

GAS PRESSURE REGULATOR & MODULATOR CATALOG

6th Edition



MAXITROL®

www.maxitrol.com

▲ WARNING

Service and installation must be performed by a trained/experienced service technician.

All products used with combustible gas **must** be installed and used **strictly** in accordance with the instructions of the Original Equipment Manufacturer (OEM) and with all applicable government codes and regulations, e.g. plumbing, mechanical, and electrical codes and practices. Maxitrol products should be installed and operated in accordance with Maxitrol Safety Warning Instructions.

Maxitrol Company is NOT responsible for any errors or omissions in reliance by anyone of any information set forth in this catalog without additional reference to local requirements and applicable ordinances or codes.

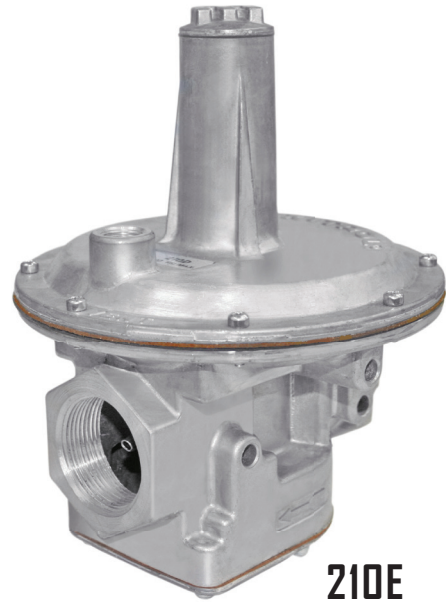
Other worldwide approvals and certifications available upon inquiry.



210 SERIES

Balanced Valve Design

The 210 series is a lockup type regulator. The balanced valve design makes it possible to maintain steady outlet pressure control with widely varying inlet pressures. The regulator has an integrated dampening mechanism in the breather outlet and the sensing tube to improve regulating stability and reduce hunting tendencies. The 210 series provides precise regulation over a wide range of pressures and flow rates. Applications include gas-fired boilers, steam generators, industrial furnaces, and ovens.



Specifications

Pipe Sizes 1" to 3" threaded connections with NPT or ISO 7-1 threads. 4" 125 lb. flange (210J only).

Housing Material 210D, 210E, 210G, 210J: aluminum.

Mounting Mount in an upright position only.

NOTE: All Maxitrol gas pressure regulators should be installed and operated in accordance with Maxitrol Safety Warning Instructions (see GPR_MI_EN.ES or GPR_CSA_MI_EN.FR).

Certifications 210D, 210E, 210G: ANSI Z21.18/CSA 6.3 Gas Appliance Pressure Regulators.

Fuel Gases Suitable for natural, manufactured, mixed gases, liquefied petroleum gases, and LP gas-air mixtures.

Maximum Inlet Pressure CSA Certified: 210D, 210E, 210G: 10 psi (69 kPa)

Maxitrol Tested 210J: 10 psi (69 kPa)

Emergency Exposure Limits 210D, 210E, 210G, 210J: 25 psi (172 kPa)

Ambient Temperature Ranges -40 to 200°F (-40 to 93°C)

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

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

Zero Governor Models Please refer to pages 32-37 for 210Z model information.

Minimum Regulation 210D: 25 CFH; 210E, 210G: 50 CFH; 210J: 100 CFH.

Model Designations (F) Factory-set; fixed non-adjustable regulator.

(M) B.S.P. - PL parallel thread - conforms to ISO 7-1, where pressure tight joints are made on the threads.



Capacities

Capacities expressed in CFH (m³/h) @ 0.64 sp gr gas

Model	Pipe Size	Inlet Pressure	Outlet Pressure - inches w.c. (kPa)								
			2.0 (0.5)	4.0 (1.0)	6.0 (1.5)	9.0 (2.25)	12 (3.0)	16 (4.0)	20 (5.0)	24 (6.0)	28 (7.0)
210D	1" x 1"	8.0" w.c.	2400 (68.0)	1900 (53.8)	1300 (36.8)	---	---	---	---	---	---
		0.5 psi	3400 (96.3)	3100 (87.8)	2700 (76.5)	2200 (62.3)	---	---	---	---	---
		0.75 psi	3500 (99.1)	4000 (113)	3800 (108)	3400 (96.3)	2900 (82.1)	2200 (62.3)	---	---	---
		1 psi	3500 (99.1)	4000 (113)	4500 (127)	4300 (122)	3900 (110)	3400 (96.3)	2700 (76.5)	1900 (53.8)	---
		1.5 psi	3500 (99.1)	4000 (113)	4500 (127)	4800 (136)	4800 (136)	5000 (142)	4600 (130)	4100 (116)	3600 (102)
		2 psi	3500 (99.1)	4000 (113)	4500 (127)	4800 (136)	4800 (136)	5000 (142)	5000 (142)	5000 (142)	5000 (142)
		3 psi	3500 (99.1)	4000 (113)	4500 (127)	4800 (136)	4800 (136)	5000 (142)	5000 (142)	5000 (142)	5000 (142)
		5 psi	3500 (99.1)	4000 (113)	4500 (127)	4800 (136)	4800 (136)	5000 (142)	5000 (142)	5000 (142)	5000 (142)
		7.5 psi	3500 (99.1)	4000 (113)	4500 (127)	4800 (136)	4800 (136)	5000 (142)	5000 (142)	5000 (142)	5000 (142)
		10 psi	3500 (99.1)	4000 (113)	4500 (127)	4800 (136)	4800 (136)	5000 (142)	5000 (142)	5000 (142)	5000 (142)

NOTE: CSA maximum capacities vary with spring range and pipe size. Please contact Maxitrol directly for CSA maximums. See pages 58-59 for Regulator Sizing Requirements and Examples.

