



GE's Mooney* Specialty Regulators

The Handloader, Mity-Mite and
Powereactor Regulators







Mooney* Handloader Regulator

This small volume, high pressure regulator has become the standard of industry and science. These instruments are often referred to as “Loaders” because of their many years of extensive use maintaining constant, extremely accurate pressure control in the “loading” of dome regulators. However, their accuracy, trouble-free performance, and versatility have led to hundreds of other applications in static, mobile and airborne services. They are used in component testing, hydraulic and pneumatic operator systems, safety relief valve actuation, critical rocket fuel transfer and pressurizing problems encountered in missiles and space vehicle projects, to name only a few.

Features

- Maintains constant, accurate pressure control
- Simple effective design
- Compact, lightweight, easy to mount
- Self-contained, self operating
- Bubble-tight shutoff
- Repeatability and accuracy of spring loading
- Greater sensitivity with flexible diaphragm
- Ease of adjustment
- Corrosion resistant
- Interchangeability of parts
- Positive downstream protection

Mooney* Handloader Pressure Reducing Regulator

Model	Inlet Pressure	Temperature Range	Cv
15L w/ Relief System 16 L 15LH w/Relief System 16 LH	6000 psi	-65° to 165° F	0.06
15 LX w/Relief System 16 LX 15 LHX w/Relief System 16 LHX	6000 psi	-65° to 165° F	0.06

Model	Basic Fig #	Outlet Range	Code	End Connection	Code
15L	10927	2-251 psi	A	1/4 Tube MS33649-4 1/4"NPT	L2 P2
16L	11058	3-60 psi	B		
15 LX	10928	5-150 psi	C		
16 LX	11089	8-300 psi 10-750 psi	E F		
15 LH	10929	10-1000 psi	H	1/4 Tube MS33649-4 1/4"NPT	L2 P2
16 LH	11059	10-2000 psi	K		
15 LHX	10930	10-3100 psi*	L		
16 LHX	11118				

Order Code =

* Available only in 15LHX and 16LHX models

For all handloaders, add the letter A to the end of the figure number for standard soft goods (Mylar diaphragm, Nylon seat). For other materials, please contact Oil & Gas.

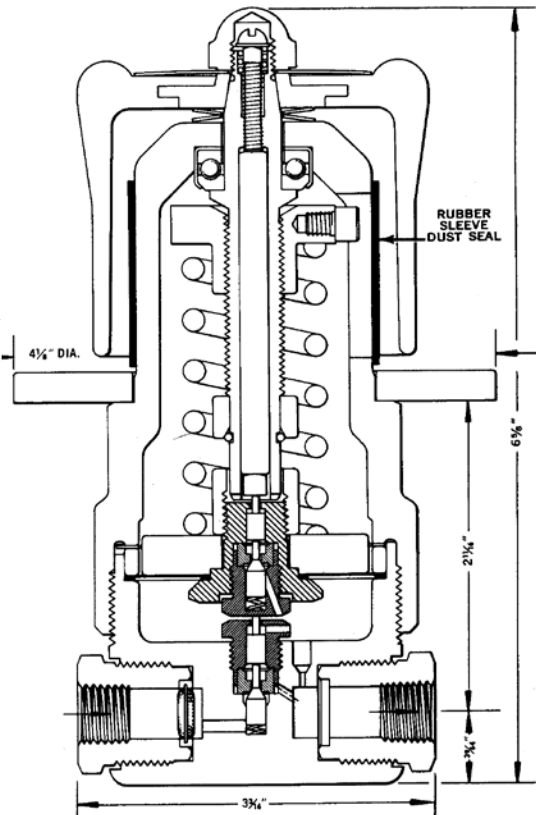
For example, the complete figure number for a Model 15L with 0-300 psi outlet range and 1/4" FNPT connections and standard soft goods is **10927EP2A**.

Mooney* Handloader Pressure Reducing Regulator

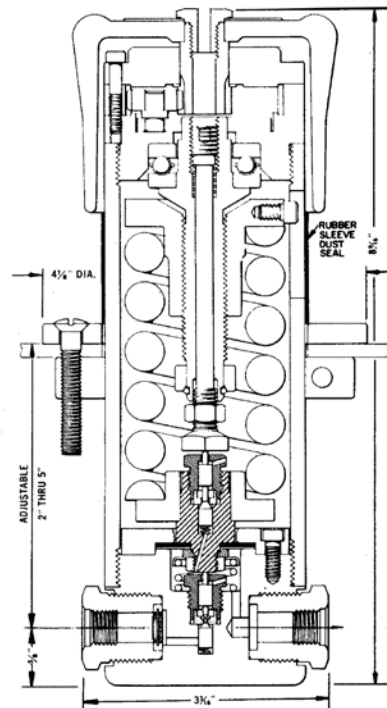
	Model 15KX w/Relief System Model 16KX	
Inlet Pressure	600 psi	10000 psi
Temperature Range	-65° F to + 165° F	-65° F to + 165° F
Cv	0.018	0.018

Model	Basic Fig #	Outlet Range	Code	End Connection	Code
15KX max Inlet: 6000 psi	10931	10-2000 psi	K	1/4 Tube MS33649-4	L2
16KX max Inlet: 6000 psi	11060	10-3500 psi	M	1/4"NPT	P2
15KX max	10932	10-6000 psi	P	1/4" Tube AMINCO (for 100000 psi only)	S2
16KX max	11229	10-6000 psi			

