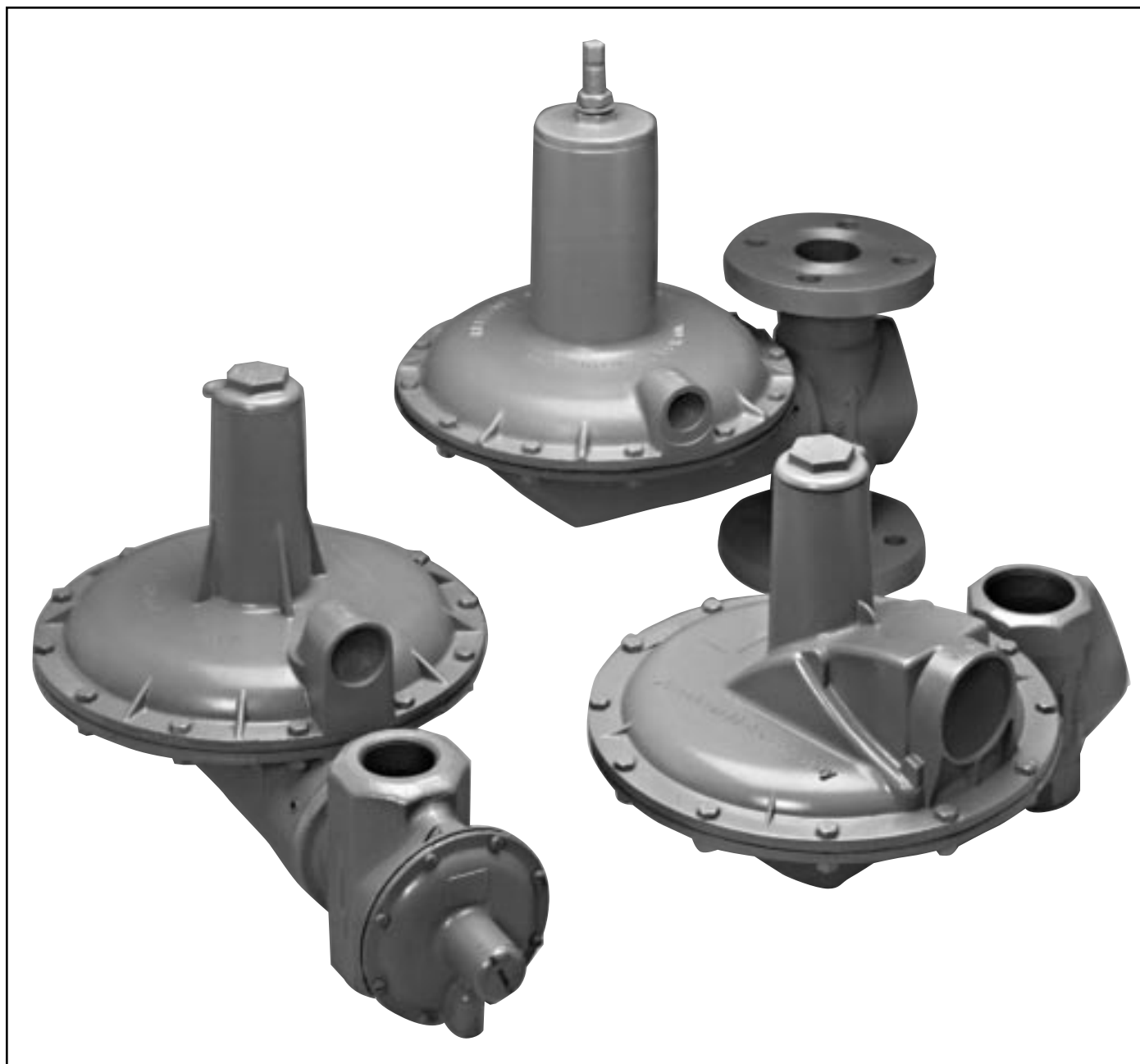


Industrial Regulator Series 1800/2000



AMC Quality System

QMI is Accredited by:



