



## JB N20/N26 Stage 1 & JB4 Install Guide

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JB4\_N20 electronic wastegate model shown above

### Tools required:

**10mm socket**

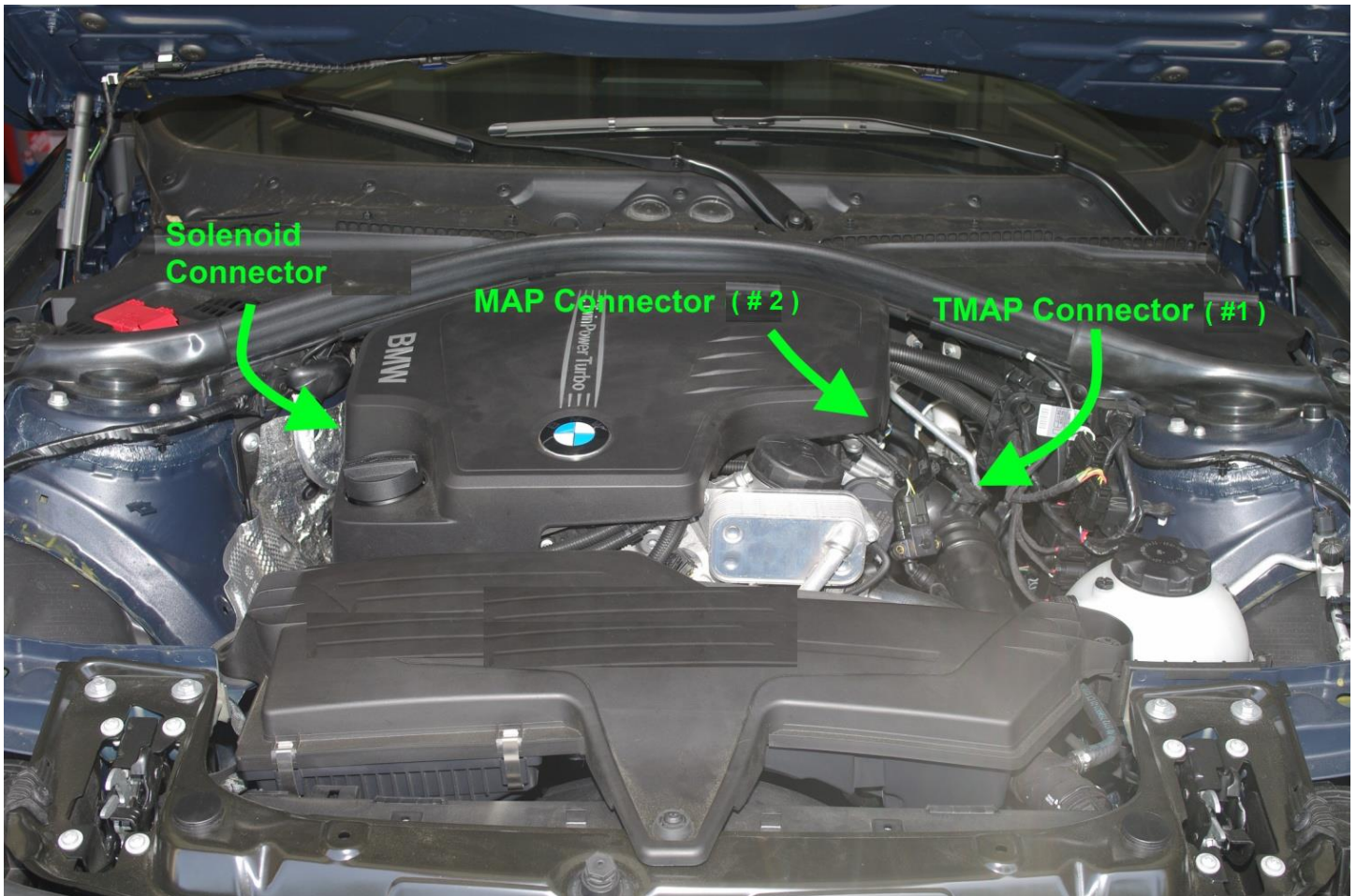
**1/2" socket for pneumatic JB4 models**

**T50 (torx) bit for pneumatic JB4 models**

**Small flat head screwdriver**

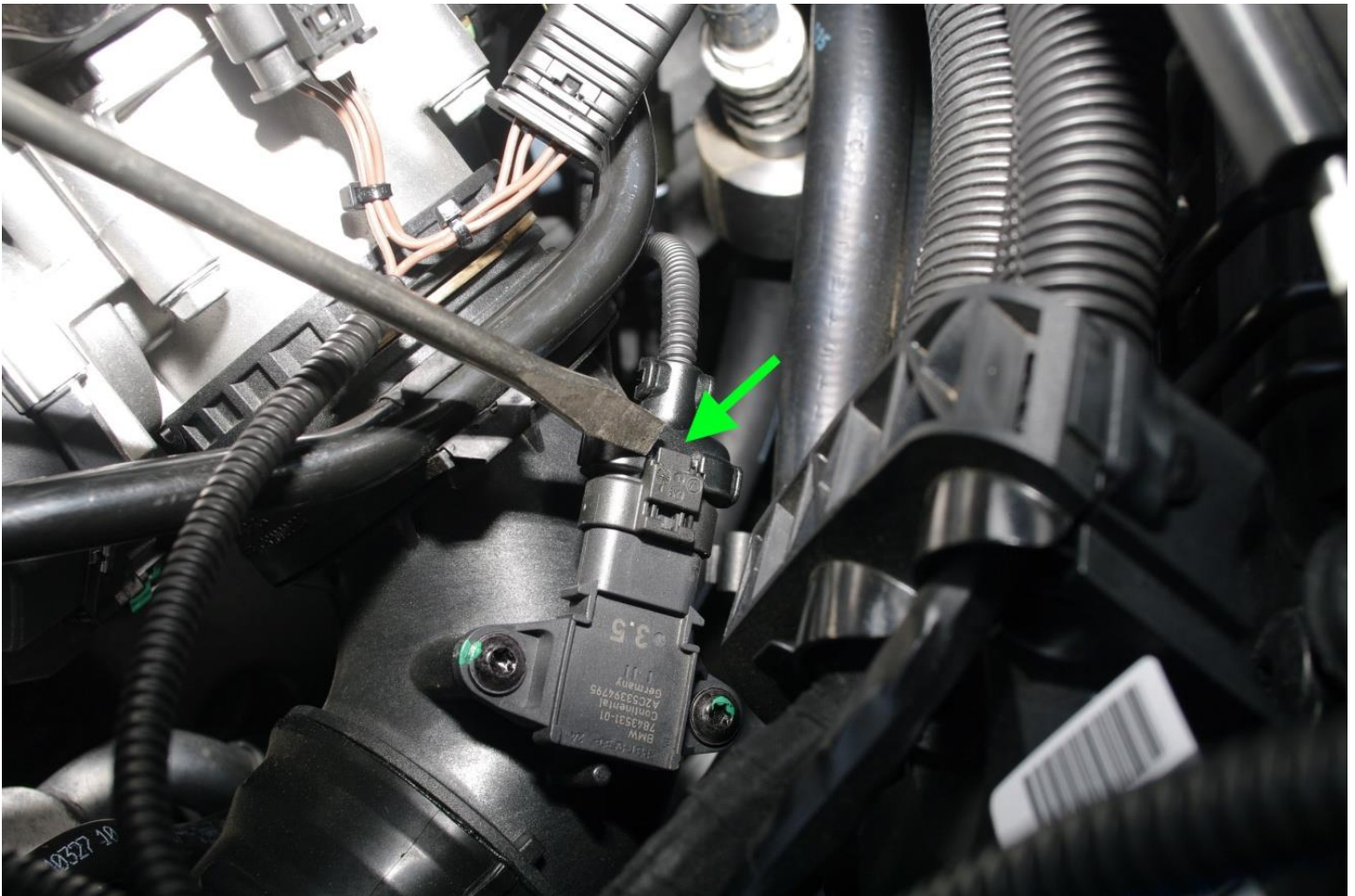
Before starting any electrical work always disconnect the negative battery terminal in the trunk. Failure to do so may result in ECU damage. Never disconnect the piggyback box, harness, or any wires while the battery is connected.

Open your hood and familiarize yourself with the location of the sensors you will be intercepting during the installation.



1) TMAP sensor, rainbow patch.

Locate the TMAP connector (#1) on the charge pipe.

