



## VW & Audi TDI CR150 ECO KIT Installation Guide



This guide is to help you install your new Rawtek DPF, EGR & Adblue Delete Exhaust ECO Kit on your (2015+) VW / Audi with 2.0l CR150 Diesel Engine.

## ***Thank you for purchasing a Rawtek Performance Exhaust System!***

### ***Please take time to read and understand the following...***

By installing your Rawtek Performance Exhaust System, you indicate that you have read this document and you agree with the terms stated below. It is the responsibility of the purchaser to follow all installation instruction guidelines and safety procedures supplied with your Rawtek Performance Exhaust System. Rawtek Performance Fabrication Inc. assumes no responsibility for damages occurring from misuse, abuse, improper installation, improper operation, lack of responsible care, or all previously stated reasons resulting from incompatibility with other manufacturer's products and/or systems. Rawtek Performance Fabrication Inc. exhaust products, unless otherwise specified, are designed for stock vehicle applications. If you have modified your vehicle in any way, please make sure that those mods will not affect fitment before beginning the installation process.

When ever reinstalling factory fasteners, use factory torque specs and sequences.

### **Warning!!!**

When working on, under, or around any vehicle exercise caution. Please allow the vehicle's exhaust and engine to cool before commencing work, as the exhaust system, engine and engine coolant temperatures may cause severe burns. If working without a lift (which is not recommended for this job) always consult vehicle manual for correct lifting specifications. Always wear safety glasses and ensure a safe work area. Serious injury or death could occur if safety measures are not followed.

### **Disclaimer - For Off-Road Use Only**

*Many Rawtek Performance Fabrication Inc. parts, including all VW TDI related exhaust products, are sold for off-road use only. All performance modifications and installations are at the customers own risk. Rawtek Performance Fabrication Inc. hold no responsibility either implied or otherwise for mechanical, electrical or other failure when using any aftermarket performance products. Items sold for off-road use only are illegal in many states and provinces and are intended for racing vehicles which may never be used on a public road.*

*By installing any aftermarket performance product, the vehicle owner takes full responsibility for any use, and/or misuse of the product and agrees that Rawtek Performance Fabrication Inc. holds no responsibility for any consequences, legal, or other, of such use and/or misuse.*

**Parts list:**

<b><u>QTY</u></b>	<b><u>Description</u></b>	<b><u>Part #</u></b>
1	Downpipe	VA.2.C15.DP
1	Front Half of Midpipe (1 of 2 versions)	VA.2.C14.MP.CP VA.2.C14.MP.NCP
1	Rear Half of Midpipe (1 of 4 versions)	VA.2.C14.MP.RP VA.2.C14.MP.NRP VA.2.C15.MP.RP VA.2.C15.MP.NRP
1	Reducer	VA.3.RED.30
1	Hardware Kit ( <i>details below</i> )	VA.2.C15.HW

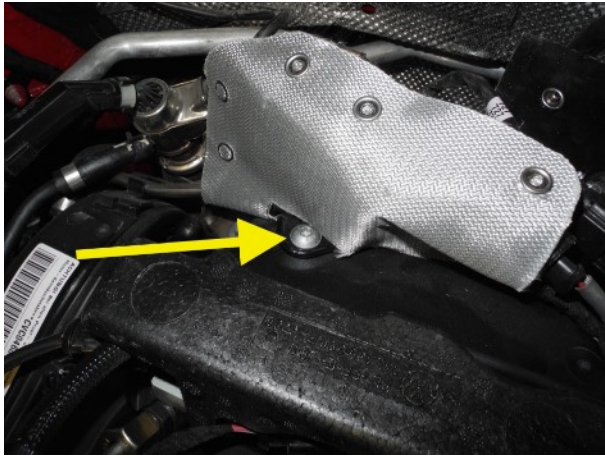
***Hardware Kit #VA.3.C15.HW Consists of the following parts:***

1	Rubber 90 degree hose	GAT.28475
1	Gasket (3 Bolt 3")	GAS3B30
1	Long Coolant Bypass Tube	VA.3.C15.CT.L
1	Short Coolant Bypass Tube	VA.3.C15.CT.S
1	Coolant "T" Fitting	VA.3.C15.CT.T
1	EGR Block Off Plate	VA.3.C15.EGR.PLT.GRV
2	Exhaust Band Clamps (3")	BCS-300
2	Stainless Bolts (3/8-16 2" Long)	
3	Stainless Bolts (3/8-16 1.5" Long)	
7	Stainless Nuts (3/8-16)	
2	Hose Clamps (1")	
5	Plastic Zip Ties (8")	



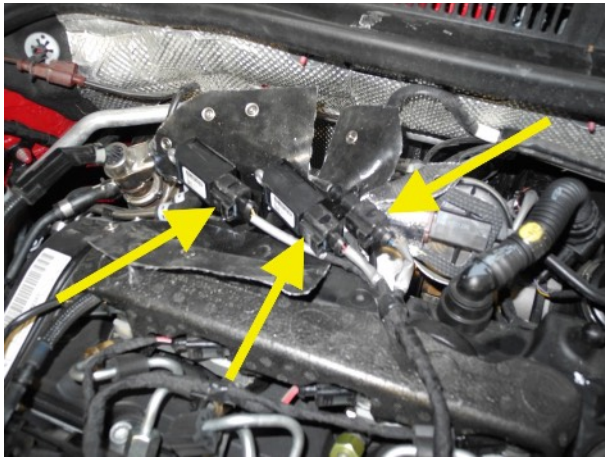
## Part 1: Removing factory exhaust

- 1) Disconnect the negative battery terminal.
- 2) Remove the plastic engine cover. (pull up on four corners)
- 3) Removing exhaust pressure sensor bracket:
  - (a) Remove bolt securing sensor bracket to valve cover (T-30 torx)

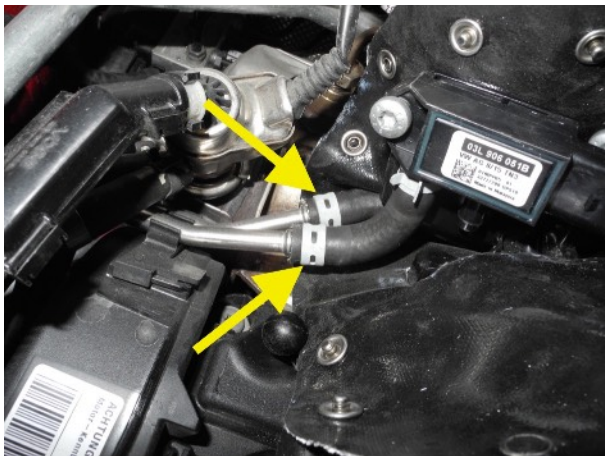


(b) Unbutton heat shield wrap

(c) Disconnect 3 electrical connectors & remove far right connector from bracket

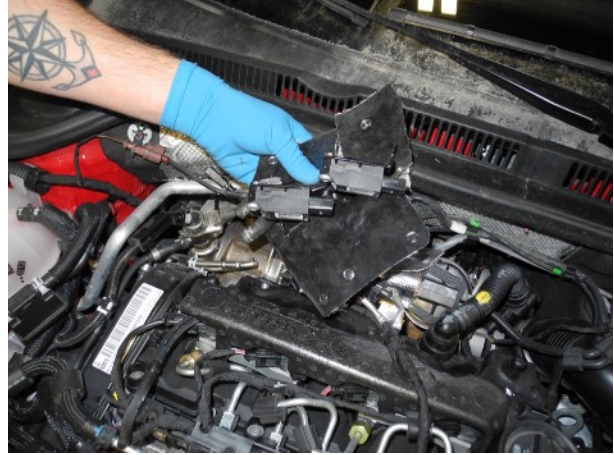


(d) Remove two small hose clamps

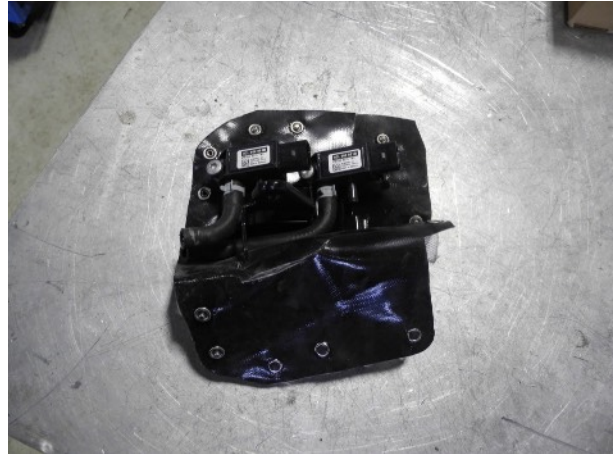




(e) Remove rubber hoses from metal lines. You may need to use a metal pic or screw driver to un-seize rubber hoses from metal lines.