210 SERIES

Balanced Valve Design

Capacities

Capacities expressed in CFH (m³/h) @ 0.64 sp gr gas

Model	Pipe Size	Inlet Pressure	Outlet Pressure - inches w.c. (kPa)								
			2.0 (0.5)	4.0 (1.0)	6.0 (1.5)	9.0 (2.25)	12 (3.0)	16 (4.0)	20 (5.0)	24 (6.0)	28 (7.0)
210D	1 1/4" x 1 1/4"	8.0" w.c.	3000 (84.9)	2400 (68.0)	1700 (48.1)	---	---	---	---	---	---
		0.5 psi	4000 (113)	3905 (111)	3400 (96.3)	2700 (76.5)	---	---	---	---	---
		0.75 psi	4000 (113)	5000 (142)	4700 (133)	4200 (119)	3700 (105)	2700 (76.5)	---	---	---
		1 psi	4000 (113)	5000 (142)	5000 (142)	5300 (150)	4900 (139)	4200 (119)	3400 (96.3)	2400 (68.0)	---
		1.5 psi	4000 (113)	5000 (142)	5000 (142)	6000 (170)	6000 (170)	6000 (170)	5700 (161)	5200 (147)	4600 (130)
		2 psi	4000 (113)	5000 (142)	5000 (142)	6000 (170)	6000 (170)	6000 (170)	6500 (184)	6500 (184)	6500 (184)
		3 psi	4000 (113)	5000 (142)	5000 (142)	6000 (170)	6000 (170)	6000 (170)	6500 (184)	6500 (184)	6500 (184)
		5 psi	4000 (113)	5000 (142)	5000 (142)	6000 (170)	6000 (170)	6000 (170)	6500 (184)	6500 (184)	6500 (184)
		7.5 psi	4000 (113)	5000 (142)	5000 (142)	6000 (170)	6000 (170)	6000 (170)	6500 (184)	6500 (184)	6500 (184)
10 psi	4000 (113)	5000 (142)	5000 (142)	6000 (170)	6000 (170)	6000 (170)	6500 (184)	6500 (184)	6500 (184)		

Capacities expressed in CFH (m³/h) @ 0.64 sp gr gas

Model	Pipe Size	Inlet Pressure	Outlet Pressure - inches w.c. (kPa)								
			2.0 (0.5)	4.0 (1.0)	6.0 (1.5)	9.0 (2.25)	12 (3.0)	16 (4.0)	20 (5.0)	24 (6.0)	28 (7.0)
210D	1 1/2" x 1 1/2"	8.0" w.c.	3100 (87.8)	2500 (70.8)	1800 (51.0)	---	---	---	---	---	---
		0.5 psi	4000 (113)	4000 (113)	3600 (102)	2800 (79.3)	---	---	---	---	---
		0.75 psi	4000 (113)	5000 (142)	5000 (142)	4400 (125)	3800 (108)	2800 (79.3)	---	---	---
		1 psi	4000 (113)	5000 (142)	5000 (142)	5600 (159)	5100 (144)	4400 (125)	3600 (102)	2500 (70.8)	---
		1.5 psi	4000 (113)	5000 (142)	5000 (142)	6000 (170)	6000 (170)	6500 (184)	6000 (170)	5400 (153)	4800 (136)
		2 psi	4000 (113)	5000 (142)	5000 (142)	6000 (170)	6000 (170)	6500 (184)	6500 (184)	6500 (184)	6500 (184)
		3 psi	4000 (113)	5000 (142)	5000 (142)	6000 (170)	6000 (170)	6500 (184)	6500 (184)	6500 (184)	6500 (184)
		5 psi	4000 (113)	5000 (142)	5000 (142)	6000 (170)	6000 (170)	6500 (184)	6500 (184)	6500 (184)	6500 (184)
		7.5 psi	4000 (113)	5000 (142)	5000 (142)	6000 (170)	6000 (170)	6500 (184)	6500 (184)	6500 (184)	6500 (184)
10 psi	4000 (113)	5000 (142)	5000 (142)	6000 (170)	6000 (170)	6500 (184)	6500 (184)	6500 (184)	6500 (184)		

NOTE: CSA maximum capacities vary with spring range and pipe size. Please contact Maxitrol directly for CSA maximums. See pages 58-59 for Regulator Sizing Requirements and Examples.

