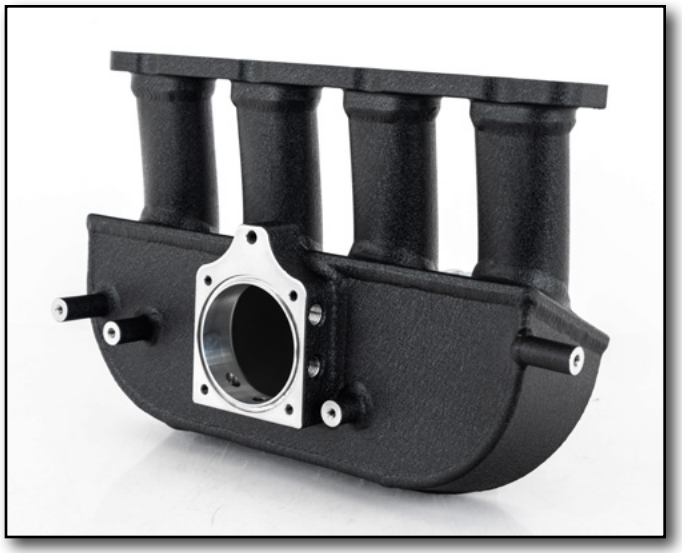
VW-Audi 2.0T TSI Aluminum Intake Manifold Installation Instructions - Click HERE to Shop

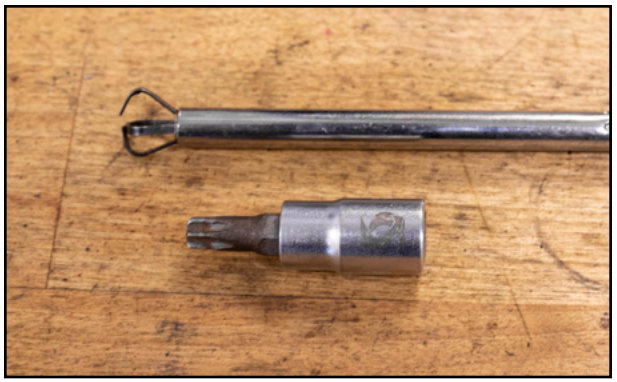
Skill Level
3 - Advanced

Advanced Skills & Experience Recommended



INTRODUCTION

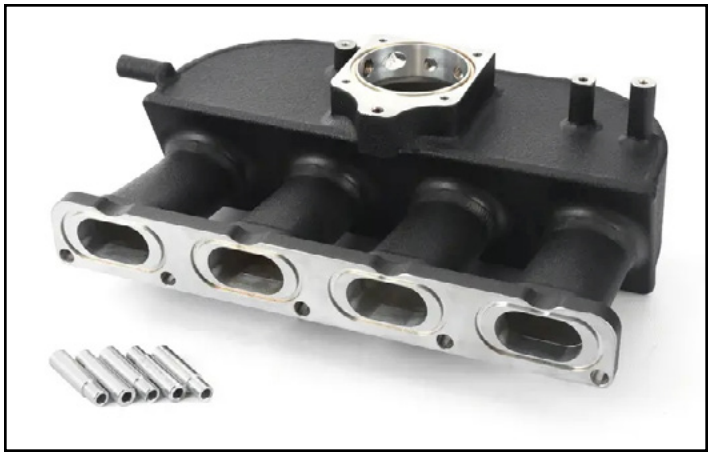
Introducing our fabricated aluminum intake manifold for the 2.0T TSI engine! This manifold has been designed from the ground up with performance in mind. The large plenum volume increases throttle response, promotes even air flow distribution to each runner, and features NPT ports on each runner as well as underneath the throttle body which can be used for auxiliary fueling, cooling, or power adders. This manifold eliminates the problematic runner flap system, so you will see a change in idle quality and overall driveability as a result of the removal of that system. This manifold should not be your only modification, it is meant to compliment a bigger turbo, meth injection, or other serious power adders.



The photo on the right shows what we picked as our "must have" tools for this job. A ¼" drive T25 socket and telescoping grabber tool are worth their weight in gold when it comes time to remove the tough-to-reach hardware along the bottom of the intake manifold. Check out Page 5 for more required tools.

This install is not for the faint of heart or the mechanical novice. A seasoned pro might be able to finish the job in a single day, but you should probably plan on dedicating a weekend to the job. Be sure to read all of these instructions ***BEFORE*** you start the install. Check the required tool list to make sure you have everything you need. Thank you for looking to ECS Tuning for all your performance and repair needs, we appreciate your business!

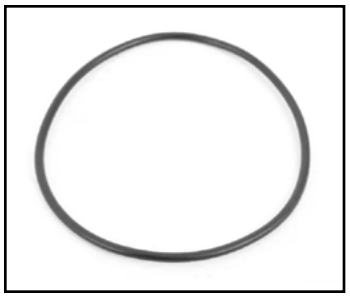
TABLE OF CONTENTS



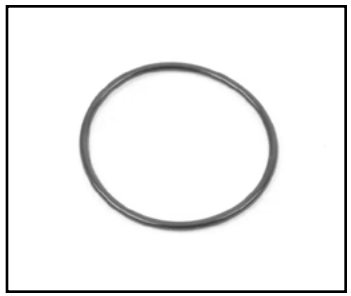
ECS Aluminum Intake Manifold w/Fuel Rail Standoff Posts
(available in black powdercoat or raw finishes)

BASIC INSTALL KIT CONTENTS

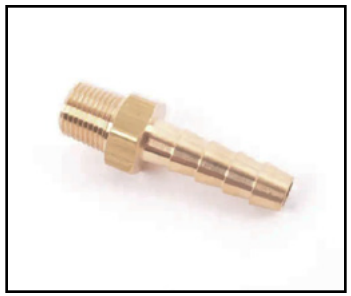
Note: All of our manifolds come w/this install kit. TSI-specific kit shown on Page 4.



Throttle Body O-Ring Seal
(QTY 1)

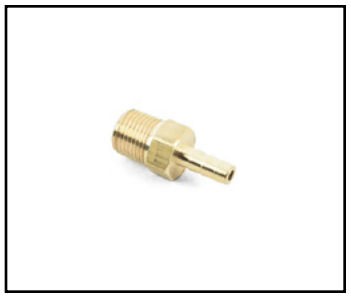


Intake Runner Flange
O-Ring Seal **(QTY 4)**



⅛ NPTF ¼" Hose ID
Barbed Fitting **(QTY 1)**

¼ NPTF 5⁄16" Hose ID
Barbed Fitting **(QTY 2)**



⅛ NPTF ⅛" Hose ID
Barbed Fitting **(QTY 1)**

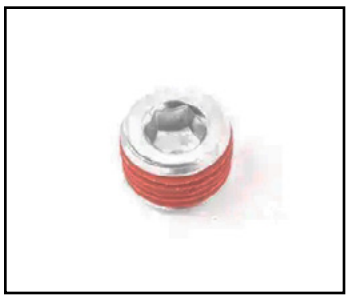
M6x65mm Bolt
(QTY 7)

M6x40mm Bolt
(QTY 4)

M8x35mm Bolt
(QTY 1)

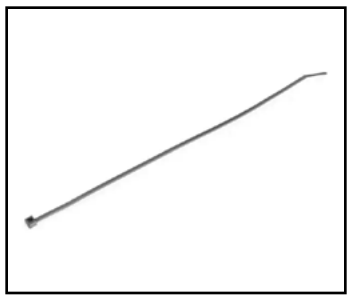
Vibration Damper
(QTY 1)

8mm ID Vacuum Cap
(QTY 1)



⅛ NPTF Threaded Plug
(QTY 6)

¼ NPTF Threaded Plug
(QTY 2)



Cable Tie
(QTY 12)

M6x12mm Bolt
(QTY 4)

M6x20mm Bolt
(QTY 1)

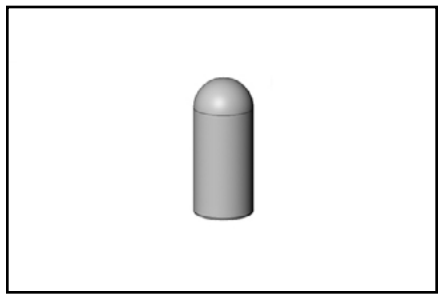
TSI-SPECIFIC INSTALL KIT CONTENTS

5/16" ID Fuel Hose
(48" length)

Plastic Hose "Tee"
(QTY 1)

5/16" Hose ID Barbed Union
(QTY 2)

12-14.3mm clamp
(QTY 10)



5/32" ID Vacuum Cap
(QTY 1)

REQUIRED TOOLS

Note: The tools required for each step will be listed by the step number throughout these instructions.

Standard Automotive Tools

- Protecta-Sockets (for lug nuts) ..... ES#2221243
- **⅜" Drive Ratchet** ..... ES#2765902
- **⅜" Drive Torque Wrench** ..... ES#2221245
- **⅜" Drive Deep and Shallow Sockets** ..... ES#2763772
- **⅜" Drive Extensions** ..... ES#2804822
- Hydraulic Floor Jack ..... ES#2834951
- **Torx Drivers and Sockets** ..... ES#11417/8
- ½" Drive Deep and Shallow Sockets ..... ES#2839106
- ½" Drive Ratchet
- ½" Drive Extensions
- ½" Drive Torque Wrench ..... ES#2221244
- ½" Drive Breaker Bar ..... ES#2776653
- Bench Mounted Vise
- Crows Foot Wrenches
- **Hook and Pick Tool Set** ..... ES#2778980

Required For This Install

- ¼" Drive Ratchet ..... ES#2823235
- ¼" Drive Deep and Shallow Sockets ..... ES#2823235
- ¼" Drive Extensions ..... ES#2823235
- **Plier and Cutter Set** ..... ES#2804496
- **Flat and Phillips Screwdrivers** ..... ES#2225921
- Jack Stands ..... ES#2763355
- Ball Pein Hammers
- Pry Bar Set ..... ES#1899378
- Electric/Cordless Drill
- Wire Strippers/Crimpers
- Drill Bits
- Punch and Chisel Set
- **Hex Bit (Allen) Wrenches and Sockets** ..... ES#11420
- Thread Repair Tools ..... ES#1306824
- **Open/Boxed End Wrench Set** ..... ES#2765907

Available On Our Website

Specialty Tools

- **¼" Drive Set (incl. ¼" Drive T30 Torx Socket)** ..... ES#2823235
- **Stubby Socket Driver Set** ..... ES#3103367
- **Telescoping Grabber Tool** ..... ES#3128444
- **VAG Connector Tool** ..... ES#2628676
- **Triple Square Sockets** ..... ES#1910125

INSTALLATION NOTES

- **RH** refers to the ***passenger side*** of the vehicle.
- **LH** refers to the ***driver side*** of the vehicle.
- Always use the proper torque specifications.
- If applicable to this installation, torque specifications will be listed throughout the document and at the end as well.
- Please read all of these instructions and familiarize yourself with the complete process **BEFORE** you begin.

