多美時燃氣設備有限公司
DMC GAS EQUIPMENT LIMITED
Address: Unit 11, 11/F, Tower One, Ever Gain Plaza
88 Container Port Road, Kwai Chung, NT, Hong Kong
Website: www.dmc-gas.com Email: dmcsaleshk@dmc-gas.com.hk
Tel: +852 2851 2121 Fax: +852 2851 2129

Model 1800 PFM Series Regulator

For Constant Outlet Pressure

Precise Fixed Factor Measurement From 0.5 to 30 PSIG

SB 8551.3

AMC Quality System
QMI is Accredited by:

ISO 9002 Registered

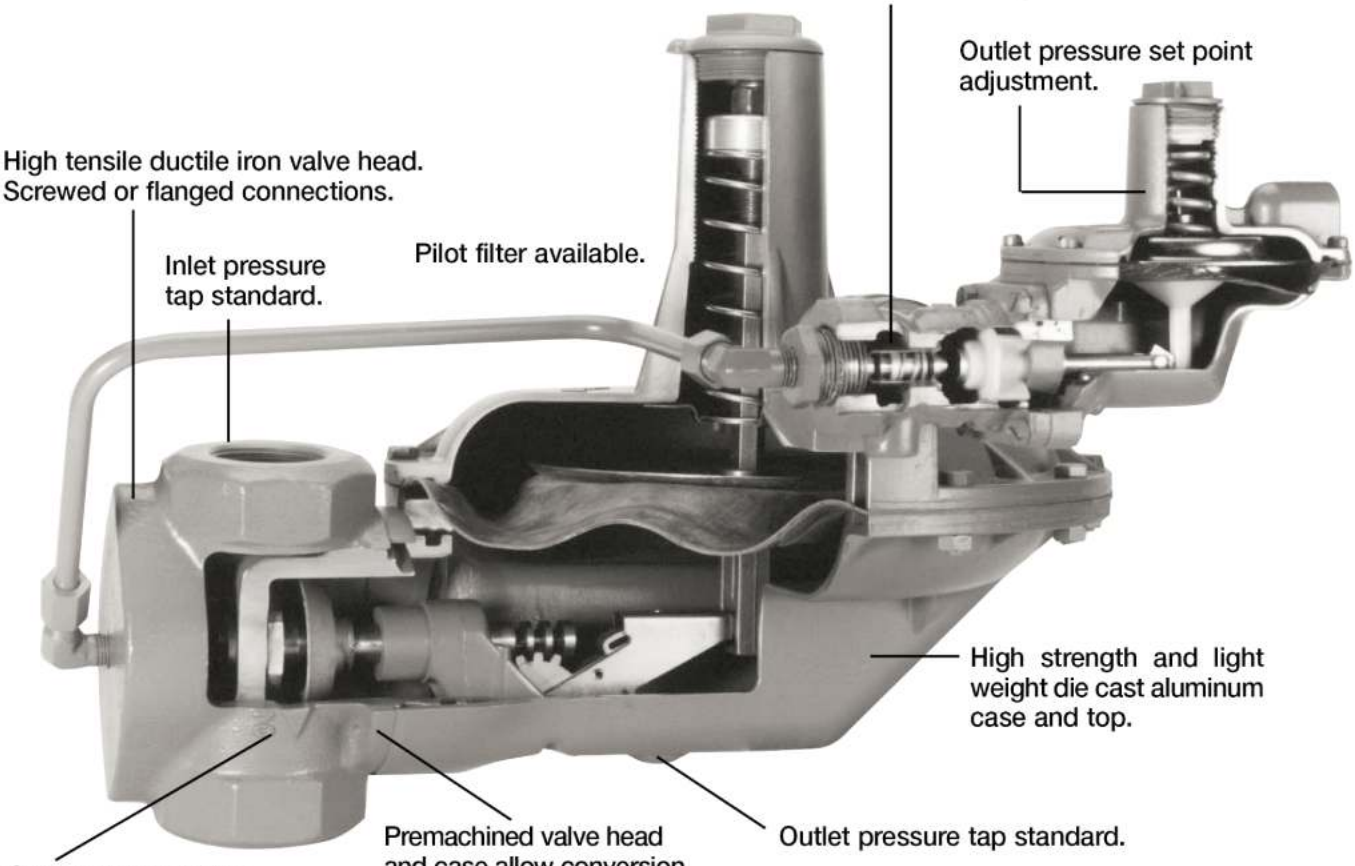
Dutch Council for Accreditation

AMERICAN METER COMPANY
Measurement Engineers Since 1836

American Meter 1800 PFM Series Regulator Features

Pilot loading and pressure balancing across a large main diaphragm eliminates the droop of spring-loaded regulators for stable, non-pulsating control over a wide range of flows.

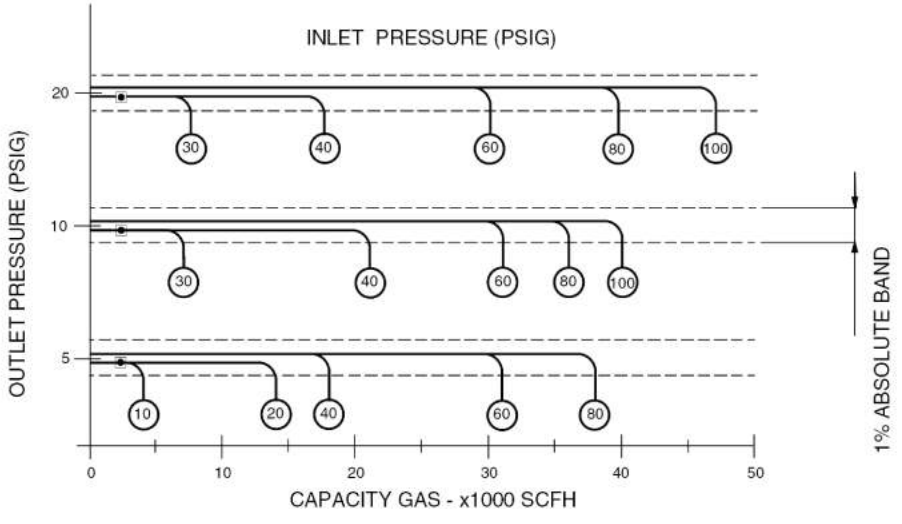
EC orifice compensates for wide variations in inlet pressure, eliminating the inlet pressure effect. Large orifice provides fast response to sudden load changes.



