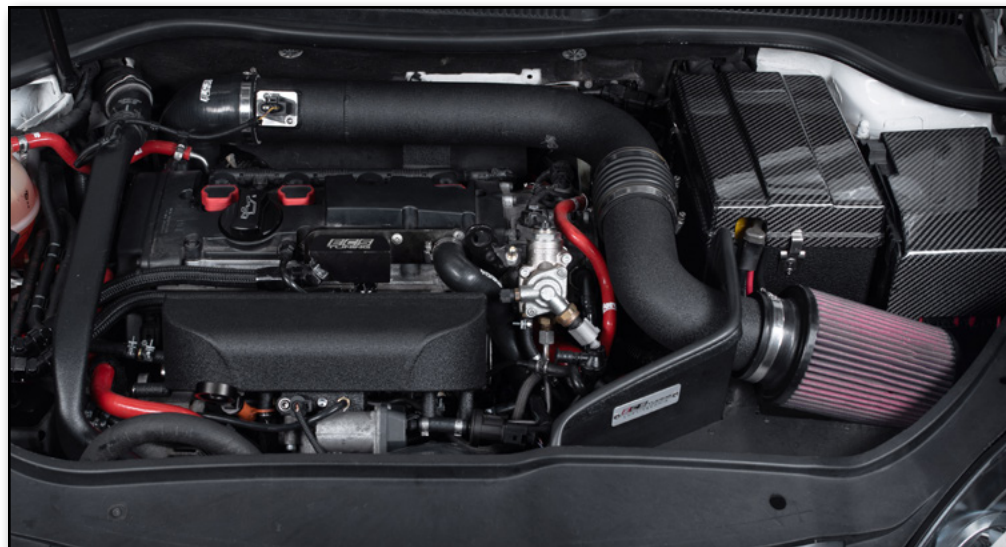




VW-Audi 2.0T FSI Aluminum Intake Manifold Installation Instructions - [Click HERE to Shop](#)



Skill Level
3 - Advanced
**Advanced Skills &
Experience Recommended**



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.

INTRODUCTION

Introducing our fabricated aluminum intake manifold for the 2.0T FSI 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 1/4" 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

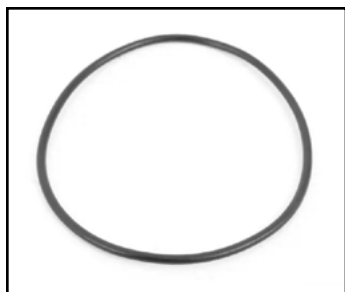
Basic Install Kit Contents.....	pg.3
FSI Specific Install Kit Contents	pg.4
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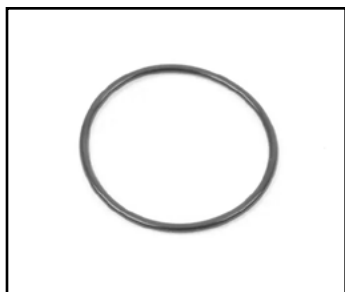
ECS Aluminum Intake Manifold w/Fuel Rail Standoff Posts
(available in black powdercoat or raw finishes)

BASIC INSTALL KIT CONTENTS

Note: All of our manifolds come w/this install kit. FSI-specific kit shown on [Page 4](#).



Throttle Body O-Ring Seal
(QTY 1)



Intake Runner Flange
O-Ring Seal (QTY 4)



1/8 NPTF 1/4" Hose ID
Barbed Fitting (QTY 1)



1/4 NPTF 5/16" Hose ID
Barbed Fitting (QTY 2)



1/8 NPTF 1/8" Hose ID
Barbed Fitting (QTY 1)



M6x65mm Bolt
(QTY 7)



M6x40mm Bolt
(QTY 4)



M8x35mm Bolt
(QTY 1)



Vibration Damper
(QTY 1)



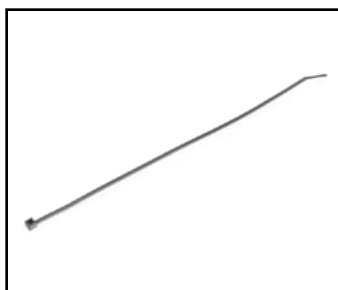
8mm ID Vacuum Cap
(QTY 1)



1/8 NPTF Threaded Plug
(QTY 6)



1/4 NPTF Threaded Plug
(QTY 2)



Cable Tie
(QTY 12)

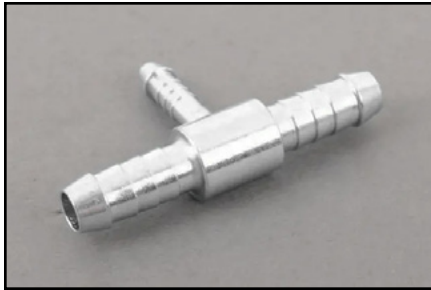


M6x12mm Bolt
(QTY 4)



M6x20mm Bolt
(QTY 1)

FSI-SPECIFIC INSTALL KIT CONTENTS



Metal Hose "Tee"
(QTY 1)



5/16" Hose ID Barbed Union
(QTY 6)



12-14.3mm clamp
(QTY 12)



8-10.3mm clamp
(QTY 2)



5mm Aluminum Spacer
(QTY 1)



Swivel Barbed Hose Fitting
(QTY 2)



Cohline Swivel Nut
(QTY 1)



5/16" ID Fuel Hose
(QTY 1 Meter)



5mm ID Fuel Hose
(QTY 1 Meter)

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](#)
- **3/8" Drive Ratchet** [ES#2765902](#)
- **3/8" Drive Torque Wrench** [ES#2221245](#)
- **3/8" Drive Deep and Shallow Sockets** [ES#2763772](#)
- **3/8" Drive Extensions** [ES#2804822](#)
- Hydraulic Floor Jack [ES#2834951](#)
- **Torx Drivers and Sockets** [ES#11417/8](#)
- 1/2" Drive Deep and Shallow Sockets [ES#2839106](#)
- 1/2" Drive Ratchet
- 1/2" Drive Extensions
- 1/2" Drive Torque Wrench [ES#2221244](#)
- 1/2" Drive Breaker Bar [ES#2776653](#)
- Bench Mounted Vise
- Crows Foot Wrenches
- **Hook and Pick Tool Set** [ES#2778980](#)

Required For This Install

Available On Our Website

- 1/4" Drive Ratchet [ES#2823235](#)
- 1/4" Drive Deep and Shallow Sockets [ES#2823235](#)
- 1/4" 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](#)

Specialty Tools

- **1/4" Drive Set (incl. 1/4" 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

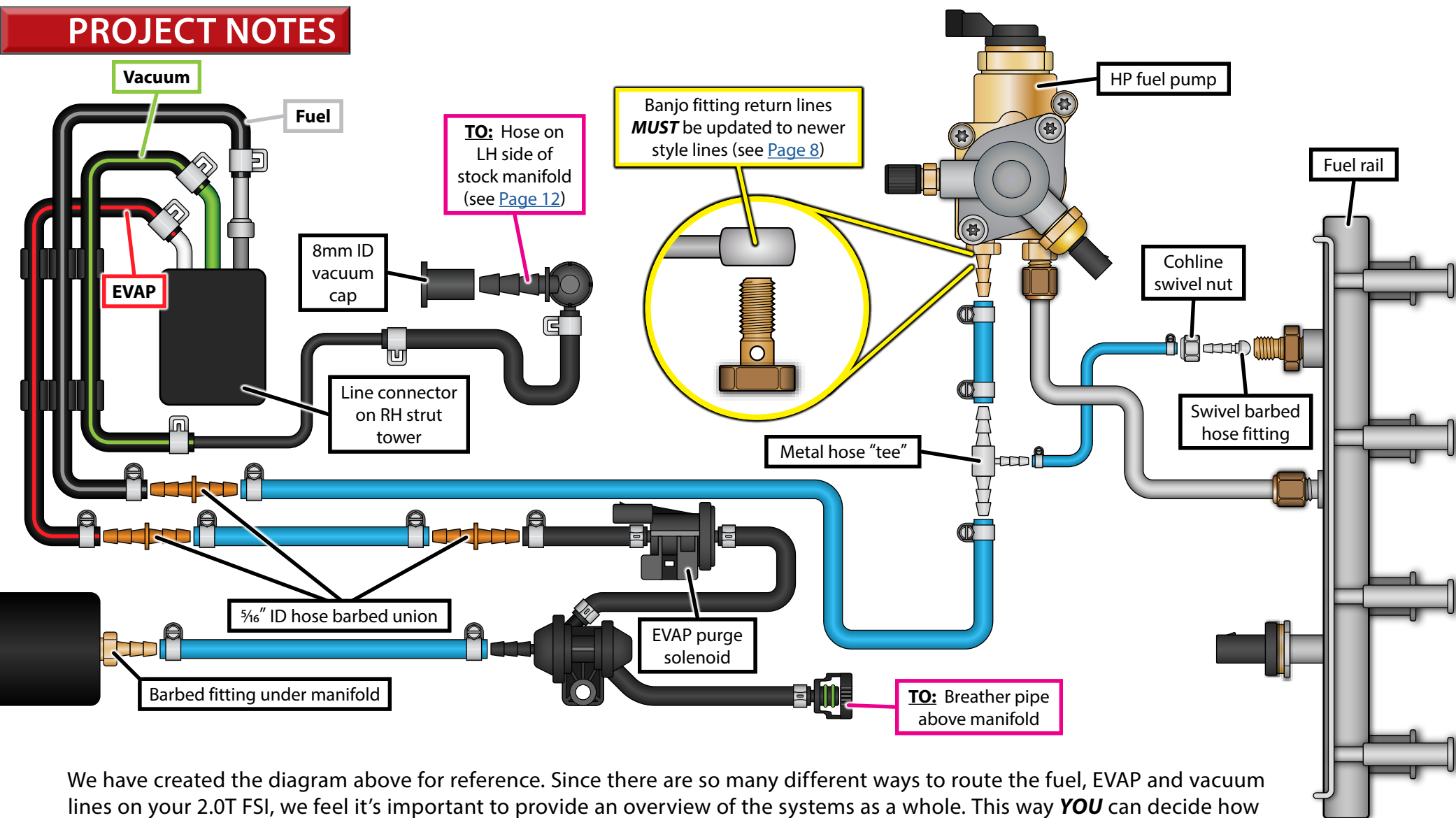
ECS Tuning cares about your health and safety, please read the following safety information. This information pertains to automotive service in general, and while it may not pertain to every job you do, please remember and share these important safety tips.

- 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 FSI, 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.

