

#TL100199

INSTALLATION MANUAL

# T4100004

APR 2.5T Drop In Turbo

**APR**





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Notes:

These instructions were written for a North American specification 8V RS3, but other models like the TT-RS are similar.

When disassembling the car, be sure to keep all fasteners so they can be reused. It is recommended that you get some kind of compartmented tray to organize the fasteners, such as a fishing tackle box or several large ice cube trays. Fasteners that are not reused for reinstallation are noted in the instructions. All directions used in this manual (right, left, front, etc.) are based on if you were sitting in the drivers seat of the car.

These instructions assume that you have basic mechanical skills and several varieties of basic hand tools in order to install the kit. If you have any questions about the install, feel free to contact your APR representative.



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4800 US HWY 280 West Opelika Alabama 36801

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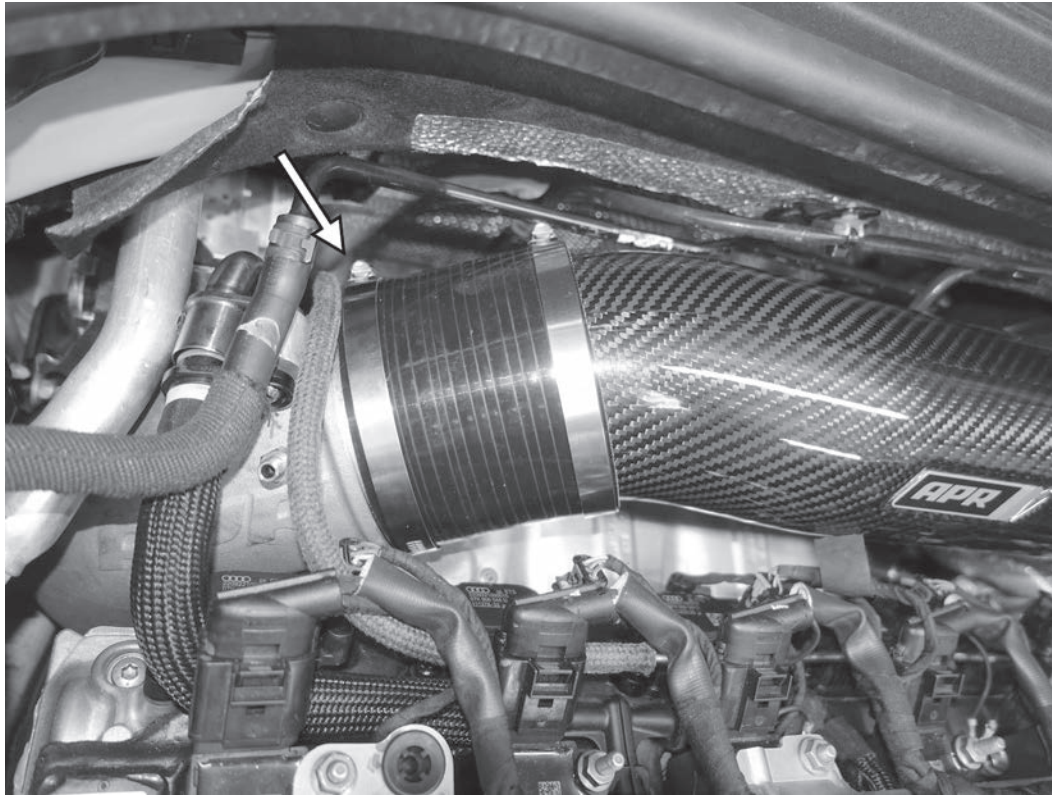
1) Securely place the vehicle on a lift or jackstands, and remove the right front wheel.

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2) Remove the two 3mm allen screws from the front of the APR airbox, if equipped. Loosen the clamps and separate the two hoses on the APR inlet after the air filter.



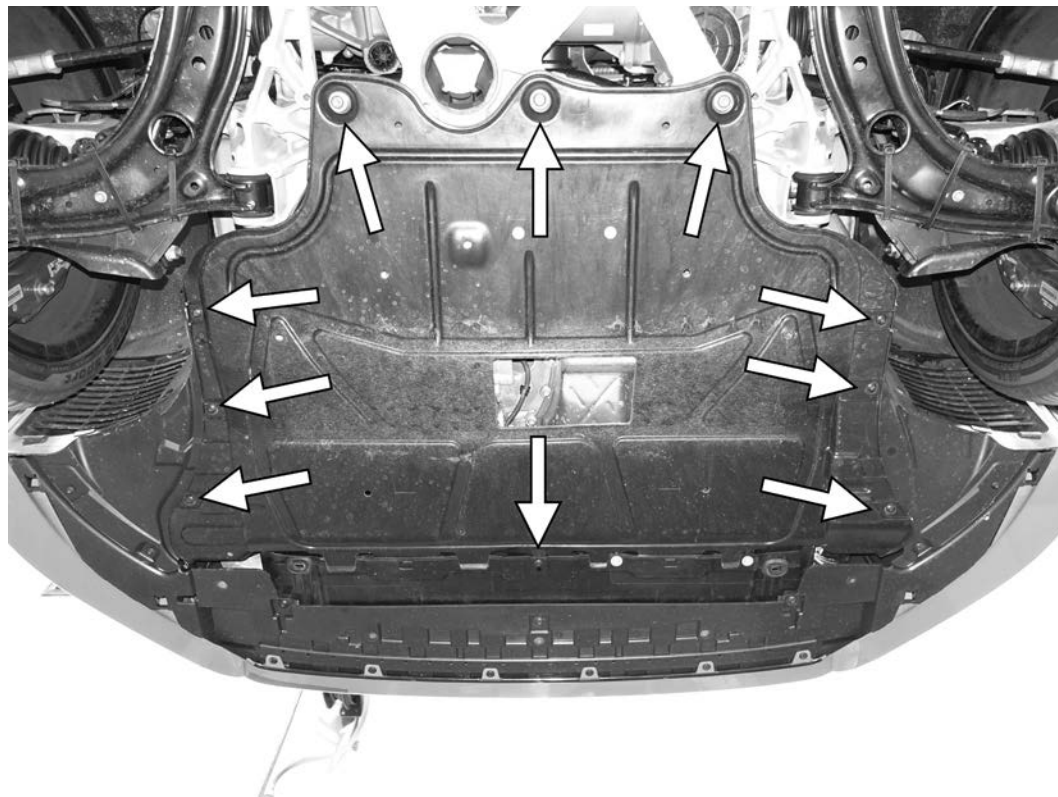
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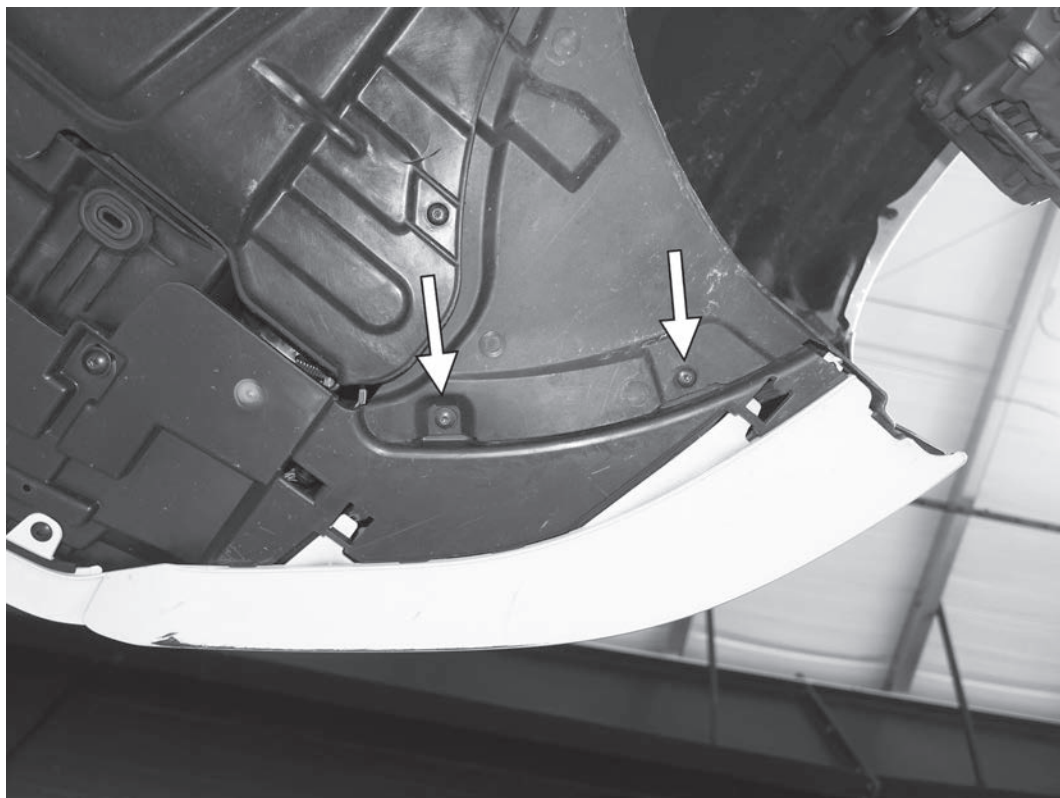


3) Loosen the clamp from the APR intake to the turbo inlet pipe, and separate the intake from the turbo inlet pipe. Lift and remove the entire intake assembly from the car.

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4) Remove the seven T25 screws on the sides and front of the belly pan. While supporting the belly pan, remove the three T45 screws along the back of the belly pan. Lower the back of the pan and slide the pan backwards, noting how the pan attaches to the bottom of the front bumper cover.

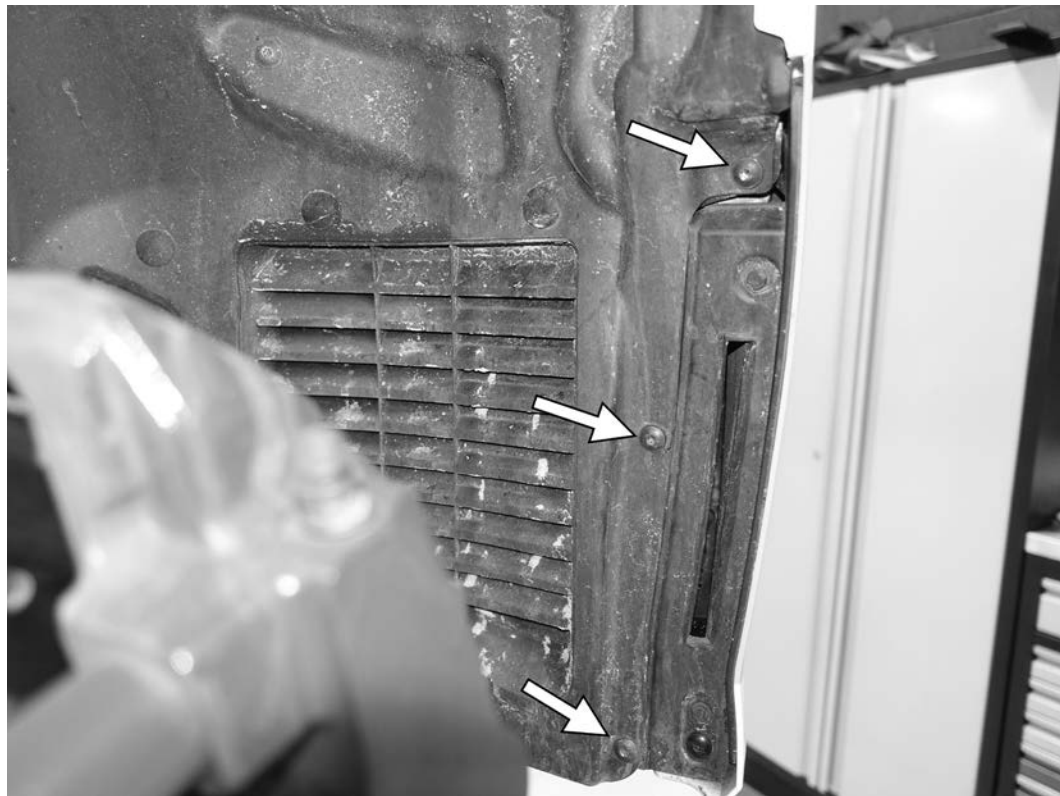




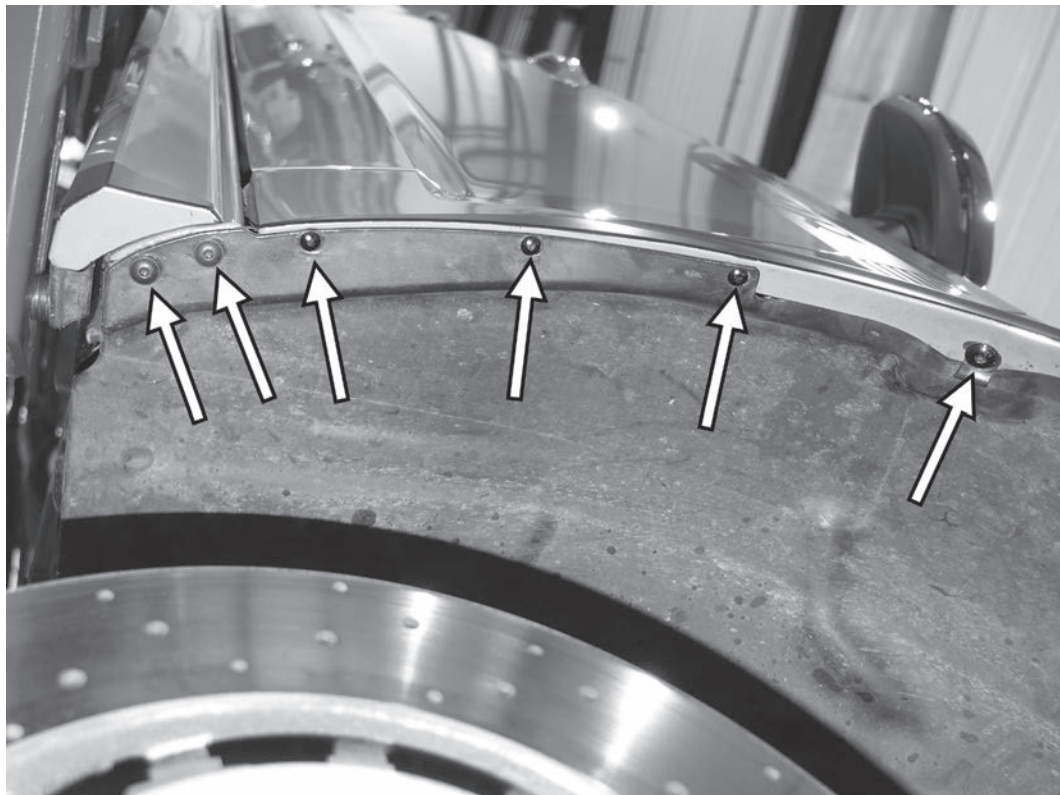
5) Remove the two T25 screws holding the front side of the right fender liner to the bottom of the front bumper cover.



6) Remove the three T25 screws holding the outside of the right fender liner to the back side of the front bumper cover.



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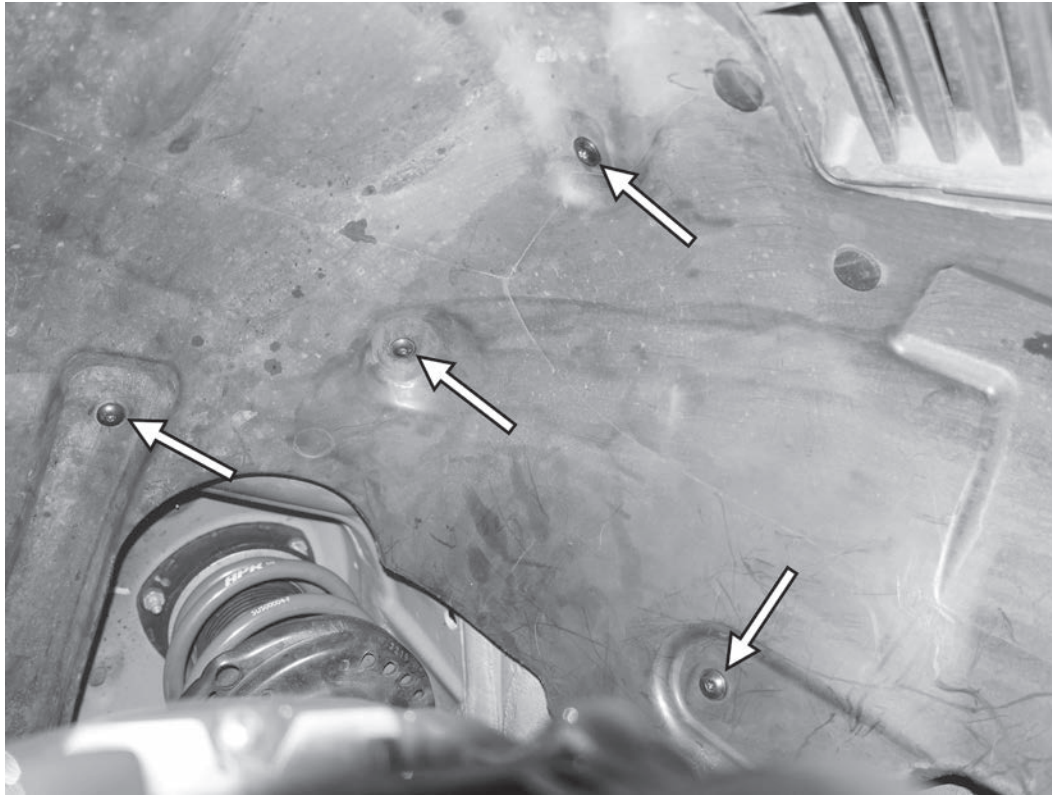
7) Remove the T25 screws and push pin style connectors from the back side of the fender liner.

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8) Remove the 10mm nut and T25 screw from the back inside of the fender liner.



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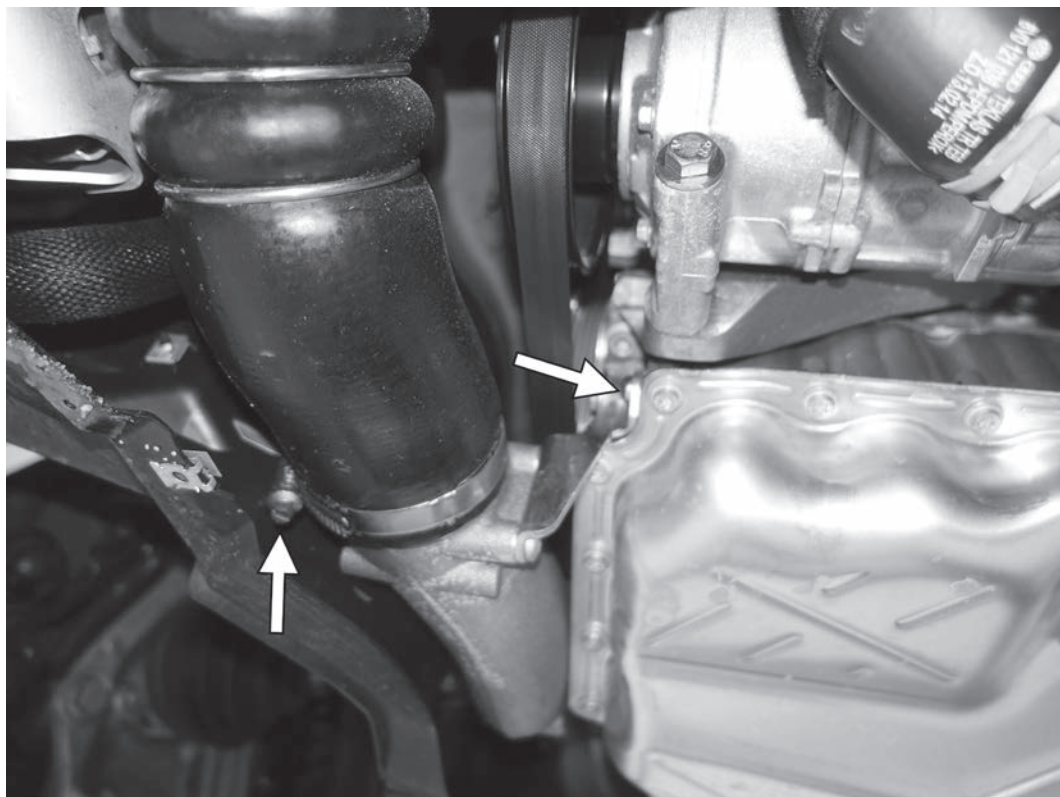


9) Remove the remaining T25 screws from the front inside of the fender liner, and then remove the fender liner from the car.

10) Remove the two 8mm allen nuts holding the right axle heat shield to the transmission bevel box, and remove the heat shield from the car.



