



## BMS S63TU Stage1 and JB4 Install Guide

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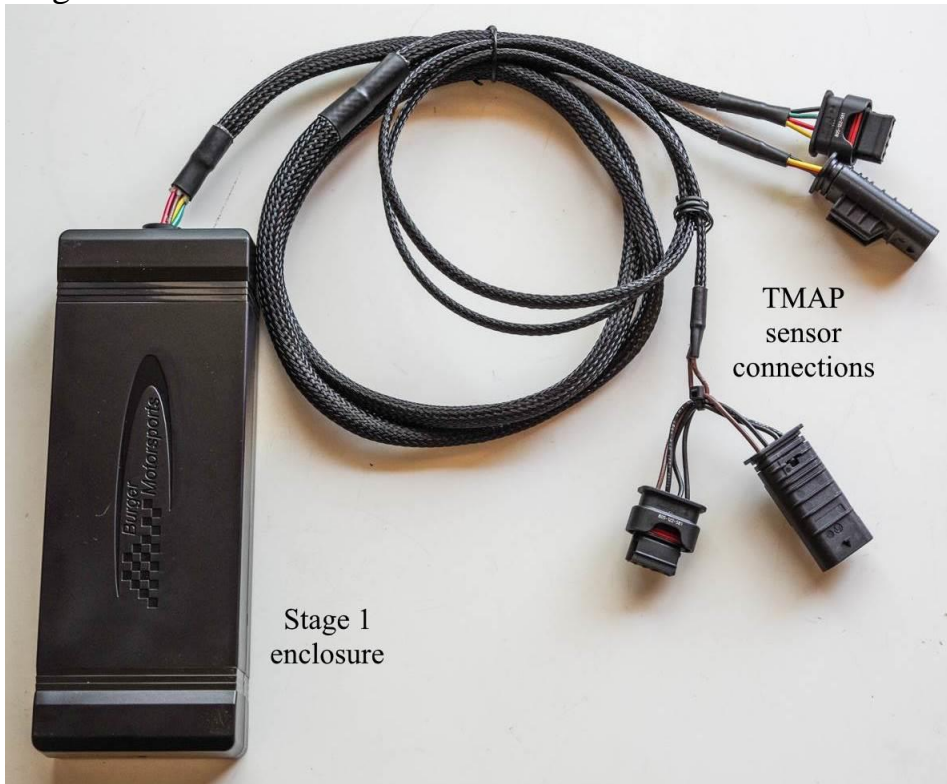
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# JB4



# Stage 1





**Directions in this section are for M5/M6, X5M/X6M specific directions and photos are below, starting on page 25**

**Photos are M5 specific, there may be slight differences in M6 models, but the general layout and location of the items is the same on both vehicles.**

**You will need the following tools, at minimum, to complete the install:**

6mm, 10mm, and 13mm (JB4 only) sockets and ratchet plus extensions (3"/75mm and 6"/150mm recommended)

T20 (JB4 only) and T30 Torx sockets or drivers

Flat head screwdrivers

**Helpful but not required tools:**

Trim removal tool

Flashlight

Rags

Gloves

Fender protectors

**A photo of the tools used to produce this guide are pictured below:**



The Stage 1 install consists of two pairs of TMAP sensor connectors.

The JB4 harness consists of two sets of TMAP sensor connectors and two sets of solenoid connectors (install of these is optional), a ground wire, plus a pigtail with a Molex connection to attach to the OBDII cable.

Throughout this guide, references will be made to the various connector pairs by their wire colors and by their gender. Note that electrical connector gender is defined by the pins contained within and not by the housing itself.

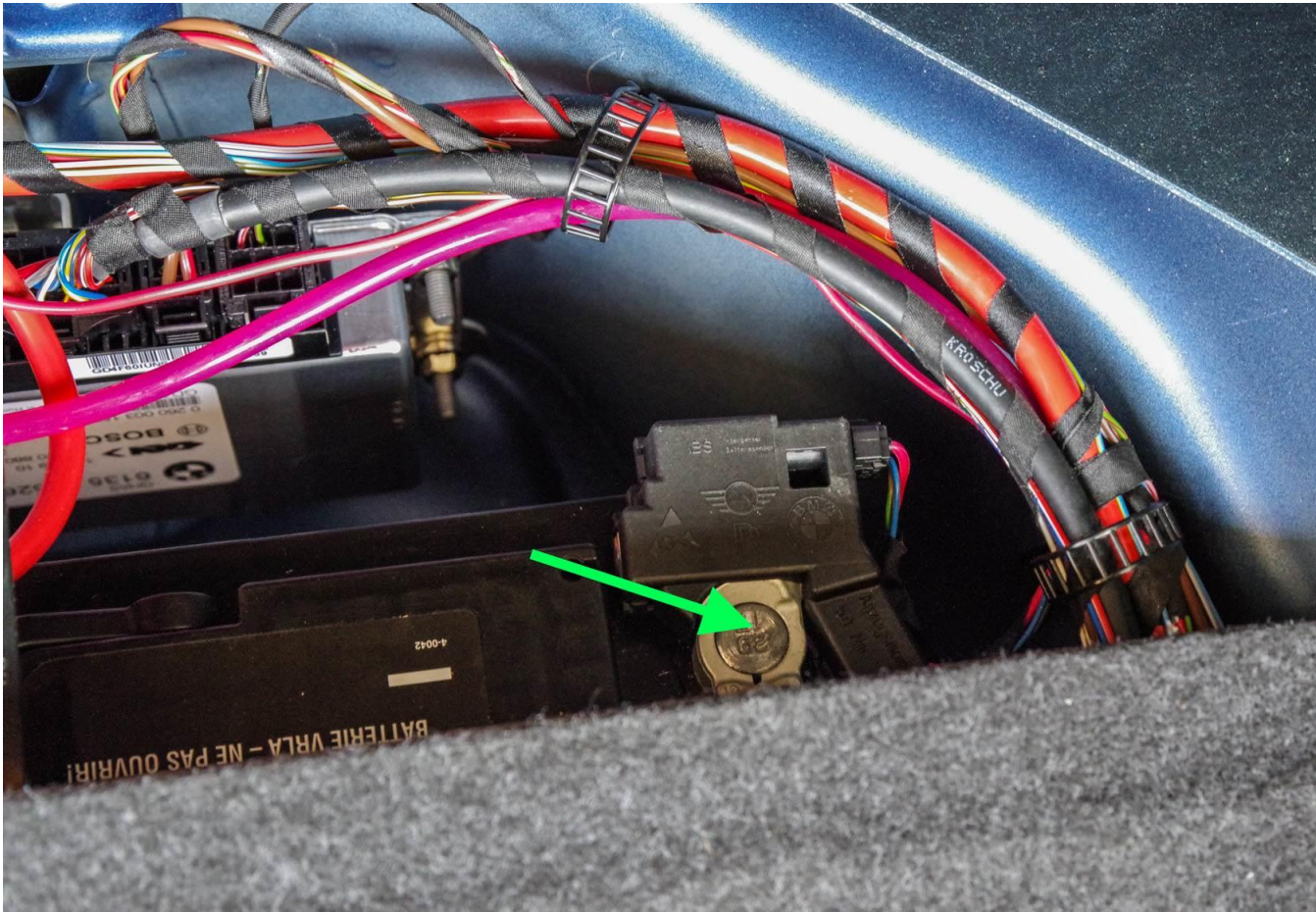
### **Step 1: Disconnect the battery's negative terminal in the trunk**

Unlock the vehicle and open the trunk and hood. Make sure to leave the doors unlocked. Raise the flap at the rear of the trunk to expose the two plastic nuts (10mm) in the below photo.





Remove these nuts and set aside, raise the trunk floor panel, and loosen and detach the negative terminal on the battery, now partially exposed, using a 10mm socket and ratchet.

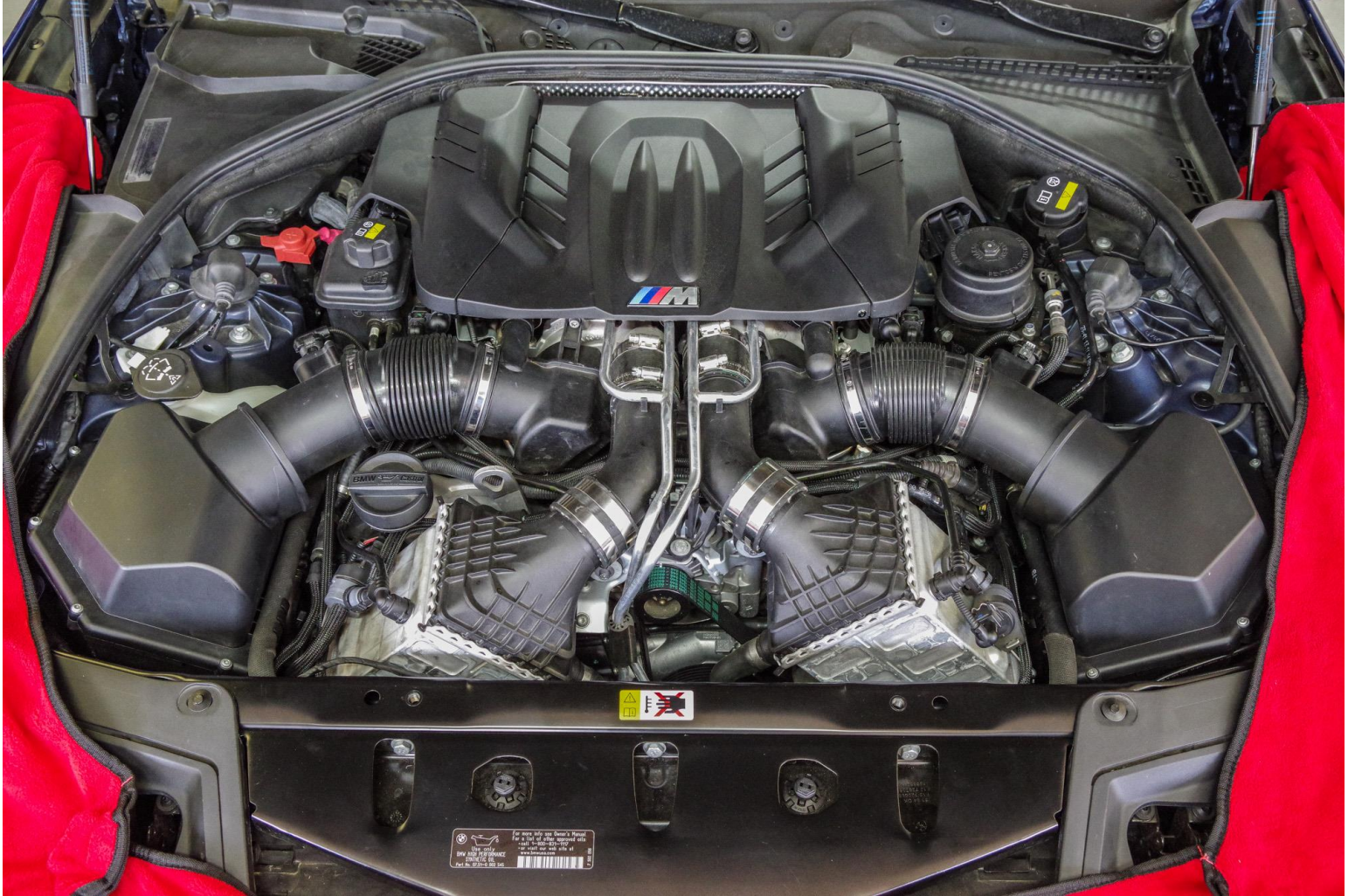


**The battery is now disconnected. Do not close the trunk until after you have reconnected the battery or you will not be able to reopen it.**



