



LHD

Installation

Guide

IETPCB21 IE Golf R EFR Turbo Kit

The IE450T turbo kit is a direct replacement for the OE turbo components found on your MK6 Golf R. It includes everything needed to install, however, there are a few supporting modifications that are absolutely necessary to install the turbo kit:

- IE FDS intercooler
- IE HPFP (or other upgrade kit)
- IE midpipe (or similar)
- IE intake kit
- Catback exhaust system (Milltek recommended)

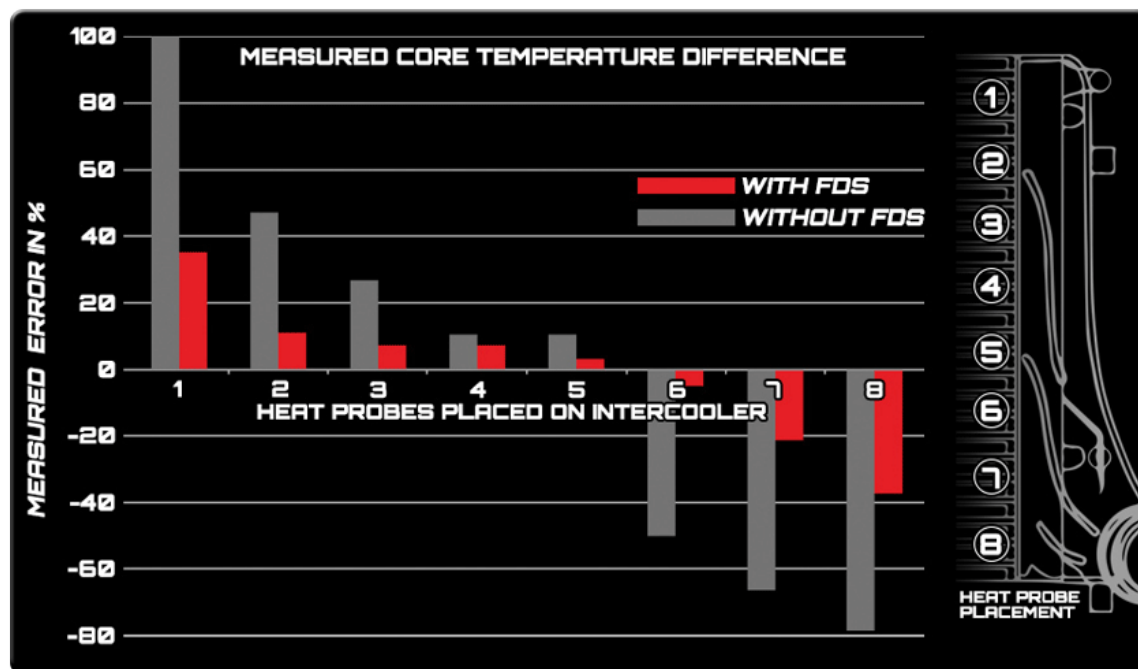
See the following 4 pages for more information on these supporting modifications.

IE FDS Intercooler (part # IETPCB1)

The IE FDS MK5 & MK6 intercooler is the best performing and only intercooler of its kind on the market. The addition of the unique FDS system and largest core volume results in keeping your air intake temperatures as low as possible.

The FDS System

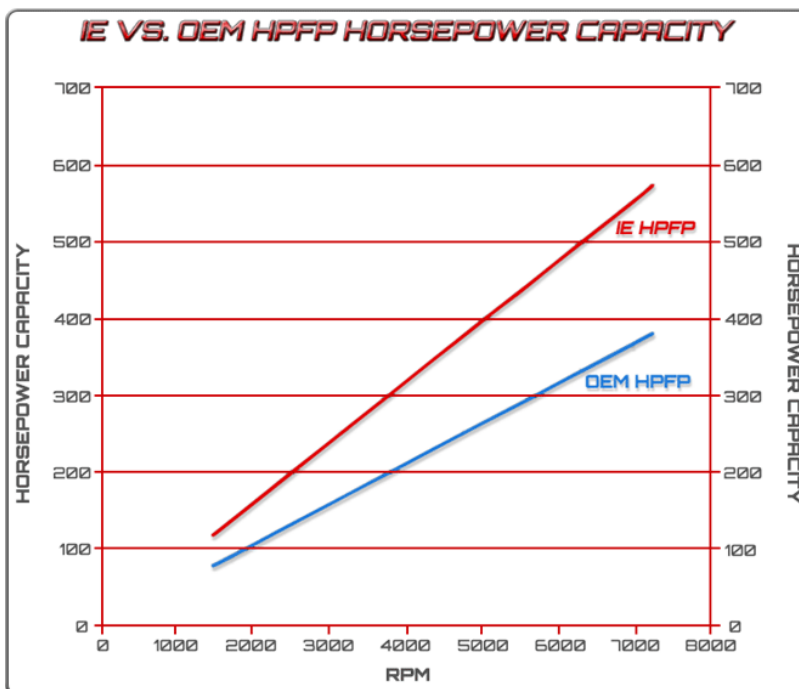
Our end tanks feature the FDS (flow distribution system), which is totally unique to the IE intercooler. By incorporating flow distribution channels into the inlet side end tank, air is evenly distributed from the top to bottom of the core, maximizing cooling efficiency. Other intercoolers on the market only allow natural airflow through the core, which is primarily on the bottom side near the inlet, making for poorly distributed cooling. In lab tests, temperatures across the IE FDS core were 65% more even than the nearest competitor. This proves more effective use of the core, resisting heat soak more so than any competitor and consistently delivering a cool charge.



For more general and technical information on the IE FDS intercooler be sure to visit our website or check out the product video found on YouTube: <https://www.youtube.com/watch?v=wSJBSvkRDzo>

IE High Pressure Fuel Pump (Part # IEFUVC1, IEFUVC2, IEFUVC3)

To support the added horsepower of the IE450T MK6 Golf R turbo kit, an upgraded high pressure fuel pump is required. The IE HPFP works effectively to increase the output of the high pressure fuel system, by using a piston and cylinder that offers 50% more displacement than the factory unit. This combination offers fueling for nearly 600hp at 7500rpm with proper ECU tuning.



One of the defining characteristics of the IE HPFP is that a new shaft seal is included in the pump rather than reusing the factory seal as many others do. Additionally, our engineers calculated that the factory spring was sufficient and did not need to be upgraded. The benefit of using a softer spring is longer cam follower life.

We offer our HPFP kits in a few different packages to suit your build:

Pump internal kit only- This is the entry-level HPFP kit for builders who prefer to assemble their HPFP themselves. Each kit includes all necessary components and a detailed install sheet to get the job done.

Rebuilding service- This option includes all of the components of the internal kit, along with a professional pump assembly in our clean room. Simply mail us your stock pump, we then swap out the internals to the IE HPFP parts, then ship it back ready to install.

Complete new pump- This option is for engine builders looking to purchase a complete new pump with the IE HPFP internals installed and ready to run. We use only NEW factory pumps for these builds. This method offers the shortest time from purchase to install, as we ship you out a pump that drops right in place of your factory one.

MK6 Golf R IE Midpipe With Hi-flow Cat (Part # IEEXCC1)

A midpipe is required in order to connect the IE450T downpipe to the catback. The IE 3 inch stainless steel midpipe mates to the IE450T downpipe with a leak free v band seal. The rear of the midpipe can easily be connected to the rear portion of your exhaust with a band clamp. A high-flow cat is also included in the midpipe, allowing more flow without the worry of failing emissions testing, as well as ensuring safer operation of no lift shifting and launch control. IE recommends using a Milltek catback system with the IE450T turbo kit; fitment of other exhaust brands have not been confirmed.



IE450T Cold Air Intake (Part # IEINCC1)

The IE450T cold air intake is a direct fit that easily plumbs your intake to the oversize MAF housing. This intake incorporates an open style filter and mandrel bent tube for aggressive sound and superior flow. The heat shield directs air flow from the front of the engine bay directly at the filter to keep intake temperatures as low as possible. The heat shield also uses the factory mounting points used by the stock air box which ensures easy installation and secure mounting. A velocity stack is utilized inside the filter for superior flow from to the 3.5" inlet pipe. The velocity stack also functions as a clean pass-through the heat shield and avoids rattling intake pipes.

This intake is perfectly calibrated to IE450T turbo kit software. Consistent MAF readings delivered by using the IE450T cold air intake will ensure that your turbo kit performs to its full potential.



If you do not have the above listed parts, DO NOT begin installation of the IE450T kit! It is very critical to have all of the supporting modifications for proper operation!

We recommend quickly rinsing out silicone couplers, MAF housing, and cast turbo outlet pipe before installation, in case packaging material made its way in during shipping.

Before beginning the installation of your new IE450T turbo kit, you will want to confirm that you have all of the tools necessary to do the job, as well as all of the supplies needed. Along with many basic metric wrenches and sockets, you will need:

- Set of Torx sockets
- Set of triple square sockets
- Set of allen sockets
- Oxygen sensor socket (optional)
- Torque wrench
- Spark plug socket
- Crowfoot wrenches
- Thread sealant tape
- Anti-seize lubricant
- Oil
- Oil filter (optional, but recommended)
- Coolant

This install guide is broken down into five major sections:

- Section 1: Removal of factory turbocharger components
- Section 2: Installation of IE450T turbocharger components
- Section 3: Removal and replacement of high pressure fuel release valve
- Section 4: Installation of IE performance ECU software
- Section 5: Final steps, inspection , first start, and first drive

Section 1: Removal of factory turbocharger components

Begin by supporting the car on jack stands or a lift (preferred), with plenty of room to work above and below the car. You will also need room to work on the passenger side of the vehicle, as several components are accessed through the wheel well.

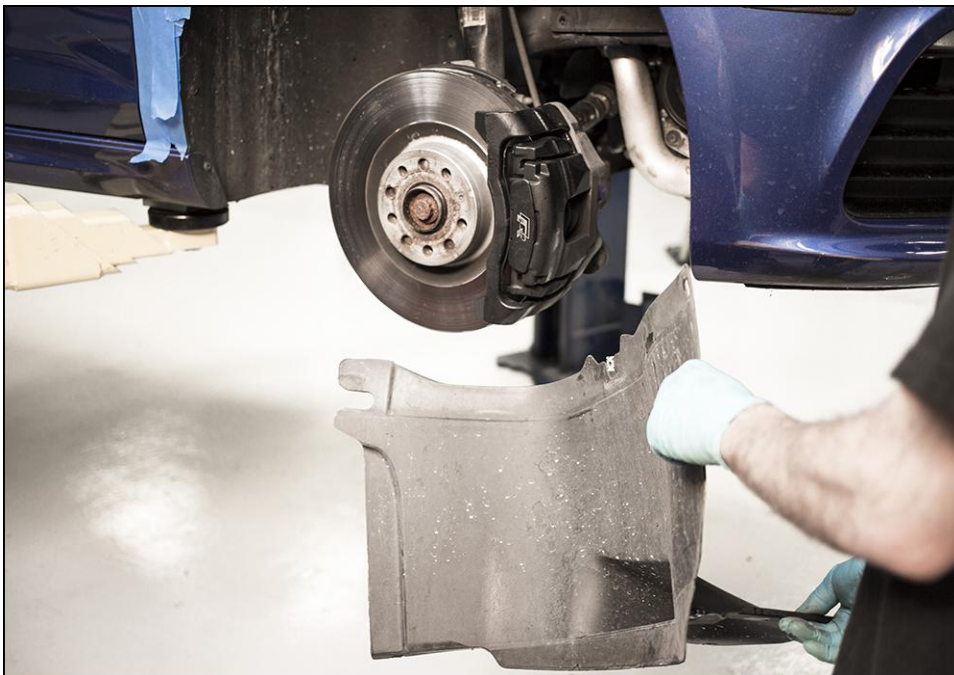


Remove plastic belly pan/catch tray from underneath front of vehicle. This piece is secured with T25 Torx screws.

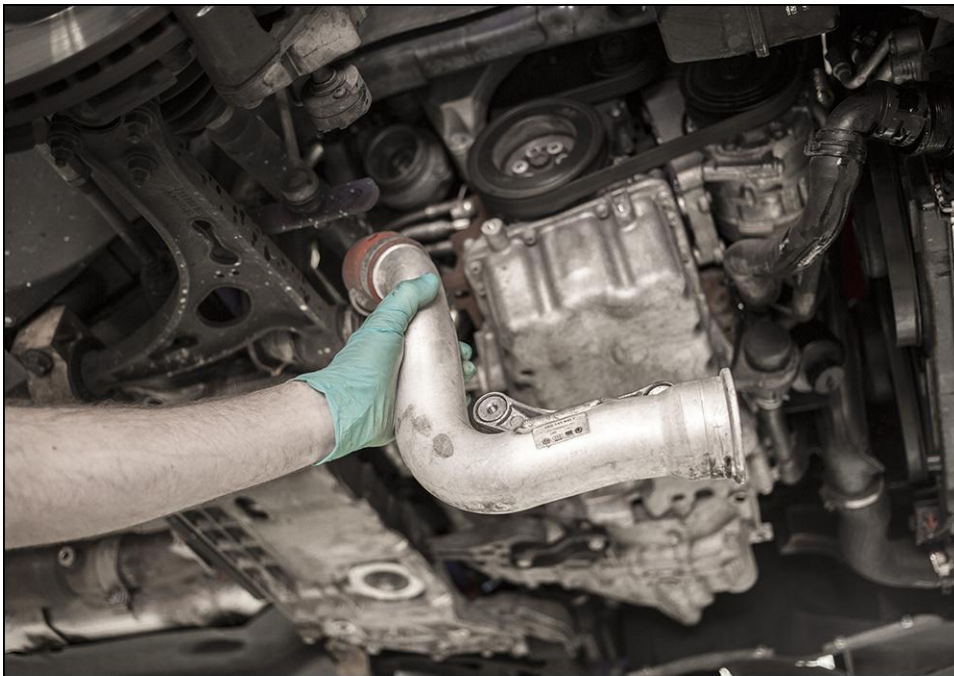


Remove passenger front wheel.

Remove lower portion of passenger side fender lining plastic, which is secured by T25 Torx screws.



Remove the factory turbo outlet pipe. To disconnect, pull the clips on either end, which secure the pipe to the turbo and intercooler hoses. Remove the two T30 Torx bolts holding the pipe to the oil pan.

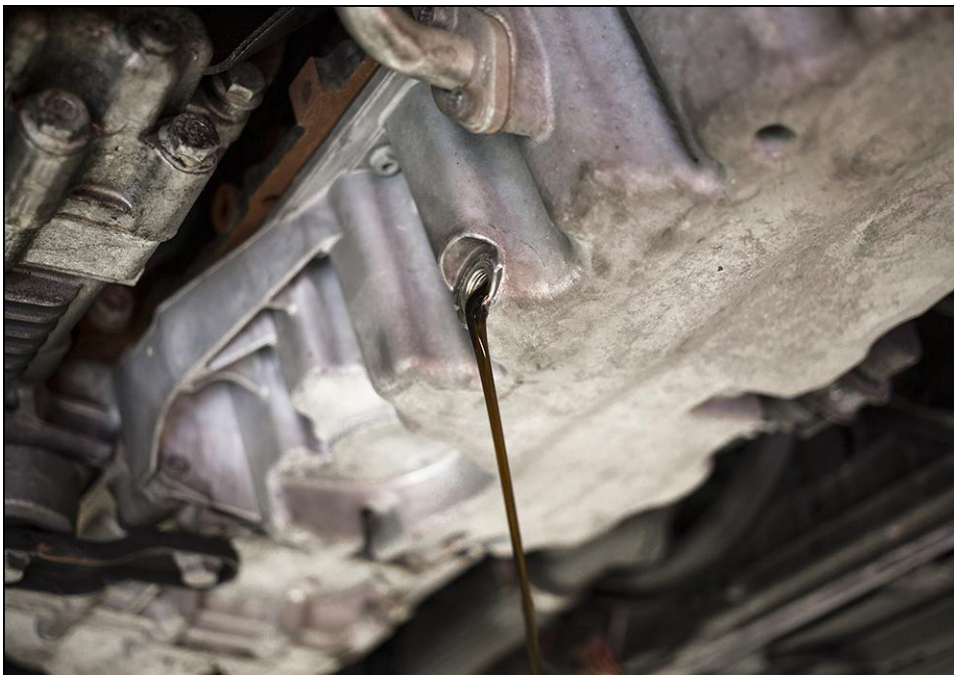


Remove the intake air duct from the radiator support, which is fastened with two T25 Torx screws. Remove hose clamp holding duct to airbox.

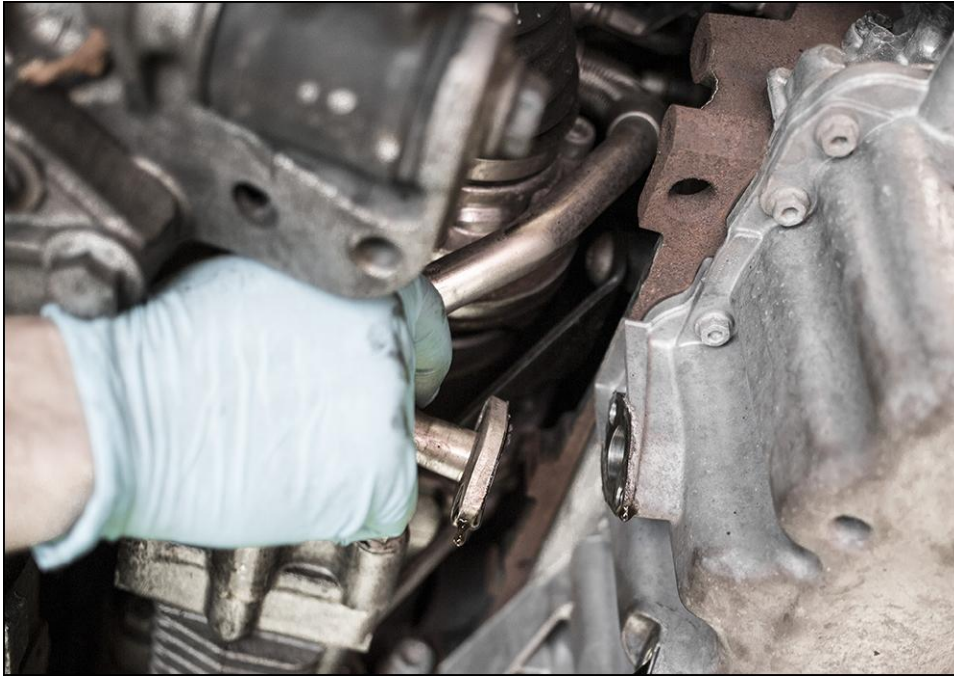
Remove factory airbox/engine cover. Start by unclipping the diverter valve hose from the timing belt side of the cover, then unplug the mass airflow sensor and unclip the turbo inlet pipe from the sensor. The airbox can now be removed from car by firmly pulling it up one corner at a time.