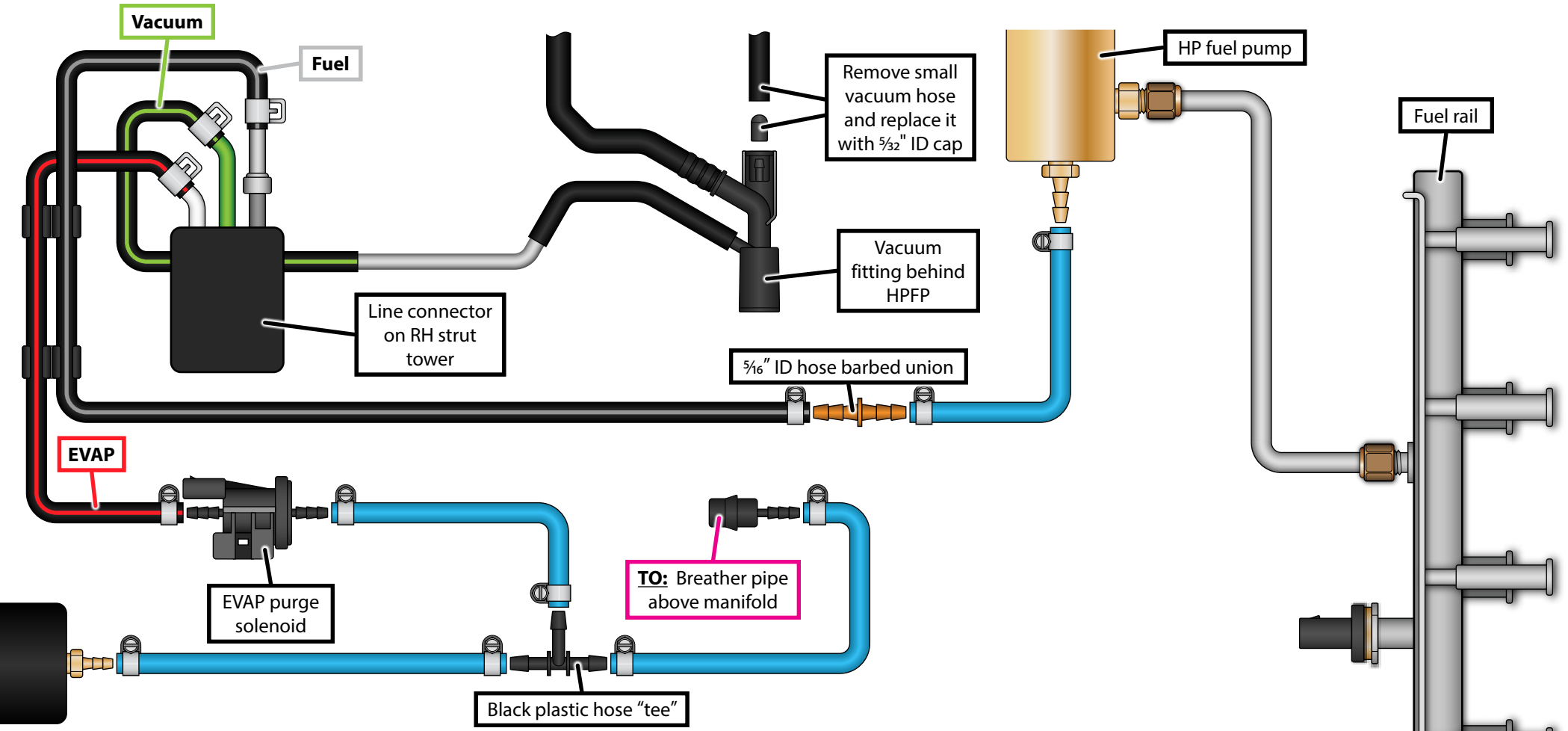
GENERAL PREPARATION AND SAFETY INFORMATION

ECS Tuning cares about your health and safety, please read the following safety information. This information pertains to automotive service in general, and while it may not pertain to every job you do, please remember and share these important safety tips.

- Park your car in a safe, well lit, level area.
- Shut the engine off and remove the key from the ignition switch.
- Make sure any remote start devices are properly disabled.
- **ALWAYS** wear safety glasses.
- Make sure the parking brake is applied until the vehicle is safely lifted and supported.
- Whether lifting a vehicle using an automotive lift or a hydraulic jack, be sure and utilize the factory specified lift points.
- Lifting a vehicle in an incorrect location can cause damage to the suspension/running gear.
- **ALWAYS** support the vehicle with jack stands.
- **ALWAYS** read and follow all safety information and warnings for the equipment you are using.

NEVER get underneath a vehicle that is supported only by a jack, and ALWAYS make sure that the vehicle is securely supported on jack stands.

PROJECT NOTES



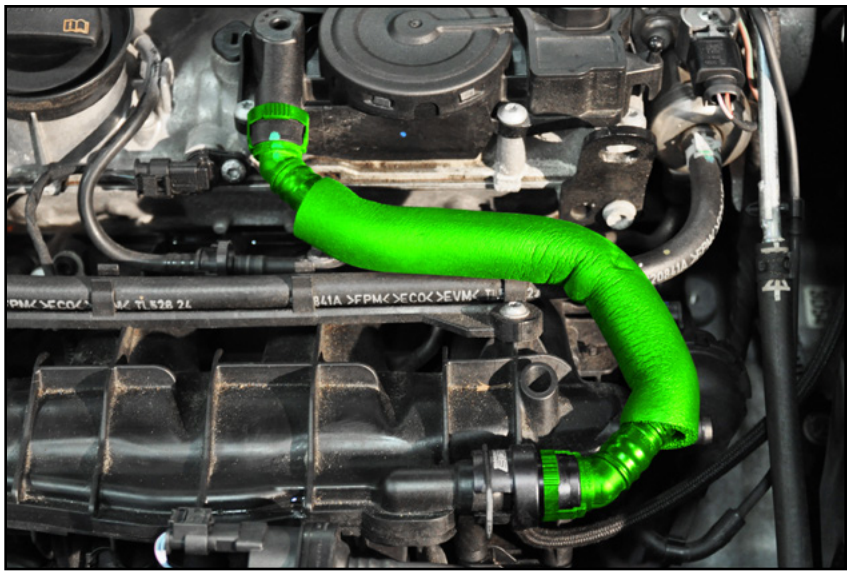
We have created the diagram above for reference. Since there are so many different ways to route the fuel, EVAP and vacuum lines on your 2.0T TSI, we feel it's important to provide an overview of the systems as a whole. This way ***YOU*** can decide how you want to route your lines, and where you want to "tee" in or extend them.

Please note that the **BLUE** fuel line shown above represents where you may decide to use the supplied fuel hose to ***EXTEND*** your stock hoses. The supplied hose is not blue. Feel free to reference back to this page as needed throughout the install.

REMOVING THE STOCK INTAKE MANIFOLD

Step 1:

Our aluminum intake manifold does not utilize the factory PCV pipe (highlighted in **GREEN** in the photo on the right), so ***a baffled oil catch can is a requirement for this install***. If you don't currently have one installed, please consider our TSI performance oil catch can kit which can be found on our website at ES#2959979.



Step 2:

Open the hood and wait at least 10 minutes after the engine has been shut off, do not open any doors during this time. The fuel system will internally relieve fuel pressure, minimizing the risk of spilled fuel later on.

Disconnect the negative (–) battery terminal. Remove the engine cover and intake system (not shown). Remove the throttle body charge pipe (optional).

Use compressed air to blow away any dirt or debris away from where the intake manifold meets the cylinder head.

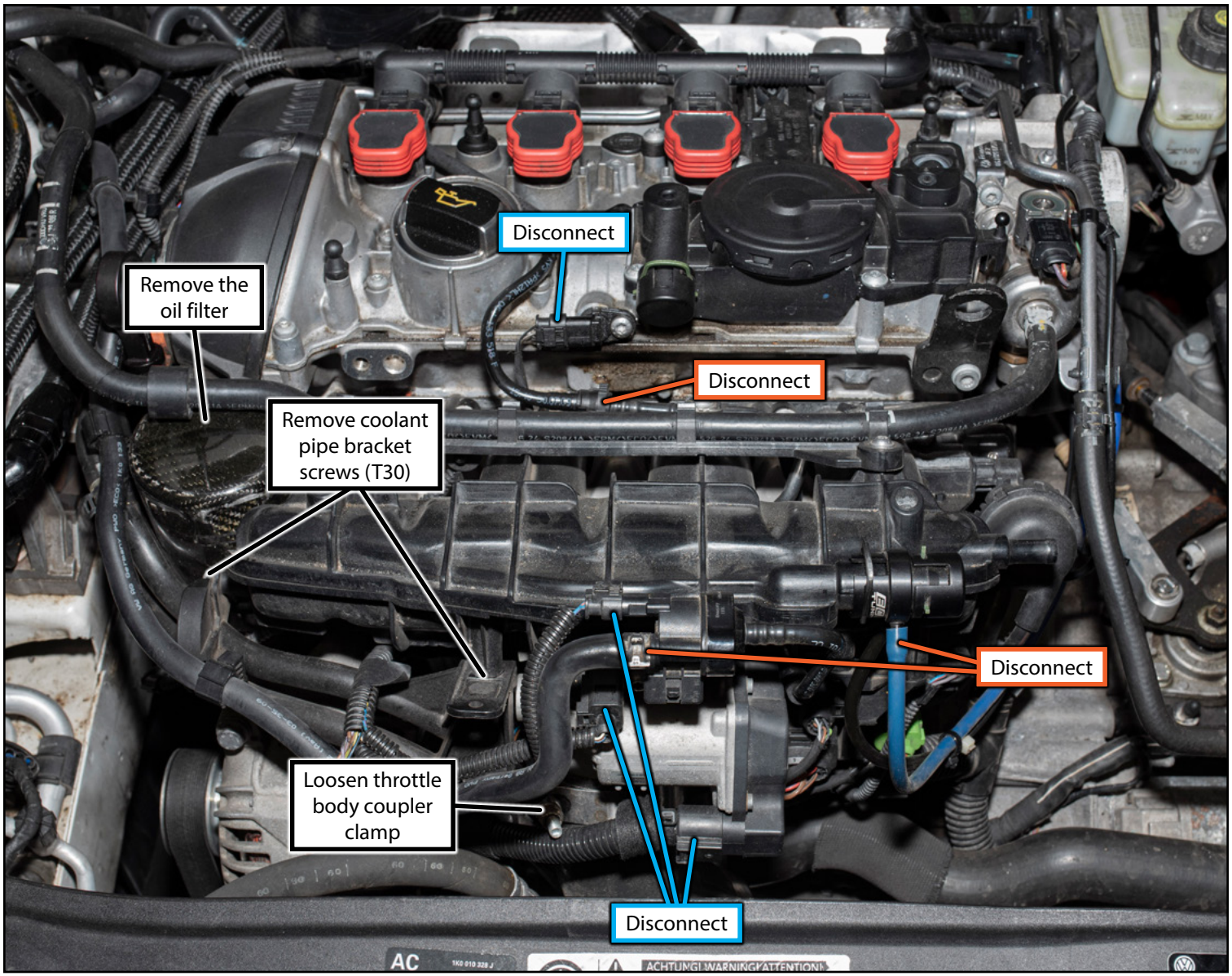
REMOVING THE STOCK INTAKE MANIFOLD

Step 3:

Disconnect the electrical connectors from the IAT sensor, throttle body, high pressure fuel pump (HPFP), the valve cover, and the EVAP purge solenoid (**BLUE** boxes in the photo on the right).

Disconnect the air tube from the valve cover, and disconnect the hoses from the EVAP purge solenoid and boost tap if you have one (**ORANGE** boxes).

Loosen the hose clamp on the throttle body coupler. Remove the engine oil filter. Remove the two T30 screws which secure the coolant pipe to the manifold (**BLACK** boxes).



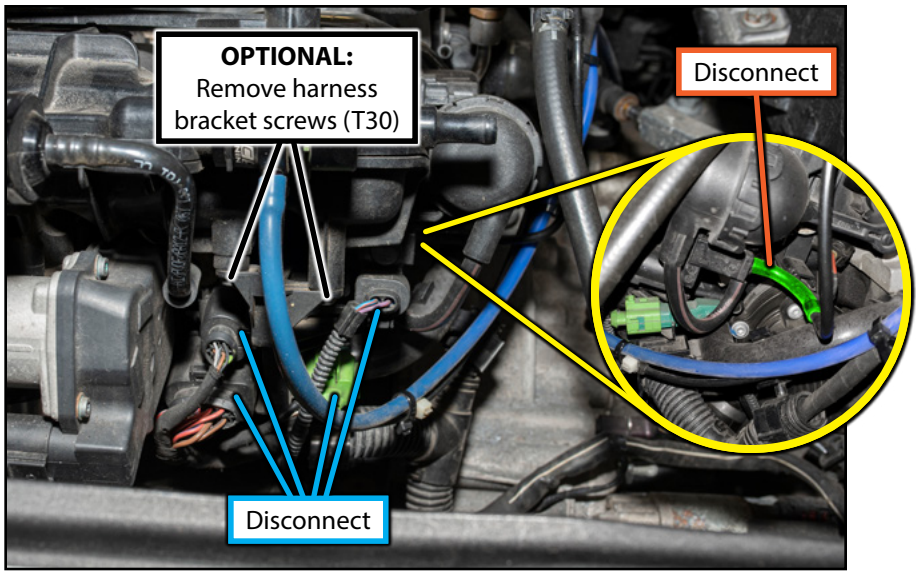
REMOVING THE STOCK INTAKE MANIFOLD

Step 4: T30 Torx

Disconnect all of the connectors on the engine harness bracket underneath the LH front corner of the intake manifold (**BLUE** box in the photo on the right).

This next part is optional, but it gives you a ***LOT*** of extra room to work and we recommend it. Slide the harness connectors out of the mounting bracket, then remove the two screws which secure the bracket to the manifold (**BLACK** box in the photo on the right).

