

7. Shift Control Mechanism

General

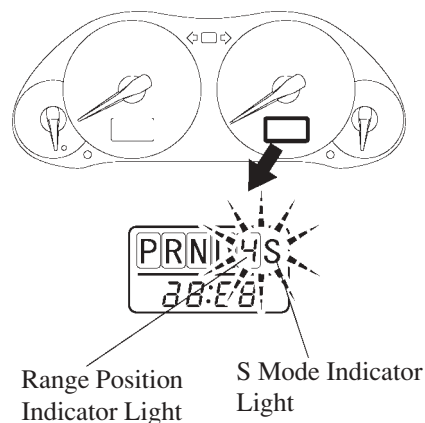
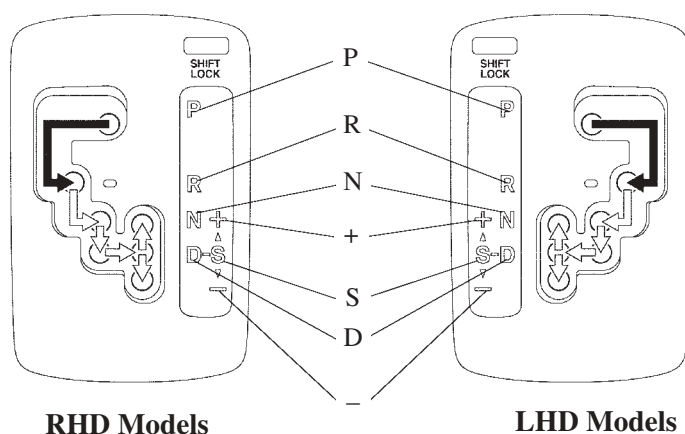
- A multi-mode automatic transmission, which uses a shift control mechanism consisting of a shift control cable and a transmission control switch, has been adopted.
- A mechanical key interlock that uses a key lock cable has been adopted.

Multi-Mode Automatic Transmission

1) General

The new Avensis equipped with an automatic transaxle have a multi mode automatic transmission that enables the range position to be switched when the shift lever is moved into + or – in “S” position. When the shift lever is engaged into S position, it can be moved to +, toward the front of the vehicle, and –, toward the rear. When moved toward + the range position upshifts, and when moved toward – the range position downshifts. The current range position is displayed in numerals from 1 to 5 on the range position indicator in the combination meter.

With the adoption of the S position, the previous shift lever’s L position, 2 position, and O/D OFF switch were discontinued.

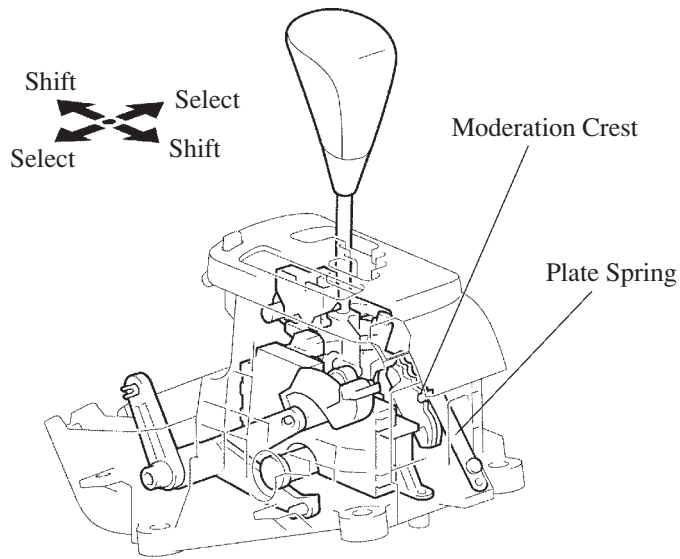


2) Construction and Operation

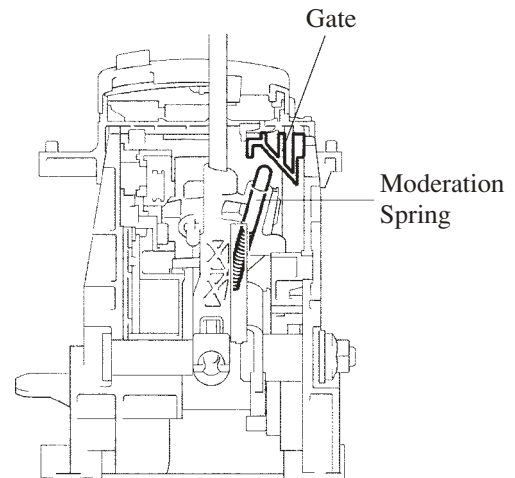
When the shift lever position is moved through P→R→N→D, it operates as a mechanical shift lever in which the shift lever cable engages and moves as in the previous model.

A sense of moderation in select direction is attained due to the plate spring pressing against the moderation in shift control lever.

A sense of moderation in select direction is attained due to the moderation pin installed on the shift lever pressing against the gate through the moderation spring.



