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Introduction

The purpose of this document is to provide very detailed information regarding the installation of the ND Performance - Traction Control System. The installation of the system is very straight forward and typically not very difficult. This document includes detailed step-by-step instructions and includes many pictures to help clarify. Average installation time is around 2 hours at a normal pace.

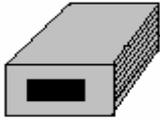
This system should be installed by professional. In our experience the vast majority of problems associated with aftermarket automotive electronics systems are due to improper installation. Improper installation can lead to a system that is unsafe, unusable, intermittent, and improper installation can even damage the Traction Control System or the vehicle electronics. ND Performance will not warranty this product or any damage that is caused to your vehicle due to improper installation (See warranty and disclaimer documentation). If you do not feel comfortable installing this system on your vehicle we strongly urge that you take your vehicle to a certified professional for installation.

There are two particular ways that the Traction Control System can be wired into the vehicle. The first method is to solder and shrink wrap / tape all wiring into the vehicle's wiring. Soldering provides the most solid wire to wire connection. However once the TCS wiring harness is soldered into the vehicle, removal of the system is difficult and cannot be performed quickly. The alternative method to use is to crimp terminals and "t-taps" to install all wiring into the vehicle's wiring. This method does not provide as solid of a connection into the vehicles wiring system as the soldering method. However, the use of the crimp terminals allows for quick installation and also quick removal of the system in the case that the vehicle needs to be returned to a factory configuration. Our testing shows that a system **properly** installed using the crimp terminals can be just as reliable as the soldering method. One of the major issues that we find with people improperly installing crimp terminals is the use of bad crimping tools. See the "Tools Needed for Installation" section of this document for a link to a good set of low cost crimpers. All terminals included with this product are high quality fully insulated terminals and include a heat shrink jacket, to provide strong resistance to moisture and corrosion due to the natural elements. All t-taps included with this product are high quality t-taps that are sealant filled to provide strong resistance to moisture and corrosion due to the natural elements. To conclude, if you want the most solid wire to wire connection, have soldering experience, and removal time/effort of the TCS is unimportant, we suggest soldering the TCS wiring harness during installation. However, installation can be easily and reliably performed using the provided crimp terminals and t-taps.

All information needed for the installation should be contained within this detailed document, however if you have any questions please feel free to contact us at neil@ndperformance.com

TCS Packing List

- Traction Control Unit



- Wiring Harness
- TCS Tuner CD (For Microsoft Windows)
- Installation Hardware Kit:
 - (3 + 1 extra) Blue “T-Tap” connectors



- (4 + 1 extra) Pink male quick disconnect crimp terminals
- (4 + 1 extra) Pink female quick disconnect crimp terminals
- (10) 4” zipties
- Documentation (Installation Manual, Warranty/Disclaimer, Return Policy)
- (2) Promotional stickers.

If you are missing any of the components, please email us at neil@ndperformance.com

Tools Needed for Installation

- Soldering Iron (and solder) or Decent Set of Crimpers.
 - If using crimpers avoid the cheap universal crimpers available at places like Radio Shack. These crimpers are very thin and easily bend, and thus create a crimp that is unusable and a poor install. A good set of crimpers for this job can be found at your local Sears and only cost around eight dollars. They are:
 - ⊗ Companion 8 in. Crimp-On Staking Tool Sears item #00973647000 Mfr. Model



#73647

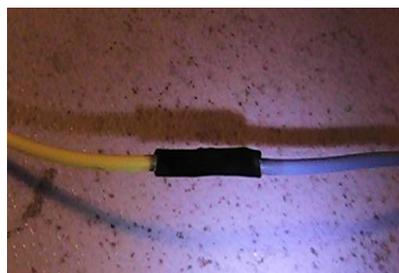
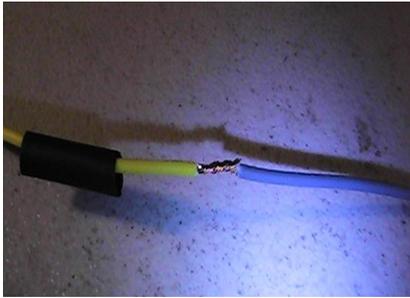
- Drill
 - Only one bit size slightly larger than the width of a single wire 18-gauge wire is needed. I typically use a 5/32" bit, however many sizes will work.
- Wire strippers
- Pliers (Alligator not needle nose)
- Electrical Tape
- Serrated knife/blade
- Wire coat hanger (Stock SRT antenna for you creative guys out there)
- Long flathead screwdriver
- Vehicle Jack
- Socket set and ratchet.

