



Audi B8 A4/A5 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.

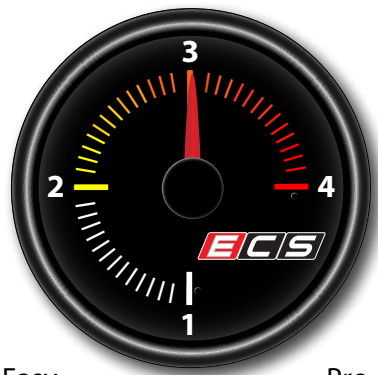
INTRODUCTION

ECS Tuning B8 A4/A5 Lightweight Flywheel

The ECS Tuning Audi B8 A4/A5 Lightweight Flywheel offers the following features and benefits:

- Improved Throttle Response
- Impressive Weight Savings
- Superior Durability
- All New Components
- New Pilot Bearings

ECS Difficulty Gauge



1 - Easy

Pro - 4

2 - Moderate

Advanced - 3

Installing the 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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Symbols:

The following symbols may be used throughout these instructions indicating special attention:



FORK IN THE ROAD: When there are different options within any given kit, we will direct you to the proper page and step to continue.



YIELD: Pause for a moment to double check component installation before you continue. Ignoring this can cost you time later during the installation.

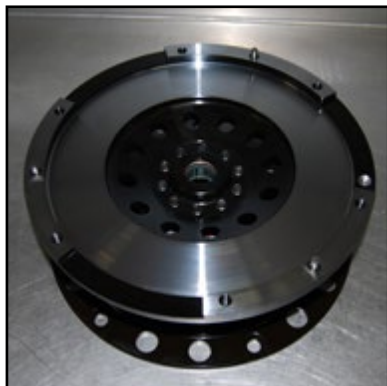


CAUTION: Pay close attention to these warnings and instructions. Difficult installation, personal injury or component damage may occur if ignored.



STOP: The upcoming steps require specific preparation and/or assistance in the interest of safety. Please read ahead in the instructions and prepare before continuing.

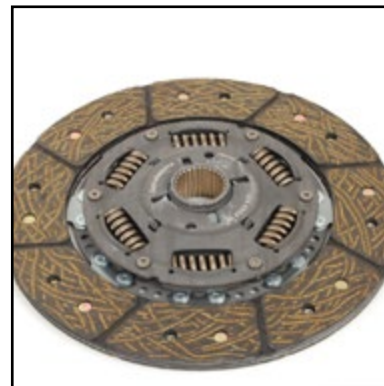
LIGHTWEIGHT FLYWHEEL KIT CONTENTS



Lightweight Flywheel



Pressure Plate



Clutch Disc



Guide Sleeve



Drive Plate o-ring



Pilot Bearing



Clutch Module Tool



Clutch Alignment Tool



Throwout Bearing



Clutch Module Bolts



Pressure Plate Bolts



Drive Plate Bolts

REQUIRED TOOLS

Standard Automotive Tools

- **Protecta-Sockets (for lug nuts)** [ES#2221243](#)
- **3/8" Drive Ratchet** [ES#2765902](#)
- **3/8" Drive Torque Wrench**..... [ES#2221245](#)
- **3/8" Drive Deep and Shallow Sockets**..... [ES#2763772](#)
- **3/8" Drive Extensions**..... [ES#2804822](#)
- Hydraulic Floor Jack [ES#240941](#)
- **Torx Drivers and Sockets** [ES#11417/8](#)
- **1/2" Drive Deep and Shallow Sockets** [ES#2839106](#)
- **1/2" Drive Ratchet**
- 1/2" Drive Extensions
- **1/2" Drive Torque Wrench**..... [ES#2221244](#)
- **1/2" Drive Breaker Bar**..... [ES#2776653](#)
- File Set
- Air Nozzle/Blow Gun
- Bench Mounted Vise
- Crows Foot Wrenches
- Hook and Pick Tool Set..... [ES#2778980](#)

Required For This Install

Available On Our Website

- **1/4" Drive Ratchet**..... [ES#2823235](#)
- **1/4" Drive Deep and Shallow Sockets**..... [ES#2823235](#)
- **1/4" Drive Extensions** [ES#2823235](#)
- 1/4" Drive Torque Wrench
- **Plier and Cutter Set**..... [ES#2804496](#)
- **Flat and Phillips Screwdrivers** [ES#2225921](#)
- Jack Stands..... [ES#2763355](#)
- Ball Pein Hammers
- **Pry Bar Set**..... [ES#1899378](#)
- Electric/Cordless Drill
- Wire Strippers/Crimpers
- Adjustable (Crescent) Type Wrenches
- Drill Bits
- Punch and Chisel Set
- **Hex Bit (Allen) Wrenches and Sockets** [ES#11420](#)
- Thread Repair Tools [ES#1306824](#)
- **Open/Boxed End Wrench Set** [ES#2765907](#)

Specialty Tools


- **VAG Connector Tool**..... [ES#2628676](#)
- **14 x 1.25 Wheel Hanger** [ES#2678092](#)
- **Engine Support Bar**..... [ES#2804772/3](#)
- **1/2" Drive Impact Wrench**

- **Triple Square Sockets**..... [ES#1910125](#)
- **Transmission Jack**
- **Brass Hammer**

IMPORTANT INFORMATION

• This clutch and flywheel design is considerably different than what is generally recognized as a “traditional” design. This new assembly is referred to as a “clutch module” and also a “clutch module/flywheel assembly”.

• Due to the different stages of clutches that are offered with this flywheel, the actual appearance of your kit contents may differ.

 The aluminum bell housing and starter bolts must be replaced on some vehicles, and can only be used twice on others depending on the production date. Please reference page eight for VIN split and bolt requirements.

• A note about 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 to torque **all of them first** to the Nm or Ft-lb specification, then tighten each one the additional specified number of degrees. To prevent a costly mistake it is important to mark each bolt with paint after tightening it the final specified number of degrees. See page 50 for additional information.

SHOP SUPPLIES AND MATERIALS

- G000100 Clutch Spline Lubricant Available at ecstuning.com..... [ES#465342](#)
- G000150 Paste Available at ecstuning.com..... [ES#2662951](#)
- G052128A1 Radial Seal Grease..... Available at ecstuning.com..... [ES#465368](#)
- Blue Threadlocker Available at ecstuning.com..... [ES#2167334](#)
- Hand Cleaner/Degreaser..... Available at ecstuning.com..... [ES#2167336](#)
- Absorbent Mats..... Available at ecstuning.com..... [ES#2626365](#)
- Aerosol Brake Parts Cleaner Available at your local auto parts store
- Nylon Cable Ties Available at your local auto parts store
- Shop Rags Available at your local auto parts store

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.



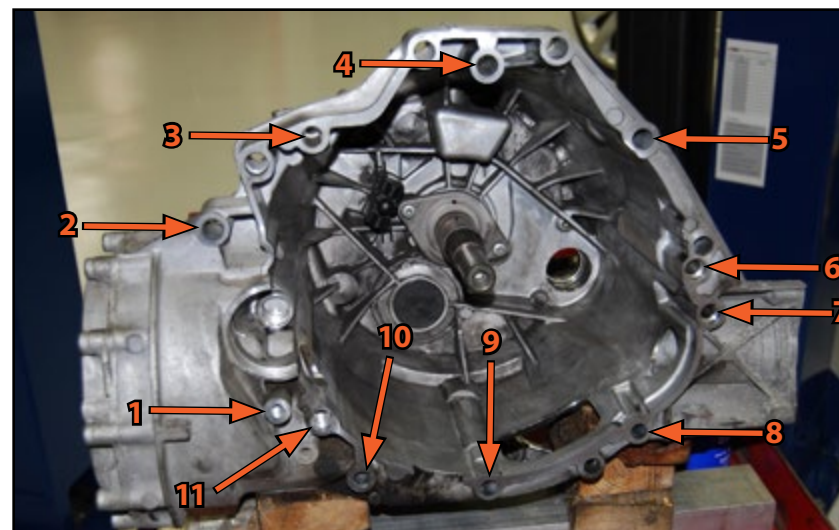
Never get underneath a vehicle that is supported only by a jack. Always make sure that the vehicle is securely supported on jack stands.

BELL HOUSING BOLT CHART

1. Lower Starter Bolt.....	M10 x 50
2. Bell Housing/Upper Starter Bolt w/spacer	M12 x 100
3. Bell Housing Bolt.....	M12 x 75
4. Bell Housing Bolt.....	M12 x 120
5. Bell Housing Bolt.....	M12 x 120
6. Bell Housing Bolt.....	M12 x 75
7. Bell Housing Bolt	M12 x 100
8. Bell Housing Bolt	M10 x 75
9. Bell Housing Bolt.....	M10 x 75
10. Bell Housing Bolt.....	M10 x 75
11. Bell Housing Bolt	M12 x 50

BELL HOUSING BOLT REQUIREMENTS

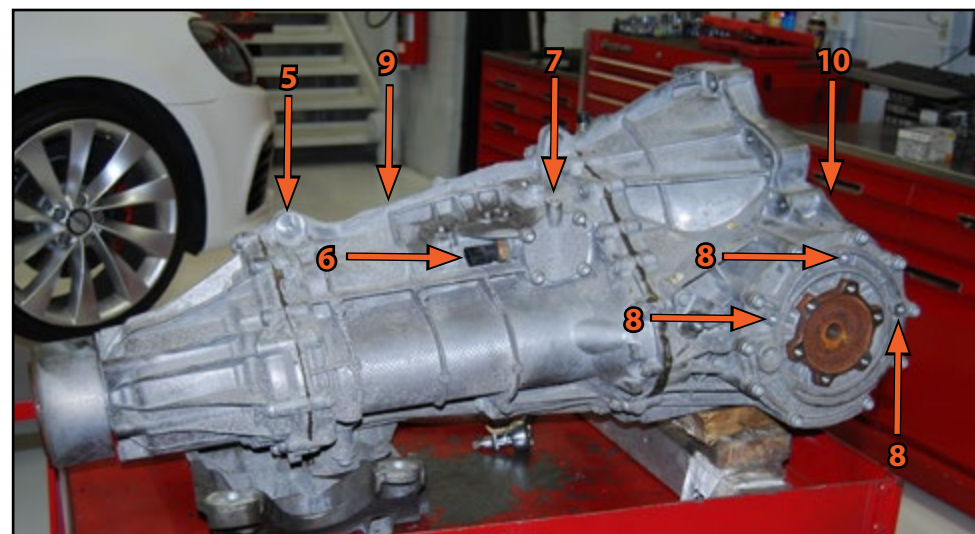
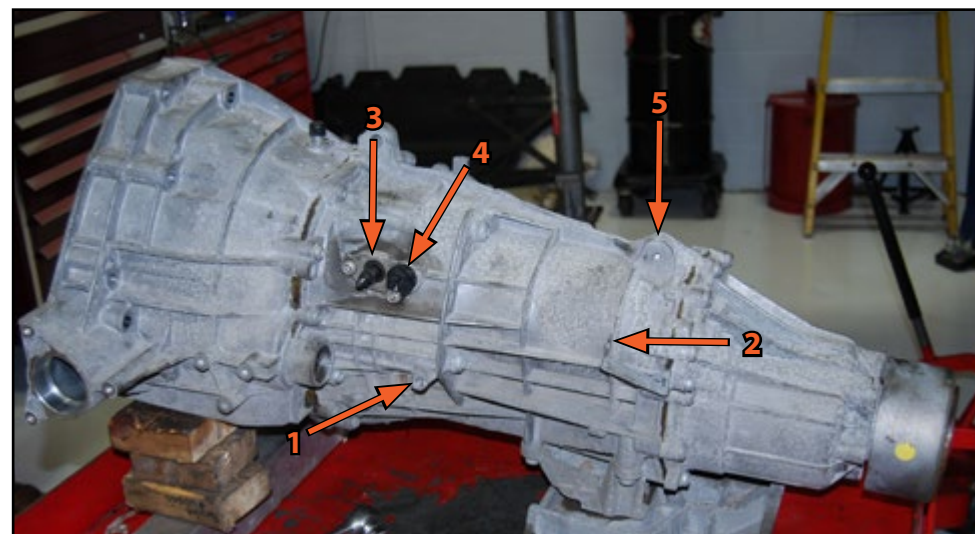
- The aluminum bell housing and starter bolts must be replaced on some vehicles, and can only be used twice on others depending on the production date. Make sure you replace the bell housing bolts if required.
- If your vehicle has bolts that can be used twice and they have an "X" on them, this means they have already been used a second time and must be replaced. If they do not have a marking on them, place an "X" on the head of each bolt to indicate that this is their second use.
- Audi A4/S4 vehicles up to VIN 8K-9-066499: Aluminum bolts must be replaced after each use.
- Audi A4/S4 vehicles from VIN 8K-9-066500 onwards: Aluminum bolts can be used twice.
- The steel lower starter bolt can be re-used any number of times.