Order Code =



Model 15L Shown



Model 15KX Shown

Mooney* Handloader Pressure Reducing Regulator

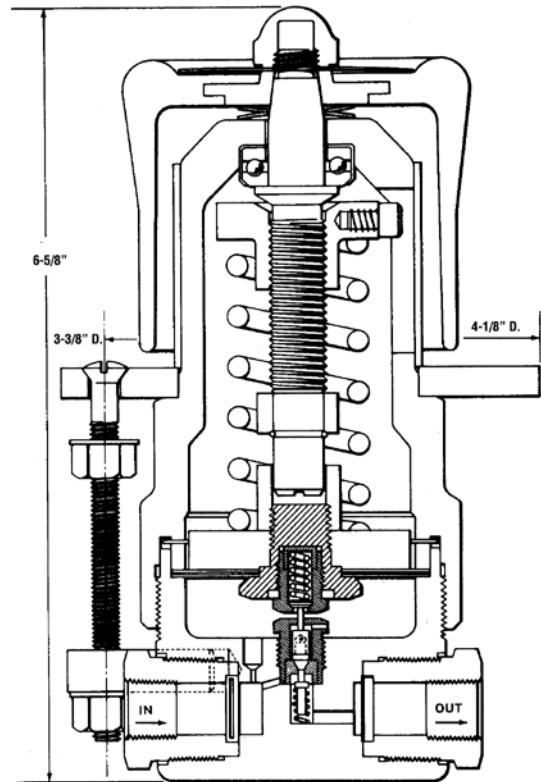
Model	Max Inlet (psig)	Outlet Range (psig)	Relief System	C _v	Outlet Rise/ 1000 psig inlet drop	Average Lockup (psig)
15L	6000	2-25	Yes	0.06	3	1.7
		3-60			3	1.7
		5-150			3	1.7
		8-300			5.4	3
		10-750			11	6
16L	6000	2-25	No	0.06	3	1.7
		3-60			3	1.7
		5-150			3	1.7
		8-300			5.4	3
		10-750			11	6
15LX	6000	2-25	Yes	0.018	1	1.7
		3-60			1	1.7
		5-150			1	1.7
		8-300			1.8	3
		10-750			3.7	6
16LX	6000	2-25	No	0.18	1	1.7
		3-60			1	1.7
		5-150			1	1.7
		8-300			1.8	3
		10-750			3.7	6
15LH	6000	10-1000	Yes	0.06	33	19
		10-3100			33	19
16LH	6000	10-1000	No	0.06	33	19
		10-3100			33	19
15LHX	6000	10-1000	Yes	0.018	5.5	9
		10-2000			11	19
		10-3100			11	19
16LHX	6000	10-1000	No	0.018	5.5	9
		10-2000			11	19
		10-3100			11	19
		10-6000			6.9	12
15KX	6000	10-2000	Yes	0.018	6.9	12
		10-3500			6.9	12
		10-6000			6.9	12
	10000	10-2000			6.9	12
		10-3500			6.9	12
		10-6000			6.9	12
16KX	6000	10-2000	No	0.018	6.9	12
		10-3500			6.9	12
		10-6000			6.9	12
	10000	10-2000			6.9	12
		10-3500			6.9	12
		10-6000			6.9	12

Mooney* Handloader Pressure Reducing Regulator

Model	Temperature Range	C _v
153	-65° to 165° F	0.17
155	-65° to 165° F	0.04

Model	Basic Fig #	Outlet Range	Code	End Connection	Code
153	11409	2-25 psi	A	1/4"NPT	P2
		3-60 psi	B		
		5-150 psi	C		
		8-300 psi	E		
		10-750 psi	F		
		10-1000 psi	H		
155	11410	2-25 psi	A	1/4"NPT	P2
		3-60 psi	B		
		5-150 psi	C		
		8-300 psi	E		
		10-750 psi	F		
		10-1000 psi	H		
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NOTE: Other configurations may be available, please contact Oil & Gas.



Model 15L Shown



Mooney* Mity-Mite Regulator

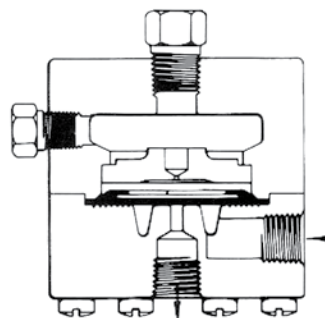
The Pressure Reducing Mity-Mite is a direct acting, self-contained gas dome regulator of compact design, weighing approximately 2 lbs. These regulators have a set of integral needle valves for internal dome loading for gas service. An auxiliary connection is provided in the dome for external dome loading. This port is used for those applications where the line fluid is a liquid and the dome must be externally loaded from a separate source of gas pressure, also used for those situations where it is desirable to set the reference dome pressure from a remote point by means of a Mooney* series 15, combination reducing and relief regulator. Control pressure is sensed within the regulator.

The Back Pressure Mity-Mite is an extremely simple, angle pattern regulator having only one moving part. The diaphragm senses upstream pressure on the underside and is balanced by dome pressure on the upper side. In addition, the diaphragm serves as the valve seal, closing on a nozzle which is an integral part of the body. This regulator acts to limit upstream pressure and has no control over outlet pressure. Unlike relief valves, this unit is designed for continuous throttling service, maintaining the upstream system pressure between two pressure levels.

All Mity-Mite back pressure regulators have externally loaded domes and may be used to control either gases or liquids providing such fluids do not react chemically with the wetted regulator materials. The dome must be charged with gas to a pressure of approximately the desired back pressure setting. Two connections are provided in the dome. One is intended for the attachment of a gauge and the other is for dome charging purposes. An assortment of double needle valve loading assemblies are available for this purpose as options. Please contact GE Oil & Gas for details.

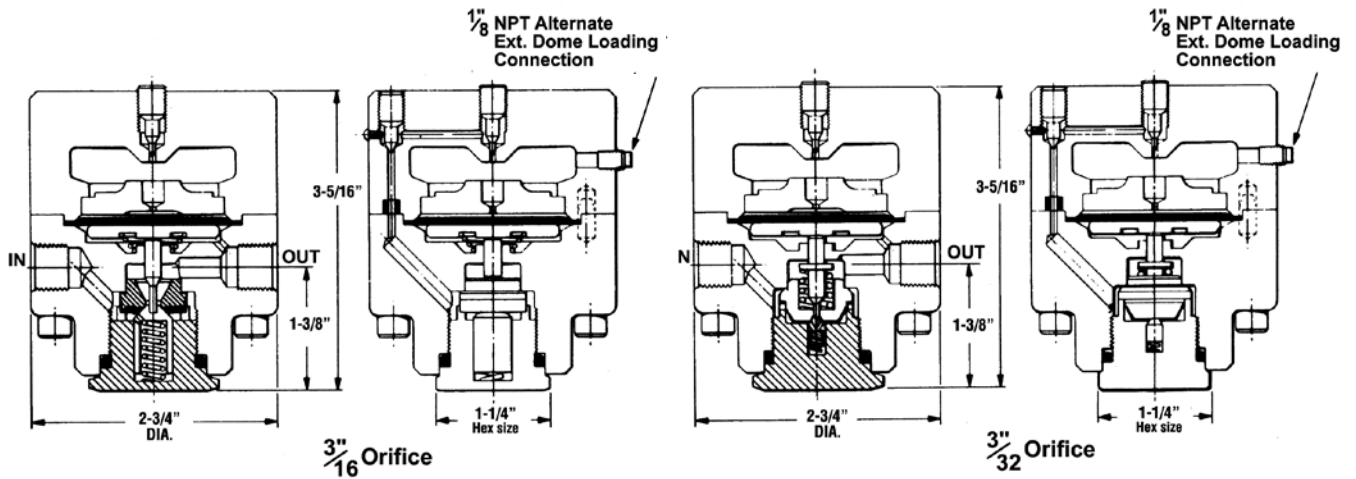
Features

- Rugged, extremely compact and lightweight
- Capacity range equal to conventional regulators
- Recommended for small/medium flow conditions where extreme accuracy is required
- Available for pressure reducing and back pressure service
- Handles any non-corrosive gas or liquid over a variety of pressure ranges
- Back pressure Mity-Mite series can be applied to corrosive flow media
- Materials - Aluminum Alloy/316 SST



Mooney* Mity-Mite Regulator

Model 94	
Inlet Pressure	5000 psi
Max. Outlet Pressure	3000 psi
End Connections	1/4" FNPT
Cv	0.1 with 3/32" orifice 0.6 with 3/16' orifice
Weight	Aluminum - 1.6 lbs Stainless Steel - 4.6 lbs.



