

# BALANCED ZERO REGULATOR - ZERO GOVERNOR

## BZR-REG SERIES

### FEATURES

- Body and valve seat (model 6, 8, 12): cast iron
- Body and valve seat (model 16, 20, 24): hardened and tempered G-AlSi 9
- Valve disc: "O" ring on aluminium
- Valve stem: AISI 303
- Diaphragms: nitrile rubber / nylon
- Max. operating pressure: 140 mbar
- Max. pressure differential: 36 mbar
- Max. operating temperature: 65° C
- Max. turndown range: 200:1
- Sensitivity: 0.1 mbar
- Accuracy: Low flow  $\pm 0.25$  mbar  
Full flow  $\pm 0.76$  mbar

### APPLICATIONS

- Gas regulation on venturi mixers.
- Gas regulation on proportional mixers.
- Gas regulation on supply lines of any kind.

### DESCRIPTION

Zero Regulators are meant to decrease fluid pressure to equal air pressure. They are double diaphragm Regulators. The first diaphragm, also called balancing diaphragm, is meant to divide the inlet gas chamber of the valve from the chamber under the main diaphragm; the second diaphragm balances out the outlet pressure of the lower chamber of the diaphragm itself and the pressure in the top chamber.

An extension spring supports the main diaphragm and valve assembly with adequate force to counter the weight of the assembly thereby holding the valve in the closed position. When the outlet pressure under the main diaphragm is less than the pressure on top of the main diaphragm, an imbalance of forces occurs and the valve assembly opens to allow gas to flow. When the pressures on both sides of the main diaphragm are once again equal the valve moves to close but remains open just enough to keep the pressures balanced. (Hence the name "Balanced Zero Regulator"). The seal diaphragm is designed so that its area equals the effective area of the valve disc. Fluctuations in inlet pressure are thus counter-balanced by these two equal areas.



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The upper diaphragm chamber is normally open to atmosphere while the lower diaphragm chamber, by means of the impulse connection, is subject to outlet pressure. With equal pressures in both chambers the valve stays closed; when there is an unbalance between the pressures of the lower and upper chambers (positive pressure in the upper chamber due to the charge or negative in the lower chamber due to the suction of a Venturi mixer) the valve moves downward letting more gas flow into the system. As changes in flow are required by the connected system, there will be slight changes in the outlet pressure and a minor unbalance in forces on the main diaphragm. This large sensitive diaphragm will move either up or down, as required to restore the force balance.

The flow across the patented compensator produces a velocity condition which is proportional to flow. The impulse when combined with the outlet pressure is transmitted to the lower diaphragm chamber and automatically adjusts the valve to hold a constant delivery pressure.

The patented regulator assures highest accuracy over flow range. With no friction between sensitively counter balanced parts, fast, positive response is assured. The BZR regulators guarantee dependable, precise gas flow control on all types of combustion systems.



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## INSTALLATION

All regulators are tested, set and sealed when shipped. If adjustment or repair is necessary, the regulator should be returned to the factory.

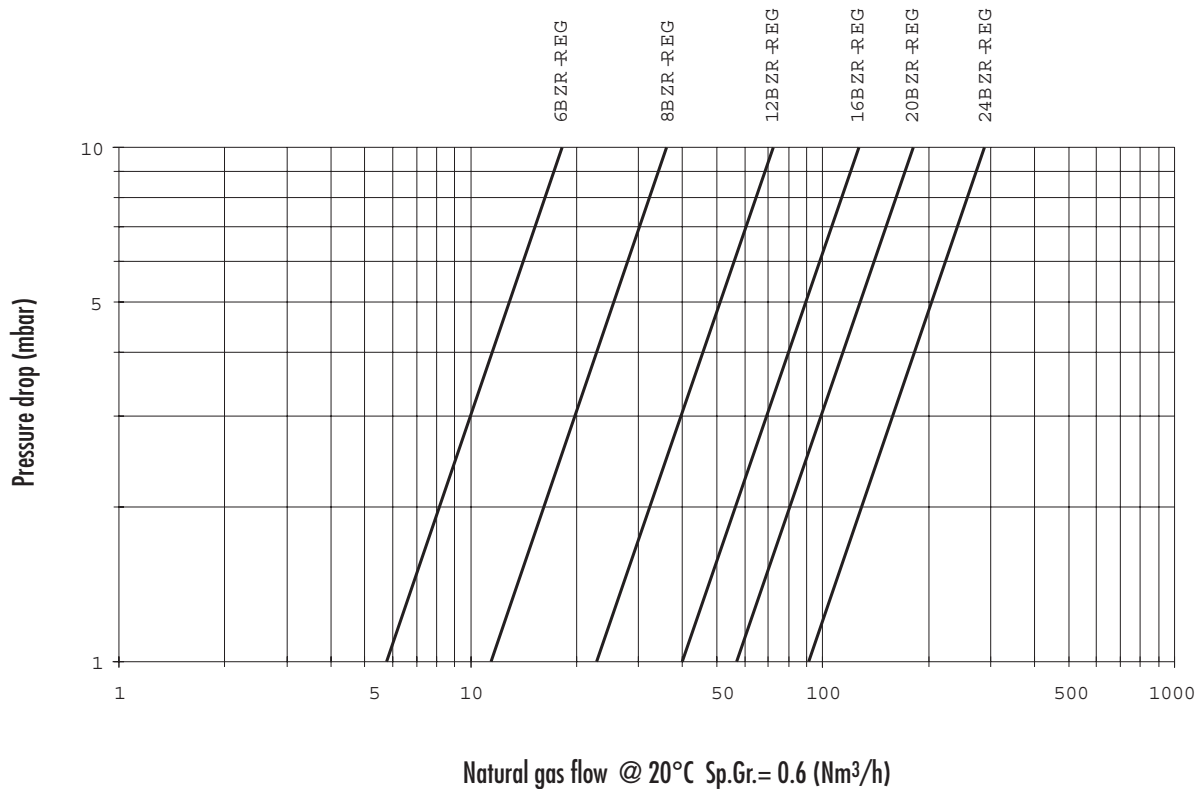
Regulators must always be mounted in a stem-up position, in a horizontal line. Any other mounting position will cause a malfunction. The arrow cast on the side of the valve body indicates direction flow.

