

Industrial Regulator Series 1800/2000



AMC Quality System

QMI is Accredited by:



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Dutch Council
for Accreditation



2000 Worker/Monitor Regulators

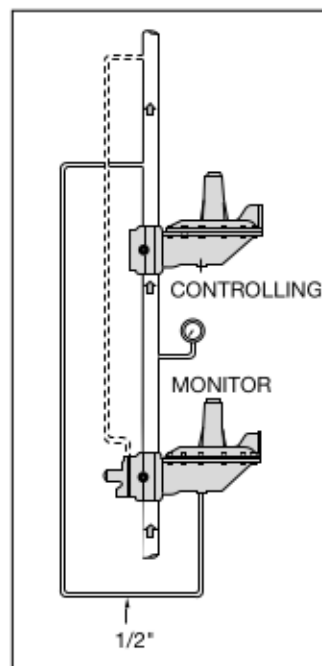
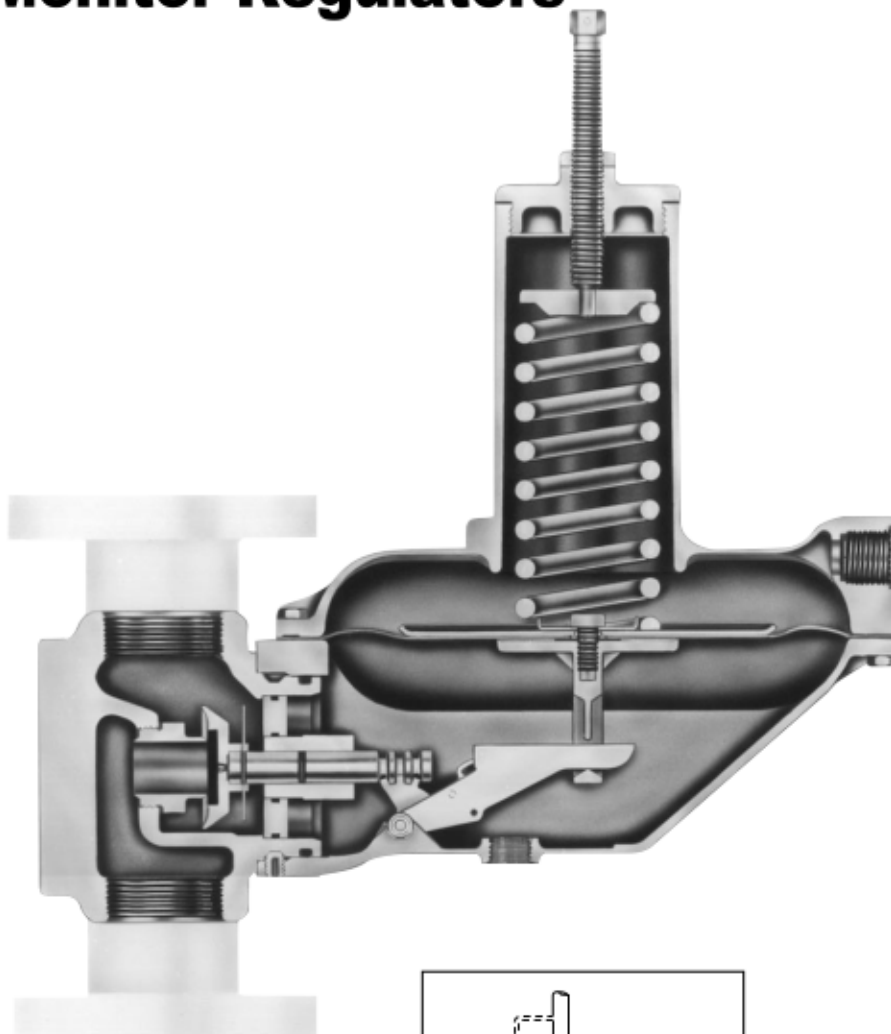
Worker/Monitor sets are commonly used to provide overpressure protection. A worker/monitor installation consists of a monitor with an external static connection and a worker with an internal static connection. The regulator selected to be the monitor is set at 2" to 5" w.c. above the worker. The external static connection is connected at a point free of turbulence and preferably a minimum of five pipe diameters downstream.

Improved Features 1800 and 2000 Series Monitor Conversion

American Meter offers four industrial monitor regulators – the 1803M, 2003M, 1883M and 2083M. Design improvements now enable *all* models to be configured as Monitor Regulators. This change was effective with all 1800 and 2000 Series Regulators manufactured after January 1994.

The advantage is that two models of the same regulator need not be stocked. All models are pre-machined to accept a monitor conversion kit. Refer to IMP 8740 for kit numbers and installation instructions.

When a regulator with an OPSO is converted to a monitor, a sense line must extend downstream of the worker, as shown in the diagram to the right.



**Typical Upstream
Monitor Installation**



Monitor Conversion

The body and valve head are pre-machined to allow easy conversion to a monitor model. See page 2 for more information.

Rugged Construction

Valve heads are ductile iron which prevents thread damage. Available as 1-1/2" and 2" screwed, and 2" flanged connections. ANSI, BSP and DIN connections available.

Springs

The 1800 Series spring ranges from 3.5" w.c. to 5 psi outlet pressure. 2000 Series spring ranges from 1/2 psi to 15 psi outlet pressure. See page 12.

Relief Vent

A 2" vent for Full Relief overpressure protection in three models, such as the 1813B. Partial Relief has 1" vent and 2000 Series has 3/4". See page 7 for relief performances.

Durability

Cast-aluminum top and bottom diaphragm case for long service life.

UPSO

Snap-acting lever for underpressure shutoff protection when line pressure drops drastically.

Pressure Taps

The 1800 and 2000 Regulators have inlet and outlet pressure taps.

Maintenance

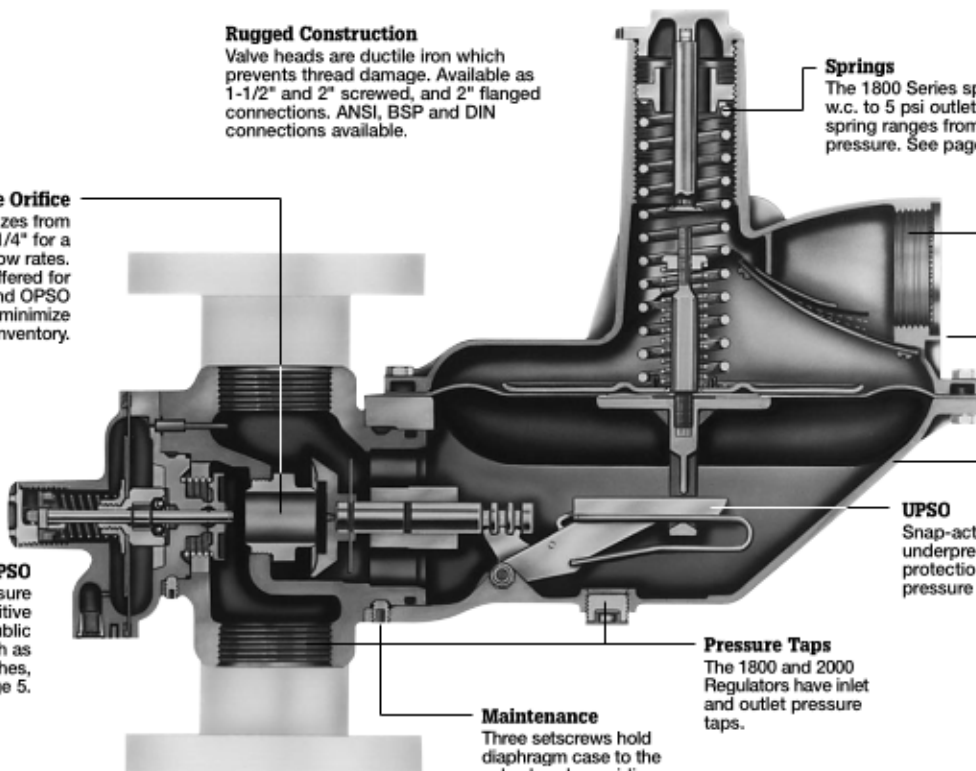
Three setscrews hold diaphragm case to the valve head, providing the easiest orifice and seat disc inspection in the industry.

