



BGD278 Series BASOTROL® CE Approved Gas Valve

The BGD278 Series gas valve is a combination main and pilot valve intended for use in conjunction with solid-state sequence control units on direct burner or intermittent pilot ignition systems.

The BGD278 valve can be used with natural gas, Liquefied Petroleum (LP) gas and LP-air mixed gas. Typical applications include heaters, process burners, commercial dryers, commercial cooking equipment, rooftop units and similar applications.



Figure 1: BGD278 CE Approved Gas Control Valve

| Features and Benefits | |
|--|---|
| <input type="checkbox"/> Optional Pressure Regulator | Provides field-adjustable flow control for range-rated applications |
| <input type="checkbox"/> Convertible Pressure Regulator | Permits use with LP gas or natural gas |
| <input type="checkbox"/> Compact Size | Permits installation in space-restrictive applications |
| <input type="checkbox"/> Multiple Operating Voltages | Provide the flexibility to suit market requirements |

Overview

Valve Operation

The BGD278 is a twin on/off valve with spring-loaded seat discs that are operated by Class B solenoids with protected rectifiers to ensure quiet operation.

When the valve is energized, the solenoid plunger is pulled into the coil, overcoming the force of the closeoff spring and the flow medium pressure. The valve seat discs are directly fixed to the plunger stem so the valve fully opens.

Valve Configurations

The BGD278 series offers twin solenoid models. Twin solenoid models allow independent opening of both valve seats.

Adjustment Methods

The BGD278 series offers models with either no adjustment, top or bottom adjust regulator control.

No Adjustment

The BGD278__A model has a blank plate mounted onto the bottom of the body casting for applications where adjustment control is not needed or for applications where separate adjustment control is already provided.

Regulator Adjustment

The BGD278__D and E models have a top adjust spring pressure regulator. These models have either a right- or left-handed top adjust pressure regulator. Right- or left-hand orientation is determined by the position of the adjustment when looking into the inlet connection of the valve. (Refer to the *Ordering Information* section for details.)

The BGD278__B and C 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 a 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.

Range of Regulation

Pressure Regulator Models

BGD278 models with an adjustable top or bottom adjust pressure regulator have the following pressure range:

- Natural gas: 7.5 to 15 mbar
(0.75 to 1.5 kPa/3 to 6 in. W.C.)
- LP gas: 15 to 30 mbar
(1.5 to 3.0 kPa/6 to 12 in. W.C.)

Table 1: Range of Regulation (ANSI Z21.78) for Pressure Regulator Models

| Valve Model | Q _{minimum} | | Q _{maximum} | |
|-----------------|----------------------|------|----------------------|------|
| | m ³ /h | cf/h | m ³ /h | cf/h |
| BGD278__D and E | 0.566 | 20 | 5.7 | 200 |
| BGD278__B and C | 0.566 | 20 | 5.7 | 200 |

Note: 1 m³/h - 10.67 kW (1 cf/h = 1,000 Btu/h) natural gas at 0.64 specific gravity.

Accessories

Table 2: Accessories

| Description | Part Number |
|---|-------------|
| Conversion Kit for Regulation to Non-regulation | Y71AA-5 |
| LP to Natural Gas Conversion Kit for 7.5 to 15 mbar (0.75 to 1.5 kPa/ 3 to 6 in. W.C.) Regulation | Y71QH-2 |
| Natural Gas to LP Conversion Kit for 15 to 30 mbar (1.5 to 30 kPa/ 6 to 12 in. W.C.) Regulation | Y71GF-4 |
| LP to Natural Gas Conversion Kit for 7.5 to 15 mbar (0.75 to 1.5 kPa/ 3 to 6 in. W.C.) Regulation | Y71QH-3 |
| Natural Gas to LP Conversion Kit for 20 to 30 mbar (2.0 to 30 kPa/ 8 to 12 in. W.C.) Regulation | Y71GF-3 |

