

CHAPTER 6

THE CLUTCH

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6:1 Description

The clutch unit is a Borg and Beck single dry plate type operated by a hydraulic mechanism. Early vehicles are equipped with a coil spring cover unit but later vehicles have the diaphragm spring cover. This latter unit cannot be overhauled and in the event of failure must be exchanged for a new one at a Rover Service Agent. The latest vehicles are also fitted with a hydrostatic operating mechanism which requires no adjustment throughout the life of the clutch. Instructions for setting this mechanism are included in this Chapter.

6:2 Adjustment of pedal travel

This operation should be carried out regularly if the early non-hydrostatic mechanism is fitted to ensure that all the free play is not taken up, thereby allowing spring pressure to load the release bearing giving rise to clutch slip as the friction plate wears. It must also be done whenever the clutch unit or any parts of the mechanism are removed and overhauled. This applies to both early and late type mechanisms. FIG 6:1 illustrates the early mechanism and FIG 6:2 the later (hydrostatic) mechanism.

First check and if necessary adjust the pedal position and master cylinder free movement as shown by FIG 6:3. Adjust screw A until dimension E is appropriate to the type of mechanism. Now slacken locknuts B and rotate pushrod C until $\frac{1}{16}$ inch (1.5 mm) play is apparent at dimension D; tighten the locknuts. This will give $\frac{1}{8}$ inch (8 mm) free movement at the pedal pad.

Early models:

Refer to FIG 6:4, slacken locknut C and rotate pushrod B on the slave cylinder until the pedal free travel measured at the pedal pad increases from $\frac{1}{8}$ inch (8 mm) to $1\frac{1}{2}$ inch (38 mm). Tighten the locknut.

Late models, hydrostatic mechanism:

Hold the cranked operating lever on the clutch cross-shaft down to ensure that all backlash in the mechanism is absorbed. Refer to FIG 6:5. Slacken nut E and turn nut D until dimension C is obtained. Lock nut E. Never loosen nut D on the shaft B, it must always be held against the end of the thread.

6:4 Servicing the hydraulic system

(a) The master cylinder

Removal of the master cylinder is a straightforward disconnecting operation but it is a little more difficult on lefthand steering vehicles than righthand steering ones. On lefthand steering vehicles the lefthand front wing

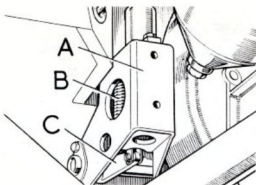


FIG 6:1 Early type mechanism

Key to Fig 6:1 A Support bracket B Return spring
C Straight operating lever

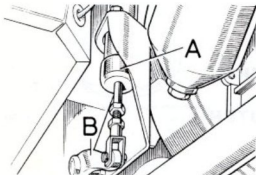


FIG 6:2 Later type mechanism

Key to Fig 6:2 A Slave cylinder B Cranked operating lever

Note that with this hydrostatic mechanism the pedal free travel remains at $\frac{1}{16}$ inch (8 mm). Any 'riding' of the clutch will cause rapid wear as the mechanism begins to operate immediately this small amount of free play disappears.

6:3 Bleeding the hydraulic system

During this operation maintain the level of fluid in the reservoir by adding Castrol Girling Brake and Clutch Fluid, Crimson, as work proceeds. If the reservoir is integral with the master cylinder, keep the fluid level up to the marking on the side of the reservoir; if the reservoir is separate from the master cylinder keep the fluid level above the top of the inner reservoir.

Remove the front floor or gearbox tunnel to gain access to the slave cylinder then attach a length of rubber or plastic tubing to the bleed screw as shown in FIG 6:6. Immerse the lower end of the tubing in a glass jar containing a little clean fluid. Slacken the bleed screw and pump the clutch pedal, pausing at the end of each stroke. When no more bubbles appear from the tubing, tighten the bleed screw at the beginning of a downwards stroke of the pedal. Remove the tubing and replace the floor. Do not re-use fluid bled from the system.

