2020+ TOYOTA GR SUPRA INTAKE MANIFOLD

INSTALL INSTRUCTIONS

2020-2021 Toyota Supra

Introduction ///

The goal of AMS Performance is to provide the highest quality, best performing products available. By utilizing research and development, and rigorous testing programs AMS Performance will never compromise the quality or performance of our products. In addition, AMS Performance will only provide the finest customer service offering only parts and advice that are in the best interests of the customer. AMS Performance was built on a foundation of integrity. This is who we are. This is what you can count on.

A vehicle modified by the use of performance parts and tuning may not meet the legal requirements for use on public roads. AMS Performance makes no claims of compliance unless otherwise stated on a per-product basis. Use or installation of performance parts and tuning may adversely affect the drivability and reliability of your vehicle, and may also affect or eliminate your insurance coverage, factory warranty and new OEM part warranty. There is no stated or implied guarantee by AMS of continued OEM vehicle warranty, insurance coverage, or emissions compliance, due to the stress placed on your vehicle by performance parts and our inability to monitor its use, tuning or modification.

These instructions are not intended to be a comprehensive guide for installation as there are many variables that may affect your particular vehicle, including but not limited to model year differences, sub-model/trim/optional equipment differences, the presence of non-OEM parts, or other modifications that may have previously been completed. A basic understanding of automotive parts and systems and novice mechanical skills should be all that is necessary for installation, but certain circumstances may necessitate professional installation.

AMS Performance is committed to providing quality support for our products. If you are in need of technical support, installation help, or a replacement component, our Customer Service Team is available directly via telephone at 847-709-0530, or digitally via the contact form linked here: amsperformance.com/support

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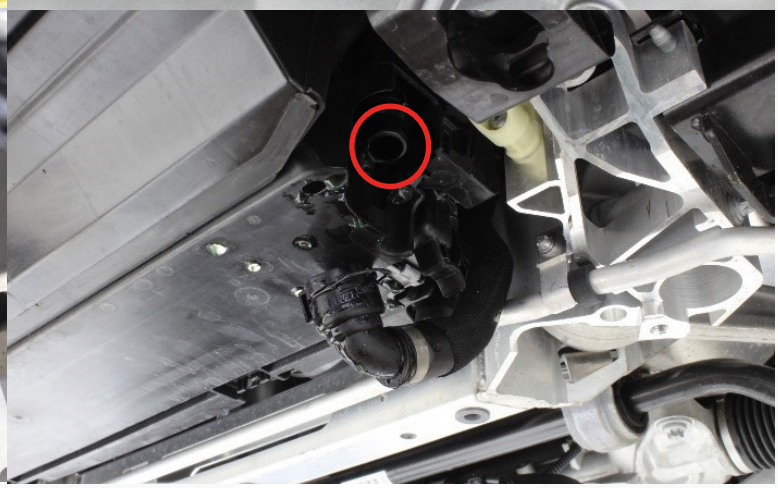
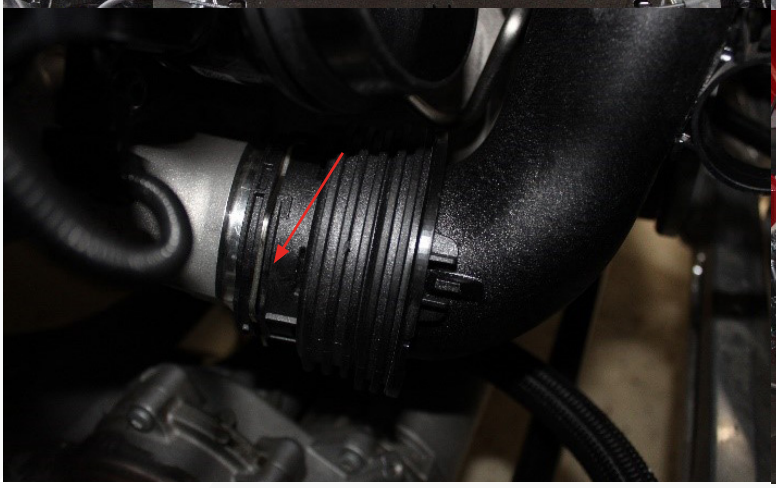
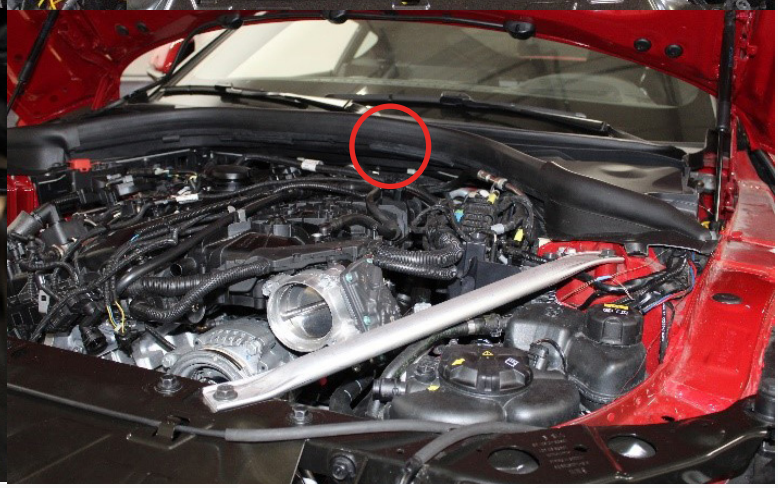
1. With the vehicle on the lift, remove the 3pc plastic undertray as well as the aluminum undertray. Then remove the intercooler reservoir cap and drain the intercooler system by disconnecting the lower heat exchanger quick connect located on left/drivers side of the heat exchanger.