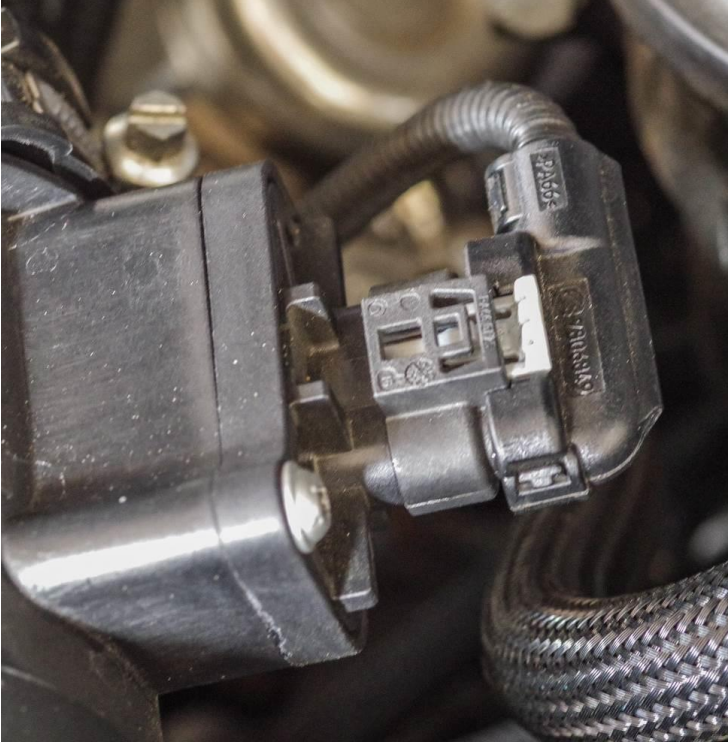
## Step 2: Airbox removal

Both the stage 1 and JB4 units will attach at the TMAP sensors which are found on the intercoolers at the front of the engine compartment. In order to access the sensors, you must remove the air filter housings (airboxes) from the vehicle. Making sure the vehicle is cooled off first, start by removing the engine cover, by pulling up at the front corners. After loosening the front two, do the same at the rear. There are four rubber inserts holding the cover onto plastic ball studs. Set the cover aside.





Disconnect the MAF sensor connections by moving the gray clip to the unlocked position (shown below – the clip has been moved slightly to the right in the photo) then squeezing the clip against the housing while simultaneously detaching the connector housing off of the sensor.



Do not pull from the wires. If the clip fails to release, you can apply slight pressure with a pry tool, or insert a small screwdriver to try to raise the retention tab as needed. Repeat for both MAF sensors (one on each intake). Remove the T30 Torx fastener shown in the attached photo.



Now loosen the clamp nearest the turbocharger inlet housing using a 6mm socket and ratchet or a screwdriver. Loosen the intake hose from the housing that connects it to the front of the turbocharger, where you loosened the clamp, by pulling the accordion section back from the housing.

With the fastener removed and the intake loose at the turbo inlet housing, remove the airbox as a whole unit. Unclip any hoses that are clipped into the airbox, and note the rubber coupling toward the back of the airbox that holds it onto the vehicle. By firmly pulling up, the airbox will come off of the ball stud that holds it in place. At the front of the airbox you will find a plastic flap that connects the airbox housing to the air intake source at the front of the vehicle. This will need to be disconnected as you raise the airbox to remove it. Press the flap toward the airbox while lifting to release the unit, then remove the whole airbox. Repeat for both sides.

With the airboxes removed, you now have access to attach the tuner's TMAP sensor connections.

### **Step 3: Attach the harness connections**

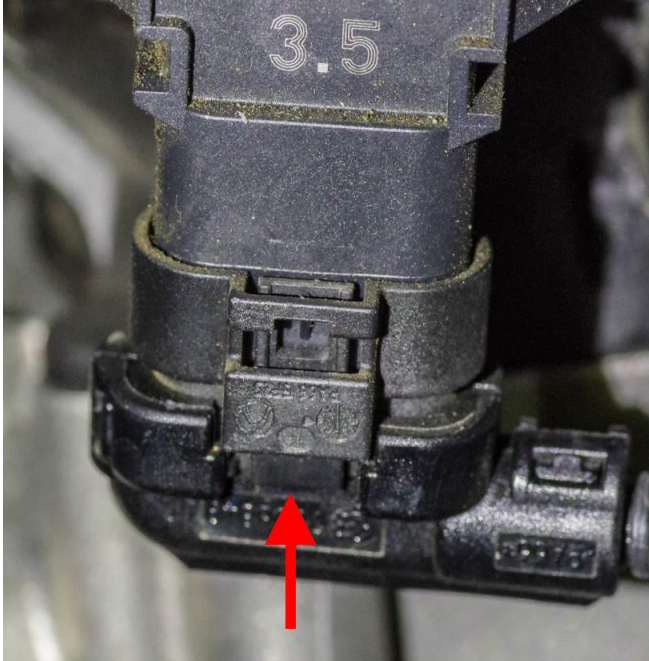
Locate the TMAP sensors at the outboard edge of each intercooler. You will be disconnecting the factory wiring, connect one half of the tuner's connector pair, then connecting the factory wiring to the other half of the tuner's connector pair.

Route the tuner harness to place the brown connector pair on the passenger side of the vehicle. The rainbow connector pair will go on the driver's side. Remove the factory connector at the passenger side exactly as you did with the MAF sensor earlier. Place the tuner's brown female connector onto the sensor and attach the factory connector you removed to the tuner's brown male connector. It only goes on in one direction. Make sure it is snapped in place.

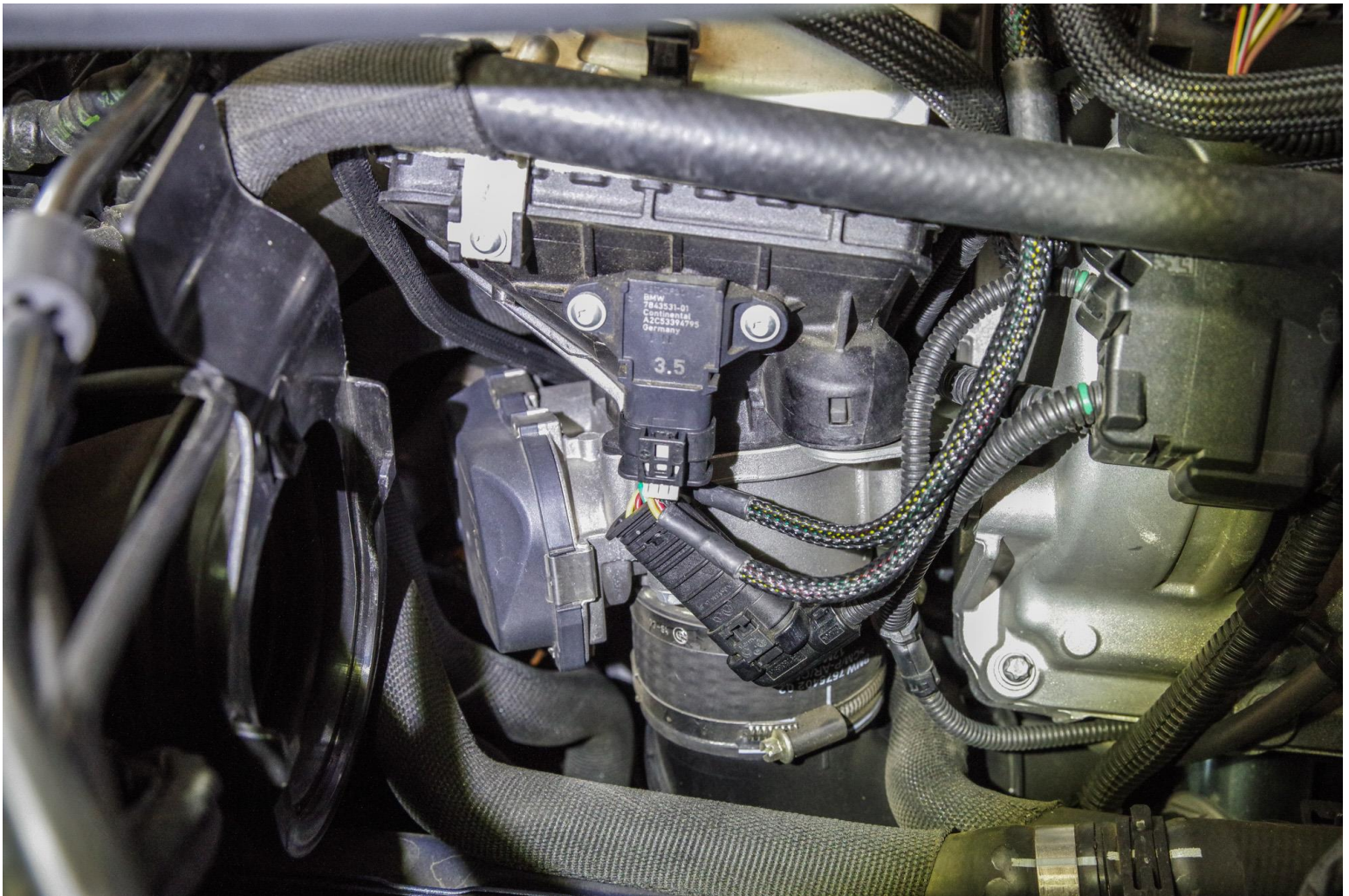




On the driver's side, find the TMAP sensor. Note that the factory connector on this side is a different style. It does not have a locking mechanism and is removed by pressing on the small squared off section shown in the below photo. Press at this section and remove the factory connector.



Now attach the tuner's rainbow female connector at the sensor and attach the factory connector you removed to the tuner's rainbow male connector, as shown.





Route the harness and tuner's circuit board toward the driver's side of the vehicle. You will be placing the control box outside of the engine compartment under the cover.