Typical Performance Data

Model No.1800 PFM

Set Pressure P_1: 60 psig
Set Pressure P_2: Various
Set Flow: 200 S.C.F.H.
Test Medium: 0.60 Sp. Gr. Gas
14.7 PSIA – 60°F



Address: Unit 11, 11/F, Tower One, Ever Gain Plaza, 88 Container Port Road, Kwai Chung, NT, Hong Kong
Website: www.dmc-gas.com **Email:** dmcsaleshk@dmc-gas.com.hk
Tel: +852 2851 2121 **Fax:** +852 2851 2129

American Meter 1800 PFM Series Regulator

Constant Outlet Pressure Regulator

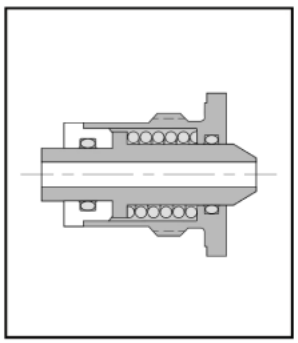
The 1800 PFM 1-1/2" and 2" industrial regulator is designed for applications requiring medium-to-high capacity, precise outlet pressure control and fast response to changing loads. It is suited for use with meters having base capacities up to 11,000 CFH.

An 1800 PFM handles varying inlet pressures up to 125 PSIG while controlling a set constant outlet pressure within ±1% of the absolute set pressure over a wide range of flow rates. It is ideal for fixed factor measurement at metering pressures from 0.5 to 30 PSIG.

