

Selas Balanced Zero Regulator BZR

SAFETY

These instructions pertain only to the Balanced Zero Regulator series and should only be used for its intended purpose. Only qualified personnel should work on the BZR to ensure proper installation, especially when installing gas piping or electrical wiring. All regulations MUST follow/meet region requirements. If unsure about this information, contact your local gas or electric company. This product can cause serious injury/harm if misused. Any person working with the BZR should be equipped with proper protective equipment, such as safety glasses, close-toed shoes, and adequate clothing attire. Contact the factory if you have any questions or concerns regarding the Balanced Zero Regulator series.

Warning: *This guide **does not** provide every eventuality; the information provided should be considered when working with the Balanced Zero Regulator Series.*

Description: How It Works

The BZR monitors and controls gas flow initiated by a slight difference in pressure throughout the main diaphragm, and the gas supply is regulated by negative or positive signals from suction mixers or controlled pressure from an external source. BZR will distribute gas in varying quantities but at a constant “zero” or atmospheric pressure.

The standard BZR model is rated for ambient temperatures up to 150°F (66°C). For installations exceeding this limit, use a high-temperature BZR model, which are rated for temperatures up to 700°F (371°C).

The standard BZR model will operate at maximum flow ratings with differences in pressure ranging from 4" to 28" W.C.

Applications

The BZR series is designed for industrial combustion systems requiring precise air/gas control.

- Proportional Premixers
- Nozzle Mixers
- Mixing Tees at positive or negative combustion chamber pressures



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Installation

All regulators are factory set and zeroed before shipping. If adjustment or repair is necessary, the regulator should be returned to the factory.

Regulators must always be mounted in a stem-up position, in a horizontal line, as close as practical to the mixer or burner. Any other mounting position will cause a malfunction. The arrow cast on the side of the valve body indicates direction of flow.

Standard regulators should not be installed in areas where operating temperatures will exceed 150°F. For high temperature regulators, see the appropriate bulletin. Where this requirement results in excessive piping, remote compensators should be used.

One BZR may be manifolded to several mixers under the following conditions:

1. A full area gas cock should be installed at the gas inlet of each mixer so that it may be operated independently.
2. Zero gas piping must be sized so that pressure losses are less than 0.1" w.c. at maximum flow rates.
3. The regulator must be operated within its maximum capacity rating.
4. All mixers supplied by one regulator should be on the same control zone or firing at similar flow rates.

Suction type proportional mixers should be connected as shown in Fig. 1 when the burner is operated at atmospheric combustion chamber pressure. When the regulator is to be used with a system under positive or negative combustion chamber pressures over 0.03" w. c., a pressure reference connection should be made. This connection of 1/8" pipe or 3/8" tubing (See Fig. 2) automatically compensates the system for the furnace pressures.

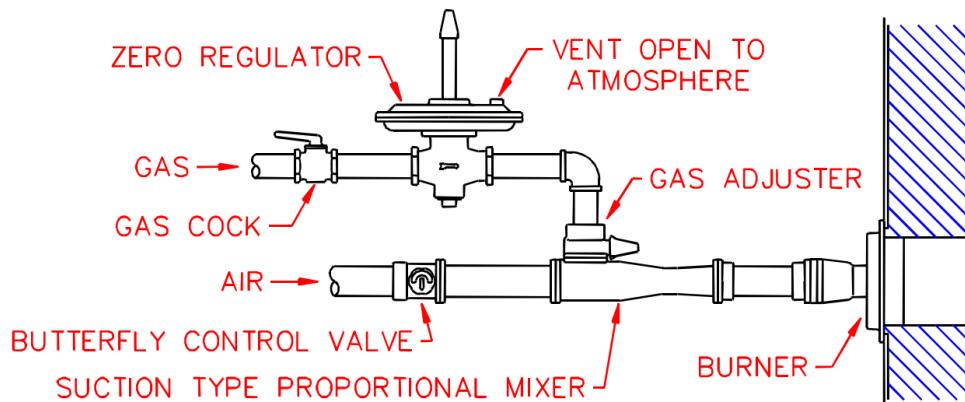


FIG. 1

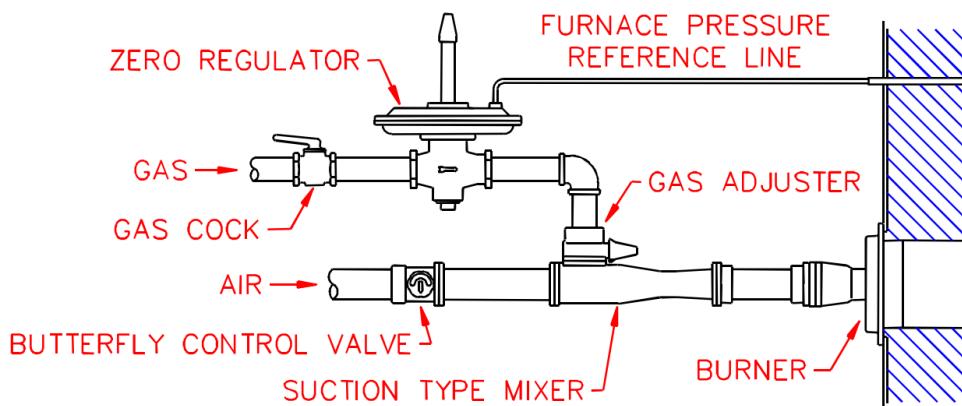


FIG. 2

Top Diaphragm Loading (for Nozzle Mix Systems)

Nozzle mixing burners do not produce a proportional suction to operate BZRs and an external pressure must be applied to the top diaphragm chamber of the regulators to open them. With this external pressure proportional to the air pressure, the air to gas ratio will be constant at all flow rates.

