

Transfer gearbox



J471

TRANSFER GEARBOX

The two speed transfer gearbox, is used to select either the high or low range of gears and, in addition, also controls the centre differential (known as the 'DIFF LOCK').

A shift interlock safety feature is fitted which prevents any transfer box gear selection being made unless the ignition is switched on and the automatic gearbox selector is in the 'N' (Neutral) position.

High range ('H')

Use high range for all normal road driving and also for off-road driving across dry, level terrain.

Low range ('L')

Use low range gears when moving off from rest when towing a heavy load, or in any situation where low speed manoeuvring is necessary, such as reversing a trailer or negotiating a boulder strewn river bed; also use low range for more extreme off-road conditions where progress in high range cannot be maintained.

WARNING

DO NOT attempt to change to LOW range gears for normal road driving.

Neutral ('N')
Transfer box in neutral. In this position, drive cannot be transmitted to the road wheels regardless of the main gear selector position. If, for any reason, the vehicle has to be towed on four wheels, this neutral position **MUST** be used (see 'Vehicle recovery').

Audible warning (automatic only)
A constant, high pitched, audible warning chime will sound whenever the vehicle starter switch is turned on when the transfer gearbox lever is in the 'neutral' position. The warning is intended to remind the driver that the appropriate 'High' or 'Low' range gearing should be engaged.

'Diff-lock' centre differential
Use the 'unlocked' position, for all normal driving, and use the 'DIFF-LOCK' position to improve traction in extreme conditions, where wheel grip could be lost, such as: wet grass, mud, sand, ice or snow. Return to the 'unlocked' position as soon as dry, firm ground is reached.

DO NOT use the 'diff-lock' unnecessarily!

Transfer gearbox

USING THE TRANSFER GEARBOX

There are two ways of operating the transfer gearbox lever; the 'normal' method - recommended for inexperienced drivers - and the 'advanced' method for experienced drivers.

Normal method

Manual models:

With the vehicle stationary and the engine running, depress the clutch and then move the transfer gearbox lever fully forward (or backwards) in TWO distinct but positive moves - 'high to neutral' 'neutral to low' (or vice versa).

If there is resistance to the gear engaging, do not force the lever. Instead, with the main lever in gear, release the clutch momentarily and then try again.

Automatic models:

With the vehicle stationary and the engine running, apply both foot brake and parking brake and then move the automatic gearbox selector to the 'N' (neutral) position before moving the transfer lever fully forward or backwards to the required position.

If there is resistance to the gear engaging, do not force the lever. Instead, with the engine running, apply the foot brake and parking brake, momentarily engage 'D' on the main gearbox then return it to the 'N' position and then try again.

Advanced method

Manual models:

Changing from high to low on the move:

With the vehicle slowing to a stop and travelling NO FASTER THAN 3 mph (5 km/h), depress the clutch and push the transfer lever into neutral. Just before the road wheels stop turning (and with the clutch still depressed) push the transfer lever fully forward into 'L' (low).

NOTE: Use positive and confident moves, but do not rush the gear change.

Changing from low to high on the move:

Changing from 'L' (low) to 'H' (high) can be achieved without stopping the vehicle, as follows:

1. Apply slight backward pressure to the transfer gear lever in preparation for changing.
2. Then, in three simultaneous moves, depress the clutch, release the accelerator and pull the transfer lever into neutral.
3. Release the clutch pedal for approximately 3 seconds before depressing it again and moving the transfer lever firmly into the high position. With the new range selected, push firmly on the transfer shift lever to ensure the gear is fully engaged.
4. Finally, select a suitable main gear, release the clutch and continue driving in the normal way.

NOTE: After a little practice, this operation can be carried out smoothly and quickly by using firm, positive moves - but do not rush the gear change.

Transfer gearbox

Automatic models:

Changing from 'H' (high) to 'L' (low) or vice versa without stopping the vehicle can be achieved as follows:

Reduce (or increase) the speed of the vehicle to 5 mph (8 km/h) and release the accelerator.

Select 'N' with the main gear selector and move the transfer lever quickly to the required 'H' or 'L' position. Finally, reselect 'D' with the main gear selector and continue driving as normal.

NOTE: This operation applies to 'H' to 'L' and 'L' to 'H' equally.



J471

THE DIFFERENTIAL LOCK

Unlike many four wheel drive vehicles, all Land Rover vehicles have permanent four wheel drive. This is achieved by the inclusion of a lockable differential between the front and rear drive shafts. With the differential locked, the drive shafts to front and rear axles are (in effect) joined together causing both axles to rotate at the same speed. This is a normal feature with all four wheel drive vehicles and enhances traction on difficult off-road surfaces. However, with the differential unlocked, the different running requirements of the two axles can be accommodated, thereby enabling Land Rover vehicles to operate permanently in four wheel drive for both road AND off-road use.

Transfer gearbox

Selecting diff lock

The diff lock can be engaged or disengaged either with the vehicle stationary, or when driving at any road speed, and without depressing the clutch. However, with the vehicle in motion it is ESSENTIAL to be travelling on firm ground, in a straight line, and without wheel slip.