Main Regulator

The main regulator is normally closed, containing one spring (for all outlet pressures) to close the regulator when the downstream load is off. Pilot loading through the top vent opens the regulator and eliminates outlet pressure droop at all flow rates by keeping a **constant pressure** on the main diaphragm. A large bleed path in the diaphragm stem also provides fast response to changing loads.

Pilot Regulator



Within the 1800 PFM pilot is an EC (elevation compensating) orifice that eliminates the **inlet pressure effect** found in most regulators. As line pressure to the pilot increases, the EC orifice moves slightly in the direction of the pilot seat disc, compensating for the **inlet pressure effect**, and assuring the outlet pressure remains constant.

The EC orifice principle has a second advantage. Since the EC orifice is inlet pressure compensating, the orifice diameter can be made larger. This increases the response time of the regulator by allowing higher pilot flow rates. The flow rate of the EC orifice is matched to bleed passage of the diaphragm providing fast response to suddenly changing loads.

Outlet pressure is set by means of a pilot spring adjustment screw. In the pilot, one spring and one orifice control outlet pressures in three pressure ranges; from 2 to 6 PSIG, 7 to 15 PSIG and 16 to 30 PSIG. By changing the spring, 0.5 to 1.0 PSIG and 1 to 2 PSIG pressure ranges are also available.

Pilots are equipped with a relief valve for excellent response to positive shock.

Fixed Factor Measurement

Fixed factor measurement is a widely used and economical way of metering and billing at elevated pressures without the use of an automatic correcting device. By controlling the metering pressure precisely to within ±1% absolute, a billing factor can be applied directly to a standard index reading ***or*** a pressure compensation index can be employed.

The key to accurate fixed factor pressure measurement is precise pressure control to within ±1% of the set point pressure under all operating conditions. This means for a set point of 5 PSIG the regulator must control outlet pressure to:

(Set Point Pressure + Atmospheric Pressure) x .01

5 PSIG + 14.7 PSIA = ± 0.197 PSIG

The 1800 PFM will control the set point to within ±1% for wide changes in flow rate ***and*** inlet pressure.

American Meter Model 1883 PFM Regulator

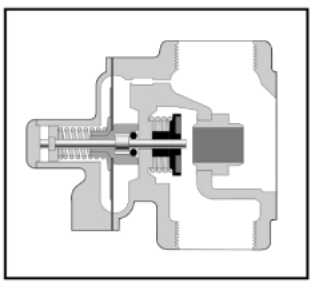
American Meter's 1883 PFM Regulator combines the precise fixed factor measurement of the standard Model 1803 PFM with the proven reliability of the Overpressure Shutoff (OPSO) Device.

How the OPSO Operates

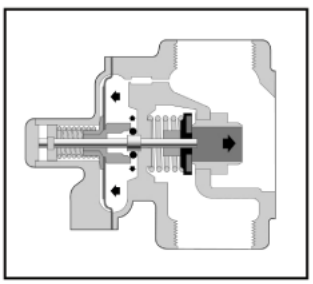
When line or static pressure increases to the specified overpressure shutoff setting, the pressure on the underside of the shutoff diaphragm over-balances the spring, forcing the diaphragm stem outward, releasing the plunger. This permits the shutoff spring to force the shutoff disc against the orifice,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

Overpressure Shutoff (OPSO) in cocked position



Overpressure Shutoff (OPSO) in tripped position



OPSO

The overpressure shutoff device prevents excessive gas pressure from entering a building causing a hazardous condition by closing the regulator if the outlet pressure rises above a maximum set point or set pressure.

Website: www.dmc-gas.com
Email: dmcsaleshk@dmc-gas.com.hk

DMC 多美時燃氣設備有限公司
DMC GAS EQUIPMENT LIMITED

American Meter 1800 PFM Series Capacities

The capacities are shown to the maximum recommended inlet pressure for the orifice size. The type of main seat disc holder used is the "Silver" holder (medium boost). The lock-up is less than 1 psi depending on inlet pressure and orifice size.

