

CRUISE CONTROL FOR TRIUMPH



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Preface

When my car was new, I put well over 100,000 miles on it in the first eight years constantly traveling on my job including four journeys around the perimeter of the continental United States and transiting all lower 48 States at least three times.

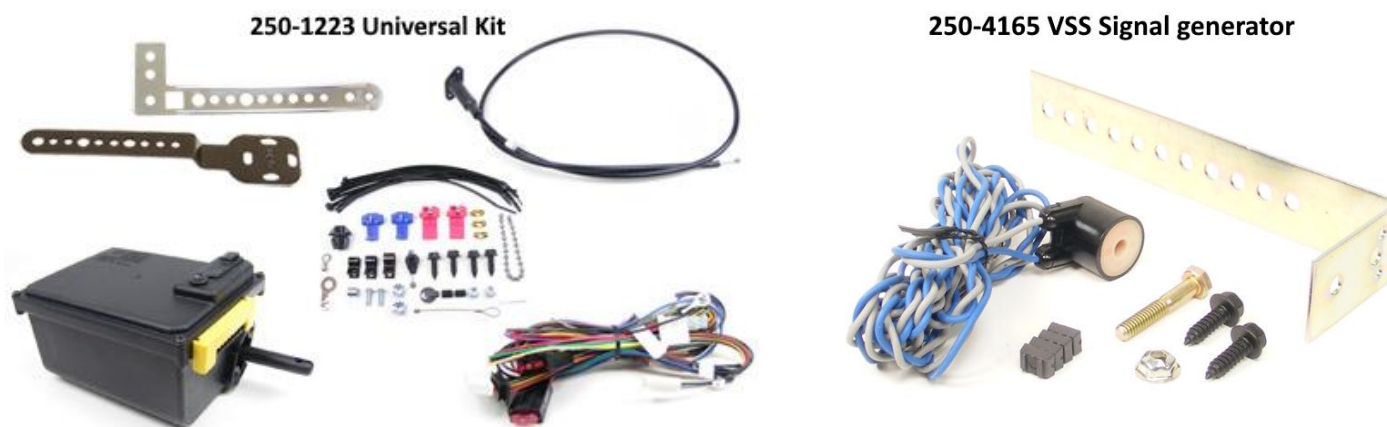
I think on each of my trips that exceeded 100 miles or so, I would say to myself “you need to install a Cruise Control”. Sears sold a Cruise Control kit back then that operated on vacuum, there were probably others that I don’t remember. I don’t recall the rational, but the Cruise Control never happened.

Fast forward to 2013, a year after I completed my 30 some year restoration. On my trips to the 6-Pack TRials in Traverse City, Michigan and then to the VTR Nationals in San Rafael, California all within two weeks and 7000 miles, the itch to install a Cruise Control came roaring back.

Overview

The Rostra 250-1223 Universal Cruise Control kit is a microprocessor-based Cruise Control that adapts well to Triumph cars.

In addition to the base kit, you will need the 250-4165 Universal VSS Signal generator Magnet kit with Pickup Coil, a Clutch Disengagement Switch, and a Controller. A mounting panel should save you from drilling holes in your engine compartment.



Installation will involve fabricating the mounting panel, a throttle linkage clamp, some bracketry for the clutch disengagement switch and the VSS Pickup coil.

Disclaimer:

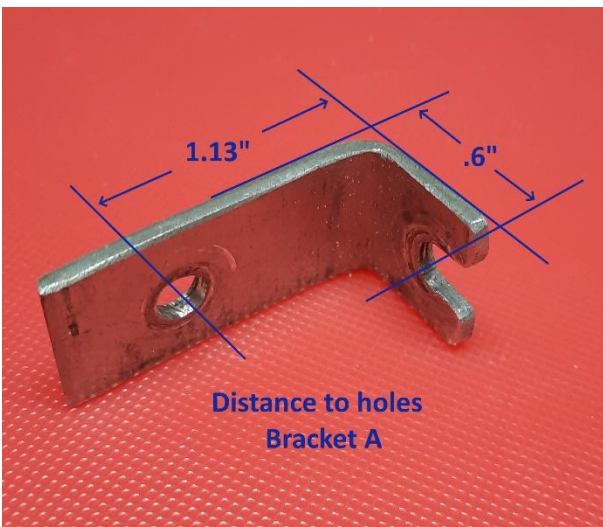
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Cruise Module Mounting Panel



The cruise module and cable are mounted on a panel that can be easily removed and doesn't require any drilling in the engine compartment. I recently fabricated a new panel cut from a 1/2" HDPP cutting board to replace my original panel made with two steel sheet metal sheets bonded to a sheet of 3/8 inch Styrofoam. After 10 years, the bond was starting to weaken and it was getting very ugly.

The panel could be made from most any rigid material, but if the thickness is much over 1/2", verify that there will be sufficient clearance with the bonnet closed. I used this product sold on Amazon: **Winco Heavy-Duty Plastic Cutting Board, 15" x 20" x 1/2"** - they are available in different colors. The brackets were made from leftover metal scraps and spare brackets that I save for projects such as this. The following dimensions for the brackets and panel should be fairly accurate, but I would suggest making a cardboard template to validate the fit. Make sure the end of the cruise cable will be aligned with the throttle linkage, before drilling the hole for its clamp.

