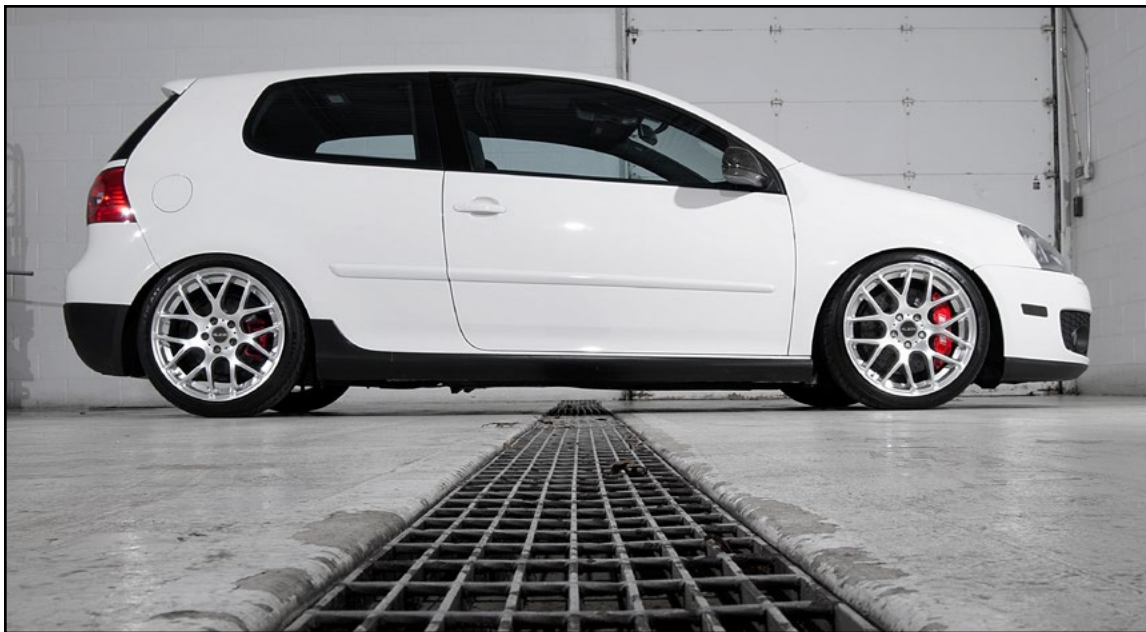
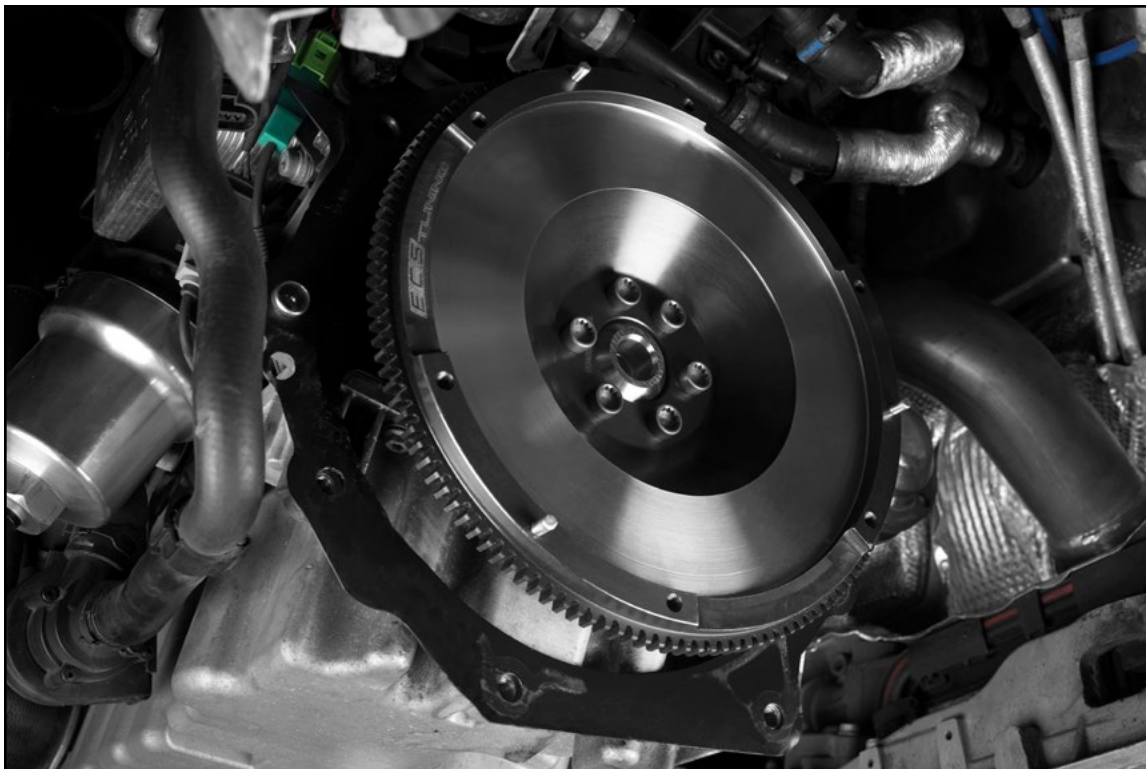


ECS TUNING

Volkswagen MK5 & MK6 TSI
6 Speed 02Q ECS Lightweight Flywheel
Installation Instructions



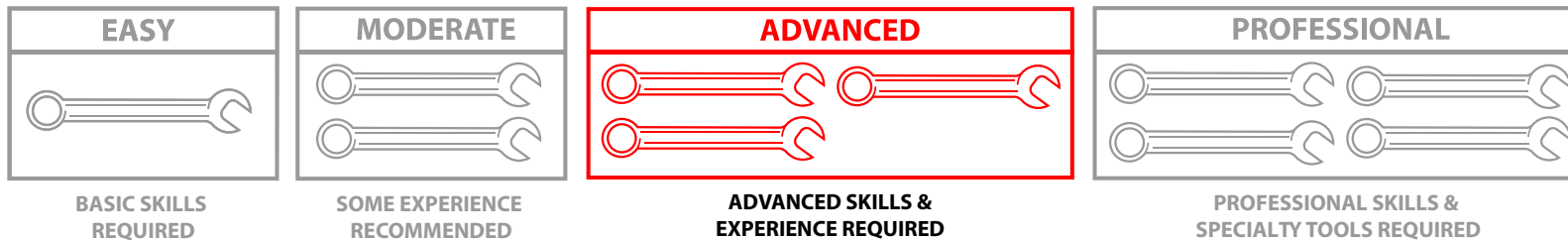
Proper service and repair procedures are vital to the safe, reliable operation of all motor vehicles as well as the personal safety of those performing the repairs. Standard safety procedures and precautions (including use of safety goggles and proper tools and equipment) should be followed at all times to eliminate the possibility of personal injury or improper service which could damage the vehicle or compromise its safety.

INTRODUCTION

Volkswagen MK5 & MK6 TSI 6 Speed 02Q ECS Lightweight Flywheel ES#2915263 Kit ES#2915268

ECS Tuning Volkswagen lightweight flywheels and kits offer these impressive technical features and performance benefits:

- Heat treated Billet Chromoly 4140 Steel
- Zinc plated for corrosion resistance
- Precision Balanced
- SFI 1.1 Tested
- In-house designed by ECS Tuning engineers
- Experience faster revs, improved throttle response, and improved acceleration
- Kits include new a Pressure Plate, Clutch Disc, Throwout Bearing/Slave Cylinder, Brake Fluid, Alignment Tool, Flywheel bolts, Pressure Plate bolts, and Slave Cylinder bolts



Installing an ECS Tuning Lightweight Flywheel is a weekend project that will reward you with the superior performance and durability of the finest products available. Plan two full days to complete this installation. If you do not have previous experience it may take longer, but following these instructions closely will help you achieve a smooth, trouble free installation. Plan your time accordingly based on your experience level. Before you begin, read and familiarize yourself with these instructions and make sure you have all the required tools on hand. Thank you for purchasing our ECS Tuning Lightweight Flywheel. We appreciate your business!

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The most important tool for this job is patience. Please read each step thoroughly and do not omit any. Obtaining the proper clearance for transmission removal is very important and many of these steps are intended for that reason. Also, be sure to have a friend help you during transmission removal. The transmission is very heavy and difficult to maneuver.

LIGHTWEIGHT FLYWHEEL KIT CONTENTS



ECS Tuning Lightweight Flywheel



Clutch Disc and Pressure Plate



Brake Fluid



Flywheel Bolts



Throwout Bearing/Slave Cylinder



Throwout Bearing/Slave Cylinder Mounting Bolts



Pressure Plate Bolts



Clutch Disc Alignment Tool

REQUIRED TOOLS

Note: The tools required for each step will be listed by the step number throughout these instructions.

We recommend that you have a complete selection of tools and equipment necessary for automotive repair. Below is a list of the tools we used to install the ECS Tuning Lightweight Flywheel. Additional tools may be required for any issues that arise during installation such as rust, corrosion, or broken and stripped fasteners.

- 17mm Protecta Socket (for lug nuts) Available at ecstuning.com [ES#2221243](#)
- 3/8" Drive Ratchet Available at ecstuning.com [ES#2765902](#)
- 3/8" Drive Torque Wrench Available at ecstuning.com [ES#2221245](#)
- 1/2" Drive Torque Wrench Available at ecstuning.com [ES#2221244](#)
- Flat Blade Screwdriver(s) Available at ecstuning.com [ES#2225921](#)
- Wheel Hanger Available at ecstuning.com [ES#2678092](#)
- Drain Pan Available at ecstuning.com [ES#2748892](#)
- Torx Bit Sockets: T25, T30 Available at ecstuning.com [ES#11418](#)
- Engine Support Bar Available at ecstuning.com [ES#2804773](#)
- Triple Square Sockets: M10, M12 Available at ecstuning.com [ES#1910125](#)
- Spring Clamp Pliers Available at ecstuning.com [ES#2702616](#)
- Schwaben Connector Tool Available at ecstuning.com [ES#2628676](#)
- Brake Fluid Catch Bottle Available at ecstuning.com [ES#4557](#)
- 1/4" Drive Sockets: 7mm, 10mm
- 1/4" Drive Ratchet
- 3/8" Drive Shallow Sockets: 9mm 12 Point
- 3/8" Drive Deep Sockets: 9mm, 13mm, 16mm, 18mm
- 1/2" Ratchet, Extensions, Breaker Bar
- 1/2" Drive Sockets: 22mm, 24mm 12 Point
- Needle Nose Pliers
- Open/Boxed End Wrenches: 17mm
- Transmission Jack
- Impact Wrench

SHOP SUPPLIES AND MATERIALS

Below is a list of standard shop supplies which we like to keep on hand during all repairs and services.

Hand Cleaner/Degreaser

Aerosol Brake/Parts Cleaner - for cleaning and degreasing parts

Shop Rags - used for wiping hands, tools, and parts

Pig Mats - for protecting your garage floor and work area from spills and stains

Penetrating oil - for helping to free rusted or stuck bolts and nuts

Mechanics wire - for securing components out of the way

Silicone spray lube - for rubber components such as exhaust hangers

Spray detailer - for rapid cleaning of anything that comes into contact with your paint such as brake fluid

Paint Marker - for marking installation positions or bolts during a torquing sequence

Micro Fiber Towels - for cleaning the paint on your car

Latex Gloves - for the extra oily and dirty jobs

INSTALLATION NOTES

- RH refers to the passenger side of the vehicle.
- LH refers to the driver side of the vehicle.
- Always use the proper torque specifications.
- If applicable to this installation, torque specifications will be listed throughout the document and at the end as well.
- Please read all of these instructions and familiarize yourself with the complete process before you begin.

GENERAL PREPARATION AND SAFETY INFORMATION

ECS Tuning cares about your health and safety. Please read the following safety information. This information pertains to automotive service in general, and while it may not pertain to every job you do, please remember and share these important safety tips.

- Park your car in a safe, well lit, level area.
- Shut the engine off and remove the key from the ignition switch.
- Make sure any remote start devices are properly disabled.
- Always wear safety glasses.
- Make sure the parking brake is applied until the vehicle is safely lifted and supported.
- If using an automotive lift, be sure and utilize the factory specified lift points. Lifting a vehicle in an incorrect location can cause damage to the suspension/running gear.
- When lifting a vehicle using a jack, always utilize the factory specified lift points. Lifting a vehicle in an incorrect location can cause damage to the suspension/running gear. Always support the vehicle with jack stands.
- Always read and follow all safety information and warnings for the equipment you are using.

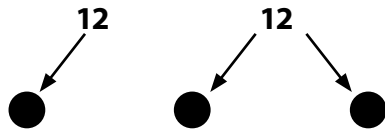
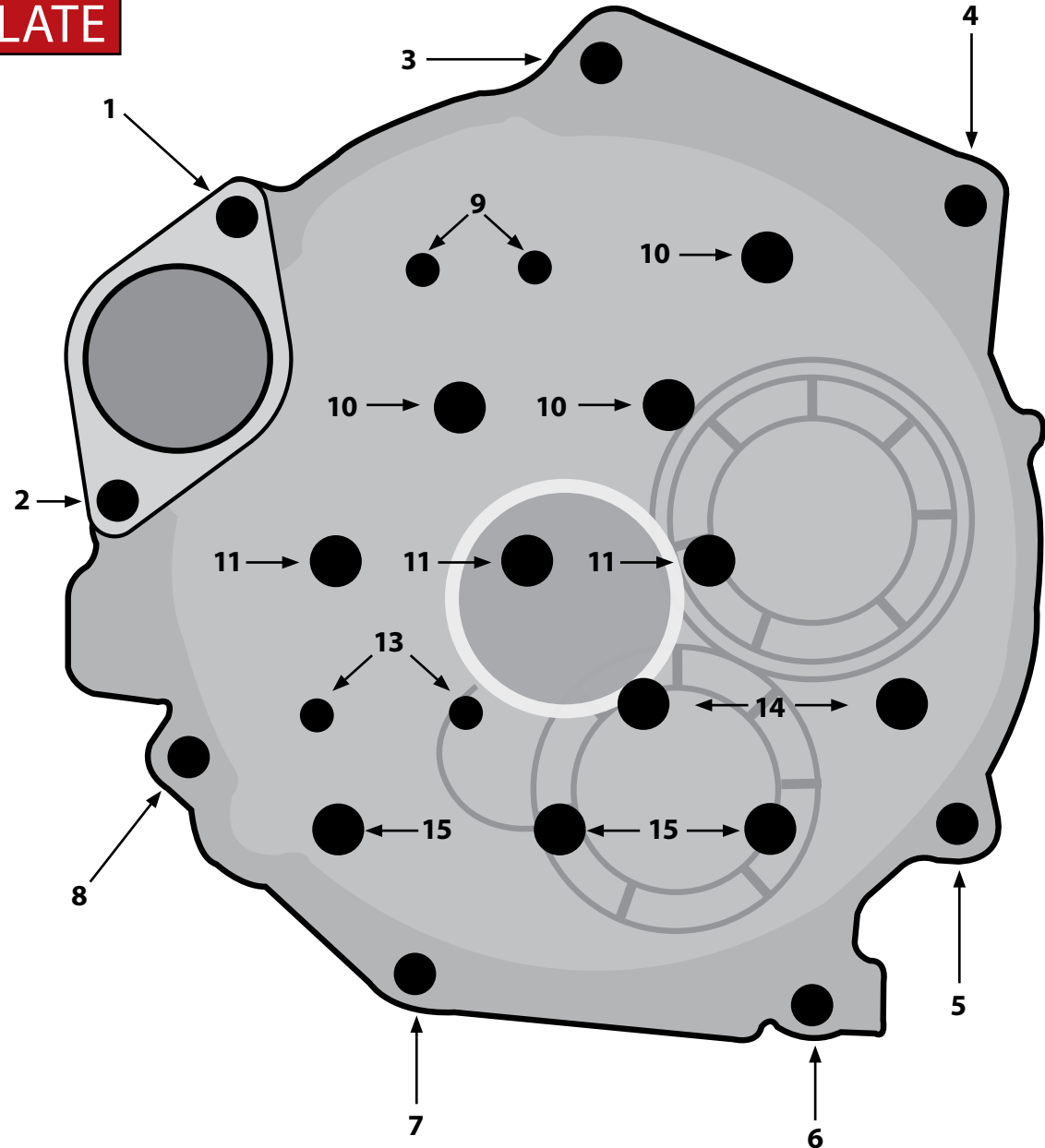


Never get underneath a vehicle that is supported only by a jack. Always make sure that the vehicle is securely supported on jack stands.

