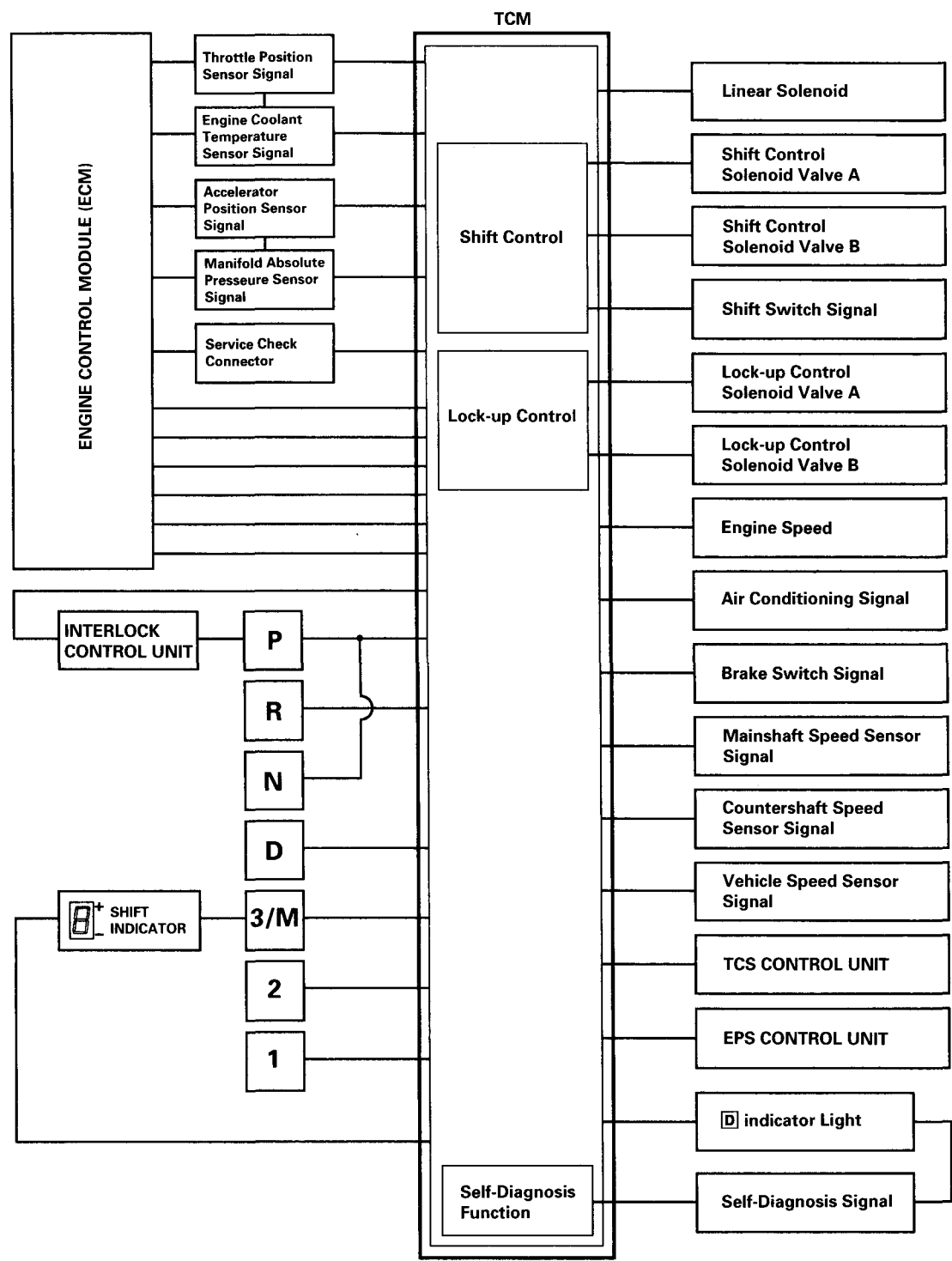


Description

Electronic Control System

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





ShiftControl

Engine torque controls shifting through the linear solenoid. The linear solenoid is controlled by the TCM, and it is used to operate the throttle valve.

The TCM instantly determines which gear to select by various signals sent from sensors, and actuates shift control solenoid valves A and B to control shifting. Also, Sport Shifting mode has been adopted to shift gears up and down manually in **3/M** position, while using the shift switch on the steering column's right pod.

