

# 1800B2 & B2-HC

## Service Regulators

### Brief information

**Application:** The 1800B2 Series pressure regulators are designed to control natural gas, air, nitrogen, carbon dioxide, propane vapor, and other non-corrosive gases in residential, light commercial, and small industrial applications. The 1800B2 and B2-HC can be installed in both horizontal and vertical pipelines.

**Control:** A comprehensive range of springs is available, as described later. The outlet pressure can be easily and accurately adjusted by turning the spring adjustment unit located under the top cap.

### Technical Data:

Inlet Pressures up to 150 PSIG

Outlet Pressures: 3.5" W.C. to 2 PSIG.

All models conform to ANSI Code B109.4-1998, and CGA Service-Type Regulator Specification CAN/CGA-6.18-M95

### Vent Elbow

The regulator vent opening should face downward (6 o'clock) to minimize the chance of blockage from ice and snow. If not possible, a 3/4" NPT plastic, 90° vent elbow (part number 78041P025) and separate protective screen (part number 70400P017) may be screwed into the vent to provide the necessary protection.

### Elevation Compensation.

The E.C. orifice is recommended for installations where the inlet pressure may vary over a wide range. The E.C. orifice is available in two sizes: 1/8" x 3/16" and 3/16". The capacities of these orifices are the same as the standard orifice of the same size.

### Full Capacity Relief Valve

Full capacity internal relief valve standard on some models (see Performance Graphs on page 10)

### Splashguards

UV stabilized, weather-resistant, resin device that protects the vent screen from splashes while providing a large external vent opening to keep regulators working properly.



## FEATURES & BENEFITS

### Main Features

- Wide range of valve body connection sizes: 3/4" x 3/4", 3/4" x 1", 3/4" x 1-1/4", 1" x 1", 1" x 1-1/4" and 1-1/4" x 1-1/4" NPT or BSP-TR
- Offset valve body: 3/4" x 3/4", 3/4" x 1" and 1" x 1" NPT or BSP-TR.
- Maximum flow rate is 2500 SCFH (70.8 m<sup>3</sup>/h).
- Temperature range: -20°F to +150°F (-30°C to 65°C).
- Threaded connections NPT to ANSI/ASME B1.20.1 or BS EN 10226 (ISO 7).
- Variety of interchangeable orifices and spring ranges
- 90 Degree (Right Angle), 180 Degree (Straight-Flow), or Offset Valve Body.

### Options

- Over pressure slam shut.
- Under pressure slam shut.
- Elevation compensating orifice.
- 1/8" NPT taps are available on most valve heads.
- Vent elbow.
- Splashguard.

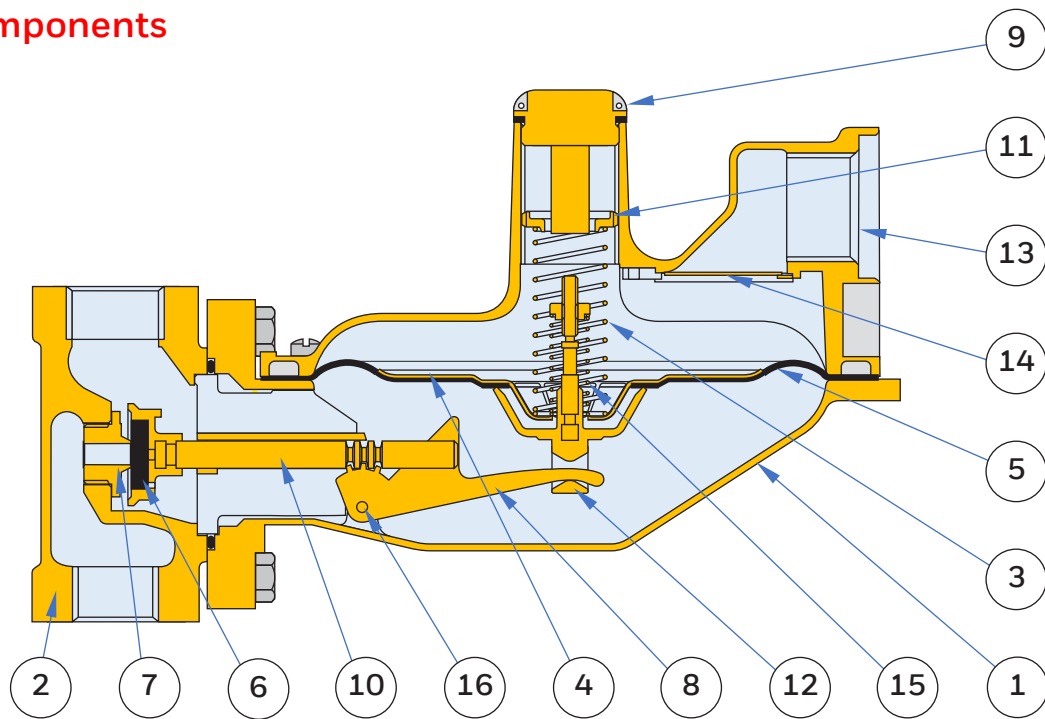


CONTROLS SUPPLY CHAIN  
VALVES ACTUATORS INSTRUMENTATIONS

## Applications

Model Number	Description
1803B2	Basic regulator, non-relieving with 3/4" or 1" NPT vent.
1803B2-HC	Basic regulator, non-relieving with 3/4" or 1" NPT vent.
1813B2	Basic regulator with full-capacity internal relief with 3/4" or 1" NPT vent.
1813B2-HC	Basic regulator with full-capacity internal relief with 3/4" or 1" NPT vent.
1823B2	Basic regulator, non-relieving with under-pressure shut-off and 3/4" or 1" NPT vent.
1833B2	Basic regulator with full-capacity internal relief and underpressure shut-off and 3/4" or 1" NPT vent.
1843B2	Basic regulator with full-capacity internal relief and overpressure shut-off and 3/4" or 1" NPT vent.
1843B2-HC	Basic regulator with full-capacity internal relief and overpressure shut-off and 3/4" or 1" NPT vent.
1843B2-L	Basic regulator with limited relief and overpressure shut-off and 3/4" or 1" NPT vent.
1853B2	Basic regulator with full-capacity internal relief and overpressure, underpressure shut-off and 3/4" or 1" NPT vent.
1883B2	Basic regulator, non-relieving with overpressure shut-off and 3/4" or 1" NPT vent.
1883B2-HC	Basic regulator, non-relieving with overpressure shut-off and 3/4" or 1" NPT vent.
1893B2	Basic regulator, non-relieving with overpressure, underpressure shut-off and 3/4" or 1" NPT vent.
1853B2 w/USSA	Basic regulator with full-capacity internal relief and overpressure, underpressure shut-off and 3/4" or 1" NPT vent.
1853B2-HC w/USSA	Basic regulator with full-capacity internal relief and overpressure, underpressure shut-off and 3/4" or 1" NPT vent.
1893B2 w/USSA	Basic regulator, non-relieving with overpressure, underpressure shut-off and 3/4" or 1" NPT vent.
1893B2-HC w/USSA	Basic regulator, non-relieving with overpressure, underpressure shut-off and 3/4" or 1" NPT vent.

