Printed in England

SEPTEMBER 1963

TSD 2042

SECTION 3 — GEAR RATIOS

The line of drive through the four gear ratios is as follows

First gear

The drive is transferred from the flywheel to the front gear train which is in reduction. From there it passes to the fluid coupling via the intermediate shaft. The fluid coupling drives the mainshaft which in turn transfers the drive through the rear train, which is in reduction, to the output shaft. With both gear trains in reduction the gearbox will be in bottom or first gear, ratio 3·82:1 (see Fig. 2).

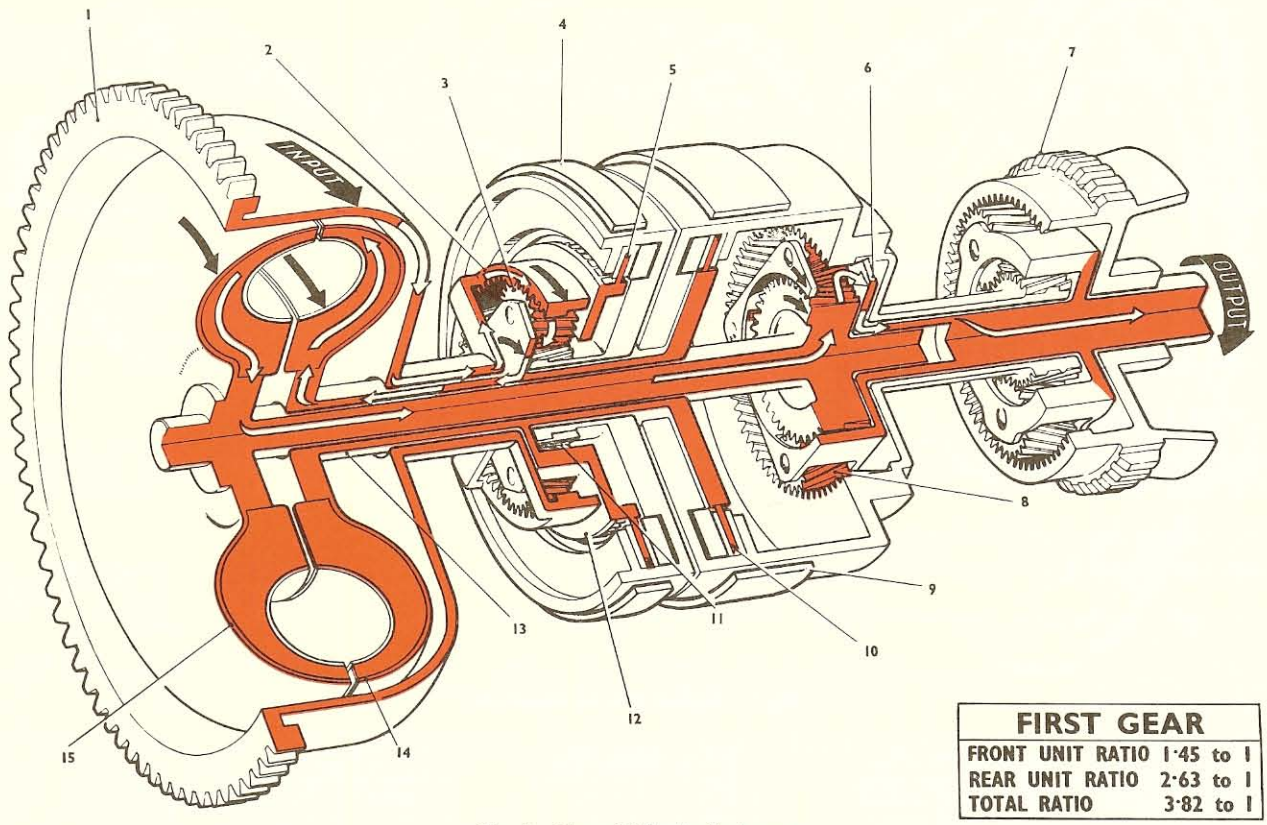

Fig. 2 Line of drive in first gear

1 TORUS COVER *driving*
2 ANNULUS GEAR *driving*
3 PLANET GEAR *rolling*
4 FRONT BAND *holding*
5 FRONT CLUTCH *released*
6 PLANET CARRIER *driving*
7 REVERSE UNIT *idling*
8 PLANET GEARS *rolling*
9 REAR BAND *holding*
10 REAR CLUTCH *released*
11 SUN GEAR *stationary*
12 PLANET CARRIER *rotating*
13 INTERMEDIATE SHAFT *driving*
14 REAR TORUS *driving*
15 FRONT TORUS *driving*

Second gear

The drive is transferred from the flywheel to the front gear train which is in direct drive. From the front gear train the drive passes to the fluid coupling via the intermediate shaft. The fluid coupling drives the mainshaft which in turn transfers the drive through the rear train, which is in reduction, to the output shaft. Only the rear train is in reduction so the gearbox will be in second gear, ratio 2·63:1 (see Fig. 3).