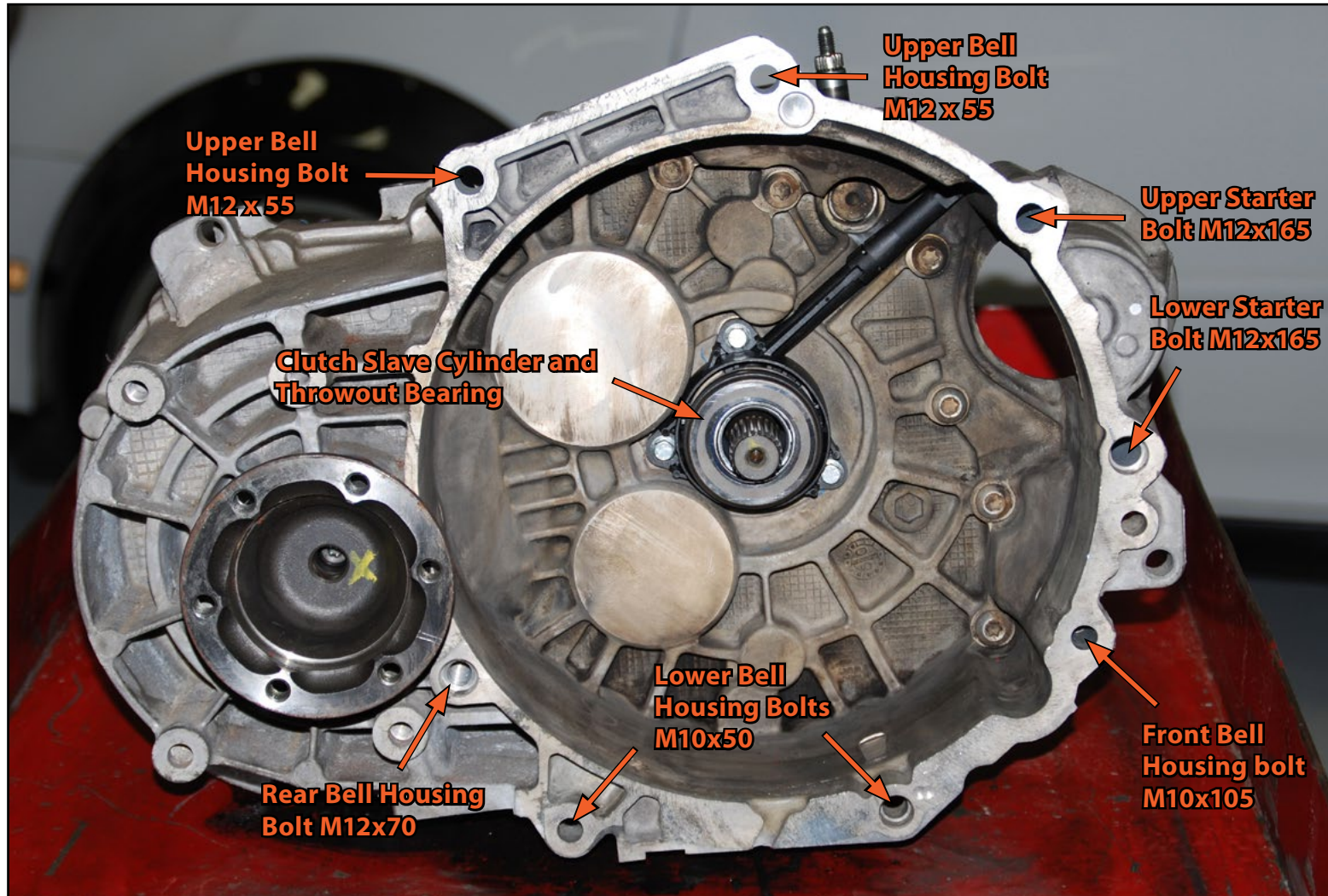
TRANSMISSION BOLT TEMPLATE

Print this page and tape it to a cardboard box. Punch holes at each bolt location and use it to store the bolts as you remove them. This will keep them perfectly organized for reassembly.

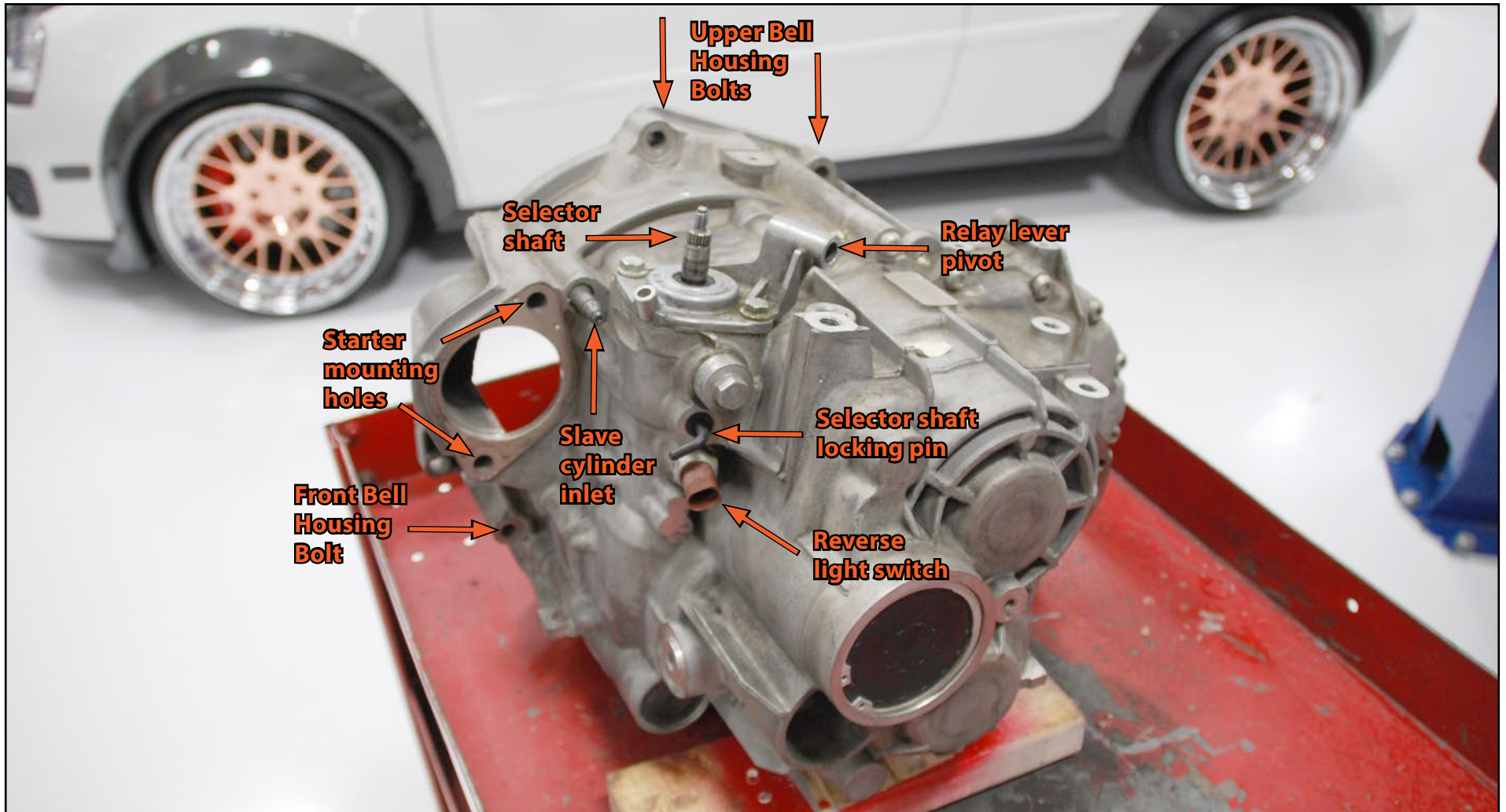
1. Upper Starter Bolt M12 x 165
2. Lower Starter Bolt M12 x 165
3. Upper Bell Housing Bolt M12 x 55 w/short end stud
4. Upper Bell Housing Bolt M12 x 55 w/long end stud
5. Rear Bell Housing Bolt M12 x 70
6. Lower Bell Housing Bolt M10 x 50
7. Lower Bell Housing Bolt M10 x 50
8. Front Bell Housing Bolt M 10 x 105
9. Exhaust Downpipe Bracket Bolts
10. Pendulum Support Bolts
11. Transmission Mount Bolts
12. Battery Tray Bolts
13. Shifter Cable Bracket Bolts and Nut
14. CV Heat Shield Bolts
15. Transmission Bracket Bolts



TRANSMISSION COMPONENT LOCATIONS



TRANSMISSION COMPONENT LOCATIONS



REMOVING THE TRANSMISSION

Step 1:

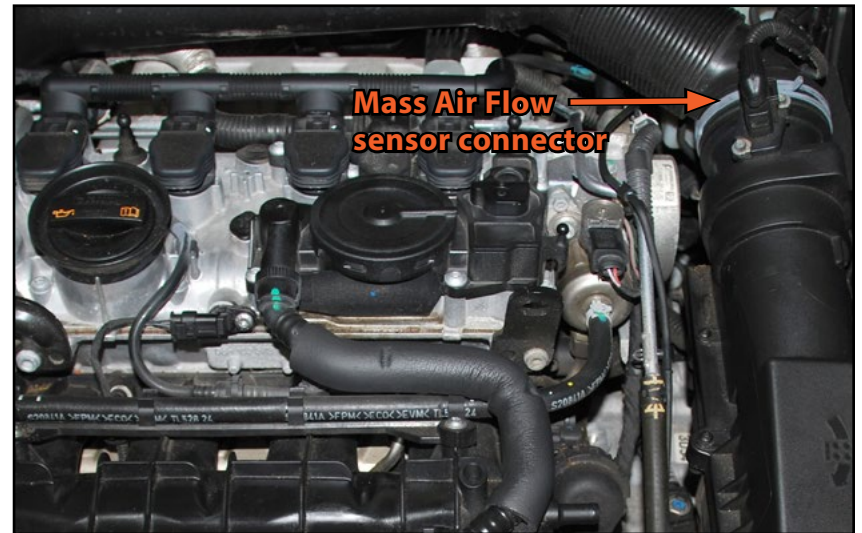
Pull up on the four corners of the engine cover to release the grommets and remove the cover.

NOTE

The original TSI engine cover and air box must be removed to access the transmission components and engine brackets. We are removing the factory components here, if you have an aftermarket intake or engine cover, remove them at this time then continue with [step 14 on page 17](#).

Step 2:

Locate the Mass Air Flow sensor connector.

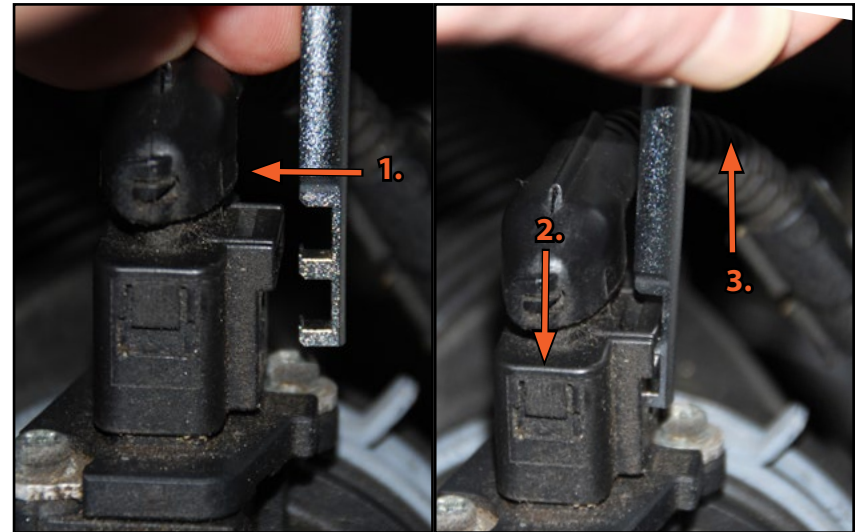


REMOVING THE TRANSMISSION

Step 3: Schwaben Connector Release Tool

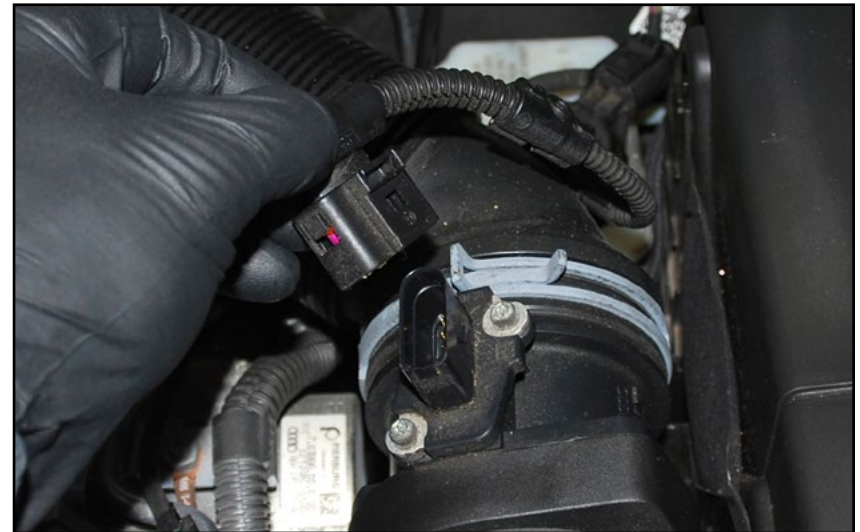
These connectors are commonly referred to as “Push and Pull” connectors, in reference to the method used to disconnect them. Disconnect the Mass Air Flow sensor as follows:

1. Engage the connector release tool into the connector housing.
2. Push down gently on the connector.
3. While holding pressure downward on the connector, pull up on the handle of the release tool.



Step 4:

Pull the connector off the Mass Air Flow sensor and remove the tool.



REMOVING THE TRANSMISSION

Step 5: Spring Clamp Pliers

Release the tension on the spring clamp that secures the flexible intake tube to the Mass Air Flow sensor.



Step 6:

Pull the flexible intake tube off of the Mass Air Flow sensor.




REMOVING THE TRANSMISSION

Step 7:

Pull the air box inlet tube off of the front air scoop.

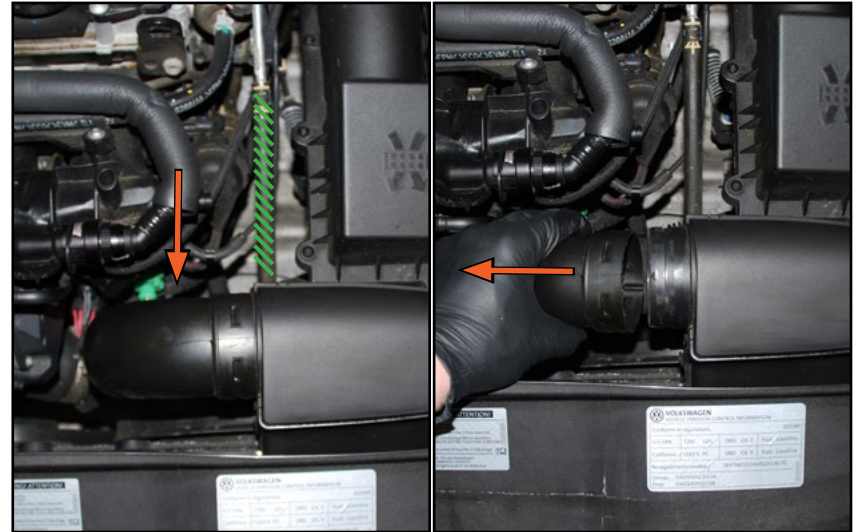
NOTE

Note the location of the coolant air bleed hose (indicated by ). This will be relevant on [page 16, step 12](#).

Step 8:

5mm Hex Bit Socket, 1/4" Ratchet, Extension

Loosen the hold down screw for the original air box. This is a "trapped" screw and will remain in place in the air box after it is loosened.



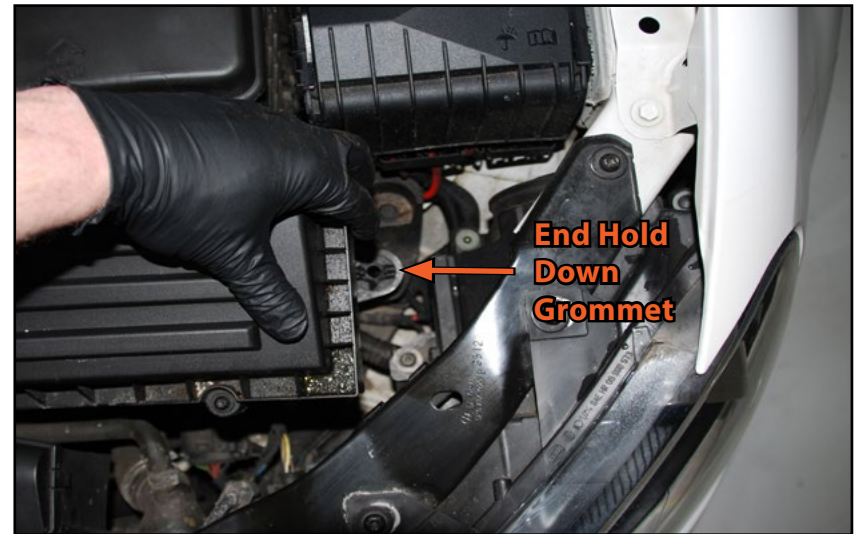
REMOVING THE TRANSMISSION

Step 9:

There are two rubber hold down grommets on the air box. First, pull up on the LH (driver's) side of the air box to release the grommet on the end, then using one hand on the front and one on the back, pull up on the center of the air box to release the grommet on the bottom side.