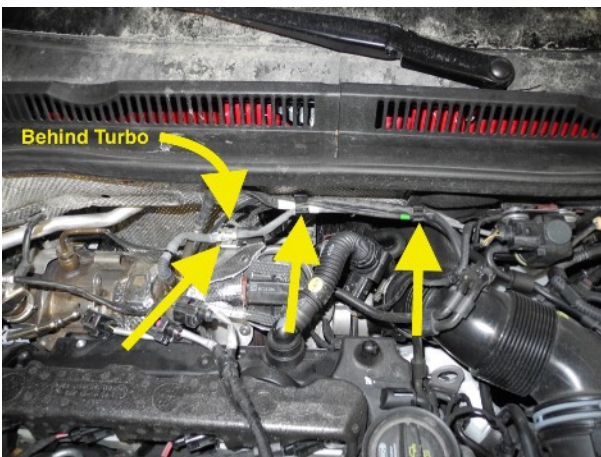


(f) Remove bracket assembly with sensors from vehicle, and set aside. This will be reinstalled later.



4) Remove EGT and O2 Sensors:

(a) Remove wires from 2 metal retaining clips on turbo and 2 plastic retaining clips on firewall





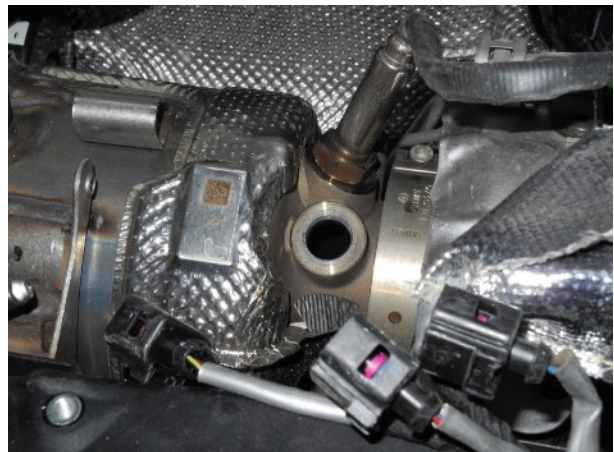
- (b) Disconnect **Yellow** and **Brown** EGT connectors from bracket behind battery and remove connector from bracket. (Note: On some vehicles the Yellow connector may be **Orange**)



- (c) Remove the left most EGT sensor from exhaust (19mm wrench)



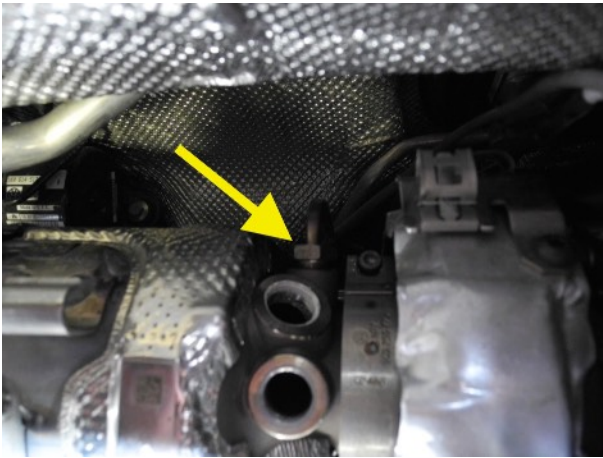
- (d) Remove Oxygen sensor from exhaust.  
(Note: You will need to use a special Oxygen sensor removal socket to make things easier. The Oxygen sensor removal socket has a slot cut into it for the wire)



- (e) Remove NOX sensor from exhaust.  
(Note: Use the same Oxygen sensor removal tool as in previous step. You may not have enough clearance to get the ratchet in so you can use a wrench on the top of your socket as shown)



- (f) Remove rear facing EGT sensor from exhaust.



- (g) Disconnect Adblue injector connector and remove alan bolt from injector clamp.

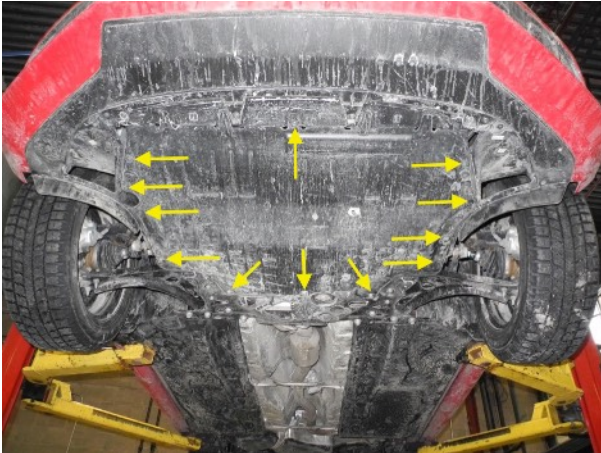




(h) Remove clamp and set aside. Tie wrap injector to A/C line so that it remains out of the way for the remainder of the job.



5) Remove plastic splash guard under engine. (9 x T25 torx screws & 3 x T45 torx bolts)



6) Remove drivers side axle from vehicle:  
(a) Remove front passenger side wheel. (17mm socket)  
(b) Remove plastic inner fender liner. (T25 torx screws)





(c) Remove upper sway bar link from strut. (18mm socket)



(d) Remove axle nut. (24mm 12 point socket)



(e) Remove 3 bolts from lower ball joint. (16mm socket)





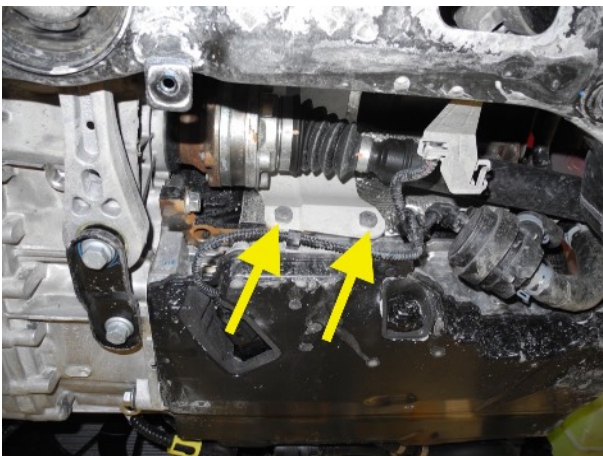
(f) While pulling down on the lower control arm, pull the axle out of the hub.



(g) Rotate sway bar link frontwards and let it hang down.

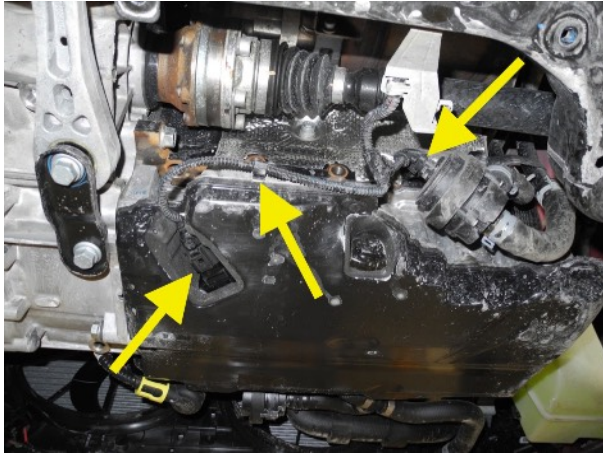


(h) Remove axle heat shield bolted to engine block. (16mm socket)





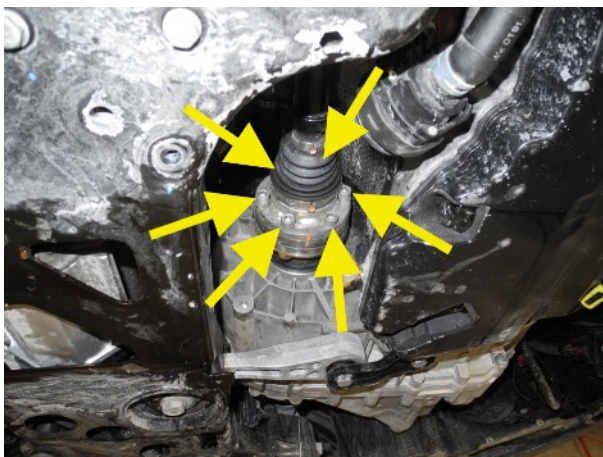
- (i) Disconnect electrical connector on oil pan, electrical connector on water pump & pull out wire retaining clip from engine block.  
(Note: On the water pump connector, pull the grey tab away from the pump and press down to disconnect)



- (j) Remove metal wire support bracket from subframe with your hands and tuck it up and out of the way as shown.



