Jetta / Golf 020 Transmission Replacement and Clutch Installation

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Welcome to the 020 tranny replacement brought to you by tiohero. This page is in NO WAY meant to be a DIY or any type of instructional resource. If you read the following I do not take any responsibility for any and all actions which cause harm or damage to you or your vehicle. If you are planning on installing a new clutch and/or replacing the tranny, I highly recommend that you only use the directions stated in the Bentley service manual available here:

http://www.amazon.com/exec/obidos/tg/detail/-/083760365X/qid=1112340637/sr=1-1/ref=sr_1_1/102-2399138-9852168?v=glance&s=books


BTW: some of these pictures are THUMBNAILS... click for large pics

The reverse gear in my 020 tranny was completely shot. Ever since I bought my car the reverse gear made all sorts of noise when backing up. Approx 10K miles later I lost reverse gear and the car would barely shift into 2nd anymore. I was fortunate considering many people lose every grear along with losing reverse. In my opinion the 020 transmission is a crappy design and it is extremely prone to developing problems. If there is one thing you should learn from reading this you should know to always shift into 1st gear in order to stop the tranny from spinning, AND THEN shift into reverse. This way you will not chip the reverse gear and you will get lots of life out of it.While doing this installation, I was fortunate enough to have the old tranny spill its fluid all over the garage floor. What's interresting is that the fluid was BLACK (with 83K miles on the old tranny)... keep in mind that the user's manual tells you that changing the fluid is unnecessary.

Step 1: I needed a new tranny for my car, but in this case a used/rebuilt tranny will make do. It just so happened there was an extra one in the trunk of my car.

Step 2: Unhook the negative battery terminal.

Step 3: Here is the "auto adjust clutch cable." I used some wire to completely compress the cable and hold it solid like that. BTW: These things are great when they work, but when the clutch wears out, the cable doesn't work like it used to anymore. You may notice that the clutch starts "grabbing at the top." Best thing to do is to get a manual adjust clutch cable... www.germanautoparts.com

Step 4: With the clutch cable compressed, unhook the base of the clutch cable from the tranny. At this point I grabbed some index cards and laid them down on a table in order to label and sort every nut, bult, etc. that came out of the car.

Step 5: Unhook the clutch cable from the top of the tranny.

Step 6: Here is the ground strap on the top of the tranny belhousing... notice how it is corroded. You will need to remove this wire and then sand down and clean up the contacts before you place it back on again later (after the re-installation). This way you will not have all sorts of electrical problems such as your alarm going off randomly every 5 minutes.

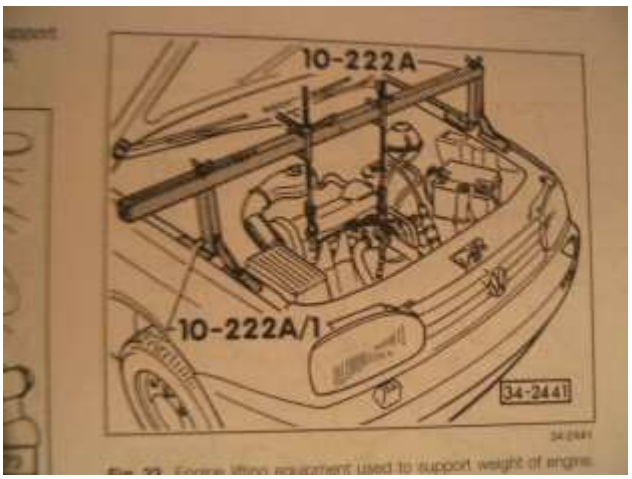
Here it is again with the wire and bolt removed... beautiful!

Step 7: Here you can see I have disconnected the two wiring harnesses for the oxygen sensors and moved them out of the way (makes things MUCH easier). Under the O2 sensor harnesses you can see a large bolt which holds the metal O2 sensor bracket on the engine mount. I had to remove that bolt... underneath there is another bolt...

