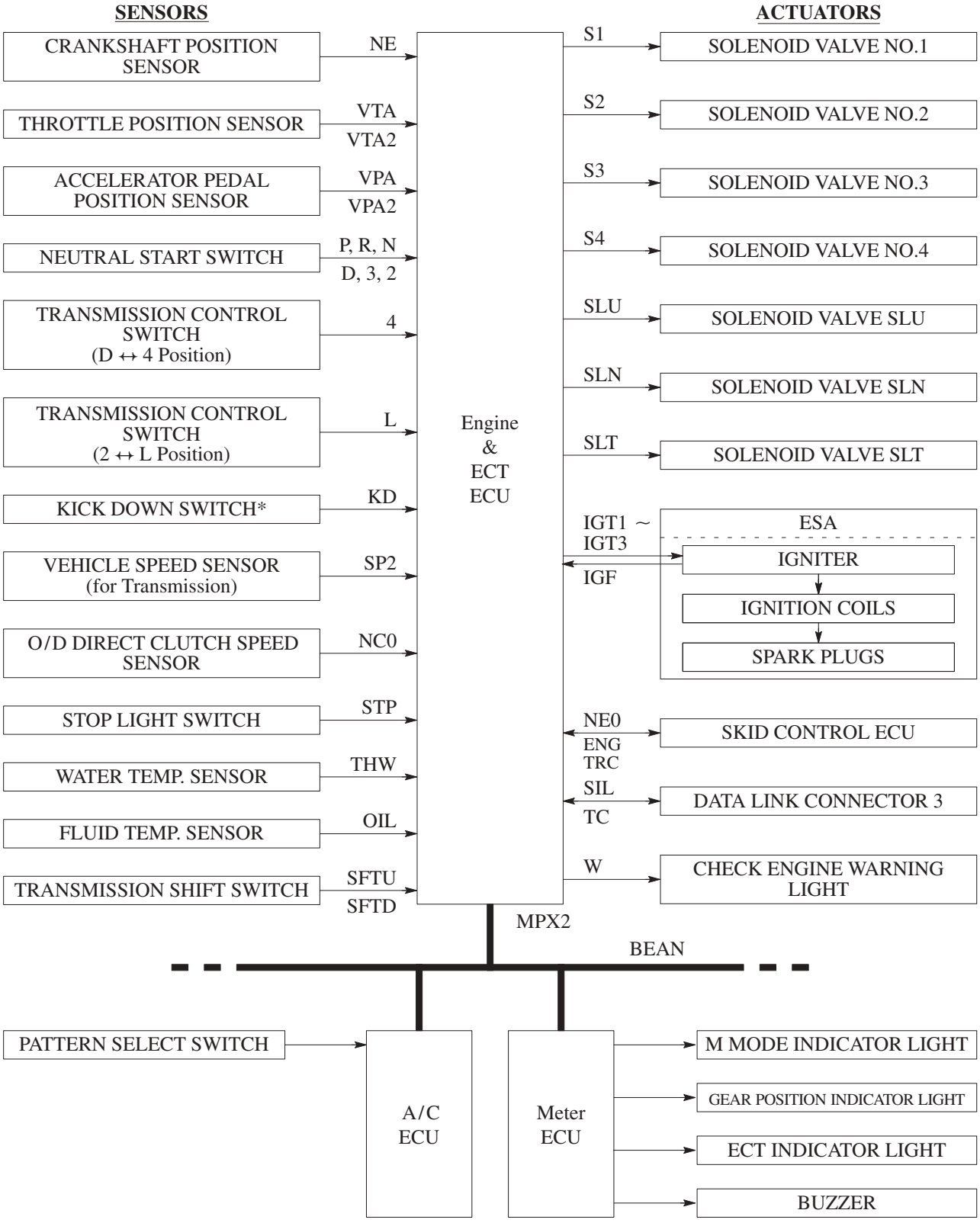
■ELECTRONIC CONTROL SYSTEM

1. Construction

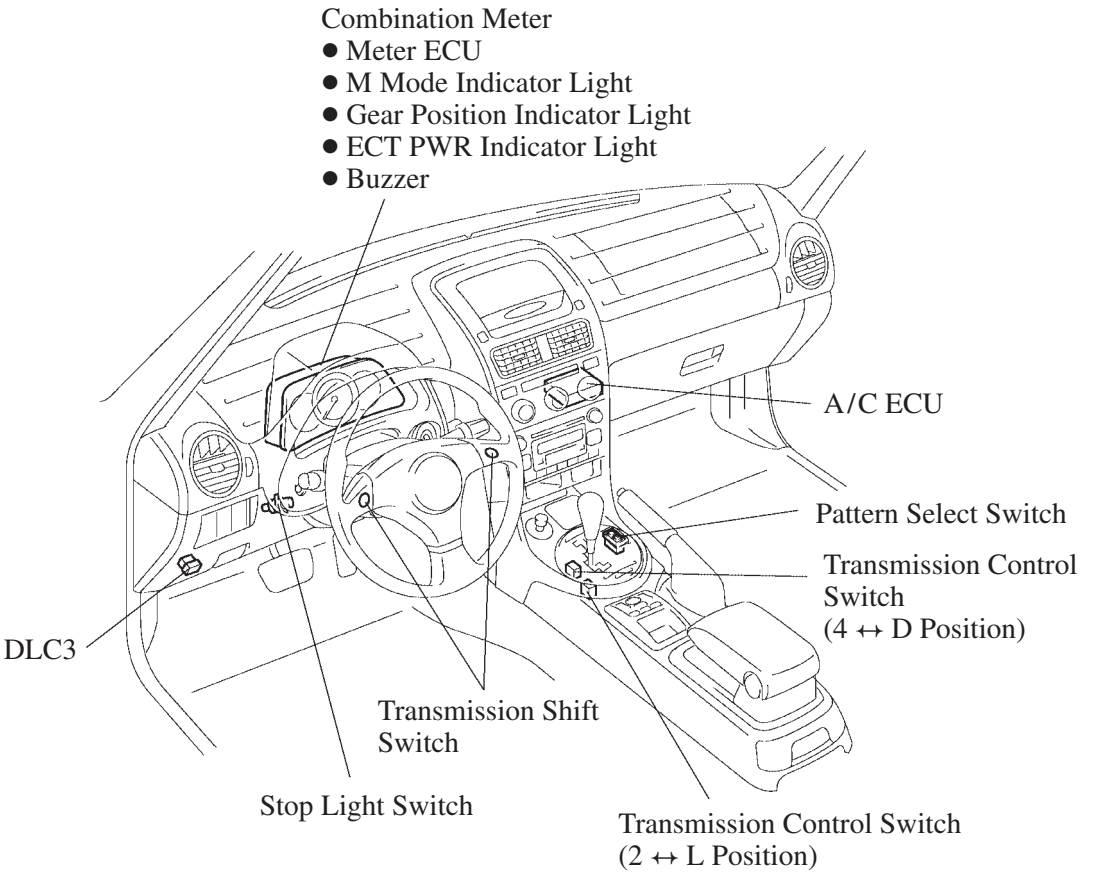
The configuration of the electronic control system in the A650E automatic transmission is as shown in the following chart.



