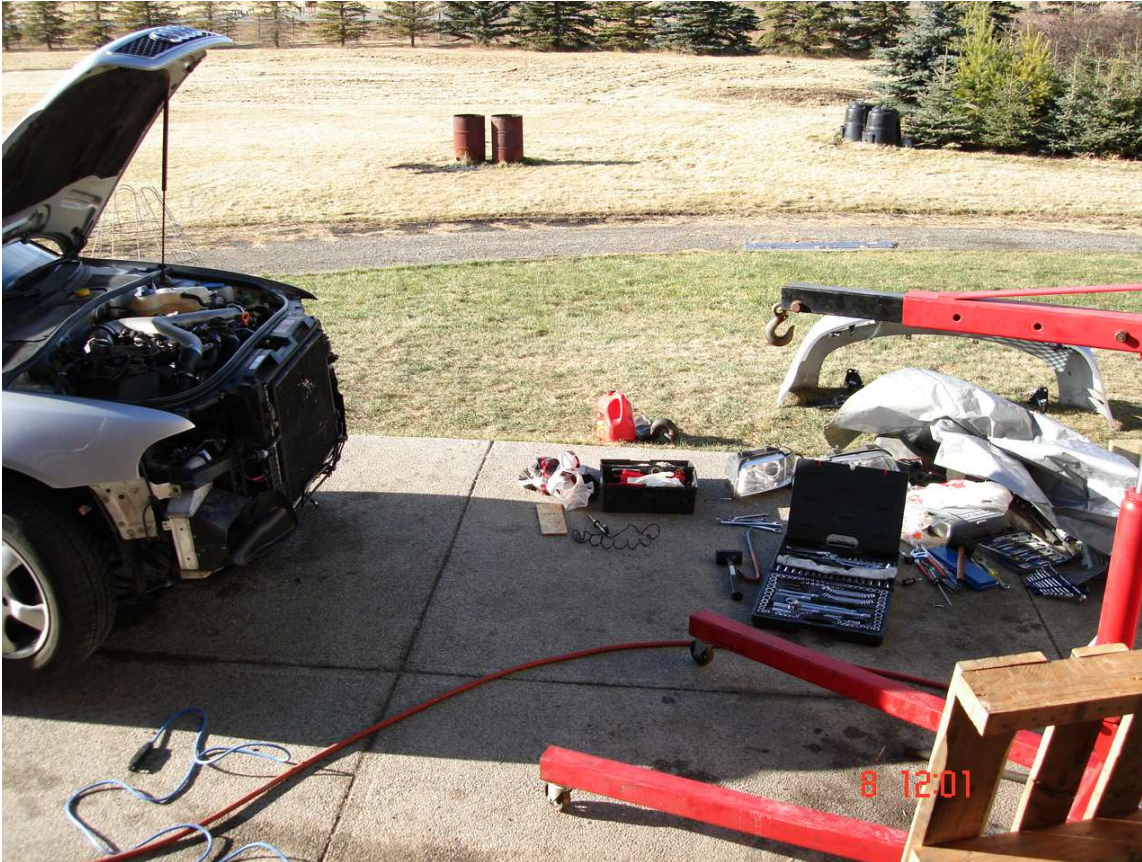


Audi S4 Stage 3 (K04) Install

Doing a stage 3 swap was a LOT of work. Just a lot of small and simple tasks really. Just make sure you keep track of what you're doing. I kept notes in point form of every single thing I did and the order I did it in. I also put all the bolts and pieces I removed in ziplock bags and labeled where I got them from. After about 37 hours of work, I now understand why shops charge \$2-3K to do this job! It is definitely an adventure though if you're into that. Anyways, scale of 1-10 of difficulty, with 1 being easiest possible job you could do on a car and 10 being Yoda challenging, I give this job as a whole a 7, with certain parts more like an 8.5. Just make sure you take your time and double and triple check everything that you do on the engine, you don't want to have to pull the bastard again once you are finished and have it running and realize you didn't tighten down the coolant return line on one of the turbos!