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

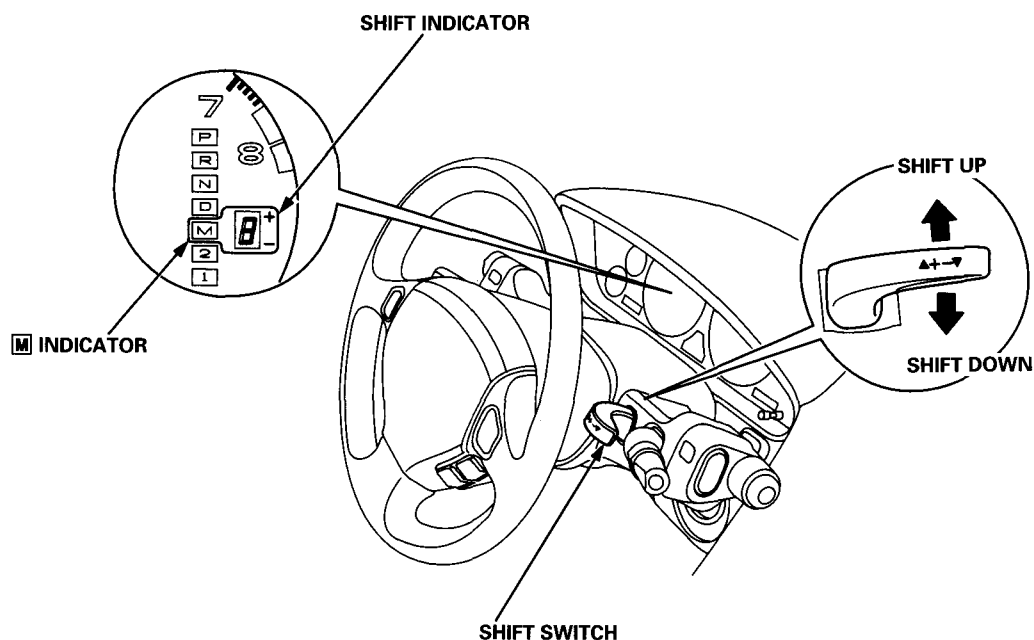
Position	Gear	Shift control solenoid valve	
		A	B
D 3/M	1st	OFF	ON
	2nd	ON	ON
	3rd	ON	OFF
	4th	OFF	OFF
2	2nd	OFF	OFF
1	1st	ON	OFF
R	Reverse	ON	OFF

Sport Shifting (Manual Shifting) mode

In **3/M** position, the driver can use the shift switch on the steering column's right pod to shift gears up and down, much like a manual transmission.

- Pushing up on the shift switch: Transmission upshifts to the next higher gear.
- Pushing down on the shift switch: Transmission downshifts.

The number of the selected gear is displayed in the shift indicator next to the **M** indicator.



(cont'd)

Description

Electronic Control System (cont'd)

- Automatic shifting control in Sport Shifting mode

This position also has automatic shifting areas:

- 1-2 upshift
- 4-3 downshift, 3-1 downshift, 2-1 downshift

depending on vehicle speed. To prevent engine over-revving, the transmission has a 1-2 automatic upshift speed, and 4-3, 3-1, 2-1 downshift allowable speeds.

- When the vehicle reaches the 1-2 automatic upshift speed, the TCM outputs the 1-2 upshift signal to the transmission and the transmission upshifts to 2nd from 1st gear.
- When the vehicle is coasting over the 4-3 downshift allowable speed and 3-2 downshift allowable speed, the TCM does not input the downshift signal from the shift switch, and the transmission does not downshift.
- When the vehicle is coasting over the 2-1 downshift allowable speed in 2nd gear, the TCM inputs the signal to wait until it reaches the 2-1 downshift allowable speed, then the shift indicator blinks to indicate it is waiting to downshift to 1st.

When the vehicle decelerates to a stop, the transmission shifts to 1st gear automatically.

The transmission can be shifted to 2nd gear by pushing the shift switch up while the vehicle is stopped. This allows the vehicle to start off in 2nd gear.

Lock-up Control

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

The lock-up control mechanism comes into operation in 2nd, 3rd, and 4th, in **D** and **3/M** positions.

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

Lock-up condition	Lock-up control solenoid valve	
	A	B
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	OFF ⇔ ON Duty operation