ISO 9002 Registered



Dutch Council
for Accreditation



ITT Controls

ITT Controls Series 1800 and 2000 Worker/Monitor Regulators

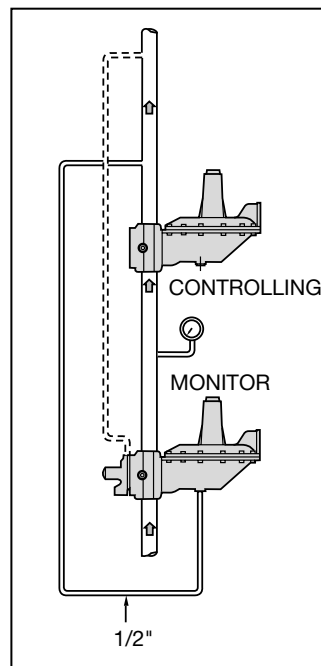
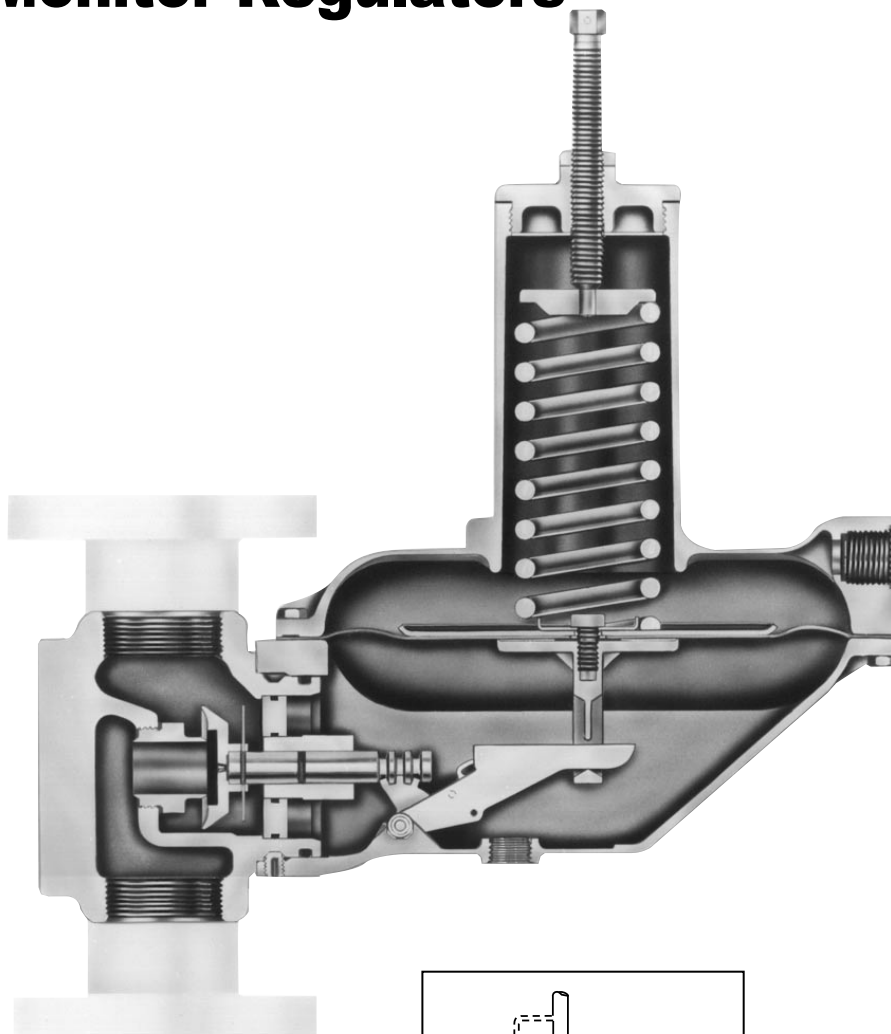
Worker/Monitor sets are commonly used to provide overpressure protection. A worker/monitor installation consists of a monitor with an external static connection and a worker with an internal static connection. The regulator selected to be the monitor is set at 2" to 5" w.c. above the worker. The external 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**

The ITT Controls Industrial Regulator

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

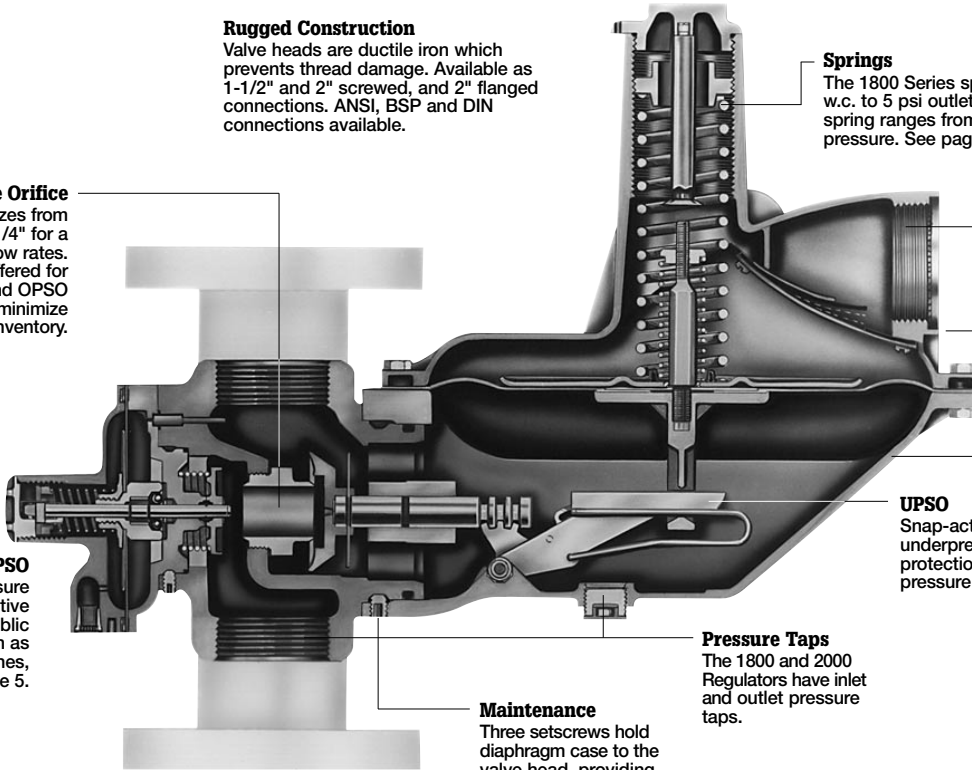
Three setscrews hold diaphragm case to the valve head, providing the *easiest orifice and seat disc inspection* in the industry.

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.



ITT Controls Regulators ... Other Features

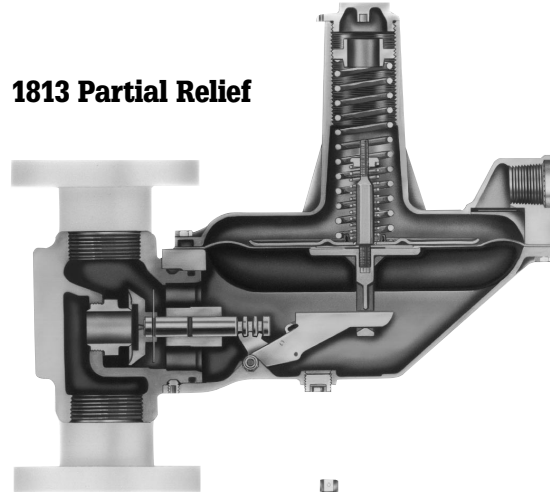
1800 Series low-pressure models have a maximum inlet pressure of 150 psi and offer outlet pressures ranging from 3.5" w.c. to 5 psi. 2000 Series high pressure models allow a maximum inlet pressure of 150 psi and outlet pressures ranging from .5 psi to 15 psi. The 1800 Series can be ordered as Full Relief, 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"