Model	Dia-phragm Size (Inches)	Max Inlet (psig)	Max Outlet (psig)	Orifice	Cv	Outlet rise/100 psig Inlet Drop	Average Lock up (psi)	Internal Loading Option*	External Sensing Option*	Valve Type
94	2	5000	3000	3/32"	0.14	0.41	1	Yes	No	Unbal
94	2	5000	3000	3/16'	0.65	2.3	6.1	Yes	No	Unbal

Model	Basic Fig. #	Body/Dome Material	Trim Material	End Conn.	Code	Size	Code	Orifice	Code	Valve/Valve Seat	Seat Gasket	Rubber Goods	Temp Range	Code
94	11486	All Alloy	416 SST	1/4" NPT	P2	1/8"	1	3/16"	None	Nylon	PCTFE	Nitrile	0 to 165° F	A
	11233	18-8 SST	17-4 PH SST	1/4" MS33649-4	L2	1/4"	2	3/32"	8	Nylon	PCTFE	Nitrile	-65°F to 165°F	C
						3/8'	3			PCTFE	PCTFE	Nitrile	0 to 165° F	E
						1/2'	4			PCTFE	PCTFE	Nitrile	-65°F to 165°F	G
										PCTFE	PCTFE	PCTFE	0 to 65° F	J

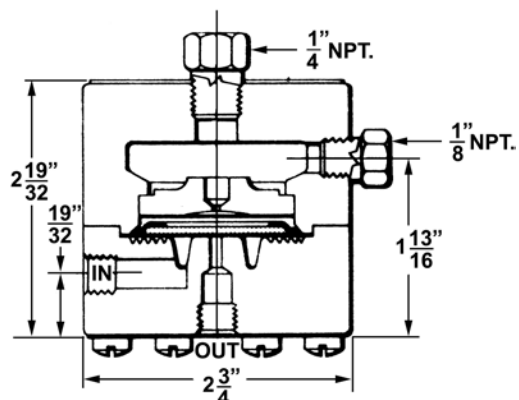
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*All regulators also include options for External Loading or Internal Sensing. External Sensing may be requested on order for the models specified above for an additional fee.

The Internal Loading option is included at no additional charge for the models specified above.

Mity-Mite Back Pressure Regulator Specifications

Model	Connections	C _v	Control Range
90W S90W SD90W	1/4" FNPT	0.44	10-2000 psi
91LW S91LW SD91LW	1/4" FNPT	0.44	25-400 psi
91W S91W SD91W	1/4" FNPT	0.38	100-2000 psi
91W S91W SD91W	1/4" FNPT	0.17	100-3000 psi
91	1/4" FNPT	0.12	60-6000 psi



Model	Basic Fig #	Dome	Body	Diaphragm	Temperature Range	Back Pressure Range (psig)	Max C _v	Weight (lbs)
90W	10448	Al-Alloy	Al-Alloy	Nitrile	0 to 165° F	10-2000	0.44	1.6
S90W	11521	Al-Alloy	Al-Alloy	FKM	0 to 200° F			2.5
SD90W	11508	316 SST	316 SST	FKM	0 to 200° F			4
91LW	10451	Al-Alloy	Al-Alloy	PTFE	-65° F to 200° F	25-400	0.44	1.6
S91LW	11522	316 SST	316 SST	PTFE				2.5
SD91LW	11504	316 SST	316 SST	PTFE				4
91W	10454	Al-Alloy	Al-Alloy	PTFE	-65° F to 200° F	100-2000	0.38	1.6
S91W	11523	Al-Alloy	316 SST	PTFE				2.5
SD91W	11505	316 SST	316 SST	PTFE				4
91W	10457	Al-Alloy	Al-Alloy	PTFE	-65° F to 200° F	100-3000	0.17	1.6
S91W	11524	Al-Alloy	316 SST	PTFE				2.5
SD91W	11506	316 SST	316 SST	PTFE				4
91	M12519-G	316 SST	316 SST	FKM	0° F to 200° F	60-6000	0.12	4

Order Code =

AL = Aluminum
316 SST = 316 Stainless Steel

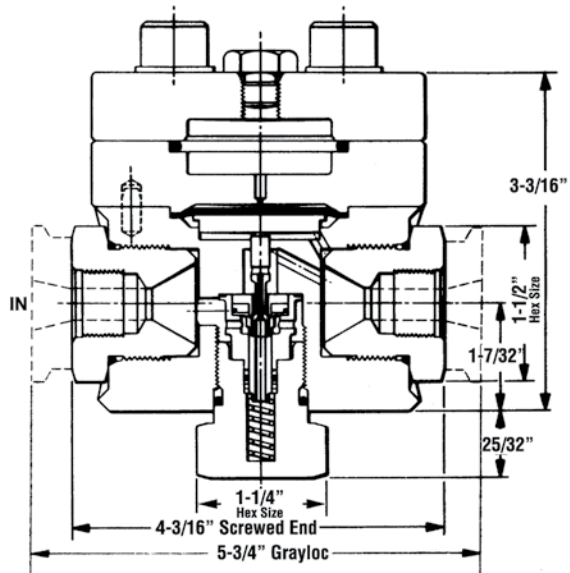


Mooney* Powreactor Dome Regulator

The Mooney* Powreactors are direct-acting, self-contained, dome-loaded, pressure reducing regulators. Control pressure sensing is normally accomplished within the Powreactor without the need for external tubing and valves. This achieves a clean silhouette and minimum envelope size while also making the Powreactor capable of sustaining much rougher handling than the average regulator.

Features

- Instantaneous automatic control
- Extremely sensitive to pressure changes
- Maintains constant delivered pressure
- Balanced valve construction
- Ease of cleaning
- Avoids chattering and pounding
- Positive, tight shutoff
- Entirely self-contained
- Quick, easy adjustment
- Few wearing parts
- Fail close on loss of dome pressure
- Optional external sensing



As you consider the proper regulator for your application, please consider the balanced and unbalanced valve configurations that are available for the Mooney* Specialty Regulator.

In **Unbalanced Valves**, the inlet pressure beneath the valve adds the force needed to open the valve. As the inlet pressure decreases, the force on the valve decreases, allowing the valve to open more freely and resulting in higher downstream pressure. **Balanced Valves** reduce this effect by equalizing the pressure above and below the valve, allowing greater consistency in downstream pressure as the upstream pressure varies.

Also, consider which outlet pressure sensing configuration is best for your application. The choices are **External Sensing or Internal Sensing**.

