



## Pressure Regulators for Oil & Natural Gas

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**ControlAir pressure regulators** are durable, high performing instruments that are designed to provide reliable control of pressure in various stages of a flow system. From first cut, high pressure regulation, to low pressure regulation and air filtration applications, ControlAir provides high quality instruments to control the process. All of the regulators in this catalog offer multiple spring ranges to enhance the control of their output pressure. NACE compliant options are also available for ControlAir pressure regulators.



TYPE 3500/3600  
HIGH PRESSURE  
REGULATOR



TYPE 330/335 AIR  
FILTER REGULATOR



TYPE 1230  
PRESSURE  
REGULATOR



TYPE 1227  
PRESSURE  
REGULATOR

# Pressure Regulators

## Model Selection

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| Type 3500/3600 High Pressure Regulator | 3    | Additional Product for the Oil & Gas Industry.....         | 25-28 |
| Type 1227 Pressure Regulator           | 6    | Type 350/360/370 Stainless Steel Regulators & Filter       |       |
| Type 1230 Pressure Regulator           | 14   | Type 380/390 Stainless Steel Filter Regulator & Regulator  |       |
| Type 330/335 Filter Regulator          | 22   | Type 950XP Explosion-Proof I/P Transducer                  |       |
|                                        |      | Type 6000 High Flow Capacity Volume Booster                |       |
|                                        |      | Type 6100 High Flow Capacity Volume Booster                |       |
|                                        |      | Type 6500/6600 Large Flow Capacity Volume Booster          |       |
|                                        |      | Type 2000 Pneumatic and Electro-Pneumatic Valve Positioner |       |



| Model                | Type 3500/3600<br>High Pressure<br>Regulator                                                                                                                                                          | Type 1227<br>Pressure<br>Regulator                                                                                                                                                          | Type 1230<br>Pressure<br>Regulator                                                                                                                                                                                   | Type 330/335<br>Filter Regulator                                                                                                                                                                                                |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Media      | Air<br>Inert Gas<br>Natural Gas                                                                                                                                                                       |                                                                                                                                                                                             |                                                                                                                                                                                                                      |                                                                                                                                                                                                                                 |
| Body Sizes           | 1/4" NPT                                                                                                                                                                                              | 1" and 2" NPT                                                                                                                                                                               | 1" and 2" NPT                                                                                                                                                                                                        | 1/4" and 1/2" NPT                                                                                                                                                                                                               |
| Max Supply Pressure* | 6000 psi                                                                                                                                                                                              | 2000 psi*                                                                                                                                                                                   | 1500 psi*                                                                                                                                                                                                            | 250 psi                                                                                                                                                                                                                         |
|                      | 413 bar                                                                                                                                                                                               | 138 bar*                                                                                                                                                                                    | 103 bar*                                                                                                                                                                                                             | 17 bar                                                                                                                                                                                                                          |
| Output Ranges        | 0-30 psi<br>0-60 psi<br>0-125 psi<br>0-150 psi<br>0-225 psi                                                                                                                                           | 5-20 psi<br>15-40 psi<br>35-80 psi<br>70-150 psi                                                                                                                                            | 27-50 psi<br>46-95 psi<br>90-150 psi<br>150-200 psi<br>200-275 psi<br>275-500 psi                                                                                                                                    | 0-30 psi<br>0-60 psi<br>0-120 psi                                                                                                                                                                                               |
|                      | 0-2 bar<br>0-4 bar<br>0-8 bar<br>0-10 bar<br>0-15 bar                                                                                                                                                 | 0.4-1.4 bar<br>1.0-2.8 bar<br>2.4-5.5 bar<br>4.8-10.3 bar                                                                                                                                   | 1.9-3.5 bar<br>3.2-6.6 bar<br>6.2-10.3 bar<br>10.3-13.8 bar<br>13.8-19 bar<br>19-34.5 bar                                                                                                                            | 0-2 bar<br>0-4 bar<br>0-8 bar                                                                                                                                                                                                   |
| Description          | Designed to be used in applications requiring high-pressure reducing regulators for various gases. Type 3600 is constructed of 316 Stainless Steel and meets NACE MR-0175 requirements for sour gases | Designed to provide pressure control for a wide range of processes - Includes additional options such as selecting elastomer materials and orifice size. Available in NACE MR-0175 version. | Designed to provide pressure control across a vast array of industries and applications - Similar to the Type 1227, includes additional product options not available for custom. Available in NACE MR-0175 version. | Designed to provide clean, accurate air pressure to instruments, valves, and other automatic control equipment. Combines pressure regulation with filtration in an integral compact package. Available in NACE MR-0175 version. |
| Catalog Pages        | 4-6                                                                                                                                                                                                   | 7-18                                                                                                                                                                                        | 19-29                                                                                                                                                                                                                | 30-34                                                                                                                                                                                                                           |

\* Max Supply Pressure will vary depending on selected options. The ratings listed in the table are the highest possible; consult the specification sheet for details.

# Pressure Regulators

## Type 3500/3600 High Pressure Regulator

**The Type 3500/3600 High Pressure Regulator** is designed to provide pressure control in numerous processes that involve a high-pressure drop. It is an extremely durable regulator capable of handling a max inlet pressure of 6000 (314 bar). The spring configuration of the Type 3500/3600 can be configured to provide five different outlet pressures ranging from 0-30 psi (0-2.1 bar) to 0-255 psi (0-15.5 bar).



### Features

- 3 outlet ports allow for regulated pressure to go to 3 separate pneumatic devices
- Adjustment screw with tamper resistant cap standard, or optional T-handle adjustment
- Seat block contains four seats - if sealing poorly, simply rotate the block for a new elastomer seat
- Warranty - 18 months

### Product Specifications

|                                    |                                                                                                                                               |                           |                                   |                 |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------|-----------------|
| Inlet Size                         | 1/4" NPT                                                                                                                                      | Temperature Limits        |                                   |                 |
| Outlet Number and Size             | 3 outlets, 1/4" NPT                                                                                                                           | Type 3500                 | -70°F to 225°F (-57°C to 107°C)   |                 |
| Spring Case Vent                   | Brass 4 holes, (5/32" each)<br>SS 1/4" NPTF                                                                                                   | Type 3600                 | -40°F to 225°F (-40°C to 107°C)   |                 |
| Output Ranges                      | 0 to 30 psi (0 to 2 bar)<br>0 to 60 psi (0 to 4 bar)<br>0 to 125 psi (0 to 8 bar)<br>0 to 150 psi (0 to 10 bar)<br>0 to 225 psi (0 to 15 bar) | Weight                    | 3.25 lbs. (1.47 kg)               |                 |
| Max Supply Pressure                | 6000 psi (314 bar)                                                                                                                            | Operating Media           | Air, Inert Gas<br>and Natural Gas |                 |
| Orifice and Flow Coefficient Value | 5/64", Cv = 0.13*                                                                                                                             | Materials of Construction | Type 3500                         | Type 3600       |
|                                    |                                                                                                                                               | Body, Bonnet, Bottom Plug | Brass                             | 316SS           |
|                                    |                                                                                                                                               | Tamper Resistant Cover    | Brass                             | 316SS           |
|                                    |                                                                                                                                               | Diaphragm                 | 302SS                             | Monel 400       |
|                                    |                                                                                                                                               | Seals                     | Nitrile                           | CTFE            |
|                                    |                                                                                                                                               | Valve Spring              | 17-7PH SS                         | MP35N           |
|                                    |                                                                                                                                               | Range Spring              | Steel                             | Stainless Steel |
|                                    |                                                                                                                                               | Seats                     | Nylon                             | PTFE            |

*Design and specifications are subject to change without notice. For latest revision, see ControlAir.com.*

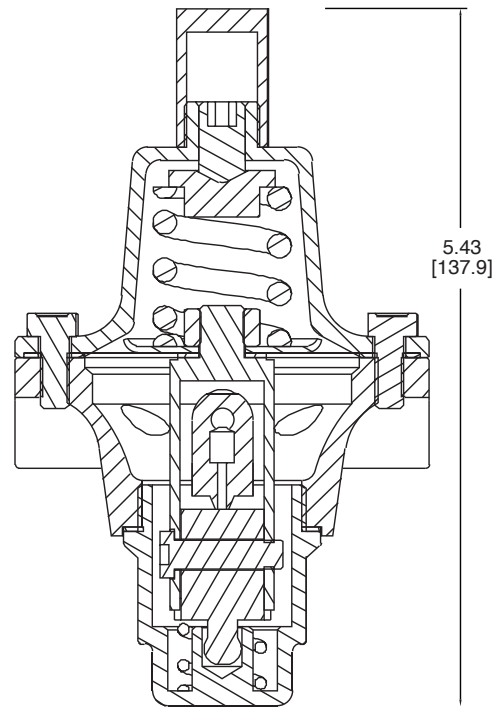
\* Cv value is a theoretical value obtained from calculations using ISA-75 01.01-2007 standard. Please contact the factory for more information.

# Pressure Regulators

## Type 3500/3600 High Pressure Regulator

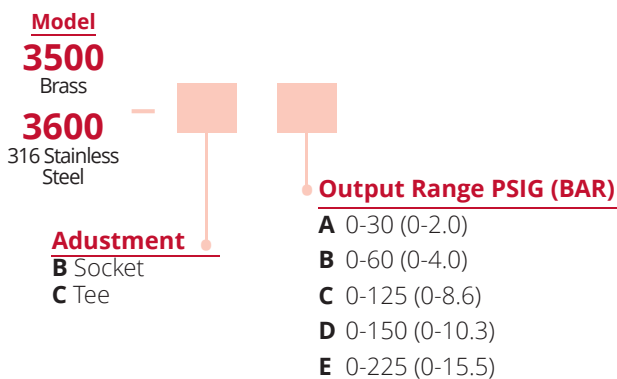
### Principles of Operation

Directly operated, the Type 3500/3600 registers downstream pressure through the body to the underside of the diaphragm. The disk is forced towards the orifice when downstream pressure is at or above the set pressure of the regulator, and less media flows through the regulator. When the downstream pressure decreases (as demand for the media increases), the regulator spring is able to extend, moving the disk assembly away from the orifice. Media is then allowed to flow through the regulator at a higher rate, until the downstream pressure once again reaches the set point. After the set point is reached, the downstream pressure pushes the disk assembly back towards the orifice, thus reducing flow through the regulator once more.



### How to Order

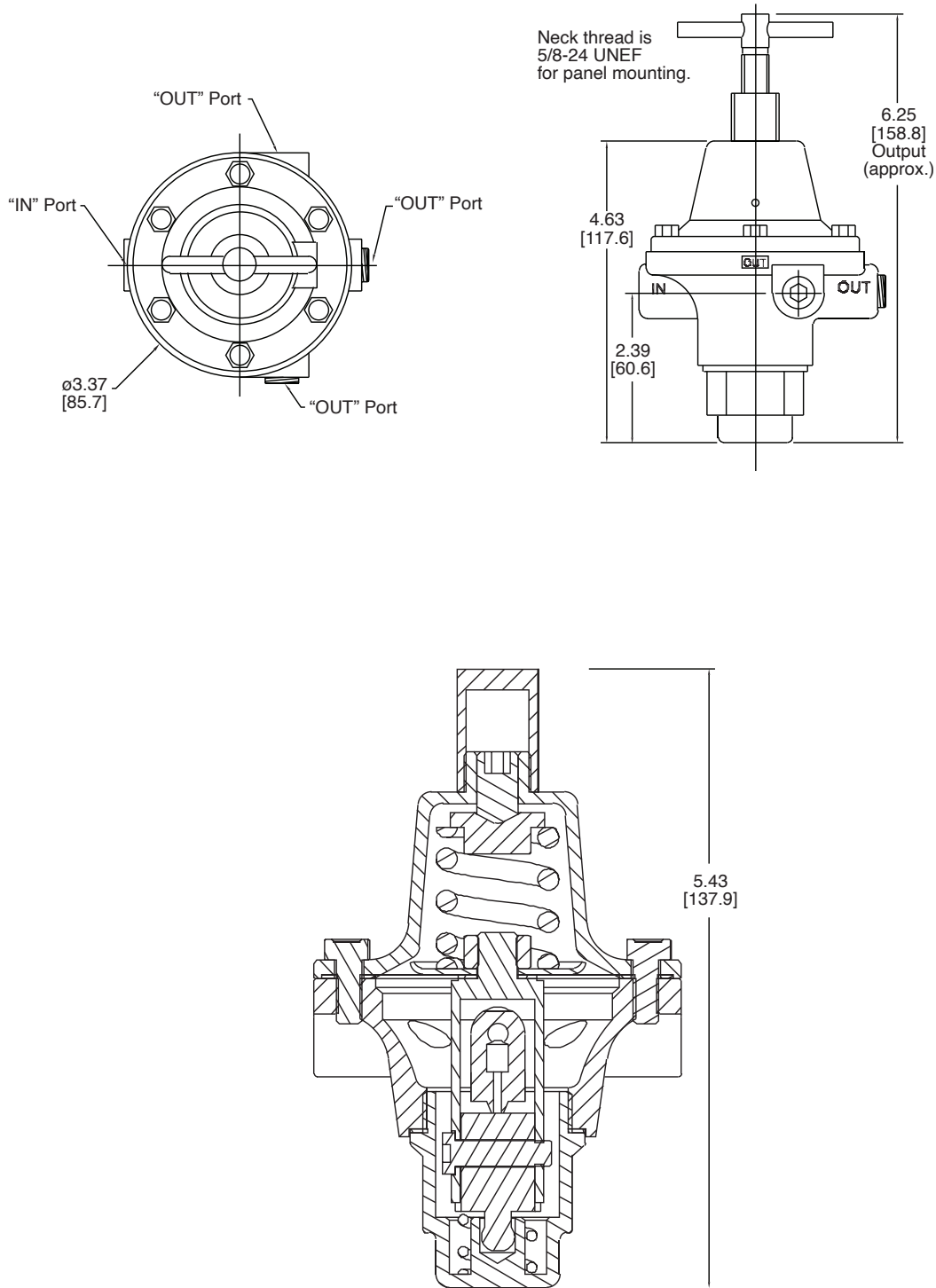
Below is the ControlAir quick select model number tree that provides you with all the options to configure and order a product for your application. You must select a designator for each component.



