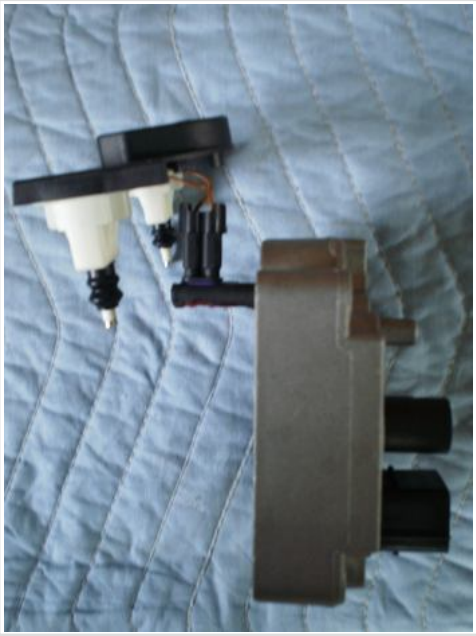
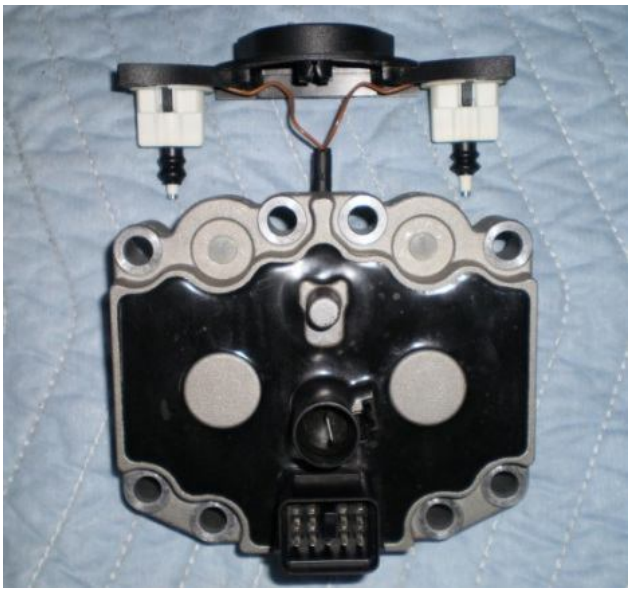
OPTION A

31. Since you are repairing the electrical fault at the SVS circuit board you need to test the SVS at the modulator side of the unit.

Connect the SVS plug to the SVS circuit board like pictured below.

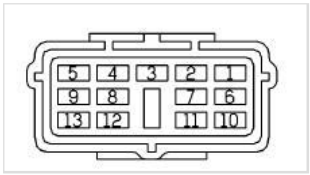


Then turn it over on its side.



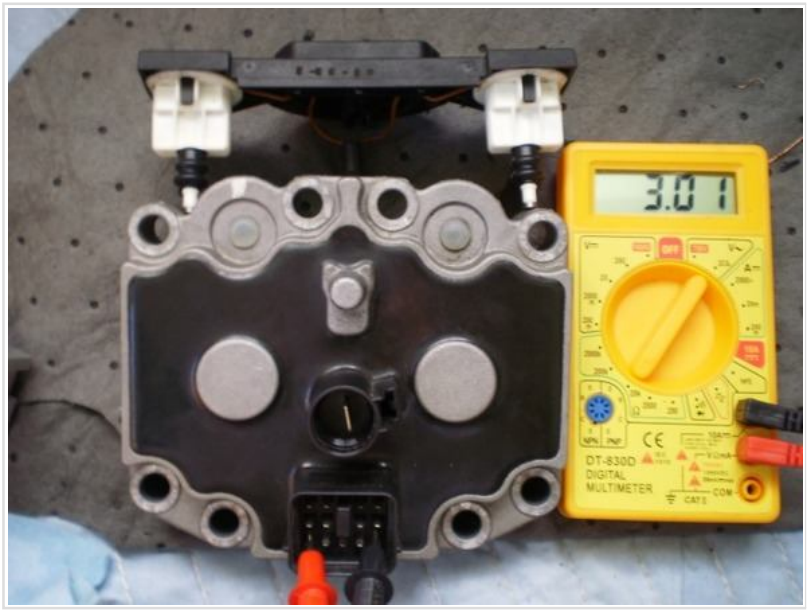
Get your handy DMM and check ohms between pin 9 (red) and 6 (black) All you need to do is have a helper push the switches while you get the readings.

Component	Resistance, ohms
Shuttle valve switches, both open (brakes off)	2977 - 3067
Shuttle valve switches, both closed (brakes on)	1007 - 1037
Shuttle valve switches, one open, one closed	1992 - 2052



Connector C0501

BOTH OPEN ----- PASS



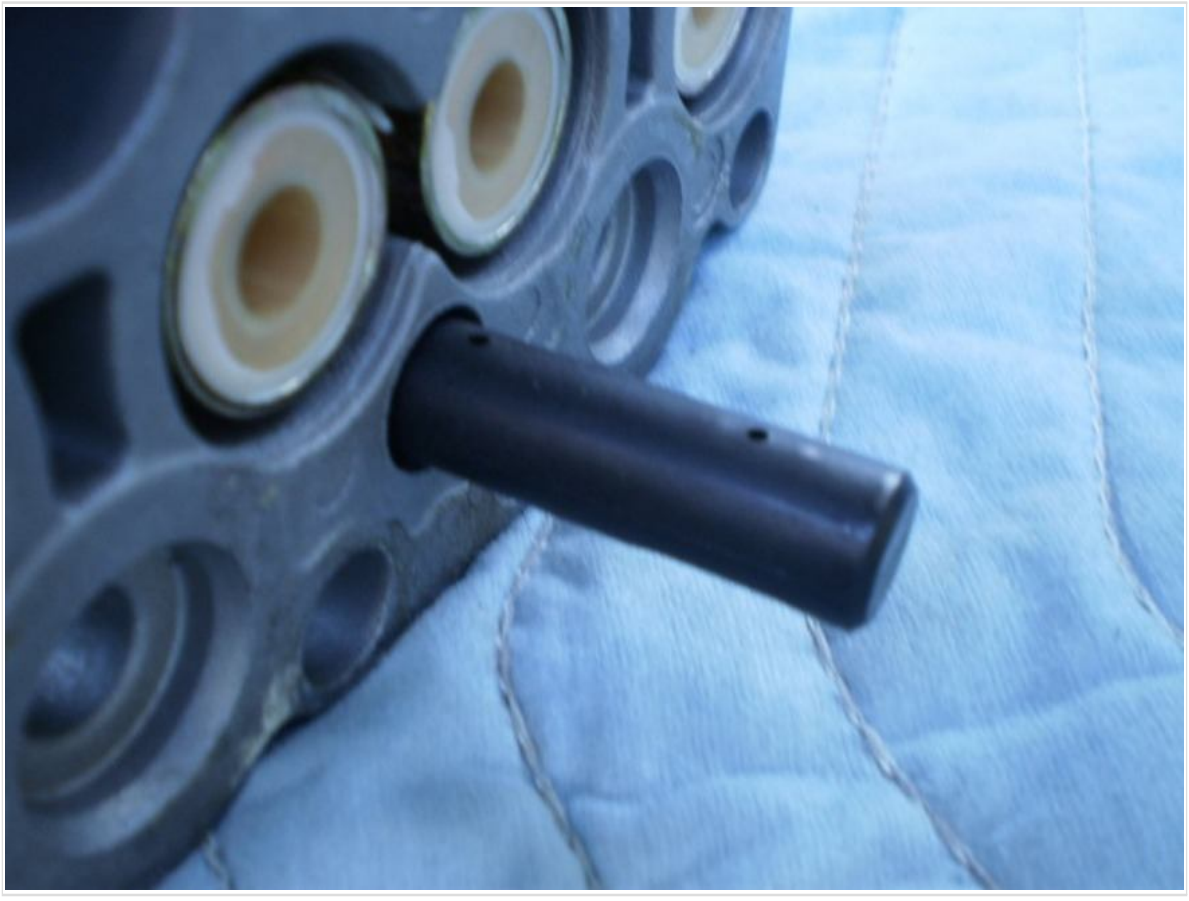
I had my DMM set at 20k

BOTH CLOSED ------ PASS

ONE CLOSED ----- PASS

If you didn't pass the test, your SVS may be faulty and may need replacing.

32. Disconnect the SVS plug. Flip the modulator side "right side up" so the SVS circuit board is at the bottom with the pins facing down. This is the part that requires surgery.