#### **Step 4: Placement of the harness and control box**

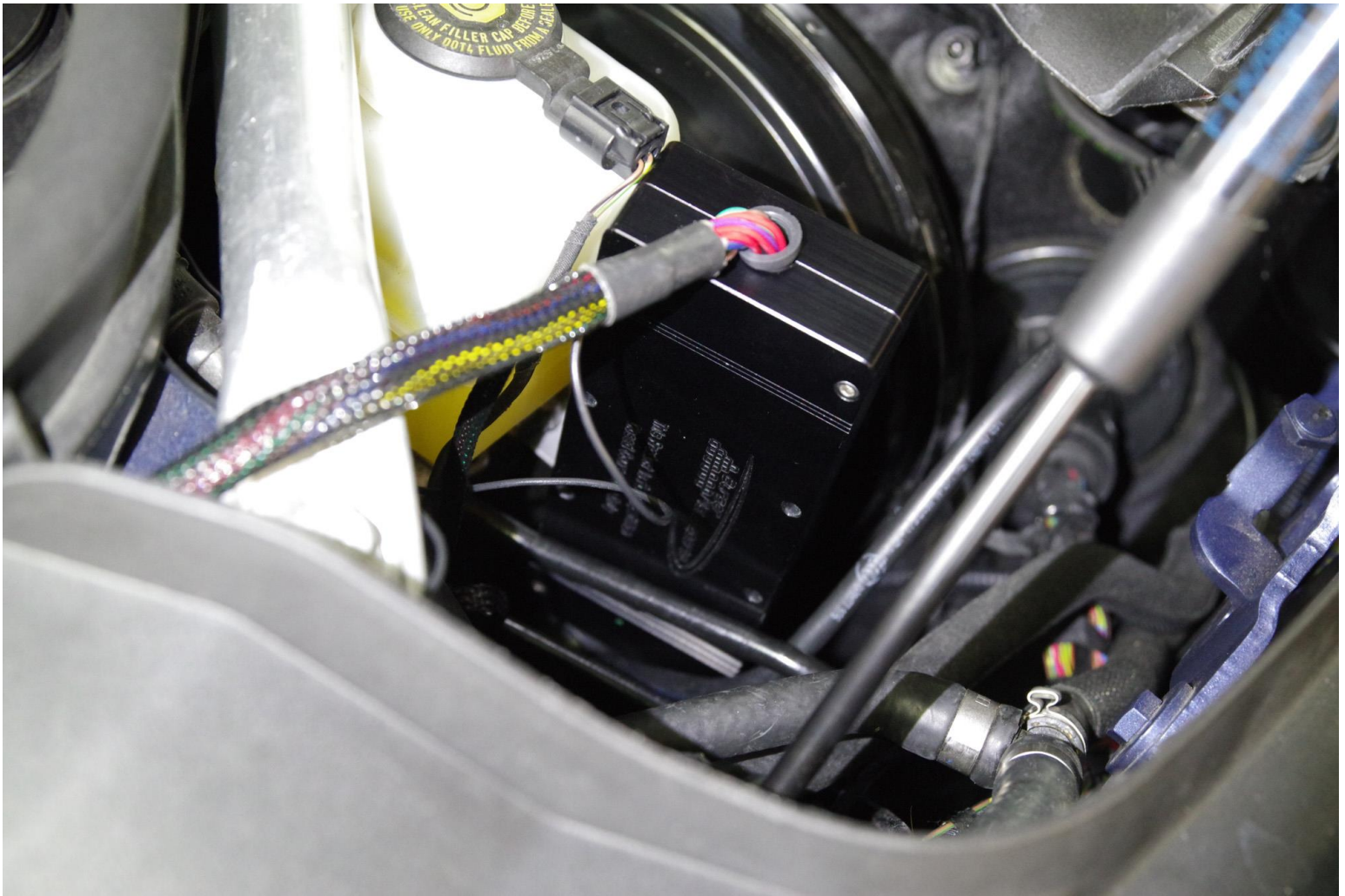
First, remove the driver's side cowl cover at the rear of the engine compartment. Using a trim removal tool or flathead screwdriver, release the 3 expanding rivets by raising the center section, then removing the rivets.



Pull up on the plastic cover to release it. Then pull the rubber hood seal away from the plastic to allow room to pass the control box and harness through to the corner compartment from the engine compartment, near the shock tower. A rubber cover allows clearance to pass the harness through.



If you are installing a Stage 1 tuner, insert the control box near the brake booster as shown. Skip to step 8.



With a JB4 installation, it's time to run the OBDII cable.

### **Step 5: Connect the OBDII cable to the vehicle. (JB4 only)**

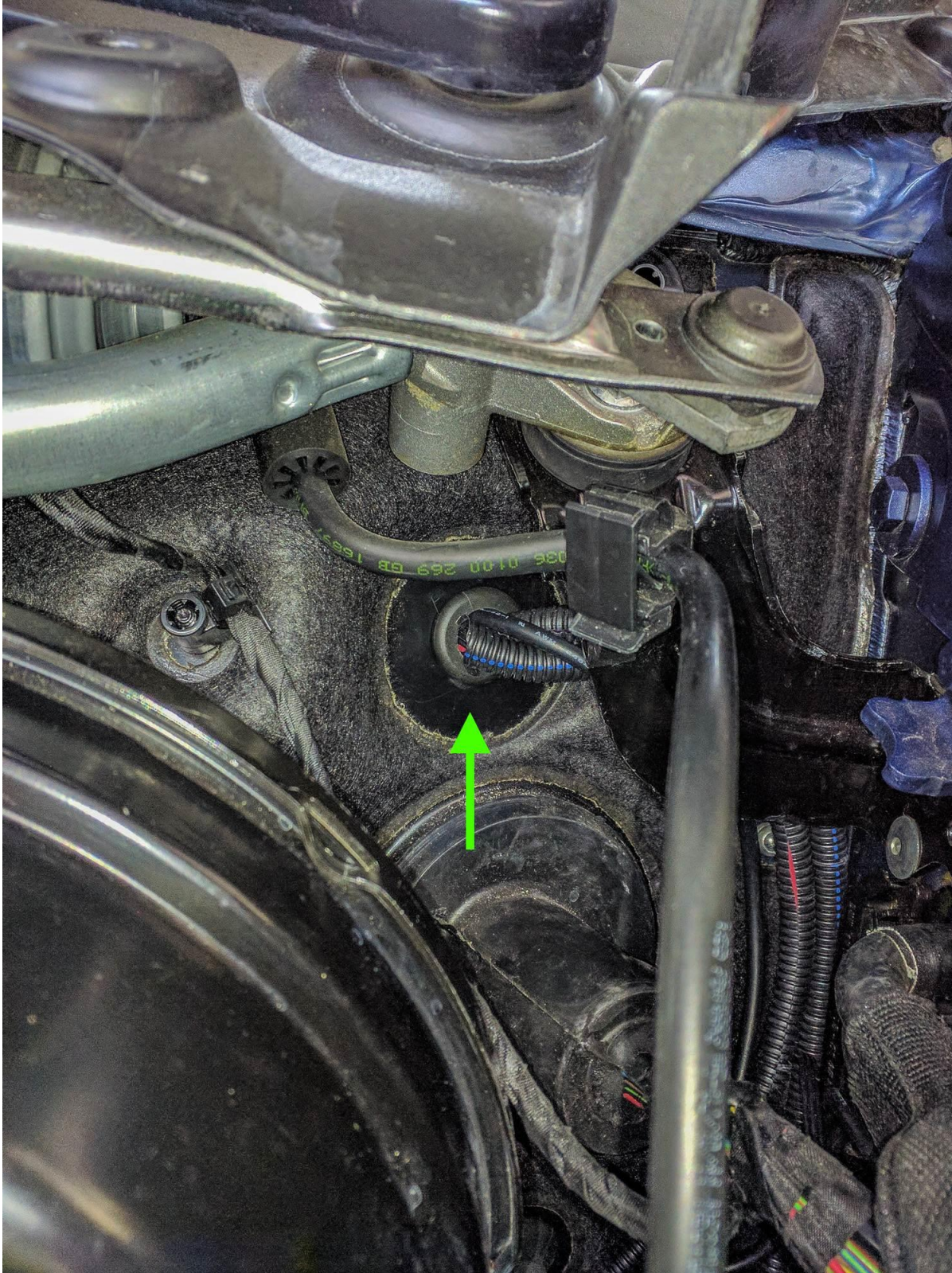
Remove the airbag panel from the driver's side footwell. Three fasteners need to be removed to do this. Two T30 Torx fasteners hold the airbag panel up at each corner. Find these toward the front of the panel, at the bottom edge. Additionally, the panel is tucked under a carpeted panel at the center console. A T20 Torx fastener holds this panel in.



Remove the screws, and pull the front of the carpeted panel away from the center console carefully. A few plastic rivets hold it in place. You only need to release the front rivet to provide adequate clearance. Once loose, the whole airbag panel can be lowered by tugging down on the front edge. As the side near the center console comes down, it will interfere with the carpeted panel and you must hold this out of the way as you lower the airbag panel.

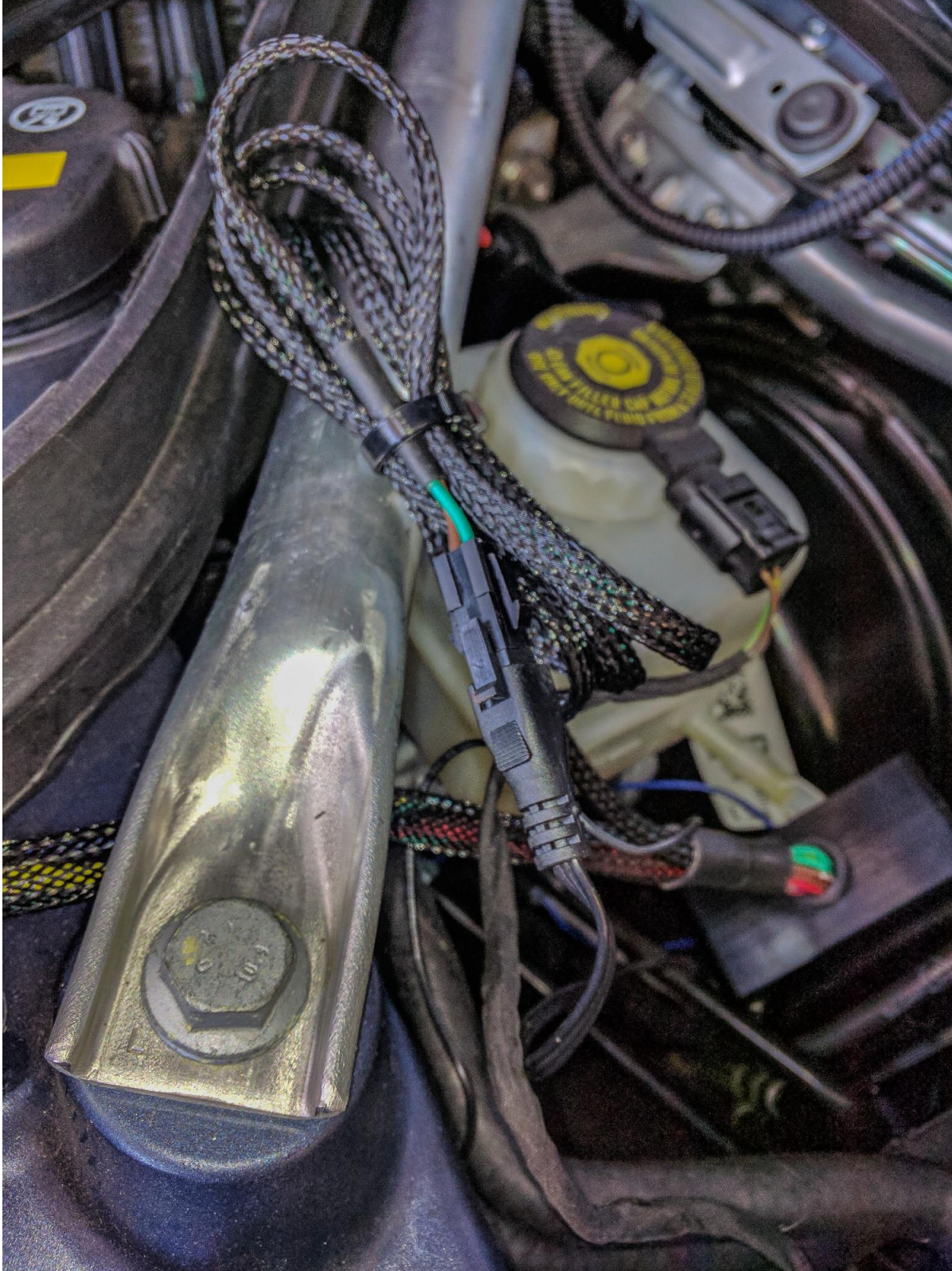


Now go back to the corner cowl compartment under the hood. Near the brake booster you will find a fabric cover that will be removed, and underneath you will find a grommet covering a hole to pass the OBDII cable through the firewall. Remove the fabric cover, then poke a hole in the grommet to pass the OBDII cable through.





