

## How to Replace the Clutch System without removing the Sub frame & Gearbox

By French Mike and T-Cut

The following How To has been edited and uploaded by me on behalf of French Mike, who did the actual work and prepared the draft.

How To Replace the Clutch and Slave Cylinder without removing the Sub frame and Gearbox

For anyone without access to a pit or a post ramp, replacing the clutch can be a difficult job. The procedure described in the Haynes manual involves complete removal of the front sub frame before the gearbox is detached from the bell housing. The gearbox is then removed completely to allow access to the clutch, flywheel and slave cylinder. However, it is possible to do the job without these major tasks using ordinary lifting gear and adequate support for the raised body.

I recently replaced the clutch system on my 2002 Rover 75 CDT (100,00 km) using the information provided here: [http://www.allpartsautomotive.co.uk/allparts/documents/unprotected-Rover\\_75\\_2.0\\_litre\\_Turbo\\_Diesel.pdf](http://www.allpartsautomotive.co.uk/allparts/documents/unprotected-Rover_75_2.0_litre_Turbo_Diesel.pdf)

The principles involved should be applicable to the other models.

The Haynes manual will be useful for reference when removing peripheral parts such as the fuel burning heater (if fitted). It also provides all the essential tightening torque's.

The manual also recommends replacing the circlip fitted to the inner end of the shorter drive shaft.

### **Symptoms**

Clutch pedal on floor due to fluid leakage from the slave cylinder.

### **Tools used**

These are shown in the following photos.

Image 1:



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Image 2 (Numbers are the sizes in mm)

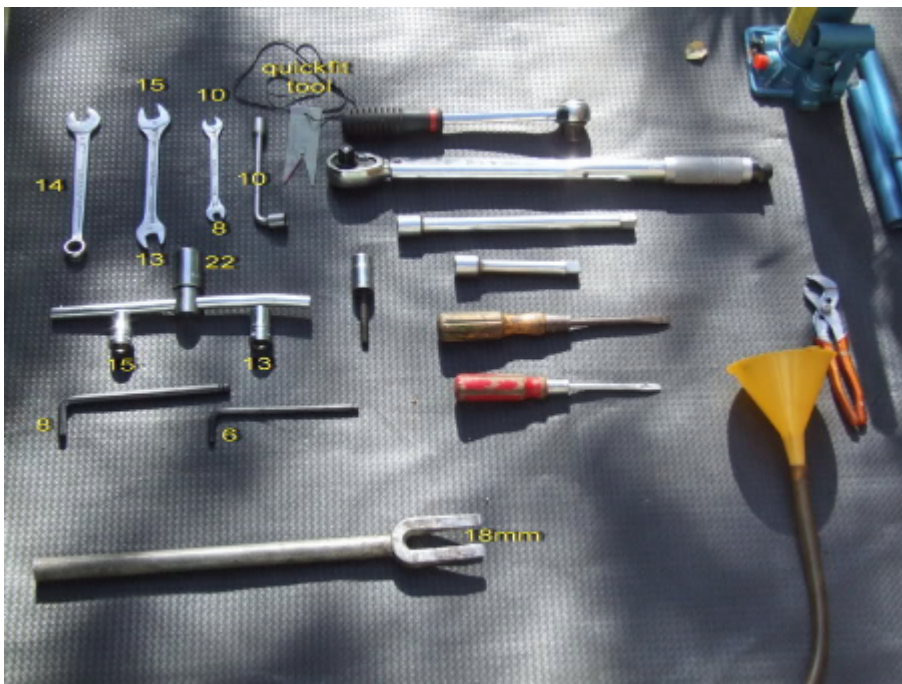


Image 2a (Home made separating tool for Hydraulic Pipe Connector)



The other home made gadget was a clutch plate alignment tool or you can get them from auto shops. Also used were several blocks of wood of sufficient size (about 30 cm long) and strength to carry the car's weight and to help support the gearbox. These were augmented by substantial concrete blocks as appropriate.

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## Preparation

Position the car on firm level ground.

