DISASSEMBLY

1.

- 1.
- 2. *Special Tool(s)* : 307-679 Installer, Countershaft Needle Bearing *General Equipment* : Hydraulic Press *General Equipment* : Bearing Separator



2. NOTICE: Use vise jaw protectors.

General Equipment : Vise General Equipment : Vise Jaw Protectors Procedure revision date: 04/25/2013



4. Special Tool(s): 211-014 Remover, Steering Wheel

Oh yeah and don't forget it is left hand thread ask me how I know? Yeah, I may have broken a hex bit...



DO NOT try to remove this bearing with a simple three arm/jaw gear puller. IT WILL NOT WORK AND YOU WILL BEND THE METAL PLATE. You will need one of these "steering wheel" or "flywheel" pullers. I bought a set on Amazon and they worked like a charm.

5. **NOTE:** Only tighten the bolts finger tight at this stage.

Special Tool(s) : 205-D015 (D80L-630-4) Step Plate General Equipment : Hydraulic Press General Equipment : Bearing Separator



6. NOTE: Only tighten the bolts finger tight at this stage.

General Equipment : Bearing Separator *General Equipment* : Hydraulic Press Here is where the fun (NOT FUN) begins. I ended up using my Harbor Freight bearing separator here and it chipped the gear as I removed it. ALSO - it took every ounce of pressure my 12-ton HF press had to offer, and then some. I would recommend at this point you find a shop with the capacity to remove these gears and pay them to do it. The shop will need at least a 20-ton press, an oxy-acetelene torch and a hammer. Otherwise, don't bother.

Keep in mind - the gears on this shaft are drive gears. And they are press-fit. Let that sink in. The tolerances are extremely tight and the pressure is extremely high. The whole ordeal of removing these is crazy. The press will have so much potential energy it will be frightening. Adding heat and some hammer blows from beneath will get them to come free.

One more tip - the bearing separator - DO NOT attempt this with the separator that comes from Harbor Freight - it is FAR to small and flimsy. It will bend, and it will crack the teeth on the gears it touches. I attempted it with step 5 and 6 and in both cases it failed.

Trust me, I spend hours working on this. Heed my advice: Find a local machine shop that can handle it. Your 12-ton Harbor Freight press WILL be enough to press the gears back on.



Ugh - gives me nightmares just looking at it...

If you are DIY'ing this, use a LARGE bearing separator. NOT the Harbor Freight one. It is too small and will crack the lower gear. Guaranteed.

7.

 General Equipment : Bearing Separator General Equipment : Hydraulic Press



You will need to replace that bottom gear, as the forces put upon it to remove it are very high.

Find a shop to remove these for you. Don't bother doing it yourself unless you have a 20t+ press, oxy-acetelene torch and the courage.

The manual is telling you to push this ring down before attempting the removal procedure. This will give you a bit more space.

Note that if you use a small/sub-par bearing separator, the bolts or the separator plates can bend and foul the shift slector here. BE CAREFUL. Take your time.

8.





1. 2.



10. General Equipment : Hydraulic Press



Be careful - the small parts will spring out.

I did not need a press for this step. The gear was very snug but I was able to get it off by hand.



Congrats! You're at the end of the disassembly process!

The bearing just comes right off. Nothing really holding it on.

ASSEMBLY

1. Material : Motorcraft® Dual Clutch Transmission Fluid / XT-11-QDC (WSS-M2C200-D2)



Be sure to oil the heck out of everything. ALSO - clean things before you put them back. Make SURE there is no debris, shavings, dirt, etc. on anything. If you need to, use a parts washer and keep stuff separate. BE SURE to OIL EVERYTHING LIBERALLY!!! Get messy.

2. *Material* : Motorcraft® Dual Clutch Transmission Fluid / XT-11-QDC (WSS-M2C200-D2)



3. *Special Tool(s)* : 205-D015 (D80L-630-4) Step Plate *General Equipment* : Hydraulic Press



Take special care to oil these friction surfaces. A lot. They will tend to bind and stick together which will cause the trans to buck and bind when you first start the car up. Oil, oil, oil.

I did not need a press for this. Just be sure everything lines up. I was able to seat it all by hand. OIL IT.

4. NOTE: Make sure that the components are installed to the position noted before removal.

1.

2. *Material* : Motorcraft® Dual Clutch Transmission Fluid / XT-11-QDC (WSS-M2C200-D2)





1. 2.

3. Material : Motorcraft® Dual Clutch Transmission Fluid / XT-11-QDC (WSS-M2C200-D2)



6. *Special Tool(s)* : 205-199 (T83T-3132-A1) Installer, Spindle/Axle Shaft *General Equipment* : Hydraulic Press

DON'T FORGET THE SNAP RING.

LOTS of oil on the friction surfaces here. Take note of the orientation.

OK, this is the end of the "fun" steps. Now comes the pain...



7. Special Tool(s) : 205-199 (T83T-3132-A1) Installer, Spindle/Axle Shaft General Equipment : Hydraulic Press



Lubricate the shaft prior to installing a gear. Get a brave friend who is not a moron to help align and hold the shaft as the gears are installed. Use the correct installer! I used a short section of steel pipe that came from a roll cage. It is *just* larger than the shaft and was smoothed and checked for any burrs. When in doubt, try buying pipe from Home Depot or online. I found that the 1 1/2" pipe will probably work, but please do your own measuring and testing. You do not want to mar the shaft or the gears.

As they are pressed on they will not go smoothly. They will "skip" on the shaft. As you press, they will move down a few MM at a time. It will be loud and it will be scary if you have never done it before. (like me) Once they reach the bottom, you will know b/c there will be a final *BANG* and oil vapor will shoot out all around the base of the gear as it goes "home" on the shaft.

One more thing - I left the shaft in the freezer until I was ready to do this job. I also used a toaster oven to warm up the gears. Whether or not it helped, I don't know. But I was able to get the job done with my 12t press, so I will recommend it. Take care to keep the gears in order so you will know exactly which one to press next. Be prepared.

almost there...

8. *Special Tool(s)* : 205-199 (T83T-3132-A1) Installer, Spindle/Axle Shaft *General Equipment* : Hydraulic Press



almost there...

9. *Special Tool(s)* : 205-199 (T83T-3132-A1) Installer, Spindle/Axle Shaft *General Equipment* : Hydraulic Press



10. Special Tool(s) : 205-D015 (D80L-630-4) Step Plate General Equipment : Hydraulic Press And, you're done withe the second hardest part! Congrats!



Be sure you are pressing on the inner race ONLY. I would recommend a socket that fits in the recessed area, as it does not go all the way down on the shaft. (will site a few thousandths proud) ALSO note the orientation of the bearing - the metal plate is DOWN.

11. NOTICE: Use vise jaw protectors.

General Equipment : Vise General Equipment : Vise Jaw Protectors



Torque : 110 Nm



REMEMBER: THIS IS LEFT HAND THREADED! YOU WILL BE TURNING THIS BOLT IN A COUNTER CLOCK-WISE MOTION TO TIGHTEN IT!! Good luck torquing this. I had a friend help, we used a strap wrench, vise and various implements to do our best. We couldn't quite get the torque wrench to click 110, but we got close. Another option is to use a power tool/air gun, but that is up to you.

13.

- Special Tool(s) : 307-679 Installer, Countershaft Needle Bearing General Equipment : Hydraulic Press
- 3.



Fairly easy to press on. I started it with a piece of flat bar and then used a large socket to press it all the way on.

Don't forget the snap ring!

Copyright © Ford Motor Company

Congrats on reaching this point! The hardest stuff is done.