Capacities in SCFH of 0.60 Sp. Gr. Gas
Outlet pressure limits of ±1% (Absolute Pressure)

1½-Inch Model 1800 PFM

1/4" Orifice

Outlet Pressure PSI	Inlet Pressure – PSI								
	10	15	20	30†	40	60	80*	100	125
0.5	1,000	1,350	2,000	2,800	3,300	4,900			
1	1,200	1,350	1,900	2,800	3,600	4,950			
1.5	1,000	1,350	2,000	2,800	3,500	4,900			
2	1,200	1,650	1,900	2,300	3,150	4,350	5,550	6,500	7,500
5	1,150	1,600	1,900	2,300	3,150	4,350	5,550	6,500	7,500
10		1,000	1,500	2,200	3,050	4,350	5,550	6,600	7,550
15			1,200	2,150	3,000	4,500	5,600	6,600	7,500
20				1,750	2,700	4,400	5,600	6,600	7,500
25				1,200	2,300	4,350	5,550	6,600	7,500
30					2,050	4,200	5,400	6,650	7,500

† Set pressure for maximum inlet pressure – 30 psi. (0.5–1.5 psi outlet pressure)

* Set pressure for maximum inlet pressure – 80 psi. (2–30 psi outlet pressure)

3/8" Orifice

Outlet Pressure PSI	Inlet Pressure – PSI								
	10	15	20	30†	40	60	80*	100	125
0.5	1,400	2,100	2,800	5,300	7,800	11,100			
1	1,500	2,300	3,400	5,500	7,600	10,900			
1.5	1,550	2,300	3,400	5,400	7,800	10,700			
2	2,100	3,400	4,300	5,750	7,150	9,900	12,600	14,200	16,000
5	2,350	3,400	4,150	5,750	7,100	9,900	12,600	14,600	16,000
10		2,200	3,150	4,250	6,750	9,900	12,600	14,650	16,000
15			2,600	4,200	5,050	9,700	12,400	14,600	16,000
20				4,050	4,750	9,650	12,250	14,200	15,800
25				3,450	4,600	9,450	12,150	13,950	15,300
30					4,300	9,200	12,150	13,750	15,300

† Set pressure for maximum inlet pressure – 30 psi. (0.5–1.5 psi outlet pressure)

* Set pressure for maximum inlet pressure – 80 psi. (2–30 psi outlet pressure)

5/8" Orifice

Outlet Pressure PSI	Inlet Pressure – PSI								
	10	15	20	30†	40	60*	80	100	125
0.5	2,600	5,900	8,000	13,400	16,400				
1	2,400	5,800	8,000	12,900	16,000				
1.5	2,400	5,800	8,400	13,400	16,600				
2	4,150	7,000	9,350	13,150	15,750	22,300	25,650	26,450	
5	3,400	6,850	9,000	13,850	16,350	23,750	28,450	30,150	
10			4,700	10,250	16,350	26,100	32,550	34,350	
15			4,600	10,250	15,650	26,450	32,950	33,850	
20				5,650	15,100	26,250	32,750	32,750	
25					10,450	24,850	32,200	31,500	
30					9,700	23,400	30,400	32,950	

† Set pressure for maximum inlet pressure – 30 psi. (0.5–1.5 psi outlet pressure)

* Set pressure for maximum inlet pressure – 60 psi. (2–30 psi outlet pressure)

7/8" Orifice

Outlet Pressure PSI	Inlet Pressure – PSI								
	10	15	20	30†	40	60*	80	100	125
0.5	3,100	5,800	8,000	13,400	18,000				
1	2,200	5,800	8,000	13,200	16,000				
1.5	3,100	5,800	7,200	13,200	18,400				
2	6,000	8,250	10,000	18,150	20,150	27,350	22,300		
5	4,150	7,750	10,050	17,000	21,600	31,000	32,200		
10			5,550	12,250	18,550	32,650	36,250		
15			3,400	12,000	19,800	36,450	39,750		
20				9,400	19,000	36,350	44,250		
25					15,500	36,350	45,500		
30					12,150	36,000	45,500		

† Set pressure for maximum inlet pressure – 30 psi. (0.5–1.5 psi outlet pressure)

* Set pressure for maximum inlet pressure – 60 psi. (2–30 psi outlet pressure)