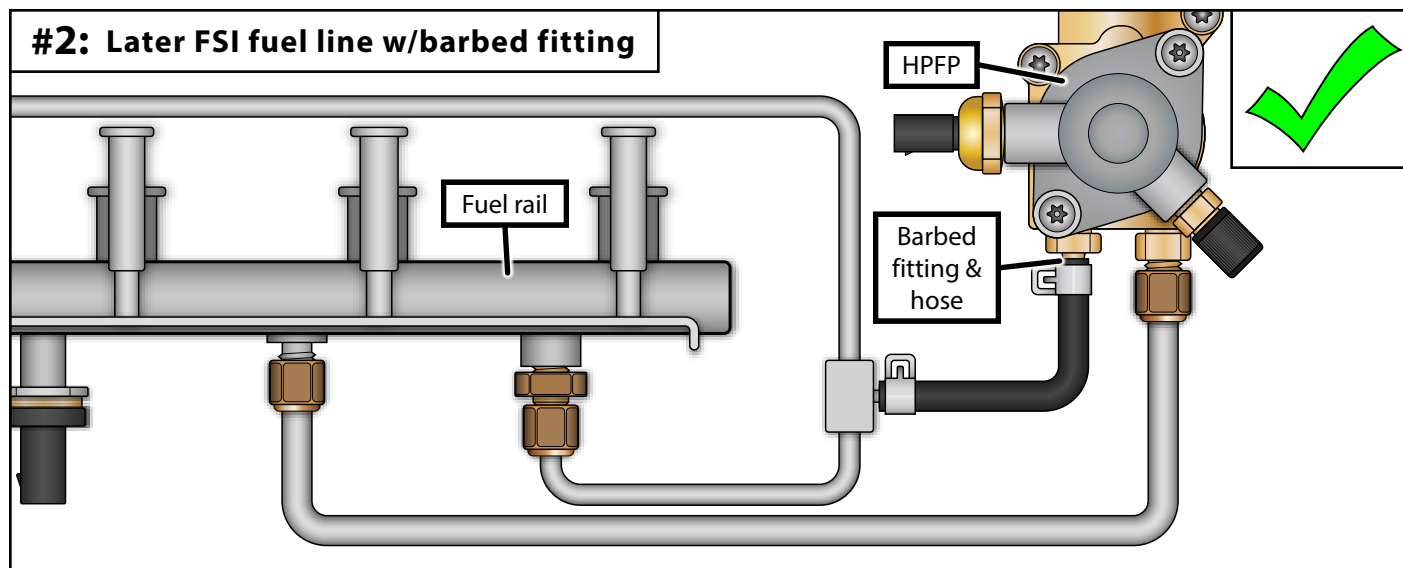
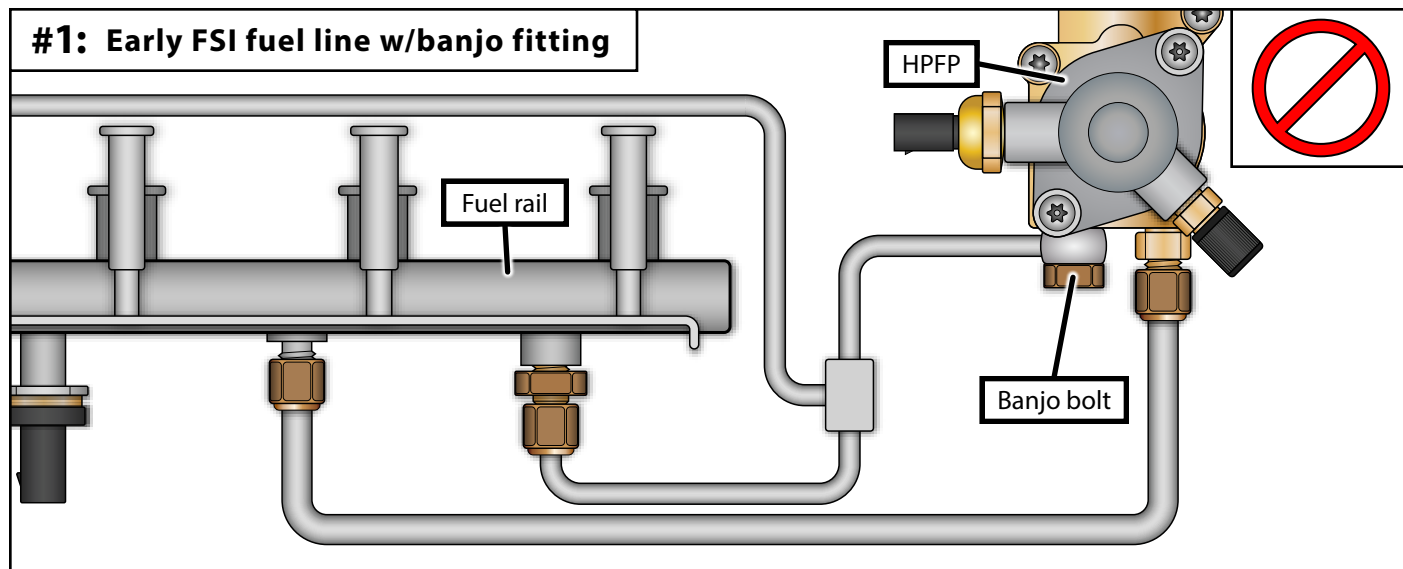
Please note that the **BLUE** fuel line shown above represents where you may decide to use the supplied fuel hose to **EXTEND** your stock hoses. The supplied hose is not blue. Feel free to reference back to this page as needed throughout the install.

PROJECT NOTES

It's important to note that our aluminum intake manifold is not compatible with the early production FSI fuel lines which connect to the high pressure fuel pump (HPFP) with a banjo bolt (**photo #1**). There is no way to safely connect our fuel return hose into this style of fuel line. The newer fuel line (commonly referred to as the "bamboo line") on the other hand is serviceable thanks to the rubber hose which connects it to the fuel pump (**photo #2**).

If you have the early production banjo bolt fuel line on your vehicle you will need to update it to the revised line set before (or during) this install. This line set can be found on our site at [ES#4213241](#).

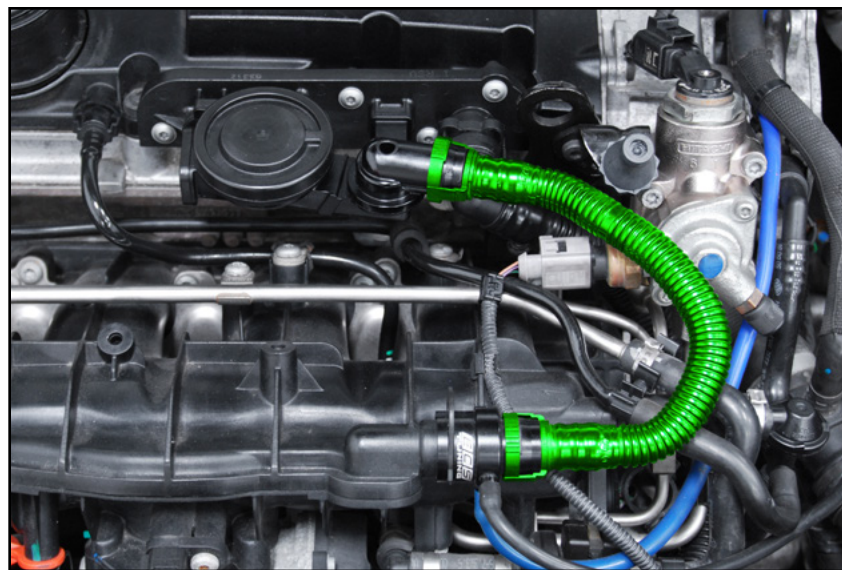
Now let's get to it!



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 FSI performance oil catch can kit which can be found on our website at [ES#2954131](#).



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.

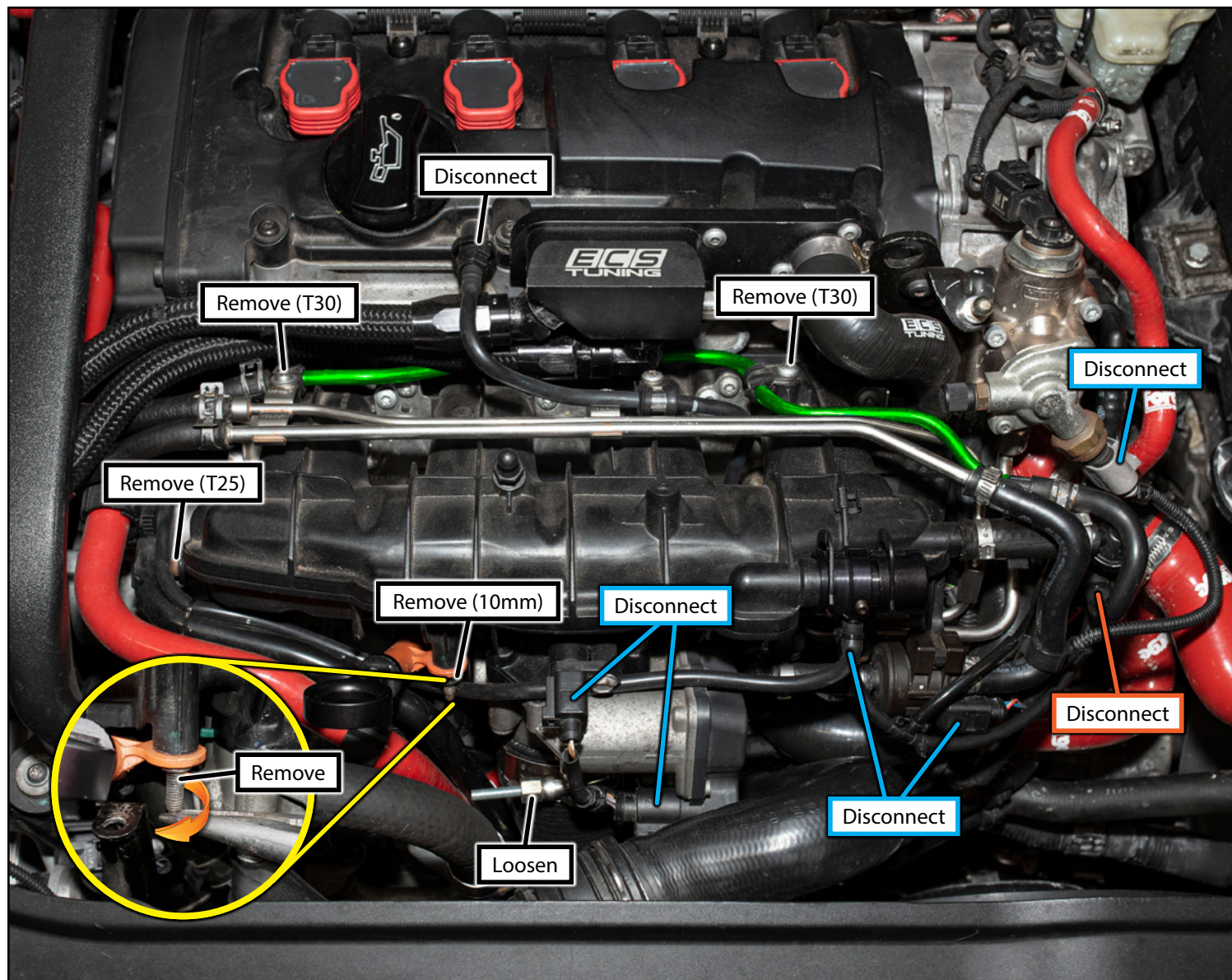


REMOVING THE STOCK INTAKE MANIFOLD

Step 3:

Disconnect the electrical connectors from the IAT sensor, throttle body, high pressure fuel pump (HPFP) and the EVAP purge solenoid (**BLUE** boxes in the photo). Disconnect the air tube from the valve cover. Remove the two T30 screws which secure the vacuum pipe (highlighted in **GREEN**) to the top of the intake manifold. Disconnect the vacuum hose from the valve located directly in front of the HPFP (**ORANGE** box).