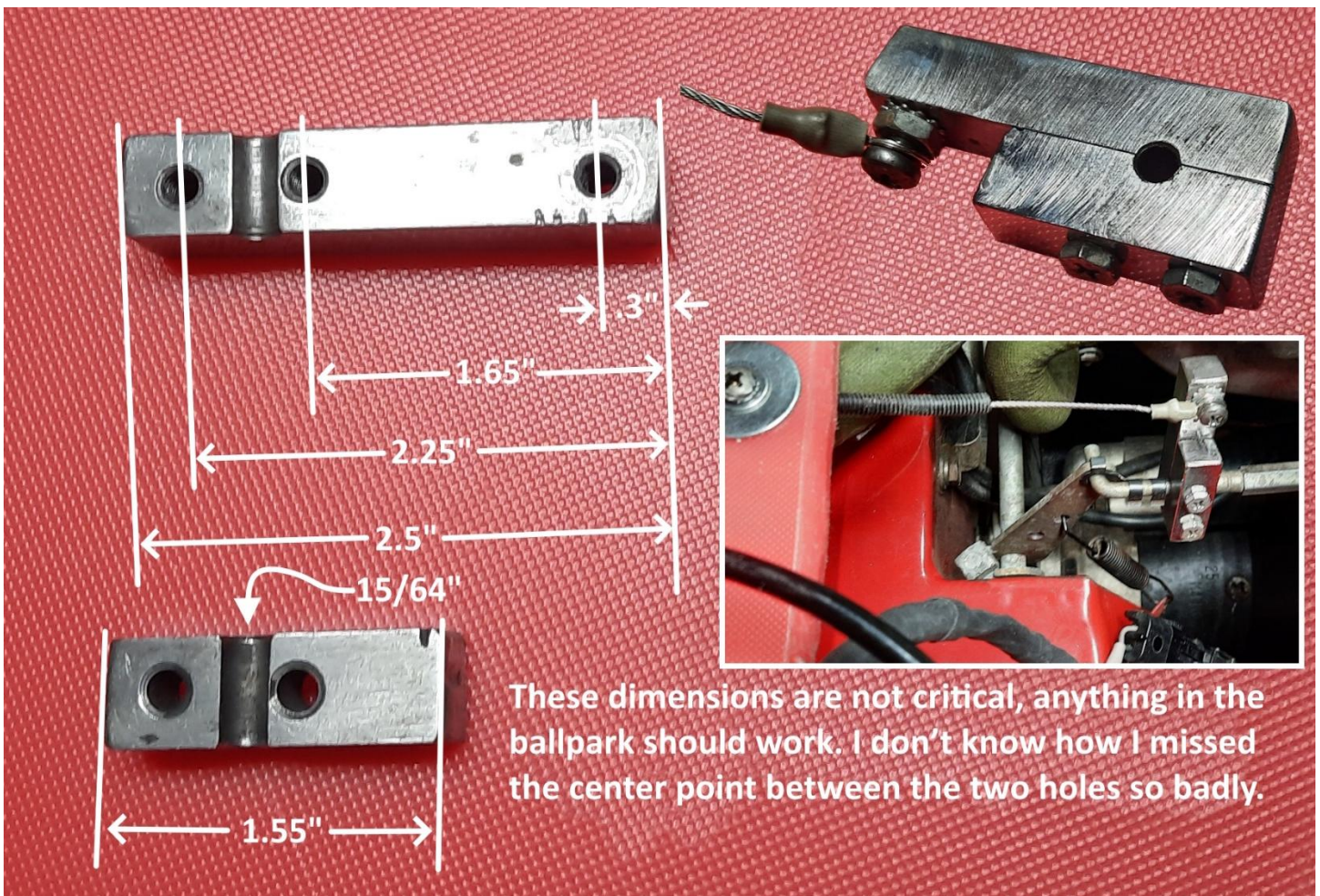


Throttle Linkage Clamp

The cruise cable attaches to the throttle linkage clamp. The clamp is made-up from two sections of $\frac{1}{2}$ " square steel bar stock.

It is highly recommended that a drill press is used to drill the holes. It is also advisable to use a cutting oil for drilling and tapping.

- With the ends of the two sections aligned, stack the short bar on top and clamp the bars together from the sides (a drill press vice works well for this) and drill the three holes completely through with a #21 drill
- Mark the bars to ensure they keep the same orientation to each other until the clamping hole is drilled
- Chamfer the three holes in the long bar that will face the short bar
- Tap the three holes in the long bar with a 10-32 tap all the way through
- Enlarge the two holes in the short bar to $\frac{3}{16}$ "
- Chamfer the two holes on both sides
- Clamp the two bars tightly together with two 10-32 bolts or screws
- Drill a $\frac{15}{64}$ " hole at the mating point midway between the two 10-32 fasteners
- Should the throttle linkage clamp not clamp down tightly on the linkage, you might try staking the inside of the half holes with a sharp center punch



Clutch Disengagement Switch

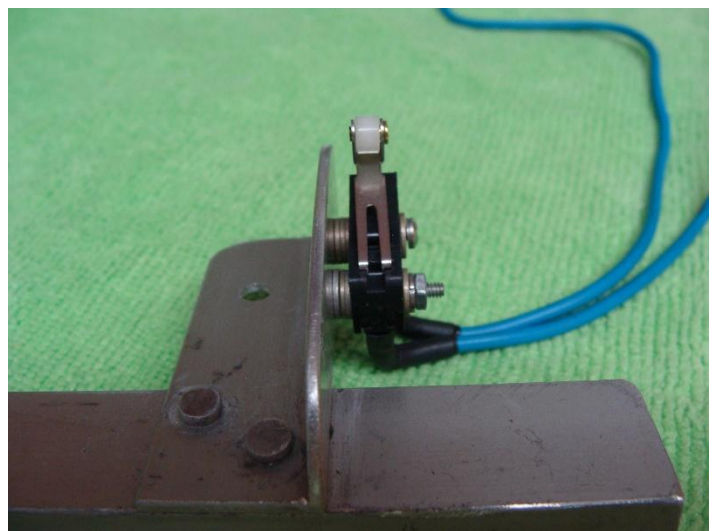
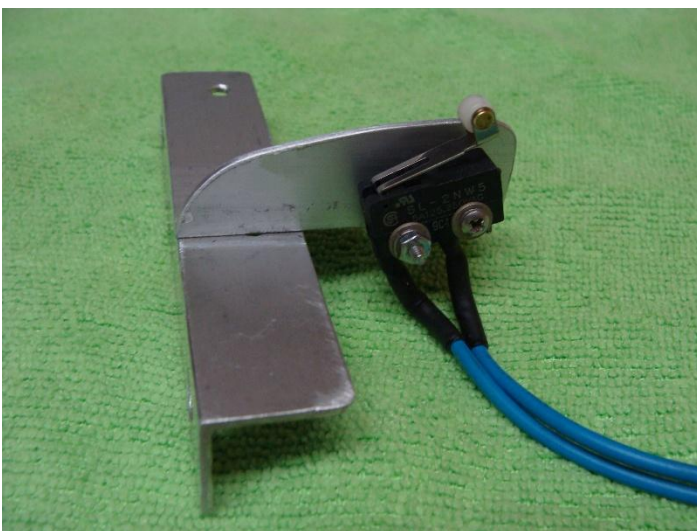
A single pole normally closed switch is used to disengage or cancel the cruise control when the clutch pedal is depressed.

