January 2010

# Y690A Series Gas Blanketing Regulators


***Figure 1.*** *Y690A Series Direct-Operated Gas Blanketing Regulators*

## Features

- **Easy Conversion Between Constructions**—Converts easily from Type Y690A to Type Y690AM with two O-rings and one machine screw.
- **Sour Gas Service Capability**—For sour gas applications, the Y690A Series regulators are available in materials that comply with National Association of Corrosion Engineers (NACE) Standards MR0175 and MR0103.
- **Inlet Pressure Equals Outlet Pressure**—Full inlet pressure capability on the downstream side of the regulator.
- **Corrosion Resistance**—Multiple regulator constructions are available in a variety of materials for compatibility with corrosive process gases.
- **Multiple Applications**—Y690A Series can be used for a wide variety of gases including air, nitrogen, natural gas, sour gas, butane, and propane.

## Introduction

The Y690A Series 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. The regulator system replaces the volume of vapors with a volume of blanketing gas to prevent the internal vessel pressure from decreasing, when liquid is being pumped out or when the vessel is suddenly cooled, causing vapors to contract. In both cases a slight positive vessel pressure prevents outside air, moisture and other contaminants from entering the vessel. Type Y690A (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. Type Y690AM uses a control line to more accurately control the pressure if the regulator is mounted away from the tank.

D102591X012

## Specifications

**Available Configurations**

**Type Y690A:** Direct-operated pressure reducing regulator for outlet pressures up to 7-inches w.c. (17 mbar) equipped with a pitot tube for greater regulated capacities.

**Type Y690AH:** Direct-operated pressure reducing regulator for outlet pressures up to 7 psig (0,48 bar) equipped with a pitot tube for greater regulated capacities.

**Type Y690AM:** Direct-operated pressure reducing regulator for outlet pressures up to 7-inches w.c. (17 mbar) equipped with a blocked throat and O-ring stem seal. The lower diaphragm casing is tapped 1/2 NPT for control line connection.

**Type Y690AHM:** Direct-operated pressure reducing regulator for outlet pressures up to 7 psig (0,48 bar) equipped with a blocked throat and O-ring stem seal. The lower diaphragm casing is tapped 1/2 NPT for control line connection.

**Body Sizes**
NPS 3/4 or 1 (DN 20 or 25)

**End Connection Styles**
See Table 1

**Maximum Allowable Inlet Pressure**(1)
150 psig (10,3 bar)

**Maximum Operating Inlet Pressure**(1)
See Table 4

**Maximum Outlet Pressure (Casing)**(1)
150 psig (10,3 bar)

**Maximum Emergency Outlet Pressure to Avoid Internal Parts Damage**(1)
150 psig (10,3 bar)

**Outlet Pressure Ranges**(1)
See Table 5

**Orifice Sizes and Flow and Sizing Coefficients**
See Table 2

**Pressure Registration**
**Types Y690A and Y690AH:** Internal
**Types Y690AM and Y690AHM:** External

**Flow Capacities**
See Tables 9 and 10

**Construction Materials**
See Table 3

**Material Temperature Capabilities**(1)
**Nitrile (NBR):**
-20° to 180°F (-29° to 82°C)
**Fluorocarbon (FKM):**
40° to 300°F (4° to 149°C)
**Ethylenepropylene (EPDM):**
-20° to 275°F (-29° to 135°C)
**Perfluoroelastomer (FFKM):**
-20° to 300°F (-29° to 149°C)

**Pressure Setting Adjustment**
Adjusting Screw

**Spring Case Connection**
1/4 NPT

**Diaphragm Case Connection**
1/2 NPT

**Approximate Weight**
19 pounds (9 kg)

1. The pressure/temperature limits in this Bulletin and any applicable standard or code limitation should not be exceeded.

***Table 1.*** *End Connection Styles*

| BODY SIZE, NPS (DN) | END CONNECTION STYLE | |
|---|---|---|
| | Ductile Iron | Stainless Steel |
| 3/4 or 1 (20 or 25) | NPT | NPT, SWE, CL150 RF, CL300 RF, or PN 16/25/40 |

***Table 2.*** *Orifice Sizes and Flow and Sizing Coefficients*

| ORIFICE SIZE, INCHES (mm) | WIDE-OPEN FOR RELIEF VALVE SIZING | | $C_1$ | IEC SIZING COEFFICIENTS | | |
|---|---|---|---|---|---|---|
| | $C_g$ | $C_v$ | | $X_T$ | $F_D$ | $F_L$ |
| 1/8 (3,2) | 12.3 | 0.35 | 35 | 0.78 | 0.50 | 0.89 |
| 1/4 (6,4) | 50 | 1.43 | | | | |
| 3/8 (9,5) | 110 | 3.14 | | | | |
| 1/2 (13) | 200 | 5.71 | | | | |
| 9/16 (14) | 250 | 7.14 | | | | |

***Table 3.*** *Construction Materials*

| BODY | DIAPHRAGM CASE | SPRING CASE | TRIM | DIAPHRAGM | DISK |
|---|---|---|---|---|---|
| Ductile iron or CF8M Stainless steel | Ductile iron or CF8M Stainless steel | Ductile iron or CF8M Stainless steel | 303 Stainless steel, 316 Stainless steel | Nitrile (NBR), Fluorocarbon (FKM), or Polytetrafluoroethylene (PTFE) bonded Nitrile (NBR) | Nitrile (NBR), Fluorocarbon (FKM), Perfluoroelastomer (FFKM), PTFE, or Ethylenepropylene (EPDM) |

***Table 4.*** *Maximum Operating Inlet Pressures in Psig (bar)*

| ORIFICE SIZE, INCHES (mm) | OUTLET PRESSURE RANGES | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Type Y690A | | Types Y690AH and Y690AM | | | | | |
| | 1 to 2.5-Inches w.c. (2 to 6 mbar) | 2.5 to 7-Inches w.c. (6 to 17 mbar) | 5 to 10-Inches w.c. (12 to 25 mbar) | 7 to 16-Inches w.c. (17 to 40 mbar) | 15-Inches w.c. to 1.2 Psig (37 to 83 mbar) | 1.2 to 2.5 Psig (83 mbar to 0,17 bar) | 2.5 to 4.5 Psig (0,17 to 0,31 bar) | 4.5 to 7 Psig (0,31 to 0,48 bar) |
| 1/8 (3,2) | 150 (10,3) | 150 (10,3) | 150 (10,3) | 150 (10,3) | 150 (10,3) | 150 (10,3) | 150 (10,3) | 150 (10,3) |
| 1/4 (6,4) | 40 (2,8) | 60 (4,1) | 75 (5,2) | 75 (5,2) | 75 (5,2) | 150 (10,3) | 150 (10,3) | 150 (10,3) |
| 3/8 (9,5) | 20 (1,4) | 20 (1,4) | 35 (2,4) | 35 (2,4) | 35 (2,4) | 60 (4,1) | 60 (4,1) | 60 (4,1) |
| 1/2 (13) | 10 (0,69) | 10 (0,69) | 8 (0,55) | 8 (0,55) | 8 (0,55) | 10 (0,69) | 12 (0,83) | 12 (0,83) |
| 9/16 (14) | 5 (0,34) | 5 (0,34) | 5 (0,34) | 5 (0,34) | 5 (0,34) | 6 (0,41) | 8 (0,55) | 8 (0,55) |