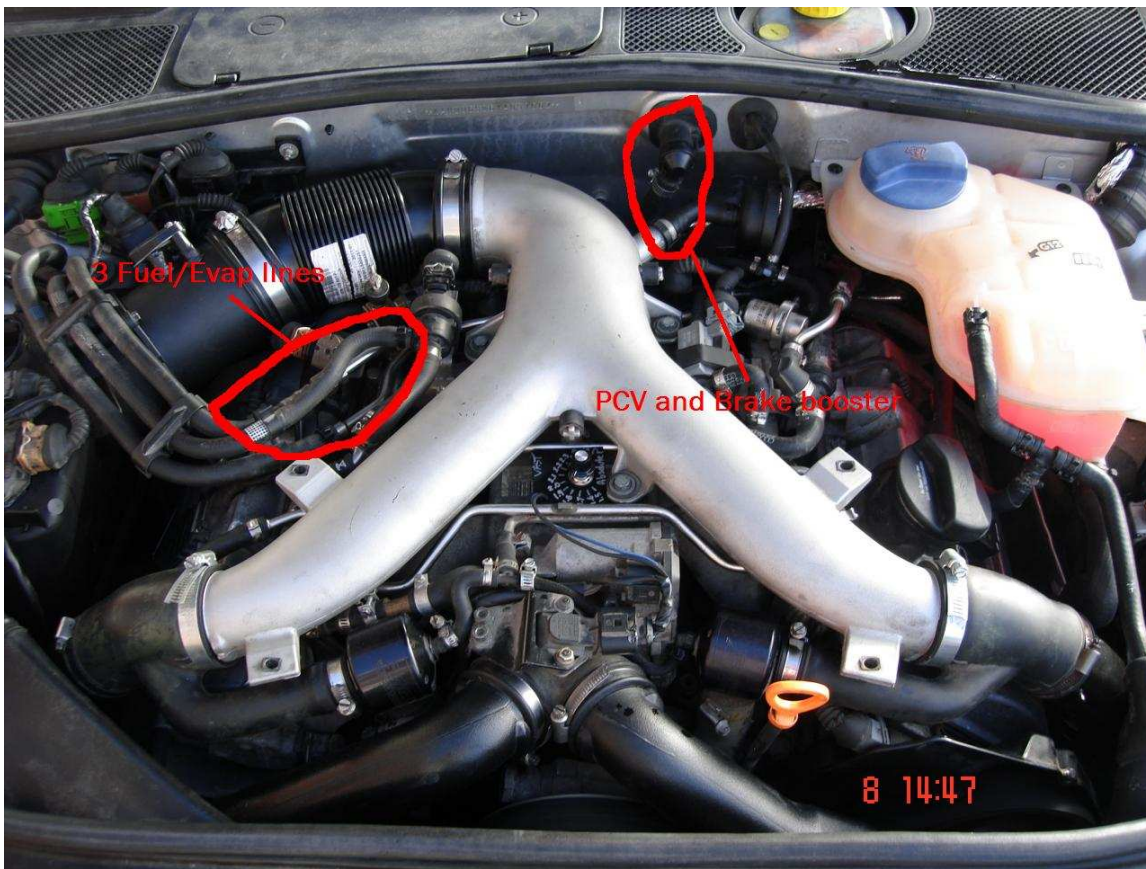
Preparation...

You'll need an engine hoist, a 5mm and 8mm ball end allen key, a standard set of metric sockets, 10 and 12mm 12pt sockets, 1/4", 3/8", and 1/2" drive ratchets and breaker bars (3/8" breaker bar not necessary), A good set of metric wrenches (ratchet wrenches come in extra handy on this job). You'll also need a clutch alignment tool. I also used a wooden pallet to set the engine onto after I got it out which aided in separating the tranny and working in general on the engine a whole lot easier.