WARNING

DO NOT engage the diff lock if one or more wheels are slipping - this could damage the transmission. If wheels are slipping, ease off the accelerator before engaging the diff lock.

To lock the differential:

Move the transfer gear lever to the left - from either 'H' (high) or 'L' (low) position (the warning light on the instrument panel will illuminate).

To unlock the differential:

Move the transfer gear lever to the right - to either 'H' (high) or 'L' (low) position as required; when the diff lock disengages the warning light will extinguish.

When to use the diff lock

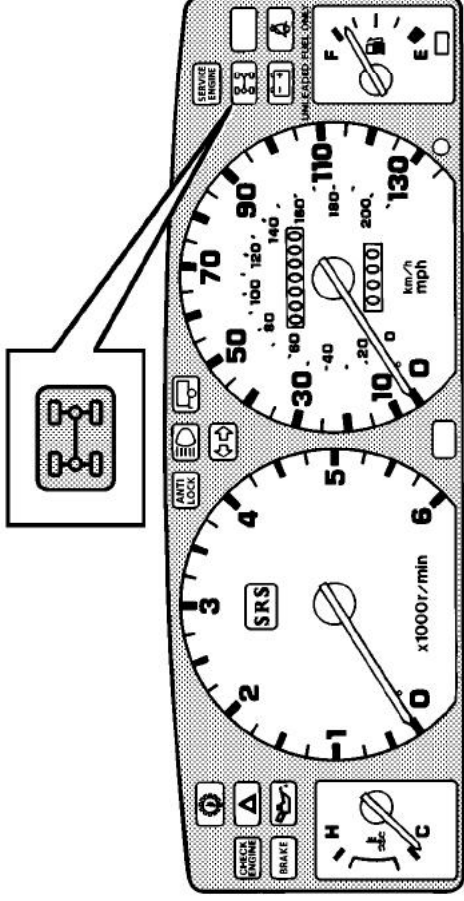
As a general rule, the differential should only be locked in order to drive on loose and slippery surfaces. ALWAYS unlock the differential for normal road driving or as soon as a hard grippy surface is reached whether high or low gears are selected.

NOTE: A valuable introduction to off-road driving, which includes many useful references to the transfer gearbox and 'diff lock', is included in the 'Off-road driving' section.

WARNING

If the vehicle is driven on normal road surfaces with the differential locked, the steering will feel stiff, excessive tyre wear will occur and the transmission will be 'wound up'. This places excessive strain on the transmission.

Transfer gearbox



J524A

Diff lock warning light

The amber warning light on the instrument panel illuminates when the diff lock is actually engaged - rather than when it has been selected. Similarly it will only extinguish when the diff lock is actually disengaged. This accounts for a slight delay between diff lock deselection and the warning light extinguishing, which is quite normal.

IMPORTANT INFORMATION

Transmission 'wind up'

If the warning light is obviously reluctant to extinguish after the diff lock has been deselected, some transmission 'wind up' may be present.

Reversing the vehicle for a short distance and then going forward will usually 'unwind' the transmission and extinguish the light and the vehicle can then be driven as normal. However, if after two or three attempts to 'unwind' the transmission the light remains on, consult your dealer AS SOON AS POSSIBLE.

Braking systems

FOOT BRAKE

As a safety precaution, the hydraulic braking system operates through dual circuits. If one circuit fails, the other will continue to function, but increased brake pedal travel, greater pedal effort and longer stopping distances will be experienced.

Power assistance

The braking system is power assisted, but ONLY when the engine is running. Without this assistance greater braking effort is necessary to safely control the vehicle, resulting in longer stopping distances. Always observe the following precautions:

- NEVER allow the vehicle to coast with the engine turned off.
- ALWAYS take particular care when being towed with the engine turned off.
- If the engine should stop for any reason while the vehicle is in motion, bring the vehicle to a halt as quickly as traffic conditions safely allow, and DO NOT pump the brake pedal as the braking system may lose any remaining assistance available.

Brake pads

Brake pads require a period of bedding in. You should avoid heavy braking, except in emergencies, for at least the first 500 miles (800 km).

Remember that regular servicing is vital to ensure that the brake pads are examined for wear and changed periodically to ensure long term safety and optimum performance.

WARNING

DO NOT rest your foot on the brake pedal while travelling as this may overheat the brakes, reduce their efficiency and cause excessive wear.

NEVER place additional floor matting or any other obstruction under the brake pedal. This restricts pedal travel and braking efficiency.

NEVER move a vehicle with the starter switch turned off, because braking assistance will not be available. The pedal brakes will still function, but more pressure will be required.

ALWAYS take particular care when being towed with the engine turned off.

WARNING

If the brake warning light comes on when driving, and the parking brake is fully released, a fault with the braking system is indicated. Be prepared for increased brake pedal travel and then stop the vehicle as quickly as traffic conditions and safety permit and seek qualified assistance before continuing.

DO NOT pump the brake pedal. If the brake pedal is pumped, the braking system may lose any remaining assistance available.