# Pressure Regulators

## Type 3500/3600 High Pressure Regulator

Dimensions shown are for reference only. They may be changed without notice. Contact the factory for certified dimension drawings. Linear = mm/in.



# Pressure Regulators

## Type 1227 Pressure Regulator

The **Type 1227 Pressure Regulator** is a pressure-reducing, direct-operated regulator suitable for use with compressed air, natural gas, or an assortment of other inert gases. The Type 1227 is available with output ranges that span from 5 psi up to 150 psi and can be ordered with a variety of orifice sizes and materials providing application flexibility.

### Features

- Wide range of orifice sizes for different flow capacities.
- 1" or 2" body size
- Guarded against unwanted set point adjustment with tamper-proof cap
- Monitoring Option (M) provides downstream feedback control line
- Trim can be replaced without disconnecting regulator from the system
- Can be re-arranged into multiple orientations for difficult installations with limited maneuverability
- NACE MR0175 configurations available
- Warranty – 18 months
- Assembled and tested in the USA



### Product Specifications

|                                   |                                                                                                                                                                    |                            |                                                                               |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------|
| Body Sizes                        | 1" or 2" NPT                                                                                                                                                       | Temperature Limits:        |                                                                               |
| Output Ranges                     | 5 to 20 psi (0.4 to 1.4 bar)<br>15 to 40 psi (1.0 to 2.8 bar)<br>10 to 95 psi (0.7 to 6.4 bar)<br>35 to 80 psi (2.4 to 5.5 bar)<br>70 to 150 psi (4.8 to 10.3 bar) | Elastomer Material         |                                                                               |
| Orifice Sizes                     | 3/32", 1/8", 3/16", 1/4", 3/8", 1/2"                                                                                                                               | Fluorocarbon (FKM)         | 0°F to 180°F (-18°C to 82°C)                                                  |
| Maximum Inlet Pressure            | See Table 1                                                                                                                                                        | Nitrile (NBR) & Nylon (PA) | -40°F to 180°F (-40°C to 82°C)                                                |
| Body Inlet Pressure Rating        | LCC Steel: 2000 psi (138 bar)                                                                                                                                      | Body Material              |                                                                               |
| Regulator Inlet Pressure Rating   | Fluorocarbon (FKM): 300 psi (21 bar)<br>Nitrile (NBR): 1000 psi (69 bar)<br>Nylon (PA): 2000 psi (138 bar)                                                         | LCC Steel                  | -40°F to 180°F (-40°C to 82°C)                                                |
| Diaphragm Casing Pressure Ratings | See Table 2                                                                                                                                                        | Weights                    | 1" NPT / DN 25 Body: 6.5 lbs. (3 kg)<br>2" NPT / DN 50 Body: 10 lbs. (4.5 kg) |
| Maximum Flow Coefficients (Cv)    | See Table 3                                                                                                                                                        | Operating Media            | Compressed Air,<br>Natural Gas, Other Inert Gases                             |
| Flow Capacities                   | See Table 4                                                                                                                                                        | Materials of Construction: | <u>Standard (S)</u> <u>NACE (N)</u>                                           |
|                                   |                                                                                                                                                                    | Body                       | LLC Steel      LLC Steel                                                      |
|                                   |                                                                                                                                                                    | Bonnet,                    |                                                                               |
|                                   |                                                                                                                                                                    | Diaphragm Case             | Ductile Iron      LCC Steel                                                   |
|                                   |                                                                                                                                                                    | Diaphragm                  | Nitrile      Fluorocarbon                                                     |
|                                   |                                                                                                                                                                    | Valve Disk                 | Nitrile      Fluorocarbon<br>(Nylon option)                                   |
|                                   |                                                                                                                                                                    | Trim                       | Aluminum      Stainless<br>(Stainless option)      Steel                      |

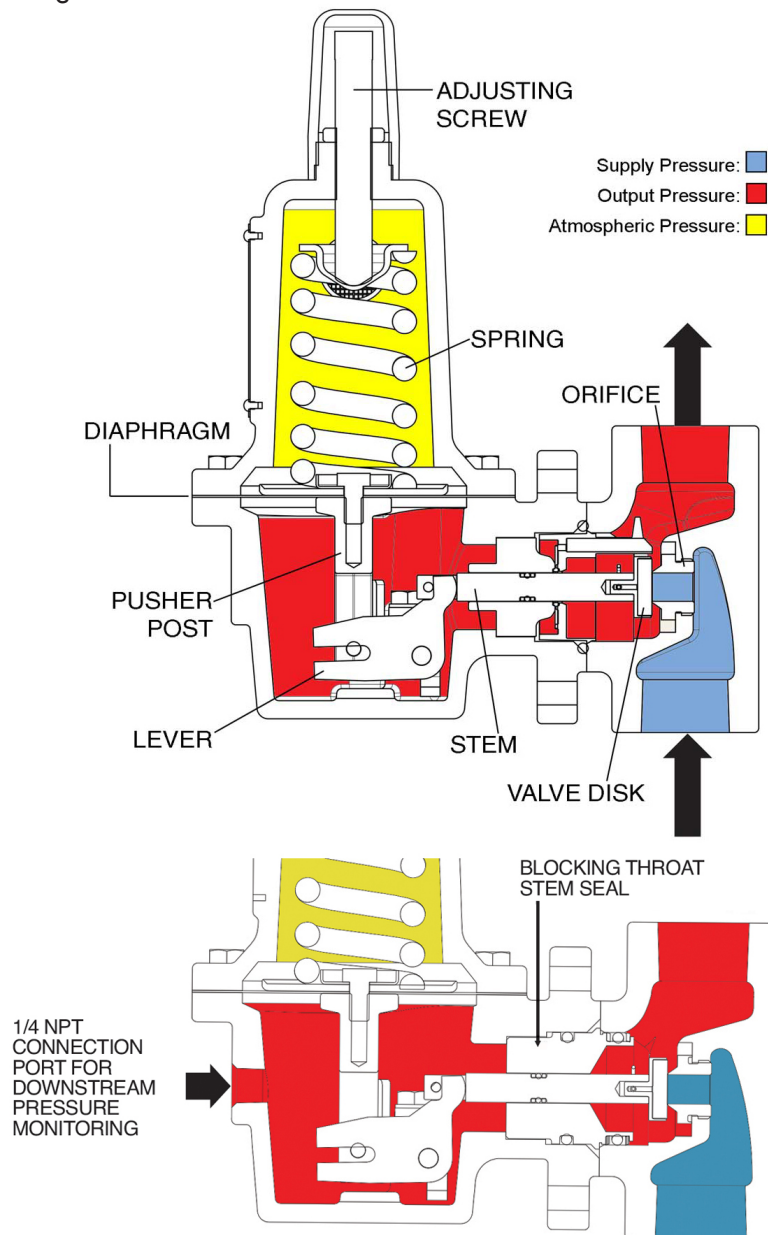
*Design and specifications are subject to change without notice. For latest revision, see ControlAir.com.*



### Principles of Operation

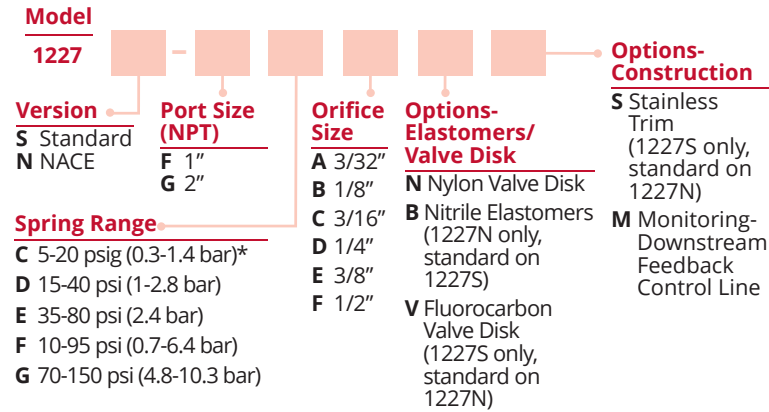
The Type 1227 utilizes a force counter-balance design consisting of a spring, diaphragm, and lever mechanism. The spring compression dictates the set point of the regulator while the diaphragm senses the downstream pressure. As downstream demand decreases, the downstream pressure increases until it reaches or exceeds the set point of the compressed spring; this causes the valve stem, lever, and pusher post assembly to move together, positioning the valve disk closer to the orifice and thereby reducing the flow of gas. On the other hand, when the downstream demand increases, the downstream pressure will decrease. The reduced downstream pressure allows the spring to push down against the pusher post and lever assembly, pulling the valve disk farther away from the orifice and increasing the flow of gas through the regulator.

**Note:** The ControlAir Type 1227 Pressure Regulator does not include internal relief. Therefore, if the inlet pressure is able to exceed the diaphragm casing pressure rating, the user must provide a pressure-relieving device.



### How to Order

Below is the ControlAir quick select model number tree that provides you with all the options to configure and order a product for your application. You must select a designator for each component.



### Materials of Construction

|                           | Standard (S)                   | NACE (N)        |
|---------------------------|--------------------------------|-----------------|
| Body                      | LCC Steel                      | LCC Steel       |
| Bonnet,<br>Diaphragm Case | Ductile Iron                   | LCC Steel       |
| Diaphragm                 | Nitrile                        | Fluorocarbon    |
| Valve Disk                | Nitrile<br>(Nylon option)      | Fluorocarbon    |
| Trim                      | Aluminum<br>(Stainless option) | Stainless Steel |



**Table 1: Maximum Inlet Pressure by Output Range, Orifice Size, and Disk Material**

| Output Range**               | Orifice Size |     | Maximum Inlet Pressure* |      |                    |      |                 |      |
|------------------------------|--------------|-----|-------------------------|------|--------------------|------|-----------------|------|
|                              |              |     | Fluorocarbon (FKM) Disk |      | Nitrile (NBR) Disk |      | Nylon (PA) Disk |      |
|                              | in.          | mm  | psi                     | bar  | psi                | bar  | psi             | bar  |
| 5-20 psi<br>(0.4-1.4 bar)    | 3/32         | 2.4 | 300                     | 20.7 | 1000               | 69   | 2000            | 138  |
|                              | 1/8          | 3.2 | 300                     | 20.7 | 1000               | 69   | 1000            | 69   |
|                              | 3/16         | 4.8 | 300                     | 20.7 | 750                | 51.7 | 750             | 15.7 |
|                              | 1/4          | 6.4 | 300                     | 20.7 | 500                | 34.5 | 500             | 34.5 |
|                              | 3/8          | 9.5 | 300                     | 20.7 | 300                | 20.7 | 300             | 20.7 |
|                              | 1/2          | 13  | 300                     | 20.7 | 250                | 17.2 | 250             | 17.2 |
| 15-40 psi<br>(1.0-2.8 bar)   | 3/32         | 2.4 | 300                     | 20.7 | 1000               | 69   | 2000            | 138  |
|                              | 1/8          | 3.2 | 300                     | 20.7 | 1000               | 69   | 1500            | 103  |
|                              | 3/16         | 4.8 | 300                     | 20.7 | 1000               | 69   | 1000            | 69   |
|                              | 1/4          | 6.4 | 300                     | 20.7 | 750                | 51.7 | 750             | 51.7 |
|                              | 3/8          | 9.5 | 300                     | 20.7 | 500                | 34.5 | 500             | 34.5 |
|                              | 1/2          | 13  | 300                     | 20.7 | 300                | 20.7 | 300             | 20.7 |
| 35-80 psi<br>(2.4-5.5 bar)   | 3/32         | 2.4 | 300                     | 20.7 | 1000               | 69   | 2000            | 138  |
|                              | 1/8          | 3.2 | 300                     | 20.7 | 1000               | 69   | 2000            | 138  |
|                              | 3/16         | 4.8 | 300                     | 20.7 | 1000               | 69   | 1750            | 121  |
|                              | 1/4          | 6.4 | 300                     | 20.7 | 1000               | 69   | 1500            | 103  |
|                              | 3/8          | 9.5 | 300                     | 20.7 | 1000               | 69   | 1000            | 69   |
|                              | 1/2          | 13  | 300                     | 20.7 | 750                | 51.7 | 750             | 51.7 |
| 70-150 psi<br>(4.8-10.3 bar) | 3/32         | 2.4 | 300                     | 20.7 | 1000               | 69   | 2000            | 138  |
|                              | 1/8          | 3.2 | 300                     | 20.7 | 1000               | 69   | 2000            | 138  |
|                              | 3/16         | 4.8 | 300                     | 20.7 | 1000               | 69   | 2000            | 138  |
|                              | 1/4          | 6.4 | 300                     | 20.7 | 1000               | 69   | 1750            | 121  |
|                              | 3/8          | 9.5 | 300                     | 20.7 | 1000               | 69   | 1250            | 86.2 |
|                              | 1/2          | 13  | 300                     | 20.7 | 750                | 51.7 | 750             | 51.7 |

\* If inlet pressure is greater than 1000 psi, always compare against the Body Inlet Pressure Rating and Valve Disk Inlet Pressure Rating in the Product Specifications Table (Page 7).

\*\* If the set point is 10 psi (0.69 bar) or less, the inlet pressure should remain below 100 psi (6.9 bar) to still allow for set point adjustment.

