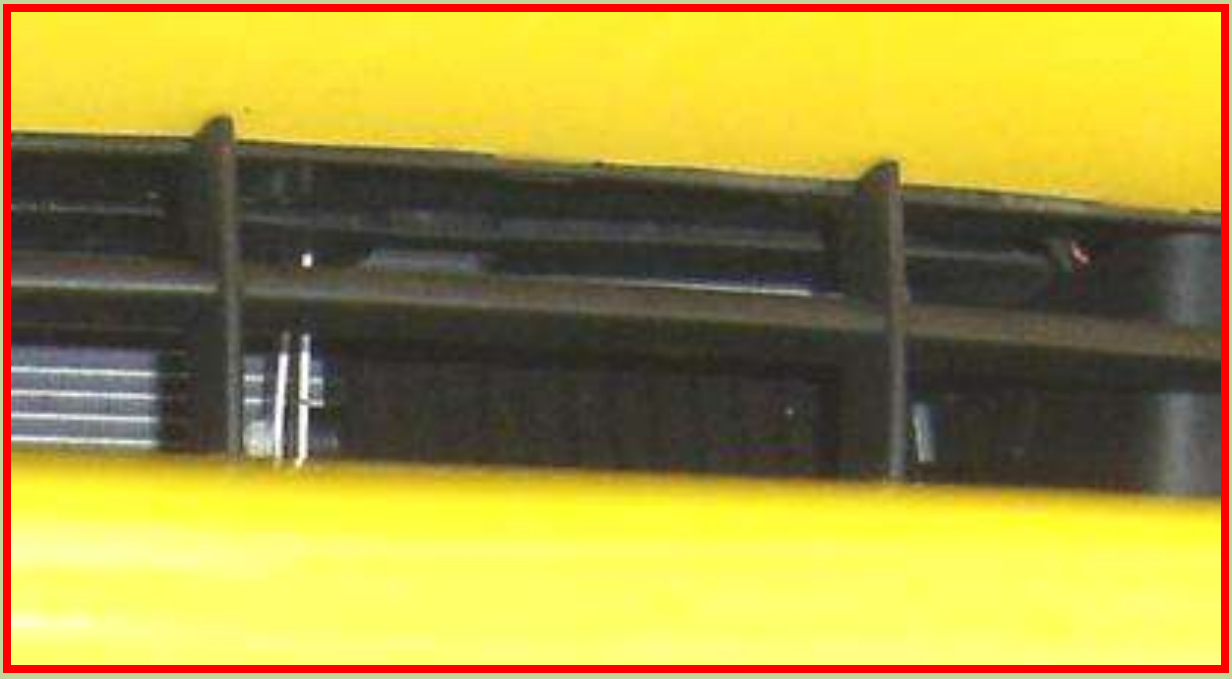
WA Technology

Fluid Coolers; *ITEM FLC*

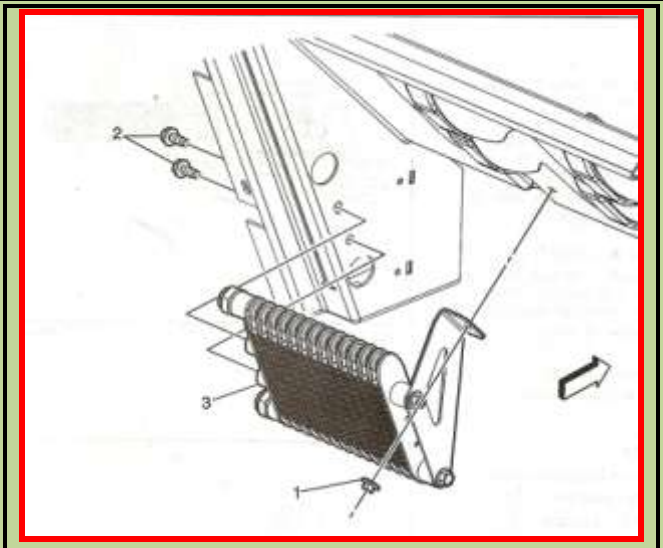
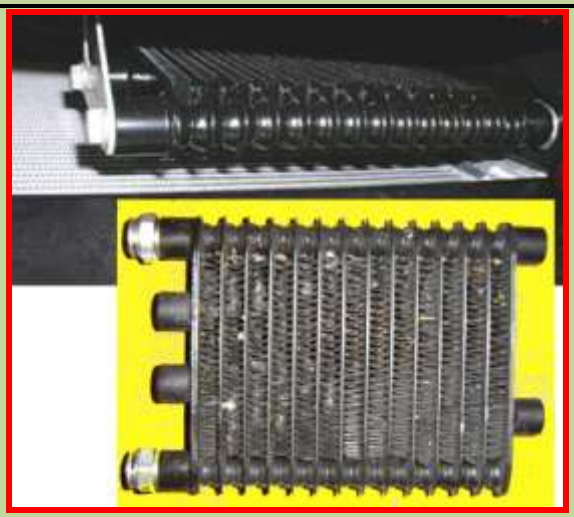
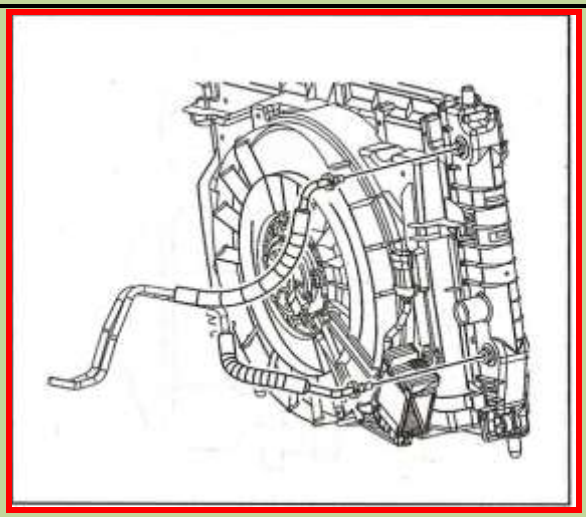


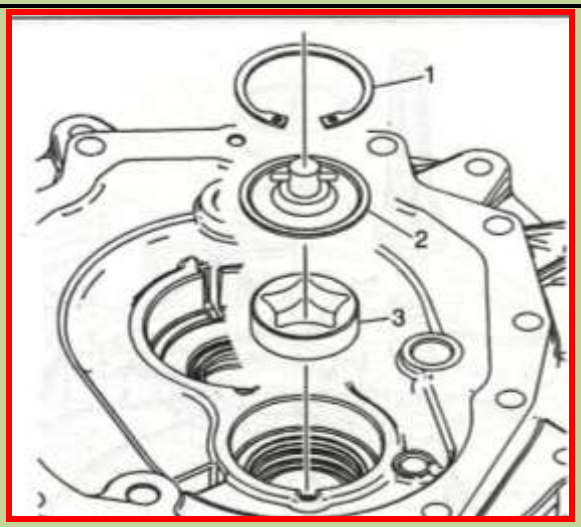
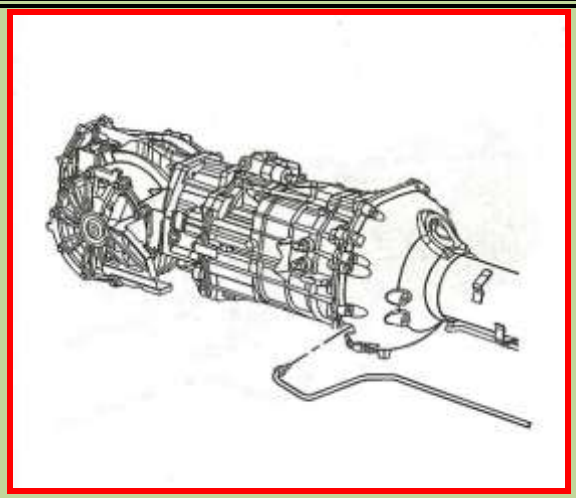
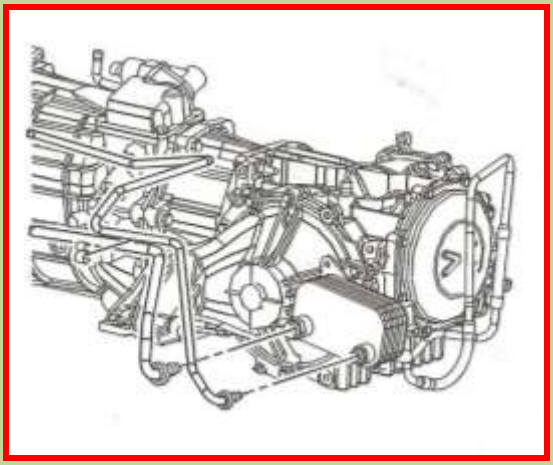
Hard to see this Engine Oil Cooler that is part of the Z51 package? Not surprising it's also hard to find and see most of the extra coolers! The Engine Oil cooler is behind the grill in front of the Air conditioning condenser on the driver side.