# Regulator Components



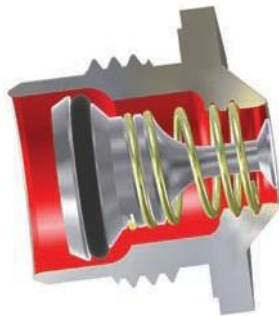
Item No.	Description	Material	Notes
1	Diaphragm Case	Diecast Aluminum	With unique seven-step advanced conversion coating. Single coat polyester primer and high solid polyurethane topcoat.
2	Valve Body	Gray Cast Iron	Undercoated, single coat polyester primer and high solid polyurethane topcoat.
3	Loading Spring	Spring Steel	Zinc plated and chromate. Color coded for identification.
4	Diaphragm Plate	Steel	Electrogalvanized
5	Diaphragm	Buna N	Fabric reinforced
6	Seat Disc	Buna N	60, 70 (std) or 80 durometer rating
7	Orifice	Aluminum	High strength, corrosion resistant
8	Lever	Steel	Zinc plated and yellow chromate.
9	Seal Plug	Minlon	
10	Plunger Guide	Minlon	
11	Pressure Adjustment Screw	Minlon	
12	Relief Valve Stem	Celcon	With steel, zinc plated and yellow chromate insert.
13	Vent Screen	Stainless Steel	All models are designed with a removable weather and bug-proof stainless steel screen to resist freeze-ups and to exclude foreign matter. The vent is threaded 3/4" or 1" NPT (BSP-TR threads available). A vent line can be added to carry gas away to a safe outside location and away from any opening(s) in the building. Comply with applicable Federal, State, and local codes.
14	Vent Valve	Stainless Steel	with Electrogalvanized steel retainer
15	Relief Valve Spring	Spring Steel	Zinc plated and yellow chromate. Non-adjustable. Color coded for identification. Standard set point of 8" W.C. above outlet set pressure of 7" W.C. Standard set point of 1.1 PSIG above outlet set pressure of 2 PSIG.
16	Lever Pin	Carbon Steel	Zinc Plated and yellow chromate
17	Relief Valve Adjustment Nut	Brass, sintered.	

Orifice Size	Standard Part No.	Part No. with OPSO
9/16"	72494P026	72751P019
1/2"	72494P025	72751P016
3/8"	72494P023	72751P014
5/16"	72494P022	72751P013
UPSO	71422G004	7122G004
1/4"	72494P021	72751P012
3/16"	72494P020	72751P011
1/8" x 3/16"	72494P030	72751P020
1/8"	72494P019	N/A

# Under Pressure Cut Off (UPCO)

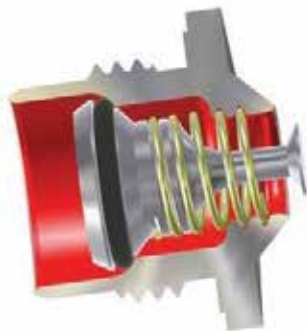
## Underpressure Shutoff (UPSO) —

The 1823B2, 1833B2, 1853B2, and the 1893B2 regulators come equipped with an underpressure shutoff (UPSO) device which utilizes a spring loaded valve stem and O-ring assembly within an orifice body. It will shut off gas flow through the regulator in the event of an upstream underpressure condition. diaphragm compresses the pressure spring forcing the diaphragm stem upwards and releasing plunger. This permits the shut-off spring to force the shut-off disc against the back side of the special double-ended orifice.



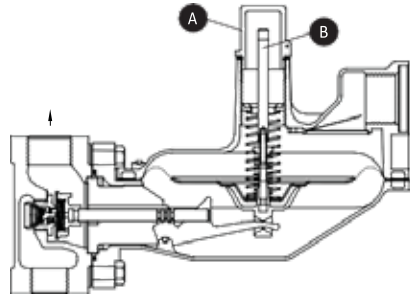
UPSO in the Open

Under normal operating conditions, gas flows through the orifice from the high pressure upstream to the low pressure downstream. If conditions should change to cause the upstream pressure to decrease, the plunger and seat disk assembly will move away from the orifice thereby opening up the regulator to compensate for the lower inlet pressure. The spring in the Underpressure Shutoff will push the valve stem assembly up against the face of the seat disk. Eventually the valve stem's O-ring will make contact with the inner wall of the orifice and completely shut off the gas flow



UPSO in the Open

When the inlet underpressure condition has been corrected or repaired, the UPSO must be manually reset to allow gas flow. Reset is done by unscrewing the seal plug and pulling up on the diaphragm stem. This will open the Underpressure Shutoff and allow gas to flow.



- A Seal Plug
- B Diaphragm Stem

This type of design allows service maintenance to be performed to downstream appliances before pressure is introduced, i.e. lighting the pilot light, closing valves, etc.

In some cases downstream failure may result in the regulator shutting off.

Excessive flow may result in a decrease in downstream pressure which opens the seat disk away from the orifice until the Underpressure Shutoff takes over and shuts the regulator off.

The design has been tested and meets capacity requirements, while insuring efficient and reliable resetting operation even at sub-zero temperatures.

## Capacities of the Underpressure Shutoff orifice:

Set Point: 7" W.C.

Inlet Pressure: 20 PSIG

Set at 50 cubic feet per hour

Maximum inlet pressure rating of 60 PSIG  
Applicable to 3/4", 1", and 1 1/4" valve bodies

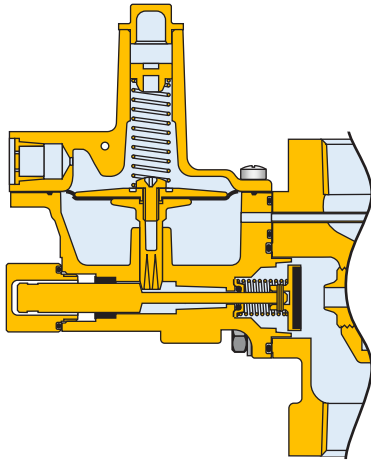
Inlet Pressure (PSIG)	Flow Rate (SCFH)
3	300
5	400
10	600
15	750
20	900
30	1000
40	1300
60	1500

## Offset Valve Body



# Slam Shut Valves

## Over Pressure Slam Shut



Overpressure Shutoff (OPSO) — Operates independently. The OPSO will shut off the gas supply in the event of a serious downstream pressure build-up. These are available in two pressure ranges on the Models 1843B2, 1843B2-HC, 1843B-L, 1853B2, 1883B2, 1883B2-HC, and 1893B2.

When the outlet pressure exceeds the OPSO set point, the pressure under the OPSO diaphragm compresses the pressure spring forcing the diaphragm stem upwards and releasing plunger. This permits the shut-off spring to force the shut-off disc against the back side of the special double-ended orifice.

## Loading Springs

### REGULATOR LOADING SPRINGS

Shut Off Pressure	Part Number	Color Code
3.5" to 6" W.C.	70017P043	Blue
3.5" to 7.5" W.C.	70017P089	Tan
5.5" to 8.5" W.C.	70017P044	Yellow
6" to 12" W.C.	70017P137	Brown
6" to 15" W.C.	70017P042	Purple
12" to 28" W.C.	70017P060	White
24" to 48" W.C.	70017P082	Red
42" W.C. to 2 PSIG	70017P049	Red - Red

### OPSO SHUTOFF SPRINGS

Shut Off Pressure	Part Number	Color Code
14" to 35" W.C.	71403P005	Green
1 PSIG to 2 PSIG	71403P004	Black

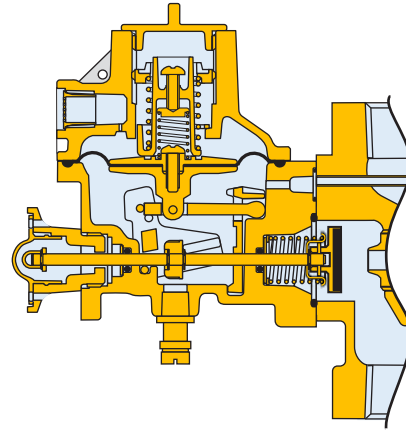
### USSA SLAM SHUT - OVER PRESSURE SPRINGS

Shut Off Pressure	Part Number	Color Code
7.5 – 24 "W.C.	70017P123	Black
20 – 32 "W.C.	70017P124	Orange
24 – 44 "W.C.	70017P125	Red
40 – 84 "W.C.	70017P126	Dark Green
3 – 5 PSIG	70017P127	Yellow
4 – 7 PSIG	70017P128	White

### USSA SLAM SHUT - UNDER PRESSURE SPRINGS

Shut Off Pressure	Part Number	Color Code
3 – 6 "W.C.	70017P133	Light Blue
6 – 24 "W.C.	70017P134	Brown
24 – 60 "W.C.	70017P135	Purple

## USSA Slam Shut



The Universal Safety Shut-off Assembly (USSA) can be fitted to an AMCO 1800 Industrial Regulator on the inlet side of the valve head. This provides over pressure and under pressure protection with immediate shut-off at the regulator inlet. It uses well proven principles to give exceptional consistency of operation and an unrivalled insensitivity to nuisance tripping. The USSA senses downstream regulator pressure through a brass sensing tube. In the event of an Overpressure or Underpressure occurrence, there is excess motion of the diaphragm, which causes the USSA mechanism to trip. Shutoff occurs when the spring-loaded seat disc is released to seal off the inlet side of the main regulator orifice.

