

Combustion

North American 7337-4 High Pressure Gas Regulators

7337-4 Regulators reduce high gas supply pressures to practical use levels. Since capacities will vary with the pressure drop across the regulator, due care must be exercised in properly sizing both the regulator and downstream piping.

SPECIFICATIONS

Body Sizes and End Connections: 2" NPT

Maximum Operating Inlet Pressure: See Table B

Capacities: See Table C

Maximum Emergency Inlet Pressure: 125 psig (8.6 bar)

Maximum Outlet (Casing) Pressure: 15 psig (1.0 bar)

Maximum Operating Outlet Pressure to Avoid Internal Parts Damage - The Outlet Pressure Rating:
3 psig (0.21 bar) above outlet pressure setting

Temperature Capabilities: -20° to 150°F (-29° to 66°C)

Pressure Registration: An external downstream control line is required

SELECTION

When selecting a regulator, specify its complete designation including pipe size code and spring designation or outlet pressure range.

Example: Select a regulator for 50,000 scfh of 0.6 specific gravity natural gas from 20 psig supply pressure to 16"wc outlet pressure.

Solution: Entering Table C at the smallest regulator with this capacity and correct spring range yields a 7337-4-G16.



Table A. Specific Gravity Correction

Sp Gr	Factor
0.4	1.22
0.6	1.00
1.0	0.774
1.5	0.632
2.0	0.547

If the specific gravity of the gas is other than 0.6, divide desired flow by gravity factor to get equivalent flow of natural gas; then select regulator from Table C.

Multiply a given size regulator's natural gas capacity by gravity factor to get regulator capacity with different gas.

INSTALLATION

The North American 7337-4 Regulator may be installed in any orientation as long as flow through it matches the direction arrow cast on the body. Normal installation is with the spring case vertical above the body.

OVERPRESSURE PROTECTION

Like most pressure-reducing regulators, the 7337-4 Regulators have outlet pressure ratings that are lower than the inlet pressure ratings. Therefore, a pressure relieving or pressure limiting device is needed if the inlet pressure can exceed the outlet pressure rating, see "Specifications". This regulator does not have an internal relief feature.

CAPACITY INFORMATION

Table C provides the natural gas regulating capacities of the 7337-4 regulators at specific inlet pressures and outlet pressure settings. Flows are in SCFH (60°F and 14.7 psia) of 0.6 specific gravity gas. For specific gravity conversion factors to other gases, refer to the "Selection" section.

To determine the wide-open flow capacity of a regulator for relief sizing, use the following formulas.

For critical flow (P outlet absolute \leq ½ P inlet absolute):

$$Q = 2322 * P$$

For non-critical flow (P outlet absolute $>$ ½ P inlet absolute):

$$Q = \sqrt{\frac{520}{GT}} 1800 P \sin \left(97.63 \sqrt{\frac{\Delta P}{P}} \right) [\text{as degrees}]$$

- G = gas specific gravity (air = 1.0)
- P = inlet pressure, psia
- Q = flow rate, SCFH
- T = absolute temperature of gas at inlet in °Rankine
- DP = differential pressure, psi (*The difference between the regulator inlet pressure and the maximum outlet pressure that can be tolerated by downstream components*)

Table B. 7337-4 Regulator Springs and Maximum Inlet Pressures

Regulator Designation	Outlet Pressure Range	Compression Spring		Droop *	Max. Operating Inlet Pressure
		Color	Number		
7337-4-L1	-1-+1"wc (-3-+3 mbar)	Unpainted	R690-5380	0.5"wc (1 mbar)	20 psig (1.4 bar)
7337-4-G5	5-9"wc (12-22 mbar)	Black	R690-5379	1"wc (3 mbar)	60 psig (4.1 bar)
7337-4-G10	8.5-18"wc (21-45 mbar)	White	R690-5308	1"wc (3 mbar)	60 psig (4.1 bar)
7337-4-G16	14-28"wc (35-70 mbar)	Green	R690-5375	1"wc (3 mbar)	60 psig (4.1 bar)
7337-4-G32	0.75-2 psig (50-140 mbar)	Blue	R690-5376	10%	60 psig (4.1 bar)
7337-4-G80	2-5 psig (0.14-0.34 bar)	Yellow	R690-5378	10%	60 psig (4.1 bar)

* Droop is the difference between outlet pressure selected and that realized when operating at capacities listed in this table.