**Table 2: Diaphragm and Spring Casing Pressure Ratings**

| Pressure Limit                                                                                                                                                                                         | Body Material | Maximum Pressure |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------|------|
|                                                                                                                                                                                                        |               | psi              | bar  |
| <b>Overpressure Limit</b><br>Maximum pressure above set point that may be applied without causing internal damage.                                                                                     | Ductile Iron  | 60               | 4.1  |
|                                                                                                                                                                                                        | LCC Steel     |                  |      |
| <b>Leakage Pressure Limit</b><br>Maximum pressure that may be applied to the diaphragm and spring casings without causing leak to atmosphere (internal damage may still occur).                        | Ductile Iron  | 250              | 17.2 |
|                                                                                                                                                                                                        | LCC Steel     |                  |      |
| <b>Burst Pressure Limit</b><br>Maximum pressure that may be applied to the diaphragm and spring casings without causing the casings to burst (leak to atmosphere and internal damage may still occur). | Ductile Iron  | 465              | 32.1 |
|                                                                                                                                                                                                        | LCC Steel     | 1500             | 103  |

**Table 3: Cv Values**

| Orifice Size |     | Cv Value |        |
|--------------|-----|----------|--------|
| in.          | mm  | 1" NPT   | 2" NPT |
| 3/32         | 2.4 | 0.24     | 0.23   |
| 1/8          | 3.2 | 0.43     | 0.42   |
| 3/16         | 4.8 | 0.93     | 1.02   |
| 1/4          | 6.4 | 1.71     | 1.66   |
| 3/8          | 9.5 | 3.42     | 3.39   |
| 1/2          | 13  | 5.29     | 5.01   |

### Flow Capacity Information

Calculated flow capacities for the ControlAir Type 1227 Pressure Regulator are listed in Table 4 (SCFH) and Table 5 (Nm<sup>3</sup>/h). The calculations were obtained with the assumption that the upstream and downstream piping are both the same size as the body of the regulator. Additionally, these flow capacities were calculated using natural gas as the process media (0.6 SG relative to air).

To determine the equivalent flow capacities for gases other than natural gas.

**Step 1:** Multiply the SCFH flow capacity from Table 4 by 0.775.

**Step 2:** Divide by the square root of the alternative gas' specific gravity.

**Step 3:** The resulting value is the equivalent flow capacity for the alternative gas.

**Step 4:** To convert SCFH flow capacities to units of Nm<sup>3</sup>/h, multiply the SCFH flow capacity by 0.02832.

**Table 4: Flow Capacities in SCFH**

| Output Range            | Set Point (psi) | Inlet Pressure (psi) | Orifice Size (in.) |       |       |       |       |       |                  |       |       |       |       |       |
|-------------------------|-----------------|----------------------|--------------------|-------|-------|-------|-------|-------|------------------|-------|-------|-------|-------|-------|
|                         |                 |                      | 1" NPT Body Size   |       |       |       |       |       | 2" NPT Body Size |       |       |       |       |       |
|                         |                 |                      | 3/32               | 1/8   | 3/16  | 1/4   | 3/8   | 1/2   | 3/32             | 1/8   | 3/16  | 1/4   | 3/8   | 1/2   |
| 5-20 psi (0.4-1.4 bar)  | 5               | 10                   | 170                | 330   | 710   | 1100  | 1900  | 2500  | 170              | 330   | 710   | 1080  | 1700  | 2400  |
|                         |                 | 20                   | 290                | 500   | 1160  | 2060  | 3400  | 4450  | 290              | 500   | 1160  | 1900  | 2650  | 3900  |
|                         |                 | 60                   | 640                | 1170  | 2600  | 4710  | 8140  | 13700 | 640              | 1170  | 2600  | 4750  | 7250  | 17800 |
|                         |                 | 100                  | 990                | 1800  | 4070  | 7310  | 12500 | 16000 | 990              | 1790  | 4070  | 7310  | 16200 | 28700 |
|                         | 10              | 15                   | 210                | 375   | 880   | 1590  | 2480  | 3300  | 210              | 375   | 880   | 1220  | 1860  | 2670  |
|                         |                 | 30                   | 380                | 670   | 1560  | 2800  | 4720  | 6840  | 380              | 670   | 1560  | 2760  | 3640  | 6460  |
|                         |                 | 75                   | 770                | 1410  | 3150  | 5710  | 9790  | 14500 | 770              | 1410  | 3150  | 5700  | 8060  | 22400 |
|                         |                 | 150                  | 1420               | 2580  | 5850  | 10500 | 17000 | 18000 | 1420             | 2580  | 5850  | 10500 | 23300 | 25900 |
|                         |                 | 300                  | 2700               | 4910  | 11200 | 19800 | 20000 |       | 2700             | 4910  | 11200 | 10300 | 12800 |       |
|                         |                 | 750                  | 5400               | 12000 | 18000 |       |       |       | 6600             | 12000 | 27200 |       |       |       |
|                         |                 | 1250                 | 6300               |       |       |       |       |       | 11000            |       |       |       |       |       |
|                         |                 | 1750                 | 6800               |       |       |       |       |       | 15000            |       |       |       |       |       |
|                         |                 | 2000                 | 7600               |       |       |       |       |       | 6300             |       |       |       |       |       |
|                         | 20              | 30                   | 350                | 620   | 1450  | 2580  | 4360  | 6290  | 350              | 620   | 1450  | 2350  | 4300  | 6110  |
|                         |                 | 60                   | 640                | 1170  | 2640  | 4750  | 9690  | 14500 | 640              | 1170  | 2640  | 4750  | 8400  | 15700 |
|                         |                 | 150                  | 1420               | 2580  | 5850  | 10500 | 17700 | 34200 | 1420             | 2580  | 5850  | 10500 | 23300 | 29000 |
|                         |                 | 300                  | 2700               | 4910  | 11200 | 20100 | 37000 |       | 2700             | 4910  | 11200 | 20100 | 19600 |       |
|                         |                 | 750                  | 6600               | 12000 | 23600 |       |       |       | 6600             | 12000 | 27200 |       |       |       |
|                         |                 | 1250                 | 10000              |       |       |       |       |       | 11000            |       |       |       |       |       |
|                         |                 | 1750                 | 12000              |       |       |       |       |       | 15000            |       |       |       |       |       |
|                         |                 | 2000                 | 14000              |       |       |       |       |       | 6300             |       |       |       |       |       |
| 15-40 psi (1.0-2.8 bar) | 40              | 60                   | 610                | 1090  | 2530  | 4510  | 9290  | 9420  | 610              | 1090  | 2530  | 4370  | 8680  | 13300 |
|                         |                 | 100                  | 990                | 1790  | 4070  | 7310  | 14700 | 21900 | 990              | 1800  | 4070  | 7310  | 16200 | 25400 |
|                         |                 | 200                  | 1850               | 3370  | 7630  | 13700 | 27100 | 46400 | 1850             | 3370  | 7630  | 13700 | 30400 | 53900 |
|                         |                 | 500                  | 4400               | 8090  | 18300 | 32900 | 63900 |       | 4400             | 8090  | 18300 | 32900 | 22000 |       |
|                         |                 | 1000                 | 8700               | 16000 | 36100 |       |       |       | 8700             | 16000 | 36100 |       |       |       |
|                         |                 | 1500                 | 13000              | 22000 |       |       |       |       | 13000            | 22000 |       |       |       |       |
|                         |                 | 2000                 | 17000              |       |       |       |       |       | 17000            |       |       |       |       |       |
|                         |                 |                      |                    |       |       |       |       |       |                  |       |       |       |       |       |

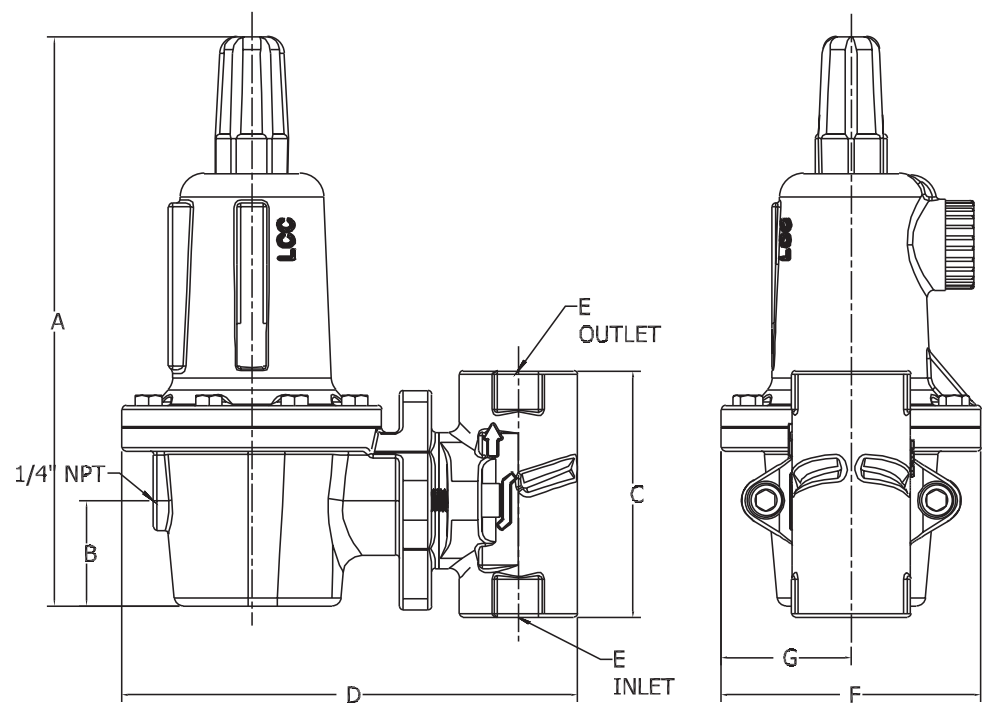
**Table 4: Flow Capacities in SCFH (cont.)**

| Output Range              | Set Point (psi) | Inlet Pressure (psi) | Orifice Size (in.) |       |       |        |        |        |                  |       |       |        |        |        |
|---------------------------|-----------------|----------------------|--------------------|-------|-------|--------|--------|--------|------------------|-------|-------|--------|--------|--------|
|                           |                 |                      | 1" NPT Body Size   |       |       |        |        |        | 2" NPT Body Size |       |       |        |        |        |
|                           |                 |                      | 3/32               | 1/8   | 3/16  | 1/4    | 3/8    | 1/2    | 3/32             | 1/8   | 3/16  | 1/4    | 3/8    | 1/2    |
| 35-80 psi (2.4-5.5 bar)   | 60              | 100                  | 970                | 1740  | 4010  | 7000   | 13000  | 19300  | 970              | 1740  | 4010  | 7000   | 15000  | 20400  |
|                           |                 | 200                  | 1850               | 3370  | 7630  | 13700  | 24000  | 42200  | 1850             | 3370  | 7630  | 13700  | 30400  | 53900  |
|                           |                 | 500                  | 4400               | 8090  | 18300 | 32900  | 64000  | 94300  | 4400             | 8090  | 18300 | 32900  | 73000  | 38800  |
|                           |                 | 1000                 | 8700               | 16000 | 36100 | 50300  | 67700  |        | 8700             | 16000 | 36100 | 43000  | 52000  |        |
|                           |                 | 1500                 | 13000              | 22000 | 54000 | 63000  |        |        | 13000            | 22000 | 54000 | 43000  |        |        |
|                           |                 | 2000                 | 17000              | 28000 |       |        |        |        | 17000            | 28000 |       |        |        |        |
|                           | 80              | 150                  | 1410               | 2580  | 5850  | 10500  | 21100  | 33600  | 1410             | 2580  | 5850  | 10500  | 23300  | 41300  |
|                           |                 | 300                  | 2700               | 4910  | 11200 | 20100  | 43300  | 75400  | 2700             | 4910  | 11200 | 20100  | 44600  | 79000  |
|                           |                 | 750                  | 6600               | 12000 | 27200 | 48900  | 105500 | 135000 | 6600             | 12000 | 27200 | 48900  | 87000  | 44000  |
|                           |                 | 1250                 | 11000              | 19000 | 45000 | 80000  |        |        | 11000            | 19000 | 45000 | 63000  |        |        |
|                           |                 | 1750                 | 15000              | 25000 | 63000 |        |        |        | 15000            | 25000 | 63000 |        |        |        |
|                           |                 | 2000                 | 28000              | 71000 |       |        |        |        |                  |       |       |        |        |        |
| 70-150 psi (4.8-10.3 bar) | 100             | 150                  | 1170               | 2510  | 5540  | 8710   | 16000  | 24000  | 1170             | 2510  | 5540  | 8600   | 16000  | 22000  |
|                           |                 | 300                  | 2700               | 4910  | 11200 | 19400  | 30100  | 53200  | 2700             | 4910  | 11200 | 20100  | 35000  | 65300  |
|                           |                 | 500                  | 4400               | 8090  | 18300 | 31800  | 66500  | 83900  | 4400             | 8090  | 18300 | 32900  | 73000  | 129000 |
|                           |                 | 1000                 | 8700               | 16000 | 36100 | 59700  | 100000 |        | 8700             | 16000 | 36100 | 64800  | 82000  |        |
|                           |                 | 1500                 | 13000              | 22000 | 54000 | 86000  |        |        | 13000            | 22000 | 54000 | 96000  |        |        |
|                           |                 | 2000                 | 17000              | 28000 | 71000 |        |        |        | 17000            | 28000 | 71000 |        |        |        |
|                           | 125             | 200                  | 1830               | 3320  | 7550  | 13400  | 28100  | 32800  | 1830             | 3320  | 7550  | 13700  | 24000  | 36000  |
|                           |                 | 500                  | 4400               | 8090  | 18300 | 32900  | 70800  | 109000 | 4400             | 8090  | 18300 | 32900  | 73000  | 129000 |
|                           |                 | 1000                 | 8700               | 16000 | 36100 | 64800  | 138000 | 160000 | 8700             | 16000 | 36100 | 64800  | 58000  |        |
|                           |                 | 1500                 | 13000              | 22000 | 54000 | 96000  |        |        | 13000            | 22000 | 54000 | 96000  |        |        |
|                           |                 | 2000                 | 17000              | 28000 | 71000 |        |        |        | 17000            | 28000 | 71000 |        |        |        |
|                           |                 |                      |                    |       |       |        |        |        |                  |       |       |        |        |        |
|                           | 150             | 300                  | 2700               | 4910  | 11200 | 17200  | 40100  | 55900  | 2700             | 4910  | 11200 | 20100  | 44600  | 64200  |
|                           |                 | 750                  | 6600               | 12000 | 27200 | 48900  | 104000 | 160000 | 6600             | 12000 | 27200 | 48900  | 108000 | 62000  |
|                           |                 | 1250                 | 11000              | 19000 | 45000 | 80000  | 150000 |        | 11000            | 19000 | 45000 | 80000  | 81000  |        |
|                           |                 | 1750                 | 15000              | 25000 | 63000 | 112000 |        |        | 15000            | 25000 | 63000 | 112000 |        |        |
|                           |                 | 2000                 | 17000              | 28000 | 71000 |        |        |        |                  |       |       |        |        |        |
|                           |                 |                      |                    |       |       |        |        |        |                  |       |       |        |        |        |

