May 2002

Type Y692 Gas Blanketing Regulator System

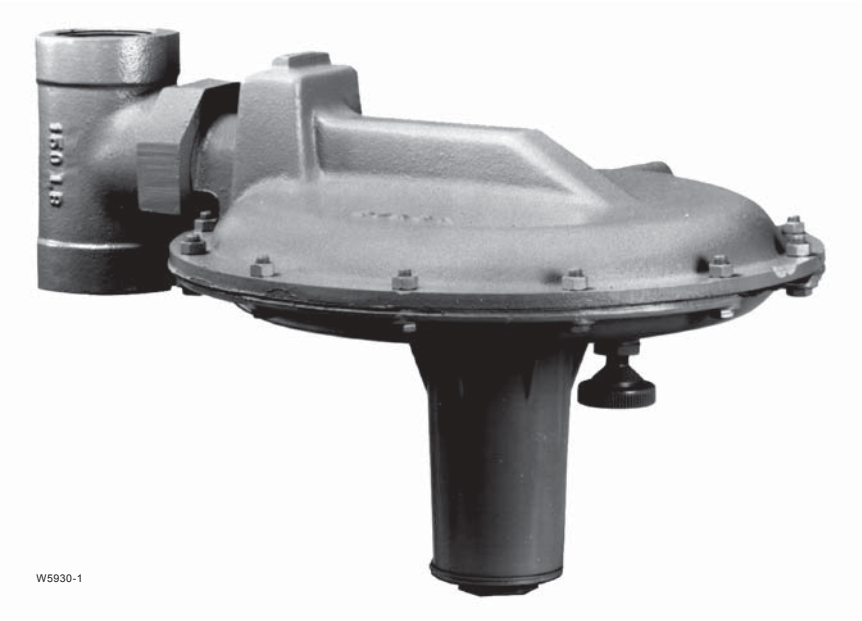

Figure 1. *Low Pressure Gas Blanketing Regulators*

An Accu–Pressure® Gas Blanketing Regulator System reduces a high pressure gas, such as nitrogen, to maintain a protective environment above any liquid stored in a tank or vessel when the liquid is being pumped out. Also when the vessel is suddenly cooled, causing vapors inside the vessel to contract, the regulator system replaces the volume of contracting vapors with a volume of blanketing gas to prevent the internal vessel pressure from decreasing. In both cases, a slight positive vessel pressure prevents outside air, moisture and other contaminants from entering the vessel and the possible collapse of the vessel walls.

The Type Y692 (figure 1) is a direct-operated regulator used for accurate pressure control on very low pressure blanketing systems. Downstream pressure is sensed through a pitot tube installed in the lower casing of the regulator, thus no external control line is required. The Type Y692 is available in 1-1/2 and 2-inch body sizes.

Features

- **Ease of Inspection and Maintenance—**The union nut connection between the body and actuator permits access to the disk and orifice by only removing the diaphragm casing assembly without removing the body from the line.

- **Accuracy of Control—**Large diaphragm areas provide more precise control even at low pressure settings and the pitot tube also creates a dynamic boost that helps provide greater capacity.

- **Speed of Response—**The downstream pressure is sensed directly by the diaphragm through the pitot tube providing quick response.

- **Ease of Installation—**The Type Y692 is easy to install in the pipeline because no additional connections are required.

D102032X012

Specifications

Available Configurations
Direct-operated pressure reducing regulator with internal registration requiring no downstream control line. Seven outlet pressure ranges from 1-inch w.c. to 7 psig (2 mbar to 0,48 bar). Available in 1-1/2 and 2-inch (DN 40 and 50) body sizes.

End Connection Styles(1)
Cast Iron: NPT and 125FF (2-inch/DN 50 only)
Steel or Stainless Steel: NPT, SWE, ANSI 150RF, ANSI 300RF, or PN 16/25/40
Hastelloy C: ANSI 150RF

Maximum Inlet Pressure(3)
150 psig (10,3 bar)

Maximum Outlet (Casing) Pressure(3)
15 psig (1,0 bar)

Maximum Operating Outlet Pressure to Avoid Internal Part Damage(3)
3 psig (0,21 bar) above outlet pressure setting

Outlet Pressure Ranges(3)
See table 1

Flow Capacities
See table 4

Coefficients for Relief Valve Sizing
See table 5

Orifice Diameter
See table 5

Spring Case Connection
1/4-inch NPT

Maximum Temperature Capabilities(3)
Nitrile (NBR):
–20° to 180°F (–29° to 82°C)
Fluoroelastomer (FKM):
0° to 300°F (–18° to 149°C)
Perfluoroelastomer (FFKM):
–20° to 300°F (-29° to 149° C)

Approximate Weight
Cast Iron Body: 45 pounds (20,4 kg)
Steel Body: 57 pounds (25,8 kg)

Canadian Registration Number (CRN)
Approved

PED (Pressure Equipment Directive) Category
The Type Y692 may be used as a safety accessory with pressure equipment in the PED 97/23/EC category I.

Construction Materials
Body, Union Nut, Spring Case, and Lower Casing Assembly: Cast iron, WCB Steel, CF8M stainless steel, or Hastelloy C
Control Spring, Control Spring Seat, Split Ring, and Diaphragm Plate: Plated steel
Diaphragm and O-Rings: Nitrile (NBR) (standard) or fluoroelastomer (FKM) (high temperature); PTFE diaphragm protector (optional)
Orifice, Pusher Post, Pusher Post Connector, Lever Assembly, Stem, and Pitot Tube: Stainless steel
Gasket: Composition
Disk Assembly: Nitrile (NBR) and stainless steel, fluoroelastomer (FKM) and stainless steel, or perfluoroelastomer (FFKM) and stainless steel

1. End connections for other than U.S. standards can usually be provided; consult the Fisher Sales Office or Sales Representative.
2. Fabricated by using slip-on flanges and socket welding nipples into body.
3. The pressure/temperature limits in this bulletin and any applicable standard limitation should not be exceeded.

