As the rotational speed of the engine and therefore the turbine increases, the direction of the fluid leaving the turbine changes to path '**D**'. The fluid is now directed from the turbine to the opposite side of the stator blades, rotating the stator in the opposite direction. To prevent the stator from resisting the smooth flow of the fluid from the turbine, the sprag clutch releases, allowing the stator to rotate freely on it shaft.

When the stator becomes inactive, the torque converter no longer multiples the engine torque. When the torque converter reaches this operational condition it ceases to multiply the engine torque and acts solely as a fluid coupling, with the impeller and the turbine rotating at approximately the same speed.

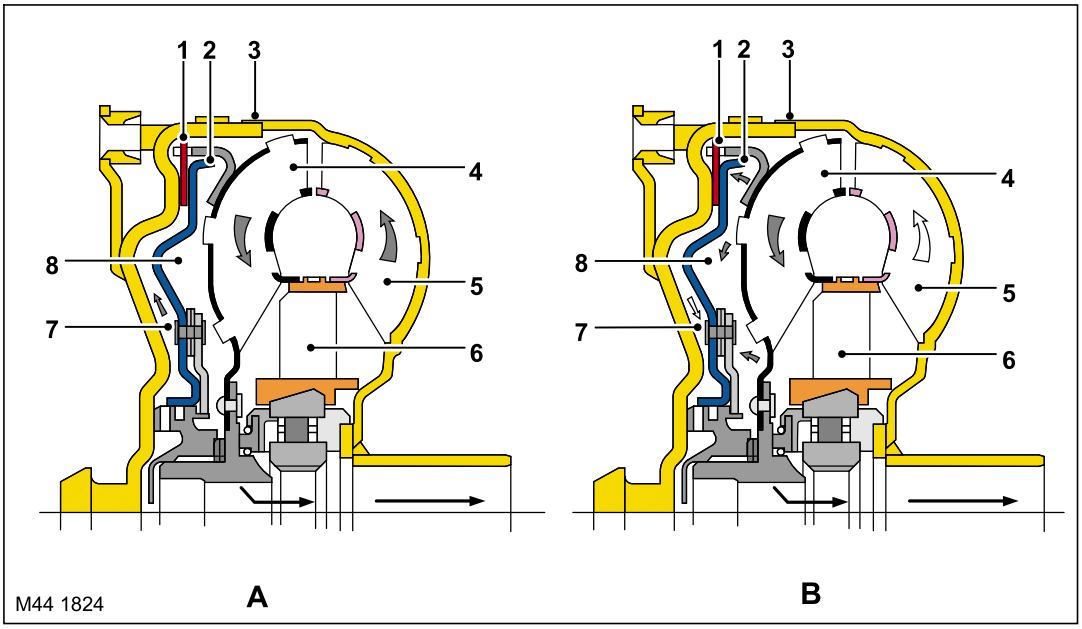
The stator uses a sprag type clutch. When the stator is rotated in a clockwise direction the sprags twist and are wedged between the inner and outer races. In this condition the sprags transfer the rotation of the outer race to the inner race which rotates at the same speed. Refer to 'One Way Freewheel Clutch' in this manual for further details of the sprag type clutch.

Lock-up Clutch Mechanism

The Torque Converter Clutch (TCC) is hydraulically controlled by an electronic pressure regulating solenoid (EPRS4) which is controlled by the EAT ECU. This allows the torque converter to have three states of operation as follows:

- Fully engaged
- Controlled slip variable engagement
- Fully disengaged.

The TCC is controlled by two hydraulic spool valves located in the valve block. These valves are actuated by pilot pressure supplied via a solenoid valve which is also located in the valve block. The solenoid valve is operated by PWM signals from the EAT ECU to give full, partial or no lock-up of the torque converter.



A *= Unlocked condition*

B *= Locked condition*

1 Clutch plate
2 Clutch piston
3 Torque converter body
4 Turbine
5 Impeller
6 Stator
7 Piston chamber
8 Turbine chamber

The lock-up clutch is a hydro-mechanical device which eliminates torque converter slip, improving fuel consumption. The engagement and disengagement is controlled by the EAT ECU to allow a certain amount of controlled 'slip'. This allows a small difference in the rotational speeds of the impeller and the turbine which results in improved shift quality. The lock-up clutch comprises a piston and a clutch friction plate.