A connection from the controlled air chamber of the nozzle mixer to the top diaphragm case of the BZR provides accurate gas pressures under all firing conditions. (See Fig. 3) Inlet gas pressure to the BZR should be 10" to 14" w.c. higher than the loading air pressure for best ratio control.

When the available gas pressure is less than the combustion air pressure, a 2TDL Loader must be used (see Fig. 4). The loading air pressure applied must be at least 1" w.c. less than the inlet gas pressure. Turndown will be limited and dependent on inlet gas pressure.

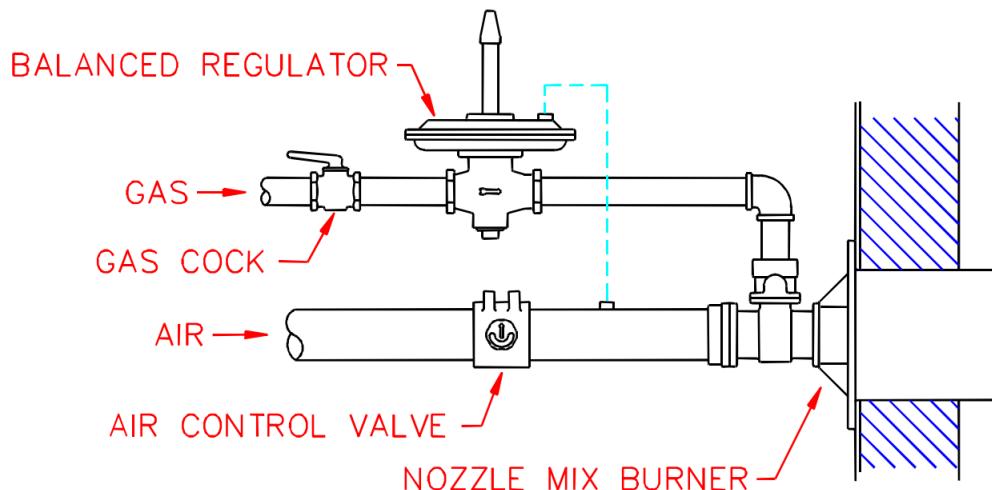


FIG. 3

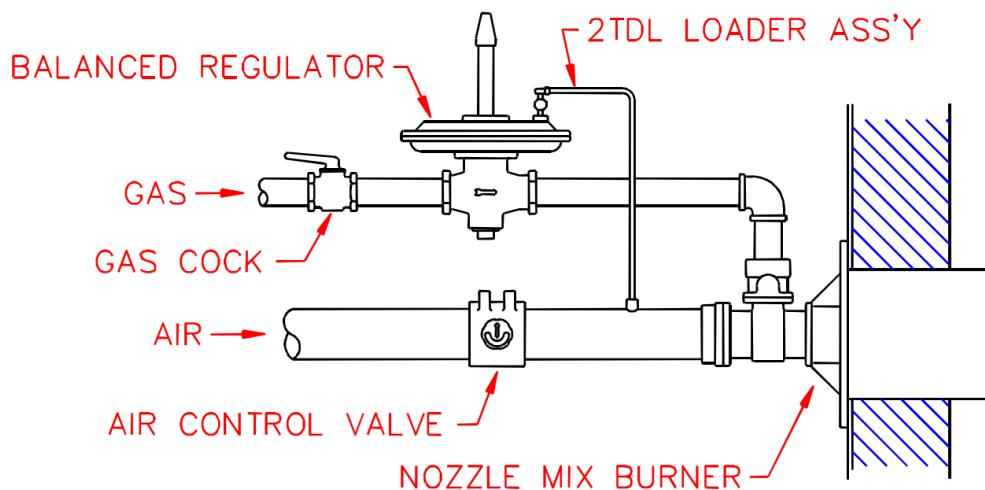


FIG. 4



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Maintenance

Routine maintenance helps ensure reliable performance and safety. Only qualified personnel should perform these procedures.

Inspection frequency:

- Inspect at least annually, or more frequently in demanding service.
- Perform a visual inspection for damage, leaks, or corrosion.

Basic maintenance steps:

1. Clean external surfaces with mild soap and water.
2. Check joints for gas leaks using an approved leak detection solution.
3. Ensure vent breathers and vent lines are clear of debris.
4. Verify outlet pressure stability during operation.
5. Record all maintenance and inspection results.

If significant service is needed, return the unit to the factory for inspection or rebuild.

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