Rostra makes a UNIVERSAL DISENGAGEMENT SWITCH, KIT #250-4206, but I chose to make my own with a small microswitch and some custom bracketry mounted to two of the bolts that secure the pedal box to the car body. I believe if the Rostra kit is used, it will still need a custom bracket of some kind.

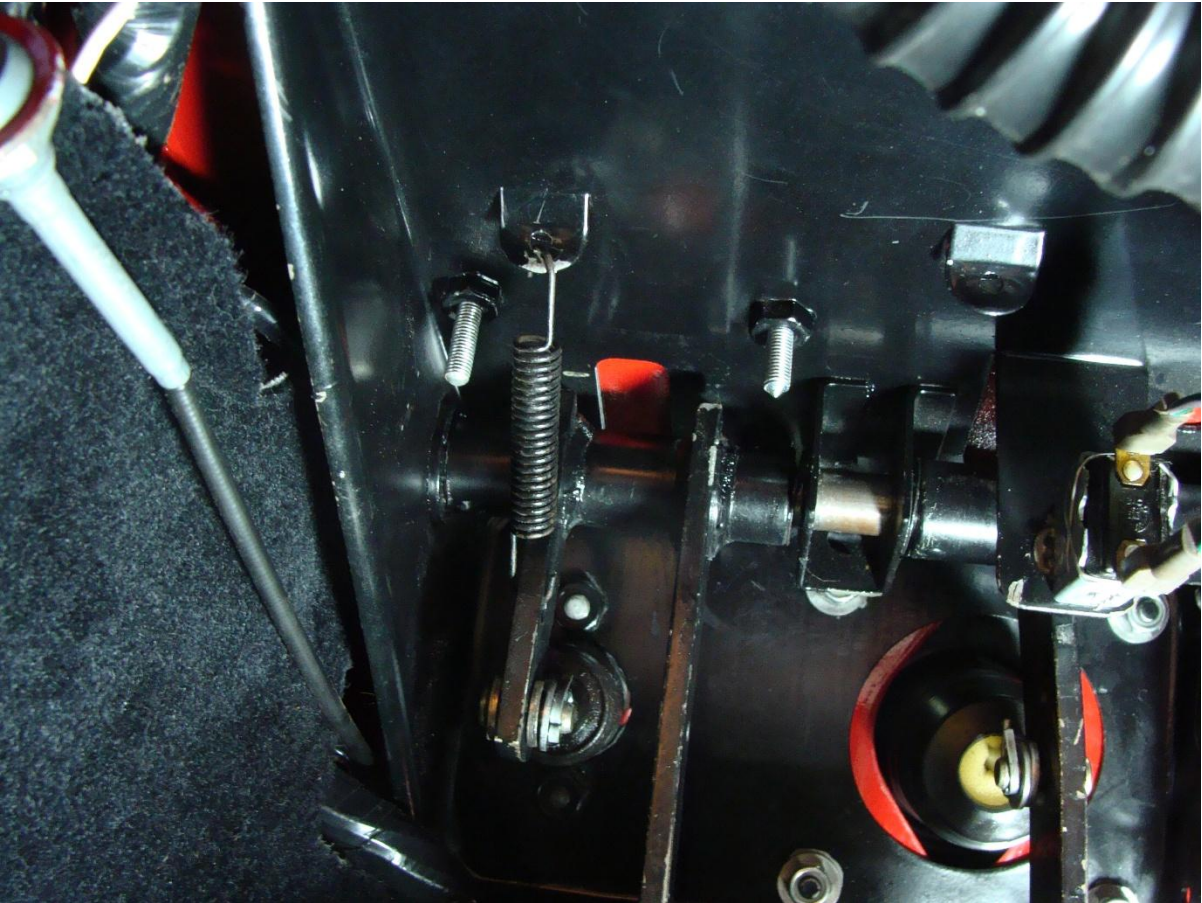
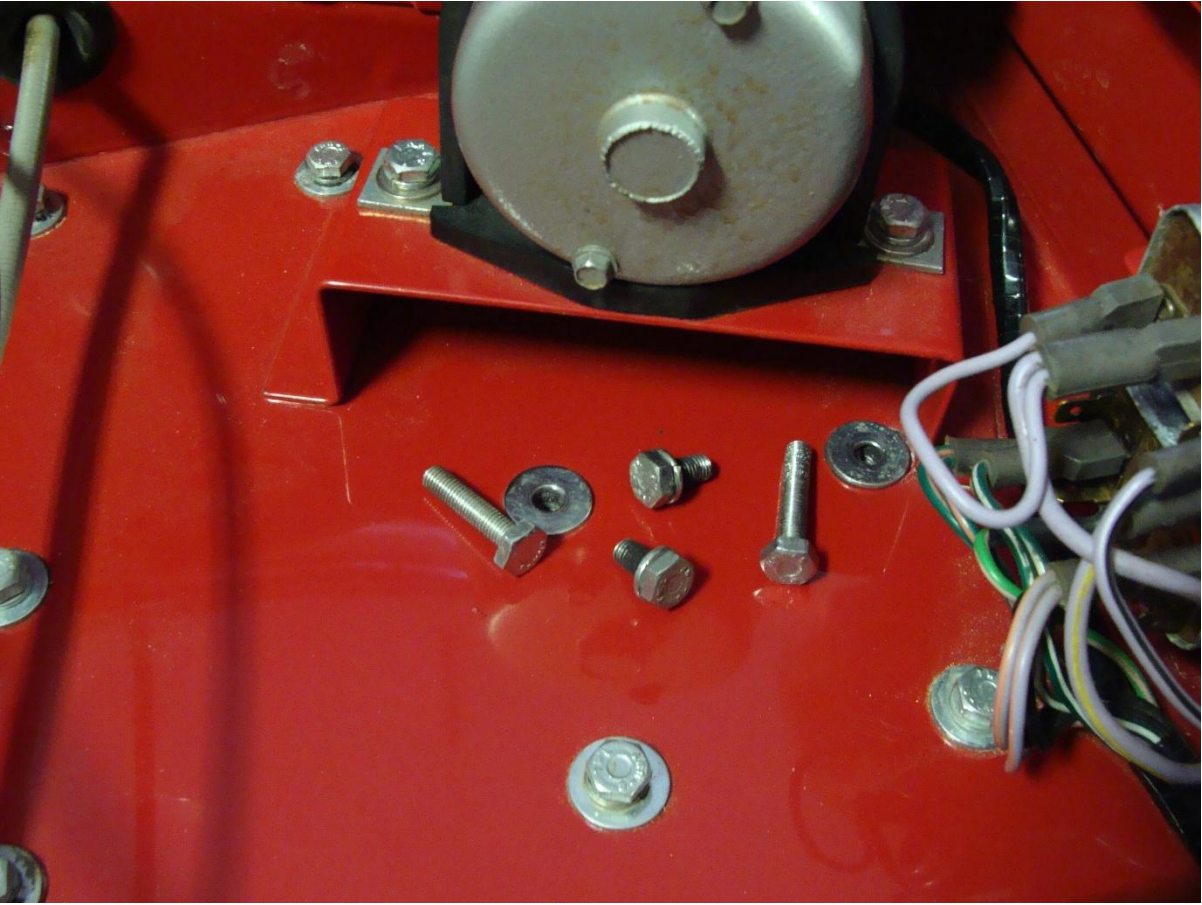
My switch was purchased from Radio Shack many years ago, but they are available from Amazon and eBay for very little. Just search for Roller Switch. Amazon has one or more with pre attached wires that would simplify the wiring.