33. Now there are many different ways you can remove the VERY HARD plastic on the underside of the SVS plug circuit board. You can use a small torch and heat up a razor blade or an X-ACTO blade. You can bite it off but that didn't work. I used an X-ACTO blade.

My surgery worked SO well that I cut too deep into the circuit board lines which made this whole repair worthless. FAIL....

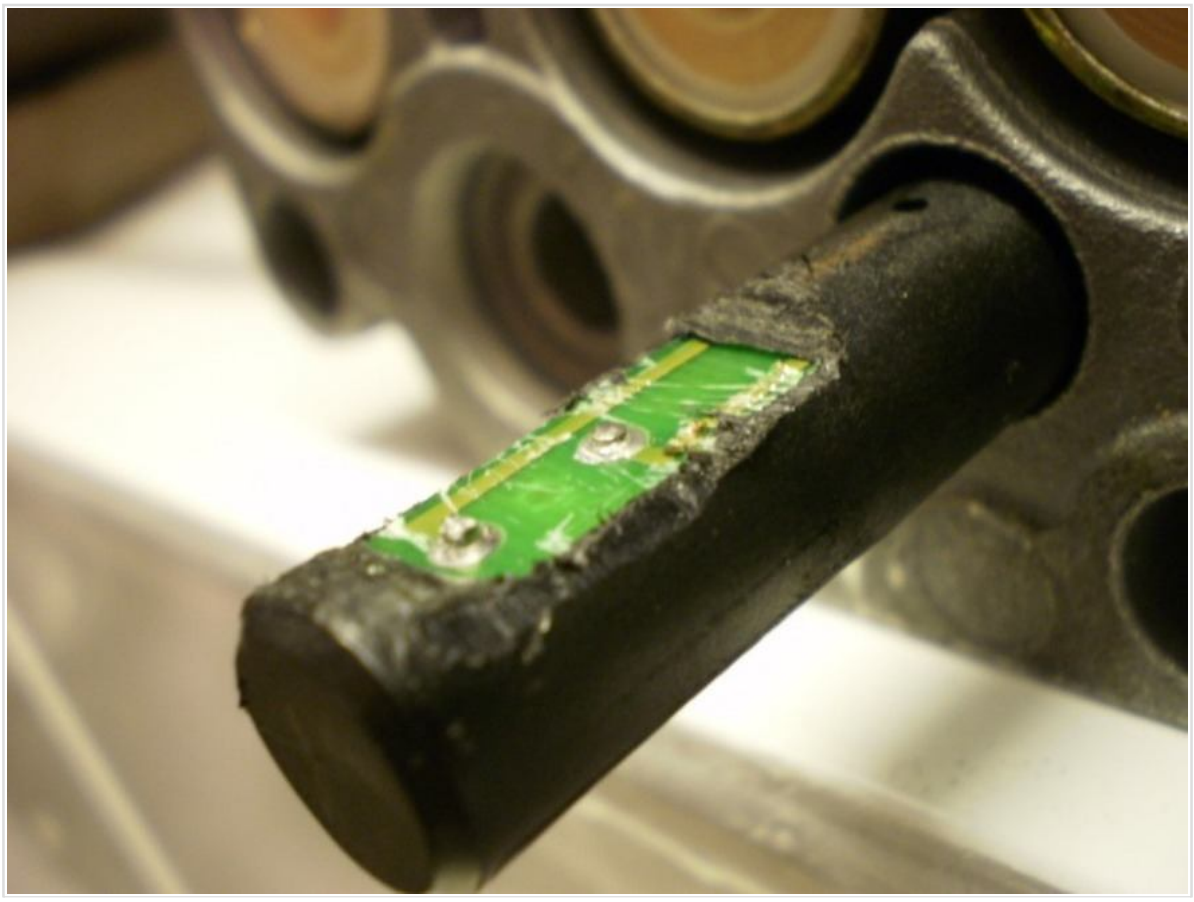
The new challenge I had was that I completely destroyed the circuit board and even straight wiring it (Option C) would not work.

So why does it not work? Well if you remember the SVS ohm test procedure, you place the DMM prongs onto pins 9 and 6 on the modulator to test ohms on the SVS various positions. As it so happens, the SLABS ECU detects and monitors the ohms using ONE wire which turned out to be the YG wire on connector C0501- pin 9. Pin 9 continues on to meet the SVS harness via that circuit board encased in hard plastic then through the SVS plug. Pin 6 is grounded internally within the modulator so there is no wire going to that pin via connector C0501- pin 6. (Hence the discovery of Option B)

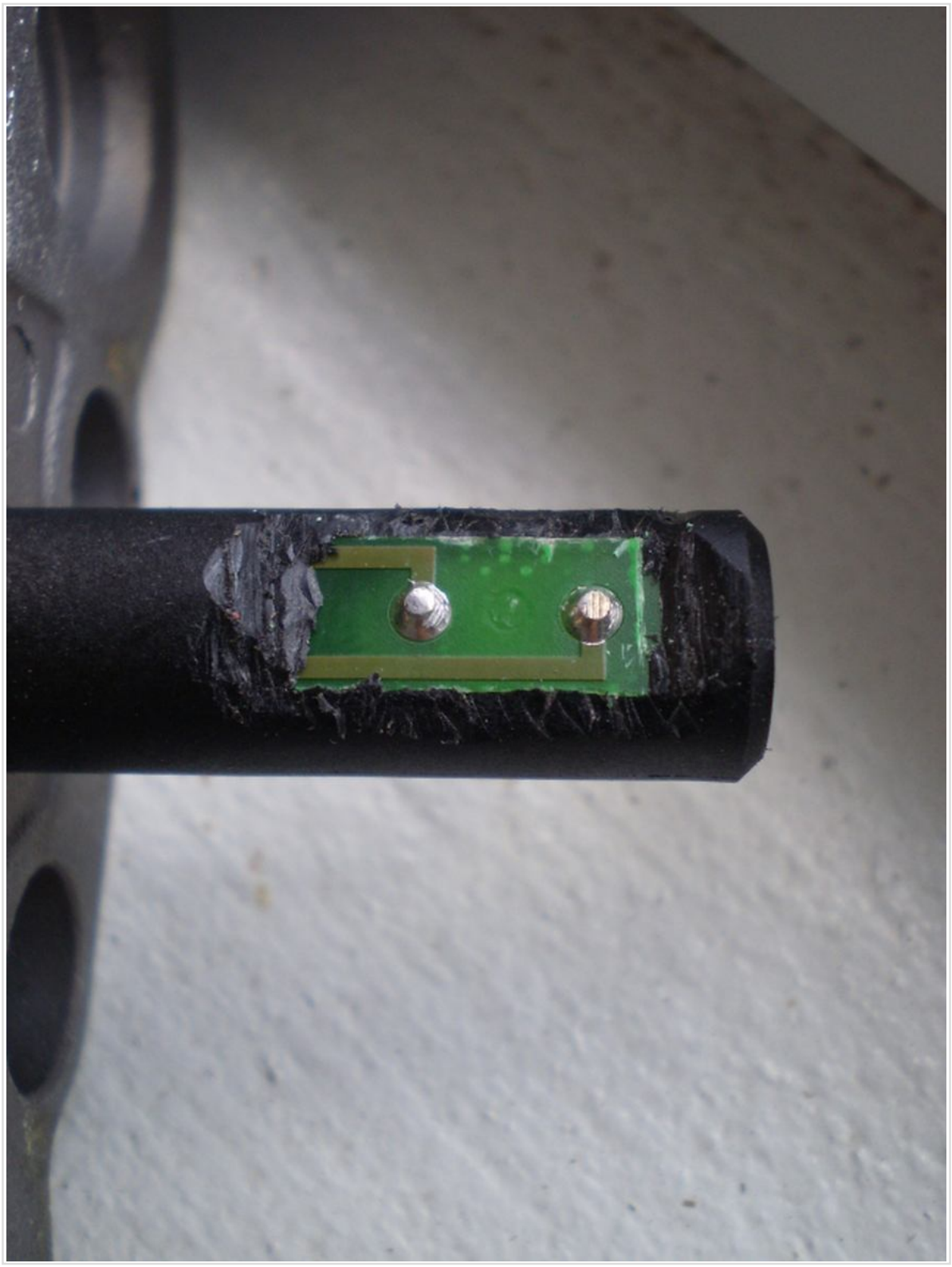
Since I severed the connections on the SVS circuit board, I created a permanent open scenario resulting in a permanent SVS Electrical Fault. The fix? Option B.