Table C. 7337-4 Capacities

Regulator Designation	Spring	Outlet Pressure Setting	Inlet Pressure psig (bar) unless otherwise noted	Capacities scfh (Nm³/hr)
7337-4-L1	Unpainted -1 to +1" wc (-3 to +3 mbar)	1" wc (3 mbar)	8" wc (20 mbar)	2 400 (60)
			14" wc (35 mbar)	4 100 (110)
			1 (0.07)	6 500 (170)
			2 (0.14)	11 500 (310)
			5 (0.34)	22 000 (590)
			10 (0.69)	44 000 (1180)
			20 (1.4)	76 000 (2040)
7337-4-G5	Black 5-9" wc (12-22 mbar)	7" wc (17 mbar)	1 (0.07)	12 000 (320)
			2 (0.14)	17 000 (460)
			3 (0.21)	21 000 (560)
			5 (0.34)	32 000 (860)
			10 (0.69)	48 000 (1290)
			20 (1.4)	79 000 (2120)
			30 (2.1)	100 000 (2680)
			40 (2.8)	124 000 (3320)
			50 (3.4)	145 000 (3890)
60 (4.1)	166 000 (4450)			
7337-4-G10	White 8.5-18" wc (21-45 mbar)	14" wc (35 mbar)	1 (0.07)	5 000 (130)
			2 (0.14)	8 200 (220)
			3 (0.21)	12 000 (320)
			5 (0.34)	16 000 (430)
			10 (0.69)	34 000 (910)
			20 (1.4)	69 000 (1850)
			30 (2.1)	91 000 (2440)
			40 (2.8)	109 000 (2920)
			50 (3.4)	130 000 (3480)
60 (4.1)	155 000 (4150)			
7337-4-G16	Green 14-28" wc (35-70 mbar)	14" wc (35 mbar)	5 (0.34)	14 000 (380)
			10 (0.69)	26 000 (700)
			20 (1.4)	60 000 (1610)
			30 (2.1)	87 000 (2330)
			40 (2.8)	107 000 (2870)
			50 (3.4)	132 000 (3540)
			60 (4.1)	152 000 (4070)
7337-4-G32	Blue 0.75-2 psig (0.05-0.14 bar)	2 psig (0.14 bar)	3 (0.21)	12 500 (340)
			5 (0.34)	20 500 (550)
			10 (0.69)	38 000 (1020)
			20 (1.4)	62 000 (1660)
			30 (2.1)	87 000 (2330)
			40 (2.8)	105 000 (2810)
			50 (3.4)	124 000 (3320)
60 (4.1)	145 000 (3890)			

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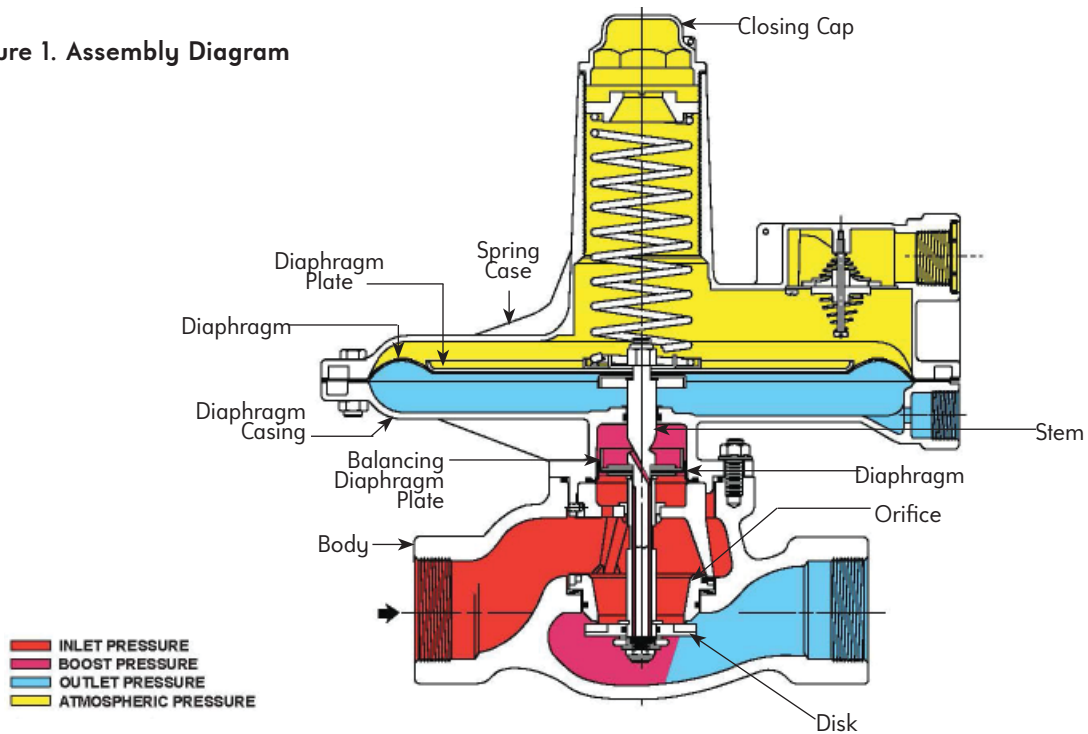
Table C. 7337-4 Capacities (continued)

