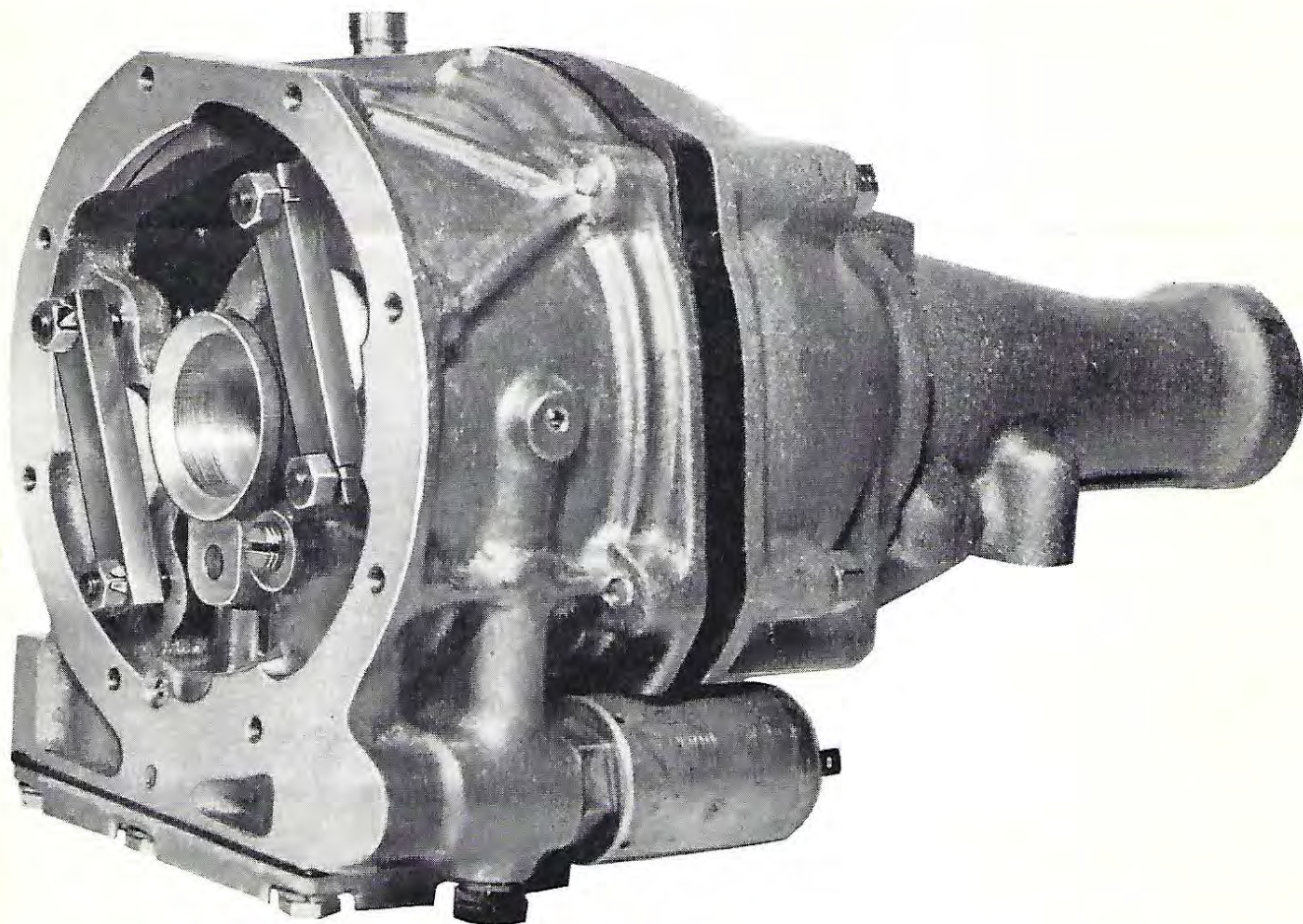
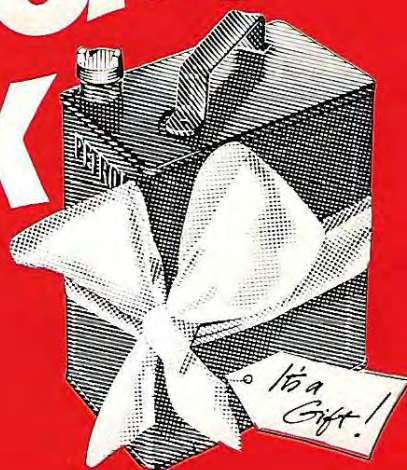


