

# HOW TO SELECT

## A SMITH SPECIALTY GAS REGULATOR

### STEP 3 Determine delivery pressure needs

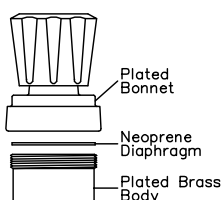
Single stage regulators reduce pressure by passing through one pressure reducing valve area in a single step to deliver a pressure within a specific range. Regulators designed in this way will show a slight increase in delivery pressure as the cylinder pressure falls during use. This phenomenon is known as decay/rise. This reduced inlet pressure provides less force against the regulator valve causing it to open wider resulting in increased outlet pressure. If constant pressure is required, periodic adjustment of the regulator is required as the cylinder pressure is reduced. Two stage or dual stage regulators perform the same function as single stage regulators, however, they are actually two regulators in the same housing. In two stage regulators delivery pressure remains constant as the cylinder pressure decreases. Greater accuracy in pressure control is maintained because the pressure is reduced by passing through two pressure reducing valves instead of one. The first stage reduces the incoming high pressure into the second stage. The second stage is adjustable and reduces the remaining pressure to the desired working pressure. Because the inlet pressure on the second stage is relatively stable from the first stage, two stage regulators maintain stable delivery pressure and do not require periodic adjustment as the cylinder pressure decreases.

In summary, a single stage regulator will automatically increase outlet pressure as the cylinder pressure drops. A two stage regulator outlet pressure will remain constant when the cylinder pressure drops.

### STEP 4 Determine outlet fitting requirements

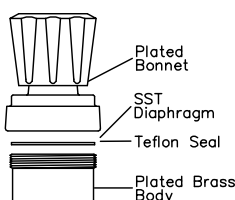
Specific outlet connections are determined by the gases used as well as application and down stream requirements. Most regulators are available with or without outlet fittings and are configured at the time of ordering. Smith Equipment offers a wide variety of outlet fittings including standard hose fittings, needle valves, diaphragm valves, and tube fittings. Refer to the available options shown on the catalog page for the specific regulator chosen. Other options and accessories are also available as listed on specific regulator pages.

#### 100 Series



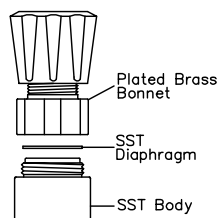
General Purpose  
Low Leak Rate:  
 $1 \times 10^{-5}$  ccs

#### 200 Series



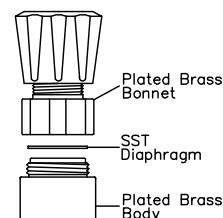
High Purity  
Analytical  
Low Leak Rate:  
 $1 \times 10^{-5}$  ccs

#### 300 Series



High Purity Stainless Steel  
Corrosion Resistant  
Low Leak Rate:  
 $2 \times 10^{-8}$  ccs

#### 600 Series



High Purity Brass  
Corrosion Resistant  
Low Leak Rate:  
 $2 \times 10^{-8}$  ccs