Interchangeable Orifice

Available in sizes from 1/4" through 1-1/4" for a wide range of flow rates. One orifice is offered for both standard and OPSO models to minimize spare-parts inventory.

OPSO

Overpressure Shutoff for positive protection of public buildings such as schools, churches, etc. See page 5.





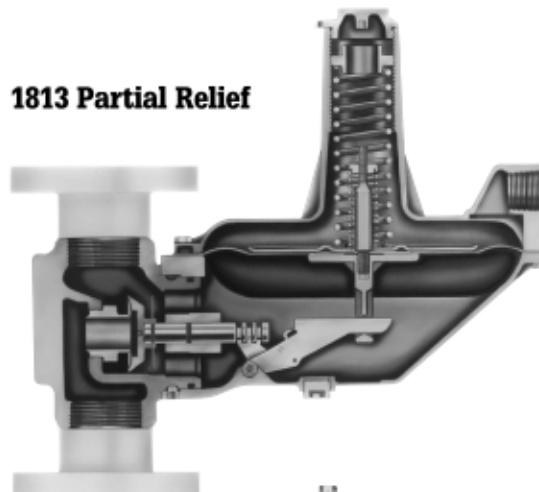
1800 Series low-pressure models have a maximum inlet pressure of 150 psi and offer outlet pressures ranging from 3.5" w.c. to 5 psi. 2000 Series high pressure models allow a maximum inlet pressure of 150 psi and outlet pressures ranging from .5 psi to 15 psi. The 1800 Series can be ordered as Full Relief, Partial Relief or No Relief Regulator as shown in the table. 2000 Series Regulators are non-relieving. Both models are available with Overpressure Shutoff, Underpressure Shutoff and monitor capabilities.

Low Pres. Model Numbers	Description	Dimensions				
		A	B	C	D	*E
1803	Standard Regulator	12.75"	3"	1.75"	16"	10.5'
1803M	Standard Monitor Regulator	12.75"	3"	1.75"	16"	10.5'
1813	Partial Internal Relief Regulator	12.75"	3"	1.75"	16"	10.5'
1813B	Full Capacity Internal Relief Regulator	12.75"	3"	1.75"	16"	10.5'
1823	Underpressure Shutoff	12.75"	3"	1.75"	16"	10.5'
1833	Underpressure Shutoff with Partial Internal Relief	12.75"	3"	1.75"	16"	10.5'
1833B	Underpressure Shutoff with Full Internal Relief	12.75"	3"	1.75"	16"	10.5'
1843	Overpressure Shutoff with Partial Internal Relief	12.75"	3"	5.62"	19.87"	10.5'
1843B	Overpressure Shutoff with Full Capacity Internal Relief	12.75"	3"	5.62"	19.87"	10.5'
1853	Overpressure and Underpressure Shutoff with Partial Internal Relief	12.75"	3"	5.62"	19.87"	10.5'
1853B	Overpressure and Underpressure Shutoff with Full Capacity Internal Relief	12.75"	3"	5.62"	19.87"	10.5'
1883	Overpressure Shutoff	12.75"	3"	5.62"	19.87"	10.5'
1883M	Overpressure Shutoff with Monitor	12.75"	3"	5.62"	19.87"	10.5'
1893	Overpressure and Underpressure Shutoff	12.75"	3"	5.62"	19.87"	10.5'

High Pres. Model Numbers	Description	Dimensions				
		A	B	C	D	*E
2003	Standard Regulator	18.19"	3"	1.75"	16"	10.5'
2003M	Standard Monitor Regulator	18.19"	3"	1.75"	16"	10.5'
2023	Underpressure Shutoff	18.19"	3"	1.75"	16"	10.5'
2083	Overpressure Shutoff	18.19"	3"	5.62"	19.87"	10.5'
2083M	Overpressure Shutoff with Monitor	18.19"	3"	5.62"	19.87"	10.5'
2093	Overpressure and Underpressure Shutoff	18.19"	3"	5.62"	19.87"	10.5'

*A 10" flange valve head is an option; contact Sales Office for information.

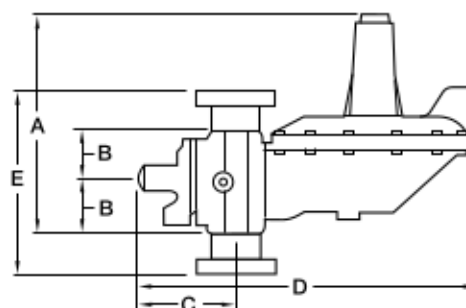
1813 Partial Relief



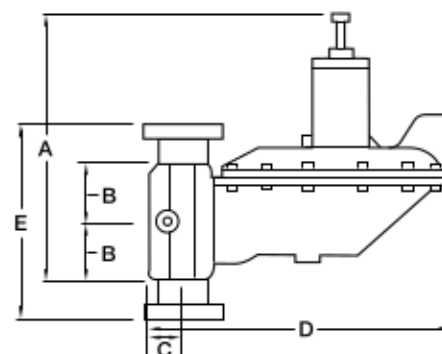
2003 No Relief



Low Pressure



High Pressure



Regulator Safety Features Available Exclusively From ITT Controls On Series 1800 and 2000 Industrial Regulators

Pressure control and automatic shutoff devices for the protection of public buildings, schools, theaters, hospitals, etc. are available in one complete package on several 1800 and 2000 Series Industrial Regulator models (see page 5). Installing one of these regulators provides automatic protection against possible extreme variations in either inlet or outlet gas pressure.

UPSO

The UPSO (underpressure shutoff) models provide complete shutoff protection in case of severely interrupted inlet gas pressure. If the inlet or outlet pressure is severely interrupted, causing the regulator to stroke to a full-open position, the shutoff closes, providing complete system safety.