How to Properly Solder

This section of the document simply describes how to properly solder and protect wire to wire connections. It includes how to properly solder a “T” connection, as well as how to solder a standard wire to wire connection (i.e. butt connect).

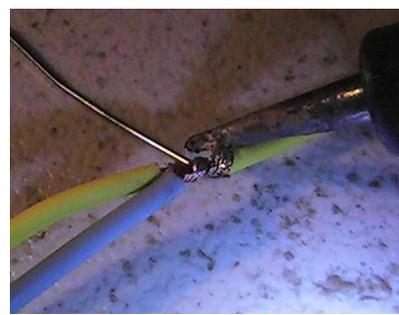
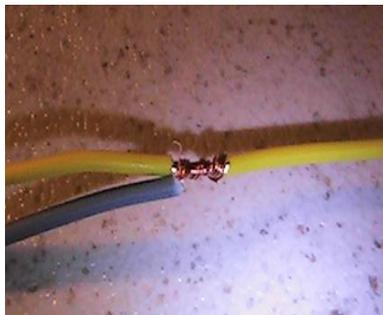
Soldering Standard Butt Connection

1. Strip approximately 1/2” of insulation from each wire to be connected. Cut approximately 1” of heat shrink tubing as well.
2. Place one wire through the heat shrink tubing and twist the stranded copper wire together so that joint is linear.
3. Use a soldering iron (with a small amount of solder on it) to heat the wire for a few seconds, and then simultaneously apply solder to the twisted copper and soldering iron, coating the entire junction with solder. Do not add an excessive amount of solder.
4. Finally move the heat shrink tubing over the soldered junction and heat the tubing with a heat gun or lighter.



Soldering “T” Connection

1. With the new wire that is to be teed in (i.e. the wire coming from the TCS harness) strip approximately 1/2” to 1” of insulation from the wire. With the existing wire that is going to be tapped (i.e. the wire in the vehicle) remove the insulation from a 1/4” to 1/2” section so that only the copper is exposed but the wire is still intact.
2. Wrap the new wire around the existing wire, so that the new wire is parallel to the existing wire.
3. Use a soldering iron (with a small amount of solder on it) to heat the wire for a few seconds, and then simultaneously apply solder to the twisted copper and soldering iron, coating the entire junction with solder. Do not add an excessive amount of solder.
4. Finally using electrical tape cleanly wrap up the soldered junction.

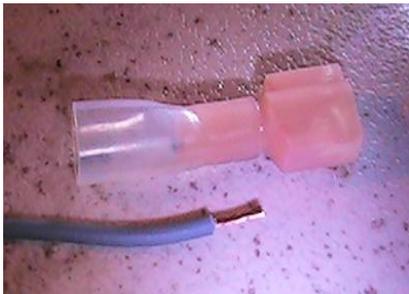


How to Properly Crimp

This section of the document simply describes how to properly crimp all connections used in this installation document. It includes how to properly use the provided t-taps, as well as how to properly crimp the provided quick disconnect terminals (for butt connections).

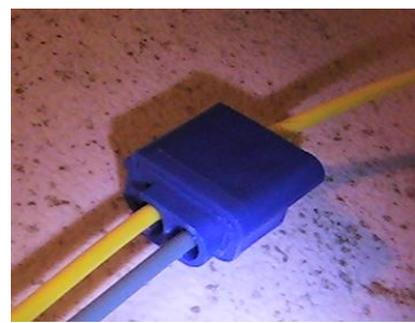
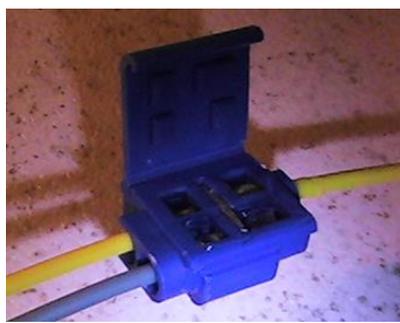
Crimping the Provided Disconnect Terminals

1. Strip approximately 3/8" of insulation from wire
2. Place the terminal over the bare copper wire, and push wire in until the wire insulation contacts the metal jacket inside of the terminal.
3. Place the terminal jacket in the crimper tool as shown in the pictures below. While holding the wire in the terminal jacket firmly squeeze the handles of the crimper tool, to crimp the terminal on to the wire. A crimp mark should be easily visible (see pictures) when crimp is performed correctly. Holding the terminal, pull on the wire slightly to ensure that the crimp is solid.
4. If equipped with your kit, use a heat gun or lighter to apply heat to the translucent pink/red heat shrink on the terminal. This shrink wrap will shrink completely on to the wire and provide protection against moisture and corrosion.