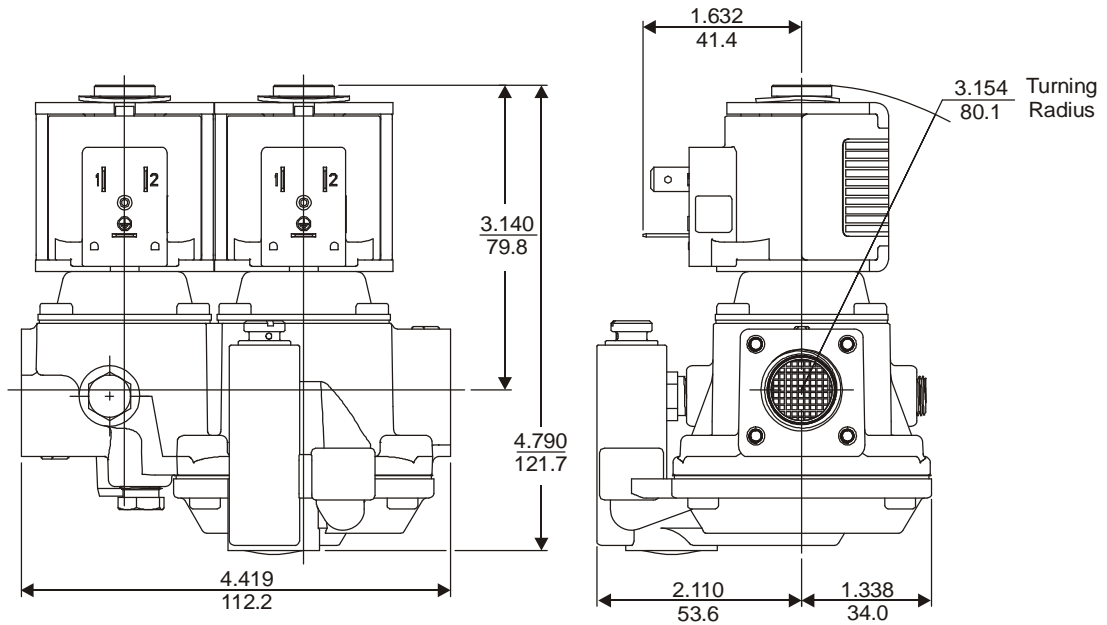
Repair and Replacement

Table 3: 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 **must not** be made to the BGD278 valve. For a replacement valve, contact the original equipment manufacturer or the nearest BASO Gas Products distributor.

Dimensions



**Figure 2: Top Adjust Regulator Dimensions, in (mm)
(Right-Hand Regulator Model)**

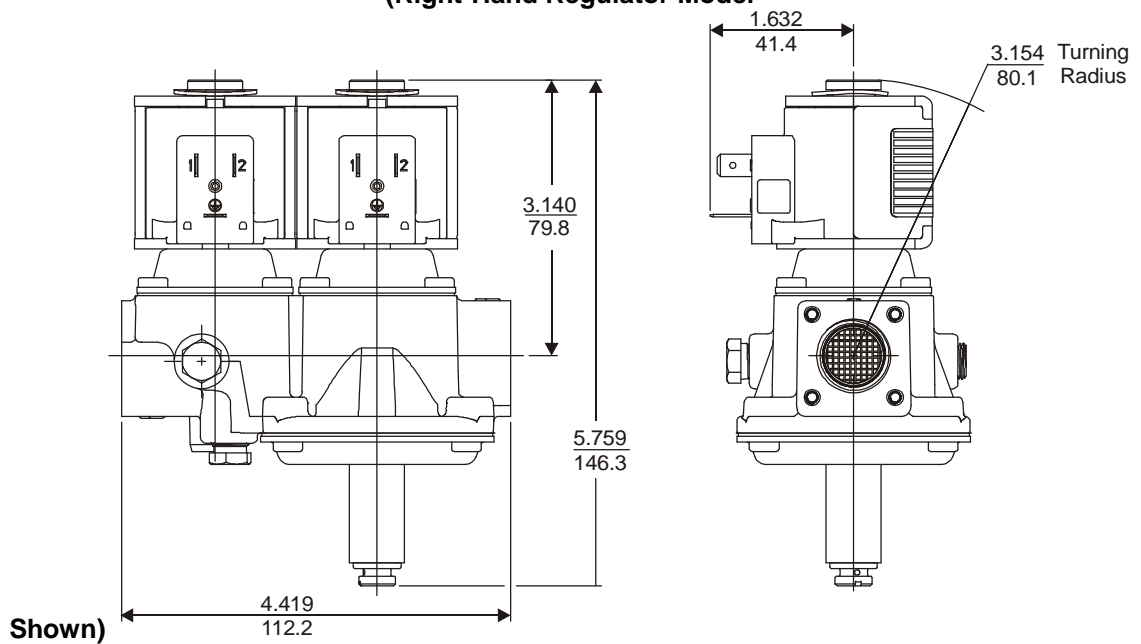
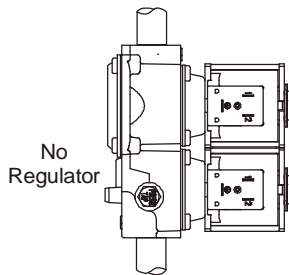
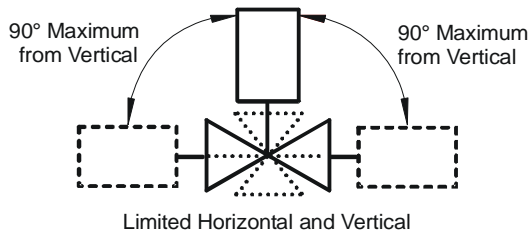


