TOC

R-1341
Rev. 5

Model 1100
Pilot Operated Regulators

Equimeter
INCORPORATED

A BTR Company

Taking the Measure of Tomorrow

Model 1100
Pilot Operated Regulators

The Equimeter Model 1100 Pilot Operated Regulator is the most versatile of all 2″ pilot operated regulators available to the gas industry. With one assembly only, it can be used for any installation requiring accurate control where the inlet pressure does not exceed 400 psi with an outlet pressure range from inches of water to 100 psi and flows up to 400,000 cubic feet per hour.

Six springs for the pilot, quickly interchangeable, cover the complete controlled pressure range—much greater than competitive models—with no sacrifice in accuracy or performance.

One basic assembly—2″—screwed or flanged.

Its many plus features make it a superior regulator which can be used to advantage in an amazing variety of applications.

- **Wider Application**—inches water to 100 psi controlled pressure—means less different types to stock and service.
- **Greater Capacity**—balanced valve construction passes 114,000 CFH at 100 psi to ounces—replaces larger, more costly regulators to reduce the expense of whole installations.
- **Proven Performance**—straight line control from minimum to maximum flow. Stable operation on changing loads, positive lock-up on zero flow.

Materials of Construction

Diaphragm Covers and Spring Cage . . . . . Cast Iron (ASTM A126-71 Class B)
Pilot Loading Chamber, Covers, and Spring Cage . . . Cast Iron (ASTM A126-71 Class B)
Diaphragm Plates . . . . . Steel
Diaphragms . . . . . Buna-N with Nylon Fabric Reinforcement
Valve Stems . . . . . Brass or Stainless Steel
Removeable Seats (Orifices) . . . . . Brass or Stainless Steel
Soft Seat Valve Material . . . . . Buna-N or Polyurethane, molded in Holder
Holder for Molded Valve . . . . . Steel
Valve Retainer . . . . . Brass or Stainless Steel
Pilot Orifice . . . . . Stainless Steel
Pilot Valve Disc . . . . . 3/16″ dia. Polyurethane
Tubing . . . . . 1/4″ Steel
Tubing Connections . . . . . Compression Type Tubing Fittings
Bodies . . . . . See Table below

Maximum Inlet Pressure— 2″ Pipe Size Only

Model	Regulator Body Type	461 Body Materials	Body Working Pressure	Maximum Inlet Pressure	Shipping Weight Lbs.
1100-31	Screwed End	CAST IRON (ASTM A126-71 Class B)	250 psi	250 psi	75
1100-34	Flanged ANSI 125 lb. FF	CAST IRON (ASTM A126-71 Class B)	175 psi	175 psi	85
1100-37	Flanged ANSI 250 lb. RF	DUCTILE IRON (ASTM A395-71 gr 60-40-18)	575 psi	400 psi	90
1100-38	Flanged ANSI 300 lb. RF	CAST STEEL (ASTM A216-70a gr WCB)	720 psi	400 psi	93
1100-39	Flanged ANSI 600 lb. RF	CAST STEEL (ASTM A216-70a gr WCB)	1200 psi	400 psi	95

Outlet Pressure Range

3″ w.c. to 100 psi
To cover this range, it is only necessary to change the spring in the pilot regulator; the main regulator assembly is not disturbed. The table gives the range for each spring.

Color of Spring	Outlet Pressure Range
Aluminum	3″-28″ w.c.
Gray	½- 5 psi
Green	2- 12 psi
Red	5- 25 psi
Brown	10- 50 psi
Black	20-100 psi

Temperature Limits

The Model 1100 Pilot Operated Regulator may be used for flowing gas temperatures from – 20°F to 150°F.

Buried Service

The Model 1100 Pilot Operated Regulator is *not* recommended for buried service.

Minimum Differential

The minimum operating differential (inlet pressure minus outlet pressure) is approximately 2 psi.

Installation

1 The drawings on page 11 show the normal installation position, which permits both the regulator and the pilot valves to be inspected easily and quickly. If desired, the regulator may be inverted or placed in a vertical line with flow in either direction. It is advisable to include a by-pass for maintenance use.

2 Make certain inlet line has been purged thoroughly to remove all matter which will damage regulator valves or clog pilot lines. Wherever possible, install strainer in inlet line. A small strainer is included in inlet tee to pilot, which should be checked periodically.

3 Place regulator in line with high pressure connected to inlet side—end through which inside valve is visible. Unions or couplings will facilitate maintenance on screwed end models.

4 From ½" union provided, extend pipe or tubing to point in outlet line at least 18 inches downstream from regulator or from swage where outlet line increases. Include valve in line, normally open.

5 Remove shipping pin and replace plug (refer to page 9).

6 Turn on inlet gas slowly. Use pilot adjustment screw to adjust for desired outlet pressure...turn clockwise to increase and counterclockwise to decrease pressure. Only adjust when there is some gas flow. Do not adjust with no flow. Tighten locknut and replace cover when adjustment is completed.

7 It is the user's responsibility to assure that all regulator vents and/or vent lines exhaust to a non-hazardous location away from **any potential** sources of ignition. Where vent lines are used, it is the user's responsibility to assure that each service regulator is individually vented and that common vent lines **are not** used.

8 The ¼" vent connection from pilot should be piped independently to safe dispersal point on interior installations. The vent must be protected to avoid the entry of water or other matter which could interfere with the proper operation of the regulator.