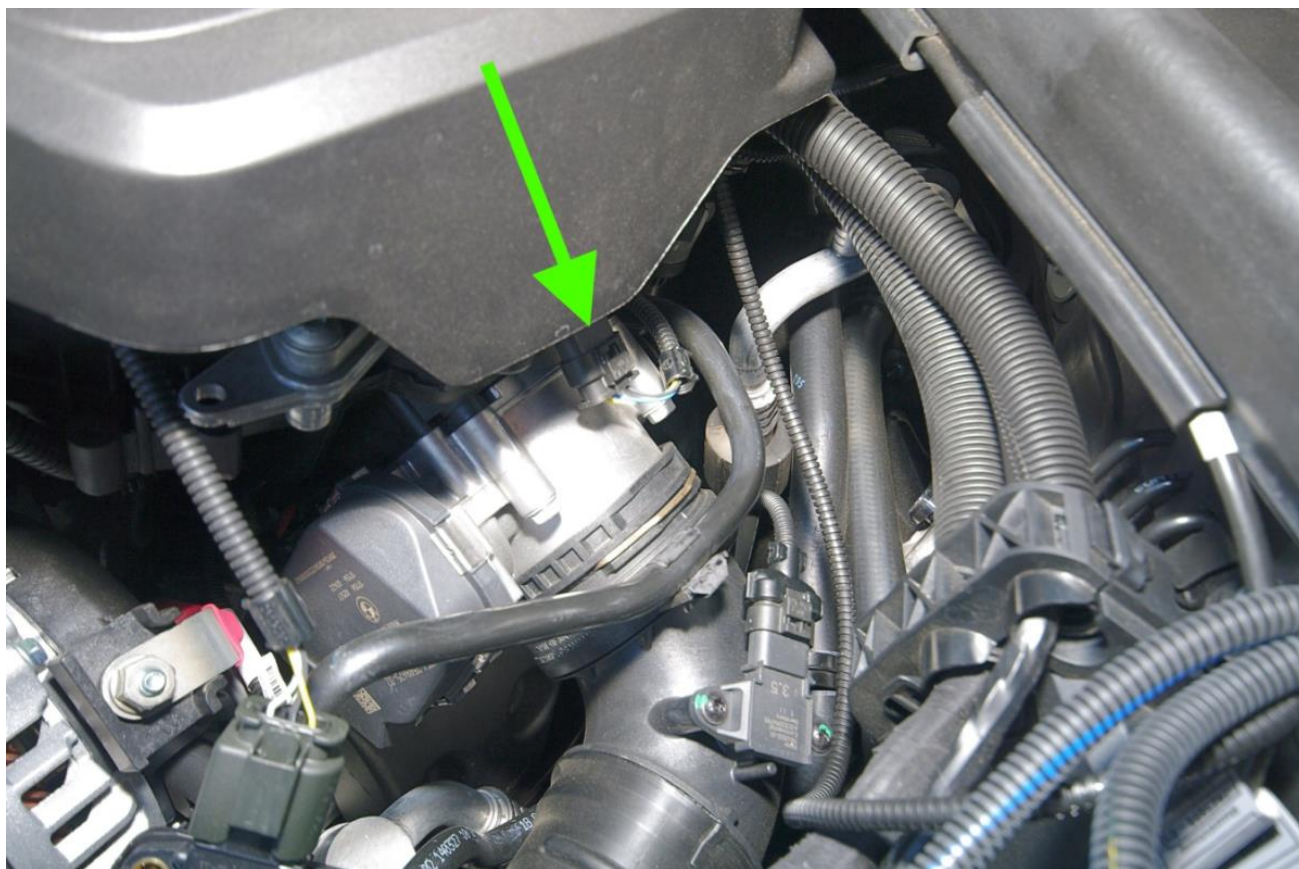


Push lightly on the release clip to release the connector from the sensor. Do not pull directly on the wires. If the connector is stuck using a small screwdriver to gently lift the tab up from the back side (closer to 3.5 numbering) can help.

Plug the JB patch with rainbow wires in to the sensor and plug the OEM plug you just removed into the JB rainbow patch making a complete circuit.

2) MAP sensor, brown patch.

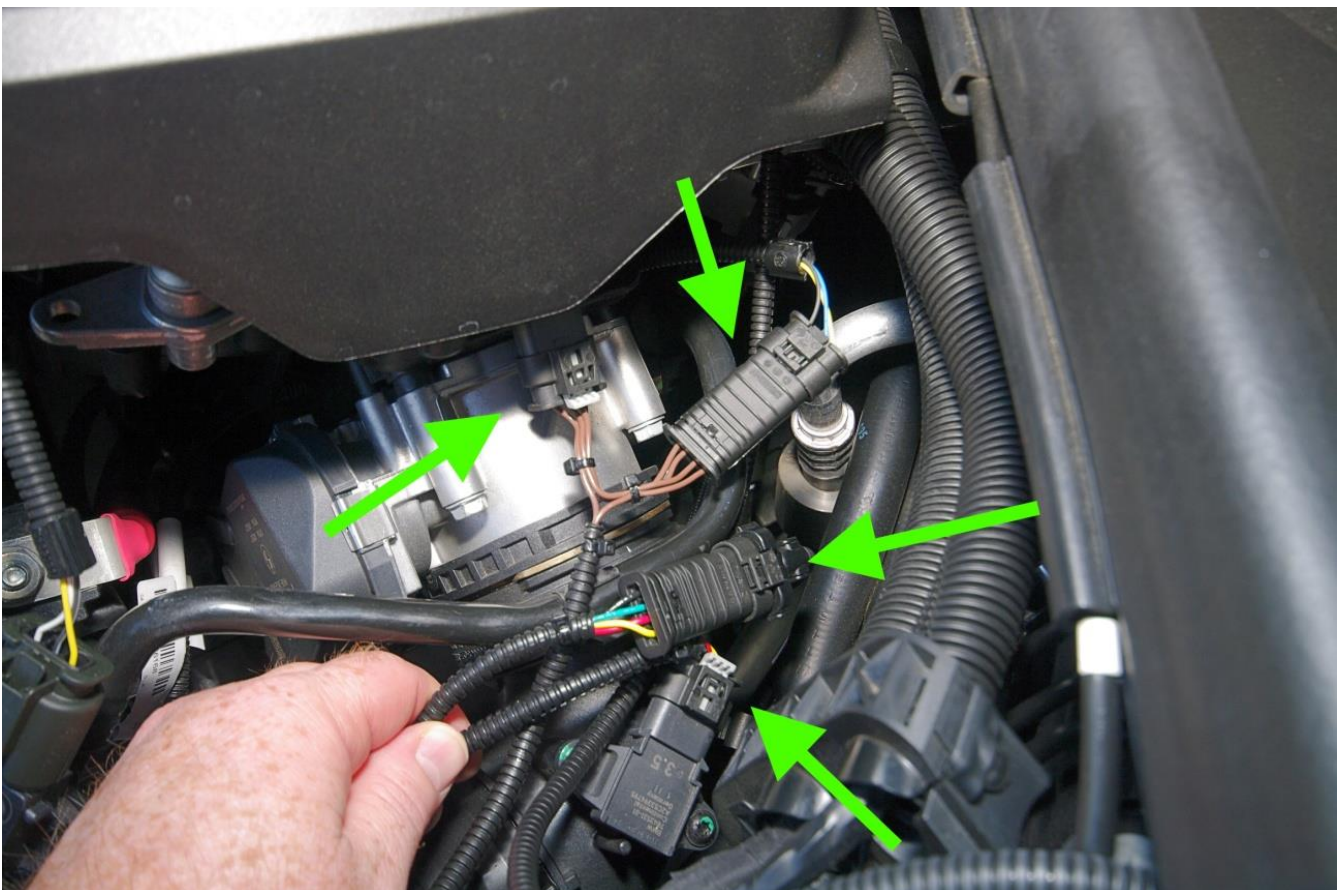
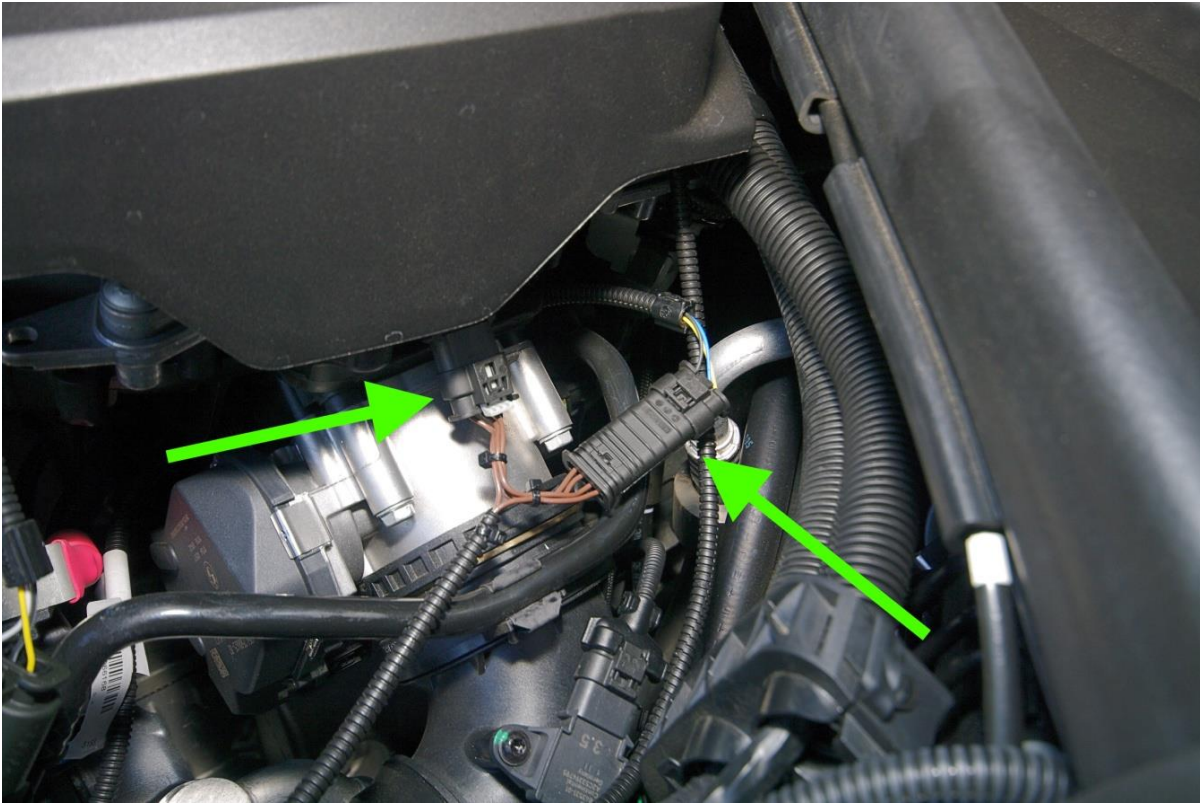
Locate the MAP Connector (#3) near the throttle body (green arrow).



