Welding Regulators

Welding regulators are used to control gases for welding and cutting operations. A regulator takes incoming pressurized gas and reduces it to the appropriate delivery pressure for use. Regulators have specific inlet connections on them, based on the type of gas they regulate. The connections are commonly referred to as a CGA fitting. CGA fittings are a system of standardized connections on gas cylinders, developed by the Compressed Gas Association. When selecting a regulator, you will need to know what CGA connection you need, or what gas you are using, and your desired delivery pressure. In addition you may want to consider if you need a specific outlet connection for the regulator in your application. The following eZtip will help explain the differences in three types of regulators to assist you in selecting the right one for your application.

Single Stage Single stage regulators reduce incoming cylinder pressure to the desired delivery pressure range in a single step or "stage". The design of a single stage regulator causes a condition called decay rise. This decay rise will cause outlet pressure to increase as cylinder pressure decreases. If a constant pressure is needed, frequent adjustments to the regulator will be required.

Two Stage Two stage regulators do essentially the same job as single stage regulators, reducing a higher incoming pressure to a lower delivery pressure. The difference, is that a two stage regulator does this in two steps, versus one step in a single stage regulator. The first stage reduces the incoming pressure to a lower pressure into the second stage. The second stage then reduces pressure further, to the desired final delivery pressure. Because it is basically two regulators in one housing, two stage units are more accurate and consistent than single stage regulators.

Flowmeter Regulator Flowmeter regulators, as the name implies, are a combination of both a regulator, and a flowmeter. The regulator side reduces the incoming pressure to a lower pre-set delivery pressure into the flowmeter. The flowmeter can then be adjusted to a specific volume of gas, in SCFH (Standard Cubic Feet per Hour) on the delivery side of the unit. Flowmeter regulators are most commonly used in MIG or TIG welding processes.

The following table shows the most common welding gases and their corresponding CGA connection.

Gas Type	CGA Connection
Acetylene	510 or 300
Oxygen	540
Carbon Dioxide	320
Inert Gas (Argon, Helium, Nitrogen, etc.)	580

Information sources include Miller-Smith welding

If you are still having difficulty choosing a Welding Regulator, please contact us at askzoro@zoro.com or 855-289-9676

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