Figure 3: Bottom Adjust Dimensions, in (mm)

Mounting

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 may also be mounted on a vertical manifold in any position around its axis (see Figure 4). 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 4: BGD278 Valve Mounting Position

Wiring

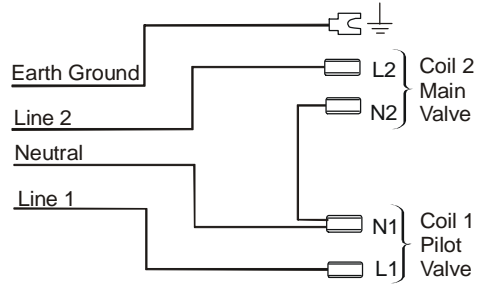
The BGD278 valve is supplied with 3-tab or 2-tab electrical connections. The tabs of the solenoid coil are male tag terminals, and electrical connections should be made using 6.35 x 0.8 mm (1/4 in.) female, fully insulated push-on terminals. The earth ground terminal is clearly labeled with the earth ground symbol.

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 5.

Route the electrical cable for the valve solenoid from the burner sequence control to the valve and make wiring connections in accordance with Figure 5.

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

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



Twin Solenoid Wiring Using 4-Wire Cable

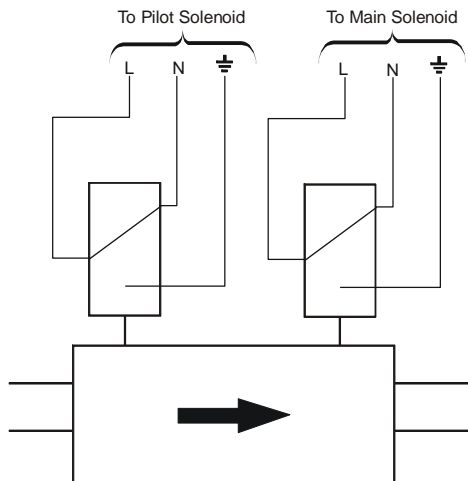
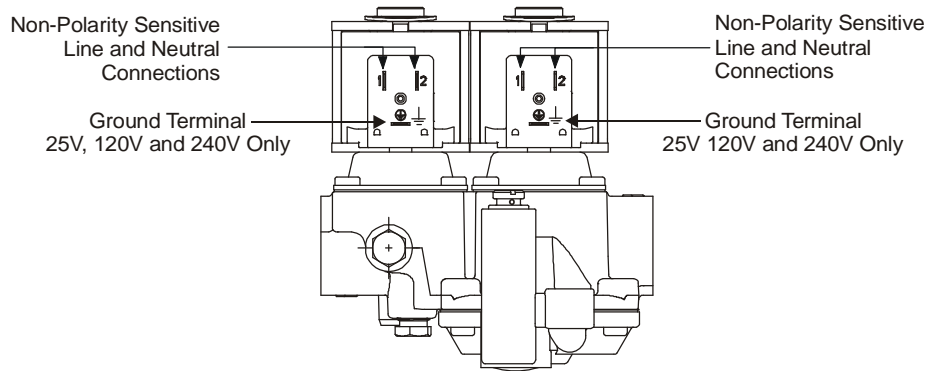


Figure 5: 3-Pin Electrical Connections

Ordering Information

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B | G | D | 2 | 7 | 8 | _ | _ | _ | - | _ | _ | _ | _ | _ | _ | _ | _ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

See the next page for Customer Specific Requirements.