Pull up on the air box *just enough* to release the grommets but do not attempt to completely remove it at this time.

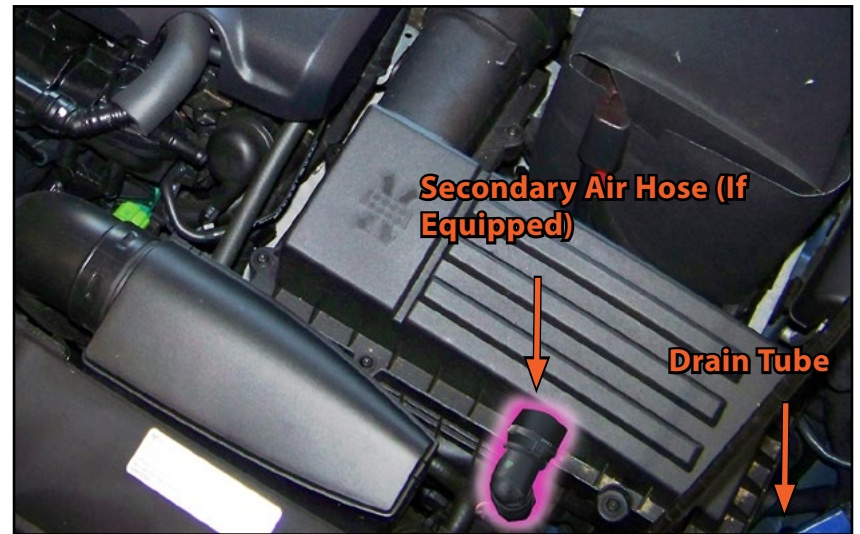


Step 10:

Look down between the air box and the fender and you will see where there is a drain tube attached to the bottom. It is very difficult to release the retaining clip, but by patiently following the next two steps, the air box can be removed without disconnecting this drain tube.

NOTE

Some vehicles may also have a secondary air tube connected to the RH side of the air box. If you are not sure, carefully inspect your air box and remove this tube if equipped.



REMOVING THE TRANSMISSION

Step 11:

Lift the air box up slowly on the LH side and carefully guide the drain tube out.



Step 12:

Rotate the air box upside down so the curved inlet tube can be pivoted around the small coolant air bleed tube (see [page 14 step 7](#)). You will now be able to lift the entire air box assembly out of the vehicle.



REMOVING THE TRANSMISSION

Step 13: T25 Torx Driver

Remove the front air scoop by removing the two securing screws (arrows) and pulling it rearwards off of the core support.



Step 14:

Remove the battery cover by pushing the release tab in the direction of the arrow, then pivoting it upwards and unhooking it at the rear.



REMOVING THE TRANSMISSION

Step 15: 10mm Socket, Ratchet

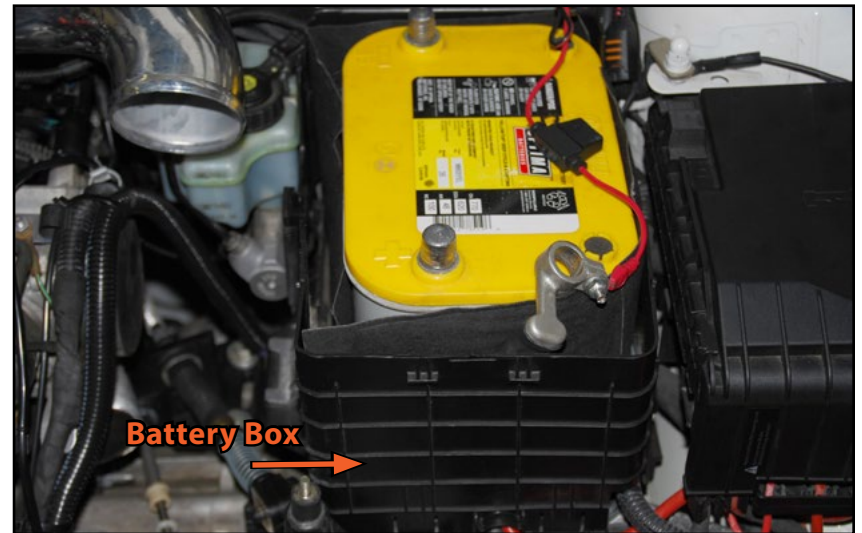
Disconnect both battery terminals and position them out of the way.

CAUTION

To reduce the risk of fire, explosion, or personal injury, **ALWAYS** disconnect the battery by removing the negative battery terminal first.

Step 16:

Remove the front half of the battery box by lifting it upward to separate it from the rear half.



REMOVING THE TRANSMISSION

Step 17: 13mm Socket, Ratchet

Remove the battery hold down and lift the battery out of the car.



Step 18:

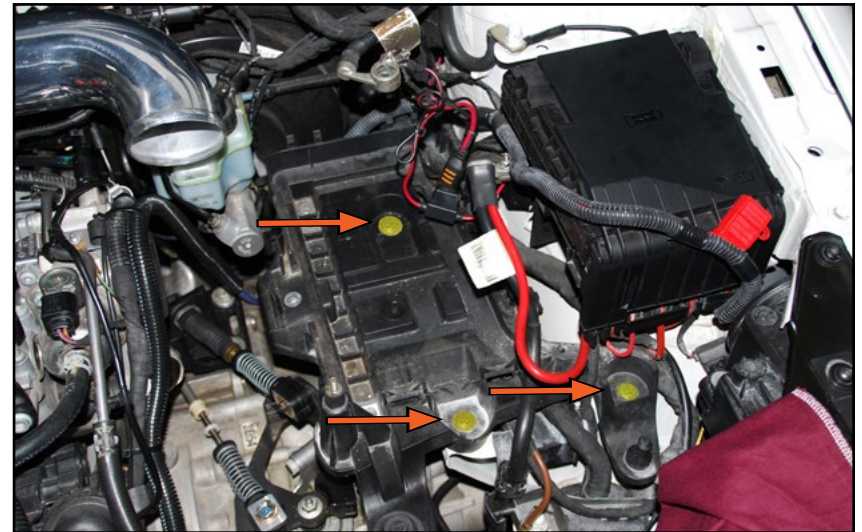
Remove the rear half of the battery box by lifting it upwards off of the battery tray.



REMOVING THE TRANSMISSION

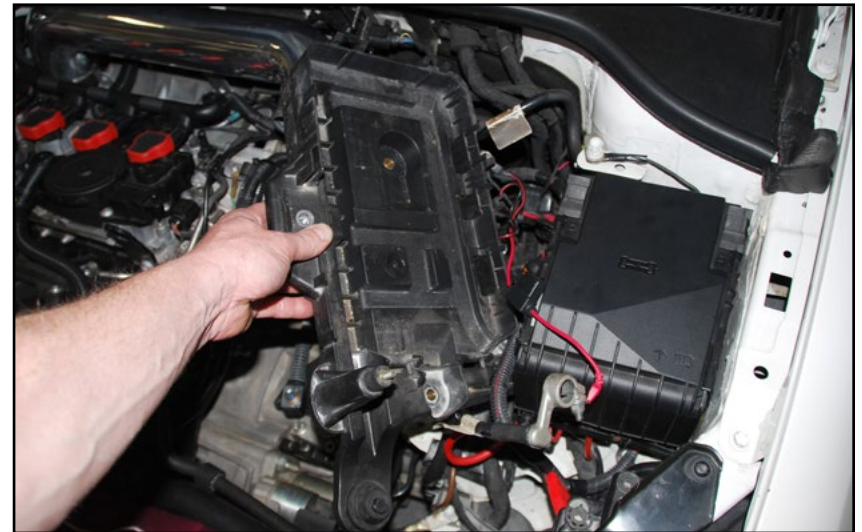
Step 19: 10mm Socket, Ratchet, Extension

Remove the three battery tray bolts.



Step 20:

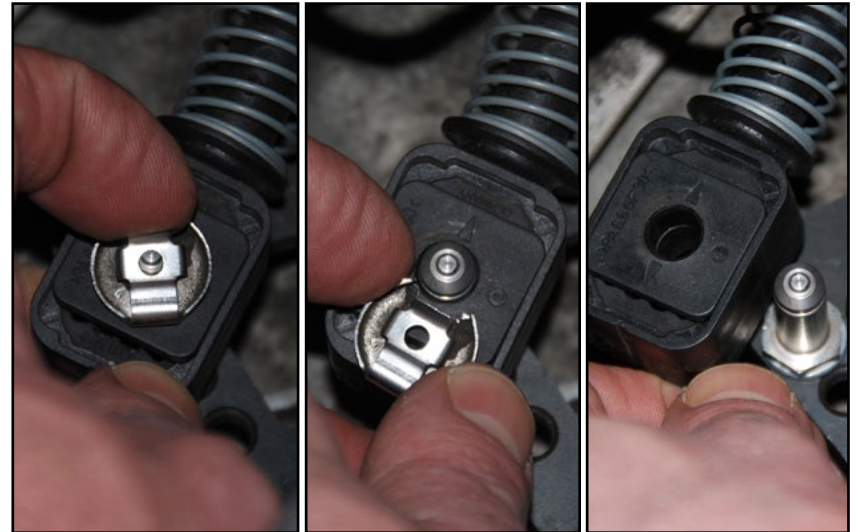
Lift the battery tray up to a vertical position then rotate it to guide the outboard air box mounting ear around the fuse panel wiring and remove it from the car.



REMOVING THE TRANSMISSION

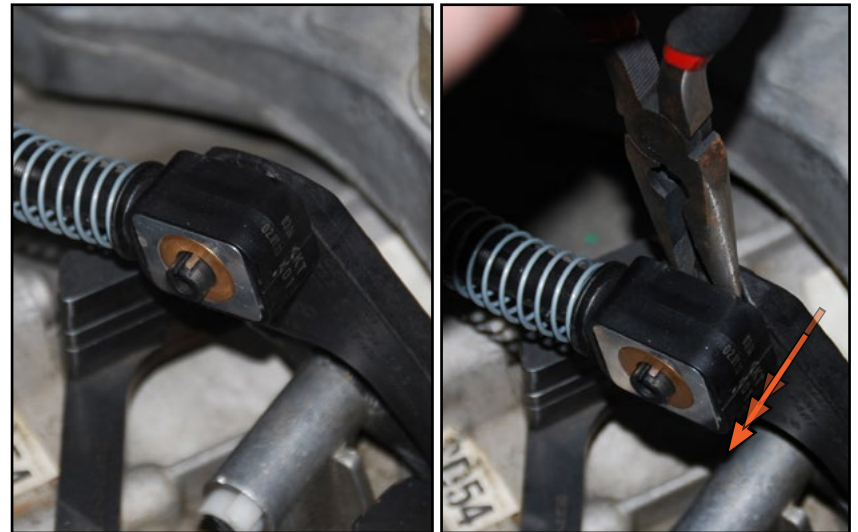
Step 21:

Pull up lightly on the spring tab for the front-to-back cable end retaining clip, slide the clip off of the selector lever pin, then lift off the cable end.



Step 22: Needle Nose Pliers

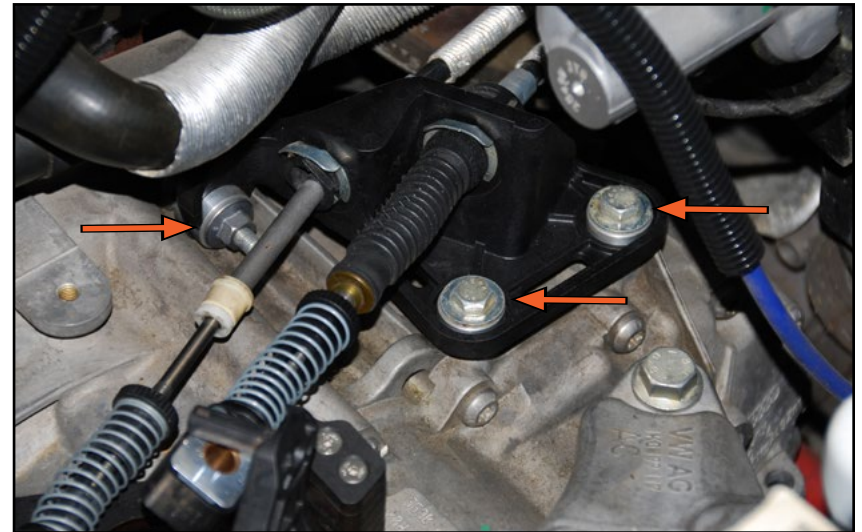
Remove the cable end from the relay lever. The cable end is retained by a small plastic nub on the end of the relay lever pin. You may be able to pull this cable end off by hand, however if it is too tight, insert a small pair of needle nose pliers between the cable end and relay lever and gently pry it off.



REMOVING THE TRANSMISSION

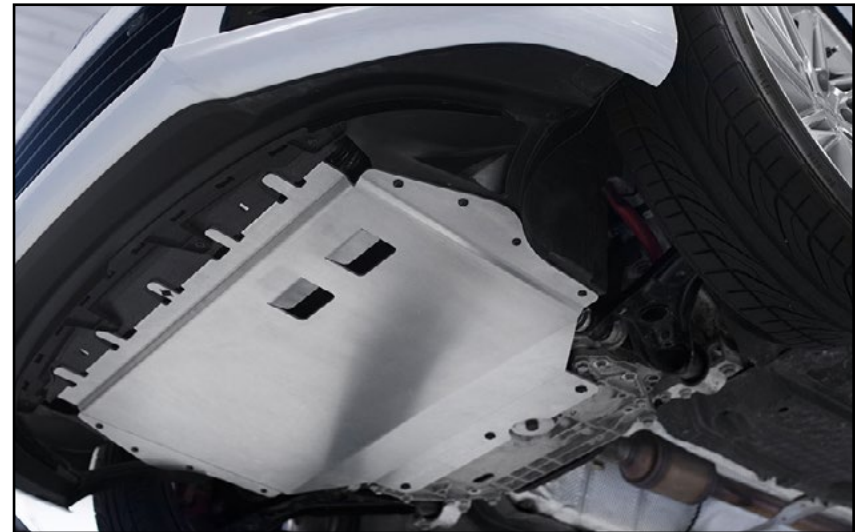
Step 23: 13mm Deep Socket, Ratchet

Locate the two bolts and one nut that hold the shifter cable bracket in place. Remove them and secure the cable bracket up out of the way using mechanics wire.



Step 24: Torx Bit Sockets: T25, T30

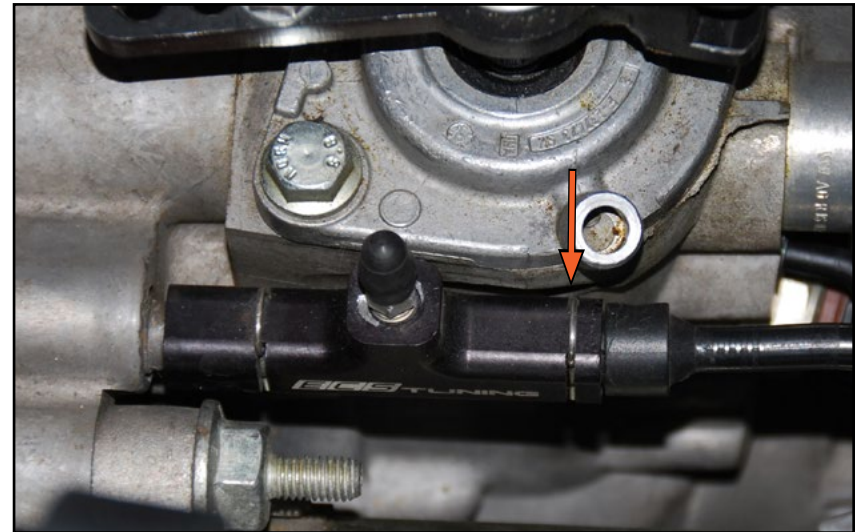
Safely raise and support the vehicle and remove the lower insulation panel or skid plate, depending on how your vehicle is equipped.



REMOVING THE TRANSMISSION

Step 25: Small Hook or Pick Tool

Remove the clip holding the clutch hydraulic line to the bleeder block.