Note: To convert SCFH to Nm<sup>3</sup>/h, multiply the SCFH flow capacity by 0.02832

Dimensions

Dimensions shown are for reference only. They may be changed without notice. Contact the factory for certified dimension drawings. Linear = mm/in.



| PORT<br>SIZE<br>(NPT) | A            | B           | C            | D            | E      | F            | G           |
|-----------------------|--------------|-------------|--------------|--------------|--------|--------------|-------------|
| 1"                    | 9.41 [239.0] | 1.75 [44.4] | 4.07 [103.4] | 7.52 [191.1] | 1" NPT | 4.29 [109.0] | 2.15 [54.5] |
| 2"                    | 9.41 [239.0] | 1.75 [44.4] | 5.00 [127.0] | 8.57 [217.8] | 2" NPT | 4.29 [109.0] | 2.15 [54.5] |

in [mm]

# Pressure Regulators

## Type 1230 Pressure Regulator

The **Type 1230 Pressure Regulator** utilizes a similar design to the Type 1227 but provides a much broader offering of output pressure ranges and valve disk materials. Just like the Type 1227, the Type 1230 can be used with compressed air, natural gas, or an assortment of other inert gases.

The Type 1230 is available with output pressures that span from 50 psi up to 500 psi making it suitable for use across a vast range of industries and applications, especially those utilizing regulators in series for controlled pressure reduction across multiple stages.

### Features

- 1" or 2" body size
- Trim can be replaced without disconnecting regulator from the system
- Wide selection of output ranges allows for multiple-stage pressure cuts
- NACE MR0175 configurations available
- Can be re-arranged into multiple orientations for difficult installations with limited maneuverability
- Assembled and tested in the USA



### Product Specifications

|                                                                                   |                                                                                                                                                                                            |                                                                                   |                                                                                  |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <b>Inlet/Outlet Sizes</b>                                                         | 1" or 2" NPT<br>(DN 25 or 50)                                                                                                                                                              | <b>Temperature Limits:</b>                                                        |                                                                                  |
| <b>Vent Size</b>                                                                  | 1/4" NPT                                                                                                                                                                                   | <b>Elastomer Material</b>                                                         |                                                                                  |
| <b>Output Ranges</b>                                                              | 27-50 psi (1.9 to 3.5 bar)<br>46-95 psi (3.2 to 6.6 bar)<br>90-150 psi (6.2 to 10.3 bar)<br>150-200 psi (10.3 to 13.8 bar)<br>200-275 psi (13.8 to 19 bar)<br>275-500 psi (19 to 34.5 bar) | Neoprene (CR), Nitrile<br>(NBR), & Nylon (PA)      -40°F to 180°F (-40°C to 82°C) |                                                                                  |
| <small>Note: Nylon seat disks standard for ranges over 150 psig (10 bar).</small> |                                                                                                                                                                                            | Fluorocarbon (FKM)<br>and PTFE      0°F to 180°F (-18°C to 82°C)                  |                                                                                  |
| <b>Orifice Sizes</b>                                                              | 1/8", 3/16",<br>1/4", 3/8", & 1/2"                                                                                                                                                         | <b>Weights</b>                                                                    | 1" NPT / DN 25 Body: 25 lbs. (11.3 kg)<br>2" NPT / DN 50 Body: 30 lbs. (13.6 kg) |
| <b>Maximum Inlet Pressure<br/>and Pressure Drop</b>                               | See Tables 1 & 2                                                                                                                                                                           | <b>Operating Media</b>                                                            | Compressed Air, Natural Gas,<br>Other Inert Gases                                |
| <b>Body Inlet Pressure Rating</b>                                                 | 1500 psi<br>(103 bar)                                                                                                                                                                      | <b>Materials of Construction:</b>                                                 | <b>Standard (S)</b> <b>NACE (N)</b>                                              |
| <b>Maximum Outlet Pressure</b>                                                    | 500 psi<br>(39.7 bar)                                                                                                                                                                      | Body, Bonnet,<br>Diaphragm Case                                                   | LCC Steel      LCC Steel                                                         |
| <b>Maximum Outlet Pressure<br/>Above Set Point</b>                                | 200 psi<br>(13.8 bar)                                                                                                                                                                      | Diaphragm                                                                         | Neoprene      Fluorocarbon                                                       |
| <b>Cv Values</b>                                                                  | See Table 2                                                                                                                                                                                | Valve Seat Disk                                                                   | Nitrile<br>or Nylon      Fluorocarbon<br>or Nylon                                |
| <b>Flow Capacities</b>                                                            | See Table 3                                                                                                                                                                                | Trim                                                                              | Brass and Aluminum<br>(Stainless option)      Stainless Steel                    |

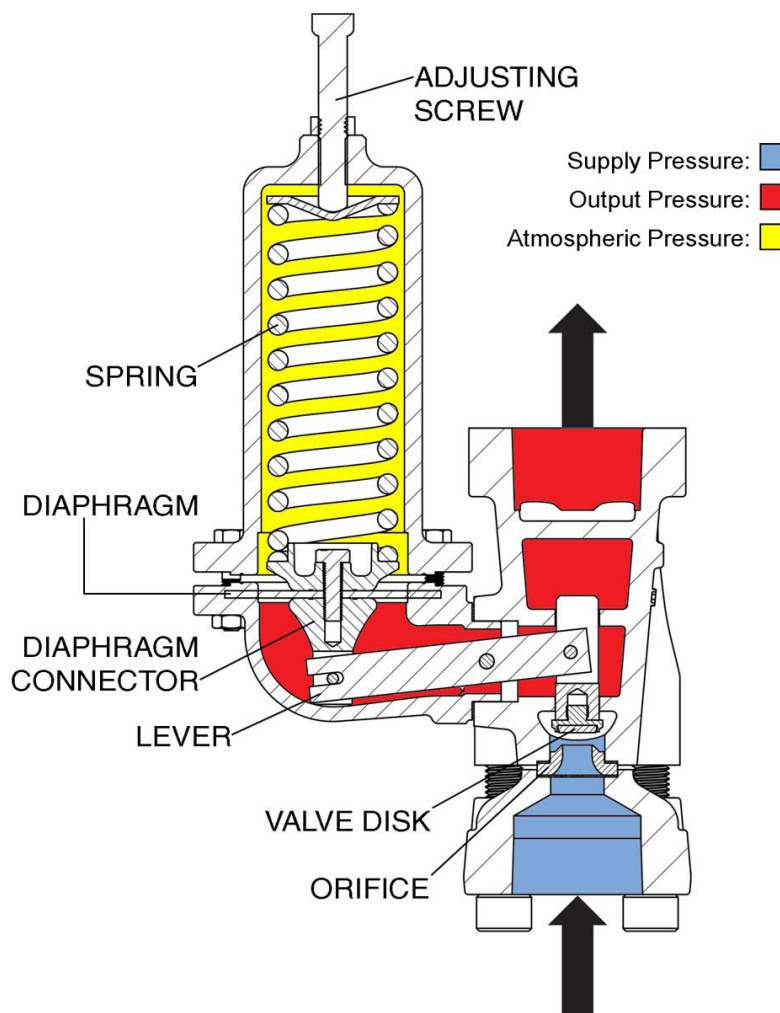
Design and specifications are subject to change without notice. For latest revision, see [ControlAir.com](http://ControlAir.com).



### Principles of Operation

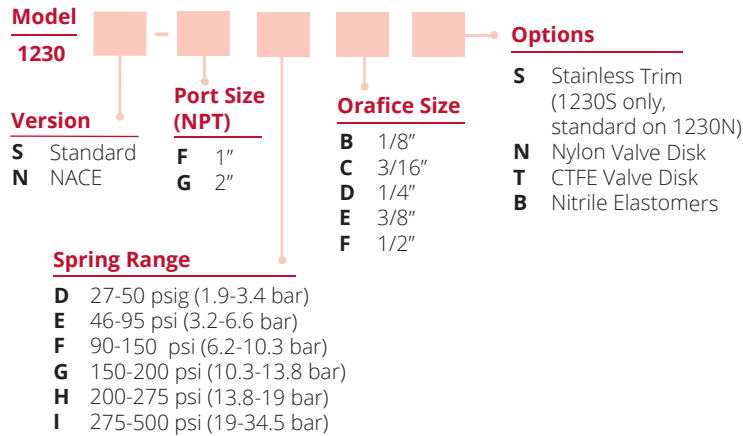
The operation of the Type 1230 pressure-reducing regulator is very similar to that of the Type 1227; the primary difference between them is the lever-mechanism design and the orientation of the orifice. If the downstream pressure (sensed by underside of diaphragm) is below the set point of the spring, the spring force will overcome the downstream pressure force causing it to push down on the diaphragm connector; this in turn pulls upward on the valve disk through movement of the lever, pulling it further away from the orifice allowing more gas to flow through the regulator. Conversely, if the downstream pressure is at or above the set point of the spring, the spring compression force is unable to overcome the downstream pressure force acting on the underside of the diaphragm; this causes the diaphragm connector to move upward, positioning the valve disk closer to the orifice and reducing the flow of gas.

**Note:** The ControlAir Type 1230 Pressure Regulator does not include internal relief. Therefore, if the inlet pressure is able to exceed the outlet pressure rating, the user must provide a pressure-relieving device.



### How to Order

Below is the ControlAir quick select model number tree that provides you with all the options to configure and order a product for your application. You must select a designator for each component.



**Note:** Nylon seat disks standard for ranges over 150 psig (10 bar).

### Materials of Construction

|                              | Standard (S)                          | NACE (N)              |
|------------------------------|---------------------------------------|-----------------------|
| Body, Bonnet, Diaphragm Case | LCC Steel                             | LCC Steel             |
| Diaphragm                    | Neoprene                              | Fluorocarbon          |
| Valve Seat Disk              | Nitrile or Nylon                      | Fluorocarbon or Nylon |
| Trim                         | Brass and Aluminum (Stainless option) | Stainless Steel       |

**Table 1: Maximum Inlet Pressure by Orifice Size**

| Orifice Size |     | Maximum Inlet Pressure |      |
|--------------|-----|------------------------|------|
| in.          | mm  | psi                    | bar  |
| 1/8          | 3.2 | 1500                   | 103  |
| 3/16         | 4.8 | 1500                   | 103  |
| 1/4          | 6.4 | 1500                   | 103  |
| 3/8          | 9.5 | 1000                   | 69   |
| 1/2          | 13  | 750                    | 51.7 |

**Table 2: Maximum Pressure Drop by Orifice Size and Disk Material**

| Orifice Size |     | Maximum Pressure Drop* |      |                         |      |           |      |                 |      |
|--------------|-----|------------------------|------|-------------------------|------|-----------|------|-----------------|------|
|              |     | Nitrile (NBR) Disk     |      | Fluorocarbon (FKM) Disk |      | CTFE Disk |      | Nylon (PA) Disk |      |
| in.          | mm  | psi                    | bar  | psi                     | bar  | psi       | bar  | psi             | bar  |
| 1/8          | 3.2 | 600                    | 41.4 | 200                     | 13.8 | 1500      | 103  | 1500            | 103  |
| 3/16         | 4.8 | 600                    | 41.4 | 200                     | 13.8 | 1500      | 103  | 1500            | 103  |
| 1/4          | 6.4 | 600                    | 41.1 | 200                     | 13.8 | 1000      | 69   | 1000            | 69   |
| 3/8          | 9.5 | 500                    | 34.5 | 200                     | 13.8 | 500       | 34.5 | 500             | 34.5 |
| 1/2          | 13  | 250                    | 17.2 | 200                     | 13.8 | 250       | 17.2 | 250             | 17.2 |

\* The inlet pressure cannot exceed the sum of the set point and maximum pressure drop.

**Note:** Nitrile valve disks are furnished for pressure ranges up to 150 psig (10 bar) for better wear resistance. Nylon valve disks are furnished for higher pressure ranges over 150 psig (10 bar).

**Example:** For a regulator with 1/2" orifice size, NBR disk material, and set point of 100 psi, the maximum inlet pressure would be 350 psi = 250 psi (maximum pressure drop for 1/2" & NBR) + 100 psi (set point)

**Table 3: Flow Coefficient for Relief Valve Sizing**

| Orifice Size |     | Cg    | Cv   | C1   |
|--------------|-----|-------|------|------|
| in.          | mm  |       |      |      |
| 1/8          | 3.2 | 13.9  | 0.49 | 26.4 |
| 3/16         | 4.8 | 31.3  | 1.11 | 28.2 |
| 1/4          | 6.4 | 55.1  | 2.03 | 27.2 |
| 3/8          | 9.5 | 122.5 | 4.61 | 26.6 |
| 1/2          | 13  | 216.0 | 8.18 | 26.4 |

### Flow Capacity Information

Calculated flow capacities for the ControlAir Type 1230 pressure regulator are listed in Table 4 (SCFH) and Table 5 (Nm<sup>3</sup>/h). The calculations were obtained with the assumption that the upstream and downstream piping are both the same size as the body of the regulator. Additionally, these flow capacities were calculated using natural gas as the process media (0.6 SG relative to air).