Step 8: The Bentley says to remove this engine mount bolt to remove the engine mount... haha, good luck! I used "crow foot wrenches" (pitured above) and reefed hard on that bolt till I was afraid to snap it off. I gave up and decided to take

a different approach to removing that engine mount (think outside the box)...

Step 9: Here is a view of the underside of the same engine mount. I was able to easily remove the bolts that hold the engine mount directly to the engine... problem solved.



Step 10: I needed to remove more engine/tranny mounts which meant that some kind of engine support was necessary. So of course I went down to the VW dealership and purchased VW special tool # 10-222A. Just kidding! ....


Some grinding...


and some welding...


Voila! My own version of the VW engine support. I used 2-ton ratcheting tie-downs to raise and lower the engine as I needed. The engine support saved me many headaches and countless hours. Eventually I added another ratcheting tie-down to raise and lower the tranny into position which was the true benefit.


Step 11: Now is a good time to unhook the shift linkage from the transmission.

Step 12: Here I started removing the transmission bracket mounting bolts. I also removed the bolts that hold the clutch shield in place (indicated in the Bentley). This is a view from under the car facing towards the driver's side wheel.

Step 13: Now it is time to undo the front engine mount bolt so that I can remove the starter from the car. This bolt is generally pretty easy to take out. It is hard to see in the picture, but it is hiding down under the radiator fan. I had to make sure the engine was supported very well at this point.

Step 14: Remove the bolt that connects the ground wires to the back of the starter. With that bolt removed, I could now remove the bolt that connects the starter to the tranny (this bolt also connects the tranny to the engine... kind of confusing I know).

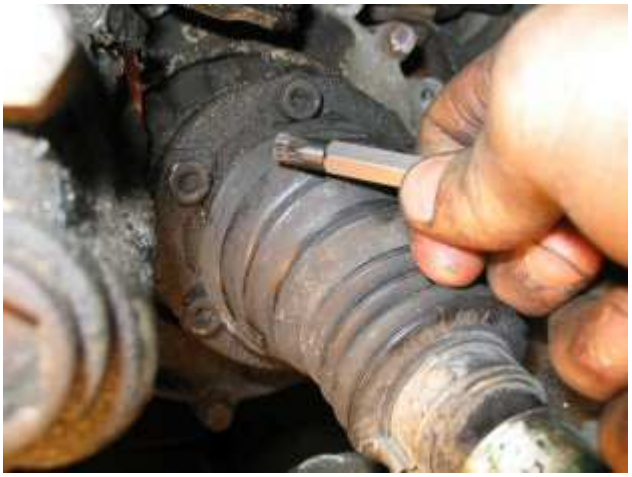
Step 15: Now you can remove the two bolts on the bottom of the starter. One of these two bolts also holds the starter to the tranny (and also the tranny to the engine again).

Here's a pic of the starter removed... I used this hole later and stuck a small dentist's mirror and a flashlight in there to make sure that the tranny was lined up correctly on the engine.

Step 16: Bentley said I should remove this engine mount attatchment bolt (camera facing driver's side fender)...

Step 17: and this bolt.

Step 18: Then it was time to remove the tranny mount (you can see it hiding back there). This one is similar to the first engine mount... difficult to remove. The bolt holding it in gave me quite a fight but I was successful in removing it. (as shown in the 2nd pic).



Step 19: Now comes the fun part... removing the drive shafts from the differential. First of all, put a couple of lug nuts back into the rotors of the car... this will prevent the drive shafts from spinning while removing the bolts. For this step you will also need what is called an 8mm "tripple square" hex bit. Many people call this tool many different things, but it is available at Autozone (surprisingly) on their wall of special tools. Autozone carries a package of three different sizes, but what you need the the 8mm one... or whatever fits best. I used this tool and successfully managed to strip three of the 12 bolts that hold both drive shafts in place. Don't panic when this happens to you...

