
Model 141-A Field Regulator




SENSUS

141-A Field Regulator

The 141-A Field Regulator is for high pressure work such as feeding intermediate and small volume loads from gas transmission lines.

Use this field regulator on pipeline taps serving remote farm, domestic, commercial, and industrial customers. The 141 is excellent for single and double stage reduction ahead of the service regulator.

Use them also on other kinds of high pressure loads; pro-

ducer field work, high pressure burners, compressed air systems, etc. They are meant for "pounds to pounds" cuts on not only natural gas but air, LP gas, nitrogen, dry CO₂, and others as well.

The 141 design combines simplicity of operation with rugged construction. The result is "staying power" to meet the demands of high pressure, rough handling, and exposure to the elements.

Spring Ranges

| Outlet Pressures | Spring Part Number | Spring Color | Diaphragm | Diaphragm Assembly |
|------------------|--------------------|--------------|--------------------------------|--|
| 5 to 12 psi | 138-02-021-00 | Yellow | 1/16" thick (141-10-150-01) | Standard Upper Diaphragm Plate (141-10-022-02) |
| 10 to 50 psi | 138-02-021-02 | Aluminum | | |
| 50 to 150 psi | 138-02-021-04 | Tan | 1/8" thick (141-10-150-00) | High Pressure Upper Diaphragm Plate and Loading Ring (141-10-022-03) and (141-10-002-00) |
| 100 to 250 psi | 138-02-021-11 | Gray | | |
| 200 to 400 psi | 138-02-021-11 | | | |

*1/8" orifice only. Use only with obsolete 140 and 3/4", 1", 1 1/4", 1 1/2", 141. + inner spring.

Maximum Inlet Pressures

| 1/8" H.P. | ORIFICE SIZE | | | | | |
|----------------------------|--------------|------|------|------|------|------|
| | 1/8" | 1/4" | 3/8" | 1/2" | 5/8" | 7/8" |
| MAXIMUM INLET PRESSURE psi | | | | | | |
| 1500 | 1000 | 1000 | 400 | 200 | 150 | 50 |

Pipe Sizes

| |
|-------------|
| Screwed NPT |
| 2" |

Temperature Limits

The 141-A Field Regulator may be used for flowing gas temperatures from -20°F to 150°F.

Buried Service

The 141-A Field Service Regulator is **not** recommended for buried service.