Remove the 10mm nut and T25 screw which secure the coolant pipe to the corner of the intake manifold, then remove the threaded stud which secures the engine oil dipstick to the bottom side of the manifold (inset photo).



REMOVING THE STOCK INTAKE MANIFOLD

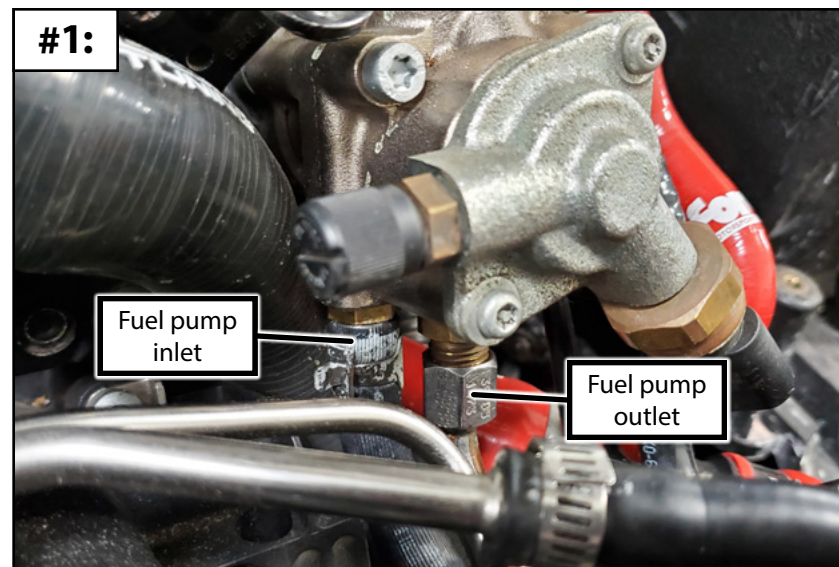
Step 4: 17mm Wrench, Needle Nose or Locking Hose Clamp Pliers

Now we need to disconnect the fuel lines (**photo #1**) 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.

We typically remove the outlet line first, then the inlet. The outlet is secured to the pump with a 17mm compression nut, an open end wrench will work here (**photo #2**). To remove the inlet hose (assuming you don't have the early fuel line with a banjo bolt) you need to squeeze the hose clamp and slide it down the hose, then twist the hose and pull it off of the barbed fitting (not shown).



REMOVING THE STOCK INTAKE MANIFOLD

Step 5: Needle Nose or Locking Hose Clamp Pliers

Disconnect the fuel, EVAP and vacuum hoses from the hard lines on the RH side of the intake manifold. Place a rag/towel **BEHIND** and **AROUND** the fuel line to catch any fuel which may spill or spray out.

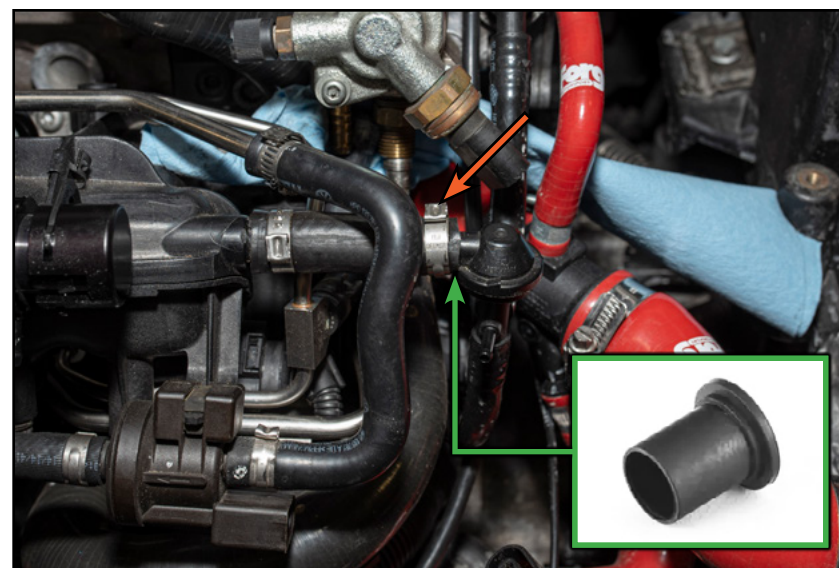


Step 6: Flat Blade Screwdriver

Cut off the hose clamp which secures the vacuum hose on the side of the intake manifold directly in front of the HPFP (**ORANGE** arrow in the photo on the right). Use the 5/16" ID vacuum cap (**GREEN** inset photo) from the main installation kit to cover up the barbed fitting on the vacuum pipe assembly.



At this point in the install we completely removed the black plastic vacuum pipe which runs across the top of the intake manifold (highlighted in **GREEN** on [Page 10](#)). This is optional, but it gives you some extra room to work.

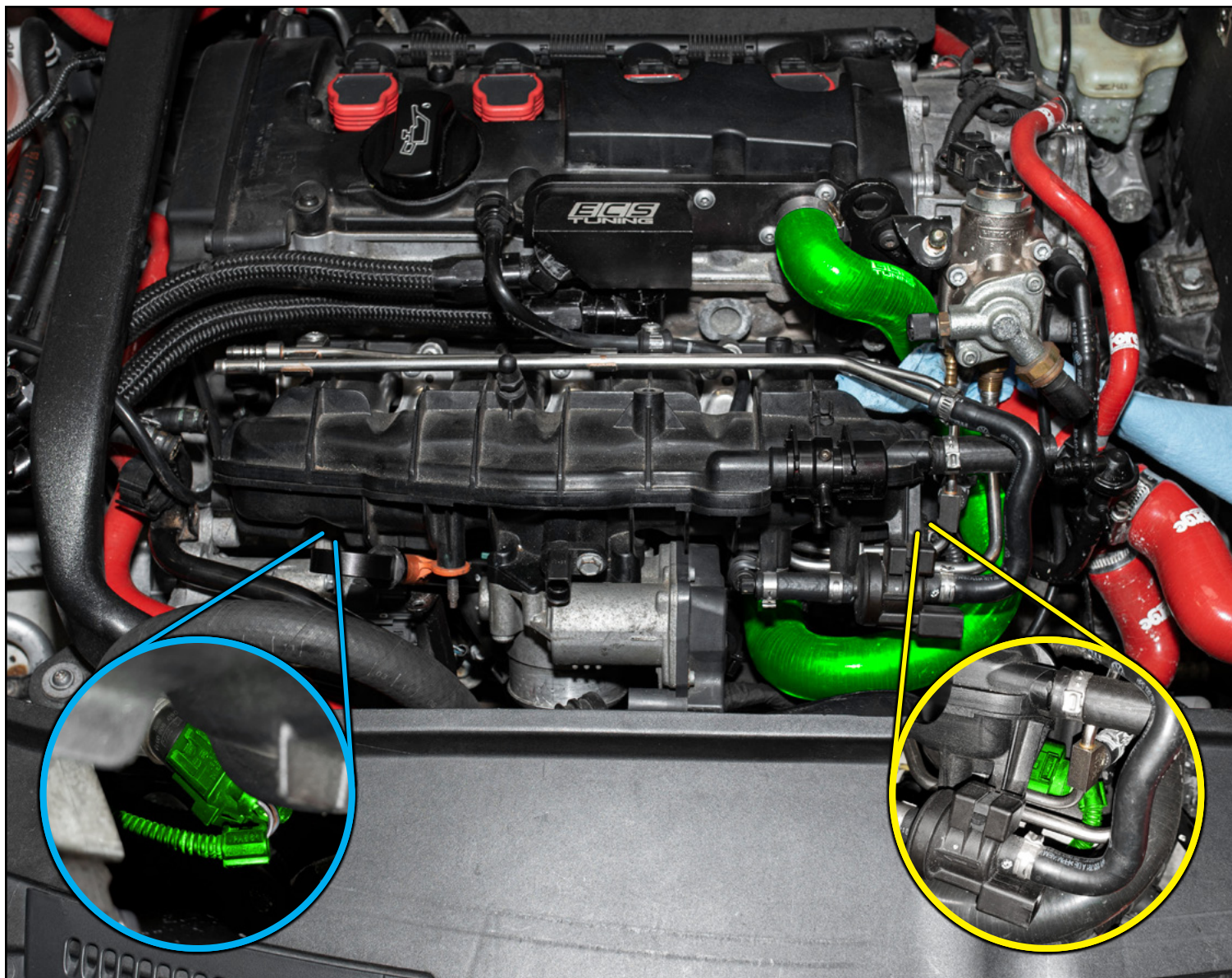


REMOVING THE STOCK INTAKE MANIFOLD

Step 7:

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 directly behind the engine oil dipstick tube. The runner flap motor connector (highlighted in **GREEN** in the **YELLOW** inset photo) is on the side of the intake manifold just in front of the HPFP.

If you have a silicone lower breather hose (highlighted in **GREEN** in the main photo), now is a good time to remove it. We've found that these silicone hoses can get in the way when we remove the manifold, the stock plastic breather pipe isn't as large and it might not need to come out.

