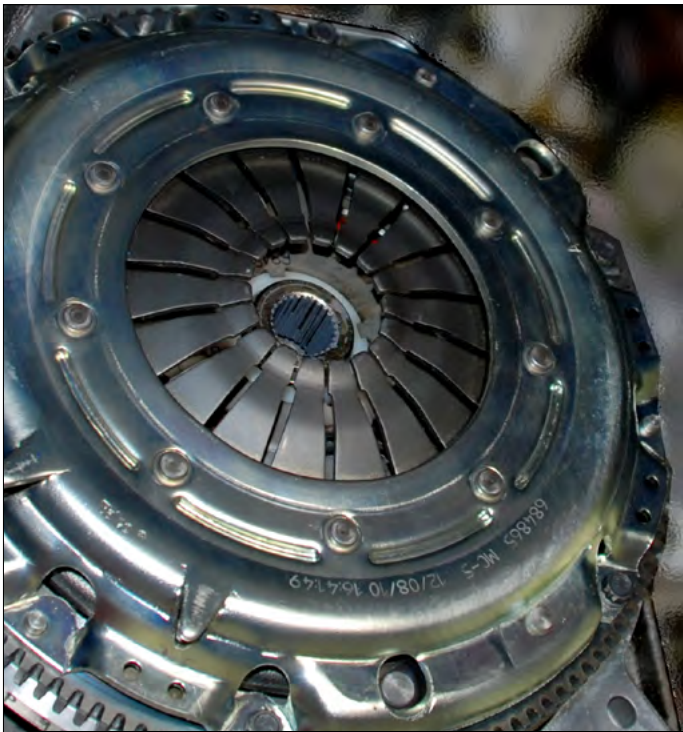




Stage 1 Clutch Kit Installation



Part Number **ES125**

VW MKIV Stage 1 Clutch Kit Installation

This tutorial is 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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VW Jetta MKIV

Stage 1 Clutch Kit Installation



ES125



The **ECS Tuning Stage I** clutch kit is a lightweight replacement for the factory-installed VW MKIV dual mass flywheel. The single mass flywheel conversion kit bolts directly to the crankshaft without modification, and comes with a mating clutch package that includes friction disc, pressure plate, release bearing, and pilot tool, plus new flywheel and pressure plate bolts.

Steps in this tutorial apply to a VW Jetta MKIV with 1.8T engine with five-speed transaxle. Steps for other engine and transaxle combinations are similar, but not necessarily identical.

The external clutch slave cylinder design in this car bolts to the transmission. The hydraulic slave cylinder actuates the clutch release bearing through a pivot arm located inside the bell housing. If the slave is unbolted and pulled to the side as an assembly, there is no need to bleed the system.

The stock air box on our car has been replaced with an aftermarket air filter. If your car still has the stock air box, plan on removing the box and ducts to make room.

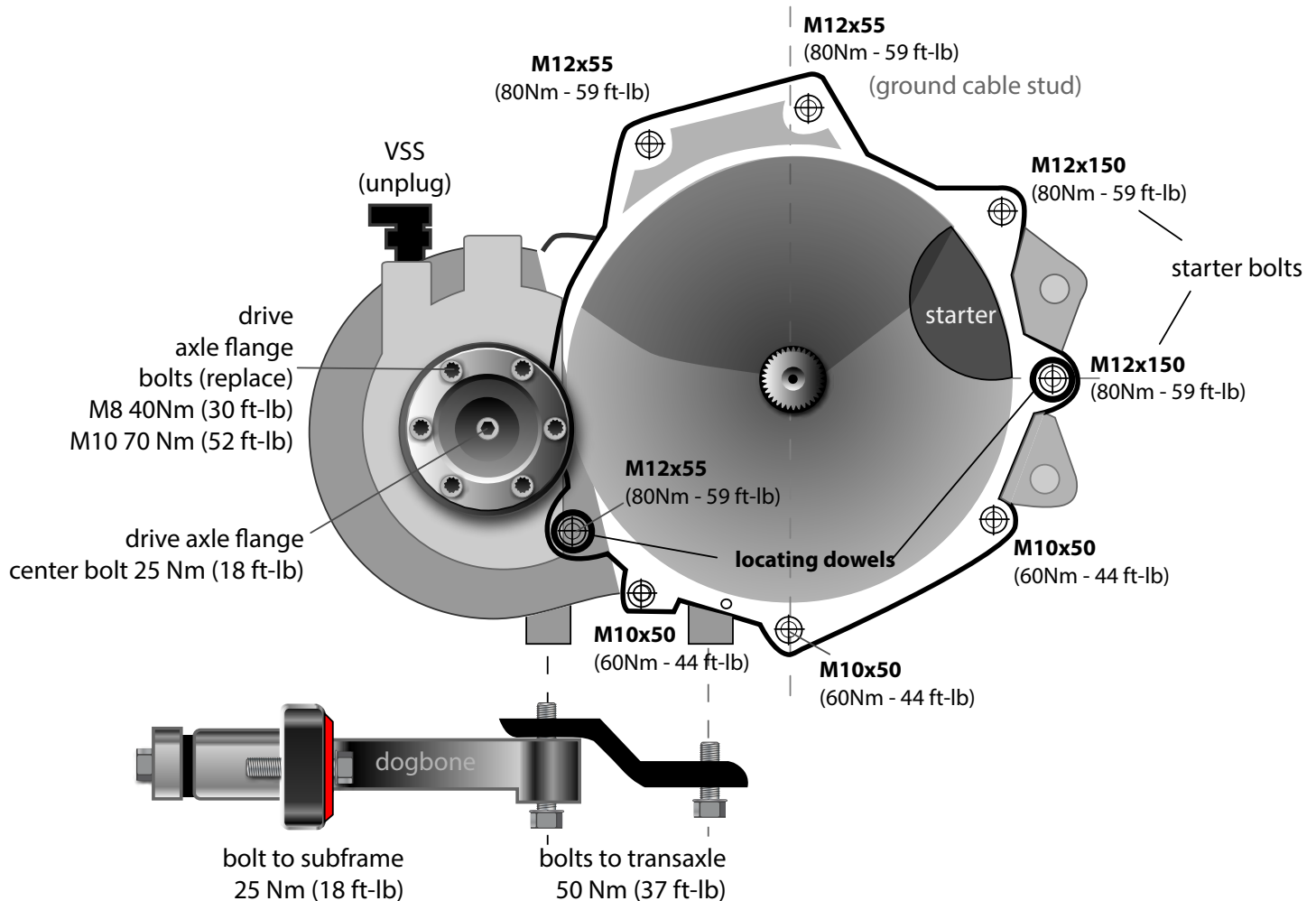
VW Jetta MKIV

Stage 1 Clutch Kit Installation



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Please refer to this diagram to identify main fasteners and their locations.



Additional Tightening Torques

- flywheel to crankshaft 60Nm (44 ft-lb) plus 90 degrees - always replace bolts
- front or rear oil seal flange (M7) 15Nm (11ft-lb)
- pressure plate bolts - 20Nm (15 ft-lb)
- clutch slave to transaxle 25Nm (18 ft-lb)
- drive axle-to-flange bolts (pre-tighten diagonally to 10Nm (7ft-lb) - final tighten to 70Nm (52 ft-lb) always replace
- drive flange to transmission 25Nm (18 ft-lb)
- ball joint bolts 20Nm (15 ft-lb) plus 90 degrees - always replace

VW Jetta MKIV

Stage 1 Clutch Kit Installation



Prepare the Vehicle

ES125

Disconnect the battery.

