

VL1500 Charging System Wiring Upgrades

Over the years we have learned that although the VL1500 is a well kept secret with a solid motor and chassis, it has a bit of a weakness in the area of charging system. Different versions of fixes have evolved over time and many people have pioneered fixes for this weakness, but many of them were done in bits and pieces, making it hard to follow and understand.

This document is meant to combine all the efforts of these great sources, from Ailog, Wes, DrJones, TomInCA, OCD, and countless others into a single document so as to KISS(Keep It Simple Stupid).

First, lets understand our problem before any assumptions are made. This wiring upgrade DOES NOT GUARANTEE that your Stator, Regulator, Starter Relay, or any other component won't fail. They all have their own unique problems. What this will do is ensure that you have the best charging flow you can get to avoid meltdowns and breakdowns caused by something as simple as a wire plug. In doing so, you will increase your DC voltage supply to your bike and battery. One can debate that by doing this, you are increasing the potential lifespan of the components, but this does not guarantee that.

I performed this mod on a perfectly good system(LC). The bike only had 16k miles on it. Also note that the bike has 55W Running Lights hard wired.

Here are the Before and After results.

Battery at Rest – 12.7 (Never used a tender) (G-Batt 535)

Ignition On – 12.24 (55 Watt Running lights hard wired)

Warm up the bike

BEFORE:

Idle – 12.7

RPM – 13.79

As you can see, it was perfectly fine.

AFTER:

Idle – 12.9

RPM – 14.69

So, you can see that although there was nothing wrong with this system, there are advantages to the upgrades. It's not simply to get rid of potential failure points, but it also increases your DC voltage which has a variety of benefits. It certainly can't hurt.

Materials:

3 to 6 feet each of #12 Red and Black primary wire.

3 ea 10 ga ring terminals.

1-heavy gauge waterproof inline fuseholder (found at any auto store)

Shrink wrap, electric tape, solder and torch(optional), wire nuts, zip ties

Some star type lock washers (the type that have jagged edges)

Tools:

Wire cutter/stripping tool/wire crimper

Solder gun or pencil(optional)

Usual tools for skinning the bike.

You will need to remove both your Regulator cover, and at least your Left Faux tank cover. I find it easier, since you will need to run a wire from your regulator up to your starter relay, to skin the top of the bike removing everything down to the carbs.

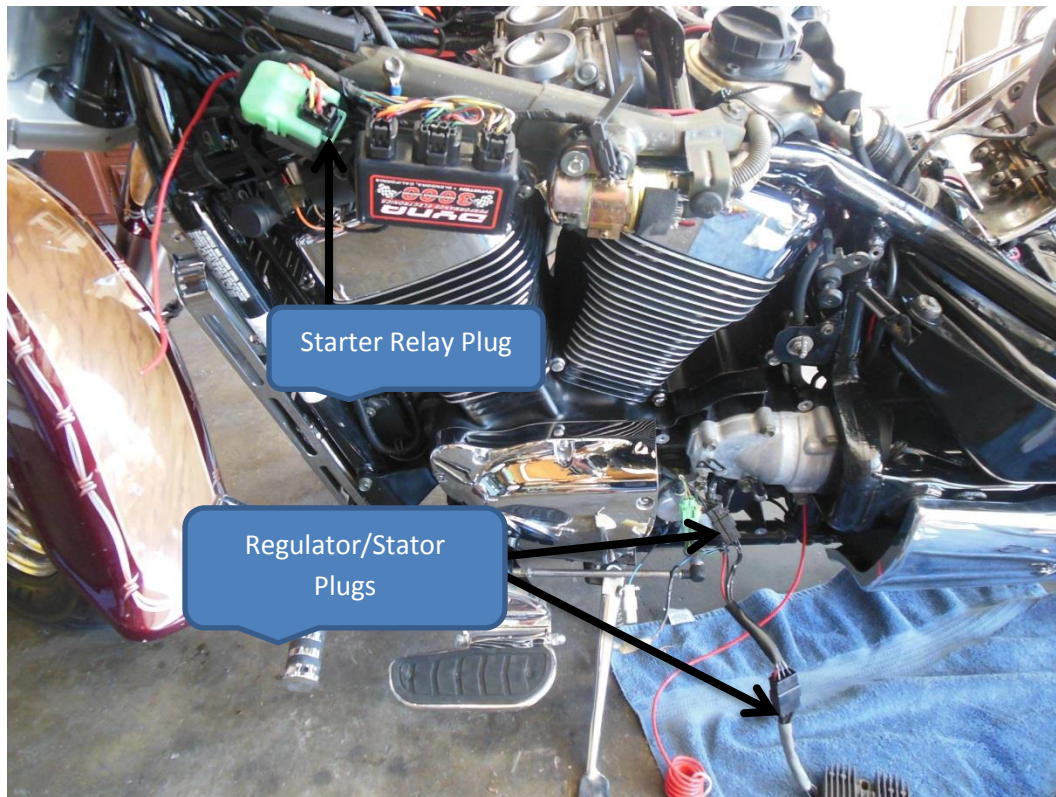
DISCONNECT YOUR NEGATIVE LEAD ON THE BATTERY.



