GAS PRESSURE REGULATORS CATALOG

For Industrial Engines and Generator Sets

MAXITROL®

GAS PRESSURE REGULATORS

For Industrial Engines and Generator Sets

⚠ WARNING

Service and or installation must be performed by a trained, experienced service technician. No untrained person should attempt to install, maintain, or service a gas pressure regulator.

All products, including gas pressure regulators, used with combustible gas MUST be installed and used strictly in accordance with instructions of the manufacturer, with government codes and regulations, and plumbing codes and practices. Maxitrol's gas appliance pressure regulators should be installed and operated in accordance with our "Safety Warning Bulletins".

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.

MAXITROL®

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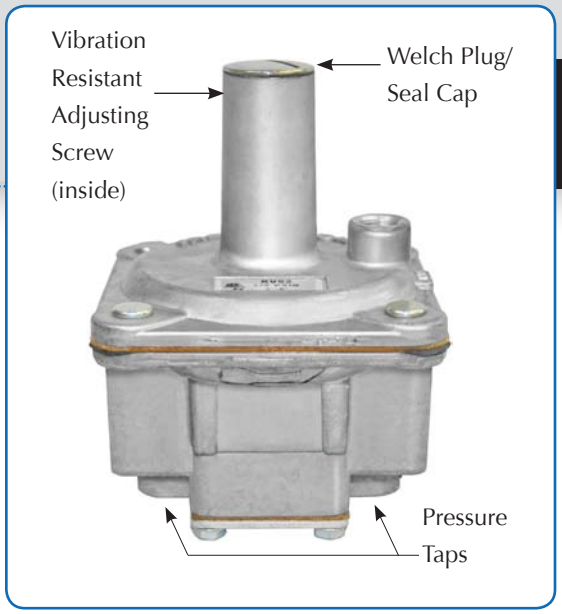
RV SERIES

Straight-Thru-Flow Design



RV52(M), RV53(M)
STRAIGHT-THRU-FLOW REGULATOR

Description

Maxitrol's original straight-thru-flow (STF) design regulators are non-lockup type regulators for high capacities at low inlet pressures. The difference between STF design and other type regulators is the conical valve. The cone principal permits gas to flow straight through the regulator without changing directions. Frictional flow resistance is reduced, resulting in greater capacity. An improved flow pattern provides accurate, sensitive regulation at extremely low pressure differentials. Typical applications include residential, commercial, and industrial gas-fired appliances and equipment used on low/medium pressure gas supplies.

Specifications

Pipe Sizes ..... 1/2″ to 3″ threaded connections with NPT threads or ISO7-Rp threads. 4″ Flange only.
RV52(M): 1/2″ x 1/2″, 3/4″ x 3/4″
RV53(M): 3/4″ x 3/4″, 1″ x 1″
RV61(M): 1″ x 1″, 1 1/4″ x 1 1/4″
RV81(M): 1 1/4″ x 1 1/4″, 1 1/2″ x 1 1/2″
RV91(M): 2″ x 2″, 2 1/2″ x 2 1/2″
RV111(M): 2 1/2″ x 2 1/2″, 3″ x 3″
RV131(M): 4″ x 4″

Housing Material ..... Aluminum or cast iron (RV131 only).

Mounting ..... RV52(M), RV53(M), RV61(M) multi-positional mounting (if ball check vent limiting device is installed, mount in an upright position only). RV81(M), RV91(M) (12A04 or 12A34), RV111(M), RV131, upright position only. Install with gas flowing as indicated by the arrow on bottom casting.

NOTE: All Maxitrol gas pressure regulators should be installed and operated in accordance with Maxitrol's Safety Warning Bulletins.

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. RV52M).

Certifications

	UL	CSA	CE
Standard/Directive:	ANSI/UL 842	ANSI Z21.18/CSA 6.3	EN 88 and GAD 2009/142/EEC
Gas Types:	Suitable for natural, manufactured, mixed gases, liquefied petroleum gases, and LP gas-air mixtures.	Suitable for natural, manufactured, mixed gases, liquefied petroleum gases, and LP gas-air mixtures.	Gas Families 1, 2, and 3 according to EN437
Maximum Inlet Pressure:	RV52(M), RV53(M), RV61(M), RV81*, RV91*, RV111*, RV131*: 1/2 psi (3.4 kPa)	RV52, RV53, RV61, RV81, RV91, RV111: 1/2 psi (3.4 kPa)	RV52M: 1.45 psi (10 kPa) RV53M,RV61M,RV81M, RV91M,RV111M: 2.9 psi (20 kPa)
Outlet Pressure:	RV52(M), RV53(M), RV81*, RV91*, RV111*, RV131*: 3″ to 12″ w.c. (0.75 to 3.0 kPa) RV61(M): 1″ to 6″ w.c. (0.25 to 0.75 kPa)	RV52, RV53, RV81, RV91, RV111: 3″ to 12″ w.c. (0.75 to 3.0 kPa) RV61: 2″ to 12″ w.c. (0.50 to 3.0 kPa)	RV52M: 1″ to 22″ w.c. (0.25 to 5.5 kPa) RV53M, RV61M: 1″ to 30″ w.c. (0.25 to 7.5 kPa) RV81M, RV91M, RV111M: 1″ to 42″ w.c. (0.25 kPa to 10.5 kPa)
Ambient Temperature Ranges:	---	RV52, RV53, RV61, RV81, RV91, RV111: -40° to 205°F (-40° to 96°C)	All Models: 5° to 176°F (-15° to 80°C)
Vibration Resistant Adjusting Screw:	RV81(M): R8111-001 RV91(M): R9111-001		

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. RV52M).

*RV81, RV91, RV111, RV131 are UL pending.

RV SERIES

Straight-Thru-Flow Design

Pressure Tap Identification Numbers

Model	Inlet	Outlet	Flow - UL Max	Flow - CSA Max
RV52(M)	2	1	450 CFH	450 CFH
RV53(M)			690 CFH	690 CFH
RV61(M)	1	2	900 CFH	900 CFH
RV81(M)*			---	2500 CFH
RV91(M)*			---	3275 CFH
RV111(M)*	---	---	---	7500 CFH
RV131			---	---

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. RV52M).

*__NOTE:__ RV81, RV91, RV111, RV131 are UL pending.

Capacities: Expressed in CFH (m^3/h) @ 0.64 sp gr gas

Model	Pressure Drop** - inches water column (kPa)									
	0.1 (0.02)	0.2 (0.04)	0.3 (0.07)	0.4 (0.10)	0.5 (0.12)	0.6 (0.15)	0.7 (0.17)	0.8 (0.20)	0.9 (0.22)	1.0 (0.25)
RV52(M)	151 (4.2)	214 (6.1)	262 (7.4)	302 (8.5)	338 (9.5)	370 (10.5)	400 (11.3)	427 (12.1)	453 (12.8)	478 (13.5)
RV53(M)	217 (6.1)	306 (8.6)	375 (10.6)	433 (12.2)	484 (13.7)	530 (15)	573 (16.2)	612 (17.3)	650 (18.4)	684 (19.3)
RV61(M)	379 (10.7)	536 (15.1)	675 (19.1)	759 (21.5)	848 (24)	929 (26.3)	1004 (28.4)	1073 (30.4)	1138 (32.2)	1200 (34.0)
RV81(M)	780 (22.1)	1102 (31.2)	1350 (38.2)	1559 (44.1)	1743 (49.5)	1909 (54)	2062 (58.4)	2204 (62.4)	2339 (66.2)	2465 (69.8)
RV91(M)	1212 (34.3)	1714 (48.5)	2100 (59.4)	2424 (68.6)	2711 (76.7)	2969 (84.1)	3208 (90.8)	3429 (97.1)	3637 (103)	3834 (108)
RV111(M)	2742 (78)	3878 (110)	4750 (134)	5485 (155)	6132 (175)	6718 (190)	7256 (205)	7757 (219)	8227 (233)	8572 (243)
RV131(M)	4734 (134)	6695 (190)	8200 (232)	9468 (268)	10586 (300)	11596 (328)	12525 (354)	13390 (380)	14202 (402)	14971 (424)

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. RV52M).