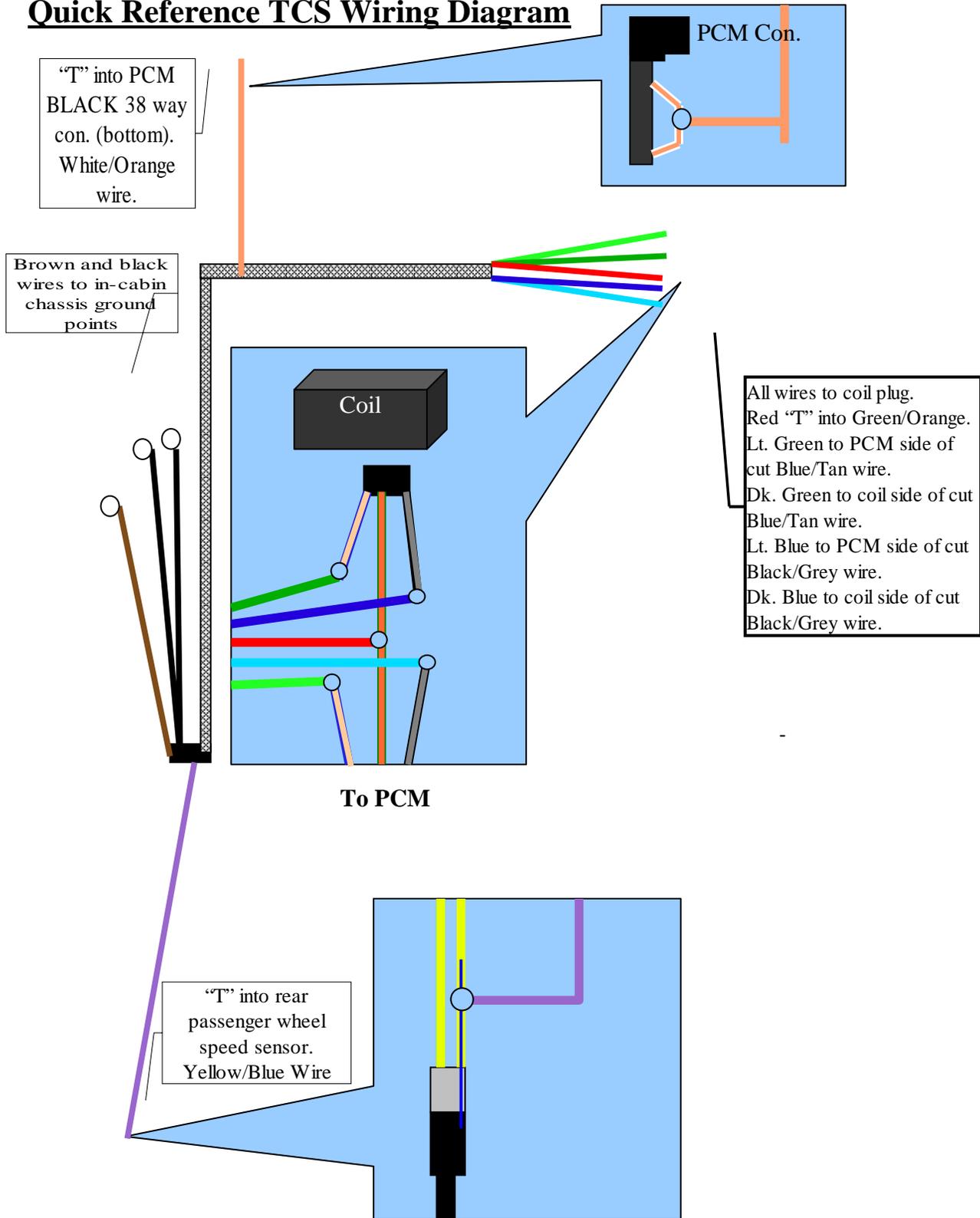


How to Use the Provided T-Taps for “T” Connection

1. Open the t-tap by pulling on the large plastic flap.
2. Place the existing wire to be tapped inside of the of the t-taps opening you created in step 1. Close the t-tap by pushing the large plastic flap to its original position.
3. Place the new wire that you want to tap in into the other side of the t-tap. Push this wire all the way through until it hits the plastic end of the t-tap.
4. Ensuring that both wires are lined up in the t-tap, use large pliers to push the metal piece firmly down into the t-tap. When you are complete, the top of the metal will be flush with the plastic.
5. Take the large plastic flap of the t-tap and lock it in place over the top of the t-tap thus sealing the wires inside the t-tap.



Quick Reference TCS Wiring Diagram



Detailed Installation

1. Remove aftermarket strut tower brace if installed. Remove negative battery terminal.
