



The SensoDrive gearbox in detail

An electronically controlled manual gearbox, the SensoDrive features electronically managed clutch and gear-shift functions. As a result, the car has no clutch pedal. The gear lever has no mechanical link with the gearbox.

The SensoDrive gearbox is managed by a control unit, which controls two actuators. One actuator changes gears while the other, which is equipped with a facing wear compensation system, opens and closes the clutch. The gearbox control unit also communicates with the engine control unit.

Linked to the C3's multiplex electrics, the gearbox control unit manages all the functions linked to the SensoDrive gearbox: start-up, automatic mode, safety functions and instrument cluster display. It diagnoses any operating failures and switches to degraded operation where necessary.

This sophisticated electronic management system takes into account all the parameters necessary for efficient gear-changing: gear lever, accelerator, brake, engine and gearbox rpm, vehicle speed, ABS, engine torque and temperature.

In this way, when the gearbox control unit receives an order to change speeds, it briefly cuts off the engine's powerflow, disengages the clutch, changes gears, engages the clutch and authorises power to be restored. These operations are sequenced as quickly as possible to minimise any break in acceleration.

In automatic mode, gears are selected by the computer on the basis of the auto-adaptive shift patterns. The control unit analyses the driver's behaviour and the road conditions (rising, falling, corner) as well as the vehicle load and surface grip in order to define the most appropriate gear speed.

To avoid changing gears too frequently, gear shifts are conducted at different speeds during acceleration and deceleration.

Contact your Citroën dealer for a test drive.



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CITROËN

C3



THE SENSODRIVE GEARBOX



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ERGONOMIC DESIGN AND DRIVING PLEASURE WITH THE NEW SENSODRIVE GEARBOX

The new Citroën C3 SensoDrive electronically-controlled manual gearbox coupled with the 1.6i 16V engine is now available in Australia. The SensoDrive endows the C3 with a level of performance and driving pleasure rarely seen in this class of vehicle.

A new driving experience

Coupled with the 1.6i 16V 83 kW engine, the SensoDrive gearbox enhances driving pleasure:

- in manual mode**, SensoDrive allows the driver to maintain precision-control of the gears selected and the vehicle speed to feel in full control of the vehicle,
- in automatic mode**, it creates a sense of comfort that is both physical and psychological, bringing the driver complete peace of mind on the open road and in the city.

The driver switches easily and naturally from one operating mode to the other, either by using the automatic mode control on the central console or by using one of the two dedicated manual mode controls; paddles under the wheel or a gear lever.



BEAUTY

The technology of the SensoDrive gearbox brings improvements in many areas:

Comfort – In automatic mode, the driver does not have to change gears: a major advantage in heavy traffic. In manual mode, the driver no longer has to take a hand off the wheel to select the gear required.

Safety – Eyes on the road and hands on the wheel, the driver concentrates on the road ahead. A dashboard indicator shows the current gear-speed and mode of operation.

Consumption – Automatic mode optimises gear shift management to bring fuel savings in a standard combined cycle.



The SensoDrive gearbox in day-to-day use

The SensoDrive features two operating modes:

- manual mode,
- automatic mode.

In manual mode, the driver maintains full control over gear shifts. Gears are changed using one of the two control functions provided.

1. Paddles located behind the wheel. The right-hand paddle is used to change up, the left-hand paddle to change down. These paddles give access to the five forward speeds.

Their position in relation to the wheel is fixed, so they can be used intuitively by the driver whatever the wheel position, for improved comfort and safety.



2. A gear lever on the central console. This lever has a stable central position. The driver pushes it forwards (+) to change up, and pulls it back (-) to change down.

For reasons of safety, only the console lever can be used to put the car into neutral or reverse. The driver pushes the lever to the right to put the car into neutral. To put the car into reverse, the driver places a foot on the brake pedal, pushes the lever right and pulls it back.

Even when manual mode is active, the SensoDrive gearbox enhances driving comfort. For example, the driver no longer has to change down on braking, when the car is approaching a stop sign or traffic lights. The gearbox changes down to first gear automatically then disengages the clutch when the car stops. When the driver puts a foot on the accelerator to move off again after a brief stop, the car starts up in first gear.

In order to protect the power train, each request to change gears is analysed by a computer, which validates or overrides the driver's actions and can even select the appropriate gear in the event of over or under-revving.

Last, the gearbox control unit makes down-shifting a smooth and gentle process.

In automatic mode, the driver delegates the decision and the selection of gears to the control unit, which applies a number of gearshift patterns managed on an auto-adaptive basis.

The control unit analyses the driver's behaviour, the type of route and the position of the accelerator in order to define the most appropriate gear.

The control unit applies a number of rules in specific situations: to maintain the current gear speed or to change down to boost engine brake power; refuse change-ups; change down to the lowest gear on kick-down for power acceleration.

In the same way, the gearbox detects low-grip conditions and adopts a "snow" type programme. This information is displayed on the instrument cluster.

An electric control function positioned on the central console behind the gear lever lets the driver switch to automatic mode. In this case, an "Auto" icon is displayed on the instrument cluster, together with the gear engaged. At the same time, an indicator lights up.

To ensure maximum safety, the SensoDrive gearbox includes a number of protective functions:

- The engine will only start if the brake pedal is pressed down.
- "Automatic mode" is activated as soon as the ignition is switched on.
- The driver can put the car into reverse only if his foot is on the brake and the car is stationary.
- After a change to reverse gear just one touch forward on the gear lever on the centre console returns the system to "Automatic mode".
- If the car remains stationary over a long period with the engine on and a gear selected, the system returns automatically to neutral.
- **Stopping the engine.** Before switching off the engine, you can choose:
 - To leave the vehicle in neutral, for this select position N.
 - To leave the vehicle with gear engaged (1st or 2nd or R); for this, bring the selector lever to the desired position prior to switching off the ignition. In this case the vehicle cannot be moved.

IN ALL CASES, IT IS ESSENTIAL TO APPLY THE HANDBRAKE.

- **Starting on a gradient.** If starting on a gradient, accelerate gradually while releasing the handbrake (a 'hill start').

If you have had to stop on a gradient, it is best to avoid using the accelerator to maintain the vehicles position (riding the clutch).



SMART