

LuK Clutch Academy Toyota RAV4



Malcolm Short, Schaeffler

This Toyota Rav4, fitted with a 2.0 D4D, a Dual Mass Flywheel (DMF) and permanent four-wheel drive, had covered more than 130,000 miles. The customer reported that the clutch was slipping under full load, which was confirmed by a road test. Schaeffler's Malcolm Short explains the steps needed to complete this job.

For this type of repair, a two-post ramp and two transmission jacks are required. Also, if the vehicle is equipped with locking wheel bolts, ensure the key/tool is available prior to starting the repair.

With the vehicle placed on the ramp, disconnect the battery, the multi-plug from the air flow meter and remove the complete air filter assembly (Fig 1).



Disconnect the reverse light switch multi-plug and the gearbox earth cable. Remove the gear linkage assembly and unbolt the clutch slave cylinder that is located on the front of the gearbox, retained by two 13mm nuts, and stow safely. Remove the plate mounted with the slave cylinder. Note, the hydraulics do not have to be disconnected.

Unscrew the top bell housing bolts and slacken the top gearbox mounting, ready for removal later.

With the vehicle on the floor, slacken the wheel bolts and the O/S/F hub nut. Raise the ramp to waist height and remove both front wheels, the O/S/F hub nut, the N/S/F wheel arch splash guard and the N/S/F under tray.



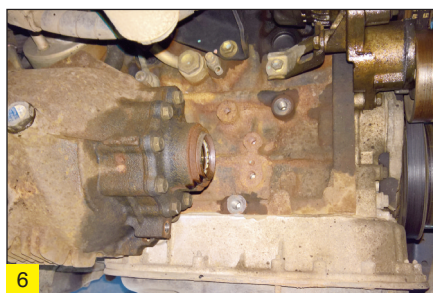
Raise the vehicle to remove the front sub-frame by disconnecting the anti-roll bar clamps, removing the front gearbox mounting, detaching both bottom ball joints, removing the two bolts that hold the steering rack to the front sub-frame (Fig 2)

and securing the steering rack to the engine bay to hold in place.

Support the front sub-frame with a transmission jack and remove the sub-frame retaining bolts. Lower the transmission jack and remove the front sub-frame and detach the gearbox cross member/cradle.

Drain the oil from the gearbox and transfer box. Once the oil has drained, remove the O/S/F driveshaft by sliding out of the transfer box and store in a safe and clean area.

It is advisable to plug the driveshaft holes when the driveshafts have been removed, to stop any excess oil dripping and to stop anything getting into the transfer box. The support bracket for the transfer box to engine can be removed (Fig 3), and the engine and gearbox can now be eased forward to release the front prop shaft joint from the transfer box.



Pull the bottom of the N/S/F strut assembly outwards, as this will release the N/S/F driveshaft from transfer box, and the driveshaft can then be positioned conveniently. From under the vehicle, the gear linkage bracket and the speedo cable that are both located towards the top rear of the gearbox can be removed.

Disconnect the starter motor from the front of the engine and leave in position. Support the engine using an engine brace or transmission jack. From the top, disconnect the top gearbox mounting from the gearbox, and remove the remaining bell housing bolts, leaving one to hold the gearbox in position.

Support the gearbox with a transmission jack and cradle, remove the final bell housing bolt and ease the gearbox away from the engine. If the gearbox has seized on the dowels, which is possible, work the gearbox up and down until it has released from the dowels and then remove the gearbox.

Remove and inspect the clutch. On this occasion, with evidence that it had reached the end

of its service life and that 'slipping' had taken place, the customer also requested that the DMF was replaced at the same time.

With the clutch and flywheel removed, clean the back of the engine to remove any clutch dust that could contaminate the new clutch and flywheel assembly. Check all parts are correct, and then fit the new flywheel and flywheel bolt torque values – replacement information is available on Schaeffler's REPERT portal or Schaeffler's DMF Checkpoint app.

With the flywheel torqued, clean the bell housing of the gearbox, clean and check all moving parts and pivot points for wear – replace if required.

Apply a small amount of high-melting point grease to pivot points and contact areas and re-assemble, removing any excess grease, and install the new release bearing (Fig 4).



Then lightly lubricate the gearbox input shaft splines with high-melting point grease, and slide the new clutch plate onto the input shaft to evenly distribute the grease. To ensure the clutch plate is correct, wipe off any excess grease. Fit the new clutch to the flywheel using a clutch alignment tool, ensuring the clutch plate is positioned correctly with 'Gearbox Side' or 'Getriebe Seite' facing the gearbox. Tighten the clutch bolts evenly and sequentially, and torque to the vehicle manufacturer's specification.

Refit the gearbox in reverse order of removal, refill the gearbox and transfer box with the correct quantity and specification of oil. After connecting the battery, reset all electrical items as required and carry out a road test to ensure the repair is complete.

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.

