

## **Electronic Control System**

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The electronic control system consists of the Transmission Control module (TCM), sensors, a linear solenoid and 4 solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under and conditions. The TCM is located on the insulator center bulkhead, behind the driver's seat.

#### Shift control

Shifting is related to engine torque through the linear solenoid used to operate throttle valve B which is controlled by the TCM

Getting a signal from each sensor, the TCM detects the appropriate gear shifting and activates shift control solenoid valves A and/or B.

The combination of driving signals to shift control solenoid valves A and B is shown in the table below.

Shift control solenoid valve	Α	В
Range (gear)		
D (1st)	OFF	ON
D (2nd)	ON	ON
D 3 (3rd), 1 (1st)	ON	OFF
D (4th), 2 (2nd)	OFF	OFF
R (Reverse)	ON	OFF

### Lock-up control

From sensor input signals, the TCM detects whether to turn the lock-up ON or OFF and activates lock-up control solenoid valve A and/or B accordingly.

The combination of driving signals to lock-up control solenoid valves A and B is shown in the table below.

Solenoid valve Lock-up condition	Α	В
Lock-up OFF	OFF	OFF
Lock-up, slight	ON	OFF
Lock-up, half	ON	ON
Lock-up, full	ON	ON
Lock-up during deceleration	ON	Duty operation OFF ←→ON

(cont'd)

# **Electronic Control System (cont'd)** TRANSMISSION CONTROL MODULE (TCM) Linear Solenoid Throttle Position Sensor Signal Engine Coolant Temperature Shift Control Shift Control Solenoid Sensor Signal Valve A Accet Pedal Shift Control Solenoid Angle Signal Valve B ENGINE CONTROL MODULE Service Check Connector (ECM) Lock-up Control Solenoid Valve A Lock-up Control Lock-up Control Solenoid Valve B INTERLOCK Ρ CONTROL UNIT TCS Control Unit R EPS Control Unit Ν Engine RPM D Air Conditioning Signal 3 Brake Switch Signal 2 Vehicle Speed Sensor Signal Mainshaft Speed Sensor Signal Countershaft Speed Sensor Signal Self-Diagnosis Self-Diagnosis Indicator Function