

# WA Technology

## Overview of Patented Gas Saver System (**GSS**<sup>™</sup>)

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.



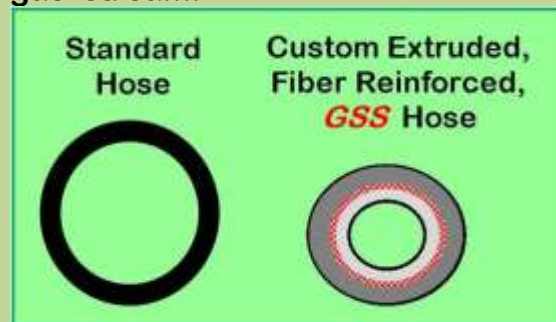
However, the pressure needed at the feeder to set the desired flow can range 3 to 8 psi depending on gun length and restrictions that occur when welding, such as spatter in the gas diffuser ports, clogged conduits that also serve as

the gas passage in the gun cable. When welding stops, gas fills to regulator or pipeline psi. Therefore, the pressure can be  $80/3 = 26$  times the pressure needed to flow the desired amount of gas!

**Excess Pressure Means Excess Shielding Gas** is stored in the gas delivery hose. 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!

**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 extruded, very heavy wall, gas delivery hose with much less volume than conventional hoses and uses a surge flow-limiting orifice. 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.



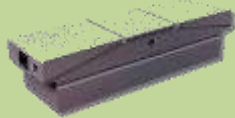
We add a surge flow restrictor to the welder end of the **GSS** hose. The surge flow restrictor is sized so it *does not* limit normal gas flow settings. Welders often see this starting benefit as reduced spatter.

**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 peak surge flow rate is accomplished with a built the peak flow limiting orifice in the welder/ wire feeder/ Robot/Cobot end of the hose. It eliminates moisture-laden air from being mixed into the gas shield that 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!

**Savings Proof:** - 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; the same welding conditions and flow rate while welding, they welded 632 of these doors with one cylinder! That is a 63% savings in gas use.

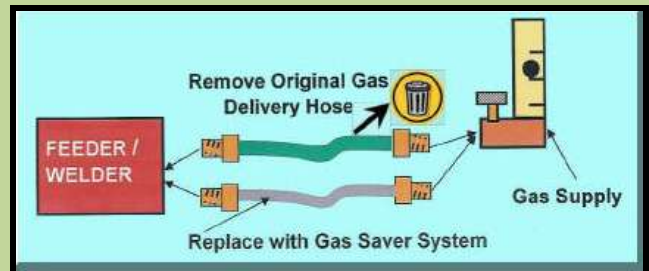


**Bottom Line** - The patented **GSS** has no moving parts to wear, maintain or knobs to adjust. It *does not* set the shielding gas flow rate while welding. The welder sets that steady state flow rate, typically with whatever device is being used or

any quality flow control. Welders appreciate the start benefits and are not irritated by restrictors that set flow they cannot adjust or low-pressure devices that cause flow variations while welding!

The **GSS** is inexpensive with **Payback** measured in months. Well over 15,000 are in use, collectively saving millions of dollars of shielding gas per year and improving weld start quality.

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



### **Welders Setting Excess Flow?**

We have another patented product that can be used in conjunction with our **GSS**. Our Flow Rate Limiter and Lock (**FRL**.)

This billet aluminum part fits over the flow control adjustment knob on most flowmeters. A set screw locks the **FRL** on the knob so it cannot be turned higher than where it is set. A small brass lock blocks access to the set screw!



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