***Table 5.*** *Outlet (Control) Pressure Ranges and Spring Part Numbers*

| TYPES | OUTLET (CONTROL) PRESSURE RANGE | SPRING PART NUMBER | SPRING COLOR | SPRING WIRE DIAMETER, INCHES (mm) | SPRING FREE LENGTH, INCHES (mm) |
|---|---|---|---|---|---|
| Y690A and Y690AM | 1 to 2.5-inches w.c. (2 to 6 mbar) | 1B558527052[1][2] | Orange | 0.072 (1,83) | 3.78 (96,0) |
| | 2.5 to 7-inches w.c. (6 to 17 mbar) | 1B653827052[1] | Red | 0.085 (2,16) | 3.63 (92,2) |
| Y690AH and Y690AHM | 5 to 10-inches w.c. (12 to 25 mbar) | 1B653827052 | Red | 0.085 (2,16) | 3.63 (92,2) |
| | 7 to 16-inches w.c. (17 to 40 mbar) | 1B653927022 | Unpainted | 0.105 (2,67) | 3.75 (95,2) |
| | 15-inches w.c. to 1.2 psig (37 to 83 mbar) | 1B537027052 | Yellow | 0.114 (2,90) | 4.31 (109) |
| | 1.2 to 2.5 psig (83 mbar to 0,17 bar) | 1B537127022 | Light green | 0.156 (3,96) | 4.06 (103) |
| | 2.5 to 4.5 psig (0,17 to 0,31 bar) | 1B537227022 | Light blue | 0.187 (4,75) | 3.94 (100) |
| | 4.5 to 7 psig (0,31 to 0,48 bar) | 1B537327052 | Black | 0.218 (5,54) | 3.98 (101) |

1. To achieve the published outlet pressure range the spring case must be installed pointing down.
2. Do not use fluorocarbon (FKM) diaphragm with this spring at diaphragm temperatures lower than 60°F (16°C).

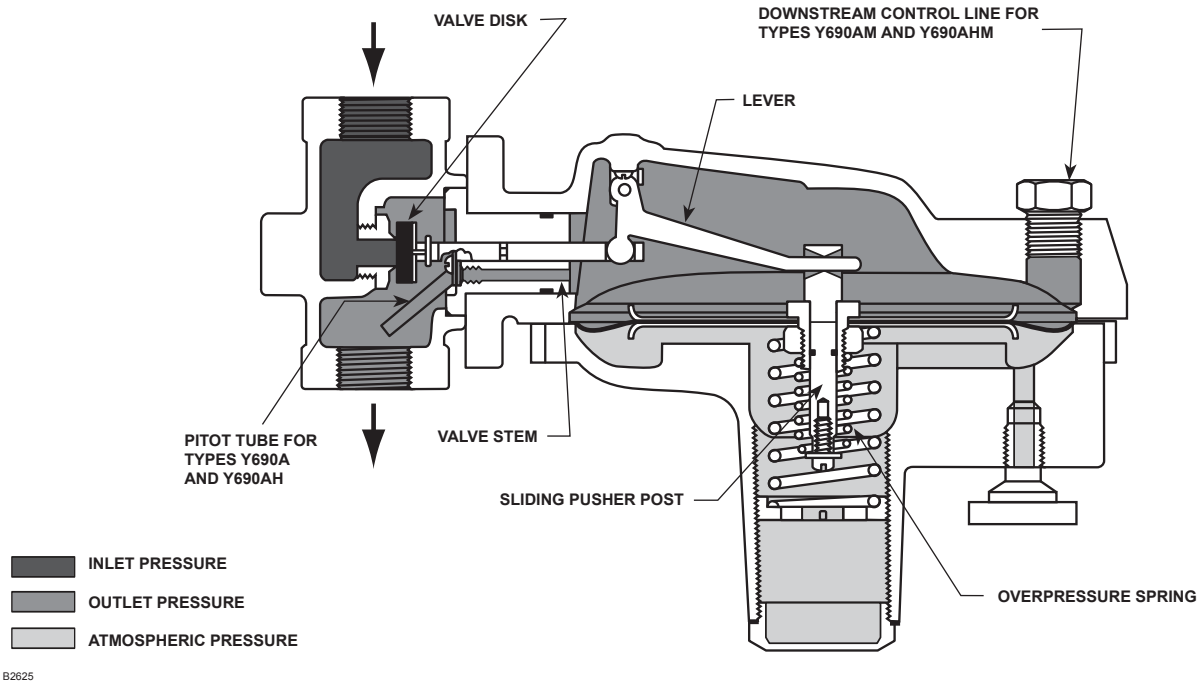



***Figure 2.*** *Y690A Series Operational Schematic*

## Principle of Operation

### With Internal Registration (Refer to Figure 3)

Types Y690A and Y690AH are direct-operated regulators with internal registration (see Figures 2 and 3). It provides a constant set pressure for accurate gas blanketing. When vessel pressure decreases below the control spring setpoint, 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 setpoint, the disk will seat against the orifice shutting off the flow of gas.

### With External Registration (Refer to Figure 4)

Types Y690AM and Y690AHM Gas Blanketing Regulators reduce a higher-pressure gas to maintain a positive low pressure of blanket gas over a stored liquid. Also when the vessel (or tank) is suddenly cooled, causing vapors to contract, the regulator replaces the volume of contracting vapors with a volume of blanketing gas to prevent the internal vessel pressure from decreasing. In both cases, a positive vessel pressure prevents outside air from entering the vessel and reduces the possibility of atmospheric pressure collapsing the vessel.

Gas blanketing regulators respond to a slight decrease in internal vessel pressure (caused by pump out or atmospheric cooling) by throttling open to increase the flow rate of gas into the vessel. When the vessel's liquid level has been lowered to the desired point and the vapor pressure has been reestablished, the regulator throttles close.

When the liquid level drops and vessel pressure decreases below the setting of the control spring, the spring force on the diaphragm opens the disk assembly to supply the required flow of gas to the vessel. When vessel pressure has been satisfied, outlet pressure tends to increase slightly, acting on the diaphragm. When the outlet pressure exceeds the control spring setting, the diaphragm moves to close the disk assembly.