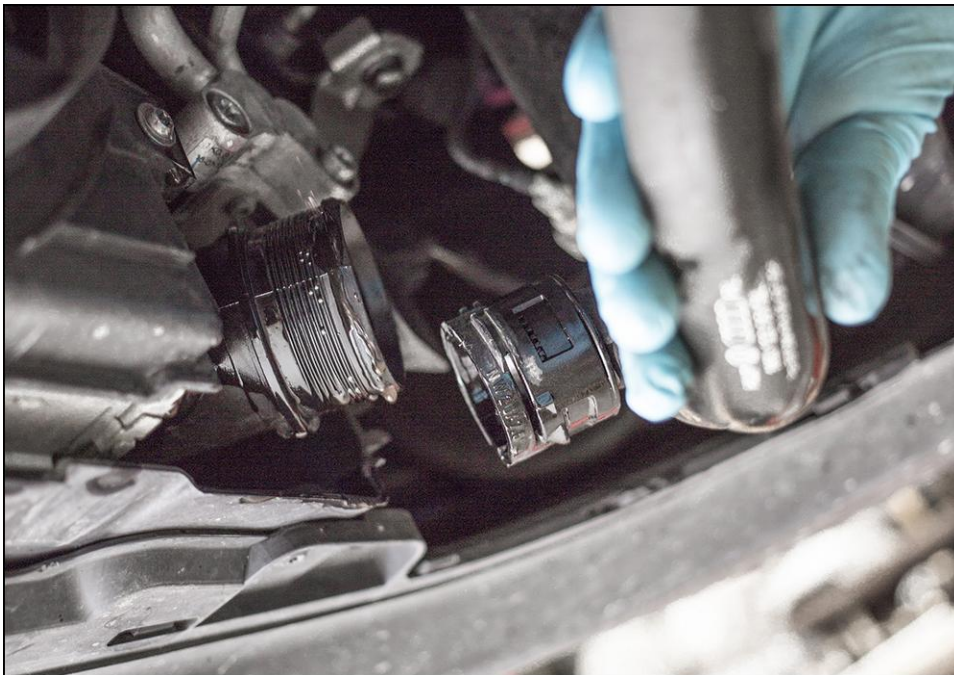
Drain oil by removing drain plug in oil pan. Once drained, reinstall drain plug and tighten.



Remove turbo drain line from oil pan with an 8mm triple square socket.



Drain cooling system by unclipping lower radiator hose from the radiator. Once the cooling system has drained entirely, securely clip hose back onto radiator.

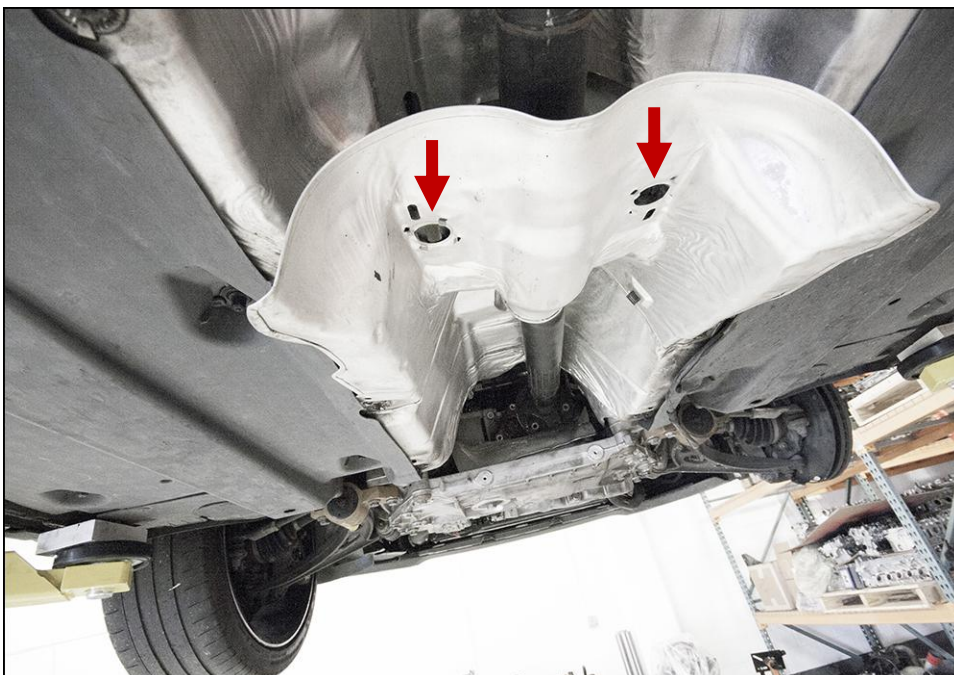


Remove the two bolts holding dogbone mount to transmission using a 16mm socket. This will allow the engine to move front to back and ease installation.



Using a 12-point 10mm socket, remove the three bolts holding the driveshaft to the transfer case. You will only be able to access one at a time, so rotate driveshaft to access all bolts.

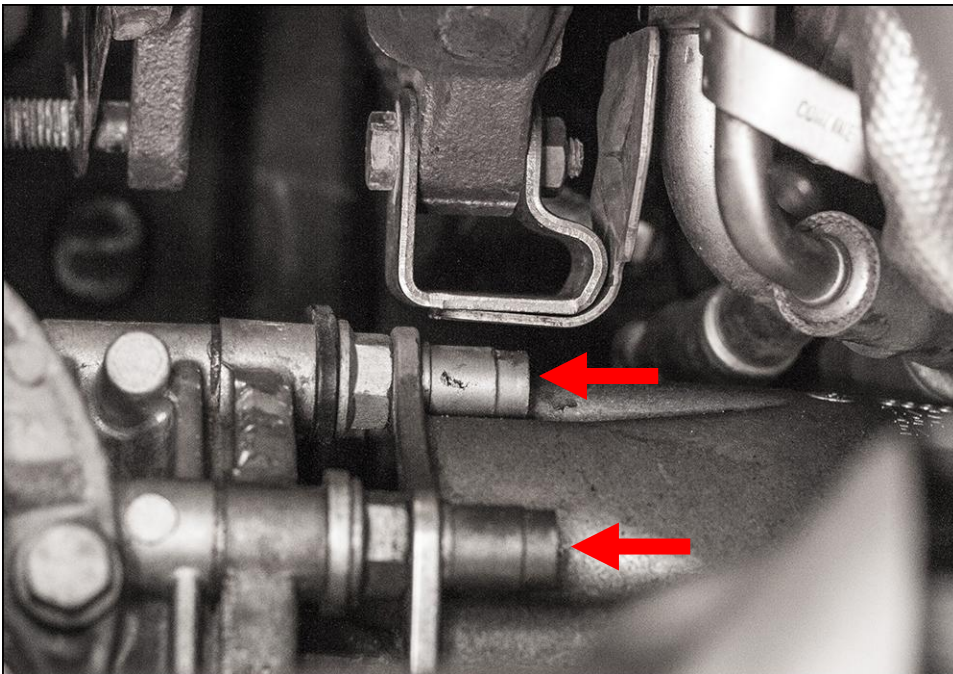
Remove the two bolts holding the driveshaft center support bearing. This will allow more movement in the driveshaft to aid the removal of the downpipe. You will notice that the tunnel heat shield will sag, which is no problem. It will be reattached at a later point.



Using a pry bar between engine and subframe, carefully rock the bottom side of the engine forward to allow driveshaft to slide off the locating pin on the transfer case.



Remove heat shield above passenger side inner CV boot. This is held in place by two allen nuts with 8mm heads.





Remove rear oxygen sensor from downpipe and put aside. We recommend using a cable tie or piece of wire to tie it out of the way while working.



Remove upper oxygen sensor from downpipe and put aside as well.



Unclip the harness from all four coilpacks, it will be tucked aside later.



Remove the four 17mm nuts holding the downpipe to the turbo outlet. On the rear of the downpipe, loosen the two bolts on the exhaust clamp to separate it from the rear section of the exhaust.



Remove the two bolts holding the exhaust hanger to the subframe using a 13mm socket.

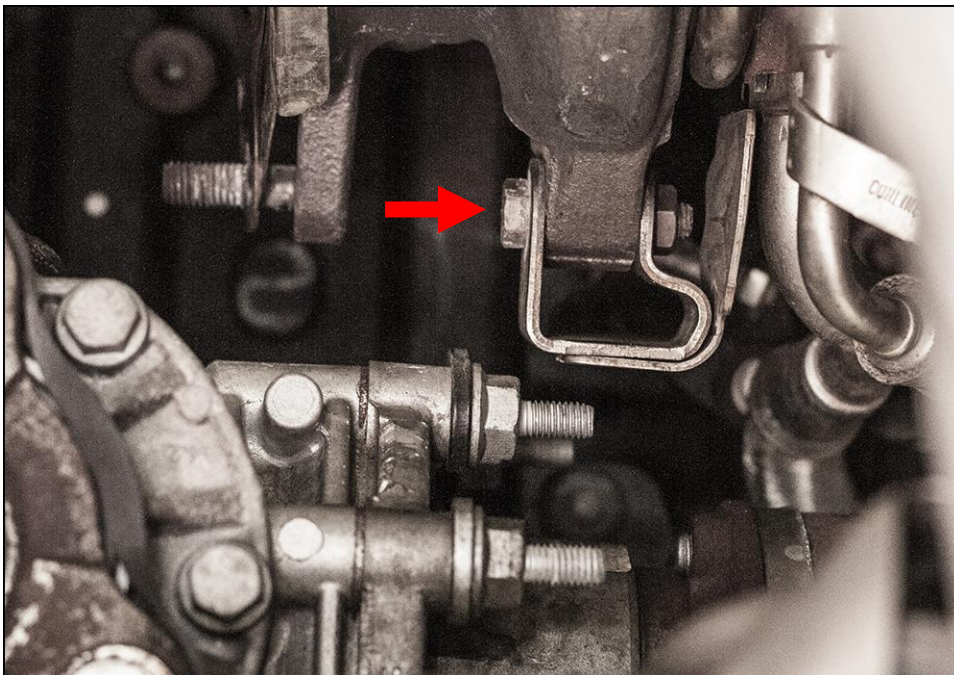


Remove downpipe from car. This step may take some adjusting of the driveshaft and engine to make room for the downpipe on the way out. Once downpipe is removed from car, carefully pull mount bracket from pins. Silicone spray or WD-40 will make this task much simpler.

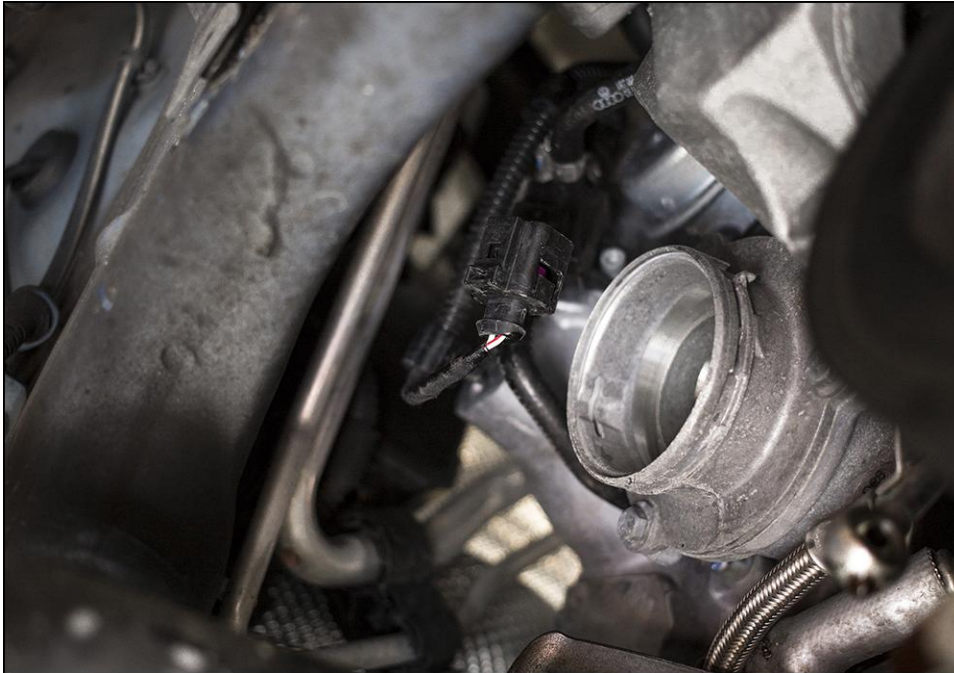


Remove the two bolts holding the oil drain line to the turbocharger using a 5mm allen socket . Remove drain line from car.

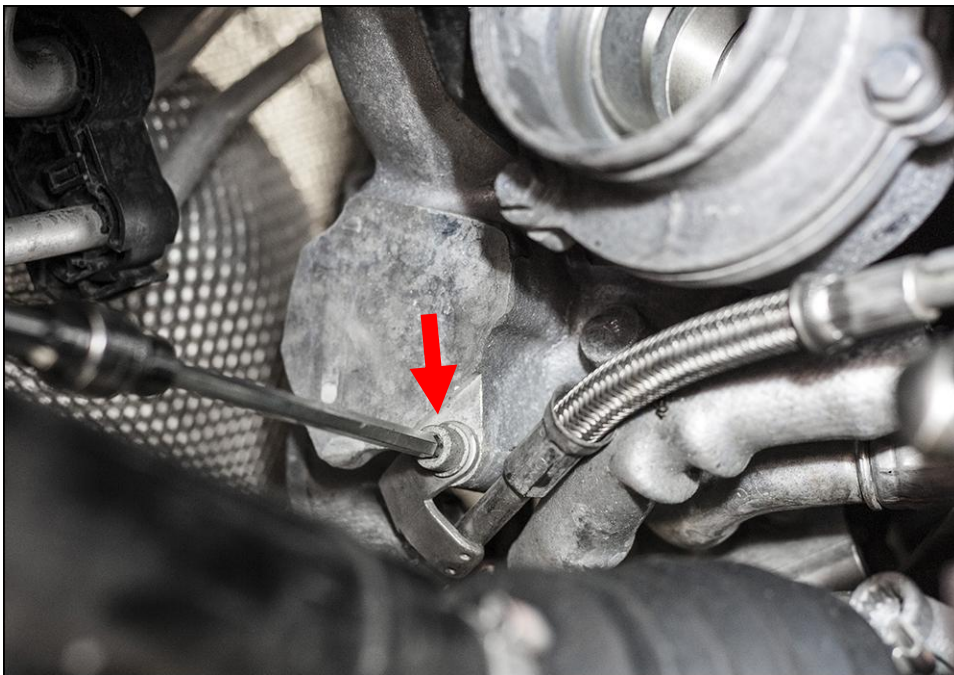
Unbolt the turbocharger from its support bracket. There is a single bolt with a 13mm head that must be removed.



Unplug connector from N75 valve mounted on the turbocharger. Once this harness is unclipped, it can be pulled up and out of the way of the turbo. We recommend pulling the coilpack/N75 harness over to the driver side of the engine bay to keep it out of the way of the turbo installation.



Remove cap screw holding oil feed line bracket to turbocharger using 5mm allen socket.



Remove rear breather hose from valve cover. The clamp can be cut with a pair of diagonal pliers (dikes), then removed. Remove small evap hose from valve cover by loosening the spring clamp holding it.

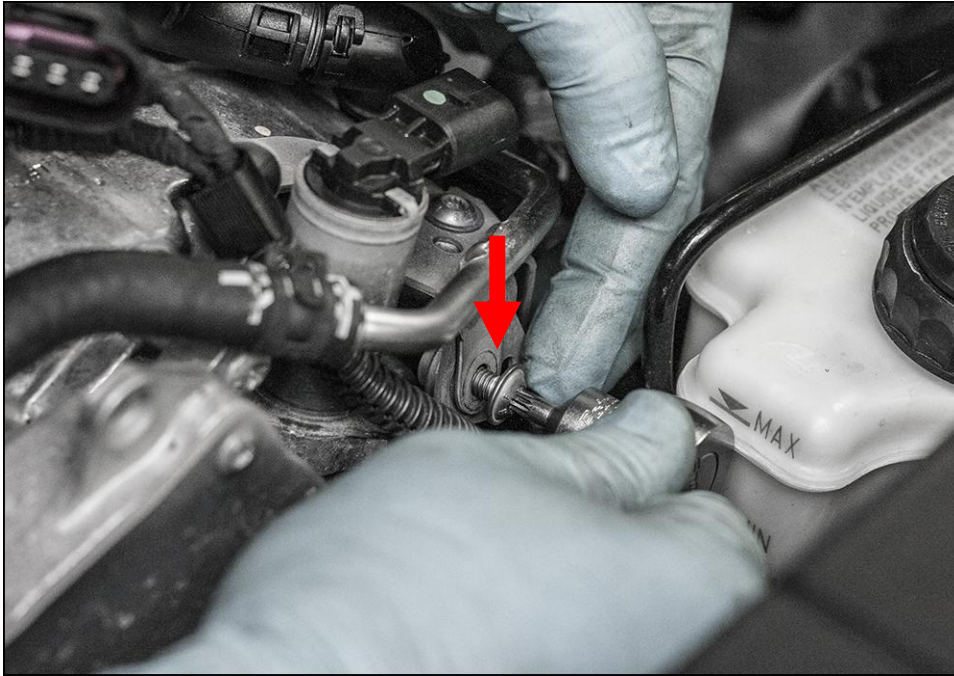


Remove the turbo inlet pipe by carefully loosening the spring clamp holding it to the turbocharger.

Disconnect coolant lines that attach to hard lines of turbo heat shield. You will need to remove the line from the coolant reservoir, as well as the one on the back side of the hard line. The hose that attaches to the front of the hard line can remain attached.



Remove the 5mm triple square bolt from hard line mount tab.



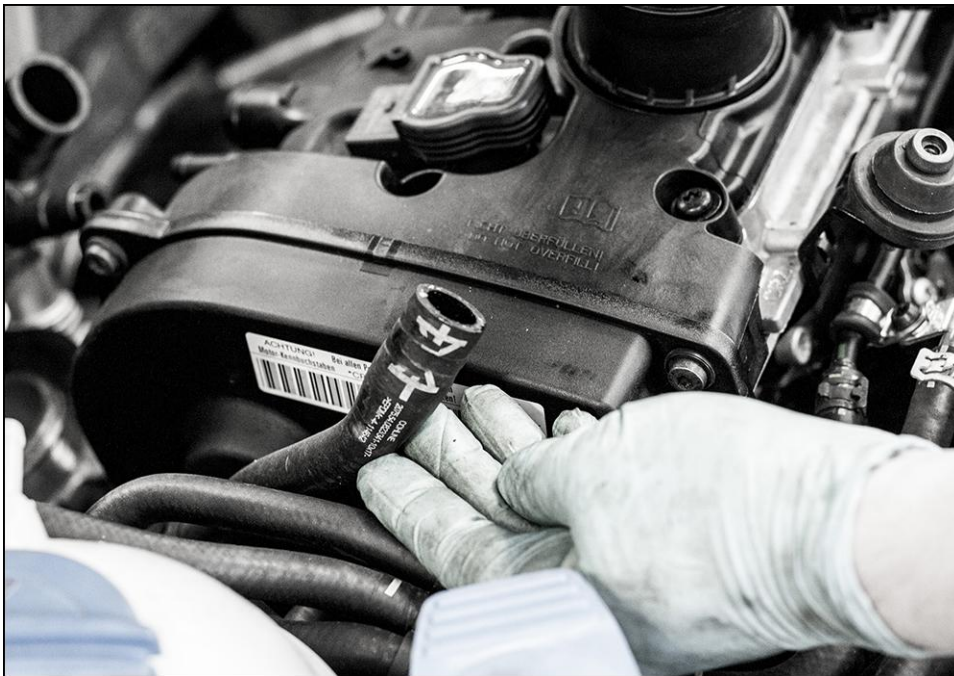
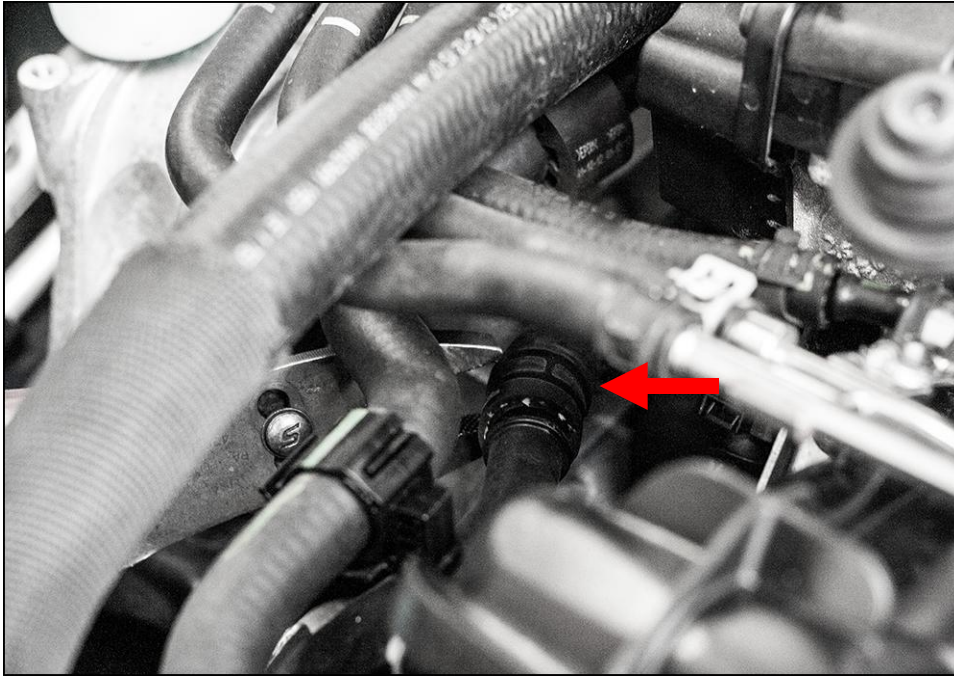
Remove bolts attaching hard lines and heat shield. There will be two bolts with 13mm heads, two bolts with 18mm heads, and four 10mm nuts. Once these have been removed, remove heat shield from car.



