

## Gas Appliance Regulators 210 Series

210D, 210E, 210G & 210J\*

### SPECIFICATIONS

**Maximum Inlet Pressure:** ..... 10 psi

**Emergency Exposure Limits:** ..... 25 psi

**Ambient Temperature Limits:** ..... - 40° to 200° F

**Gases:** Suitable for application in natural, manufactured, mixed gases, liquified petroleum gases or LP gas-air mixture piping systems.

**Mounting:** ..... upright only

**Note:** All Maxitrol gas appliance regulators should be installed and operated in accordance with Maxitrol's "Safety Warning" Bulletin.

\* Not CSA Approved

### DESCRIPTION

The 210 series is a lock-up type regulator and complies with codes using this specification.

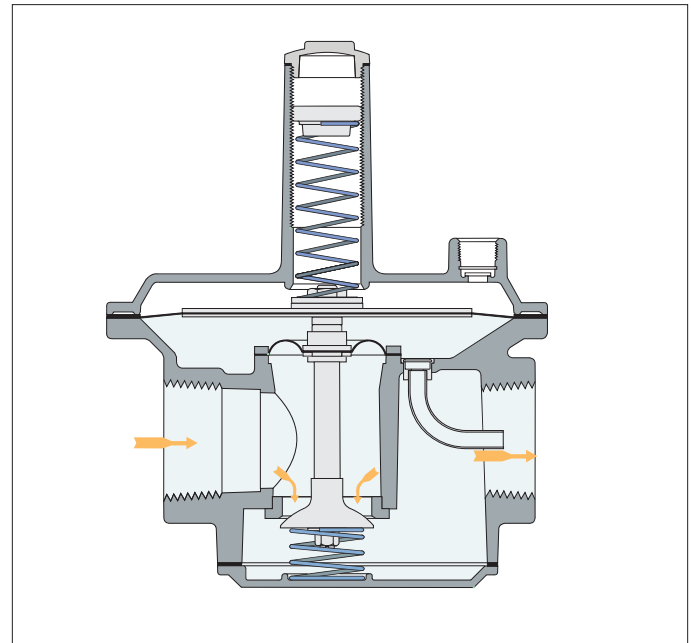
The 210 series has been designed for maximum control function in an easy to use package. The series is intended for use with gas-fired boilers, steam generators, industrial furnaces, ovens, and similar high demand equipment.

The balanced valve design eliminates the inlet pressure effect acting on the valve. Regulating stability is improved and hunting tendencies reduced by the use of dampening mechanisms in both the breather outlet and sensing tube. You get precise regulation over a broad range of pressures and flow rates with the 210 series, including a "zero governor" application.

Housings are of high strength aluminum alloy and are reinforced with webs for maximum strength. The 210J model is of cast iron and steel construction with 125 pound flange connections. Internal parts are cast or machined from corrosion resistant metals or electroplated.

Diaphragms are of the finest synthetic coated fabrics.

When selecting pipe size, make sure regulator is not more than one size smaller or larger than manifold pipe size. Gas flow must be oriented to arrow on the bottom casting. At exposures to maximum emergency levels, the regulator will suffer no internal damage, but it may provide accurate regulation. See Maxitrol's "Spring Chart" for complete selection of spring ranges on all models.



Balanced Valve Design

Convenient tap locations are provided for downstream sensing, cross connections, and differential control. Four locations can be tapped and plugged for measuring pressure.

The 210D, E, and G may be ordered with remote sensing. The internal sensing tube is omitted and external sensing taps are provided. Add suffix letter "R" to model numbers when ordering.

Vertical vent tapped - 3/8" NPT on 210D, 1/2" on 210E, 3/4" on 210G and J.

The 210 series is designed to operate as a "zero governor" in the normal upright position - See Bulletin GPRZ-ER\_MS\_EN.