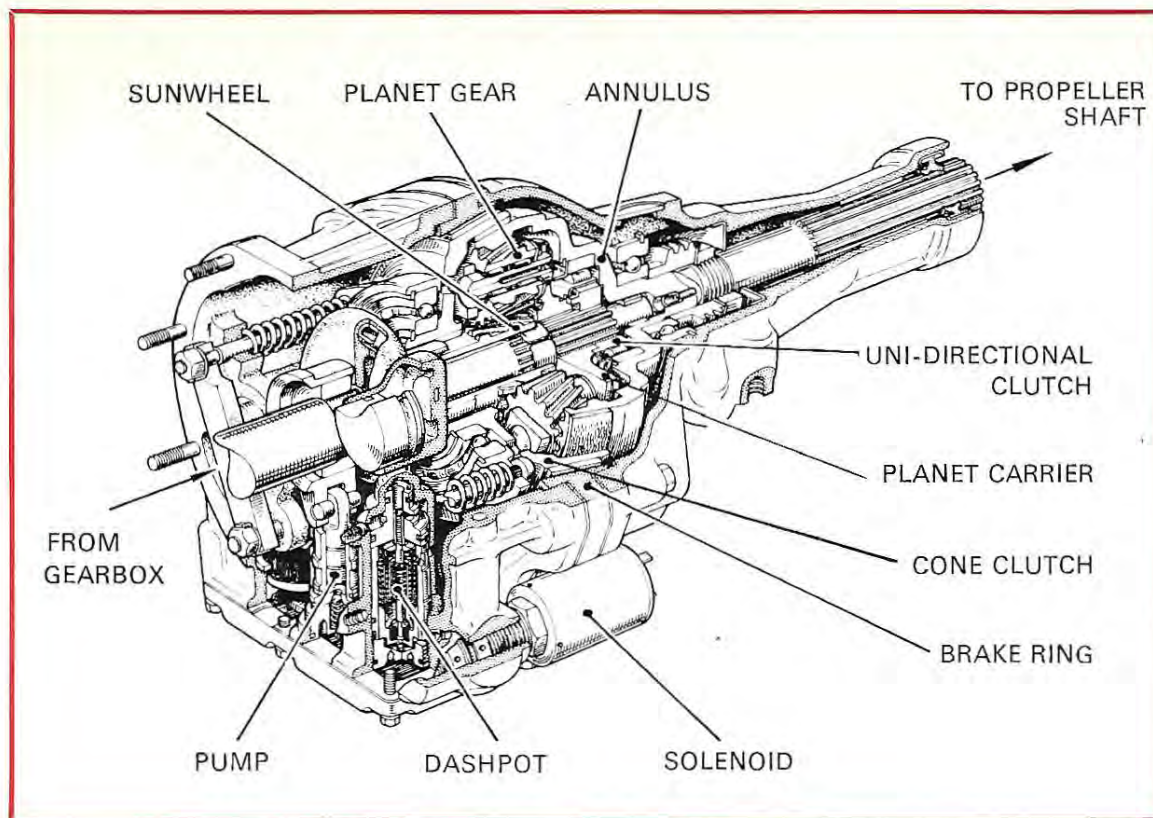
How Laycock Overdrive will

Save one
in Six



LAYCOCK
OVERDRIVE

**PUTS POUNDS
IN YOUR
POCKET**



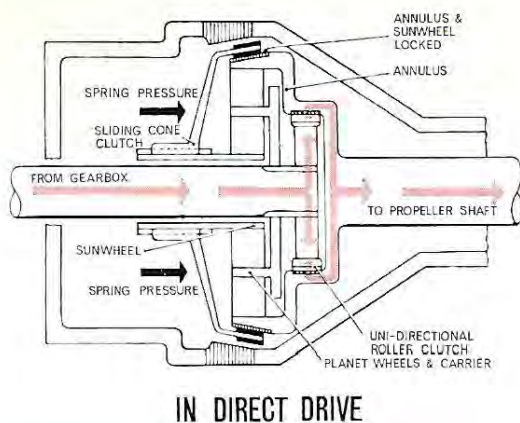
WHY AN OVERDRIVE -and WHAT DOES IT DO?