You may find it easier to drop a wire or string in from this side to pull the OBDII cable through the firewall. Route the OBDII cable through the hole and connect it to the JB4's harness at the Molex connector as shown, noting the orientation of the connector clips.





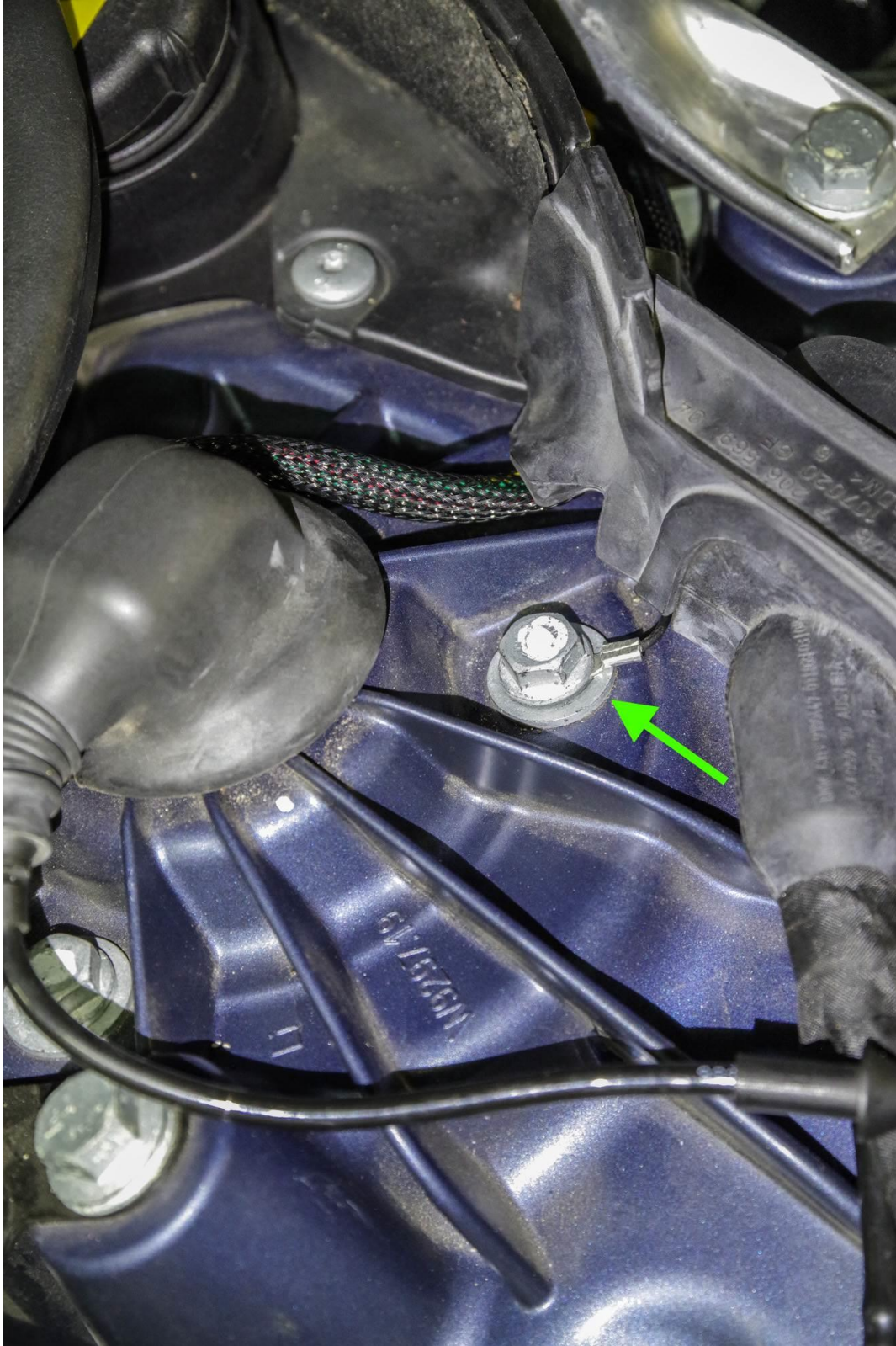
Inside the vehicle, route the OBDII harness around the edge of the airbag panel. It will be plugged into the OBDII port as shown.



Replace the airbag panel, reattaching the fasteners that hold the panel in place. Replace the screw holding the carpeted panel making sure to tuck the edge of the airbag panel under it.

## Step 6: Attach ground wire at shock tower bolt

Using a 13mm socket and ratchet, loosen the shock tower bolt shown. Route the JB4 ground wire carefully to this location, then retighten the fastener.





## Step 7: Attach the BCM solenoid connectors (JB4 only – optional)

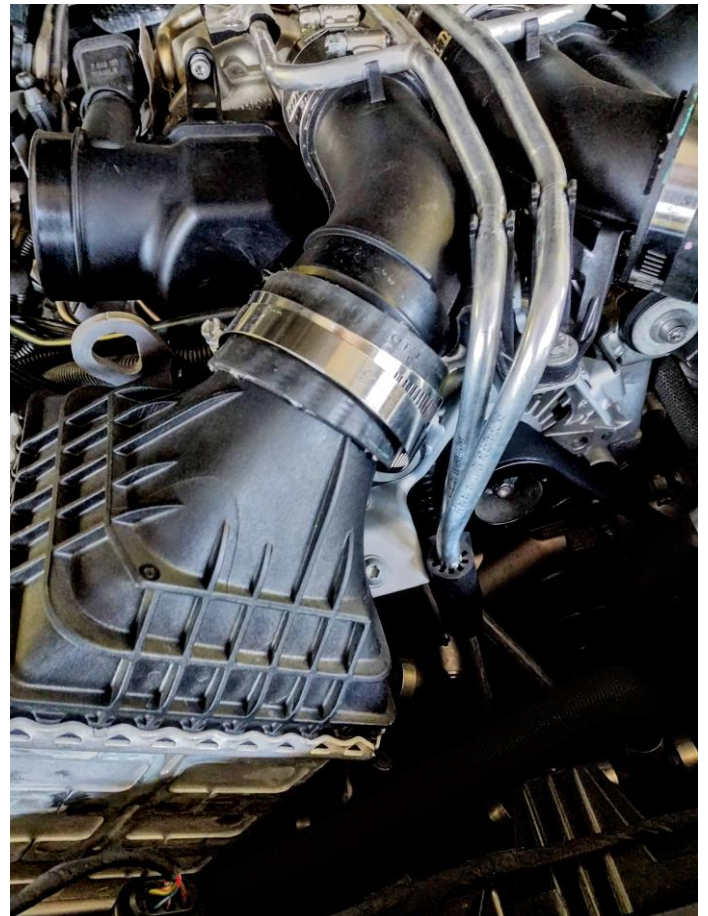
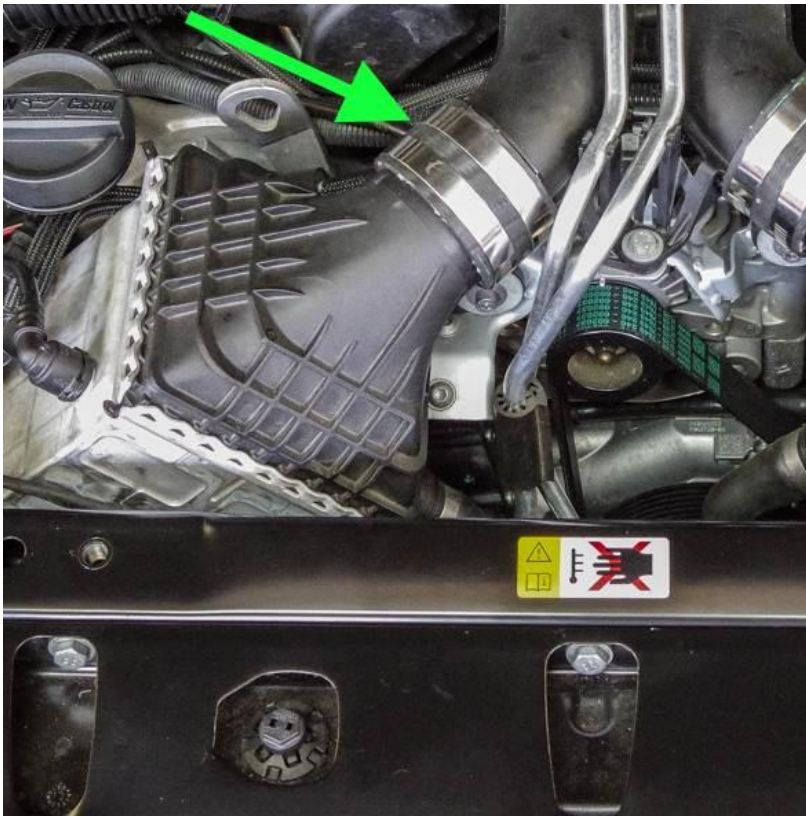
**On a new install, we recommend skipping this section and moving on to the next step, ensuring the vehicle runs and drives normally before proceeding. Any issues will be easier to troubleshoot with only the TMAP and OBDII connections in place. This is the most difficult and time-consuming part of the install.**

**The solenoid connections are not required for pump gas installs running map 1. They are intended for vehicles running map 2+, generally with higher octane fuels or methanol injection.**

To access the boost solenoids, the passenger side intercooler must be moved aside. There are two ways to achieve this. You can either detach all of the coolant lines from the intercooler, losing approximately a quart of coolant, or you can leave the coolant lines attached, removing the metal brace at the front of the engine compartment for clearance to reach the connectors. Both are time-consuming, but disconnecting the coolant lines allows for easier access to the solenoid connections.

In either case the intercooler must be detached from the turbo outlet chargepipe.

Note: Our hose clamp has already been replaced, yours may be a stock Oetiker-style clamp and you will have to use a pair of nippers to remove...**DO NOT REMOVE DRIVER'S SIDE** unless you want to replace the clamps. We will not be disconnecting the driver's side intercooler for this install so it does not have to be removed.



Once you have removed the clamps, push the rubber coupling onto the intercooler as shown.