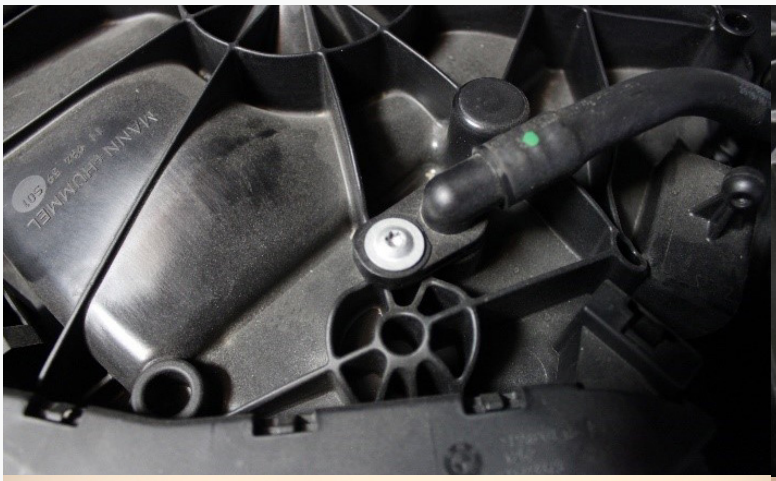


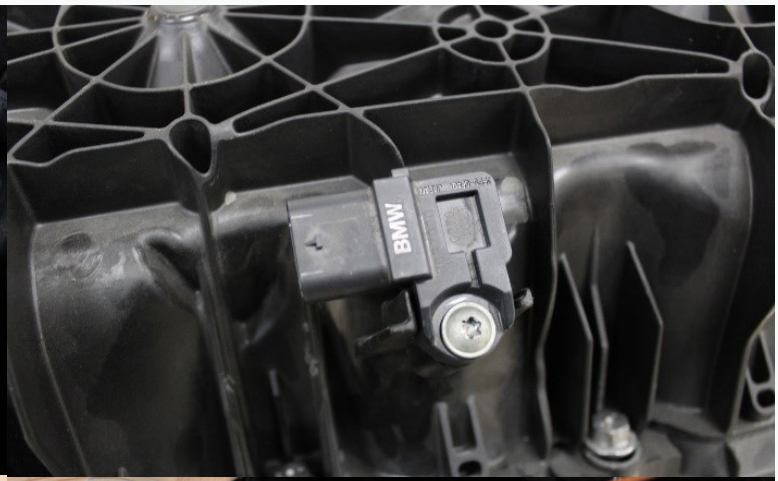
2. Remove the engine cover and charge pipe by removing the two bolts on the throttle body and metal retaining clip near the turbo. Stock charge pipe is shown, for the AMS charge pipe, loosen the worm gear clamps and remove the charge pipe.

