

# ROLLS-ROYCE AUTOMATIC GEARBOX

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## SECTION 6 — FRONT EPICYCLIC UNIT

The torus cover, bolted to the engine flywheel, is splined onto the tubular front drive-shaft which is integral with the front unit annulus gear (see Fig. 9); drive is therefore transferred direct from the engine to the annulus gear of the front epicyclic unit.

Four planet gears revolve inside the annulus, engaging also with a sun gear. The planet gears rotate on needle roller bearings and hardened pins riveted into a planet carrier integral with the front clutch hub and the hollow intermediate shaft. This shaft projects forward through the front drive shaft to support and drive the rear torus member, and rearward through the sun

gear to support and drive the clutch hub of the rear epicyclic unit. Splines and spring rings are used to drive and retain the various driven components on the shaft.

The epicyclic gear train is housed in the front drum, adjacent to the clutch pack. The sun gear of the train is integral with the clutch cover which is retained in the drum bore by a spring ring. In the clutch pack, the four lined (driving) plates are splined to the clutch hub and the steel (driven) plates are located by three pins pressed into the drum.

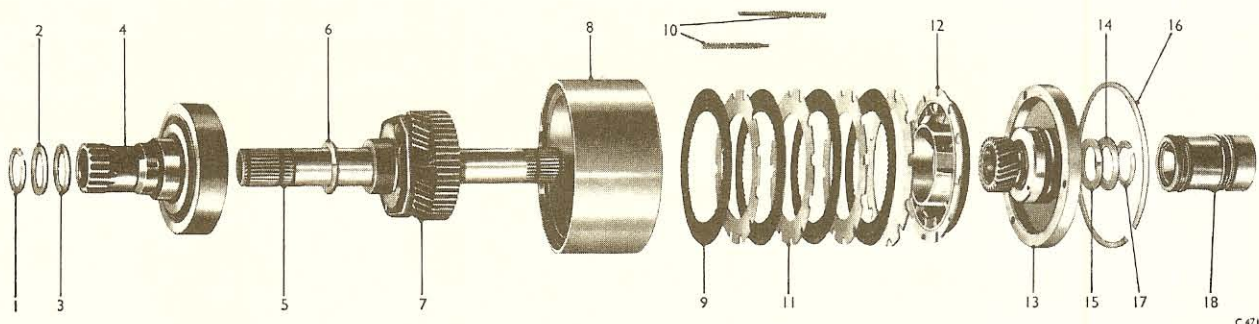


Fig. 9 Front epicyclic unit — exploded

- |                                      |                                  |  |
|--------------------------------------|----------------------------------|--|
| 1 SNAP RING                          | 7 FRONT PLANET CARRIER           | 13 CLUTCH COVER AND SUN GEAR WITH INNER SEAL |
| 2 BACKING WASHER                     | 8 FRONT DRUM                     | 14 BACKING WASHER                            |
| 3 THRUST WASHER                      | 9 DRIVING PLATE (4)              | 15 THRUST WASHER                             |
| 4 FRONT DRIVE-SHAFT AND ANNULUS GEAR | 10 CLUTCH RETURN SPRING (6 SETS) | 16 SNAP RING—FRONT DRUM                      |
| 5 INTERMEDIATE SHAFT                 | 11 DRIVEN PLATE (4)              | 17 SNAP RING                                 |
| 6 THRUST WASHER                      | 12 CLUTCH PISTON AND SEAL        | 18 DELIVERY SLEEVE AND RINGS                 |

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The clutch is engaged when the plates are compressed by the hydraulic application of an annular piston, located between the plates and the clutch cover. The clutch is released by the counter action of six concentric pairs of coil springs. The steel plates are perfectly flat but the friction plates are slightly corrugated to assist separation when the clutch is released. Leakage past the piston is prevented by two synthetic rubber seals; one on the clutch cover spigot and the other on the outer working surface of the piston.

The front friction band passes twice round the drum. A bracket on one end of the band abuts the band

adjusting screw while the other end contacts the operating rod of the hydraulic servo responsible for band application. The friction band comprises a spring steel strap to which the wear resisting lining is either bonded or riveted. The lining is ironed to obtain maximum bedding area on the outer surface of the drum. The face of the lining is grooved to assist lubrication of the band.

Direct drive through the unit is obtained when the band is released and the clutch is engaged. Conversely, when the band is applied and the clutch is released, the drive is transferred through the unit in a reduction of 1.45:1.