



# Gas Essentials<sup>INC</sup>

Natural and Propane Gas Regulation, Measurement and Controls

Distributed By



## Commercial & Industrial Propane Regulators and Meters

Master Distributor for



[www.gasesentials.com](http://www.gasesentials.com)



# First Stage Regulators

P32\* ▶



- ◀ Field adjustable
- ◀ 60 Mesh screen on inlet
- ◀ 1/4" FNPT 250 PSI
- ◀ Excellent stability

P37\* ▶



- ◀ Patented balance spindle design eliminates changes on outlet due to inlet fluctuations
- ◀ 1/2" FNPT 250 PSI

## Capacity Chart @ 100 PSI

P32	2 MBTUPH
P37	8 MBTUPH

Outlet spring range: 0 to 30 PSI

P912\* ▶



- ◀ Versatile
- ◀ Control Accuracy
- ◀ Compact Design
- ◀ Removable Vent Screen
- ◀ 1/4" x 3/8" FNPT 250 PSI

## Capacity Chart

10 PSI	25 PSI	50-250 PSI
120,000 BTUPH	220,000 BTUPH	245,000 BTUPH

Based on 11" wc outlet pressure

\* UL Approved

**Belgas**  
A DIVISION OF MARSH BELLOFRAM

# First Stage Regulators

Maximum inlet pressure 250 PSI ▶

Materials of construction: ▶  
Cast ductile iron body,  
aluminum bonnet  
and diaphragm case,  
nitrile diaphragm and seat

Temperature range -20° to 180° F ▶  
-29° to 82° C

Sizes available: 3/4", 1" & 2" FNPT ▶

Outlet pressure ranges: ▶  
5 to 20 PSI  
15 to 40 PSI

Operator/Monitor versions available ▶  
P627/P627M

Internal Relief version available ▶  
P627R



## ▲ P627

The P627 is a First Stage Regulator used in conjunction with PGS Second Stage Regulators.

# First Stage Regulators



## ▲ P630

The P630 is a First Stage Regulator used in conjunction with PGS Second Stage Regulators.

- ◀ Maximum inlet pressure 250 PSI
- ◀ Materials of construction:  
Cast ductile iron body,  
bonnet and diaphragm case,  
neoprene diaphragm  
and nylon seat
- ◀ Temperature range -20° to 150° F  
-29° to 66° C
- ◀ Sizes available: 1" & 2" FNPT
- ◀ Outlet pressure ranges:  
3 to 10 PSI  
8 to 20 PSI

## P627 – Capacity Chart

### Maximum Flow Of Propane In Million BTUPH

#### Outlet Pressure

Inlet Pressure	Size	10 PSI			20 PSI		
		Orifice			Orifice		
		1/4"	3/8"	1/2"	1/4"	3/8"	1/2"
30 PSI	1"	4.4	7.5	10.8	4.0	6.9	9.9
	2"	4.4	5.8	10.2	3.7	6.8	9.7
60 PSI	1"	7.5	13	21.7	7.5	15.3	23
	2"	7.5	11.5	28.2	7.5	13.3	24.9
100 PSI	1"	11.6	19.8	25.4	11.6	22	37
	2"	11.6	25.7	45.5	11.6	25.7	45.5
150 PSI	1"	16.6	27	28.5	16.6	28	54.2
	2"	16.6	36.9	41.1	16.6	36.9	46
200 PSI	1"	21.7	28.5	29.3	21.7	42.2	62
	2"	21.7	36	38	21.7	38	52.3

**How to order: P627 1" or 2"**

Orifices: A = 1/4" B = 3/8" C = 1/2" Spring ranges: A = 5 to 20 psi B = 15 to 40 psi

## R627 – Capacity Chart

### Maximum Flow Of Propane In Million BTUPH

#### Outlet Pressure

Inlet Pressure	Size	10 PSI			20 PSI		
		Orifice			Orifice		
		1/4"	3/8"	1/2"	1/4"	3/8"	1/2"
30 PSI	1"	3.9	5.6	7.6	4	6.9	9.9
	2"	3.9	5.6	7.6	4	6.9	9.9
60 PSI	1"	5.8	8.9	10.9	7.5	12.3	16.8
	2"	5.8	8.9	10.9	7.5	12.3	16.8
100 PSI	1"	7.6	11.9	12.9	11.6	17.1	21.2
	2"	7.6	11.9	12.9	11.6	17.1	21.2
150 PSI	1"	9	15.8	17.1	16.3	21.4	22.2
	2"	9	15.8	17.1	16.3	21.4	22.2
200 PSI	1"	10	17.4	20.4	16.6	22.2	22.8
	2"	10	17.4	20.4	16.6	22.2	22.8

**How to order: P627R 1" or 2"**

Orifices: A = 1/4" B = 3/8" C = 1/2" Spring ranges: A = 5 to 20 psi B = 15 to 40 psi