Your Starter Relay sits just in front of your ECU on the left side and your regulator is mounted to the chrome bubble cover.



It is safer to remove the regulator from the side cover and place it aside. 2 Phillips Head screws.
Below is a picture identifying the 3 points we will be addressing.

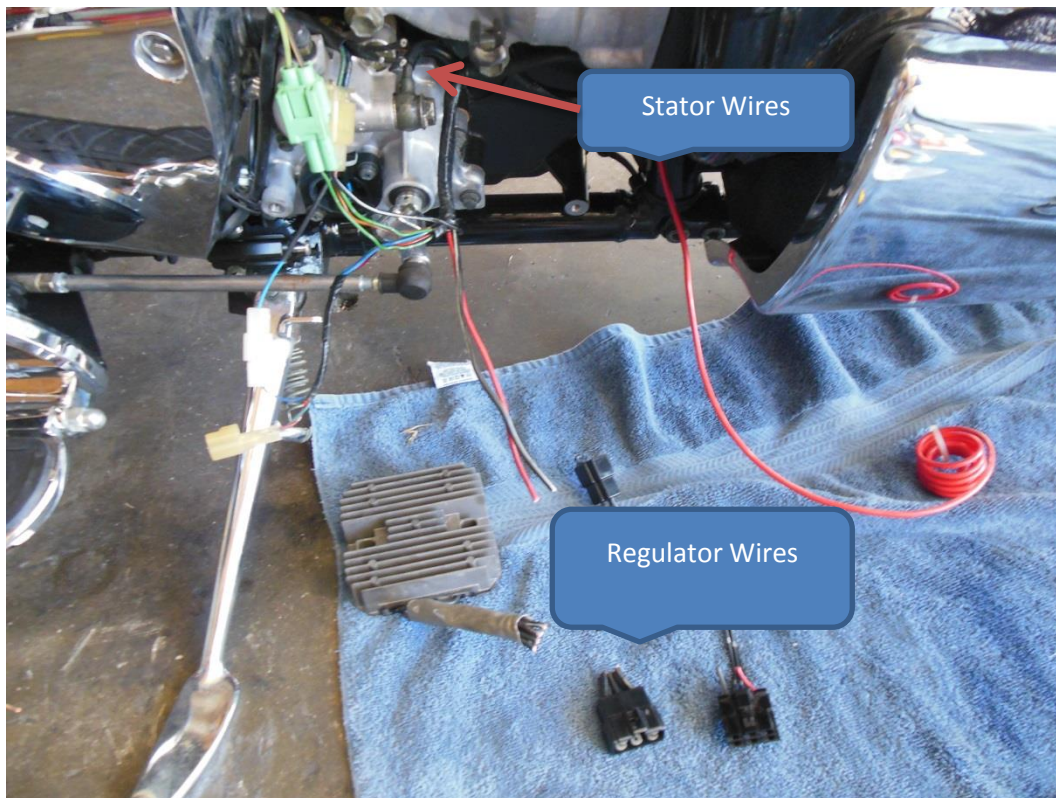


Take note of the red wire I have hanging there. This is the wire we will be using to bypass the starter relay plug. Run it through where you see fit, but try to make sure it's not sitting along something that could melt the casing on the wire. Just let it hang there for now.