Step 20: Fortunately I had a set of Craftsman bolt extractors. These things gripped onto the bolts much better than the 8mm tripple thingy could and it ripped the three stripped bolts right out of there. The size extractor that fits the drive shaft bolts is the #8 extractor (pictured). LAST RESORT (provided by "general problem"): if the bolt absolutely will not come out, it is possible to cut the head off the bolts that are stuck and the axle will come loose. Once the axle is out of the way you should be able to spin the rest of the bolt out, because there is no more pressure holding it.

Step 21: With the drive shafts disconnected, I had to turn the steering wheel all the way to the left and I used some wire to hold the driveshafts out of the way for when the tranny comes loose. As stated in the Bentley, I used a "scissor jack" to wedge between the engine and the frame of the car in order to push the engine toward the front of the car, thereby allowing me more room to remove the tranny. This jack did not work very effectively, so instead I used another rathceting tie-down strap to pull the engine forward. I had to be very careful because there are power steering lines in-front of the engine. If I had pushed the engine too hard against the front of the car then one of the power steering lines would have burst. I just had to make sure those lines were out of the way.

Step 22: I used one more ratcheting tie-down to wrap around the tranny and I attatched it on the engine support above. This is necessary because I was about to undo the last few bolts holding the tranny to the engine.

Step 23: Undo the last few bolts.

Step 24: There I am cathcing the tranny when it fell. My brother is my partner in crime in this tranny swap.

Step 25: Clutch, flywheel and pressure-plate all exposed. Time to remove the bolts holding the flywheel to the the pressure plate. There is the flywheel removed in the 2nd pic and aparently there was pleanty of life left in the clutch... possibly the previous owner had replaced it recently? In the meantime I had to get the flywheel re-surfaced.

Step 26: Using needle-nose pliers, I removed the large retainer clip holding the metal plate onto the pressure plate.

Step 27: Another special tool is needed for removing the stretch-bolts for the pressure plate. The special tool is supposed to hold the pressure plate in place while you put force on your wrench. I simply used some steel cable to hold it in place instead. "two point o" and "broke" from VWvortex were able to achieve the same by using a 12mm Craftsman wrench as shown in the pic on the right. I had to make sure not to loop the cable through any threaded holes.


Step 28: Time to replace oil seals... I used a hammer and a knife to carefully pry up on the green metal cap on the tranny. The release bearing is down in there and needs to be replaced.


Step 29: This is the most critical oil seal... the "rear main oil seal"... if I did not replace this, then I would likely have engine oil eventually seeping out onto my clutch and then I would be back to square one. The Bentley does not mention removing the two or three bolts holding the metal plate over the oil seal... it was absolutely impossible, however, to put a new oil seal back in place without removing those bolts. I ruined one oil seal while trying to push it past that metal plate, and then I had to go to Autozone to get a new one.

Step 30: Time to put in the new stretch bolts for the pressure-plate.

Step 31: The stretch bolts have to be torqued very carefully and in a "star" pattern, going from one side to the other. (tighten to 44 ft. lbs. plus additional 1/4 turn)

Step 32: Now its time to lube up the splines at the center of the clutch disk. I had to make absolutely CERTAIN that no grease or oil of any kind rubbed onto the clutch disk.

Step 33: Put the cutch assembly back together (flywheel bolts tightened to 15 ft. lbs.) and position the clutch alignment tool on the back of the flywheel while you torque it back into place.

That's about it! Installation is reverse of removal. Getting the tranny back into place was difficult even when using the ratcheting tie-downs to lift it into place. The differential only goes in one way! I had to basically turn the diff towards the top of the car and slowly work it into place and then turn it back into the correct position. As I said before, I used the hole where the starter was to help me position the tranny back in place using a dentist mirror and a flashlight. It has

been approx 1000 miles since I installed the tranny and so far no problems.