# P630LP – Capacity Chart

## Maximum Flow Of Propane In Million BTUPH

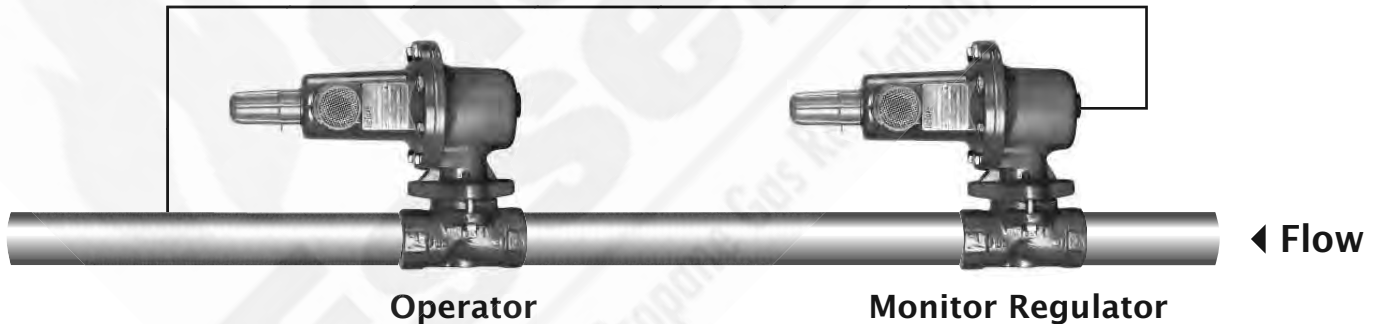
### Outlet Pressure

Inlet Pressure	Size	10 PSI			20 PSI		
		Orifice			Orifice		
		1/4"	3/8"	1/2"	1/4"	3/8"	1/2"
30 PSI	1"	3.3	4.9	6.8	3.9	7.3	10.8
	2"	3.9	7.3	14	4.1	8.2	14.6
60 PSI	1"	5.5	7.4	9.2	7.7	11.9	15.5
	2"	7.1	15.7	29.3	8	17.4	28.5
100 PSI	1"	7.3	9	10.9	11.7	15	17.4
	2"	11.7	27	47.6	12.3	27	46
150 PSI	1"	9	10.7	12.3	14.6	17.4	19
	2"	17.4	39.6	69.8	17.4	36.5	66.6
200 PSI	1"	9.8	11.9	13	15.8	19	20.6
	2"	22.2	50.8	90.4	22.2	50	93.6

**How to order:** P630LP 1" or 2"

**Orifices:** A = 1/4" B = 3/8" C = 1/2" **Spring ranges:** A = 3 to 10 psi B = 8 to 20 psi

### Monitor set using two P627 Belgas Regulators



### Principle of Operation

The Operator/Monitor installation is designed to protect against over-pressurization of downstream piping and equipment in the event the normally throttling regulator (Operator) cannot function properly. In any Operator/Monitor installation the Operator will be the regulator with the lower set point and the Monitor will be the regulator with the higher set point. The upstream regulator must always be an "M" version with an o-ring sealed valve stem and a threaded connection on the lower diaphragm case for a downstream sensing line. In the event the Operator cannot function properly, the downstream pressure will rise to the set point of

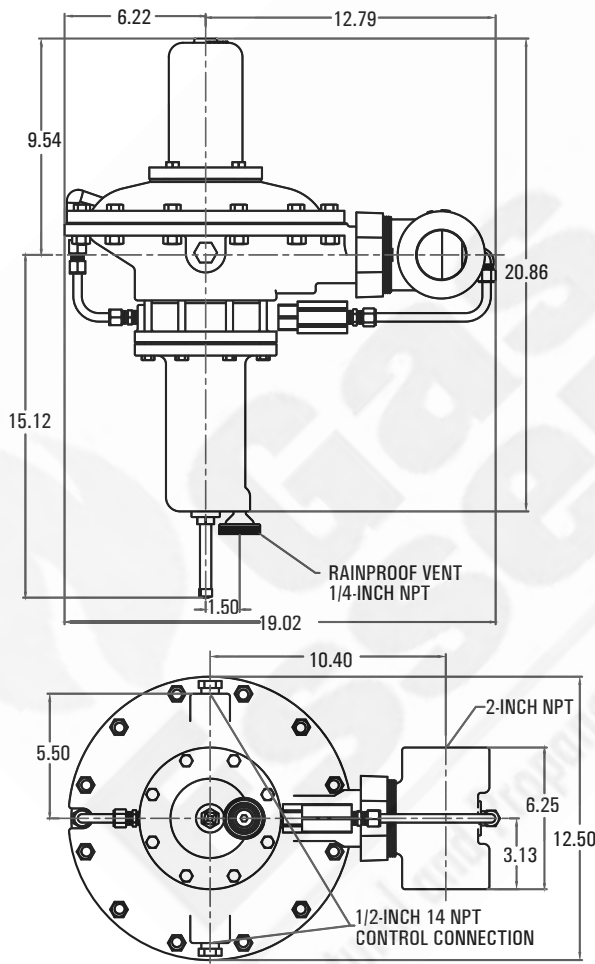
the Monitor at which time the Monitor will begin throttling at its set point. For example, suppose the Operator has a set-point of 10 PSIG and the Monitor has a set point of 11 PSIG. Since both regulators are attempting to regulate the pressure at the same location (downstream of the second regulator) the Monitor will remain "wide-open" during normal operation because the Operator is limiting the downstream pressure to 10 PSIG. If the Operator fails to control the pressure at 10 PSIG, the downstream pressure will rise to 11 PSIG and the Monitor will begin regulating.

# First Stage Regulators

Maximum inlet pressure 400 PSI ▶

Temperature range -20° to 180° F ▶  
-29° to 82° C ▶

Size available: 2" NPT ▶



## ▲ P99

The P99 High Pressure First Stage Regulator is designed for commercial and industrial applications such as agriculture dryers, large boilers, furnaces, asphalt plants etc.