The shutoff valve remains closed until manually reset.

How The UPSO Operates

When gas pressure under the main diaphragm falls below normal, the shutoff device is tripped and the spring, connected with the valve plunger, forces the valve seat against the orifice closing off gas flow. The UPSO **must be manually reset** to re-establish gas flow.

To reset the underpressure shutoff device (Figure 3), unscrew the reset plug with a wrench. When it becomes free of the threads, pull it out until it engages the reset mechanism. With the wrench, turn the reset shaft clockwise until the reset mechanism is engaged. Hold firmly in this position until normal pressure is established under the diaphragm and downstream line, and regulator operation is restored. Screw in the reset plug and tighten.

OPSO

Overpressure shutoff regulator models prevent excessive gas pressure from entering a building causing a hazardous condition. The shutoff device closes if the regulator outlet pressure rises above a maximum set point or set pressure.

How The OPSO Operates

When line or static pressure increases to the specified overpressure shutoff setting, the pressure on the under side of the shutoff diaphragm over-balances the spring, forcing the diaphragm stem outward, releasing the plunger. This permits the shutoff spring to force the shutoff disc against the orifice, closing off gas flow. The OPSO assembly is part of the regulator but is not connected to the regulator operating mechanism.

When selecting a shutoff spring, a minimum differential of 14" w.c. between normal operating pressures and the shutoff pressure setting should be provided.

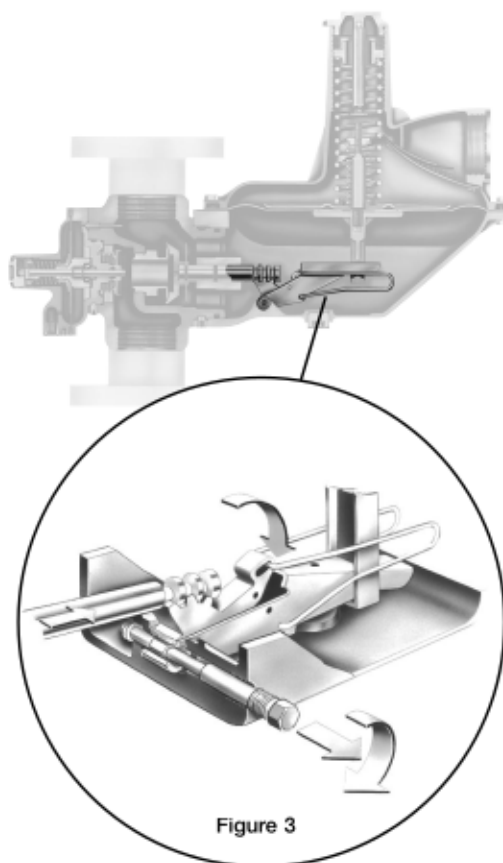
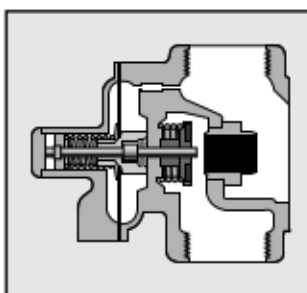
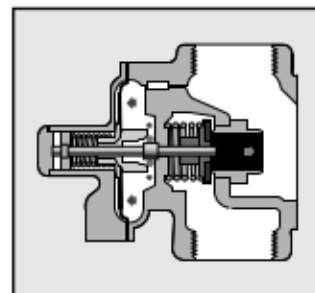


Figure 3

Overpressure Shutoff (OPSO) in cocked position



Overpressure Shutoff (OPSO) in tripped position



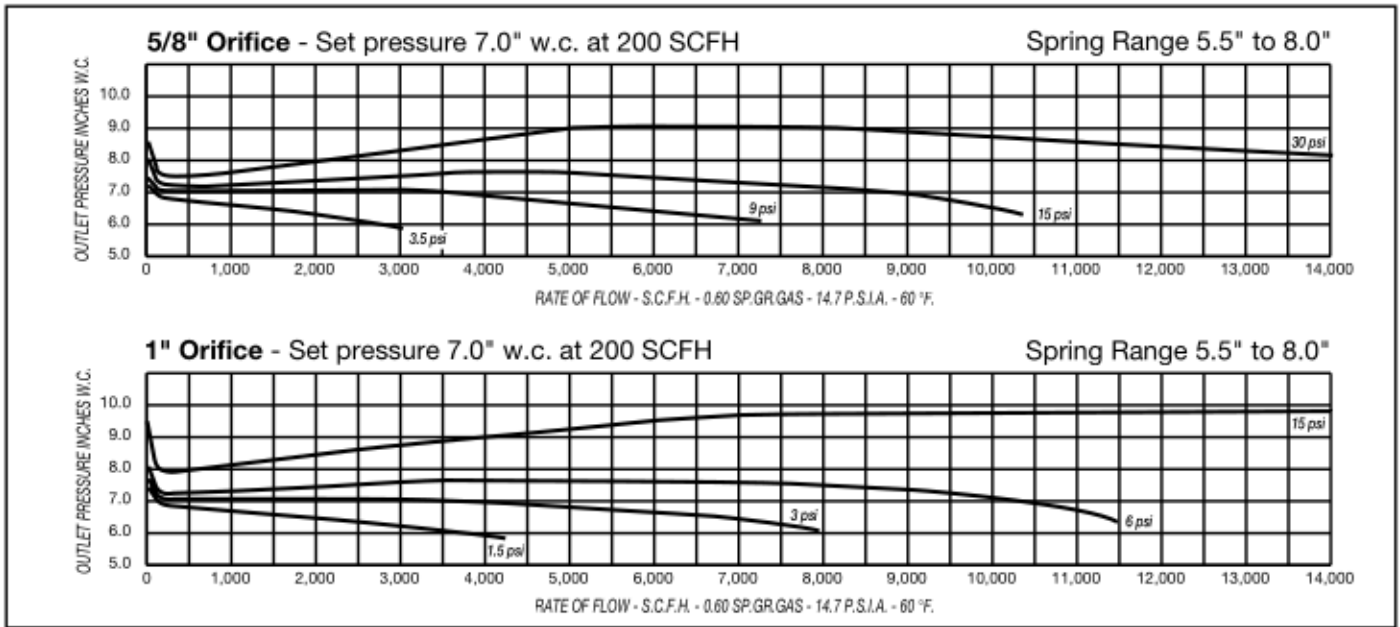
To reset the overpressure shutoff device, unscrew the seal cap, which opens the regulator orifice, permitting gas flow. Pull out on the seal cap until the overpressure shutoff device latches completely. Tighten the seal cap.

Do not trip the shutoff valve unless the seal cap is installed.