9 To change pilot springs or inspect regulator or pilot, regulator must be by-passed and shut-off.

10 When gas has high vapor content and the pressure drop across regulator is high, freezing may occur at the pilot orifice to interrupt loading pressure, causing regulator to close. Either install a small dehydrator in line from body to pilot inlet (¼" optional connection on body may be used) or reduce the pressure drop across the regulator by using multiple stage reduction. Allow as much space as possible between regulators for temperature recovery.

11 If regulator fails to operate correctly, check inlet tubing to pilot for clogging or freezing.

Monitoring

The Model 1100 can be used as a monitor; a standby regulator installed in series which assumes control if a failure in the operating regulator causes the outlet pressure to exceed the set point.

The 1100 can be used to monitor another 1100 or to monitor a different regulator.

When any standard pilot operated regulator, such as a Model 1100, is used as a monitor, a load-limiting regulator should be installed in the inlet supply to the pilot. Its purpose is to prevent chattering in the small relief valve (ball-and-spring type) located in the bottom end of the pilot. Use a small capacity regulator such as a Equimeter 041 with 3/32" or ⅛" orifice. Adjust it for a set-point 5 psi more than the set-point of the regulator.

When a Model 1100 is used to monitor a regulator with an identical inner valve (another Model 1100), the **total maximum capacity** through both regulators can be figured at 70% of the capacity of one of them alone. This applies with the monitor located either up or downstream.

For additional information to help with your monitoring requirements, please contact your Equimeter Sales Office.

Air Loading

Air loading refers to the use of compressed air or instrument air to provide motor power in a pilot operated regulator. Normally this is done with a small amount of gas from the inlet and the 1100, as well as most pilot operated regulators, are arranged in this way. However, there are applications in which this usage of inlet gas is undesirable and for those an air loaded Model 1100 provides the answer.

Gases, such as coke oven and sewage sludge gas, often contain large amounts of impurities which tend to clog small orifices and moving parts. Air loading keeps trouble of that kind out of the pilot system.

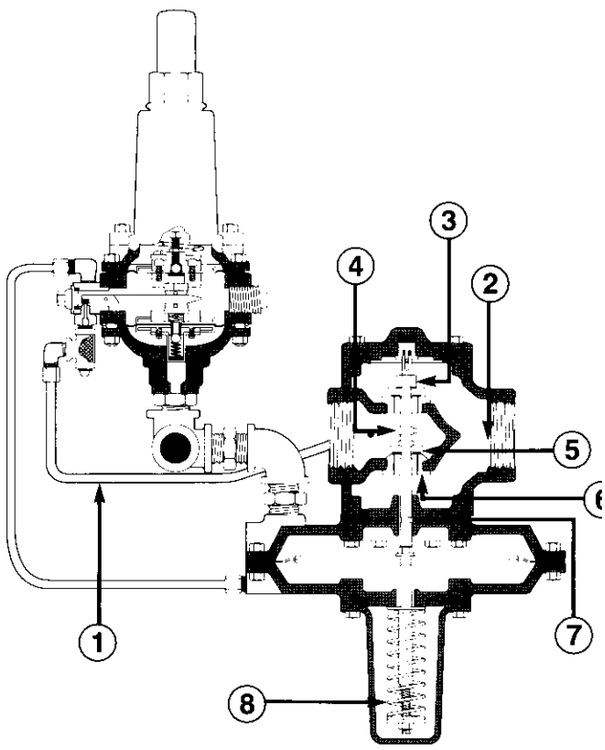
Air loading also insures normal operation where there is not enough differential between the inlet and outlet pressure of the gas. That is the case where inlet is normally only slightly higher than outlet, or it could be the case where the inlet to a system at times drops until it is almost the same as the oultet pressure. Where such conditions exist, an air loaded Model 1100 will provide the required amount of motor power at all times for correct operation.

The air loaded 1100 is almost identical to the standard unit. Dimensionally it is the same. The differences are inside the pilot and are changes which are taken to fully isolate the air from the gas and to provide exhaust to atmosphere for the spent air. Although these changes can be made in the field, it is probably best to order complete air loaded units from the factory.

For additional information on an air loaded Model 1100 to fill your requirements please contact your Equimeter Sales Office.

Construction and Design Features

Regulator Unit



1 **Unitized assembly**—separate regulator and pilot units assembled as one—either can be serviced or replaced without disturbing the other.

2 **Flow contoured body**—enlarged gas exit areas for smoother, greater flow. Side inspection plates.

3 **Accessible valve assembly**—readily removable through top opening for inspection or replacement without disturbing other parts.

4 **Balanced valves**—offset effect of high or varying inlet pressure—provide increased capacity. Can be quickly adjusted for complete shut-off. Two orifice sizes available.

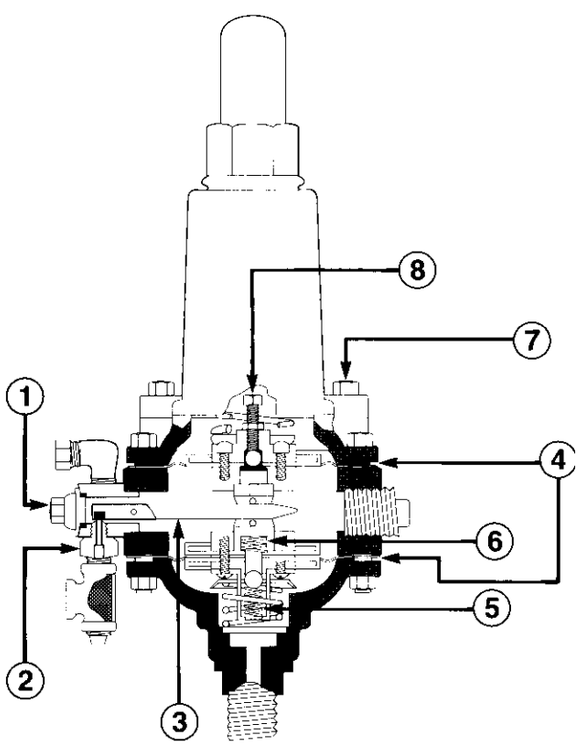
5 **Molded valve discs**—cannot blow out.