Press and release the clip as you did in the first step.



Once removed, locate the connector pair with brown wires on the JB harness and plug the small connector into the MAP sensor as shown. Connect the large connector from the harness to the factory harness connector as shown below. Please note the orientation of each plug.



3) MAF, Purple patch. Note, this patch is no longer used or included in harnesses. If you have an older harness with the purple patch you can cut it off the harness or tuck it out of the way.

4) Boost solenoid, blue patch, JB4 pneumatic solenoid systems only. This harness will be installed on any models that are equipped with a pneumatic solenoid. Models not equipped with a solenoid as shown in the photo will leave the blue patch tucked out of the way and skip to step 5. Generally models 2014 and newer will not use this connection.



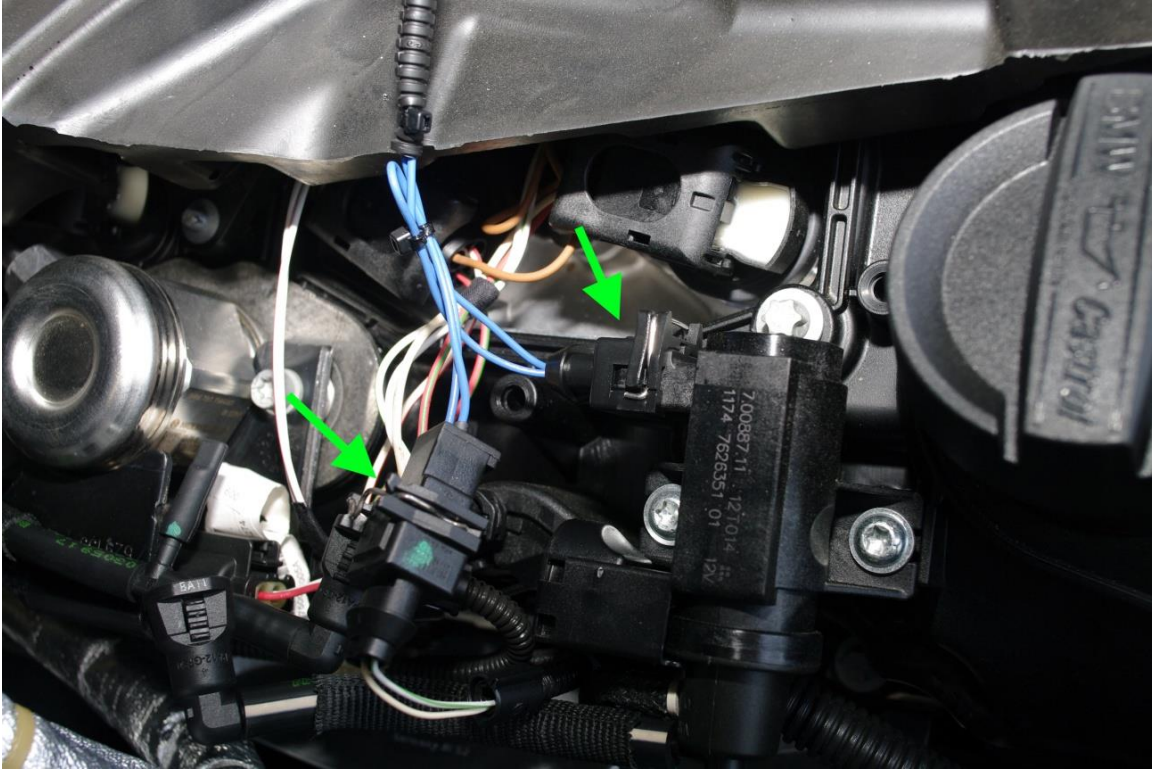
The solenoid is located under the engine cover. You'll lift it up to access the connection.



Push down on the metal retaining clip as shown and slide the connector back. Do not pull directly on the wires, make sure to pull on the connector.



Lay the JB harness over the engine and locate the connector pair with blue wires. Plug the female connector on the JB N20 Stage 1 harness over the factory connection as shown, making sure that the retaining clip clicks into place. Then, plug the factory harness connection you removed in the last step onto the male connector on the JB harness, making sure that the retaining clip clicks into place.



Now route the wire harness over the back of the engine cover area as shown below.





Newer JB4 harnesses also include a 3-position FLEX FUEL wire which generally only needs to be installed on 320i & 520i installations, or those who plan to use E85 mixtures down the road.



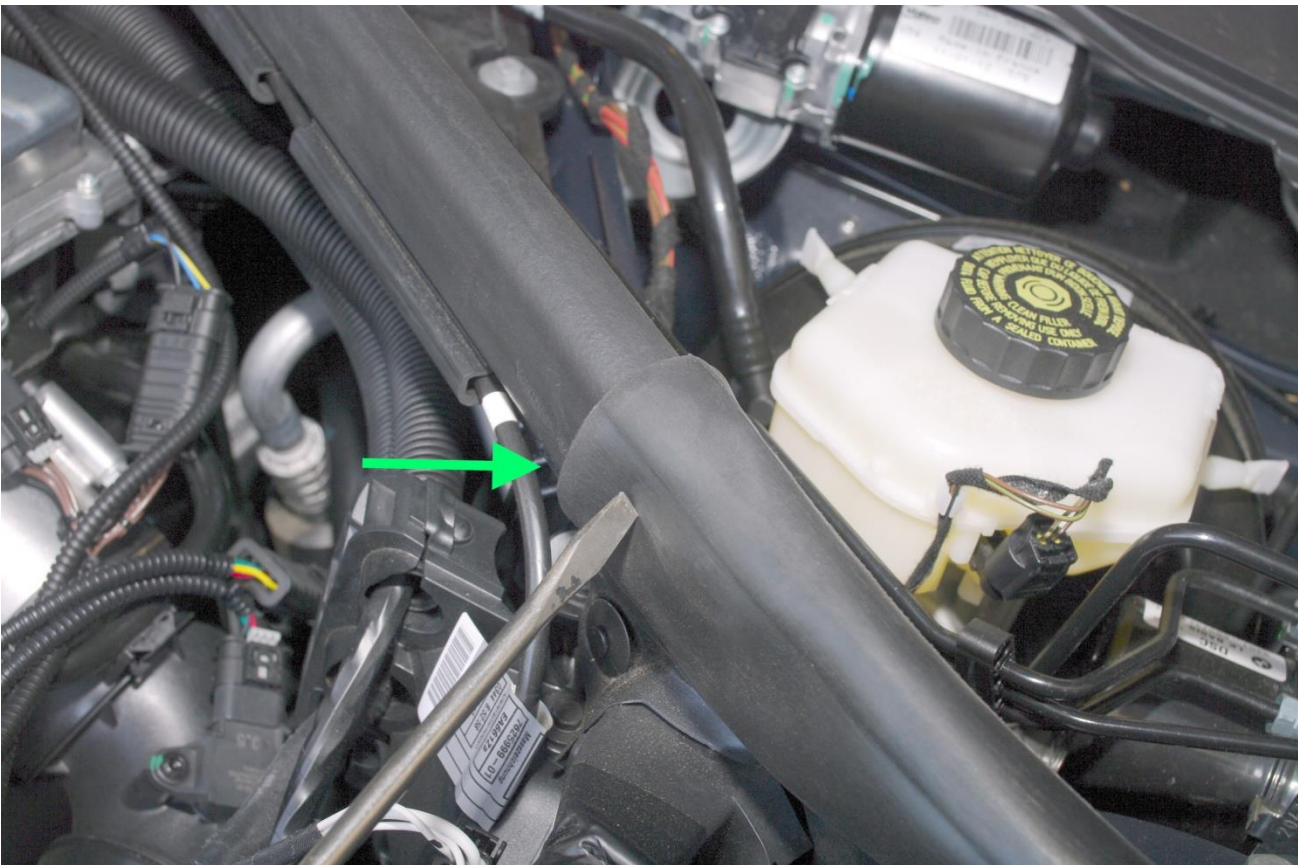
Step 5: Mounting the box. Now that we've connected the basic connections we need to place the box under the driver side plastic cover as shown. Locate the plastic cover over the brake booster as shown. Note the small ring near the side of the vehicle.



Pull up on the ring and pull the plastic cover forward to remove.



