



Dale & Donna Collvins 1985

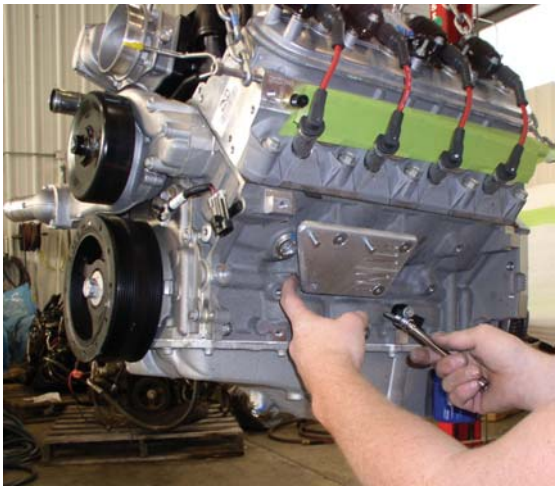
Chevy pickup came to Street & Performance with the stock engine and a 350 turbo trans. He wanted the S&P installation team to complete the install with all the necessary wiring and bracketry to make his truck into a fuel efficient, high performance, dependable daily driver and still use it to go to car shows in his area as well as distant shows.

Dale wanted to update his '85 with an LS-2 to have the fuel efficiency, power and dependability that the 400 hp 400 ft lbs of torque the LS-2 offers from its all aluminum block and heads. These engines are readily available in salvage from the '05-'06 GTO, 05-07 Corvette, SSR & Trail Blazer. The 6.0 and the 8.1 are not as fuel efficient but are better suited for towing due to the torque that these two engines develop.



Dale purchased his LS-2 crate motor & 4L65E trans from Street & Performance where they smoothed and painted the block and trans.

If you are getting an engine from salvage, be sure to get the computer, mass air flow and all oxygen sensors & gas pedal. With autos you will need the trans control module. (Above is a example of an complete low mileage pull out available from S&P)



The LS-2 has a set of S&P engine plates bolted to the block to test fit the truck clam shell mounts. After the test fit, the engine is detailed.



The late type vehicles use clam shell mounts, Sometimes these clam shells will have a knot on the back that will have to be ground flush to the back of the mount.



Vette LS-2 pan shown above has to be changed to a 98-02 Camaro pan to clear the cross member. Truck pan can be used if the vehicle does not set to low.



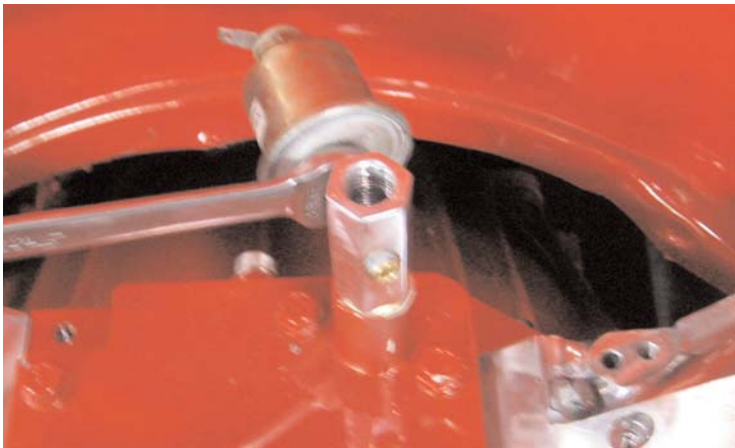
The factory mounts are then bolted to the S&P adapter plates. S&P recommends the use of anti-seize compound on all bolt threads.