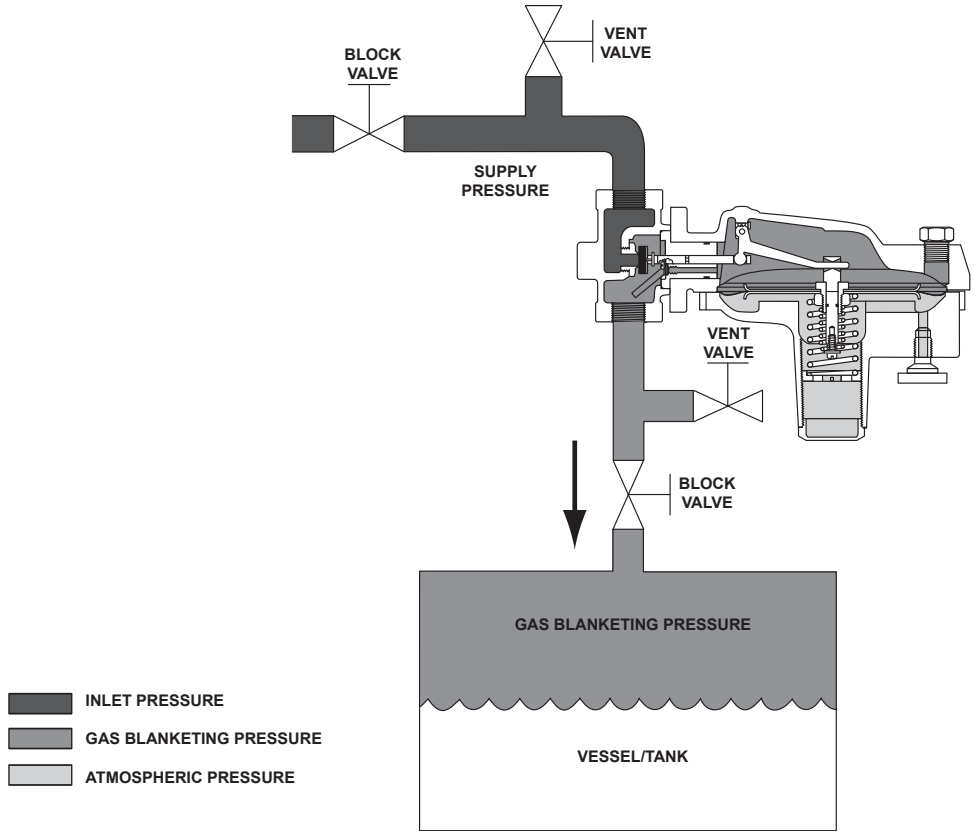



***Figure 3.*** *Type Y690A or Y690AH with Internal Registration Operational Schematic*

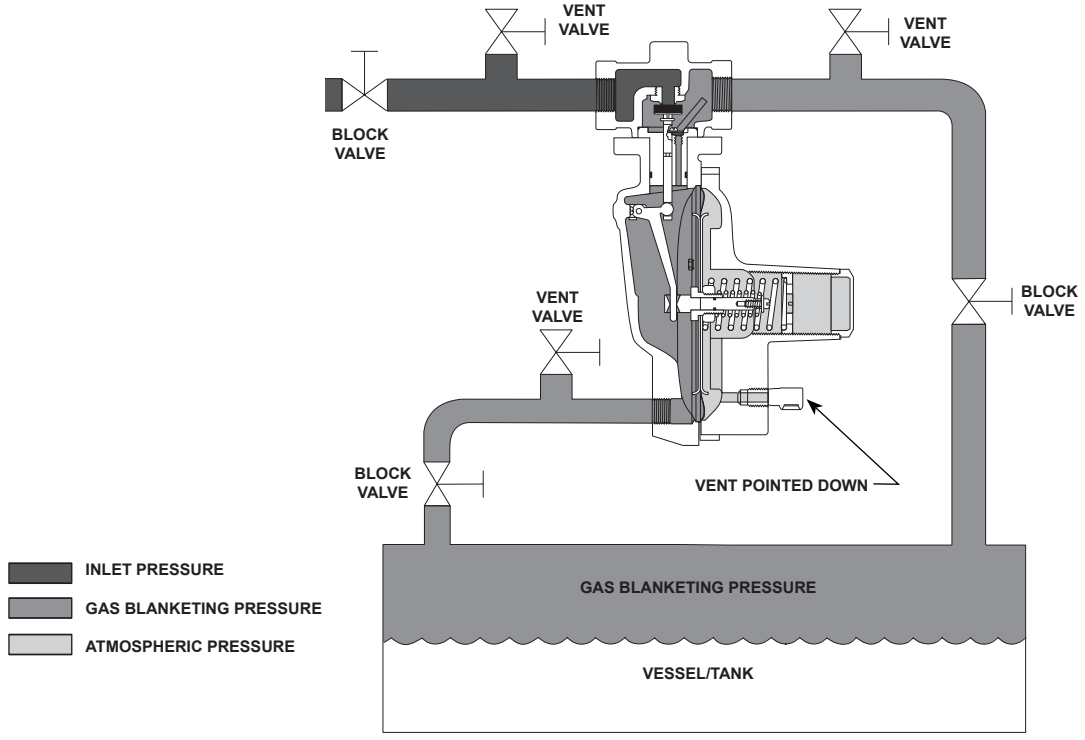



***Figure 4.*** *Type Y690AM or Y690AHM Gas Blanketing Regulator with External Registration Operational Schematic*

***Table 6.*** *Vessel Capacity*

| VESSEL CAPACITY | | | SCFH (Nm³/h) AIR FLOW RATE REQUIRED(1) |
|---|---|---|---|
| Barrels | Gallons | Liters | |
| 60 | 2500 | 9500 | 60 (1,6) |
| 100 | 4200 | 16 000 | 100 (2,7) |
| 500 | 21 000 | 79 500 | 500 (13,4) |
| 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) |

1. Flash point is below 100°F (38°C) or normal boiling point is below 300°F (149°C).

***Table 7.*** *Correction Factors (for converting nitrogen flow rates to other gas flow rates)*

| BLANKET GAS | SPECIFIC GRAVITY | CORRECTION FACTOR |
|---|---|---|
| Natural Gas | 0.60 | 1.270 |
| Air | 1.00 | 0.985 |
| Dry $CO_2$ | 1.52 | 0.797 |
| Correction Factor = $\frac{0.985}{\sqrt{SG}}$ | | |

***Table 8.*** *Flow Rate Conversion*

| MULTIPLY MAXIMUM PUPM RATE IN | BY | TO OBTAIN |
|---|---|---|
| U.S. GPM | 8.021 | SCFH air required(1) |
| U.S. GPH | 0.1337 | |
| Barrels/hour | 5.615 | |
| Barrels/day | 0.2340 | |

1. To convert to Nm³/h multiply SCFH by 0.0268.

# Product Description

## Y690A Series Pressure Reducing Regulators

Very low-pressure (Types Y690A and Y690AM) and higher-pressure versions (Types Y690AH and Y690AHM) are available for operating inlet pressures up to 150 psig (10,3 bar) and outlet pressures settings from 1-inch w.c. to 7 psig (2 mbar to 0,48 bar). Refer to Table 5 for outlet pressure ranges of each type. These regulators are available in NPS 3/4 and 1 (DN 20 and 25) body sizes with the end connections as shown in Table 1.

## Downstream Control Line

Types Y690AM and Y690AHM regulators have a blocked throat stem seal with O-rings and a 1/2 NPT control line connection in the diaphragm case (Figure 2). The control line can be used to more accurately control the pressure in the tank if the regulator is mounted an extended distance from the control point. The stem seal separates the body outlet pressure from the diaphragm case.

## Sliding Pusher Post

The diaphragm assembly of the regulator is equipped with a sliding pusher post. During an overpressure situation (outlet pressure above setpoint or lockup pressure), the spring of the sliding pusher post is compressed, allowing the diaphragm head to come to rest on the spring case. This action prevents any damage to internal parts.

## 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. Using the established procedures from American Petroleum Institute Standard 2000 (API 2000), determine the flow rate of blanketing gas required.

1. Determine the gas flow rate required to replace the liquid being pumped out (see Table 8).
2. Determine the gas flow rate due to “inbreathing” caused by atmospheric thermal cooling (see Table 6).

3. Add the requirements of 1 and 2 and select regulator size, based on total capacity required from Table 9 or 10.

**Sample sizing problem for blanketing applications:**

Vessel Capacity . . . . . 12 500 gallons (47 318 l)
Pump In/Out Capacity . . . . . 120 GPM (454 l/min)
Inlet Pressure Source . . . . . 60 psig (4,1 bar) Nitrogen
Desired Blanket Setpoint . . . . . 3.0-inches w.c. (7 mbar)

1. From Table 8, the desired air flow rate due to pump out equals 120 GPM (454 l/min) x 8.021 = 963 SCFH (25,8 Nm³/h) air.
2. From Table 6, interpolate to determine the required air flow due to thermal cooling = 300 SCFH (8,0 Nm³/h) air.
3. Total flow required for pump out and thermal cooling is 963 + 300 = 1263 SCFH (33,8 Nm³/h) air.
4. Convert to nitrogen by dividing the total air flow by the square root of the specific gravity of nitrogen: 1263 divided by square root of 0.97 = 1282 SCFH (34,4 Nm³/h) nitrogen.
5. From Table 9, an NPS 1 (DN 25) body size Type Y690A with a 1/4-inch (6,4 mm) orifice will flow 1323 SCFH (35,5 Nm³/h) nitrogen at 60 psig (4,1 bar) inlet pressure. This will satisfy the required flow of 1282 SCFH (34,4 Nm³/h) nitrogen.

## Installation

### Types Y690A and Y690AH

Install the regulator with the spring case barrel pointed down. This will assure that the lowest set pressure shown in Table 5 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.

### Types Y690AM and Y690AHM

The regulator may be installed in any position as long as the flow through the body is in the direction indicated by the flow arrow attached to the body. Install the regulator as close as possible to the blanketed vessel using a straight run of pipe the same size as or larger than the regulator body. Position the body and/or diaphragm spring case so it will not collect moisture or debris into the screened vent and also be self draining (as shown in Figure 4). If a block valve is required, install a full flow valve between the regulator and the blanketed vessel.