## DIMENSIONS AND SPECIFICATIONS

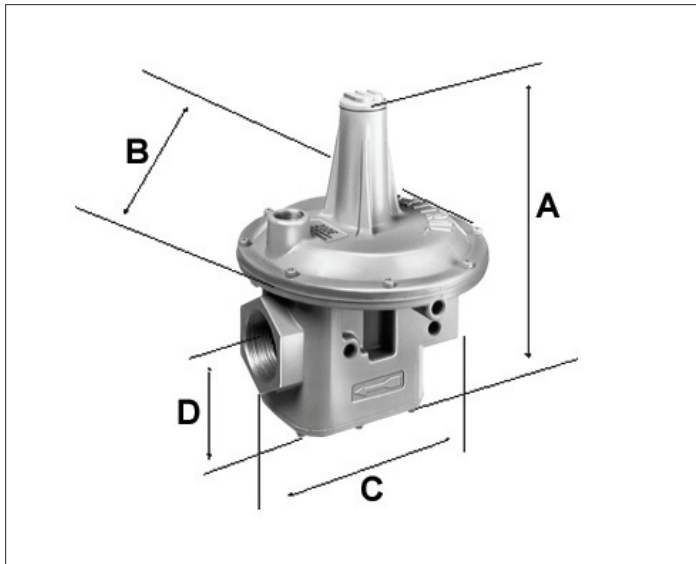


Illustration no. 1

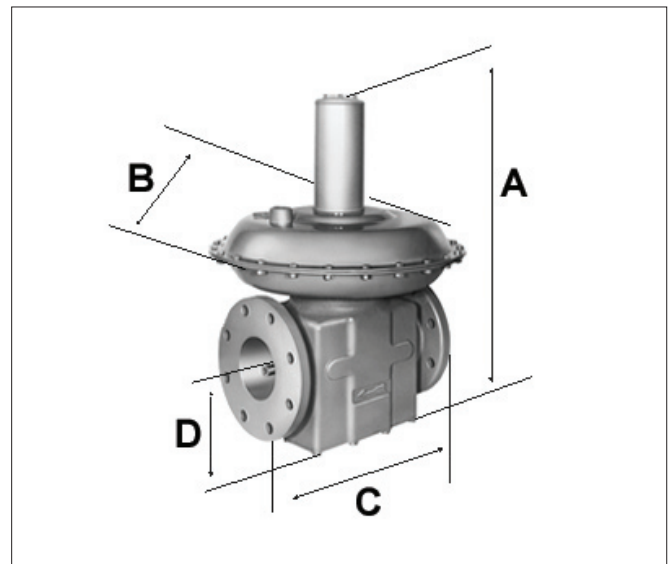


Illustration no. 2

### DIMENSIONS - in inches

Model and Illustration Number	Swing Radius	Call Outs				
		A	B	C	D	
210D	1	5 <sup>7</sup> / <sub>16</sub>	9	7	6	2 <sup>3</sup> / <sub>8</sub>
210E	1	8 <sup>5</sup> / <sub>16</sub>	11 <sup>1</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>8</sub>	8	2 <sup>15</sup> / <sub>16</sub>
210G	1	11 <sup>7</sup> / <sub>8</sub>	16 <sup>1</sup> / <sub>2</sub>	13 <sup>1</sup> / <sub>2</sub>	10 <sup>3</sup> / <sub>8</sub>	4 <sup>9</sup> / <sub>16</sub>
210J	2	18	24 <sup>1</sup> / <sub>4</sub>	18	13 <sup>3</sup> / <sub>4</sub>	5 <sup>7</sup> / <sub>16</sub>

**NOTE:** Dimensions are to be used only as an aid in designing clearance for the regulator. Actual production dimensions may vary somewhat from those shown.

### SPRING SELECTION CHART - in inches

Model and Standard Spring Range		Other Springs Available									
210D	3.0" - 6.0"	1.0 - 3.5	2.0 - 5.0	3.0 - 8.0	4.0 - 8.0	4.0 - 8.0	4.0 - 12	5.0 - 12	10 - 22	15 - 30	20 - 42
210E	3.0" - 6.0"	1.0 - 3.5	2.0 - 5.0	3.0 - 8.0	4.0 - 8.0	4.0 - 8.0	4.0 - 12	5.0 - 12	10 - 22	15 - 30	20 - 42
210G	3.0" - 6.0"	1.0 - 3.5	2.0 - 5.0	3.0 - 8.0	4.0 - 8.0	4.0 - 8.0	4.0 - 12	5.0 - 12	10 - 22	15 - 30	20 - 42
210J	3.0" - 6.0"	---	2.0 - 5.0	3.0 - 8.0	---	4.0 - 8.0	4.0 - 12	---	10 - 22	15 - 30	20 - 42