**See page 22 for pressure drop chart.

Spring Selection Charts

UL Certified Springs				
Model	**Expressed in inches water column (kPa)**			
RV52(M)	---	3 to 6 (0.75 to 1.5)	4 to 8 (1 to 2)	5 to 12 (1.25 to 3)
RV53(M)	---	3 to 6 (0.75 to 1.5)	4 to 8 (1 to 2)	5 to 12 (1.25 to 3)
RV61(M)	2 to 5 (0.50 to 1.25)	3 to 6 (0.75 to 1.5)	4 to 8 (1 to 2)	5 to 12 (1.25 to 3)
RV81, RV91, RV111, RV131 are UL Pending				

CSA Certified Springs				
Model	**Expressed in inches water column (kPa)**			
RV52	---	3 to 6 (0.75 to 1.5)	4 to 8 (1 to 2)	5 to 12 (1.25 to 3)
RV53	---	3 to 6 (0.75 to 1.5)	4 to 8 (1 to 2)	5 to 12 (1.25 to 3)
RV61	2 to 5 (0.50 to 1.25)	3 to 6 (0.75 to 1.5)	4 to 8 (1 to 2)	5 to 12 (1.25 to 3)
RV81	---	3 to 6 (0.75 to 1.5)	4 to 8 (1 to 2)	5 to 12 (1.25 to 3)
RV91	---	3 to 6 (0.75 to 1.5)	4 to 8 (1 to 2)	5 to 12 (1.25 to 3)
RV111	---	3 to 6 (0.75 to 1.5)	4 to 8 (1 to 2)	5 to 12 (1.25 to 3)

CE Certified Springs							
Model	**Expressed in inches water column (kPa)**						
RV52M	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	10 to 22 (2.5 to 5.5)	---	---
RV53M	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.75 to 7.5)	---
RV61M	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	3 to 8 (0.75 to 2)	5 to 12 (1.25 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.75 to 7.5)	---
RV81M	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.75 to 7.5)	20 to 42 (5 to 10.5)
RV91M	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.75 to 7.5)	20 to 42 (5 to 10.5)
RV111M	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.75 to 7.5)	20 to 42 (5 to 10.5)
RV131M	2 to 5.5 (0.5 to 1.3)	---	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.75 to 7.5)	20 to 42 (5 to 10.5)

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. RV52M).

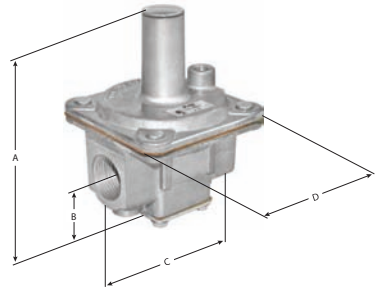
RV SERIES

Straight-Thru-Flow Design

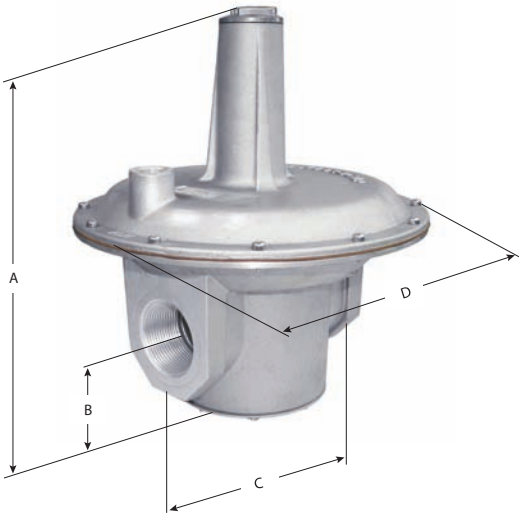
Dimensions: Expressed in inches (millimeters)

Model	Vent	Swing Radius	Dimensions			
			A	B	C	D
RV52(M)	1/8″ NPT	3.6 (91)	4.9 (124)	1.25 (32)	3.2 (81)	3.25 (83)
RV53(M)	1/8″ NPT	3.9 (99)	5.2 (132)	1.3 (33)	3.75 (95)	3.9 (99)
RV61(M)	1/8″ NPT	4.8 (122)	6.4 (164)	1.6 (41)	4.4 (111)	5.4 (138)
RV81(M)	3/8″ NPT	6.4 (162)	8.4 (213)	2 (51)	6 (153)	7 (178)
RV91(M) 2.0″ Pipe	1/2″ NPT	8.5 (216)	10.8 (275)	2.3 (60)	6.5 (165)	9.1 (232)
	M: 1/2 ISO7					
RV91(M) 2.5″ Pipe	1/4″ NPT	8.3 (212)	10.5 (267)	2.4 (62)	7.1 (181)	9.1 (232)
RV111(M)	3/4″ NPT	11.5 (284)	15.1 (373)	3.5 (89)	9 (229)	13.4 (324)
	M: 3/4 ISO7					
RV131(M)	3/4″ NPT	18.2 (462)	23.3 (592)	5.1 (130)	13.9 (353)	18 (457)
	M: 3/4 ISO7					

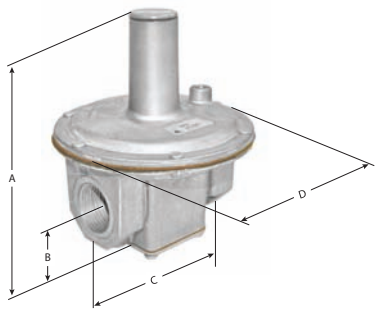
NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. RV52M).