6 **Removable orifices**—damaged orifices can be readily replaced with regulator in line.

7 **O-ring seal**—isolates control chamber from body and assures accurate control from downstream connection.

8 **Positive closing**—always compressed spring guarantees closing on failure and tight lock-up.

Pilot Unit



1 **Simplified assembly**—by removing two screws, whole valve assembly can be removed as a unit from the outside for inspection or service, without disturbing other parts.

2 **Exterior orifice**—the likely trouble spot—the orifice—where freezing or clogging might occur, is placed outside, where you can get at it quickly—no internal tubes to plug up.

3 **Simple valve leverage**—quickly removable as part of orifice unit. Provides greater accuracy and better lock-up than straight connection—avoids complicated parts requiring accurate adjustment.

4 **Twin diaphragms**—molded synthetic diaphragms remove as a unit.

5 **Internal relief unit**—guards against overpressure in case pilot valve is damaged or blocked open. Limits maximum differential between loading and controlled pressures.

6 **Lock-up force limit**—automatically limits maximum closing force on valve lever to prevent damage, when pilot is subjected to abnormally high lock-up pressure.

7 **Spring unit**—remove three screws to change springs without disturbing diaphragm assembly.

8 **Sensitivity adjustment**—gives micro-trimming of pilot for maximum possible sensitivity.

Typical Performance Curves

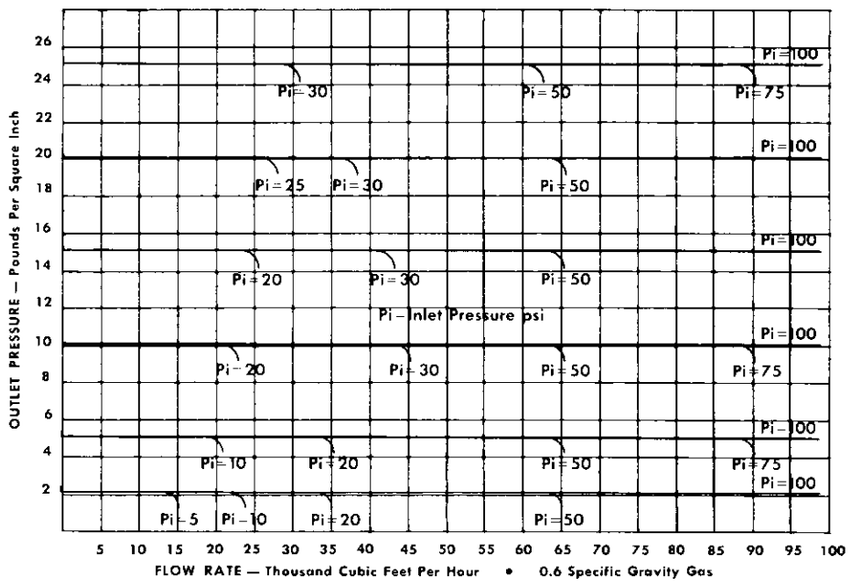
Equimeter INCORPORATED
A BTR Company

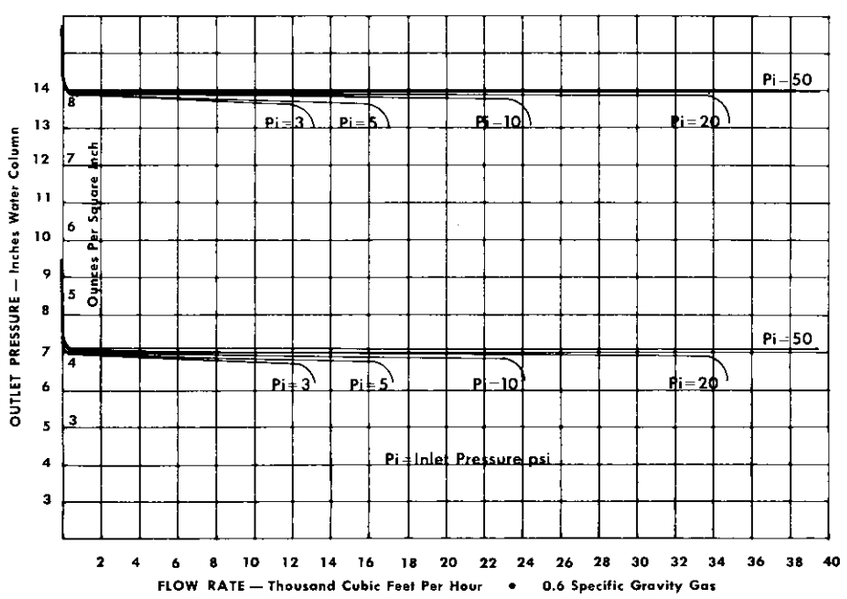
These performance curves are typical of Model 1100 operating characteristics. The outlet pressure was set for each group of curves and was not further adjusted during changes in inlet pressure or flow rate.