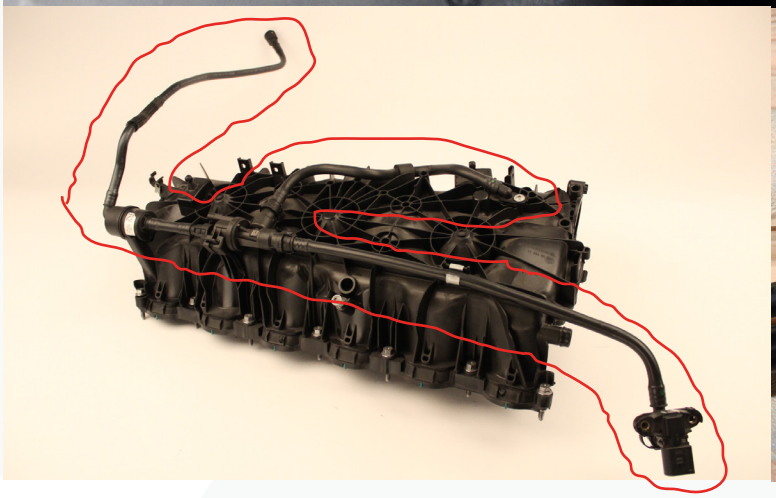




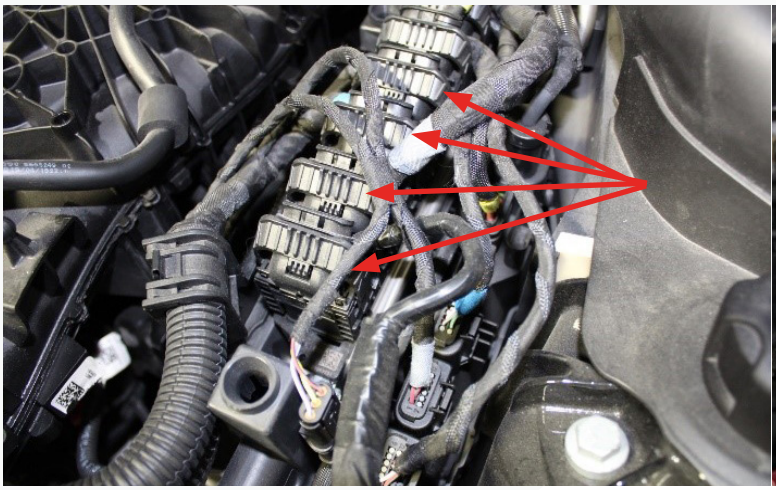
3. Remove the throttle body, IAT and MAP sensors. Also remove the fuel vapor feed hose and check valve (outlined above). The sensors are screwed into the manifold with T25 Torx head bolts. Unclip any vacuum lines and move them away from the manifold. Make sure to check the ones connected to the back of the manifold. The final connection for the fuel vapor hose is under the car, but still can be accessed from the engine bay. It is shown in the last photo.

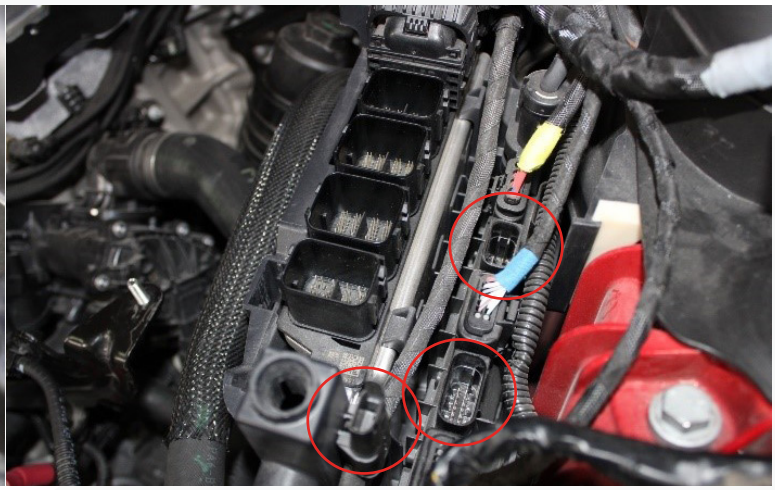






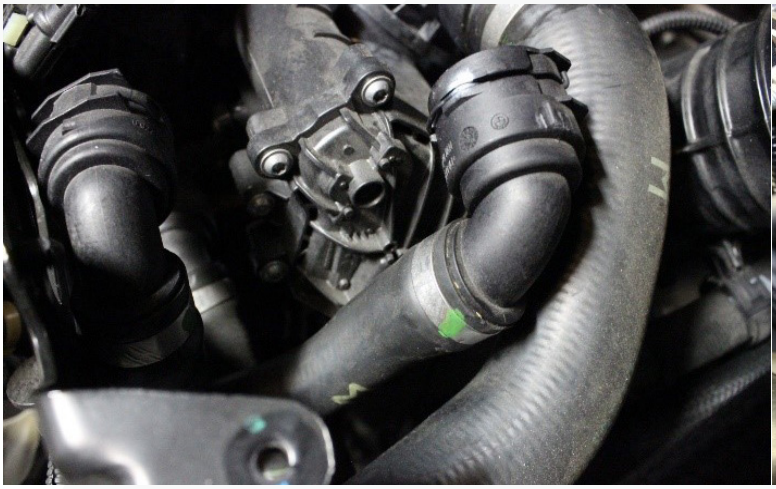
4. Disconnect the first four electrical connectors on the connection block, as well as the two smaller connectors that are tied into the same harness. Unclip the plastic guide connected to the manifold and move the harness out of the way.



