where the controls are installed and the end user for each individual application.

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.

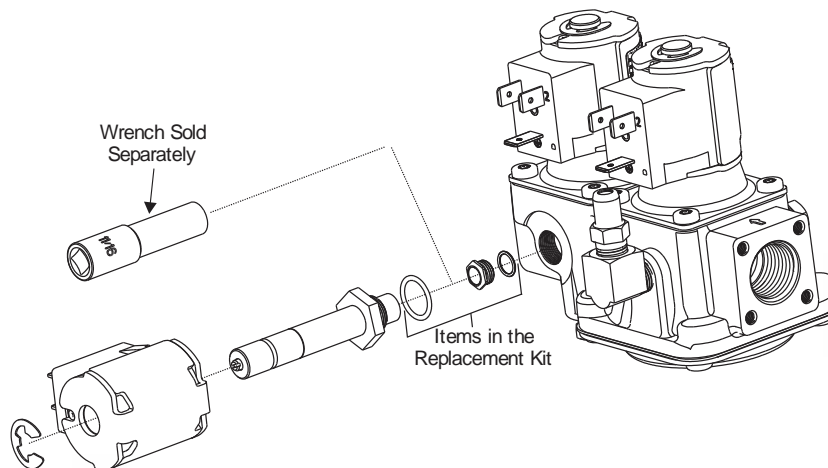
Simply doing a scheduled maintenance program will help remove the chances of a costly unexpected shutdown.

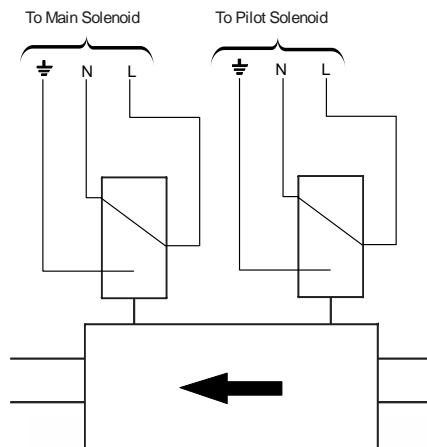
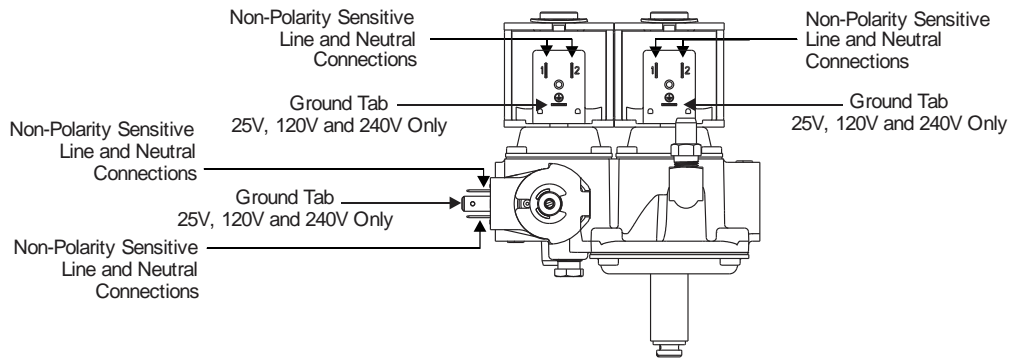
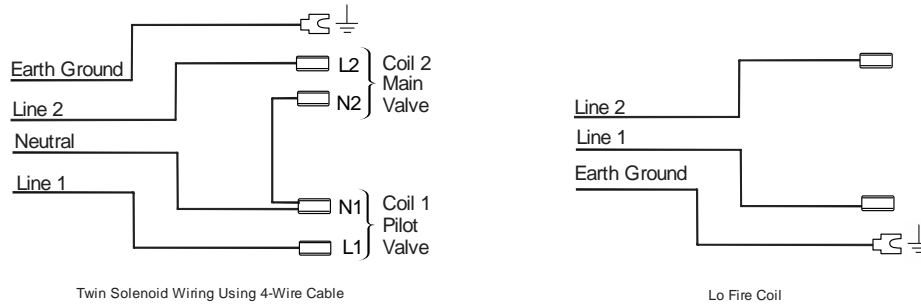
Never try to repair or replace a gas control unless you are an authorized licensed gas contractor as this will void the manufactures warranty. In all cases, use an authorized licensed gas contractor for any gas control replacement.