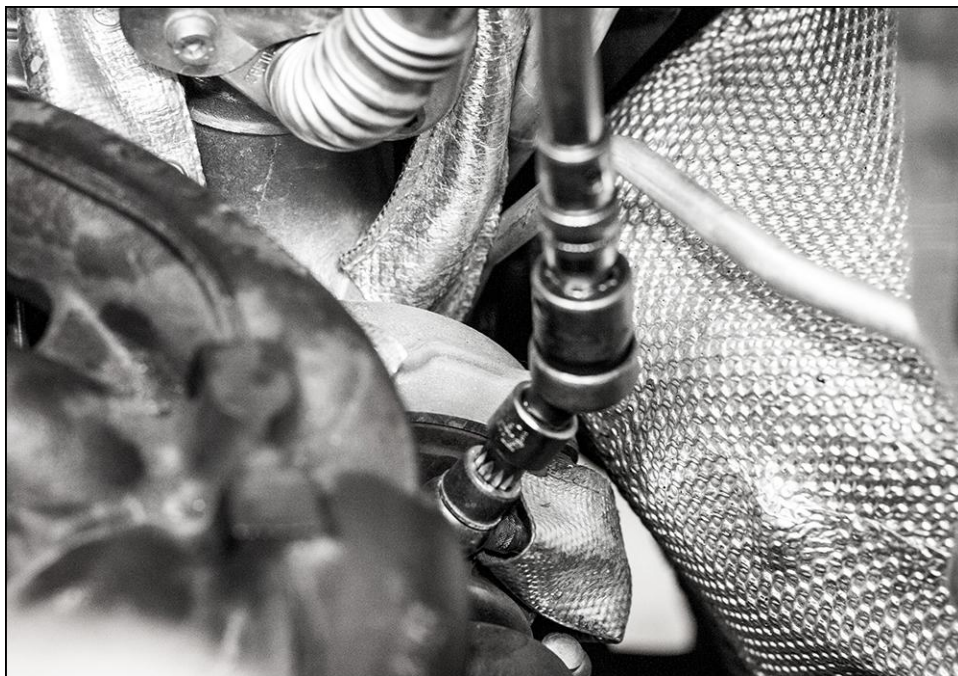
Using a 24mm wrench, remove the airbox mounting pins from the heat shield. The new MAF housing will mount to the holes they were in.



Carefully relieve pressure on spring clamp holding coolant drain line to the hard line near the intake manifold, slide clamp back and remove hose from hard line.



Remove coolant feed line banjo bolt from rear of turbocharger using 12mm triple square socket. Remove oil feed line banjo bolt from top of turbo. Set aside banjo bolts, as they will be reused later.



To gain access to the turbocharger, you will need to remove the upper portion of the rain tray. Remove caps over wiper nuts. Remove 13mm nuts securing wipers. Remove windshield wipers, using a puller or by carefully rocking side to side. Take note of wiper placement and orientation.





Carefully remove plastic cowl cover below windshield. Once the rubber seal has been taken off the front side, you will be able to unsnap it from the bottom side of the windshield. Start on one side and slowly move towards the other side. Remove cover from car.





The upper firewall is held in by one 10mm nut on either side. Remove these, then carefully unclip wire harness from back side. Remove from car.

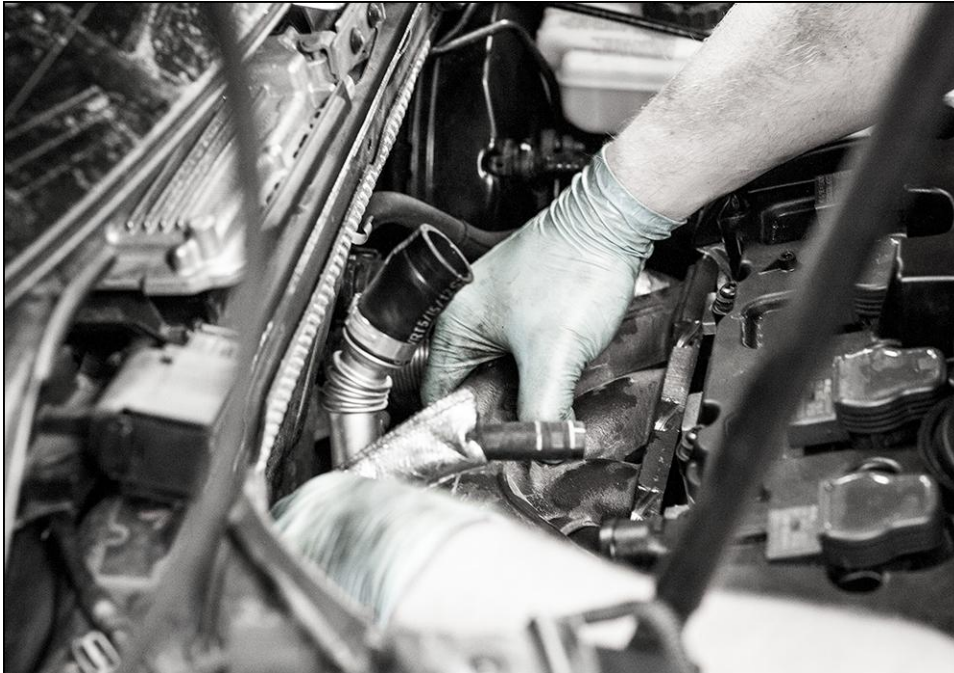




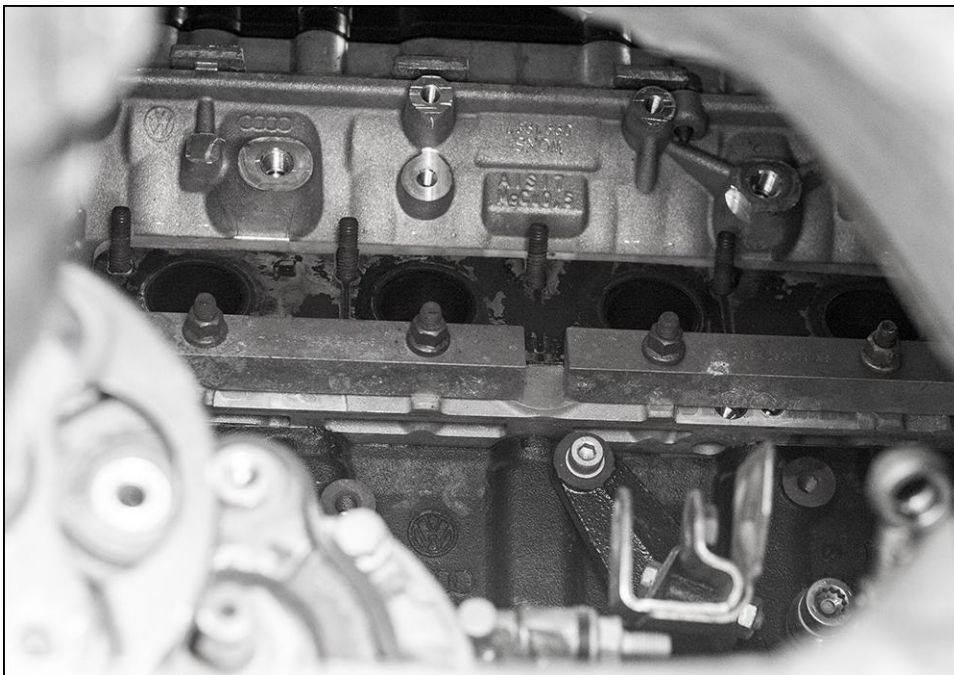
Remove the five nuts on the top side of the turbo manifold using a 12mm socket. This will allow the turbocharger to be lifted off the cylinder head.



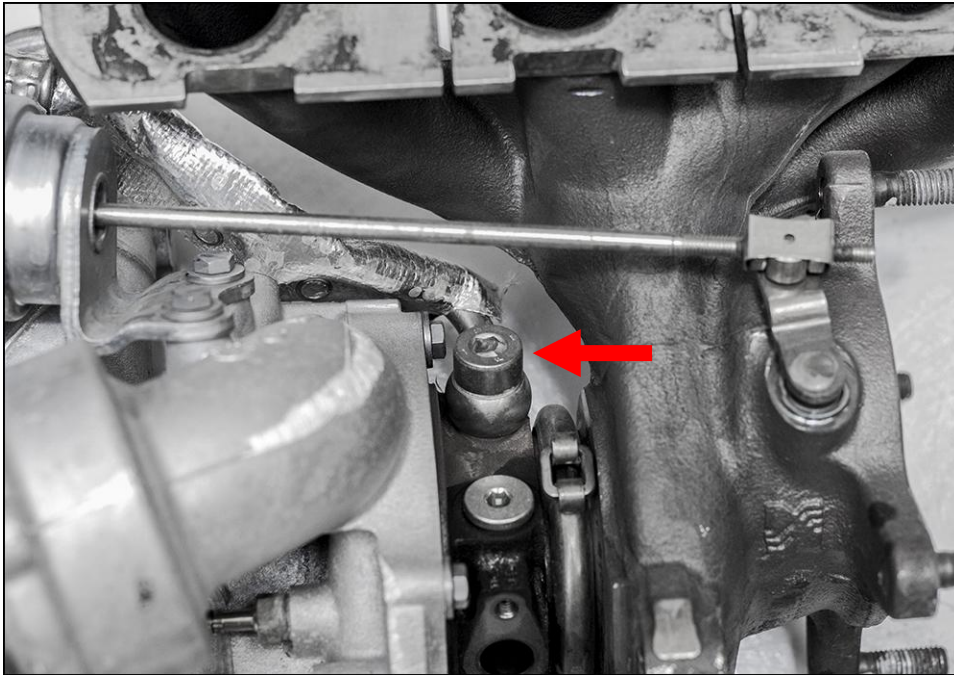
Remove turbocharger from car by lifting back and upward. The lower wedge blocks will not need to be removed.



Remove exhaust manifold gasket from head.



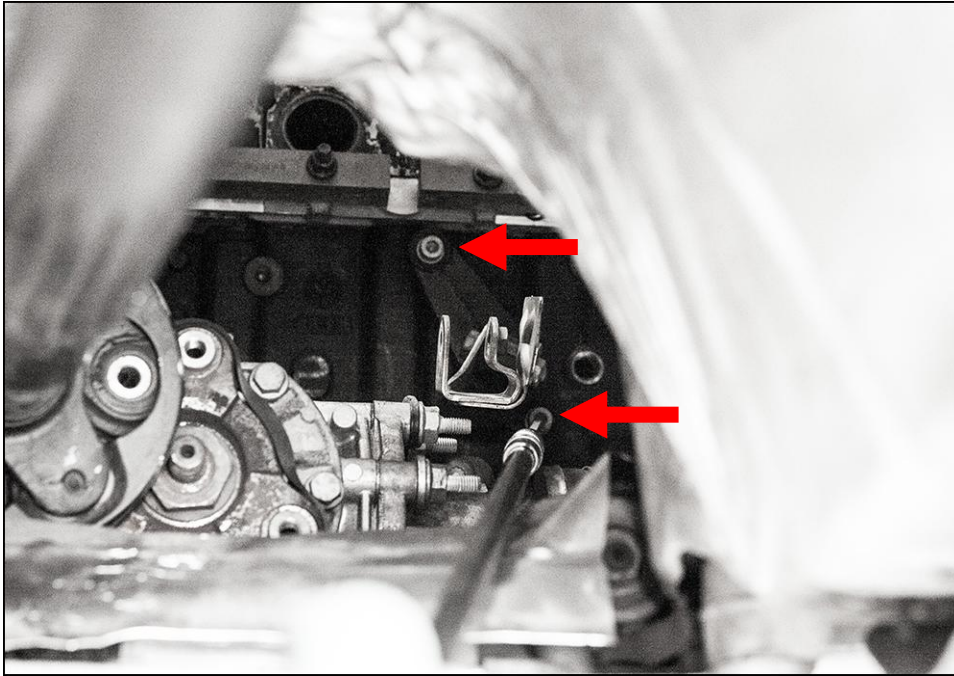
Remove remaining coolant line from turbocharger using an 8mm allen socket. Set aside banjo bolt, as this will be reused on the EFR turbocharger.



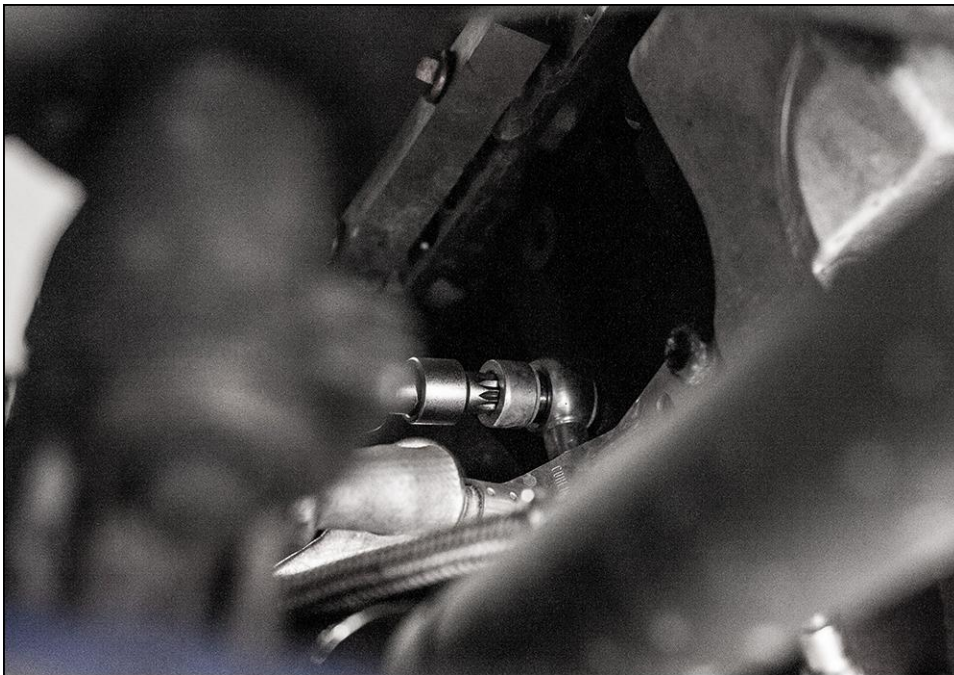
Unbolt rear breather hose from OEM turbocharger using 5mm allen socket. This hose and associated bolts will be reused. Remove evap hose from OEM turbocharger as well, which will also be reused.

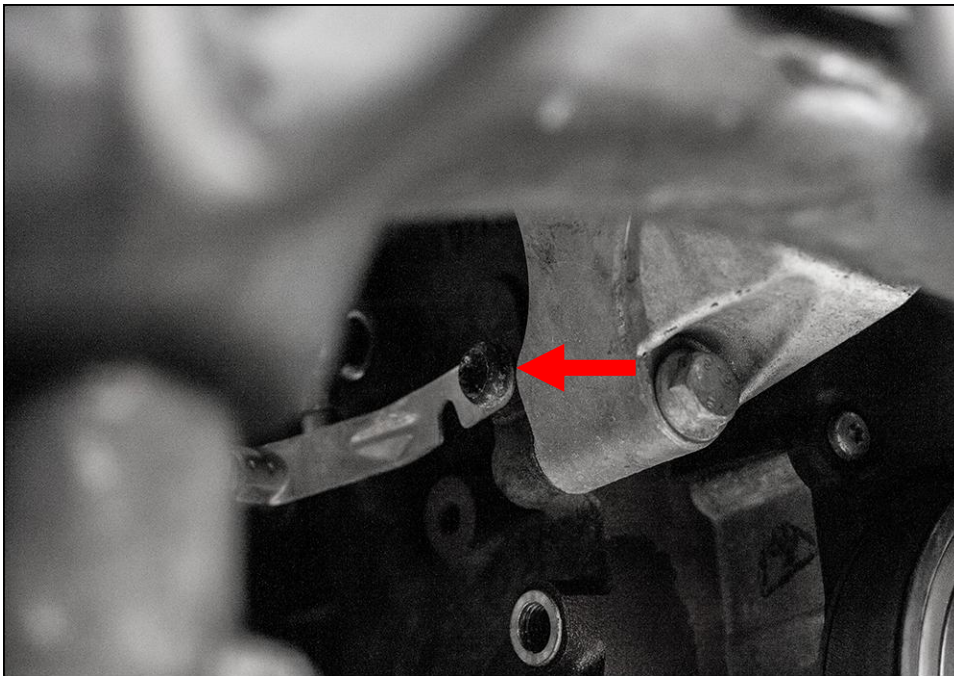


Remove turbo support bracket from block. There are two allen bolts with 6mm heads securing it.



Remove coolant feed and oil feed lines from block using 12mm triple square socket. There is also an 10mm triple square bolt that holds a mount bracket in place that will need to be removed. Remove both lines from car and save banjo bolts for later use.



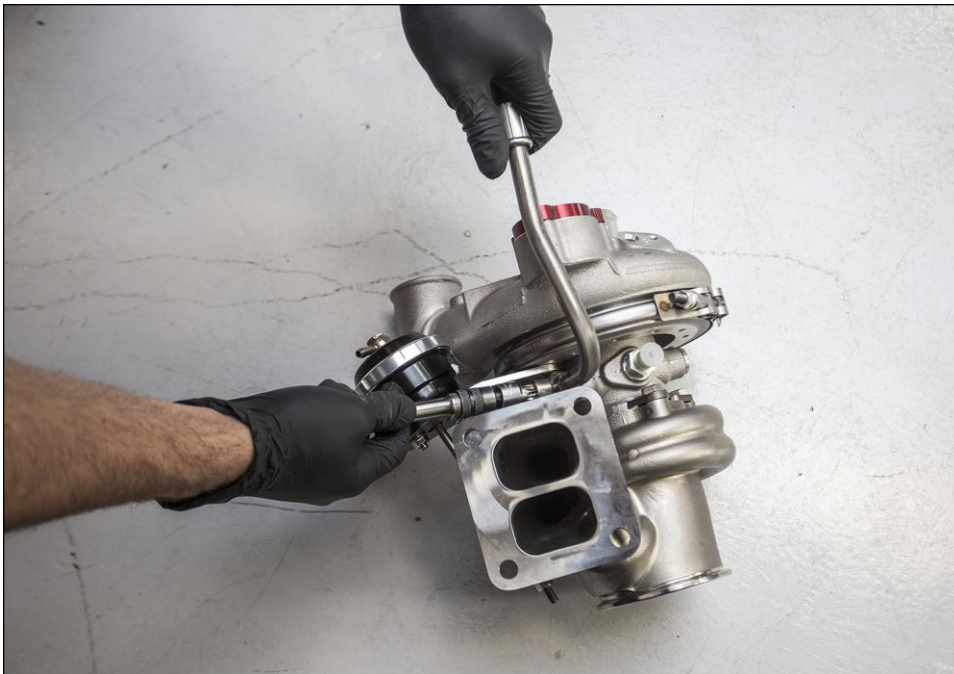


Section 2: Installation of IE450T turbocharger components

Wrap the small end threads of the oil drain fitting with pipe sealant tape, then install into bottom of turbocharger. Tighten fitting into turbo using a 24mm socket.

