■ELECTRONIC CONTROL SYSTEM

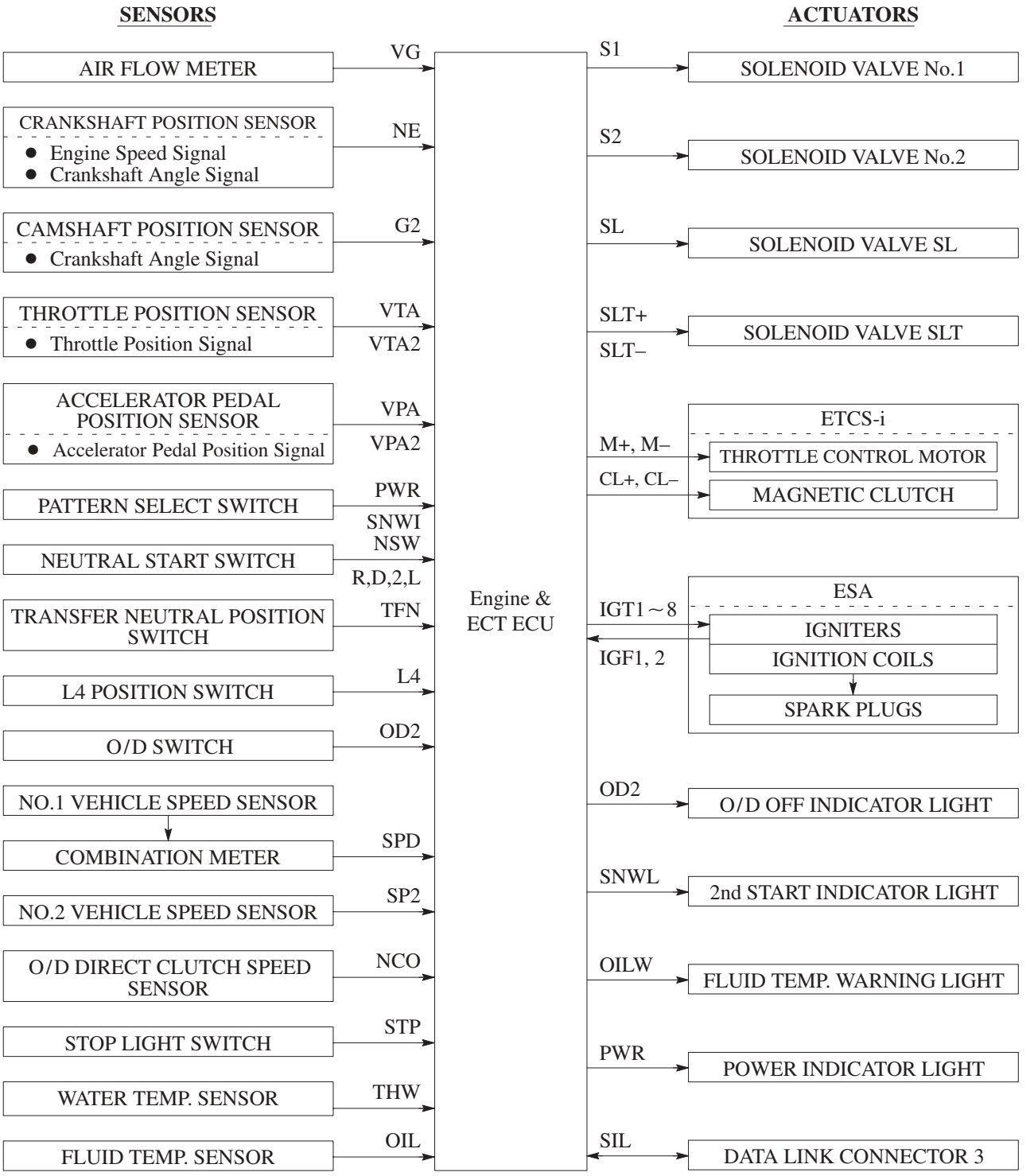
1. General

The electronic control system of the A343F automatic transmission consists of the controls listed below.

