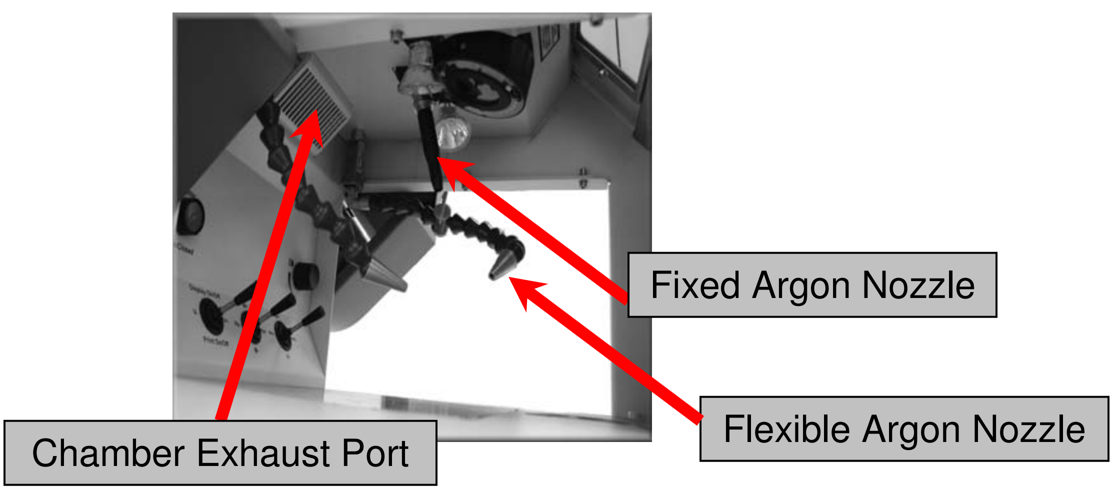
Argon Gas Set Up and Operation

The use of argon gas can be beneficial when laser welding various metals. It can improve the quality of the weld joints by preventing porosity, pinholes or gaps within the weld joint itself. This can insure a stronger joint with less (or no) oxidation resulting in a cleaner, brighter weld.

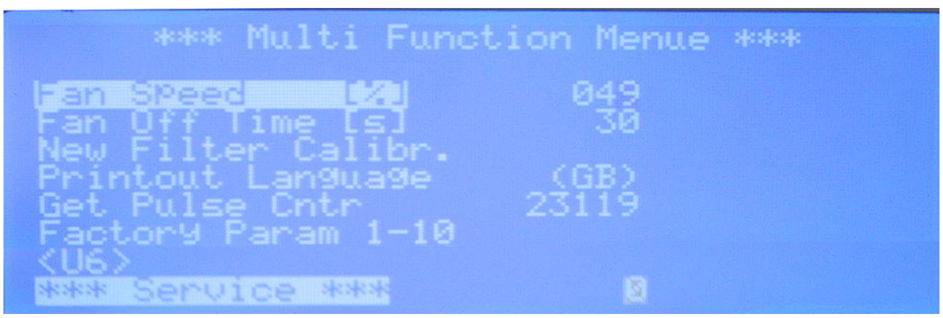
It is important to understand that the reason for using argon is to PREVENT air (oxygen) from getting into the weld joint. Therefore, it is extremely important that the proper flow of argon onto the weld area is maintained. One might argue that some argon is good so more argon would be better. This is not the case! Too high a flow of argon gas will create turbulence and air will be allowed to mix in with the argon defeating it's purpose. The ideal scenario would be to create a "cloud" of argon around the weld joint by utilizing a very light flow of gas.

The StarWeld Performance offers two outlets for the argon gas within the welding chamber. The main delivery is via the fixed nozzle which is just behind the laser protection glass. This nozzle can be removed with it's quick disconnect fitting by simply pushing up on the retaining ring. It can be replaced by simply plugging it into the fitting until it locks in place. A second delivery nozzle is available via the flexible hose that includes a manual shut off petcock valve. This flexible delivery hose allows for the argon to be delivery from a different angle than the fixed nozzle. This can help to insure that argon is surrounding the weld joint.



The StarWeld Performance laser welder utilizes a two position footswitch for firing the laser. As the operator pushes the footswitch down, there will be a click which is the activation of the argon gas solenoid switch. When argon is utilized, a momentary whoosh of argon will be released, followed by a steady stream for as long as the footswitch is held down. By further pushing down on the footswitch, the laser will then fire. The purpose of this dual action footswitch is so that argon gas will only be flowing when you are welding.

There is also a setting that can be adjusted for the chamber filtration system which can help insure the optimum results with argon gas. By pressing F2 on the keypad, you will bring up a Multi- Function Menu of operational settings. The first setting is for the Fan Speed. This setting controls the speed of the exhaust fan within the welding chamber and is displayed as a percentage of maximum fan speed. If you are using argon gas, then you may want to reduce the Fan Speed so that the argon flow is less affected by the exhaust function. This will help to maintain the “cloud” of argon as discussed earlier. The default setting for the fan speed is 50% but it can be adjusted from 40% up to 100%. This setting should be calculated based on the needs of the application and how much exhaust gas must be removed during the welding process.



Items that are included with the StarWeld Performance laser welder for argon gas use;

Rear Panel of Laser

Argon gas hose

Argon gas ¼" Universal NPT Fitting

The red argon gas hose includes a quick disconnect fitting on one end that will plug directly into the Argon Gas Input Port on the rear panel of the StarWeld Performance laser. The other end is for attachment to the user supplied tank of argon gas. Rofin supplies two (2) ¼" Universal NPT fittings (one is required). This fitting can be attached to the red hose by inserting the cut off end of the hose into the nylon fitting on the connector. It will self lock into place. If needed, it can be removed by compressing the outer ring while pulling on the hose to remove.

This supplied fitting can then be attached to the Argon tank via a regulator or Flowmeter. The user will need to supply a tank of argon gas which should be rated as Industrial Grade or better. The tank will come equipped with a valve to shut the gas on/off. The user will need to supply a regulator of some type in order to control the flow of gas to the laser. There are two methods of gas control commonly available, an Argon Regulator or an Argon Flowmeter. Rofin recommends using a flowmeter as it offers better control of the gas flow with a simple to read gage. Either type of valve will need to attach directly onto the argon tank. Be sure to specify that an Argon Regulator (or Flowmeter) is being used as the thread type/direction may be different for other gases.

The output side of the Argon Regulator (or Flowmeter) will have a connector of some type. This will need to mate up to the Rofin supplied ¼" Universal NPT connector you installed on the end of the red hose. An alternative may be available that allows the red hose to attach directly to a quick disconnect that comes with the Argon Regulator (or Flowmeter). In some cases, you will need an adapter to fit the Rofin supplied connector to the proper connector size on the Argon Regulator (or Flowmeter).