Table 1. *Outlet Pressure Ranges*

OUTLET PRESSURE RANGES	SPRING PART NUMBER	SPRING COLOR	SPRING WIRE DIAMETER
1 to 3-inches w.c. (2 to 7 mbar)(1)(2)	1D892527022	Brown	0.109-inches (2,77 mm)
3 to 11-inches w.c. (7 to 27 mbar)(1)(2)	0B0197000A2	Iridite	0.148-inches (3,76 mm)
6.5-inches w.c. to 1.2 psig (16 to 83 mbar)(1)	0B019427052	Green	0.187-inches (4,75 mm)
0.7 to 2 psig (0,048 to 0,14 bar)	0B019627032	Blue	0.225-inches (5,72 mm)
1 to 3.2 psig (0,069 to 0,22 bar)	0A081127202	Orange	0.250-inches (6,35 mm)
2 to 5.5 psig (0,14 to 0,38 bar)	0Y066427022	Silver with green stripe	0.363-inches (9,22 mm)
4 to 10 psig (0,28 to 0,69 bar)	1H8024000A2	Silver	0.406-inches (10,3 mm)

1. Install with spring case pointing down to achieve low setpoints in these spring ranges. When installed with spring case pointing up the spring range increases by 2-inches w.c. (5 mbar).
2. Do not use fluoroelastomer (FKM) diaphragm with these springs at diaphragm temperatures lower than 60°F (16°C).

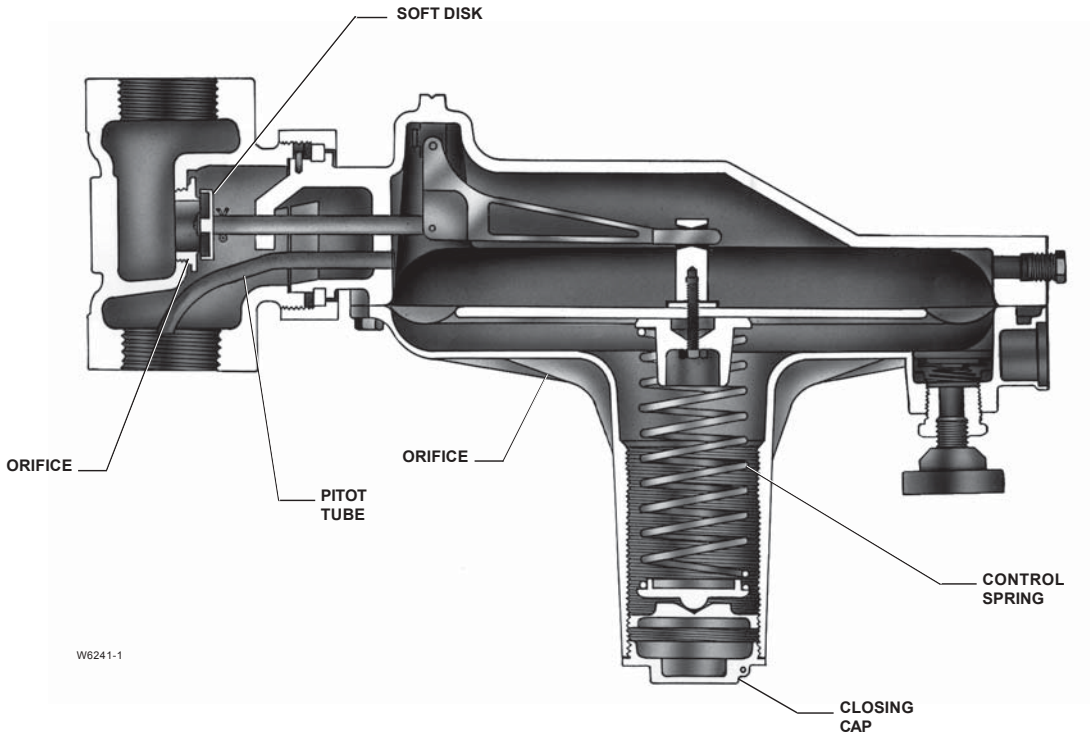

Figure 2. *Type Y692 Construction Features*

Principle of Operation

The Type Y692 is a direct-operated regulator with internal registration (see figure 2). It provides a constant set pressure for accurate gas blanketing.

When vessel pressure decreases below the control spring set point, the force of the spring moves the disk away from the orifice allowing gas to flow into the vessel.

As the vessel pressure increases, the increase is sensed by the diaphragm through the pitot tube. This movement of the diaphragm causes the disk to move toward the orifice, decreasing the flow of blanketing gas. When the vessel pressure reaches the system set point, the disk will seat against the orifice shutting off the flow of gas.

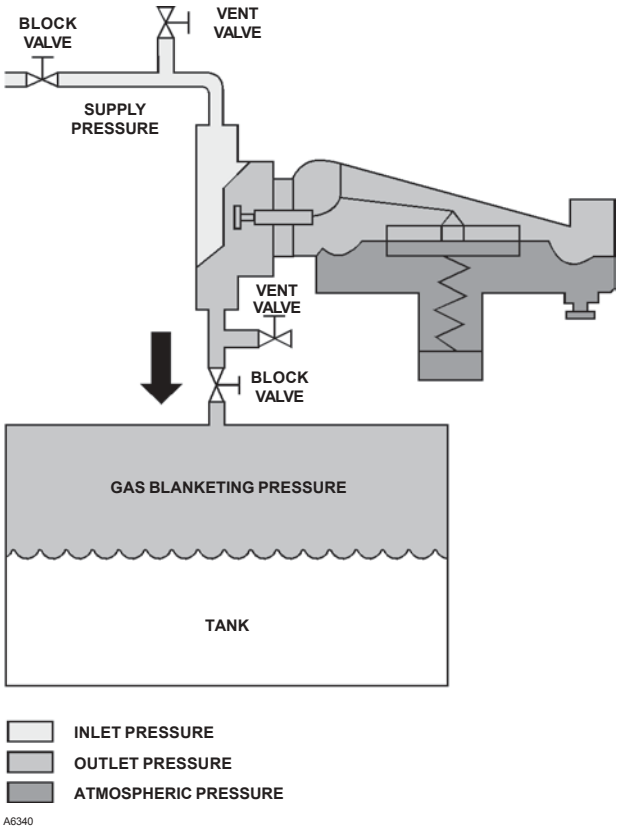

Figure 3. *Principle of Operation Schematic*

Table 2. *Flow Rate Conversion (Gas flow required to replace or displace blanketing gas with pump-out or pump-in of liquid)*