Note: Disconnecting the battery erases all computer module keep-alive memory that requires a constant voltage source. Make sure you have access to your anti-theft radio code, and don't plan on taking a scan tool emissions test until all onboard monitors have had a chance to run again following the installation.

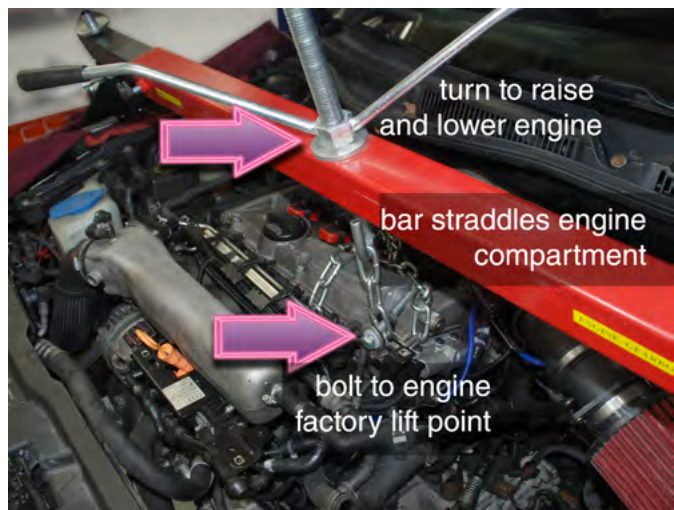
We will remove the battery and battery tray entirely to make added room. The car has no stock air cleaner housing to get in the way.



Support the engine

Install an engine support. Our crossbar engine hanger ([ES1884247](#)) is ideal for this job. It straddles the entire transverse width of the engine compartment, and its long threaded adjustment screw lets us lower and raise the engine as we work.

We realize that some of you will not have access to a lift or dedicated drivetrain hanger. If you are improvising, plan carefully to devise a safe alternative support mechanism that ensures your personal safety and prevents vehicle damage.



Optional

This is an ideal time to drain and refill the transmission. **Note:** The original fill plugs can be very tight and difficult to remove.

While you're at it, why not install a new ECS Tuning magnetic drain plug to catch and hold ferrous particles between fluid changes?

The ECS VW transaxle service wrench makes the job easy; it has a 17mm box end and 17mm hex head to fit both old and new plugs.



VW Jetta MKIV

Stage 1 Clutch Kit Installation

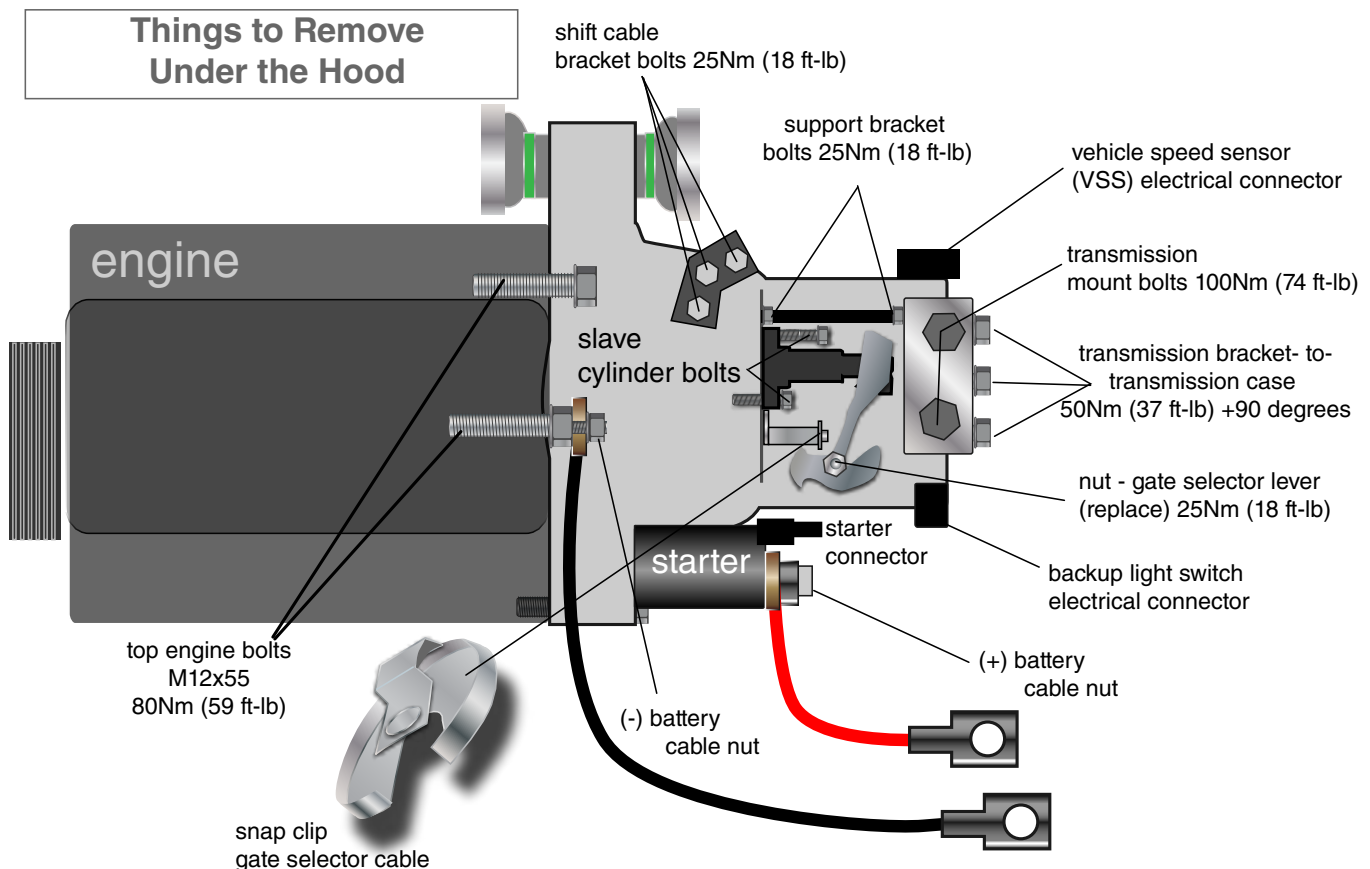


Under the Hood

ES125

Things to remove or disconnect under the hood

- shift cable support bracket
- gate selector cable (remove snap clip)
- gate selector relay lever (remove nut and pull lever from shaft)
- vehicle speed sensor (VSS) electrical connector (unplug)
- main positive cable to starter (remove nut and cable)
- electrical connector to starter solenoid (unplug)
- backup light switch connector (unplug)
- negative battery cable (remove nut from top front engine bolt stud)
- top bell housing-to-engine bolts
- two transmission mount bolts



Photos on the following pages illustrate these components and their removal.