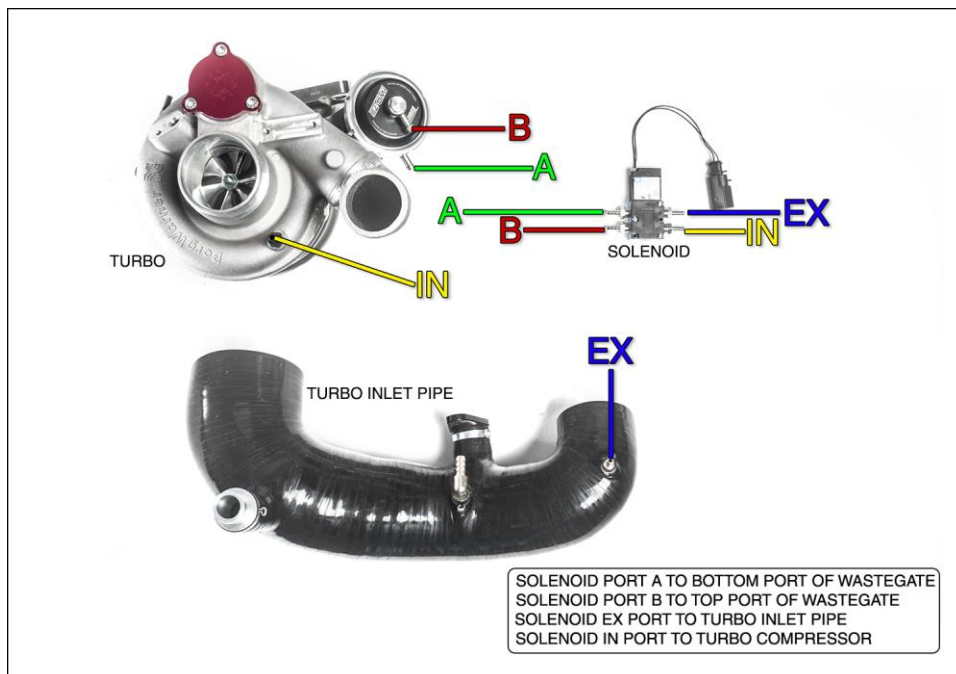


Install coolant drain line on front of turbo. You will reuse the banjo bolt from the OEM turbocharger, along with the two included crush washers (one on either side of banjo) to secure it. Ensure that there is clearance between the coolant line and the compressor housing.



Install pre-cut lengths of silicone vacuum hose to both barbs on wastegate actuator and onto barb in compressor housing. Secure with cable ties. Mark each hose with tape, per the following diagram. Do not connect hoses to solenoid yet.

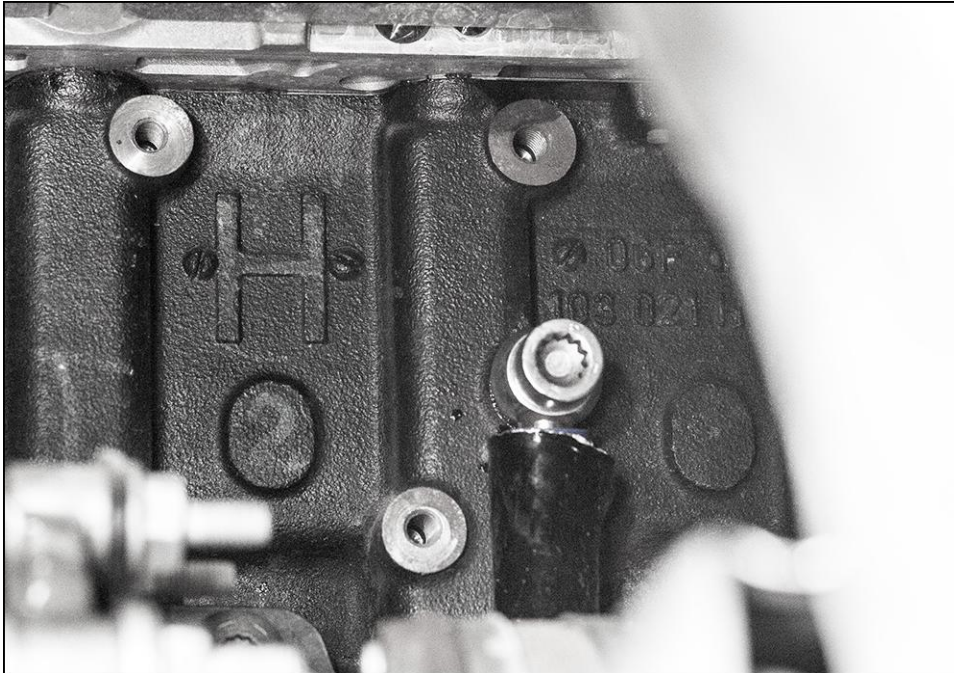




Install turbocharger studs into exhaust manifold. These need to be snug in the manifold, but not over tightened. We recommend using a stud installer if available, otherwise two nuts can be used.



Using the OEM banjo bolt with new crush washers, install coolant feed line onto block. You will notice that only one side of the hose comes with a banjo fitting installed, use that end on the block side. Orient the banjo fitting so that it is facing straight down. Tighten banjo bolt.



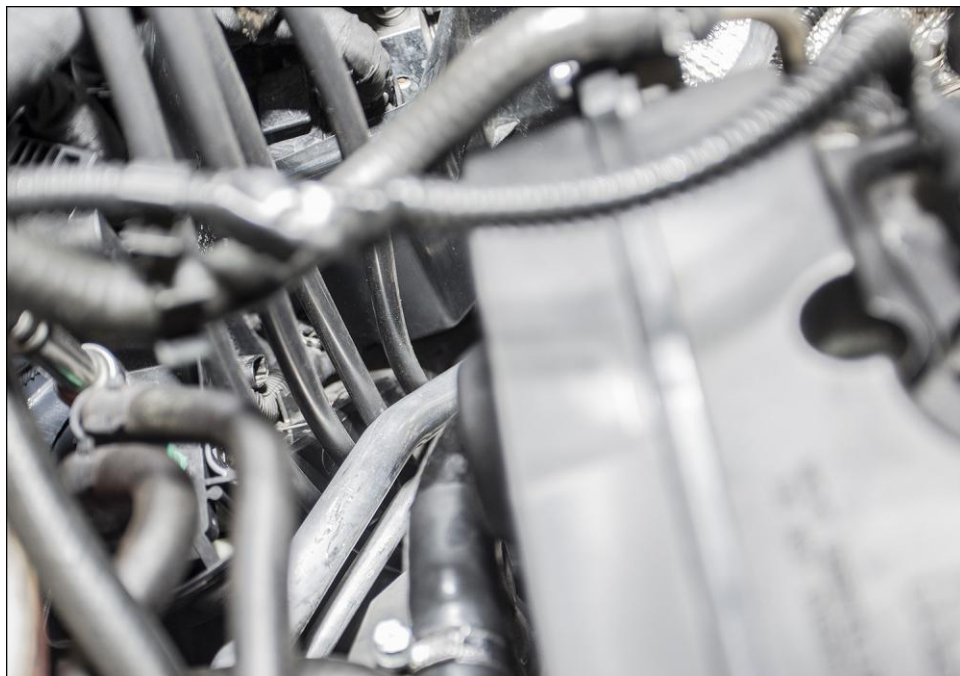
After cleaning the mounting surface, install oil drain line adapter onto oil pan using included allen bolts with 5mm heads. Ensure that new gasket is placed between the adapter and oil pan.



Carefully place turbocharger in behind engine. Once it is in place, allow it to sit on the transfer case with the inlet flange facing upward.



Once turbo is in place, carefully route all vacuum hoses behind A/C lines and up towards the plastic grommet in the rain tray. Pay close attention to the two hoses on the wastegate actuator, as these come very close to the axle and oil/coolant lines for turbo. It is recommended to tie these two hoses together near the compressor outlet using a cable tie.



Place turbo gasket onto manifold. Apply anti-seize lubricant to studs in manifold.

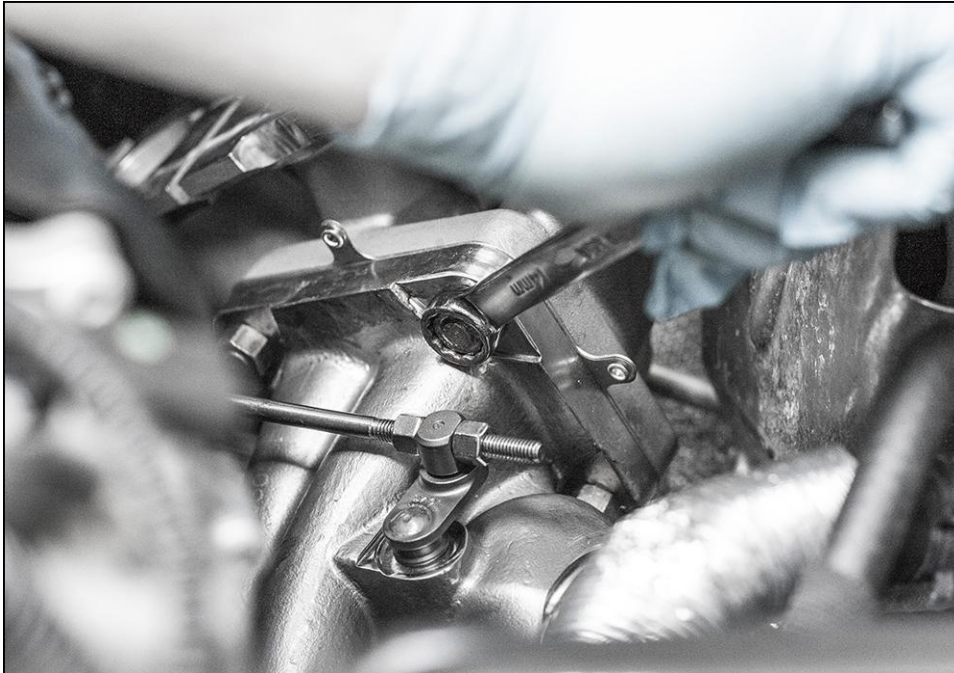


Slide manifold into the turbocharger.



Install nuts onto studs. It is necessary to install the nut on the rear driver side first before starting the other three. Once all four are on the studs, evenly tighten them in a crossing pattern using a 14mm wrench.



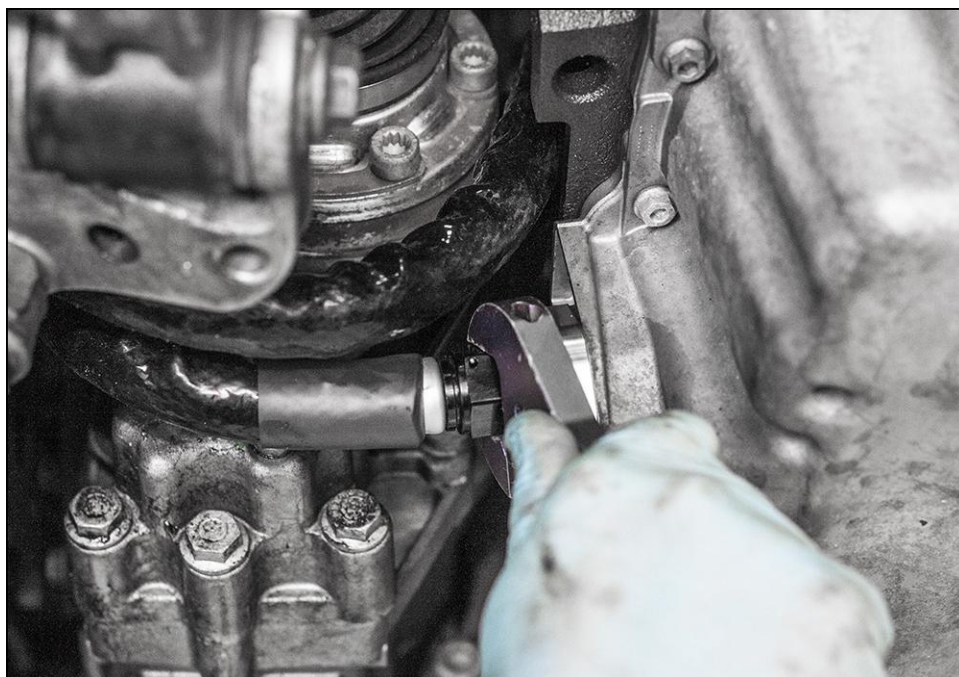
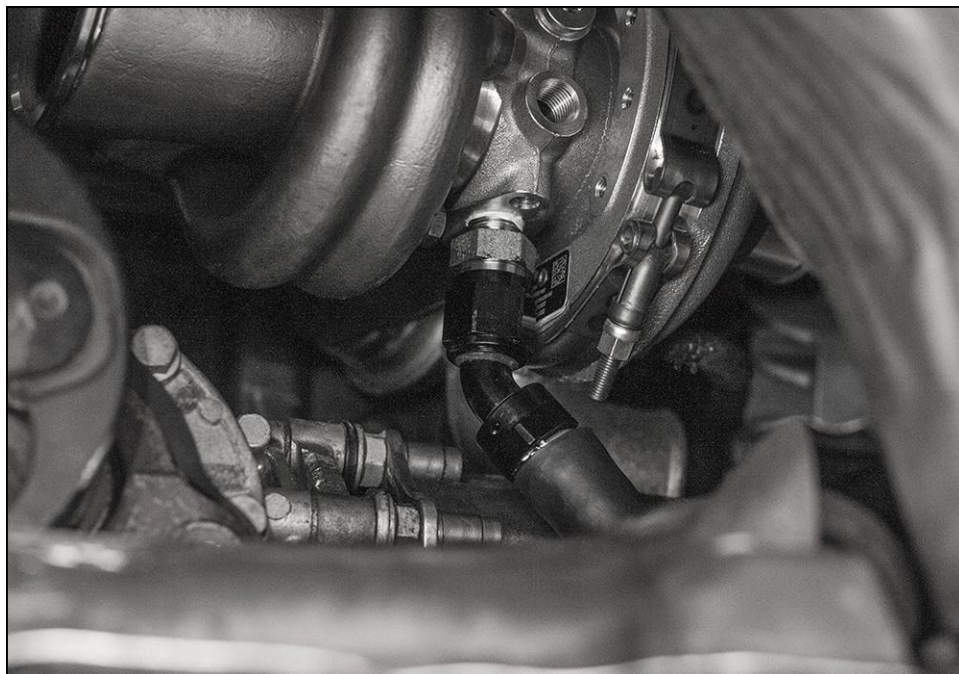


Install new exhaust manifold gasket onto head. Confirm orientation, making sure it is installed correctly. Lightly wipe studs in cylinder head with anti seize lubricant.

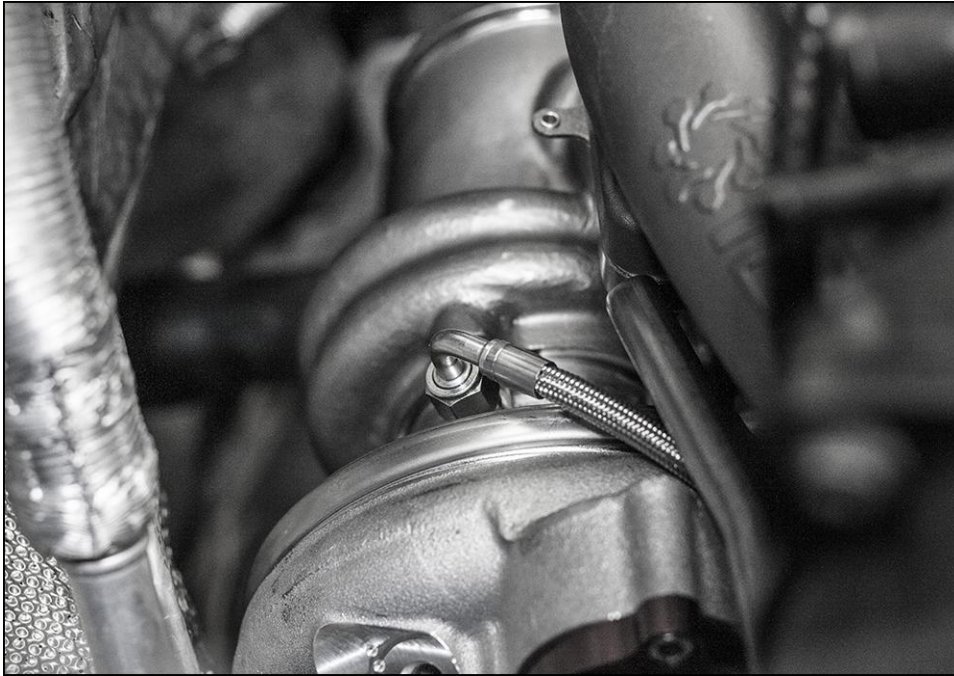


Lift turbo/manifold assembly up and slide into wedge blocks on the bottom side of the head flange. Then, tilt manifold forward with slots over studs. Thread on new lock nuts by hand, five in total. Torque the five nuts on the top side of the manifold to 20 ft/lbs, working from the center out.

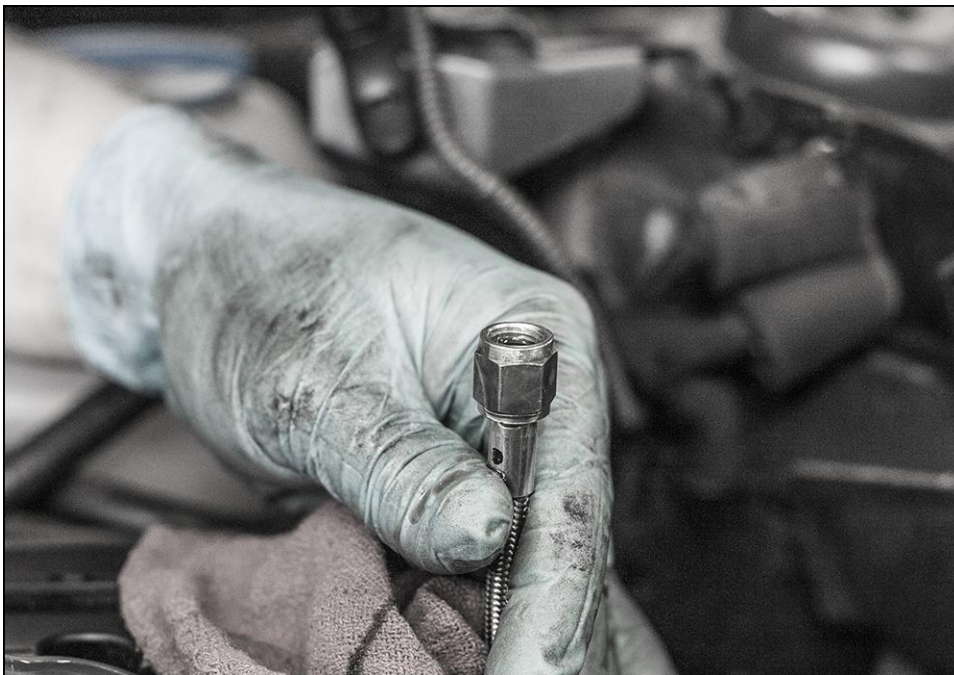
Install oil drain line between turbocharger and oil pan, making sure 45° end is placed on turbo and straight end is placed on the oil pan. Do not over tighten these connections, they only need to be snug.



