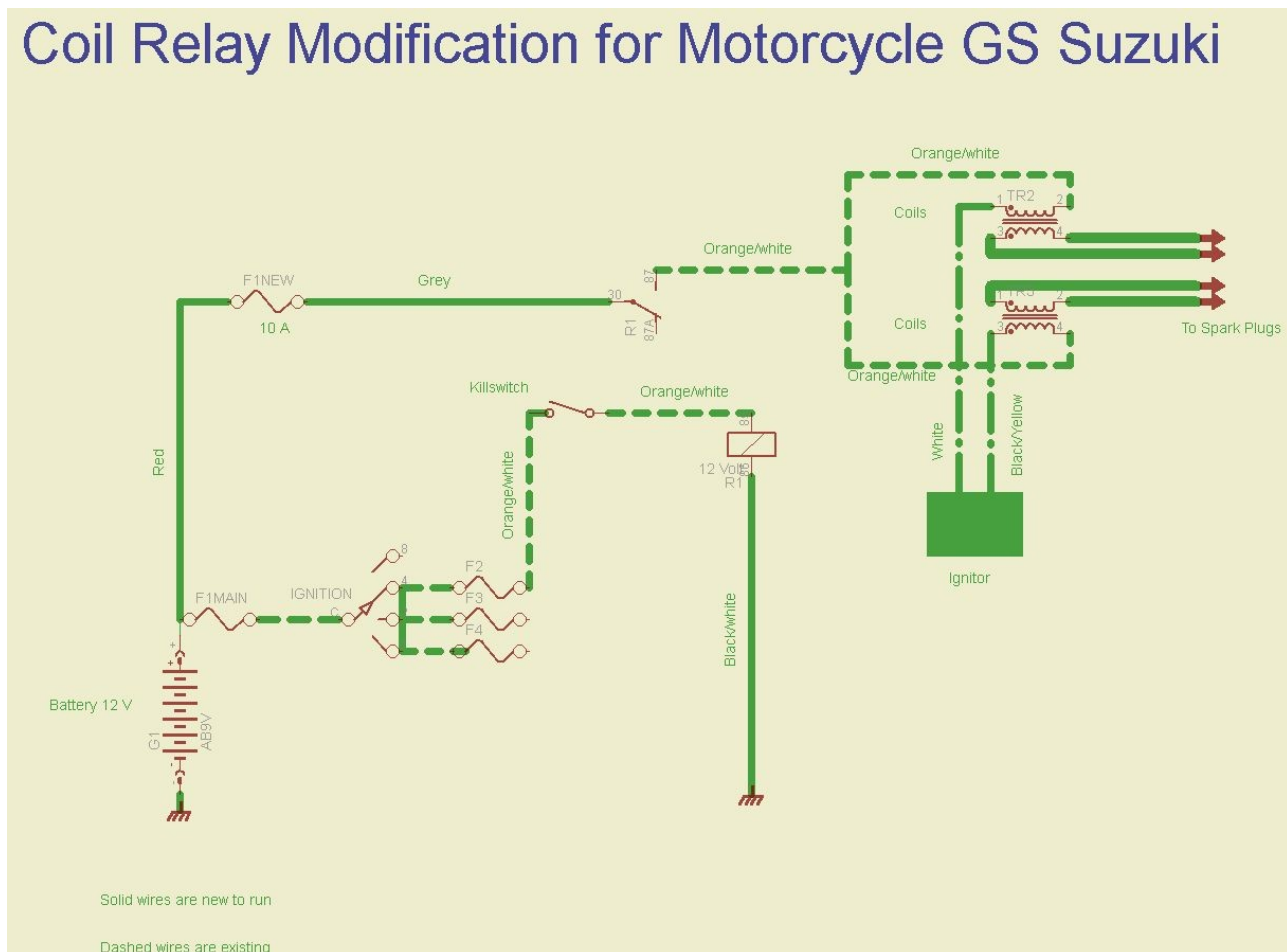


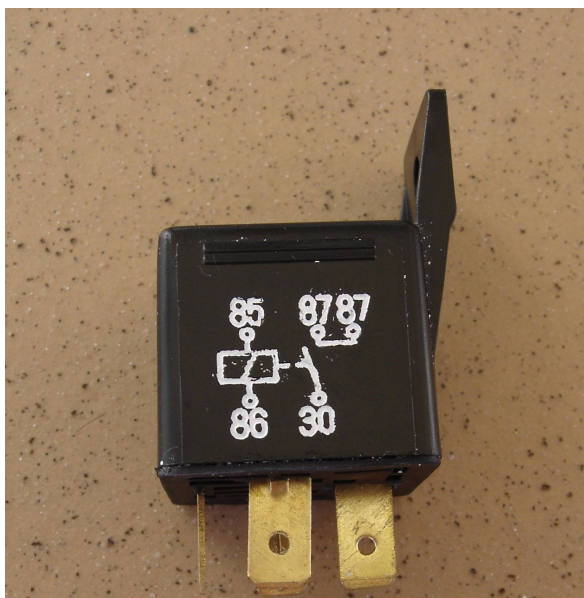
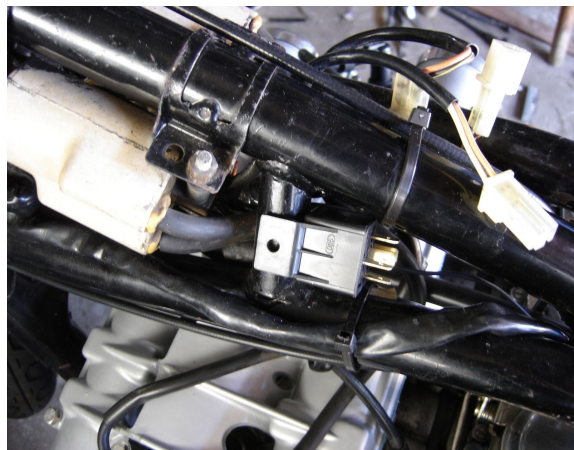
Installing Ignition Coil relay

Coil Relay Modification for Motorcycle GS Suzuki

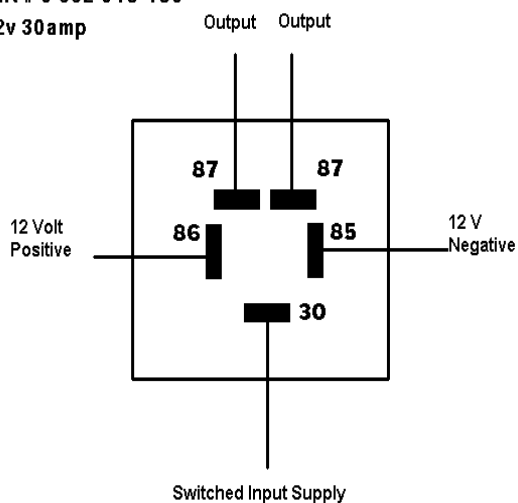


Above is a schematic diagram of the coil relay modification. All it really does is, it uses the existing 12 Volt positive that normally powers the coils, to power a relay, the relay contacts then switch a direct 12 V positive from the battery to the coils and so ensures that no voltage loss due to poor wiring, connectors or worn switches causes the coils to operate beneath peak performance.

- 1) Have a few rolls of black electricians insulation tape, a 5 pin 12 volt relay, relay base, spade connectors-female with small lugs, cable ties, soldering bolt and shrink sleeving at hand.
- 2) Make sure you have the proper wiring diagram for your bike.