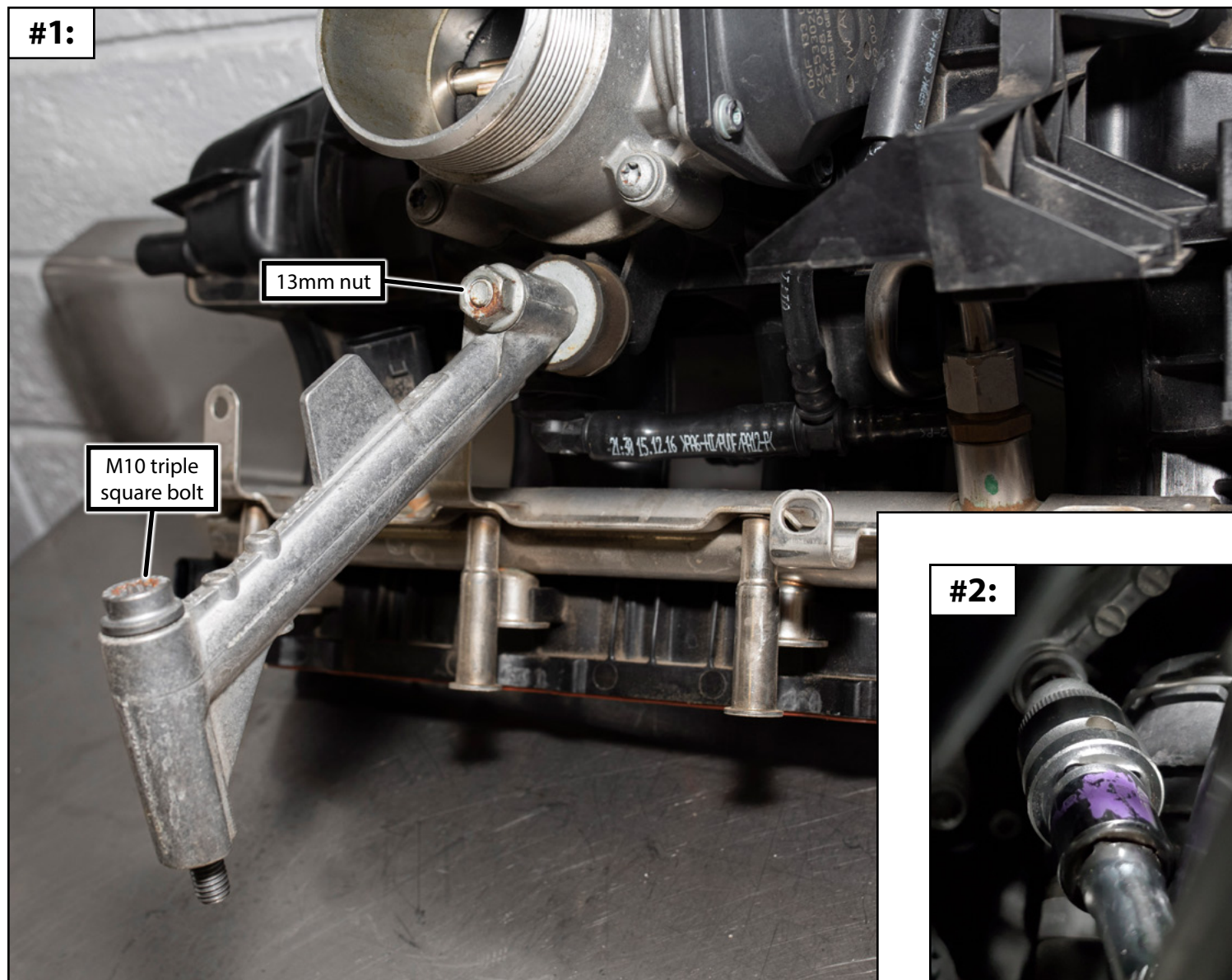


REMOVING THE STOCK INTAKE MANIFOLD

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. Pulling the throttle body off now will give you some extra space to work (see [Page 22](#)).

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!



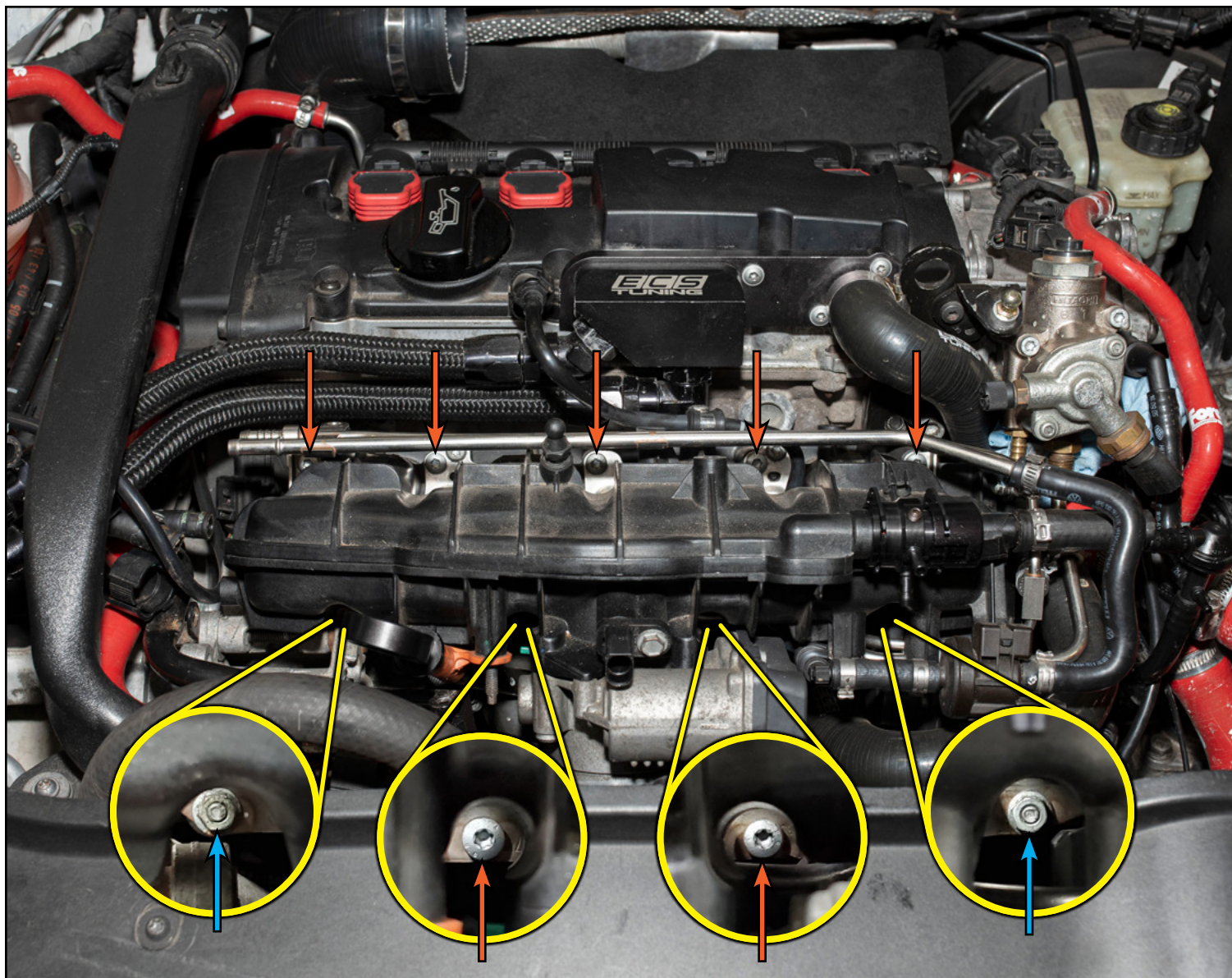
REMOVING THE STOCK INTAKE MANIFOLD

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 $\frac{1}{4}$ " drive sockets and long extensions work really well here.

The $\frac{1}{4}$ " 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 $\frac{3}{8}$ " drive T30 socket underneath the intake manifold to reach those two lower bolts.



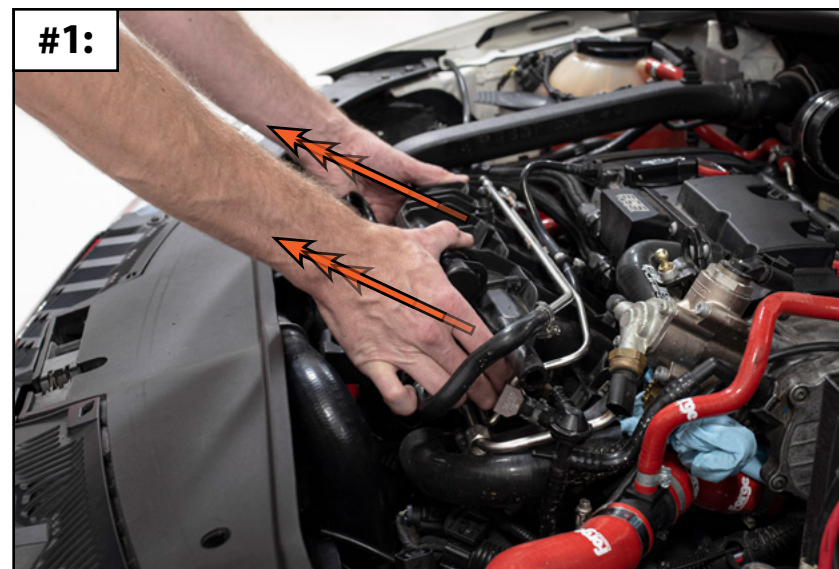
REMOVING THE STOCK INTAKE MANIFOLD

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**). This harness 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.