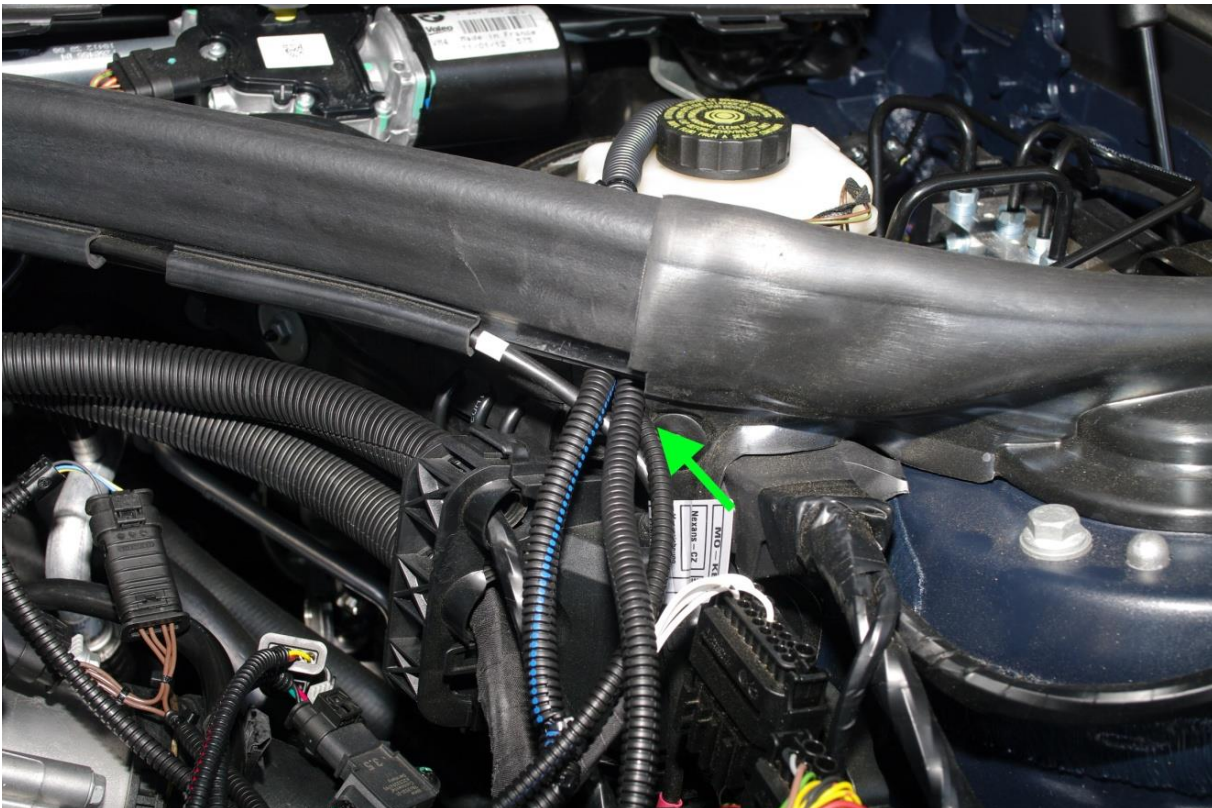
Now locate the overlapping weather seal shown.



Pull the weather seal forward as shown.



Now run the JB wire harness between the split in the weather seal and replace the weather seal as shown. The portion of the wire harness with the AMP cover on the connector should now be near the brake booster.



Route the JB harness and control box to a location that allows you to replace the cover. Note that the box is not water proof and should be positioned in such a way under the plastic cowl cover to keep it as dry as possible. Also take care to ensure it's not placed in the path of the windshield wiper assembly.



If you are installing Stage1 then skip to step 7. If this is a JB4 system then you must also install the power, ground, and CAN.

If you have an older Stage1 system that happens to have these extra wires, do not install them. Tape off each wire and tuck them out of the way.

**Step 6: JB4 only wires. Red, black, green. and brown. (for X1/Z4 models, skip to the model-specific sections below)**

Note JB4 electronic wastegate (EWG) models do not have a separate power and ground wire. If your harness does not have these then skip the steps for the red and black wires below. JB4 Models also include an OBDII wire for CANbus which will be routed in to the cabin as shown.



The black wire is a chassis ground. Connect it to the shock tower using a 1/2" socket or other suitable chassis ground.

The red wire extends over to the passenger side and attaches to the power terminal under the red flip-top. You'll need a Torx-50 bit to loosen the terminal. The red wire should be routed under the plastic cowl covers so its out of sight.



**OBDII CANbus connection:**



Remove the panel under the steering wheel by removing the 2x 10mm bolts, and if you need the room unplug the courtesy light and speaker connection so the panel can be moved out of the way all together.



Using a long screwdriver push in on the rubber firewall cap pushing it in to the interior compartment. You'll see it fall down by the pedals and can put it away for safe keeping. Feed the OBDII wire from the interior through the hole to the engine compartment. Note 535 models have a foam cover that is pulled off to access the rubber plug.



Note those with a manual transmission have the clutch line run through this same hole. You'll need use a coat hanger to pull CANbus wire around the grommet. Alternatively you can use cut a small slide in the grommet to facilitate feeding the CANbus wire through.





Connect the OBDII cable to the JB4 harness by plugging in the connector.

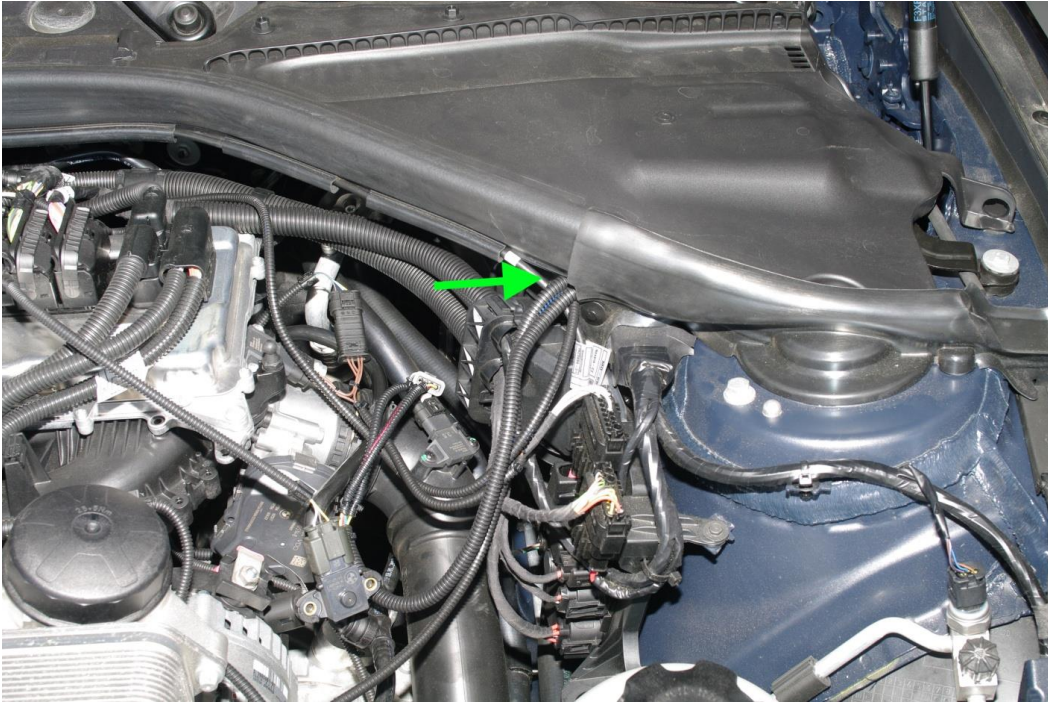


Reinstall bottom cover and route CANbus wire behind it for a clean look.



## 7. Wrapping up.

Finally replace the plastic cover over the brake booster area as shown. Note the position of the harness near the weather seal.



Before closing the hood, reconnect your negative battery cable and start the car. If you receive a CEL (check engine light, picture of a yellow engine on the instrument display), double check each connection and the orientation of the connectors. If you're unable to see any problems, please take photos of the install, including each connector and email to [support@burgertuning.com](mailto:support@burgertuning.com) for troubleshooting support.

Assuming the car starts and idles without a CEL, you can close the hood and trunk and your installation is complete.

Settings:

Stage1: This system is a single map and no software changes are required for any models.

JB4: This system is a multiple map system and the user can select between map (disabled) and performance maps using the volume control. Refer to the appropriate video on N54tech for specific map switch directions.

Software the JB4 system as well as any additional mapping information is posted here. For any additional questions on setup and settings please post in this thread:

<http://www.n54tech.com/forums/showthread.php?t=15536>

**X1:**

Please see the overview of the install for the X1 at YouTube:

[https://www.youtube.com/watch?v=GyWgDC5wv\\_8](https://www.youtube.com/watch?v=GyWgDC5wv_8)



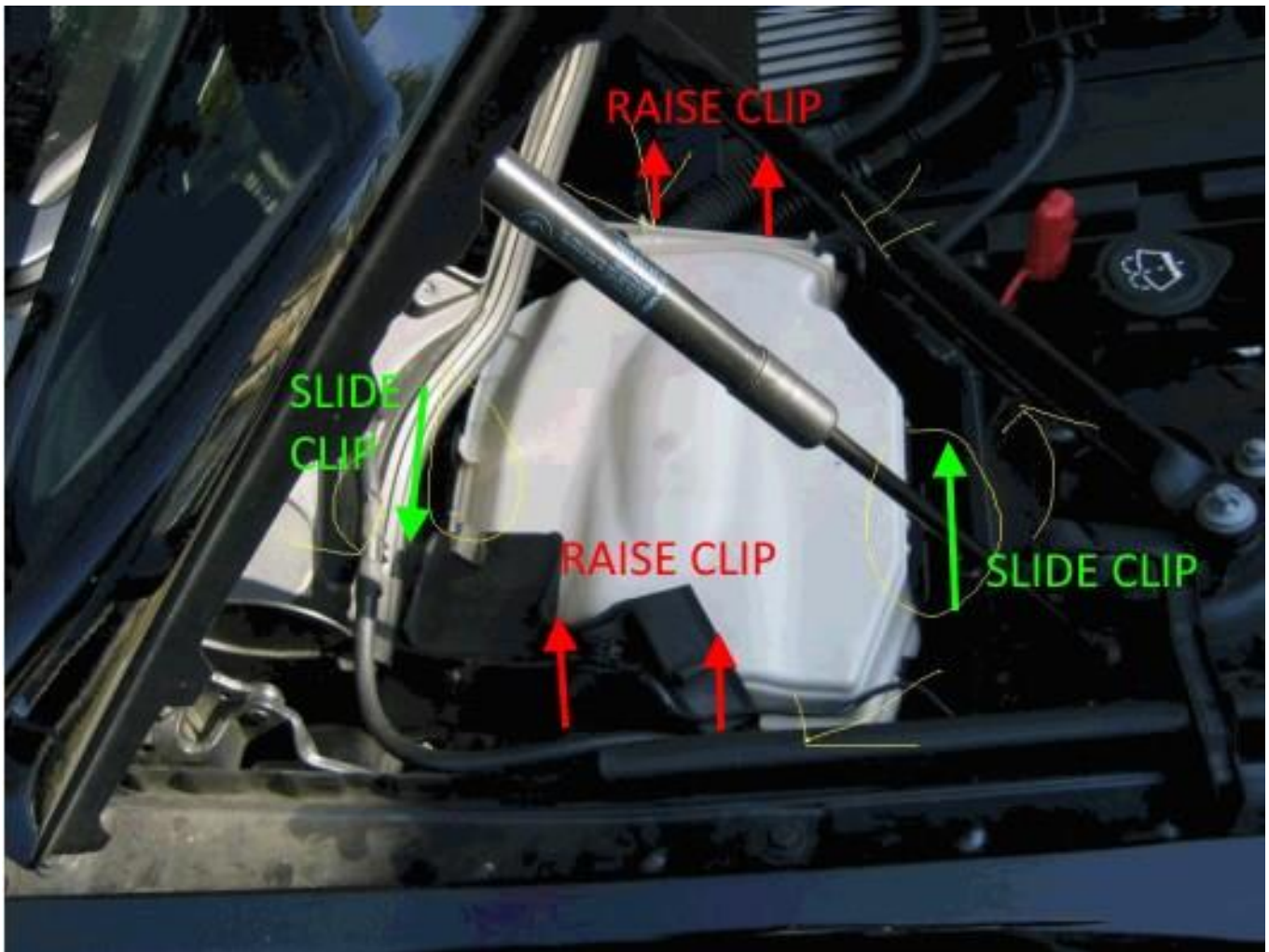
- 1) Remove the screws around the perimeter of the HVAC air filter (highlighted green in the below photo) at the base of the windshield and set the filter housing aside



