



Alistair Mason, Schaeffler

# LuK Clutch Academy

## 2003 Mini One

This month, REPERT Alistair Mason replaced the clutch on a 2003 Mini One, which had covered 103,000 miles. The customer reported that the clutch pedal was heavy when used.

**F**or this repair, a two-post vehicle lift, engine support, transmission jack and clutch alignment tool are required. Combining the equipment with the scheduled seven-hour labour time, this replacement is a simple one for an independent technician.

### Step-by-step procedure

Ensure a locking wheel bolt tool is nearby before starting the repair. With the vehicle placed on the ramp, open the bonnet (Fig 1), remove the battery cover, then disconnect the battery.



Detach the smaller multiplug from the engine control unit (ECU), remove the ECU from the battery box assembly that is retained by an internal clip, undo the battery box retaining bolts and remove the battery box assembly.

Remove the air filter/air box assembly, which gives good access to the top of the gearbox and bell-housing area. Unscrew the clutch slave cylinder retaining bolts and stow the slave cylinder in a safe area – don't disconnect the hydraulic pipe!

Disconnect the reverse light switch multiplug, ease off the gearchange cables from the linkage and then remove the three retaining bolts for the gearchange cable holder. Undo the upper bell-housing bolts and detach the rear bolt from the O/S upper engine torque arm.

Remove the front subframe. Slacken the front wheels and the front hub nuts, raise the vehicle lift to waist height, remove the front wheels, hub nuts, and then tie the steering rack up on both sides to the front struts, which

will hold it in position when the front subframe is removed.

Raise the vehicle lift to gain access to the underside, detach the engine undertray, disconnect both bottom ball joints (Fig 2) and the anti-roll bar links, before removing the lower engine torque arm and the subframe retaining bolts.



Allow the subframe to lower slightly, to gain access, and undo the four steering rack retaining bolts. Unscrew the power steering motor mounting bolts, too. Support the subframe and ease it out of the front cross member tubes. Once free, lower and stow it out of the way (Fig 3).



Drain the gearbox oil, before refitting the drain plug and torquing to the manufacturer's specification.

With the subframe removed, disconnect the driveshafts: undo the lower bell-housing bolts, leaving in two easily-accessible ones to retain the gearbox until ready to remove.

Support the engine, which can be done with either an engine support mounted across the inner wings or a transmission jack/large axle stand to support the engine from the

underside. In this instance, a transmission jack was used, before a second transmission jack was brought in to support the gearbox.

With the aid of a ladder/steps to gain access to the engine bay, remove the gearbox mounting. Then, from the underside of the vehicle, unscrew the two easily-accessible bell housing bolts, and ease the gearbox away from the engine and clutch assembly. Once clear, lower the transmission jack and remove the gearbox.

Detach the clutch and inspect it. In this instance, the clutch was in a serviceable condition; the release system was then inspected for correct operation, and this is where the problem was identified: the bushes for the release fork had worn badly, causing the release fork to operate at a slight angle and requiring extra force, to operate the clutch (Fig 4).



With the clutch removed and the flywheel surface deglazed by an Emery cloth, it was cleaned using brake and clutch dust cleaner. The clutch plate was then mounted onto the gearbox input shaft to ensure correct fitment.

Once located, fit the new clutch using a clutch alignment tool, ensuring the clutch plate is installed correctly with either 'Gearbox Side' or 'Getriebe Seite' facing the gearbox. Install

the bolts and tighten evenly and sequentially, before, finally, torquing to the manufacturer's specification.

With the new clutch fitted, the focus switches to the release mechanism. With new release fork bushes obtained, remove the release bearing and then knock out the retaining pin that secures the clutch arm lever to the clutch release fork. Remove the clutch arm lever and the clutch release fork; in practice, everything had seized solid.

**Be careful when trying to remove seized components from the gearbox**

The gearbox castings can be brittle and easily broken, causing an even bigger problem. On this occasion, the centre of the retaining pin was drilled, while the remainder of it was removed with a punch. The release arm lever had corroded and seized onto the clutch release fork; even a two-legged puller failed to separate the two components. At this point, some physics were applied to the job, by expanding and contracting the metal with some heat. The reverse light switch, however, was removed so not to damage it.