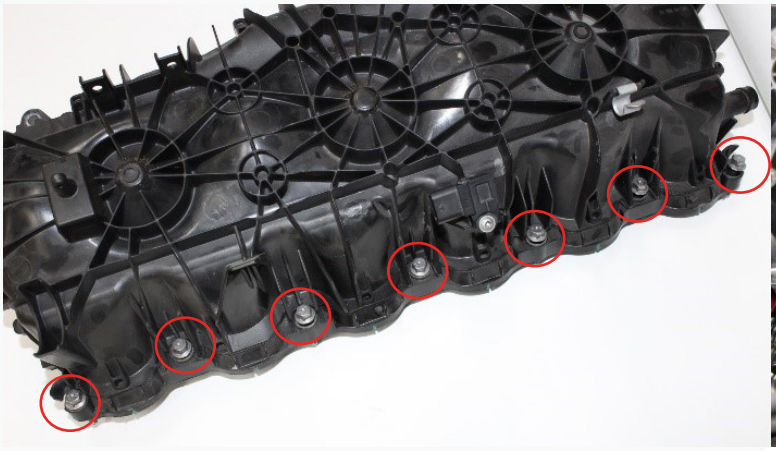


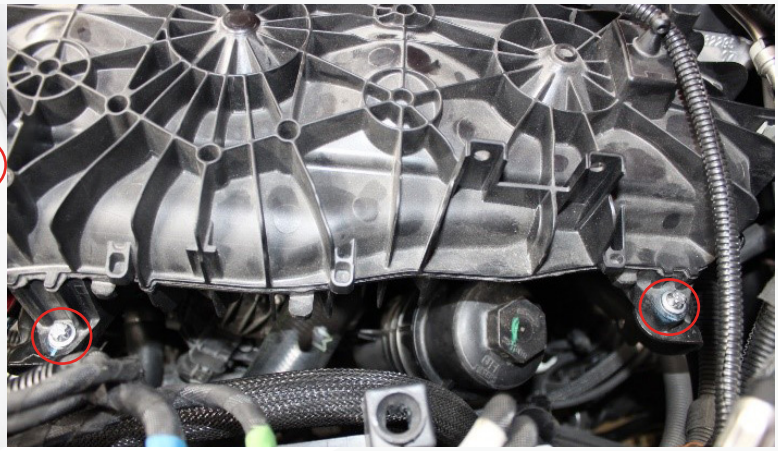
5. With everything on top of the manifold out of the way, disconnect the water lines underneath the manifold. Use a small pick tool to pop the retaining clip out and remove the hose from the fitting.

*Tech Note: The intake manifold has been removed in these pictures to better show the locations of the retaining clips.



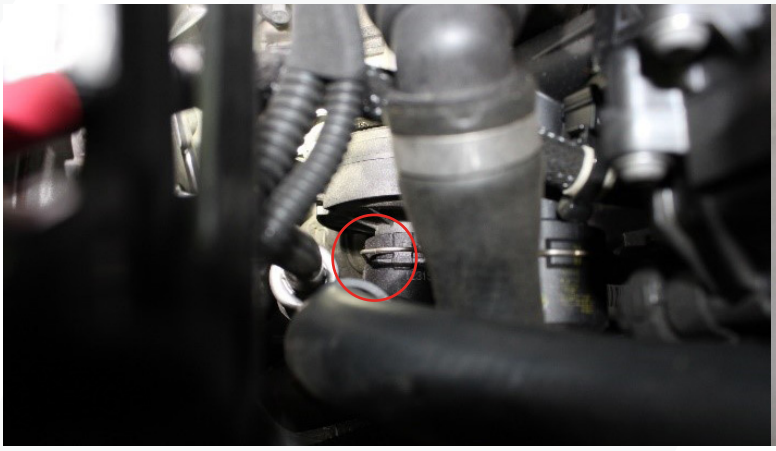
6. Once both fittings are removed, double check that all lines and connectors are removed from the manifold. Next, remove the seven 10mm bolts that mount the intake to the cylinder head. These are captured bolts and will not come all the way out of the intake manifold so do not force them. Then remove the two E-Torx head bolts on the outside support brackets for the manifold. Once these are removed, the intake can be lifted out of the engine bay.