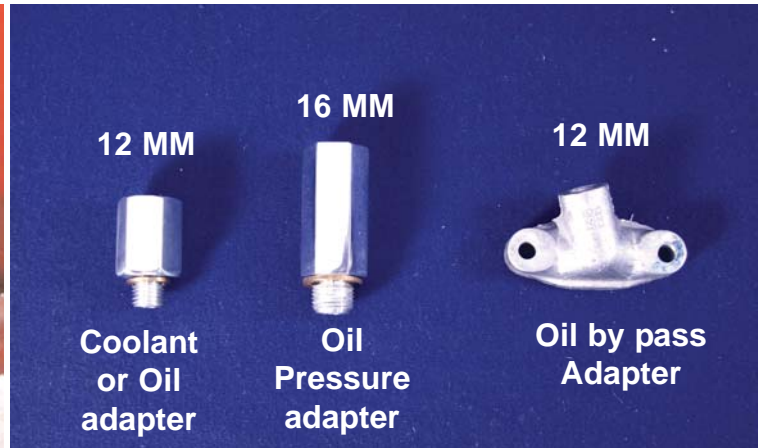
With the engine in place, it is best to leave the front mounts and stands loose until you get the rear cross member bolted in. Once all the bolts are in place then tighten them down.



The factory trans cross member is placed in the same place as a 400 Turbo using a 700R-4 Trans mount. This setup allows everything to line up very well.



S&P makes an oil pressure adapter for the LS2-3 &7, when the stock sending unit is needed for the factory gauges. The adapter has 16 mm threads on the bottom and 1/8 NPT on the sides for early pressure switches.



The 12mm adapter above is used on the passenger side head at the rear to install a coolant temp sensor. The 16mm adapter for the oil pressure sensor at the rear of the block is available with 1/8-1/4-3/8 & 1/2 NPT. The oil bypass adator is 12mm female and a 12 mm adapter is needed to get to pipe thread.



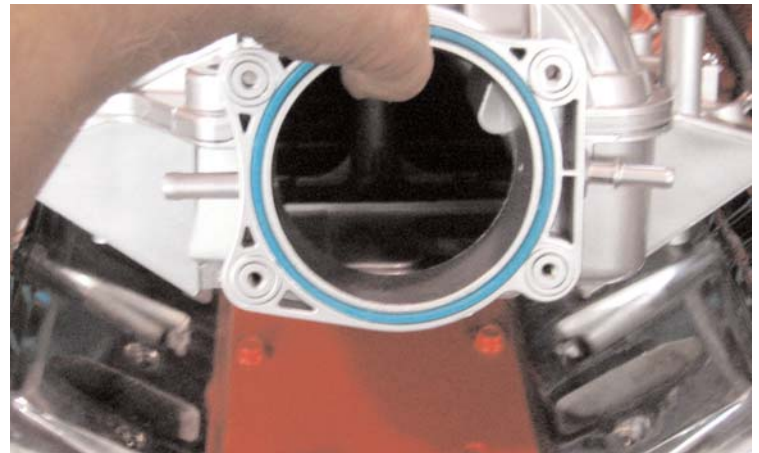
Guy drilled the water pump housing with a 7/16 drill bit and tapped to 1/4 NPT. He used wheel bearing grease on the drill and tap to help keep the chips from going into the pump. With a fitting installed at the pump you can run the steam line to the fitting and make a cleaner connection then hooking to the top radiator hose.



A short length of tubing runs from the steam line to the fitting at the water pump.



After smoothing & painting the intake, the original o-ring intake seals are put back into place.



The intake is then placed on the engine without the throttlebody. Note that the throttlebody also has an o-ring seal. LS-2, 3 & 7 have a 4 bolt throttle body where earlier LS's have only 3 bolts.



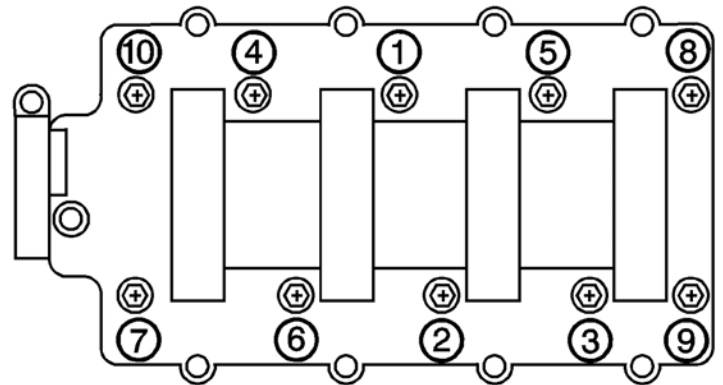
The intake bolts are just snugged to ensure proper alignment.