- 3) Read the complete procedure below and compare to your bike and the wiring diagram before doing.
- 4) Disconnect your battery, remove the headlight and tank.
- 5) Disconnect the harness plugs inside the headlamp shroud. Make a note of what goes where.
- 6) Disconnect the small wire loop guide for the harness in the steering neck and any clamps holding it to the frame up to the back part of the frame near the seat.
- 7) Pull the harness back so that you have it away from the frame and can easily work on it.
- 8) Install coil relay close to coils, drill a hole in short brace on frame.

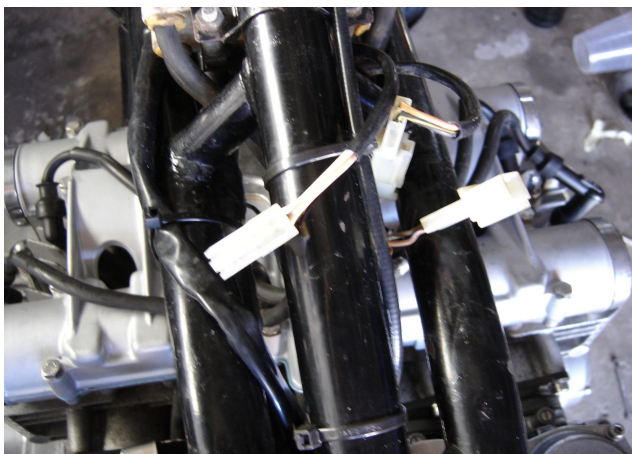


BOSCH relay
part # 0 332 019 150
12v 30amp



9) Use 5 pin relay with common double pin 87

10) Locate the two connector plugs on the coils and unplug them. No changes are made to the wires and plugs connected to the coils.