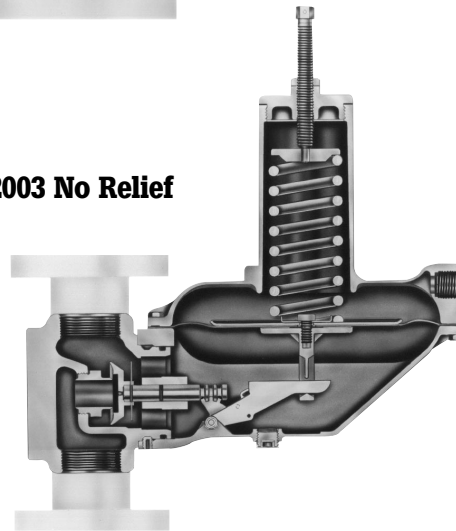
High Pres. Model Numbers	Description	Dimensions				
		A	B	C	D	*E
2003	Standard Regulator	18.19"	3"	1.75"	16"	10.5"
2003M	Standard Monitor Regulator	18.19"	3"	1.75"	16"	10.5"
2023	Underpressure Shutoff	18.19"	3"	1.75"	16"	10.5"
2083	Overpressure Shutoff	18.19"	3"	5.62"	19.87"	10.5"
2083M	Overpressure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

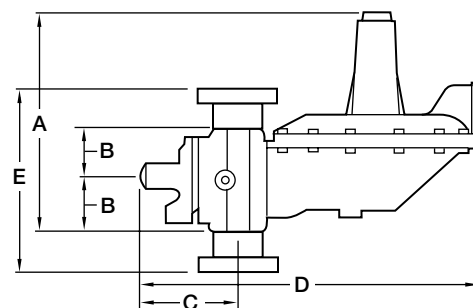
1813 Partial Relief



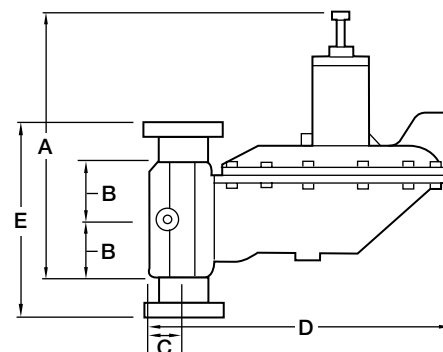
2003 No Relief



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.

UPS0

The UPS0 (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 UPS0 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 UPS0 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.

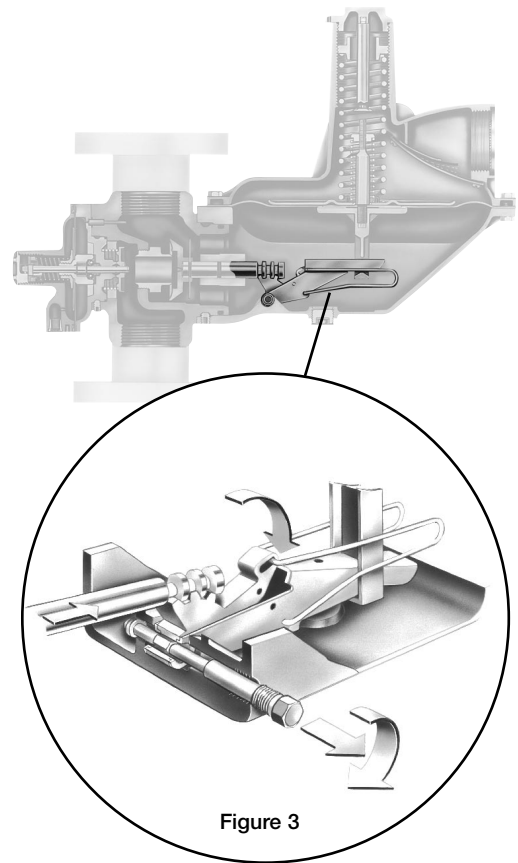
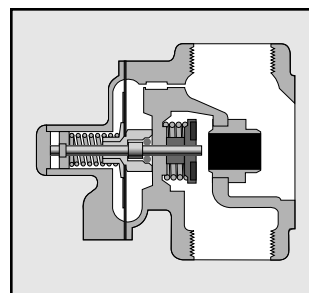
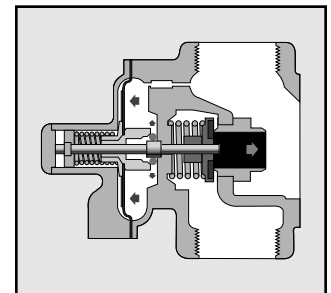