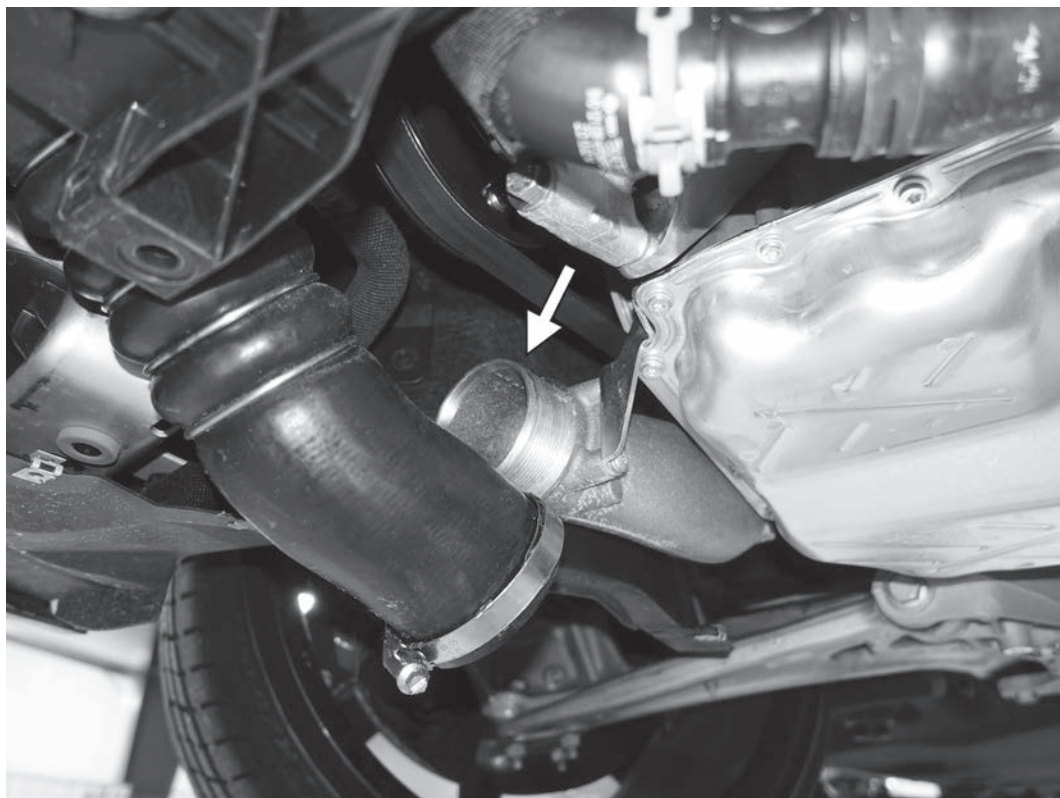
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11) On the front side of the turbo outlet pipe, loosen the hose clamp for the intercooler hose at the pipe. Then, remove the T30 screw from the bracket holding the outlet pipe to the engine block at the engine block.

12) Remove the 10mm triple square screw holding the turbo outlet pipe to the back of the engine block.



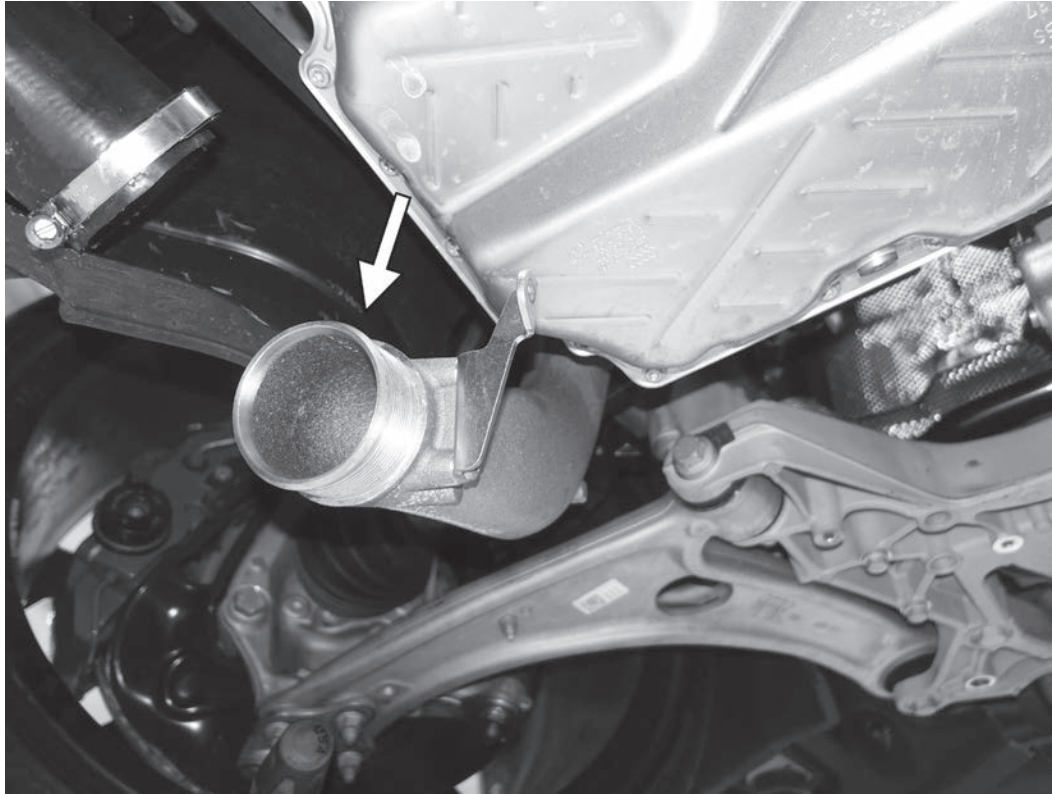


13) Separate the intercooler hose from the turbo outlet pipe. The hose clamp is affixed to the intercooler pipe.



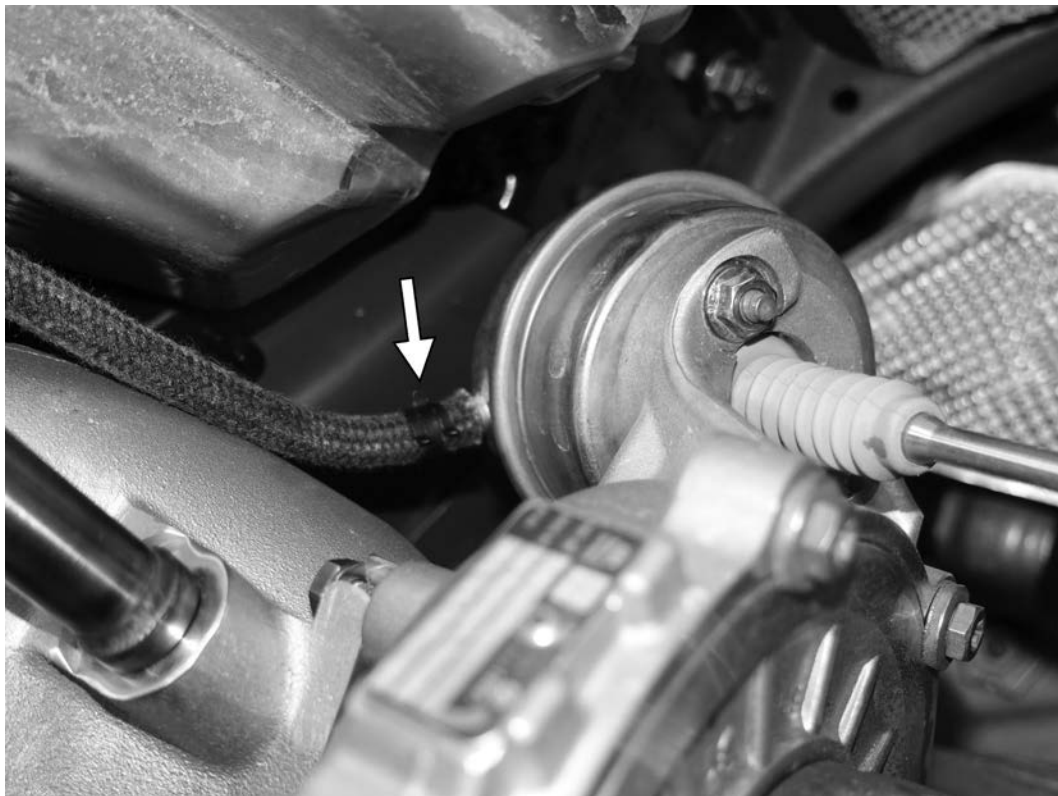
14) Loosen the clamp on the turbocharger outlet hose, nearest the turbocharger. A flathead screwdriver or 7mm socket will work for this. The clamp is affixed to the hose, so only loosen the clamp.

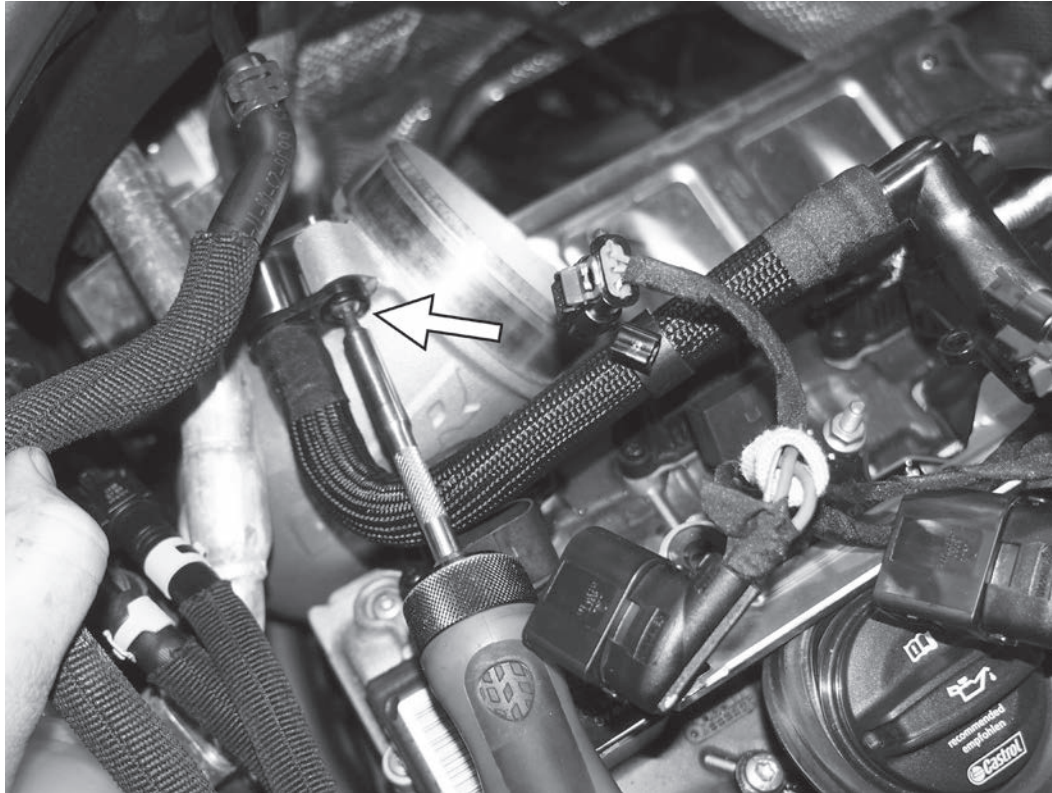




15) Remove the turbo outlet pipe by pulling the pipe down from the car. It may be necessary to use a large, angled pick to separate the rubber hose from the turbocharger outlet at the previously loosened clamp.

16) Disconnect the vacuum line from the nipple on the turbocharger wastegate.



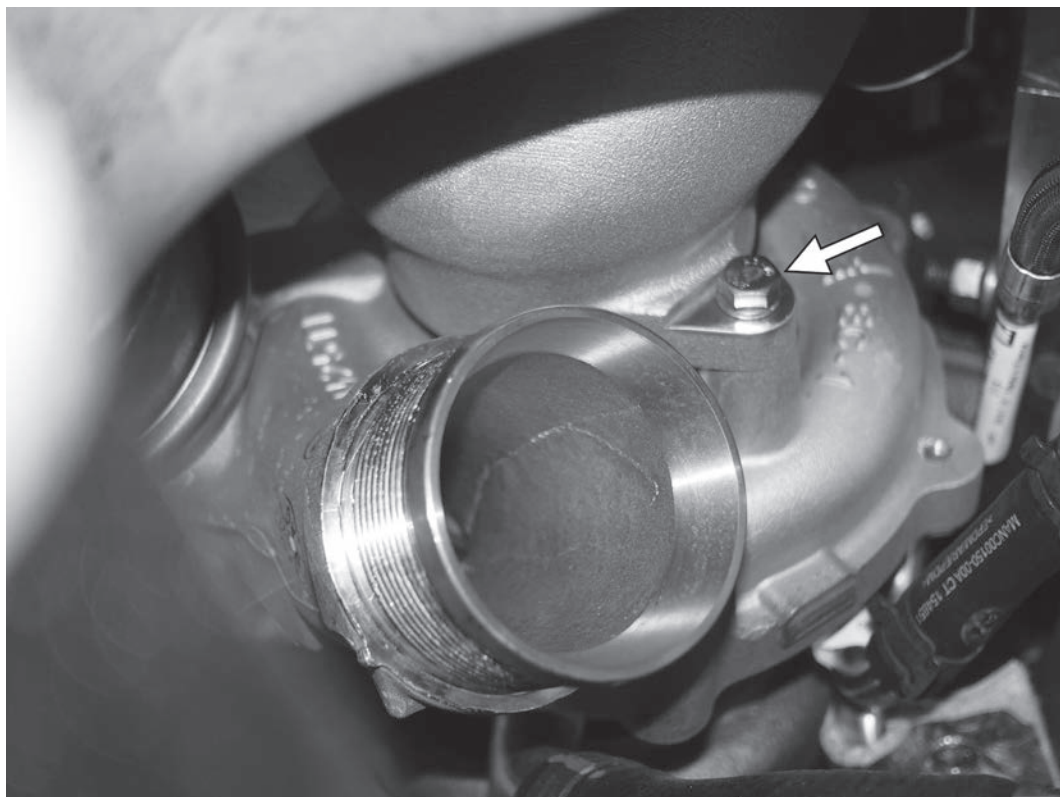


17) Remove the 4mm allen screw from the breather hose to the APR turbo inlet, and separate the hose from the turbo inlet.

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18) Remove the 10mm screw from the top side of the APR turbo inlet pipe.

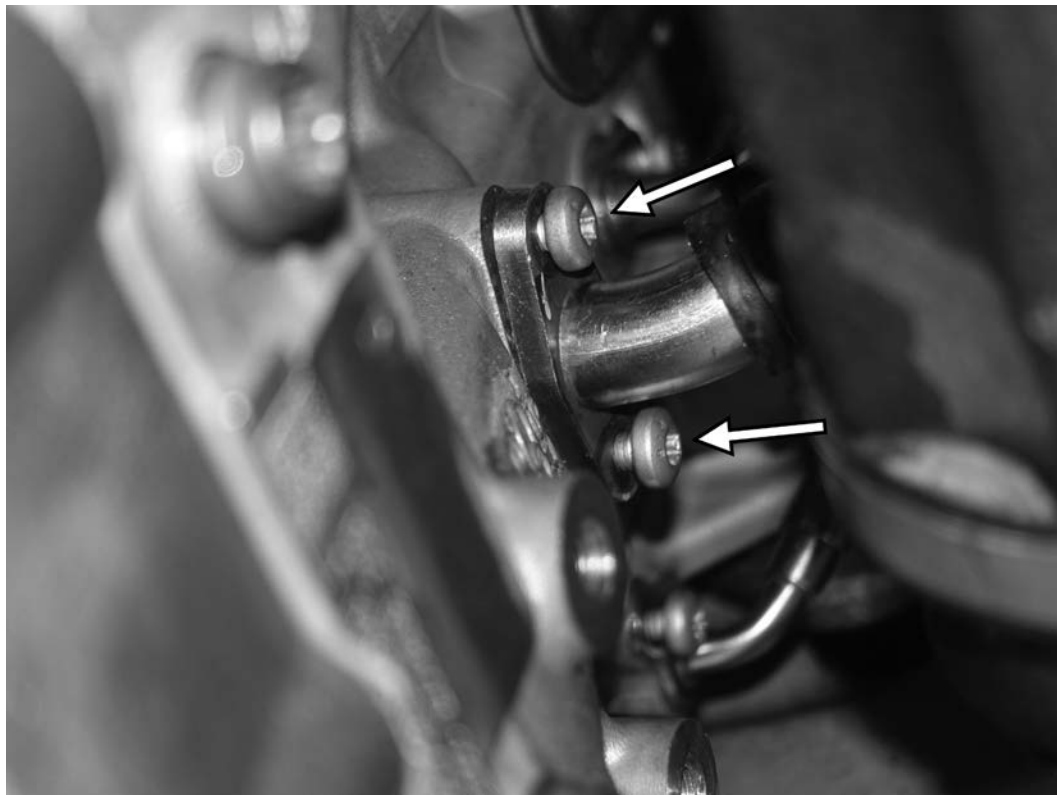


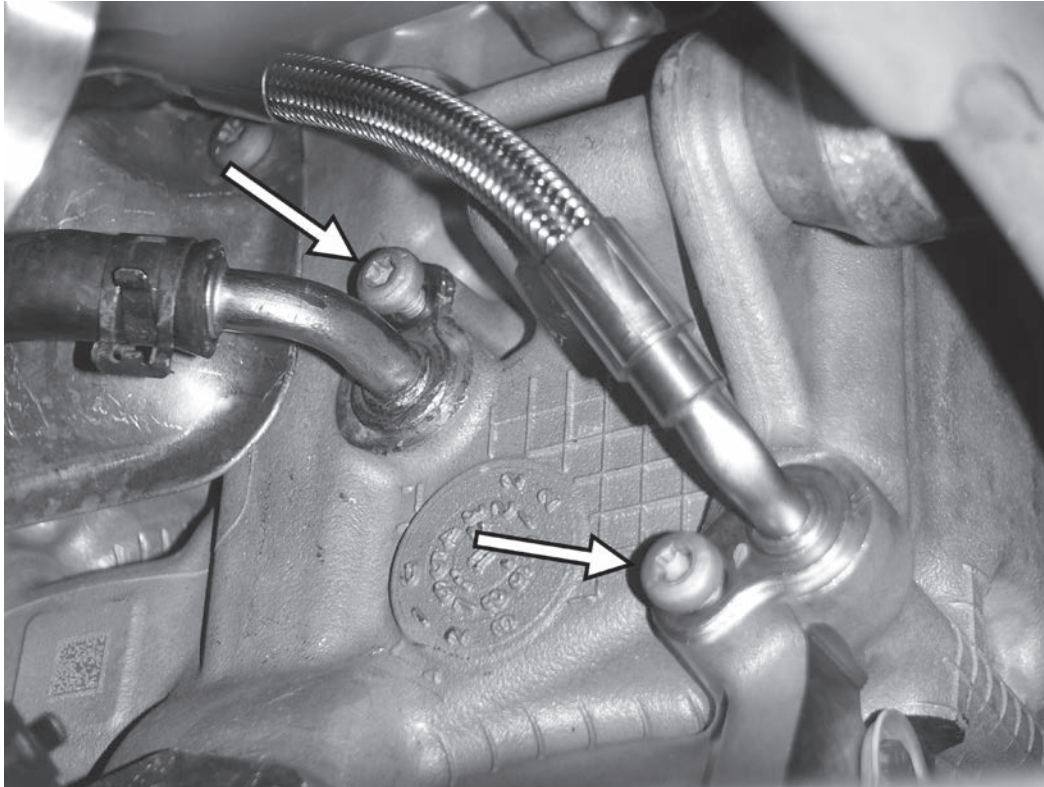


19) Remove the 10mm screw from the bottom of the APR turbo inlet pipe. Lift the APR turbo inlet pipe up and out of the car from above.

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20) Remove the T30 screws from the oil drain line and separate the line from the car. If you have not drained the engine oil yet, you will get some oil leakage from doing this step.



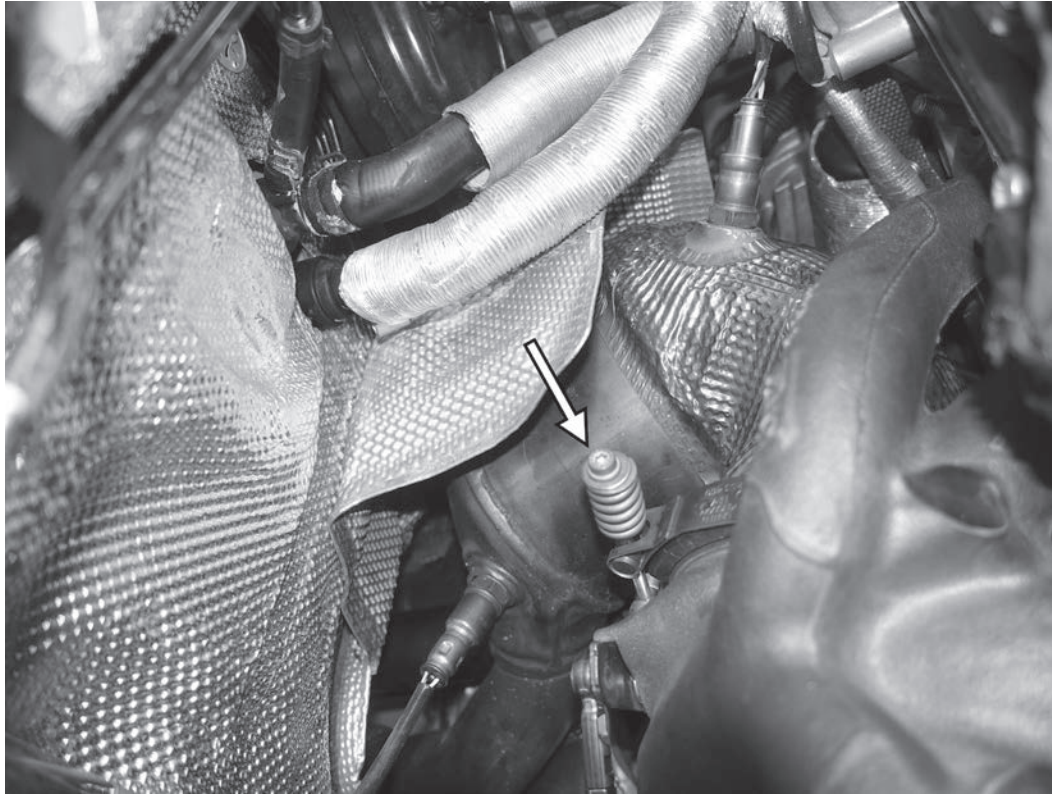


21) From the back side of the engine block, remove the T30 screw from the oil feed line (bottom right). Pull the line out of the engine block, some oil leakage may occur. Also remove the T30 screw to the coolant feed line (upper right). Pull the line out from the engine block. Some coolant leakage will occur.