RV52(M), RV53(M)



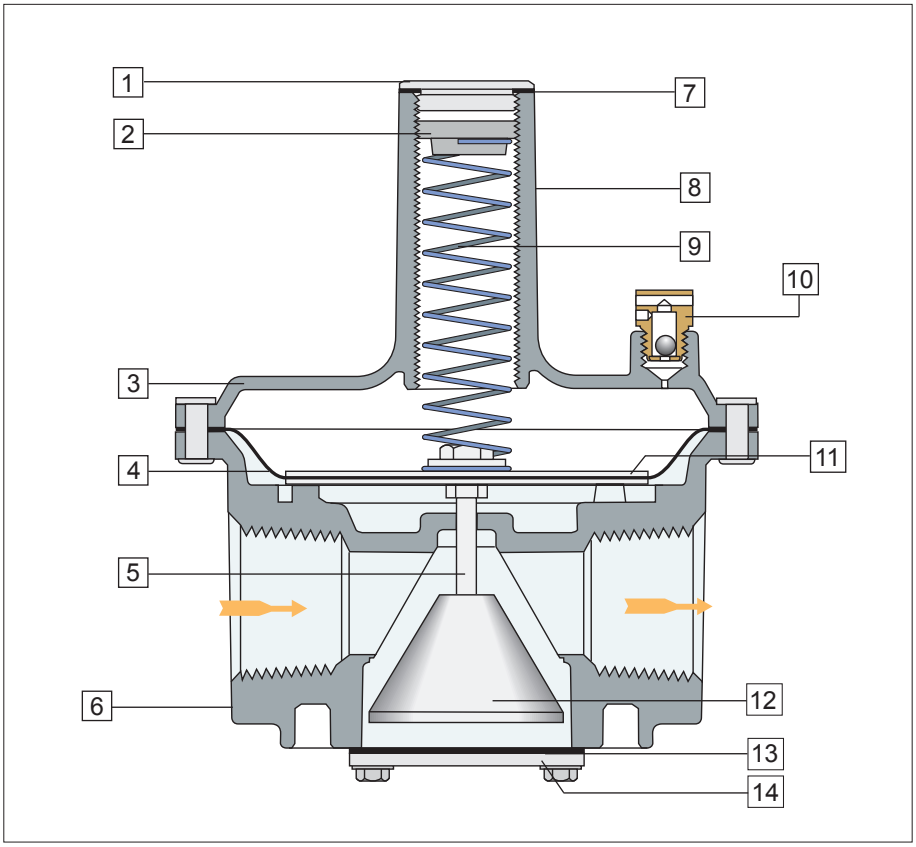
RV111(M), RV131(M)



RV61(M), RV81(M), RV91(M)

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

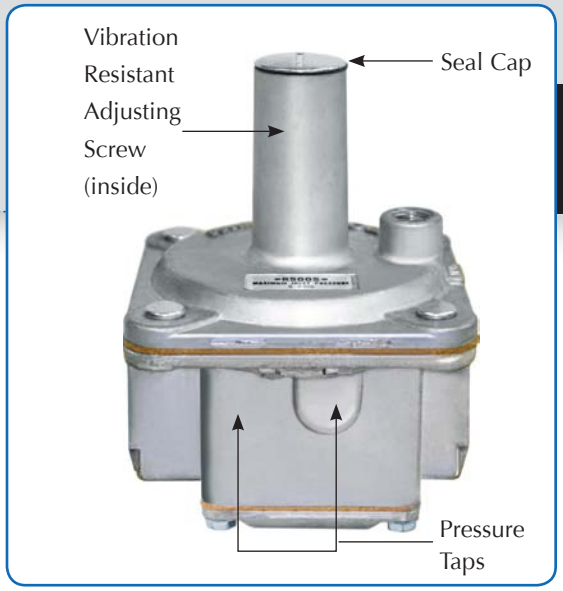
Straight-Thru-Flow Design



1	Welch Plug/Seal Cap
2	Vibration Resistant Adjusting Screw
3	Top Housing
4	Diaphragm
5	Stem
6	Bottom Housing
7	Seal Cap Gasket
8	Stack
9	Spring
10	Vent Limiting Device
11	Diaphragm Plates
12	Valve
13	Bottom Plate Gasket
14	Bottom Plate

R/RS SERIES

Balanced Valve Design



R400(S)(Z)(M), R500(S)(Z)(M), R600(S)(Z)(M)
BALANCED VALVE REGULATOR

Description

The R & RS regulators are ideal for industrial applications, capable of controlling pressure at extremely low flows. The double diaphragm balanced valve design makes it possible to build a regulator that is physically small yet has good capacity characteristics. They are able to maintain steady outlet pressure control with widely varying inlet pressures. Zero governor models available.

Specifications

Pipe Sizes ..... 3/8″ to 1″ threaded connections with NPT threads or ISO7-Rp threads.
R400(S)(Z)(M): 3/8″ x 3/8″, 1/2″ x 1/2″
R500(S)(Z)(M): 1/2″ x 1/2″, 3/4″ x 3/4″
R600(S)(Z)(M): 3/4″ x 3/4″, 1″ x 1″

Housing Material ..... Aluminum

Venting..... 1/8″ NPT

Mounting ..... R400(S)Z(M) mount in an upright position only. R400(S)(M), R500(S)(Z)(M), R600(S)(Z)(M) suitable for multi-positional mounting. If ball check vent limiting device is installed, mount in an upright position only. Install with gas flowing as indicated by the arrow on bottom casting.

NOTE: All Maxitrol gas pressure regulators should be installed and operated in accordance with Maxitrol's Safety Warning Bulletins.

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. R400SM).

Certifications

	UL	CSA	CE
Standard/Directive:	ANSI/UL 842	ANSI Z21.18/CSA 6.3	EN 88 and GAD 2009/142/EEC
Gas Types:	Suitable for natural, manufactured, mixed gases, liquefied petroleum gases, and LP gas-air mixtures.	Suitable for natural, manufactured, mixed gases, liquefied petroleum gases, and LP gas-air mixtures.	Gas Families 1, 2, and 3 according to EN437
Maximum Inlet Pressure:	R400(S)(Z), R500(S)(Z), R600(S)(Z): 1 psi (6.9 kPa)	R400(S)(Z), R500(S)(Z), R600(S): 1/2 psi (3.45 kPa)	R400SM, R500SM, R600SM: 5.2 psi (36 kPa) R400ZM, R500ZM, R600ZM: 1.4 psi (10 kPa)
Maximum Air Loading Pressure:	R400(Z), R500(Z), R600(Z): 2 psi (13.8 kPa)	---	---
Outlet Pressure:	R400(S), R500(S), R600(S): 1″ to 22″ w.c. (0.25 to 5.5 kPa) R400(S)Z: -1.5″ to 1″ w.c. (-0.37 to 0.25 kPa) R500(S)Z, R600(S)Z: -1″ to 2.5″ w.c. (-0.25 to 0.62 kPa)	R400(S), R500(S), R600(S): 3″ to 12″ w.c. (0.75 to 12 kPa) R400(S)Z: -1.5″ to 1″ w.c. (-0.25 to 0.35 kPa) R500(S)Z: -1″ to 2.5″ w.c. (-0.25 to 0.62 kPa)	R400SM, R500SM: 1″ to 22″ w.c. (0.25 to 5.5 kPa) R600SM: 1″ to 30″ w.c. (0.25 to 7.5 kPa) Z Models: -1″ to 1.5″ w.c. (-0.25 to 0.35 kPa)
Ambient Temperature Ranges:	---	R400(S)(Z), R500(S), R600(S): -40° to 205°F (-40° to 96°C) R500(S)Z: 32° to 205°F (0° to 96°C)	All Models: 5° to 176°F (-15° to 80°C)

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. R400SM).