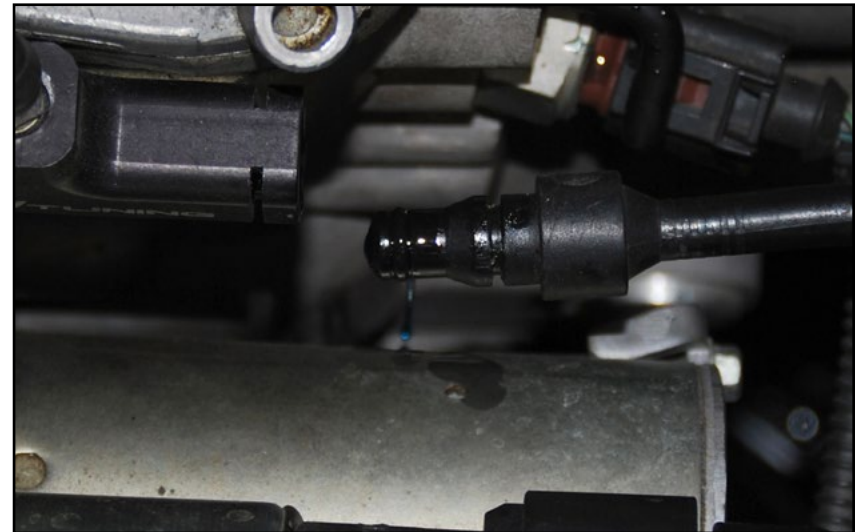


Step 26: Drain Pan

Pull the clutch hydraulic line out of the bleeder block. Brake fluid will begin to run out. Be sure to catch the old fluid in a drain pan. Let the fluid drain out, then cap the end to keep any remaining fluid from dripping on you.

CAUTION

Do not attempt to pinch the rigid plastic line or it will be damaged.



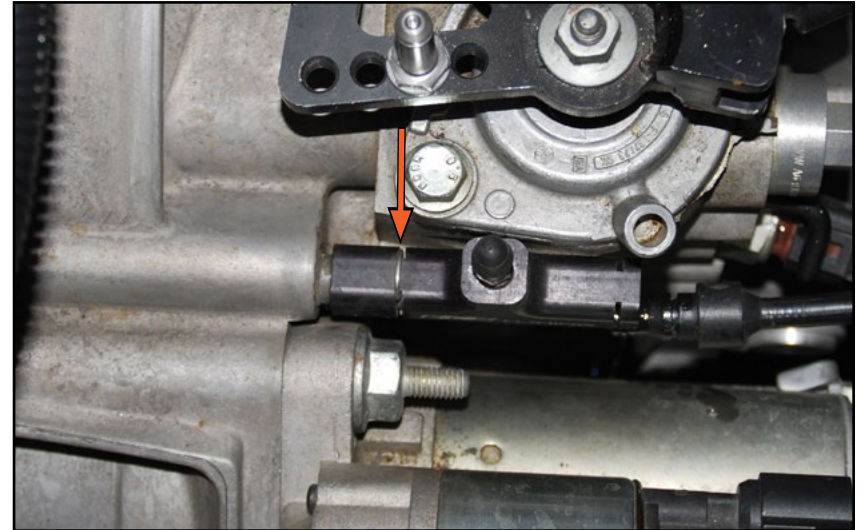
REMOVING THE TRANSMISSION

Step 27: Small Pick or Hook Tool

Remove the remaining clip on the bleeder block and remove it from the inlet of the clutch slave cylinder.

CAUTION

Brake fluid is extremely corrosive and damaging. Be sure to clean up any spills immediately.

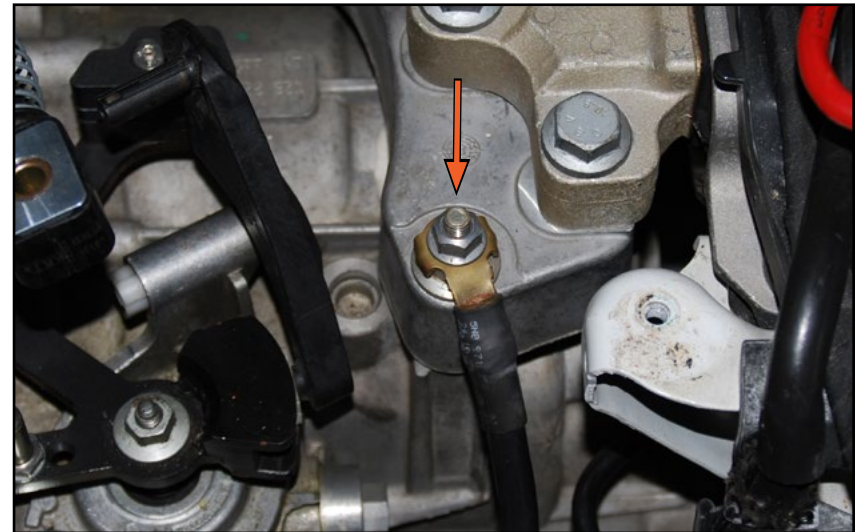


Step 28: 13mm Socket, Ratchet

Remove the ground cable from the transmission mount bracket.

NOTE

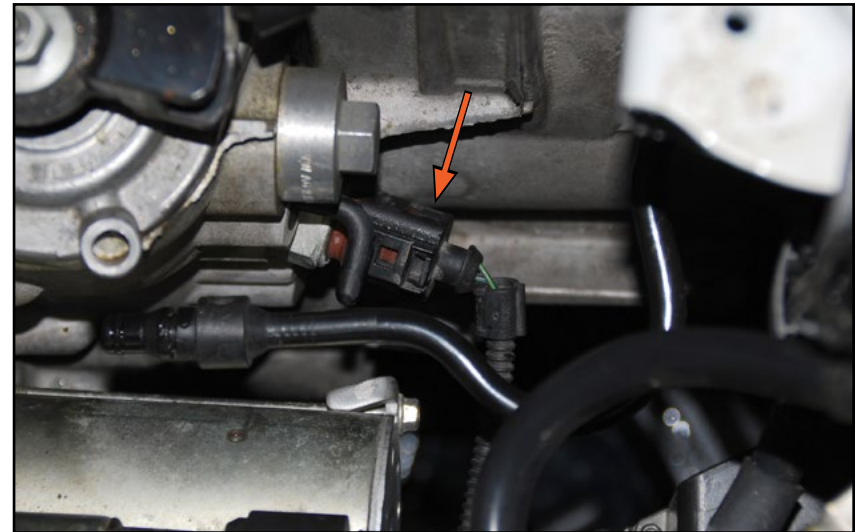
Some vehicles may have the ground cable located on the end stud of one of the bell housing bolts.



REMOVING THE TRANSMISSION

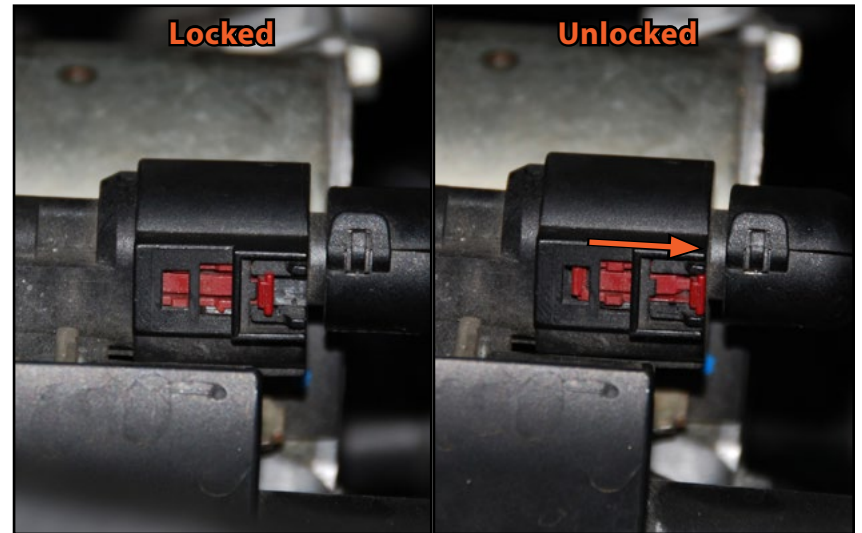
Step 29: Schwaben Connector Release Tool

Disconnect the reverse light switch, located between the starter and the transmission.



Step 30:

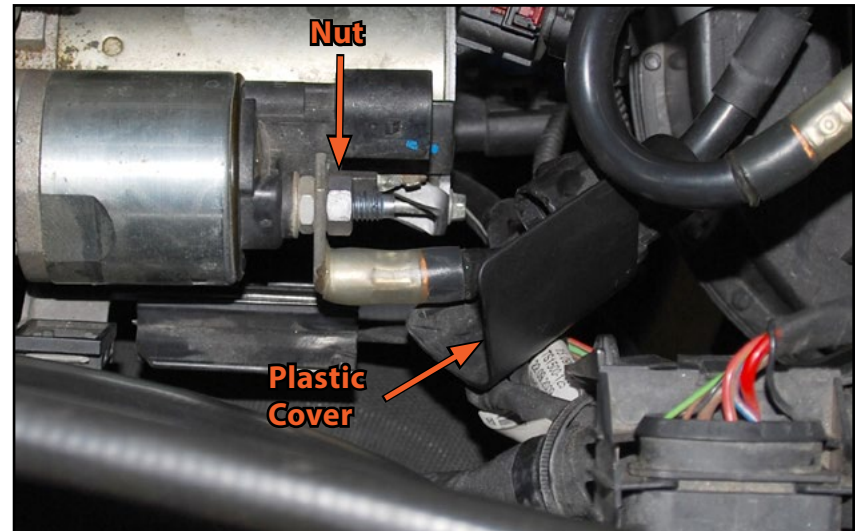
Disconnect the starter solenoid by pulling the connector lock out, then squeezing the end of the connector and pulling it off.



REMOVING THE TRANSMISSION

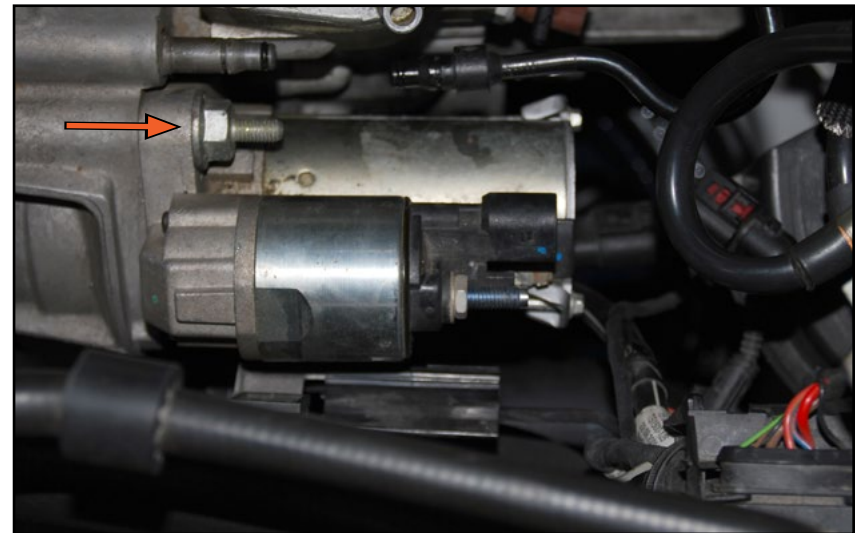
Step 31: 13mm Deep Socket, Ratchet

Slide back the plastic cover on the end of the starter cable, then remove the nut holding the cable to the starter stud, pull the cable off and position it out of the way.



Step 32: 18mm Deep Socket, Ratchet

Remove the upper starter bolt (#1 on the bolt template on [page 8](#)).



REMOVING THE TRANSMISSION

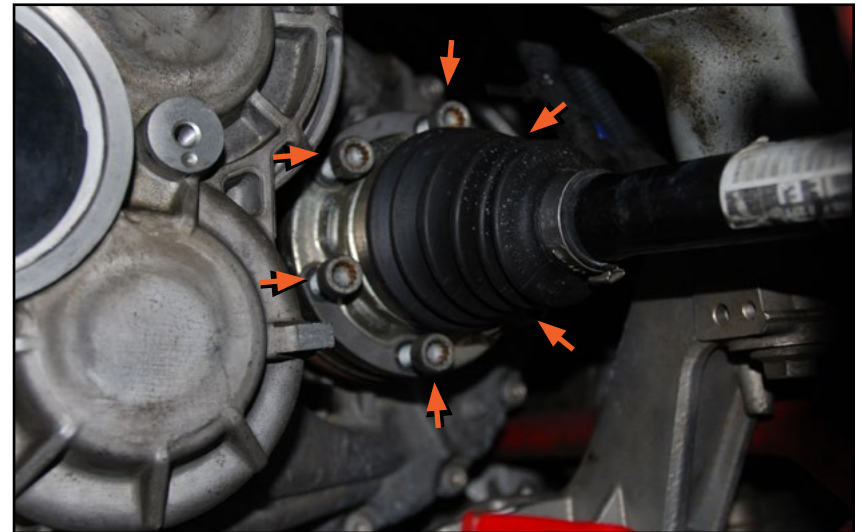
Step 33: 18mm Deep Socket, Ratchet

Remove both upper bell housing bolts (#'s 3 and 4 on the bolt template on [page 8](#)).



Step 34: M10 Triple Square Socket, 1/2" Ratchet

Remove the six LH (driver side) inner CV joint bolts. You will have to hold the wheel with one hand while loosening the bolts with the other. Once the joint is disconnected from the CV flange on the transmission, you do not have to pull the bolts out of the CV joint. You can leave them in place.



REMOVING THE TRANSMISSION

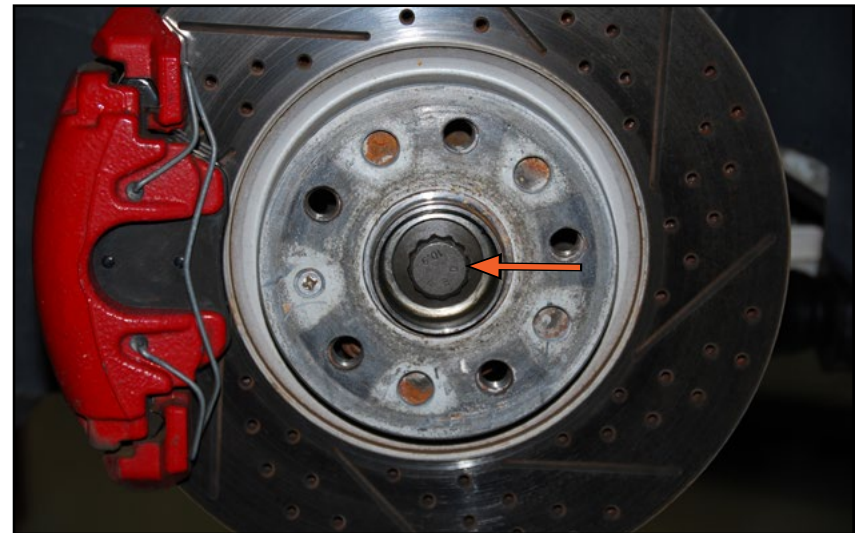
Step 35: 17mm Protecta Socket, Wheel Hanger, Impact Wrench

Remove the LF wheel. We are using a wheel hanger here to support the weight of the wheel while we remove the lug bolts.



Step 36: 24mm 12 Point Socket, Impact Wrench or Breaker Bar

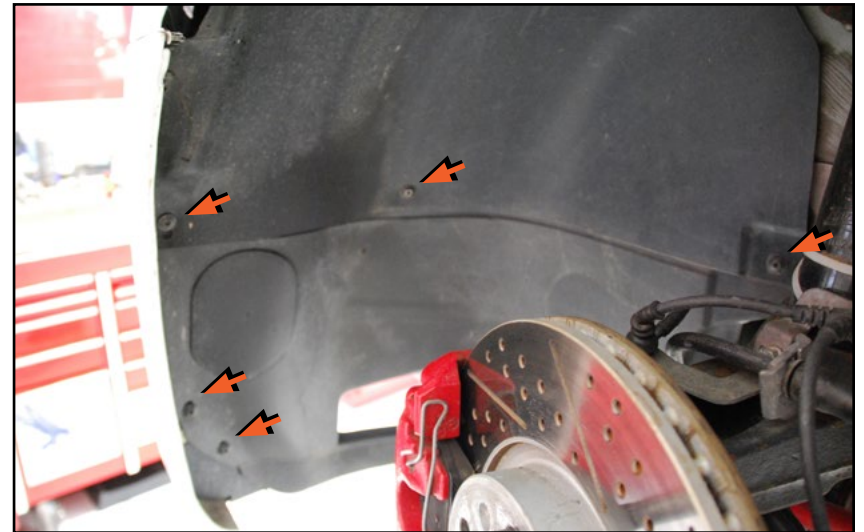
Remove the LH outer CV joint bolt. You can use an impact for this or you can loosen it with a breaker bar while an assistant holds firm pressure on the brake pedal. **Do not** loosen the bolt with the wheel on the ground or the wheel bearing will be damaged.