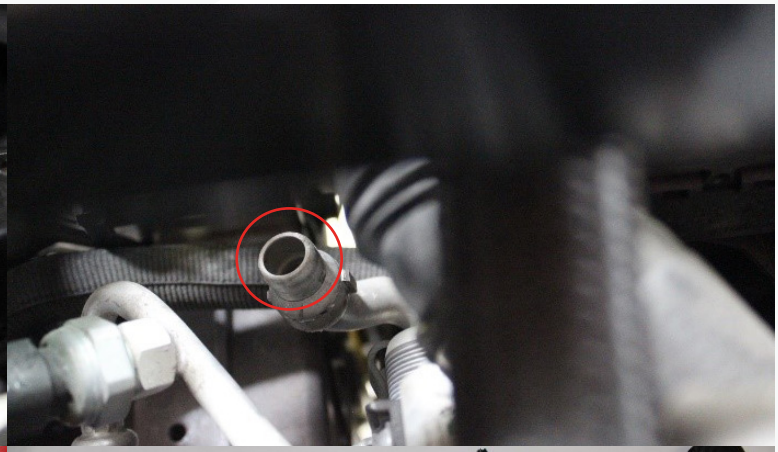


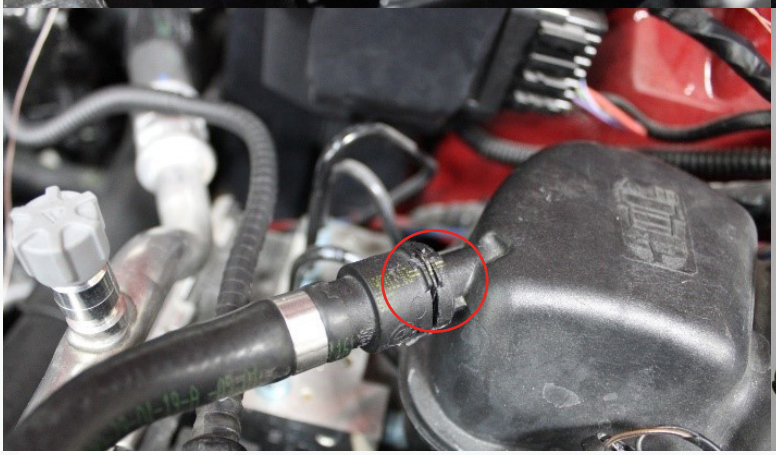
7. With the intake removed, locate the provided water lines in your kit. These lines are much larger and can support more flow for better cooling.

8. To install them, you first need to remove the factory intercooler lines from the quick-connect fittings. Start by removing the water lines from the engine bay. Using a long 90-degree pick tool, you can release the retaining clip of the intercooler outlet line that route to the inlet of the electric water pump and pull the fitting off the pump. Then release the clip on the other end of the hose and remove the assembly from the engine bay.



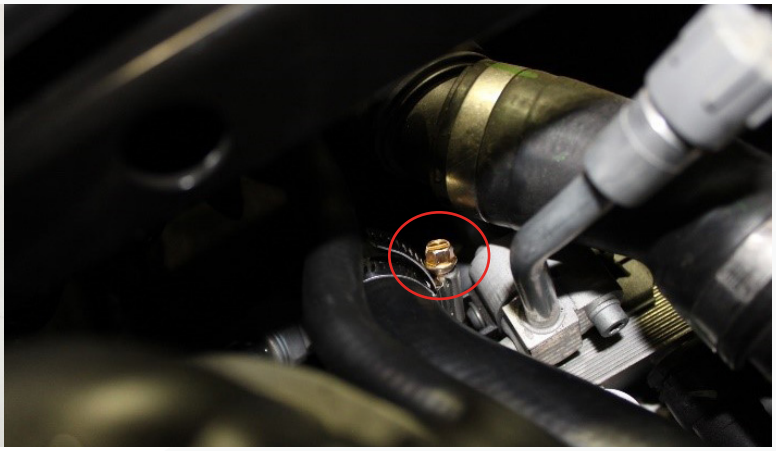
9.The longer hose is connected to the top fitting of the heat exchanger, the A/C condenser and overflow tank. It clips into a bracket connected to the larger radiator hose as well. Undo all these connections to remove the hose from the engine bay.





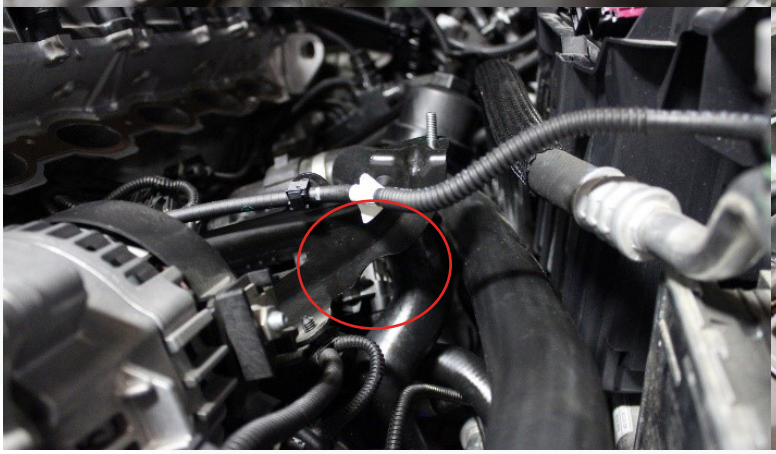
10.The hoses are connected to the fittings with permanent clamps that need to be cut off. The easiest way to do this is by using a small rotary tool with a metal cutting disc. Choose a spot on the clamp and cut carefully, with a little patience this won't damage your factory hoses. Once the clamps have been cut, install the shorter of the two hoses on the inlet fitting of the electric water pump. Tighten the lower clamp and loosely install the upper clamp before putting the new manifold on. The longer hose will be connected to the new intake manifold first, so you can re-install the upper heat exchanger hose before proceeding.