2. Remove driver's side front and rear door sills. These are held in by snap clips, and remove easily by pulling straight up. Also remove the lower B-pillar by pulling straight towards you working from the bottom up. Remove the rear seat bottom by pulling straight up.



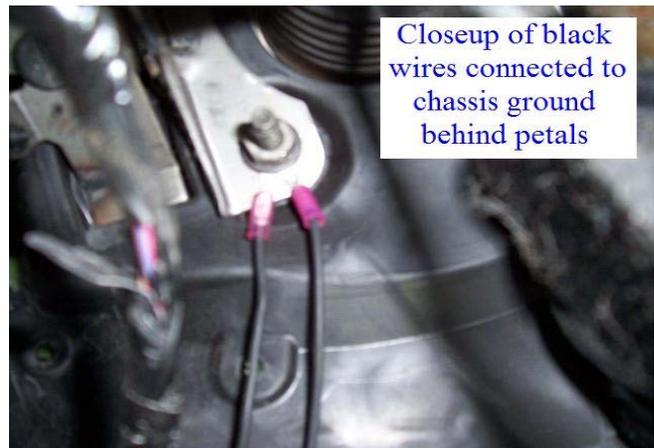
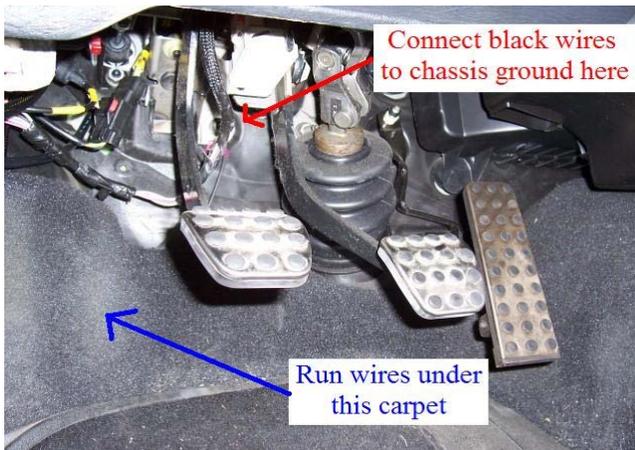
3. Lay harness down and place the harness plug side under drivers seat. Route the wires towards the firewall under the carpet.



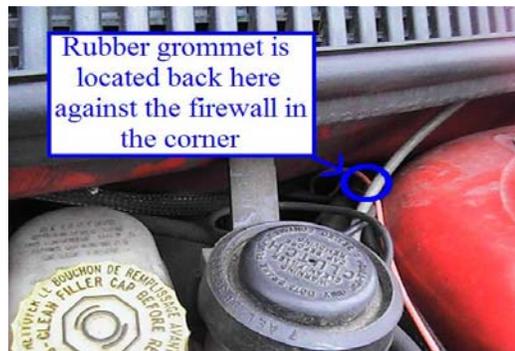
4. Remove the driver side kick panel by pulling it away from the side of the car. This is the panel that goes over the hood release latch.
5. Remove the 13mm bolt just above the hood release latch, and place the bolt through the “eye” terminal of the **BROWN** wire. Reinstall the bolt, ensuring that the terminal/wire do not get damaged.



6. Run the two **BLACK** wires underneath the driver pedal carpeting.
7. Between the clutch and brake pedals there is a 13mm nut. Using a deep well 13mm socket remove this nut. Take both **BLACK** wires and place their terminals over the stud. Reinstall the nut, ensuring that the terminals/wires do not get damaged.