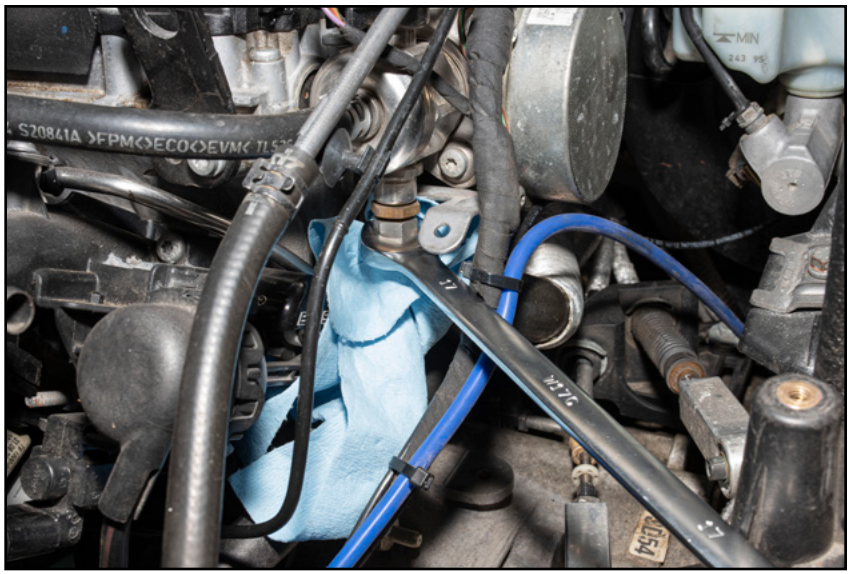
Disconnect the vacuum hose from the runner flap actuator (highlighted in **GREEN** in the **YELLOW** inset photo).



Step 5: 17mm Wrench

Now we need to disconnect the line from the bottom of the high pressure fuel pump (HPFP). Place a rag/towel **BEHIND** and **AROUND** the fuel lines to catch any fuel which may spill or spray out.

CAUTION: There is a **LOT** of fuel which can spray out during this step. Be sure that the engine has cooled down, work slowly, wear eye protection, and ***ALWAYS*** keep a rag/towel between you and the fuel line.

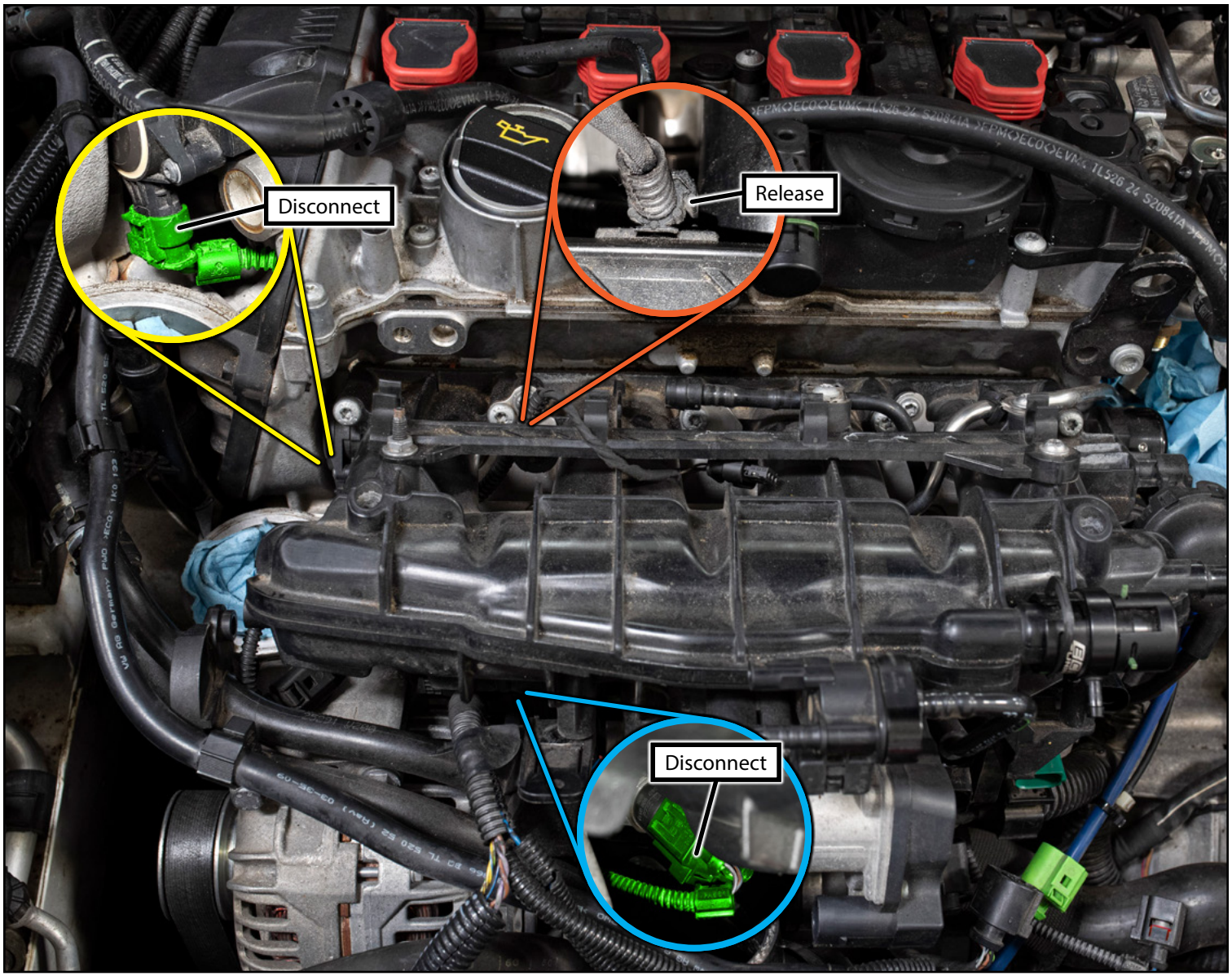


REMOVING THE STOCK INTAKE MANIFOLD

Step 6:

There are two electrical connectors underneath the intake manifold, and they can be tough to reach. The fuel pressure sending unit connector (highlighted in **GREEN** in the **BLUE** inset photo) is on the fuel rail near the throttle body. The runner flap motor connector (highlighted in **GREEN** in the **YELLOW** inset photo) is on the RH side of the intake manifold just behind the oil filter.

Release the wiring harness from the mounting clip on the back side of the fuel hose rail on top of the manifold (**ORANGE** inset photo).



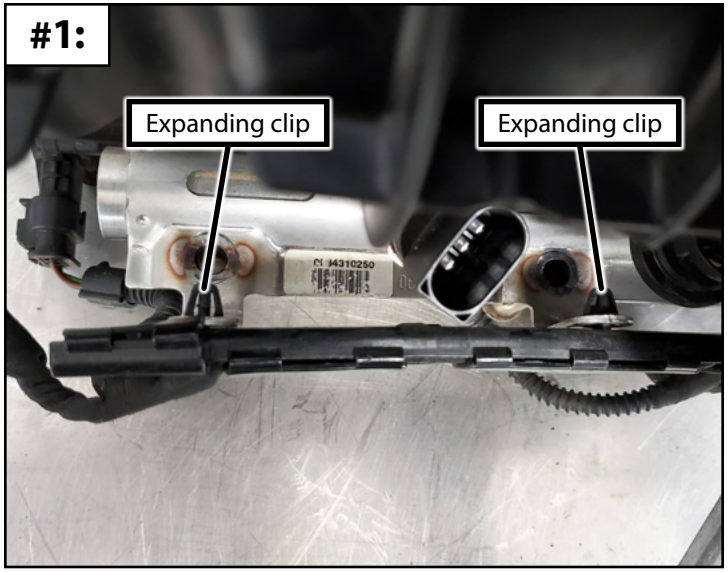
REMOVING THE STOCK INTAKE MANIFOLD

Step 7:

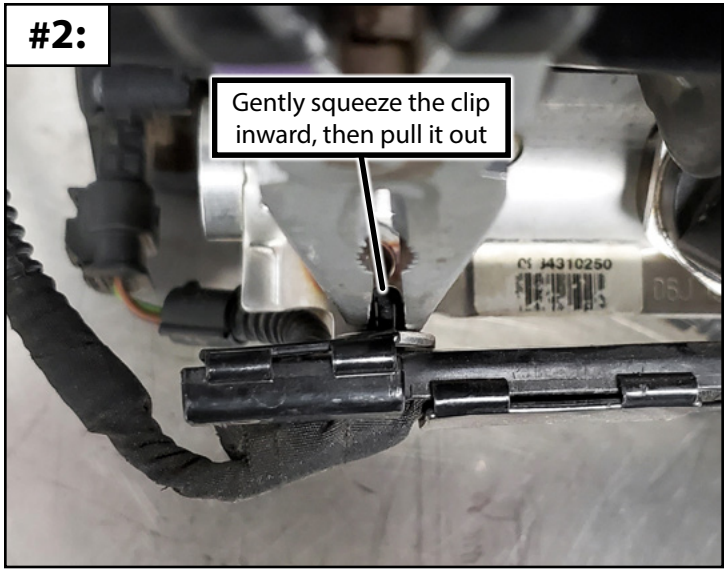
There is a small wiring harness channel which clips into the fuel rail from below. Locate the two expanding clips which secure the channel to the RH side of the rail near the cylinder #1 and cylinder #2 injectors (**photo #1**). Squeeze these clips inward while you pull the channel down slightly (**photo #2**).

There are two other clips which secure the channel to the fuel rail mounting posts near the cylinder #3 and cylinder #4 injectors. You can release these clips now, or guide them off of the posts while you're pulling the manifold out later on (**photo #3**).

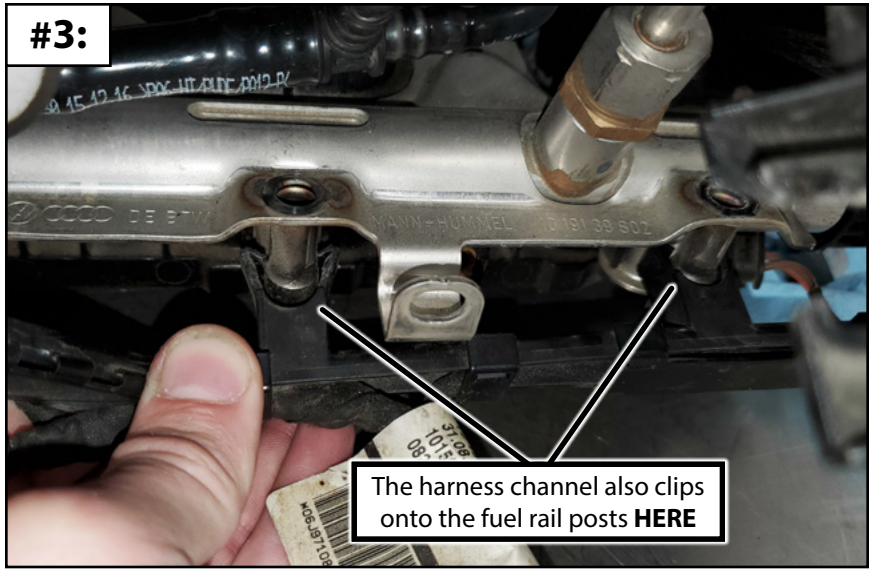
#1:



#2:



#3:



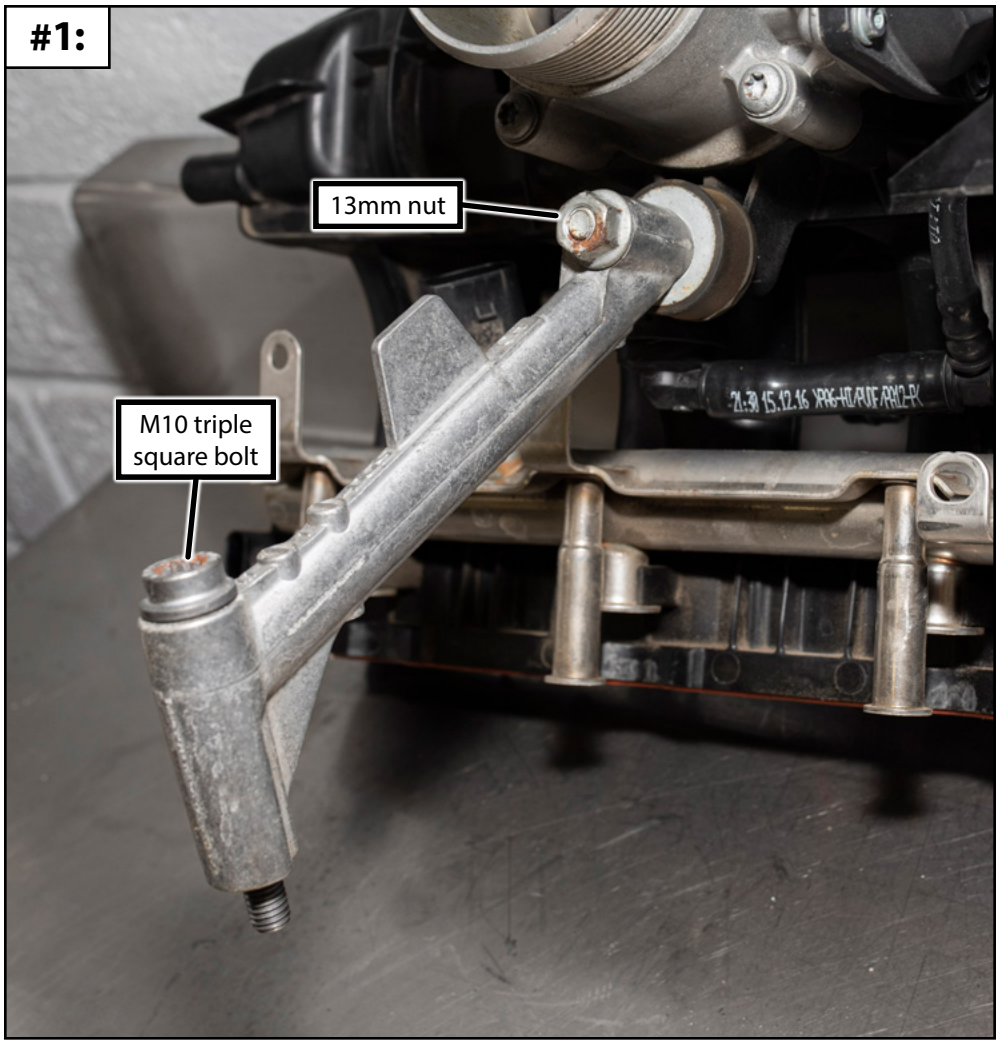
REMOVING THE STOCK INTAKE MANIFOLD

Step 8:

Now for the hardest part of this install, the support bracket (**photo #1**). This thing can be a real pain to reach, but it has to be removed before the manifold can come out. Removing the wiring harness bracket and/or the throttle body will give you some extra space to work (see Page 17).

