

First Stage Regulators

P32* ▶



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

P37* ▶



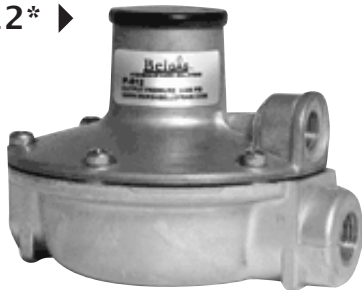
- ◀ Patented balance spindle design eliminates changes on outlet due to inlet fluctuations
- ◀ 1/2" FNPT 250 PSI

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

BelGASTM
A DIVISION OF MARSH BELLOFRAM

First Stage Regulators

Maximum inlet pressure 250 PSI ▶

Capacities up to 45.5 MBTUPH ▶

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

Temperature range -20° to 180° F ▶

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 PGS10 & 12 Second Stage Regulators.

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	34.2
	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

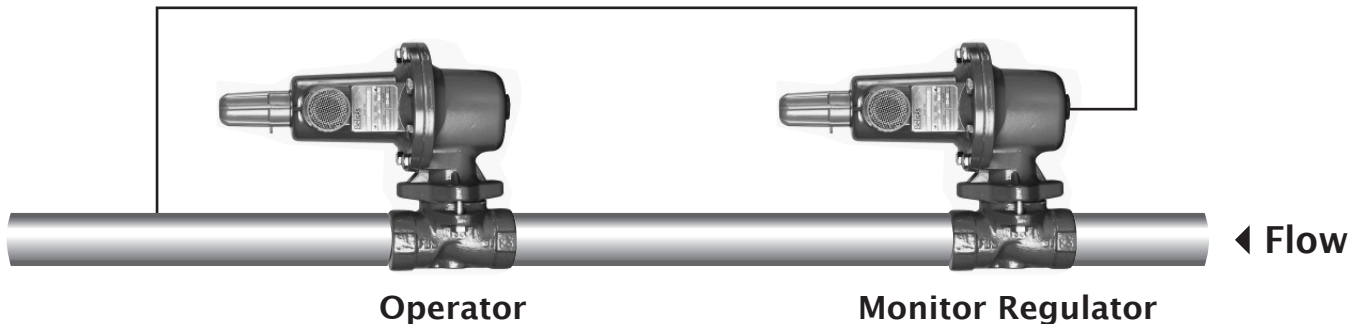
How to order:

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

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 Gas Regulators

Pilot Loaded

The PGP12 is a First Stage Regulator, but can also be used as Second Stage or with models PGS 10, 12, or 24

Maximum Inlet Pressure 250 PSI

Capacities up to 100 MBTUPH

Outlet Pressure Ranges: 2 to 30 PSI

Size: 2" FNPT

Features

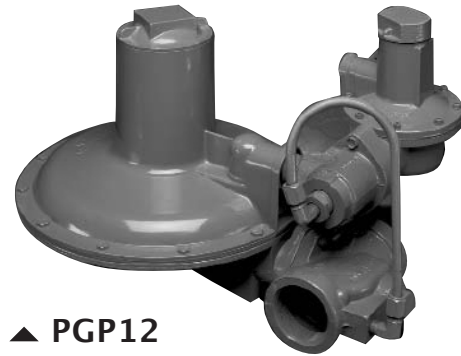
- Pilot Loaded design keeps outlet pressure constant despite varying flow rates
- Spring Loaded pilot with partial internal relief
- Field interchangeable pilot adjustment spring
- controlled internal bleed hole eliminates pulsation

Principle of Operation PGP Operating Schematic

Inlet pressure connected by tubing to the pilot regulator is utilized as supply pressure for pilot. Outlet pressure of the Pilot Regulator is applied to top of Main Regulator diaphragm. This loading pressure is a constant pressure equal to the desired outlet pressure plus the pressure required to counter-balance the Light Closing Spring.

Increasing Load Condition

As load increases downstream, the outlet pressure in lower diaphragm chamber is reduced and constant pressure above the main diaphragm forces the diaphragm downward. This motion is transmitted through the Main Regulator lever to open the main valve to the proper position to meet the flow rate. Gas simultaneously begins to flow across the Bleed Hole, which momentarily reduces the loading pressure. The pilot diaphragm senses the reduced loading pressure and the pilot valve opens to maintain a constant loading pressure.