COMPONENT LOCATIONS

Many of the items that you will need to remove are difficult to see and you will need to locate and remove some of them by “feel”. Use these charts as a reference before you begin and as you proceed with the installation. Be sure you do not forget to disconnect any of these items before lowering the transmission or they will be damaged.

1. Slave Cylinder Mounting Bolt
2. Mounting Grommet for Slave Cylinder Hydraulic Line
3. Selector Shaft
4. Start/Stop Switch (if equipped)
5. Mounting Bolt for Shifter Push Rod
6. Gear Detector Switch
7. Mounting Bolt for Shifter Connecting Rod
8. RH CV Joint Heat Shield Bolts
9. Harness Retainer Clip
10. Spacer for Upper Starter Bolt.



REMOVING THE TRANSMISSION

Step 1:

Using a 10mm socket, disconnect the negative battery terminal. (The battery is located in the trunk underneath the spare tire). Isolate the battery terminal so it does not accidentally swing over and contact the negative battery post.



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



Step 2:

Pull up on the engine cover on both sides to release the rubber grommets that hold it in place. Remove the cover.



REMOVING THE TRANSMISSION

Step 3:

Locate the two engine lift brackets (arrows).



Step 4:

Place the engine support bar over the engine, making sure it is positioned securely on the body structure at each side. Fasten the chains on the front and rear engine lift brackets, then tension them until all slack is removed from the chains.



Do not place the engine support bar on the inner lips of the fenders, they are very thin and will not support the weight. Make sure the legs of the support bar are placed on the rigid body structure.



REMOVING THE TRANSMISSION

Step 5:

Place the transmission in neutral, and safely raise and support the vehicle. Next remove the lower insulation panels from underneath the transmission and engine. This may differ from car to car depending on whether or not you have factory insulation panels or a skid plate installed. You will need a flat blade screwdriver, a T25 torx driver, and/or a 5mm allen, depending on your application.

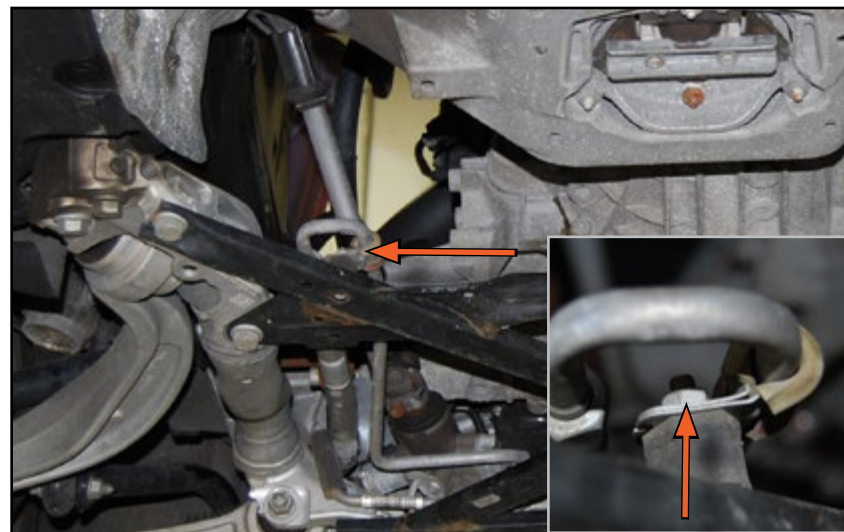
NOTE

For an in depth installation guide and fastener location chart for B8 skid plates, refer to our ECS Street Shield Skid Plates, [ES#2771379](#) or [ES#2771912](#)



Step 6:

Remove the 10mm nut (arrow and inset) holding the power steering line to the subframe cross brace.



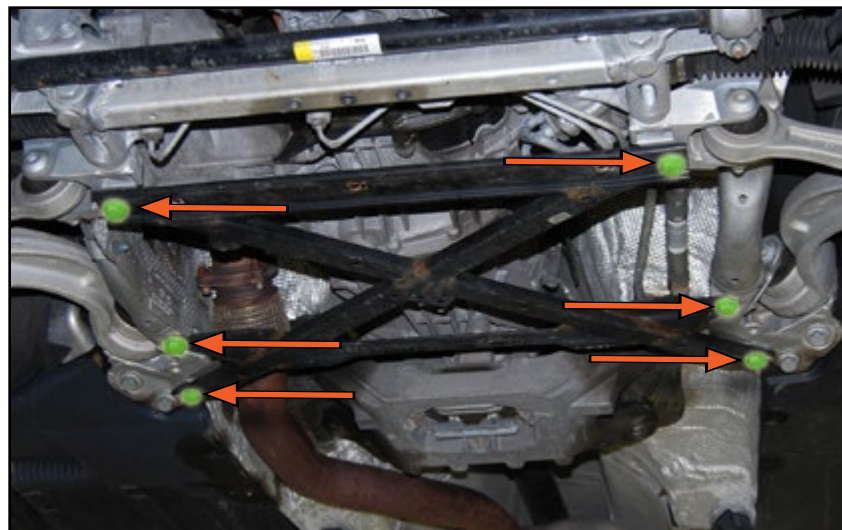
REMOVING THE TRANSMISSION

Step 7:

Using an 18mm socket, remove the six bolts attaching the subframe cross brace to the subframe and remove the cross brace.

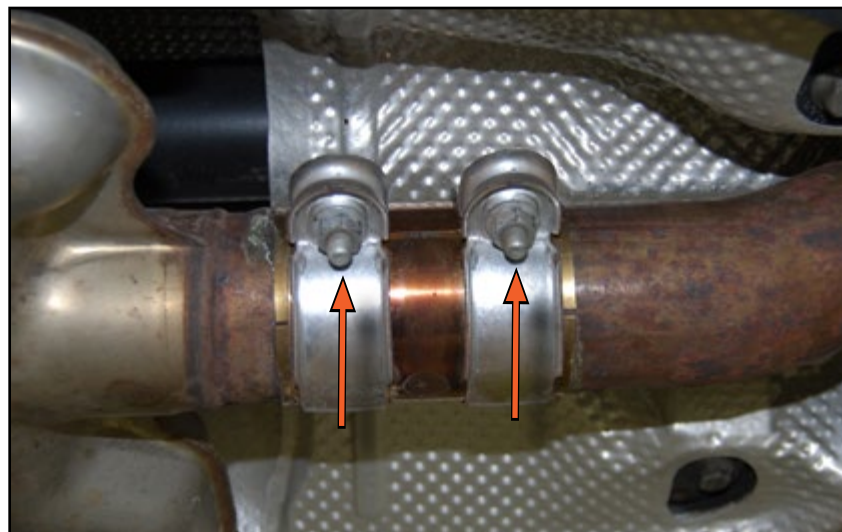


Do not lower the vehicle on the ground or put any weight on the wheels with the sub frame cross brace removed. Damage to the running gear can occur.



Step 8:

Loosen the two 13mm nuts (arrows) on the exhaust sleeve between the front exhaust pipe and the rear exhaust system. Do not remove the sleeve at this time.



REMOVING THE TRANSMISSION

Step 9:

Loosen the three nuts securing the front exhaust pipe to the catalytic converter. Remove two of the nuts first and while supporting the front pipe, remove the last nut, slide the exhaust sleeve rearward onto the rear exhaust pipe, then remove the front pipe.



Do not let the weight of the exhaust hang on the flexible section of the front exhaust pipe or damage to the pipe may occur.

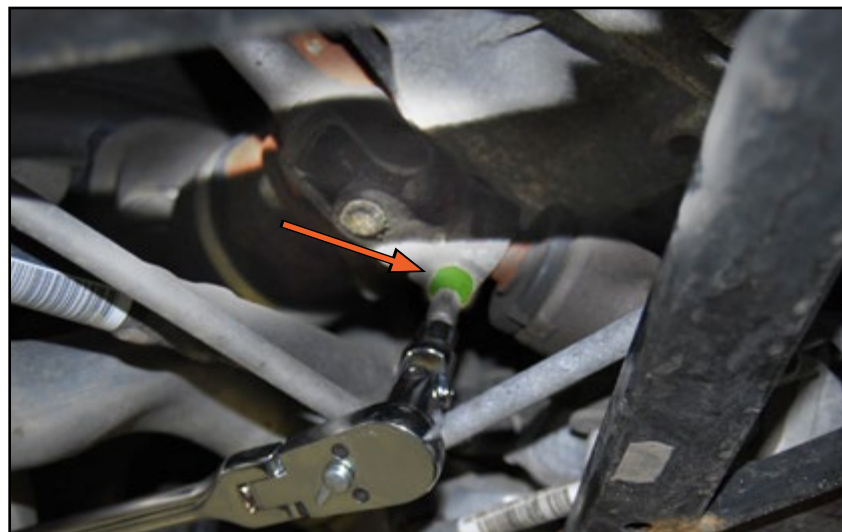


Step 10:

Make sure the front wheels are in the straight ahead position. Then, using a 10mm triple square socket, remove the bolt for the steering shaft universal joint.



Once the steering shaft is disconnected from the steering rack, make sure the steering wheel remains centered. Do not unlock the steering wheel or move it from center or the airbag spring will be damaged.



REMOVING THE TRANSMISSION

Step 11:

Slide the universal joint off the steering rack and push the steering shaft all the way up towards the firewall, out of the way.

