

WA Technology

Grill Mesh Screen *ITEM GMS*



Without having experienced an Air Conditioner Condenser leak, would not have installed the Grill Mesh Screen behind the existing grill! The local Chevy Service Center, who replaced the Condenser, said that the cause was a rock and GM warrantee (or extra GM warrantee purchased) wouldn't cover the replacement. Decided one \$870 bill was enough so bought this GM Grill Mesh Screen to protect the new Condenser and radiator – that was before I found out it would be covered by Chevy! The Condenser problem is outlined at the end of this report since it's of interest and discusses how "Chevy Home Office" was addressed and after a month finally covered the cost.

Looked at a number of mesh screen grills on the Net. Some are inexpensive but look cheap. Fortunately some pictures show their products are not ridged but simple window screen type material – not what I wanted. Some attach with only tie-wraps! Decided since there might be some reduction in airflow it would be smart to buy the one GM sold for the Vette (GM part number is 17891009). It hopefully would have been checked out for adequate performance. You can Google the part number and find a number of folks selling at discount.

After receiving the product it was obvious the GM Grill Mesh Screen was very well designed and fit as one would expect from an OEM. It looked integrated into the overall design. Any air reduction would be minimal and probably not significant.

Not wanting any "Bling" on the car, gave consideration to painting the Grill Mesh flat black. However after a trial fit realized that it is sufficiently recessed so it is really not very visible. If you're thinking of purchasing for appearance consider a more aggressive look. There are heavy screen material grills available in stainless (as is this one) that essentially replace or cover the existing black grill. They also sell for about 1/2 the price. ***But if you want quality, subtle protection for your Condenser and Radiator the GM product is a great choice. It is labeled "Made in Belgium."***

Tools Needed: In addition to a 7mm socket you will need a few different length extensions. A hand ratchet is useful but not essential. Medium Strength thread locker is also needed. The Loctite 242 stick shown works great. An awl and pointed needle nose pliers help move the Grill Mesh during installation. A roll of masking tape.

With all my metric tools did not have a 7mm wrench. Three sets went from 6 to 8. However thankfully had a 7mm socket.



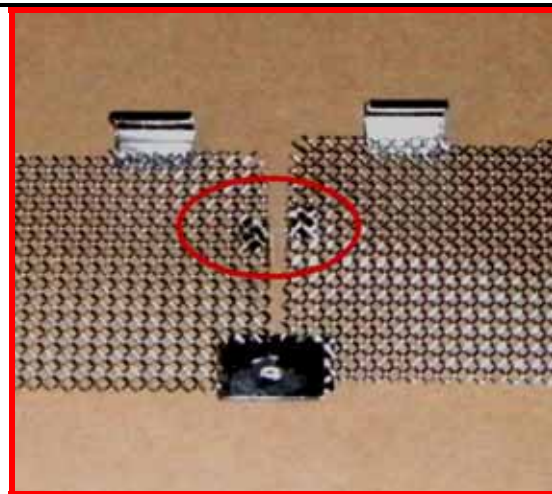
Don't be surprised when the box is delivered, it is not very long! The Stainless Mesh Grill comes in two pieces.



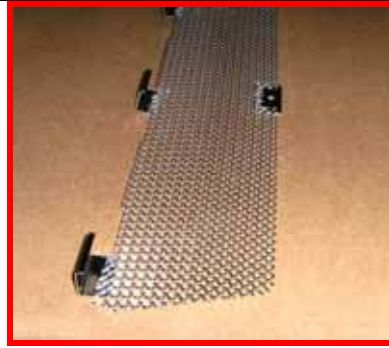
This is a photo of both pieces laid side by side. This makes it easy for the ridged pieces to slip into the area behind the grill. The red circle shows two center tabs that are perpendicular to the Mesh.



Hard to see clearly but in the Red circle are the two tabs in the center which are perpendicular to the Grill Screen. One of the center tabs has a welded nut, the other a hole. Was concerned this would be the hardest to assemble. It was not easy but others were more difficult! On the bottom are the overlapping center tabs that screw into Clips provided.



This is a view of one grill side. On the left are the stainless hooks that slip over the top of the original grill. These are not visible when in place. On the bottom is one of the tabs that screws into the supplied Clips you'll install.



Three Stainless Clips are supplied in the kit. The black screw is one of the three removed from the back of the existing grill. The first step is to install these clips using the removed screws. However when the first one was tightened the very small screw easily stripped the plastic part it screwed into. That was only with a hand ratchet! The next photo shows what was done to solve the problem and a recommendation that differs from the instructions. Recommend these clips be installed without jacking the Corvette since you can access them with two hands through the grill.