REMOVING THE TRANSMISSION

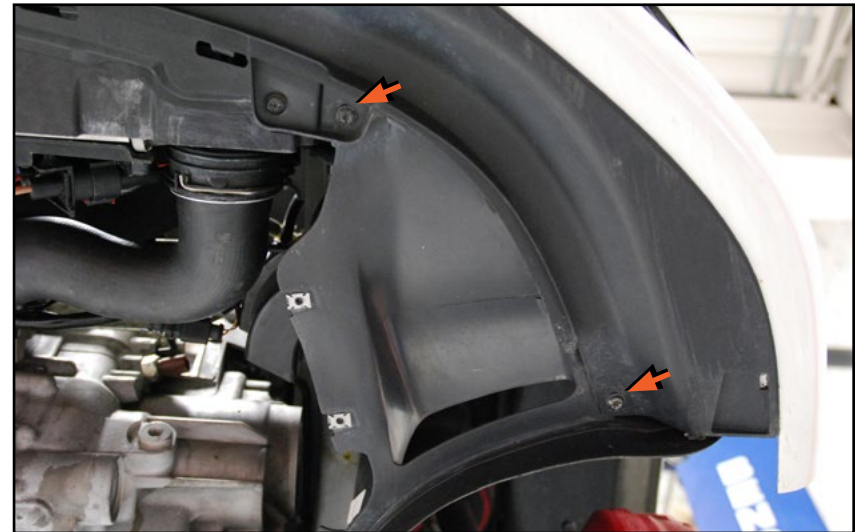
Step 37: Torx T25

Remove the five LF fender liner screws shown in the picture.



Step 38: Torx T25

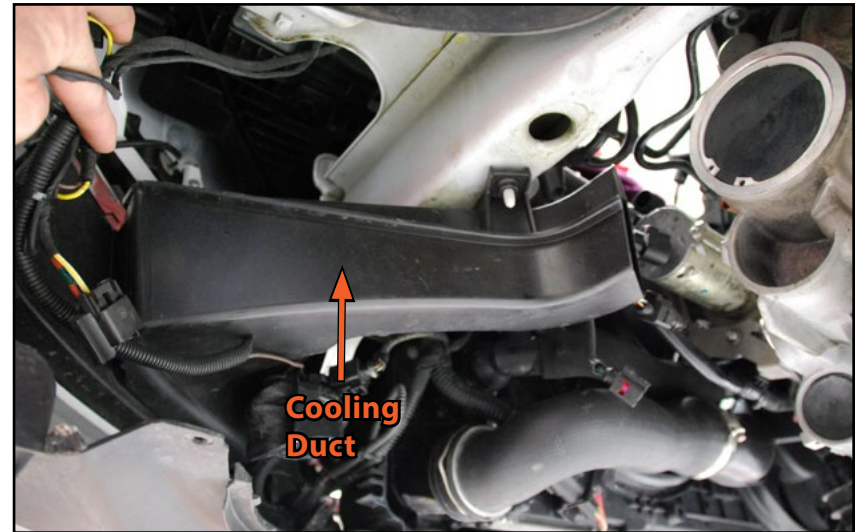
Remove the two fender liner screws underneath, then remove the LF lower fender liner from the car.



REMOVING THE TRANSMISSION

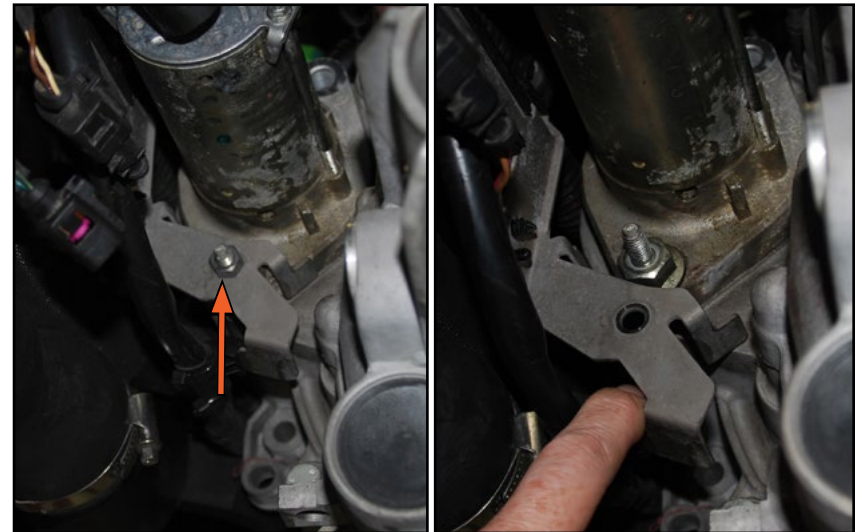
Step 39: 13mm Deep Socket, Ratchet

Remove the two nuts securing the cooling duct on the LF, then pull the duct down and remove it.



Step 40: 13mm Socket, Ratchet

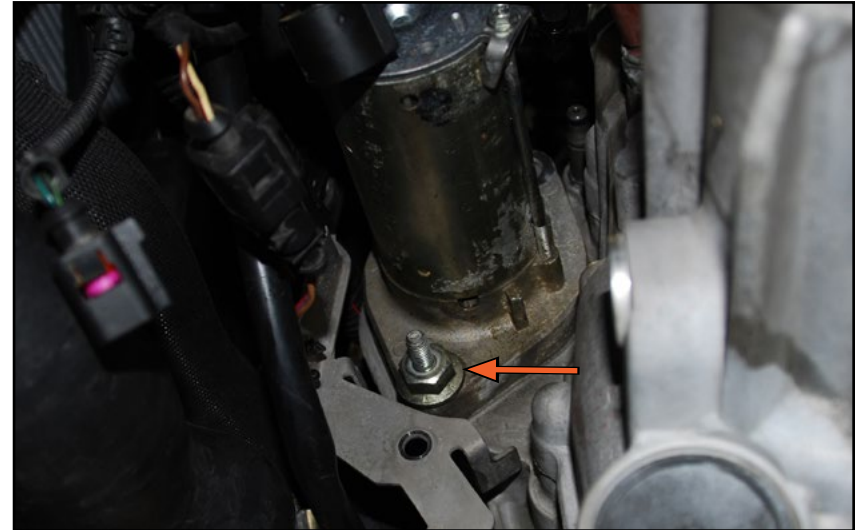
Remove the harness bracket from the end stud on the lower starter bolt (#2 on the bolt template on [page 8](#)). Thread the nut back onto the stud to keep from losing it.



REMOVING THE TRANSMISSION

Step 41: 18mm Deep Socket, Ratchet

Remove the lower starter bolt (#2 on the bolt template on [page 8](#)) and remove the starter.



Step 42: Flat Blade Screwdriver

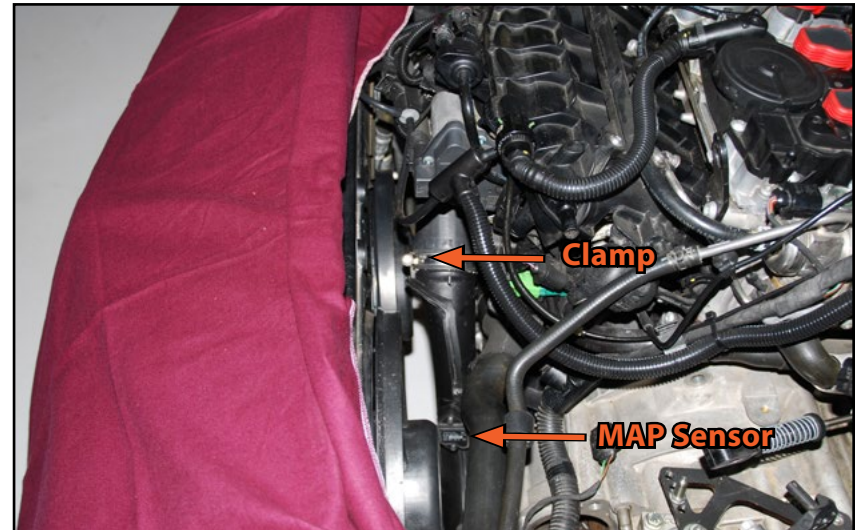
Loosen the clamp between the LH charge air hose and duct, then pull out the clip between the LH charge air hose and intercooler, and pull the hose off on both ends.



REMOVING THE TRANSMISSION

Step 43: Flat Blade Screwdriver

Loosen the clamp on the top of the charge air duct. Also note the location of the MAP sensor.



Step 44: Schwaben Connector Release Tool

Disconnect the MAP sensor, located on the charge air duct, just behind the radiator fans.



REMOVING THE TRANSMISSION

Step 45: Torx T30

Remove the upper charge air duct mounting screw. It is normally hidden from view but can be located by moving the wiring harnesses aside.

NOTE

After they are removed from the engine block, the charge air duct screws will remain "trapped" in place in the charge air duct.



Step 46: Torx T30

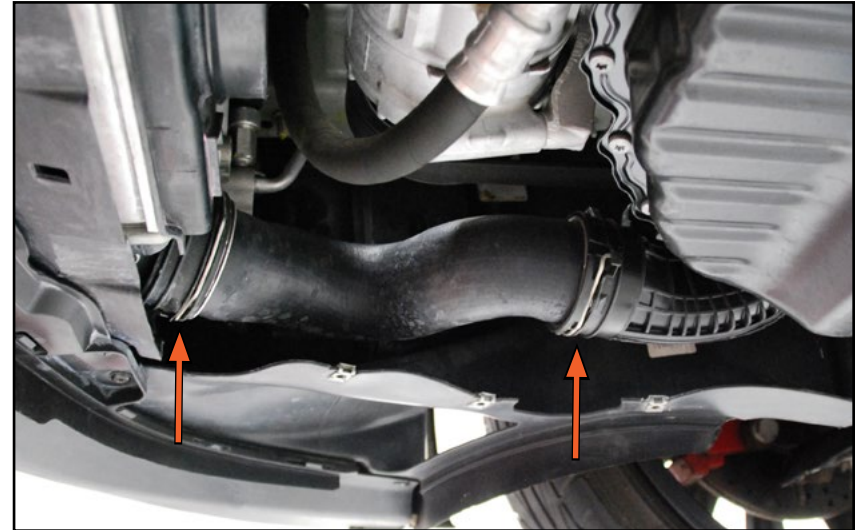
Remove the lower charge air duct mounting screw. It is located just above the front LH corner of the oil pan. Pull down on the charge air duct to separate it from the hose on top, then rotate it and guide it downwards and out between the engine and radiator fans.



REMOVING THE TRANSMISSION

Step 47: Flat Blade Screwdriver

Remove the clip on each end of the RH charge air hose, then pull the hose off on each end.



Step 48: 17mm Socket, Ratchet

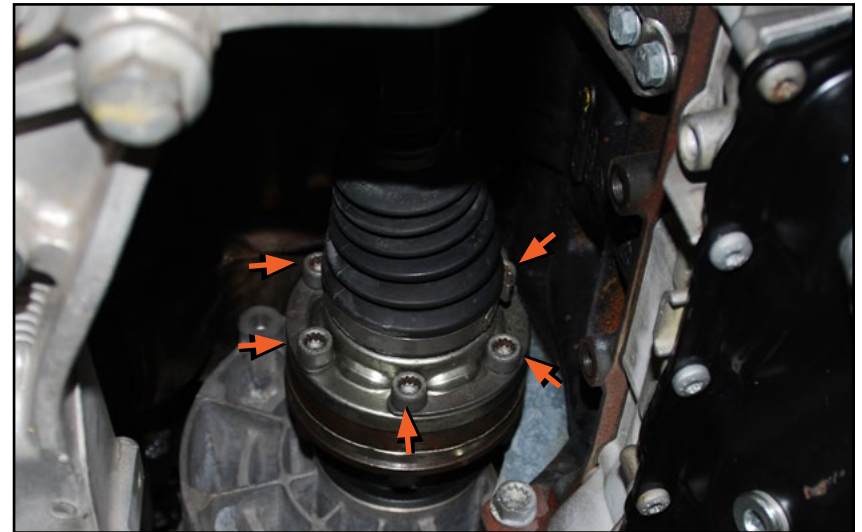
Remove the two bolts for the RH inner CV heat shield then rotate the shield around the half shaft and remove it.



REMOVING THE TRANSMISSION

Step 49: M10 Triple Square, Ratchet

Remove the six bolts holding the RH inner CV joint to the transmission flange, then tie the CV shaft up and out of the way using mechanics wire. Note that the top bolt is not visible in this picture.



Step 50: 16mm Socket, Ratchet

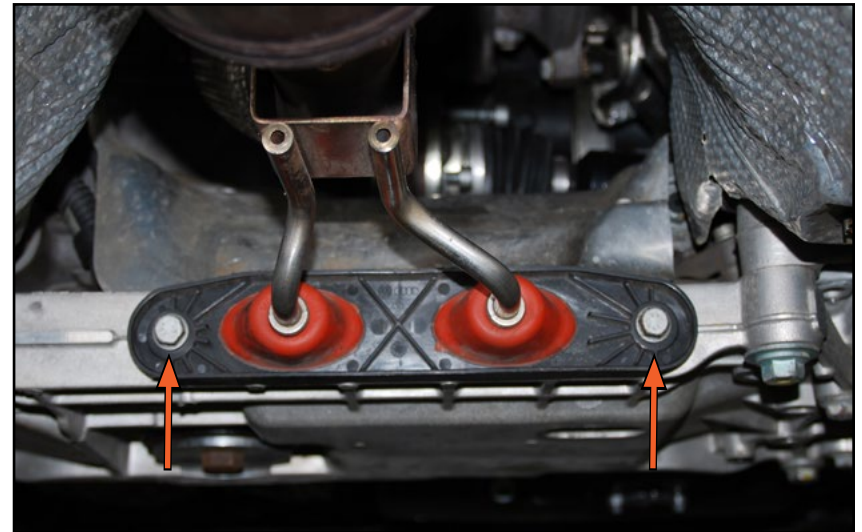
Remove the three LH lower ball joint nuts, then pull down on the control arm to separate it from the ball joint and remove the CV shaft.



REMOVING THE TRANSMISSION

Step 51: 13mm Socket, Ratchet

Remove the two 13mm bolts holding the exhaust downpipe bracket to the subframe.



Step 52: Schwaben Engine Support Bar

Now it's time to install the engine support bar. Locate the engine lift bracket on the cylinder head. Position the legs of the engine support bar securely inside the fenders, then position an extension arm out onto the radiator core support. Secure the lifting hook of the engine bar to the engine lift bracket using a chain. Tension the lifting hook and chain until it just begins to lift the engine.



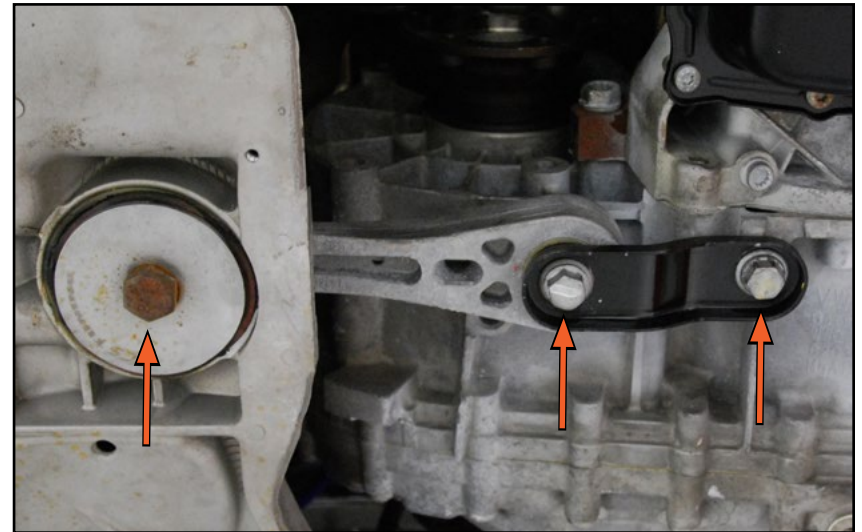
NOTE

We are using a block of wood here since the radiator core support is plastic, this will distribute the weight evenly to prevent damage.

REMOVING THE TRANSMISSION

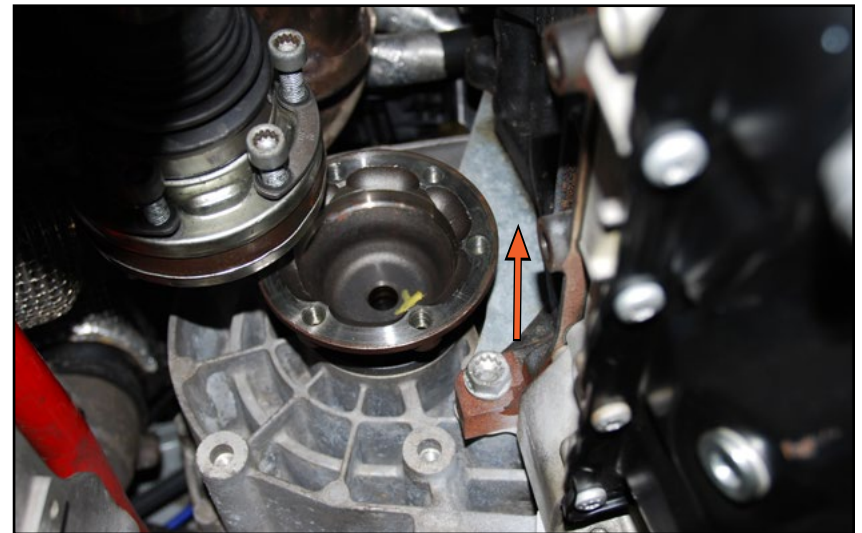
Step 53: 16mm, 22mm Sockets, Ratchet

Remove the three pendulum support bolts and slide the support out of the subframe.