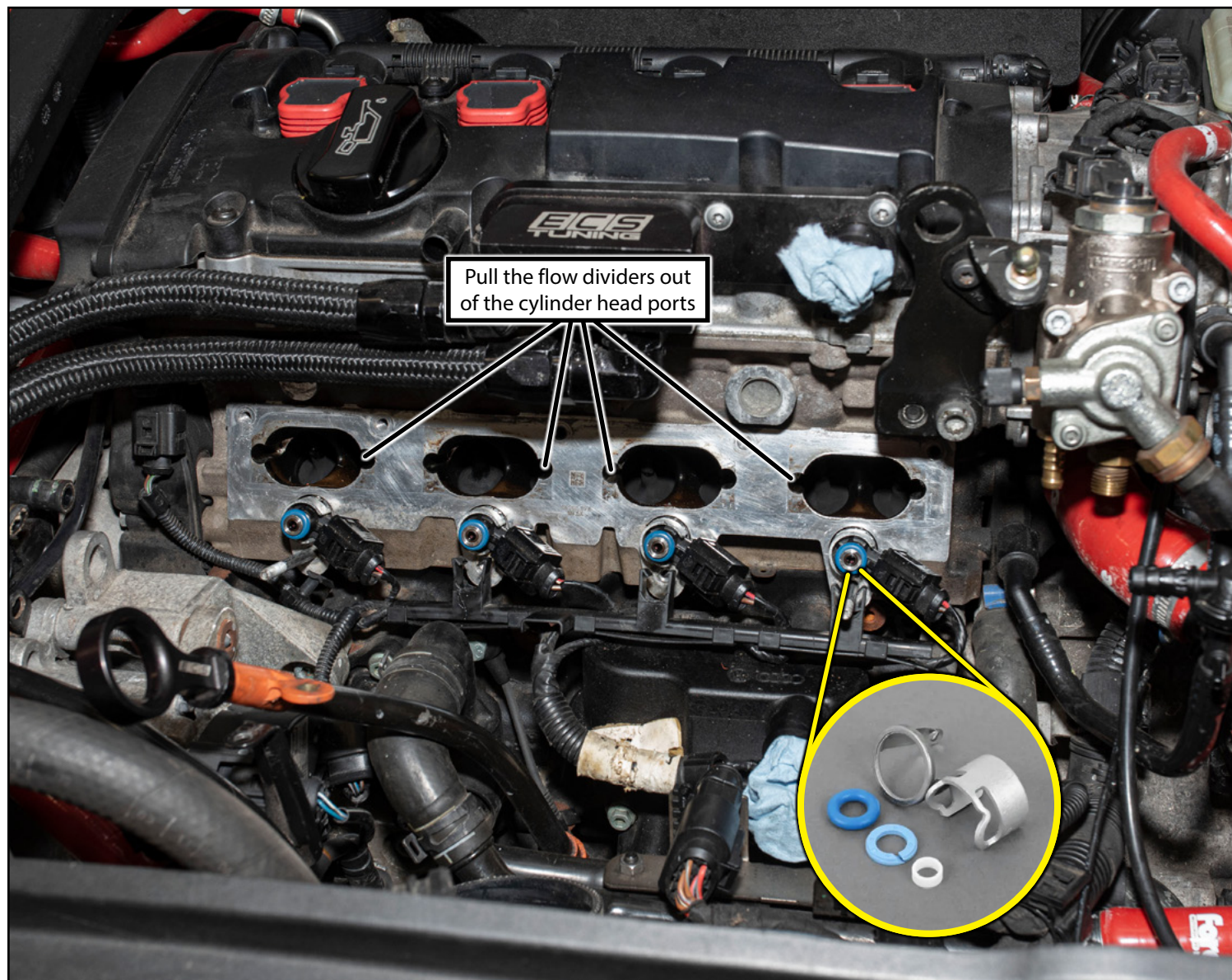


REMOVING THE STOCK INTAKE MANIFOLD

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#280488](#), 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.



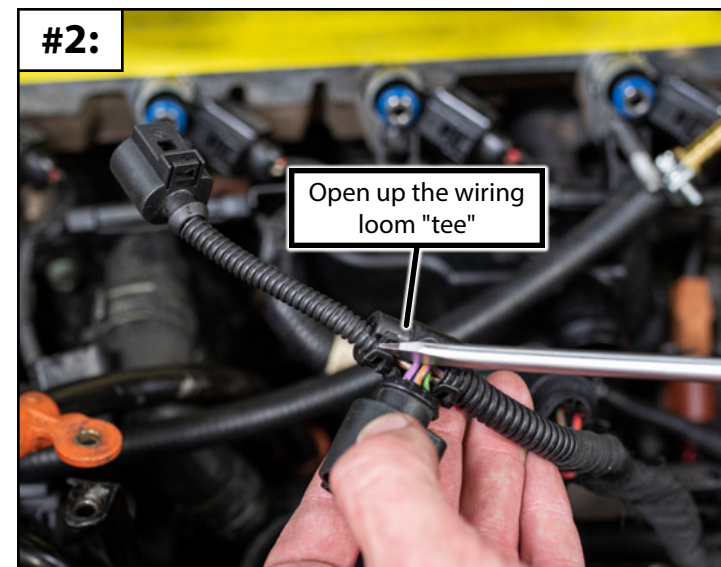
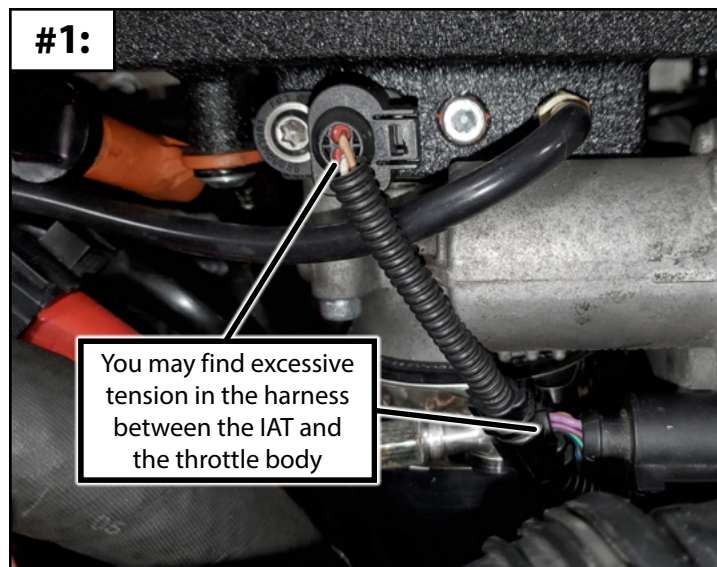
REMOVING THE STOCK INTAKE MANIFOLD

Step 12:

Due to manufacturing tolerances in FSI intake manifolds, you may find tension in the wiring harness between the IAT sensor and throttle body connectors (**photo #1**). If this happens to you then you'll need to make a small modification to relieve the tension, but it's really simple! **Please read all the way through Page 20 BEFORE starting with this modification.**

The goal here is to free up these wires so they can follow a more direct path to their connectors. We won't be cutting or splicing any wires, and you will be able to go back to the stock manifold (if desired) some day without any issues.

Start by opening up the wiring loom "tee" behind the throttle body connector (**photo #2**). Slowly and carefully, cut the tape from the wiring loom and peel it off, working your way down toward the main engine harness (**photo #3**).

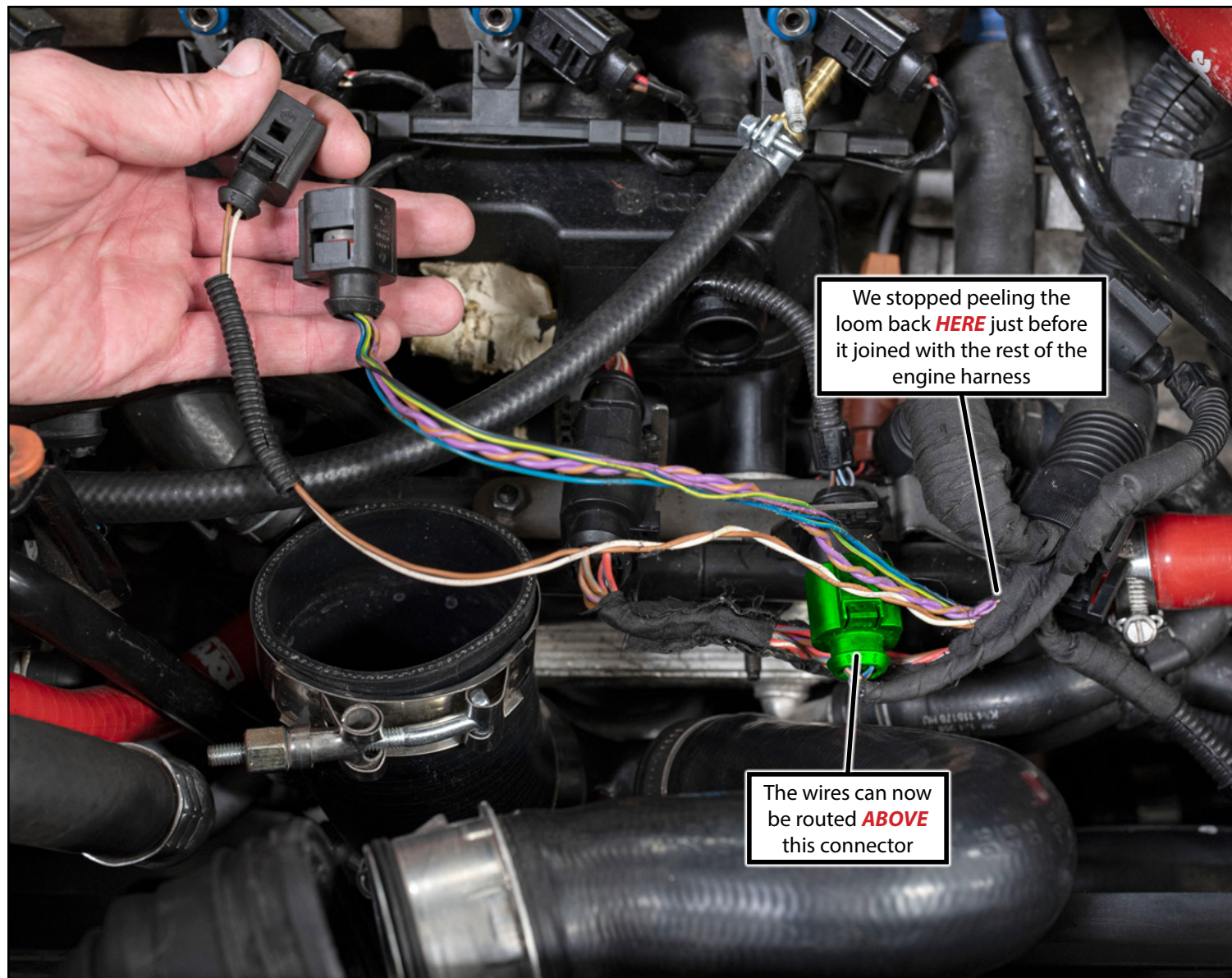


REMOVING THE STOCK INTAKE MANIFOLD

Step 13:

This photo shows the result we're looking for. The wires for the IAT sensor and throttle body are separated from one another, and they no longer follow the indirect path underneath the main engine harness connector (highlighted in **GREEN**).

Proceed to [Page 20](#) and we'll show you how to finish the job.



REMOVING THE STOCK INTAKE MANIFOLD

Step 14:

Here you can see that we've wrapped the wires up in automotive grade wiring harness cloth tape. We wrapped the wiring for each connector separately, and we wrapped up the main harness where we were splitting the loom apart.

With all of this complete you can proceed to the next page for one final modification we need to make for clearance around the intake manifold.