### CAPACITIES - expressed in ft<sup>3</sup>/h@0.64 sp gr gas

Model Number and Pipe Size		0.1	0.3	0.5	1.0	3.0	5.0	7.0	1/2 psi	3/4 psi	1 psi	2 psi
210D	1 x 1	---	---	---	900	1600	2000	2400	3300	4100	4750	5800
	1 <sup>1</sup> / <sub>4</sub> x 1 <sup>1</sup> / <sub>4</sub>	---	---	---	1100	1900	2500	2900	4100	5000	5850	7150
	1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub>	---	---	---	1200	2100	2700	3200	4500	5500	6350	7750
210E	1 <sup>1</sup> / <sub>2</sub> x 1 <sup>1</sup> / <sub>2</sub>	---	1050	1350	1915	3315	4280	5065	7125	8725	10075	12340
	2 x 2	---	1210	1560	2210	3825	4940	5845	8225	10070	11630	14245
210G	2 <sup>1</sup> / <sub>2</sub> x 2 <sup>1</sup> / <sub>2</sub>	1410	2450	3160	4470	7740	9995	11825	16635	20375	23525	28810
	3 x 3	1555	2695	3475	4920	8520	11000	13020	18310	22425	25890	31710
210J	4 x 4	2700	4700	6000	8600	15000	19000	23000	32000	40000	45000	55700

# MAXITROL

## Gas Appliance Regulators R400, R500, R600 & R400S, R500S & R600S

### MAXIMUM INLET PRESSURES:

#### CSA Certified

All R & RS models.....1/2 psi (34 mbar)

#### Maxitrol Tested

R400, R500, & R600.....1.0 psi (69 mbar)

R400S, R500S & R600S.....5.0 psi (345 mbar)

### EMERGENCY EXPOSURE LIMITS:

R400, R500, R600.....2.0 psi (138 mbar)

R400S, R500S, & R600S.....12.5 psi (862 mbar)

### AMBIENT TEMPERATURE LIMITS:

R400, R500, R600,

R400S, R500S, & R600S.....-40° to 205°F (-40° to 96° C)

VENTING.....1/8" NPT

**GASES:** Suitable for application in natural, manufactured, mixed gases, liquefied petroleum gases and LP gas-air mixture piping systems.

**MOUNTING:** Suitable for multiple-poise mounting-mount with flow direction as marked on bottom casting.



**NOTE:** All Maxitrol appliance regulators should be installed and operated in accordance with Maxitrol's "Safety Warning" Bulletin.

**These regulators are not suitable for dead-end lock-up service. They are capable of controlling pressure at very low flows such as standing pilots, but should not be used as a line gas pressure regulator for appliances equipped with electronic ignition unless automatic control valve can open against line pressure.**

The R & RS series is intended for use with both main burner and pilot load applications. The double diaphragm balanced valve design makes it possible to build a regulator physically small in size yet having good capacity characteristics. They are able to maintain steady outlet pressure control with widely varying inlet pressures. The high quality molded balancing diaphragm eliminates the inlet pressure effect acting on the valve.

# R&RS series



## balanced valve design

The housings are rugged aluminum die castings. All internal components are carefully selected and corrosion resistant. The diaphragms are of high quality supported synthetic rubber components having excellent low temperature performance. The RS models incorporate a resilient chemically bonded synthetic rubber ring on the valve member. The soft seating insures satisfactory pilot control at inlet pressures up to 5 psi.

These regulators are ideally suited for use with infrared heaters and pilot lines on large industrial heaters and boilers. They may also be used in residential applications. Because of their high pressure drop capacities, both the R & RS models will operate satisfactorily on domestic as well as elevated pressures. Appliances may be shipped to any area having supply pressures from 7.0" w.c. to 5 psi without changing regulators. They find wide applications on commercial and industrial equipment, especially where precise outlet pressure accuracy is required.

Any of the R models can be furnished for zero governor applications.