A closer picture of the regulator plug identifies that there is a Positive and Negative DC wires on one side of the plug, and the AC (Stator) wires on the other side. Also note that the Stator Wires run to a separate plug which we will also be removing. Not all plug configurations are the same.

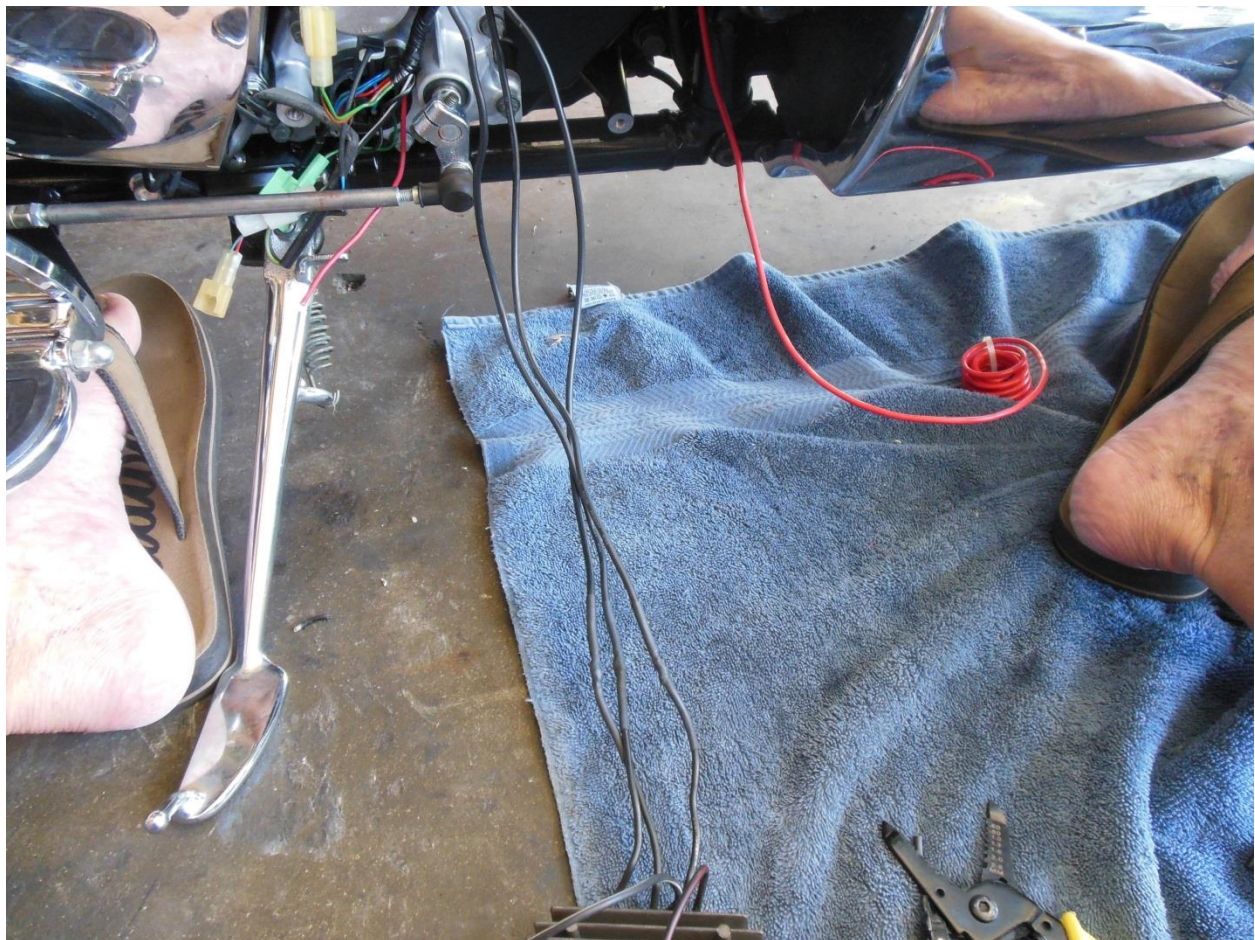


Now for the scary part. Cut those plugs out, throw them away, we won't be using them. You can disconnect the stator plug or simply just cut them all out. So now what we have is simply wires hanging there ready for the hard connection. Note that they didn't give me a lot of room on the stator wires so I tried to point them out. The FEWER connections the better, but sometimes you just have no choice.