Re-doing the SVS ohm test after surgery is a good idea to make sure you didn't cut anything..... and of course I failed the test..

If you accidentally cut too much... go to Option B (# 37) If not, read on.



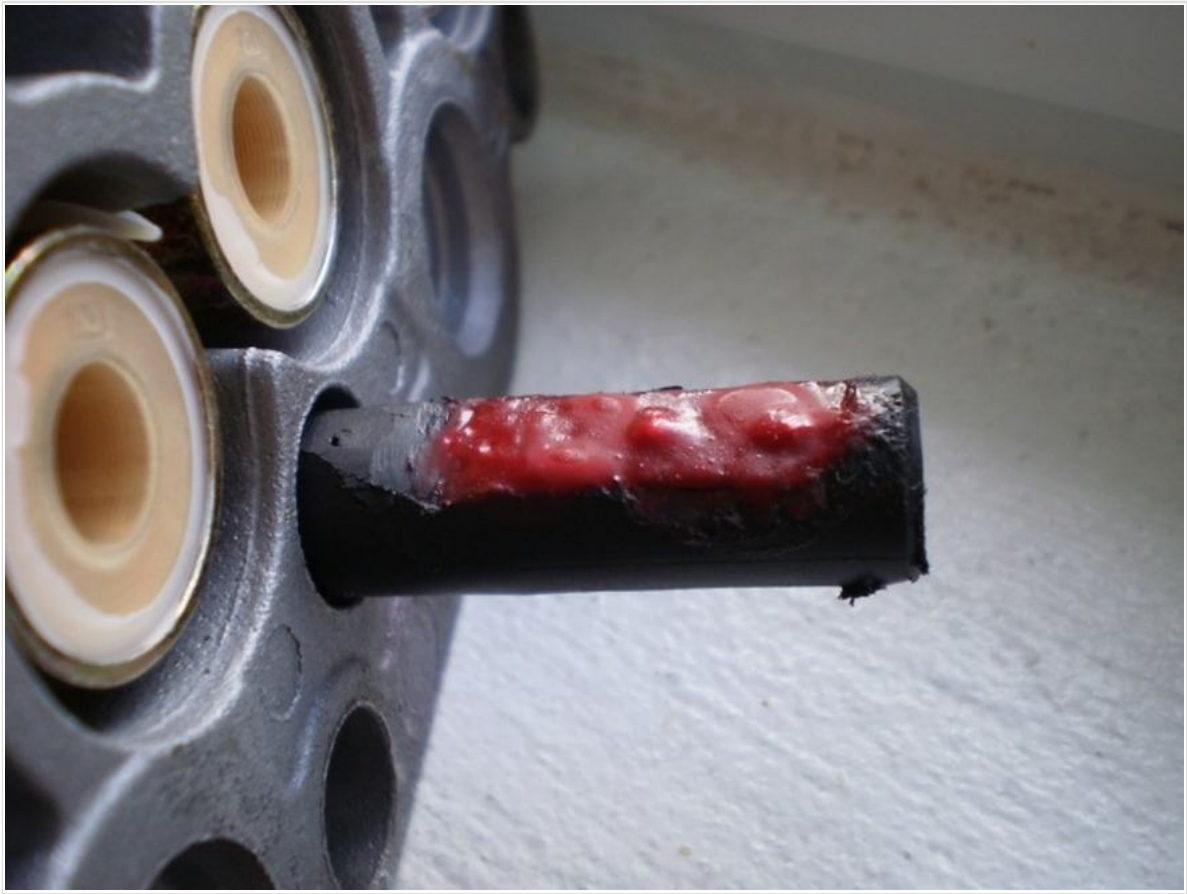
34. Luckily I had that spare modulator and I continued on with the repair. Except this time I used a very sharp serrated steak knife. **WHAT A DIFFERENCE!!**! I basically shaved it of little by little.



35. Upon inspection of my circuit board and that of the spare's, I found it very hard to tell if the soldered joints were bad. Both pins remained on the circuit board when I removed the SVS plug but I could tell they weren't 100% solid. I re-soldered the pins on the spare unit. Be careful as the pins may fall out. while soldering. One did fall out but I was able to reinsert it with pliers and re-soldered it. I re-tested the SVS on all three positions and passed.

I was concerned that the fallen pin would not be soldered strong enough but surprisingly it held very well and it passed the ohm tests after about 10 tries plugging and unplugging the SVS plug just to make sure.

36. A few coats of liquid electric tape and done. The store only had red liquid electric tape.



OPTION B

This option is my favorite. It allows one to fix their SVS fault the fastest and is a more permanent repair compared to OPTION A.

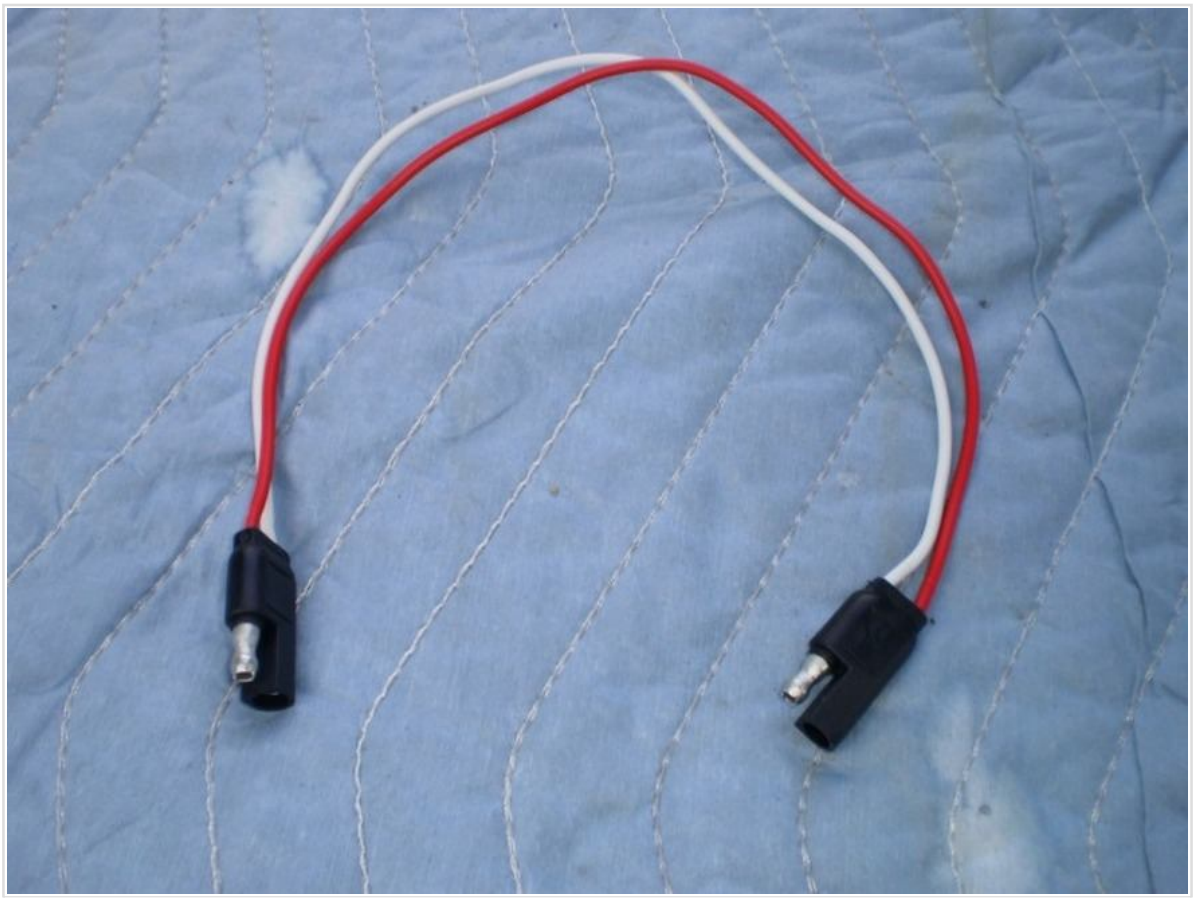
So how does this work?