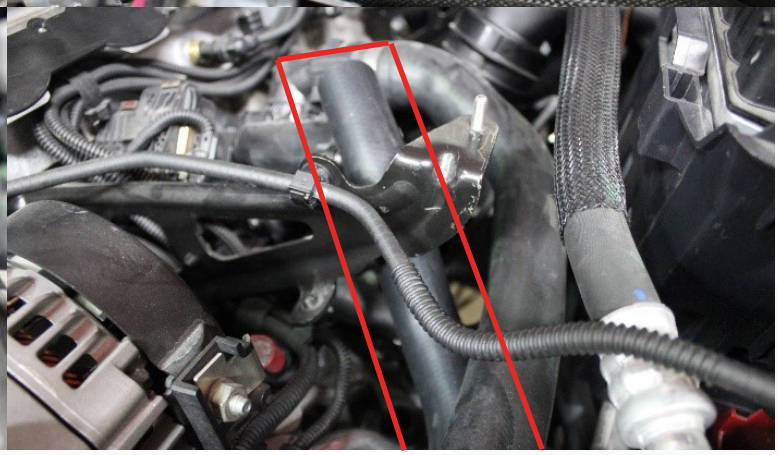
11. The longer hose will be installed on the intake manifold before being dropped into place. This will make the hoses easier to route and install in the engine bay. See pictures above for the correct orientation of this hose and make sure the hose clamp is tight.



12. Inspect the included gasket for any damage and install it on the flange of the cylinder head. To help keep the gasket in place while installing the manifold, use a thin layer of copper gasket maker and allow it to get tacky before proceeding.

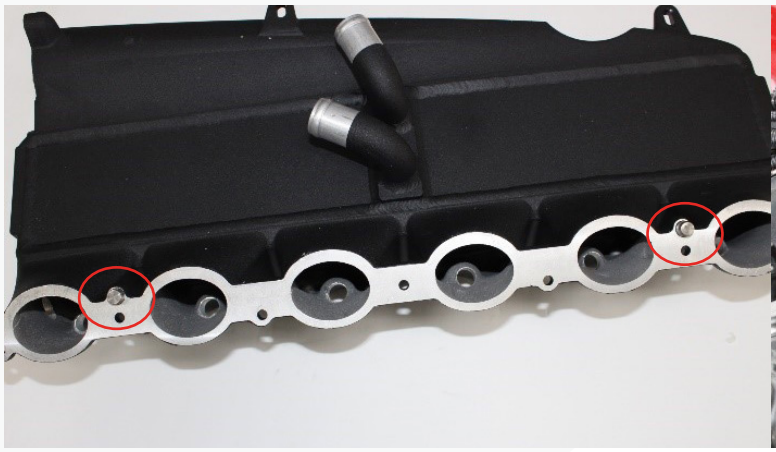
13. Once you are ready to install the new manifold, it is recommended to have a helper guide the longer hose into place. It needs to route underneath the front support bracket and along the larger engine radiator hose to the front heat exchanger fitting.