VW Jetta MKIV

Stage 1 Clutch Kit Installation



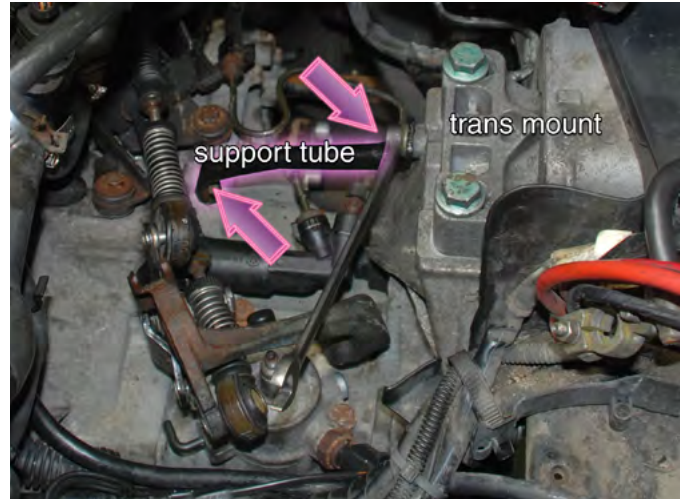
Under the Hood

ES125

Step 1

Unbolt and remove the support tube between the transaxle and transmission mount bracket.

(The tube is a bent length of black pipe that acts as a stiffener.)

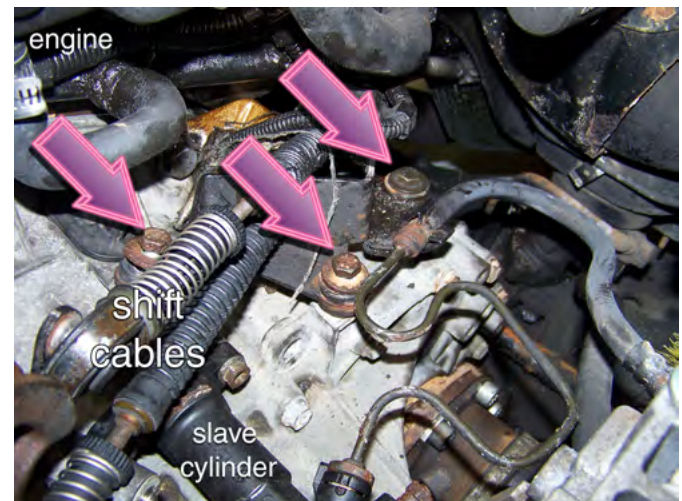


Step 2

Remove the shift cable mechanism as an assembly.

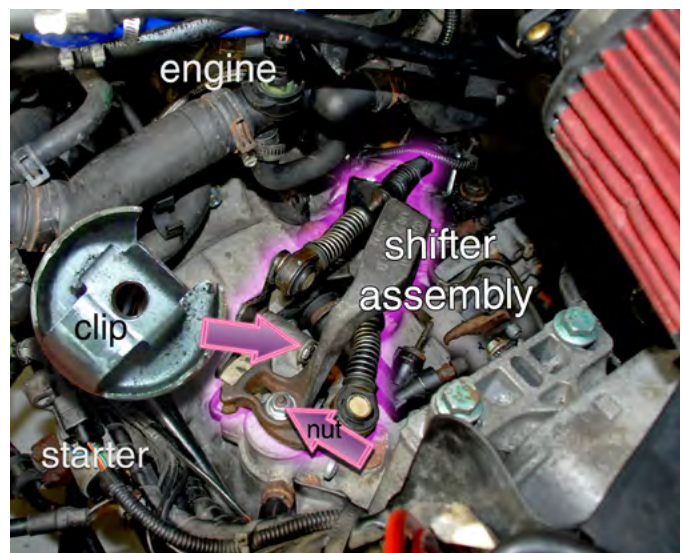
Start by removing the three bolts holding the shift cable bracket to the transaxle (arrows).

(Slave cylinder and engine labeled for reference.)



Step 3

- Remove the snap clip (left arrow) from the gate selector shaft and slide the shaft out of its tube in the transaxle. (**Note:** We enlarged the clip and labeled it so you can see it better. Pry on the clip center tab as you remove it.)
- Remove the nut holding the gate selector lever to the shaft (right arrow). Then lift the lever straight up to remove it from the splined gear selector shaft. (See note in Step 4.)
- Leave the shift cables connected to the lever. Pull the arm and cables aside as a unit and tie them out of the way with mechanic's wire or a bungee cord.



VW Jetta MKIV

Stage 1 Clutch Kit Installation



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Note

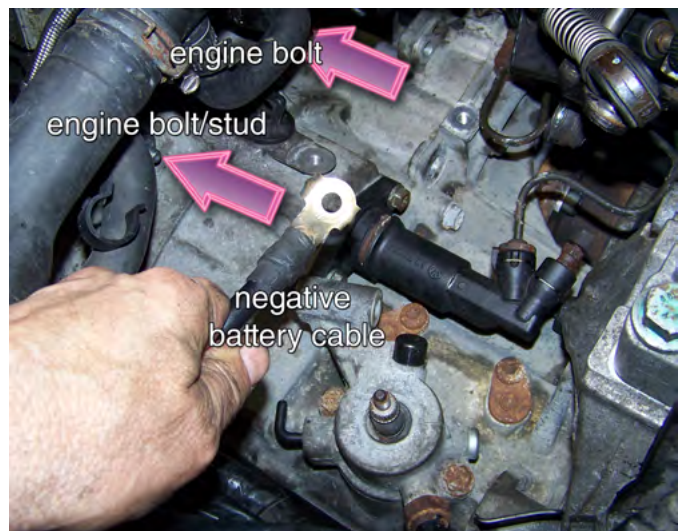
The splined transmission selector shaft has **one** wide tooth that matches a mating wide tooth in the selector arm.

Later, when you reinstall the selector arm on the shaft, align the wide teeth as you slide the arm in place, restoring it to its original position. (Since the cables, bracket, and shift arm were removed and reinstalled as an assembly, no shift linkage adjustments will be needed.)

Step 4

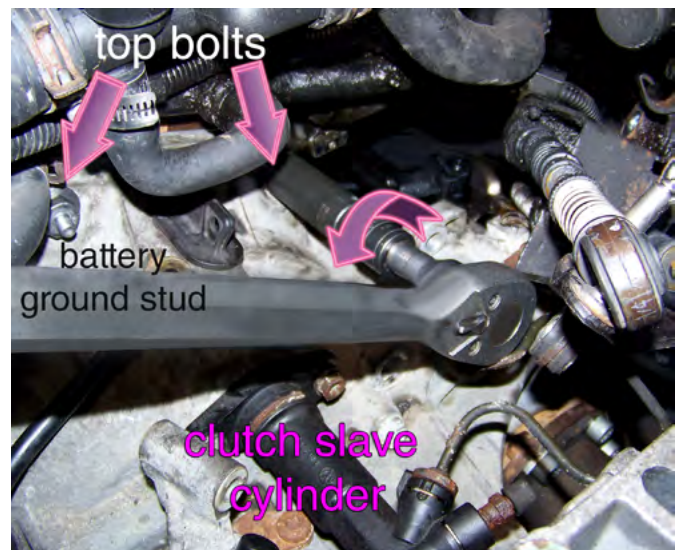
The front top engine bolt has a threaded stud where the negative battery cable attaches.

Remove the nut on the cable and pull it from the stud. (This is a great time to sand the cable eyelet down to bright metal, ensuring a good connection later when you reinstall the cable.)



Step 5

Reach in under the hoses on the left side of the engine and remove the two top transaxle-to-engine bolts (arrows).