Attach a downstream pressure control line to the 1/2 NPT connection in the lower diaphragm case. Connect the other end of the control line to the vessel. To allow for self-drainage, install the control line at an angle so that any liquid material will drain away from the regulator. See Figures 2 and 4 for the location of the external control line connection. External dimensions and connections are shown in Figure 5.

## Universal NACE Compliance

Optional materials are available for applications handling sour gases. These constructions comply with the recommendations of National Association of Corrosion Engineers (NACE) sour service standards.

The manufacturing processes and materials used by Emerson assure that all products specified for sour gas service comply with the chemical, physical, and metallurgical requirements of NACE MR0175/ ISO 15156 and/or NACE MR0103. Customers have the responsibility to specify correct materials. Environmental limitations may apply and shall be determined by the user.

## Capacity Information

Capacity tables are based on 0.97 specific gravity nitrogen. Nitrogen is the most common blanketing gas. Should you use a different gas, convert the tabular values as follows. For blanketing (pad) gases other than nitrogen, multiply the given nitrogen flow rate by the correction factors in Table 7. For gases of other specific gravities, multiply the given nitrogen flow rate by 0.985, and divide by the square root of the appropriate specific gravity.

$$Q = \sqrt{\frac{520}{GT}}\, C_g P_1 \mathrm{Sin}\left[\frac{3417}{C_1}\sqrt{\frac{\triangle P}{P_1}}\right] \mathrm{Deg}$$

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

where,

$C_g$ = gas sizing coefficient from Table 2

$C_1$ = $C_g / C_v$, or 35 from Table 2

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 9.*** *Types Y690A and Y690AM Capacities*

| BODY SIZE, NPS (DN) | OUTLET PRESSURE RANGE, PART NUMBER, AND COLOR | OUTLET PRESSURE SETTING | INLET PRESSURE, PSIG (bar) | CAPACITIES IN SCFH (Nm³/h) OF NITROGEN[1] | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Orifice Size, Inches (mm) | | | | |
| | | | | 1/8 (3,2) | 1/4 (6,4) | 3/8 (9,5) | 1/2 (13) | 9/16 (14) |
| 3/4 (20) | 1 to 2.5-inches w.c. (2 to 6 mbar)<br>1B558527052 Orange | 1-inch w.c. (2 mbar) | 2 (0,14) | 122 (3,3) | 305 (8,2) | 356 (9,5) | 468 (12,5) | 611 (16,4) |
| | | | 5 (0,34) | 183 (4,9) | 417 (11,2) | 458 (12,3) | 611 (16,4) | 713 (19,1) |
| | | | 10 (0,69) | 204 (5,5) | 591 (15,8) | 540 (14,5) | 814 (21,8) | |
| | | | 20 (1,4) | 285 (7,6) | 621 (16,6) | 662 (17,7) | | |
| | | | 40 (2,8) | 611 (16,4) | 987 (26,4) | | | |
| | | | 60 (4,1) | 814 (21,8) | | | | |
| | | | 80 (5,5) | 916 (24,5) | | | | |
| | | | 100 (6,9) | 1018 (27,3) | | | | |
| | | | 125 (8,6) | 1222 (32,8) | | | | |
| | | | 150 (10,3) | 1323 (35,5) | | | | |
| | | 2.5-inches w.c. (6 mbar) | 2 (0,14) | 122 (3,3) | 356 (9,5) | 407 (10,9) | 652 (17,5) | 784 (21,0) |
| | | | 5 (0,34) | 204 (5,5) | 509 (13,6) | 611 (16,4) | 835 (22,4) | 967 (25,9) |
| | | | 10 (0,69) | 224 (6,0) | 672 (18,0) | 764 (20,5) | 1038 (27,8) | |
| | | | 20 (1,4) | 285 (7,6) | 784 (21,0) | 967 (25,9) | | |
| | | | 40 (2,8) | 662 (17,7) | 1038 (27,8) | | | |
| | | | 60 (4,1) | 916 (24,5) | | | | |
| | | | 80 (5,5) | 1069 (28,6) | | | | |
| | | | 100 (6,9) | 1171 (31,4) | | | | |
| | | | 125 (8,6) | 1222 (32,8) | | | | |
| | | | 150 (10,3) | 1273 (34,1) | | | | |
| | 2.5 to 7-inches w.c. (6 to 17 mbar)<br>1B653827052 Red | 2.5-inches w.c. (6 mbar) | 2 (0,14) | 122 (3,3) | 204 (5,5) | 234 (6,3) | 458 (12,3) | 499 (13,4) |
| | | | 5 (0,34) | 183 (4,9) | 275 (7,4) | 540 (14,5) | 611 (16,4) | 692 (18,5) |
| | | | 10 (0,69) | 234 (6,3) | 458 (12,3) | 713 (19,1) | 825 (22,1) | |
| | | | 20 (1,4) | 255 (6,8) | 641 (17,2) | 916 (24,5) | | |
| | | | 40 (2,8) | 611 (16,4) | 886 (23,7) | | | |
| | | | 60 (4,1) | 794 (21,3) | 1273 (34,1) | | | |
| | | | 80 (5,5) | 967 (25,9) | | | | |
| | | | 100 (6,9) | 1028 (27,6) | | | | |
| | | | 125 (8,6) | 1171 (31,4) | | | | |
| | | | 150 (10,3) | 1232 (33,0) | | | | |
| | | 3-inches w.c. (7 mbar) | 2 (0,14) | 112 (3,0) | 193 (5,2) | 234 (6,3) | 428 (11,5) | 468 (12,5) |
| | | | 5 (0,34) | 132 (3,5) | 275 (7,4) | 509 (13,6) | 621 (16,6) | 692 (18,5) |
| | | | 10 (0,69) | 193 (5,2) | 458 (12,3) | 713 (19,1) | 804 (21,5) | |
| | | | 20 (1,4) | 255 (6,8) | 641 (17,2) | 916 (24,5) | | |
| | | | 40 (2,8) | 590 (15,8) | 875 (23,5) | | | |
| | | | 60 (4,1) | 723 (19,4) | 1069 (28,6) | | | |
| | | | 80 (5,5) | 1008 (27,0) | | | | |
| | | | 100 (6,9) | 1150 (30,8) | | | | |
| | | | 125 (8,6) | 1303 (34,9) | | | | |
| | | | 150 (10,3) | 1354 (36,3) | | | | |
| | | 7-inches w.c. (17 mbar) | 2 (0,14) | 122 (3,3) | 163 (4,4) | 193 (5,2) | 316 (8,5) | 407 (10,9) |
| | | | 5 (0,34) | 193 (5,2) | 224 (6,0) | 448 (12,0) | 529 (14,2) | 611 (16,4) |
| | | | 10 (0,69) | 204 (5,5) | 407 (10,9) | 672 (18,0) | 774 (20,7) | |
| | | | 20 (1,4) | 224 (6,0) | 550 (14,7) | 957 (25,6) | | |
| | | | 40 (2,8) | 499 (13,4) | 733 (19,6) | | | |
| | | | 60 (4,1) | 611 (16,4) | 1018 (27,3) | | | |
| | | | 80 (5,5) | 682 (18,3) | | | | |
| | | | 100 (6,9) | 804 (21,5) | | | | |
| | | | 125 (8,6) | 855 (22,9) | | | | |
| | | | 150 (10,3) | 1079 (28,9) | | | | |

▭ - Shaded areas indicate maximum allowable inlet pressure is exceeded.