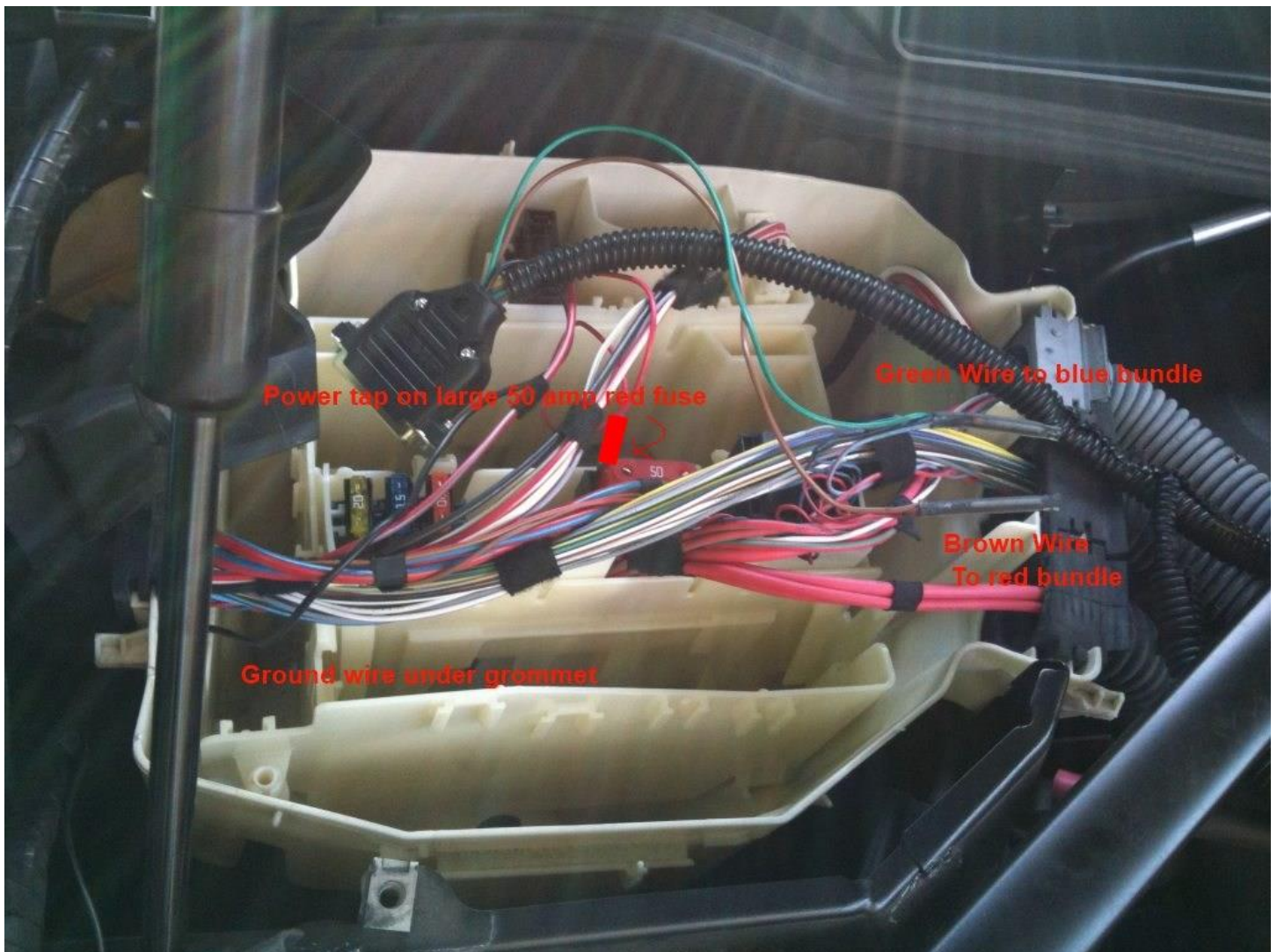
- 2) Pop off the side covers (highlighted red in the above photo) by lifting the clips around their perimeter and set the covers aside.
- 3) Unclip the sensors at each side as shown in the below photos. The passenger side sensor removes by pushing in a small clip and rotating, while the optional driver side will lift off if present. Pull the tabs holding the wires out by grasping the tabs and pulling towards you. The sensors will stay connected to the wires, just lay the sensors and wires towards the front of the engine out of the way.



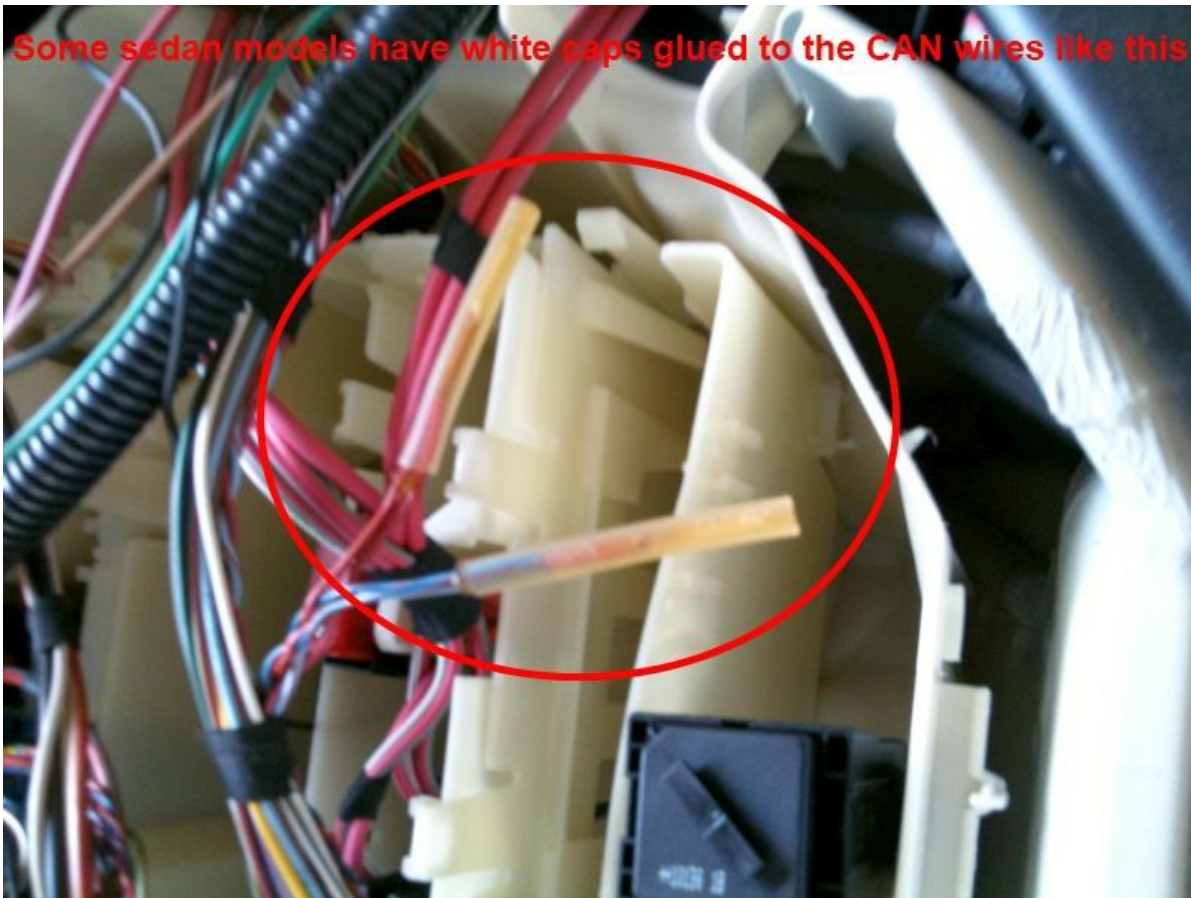
- 4) Once the sensors, covers and filter have been removed, two 8mm bolts hold down the corners of the cowl cover. These are found at the leading edge of the cowl cover. Remove these and set aside.
- 5) The cowl cover can now be carefully lifted and removed from the vehicle. Set it aside.
- 6) Remove the white ECU cover by raising the retaining clips at the left and right sides of the lid, and sliding the two clips at the front and back of the lid as shown in the below photo. Set the cover aside.