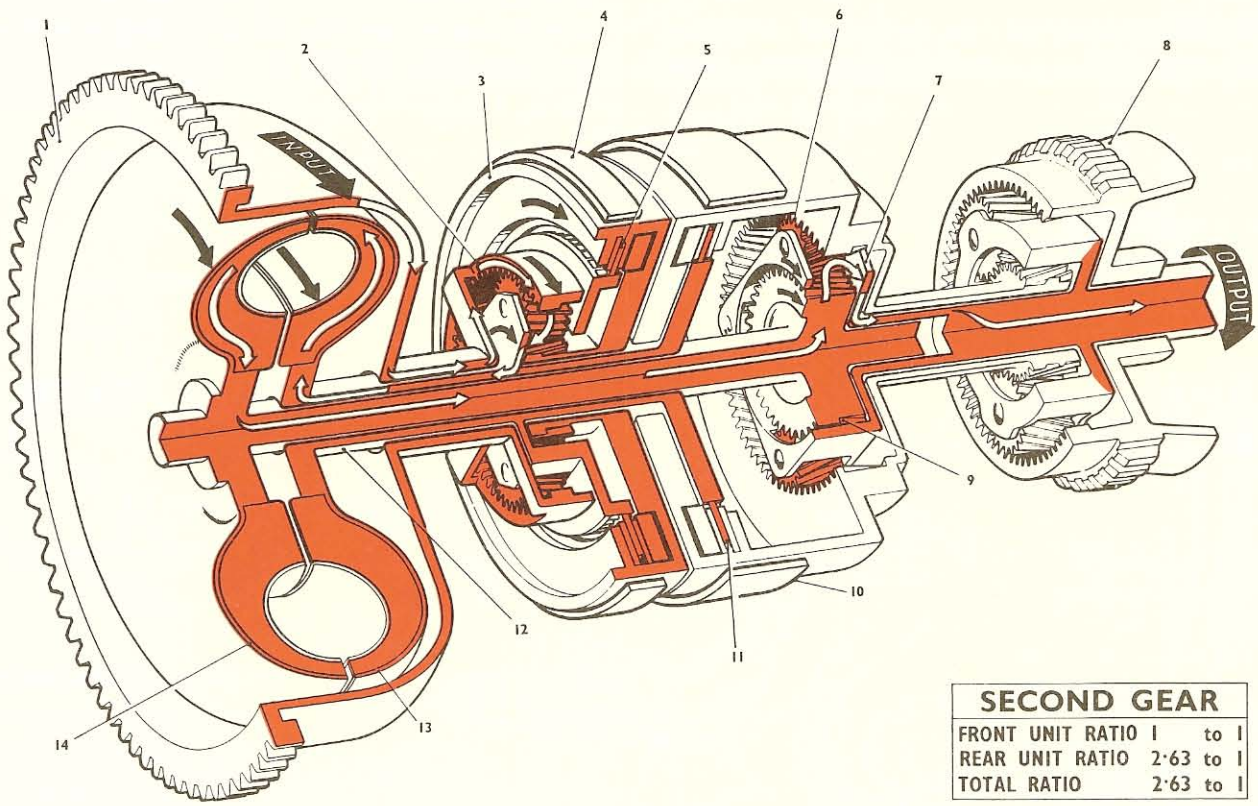

Fig. 3 Line of drive in second gear

1 TORUS COVER *driving*
2 ANNULUS GEAR *driving*
3 FRONT DRUM *revolving*
4 FRONT BAND *released*
5 FRONT CLUTCH *applied*
6 PLANET GEARS *rolling*
7 PLANET CARRIER *driving*
8 REVERSE UNIT *idling*
9 SUN GEAR *driving*
10 REAR BAND *holding*
11 REAR CLUTCH *released*
12 INTERMEDIATE SHAFT *driving*
13 REAR TORUS *driving*
14 FRONT TORUS *driving*

Printed in England

SEPTEMBER 1963

TSD 2042

Third gear

The drive is transferred from the flywheel to the front gear train which is in reduction. Here the drive is divided, going to the fluid coupling via the intermediate shaft, also going directly to the rear train via the intermediate shaft. The rear train is in direct drive, hence torque is applied to the output shaft from the fluid coupling, via the mainshaft, and also from the intermediate shaft. As a result of the front train only being in reduction the gearbox will be in third gear, ratio 1·45:1 (see Fig. 4).