OUPSO

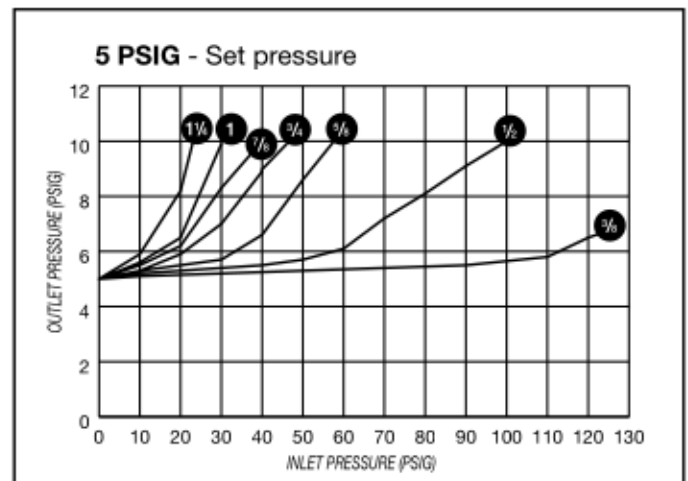
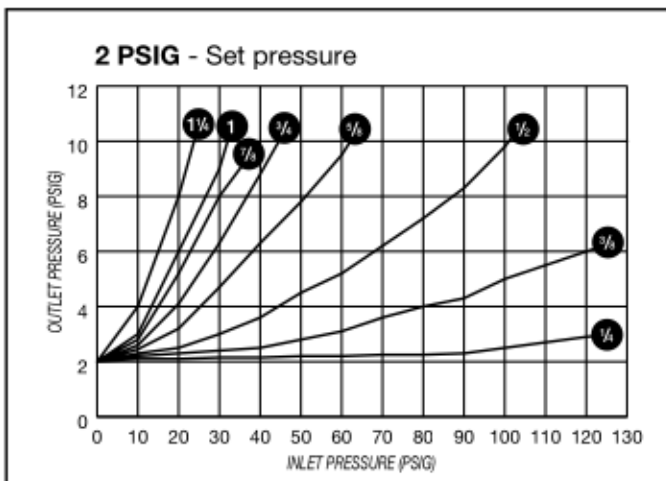
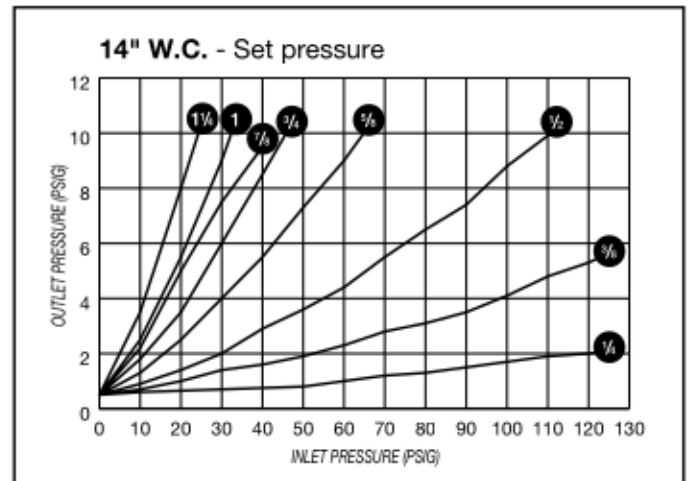
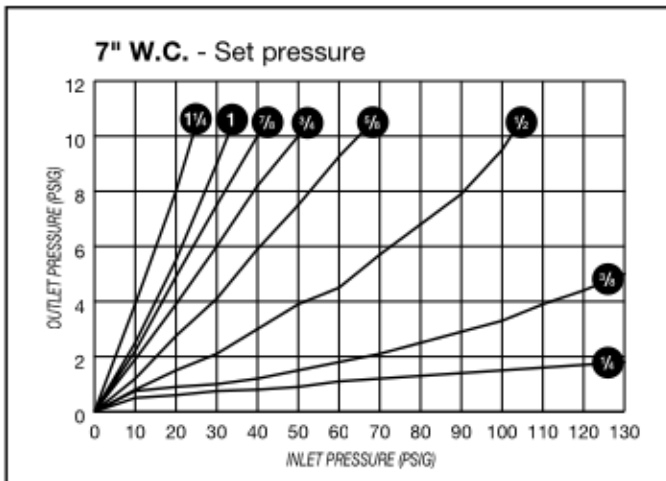
Overpressure and underpressure shutoff models combine both safety features for maximum protection. On these models, when the OPSO shuts off, the UPSO automatically trips, providing double assurance of positive gas shutoff. The overpressure shutoff device must be reset first followed by resetting the underpressure shutoff device.

Capacity Data



ITT Controls Model 1813B Regulator (1-1/2" and 2" sizes) Full Relief Valve Characteristics

Test performed with orifice valve blocked in wide open position.
2" screened vent-no vent pipe. Numbers in each circle indicate orifice size.





1-1/2" Series 1800 Capacity Data

SCFH Gas - 0.60 Specific Gravity

		Orifice Size - All Models With Silver Holder								Inlet psi	Orifice Size - All Models With Silver Holder									
		1-1/4"	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"		1-1/4"	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"		
SPRING NO. 71424P017	3.5" to 6" w.c. Set: 6" w.c. Droop: 1" w.c. Max. Compound: 2" w.c.	2,000	1,600	1,300	1,100	900	550			1/2	1,900	1,550	1,300	1,100	1,000	600			SPRING NO. 71424P018	5.5" to 8" w.c. Set: 7" Droop: 1" Max. Compound: 2" w.c.
		2,850	2,300	2,100	1,800	1,400	1,100	750		1	2,750	2,300	1,850	1,800	1,300	1,150	700			
		3,800	3,250	2,900	2,700	2,000	1,700	1,200		2	3,750	3,300	2,600	2,600	2,000	1,800	1,100			
		4,500	3,900	3,400	3,400	2,500	2,200	1,400		3	4,500	3,900	3,300	3,200	2,500	2,100	1,300			
SPRING NO. 71424P019	8.5" to 14" w.c. Set: 11" w.c. Droop: 2" w.c.	5,700	5,100	4,400	4,300	3,300	2,900	2,000	1,100	5	5,700	5,100	4,300	4,000	3,400	2,950	1,800	1,000	SPRING NO. 71424P021	1 psi to 2 psi Set: 2 psi Droop: 0.4 psi
		7,500	6,200	6,100	4,800	4,400	3,000	1,550		10	7,400	6,300	6,000	5,000	4,400	3,000	1,600			
		9,100	7,900	7,500	6,200	5,400	3,850	1,900		15	9,150	7,800	7,500	6,300	5,500	3,850	1,900			
		11,750	11,100	9,000	7,200	6,300	4,600	2,300		20	11,800	10,700	8,900	8,100	5,800	2,800				
SPRING NO. 71424P020	14.5" to 28" w.c. Set: 1 psi Droop: 6" w.c.	12,300	10,800	9,200	7,200	3,400				30	12,300	11,000	9,300	7,150	3,400				SPRING NO. 71424P022	3 psi to 5 psi Set: 5 psi Droop: 1 psi
		12,000	9,400	4,500						40	12,000	9,400	4,500							
		5,850								60	5,850									
		7,000								80	7,000									
SPRING NO. 71424P022	2 psi to 3 psi Set: 3 psi Droop: 0.6 psi	8,400								100	8,400								SPRING NO. 71424P023	125
										125										
SPRING NO. 71424P026	1.5 to 2.5 psi Set: 2.5 psi Droop: 0.4 psi																		SPRING NO. 71424P026	