The OPSS and UPSS loading springs are fitted concentrically and can be adjusted independently.

### USSA Specifications

Under Pressure Shutoff Assemblies (USSAs) can be fitted to AMCO Industrial Regulators with inlet pressures from 1/2 psig to 125 psig.

The USSA meets all applicable EN334 standards of performance with the following features:

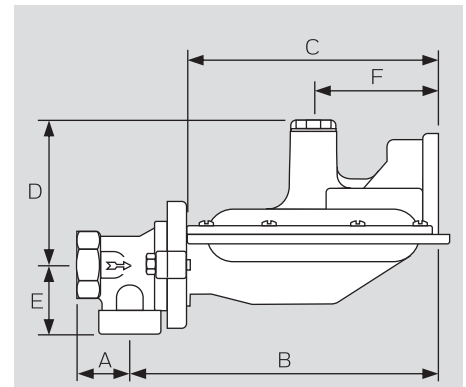
- Diaphragm Moulded Buna N with Sealing Ring Minimum burst pressure >100 psig
- Shutoff Pressures OPSO (7.5" w.c. to 35 psig) UPSO (3.0" w.c. to 60" w.c.).
- Repeatability OPSO (< 1% absolute pressure – " w.c. units) (< 1/2% absolute pressure – psig units) UPSO (< 2% absolute pressure – all units)
- Response Time Less than one second
- Service Life Type approval of 3000 on/shutoff/reset cycles USSA rated for 20-year average service life
- Temperature Range Operates at -20°F to +140°F
- Vent bug shield is standard equipment.

All USSA models have a Green "Flag" Visual Flow Indicator that shows proper Regulator flow. When the OPSO or UPSO trips, the Green Flag is withdrawn into the USSA, showing that the unit needs to be reset.

## 1800B2 & 1800B2-HC Dimensions

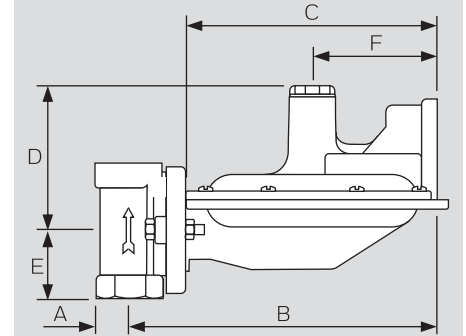
### Model 1803B2, 1803B2-HC, 1813B2, and 1813B2-HC - 90°

Inlet	Outlet	Dimensions					
		A	B	C	D	E	F
3/4"	3/4"	1-9/16" 39.7mm	8-7/8" 225.4mm	7-1/4" 184.2mm	4-1/8" 104.8mm	2" 50.8mm	3-5/8" 92.1mm
3/4"	1"	1-9/16" 39.7mm	8-7/8" 225.4mm	7-1/4" 184.2mm	4-1/8" 104.8mm	2" 50.8mm	3-5/8" 92.1mm
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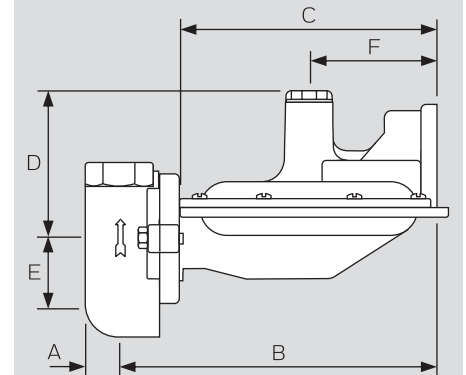
### Model 1803B2, 1803B2-HC, 1813B2, and 1813B2-HC - 180°

Inlet	Outlet	Dimensions					
		A	B	C	D	E	F
3/4"	3/4"	1" 25.4mm	8-7/8" 225.4mm	7-1/4" 184.2mm	4-1/8" 104.8mm	2" 50.8mm	3-5/8" 92.1mm
3/4"	1"	1" 25.4mm	8-7/8" 225.4mm	7-1/4" 184.2mm	4-1/8" 104.8mm	2" 50.8mm	3-5/8" 92.1mm
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1"	1-1/4"	1-1/8" 28.6mm	8-7/8" 225.4mm	7-1/4" 184.2mm	4-1/8" 104.8mm	2" 50.8mm	3-5/8" 92.1mm
1-1/4"	1-1/4"	1-1/8" 28.6mm	8-7/8" 225.4mm	7-1/4" 184.2mm	4-1/8" 104.8mm	2" 50.8mm	3-5/8" 92.1mm
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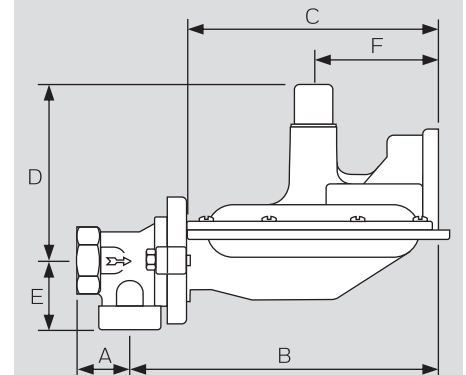
### Model 1803B2 and 1813B2 - Offset

Inlet	Outlet	Dimensions					
		A	B	C	D	E	F
3/4"	3/4"	1" 25.4mm	8-7/8" 225.4mm	7-1/4" 184.2mm	4-1/8" 104.8mm	2" 50.8mm	3-5/8" 92.1mm
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### Model 1823B2 and 1833B2 - 90°

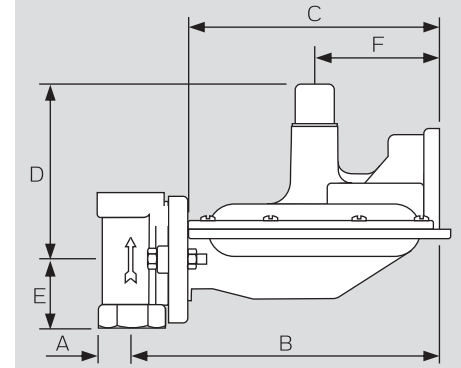
Inlet	Outlet	Dimensions					
		A	B	C	D	E	F
3/4"	3/4"	1-9/16" 39.7mm	8-7/8" 225.4mm	7-1/4" 184.2mm	5-1/8" 130.2mm	2" 50.8mm	3-5/8" 92.1mm
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# 1800B2 & 1800B2-HC Dimensions