Downstream sensing line required to obtain maximum accuracy. The seat and orifice can be inspected without removing the body from the pipeline. Pilot Operation keeps outlet pressure constant despite varying inlet pressure.

Over Pressure Protection should be considered for all first stage high pressure regulators. A relief valve or regulators installed as a monitor set are optimal protection for over pressure



# P99 – Capacity Chart

## Maximum Flow Of Propane In Million BTUPH

### 7/8" ORIFICE

INLET PRESSURE	OUTLET PRESSURE			
	10	15	20	25
30	36	31.5	26.5	19.8
40	44.4	44.4	41.2	36.5
60	66.6	66.6	66.6	66.6
100	93.6	93.6	93.6	93.6

### 1-1/8" ORIFICE

INLET PRESSURE	OUTLET PRESSURE			
	10	15	20	25
30	61	53.9	44.4	33.3
40	74.6	74.6	68.2	60.3
60	103	103	103	103
100	157	157	157	157

Capacities are based on a 20% Droop

**Contact your distributor for higher capacities.**



# Second Stage Regulators



## P143 Series

- Valve Body Sizes: 3/4", 1", 1-1/4" NPT
- Vent Size: 1" NPT
- Temperature Range: -20°F to 150°F
- Approximate Weight: 6 lbs.
- 125 PSI Maximum Inlet Pressure



## P200 Series

- Valve Body Size: 2" NPT, 2" 150 RF Flange
- Vent Size: 1" NPT
- Temperature Range: -20°F to 200°F
- Approximate Weight: 26 lbs.
- 125 PSI Maximum Inlet Pressure



## P133 Series

- Valve Body Size: 2" NPT, 2" 125 RF Flange
- Vent Size: 1" NPT
- 3/4" NPT Control Connections
- Temperature Range: -40°F to 200°F
- Approximate Weight: 35 lbs.
- 60 PSI Maximum Inlet Pressure

# P143 Pressure Regulator

## Second Stage

- Versatile
- Control Accuracy
- Compact Design
- Low Pressure Cut-Off Option

The Type P143 pressure regulator is ideal for natural gas, air, propane and general purpose gas pressure regulation. Uses include commercial, residential and light industrial for burners and unit heaters. The P143 has an internal relief device and is available in the low pressure cut off – LPCO – version.

### Applications

Applicable to a wide range of gaseous fluids, including air, natural gas and propane. Can be used as a LP regulator.

### Materials of Construction

	P143
Body, Bonnet	Iron, Aluminum
Diaphragm	Nitrile
Diaphragm Assembly	Zinc/Nitrile
Gaskets	Non-asbestos, CGR 2750
Pin	Stainless Steel
Vent Screen	Stainless Steel
Spring	Zinc-Plated Steel
Diaphragm Piston	Zinc-Plated Steel

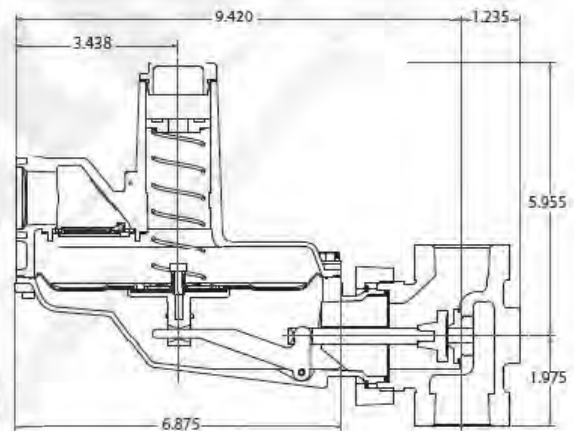
### Max Inlet Pressure

Orifice	Standard
1/8"	125
3/16"	125
1/4"	60
5/16"	40
3/8"	40
7/16"	-
1/2"	20
5/8"	10



- Valve Body Sizes: 3/4", 1", 1-1/4" NPT
- Vent Size: 1" NPT
- Temperature Range: -20°F to 150°F
- Approximate Weight: 6 lbs.

### P143 Dimensions



### Spring Ranges

3.5" - 6.5" WC	Red
5" - 8.5" WC	Blue
6" - 14" WC	Green
12" - 33" WC	Orange
0.5 - 2.0 PSI	Purple
0.5 - 3.0 PSI	Yellow
2.0 - 6.0 PSI	Black

# P143 Pressure Regulator

## Propane Gas Capacities BTU/Hr (1.50 Specific Gravity)

Body Size 3/4" x 3/4"							
Inlet psig	Orifice						
	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"
1/2					535,500	708,750	803,250
1				756,000	787,500	803,250	834,750
2			834,750	882,000	897,750	913,500	945,000
3		661,500	945,000	882,000	992,250	1,023,750	1,055,250
5	393,750	882,000	1,102,500	1,134,000	1,149,750	1,212,750	1,244,250
8	488,250	1,102,500	1,323,000	1,354,500	1,386,000	1,417,500	1,417,500
10	582,750	1,307,250	1,496,250	1,527,750	1,575,000	1,606,500	1,606,500
20	834,750	1,890,000	1,921,500	1,953,000	1,968,750	2,000,250	
40	1,354,500	2,472,750	2,094,750	2,110,500	2,283,750		
60	1,890,000	2,614,500	2,394,000				