▲ PGP12

- No down-stream sensing line required except for monitor
- Operator/Monitor versions available

Decreasing Load Condition

When the flow rate is decreased, the outlet pressure tends to increase. The pressure increase is reflected in the lower diaphragm chamber increasing pressure below the main diaphragm, thereby decreasing the differential pressure across the main diaphragm. This allows the closing spring to move diaphragm upward, closing the main valve and throttling gas flow. The pilot then senses a pressure rise in the loading pressure chamber and closes its valve.

No-Load (Lock-up) Condition

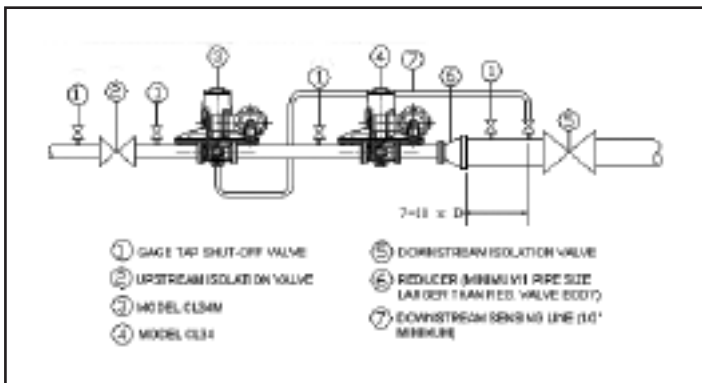
As load decreases to zero, the downstream pressure begins to rise which stops the flow of gas through the bleed hole in the main diaphragm. At the same time, the pressure across the main diaphragm is equalized, which allows the closing spring to close the main valve. The upward movement of the main diaphragm causes the loading chamber pressure to increase slightly, which in turn causes the pilot to close.

Capacity Chart

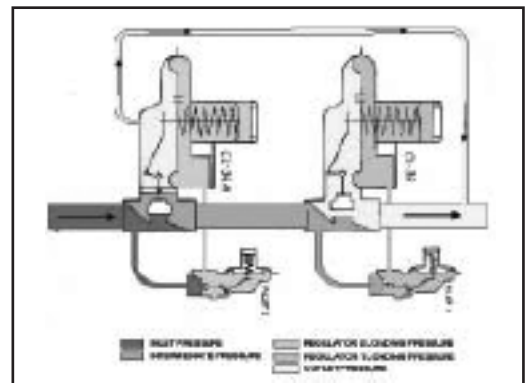
Maximum Flow Of Propane In Million BTUPH

Inlet Pressure	Outlet Pressure	Orifice Size			
		3/8"	1/2"	5/8"	3/4"
20 PSI	5 PSIG> Model #	7 PGPI2AD	13 PGPI2BD	13 PGPI2CD	24 PGPI2DD
30 PSI	11 PSIG> Model #	10 PGPI2AD	17 PGPI2BD	24 PGPI2CD	31 PGPI2DD
40 PSI	16 PSIG> Model #	12 PGPI2AD	21 PGPI2BD	29 PGPI2CD	38 PGPI2DD
60 PSI	26 PSIG> Model #	15 PGPI2AD	29 PGPI2BD	39 PGPI2CD	52 PGPI2DD
100 PSI	30 PSIG> Model #	25 PGPI2AD	44 PGPI2BD	61 PGPI2CD	80 PGPI2DD
150 PSI	30 PSIG> Model #	31 PGPI2AD	53 PGPI2BD	76 PGPI2CD	95 PGPI2DD

Operator/Monitor Installation Schematic



Operator/Monitor Pressure Schematic



Outlet spring ranges

(add spring to part number)

A- 1 to 8 PSI

B- 7 to 19 PSI

C- 9 to 30 PSI

First Stage Regulators

Direct Acting

PGD1 ▶

PGD2 ▶



◀ Maximum Inlet Pressure 250 PSI

◀ Capacities up to 220 MBTUPH

◀ Outlet Pressures from
11" WC to 30 PSI

◀ Size Ranges:

Model PGD1 – 1 1/2" FNPT

Model PGD11 – 2" & 3" Flanged

PGD11 ▶

PGD22 ▶

PGD33 ▶



Features

- Balanced valve design
- Built-in pulsation damper
- Available with high and/or low pressure shut-off valve (PGD11 only)
- Requires down-stream sensing line



ACTARIS

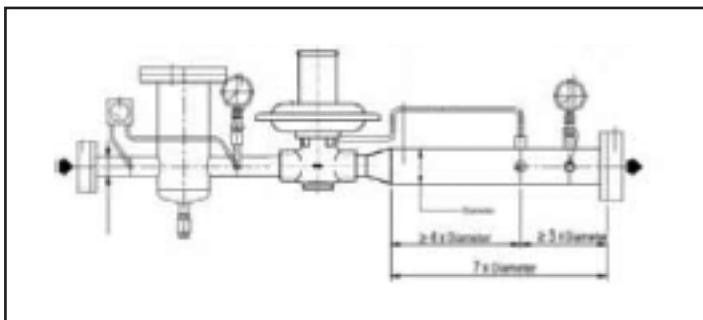
metering systems

Capacity Chart

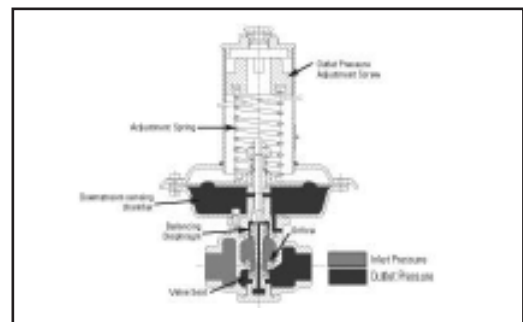
Maximum Flow Of Propane In Million BTUPH

Inlet Pressure	Outlet Pressure							
	11" WC		2 PSI		5 PSI		10 PSI	
	Model #	Capacity	Model #	Capacity	Model #	Capacity	Model #	Capacity
2 PSI	PGD1A PGD11A	15 27						
5 PSI	PGD1A PGD11A	25 54	PGD1B PGD11B	16 45				
10 PSI	PGD1A PGD11A	38 88	PGD1B PGD11B	24 75	PGD2C PGD22B	21 45	PGD2D PGD33C	
20 PSI	PGD1A PGD11A	50 150	PGD1B PGD11B	42 106	PGD2C PGD22B	38 78	PGD2D PGD33C	34 109
30 PSI	PGD1A PGD11A	60 152	PGD1B PGD11B	49 125	PGD2C PGD22B	52 99	PGD2D PGD33C	48 155
40 PSI	PGD1A PGD11A	73 156	PGD1B PGD11B	60 155	PGD2C PGD22B	57 99	PGD2D PGD33C	57 192
50 PSI	PGD1A PGD11A	87 187	PGD1B PGD11B	72 191	PGD2C PGD22B	67 143	PGD2D PGD33C	67 211
60 PSI	PGD1A PGD11A	100 216	PGD1B PGD11B	83 221	PGD2C PGD22B	78 154	PGD2D PGD33C	77 264

Installation Schematic



PGD1 Operating Schematic



Second Stage Regulators

Spring Loaded



PGS6 ▶



PGS10 ▶



PGS12 ▶



PGS24 ▶

- ◀ Maximum Inlet Pressure 125 PSI
- ◀ Capacities up to 31 MBTUPH
- ◀ Outlet Pressures from 11" WC to 7 PSI
- ◀ Size Ranges:
 - Model PGS6 3/4", 1", & 1 1/4"
 - Model PGS8 1" to 1 1/4"
 - Model PGS10 & PGS12
 - 1 1/4" to 2" FNPT
 - 2" & 3" Flanged
 - Model PGS24
 - 2" FNPT
 - 2" & 3" Flanged

Features

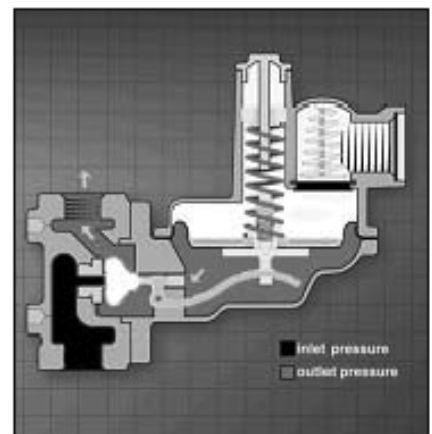
- Spring Loaded internal relief valve assembly
- Field interchangeable adjustment spring
- Controlled size breather orifice eliminates pulsation