- (k) Remove 6 bolts securing axle to transmission coupler. (10mm triple square)  
Remove axle from vehicle and set aside.



7) Remove rear electric coolant pump:

**ATTENTION!!!**

**Be ready for coolant to splash all over the place when you disconnect the coolant lines. Wear eye protection. Make sure that the engine has cooled down so you do not burn yourself. Place a bin on the ground to catch the coolant that drains out.**

- (a) Remove cap from coolant reservoir.
- (b) Remove the bolt holding the coolant pump bracket to the engine block.  
(12mm triple square)



- (c) Loosen the two hose clamps where the rubber hose connects to the vertical metal coolant lines. Move the clamps down onto the rubber lines.





- (d) Insert a metal pick or screwdriver in between the rubber hose and the metal coolant line. Be careful not to damage the hose. Use the pick or screw driver to un-seize the rubber hose from the metal line.

**ATTENTION!!!**

**Coolant will leak out when you disconnect the lines. Be ready and be careful!**



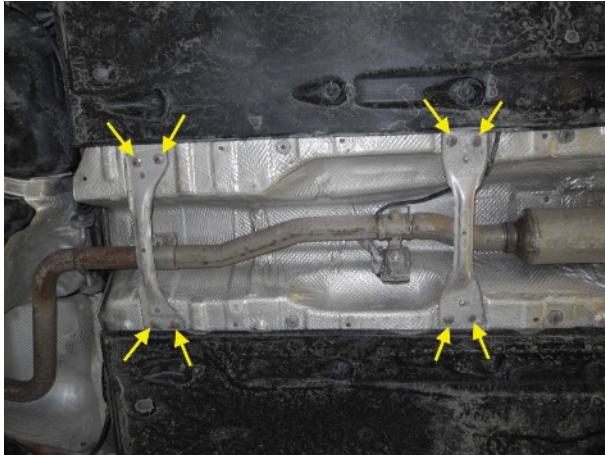
- (e) Remove pump and hose assembly and set aside.



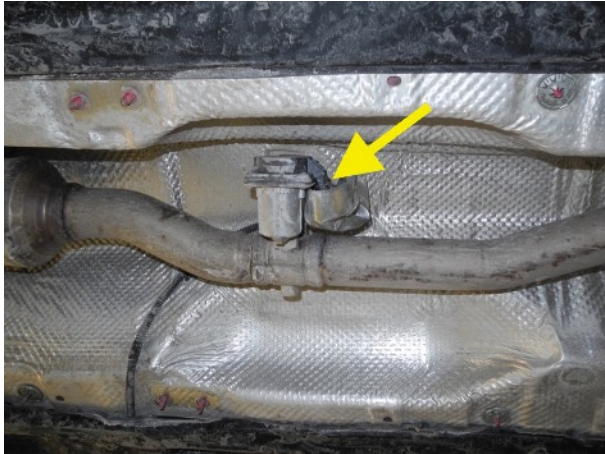
- (f) Let coolant drain out into bin.



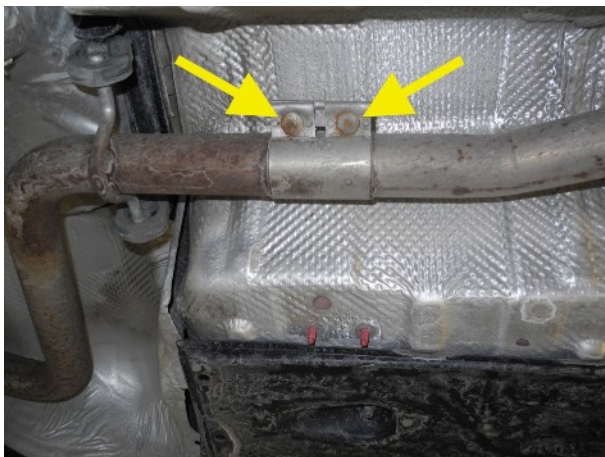
- 8) Remove factory exhaust midpipe:  
(a) Remove 8 nuts from underbody braces. Remove both braces and set aside.  
(13mm socket)



- (b) Disconnect electrical connector from exhaust flap motor.



- (c) Loosen nuts on exhaust clamp so that the clamp can be rotated freely. Do not slide the clamp off of the joint yet. (13mm socket or wrench)



- (d) Undo the exhaust band clamp connecting the factory midpipe to the DPF assembly. (5mm allen)  
(Note: The clamp will be seized to the exhaust. Use a pry-bar and hammer or equivalent to jar the clamp loose. Remove the clamp and set aside.)



- (e) With exhaust still supported by a stand or a second set of hands, remove the two bolts securing the plastic and rubber exhaust hanger to the subframe. (13mm socket)  
(Note: If the exhaust is not properly supported it will drop suddenly, by a few inches, when the clamp is jarred loose. Be careful.)

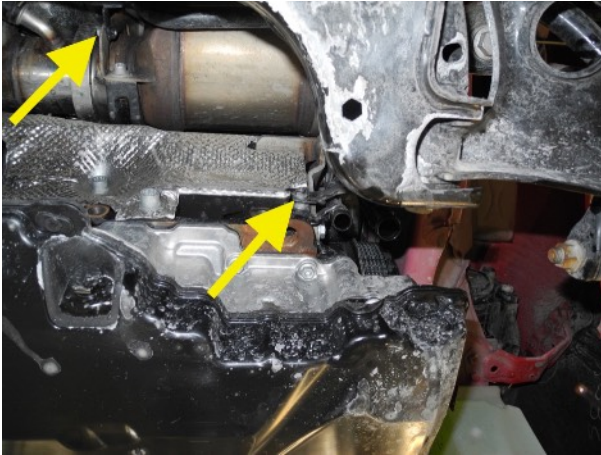


- (f) Still with the exhaust supported by a stand or a second set of hands, slide the rear exhaust clamp back and off of the joint. You can now take the exhaust down and set aside.

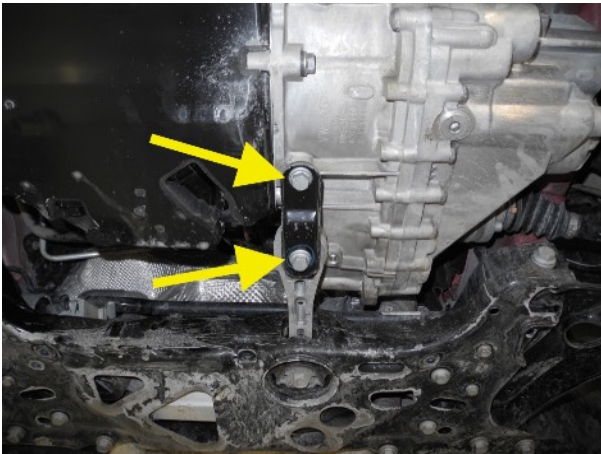




- 9) Remove metal coolant pipe:  
(a) Remove 2 nuts securing metal coolant pipe to DPF and engine block. (10mm socket or wrench)



- (b) Remove two bolts from lower engine dog bone brace. (16mm socket)



- (c) With a jack stand under the transmission, pivot the bottom of the engine forward. This will give you more access to work between the engine and firewall.





- (d) Loosen the two metal hose clamps on the rubber coolant hoses. Using metal pick or screw driver to un-seize the rubber hoses from the metal lines. Remove the metal coolant tube from the vehicle and set aside.