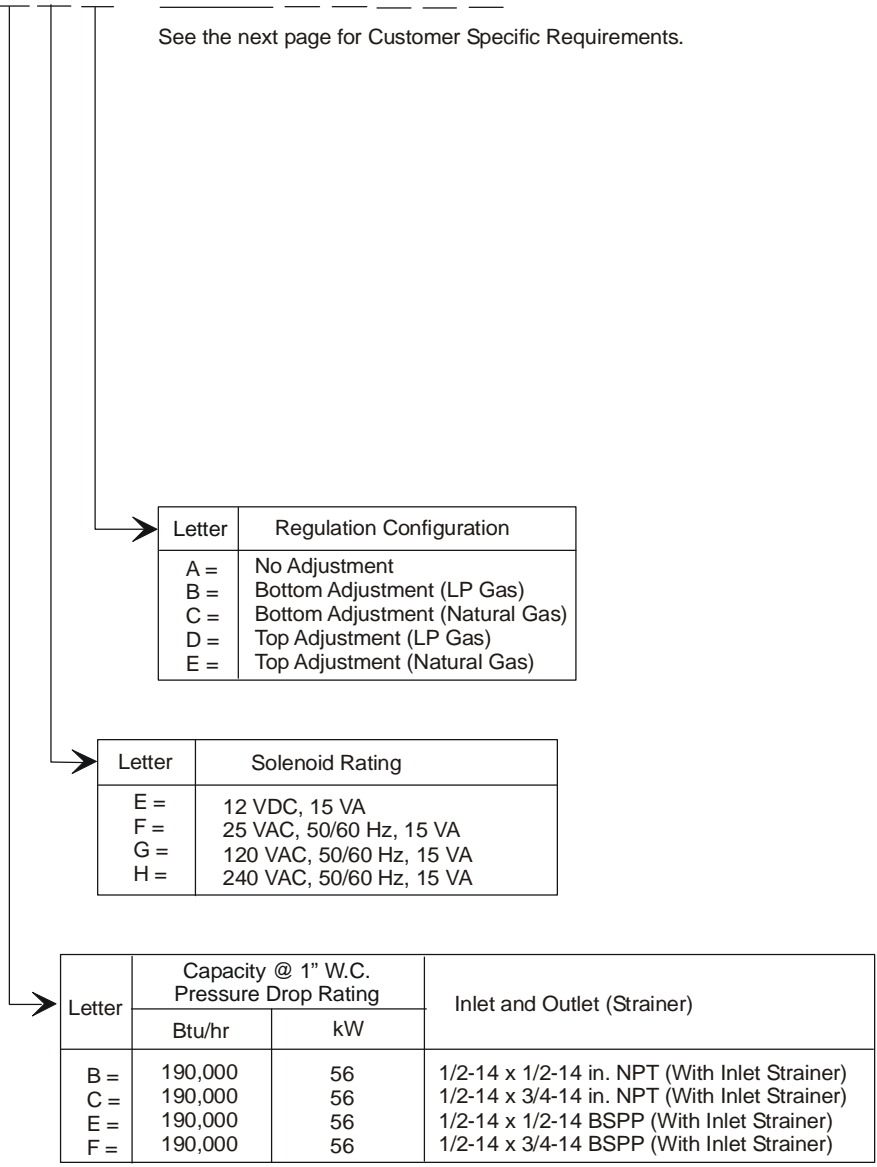


Figure 6: BGD278 Valve Ordering Matrix

Ordering Information (Continued)