To determine the equivalent flow capacities for gases other than natural gas.

**Step 1:** Multiply the SCFH flow capacity from Table 4 by 0.775.

**Step 2:** Divide by the square root of the alternative gas' specific gravity.

**Step 3:** The resulting value is the equivalent flow capacity for the alternative gas.

**Step 4:** To convert SCFH flow capacities to units of Nm<sup>3</sup>/h, multiply the SCFH flow capacity by 0.02832.

**Table 4: Flow Capacities in SCFH at 20% droop of Natural Gas (0.6 Specific Gravity)**

| Output Range                 | Set Point (psi) | Inlet Pressure (psi) | Orifice Size (in.) |       |       |       |       |                  |       |       |       |       |
|------------------------------|-----------------|----------------------|--------------------|-------|-------|-------|-------|------------------|-------|-------|-------|-------|
|                              |                 |                      | 1" NPT Body Size   |       |       |       |       | 2" NPT Body Size |       |       |       |       |
|                              |                 |                      | 1/8                | 3/16  | 1/4   | 3/8   | 1/2   | 1/8              | 3/16  | 1/4   | 3/8   | 1/2   |
| 27-50 psi<br>(1.9-3.5 bar)   | 50              | 60                   | 900                | 2000  | 3100  | 5200  | 8100  | 1000             | 2100  | 3200  | 5300  | 12000 |
|                              |                 | 100                  | 1700               | 3500  | 5700  | 10500 | 13000 | 1800             | 3600  | 5800  | 10000 | 21000 |
|                              |                 | 200                  | 3500               | 7800  | 11000 | 16000 | 19000 | 3600             | 7900  | 12000 | 21000 | 55000 |
|                              |                 | 300                  | 5300               | 10500 | 14000 | 20000 | 23000 | 5500             | 11000 | 19000 | 48000 | 83000 |
|                              |                 | 400                  | 6900               | 13000 | 17000 | 23000 |       | 7000             | 15000 | 27000 | 63000 |       |
|                              |                 | 500                  | 8700               | 15000 | 19000 | 25000 |       | 8800             | 19000 | 34300 | 79700 |       |
|                              |                 | 600                  | 9800               | 17000 | 21000 |       |       | 10000            | 23000 | 42000 |       |       |
|                              |                 | 1000                 | 16200              | 22300 | 26300 |       |       | 18000            | 39900 | 70400 |       |       |
| 46-95 psi (3.2-6.6 bar)      | 50              | 1500                 | 19000              | 25000 |       |       |       | 27000            | 60000 |       |       |       |
|                              |                 | 60                   | 800                | 1500  | 2400  | 4300  | 6400  | 900              | 1600  | 2500  | 4400  | 7300  |
|                              |                 | 100                  | 1500               | 3100  | 4200  | 7500  | 10000 | 1600             | 3400  | 4300  | 7600  | 12000 |
|                              |                 | 200                  | 3400               | 6800  | 9400  | 14000 | 17000 | 3500             | 6700  | 9600  | 16000 | 27000 |
|                              |                 | 300                  | 5200               | 8900  | 11000 | 16000 | 20000 | 5300             | 10000 | 14000 | 27000 | 51000 |
|                              |                 | 400                  | 6800               | 11000 | 15000 | 20000 |       | 6900             | 13000 | 21000 | 46000 |       |
|                              |                 | 500                  | 8600               | 12300 | 16300 | 22000 |       | 8700             | 16300 | 26300 | 73300 |       |
|                              |                 | 600                  | 9800               | 14000 | 19000 |       |       | 10000            | 20000 | 35000 |       |       |
|                              | 75              | 1000                 | 13500              | 18400 | 21700 |       |       | 17100            | 38700 | 68800 |       |       |
|                              |                 | 1500                 | 18000              | 24000 |       |       |       | 26000            | 59000 |       |       |       |
|                              |                 | 100                  | 1700               | 3200  | 5000  | 8000  | 13000 | 1800             | 3300  | 5200  | 9000  | 14000 |
|                              |                 | 200                  | 3500               | 7300  | 10000 | 16000 | 22000 | 3600             | 7400  | 11000 | 19000 | 30000 |
|                              |                 | 400                  | 7100               | 14000 | 19000 | 27000 |       | 7200             | 15000 | 24000 |       |       |
|                              |                 | 500                  | 8600               | 16300 | 21300 | 28700 |       | 8700             | 19000 | 31400 |       |       |
|                              |                 | 600                  | 9900               | 19000 | 25000 |       |       | 10000            | 23000 | 39000 |       |       |
|                              |                 | 1000                 | 16700              | 25800 | 31000 |       |       | 17600            | 39000 | 69300 |       |       |
| 90-150 psi<br>(6.2-10.3 bar) | 100             | 1500                 | 23000              | 32000 |       |       |       | 24000            | 60000 |       |       |       |
|                              |                 | 125                  | 2000               | 3600  | 5500  | 9200  | 13000 | 2100             | 3700  | 5600  | 9800  | 15000 |
|                              |                 | 150                  | 2500               | 4600  | 6800  | 11000 | 16000 | 2600             | 4900  | 7400  | 12000 | 18000 |
|                              |                 | 200                  | 3600               | 6600  | 9400  | 13000 | 22000 | 3700             | 6900  | 10000 | 17000 | 27000 |
|                              |                 | 300                  | 5300               | 9800  | 14000 | 21000 | 30000 | 5400             | 10000 | 16000 | 27000 | 44000 |
|                              |                 | 400                  | 7000               | 13000 | 18000 | 27000 |       | 7200             | 14000 | 21000 | 39000 |       |
|                              |                 | 500                  | 8300               | 15500 | 20500 | 31000 |       | 8600             | 17500 | 27500 | 54000 |       |
|                              |                 | 1000                 | 17500              | 26000 | 32600 |       |       | 17200            | 38600 | 66000 |       |       |
|                              |                 | 1500                 | 25000              | 35000 |       |       |       | 27000            | 59000 |       |       |       |

(cont.)

# Pressure Regulators

## Type 1230 Pressure Regulator

Table 4: Flow Capacities in SCFH (cont.)

| Output Range                | Set Point (psi) | Inlet Pressure (psi) | Orifice Size (in.) |       |       |       |       |                  |       |       |       |        |
|-----------------------------|-----------------|----------------------|--------------------|-------|-------|-------|-------|------------------|-------|-------|-------|--------|
|                             |                 |                      | 1" NPT Body Size   |       |       |       |       | 2" NPT Body Size |       |       |       |        |
|                             |                 |                      | 1/8                | 3/16  | 1/4   | 3/8   | 1/2   | 1/8              | 3/16  | 1/4   | 3/8   | 1/2    |
| 90-150 psi (6.2-10.3 bar)   | 125             | 150                  | 2400               | 4600  | 6700  | 11000 | 17000 | 2500             | 5000  | 8100  | 12000 | 20000  |
|                             |                 | 200                  | 3500               | 6800  | 10000 | 15000 | 23000 | 3600             | 7400  | 11000 | 19000 | 30000  |
|                             |                 | 300                  | 5200               | 10000 | 15000 | 25000 | 34000 | 5300             | 11000 | 17000 | 31000 | 48000  |
|                             |                 | 400                  | 7300               | 14500 | 19000 | 29000 |       | 7000             | 15000 | 24000 | 43000 | 65000  |
|                             |                 | 500                  | 7900               | 15000 | 25000 | 36000 |       | 8800             | 19000 | 30000 | 59000 |        |
|                             |                 | 1000                 | 16000              | 30300 | 38800 |       |       | 17000            | 39000 | 69300 |       |        |
|                             |                 | 1500                 | 26000              | 43000 |       |       |       | 27000            | 60000 |       |       |        |
|                             | 150             | 200                  | 3400               | 6800  | 10000 | 16000 | 26000 | 3500             | 7300  | 11000 | 18000 | 30000  |
|                             |                 | 300                  | 5300               | 10000 | 15000 | 24000 | 35000 | 5400             | 11000 | 19000 | 32000 | 52000  |
|                             |                 | 400                  | 7100               | 14000 | 22000 | 34000 | 42000 | 7200             | 15000 | 26000 | 46000 | 77000  |
|                             |                 | 500                  | 8000               | 18800 | 26300 | 39300 |       | 8600             | 19800 | 32800 | 62500 |        |
|                             |                 | 800                  | 13000              | 29000 | 38000 |       |       | 14000            | 30000 | 54000 |       |        |
|                             |                 | 1000                 | 17000              | 34000 | 44300 |       |       | 18000            | 39100 | 67700 |       |        |
|                             |                 | 1500                 | 26000              | 47000 |       |       |       | 27000            | 60000 |       |       |        |
| 150-200 psi (10.3-13.8 bar) | 150             | 200                  | 3400               | 6200  | 9300  | 16000 | 26000 | 3500             | 6900  | 10000 | 17000 | 28000  |
|                             |                 | 300                  | 5300               | 10000 | 15000 | 24000 | 30000 | 5400             | 11000 | 17000 | 28000 | 47000  |
|                             |                 | 400                  | 7100               | 14000 | 21000 | 32000 | 38000 | 7200             | 15000 | 24000 | 40000 | 66000  |
|                             |                 | 500                  | 8000               | 16500 | 26300 | 39000 |       | 8500             | 18300 | 30250 | 53000 |        |
|                             |                 | 800                  | 13000              | 27000 | 37000 |       |       | 14000            | 30000 | 51000 |       |        |
|                             |                 | 1000                 | 16700              | 31000 | 43900 |       |       | 17400            | 38600 | 66400 |       |        |
|                             |                 | 1500                 | 26000              | 44000 |       |       |       | 27000            | 60000 |       |       |        |
|                             | 200             | 250                  | 4200               | 8300  | 12000 | 20000 | 30000 | 4300             | 9100  | 13000 | 23000 | 42000  |
|                             |                 | 300                  | 5200               | 10000 | 16000 | 25000 | 35000 | 5300             | 11000 | 18000 | 33000 | 52000  |
|                             |                 | 600                  | 9500               | 22000 | 34000 | 55000 |       | 10000            | 23000 | 40000 | 75000 |        |
|                             |                 | 700                  | 11000              | 25000 | 40000 | 61500 |       | 12000            | 27000 | 47000 | 90000 |        |
|                             |                 | 800                  | 13000              | 30000 | 43000 |       |       | 14000            | 31000 | 54000 |       |        |
|                             |                 | 1000                 | 16000              | 37000 | 50000 |       |       | 17000            | 39000 | 69000 |       |        |
|                             |                 | 1200                 | 20000              | 41000 | 59000 |       |       | 21000            | 48000 | 83000 |       |        |
|                             |                 | 1500                 | 26000              | 53000 |       |       |       | 27000            | 60000 |       |       |        |
| 200-275 psi (13.8-19 bar)   | 200             | 250                  | 4200               | 8200  | 11000 | 20000 | 29000 | 4300             | 8900  | 12000 | 23000 | 35000  |
|                             |                 | 300                  | 5200               | 10000 | 14500 | 25000 | 35000 | 5300             | 11000 | 18000 | 31000 | 46000  |
|                             |                 | 600                  | 9500               | 22000 | 31000 | 51000 |       | 10000            | 23000 | 38000 | 70000 |        |
|                             |                 | 700                  | 11000              | 25000 | 35000 | 55000 |       | 12000            | 27000 | 45000 | 83000 |        |
|                             |                 | 800                  | 13000              | 29000 | 42000 |       |       | 14000            | 31000 | 52000 |       |        |
|                             |                 | 1000                 | 16000              | 36000 | 50000 |       |       | 17000            | 39000 | 68000 |       |        |
|                             |                 | 1200                 | 19000              | 41000 | 55000 |       |       | 20000            | 46000 | 83000 |       |        |
|                             |                 | 1500                 | 26000              | 51000 |       |       |       | 27000            | 60000 |       |       |        |
|                             | 250             | 300                  | 4900               | 9000  | 15000 | 28000 | 42000 | 5000             | 10000 | 17000 | 30000 | 52000  |
|                             |                 | 400                  | 7000               | 14000 | 23000 | 40000 | 56000 | 7100             | 15000 | 25000 | 47000 | 76000  |
|                             |                 | 500                  | 8500               | 18000 | 29000 | 51000 | 65000 | 8600             | 19000 | 34000 | 62000 | 103000 |
|                             |                 | 600                  | 9500               | 22000 | 34000 | 59000 |       | 10000            | 23000 | 41000 | 78000 |        |
|                             |                 | 1000                 | 16000              | 39000 | 58000 |       |       | 17000            | 40000 | 68000 |       |        |
|                             |                 | 1500                 | 26000              | 59000 |       |       |       | 27000            | 60000 |       |       |        |
|                             | 275             | 300                  | 4700               | 9000  | 15000 | 28000 | 39000 | 4800             | 10000 | 17000 | 29000 | 43000  |
|                             |                 | 400                  | 6900               | 14000 | 25000 | 40000 | 54000 | 7000             | 15000 | 26000 | 47000 | 73000  |
|                             |                 | 600                  | 9300               | 21000 | 39800 | 76100 |       | 10000            | 23000 | 40800 | 81900 |        |
|                             |                 | 1000                 | 16000              | 39000 | 67000 |       |       | 17000            | 40000 | 68000 |       |        |
|                             |                 | 1500                 | 26000              | 60000 |       |       |       | 26000            | 61000 |       |       |        |

(cont.)

