ECT AND A/T INDICATOR (RHD)

SYSTEM OUTLINE

Previous automatic transmissions have selected each gear shift using mechanically controlled throttle hydraulic pressure, governor hydraulic pressure and lock–up hydraulic pressure. The electronically controlled transmission, however, electrically controls the line pressure, throttle pressure, lock–up pressure and accumulator pressure etc. through the solenoid valve. The electronically controlled transmission is a system which precisely controls gear shift timing and lock–up timing in response to the vehicle's driving conditions and the engine condition detected by various sensors. It makes smooth driving possible by shift selection for each gear which is the most appropriate to the driving conditions at that time, and by preventing downing, squat and gear shift shock when starting off.

1. GEAR SHIFT OPERATION

When driving, the engine warm up condition is input as a signal to TERMINAL THW of the engine and ECT ECU from the EFI water temp. sensor and the vehicle speed signal from speed sensor is input to TERMINAL SP2+ of the engine and ECT ECU. At the same time, the throttle valve opening signal from the throttle position sensor is input to TERMINALS VTA and VTA2 of the engine and ECT ECU as throttle angle signal.
Based on these signals, the engine and ECT ECU selects the best shift position for the driving conditions and sends current to the ECT solenoid.

2. LINE HYDRAULIC PRESSURE CONTROL

The engine and ECT ECU adjusts the line hydraulic pressure to the optimal level by controlling TERMINAL SLT+ of the module according to the engine torque data. This realizes the smooth gear shifting.

3. HIGH RESPONSE GEAR SHIFTING CONTROL

The engine and ECT ECU performs the high response engine torque up control to control the ignition–timing lag as well as opening the electronic throttle when shifting down. By doing this, the gear shifting is performed in a short period of time. Moreover, the engine and ECT ECU uses the orifice switching control, which optimizes the speed of applying and reducing the hydraulic pressure. And it realizes the fine shifting condition by applying and reducing hydraulic pressure slowly when the gear shifting shock is important and quickly when the high response is required.

4. CLUTCH HYDRAULIC PRESSURE CONTROL

The engine and ECT ECU controls the clutch operation in the optimal timing and with the best hydraulic pressure according to the engine torque data and the number of the clutch revolution

5. LOCK–UP AND FLEXIBLE LOCK–UP CONTROL

The engine and ECT ECU carries out the lock–up control by controlling the TERMINAL SLU+ of the module according to the shift position, vehicle speed, throttle opening degree and running conditions. The engine and ECT ECU also steadily keeps applying the lock–up clutch a delicate slippage to improve the transmission efficiency (Fuel efficiency) of the torque converter.

6. STOP LIGHT SW CIRCUIT

If the brake pedal is depressed (Stop light SW on) when driving in lock–up condition, a signal is input to TERMINAL STP of the engine and ECT ECU. The engine and ECT ECU operates and cuts the current to the solenoid to release lock–up.

7. AI–SHIFT CONTROL

The engine and ECT ECU judges whether the road is downslope or upslope by detecting the throttle opening degree or the vehicle's speed. Moreover it can expect the winding roads by detecting the turning condition of the vehicle. The engine and ECT ECU keeps unnecessary shifting up from the fourth gear from operating and carries out the automatic shifting down to the third gear in order to control the vehicle running according to the road conditions. The engine and ECT ECU also reads the driver's intention during driving from his (her) accelerating operation and the running conditions of the vehicle. As a result of that, ideal shifting patters for each driver are automatically selected without any switching operations.

8. ECT PATTERN SELECT SW CIRCUIT

When the ECT pattern select SW is switched to PWR, a signal is input to TERMINAL PWR of the passenger side J/B ECU, and control signals are distributed to the engine and ECT ECU through communication control of the J/B ECU. This enables shift–up and shift–down at a higher speed range.

SERVICE HINTS

E4 (B), E5 (C), E6 (D), E7 (E) ENGINE AND ECT ECU

(B) 7, (B) 4–GROUND : Always approx. **12** volts
(B) 17–GROUND : Approx. **12** volts with ignition SW at **ON** or **ST** position
(B) 2, (C) 1, (C) 2, (C) 3, (D) 4, (E) 7–GROUND : Always continuity

C12 COMBINATION METER

1–GROUND : Approx. **12** volts with ignition SW at **ON** or **ST** position
12, 13–GROUND : Always approx. **12** volts
11, 22–GROUND : Always continuity

: PARTS LOCATION

Code	See Page	Code	See Page	Code	See Page
A14	130 (RHD)	E7 E	126 (RHD)	J18 B	131 (RHD)
A22	130 (RHD)	E11	131 (RHD)	K5	132 (RHD)
A27	130 (RHD)	G1	131 (RHD)	N1	129 (RHD)
C6	130 (RHD)	J1 A	128 (RHD)	O1	129 (RHD)
C12	130 (RHD)	J2 B	128 (RHD)	P3 A	132 (RHD)
D1	131 (RHD)	J3 A	128 (RHD)	P4 B	132 (RHD)
D2	131 (RHD)	J4 B	128 (RHD)	S3	129 (RHD)
E1	126 (RHD)	J5 A	128 (RHD)	S8	133 (RHD)
E2	126 (RHD)	J7	128 (RHD)	S12 B	133 (RHD)
E3 A	126 (RHD)	J11	131 (RHD)	S13 C	133 (RHD)
E4 B	126 (RHD)	J13	131 (RHD)	S21	133 (RHD)
E5 C	126 (RHD)	J14	131 (RHD)	T2	129 (RHD)
E6 D	126 (RHD)	J17 A	131 (RHD)	T3	129 (RHD)

: RELAY BLOCKS

Code	See Page	Relay Blocks (Relay Block Location)
1	81	Engine Room No.1 R/B (Engine Compartment Left)

: JUNCTION BLOCK AND WIRE HARNESS CONNECTOR

Code	See Page	Junction Block and Wire Harness (Connector Location)
DC	99 (RHD)	Engine Room Main Wire and Driver Side J/B (Right Kick Panel)
DE	100 (RHD)	Instrument Panel Wire and Driver Side J/B (Right Kick Panel)
DF		
DH		
PC	106 (RHD)	Engine Room Main Wire and Passenger Side J/B (Left Kick Panel)
PE	105 (RHD)	Instrument Panel Wire and Passenger Side J/B (Left Kick Panel)
PF		
PH		

: CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
EB1	152 (RHD)	Engine Wire and Engine Room Main Wire (Inside of ECU Box)
IC3	154 (RHD)	Instrument Panel Wire and Engine Room Main Wire (Cowl Side Panel LH)
IC4		
IH3	156 (RHD)	Instrument Panel Wire and Engine Room Main Wire (Cowl Side Panel RH)

: GROUND POINTS

Code	See Page	Ground Points Location
EB	152 (RHD)	Cowl Top Side RH
ED	152 (RHD)	Under the Fusible Link Block
EE	152 (RHD)	RH Side of Cylinder Head
EF	152 (RHD)	LH Side of Cylinder Head
IG	154 (RHD)	Cowl Side Panel LH
IH	154 (RHD)	Left Side of Shift Lever
II		

: SPLICE POINTS

Code	See Page	Wire Harness with Splice Points	Code	See Page	Wire Harness with Splice Points
E1	152 (RHD)	Engine Room Main Wire	E9	152 (RHD)	Engine Room Main Wire