Install 90 degree end of oil feed line onto turbo, hand tighten only.

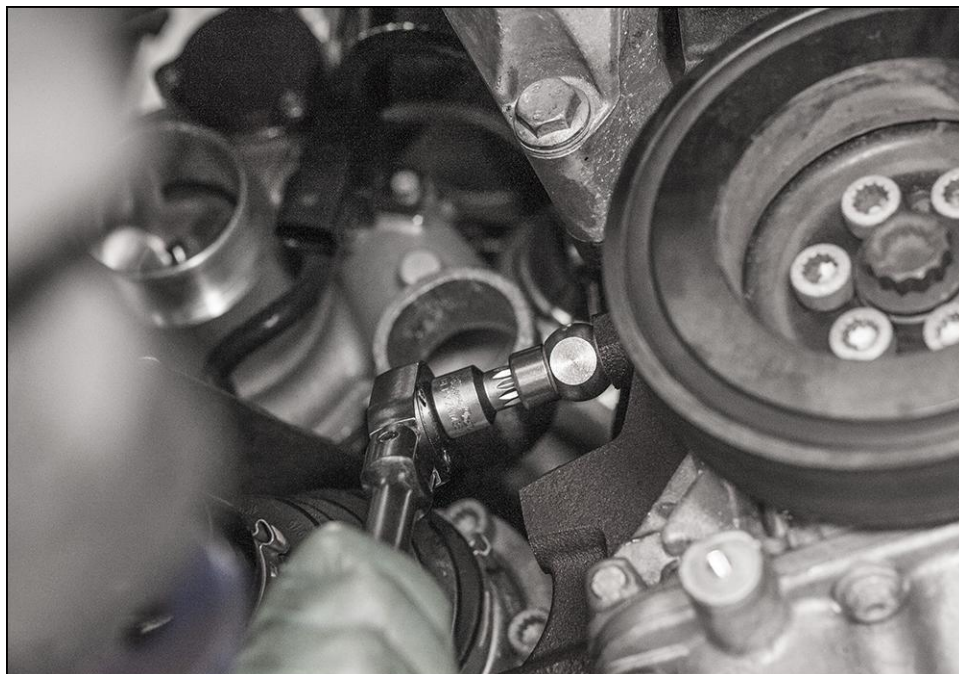


It is necessary to prime the turbo with oil before the first start. This is a good time to do so, using a clean funnel in the feed line. Pour enough fresh engine oil into the line to reach the turbocharger and lubricate internal ball bearings.

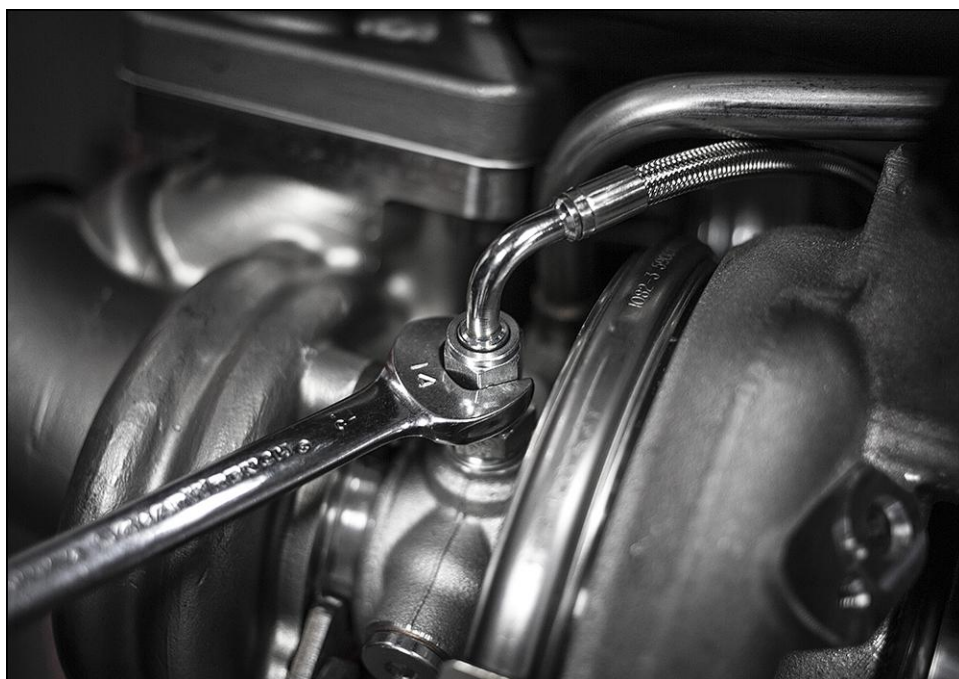


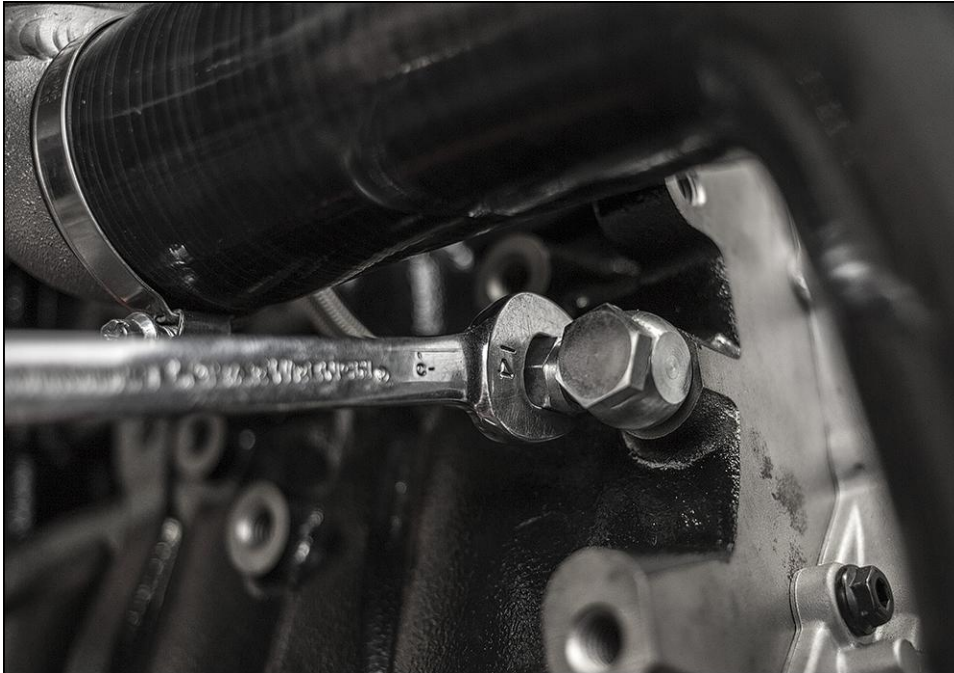
Route oil feed line over turbo, underneath coolant drain line. Install block side of oil line onto the banjo fitting, hand tighten only.

Bolt oil feed banjo to the block using OEM banjo bolt and new crush washers. Clock the feed line to roughly 10 o'clock. Tighten banjo bolt.



Confirm that oil line is routed properly and not interfering with turbo, manifold, or block. Tighten both ends of feed line with 14mm wrench.



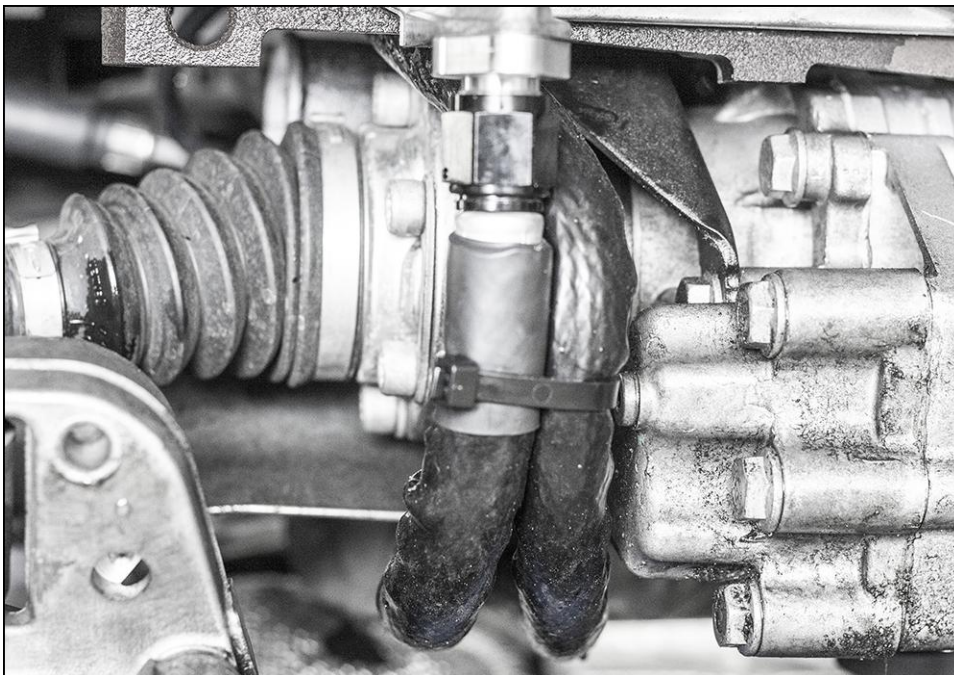


Loosely install coolant feed banjo onto rear port of the turbo with OEM banjo bolt and new crush washers. Slide blue silicone hose onto banjo with clamp on it, then clock line as needed. It should go straight down and run parallel with the oil drain line, then back up to the block. Once clocked properly, you can pinch the clamp, then slide heat jacket over clamp. Install new crush washers and tighten banjo bolt.

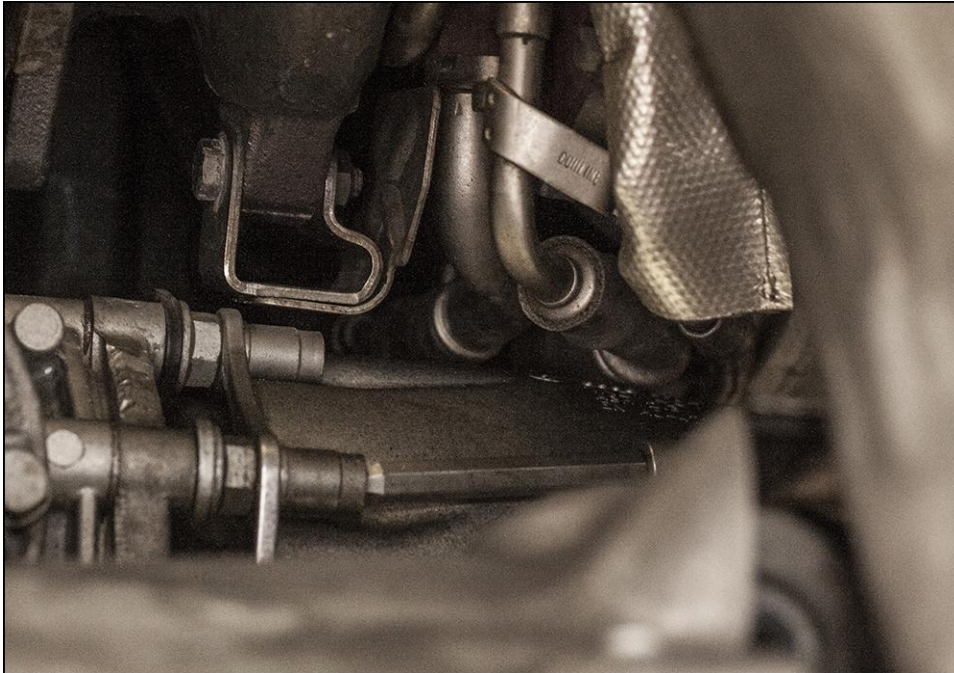




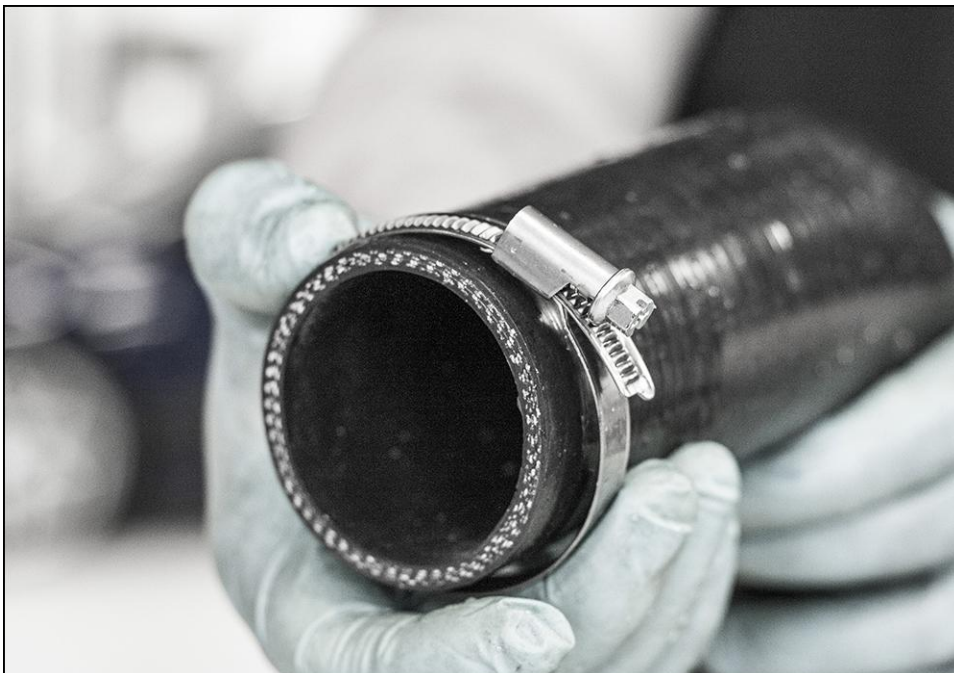
Group oil drain line and coolant feed line together and fasten with included cable tie. Trim excess from tie.

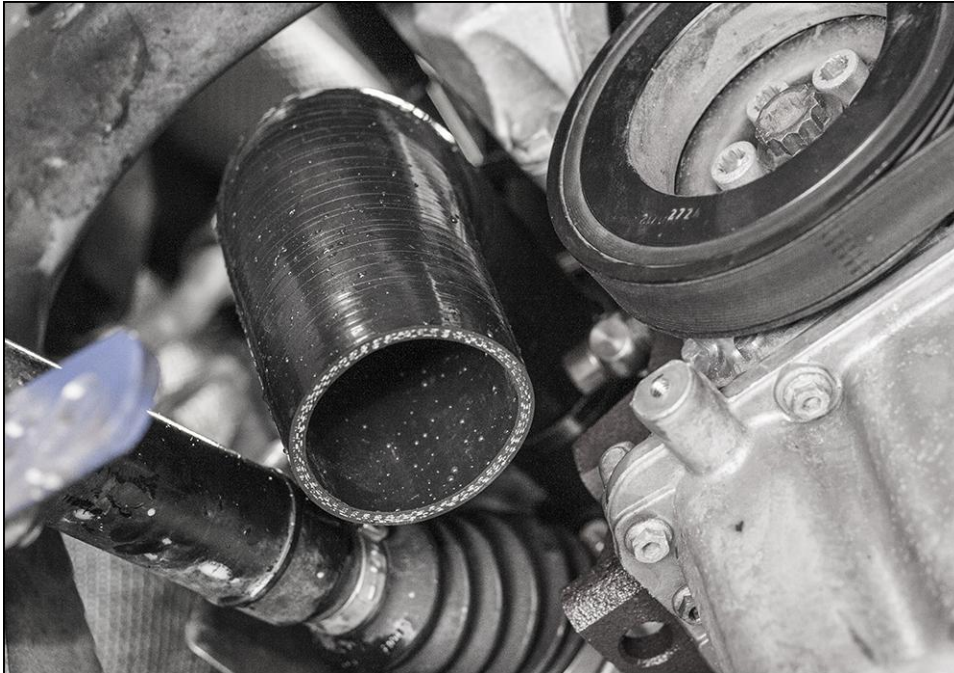


Reinstall CV boot heat shield below turbo. Tighten both nuts.

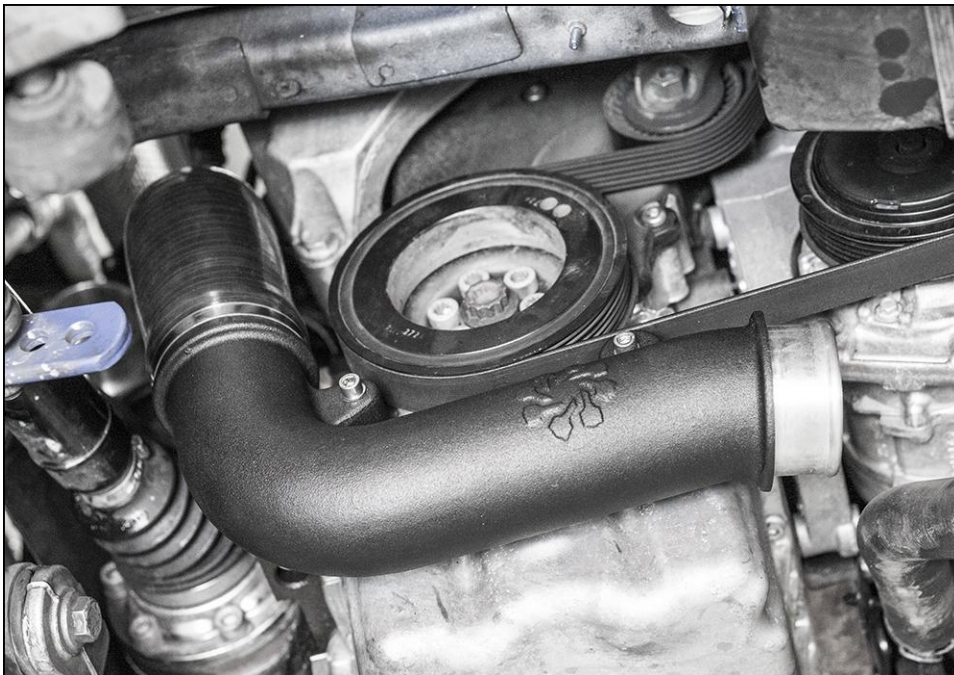


Slide smaller turbo outlet clamp onto coupler with screw facing the rear of the car, on the top side of the coupler. Slide coupler onto turbo outlet. Slide larger clamp onto opposite end of coupler and slide in turbo outlet pipe.