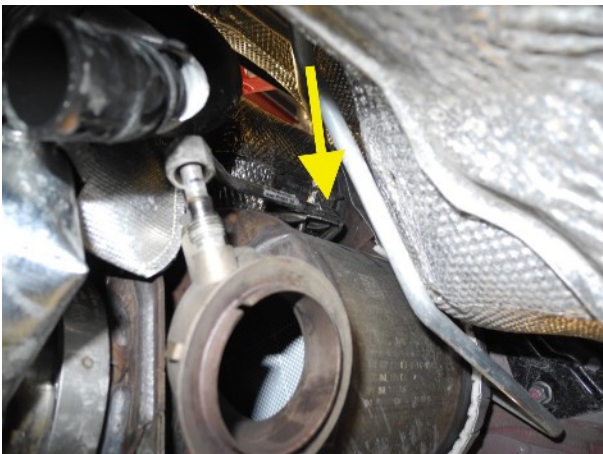


10. Remove exhaust gas pressure sensor lines:

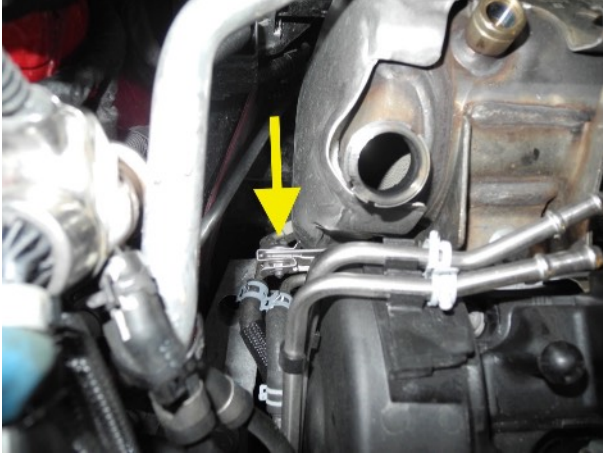
- (a) Unscrew sensor line from bottom DPF assembly. (17mm wrench)



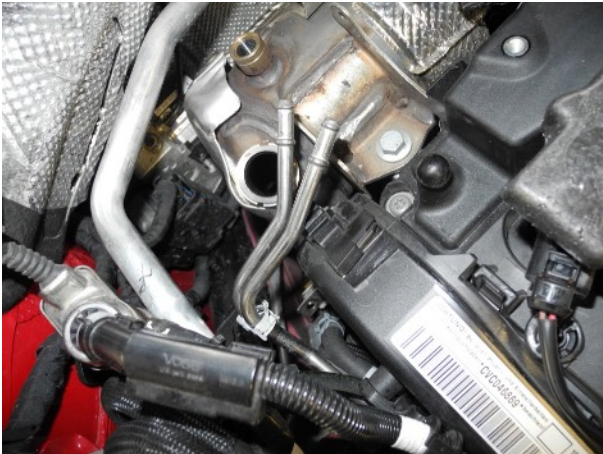
- (b) Remove the bolt securing metal sensor line to bracket on DPF assembly. (T-30 torx) Remove the bracket and set aside. (Note: Image was taken from the bottom but it must be accessed blindly from the top.)



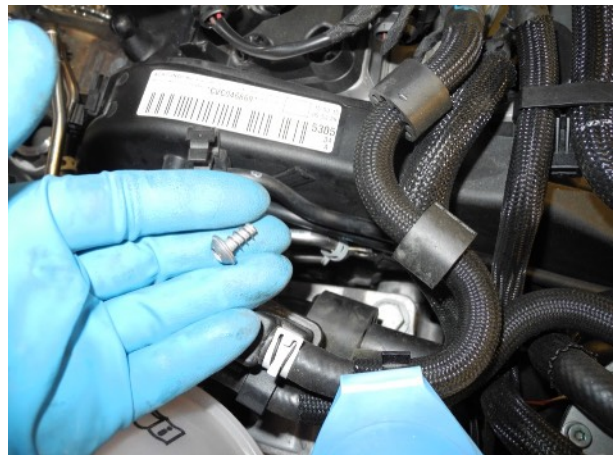
- (c) Still from top, remove bolt securing metal lines to bracket on side of DPF assembly. (T-30 torx) Remove the overly complex VW nut and bolt assembly and set aside.



- (d) Remove two metal lines from plastic locators on timing cover.



- (e) Remove small plastic clip holding both lines together.  
(f) Remove screw holding metal line to side of timing cover. (T-30 torx)  
(Note: For better access have someone hold the large rubber hose out of the way, or use a tie wrap to hold it out of the way)





(g) From the bottom, unscrew sensor line from side of DPF assembly. (17mm wrench) Remove line and set aside.

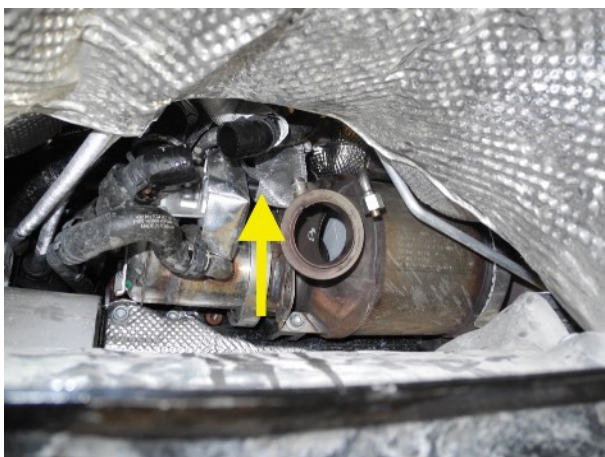


11) Prep EGR cooler and DPF assembly for removal.

(a) Remove EGT sensor from bottom of DPF and set aside.



(b) Disconnect electrical connector from EGR cooler.



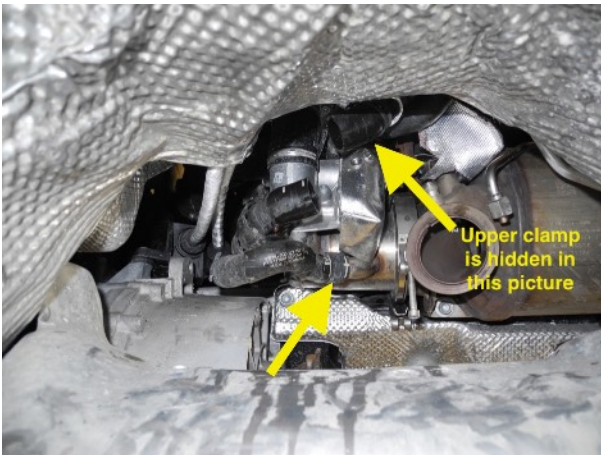
- (c) Loosen clamp between EGR cooler and DPF assembly. (T-30 torx)  
(Note: The clamp will be seized to the exhaust. Use a pry-bar and hammer or equivalent to jar the clamp loose.)



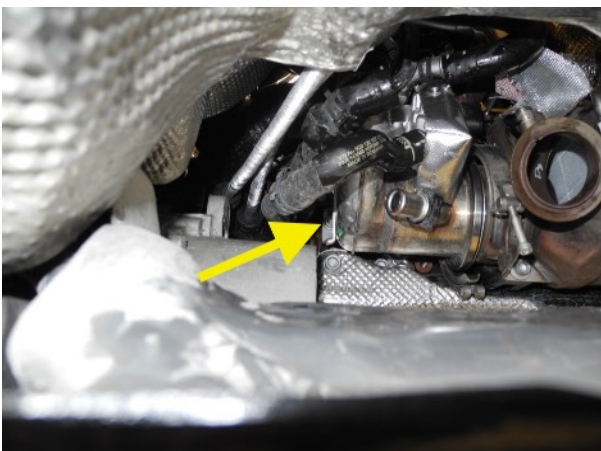
- (d) Loosen hose clamps and remove rubber hoses from metal inlet & outlet on EGR cooler. (Note: Rubber hoses will be seized to metal inlet & outlet. Use a metal pick or screw driver to separate.)

**ATTENTION!!!**

**Coolant will drip when rubber hoses are pulled off. Wear eye protection and have a bin ready to catch falling coolant.**

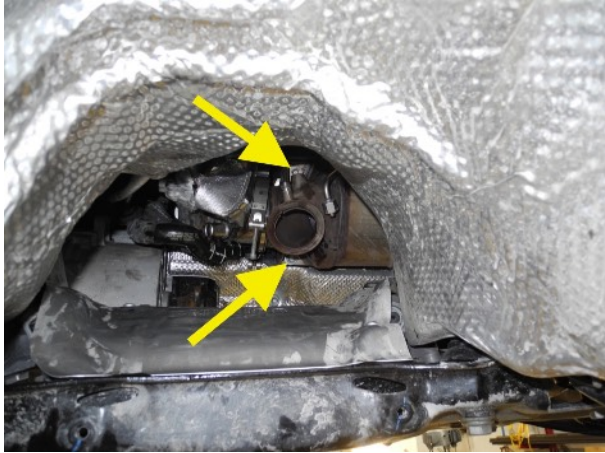


- (e) Remove bolt securing EGR cooler to engine block. (10mm triple square)  
(Note: Bolt is on left side of cooler and is very hard to see and access.)