For optimum performance
above solid line. For UPS



2" Series 1800 Capacity Data

SCFH Gas – 0.60 Specific Gravity

Orifice Size For Models With Blue Holder – Without OPSO Orifice Size For Models With Silver Holder – With OPSO				Inlet psi	Orifice Size For Models With Silver Holder – Without OPSO Orifice Size For Models With Red Holder – With OPSO					
	1-1/4"	1"	7/8"		7/8"	3/4"	5/8"	1/2"	3/8"	1/4"
SPRING NO.	2,500	2,000	1,600	1/2	1,500	1,300	1,000	500		
71424P017	3,800	3,200	2,500	1	2,400	1,900	1,600	1,100	900	
	5,600	5,000	3,800	2	3,800	2,900	2,400	1,650	1,300	
3.5" to 6" w.c.	8,900	6,300	5,100	3	4,800	3,800	3,200	2,100	1,600	
Set: 6" w.c.	13,200	10,000	8,000	5	7,200	5,200	4,000	2,900	2,000	1,100
Droop: 1" w.c.		16,500	13,000	10	12,300	8,300	6,200	4,800	3,000	1,650
Max. Compound:				15	16,000	10,800	9,000	6,600	4,000	1,950
2" w.c.		20,000	20,000	20	19,000	15,700	11,700	8,000	4,600	2,300
				30	20,000	20,000	14,300	10,500	5,900	2,850
				40		20,000	18,500	13,000	7,200	3,400
				60				17,700	9,600	4,500
				80						5,850
				100						7,000
				125						8,400

Orifice Size For Models With Blue Holder – Without OPSO Orifice Size For Models With Silver Holder – With OPSO				Inlet psi	Orifice Size For Models With Silver Holder – Without OPSO Orifice Size For Models With Red Holder – With OPSO					
	1-1/4"	1"	7/8"		7/8"	3/4"	5/8"	1/2"	3/8"	1/4"
SPRING NO.	1,900	1,600	1,400	1/2	1,300	1,050	1,000	500		
71424P018	3,400	2,700	2,300	1	2,100	1,800	1,600	1,050	750	
	5,600	4,400	3,800	2	3,500	2,700	2,400	1,600	1,250	
5.5" to 8" w.c.	8,500	6,000	5,000	3	4,500	3,600	3,200	2,100	1,500	
Set: 7" w.c.	13,000	10,000	8,000	5	7,000	5,000	4,000	2,900	2,000	1,000
Droop: 1" w.c.		15,700	13,000	10	11,500	8,300	6,200	4,800	3,000	1,600
Max. Compound:		17,500	16,000	15	15,000	11,500	9,000	6,400	4,000	1,900
2" w.c.			19,200	20	19,000	15,500	11,000	7,800	4,600	2,200
				30	20,000	20,000	14,000	10,300	5,900	2,800
				40		20,000	18,500	12,500	7,200	3,400
				60				17,400	9,600	4,500
				80						5,800
				100						7,000
				125						8,300

Orifice Size For Models With Blue Holder – Without OPSO Orifice Size For Models With Silver Holder – With OPSO				Inlet psi	Orifice Size For Models With Silver Holder – Without OPSO Orifice Size For Models With Red Holder – With OPSO					
	1-1/4"	1"	7/8"		7/8"	3/4"	5/8"	1/2"	3/8"	1/4"
SPRING NO.	3,400	2,700	2,200	1	2,000	1,700	1,600	1,000	750	
71424P019	5,100	4,200	3,800	2	3,500	2,700	2,400	1,500	1,200	
	7,200	5,700	5,000	3	4,500	3,600	3,000	2,000	1,500	
8.5" to 14" w.c.	11,500	8,500	7,100	5	6,400	4,800	4,000	2,600	2,000	1,000
Set: 11" w.c.	20,000	15,000	12,300	10	11,200	8,100	6,200	4,300	2,900	1,600
Droop: 2" w.c.		19,000	16,000	15	15,000	10,800	8,000	5,800	3,800	1,900
			20,000	20	18,000	13,300	10,800	7,400	4,300	2,200
				30	20,000	17,900	14,000	10,000	5,700	2,800
				40		20,000	18,000	12,300	7,000	3,300
				60			20,000	17,300	9,000	4,500
				80				20,000	11,800	5,700
				100						7,000
				125						8,200

Orifice Size For Models With Blue Holder – Without OPSO Orifice Size For Models With Silver Holder – With OPSO				Inlet psi	Orifice Size For Models With Silver Holder – Without OPSO Orifice Size For Models With Red Holder – With OPSO					
	1-1/4"	1"	7/8"		7/8"	3/4"	5/8"	1/2"	3/8"	1/4"
SPRING NO.	2,700	2,200	2,000	1	1,800	1,500	1,500	900	750	
71424P019	4,500	3,800	3,100	2	3,000	2,300	2,100	1,400	1,100	
	6,000	5,300	4,200	3	3,800	3,200	2,700	1,800	1,400	
8.5" to 14" w.c.	10,600	7,600	6,200	5	5,600	4,400	3,600	2,500	1,800	1,000
Set: 14" w.c.	19,000	14,100	11,600	10	9,800	7,400	5,800	4,000	2,800	1,600
Droop: 2" w.c.		19,000	16,300	15	14,300	10,000	7,900	5,500	3,700	1,900
			20,000	20	17,700	12,300	9,500	7,200	4,300	2,200
				30	20,000	17,400	15,000	9,800	5,600	2,800
				40		20,000	18,000	12,200	7,000	3,300
				60			20,000	17,300	9,000	4,500
				80				20,000	11,800	5,700
				100						7,000
				125						8,100

For optimum performance
solid line. For UPSO Mod



2" Series 1800 Capacity Data

SCFH Gas – 0.60 Specific Gravity

Orifice Size For Models With Blue Holder – Without OPSO
Orifice Size For Models With Silver Holder – With OPSO

Inlet
psi

Orifice Size For Models With Silver Holder – Without OPSO
Orifice Size For Models With Red Holder – With OPSO

1-1/4"	1"	7/8"		7/8"	3/4"	5/8"	1/2"	3/8"	1/4"
7,000	5,500	4,600	3	4,500	3,500	3,000	2,000	1,500	
10,000	7,700	6,900	5	6,400	5,000	4,100	2,700	2,000	1,100
18,000	13,600	10,900	10	10,600	7,900	6,500	4,500	2,800	1,600
	18,000	15,300	15	14,000	10,500	8,600	6,100	3,700	1,900
	20,000	20,000	20	17,200	13,000	10,500	7,600	4,300	2,300
		20,000	30	20,000	18,000	14,000	10,300	5,600	2,800
			40	20,000	20,000	18,000	12,600	6,700	3,400
			60		20,000	20,000	17,400	9,300	4,700
			80				20,000	11,500	5,800
			100					13,800	7,000
			125						8,400

SPRING NO.
71424P020

14.5" to 28" w.c.
Set: 1 psi
Droop: 6" w.c.

