

Rewiring the Beetle in Style

Almost from the first day that a Beetle drove the roads, VW restoration products were needed. Now don't get us wrong. VW's weren't built to break down. They were a car for the people...Folk's wagons. But for that very reason, they got used...and used, and used. And as a result they needed repair. And as they aged, they needed restoration. But as well designed and as simplistically engineered as the mechanical parts of a Beetle were, their electrical systems were not. Well, actually, that same simplicity may actually be the problem with their electrical systems.

Early VW wiring was all battery fed...it was always ON. Those early Germans didn't know of drive-ins or parking. So, the radio, turn signals and wipers, for instance, ran off of direct battery feed and had to be shut off independently from the ignition switch. And, once those VW engineers determined that everything could be battery "hot" fed, they also could route wiring wherever they wanted. (Read that to mean - route wiring to the closest spot for subsequent distribution without logical engineering rational.) One point of example..why does the primary battery feed go to the headlight switch first?

American wiring takes a different approach which we like to refer to as the tree trunk approach. (A) Battery primary is fed directly into the fuse panel for those circuits which require it. (B) Also feed battery primary to the ignition switch and then feed, secondarily, the accessories to be controlled by the ignition switch. And (C), route all circuits through a fuse and then to the load (lights, coil, starter, etc.). This tree trunk approach provides a common feed for always-on (battery) circuits that branches off through fuses to the individual circuits and also for the on-only-with-the-ignition (accessory) circuits. Now, that's logical. It also makes for much easier trouble shooting should an electrical problem pop up.

Two other considerations of original VW wiring are visual esthetics and safety. Visually, the back side of the VW fuse panel tended to resemble either a cross-legged centipede or a porcupine having a bad quill day. Wires went everywhere without obvious sense. Not something that you could make to look "show quality". And most connectors are bare terminals just waiting to short circuit on your unsuspecting screw driver or hand.

O.K., so we need a new wiring system in our Bug and we want something modern, safe, good looking, easy to trouble shoot, uses ATO/ATC fuses...the whole nine yards. Who ya' gonna' call? Call Watson's StreetWorks and check out their VW Beetle Modular wiring kit. This state-of-the-art system gives you 18 circuits, a safe, modern fuse panel, color coded and line-marked wires, terminals, detailed, easy-to-follow instructions/schematics...almost everything you need to rewire and upgrade your Beetle's electrical system. So, let's get started with the project. Check out the photos, especially the before and after shots. Wow, what a difference.

There are a few parts that are not included in the kit, so plan accordingly. There are no switches in the kit which allows you to keep your originals if you want or to selectively upgrade to new. We wanted to get away from all of the old design stuff and into modern components so that suited us perfectly. And switching to an ignition switch that included accessory position seemed the smart thing to do.

We also wanted to get rid of the complicated and expensive turn signal/emergency flasher relays which we did. And finally, we are upgrading to a 12 volt system - the details of which we will leave for another article. Lots of work, but best done all at once in this case.

There are lots of other modifications that this particular V-dub will undergo, but we wanted to show you what installing this type of wiring kit on a stocker was all about. The process is not difficult, nor

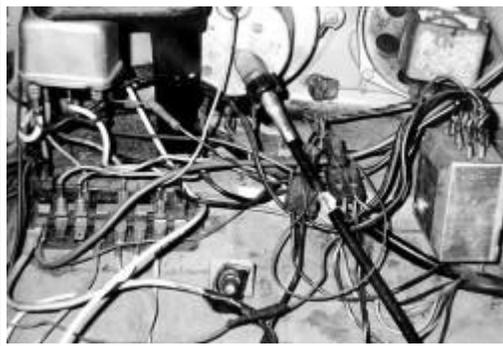
are there special tools required beyond basic wiring stuff, rather it just takes some time. Planning beforehand and as you go, combined with the kit's good instructions, will take you step-by-step through the process.



This is our "project" - a six-volt CE66 Beetle. Looks good from a distance but it has a long way to go to be what we want.



Just pop the bonnet...here's where we made our decision to do a major renovation.



Be brave and take a closer look. The original wiring was bad enough with wimp fuses, unprotected hot terminals and no markings what so ever. But then add years of amateur owners who have patched leads, used household wire, twisted connections and electrical tape. Top off the spaghetti with the emergency flasher module and other "black box" components and it becomes impossible to digest. Start ripping it out...



Step one in any electrical project, disconnect the battery. We'll donate this 6-volt to one of our antique car friends.



In order to get at everything, we are



Power to the rear end goes down the

gutting the interior. It needs it anyway. This pile of goop from near the battery and by the wheel well is courtesy of New England mice. It has to come out both for safety and to eliminate that *old car* smell.

driver kick panel, then through and along the heat box...