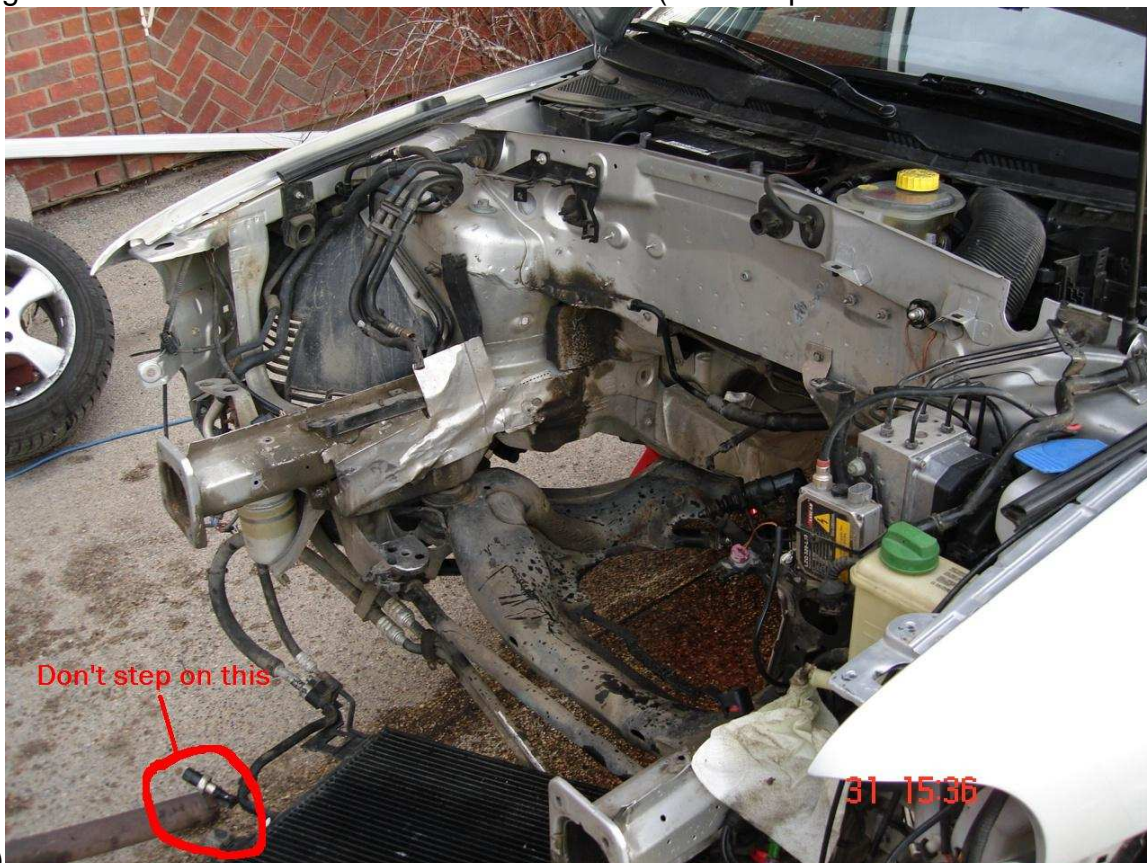


With the car on the ground you will want to:

- Remove the ground from the battery
- Pull belly-pan/drain engine oil.
- Take out airbox and Y pipe
- Remove fuel/evap lines (3 of them on the pass side of the motor and one vacuum line running near the top of the firewall on the drivers side).
- Remove the PCV and brake booster vacuum lines.



- Detach electrical connectors (5) adjacent to ABS pump, leading to radiator support.
- Pull headlights (3 connectors), bumper, remove front pusher fan (4 5mm hex bolts). I just removed the fan itself (plastic ring with the blades on it), instead of removing the hole fan assembly with the reverse threads. It worked fine.
- Swing AC condenser to the side and under the car (don't step on the electrical connector on the condenser!)



- DOH)
- Remove rad support (6 bolts plus the bumper shock bolts)(Don't forget the temp sensor on the lower hose

Doing a stage 3 swap was a LOT of work

and the hood-latch cable!)

-Drain the coolant using the lower rad hose and pull expansion tank and remove it from the car.

-Pull Bipipe with DV's

-Pull intercoolers

-Remove bolt from coolant hardline on block going to expansion tank and work it up and out to make room to remove the AC compressor. Detach lower coolant hoses off the oil cooler and remove the oil filter(Helps with next step)

-Pull AC compressor and swing underneath the car (2 bolts front, one back, 13mm and a bracket that holds the stiff AC lines under the engine)

-Detach grounds, little brown one on top drivers-side on the firewall, and big green one on bottom passengers side directly underneath the passenger frame rail that the bumper shock bolts to.



-Detach all wire connectors from firewall- there's a harness full on the passenger side as well as another on the drivers side.

-Remove ECU (5 10mm bolts on the box) and unplug the harness from deep inside the ECU box (little multi-colored connectors), flop it on top of the engine

-take positive lead from battery, detach chassis lead from the battery cable and pull the terminal through firewall (the grommet comes out too) and place on top of engine. Also remove the oil level sensor from the bottom of the oil pan, since it's on the same bundle of wires.

-Loosen cable protector that is attached to frame-rail.

-Remove PS hoses, one hard line in the rear running parallel to the firewall which you disconnect right underneath the accordion hose using 2 wrenches and 19 and a 17mm, and another to the PS pump which goes up into the engine from the reservoir.

-Detach shifter (Just the two bolts in the car holding the rods onto the shifter)

-Detach heater core hoses in between firewalls covered by an accordion shaped sheath.