Orifice Size For Models With Blue Holder – Without OPSO
Orifice Size For Models With Silver Holder – With OPSO

Inlet
psi

Orifice Size For Models With Silver Holder – Without OPSO
Orifice Size For Models With Red Holder – With OPSO

1-1/4"	1"	7/8"		7/8"	3/4"	5/8"	1/2"	3/8"	1/4"
7,600	6,000	5,300	5	5,200	4,600	3,600	2,600	1,800	1,000
14,100	10,800	8,900	10	8,400	7,600	5,900	4,200	2,800	1,600
20,000	15,100	12,600	15	11,800	10,300	7,600	5,800	3,700	1,900
20,000	19,100	15,800	20	14,500	12,500	9,500	7,200	4,300	2,200
	20,000	20,000	30	20,000	16,800	13,100	9,800	5,600	2,800
		20,000	40	20,000	20,000	17,300	12,200	6,700	3,400
			60	20,000	20,000	20,000	17,200	9,000	4,600
			80		20,000	20,000	20,000	11,500	5,800
			100					13,800	7,000
			125						8,400

SPRING NO.
71424P021

1 psi to 2 psi
Set: 2 psi
Droop: 0.4 psi

Orifice Size For Models With Blue Holder – Without OPSO
Orifice Size For Models With Silver Holder – With OPSO

Inlet
psi

Orifice Size For Models With Silver Holder – Without OPSO
Orifice Size For Models With Red Holder – With OPSO

1-1/4"	1"	7/8"		7/8"	3/4"	5/8"	1/2"	3/8"	1/4"
5,400	3,600	2,900	5	3,200	2,700	2,500	1,600	1,200	800
9,000	7,400	6,300	10	6,500	5,800	4,100	2,900	2,100	1,300
13,100	10,300	9,400	15	9,000	6,300	5,800	4,000	3,100	1,600
18,500	12,800	11,200	20	11,200	8,300	7,000	5,200	3,600	2,000
	19,300	17,500	30	15,500	13,100	10,400	7,600	5,100	2,600
		22,700	40	22,700	17,800	13,000	9,200	6,400	3,200
			60	22,700	25,900	21,600	14,400	8,900	4,400
			80		18,400	24,100	19,100	11,600	5,600
			100					13,400	6,800
			125						8,200

SPRING NO.
71424P026

1.5 psi to 2.5 psi
Set: 2.5 psi
Droop: 0.4 psi

Orifice Size For Models With Blue Holder – Without OPSO
Orifice Size For Models With Silver Holder – With OPSO

Inlet
psi

Orifice Size For Models With Silver Holder – Without OPSO
Orifice Size For Models With Red Holder – With OPSO

1-1/4"	1"	7/8"		7/8"	3/4"	5/8"	1/2"	3/8"	1/4"
4,100	3,400	3,200	5	3,000	3,000	2,000	2,000	1,300	750
7,600	5,800	5,000	10	5,000	5,000	3,500	3,500	2,200	1,400
10,800	8,000	6,600	15	6,600	6,600	4,800	4,800	2,000	1,800
13,800	10,500	8,600	20	8,100	8,100	5,800	5,800	3,600	2,200
	14,200	12,800	30	10,800	10,800	8,000	8,000	4,800	2,900
		17,000	40	14,300	14,300	10,000	10,000	6,000	3,500
			60	20,000	20,000	14,500	14,500	8,400	4,800
			80		20,000	19,300	19,300	10,900	6,200
			100					13,300	7,500
			125						8,100

SPRING NO.
71424P022

2 psi to 3 psi
Set: 3 psi
Droop: 0.6 psi

Orifice Size For Models With Blue Holder – Without OPSO
Orifice Size For Models With Silver Holder – With OPSO

Inlet
psi

Orifice Size For Models With Silver Holder – Without OPSO
Orifice Size For Models With Red Holder – With OPSO

1-1/4"	1"	7/8"		7/8"	3/4"	5/8"	1/2"	3/8"	1/4"
8,000	6,300	5,100	10	5,100	5,000	3,800	3,100	2,200	1,200
11,300	8,600	7,400	15	7,000	7,000	5,100	4,300	3,000	1,800
14,500	11,000	9,200	20	8,700	8,700	6,500	5,300	3,800	2,200
	15,100	12,800	30	12,100	12,100	8,800	7,400	5,000	2,900
		17,000	40	15,600	15,600	11,000	9,500	6,500	3,500
			60	20,000	20,000	15,500	13,200	8,900	4,900
			80		20,000	20,000	17,000	11,200	6,200
			100					13,700	7,500
			125						8,100

SPRING NO.
71424P023

3 psi to 5 psi
Set: 5 psi
Droop: 1 psi

For optimum performance
solid line. For OPSO Mod



1-1/2" Series 2000 Capacity Data

SCFH Gas – 0.60 Specific Gravity

All Models With Silver Holder Orifice Size									Inlet psi
1-1/4"	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"		
SPRING NO. 71411P020	7,000	5,900	4,350	4,350	4,000	2,900	1,900	1,000	5
	11,200	8,700	7,300	6,800	5,900	4,500	2,700	1,500	10
1/2 psi to 1 psi Set: 1 psi Droop: 6" w.c.	12,200	10,600	7,900	7,900	7,650	5,800	3,700	1,800	15
	13,200	11,750	10,000	9,500	7,000	4,500	2,200		20
	15,800	14,200	12,300	10,100	9,000	5,700	2,800		30
	15,600	13,900	14,200	10,600	7,100	3,300			40
			16,400	16,200	13,500	9,300	4,600		60
			18,200	18,000	15,400	12,000	5,900		80
						14,000	7,200		100
							8,500		125

2" Series 2000 Capacity Data

SCFH Gas – 0.60 Specific Gravity

All Models With Blue Holder Orifice Size									Inlet psi
1-1/4"	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"		
SPRING NO. 71411P020	10,700	7,500	6,400	4,700	4,100	2,500	1,900	1,000	5
	18,100	12,900	10,300	7,400	6,500	4,100	2,800	1,500	10
	20,000	17,500	14,200	9,900	8,800	5,500	3,700	1,800	15
	20,000	18,100		12,000	10,800	6,800	4,500	2,200	20
	20,000	20,000		17,000	15,100	9,400	5,700	2,800	30
		20,000		20,000	19,200	11,800	7,100	3,400	40
				20,000	20,000	16,800	9,300	4,600	60
				20,000	20,000	20,000	12,100	5,900	80
							14,900	7,200	100
								8,500	125

