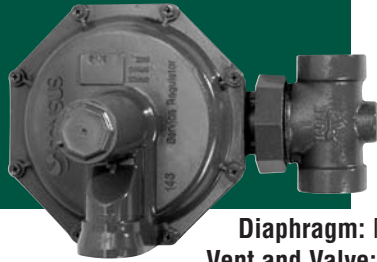


# Model 143-80 Service Regulator

## Technical Data



**Models:**  
**143-80-1**  
**143-80-2**  
**143-80-2HP**

<b>Valve Body:</b> Cast Iron, 125 psig Working Pressure	<b>Straight Body</b>
<b>Spring and Lower Case:</b> Die-Cast Aluminum	3/4" x 3/4"
<b>Orifice:</b> Aluminum or Brass	3/4" x 1"
<b>Fulcrum Pin:</b> Stainless Steel	3/4" x 1-1/4"
<b>Valve Seat/Stem:</b> One piece molded Buna-N seat pad and fiberglass reinforced nylon stem	1" x 1"
<b>Throat/Support/Stem Guide:</b> Cast Aluminum integral to lower case	1" x 1-1/4"
<b>Diaphragm Plate:</b> Plated Steel	1-1/4" x 1-1/4"

**Diaphragm:** Nylon fabric reinforced Buna-N with full 26 in<sup>2</sup> effective area  
**Vent and Valve:** Precision-fit polyethylene valve and seat, threaded 3/4" or 1" NPT  
**Operating Temperature:** -20° F to 150° F (-28.9° C to 65.5° C)  
**Corrosion Protection:** Cases dip primed chromate conversion coating, topcoat enamel  
**Internal Relief Valve:** Set to relieve at approximately 7" w.c. above normal outlet pressure setting

### Spring Ranges

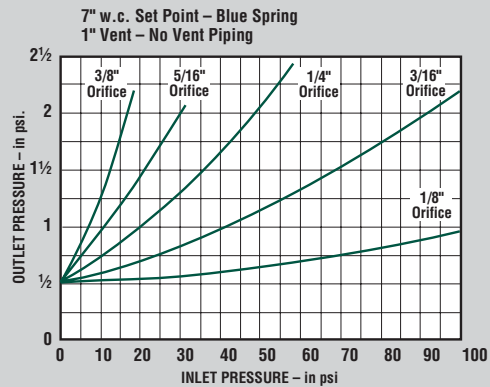
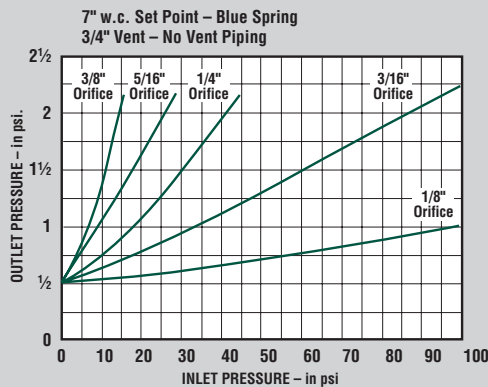
Outlet Pressure Ranges	Spring Color	Spring Part Number
3 1/2" to 6 1/2" w.c.	Red	143-62-021-15
5" to 8 1/2" w.c.	Blue	143-62-021-16
6" to 14" w.c.	Green	143-62-021-17
12" to 28" w.c.	Orange	143-62-021-18
1/2 psi to 2 psi	Black & White	143-62-021-22
1/2 psi to 3 psi	Cadmium*	173-62-021-02
2 to 6 psi	Black*	139-16-021-01

\*For high pressure model 143-80-2HP

### Orifice and Maximum Inlet Pressure

Orifice	Part Number	Pressure
1/8" aluminum	143-62-023-37	125 psig
3/16" aluminum	143-63-023-40	125 psig
1/4" aluminum	143-62-023-42	60 psig
5/16" aluminum	143-62-023-43	40 psig
3/8" aluminum	143-62-023-44	40 psig
1/2" aluminum	143-62-023-45	20 psig
5/8" aluminum	143-62-023-46	10 psig

### Relief Valve Performance: Lever blocked with valve disc in the wide open position



### Maximum Emergency Pressure

The maximum pressure that the model 143-80-1, 143-80-2 and 143-80-2HP regulator inlets may be subjected under abnormal conditions without causing damage to the regulator is the stated Maximum Inlet Pressure + 50 psi

**Note:** For the Low Pressure Cut Off version model 143-80-6 it is Maximum Inlet Pressure + 10 psi. See bulletin TD-1301-L

The maximum pressure to which the 143-80 diaphragm case may be subjected under abnormal conditions without causing damage to the internal parts of the regulator is the set point + 3 psi. If the outlet pressure exceeds this pressure, the regulator must be removed from service and carefully inspected. Damaged or otherwise unsatisfactory parts must be replaced before returning the regulator to service. The maximum outlet pressure that can be safely contained in the 143-80 diaphragm case is 10 psi (safely means no leakage as well as no bursting).

### Full Open Capacity

Use the following formula for the full open capacity:

$$1. Q = K\sqrt{P_0(P_1 - P_0)} \dots \text{(for } \frac{P_1}{P_0} \text{ less than 1.894)}$$

$$2. Q = \frac{KP_1}{2} \dots \text{(for } \frac{P_1}{P_0} \text{ greater than 1.894)}$$

Q = maximum capacity of the regulator (in SCFH of 0.6 specific gravity natural gas).