-Remove IC hoses

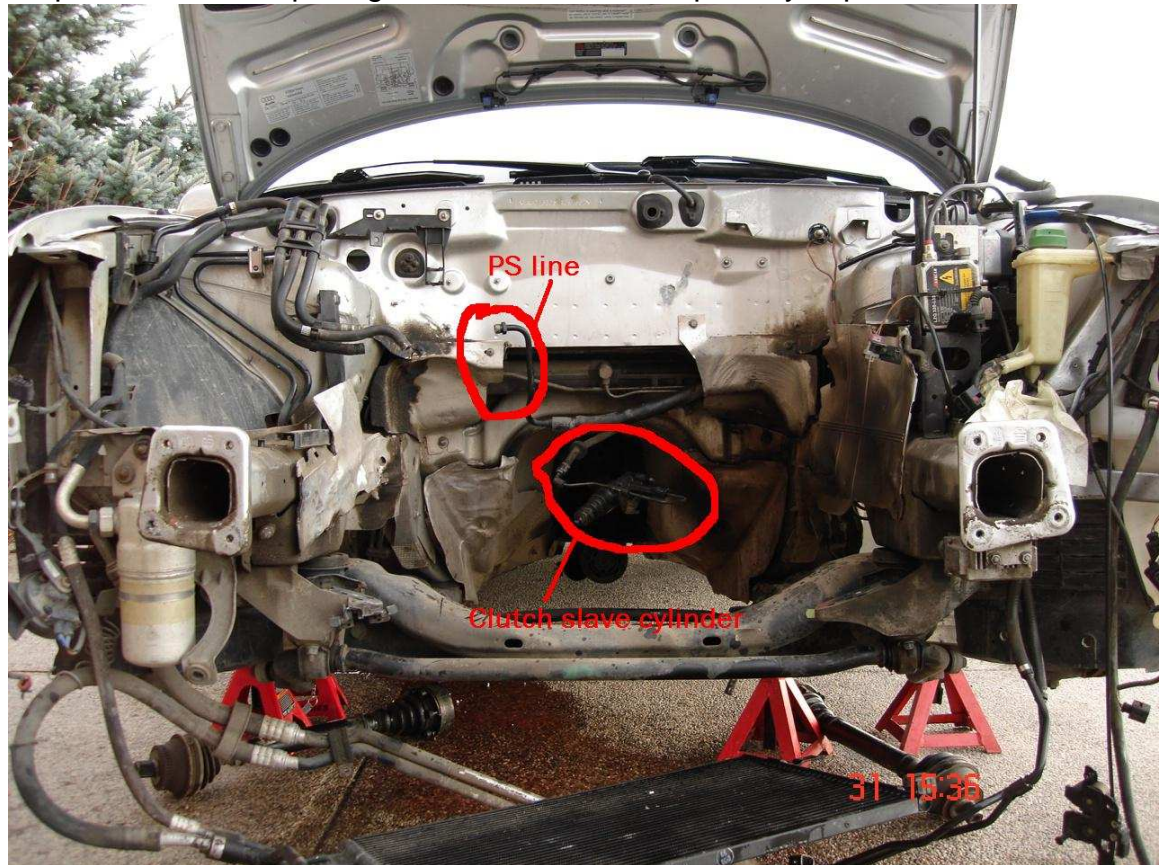
-Loosen driveshaft bolts from center of the wheel hub while car is on the ground (you will need a big breaker bar). You can do it in the air but you will need to put a wheel bolt through the rotor into the hub and have somebody stand on the brakes while you do it.

Put the car in the air at this point and make sure you chock the rear tires and have multiple support systems under the car. (Better safe than sorry!)

- unbolt exhaust from DP's
- Remove rear driveshaft cover (2 bolts) (this is a bit of a pain in the arse to re-install if the exhaust is in your way, so make sure you have a pivoting 1/4" drive ratchet and a bit holder for the torx bit that the axle cover bolts take.
- Unbolt front CV's and rear driveshaft (jack one rear wheel up so you can rotate the drive axle. There are 6 bolts per flange)
- Unbolt motor and trans mounts (trans mounts have 2 bolts per mount and the motor mounts have only 1)

<Lift engine up and out a few inches>

- Remove clutch slave cylinder (it is sitting right in front of the gear selector on top of the transmission (1 13mm bolt underneath the bleeder valve) Also, don't put excessive strain on the steel line! I did this step with the engine as far out as possible without pulling on the line. This is especially important on the re-install,



you need plenty of room.