All Models With Silver Holder Orifice Size									Inlet psi
1-1/4"	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"		
SPRING NO. 71411P021	6,300	5,000	4,400	3,800	3,250	2,400	1,700	900	5
	10,500	8,400	7,150	6,500	5,350	4,100	2,700	1,400	10
1 psi to 2-1/2 psi Set: 2-1/2 psi Droop: 1/2 psi	13,300	10,600	9,400	8,400	7,250	5,500	3,600	1,800	15
	15,200	13,500	11,200	10,000	8,900	6,800	4,350	2,200	20
	16,500	14,600	13,000	11,250	9,000	5,700	2,800		30
		17,700	15,000	14,000	10,900	7,100	3,400		40
			18,300	17,500	13,700	9,600	4,600		60
			20,000	20,000	16,800	12,100	5,900		80
						14,200	7,200		100
							8,500		125

All Models With Blue Holder Orifice Size									Inlet psi
1-1/4"	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"		
SPRING NO. 71411P021	7,500	5,800	4,900	3,800	3,300	2,200	1,700	900	5
	13,800	10,200	8,300	6,800	5,400	3,800	2,700	1,400	10
	19,100	13,700	11,700	9,000	7,500	5,200	3,600	1,800	15
	20,000	17,400	14,300	10,800	9,500	6,400	4,350	2,200	20
	20,000	20,000		15,200	13,100	8,900	5,700	2,800	30
		20,000		19,300	16,700	11,100	7,100	3,400	40
				20,000	20,000	16,000	9,600	4,600	60
				20,000	20,000	20,000	12,100	5,900	80
							14,300	7,200	100
								8,500	125

All Models With Silver Holder Orifice Size									Inlet psi
1-1/4"	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"		
SPRING NO. 71411P022	10,400	8,000	6,600	6,200	4,800	4,000	2,400	1,300	10
	13,800	11,100	9,000	8,800	6,700	5,500	3,200	1,800	15
2-1/2 psi to 5 psi Set: 5 psi Droop: 1 psi	16,300	14,200	11,200	10,700	8,300	7,000	4,000	2,200	20
	18,300	15,000	14,300	11,300	9,500	5,500	2,800		30
		19,500	17,200	14,900	11,800	6,700	3,400		40
		20,000	20,000	19,000	15,800	9,200	4,600		60
			20,000	20,000	19,000	12,000	5,900		80
						14,200	7,200		100
							8,500		125

All Models With Blue Holder Orifice Size									Inlet psi
1-1/4"	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"		
SPRING NO. 71411P022	11,700	9,200	7,500	6,200	4,800	3,600	2,400	1,300	10
	16,800	13,000	10,800	8,800	6,700	5,000	3,200	1,800	15
	20,000	16,700	13,600	11,200	8,700	6,400	4,000	2,200	20
	20,000	18,900		15,500	12,000	9,000	5,500	2,800	30
		20,000		19,600	15,700	11,400	6,700	3,400	40
				20,000	20,000	16,000	9,200	4,600	60
				20,000	20,000	20,000	12,000	5,900	80
							14,600	7,200	100
								8,500	125

All Models With Silver Holder Orifice Size									Inlet psi
1-1/4"	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"		
SPRING NO. 71411P023	10,000	8,250	7,000	6,300	5,000	4,000	2,800	1,500	15
	13,000	11,500	9,400	8,400	6,600	5,400	3,500	2,100	20
5 psi to 10 psi Set: 10 psi Droop: 2 psi	16,100	13,350	12,000	9,700	7,700	5,200	2,800		30
		17,600	15,000	12,000	10,000	6,600	3,400		40
		20,000	20,000	17,800	13,800	9,100	4,600		60
			20,000	20,000	17,300	11,700	5,900		80
						14,200	7,200		100
							8,500		125

All Models With Blue Holder Orifice Size									Inlet psi
1-1/4"	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"		
SPRING NO. 71411P023	10,700	8,700	7,400	6,200	5,000	3,700	2,800	1,500	15
	13,800	12,000	10,100	8,400	6,700	5,000	3,500	2,100	20
	17,700	15,000		12,300	9,800	7,300	5,200	2,800	30
		19,400		15,700	12,000	9,500	6,600	3,400	40
		20,000		20,000	18,300	13,400	9,100	4,600	60
				20,000	20,000	17,400	11,700	5,900	80
							14,400	7,200	100
								8,500	125

All Models With Silver Holder Orifice Size									Inlet psi
1-1/4"	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"		
SPRING NO. 71411P024	12,900	10,200	8,500	7,800	5,900	5,000	3,100	1,800	20
	15,800	12,900	12,300	9,250	7,800	4,900	2,800		30
10 psi to 15 psi Set: 15 psi Droop: 3 psi		17,900	15,800	13,000	10,000	6,300	3,400		40
		20,000	20,000	18,300	14,800	9,100	4,600		60
			20,000	20,000	19,500	11,700	5,900		80
						14,500	7,200		100
							8,500		125

All Models With Blue Holder Orifice Size									Inlet psi
1-1/4"	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"		
SPRING NO. 71411P024	13,900	11,000	8,900	7,500	6,000	4,500	3,100	1,800	20
	17,600	14,600		12,000	9,700	7,100	4,900	2,800	30
		19,200		15,500	13,000	9,500	6,300	3,400	40
		20,000		20,000	18,400	13,500	9,100	4,600	60
				20,000	20,000	17,600	11,700	5,900	80
							14,500	7,200	100
								8,500	125

**1800 SERIES LOW PRESSURE REGULATOR
PRESSURE SPRINGS**

3.5" to 6" w.c.	71424P017	Red
5.5" to 8" w.c.	71424P018	Orange
8.5" to 14" w.c.	71424P019	Yellow
14.5" to 28" w.c.	71424P020	Green
1 psi to 2 psi	71424P021	Blue
1.5 psi to 2.5 psi	71424P026	Brown and Blue
2 psi to 3 psi	71424P022	Brown and Green
3 psi to 5 psi	71424P023	Black and Green

**2000 SERIES HIGH PRESSURE REGULATOR
PRESSURE SPRINGS**

.5 psi to 1 psi	71411P020	Brown and White
1 psi to 2.5 psi	71411P021	Purple and White
2.5 psi to 5 psi	71411P022	Orange and Black
5 psi to 10 psi	71411P023	Black
10 psi to 15 psi	71411P024	Yellow and Green

OPSO SHUTOFF SPRINGS

14" to 28" w.c.	70017P075	Red and Purple
1 psi to 2 psi	70017P076	Red and Brown
2 psi to 3 psi	70017P077	Purple
3 psi to 5 psi	70017P078	Orange and Yellow
5 psi to 8 psi	70017P079	Orange and Green
8 psi to 14 psi*	70017P078	Orange and Yellow
14 psi to 20 psi*	70017P079	Orange and Green

*To achieve these ranges, reducing ring 72646P001 must be used.

1800/2000 SERIES REGULATOR ORIFICE SIZES

Valve Head Size	Orifice Size	Part Number
1-1/2" and 2"	1/4"	72983P010
1-1/2" and 2"	3/8"	72983P011
1-1/2" and 2"	1/2"	72983P012
1-1/2" and 2"	5/8"	72983P013
1-1/2" and 2"	3/4"	72983P014
1-1/2" and 2"	7/8"	72983P015
1-1/2" and 2"	1"	72983P016
1-1/2" and 2"	1-1/4"	72983P017

These orifices are double-sided and work with both OPSO and non-OPSO Models.