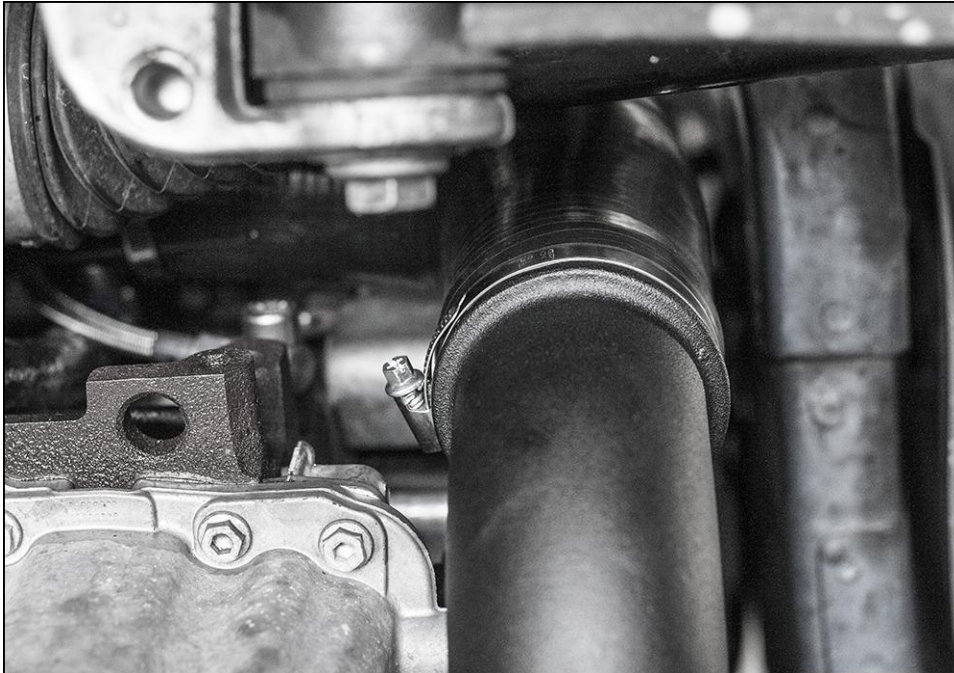




Attach turbo outlet pipe to oil pan using included bolts and washers. You will need a 5mm allen socket for this step.



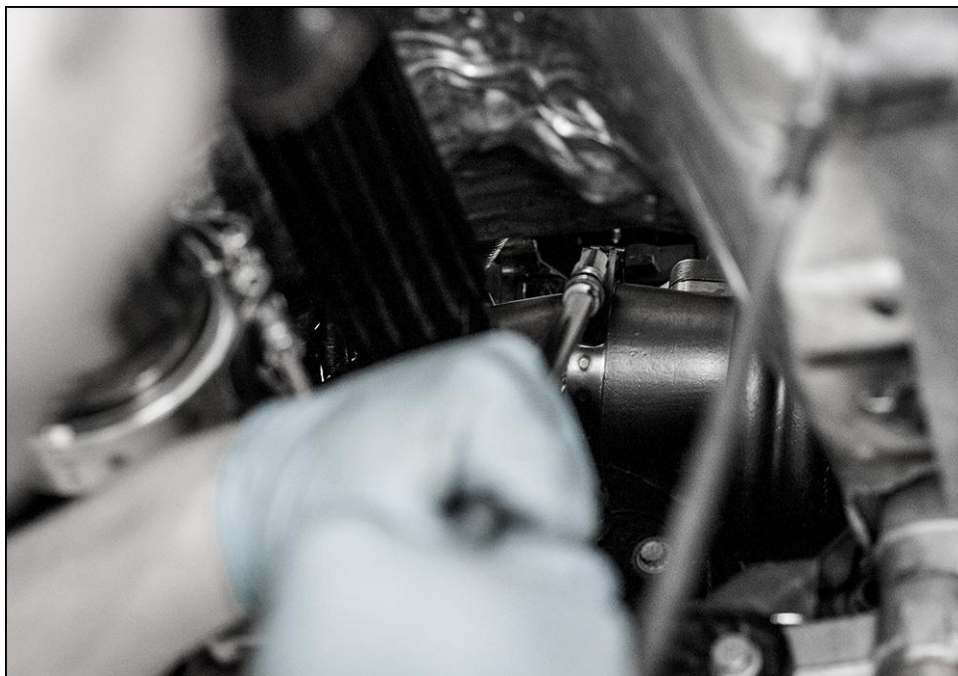
Tighten both hose clamps on turbo outlet coupler. Do not over tighten clamps.



Attach intercooler inlet hose to cast outlet pipe. If using IE FDS intercooler, you will remove the black billet adapter and clamp the hose directly to the cast outlet pipe.

Lightly wipe the threads of the oxygen sensor bungs in the downpipe and midpipe with anti-seize lubricant. Put downpipe into place from underneath the car. Install upper v band clamp loosely onto turbo and downpipe.





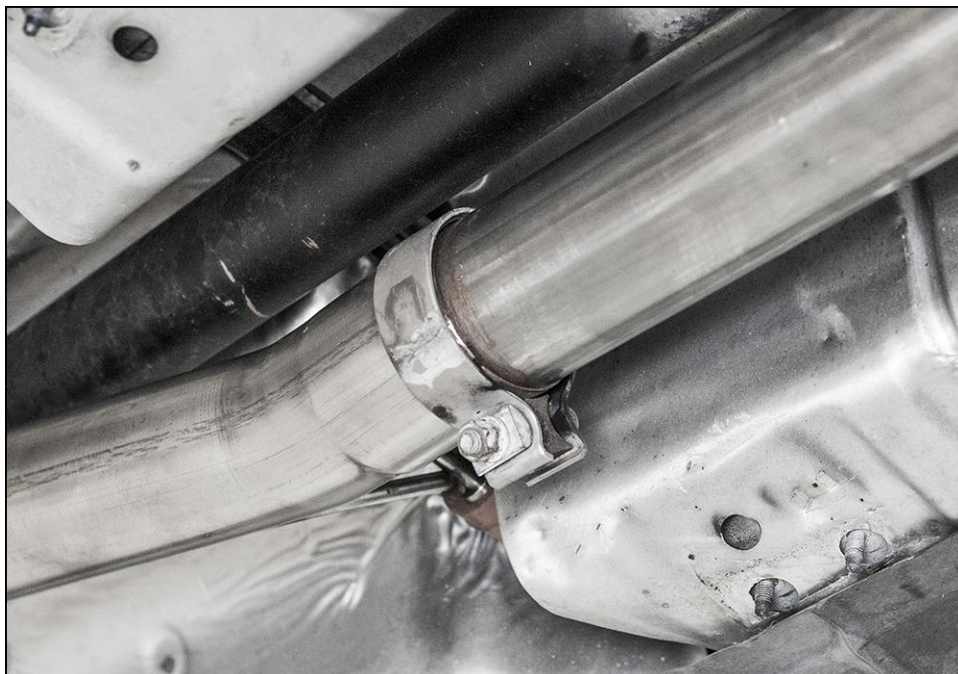
Pry engine forward from the bottom again and slide driveshaft onto alignment pin on the transfer case. Reinstall the three mount bolts, one at a time. Torque each bolt to 60 ft/lbs. This step can easily be performed with the car in gear and the emergency brake engaged.

Reinstall the two bolts in the driveshaft center support bearing and heat shield. Ensure that support bearing is not crooked before tightening.



Reattach dogbone mount and torque both bolts to 30 ft/lbs.

Slide IE midpipe into catback system (or install custom midpipe). Loosely secure v band clamp on bottom side of downpipe to midpipe.



Slide pins on IE mount bracket into rubber grommets in factory bracket. Secure bracket to car, tighten the two bolts with 13mm heads.

Line up downpipe bracket with mount bracket, install 8x16mm bolt with washers. Tighten.



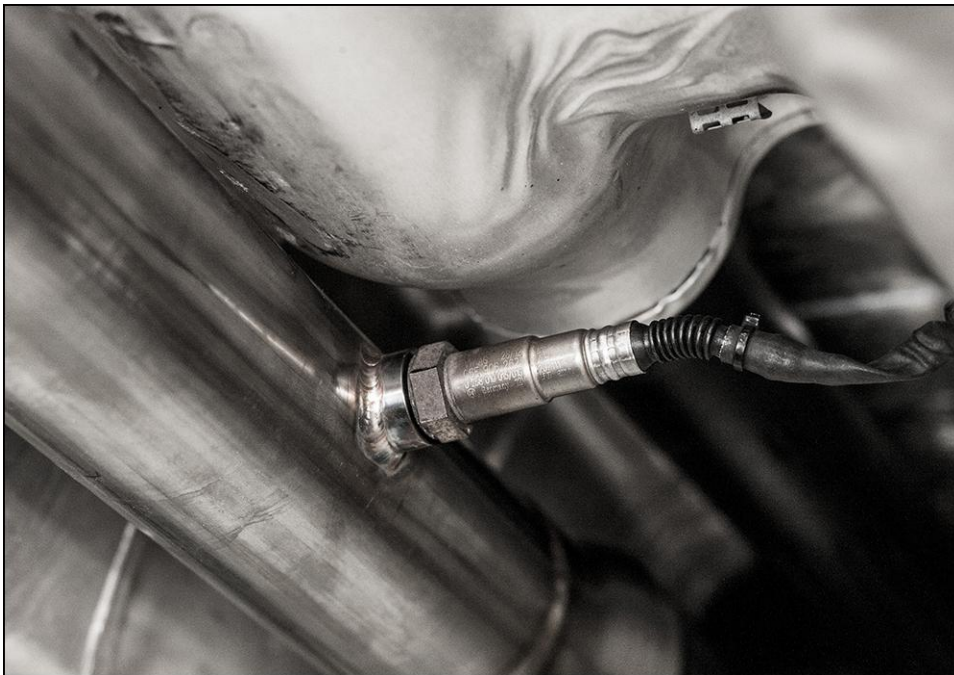
Tighten upper v band clamp, then tighten lower v band clamp. Do not overtighten.



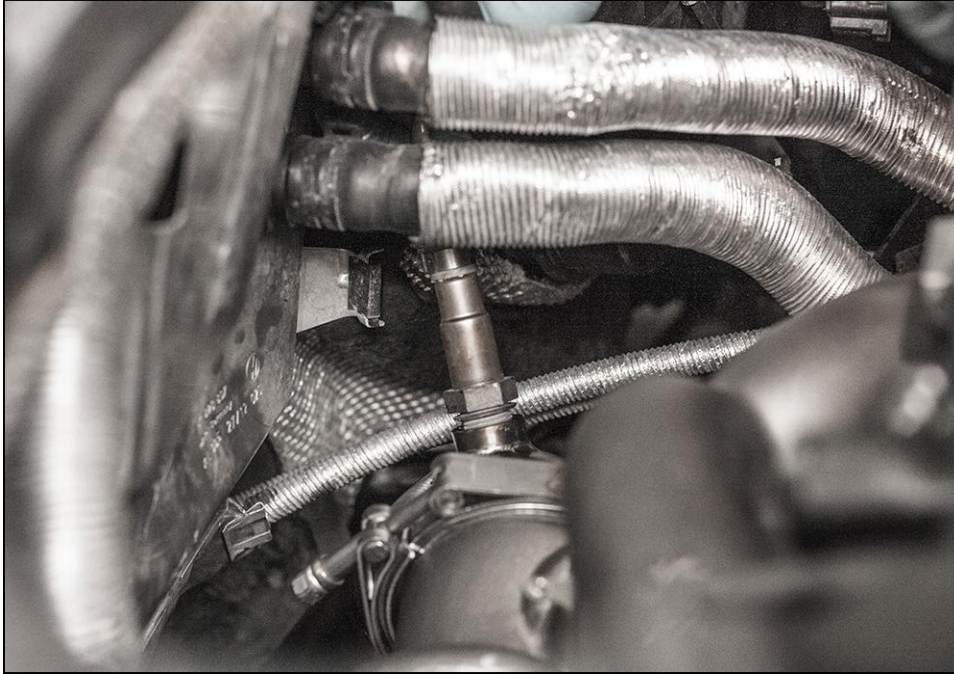
Tighten clamp on rear of midpipe to secure to catback portion of exhaust.



Install rear oxygen sensor into midpipe. It is a good idea to twist the wiring up counterclockwise, roughly 4 full turns, before installing, so that it is not twisted once installed.

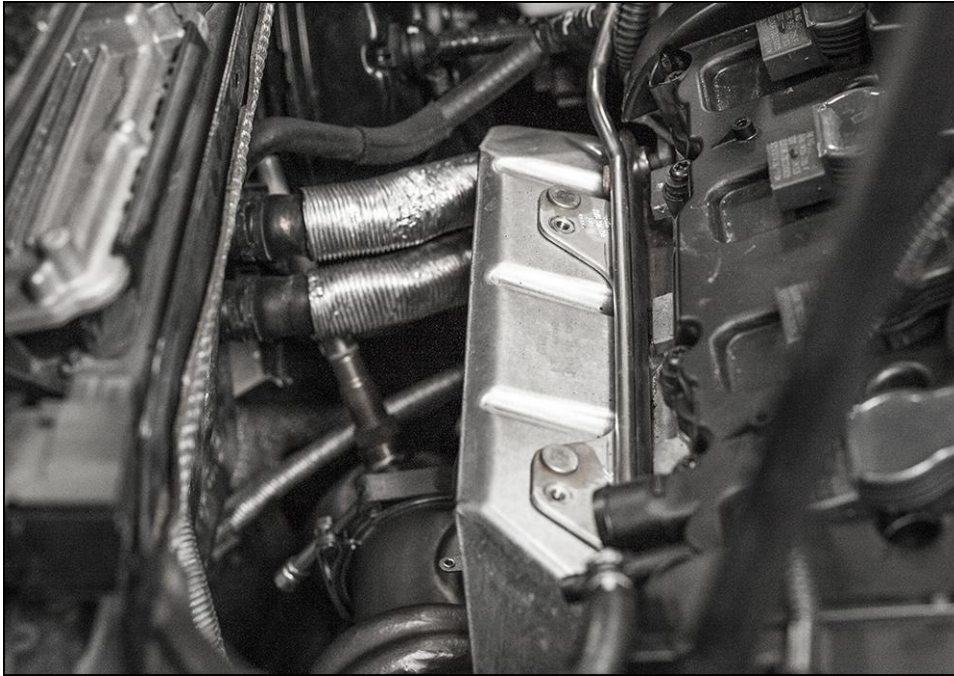


Using same method as above, install oxygen sensor into downpipe.



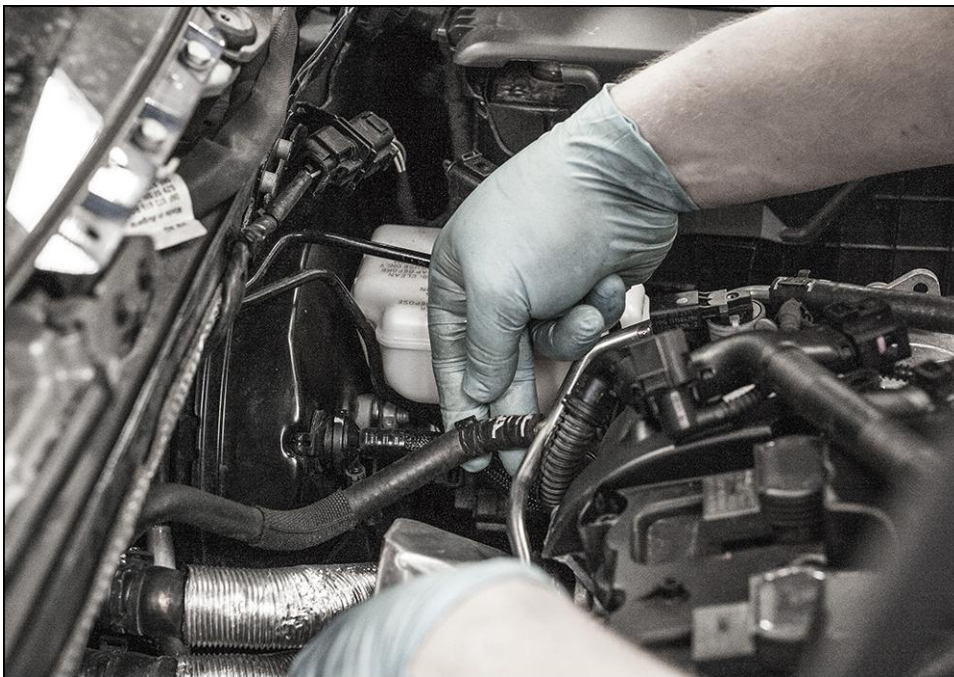
Attach coolant hard lines to turbo heat shield using two 10mm nuts that were previously removed. Reinstall heatshield onto cylinder head using the top two bolts with 13mm heads. The other two original bolts with 18mm heads are no longer used. Ensure that coilpack harness is on the left side of the rear nipple on the hard line.





Reinstall 5mm triple square bolt to secure hard line bracket.

Reattach soft coolant line on back side of hard line. Reattach soft line to coolant reservoir.

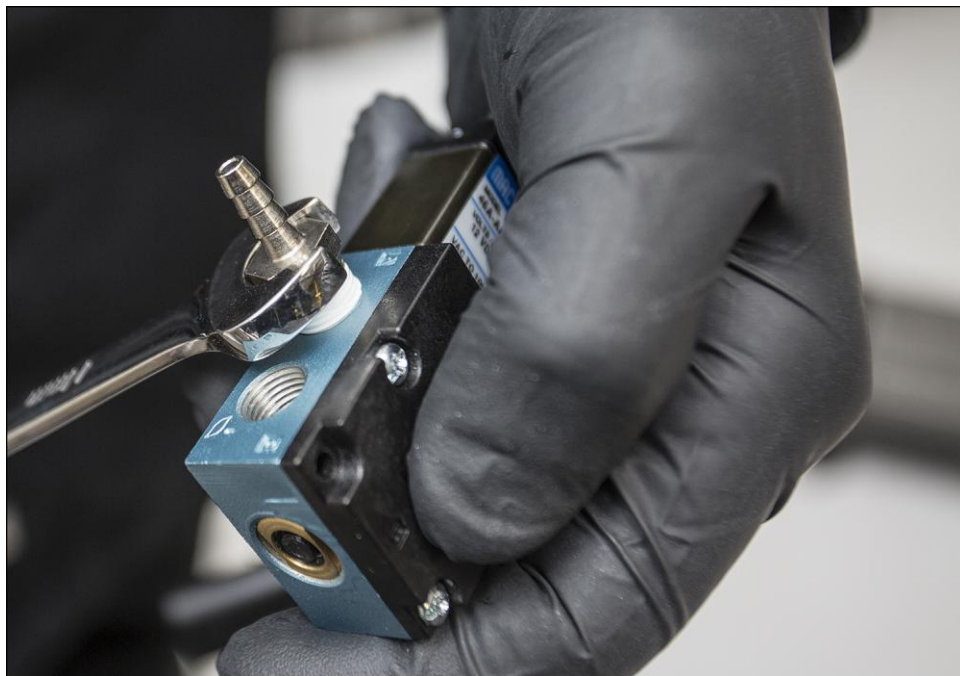




Pull coilpack/N75 harness back across engine. Do not plug in coilpacks at this point.

Wrap threads of barbed fittings for boost control solenoid in sealing tape. Install barbed fittings into boost control solenoid using 11mm wrench. Using a 3/32" allen wrench, mount solenoid to bracket.







The boost control solenoid will mount in the rain tray to the passenger side bolt that secures the black box pictured below.



In order to run the wire harness and vacuum lines to the solenoid, the small harness going into the rain tray will need to be modified. To do so, start by carefully releasing the plastic cover securing it. There are two tabs, one on each side that must be released with a small screwdriver.