R/RS SERIES

Balanced Valve Design

Pressure Tap Identification Numbers

Model	Inlet	Outlet
R400(S)(Z)(M)	NA	1 & 2
R500(S)(Z)(M)	3 & 4	1 & 2
R600(S)(Z)(M)	NA	1 & 2

Capacities: Expressed in CFH (m^3/h) @ 0.64 sp gr gas

Model	Pressure Drop* - inches water column (kPa)										
	0.2 (0.05)	**0.4 (0.10)**	**0.6 (0.15)**	**0.8 (0.20)**	**1.0 (0.25)**	**1.5 (0.37)**	**2.0 (0.50)**	**2.5 (0.62)**	**3.0 (0.75)**	**3.5 (0.87)**	**4.0 (1.0)**
R400S(Z)(M)	86 (2.4)	121 (3.4)	148 (4.1)	172 (4.8)	192 (5.4)	235 (6.8)	271 (7.6)	303 (8.5)	---	---	---
R500S(Z)(M)	196 (5.5)	277 (7.8)	340 (9.5)	392 (11.0)	438 (12.3)	537 (15.0)	620 (17.4)	693 (19.4)	760 (21.3)	820 (23.0)	876 (24.5)
R600S(Z)(M)	330 (9.2)	468 (13.1)	572 (16.0)	661 (18.2)	739 (20.7)	906 (25.4)	1,046 (29.3)	1,169 (32.7)	1,280 (35.8)	1,380 (38.6)	1,480 (41.4)

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. R400SM).

*See page 23 for pressure drop chart.

Spring Selection Charts

UL Certified Springs							
Model	**Expressed in inches water column (kPa)**						
R400(S)	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	3 to 6 (0.75 to 1.5)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	5 to 12 (1.25 to 3)	10 to 22 (2.5 to 5.5)
R500(S)	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	3 to 6 (0.75 to 1.5)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	5 to 12 (1.25 to 3)	10 to 22 (2.5 to 5.5)
R600(S)	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	3 to 6 (0.75 to 1.5)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	5 to 12 (1.25 to 3)	10 to 22 (2.5 to 5.5)
"Z" Models	R400Z: -1.5 to 1 (-0.37 to 0.25); R500Z, R600Z: -1 to 2.5 (-0.25 to 0.62)						

CSA Certified Springs			
Model	**Expressed in inches water column (kPa)**		
R400(S)	3 to 6 (0.75 to 1.5)	---	5 to 12 (1.25 to 3)
R500(S)	3 to 6 (0.75 to 1.5)	4 to 8 (1 to 2)	5 to 12 (1.25 to 3)
R600(S)	3 to 6 (0.75 to 1.5)	4 to 8 (1 to 2)	5 to 12 (1.25 to 3)
"Z" Models	R400Z: -1.5 to 1 (-0.37 to 0.25); R500Z: -1 to 2.5 (-0.25 to 0.62)		

CE Certified Springs						
Model	**Expressed in inches water column (kPa)**					
R400SM	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	10 to 22 (2.5 to 5.5)	---
R500SM	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	10 to 22 (2.5 to 5.5)	---
R600SM	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.75 to 7.5)

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. R400SM).

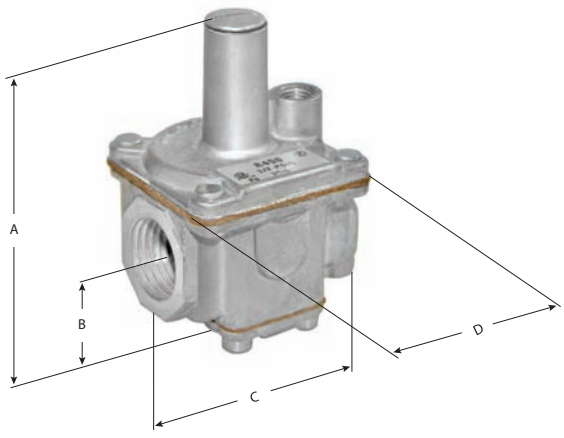
R/RS SERIES

Balanced Valve Design

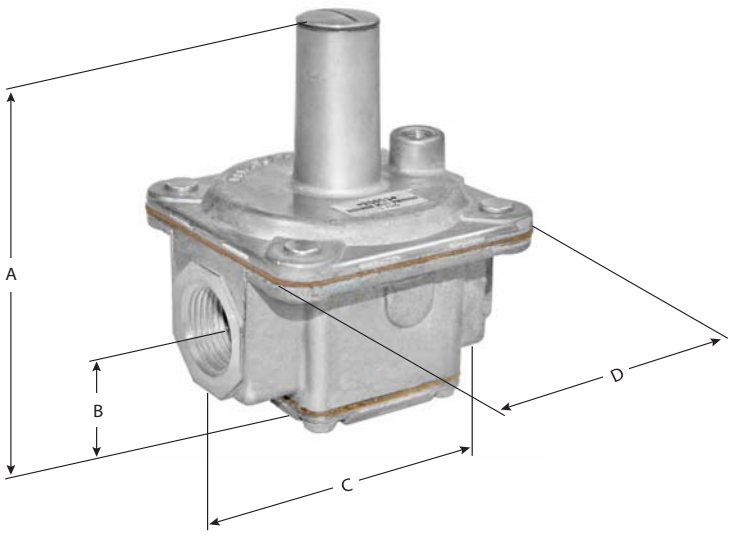
Dimensions: Expressed in inches (millimeters)

Model	Swing Radius	Dimensions			
		A	B	C	D
R400(S)(Z)(M)	2.38 (60)	3.25 (83)	0.94 (24)	2 (51)	2 (51)
R500(S)(Z)(M)	3.56 (90)	4.69 (119)	1.19 (30)	3 (76)	3.13 (79)
R600(S)(Z)(M)	4.32 (110)	5.68 (145)	1.46 (38)	4.03 (103)	3.88 (99)

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. R400SM).



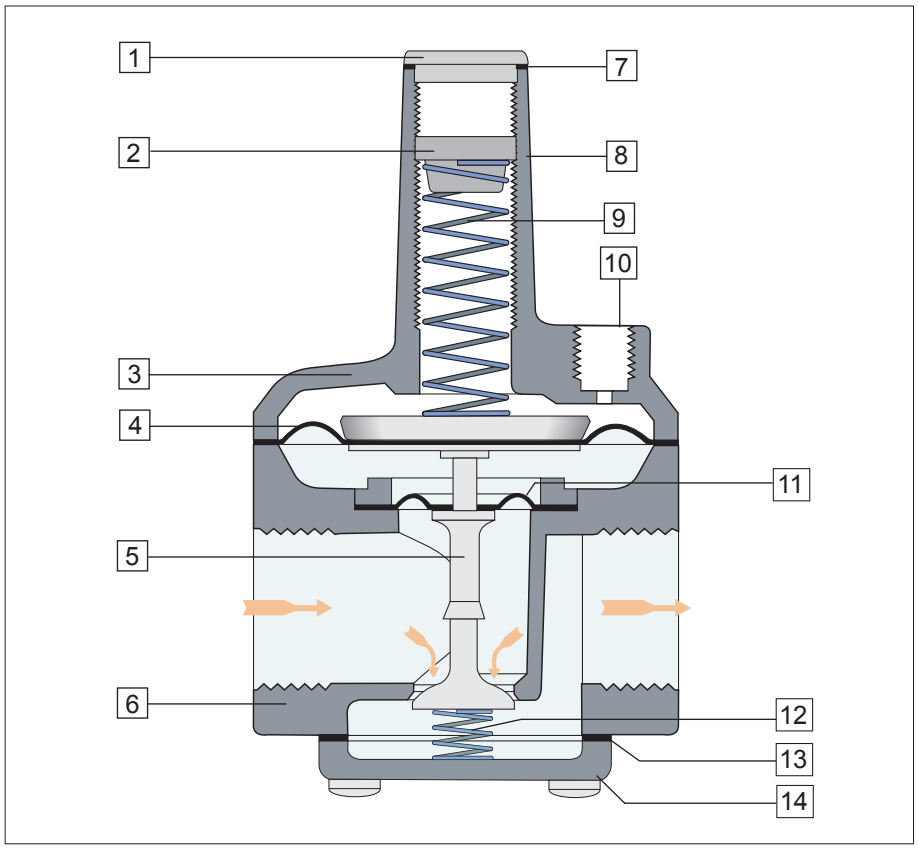
R400(S)(Z)(M)