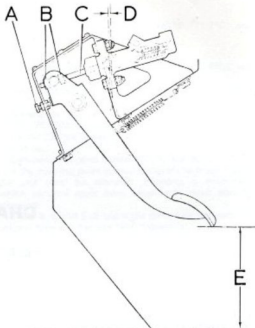


FIG 6:3 Pedal and master cylinder settings

Key to Fig 6:3 A Pedal position setting bolt B Master cylinder pushrod locknuts C Master cylinder pushrod
D Free play $\frac{1}{16}$ in (1.5 mm) E Models with non-hydrostatic clutch mechanism: $6\frac{1}{2}$ in (158 mm) Models with hydrostatic clutch mechanism: $5\frac{1}{2}$ in (140 mm)

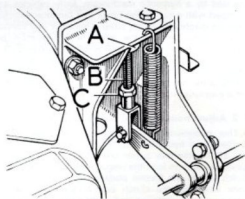


FIG 6:4 Slave cylinder adjustment, early type

Key to Fig 6:4 A Slave cylinder B Pushrod
C Locknut

must be removed and also the whole pedal bracket and its fixings. This allows the clutch pedal, bracket and master cylinder to come out as one assembly. On righthand steering vehicles it is only necessary to remove the top cover from the pedal bracket before undoing the bolts holding the master cylinder and releasing the pushrod from the pedal trunnion. When the hydraulic pipes are released take great care to prevent dirt entering them. It is best to wrap adhesive tape right over the end until ready for reassembly.

For overhauling the master cylinder a kit of seals and rubbers is obtainable. Note that it does not matter whether or not the master cylinder has an integral or separate reservoir. The internal components are identical. In all operations connected with hydraulic components exercise the most scrupulous cleanliness. Cover the bench with newspaper and discard it as it becomes soiled. Wipe the external surfaces of components as clean as possible before dismantling, then wash everything in Girling cleaning fluid or clean new hydraulic fluid after dismantling. Inspect the surfaces of the cylinder bore and the piston for wear, scores or discolouration. If any of these are present, scrap the component.

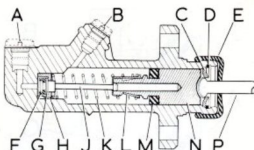


FIG 6:7 Sectioned view of master cylinder

Key to FIG 6:7 A Inlet port B Outlet port C Spring washer D Dust cover E Valve seal F Spring washer G Valve spacer H Valve stem J Valve stem K Return spring L Spring retainer M Piston seal N Piston P Pushrod

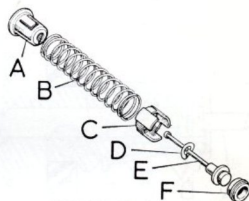


FIG 6:8 Complete valve assembly

Key to FIG 6:8 A Spring retainer B Spring C Valve spacer D Spring washer E Valve stem F Valve seal

Refer to FIG 6:7. Pull off dust cover E, release circlip D and then extract pushrod P and washer C. Very gently tap the casting on a piece of soft wood until the piston N and all the valve components slip out of the cylinder bore. Raise prong L on the spring retainer and pull away from the piston. Slip the valve stem J from the keyhole slot in L and the valve assembly can be dismantled.

Discard all the rubber components then clean and inspect the remainder. If all is well proceed to rebuild as follows:

- 1 Smear all the seals with Castrol Girling rubber grease and lubricate all other sliding surfaces with clean hydraulic fluid.
- 2 Fit the valve assembly as shown in FIG 6:8 paying particular attention to the detail given in FIG 6:9.
- 3 Replace the valve stem through the keyhole in the retainer, fit the piston seal as shown in FIG 6:10, then replace the retainer, locking the prong under the piston head.
- 4 Slide the piston and valve assembly into the previously lubricated cylinder and fit the pushrod, washer and circlip.

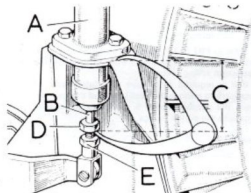


FIG 6:5 Slave cylinder adjustment, later type

Key to FIG 6:5 A Slave cylinder B Pushrod C 2 1/2 (73.4 mm). Check dimension with calipers as shown D Nut must be at end of pushrod thread E Locknut for pushrod

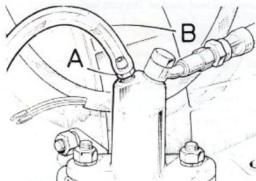


FIG 6:6 Bleeding the hydraulic system

Key to FIG 6:6 A Bleed screw B Tubing