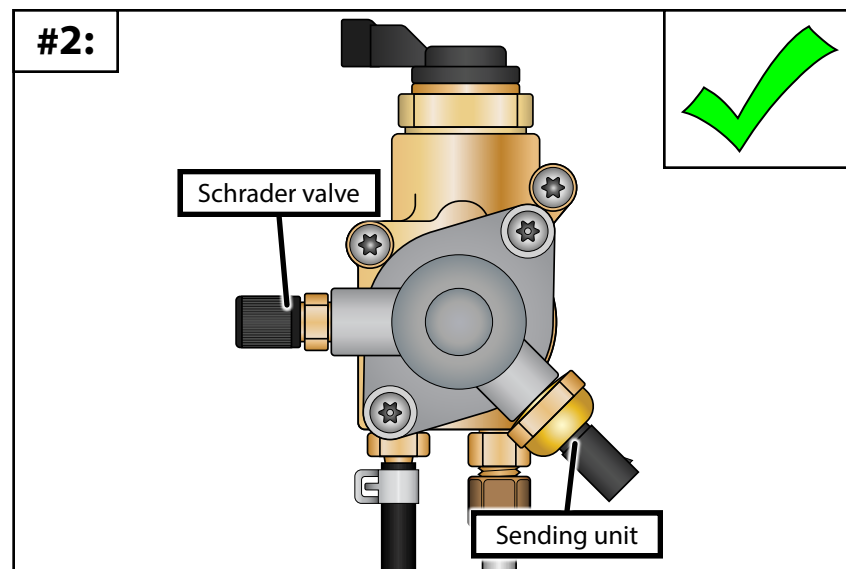
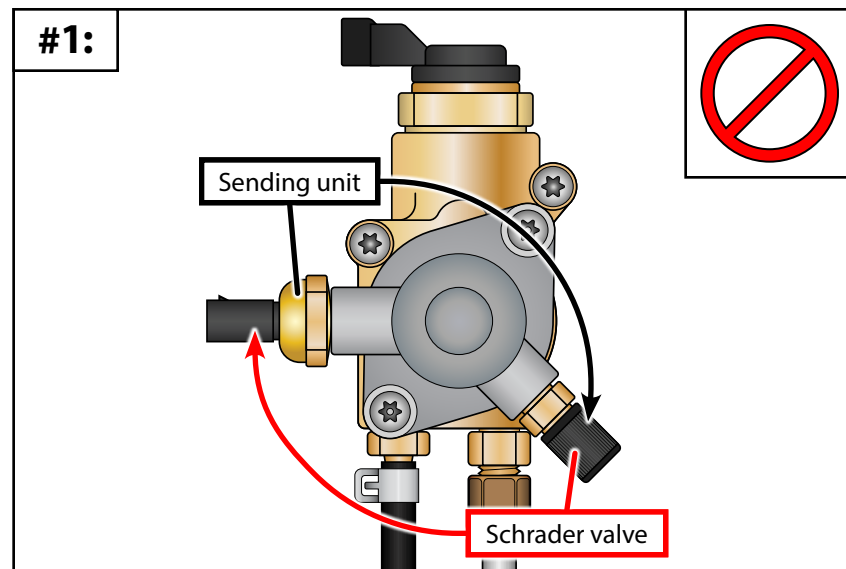


REMOVING THE STOCK INTAKE MANIFOLD

Step 15:

The sending unit on the side of the HPFP won't clear the new aluminum intake manifold, so it needs to be swapped with the schrader valve fitting on the other side (**photo #1**).

These two components share the same thread pitch and diameter, so swapping them is a very simple job. Please reference **photo #1** & **photo #2** for before and after illustrations.



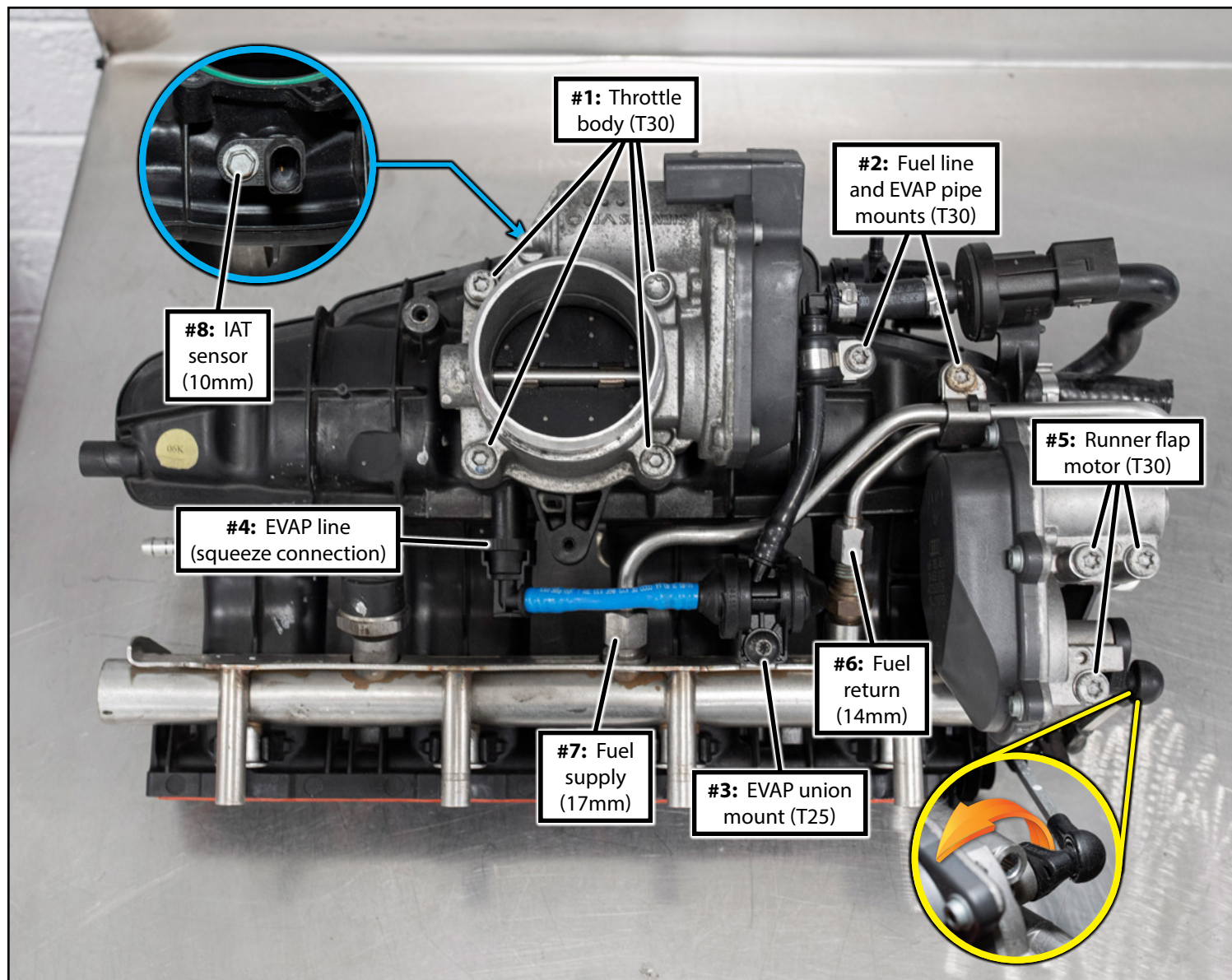
PREPPING THE NEW INTAKE MANIFOLD FOR INSTALL

Step 1:

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

Remove the throttle body, runner flap motor, 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.

It's worth pointing out that the runner flap motor needs to be removed to make room for removing the fuel lines. The **YELLOW** inset photo shows the optional step of rotating the motor to release it from the linkage.



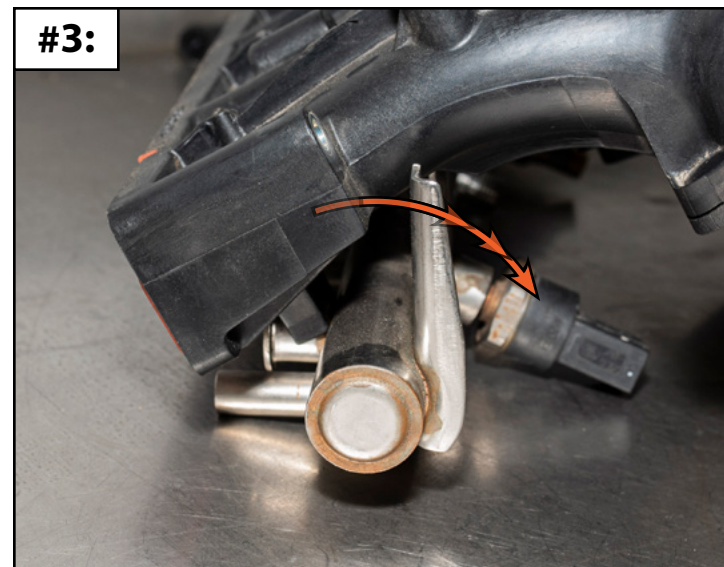
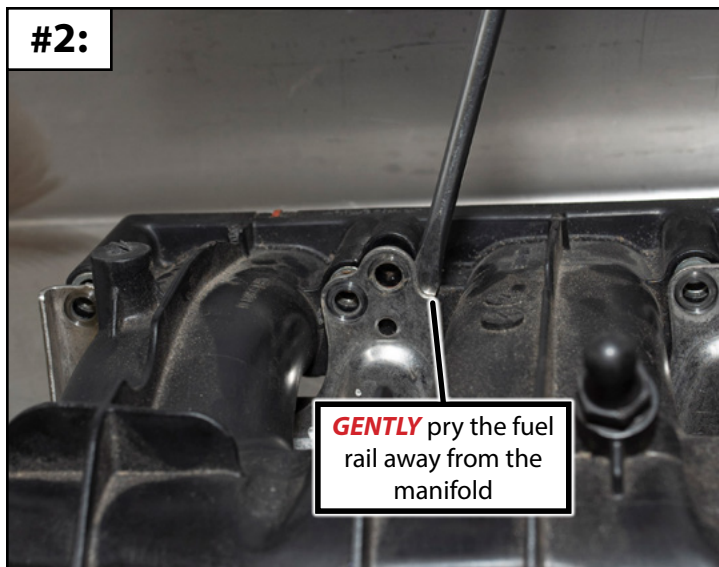
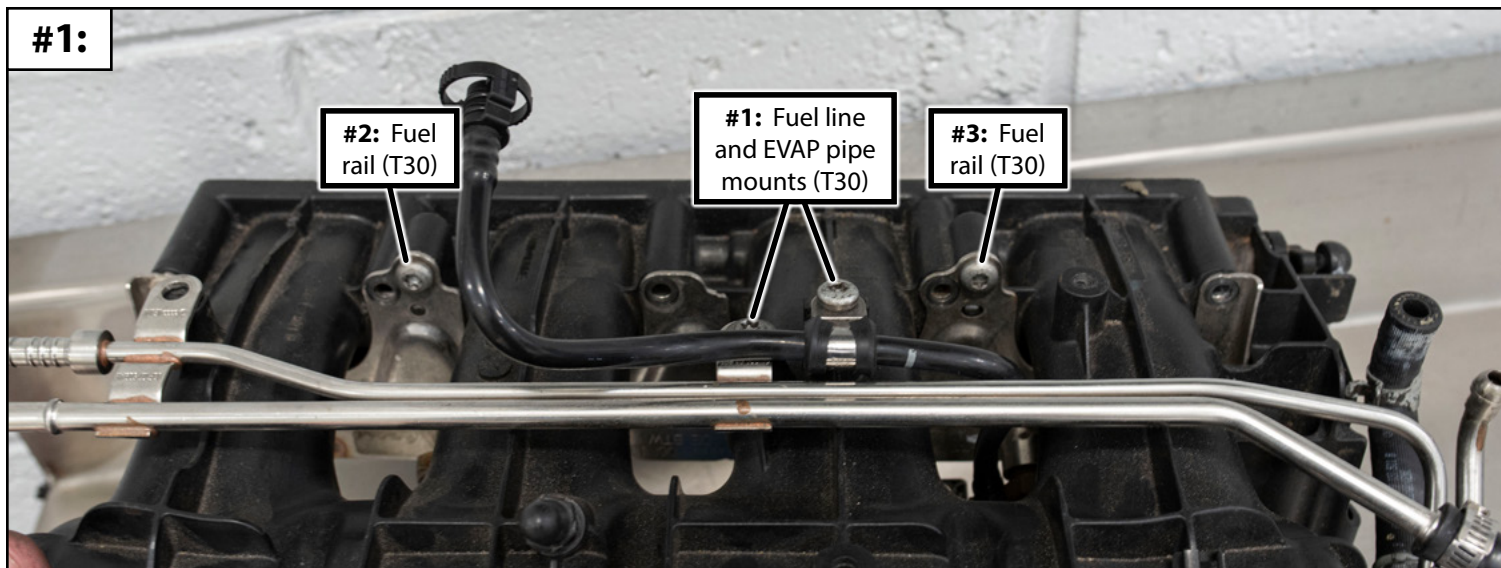
PREPPING THE NEW INTAKE MANIFOLD FOR INSTALL

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 lines 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**).