VW Jetta MKIV

Stage 1 Clutch Kit Installation



Under the Hood

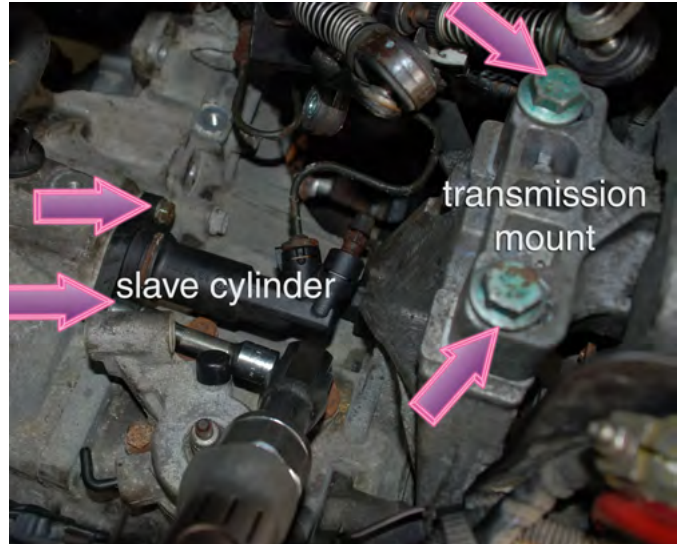
ES125

Step 6

Remove both slave cylinder bolts (left arrows).

Don't disconnect the fluid lines. Free the lines from their support clips and pull the slave cylinder with its fluid lines off to one side. Tie the assembly out of your way.

Remove both of the large bolts that secure the transmission mount to the mount support bracket (right arrows).

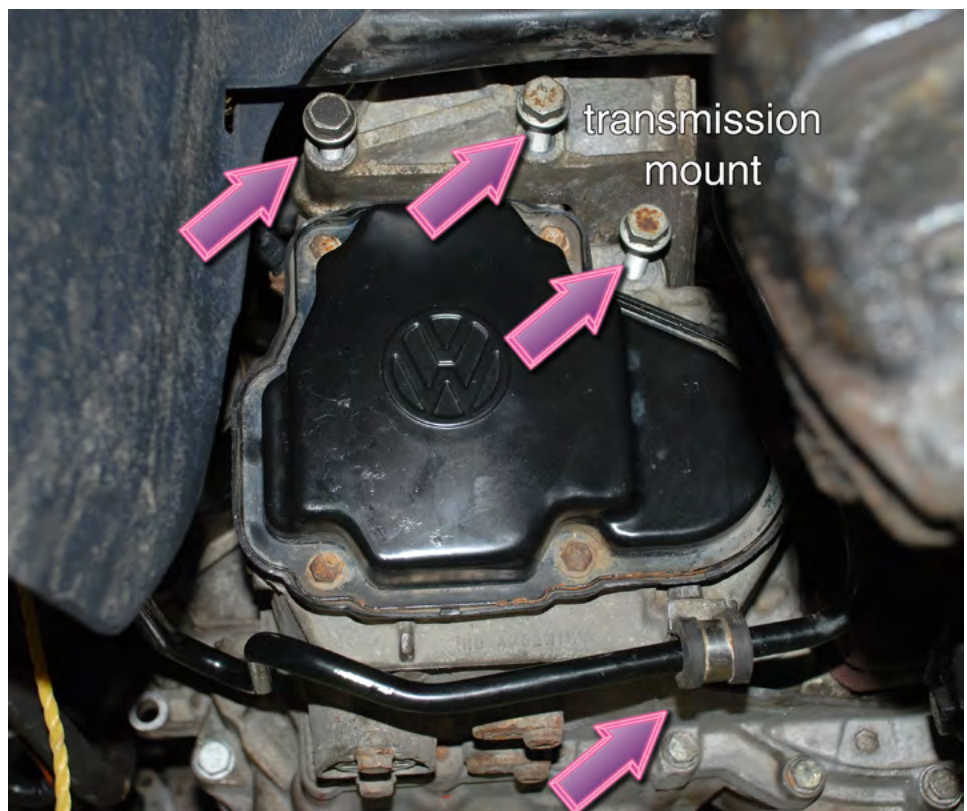


Step 7

Lower the engine/transmission until you can reach in through the left side wheel well and remove the side bolts from the transmission mount (upper arrows).

Slide the mount out and lay it aside.

Remove the bolt from the power steering tube p-clamp at the bottom of the transmission (lower arrow).



VW Jetta MKIV

Stage 1 Clutch Kit Installation



Under the Car

ES125

Things to remove or disconnect under the car

- positive battery cable (remove from starter)
- starter solenoid electrical connector
- backup light switch (disconnect)
- starter bolts (very long bolts with a threaded stud for the power steering hose support bracket)
- power steering clamp (removed in step 7)
- flywheel inspection plate (see step 9)
- driveshaft-to-drive flange bolts (six at each axle)
- left driveshaft (no need to disconnect the outer end of the shorter left side driveshaft; just unbolt it from the drive flange and hang it up as high as possible with a rope, wire or bungee cord)
- right driveshaft (unbolt it from the drive flange; unbolt the right side ball joint, then pivot the base of the right strut with the axle outward far enough that the axle does not interfere with the transaxle.)
- remaining large bolts securing the bell housing to the engine block
- **special note:** we chose to unbolt and remove the drive flanges from the transaxle. Doing so gave us much more clearance and prevented interference between the head of the flange and the chassis. Do not interchange the flanges.