Answer: *The SLABS ECU uses one wire to get a signal from the SVS. The signals the SLABS ECU monitors are; SVS CLOSED, OPEN, or ONE OPEN, ONE CLOSED. If the SLABS ECU senses an open in the circuit, the Three Amigos pay a visit. So having messed up the SVS plug circuit board I needed to find a way to replicate this "monitoring" by bypassing the circuit board completely, I needed to figure out the missing link between the YG wire and the two pins on the circuit board. As it turned out, one SVS pin went to ground, and the other went to the YG wire. THAT WAS IT!*

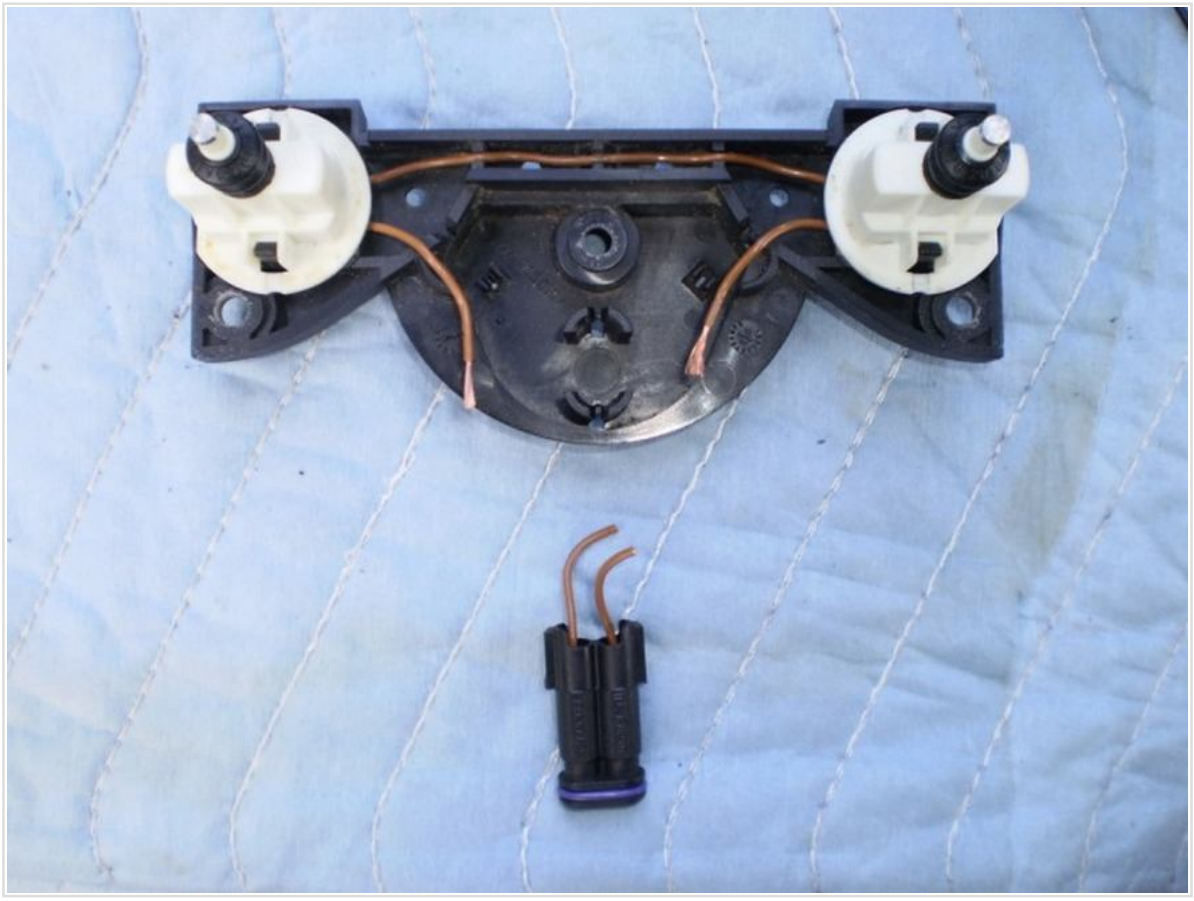
I tested it using a customer's DII. I took my SVS and placed it on the customer's ABS pump. I cut into his YG wire, ran a wire from there to the SVS plug, then ran another separate wire from ground to the other pin on the SVS plug. I tested for Ohms and boom... I passed at OPEN, CLOSED, and ONE Open.

That told me that I don't need to do OPTION A.... EVER... I don't need to mess with that little SVS circuit board and risk cutting it up. It became clear this method was better. Hopefully I have won you over on your decision to do option B.... so let's do it!

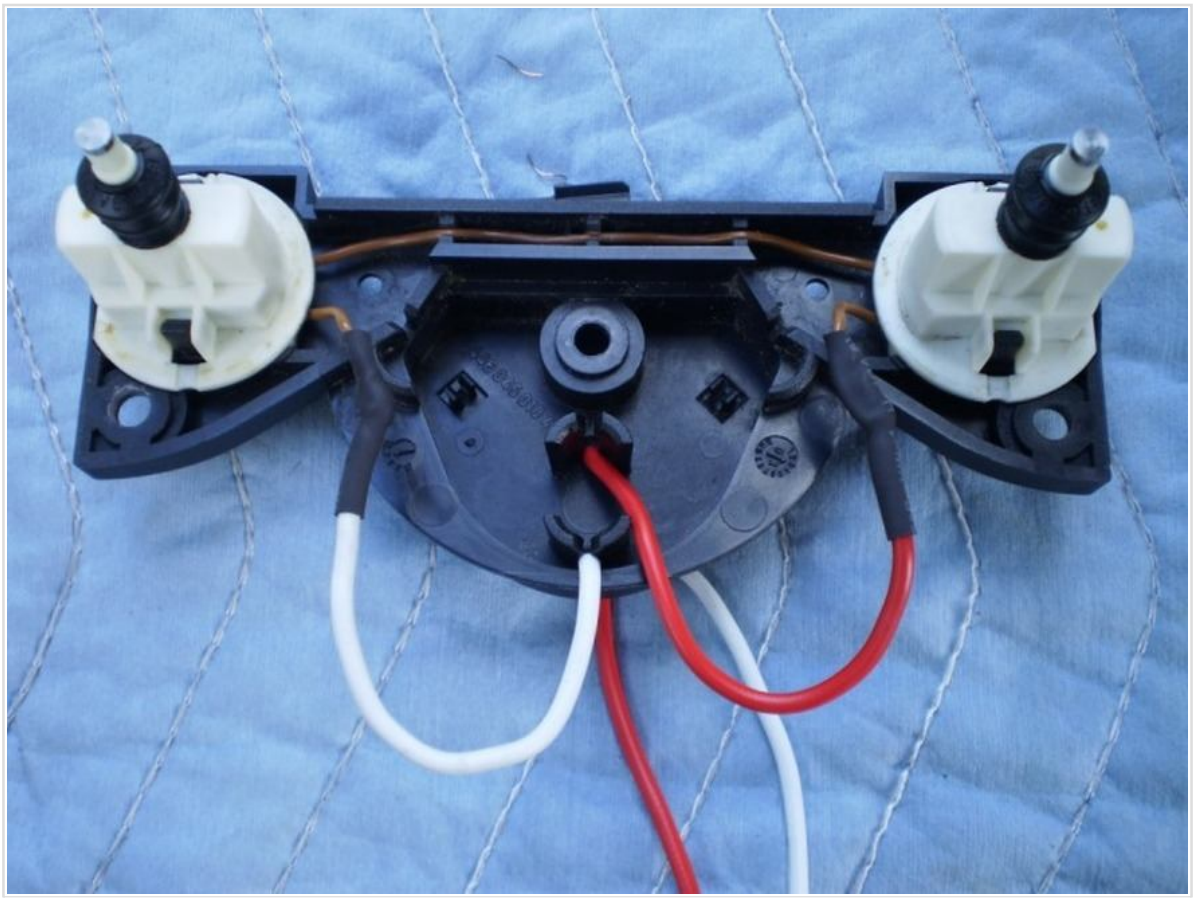
37. You need to decide how you want to connect and run the wires. Read through all of OPTION B to get a better understanding. I chose a trailer connector harness for a few bucks. I cut my connector 3/4 of the length.