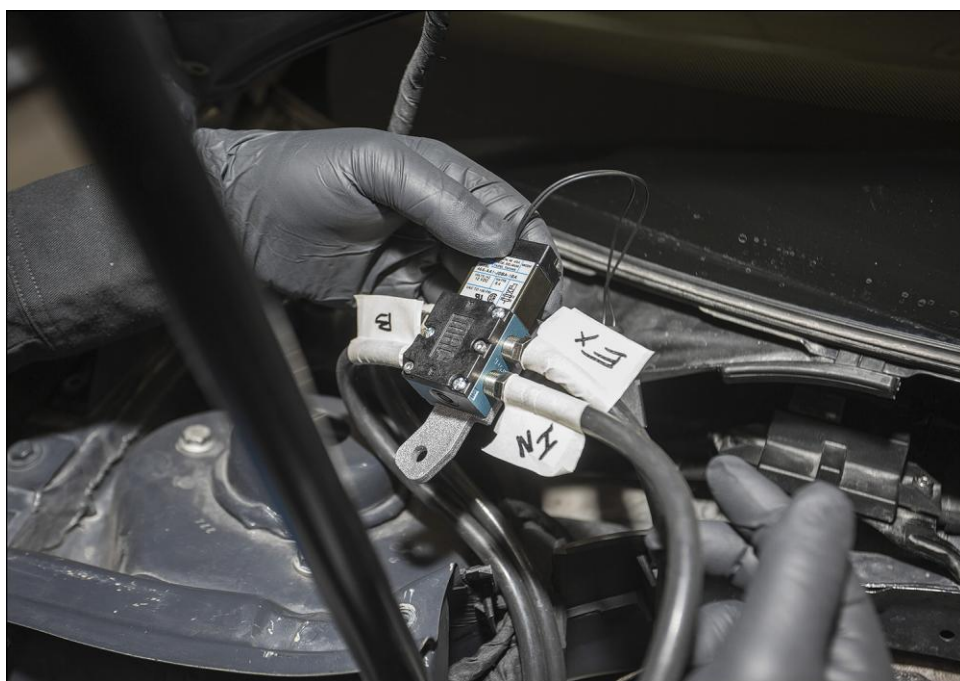


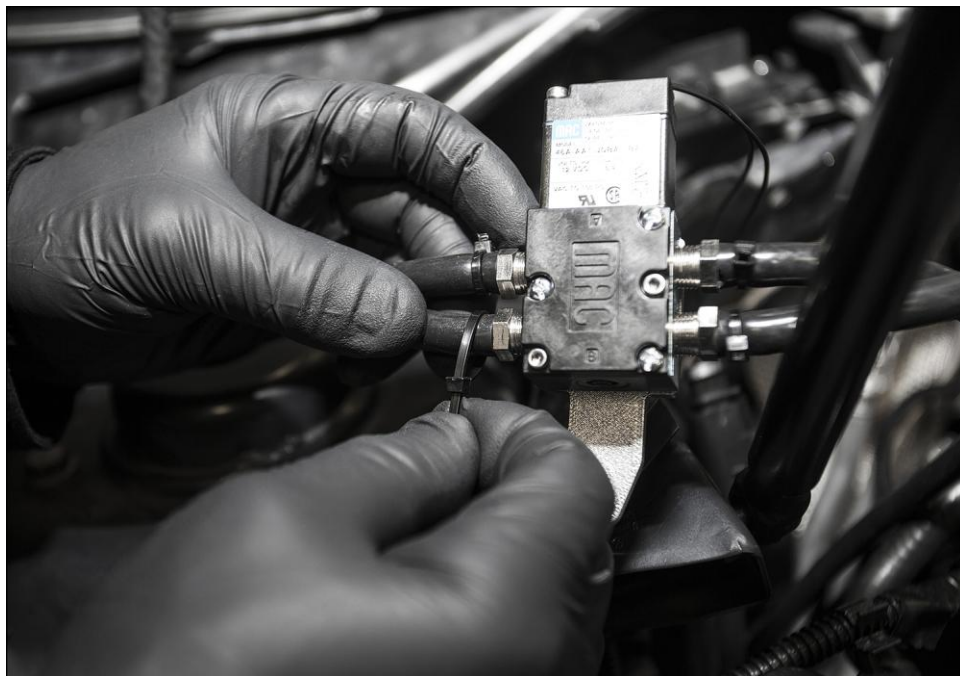
Once you release both tabs, slide the plastic cover upwards and set aside. Unwrap some of the foam surrounding the small wire harness. About half of this foam will need to be removed in order to fit vacuum lines and harness through the hole.





Refer back to vacuum line plumbing diagram above and connect the vacuum lines from the wastegate actuator and compressor housing to the appropriate barbs. The last remaining barb will be used to connect to the turbo inlet pipe. Attach the last piece of hose to this barb on the solenoid and run into the engine bay. It will be connected to the inlet pipe at a later step. Secure all four lines to solenoid with small cable ties. Once connected, the tape can be removed from each hose.





Secure solenoid using the bolt that was previously removed in the rain tray.



Carefully run all four vacuum lines through plastic grommet. Connect the solenoid harness to the OEM N75 plug. Place harness in grommet with plugs in the rain tray. Slide upper portion of grommet back in to secure all hoses.



Reinstall upper portion of firewall, securing with 10mm nuts. Be sure to reinstall wiring harness into plastic clips on the back side of the firewall piece. Install plastic cowl cover, clipping into receiving groove on the bottom of windshield, again working from one side to the next. Slide rubber seal back onto edge of firewall once installed.

Install wipers, making sure to orient them the same way as they came off. Tighten nuts onto wipers. Install caps over wiper nuts.

Connect new coolant drain line to hard pipe near the front of the engine bay using OEM spring clamp. Be sure to route this hose just above the engine mount and below other hoses in the engine bay.



Reusing OEM bolts, fasten rear breather hard line to the black flange in the inlet pipe. Be sure to use included o ring to seal.



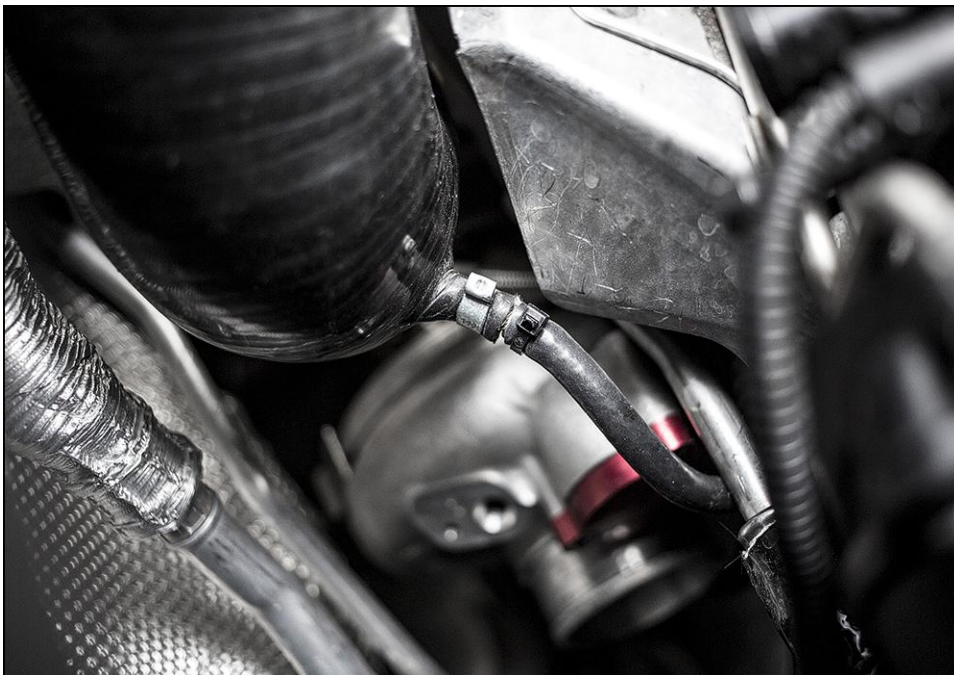
Remove evap hose from heat jacket and trim lower portion of hose off, leaving 6" length. Cut heat jacket to match.



Slide pinch clamp onto evap hose, then slide hose onto 90° barb in inlet hose. Secure hose to barb by pinching the clamp. Reinstall heat jacket onto evap hose.



Install vacuum line from boost control solenoid to turbo inlet hose barb, trimming if necessary. Secure with cable tie. Now is a good time to secure all vacuum lines from boost control solenoid together with included cable ties.



Slide lower clamp onto inlet hose, install pipe onto turbo inlet. Do not tighten clamp yet. Hold MAF housing up to inlet hose and locate mount holes. This is done to orient the inlet hose correctly. Set MAF housing aside and tighten lower clamp.

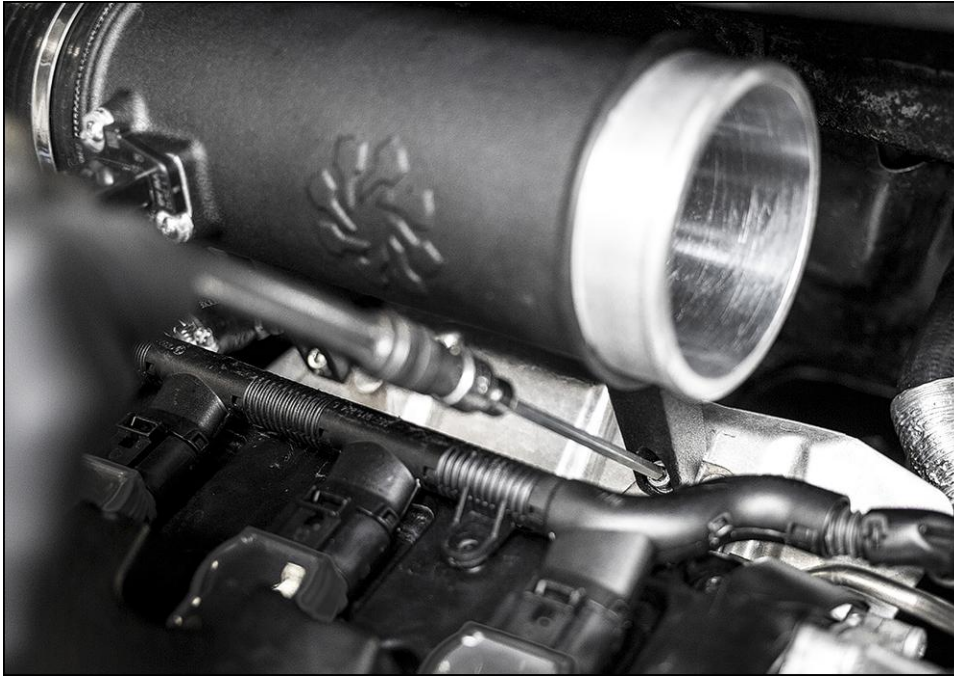


Attach evap hose to valve cover using factory spring clamp. Attach rear breather hose to valve cover as well, using the provided worm gear clamp.



Slide upper clamp onto inlet hose, slide MAF housing into hose. Using included bolts and lock washers, bolt MAF housing to heat shield. Tighten clamp to inlet hose.





Ensure that proper clearance exists between coolant hard line and turbo inlet pipe. If needed, hard line can be bent forward slightly to add more clearance.



Remove MAF sensor from factory airbox with T20 Torx socket. Using provided bolts, install MAF sensor into IE MAF housing with 2.5mm allen socket. Plug in MAF.



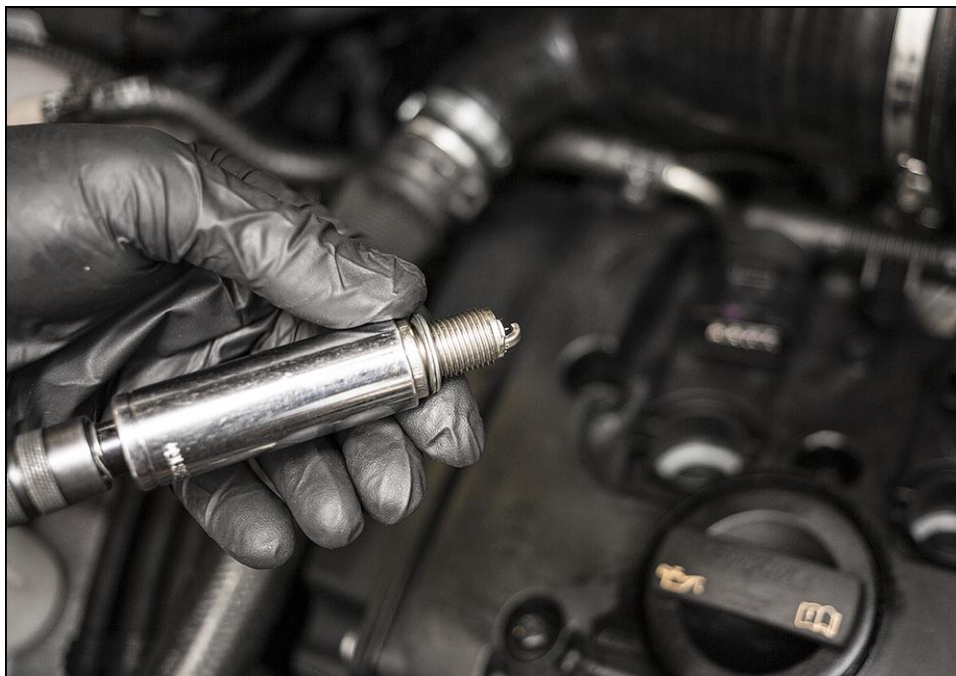


Attach diverter valve hose to aluminum barb in turbo inlet hose. Secure with factory spring clamp.



Remove all coilpacks, remove spark plugs and replace one at a time with included plugs. These come pregapped, so they are ready to install. Torque spark plugs to 25NM (18 ft/lbs). Reinstall coilpacks and plug them in.





If using the IE intake kit, please refer to the following steps.

Remove two grommets from the bottom side of the factory engine cover. Install into the mount bracket on the bottom side of the heat shield from the bottom up.



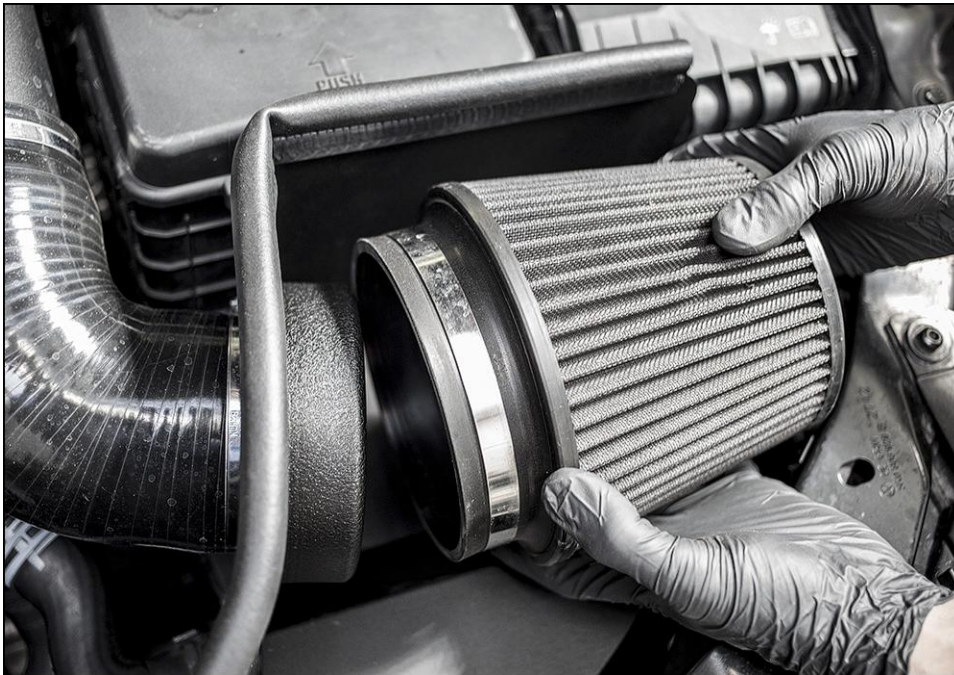


Install heat shield onto plastic pins in front of battery. It may be necessary to use silicone spray to lubricate grommets before installing. Secure mount tab on heat shield to radiator support using factory screw.

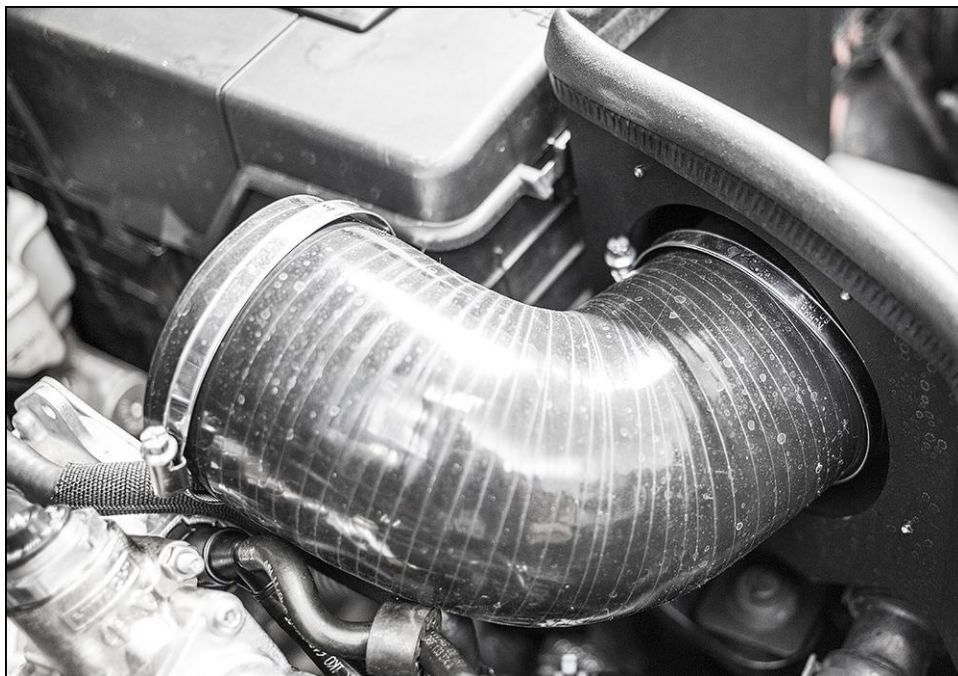




Install air filter on velocity stack. Tighten clamp.



Install step-down coupler onto velocity stack with 80-100mm clamp, do not tighten yet. Slide second 80-100mm clamp onto coupler.

