B21 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 B21 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 B21 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 B21 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.

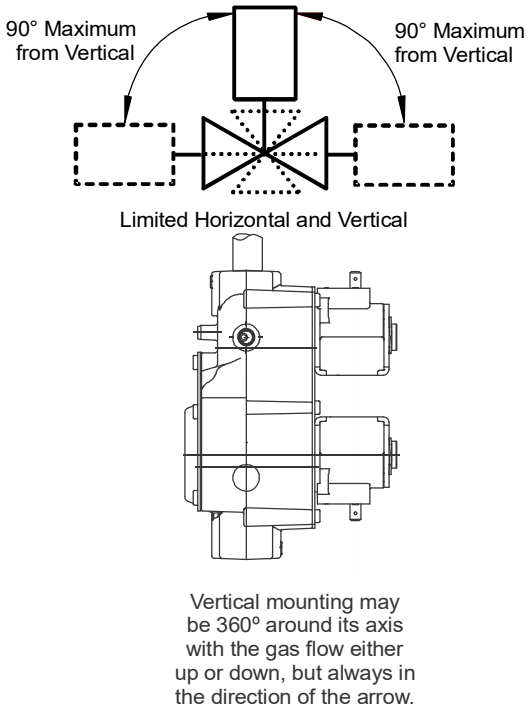

Figure 1: B21 Mounting Positions

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.)
3/4	13/16	3/4
1	13/16	5/8

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.

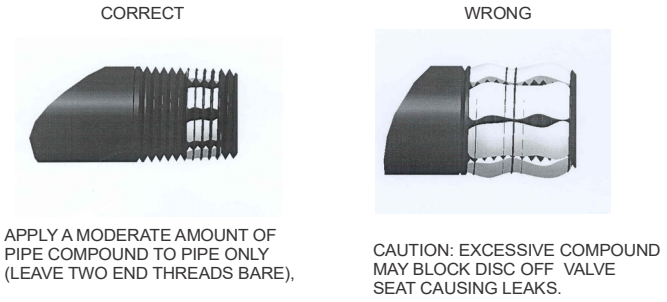

Figure 2: Use a Moderate Amount of Pipe Compound

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 valve body. If a flange is used, place the wrench on the flange rather than on the control valve body. **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 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.

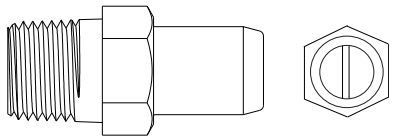

Figure 3: Y99AX-1 (1/8-27 NPT) Pressure Test Fitting
Y99AX -2 (1/8-28 BSPT) Pressure Test Fitting

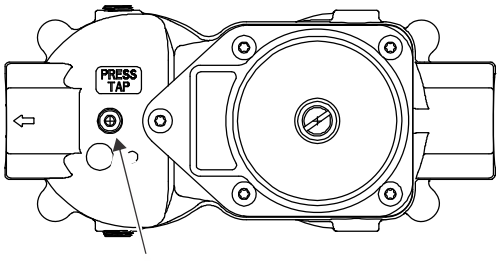

Figure 4: Pressure Tap Location

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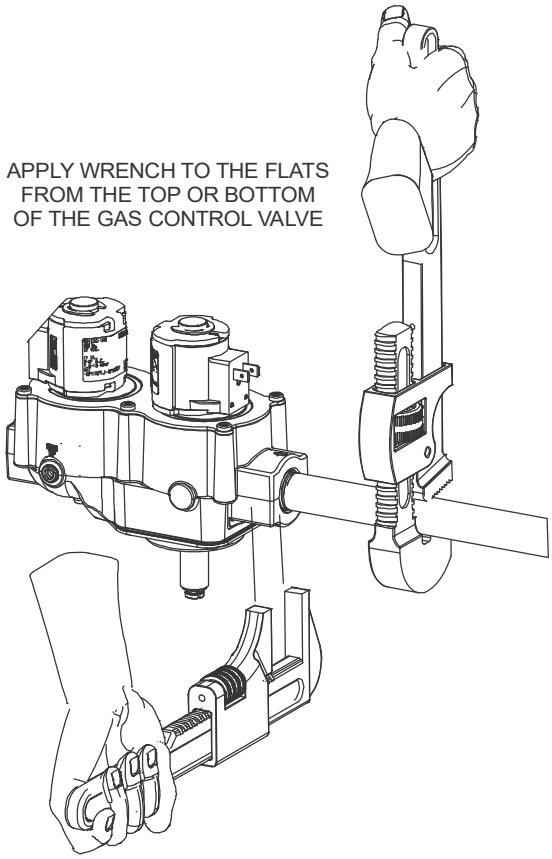

Figure 5: Proper Use of Wrench on Gas Control

10. 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 B21 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.
11. Make wiring connections. See the *Wiring* section (Figure 6) for specific wiring instructions.
12. The inlet pressure tap is a bleed hole with a machined spigot, sealed with a threaded brass needle screw. To measure the inlet pressure, turn the screw in a counterclockwise direction one or two turns and fit a 9 mm diameter flexible tube over the machined spigot. **Turn on the gas**. After adjustments have been made and the desired inlet pressure has been obtained, **turn off the gas** and remove the flexible tube. Tighten the needle screw by turning it clockwise with a slotted screwdriver until hand tight, sealing the bleed hole. **Turn the gas back on**.
13. 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 fitting 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.