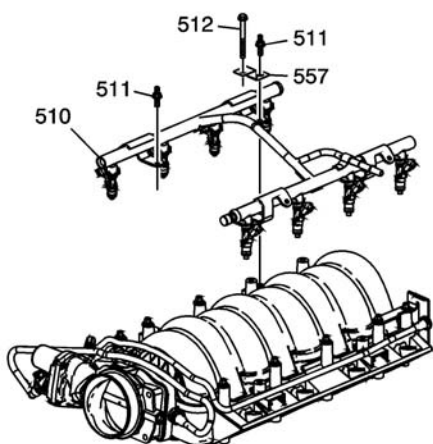
We painted the coils and chromed the coil rack which makes for easier cleaning.
Tighten the ignition coil mounting bolts to 12 N·m (106 lb in).



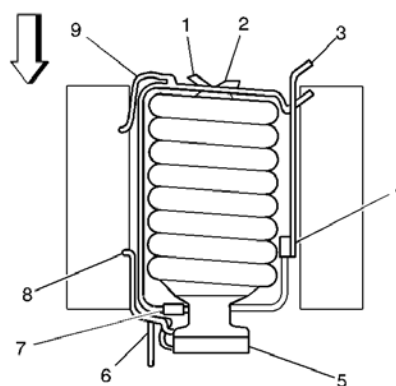
Install the intake manifold bolts and fuel rail stop bracket



Tighten the intake manifold bolts (1-10) a first pass in sequence to 5 N·m (44 lb in).
Tighten the intake manifold bolts (1-10) a final pass in sequence to 10 N·m (89 lb in).



Lubricate the fuel injector O-ring seals (532, 534) with clean engine oil. Install the O-ring seals to the fuel injectors. Install the fuel injectors (533) and retaining clips (521). Install the fuel rail assembly (510) to the manifold. Push firmly on both sides of the rail until all injectors have entered their bores. Install the fuel rail bolts (511, 512) and fuel rail ground strap (557). Tighten the fuel rail bolts to 10 N·m (89 lb in).



- (1) To HVAC
- (2) To Power Brake Vacuum Assist
- (3) To EVAP Canister
- (4) EVAP Canister Purge Solenoid Valve
- (5) Throttle Body
- (6) Engine Coolant Hoses
- (7) Positive Crankcase Ventilation (PCV) Valve
- (8) Crankcase Ventilation Hose
- (9) Crankcase Ventilation Hose



The old fuel tank was removed and replaced with an aftermarket tank and fuel pump assembly from a 87 Chevy pickup. A high pressure fuel pump was installed from a 86-87 Vortec.



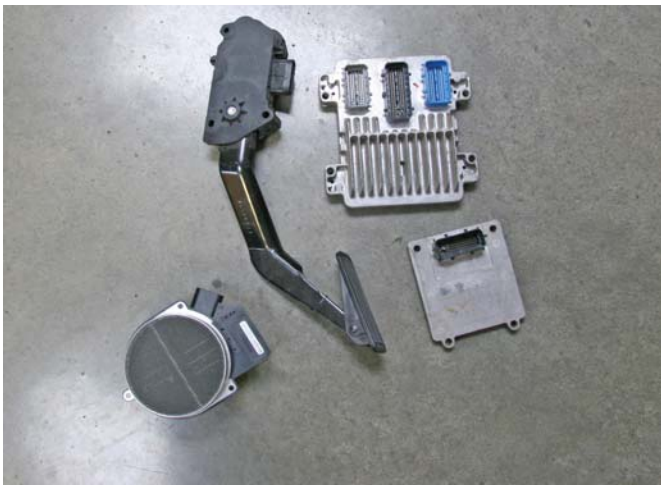
S&P 99-up Vette fuel filter/regulator kit was mounted to the frame rail & two AN6 braided fuel lines were run from the tank to the filter/regulator. The 3/8 line is the inlet and the 5/16 line is the return.