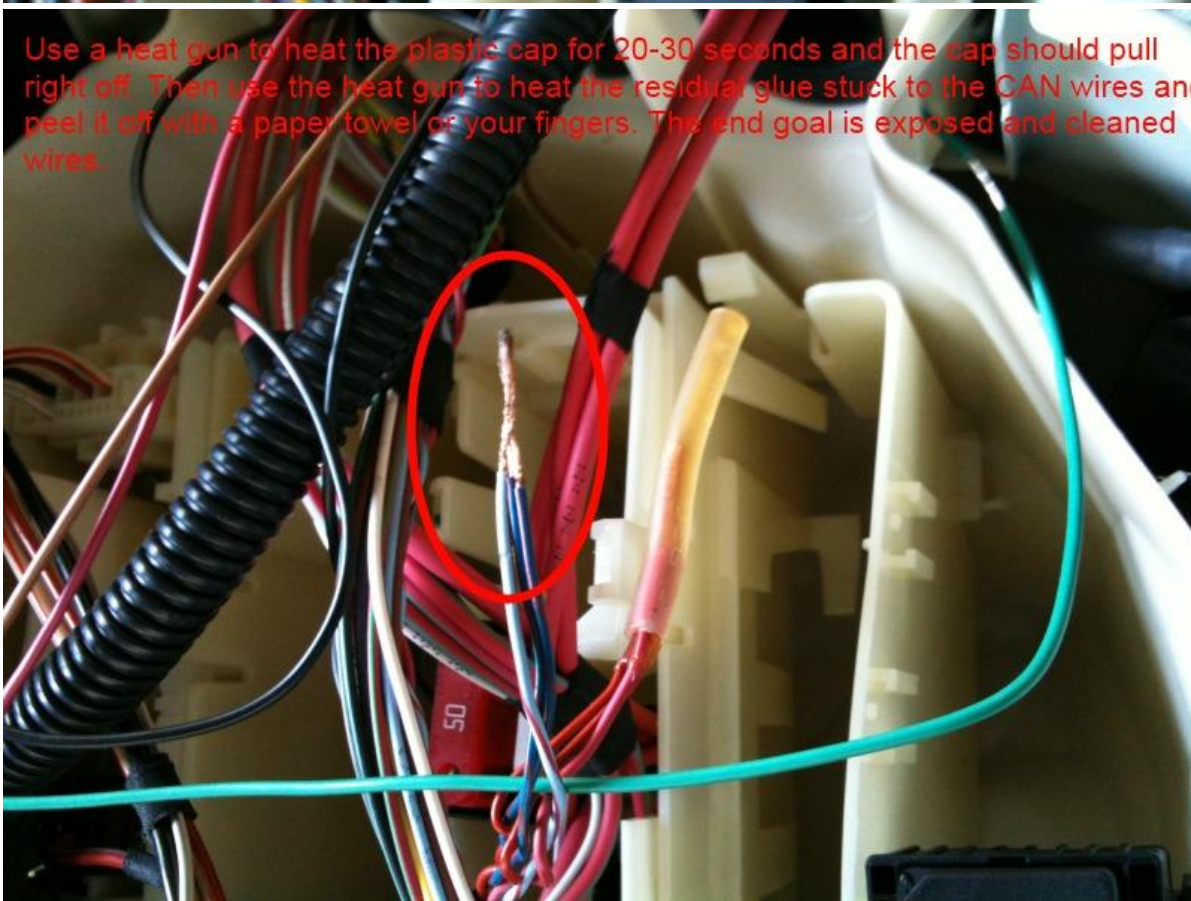
7) Locate and remove the felt-tape holding the wire bundle together and pull out the blue and red CAN wire bundles as shown below. It will be the only bundle wrapped in black felt tape. If you can't find it remove the black tape. It's easy to miss but is right in front of you. Each one will have a black or white cap on top of it. Pull the cap off and ensure the wire leads are clean. If needed you can clean them using a paper towel and rubbing alcohol. A clean connection here is critical to the CAN system functioning properly. Wrap the appropriate JB4 wire around the exposed leads and push the cap back over ensuring a solid connection. If your CAN wires have the white cap glued on you will need a heat gun or a hair dryer to remove it. When removing the factory caps it's important to use rubbing alcohol to remove any black sticky "junk" left behind so the JB4 wires make a clean connection. A poor connection here will result in the JB4 "resetting" during driving and may lead to a check engine light. It is OK to solder these wires if you're having a difficult time getting a clean connection. The JB4's green CAN wire attaches to the blue factory wiring bundle and the JB4's brown CAN wire attaches to the red factory bundle. Refer to those photos below for additional directions.



Some sedan models have white caps glued to the CAN wires like this



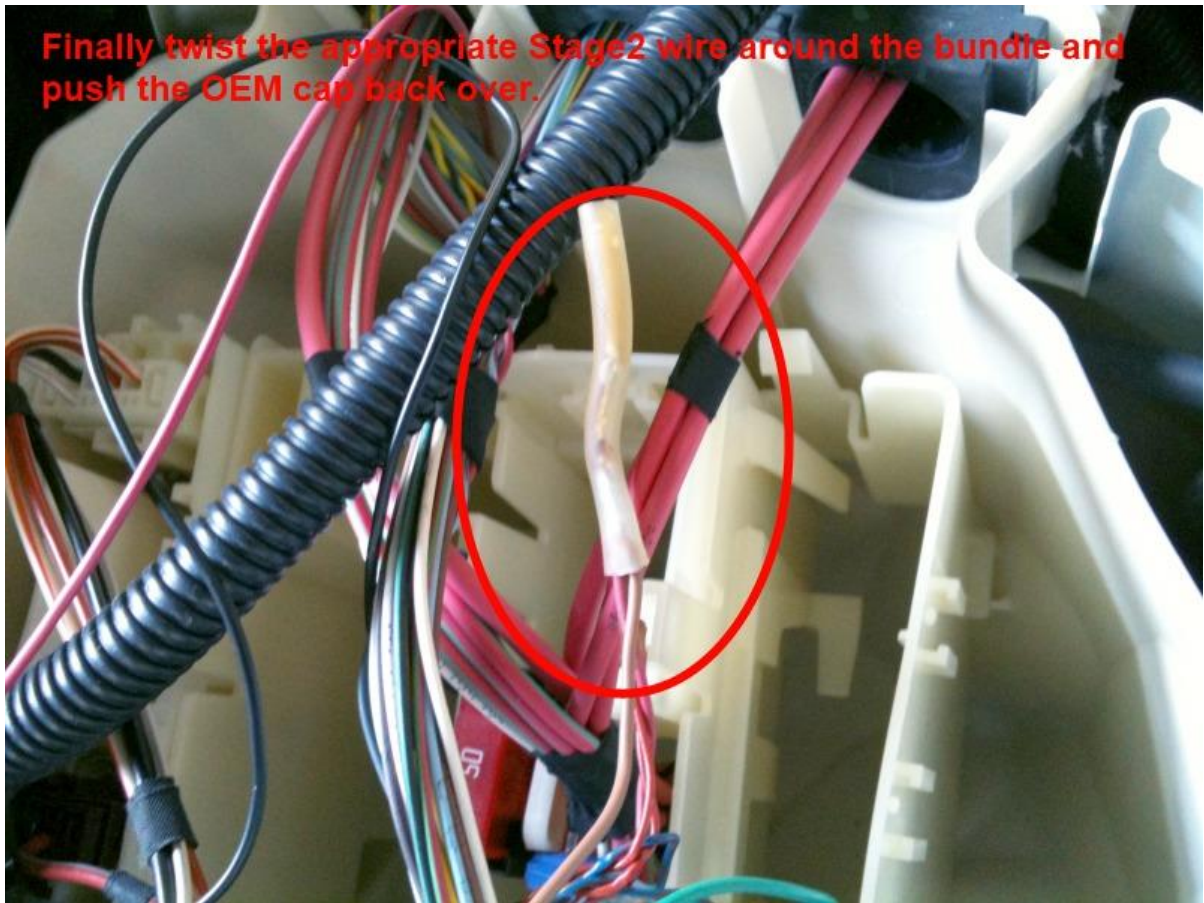
Use a heat gun to heat the plastic cap for 20-30 seconds and the cap should pull right off. Then use the heat gun to heat the residual glue stuck to the CAN wires and peel it off with a paper towel or your fingers. The end goal is exposed and cleaned wires.