22) On the top of the engine, remove the four 5mm allen screws holding the upper turbo heat shield to the cylinder head. These screws are located on the bottom side of the heat shield, near where the arrows indicate.





23) Loosen the T25 screw on the v-band clamp to the catalyst. Separate the screw on the clamp, and then slide the clamp from between the turbo and the catalyst to where it is over the catalyst.

24) Separate the clip for the primary oxygen sensor from the back of the cylinder head and move the sensor wiring up and out of the way.

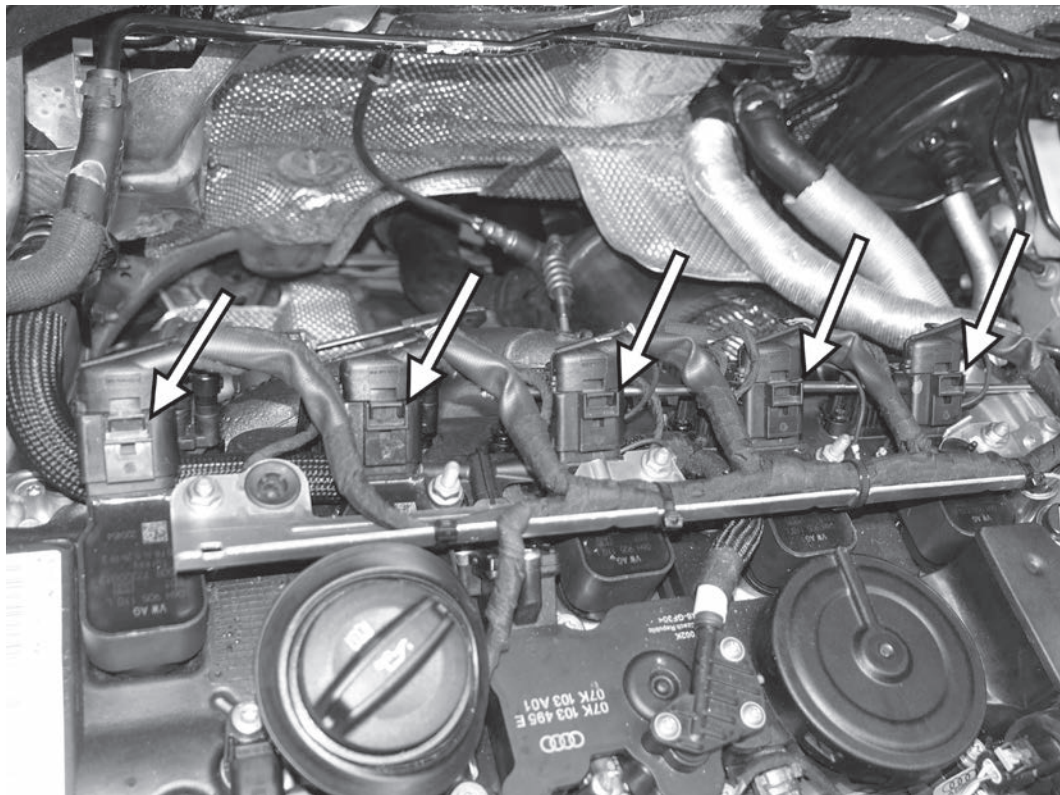




25) Find the metal coolant return line located between the front side of the turbocharger and the back side of the engine. Follow the line to the left side of the car until you find the T25 screw on the lower bracket. Remove the T25 screw.

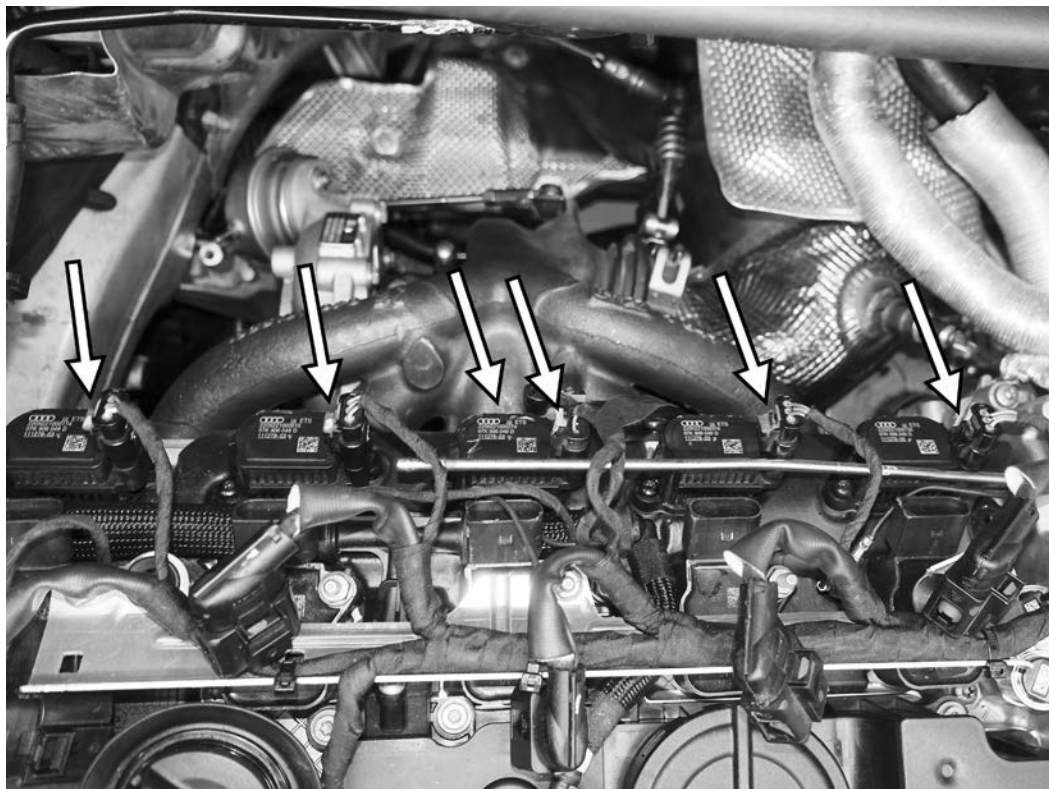
26) Following the metal coolant return line again, locate the 10mm triple square screw just to the left of the exhaust manifold and remove the screw. Remove the spring clamp from the rubber coolant hose at the barbed end of the metal coolant return line and separate the hose from the metal coolant return line.

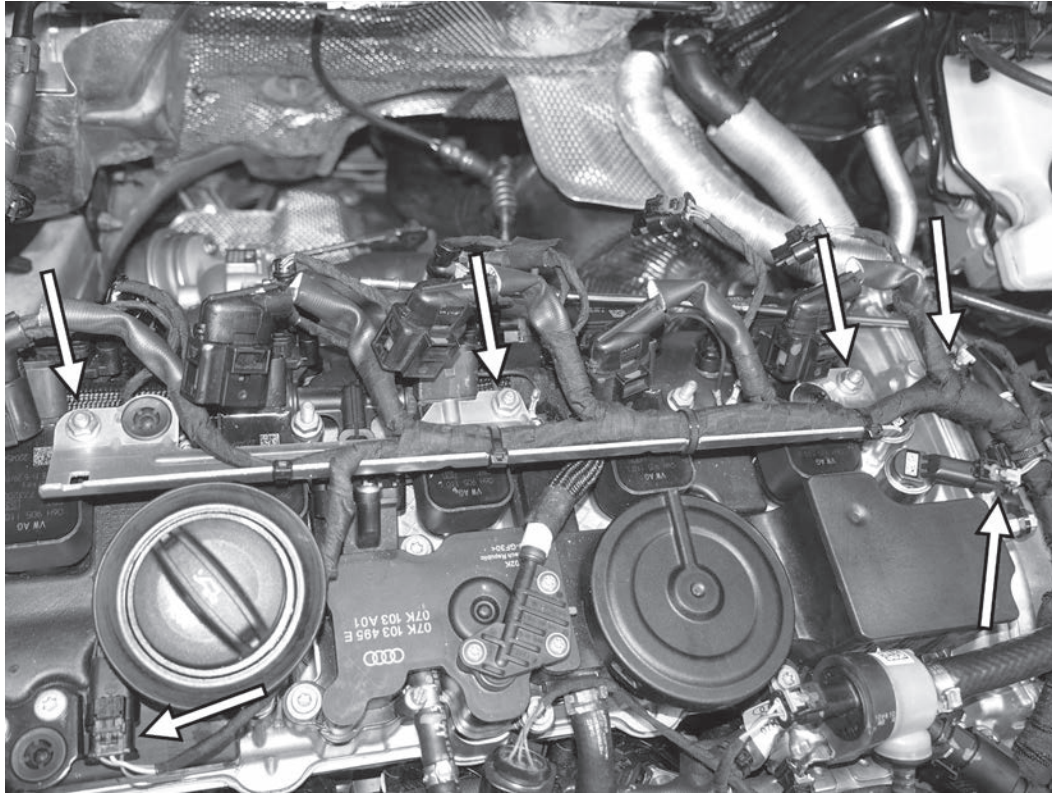




27) Disconnect the electrical connector to all five ignition coil packs.

28) Disconnect the electrical connectors to the five valve lift actuators. On the back side of the engine behind the middle valve lift actuator, unplug the exhaust camshaft position sensor.



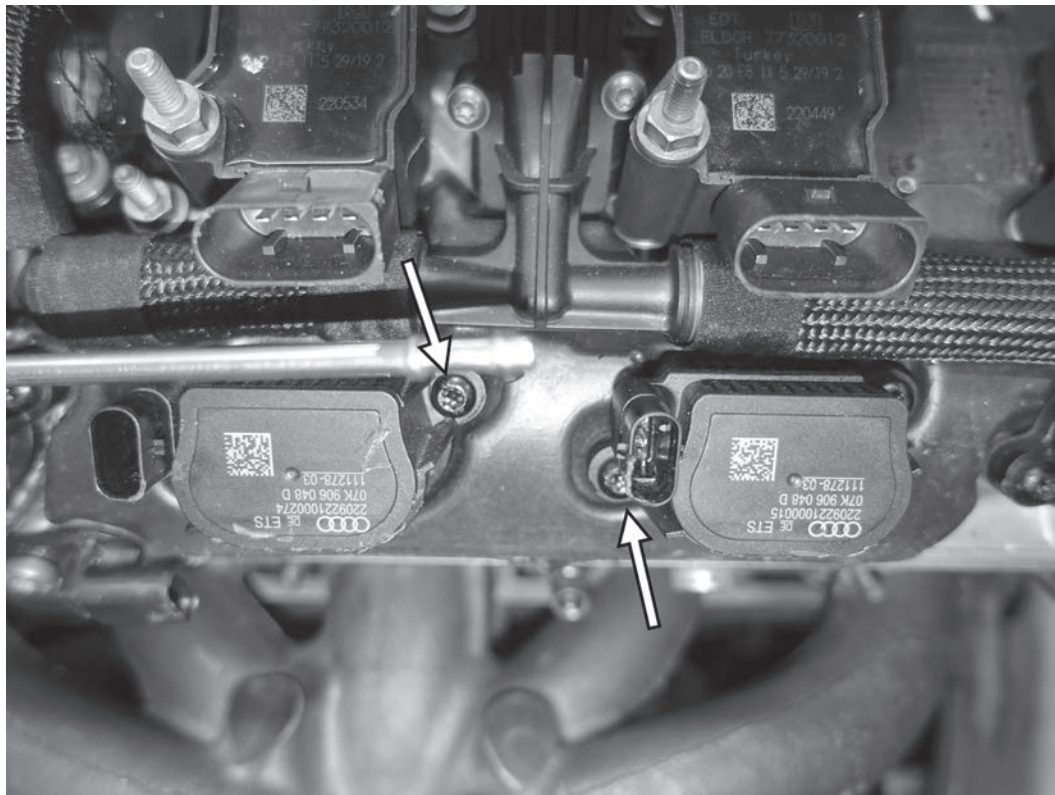


29) On the top left side of the engine, disconnect the electrical connectors to the exhaust cam actuator and the intake cam actuator. On the top right side of the engine, disconnect the electrical connector to the intake cam position sensor. Finally, remove the three 10mm nuts holding the wiring harness bracket to the top of the engine.



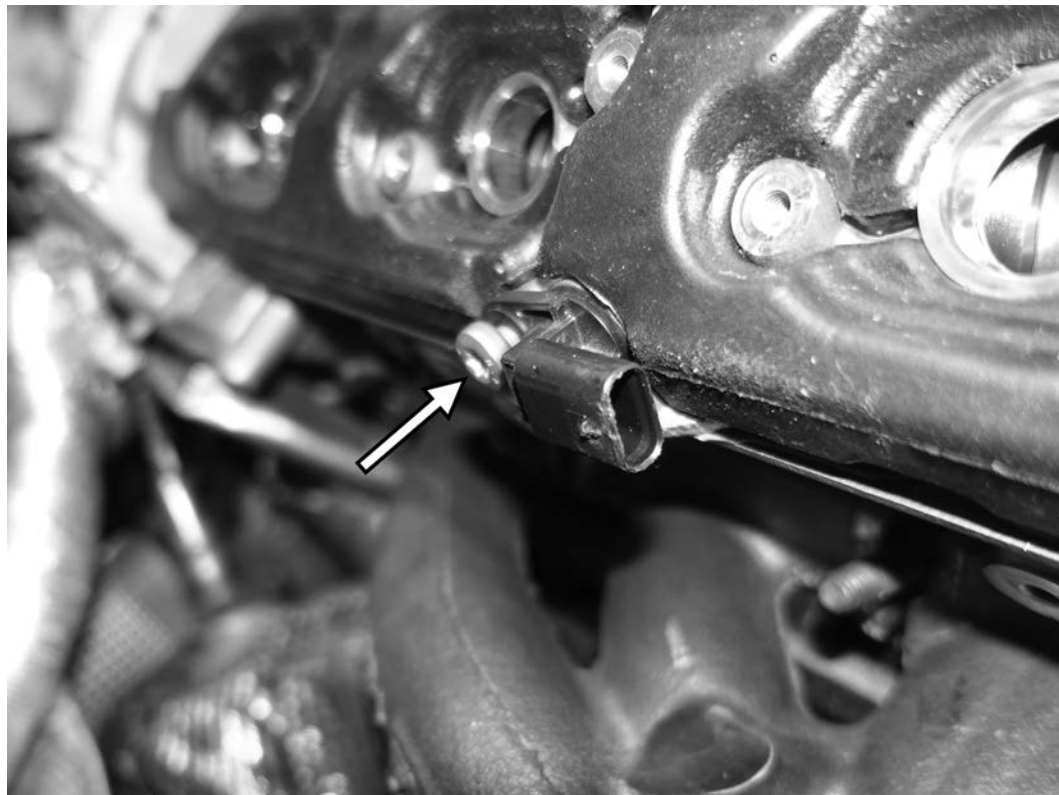
30) Lift the harness bracket up and out of the way, and then remove the three 10mm nuts holding the grounding straps down. Remove the grounding straps from the top of the cylinder head. The wiring harness should be free enough now to fold it out of the way of the back of the engine.

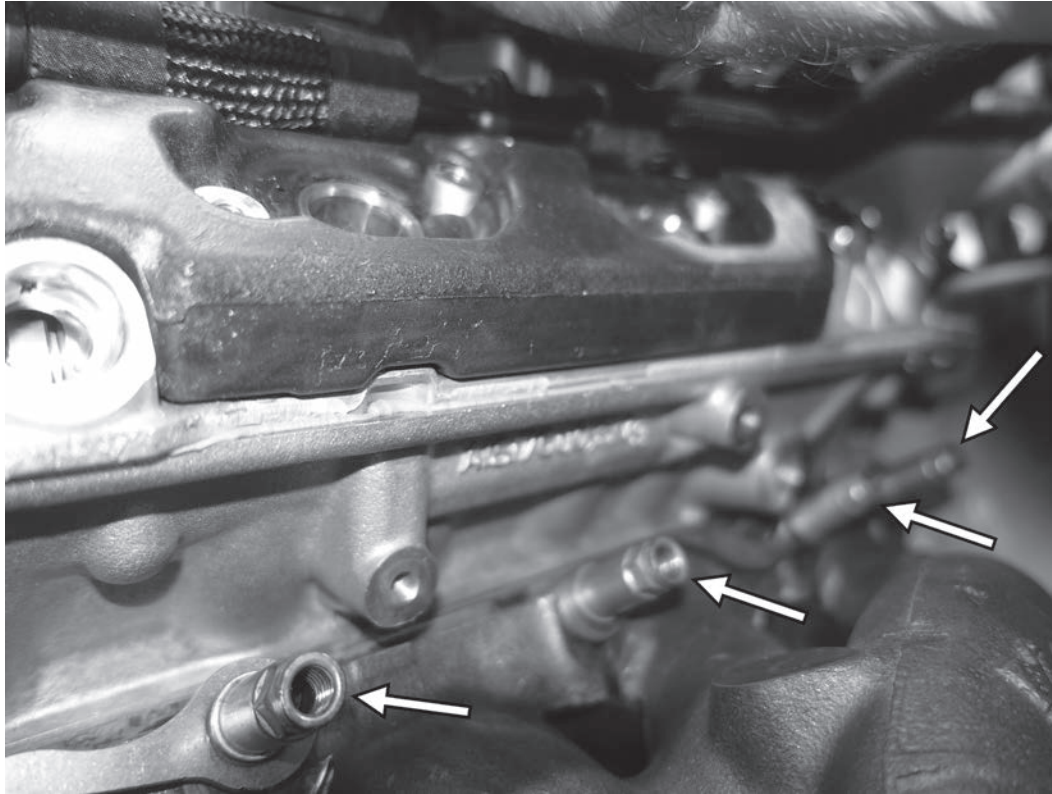




31) Remove the ten T25 screws holding the five valve actuators to the top of the cylinder head, and remove the actuators from the head.

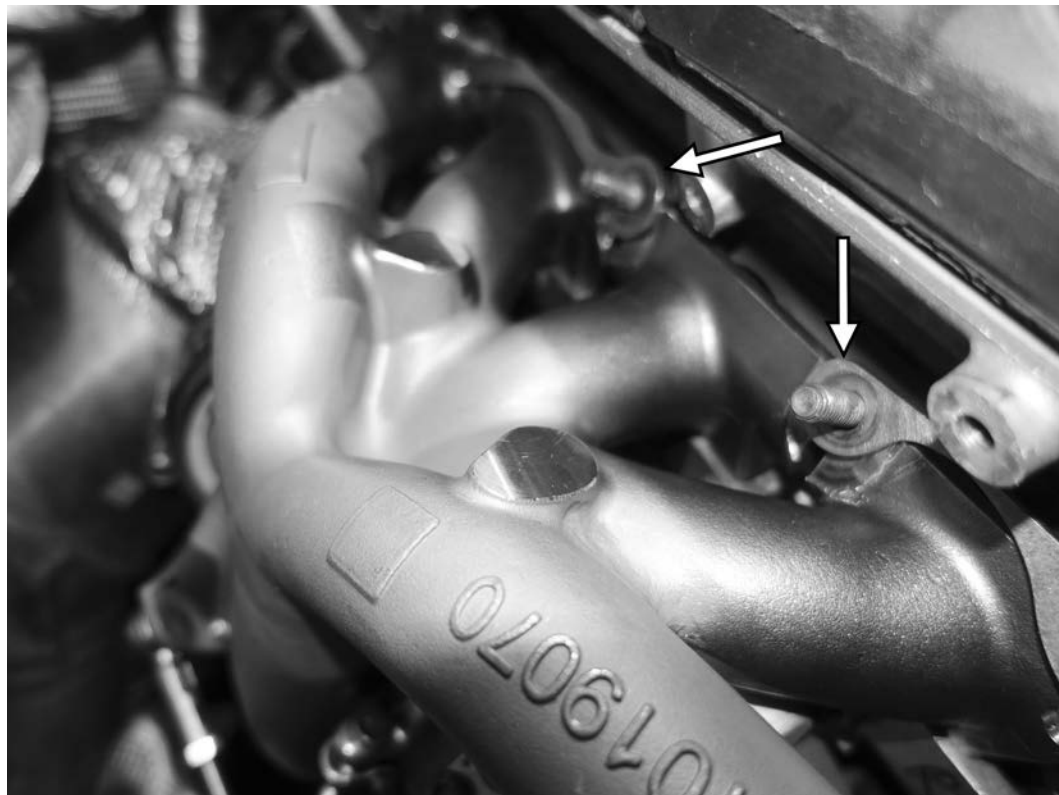
32) On the back of the cylinder head above the turbo, remove the T25 screw from the exhaust camshaft position sensor, and then remove the sensor from the cylinder head.