A S&P 3/8 Stainless Steel compression to AN6 fitting comes with the S&P fuel line kit. This will compress to the single fuel line to the engine. With all Stainless fittings, use a drop of oil on the threads and flare to insure a proper seal. When all connections are made, be sure to check the entire fuel system for leaks before starting the engine.



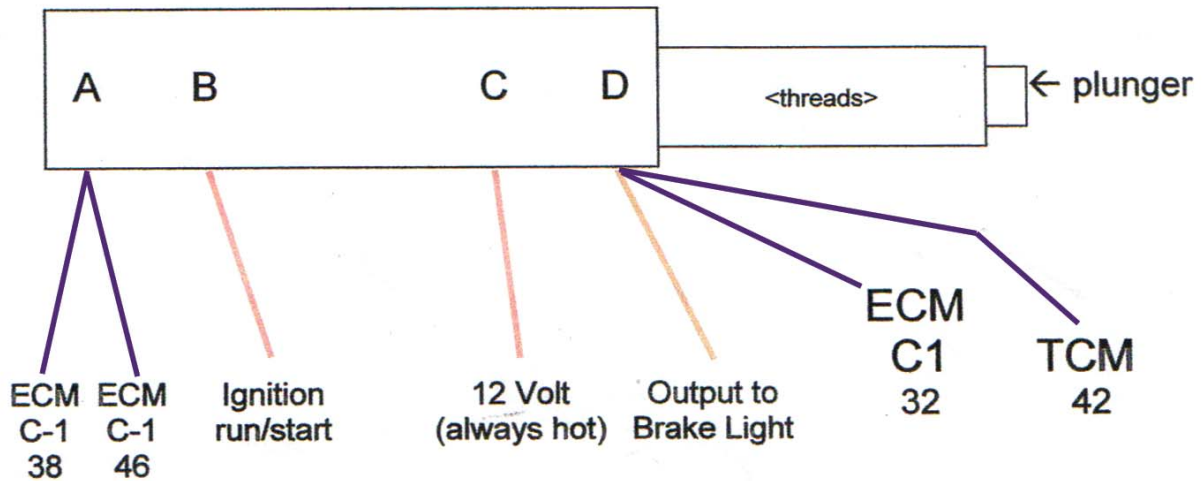
S&P makes single fuel line kits for factory covers that let you get from the fuel rail to the passenger side frame rail or the driver side frame rail. There is also a version that goes under the S&P smooth top covers.



Dales engine is a 07 Vette which has a 58 tooth reductor ring, so we used a 07 Trail Blazer computer(12605842) & Trail Blazer trans control module. The computer was reprogrammed with a Vette based program. When using the 07 Trail Blazer computer you have to use a 07 gas pedal (15145758) and a 5 pin MASS AIR FLOW.

4 WIRE SWITCH (NORMALLY CLOSED TO ECM) Part # 25524845

(ECM C1-32 and TCM 42 not used)



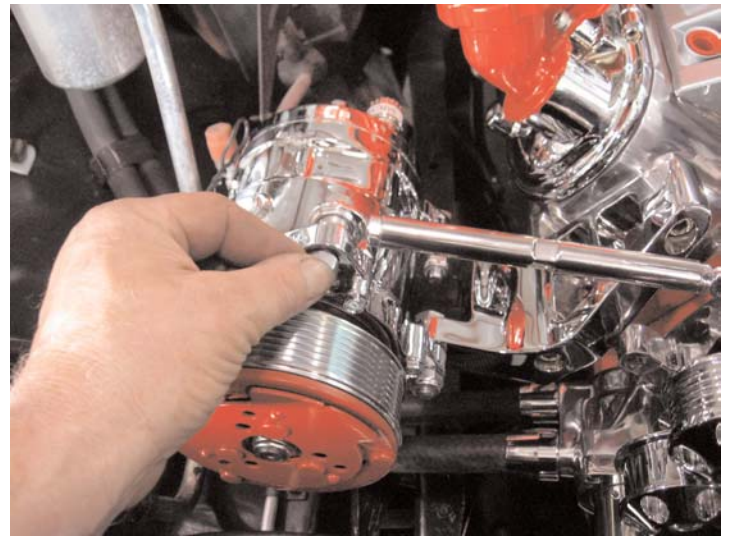
*** Must be mounted so that plunger is depressed with foot off brake and plunger is released when brake applied.**