The pounds-to-pounds group of curves show no perceptible variation in the set pressure caused either by inlet or flow change and the controlled pressure is constant from low to maximum flow, where a sudden drop shows the regulator to be wide open.

In the pounds-to-inches water column curves, a slight variation shows on changing inlet pressure and the permissible variation from increasing flow is limited to half an inch water column at maximum flow rates.

In all cases the regulator at zero flow closes tightly with three inches water column maximum increase in the controlled pressure.





Caution: Turn gas on slowly. If an outlet stop valve is used, it should be opened first. Do not overload the diaphragm with a sudden surge of inlet pressure. Monitor the outlet pressure during start-up to prevent an outlet pressure overload.

Model 1100 Pilot Operated Regulators
Capacity Tables

Capacity 1100 in 1000 SCFH of Natural Gas (0.6 Specific Gravity—14.65 psia—60°F)

Inlet Pressure psi	Outlet Pressure psi	Double Seat Balanced		Single Seat Balanced	
		1" Valve	11/16" Valve	1" Valve	11/16" Valve
3	7" w.c.	12.6	6.3	8.2	4.1
	14" w.c.	12.2	6.1	7.9	3.9
	1 psi	11.0	5.5	7.1	3.5
4	7" w.c.	14.8	7.4	9.6	4.8
	14" w.c.	14.4	7.2	9.3	4.6
	1 psi	13.6	6.8	8.8	4.4
	2 psi	11.4	5.7	7.4	3.7
5	7" w.c.	16.6	8.3	10.8	5.4
	14" w.c.	16.4	8.2	10.6	5.3
	1 psi	15.6	7.8	10.1	5.0
	2 psi	14.0	7.0	9.1	4.5
	3 psi	11.8	5.9	7.6	3.8
6	7" w.c.	18.2	9.1	11.8	5.9
	14" w.c.	18.0	9.0	11.7	5.8
	1 psi	17.6	8.8	11.4	5.7
	2 psi	16.2	8.1	10.5	5.2
	4 psi	12.2	6.1	7.9	3.9
8	7" w.c.	21.2	10.6	13.7	6.9
	14" w.c.	21.0	10.5	13.6	6.8
	1 psi	20.8	10.4	13.5	6.7
	2 psi	19.8	9.9	12.8	6.4
	4 psi	17.2	8.6	11.1	5.6
	6 psi	12.8	6.4	8.3	4.1
10	7" w.c.	23.8	11.9	15.4	7.8
	14" w.c.	23.6	11.8	15.3	7.7
	1 psi	23.4	11.7	15.2	7.6
	3 psi	22.2	11.1	14.4	7.2
	5 psi	19.8	9.9	12.8	6.4
	7 psi	16.0	8.0	10.4	5.2
12	7" w.c.	26.2	13.1	17.0	8.5
	14" w.c.	26.0	13.0	16.9	8.4
	1 psi	25.8	12.9	16.7	8.3
	3 psi	25.2	12.6	16.3	8.2
	5 psi	23.4	11.7	15.2	7.6
	7 psi	20.8	10.4	13.5	6.7
	10 psi	14.0	7.0	9.1	4.5
15	1 psi & less	29.4	14.7	19.1	9.5
	3 psi3	29.0	14.5	18.8	9.4
	5 psi	28.0	14.0	18.2	9.1
	8 psi	25.0	12.5	16.2	8.1
	12 psi	17.8	8.9	11.5	5.7
20	3 psi & less	34.6	17.2	22.5	11.2
	6 psi	34.0	17.0	22.1	11.0
	10 psi	31.4	15.7	20.4	10.2
	15 psi	24.2	12.1	15.7	7.8
25	6 psi & less	39.6	19.8	25.7	12.8
	10 psi	38.4	19.2	24.9	12.4
	15 psi	34.4	17.2	22.3	11.1
	20 psi	26.2	13.1	17.0	8.5
30	9 psi & less	44.4	22.2	28.8	14.4
	15 psi	42.0	21.0	27.3	13.6
	20 psi	37.2	18.6	24.1	12.1
	25 psi	28.0	14.0	18.2	9.1

Inlet Pressure psi	Outlet Pressure psi	Double Seat Balanced		Single Seat Balanced	
		1" Valve	11/16" Valve	1" Valve	11/16" Valve
40	14 psi & less	54.4	27.2	35.3	17.6
	20 psi	52.6	26.3	34.2	17.1
	25 psi	48.6	24.3	31.6	15.8
	30 psi	42.2	21.1	27.4	13.7
50	20 psi & less	64.4	32.2	41.8	20.9
	25 psi	62.8	31.4	40.8	20.4
	30 psi	59.6	29.8	38.7	19.3
	40 psi	46.6	23.3	30.3	15.1
60	25 psi & less	74.4	37.2	48.3	24.1
	30 psi	73.2	36.6	47.5	23.8
	40 psi	66.0	33.0	42.9	21.4
	50 psi	50.8	25.4	33.0	16.5
80	35 psi & less	94.2	47.1	61.2	30.6
	40 psi	93.2	46.6	60.5	30.3
	50 psi	87.8	43.9	57.0	28.5
	60 psi	77.2	38.6	50.1	25.1
100	45 psi & less	114	57.2	74.3	37.1
	50 psi	113	56.8	73.8	36.9
	60 psi	109	54.6	70.9	35.5
	80 psi	86.8	43.4	56.4	28.2
125	60 psi & less	139	69.6	90.4	45.2
	80 psi	130	65.2	84.7	42.3
	100 psi	107	53.5	69.5	34.7
150	75 psi & less	164	82.0	106	53.3
	80 psi	162	81.3	105	52.8
	100 psi	151	75.7	98.4	49.2
175	85 psi & less	189	94.8	123	61.6
	100 psi	185	92.7	120	60.2
200	100 psi & less	214	107	139	69.6
225		239	119	155	77.8
250		264	132	171	85.9
300		314	157	204	102
350		364	182	236	118
400		414	207	269	134
"K" FACTORS		**2000**	**1000**	**1300**	**650**

Size each regulator on the basis of the **minimum expected inlet pressure** and **maximum required outlet pressure.**

For best overall performance use full table capacity values.