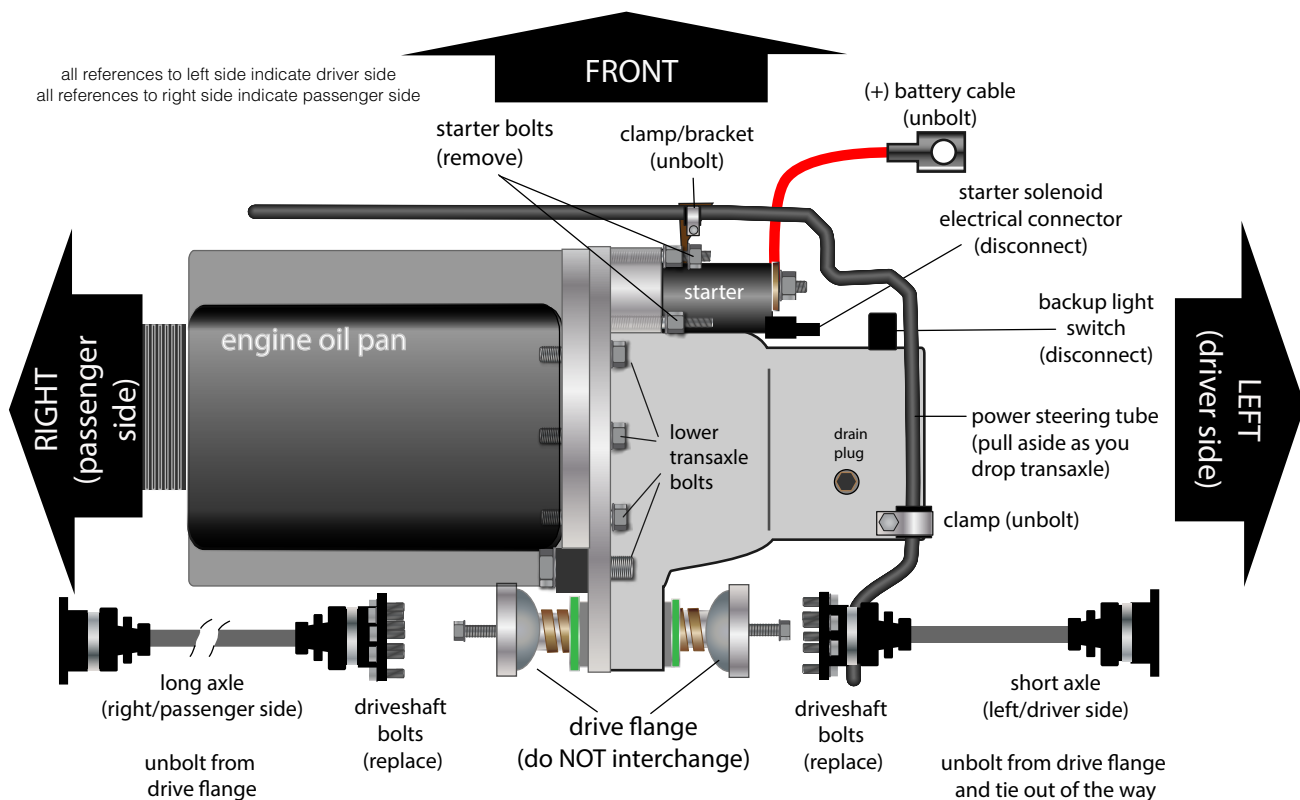


Illustration shows components as viewed from beneath car, looking up.

VW Jetta MKIV

Stage 1 Clutch Kit Installation



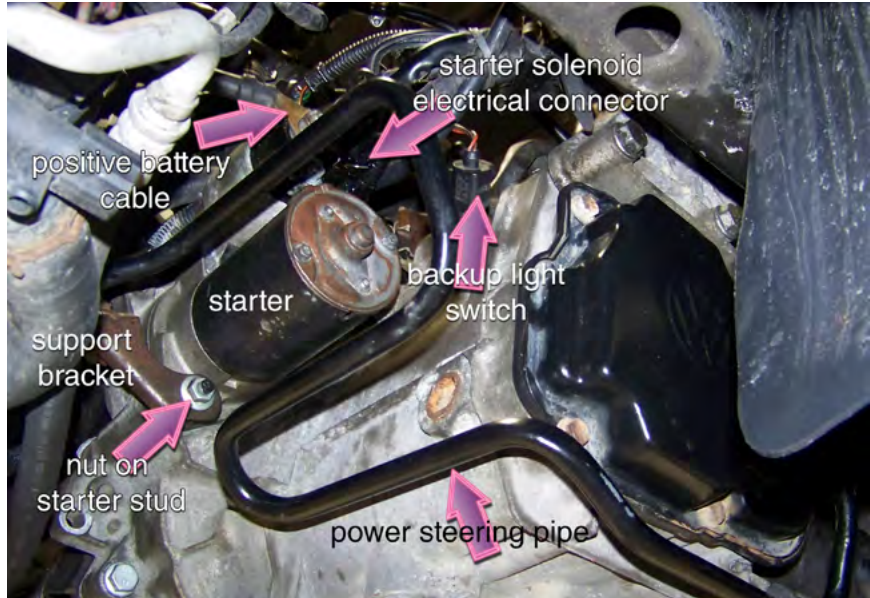
Under the Car

ES125

Step 8

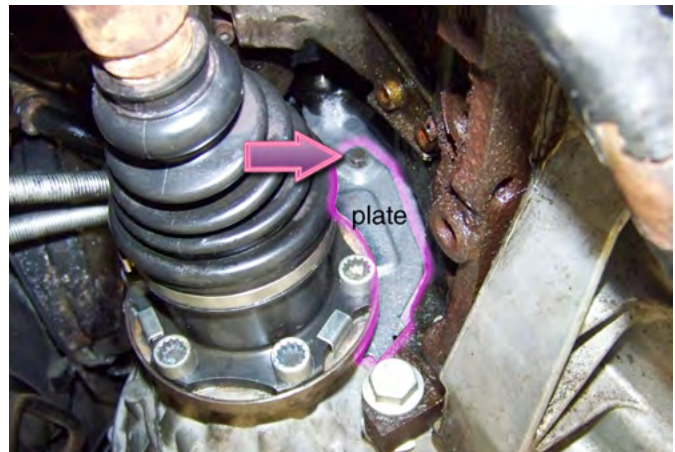
Compare these photos to the illustration on the previous page. Note the location of key components.

- Disconnect the starter electrical and backup light connectors.
- Remove the positive battery cable.
- Remove the nut on the lower starter bolt stud and tie the power steering pipe support bracket away from the transaxle.



Step 9

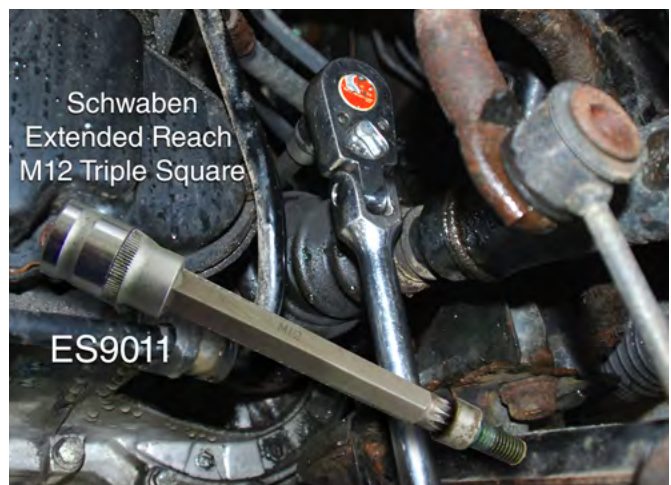
Working at the rear of the engine, remove the small retainer bolt holding the flywheel inspection cover plate to the right rear of the engine, above the right drive axle.



Step 10

Unbolt both drive axles from their flanges. There are six bolts on each flange.

An extended reach driver like the Schwaben triple square makes it easier to reach in and break the bolts free. It is part of a six-piece driver set made for jobs like this, where extra reach is needed ([ES9011](#)).



VW Jetta MKIV

Stage 1 Clutch Kit Installation



Under the Car

ES125

Quick Tip

Need a fast and easy way to hold the drive axles as you loosen or tighten the drive axle bolts?

Just slide the tip of a screwdriver into a brake rotor vent slot. The screwdriver will stop when it comes up against the brake caliper, and keep the axle from turning as you loosen or tighten axle bolts.

Reposition the screwdriver as you rotate the drive axle to reach all of the drive axle-to-flange bolts.



Step 11

After disconnecting the left drive axle from the transmission flange, use rope or a length of mechanic's wire to tie the axle up, out of the way.



Step 12

To make extra room on the right side, remove the bolts from the right ball joint. Then slide the right ball joint out of the control arm.

Pull the bottom of the strut (with right drive axle still attached) away from the control arm. This will move the axle outward, adding much appreciated space between the inner drive joint and flange.

Prop the strut in this position, and support the axle with a wire or bungee cord.

(We recommend replacing these bolts.)