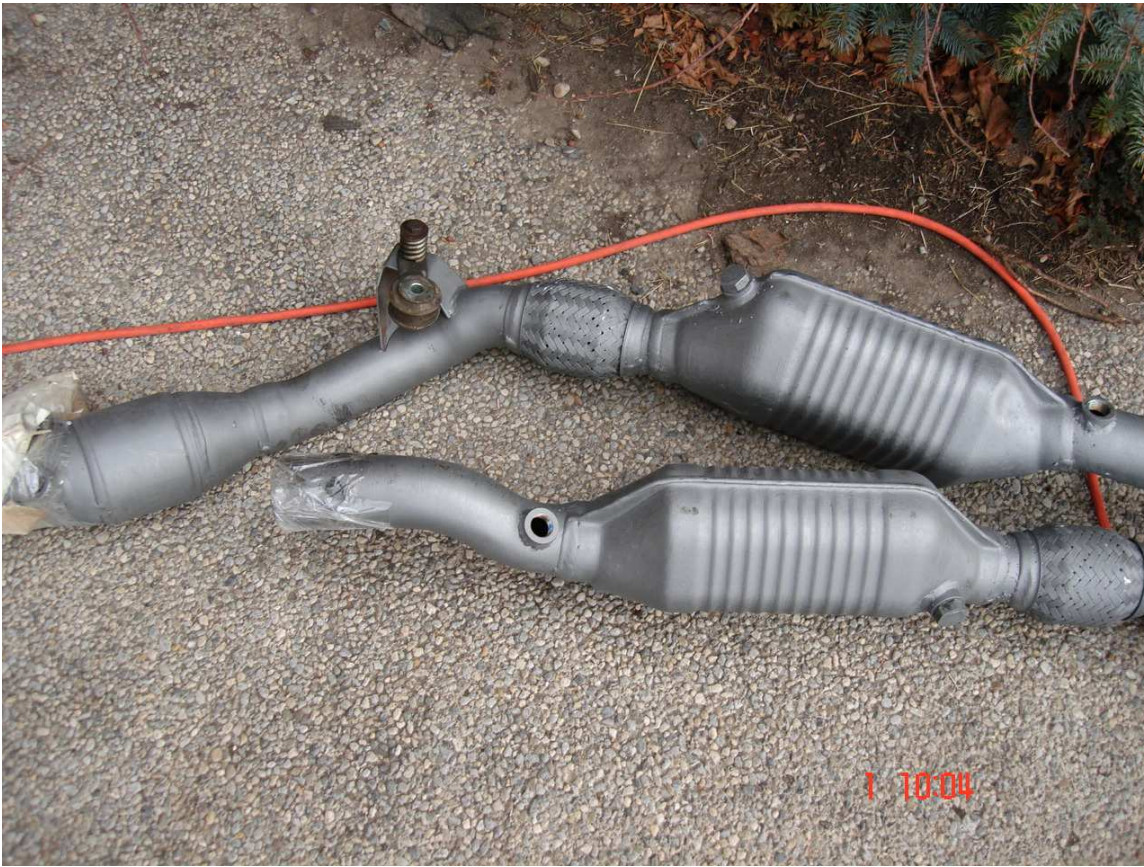
- Fish heater core hoses out
- Pull CV axles out under the trans, straight out



Out she comes!

Now that you have fished the engine out, you can start on the motor work.

The first thing I did was remove the dp's and their heatshields from the motor (the flange bolts to the turbos plus the hanger bolts) remove the O2 sensors first though.



-Remove the 6 lines going to the driver's side turbo (an oil line on the bottom of the turbo held on with 2 5mm hex bolts, an air line going to the wastegate, an oil and a coolant line on top of the turbo, and a coolant line on the back of the turbo).

-Disconnect the turbo from the manifold.

-I replaced the stock exhaust manifolds with ported and polished mani's, so the next step for me was to remove the manifolds from the cylinder head (remember to remove the EGT sensors FIRST!!)

-Repeat on passenger side.

- Undo the 4 hex bolts holding the fuel rail to the intake manifold and using a pry bar gently pry the square tubing of the fuel rail up using equal force front to rear.

-Unplug the electrical connectors from the fuel injectors as well as the 2 vacuum lines and 2 electrical connectors holding the fuel rail to the manifold.

-With the fuel rail separated, remove the clips holding the injectors to the rail (keeping in mind how the clips go back in! They go into the groove of the injectors but also hold the rim of the fuel rail)

-Remove the fuel injectors and lube the seals of the new ones with some gasoline. Install the new injectors and reinstall the fuel rail.

-Install new spark plugs

-Undo the 8(??) bolts holding the bellhousing on the tranny to the engine.

-Undo the 2 sensors on the driver's side of the tranny (1 10mm bolt) and the 1 sensor on the pass side.

-Loosen the O2 sensors from the transmission housing.