OEM CAN Wires

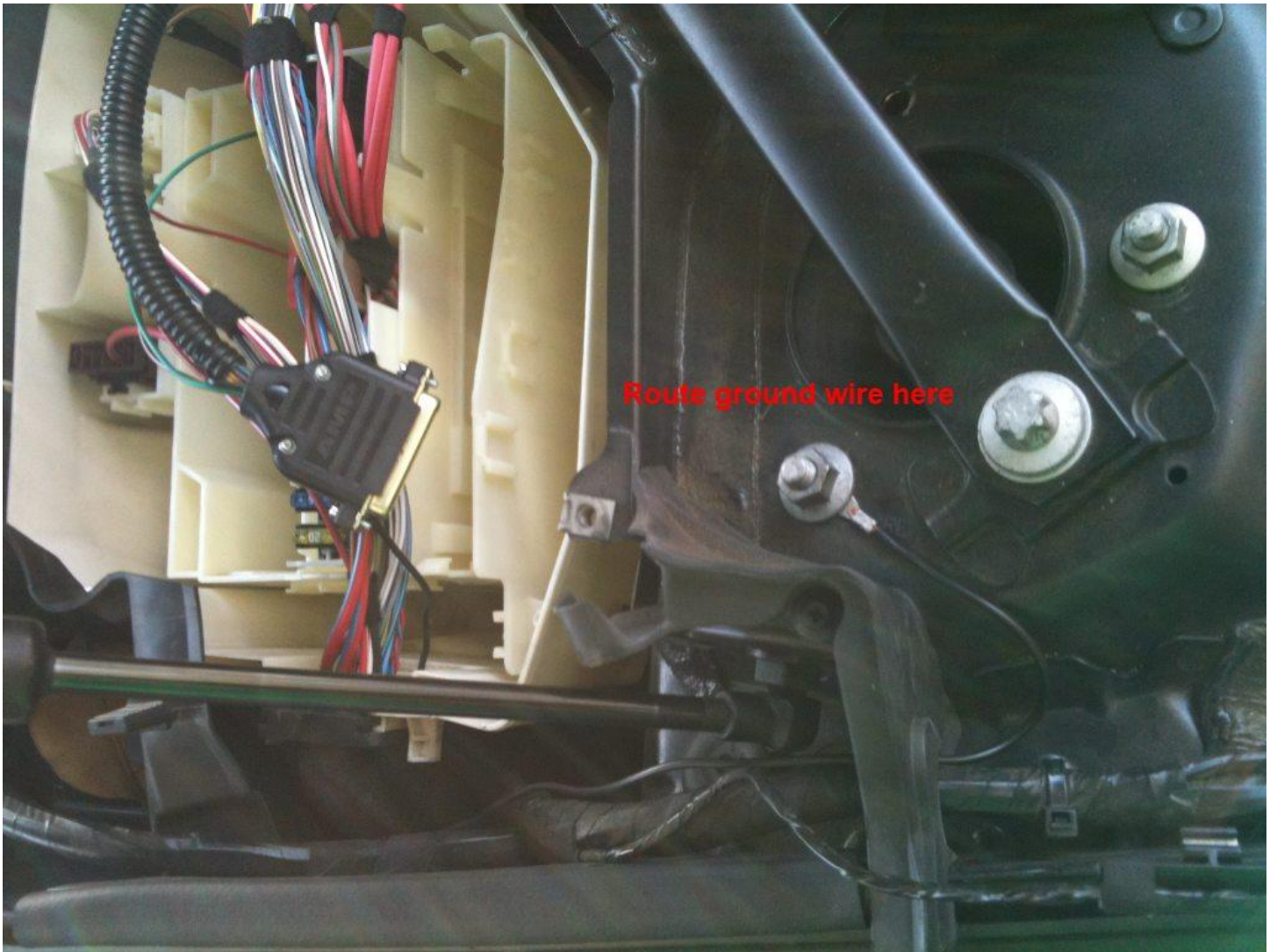
Stage 2 CAN Wire Wrapped Around It



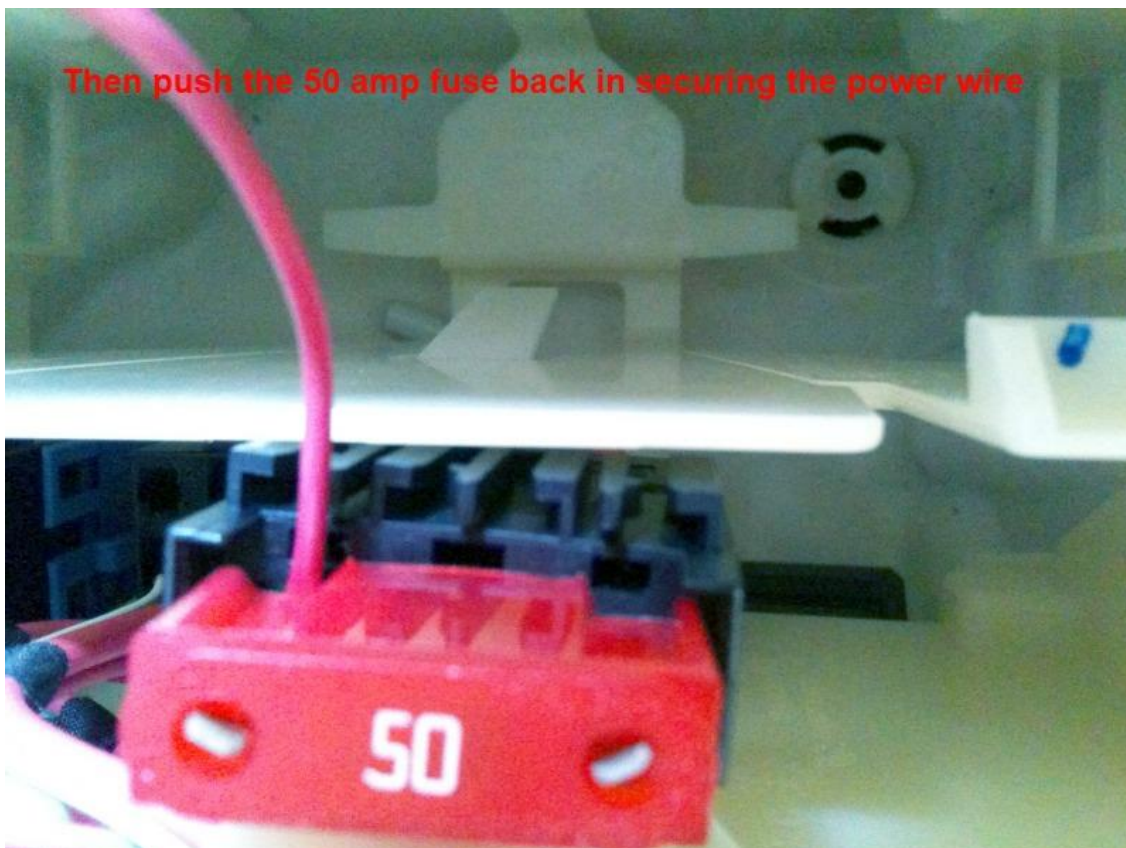
Finally twist the appropriate Stage 2 wire around the bundle and push the OEM cap back over.



8) Attach the JB4 ground wire as shown.



- 9) The JB4 red power wire is routed to the 50amp fuse below. Note that some newer JB4 systems have the power wire incorporated in to the blue solenoid harness. If your system does not have a loose red power wire then disregard this step.



10) Before closing the hood or replacing all of the cowling, reconnect your negative battery cable and start the car. If you receive a CEL (check engine light, picture of a yellow engine on the instrument display), double check each connection and the orientation of the connectors. If you're unable to see any problems, please take photos of the install, including each connector and email to [support@burgertuning.com](mailto:support@burgertuning.com) for troubleshooting support.

Assuming the car starts and idles without a CEL, you can replace the cowl cover, sensors, and filter by reversing the directions you used earlier and close the hood and take the vehicle for a test drive.

### **Settings:**

The JB4 is a multiple map system and the user can select between map 0 (disabled) and performance maps using the steering wheel controls. A map guide and information on the wheel controls specific to the X1 models is found at the end of this guide.

Software the JB4 system as well as any additional mapping information is posted here. For any additional questions on setup and settings please post in this thread:

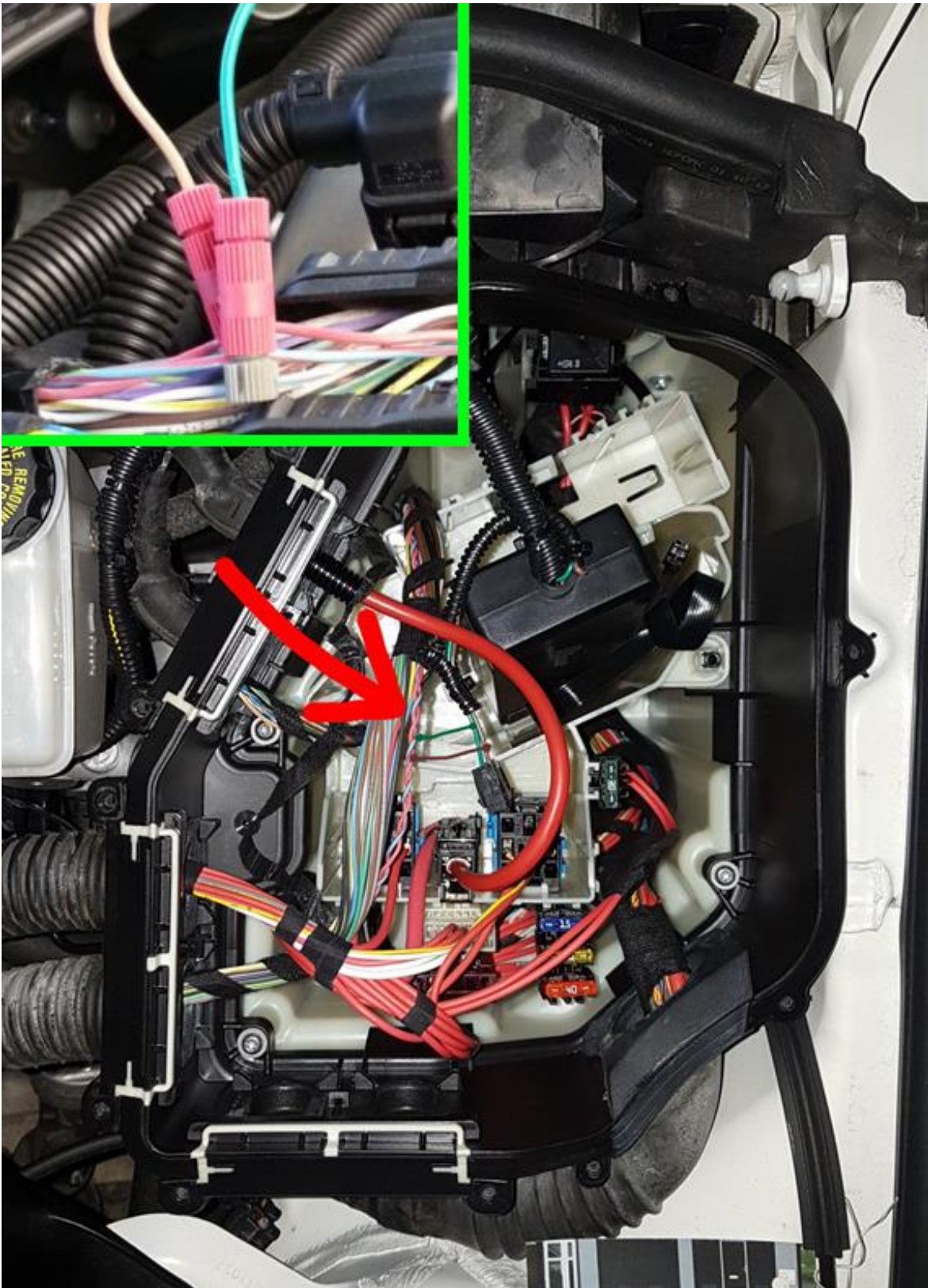
<http://www.n54tech.com/forums/showthread.php?t=15536>

**Z4:**

To access the area where the CAN wires attach you will need to remove the cover shown highlighted green in the below photo.