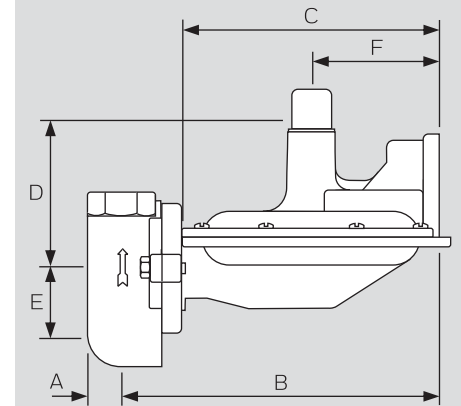
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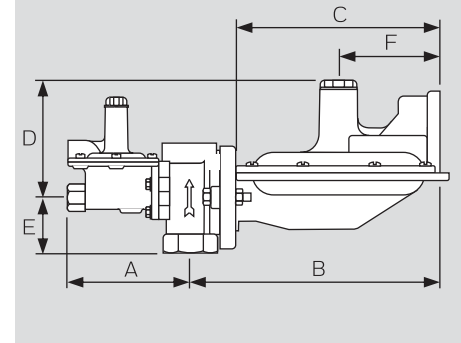
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## Model 1843B2, 1843B2-HC, 1883B2 and 1883B2-HC

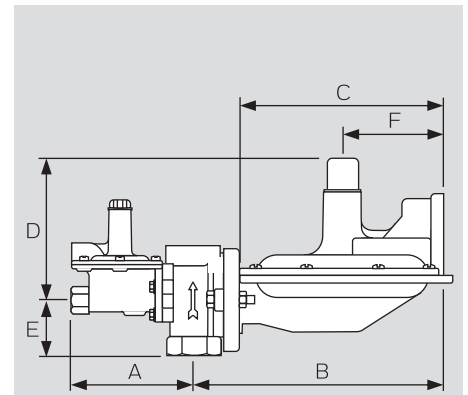
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## 1800B2 & 1800B2-HC Dimensions

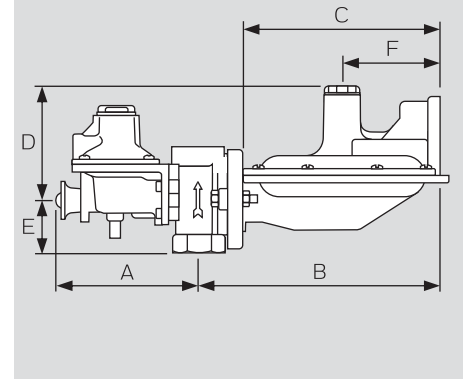
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1-1/4"	1-1/4"	4-1/2" 114.3mm	8-15/16" 227.0mm	7-1/4" 184.2mm	5-1/8" 130.2mm	2" 50.8mm	3-5/8" 92.1mm



### Model 1853B2, 1853B2-HC, 1893B2 and 1893B2-HC +USSA

Inlet	Outlet	Dimensions					
		A	B	C	D	E	F
3/4"	3/4"	5.25" 133.3mm	8-15/16" 227.0mm	7-1/4" 184.2mm	4-1/8" 104.8mm	2" 50.8mm	3-5/8" 92.1mm
3/4"	1"	5.25" 133.3mm	8-15/16" 227.0mm	7-1/4" 184.2mm	4-1/8" 104.8mm	2" 50.8mm	3-5/8" 92.1mm
1"	1"	5.25" 133.3mm	8-15/16" 227.0mm	7-1/4" 184.2mm	4-1/8" 104.8mm	2" 50.8mm	3-5/8" 92.1mm
1"	1-1/4"	5.25" 133.3mm	8-15/16" 227.0mm	7-1/4" 184.2mm	4-1/8" 104.8mm	2" 50.8mm	3-5/8" 92.1mm
1-1/4"	1-1/4"	5.25" 133.3mm	8-15/16" 227.0mm	7-1/4" 184.2mm	4-1/8" 104.8mm	2" 50.8mm	3-5/8" 92.1mm





# 1800B2 Series Regulator Capacity Performance

## 3/4" Outlet

Set Point 7.0" W.C. (17.4 mbar)  
at 50 SCFH

SCFH (m<sup>3</sup>/h) 0.60 specific gravity gas at 60°F and 14.7 PSIA (20°C and 1.01 bar). Pressure spring 70017P044. Outlet pressure variance not to exceed +2" -1" W.C. from set point, horizontal position.

## 1800B2 Series Regulator Capacity SCFH (m<sup>3</sup>/h)

Inlet PSIG (bar)	1/8" x 3/16" Orifice	3/16" Orifice	1/4" Orifice	5/16" Orifice	3/8" Orifice	1/2" Orifice	9/16" Orifice
1 (0.07)	—	150 (4.2)	175 (5.0)	250 (7.1)	300 (8.5)	350 (9.9)	350 (9.9)
2 (0.14)	150 (4.2)	225 (6.4)	275 (7.8)	375 (10.6)	400 (11.3)	475 (13.4)	475 (13.4)
3 (0.21)	200 (5.7)	300 (8.5)	375 (10.6)	425 (12.0)	500 (14.2)	550 (15.6)	600 (17.0)
5 (0.34)	250 (7.1)	400 (11.3)	500 (14.2)	600 (17.0)	700 (19.8)	800 (22.7)	1000 (28.3)
10 (0.70)	350 (9.9)	600 (17.0)	850 (24.1)	1000 (28.3)	1200 (34.0)	1300 (36.8)	1400 (39.6)
15 (1.00)	425 (12.0)	900 (25.5)	1100 (31.2)	1500 (42.5)	1500 (42.5)	1500 (42.5)	1600 (45.3)
20 (1.40)	500 (14.2)	1100 (31.2)	1400 (39.6)	1600 (45.3)	1800 (51.0)	1800 (51.0)	1900 (53.8)
30 (2.10)	650 (18.4)	1400 (39.6)	1800 (51.0)	2100 (59.5)	2100 (59.5)	2100 (59.5)	—
40 (2.80)	800 (22.7)	1800 (51.0)	2200 (62.3)	2400 (68.0)	2500 (70.8)	—	—
60 (4.10)	1100 (31.2)	2200 (62.3)	2500 (70.8)	2500 (70.8)	—	—	—
100 (6.90)	1700 (48.1)	2400 (68.0)	2500 (70.8)	—	—	—	—
125 (8.60)	2000 (56.6)	—	—	—	—	—	—

For optimum performance, maximum inlet pressure should not exceed maximum capacity rating for any given orifice size.

## 1" Outlet

Set Point 7.0" W.C. (17.4 mbar)  
at 50 SCFH

SCFH (m<sup>3</sup>/h) 0.60 specific gravity gas at 60°F and 14.7 PSIA (20°C and 1.01 bar). Pressure spring 70017P044. Outlet pressure variance not to exceed +2" -1" W.C. from set point, horizontal position.