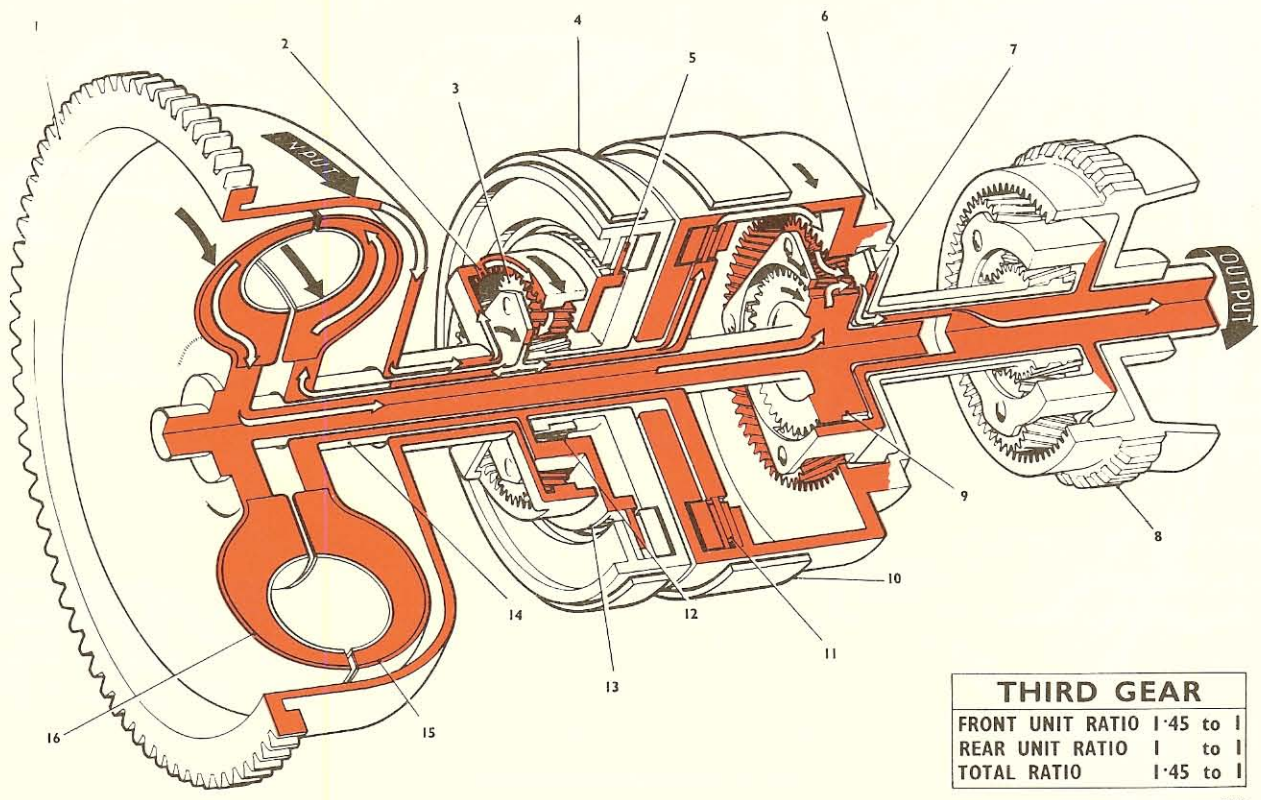

Fig. 4 Line of drive in third gear

1 TORUS COVER *driving*
2 ANNULUS GEAR *driving*
3 PLANET GEARS *rolling*
4 FRONT BAND *holding*
5 FRONT CLUTCH *released*
6 ANNULUS GEAR *driving*
7 PLANET CARRIER *driving*
8 REVERSE UNIT *idling*
9 SUN GEAR *driving*
10 REAR BAND *released*
11 REAR CLUTCH *applied*
12 SUN GEAR *stationary*
13 PLANET CARRIER *rotating*
14 INTERMEDIATE SHAFT *driving*
15 REAR TORUS *driving*
16 FRONT TORUS *driving*

Fourth gear

The drive is transferred from the flywheel to the front gear train which is in direct drive. Here the drive is again divided, going forward to the fluid coupling and rearward to the rear gear train. The rear gear train is in direct drive, hence the torque is delivered to the output shaft. With both gear trains being in direct drive the gearbox will be in fourth or 'top' gear, ratio 1:1 (see Fig. 5).