The Z51 option comes with a number of extras such as Stiffer Shocks and Springs, Lager Diameter Anti-Roll Bars, Larger Cross Drilled Brake Rotors and "Stickier" Eagle F1 Supercar EMT Tires. It also has Engine Oil, Transmission, Differential and Power Steering Fluid Coolers.

The trick is finding the coolers! You can understand how an automatic transmission has a cooler, most all do. There is a pump in all automatic transmissions so sending high pressure oil to a cooler is not difficult. However where is the pump in a standard transmission? The question can be asked about the differential as well. And where are these coolers?

We'll show where they are and how they work. Similar coolers are on the Z06 allbeit some of the coolers are larger.

First the engine oil cooler. We'll use the Corvette Service Manual to define most of the cooler locations and show schematics of their mounting. The tube and fin engine oil cooler is located in front of the radiator and air conditioning condenser on the driver side. It gets cool air from the front of the car.	
The top picture is the engine oil cooler installed while the inset on the bottom is the cooler removed from the car. Note the fittings on the left of the bottom picture are the "Quick Disconnect" fittings used on most of all the cooler connections. Perhaps these are used for faster assembly in production, certainly not to help maintenance for these seldom changed items!	
The standard transmission cooler is located the same as the with the automatic, in the passenger side radiator header. Transmission oil enters the top fitting and goes through a cooler surrounded by engine coolant to the bottom fitting were it exits. Where it goes is interesting and we'll discuss with the next cooler.	

The cooler location for the standard transmission is the same as the automatic but where is the pressure to get the fluid to the cooler? Item 3 in the picture is the pump that is part of the transmission. It turns with the transmission when the car is moving unlike the pump in an automatic that operates when the engine is running.	
But the transmission is in the rear so the transmission fluid line must come from the back of the car. This line goes to the upper fitting on the radiator. Where does the return line go? Back to the transmission? Well not directly!	
The return transmission oil line comes from the bottom of the radiator. It doesn't go directly back to the transmission it first goes to a heat exchanger to cool the differential! Photo right shows the "Differential Cooler" with the transmission oil lines disconnected. It operates similar to the transmission cooler in that one fluid cools the other through a metal heat exchanger.	

