

How To Install:

Dual Mode Exhaust Switch: *ITEM EXS*

For Z06 and Vettes 2008 and newer with the NPP Option, a switch to turn the dual mode exhaust on and off when you want is a must. If nothing else, to hear the gurgling and popping when backing off at low speeds! The stock system shuts down below ~3000 RPM depending on year and model so you'll never hear it! Now you are in control.

Found a place to put the switch that is hidden from view, easily and readily accessible while driving and requires drilling one small hidden hole! If you want to return to stock, a small black rubber plug will go unnoticed (but anyone buying the Corvette will want this feature-even a purest! The front cup holder is a great spot! The cover can still be used to completely hide the switch if desired. We considered using the ashtray but decided the cup holder would be best. You can use your ingenuity for location. If you don't have heated seats a switch can be placed next to the ashtray where they would be located.

Materials and Construction Steps:

Purchase:

- A mini fuse size "Add-A-Circuit" from Advanced Auto, Pep Boys



etc.

- A 10 amp rated two position off-on switch from Advanced Auto, Pep Boys etc. Avoid one with an LED indicator since the way GM has the circuit working there are 12 volts available when the car is off and the LED will be lit when the car is shut off and the switch set to the off or quite mode! We measured a 15 milliamp draw when the LED was lit. No big deal but



why add this to the other current draws when the car is parked. You'll quickly learn what position in on! Note if you purchase a switch with an LED (since the size you want may be more readily available, as we found) no big deal, just don't hook up the ground!

- About 12 feet of number 16 wire.
- Solderless wire connectors and two female spade connectors sized to fit the switch you buy. You'll need one small male spade connector which you'll trim to fit a female fuse slot. Buy two in case you mess up with the trimming!
- You do not need a fuse; you'll use the one in the car.
- An old metal car coffee mug that will fit the cup holder and can be "sacrificed" to hold the switch and a few pieces of Velcro Strips.
- You'll also need one rubber grommet (to protect wires leaving a hole drilled in switch holder) and a short piece of shrink tubing or electrical tape.

Tools:

- A good wire crimper and two solderless wire connectors.
- A few wire ties will make installation neat.
- Hole saw or drill of the size needed to mount switch you purchased. Drill set through 3/8 inches.
- Hacksaw and fine file.

Photo sequence.

To install in the front cup holder, cut the bottom from a cup being "sacrificed" for the project. We used an old Stainless car coffee cup with a straight bottom section. Cut 1 3/8 inches up from bottom with hacksaw. Simply follow a line marked where the cut is needed or use a hose clamp as a guide. Might also be able find a small metal jar that will fit.



File edges as needed. Mount the cut cup section with Velcro strips on the side of the cup holder; You may need to stack two sections back to back if they are thin. The Velcro is placed vertically on either side of the rubber grommet shown below.

If you find a metal jar that will fit you can install the Velcro to the cup holder bottom.



Drill the hole to mount the switch on bottom of cup (which will become top) of the "Switch Holder" (we used a hole saw).



Now drill a hole into the side of the front cup holder! The hard part is psychological! Use an 1/8 inch drill bit at about 1:30 looking down from the top of the cup holder about 1 inch from the bottom. It will go through the rubber and plastic very quickly so don't go to fast. Once through, use a 5/16 inch drill to open the hole larger. That is large enough for the two # 16 wires that will be slipped through and some inevitable misalignment.



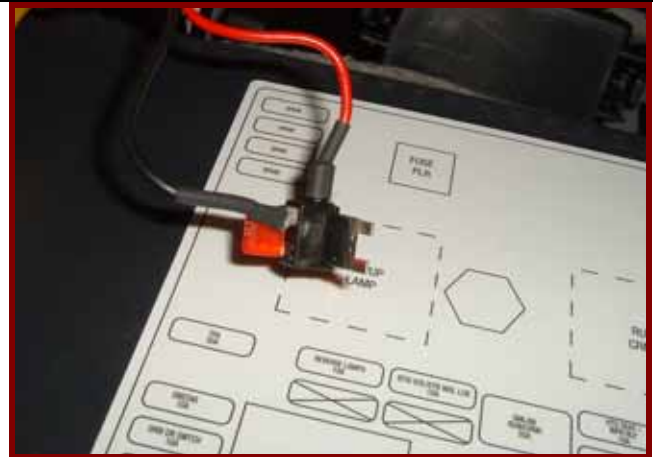
Now drill a hole in the side of the switch holder to line up approximately with the hole in the cup holder. Make it larger so there is room for a rubber grommet to protect the wires. The holes do not have to line up perfectly since there is a small gap between the switch holder and the side of the cup holder.