8. There is a large rubber grommet that runs through the firewall that is located in the driver side rear corner of the engine bay. From the inside of the car this grommet can be found approximately one foot above the pedals. Locate this grommet.
9. Cut/Poke a small hole through the grommet to allow the TCS harness to fit through. This can be done with a small serrated knife/blade. When placing the hole in the harness sure not to place the hole too close to the center of the grommet where the existing vehicle wiring harness is located.
10. Use a coat hanger (or other stiff metal rod), and from the under the hood push it through the hole that you created in the rubber grommet against the firewall on the driver's side corner. For reference see the picture in step 7. Once the coat hanger (or antenna) is through the grommet

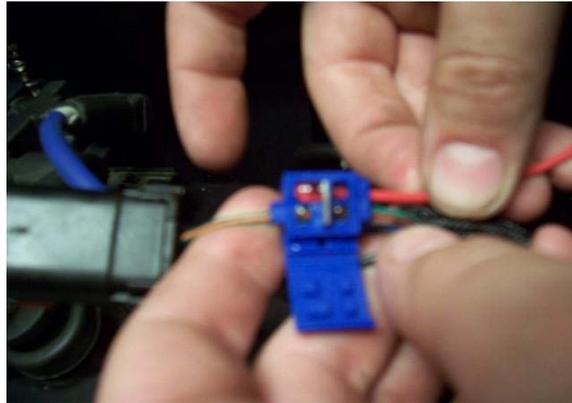


push it far enough so that you can see it end inside the cabin by the petal assembly.

11. Tape the remaining wires (red, light blue, dark blue, light green, dark green, and orange) **firmly** to the coat hanger (or antenna). Slowly pull the coat hanger (or antenna) back through the firewall grommet by pulling on the coat hanger (or antenna) from under the hood. Once the harness has been passed through the firewall grommet release the harness from the coat hanger (or antenna) by removing the tape. Be sure all the wires have come through the grommet.

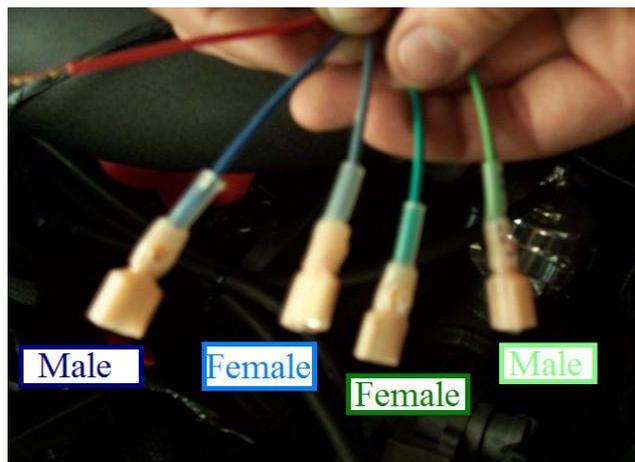


12. Run the TCS harness wires (except for the orange wire) towards the ignition coil. Use a few of the provided black zipties to avoid running the harness close to the turbo or other source of extreme heat.
13. Remove the tape at the end of the sheathing at the coil connector on the stock vehicle harness. This will allow you to pull back the black wire sheathing at coil connector to expose about 3 inches of wire on the stock vehicle harness.
14. “T” the **RED** wire from the TCS harness into the **GREEN/ORANGE** wire on the vehicle harness. Shown below is the using the provided t-tap (see “How to properly crimp” section). If you are soldering directly see the “How to properly solder” section.



15. Next crimp the following connectors onto the wires on the TCS harness. You can skip this step if you are soldering directly:

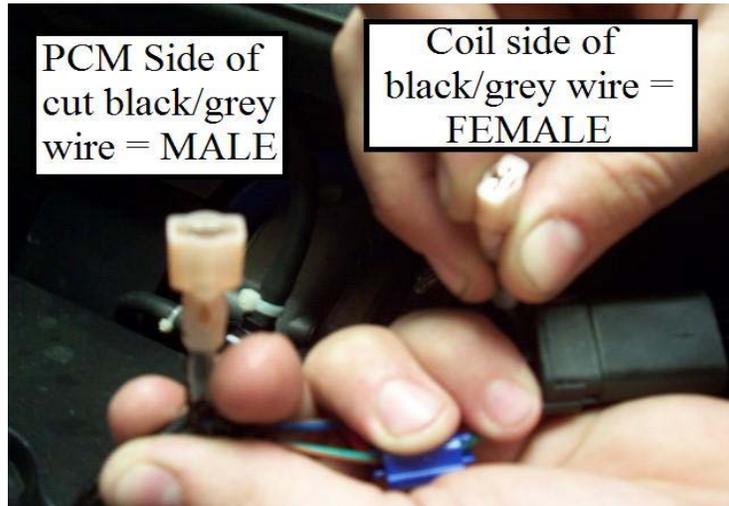
- **LIGHT GREEN** : Male terminal
- **DARK GREEN** : *Female* terminal
- **LIGHT BLUE** : *Female* terminal
- **DARK BLUE** : Male terminal



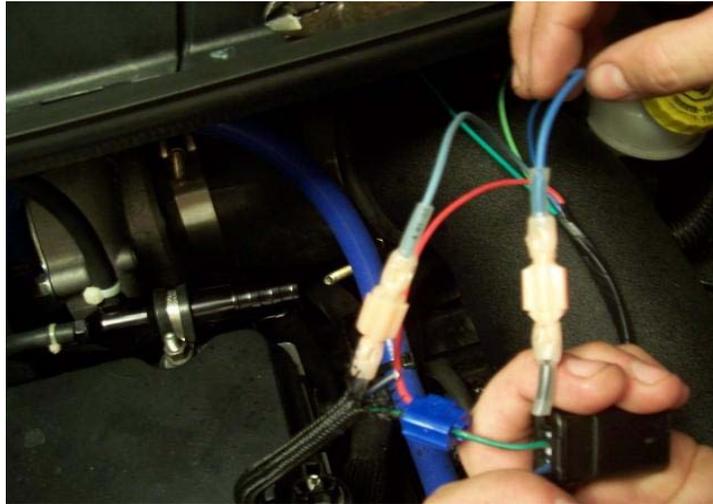
16. Cut the **BLACK/GREY** wire on the vehicle harness approximately 2 inches from the coil connector.

17. Next crimp the following connectors onto the wire ends you just cut. You can skip this step if you are soldering directly.

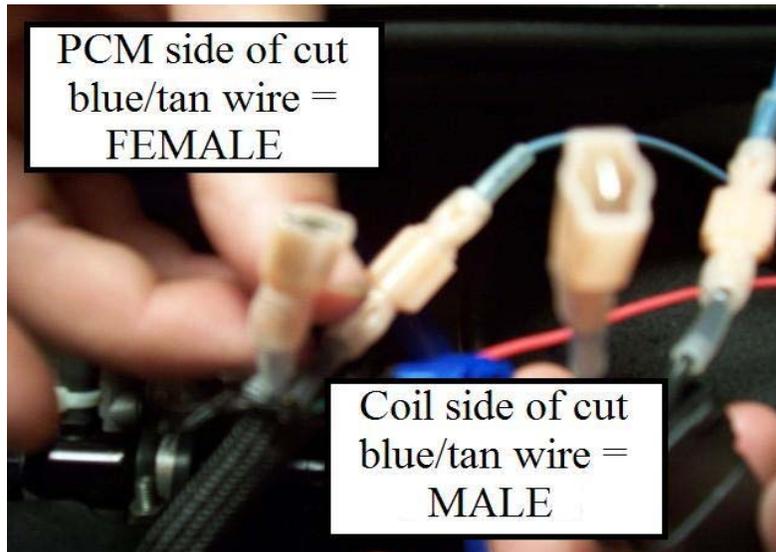
- On the coil side of the **BLACK/GREY** wire crimp on a *Female* terminal
- On the PCM side of the **BLACK/GREY** wire crimp on a Male terminal



