

HOW TO SELECT

A SMITH SPECIALTY GAS REGULATOR

STEP 1 Determine gas and materials compatibility

Material compatibility between the purposed gas and the regulator's materials of construction is essential. Regulator components that come in contact with the gas stream called "wetted surfaces" must be compatible with the gas being used. Depending on the environment the regulator is being operated in, external materials of construction must be considered as well. Smith Equipment manufactures a wide variety of regulators constructed with various materials to meet most any application. For more information on materials compatibility please refer to the "Material Compatibility Reference" located on page 11 of this catalog.

Types of inlet connections (CGA connections) are determined by the type of gas that is used. You can determine the appropriate CGA connection you require for the desired gas need by locating the gas you will be using in the "Regulator CGA Connections guide located on page 12 of this catalog.

STEP 2 Determine gas purity needs

The higher the purity grade of gas selected, the more "diffusion resistant" the system components must be. Maintaining gas stream purity is directly related to the materials of construction in the equipment selected. For example when high purity gas is required, regulators with non-stainless steel diaphragms should not be used. Elastomeric (rubber based) diaphragms tend to absorb and outgas which may compromise the gas purity. Regulators with stainless steel metal to metal diaphragms prevent particulates from being absorbed and later diffused into the gas stream maintaining gas purity. To define the grade of regulator purity required, consider the following as a guide:

GENERAL PURPOSE REGULATORS- Are recommended for use with non-corrosive and non-hazardous pure and mixed gas applications where elastomeric outgassing is not critical. These regulators are not recommended for analytical or high purity applications. Typical applications included general laboratory or plant use. These regulators contain a self-resetting safety relief valve vented to atmosphere to protect downstream equipment from over-pressurization and are available with optional needle valves.

HIGH PURITY ANALYTICAL REGULATORS- Are recommended for use with non-corrosive pure and mixed gas application. Typical applications include gas management of analytical instrumentation, chromatographic carrier gas, and process gas regulation. These units minimize outgassing and inboard diffusion through the use of stainless steel convoluted diaphragms and high purity seats and seal rings. These regulators contain a self resetting safety relief valve vented to atmosphere to protect downstream equipment from over-pressurization and are available with optional needle valves.

HIGH PURITY REGULATORS- Are recommended for use with non-corrosive pure and mixed gas application. Typical applications include gas management of analytical instrumentation, chromatographic carrier gas, and process gas regulation. These units minimize outgassing and inboard diffusion through the use of stainless steel convoluted diaphragms, high purity seats and seal rings. These regulators may be fitted with optional captured safety relief vents in the bonnet to safely vent away hazardous gases and protect from over-pressurization in the event the diaphragm fails. Optional packless diaphragm valves are also available for these regulators.

HIGH PURITY CORROSION RESISTANT REGULATORS- Are recommended for use with mildly corrosive and non-corrosive gas applications. The stainless steel convoluted metal to metal diaphragm seal provides superior leak performance and eliminates the need for seal rings. The metal to metal seal eliminates outgassing and inboard diffusion in the gas stream. These regulators may be fitted with optional captured relief vents in the bonnet to safely vent away hazardous gasses and protect from over-pressurization in the event of a diaphragm failure. Optional packless diaphragm valves are also available for these regulators.