

WA Technology

SUGGESTED MIG WELDING SHIELDING GAS FLOW CHART

(Argon Mixtures and CO₂)

Exceeding Maximum Flow Pulls in Air, Making Shielding Worse!

Our Patented ***“Gas Saver System”*** Reduces the Excessive Blast of Shielding Gas at Each Weld Start, Reducing Spatter and Total Gas Use.

MIG Gun Nozzle Size Inside Diameter (Wire Size, inches)	Minimum Suggested Flow (1)	Typical Flow Setting	Maximum Suggested Flow (2)
3/8 inch (0.023-0.030)	15 CFH	18-22 CFH	~ 30 CFH
1/2 inch (0.030-0.045)	18 CFH	22-27 CFH	~40 CFH
5/8 inch (0.045-1/16)	22 CFH	30-35 CFH	~55 CFH
3/4 inch (3/32-1/8)	30 CFH	30-40 CFH	~65 CFH

Notes: (1) Flow is measured in CFH (cubic feet per hour) NOT in pressure (psi.)

(2) Maximum flow rate limit is set to avoid excess shielding gas turbulence. If exceeded, moisture laden air will mix into the shielding gas. These values are somewhat higher than defined in articles by The Welding Institute (UK) and the manager of welding R&D for Praxair (which states flows should not exceed 50 CFH for typical 5/8 inch ID nozzle.) CO₂ shielding tolerates the somewhat higher values shown. Exceeding these suggested maximum flows will not help handle drafts! If draft is over ~ 4 to 5 mph use a wind break.

See the Following Pages for Information About Our Patented,
Inexpensive, Simple to Install ***“Gas Saver System (GSS.)”***

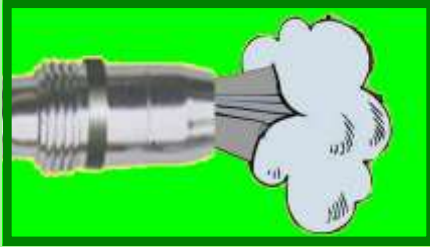
It can cut total gas use in half and provides improved weld starts with less spatter. An example of an industrial fabricator, making short welds, is presented where they were able to produce 632 parts with one cylinder of shielding gas using our ***GSS*** where only 236 parts could be made without it!

To Keep a Focus on ***SAVING NOT SELLING*** Shielding Gas, and to Provide an Excellent Value, Our Patented ***GSS*** and Other Shielding Gas Saving Products Are Available Directly on the Internet at www.NetWelding.com.

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The Gas Surge at Weld Start Can Waste Over Half the Shielding Gas Used!

Depending on the number of weld starts, tack welds and how often the MIG wire is just inched to cut of the end or position it in the joint, the gas surge at the weld start can waste over half the shielding gas used!



Why is Gas Wasted? When welding, the pressure in the gas delivery hose is reduced by a needle valve or an orifice (depending on the

flow control device used) to that needed to flow the relatively low shielding gas flow rate. It typically varies from 3 to 7 psi depending on gun cable bends, spatter build-up etc.

At each weld stop, gas continues to flow through the needle valve or orifice and quickly fills the hose from the gas supply to the welder with excess gas. Typical pressures for cylinder regulators is ~40 psi.

When welding starts, this excess stored gas, created by the 40 psi, reduces to on average 4 psi, by blasting out of the gun nozzle. It's like letting the air out of your car tire! We have measured peak gas flows of well over 150 CFH on small welders and 200 CFH on industrial welders. This also pulls air into the shielding gas stream creating excess spatter.

How Our Patented Gas Saver System Works

Our patented **Gas Saver System (GSS)** simply replaces the existing gas delivery hose from gas supply flow control, to welder. It uses a small inside diameter hose that holds only about 20% of the stored shielding gas, therefore saves 80% of the gas waste at each weld start. It includes a special flow control orifice in the brass fitting at the welder end to limit the peak surge flow to a rate that does not cause excess turbulence. Enough extra gas is available to quickly purge air from the weld start area at a controlled rate - improving start quality.



Can the GSS flow enough gas? Yes we have industrial fabricators using **GSS's** over 50 feet in length! It can flow any practical flow rate needed. **Does it interfere with welding gas flow settings?** No, it only limits peak flow; welding flow rates are set with your existing flow control to whatever level is needed. There are over 10,000 **GSS's** in use, with large fabricators purchasing more when new MIG welders are added - it works!

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Examples and Testimonials of Fabricator Results When Using Our Patented **GSS**

How Much Gas Can Be Saved??