The normal configuration of the Mooney* regulator is **Internal Sensing**. This method conveys outlet pressure to the bottom of the diaphragm through an internal sensing passage. This method provides quick response and accurate control.

Sometimes high-pressure drops across the regulator can cause turbulence at the outlet port resulting in inaccurate sensing of the true outlet pressure. This makes the **External Sensing** configuration the better choice as the outlet sensing point is moved away from the turbulence.

Models 202B, 212B, 301B, 311B, 402F, 412F, and 411B can be converted to external sensing by plugging the internal sense passage and connecting a tube between the sense volume and downstream piping.

Model	Inlet Pressure	Max Outlet Pressure	C _v	Relief Port	Relief Material	Weight
112B - 3/16" Bal Valve	6000 psi	6000 psi	0.5			6 lbs aluminum/ 15 lbs stainless
112 BR - 3/16"	6000 psi	6000 psi	0.5	1/4" MS16142-4	PCTFE	16 lbs

BR represents relief configuration

112BR Relief Port:

Internally loaded through integral needle valves

External Dome Loading connection: 1/4" MS16142-4

Model	Basic Fig. #	Body/Dome Material	End Connection	Code	Orifice	Code	Rubber Goods Seat	Temperature Range	Code	Trim Material	Seat Material
112B	11220	All Alloy	1/2" FNPT	P04	3/16" Bal	9	Nitrile	-65° F to 165° F	A	18-8 & 17-4 SST	PTFE
112B	11221	304 SST	1/2" MS33649-8	L04	3/16" Bal	9	EDPM	-65° F to 165° F	H	18-8 & 17-4 SST	PTFE
112 BR	11301	304 SST	1/2" & 3/4" GR4	H044	3/16" Bal	9	FKM	0° to 165* F	P	18-8 & 17-4 SST	PTFE

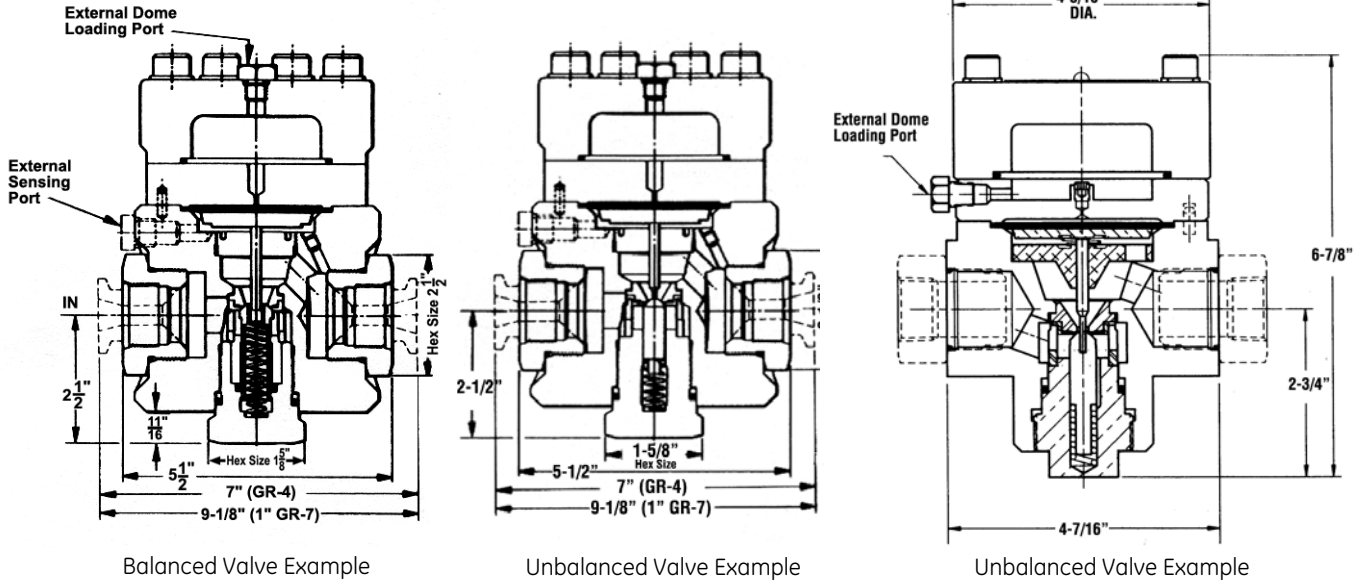
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Model	Inlet Pressure	Maximum Outlet Pressure	Weight
202B	6000 psi	6000 psi	32 lbs.
212B	6000 psi	6000 psi	32 lbs
202F	3500 psi	3500 psi	12 lbs

Internal Sensing with Alternate External Sensing Connection 3/8" MS16142

Internally loaded through integral needle valves

External Dome Loading connection: 1/4" MS16142-4



Model	Basic Fig. #	Body/Dome Material	Trim Material	End Conn.	Code	End Conn Size	Code	Orifice	Code	Rubber Goods	Seat Material	Seat Gasket	Temp Range	Code
202B	11127	304 SST	18-8 & 17-4 SST	FNPT	P	1/2"	04	1/4"	6	Nitrile	PCTFE	PCTFE	-65°F to 165°F	A
212B	11128	304 SST	18-8 & 17-4 SST	MS33649-4	L	1"	06	3/8"	8	EPDM	Kynar	PCTFE	-65°F to 165°F	H
								1/2"	9	Viton	PCTFE	PCTFE	0 to 165° F	9
								1/2" GR4 Grayloc 1" GR7 Grayloc 1-1/12" GR14 Grayloc	H044 H067 H0814					
202F	11568	Aluminum Bronze/ Brass	18-8 SST	FNPT	P	1/2"	04	3/16"	5	Nitrile	PCTFE	PCTFE	-65°F to 165°F	A
				MS33649	L	3/4"	05	1/4"	6	EPDM	Kynar	PCTFE	-65°F to 165°F	H
				MS16142	M	1"	06	5/16"	7	Viton	PCTFE	PCTFE	-65°F to 165°F	P
								3/8"	8					
								1/2"	9					

Order Code =

Internally loaded through integral needle valves
External Dome Loading connection: 1/8" FNPT

Example: A Model 202B with 1/2" MS end connections, a 3/8" orifice, and standard soft goods (Nitrile O-rings and diaphragm, PCTFE seat and seal gasket), would be Figure No. **11127L048A**.