For larger capacity use Model 441-VPC (Bulletin R 1370).

For higher pressure see Model 1200 (Bulletin R 1342).

Note: The above performance data is based on normal testing at 70°F flowing temperature. Changes in performance can occur at extreme low flowing temperatures.

Maximum Emergency Pressures

The maximum pressure the regulator inlet may be subjected to under abnormal conditions without causing damage to the regulator is:

Screwed Ends Model 1100 . . . . . 275 psi
ANSI 125 lb. Model 1100 . . . . . 195 psi
ANSI 250 lb., 300 lb. & 600 lb. Model 1100 . . . . . 450 psi

The maximum pressure the downstream connection (control line) may be subjected to without causing damage to the internal parts of the regulator is set-point plus 10 psi (set-point is defined as the outlet pressure a regulator is adjusted to deliver).

If any of the above pressure limits are exceeded, the regulator must be taken out of service and inspected. Damaged or otherwise unsatisfactory parts must be repaired or replaced.

The maximum pressure that can be safely contained by the diaphragm case and pilot is 165 psi (safely contained means no leakage as well as no bursting).

Before using any of the above data, make sure this entire section is clearly understood.

This data is meant to conform with "Title 49 of the Code of Federal Regulations, Department of Transportation, Part 192" rule 192.195 (b) (1), and the applicable section of the "ASME Guide for Gas Piping Systems—1976".

Overpressurization Protection

Protect the downstream piping system and the regulator's low pressure chambers against overpressurization due to possible regulator malfunction or failure to achieve complete lockup. The allowable outlet pressure is the lowest of the maximum pressures permitted by federal codes, state codes, Equimeter Bulletin RDS-1498, or other applicable standards. The method of protection can be a relief valve, monitor regulator, shutoff device, or similar mechanism.

Capacities at Other Pressures

Capacity for pressures not listed in the table on Page 6 can be calculated with the following formulae:

1. $Q = K\sqrt{P_o(P_1 - P_o)}$ . . . . . (for $\frac{P_1}{P_o}$ less than 1.894)

2. $Q = \frac{KP_1}{2}$ . . . . . (for $\frac{P_1}{P_o}$ greater than 1.894)

Q = maximum capacity of the regulator (in SCFH of 0.6 specific gravity natural gas).
K = the **"K" factor**, the regulator constant (from bottom of table, Page 6).
P_1 = **absolute** inlet pressure (psia).
P_o = **absolute** outlet pressure (psia).

Other Gases

Model 1100 Pilot Operated Regulators are mainly used on natural gas. However, they perform equally well on LP gas, nitrogen, dry CO_2, air and others.

OTHER GASES	CORRECTION FACTOR
Air (Specific Gravity 1.0)	0.77
Propane (Specific Gravity 1.53)	0.63
1350 BTU Propane-Air Mix (1.20)	0.71
Nitrogen (Specific Gravity 0.97)	0.79
Dry Carbon Dioxide (Specific Gravity 1.52)	0.63
For other noncorrosive gases: CORRECTION FACTOR =	$\sqrt{\frac{0.6}{\text{Specific Gravity of the Gas}}}$

For use with gases not listed above, please contact your Equimeter representative or Industrial Distributor for recommendations.

Periodic Inspection: Regulators are pressure control devices with numerous moving parts subject to wear that is dependent upon particular operating conditions. To assure continuous satisfactory operation, a periodic inspection schedule must be adhered to with the frequency of inspection determined by the severity of service and applicable laws and regulations.

How it works

Why Pressure Loading

In the conventional spring or weight loaded regulator, the outlet pressure being controlled is applied to one side of a diaphragm, and is opposed by the balancing force of a compressed spring or weights. The diaphragm itself must withstand the difference in pressure between the controlled pressure on one side and atmospheric pressure on the spring or weight side.

Since this differential increases as the outlet pressure increases, the diaphragm is made heavier and smaller, decreasing its sensitivity and increasing its friction. This fact, together with the change in diaphragm area and loss of spring force as a regulator opens, accounts for the rapid fall-off in the controlled pressure as the flow rate increases.

This undesirable characteristic limits the capacity potential of a regulator, since the maximum capacity is then limited by the permissible fall-off in the controlled pressure.

Constant Pressure Loading

As a solution, pressure loading was introduced. An accurately controlled constant pressure, supplied by reducing the available line pressure to the required value by a small regulator, is applied to one side of the diaphragm to balance the pressure being controlled on the other.

This pressure, termed the **loading pressure**, is usually slightly higher than the controlled pressure. However, the pressure differential across the diaphragm is relatively small even at high controlled pressures, so that a large flexible diaphragm may be used to provide sensitivity and improved accuracy.