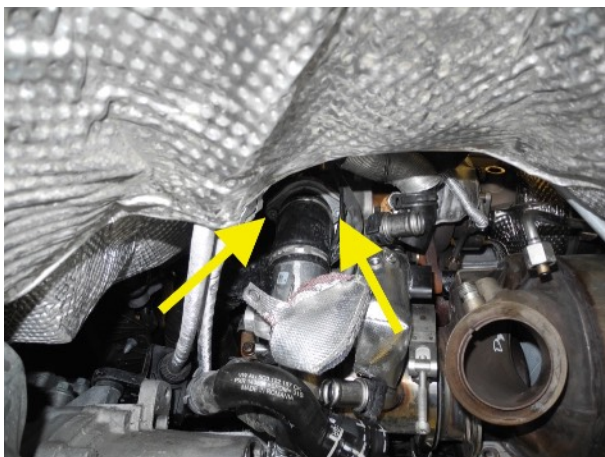
- (f) Remove 2 bolts securing DPF assembly to the cast iron bracket on engine block. (10mm triple square)  
(Note: You may need to pivot the engine forward with a jack stand in order to gain better access to the upper bolt)



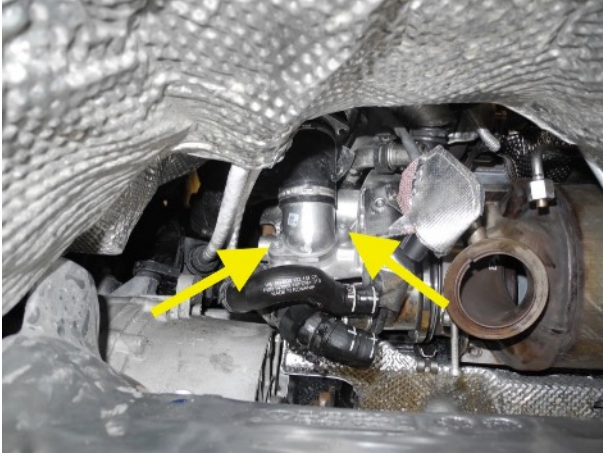
- (g) Remove 2 DPF bracket bolts on passenger side. (13mm socket)



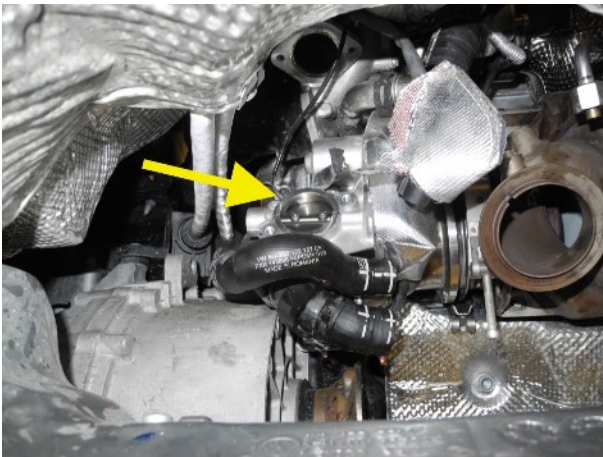
- (h) Remove 2 bolts on upper EGR pipe flange. (T-30 torx)



- (i) Remove 2 bolts on lower EGR pipe flange. (T-30 torx) Remove EGR pipe and set aside.



- (j) Remove EGT sensor from EGR cooler. (14mm wrench)



- (k) From the top, remove the upper DPF bracket bolt. (13mm socket)





- (l) Loosen alan bolt on V-band clamp between turbo and DPF. (5mm alan)  
Remove the clamp and set aside.  
(Note: Clamp will be seized to exhaust so you will need to use a pry bar and hammer or equivalent to jar it loose. Try not to damage the clamp as it will be reused.)

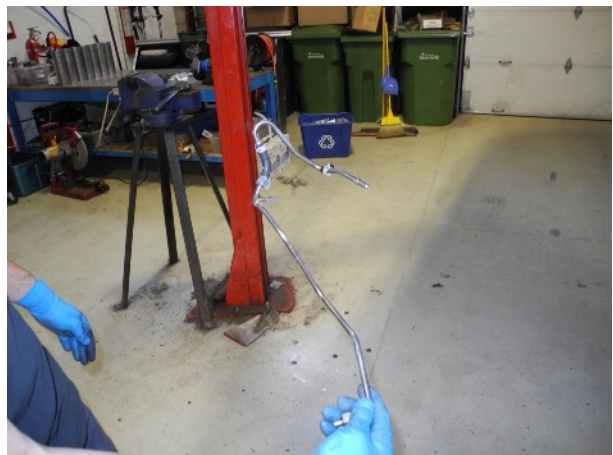


12) Remove EGR cooler and DPF assembly from vehicle:

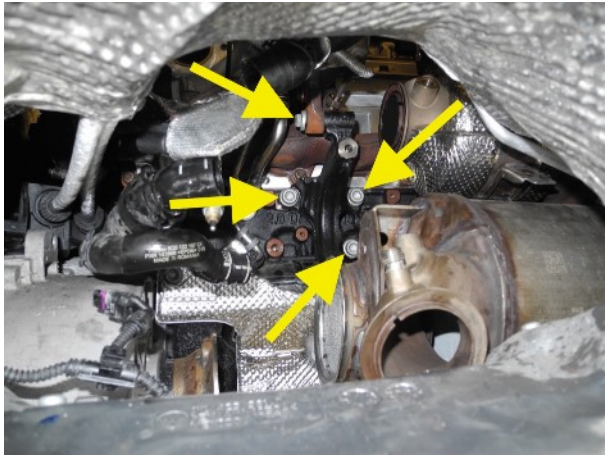
- (a) With EGR cooler and DPF assembly loose, jiggle both parts to separate them and remove EGR cooler through the exhaust tunnel.



- (b) Jiggle the DPF as needed to remove the metal exhaust gas pressure tube and set aside.  
(Note: You may need to pivot engine forward with jack stand to make room)



(c) Remove 3 bolts holding cast iron bracket to engine block and 1 bolt holding bracket to turbo. (3 x 12mm triple square & 1 x 13mm wrench) Remove cast iron bracket and set aside.



(d) With the engine rocked forward you can now manipulate the downpipe and remove it through the opening between the engine block and the cross member.



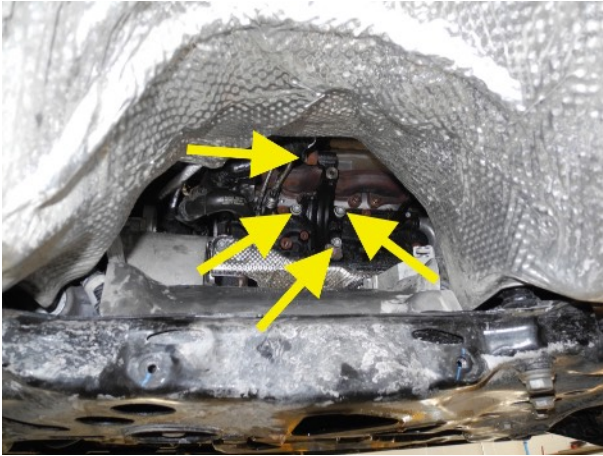
(e) Congratulations you have finally removed your DPF assembly! Now it's time to tell it how you really feel.



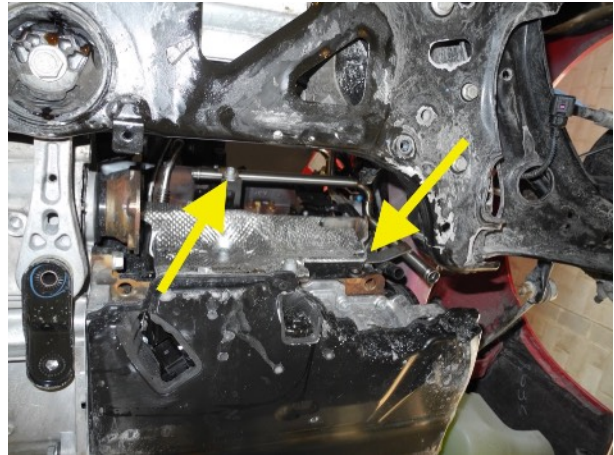


## **Part 2: Installing Rawtek ECO Exhaust Kit**

- 13) Reinstall cast iron bracket to engine block and turbo. Reuse factory hardware. (3 x 12mm triple square bolts & 1 x 13mm hex bolt)



- 14) Instal long coolant bypass tube to engine. Reuse factory hardware. (1 x 10mm triple square bolt & 1 x 10mm hex nut)



- 15) Reinstall lower engine dog bone brace. Reuse factory hardware. (2 x 16mm hex bolts)



16) Install supplied stainless steel "T" fitting and 90 degree rubber coolant hose:

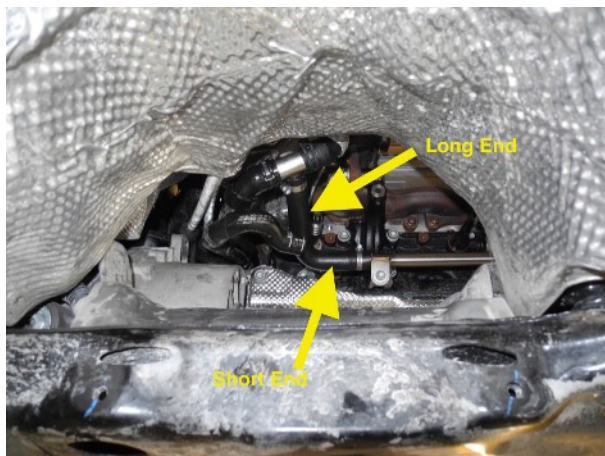
(a) Install the "T" fitting between the two 1" rubber coolant hoses.