Body Size 3/4" x 1" • 1" X 1"							
Inlet psig	Orifice						
	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"
1/2					551,250	724,500	819,000
1				756,000	866,250	945,000	1,023,750
2			834,750	1,102,500	1,323,000	1,386,000	1,228,500
3		661,500	1,023,750	1,370,250	1,575,000	1,449,000	1,433,250
5	393,750	913,500	1,401,750	1,764,000	1,827,000	1,496,250	1,527,750
7.5	488,250	1,102,500	1,795,500	2,110,500	2,000,250	1,795,500	1,669,500
10	582,750	1,323,000	2,142,000	2,362,500	2,094,750	1,890,000	1,858,500
20	834,750	1,937,250	3,150,000	2,520,000	2,331,000	2,205,000	
40	1,354,500	2,677,500	3,150,000	2,583,000	2,992,500		
60	1,890,000	2,992,500	3,150,000				

Body Size 1" x 1-1/4" • 1-1/4" x 1-1/4"							
Inlet psig	Orifice						
	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"
1/2					551,250	724,500	819,000
1				756,000	866,250	1,071,000	1,197,000
2			834,750	1,102,500	1,323,000	1,606,500	1,622,250
3		661,500	1,023,750	1,370,250	1,622,250	1,890,000	1,653,750
5	393,750	913,500	1,401,750	1,858,500	2,126,250	2,346,750	1,669,500
7.5	488,250	1,102,500	1,795,500	2,362,500	2,535,750	2,488,500	1,669,500
10	582,750	1,323,000	2,142,000	2,677,500	2,693,250	2,835,000	1,858,500
20	992,250	1,937,250	2,520,000	2,835,000	2,992,500	2,992,500	
40	1,354,500	2,835,000	3,465,000	2,992,500	3,150,000		
60	1,890,000	3,307,500	3,780,000				

# P200 Pressure Regulator

## Features

- Minimize Sudden Downstream Load Change
- Wide Pressure Ranges
- P202 has internal relief valve for overpressure protection

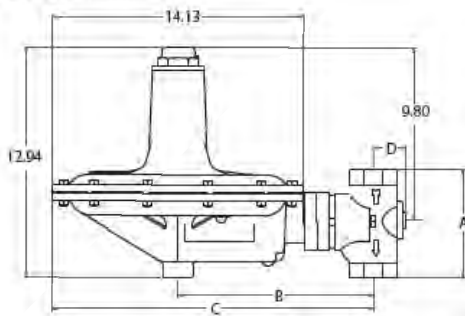
The P200 Series Pressure Regulator is a manual self-operating, spring loaded, adjustable regulator.

The P200 Series is used in applications where pressure reduction is required.

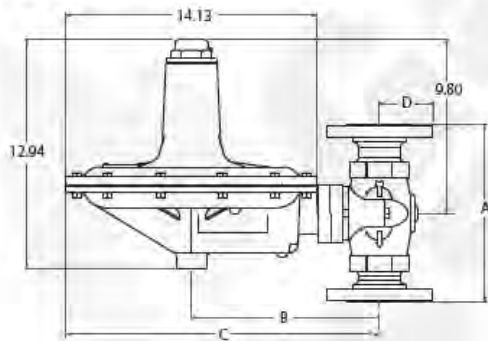
The P200 will reduce the risk of “shock” from abrupt changes in downstream conditions. This can help prevent safety equipment from shutting an operation down.



**P200 Standard**



**P200 Flanged**



## Dimensions

Body Size	A		B	C	D		
	Inches	NPT			125 FF Flange*	NPT	125 FF Flange*
1.25	6.13		11.03	18.09	1.85		
1.5	6.13		11.03	18.09	1.85		
2	6.13	10	10.59	17.66	2.15	3	3

- Valve Body Size: 2” NPT, 2” 150# RF Flange
- Vent Size: 1” NPT
- Temperature Range: -20°F to 200°F
- Approximate Weight: 26 lbs.
- 125 PSI Maximum Inlet Pressure

Maximum Pressures			
Orifice Inches	Versions	Pressure Range "WC or PSIG	Maximum Inlet Pressure PSIG
1/4"			125
3/8"			125
1/4"			100
3/4"			60
1"	O		25
	H		20
	K		30
1-3/16"	O		13
		1 - 2 PSIG	14
	H	1.5 - 3.25 PSIG	14
		2 - 5 PSIG	20
	K	2 - 5.5 PSIG	20
	4 - 10 PSIG	25	

Outlet Spring Pressure Ranges				
Model	Spring Ranges		Spring Color	Part Number
	W.C. or PSI	Bar		
P201 and P202	2 - 4.5 W.C.	0.005 - 0.011	Brown	655-697-002
	3.5- 6.5 W.C.	0.009 -0.016	Red	655-697-003
	5 - 9 W.C.	0.012 - 0.022	Black	655-697-004
	8.5 - 18 W.C.	0.021 - 0.045	White	655-697-005
	14 - 30 W.C.	0.035 - 0.075	Dark Green	655-697-006
P201H and P202H	1 - 2 PSI	0.069 - 0.138	Dark Blue	655-697-007
	1.5 3.25 PSI	0.103 - 0.224	Orange	655-697-008
	2 - 5 PSI	0.138 - 0.345	Yellow	655-697-009
P201K	2 - 5.5 PSI	0.138 - 0.379	Green	655-659-003
	4 - 10 PSI	0.276 - 0.689	Grey	655-697-010