Step 54:

Look between the RH CV drive flange and the back of the engine. Some vehicles are equipped with an additional flywheel shield in this location. Our vehicle is not. If yours is equipped with this it must be removed at this time so the drive flange will clear the shield when removing the transmission.



REMOVING THE TRANSMISSION

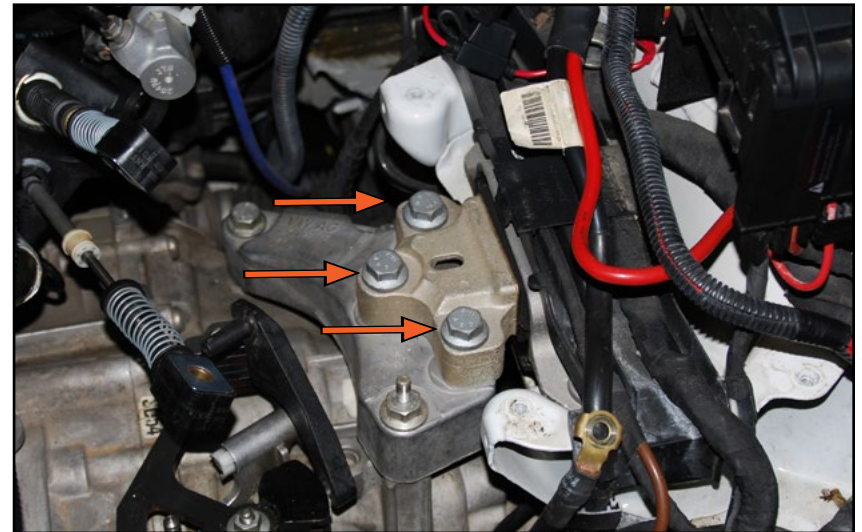
Step 55:

If your vehicle is equipped with an oil level sensor on the bottom of the oil pan, disconnect it at this time so the wiring harness is not stretched when tilting the engine for transmission removal. Our vehicle is not equipped with one, but the location will be the same as indicated by the photo.



Step 56: 18mm Socket, Ratchet

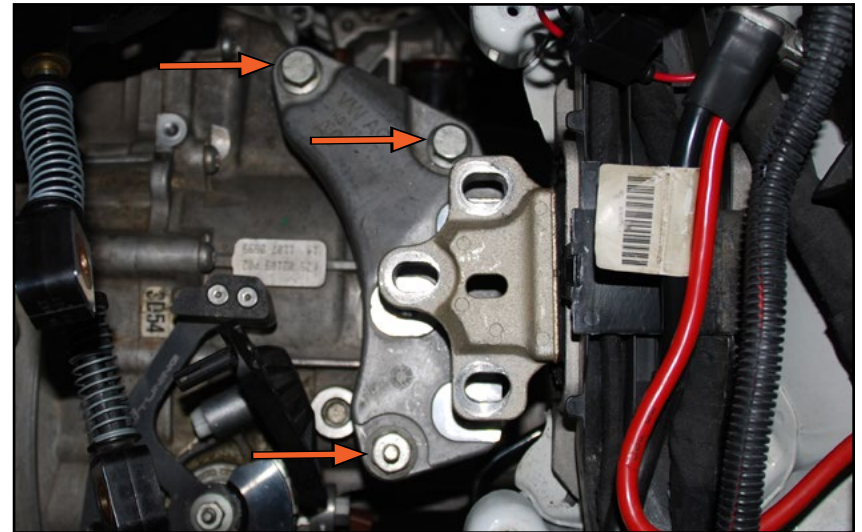
Remove the three transmission mount bolts.



REMOVING THE TRANSMISSION

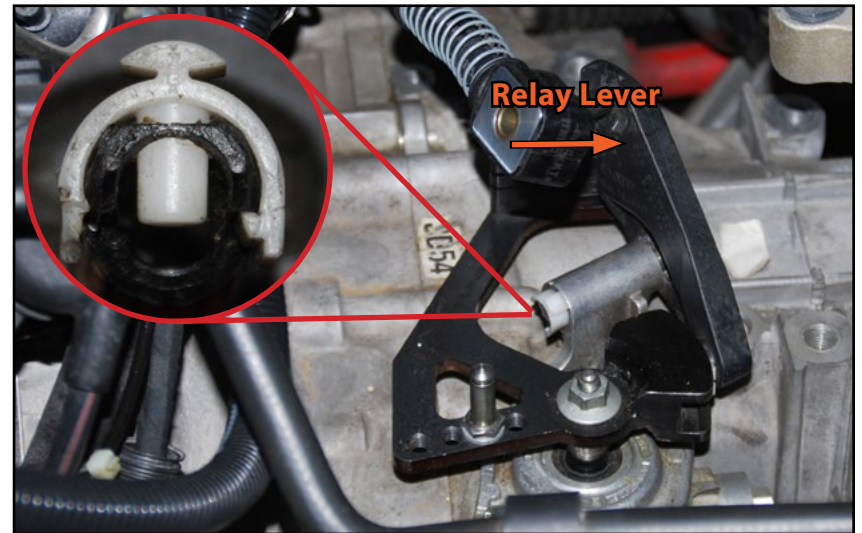
Step 57: 18mm Socket, Ratchet

Lower the transmission about 2 inches by loosening the center screw on the engine bar, then remove the three bolts and remove the transmission bracket.



Step 58:

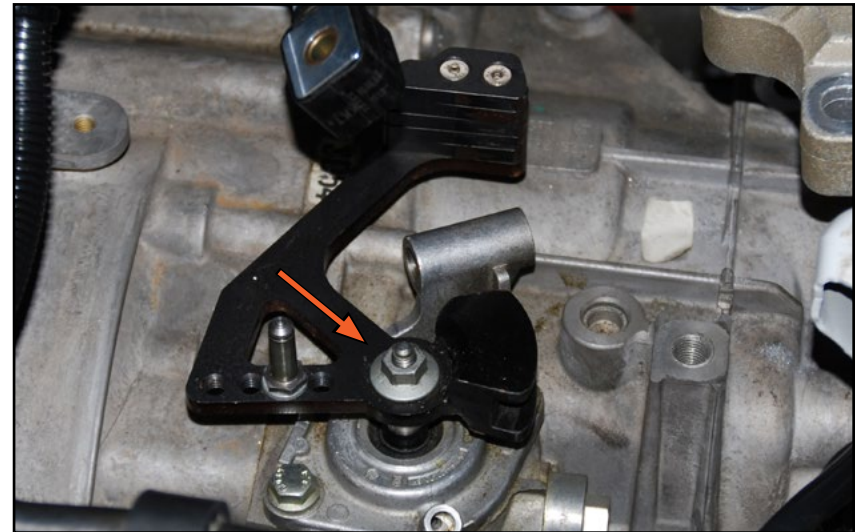
Pull the plastic retaining clip off by hand, then slide the relay lever out and remove it.



REMOVING THE TRANSMISSION

Step 59: 13mm Socket, Ratchet

Remove the selector shaft nut.

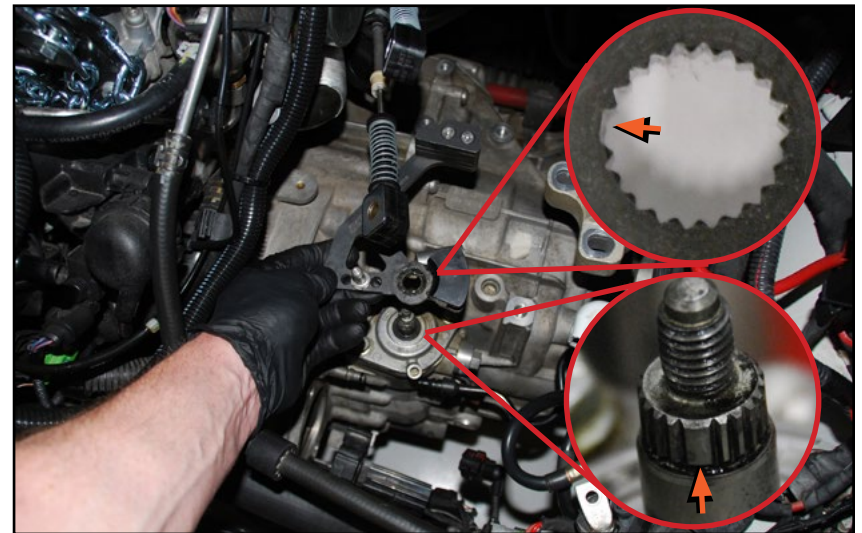


Step 60:

Pull the selector lever off the selector shaft. You may have to gently wiggle it side to side until it releases. Be patient and work the lever gently until it is free. You may have to use a puller if it is stuck, but it can normally be removed without one. Re assembly note: There is one double tooth on the selector lever and selector shaft, allowing only one way for installation.

CAUTION

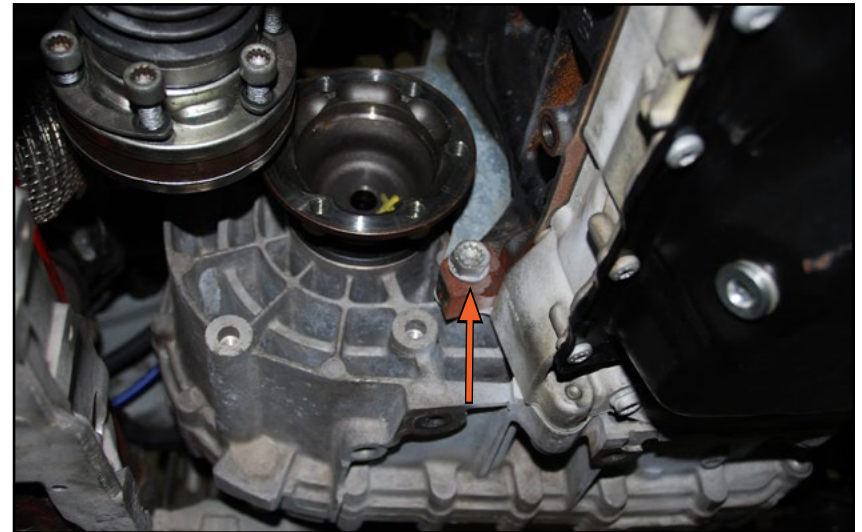
Do not hammer on the end of the selector shaft or pry on the selector lever or the selector shaft can be damaged.



REMOVING THE TRANSMISSION

Step 61: 18mm Socket, Ratchet

Remove the rear transmission bell housing bolt (#5 on the bolt template on [page 8](#)).



Step 62: Transmission Jack

Raise the transmission jack in place and secure the transmission to the jack using hold down straps.



Double check the engine support bar to make sure it is secure and the engine is properly supported. Be sure to have a friend help you remove the transmission.



REMOVING THE TRANSMISSION

Step 63: 16mm Socket, Ratchet

Remove the front transmission bell housing bolt (#8 on the bolt template on [page 8](#)) and the two lower bell housing bolts (#'s 6 and 7 on the bolt template on [page 8](#)), shown here without the jack in place for clarity.

Final removal from the car:

Remember to work slowly and cautiously during removal and follow these general steps and tips:

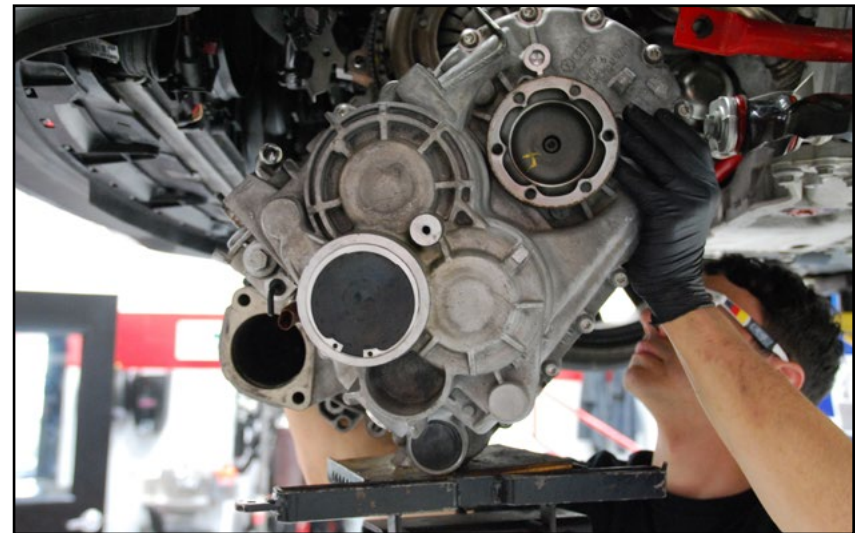
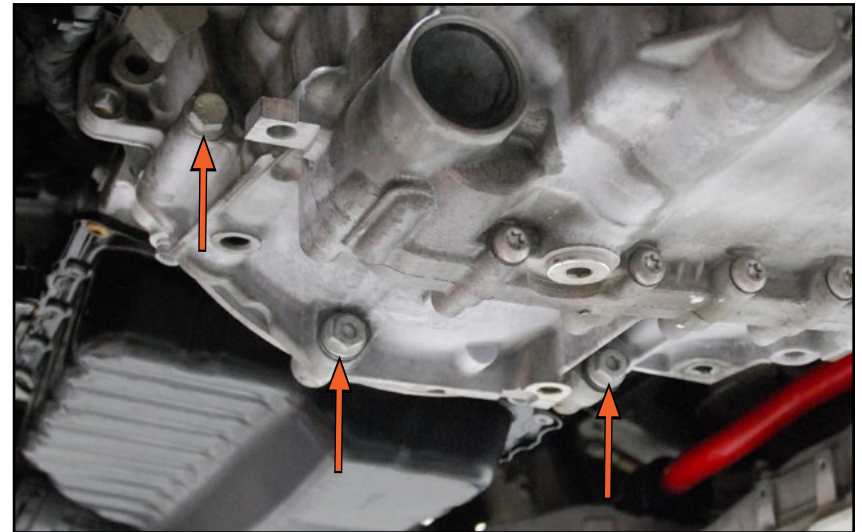
Separate the transmission from the engine by pulling it back from the engine block.

Rotate the differential upwards, then angle the transmission toward the front and guide the RH CV flange around the flywheel.

Pull the transmission back until it completely clears the flywheel and clutch

Slowly lower and adjust the engine bar and transmission jack as necessary to gain the required clearance for removal.

Once the transmission is clear, lower it completely and transfer it to a work surface.

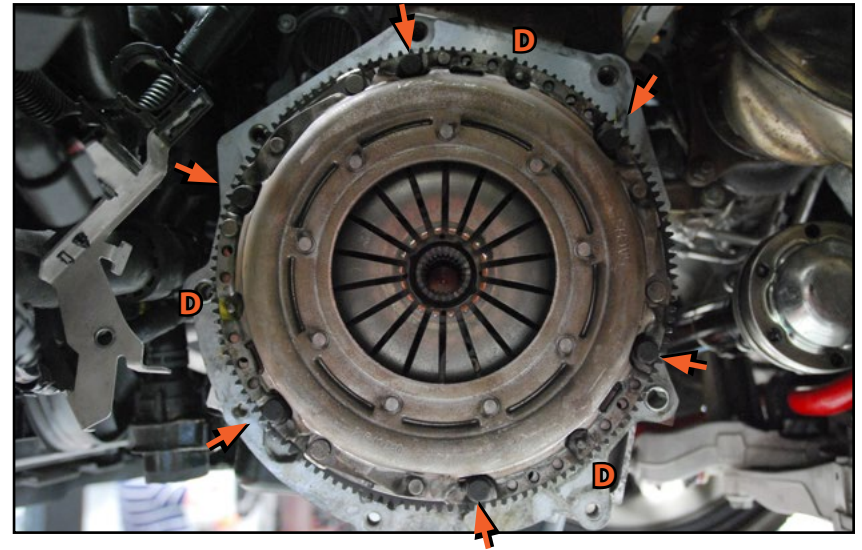


REMOVING THE ORIGINAL FLYWHEEL AND CLUTCH

Step 1: 13mm Socket, Ratchet, Flat Blade Screwdriver

! READ ENTIRE STEP FIRST

Loosen, but do not remove all six pressure plate bolts (arrows). Next, keep a flat blade screwdriver within reach, then place one hand on the pressure plate to keep it in place and remove all six bolts in an alternating pattern. Now, using both hands, slowly pull the pressure plate off of the flywheel dowel pins (D). As you pull it off, make sure that you grab the clutch disc so it does not fall and remove it along with the pressure plate. You may have to pry the pressure plate off the dowel pins (D) using a flat blade screwdriver. Depending on whether the pressure plate bolts are original or not, the socket size required for removal may vary.