(Note: The "T" fitting has a slight angle to it. Install it so that the small end of the "T" is pointing perpendicular to the engine block with a slight downward angle.)

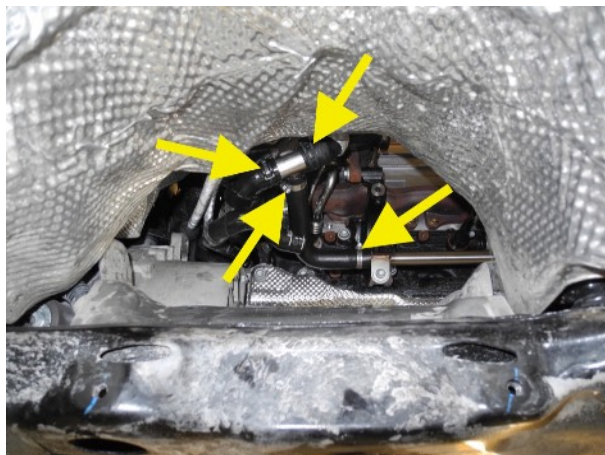


(b) Install the supplied 90 degree rubber hose between the "T" fitting and the long coolant bypass tube.

(Note: Connect the long end of the 90 degree rubber hose to the "T" fitting, and the short end to the installed coolant bypass tube)

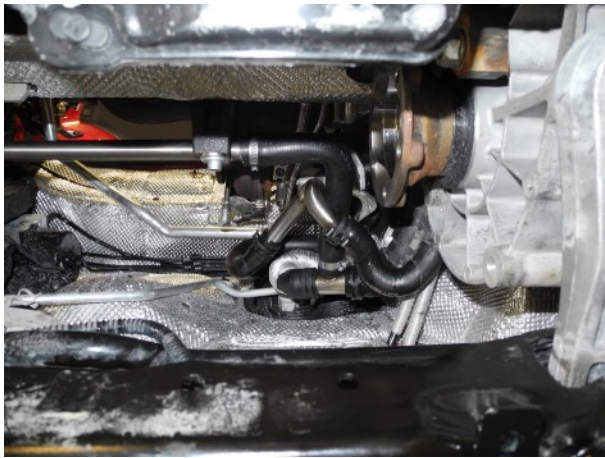
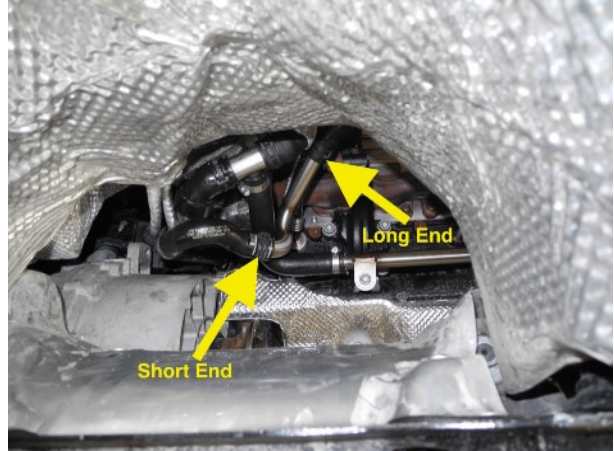


(c) Install hose clamps. Reuse the two factory hose clamps on the 1" ends of the "T" fitting. Use the supplied hose clamps on the 90 degree rubber coolant hose.





- (d) Install supplied short coolant bypass tube between the EGR supply and return hoses. Reuse the two factory hose clamps.  
(Note: Install the lower coolant hose onto the short end of the coolant bypass tube, and the upper coolant hose onto the long end of the coolant bypass tube.)



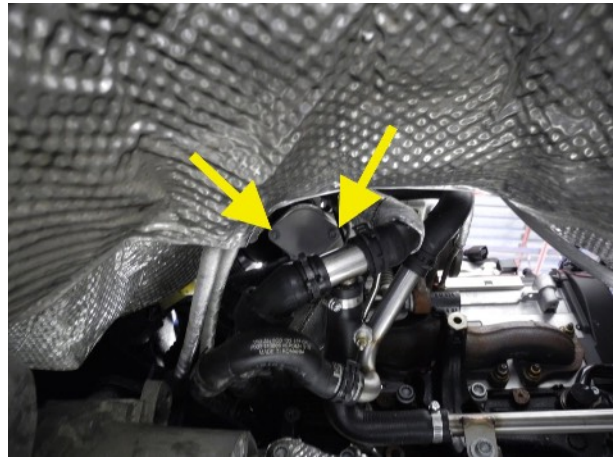
- 17) Install supplied EGR block off plate: (For Golf or SportWagen it is a **PLUG**)  
(a) Remove factory "O" ring from straight end of the factory EGR pipe.



- (b) Install “O” ring into supplied EGR block off plate.  
(Note: Make sure that the “O” ring is clean and oil free)



- (c) Install EGR plate to open EGR port on turbo. Reuse factory hardware. (2 x T30 torx bolts)  
(Note: Make sure that both gasket surfaces are clean and oil free)



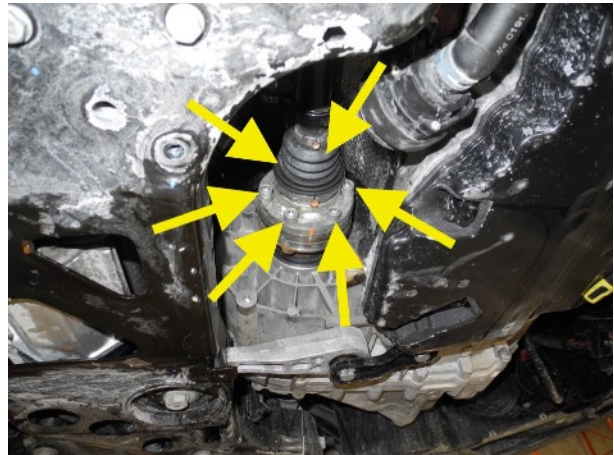
- 18) Reinstall lower electric water pump. Reuse factory hose clamps and bolt. (12mm triple square bolt)





19) Reassemble axle and wheel assembly:

- (a) Reinstall axle to transmission using factory hardware. (6 x 10mm triple square bolts and special 2 bolt washers)



- (b) Insert outer end of axle into wheel hub assembly.

- (c) Reattach lower ball joint to lower control arm. Reuse factory hardware. (3 x 16mm hex nuts)

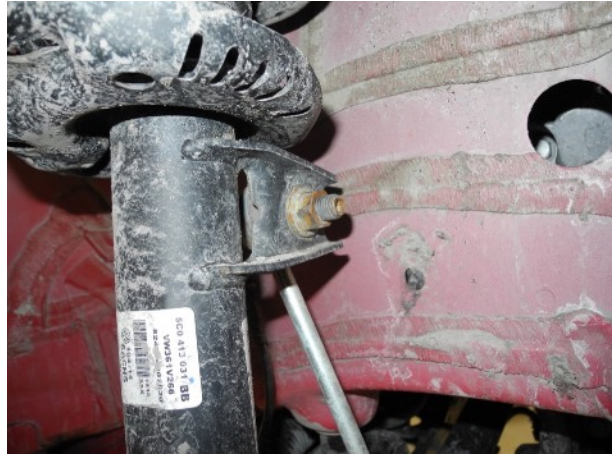


- (d) Reinstall axle bolt. (24mm 12 point bolt)





(e) Reattach sway bar link. Reuse factory hardware. (18mm hex nut)



(f) Reinstall fender liner. Reuse factory hardware. (T-25 torx screws)

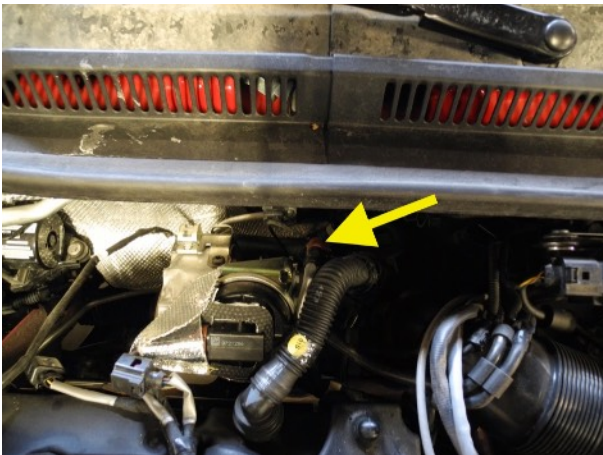


(g) Reinstall wheel on hub.