Capacities

Capacities expressed in CFH (m³/h) @ 0.64 sp gr gas

Model	Pipe Size	Inlet Pressure	Outlet Pressure - inches w.c. (kPa)								
			2.0 (0.5)	4.0 (1.0)	6.0 (1.5)	9.0 (2.25)	12 (3.0)	16 (4.0)	20 (5.0)	24 (6.0)	28 (7.0)
210E	1 1/2" x 1 1/2"	8.0" w.c.	4450 (126)	3650 (103)	2550 (72.2)	---	---	---	---	---	---
		0.5 psi	6300 (178)	5750 (163)	5150 (146)	4050 (115)	---	---	---	---	---
		0.75 psi	7000 (198)	7500 (212)	7050 (200)	6300 (178)	5450 (154)	4050 (115)	---	---	---
		1 psi	7000 (198)	8800 (249)	8500 (241)	7950 (225)	7250 (205)	6300 (178)	5150 (146)	3650 (103)	---
		1.5 psi	7000 (198)	8800 (249)	8800 (249)	10450 (296)	9950 (282)	9250 (262)	8550 (242)	7700 (218)	6800 (193)
		2 psi	7000 (198)	8800 (249)	8800 (249)	10500 (297)	10500 (297)	10500 (297)	10500 (297)	10250 (290)	9600 (272)
		3 psi	7000 (198)	8800 (249)	8800 (249)	10500 (297)	10500 (297)	10500 (297)	10500 (297)	10500 (297)	10500 (297)
		5 psi	7000 (198)	8800 (249)	8800 (249)	10500 (297)	10500 (297)	10500 (297)	10500 (297)	10250 (290)	10500 (297)
		7.5 psi	7000 (198)	8800 (249)	8800 (249)	10500 (297)	10500 (297)	10500 (297)	10500 (297)	10250 (290)	10500 (297)
10 psi	7000 (198)	8800 (249)	8800 (249)	10500 (297)	10500 (297)	10500 (297)	10500 (297)	10250 (290)	10500 (297)		

Capacities expressed in CFH (m³/h) @ 0.64 sp gr gas

Model	Pipe Size	Inlet Pressure	Outlet Pressure - inches w.c. (kPa)								
			2.0 (0.5)	4.0 (1.0)	6.0 (1.5)	9.0 (2.25)	12 (3.0)	16 (4.0)	20 (5.0)	24 (6.0)	28 (7.0)
210E	2" x 2"	8.0" w.c.	5150 (146)	4200 (119)	2950 (83.5)	---	---	---	---	---	---
		0.5 psi	7250 (205)	6650 (188)	5950 (168)	4700 (133)	---	---	---	---	---
		0.75 psi	8000 (226)	8650 (245)	8150 (231)	7250 (205)	6300 (178)	4700 (133)	---	---	---
		1 psi	8000 (226)	10000 (283)	9850 (279)	9150 (259)	8400 (238)	7250 (205)	5950 (168)	4200 (119)	---
		1.5 psi	8000 (226)	10000 (283)	10000 (283)	12000 (340)	11500 (326)	10700 (303)	9850 (279)	8900 (252)	7850 (222)
		2 psi	8000 (226)	10000 (283)	10000 (283)	12000 (340)	12000 (340)	12000 (340)	12000 (340)	11850 (335)	11000 (311)
		3 psi	8000 (226)	10000 (283)	10000 (283)	12000 (340)	12000 (340)	12000 (340)	12000 (340)	12000 (340)	12000 (340)
		5 psi	8000 (226)	10000 (283)	10000 (283)	12000 (340)	12000 (340)	12000 (340)	12000 (340)	12000 (340)	12000 (340)
		7.5 psi	8000 (226)	10000 (283)	10000 (283)	12000 (340)	12000 (340)	12000 (340)	12000 (340)	12000 (340)	12000 (340)
10 psi	8000 (226)	10000 (283)	10000 (283)	12000 (340)	12000 (340)	12000 (340)	12000 (340)	12000 (340)	12000 (340)		

NOTE: CSA maximum capacities vary with spring range and pipe size. Please contact Maxitrol directly for CSA maximums. See pages 58-59 for Regulator Sizing Requirements and Examples.

210 SERIES

Balanced Valve Design

Capacities

Capacities expressed in CFH (m³/h) @ 0.64 sp gr gas

Model	Pipe Size	Inlet Pressure	Outlet Pressure - inches w.c. (kPa)								
			2.0 (0.5)	4.0 (1.0)	6.0 (1.5)	9.0 (2.25)	12 (3.0)	16 (4.0)	20 (5.0)	24 (6.0)	28 (7.0)
210G	2 1/2" x 2 1/2"	8.0" w.c.	10400 (294)	8500 (241)	6000 (170)	---	---	---	---	---	---
		0.5 psi	14700 (416)	13410 (380)	12000 (340)	9500 (269)	---	---	---	---	---
		0.75 psi	16000 (453)	17500 (495)	16400 (464)	14700 (416)	12750 (361)	9500 (269)	---	---	---
		1 psi	16000 (453)	20000 (566)	19900 (563)	18500 (524)	16950 (480)	14700 (416)	12000 (340)	8500 (241)	---
		1.5 psi	16000 (453)	20000 (566)	20000 (566)	24000 (680)	23250 (658)	21600 (612)	19900 (563)	18000 (510)	15850 (449)
		2 psi	16000 (453)	20000 (566)	20000 (566)	24000 (680)	24000 (680)	24000 (680)	24000 (680)	24000 (680)	22450 (636)
		3 psi	16000 (453)	20000 (566)	20000 (566)	24000 (680)	24000 (680)	24000 (680)	24000 (680)	24000 (680)	24000 (680)
		5 psi	16000 (453)	20000 (566)	20000 (566)	24000 (680)	24000 (680)	24000 (680)	24000 (680)	24000 (680)	24000 (680)
		7.5 psi	16000 (453)	20000 (566)	20000 (566)	24000 (680)	24000 (680)	24000 (680)	24000 (680)	24000 (680)	24000 (680)
10 psi	16000 (453)	20000 (566)	20000 (566)	24000 (680)	24000 (680)	24000 (680)	24000 (680)	24000 (680)	24000 (680)		