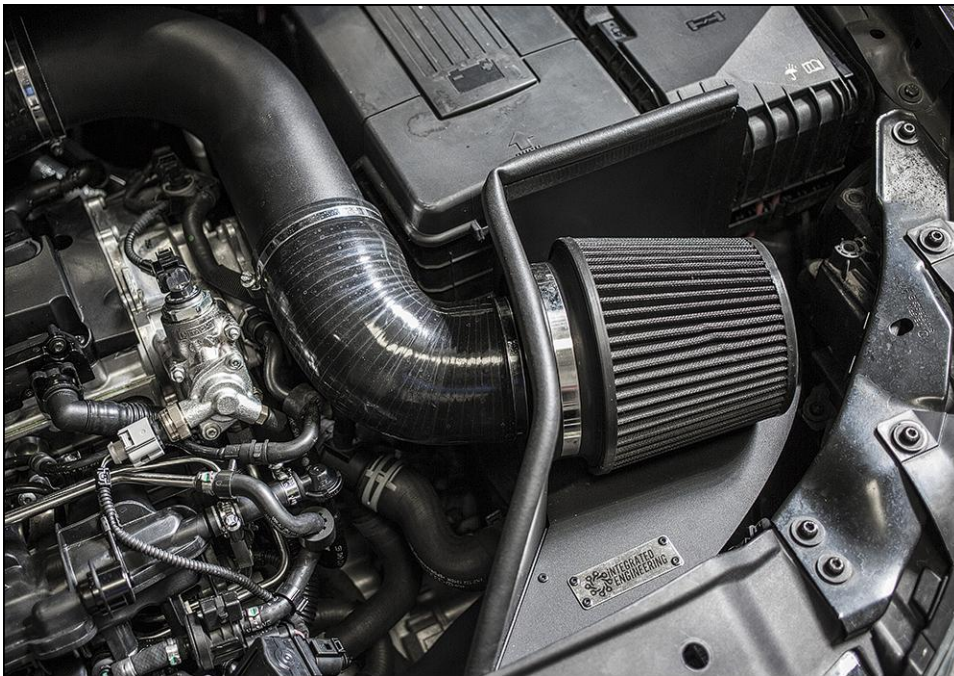
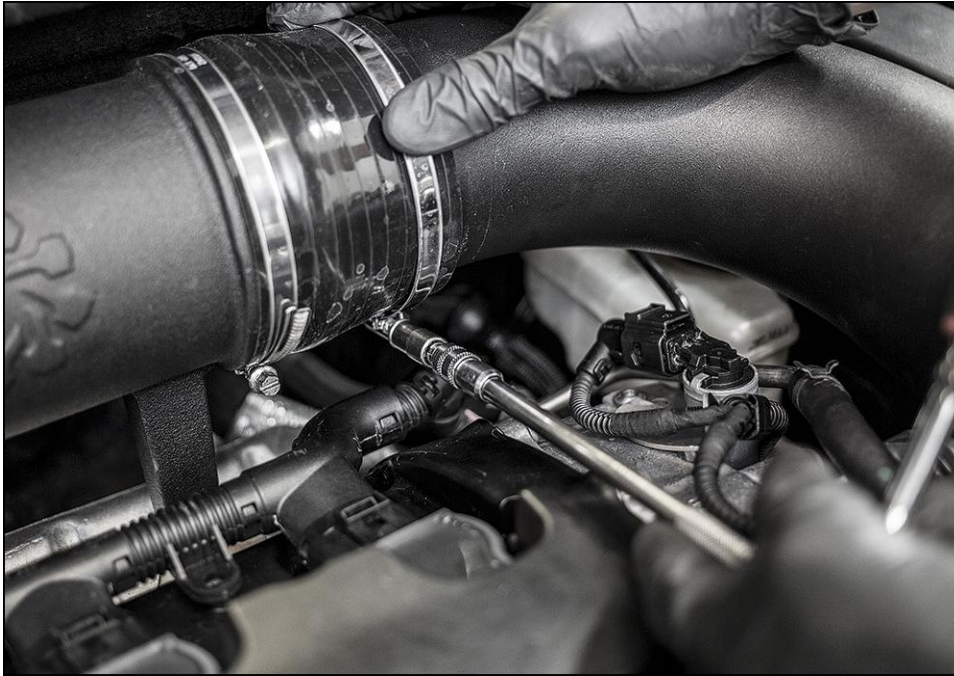


Install straight reducing coupler onto MAF housing. Secure with 90-110mm clamp. Slide 80-100mm clamp onto coupler.



Install aluminum intake tube between MAF housing and velocity stack. Tighten clamps.





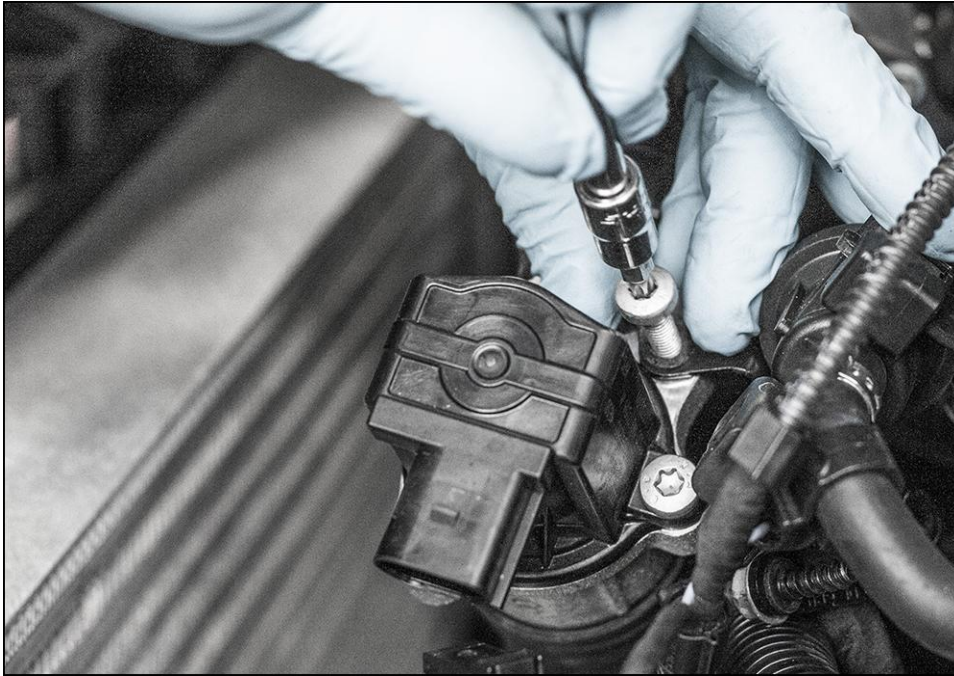
Section 3: Removal and replacement of high pressure fuel release valve

There are multiple methods of replacing the rail valve. It can be done per the factory service manual, which involves removing the intake manifold to access the valve. The method that we prefer and recommend is done with the intake manifold still on the car, which is described below. Be sure to perform this procedure in an environment away from sparks and fire, as fuel fumes can easily catch fire!

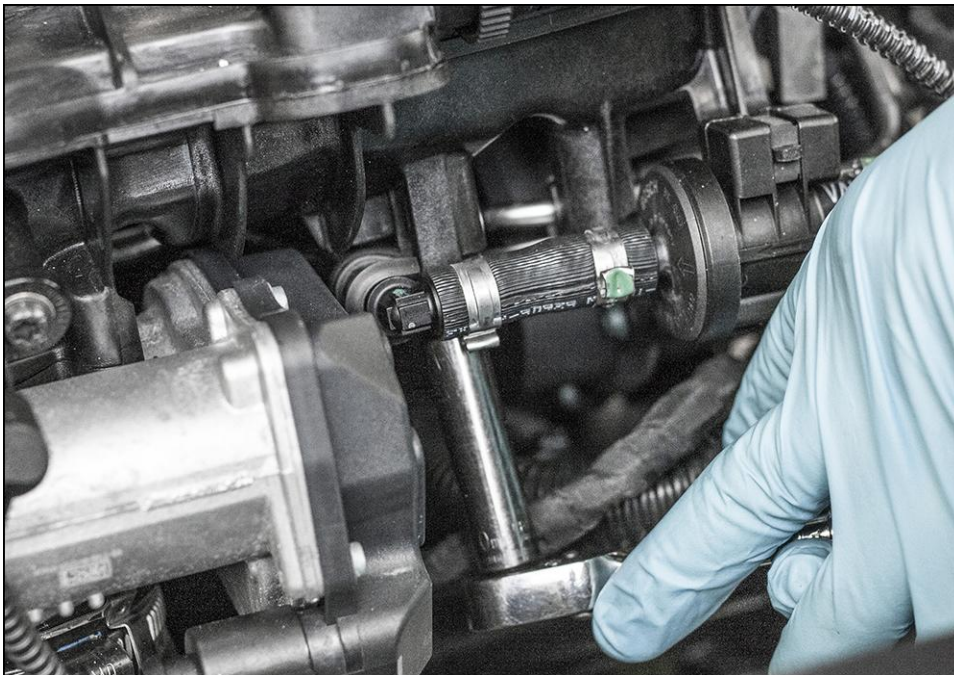
While wearing safety glasses, carefully bleed off fuel pressure by pressing in the Schrader valve on the HPFP. To access this, a plastic cap will need to be removed. Hold a rag over the valve to catch fuel while bleeding off pressure.



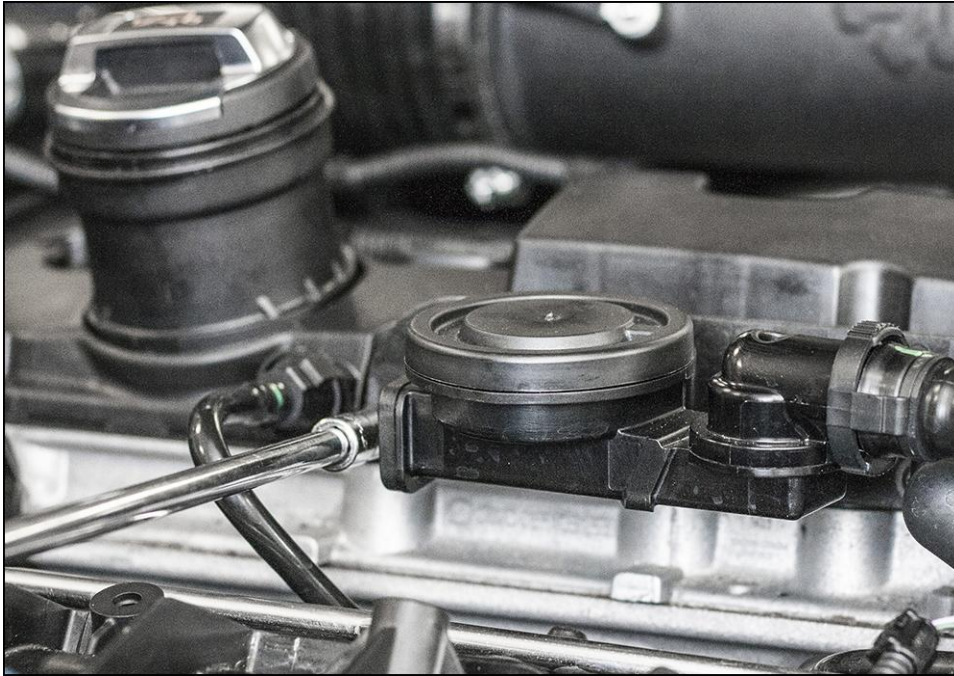
Unbolt single bolt securing diverter valve to mount bracket using T30 Torx socket. Remove spring clamps holding hoses onto diverter valve housing.



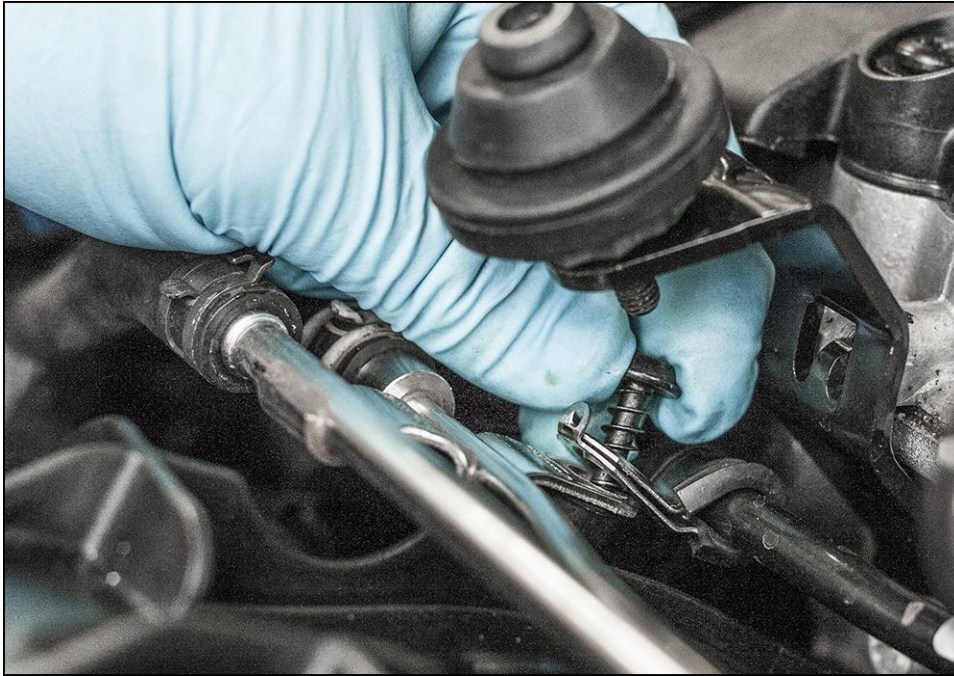
Remove two nuts holding evap solenoid lines and diverter valve bracket to intake manifold using 10mm socket. Unplug evap solenoid. Slide solenoid off intake manifold.



Remove PCV from valve cover using T25 Torx socket to gain access from above. Carefully unclip both hoses from PCV valve. The hose attached to the intake manifold can remain attached, you will just need to rotate it out of the way.

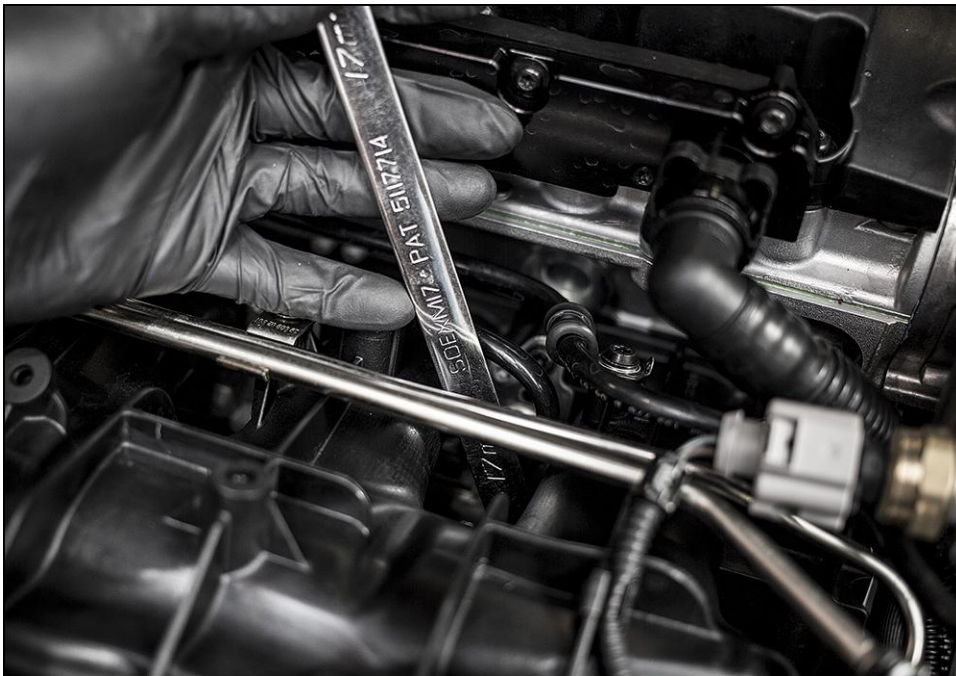
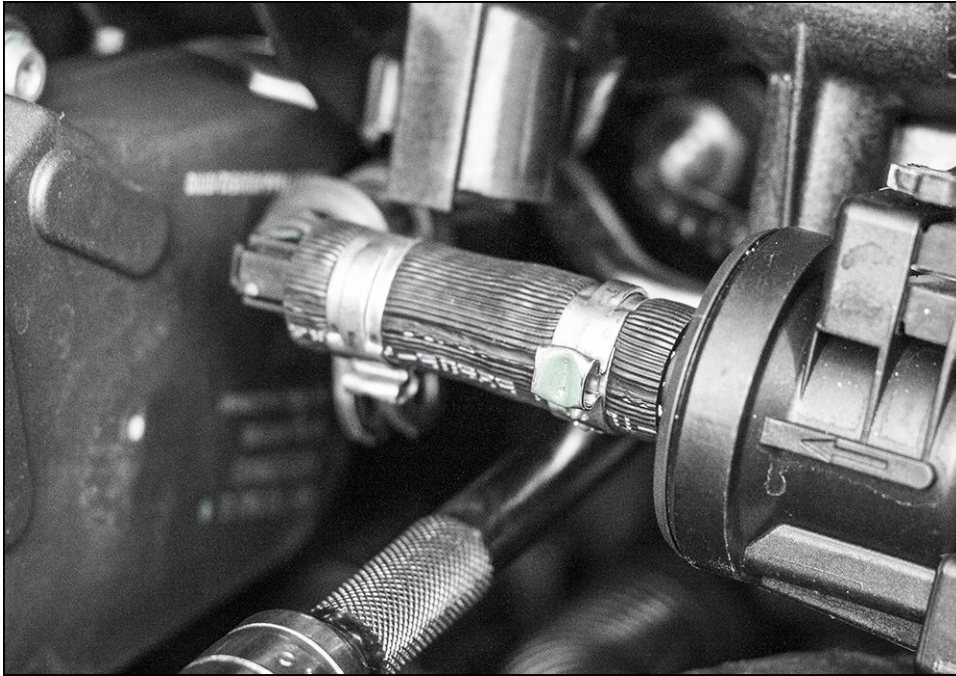


Remove the four screws holding the hard lines to the top of the intake manifold using a T30 Torx socket. This will allow the lines to be moved out of the way to access the rail valve from above.



Remove hard line attached to rail valve using 14mm crowfoot wrench.

Using 17mm crowfoot wrench, loosen valve from beneath the intake manifold. You may also be able to loosen the valve from above with a 17mm wrench. Using a combination of both tools, unscrew valve from fuel rail and remove.





Install new rail valve. It is often difficult to get it started in the fuel rail, but a piece of rubber hose can be slid over the valve to guide it into the fuel rail and get threads started. If using a piece of hose to start the threads, ensure that it is very clean before sliding over valve. Remove hose and tighten rail valve.





Reattach fuel hard line to rail valve and tighten.

Reinstall evap solenoid and diverter valve brackets and plug in solenoid.

Reinstall diverter valve hoses, secure with spring clamps. Bolt to bracket.

Secure hard lines to top of intake manifold.

Bolt PCV valve back to valve cover, clip on breather hose.

Section 4: Installation of IE performance ECU software

The IE450T kit includes the IE PowerLINK tool to easily flash your ECU with the proper tuned file to match the hardware upgrade. Once the hardware has been installed, you will need to install the PowerLINK flashing software, which is found on the included flash drive. Follow the installation steps to complete installation. Once this has been done, you will be able to use the tool to read the file from your ECU. Please do so, then send this file to tuning@performancebyie.com with your order number. We will then build the correct tuned file for the IE450T kit and email it back to you as soon as possible. Using the same software, you can load the tuned file onto your ECU. Be sure to have a battery charger connected to the battery at all times during this process, as a dead battery can compromise your ECU.

Section 5: Final steps, inspection , first start, and first drive

If changing the oil filter, do so now. Once the new filter is installed, fill engine with the correct factory-spec oil. With a filter change, the engine will require approximately 4.9 quarts of oil.

Fill engine with the proper blend of coolant and water. We recommend using a vacuum bleeder to remove all air from the system while filling.

Do one last once-over, confirming that every bolt, nut, and hose clamp has been tightened before preparing to start the car. Double check that all wiring connectors that were unplugged have been reconnected.

Start engine and allow to idle for approximately 15-20 seconds. Shut off engine and check for oil, fuel, coolant, and vacuum leaks. We recommend checking all lines underneath the car to make sure that there are no loose connections and that nothing is leaking.

Once you have confirmed that nothing is leaking, start car again and allow it to warm up to operating temperature. Once it is fully warm, double check the coolant and oil levels. Do not open coolant reservoir while car is up to temperature, but keep an eye on the level using the marks on the outside of the reservoir.

The car is now ready to be driven. For the first drive, we recommend taking it somewhat easy to get a feel for the added power and to ensure that everything is connected and functioning properly. Drive the car for a few miles and make sure there are no check engine lights or abnormal noises. If everything is confirmed to be working properly, you are ready to experience the full potential of the IE450T turbo kit.

To use motorsport launch control and flat shift features:

The IE performance software comes with launch control built in and preset for launching the car with the IE450T kit. This feature will not become available until the car is up to operating temperature, to prevent damage from happening to the engine. To use this feature, the car will need to be stationary with the clutch pressed in. While in first gear, depress the throttle pedal entirely. The launch control will remain active until the clutch is released.

We do not recommend using this feature with the factory clutch.

The flat shift feature within the IE performance software allows you to quickly shift gears without ever leaving the throttle, which maintains boost through shifts. This simply requires the throttle to be fully depressed while driving and using the clutch as normal. Once the clutch is pressed in, ignition will be cut, allowing you to shift without taking your foot off the throttle.