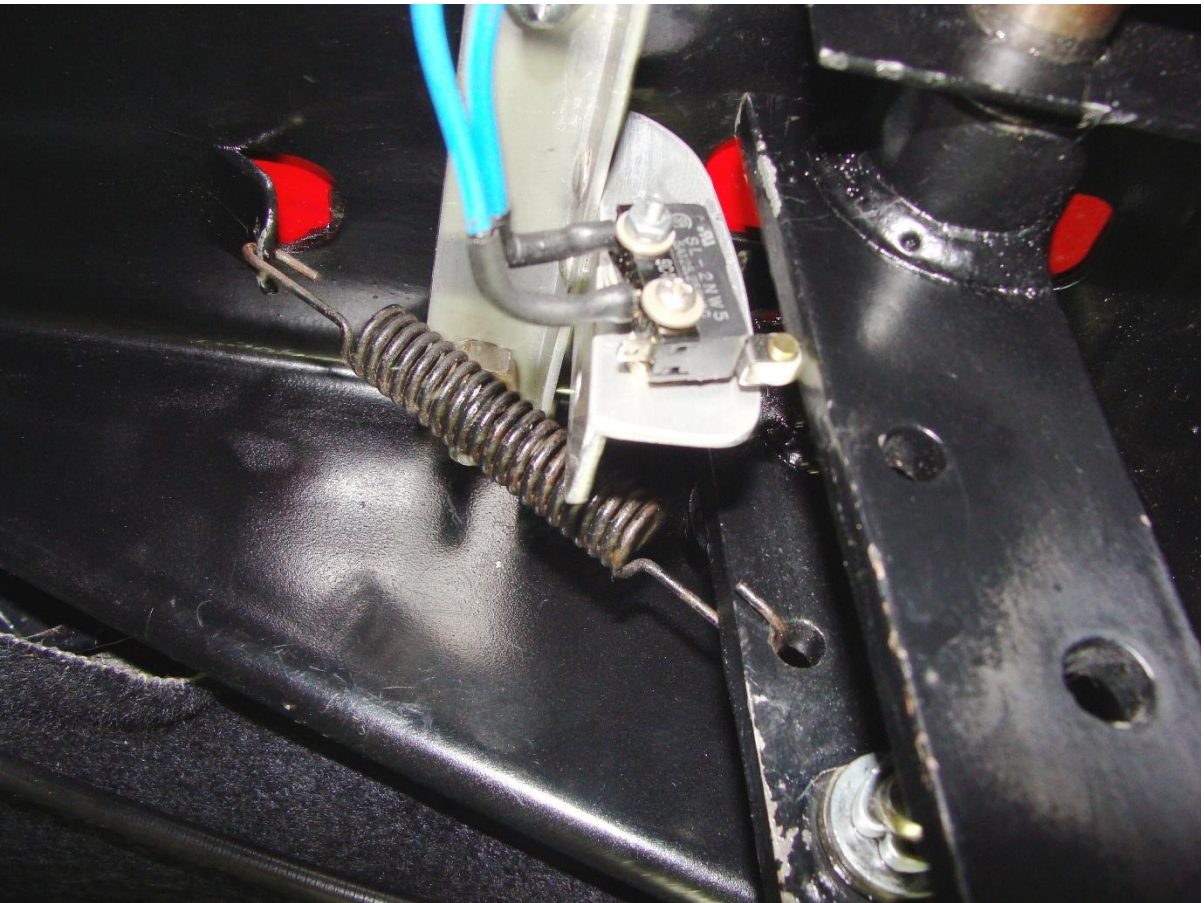
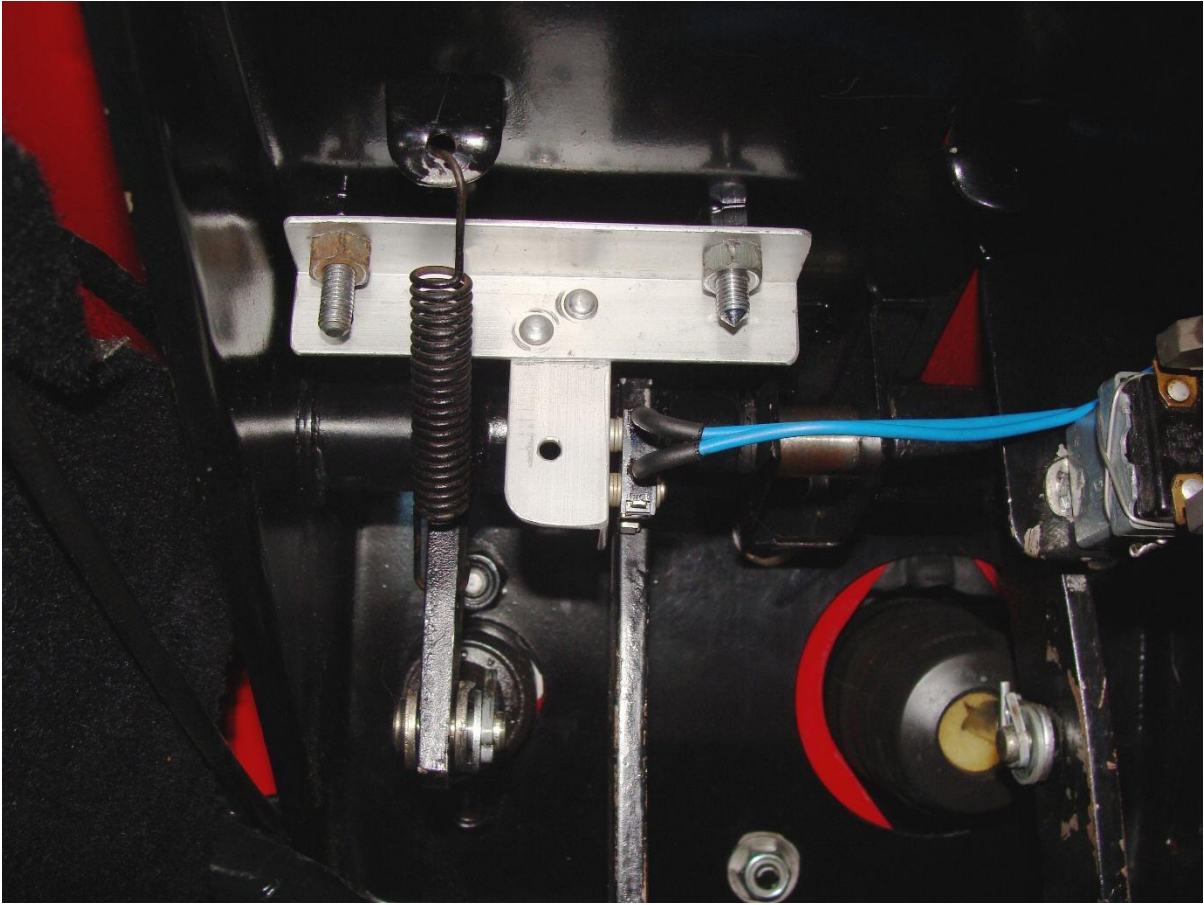
I made the bracket from some scrap pieces of 1/2" aluminum angle. I used solid rivets to attach the two pieces, but pop rivets or bolts should work just fine.