Figure 3

Overpressure Shutoff (OPSO) in cocked position



Overpressure Shutoff (OPSO) in tripped position



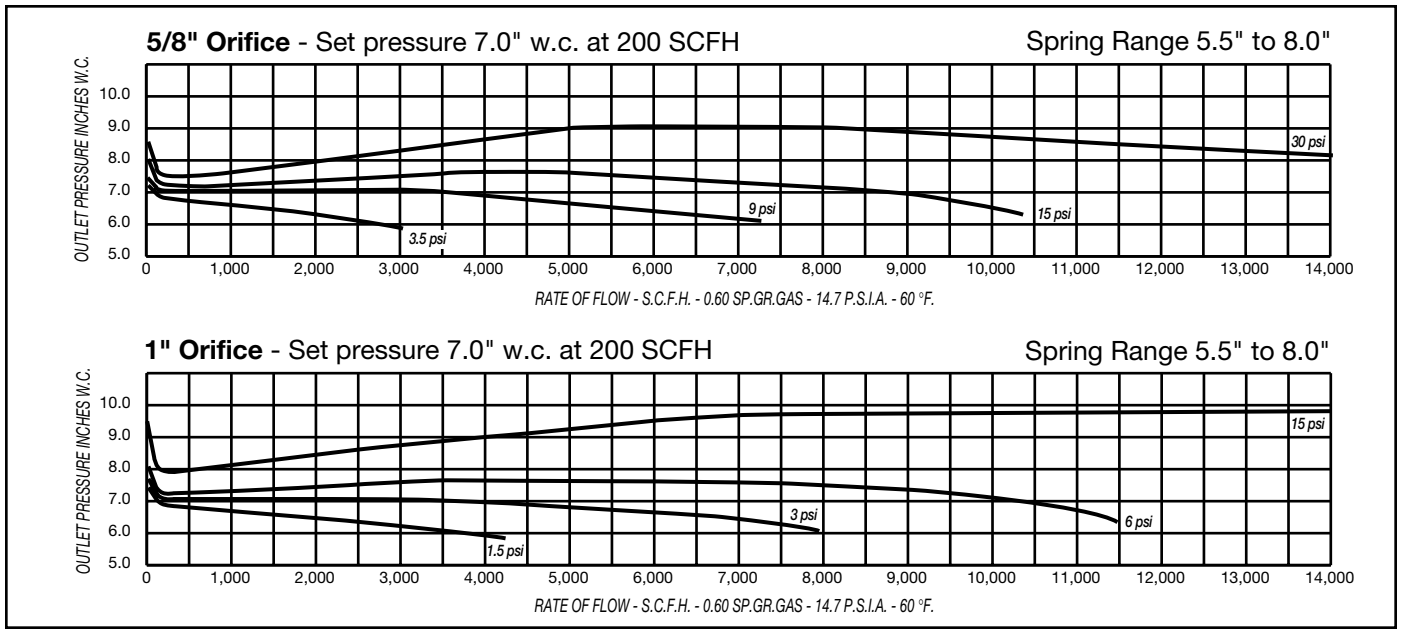
To reset the overpressure shutoff device, unscrew the seal cap, which opens the regulator orifice, permitting gas flow. Pull out on the seal cap until the overpressure shutoff device latches completely. Tighten the seal cap.