# Capacity Table- P200 Regulator

## Propane Gas Capacities BTU/Hr (1.50 Specific Gravity)

7" w.c. SET POINT (1" Droop)						
Inlet PSIG	Orifice Size, Inches					
	1/4"	3/8"	1/2"	3/4"	1"	1 3/16"
0.5				2,362,500	2,835,000	3,150,000
1	630,000	1,260,000	1,890,000	3,622,500	4,410,000	5,197,500
1.5	787,500	1,653,750	2,520,000	4,882,500	5,670,000	7,087,500
2	945,000	2,047,500	3,150,000	6,300,000	7,087,500	9,450,000
5	1,575,000	3,307,500	5,512,500	12,127,500	14,805,000	14,805,000
13	2,598,750	5,512,500	10,080,000	15,750,000	31,815,000	33,390,000
25	3,780,000	8,190,000	16,222,500	31,500,000	18,585,000	
60	7,008,750	14,175,000	18,900,000	32,602,500		

11" w.c. SET POINT (2" Droop)						
Inlet PSIG	Orifice Size, Inches					
	1/4"	3/8"	1/2"	3/4"	1"	1 3/16"
0.5				1,260,000	2,362,500	2,520,000
1	630,000	1,181,250	1,732,500	2,835,000	3,937,500	4,095,000
1.5	787,500	1,575,000	2,283,750	3,937,500	5,355,000	5,276,250
2	945,000	1,890,000	2,677,500	4,882,500	6,615,000	5,906,250
5	1,575,000	3,150,000	4,725,000	11,497,500	11,025,000	13,387,500
13	2,520,000	5,355,000	9,765,000	16,301,250	27,798,750	28,507,500
25	3,780,000	8,898,750	16,301,250	30,397,500	36,933,750	
60	7,008,750	17,876,250	30,397,500	31,815,000		

14" w.c. SET POINT (2" Droop)						
Inlet PSIG	Orifice Size, Inches					
	1/4"	3/8"	1/2"	3/4"	1"	1 3/16"
1	708,750	1,102,500	1,732,500	2,362,500	2,677,500	4,252,500
1.5	866,250	1,338,750	1,890,000	2,992,500	4,252,500	5,670,000
2	945,000	1,575,000	2,992,500	4,410,000	5,985,000	5,985,000
5	1,653,750	2,756,250	4,410,000	6,300,000	8,347,500	16,695,000
13	2,756,250	5,827,500	8,977,500	22,680,000	28,350,000	29,137,500
25	4,095,000	8,977,500	16,065,000	28,350,000	40,005,000	
60	7,560,000	17,167,500	17,325,000	30,870,000		

# Capacity Table- P200 Regulator

(continued)

## Propane Gas Capacities BTU/Hr (1.50 Specific Gravity)

2 PSI SET POINT (2% Droop)						
Inlet PSIG	Orifice Size, Inches					
	1/4"	3/8"	1/2"	3/4"	1"	1 3/16"
5	1,575,000	3,386,250	4,331,250	7,875,000	9,765,000	12,442,500
10	2,441,250	4,803,750	7,875,000	13,545,000	20,081,250	21,735,000
15	2,992,500	6,615,000	11,340,000	17,325,000	18,506,250	34,177,500
20	3,622,500	8,032,500	14,490,000	22,365,000	25,200,000	
25	4,095,000	9,292,500	16,852,500	25,830,000	40,005,000	
30	4,725,000	10,395,000	19,057,500	31,027,500	43,942,500	
40	5,827,500	12,915,000	19,215,000	42,840,000		
45	6,457,500	14,175,000	23,940,000	42,840,000		
50	6,930,000	15,277,500	26,617,500	43,155,000		
60	8,032,500	17,797,500	32,760,000	43,155,000		

5 PSI SET POINT (2% Droop)						
Inlet PSIG	Orifice Size, Inches					
	1/4"	3/8"	1/2"	3/4"	1"	1 3/16"
10	1,575,000	2,205,000	2,598,750	4,567,500	5,512,500	7,087,500
15	2,047,500	3,307,500	4,410,000	6,142,500	8,662,500	9,213,750
20	2,598,750	4,331,250	5,670,000	8,347,500	11,655,000	
25	3,228,750	5,355,000	6,930,000	10,710,000	11,655,000	
30	3,780,000	6,300,000	8,662,500	12,442,500	13,151,250	
40	4,882,500	8,505,000	11,340,000	14,647,500		
45	5,118,750	9,607,500	13,072,500	15,513,750		
50	6,063,750	10,552,500	14,805,000	16,773,750		
60	7,008,750	12,915,000	18,112,500	22,916,250		

10 PSI SET POINT (2% Droop)						
Inlet PSIG	Orifice Size, Inches					
	1/4"	3/8"	1/2"	3/4"	1"	1 3/16"
15	708,750	866,250	1,338,750	2,047,500	2,441,250	2,913,750
20	708,750	1,575,000	1,732,500	2,756,250	3,465,000	3,780,000
25	866,250	1,968,750	2,520,000	3,622,500	4,252,500	5,591,250
30	1,260,000	2,126,250	2,835,000	4,410,000	4,410,000	
40	1,653,750	2,598,750	3,386,250	5,512,500		
45	2,126,250	2,992,500	4,095,000	5,827,500		
50	2,283,750	3,307,500	4,488,750	6,772,500		
60	2,520,000	3,622,500	4,882,500	6,930,000		

# P133 Pressure Regulator

## Applications

The P133 is a direct operated pressure reducing regulator used in commercial and industrial applications such as furnaces and burners where accuracy and sensitivity is critical.

The P133 regulator utilizes a balanced diaphragm design that provides for sensitivity and accuracy.