- Remove the tranny by wiggling it and pulling back. Have someone help because it's heavy. Be gentle because the input shaft could get damaged if the tranny doesn't come straight out.

- Remove the old throw-out bearing from the tranny and put on the new one keeping in mind the orientation of which direction it goes on.

- Remove pressure plate and clutch disc.

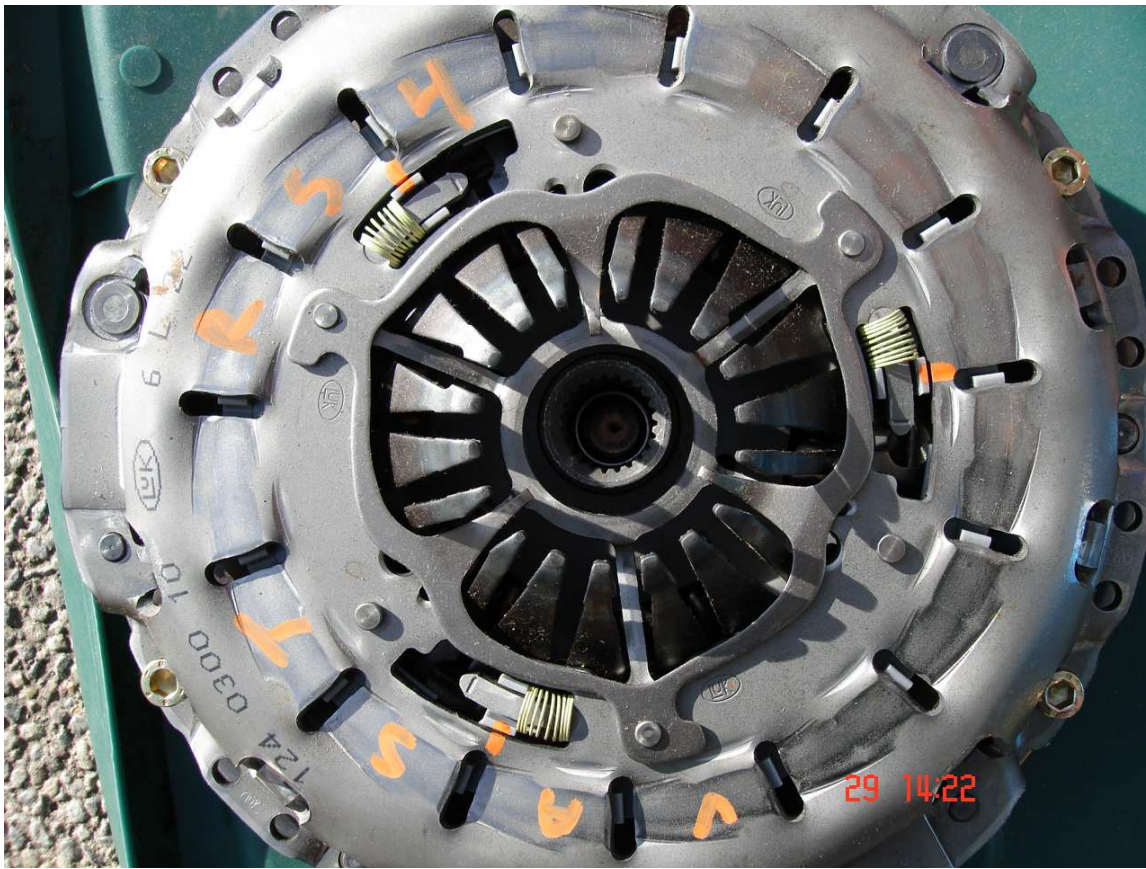
- Grease the input shaft on the tranny and use the old clutch disc to slide it back and forth a few times to remove excess grease.

-Mark the orientation of the flywheel and remove it (If you are replacing it) by having someone hold a socket and ratchet on the 24mm drive shaft on the opposite side of the engine. Oh, and use the socket sides of the flywheel bolts, not the triple-square inside face, the outside is stronger for a better grip when torquing.

-Install new flywheel (there are 2 sets of 2 holes that are closer together than the rest which is why its important to mark which way it goes) Torque down the bolts in a star pattern loosening and tightening the bolts a couple times before you do the final torque down.