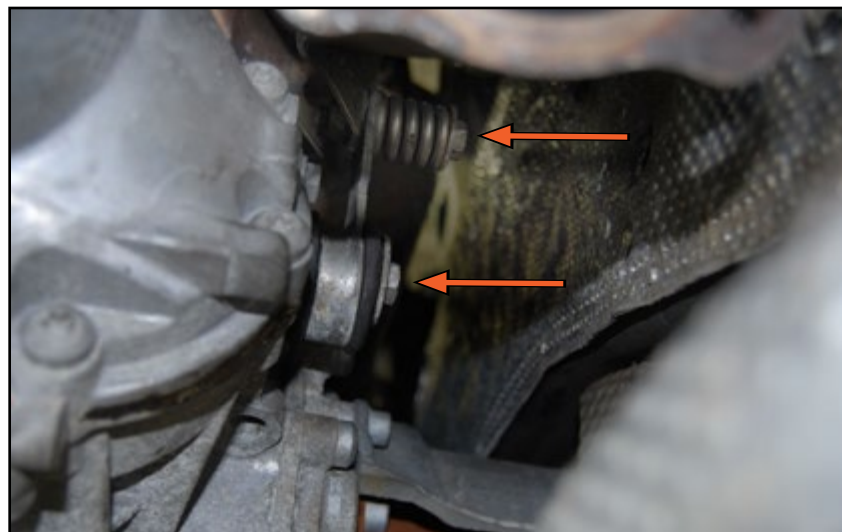
TECH TIP

You may need to spread the end of the universal joint slightly to remove it from the steering rack. As shown in the picture, use a flat blade screwdriver to spread the end of the joint, then using a soft face or brass hammer, lightly tap on the universal joint to remove it from the steering rack.



Step 12:

Using a 13mm wrench, remove the two bolts (arrows) securing the catalytic converter brace between the transmission and converter, then remove the brace.



REMOVING THE TRANSMISSION

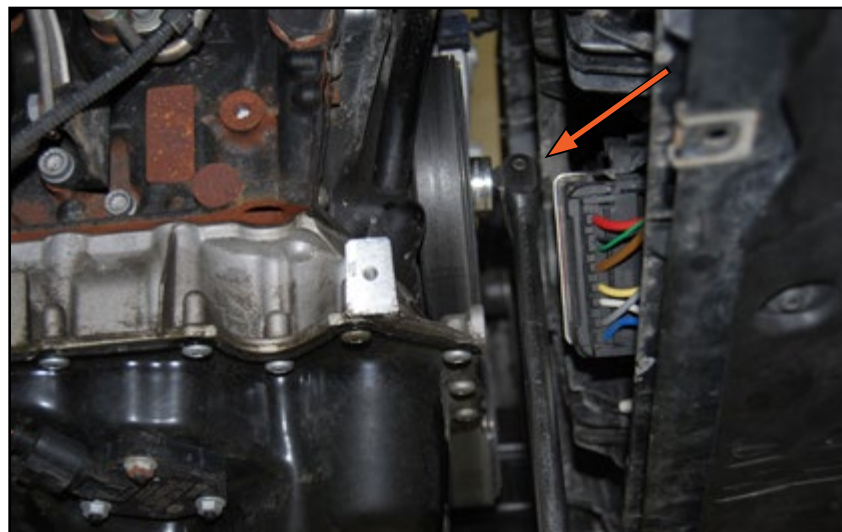
Step 13:

Using your thumb and forefinger, pull the cover/access plate (arrow) off the lower bell housing.



Step 14:

Using a 24mm socket and a breaker bar on the front crankshaft/balancer bolt, rotate the engine in a clockwise direction until one of the clutch module (clutch and flywheel assembly) bolts (shown in step 15) is visible through the access hole.



REMOVING THE TRANSMISSION

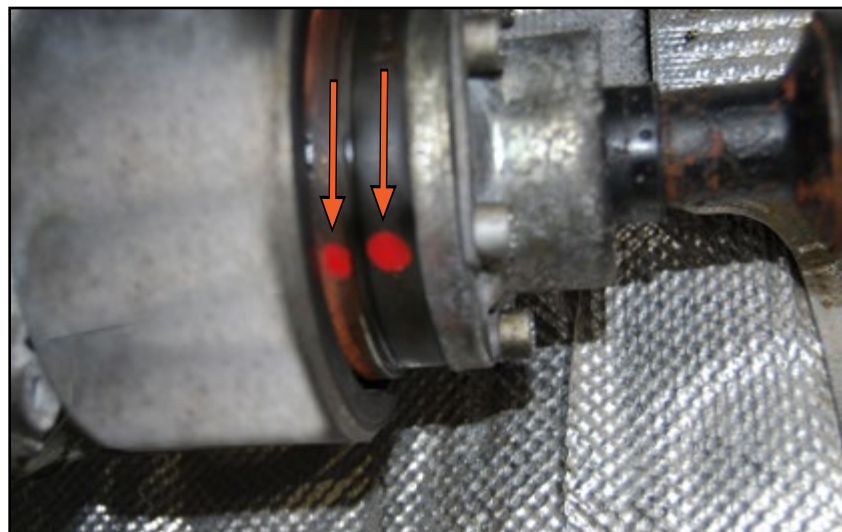
Step 15:

Using a 16mm 12 point wrench or socket, loosen and remove the clutch module bolt. You will need to hold the crankshaft while loosening the bolt. Rotate the crankshaft clockwise until the remaining clutch module bolts are accessible. Loosen and remove the two remaining clutch module bolts.



Step 16:

Using a paint marker, make a reference mark on the front propeller shaft joint and the transmission output flange.



REMOVING THE TRANSMISSION

Step 17:

Using an M10 triple square, remove the bolts holding the propeller shaft to the transmission flange. Some vehicles are equipped with a heat shield over the front propeller shaft flange. If your vehicle has this heat shield, it will need to be removed before you can access the propeller shaft bolts.

NOTE

If your car has a flanged propeller shaft connection at the transmission, refer to our B8S4 Lightweight Flywheel ([ES#2772073](#)) installation PDF for detailed instructions on removal.

TECH TIP

You will need to keep the propeller shaft from turning in order to loosen the bolts. A pry bar placed between two bolt heads will prevent the propeller shaft from turning.



Step 18:

Remove the propeller shaft from the transmission flange, push it slightly towards the rear, and secure it up out of the way using mechanic's wire.

TECH TIP

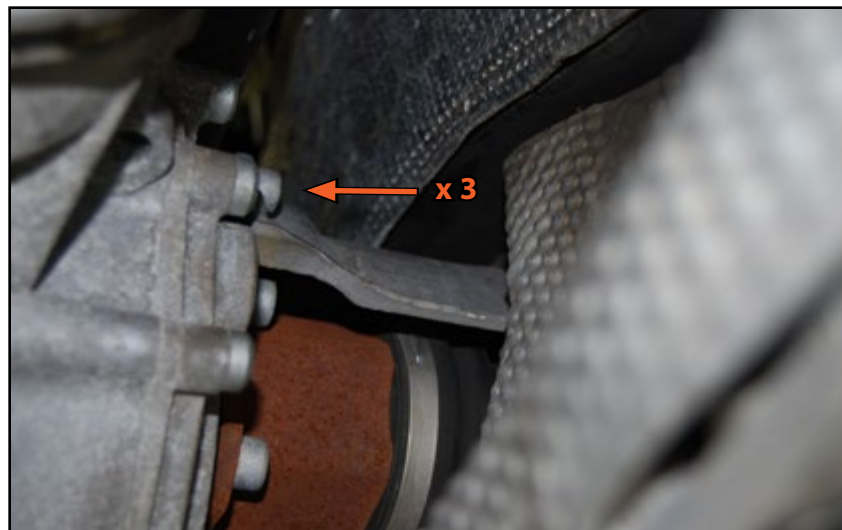
It may be necessary to drive the propeller shaft joint from the flange. To do so, engage a screwdriver in the groove on the propeller shaft joint and tap lightly. Rotate the propeller shaft and work your way around the circumference of the joint. Penetrating oil can also be helpful.



REMOVING THE TRANSMISSION

Step 19:

Using a 6mm allen socket or wrench, remove the three bolts for the RH Front CV joint heat shield and remove the shield. Reference page nine for bolt location.



Step 20:

Using an M10 triple square, unbolt the front LH and RH Inboard CV joints from the transmission output flanges. There are six bolts on each side.



REMOVING THE TRANSMISSION

Step 21:

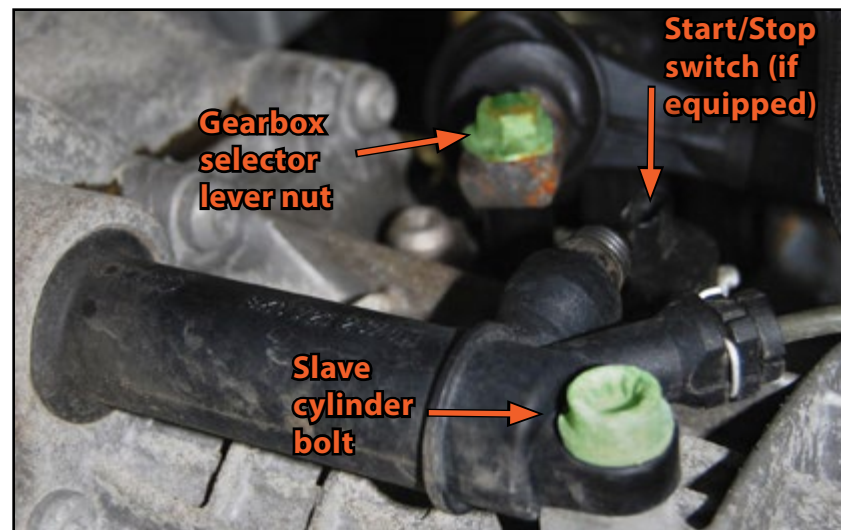
Using an M10 triple-square, remove the bolt for the clutch slave cylinder. Push up on the metal line for the slave cylinder to remove it from the support bracket. Slide the slave cylinder out of the bell housing and secure it up out of the way.

NOTE

If your vehicle is equipped with the start/stop system, disconnect the electrical connector from the switch on the transmission. It will be located just above the slave cylinder.



Do not press on the clutch pedal with the slave cylinder removed.



Step 22:

Using a 13mm wrench, loosen the selector lever nut (arrow). Do not remove the nut at this time, but leave it threaded onto the end of the selector shaft.



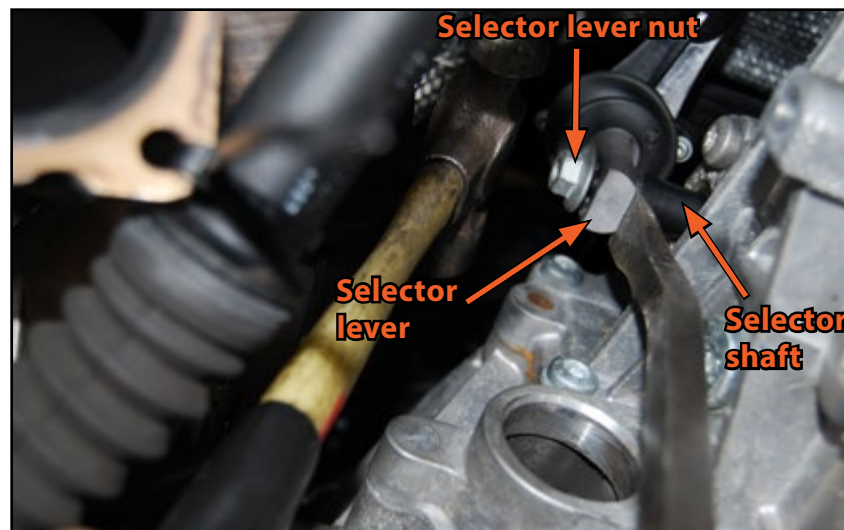
REMOVING THE TRANSMISSION

Step 23:

Remove the selector lever from the selector shaft. There is a special puller designed for this, however the following procedure works very well in absence of the puller: Using a pry bar, *gently* lever the selector shaft out of the transmission. Then, *tap* very lightly on the end of the selector lever nut and the selector lever will easily loosen on the selector shaft. As soon as the selector lever is loose, remove the nut and pull it the rest of the way off.