Loosen the T30 Torx bolt holding the intercooler in place. Note that the chargepipes have been removed from the vehicle in this photo, which is not required.





Near the TMAP sensor on the passenger side, find the top clamp holding the intercooler to the intake manifold via the rubber coupling. Loosen this top clamp using a 6mm socket and ratchet with extension.

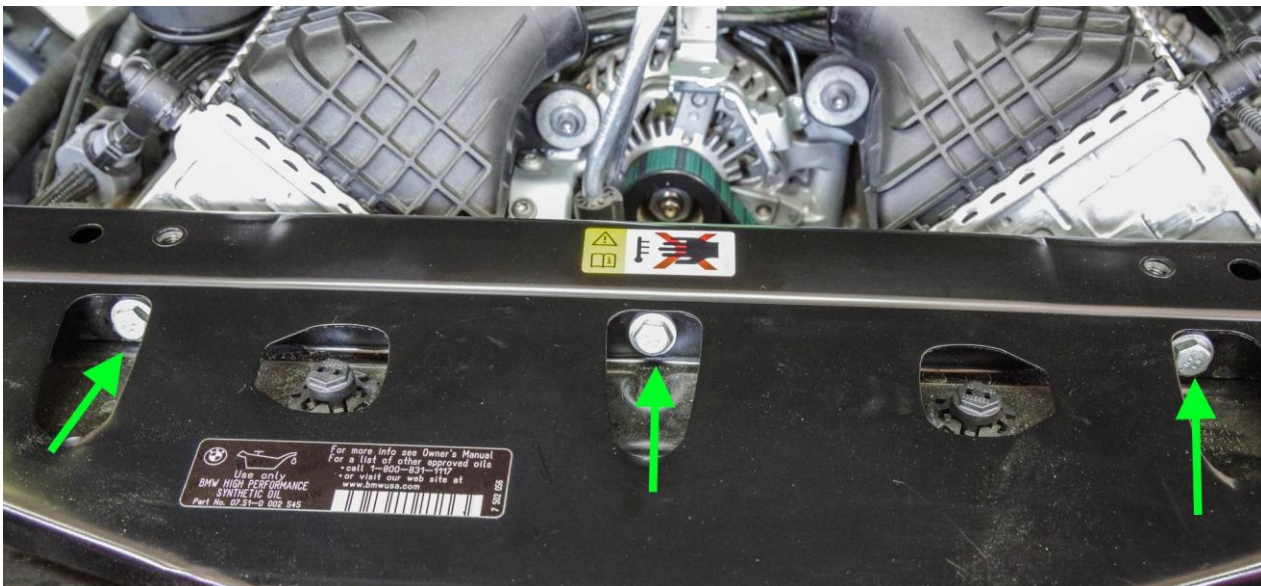


If you are disconnecting the coolant lines, release them by pulling back the retaining clips at the 3 hoses, then disconnecting the hoses. Try your best to catch the coolant that comes out.

Using a T20 Torx driver, loosen the fastener holding the evaporative valve on the intercooler, detaching the hose and electrical connections on the valve.



If you are not removing the coolant hoses, you will now need to remove the brace at the front of the engine compartment. Loosen and remove the nine 13mm bolts holding the brace in place. Three are accessible as shown.



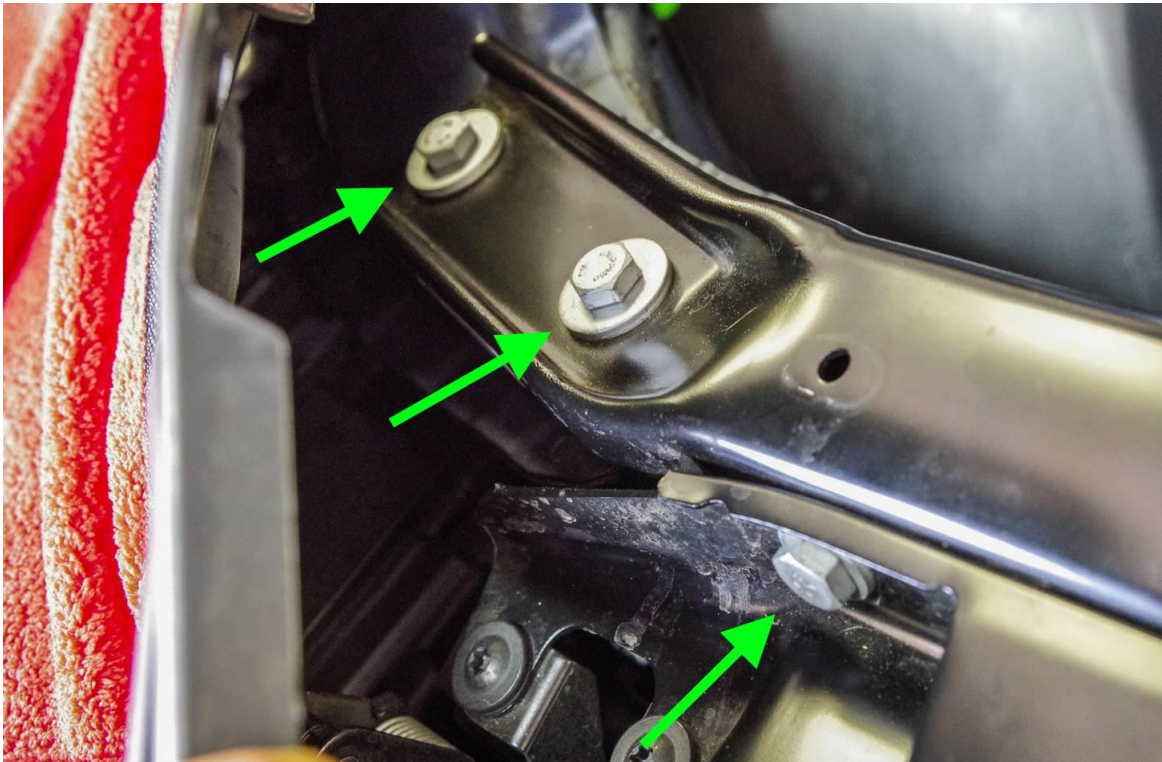


An additional 3 bolts per side must be removed at the ends of the brace that are covered by some plastic trim. First you will remove 2 plastic rivets at each corner to loosen the panel. Do this at both sides.

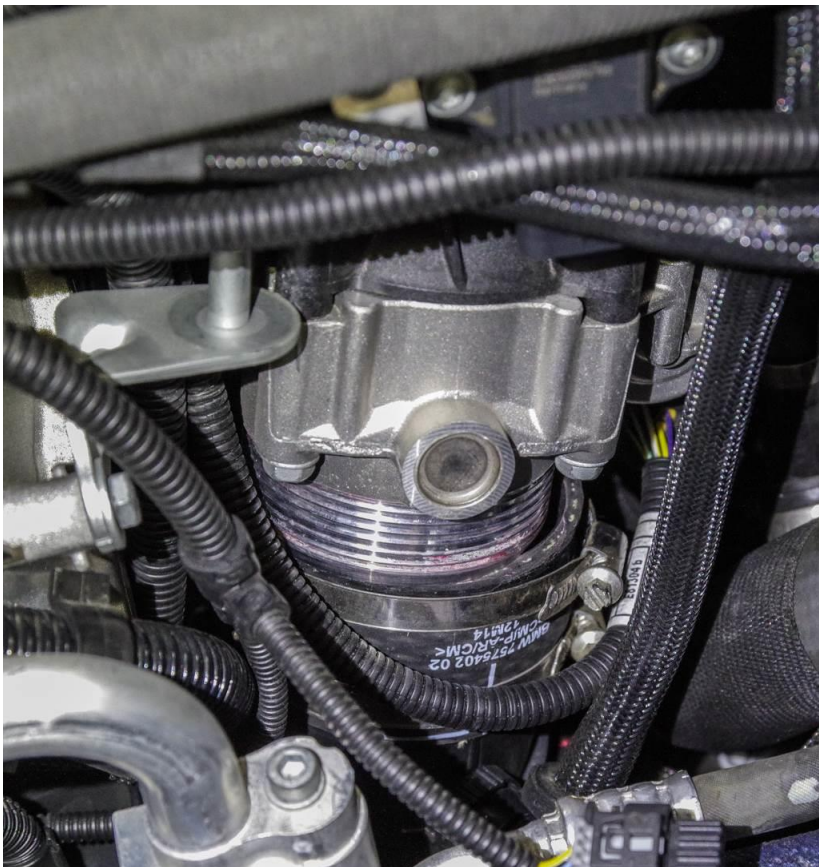




Now hold the trim up out of the way while you remove the bolts underneath. Repeat on both sides. Remove the remaining bolts as shown, then remove the brace from the vehicle and set it aside.

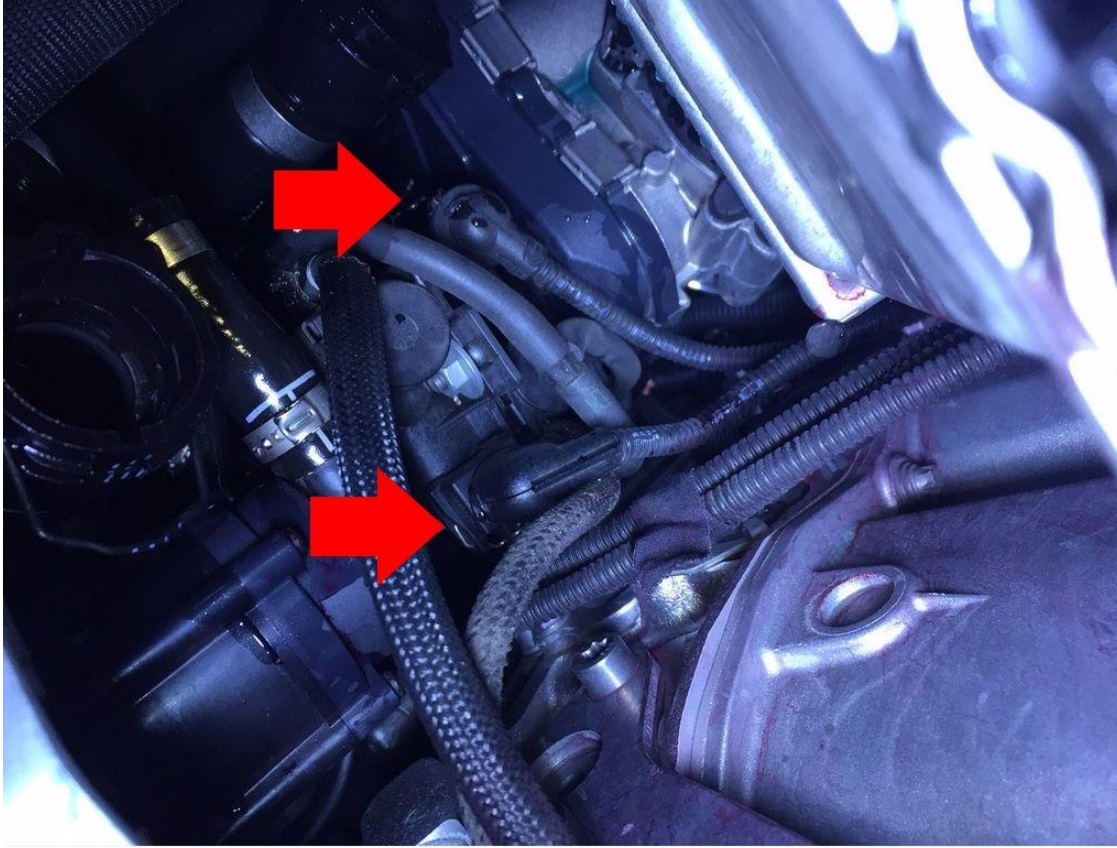


With the brace out of the way or coolant lines disconnected, you can now move the intercooler up enough to gain access to the solenoid connections underneath. The intercooler sits on a pin that aligns it. Raise the intercooler a few inches until the unit is resting on top of the rubber coupler as shown.