Apply the hand brake and chock the rear wheels front and back.

Slacken the bolts on both front wheels.

Using a trolley jack, lift the front of the car to a height sufficient for you to comfortably work underneath. Slide the large wooden blocks/concrete blocks under both front sill jacking points (this is more secure than axle stands IMO).

Remove the jack so the car is supported on the blocks.

Satisfy yourself that the car is completely safe to work underneath.

## Under the Bonnet

Remove five screws securing the air duct to the bonnet platform and remove the duct.

Disconnect and remove battery and battery carrier.

If fitted, disconnect the fuel burning heater and its mounting frame.

Remove the fuel filter and lift pump frame, move it to engine side and secure it out of the way.

Disconnect the clutch hydraulic pipe at the self-sealing coupling. I used a home made tool as shown in Image 2a above.

Using an open ended spanner (13 mm), release gear change inner cables from the gearbox.

Compress the retaining springs and remove the outer cables from the support bracket on the gearbox.

Support the engine/gearbox on a suitable jack cushioned with wood as shown below (taken at a later stage).

Image 3:



Drain the gearbox oil and disconnect reverse lamp switch.

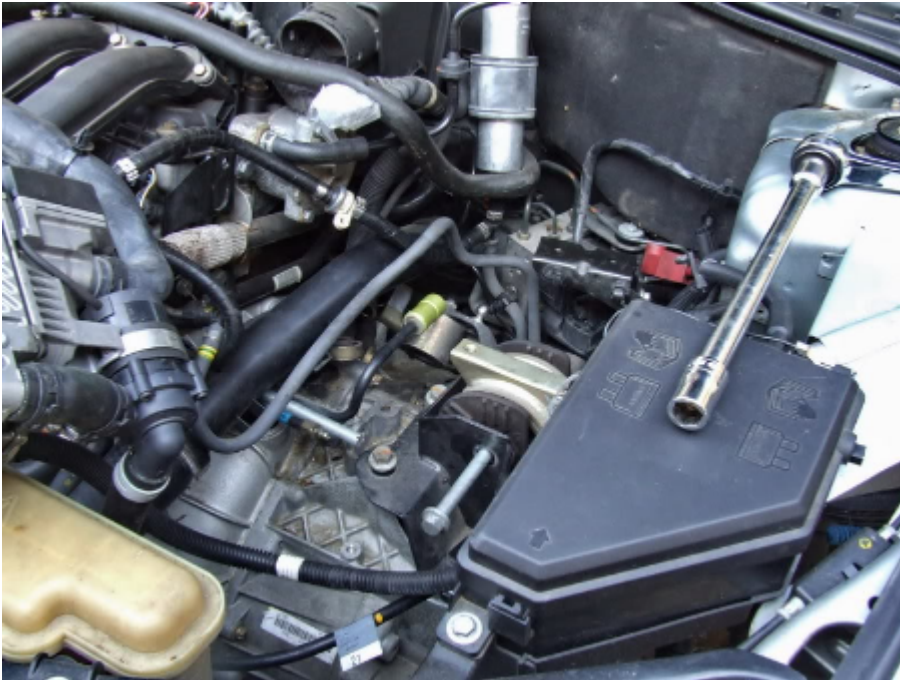
Remove through bolt securing gearbox mounting bracket to gearbox (100Nm) as shown in the next photo.

Notice the disconnected hydraulic pipe with the yellow coloured union.