System	Function
Shift Timing Control	The optimum shift pattern is selected from 2 shift patterns in the engine & ECT ECU by the pattern select switch. The engine & ECT ECU sends current to the solenoid valve No.1 and/or No.2 based on signals from each sensor and shifts the gear.
Lock-Up Timing Control	The optimum lock-up pattern is selected from 2 lock-up patterns in the engine & ECT ECU by the pattern select switch. The engine & ECT ECU sends current to the solenoid valve SL based on signals from each sensor and engages or disengages the lock-up clutch.
Line-Pressure Control	Based on the throttle opening angle, the engine & ECT ECU sends a signal to solenoid valve SLT to generate line pressure according to the engine output, to effect a smooth gear shift change.
"N" to "D" Squat Control	When the shift lever is shifted from "N" to "D" range, the gear is temporarily shifted to OD and then to 1st to reduce vehicle squat.
Engine Torque Control	Retards the engine ignition timing temporarily to improve shift feeling during up or down shifting.
2nd Start System	Enabling the vehicle to take off in the 2nd gear and thus make it easy to take off on snowy, sandy or muddy terrain.
Self-Diagnosis	When the engine & ECT ECU detects the electrical circuit malfunctions, it flashes the O/D OFF indicator light to alert the driver. In addition, the engine & ECT ECU stores the codes of the malfunctions. Diagnosis code can be confirmed with flashing of O/D OFF indicator light. As this system adapts M-OBD, a hand-held tester can be connected to DLC3 to check the codes. For details on the diagnostic code check method, diagnostic codes, and diagnostic code clearance, see the Land Cruiser Chassis and Body Repair Manual (Pub. No. RM616E).
Fail-Safe	Controls other normally operating components, permitting continued driving when malfunctions occur in the electrical circuit.

2. Construction

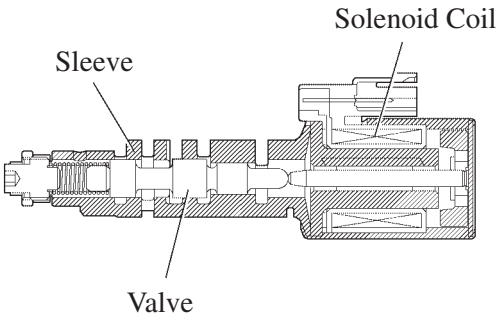
The configuration of the electronic control system in the A343F is as shown in the following chart.



3. Construction and Operation of Main Components

Solenoid Valve SLT

In order to provide a hydraulic pressure that is in proportion to the current that flows to the solenoid coil, the solenoid valve SLT linearly controls the line pressure based on the signals it receives from the engine & ECT ECU.



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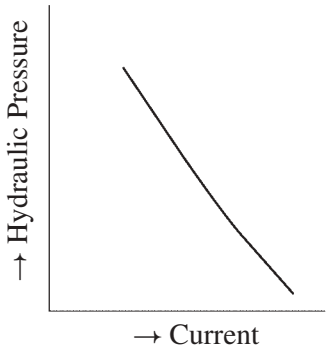

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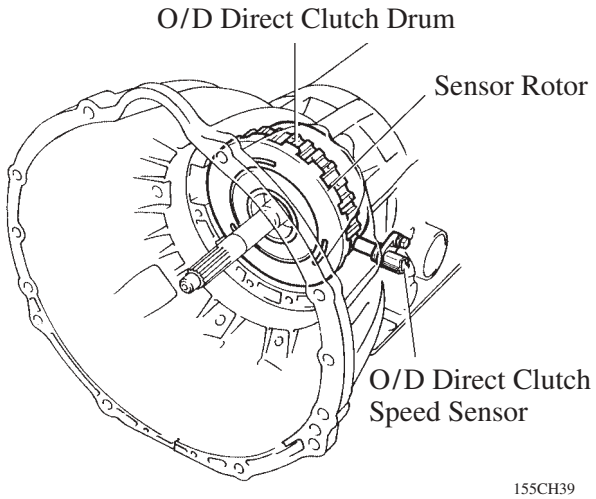
O/D Direct Clutch Speed Sensor

The O/D direct clutch speed sensor is fitted to the transmission case to detect revolution of the transmission input shaft.
The sensor rotor is fitted to the O/D direct clutch drum.



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4. Function of Engine & ECT ECU

Line Pressure Control

The previous mechanical control, which consisted of a throttle cable, cam, and throttle valve, has been changed to an electronic control system that uses a solenoid valve SLT.
In order to obtain a predetermined line pressure characteristic according to the throttle position sensor (VTA) signal the engine & ECT ECU activates the solenoid valve SLT to regulate the throttle pressure.
This makes it possible for the primary regulator valve to precisely and minutely control the line pressure, in accordance with the engine output, and thus realize smoother shift characteristics.
And also, the engine & ECT ECU detects the speed of the transmission input shaft to determine whether or not the transmission is shifting properly in order to ensure the smooth engagement of the clutch.
To ensure the optimal speed changes in the transmission input shaft, the engine & ECT ECU controls the solenoid valve SLT to finely regulate the line pressure.