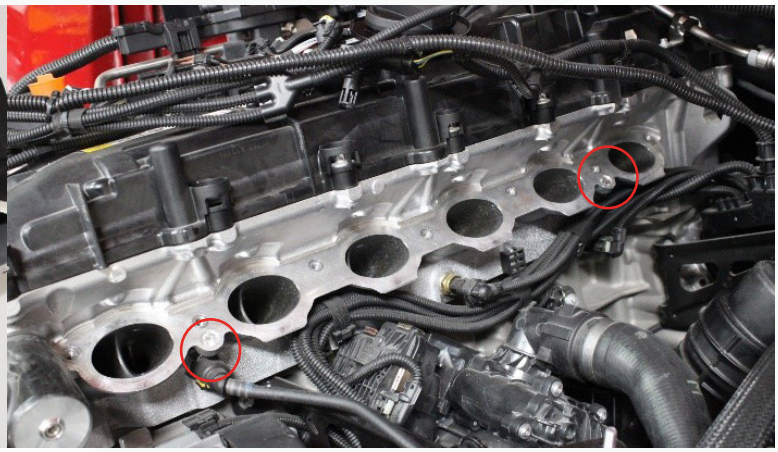




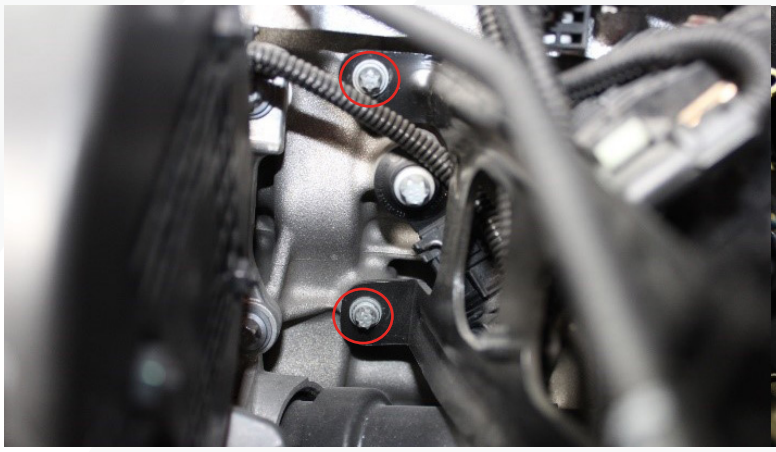
14. Due to the weight of the part and space in the engine bay, aligning the intake can be difficult. Try to set it down as square as possible on the cylinder head flange to avoid damaging the gasket. The dowel pins will help align the intake once they are in place. Start all seven mounting bolts by hand before tightening the support bracket bolts.

(Note: Gasket is not shown)





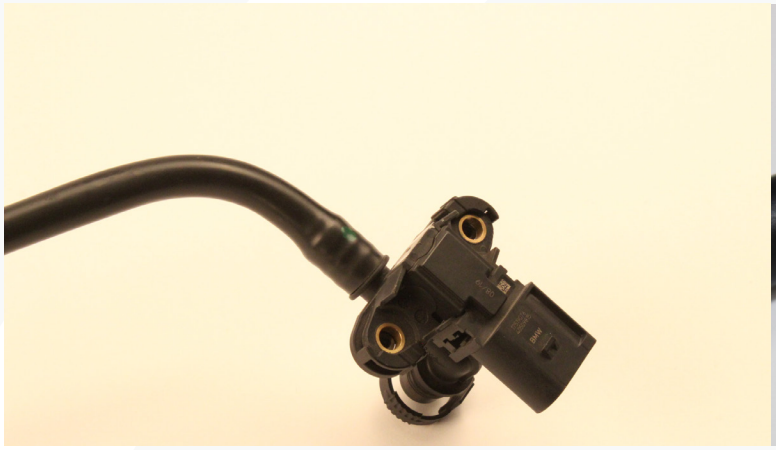
15. In some cases, the front support bracket may not exactly line up with the bolt hole on the new intake. The bracket has a lot of potential adjustment, and you may need to move the bracket slightly to properly align and support the intake manifold. To do this, first make sure the flange bolts as well as the other support bracket bolts are all threaded in but not fully tightened. Then, you will need an E10 inverted Torx socket and long extension to loosen the two bracket bolts on the engine block. Once these are loose, you can move the bracket into place and tighten everything back down. The support bracket should be adjusted so it provides a very slight upward pressure on the intake to take some of the weight off the cylinder head.