20) Instal your new Rawtek downpipe:

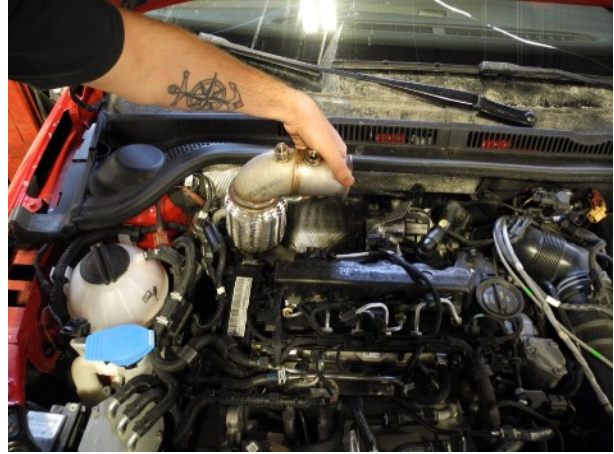
\*\*\*\*\*IMPORTANT\*\*\*\*\* UPDATED DOWNPIPES HAVE ONLY ONE SENSOR (O2)

(a) Disconnect brown electrical connector on top of turbo. Remove sensor and set aside. This will not be reinstalled.





- (b) Lower your new Rawtek downpipe (new model has only one sensor fitting) into position from the top and install on turbo using factory exhaust band clamp. Do not tighten yet.



- (c) Start tightening alan bolt on exhaust clamp but do not fully tighten yet. The downpipe should be snug onto the turbo but you should still be able to rotate it with some effort.



21) Reinstall sensors and clean up wiring on top of engine:

- (a) Install the O2 sensor into the downpipe as shown.  
Note sensor location:  
-O2 sensor with grey wire, on top of downpipe.  
(Notes: Apply anti seize paste to sensor threads)





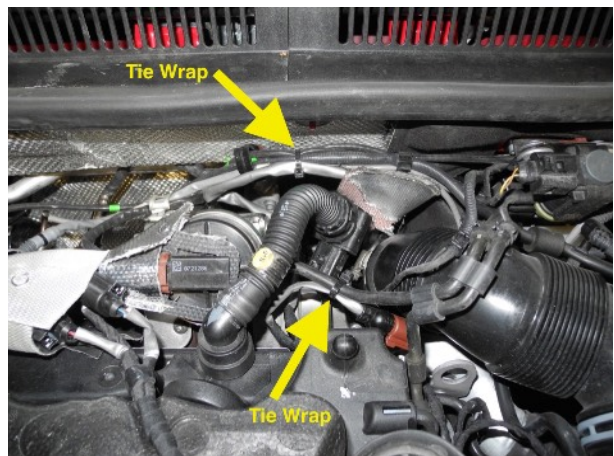
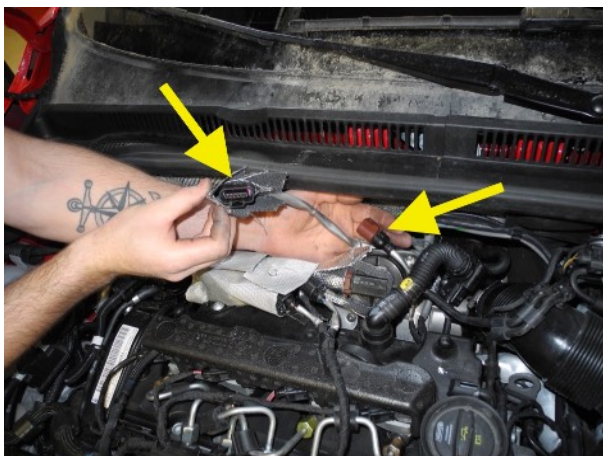
(b) Reinstall exhaust gas pressure sensor assembly with bracket on valve cover. Reuse factory hardware. (T-30 torx bolt)



(c) Reconnect 2 exhaust gas pressure sensors and 1 EGT sensor. Reinstall EGT connector on bracket. Re-button heat wrap.



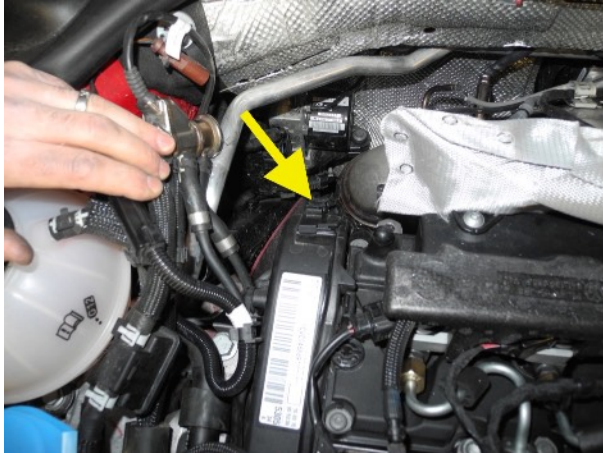
(d) Pull up small brown electrical connector and large EGR connector from back of engine. Tie wrap wires out of the way as shown.





22) Secure Adblue injector to timing cover:

- (a) Remove the plastic clip from the timing cover by lifting the tab and sliding it toward the engine. Put a tie wrap under the plastic clip as shown and reinstall clip to timing cover.



- (b) Using the tie wrap previously installed, secure the Adblue injector to the timing cover as shown. Reconnect brown adblue electrical connector.



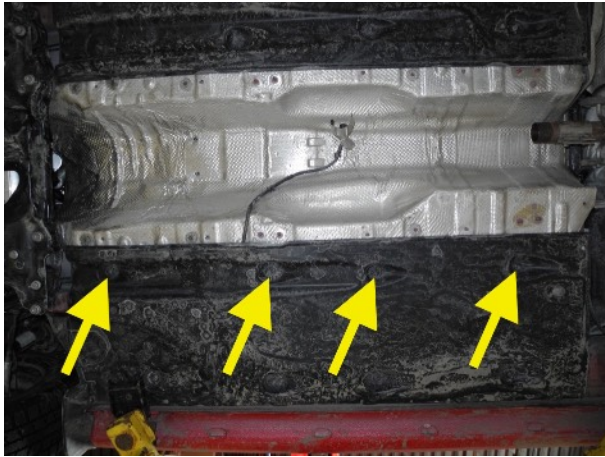
23) Instal bent EGT sensor with black wire into lower bung on downpipe.

- (Make sure that the sensor is installed at an angle which allows the wire to be loose but not touching the downpipe or turbo.



24) Tuck away exhaust flap wire:

(a) Unscrew 4 nuts on underbody plastic shield. (10mm socket)



(b) While pulling down on the plastic shield, curl up exhaust flap wire and tuck it up underneath.



(c) Reinstall underbody plastic with 4 nuts. (10mm socket)



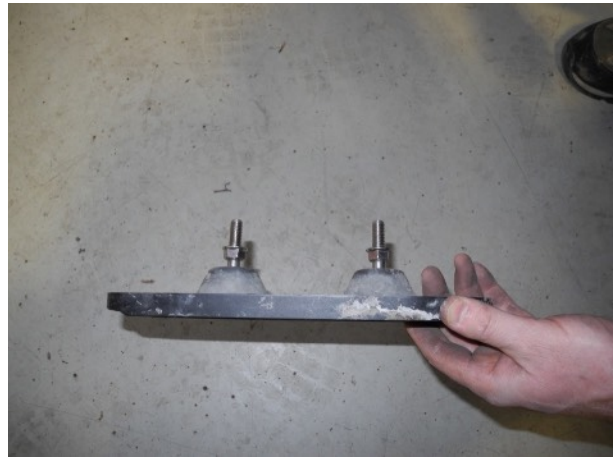
25) Install your new Rawtek midpipe:

(a) Remove the plastic and rubber exhaust bracket from the factory midpipe.





(b) Install the two supplied 3/8 x 2" long bolts through the front side of the exhaust bracket. Then thread 2 of the 3/8 flange nuts backwards onto the bolts as shown.



(c) Reinstall exhaust bracket to the subframe as shown. Reuse factory hardware. (2 x 13mm head nuts)



- (d) Install 3 supplied 3/8 x 1.5" long bolts through downpipe flange so that threaded side is pointing down and back as shown. Install gasket onto flange and bolts. Gasket should hang in place on it's own while you go get front half of midpipe.