To some overdrive users it is merely a switch on the steering column which, when operated facilitates easier driving—plus a saving in petrol consumption.

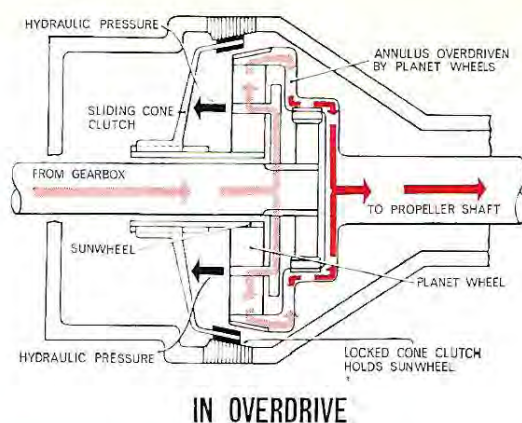
To others, it is a device that provides them with extra gear ratios—plus a better m.p.g. To the initiated it is an epicyclic gear overriding the gearbox to provide a lower engine speed for a given road speed, thereby reducing engine noise, effort and wear.

This latter group also know that the axle ratio of every car is a compromise, designed to give flexibility in top gear. This compromise is imposed by the need to obviate too frequent gear changing and, instead, to obtain the increased force or horsepower required simply by opening the throttle. The result, however, is that when cruising at the higher road speeds, the engine is rotating unnecessarily fast, as the propeller shaft is rotating at the same speed as the engine. It is at this stage that the Laycock Overdrive comes into its own, for it provides the means of driving the propeller shaft faster than the engine—in other words, of reducing the engine speed for the same road speed. And that answers the second part of the question. The overdrive unit is fitted between the gearbox and propeller shaft and is operated by an electric solenoid controlled by a switch usually mounted on the steering column or fascia panel. It is a power change and should be operated without using the clutch pedal and without easing off the accelerator as the unit is designed to engage and disengage under such conditions.

LAYCOCK OVERDRIVE



IN DIRECT DRIVE

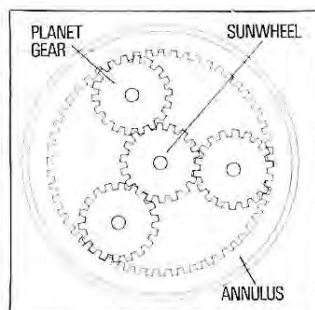


IN OVERDRIVE

HOW AN OVERDRIVE WORKS

IN DIRECT DRIVE

The overdrive gears are epicyclic and consist of a central sunwheel meshing with three planet gears, which, in turn, mesh with an internally toothed annulus. All gears are in constant mesh. The planet carrier is splined to the input shaft and the annulus is integral with the output shaft.



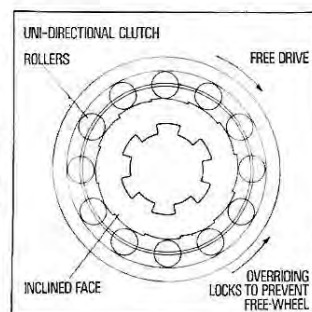
The extension of the gearbox main shaft forms the overdrive input shaft and power is transmitted by this to the inner member of the uni-directional clutch through a series of rollers which are driven up inclined faces and wedged between the inner member and annulus.