## 1800B2 Series Regulator Capacity SCFH (m<sup>3</sup>/h)

Inlet PSIG (bar)	1/8" x 3/16" Orifice	3/16" Orifice	1/4" Orifice	5/16" Orifice	3/8" Orifice	1/2" Orifice	9/16" Orifice
1 (0.07)	—	150 (4.2)	200 (5.7)	250 (7.1)	300 (8.5)	350 (9.9)	350 (9.9)
2 (0.14)	175 (5.0)	250 (7.1)	350 (9.9)	375 (10.6)	400 (11.3)	475 (13.4)	475 (13.4)
3 (0.21)	200 (5.7)	325 (9.2)	400 (11.3)	425 (12.0)	500 (14.2)	550 (15.6)	600 (17.0)
5 (0.34)	275 (7.8)	425 (12.0)	550 (15.6)	600 (17.0)	700 (19.8)	1000 (28.3)	1000 (28.3)
10 (0.70)	350 (9.9)	650 (18.4)	900 (25.5)	1000 (28.3)	1400 (39.6)	1500 (42.5)	1800 (51.0)
15 (1.00)	425 (12.0)	900 (25.5)	1200 (34.0)	1500 (42.5)	1800 (51.0)	2100 (59.5)	2400 (68.0)
20 (1.40)	500 (14.2)	1100 (31.2)	1600 (45.3)	1800 (51.0)	2300 (65.1)	2500 (70.8)	2500 (70.8)
30 (2.10)	650 (18.4)	1400 (39.6)	2000 (56.6)	2500 (70.8)	2500 (70.8)	2500 (70.8)	—
40 (2.80)	800 (22.7)	1800 (51.0)	2500 (70.8)	2500 (70.8)	2500 (70.8)	2500 (70.8)	—
60 (4.10)	1100 (31.2)	2400 (68.0)	2500 (70.8)	2500 (70.8)	2500 (70.8)	—	—
100 (6.90)	1700 (48.1)	2500 (70.8)	2500 (70.8)	—	—	—	—
125 (8.60)	2000 (56.6)	—	—	—	—	—	—

For optimum performance, maximum inlet pressure should not exceed maximum capacity rating for any given orifice size.

# 1800B2 Series Regulator Capacity Performance

## 1-1/4" Outlet

Set Point 7.0" W.C. (17.4 mbar)  
at 50 SCFH

SCFH (m<sup>3</sup>/h) 0.60 specific gravity gas at 60°F and 14.7 PSIA (20°C and 1.01 bar). Pressure spring 70017P044. Outlet pressure variance not to exceed +2" -1" W.C. from set point, horizontal position.

## 1800B2 Series Regulator Capacity SCFH (m<sup>3</sup>/h)

Inlet PSIG (bar)	1/8" x 3/16" Orifice	3/16" Orifice	1/4" Orifice	5/16" Orifice	3/8" Orifice	1/2" Orifice	9/16" Orifice
1 (0.07)	—	150 (4.2)	200 (5.7)	275 (7.8)	350 (9.9)	400 (11.3)	400 (11.3)
2 (0.14)	175 (5.0)	250 (7.1)	350 (9.9)	475 (13.4)	500 (14.2)	650 (18.4)	900 (25.5)
3 (0.21)	225 (6.4)	325 (9.2)	475 (13.4)	550 (15.6)	700 (19.8)	1000 (28.3)	1500 (42.5)
5 (0.34)	275 (7.8)	475 (13.4)	750 (21.2)	1000 (28.3)	1200 (34.0)	2000 (56.6)	2500 (70.8)
10 (0.70)	375 (10.6)	800 (22.7)	1500 (42.5)	2200 (62.3)	2500 (70.8)	2500 (70.8)	2500 (70.8)
15 (1.00)	450 (12.7)	1000 (28.3)	1800 (51.0)	2500 (70.8)	2500 (70.8)	2500 (70.8)	2500 (70.8)
20 (1.40)	500 (14.2)	1200 (34.0)	2100 (59.5)	2500 (70.8)	2500 (70.8)	—	—
30 (2.10)	650 (18.4)	1600 (45.3)	2500 (70.8)	—	—	—	—
40 (2.80)	800 (22.7)	1900 (53.8)	—	—	—	—	—
60 (4.10)	1100 (31.2)	—	—	—	—	—	—
100 (6.90)	1700 (48.1)	—	—	—	—	—	—

For optimum performance, maximum inlet pressure should not exceed maximum capacity rating for any given orifice size.

## 3/4" Outlet

Set Point 2 PSIG (0.14 bar)  
at 50 SCFH

SCFH (m<sup>3</sup>/h) 0.60 specific gravity gas at 60°F and 14.7 PSIA (20°C and 1.01 bar). Pressure spring 70017P049. Outlet pressure variance not to exceed +/- 10% from set point, horizontal position.

## 1800B2 Series Regulator Capacity SCFH (m<sup>3</sup>/h)

Inlet PSIG (bar)	1/8" x 3/16" Orifice	3/16" Orifice	1/4" Orifice	5/16" Orifice	3/8" Orifice	1/2" Orifice	9/16" Orifice
3 (0.21)	—	200 (5.7)	225 (6.4)	275 (7.8)	300 (8.5)	375 (10.6)	450 (12.7)
5 (0.34)	200 (5.7)	300 (8.5)	375 (10.6)	475 (13.4)	475 (13.4)	600 (17.0)	700 (19.8)
10 (0.70)	325 (9.2)	450 (12.7)	600 (17.0)	750 (21.2)	800 (22.7)	1100 (31.2)	1200 (34.0)
15 (1.00)	425 (12.0)	600 (17.0)	800 (22.7)	1000 (28.3)	1000 (28.3)	1400 (39.6)	1500 (42.5)
20 (1.40)	500 (14.2)	750 (21.2)	1000 (28.3)	1200 (34.0)	1300 (36.8)	1600 (45.3)	1800 (51.0)
30 (2.10)	600 (17.0)	950 (26.9)	1300 (36.8)	1600 (45.3)	1700 (48.1)	2300 (65.1)	—
40 (2.80)	750 (21.2)	1200 (34.0)	1600 (45.3)	1900 (53.8)	2100 (59.5)	2500 (70.8)	—
60 (4.10)	1100 (31.2)	1600 (45.3)	2100 (59.5)	2300 (65.1)	2500 (70.8)	—	—
100 (6.90)	1600 (45.3)	2200 (62.3)	2500 (70.8)	—	—	—	—
125 (8.60)	2000 (56.6)	—	—	—	—	—	—

For optimum performance, maximum inlet pressure should not exceed maximum capacity rating for any given orifice size.

# 1800B2 Series Regulator Capacity Performance

## 1" Outlet

Set Point 2 PSIG (0.14 bar)  
at 50 SCFH

SCFH (m<sup>3</sup>/h) 0.60 specific gravity gas at 60°F and 14.7 PSIA (20°C and 1.01 bar). Pressure spring 70017P049. Outlet pressure variance not to exceed +/- 10% from set point, horizontal position.

## 1800B2 Series Regulator Capacity SCFH (m<sup>3</sup>/h)

Inlet PSIG (bar)	1/8" x 3/16" Orifice	3/16" Orifice	1/4" Orifice	5/16" Orifice	3/8" Orifice	1/2" Orifice	9/16" Orifice
3 (0.21)	—	200 (5.7)	225 (6.4)	275 (7.8)	300 (8.5)	375 (10.6)	450 (12.7)
5 (0.34)	200 (5.7)	300 (8.5)	375 (10.6)	475 (13.4)	475 (13.4)	600 (17.0)	700 (19.8)
10 (0.70)	350 (9.9)	475 (13.4)	600 (17.0)	750 (21.2)	850 (24.1)	1200 (34.0)	1300 (36.8)
15 (1.00)	425 (12.0)	650 (18.4)	850 (24.1)	1000 (28.3)	1100 (31.2)	1500 (42.5)	1700 (48.1)
20 (1.40)	500 (14.2)	800 (22.7)	1100 (31.2)	1300 (36.8)	1400 (39.6)	2000 (56.6)	2300 (65.1)
30 (2.10)	650 (18.4)	1000 (28.3)	1500 (42.5)	1800 (51.0)	2000 (56.6)	2500 (70.8)	—
40 (2.80)	800 (22.7)	1300 (36.8)	1900 (53.8)	2400 (68.0)	2500 (70.8)	2500 (70.8)	—
60 (4.10)	1100 (31.2)	2100 (59.5)	2500 (70.8)	2500 (70.8)	2500 (70.8)	—	—
100 (6.90)	1600 (45.3)	2500 (70.8)	2500 (70.8)	—	—	—	—
125 (8.60)	2000 (56.6)	—	—	—	—	—	—

For optimum performance, maximum inlet pressure should not exceed maximum capacity rating for any given orifice size.