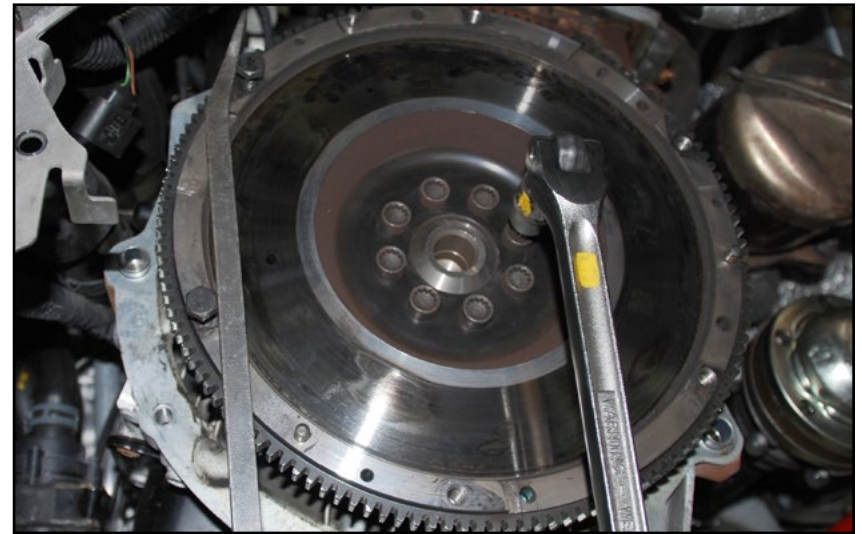


Step 2: M12 Triple Square, Breaker Bar, Pry Bar

Loosen all eight flywheel bolts, then remove seven of them. Firmly grip the flywheel and remove the last bolt, then pull the flywheel off the end of the crankshaft. Depending on whether the flywheel bolts are original or not, the socket size required for removal may vary.

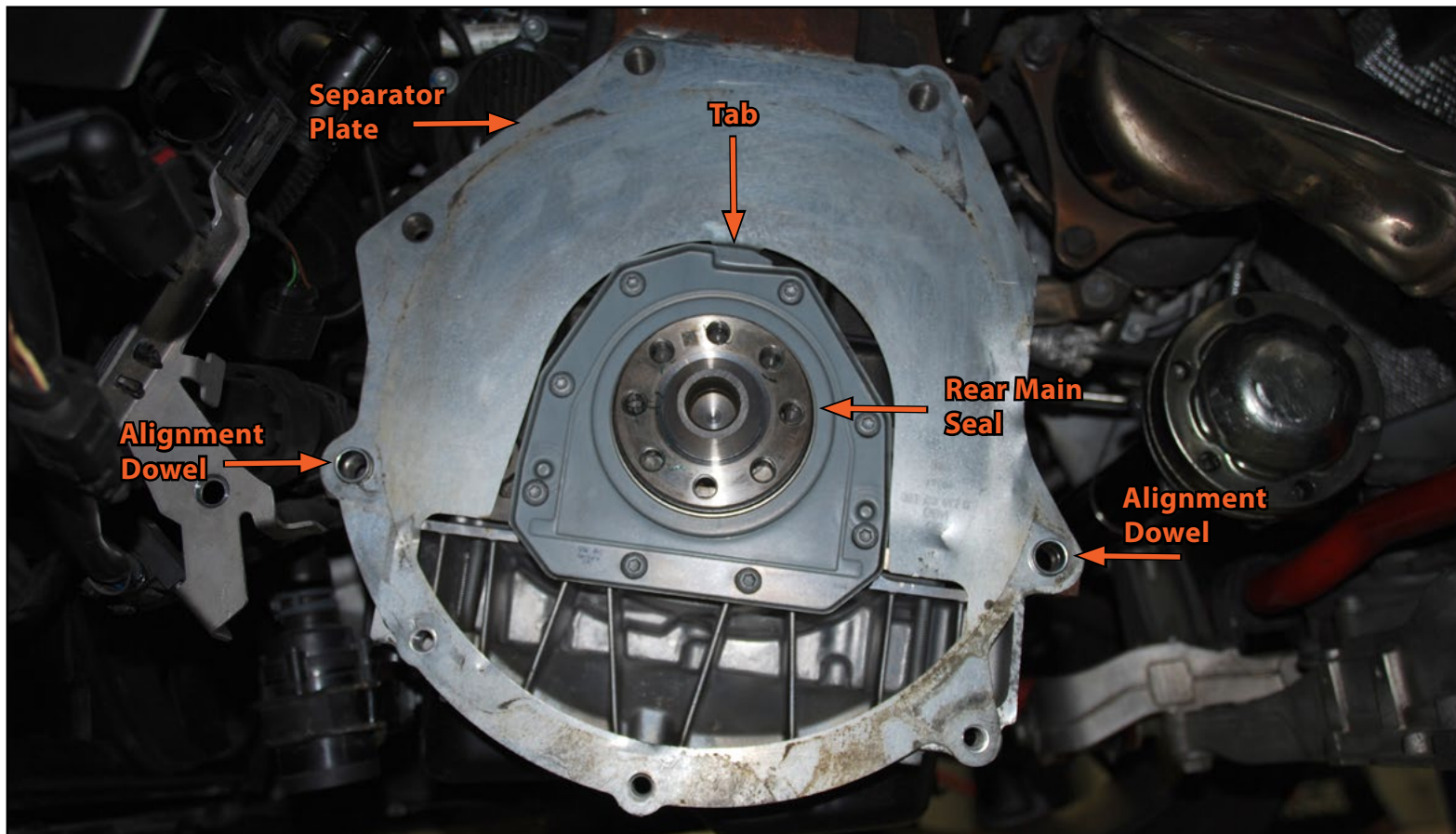
TECH TIP

An impact can be used to easily remove the flywheel bolts. If you do not have an impact, thread two of the old pressure plate bolts back into place and lever a pry bar between them to keep the engine from turning while you break the flywheel bolts loose.



CLEANING THE ENGINE BLOCK

Thoroughly clean the end of the crankshaft, engine block, and separator plate. Closely inspect the rear main seal for any signs of leakage, replace it if necessary. Make sure that both alignment dowels are located in the block in the locations shown. If not, remove them from the transmission bell housing and reinstall them in the block. It is common for the separator plate fall off during transmission removal. Reposition it by hooking the center tab behind the rear main seal plate then resting it on the two alignment dowels



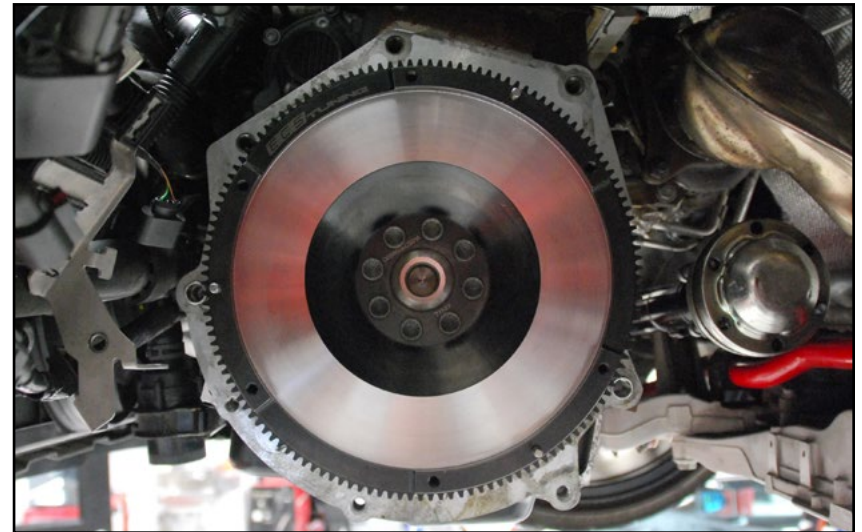
INSTALLING THE NEW FLYWHEEL AND CLUTCH

Step 1: M12 Triple Square Socket, Ratchet

Install the flywheel into place on the end of the crankshaft, then install all eight bolts and thread them in just until they are fully seated. The new bolts have loctite pre-applied on the threads so you may have to use a ratchet to thread them in.

NOTE

Some of the flywheel bolt holes are offset, they will only line up in one position.



Step 2: M12 Triple Square, Torque Wrench, Breaker Bar, Paint Pen

Torque the flywheel bolts in the sequence shown on the right in the three different stages listed below.

- 1: 30 Nm (22 Ft-lbs)
- 2: 60 Nm (44 Ft-lbs)
- 3: Additional 90 degrees

When you begin stage 3, mark each bolt with paint after you tighten it the additional 90 degrees so you do not lose track of which ones have been tightened.



INSTALLING THE NEW FLYWHEEL AND CLUTCH

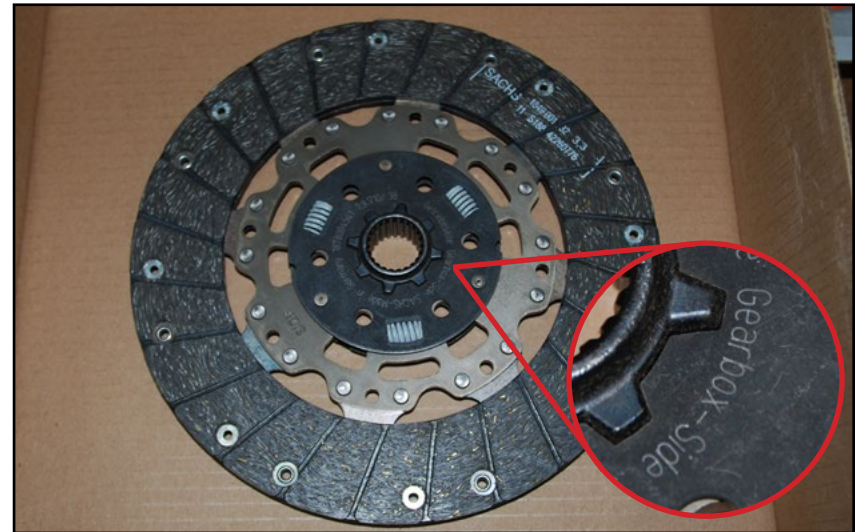
Step 3:

Wipe the surface of the new flywheel using brake cleaner and a rag to remove any dirt, oil, or contaminants.



Step 4:

Inspect the new clutch disc. It will have a marking that indicates which side faces the transmission when installed.



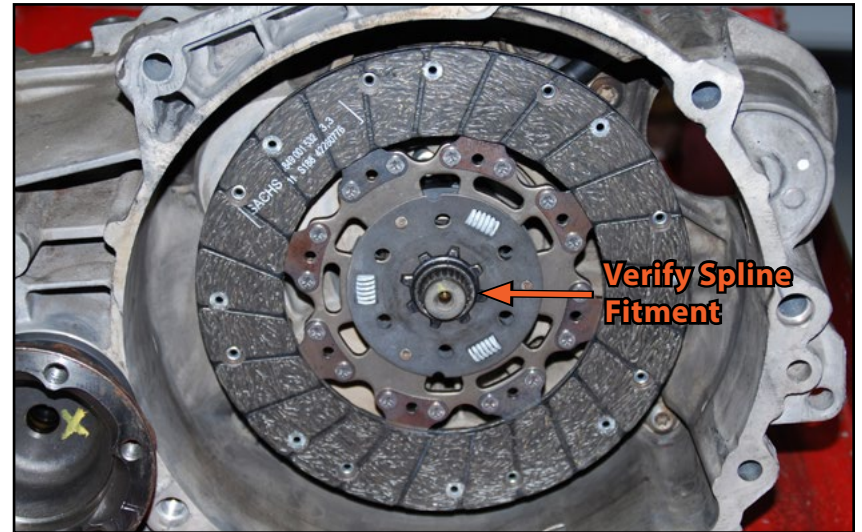
INSTALLING THE NEW FLYWHEEL AND CLUTCH

Step 5:

Slide the clutch disc onto the splines of the transmission input shaft to make sure it fits correctly and slides on easily.

NOTE

This is a general precaution that should be taken with every clutch installation. It is very uncommon that you would encounter a problem such as a clutch disc that was packaged wrong or manufactured incorrectly, but it is always better to check.



Step 6: Clutch Alignment Tool

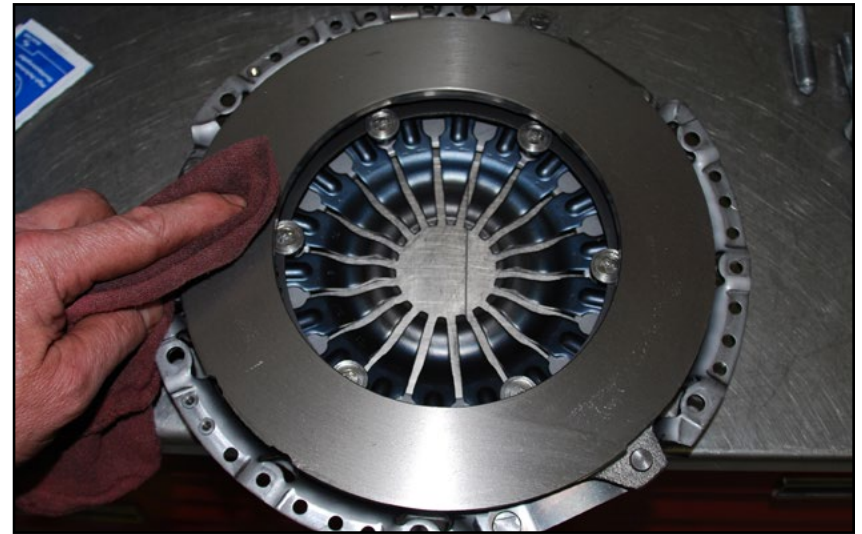
Hold the clutch disc onto the surface of the flywheel with the "transmission side" facing you, then insert the alignment tool through the disc and into the end of the crankshaft.



INSTALLING THE NEW FLYWHEEL AND CLUTCH

Step 7:

Wipe the surface of the new pressure plate using brake cleaner and a rag to remove any dirt, oil, or contaminants.

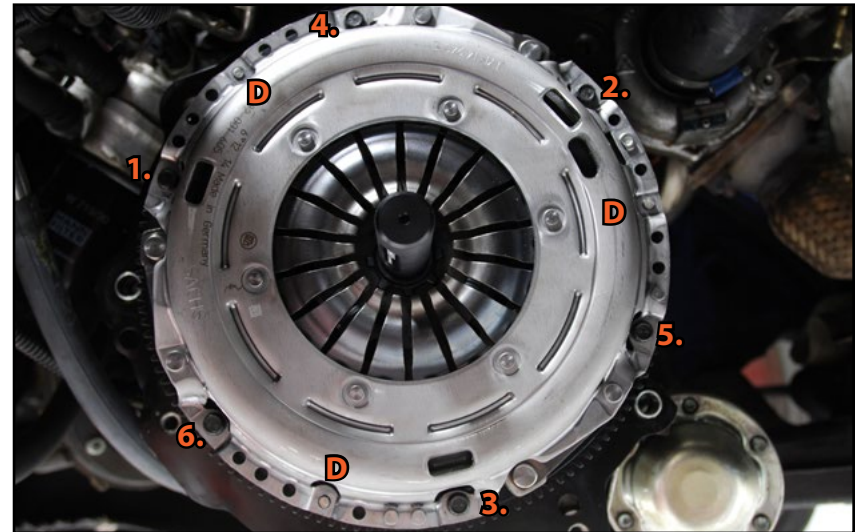


Step 8: 9mm 12 Point Socket, Torque Wrench

Install the pressure plate over the alignment tool and disc, onto the flywheel. Make sure all three dowel pins are lined up (D), then push the pressure plate into place.

Start all six pressure plate bolts, then tighten them evenly and alternately in the sequence shown on the right until they are fully seated.

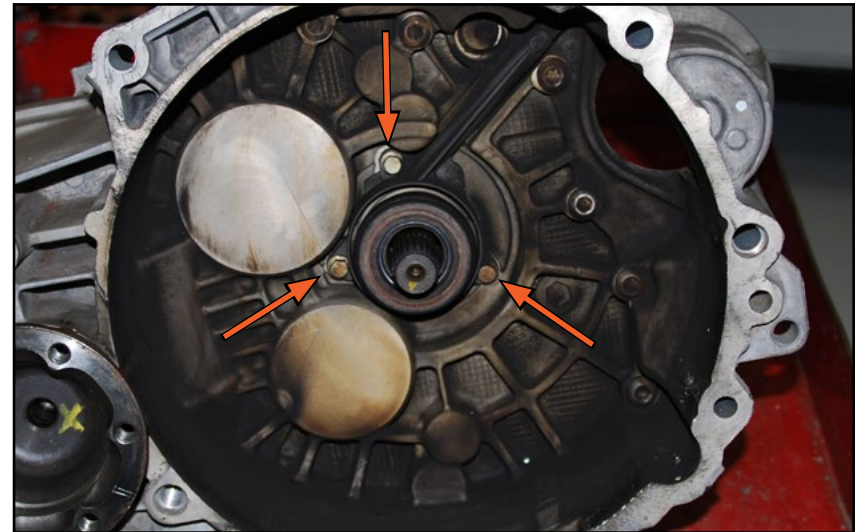
Torque the pressure plate bolts to 20 Nm (15 Ft-lbs) using the same sequence shown on the right. Remove the alignment tool after the bolts are torqued.