We will be connecting all these wires together using a couple of options. If you can solder and get a “good” solder joint, that’s the best way to do it. If you just can’t solder or don’t have the materials necessary, there is absolutely nothing wrong with the twist connectors. In fact, if your soldering skills are a little weak, it’s best to use the twist connections. Our goal here is to have solid WIRE TO WIRE contact. The krimp connectors commonly used, although useful if you are in a pinch, leave a gap in the wires. Your electricity runs from copper, to aluminum or steel, back to copper. It’s simply better for a solid WIRE TO WIRE connection. More flow capacity, less restriction, less heat.

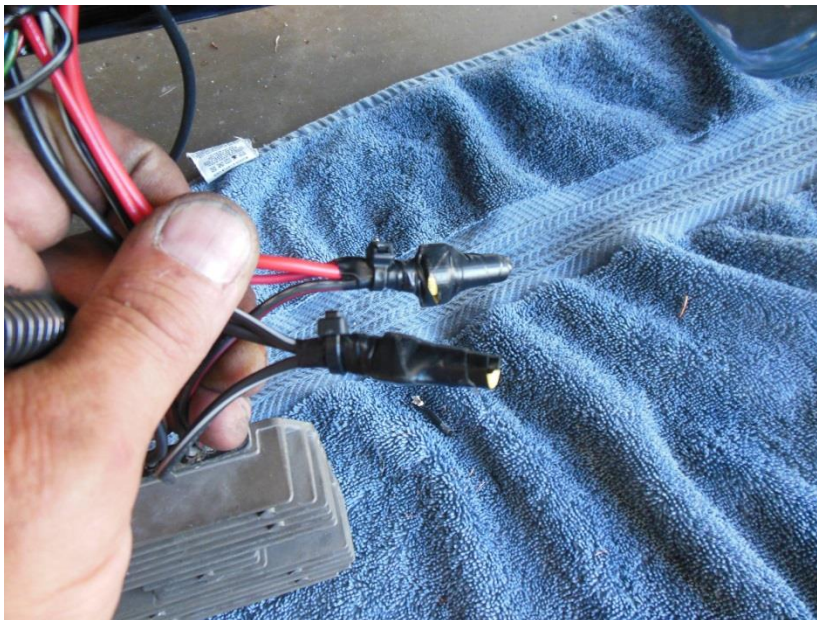
I had to extend my stator wires so that I could route them. If you have extra length wire, use it. I soldered my connections for the Stator wires and used shrink wrap to protect them. It DOES NOT matter what wire connects to what wire from the stator to the regulator. As long as there is just one to one.



There is a little difficulty while soldering. I didn't have a small torch. You are soldering 12ga wires together. You need patience just to solder 2 12g wires together with a common 40amp solder gun. You need a miracle to solder 3 of them together with the same gun. So, the alternative. Remember, solid WIRE TO WIRE.

Connect the DC Positive (Red) wires together. 3 of them. One from the regulator, the second from the wire you routed to the Starter Relay, and the one you cut off the plug. Use the twist connector on these. Make sure they are tight, and are held tight. Use some good electrical tape to secure them, and put a twist tie on the wires so that they are held in position and don't come loose.