-Check to make sure that the SAC setting on the PP is good, and then install clutch disc and pressure plate (again torque it down in a star pattern)

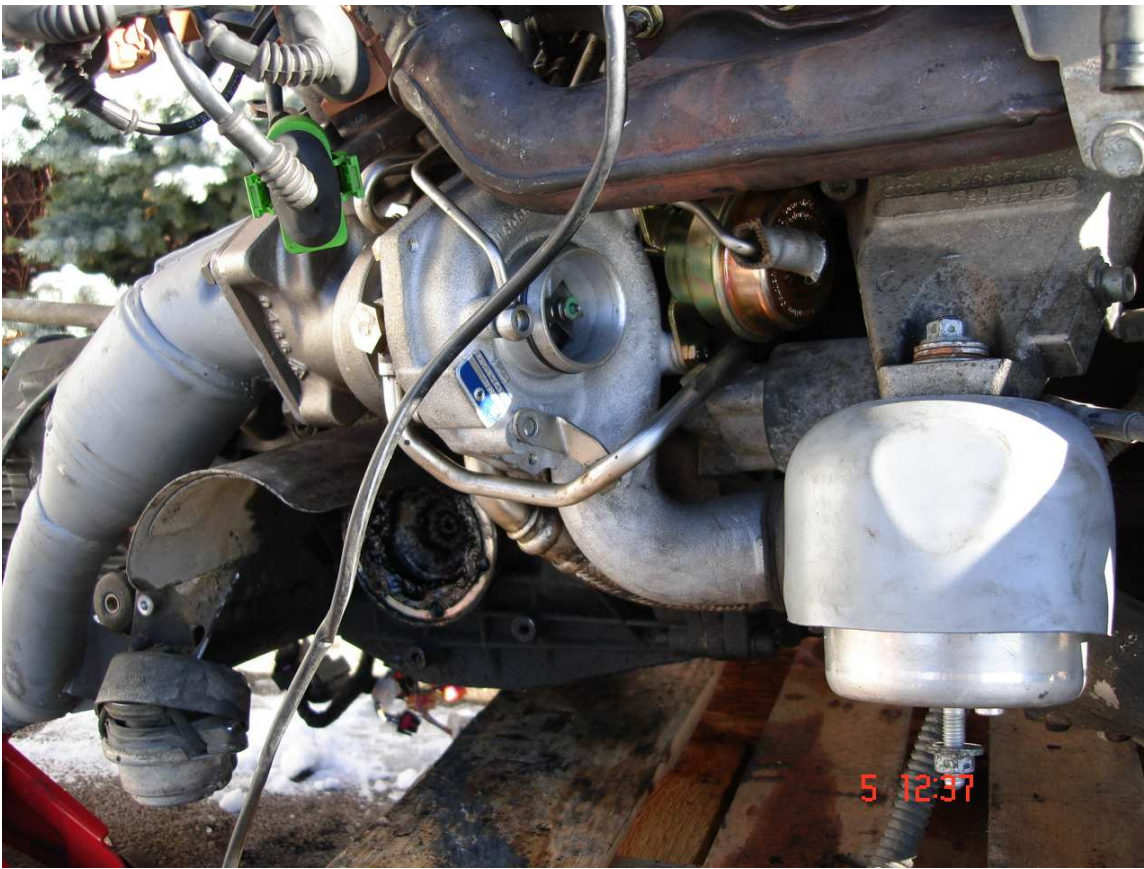


-I drained the tranny fluid out the bottom from the 17mm hex drain plug and measured how much came out and then re-filled it using the same amount of Redline MT90.

-Re-install the tranny

-Install new motor and tranny mounts as well as the tranny mount heat shields. Keep in mind the positioning of them. They need to line up properly between the motor and chassis.

-Install the lines on the turbos using new crush washers. You will need to install the top rear lines first and then the outer ones (you can't access the ones at the back with the frontal ones in the way)



- Install the new manifolds (if you pulled the old ones) using a new mani-cylinder head gasket.
- Bolt the turbos to the manifold ensuring that the metal ring is between the turbos and mani flange.
- Install EGT sensors.
- Install the DP's on the turbos.



