



CONOFLOW HIGH-PRESSURE REGULATOR - HP610

Pressure Reducing Diaphragm Type - High Purity

The HP610 is a high purity, self-contained, spring-loaded, pressure reducing regulator. This unit is designed for use in applications requiring high flow rates and the ability to relieve outlet media pressure. Non-relieving models also are available.

The 316SS constructed unit has a maximum supply pressure rating to 250 PSIG (1.73 MPa). The convoluted 316SS diaphragm provides accurate and reliable regulation over a control setting range of 0-50 PSIG (0-0.35 MPa).

The HP610 has one 1/4" NPT inlet connection and two 1/4" NPT outlet connections. Both outlet ports provide the same flow capacity with the central port generally being used as a gauge port.

OPTIONS

Mounting

Line - All variations
Panel - 1 nut - Standard

Adjustments

Handwheel (Large)

Gauges

2" and 2-1/2" diameters
Brass, steel and stainless steel construction

HP610 Maintenance Kit - (RELIEVING):

80610-11 - For all control setting ranges

HP610 Maintenance Kit - (NON-RELIEVING):

80615-11 - For all control setting ranges

HP610 Overhaul Kit - (RELIEVING):

81610-11 - For all control setting ranges

HP610 Overhaul Kit - (NON-RELIEVING):

81615-11 - For all control setting ranges

FEATURE SUMMARY

Relieving style diaphragm provides accurate regulation in dead-ended applications

Internal finish on wetted components is 20Ra

Inboard leakage to 2×10^{-8} atm cc/sec helium

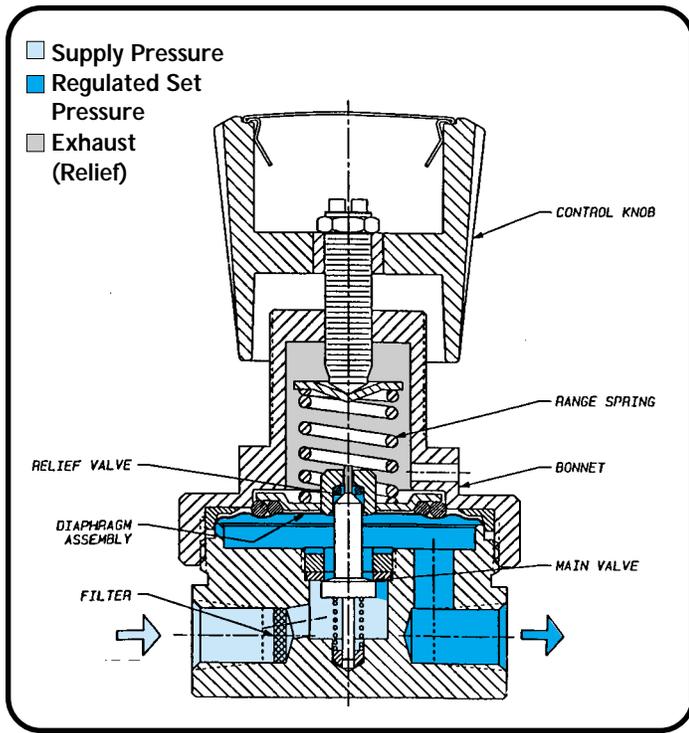
High flow rate capability

Non-relieving model available

Regulator cleaned to ITT Conoflow Specification (ES8A 01 294)

DIMENSIONAL DATA - ADVERTISING DRAWING:

HP610-C: Standard Unit



HP610 Series - Relieving Diaphragm

PRINCIPLE OF OPERATION

The HP610 is a high-purity, self-contained, spring-loaded pressure reducing unit. This regulator is designed for use in applications requiring high flow rates and the ability to relieve outlet media pressure.

Turning the control knob clockwise will increase the force on the internal range spring and in turn will close the relief valve and increase the outlet set pressure of the regulator. Conversely, turning the control knob counterclockwise will reduce the force on the range spring and will decrease the set pressure of the regulator. When the outlet pressure exceeds the set pressure, the internal diaphragm assembly will rise and open the relief valve, relieving the excess pressure to atmosphere until equilibrium is reached. In equilibrium, the force exerted by the range spring is balanced by the outlet pressure force on the diaphragm.

An unbalance between the outlet pressure and the set pressure will cause a corresponding reaction in the diaphragm and valves. If the outlet pressure falls below the set pressure, the diaphragm will be moved down by the range spring and open the main valve. As the outlet pressure increases, the diaphragm will move up and allow the main valve to close. In equilibrium, the diaphragm will assume a position which will supply the flow required to maintain outlet pressure.

