

Noth American 7347 High Pressure Gas Regulators

7347 Regulators reduce high gas supply pressures to practical use levels. Since capacities will vary with the pressure drop across the regulator (see Table C), due care must be exercised in properly sizing both the regulator and downstream piping. For 7347 regulators, downstream piping may be enlarged only one pipe size from the regulator pipe size to increase capacity. Outlet pressure of regulators (except where noted) may be varied through use of interchangeable compression springs within the groups indicated in selection Table B. Compression springs are identified by either color or part number.

SPECIFICATIONS

Body Sizes and End Connections: 3/4" to 1-1/4" NPT

Orifice Diameter: 3/8"

Maximum Operating Inlet Pressure: See Table B

Maximum Outlet (Casing) Pressure: 20 psig (1.4 bar)

Maximum Operating Outlet Pressure to Avoid Internal Parts Damage - The Outlet Pressure Rating:
2 psig (0.14 bar) above outlet pressure setting

Temperature Capabilities: -20° to 180°F (-29° to 82°C)

Pressure Registration: Internal pitot tube

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 800 scfh of 1.5 specific gravity propane gas from 10 psig supply pressure to 26"wc outlet pressure.

Solution: Convert the propane gas volume to the equivalent natural gas volume by using the factor from Table A: 800 scfh of propane gas ÷ 0.632 is equivalent to 1266 of natural gas. Entering Table C at the smallest regulator with this capacity yields a 7347-0. The required outlet pressure reveals that a 7347-0-A Regulator having a 15-33" wc spring should be used.

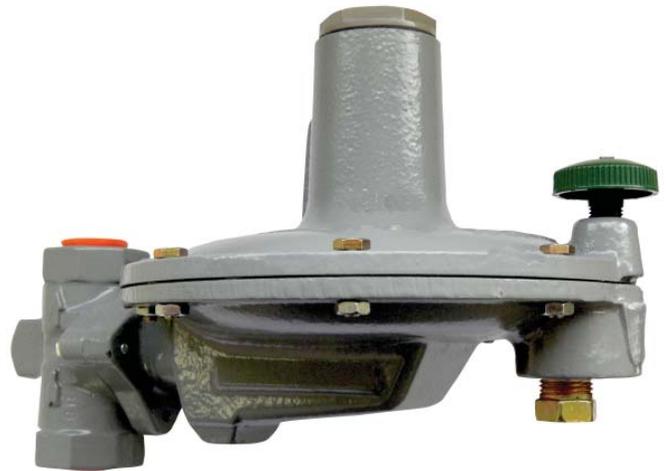


Table A. Specific Gravity Correction

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.

RELIEF VALVES

The North American **7347 Regulator** comes equipped with a non-adjustable internal limited capacity relief valve feature. This internal relief valve is intended to minimize overpressure that could occur due to seat leakage. If the downstream pressure exceeds the regulator setting by 10 "w.c. to 2 psig (25 mbar to 0.14 bar) depending on the main spring used (see Table B), the relief valve opens and excess gas is vented through the stabilizer vent in the upper spring case.

INSTALLATION

The North American 7347 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 or below the diaphragm case.

If gas escaping through the internal relief could constitute a hazard the spring case vent must be piped to a location where escaping gas will not be hazardous. If the vented gas will be piped to another location use obstruction-free tubing or piping at least equal in size to the vent. The end of the vent pipe must be protected from anything that might clog it.

OVERPRESSURE PROTECTION

Like most pressure-reducing regulators, the 7347 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". The internal relief in this regulator does provide limited downstream overpressure protection, but it should not be considered complete overpressure protection. Refer to the capacity information section to determine the required relief valve capacity.