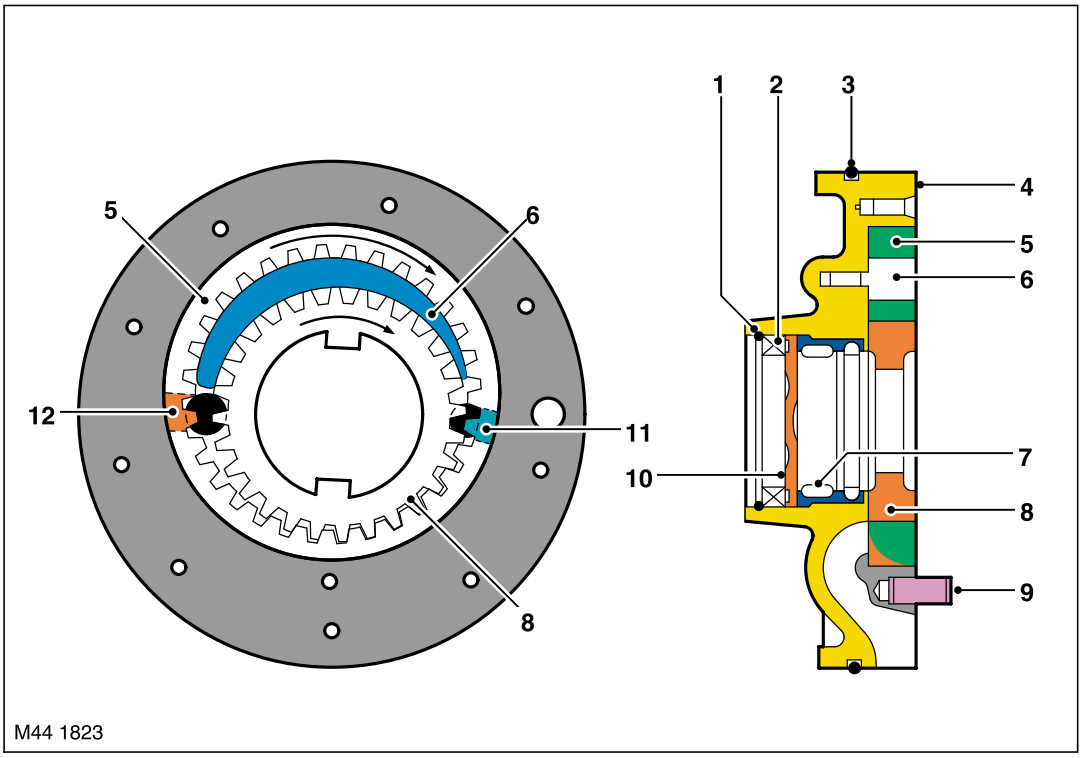
In the unlocked condition, the oil pressure supplied to the piston chamber and the turbine chamber is equal. Pressurised fluid flows through a drilling in the turbine shaft and through the piston chamber to the turbine chamber. In this condition the clutch plate is held away from the torque converter body and torque converter slip is permitted.

In the locked condition, the TCC spool valves are actuated by the electronic pressure regulating solenoid (EPRS4). The fluid flow in the unlocked condition is reversed and the piston chamber is vented. Pressurised fluid is directed into the turbine chamber and is applied to the clutch piston. The piston moves with the pressure and pushes the clutch plate against the torque converter body. As the pressure increases, the friction between the clutch plate and the body increases, finally resulting in full lock-up of the clutch plate with the body. In this condition there is direct mechanical drive from the engine crankshaft to the transmission planetary gear train.

Fluid Pump

The fluid pump is an integral part of the transmission. The fluid pump is used to supply hydraulic pressure for the operation of the control valves and clutches and also to pass the fluid through the transmission cooler.

The 5HP24 fluid pump is a crescent type pump and is located between the intermediate plate and the torque converter. The pump has a delivery rate of 16cm^3 per revolution.



1 Securing ring
2 Shaft oil seal
3 O-ring seal
4 Pump housing
5 Ring gear
6 Crescent spacer
7 Roller bearing
8 Impeller
9 Centring pin
10 Spring washer
11 Outlet port (high pressure)
12 Inlet port (low pressure)

The pump is driven by a positive coupling with the torque converter impeller, therefore the pump is driven at engine crankshaft speed.

The pump comprises a housing, a crescent spacer, an impeller and a ring gear. The housing has inlet and outlet ports to direct flow and is located in the intermediate plate by a centring pin. The pump action is achieved by the impeller, ring gear and crescent spacer.