Capacities expressed in CFH (m³/h) @ 0.64 sp gr gas

Model	Pipe Size	Inlet Pressure	Outlet Pressure - inches w.c. (kPa)								
			2.0 (0.5)	4.0 (1.0)	6.0 (1.5)	9.0 (2.25)	12 (3.0)	16 (4.0)	20 (5.0)	24 (6.0)	28 (7.0)
210G	3" x 3"	8.0" w.c.	11500 (325)	9400 (266)	6600 (187)	---	---	---	---	---	---
		0.5 psi	16000 (453)	14800 (416)	13200 (374)	10450 (296)	---	---	---	---	---
		0.75 psi	16000 (453)	19300 (546)	18100 (516)	16200 (459)	14000 (396)	10450 (296)	---	---	---
		1 psi	16000 (453)	20000 (566)	20000 (566)	20350 (576)	18700 (529)	16200 (459)	13200 (374)	9350 (265)	---
		1.5 psi	16000 (453)	20000 (566)	20000 (566)	24000 (680)	24000 (680)	23800 (674)	21900 (620)	19800 (561)	17450 (494)
		2 psi	16000 (453)	20000 (566)	20000 (566)	24000 (680)	24000 (680)	27000 (765)	27000 (765)	26400 (748)	24700 (699)
		3 psi	16000 (453)	20000 (566)	20000 (566)	24000 (680)	24000 (680)	27000 (765)	27000 (765)	27000 (765)	27000 (765)
		5 psi	16000 (453)	20000 (566)	20000 (566)	24000 (680)	24000 (680)	27000 (765)	27000 (765)	27000 (765)	27000 (765)
		7.5 psi	16000 (453)	20000 (566)	20000 (566)	24000 (680)	24000 (680)	27000 (765)	27000 (765)	27000 (765)	27000 (765)
		10 psi	16000 (453)	20000 (566)	20000 (566)	24000 (680)	24000 (680)	27000 (765)	27000 (765)	27000 (765)	27000 (765)

NOTE: CSA maximum capacities vary with spring range and pipe size. Please contact Maxitrol directly for CSA maximums. See pages 58-59 for Regulator Sizing Requirements and Examples.

Capacities

Capacities expressed in CFH (m³/h) @ 0.64 sp gr gas

Model	Pipe Size	Inlet Pressure	Outlet Pressure - inches w.c. (kPa)								
			2.0 (0.5)	4.0 (1.0)	6.0 (1.5)	9.0 (2.25)	12 (3.0)	16 (4.0)	20 (5.0)	24 (6.0)	28 (7.0)
210J	4" x 4"	8.0" w.c.	20800 (589)	17000 (481)	12000 (339)	---	---	---	---	---	---
		0.5 psi	29500 (835)	27000 (764)	24000 (680)	19000 (538)	---	---	---	---	---
		0.75 psi	32000 (906)	35000 (991)	33000 (934)	29420 (833)	25500 (722)	19000 (538)	---	---	---
		1 psi	32000 (906)	40000 (1132)	40000 (1132)	37000 (1048)	34000 (963)	29420 (833)	24000 (680)	17000 (481)	---
		1.5 psi	32000 (906)	40000 (1132)	40000 (1132)	48000 (1359)	47000 (1331)	43350 (1227)	39700 (1124)	36000 (1019)	31800 (900)
		2 psi	32000 (906)	40000 (1132)	40000 (1132)	48000 (1359)	48000 (1359)	50000 (1416)	50000 (1416)	48000 (1359)	45000 (1274)
		3 psi	32000 (906)	40000 (1132)	40000 (1132)	48000 (1359)	48000 (1359)	50000 (1416)	50000 (1416)	50000 (1416)	50000 (1416)
		5 psi	32000 (906)	40000 (1132)	40000 (1132)	48000 (1359)	48000 (1359)	50000 (1416)	50000 (1416)	50000 (1416)	50000 (1416)
		7.5 psi	32000 (906)	40000 (1132)	40000 (1132)	48000 (1359)	48000 (1359)	50000 (1416)	50000 (1416)	50000 (1416)	50000 (1416)
		10 psi	32000 (906)	40000 (1132)	40000 (1132)	48000 (1359)	48000 (1359)	50000 (1416)	50000 (1416)	50000 (1416)	50000 (1416)

NOTE: CSA maximum capacities vary with spring range and pipe size. Please contact Maxitrol directly for CSA maximums. See pages 58-59 for Regulator Sizing Requirements and Examples.