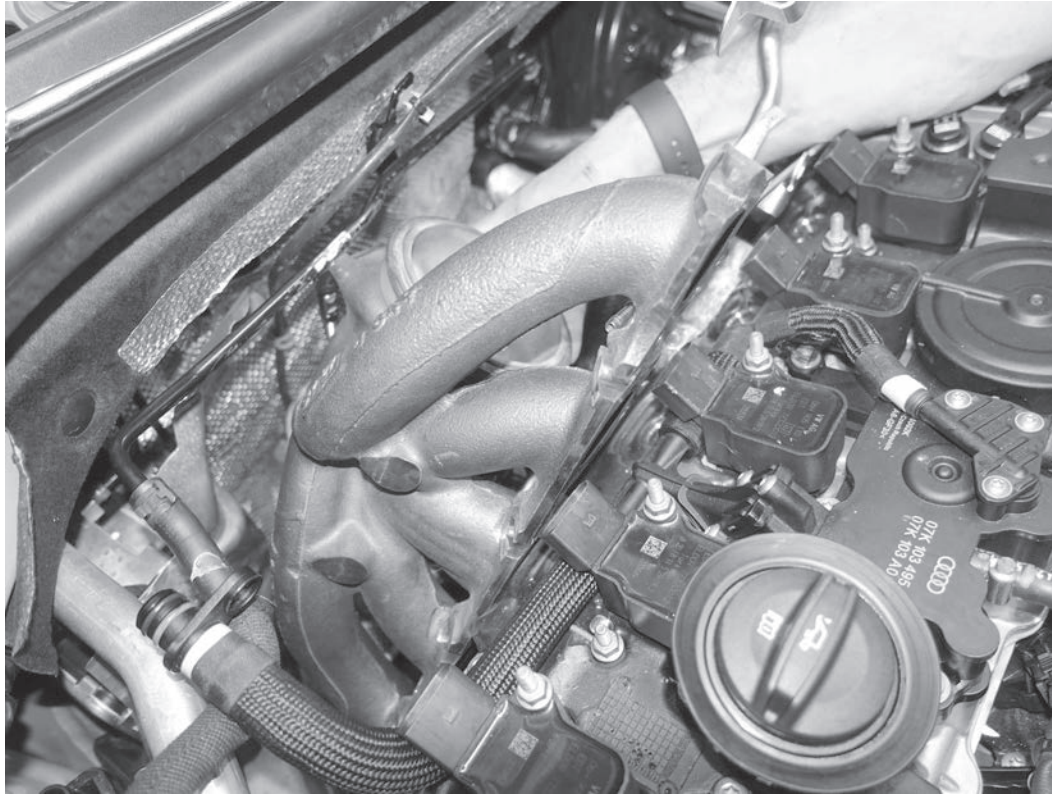




33) Remove the six 12mm nuts along the top of the stock turbocharger.

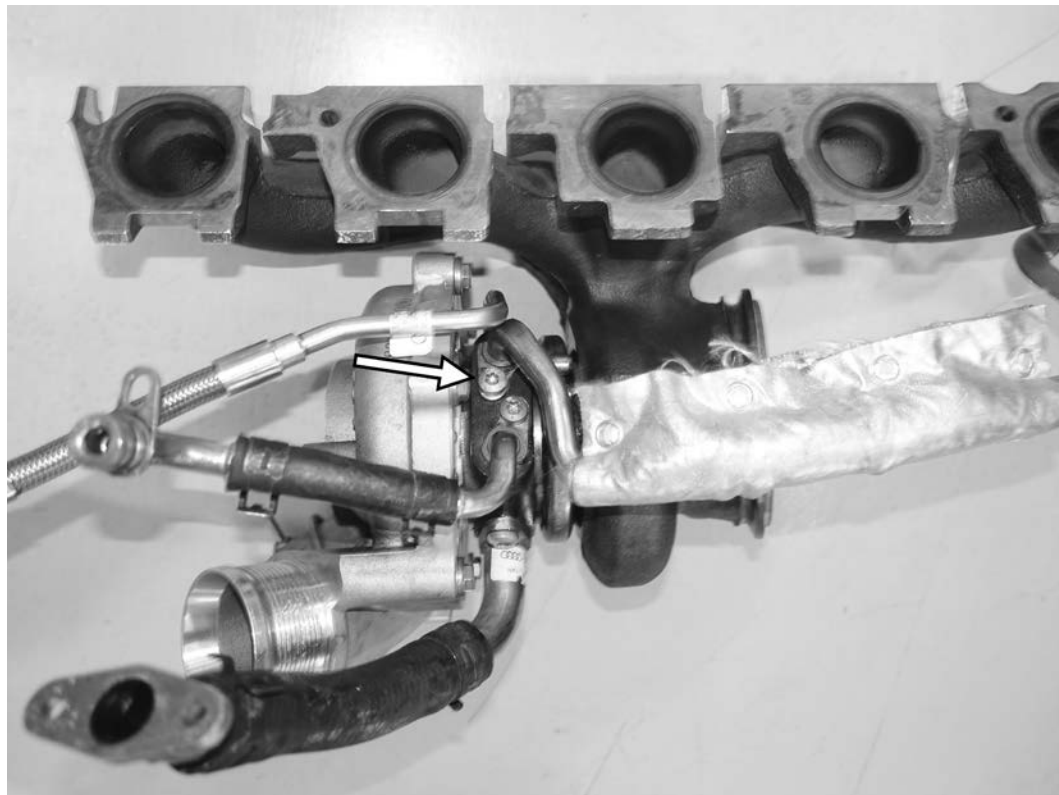
34) Note the orientation of the the two metal straps along the top of the exhaust manifold before removing them. They are different right to left, and must be reinstalled in the same orientation.

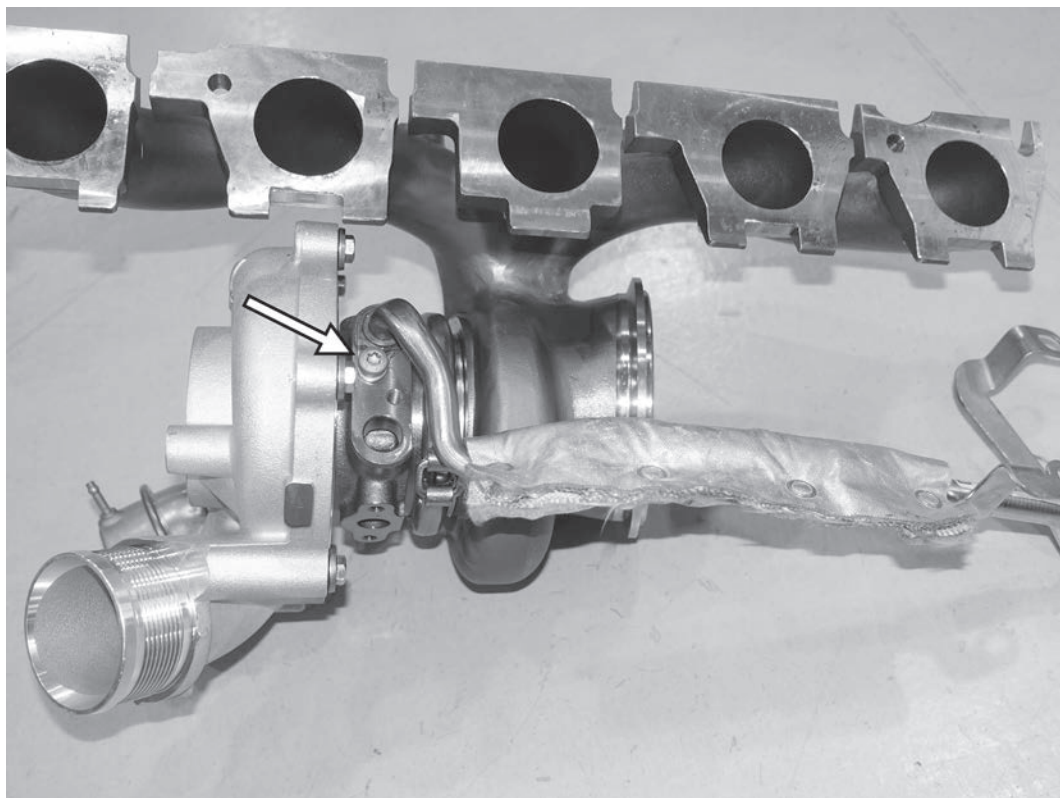




35) Carefully remove the stock turbocharger from the back of the engine. An assistant may be useful to help you maneuver and manipulate the turbo out from the engine and the surrounding components.

36) Remove the T25 screw from the metal coolant return line, and remove the line from the turbo.

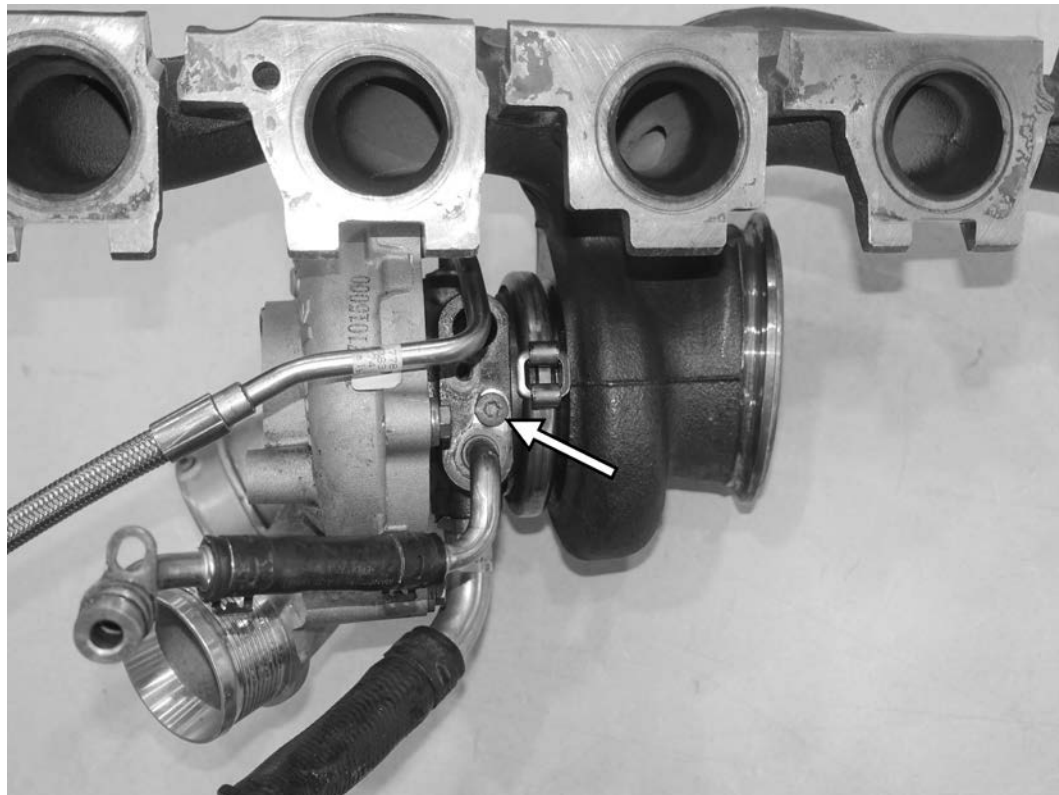




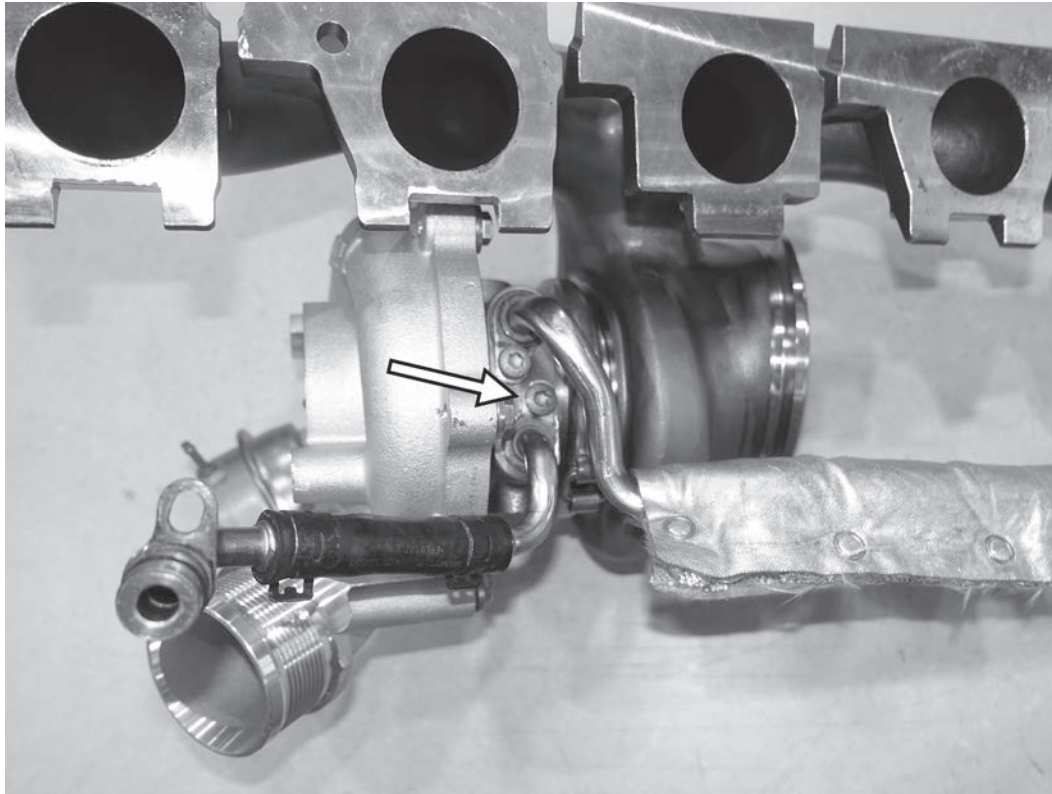
37) Replace the o-ring on the metal coolant return line with one of the two smaller, black o-rings. Install the coolant return line with the original T25 screw to the APR turbo and tighten the screw to 9Nm (80 in-lbs).



38) Remove the T25 screw from the coolant feed line on the stock turbo-charger, and remove the line from the turbo.



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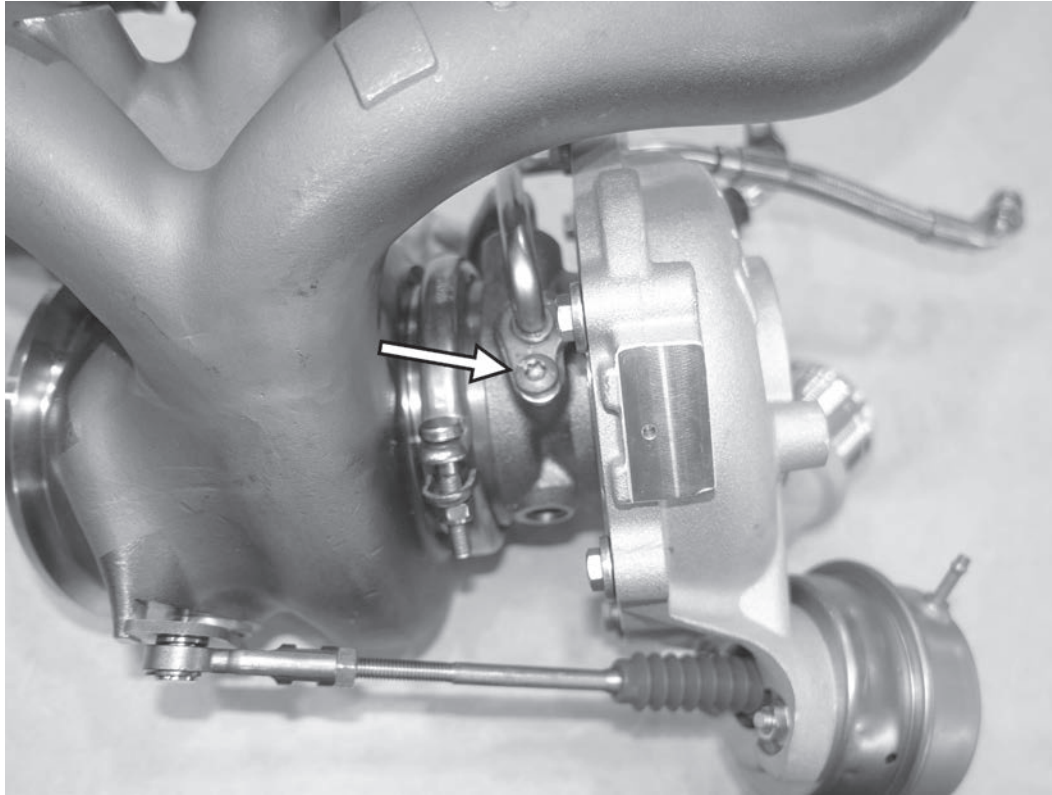


39) There are two different sized o-rings on the coolant feed line. Remove the old o-ring from the turbo side of the line and replace it with the remaining smaller black o-ring. On the block side of the coolant feed line, replace the old o-ring with the one larger supplied black o-ring. Install the smaller sized fitting into the APR turbo and secure it with the original T25 screw, tightening the screw to 9Nm (80 in-lbs).

40) Remove the T25 screw from the oil feed line on the stock turbocharger, and remove the line from the turbo.



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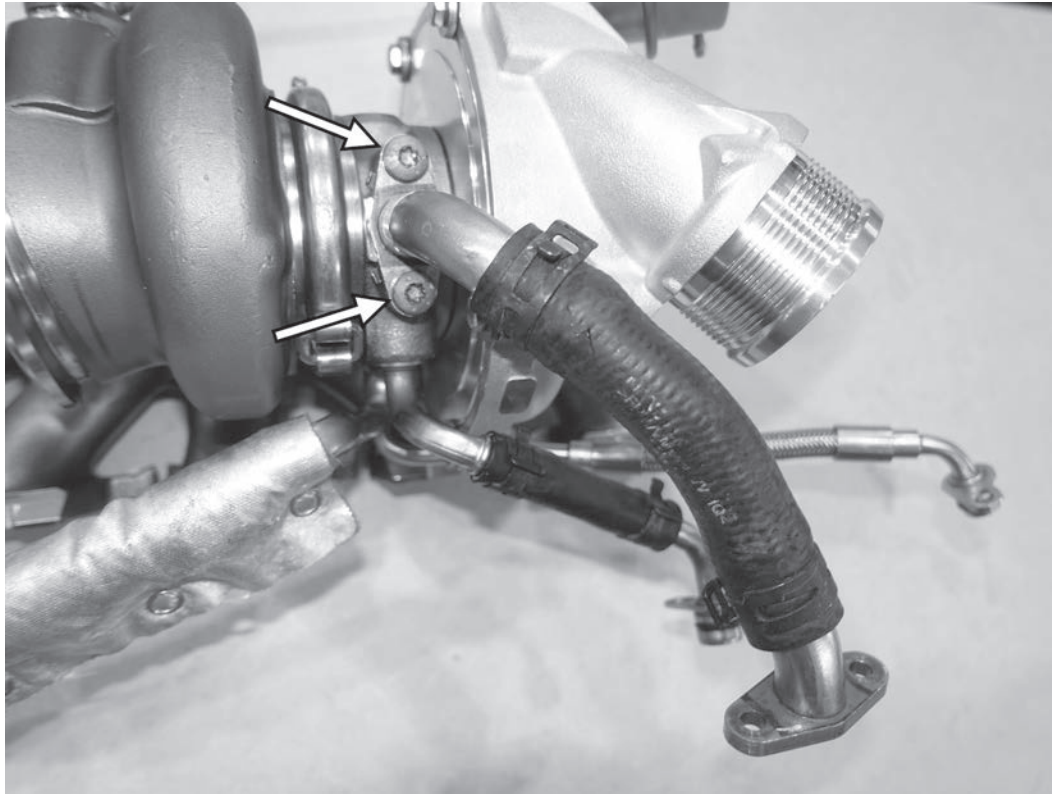


41) Replace both o-rings on the oil feed line with the two supplied red o-rings. Install the oil feed line with the original T25 screw to the APR turbo and tighten the screw to 9Nm (80 in-lbs).