WARNING: Do not use normal thread locker on plastic. It says that clearly on the instructions. It will dissolve plastic!

Loctite 425 is sold for screwing into plastic but it's expensive.

The OEM screws are very small. *It is recommended you do not reinstall the original ones but use what I had to for the one that caused the striped hole, a much larger diameter sheet metal screw.* The clip hole will accept a screw even one size larger (screw on left) than what was selected (the one used is shown in the clip hole.)

Be sure to install in the Clip in the correct direction, weld nut faces the front of the car.

You'll define the length of socket extensions needed for each of the three clips in this installation where you can use two hands and see!



With our Z51 the left clip has the engine oil cooler reducing clearance for your hands, requiring a shorter socket extension and more difficult access.

Used a technique of jacking both car sides about 2 inches (using lifting pads-see picture below) to provide access for the center hydraulic Jack with “Cross Brace.”



On Left is the bottom side of our home built cross brace. It has a center pin that fits into the hole in the jack lifting platform (Inside Red circle). The other side has two raised wood pads that fit under the GM “preferred lifting points” on the front cross member. Be sure you know where they are and you’re not jacking on the oil pan etc.



You must always use jack stands which in this case fit on the ends of the cross brace. To be safe an extra pair of jack stands can be placed under the lifting pucks on the car sides.



To gain access to install the screw in the perpendicular center tabs you’ll require complete access from under the car unless you have a friend that plays in the NBA with very long arms!



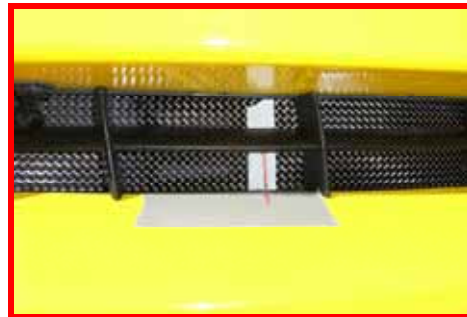
To assist in lining up the bottom tab with the clip previously installed, place a piece of masking tape on the front face of the Grill Screen and put a line at the center of the hole



Install the right side first (all references to car side follow the convention of as if sitting in the car seat.) After insertion and putting the top clips over the top edge of the original grill then move the Grill Screen to the right using the needle nose pliers.



Also place a piece of tape on the front bumper and mark the clip center line location. Then just line up the tape marks as you insert the screw blind from the back. If you have long arms perhaps you can reach to start all screws by hand. It was much easier for me to use the set-up shown below.



For the center tabs was able to use my hand in a somewhat contorted position to insert the screw. Used a socket, extension and hand ratchet to tighten.

The approach used to install the stainless screws provided into the Clips was to place the screw and washer in the 7mm socket and place a small hole in a piece of masking tape and insert it over the bolt. Use Loctite (shown in stick form on right of photo) since you will not use much tightening force to avoid overloading the screws holding the Clips which are only screwed into plastic. When the screw is $\frac{1}{2}$ way in pull the socket off and the tape will come with it. May want to use Duct Tape to secure the socket to the extension so it does not remain on the bolt head. Reinstall the socket and tighten by hand.

We used the original screws on two clips and relied on the Loctite to hold hand tightened screws.



In Summary:

You can install the supplied "Clips" from the front of the grill since you can use two hands and access through the grill. You can also see what you're doing! One hand can position and hold the socket while the other reaches from the back with a long extension. You'll be doing that blind in the next step!

DO NOT OVERTIGHTEN THE SCREWS; they are only going into plastic.



To install the Grill Mesh you'll need to jack up the car. Be careful. Use thin needle nose pliers to position the Grill Mesh and to pull it forward as the screws are inserted from the back through the tabs into the Clips. Use Loctite not excess force on the supplied stainless screws (not the ones in plastic!)

For the center middle tabs the screw is parallel to the Grill Mesh so you'll have to reach in an install with your hand. You can feel your way into the nut. You can then use a socket with extension and a hand ratchet to tighten. Tighten this one all you want!

Finished Grill Mesh Below. Looks Very Neat and Professional.