CAPACITY INFORMATION

Table C provides the natural gas regulating capacities of the 7347 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 formula.

$$Q = \sqrt{\frac{520}{GT}} 110 P \sin \left(97.63 \sqrt{\frac{\Delta P}{P}} \right) [\text{as degrees}]$$

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

Table B. 7347 Regulator Springs

Regulator Designation	End Connections	Outlet Pressure Range	Compression Spring		Drop *	Approx. point above pressure setting @ which internal relief starts to discharge	Max. inlet pressure psig
			Color	Number			
7347-0-G	¾" NPT	4-8"wc (10-20 mbar)	Red	R690-5278	1"wc (2.5 mbar)	10-24"wc (25-60 mbar)	35
7347-0-A		15-33"wc (37-83 mbar)	Yellow	R690-5279	5.5"wc (14 mbar)	10-26"wc (25-65 mbar)	35
7347-0-B‡		1.2-2.5 psig (0.08-0.17 bar)	Green	R690-5280	5.5"wc (14 mbar)	0.5-2 psig (0.03-0.14 bar)	60
7347-1-G	1" NPT	4-8"wc (10-20 mbar)	Red	R690-5278	1"wc (2.5 mbar)	10-24"wc (25-60 mbar)	35
7347-1-A		15-33"wc (37-83 mbar)	Yellow	R690-5279	5.5"wc (14 mbar)	10-26"wc (25-65 mbar)	35
7347-1-B‡		1.2-2.5 psig (0.08-0.17 bar)	Green	R690-5280	5.5"wc (14 mbar)	0.5-2 psig (0.03-0.14 bar)	60
7347-2-G	1¼" NPT	4-8"wc (10-20 mbar)	Red	R690-5278	1"wc (2.5 mbar)	10-24"wc (25-60 mbar)	35
7347-2-A		7-16"wc (17-40 mbar)	Unpainted	R690-5270	1"wc (2.5 mbar)	10-26"wc (25-65 mbar)	35
7347-2-B‡		1.2-2.5 psig (0.08-0.17 bar)	Green	R690-5280	5.5"wc (14 mbar)	0.2-2 psig (0.03-0.14 bar)	60

‡ Within a grouping, by changing compression springs, the "B" regulator may be made into either of two regulators above it; and those two above may be changed into each other, but they cannot be changed into "B" regulators because they lack the high pressure diaphragm head assembly.

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

Table C. Capacities for High Pressure Regulators

Regulator Designation	Spring	Outlet Pressure Setting	Inlet Pressure psig (bar)	Capacities in scfh (Nm³/hr) of 0.6 specific gravity gas
7347-0-G	Red 4-8" wc (10-20 mbar)	7" w.c. (17 mbar)	1 (0.07)	250 (6.7)
			5 (0.34)	490 (13.1)
			8 (0.55)	540 (14.5)
			20 (1.4)	650 (17.4)
			35 (2.4)	900 (24.1)
7347-0-A	Yellow 15-33" wc (37-83 mbar)	15" w.c. (37 mbar)	2 (0.14)	900 (24.1)
			6 (0.41)	1640 (43.9)
			10 (0.69)	1940 (51.9)
			30 (2.1)	2450 (65.7)
		1.2 psig (83 mbar)	2 (0.14)	600 (16.1)
			6 (0.41)	1290 (34.6)
7347-0-B	Green 1.2-2.5 psig (0.08-0.17 bar)	1.2 psig (83 mbar)	10 (0.69)	1420 (38.0)
			30 (2.1)	2430 (65.1)
			2 (0.14)	350 (9.4)
			6 (0.41)	740 (19.8)
			10 (0.69)	1010 (27.0)
		2.5 psig (172 mbar)	30 (2.1)	1720 (46.1)
			60 (4.1)	2340 (62.7)
			6 (0.41)	450 (12.1)
			10 (0.69)	570 (15.3)
			30 (2.1)	1030 (27.6)
7347-1-G	Red 4-8" wc (10-20 mbar)	7" w.c. (17 mbar)	60 (4.1)	2250 (60.3)
			1 (0.07)	300 (8.0)
			5 (0.34)	1140 (30.6)
			8 (0.55)	2140 (57.4)
			20 (1.4)	1170 (31.4) ⁽¹⁾
7347-1-A	Yellow 15-33" wc (37-83 mbar)	15" w.c. (37 mbar)	35 (2.4)	930 (24.9) ⁽¹⁾
			2 (0.14)	1100 (29.5)
			6 (0.41)	2500 (67.0)
			10 (0.69)	3250 (87.1)
			30 (2.1)	5460 (146)
		1.2 psig (83 mbar)	2 (0.14)	820 (22.0)
			6 (0.41)	1550 (41.5)
			10 (0.69)	2320 (62.2)
			30 (2.1)	4390 (118)
			7347-1-B	Green 1.2-2.5 psig (0.08-0.17 bar)
10 (0.69)	1150 (30.8)			
30 (2.1)	1910 (51.2)			
60 (4.1)	2420 (64.9)			
6 (0.41)	500 (13.4)			
2.5 psig (172 mbar)	10 (0.69)	710 (19.0)		
	30 (2.1)	1640 (43.9)		
	60 (4.1)	3130 (83.9)		