NON-RISING
ADJUSTMENT
SCREW

- With protective cap

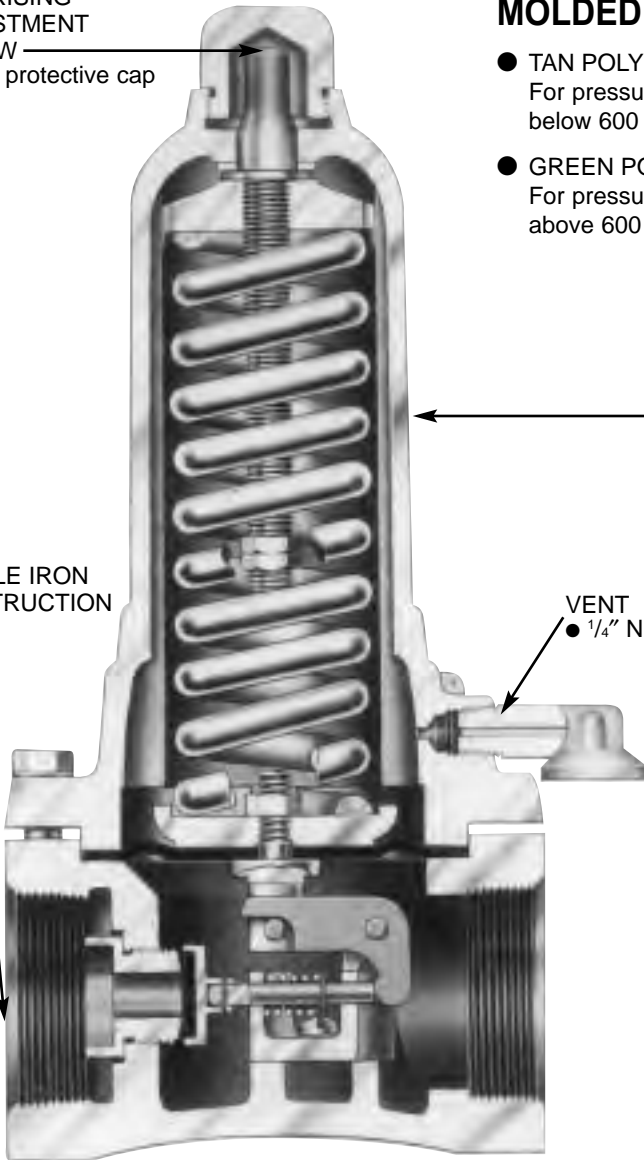
MOLDED SOFT SEATS

- TAN POLYURETHANE (85 to 95 Durometer "A")
For pressure cuts below 300 psi and/or inlet pressures below 600 psi.
- GREEN POLYURETHANE (52 to 60 Durometer "D")
For pressure cuts above 300 psi and/or inlet pressures above 600 psi.

CAST IRON

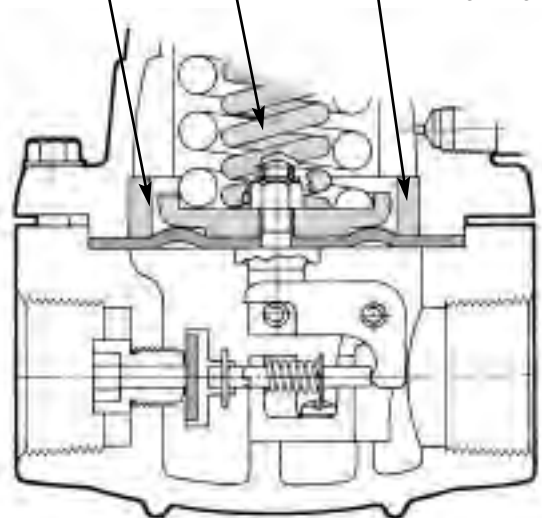
DUCTILE IRON
CONSTRUCTION

VENT
● 1/4" NPT



HIGH PRESSURE DIAPHRAGM ASSEMBLY CONSTRUCTION

- High Pressure upper diaphragm plate
- Inner spring (1/8" orifice only)
- Loading Ring



141-A Capacity Tables

in scfh of natural gas
(0.6 Specific Gravity—14.65 psia—60°F)