Model	Basic Fig. #	Body/Dome Material	End Connection	Code	Orifice	Code	Rubber Goods Seat	Temperature Range	Code	Trim Material	Seat Material
301B	11167	All Alloy	1/2" FNPT	P04	3/16" Bal	9	Nitrile	-65° F to 165° F	A	18-8 & 17-4 SST	PCTFE
311B	11221	304 SST	1/2" MS33649-8	L04	3/16" Bal	9	EDPM	-65° F to 165° F	H	18-8 & 17-4 SST	Kynar
301B	11213	Carbon Steel Elect Nickel Coated	1-1/2" FNPT Grayloc	H0814	3/4"	8	KFM		P	18-8 & 17-4 SST	PCTFE
311B	11215	Carbon Steel Elect Nickel Coated	3' x 3" ANSI 2500 RTJ Flg	CJ12	1" Bal Val	9				18-8 & 17-4 SST	PCTFE
311B	11245	304 SST	2-1/2" - 3"	H1225	1-1/2" Bal	9				303 & 17-4 PH SST	PTFE
311B	11246	Carbon Steel Elect Nickel Coated	4" FR 31 - 4" GR31	H1431	1-1/2" Bal	9	FKM	0° to 165* F	P	303 & 17-4 PH SST	PTFE

Order Code =

301B, 311 B Weights:
 1" - 1-1/2" = 94 lbs.
 3" - 4" = 306 lbs

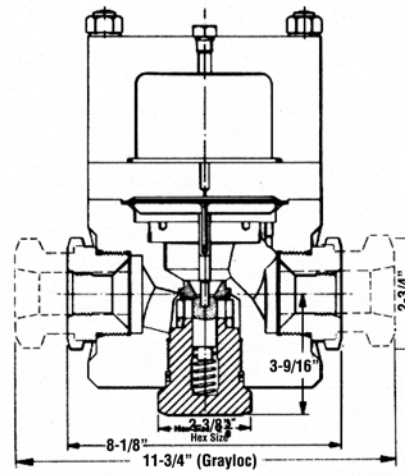
302G Weight: 40 lbs

Internal Sensing (External Sensing Available)

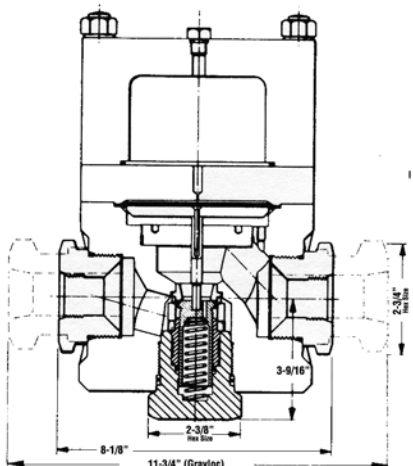
Internally loaded through integral needle valves

External Dome Loading connection: 1/4" MS16142-4

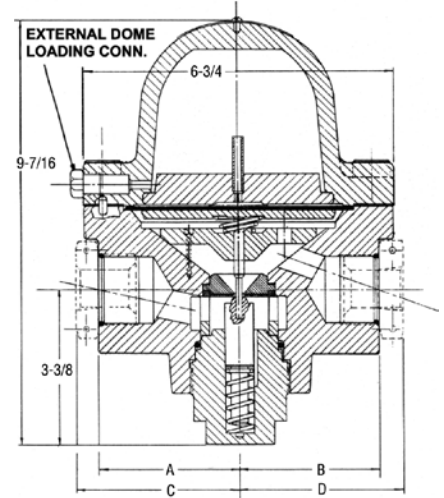
External Dome Loading connection: 1/8" FNPT



301B Unbalanced



311B Balanced



302G Unbalanced

Model	Basic Fig. #	Body/Dome Material	End Connection	Code	Orifice	Code	Rubber Goods Seat	Temperature Range	Code	Trim Material
302G	11567	Aluminum Bronze/Carbon Steel	1/2" FNPT	P08	1/4"	4	Nitrile	-65° F to 165° F	A	18-8 SST
			1-1/2" MS336949-24	L08	5/16"	5				
					3/8"	6				
					1/2"	7				
					3/4"	8				
					1"	9				

Order Code =

Model	Basic Fig #	Body/Dome Material	End Connection	Orifice Size	Max Inlet (psi)	Max Outlet (psi)	Temperature Range	Rubber Goods	Valve Seal & Gasket	Body Plug Gasket	Trim Material
402E	11487P106A	Forged Carbon Steel	2' FNPT	1/2"	3600	1500	0 to 165° F	Nitrile	PCTFE	PCTFE	18-8 SST
	11487P107A	Forged Carbon Steel	2' FNPT	3/4"	3600	1500	0 to 165° F	Nitrile	PCTFE	PCTFE	18-8 SST
	11487P108A	Forged Carbon Steel	2' FNPT	1"	3600	1500	0 to 165° F	Nitrile	PCTFE	PCTFE	18-8 SST
	11487P088A	Forged Carbon Steel	1-1/2' FNPT	1/2"	6000	3000	0 to 165° F	Nitrile	PCTFE	PCTFE	18-8 SST
	11487P086A	Forged Carbon Steel	1-1/2' FNPT	1"	6000	3000	0 to 165° F	Nitrile	PCTFE	PCTFE	18-8 SST

Order Code =

402E Weight: 80 lbs
 Internal loaded integral needle valves
 External Dome Loading connection: 1/8" FNPT

Model	Basic Fig #	Body/Dome Material	End Connection	Orifice Size	Max Inlet (psi)	Max Outlet (psi)	Temperature Range	Rubber Goods	Valve Seal & Gasket	Body Plug Gasket	Trim Material
402F	11040P106A	Nickel Coated Carbon Steel	2' FNPT	1/2"	3600	3000	-65° F to 165° F	Nitrile	PCTFE	PCTFE	18-8 SST 17-4 PH SST
	11040P107A	Nickel Coated Carbon Steel	2' FNPT	3/4"	3600	3000	-65° F to 165° F	Nitrile	PCTFE	PCTFE	18-8 SST 17-4 PH SST
	11040P108A	Nickel Coated Carbon Steel	2' FNPT	1"	3600	300	-65° F to 165° F	Nitrile	PCTFE	PCTFE	18-8 SST 17-4 PH SST
	11040P086A	Nickel Coated Carbon Steel	1-1/2' FNPT	1/2"	6000	3000	-65° F to 165° F	Nitrile	PCTFE	PCTFE	18-8 SST 17-4 PH SST
	11040P088A	Nickel Coated Carbon Steel	1-1/2' FNPT	1"	6000	3000	-65° F to 165° F	Nitrile	PCTFE	PCTFE	18-8 SST 17-4 PH SST

Order Code =

402F Weight: 85 lbs
 Internal loaded integral needle valves
 External Dome Loading connection: 1/8" FNPT

Model	Basic Fig. #	Body/Dome Material	End Connection	Code	Orifice	Code	Rubber Goods Seat	Temperature Range	Code	Trim Material	Seat Seal
411B	11251	304 SST	4' x 4" ANSI 2500 RGJ Flg	CJ14	2-1/2"	9	Nitrile	-65° F to 165° F	A	303 SST and 17-4 PH SST	PTFE
	11252	Aluminum Bronze/Carbon Steel	4' x 4" GR 31 Grayloc	H1431	2-1/2"	9	EDPM	-65° F to 165° F	H	303 SST and 17-4 PH SST	PTFE
							FKM	0 to 165° F	P	303 SST and 17-4 PH SST	PTFE