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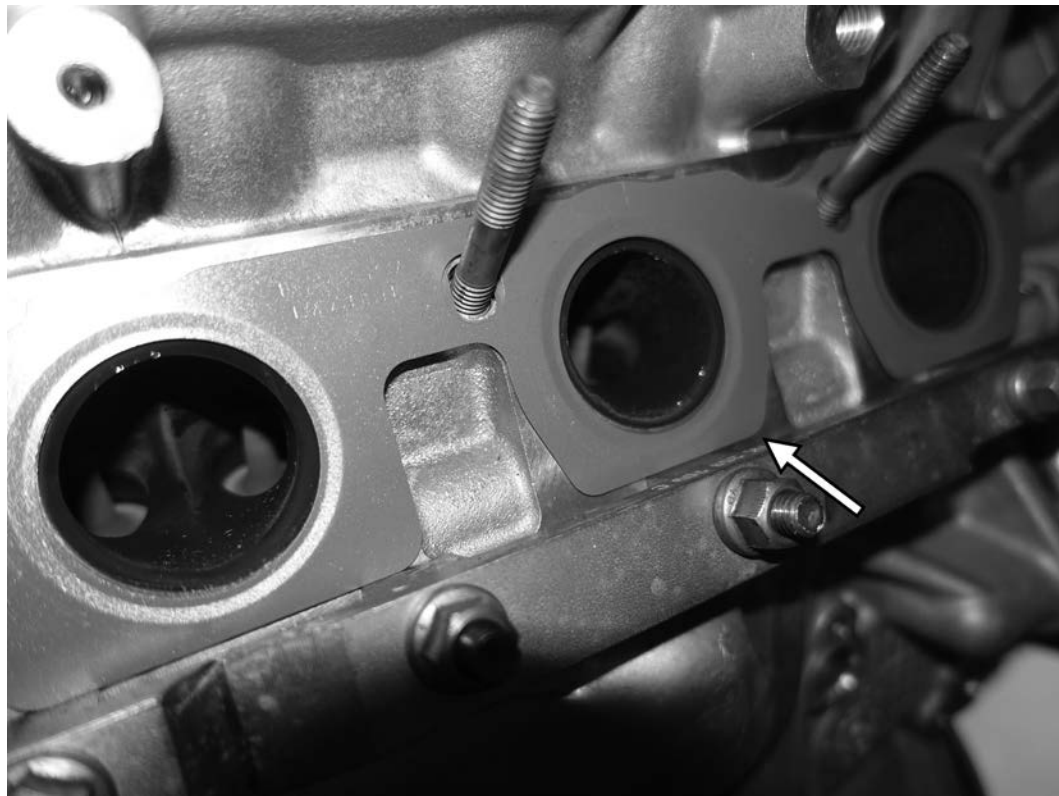
42) Remove the two T25 screws holding the oil drain line to the stock turbo. As you remove the drain line from the turbo, note how the gasket was installed.

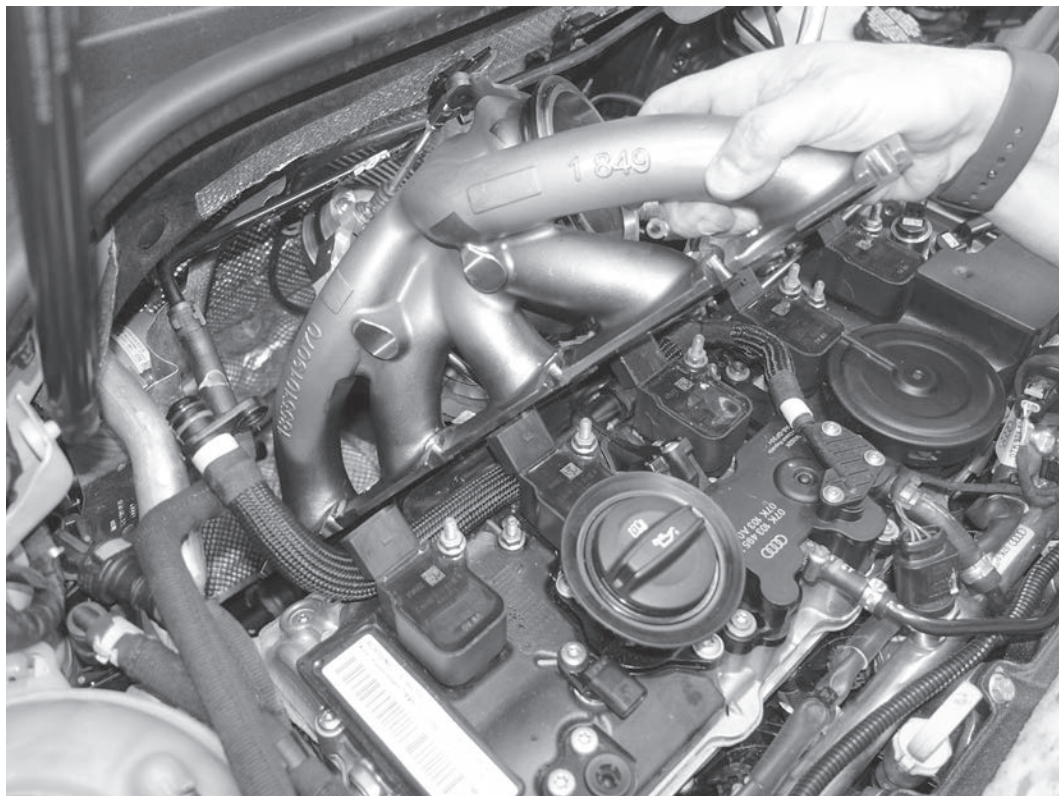




43) With the old gasket are removed, and then install the new gasket in the same orientation as the stock gasket. Install the two T25 screws and tighten them to 9Nm (80 in-lbs).

44) After noting the orientation on how it was installed, remove the factory exhaust manifold gasket. Install the new supplied gasket on the cylinder head in the same orientation.



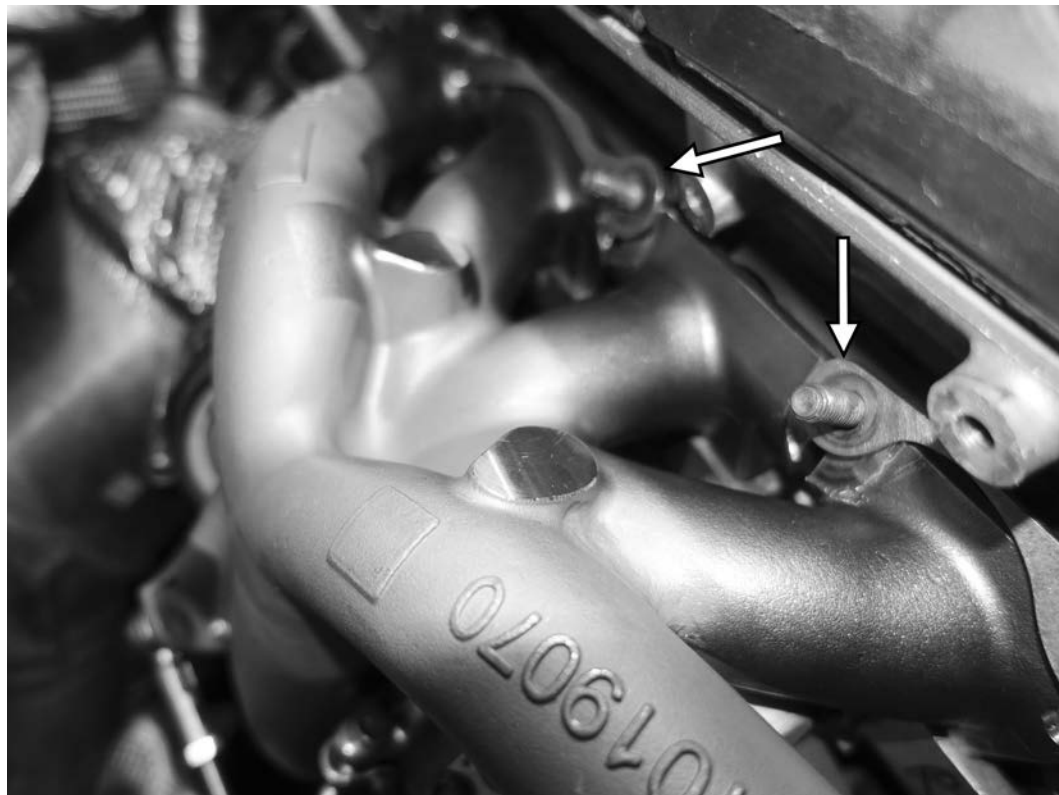


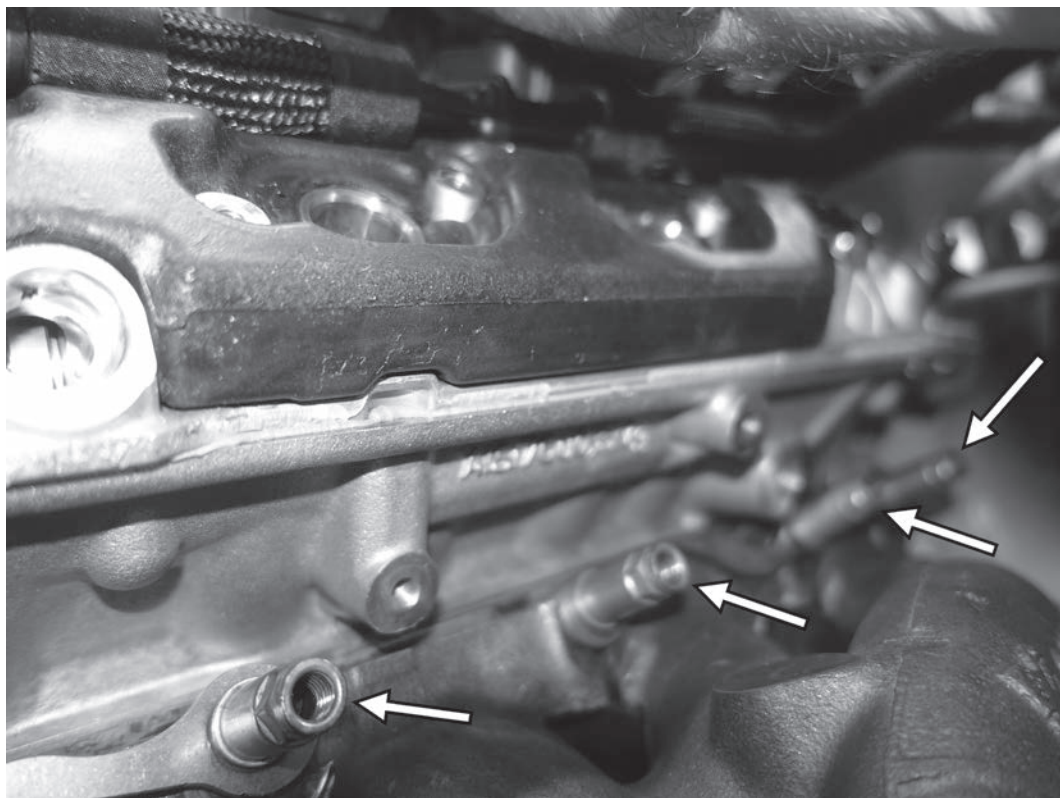
45) With an assistant, place the APR turbo in the car. Before allowing the turbo to sit back into the lower mounting blocks on the cylinder head, make sure the metal coolant return line is routed correctly behind the engine.

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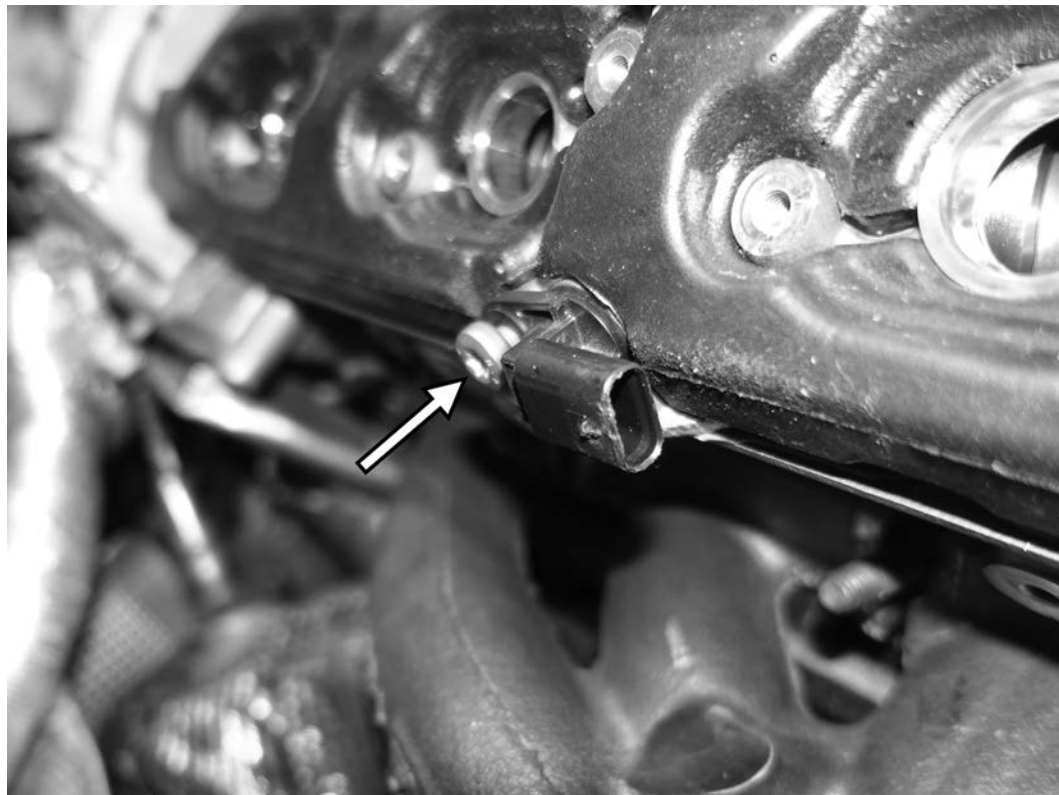
46) With the APR turbo fully seated on the lower mounting blocks, install the two mounting straps along the top studs along the cylinder head. Be sure they are in the same orientation as they were when they were removed from the stock turbo.

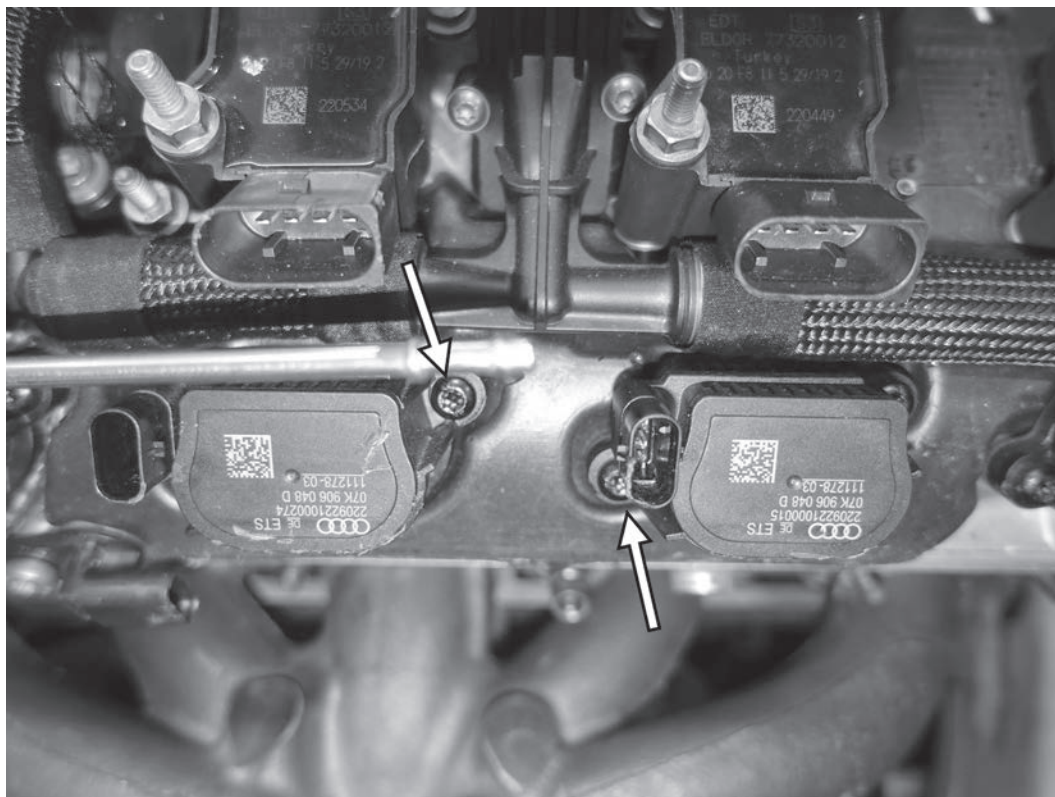




47) Install the six new, supplied 12mm nuts to hold the turbo in place. Tighten the nuts until they are just making contact. Use a rubber mallet to try to drive the turbo down into the lower mounting blocks. Tighten the 12mm nuts from the center out (alternating side to side) to 15Nm (11 ft-lbs). Use the rubber mallet to try to drive the turbo down further on the lower mounting blocks. Tighten the nuts in the same center out, alternating sequence to 25Nm (18 ft-lbs). Then tighten the nuts to 30Nm (22 ft-lbs). Finally, check once again to make sure the nuts are tightened to 30Nm (22 ft-lbs).

48) Reinstall the exhaust cam position sensor with the original T30 screw. Tighten the screw to 9Nm (80 in-lbs).

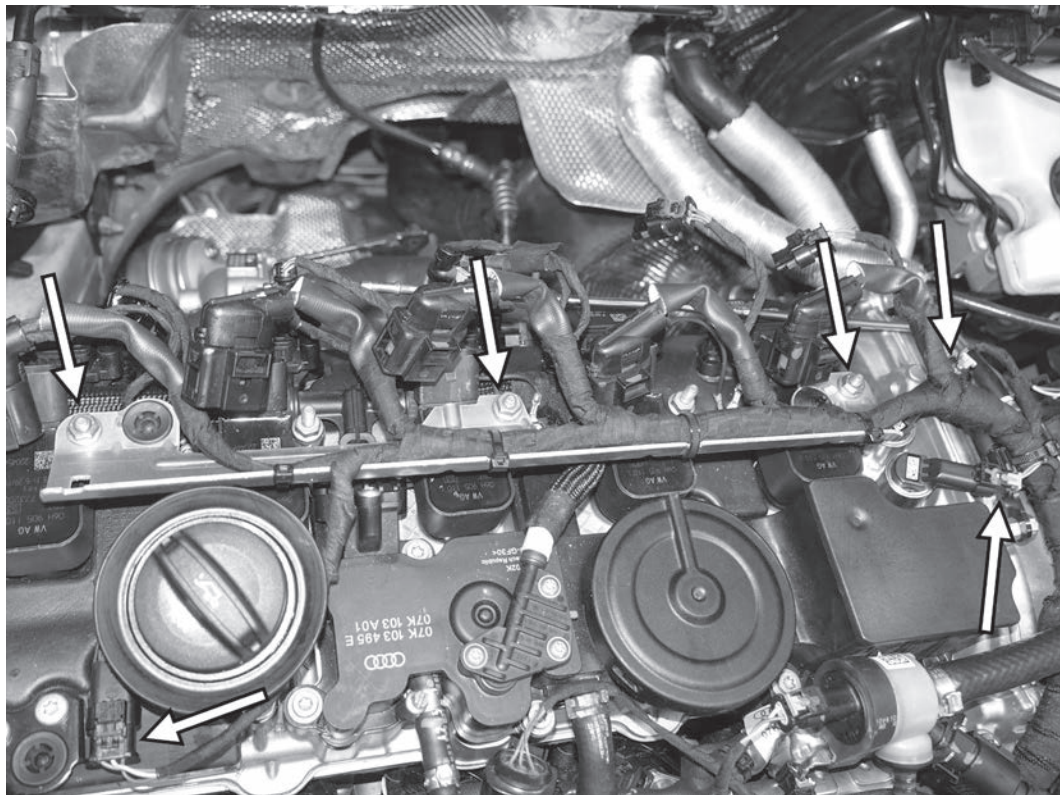




49) Reinstall the five valve lift actuators. Secure the five actuators with the ten T25 screws, torquing each screw to 4Nm (35 in-lbs).