| PRESSURES PSI | | 2" PIPE SIZE ORIFICES | | | | | |
|------------------|------------|--------------------------|---------------|---------------|---------------|---------------|---------------|
| Inlet | Outlet | 1/8" | 1/4" | 3/8" | 1/2" | 5/8" | 7/8" |
| 10 | 5 | 550 | 1,000 | 2,400 | 3,500 | 5,000 | 6,000 |
| 20 | 5 | 950 | 1,200 | 4,000 | 5,100 | 6,700 | 9,800 |
| 30 | 5 | 1,100 | 1,700 | 5,300 | 6,200 | 7,400 | 11,700 |
| 50 | 5 | 1,500 | 2,000 | 7,200 | 7,800 | 8,400 | 16,000 |
| 75 | 5 | 1,600 | 3,100 | 10,500 | 11,200 | 12,100 | |
| 100 | 5 | 2,100 | 4,000 | 14,000 | 16,000 | 21,000 | |
| 150 | 5 | 3,000 | 6,500 | 19,500 | 21,000 | 26,000 | |
| 20 | 10 | 800 | 1,600 | 3,200 | 5,500 | 7,800 | 11,000 |
| 30 | 10 | 1,000 | 1,900 | 5,300 | 6,600 | 8,600 | 15,200 |
| 50 | 10 | 1,600 | 2,300 | 7,500 | 8,500 | 9,400 | 21,500 |
| 75 | 10 | 1,700 | 3,300 | 11,000 | 12,000 | 12,800 | |
| 100 | 10 | 2,100 | 4,300 | 15,500 | 17,500 | 23,000 | |
| 150 | 10 | 3,000 | 7,000 | 21,000 | 24,500 | 28,000 | |
| 200 | 10 | 3,700 | 9,000 | 25,000 | 33,000 | | |
| 30 | 20 | 900 | 1,600 | 4,000 | 5,500 | 7,500 | 9,700 |
| 50 | 20 | 1,400 | 2,000 | 6,000 | 7,800 | 9,000 | 16,500 |
| 75 | 20 | 1,700 | 3,400 | 11,000 | 12,500 | 14,000 | |
| 100 | 20 | 2,100 | 4,500 | 15,500 | 17,000 | 20,000 | |
| 150 | 20 | 3,000 | 8,500 | 21,000 | 23,500 | 27,000 | |
| 200 | 20 | 3,700 | 10,000 | 25,000 | 30,000 | | |
| 400 | 20 | 7,500 | 22,000 | 42,000 | | | |
| 50 | 40 | 1,000 | 2,700 | 7,000 | 8,500 | 9,000 | 18,000 |
| 75 | 40 | 1,500 | 3,900 | 13,000 | 13,500 | 16,000 | |
| 100 | 40 | 2,000 | 6,000 | 15,500 | 17,000 | 20,000 | |
| 150 | 40 | 3,000 | 9,000 | 21,000 | 23,500 | 27,000 | |
| 200 | 40 | 3,700 | 11,000 | 25,000 | 30,000 | | |
| 400 | 40 | 7,500 | 22,500 | 42,000 | | | |
| 60 | 50 | 1,100 | 3,000 | 7,000 | 9,000 | 8,500 | |
| 75 | 50 | 1,400 | 4,000 | 11,500 | 15,000 | 14,000 | |
| 100 | 50 | 1,900 | 6,500 | 14,000 | 17,000 | 19,000 | |
| 150 | 50 | 3,000 | 9,500 | 21,000 | 23,500 | 27,000 | |
| 200 | 50 | 3,700 | 11,500 | 25,000 | 30,000 | | |
| 400 | 50 | 7,500 | 22,500 | 42,000 | | | |
| 100 | 75 | 1,350 | 5,500 | 10,000 | 11,500 | 17,000 | |
| 150 | 75 | 2,800 | 8,000 | 15,000 | 17,000 | 41,000 | |
| 200 | 75 | 3,700 | 9,000 | 24,000 | 24,000 | | |
| 400 | 75 | 7,500 | 22,500 | 42,000 | | | |
| 600 | 75 | 9,500 | 30,000 | | | | |
| 125 | 100 | 1,500 | 6,100 | 12,000 | 13,000 | 18,000 | |
| 150 | 100 | 2,100 | 7,000 | 18,000 | 20,500 | 32,000 | |
| 200 | 100 | 3,700 | 8,500 | 24,000 | 26,500 | | |
| 400 | 100 | 7,500 | 22,500 | 42,000 | | | |
| 600 | 100 | 9,500 | 33,500 | | | | |
| 200 | 150 | 2,500 | 10,000 | 21,000 | 25,000 | | |
| 300 | 150 | 4,400 | 17,000 | 35,000 | | | |
| 400 | 150 | 7,500 | 22,500 | 44,000 | | | |
| 600 | 150 | 9,500 | 33,500 | | | | |
| 800 | 150 | 13,000 | 44,500 | | | | |