1. Deviation from setpoint is -1 to 2-inches w.c. (-2 to 5 mbar).

*- continued -*

***Table 9.*** *Types Y690A and Y690AM Capacities (continued)*

| BODY SIZE, NPS (DN) | OUTLET PRESSURE RANGE, PART NUMBER, AND COLOR | OUTLET PRESSURE SETTING | INLET PRESSURE, PSIG (bar) | CAPACITIES IN SCFH (Nm³/h) OF NITROGEN(1) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Orifice Size, Inches (mm) | | | | |
| | | | | 1/8 (3,2) | 1/4 (6,4) | 3/8 (9,5) | 1/2 (13) | 9/16 (14) |
| 1 (25) | 1 to 2.5-inches w.c. (2 to 6 mbar)<br><br>1B558527052 Orange | 1-inch w.c. (2 mbar) | 2 (0,14) | 112 (3,0) | 316 (8,5) | 468 (12,5) | 489 (13,1) | 967 (25,9) |
| | | | 5 (0,34) | 193 (5,2) | 356 (9,5) | 1008 (27,0) | 1120 (30,0) | 1161 (31,1) |
| | | | 10 (0,69) | 244 (6,5) | 814 (21,8) | 1140 (30,6) | 1547 (41,5) | |
| | | | 20 (1,4) | 356 (9,5) | 947 (25,4) | 1344 (36,0) | | |
| | | | 40 (2,8) | 662 (17,7) | 1140 (30,6) | | | |
| | | | 60 (4,1) | 977 (26,2) | | | | |
| | | | 80 (5,5) | 1191 (31,9) | | | | |
| | | | 100 (6,9) | 1323 (35,5) | | | | |
| | | | 125 (8,6) | 1395 (37,4) | | | | |
| | | | 150 (10,3) | 1446 (38,7) | | | | |
| | | 2.5-inches w.c. (6 mbar) | 2 (0,14) | 122 (3,3) | 295 (7,9) | 346 (9,3) | 478 (12,8) | 804 (21,5) |
| | | | 5 (0,34) | 204 (5,5) | 356 (9,5) | 753 (20,2) | 947 (25,4) | 1161 (31,1) |
| | | | 10 (0,69) | 244 (6,5) | 753 (20,2) | 957 (25,6) | 1262 (33,8) | |
| | | | 20 (1,4) | 356 (9,5) | 916 (24,6) | 1273 (34,1) | | |
| | | | 40 (2,8) | 611 (16,4) | 1252 (33,6) | | | |
| | | | 60 (4,1) | 957 (25,6) | | | | |
| | | | 80 (5,5) | 1191 (31,9) | | | | |
| | | | 100 (6,9) | 1323 (35,5) | | | | |
| | | | 125 (8,6) | 1415 (37,9) | | | | |
| | | | 150 (10,3) | 1537 (41,2) | | | | |
| | 2.5 to 7-inches w.c. (6 to 17 mbar)<br><br>1B653827052 Red | 2.5-inches w.c. (6 mbar) | 2 (0,14) | 112 (3,0) | 132 (3,5) | 275 (7,4) | 478 (12,8) | 641 (17,2) |
| | | | 5 (0,34) | 183 (4,9) | 305 (8,2) | 601 (16,1) | 774 (20,7) | 875 (23,4) |
| | | | 10 (0,69) | 265 (7,1) | 611 (16,4) | 814 (21,8) | 1099 (29,5) | |
| | | | 20 (1,4) | 326 (8,7) | 672 (18,0) | 1161 (31,1) | | |
| | | | 40 (2,8) | 590 (15,8) | 987 (26,5) | | | |
| | | | 60 (4,1) | 896 (24,0) | 1323 (35,5) | | | |
| | | | 80 (5,5) | 1028 (27,6) | | | | |
| | | | 100 (6,9) | 1222 (32,8) | | | | |
| | | | 125 (8,6) | 1303 (34,9) | | | | |
| | | | 150 (10,3) | 1425 (38,2) | | | | |
| | | 3-inches w.c. (7 mbar) | 2 (0,14) | 102 (2,7) | 153 (4,1) | 204 (5,5) | 448 (12,0) | 509 (13,6) |
| | | | 5 (0,34) | 173 (4,6) | 305 (8,2) | 570 (15,3) | 570 (15,3) | 682 (18,3) |
| | | | 10 (0,69) | 255 (6,8) | 540 (14,5) | 723 (19,4) | 855 (22,9) | |
| | | | 20 (1,4) | 305 (8,2) | 672 (18,0) | 1028 (27,6) | | |
| | | | 40 (2,8) | 519 (13,9) | 987 (26,5) | | | |
| | | | 60 (4,1) | 764 (20,5) | 1323 (35,5) | | | |
| | | | 80 (5,5) | 1018 (27,3) | | | | |
| | | | 100 (6,9) | 1222 (32,8) | | | | |
| | | | 125 (8,6) | 1303 (34,9) | | | | |
| | | | 150 (10,3) | 1425 (38,2) | | | | |
| | | 7-inches w.c. (17 mbar) | 2 (0,14) | 102 (2,7) | 153 (4,1) | 204 (5,5) | 377 (10,1) | 397 (10,6) |
| | | | 5 (0,34) | 173 (4,6) | 305 (8,2) | 438 (11,7) | 540 (14,5) | 672 (18,0) |
| | | | 10 (0,69) | 204 (5,5) | 387 (10,4) | 590 (15,8) | 845 (22,6) | |
| | | | 20 (1,4) | 285 (7,6) | 621 (16,6) | 794 (21,3) | | |
| | | | 40 (2,8) | 407 (10,9) | 794 (21,3) | | | |
| | | | 60 (4,1) | 580 (15,5) | 1323 (35,5) | | | |
| | | | 80 (5,5) | 662 (17,7) | | | | |
| | | | 100 (6,9) | 764 (20,5) | | | | |
| | | | 125 (8,6) | 875 (23,5) | | | | |
| | | | 150 (10,3) | 1150 (30,8) | | | | |

▭ - Shaded areas indicate maximum allowable inlet pressure is exceeded.

1. Deviation from setpoint is -1 to 2.0-inches w.c. (-2 to 5 mbar).

***Table 10.*** *Types Y690AH and Y690AHM Capacities*

| OUTLET PRESSURE RANGE, CONTROL SPRING PART NUMBER, AND COLOR | OFFSET FROM SETPOINT | OUTLET PRESSURE SETTING | INLET PRESSURE, PSIG (bar) | NPS 3/4 (DN 20) BODY SIZE<br>Capacities in SCFH (Nm³/h) of Nitrogen<br>Orifice Size, Inches (mm) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1/8 (3,2) | 1/4 (6,4) | 3/8 (9,5) | 1/2 (13) | 9/16 (14) |
| 5 to 10-inches w.c. (12 to 25 mbar)<br>1B653827052 Red | 1-inch w.c. (2 mbar) | 7-inches w.c. (17 mbar) | 1 (69 mbar) | 71 (1,9) | 183 (4,9) | 193 (5,2) | 326 (8,7) | 346 (9,3) |
| | | | 5 (0,34) | 173 (4,6) | 356 (9,5) | 387 (10,4) | 407 (10,9) | 764 (20,5) |
| | | | 8 (0,55) | 183 (4,9) | 417 (11,2) | 428 (11,5) | 468 (12,5) | |
| | | | 20 (1,4) | 407 (10,9) | 489 (13,1) | 509 (13,6) | | |
| | | | 35 (2,4) | 519 (13,9) | 662 (17,7) | 713 (19,1) | | |
| | | | 75 (5,2) | 611 (16,4) | 753 (20,2) | | | |
| | | | 150 (10,3) | 1323 (35,5) | | | | |
| 7 to 16-inches w.c. (17 to 40 mbar)<br>1B653927022 Unpainted | 1-inch w.c. (2 mbar) | 11-inches w.c. (27 mbar) | 1 (69 mbar) | 71 (1,9) | 122 (3,3) | 153 (4,1) | 183 (4,9) | 193 (5,2) |
| | | | 5 (0,34) | 122 (3,3) | 224 (6,0) | 275 (7,4) | 417 (11,2) | 590 (15,8) |
| | | | 8 (0,55) | 132 (3,5) | 336 (9,0) | 356 (9,5) | 428 (11,5) | |
| | | | 20 (1,4) | 275 (7,4) | 468 (12,5) | 478 (12,8) | | |
| | | | 35 (2,4) | 407 (10,9) | 489 (13,1) | 509 (13,6) | | |
| | | | 75 (5,2) | 509 (13,6) | 743 (19,9) | | | |
| | | | 150 (10,3) | 1323 (35,5) | | | | |
| 15-inches w.c. to 1.2 psig (37 mbar to 83 mbar)<br>1B537027052 Yellow | 5.5-inches w.c. (14 mbar) | 15-inches w.c. (37 mbar) | 2 (0,14) | 71 (1,9) | 397 (10,6) | 713 (19,1) | 865 (23,2) | 906 (24,3) |
| | | | 6 (0,41) | 193 (5,2) | 733 (19,6) | 1293 (34,7) | 1659 (44,5) | |
| | | | 10 (0,69) | 265 (7,1) | 1089 (29,2) | 1527 (40,9) | | |
| | | | 30 (2,1) | 540 (14,5) | 1883 (50,5) | 1934 (51,8) | | |
| | | | 60 (4,1) | 916 (24,5) | 2749 (73,7) | | | |
| | | | 150 (10,3) | 2026 (54,3) | | | | |
| | | 1.2 psig (83 mbar) | 2 (0,14) | 71 (1,9) | 326 (8,7) | 478 (12,8) | 641 (17,2) | 550 (14,7) |
| | | | 6 (0,41) | 193 (5,2) | 550 (14,7) | 1018 (27,3) | 1120 (30,0) | |
| | | | 10 (0,69) | 244 (6,5) | 804 (21,5) | 1120 (30,0) | | |
| | | | 30 (2,1) | 529 (14,2) | 1629 (43,7) | 1914 (51,3) | | |
| | | | 60 (4,1) | 896 (24,0) | 2647 (70,9) | | | |
| | | | 150 (10,3) | 1955 (52,4) | | | | |