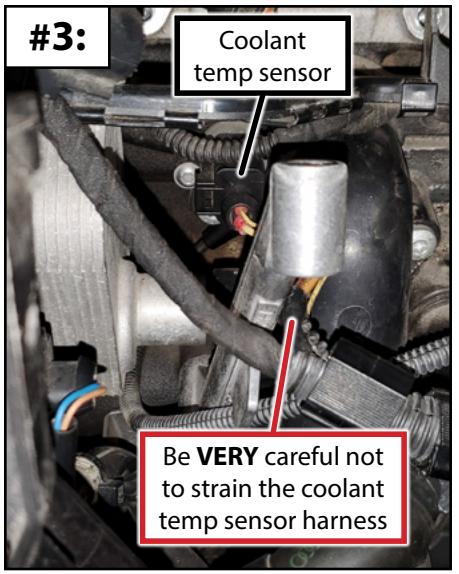
The 13mm nut can be reached somewhat easily with a socket and ratchet, or ratcheting wrench. The triple square bolt on the other hand is extremely difficult to get at. We've tried everything, we ended up using a ½" drive socket, ⅜" drive to ½" drive adapter, ⅜" drive extension and ratchet (**photo #2**). Use a flashlight, mirror, or a freaking magician to get this bolt out, whatever works!

#1:



#2:

#3:



CAUTION: Be very careful to not rip out the coolant temp sensor wires during this part of the install (**see photo #3**).

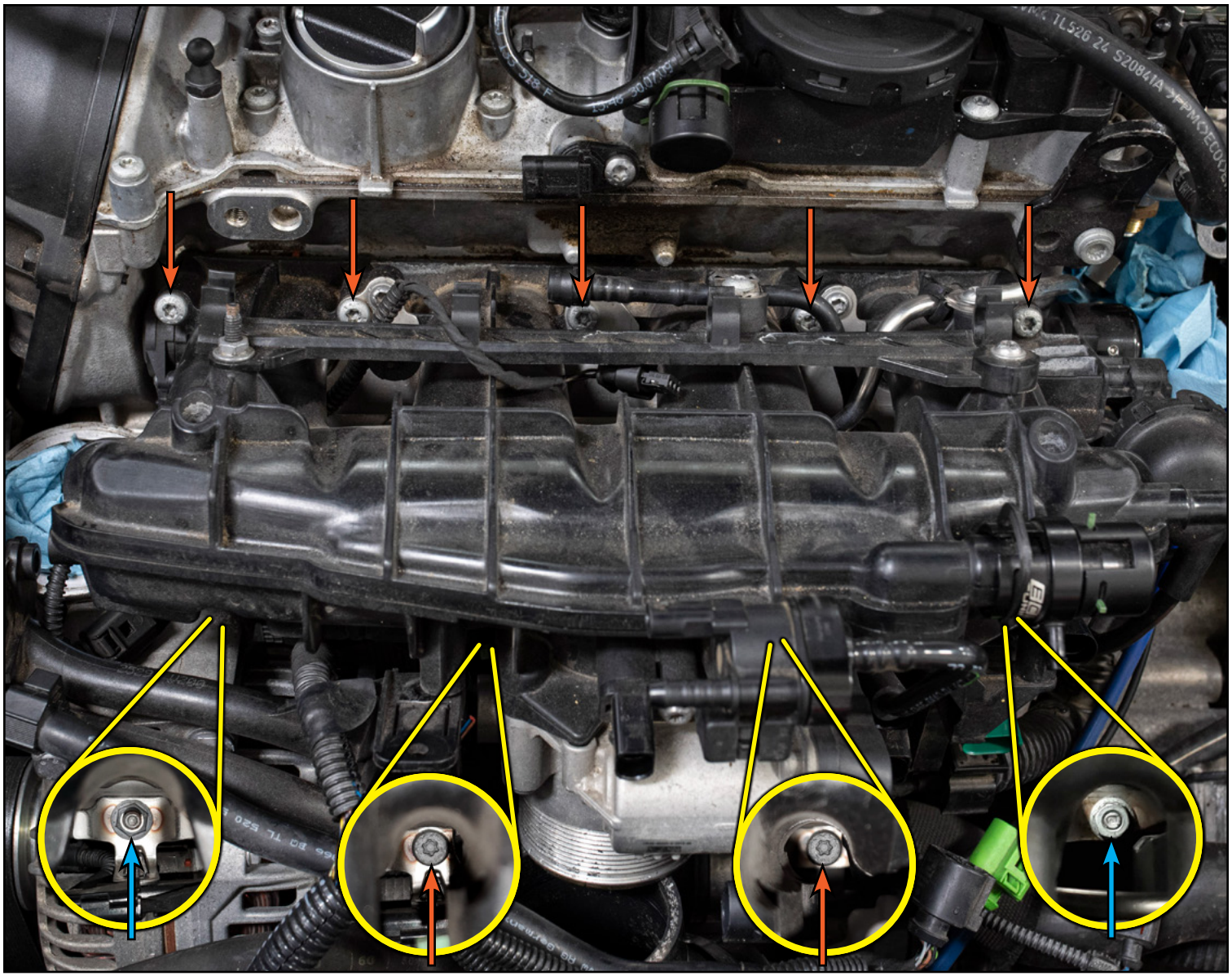
REMOVING THE STOCK INTAKE MANIFOLD

Step 9:

There are seven T30 Torx bolts (**ORANGE** arrows) and two 10mm nuts (**BLUE** arrows) which secure the intake manifold to the cylinder head.

The four lower nuts and bolts can be a little tricky to see, let alone reach. We've found that a set of good ¼" drive sockets and long extensions work really well here.

The ¼" drive T30 socket which can be found in ES#2823235 is also very handy to have for this job, there simply isn't enough space to get a ⅜" drive T30 socket underneath the intake manifold to reach those two lower bolts.



REMOVING THE STOCK INTAKE MANIFOLD

Step 10:

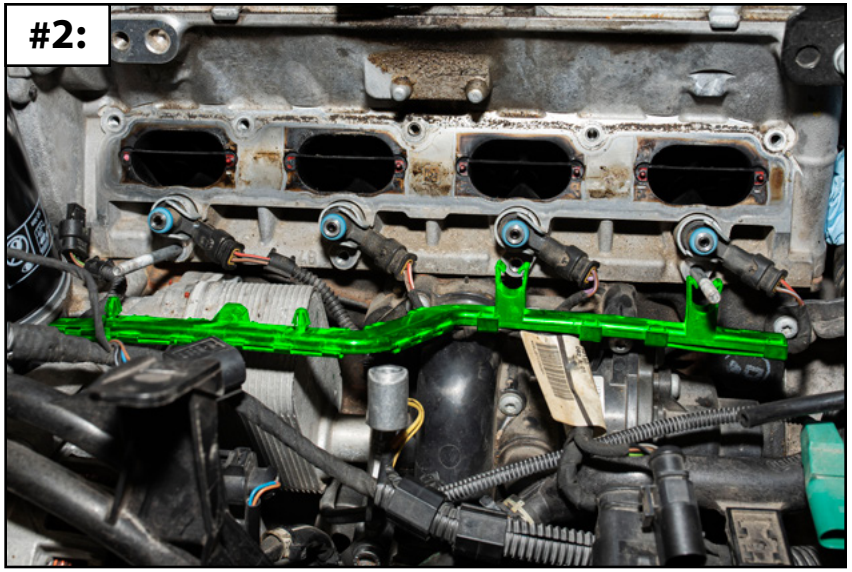
Double check to ensure that all electrical connectors, hoses, lines, etc. have all been removed and the intake manifold is ready for removal. Pull the manifold off of the engine as shown (**photo #1**), wiggling it back and forth as needed to get the fuel rail to slide off of the injectors.

It's very important that you are aware of the wiring harness which runs underneath the fuel injectors (highlighted in **GREEN** in **photo #2**). We worked on this harness channel back on Page 12. The harness channel is clipped underneath the fuel rail on the mounting posts, you'll need to release these clips or guide them off of the posts while you're pulling the manifold out.

Keep double checking all of the connections around the manifold while you're pulling it out, there is a chance that one or more of the fuel injectors will stay in the fuel rail. If this happens to you then you will need to reach down and disconnect the harness connector.

#1:

#2:

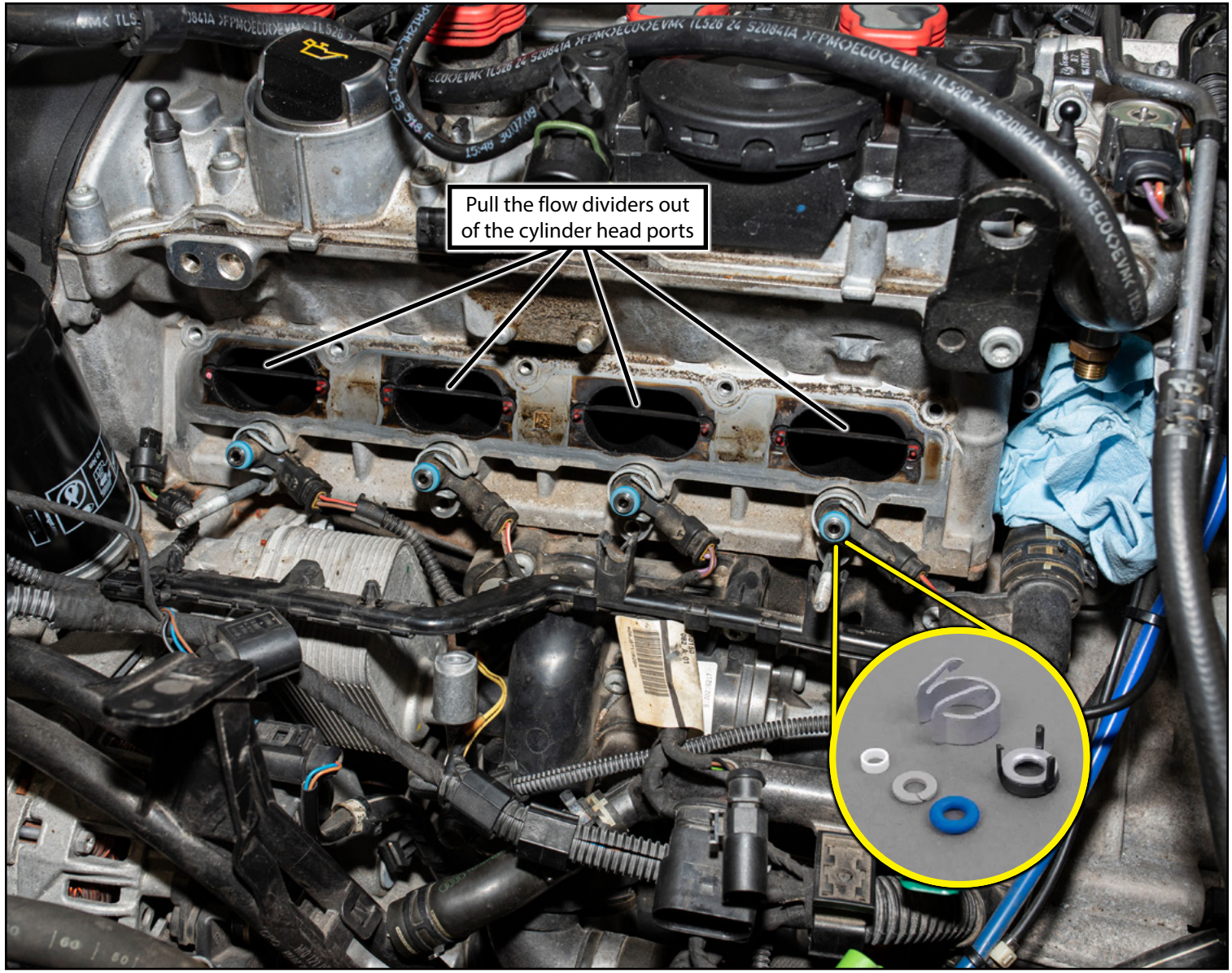


REMOVING THE STOCK INTAKE MANIFOLD

Step 11:

If you're lucky like we are, your injectors will stay in the cylinder head. If one or more injectors stay inside the fuel rail you ***MUST*** replace the seals (**YELLOW** inset photo) to prevent fuel leaks. This seal kit can be found on our website at ES#3439102, and our Fuel Injector Puller Tool Kit can be found at ES#2587556. Check out our video DIY for step-by-step instructions.

