

TwinBed® II Differential Pressure Ratio Regulator

7287 Regulators are flow balancing air/gas ratio control devices used in TwinBed II Heat Reclamation systems. The 7287 matches pressure drop across an orifice in the gas line to the drop across an orifice in the combustion air line, thereby matching gas and air flows from high fire to low.

The standard arrangement uses an 1807 Limiting Orifice Valve as the gas orifice, which is used to set the air/gas ratio.

This differential pressure regulator controls ratio regardless of changes in downstream resistance and/or backpressure. Such changes occur in TwinBed installations as regenerative bed temperatures increase and decrease.

The 7287 differs from the 7288 in internal construction: A one-piece shaft assures that diaphragms move together, which prevents a surge condition. The 7287 can endure the continual cycling characteristics of regenerative burners. It can be used on a suction system, e.g., with TwinBed educators.

An individual 7287 Regulator is recommended for each pair of TwinBed burners. Allow a minimum of 1 psi drop across the combination of 7287 and 1807, with no more than 40% of the combined drop across the 1807.

Heat Reclamation installations (regenerators or recuperators) require flow balance ratio control because resistance in the air line increases as bed temperatures rise.



7287 Differential Pressure Ratio Regulator

The 7287 Regulator works on the principle that matched differential pressures mean matched flows (assuming air and gas temperatures are maintained at each orifice).

For example, as a regenerative bed temperature increases and air flow through it is restricted, pressure drop across the orifice plate in the cold air line decreases. The 7287 senses this and reduces pressure drop across the gas orifice (usually a limiting orifice valve), thus decreasing gas flow in the same proportion as the air flow reduction. Preset air/fuel ratio is maintained.

Table 1.

CAPACITIES
cfh at 8 psi drop through regulator

Regulator designation	size in inches	gas gravity		
		0.4	0.6	1.5
7287-0	¾	600	500	300
7287-1	1	1000	800	500
7287-2	1¼	2000	1600	1000
7287-3	1½	2900	2400	1500
7287-4	2	4700	3800	2400
7287-5	2½	7800	6400	4000
7287-6	3	11800	9600	6100

Table 2. Capacity correction factors for various pressure drops across 7287 Regulators.

Pressure drop, psi	Factor
4	0.707
8	1.00
16	1.41
24	1.73
32	2.00

For higher capacity applications, see Sheet 7000-3.

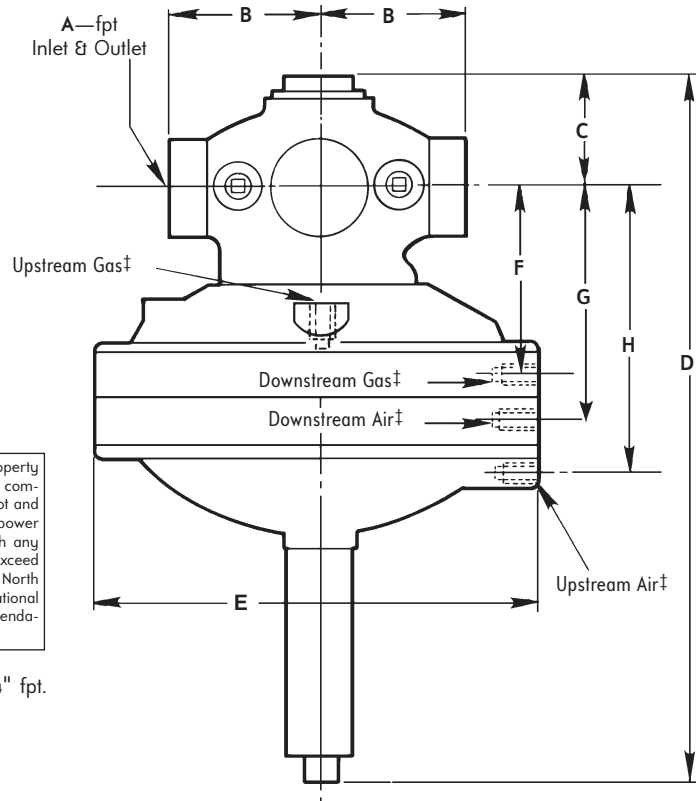
SPECIFICATIONS

Material

Body: cast iron
Diaphragm cases: cast aluminum
Internals: brass, steel, aluminum, stainless steel

Diaphragms: silicone rubber and fiberglass
Maximum pressure: 4 psi
Maximum temperature: 180 F ambient

NOTE: 7287 Regulators should be installed horizontally with spring on bottom.



WARNING: Situations dangerous to personnel and property may exist with the operation and maintenance of any combustion equipment. The presence of fuels, oxidants, hot and cold combustion products, hot surfaces, electrical power in control and ignition circuits, etc., are inherent with any combustion application. Parts of this product may exceed 160F in operation and present a contact hazard. Fives North American Combustion, Inc. urges compliance with National Safety Standards and insurance Underwriters recommendations, and care in operation.

‡ All pressure connections are 1/4" fpt.

Regulator designation	dimensions in inches								approx. weight, lb
	A	B	C	D	E	F	G	H	
7287-0	3/4	2 1/2	1 7/8	9 3/8	10 1/2	3 5/8	4 3/8	5 5/16	26
7287-1	1	2 3/4	2 1/16	9 3/8	10 1/2	3 5/8	4 3/8	5 5/16	26
7287-2	1 1/4	2 3/4	2 1/2	14 3/8	10 1/2	3 5/8	4 3/8	5 5/16	28
7287-3	1 1/2	3 1/16	2 5/8	14 3/8	10 1/2	3 5/8	4 3/8	5 5/16	28
7287-4	2	3 5/16	3 1/4	18	13 1/2	4 3/8	4 7/8	5 15/16	30
7287-5	2 1/2	4 1/2	4 3/8	22 1/2	18 1/2	5 3/8	6 15/16	8	50
7287-6	3	4 13/16	4 7/8	22 1/2	18 1/2	5 3/8	6 5/16	8	50

DIMENSIONS SHOWN ARE SUBJECT TO CHANGE. PLEASE OBTAIN CERTIFIED PRINTS FROM FIVES NORTH AMERICAN COMBUSTION, INC. IF SPACE LIMITATIONS OR OTHER CONSIDERATIONS MAKE EXACT DIMENSION(S) CRITICAL.

For Operation and Maintenance Instructions, see Operation 7287
For Installation Instructions, see Installation 7287
For Trouble-Shooting, see Trouble-Shooting 7287



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