The best way to show the gas savings achieved with our simple, inexpensive, patented **Gas Saver System (GSS)**, is with an example from one of our industrial customers. They tested one system then bought them for all 35 of their MIG welders.

A Texas Truck Box manufacturer evaluated the system on a repetitive job, welding doors. With their standard gas delivery hose they welded **236 doors** with a full cylinder of shielding gas. Just replacing their gas hose with our patented **GSS**, maintaining the same flow settings, they welded **632 doors with another full cylinder!** That's a 63% reduction in shielding gas use. Said another way it would take over 2 1/2 cylinders to weld that same 632 doors with their old gas delivery hose!

Weld Performance Improvement

A small shop owner, Al Hackethal, provided this feedback after he purchased a 3 foot **GSS** (WAT FB3) for his small MIG welder. He reported these findings:

"Well, I can't believe it. I never thought a hose could make that much of a difference. I had a small job that's been waiting for a while. The weld quality, and even penetration is considerable better. Almost no spatter! The weld seemed to be hotter and I turned my MIG down a notch.



Initially thought that my imagination had kicked in, but then realized that the gas I'm buying is actually working the way it's supposed to. Glad I found your website. This is one of the few things that really works better than any info could suggest. I understood the theory, though in practice I under-

stood it much better after the first couple of welds. Now I have better looking welds and almost no spatter, which means less grinding and finish work! In addition, the tip was cleaner after the job I just did.

This will provide savings in time, labor and maybe even consumables too. As a one man shop there's never enough time for anything.

Al also has a TIG welder with 300 amp water cooled torch and bought one of our Leather Cable Covers (WAT HCC). His email said this about it!

Oh, the leather wrap for my TIG hoses worked very well and fits perfectly. I'd just replaced the hoses and was looking for something to protect them that was better than the nylon wrap that's available around here. Now I'm "TIGing" again too, and much safer. It's good to know the coolant hoses are well protected. Much better than using a 300 amp TIG and then realizing that I was standing in a puddle of coolant, which is what recently happened. Can't pay the bills if I electrocute myself!

Thanks for making products affordable".

Another Home Shop Writes About the **GSS** System

Perry Thomasson has a very well equipped home shop. He uses a 175 amp MIG welder. However the small welder cart only held a medium size shielding gas cylinder and Perry wanted to reduce the number of times he had to have it filled.



He purchased a large cylinder and chained it to the shop wall. He needed a longer gas delivery hose so he added a 50 foot conventional 1/4 inch ID hose. He found he was using a lot of gas!

Perry purchased a 50 foot long **GSS** and saved a significant amount of shielding gas while improving his weld starts by reducing the starting gas surge. Since his regulator/flowgauge had a hose barb on the output, we supplied Perry with a splice connection on the supply end of the **GSS**. He simply cut the existing gas delivery hose close to the regulator and spliced in the **GSS** hose. The welder end uses a standard CGA fitting that is supplied with the system.

(About a year later, Perry's brother purchased the same system for his welder!)

Perry emailed the above picture and said;

" The system works great. Thanks for the professional service and a great product."

A Professional Street Rod Builder Said This About the **GSS**:

The shop had a 250 amp MIG welder with built in feeder and a 6 foot gas delivery hose. With their standard gas delivery hose the peak shielding flow at weld start was measured at 150 CFH, far more than needed and enough to pull air into the shielding stream. Air is then "pulled" into the gas stream causing poor weld starts and possibly weld porosity.



With the **GSS** replacing their existing hose, the peak flow surge at the weld start was about 50 CFH and it quickly reduced to the 25 CFH setting on their regulator/flowgauge. With their many short welds and tack welds, they used less than half the gas with the **GSS** and had better starts.

Kyle Bond, owner, indicated a big benefit is the reduced time and effort changing cylinders since it's required less frequently. He quickly saw the improvement achieved in weld start quality as a significant advantage! Kyle, an excellent automotive painter, was well aware of the effects of gas surge caused by pressure buildup in the delivery hose when stopped. He has to deal with the visible effects in the air hose lines on the spray gun in his paint booth! It's too bad we can't see the shielding gas waste as Kyle can the effects of excess pressure when he triggers his spray gun! The paint surge is visible and creates defects unless the gun is triggered off the part being painted! Kyle can manage the surge by triggering the paint gun off the part; unfortunately we can't start our weld with the MIG gun off the part! The **GSS** has a built in surge flow limiting orifice that keeps the peak flow from becoming excessive. So the **GSS** not only saves gas it improves weld starts!

Have questions? Email us at: TechSupport@NetWelding.com