R500(S)(Z)(M), R600(S)(Z)(M)

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

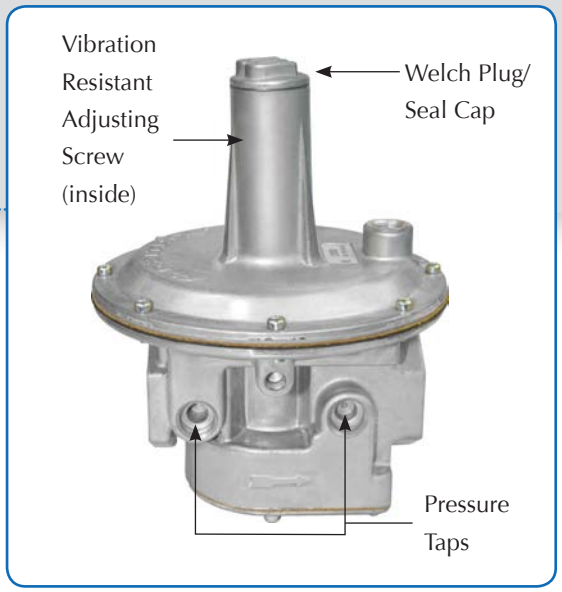
Balanced Valve Design



1	Welch Plug/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	Balancing Diaphragm
12	Zero Spring (Z Model)
13	Bottom Plate Gasket
14	Bottom Plate

210 SERIES

Balanced Valve Design



210D(M),210E(M),210G(M)
BALANCED VALVE REGULATOR

Description

The 210 Series is a lock-up type regulator. The balanced valve design eliminates the inlet pressure affect acting on the valve. Regulating stability is improved and hunting tendencies are reduced by the use of dampening mechanisms in both the breather outlet and the sensing tube. The 210 series provides precise regulation over a wide range of pressures and flow rates. Zero governor models available.

Specifications

Pipe Sizes ..... 1″ to 3″ threaded connections with NPT threads or ISO7-Rp threads. 4″ Flange only.
210D(Z)(M): 1″ x 1″, 1 1/4″ x 1 1/4″, 1 1/2″ x 1 1/2″
210E(Z)(M): 1 1/2″ x 1 1/2″, 2″ x 2″
210G(Z)(M): 2 1/2″ x 2 1/2″, 3″ x 3″
210J(Z)(M): 4″ x 4″, 125lb flange connection or DN100 flange according to ISO 7005-2 PN 16 (CE)

Housing Material ..... Aluminum

Mounting ..... Mount in an upright position only. Install with gas flowing as indicated by the arrow on bottom casting.
NOTE: All Maxitrol gas pressure regulators should be installed and operated in accordance with Maxitrol's Safety Warning Bulletins.

Remote Sensing..... 210D(Z)(M), 210E(Z)(M), 210G(Z)(M): 5 & 6

Vibration Resistant Screw... 210D(Z)(M): R8111-001, 210E(Z)(M): R9111-001

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. 210DM).

Certifications

	UL	CSA	CE
Standard/Directive:	ANSI/UL 842	ANSI Z21.18/CSA 6.3	EN 88 and GAD 2009/142/EEC
Gas Types:	Suitable for natural, manufactured, mixed gases, liquefied petroleum gases, and LP gas-air mixtures.	Suitable for natural, manufactured, mixed gases, liquefied petroleum gases, and LP gas-air mixtures.	Gas Families 1, 2, and 3 according to EN437
Maximum Inlet Pressure:	210D(Z)(M), 210E(Z)(M), 210G(Z)(M): 5 psi (34.5 kPa)	210D(Z), 210E(Z), 210G(Z): 10 psi (69 kPa)	210DM, 210EM, 210GM: 12.3 psi (85 kPa) Z models: 5.2 psi (36 kPa)
Maximum Air Loading Pressure:	210D(Z)(M), 210E(Z)(M), 210G(Z)(M): 6 psi (41.4 kPa)	---	---
Outlet Pressure:	210D(M), 210E(M), 210G(M): 1″ to 42″ w.c. (0.25 to 10.5 kPa) Z models: -1″ to 1.5″ w.c. (-0.25 to 0.35 kPa)	210D, 210E, 210G: 1″ to 30″ w.c. (0.25 to 7.5 kPa) Z models: -1″ to 1.5″ w.c. (-0.25 to 0.35 kPa)	210DM, 210EM, 210GM: 1″ to 30″ w.c. (0.25 to 7.5 kPa) 210JM: 2″ to 42″ w.c. (0.5 to 10.5 kPa) Z models: -1″ to 1.5″ w.c. (-0.25 to 0.35 kPa)

210 SERIES

Balanced Valve Design

Pressure Tap Identification Numbers

Model	Inlet	Outlet
210D(Z)(M)	3 & 4	1 & 2
210E(Z)(M)		
210G(Z)(M)		
210J(Z)(M)		

Capacities: Expressed in CFH (m^3/h) @ 0.64 sp gr gas

Model	Pipe Sizes	Pressure Drop* - inches water column (kPa) unless noted										
		0.1 (0.02)	0.3 (0.07)	0.5 (0.12)	1.0 (0.25)	3.0 (0.75)	5.0 (1.25)	7.0 (1.75)	1/2 psi (3.4)	3/4 psi (5.2)	1 psi (7.0)	1.5 psi (10.3)
210D(Z)(M)	1″ x 1″	---	---	---	900 (25.5)	1600 (45.3)	2000 (56.6)	2400 (68.0)	3300 (93.5)	4100 (116.1)	4750 (134.5)	5800 (164.2)
	1 1/4″ x 1 1/4″				1100 (31.2)	1900 (53.8)	2500 (70.8)	2900 (82.1)	4100 (116.1)	5000 (141.6)	5850 (165.7)	7150 (202.5)
	1 1/2″ x 1 1/2″				1200 (34.0)	2100 (59.5)	2700 (76.5)	3200 (90.6)	4500 (127.4)	5500 (155.7)	6350 (179.8)	7750 (219.5)
210E(Z)(M)	1 1/2″ x 1 1/2″	---	1050 (29.7)	1350 (38.2)	1915 (54.2)	3315 (93.9)	4280 (121.2)	5065 (143.4)	7125 (201.8)	8725 (247.1)	10075 (285.3)	12340 (349.4)
	2″ x 2″		1210 (34.3)	1560 (44.2)	2210 (62.6)	3825 (108.3)	4940 (139.9)	5845 (165.5)	8225 (233.0)	10070 (285.2)	11630 (329.3)	14245 (403.4)
210G(Z)(M)	2 1/2″ x 2 1/2″	1410 (39.9)	2450 (69.4)	3160 (89.5)	4470 (126.6)	7740 (219.2)	9995 (283.0)	11825 (334.9)	16635 (471.0)	20375 (577.0)	23525 (666.2)	28810 (815.8)
	3″ x 3″	1555 (44.0)	2695 (76.3)	3475 (98.4)	4920 (139.3)	8520 (241.3)	11000 (311.5)	13020 (368.7)	18310 (518.5)	22425 (635.0)	25890 (733.1)	31710 (897.9)
210J(Z)(M)	4″ x 4″	2700 (76.5)	4700 (133.1)	6000 (169.9)	8600 (243.5)	15000 (424.8)	19000 (538.0)	23000 (651.3)	32000 (906.1)	40000 (1132.7)	45000 (1274.3)	55700 (1577.3)

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. 210DM).