MULTIPLY MAXIMUM PUMP RATE IN	BY	TO OBTAIN
U.S. GPM U.S. GPH Barrels/hour Barrels/day	8.021 0.1337 5.615 0.2340	SCFH air required(1)
1. To convert to m³/h(n) multiply scfh by 0.0268.		

Sizing Blanketing Systems

When sizing a gas blanketing regulator system for a low pressure blanketing application, you must consider the replacement of blanketing gas required for the liquid loss during pump out of the vessel plus the condensation/contraction of vessel vapors during atmospheric thermal cooling.

1. Determine the gas flow rate required to replace the liquid being pumped out (see table 2).

2. Using the established procedures from the American Petroleum Institute Standard 2000 (API 2000), determine the gas flow rate due to “inbreathing” caused by atmospheric thermal cooling (see table 3).

3. Add the requirements of 1 and 2 and select the regulator size, based on total capacity required from table 5.

Sample sizing problem for blanketing applications:

Service Conditions:

Vessel Capacity . . . . . 42,000 gallons (159 000 L)
Pump In/Out Capacity . 150 gallons/minute (570 L/m)
Inlet Pressure Source . . . . 20 psig (1,4 bar) Nitrogen
Desired Blanket Setpoint . . . . . 1-inch w.c. (2 mbar)

Sizing and Selection Methodology:

1. From table 2 the desired air flow rate due to pump out equals 150 gpm x 8.021 = 1203 scfh (32 m³/h (n)) air.

2. From table 3 the required air flow due to thermal cooling = 1000 scfh (27 m³/h (n)) air.

3. Total flow required for pump out and thermal cooling is 1203 + 1000 = 2203 scfh (59 m³/h (n)) air.

4. Convert to nitrogen by dividing the total air flow by the square root of the specific gravity of nitrogen:
2203 ÷ $\sqrt{0.97}$ = 2248 scfh (60 m³/h (n)) nitrogen.

5. From table 4, a Type Y692 in either a 1-1/2 or 2-inch body size and a 3/8-inch orifice will flow 3620 scfh (97 m³/h (n)) nitrogen at 20 psig (1,4 bar) inlet pressure. This satisfies the required flow of 2248 scfh (60 m³/h (n)) nitrogen.

Table 3. *Gas Flow Required for Thermal Heating (Outbreathing) or Cooling (Inbreathing) per API 2000 (Interpolate for Intermediate size*

VESSEL CAPACITY			SCFH (m³/h(n)) AIR FLOW RATE REQUIRED
Barrels	Gallons	Liters	
60	2500	9500	60 (1,61)
100	4200	16 000	100 (2,68)
500	21,000	79 500	500 (1,34)
1000	42,000	159 000	1000 (26,8)
2000	84,000	318 000	2000 (53,6)
3000	126,000	477 000	3000 (80,4)
4000	168,000	636 000	4000 (107)
5000	210,000	795 000	5000 (134)
10,000	420,000	1 590 000	10,000 (268)
15,000	630,000	2 385 000	15,000 (402)
20,000	840,000	3 180 000	20,000 (536)
25,000	1,050,000	3 975 000	24,000 (643)
30,000	1,260,000	4 769 000	28,000 (750)
35,000	1,470,000	5 564 000	31,000 (831)
40,000	1,680,000	6 359 000	34,000 (911)
45,000	1,890,000	7 154 000	37,000 (992)
50,000	2,100,000	7 949 000	40,000 (1072)
60,000	2,520,000	9 539 000	44,000 (1179)
70,000	2,940,000	11 129 000	48,000 (1286)
80,000	3,360,000	12 718 000	52,000 (1394)
90,000	3,780,000	14 308 000	56,000 (1501)
100,000	4,200,000	15 898 000	60,000 (1608)
120,000	5,040,000	19 078 000	68,000 (1822)
140,000	5,880,000	22 257 000	75,000 (2010)
160,000	6,720,000	25 437 000	82,000 (2198)
180,000	7,560,000	28 616 000	90,000 (2412)

Capacity Information

Table 4 gives the typical regulating capacities at selected inlet pressures and outlet pressure settings. Flows are in scfh (60°F and 14.7 psia) of 0.97 specific gravity nitrogen. For gases of other specific gravities, multiply the given capacity of nitrogen by 0.985, and divide the given capacity by the square root of the appropriate specific gravity of the gas required. Then, if capacity is desired in normal cubic meters per hour at 0°C and 1.01325 bar, multiply scfh by 0.0268.