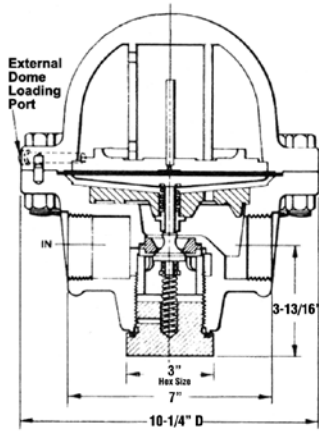
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411B Weight: 900 lbs
 Internally Sensing (External sensing option available)
 External Dome Loading connection: 1/2" MS-16142

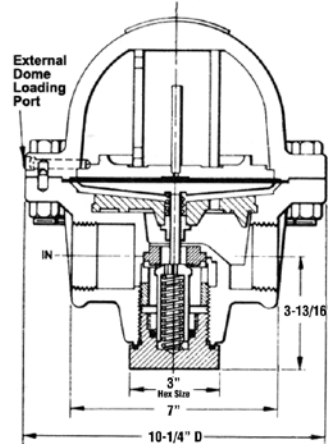
Model	Basic Fig #	Body/Dome Material	End Connection	Orifice Size	Max Inlet (psi)	Max Outlet (psi)	Temperature Range	Rubber Goods	Valve Seal & Gasket	Body Plug Gasket	Trim Material
412E	11489P109A	Forged Carbon Steel	2' FNPT	1/2"	3600	1500	0 to 165° F	Nitrile	PCTFE	PCTFE	18-8 SST
412F	11311P109A	Nickel Coated Carbon Steel	2' FNPT	3/4"	6000	3000	-65° F to 165° F	Nitrile	PCTFE	PCTFE	18-8 SST

Order Code =

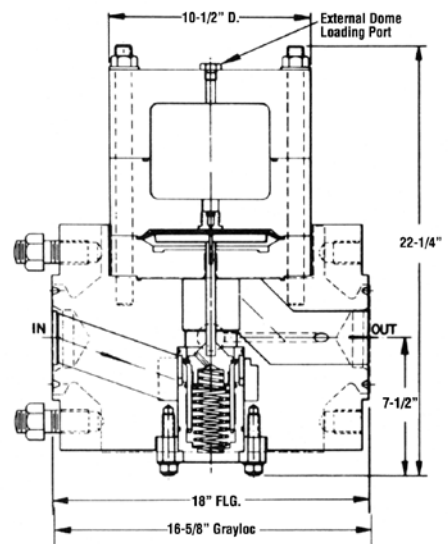
412E Weight: 80 lbs **412F Weight:** 85 lbs
 Internal loaded integral needle valves
 External Dome Loading connection: 1/8" FNPT



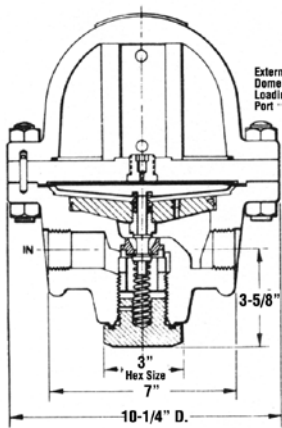
402E Balanced



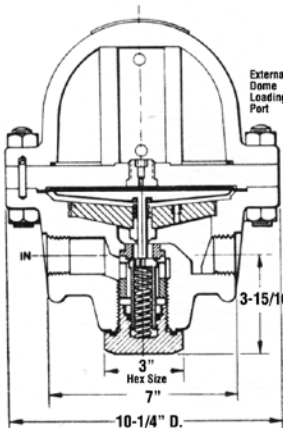
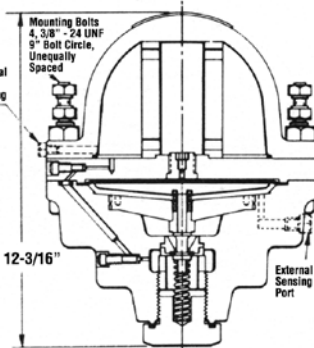
412E Unbalanced



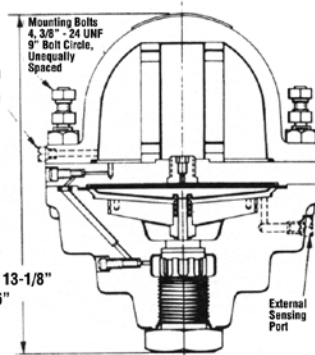
411B Balanced



412F Unbalanced



4142F Unbalanced



Powreactor Dome Regulator Chart

Model	Diaphragm Size	Max Inlet (psi)	Max Outlet (psi)	Orifice (inches)	C _v	Outlet rise per 100 psi Inlet Drop	Average Lockup (psi)	Internal Loading Option*	External Loading Option*	Valve Type
94	2	5000	3000	3/32	0.14	0.41	1	Yes	No	Unbal
94	2	5000	3000	3/16	0.65	2.3	6.1	Yes	No	Unbal
112B	2	6000	6000	3/16	0.5	0.3	7.1	Yes	No	Bal
112BR	2	6000	6000	3/16	0.5	0.18	7.1	Yes	No	Bal
202B	3	6000	6000	3/16	0.7	0.94	2.6	Yes	Yes	Unbal
202B	3	6000	6000	1/4	1.4	1.5	3.3	Yes	Yes	Unbal
202B	3	6000	6000	5/16	1.5	2.2	4	Yes	Yes	Unbal
202B	3	6000	6000	3/8	2.3	2.6	4.4	Yes	Yes	Unbal
212B	3	6000	6000	1/2	4	0.92	6.7	Yes	Yes	Bal
202F	3	3500	3000	3/16	0.7	0.94	2.6	Yes	No	Unbal
202F	3	3500	3000	1/4	1.2	1.5	3.3	Yes	No	Unbal
202F	3	3500	3000	5/16	1.5	32.2	4	Yes	No	Unbal
202F	3	3500	3000	3/8	2.4	2.6	4.4	Yes	No	Unbal
202F	3	3500	3000	1/2	3.4	5	6	Yes	No	Unbal
301B	5	6000	6000	3/8	2.4	0.99	1.5	No	Yes	Unbal
301B	5	6000	6000	1/2	5	1.6	1.9	No	Yes	Unbal
301B	5	6000	6000	3/4	10.7	3.5	2.9	No	Yes	Unbal
311B	5	6000	6000	1	12.4	0.75	3.7	No	Yes	Bal
311B	5	6000	6000	1-1/2	26	1	8	No	Yes	Bal
302G	5	3500	2000	3/8	2.4	0.99	1.5	Yes	No	Unbal
302G	5	3500	2000	1/2	4.4	1.6	1.9	Yes	No	Unbal
302G	5	3500	2000	3/4	8.6	3.5	2.9	Yes	No	Unbal
302G	5	3500	2000	1	11	5.9	3.7	Yes	No	Unbal
402E	7-3/4	6000	3000	1/2	4	0.62	0.8	Yes	No	Unbal
402E	7-3/4	6000	3000	3/4	10	1.4	1.1	Yes	No	Unbal
402E	7-3/4	6000	3000	1	12	2.3	1.5	Yes	No	Unbal
412E	7-3/4	3600	3000	1-1/2	20	0.55	2.2	Yes	Yes	Bal
402F	7-3/4	6000	3000	1/2	4	0.62	0.8	Yes	Yes	Unbal
402F	7-3/4	6000	3000	3/4	10	104	1.1	Yes	Yes	Unbal
402F	7-3/4	6000	3000	1	12	2.3	1.5	Yes	Yes	Unbal
412F	7-3/4	3600	3000	1-1/2	20	0.55	2.2	Yes	Yes	Bal
411B	7-3/4	6000	3000	2-1/2	69	0.65	5.1	No	Yes	Bal