Regulators should not be installed in areas where operating temperatures will exceed 65°C.

Zero Regulators may be connected to several mixers under the following condition:

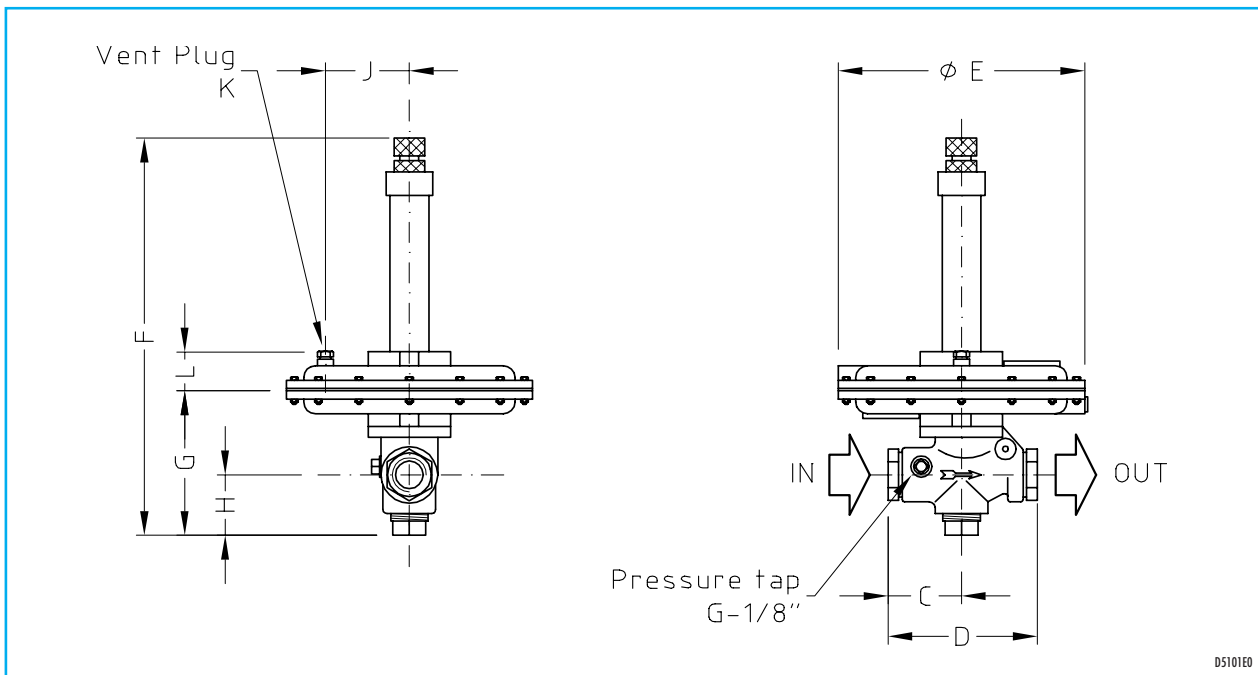
1. a full area gas cock should be installed at the gas inlet of each mixer so that it may be operated independently;
2. the Regulator must be operated within its maximum capacity rating;
3. all mixers supplied by one regulator should be on the same control zone.

## CAPACITY TABLE



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## DIMENSIONS



D5101E0

Catalog no.	Counterflange In/Out	In	Out	C mm	D mm	E mm	F mm	G mm	H mm	J mm	K mm	L mm	Mass kg
6 BZR - REG	(not present)	G - 3/4"	G - 3/4"	63.5	127	210	286	120	48	45	1/4"	32	3
8 BZR - REG	(not present)	G - 1"	G - 1"	60	120	248	298	120	51	86	1/4"	32	4
12 BZR - REG	(not present)	G - 1.1/2"	G - 1.1/2"	76	165	298	403	184	83	98	1/4"	35	7
16 BZR - REG	threaded	G - 2"	G - 2"	124	260	298	406	194	92	98	1/4"	35	8
	welding	2"	2"	111	235	298	406	194	92	98	1/4"	35	8
20 BZR - REG	threaded	G - 2.1/2"	G - 2.1/2"	134	286	356	448	222	89	92	1/4"	48	12
	welding	2.1/2"	2.1/2"	120	258	356	448	222	89	92	1/4"	48	12
24 BZR - REG	threaded	G - 3"	G - 3"	185	370	356	514	263	111	92	1/4"	48	15
	welding	3"	3"	165	330	356	514	263	111	92	1/4"	48	15

**NOTE:** dimensions C and D on models 16, 20 and 24 BZR include also threaded or welding counterflanges.