11) Have a look at the two coil plugs coming out of the wiring harness, they should have an orange/white and a white wire on one and an orange/white and a black yellow on the other. What we now intend doing is rerouting the orange/white wire coming from the harness to

operate a relay and wire the relay contact directly to a new battery positive supply and connect the coils orange/white wires to the dual pin #87, so that the coil battery positive is not fed via the ignition switch and old wiring. The ignition switch now operates the relay and the relay switches the 12 volt positive on the new wire to the relay.

- 12) Now carefully loosen the wiring harness from the frame so that you can get to the area where the orange/white wires go into it and under the tape wound around it.
- 13) Carefully unwind the black tape and you may find a smooth plastic protection sleeve that is used to keep the engine heat from the wires. If so then continue unwinding until you get to the the end of this plastic sleeve.
- 14) Remove the black sleeve and you may now again have to unwrap some black tape for a couple if inches following the orange white wire, until you come to a spot where four orange/white wires are soldered together and wrapped in insulation tape. This is the T-off of the coils positive via the ignition switch.
- 15) Open up this connection and disconnect the two shorter wires orange /white going to the coil plug connectors.
- 16) In the harness you now have two orange/white wires, one going back to the igniter and the other going towards the front to the kill switch. Attach a new short piece of orange/white wire to these and re solder and insulate with heat shrink and push back into harness. I used a light piece of orange wire.
- 17) This new orange wire, brings the old battery positive that used to supply the coils out to the new coil relay and is terminated on the relay coil terminal #86 to operate the relay when the ignition is on. Label it #86.
- 18) In the harness you will also find a common negative heavy black/white wire which at places has some lighter black/white wires connected to it and taped up.
- 19) Locate this wire and connect a short piece of black/white wire to it and insulate with heat shrink. This is now your negative (ground) for the the other side of the relay coil terminal #85. Label it #85. I used a light piece of black wire.
- 20) Now run a new wire (I used gray) back to the fuse box for your new direct positive feed, (assuming a new fuse box has already been fitted) with a separate fuse for the coils or alternatively to a single separate in-line fuse connected directly to the battery positive.
- 21) This gray wire is now your new direct battery positive that goes to the coils via the relay contacts, leave enough slack at the relay side and label it #30.
- 22) Label both the two old loose ends orange/white coming from the coil connector plugs #87.
- 23) You should now have 5 wires that need to be neatly routed to the relay, gray #30, black #85, orange #86, orange/white #87, orange/white #87.
- 24) Now proceed to tape up the wires in the harness, fit the plastic sleeve back and tape over that. Push and bend the harness and fix with cable ties to the frame until it is neat again.

- 25) You should have the connector plugs for the ignition coils plugged into each other as before and enough slack and neatness on your wiring harness as you want it.
- 26) The final part of the new 5 wire leg of the harness now has to be terminated on the relay.
- 27) Bend the cables and give yourself enough slack to allow plugging and unplugging on the base of the relay. The cut all 5 wires off at the same length and tape the 5 wires nearly to the end.
- 28) Strip the ends off all 5 wires and fit a female, brass spade connector with a small lug in the center for use in multiple plugs. Crimp them, but also solder the wire lightly.
- 29) If you have a base connector for the relay with tails, remove the tails. Look at the new spade connector and find the location of the small lug on the side. The on the base connector push that lug in with a small watchmakers screwdriver and pull the tails out towards the wire side.



- 30) Now push your new wires in the correct holes until they click in and push the new base connector on the relay.
- 31) Label the relay Coil Relay and make a note of your wiring changes and colors in your



workshop manual.

- 32) Coil relay and horn relay on opposite side completed.

Footnote: Some people may have unnecessarily replaced their coils or installed after market ones to solve an ignition problem and in the process eliminated the actual faulty situation unwittingly, and

believing that the old coils were faulty. In many cases the problem is actually caused by old wiring, poor connections and a permanent, partial or intermittent voltage loss at the coils. Permanent is easy to find as you just measure for 12 volt right at the coil and a drop of 2-3 volts due to bad wiring is not unusual, but in actual fact the full battery voltage should be present at the coils with maybe about 0.2 Volt drop. An intermittent voltage drop or loss is more difficult and may just happen when the bike is hot or moves in a certain way and may not show up when testing static. This needs to be 'proved' by running in a temporary direct positive wire, bypassing the old route and wires and testing the bike to see if the problem has cleared itself.

In many cases the original wiring can be fixed to rectify this fault, but any loss through an old ignition switch cannot easily be repaired and may need replacement. If such a loss is observed the switch can be disassembled and cleaned and re lubricated or only the switch on the bottom of the lock can be replaced.

A faulty battery and charging system must also be rectified as this can also aggravate or lead to the cause of the above problem.

Many people have testified that after this modification the bike starts easier and runs smoother and was the best modification they could have made.

You can also use the more common relays that have 4 pins with only one #87 output, then just common the two orange/white wires together and make off on a single blade connector.