## 1-1/4" Outlet

Set Point 2 PSIG (0.14 bar)  
at 50 SCFH

SCFH (m<sup>3</sup>/h) 0.60 specific gravity gas at 60°F and 14.7 PSIA (20°C and 1.01 bar). Pressure spring 70017P049. Outlet pressure variance not to exceed +/- 10% from set point, horizontal position.

## 1800B2 Series Regulator Capacity SCFH (m<sup>3</sup>/h)

Inlet PSIG (bar)	1/8" x 3/16" Orifice	3/16" Orifice	1/4" Orifice	5/16" Orifice	3/8" Orifice	1/2" Orifice	9/16" Orifice
3 (0.21)	—	200 (5.7)	225 (6.4)	275 (7.8)	300 (8.5)	375 (10.6)	450 (12.7)
5 (0.34)	200 (5.7)	300 (8.5)	375 (10.6)	475 (13.4)	500 (14.2)	600 (17.0)	750 (21.2)
10 (0.70)	350 (9.9)	500 (14.2)	600 (17.0)	750 (21.2)	950 (26.9)	1200 (34.0)	1400 (39.6)
15 (1.00)	425 (12.0)	650 (18.4)	850 (24.1)	1100 (31.2)	1300 (36.8)	1800 (51.0)	2100 (59.5)
20 (1.40)	500 (14.2)	850 (24.1)	1100 (31.2)	1400 (39.6)	1700 (48.1)	2400 (68.0)	2500 (70.8)
30 (2.10)	650 (18.4)	1100 (31.2)	1600 (45.3)	2300 (65.1)	2500 (70.8)	2500 (70.8)	—
40 (2.80)	800 (22.7)	1500 (42.5)	2200 (62.3)	2500 (70.8)	2500 (70.8)	2500 (70.8)	—
60 (4.10)	1100 (31.2)	2400 (68.0)	2500 (70.8)	2500 (70.8)	2500 (70.8)	—	—
100 (6.90)	1700 (48.1)	2500 (70.8)	2500 (70.8)	—	—	—	—
125 (8.60)	2100 (59.5)	—	—	—	—	—	—

For optimum performance, maximum inlet pressure should not exceed maximum capacity rating for any given orifice size.

## 1800B2-HC Series Regulators

Ideal for light commercial and industrial use, the 1-1/4" 1800B"-HC Series regulator is designed to increase output capacity during medium to high inlet pressure operations.

### General Information

The 1800B2-HC Series regulator's lightweight design features high-capacity capabilities for 1-1/4" NPT connections and flow capacities up to 4600 SCFH depending on inlet pressure and orifice selection. It complements the 1800B2 Series family of regulators.



AC-630 Meter with 1813B2-HC Regulator

## 1800B2-HC Series Regulator Capacity Performance

### 1-1/4" Outlet

Set Point 7.0" W.C. (17.4 mbar)  
at 50 SCFH

SCFH (m<sup>3</sup>/h) 0.60 specific gravity gas at 60°F and 14.7 PSIA (20°C and 1.01 bar). Pressure spring 70017P044. Outlet pressure variance not to exceed +2" -1" W.C. from set point, horizontal position.

### 1800C-HC Series Regulator Capacity SCFH (m<sup>3</sup>/h)

Inlet PSIG (bar)	1/8" x 3/16" Orifice	3/16" Orifice	1/4" Orifice	5/16" Orifice	3/8" Orifice	1/2" Orifice	9/16" Orifice
1 (0.07)	—	150 (4.2)	225 (6.4)	225 (6.4)	200 (4.2)	325 (9.2)	300 (8.5)
2 (0.14)	150 (4.2)	200 (5.7)	275 (7.8)	300 (8.5)	350 (9.9)	375 (10.6)	450 (12.7)
3 (0.21)	200 (5.7)	250 (7.1)	350 (9.9)	350 (9.9)	425 (12.0)	600 (17.0)	600 (17.0)
5 (0.34)	250 (7.1)	350 (9.9)	425 (12.0)	500 (14.2)	600 (17.0)	750 (21.2)	850 (24.1)
10 (0.70)	350 (9.9)	500 (14.2)	650 (18.4)	800 (22.7)	800 (22.7)	1500 (42.5)	1700 (48.1)
15 (1.00)	425 (12.0)	600 (17.0)	900 (25.5)	950 (26.9)	1500 (42.5)	2200 (62.3)	2300 (65.1)
20 (1.40)	500 (14.2)	750 (21.2)	1000 (28.3)	2100 (59.4)	2200 (62.3)	2700 (76.4)	2900 (82.1)
30 (2.10)	650 (18.4)	1200 (34.0)	1700 (48.1)	3600 (101.9)	3000 (84.9)	3900 (110.4)	—
40 (2.80)	800 (22.7)	1650 (46.7)	2600 (73.6)	4300 (121.7)	4100 (116.0)	—	—
60 (4.10)	1100 (31.2)	2500 (70.8)	4500 (127.4)	4600 (130.2)	3900 (110.4)	—	—
100 (6.90)	1700 (48.1)	3900 (110.4)	—	—	—	—	—
125 (8.60)	1900 (53.8)	—	—	—	—	—	—

For optimum performance, maximum inlet pressure should not exceed maximum capacity rating for any given orifice size.

# 1800B2 and 1800B2-HC Series Service Regulators - Other Technical Data

## Full-Open Regulator Relief Capacity

For sizing downstream relief valves, use the following formulas to determine the regulator full-open capacity:

Critical flow rates:  $Q = 0.5 C \times \frac{P_1}{\sqrt{G}}$       sub-critical flows:  $Q = C \times \sqrt{\frac{P_2 h}{G}}$

Critical flow occurs when the absolute outlet pressure is less than about 1/2 of the absolute inlet pressure.

- Q Maximum capacity of regulator
- C Orifice constant (see table below)
- P<sub>1</sub> Inlet absolute pressure (PSIA)
- P<sub>2</sub> Outlet absolute pressure (PSIA)
- h Differential pressure
- G Specific gravity of gas

## Orifice Constants

Orifice	C
1/8"	25
1/8" x 3/16"	25
3/16"	57
1/4"	98
5/16"	149
3/8"	208
1/2"	353
9/16"	421

## Maximum Recommended Inlet Pressure

Orifice	Inlet pressure (PSIG)
9/16"	20
1/2"	40
3/8"	100
5/16"	110
1/4"	125
3/16"	125
1/8" x 3/16"	125
1/8"	125

This is the maximum inlet the regulator should operate at to insure complete lockup at no-flow conditions.

## Other Gas Capacities

To determine the capacity of these regulators for gases other than natural gas, multiply the values within the capacity tables by a Specific Gravity Conversion Factor (F<sub>g</sub>). The table below lists this factor for some of the more common gases.

GAS TYPE	SPECIFIC GRAVITY	CONVERSION FACTOR (F <sub>g</sub> )
Air	1.00	0.77
Butane	2.01	0.55
Carbon Dioxide	1.52	0.63
Nitrogen	0.97	0.79
Propane	1.53	0.63

To calculate the Conversion Factor for other gases:

$$\sqrt{\frac{\text{Specific gravity of gas on which the capacity table is based}}{\text{Specific gravity of gas being used}}}$$

Example: If using propane and only having tables based on natural gas, the Specific Gravity Conversion Factor is:

$$(F_g) = \sqrt{\frac{\text{Specific gravity of natural gas (0.6)}}{\text{Specific gravity of propane (1.53)}}}$$

$$(F_g) = \sqrt{\frac{0.60}{1.53}}$$

$$(F_g) = 0.626$$

## Regulator Pressure Rating

125 PSIG (8.6 bar) = Maximum recommended inlet pressure for normal service. Maximum recommended pressure may vary with orifice size.