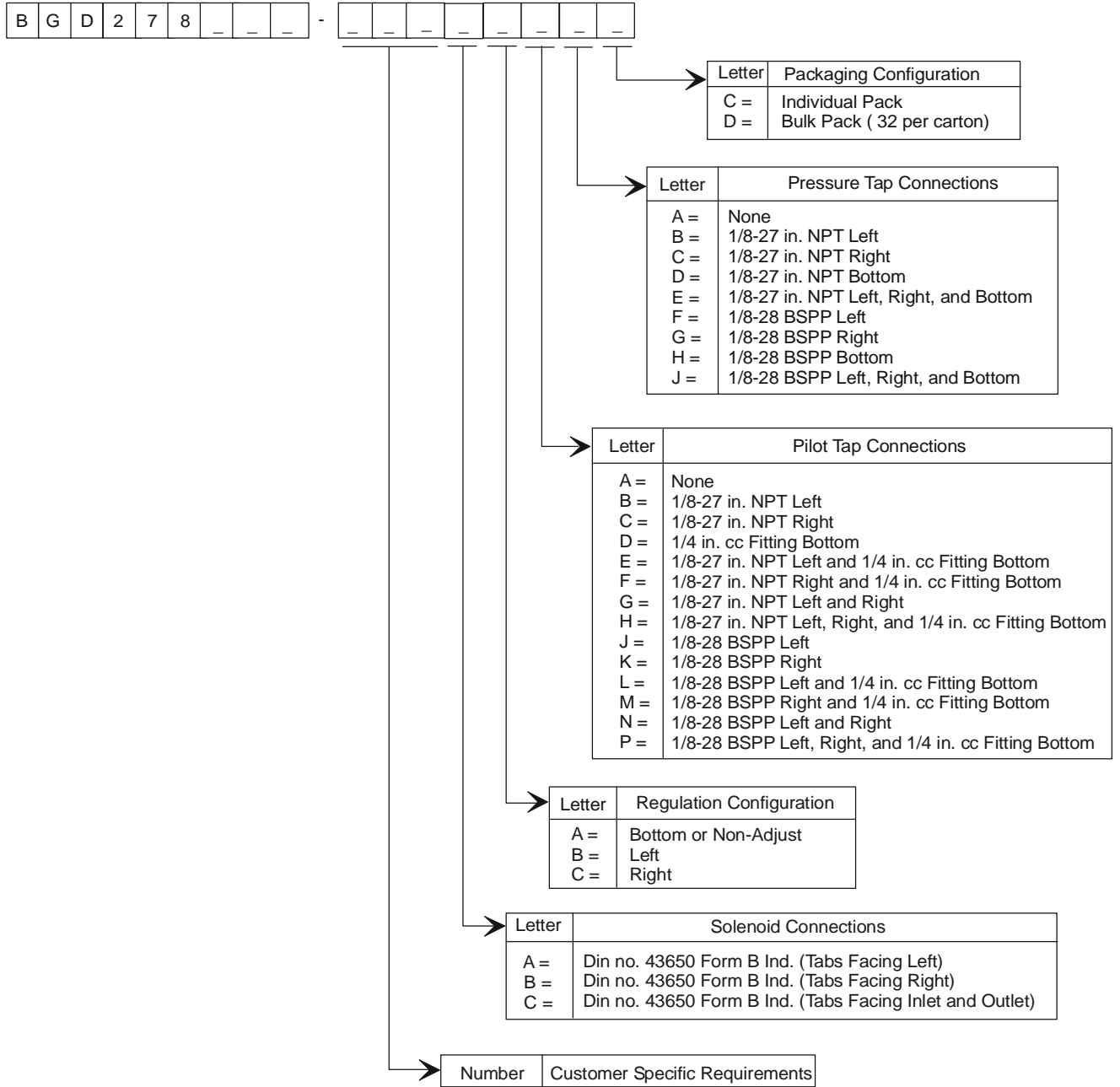


Figure 7: BGD278 Valve Ordering Matrix

Technical Data

| | | | | |
|--|--|--|--------------------------------|---------|
| Product | BGD278 Series CE Approved Gas Valve | | | |
| Maximum Operating Pressure | North America: | 0.5 psi | | |
| | Europe: | 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 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 and bottom adjust | | |
| | LP Gas: | 6 to 12 in. W.C. (15 to 30 mbar [1.5 to 3.0 kPa]) top adjust | | |
| | | 8 to 12 in. W.C. (20 to 30 mbar [2.0 to 3.0 kPa]) bottom adjust | | |
| Regulator Setting | Factory Set to Customer's Specifications | | | |
| Permissible Ambient (Surface) Temperature | -20 to 175°F (-29 to 79°C) | | | |
| Body Connections | 1/2 in. NPT or 1/2 in. Rp | | | |
| Valve Torsion Group | Group 2 (EN 126 and EN 161) | | | |
| Pressure Connection | 1/8 in. NPT or 1/8 in. Rp Outlet Tap | | | |
| Pilot Connection | 1/8 in. NPT or 1/8 in. RpT Left-Hand and Right-Hand | | | |
| 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 | | | |
| 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 | 15 VA per Coil | | | |
| Electrical Connections | 3-Tab Solenoid Coil: 2 x 1/4 in. (6.35 mm) Terminals + 1/4 in. (6.35 mm) Earth Ground Terminal 2-Tab Solenoid Coil: 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 1-6.20 |

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 Installation Instructions (Part No. BASO-INS-BGD278)* for necessary information on the installation, use, and servicing of this product.

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