When the outlet pressure is equal to the set pressure, the main valve will close and flow will cease. If the outlet pressure rises above the set pressure, the diaphragm will rise further and unseat the relief valve. When the outlet pressure decreases to the set pressure, the valve will close and the relieving will stop.

SPECIFICATIONS

- Maximum Supply Pressure:** 250 PSIG (1.73 MPa)
- Control Setting Range:** 0 - 50 PSIG (0 to 0.345 MPa)
- Proof Pressure:** 200% maximum operating
- Burst Pressure:** 400% maximum operating
- Flow Capacity:** $C_v - 0.95$ (See Flow Graph)
Orifice Diameter: 0.391"
- Supply Pressure Effect:** 12 PSIG (0.08 MPa) increase for 100 PSIG (0.690 MPa) supply decrease.
- Operating and Fluid Temperature Range:** -40°F to +165°F (-40°C to +74°C)
- Leakage:**
 - Main Valve:** 2×10^{-8} atm cc/sec helium
 - Vent Valve:** Bubble tight
 - Diaphragm:** 2×10^{-8} atm cc/sec helium
- Ports:** 1/4" NPTF supply and outlet
One gauge port at 90°.
- Weight (Without gauges):** 2.6 lbs. (1.2 Kg)

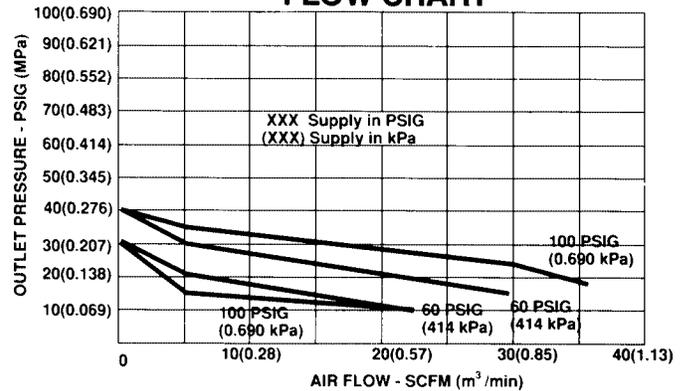
MATERIALS OF CONSTRUCTION

- Body:** 316 SS - Electropolish
- Bonnet:** Brass, nickel plated
- Main Valve Seat:** Teflon
- Vent Valve Seat:** Teflon
- Diaphragm:** 316 Stainless Steel
- Trim:** 316 Stainless Steel
- Filter:** 316 Stainless Steel (120 mesh)

OXYGEN SERVICE

Specification of materials in regulators used for oxygen service is the user's responsibility. Cleaning for oxygen service (Per ES8A 01 297) to 3500 PSIG (24.20 MPa) is supplied by ITT Conoflow at no additional cost. Special cleaning may be performed to the user's specifications at an additional cost through an outside source.

FLOW CHART



ELECTRONIC GRADE CLEANING

Available at additional cost. ITT Conoflow will perform electronic grade cleaning to customer supplied specifications. Cost will be advised prior to performing cleaning.

LEAK RATE CERTIFICATION (ES8A 01 295)

Available at additional cost. ITT Conoflow will certify a leak rate to 2×10^{-8} atm cc/sec of helium. For non-relieving option only.