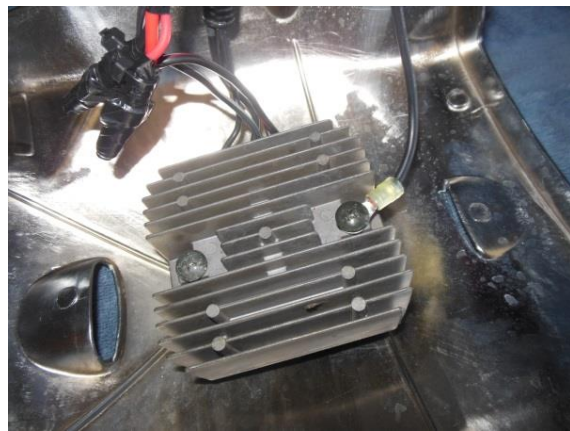
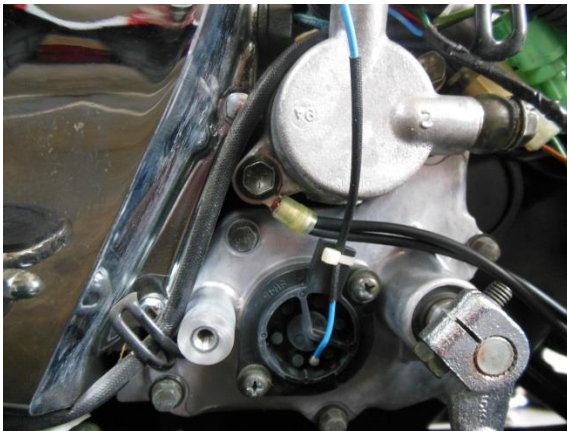
Do the same thing with your DC Negative(Ground). One from the Regulator, one from the cut off plug, and add about 1 ft of extra 12ga wire to this mix. Use the twist connector just like you did with the DC Positive.



At this point, we have connected all the wires to and from the Stator/Regulator either by solder, or wire twist, with the exception of that DC Negative wire we added (ground). Use one of the ring connectors and attach it to the end of that wire. I also suggest adding another small length of black wire to that ring connector.



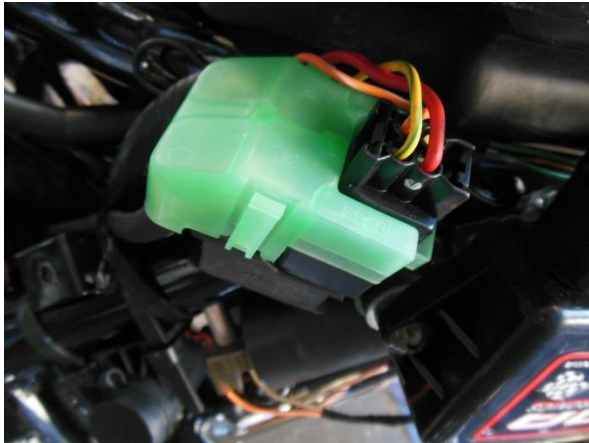
Remove one of your bolts from the shifter mechanism housing. This is where we will be attaching for an additional ground. Place the star lock washer under the head of the bolt, and the ring connector, and put it back in place. The extra ground wire that you added to that ring connector, use one of the regulator mounts for it to act as a chassis ground for the regulator.



We are literally done with the wires at the regulator area. All your wires should be solid WIRE TO WIRE connections using either solder or secured twist connections. You should have an additional DC Positive (Red) wire connected that runs up to the Starter Relay. And you should have an additional DC Negative (Ground) wire attached to the engine, and optional extra length attached to the Regulator Chassis. The only thing left is the Starter Relay itself.

The starter relay has a plug on it. The weakness in this is the pin in the relay that the red wire is running to. This “was” the only path for charging power. The pin is small, generated resistance,

heat, melted. What we are doing is bypassing that pin. But, we don't need to cut the wire, we already have one.



First thing to do here is to remove the fuse from this relay. The one on the top of the above picture is your primary fuse, the bottom one is a spare. Just remove it. It's the same thing as cutting the wire. BUT, by not cutting that wire, if your fuse holder fails (and it DOES happen), you can simply put a fuse back into the relay and get down the road like normal.

That red wire that you routed to the relay, connect the fuse holder to it (solder or twist). Place one of the ring connectors on the other end of the fuse holder. Use another one of those star lock washers, and connect the fuse holder to your positive terminal on the starter relay. Place that fuse that you removed from the relay, into this fuse holder. Note, there is no primary fuse in the relay, the fuse is now in your holder. Tidy up the wires by placing the fuse holder under the neck cover.



Button it up, get out there and ride it like you stole it.