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

OUPS0

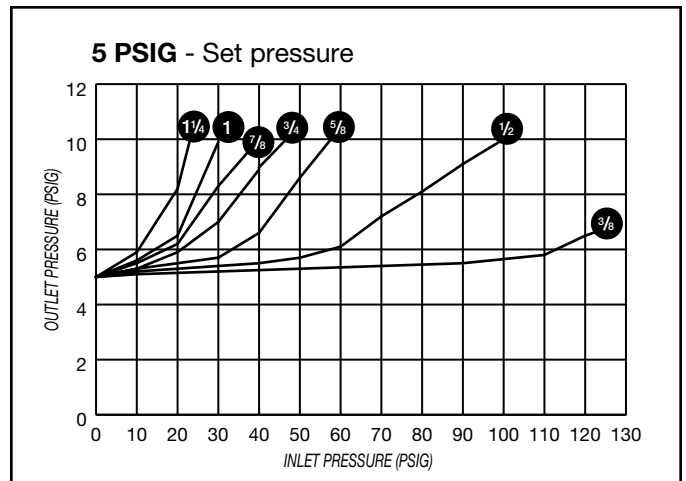
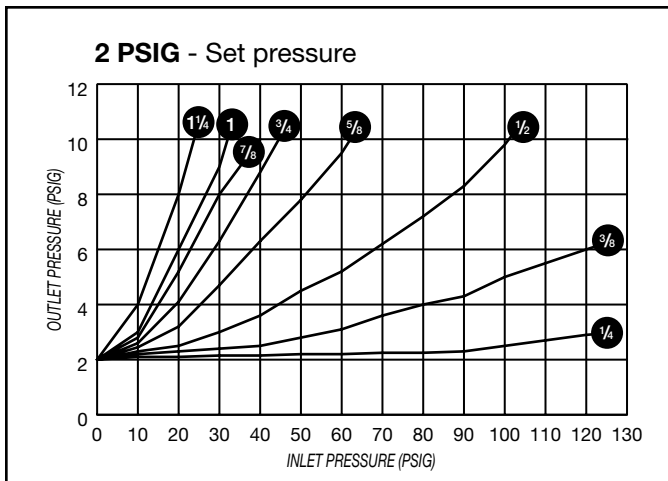
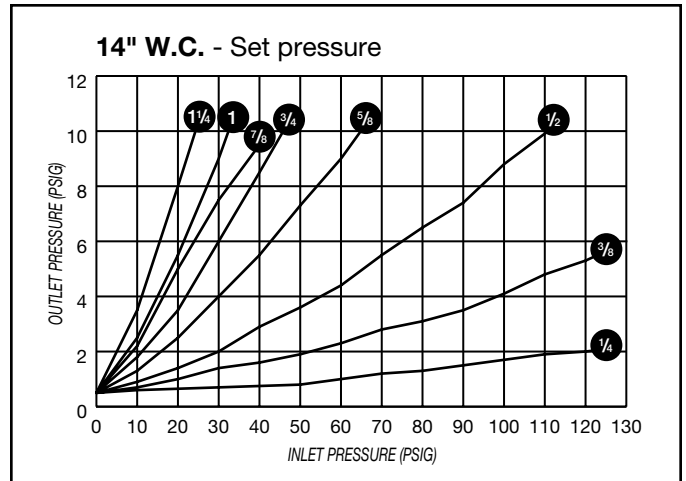
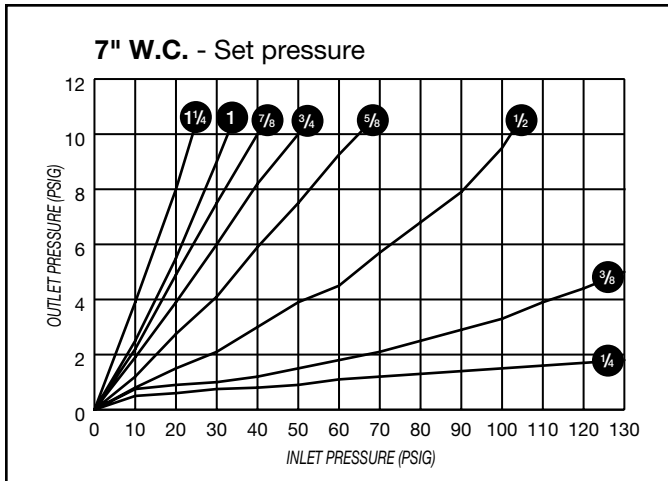
Overpressure and underpressure shutoff models combine both safety features for maximum protection. On these models, when the OPSO shuts off, the UPS0 automatically trips, providing double assurance of positive gas shutoff. The overpressure shutoff device must be reset first followed by resetting the 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								SPRING NO.										
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								1/2									SPRING NO. 71424P018										
2,000	1,600	1,300	1,100	900	550			1	1,900	1,550	1,300	1,100	1,000	600			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		2	3,750	3,300	2,600	2,600	2,000	1,800	1,100			
3.5" to 6" w.c.								3									5.5" to 8" w.c.										
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		3	4,500	3,900	3,300	3,200	2,500	2,100	1,300			
Set: 6" w.c.								5									Set: 7"										
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	5	5,700	5,100	4,300	4,000	3,400	2,950	1,800	1,000		
Droop: 1" w.c.								10									Droop: 1"										
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		10	7,400	6,300	6,000	5,000	4,400	3,000	1,600			
Max. Compound: 2" w.c.								15									Max. Compound: 2" w.c.										
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		15	9,150	7,800	7,500	6,300	5,500	3,850	1,900			
	9,200	8,700	7,200	6,300	4,600	2,300		20	9,300	8,600	7,250	6,400	4,550	2,200		20	9,300	8,600	7,250	6,400	4,550	2,200					
	11,750	11,100	9,000	7,700	5,900	2,850		30	11,800	10,700	8,900	8,100	5,800	2,800		30	11,800	10,700	8,900	8,100	5,800	2,800					
			12,300	10,800	9,200	7,200	3,400	40				12,300	11,000	9,300	7,150	3,400	40				12,300	11,000	9,300	7,150	3,400		
					12,000	9,400	4,500	60						12,000	9,400	4,500	60						12,000	9,400	4,500		
							5,850	80								5,850	80								5,850		
							7,000	100								7,000	100								7,000		
							8,400	125								8,400	125								8,400		
SPRING NO. 71424P019								1									SPRING NO. 71424P019										
2,800	2,300	1,900	1,800	1,300	1,100	750		1	2,550	2,100	1,700	1,500	1,300	1,000	700		1	2,550	2,100	1,700	1,500	1,300	1,000	700			
4,300	3,500	2,800	2,500	2,000	1,700	1,200		2	3,800	3,200	2,600	2,400	1,900	1,500	1,000		2	3,800	3,200	2,600	2,400	1,900	1,500	1,000			
5,800	4,000	3,550	3,200	2,550	2,100	1,400		3	4,750	4,000	3,200	3,100	2,500	2,000	1,350		3	4,750	4,000	3,200	3,100	2,500	2,000	1,350			
8.5" to 14" w.c.								5									8.5" to 14" w.c.										
6,100	5,300	4,500	4,200	3,600	2,800	2,000	1,000	5	5,700	5,400	4,400	4,100	3,300	2,600	1,800	1,000	5	5,700	5,400	4,400	4,100	3,300	2,600	1,800	1,000		
Set: 11" w.c.								10									Set: 14"										
8,000	7,600	6,600	6,200	5,100	4,300	2,900	1,500	10	8,200	7,800	6,400	6,100	4,900	4,100	2,800	1,500	10	8,200	7,800	6,400	6,100	4,900	4,100	2,800	1,500		
Droop: 2" w.c.								15									Droop: 2" w.c.										
9,300	8,100	7,800	6,500	5,400	3,800	1,850		15	9,400	8,000	7,600	6,250	5,200	3,700	1,900		15	9,400	8,000	7,600	6,250	5,200	3,700	1,900			
			9,500	9,000	7,350	6,500	4,500	20				9,600	8,800	7,500	6,200	4,300	2,200	20				9,600	8,800	7,500	6,200	4,300	2,200
			12,300	11,100	9,200	8,100	5,800	30				12,200	11,100	9,400	8,000	5,600	2,800	30				12,200	11,100	9,400	8,000	5,600	2,800
					12,700	11,400	9,500	40				12,800	11,200	9,300	7,100	3,300		40				12,800	11,200	9,300	7,100	3,300	
						13,900	12,500	60						13,800	12,300	9,400	4,500	60						13,800	12,300	9,400	4,500
							14,100	80							14,000	11,800	5,700	80							14,000	11,800	5,700
							7,000	100								7,000	100									7,000	
							8,200	125								8,200	125									8,200	
SPRING NO. 71424P020								3									SPRING NO. 71424P021										
6,300	4,900	4,200	3,400	3,000	2,300	1,500		3	7,200	5,800	4,900	4,400	3,600	2,800	1,750	900	3	7,200	5,800	4,900	4,400	3,600	2,800	1,750	900		
8,000	6,650	5,600	4,700	4,100	3,200	2,000	1,000	5	11,000	9,200	7,800	7,000	5,900	4,700	2,900	1,500	5	11,000	9,200	7,800	7,000	5,900	4,700	2,900	1,500		
11,000	9,400	8,100	7,000	6,300	4,900	2,800	1,500	10	13,000	11,500	9,750	8,700	7,600	6,300	3,800	1,900	10	13,000	11,500	9,750	8,700	7,600	6,300	3,800	1,900		
14.5" to 28" w.c.								15									1 psi to 2 psi										
11,300	10,000	8,700	7,800	6,200	3,700	1,900		15	14,900	12,800	11,900	10,800	9,500	7,400	4,700	2,200	15	14,900	12,800	11,900	10,800	9,500	7,400	4,700	2,200		
Set: 1 psi								20									Set: 2 psi										
12,700	11,400	10,000	9,200	7,300	4,300	2,250		20	15,400	14,850	13,300	12,100	9,500	6,000	2,800		20	15,400	14,850	13,300	12,100	9,500	6,000	2,800			
Droop: 6" w.c.								30									Droop: 0.4 psi										
14,200	12,300	11,600	9,300	5,600	2,800			30	17,000	15,200	13,850	11,600	7,100	3,400		30	17,000	15,200	13,850	11,600	7,100	3,400					
			15,600	13,900	13,700	10,900	7,100	40				19,600	18,200	17,200	15,000	9,800	4,600	40				19,600	18,200	17,200	15,000	9,800	4,600
			16,400	16,000	14,200	9,300	4,700	60				20,000	18,900	17,700	11,500	5,800		60				20,000	18,900	17,700	11,500	5,800	
					16,000	11,500	5,800	80								13,800	7,000	80								13,800	7,000
							8,400	100								8,400	100									8,400	
								125									125										
SPRING NO. 71424P022								5									SPRING NO. 71424P023										
4,100	3,400	2,900	2,900	2,000	2,000	1,300	750	5	7,000	5,600	4,800	4,800	3,700	3,100	2,200	1,200	5	7,000	5,600	4,800	4,800	3,700	3,100	2,200	1,200		
7,600	5,800	5,000	5,000	3,500	3,500	2,200	1,400	10	9,500	7,600	6,200	6,200	4,800	4,200	3,000	1,850	10	9,500	7,600	6,200	6,200	4,800	4,200	3,000	1,850		
10,000	7,900	6,550	6,550	4,800	4,800	3,000	1,800	15	11,800	9,750	7,600	7,600	6,000	5,300	3,800	2,200	15	11,800	9,750	7,600	7,600	6,000	5,300	3,800	2,200		
2 psi to 3 psi								20									3 psi to 5 psi										
12,000	9,700	8,100	8,100	5,800	5,800	3,600	2,200	20	12,700	10,500	10,500	8,300	7,200	5,000	2,900		20	12,700	10,500	10,500	8,300	7,200	5,000	2,900			
Set: 3 psi								30									Set: 5 psi										
13,100	10,800	10,800	8,000	8,000	4,800	2,900		30	13,000	13,000	9,400	8,700	6,500	3,500		30	13,000	13,000	9,400	8,700	6,500	3,500					
Droop: 0.6 psi								40									Droop: 1 psi										
13,400	13,400	9,800	9,800	6,000	3,500			40	17,000	17,200	12,700	12,000	8,900	4,900		40	17,000	17,200	12,700	12,000	8,900	4,900					
			17,000	17,000	12,900	12,900	8,400	60				20,000	16,000	15,200	10,800	6,200	60				20,000	16,000	15,200	10,800	6,200		
			20,000	15,500	15,500	10,850	6,200	80								12,700	7,500	80								12,700	7,500
							12,700	100									100										
							8,100	125									125										
SPRING NO. 71424P026								5									SPRING NO. 71424P023										
4,050	3,400	3,400	2,800	2,300	1,800	1,400	800	5	7,000	5,600	4,800	4,800	3,700	3,100	2,200	1,200	5	7,000	5,600	4,800	4,800	3,700	3,100	2,200	1,200		
7,200	5,800	5,000	4,500	4,700	2,800	2,200	1,200	10	9,500	7,600	6,200	6,200	4,800	4,200	3,000	1,850	10	9,500	7,600	6,200	6,200	4,800	4,200	3,000	1,850		
8,640	7,400	6,300	5,800	5,800	3,500	3,000	1,600	15	11,800	9,750	7,6																