A coned clutch is mounted on the externally splined extension of the sunwheel and is loaded on to the annulus by a number of springs which have their reaction against the casing of the overdrive unit. The spring load is transmitted to the clutch member through a thrust ring and ball bearing. This arrangement causes the inner friction lining of the cone clutch to contact the cone of the annulus and rotate with it whilst the springs and thrust ring remain stationary. Since the sunwheel is splined to the clutch member, the whole gear train is locked, permitting over-run and reverse torque to be transmitted. Due to the design of the sunwheel teeth, additional load is transmitted to the clutch member during over-run and reverse.

IN OVERDRIVE

On operation of the overdrive switch, the resulting build-up of hydraulic pressure causes the sliding cone clutch to move forward so that the outer friction lining is in contact with the brake ring. The sunwheel to which the clutch is attached is therefore held stationary. The planet carrier rotates with the input shaft and the

planet wheels are caused to rotate around the sunwheel and drive the annulus at a faster speed than the input shaft. The rollers of the uni-directional clutch are now driven down their inclined faces and are free to rotate.



THE HYDRAULIC SYSTEM

Hydraulic pressure is developed by a plunger type pump operated by a cam on the input shaft. The pump draws oil from an air-cooled sump through a suction filter and delivers it via a non-return valve through a pressure filter to the operating pistons, solenoid valve and relief valve. Incorporated in the relief valve is a spring dashpot which ensures smooth overdrive engagement and disengagement under varying conditions. In direct drive a residual pressure of approximately 40 p.s.i. is maintained within the system and is controlled by a relief valve. When overdrive is engaged this is increased to a pre-determined operating pressure.

Engaging Overdrive

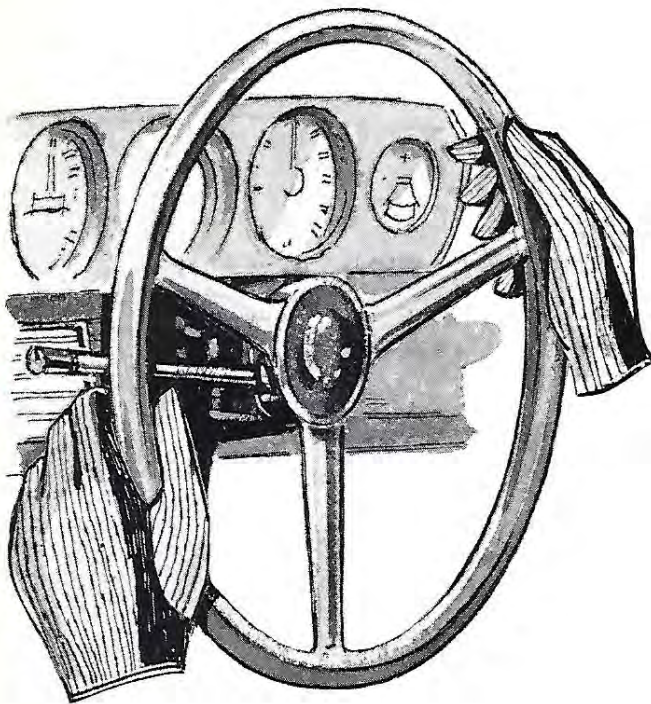
When the solenoid is energised its valve opens and oil which is at residual pressure is directed to the bottom of the dashpot piston. This causes the dashpot piston to rise and compress the springs, causing a gradual increase in hydraulic pressure until the piston reaches its limit, by which time the relief valve spring has been compressed to its working length, thus giving full operating pressure. This pressure causes the operating piston to move forward overcoming the clutch return spring and engages the cone clutch with the brake ring.

Engaging Direct Drive

When the solenoid is de-energised, its valve is closed by a spring, cutting off the oil supply from the pump to the dashpot. Oil is now exhausted via the control orifice which allows the relief valve spring to relax to its direct drive condition. The dashpot springs continue to move the dashpot piston to its stop, allowing the system pressure to progressively drop which enables the clutch return springs to move the cone clutch gently into contact with the annulus.

LAYCOCK OVERDRIVE

is now available
on the following cars



FLIP THE SWITCH—instantly,
*automatically, your overdrive
is in action

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MOVE
WITH THE TIMES**

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