AIR CONDITIONER CONDENSER PUNCTURE

The use of a Grill Screen came about because the air conditioner Condenser developed a visible leak. The Chevy Service department removed the Condenser and said the leak was caused by a stone or similar item and would not be covered under the GM warrantee. While waiting over a week for a new condenser to be shipped from GM, investigated several grill screens and purchased the one sold by GM as a Corvette accessory. When the car was picked up I asked to have the old condenser. I could not understand how a stone could have caused the puncture since when I saw the leak I had just traveled 16 miles into town on city streets at a max speed of 40 to 50 mph.

The Following Pictures Depict What Was Found:

There was a gouged area where the leak had occurred. This gouged area was about 5/32 inches long. With a 10X magnifier saw the metal was very thin and the gouge was oxidized as if it had occurred some time ago. At one end of the gouge was a small crack. The shape of the crack was very similar to a cracked weld in a natural gas pipeline that I have on my web site! It was obviously a crack not a hole caused by a puncture! Conjectured the gouge was caused before the Condenser was put in the car. It created a very thin area but not a hole. After a year the thin area produced a small crack.



Unfortunately don't have the ability to take a picture of the crack with photographic equipment at home but the overall shape looked very similar to the crack shown in this photo that occurred in a natural gas pipeline! The center was opened and slightly raised from the internal pressure. A puncture from a rock would be pushed into the tube and have a more rounded appearance.

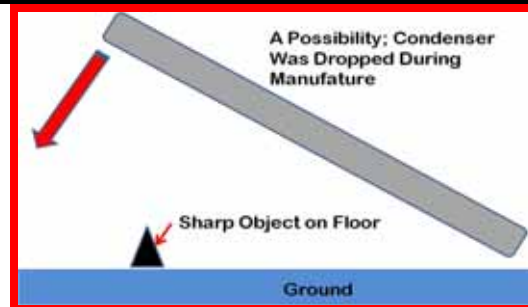


Perhaps the most obvious peculiarity was the fact that the condenser was bent! It was bent as if the Condenser was hit very hard at the location of the gouge. That could not have occurred by any foreign object striking the condenser as I drove!

Was not as obvious without the straight edge as in the photo.



Then how did all this occur? One can only speculate but a plausible explanation is the condenser was dropped on a sharp object from the time it was manufactured to when it was installed in the Corvette causing a gouge. Therefore it was a manufacturing defect not caused by me!



A 10 page report summarizing my observations with pictures was prepared and given to the Chevy Service Center. They passed the report on to the Chevy district service representative who visits once per month and must approve unusual warrantee items. He accepted the information in the report reinforced by the Service Center Manager and the Mechanic who emphatically said that he had not bent the condenser while it was being removed! Bottom line, the \$850 for the new condenser installation was reimbursed!

Had Similar Warrantee Occurrences Two Other Times!

One Occurred With The First New Car Ever Purchased, A 1967 Corvair

The clutch plate broke in the 1st year! Had an uncle who was Service Manager at the Chevy dealer where I purchased the car. He told me, "Chevy won't cover a clutch failure." But the car was only a year old and was not abused. Only had 110 HP so rapid starts were not my MO at the time! And a clutch plate broke not a disk! Uncle Fred said, "We can leave the car disassembled and wait for the Chevy rep to visit! The rep saw the parts agreed it was a defect in the clutch plate since the clutch disk any flywheel were fine! Paid to escalate the issue!

The Other Was With My “Just Out of Warrantee” Datsun 260 Z

While driving the car heard a loud noise like an airplane overhead. As I slowed down so did the noise! Stopped the car and found a stream of gear oil coming out of the differential. A closer look revealed a dime size hole in the cover! After paying for a new rear end I asked to have the old rear to examine. Found a differential ring gear bolt had loosened the bolt head wedged on the inside of the case and sheared off. The sheared head was propelled through the cast cover as I was driving! That caused all the gear oil drained out. Examination of the broken bolt shank that remained in the differential showed a ductile failure. In our Metallurgical Lab we took magnified pictures of the sheared bolt and pristine gears showing no abuse.

The Datsun service manual I had purchased said, *“If the differential cover is removed check the ring gear bolt locking tabs and be sure they are bent fully around the bolt heads!?”* Hmm, why say that since to remove the cover from the differential it had to be removed or lowered from the car- not normal maintenance!? Neither Dealer nor Datsun USA would accept that this was a manufacturing defect. So wrote to the President of Datsun in Japan (one of my engineers came from Japan and wrote a cover letter in Japanese!) We included a report showing the ductile bolt failure and pristine gear teeth reinforcing this was not a bolt failure or abuse of the car. Datsun Japan agreed it was not abuse and the locking tab was not properly installed. They authorized reimbursement of the cost of the new differential! Had the Dealer taken the differential apart they would have seen it could have easily been repaired with a new bolt, properly installed bolt locking tabs and a new cover. But they just replaced it and charged me! The report from investigation of the removed differential caused Datsun to reimburse the cost of the new one!