INTERNAL SURFACE FINISH

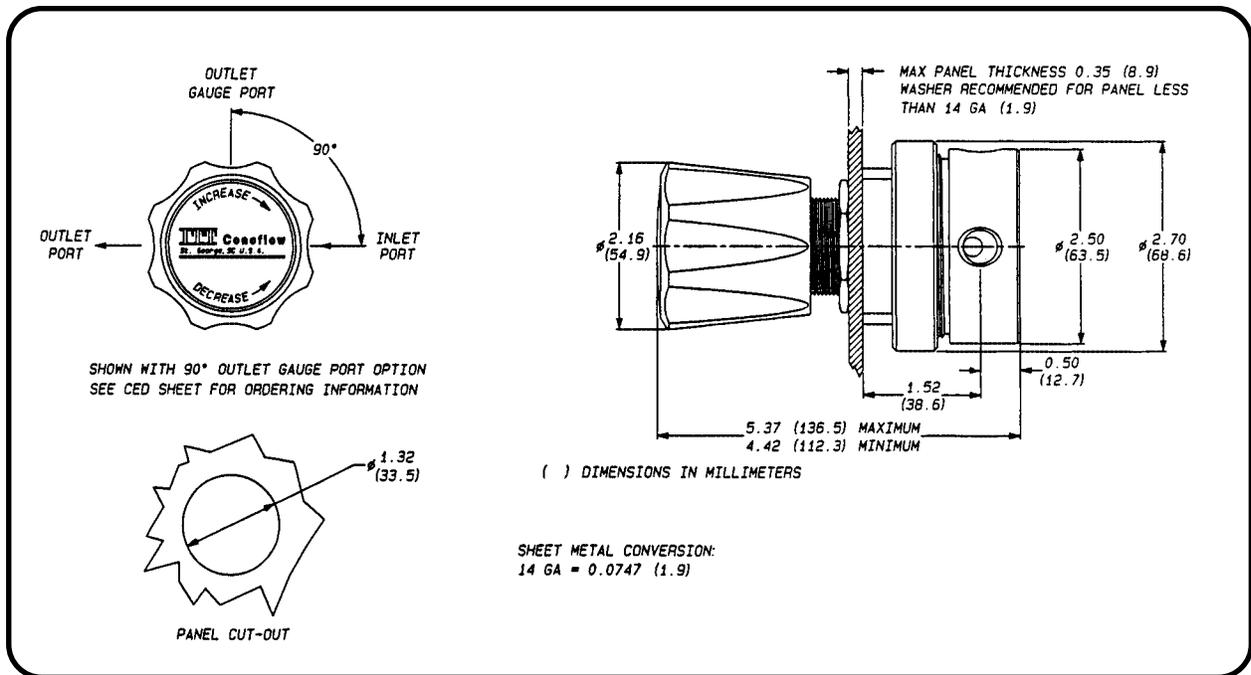
The Model HP610 Regulator has an internal surface finish of 20 Ra on wetted surfaces.

CONTROL ENGINEERING DATA

Control Engineering Data is intended to provide a single source from which one can determine, in detail, the full scope of the product line. In addition to materials of construction and diaphragm selection, it also provides all necessary data, regarding adjustment options and range selections. Control Engineering Data also provides a means of communicating, by way of a code number, which is fully descriptive of the product selection.

NOTE: 1. Catalog numbers as received must contain fifteen (15) characters.

1-5 Basic Model Numbers	HP610= Pressure Reducing Regulator - High Purity Diaphragm Type	12 Mounting	P = Panel Mounting (1-nut)						
6 Materials of Construction	Body/Bonnet/Trim H = 316 Stainless Steel/Nickel Plated Brass/ 316 Stainless Steel	13 Cleaning Options	A = Regulator is cleaned to ITT Conoflow Specification ES8A 01 294. B = OXYGEN CLEANING. Specification of materials in regulators used for oxygen service is the user's responsibility. Cleaning for oxygen service (Per ES8A 01 297) to 3500 PSIG (24.20 MPa) is supplied by ITT Conoflow at no additional cost. C = CUSTOMER SPECIFIED CLEANING Customer to specify the desired level of cleanliness. ITT Conoflow will advise cost prior to performing cleaning operation. Specification of materials is the USER'S RESPONSIBILITY.						
7-8 Elastomers and Diaphragms	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Seals and Diaphragms</td> <td style="text-align: center;">Main Valve Seat</td> <td style="text-align: center;">Valve Seat O-Ring</td> </tr> <tr> <td style="text-align: center;">11 = 316 Stainless Steel</td> <td style="text-align: center;">Teflon</td> <td style="text-align: center;">Buna-N</td> </tr> </table>	Seals and Diaphragms	Main Valve Seat	Valve Seat O-Ring	11 = 316 Stainless Steel	Teflon	Buna-N	14 Adjustment Selections	B = Handwheel (Large)
Seals and Diaphragms	Main Valve Seat	Valve Seat O-Ring							
11 = 316 Stainless Steel	Teflon	Buna-N							
9 Relieving Options	N = Non-Relieving V = Relieve to atmosphere (Standard)	15 Control Setting Ranges	B = 0-50 PSI (0-0.35 MPa)						
10--11 Inlet/Outlet/Gauge Ports	Inlet/Outlet/ 1-Outlet Gauge Ports (90 Degrees) (See Note 1) NPT Connections 91 = 1/4" NOTE 1. Gauge port connection is 1/4" NPT.								



For certified dimensional drawing, refer to HP610-C