To determine wide-open flow capacities for relief sizing, use the following formula:

$$Q = \sqrt{\frac{520}{GT}} C_g P_1 \sin\left[\frac{3417}{C_1}\sqrt{\frac{\Delta P}{P_1}}\right] \text{Deg}$$

where,

C_g = gas sizing coefficient from table 5
$C_1 = C_g/C_v$, or 35 from table 5
G = gas specific gravity (air = 1.0)
P_{1abs} = inlet pressure, psia (add 14.7 psi to gauge inlet pressure to obtain absolute inlet pressure)
Q = flow rate, scfh
T = absolute temperature in °Rankine of gas at inlet

Table 4. *Blanketing Regulating Capacities in SCFH (m3/h(n)) of 0.97 Specific Gravity Nitrogen*

BODY SIZE, INCHES (DN)	OUTLET PRESSURE RANGE(1), ACCURACY, AND SPRING COLOR	OUTLET PRESSURE SETTING	INLET PRESSURE, PSIG (bar)	Orifice Diameter, Inches (mm)					
				1/4 (6,4)	3/8 (9,5)	1/2 (12,7)	3/4 (19,1)	1 (25,4)	1-3/16 (30,2)
1-1/2 (40)	1 to 3-inches w.c. (2,5 to 7,5 mbar) -1 to +2-inches w.c. (-2,5 to +5 mbar) Brown	1-inch w.c. (2,5 mbar)	2 (0,14)	360 (9,65)	970 (26,0)	1750 (46,9)	3280 (87,9)	4750 (127)	3650 (97,8)
			5 (0,34)	680 (18,2)	1560 (41,8)	2800 (75,0)	3880 (104)	3650 (97,8)	2840 (76,1)
			10 (0,69)	1030 (27,6)	2350 (63,0)	4210 (113)	3880 (104)	3650 (97,8)	- - -
			20 (1,4)	1580 (42,3)	3620 (97,0)	4900 (131)	3700 (99,2)	- - -	- - -
			40 (2,8)	2500 (67)	3620 (97,0)	4900 (131)	- - -	- - -	- - -
			60 (4,1)	3410 (91,4)	3620 (97,0)	- - -	- - -	- - -	- - -
			80 (5,5)	4320 (116)	- - -	- - -	- - -	- - -	- - -
			100 (6,9)	4510 (121)	- - -	- - -	- - -	- - -	- - -
			125 (8,6)	4510 (121)	- - -	- - -	- - -	- - -	- - -
			150 (10,3)	4510 (121)	- - -	- - -	- - -	- - -	- - -
		3-inches w.c. (7,5 mbar)	2 (0,14)	360 (9,65)	970 (26,0)	1750 (46,9)	3280 (87,9)	4750 (127)	3650 (97,8)
			5 (0,34)	680 (18,2)	1560 (41,8)	2800 (75,0)	3880 (104)	3650 (97,8)	2840 (76,1)
			10 (0,69)	1030 (27,6)	2350 (63,0)	4210 (113)	3880 (104)	3650 (97,8)	- - -
			20 (1,4)	1580 (42,3)	3620 (97,0)	4900 (131)	3700 (99,2)	- - -	- - -
			40 (2,8)	2500 (67)	3620 (97,0)	4900 (131)	- - -	- - -	- - -
			60 (4,1)	3410 (91,4)	3620 (97,0)	- - -	- - -	- - -	- - -
			80 (5,5)	4320 (116)	- - -	- - -	- - -	- - -	- - -
			100 (6,9)	4510 (121)	- - -	- - -	- - -	- - -	- - -
			125 (8,6)	4510 (121)	- - -	- - -	- - -	- - -	- - -
			150 (10,3)	4510 (121)	- - -	- - -	- - -	- - -	- - -
	3 to 11-inches w.c. (7,5 to 27 mbar) -1 to +2-inches w.c. (-2,5 to +5 mbar) Iridite	7-inches w.c. (17,5 mbar)	0.5 (0,034)	- - -	- - -	- - -	950 (25,5)	1180 (31,6)	1330 (35,6)
			1 (0,069)	330 (8,84)	630 (16,9)	870 (23,3)	1340 (35,9)	1810 (48,5)	2290 (61,4)
			2 (0,14)	470 (12,6)	950 (25,5)	1300 (34,8)	2260 (60,6)	3160 (84,7)	4730 (127)
			5 (0,34)	770 (20,6)	1580 (42,3)	2520 (67,5)	6070 (163)	6100 (163)	6100 (163)
			13 (0,9)	1270 (34,0)	2590 (69,4)	4900 (131)	6100 (163)	6100 (163)	6100 (163)
			25 (1,7)	1850 (49,6)	4100 (110)	6100 (163)	6100 (163)	6100 (163)	- - -
			50 (3,4)	3040 (81,5)	6100 (163)	6100 (163)	6100 (163)	6100 (163)	- - -
			100 (6,9)	5370 (144)	6100 (163)	6100 (163)	6100 (163)	- - -	- - -
			150 (10,3)	6100 (163)	6100 (163)	6100 (163)	- - -	- - -	- - -
	6.5-inches w.c. to 1.2 psig (16 to 83 mbar) Green or 0.7 to 2 psig (48 to 138 mbar) Blue 0.2 psig (14 mbar)	1.5 psig (0,10 bar)	2 (0,14)	- - -	789 (21,1)	1260 (33,8)	2050 (54,9)	2660 (71,3)	3220 (86,3)