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Stage 1 Clutch Kit Installation



Under the Car

ES125

Step 13

We feel that removing both drive flanges actually saves time and a lot of aggravation by adding wiggle room when you pull the transaxle.

Use a 6mm hex to loosen and remove the center bolt. The spring-loaded axles will pop out easily. Mark them for location and do not swap them!

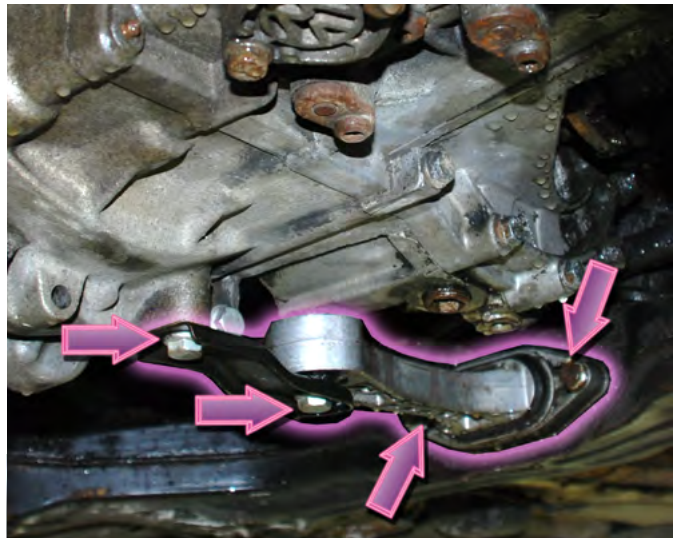
Place a clean rag into each flange hole to keep oil in and dirt out.



Step 14

Remove the dogbone bolts at the transaxle and chassis.

Inspect the dogbone for signs of damage or cracking. Ours is cracked from age and will be replaced with [ES5669](#).



Step 15

- Remove the remaining bell housing bolts (see diagram page 3).
- Make sure the transaxle has been lowered far enough to clear the chassis when it is removed from the engine.
- Support the transaxle (securely!) with a jack.
- Double check: Are all electrical cables and connectors disconnected?
- Wiggle the transaxle away from the engine. Move it away just far enough that the transaxle input shaft clears the pressure plate fingers.
- Lower the transaxle slowly, making sure it clears the engine and chassis at the same time. Minor wiggling required.



VW Jetta MKIV

Stage 1 Clutch Kit Installation



Prepare the Transaxle

ES125

Step 16

At 154,000 miles, the inside of the bell housing has accumulated a lot of clutch grime. We'll clean this away before installing the new clutch.

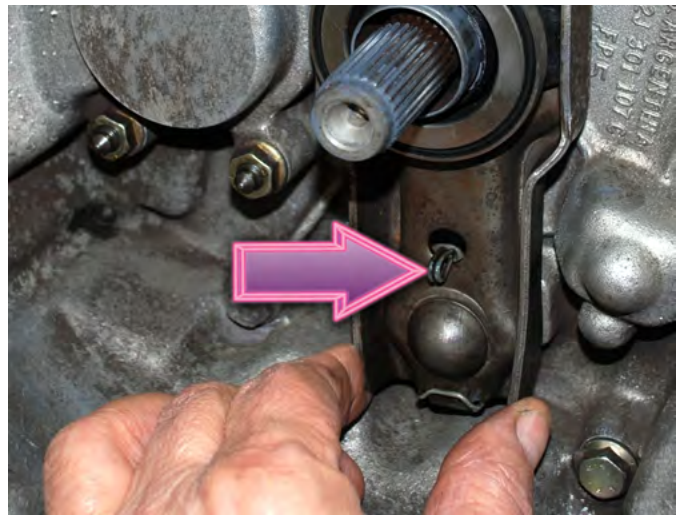
To reduce our exposure to clutch dust, we wet the inside of the bell housing with spray cleaner, and wear a dust mask as we scrub.



Step 17

Press on the spring clip at the clutch release arm pivot (arrow) until it pops out. Save the clip.

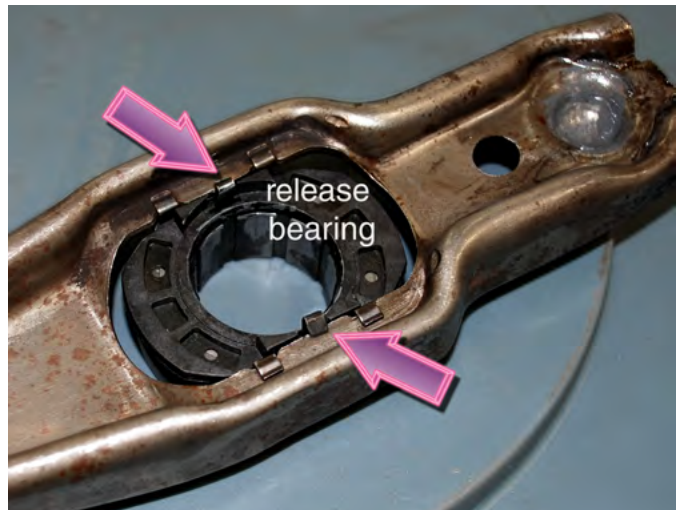
Pull the release arm/release bearing assembly off the sleeved guide surrounding the input shaft.



Step 18

Compress the retainer clips on the old release bearing and remove it from the pivot arm.

Snap the new release bearing into the arm, making sure the snap clips lock in place (arrows).



VW Jetta MKIV

Stage 1 Clutch Kit Installation



Prepare the Transaxle

ES125

Step 19

Apply a small film of moly paste to the splines on the input shaft, on the sleeve surrounding the shaft, and on the pivot stud.

Note: Your Stage I Valeo clutch comes with a small packet of lubricant. Use it or a small amount of LiquiMoly lube, available from ECS Tuning (ES3317).



Step 20

Test fit the clutch friction disc on the transmission input shaft. It should engage the splines easily, and slide smoothly.

Remove the clutch after the test, and lay it aside for now. (Do not get oil or paste on the friction material.)

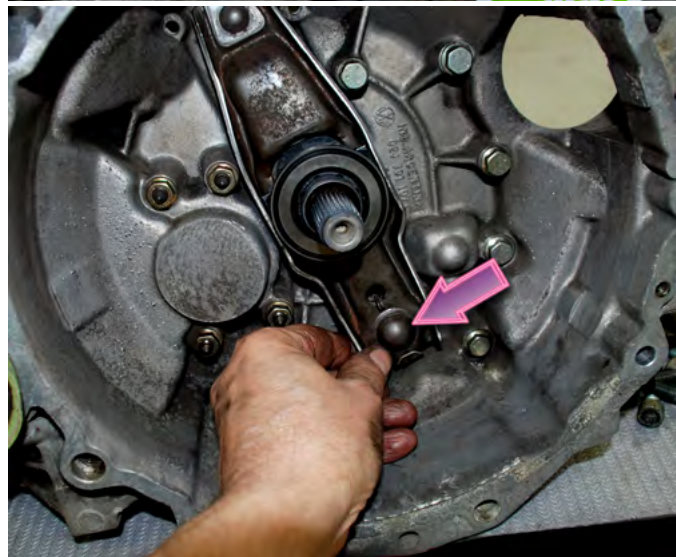


Step 21

Replace the spring clip on the clutch arm removed in step 17.