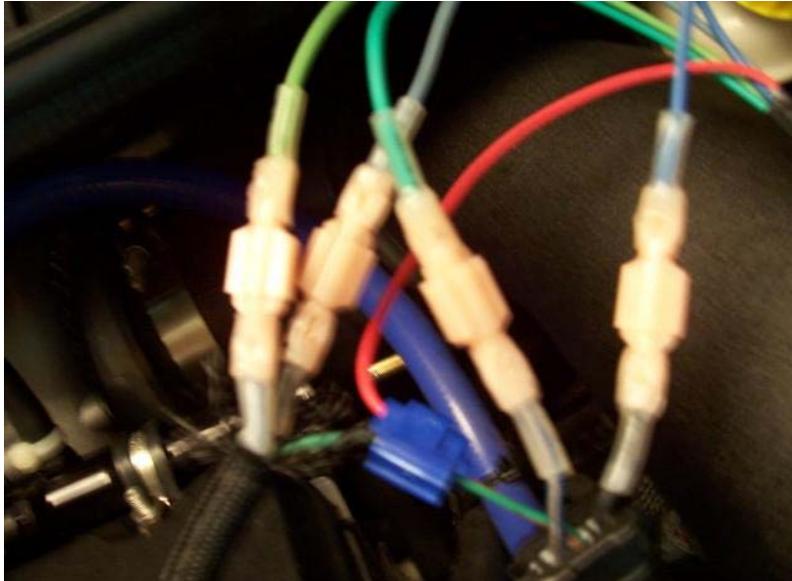
18. Connect the **LIGHT BLUE** wire from the TCS harness to the PCM Side of the cut **BLACK/GREY** wire from the vehicle harness. Connect the **DARK BLUE** wire from the TCS harness to the coil side of the cut **BLACK/GREY** wire from the vehicle harness. If soldering then follow the “How to properly solder” section to make the connections. If using crimp terminals then simply push the terminals into each other to make the connections.



19. Cut the **BLUE/TAN** wire on the vehicle harness approximately 2 inches from the coil connector.
20. Next crimp the following connectors onto the wire ends you just cut. You can skip this step if you are soldering directly:
- On the coil side of the **BLUE/TAN** wire crimp on a **Male** terminal
 - On the PCM side of the **BLUE/TAN** wire crimp on a **Female** terminal



21. Connect the **LIGHT GREEN** wire from the TCS harness to the PCM Side of the cut **BLUE/TAN** wire from the vehicle harness. Connect the **DARK GREEN** wire from the TCS harness to the coil side of the cut **BLUE/TAN** wire from the vehicle harness. If soldering then follow the “How to properly solder” section to make the connections. If using crimp terminals then simply push the terminals into each other to make the connections.

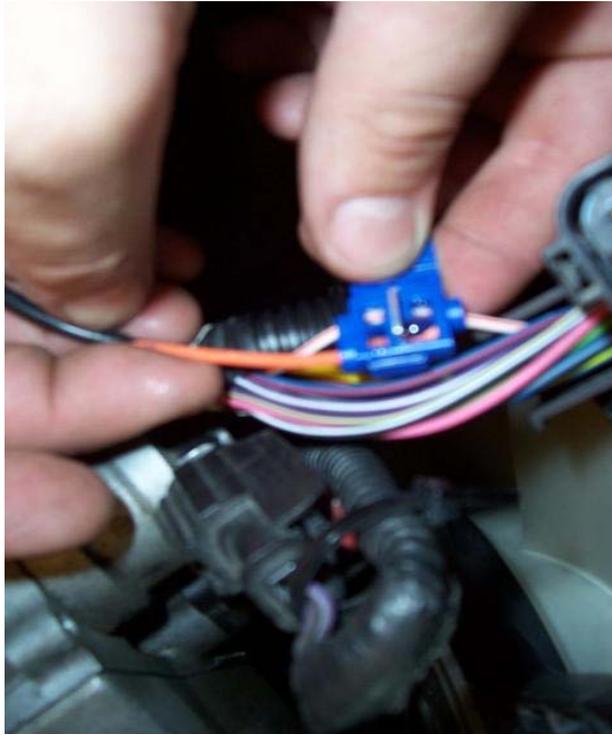


22. Route the **ORANGE** wire towards the bottom connector of the PCM. A suggested routing is shown below. You can use some of the zipties to secure the wire as needed. If you still have the stock airbox in your vehicle it will need to be removed now.



23. Disconnect the bottom Black 38-way connector from the PCM. To remove this connector you need to slide back the red locking tab and then press down on the top of the connector while pulling the connector away from the PCM. Once the connector is disconnected from the PCM move the connector up above the PCM so that it can easily be accessed. Remove the tape at the base of the connector and pull back the plastic looming so that the wires are exposed (See pic below). Locate the large WHITE/ORANGE wire (pin 13). “T” the ORANGE wire from the TCS harness into the WHITE/ORANGE wire you located. Shown below is the using the provided t-tap (see “How to properly crimp” section). If you are soldering directly see the “How





to properly solder” section.