210 SERIES

Balanced Valve Design

Pressure Drop: inches w.c. (kPa)

Flow Rate CFH (m ³ /h)	210D			210E		210G		210J
	1"	1 1/4"	1 1/2"	1 1/2"	2"	2 1/2"	3"	4"
500 (14.2)	0.23 (0.06)	0.15 (0.04)	0.14 (0.03)	---	---	---	---	---
1000 (28.3)	0.92 (0.23)	0.59 (0.15)	0.54 (0.13)	0.27 (0.07)	0.20 (0.05)	0.05 (0.01)	0.04 (0.009)	0.01 (0.002)
1500 (42.5)	2.08 (0.52)	1.33 (0.33)	1.22 (0.30)	---	---	---	---	---
2000 (56.6)	3.07 (0.76)	2.37 (0.59)	2.16 (0.54)	1.09 (0.27)	0.82 (0.20)	0.20 (0.05)	0.17 (0.04)	0.05 (0.01)
2500 (70.8)	5.78 (1.44)	3.70 (0.92)	3.38 (0.84)	---	---	---	---	---
3000 (85.0)	8.32 (2.07)	5.33 (1.33)	4.87 (1.21)	2.46 (0.61)	1.84 (0.46)	0.45 (0.11)	0.37 (0.09)	0.12 (0.03)
3500 (99.1)	11.33 (2.82)	7.25 (1.81)	6.62 (1.65)	---	---	---	---	---
4000 (113)	14.79 (3.68)	9.47 (2.36)	8.65 (2.15)	4.37 (1.09)	3.28 (0.82)	0.80 (0.20)	0.66 (0.16)	0.21 (0.05)
4500 (127)	18.72 (4.66)	11.98 (2.98)	10.95 (2.73)	---	---	---	---	---
5000 (142)	23.11 (5.76)	14.79 (3.68)	13.52 (3.37)	6.82 (1.70)	5.12 (1.28)	1.25 (0.31)	1.03 (0.26)	0.34 (0.08)
5500 (156)	27.97 (6.97)	17.90 (4.46)	16.35 (4.07)	---	---	---	---	---
6000 (170)	33.28 (8.29)	21.30 (5.30)	19.46 (4.85)	9.82 (2.45)	7.37 (1.84)	1.80 (0.45)	1.48 (0.37)	0.49 (0.12)
6500 (184)	---	25.00 (6.23)	22.84 (5.69)	---	---	---	---	---
7000 (198)	---	28.99 (7.22)	26.49 (6.60)	13.36 (3.33)	10.05 (2.50)	2.45 (0.61)	2.02 (0.50)	0.66 (0.16)
7500 (212)	---	---	30.41 (7.57)	---	---	---	---	---
8000 (226)	---	---	---	17.45 (4.35)	13.10 (3.26)	3.20 (0.80)	2.64 (0.66)	0.87 (0.22)
8500 (241)	---	---	---	---	---	---	---	---
9000 (255)	---	---	---	22.10 (5.50)	16.60 (4.13)	4.05 (1.01)	3.35 (0.83)	1.10 (0.27)
9500 (269)	---	---	---	---	---	---	---	---
10000 (283)	---	---	---	27.30 (6.80)	20.50 (5.11)	5.00 (1.24)	4.15 (1.03)	1.35 (0.34)
11000 (311)	---	---	---	33.00 (8.22)	24.80 (6.18)	6.05 (1.51)	5.00 (1.24)	---
12000 (340)	---	---	---	39.30 (9.79)	29.50 (7.35)	7.20 (1.79)	5.95 (1.48)	1.95 (0.48)
13000 (368)	---	---	---	---	34.60 (8.62)	8.50 (2.12)	7.00 (1.74)	---
14000 (369)	---	---	---	---	40.15 (10.00)	9.85 (2.45)	8.10 (2.01)	2.68 (0.67)
15000 (425)	---	---	---	---	---	11.30 (2.81)	9.30 (2.32)	---
16000 (453)	---	---	---	---	---	12.85 (3.20)	10.60 (2.64)	3.47 (0.86)
17000 (481)	---	---	---	---	---	14.50 (3.61)	11.95 (2.98)	---
18000 (510)	---	---	---	---	---	16.25 (4.05)	13.40 (3.34)	4.40 (1.09)
19000 (538)	---	---	---	---	---	18.10 (4.51)	14.90 (3.71)	---
20000 (566)	---	---	---	---	---	20.05 (4.99)	16.50 (4.11)	5.42 (1.35)
22000 (623)	---	---	---	---	---	24.25 (6.40)	20.00 (4.98)	6.56 (1.63)
24000 (680)	---	---	---	---	---	28.85 (7.19)	23.80 (5.93)	7.81 (1.94)
26000 (736)	---	---	---	---	---	33.85 (8.43)	27.90 (6.95)	9.06 (2.26)
28000 (793)	---	---	---	---	---	39.25 (9.78)	32.40 (8.07)	10.62 (2.64)
30000 (849)	---	---	---	---	---	---	37.20 (9.27)	12.41 (3.09)
32000 (906)	---	---	---	---	---	---	---	13.90 (3.46)
34000 (963)	---	---	---	---	---	---	---	15.69 (3.91)
36000 (1019)	---	---	---	---	---	---	---	17.60 (4.38)
38000 (1076)	---	---	---	---	---	---	---	19.60 (4.88)
40000 (1133)	---	---	---	---	---	---	---	21.70 (5.40)
45000 (1274)	---	---	---	---	---	---	---	27.40 (6.82)
50000 (1416)	---	---	---	---	---	---	---	33.80 (8.42)
55000 (1557)	---	---	---	---	---	---	---	41.00 (10.21)

NOTE: The maximum capacities for the different models listed on the capacity charts and represented by the heavy line on the pressure drop are values at which these controls have been certified by CSA (except for the 210J). See pages 58-59 for Regulator Sizing Requirements and Examples.

