

CLUTCH REPAIR / REPLACEMENT

(by Roland Lohnert)

While a clutch repair or replacement on a Porsche-Diesel tractor is basically a straight forward mechanical repair, there are a few points to be taken under consideration.

The Workshop Manual addresses clutch service in a few places, but does not consider that many owners are doing this repair for the first time and have not attended a Porsche-Diesel Service School. In the end, the factory at that time did not encourage end users to do this job but leave it to well trained service crews at the local dealership.

However, anyone who has done a similar job on a VW Beetle, or another brand of farm tractor, can do it, subject to the suggestions and recommendations below. Take your time, and you will be ok.

There are basically 4 models of P-D tractors and the repair / replacement of a clutch is very similar to all. The parts manual shows you how the different parts fit together. The Workshop Manual is nice to have for many other jobs, but the parts manual is equally or even more important for this task.

So, here we go:

If you have a clutch problem, try to identify the problem before you tear into things. For example: a slipping clutch usually can be fixed by adjusting the linkage / clearance settings, and setting the correct play on the pedal. For adjustment purposes you need to know if your tractor has a single disc or double disc clutch. A single disc clutch acts only for the transmission drive, the double disc has a second clutch disc just for the pto drive (live pto).

If your clutch problems go beyond simple adjustment and you have to bite the bullet for a repair or replacement then continue with the following steps:

1. Assemble the correct tools:
 - A good set of metric tools - and I mean good quality
 - A good working floor jack of at least 2 ton capacity
 - Several jack stands, wooden blocks, wood shims, wood wedges
 - A very level, solid (concrete) floor in a dry area
 - A few buckets or pans to catch oil or parts
 - Ample paper towels or rags for your hands or the oil you may spill.
 - A second pair of strong hands is **a must** for this job, especially, if you have a Super or Master to repair.

2. Consider your approach to working with heavy machinery:
 - Stand back and paint yourself a big sign over your tractor:
“**SAFETY FIRST**”
 - Look at that sign every few minutes during the whole job. Ok!

3. Stabilize the tractor for jacking and work:
 - Bring your tractor on the level concrete pad.
 - Assure that your tractor is level to the floor. If you have large front wheels, they have to come off so everything is as level as you can get it. The more level the tractor sits, the easier the job will be.
 - If your front wheels are still on the axle, block them securely front & rear. If they are off, make sure that your stands are safe and secure.
 - For the time being, lock the hand break.
 - Disconnect the battery.
 - Drain the hydraulic oil by disconnecting the pressure and return line at the pump.
 - Identify all electrical wires going from the flywheel housing backwards. Mark them to save time during re-assembly, and disconnect them.
 - Block the engine securely under the flywheel housing. Secure for side-loads also.

4. Split the engine and transmission:
 - **REVIEW STEP 2.**
 - Most Porsche-Diesel tractors equipped with a double-disc clutch assembly have an intermediate housing between engine and transmission to accommodate the clutch assembly.
 - This additional housing could require the removal of additional items before splitting, such as foot accelerator, exhaust pipe, removal of rear mounting bolts of battery box, etc.
 - Walk around the tractor to assure everything is clear and there is no interference.
 - The tractor always will be split at the end of the flywheel housing, i.e. between engine and transmission or between engine and intermediate housing.
 - Place floor jack from behind under the front of the transmission housing / intermediate housing, as close to the flywheel housing as possible, but do not touch the flywheel housing.
 - Take off all the nuts that hold flywheel housing to the transmission housing.
 - Release hand brake.
 - With one person on each rear wheel, slowly roll the rear end of the tractor back. Carefully roll back and forth until everything is loose. Then keep on evenly rolling back and watch the floor jack in the process. Also watch the front end of the tractor at all times, so it stays fixed in place.
 - When you have an opening of about 12 inches, stop, set the hand brake and relax for awhile.
 - Block transmission from underneath in case the floor jack develops an internal leak.

5. Inspect the clutch:
 - On a single-disc clutch, the pressure plate is bolted to the flywheel.
 - On a double-disc clutch, pressure plates and discs are one unit as an assembly.

The whole assembly is bolted to the flywheel and quite heavy. Be prepared to ease 75 lbs plus to the floor.

- On a single-disc clutch remove the clutch disc from the flywheel. Remember front and rear side of the disc.
- Inspect clutch disc and pressure plate or clutch assembly, and release bearing for wear or damage.
- On a double-disc clutch assembly, read the dis-assembly and assembly instructions, posted as a service bulletin on the website. Adjustment and clearances are very critical. You will need a relatively narrow 15 mm wrench and a feeler gauge with a 2mm thickness and 10 mm opening to fit around the bolts. Take your time and double check every measurement.
- Currently, most parts for both clutch types are available, as well as the release bearings.
- When working on a double clutch assembly, take lots of pictures. They come in very handy during assembly time.

6. Reassembly (carefully reverse your steps):

- Clean both housings on the inside.
- Replace the seal (s) on the transmission side, if they are leaking.
- The Workshop Manual explains well the replacement of the rear crankshaft seal, if necessary.
- Check bearing / bushing in the center of the flywheel. If ok, just lubricate it with a hi-temp lubricant that does not melt.
- Install release bearing and assure proper movements.
- Install clutch disc and pressure plate. Center disc before tightening the bolts on the pressure plate. Or install clutch assembly (double-disc clutch).
- To mate the transmission to the engine, it would be nice to have 3 people. One on each rear wheel and one directing the floor jack.
- Always watch that the front end of the tractor stays in fixed position. Carefully mate the 2 components and tighten the nuts.
- Connect the wiring harness and all other items previously disconnected.
- Connect the hydraulic lines and add hydraulic fluid or SAE 10 motor oil. Bleed the lines to save wear on the pump.
- Adjust clutch play on the foot pedal as needed

7. Maintaining your rebuilt clutch:

- Regular adjustment of the clutch pedal (and especially the disc play on a double clutch assembly) is **VERY** important to the long-term condition of your drive-train.