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Image 4:



Remove the four bolts securing gearbox mounting bracket to gearbox (85Nm).  
If Master Cylinder is to be Replaced:

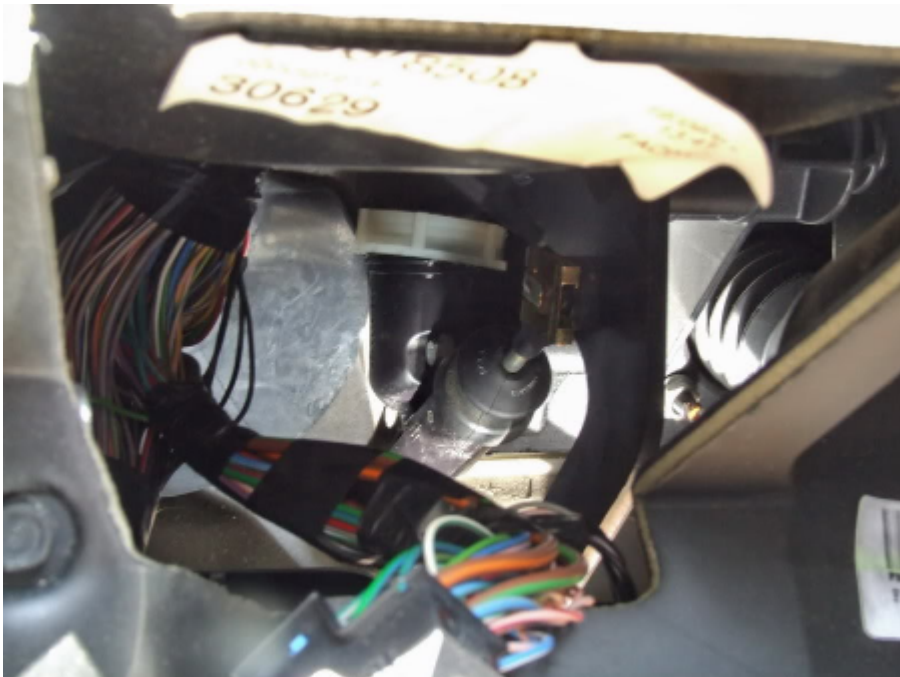
#### In the Cab

Remove the driver's side lower fascia panel (Ref. to Haynes).

Remove two screws and two clips securing trim panel above the pedals and remove panel.

Release clip and remove clevis pin master cylinder push-rod to clutch pedal as seen in the next photo.

Image 5:



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Remove the two bolts securing clutch master cylinder to pedal bracket.

Release clutch pipe grommets under bonnet lower plenum and bulkhead adjacent to pedal bracket.

Remove master cylinder and fluid pipe, manoeuvring clutch pipe through grommet holes.

Fit new master cylinder by reversing the above steps.

### Under the Car

Remove the front wheels and wheel arch liners.

Disconnect both ABS sensor leads and the brake wear sensor lead on the driver's side.

Release the downlink lower ball joint (60 Nm) from the stabiliser bar on the near side.

Disconnect the lower ball joint on both lower suspension arms by removing the nut and bolt securing it to the hub (45 Nm).

When you release the ball joint take care not to damage rubber gaiter.

Protect ball joints with rags, etc.

Remove two bolts (three on 1.8 models) securing the long drive shaft intermediate bearing housing to engine using the 14 mm ring spanner. These bolts require a 12-point socket/spanner. A standard 6-point socket will not fit.

Pull hub outwards and withdraw each drive shaft horizontally from the differential. Protect the splines with plastic bags and tape. Here's the photo again.

Inspect the oils seals in each drive shaft port and renew as necessary.

Image 6:



Remove the four bolts (three easy + one hidden) securing the steering rack to the sub frame and release steering rack from sub frame (open-ended spanner 13 mm).

Image 7:



Remove bolt (spanner 10 mm) securing closing plate to gearbox.

Disconnect Lucar connector from starter motor solenoid.

Remove nut and disconnect two cables from starter motor solenoid (spanner 13 mm).

Remove two bolts (or just the lower nut and bolt) and release engine earth lead from top bolt. Remove the motor. (If preferred, just slide the motor to the left).

Slacken the three bolts on the offside sub frame mountings and remove the near side three bolts securing sub frame mountings to body.

Remove the seven bolts securing gearbox to engine (85 Nm).

Release gearbox from the two dowels.

Manoeuvre and lower gearbox onto sub frame with help of trolley jack and protective wood.

Limit the lowering of the sub frame to 5 cm using a block of wood as shown below.