			6 (0,41)	- - -	1740 (46,6)	2760 (74,0)	4730 (127)	6790 (182)	7530 (202)
			14 (0,97)	- - -	3156 (84,6)	5050 (135)	9470 (254)	12,500 (335)	- - -
			30 (2,1)	- - -	4890 (131)	8050 (216)	13,360 (358)	- - -	- - -
			50 (3,4)	- - -	7120 (191)	11,990 (321)	- - -	- - -	- - -
			150 (10,3)	- - -	18,030 (483)	- - -	- - -	- - -	- - -
	1 to 3.2 psig (0,069 to 0,22 bar) 0.6 psig (41 mbar) Orange	3 psig (0,21 bar)	3 (0,21)	- - -	- - -	- - -	- - -	2450 (65,7)	2840 (76,1)
			7 (0,48)	- - -	1550 (41,5)	2370 (63,5)	3950 (106)	5130 (137)	6312 (169)
			14 (0,97)	- - -	2370 (63,5)	3700 (99,2)	7020 (188)	7470 (200)	- - -
			30 (2,1)	- - -	4500 (121)	7380 (198)	11,680 (313)	- - -	- - -
			50 (3,4)	- - -	7020 (188)	10,750 (288)	- - -	- - -	- - -
			150 (10,3)	- - -	17,250 (462)	- - -	- - -	- - -	- - -
	2 to 5.5 psig (0,14 to 0,38 bar) 0.5 psig (34 mbar) Silver with green stripe	5 psig (0,34 bar)	2 (0,14)	360 (9,65)	970 (26,0)	1750 (46,9)	3280 (87,9)	4750 (127)	3650 (97,8)
			10 (0,69)	590 (15,8)	950 (25,5)	1180 (31,6)	1810 (48,5)	2200 (59,0)	2370 (63,5)
			15 (1,0)	789 (21,1)	1030 (27,6)	1580 (42,3)	2370 (63,5)	2840 (76,1)	3310 (88,7)
			20 (1,4)	950 (25,5)	1380 (37,0)	2200 (59,0)	2920 (78,3)	3310 (88,7)	- - -
			35 (2,4)	1420 (38,1)	1970 (52,8)	2920 (78,3)	4020 (108)	- - -	- - -
			60 (4,1)	2210 (59,2)	2920 (78,3)	4730 (127)	- - -	- - -	- - -
			75 (5,2)	2760 (74,0)	3470 (93,0)	5680 (152)	- - -	- - -	- - -
			100 (6,9)	3550 (95,1)	5130 (137)	- - -	- - -	- - -	- - -
	2 to 5.5 psig (0,14 to 0,38 bar) 1 psig (69 mbar) Silver with green stripe	5 psig (0,34 bar)	10 (0,69)	950 (25,5)	1500 (40,2)	2050 (54,9)	3230 (86,6)	4100 (110)	4580 (123)
			15 (1,0)	1180 (31,6)	1890 (50,7)	2760 (74,0)	4100 (110)	5520 (148)	6310 (169)
			20 (1,4)	1380 (37,0)	2200 (59,0)	3790 (102)	5130 (137)	6310 (169)	- - -
			35 (2,4)	1970 (52,8)	3310 (88,7)	5130 (137)	7730 (207)	- - -	- - -
			60 (4,1)	3160 (84,7)	5290 (142)	7890 (211)	- - -	- - -	- - -
			75 (5,2)	4100 (110)	6390 (171)	10,260 (275)	- - -	- - -	- - -
			100 (6,9)	5130 (137)	8680 (233)	- - -	- - -	- - -	- - -
	4 to 10 psig (0,28 to 0,69 bar) 1 psig (69 mbar) Silver	10 psig (0,69 bar)	15 (1,0)	708 (19,0)	1023 (27,4)	1338 (35,9)	1810 (48,5)	2518 (67,5)	2990 (80,1)
			20 (1,4)	944 (25,3)	1377 (36,9)	1967 (52,7)	2597 (69,9)	3148 (84,4)	4564 (122)
			25 (1,7)	1102 (29,5)	1652 (44,3)	2203 (59,0)	3148 (84,4)	4013 (108)	- - -
			40 (2,8)	1810 (48,5)	2203 (59,0)	2912 (78,0)	4721 (127)	- - -	- - -
			60 (4,1)	2361 (63,3)	3148 (84,4)	4643 (124)	- - -	- - -	- - -
			75 (5,2)	2754 (73,8)	3541 (94,9)	5666 (152)	- - -	- - -	- - -
			100 (6,9)	3541 (94,9)	5193 (139)	- - -	- - -	- - -	- - -
	4 to 10 psig (0,28 to 0,69 bar) 2 psig (138 mbar) Silver	10 psig (0,69 bar)	15 (1,0)	1023 (27,4)	1731 (46,4)	2518 (67,5)	3620 (97,0)	4721 (127)	6295 (169)
			20 (1,4)	1259 (33,7)	2125 (57,0)	3384 (90,7)	5115 (137)	6295 (169)	7869 (211)
			25 (1,7)	1574 (42,2)	2675 (71,7)	3777 (101)	6453 (173)	7082 (190)	- - -
			40 (2,8)	2282 (61,2)	3934 (105)	5272 (141)	8656 (232)	- - -	- - -
			60 (4,1)	2990 (80,1)	5351 (143)	8656 (232)	- - -	- - -	- - -
			75 (5,2)	4013 (108)	6531 (175)	10,230 (274)	- - -	- - -	- - -
			100 (6,9)	5115 (137)	8656 (232)	- - -	- - -	- - -	- - -