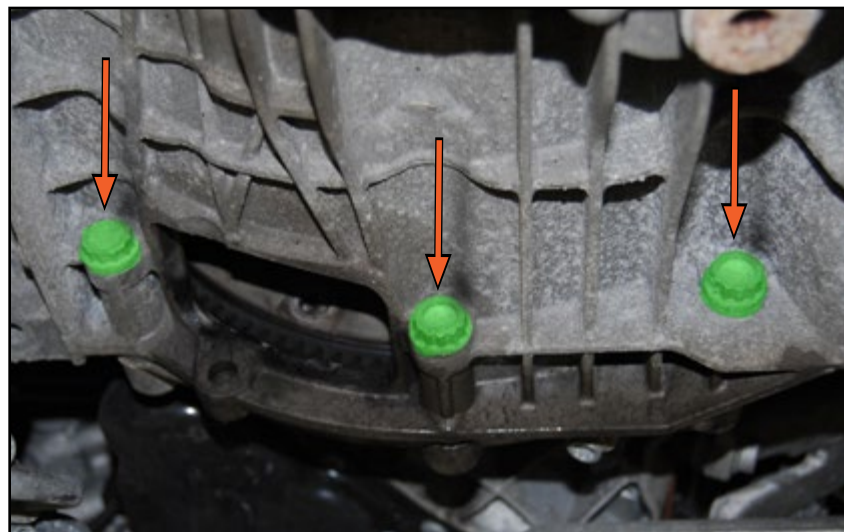


This will work very easily but be sure to be gentle. If you pry or hammer on the selector shaft, you can damage the transmission.



Step 24:

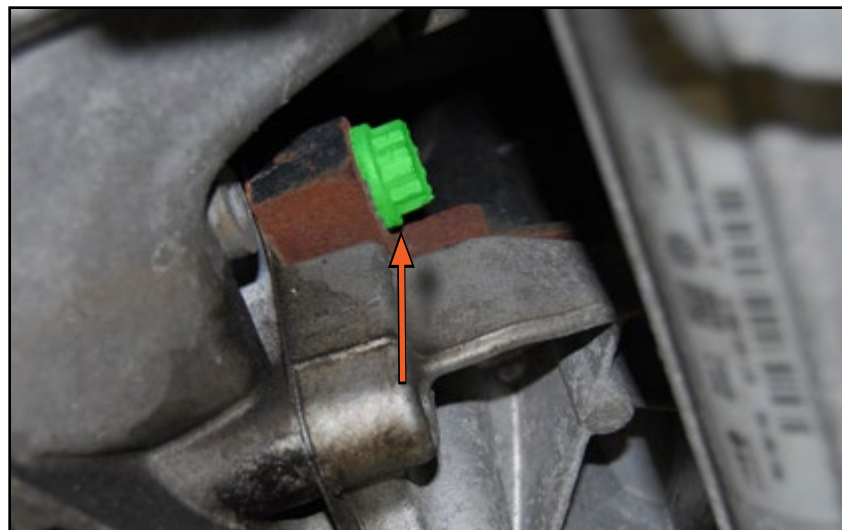
Using a 16mm 12 point socket, remove the three lower bell housing bolts (arrows).



REMOVING THE TRANSMISSION

Step 25:

Using an 18mm wrench, remove the rearward facing bolt from the lower bell housing. This bolt is located on the RH side, just below the starter.



Step 26:

Place a transmission jack under the center of the transmission and secure it in place with safety straps

NOTE

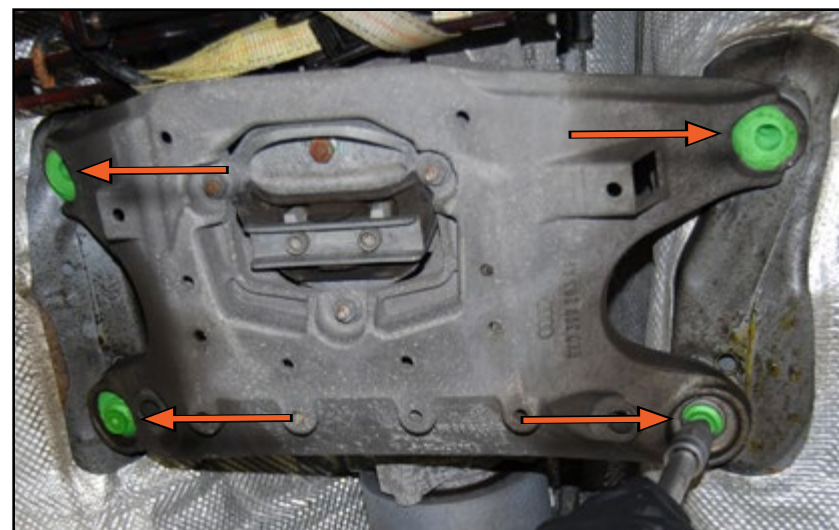
Be careful not to trap the shifter linkages or any wiring harnesses under the safety straps.



REMOVING THE TRANSMISSION

Step 27:

Using an M12 Triple-square, remove the four bolts securing the transmission cross member to the body of the car.



Step 28:

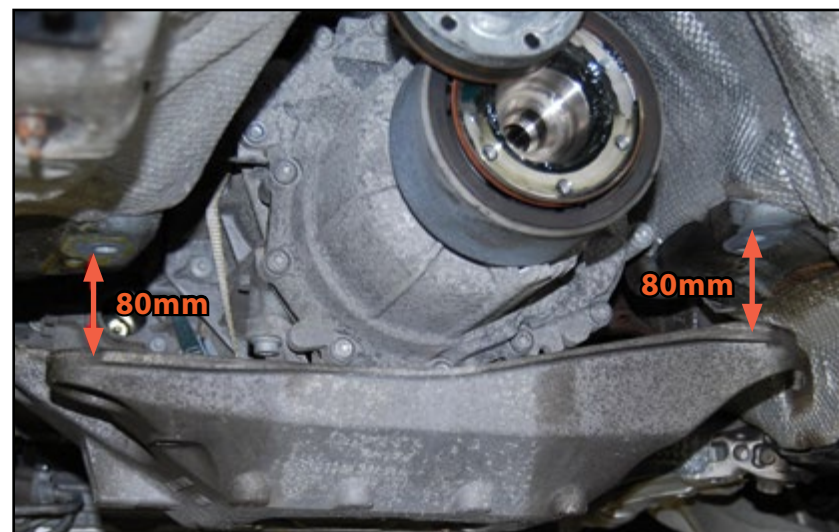
Slowly lower the transmission jack to obtain a distance of 80mm between the transmission cross member and the body.

NOTE

You may need to slightly lower the engine at the support bar once you begin to lower the transmission jack.

TECH TIP

As you lower the transmission, verify that no linkages or wiring harnesses are trapped under the transmission jack safety straps.



REMOVING THE TRANSMISSION

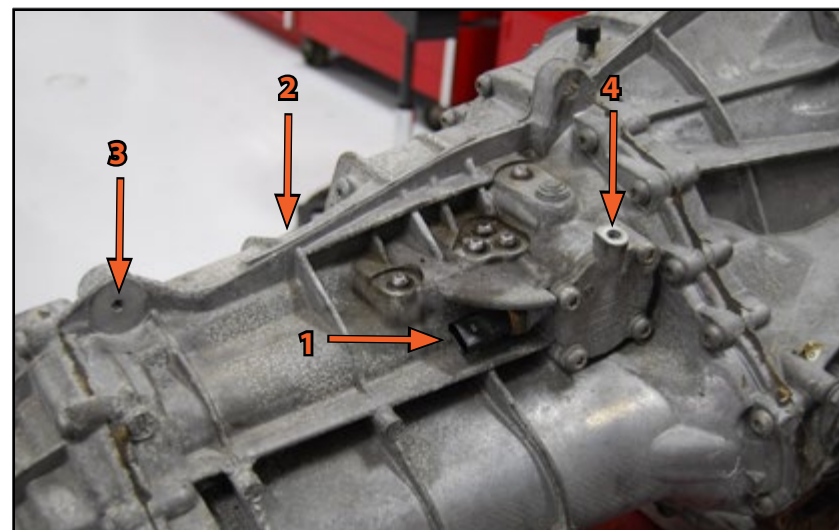
Step 29:

The following items are difficult to see. You will access them from reaching across the top of the transmission. Refer to the picture at the right then perform the following:

- Disconnect the gear detector switch (1)
- Remove the wiring harness spring clip (2)
- Remove the shifter push rod using a 13mm socket (3)
- Remove the shifter connecting rod using a 13mm wrench (4)

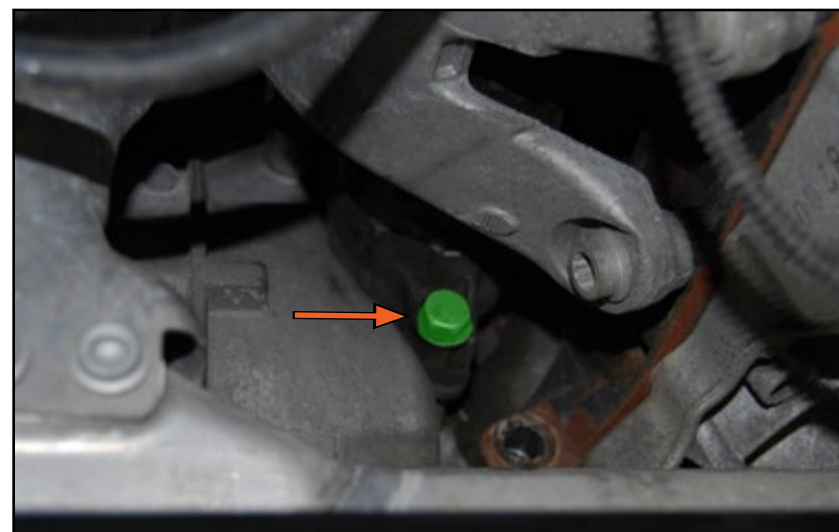
NOTE

The bolts in the shifter push rod and connecting rod are captured bolts and will remain in place in the linkages when they are removed.



Step 30:

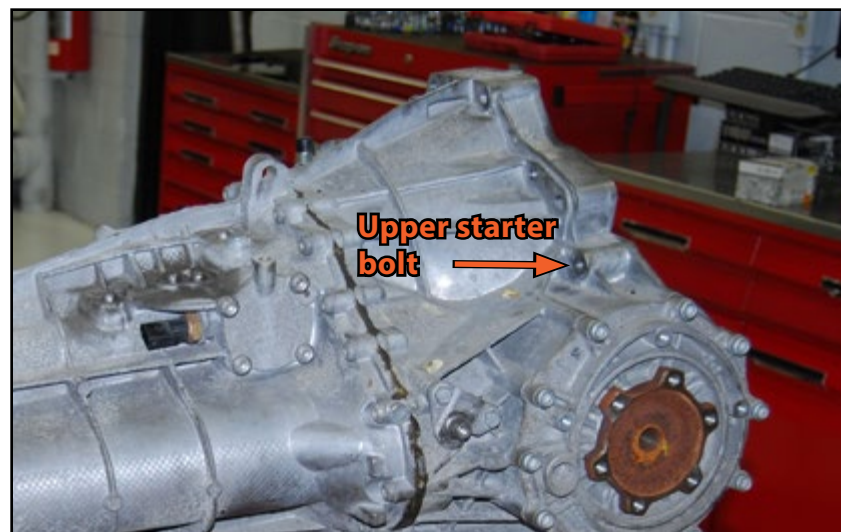
Using a 16mm wrench, Remove the lower starter bolt (arrow).