The regulator diaphragm is still the control diaphragm, and the valve is positioned by the change in differential pressure across the diaphragm caused by a decrease or increase in the controlled pressure; the loading pressure being constant.

This method still requires some fall-off in the controlled pressure to secure maximum valve travel.

Variable Pressure Loading

The principle of operation used in the Model 1100 is a further refinement of pressure loading, which provides the greatest degree of sensitivity and control accuracy. Instead of being constant, the loading pressure is varied to correct for any change in the controlled pressure. Variable pressure loading is usually called pilot (relay) operation.

The pilot control diaphragm becomes the control diaphragm and the regulator diaphragm is only a means to position the valve. If the controlled pressure changes, the pilot valve changes the loading pressure to position the regulator valve as necessary to restore the controlled pressure to its set point. This restoration of the controlled pressure on increased flow rates is not possible in spring or constant pressure loaded types, since some fall-off is required to open the valve.

This system insures positioning of the regulator valve in response to flow changes to maintain the controlled pressure at the desired point from zero flow to the maximum potential capacity of the regulator.

Model 1100 Operation

The operation of the Model 1100 is very simple and may be observed in the operating diagram in which the inlet pressure shows ▬, the loading pressure ▒ and the controlled pressure ▒. See illustration on page 9. The regulator is assembled as shown complete with tubing connections, except for illustration the pilot assembly has been moved off the regulator centerline.

The regulator is installed with the inlet pressure connected to the ▬ side. One connection is required from the point shown to the downstream line. This may be ½" pipe or smaller tubing.

The **regulator spring** has been factory set to close the valve and requires no further adjustment.

The downstream connection transmits the controlled pressure to the body side of the **regulator diaphragm** and to the **pilot control diaphragm chamber**. The controlled pressure is balanced by the **pilot valve spring**, which is adjusted for the required controlled pressure by turning the **adjustment screw** in to increase, or out to decrease.

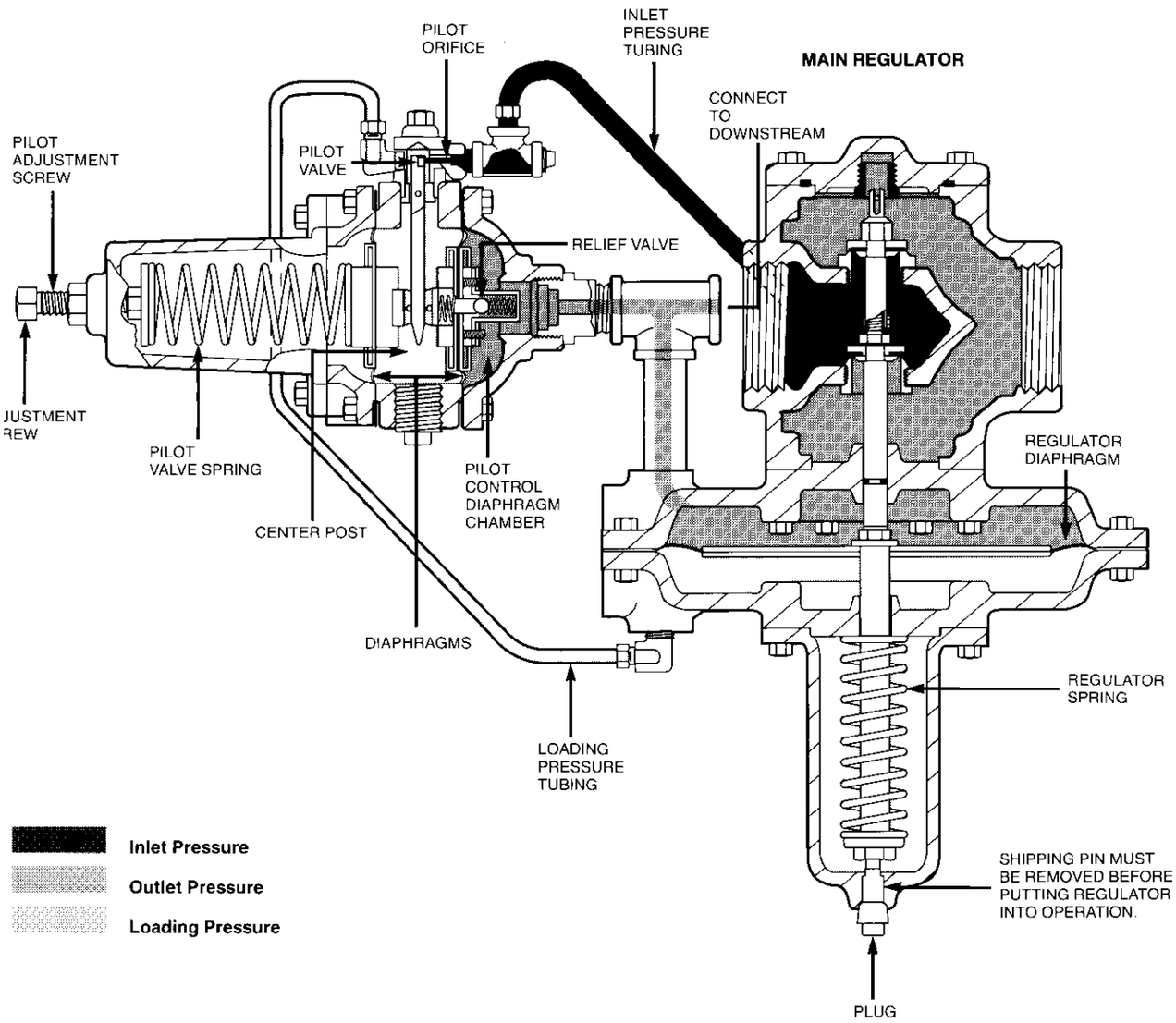
Tubing from the inlet side of the body conveys **inlet pressure** through a small screen strainer to the **pilot orifice**. The **pilot valve** reduces this pressure to the required loading pressure which is contained within the loading pressure chamber by the **diaphragm**. Both diaphragms are connected to the yoke assembly, so that the force of the variable loading pressure is off-set and imparts no motion to the pilot valve. **Tubing** conveys the **loading pressure** to the closing spring side of the regulator diaphragm. There is a slight continuous bleed from the loading chamber to the control chamber through orifice.