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 B21 valve is supplied with 2-tab electrical connections. The solenoid coils are male tabs and electrical connections should be made using 1/4 in (6.35 x 0.8 mm) female, fully insulated push-on terminals.

The electrical wiring to a twin solenoid valve from an electronic ignition system is comprised of a power line and power common. Wiring can be done using a single 4-wire cable. The wiring connections for a 4-wire cable are shown in Figure .

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).

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

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.

Table 2: Replacement Solenoid Coil

Part Number	Description
RSDA17A-12	12 VDC; 2-tab 17 VA Coil
RSDA17A-24	24 VDC; 2-tab 17 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 a 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.

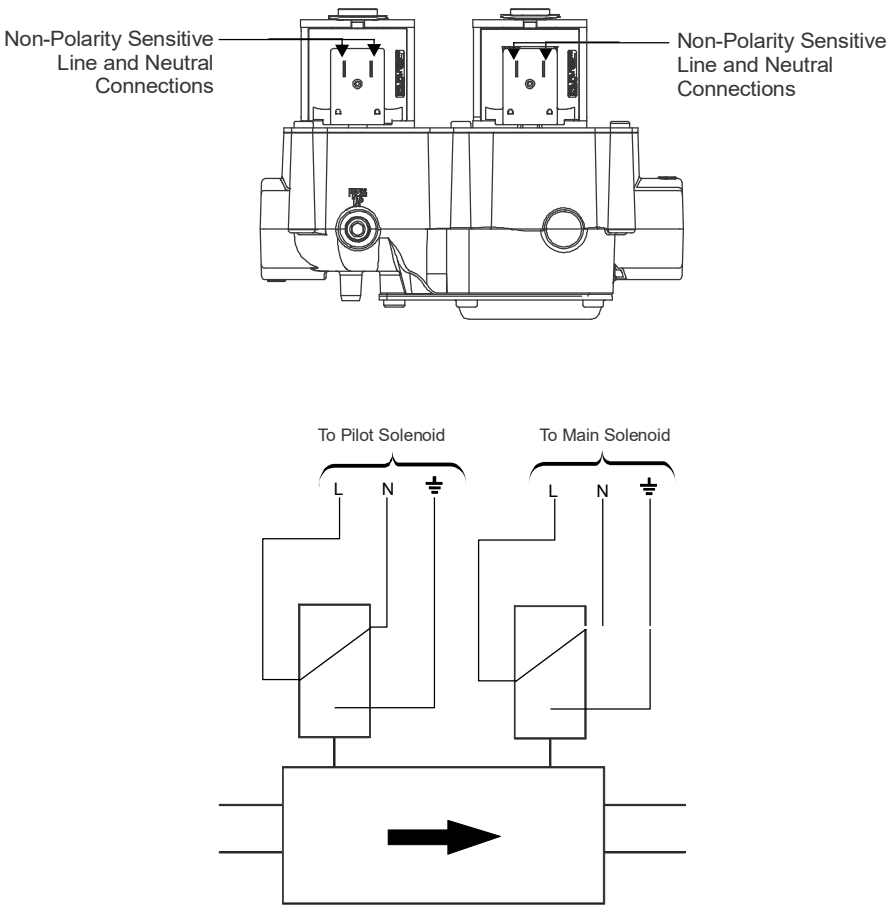

Figure 6: 2-Tab Electrical Connections

Technical Specifications

Product	B21 Series Gas Valve
Types of Gas	2nd (Natural Gas), and 3rd (LP Gas) Family Gases
Permissible Ambient (Surface) Temperature	-40 to 175°F (-40 to 79°C)
Electrical Ratings	12 VDC 24 VDC
Rated Inlet Pressure	North America: 1/2 psi
Body Connections	3/4” NPT or 1” NPT
Pressure Connections	1/8 NPT Left-hand and/or Right-hand
Dirt Strainer	0.039 in. (0.99 mm) mesh
Operating Time Rating	100% Continuous
Valve Timings	Closing Time: ≤ 1 Second Opening Time: ≤ 1 Second Dead Time: < 1 Second
Power Rating	17 VA
Electrical Connections	2-Tab Solenoid Coil: 2 x 1/4 in. (6.35 mm)
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	40 lb (18 kg) per carton
Agency Listing	UL Certification Number MH5939
Specification Standards	UL429 ANSI Standards Z21.21/CSA 6.5

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 *B21 Series BASOTROL Gas Valve Product Bulletin (BASO-PB-B21)* for necessary information on operating and performance specifications for this product.

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