**Figure 7: Proper Use of Wrench on Gas Control**

Replacement Orifice Kits	
Part Number	Orifice Size
INT10A-032H	0.032
INT10A-039H	0.039
INT10A-059H	0.059
INT10A-067H	0.067
INT10A-093H	0.093
INT10A-234H	0.234
Use Wrench SKT132A-600H	





**Figure 8: 3-Tab Electrical Connections**

## Technical Specifications

Product	BGF378 Series Hi/Lo Solenoid Operated Lo Flow Gas Valve		
Types of Gas	2nd (Natural Gas), and 3rd (LP Gas) Family Gases		
Permissible Ambient (Surface) Temperature	-29 to 79°C (-20 to 175°F)		
Electrical Ratings	<b>10.5 VA Coil</b> 12 VDC, 0.875A 25 VDC, 0.46A 25 VAC, 50/60 Hz, 0.42A 120 VAC, 50/60 Hz, 0.088A 240 VAC, 50/60 Hz, 0.044A		<b>16 VA Coil</b> 12 VDC, 1.0A 25 VDC, 0.675 A 25 VAC, 50/60 Hz, 0.595A 120 VAC, 50/60 Hz, 0.13A 240 VAC, 50/60 Hz, 0.063A
Rated Inlet Pressure	North America:	1/2 psi	
	Europe:	35 mbar	
	Australia:	3.5 kPa	
Maximum Differential Pressure	20 mbar (2 kPa [8 in. W.C.])		
Regulator Classification	Class C (EN 126); Adjustable, Class 2, Grade 20 (AS 4624)		
Regulator Adjustment Range	Bottom Adjust Regulators:	7.5 to 12.5 mbar (0.75 to 1.25 kPa [3 to 5 in. W.C.]) 22.5 to 30 mbar (2.25 to 3.0 kPa [9 to 12 in. W.C.])	
	Top Adjust Regulators	7.5 to 12.5 mbar (0.75 to 1.25 kPa [3 to 5 in. W.C.]) 22.5 to 30 mbar (2.25 to 3.0 kPa [9 to 12 in. W.C.])	
Body Connections	1/2 or 3/4 NPT Flange Connection Holes (M4 x 0.7 mm pitch x 6 mm deep)		
Valve Torsion Group	Group 2 (EN 126 and 161)		
Pressure Connection	1/8 NPT Left-hand and/or Right-hand, or M5 x 0.8 Thread Bottom		
Pilot Connection	1/8 NPT Left-hand and/or Right-hand, or 1/4 in. cc Fitting Bottom		
Dirt Strainer	0.9 mm (0.036 in.) mesh (CE only or upon request)		
Operating Time Rating	100% Continuous		
Valve Timings	Closing Time:	≤ 1 Second	
	Opening Time:	≤ 1 Second	
	Dead Time:	< 1 Second	
Power Rating	10.5 VA per Coil (except 25 VDC, 11.5 VA)		
Electrical Connection	2-Tab Solenoid Coil: 2 x 6.35 mm (1/4 in.) 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	10 per carton		
Bulk Pack Weight	21 kg (45 lb.) per carton		
Accessories	Conversion Kits	Natural gas to LP gas: LP gas to Natural gas: Regulated to non-regulated:	GM-70-CLP GM-70-CNG GM-70-CBP
	Orifice Kits	INT10A-(Suffix 0.32 thru .234)	

## Technical Specifications (continued)

<b>Agency Listings</b>	CSA (AGA/CGA) Certificate Number 229521-1656041
<b>Specification Standards</b>	EN 126 and 161 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.*

Refer to the *BGF378 Series Hi/Lo Solenoid Operated BASOTROL Gas Valve Product Bulletin (BASO-PB-BGF378)* for necessary information on operating and performance specifications for this product.



BASO Gas Products LLC

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

**www.baso.com**  
Published in U.S.A.

BGF378 Series Hi/Lo Solenoid Operated Lo Fire BASOTROL® Gas Valve