The CAN wire connections attach with the provided Positap connectors to the twisted wire pair shown in the below photo. Note the placement of the control box as well.



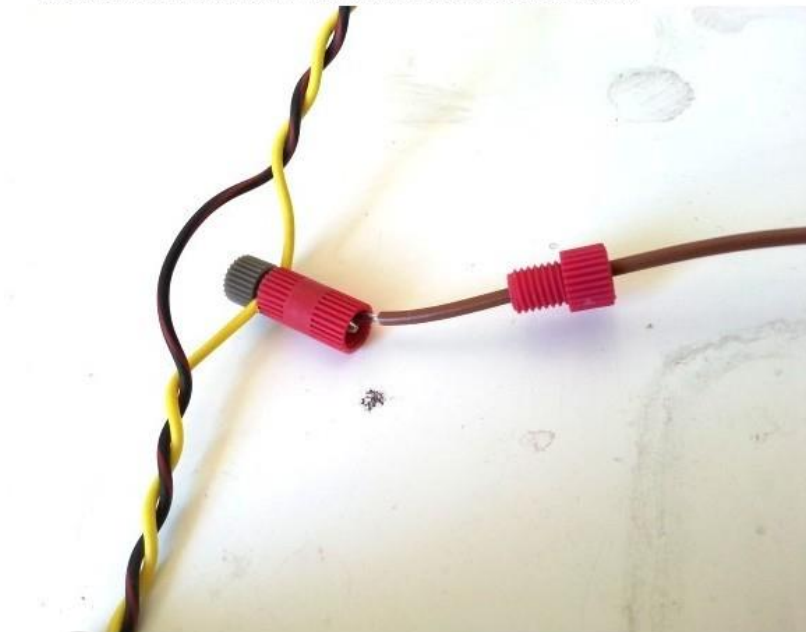
Attach the green JB4 CAN wire to the blue/red striped wire and the brown JB4 CAN wire to the solid red wire as shown in the inset at the top left.

## Quick connect directions:

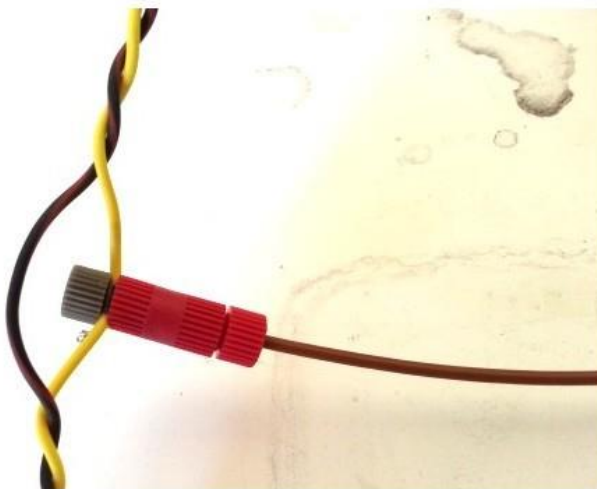
Unscrew connector and slide gray part over wire to intercept.  
Then screw base firmly in to gray connector to make connection.



Slide wire to be connected through connector as shown and poke stripped wire in to base. As you tighten base ensure wire remains inserted and that the wire makes a solid connection.



How it should look when complete.



Attach the ground wire to a suitable chassis ground like the shock tower as shown in the section above on step 8 of the X1 section above.

Before closing the hood or replacing the cover, reconnect your negative battery cable and start the car. If you receive a CEL (check engine light, picture of a yellow engine on the instrument display), double check each connection and the orientation of the connectors. If you're unable to see any problems, please take photos of the install, including each connector and email to [support@burgertuning.com](mailto:support@burgertuning.com) for troubleshooting support.

Assuming the car starts and idles without a CEL, you can replace the cover, close the hood, and take the vehicle for a test drive.

### **Settings:**

The JB4 is a multiple map system and the user can select between map 0 (disabled) and performance maps using the steering wheel controls. A map guide and information on the wheel controls specific to the Z4 models is found at the end of this guide.

Software the JB4 system as well as any additional mapping information is posted here. For any additional questions on setup and settings please post in this thread:

<http://www.n54tech.com/forums/showthread.php?t=15536>

## X1/Z4 Steering Wheel Controls:

A video showing how this control scheme works is found here:

<https://www.youtube.com/watch?v=HDjD4OcDIGU>

### JB4 Z4/X1 N20 Wheel Control Guide

To engage command mode with engine running press both volume select and channel select down.

The orange test image will appear in the cluster indicating you are in command mode.

Press the volume up and down to move the speedo, and channel up and down to move the tach, selecting the options below as indicated.

To save a selection move the volume up or down once the tach is on the intended selection.

To exit command mode move the speedo to the 0 position and press down on the volume.

Certain menu options such as code management will exit automatically.

Speedo	Tach	Function	
0	0	Map 0 : JB4 disabled	Disables JB4 entirely
0	1	Map 1 : 20psi peak target	Suggested for most racing applications
0	2	Map 2 : 22psi peak target	
0	3	Map 3 : Progressive Meth	
0	4	Map 4 : Stock tuning	Stock like performance with CAN active.
0	5	Map 5 : Not used	
0	6	Map 6 : User defined boost values	Used by tuners or for troubleshooting
0	7	Map 7 : Not used	
1	1	Read Codes	
1	2	Delete All Codes	Command mode exits after a code read/delete
1	3	UNUSED	
1	4	UNUSED	
1	5	Reset Cluster (If needles go out of alignment)	
1	6	Reset Airbag Codes (after reinstalling a seat, etc)	
1	7	Resets octane, throttle, and o2 sensor adaptations for advanced diagnostic use	
2	0	Disable fuel gauge hijacking	Menu starts at selected gauge hijack mode
2	1	Boost on fuel	Boost scaling is min = 0psi, middle = 10psi, max = 20psi
2	2	Timing on fuel	Timing scaling is min = 0, middle = 10, max = 20
2	3	IAT on fuel	IAT scaling is min = 60F, middle = 120F, max = 180F
2	4	Under/Over Boost Target On Fuel	Middle is on target, to left is under target, to the right is over
2	5	MethFlow on fuel	MethFlow scaling is 0-100%
2	6	WaterTemp on fuel	WaterTemp scaling is min-max = 160-340 degrees F
2	7	AFR on fuel	AFR scaling is min-max = 10:1 to 20:1
3	0 to 7	Shift light RPM, 7000rpm = OFF	Menu starts at selected shift light RPM
4	1	UNUSED	
4	2	Transport Mode On	
4	3	Transport Mode Off	
4	4	CANflap OFF	Returns exhaust flapper to normal / stock operation
4	5	CANflap ON	Forces exhaust flap open at all times
4	6	UNUSED	
4	7	UNUSED	
5	1	Config gauges for 135	Exits command mode after selection is saved
5	2	Config gauges for 335/535	
5	3	Config gauges for 335/535 metric	
5	4	Config gauges for 135 metric	
5	5	UNUSED	
5	6	UNUSED	
5	7	Toggle on/off startup gauge sweep	Sweeps gauges when starting motor like Corvette or STI
6	1	MaxCool mode ON	Improves engine cooling, menu starts at 1 if enabled otherwise 0
6	2	MaxCool mode OFF	
6	3	Warmup Flash toggle on/off	Flashes blinkers when oil temp goes over 160 degrees F
6	4	DTC Press at Startup Toggle on/off	Automatically does a one push traction control disable at startup
6	5	Auto Radio - Disable	
6	6	Auto Radio - Off (Non-iDrive)	
6	7	Auto Radio - Off (2009+ iDrive)	
7	0	Disable oil gauge hijacking	Menu starts at selected gauge hijack mode
7	1	Boost on oil	Boost scaling is min = 0psi, middle = 10psi, max = 20psi
7	2	Timing on oil	Timing scaling is min = 0, middle = 10, max = 20
7	3	IAT on oil	IAT scaling is min = 60F, middle = 120F, max = 180F
7	4	Under/Over Boost Target on oil	Middle is on target, to left is under target, to the right is over
7	5	MethFlow on oil	MethFlow scaling is 0-100%
7	6	Stealth Gauges	Turn gauges on only under heavy throttle
7	7	Gauge Sweep	Toggle startup gauge sweep on and off
8	0-7	UNUSED	
9	0-8	Map 3 methanol boost additive	Boost will not target above max boost limit setting regardless of this setting