Capacity Chart

Maximum Flow Of Propane In Million BTUPH

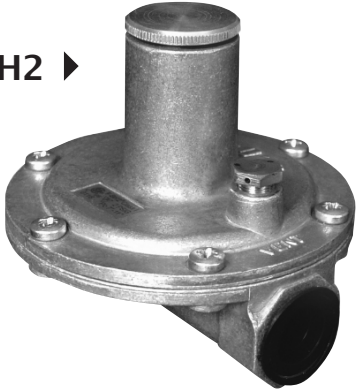
Inlet Pressure	Outlet Pressure					
	11" WC		2 PSI		5 PSI	
	Model #	Capacity	Model #	Capacity	Model #	Capacity
2 PSI	PGS6BA	1.1				
	PGS8BA	1.9				
	PGS10EA	3				
	PGS12EC	7				
	PGS24GC	8				
5 PSI	PGS6BA	1.9	PGS6BF	1.7		
	PGS8BA	2.7				
	PGS10EA	7				
	PGS12EC	10.3	PGS10EB	3.6		
	PGS24GC	14.2	PGS12ED	9.5		
10 PSI	PGS6BA	2.5	PGS6BF	2.7	PGS6BB	1
	PGS8BA	3.8				
	PGS10EA	12	PGS10EB	6		
	PGS12EC	16	PGS12ED	19	PGS12EE	4
	PGS24GC	21			PGS24GE	6.3
20 PSI	PGS24GC	31	PGS12ED	30	PGS12EE	7.1
					PGS24GE	8.2

Operating Principle



Third Stage Regulators

FBH2 ▶



Designed for installation inside of buildings on 2 psi to 11" wc applications, these regulators do not require a vent line.

◀ Maximum Inlet Pressure up to 5 PSI

◀ Size Ranges:

Model FBH2P – 1/2" FNPT

Model FBH3P – 3/4" FNPT

◀ Vent Limiter Included

FBH3 ▶



Capacity Chart

2 PSI to 11" WC		
FBH2P	1/2"	215 BTUPH
FBH3P	3/4"	460 BTUPH

univac

Relief Valves

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: ▶

for 1"

1 to 4.5 PSI

4 to 15 PSI

10 to 20 PSI

15 to 50 PSI

for 2"

.5 to 2.5 PSI

1.75 to 7 PSI

4 to 10 PSI

Weight: ▶

1" - 2 LBS

2" - 15 LBS

How to order:

289.1 or .2 plus spring range



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

Vapor Meters



M250 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 ATC ▲

- ◀ 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

Available sealed
"Weights and Measures"
Measurement Canada.

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 consult your local distributor.
For pressure correction factor to compensate for over 11"WC pressure 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 litres per hour LP,
multiply by 28.316

To convert SCFH to gallons per hour LP,
divide by 36.39

Industrial Vapor Meters



DATTUS

- ◀ **Sizes available:
2," 3," and 4" Flanged**
- ◀ **No moving parts**
- ◀ **Install in any orientation**
- ◀ **No oil required**
- ◀ **Fixed pressure factor standard**
- ◀ **Temperature compensation available**
- ◀ **Low frequency pulse output available
1 Pulse = 10 SCFH**
- ◀ **Maximum Inlet Pressure 175 PSI**

**Available sealed
"Weights and Measures"
Measurement Canada.**



Capacity Chart

Maximum Flow Of Propane In Million BTUPH

Model Number	2M	3M	5M	7M
2 PSI	5.5	9.0	14.0	20.1
5 PSI	6.5	10	16.6	23.4
10 PSI	8.3	12.6	20.9	29.4
20 PSI	11.8	17.6	29.4	41.3

For higher flows and inlet pressures please contact your local distributor.

Meter index reading in SCFH.

To convert SCFH to litres per hour LP,
multiply by 28.316

To convert SCFH to gallons per hour LP,
divide by 36.39

General Information

Information about LP-Gas*

	Propane	Butane
Formula	C ₃ H ₈	C ₄ H ₁₀
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