# Pressure Regulators

## Type 1230 Pressure Regulator

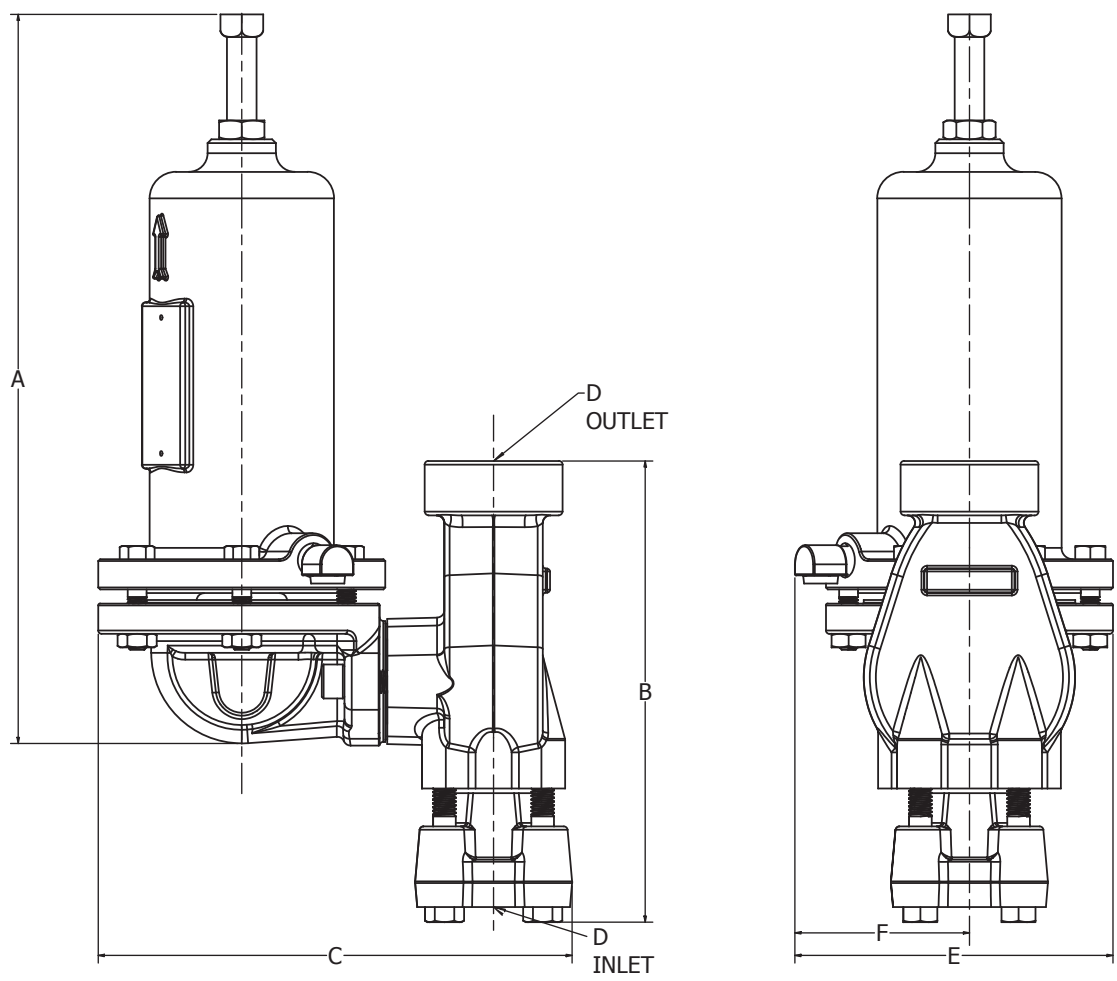
Table 4: Flow Capacities in SCFH (cont.)

| Output Range              | Set Point (psi) | Inlet Pressure (psi) | Orifice Size (in.) |       |       |        |       |                  |       |       |        |        |
|---------------------------|-----------------|----------------------|--------------------|-------|-------|--------|-------|------------------|-------|-------|--------|--------|
|                           |                 |                      | 1" NPT Body Size   |       |       |        |       | 2" NPT Body Size |       |       |        |        |
|                           |                 |                      | 1/8                | 3/16  | 1/4   | 3/8    | 1/2   | 1/8              | 3/16  | 1/4   | 3/8    | 1/2    |
| 275-500 psi (19-34.5 bar) | 275             | 300                  | 4500               | 7500  | 10000 | 20000  | 31000 | 4600             | 8400  | 13000 | 23000  | 37000  |
|                           |                 | 400                  | 6600               | 12000 | 16000 | 31000  | 43000 | 7000             | 13000 | 20000 | 32000  | 53000  |
|                           |                 | 600                  | 9300               | 18400 | 24300 | 43800  |       | 10000            | 23000 | 40800 | 81900  |        |
|                           |                 | 1000                 | 17000              | 32000 | 43000 |        |       | 18000            | 37000 | 57000 |        |        |
|                           |                 | 1500                 | 26000              | 46000 |       |        |       | 27000            | 57000 |       |        |        |
|                           | 300             | 400                  | 6600               | 11000 | 16000 | 31000  | 42000 | 7000             | 13000 | 21000 | 35000  | 54000  |
|                           |                 | 600                  | 9900               | 19000 | 26000 | 48000  |       | 10000            | 21000 | 34000 | 59000  |        |
|                           |                 | 700                  | 11000              | 23000 | 30000 | 54000  |       | 12000            | 26000 | 40000 | 72000  |        |
|                           |                 | 800                  | 13000              | 26000 | 35000 | 61000  |       | 14000            | 29000 | 47000 | 81000  |        |
|                           |                 | 1000                 | 16800              | 32500 | 43800 |        |       | 15800            | 33200 | 53600 |        |        |
|                           |                 | 1300                 | 22000              | 43000 | 58000 |        |       | 23000            | 50000 | 80000 |        |        |
|                           |                 | 1500                 | 26000              | 49000 |       |        |       | 27000            | 58000 |       |        |        |
|                           | 400             | 500                  | 8300               | 16000 | 24000 | 44000  | 62000 | 8800             | 17000 | 28000 | 49000  | 77000  |
|                           |                 | 600                  | 9400               | 21300 | 30000 | 55300  |       | 10300            | 22300 | 36000 | 66300  | 100300 |
|                           |                 | 800                  | 13000              | 30000 | 41000 | 76000  |       | 14000            | 31000 | 51000 | 95000  |        |
|                           |                 | 900                  | 15000              | 34000 | 49000 | 85000  |       | 16000            | 36000 | 58000 | 110000 |        |
|                           |                 | 1000                 | 17000              | 38000 | 54000 |        |       | 18000            | 40000 | 66000 |        |        |
|                           |                 | 1200                 | 20000              | 46000 | 63000 |        |       | 21000            | 48000 | 80000 |        |        |
|                           |                 | 1400                 | 24000              | 55000 | 76000 |        |       | 25000            | 57000 | 96000 |        |        |
|                           |                 | 1500                 | 26000              | 60000 |       |        |       | 27000            | 61000 |       |        |        |
|                           | 500             | 550                  | 8700               | 16000 | 26000 | 50000  | 77000 | 9000             | 18000 | 30000 | 53000  | 89000  |
|                           |                 | 600                  | 9500               | 19000 | 36800 | 57000  |       | 10000            | 20800 | 34500 | 62300  | 102000 |
|                           |                 | 900                  | 15000              | 34000 | 52000 | 92000  |       | 16000            | 35000 | 60000 | 113000 |        |
|                           |                 | 1000                 | 17000              | 39000 | 60000 | 100000 |       | 18000            | 40000 | 67000 | 130000 |        |
|                           |                 | 1500                 | 26000              | 59000 | 72000 |        |       | 27000            | 60000 | 82000 |        |        |

Note: To convert SCFH to Nm<sup>3</sup>/h, multiply the SCFH flow capacity by 0.02832

Dimensions

Dimensions shown are for reference only. They may be changed without notice. Contact the factory for certified dimension drawings. Linear = mm/in.



|         | A             | B            | C            | D      | E            | F           |
|---------|---------------|--------------|--------------|--------|--------------|-------------|
| 1" Body | 12.07 [306.5] | 7.63 [193.9] | 7.84 [199.2] | 1" NPT | 5.26 [133.7] | 2.89 [73.4] |
| 2" Body | 12.07 [306.5] | 8.58 [218.0] | 8.48 [215.4] | 2" NPT | 5.26 [133.7] | 2.89 [73.4] |



# Pressure Regulators

## Type 330/335 Air Filter Regulator

### Type 330/335 Air Filter Regulator

The Type 330/335 Air Filter Regulator is designed to provide clean, accurate air pressure to instruments, valves, and other automatic control equipment in a lightweight, compact housing. This quality instrument is constructed of durable materials that will provide long lasting performance in industrial environments. The Type 330 Filter Regulator is available in 1/4" NPT porting for normal operation and 1/2" NPT porting for high flow capacity requirements. The materials in the Type 335 Filter Regulator meet NACE MR-0175 requirements (available in 1/4" only).



1/4" NPT

### Features

- Compact and light weight construction
- Mounts where competitive units won't
- 1/4" NPT or 1/2" NPT version for high flow capacity
- Low air consumption lower operating costs
- Tapped exhaust option
- Rugged, corrosion resistant design functional for harsh conditions
- Warranty - 18 months
- NACE option available for 1/4" NPT version



HIGH FLOW  
CAPACITY  
1/2" NPT

### Product Specifications

|                         |                                                                                                                |                                     |                                                                                                                               |
|-------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| In/Out Port Size        | 1/4" NPT<br>1/2" NPT (High flow capacity)<br>(Gauge Ports 1/4 NPT)                                             | Effect of Supply Pressure Variation | Less than 0.25 psi (0.017 bar)<br>for 25 psi (1.7 bar) change<br>Less than 0.5 psi (0.035 bar)<br>for 25 psi (1.7 bar) change |
| Output Ranges           | 0-30 psi (0 to 2 bar)<br>0-60 psi (0 to 4 bar)<br>0-120 psi (0 to 8 bar)                                       | Temperature Limits                  | 0°F to 160°F (-18°C to 71°C)                                                                                                  |
| Maximum Supply Pressure | 250 psi (17 bar)                                                                                               | Weight                              | 1.2 lbs (.45 kg)                                                                                                              |
| Mounting                | Pipe or through body direct                                                                                    | Operating Media                     | Air, Inert Gas, Sweet Natural Gas,<br>Sour Natural Gas (Type 335)                                                             |
| Filter                  | 40 micron (5 optional)                                                                                         | Materials of Construction           | <u>Standard</u> <u>NACE</u>                                                                                                   |
| Cv Values               | 0.5 at 150 psi supply and<br>80 psi setpoint for 1/4"<br>2.5 at 150 psi supply and<br>80 psi setpoint for 1/2" | Body                                | Diecast Aluminum Alloy,<br>Irridite & Baked Epoxy Finish                                                                      |
| Exhaust Capacity        | 0.1 scfm (2.83 NI/min) with<br>downstream pressure<br>5 psi (0.3 bar) above set point                          | Filter                              | Polyethylene                                                                                                                  |
| Sensitivity             | 1" of water                                                                                                    | Diaphragm                           | Nitrile Elastomer<br>& Nylon Fabric                                                                                           |
| Air Consumption         | Less than 5 scfh (2.5 NI/min)                                                                                  | Valve Seat                          | Nitrile Elastomer                                                                                                             |
|                         |                                                                                                                | Additional Materials                | Brass, Zinc<br>Plated Steel,<br>Acetal                                                                                        |
|                         |                                                                                                                |                                     | 316SS<br>Aluminum,<br>Heat Treated<br>Plated Steel                                                                            |

Design and specifications are subject to change without notice. For latest revision, see ControlAir.com.

# Pressure Regulators

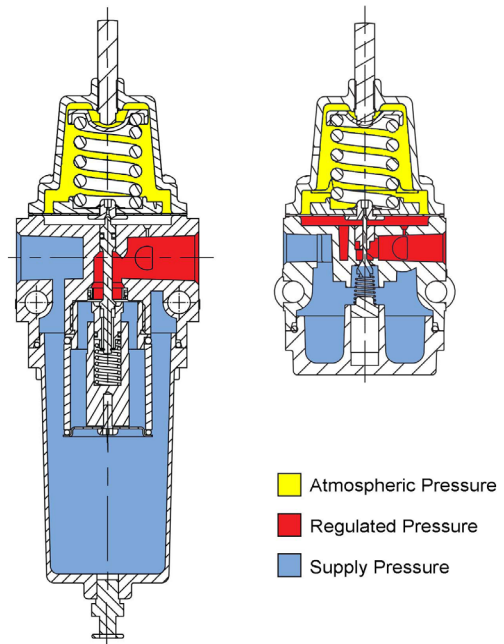
## Type 330/335 Air Filter Regulator

### Principles of Operation

Turning the adjusting screw changes the force exerted by the range spring on the diaphragm assembly. In equilibrium of set pressure, the force exerted by the range spring is balanced by the force from the output pressure acting underneath the diaphragm assembly. An unbalanced state between the output pressure and the set pressure causes a corresponding reaction in the diaphragm and supply valve assemblies.

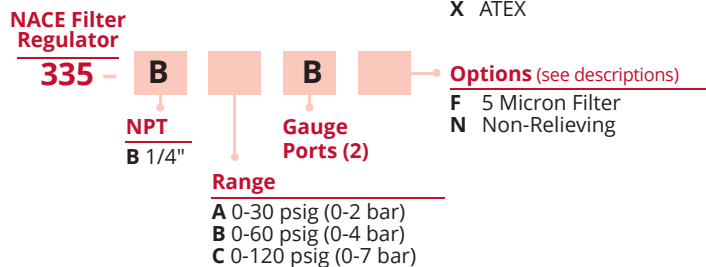
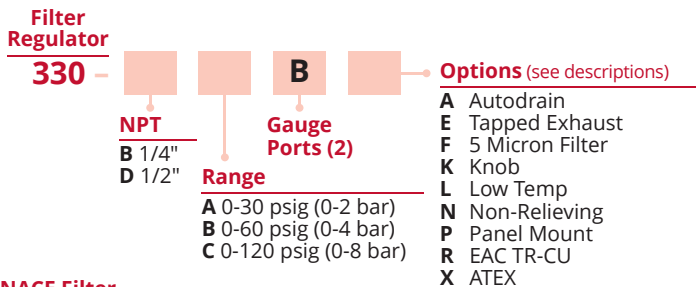
If the output pressure rises above the set pressure, an upward force is exerted on the diaphragm assembly causing the relief seat to lift and open. Excess pressure is vented to atmosphere until equilibrium is reached. If the output pressure drops below the set pressure the unbalanced force of the range spring causes a downward force on the diaphragm assembly. The supply valve then opens until the pressure builds up once more to the equilibrium condition.