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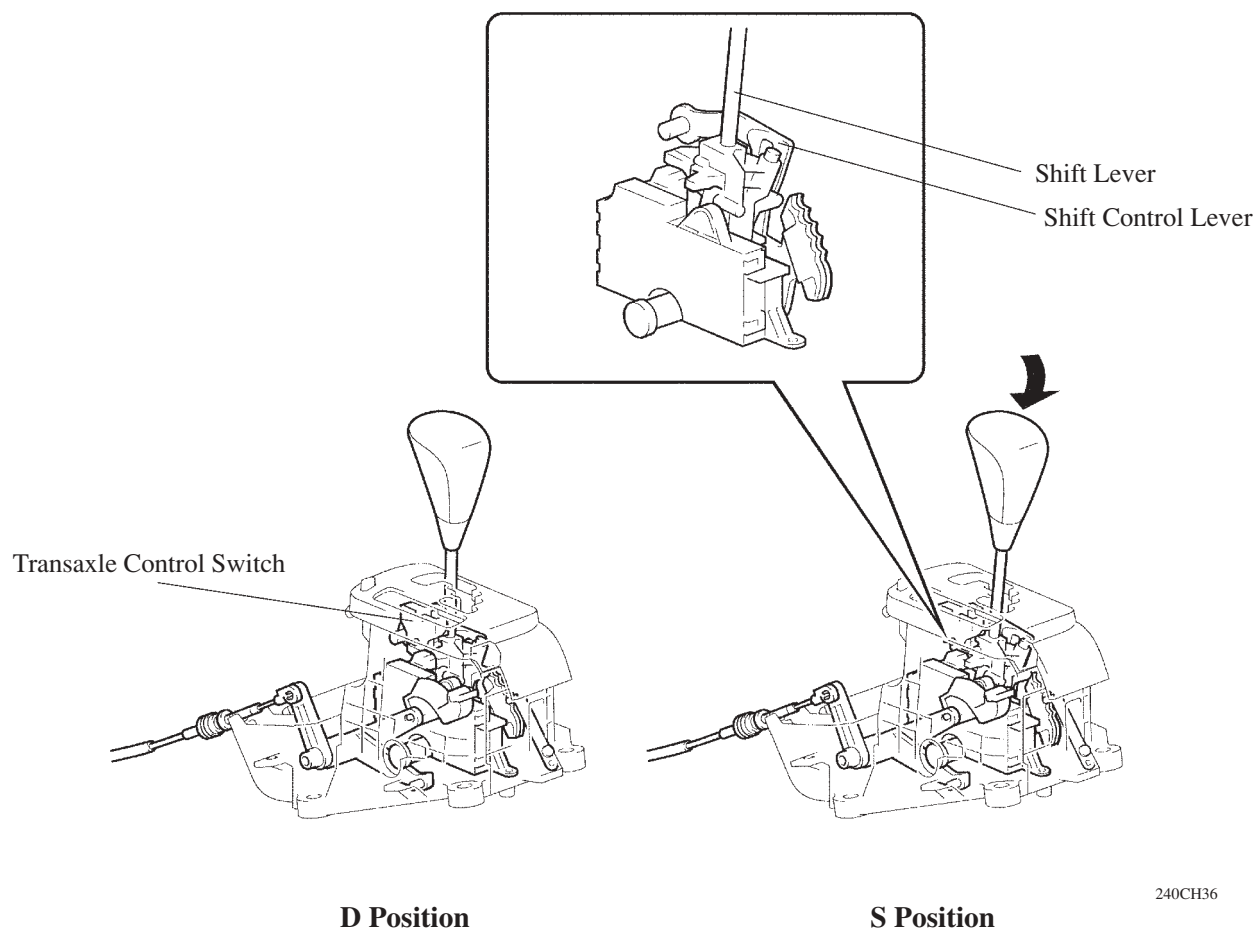


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When the shift lever position is shifted from D to S, the shift lever projection separates from the hole in the shift control lever and the shift lever and shift lever cable are uncoupled. At this, the shift lever no longer has control of the shift direction.

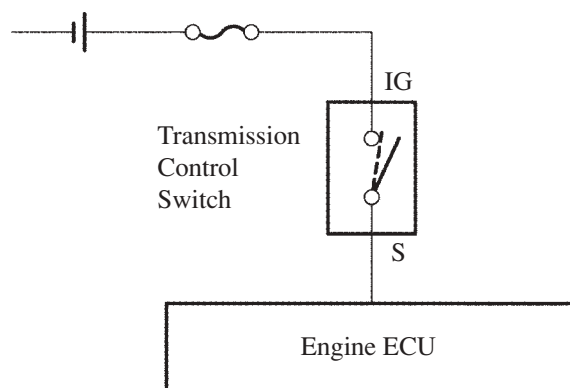
At the same time, with the movement of select direction toward the shift lever S position, there is continuity between the S terminal and the IG terminal of the transmission control switch. The engine ECU receive this signal and shift into S mode.