▭ - Shaded areas indicate inlet pressure is too high for orifice size.

*- continued -*

***Table 10.*** *Types Y690AH and Y690AHM Capacities (continued)*

| OUTLET PRESSURE RANGE, CONTROL SPRING PART NUMBER, AND COLOR | OFFSET FROM SETPOINT | OUTLET PRESSURE SETTING | INLET PRESSURE, PSIG (bar) | NPS 3/4 (DN 20) BODY SIZE<br>Capacities in SCFH (Nm³/h) of Nitrogen<br>Orifice Size, Inches (mm) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1/8 (3,2) | 1/4 (6,4) | 3/8 (9,5) | 1/2 (13) | 9/16 (14) |
| 1.2 to 2.5 psig (83 mbar to 0,17 bar)<br>1B537127022 Light green | 0.2 psig (14 mbar) | 1.2 psig (83 mbar) | 2 (0,14) | 92 (2,5) | 173 (4,6) | 275 (7,4) | 387 (10,4) | 407 (10,9) |
| | | | 6 (0,41) | 143 (3,8) | 356 (9,5) | 580 (15,5) | 672 (18,0) | 845 (22,7) |
| | | | 10 (0,69) | 153 (4,1) | 468 (12,5) | 794 (21,3) | 926 (24,8) | |
| | | | 30 (2,1) | 438 (11,7) | 1222 (32,8) | 1354 (36,3) | | |
| | | | 60 (4,1) | 682 (18,3) | 1955 (52,4) | 1843 (49,4) | | |
| | | | 150 (10,3) | 1568 (42,0) | 4031 (108) | | | |
| | | 2.5 psig (0,17 bar) | 6 (0,41) | 102 (2,7) | 204 (5,5) | 356 (9,5) | 468 (12,5) | 540 (14,5) |
| | | | 10 (0,69) | 132 (3,5) | 387 (10,4) | 448 (12,0) | 682 (18,3) | |
| | | | 30 (2,1) | 336 (9,0) | 774 (20,7) | 814 (21,8) | | |
| | | | 60 (4,1) | 590 (15,8) | 1527 (40,9) | 1771 (47,5) | | |
| | | | 150 (10,3) | 1171 (31,4) | 2647 (70,9) | | | |
| 2.5 to 4.5 psig (0,17 to 0,31 bar)<br>1B537227022 Light blue | 0.3 psig (21 mbar) | 2.5 psig (0,17 bar) | 4 (0,28) | 112 (3,0) | 153 (4,1) | 244 (6,5) | 295 (7,9) | 377 (10,1) |
| | | | 8 (0,55) | 112 (3,0) | 285 (7,6) | 407 (10,9) | 560 (15,0) | 631 (16,9) |
| | | | 12 (0,83) | 153 (4,1) | 387 (10,4) | 540 (14,5) | 733 (19,6) | |
| | | | 30 (2,1) | 336 (9,0) | 713 (19,1) | 875 (23,5) | | |
| | | | 60 (4,1) | 519 (13,9) | 1364 (36,6) | 1446 (38,8) | | |
| | | | 150 (10,3) | 1242 (33,3) | 3644 (97,7) | | | |
| | | 4.5 psig (0,31 bar) | 8 (0,55) | 92 (2,5) | 193 (5,2) | 316 (8,5) | 407 (10,9) | 428 (11,5) |
| | | | 12 (0,83) | 122 (3,3) | 255 (6,8) | 417 (11,2) | 570 (15,3) | |
| | | | 30 (2,1) | 234 (6,3) | 601 (16,1) | 652 (17,5) | | |
| | | | 60 (4,1) | 468 (12,5) | 967 (25,9) | 1059 (28,4) | | |
| | | | 150 (10,3) | 967 (25,9) | 2850 (76,4) | | | |
| 4.5 to 7 psig (0,31 to 0,48 bar)<br>1B537327052 Black | 0.7 psig (48 mbar) | 4.5 psig (0,31 bar) | 9 (0,62) | 153 (4,1) | 336 (9,0) | 489 (13,1) | 733 (19,6) | 784 (21,0) |
| | | | 12 (0,83) | 163 (4,4) | 438 (11,7) | 641 (17,2) | 906 (24,3) | |
| | | | 30 (2,1) | 407 (10,9) | 865 (23,2) | 1425 (38,2) | | |
| | | | 60 (4,1) | 682 (18,3) | 1619 (43,4) | 2138 (57,3) | | |
| | | | 150 (10,3) | 1547 (41,5) | 3980 (107) | | | |
| | | 7 psig (0,48 bar) | 9 (0,62) | 122 (3,3) | 214 (5,7) | 407 (10,9) | 489 (13,1) | 519 (13,9) |
| | | | 12 (0,83) | 153 (4,1) | 295 (7,9) | 509 (13,6) | 682 (18,3) | |
| | | | 30 (2,1) | 305 (8,2) | 713 (19,1) | 1049 (28,1) | | |
| | | | 60 (4,1) | 631 (16,9) | 1354 (36,3) | 1934 (51,8) | | |
| | | | 150 (10,3) | 1507 (40,4) | 3197 (85,7) | | | |

▭ - Shaded areas indicate inlet pressure is too high for orifice size.