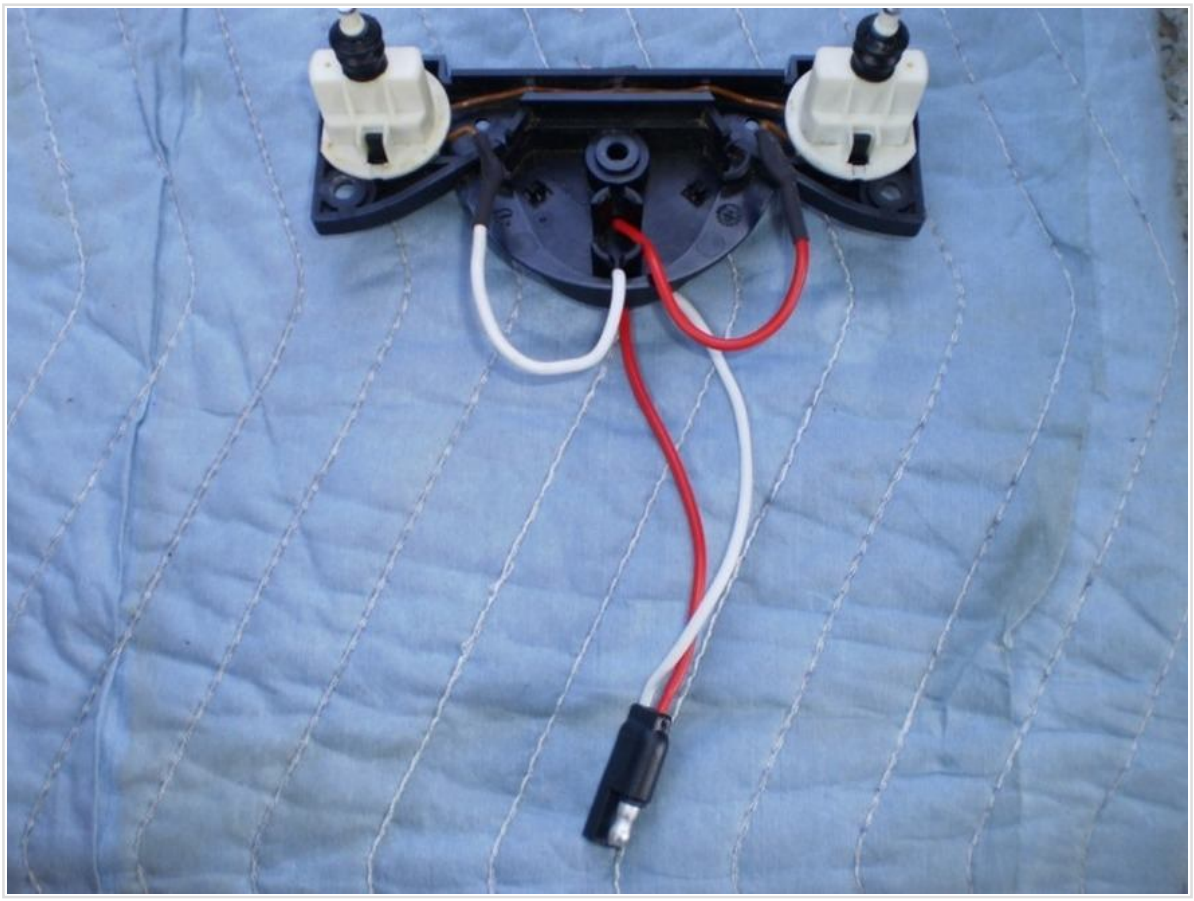


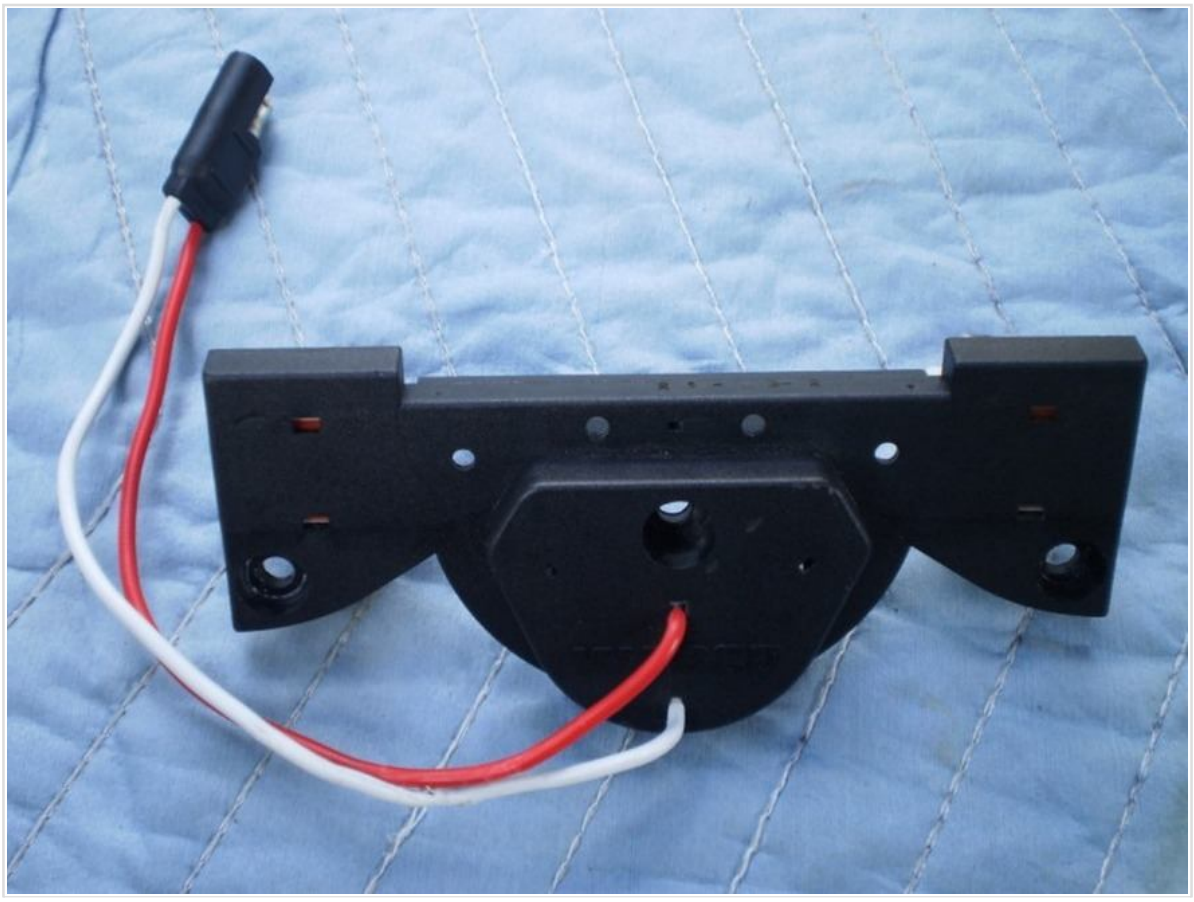
38. Remove your SVS any method you desire, Option A, or Option B without removing the modulator side (see steps # 25 through # 29) Cut SVS plug, but unlike my cut illustrated below, cut as close to the plug as possible.



39. Splice, solder, and heat shrink the longer end of the trailer connector to the SVS wires and run them through the SVS cover plate.







40. Now to test the connections.

BOTH open, PASSED.