| PRESSURES PSI | | 2" MODELS 141-A | | | | |
|------------------|------------|----------------------|---------------|---------------|----------------------------|---------------|
| | | STANDARD ORIFICES | | | HIGH PRESSURE* ORIFICES | |
| Inlet | Outlet | 1/8" | 1/4" | 3/8" | 1/8" | 1/4" |
| 250 | 200 | 3,000 | 11,500 | 23,000 | 2,100 | 7,300 |
| 300 | 200 | 4,200 | 16,000 | 32,000 | 3,000 | 10,400 |
| 400 | 200 | 6,000 | 22,500 | 44,000 | 5,000 | 14,600 |
| 600 | 200 | 9,500 | 33,500 | | 9,500 | 33,500 |
| 800 | 200 | 13,000 | 44,500 | | 11,500 | 44,500 |
| 1000 | 200 | | | | 13,000 | 55,000 |
| 1250 | 200 | | | | 16,500 | |
| 300 | 250 | 4,000 | 15,300 | 31,000 | | |
| 400 | 250 | 5,800 | 21,600 | 44,000 | | |
| 600 | 250 | 8,900 | 33,500 | | | |
| 800 | 250 | 11,500 | 44,500 | | | |
| 1000 | 250 | 13,000 | 55,000 | | | |
| 350 | 300 | | | | 2,600 | 8,900 |
| 400 | 300 | | | | 4,000 | 12,600 |
| 600 | 300 | | | | 8,500 | 31,000 |
| 800 | 300 | | | | 11,500 | 44,500 |
| 1000 | 300 | | | | 13,000 | 55,000 |
| 1250 | 300 | | | | 16,500 | |
| 1500 | 300 | | | | 20,000 | |
| 500 | 400 | | | | 4,300 | 14,500 |
| 600 | 400 | | | | 6,000 | 23,000 |
| 800 | 400 | | | | 10,000 | 44,500 |
| 1000 | 400 | | | | 13,000 | 55,000 |
| 1250 | 400 | | | | 16,500 | |
| 1500 | 400 | | | | 20,000 | |

***HIGH PRESSURE DIAPHRAGM ASSEMBLY CONSTRUCTION:**

- a. Diaphragm Plate.....141-10-022-03
- b. Loading Ring141-10-022-00

NOTES:

- 1. Capacities are based on 20% droop.
- 2. Bold type indicates maximum inlet pressure for indicated size orifice.

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- 2. Bold type indicates maximum inlet pressure for indicated size orifice.

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

Maximum Emergency Pressures

The maximum inlet pressure for the 141-A regulator may be subjected to under abnormal conditions without causing internal damage is as follows:

| ORIFICE SIZE | | | | | | |
|--------------|-------|------|-------|------|------|------|
| 1/8" | 1/4" | 3/8" | 7/16" | 1/2" | 5/8" | 7/8" |
| PRESSURE psi | | | | | | |
| 1650* | 1150* | 550 | 450 | 350 | 300 | 200 |

*Green polyurethane soft seats only. If tan polyurethane soft seats are used, pressure is 700 psi.

The maximum pressures the outlet may be subjected to under abnormal conditions without causing internal damage are as follows:

1. Standard (set-points to 250 psi)set-point + 100 psi.
 2. High Pressure Diaphragm Assembly.....set-point + 150 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 before returning the regulator to service.

The maximum outlet pressure that can be safely contained by the diaphragm/spring case of Model 141-A regulators is 800 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.

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.

Full Open Capacity

Capacity for the full open valve position can be calculated using the following formulas and K factors:

$$1. Q = K \sqrt{P_0 (P_1 - P_0)}$$

$$2. Q = \frac{K P_1}{2}$$

Q = full open capacity of the regulator in SCFH of 0.6 specific gravity natural gas.

K = the "K" factor, the regular constant (from the table).

P₁ = absolute inlet pressure (psia).

P₀ = absolute outlet pressure (psia).

Use formula 1. when $\frac{P_1}{P_0}$ is less than 1.894.

Use formula 2. when $\frac{P_1}{P_0}$ is greater than 1.894.

| ORIFICE | K |
|---------|-----|
| 1/8" | 33 |
| 1/4" | 132 |
| 3/8" | 292 |

| ORIFICE | K |
|---------|-----|
| 7/16" | 400 |
| 1/2" | 520 |
| 5/8" | 820 |
| 7/8" | 900 |

Remember, at the above full open capacities the droop is greater than specified in the capacity tables on page 4.

When sizing relief valve for these regulators, use the above calculated full open capacity. Do not use capacity values from tables on page 4.

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. **See bulletin RM-1311 for field service instructions.**

Other Gases

141-A Field Regulators are mainly used on natural gas. However, they perform equally well on LP gas, nitrogen, dry CO₂, 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.