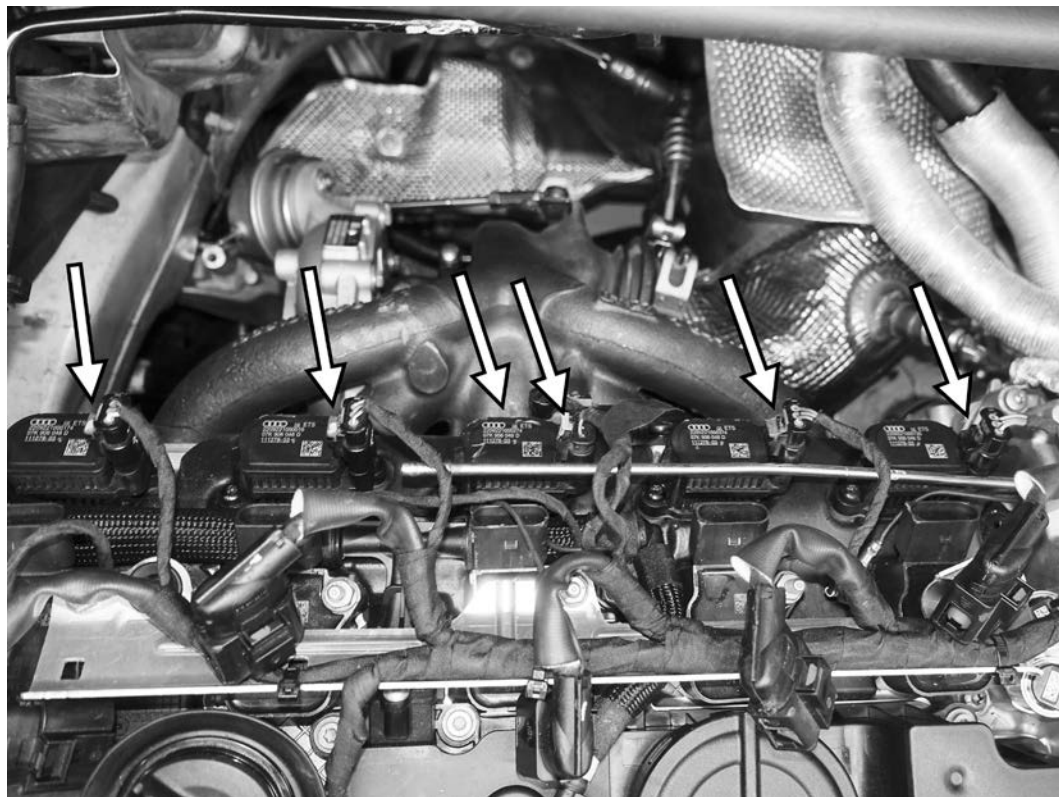
50) Place the wiring harness bracket over near it's mounting location. Reinstall the grounding straps to the three posts on the cylinder head, and then secure the straps with the three original 10mm nuts. Tighten the 10mm nuts to 5Nm (44 in-lbs).

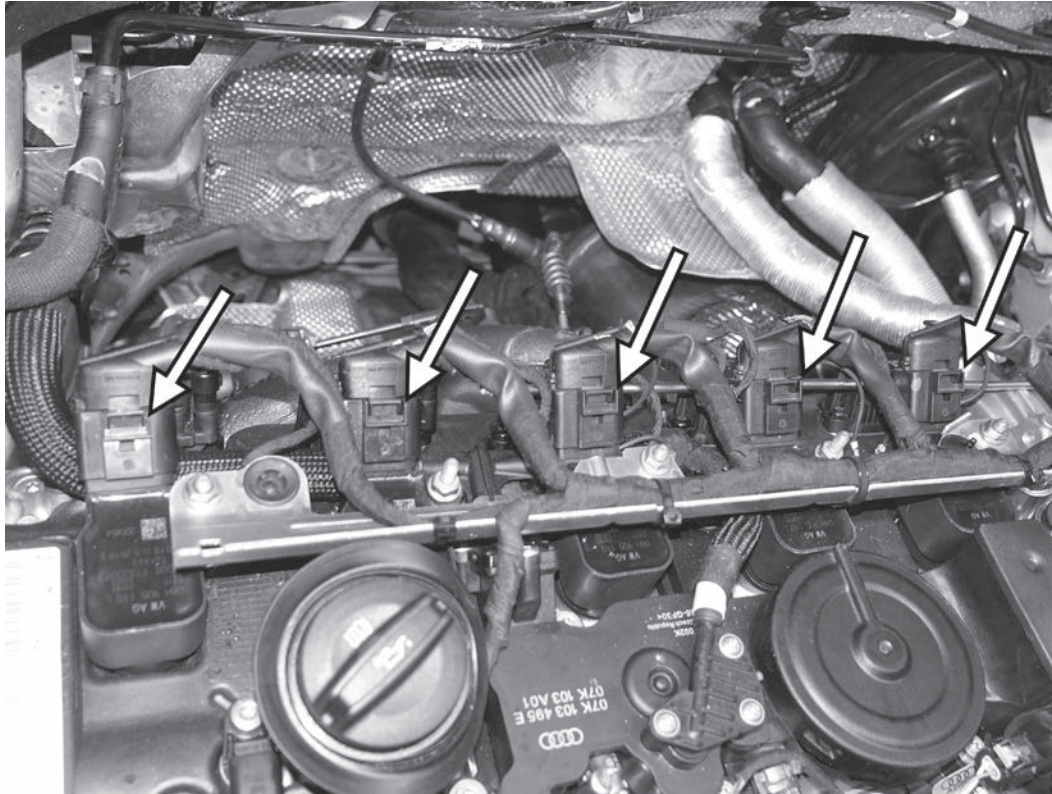




51) Place the coilpack wiring harness bracket back in place, and secure with the three 10mm nuts. Tighten the nuts to 5Nm (44 in-lbs). Reconnect the electrical connectors to both the intake cam actuator and the exhaust cam actuator.

52) Reconnect the five electrical connectors to each of the five valve-lift actuators. Also reconnect the electrical connector to the exhaust cam position sensor.



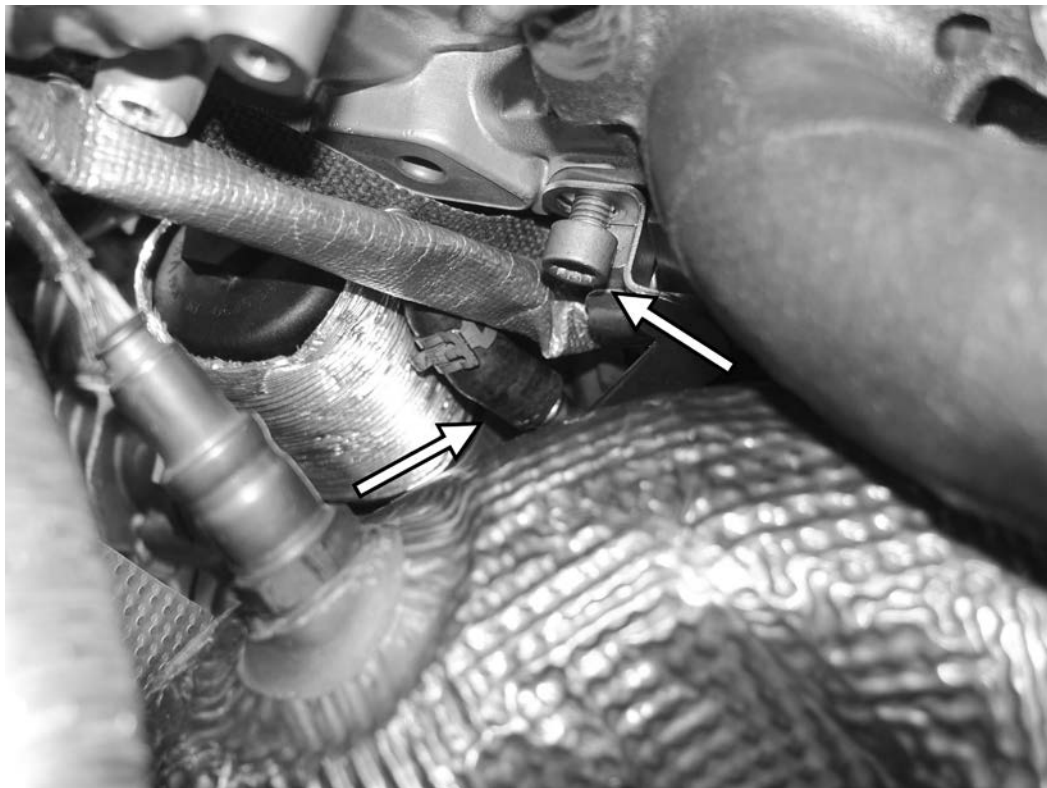


53) Reconnect the electrical connectors to all five ignition coilpacks.

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54) On the back of the engine, reconnect the rubber hose to the metal coolant return line from the turbo and secure with the spring clip. Reinstall the 10mm triple square screw into the metal return line, but do not tighten it yet.

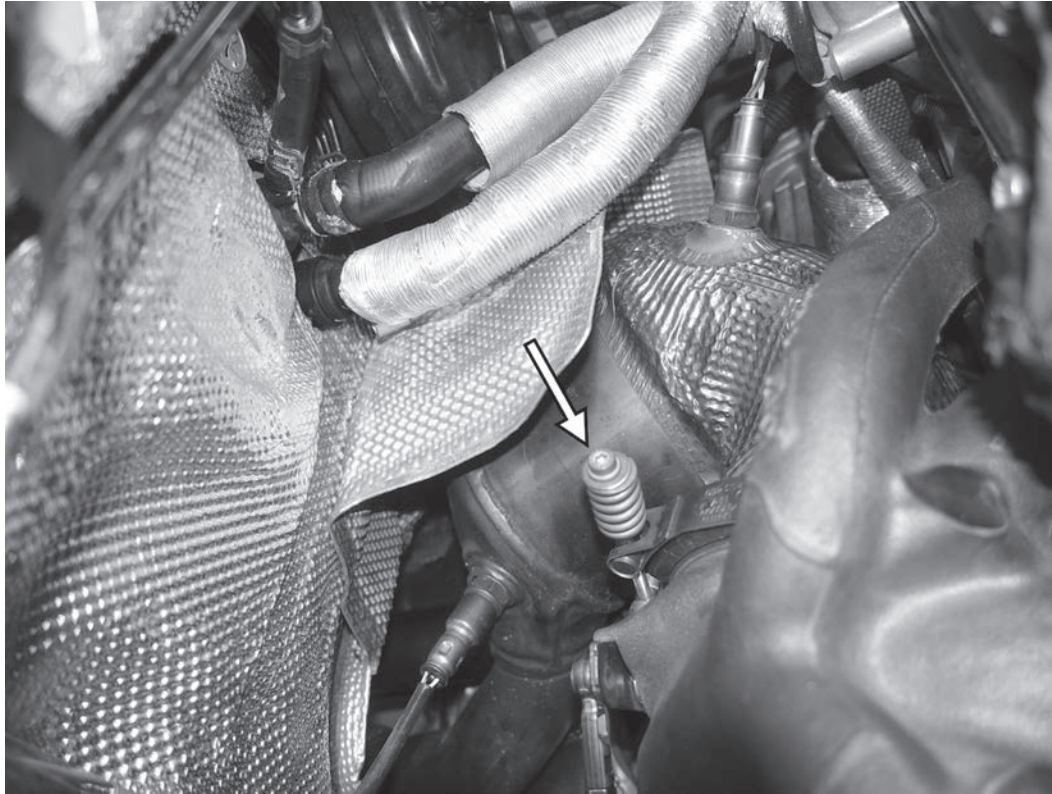




55) Reinstall the T25 screw into the bottom side of the metal coolant return line. Tighten the screw to 9Nm (80 in-lbs). Once tight tighten the 10mm triple square screw to 20Nm (15 ft-lbs).

56) Reconnect the mounting grommet for the oxygen sensor to the location on the back of the cylinder head.



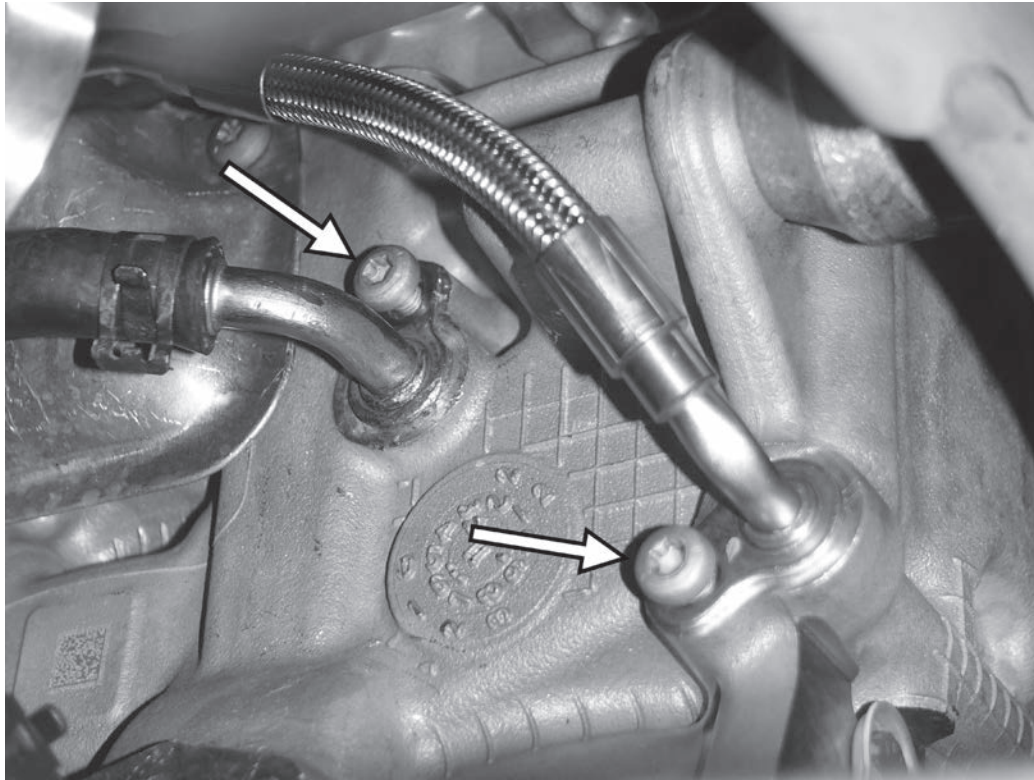


57) Install the catalyst to the outlet of the APR turbo. Install the v-band clamp over the connection between the turbo and the catalyst, and then secure the v-band clamp by tightening the T25 screw to 7Nm (62 in-lbs).

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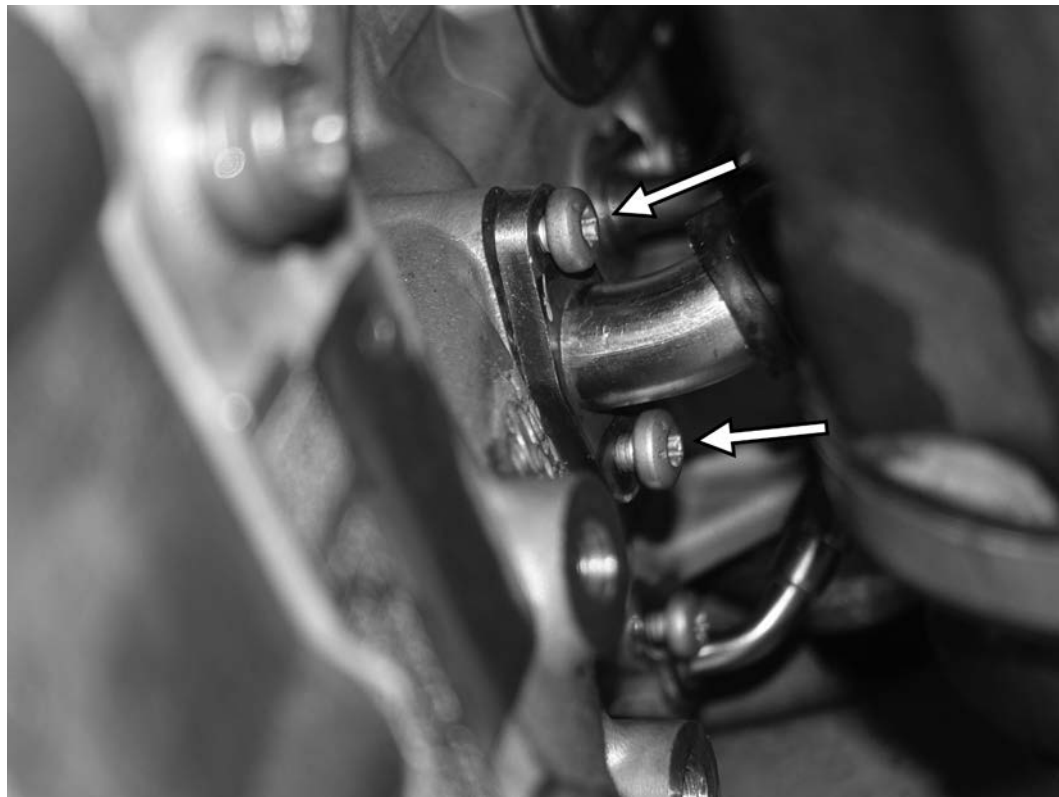
58) Reinstall the metal heat shield above the APR turbo using the four 5mm allen screws. Tighten the screws 9Nm (80 in-lbs).

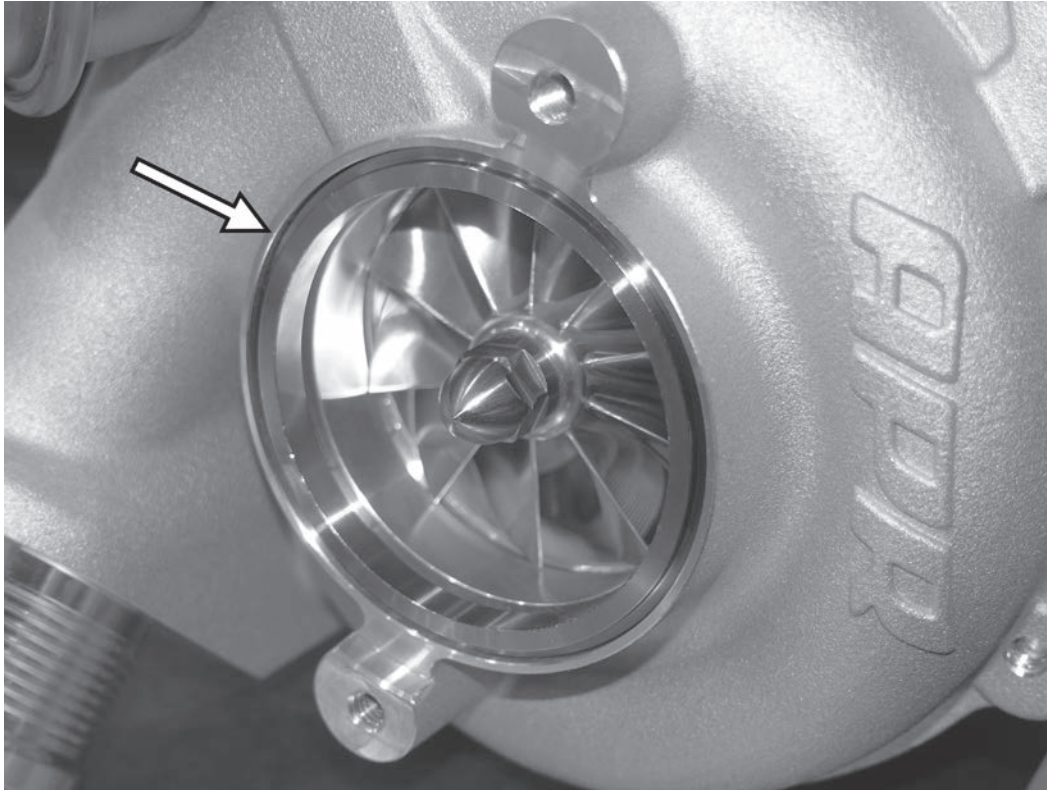




59) Connect the coolant feed line into the back of the engine block, and secure with the original T30 screw. Connect the oil feed line into the back of the engine block and secure with the original T30 screw. Tighten both T30 screws to 9Nm (80 in-lbs).

60) After installing one of the supplied new gaskets, connect the oil drain line to the back of the engine block and secure with the two original T30 screws. Tighten both screws to 9Nm (80 in-lbs).