A decrease in controlled pressure lowers the pressure on the regulator diaphragm and simultaneously on the control diaphragm, permitting the pilot spring to open the pilot valve and increase the loading pressure to the regulator diaphragm, which opens the valves to increase the flow and restore the controlled pressure to its set point.

An increase in controlled pressure moves the pilot valve toward its seat and decreases the loading pressure to the regulator diaphragm, which permits the valves to reduce the flow through the regulator until the set pressure is restored, or to close tightly at zero flow.

A **relief valve** guards against overpressure in case pilot valve is damaged or blocked open, by limiting the maximum differential possible between the loading and controlled pressures.

The **center post** of the pilot diaphragm yoke is spring balanced to limit the maximum closing force on the pilot valve lever. This prevents any damage to the valve lever, if the pilot valve is suddenly subjected to a high closing pressure, possibly created by a high back pressure in an open piping system, or quick acting shut-off valves in a closed system.



Caution: It is the user's responsibility to assure that all residential service regulator vents and/or vent lines exhaust to a non-hazardous location away from **any potential** sources of ignition.

Fully Interchangeable Valve Assemblies

Valve assemblies can be interchanged with the regulator in place in the line.

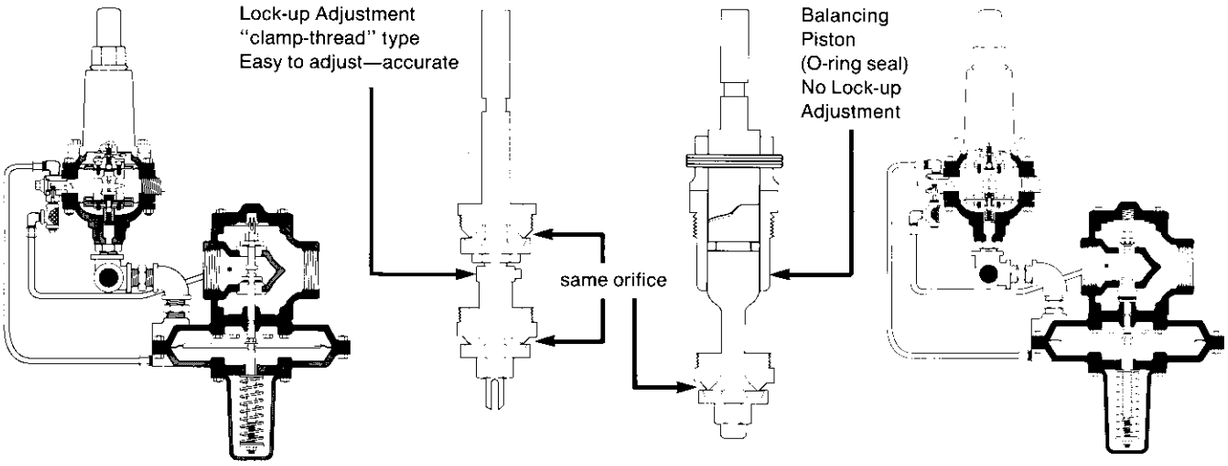
Use the 11/16" Single Seat initially for small loads. Then in the future, as loads grow, change only the Valve Assembly, up to 1" Double Seat for maximum capacity.

MOLDED SOFT SEATS for positive tight shut-off will not blow out

Lock-up Adjustment
"clamp-thread" type
Easy to adjust—accurate

Balancing
Piston
(O-ring seal)
No Lock-up
Adjustment

same orifice



2" Model 1100
Double Seat
Balanced Valve

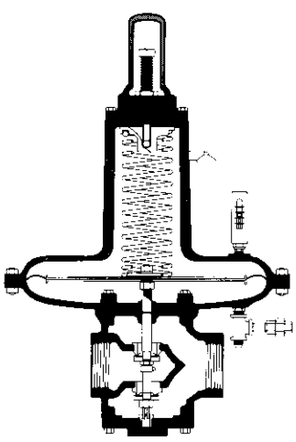
Double Seat
Balanced Valve
1" or 11/16"

Single Seat
Balanced Valve
1" or 11/16"

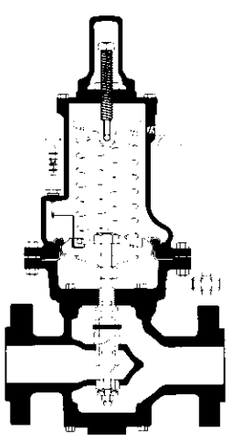
2" Model 1100
Single Seat
Balanced Valve