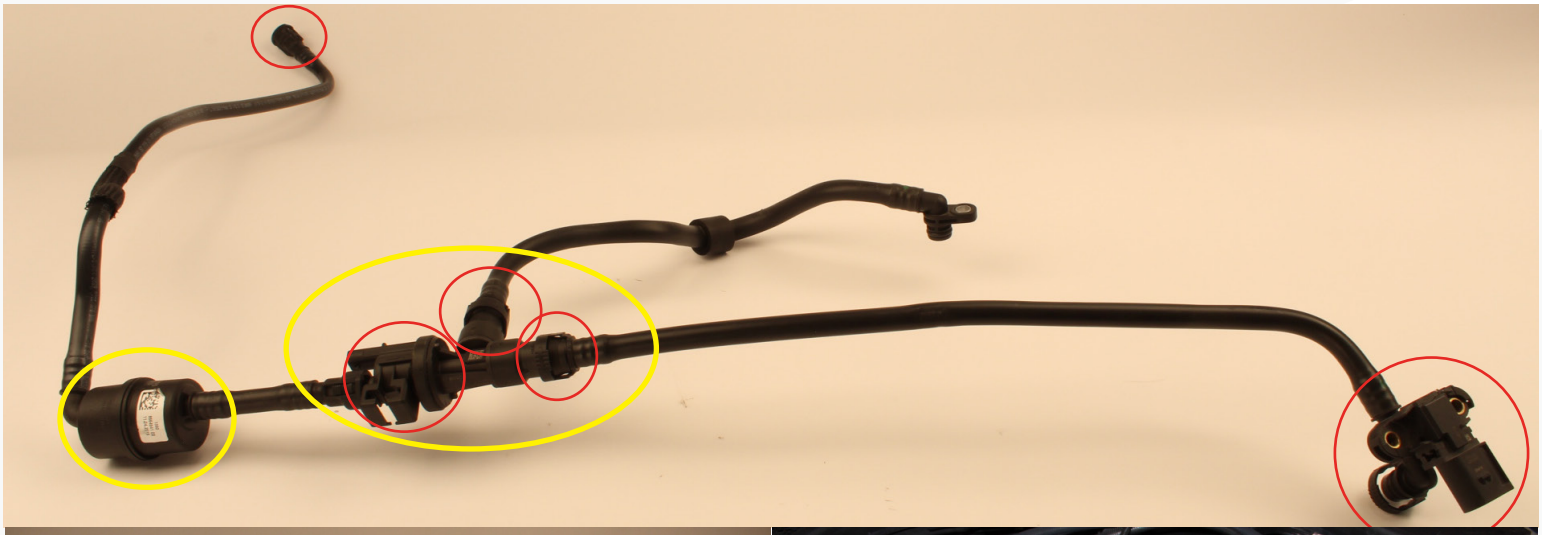
16. With the bracket adjusted, make sure all the mounting hardware is tightened. The 10mm mounting bolts should be torqued to 8ft-lbs and the two support bracket bolts should be torqued to 10ft-lbs.

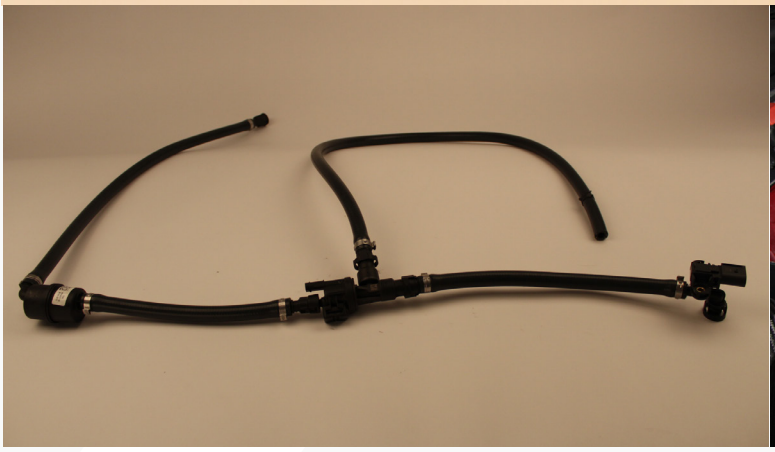
17. Next, push the open end of the smaller hose onto the open fitting underneath the manifold and tighten the hose clamp.

18. With the manifold in place, now assemble your fuel vapor feed hoses. Using the existing hoses cut off the hoses with a razorblade by carefully cutting a small incision where the hose meets the connector (pictured above), make sure not to cut too deep as you will damage the connector.



18 continued - With the cut made, wiggle the connector out. You will reuse 5 of the original connectors (circled in red below) along with the check valve and the fuel vapor purge canister. (Circled in yellow below). Using the supplied line and oetiker clamps assemble and route the fuel vapor feed hose in the best way to suit your application (see example below), reconnect the factory connectors.





Once the car is back together, you will need to vacuum bleed the system to ensure it is properly refilled. The intercooler system on these vehicles is difficult to bleed to avoid an “air lock” condition due to the intercooler being the highest point. Since the intercooler pump is not self-priming, it cannot move air. If one part of the system has an air pocket close to the pump, no coolant will flow. It is also important to know that damage may occur to the intercooler pump if it is run dry. Avoid this at all costs! Standard filling procedures will not work for this application. The method we prefer involves using a widely available system called an Air Lift or Vacuum Venturi System. These systems use compressed air to draw the cooling system under a vacuum and remove all the air from the system. The vacuum then draws in coolant into the entire system.

https://www.matcotools.com/catalog/product/MCR103A/COOLING-SYSTEM-FILLER/

https://www.matcotools.com/catalog/product/MPT0445/COOLING-SYSTEM-ADAPTER-BMW/

Follow your tools manufacturer instructions for bleeding.

After completion, test drive the vehicle and check the fluid level in the reservoir.

Once the system is properly bled, Enjoy!