American Meter 1800 PFM Series Capacities

1½-Inch Model 1800 PFM

	Outlet Pressure PSI	Inlet Pressure – PSI								
		10	15	20	30†	40*	60	80	100	125
1" Orifice	0.5	6,400	8,900	11,400	18,000					
	1	5,200	8,500	12,400	18,400					
	1.5	7,100	8,400	11,600	18,000					
	2	5,050	7,350	10,550	18,000	23,000	20,350			
	5	4,500	7,000	11,250	18,000	22,500	28,950			
	10		6,000	9,000	13,150	22,000	39,000			
	15			9,900	16,000	22,000	39,000			
	20				10,800	22,500	41,150			
	25					22,500	41,500			
	30					11,500	41,750			

† Set pressure for maximum inlet pressure – 30 psi. (0.5–1.5 psi outlet pressure)

* Set pressure for maximum inlet pressure – 40 psi. (2–30 psi outlet pressure)

	Outlet Pressure PSI	Inlet Pressure – PSI								
		10	15	20	30†*	40	60	80*	100	125
1-1/4" Orifice	0.5	5,600	8,800	12,000	18,000					
	1	5,200	8,800	12,400	18,200					
	1.5	6,000	8,800	12,400	19,000					
	2	8,000	10,450	12,400	19,050	23,200				
	5	8,100	10,000	12,600	19,600	25,750				
	10		8,100	14,400	23,550	29,350				
	15			10,050	23,950	31,320				
	20				21,250	32,200				
	25				14,200	30,600				
	30					24,300				

† Set pressure for maximum inlet pressure – 30 psi. (0.5–1.5 psi outlet pressure)

* Set pressure for maximum inlet pressure – 30 psi. (2–30 psi outlet pressure)

2-Inch Model 1800 PFM

	Outlet Pressure PSI	Inlet Pressure – PSI								
		10	15	20	30†	40	60	80*	100	125
1/4" Orifice	0.5	1,000	1,200	1,500	2,300	3,300	4,900			
	1	1,000	1,200	1,500	2,300	3,300	4,950			
	1.5	1,000	1,200	1,500	2,300	3,300	4,900			
	2	1,000	1,450	1,900	2,500	3,100	4,400	5,500	6,700	8,200
	5	900	1,300	1,900	2,500	3,100	4,400	5,450	6,700	8,200
	10			700	2,100	3,000	4,300	5,400	6,600	8,300
	15				2,100	3,000	4,200	5,350	6,700	8,300
	20				1,700	2,800	4,200	5,300	6,700	8,300
	25				700	2,500	4,200	5,300	6,700	8,300
	30					1,200	4,000	5,300	6,700	8,300

† Set pressure for maximum inlet pressure – 30 psi. (0.5–1.5 psi outlet pressure)

* Set pressure for maximum inlet pressure – 80 psi. (2–30 psi outlet pressure)

	Outlet Pressure PSI	Inlet Pressure – PSI								
		10	15	20	30†	40	60	80*	100	125
3/8" Orifice	0.5	1,600	2,100	2,800	5,000	7,200	10,000			
	1	1,600	2,500	3,400	5,200	6,600	9,800			
	1.5	1,600	2,300	3,600	5,200	6,700	9,300			
	2	2,300	3,000	3,900	5,200	6,000	9,000	11,500	14,400	17,600
	5	1,350	2,500	3,400	4,850	6,200	9,000	11,500	14,300	17,400
	10		2,500	3,150	4,400	6,200	9,000	12,400	14,350	17,300
	15			2,850	4,850	5,400	9,000	12,400	14,350	17,300
	20				2,800	4,100	8,000	11,500	14,000	17,200
	25					4,100	7,000	11,000	14,200	17,100
	30					4,100	7,000	11,000	14,100	17,100

† Set pressure for maximum inlet pressure – 30 psi. (0.5–1.5 psi outlet pressure)

* Set pressure for maximum inlet pressure – 80 psi. (2–30 psi outlet pressure)

Address: Unit 11, 11/F, Tower One, Ever Gain Plaza, 88 Container Port Road, Kwai Chung, NT, Hong Kong
Website: www.dmc-gas.com Email: dmcsaleshk@dmc-gas.com.hk
Tel: +852 2851 2121 Fax: +852 2851 2129

DMC 多美時燃氣設備有限公司
DMC GAS EQUIPMENT LIMITED

American Meter 1800 PFM Series Capacities

The capacities are shown to the maximum recommended inlet pressure for the orifice size. The type of main seat disc holder used is the "Silver" holder (medium boost). The lock-up is less than 1 psi depending on inlet pressure and orifice size.