BOTTOM LINE

Don't Give Up! Prove Your Point When It Comes To Warrantees.

**Have a MIG (Wire) Welder?
A Friend with a MIG Welder?
Know Someone with a
Fabrication Shop?**

**Do Them a Big Favor and Have Them
Review the Shielding Gas Saving
Information on Our Web Site:**

www.NetWelding.com

***If You Have a Home Shop -
Have You Run Out of Shielding
Gas on a Saturday or Sunday?
We Have a Solution:***

How Much Gas Can Be Saved??

The best way to show the savings is with an example from one of our industrial customers who tested the system then bought them for all 35 of his 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 substituting their gas hose with our patented **GSS** maintaining the same flow settings they welded **632 doors!** That's a 63% reduction in shielding gas use.

Weld Performance Improvement

A small shop owner provided this feedback after he purchased a 3 foot **GSS** for his small MIG welder. Al Hackethal 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 understood 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. 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 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 the largest cylinder his distributor offered for sale and chained it to a wall in his shop. He needed a much

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.

He 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.

Perry emailed a picture and said;

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

A Professional Street Rod Builder Had This to Say About the GSS:

They use 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 sucked 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. With the many short welds made and frequent inching of the wire, they used less than half the gas and had better starts.

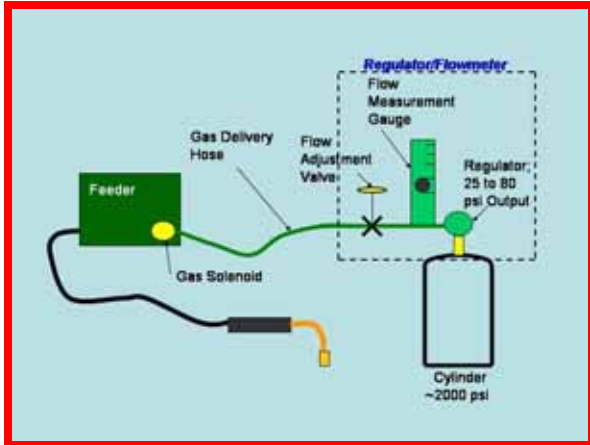


Kyle Bond, President, indicated a big benefit is the reduced time and effort

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 you not only save gas you improve your weld starts!

How Does The GSS Work?

Gas waste occurs every time you pull the MIG torch trigger even if it's only to inch the wire to cut off the end.



To keep flow at the preset level the gas pressure in the cylinder regulator will be between 25 and 80 psi. Flowgauge regulators (those with a flow calibrated pressure gauge) operate in this pressure range as well.) However to flow shielding gas though the welder and torch typically requires 3 to 5 psi depending on restrictions. Therefore every time



welding stops the pressure in the gas hose raises to the regulator pressure of 25 to 80 psi. That stores up to 7 times the hose volume of gas in the hose. This is similar to your shielding gas cylinder which holds about 150 times the volume of gas as the physical volume of the cylinder due to the high pressure!

The patented **GSS** stores over 80% less gas than typical shielding gas hoses. In addition to the wasted gas (which you can hear when you pull the torch trigger) the high flow also

causes air to be pulled into the turbulent shielding gas stream! This is like starting with the gas cylinder shut off! You have probably experienced that before when you forgot to open the valve!

It takes a short time for the shielding gas flow to return to a smooth less turbulent (laminar) flow even when the start gas surge flow reduces. That can take several seconds so when making short welds or tack welds you're not getting all the benefits of the shielding gas you're purchasing!

SUMMARY:

The **GSS** can cut your gas use in half or more. It also has a surge restriction orifice built into the fitting at the welder- wire feeder end. That limits peak flow (*but not your set flow*) to a level that avoids excess turbulence for better starts. It allows a controlled amount of shielding gas to quickly purge the weld start area.

All you need to do is replace the exiting gas hose from cylinder regulator to welder with our patented GSS. It is available in various lengths at www.NetWelding.com.

There are more testimonials at:

http://www.netwelding.com/product/on_test_results.htm

Have more questions? See:

http://www.netwelding.com/Overview_GSS.htm

Or email us at:

TechSupport@NetWelding.com