The P133 is available in a low pressure or high pressure model and a broad range of outlet spring ranges. The P133 is also suitable in pressure monitoring applications.

## Specifications

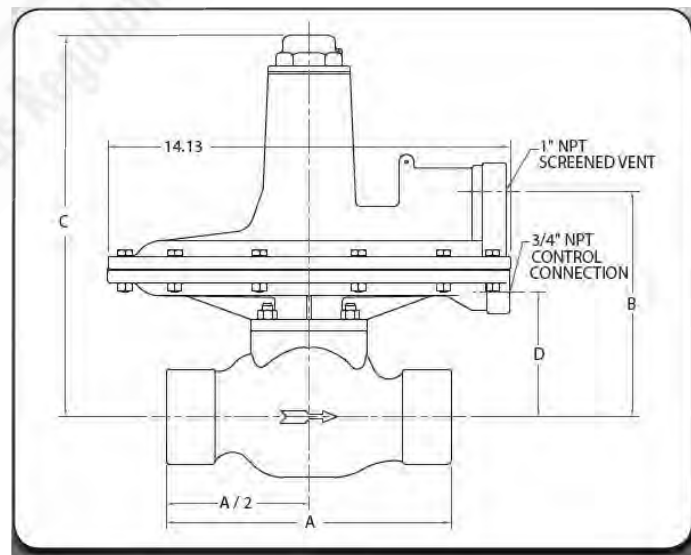
	133L	133H
Maximum Operating Inlet	60 PSIG	60 PSIG
Maximum Emergency Inlet	125 PSIG	125 PSIG
Maximum Operating Outlet	2 PSIG	10 PSIG
Maximum Emergency Outlet	15 PSIG	15 PSIG
Maximum Over Outlet Pressure	3 PSIG	3 PSIG
Pressure Ranges	See Table 2	
Port Sizes	2 NPT	
Restrictor Collars	25%	
	40%	
	60%	
End Connections	2" NPT (Standard) 125 FF Flange (Iron Only)	
Temperature Range	-40° F to 200° F	
	-40° C to 93° C	
Approximate Weight	35 lbs. (15.9 kg)	

Outlet Spring Ranges			
Model	Spring Ranges W.C. or PSI	Spring Color	Part Number
P133 L & H	2" - 4" W.C.	Brown	655-697-002
	3.5" - 6" W.C.	Red	655-697-003
	5" - 9" W.C.	Black	655-697-004
	8.5" - 18" W.C.	White	655-697-005
	14" - 28" W.C.	Green	655-697-006
	0.75 - 2 PSI	Dark Blue	655-697-007
P133 H Version Only	1.5 - 3.25 PSI	Orange	655-697-008
	2 - 5 PSI	Yellow	655-730-000
	5 - 10 PSI	Blue Stripe	655-659-004



## P133 Dimensions

A			B	C	D		
2" NPT	12.5 FF	150 RF			2" NPT	12.5 FF	150 RF
10	10	10	7.91	13.36	4.36	4.36	4.36





# Capacity Table - P133 Regulator

## Propane Gas Capacities BTU/Hr (1.50 Specific Gravity)

P133L Unrestricted Flow Capacities in Millions of BTU Propane

Outlet Pressure Setting and Outlet Pressure Range											
Inlet Pressure	4" wc 2 - 4" wc	6" wc 3.5 - 6" wc	7" wc 5 - 9" wc	14" wc 8.5 - 18" wc		14" wc 14 - 28" wc		1 psig 14 - 28" wc		2 psig 0.75 - 2 psig	
	1" wc Droop	1" wc Droop	1" wc Droop	1" wc Droop	2" wc Droop	1" wc Droop	2" wc Droop	10% Droop	20% Droop	10% Droop	20% Droop
1	22	20	18	7	13						
2	32	31	26	12	23			18	25		
3	40	38	33	18	30			24	33	19	29
5	55	51	50	25	44	22	36	37	49	32	44
10	81	81	75	53	70	40	59	59	69	59	72
20	122	121	124	108	119	94	108	110	121	97	119
30	159	157	157	143	152	137	146	141	159	137	159
40	195	192	195	171	182	168	181	173	192	165	190
50	229	226	228	204	214	207	215	200	228	195	228
60	267	264	261	244	253	239	248	234	263	228	267

P133H Unrestricted Flow Capacities in Millions of BTU Propane

Outlet Pressure Setting and Outlet Pressure Range										
Inlet Pressure	3 psig 1.5 - 3 psig		2 psig 2 - 5 psig		5 psig 2 - 5 psig		5 psig 5 - 10 psig		10 psig 5 - 10 psig	
	10% Droop	20% Droop	10% Droop	20% Droop	10% Droop	20% Droop	10% Droop	20% Droop	10% Droop	20% Droop
3			10	18						
5	22	34	17	28						
7	33	48	20	34	24	37	14	23		
10	44	66	23	42	37	55	22	34		
15	63	89	40	61	55	80	29	49	33	55
20	81	113	55	81	72	105	37	64	48	80
30	119	151	77	114	107	149	55	91	69	116
40	154	187	103	152	138	184	69	114	88	152
50	185	222	132	176	162	217	89	140	116	184
60	214	259	163	207	192	245	102	166	143	214



# Relief Valves

## Liquid Service

**Type P98H-** is a direct-operated relief valve for use on relief and backpressure applications involving large LP-Gas pumping systems and vaporizers. Body Materials are available in Gray Cast Iron, and Steel. Temperature ratings are -40 to 180°F / -40 to 82°C for C.I. and -20 to 180°F / -29 to 82°C for Steel.