Washers were used between the bracket and switch to ensure the roller aligned with the clutch pedal.



Two of the pedal box bolts used to mount the bracket need to be replaced with longer bolts.

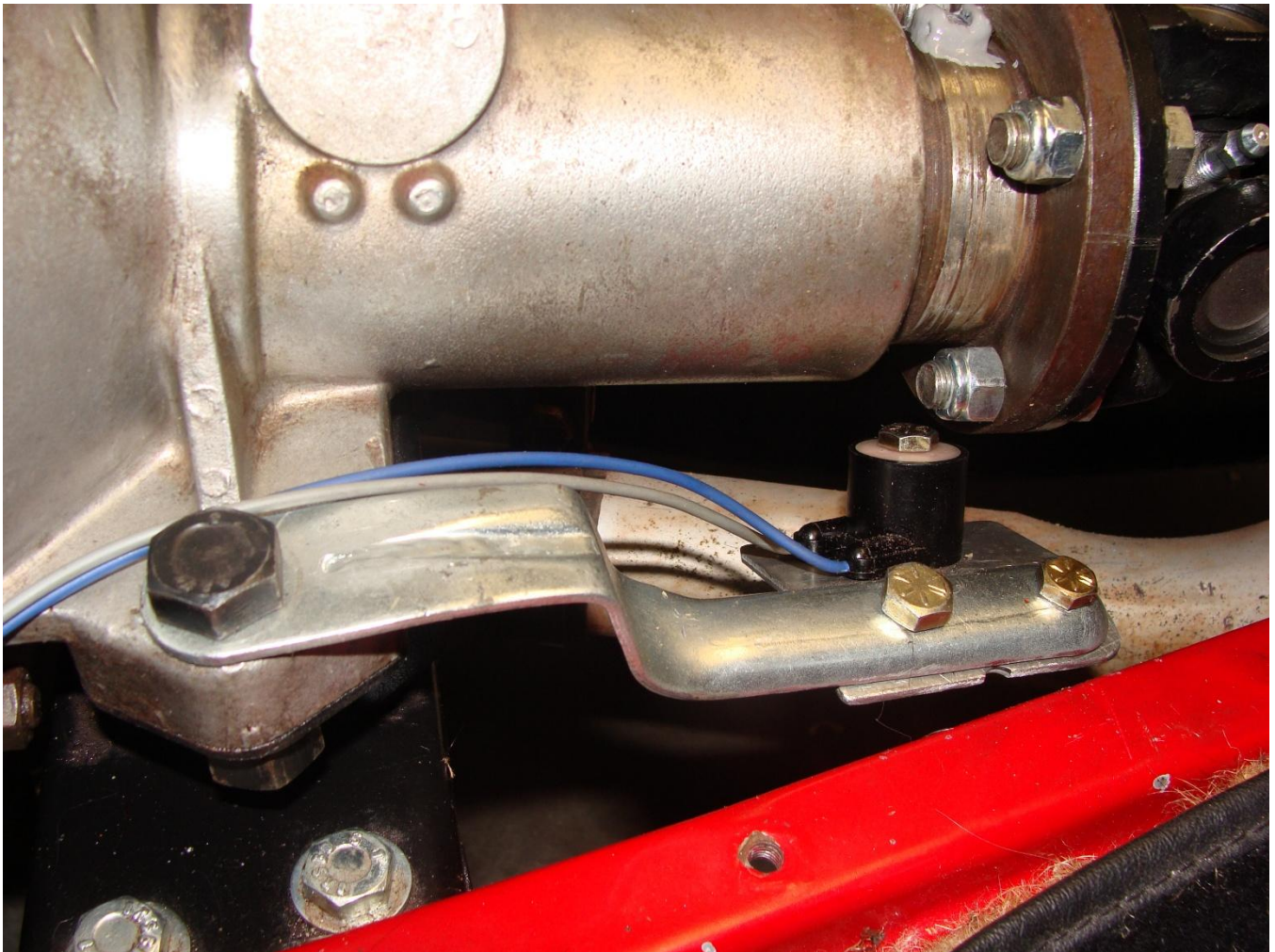
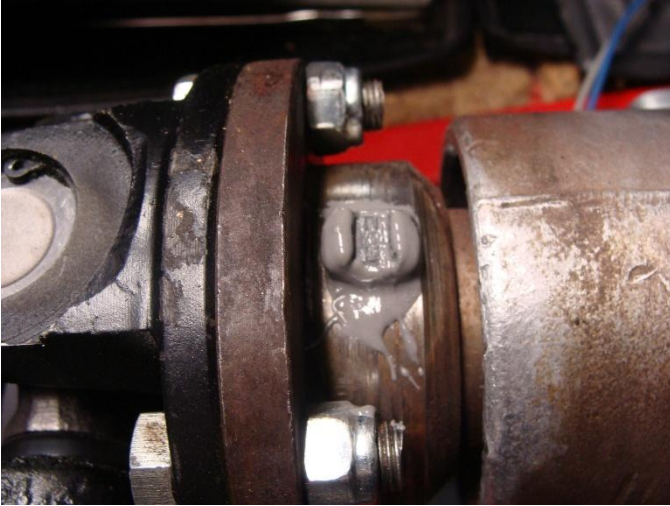




Road Speed Sensor

The Cruise Control requires a 250-4165 Universal VSS Signal generator Magnet kit with Pickup Coil to recognize the vehicle speed. A single magnet is epoxied to the drive shaft and the pickup sensor is positioned close to it.

I used J-B Weld to attach the magnet to the gearbox output flange. Searching through my junk pile, I found a boxed end wrench that came with some unknown piece of equipment that seemed to fit the bill.



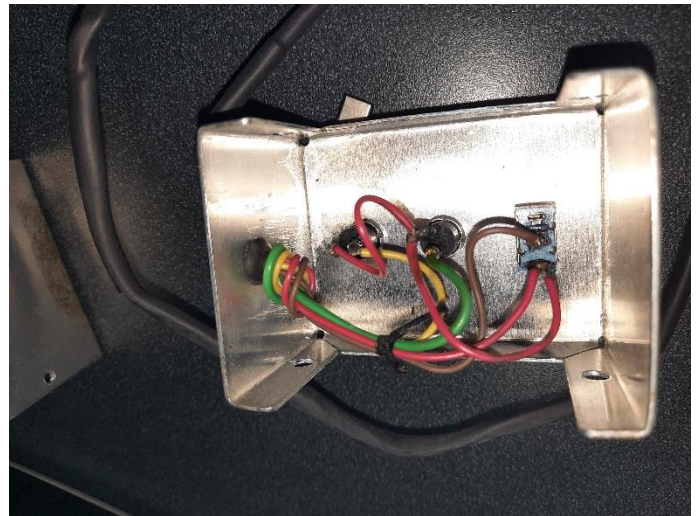
Controller

There are a few options for a controller from Roll your own to an RF controller. I opted for the 250-1483 RF Cruise Control Switch, but unfortunately after 6 years it gave up the ghost. Unable to find a replacement in short order, I purchased a 433 MHz 4 channel relay module from Amazon and adapted it to the Cruise Control. More on that later.

There are two illuminated flush mount control switches measuring 1.5" x 2" available that can also be wired to your instrument light circuit. They do require three 9/32" holes, one for the wires and two for mounting. In the past I saw that someone had one of them mounted diagonally or canted at the base of the dash support and carpet just behind the gearshift.



As I was waiting for a good deal on the RF controller, I decided to make my own temporary controller. The connection to the Cruise Control harness is made with the same plug used for older computer drives.