Spring Selection Chart: inches w.c. (kPa)

Model	CSA Certified Springs										Other Springs
	1 to 3.5 (0.25 to 0.9) Brown	2 to 5 (0.5 to 1.25) Plated	3 to 6 (0.75 to 1.5) Plated	3 to 8 (0.75 to 2) Pink	4 to 8 (1 to 2) Orange	4 to 12 (1 to 3) Violet	5 to 12 (1.25 to 3) Blue	5 to 15 (1.25 to 3.7) Green	10 to 22 (2.5 to 5.5) Red	15 to 30 (3.7 to 7.5) Yellow	
210D	1 to 3.5 (0.25 to 0.9) Brown	2 to 5 (0.5 to 1.25) Plated	3 to 6 (0.75 to 1.5) Plated	3 to 8 (0.75 to 2) Pink	4 to 8 (1 to 2) Orange	4 to 12 (1 to 3) Violet	5 to 12 (1.25 to 3) Blue	5 to 15 (1.25 to 3.7) Green	10 to 22 (2.5 to 5.5) Red	15 to 30 (3.7 to 7.5) Yellow	20 to 42 (5 to 10.5) Black
210E	1 to 3.5 (0.25 to 0.9) Brown	2 to 5 (0.5 to 1.25) Plated	3 to 6 (0.75 to 1.5) Plated	3 to 8 (0.75 to 2) Pink	4 to 8 (1 to 2) Orange	4 to 12 (1 to 3) Violet	5 to 12 (1.25 to 3) Blue	5 to 15 (1.25 to 3.7) Green	10 to 22 (2.5 to 5.5) Red	15 to 30 (3.7 to 7.5) Yellow	20 to 42 (5 to 10.5) Black
210G	1 to 3.5 (0.25 to 0.9) Brown	2 to 5 (0.5 to 1.25) Plated	3 to 6 (0.75 to 1.5) Plated	3 to 8 (0.75 to 2) Pink	4 to 8 (1 to 2) Orange	4 to 12 (1 to 3) Violet	5 to 12 (1.25 to 3) Blue	5 to 15 (1.25 to 3.7) Green	10 to 22 (2.5 to 5.5) Red	15 to 30 (3.7 to 7.5) Yellow	20 to 42 (5 to 10.5) Black
210J	---	2 to 5 (0.5 to 1.25) Plated	3 to 6 (0.75 to 1.5) Plated	3 to 8 (0.75 to 2) Pink	---	4 to 12 (1 to 3) Violet	5 to 12 (1.25 to 3) Blue	---	10 to 22 (2.5 to 5.5) Red	15 to 30 (3.7 to 7.5) Yellow	20 to 42 (5 to 10.5) Black

NOTE: The area within the heavy line indicates CSA certified springs. See pages 56-57 for complete Spring Selection Chart.