The solenoid connections can be accessed now. A photo of these connections is shown below, with the intercooler removed. Work one solenoid at a time. The solenoid closer to the passenger side of the vehicle is more difficult to reach. You can see the driver's side solenoid connection behind the intercooler. You can start with either one, but work one at a time to avoid mixing up any connections.



#### Passenger side solenoid:

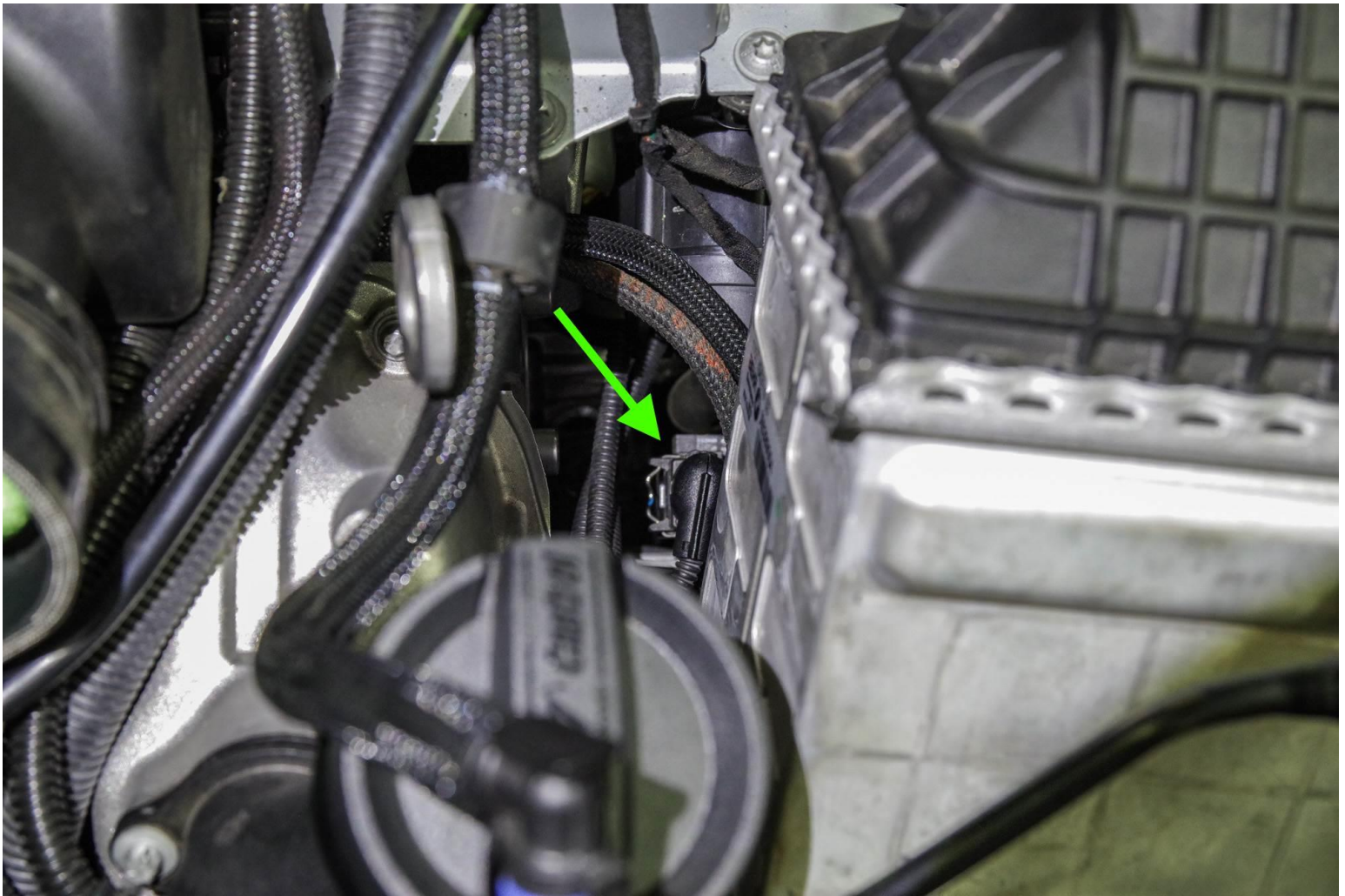
Using light pressure, press the intercooler toward the passenger side of the vehicle, allowing for clearance to place your hand between the intercooler and its underside. You can use a screwdriver or other tool to press onto the retaining clip that holds the harness connector in place. It is possible to fit your hand in this location to pull the connection loose without disconnecting the coolant lines, but it is a tight fit. Once removed, pull the wire connection you disconnected toward the back of the vehicle. Connect the JB4's green/purple female connector onto the solenoid, and attach the green/purple male connector onto the factory connector you removed.





## Driver's side solenoid:

The driver's side connection is considerably easier and can be reached by pushing the intercooler toward the front of the vehicle slightly. Press the retaining clip, remove the connector, and place the JB4's brown/blue female connection onto the solenoid. Connect the brown/blue male connection to the factory connector you removed.



If you disconnected the coolant hoses, replace them, making sure the retaining clips are properly placed. Push the intercooler back into place, aligning it on the mounting pin and into the rubber coupling at its base. Retighten the clamp near the TMAP sensor. Replace the T30 Torx bolt. Slide the rubber coupling back from the chargepipe over the intercooler and place two No. 40 clamps in place of the Oetiker-style clamps you removed earlier. Reconnect the evap valve to the side of the intercooler, making sure to reconnect its hose and electrical connection. Replace the 10mm bolt holding the chargepipes in position. Reattach the brace if removed, and reattach the trim panels and their plastic rivets.



## **Step 8: Replace the airboxes**

Reversing the removal procedure, replace the airboxes you removed from the vehicle in step 2. Slide the front of the airbox into the air inlet slot, pop the airbox back onto the ball stud, connect the hose to the turbo inlet housing, tighten the clamp, replace the airbox fastener, and reattach the hoses.

## **Step 9: Final installation steps**

Making sure to properly place the control box under the covered area, replace the trim panel in the corner, replacing the plastic rivets. Make sure the rubber hood seal is refastened. Reconnect the battery's negative terminal, refasten the plastic nuts on the trunk floor liner.

If you disconnected the intercooler coolant hoses, you must refill and purge the system of air. Refer to this link for additional information:

<https://blog.bavauto.com/13140/bmw-coolant-bleeding-how-to-electric-waterpump-water-pump-no-bleeder-screw/>

## **Step 10: Completing the install**

Start the vehicle, and drive around normally until it reaches operating temperature. Then with progressively heavier throttle applications, make sure you allow the vehicle to adapt to the new power.

For a stage 1 tuner, you're done. The JB4 offers additional options like selectable maps, and you can find more information on the last page of this guide.

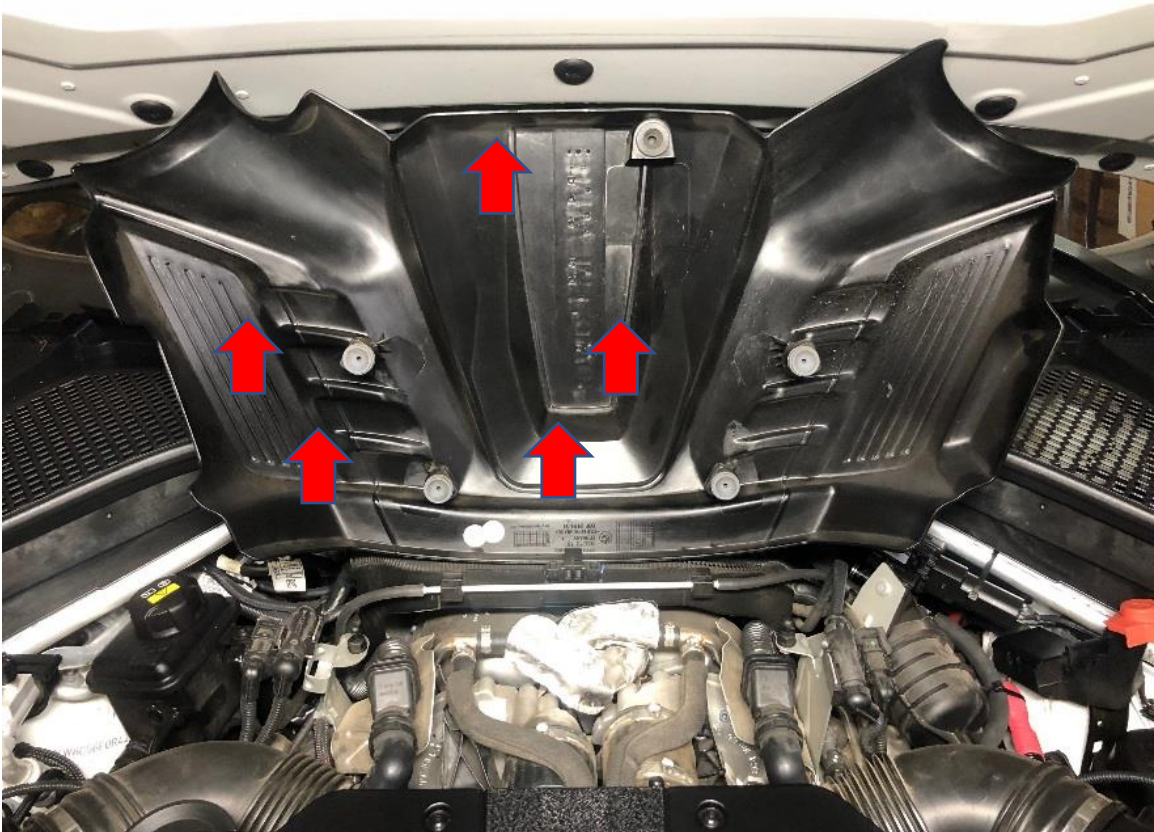
## X5M/X6M Directions:

### 1. X5M/X6M engine bay



### 2. Remove top engine cover over turbos.

- a. Pull straight up until the 5 grommets release.