- continued -

Table 4. *Blanketing Regulating Capacities in SCFH (m3/h(n)) of 0.97 Specific Gravity Nitrogen (continued)*

BODY SIZE, INCHES (DN	OUTLET PRESSURE RANGE(1), ACCURACY, AND SPRING COLOR	OUTLET PRESSURE SETTING	INLET PRESSURE, PSIG (bar)	Orifice Diameter, Inches (mm)					
				1/4 (6,4)	3/8 (9,5)	1/2 (12,7)	3/4 (19,1)	1 (25,4)	1-3/16 (30,2)
2 (50)	1 to 3-inches w.c. (2,5 to 7,5 mbar) -1 to +2-inches w.c. (-2,5 to +5 mbar) Brown	1-inch w.c. (2,5 mbar)	2 (0,14)	320 (8,58)	930 (24,9)	1750 (46,9)	4000 (107)	5010 (134)	5930 (159)
			5 (0,34)	680 (18,2)	1560 (41,8)	2800 (75,0)	6050 (162)	4630 (124)	4260 (114)
			10 (0,69)	1030 (27,6)	2350 (63,0)	4210 (113)	3650 (97,8)	4060 (109)	- - -
			20 (1,4)	1580 (42,3)	3620 (97,0)	3450 (92,5)	3650 (97,8)	- - -	- - -
			40 (2,8)	2500 (67,0)	4420 (118)	3450 (92,5)	- - -	- - -	- - -
			60 (4,1)	3410 (91,4)	4420 (118)	- - -	- - -	- - -	- - -
			80 (5,5)	3650 (97,8)	- - -	- - -	- - -	- - -	- - -
			100 (6,9)	3650 (97,8)	- - -	- - -	- - -	- - -	- - -
			125 (8,6)	3650 (97,8)	- - -	- - -	- - -	- - -	- - -
			150 (10,3)	3650 (97,8)	- - -	- - -	- - -	- - -	- - -
		3-inches w.c. (7,5 mbar)	2 (0,14)	320 (8,58)	930 (24,9)	1750 (46,9)	4000 (107)	5010 (134)	5930 (159)
			5 (0,34)	680 (18,2)	1560 (41,8)	2800 (75,0)	6050 (162)	4630 (124)	4260 (114)
			10 (0,69)	1030 (27,6)	2350 (63,0)	4210 (113)	3650 (97,8)	4060 (109)	- - -
			20 (1,4)	1580 (42,3)	3620 (97,0)	3450 (92,5)	3650 (97,8)	- - -	- - -
			40 (2,8)	2500 (67,0)	4420 (118)	3450 (92,5)	- - -	- - -	- - -
			60 (4,1)	3410 (91,4)	4420 (118)	- - -	- - -	- - -	- - -
			80 (5,5)	3650 (97,8)	- - -	- - -	- - -	- - -	- - -
			100 (6,9)	3650 (97,8)	- - -	- - -	- - -	- - -	- - -
			125 (8,6)	3650 (97,8)	- - -	- - -	- - -	- - -	- - -
			150 (10,3)	3650 (97,8)	- - -	- - -	- - -	- - -	- - -
	3 to 11-inches w.c. (7,5 to 27 mbar) -1 to +2-inches w.c. (-2,5 to +5 mbar) Iridite	7-inches w.c. (17,5 mbar)	0.5 (0,034)	- - -	- - -	- - -	950 (25,5)	1180 (31,6)	1330 (36,5)
			1 (0,069)	330 (8,84)	630 (16,9)	870 (23,3)	1340 (35,9)	1810 (48,5)	2290 (61,4)
			2 (0,14)	470 (12,6)	950 (25,5)	1300 (34,8)	2260 (60,6)	3160 (84,7)	4730 (127)
			5 (0,34)	770 (20,6)	1580 (42,3)	2520 (67,5)	6080 (163)	7890 (211)	7890 (211)
			13 (0,9)	1270 (34,0)	2590 (69,4)	4900 (131)	7890 (211)	7890 (211)	7890 (211)
			25 (1,7)	1850 (49,6)	4100 (110)	7180 (192)	7890 (211)	7890 (211)	- - -
			50 (3,4)	3040 (81,5)	6700 (180)	7890 (211)	7890 (211)	7890 (211)	- - -
			100 (6,9)	5370 (144)	7890 (211)	7890 (211)	7890 (211)	- - -	- - -
			150 (10,3)	7890 (211)	7890 (211)	7890 (211)	- - -	- - -	- - -
	6.5-inches w.c. to 1.2 psig (16 to 83 mbar) Green or 0.7 to 2 psig (48 to 138 mbar) Blue 0.2 psig (14 mbar)	1 psig (69 mbar)	2 (0,14)	- - -	1030 (27,6)	1340 (35,9)	2450 (65,7)	3230 (86,6)	3390 (90,9)
			6 (0,41)	- - -	1970 (52,8)	2840 (76,1)	5680 (152)	7730 (207)	8760 (235)
			14 (0,97)	- - -	3390 (90,9)	5130 (137)	10,650 (285)	13,490 (362)	- - -
			30 (2,1)	- - -	5130 (137)	8130 (218)	16,730 (448)	- - -	- - -
			50 (3,4)	- - -	7120 (191)	11,990 (321)	- - -	- - -	- - -
			150 (10,3)	- - -	- - -	18,310 (491)	- - -	- - -	- - -
	1 to 3.2 psig (0,069 to 0,22 bar) 0.6 psig (41 mbar) Orange	3 psig (0,21 bar)	3 (0,21)	- - -	- - -	- - -	- - -	2550 (68,3)	3050 (81,7)
			7 (0,48)	- - -	1740 (46,6)	2600 (69,7)	4730 (127)	5880 (158)	7140 (191)
			14 (0,97)	- - -	3310 (88,7)	4180 (112)	7700 (206)	10,450 (280)	- - -
			30 (2,1)	- - -	5130 (137)	7930 (213)	14,480 (388)	- - -	- - -
			50 (3,4)	- - -	7500 (201)	11,400 (306)	- - -	- - -	- - -
			150 (10,3)	- - -	19,820 (531)	- - -	- - -	- - -	- - -
	2 to 5.5 psig (0,14 to 0,38 bar) 0.5 psig (34 mbar) Silver with green stripe	5 psig (0,34 bar)	10 (0,69)	590 (15,8)	950 (25,5)	1180 (31,6)	1810 (448,5)	2200 (59,0)	2370 (63,5)
			15 (1,0)	789 (21,1)	1030 (27,6)	1580 (42,3)	2370 (63,5)	2840 (76,1)	3310 (88,7)
			20 (1,4)	950 (25,5)	1380 (37,0)	2200 (59,0)	2920 (78,3)	2920 (78,3)	- - -
			35 (2,4)	1420 (38,1)	1970 (52,8)	2920 (78,3)	4020 (108)	- - -	- - -
			60 (4,1)	2210 (59,2)	2920 (78,3)	4730 (127)	- - -	- - -	- - -
			75 (5,2)	2760 (74,0)	3470 (93,0)	5680 (152)	- - -	- - -	- - -
			100 (6,9)	3550 (95,1)	5130 (137)	- - -	- - -	- - -	- - -
	2 to 5.5 psig (0,14 to 0,38 bar) 1 psig (69 mbar) Silver with green stripe	5 psig (0,34 bar)	10 (0,69)	950 (25,5)	1500 (40,2)	2050 (54,9)	3230 (86,6)	4100 (110)	4580 (123)
			15 (1,0)	1180 (31,6)	1890 (50,7)	2760 (74,0)	4100 (110)	5520 (148)	6310 (169)
			20 (1,4)	1380 (37,0)	2200 (59,0)	3790 (102)	5130 (137)	6310 (169)	- - -
			35 (2,4)	1970 (52,8)	2050 (54,9)	5130 (137)	7730 (207)	- - -	- - -
			60 (4,1)	3160 (84,7)	5290 (142)	7890 (211)	- - -	- - -	- - -
			75 (5,2)	4100 (110)	6390 (171)	10,260 (275)	- - -	- - -	- - -
			100 (6,9)	5130 (137)	8680 (233)	- - -	- - -	- - -	- - -
	4 to 10 psig (0,28 to 0,69 bar) 1 psig (69 mbar) Silver	10 psig (0,69 bar)	15 (1,0)	708 (19,0)	1023 (27,4)	1338 (35,9)	1810 (48,5)	2518 (67,5)	2990 (80,1)
			20 (1,4)	944 (25,3)	1377 (36,9)	1967 (52,7)	2597 (69,9)	3148 (84,4)	4564 (122)
			25 (1,7)	1102 (29,5)	1652 (44,3)	2203 (59,0)	3148 (84,4)	4013 (108)	- - -
			40 (2,8)	1810 (48,5)	2203 (59,0)	2912 (78,0)	4721 (127)	- - -	- - -
			60 (4,1)	2361 (63,3)	3148 (84,4)	4643 (124)	- - -	- - -	- - -
			75 (5,2)	2754 (73,8)	3541 (94,9)	5666 (152)	- - -	- - -	- - -
			100 (6,9)	3541 (94,9)	5193 (139)	- - -	- - -	- - -	- - -
	4 to 10 psig (0,28 to 0,69 bar) 2 psig (138 mbar) Silver	10 psig (0,69 bar)	15 (1,0)	1023 (27,4)	1731 (46,4)	2518 (67,5)	3620 (97,0)	4721 (127)	6295 (169)
			20 (1,4)	1259 (33,7)	2125 (57,0)	3384 (90,7)	5115 (137)	6295 (169)	7869 (211)
			25 (1,7)	1574 (42,2)	2675 (71,7)	3777 (101)	6453 (173)	7082 (190)	- - -
			40 (2,8)	2282 (61,2)	3934 (105)	5272 (141)	8656 (232)	- - -	- - -
			60 (4,1)	2990 (80,1)	5351 (143)	8656 (232)	- - -	- - -	- - -
			75 (5,2)	4013 (108)	6531 (175)	10,230 (274)	- - -	- - -	- - -
			100 (6,9)	5115 (137)	8656 (232)	- - -	- - -	- - -	- - -