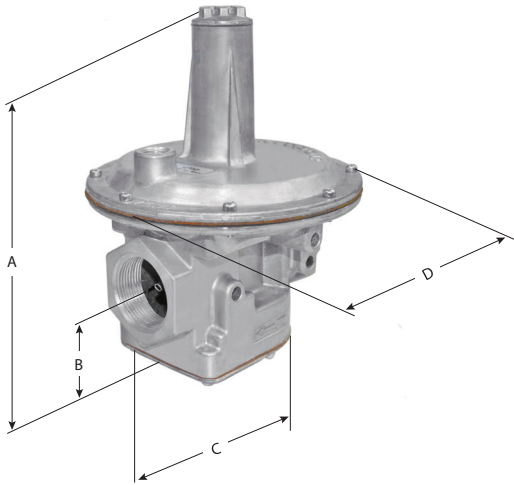
210 SERIES

Balanced Valve Design

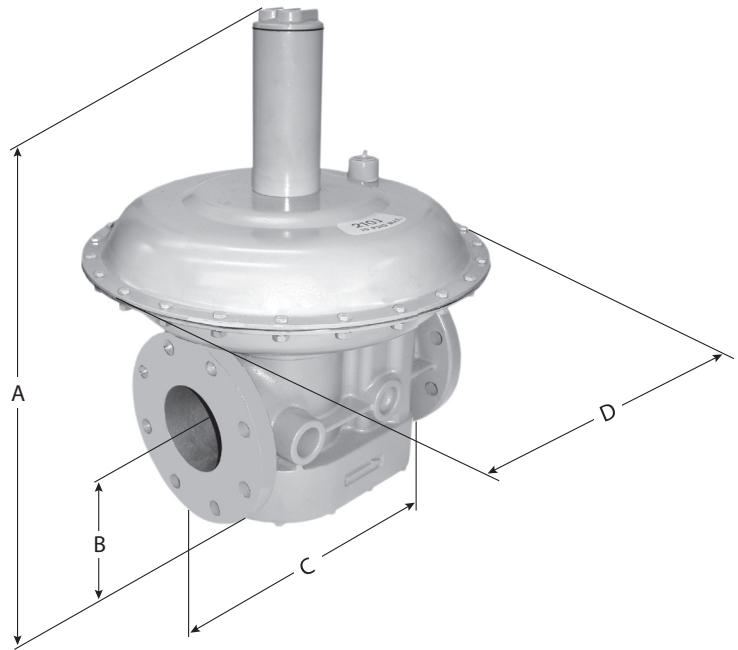
Dimensions

Model	Pipe Size	Vent Connection	Swing Radius	Dimensions			
				A	B	C	D
210D	1", 1 1/4", 1 1/2"	3/8" NPT	5.4" (138 mm)	9" (228 mm)	2.4" (60 mm)	6" (152 mm)	7" (178 mm)
210E	1 1/2", 2"	1/2" NPT	8.3" (211 mm)	11.3" (286 mm)	2.9" (75 mm)	8" (203 mm)	9.1" (232 mm)
210G	2 1/2", 3"	3/4" NPT	11.9" (302 mm)	16.5" (419 mm)	4.6" (116 mm)	11.8" (300 mm)	13.5" (343 mm)
210J	4"	3/4" NPT	18.4" (467 mm)	24.3" (616 mm)	5.4" (138 mm)	13.8" (349 mm)	18" (457 mm)

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

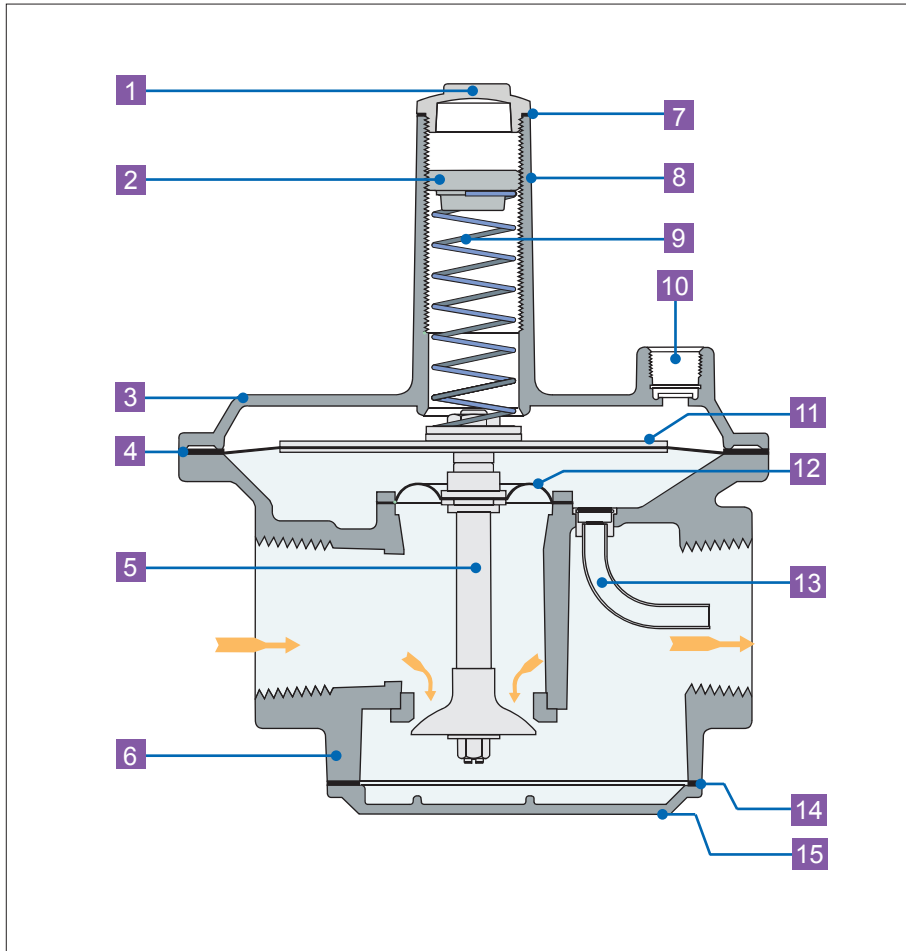


210D, 210E, 210G



210J

210 Balanced Valve Design



- 1 Welch Plug or Seal Cap
- 2 Vibration Resistant Adjusting Screw
- 3 Top Housing
- 4 Regulating Diaphragm
- 5 Stem & Valve
- 6 Bottom Housing
- 7 Seal Cap Gasket
- 8 Stack
- 9 Spring
- 10 Vent Connection
- 11 Diaphragm Plates
- 12 Balancing Diaphragm
- 13 Sensing Tube
- 14 Bottom Plate Gasket
- 15 Bottom Plate

NOTE: Diagrams are graphical representations only and may differ from actual product.

SIZING A REGULATOR

See www.maxitrol.com for our Regulator Sizing Program. Please contact Maxitrol directly for more information on sizing a regulator.