### Liquid Service Relief Valves

BODY SIZE, INCHES	RELIEF PRESSURE RANGE		RELIEF PRESSURE SETTING		PROPANE RELIEF CAPACITY GPM / l/min AT FOLLOWING PRESSURE BUILD-UP OVER RELIEF SETTING									
					5 psig / 0.34 bar		10 psig / 0.69 bar		20 psig / 1.4 bar		30 psig / 2.1 bar		50 psig / 3.4 bar	
	psig	bar	psig	bar	GPM	l/min	GPM	l/min	GPM	l/min	GPM	l/min	GPM	l/min
3/4 FNPT	70 to 140	4.8 to 9.7	100	6.9	30.8	117	49	185	67.9	257	79.8	302	93.1	352
1 FNPT	71 to 140	4.8 to 9.8	100	6.9	30.8	117	49	185	67.9	257	79.8	302	93.1	352

## Vapor Service

P289 Relief Valve ▼

- Size Ranges: ▶  
1" and 2" FNPT
- Throttling type relief ▶
- High flow rates ▶
- Compact ▶
- Reliability due to simplicity ▶
- Tight shut off ▶
- Maximum Inlet Pressure: ▶  
1" 100 PSI  
2" 25 PSI
- Temperature Range: ▶  
-20 to 150F



Spring Ranges	
1" NPT	2" NPT
1 - 4.5 PSI	.5 - 2.5 PSI
4 - 15 PSI	1.75 - 7 PSI
10 - 20 PSI	4 - 10 PSI
15 - 50 PSI	
45 - 75 PSI	

Weight: ▼  
1" NPT - 2 LBS  
2" NPT - 15 LBS

### Capacity Chart

1"	2 PSI	23 MBTUPH
	5 PSI	24 MBTUPH
	10 PSI	40 MBTUPH
	20 PSI	66 MBTUPH
2"	1 PSI	28 MBTUPH
	2 PSI	41 MBTUPH
	5 PSI	50 MBTUPH
	10 PSI	50 MBTUPH

### How to order:

P289 plus spring range -100 or -200



# Relief Valves



## P1 808 Pilot-Operated Relief Valve

### Features

- ▶ Compact Design
- ▶ Pilot Operated
- ▶ 125 PSI Maximum Inlet Pressure
- ▶ Can be used as a relief valve or a back-pressure regulator.
- ▶ Used in gas or liquid service to maintain pressure on oil and gas separators, and in pressure relief applications in gas distribution systems.

Spring Ranges
3 - 18 PSI
15 - 40 PSI

Pilot	Application
PL82	Back Pressure
PL82B	Pressure Relief

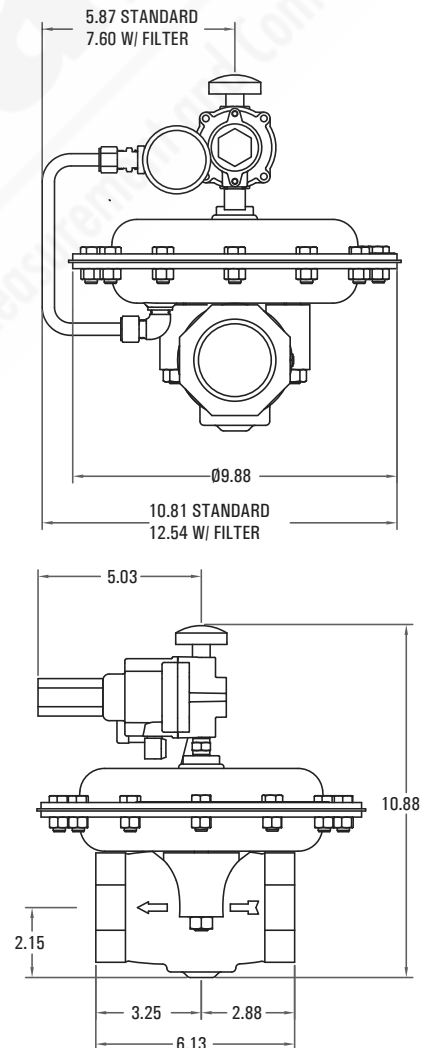
Relief Pressure Setting	Capacity in Millions of BTU of Propane						
	Pressure Build-up in PSIG Over Relief Pressure Setting						
PSIG	2	6	10	15	20	25	30
5	50.4	72.5	78.8	96.1	110.3	126.0	140.2
12	64.6	86.6	102.4	116.6	132.3	146.5	160.7
20	88.2	115.0	126.0	140.2	155.9	170.1	184.3
30	105.5	140.2	155.9	170.1	184.3	200.0	214.2
40	133.9	165.4	189.0	200.0	214.2	228.4	242.6
50	148.1	189.0	215.8	228.4	242.6	256.7	270.9
60	--	212.6	239.4	256.7	270.9	285.1	299.3
70	--	236.3	264.6	253.6	299.3	315.0	329.2
80	--	253.6	283.5	315.0	316.6	343.4	357.5
90	--	267.8	302.4	335.5	357.5	371.7	385.9
100	--	288.2	329.2	363.8	385.9	400.1	414.2
110	--	310.3	351.2	387.5	414.2	434.7	442.6
125	--	316.6	379.6	420.5	447.3	469.4	--

- Shaded areas indicate capacities with main valve wide-open.