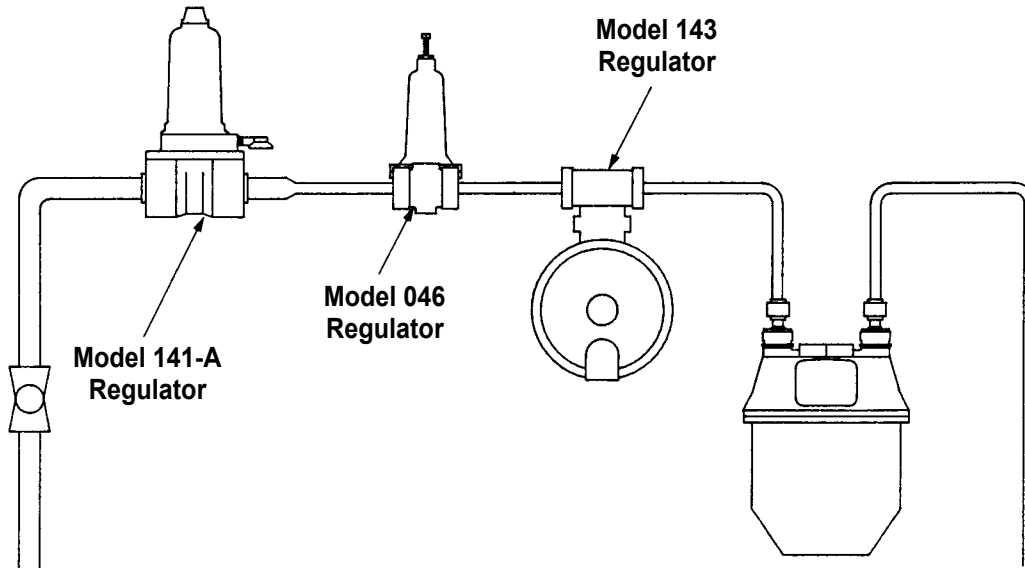
Materials of Construction

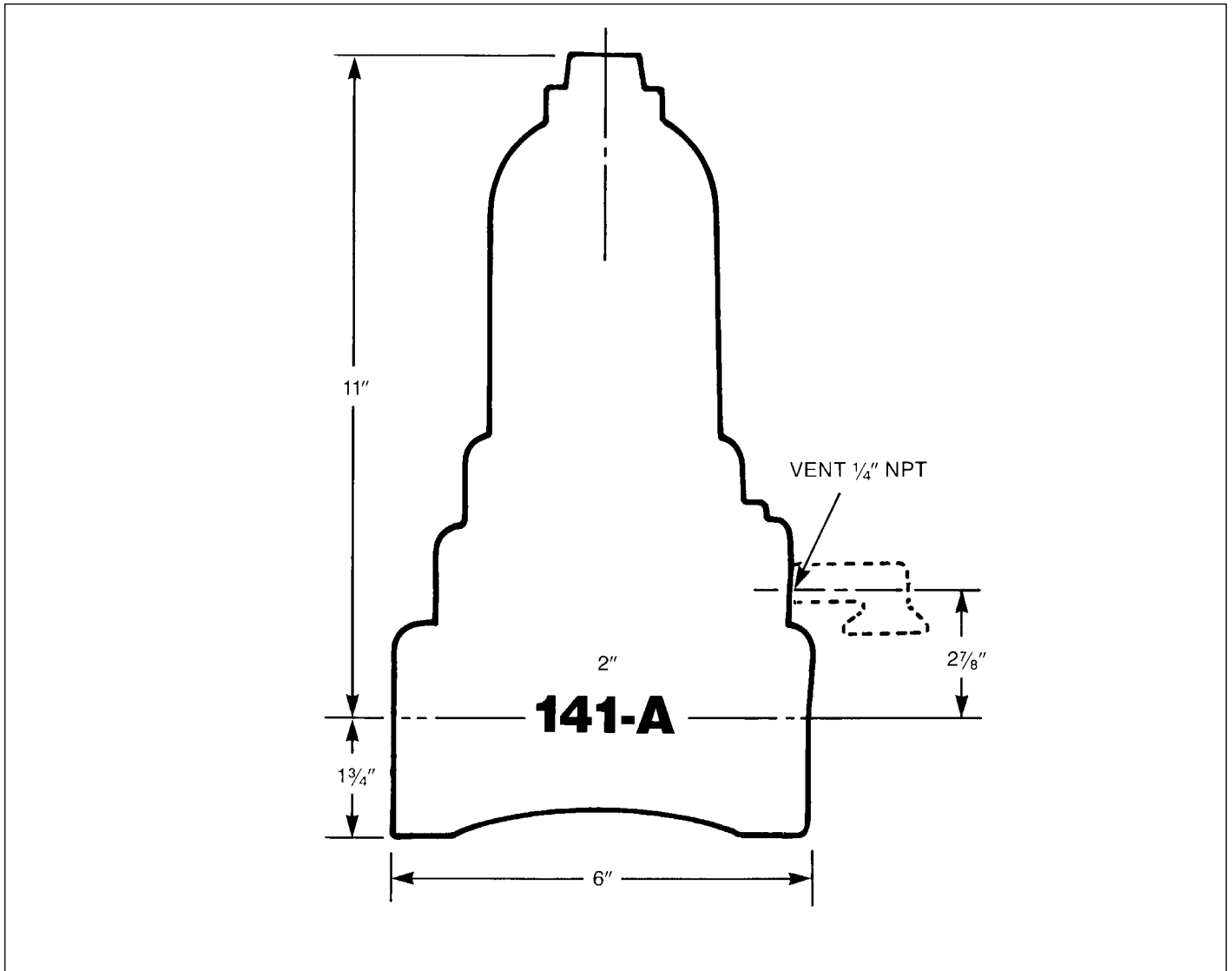
| | |
|--------------------------------------|--|
| Body and Spring-Diaphragm Case | See page 2 |
| Orifice | Brass or Stainless Steel |
| Valve | Aluminum with Molded Poyurethane Soft Seat, see page 3 |
| Stem | Brass or Stainless Steel |
| Lever | Cadmium Plated Steel |
| Lever Bracket | Cadmium Plated Malleable Iron |
| Pins | Steel |
| Diaphragm Stem | Cadmium Plated Steel |
| Diaphragm | Buna N or Nylon Fabric |
| Upper Diaphragm Plate | Cadmium Plated Ductile Iron |
| Top Spring Button | Cadmium Plated Cast Iron |
| Adjustment Screw | Cadmium Plated Steel |
| Adjustment Cap 141A | Die Cast Aluminum |