2" Series 1800 Capacity Data

SCFH Gas – 0.60 Specific Gravity

	Orifice Size For Models With Blue Holder – Without OPSO			Inlet psi	Orifice Size For Models With Silver Holder – Without OPSO					
	Orifice Size For Models With Silver Holder – With 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.										
Set: 6" w.c.	8,900	6,300	5,100	3	4,800	3,800	3,200	2,100	1,600	
Droop: 1" w.c.	13,200	10,000	8,000	5	7,200	5,200	4,000	2,900	2,000	1,100
Max. Compound:		16,500	13,000	10	12,300	8,300	6,200	4,800	3,000	1,650
2" w.c.		20,000	16,500	15	16,000	10,800	9,000	6,600	4,000	1,950
			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			Inlet psi	Orifice Size For Models With Silver Holder – Without OPSO					
	Orifice Size For Models With Silver Holder – With 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.										
Set: 7" w.c.	8,500	6,000	5,000	3	4,500	3,600	3,200	2,100	1,500	
Droop: 1" w.c.	13,000	10,000	8,000	5	7,000	5,000	4,000	2,900	2,000	1,000
Max. Compound:		15,700	13,000	10	11,500	8,300	6,200	4,800	3,000	1,600
2" w.c.		17,500	16,000	15	15,000	11,500	9,000	6,400	4,000	1,900
			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			Inlet psi	Orifice Size For Models With Silver Holder – Without OPSO					
	Orifice Size For Models With Silver Holder – With 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.										
Set: 11" w.c.	11,500	8,500	7,100	5	6,400	4,800	4,000	2,600	2,000	1,000
Droop: 2" w.c.	20,000	15,000	12,300	10	11,200	8,100	6,200	4,300	2,900	1,600
		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			Inlet psi	Orifice Size For Models With Silver Holder – Without OPSO					
	Orifice Size For Models With Silver Holder – With 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.										
Set: 14" w.c.	10,600	7,600	6,200	5	5,600	4,400	3,600	2,500	1,800	1,000
Droop: 2" w.c.	19,000	14,100	11,600	10	9,800	7,400	5,800	4,000	2,800	1,600
		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, regulator should be operated above solid line. For UPSO Models, use only above dashed line.