For use with 4L60E & 4L65E Transmissions

We used a 4L65E transmission, which is heavier duty than the 4L60E. You have to hook the purple wire C-1 38 and C-1 46 to a 12 volt source that is on anytime you have the key on until you push the brake and then the 12 volts goes away. Purple wires C-1 32 and TCM 42 have to be hooked to the brake light post of the brake switch that gets 12 volts only when you put the brake on.



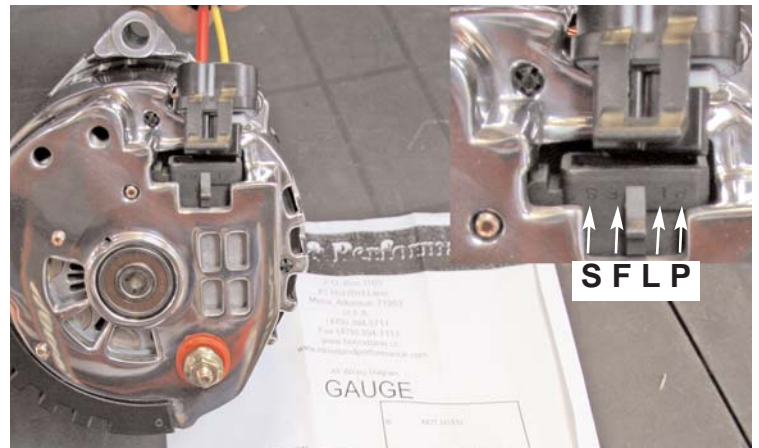
With the engine and trans in place and the fuel lines installed, we added the S&P chrome ALT-AIR & Power Steering kit. S&P makes these brackets for the Vette/GTO/Camaro/Trans Am balancer as well as the 4.8-5.3-6.0 Truck/Trail Blazer and SSR Balancer.



The compressor was then mounted to the bracket. This compressor has the rear exit lines and all of the unused mounting ears removed for a much cleaner appearance.



A CS-130 140 amp Alternator was used. This alternator has a small size and can be built at S&P to an output of 140 amps.



Hooking up the Alternator with the S&P CS-130/CS-144 pigtail. The red wire "S" terminal is hooked to the battery post. Since we are using a guage we use the "L" terminal, white and yellow wire to 12 volt key on. The yellow wire has a resistor in it so do not cut this out of the pigtail. See the diagram at the end of this story.

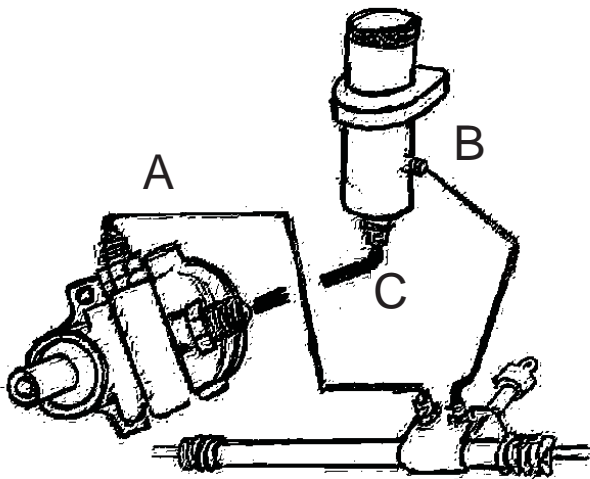


The S&P chrome power steering pump is mounted low on the driver side and cleared the frame rail without problems. Custom power steering hoses provided by S&P are then installed.



The pickups steering box uses an 18mm o-ring & a 16mm o-ring to AN6 adapters to connect to the S&P hose kit. After making the connections fill the remote reservoir with GM 12345867 Power Steering Fluid or Valvoline Pyroil Power Steering Fluid PSC-12.