*- continued -*

***Table 10.*** *Types Y690AH and Y690AHM Capacities (continued)*

| OUTLET PRESSURE RANGE, CONTROL SPRING PART NUMBER, AND COLOR | OFFSET FROM SETPOINT | OUTLET PRESSURE SETTING | INLET PRESSURE, PSIG (bar) | NPS 1 (DN 25) BODY SIZE<br>Capacities in SCFH (Nm³/h) of Nitrogen<br>Orifice Size, Inches (mm) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1/8 (3,2) | 1/4 (6,4) | 3/8 (9,5) | 1/2 (13) | 9/16 (14) |
| 5 to 10-inches w.c. (12 to 25 mbar)<br><br>1B653827052 Red | 1-inch w.c. (2 mbar) | 7-inches w.c. (17 mbar) | 1 (69 mbar) | 71 (1,9) | 193 (5,2) | 234 (6,3) | 326 (8,7) | 417 (11,2) |
| | | | 5 (0,34) | 173 (4,6) | 356 (9,5) | 896 (24,0) | 1496 (40,1) | 1517 (40,7) |
| | | | 8 (0,55) | 183 (4,9) | 417 (11,2) | 1690 (45,3) | 1863 (49,9) | |
| | | | 20 (1,4) | 407 (10,9) | 1425 (38,2) | 926 (24,8) | | |
| | | | 35 (2,4) | 560 (15,0) | 1812 (48,6) | 733 (19,6) | | |
| | | | 75 (5,2) | 814 (21,8) | 1099 (29,5) | | | |
| | | | 150 (10,3) | 1323 (35,5) | | | | |
| 7 to 16-inches w.c. (17 to 40 mbar)<br><br>1B653927022 Unpainted | 1-inch w.c. (2 mbar) | 11-inches w.c. (27 mbar) | 1 (69 mbar) | 71 (1,9) | 132 (3,5) | 163 (4,4) | 183 (4,9) | 193 (5,2) |
| | | | 5 (0,34) | 122 (3,3) | 244 (6,5) | 407 (10,9) | 489 (13,1) | 916 (24,6) |
| | | | 8 (0,55) | 132 (3,5) | 336 (9,0) | 916 (24,6) | 1150 (30,8) | |
| | | | 20 (1,4) | 275 (7,4) | 611 (16,4) | 1283 (34,4) | | |
| | | | 35 (2,4) | 438 (11,7) | 1425 (38,2) | 937 (25,1) | | |
| | | | 75 (5,2) | 967 (25,9) | 1191 (31,9) | | | |
| | | | 150 (10,3) | 1374 (36,8) | | | | |
| 15-inches w.c to 1.2 psig (37 to 83 mbar)<br><br>1B537027052 Yellow | 5.5-inches w.c. (14 mbar) | 15-inches w.c. (37 mbar) | 2 (0,14) | 71 (1,9) | 397 (10,6) | 865 (23,2) | 916 (24,6) | 1140 (30,6) |
| | | | 6 (0,41) | 193 (5,2) | 733 (19,6) | 1975 (52,9) | 2209 (59,2) | |
| | | | 10 (0,69) | 265 (7,1) | 1252 (33,6) | 2565 (68,7) | | |
| | | | 30 (2,1) | 540 (14,5) | 2229 (59,7) | 4306 (115) | | |
| | | | 60 (4,1) | 916 (24,6) | 3644 (97,7) | | | |
| | | | 150 (10,3) | 2026 (54,3) | | | | |
| | | 1.2 psig (83 mbar) | 2 (0,14) | 71 (1,9) | 366 (9,8) | 865 (23,2) | 916 (24,6) | 1018 (27,3) |
| | | | 6 (0,41) | 193 (5,2) | 550 (14,7) | 1222 (32,8) | 1313 (35,2) | |
| | | | 10 (0,69) | 255 (6,8) | 804 (21,6) | 2107 (56,5) | | |
| | | | 30 (2,1) | 529 (14,2) | 2016 (54,0) | 3624 (97,1) | | |
| | | | 60 (4,1) | 896 (24,0) | 3309 (88,7) | | | |
| | | | 150 (10,3) | 2026 (54,3) | | | | |

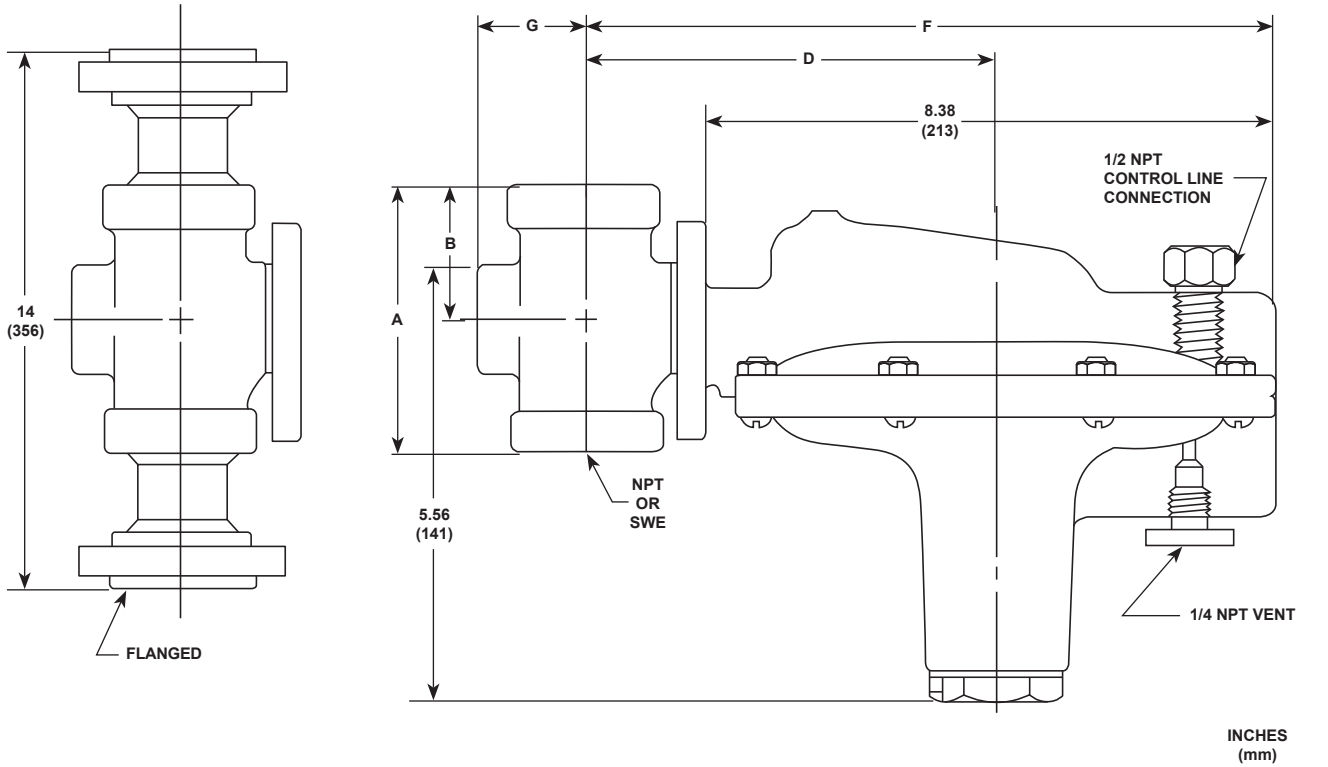
▭ - Shaded areas indicate inlet pressure is too high for orifice size.