I was looking for a controller that I could remove easily for the Concours shows without the need to pull back and hide wiring. The 250-1483 RF Cruise Control Switch comes with a bracket to attach it to the steering wheel hub of some cars. I knew that it wouldn't adapt to a TR6 steering wheel and I ended up mounting it with Velcro to the underside of the center switch plinth visor.



This worked fine until it didn't. Trying to troubleshoot, I couldn't even determine if it was the transmitter or the receiver that went bad.

I purchased the **QIACHIP DC 12V Relay Remote Switch Wireless RF Remote Control Switch 4 Channel Module 433Mhz Transmitter Receiver Kit** from Amazon and with a little wiring reconfiguration had a replacement for the Rostra controller. I mounted the control switch to the steering wheel spoke with a 10-32 screw through the case back and a nut.



Being a 4-channel relay module, it gave me the ability to have a Cancel switch. I use the C button to Set, B to Resume and A to Cancel, D will Reset the whole system, but it's not really needed. The Rostra controller had a cancel feature, but it required you to press both buttons at once.

Just a slight tap on the clutch pedal will also work to cancel without showing your Brake Lights.

Wiring

Refer to the installation manual for the complete wiring details and general wiring diagram.

The harness from the Cruise Module along with the two wires for the VSS Pick up coil travel down and through a 1" hole adjacent to the lower attach point of the throttle return spring. On the opposite side of the engine bay, that is the hole the speedo cable passes through. The wires can be tied back so that the three wiring disconnects are positioned just above the hole.

From there harness and VSS wires continue down and to the rear and at one of the front bolts securing the gearbox cover I clamped it with a nut to one of the protruding bolts below the floor panel (I may have used a longer bolt). The harness wires then enter the cabin along with the wires going down for the backup lights switch, neutral safety switch and overdrive interlock switches, if so equipped, while the VSS wires go over the gearbox to where the Pick-up coil is mounted.

A convenient location to connect the Brown wire from the 10 AMP fuse is at the bullet/sleeve connection of the green wire for the backup lights switch just above the gearbox cover.

The Violet wire will route over to the Clutch Disengagement Switch where you will have two options for wiring:

When you cancel the Cruise Control engagement with the brake or clutch pedal it interrupts the ground signal to the Cruise Module via the Violet wire. In Option A, the Violet wire picks up that ground signal from the unlit Brake Lights bulbs. The vehicle ground actually passes through the bulb filaments then on to the Cruise Module. When the brakes are applied, the 12V to the brake lights cancel out the ground signal and the Cruise Control is disengaged.