Slide the release bearing over the sleeve and push the lower part of the release arm until it snaps in place over the pivot stud (arrow).

Grab the opposite end of the release arm and make sure the release bearing slides easily and smoothly on the sliding sleeve as the arm is moved.



VW Jetta MKIV

Stage 1 Clutch Kit Installation



Install the Clutch

ES125

Step 22

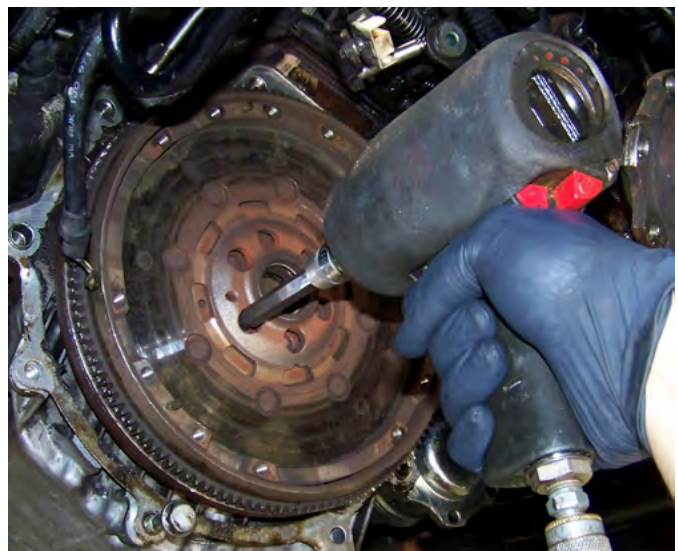
The old dual mass flywheel/pressure plate assembly is considerably heavier than a single mass assembly.

While it is possible to reach in and remove the flywheel bolts and remove the old flywheel/pressure plate assembly as a single unit, you may find it more manageable to remove the pressure plate first to split the weight.



Step 23

Unbolt and remove the old dual mass flywheel. You'll need an M12 triple square driver and some muscle.

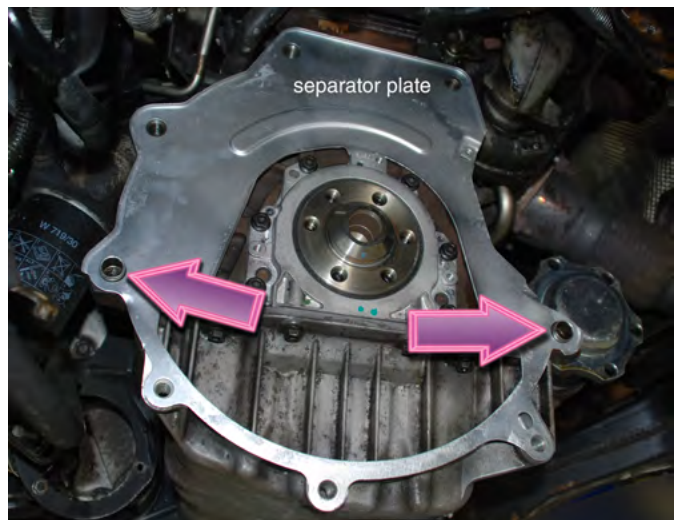


Step 24

Clean the rear of the engine. Check the metal separator plate for damage. Make sure that it is properly positioned on the locator dowels, and sitting flat against the engine.

Check the locator dowels; make sure both are in place, and that neither was damaged as the transaxle was removed.

Service Tip: If the crank seal is leaking, now is the time to replace it.



VW Jetta MKIV

Stage 1 Clutch Kit Installation



Install the Clutch

ES125

Step 25

- Install the new flywheel. The bolt pattern is asymmetrical. The flywheel-to-crankshaft holes align only one way. If the holes in the flywheel will not align with those in the crankshaft initially, rotate the flywheel until all holes accept bolts.
- Cross-tighten and torque the new bolts to 10 ft-lb initially to ensure that the flywheel is seated uniformly. Install a flywheel lock (arrow).
- Torque the bolts in a diagonal pattern to 60Nm (44 ft-lb) + 90 degrees. Use the new bolts.

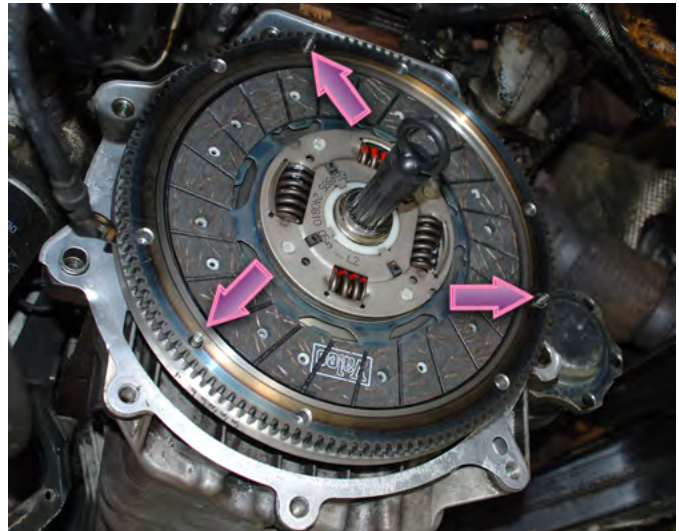
Remove the flywheel lock.



Step 26

Insert the pilot tool from the Stage I kit into the clutch disc, and push the tool into the recess at the center of the flywheel.

Note the location of the three locator pins (arrows) in the flywheel for the next step. These pins are not symmetrical, and align only one way.

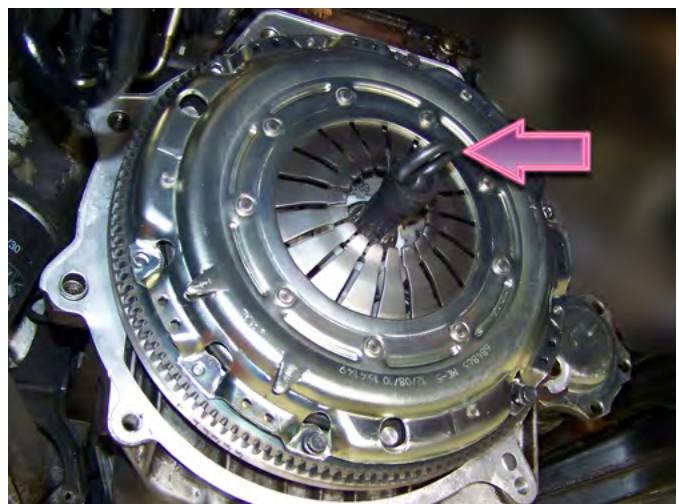


Step 27

Have the new pressure plate bolts handy. Install the pressure plate over the disc and align the holes in the pressure plate with the dowels in the flywheel.

Screw in the pressure plate bolts finger tight. Then draw down the bolts evenly. Cross tighten until all bolts are seated.

It is important to draw the pressure plate down evenly.