*See page 24 for pressure drop chart.

Spring Selection Charts

UL Certified Springs											
Model	**Expressed in inches water column (kPa)**										
210D(Z)	1 to 3.5 (0.25 to 0.87)	4 to 8 (1 to 2)	5 to 15 (1.25 to 3.74)	2 to 5 (0.5 to 1.25)	3 to 6 (0.75 to 1.5)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	5 to 12 (1.25 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.74 to 7.5)	20 to 42 (5 to 10.5)
210E(Z)	1 to 3.5 (0.25 to 0.87)	4 to 8 (1 to 2)	5 to 15 (1.25 to 3.74)	2 to 5 (0.5 to 1.25)	3 to 6 (0.75 to 1.5)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	5 to 12 (1.25 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.74 to 7.5)	20 to 42 (5 to 10.5)
210G(Z)	1 to 3.5 (0.25 to 0.87)	4 to 8 (1 to 2)	5 to 15 (1.25 to 3.74)	2 to 5 (0.5 to 1.25)	3 to 6 (0.75 to 1.5)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	5 to 12 (1.25 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.74 to 7.5)	20 to 42 (5 to 10.5)
210J(Z)	---	---	---	---	---	---	---	---	---	---	---

CSA Certified Springs									
Model	**Expressed in inches water column (kPa)**								
210D(Z)	1 to 3.5 (0.25 to 0.87)	4 to 8 (1 to 2)	5 to 15 (1.25 to 3.74)	2 to 5 (0.5 to 1.25)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	5.5 to 12 (1.37 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.74 to 7.5)
210E(Z)	1 to 3.5 (0.25 to 0.87)	4 to 8 (1 to 2)	5 to 15 (1.25 to 3.74)	2 to 5 (0.5 to 1.25)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	5.5 to 12 (1.37 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.74 to 7.5)
210G(Z)	1 to 3.5 (0.25 to 0.87)	4 to 8 (1 to 2)	5 to 15 (1.25 to 3.74)	2 to 5 (0.5 to 1.25)	3 to 8 (0.75 to 2)	4 to 12 (1 to 3)	5.5 to 12 (1.37 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.74 to 7.5)
210J(Z)	---	---	---	---	---	---	---	---	---

CE Certified Springs						
Model	**Expressed in inches water column (kPa)**					
210D(Z)(M)	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	4 to 12 (1 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.8 to 7.5)	20 to 42 (5 to 10.5)
210E(Z)(M)	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	4 to 12 (1 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.8 to 7.5)	20 to 42 (5 to 10.5)
210G(Z)(M)	1 to 3.5 (0.25 to 0.9)	2 to 5 (0.5 to 1.25)	4 to 12 (1 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.8 to 7.5)	20 to 42 (5 to 10.5)
210J(Z)(M)	---	2 to 5 (0.5 to 1.25)	4 to 12 (1 to 3)	10 to 22 (2.5 to 5.5)	15 to 30 (3.8 to 7.5)	20 to 42 (5 to 10.5)

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. 210DM).

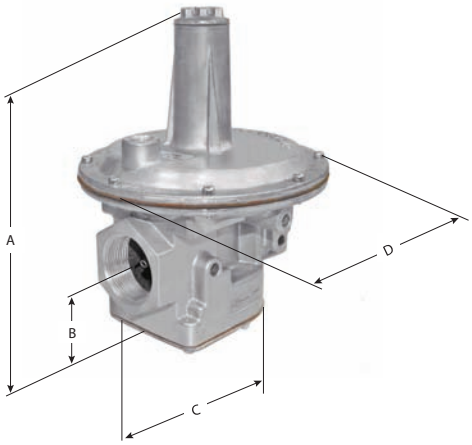
210 SERIES

Balanced Valve Design

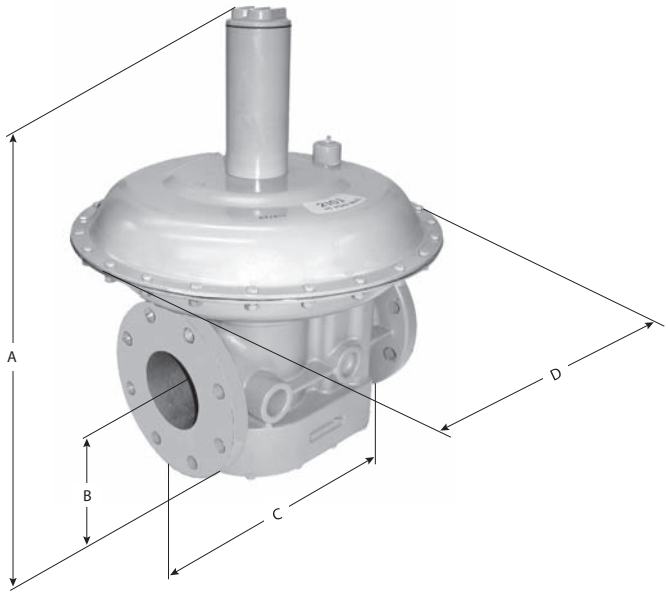
Dimensions: Expressed in inches (millimeters)

Model	Swing Radius	Dimensions			
		A	B	C	D
210D(Z)(M)	5.44 (138)	9 (228)	2.44 (62)	5.5 (140)	7 (178)
210E(Z)(M)	8.31 (211)	11.25 (286)	2.31 (59)	7.63 (194)	9.12 (232)
210G(Z)(M)	11.88 (302)	16.06 (408)	4.25 (107)	10.38 (264)	13.44 (341)
210J(Z)(M)	18 (457)	24.25 (616)	5.44 (138)	13.75 (349)	18 (457)

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. 210DM).