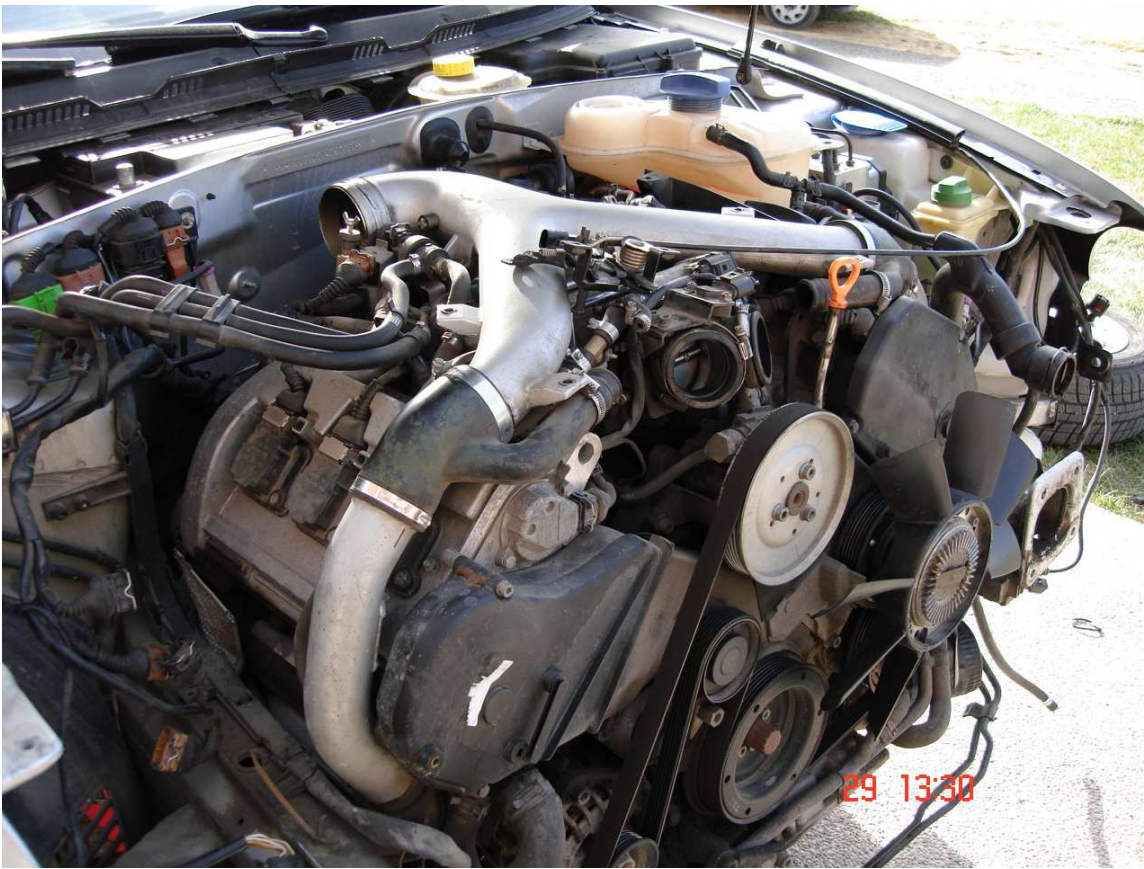
-Install the O2 sensors on the dp's.

-Here is when I rebuilt the shifter linkage and installed a delrin bushing on the stabilizer shifter rod.

-Double and triple check all lines and fittings are torqued down

-Install the outlet pipes to new turbos (ensuring that you have a new rubber o-ring on the outlet of the turbo

-Install the inlet pipes



-Grease all axle flanges.

-Re-install engine keeping in mind the following: Make sure you put the axles into the wheel hubs while the engine is still several inches from its final position. Also, as soon as you can reach, install the clutch slave cylinder (with copper lubricant on the tip and lithium grease on the collar where it seals to the tranny) and as you are doing that, put the bolt through the bracket and the cylinder while trying to position the cylinder in the tranny. Do not put the bolt all the way through, only til it's flush with the inside of the slave cylinder. This will aid in getting the bolt into the tranny once the slave cylinder is in the tranny and lined up.



- Have someone under the car to guide the shifter rods into the boot and also to guide the dp's into the exhaust.
- Fish the heater core hoses back through the firewall
- Bolt up engine and tranny mounts after shaking the engine a few times to let it settle into position.
- Bolt up axles, exhaust, and align shifter onto its rods.
- Start putting things back on the engine in the reverse order you took them off! Put the temp sensor rod with PS line on the rad support before you install the intercoolers. Also, before you install the rad support, it would be a good time to install the poly snub mount if you are going to. Grease the stub on the engine block and microwave the snub mount for 30 seconds. Position the mount and use a rubber mallet to pound it on!
- Refill engine oil, coolant, and PS fluid.
- Pull the fuel pump fuse and crank the engine for 5 seconds twice to get oil flowing through the turbos.
- Do a pressure boost leak test.
- Start the car and let it run for a minute and turn the steering wheel back and forth to get the PS fluid pumped through the system. You also want to "burp" the coolant system by squeezing the lower rad hose (before it gets hot!) to get the coolant pumped through. Top up fluids.
- VAG the car and hopefully there are no codes!
- Done!



Oh, and one more thing...pray this doesn't happen while you are in the middle of it!