(continued on the next page)

Note: (1) Indicates capacity limited due to boost.

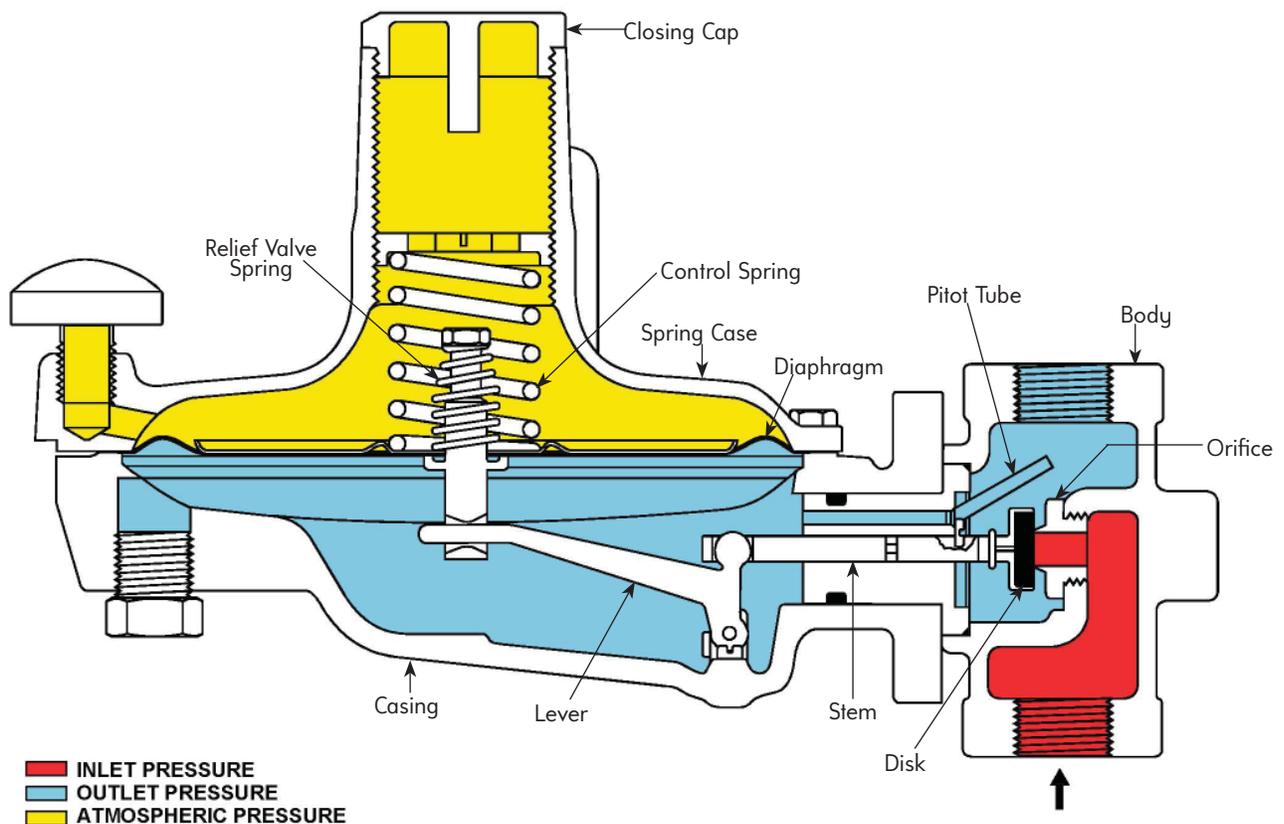
Table C. Capacities for High Pressure Regulators (continued)