- (e) Carefully guide front half of midpipe into place. The 3 bolts in downpipe flange should go through 3 holes in midpipe flange with gasket sandwiched in between. At the same time the 2 bolts on rubber exhaust bracket should go through the two slots in the midpipe bracket. Once all bolts are through all holes, install two 3/8" flange nuts onto the exhaust bracket bolts. Leave them finger tight. Now the midpipe should hang in place while you install rear half of midpipe.



- (f) Slide one of the supplied 3" exhaust band clamps over the end of the front half of midpipe.  
(g) Install the other 3" band clamp and reducer onto the rear half of midpipe.  
(Note: If you will be installing one of our Cat-Back Exhaust systems at the same time then you will not need this reducer.)





- (h) Install rear half of midpipe over front half of midpipe. Slide factory exhaust clamp onto reducer so that exhaust stays in place as shown.



- (i) Make sure that the reducer is flush against the factory tail pipe and tighten the factory band clamp. (13mm socket or wrench)
- (j) Snug the two 3" band clamps but do not fully tighten. You still want to be able to rotate the pipes with some effort.
- (k) Now rotate the downpipe into position so that it's flange is nicely lined up with the midpipe flange. Once it is lined up nicely, install the 3 nuts on the flange bolts as shown. Do not fully tighten yet.



- (l) From the top, tighten the v-band clamp between the downpipe and turbo. (5mm allen)  
(Note: Make sure not to over tighten. This clamp will break before it ever bottoms out.)



**Attention!!!**

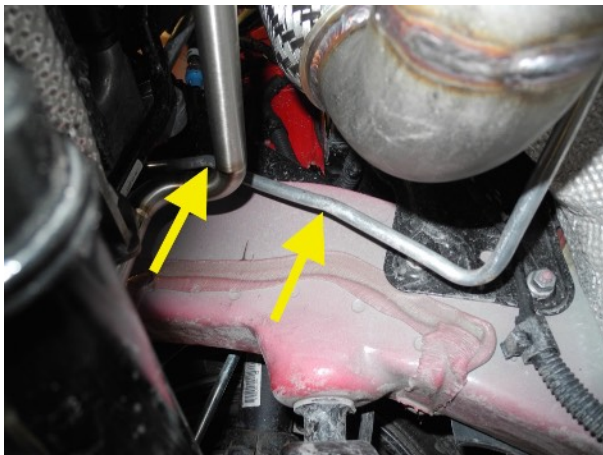
Verify the clearance between the downpipe and the aluminum air conditioning line that runs along the firewall. On some models, this line is too close to the downpipe and must be bent. If you do not have at about 3/4" between the downpipe and the A/C line, then you will need to follow the instructions in Step 26. If you do not need to bend the line, proceed directly to Step 27.



26) Bend the aluminum air conditioning line to clear downpipe:

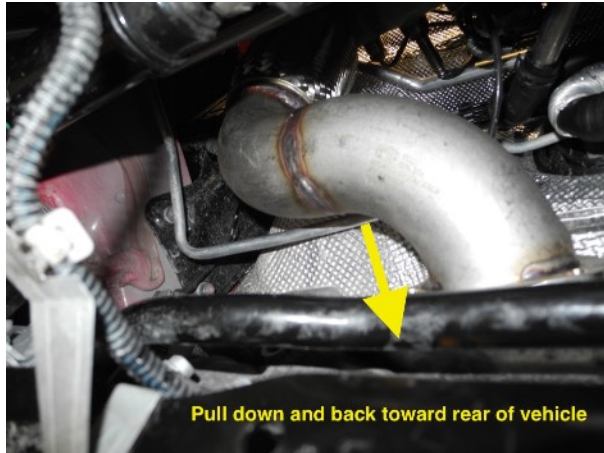
**NOTE: Be careful to not damage the line. Use your hands to bend. Do not use any pry-bars or other tools that could damage the line. Do not be too rough with the line.**

(a) Using your hands, straighten out the two bends on the A/C line indicated by the arrows. The idea is to straighten out this line so that it moves closer to the firewall and away from the downpipe.





- (b) Pull the lower section of the A/C line down and back towards the rear of the car.



- (c) Push the A/C line back towards the rear of vehicle where indicated by the arrow in the image below.



- (d) These steps are just guidelines to help you reshape the A/C line to better clear your downpipe. You may need to continue to work on the A/C line to get more clearance. You can also try rotating the downpipe away from the firewall a bit. Just be careful to not put too much strain on the flex joint.

## 27) Tightening down your Rawtek midpipe:

- (a) Tighten the nuts and bolts on the 3 bolt flanges. (9/16" or 14mm socket)



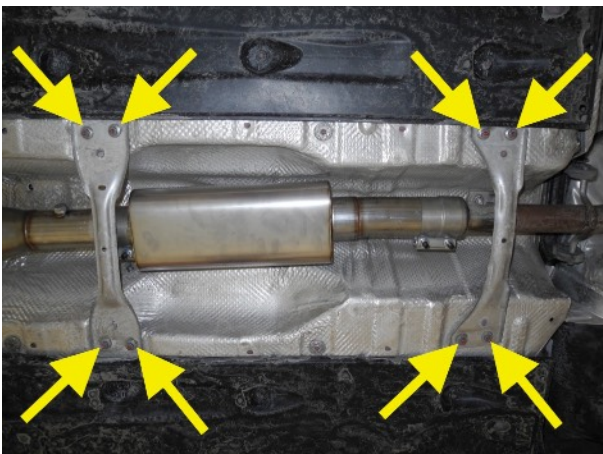
- (b) Rotate the rear half of midpipe as needed to fit best. If you have the resonated midpipe, the bottom of the resonator should be level with the ground.
- (c) Tighten both exhaust band clamps. (14mm socket and 17mm wrench)
- (d) Tighten the bolts on the midpipe bracket. Tighten both nuts against each other so that the midpipe bracket is sandwiched tightly in between both flanged surfaces of the nuts. (9/16" or 14mm wrenches)



- (e) If your midpipe has a sensor bung in it, you should have received a plug. Apply anti seize to the threads of the plug and install into bung. Tighten firmly. (22mm socket or wrench)

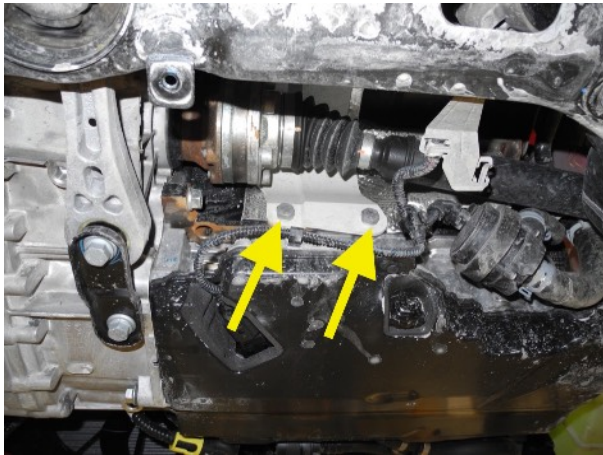


28) Reinstall under body braces. Reuse factory hardware. (8 x 13mm hex nuts)





29) Reinstall axle shield. Reuse factory hardware. (2 x 16mm hex bolts)



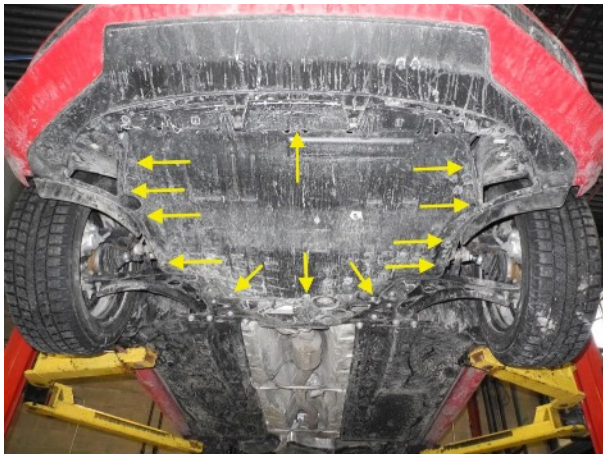
30) Carefully inspect clearances of electrical wires to make sure that nothing can come in contact with the exhaust. Double check that all hardware and connections are tight and secure.

31) Reconnect battery.

32) Refill engine coolant:

- (a) Refill coolant reservoir with genuine VW / Audi coolant with proper dilution.
- (b) Reinstall cap on coolant reservoir.
- (c) Perform coolant bleed and add coolant as necessary.
- (d) Check for coolant leaks. Verify that all hose clamps are properly installed and tight.

33) Reinstall plastic splash guard under engine. (9 x T25 torx screws & 3 x T45 torx bolts)



34) Reinstall engine cover.

35) Congratulations, you're done!!! Enjoy your new ride!