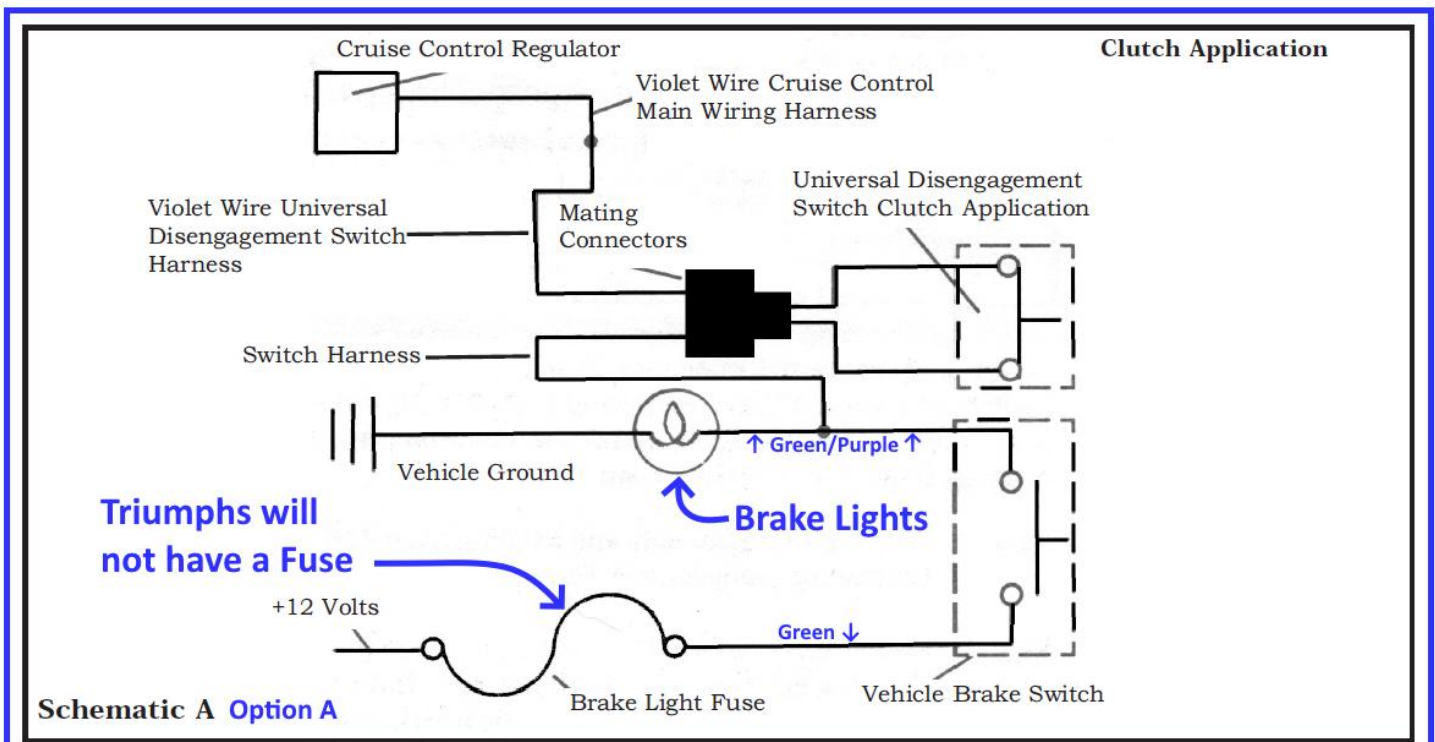
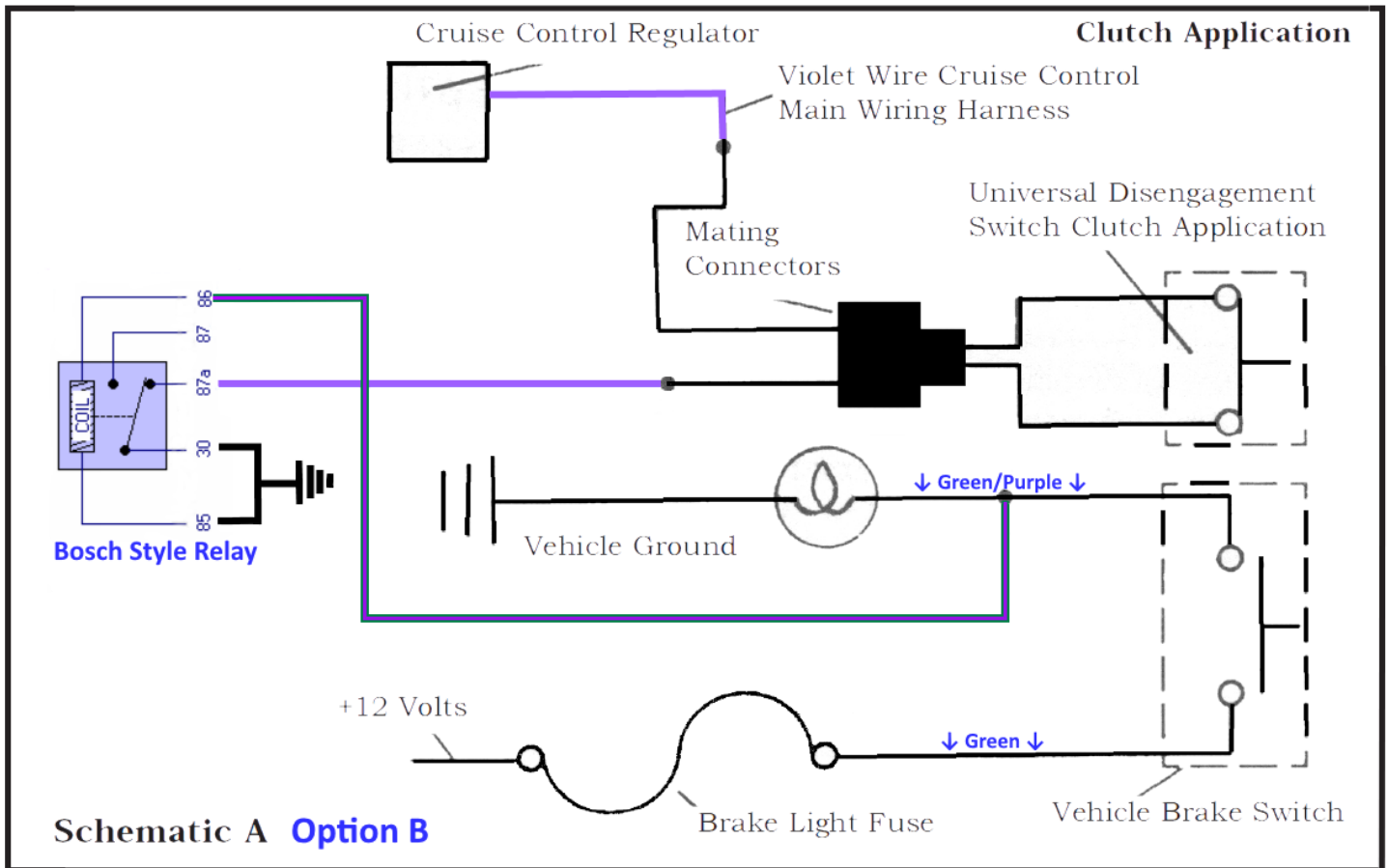


Diagram from 250-4206 Universal Disengagement Switch Kit Manual

If you have installed LED Brake lights or if the 50+ year old ground circuit wiring resistance is a bit too high, the Cruise Module will/may see an inadequate ground signal and the Cruise Control will not be able to engage or the engagement might drop out unexpectedly.

Option B incorporates a SPDT Bosch style relay to bypass the brake light bulbs. When the brakes are applied, the relay will break the ground connection between terminals 30 and 87a.



Random Notes and Thoughts

The two 4 pin connectors referred to as Bulkhead Connectors are not in an optimal position for the quick removal of the Cruise Module and mounting panel. As mentioned in the preceding section, you can tie back the wires, but I cut the wires at about the same length as the VSS speed sensor plug and installed new disconnect plugs. The original 4 pin plugs then ended up between the two kidney panels. I also added the gray VSS and the dark blue tach wire to the plugs.

The manual says the dark blue tach wire should be grounded if using a clutch switch, and if using an auxiliary speed sensor to trim the gray VSS wire so as not to pick-up any stray signals. To facilitate this, in the harness between the Cruise Module plug and the Newly added disconnect plugs, I reconfigured some of the wires:

- Cut the #6 Gray VSS wire from the 3-way splice and spliced it to the #10 Orange Enable Output wire
- Cut the #8 Dark Blue Tach wire and left it for possible future upgrades
- Changed the 3-way splice of the #3 Black Ground wire to a 4-way including the #8 Dark Blue Tach wire
- Trimmed the #9 Light Green Neutral Safety wire

These modifications can be seen in the diagram on the next page. The original harness layout is shown below it. The diagram also includes the 4 Channel RF Relay Module controller and two LED status lights for On and Engaged, along with a relay for the engaged LED controlled by the #10 Orange Enable Output wire.

The LEDs of various colors are from Amazon: **Oznum Prewired Surface Mount LEDs (2835 LED) – 3 Pack**