K = the "K" factor, the regulator constant from the table below.

P<sub>1</sub> = absolute inlet pressure (psia).

P<sub>0</sub> = absolute outlet pressure (psia).

Orifice	5/8"	1/2"	3/8"	5/16"	1/4"	3/16"	1/8"
K	820	520	292	206	132	74	33

## Capacities

Flow capacities in SCFH natural gas  
(0.6 specific gravity – 14.65 psia – 60°F)

Capacities are based on the following maximum variations in outlet pressure:

- Red and Blue Springs – 1" w.c. droop
- Orange Spring – 3" w.c. droop
- Green Spring – 2" w.c. droop
- Black Spring – 10% droop

**Note:** The 1/2 psig, 1 psig and 2 psig inlet pressures apply only to Red and Blue springs.

**Note:** The last capacity figure in each column indicates the maximum capacity for each orifice at recommended pressure within the optimum performance range.

The performance data is based on normal testing at 70°F flowing temperature.

Changes in performance can occur at extreme low flowing temperatures.

## Other Gases

143-80 Regulators are mainly used on natural gas. However, they perform equally well on LP gas, nitrogen, dry CO<sub>2</sub>, air and others.

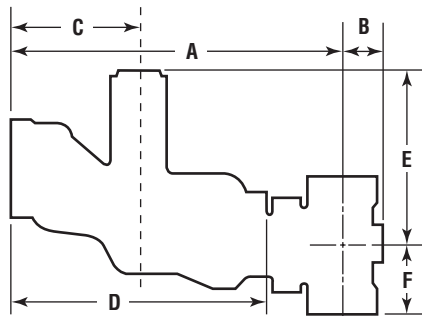
Other Gases	Correction Factor
Air (Specific Gravity 1.0)	0.77
Propane (Specific Gravity 1.53)	0.63
1350 BTU Propane Air Mix (1.20)	0.71
Nitrogen (Specific Gravity 0.97)	0.79
Dry Carbon Dioxide (Specific Gravity 1.52)	0.63

For other non corrosive gases:

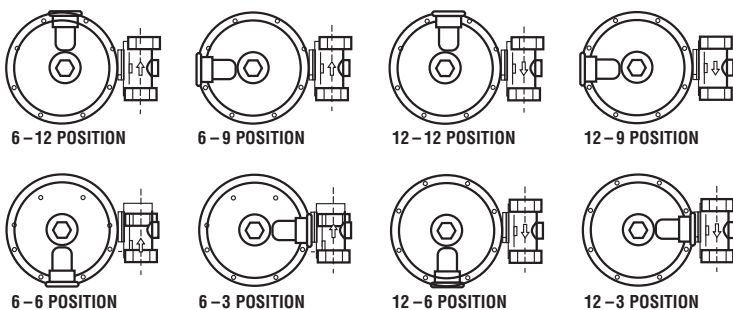
$$\text{CORRECTION FACTOR} = \sqrt{\frac{0.6}{\text{Specific Gravity of the Gas}}}$$

## Dimensions

Regulator	A	B	C	D	E	F
<b>143-80</b>	9 <sup>3</sup> / <sub>8</sub> "	1 <sup>5</sup> / <sub>16</sub> "	3 <sup>7</sup> / <sub>16</sub> "	6 <sup>7</sup> / <sub>8</sub> "	5 <sup>3</sup> / <sub>4</sub> "	1 <sup>3</sup> / <sub>32</sub> "



## Mounting Positions



## 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	–	–	–	–	340	450	510
1	–	–	–	480	500	510	530
2	–	–	530	560	570	580	600
3	–	420	600	620	630	650	670
5	250	560	700	720	730	770	790
7.5	310	700	840	860	880	900	900
10	370	830	950	970	1000	1020	1020
20	530	1200	1220	1240	1250	1270	–
40	860	1570	1330	1340	1450	–	–
60	1200	1660	1520	–	–	–	–
80	1500	1710	–	–	–	–	–
125	1800	1900	–	–	–	–	–

## 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	–	–	–	–	350	460	520
1	–	–	–	480	550	600	650
2	–	–	530	700	840	880	780
3	–	420	650	870	1000	920	810
5	250	580	890	1120	1160	950	970
7.5	310	700	1140	1340	1270	1140	1060
10	370	840	1360	1500	1330	1200	1180
20	530	1230	2000	1600	1480	1400	–
40	860	1700	2000	1640	1900	–	–
60	1200	1900	2000	–	–	–	–
80	1540	2000	–	–	–	–	–
125	2100	2100	–	–	–	–	–

## Body Size 3/4" x 1-1/4" • 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	–	–	–	–	350	460	520
1	–	–	–	480	550	680	760
2	–	–	530	700	840	1020	1030
3	–	420	650	870	1030	1200	1050
5	250	580	890	1180	1350	1490	1060
7.5	310	700	1140	1500	1610	1580	1060
10	370	840	1360	1700	1710	1800	1180
20	630	1230	1600	1800	1900	1900	–
40	860	1800	2200	1900	2000	–	–
60	1200	2100	2400	–	–	–	–
80	1550	2200	–	–	–	–	–
125	2250	2400	–	–	–	–	–



805 Liberty Boulevard  
DuBois, PA 15801

800-375-8875  
Fax: (814) 375-8460

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