PREPARING THE TRANSMISSION FOR INSTALLATION

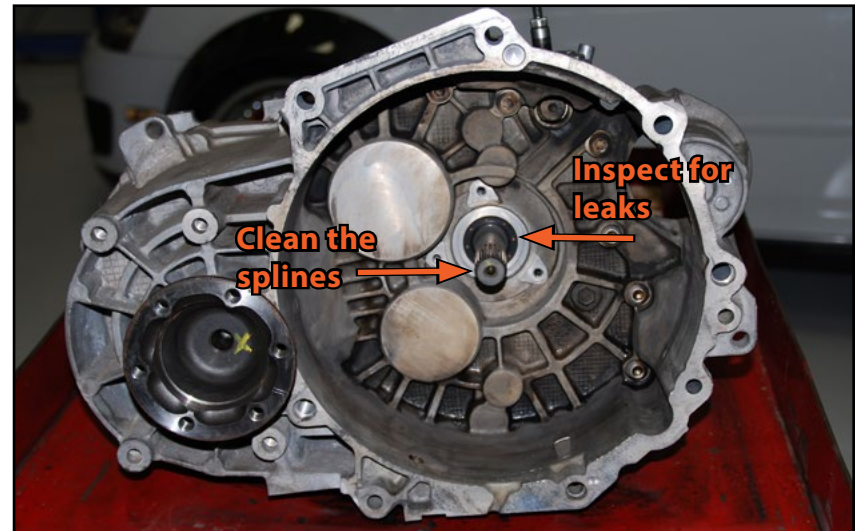
Step 1: 9mm Deep Socket, Ratchet

Remove the three retaining bolts and pull the throwout bearing/slave cylinder off of the bell housing.



Step 2:

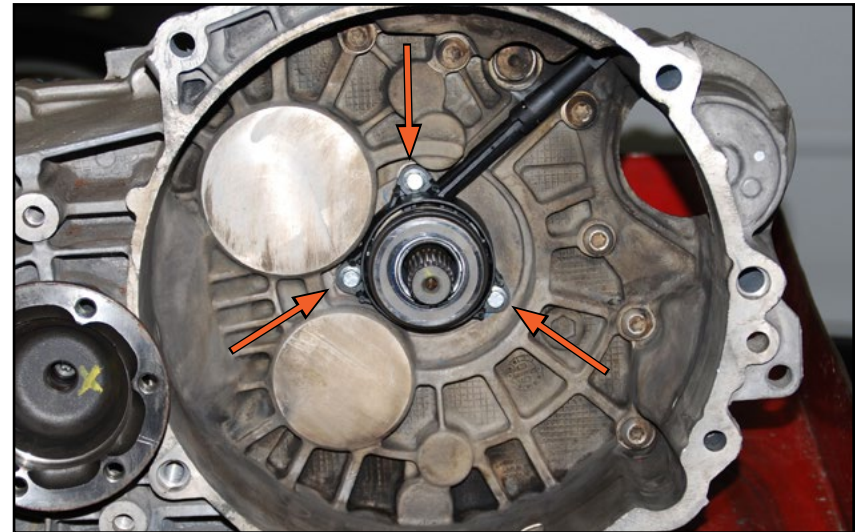
Thoroughly clean the bell housing and the splines on the input shaft. Inspect the input shaft seal for any signs of leakage, replace if necessary.



PREPARING THE TRANSMISSION FOR INSTALLATION

Step 3: 9mm Deep Socket, Torque Wrench

Install the new throwout bearing/slave cylinder into place using the new bolts included with the kit and torque them to 12 Nm (9 Ft-lbs).



Step 4:

Evenly apply clutch spline lubricant (included in a small pack with the clutch) onto the input shaft splines.

You are now ready to install the transmission!



REINSTALLING THE TRANSMISSION

Reinstalling the transmission is basically the reverse of removal, however for convenience and accuracy we have provided this checklist along with tips and important information.

Secure the transmission on a transmission jack, then raise it up and guide it into place until it is fully seated against the engine block. Be patient and adjust the angles of the engine and transmission until they easily slide together.

Install the two lower bell housing bolts until they are fully seated but do not tighten them at this time.

Install the front bell housing bolt until it is fully seated but do not tighten it at this time.

Install the rear bell housing bolt until it is fully seated but do not tighten it at this time.

Remove the transmission jack.

Install the two upper bell housing bolts until they are fully seated but do not tighten them at this time.

Check to make sure no wires or cables are pinched between the bell housing and engine block.

Torque the upper bell housing bolts to 80 Nm (59 Ft-lbs).

Torque the lower bell housing bolts to 40 Nm (30 Ft-lbs).

Torque the front bell housing bolt to 40 Nm (30 Ft-lbs).

Torque the rear bell housing bolt to 80 Nm (59 Ft-lbs).

Install the selector lever and shaft nut and torque the selector shaft nut to 20 Nm (15 Ft-lbs).

REINSTALLING THE TRANSMISSION

Install the relay lever and retaining clip.

Install the transmission bracket and torque the bolts to 60 Nm+90 degrees (44 Ft-lbs+90 degrees).

Raise the transmission up to its normal installation position.

Install the three transmission mount bolts and torque them to 60 Nm+90 degrees (44 Ft-lbs+90 degrees).

If equipped, reconnect the oil level sensor on the bottom of the oil pan.

If equipped, reinstall the flywheel shield behind the RH CV drive flange.

Slide the pendulum support into place.

Install the pendulum support to transmission bolts and torque them to 50 Nm+90 degrees (37 Ft-lbs+90 degrees).

Install the pendulum support to subframe bolt and torque it to 100 Nm+90 degrees (74 Ft-lbs+90 degrees).

Remove the engine bar.

Install the exhaust downpipe bracket.

Install the LH CV shaft back into place.

Install the ball joint nuts and torque them to 60 Nm (44 Ft-lbs) for a cast steel control arm or 100 Nm (74 Ft-lbs) for a sheet steel or forged aluminum control arm.

REINSTALLING THE TRANSMISSION

Install the RH inner CV joint bolts and torque them to 70 Nm (51 Ft-lbs) for 10mm bolts or 40 Nm (30 Ft-lbs) for 8mm bolts

Install the RH inner CV joint heat shield.

Install the RH charge air hose.

Install the charge air duct on the front of the engine.

Reconnect the MAP sensor and tighten the clamp on the top of the charge air duct.

Install the LH charge air hose.

Install the starter and torque both starter bolts to 80 Nm (59 Ft-lbs).

Install the harness bracket on the lower starter bolt.

Install the cooling duct on the LF.

Install the LF fender liner.

Install the outer CV bolt and torque it to the proper specification depending on whether it is a ribbed or non-ribbed bolt. (See pages 55, 56).

Note: Once the initial torque is applied to the outer CV bolt, you can lower the vehicle to the ground to perform the final tightening of the bolt.

Remove the wheel center cap (so you can access the outer CV bolt for the final torque setting).

Install the wheel and torque the bolts to 120 Nm (89 Ft-lbs).

REINSTALLING THE TRANSMISSION

Install the LH inner CV joint and torque the bolts to 70 Nm (51 Ft-lbs) for 10mm bolts or 40 Nm (30 Ft-lbs) for 8mm bolts.

Install the starter cable and plastic cover.

Connect the starter solenoid.

Connect the reverse light switch.

Install the ground cable.

Install the clutch bleeder block.

Install the shifter cable bracket.

Connect the shift cables.

Install the battery tray and battery.

Bleed the air from the clutch hydraulic system and top off the brake fluid.

Install the air box/intake system.

Install the lower insulation panel or skid plate.

Lower the vehicle to the ground and tighten the outer CV bolt the additional specified number of degrees (if required).

TORQUING TIPS

Torque to Yield or "Stretch" Bolts

Many bolts will have a torque specification listed in the format - xx Nm (xx Ft-lbs) + xx degrees. These bolts are torque to yield bolts, commonly referred to as "stretch" bolts. The correct procedure for torquing these bolts is:

Stage One - Torque the bolt(s) to the initial Nm or Ft-lb specification. If there is more than one, be sure to torque them in the correct sequence.

Stage Two - Tighten or "stretch" the bolt(s) the additional specified number of degrees. If there is more than one, be sure to follow the correct sequence.

Note - Some bolts may have two or more stages of torquing before the final stage of "stretching" the bolts.

When tightening more than one bolt in a specified sequence, be sure to mark each fastener with paint **immediately** after performing the final stage or "stretching" of the bolts. This will ensure that you keep track of which bolts have already been "stretched".

All Torque to Yield bolts should only be used once and should be replaced each time they are removed. If they are reused, they will not be able to achieve the proper clamping force with the specified torque.

Lubrication

Torque specifications are always listed for a dry fastener (**no** lubrication) unless specified otherwise.

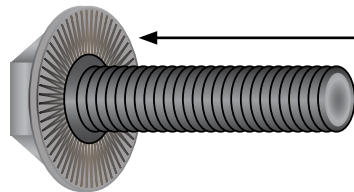
Some fasteners require lubrication on the threads -or- on the contact surface while torquing. These fasteners will be listed with the specific location and type of lubrication required. Always follow manufacturers recommendations exactly.

Lubricating a fastener that is intended to be installed dry and then torquing it to factory specifications will increase the clamping force and stress on the fastener and components, which can result in damage or failure.

Do not lubricate the threads of any fastener unless it is specifically recommended by the manufacturer.

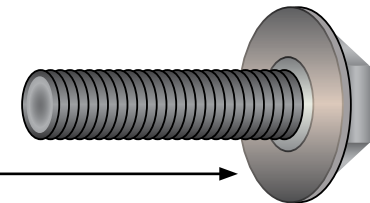
Ribbed vs. Non-Ribbed Bolts

Ribbed and Non-Ribbed bolts in the same location generally require a different torque specification.



A ribbed bolt is identified by the ribs on the contact surface

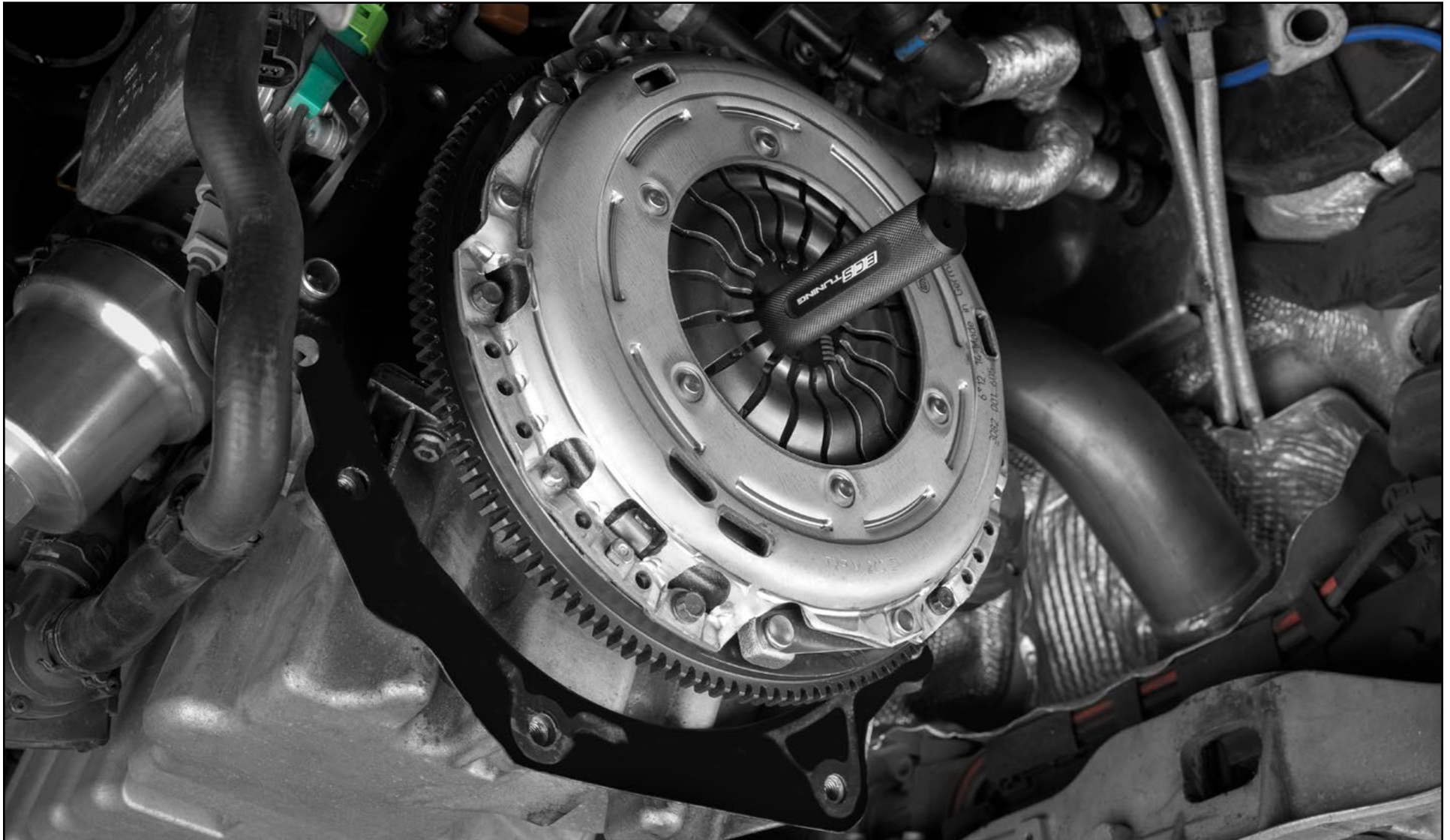
A non-ribbed bolt is identified by the smooth contact surface



TORQUE SPECIFICATIONS

Ball Joint Nuts Cast Steel Control Arm	60 Nm (44 Ft-lbs)	(Page 52)
Ball Joint Nut Sheet Steel or Forged Alum Control Arm.....	100 Nm (74 Ft-lbs)	(Page 52)
Bell Housing Bolt Front M10 x 105	40 Nm (30 Ft-lbs)	(Page 51)
Bell Housing Bolts Lower M10 x 50.....	40 Nm (30 Ft-lbs)	(Page 51)
Bell Housing Bolt Rear M12 x 65 or 70	80 Nm (59 Ft-lbs)	(Page 51)
Bell Housing Bolt Upper M12 x 50 or 55	80 Nm (59 Ft-lbs)	(Page 51)
Flywheel Bolts.....	<i>Stage One:</i> 30 Nm (22 Ft-lbs) <i>Stage Two:</i> 60 Nm (44 Ft-lbs) <i>Stage Three:</i> Tighten an additional 90 degrees	(Page 45)
Inner CV bolts 8mm.....	40 Nm (30 Ft-lbs)	(Page 53)
Inner CV bolts 10mm.....	70 Nm (51 Ft-lbs)	(Page 53)
Outer CV bolt (Ribbed)	70 Nm (51 Ft-lbs) + 90 degrees.....	(Page 53)
Outer CV bolt (Smooth)	200 Nm (147 Ft-lbs) + 180 degrees	(Page 53)
Pendulum Support to Subframe.....	100 Nm (74 Ft-lbs) + 90 degrees	(Page 52)
Pendulum Support to Transmission.....	50 Nm (37 Ft-lbs) + 90 degrees	(Page 52)
Pressure Plate Bolts.....	20 Nm (15 Ft-lbs).....	(Page 48)
Selector Shaft Nut.....	20 Nm (15 Ft-lbs).....	(Page 51)
Slave Cylinder Bolts (Metal Slave)	12 Nm (9 Ft-lbs).....	(Page 50)
Slave Cylinder Bolts (Plastic Slave).....	15 Nm (11 Ft-lbs)	(Page 50)
Starter Bolts M12 x 165.....	80 Nm (59 Ft-lbs)	(Page 53)
Transmission Bracket Bolts	60 Nm (44 Ft-lbs) + 90 degrees	(Page 52)
Transmission Mount Bolts.....	60 Nm (44 Ft-lbs) + 90 degrees	(Page 52)
Wheels.....	120 Nm (89 Ft-lbs)	(Page 53)

Your Volkswagen MK5/MK6 TSI Lightweight Flywheel installation is complete!



These instructions are provided as a courtesy by ECS Tuning

Proper service and repair procedures are vital to the safe, reliable operation of all motor vehicles as well as the personal safety of those performing the repairs. Standard safety procedures and precautions (including use of safety goggles and proper tools and equipment) should be followed at all times to eliminate the possibility of personal injury or improper service which could damage the vehicle or compromise its safety.

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