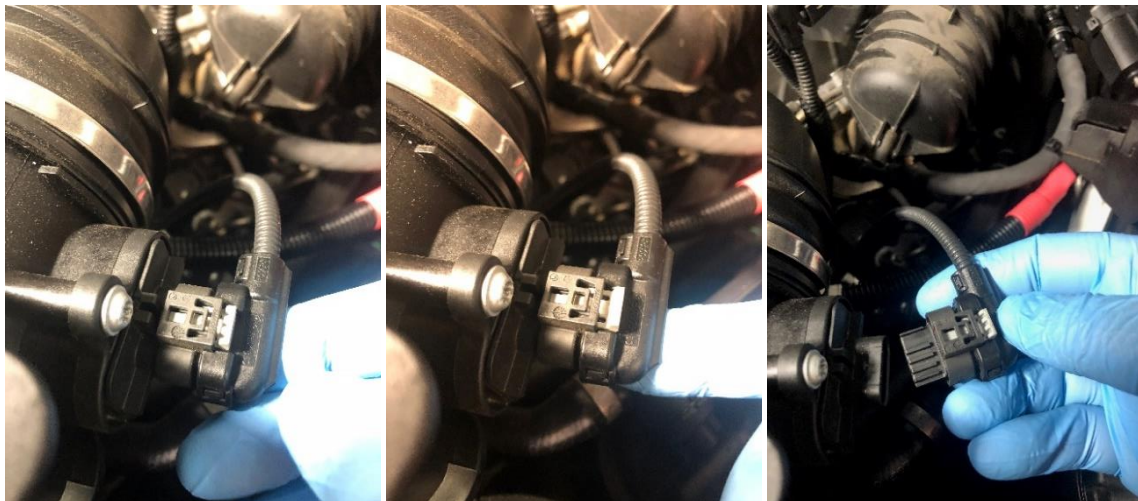
### 3. Disconnect turbo inlet hoses

- Loosen the driver's side and passenger side inlet hose clamps with a 6mm socket or flathead screw driver.
- Disconnect the hoses.
- Plug them with a towel.



### 4. Disconnect the MAF sensor on the driver's side and passenger side.

- Extend the gray clip
- Press to release
- Pull connector out to disconnect.



### 5. Remove intake filter and radiator cowl.

- Pull up on both sides of filter to release the three grommets holding it in place.
- Slide filter and cowl toward passenger compartment to disengage clips.
- Remove the whole assembly.





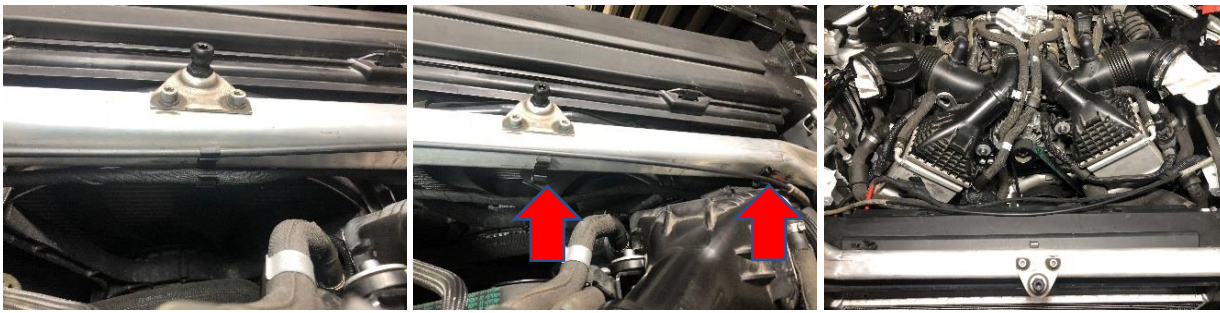
**6. Remove the silver cross brace and intake grommet brackets.**

- a. Remove the four 13mm bolts
- b. Remove driver's side and passenger side grommet brackets



- c. Remove hood latch cable and power cable from clips on silver bar (they clip in 2 places)





**7. Disconnect passenger side intercooler coupler**

a. Remove the passenger side hose clamp to intercooler inlet

- i. Note: Our hose clamp has already been replaced, yours may be a stock Oetiker style clamp and you will have to use a pair of nippers to remove as shown in the picture on our driver's side clamp...DO NOT REMOVED DRIVER'S SIDE unless you want to replace both clamps. We will not be disconnecting the driver's side intercooler for this install so it does not have to be removed.



b. Remove T30 bolt holding intercooler to motor

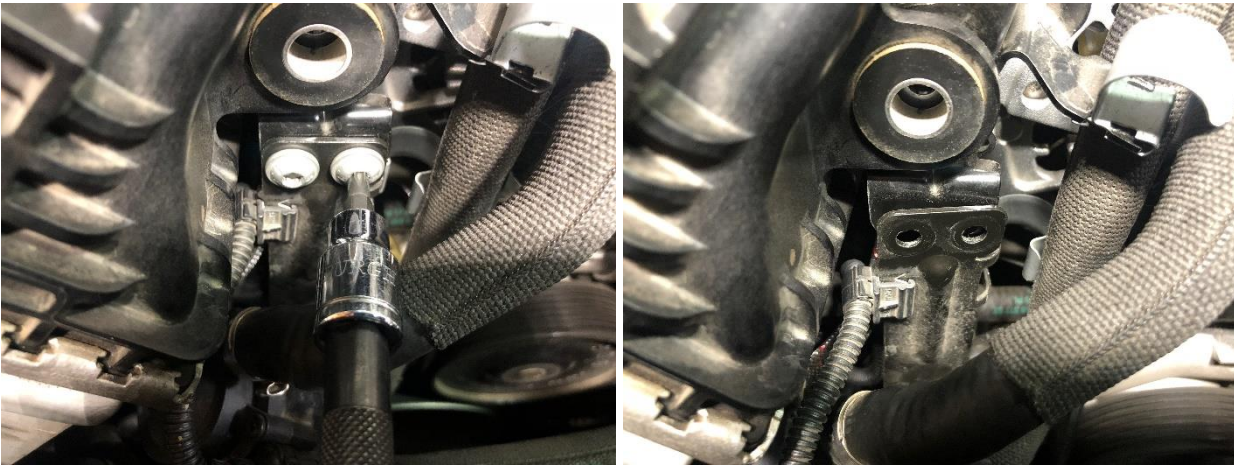




c. Remove coolant lines from the 4 retaining clips



d. Remove both T30 bolts to disconnect solenoid bracket



e. Release coolant hose and remove T30 bolt for hose bracket





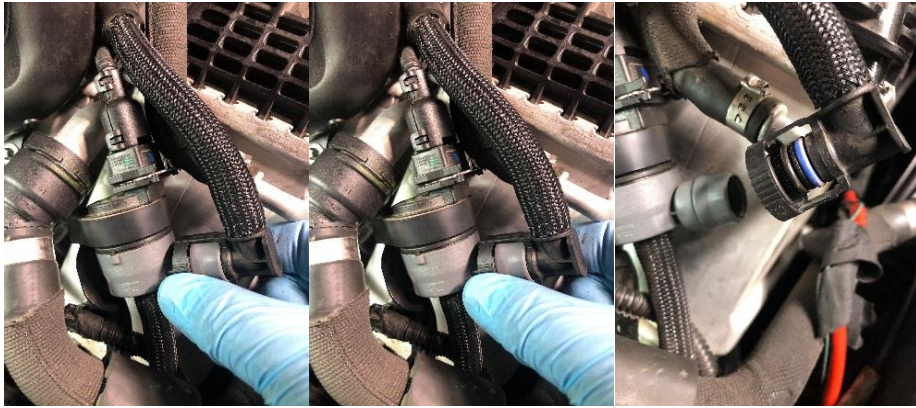
f. Disconnect TMAP sensor (same connector as MAF)



g. Loosen intercooler hose clamp with a 6mm socket (tip: use a 3" extension)



h. Disconnect evap hose



i. Disconnect evap connector

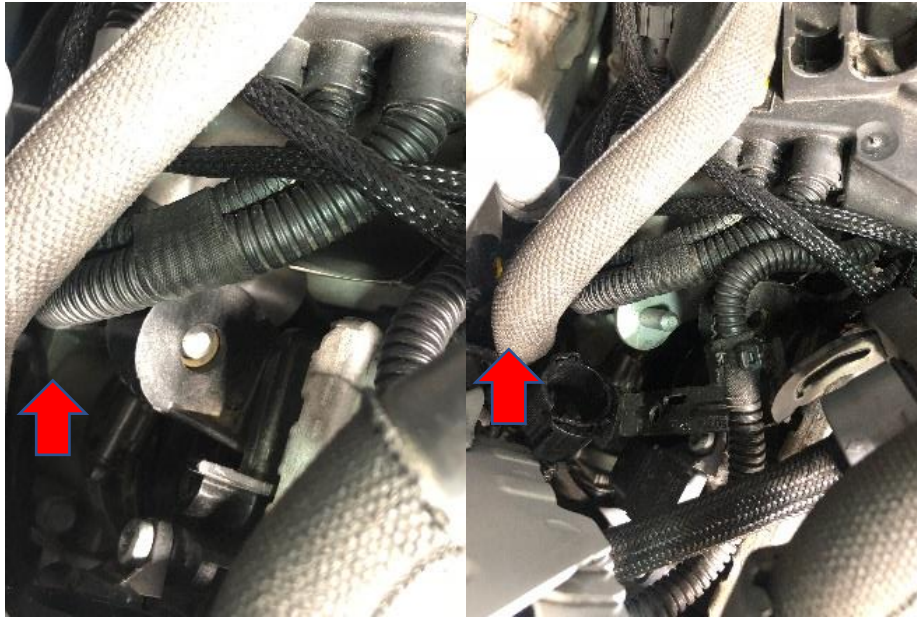


j. Pull intercooler out of silicone hose coming from the passenger side turbo and plug