Now for the wiring. First open up the access to the fuse panel. Pull down the top of the panel at the front of the passenger foot well. Now you can see the fuse panel. The 10 amp mini fuse in the lower right controls the exhaust. Use the white fuse puller supplied by GM (top of panel) and remove fuse. Without using an electrical diagram we'll explain what's happening. If you left the fuse out the exhaust would always be in the open or "loud" position. You won't tolerate the drone when cruising if you just pull the fuse - believe me! All we are doing is putting in a switch to open the circuit so power can not go to the dual mode circuit to allow it to close the butterfly valves in the exhaust. When you wish!

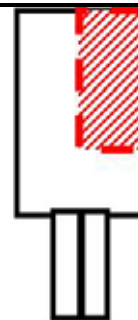


We accomplish that by using the "Add-A-Circuit." Place the 10 amp fuse you removed into the side of the "Add-A-Circuit where the wire (red for ours) exits the device. There is no fuse in the other side. One of the open female slots in the other side will be used to get power to our new switch.

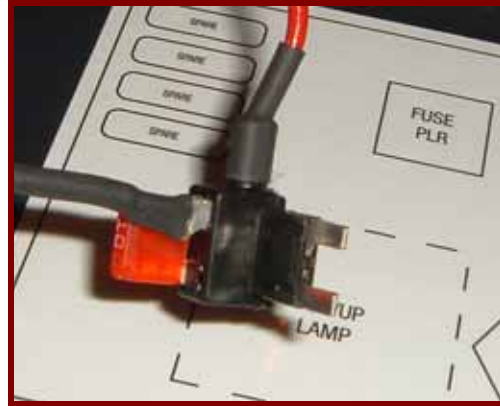


The red wire coming from the "Add-A-Circuit goes to the left when looking at the fuse panel straight on.

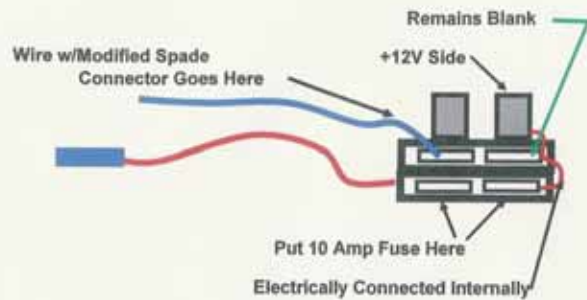
Now we must get the power back to the side of the fuse panel that powers the Dual Mode Control. It is one of the two fuse slots that are empty on the 'Add-A-Circuit. To get the power into that side; take the small male spade connector and using a pair of heavy wire cutters-(side cutters) shape the end to look similar to one side of the mini fuse. i.e. cut red area away as shown in photo.



The cut spade connector will be connected to one of the two wires coming from the switch. It is inserted in the slot closest to the red wire which exits the “Add-A-Circuit.” Carefully look at the photo - it is the slot on the top. Don’t worry. If you pick the wrong slot your just putting 12V to the side that already has 12V and nothing will happen! It just won’t work!



This is a schematic view of how the Add-A-Circuit is wired looking at the 4 fuse slots. The 10 amp fuse you removed goes into the slots on the side where the red wire exits. The modified spade connector to bring +12V to where it was originally, inserts as noted in the upper left slot if your holding as shown.