NOTE: you must use hose that is rated for 27" vacuum from the bottom of the reservoir to the return on the pump.



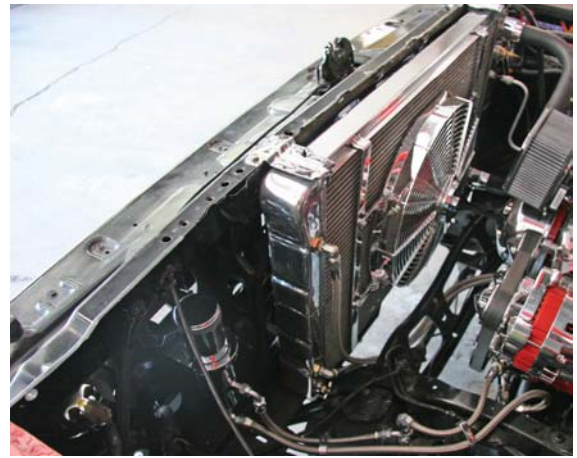
A..#6 Pressure Line to Rack or Gear Box
 B..Return #6 or 3/8 from Rack or Gear Box to side of Reservoir.
 C..#8 or 5/8 Return from Reservoir to pump



S&P offers a Aluminum self contained power steering reservoir that mounts to the pump and eliminates the need for any hoses.



The S&P power steering hose kit is then connected to the S&P remote reservoir mounted on the radiator support.



The Griffin cross flow radiator is installed. The cross flow has both the inlet and the outlet on the passenger side of the radiator. This makes the connection of the hose easier and gives a cleaner look. The top hose that was used is a Goodyear MRH21631 and the lower hose is a Gates 22147 or Goodyear 62091



S&P built the MASS AIR FLOW into the air cleaner and S&P smooth top covers were painted as well as the plastic intake. The top covers are available in black, white, red and carbon fiber.

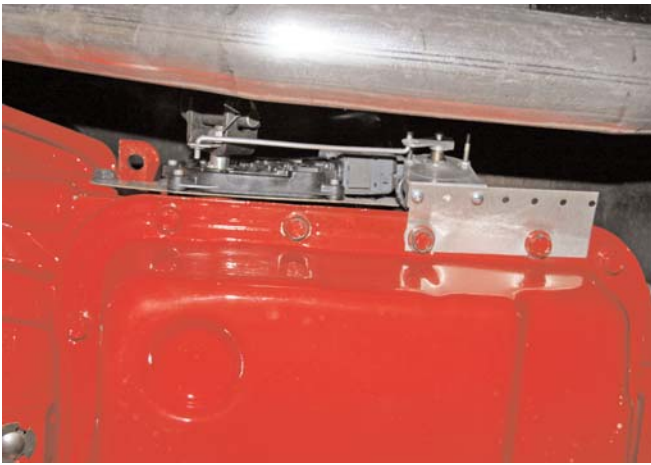


The heater hoses were hooked up to the water pump fittings. The 5/8 bib is out to the heater and the 3/4 bib is the return. We also install S&P hose clamp covers to clean up the connection.



While under the truck we plugged the wiring harness into the Oxygen sensors located in the header collectors. Then the gear selector linkage was attached.





A Dakota Digital gear selector was mounted to the 4L65E transmission.



All of the AC lines were done with O-ring fittings to prevent leaks, then S&P's chrome shop chromed the fittings right on the hose.



Larry installs the Dakota instrument cluster into the dash. Since Dale chose to use the electronic speedometer, he did not need to change the tail housing on the transmission. If you elect to retain the original manual speedometer you will need the tail housing adapter below.



The reprogrammed computer is mounted behind the glove box and the ALDL connector is mounted under the dash for easy access. The New Street & Performance Performance Plus Tuner/Scanner/Programmer. The performance plus will allow you to alter the computer programming such as gear, and tire diameter changes, engine tuning, shift points, etc. It also scans for error codes.