REMOVING THE TRANSMISSION

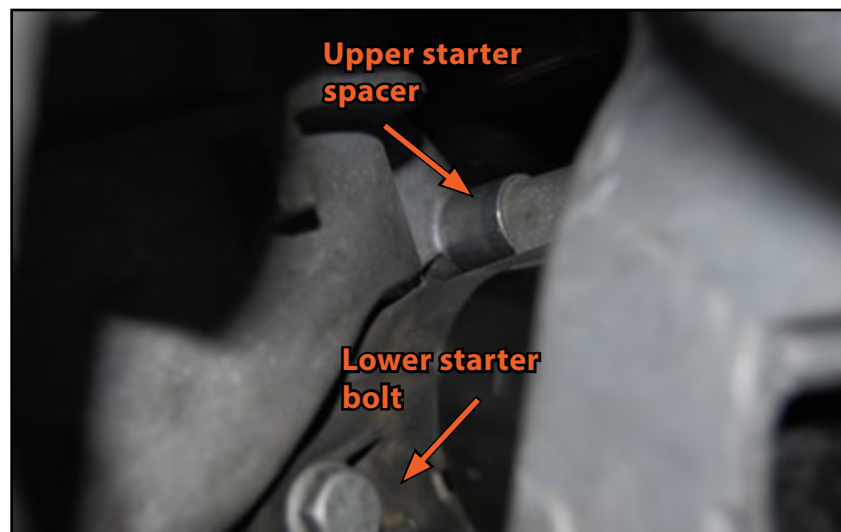
Step 31:

Working across the top of the transmission with a number of extensions and an 18mm 12 point socket, remove the upper starter bolt. (Location shown with the transmission removed for clarity).



Step 32:

Pull the starter back from the bell housing, making sure not to lose the spacer between the starter and the bell housing. It is not necessary to completely remove the starter or disconnect the cables.



REMOVING THE TRANSMISSION

Step 33:

Working across the top of the transmission using a number of extensions and an 18mm 12 point socket, remove the remaining five bolts securing the bell housing to the engine block. Reference page eight for bell housing bolt location.



Before proceeding, we strongly recommend the help of an assistant to remove the transmission. It will be very top heavy on the jack and an assistant can help stabilize it during removal.



Step 34:

Pull the transmission rearward until the clutch module is clear of the pilot bearing in the drive plate. You will be able to look between the transmission and the drive plate to see when it is clear. At this point you can begin to lower the transmission slightly.

TECH TIP

Gently levering a screwdriver between the engine and transmission bell housing will help separate them. They should separate very easily. If not, double check for any bolts that may still be installed.



REMOVING THE TRANSMISSION

Step 35:

Adjust the front to rear and side to side angle of the transmission as needed to allow it to clear the body and subframe. Continue to lower the transmission and pull it rearward in small increments until the transmission is clear of all obstructions and you can lower it completely.

TECH TIP

Work slowly and patiently and you will be able to remove the transmission without any trouble. Pay close attention to the angles and position required to remove it. You will re install it in the same way.



Step 36:

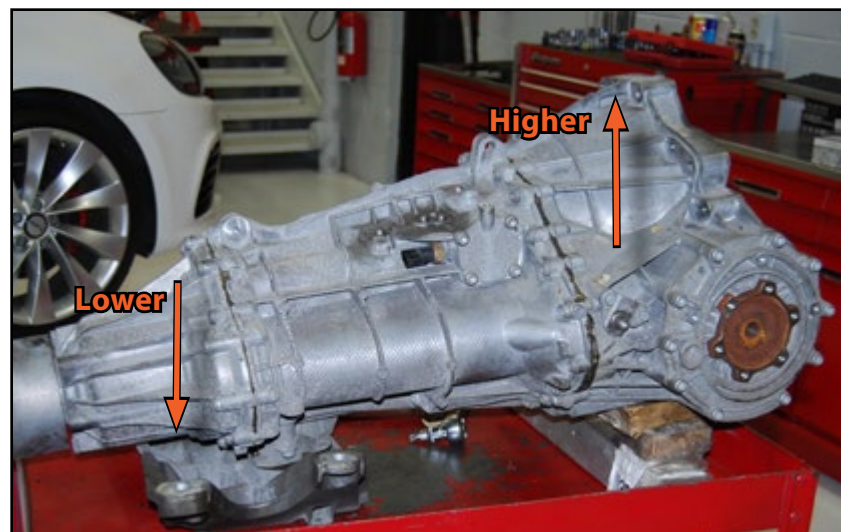
Remove the safety straps and place the transmission on a bench.



REMOVING THE CLUTCH MODULE/FLYWHEEL ASSEMBLY

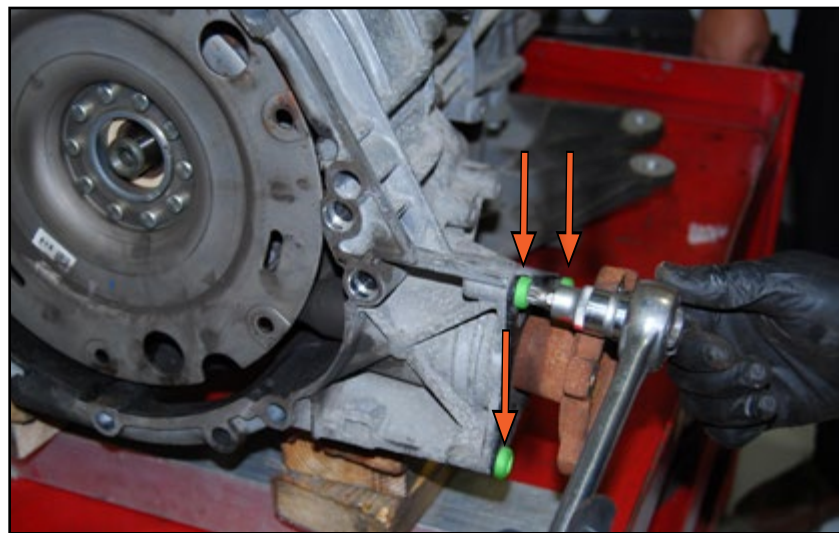
Step 1:

Raise and support the bell housing so the transmission tailshaft is slightly lower than the bell housing. This is to prevent gear oil from leaking out when the LH axle shaft is removed.



Step 2:

Using an M10 Triple-square, remove the three bolts (arrows) holding the LH axle retainer to the transmission bell housing.



REMOVING THE CLUTCH MODULE/FLYWHEEL ASSEMBLY

Step 3:

Pull the LH axle straight out to remove it.

NOTE

Be careful to keep the axle shaft centered when removing it or the inner oil seal can be damaged.

TECH TIP

If the axle shaft does not easily pull straight out, you may need to use a slide hammer/puller for removal.

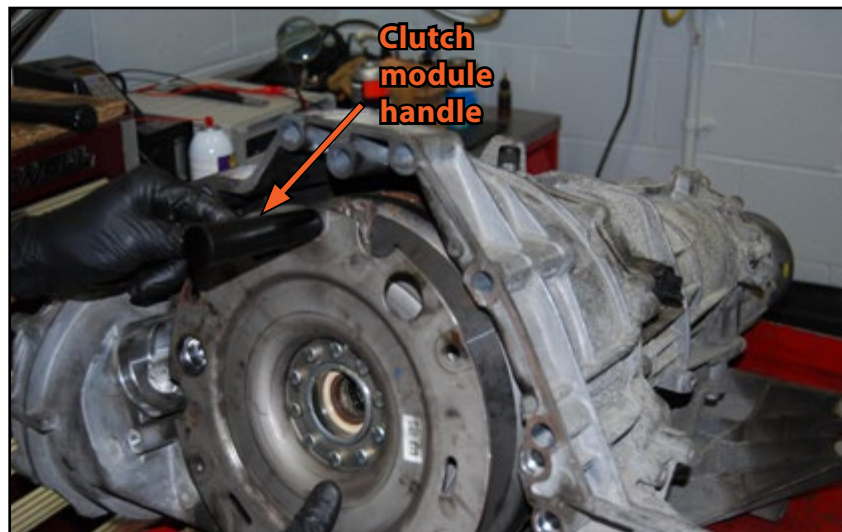


Step 4:

Insert the clutch module extractor handle bolt through one of the holes in the clutch module and install the nut on the back side of the handle. Position the handle at the top as shown in the picture. While firmly gripping the handle and supporting the weight of the module at the bottom, pull the clutch module straight out from the bell housing to remove it.



The clutch module is very heavy. Be sure to pull it straight out or you may damage the seal and the pilot bearing housed in the flywheel.



SERVICING THE CLUTCH RELEASE MECHANISM

Step 1:

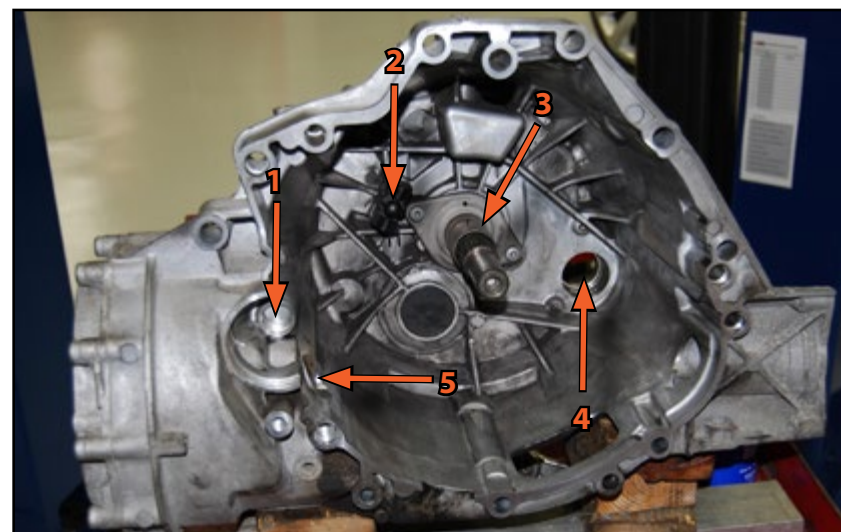
Remove the clutch release lever and throwout bearing together by pushing in on the retaining spring (arrow) and pulling the end of the release lever off the pivot ball. Remove the old throwout bearing by simply pulling it off of the clutch release lever. Make sure to install the retaining spring back in place.



Step 2:

Cover the opening for the axle shaft, then thoroughly clean the inside surface of the bell housing using brake cleaner. Also carefully clean the hole for the slave cylinder, the release lever pivot ball, and the hole for the starter nose.