REGULATOR REPAIR KITS
73909K013

Valve Seat Disc	70014P072
Body O-Ring	42710P161
Diaphragm	70014P143
Body Screw	78001P032
Body Nut	78020P003
Vent Flapper	72163P001
Vent Flapper Retainer	78074P001
Vent Screen	70400P008
Isolation Plate O-Ring (I.D.)	42710P106
Isolation Plate O-Ring (O.D.)	42710P157
Valve Plunger O-Ring	42710P149
Valve Head Setscrew	78014P006
O-Ring	42710P146
O-Ring	42710P154
Isolation Plate O-Ring (I.D.)	42710P078
Gasket	70019P087
Gasket	70019P094

Kit Services: 2003, 2003M, 2023, 2083, 2083M, 2093

73909K012**

Isolation Plate	73010P002
O-Ring	42710P078
O-Ring	42710P157
O-Ring	42710P149

Kit Services All Regulators

**For use in units built after January 1, 1994.

73909K007**

Valve Seat Disc	70014P072
Body O-Ring	42710P161
Seal Plug O-Ring	42710P107
Diaphragm	70014P168
Body Screw	78001P032
Body Nut	78020P003
Vent Flapper	73060P001
Vent Flapper Retainer	71876P005
Vent Screen	70400P015
Valve Head Setscrew	78014P006
O-Ring	42710P146
O-Ring	42710P154
Gasket	70019P094

Kit Services: 1813B, 1833B, 1843B, 1853B

**For use in units built prior to April 1, 1994.

73909K015**

Valve Seat Disc	70014P072
Body O-Ring	42710P161
Seal Plug O-Ring	42710P107
Diaphragm	70014P203
Body Screw	78001P032
Body Nut	78020P003
Vent Flapper	73060P001
Vent Flapper Retainer	71876P005
Vent Screen	70400P015
Valve Head Setscrew	78014P006
O-Ring	42710P146
O-Ring	42710P154
Gasket	70019P094

Kit Services: 1813B, 1833B, 1843B,

1853B

**For use in units built after April 1, 1994.

73909K006

Valve Seat Disc	70014P072
Body O-Ring	42710P161
Seal Plug O-Ring	42710P107
Diaphragm	70014P143
Body Screw	78001P032
Body Nut	78020P003
Vent Flapper	72770P002
Vent Flapper Retainer	71876P005
Vent Screen	70400P013
Vent Screen Retainer	71876P004
Isolation Plate O-Ring (I.D.)	42710P106
Isolation Plate O-Ring (O.D.)	42710P157
Valve Plunger O-Ring	42710P149
Valve Head Setscrew	78014P006
O-Ring	42710P146
O-Ring	42710P154
Isolation Plate O-Ring (I.D.)	42710P148

Kit Services: 1813, 1833, 1843, 1843M, 1853, 1853M, 1803, 1803M, 1823, 1883, 1883M, 1893

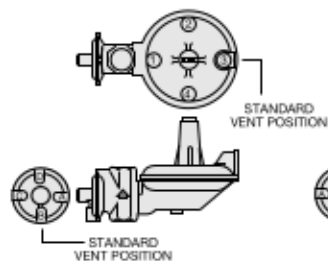
73909K004

Valve Seat Disc	70014P072
Body O-Ring	42710P161
Seal Plug O-Ring	42710P107

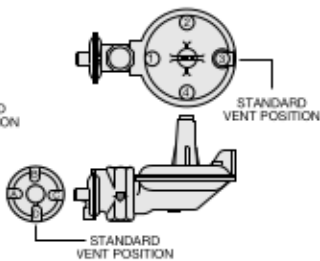
Kit Services All Regulators



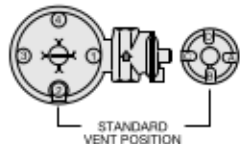
Valve Head Position A



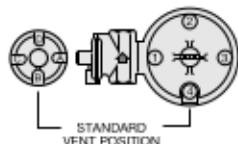
Valve Head Position B



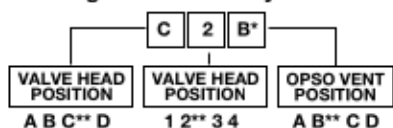
Valve Head Position C



Valve Head Position D



Regulator Assembly Number



* FOR MODELS USING OPSO ONLY.
** UNLESS OTHERWISE SPECIFIED, VALVE HEAD POSITION "C" WILL BE SUPPLIED.

Full-Open Regulator Capacity

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

For critical flow rates –

$$Q = 0.5 C \times \frac{P_1}{\sqrt{G}}$$

For sub-critical flows –

$$Q = C \frac{\sqrt{P_2 h}}{\sqrt{G}}$$

Key:

Q = Maximum capacity of regulator
C = Orifice constant, see table
P₁ = Inlet absolute pressure (psia)
P₂ = Outlet absolute pressure (psia)
h = Differential pressure (P₁ - P₂)
G = Specific gravity of gas

Orifice

Orifice	C
1/4"	110
3/8"	226
1/2"	400
5/8"	600
3/4"	840
7/8"	1,100
1"	1,425
1-1/4"	2,150

Shipping Weights

Description	Net Wgt. (Lbs.)
1-1/2" x 1-1/2" Screwed 1800*	19-3/4
1-1/2" x 1-1/2" Screwed 1883	21-3/4
1-1/2" x 1-1/2" Screwed 2000*	25-1/2
1-1/2" x 1-1/2" Screwed 2083	27-1/2
2" x 2" Screwed† 1800*	19-1/2
2" x 2" Screwed† 1883	21-1/2
2" x 2" Screwed† 2000*	25-1/4
2" x 2" Screwed† 2083	27-1/4

* All Models except OPSO.

† For Flanged Models add 13-1/2 lbs.

Ordering Information

1. Model number.
2. Size of connection: screwed or flanged.
3. Inlet and outlet pressures.
4. Volume in scfh.
5. Kind of gas and specific gravity.
6. Assembly position.
7. Orifice size.
8. OPSO spring part numbers, if required.

A Complete Family of Gas Measurement, Pressure Regulation, and Testing Systems



Turbine Gas Meters

High-performance meters provide accurate measurement of high-volume gas flow. Turbines are available from 3" to 12" line sizes and line pressures up to 1440 psig. See bulletin SB 4510 for more information.



Rotary Gas Meters

RPM Series Rotary Meters are designed for commercial and industrial loads to provide accurate flow measurement and outstanding performance in the most adverse conditions. See bulletin SB 5500 for more information.



Diaphragm Meters

American Meter's compact, lightweight, aluminum case meters are designed to provide positive displacement accuracy for industrial or commercial loads. See bulletin SB 3510 for more information.



Pilot-Loaded Regulators

1800 PFM industrial regulators are designed for applications requiring medium-to-high capacity, extremely precise outlet-pressure control, and fast response to changing loads. See bulletin SB 8551 for more information.