Using an oxy-acetylene pack, heat the clutch arm lever and release the fork connection until red hot and quench with cold water. The expansion and contraction will break the corrosion/rust, and then the clutch

release arm can be removed by hand.

Disconnect the clutch release fork from the bell housing and inspect for any wear; in this instance, the release arm was serviceable, so just the bushes were replaced.

Always check the release bearing guide tube for any wear and replace if necessary, as this can cause the release bearing not to return properly. Install the release arm; here, a 'G' clamp was used to insert the new retaining pin into the clutch release fork and release arm lever connection.

Fit the new release bearing (Fig 5). Apply a light smear of high-melting point grease to the gearbox input shaft splines and wipe off any excess.

The gearbox is now ready to be fitted; check that the two alignment dowels are located correctly in the engine, and using the transmission jack to refit the gearbox, ease into position and locate on the engine dowels. Once located, secure in position with a couple of bell housing bolts.

Reinstall all items in reverse order of removal, refill the gearbox with the correct quality and quantity of gearbox oil, and torque all bolts to the manufacturer's specification. Once the battery has been reconnected, reset all electrical consumers as required. Finally, road test the vehicle to ensure a quality repair.








Find more information fitting times and instructions can be found on the REPXPART garage portal, [www.repxpert.co.uk](http://www.repxpert.co.uk), or call the REPXPART technical hotline on +44 1432 264 264.

SCHAEFFLER  
**REPXPART**

# AUTOBIZ jobs.ie

For further details on any of the jobs listed below please visit [www.autobizjobs.ie](http://www.autobizjobs.ie) and enter the 'Quick Find Code'



DUBLIN	WORKSHOP	GENERAL OPERATIVE	QUICK FIND CODE: 553
	<b>National Vehicle Distributors</b> - The Workshop General Operative will operate as part of a workshop team and will take responsibility for completing a range of workshop tasks as assigned and in line with company policy, procedures and safety standards. The operative will also assist with other workshop tasks as may be required from time to time.....		See <a href="http://Autobizjobs.ie">Autobizjobs.ie</a> for more details...
DUBLIN	BODYSHOP	PANEL BEATER	QUICK FIND CODE: 552
	<b>National Vehicle Distributors</b> - Working in a fast-paced workshop, Panel Beaters are responsible for providing a quality vehicle body repair service. The role is primarily concerned with ensuring vehicles are repaired in a timely manner to the required standard. The successful candidates will be tasked with ensuring that body shop targets and KPI's are met daily. An attractive remuneration package is on offer....		See <a href="http://Autobizjobs.ie">Autobizjobs.ie</a> for more details...
LONGFORD	BODYSHOP	QUALIFIED PANEL BEATER / SPRAY PAINTER	QUICK FIND CODE: 549
	<b>Premier Crash Repairs</b> - is looking to recruit a fully qualified Panel Beater / Spray Painter. The successful candidate should have a minimum of 5 years experience in body repair and should have the flexibility to work as both as a panel beater and painter. Good communication skills and the ability to work on your own initiative are also essential.....		See <a href="http://Autobizjobs.ie">Autobizjobs.ie</a> for more details...
MONAGHAN	BODYSHOP	TRAINEE PANEL BEATER	QUICK FIND CODE: 551
	<b>Courtney Crash Repairs</b> - Seeking a trainee / apprentice panel beater to join their team. This is an opportunity for an enthusiastic and eager to learn young person to enter a fast developing trade and take the first in an exciting career path. The successful applicant will receive a combination of training and work experience, working towards a full recognised trade qualification.....		See <a href="http://Autobizjobs.ie">Autobizjobs.ie</a> for more details...
MONAGHAN	BODYSHOP	PANEL BEATER	QUICK FIND CODE: 550
	<b>Courtney Crash Repairs</b> - seeking a fully experienced panel beater. The successful candidate will have a minimum of 5 years experience in a similar role, be enthusiastic and have the ability to work on their own initiative. Good communication skills are also essential. The ability to undertake light mechanical work would also be advantageous. An attractive remuneration package is available to the successful applicant.....		See <a href="http://Autobizjobs.ie">Autobizjobs.ie</a> for more details...