* All regulators also include options for External Loading or Internal Sensing. External Sensing may be requested on order for the models specified above for an additional fee.

The Internal Loading option is included at no additional charge for the models specified above.

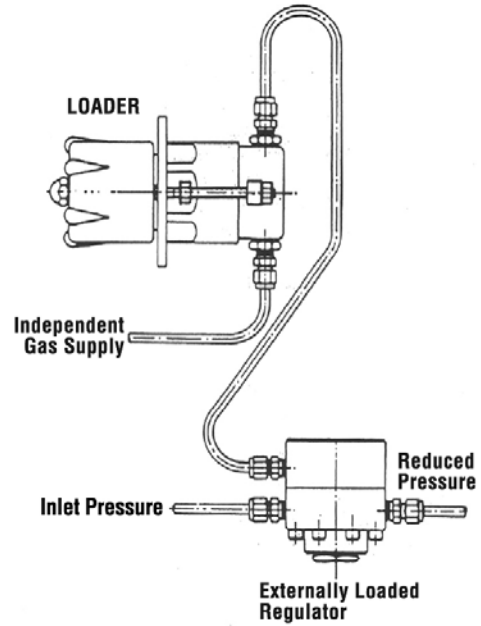
Dome Loading Methods

Dome regulators use gas pressure instead of a spring force to push down on the diaphragm to establish an outlet set pressure. A pressure down stream that is lower than the dome pressure results in the diaphragm being pushed down which opens the valve. Conversely, the valve closes as the outlet increases above the dome pressure.

The dome loading methods include the use of internal loading needle valves or by the use of a Model 15 Handloader or other method. By using the Model 15 Handloader, compensation for variations of pressure changes caused by increased temperature is carried out by venting gas out of the dome. Any decrease in dome pressure is maintained by set point of the Model 15 by adding gas to the dome.

Dome Loaded Regulator uses include:

- Propellant transfer systems (pressurization prefabs)
- Fuel tank pressurization (test stands)
- Test consoles and benches
- Jet engine air start sets
- Component pressure testing
- Hydraulic hoists, power cylinders and presses
- High pressure gas wells and pipelines



Regulator Selection Considerations:

- Is the flow media liquid or gas?
- Is it for pressure reducing or back pressure service?
- What is the minimum and maximum inlet pressure?
- What is the minimum and maximum outlet pressure?
- What is the specific gravity of the media?
- What is the minimum and maximum flow rate?
- What are the connection requirements?
- Other considerations:
 - ❖ Unbalanced Effect = Outlet pressure change affected by the inlet pressure.
 - ❖ Lockup = Normal pressure rise above set pressure required to shut off flow through the regulator
 - Larger diaphragms and smaller valves have lower lockup pressures
 - ❖ Droop = As flow increases through the regulator, the outlet pressure decreases
 - Large diaphragms and small orifices have lower droop

Universal Gas Sizing Equation

$$Q = \sqrt{\frac{520}{G \cdot T}} \cdot C_g \cdot P_1 \cdot \sin \left[\frac{3417}{C_1} \sqrt{\frac{\Delta P}{P_1}} \right] \text{ deg.}$$

$$C_g = \frac{Q}{P_1 \cdot \sqrt{\frac{520}{G \cdot T}} \cdot \sin \left[\sqrt{\frac{P_1 - P_2}{P_1}} \right] \text{ deg.}}$$

↓

Simplifies
1.29
Natural gas @ 60° F
& 0.6 Sg

↓

Simplifies
1.00
Critical Flow

Liquid Sizing

$$Q = C_v F_p \sqrt{\frac{\Delta P_A}{G}}$$

ΔP_A or ΔP Allowable

$\Delta P_A = P_1 - P_2$ or $\Delta P_A = .8 (P_1 - P_v)$ } whichever is less

Q = Flow gpm (Gallons per minute)

C_v = Liquid Sizing coefficient (see valve selection)

G = Liquid Specific Gravity

P_1 = Inlet Pressure (psia)

P_2 = Outlet Pressure (psia)

P_v = Vapor Pressure (psia)

F_p = Piping Swage Factor

Q = Flow Rate (SCFH)

C_g = Gas Size Coefficient

P_1 = Inlet Pressure (psia)

ΔP = Pressure Drop Across Valve ($\Delta P = P_1 - P_2$ (psid))

P_2 = Outlet Pressure (psia)