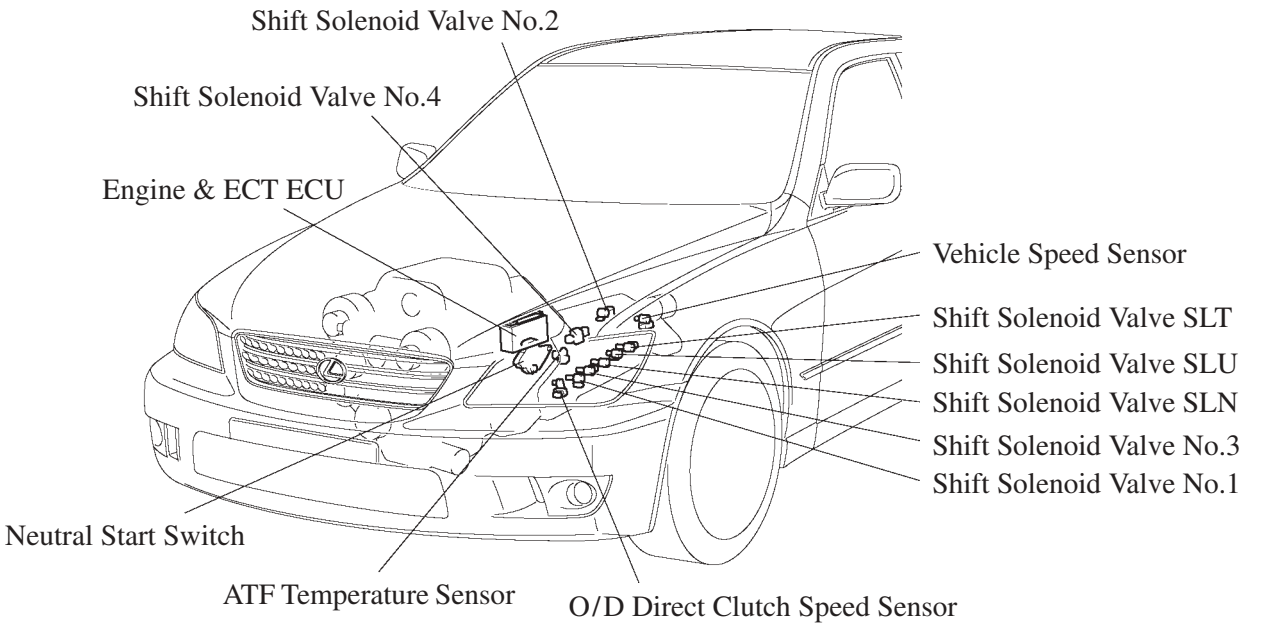
*: Only for LHD Model

NF

2. Layout of Main Components



LHD Model



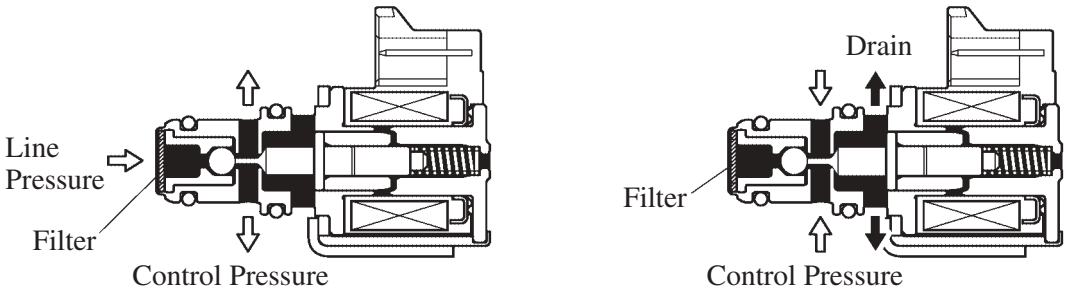
3. Solenoid Valve

Solenoid Valve No.1, No.2, No.3 and No.4

Solenoid Valve	Type	Function
No.1	3-way	Switches the 2-3 shift valve.
No.2	2-way	● Switches the 1-2 shift valve. ● Switches the 3-4 shift valve. ● Switches the reverse control valve.
No.3	3-way	● Switches the 4-5 shift valve. ● Applies the engine brake of the 1st and 3rd gears.
No.4	2-way	● Switches the O/D direct clutch (C_0) pressure.

- Solenoid valves No.1 and No.3 use a 3-way solenoid valve to reduce the volume of fluid used in the operation, to lessen the oil pump load, and to improve response during low-temperature operation. A filter has been provided at the tip of the solenoid valve to further improve operational reliability.
- Solenoid valve No.2 and No.4 use a compact and lightweight 2-way solenoid valve.

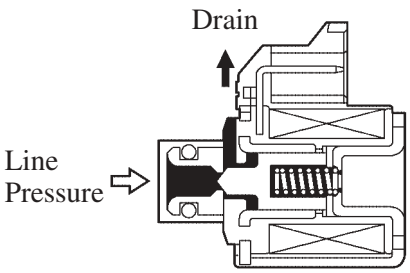
▶ Solenoid Valve No.1 and No.3 ◀



Solenoid Valve OFF **Solenoid Valve ON**

204CH06

▶ Solenoid Valve No.2 and No.4 ◀

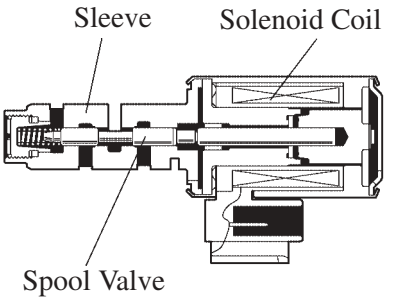


204CH07

Solenoid Valve SLU, SLN and SLT

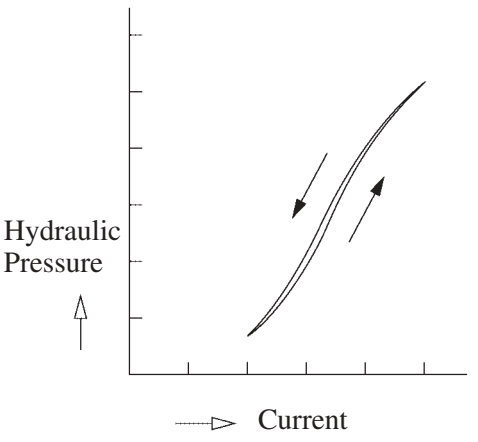
In order to provide a hydraulic pressure that is proportion to current that flows to the solenoid coil, the solenoid valve SLU, SLN and SLT linearly controls the line pressure, clutch and brake engagement pressure and accumulator pressure based on the signals it receives from the engine & ECT ECU.

