

By GEOMETER

Rectifying clutch faults

THE single plate dry clutch fitted to most cars is a reliable mechanism, and even major faults are simple to rectify when the gearbox has been removed—always the longest and most awkward part of the work.

Removal calls for clearing the gearbox of attachments, jacking the engine at the rear, and taking out bolts which hold the clutch bell housing (part of the gearbox as a rule) to the engine. The gearbox draws straight back, the splined primary shaft pulling out of the clutch centre plate. On newer cars, the gearbox-supporting cross-member has generally to be taken off.

The clutch is as at A. The centre or driven plate, splined to the gearbox shaft, is lined each side and gripped between the flywheel and the pressure plate, which is forced up by springs located in sockets in the cover. Three release levers carry a release lever plate which is operated by the thrust bearing, a carbon ring in a metal housing. The thrust bearing is carried in a fork on the cross-shaft, or on an arm, which is moved by the clutch pedal, or by a slave cylinder with hydraulic operation.

Cover, pressure plate, springs, release levers, and release lever plate form an assembly which keeps together when removed from the flywheel, by detaching the cover screws evenly. The centre plate falls free.

Curing slip

Clutch slip may have various causes: no clearance between release lever plate and thrust bearing; cross-shaft tight in its bearings; weak springs; worn linings (down to rivet heads); oil on linings (escape from engine or gearbox). Clearance should be $\frac{1}{16}$ in. between release lever plate and thrust bearing, as given by adjustment to the pedal ($\frac{3}{4}$ in. to 1 in. play at the pedal pad). A tight cross-shaft may be oiled at the ends, but may have to be removed. Washing out a clutch by syringing with petrol, through an inspection cover, or with starter removed, may temporarily rectify slip.

A stuck clutch after a car has been laid up can often be cleared by

blocking down the pedal, engaging a gear and rocking the car backwards and forwards. With the brakes applied, the starting handle can be turned. Cleaning with petrol may help. Advisedly, when laying up, the pedal should be blocked down, or the cross-shaft lever wired to hold the clutch free.

Clutch drag may occur with too much play on the pedal—corrected by adjustment or, if the linings are sticky with oil-cleared by washing out. A hub tight on the primary shaft splines, or a tight spigot bearing for the primary shaft in the flywheel or crankshaft end, may cause drag, as may a badly wobbling centre plate. These are points to check with the clutch dismantled.

If the engine noticeably slows with the clutch fully released the cause can be too much movement on pedal and clutch with the pressure plate springs coiled solid. There may be a stop for pedal or lever to set to a specified dimension; or the pedal can be held with clutch comfortably clear and the stop set to limit movement.

Judder and wobble

There are various reasons for judder or fierce take-up: gummy linings; wobbling centre plate; worn tush-hub (spring hub) in centre plate; unevenly set release levers. Wobble is checked as at B. If the mandrel is machined down at the end, it can be used when assembling the clutch to align the centre plate to the flywheel. Wobble should not exceed $\frac{1}{64}$ in. and if greater it can be reduced by carefully pushing over the plate.

A tool for dismantling the cover-pressure-plate assembly is as at C. The heavy board or thick plywood should take at least four bolts. Packing $\frac{3}{8}$ in. thick to abut to the pressure plate can be screwed on, and the board mounted with long bolts, x-y. The distance from board to release lever plate should be measured for resetting the levers when assembling; then, with the clutch mounted on the flywheel, the release lever plate must be trued to spin as accurately as possible, using a pointer or indicator, as at D.