Pull the flow dividers out of the cylinder head ports. We took this opportunity to clean the mating surface on the cylinder head, then we covered the ports with masking tape to prevent anything from falling inside while we worked. Now would be a good time to think about walnut blasting.

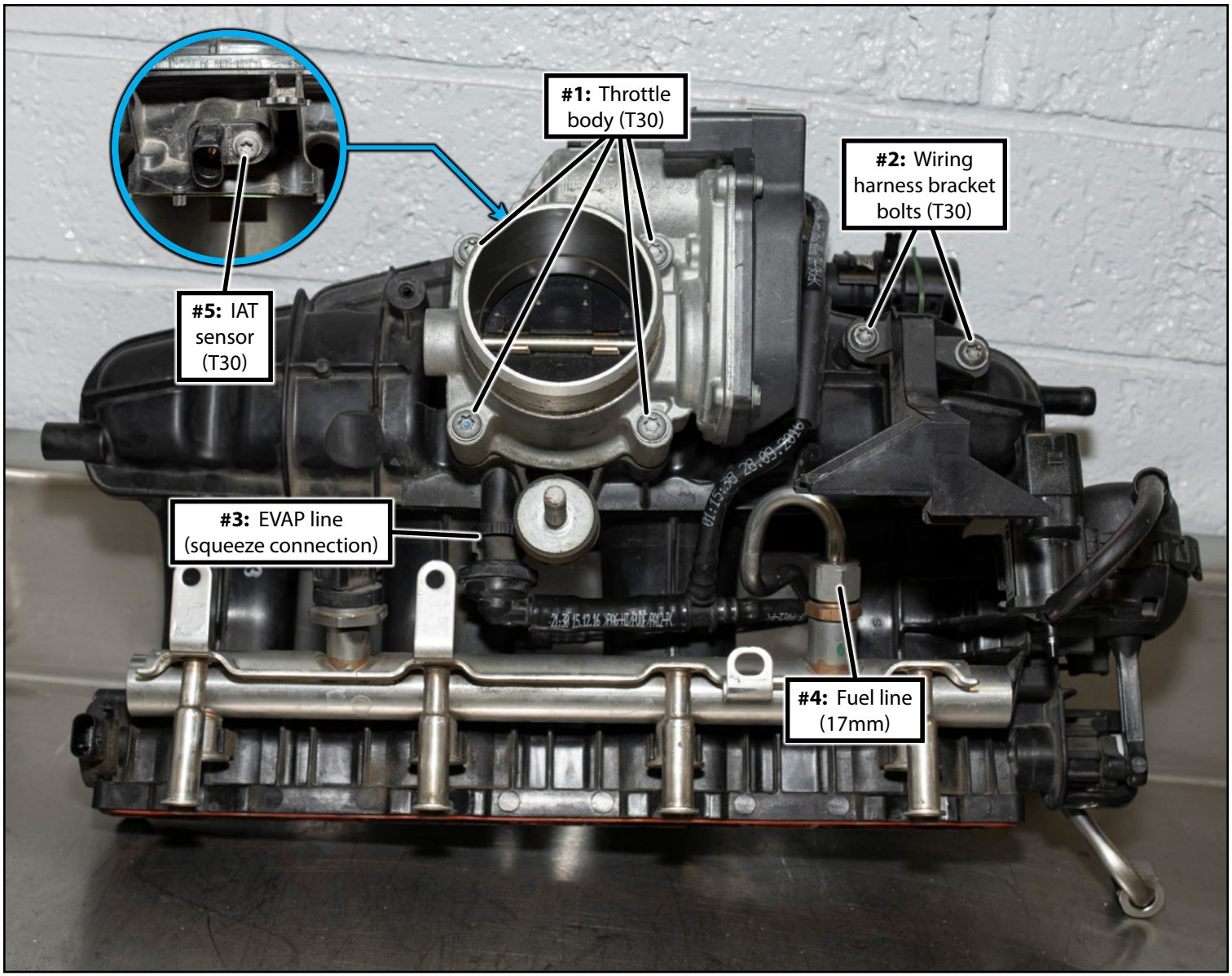


PREPPING THE NEW INTAKE MANIFOLD FOR INSTALL

Step 1:

Remove all of the fasteners in the order shown underneath the stock intake manifold.

Remove the throttle body, wiring harness bracket, and IAT sensor (**BLUE** inset photo) from the manifold. The EVAP pipe assembly and fuel lines are still fastened to the top side of the manifold, we'll get to those on the next page.



PREPPING THE NEW INTAKE MANIFOLD FOR INSTALL

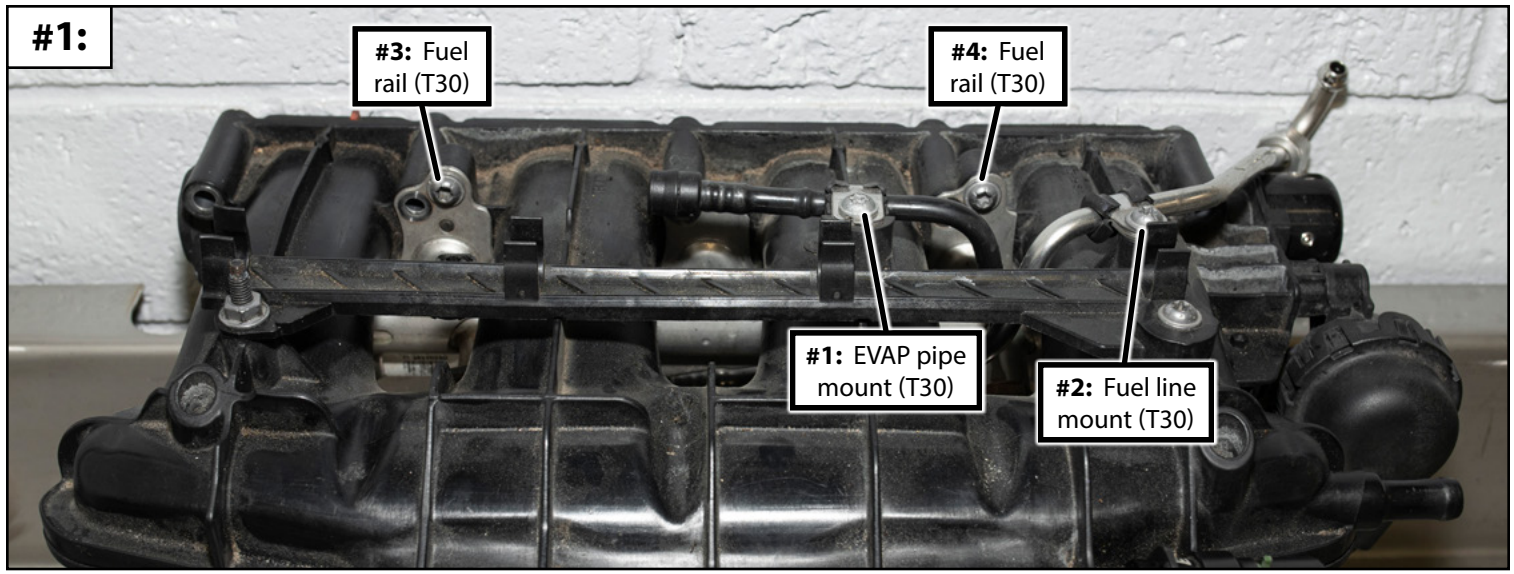
Step 2:

Remove all of the fasteners in the order shown on top of the stock intake manifold (**photo #1**).

Remove the EVAP pipe assembly and the fuel line from the manifold (not shown).

Use a flat blade screwdriver to gently pry the fuel rail back from the intake manifold (**photo #2**). The rail will pivot down and back, and can then be removed from the manifold (**photo #3**).

#1:



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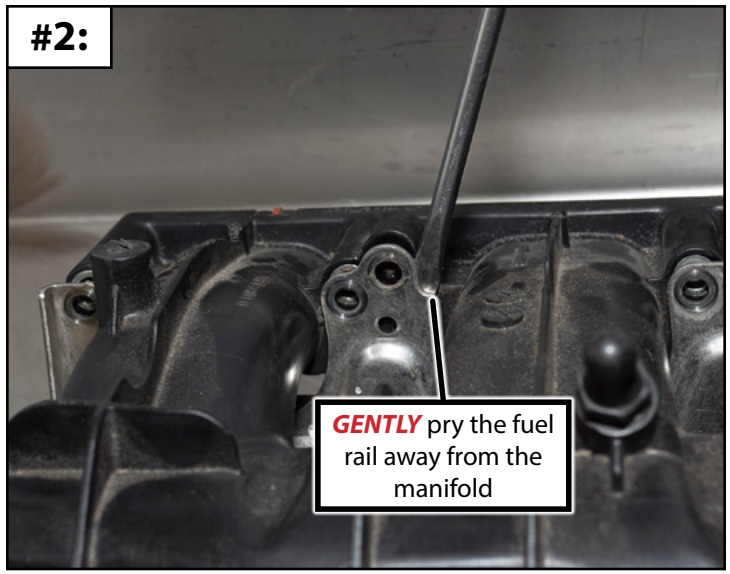
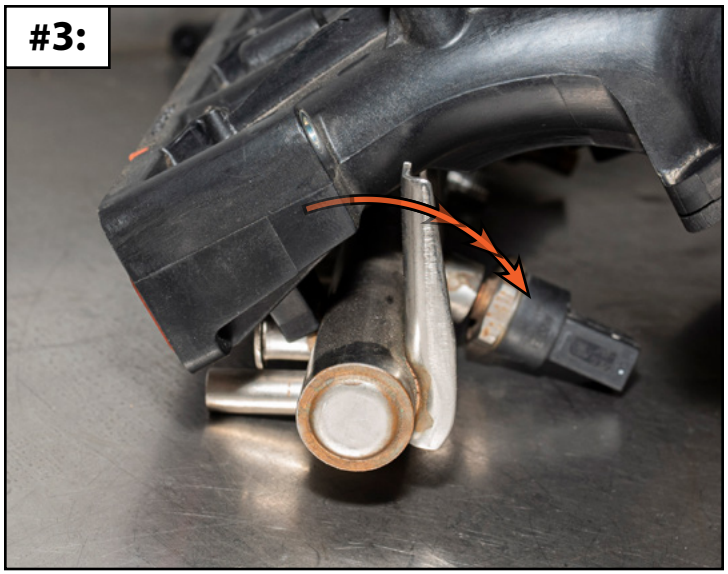


#3:



PREPPING THE NEW INTAKE MANIFOLD FOR INSTALL

Step 3: 5mm Hex (Allen)

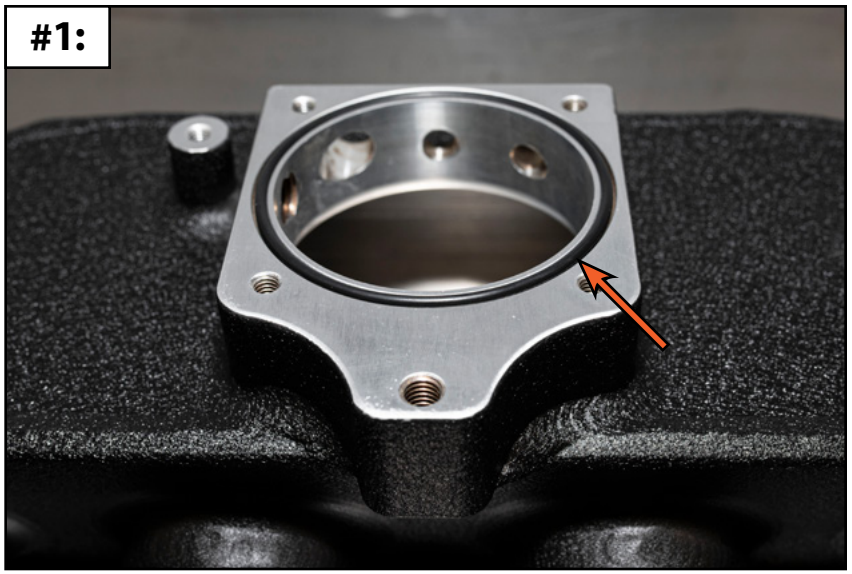
Install the larger o-ring into the throttle body seal channel underneath the new aluminum manifold (arrow in **photo #1**). You may find it difficult to get this o-ring to stay in place inside the channel. Be sure to keep the o-ring from twisting when you install it to prevent this from happening.