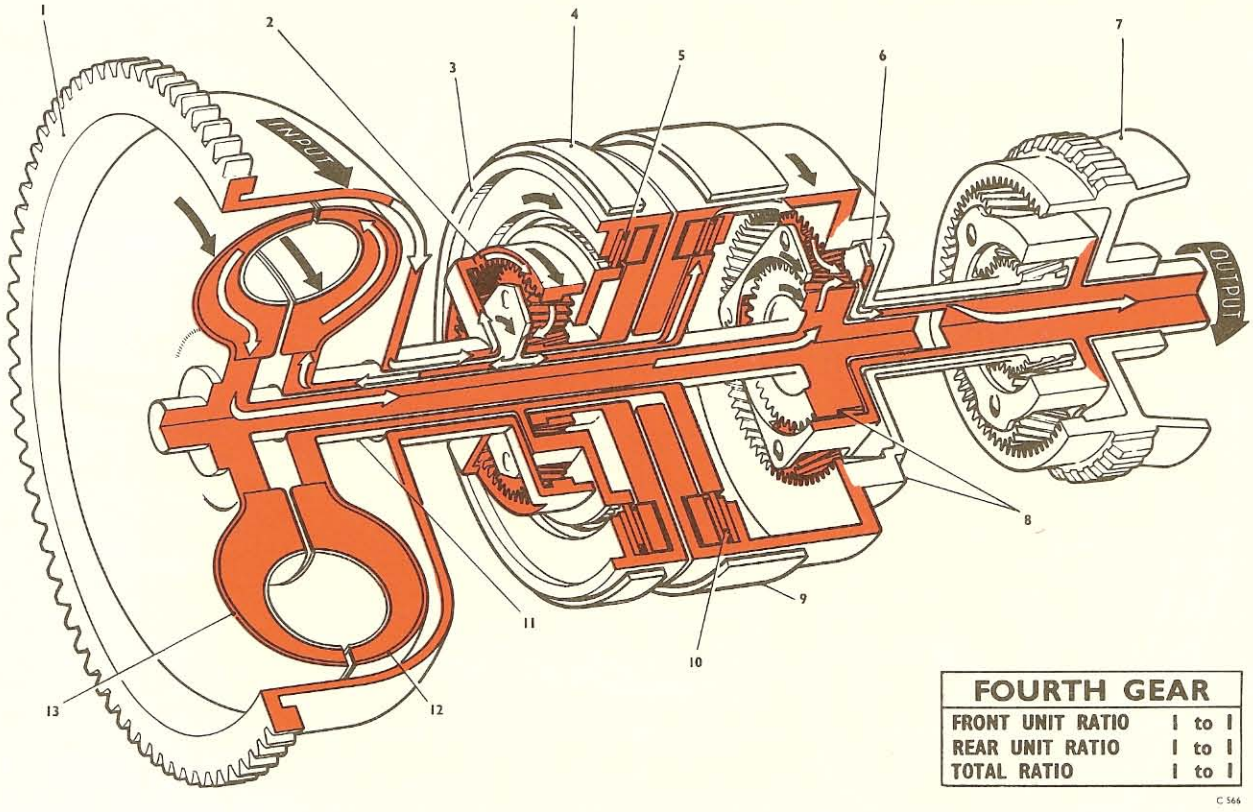

Fig. 5 Line of drive in fourth gear

1 TORUS COVER *driving*
2 ANNULUS GEAR *driving*
3 FRONT DRUM *revolving*
4 FRONT BAND *released*
5 FRONT CLUTCH *applied*
6 PLANET CARRIER *driving*
7 REVERSE UNIT *idling*
8 ANNULUS AND SUN GEAR *driving*
9 REAR BAND *released*
10 REAR CLUTCH *applied*
11 INTERMEDIATE SHAFT *driving*
12 REAR TORUS *driving*
13 FRONT TORUS *driving*

Printed in England

SEPTEMBER 1963

TSD 2042

Reverse

The drive is transferred from the flywheel to the front train which is in reduction. From the front gear train the drive passes to the fluid coupling via the intermediate shaft. The fluid coupling drives the mainshaft and rear unit sun gear. The rear unit sun gear transmits the drive via the output shaft planet gears to the rear unit annulus gear which is fastened to the reverse unit sun gear. The reverse unit is in reduction and drive is transmitted by the reverse unit planet carrier to the output shaft in reverse direction. With the front, rear and reverse trains in reduction the ratio is 4·3:1 (see Fig. 6).