PREPPING THE NEW INTAKE MANIFOLD FOR INSTALL

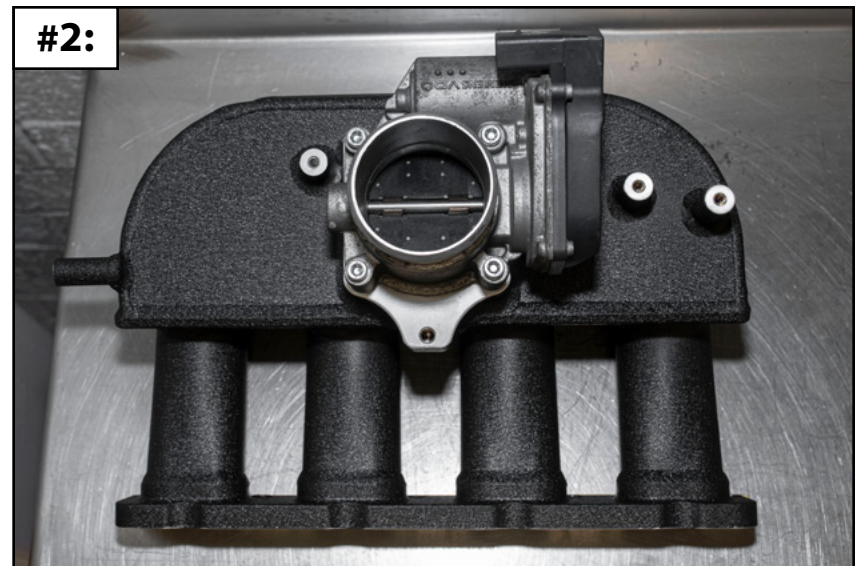
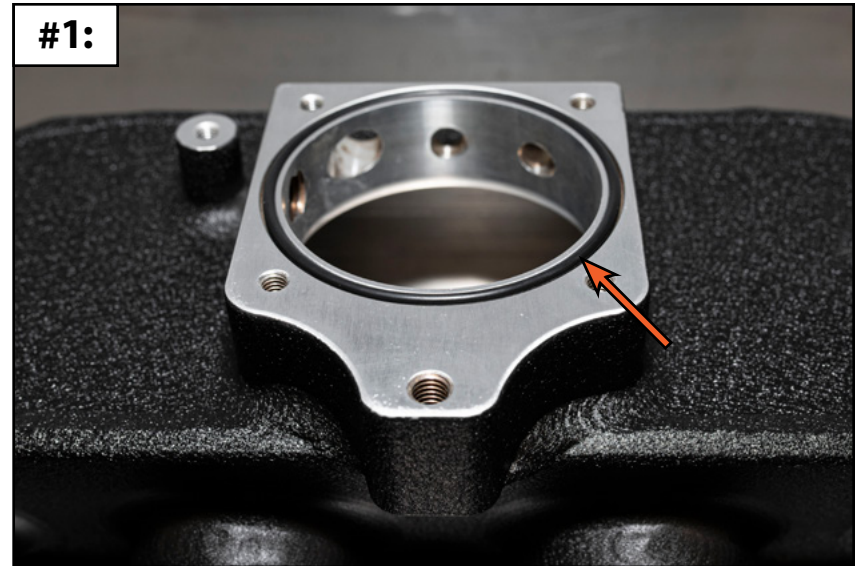
Step 3: 5mm Hex (Allen)

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.



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.



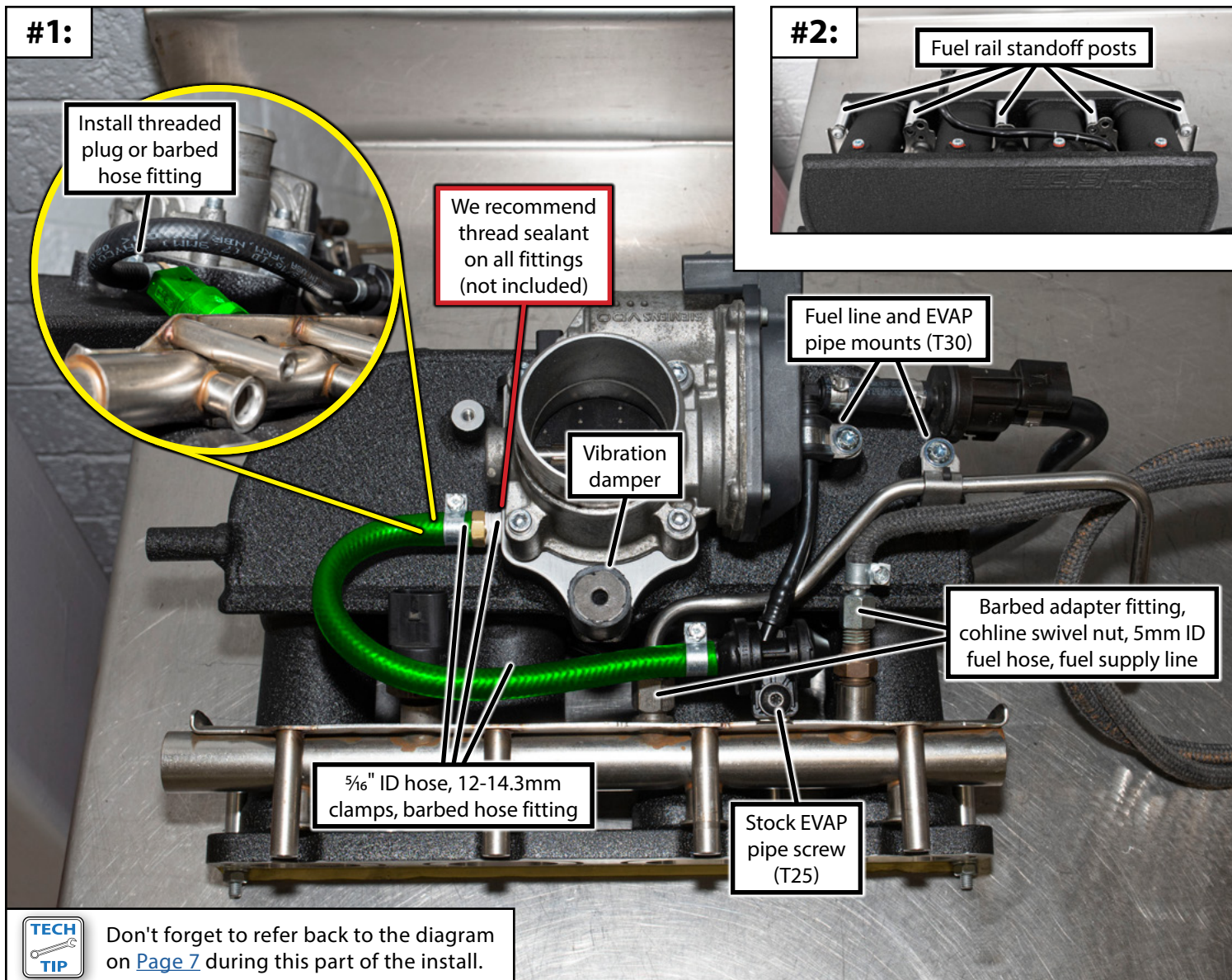
PREPPING THE NEW INTAKE MANIFOLD FOR INSTALL

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 26](#)). Slide two manifold mounting bolts through the rail to hold it in place (optional).

Cut out and replace the EVAP pipe between the union and the manifold (highlighted in **GREEN** in **photo #1**) with part of the $\frac{5}{16}$ " ID hose from the install kit. Secure the pipe assembly to the manifold. Be sure to orient the hose so that it won't interfere with the fuel pressure sending unit connector (highlighted in **GREEN** in the **YELLOW** inset photo).