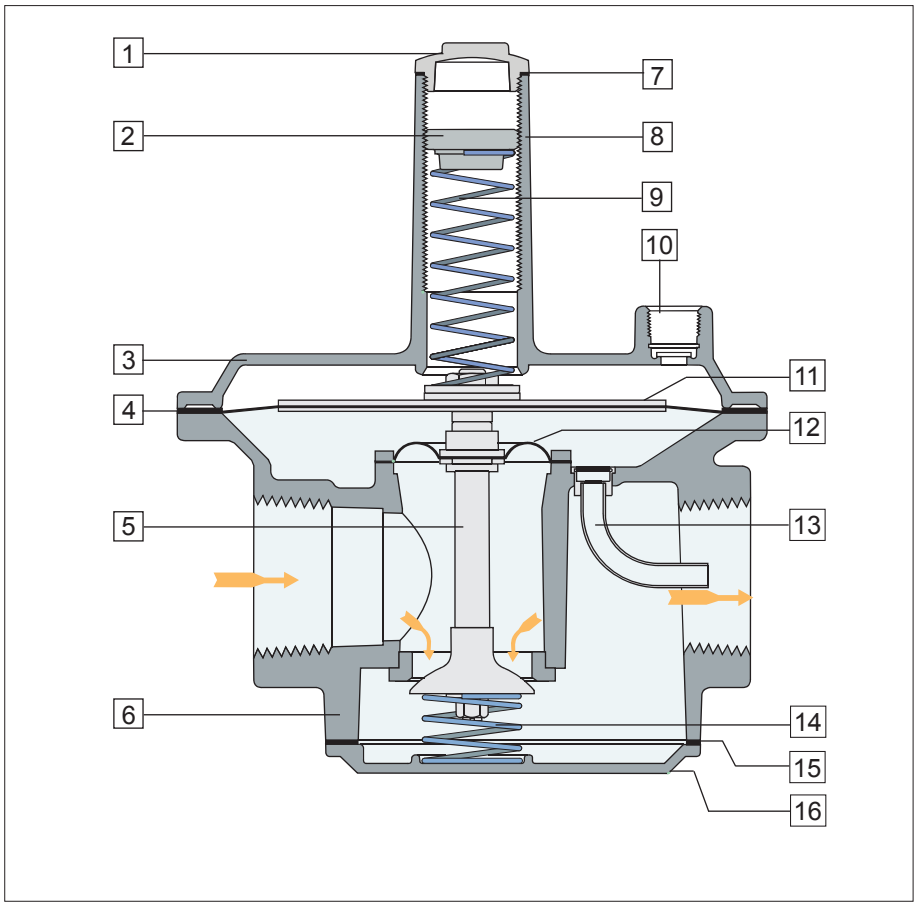
210D(Z)(M), 210E(Z)(M), 210G(Z)(M)



210J(Z)(M)

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

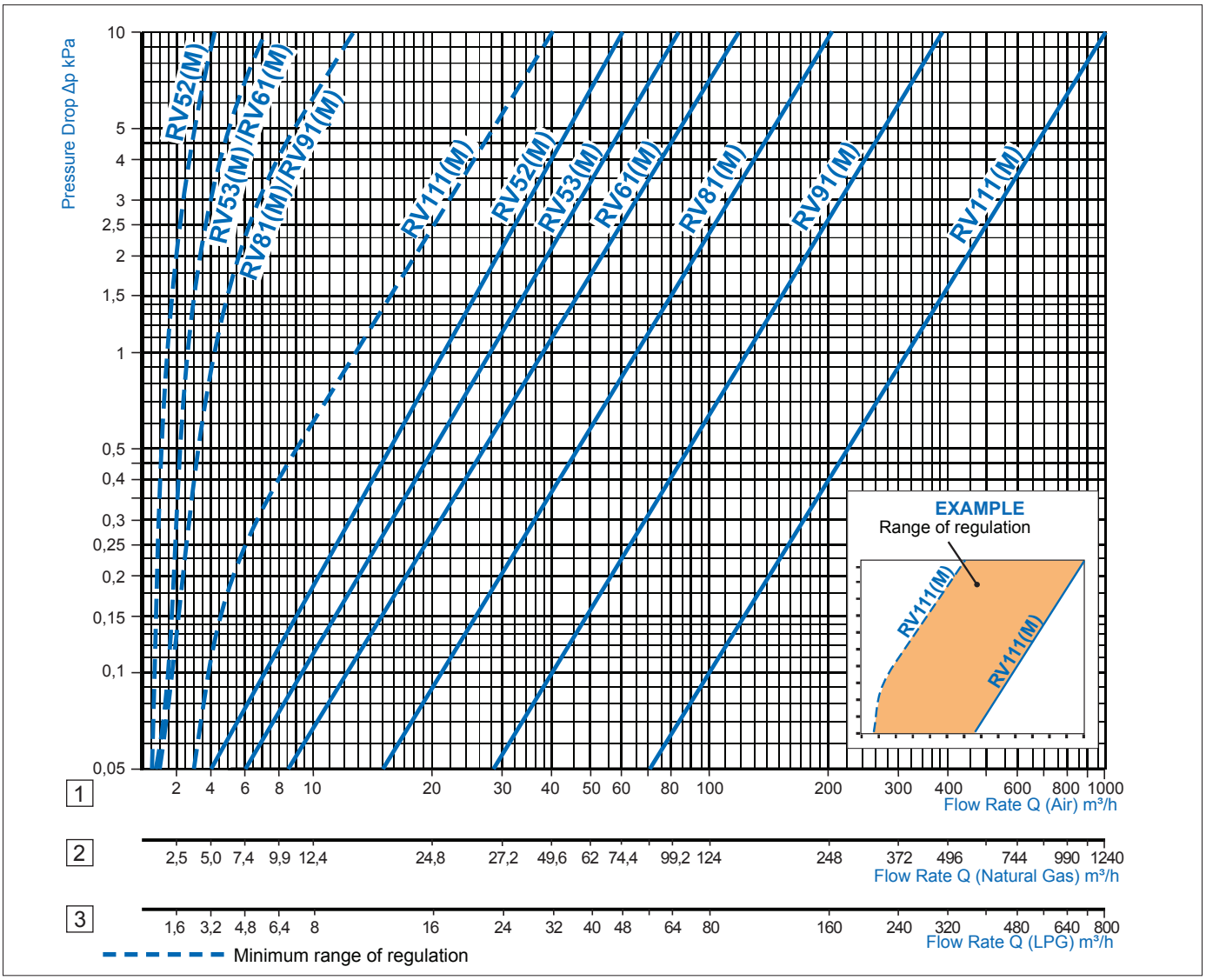
210 Balanced Valve Design



1	Welch Plug/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	Zero Spring (Z Model)
15	Bottom Plate Gasket
16	Bottom Plate