2" Series 1800 Capacity Data

SCFH Gas – 0.60 Specific Gravity

Orifice Size For Models With Blue Holder – Without OPSO			Inlet psi	Orifice Size For Models With Silver Holder – Without OPSO					
Orifice Size For Models With Silver Holder – With 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			Inlet psi	Orifice Size For Models With Silver Holder – Without OPSO					
Orifice Size For Models With Silver Holder – With 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			Inlet psi	Orifice Size For Models With Silver Holder – Without OPSO					
Orifice Size For Models With Silver Holder – With 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			Inlet psi	Orifice Size For Models With Silver Holder – Without OPSO					
Orifice Size For Models With Silver Holder – With 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			Inlet psi	Orifice Size For Models With Silver Holder – Without OPSO					
Orifice Size For Models With Silver Holder – With 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, regulator should be operated above solid line. For UPSO Models, use only above dashed line.

1-1/2" Series 2000 Capacity Data

SCFH Gas – 0.60 Specific Gravity

2" Series 2000 Capacity Data

SCFH Gas – 0.60 Specific Gravity

	All Models With Silver Holder Orifice Size								Inlet psi	All Models With Blue Holder Orifice Size			All Models With Silver Holder Orifice Size				
	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.	7,000	5,900	4,350	4,350	4,000	2,900	1,900	1,000	5	10,700	7,500	6,400	4,700	4,100	2,500	1,900	1,000
71411P020	11,200	8,700	7,300	6,800	5,900	4,500	2,700	1,500	10	18,100	12,900	10,300	7,400	6,500	4,100	2,800	1,500
	12,200	10,600	7,900	7,900	7,650	5,800	3,700	1,800	15	20,000	17,500	14,200	9,900	8,800	5,500	3,700	1,800
1/2 psi to 1 psi	13,200	11,750	10,000	9,500	7,000	4,500	2,200	20	20,000	20,000	18,100	12,000	10,800	6,800	4,500	2,200	
Set: 1 psi	15,800	14,200	12,300	10,100	9,000	5,700	2,800	30	20,000	20,000	20,000	17,000	15,100	9,400	5,700	2,800	
Drop: 6" w.c.	15,600	13,900	14,200	10,600	7,100	3,300	40	20,000	20,000	20,000	20,000	19,200	11,800	7,100	3,400		
			16,400	16,200	13,500	9,300	4,600	60				20,000	20,000	16,800	9,300	4,600	
			18,200	18,000	15,400	12,000	5,900	80				20,000	20,000	20,000	12,100	5,900	
						14,000	7,200	100							14,900	7,200	
							8,500	125								8,500	

	All Models With Silver Holder Orifice Size								Inlet psi	All Models With Blue Holder Orifice Size			All Models With Silver Holder Orifice Size				
	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.	6,300	5,000	4,400	3,800	3,250	2,400	1,700	900	5	7,500	5,800	4,900	3,800	3,300	2,200	1,700	900
71411P021	10,500	8,400	7,150	6,500	5,350	4,100	2,700	1,400	10	13,800	10,200	8,300	6,800	5,400	3,800	2,700	1,400
	13,300	10,600	9,400	8,400	7,250	5,500	3,600	1,800	15	19,100	13,700	11,700	9,000	7,500	5,200	3,600	1,800
1 psi to 2-1/2 psi	15,200	13,500	11,200	10,000	8,900	6,800	4,350	2,200	20	20,000	17,400	14,300	10,800	9,500	6,400	4,350	2,200
Set: 2-1/2 psi	16,500	14,600	13,000	11,250	9,000	5,700	2,800	30	20,000	20,000	20,000	15,200	13,100	8,900	5,700	2,800	
Drop: 1/2 psi	17,700	15,000	14,000	10,900	7,100	3,400	40	20,000	20,000	20,000	19,300	16,700	11,100	7,100	3,400		
			18,300	17,500	13,700	9,600	4,600	60				20,000	20,000	16,000	9,600	4,600	
			20,000	20,000	16,800	12,100	5,900	80				20,000	20,000	20,000	12,100	5,900	
						14,200	7,200	100							14,300	7,200	
							8,500	125								8,500	

	All Models With Silver Holder Orifice Size								Inlet psi	All Models With Blue Holder Orifice Size			All Models With Silver Holder Orifice Size				
	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.	10,400	8,000	6,600	6,200	4,800	4,000	2,400	1,300	10	11,700	9,200	7,500	6,200	4,800	3,600	2,400	1,300
71411P022	13,800	11,100	9,000	8,800	6,700	5,500	3,200	1,800	15	16,800	13,000	10,800	8,800	6,700	5,000	3,200	1,800
	16,300	14,200	11,200	10,700	8,300	7,000	4,000	2,200	20	20,000	16,700	13,600	11,200	8,700	6,400	4,000	2,200
2-1/2 psi to 5 psi	18,300	15,000	14,300	11,300	9,500	5,500	2,800	30	20,000	20,000	18,900	15,500	12,000	9,000	5,500	2,800	
Set: 5 psi	19,500	17,200	14,900	11,800	6,700	3,400	40	20,000	20,000	20,000	19,600	15,700	11,400	6,700	3,400		
Drop: 1 psi	20,000	20,000	19,000	15,800	9,200	4,600	60	20,000	20,000	20,000	20,000	20,000	16,000	9,200	4,600		
			20,000	20,000	19,000	12,000	5,900	80				20,000	20,000	20,000	12,000	5,900	
						14,200	7,200	100							14,600	7,200	
							8,500	125								8,500	