1. Hole for Starter Nose
2. Release Lever Pivot Ball
3. Guide Sleeve
4. Hole for Slave Cylinder
5. Opening for Axle Shaft (Cover this when cleaning)



SERVICING THE CLUTCH RELEASE MECHANISM

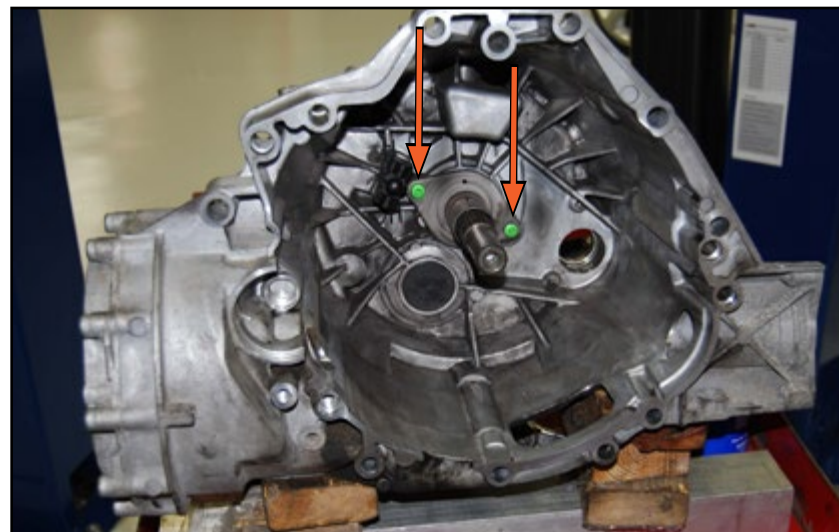
Step 3:

Clean the opening for the axle shaft by wiping outward with a rag so no dirt is pushed onto the axle shaft seal. The axle shaft seal requires a special radial seal grease ([ES#465368](#)) in the valley of the seal. If any of this grease is wiped away, it must be replenished.



Step 4:

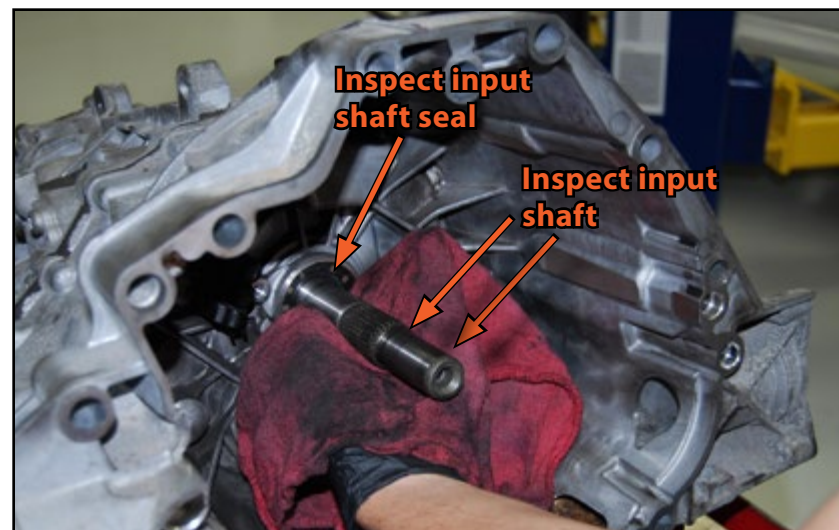
Using a T30 Torx bit, remove the two bolts (arrows) securing the throwout bearing guide sleeve and remove the guide sleeve.



SERVICING THE CLUTCH RELEASE MECHANISM

Step 5:

Clean the area under the guide sleeve and carefully inspect the input shaft seal for signs of leakage. Also inspect the end of the transmission input shaft for any signs of wear or galling where the pilot bearings ride. It is normal to see light discoloration as you can see in this picture. Only excessive wear will require replacement of the input shaft.



Step 6:

Apply blue threadlocker to the guide sleeve bolts, install the new guide sleeve and torque the bolts to 8 Nm (6 Ft-lbs).



SERVICING THE CLUTCH RELEASE MECHANISM

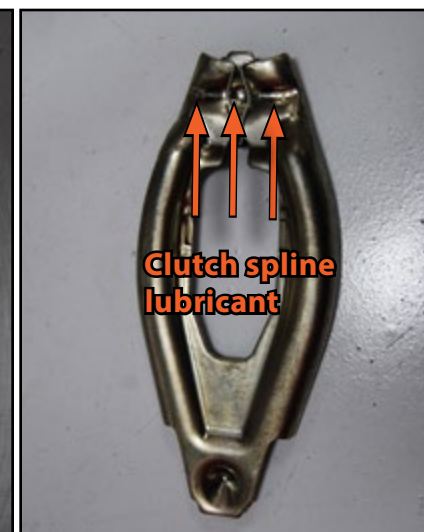
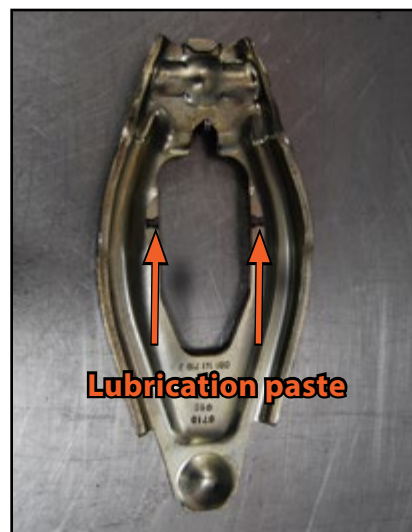
Step 7:

Apply clutch spline lubricant ([ES#465342](#)) to the splines on the transmission input shaft.



Step 8:

Thoroughly clean the clutch release lever using brake cleaner. Then sparingly apply clutch spline lubricant ([ES#465342](#)) to the clutch release lever at the pivot points and lubrication paste ([ES#2662951](#)) where the throwout bearing contacts the clutch release lever. These locations are shown by arrows in the pictures.



SERVICING THE CLUTCH RELEASE MECHANISM

Step 9:

Install the new throwout bearing onto the clutch release lever by pressing it into place and also make sure the retaining spring is correctly installed as shown.



Step 10:

Install the clutch release lever assembly onto the guide sleeve, then push on the clutch release lever at the pivot point to engage the retaining clip.

NOTE

Make sure the guide sleeve is clean and free of grease where it contacts the throwout bearing.

TECH TIP

Once the clutch release lever is installed, make sure it moves freely back and forth on the guide sleeve.



ASSEMBLING AND INSTALLING THE CLUTCH MODULE

Step 1:

Thoroughly clean the surface of the flywheel using brake cleaner and a clean shop rag.

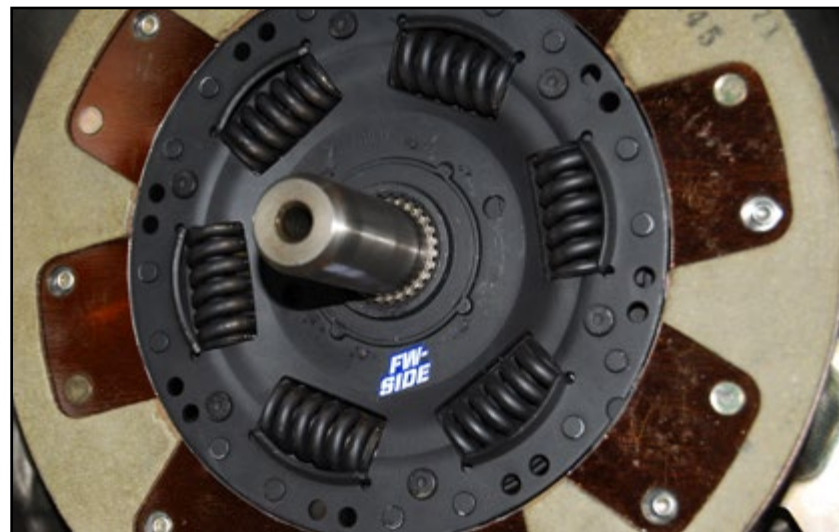


Step 2:

Test fit the clutch disc by sliding it onto the input shaft and make sure that it fits correctly and slides on with ease. It is extremely uncommon to experience any type of trouble with this, but in the rare case it's better to find out now than when the transmission is back in the car.

NOTE

Be sure to have clean hands and be careful not to get any grease or contaminants on the surface of the clutch disc.



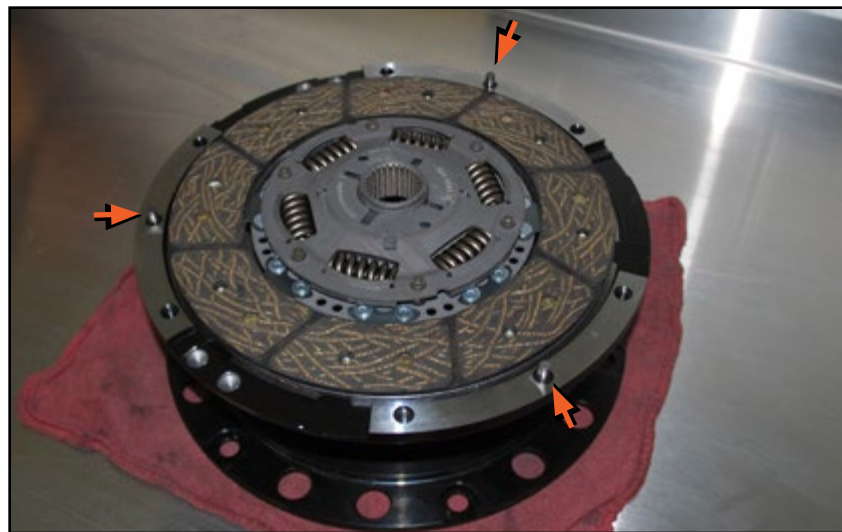
ASSEMBLING AND INSTALLING THE CLUTCH MODULE

Step 3:

Place the new clutch disc on the flywheel. The new disc will have a marking for “flywheel side” or “transmission side”. Make sure the disc is installed with the correct side mating to the flywheel. Note the location of the three dowel pins in the new flywheel (arrows). These will be relevant on page 37, step 6.

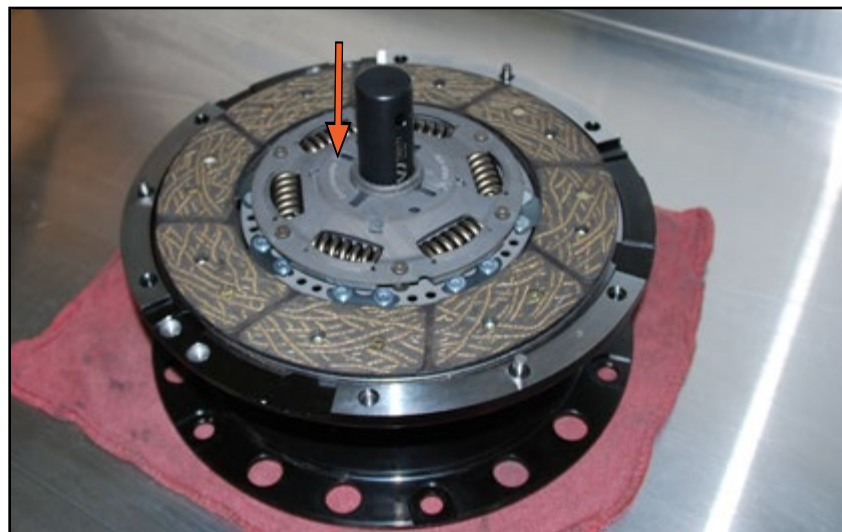
NOTE

The clutch disc will only fit and sit flush on the flywheel one way. If you cannot find a marking, you will see that the clutch disc will not sit flush against the flywheel if it is upside down.



Step 4:

Push the clutch disc alignment tool (included with the kit) down through the center of the clutch disc and into the pilot bearing of the flywheel until it is fully seated.