Solenoid Valve	Function
SLU	● 2nd brake (B3) pressure control ● Forward clutch (C1) pressure control ● Lock-up clutch pressure control
SLN	Accumulator back pressure control
SLT	Accumulator back pressure control
	● Line pressure control ● Secondary pressure control

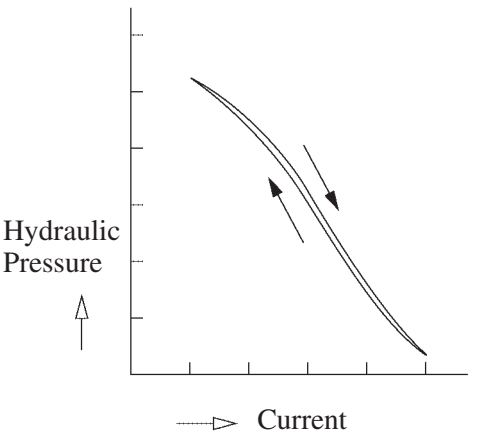


Solenoid Valve SLU

189CH09



Solenoid Valve SLU and SLN

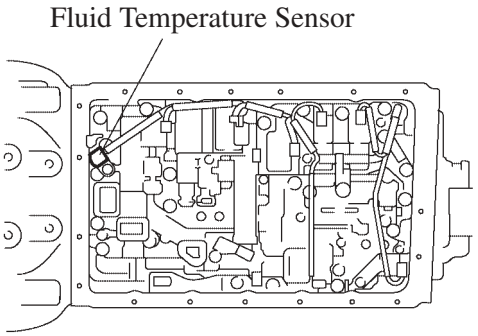


Solenoid Valve SLT

189CH10

4. Fluid Temperature Sensor

The fluid temperature sensor has been located at the valve body.
Accordingly, a more precise fluid temperature detection has been made possible, enabling a more precise 2nd brake (B_3) pressure control that adapts to oil temperature changes. As a result, shift shocks have been reduced in a wide fluid temperature range, including the extremely low temperature range.

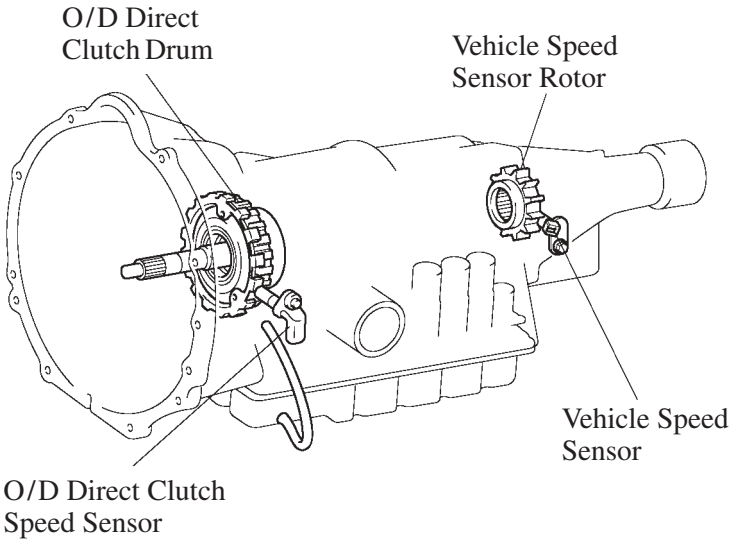


Bottom View with Oil Pan Removed

199CH59

5. Vehicle Speed Sensor and O/D Direct Clutch Speed Sensor

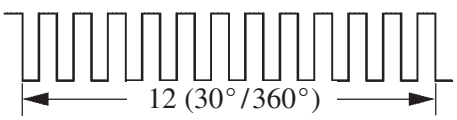
- The speed of the O/D direct clutch drum, which is equivalent to the input speed of the transmission (except when driving at 5th and reverse gear position), is detected through the O/D direct clutch speed sensor on the left side of the transmission case, and is output to the engine & ECT ECU.
- A rotor is provided on the output shaft of the transmission, and the vehicle speed sensor on the left side of the transmission case detects the speed and outputs it to the engine ECU & ECT ECU.
- Both the vehicle speed sensor and the O/D direct clutch speed sensor are the pick-up coil type.



204CH08

▶ Waveform Output of 1 Revolution of Rotor ◀

O/D Direct Clutch Speed Sensor



Vehicle Speed Sensor

199CH05