

LuK Clutch Academy Vivaro 2.5 DTi

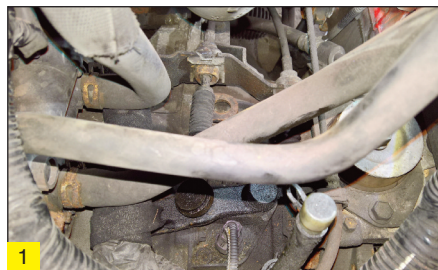


Malcolm Short, Schaeffler

The Vivaro is a popular van, especially among tradesmen and fleet van operators. The platform for the Vivaro is also shared with Renault and Nissan, so the opportunity for clutch replacement is likely. The LuK technical team take a look at the clutch replacement procedures for the Vivaro.

Disconnect the battery, remove the engine cover, disconnect the air mass meter and remove the air filter housing and ducting. Then, disconnect the turbo boost pressure sensor multi-plug, and remove the upper charge air hose.

With these removed, there is now better access to the gearbox area. Then, remove both gear change cables (Fig 1) from the gearbox by pressing in the centre of the nylon ball joint retainers and lifting.



Remove the retaining clips on the outer cables. The cables can now be removed from the gearbox and stored against the bulkhead, while the speedo and reverse light switch multi-plugs can now be disconnected.

Clamp the flexible section of the hydraulic clutch pipe, and disconnect the clutch pipe from the concentric slave cylinder connection. Remove the upper bell housing nuts – the studs may come out with the nuts; if they don't, remove the studs with a female TRX socket, as this gives extra clearance when removing the gearbox.

Slacken both driveshaft/hub nuts, raise the ramp, remove the engine under tray and drain the gearbox oil.

Lower the ramp to waist height and support the vehicle, so that the front wheels are suspended. Remove both front wheels, front-hub nuts and the N/S/F wheel arch liner, and the inner driveshaft gaiter retaining bolts (Fig 2).

Release the front flexible brake hoses from the retaining points on the front struts, remove the strut to hub assembly bolts, lever the hub assemblies out, remove the driveshafts from the hubs, and then remove the driveshafts from the gearbox and vehicle.

Raise the ramp and remove the lower gearbox

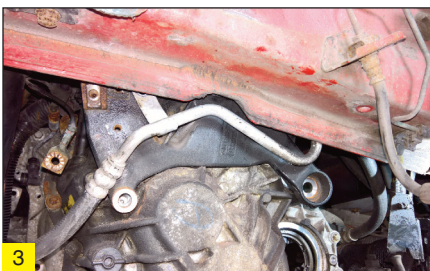


bell housing cover. Remove the starter motor bolts and bell housing bolts from behind and around the oil filter housing area. These can be removed using a universal joint on socket and extension tooling.

Remove the rest of the bell housing bolts, leaving one accessible bolt to support the gearbox until removal, and remove the lower engine pendulum mounting. Attach an engine support, remove the six-sub frame bolts and the four steering rack bolts, allowing the engine and gearbox to lower on the sub frame to aid gearbox removal.

Lower the ramp and remove the gearbox mounting from the chassis leg, and then lower the engine slightly on the engine support, giving access to remove the gearbox mounting, air conditioning pipe and earth strap (Fig 3).

Support the gearbox with a transmission jack, remove the final accessible bell housing bolt, and ease



the gearbox back until free and lower to the floor. On this occasion, the gearbox had seized on the location dowels, so a little force was required to separate it from the engine (Fig 4). With the gearbox removed, the location dowels were cleaned up with emery cloth.

The clutch assembly can now be removed from the flywheel. An inspection discovered that the clutch plate had worn and was close to the end of its service life, and the release mechanism lacked lubrication, which would both contribute to a heavy clutch pedal.

Inspect the flywheel for heat stress, such as hairline fractures or cracks, confirming the flywheel is serviceable, and remove the glaze from the flywheel face using emery cloth. Also, clean the flywheel and surrounding area with clutch and brake dust cleaner.



Remove the old CSC from the gearbox bell housing, and carry out an inspection to ensure there are no oil leaks that could contaminate the new clutch, cleaning the bell housing and input shaft with brake and clutch dust cleaner.

Ensure the mounting surface for the new CSC is clean, and mount it – do not 'dry squeeze' the new CSC as this can cause damage internally or externally – and bolt into position, torquing the bolts to the manufacturer's specification.

Lightly smear a small amount of high-melting point grease to the input shaft, and mount the new clutch plate onto it – this will ensure the clutch plate is correctly fitted and the grease is evenly distributed.

Remove the clutch plate and wipe off any excess grease. Using a clutch alignment tool, mount the new clutch on the flywheel, making sure the clutch plate is located correctly with 'Gearbox Side' or 'Getriebe Seite' facing the gearbox and tighten evenly and sequentially.

At this point, it is good practice to change the clutch fluid in the hydraulic system, as this will remove any contaminated fluid that could cause bleeding problems or even premature failure in the hydraulic system. This is carried out simply by allowing the fluid to flow through the system, remembering to keep the reservoir topped up, and open the bleed valve to confirm correct operation before commencing with bleeding.

The gearbox can now be installed, in reverse order of removal. Torque all bolts to the manufacturer's specification, remembering to re-fill the gearbox with the correct grade and quantity of gearbox oil.

The Vivaro can be challenging to bleed. The recommended process for this system requires a second person, and is as follows:

Fill the clutch fluid reservoir and attach a bleed bottle to the bleed nipple. Press the clutch pedal slowly to the floor, open the bleed nipple, and, when the pressure has exhausted, close the bleed nipple. Slowly, allow the clutch pedal to return to the start position and allow the system to rest momentarily.

Repeat this process 25 times, remembering to keep the clutch fluid reservoir full. By using this method, the clutch return system is doing the work – not the pressure coming from the foot through the CSC.

Check out the full workshop instructions and online support at www.repxpert.co.uk or contact the LuK Technical Hotline on +44 1432 264 264.