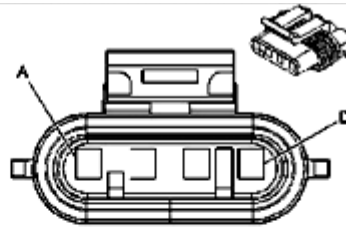
- Each programmer is custom programmed to optimally tune your Muscle Car, Street Rod, Off Road and Performance vehicles.
- Fine tunes the engine for maximum power, performance and fuel mileage improvements to your specifications.
- The Street & Performance Programmer Plus automatically installs your custom program and allows you to access the program and make changes such as if you change the tire size or gear ratio for example, without having to return the computer for reprogramming.
- Optimizes shift points by speed and RPM for maximum acceleration.
- Extends the engine's RPM range for a broader power band.
- The Street & Performance Programmer Plus requires no tools, or any knowledge of cars or computers.
- Live Data
- Update via the internet for custom calibration.
- The scanner function will allow you to search for trouble codes and direct you to your vehicle's problem.
- Small light weight, one hand operation.
- Instruction DVD, case and cable.

NEW S&P Programmer Scanner



96-Up 4L60E 6 Bolt to 4 Bolt Tail Housing Adapter. Comes with tail housing gears and hardware For Manual Speedometer. Gear ratio and tire rollout is needed when ordering.

FACTORY CS 130 A AND AD PLUG CONNECTION



Connector Part Information

- OEM: 12186684
- Service: 15306009
- 4-Way F Motri-Pack 150 Series (BK)

Pin	Wire Color	Circuit No.	Function
A	--	--	Not Used
B	OG	225	Generator Turn On Signal
C	GY	23	Generator Field Duty Cycle Signal
D	RD/WH	2540	Battery Positive Voltage



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Instructions For CS130D & AD Regulator Harness

BLUE WIRE

Battery sensing-- connect to the main battery positive post on the isolator or on the main battery positive post.

GREEN WIRE*

In an application with a gauge this is an ignition source for the regulator.
This wire needs to be hooked to 12 volts switched ignition

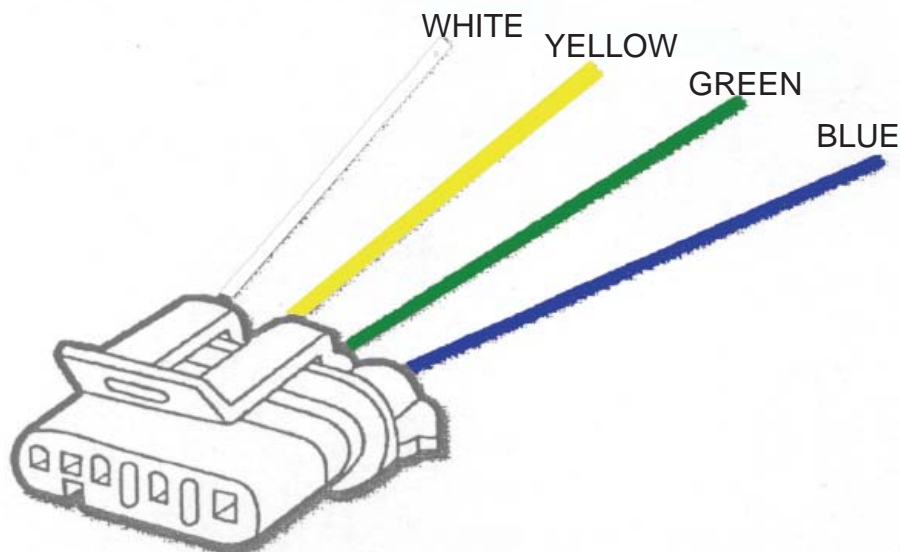
In a application with a light this is the charge light circuit for charging the system.
This wire wants to see about 3 or less volts when the charge lite is on,

ANYTHING MORE THAN SPECIFIED VOLTAGE WILL DESTROY REGULATOR INSTANTLY!

WHITE WIRE (NOT USED IN THIS APPLICATION)

This wire is normally not used.
This is a stator tap and will have about 7 volts output.
This can be used for a tachometer and hour meters.

*USE ONE OR THE OTHER, BUT NOT BOTH



CS 130 95/140 Amp Alt Wiring Diagram using S&P harness

GAUGE