Image 8:

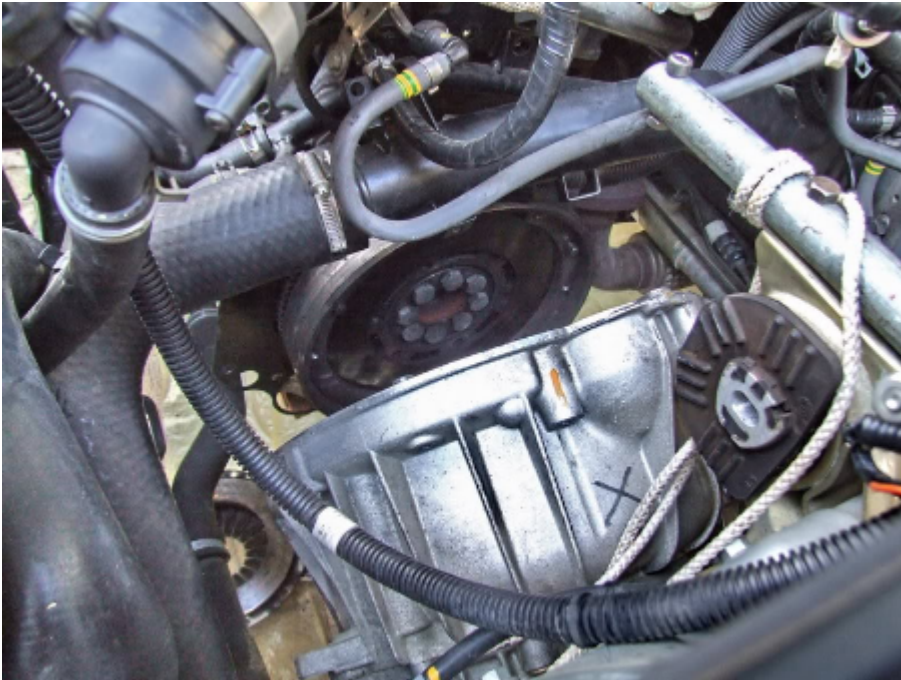


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The gearbox can now be pulled back sufficiently to allow it to rest on the sub frame, giving access to the clutch assembly and flywheel.

Image 9:



Restrain the crankshaft using a socket (22 mm) on the pulley bolt as shown next.

Image 10:



Progressively loosen and then remove the six bolts securing clutch cover assembly to the flywheel (25 Nm). Remove clutch cover and the driven (friction) plate. My old parts can be seen with their replacements in the next photo. Notice that the old plate had no damper springs. These plates are sold with and

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without damper springs, so ensure you get the one with springs.

Image 11:



Inspect the Dual Mass Flywheel thoroughly.

There should be no more than 25-30 mm of free movement between the two masses. If free movement is excessive, the flywheel should be replaced.

Remove the grommet securing the slave cylinder pipes to the bell housing.

Manoeuvre the release bearing and slave cylinder assembly from bell housing.

Here's a few pictures of the failed slave cylinder.

Image 12:



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Image 13:



Image 14:



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Image 15:



Install the new slave unit. Clean the release bearing and bearing guide mating faces. Lubricate bearing running surface with molybdenum disulphide grease.

Align slave cylinder pipes. Fit release bearing and secure clutch pipe grommet.

Position the new clutch plate (check it faces correctly) and align it with the pressure plate with the help of an alignment tool (21/70 mm).

Working in a diagonal sequence progressively tighten pressure plate retaining bolts to 25Nm.

Remove crankshaft restraining socket.

#### Refitting Peripherals

Reverse of the described procedure, with attention to the following.

The manual recommends replacing the circlip fitted on the spline of the shorter drive shaft.

When refitting this drive shaft, ensure the clip engages properly in the differential. Listen for the click.

Ensure correct torque settings are applied throughout (Ref. Haynes where necessary).

It should be unnecessary to bleed the clutch hydraulics if all new parts have been fitted. The pipe union has anti-leak valves which allow for an instant seal.