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



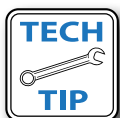
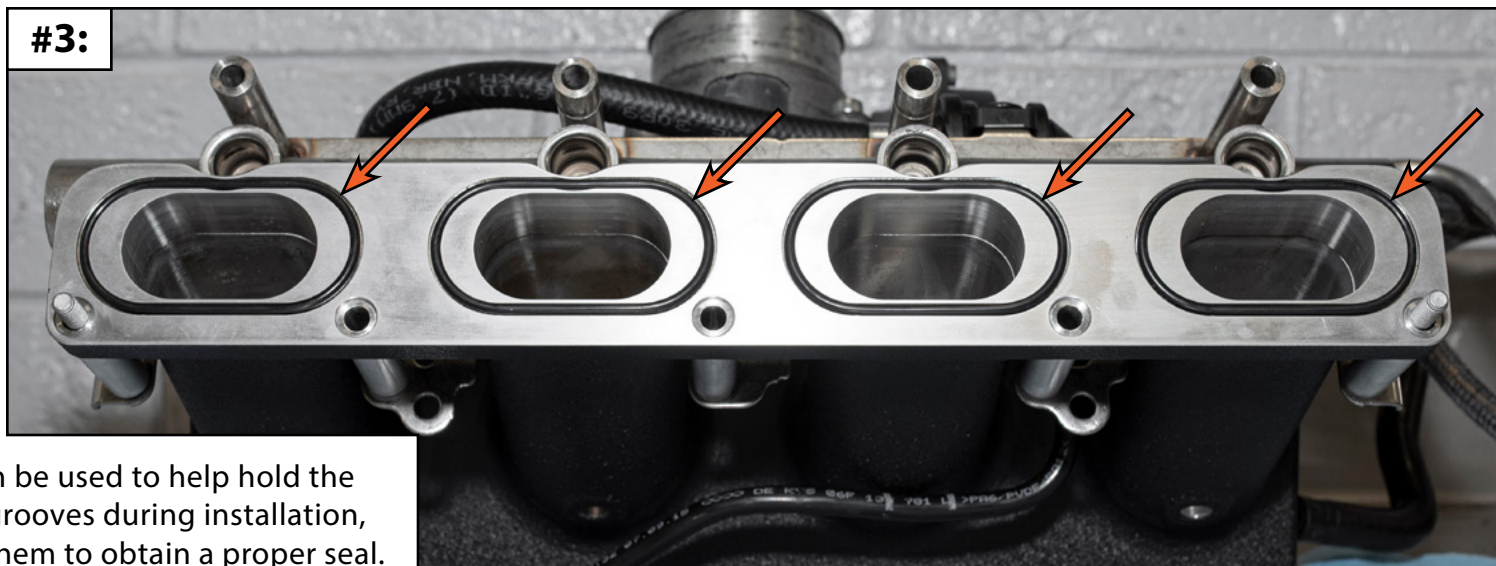
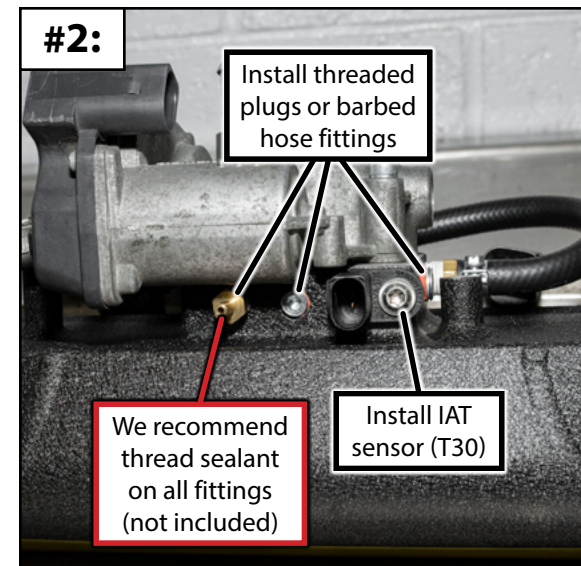
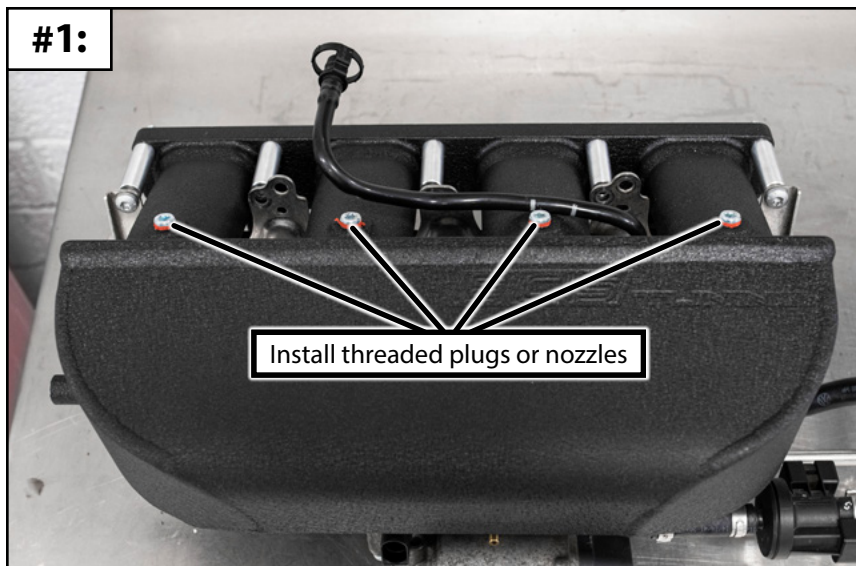
PREPPING THE NEW INTAKE MANIFOLD FOR INSTALL

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**).



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:

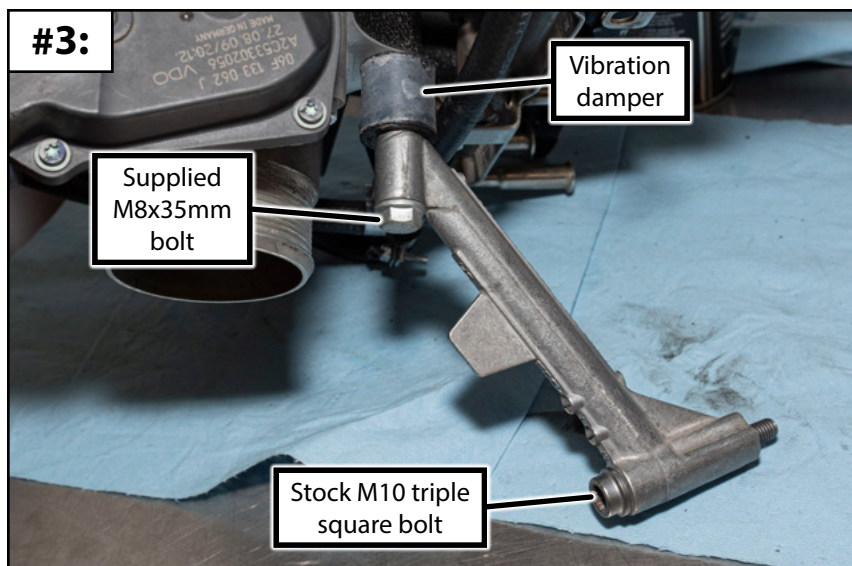
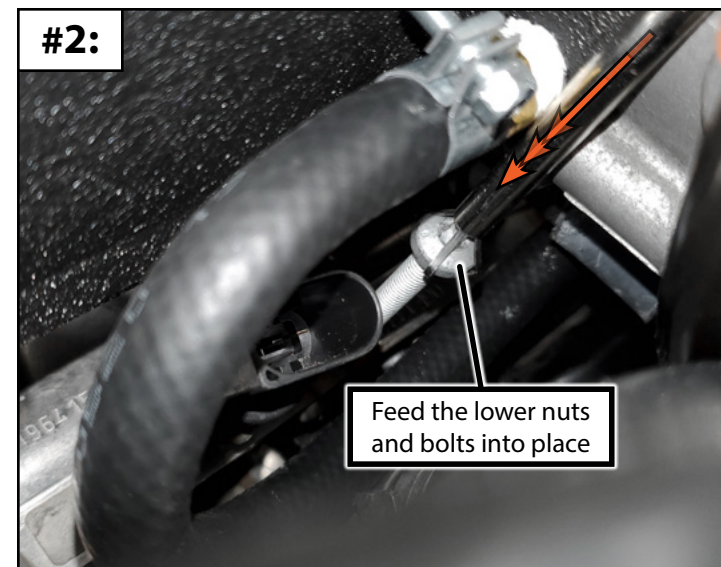
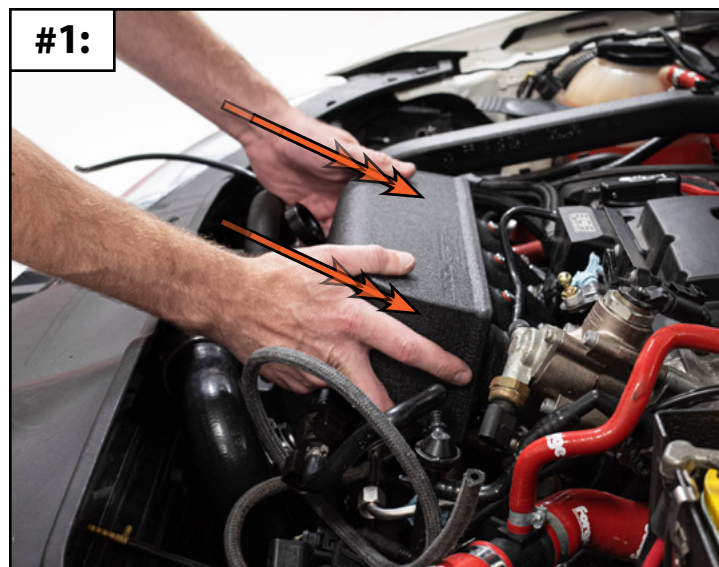
Reinstall the intake manifold into the engine bay (**photo #1**). Be very careful during this step to align the fuel rail with the cylinder head studs, align the fuel injectors with the rail, and clip the injector harness loom to the bottom of the fuel rail ([see Page 16](#)).

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 install the brace.

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 #3** shows these bolts with the manifold removed for reference). Tighten these bolts until snug.

Torque the manifold nuts and bolts to 10 Nm.



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Step 2:

Reinstall the silicone lower breather hose or plastic breather pipe (if removed).

Reconnect the fuel pressure sending unit connector on the fuel rail.

Secure the engine oil dipstick and coolant pipe bracket to the bottom of the intake manifold using the supplied M6x20mm bolt and 5mm thick spacer (**photo #1**).

Connect all 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.

Reconnect the negative (-) battery terminal.

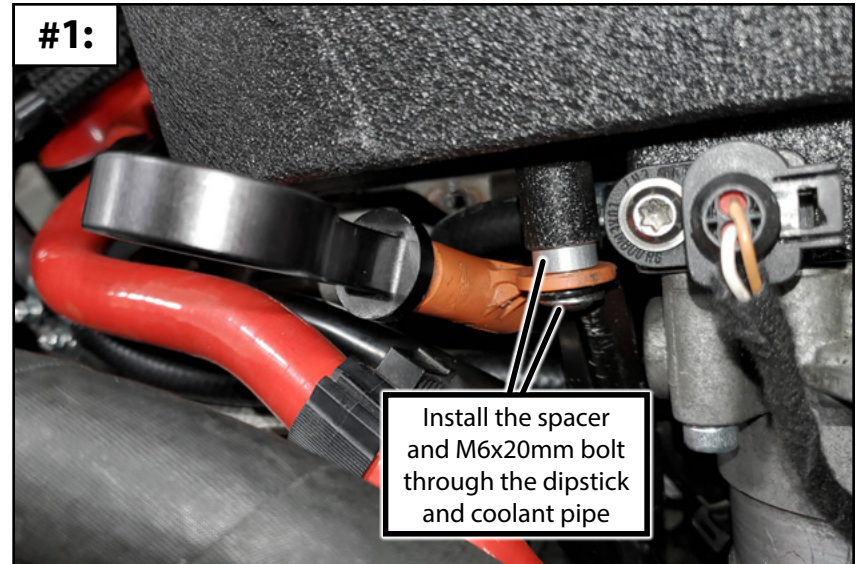
Cycle the ignition key from **OFF** to **ON** several times (without cranking the engine) to cycle the fuel pump. Check for fuel leaks.

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 FSI Aluminum Intake Manifold installation is complete!



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



These instructions are provided as a courtesy by ECS Tuning

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