	All Models With Silver Holder Orifice Size								Inlet psi	All Models With Blue Holder Orifice Size			All Models With Silver Holder Orifice Size				
	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.	10,000	8,250	7,000	6,300	5,000	4,000	2,800	1,500	15	10,700	8,700	7,400	6,200	5,000	3,700	2,800	1,500
71411P023	13,000	11,500	9,400	8,400	6,600	5,400	3,500	2,100	20	13,800	12,000	10,100	8,400	6,700	5,000	3,500	2,100
	16,100	13,350	12,000	9,700	7,700	5,200	2,800	30	17,700	15,000	15,000	12,300	9,800	7,300	5,200	2,800	
5 psi to 10 psi	17,600	15,000	12,000	10,000	6,600	3,400	40	20,000	20,000	19,400	15,700	12,000	9,500	6,600	3,400		
Set: 10 psi	20,000	20,000	17,800	13,800	9,100	4,600	60	20,000	20,000	20,000	20,000	18,300	13,400	9,100	4,600		
Drop: 2 psi			20,000	20,000	17,300	11,700	5,900	80				20,000	20,000	17,400	11,700	5,900	
						14,200	7,200	100							14,400	7,200	
							8,500	125								8,500	

	All Models With Silver Holder Orifice Size								Inlet psi	All Models With Blue Holder Orifice Size			All Models With Silver Holder Orifice Size				
	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.	12,900	10,200	8,500	7,800	5,900	5,000	3,100	1,800	20	13,900	11,000	8,900	7,500	6,000	4,500	3,100	1,800
71411P024	15,800	12,900	12,300	9,250	7,800	4,900	2,800	30	17,600	14,600	14,600	12,000	9,700	7,100	4,900	2,800	
	17,900	15,800	13,000	10,000	6,300	3,400	40	20,000	19,200	19,200	15,500	13,000	9,500	6,300	3,400		
10 psi to 15 psi	20,000	20,000	18,300	14,800	9,100	4,600	60	20,000	20,000	20,000	20,000	18,400	13,500	9,100	4,600		
Set: 15 psi	20,000	20,000	19,500	11,700	5,900	80	20,000	20,000	20,000	20,000	20,000	17,600	11,700	5,900			
Drop: 3 psi						14,500	7,200	100							14,500	7,200	
							8,500	125								8,500	

For optimum performance, regulator should be operated above solid line. For UPSO Models, use only above dashed line.

ITT Controls Regulator Parts

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

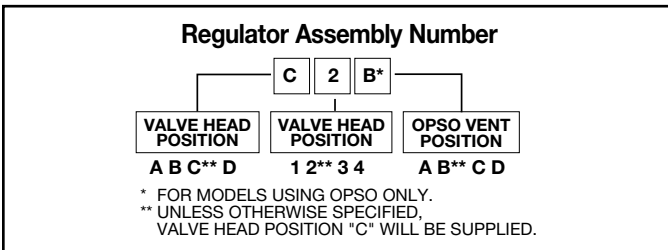
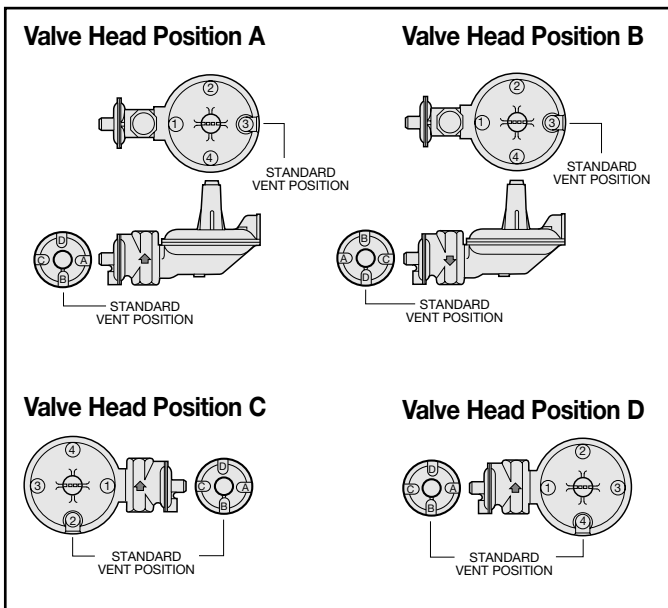
Kit Services: 1813, 1833, 1843, 1843M, 1853, 1853M, 1803, 1803M, 1823, 1883, 1883M, 1893

73909K004

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

Kit Services All Regulators

ITT Controls Regulator Assembly Positions



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
P ₁	= Inlet absolute pressure (psia)
P ₂	= Outlet absolute pressure (psia)
h	= Differential pressure (P ₁ - P ₂)
G	= Specific gravity of gas

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



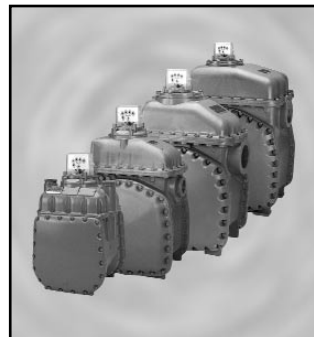
Turbine Gas Meters

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.



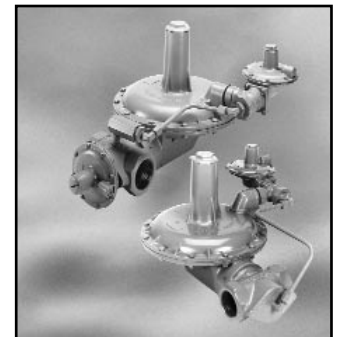
Rotary Gas Meters

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.