**Weight** 22 LBS

How to order:

Contact Us for Ordering Information



# Vapor Meters



250/275 TC ▲

- ◀ Standard 5 PSI MAOP  
option HP version for 10 PSI
- ◀ Direct read, temperature  
compensated standard
- ◀ Available with 3/4" or 1 " MNPT swivels  
or 3/4" 90 MNPT swivels



400 TC ▲

- ◀ Standard 10 PSI MAOP  
option HP version for 25 PSI
- ◀ Direct read, temperature  
compensated standard
- ◀ Available with 1 1/4" and  
1 1/2" MNPT swivels

# Capacity Chart

## Maximum Flow Of Propane In Million BTUPH

Inlet Pressure	250 TC	250 TCHP	400 ATC	400 ATCHP
11" WC	630,000		1,000,000	
2 PSI	1,600,000		2,300,000	
5 PSI	1,800,000		2,600,000	
10 PSI		2,300,000	3,000,000	
20 PSI				4,000,000

For higher capacities contact your Gas Essentilas sales representative.  
For pressure correction factor to compensate for pressure over 11" w.c. use chart below.

Pressure	Multiply
2 PSI	× 1.113
5 PSI	× 1.317
10 PSI	× 1.656
20 PSI	× 2.335

Meter index reading in SCFH.  
To convert SCFH to gallons per hour LP,  
divide meter reading by 36.39

# General Information

## Information about LP-Gas\*

	Propane	Butane
Formula	C <sub>3</sub> H <sub>8</sub>	C <sub>4</sub> H <sub>10</sub>
Boiling Point, °F.	-44	15
Specific Gravity of Gas (Air = 1.00)	1.50	2.01
Specific Gravity of Liquid (Water = 1.00)	0.504	0.582
Lbs. per Gallon of Liquid at 60° F.	4.20	4.81
BTU per Gallon of Gas at 60° F.	91502	102032
BTU per Lb. of Gas	21548	21221
BTU per Cu. Ft. of Gas at 60° F.	2488	3280
Cu. Ft. of Vapor (at 60° F) Gal.	36.38	31.26
Cu. Ft. of Vapor (at 60° F) Lb.	8.66	6.51
Latent Heat of Vaporization at Boiling Point BTU/Gal.	773	808
Combustion Data: Cu. Ft. Air Required to Burn 1 Cu. Ft. Gas	23.86	31.02
Flash Point, °F.	-156	N.A.
Ignition Temperature in Air, °F.	920-1120	900-1000
Maximum Flame Temperature in Air, °F.	3595	3615
Limits of Flammability Percentage of Gas in Air Mixture; at Lower Limit - % at Upper Limit - %	2.15 9.6	1.55 8.6
Octane Number (ISO - Octane = 100)	Over 100	92

\* Commercial quality. Figures shown in this chart represent average values.

## Vapor Pressures of LP-Gases\*

Temperature		Approximate Pressure (PSIG)	
(°F.)	(°C.)	Propane	Butane
-40	-40	3.6	
-30	-34	8	
-20	-29	13.5	
-10	-23	23.3	
0	-18	28	
10	-12	37	
20	-7	47-1	
30	-1	58	
40	4	72	3.0
50	10	86	6.9
60	16	102	12
70	21	127	17
80	27	140	23
90	32	165	29
100	38	196	36
110	43	220	45

\* Conversion Formula: Degrees C. = (°F. - 32) x 5/9 • Degrees F. = 9/5 x °C. + 32

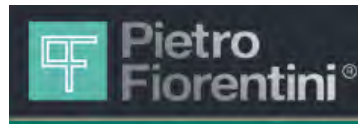
# Comparison Chart

<b>Itron</b>	<b>BelGas</b>	<b>Fisher</b>
B42R/PGS6	<b>P143</b>	HSRL
B31R/PGS8	<b>P143</b>	S102
B34SR/PGS10	<b>P202</b>	S202
B34R/PGS12	<b>P202</b>	S202
B38R/PGS24	<b>P202 or P133</b>	
	<b>P912</b>	912
	<b>P32</b>	67C
	<b>P37</b>	64
	<b>P627</b>	627
	<b>R627</b>	627R
	<b>P630</b>	630
	<b>P98</b>	98
PGP12	<b>P99</b>	299/99
PGD1/2	<b>P133/P99</b>	133L/H
PGD11/22/33	<b>P99/Dival</b>	1098-EGR
	<b>P289</b>	289
	<b>P1808</b>	1808

**\* Note – This is a guide only**



Natural and Propane Gas Regulation, Measurement and Controls



CSA 6.22a -2005 and ANSI Z21.80a Approved  
Ventless Indoor Applications

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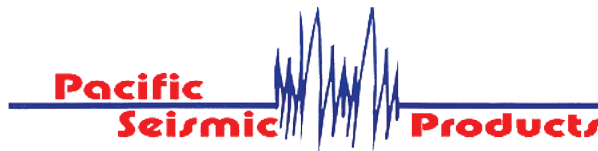
Regulators for Natural & Propane Gas  
High Pressure Regulators up to 5000 PSI  
Filter Regulators & Gauges

.....

## **MILLIKEN**

Lubricated two way & three way Plug Valves  
CSA/CGA Approved

.....



Seismic "Earthquake" Valves  
available from 3/4" to 8"

.....

## **METERS**

Diaphragm, Rotary, Turbine,  
Flange Kits and Accessories

Manufacturer standard warranty applies. For a copy please contact us.