175 PSIG (12 bar) = Maximum inlet pressure for abnormal or emergency service, without causing damage to regulator case.

2 PSIG (138 mbar) = Maximum outlet pressure for normal service.

10 PSIG (689 mbar) = Maximum outlet pressure which can be contained by pressure carrying components (no flange leakage to atmosphere except for normal relief action). **If regulator is subjected to these conditions, it should be removed from service.**

50 PSIG (3.5 bar) = Maximum outlet pressure for abnormal service without damage to internal components. **If regulator is subjected to these conditions, it should be removed from service.**

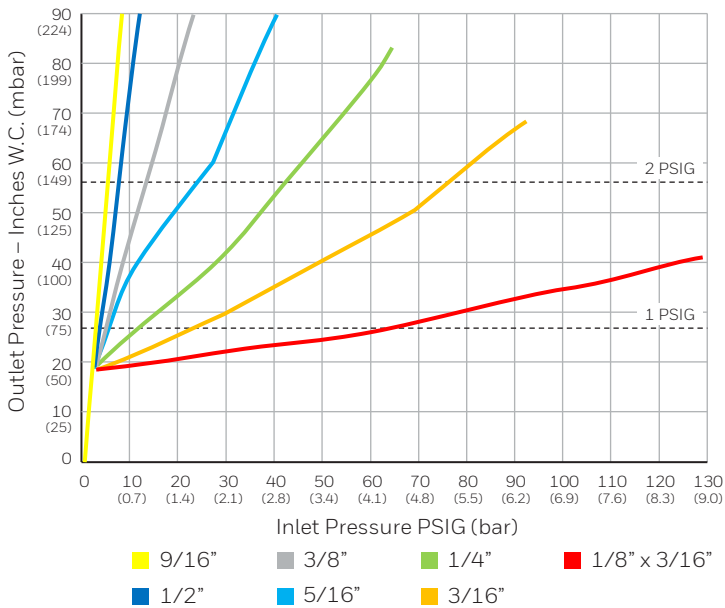
# 1800B2 and 1800B2-HC Series Service Regulators

## Regulator Relief Valve Performance

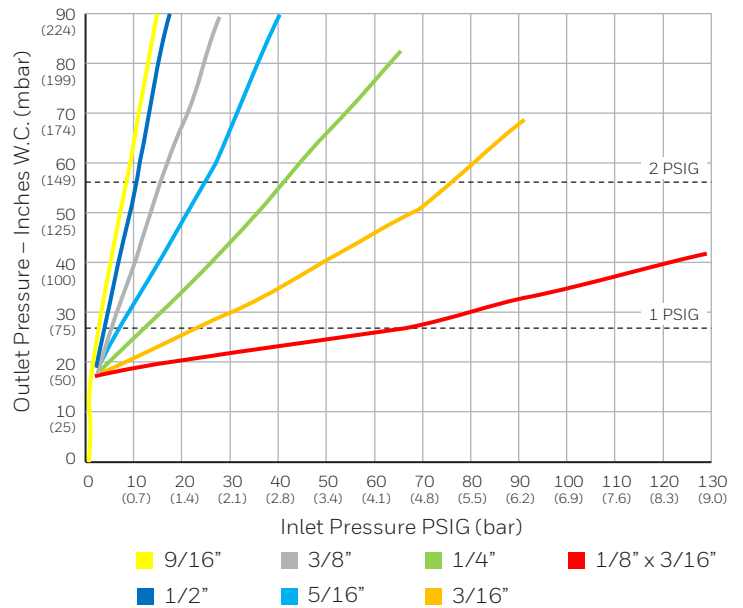
There are several methods of measuring the relief performance of a regulator. The worst case scenario will occur when the lever is disconnected. The data presented in the tables below represent this condition.

### Outlet Pressure Relative to Inlet Pressure

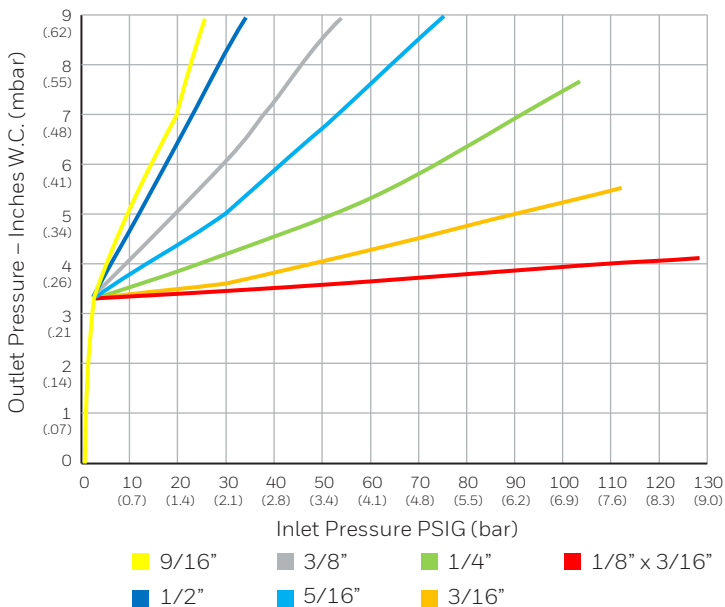
3/4" Screen Vent – No Vent Pipe Set Pressure 7" W.C.



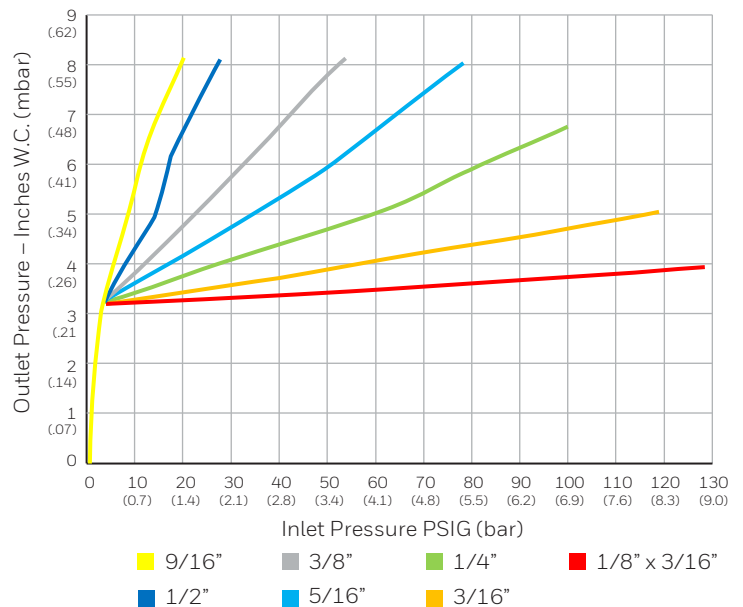
1" Screen Vent – No Vent Pipe Set Pressure 7" W.C.



3/4" Screen Vent – No Vent Pipe Set Pressure 2 PSIG



1" Screen Vent – No Vent Pipe Set Pressure 2 PSIG

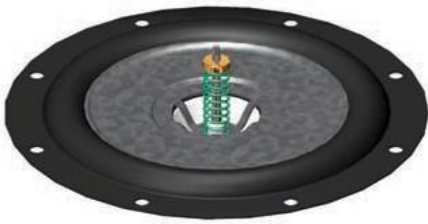


# 1800B2-L Regulator with Limited Relief

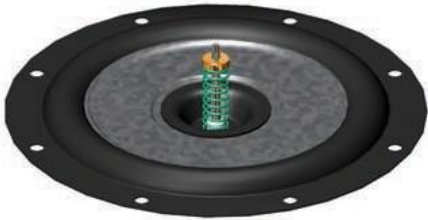
The 1843B2-L has a limited relief feature that reduces the amount of gas released to the atmosphere.

