

WA Technology

Overview of Patented Gas Saver System (*GSS*[™])

The *GSS* is a Patented Gas Delivery Hose Incorporating a Start Flow Surge Limiter That Can Save 50% or More of MIG Shielding Gas Use and Improve Weld Start Quality.



The Problem – An orifice or a needle valve are used to set and control gas flow. With Regulator/Flowmeters (photo right) outlet pressures range from 25 to 80 psi. Flowmeters used on pipelines allow pipeline pressure to exit the flow control valve when welding stops. A typical pipeline pressure is 50 psi.



Flowgauge/Regulators (photo left) operate by setting a pressure above a critical orifice. For most MIG shielding gas flow rates the pressure exiting the control orifice when welding stops will range from 40 to 70 psi.



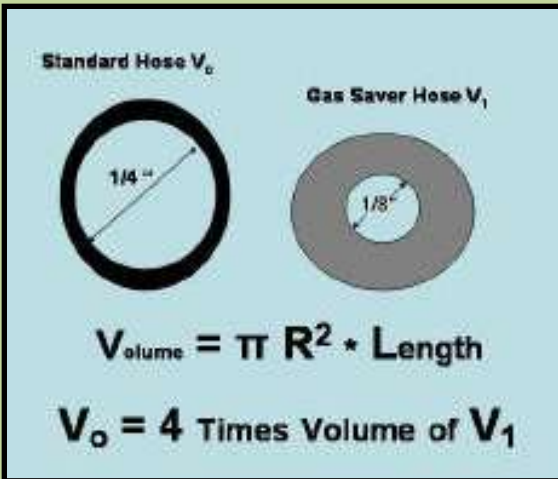
However the pressure needed at the feeder can range 3 to 8 psi depending on gun length and restrictions that occur when welding. When welding stops, gas continues to flow though the orifice or needle valve and pressure in the gas delivery hose will rise to that of the regulator or pipeline. Therefore the pressure will be about $25/3 = 8$ to $80/3 = 26$ times the pressure needed to flow the desired amount of gas!

Excess Pressure Means Excess Shielding Gas is stored in the gas delivery hose due to this high pressure. Most of this excess gas is wasted every time the MIG gun switch is energized, even when just inching the wire. The excess can exceed the amount of gas used while welding! Inferior weld starts result from the high gas surge flow pulling air into the shielding gas stream.

How much excess gas can be stored in a 1/4 inch delivery hose? Up to *7 times* the physical hose volume depending on pressures!

The Solution - Our patented *Gas Saver System (GSS)* stores 80%+ less gas when welding stops.

The *GSS* solves this excess stored gas problem by utilizing a custom, very heavy wall, gas delivery hose with less volume than conventional hoses and the use of a surge flow limiting orifice. The excess stored gas creates another problem as it exits the gun nozzle with a high surge flow at the weld start. Start gas flow rates far exceed the level that allows smooth Laminar flow. It creates Turbulent flow that pulls air into the shielding gas stream. The surge flow restrictor incorporated



in the **GSS** not only adds to waste reduction, it improves weld starts. The start surge flow restrictor is sized so it *does not* limit normal gas flow settings.

Superior Start Quality - Limiting start flow velocity to a rate that avoids excessive Turbulence is achieved while quickly providing enough extra gas to purge the gun nozzle and weld start area. This controlled surge flow rate eliminates moisture laden air from being mixed into the gas shield which results in excess spatter and possibly weld porosity.

The patented **GSS** design maintains system pressure to retain *Automatic Flow Compensation* built into standard gas delivery systems since the introduction of MIG and TIG processes! If the pressure is lower than 25 psi this feature is lost! Retaining the high pressure also helps to quickly provide a controlled amount of extra gas at the weld start to purge air from the gun nozzle and weld start zone.

Proof of Savings- A Manufacturer making truck boxes reported the following test results. They used



their standard gas delivery hose and welded 236 truck box doors with one cylinder of shielding gas. With the **GSS** installed; same welding conditions and same flow rate they welded 632 of these doors with one cylinder! That is a 63% savings in gas use.

Bottom Line - The patented **GSS** has no moving parts to wear, maintain or knobs to adjust. It *does not* control gas flow while welding. The welder sets that rate as usual. Welders appreciate the start benefits and are not irritated by restrictors that set flow or low pressure devices that cause flow variations while welding! If you desire to control the range of allowable flow settings see our separate patented **Flow Rate Limiter** device on our web site.

The **GSS** is inexpensive with **Payback** measured in weeks.

Saving Shielding Gas and Improving Weld Start Quality Is Easy and Inexpensive

Just Replace Your Gas Delivery Hose with Our **GSS**



Copyright by WA Technology
 US Patent Number 6,610,957
 These other patents also cover
 some of our shielding gas saving products;
 7,015,412; 7,019,245; 7,462,799
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