VW Jetta MKIV

Stage 1 Clutch Kit Installation



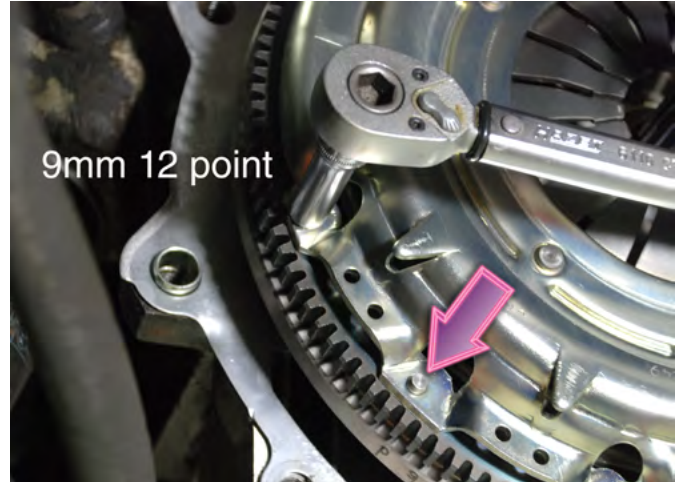
Install the Clutch

ES125

Step 28

Using a 9mm 12-point socket, cross torque the pressure plate bolts to 20Nm (15 ft-lb).

All flywheel dowels (one of which is indicated by our arrow) must be properly aligned with their corresponding holes in the flywheel. They align only one way.



Step 29

After the pressure plate is installed, remove the clutch pilot tool.

The clutch/flywheel assembly is now installed and ready for the transaxle to be reinstalled



Step 30

Retrace your steps to reinstall the transaxle.

We've added a few special instructions and tips we hope will help you on the following pages.



VW Jetta MKIV

Stage 1 Clutch Kit Installation



Interference Areas

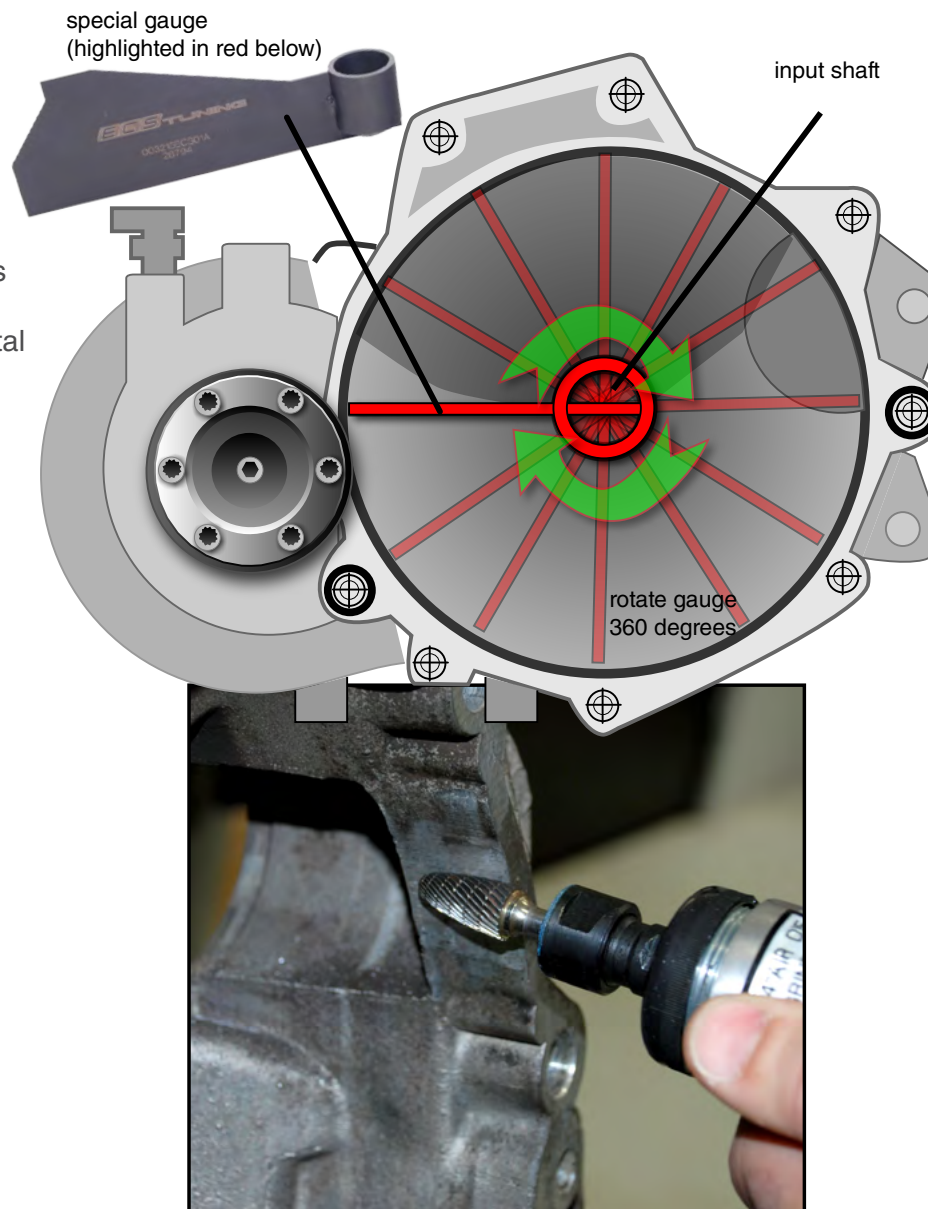
ES125

Due to casting dimension variations, your new flywheel/pressure plate may rub at one or more points inside the bellhousing.

For this reason, we recommend the following:

Use the ECS Tuning MKIV bellhousing clearance gauge to locate raised casting areas that will interfere with the flywheel, causing it to rub and bind.

- slide the tool sleeve onto the input shaft
- press the sleeve in against its stop as you rotate the tool inside the bellhousing
- note any contact points where the tool rubs and leaves shiny telltale marks
- use a grinder to remove raised casting metal at interference points
- test again and repeat as needed to make clearance between the new flywheel and bellhousing



If the tool contacts any point in the bellhousing, that point will require grinding.

Do not grind away more metal than necessary. In most cases, moderate grinding will be enough to make enough clearance between the flywheel and bellhousing.

VW Jetta MKIV

Stage 1 Clutch Kit Installation



Installation Tips:

ES125

VW recommends replacing several fasteners.

ECS Tuning stocks two kits containing related hardware associated with a clutch installation. These include the three ball joint bolts and three-nut plate for the left ball joint [ES205173](#).

Torque ball joint bolts to 20Nm (15 ft-lb) plus 90 degrees.



VW recommends replacing the axle bolts as well.



If your car needs a clutch, odds are the old dogbone is worn too. Ours had seized to the chassis bolts and was cracked, to boot.

In addition to looking great, the ECS Tuning dogbone has high 88A durometer polyurethane bushings and comes with installation hardware ([ES5669](#)).



VW Jetta MKIV

Stage 1 Clutch Kit Installation



Installation Tips:

ES125

Both drive flanges are spring-loaded. Push in to compress the spring until you can thread the center bolt in by hand. (The springs are stout, so expect to have to push hard on the flange faces to compress the springs far enough to get the bolts started.)

Use two of the old axle bolts and a long screwdriver to hold the drive flange while you torque the center bolts to 25Nm (18 ft-lb). We add medium strength thread sealer to the bolt for good measure.

Leaky crank seal? ECS stocks both OEM and aftermarket crankshaft seals. These seals come with a replacement flange.



Thanks!

For purchasing the ECS Tuning
Stage I Clutch Kit.

We thank you for your business, and hope
this tutorial has been helpful.