Regulator Designation	Spring	Outlet Pressure Setting	Inlet Pressure psig (bar)	Capacities in scfh (Nm ³ /hr) of 0.6 specific gravity gas
7347-2-G	Red 4-8"wc (10-20 mbar)	7" w.c. (17 mbar)	0.5 (0.034)	240 (6.43)
			1 (0.069)	340 (9.11)
			5 (0.34)	1770 (47.4)
7347-2-A	Unpainted 7-16"wc (17-40 mbar)		8 (0.83)	1800 (48.2)
			20 (1.4)	1800 (48.2)
			35 (2.4)	1800 (48.2)
7347-2-B	Green 1.2-2.5 psig (0.08-0.17 bar)	1 psig (69 mbar)	2 (0.14)	300 (8.04)
			6 (0.41)	670 (18.0)
			10 (0.69)	950 (25.5)
			30 (2.1)	2000 (53.6)
			60 (4.1)	3100 (83.1)

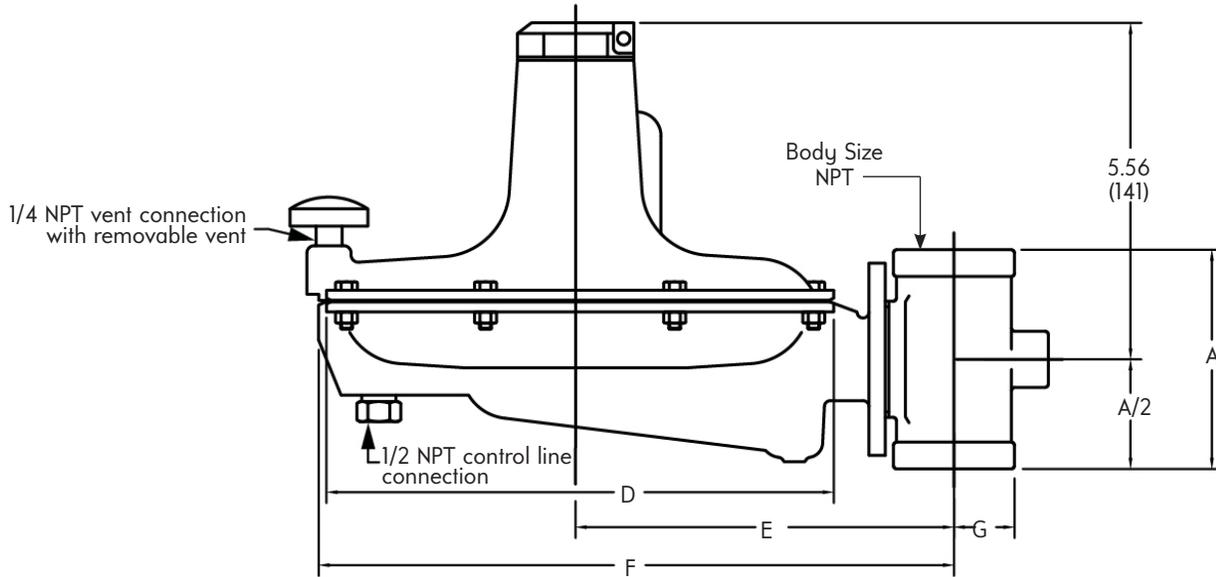
Table D. Materials of Construction (see Figure 1.)

Body, Diaphragm Casing, and Spring Case	Orifice	Control Spring and Lever	Diaphragm and Disk	Closing Cap	Stem	Pitot Tube and Relief Valve Spring
Cast Iron	Aluminum	Zinc-plated steel	Nitrile (NBR)	Thermoplastic	Stainless Steel	Stainless Steel

Figure 1. Assembly Drawing



DIMENSIONS inches (mm)



Body Size	Dimension, Inches (mm)					Approx. shipping weight, pounds (kg)
	A	D Diameter	E	F	G	
3/4 and 1	4 (102)	8.38 (213)	6.25 (159)	10.69 (272)	1.00 (25)	13 (6)
1-1/4	3.75 (95)	8.38 (213)	6.44 (164)	10.88 (276)	1.25 (32)	13 (6)

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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