...then back through the rail to go over the rear wheel well...

...into the engine compartment...



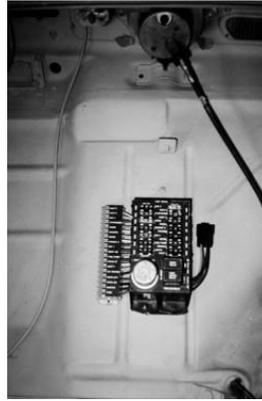
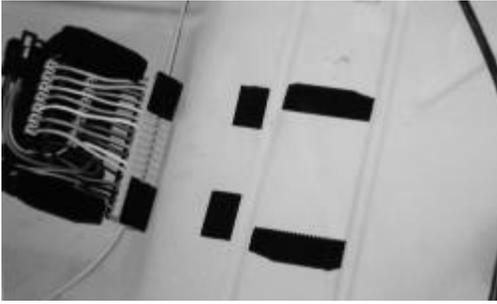
...across to the passenger side...

...and down to the starter. Note what is connected where - write it down and make sketches if needed. Then tear it all out.



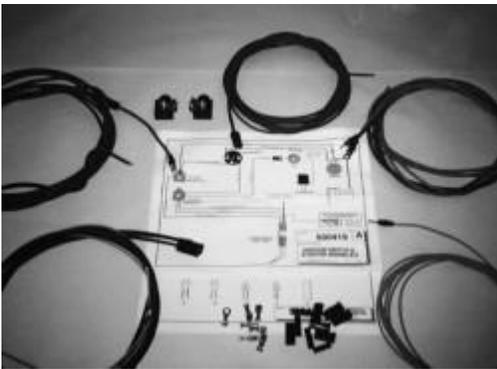
The steering column feed will get pulled out but retained since we're not doing a column swap.

Here is the new kit to be installed. Look at that beautiful fuse panel. The kit is extremely well organized in step-by-step packs, each with CAD drawings and all the parts to do a specific installation step.



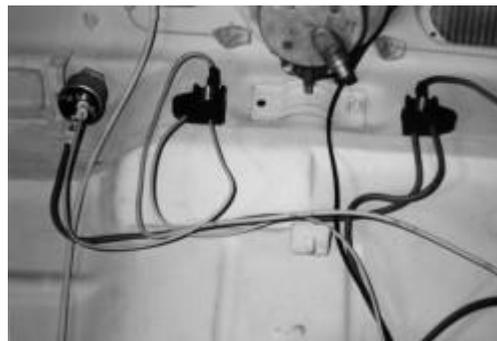
We start by locating the fuse panel. To provide more room and a better looking installation we elected to put it straight forward of the speedometer. We used snap interlocking fasteners to attach the panel.

In place, this panel is easy to access with well marked fuses, connectors, relays...everything.



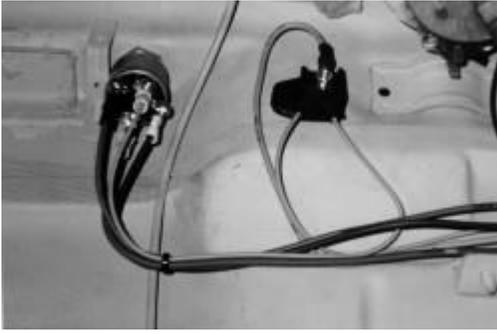
Our first wiring will be for the main power feeds. All of the goodies are in bag "A" with clear diagrams to show us how.

The new battery hot lead goes to the starter solenoid and then forward to the fuse panel through a fusible link for protection. The other connection is the starter trigger from the ignition switch.

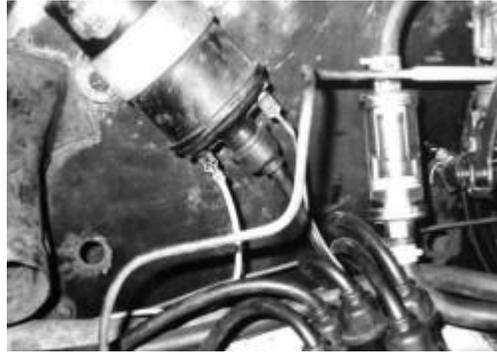


The voltage regulator battery feed goes back to the same starter solenoid terminal to recharge the battery as needed and the other connection goes forward to the idiot light to trigger the regulator. The kit is aimed toward one-wire alternator use, but is easily adapted to any type charging system.

For ease of wiring now, and for adding circuits later, this kit provides two junction blocks. The one on the right is battery fed power and the one on the left is accessory power from the ignition switch. A clean way to hook up the juice.