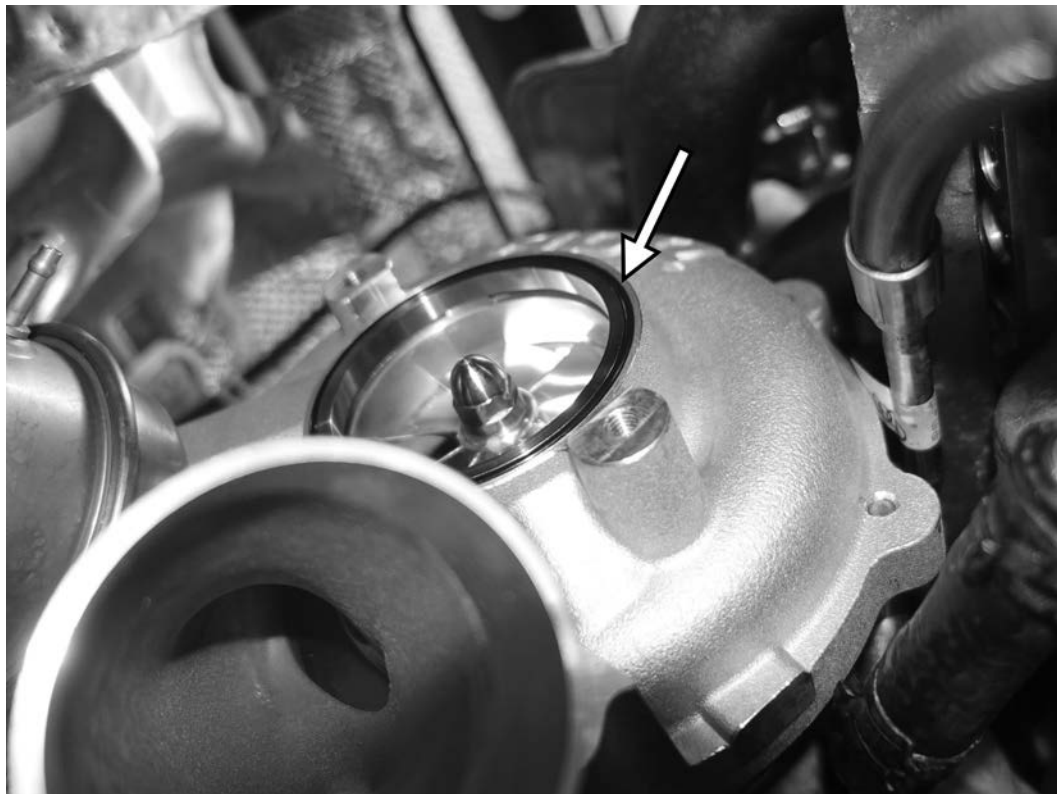


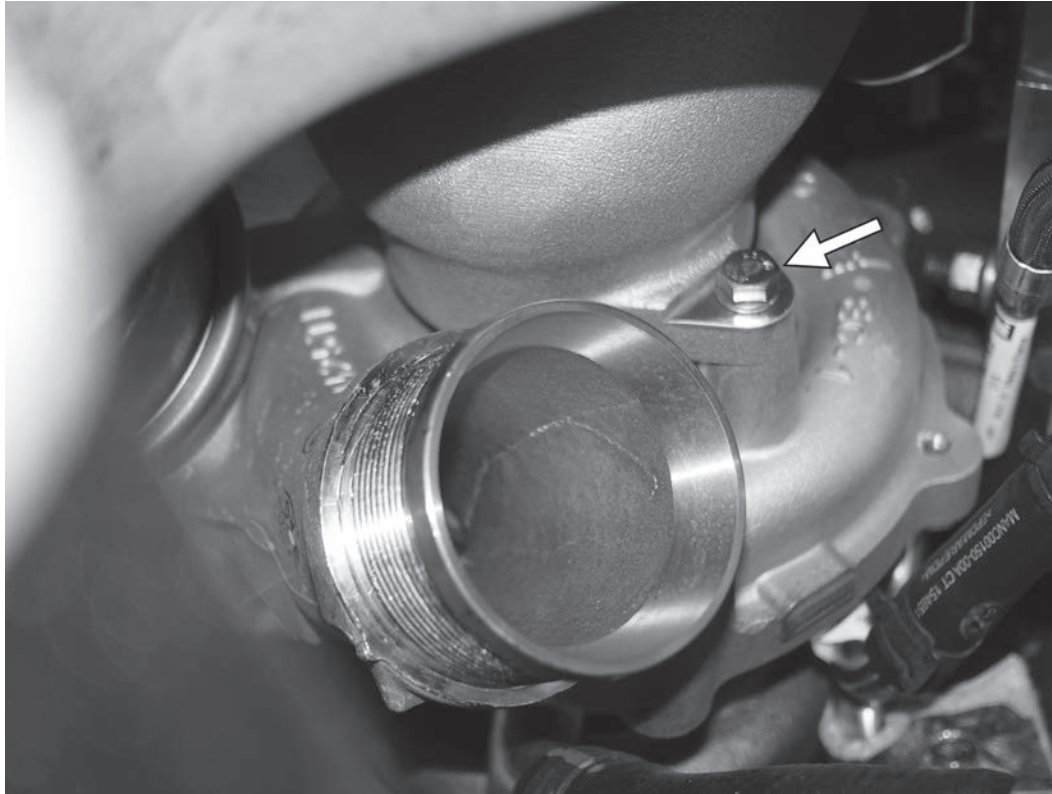
61) Install the supplied metal ring in the inlet of the APR turbo. The flat side of the ring should be towards the turbo, and the raised lip facing away from the turbo, creating a groove for an o-ring.

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62) Install the supplied o-ring into the groove on the inlet of the APR turbo.





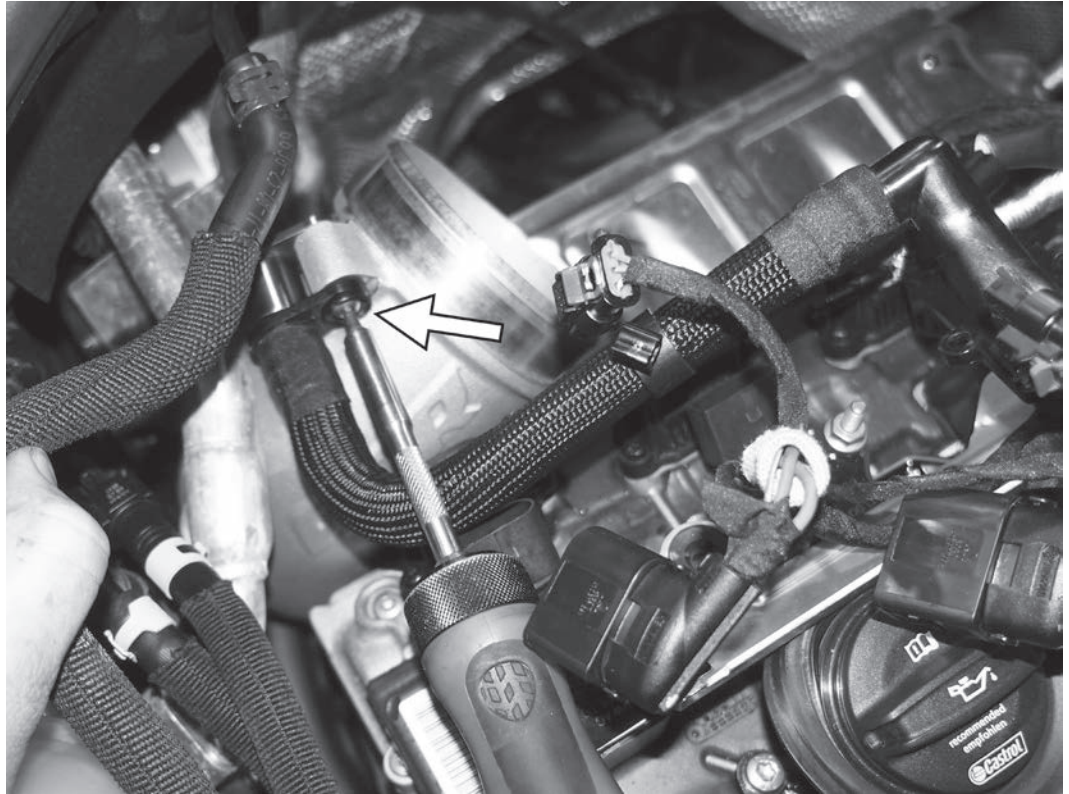
63) Place the APR turbo inlet on the APR turbo. Using the 10mm screw the APR turbo inlet was supplied with, put a drop of medium strength, blue threadlocker, like Loctite 246. Install the wedge lock washer onto the screw, being careful not to separate the two halves of the lock washer. Very loosely install the supplied 10mm screw and wedge lock washer into the upper mounting hole on the turbo, holding the APR turbo inlet pipe to the turbocharger.

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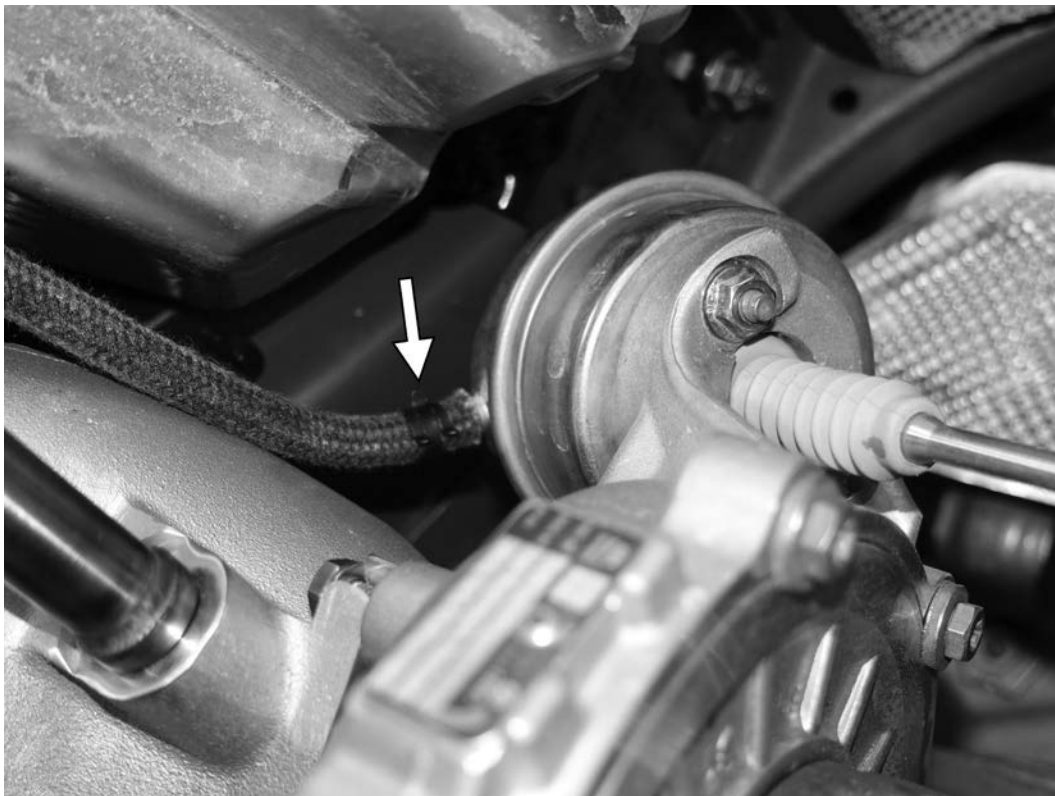
64) Make sure the APR turbo inlet pipe is properly seated in the turbocharger. Put a drop of medium strength, blue threadlocker, like Loctite 246, onto the other 10mm screw. Install the wedge lock washer onto the screw, being careful not to separate the two halves of the lock washer. Install the 10mm screw and washer to the lower hole on the APR turbo inlet pipe. Torque both the lower and upper 10mm screws to 80 in-lb (9Nm).



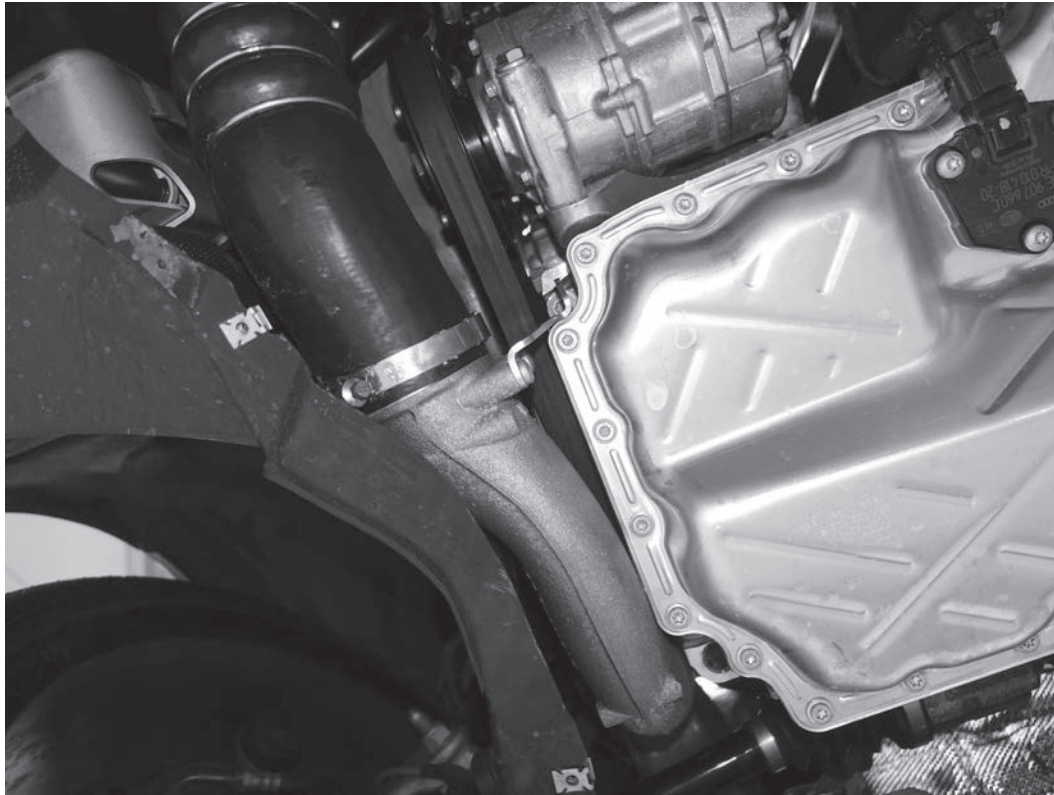
65) Install the factory breather tube line into the tube on the APR turbo inlet. Secure with the previously removed 4mm allen screw. Torque to 10Nm (88 in-lbs).



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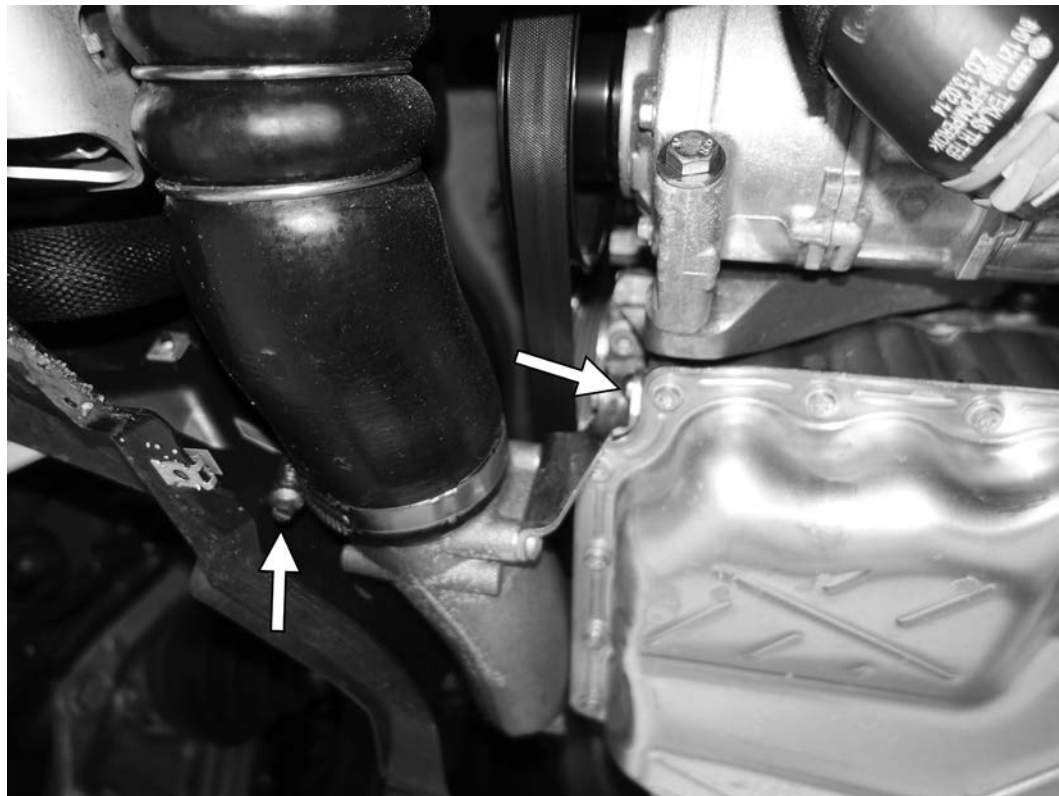


66) Reconnect the previously removed vacuum line to the wastegate and secure with the spring clamp.

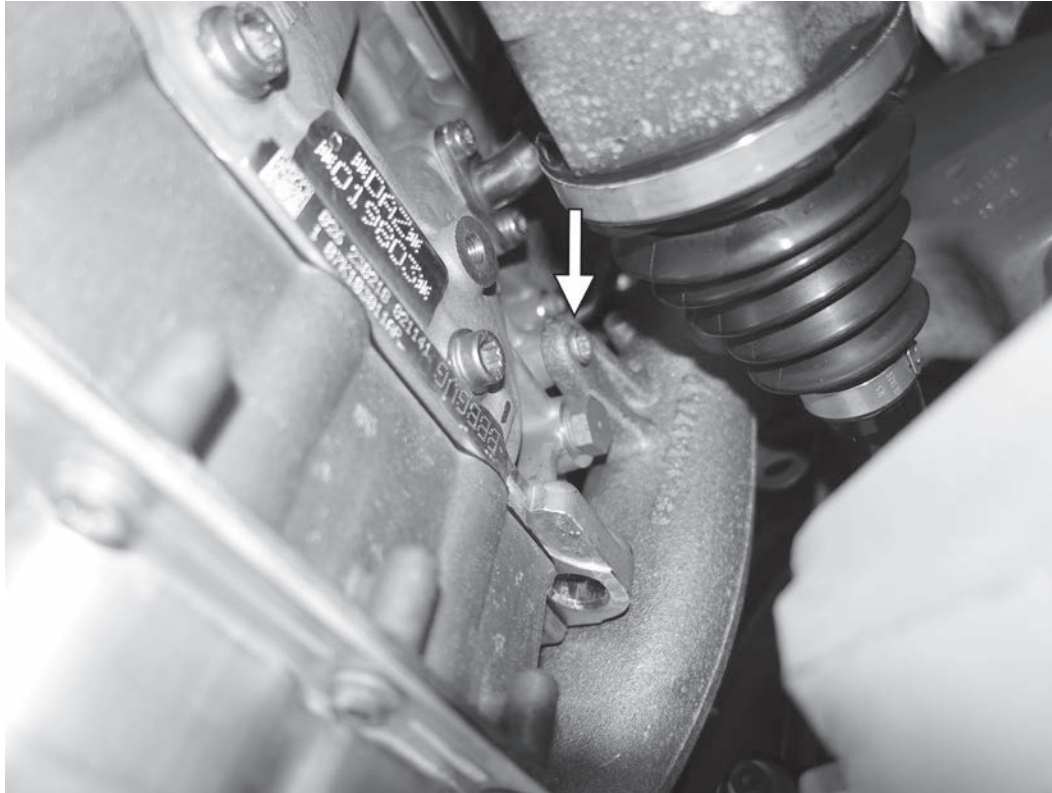


67) Loosely reinstall the turbo outlet pipe, reconnecting the rubber coupler to the turbo outlet. Attach the intercooler hose to the front of the turbo outlet pipe.

68) Install the T30 screw on the turbo outlet pipe bracket to hold the pipe in place.



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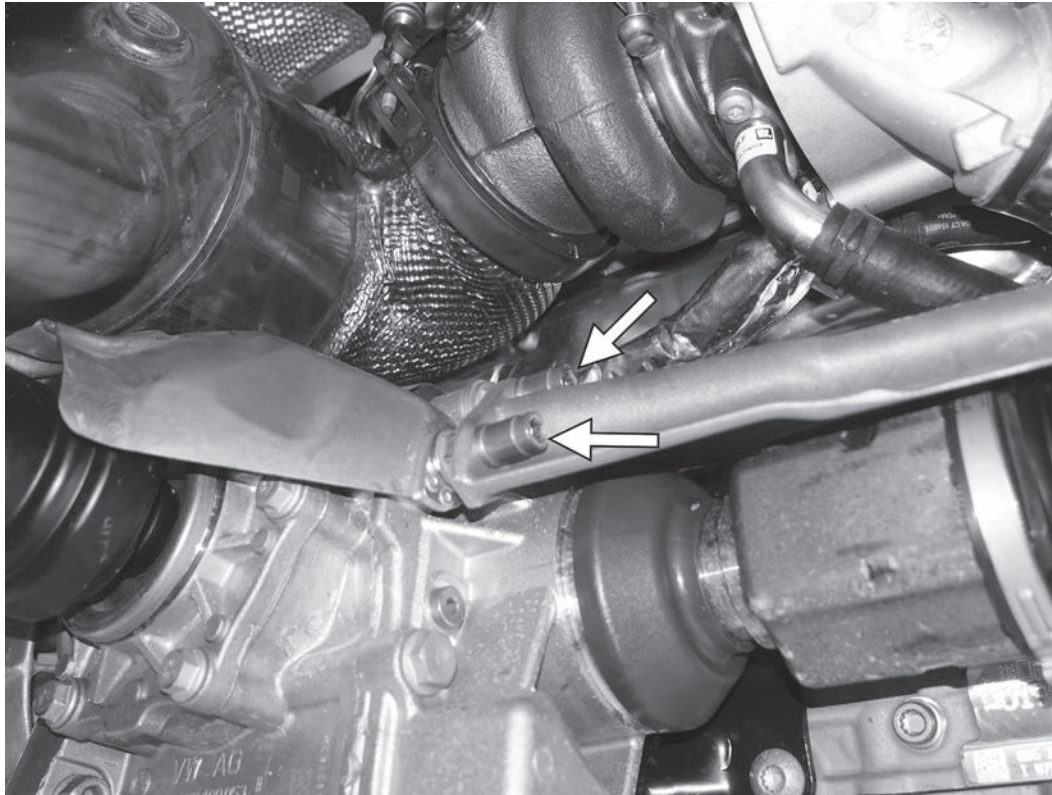


69) Reinstall the 10mm triple square holding the turbo outlet pipe to the back of the engine block. Torque this bolt to 20 Nm (177 in-lbs). Tighten the previously installed T30 screw on the front of the turbo outlet pipe bracket to 8Nm (70 in-lbs). Tighten the 7mm screw on the hose clamp connecting the outlet pipe to the intercooler hose by torquing it to 5.5Nm (48 in-lbs). Do not overtorque the clamp or the screws.