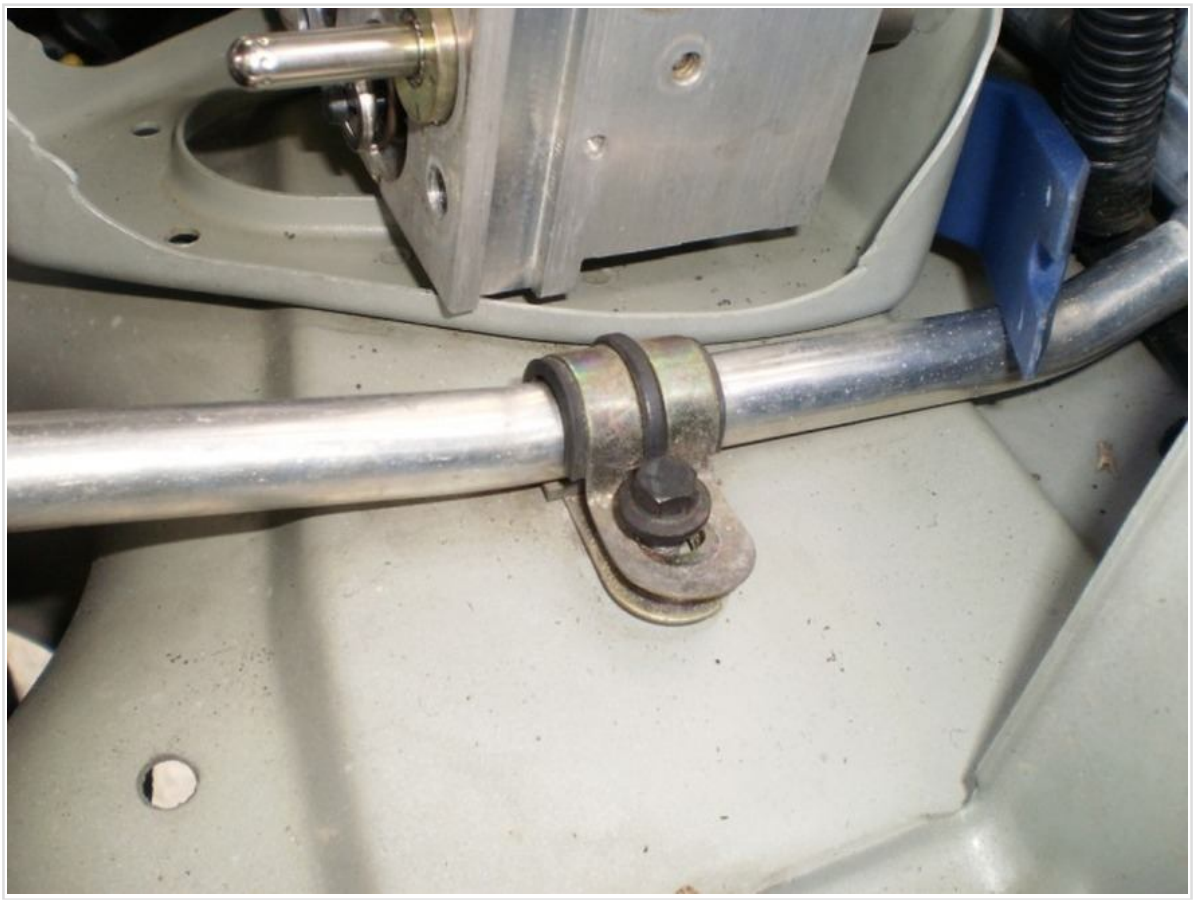
ONE Closed, PASSED.

BOTH Closed, PASSED.

41. Now to find a close ground.... Since the YG wire we need to tap into runs along side the A/C line bracket retaining bolt.. Why not use it?

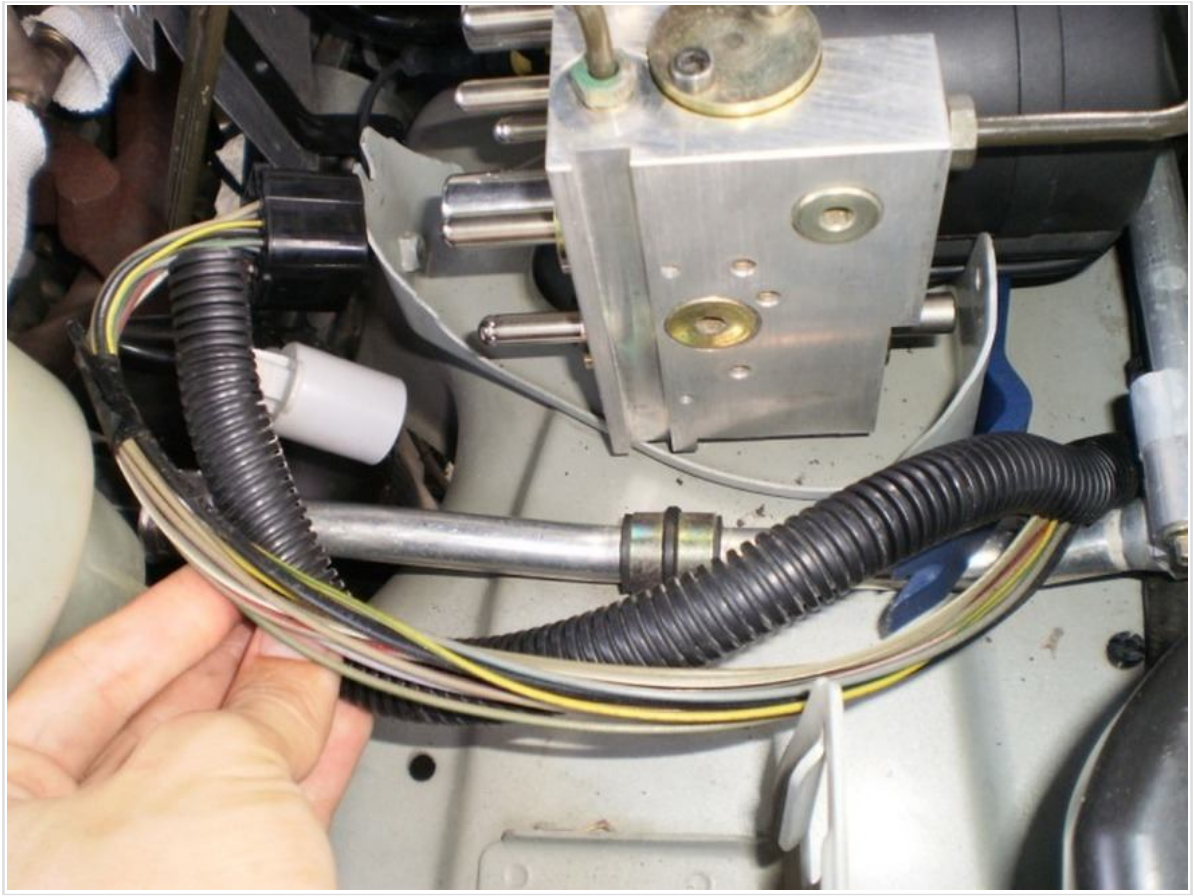
*****UPDATE* April 22, 2010*****

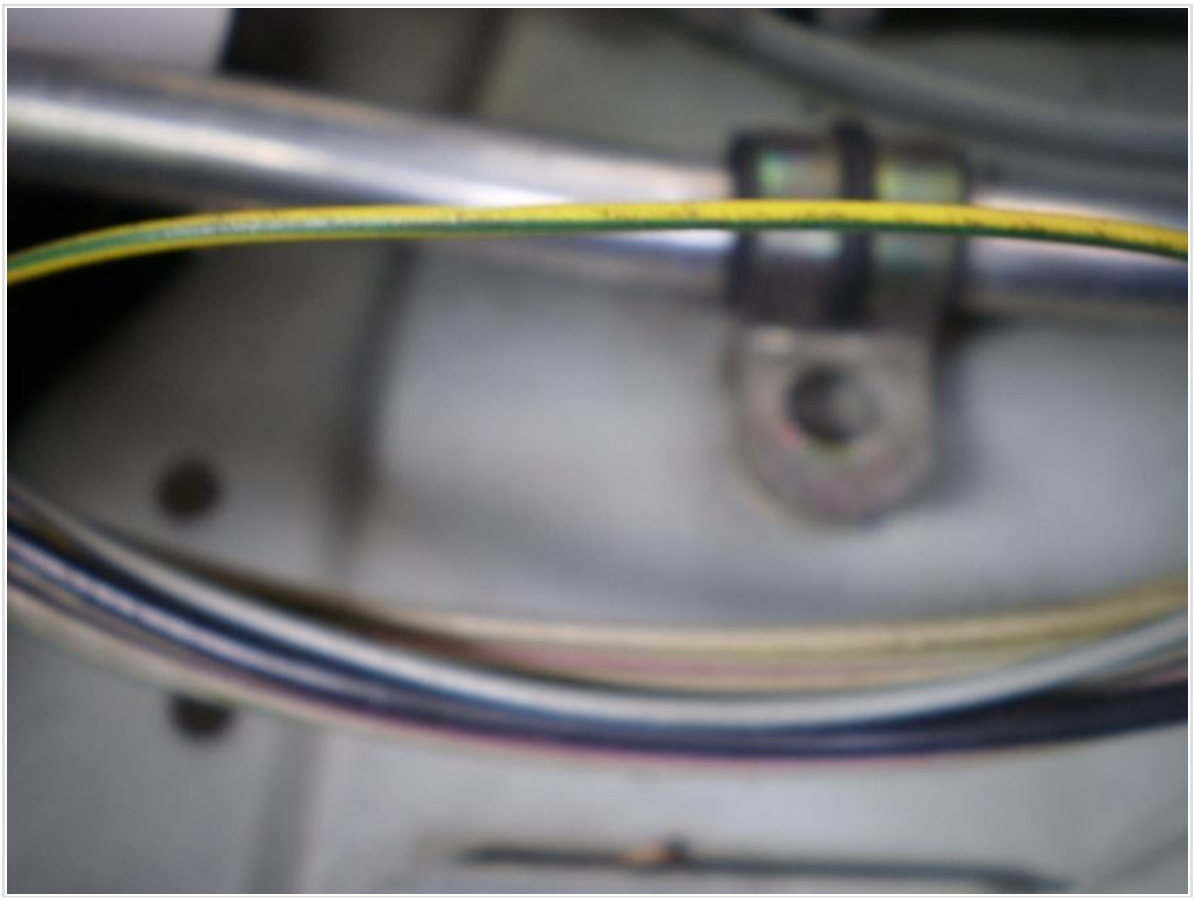
The Three Amigos returned in April 2010 as a result of this bolt coming loose. I may not have tightened it well when I did it the first time back in November 2009 so torque it good, and add loctite. I plan to check the bolt every oil change. In addition to using that bolt as a ground, ensure that it is free of dirt or rust or anything that would diminish a good electrical contact.