Now we are ready to run the wires:

1. Using a stiff piece of wire (bent coat hanger works fine!) tape a 6 foot piece of scrap wire (# 18 or 20) or string to the end with electrical tape.
2. Push the coat hanger with taped wire through the hole you drilled in the cup holder and have them exit the bottom side of the console about 6 inches from the hole. You may have to wiggle it and reach up with your fingers to grab the wire/coat hanger.
3. Once through, untape the wire/string and remove the coat hanger. Now pull about 3 feet through. You will see a bracket under the dash toward the front connecting to the drive shaft tunnel; run the wire above it and exit at the firewall. You may need the coat hanger again to push it through.
4. Grab the ends of the wires and pull them toward the fuse panel. Now very securely attach two pieces of # 16 wires to the scrap wire or string with electrical tape. (I usually put a small amount of Vaseline over the taped end to help it slip through.)
5. Now pull the scrape wire/string trough being very careful to work past any snags so the tied wires do not come loose. If they do you’ll start all over! When about 3 feet of wire are into the cup you’ve done it!

Working on the fuse panel side:

- 1. Strip a ¼ inch of wire insulation from the end of each wire and crimp one to the connector that came with the Add-a-Circuit.**
- 2. Strip the end of the other wire, inset a 1 inch piece of shrink tubing onto it and crimp it into the modified spade connector you made. Shrink the tubing over the bare wire and spade connector round end. Inset the modified spade connector into the slot already identified.**

Now take the “Add-A-Circuit” and inset it into the now empty fuse slot where you took out the fuse. Note the direction from the photo, the red wire on the Add-A-Circuit goes to the left.

Pull excess slack from the wires back through the cup holder and use a few wire ties to secure them in place near the console bracket.

Pull the wires trough in the cup holder leaving about a foot of extra.

Attach the wires into the switch by crimping on the female spade connectors and inserting onto the male connectors on the switch.

Start the car and try it out- JUST DON'T LET ANY BARE WIRES TOUCH ANY GROUND CONNECTION. Assuming it works, Insert the switch into the switch holder you made.

Carefully push the extra wires into the console while you lower the switch and switch holder into place secured with the Velcro Strips.

YOUR FINISHED-HAVE FUN.



NOTE:

YES, We Were Aware A Remote Relay Could Be Used– We Have One!

We were aware this control feature can be accomplished with a remote relay. In fact such a relay was purchased well before the Corvette for a truck project! Never did use it for what it was intended. They are still available from eBay for about \$10 up to 20 amp capacity! See the one we still have, photo right. Why not use it for this project? Using a remote is fine when next to a garage door and you can see it open and close. Some days that happens sooner than others. However how do you know quickly if the exhaust mode is on or off? Can't tell. If going through a quite area you want it off NOW – not when the remote decides to operate it, with a delay. Also to avoid drawing power all the time to have the remote ready requires more complex wiring and when you start the car is it off or on? With a simple \$3.00 switch I can see what position it is in, instantly. Your choice but for under \$15.00 you can add a switch by simply plugging in an “Add-a-Circuit” wired per these instructions. You can place the switch as did we, hidden in the front cup holder or wherever you like!



**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.

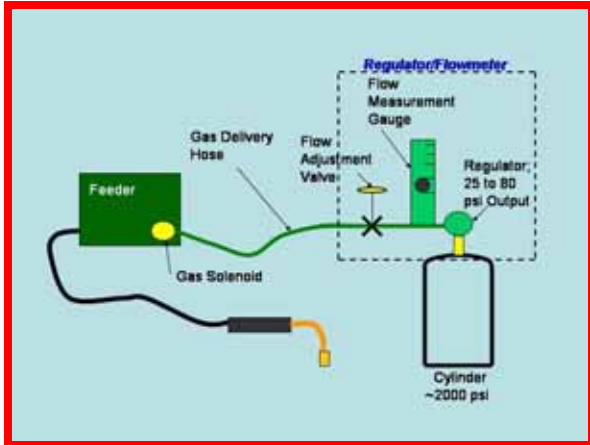


Kyle Bond, President, indicated a big benefit is the reduced time and effort

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