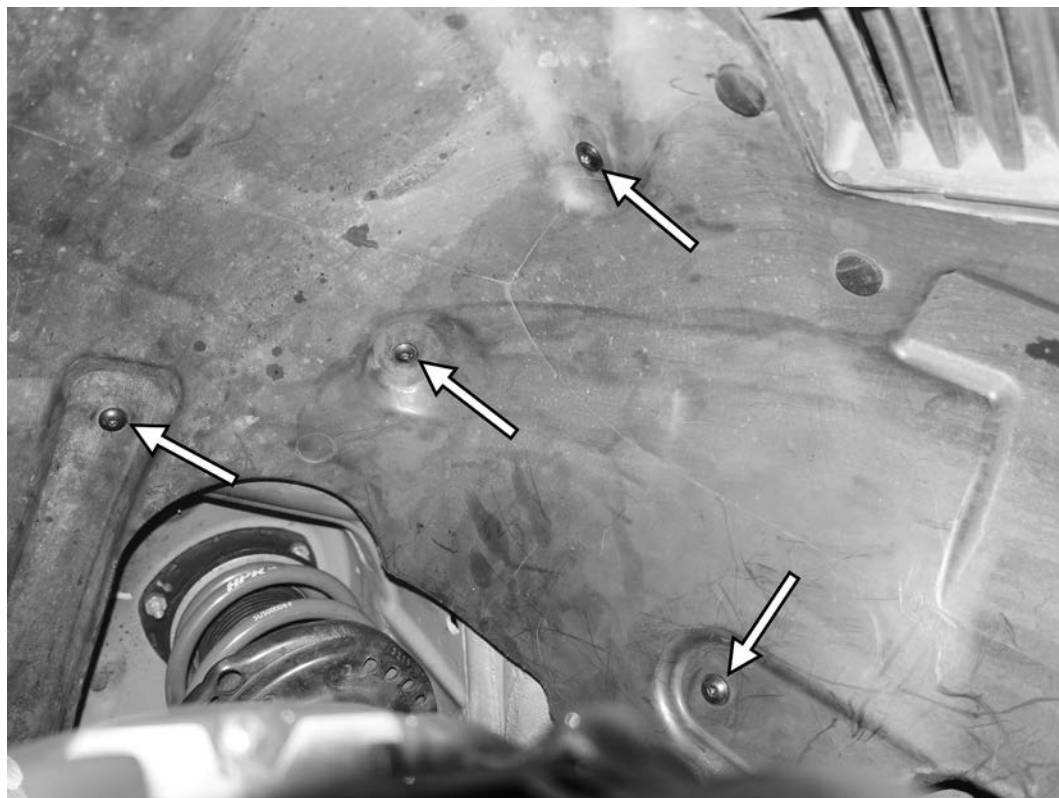
70) Tighten the 7mm screw on the hose clamp connecting the turbo to the turbo outlet pipe by torquing it to 5.5Nm (48 in-lbs). Do not overtorque the clamp or the screws.



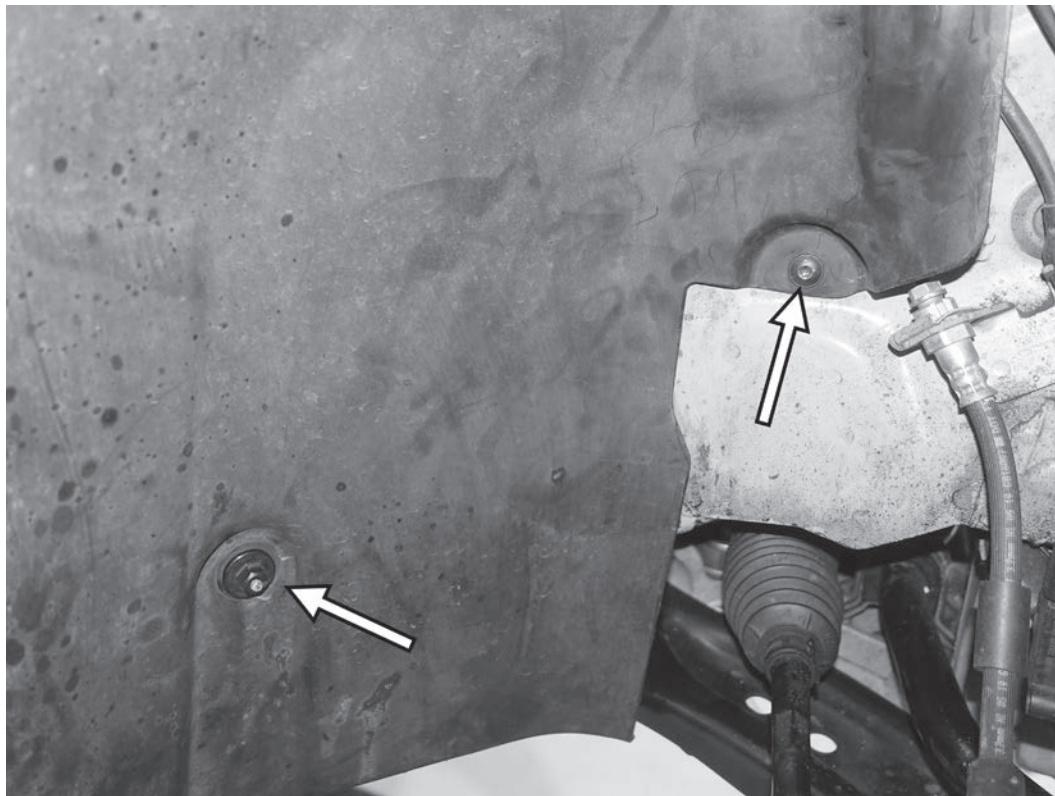


71) Reinstall the right axle heat shield with the two 8mm allen nuts. Torque the allen nuts to 25 Nm (18 ft-lbs).

72) Reinstall the right front wheel fender liner. On the inside of the front of the liner, install the T25 screws, tightening them to 2Nm (18 in-lbs).



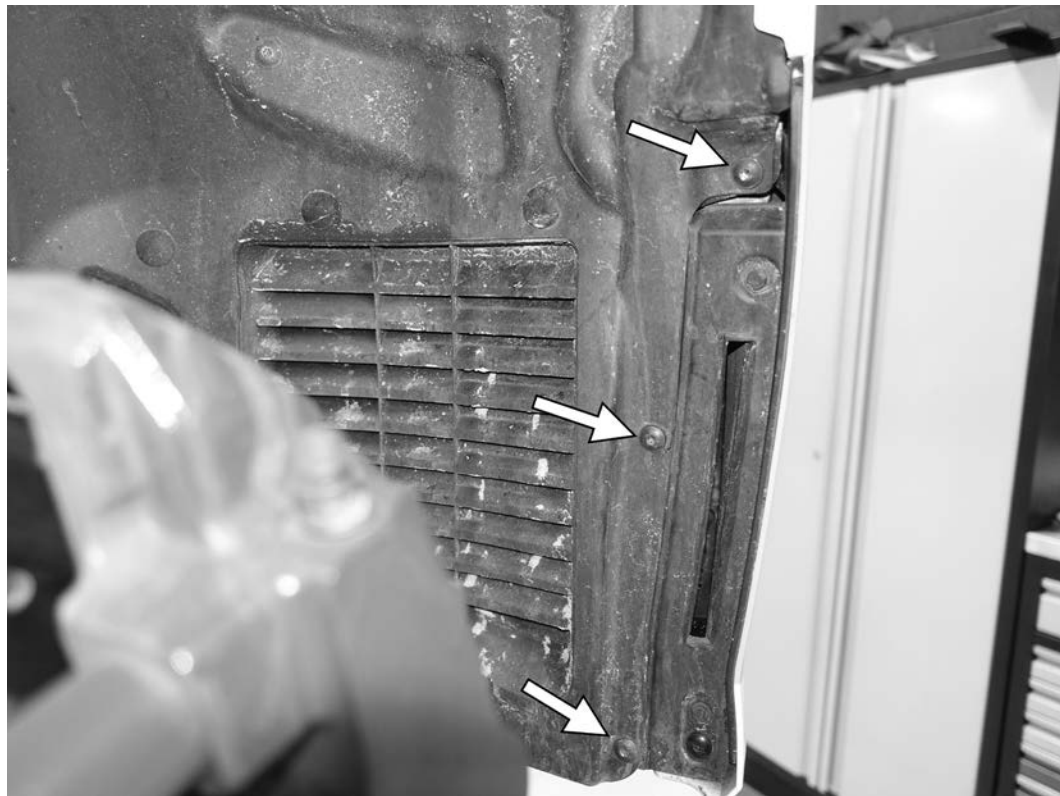
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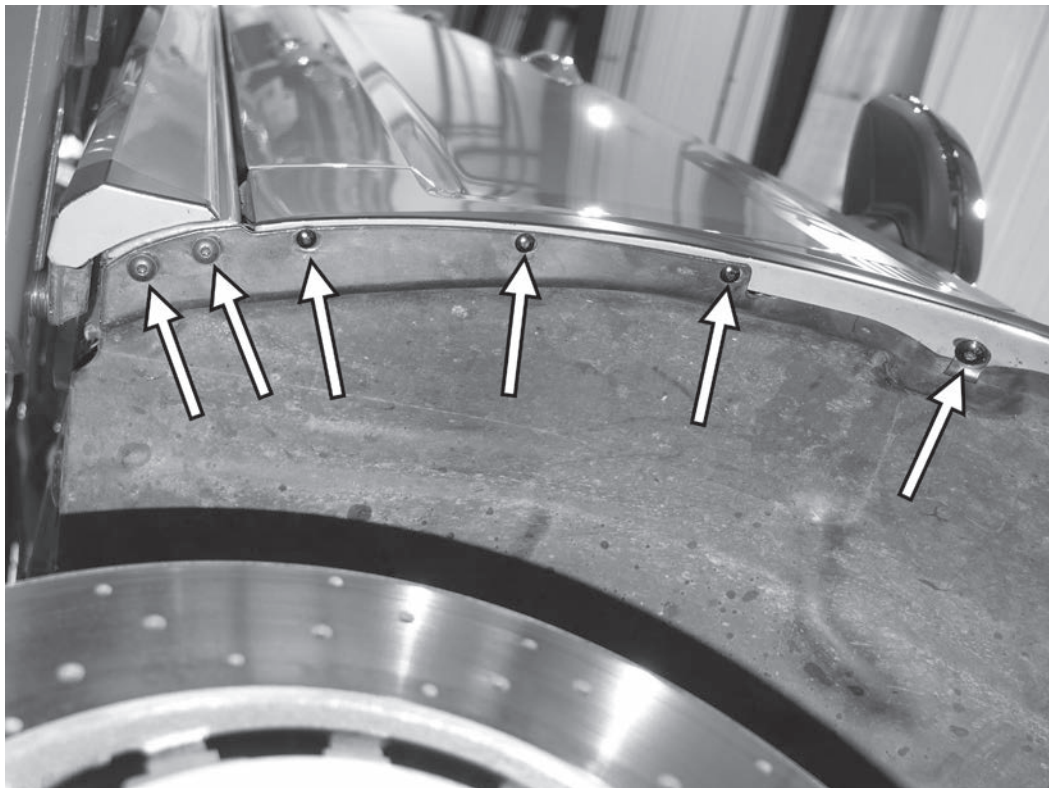
73) On the inside of the back side of the fender liner, install the T25 screw and 10mm nut. Tighten both of these to 2Nm (18 in-lbs).

**APR**

74) On the front side of the fender liner, attach the T25 screws holding the liner to the front bumper cover. Tighten the screws to 2Nm (18 in-lbs).



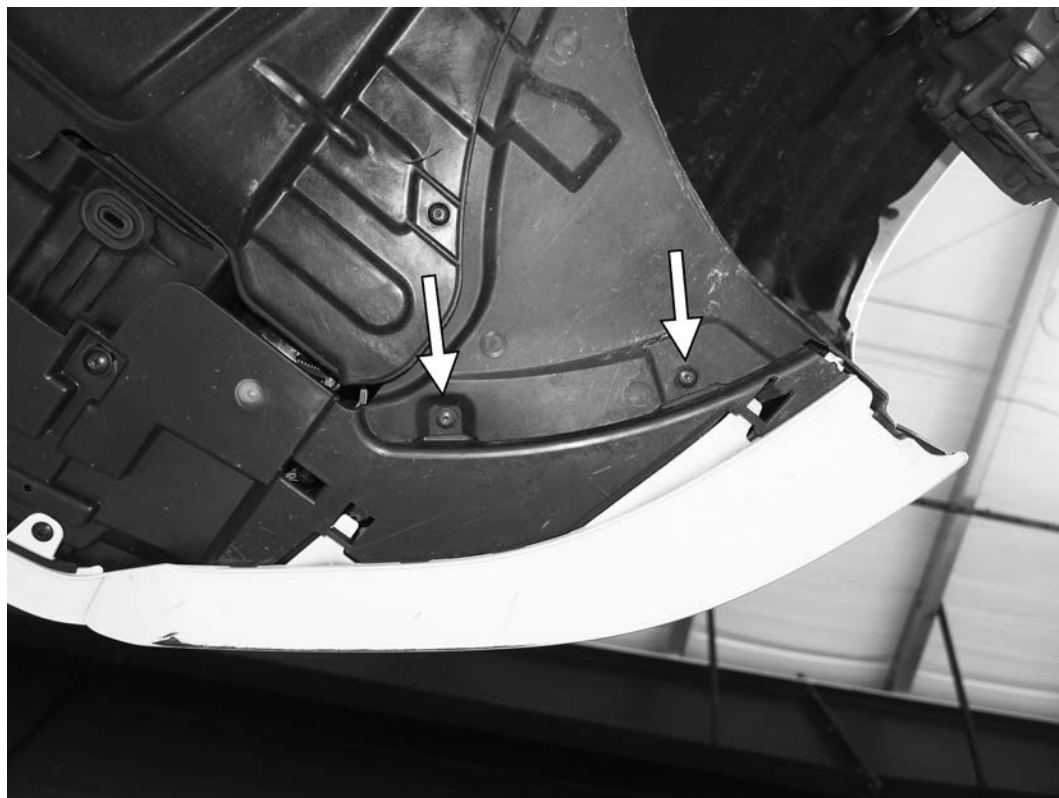
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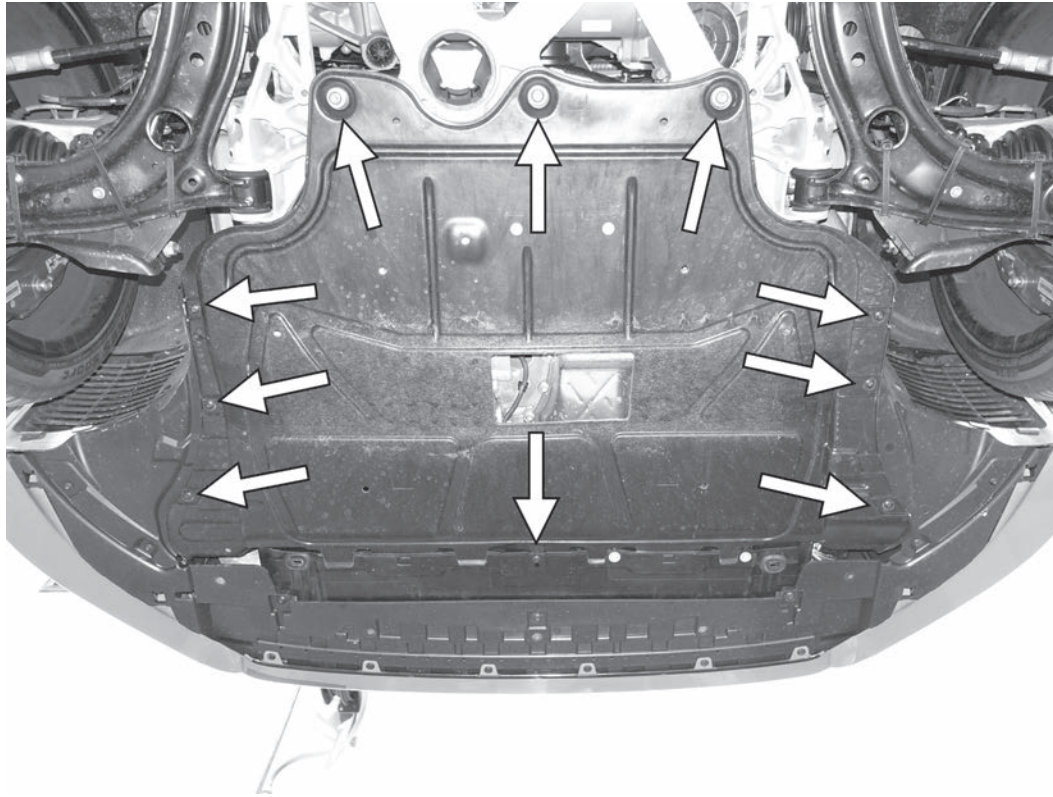
75) On the back side of the fender liner, install the T25 screws and push pin connectors, tightening the screws to 2Nm (18 in-lbs).

***APR***

76) Install the T25 screws to the bottom side of the front of the fender liner and tighten these screws to 2Nm (18 in-lbs).



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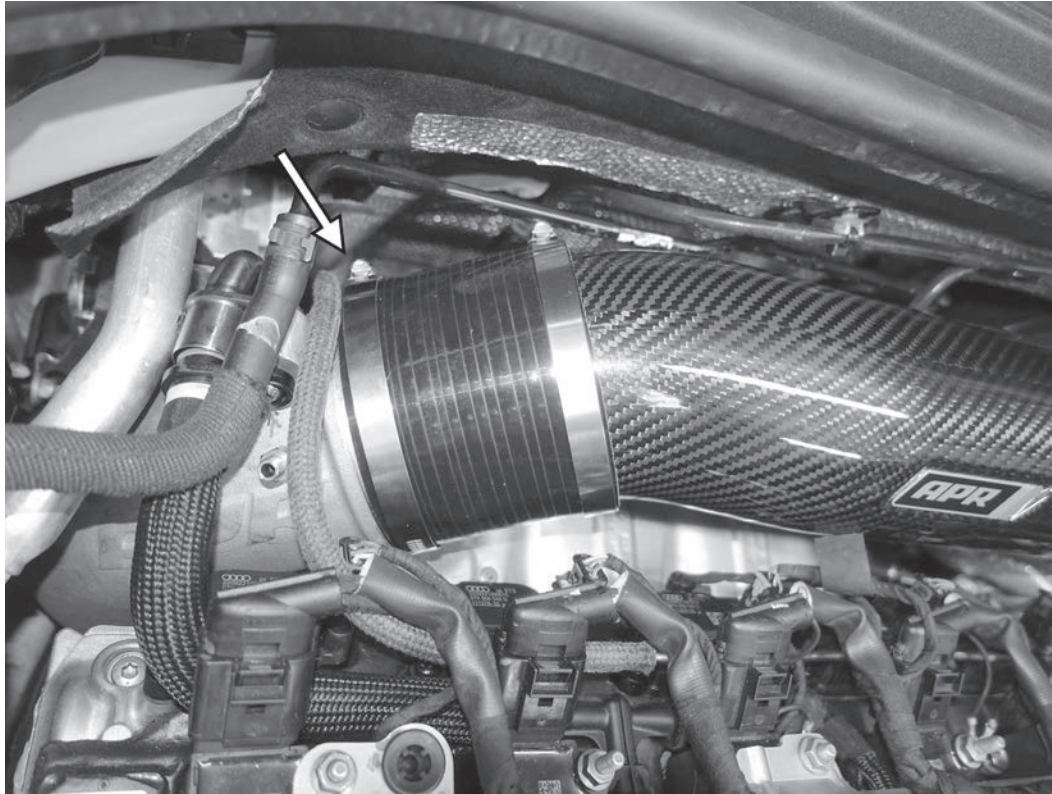
77) Reinstall the belly pan to the car, making sure the front side of the belly pan interacts with the bottom side of the bumper as it did originally. Install the three T45 screws on the back side of the belly pan, tightening them to 6Nm (53 in-lbs). Reinstall the seven T25 screws, tightening them to 2Nm (18 in-lbs).



78) Reinstall the APR airbox assembly in the car, connecting the airbox to the radiator core support with the two flanged 3mm allen screws. Tighten the screws to 2Nm (18 in-lbs).



TL100199



79) Adjust the hose clamp to turbo inlet pipe, and then tighten the clamp to 5 in-lb (0.6Nm).

**APR**

80) Reinstall the right front wheel on the car. Check and top off the engine oil (or refill it, if you are doing an oil change). Use a vacuum style coolant bleed system to put a vacuum on the coolant system and then refill the coolant to the correct levels. This is necessary to remove all air pockets in the coolant system.



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