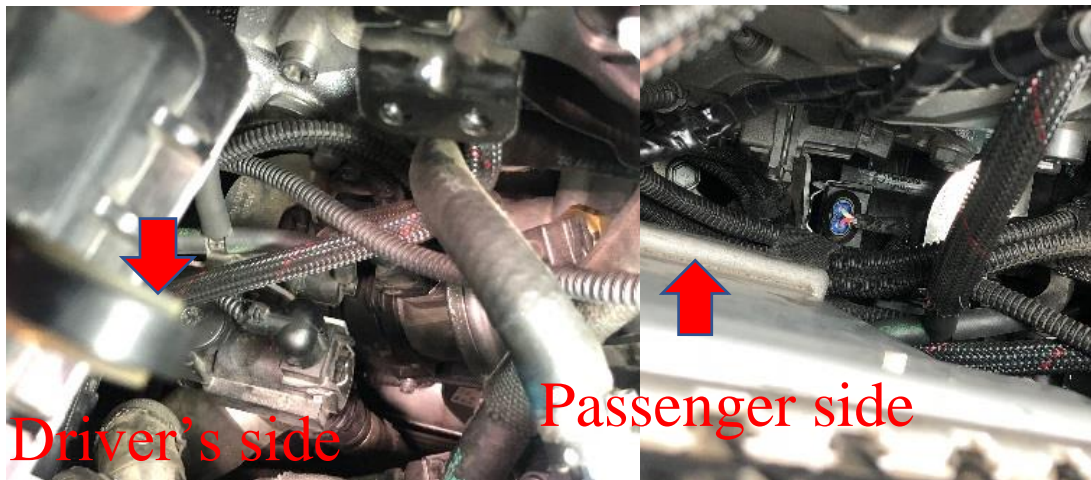




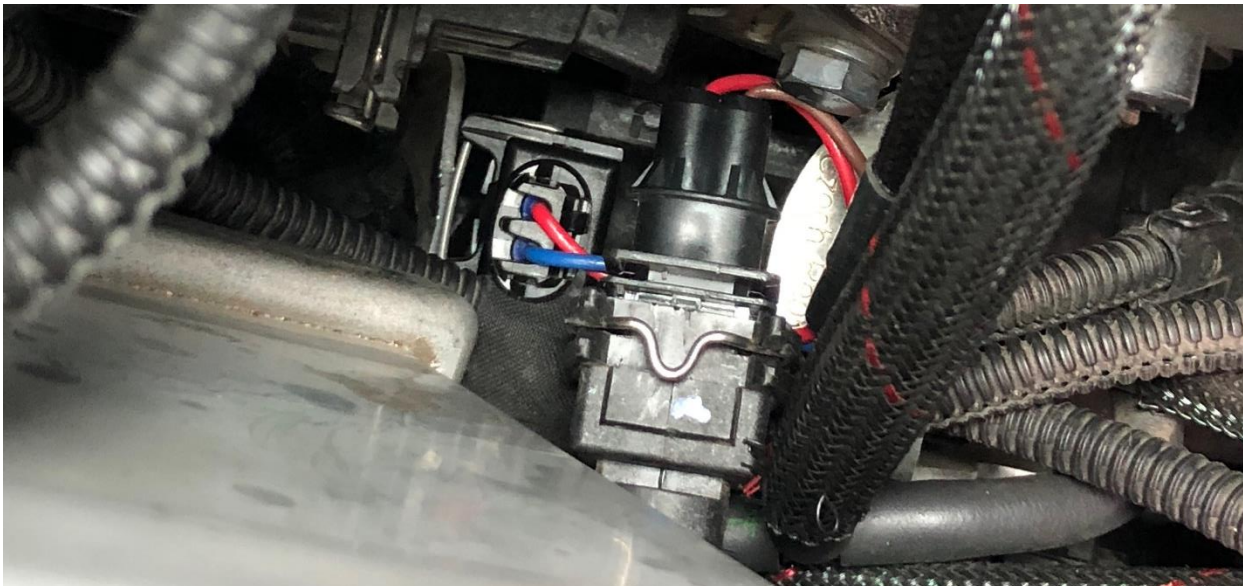
- k. Pull up on intercooler to disconnect from throttle body and remove from pin holding it in place.



- l. Pull the passenger side intercooler to the side and locate boost solenoids

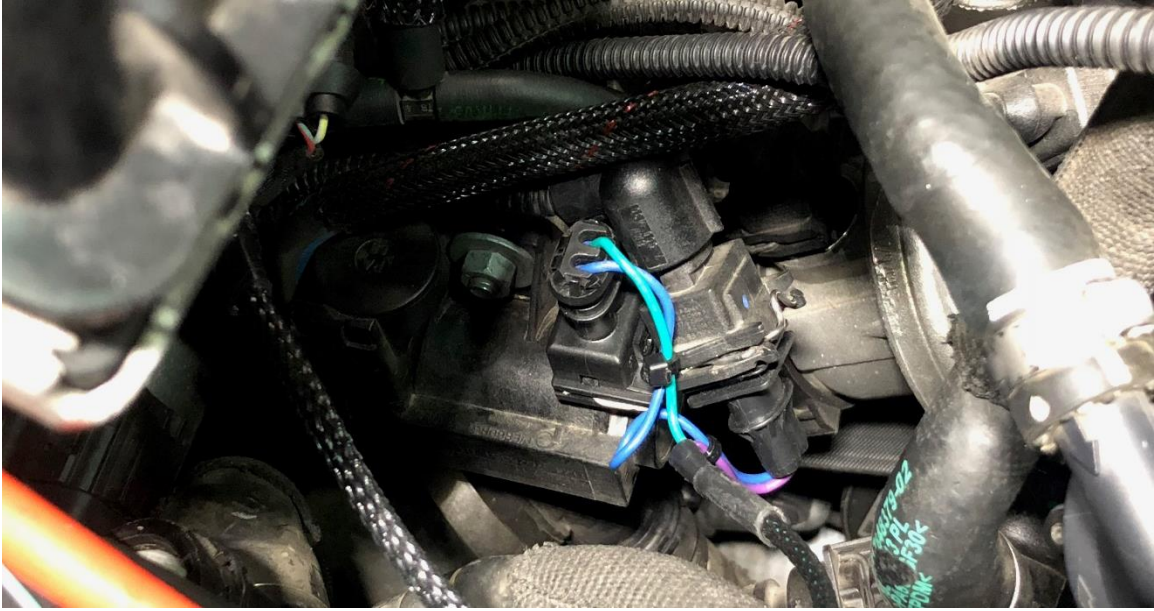


- m. Disconnect the stock passenger side solenoid the same way you did the evap connector and connect BCM Brown, Red, and Blue female connector to passenger side boost solenoid.
- n. Connect the BCM Brown, Red, and Blue male connector to the stock female connector for the passenger side boost solenoid.

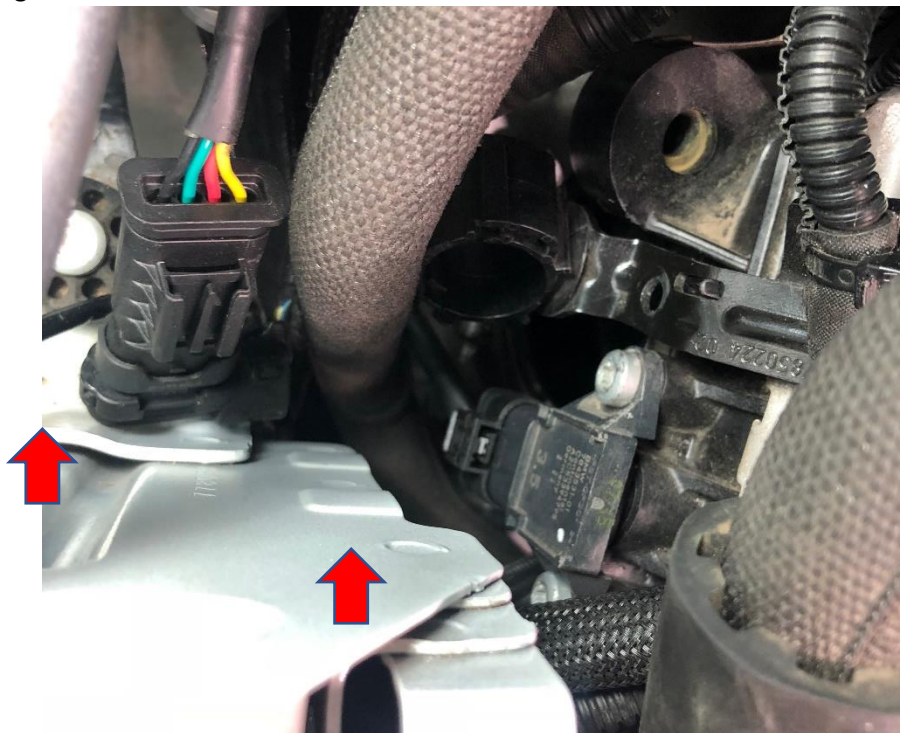




- o. Disconnect the stock driver's side solenoid.
- p. Connect BCM Purple, Green, and Blue female connector to driver's side boost solenoid.
- q. Connect the BCM Purple, Green, and Blue male connector to the stock female connector for the driver's side boost solenoid.



- 8. Install JB4 Passenger side TMAP male and female connections
  - a. Connect passenger side rainbow connector to TMAP on the intercooler





9. Reseat intercooler in to the silicone throttle body coupler
  - a. Make sure intercooler is completely seated
  - b. Tighten 6mm hose clamp
10. Reinstalled hose bracket with T30 bolt to intercooler (By TMAP)
11. Install hose in to hose bracket
12. Reconnect the evap connector and hose
13. Install top of intercooler in to turbo silicone coupler and replace/tighten the hose clamp.
14. Reinstall the solenoid bracket with the two T30 bolts
15. Put coolant lines back in the 4 retaining clips
16. Install T30 bolt and large washer in to intercooler retention bracket.
17. Install JB4 drivers side TMAP connection with brown and black wires (same place as passenger side on intercooler but on driver's side intercooler)
18. Reinstall silver brace with the four 13mm bolts and grommet brackets
19. Install the filter and cowl assemblies.
20. Plug in MAF connections.

Find the latest information on the JB4, including, software, firmware, and more information here:  
<http://www.n54tech.com/forums/showthread.php?t=31292>

### Map Guide for All Models:

Map 0: JB4 disabled

Map 1: 4-5psi over stock additive. The JB4 comes preset to map1 and it's suggested for most pump gas applications with and without BCM wires attached.

Map 2: 22psi peak absolute. BCM wires required. In some cases we've found this map maxes out the factory fuel trims so it's a good idea to datalog if you plan to use map2 to evaluate your fueling. In those cases where fuel trims are maxing out only map1 or map3 should be used without meth injection.

Map 3: 18psi peak absolute, suitable for lower grade fuels

Map 4: Stock map w/ CANbus enabled

Map 5: //M map ramping boost up to redline (BETA)

Map 6: Custom target map

Map 7: 25psi peak (e.g. race gas, BCM required)

Map 8: Progressive meth map. Peak boost based on meth additive. 0 = 19psi, 75 = 30psi. BCM suggested.

Note without BCM the higher target maps may under target on boost.

### Current dash settings as of OBDII v2 firmware:

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'BC In Dash Menu

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Press and hold the BC button until the left blinker sticks on and the speedo and tach drop to 0. Once in the menu system as you press the BC button you'll toggle through menus on the speedo. Where 0mph = menu0, 10mph = menu1, 20mph = menu2, etc. When on a menu if you press and hold the BC button again the blinker will shift to the right and then that menu's current value will appear on the tach. Tap the BC button to scroll through options on the tach. Press and hold the BC button to save the setting and exist the in dash system.

'0 map menu, map shown on tach (TACH shows Map)

'1 Active Sound MUTE. (OFF tach = 0, ON tach = 1000)

'2 Boost gauge on fuel, scaling in dash is 0 to boost safety setting, turns on when gas pedal is pressed 50% or more and turns itself off when you resume low throttle use. Tach = 0: OFF; Tach = 1000: Boost on fuel only; Tach = 2000 Boost on fuel, WMI flow on speedo ring; Tach = 3000 Boost on fuel, Ign timing on speedo ring; Tach = 4000 boost on fuel, AFR on speedo ring.

'3 LED MAX brightness mode. For those with factory LED headlights this option brightens HALO during nighttime operation. (OFF tach = 0, ON tach = 1000)

'4 Delete Fault Codes.

'5 Adjust speedo for metric dash (tach = 0 SAE, tach = 1000 Metric)

'6 1st gear boost limiter. (Tach = boost cap / 3)

'7 2nd gear boost limiter. (Tach = boost cap / 3)

'8 3rd gear boost limiter. (Tach = boost cap / 3)

Note to enable the in dash menu for X5M/X6M models you must use a BMS data cable or JB4 mobile to enable FutureUsed bit2. After enabling you'll need to lock doors and wait a few minutes for the DME and JB4 system to reset and register the change.