ASSEMBLING AND INSTALLING THE CLUTCH MODULE

Step 5:

Clean the surface of the pressure plate using brake cleaner and a clean shop rag. Note the location of the three dowel pin holes in the pressure plate (arrows) which will be relevant in the next step.



Step 6:

Set the pressure plate in place on top of the clutch disc, making sure to align the three dowel pins with the three dowel pin holes in the pressure plate.



ASSEMBLING AND INSTALLING THE CLUTCH MODULE

Step 7:

First install all six new pressure plate bolts (included with the kit) through the pressure plate and into the flywheel, just until they are finger tight. Next using an M10 Triple Square Socket, slowly tighten each of the pressure plate bolts 1/4 turn at a time, alternating between them in the sequence shown at the right until the pressure plate and the bolts are fully seated onto the flywheel.



Step 8:

Using an M10 Triple Square socket, torque the pressure plate bolts to 22 Nm (16 Ft-lbs) + 90 degrees using the same tightening sequence as used in the previous step. You can now remove the clutch alignment tool.



If you are unfamiliar with this type of torque specification, reference page 50 for an explanation of the procedure.

TECH TIP

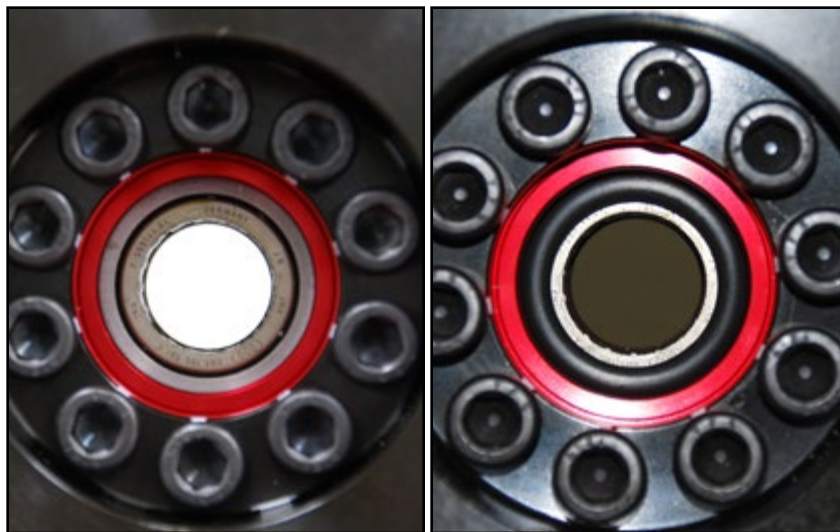
A second person may be required to hold the clutch module while torquing these bolts. Do not place the clutch module in a vise or anything that will damage or distort the flywheel.



ASSEMBLING AND INSTALLING THE CLUTCH MODULE

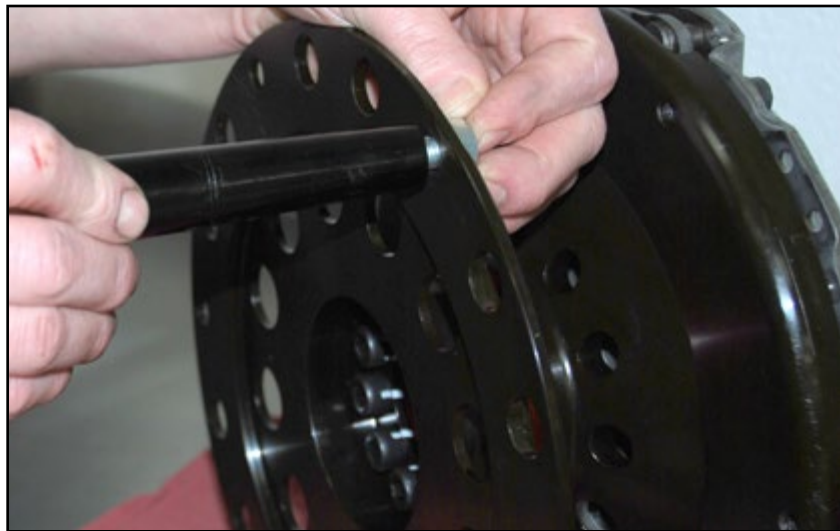
Step 9:

Push the drive plate o-ring into the center of the flywheel as shown. The o-ring should fit tight enough so it does not fall out while installing the flywheel. If the o-ring seems loose or falls out, apply a small amount of light bearing grease around the seal to hold it into place.



Step 10:

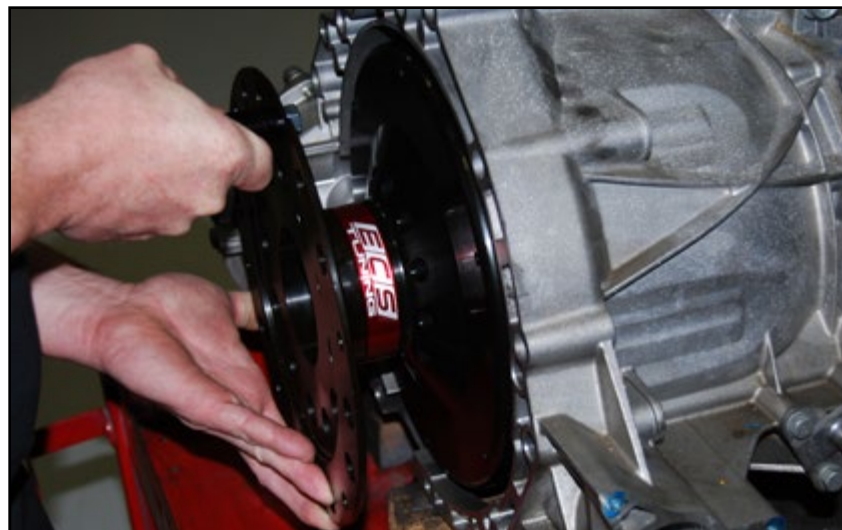
Install the clutch module tool into one of the holes around the perimeter of the new flywheel.



ASSEMBLING AND INSTALLING THE CLUTCH MODULE

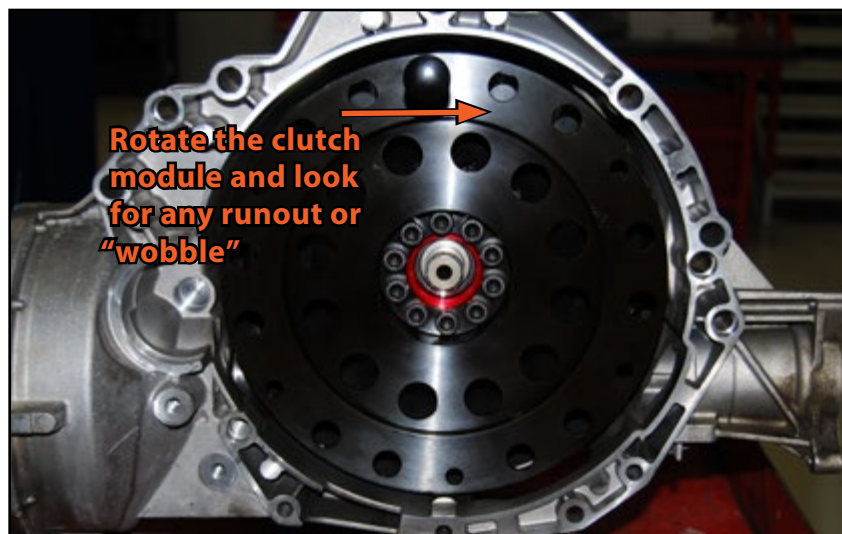
Step 11:

Slide the clutch module/flywheel assembly onto the transmission input shaft. Be sure to keep the assembly centered while you are installing it or you can damage the seal on the pilot bearing. Rotate or “wobble” the clutch module back and forth as necessary until it slides all the way on and is fully seated.



Step 12:

Turn the clutch module continuously in one direction and watch closely at the edges to make sure it rotates smoothly and does not wobble (runout). Even with the clutch disc properly centered, you may still notice a small amount of runout (approximately 1mm) but this is an acceptable amount. If you experience excessive runout, make sure the flywheel is fully seated onto the input shaft and if necessary, remove the flywheel and check the centering of the clutch disc using the clutch alignment tool.



ASSEMBLING AND INSTALLING THE CLUTCH MODULE

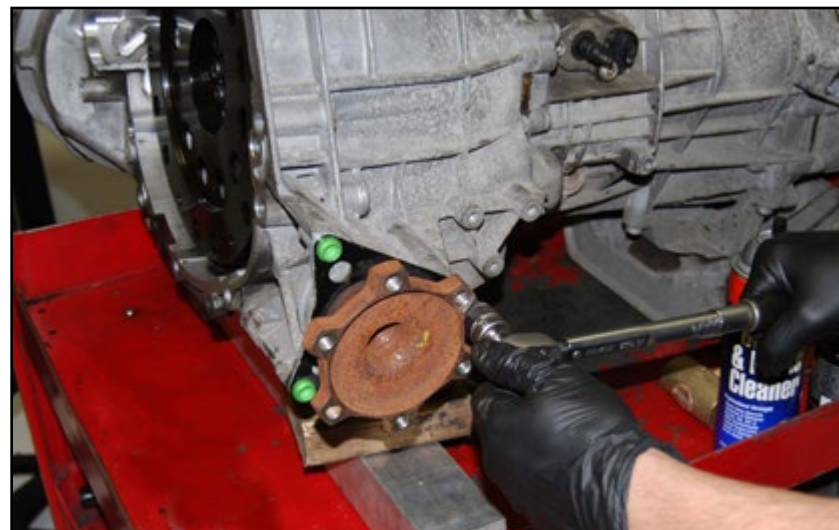
Step 13:

Install the axle by slowly inserting the axle shaft into the bell housing, through the clutch module and into the opening for the axle shaft. Support the axle shaft by holding it with your finger through one of the holes in the flywheel. Keep it centered so the splines do not contact or damage the seal. The shaft should slide in very easily if it is properly centered.



Step 14:

Install the three axle retainer bolts and torque them to 15 Nm (11 Ft-lbs) + 45 degrees.



REPLACING THE PILOT BEARING IN THE DRIVE PLATE

Step 1:

Hold the crankshaft/balancer bolt to prevent the engine from turning, then using an M12 triple square socket, remove the eight bolts holding the drive plate to the crankshaft.



Step 2:

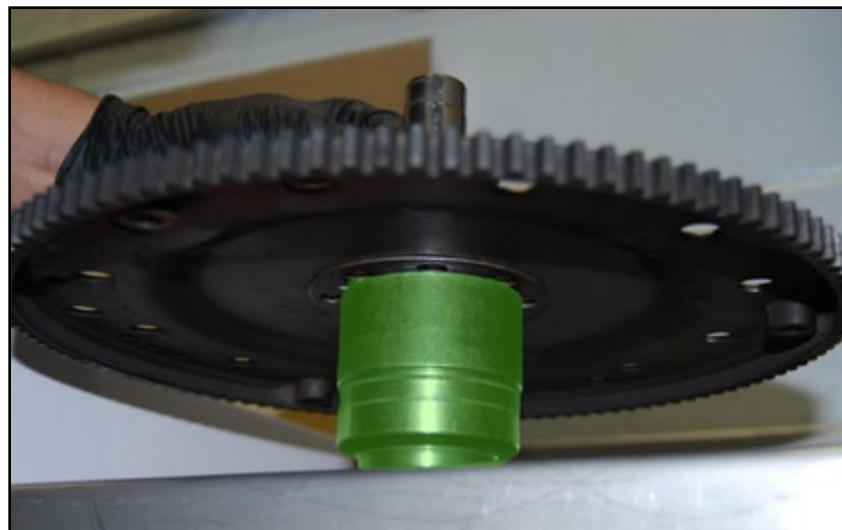
Pull the drive plate from the crankshaft.