Install the throttle body onto the new manifold using the provided M6x40mm bolts (**photo #2**). Tighten them until snug.

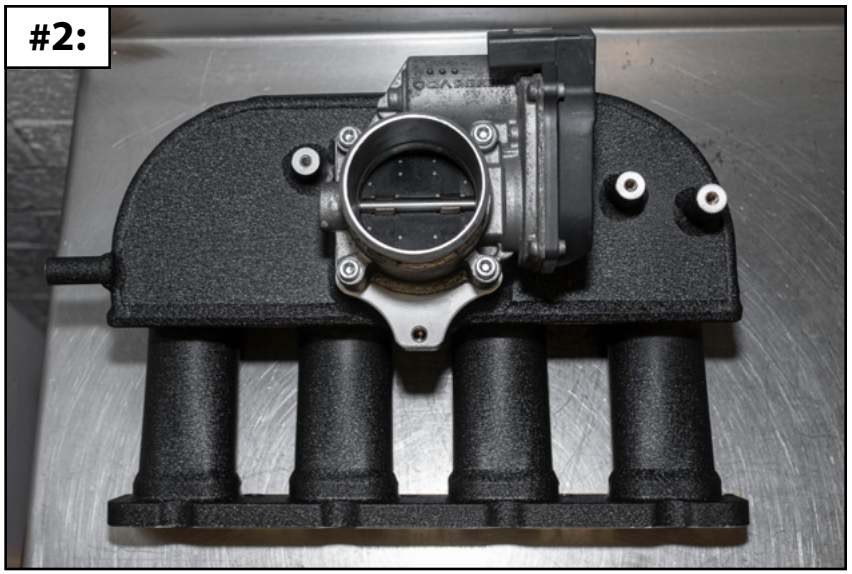
TECH TIP

A dab of grease can be used to help hold the o-ring inside the groove during installation, and will also help it to obtain a proper seal.

#1:



#2:



PREPPING THE NEW INTAKE MANIFOLD FOR INSTALL

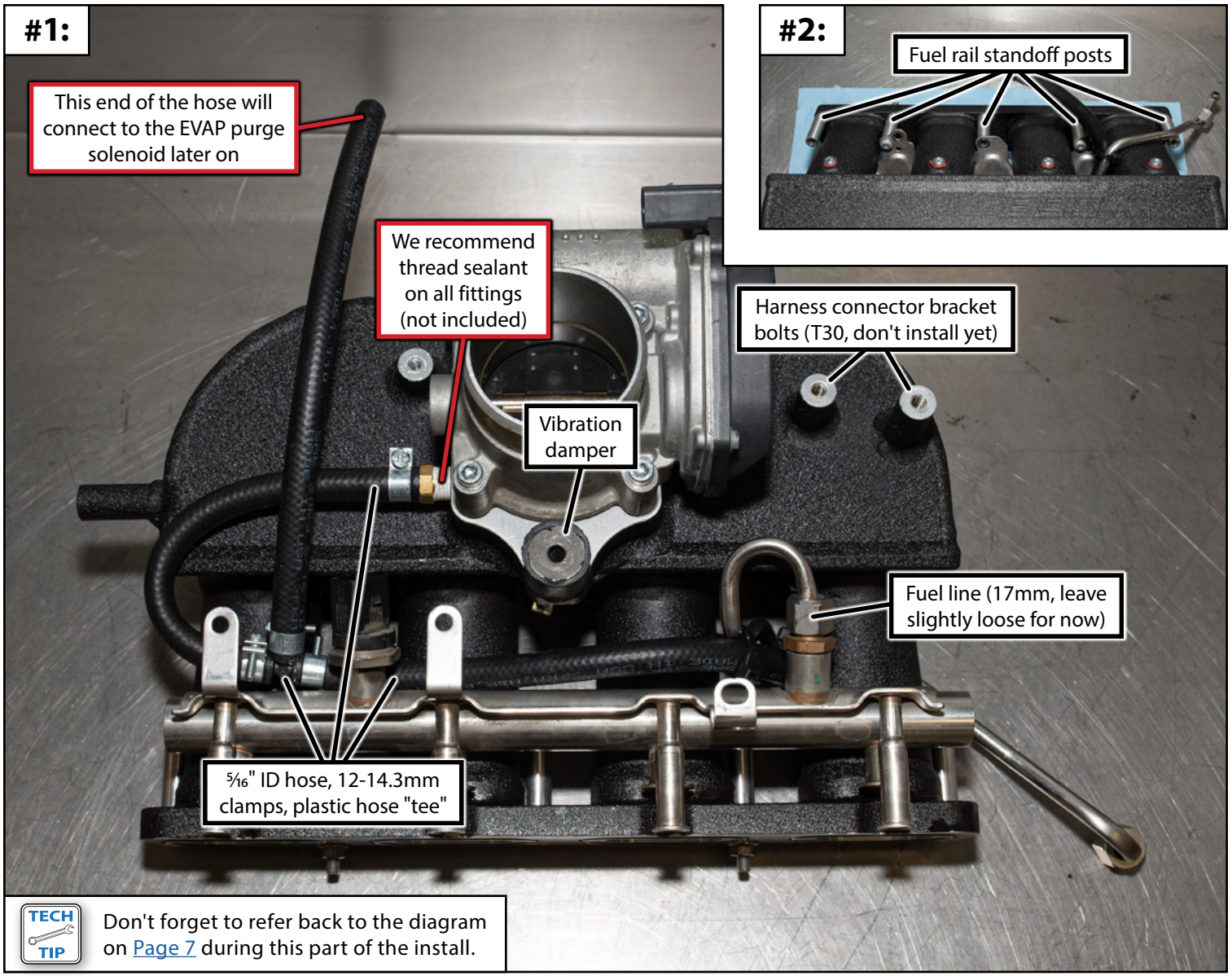
Step 4:

Slide the included fuel rail standoff posts into the manifold, then loosely install the fuel rail onto the manifold (**photo #2**, also see Page 21). Slide two manifold mounting bolts through the rail to hold it in place (optional).

Cut the fittings off of the EVAP pipe and use the supplied hose and plastic "tee" to plumb up the system as shown in **photo #1**. We used a few cable ties to secure the hose to the fuel line. Run a section of hose from the plastic "tee" out past the throttle body, we'll be connecting this to the back side of the EVAP purge solenoid later on in the install.

Install the fuel supply line onto the manifold and fuel rail.

#1:



#2:

TECH TIP

Don't forget to refer back to the diagram on Page 7 during this part of the install.

PREPPING THE NEW INTAKE MANIFOLD FOR INSTALL

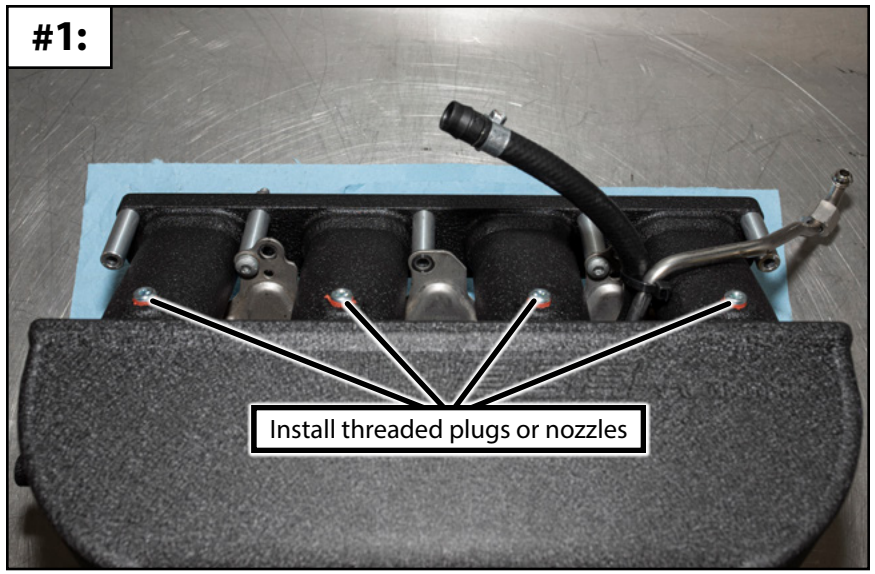
Step 5:

Install the provided threaded plugs or nozzles (secondary fueling, cooling, nitrous, water/meth) into all of the open ports on the new manifold (**photo #1**).

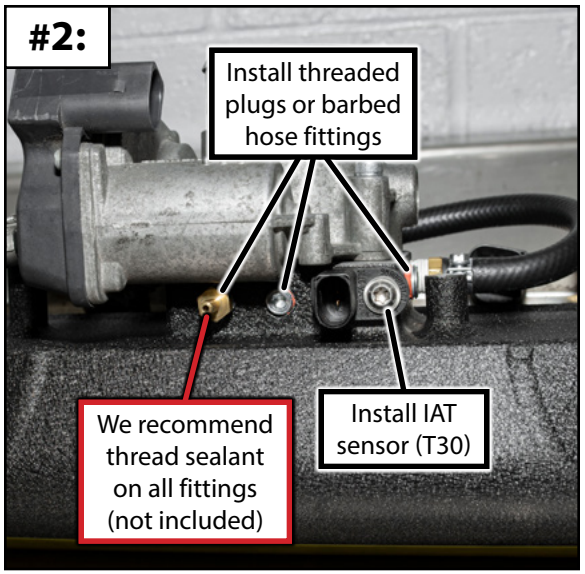
Install the IAT sensor into the new manifold (**photo #2**). Install threaded plugs or barbed hose fittings into the open ports next to the IAT sensor.

Install one of the four smaller o-ring seals into each of the four channels along the front face of the new aluminum manifold (arrows in **photo #3**).

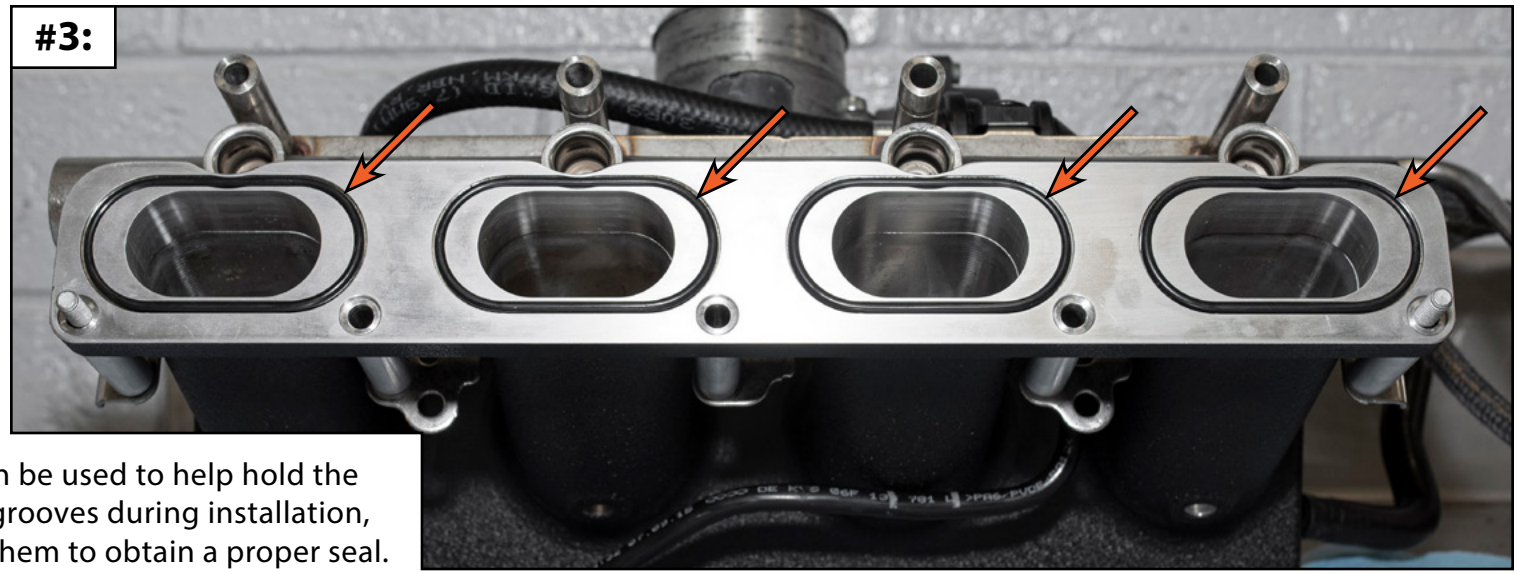
#1:



#2:



#3:



TECH TIP

A dab of grease can be used to help hold the o-rings inside the grooves during installation, and will also help them to obtain a proper seal.