42. Take your other end of the harness and crimp a connector to secure to the ground bolt. Heat shrink it to provide better protection and it also just looks better.

43. Peel off the wire loom shield off of the ABS Modulator wire harness. Locate the YG wire. Cut it in half but in such a way to leave enough length for your harness.



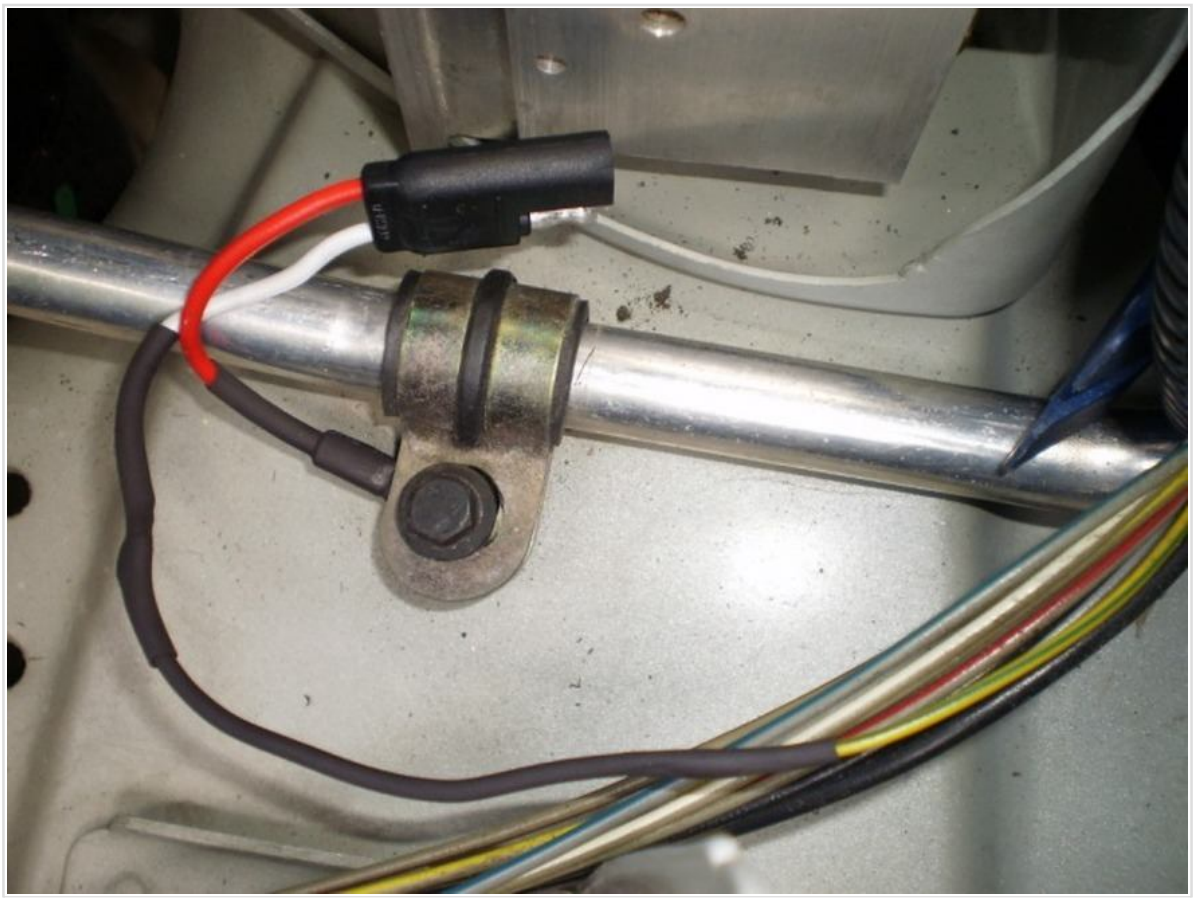


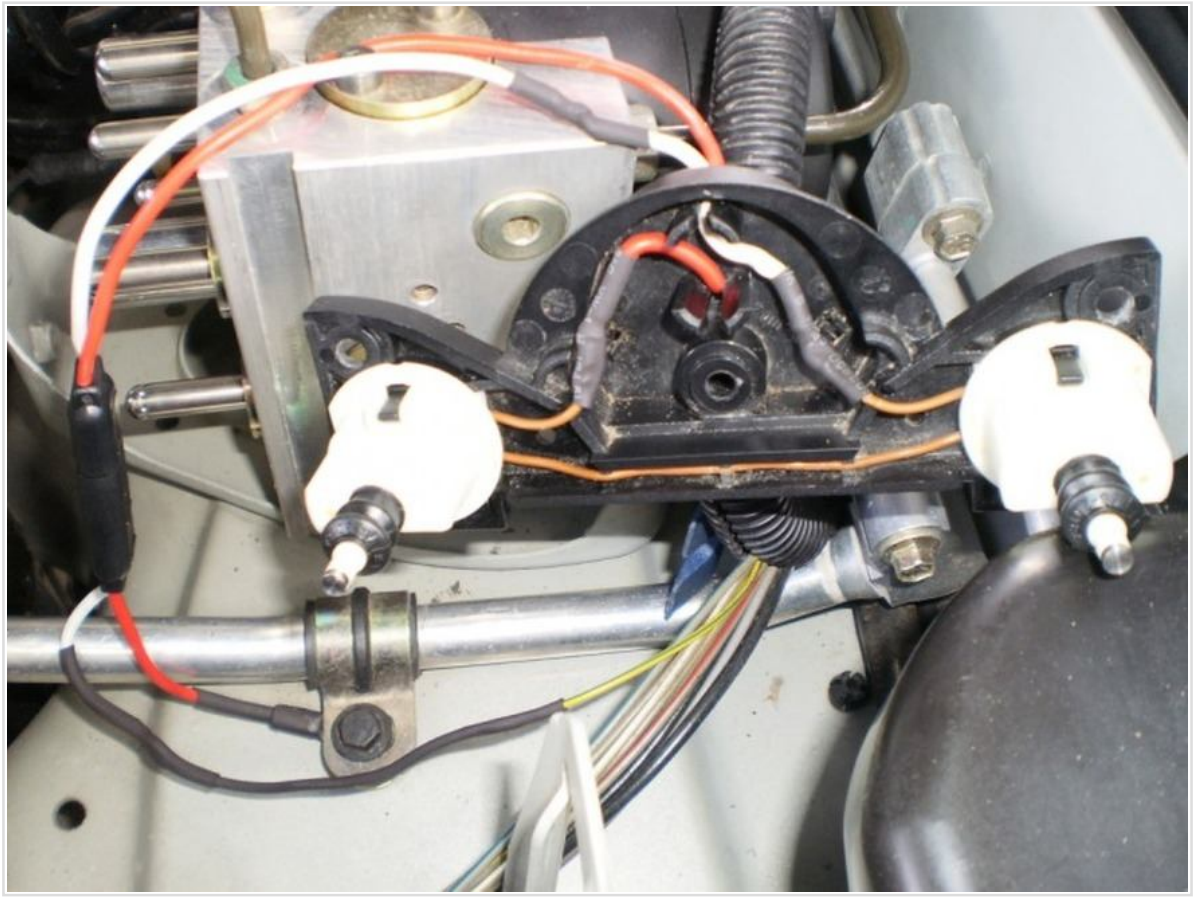
44. Take the second wire from your trailer harness and splice, solder, and heat shrink it into the YG wire coming from the main harness end NOT the end going backt to the modulator plug.

Connect the ground wire to the ground bolt.

Based on comments and feed back, I should add and clarify that the remaining end of the YG wire (the end attached to the plug) will just get tucked back into the loom as it is now dead.