## General Information

Limited Relief is accomplished by installing a relief restriction cup inside the diaphragm assembly of the 1843B2 regulator. The 1843B2-L regulator utilizes overpressure protection as part of its assembly, which will shut off the gas in the event of over pressure condition.



Full Relief Diaphragm Assembly



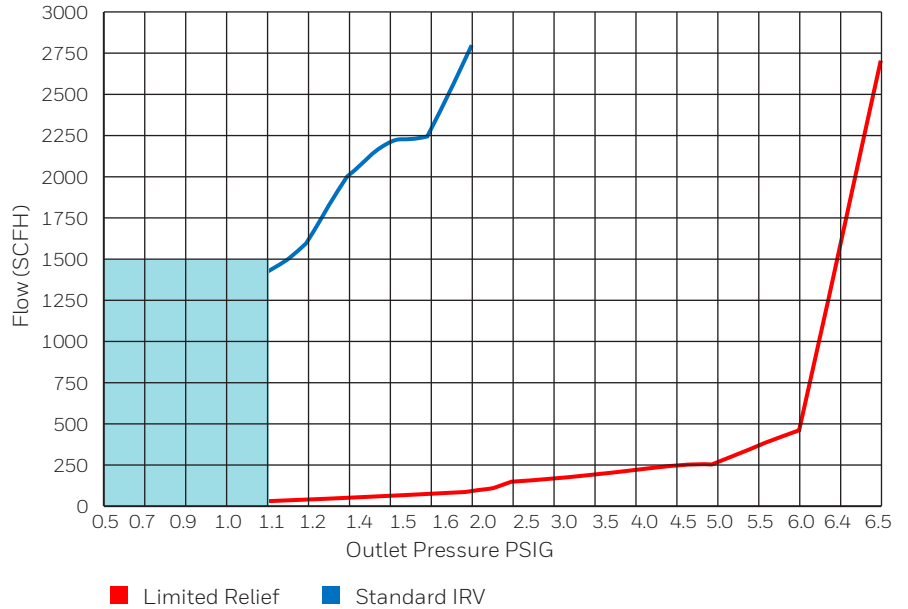
Full Relief Diaphragm Assembly

Under regulator lockup conditions, an increase in gas temperature or very small gas leakage through the orifice can raise the outlet gas pressure. The limited relief will release this small increase in outlet pressure to atmosphere without the OPSO tripping. But should the outlet pressure continue to increase for some reason, then the OPSO will shut off and close off the gas flow.

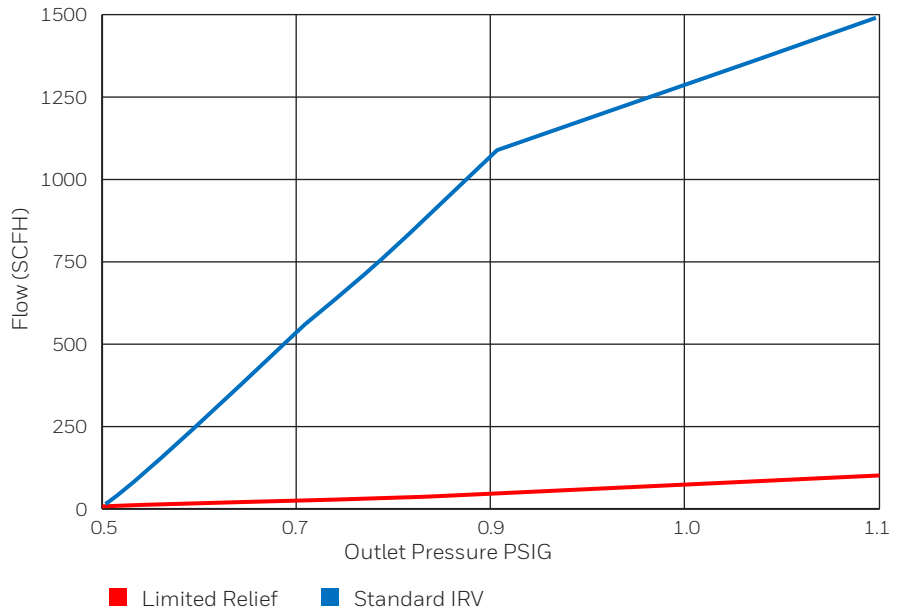
3/8" O/D minimum pipe size is recommended should the relief connection require piping to a safe location. Care must be taken to prevent water from closing off or entering into the vent opening. Any kind of blockage of the vent or vent pipe must be prevented.

To the right is a graphical representation of the difference of gas flow between a standard relief valve and a limited relief valve.

## Flow Through Vent



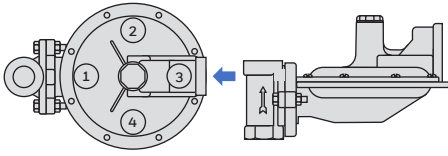
## Flow Through Vent – Enlarged View of Tinted Area



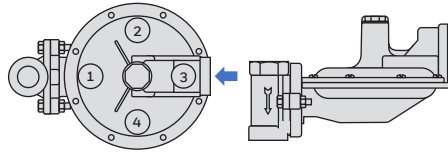
# Regulator Assembly Positions

## 180° Models

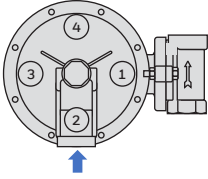
Valve Head Position 'A'



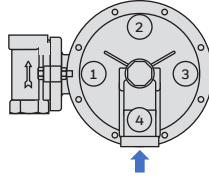
Valve Head Position 'B'



Valve Head Position 'C'

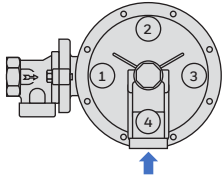


Valve Head Position 'D'

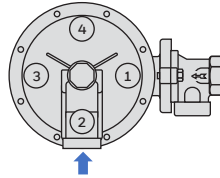


## 90° Models

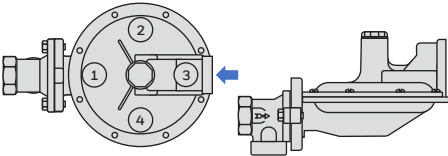
Valve Head Position 'A'



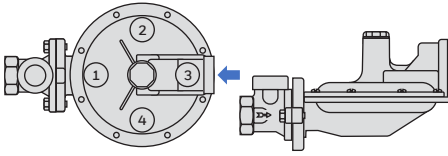
Valve Head Position 'B'



Valve Head Position 'C'

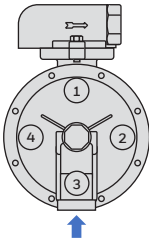


Valve Head Position 'D'



## Offset Models

Valve Head Position 'D'



↑ = Standard Vent Position



### Example of Regulator Assembly Position

In the photo above the 1813B2 Regulator shown has a 180-degree valve head in Position "C" (Flow upward) with the vent in position 2 (Looking down). This would be assembly position C2.

### Ordering Information

1. Model number
2. Size of inlet and outlet
3. Thread standard required
4. Maximum Inlet pressure, PSIG (bar)
5. Outlet pressure, inches w.c. (mbar) or PSIG (bar)
6. Maximum Flow, scfh (m<sup>3</sup>/h)
7. Kind and specific gravity of gas
8. Orifice size
9. Regulator assembly position number
10. Possible variation in inlet pressure for E.C. Orifice models.  
Maximum PSIG (bar)  
Minimum PSIG (bar)
11. OPSO Trip range, inches w.c. (mbar) or PSIG (bar) if required.
12. UPSO Trip range, inches w.c. (mbar) or PSIG (bar) if required.

### Shipping Weight

17.5 lbs/carton of four regulators.