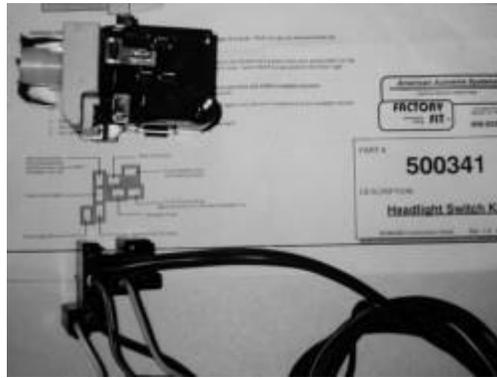
A close up of the ignition switch. This is a higher amperage unit from StreetWorks - it fits into the original location, clearing the ash tray brackets, and has the extra accessory position. We have added the starter trigger wire and the ignition feed wire...



...that goes back to the coil. The second coil connection goes to the distributor.



Street Works wiring kit does not come with switches, so you can retain your originals if you want. We wanted a new style headlight switch and got this OEM style from them.



Notice that the headlight switch instructions give explicit details for where each wire goes.



Installed in its new location, the headlight switch wires get routed to the right places.



One of the replacement/upgrades we are doing is to replace the old dimmer switch relay with a newer, smaller unit also from Watson's. The headlight switch feeds the relay, which is then triggered by the stock grounding switch in the turn signal arm.



We can then run and terminate the headlight wires with the sockets provided in the kit. The individual lead is for the parking light that is in the headlight assembly.



The driver side headlight bucket has twice the wires because they go there first and then jumper over to the passenger side. Before reinstalling the seal beams, we epoxied a rubber pad to the back of the fender cavity to help prevent any possible wire chaffing.



While wiring up front, we connected the turn signals...



...and the brake switch and the horn (not shown).



Running the wiring to the back end, we found that a left over piece of the heavy 10 gauge primary battery feed wire came in handy. We fished it through the body easier than small wires and then pulled the whole bunch in one shot.



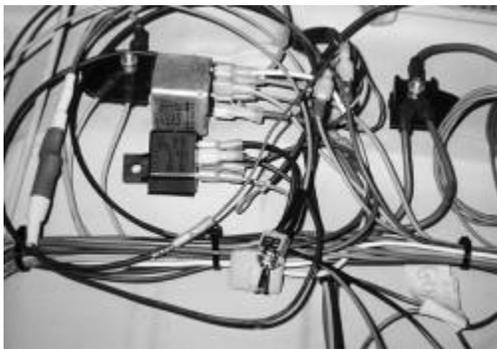
The taillights get wired just like the front end. Wires on this driver side get jumper wired over to the passenger side and to the license plate light.



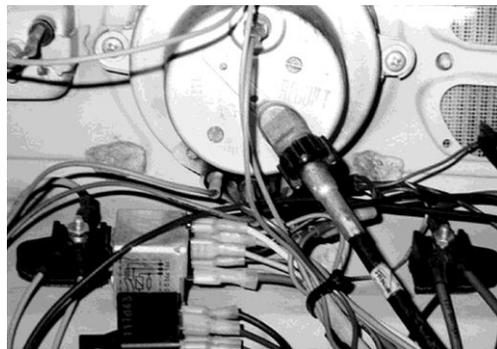
Don't forget the dome light. We put these wires inside some heavy wall shrink tubing and used the old wires to pull the new wires through the body.



Up front again, we added new terminals to the steering column wires...



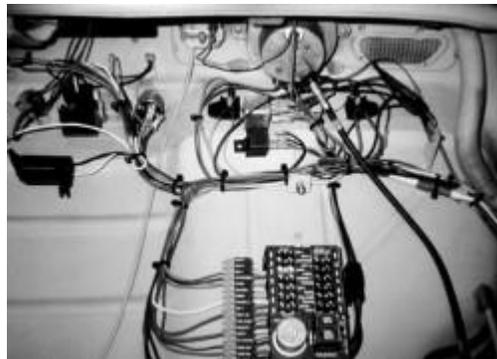
...then routed them to our new 4-way hazard switch relay and on to the turn signal leads. We're using a neat little toggle switch to activate the 4-ways. Toggle, relay and all are also StreetWorks items and are much more straight forward than the original stuff.



Let's not forget the dash lights, turn indicators and generator light.



All of those tie-wraps that come in the kit help to clean up the wiring. On the right of the photo you can see our master ground connection attached to the old flasher relay mount.



Finishing up under the hood, we have added the wiper switch on the far left and an electric windshield spritzer pump close by it, tie-wrapped wires and have gotten everything except the fuse panel itself behind where a protective panel will attach. The guys are gonna' be envious of this setup.



Here is our new switch grouping - ignition, headlights and wiper switches on the bottom; the toggle over the ignition is for 4-ways and the one over the wiper is for the electrical windshield washer.