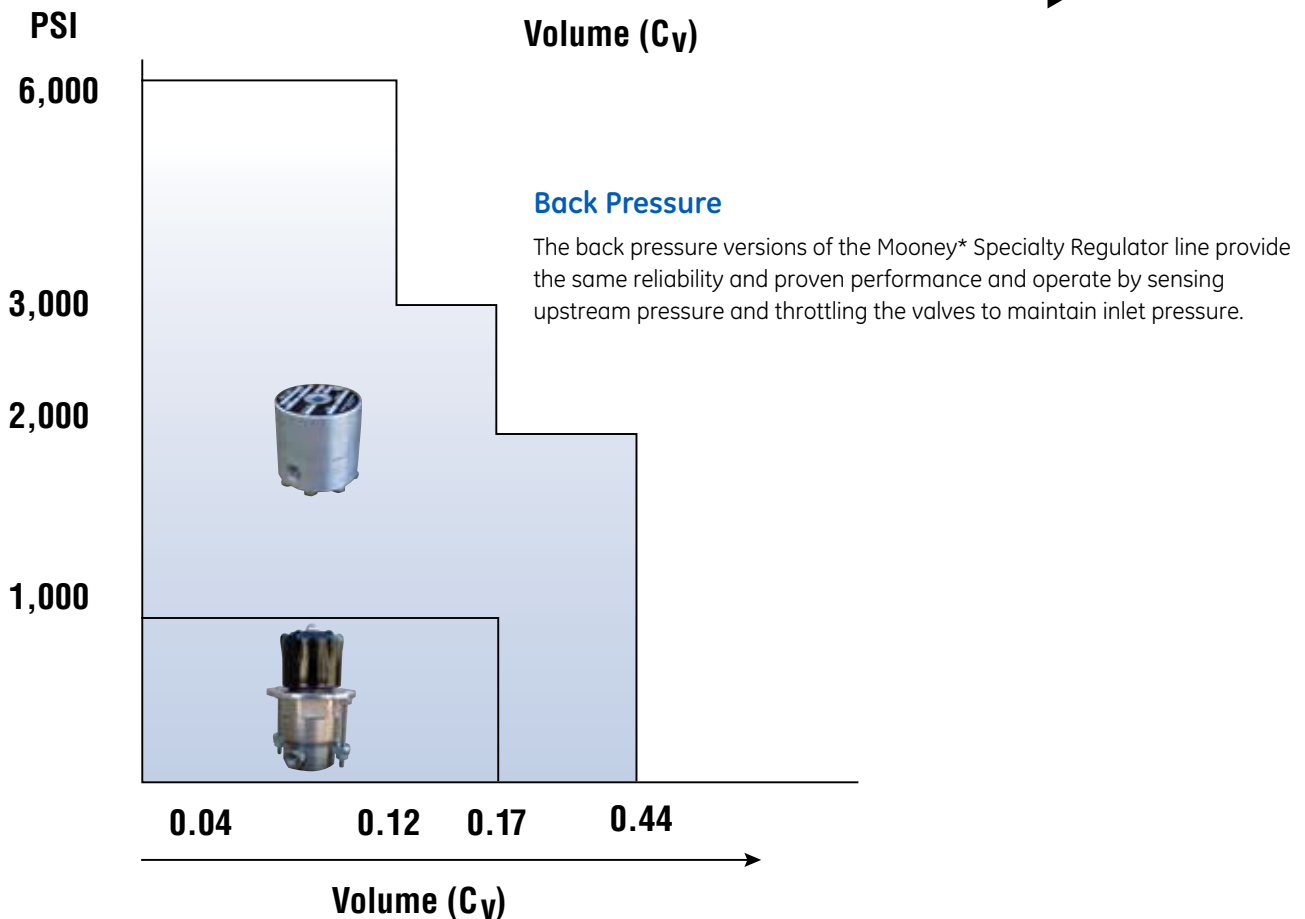
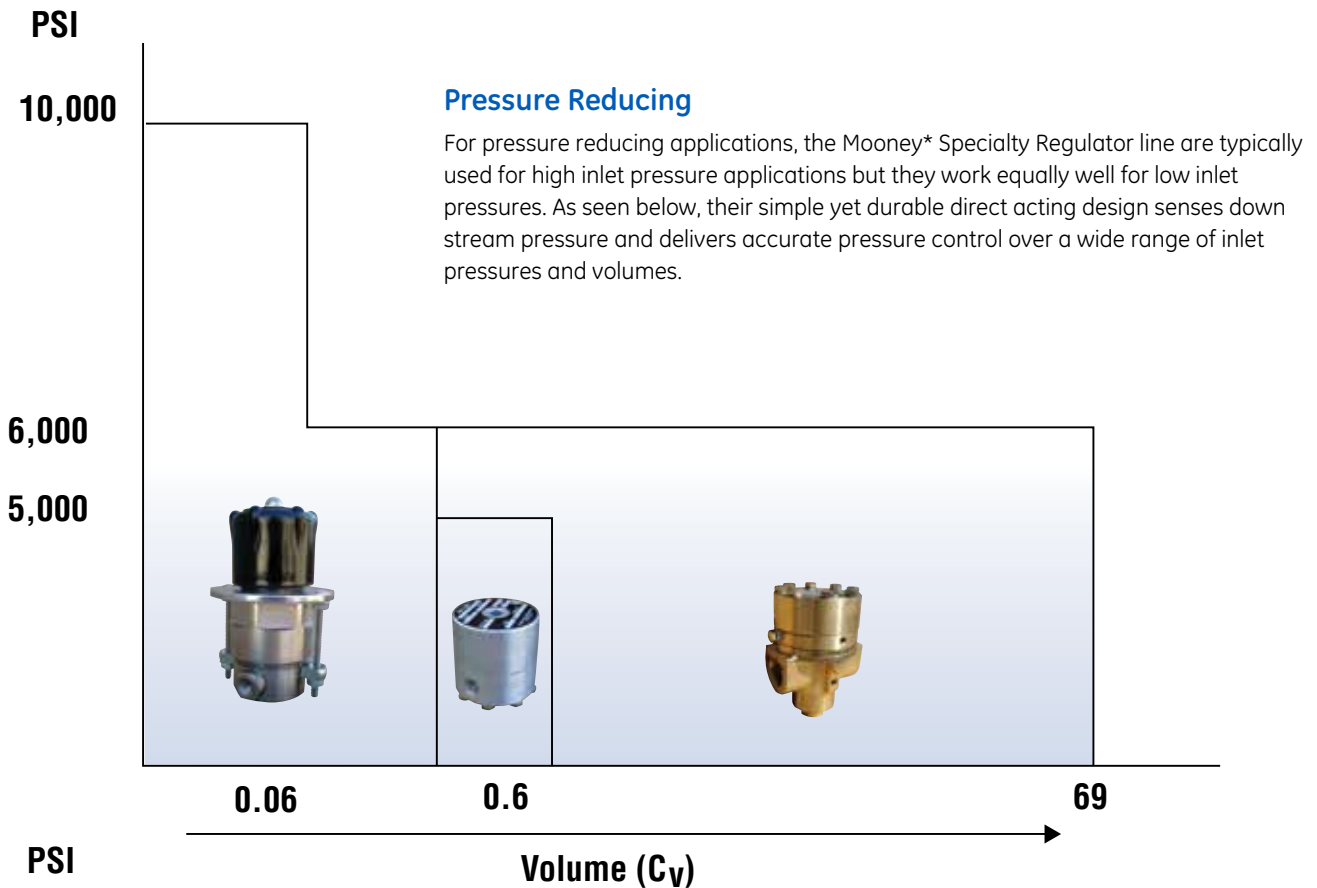
C_1 = Value Recovery Coefficient ($C_1 = C_g - C_v$)

C_v = Liquid Sizing Coefficient

G = Specific Gravity (0.6 for Natural Gas 1.0 for Air)

T = Gas temperature (°Rankine) ($T = 460 + ^\circ F$)

Whether it is the simple operation of the Handloader, the compact Mity-Mite or the configurable Powreactor, the Mooney* Specialty Regulators provide a stellar history of performance in the most demanding industrial, laboratory, aero space and defense applications.



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