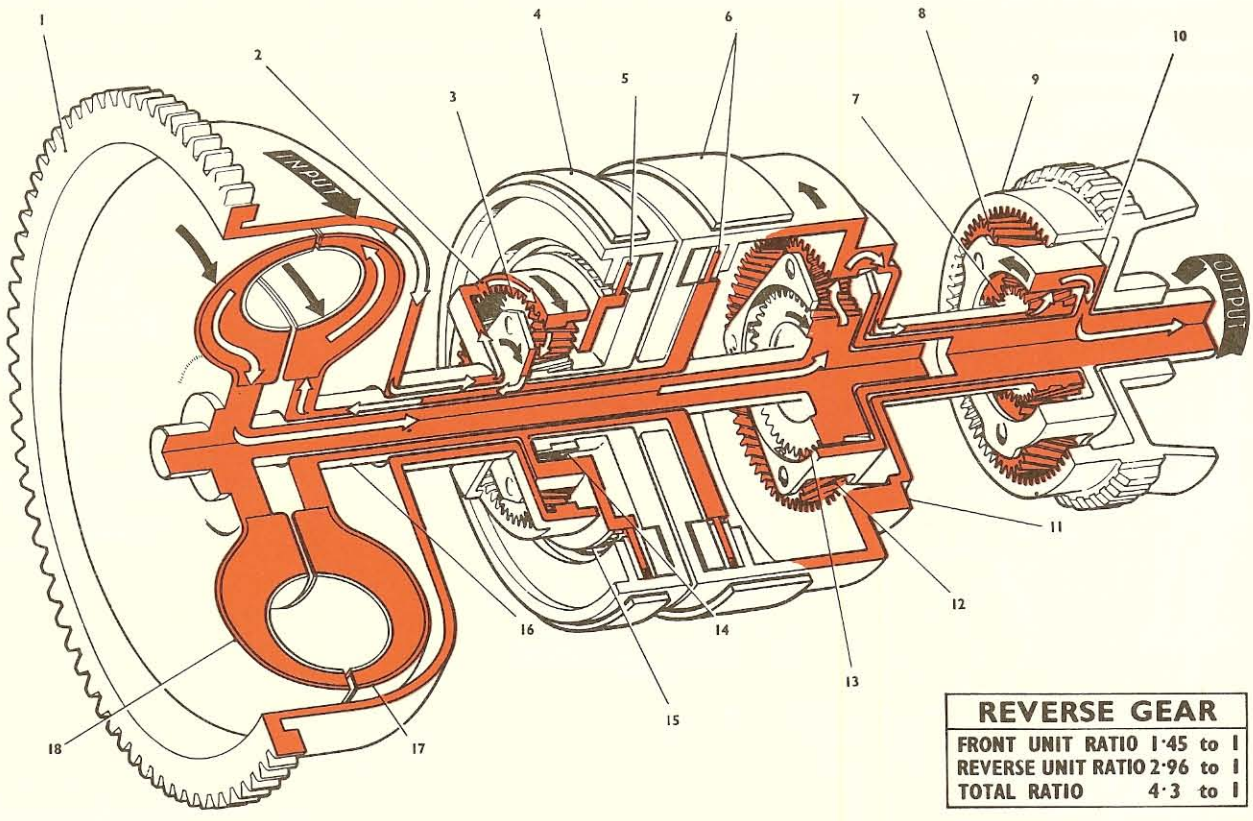

Fig. 6 Line of drive in reverse gear

1 TORUS COVER *driving*
2 ANNULUS GEAR *driving*
3 PLANET GEAR *rolling*
4 FRONT BAND *holding*
5 FRONT CLUTCH *released*
6 BAND AND CLUTCH *released*
7 SUN GEAR *driving*
8 PLANET GEARS *rolling*
9 ANNULUS GEAR *stationary*
10 PLANET CARRIER *driving*
11 ANNULUS GEAR *opposite rotation*
12 PLANET GEARS *rolling*
13 SUN GEAR *driving*
14 SUN GEAR *stationary*
15 PLANET CARRIER *rotating*
16 INTERMEDIATE SHAFT *driving*
17 REAR TORUS *driving*
18 FRONT TORUS *driving*

Neutral

The drive is transferred from the flywheel to the front train. The gears idle and no torque is transmitted to the output shaft (see Fig. 7).