1. Spring ranges based on regulator installation with the spring case pointed down.

Table 5. *Orifice Diameters and Coefficients for Relief Valve Sizing*

BODY SIZES, INCHES (DN)	ORIFICE DIAMETER, INCHES (mm)	WIDE-OPEN C_v	WIDE-OPEN C_g	C_1
1-1/2 (40) and 2 (50)	1/4 (6,4)	1.51	53.0	35
	3/8 (9,5)	3.14	111.0	
	1/2 (12,7)	5.43	190.0	
	3/4 (19,1)	11.9	415.0	
	1 (25,4)	20	700.0	
	1-3/16 (30,2)	26	910.0	

Installation

Install the Type Y692 regulator with the spring case barrel pointed down. This will assure that the lowest set pressure shown in table 1 is achieved. Flow through the regulator body is indicated by the flow arrow cast on the body. If a block valve is required, install a full flow valve between the regulator and the blanketed vessel.

Ordering Information

When ordering, specify:

1. Type of gas being controlled (nitrogen fuel gas, etc.); list any factors such as impurities in the gas that may affect compatibility of the gas with the regulator trim parts.
2. Specific gravity of the gas
3. Temperature of the gas
4. Range of flowing inlet pressures to regulator
5. Flow rates
   a) Minimum controlled flow
   b) Normal flow
   c) Maximum flow
6. Line size and end connection size of adjacent piping. Adjacent downstream piping must be the same size as the regulator body or longer.
7. Vessel size

Ordering Guide

Carefully review the Specifications section, then specify the desired selection on the Ordering Guide on page 8. If a pilot setpoint is not requested, the regulator will be factory set at the approximate midrange.