# Specifications

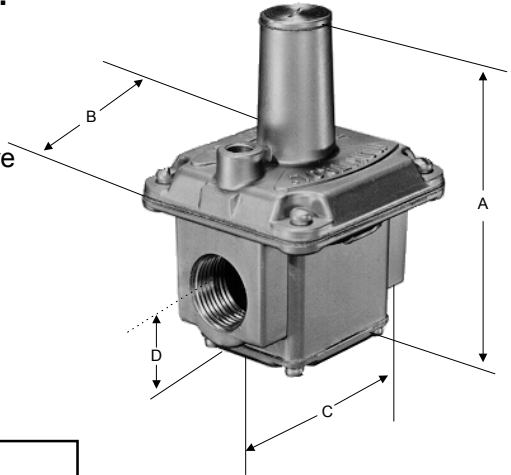
## REGULATORS FOR ZERO GOVERNOR APPLICATIONS:

R400Z, R500Z & R600Z – These regulators are equipped with a counter spring beneath the valve for zero governor use in the normal upright position.

A maximum inlet pressure of 1 psi is recommended, and outlet pressure may be adjusted from -1.0" to +1.5" w.c.

At any given flow rate the regulation accuracy is +/- 0.2" w.c. over varying inlet pressures up to 1 psi.

See Bulletin MS 2043



## DIMENSIONS – in inches (millimeters)

Swing Model Number	Radius	Call-Outs			
		A	B	C	D
R400 & R400S	2.38 (60)	3.25 (83)	2 (51)	2 (51)	.94 (24)
R500 & R500S	3.56 (90)	4.69 (119)	3.13 (79)	3 (76)	1.19 (30)
R600 & R600S	4.32 (109.7)	5.68 (144.3)	3.88 (98.3)	4.03 (102.4)	1.46 (37.1)

## SPRING SELECTION CHART – in inches (mbar)

Model Number with Standard Spring		Other Springs Available							
R400 & R400S	3 to 6	1 - 3.5 (2.5 - 9)	2 - 5 (5 - 12.5)	3 - 8 (7.5 - 20)	—	4 - 12 (10 - 30)	5 - 12 (12.5 - 30)	10 - 22 (25 - 55)	—
R500 & R500S	3 to 6	1 - 3.5 (2.5 - 9)	2 - 5 (5 - 12.5)	3 - 8 (7.5 - 20)	4 - 8 (10 - 20)	4 - 12 (10 - 30)	5 - 12 (12.5 - 30)	10 - 22 (25 - 55)	—
R600 & R600S	3 to 6	2 - 5 (5 - 12.5)	2 - 5 (5 - 12.5)	3 - 8 (7.5 - 20)	4 - 8 (10 - 20)	4 - 12 (10 - 30)	5 - 12 (12.5 - 30)	10 - 22 (25 - 55)	15 - 30 (38 - 75)

## CAPACITIES — expressed in CFH (m<sup>3</sup> /h) @ 0.64 sp gr gas

Model Number and Pipe Size		Pressure Drop inches w.c. (mbar)										
		0.2 (.50)	0.4 (1.00)	0.6 (1.5)	0.8 (2.0)	1.0 (2.5)	1.5 (3.7)	2.0 (5.0)	2.5 (6.2)	3.0 (7.5)	3.5 (8.7)	4.0 (10.0)
R400 & R400S	3/8 x 3/8	77 (2.16)	110 (3.08)	134 (3.75)	155 (4.34)	174 (4.87)	212 (5.94)	245 (6.86)	274 (7.67)	—	—	—
	1/2 x 1/2	86 (2.41)	121 (3.39)	148 (4.14)	172 (4.82)	192 (5.38)	235 (6.58)	271 (7.59)	303 (8.48)	—	—	—
R500 & R500S	1/2 x 1/2	163 (4.56)	231 (6.47)	283 (7.92)	327 (9.16)	366 (10.25)	447 (12.52)	516 (14.55)	577 (16.16)	635 (17.78)	685 (19.18)	730 (20.44)
	3/4 x 3/4	196 (5.49)	277 (7.76)	340 (9.52)	392 (10.97)	438 (12.26)	537 (15.04)	620 (17.36)	693 (19.40)	760 (21.28)	820 (22.96)	876 (24.53)
R600 & R600S	3/4 x 3/4	298 (8.34)	421 (11.79)	516 (14.45)	595 (16.66)	666 (18.65)	816 (22.85)	942 (26.38)	1,054 (29.51)	1,150 (32.20)	1,245 (34.86)	1,335 (37.38)
	1 x 1	330 (9.24)	468 (13.10)	572 (16.02)	661 (18.21)	739 (20.69)	906 (25.37)	1,046 (29.29)	1,169 (32.73)	1,280 (35.84)	1,380 (38.64)	1,480 (41.44)

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