Under forward flow conditions, the range spring force is balanced by the diaphragm pressure force, with the supply valve open just enough to maintain the required equilibrium pressure. When high flow occurs, a specially designed aspirator helps maintain downstream pressure and compensates for droop.

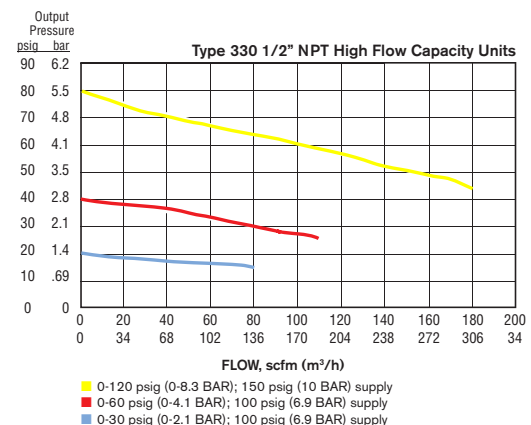
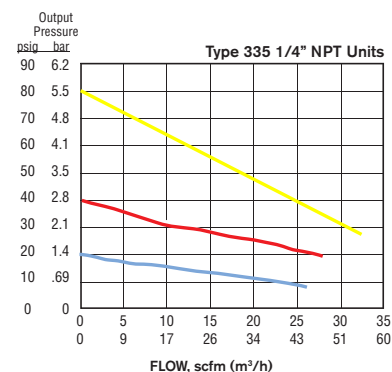


### How to Order

Below is the ControlAir quick select model number tree that provides you with all the options to configure and order a product for your application. You must select a designator for each component



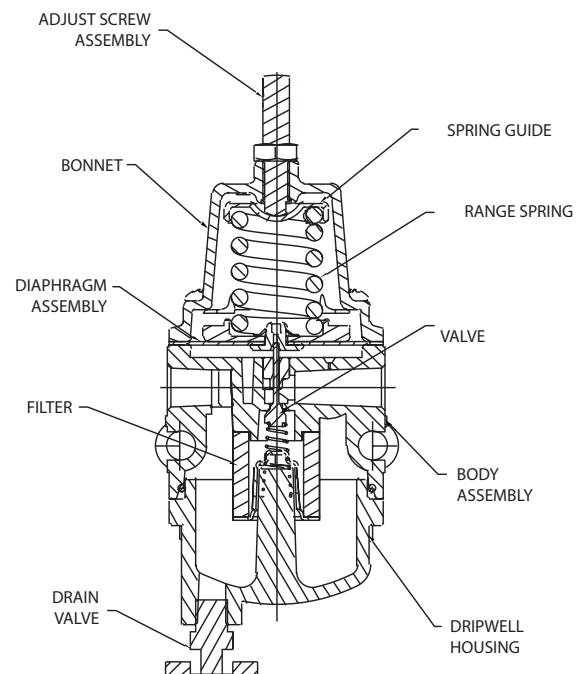
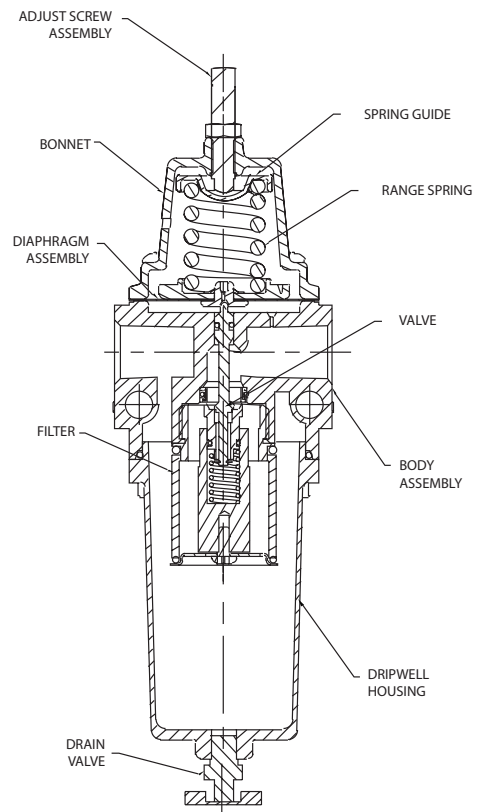
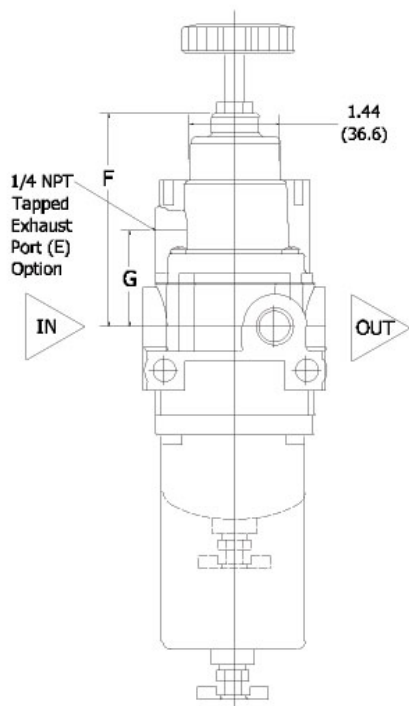
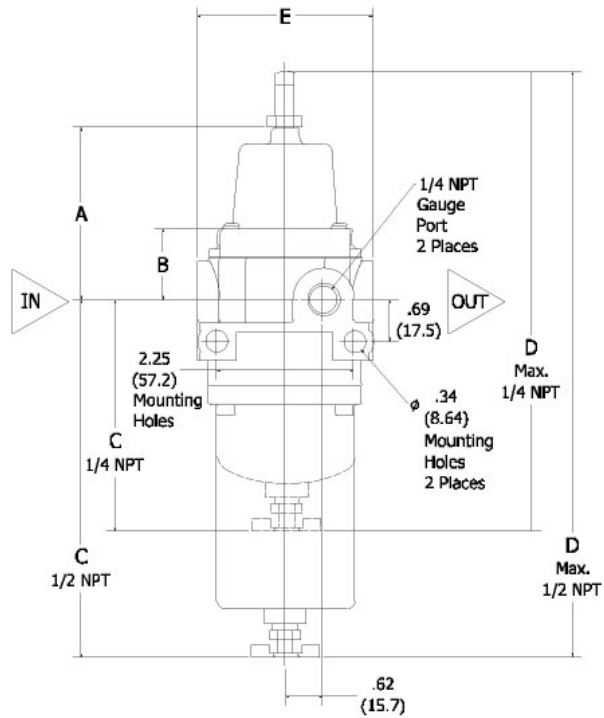
### Flow Charts



# Pressure Regulators

## Type 330/335 Air Filter Regulator

Dimensions shown are for reference only. Linear = mm/in.



| Port Size (NPT) | A in. (mm)  | B in. (mm)  | C in. (mm)   | D in. (mm)   | E in. (mm)  | F in. (mm)  | G in. (mm)  |
|-----------------|-------------|-------------|--------------|--------------|-------------|-------------|-------------|
| 1/4"            | 2.66 (67.6) | 1.0 (25.4)  | 3.42 (86.8)  | 7.15 (181.6) | 2.25 (57.2) | 3.19 (81.0) | 1.22 (31.0) |
| 1/2"            | 2.83 (71.9) | 1.17 (29.7) | 6.06 (153.7) | 9.78 (248.4) | 2.25 (57.2) | 3.36 (85.3) | 1.39 (35.3) |

# Pressure Regulators

## Type 350/360/370 Stainless Steel Regulators & Filter

350SS Stainless Steel Filter Regulator | 360SS Stainless Steel Regulator | 370SS Stainless Steel Filter



- Provides clean, accurate air pressure
- Epoxy paint finish standard
- Stable output and repeatability
- High capacity, long lasting depth filter
- Low droop
- Meets NACE MR-0175 requirements
- Low temperature option
- Filter only unit available

|                                     |        |         |
|-------------------------------------|--------|---------|
| Maximum Flow Capacity SCFM (NI/min) |        |         |
| 1/4" NPT                            | 20     | (600)   |
| 1/2" NPT                            | 160    | (4,800) |
| Exhaust Capacity SCFM (NI/min)      |        |         |
| 1.0                                 | (30)   |         |
| Sensitivity Inch wc (mm)            |        |         |
| 1.0                                 | (25.0) |         |
| Supply Pressure max. psig (BAR)     |        |         |
| 290                                 | (20)   |         |

### Type 370SS Stainless Steel Filter

| Model  | Part Number | Port Size (NPT) |
|--------|-------------|-----------------|
| 370-SS | 370-BX      | 1/4"            |
| 370-SS | 370-DX      | 1/2"            |

### Type 350SS Stainless Steel Filter Regulator

| Model  | Part Number | Port Size (NPT) | Output Range<br>psi | bar    |
|--------|-------------|-----------------|---------------------|--------|
| 350-SS | 350-BA      | 1/4"            | 0-30                | 0-2.1  |
| 350-SS | 350-BB      | 1/4"            | 0-60                | 0-4.1  |
| 350-SS | 350-BC      | 1/4"            | 0-100               | 0-6.9  |
| 350-SS | 350-BD      | 1/4"            | 0-150               | 0-10.3 |
| 350-SS | 350-DA      | 1/2"            | 0-30                | 0-2.1  |
| 350-SS | 350-DB      | 1/2"            | 0-60                | 0-4.1  |
| 350-SS | 350-DC      | 1/2"            | 0-100               | 0-6.9  |
| 350-SS | 350-DD      | 1/2"            | 0-150               | 0-10.3 |

### Type 360SS Stainless Steel Regulator

| Model  | Part Number | Port Size (NPT) | Output Range<br>psi | bar    |
|--------|-------------|-----------------|---------------------|--------|
| 360-SS | 360-BA      | 1/4"            | 0-30                | 0-2.1  |
| 360-SS | 360-BB      | 1/4"            | 0-60                | 0-4.1  |
| 360-SS | 360-BC      | 1/4"            | 0-100               | 0-6.9  |
| 360-SS | 360-BD      | 1/4"            | 0-150               | 0-10.3 |
| 360-SS | 360-DA      | 1/2"            | 0-30                | 0-2.1  |
| 360-SS | 360-DB      | 1/2"            | 0-60                | 0-4.1  |
| 360-SS | 360-DC      | 1/2"            | 0-100               | 0-6.9  |
| 360-SS | 360-DD      | 1/2"            | 0-150               | 0-10.3 |

## Type 380/390 Stainless Steel Filter Regulator & Regulator

380 Large Flow Capacity Stainless Steel Filter Regulator | 390 Large Flow Capacity Stainless Steel Regulator



- All 316 stainless steel construction
- 3/4" & 1" NPT/BSP ported version
- High flow capacity
- NACE approved
- Autodrain option
- Tapped exhaust

|                                                    |          |                  |
|----------------------------------------------------|----------|------------------|
| Maximum Flow                                       | 3/4" NPT | 6.0              |
| Coefficients (Cv)                                  | 1" NPT   | 7.0              |
| Maximum Flow                                       | 3/4" NPT | 350 (9,905)      |
| Capacity SCFM (NI/min)                             | 1" NPT   | 400 (11,320)     |
| Supply Pressure max. 290 psig (20 BAR)             |          |                  |
| Operating Temperature -40° to 200°F (-40° to 93°C) |          |                  |
| Filter 25 micron or 5 micron                       |          |                  |
| Weight                                             | Type 380 | 15 lbs (6.80 kg) |
|                                                    | Type 390 | 13 lbs (5.90 kg) |

### Type 380 Stainless Steel Filter Regulator

| Range psig (BAR) | Port Size NPT | Model#         |
|------------------|---------------|----------------|
| 0-30 (0-2)       | 3/4, 1        | 380-EA, 380-FA |
| 0-60 (0-4)       | 3/4, 1        | 380-EB, 380-FB |
| 0-100 (0-7)      | 3/4, 1        | 380-EC, 380-FC |
| 0-150 (0-10)     | 3/4, 1        | 380-ED, 380-FD |
| 0-200 (0-14)     | 3/4, 1        | 380-EE, 380-FE |

### Type 390 Stainless Steel Regulator

| Range psig (BAR) | Port Size NPT | Model#         |
|------------------|---------------|----------------|
| 0-30 (0-2)       | 3/4, 1        | 390-EA, 390-FA |
| 0-60 (0-4)       | 3/4, 1        | 390-EB, 390-FB |
| 0-100 (0-7)      | 3/4, 1        | 390-EC, 390-FC |
| 0-150 (0-10)     | 3/4, 1        | 390-ED, 390-FD |
| 0-200 (0-14)     | 3/4, 1        | 390-EE, 390-FE |