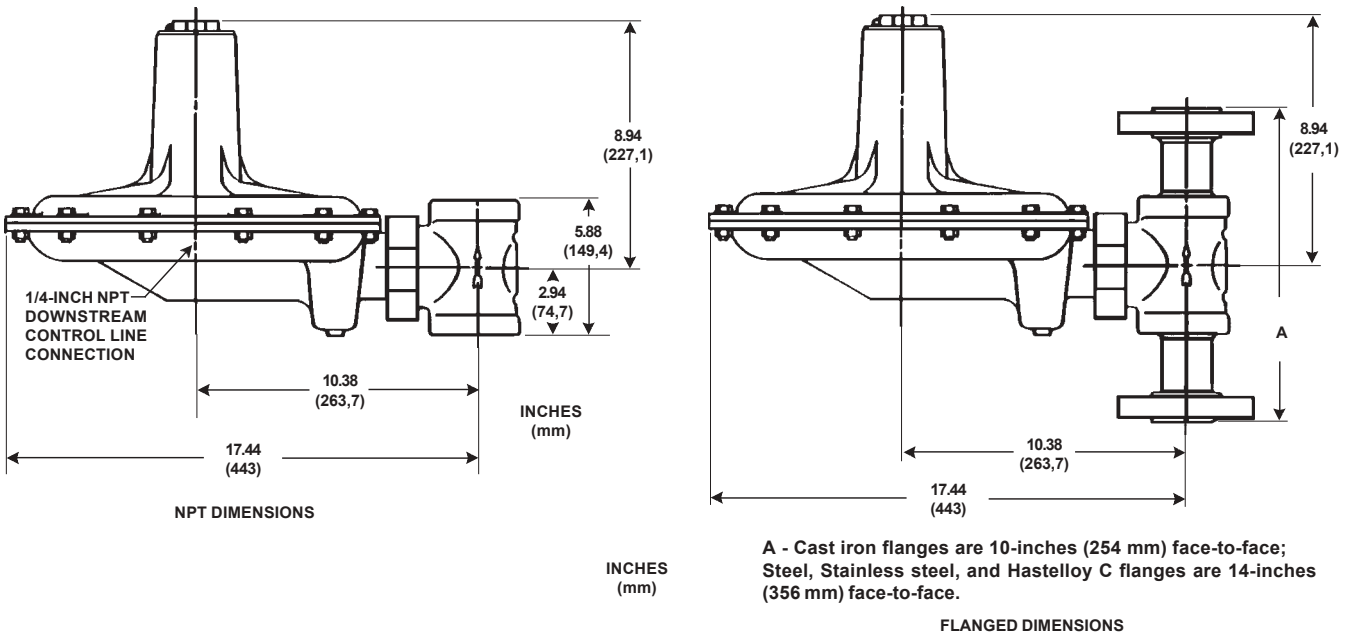

Figure 4. *Dimensions*

Ordering Guide

Body Size (Select One)

☐ 1-1/2-inch (DN 40) ☐ 2-inch (DN 50)

Body Material and End Connection Style (Select One)

Cast Iron
- ☐ NPT Screwed***
- ☐ 125 FF (2-inch body only)***

Hastelloy C
- ☐ 150 RF*

WCB Steel
- ☐ NPT Screwed***
- ☐ 150 RF**
- ☐ 300 RF**
- ☐ PN 16/25/40*

CF8M Stainless Steel
- ☐ NPT Screwed**
- ☐ 150 RF**
- ☐ 300 RF**
- ☐ PN 16/25/40*

Spring Case Material (Select One)
- ☐ Cast iron***
- ☐ WCB Steel***
- ☐ CF8M Stainless steel**

Diaphragm Case Material (Select One)
- ☐ Cast iron***
- ☐ WCB Steel***
- ☐ CF8M Stainless steel**
- ☐ Hastelloy C*

Trim Material (Select One)
- ☐ S30400 Stainless steel***
- ☐ S31600 Stainless steel**
- ☐ Hastelloy C*

Diaphragm Material (Select One)
- ☐ Nitrile (NBR) (standard)***
- ☐ Fluoroelastomer (FKM)**

Disk Material (Select One)
- ☐ Nitrile (NBR) (standard)***
- ☐ Fluoroelastomer (FKM)***
- ☐ Perfluoroelastomer (FFKM)*

Orifice Size (Select One)
- ☐ 1/4-inch (6,4 mm)***
- ☐ 3/8-inch (9,5 mm)***
- ☐ 1/2-inch (12,7 mm)***
- ☐ 3/4-inch (19,1 mm)***
- ☐ 1-inch (25,4 mm)***
- ☐ 1-3/16-inch (30,2 mm)***

Fisher Regulators Quick Order Guide	
* * *	Standard - Readily Available for Shipment
* *	Non-Standard - Allow Additional Time for Shipment
*	Special Order, Constructed from Non-Stocked Parts. Consult Your Fisher Sales Representative for Availability.
Availability of the product being ordered is determined by the component with the longest shipping time for the requested construction.	

Outlet Pressure Range (Select One)
- ☐ 1 to 3-inches w.c. (2 to 7 mbar)***
- ☐ 3 to 11-inches w.c. (7 to 27 mbar)***
- ☐ 6-1/2-inches w.c. to 1.2 psig (16 to 83 mbar)***
- ☐ 0.7 to 2 psig (0,05 to 0,14 bar)***
- ☐ 1 to 3.2 psig (0,069 to 0,2 bar)***
- ☐ 2 to 5.5 psig (0,14 to 0,4 bar)***
- ☐ 4 to 10 psig (0,3 to 0,69 bar)***

Pressure Registration (Select One)

☐ Internal*** ☐ External**

TFE Diaphragm Protector (Optional)

☐ Yes

CRN (Canadian Registration Number) Required (Optional)

☐ Yes

PED (Pressure Equipment Directive) Conformity (Optional)

☐ Yes

Replacement Parts Kit (Optional)

☐ Yes, send one replacement parts kit to match this order.

Tank Blanketing Specification Worksheet

Application Specifications:

Tank Size _____

Pump In Rate _____

Pump Out Rate _____

Blanketing Gas (Type and Specific Gravity) _____

Pressure Requirements:

Maximum Inlet Pressure (P_{1max}) _____

Minimum Inlet Pressure (P_{1min}) _____

Control Pressure Setting (P_2) _____

Maximum Flow (Q_{max}) _____

Accuracy Requirements:

☐ 1/4-inches w.c. (0,6 mbar) ☐ 1/2-inches w.c. (1 mbar)
☐ 1-inch w.c. (2 mbar) ☐ 2-inches w.c. (5 mbar)
☐ Other _____

Other Specifications:

Is a vapor recovery regulator required? ☐ Yes ☐ No

Special Material Requirements: ☐ Ductile Iron ☐ Steel
☐ Stainless Steel ☐ Hastelloy C ☐ Other _____

Other Requirements: _____

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