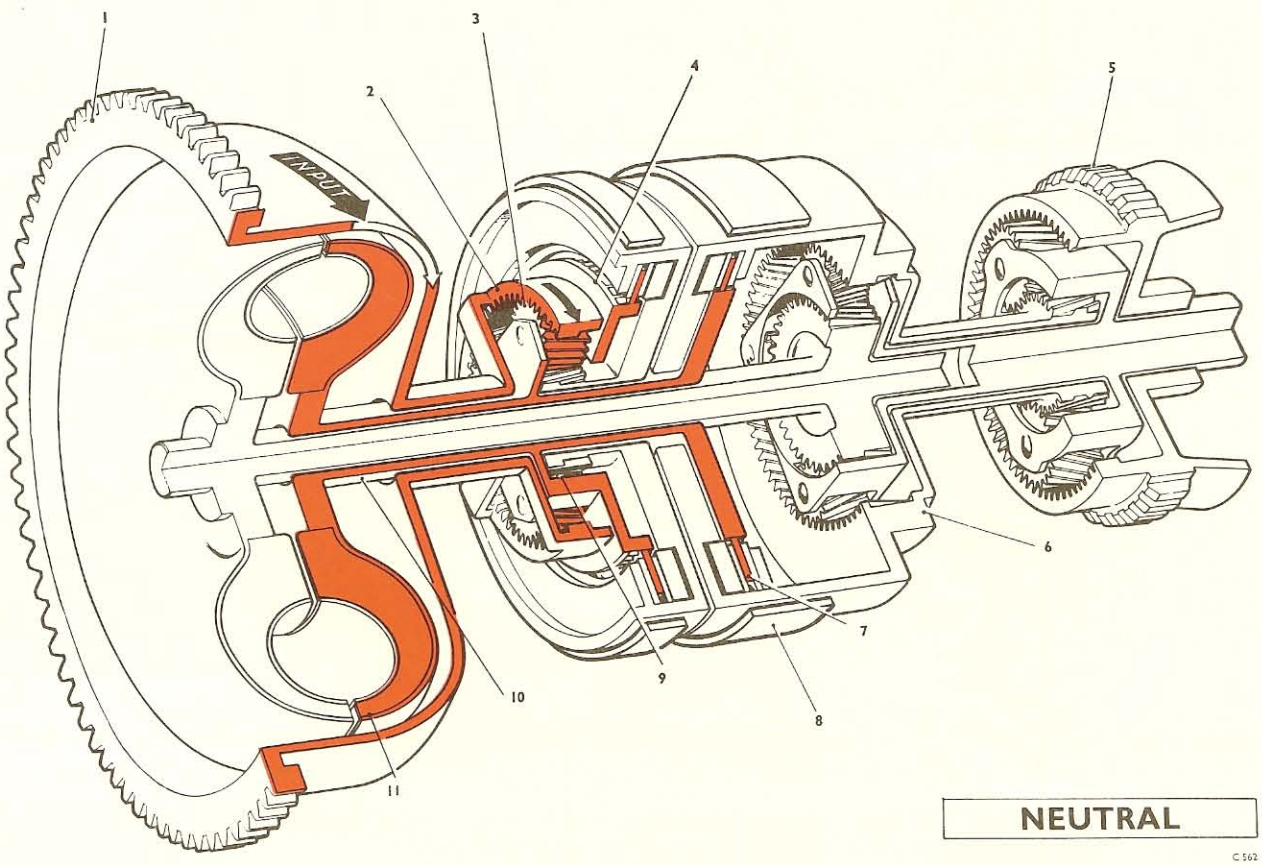

Fig. 7 Neutral

1 TORUS COVER *driving*
2 ANNULUS GEAR *driving*
3 PLANET GEARS *rotating*
4 PLANET CARRIER *idling*
5 REVERSE UNIT *idle*
6 ANNULUS GEAR *idle*
7 REAR CLUTCH *released*
8 REAR BAND *released*
9 SUN GEAR *idling*
10 INTERMEDIATE SHAFT *idling*
11 REAR TORUS *idling*