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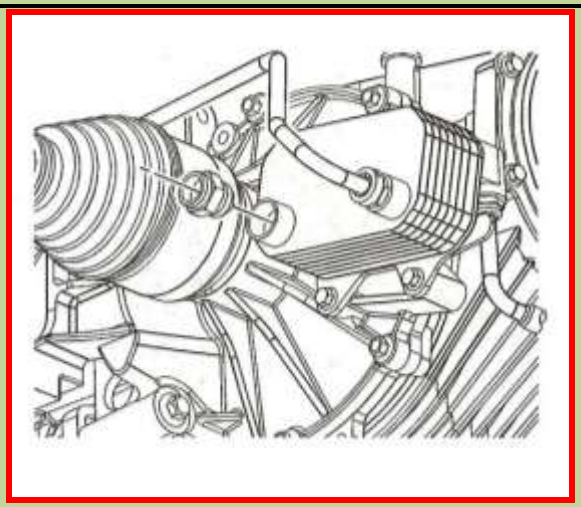
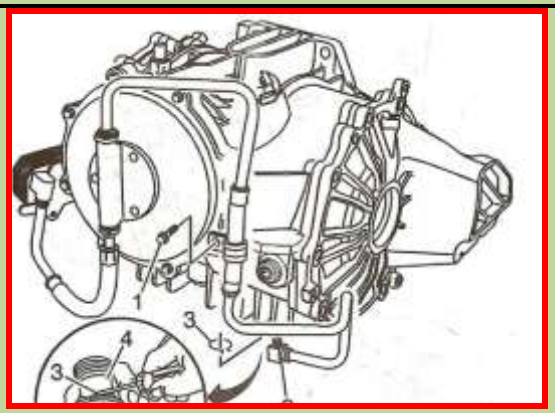
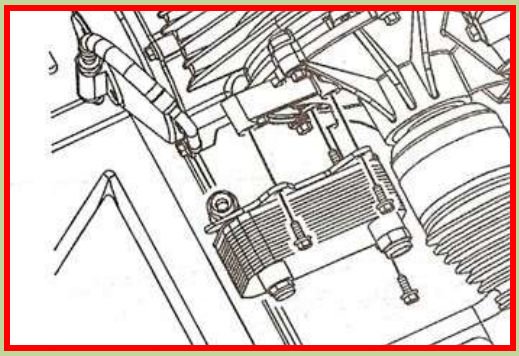
This is a closer view of the Differential Cooler. The return transmission oil line going back to the transmission is shown connected. It basically takes cooled transmission oil (if going through a 200 degree radiator can be called cool) into this liquid/liquid "Cooler" and lowers the differential gear oil temperature if it becomes excessive.	
On the Z51 Standard Transmission (and the Z06) the end differential cover includes a gear oil pump. Gear oil is picked up from the bottom of the case (item labeled 2) by the pump and goes into the Cooler. This is done with external lines as shown.	
In this view you can see the Differential Cooler detached. It bolts to the left side case cover and the gear oil outlet connects into a "Quick Connect" fitting in the line going back to the differential case. Therefore gear oil comes from the case bottom, is cooled by the transmission oil and returned to the differential.	
The last of the coolers is one for the power steering fluid. It is a tube and fin unit that sits at the bottom on the radiator and gets cool air from the front of the car.	

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*:*

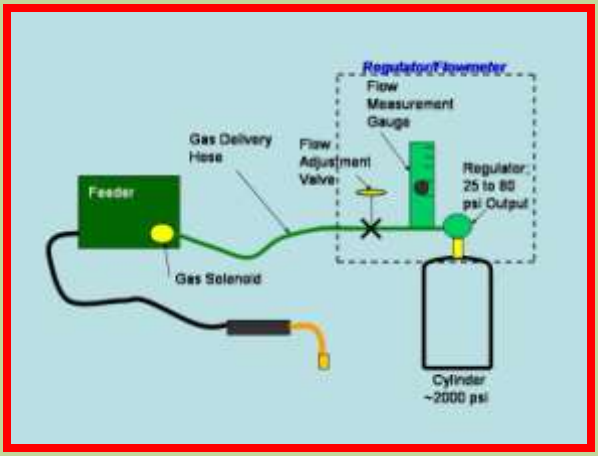
They use a 250 amp MIG welder with built in feeder and a 6 foot gas delivery hose. With their standard gas delivery hose the peak shielding flow at weld start was measured at 150 CFH, far more than needed and enough to pull air into the shielding stream. Air is then sucked into the gas stream causing 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 then 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/production_test_results.htm

Have more questions? See:

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

Or email us at:
TechSupport@NetWelding.com