REPLACING THE PILOT BEARING IN THE DRIVE PLATE

Step 3:

Support the center bolt flange of the drive plate using a large socket or suitable tool as shown in the picture.



Step 4:

Using a socket and soft faced hammer, drive the old pilot bearing out of the drive plate.



REPLACING THE PILOT BEARING IN THE DRIVE PLATE

Step 5:

Turn the drive plate over and support the center bolt flange using a large socket or suitable tool as shown in the picture. Then, using a socket or suitable tool that closely fits the outer diameter of the new pilot bearing, drive the new bearing into place.



Step 6:

Drive in the new bearing until it is fully seated in the drive plate.

NOTE

There is a lip in the snout of the drive plate which the pilot bearing will seat against when it is installed. When driving it into place you will be able to feel when it hits this lip.

TECH TIP

Clean the drive plate and crankshaft mating surfaces with brake cleaner to ensure that the drive plate will seat fully against the crankshaft.



REPLACING THE PILOT BEARING IN THE DRIVE PLATE

Step 7:

Hold the drive plate in position on the crankshaft, align the holes, and install the new bolts included with the kit. The bolts will not thread in by hand. The new bolts will have loctite on the bolt threads and will require the use of a ratchet to be threaded in. Thread the bolts in until they are completely seated.

NOTE

The bolt holes will only line up one way. Some vehicles may also have a locating dowel for the drive plate.

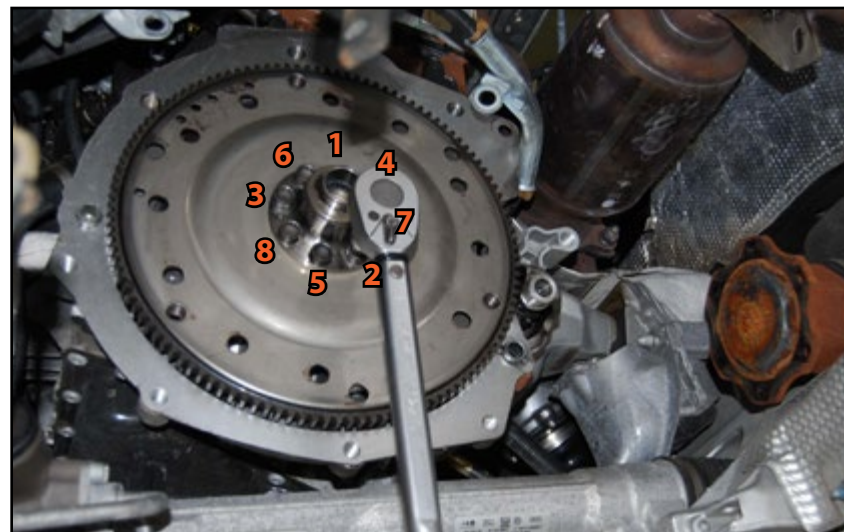


Step 8:

While holding the crankshaft to prevent it from turning, torque the drive plate bolts to 60 Nm (44 Ft-lbs) + 90 degrees. Torque these bolts in a criss-cross pattern.

NOTE

You will need someone to hold the crankshaft in place as you torque these bolts. Mark the bolts with a paint marker as you tighten them so you do not lose track of which ones have been tightened.



PREPARING FOR TRANSMISSION INSTALLATION

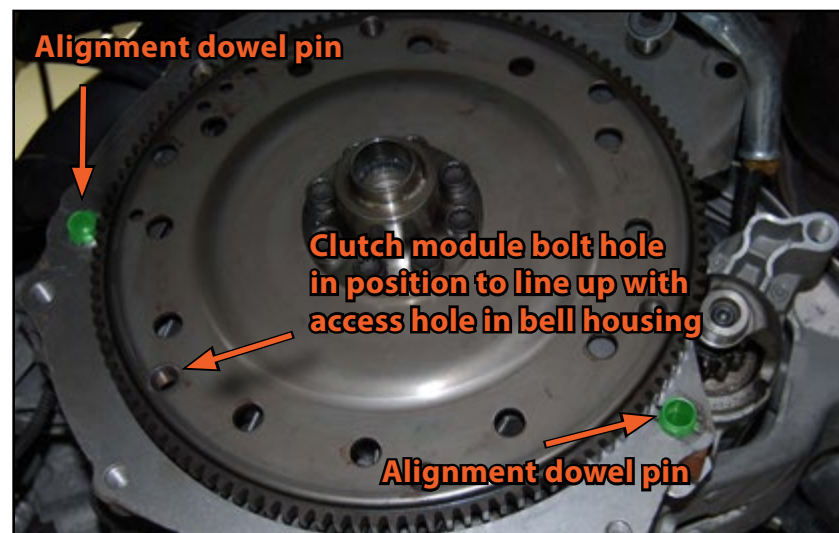
Step 1:

For ease of installation, rotate the crankshaft until one of the clutch module bolt holes (in the drive plate) will be in alignment with the access hole on the bottom of the transmission bell housing, once it is installed. Use both pictures at the right to reference this location.



Step 2:

Make sure that both of the alignment dowel pins are still located in the rear of the engine block and that they have not fallen out.



INSTALLING THE TRANSMISSION

The basic transmission Installation steps are the reverse of removal, however for ease of installation and accuracy, we have provided this checklist, complete with torque specifications and installation tips.

Place and secure the transmission on the transmission jack and raise it back into place. Work slowly and adjust the angles and height of the transmission jack as necessary to guide the transmission into place.

Once the transmission is aligned, slide it forward until the bell housing is fully seated against the engine block.

Slide the starter back into place and loosely install the lower starter bolt.

Install the 4 lower bell housing bolts just until they are fully seated.

For access, make sure there is a distance of 80mm between the transmission cross member and the body.

Install the remaining bell housing bolts just until they are fully seated.

Loosely install the upper starter bolt with the spacer.

Torque all of the bell housing bolts, then both starter bolts.

10mm Aluminum Bell Housing Bolts: 15 Nm (11 Ft-lbs) + 90 degrees

12mm Aluminum Bell Housing Bolts: 30 Nm (22 Ft-lbs) + 90 degrees

Lower Starter Bolt: 65 Nm (48 Ft-lbs)

Upper Starter Bolt w/spacer: 30 Nm (22 Ft-lbs) + 90 degrees

Install the shifter connecting rod, push rod, and selector rod. Torque them all to 20 Nm (15 Ft-lbs).

Connect the electrical connector for the gear detector switch and reconnect the harness retaining clip.

INSTALLING THE TRANSMISSION

If your vehicle is equipped with the start/stop system, reconnect the neutral position sender at this time.

Install the support bracket for the catalytic converter.

Raise the transmission so the cross member contacts the body

Install the four transmission cross member bolts and torque them to 70 Nm (52 Ft-lbs)

Push the slave cylinder into position. Be careful to keep the slave cylinder push rod straight as you slide it into position. Push the slave cylinder line bushing into the retaining bracket. Install and torque the slave cylinder bolt to 20 Nm (15 Ft-lbs).

Install and torque all three clutch module bolts. The holes in the drive plate and clutch module may not line up perfectly until the first bolt is installed. You will have to hold the clutch module and rotate the crankshaft until the first hole is lined up. The drive plate and clutch module are a precise fit, so they may turn together unless you hold the clutch module stationary. Install all three bolts until they are fully seated, then torque them all to 60 Nm (44 Ft-lbs).

Install the bell housing access hole cover plate.

Connect the propeller shaft. Torque the bolts to 30 Nm (22 Ft-lbs) + 90 degrees. Be sure to line up the paint marks made during disassembly.

Reinstall the propeller shaft heat shield if your vehicle was equipped with one.

Connect the steering shaft. Torque the bolt to 30 Nm (22 Ft-lbs) + 90 degrees.

Install both front CV axles. Torque the bolts to 70 Nm (52 Ft-lbs).

INSTALLING THE TRANSMISSION

Install the heat shield for the RH front CV joint.

Install the front exhaust pipe.

Install the subframe cross brace and torque all six bolts to 90 Nm (66 Ft-lbs) + 90 degrees.

Install the nut for the power steering line.

Install the noise insulation

Connect the negative battery terminal.

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.

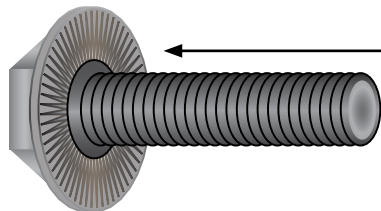
Some fasteners require lubrication on the threads -or- on the contact surface while torquing. These fasteners will be listed with the specific location and type of lubrication required. Always follow manufacturers recommendations exactly.

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.

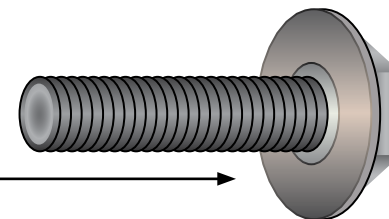
Ribbed vs. Non-Ribbed Bolts

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

10mm Aluminum Bell Housing Bolts	15 Nm (11 Ft-lbs) + 90 degrees	(Page 47)
12mm Aluminum Bell Housing Bolts	30 Nm (22 Ft-lbs) + 90 degrees	(Page 47)
Axle Retainer Bolts (Use Loctite)	15 Nm (11 Ft-lbs) + 45 degrees	(Page 41)
Clutch Module to Drive Plate Bolts (Always Replace)	60 Nm (44 Ft-lbs)	(Page 48)
CV joint to Transmission Flange (Always Replace)	70 Nm (52 Ft-lbs)	(Page 48)
Drive Plate to Crankshaft Bolts (Always Replace)	60 Nm (44 Ft-lbs) + 90 degrees	(Page 45)
Gearbox Selector Lever Nut (Always Replace)	20 Nm (15 Ft-lbs)	(Page 47)
Guide Sleeve Bolts (Apply Loctite)	8 Nm (6 Ft-lbs)	(Page 32)
Pressure Plate Bolts (Always Replace)	22 Nm (16 Ft-lbs) + 90 degrees	(Page 38)
Propeller Shaft Bolts (Always Replace)	30 Nm (22 Ft-lbs) + 90 degrees	(Page 48)
Shifter Connecting Rod	20 Nm (15 Ft-lbs)	(Page 47)
Shifter Push Rod	20 Nm (15 Ft-lbs)	(Page 47)
Slave Cylinder Bolt	20 Nm (15 Ft-lbs)	(Page 48)
Starter Bolt Lower	65 Nm (48 Ft-lbs)	(Page 47)
Starter Bolt Upper w/spacer	30 Nm (22 Ft-lbs) + 90 degrees	(Page 47)
Steering Shaft Bolt (Always Replace)	30 Nm (22 Ft-lbs) + 90 degrees	(Page 48)
Subframe Cross Brace Bolts (Always Replace)	90 Nm (66 Ft-lbs) + 90 degrees	(Page 49)
Transmission Cross Member Bolts	70 Nm (52 Ft-lbs)	(Page 48)
Wheels	120 Nm (89 Ft-lbs)	

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Your Audi B8 A4 Lightweight Flywheel installation is complete!



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