Regulator Designation	Spring	Outlet Pressure Setting	Inlet Pressure psig (bar) unless otherwise noted	Capacities in scfh (Nm ³ /hr)
7337-4-G80	Yellow 2-5 psig (0.14-0.34 bar)	2 psig. (0.14 bar)	3 (0.21)	6 500 (170)
			5 (0.34)	11 000 (300)
			7 (0.48)	13 000 (350)
			10 (0.69)	15 000 (400)
			15 (1.0)	25 500 (680)
			20 (1.4)	35 000 (940)
			30 (2.1)	49 000 (1310)
			40 (2.8)	66 000 (1770)
	50 (3.4)	84 000 (2250)		
	60 (4.1)	104 000 (2790)		
	Yellow 2-5 psig (0.14-0.34 bar)	5 psig (0.34 bar)	7 (0.48)	15 500 (420)
			10 (0.69)	24 000 (640)
			15 (1.0)	35 000 (940)
			20 (1.4)	46 000 (1230)
			30 (2.1)	68 000 (1820)
			40 (2.8)	88 000 (2360)
50 (3.4)			103 000 (2760)	
60 (4.1)			122 000 (3270)	

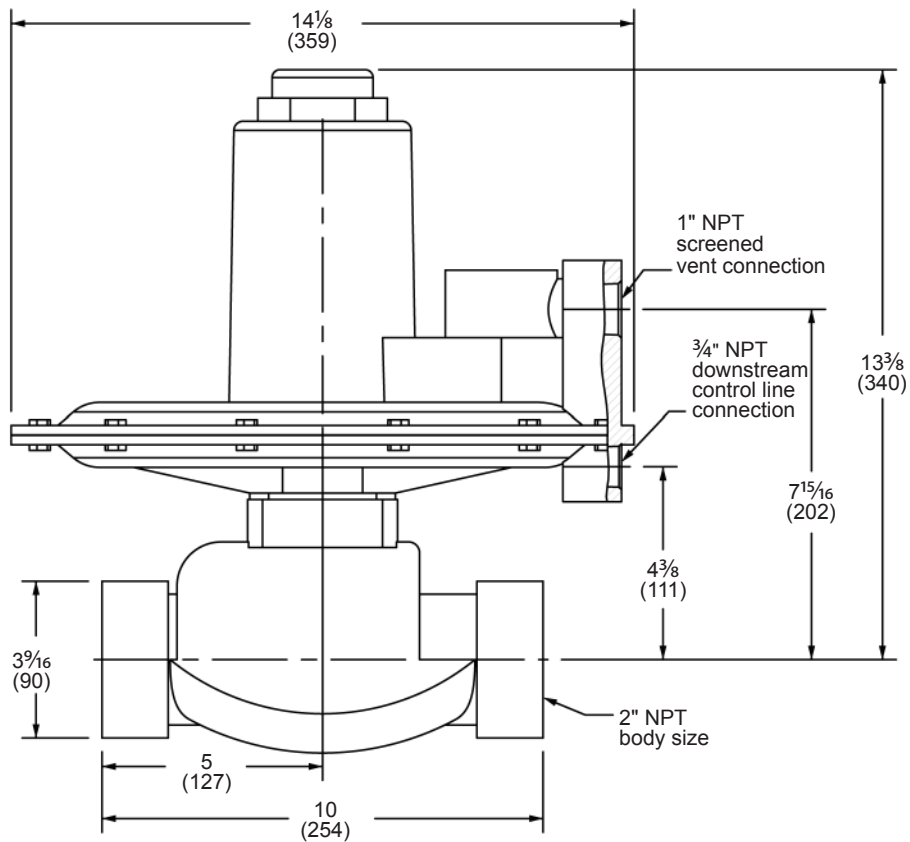
Table D. Materials of Construction (see Figure 1.)

Body	Closing Cap, Diaphragm Casing, and Spring Case	Orifice	Diaphragm Plate	Diaphragms and Disk	Balancing Diaphragm Plate	Stem
Cast Iron	Aluminum	Aluminum	Steel	Nitrile (NBR)	Plated Steel	Stainless Steel

Figure 1. Assembly Diagram



DIMENSIONS Inches (mm)



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.

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.



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