*- continued -*

***Table 10.*** *Types Y690AH and Y690AHM Capacities (continued)*

| OUTLET PRESSURE RANGE, CONTROL SPRING PART NUMBER, AND COLOR | OFFSET FROM SETPOINT | OUTLET PRESSURE SETTING | INLET PRESSURE, PSIG (bar) | NPS 1 (DN 25) BODY SIZE<br>Capacities in SCFH (Nm³/h) of Nitrogen<br>Orifice Size, Inches (mm) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1/8 (3,2) | 1/4 (6,4) | 3/8 (9,5) | 1/2 (13) | 9/16 (14) |
| 1.2 to 2.5 psig (83 mbar to 0,17 bar)<br>1B537127022 Light green | 0.2 psig (14 mbar) | 1.2 psig (83 mbar) | 2 (0,14) | 92 (2,5) | 183 (4,9) | 366 (9,8) | 489 (13,1) | 519 (13,9) |
| | | | 6 (0,41) | 143 (3,8) | 356 (9,5) | 865 (23,2) | 692 (18,6) | 855 (22,9) |
| | | | 10 (0,69) | 153 (4,1) | 509 (13,6) | 1110 (29,8) | 1384 (37,1) | |
| | | | 30 (2,1) | 499 (13,4) | 1262 (33,8) | 3186 (85,4) | | |
| | | | 60 (4,1) | 794 (21,3) | 2840 (76,1) | 6067 (163) | | |
| | | | 150 (10,3) | 1924 (51,6) | 3054 (81,9) | | | |
| | | 2.5 psig (0,17 bar) | 6 (0,41) | 112 (3,0) | 214 (5,7) | 519 (13,9) | 529 (14,2) | 540 (14,5) |
| | | | 10 (0,69) | 143 (3,8) | 387 (10,4) | 611 (16,4) | 682 (18,3) | |
| | | | 30 (2,1) | 448 (12,0) | 814 (21,8) | 1812 (48,6) | | |
| | | | 60 (4,1) | 672 (18,0) | 1985 (53,2) | 5813 (156) | | |
| | | | 150 (10,3) | 1731 (46,4) | 2749 (73,7) | | | |
| 2.5 to 4.5 psig (0,17 to 0,31 bar)<br>1B537227022 Light blue | 0.3 psig (21 mbar) | 2.5 psig (0,17 bar) | 4 (0,28) | 112 (3,0) | 153 (4,1) | 326 (8,7) | 336 (9,0) | 377 (10,1) |
| | | | 8 (0,55) | 143 (3,8) | 285 (7,6) | 560 (15,0) | 580 (15,5) | 713 (19,1) |
| | | | 12 (0,83) | 153 (4,1) | 387 (10,4) | 733 (19,6) | 753 (20,2) | |
| | | | 30 (2,1) | 336 (9,0) | 713 (19,1) | 1446 (38,8) | | |
| | | | 60 (4,1) | 519 (13,9) | 1374 (36,8) | 3217 (86,2) | | |
| | | | 150 (10,3) | 1588 (42,6) | 5253 (141) | | | |
| | | 4.5 psig (0,31 bar) | 8 (0,55) | 92 (2,5) | 193 (5,2) | 387 (10,4) | 407 (10,9) | 428 (11,5) |
| | | | 12 (0,83) | 122 (3,3) | 255 (6,8) | 478 (12,8) | 672 (18,0) | |
| | | | 30 (2,1) | 305 (8,2) | 601 (16,1) | 1069 (28,7) | | |
| | | | 60 (4,1) | 499 (13,4) | 967 (25,9) | 2443 (65,5) | | |
| | | | 150 (10,3) | 1099 (29,5) | 3940 (106) | | | |
| 4.5 to 7 psig (0,31 to 0,48 bar)<br>1B537327052 Black | 0.7 psig (48 mbar) | 4.5 psig (0,31 bar) | 9 (0,62) | 163 (4,4) | 336 (9,0) | 662 (17,7) | 764 (20,5) | 825 (22,1) |
| | | | 12 (0,83) | 183 (4,9) | 438 (11,7) | 794 (21,4) | 1018 (27,3) | |
| | | | 30 (2,1) | 407 (10,9) | 865 (23,2) | 1639 (43,9) | | |
| | | | 60 (4,1) | 692 (18,6) | 1619 (43,4) | 2881 (77,2) | | |
| | | | 150 (10,3) | 1629 (43,7) | 4734 (127) | | | |
| | | 7 psig (0,48 bar) | 9 (0,62) | 122 (3,3) | 214 (5,7) | 468 (12,5) | 489 (13,1) | 519 (13,9) |
| | | | 12 (0,83) | 163 (4,4) | 295 (7,9) | 611 (16,4) | 702 (18,8) | |
| | | | 30 (2,1) | 295 (7,9) | 713 (19,1) | 1303 (34,9) | | |
| | | | 60 (4,1) | 631 (16,9) | 1354 (36,3) | 2179 (58,4) | | |
| | | | 150 (10,3) | 1588 (42,6) | 3268 (87,6) | | | |

▭ - Shaded areas indicate inlet pressure is too high for orifice size.




| BODY SIZE, NPS (DN) | A | | B | | D | | F | | G | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Ductile Iron | Stainless Steel | Ductile Iron | Stainless Steel | Ductile Iron | Stainless Steel | Ductile Iron | Stainless Steel | Ductile Iron | Stainless Steel |
| 3/4, 1 (20, 25) | 4.0 (102) | 4.12 (105) | 2.12 (54) | 2.25 (57) | 6.19 (157) | 6.19 (157) | 10.12 (257) | 10.12 (257) | 1.53 (39) | 1.53 (39) |

***Figure 5.*** *Dimensions*

## Ordering Information

When ordering, specify:

### Application

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

### Construction

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

## Ordering Guide

**Type** (Select One)
- ☐ Y690A (Internal registration)***
- ☐ Y690AH (High-pressure with Internal registration)***
- ☐ Y690AM (External registration)***
- ☐ Y690AHM (High-pressure with External registration)***

**Body Size** (Select One)
- ☐ NPS 3/4 (DN 20)***
- ☐ NPS 1 (DN 25)***

**Body Material and End Connection Style** (Select One)

**Ductile iron Body**
- ☐ NPT***

**CF8M Stainless steel**
- ☐ NPT***
- ☐ CL150 RF**
- ☐ CL300 RF**
- ☐ PN 16/25/40**

**Spring Case Material** (Select One)
- ☐ Ductile iron***
- ☐ CF8M Stainless steel***

**Diaphragm Case Material** (Select One)
- ☐ Ductile iron***
- ☐ CF8M Stainless steel***

**Trim Material** (Select One)
- ☐ 303 Stainless steel***
- ☐ 316 Stainless steel**

**Diaphragm Material** (Select One)
- ☐ Nitrile (NBR) **(standard)***
- ☐ Fluorocarbon (FKM)**
- ☐ Nitrile (NBR) with PTFE Protector**

**Disk Material** (Select One)
- ☐ Nitrile (NBR) **(standard)***
- ☐ Fluorocarbon (FKM)***
- ☐ Ethylenepropylene (EPDM)**
- ☐ PTFE**
- ☐ Perfluoroelastomer (FFKM)*

**Orifice Size** (Select One)
- ☐ 1/8-inch (3,2 mm)***
- ☐ 1/4-inch (6,4 mm)***
- ☐ 3/8-inch (9,5 mm)***
- ☐ 1/2-inch (13 mm)***
- ☐ 9/16-inch (14 mm)***

**Outlet (Control) Pressure Range** (Select One)

**Types Y690A and Y690AM**
- ☐ 1 to 2.5-inches w.c. (2 to 6 mbar) Orange***
- ☐ 2.5 to 7-inches w.c. (6 to 17 mbar) Red***

**Types Y690AH and Y690AHM**
- ☐ 5 to 10-inches w.c. (12 to 25 mbar) Red***
- ☐ 7 to 16-inches w.c. (17 to 40 mbar) Unpainted***
- ☐ 15-inches w.c. to 1.2 psig (37 to 83 mbar) Yellow***
- ☐ 1.2 to 2.5 psig (83 mbar to 0,17 bar) Light Green***
- ☐ 2.5 to 4.5 psig (0,17 to 0,31 bar) Light Blue***
- ☐ 4.5 to 7 psig (0,31 to 0,48 bar) Black***

**Replacement Parts Kit** (Optional)
- ☐ Yes, send one replacement parts kit to match this order.

To order this product, complete this page or complete the Specification Worksheet and forward to your local Sales Office.

If the construction you need is not offered on this page, contact your local Sales Office.

To locate your local Sales Office log on to: www.fisherregulators.com

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

**Tank Blanketing Specification Worksheet**

**Application Specifications:**

Tank Capacity _____

Pump In Rate _____

Pump Out Rate _____

Blanketing Gas (Type and Specific Gravity) _____

Conservation Vent Setpoint _____

**Pressure Requirements:**

Maximum Inlet Pressure ($P_{1max}$) _____

Minimum Inlet Pressure ($P_{1min}$) _____

Control Pressure Setting ($P_2$) _____

Maximum Flow ($Q_{max}$) _____

**Accuracy Requirements:**

☐ 0.25-inch w.c. (0,6 mbar) ☐ 0.5-inch w.c. (1 mbar)

☐ 1-inch w.c. (2 mbar) ☐ 2-inches w.c. (5 mbar)

☐ Others _____

**Other Specifications:**

Is a vapor recovery regulator required? ☐ Yes ☐ No

Special Material Requirements: ☐ Ductile Iron ☐ Steel

☐ Stainless steel ☐ Hastelloy® C ☐ Others _____

Other Requirements: _____

_____

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