## Type 950XP Explosion-Proof I/P Transducer

Process reliable and field rugged electronic pressure regulator



- Compact design
- Explosion-proof NEMA-4X (IP65) enclosure
- RFI, EMI protected
- Shock, vibration and position insensitive.
- Field-selectable outputs (optional)
- Highly tolerant of impure air
- Optional tapped exhaust and conduit seal required for FM/CSA approval when using natural gas (sweet) or methane

|                                      |                                 |
|--------------------------------------|---------------------------------|
| Flow Capacity SCFM (NI/min)          | 12.0 (360)                      |
| Terminal Based Linearity (% of span) | ±0.10                           |
| Repeatability (% of span)            | <0.10                           |
| Supply Pressure max. psig (BAR)      | 100 (7)                         |
| Port Size Pneumatic (Electric)       | 1/4 NPT (1/2 NPT)               |
| Approximate Size inches (mm)         | DIA 3.50 (88.9) H 4.60 (116.6)  |
| Weight lbs (kg)                      | T380: 15 (6.80) T390: 13 (5.90) |

| Input Signal | Output Range PSI (BAR) | Model# NPT/BSP |
|--------------|------------------------|----------------|
| 4-20 mA      | 3-15 (0.2-1)           | 950-AC         |
| 4-20 mA      | 3-27 (0.2-1.8)         | 950-AD         |
| 4-20 mA      | 6-30 (0.4-2)           | 950-AE         |
| 4-20 mA      | Field Selectable       | 950-ACA        |
| 4-20 mA      | Explosion-proof        | 950-ACA        |

# Volume Boosters

## Type 6000 High Flow Capacity Volume Booster

High Flow Capacity in a Rugged Casing



- 1:1 signal to output relay
- High air volume for rapid actuator stroking
- Adjustable bypass valve eliminates actuator overshoot or overdamping
- Soft seat sealing for tight shutoff
- Available in aluminum or 316 stainless steel construction
- EPDM or silicone elastomer options



| In/Out Port | Construction    | Model # |
|-------------|-----------------|---------|
| 1/2" NPT    | Aluminum        | 6000-DA |
| 3/4" NPT    | Aluminum        | 6000-EA |
| 1/2" NPT    | Stainless Steel | 6000-DS |
| 3/4" NPT    | Stainless Steel | 6000-ES |

|                            |                               |
|----------------------------|-------------------------------|
| Supply & Signal Pressure   | 150 psig (10 BAR) max.        |
| Max Flow Coefficients (Cv) | Supply 3.0 / Exhaust 3.0      |
| Flow Capacity              | 115 SCFM (3,450 NL/min)       |
| Deadband                   | Under 0.25 psig (0.017 BAR)   |
| Signal to Output Ratio     | 1:1 ± 5%                      |
| Temperature Limits         | -40° to 160°F (-40° to 71°C)  |
| EPDM Option "R"            | -40° to 230°F (-40° to 110°C) |
| Silicone                   | -60° to 230°F (-51° to 110°C) |
| Signal Port                | 1/4" NPT                      |
| Supply/Output Port         | 1/2" or 3/4" NPT              |

## Type 6100 High Flow Capacity Volume Booster

Rapid Stroke Capability in a Rugged Aluminum Casing



- 1/4", 1/2", 3/4" NPT porting
- Two 1/4" NPT gauge ports
- Integral adjustable bypass valve
- High flow capacity
- Soft valve seat design
- High temperature operation
- Two high output exhaust vents
- Two 1/4" NPT gauge ports

| In/Out Port | Construction    | Model # |
|-------------|-----------------|---------|
| 1/2" NPT    | Aluminum        | 6100-DA |
| 3/4" NPT    | Aluminum        | 6100-EA |
| 1/2" NPT    | Stainless Steel | 6100-DS |
| 3/4" NPT    | Stainless Steel | 6100-ES |

|                                    |                                                                                                |
|------------------------------------|------------------------------------------------------------------------------------------------|
| Signal/Output Ratio                | 1:1                                                                                            |
| Supply Pressure                    | 250 psig (17.0 BAR) max.                                                                       |
| Signal Pressure                    | 150 psig (10.0 BAR) max.                                                                       |
| Maximum Flow Coefficients          | 3/4"-Forward: 5.0; Exhaust 3.5, 1/2"-Forward: 4.5; Exhaust 3.5, 1/4"-Forward: 2.0; Exhaust 2.5 |
| Exhaust Capacity SCFM (NL/min)     | 3/4"-80 (2,264 NL/min), 1/2"-75 (2,123 NL/min), 1/4"-35 (991 NL/min)                           |
| Output Accuracy                    | 1.0% of 100 psi output span                                                                    |
| Sensitivity Inch wc (cm) 1" (2.54) |                                                                                                |
| Supply Pressure Effect             | 0.1 psig (0.007 BAR) for a 25 psig (1.7 BAR) change                                            |
| Signal Port                        | 1/4" NPT                                                                                       |
| Supply/Output Port                 | 1/4", 1/2", or 3/4" NPT                                                                        |
| Exhaust Port                       | ø7/16" or 1/4" NPT option                                                                      |
| Gauge Port (2)                     | 1/4" NPT                                                                                       |

## Type 6500/6600 Large Flow Capacity Volume Booster

Rapid Stroke Capability in a Rugged Aluminum or Stainless Steel Casing



- 11:1 signal to output relays utilized in high flow applications
- Aluminum or 316 stainless steel
- 3/4" or 1" NPT porting
- SIL3 certifications
- Integral adjustable bypass valve
- High temperature option
- Soft valve seat design
- Tapped high output exhaust port
- no gauge ports - optional output feedback port
- Low temperature option

| In/Out Port | Construction    | Model # |
|-------------|-----------------|---------|
| 3/4" NPT    | Aluminum        | 6500-EA |
| 1" NPT      | Aluminum        | 6500-FA |
| 3/4" NPT    | Stainless Steel | 6600-ES |
| 1" NPT      | Stainless Steel | 6600-FS |

|                           |                                                             |
|---------------------------|-------------------------------------------------------------|
| Signal/Output Ratio       | 1:1                                                         |
| Supply Pressure           | 250 psig (17.0 BAR) Maximum                                 |
| Signal Pressure           | 150 psig (10.0 BAR) Maximum                                 |
| Maximum Flow Coefficients | 3/4"-Forward: 6.0; Exhaust 5.0 1"-Forward: 7.0; Exhaust 5.0 |
| Flow Capacity:            | 3/4"-350 SCFM (9,905 NL/min); 1"-400 SCFM (11,320 NL/min)   |
|                           | 100 psig (7 BAR) supply, 20 psig (1.4 BAR) output           |
| Signal to Output          | 2.0% (% of 100 psi output span)                             |
| Ratio Accuracy:           | 1.5% (% of 15 psi output span)                              |
| Temperature Limits        | -40 to 200°F (-40 to 93°C)                                  |
| Low Temperature Limits    | -62 to 194°F (-52 to 90°C)                                  |
| Deadband                  | Under 0.2 psig (.01 BAR)                                    |
| Supply Pressure Effect    | 0.3 psig (.02 BAR)                                          |
| Exhaust Port              | ø7/16" or 1/4" NPT option                                   |
| Gauge Port (2)            | 1/4" NPT                                                    |



# Valve Positioner

## Type 2000 Pneumatic and Electro-Pneumatic Valve Positioner

Stable and accurate positioning of rotary and linear valves



- Modular construction - base pneumatic unit can be quickly field converted to a fully optioned electro-pneumatic unit
- Rotary and linear, single and double acting
- External and zero adjustment for easy calibration
- Compact design - small size and low weight
- Vibration, position and shock insensitive
- Namur rotary mounting kits
- Linear mounting kits for most valves
- Stainless steel spool valve - long operating life
- High gain pilot valve - Provides quick and accurate valve/actuator response
- Standard pointed indicator (rotary), standard blank cover (linear) and optional raised beacon
- High maximum supply pressure - 145 psig (10 Bar)
- FM, CSA & ATEX approvals - for Intrinsically Safe (CA2010/CA2011) and Explosion-proof (CA2020/CA2021) operation
- Optional mechanical switches and 4-20mA position feedback

|                   | Pneumatic<br>(CA2000)                                                                   | Electro-Pneumatic<br>(CA2005/CA2010/CA2011) (CA2022/CA2023) |                                |
|-------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------|--------------------------------|
| Input Signal      | 3-15 PSI (0.2-1.0 Bar)                                                                  | 4-20 mA (Ri<250 ohms)                                       |                                |
| Supply Pressure   | <145 PSI (<10 Bar)                                                                      | 21.8-145 PSI (1.5-10 Bar)                                   |                                |
| Linearity Error   | <0.7 % f.s                                                                              | <1.0% f.s                                                   |                                |
| Hysteresis        | <0.4% f.s                                                                               | <0.6% f.s                                                   |                                |
| Repeatability     | <0.3% f.s                                                                               | <0.5% f.s                                                   |                                |
| Pressure Gain     | 750 P out/P in                                                                          | 750 P out/P in                                              |                                |
| Flow Capacity     | SCFM NI/min                                                                             | SCFM                                                        | NI/min                         |
| @29 PSI (2.0 Bar) | 9.5                                                                                     | 268.9                                                       | 9.5 268.9                      |
| @87 PSI (6.0 Bar) | 28.3                                                                                    | 800.1                                                       | 28.3 800.1                     |
| @145 PSI (10 Bar) | 47.1                                                                                    | 1333                                                        | 47.1 1333                      |
| Air Consumption   | SCFM NI/min                                                                             | SCFM                                                        | NI/min                         |
| @29 PSI (2.0 Bar) | 0.18                                                                                    | 5.09                                                        | 0.2 5.7                        |
| @87 PSI (6.0 Bar) | 0.53                                                                                    | 424.5                                                       | 0.6 17.0                       |
| @145 PSI (10 Bar) | 0.88                                                                                    | 707.5                                                       | 1.0 28.3                       |
| Impedance         |                                                                                         | 260 Ohms @ 70°F                                             | 500 Ohms @ 70°F                |
| Loop Load         |                                                                                         | 5.2 Volts @ 20 mA                                           | 9.5 Vdc @ 20 mA                |
| Temperature Range | -40° to 185° F (-40° to 85° C)                                                          |                                                             | -40° to 158° F (-40° to 70° C) |
| Port Sizes        | Pneumatic: 1/4" NPT; Gauge Ports - 1/8" NPT<br>Electric: 1/2" NPT; M20-1.5 (ATEX)       |                                                             |                                |
| Media             | Clean, dry, oil-free instrument air, filtered to 40 micron or methane Sweet natural gas |                                                             |                                |
| Enclosure         | Nema 4X / IP66 aluminum with polyester epoxy finish                                     |                                                             |                                |
| Weight            | 3.5 lbs (1.6 kg)                                                                        | 3.8 lbs (1.7 kg)                                            | CA2005/CA2010/CA2011           |
|                   | 5.1 lbs (2.3 kg)                                                                        | 5.4 lbs (2.5 kg)                                            | CA2005 with feedback           |
|                   |                                                                                         | 4.8 lbs (2.2 kg)                                            | CA2020/CA2011                  |
|                   |                                                                                         | 6.0 lbs (2.7 kg)                                            | CA2022/CA2023                  |

### Mechanical Switches

|                   |                               |
|-------------------|-------------------------------|
| (S & FS Option)   |                               |
| Input Signal      | Honeywell V15S05-CZ100 A05-01 |
| Switch Type       | SPDT                          |
| Loop Load         | 5A 125/ 250 VAC/ 0.1A 48 Vdc  |
| Operating Force   | 100gf                         |
| Position Feedback | <0.3% f.s.                    |

### (F & FS Option)

|                  |                    |
|------------------|--------------------|
| Voltage          | Supply 12-30 Vdc   |
| Output           | 2 Wire; 4-20 mA DC |
| Loop Impedance   | Max. 700Ω @ 24 Vdc |
| Linearity Error  | <1.5% F.S.         |
| Hysteresis Error | <0.5% F.S.         |

| Model                                                        | Type of Motion       | Cam                                                                         | Feedback/ Switches                                    |
|--------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------|-------------------------------------------------------|
| CA20                                                         | R Rotary<br>L Linear | C1 90°/180° (Standard Rotary)<br>C2 45°/90°<br>C3 30°/60° (Standard Linear) | (factory installed)<br>CA20-05-R or<br>CA20-00-R only |
| Type of Positioner                                           | Spindle              | Indicator                                                                   |                                                       |
| 00 P/P Pneumatic                                             | 0 Namur (Rotary)     | N None (Standard Linear)                                                    | F 4-20 mA Feedback                                    |
| 05 E/P Electro-pneumatic; no approvals; general purpose only | 1 Standard (Linear)  | A Arrow (Standard Rotary)                                                   | S Mechanical Switch (2 spdt)                          |
| 10 E/P Electro-pneumatic; FM/CSA Intrinsically Safe          | 2 3/8" Square        | D Dome (Option)                                                             | FS 4-20 mA Feedback & mechanical switches             |
| 11 E/P Electro-pneumatic; ATEX Intrinsically Safe            | 3 1/2" Square        |                                                                             |                                                       |
| 20 E/P Electro-pneumatic; FM/CSA Explosion-proof             |                      |                                                                             |                                                       |
| 21 E/P Electro-pneumatic; ATEX Flame-proof                   |                      |                                                                             |                                                       |
| 22 E/P Electro-pneumatic; FM/CSA XP; Natural Gas             |                      |                                                                             |                                                       |
| 23 E/P Electro-pneumatic; ATEX Flame-proof, Natural Gas      |                      |                                                                             |                                                       |



## Accessories

### Gauges

|                                           |                  |
|-------------------------------------------|------------------|
| 0-30 psi (0-2 bar), 1/8" NPT Back Mount   | P/N: 446-725-006 |
| 0-160 psi (0-11 bar), 1/8" NPT Back Mount | P/N: 446-725-008 |
| 0-30 psi (0-2 bar), 1/8" NPT Bottom Mount | P/N: 446-725-033 |

### Mounting Kits

| Rotary Namur Bracket Kits (Namur spindle required) |                  |
|----------------------------------------------------|------------------|
| ISO-1 Bracket                                      | P/N: 449-542-032 |
| ISO-2 Bracket                                      | P/N: 449-542-033 |
| ISO-3 Bracket                                      | P/N: 449-542-034 |
| ISO-4 Bracket                                      | P/N: 449-542-035 |

### Linear Bracket Kits

|              |                  |
|--------------|------------------|
| Universal    | P/N: 449-542-036 |
| Namur IEC534 | P/N: 449-542-037 |

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