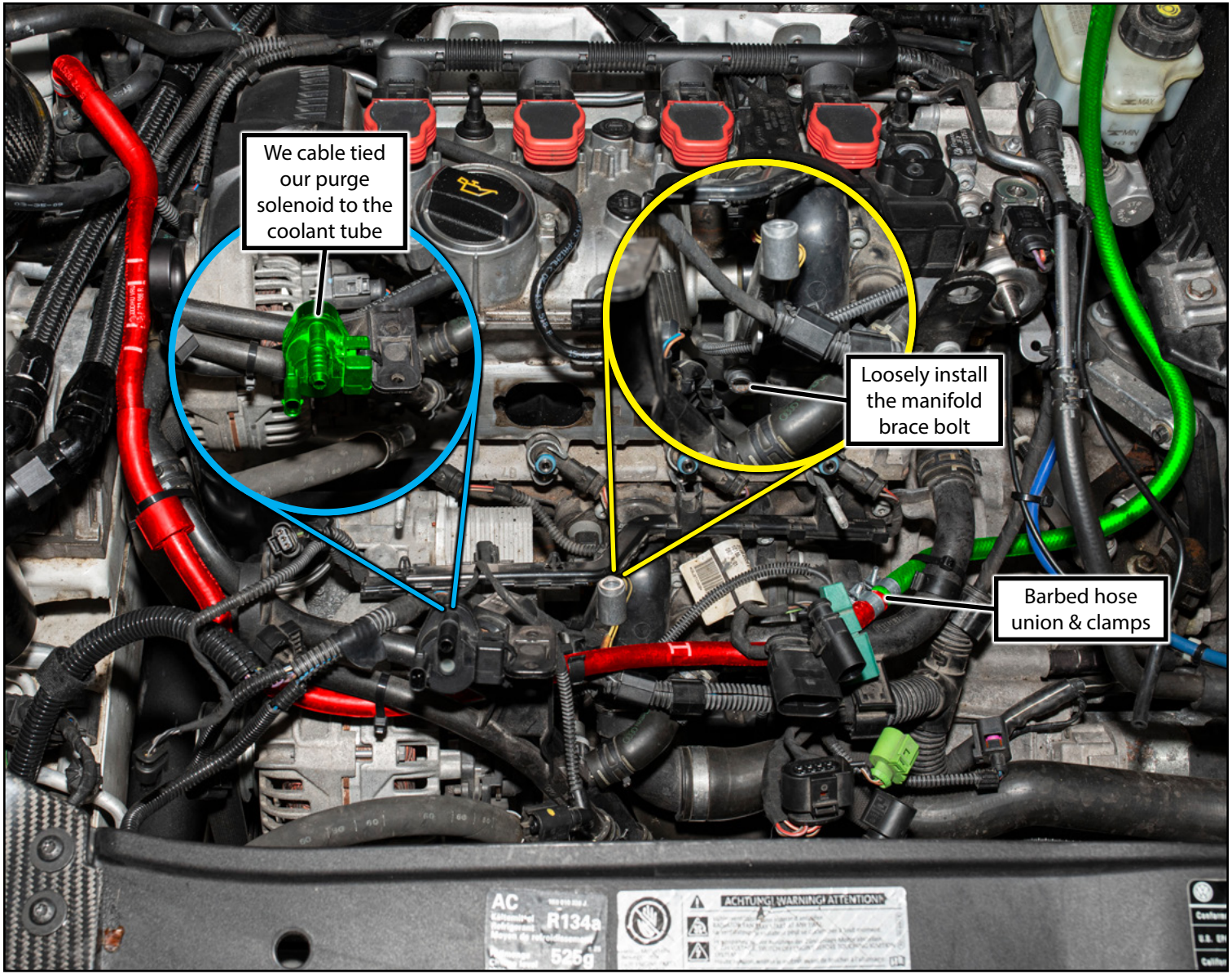
INSTALLING THE NEW INTAKE MANIFOLD

Step 1:

We're almost ready to install the new manifold, but there are a few things to wrap up first.

We started by routing the stock fuel hose (highlighted in **RED** the main photo on the right) underneath where the manifold will be installed, then we extended it with a length of the supplied fuel hose (highlighted in **GREEN** the main photo on the right). We used a cable tie to secure the EVAP purge solenoid to the coolant tubes (highlighted in **GREEN** in the **BLUE** inset photo).

Finally, we loosely installed the lower bolt into the manifold support brace (**YELLOW** inset photo). It's much easier to install this bolt now before the manifold is in place.



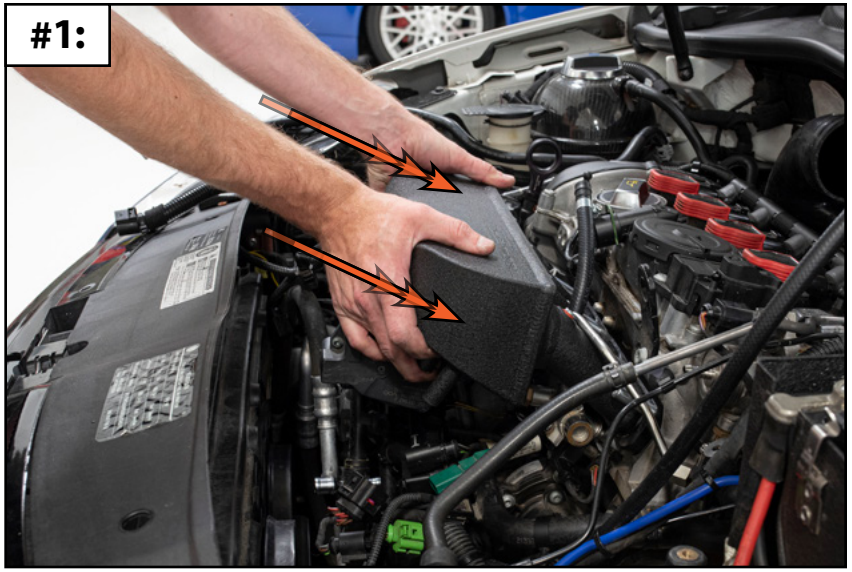
INSTALLING THE NEW INTAKE MANIFOLD

Step 2: 10mm Socket & Ratchet, T30 Torx, Telescoping Grabber

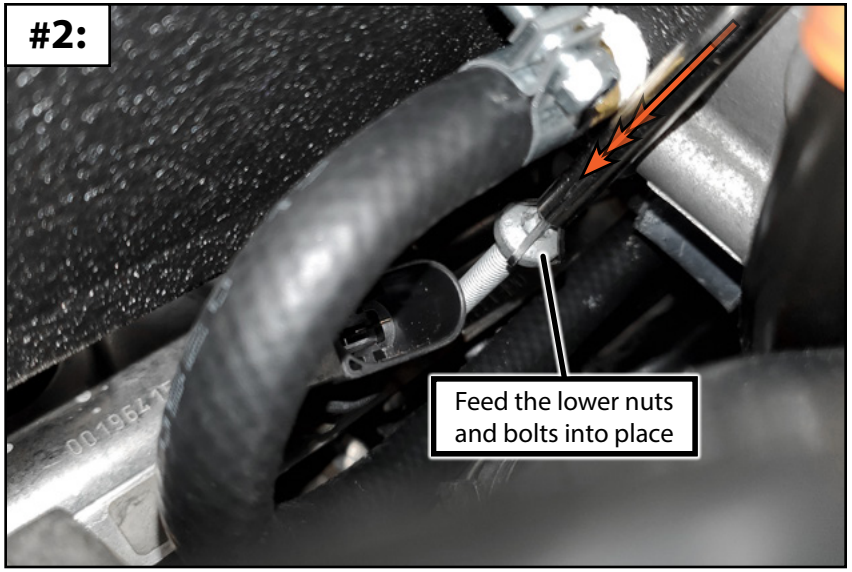
Reinstall the intake manifold into the engine bay (**photo #1**). Be very careful during this step to align the fuel rail with the cylinder head studs, align the fuel injectors with the rail, and clip the injector harness loom to the bottom of the fuel rail (see Page 12 & Page 15).

Partially thread in all of the intake manifold nuts and bolts by hand. A telescoping grabber tool will really come in handy to reach the fasteners along the bottom (**photo #2**). Leave these nuts and bolts loose until after we complete step 3 on the next page.

#1:



#2:



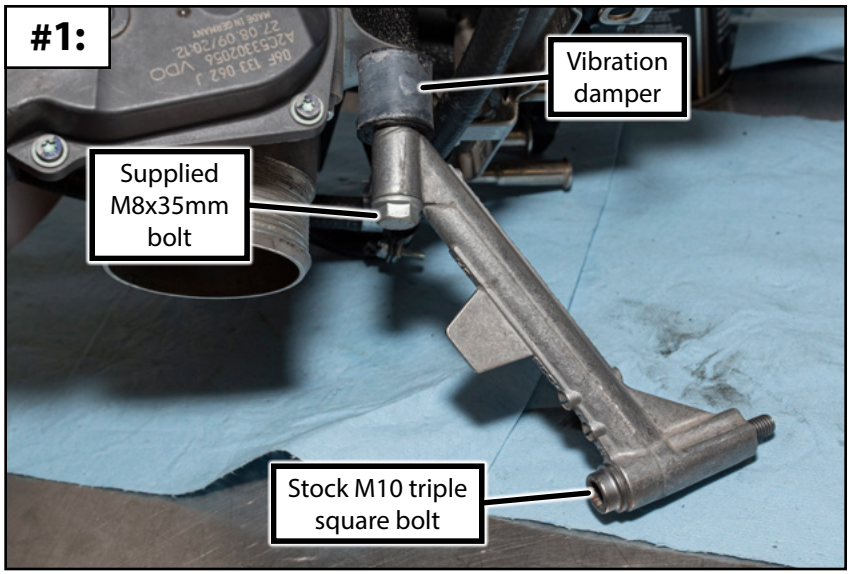
INSTALLING THE NEW INTAKE MANIFOLD

Step 3: 13mm Socket & Ratchet, M10 Triple Square

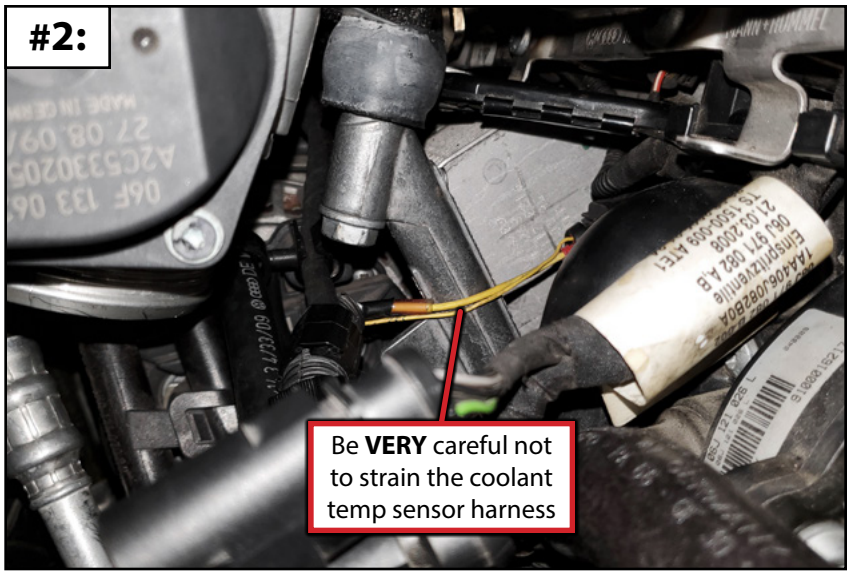
Partially thread in the bolt which secures the support brace to the block by hand, then do the same with the new M8x35mm bolt which secures it to the vibration damper under the manifold (**photo #1** shows these bolts with the manifold removed for reference). Be very careful during this step to not strain or rip the wires out of the coolant temp sensor (**photo #2**).

