DESCRIPTION

TORQUE CONVERTER

The torque converter is of the three-element, single-phase type. The three elements are: impeller, connected to the engine crankshaft; turbine, connected to the gearbox input shaft, and stator, mounted on a one-way clutch on the stator support projecting from the gearbox case. The converter provides torque multiplication of from 1 : 1 to 2.3 : 1 and the speed range during which this multiplication is obtained varies with the accelerator position.

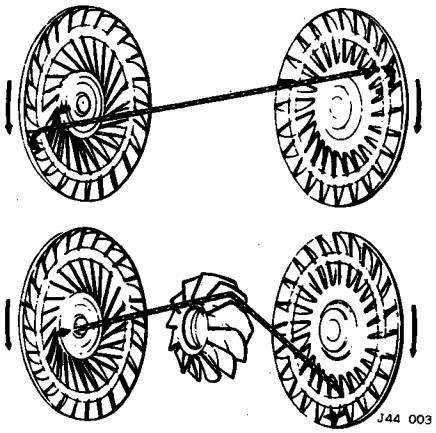

Fig. 3

GEAR SET

The planetary gear set consists of two sun gears, two sets of pinions, a pinion carrier and a ring gear.

Power enters the gear set via the two sun gears, the forward sun gear driving in forward gears, the reverse sun gear driving in reverse gear. The ring gear, attached to the output shaft, is the driven gear. The planet wheels connect driving and driven gears, two sets of planet wheels being used in forward gears and one set in reverse.

The planet carrier locates the planet wheels relative to sun and ring gears, also serving as a reaction member.

CLUTCHES

The gearbox input shaft is connected to the torque converter turbine at the front end and is therefore known as the turbine shaft. The rear end of the shaft is connected to the front and rear clutches; (the clutches are of the multi-disc type operated by hydraulic pressure). Engagement of the front clutch connects the turbine shaft to the forward sun gear. Engagement of the rear clutch connects the turbine shaft to the reverse sun gear.

BRAKE BANDS

The brake bands, operated by hydraulic servos, are used to hold drive train components stationary in order to obtain low, intermediate and reverse gears. The front band is clamped around the rear clutch outer drum to hold the reverse sun gear stationary. The rear band is clamped around the planet carrier to hold the planet carrier stationary.

ONE-WAY CLUTCH

The one-way clutch is situated between the planet carrier and the gearbox case. Rotation of the planet carrier and the gearbox against engine direction is prevented so providing the reaction member for low gear (drive). Rotation of the planet carrier in engine direction is allowed (free-wheeling) providing smooth changes from low to intermediate and intermediate to low gears.

MECHANICAL POWER FLOWS

Neutral and Park

In neutral the front and rear clutches are off, and no power is transmitted from converter to the gear set. The front and rear bands are also released. In 'P' the rear servo circuit is pressurized while the engine is running, so that the rear band is applied.

First gear ('D') selected

The front clutch is applied, connecting converter to the forward sun gear. The one-way

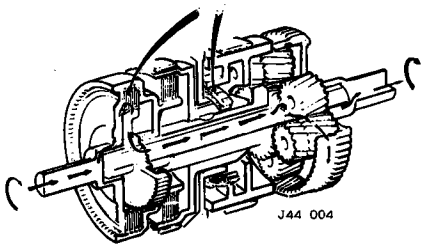

Fig. 4

clutch is in operation, preventing the planet carrier from rotating anti-clockwise. When the vehicle is coasting, the one-way clutch overruns and the gear set free-wheels.

First gear ('1' selected)

The front clutch is applied, connecting converter to forward sun gear. The rear band is applied, holding the planet carrier stationary.

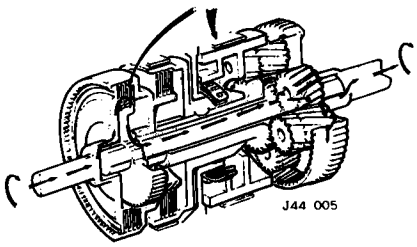

Fig. 5

Planet pinions drive ring gear, and reverse sun gear rotates freely in the opposite direction to the forward sun gear.

Second gear ('D', '2' or '1' selected)

Again the front clutch is applied, connecting converter to forward sun gear. The front band

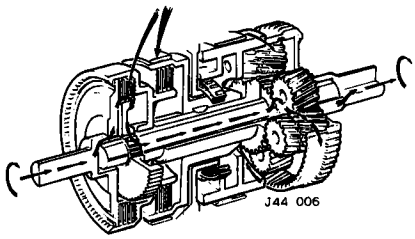

Fig. 6

is applied, holding the reverse sun gear stationary. Combined rotation of planet pinions and carrier drive the ring gear.

Third gear ('D' selected)

Again the front clutch is applied, connecting converter to forward sun gear. The rear clutch is applied, connecting the converter also to the

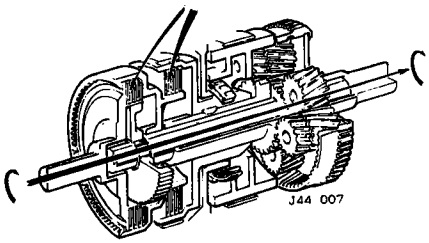

Fig. 7

reverse sun gear; thus both sun gears are locked together and the gear set rotates as a unit, providing a ratio of 1 : 1.

Reverse gear ('R' selected)

The rear clutch is applied, connecting converter to reverse sun gear. The rear band is

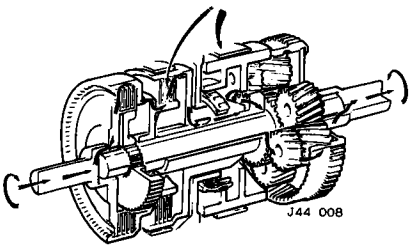

Fig. 8

applied, holding planet carrier stationary. Planet pinions drive ring gear in an opposite direction to engine rotation.