The 461 Family of Regulators

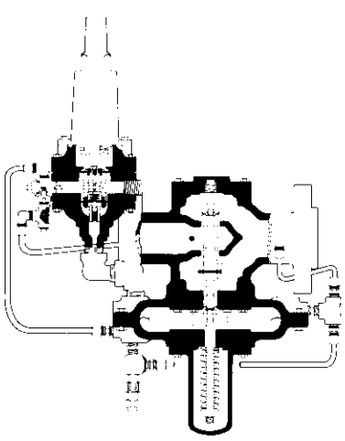
Other Models Which Use Type 461 Balanced Valves



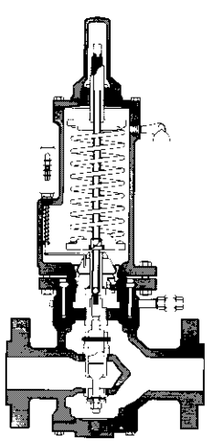
2" Model 461-S
Outlet Pressures in w.c. to 10 psi
See bulletin R 1330



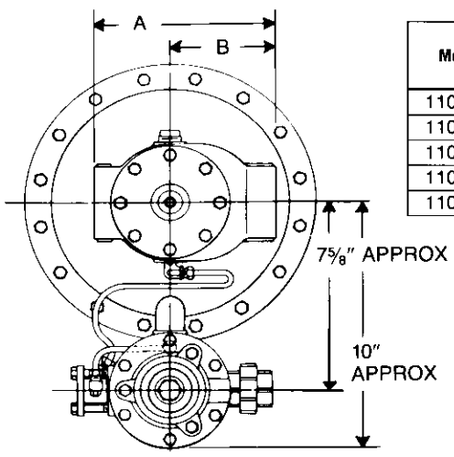
2" Model 461-57S
"Roll-Out" Diaphragm
Outlet Pressures 3 to 100 psi See Bulletin R 1331



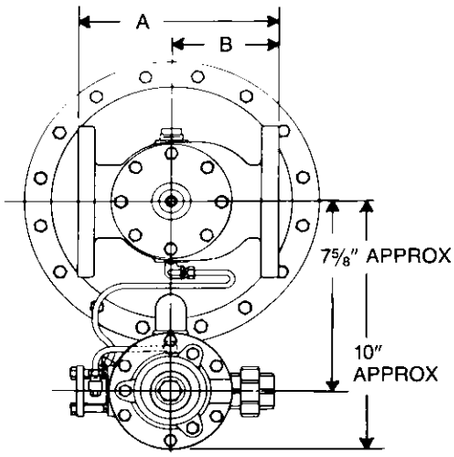
2" Model 1200
All steel construction Outlets to 600 psi
See Bulletin R 1342



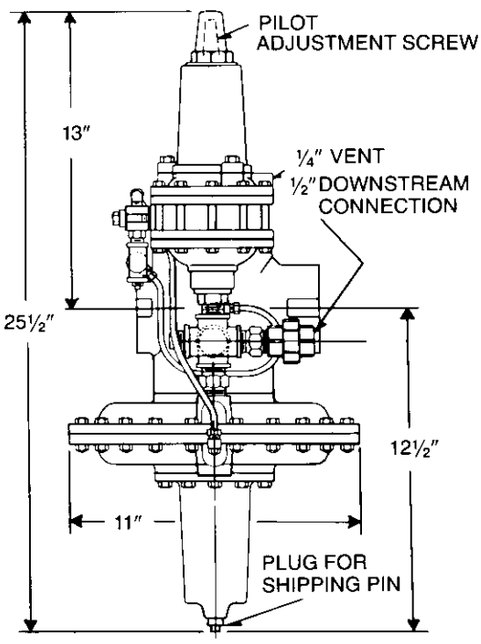
2" Model 461-X57
"Roll-Out" Diaphragm
Outlet Pressures
75 to 250 psi
See Bulletin R 1332



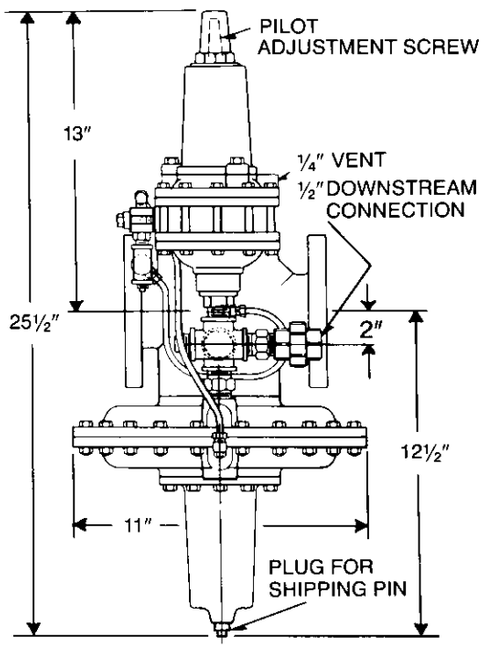
Model	A	B	Shipping Weight Lbs.
1100-31	6½	3¾	75
1100-34	10	5¼	85
1100-37	10½	5½	90
1100-38	10½	5⅝	93
1100-39	11¼	6	95



SCREWED ENDS



FLANGED ENDS



How to Order

Specify:

1. **2" Model 1100**
2. Regulator body type and material (see table on page 2).
3. Outlet pressure and spring (see table on page 2).
4. Inlet pressure (also, maximum and minimum inlet pressures, if available)
5. Capacity required (scfh).
6. Type of gas (natural gas, propane, air, etc.).
7. Trim (standard or stainless steel).
8. Double or single port balanced valve (pages 6 and 10).
9. 1" or 1 1/16" valve (page 6).