PRESSURE DROP CHARTS

RV Series Pressure Drop Chart

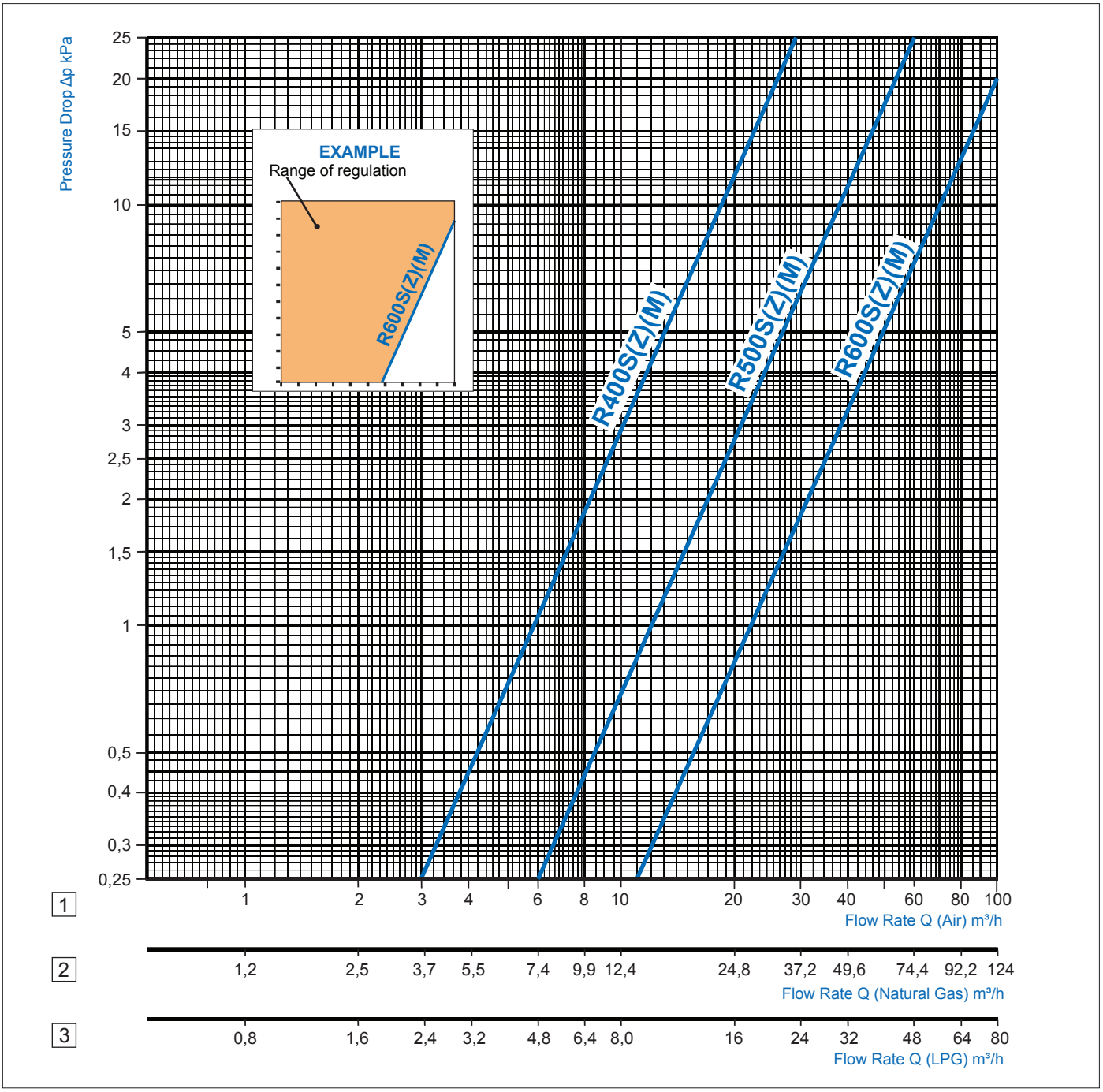


NOTE: Values below apply to all pressure drop charts on pages 22-24.

1 = Air dv = 1.00 f = 1.00	2 = Natural Gas dv = 0.64 f = 1.24	3 = LPG dv = 1.56 f = 0.80
$dv = \frac{\rho_{gas}}{\rho_{air}}$	$f = \sqrt{\frac{\rho_{air}}{\rho_{gas}}}$	$\dot{V}_{gas} = f \cdot \dot{V}_{air}$

NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. RV52M).

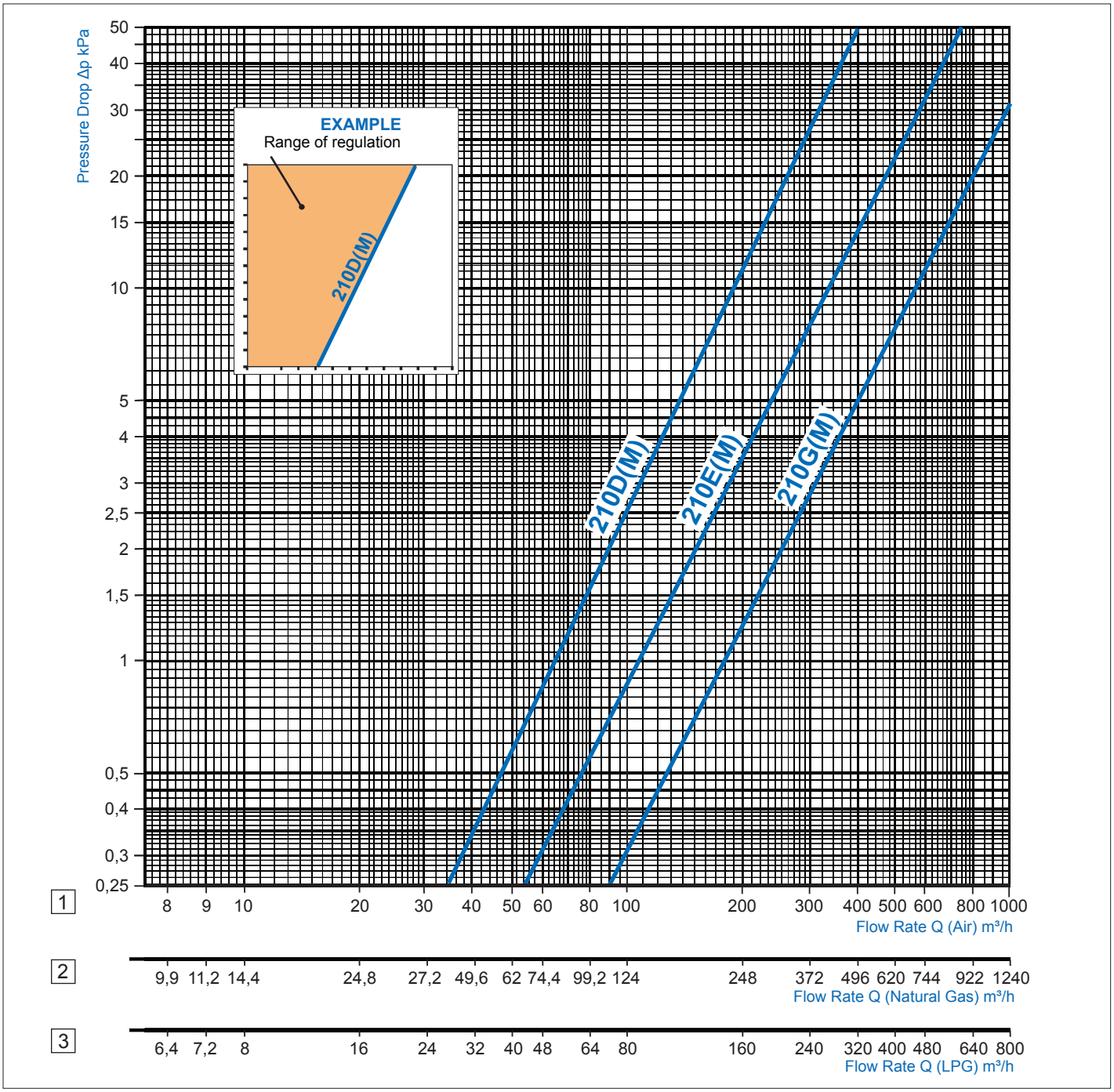
R/RS Series Pressure Drop Chart



NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. R400SM).

PRESSURE DROP CHARTS

210 Series Pressure Drop Chart



NOTE: Models with ISO7-Rp threads are designated by the suffix "M" (e.g. 210DM).

Notes:

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