

Battery; ITEM BAT

At 3 1/2 years old it was time to think about a battery replacement in the 2008 Corvette. Checked the voltage after the car sat for 12 hours and it was only 12.4 volts; it should be about 12.8 to 12.9volts- as was our 2010 SUV when checked to compare and validate the meter reading. Since the Vette is my only vehicle and is occasionally left parked at our local airport (with a car cover) no sense in waiting and getting stuck! Decided since the Optima Yellow Top in our Street Rod is now 6 years old, the extra money was worth the cost. Besides it matches the yellow car! (Turns out it was replaced “just in time.”)

The following is a picture story of the replacement and an interesting finding:

First remove the terminals. The black covered ground terminal first and then the red covered positive terminal. The negative ground is first since if the wrench slips, and touches the terminal and a metal ground - -no harm done! Once it is off there is no problem with positive red covered cable since if contact is made there is no ground path with the negative terminal removed.

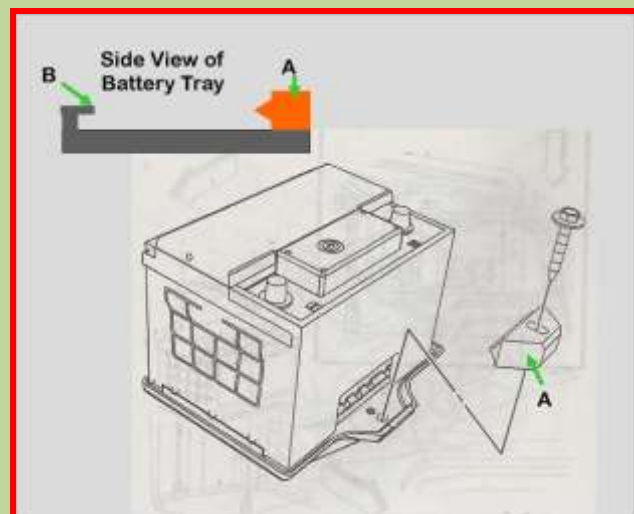
Have to give GM credit for designing a new, light, efficient terminal. Just unloosen the nut and the tension will be lessened. No need to remove the nut. Wiggle the terminal connector and it should come loose.



Next remove the front battery hold-down. See Corvette Service Manual figure - right. Remove hold-down marked “A”. Loosen bolt fully then reach down and remove by hand.

Some Vette Forum discussions indicated Optima needs an external hold-down. Actually the Corvette system works great.

Note in sketch, the battery tray has an “overhang” (B in the picture) on the rear side. The new Optima has a lip that will slip under the overhang and holds perfectly.



Just lift out the old battery,-there is room. Slip in the Yellow Optima, it fits perfectly. It is model number 35D as recommended in the Optima application tables. Tilt the Yellow Top slightly to be sure it slips under the rear hold-down lip. Then carefully inset the bolt in the front hold-down. Do not over tighten; the service manual says to use 13 ft-lbs. The overall Optima dimensions are almost identical to the OEM Delco.



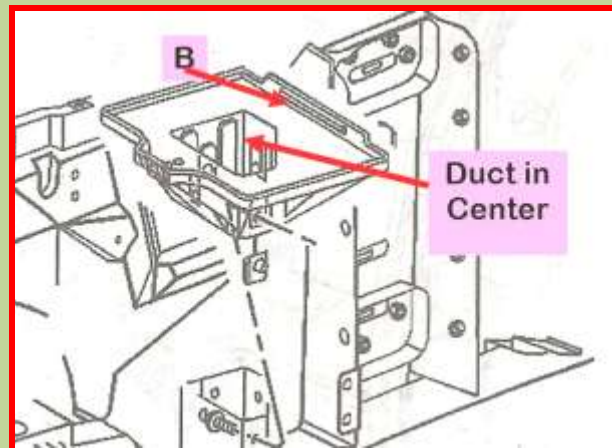
The GM terminal has a unique way of tightening. There is a conical bottom on the terminal nut. It fits in a tapered, tear drop shaped slot which pulls the clamp together as the nut is tightened. Part of the taper can be seen on the right of the nut. Again don't over tighten. The service manual says 11 ft-lbs.



Put the positive red terminal on first then cover it with the red rubber Corvette terminal protector.

Connect the negative terminal last.

An interesting observation occurred when the battery was removed. Saw the water level could be checked which had not been done in 3 ½ years! Did not realize it was possible. Nor does the owner's manual say anything about checking battery water levels. The three cells on the driver side were low, slightly exposing the top of the plates. Then noticed a black stain on the rag that the battery was placed on. It was getting larger! Put the battery outside on a new rag and checked after about 12 hours. No more staining. It probably was a small crack! Then read in a Forum comment that there is a center opening and a plastic duct in the battery tray just in case of a leak! It protects the wire harness and electronics sitting below the battery!



REPLACED THE BATTERY-JUST IN TIME!
(Note, the rear hold down lip labeled "B.")

It appears the battery was changed just in time! The battery tray did not have anything but dust under the removed Delco! The crack must have been small and in the center area. Nothing was visible under the battery or on the ground under that area in the garage.

An Optima Red top is no doubt all the capacity needed. If the Vette was red that would have been my choice! However the Yellow Top in the Street Rod has been working well for 6 years! There is a battery tender on it at all times and that no doubt helped extend its life.

One Minor Short Lived Problem!

The Vette Forums and the Chevy Service Manual made no mention of worrying about the lack of power with the battery being disconnected during the change. Was thinking I would make a 9 volt battery to a “cigarette lighter” auxiliary plug, but no need. One Forum comment said it was 2 hours before the new battery was reconnected and all functions, radio, seat settings etc. retained their memory positions. Can’t imagine why it should take more than 10 to 15 minute! Well they were mostly right! All functions worked fine or so I thought until I used the car for the first time. I had not noticed, but after the battery was replaced the driver’s window no longer moved up the ~ ¼ inch when the door closed. There was a small gap. But only on the driver’s side. All was fine on the passenger side.

Checked the Forums and found no comments on the issue (probably didn’t search long enough.) Checked the Owner’s Manual and sure enough the windows need to be “indexed” after a battery change! It is easily accomplished. Just sit in the car with it running, use the window switch and raise it all the way up and hold it in the open position for 3 seconds. Then close the switch. Reactivate it in the upward position again for another 3 seconds. That did it! It remembered where it needed to go! All worked fine.

**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.

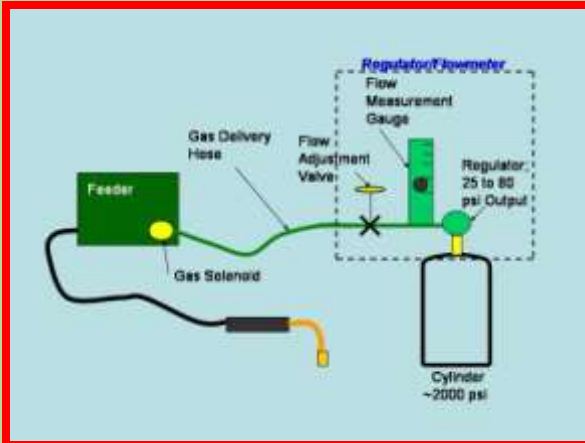


Kyle Bond, President, indicated a big benefit is the reduced time and effort

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