Capacities in SCFH of 0.60 Sp. Gr. Gas
Outlet pressure limits of ±1% (Absolute Pressure)

2-Inch Model 1800 PFM

	Outlet Pressure PSI	Inlet Pressure – PSI								
		10	15	20	30†	40	60*	80	100	125
5/8" Orifice	0.5	2,100	4,900	6,900	10,400	16,400				
	1	2,100	4,500	5,900	10,900	16,000				
	1.5	2,100	4,500	6,400	11,600	15,800				
	2	4,700	6,200	8,500	12,500	18,000	27,000	24,000	18,000	
	5	2,700	6,200	8,300	12,200	18,000	27,000	32,500	28,000	
	10		5,600	7,800	12,000	17,500	27,000	34,300	40,500	
	15			5,050	12,000	16,500	27,000	34,200	40,500	
	20				7,500	11,000	26,000	33,800	40,000	
	25					10,000	24,300	34,000	40,000	
	30					7,000	23,000	34,300	40,000	

† Set pressure for maximum inlet pressure – 30 psi. (0.5–1.5 psi outlet pressure)

* Set pressure for maximum inlet pressure – 60 psi. (2–30 psi outlet pressure)

	Outlet Pressure PSI	Inlet Pressure – PSI								
		10	15	20	30†	40	60*	80	100	125
7/8" Orifice	0.5	2,000	5,200	8,000	16,400	25,000				
	1	2,000	5,100	8,200	15,800	24,600				
	1.5	2,000	4,800	7,200	14,600	24,000				
	2	4,700	9,000	10,100	18,000	24,000	20,000	20,000		
	5	4,300	9,000	12,000	20,000	25,000	31,000	32,000		
	10		5,100	10,500	20,000	28,000	46,000	52,000		
	15			6,900	16,000	28,000	46,000	52,000		
	20				13,000	27,000	47,000	58,000		
	25					20,000	44,000	59,000		
	30					14,000	42,500	60,000		

† Set pressure for maximum inlet pressure – 30 psi. (0.5–1.5 psi outlet pressure)

* Set pressure for maximum inlet pressure – 60 psi. (2–30 psi outlet pressure)

	Outlet Pressure PSI	Inlet Pressure – PSI								
		10	15	20	30†	40*	60	80	100	125
1" Orifice	0.5	4,400	7,900	11,400	18,200					
	1	4,200	7,500	10,600	18,400					
	1.5	4,700	7,400	10,600	18,000					
	2	10,000	14,500	21,600	31,500	38,500	52,000			
	5	9,000	16,000	21,000	30,600	39,000	52,000			
	10			13,000	27,700	39,250	56,100			
	15			9,300	24,100	35,600	56,150			
	20				18,000	34,000	51,450			
	25				11,500	27,300	51,100			
	30					23,400	46,800			

† Set pressure for maximum inlet pressure – 30 psi. (0.5–1.5 psi outlet pressure)

* Set pressure for maximum inlet pressure – 40 psi. (2–30 psi outlet pressure)

	Outlet Pressure PSI	Inlet Pressure – PSI								
		10	15	20	30†*	40	60	80	100	125
1-1/4" Orifice	0.5	7,600	10,800	19,000	28,200					
	1	7,100	10,900	18,800	26,800					
	1.5	6,200	11,100	18,800	27,200					
	2	10,200	25,000	30,600	40,300	41,000				
	5	12,200	21,800	29,100	41,700	44,000				
	10			10,800	32,760	45,000				
	15			6,100	30,250	43,900				
	20				18,300	34,500				
	25				14,400	38,500				
	30					32,400				