At this time, the shift range position always moves into the 3 range position.



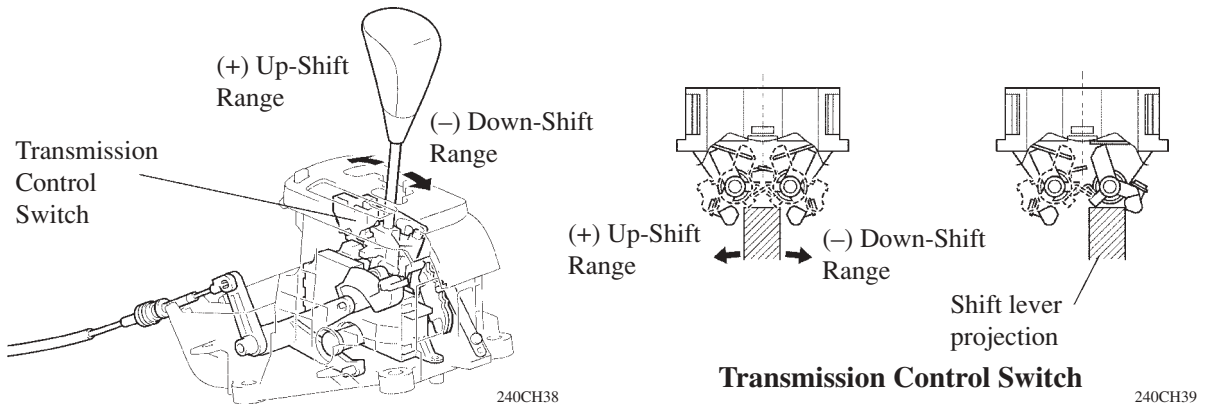
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► System Diagram ◀

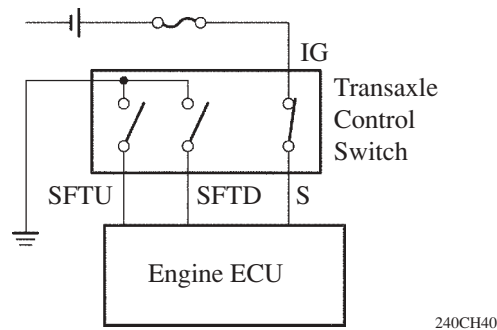


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In S position, when the shift lever is shifted to the + or – side, the shift lever projection turns either the transmission control switch upshift range switch or downshift range switch on. If the lever is moved to the + side, there is continuity between the SFTU terminal and the E terminal of the transmission control switch. If the lever is moved to the – side, there is continuity between the SFTD terminal and the E terminal. The engine ECU receive this signal and move the shift range position up or down.

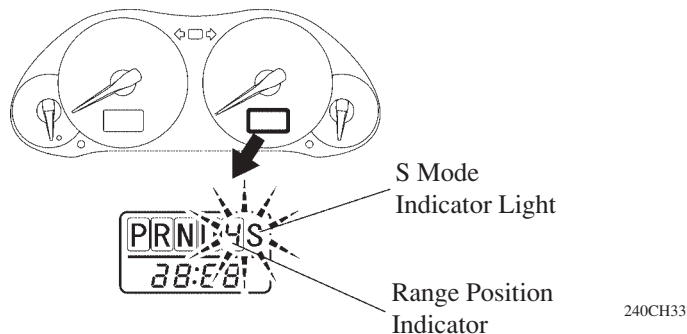


► System Diagram ◀



3) Shift Program

When the shift lever is moved into the S position, the S mode indicator and range position indicator in the combination meter light up. When the vehicle stops, it shifts into 1st gear an ordinary automatic transaxle.



The usable gears are shown in the chart below:

→: Up Shift ←: Down Shift

Range Position Indicator	Shift Range Position	Usable Gears
5	5	1st ↔ 2nd ↔ 3rd ↔ 4th ↔ 5th
4	4	1st ↔ 2nd ↔ 3rd ↔ 4th ← 5th
3	3	1st ↔ 2nd ↔ 3rd ← 4th
2	2	1st ↔ 2nd ← 3rd
1	1	1st ← 2nd

Shift Lock System

1) Key Interlock Mechanism

- The key interlock device prevents the key from being pulled out after the ignition switch is turned OFF, unless the shift lever is moved to the P position. Thus, the driver is urged to park the vehicle in the P position.
- A mechanical key interlock device that uses the key lock cable has been adopted.

2) Shift Lock Mechanism

- The shift lock mechanism prevents the shift lever from being shifted to a position other than the P position, unless the ignition switch is ON and the brake pedal is pressed. This prevents the vehicle from starting off suddenly against the wish of driver.
- The shift lock ECU receives the inputs of the stop light switch and ignition switch signals. Upon receiving these signals, the shift lock ECU turns ON the shift lock solenoid in order to release shift lock.
- A shift lock override button, which manually overrides the shift lock mechanism, is provided

3) Layout of Component