24. After tapping the WHITE/ORANGE wire, place the wires all back in the stock loom and tape up the area and base of the Black 38-way connector, just as it was before the tap. Reinstall the connector into the PCM. If your vehicle is still using the stock airbox reinstall it now.
25. Go back into the cabin of the vehicle and run the PURPLE wire from the TCS Harness towards the rear of the vehicle. Run this wire behind the B-pillar that was partially removed earlier and run the wire underneath the carpet towards the **driver** side of the vehicle so that it ends with a foot or two of wire under by the plastic seat retainer on the **driver** side (See pics below).



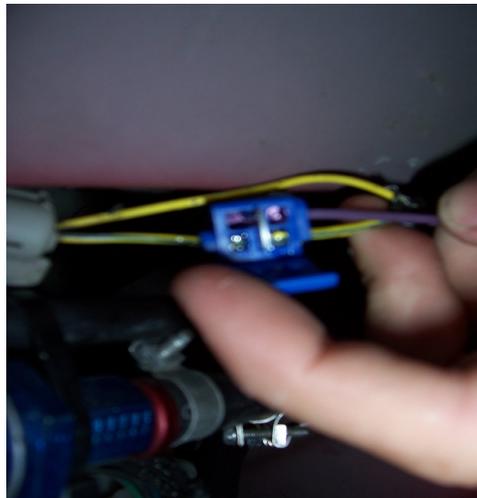
26. Using a drill with a bit slightly larger than the width of a single wire (I typically use a 5/32" bit, however many sizes will work), drill a small hole in the plastic seat retainer. Place this hole close to the driver side of the vehicle (See pics below). This hole will be used to pass the purple wire through the plastic seat retainer.



27. Pass the purple wire through the hole drilled above. Ensure that the TCS connector under the driver seat still has room to move while all of the purple wire has been passed through the plastic seat retainer. Once the wire is under the vehicle route the wire towards the passenger side of the vehicle.
28. Jack up the vehicle on the passenger side.
29. Locate the passenger side rear wheel speed sensor connection point. This connection can be found very close to the passenger side pinch weld about one foot in front of the passenger side rear wheel. See picture below as reference.



30. Using a blade carefully remove the black tape for about 2 inches before the **GREY** connector at the rear wheel speed sensor connection. This will expose two wires, one is completely **YELLOW** and the other is **YELLOW/BLUE**. (See pic below in step 32)
31. “T” the **PURPLE** wire from the TCS harness into the **YELLOW/BLUE** wire you located. Shown below is the using the provided t-tap (see “How to properly crimp” section). If you are soldering directly see the “How to properly solder” section.



32. After the tap is complete we recommend taping up the area, much like was done before the tap. Additionally be sure to use some of the provided black zipties to secure the purple wire to various points on the vehicle to ensure it never hangs.
33. Next slide the driver seat to the completely back most position. Screw a DB9 serial communications cable or USB -> Serial Converter cable (not included) into the main traction control unit and place the main traction control unit under the driver seat. Be sure that the sticker

on the box is facing upwards. The serial communications cable should be pointing out of the box towards the passenger seat, while the main harness receptacle on the TCS unit is facing the harness itself. Next slide the driver side seat to the completely forward most position. From the behind the driver seat you will be able to connect the TCS harness into the main traction control unit.

34. Next run the DB9 serial communications or USB -> Serial converter cable through the cabin how you so desire. Just be sure that it is not run in such a way that it obstructs the driver's ability to use the pedals, shift, or steer.
35. Reattach all interior panels including the driver side kick panel, front and rear driver side door sills, and the driver side B-pillar. Reinstall the rear seat bottom.
36. Reattach the negative battery terminal, reinstall strut tower brace (if equipped) and check the engine bay to prepare for vehicle run.
37. Startup the vehicle, drive and enjoy. All units have been burned-in, bench tested, and are ready for immediate use. TCS is automatically operational with a launch limiter set at 3500, and a generic (medium aggressiveness) TCS map. For more information on TCS operation please see the operation manual/notes on the CD provided or check the website for the most recent information. If the vehicle does not start or operate properly we suggest double checking all of your connections (and this install document in its entirety), and if the problem persists contact ND Performance immediately.