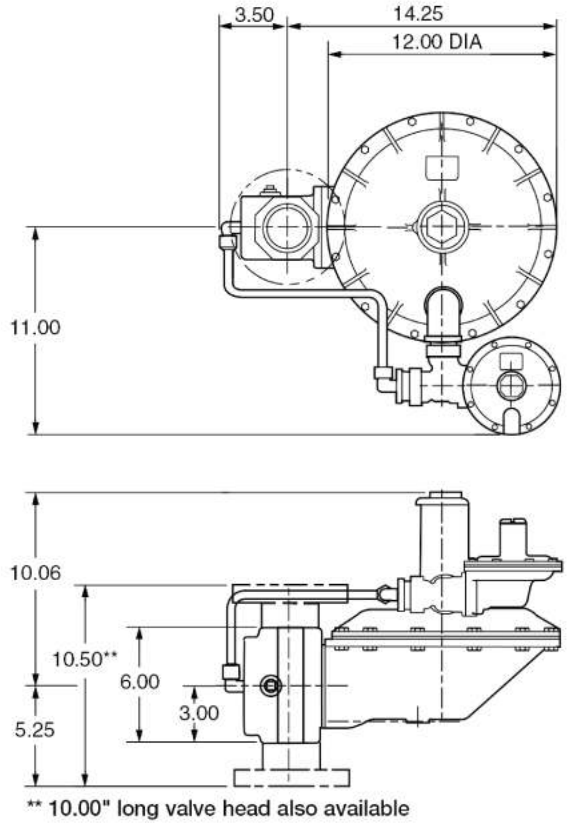
† Set pressure for maximum inlet pressure – 30 psi. (0.5–1.5 psi outlet pressure)

* Set pressure for maximum inlet pressure – 30 psi. (2–30 psi outlet pressure)

American Meter 1800 PFM Series Dimensional Data

Website: www.dmc-gas.com
Email: dmcsaleshk@dmc-gas.com.hk

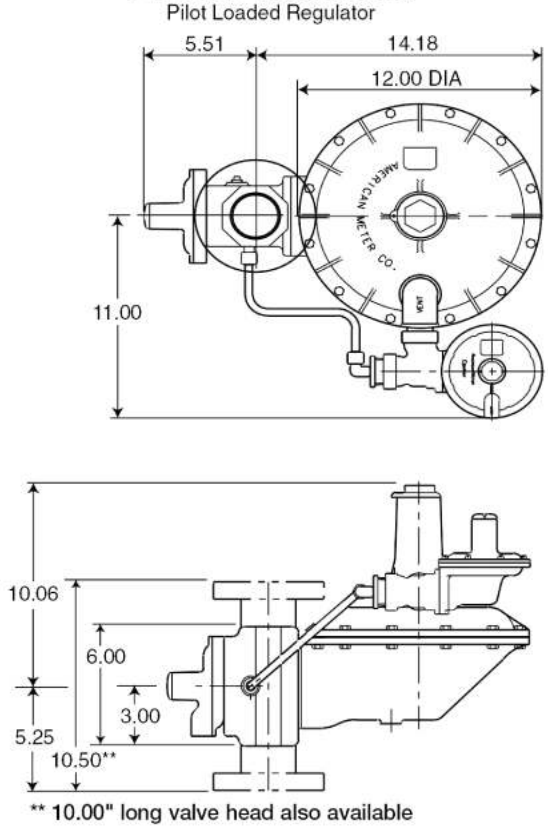
1-1/2" and 2" Model 1803 PFM
Pilot Loaded Regulator