How to Order

- Specify:
- | | | |
|-------------------------------|---|---|
| 1. Pipe size and model number | 3. Inlet pressure (also maximum and minimum if available) | 5. Capacity required (scfh) |
| 2. Orifice size | 4. Outlet pressure set-point | 6. Type of gas (natural gas, propane, etc.) |
| | | 7. Spring part number |

Typical Installation





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. **Refer to RM-1311 for more detailed start-up procedures.**

CAUTION: 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. **Refer to Equimeter Bulletin RM-1311 for more detailed information.**



805 Liberty Boulevard
DuBois, PA 15801
814-375-8875
Fax 814-375-8460

Authorized Distributor

Limited Warranty

Seller warrants the Goods to be free from defects in materials manufactured by Seller and in Seller's workmanship for a period of one (1) year after tender of delivery (the "Warranty Period"). THIS LIMITED WARRANTY (a) IS IN LIEU OF, AND SELLER DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES, STATUTORY, EXPRESS OR IMPLIED, INCLUDING, WITH LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR OF CONFORMITY TO MODELS OR SAMPLES; (b) does not apply to any Goods which have been (i) repaired, altered or improperly installed; (ii) subjected to improper use or storage, (iii) used or incorporated with other materials or equipment, after buyer or anyone using the Goods has, or reasonably should have, knowledge of any defect or nonconformance of the Goods; or (iv) manufactured, fabricated or assembled by anyone other than Seller, (c) shall not be effective unless buyer notifies Seller in writing of any purported defect or nonconformance with (thirty days) after Buyer discovers or should have reasonably discovered such purported defect or nonconformance; and (d) shall only extend to Buyer and not to any subsequent buyers or users of the Goods. Buyer shall provide Seller access to the Goods as to which Buyer claims a purported defect or nonconformance, upon request by Seller, buyer shall, at its own risk and expense, promptly return the Goods in question to Seller's Plant.