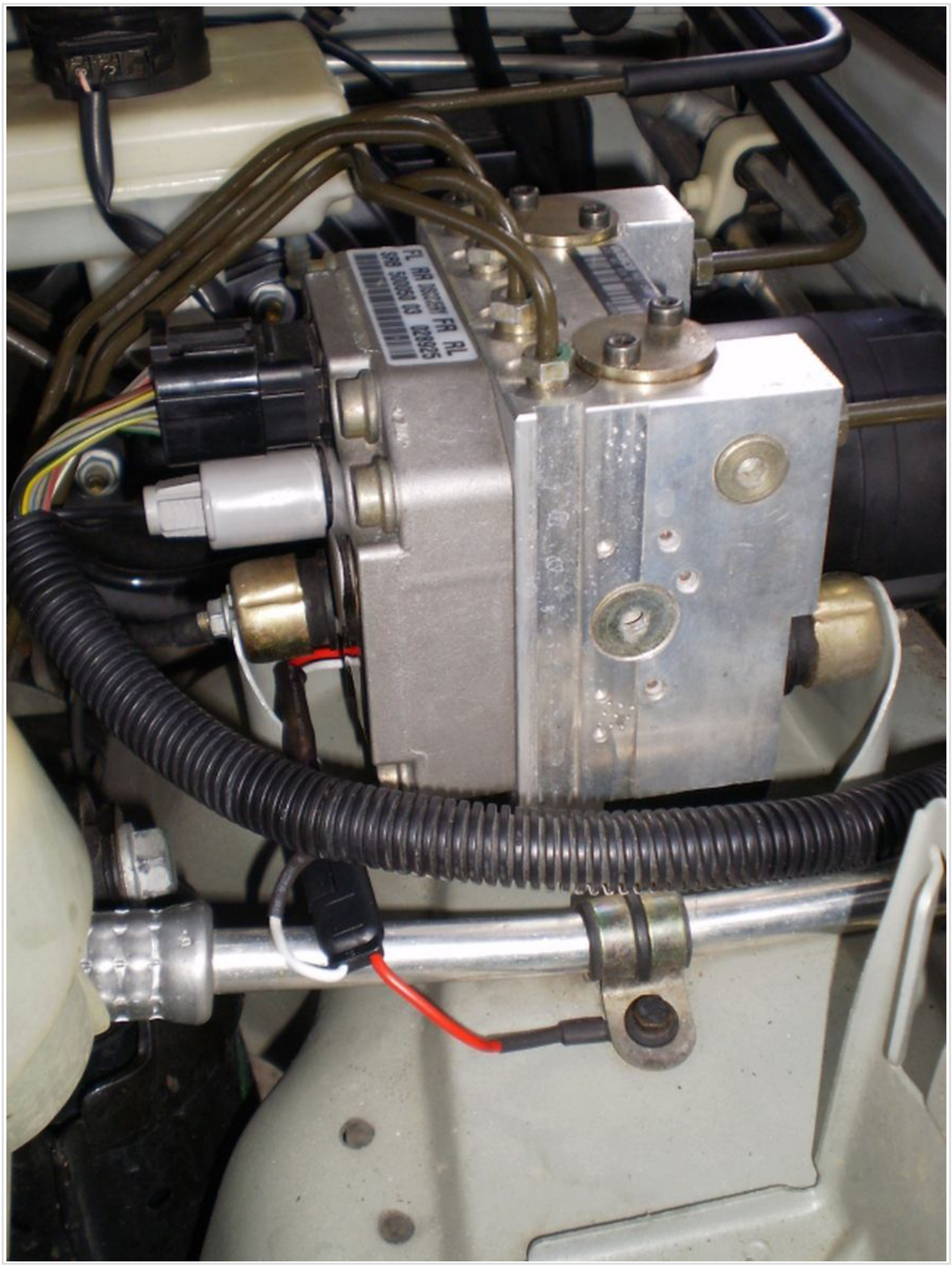
*Note** It does not matter which wire of the Trailer harness goes to ground or the YG wire.* In other words, it doesn't matter which wire from the SVS goes to either GROUND or the YG wire as long as ONE goes YG wire, and the SECOND to GROUND. *(So in my case I could have chosen either white or red wire)*





This is what it looks like plugged up.

45. Everything installed, tested, no Amigos, no SLABS trouble codes. Installation is the reverse of removal for any method chosen to remove the SVS.

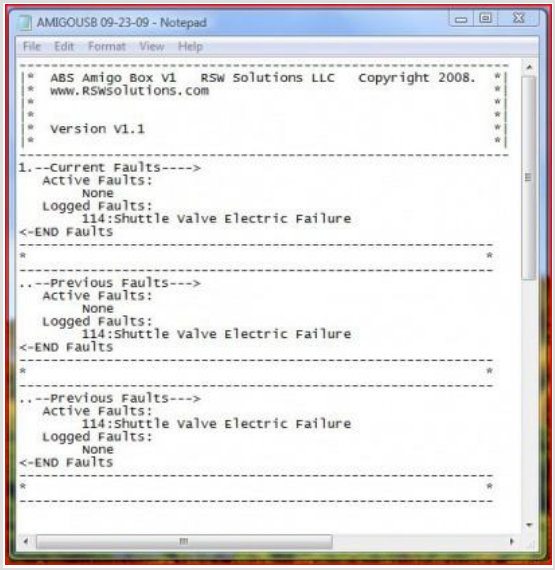


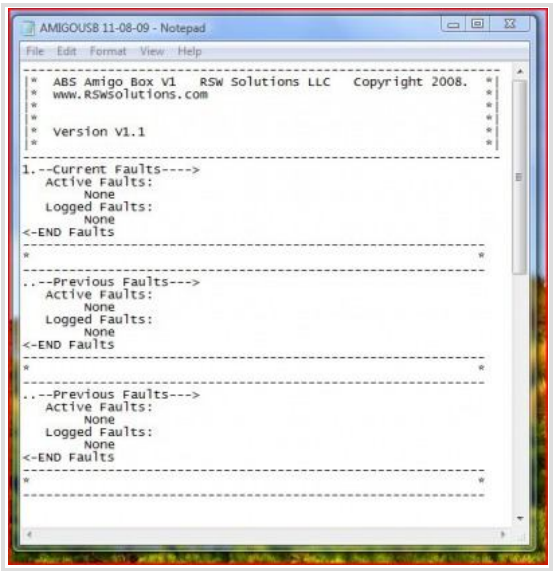
.

46. After everything is re-installed, turn the engine on and look at your dash board. You shouldn't have any lights on. Congratulations if you don't. If you DO, double check your work and connections. Re-scan for codes.

47. If you have access to an ABS capable scanner, get a reading and clear any current and/or historical faults. Any faults that reappear should not be related to the shuttle valves. If your only fault was the 114 SVS Electrical Failure, like mine, then you know it only appears when the SLABS ECU picks up an OPEN circuit signal and resets itself after the engine is shut off. No need for an ABS code scanner.

FROM THIS..... TO THIS





48. If you disconnected brake lines...
Bleed the brakes. You can use the traditional method with a helper following this sequence: Rear Right, Rear Left, Front Right, Front left. Brake pedal may still feel spongy.

49. Go for a test drive and try to get the ABS and TC to kick on. Find a good incline to test HDC or on a flat ground, accelerate and let off the pedal and HDC should kick in, slowing you down. You must actuate these functions in order to get the trapped air out during the final bleed.

50. Re- bleed the brakes. It is very important to do this last step after you successfully activate TC/HDC/ABS so that the trapped air in the modulator is expelled.

.....Enjoy!

03/2011 Correctly doing Option A or Option B in no way affects the function of the ABS Modulator nor the SLABS' effectiveness in monitoring the SVS.

Please use the below form for feedback, comments, and suggestions only. Direct all questions regarding this write-up through email or forum communication for others to get involved and answer questions. I will reply to them as soon as I can. ***** Hummer owners please leave feedback also! *****

FEEDBACK ONLY, NO QUESTIONS PLEASE. Direct questions here josh@landroverclubvi.com

Want to leave feedback?? Please Do!

Email *

Forum Screen Name or Name

Comment / Feedback *

Submit

READ PREVIOUS FEED BACK

ABS MOD Survey

Have you performed this repair on your Discovery? * Yes

If someone else did it for you, who was it?

How long did it take to do? * Half an hour

What year is your Discovery? * 1999

How long has your Three Amigos been visiting due to this fault? *

How often are the Three Amigos visiting? * Daily (Once or twice a day)

Submit

If you found anything on my site useful and would like to donate, please use the donate button below. Thank You

Donate