** 10.00" long valve head also available

Shipping Weight
21 Lbs. – Screwed Connection
35 Lbs. – Flanged Connection

1-1/2" and 2" Model 1883 PFM
Pilot Loaded Regulator

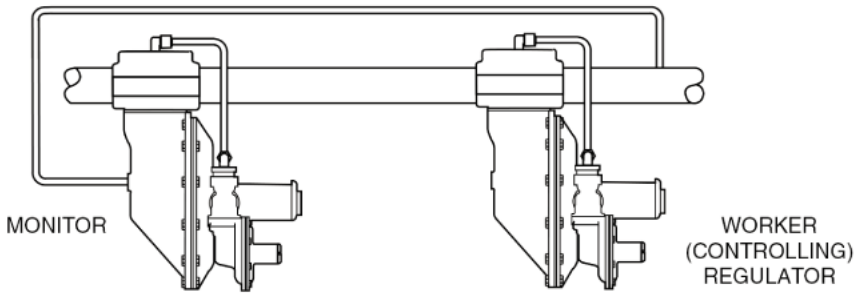


** 10.00" long valve head also available

Shipping Weight
23.25 Lbs. – Screwed Connection
37.25 Lbs. – Flanged Connection

DMC 多美時燃氣設備有限公司
DMC GAS EQUIPMENT LIMITED

American Meter 1800 PFM Series Monitor Application



Typical Upstream Monitor Installation

A worker/monitor regulator installation consists of a regulator with an external static connection and a regulator with an internal static connection. The regulator selected to be the monitor is set at 2" to 5" w.c. above the controlling regulator. Upstream monitoring, as shown in the sketch above, is more commonly used. The external static connection should be connected at a point free of turbulence and preferably a minimum of five pipe diameters downstream. A worker-to-monitor conversion kit is available.

Ordering Information

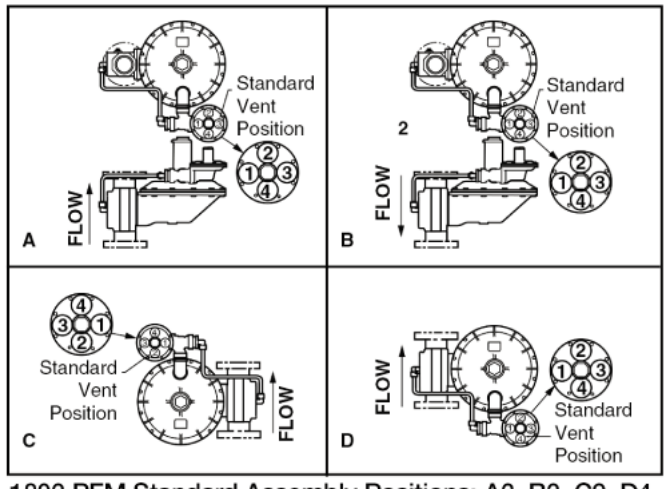
1. **Model** 1803 PFM, 1803 MPFM, 1883 PFM, 1883 MPFM
2. **Connection Size:** 1-1/2" Screwed, 2" Screwed, 2" Flanged
3. **Inlet Pressure Range:** up to 125 PSIG
4. **Outlet Set Pressure:** 1/2 to 30 PSIG
5. **Main Orifice Diameter:** 1/4", 3/8", 5/8", 7/8", 1", 1-1/4"
6. **Gas Specific Gravity**
7. **Regulator Assembly Position:** See right
8. **Pilot Filter Option:** Yes/No
9. **OPSO Spring Range:** See below

OPSO Shutoff Spring Ranges

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

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

Regulator Assembly Positions



1803 PFM Standard Assembly Positions: A3, B3, C2, D4
1883 PFM Standard Assembly Positions: A3, C2

American Meter Company is committed to a program of continuous quality enhancement. All equipment designed and manufactured by American Meter Company benefits from the company's quality assurance standards, which are approved to ISO 9001 or ISO 9002.

American Meter Company has a program of continuous product development and improvement; and, therefore, the information in this bulletin is subject to change or modification without notice.

Address: Unit 11, 11/F, Tower One, Ever Gain Plaza
88 Container Port Road, Kwai Chung, NT, Hong Kong
Website: www.dmc-gas.com
Email: dmcsaleshk@dmc-gas.com.hk
Tel: +852 2851 2121 Fax: +852 2851 2129

Printed in U.S.A. ELSTER AMCO Core – 2500 – 5/02