System Requirements

When sizing a regulator the following must be known:

- Gas Type
- Available Inlet Pressure
- Desired Outlet Pressure
- Zero Governor Application (indicated by model number ending in "Z")
- Will the regulator control main burner and pilot load OR main burner only?
- Required minimum and maximum flow rate in cfh or m³/h or Btu/h
- Pipe Size

In most cases, the manifold pipe size has already been selected on the basis of good engineering practice, and the regulator pipe size should conform to this size.

The capacity of any regulator is not an absolute value but will vary with the application depending on the prevailing differential pressure.

⚠ WARNING

Service and installation must be performed by a trained/experienced service technician.

All products used with combustible gas must be installed and used strictly in accordance with the instructions of the Original Equipment Manufacturer (OEM) and with all applicable government codes and regulations, e.g. plumbing, mechanical, and electrical codes and practices. These instructions do NOT supersede OEM's installation or operating instructions.

All Maxitrol products should be installed and operated in accordance with Maxitrol Safety Warning Instructions.

HOW TO CALCULATE PRESSURE DROP AT VARIOUS FLOW RATES FROM CAPACITY CHART

LP Applications - When using natural gas pressure drop chart to determine LP pressure drop in terms of Btu/h, multiply NAT Btu/h by 1.61; in terms of CFH multiply NAT CFH by 0.645.

$$\text{Formula: } P_2 = P_1 \times (Q_2/Q_1)^2$$

P2 = Pressure drop at desired flow rate
P1 = Known pressure drop

Q2 = Desired flow rate
Q1 = Known flow rate

A. Check Capacity Chart, ensuring regulator has ample range of regulation and individual load capacities (for use with pilot) for the application.

B. Know the minimum encountered inlet pressure. MINIMUM INLET PRESSURE MINUS "P2" MUST BE GREATER THAN DESIRED OUTLET PRESSURE. Solve for "P2" using the formula above. (See examples on page 59.)

Sizing Examples

RUBBER SEAT POPPETS

For main burner and pilot load applications.

Example: To select an RV type regulator:

- Known: Single 150,000 Btu/h main burner; pipe size 1/2"; inlet pressure 7" w.c.; outlet pressure 4" w.c.
- Solution: The RV48 (1/2") has a maximum capacity of 230,000 Btu/h and a maximum individual load of 160,000 Btu/h. The pressure drop at a flow rate of 150,000 Btu/h is 0.4" w.c., well below the available differential of 3" w.c. The RV48 (without "L" fixed orifice) is the correct regulator to use for the application.

STRAIGHT-THRU-FLOW (S-T-F)

For main burner only applications not requiring a lockup type regulator. When sizing the S-T-F series, it is recommended that pressure drop not exceed 1/2 of available differential pressure.

Example: To select an RV type regulator:

- Known: Flow rate 2,000,000 Btu/h; pipe size 1 1/4"; inlet pressure 9" w.c.; outlet pressure 5" w.c.
- Solution: The RV81(1 1/4") has a maximum capacity of 2,500,000 Btu/h. The pressure drop at a flow of 2,000,000 Btu/h is 0.66" w.c. The RV81 (1 1/4") is the correct regulator to use with this application. The pressure drop of the RV61 (1 1/4") at a flow rate of 2,000,000 Btu/h is 2.64" w.c. This is within the available differential but exceeds the recommended 50% maximum.

LEVER ACTING

For main burner and pilot load application requiring positive dead-end lockup (see Definitions page 63).

Example: To select a 325 series regulator:

- Known: Single 145,000 Btu/h burner; pipe size 1/2"; inlet pressure 2 psi; outlet pressure 7" w.c.
- Solution: The 325-3's pressure drop at a flow rate of 145,000 Btu/h is 7" w.c., well below the available differential of 1 3/4 psi. However, the Maximum Individual Load for the 325-3 is only 100,000 Btu/h. The 325-5 (1/2") is the correct regulator to use with this application.

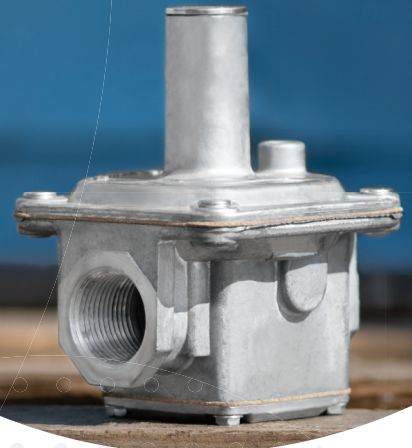
BALANCED VALVE

For main burner and pilot load application requiring a lockup type regulator or zero governor usage (see Definitions page 63).

Example: To select a 210 or R/RS series regulator:

- Known: Desired flow rate 6,000,000 Btu/h; pipe size 1 1/2"; inlet pressure 1 psi; outlet pressure 9" w.c.
- Solution: The 210E (1 1/2") has a maximum capacity of 10,000,000 Btu/h. The 210D (1 1/2") has a capacity of 6,000,000 Btu/h. Therefore, the 210E (1 1/2") will give you the desired outlet pressure of 9" w.c. and is the correct regulator to use for the application.

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