Tighten the manifold support brace bolts until snug, then torque the manifold nuts and bolts to 10 Nm.

#1:



#2:



INSTALLING THE NEW INTAKE MANIFOLD

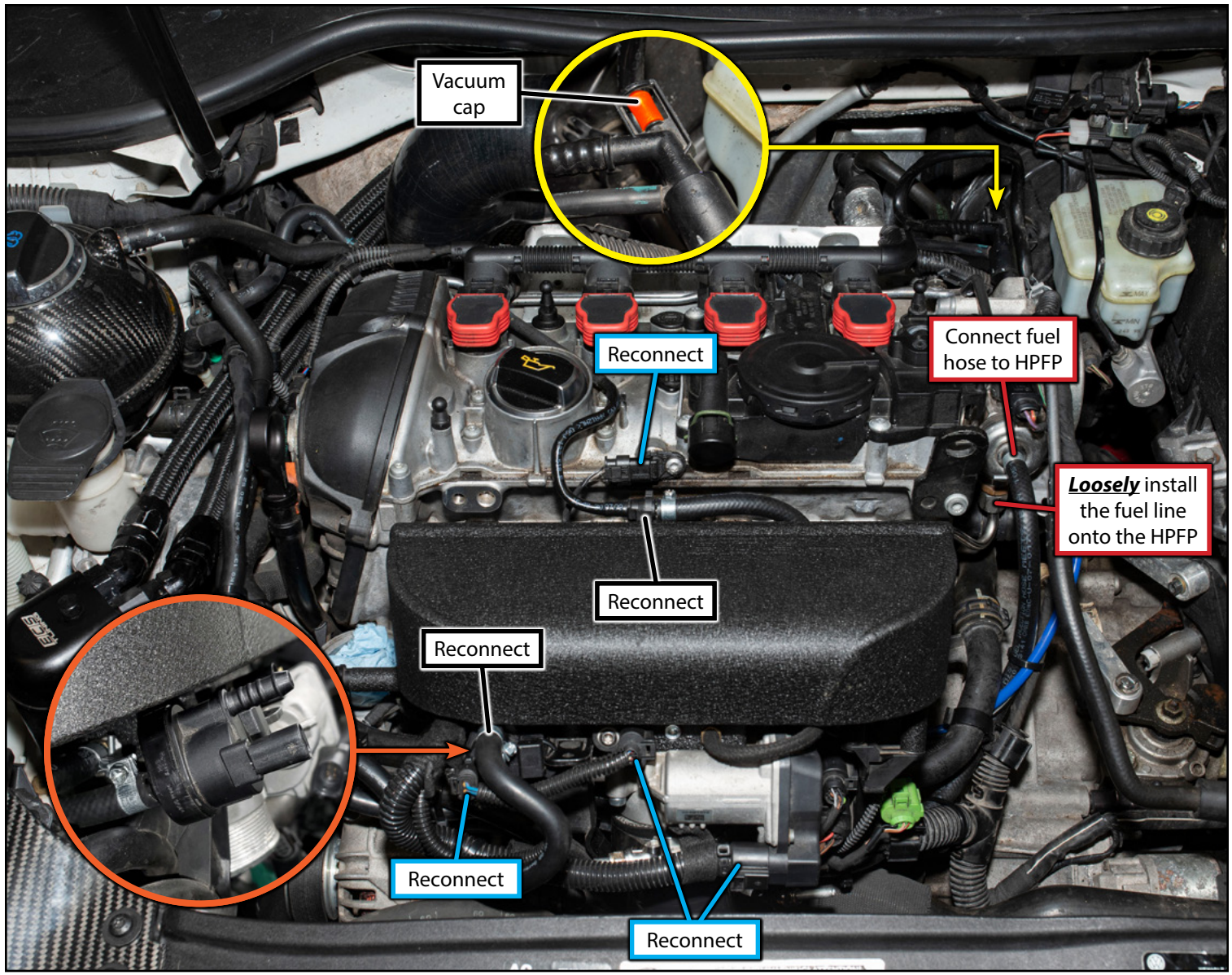
Step 4:

Connect the hose that we installed on Page 20 to the back side of the purge solenoid (**ORANGE** inset photo).

Reconnect the electrical connectors on the EVAP purge solenoid, IAT sensor, throttle body, and valve cover (**BLUE** boxes in the main photo).

Connect the new fuel hose that we ran on Page 22 to the HPFP. ***Loosely*** connect the rigid fuel line from the fuel rail to the HPFP (**RED** boxes in the main photo). Reconnect the EVAP pipe on top of the intake manifold (**BLACK** box in the main photo). Don't forget to refer back to the diagram on Page 7.

Install the supplied vacuum cap in place of the vacuum hose which ran to the runner flap actuator (**YELLOW** inset photo).



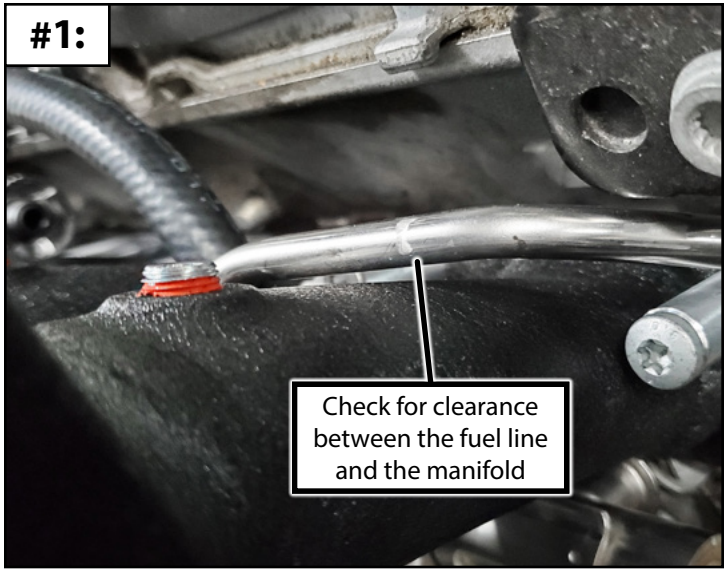
INSTALLING THE NEW INTAKE MANIFOLD

Step 5:

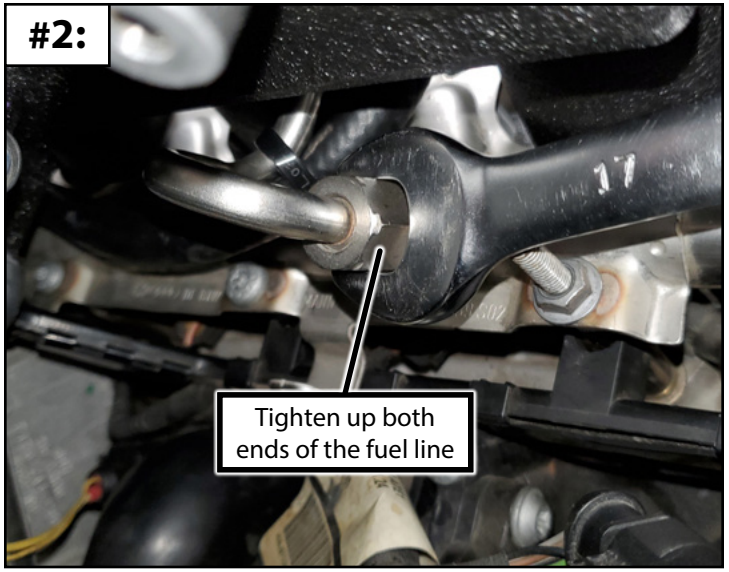
Check for clearance between the fuel line and the intake manifold (**photo #1**). With both ends of the rigid fuel line loose you will be able to twist it slightly to gain sufficient clearance here. Tighten up both ends of the fuel line once you're satisfied with how it fits (**photo #2**).

Mount the harness bracket underneath the new manifold using two of the supplied T30 screws. Slide the connectors into the slots and reconnect them (**photo #3**).

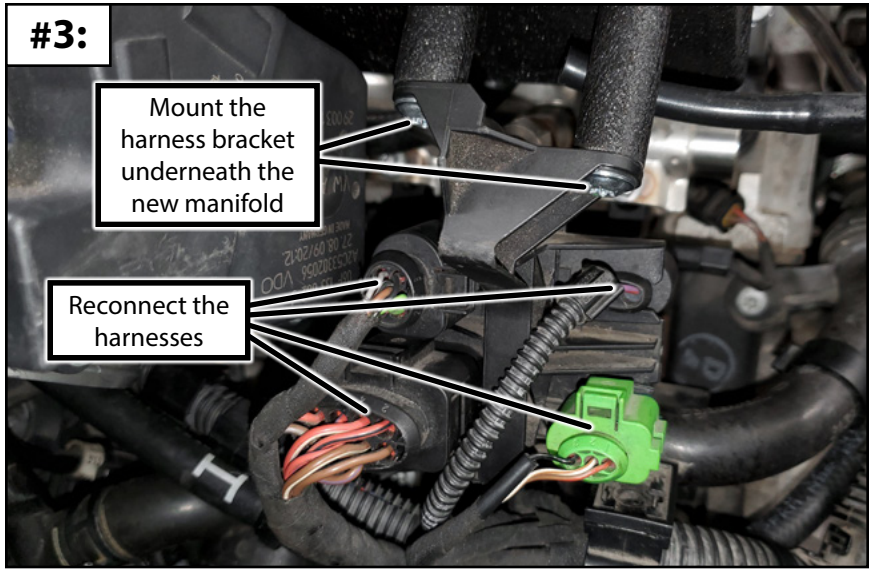
#1:



#2:



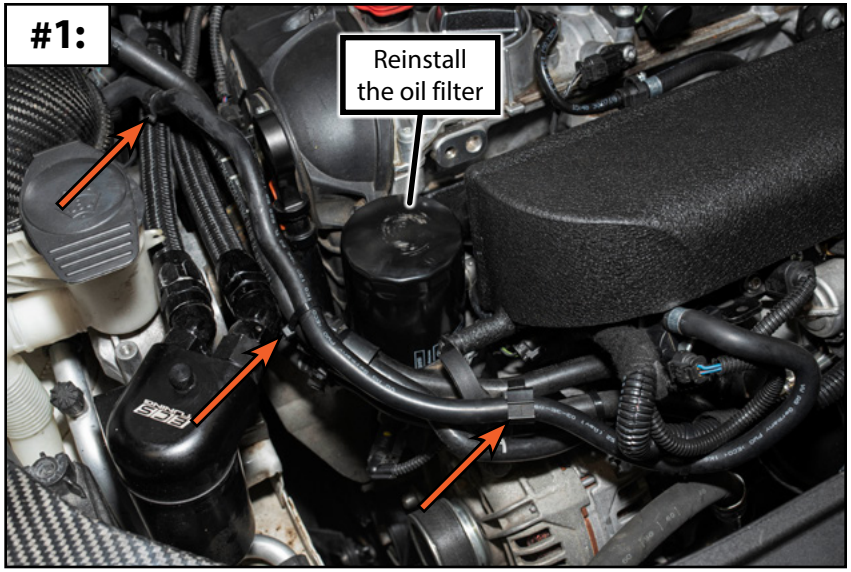
#3:



- [ ] Reinstall the engine oil filter (**photo #1**).
- [ ] Reconnect the fuel pressure sending unit connector on the fuel rail.
- [ ] Connect any remaining fuel, EVAP, and vacuum lines (don't forget to refer back to the diagram on Page 7).
- [ ] Secure the hoses in place using the provided cable ties (arrows in **photo #1**).
- [ ] Reconnect the negative (−) battery terminal.
- [ ] Cycle the ignition key from **OFF** to **ON** several times (without cranking the engine) to cycle the fuel pump. Check for fuel leaks.
- [ ] Start the engine, check again for fuel leaks.
- [ ] If you experience any high idle or boost leak issues, be sure to check the o-rings for leaks or tears, and ensure that all ports have been appropriately tapped or plugged.
- [ ] Bring your vehicle to a local tuner for a custom tune without runner flap functionality.

Congratulations, your 2.0T TSI Aluminum Intake Manifold installation is complete!

#1:



#2:

Your 2.0T TSI Fabricated Aluminum Intake Manifold installation is complete!

These instructions are provided as a courtesy by ECS Tuning

Proper service and repair procedures are vital to the safe, reliable operation of all motor vehicles as well as the personal safety of those performing the repairs. Standard safety procedures and precautions (including use of safety goggles and proper tools and equipment) should be followed at all times to eliminate the possibility of personal injury or improper service which could damage the vehicle or compromise its safety.

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