ECT AND A/T INDICATOR

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 ECT 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 water temp. sensor and the vehicle speed signal from speed sensor (Transmission Output) 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. LOCK–UP OPERATION

When the engine and ECT ECU decides based on each signal that the lock–up condition has been met, the current flows through TERMINAL SLU+ of the engine and ECT ECU to TERMINAL 3 of the ECT solenoid to TERMINAL 7 to TERMINAL SLU– of the engine and ECT ECU to GROUND.

3. 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.

4. ECT PATTERN SELECT SW CIRCUIT

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

SERVICE HINTS

E1 ECT SOLENOID

9–15 : **5.1**–**5.5** Ω
3–7 : **5.1**–**5.5** Ω
4, 8–GROUND : **11**–**15** Ω

E10 ECT PATTERN SELECT SW

2–4 : Closed with select SW at **PWR** position
5–4 : Only closed with select SW at **SNOW** position

S2 SPEED SENSOR (TRANSMISSION INPUT)

1–2 : **560**–**680** Ω

S3 SPEED SENSOR (TRANSMISSION OUTPUT)

1–2 : **560**–**680** Ω

E2 (A), E3 (B), E4 (C), E5 (D), E6 (E) ENGINE AND ECT ECU

BATT–E1 : Always approx. **12** volts
B–E1 : Approx. **12** volts with ignition SW **ON** or **ST** position
B2–E1 : Approx. **12** volts with ignition SW **ON** or **ST** position
MREL–E1 : Approx. **12** volts with ignition SW **ON** or **ST** position
STA–E1 : Approx. **12** volts with ignition SW **ST** position and shift lever other than **P** or **N** position

N1 A/T INDICATOR LIGHT SW [NEUTRAL START SW]

3–1 : Closed with shift lever in **P** position
3–2 : Closed with shift lever in **R** position
3–5 : Closed with shift lever in **N** position
3–7 : Closed with shift lever in **D** position or **3** position
3–4 : Closed with shift lever in **2** position
3–8 : Closed with shift lever in **L** position

: PARTS LOCATION

Code		See Page	Code		See Page	Code	See Page
A9		96 (LHD)	E4	C	96 (LHD)	J11	99 (LHD)
		104 (RHD)			104 (RHD)		107 (RHD)
A14	A	98 (LHD)	E5	D	96 (LHD)	J16	100 (LHD)
		106 (RHD)			104 (RHD)	J17	100 (LHD)
A15	B	98 (LHD)	E6	E	96 (LHD)	K3	99 (LHD)
		106 (RHD)			104 (RHD)	N1	97 (LHD)
B6	A	98 (LHD)	E10		99 (LHD)		105 (RHD)
		106 (RHD)			107 (RHD)	S2	97 (LHD)
C3		96 (LHD)	I13		97 (LHD)		105 (RHD)
		104 (RHD)			105 (RHD)	S3	97 (LHD)
C10		98 (LHD)	J1	A	97 (LHD)		105 (RHD)
		106 (RHD)		B	105 (RHD)	S8	99 (LHD)
D2		106 (RHD)	J2	A	97 (LHD)		107 (RHD)
D4		98 (LHD)			105 (RHD)	S11	99 (LHD)
		106 (RHD)	J3	B	97 (LHD)		107 (RHD)
E1		96 (LHD)			105 (RHD)	T2	97 (LHD)
		104 (RHD)	J4		97 (LHD)		105 (RHD)
E2	A	96 (LHD)			105 (RHD)	T5	107 (RHD)
		104 (RHD)	J5		107 (RHD)	W2	97 (LHD)
E3	B	96 (LHD)	J7		99 (LHD)		105 (RHD)
		104 (RHD)			107 (RHD)		

: RELAY BLOCKS

Code	See Page	Relay Blocks (Relay Block Location)
1	80 (LHD)	Engine Room No.1 R/B (Engine Compartment Right)
	81 (RHD)	Engine Room No.1 R/B (Engine Compartment Left)
2	80 (LHD)	Engine Room No.2 R/B (Engine Compartment Right)
	81 (RHD)	Engine Room No.2 R/B (Engine Compartment Left)

: JUNCTION BLOCK AND WIRE HARNESS CONNECTOR

Code	See Page	Junction Block and Wire Harness (Connector Location)
1A	88 (RHD)	Engine Room Main Wire and Driver Side J/B (Right Kick Panel)
1E	82 (LHD)	Instrument Panel Wire and Driver Side J/B (Left Kick Panel)
	88 (RHD)	Instrument Panel Wire and Driver Side J/B (Right Kick Panel)
1G	82 (LHD)	Engine Room Main Wire and Driver Side J/B (Left Kick Panel)
	88 (RHD)	Instrument Panel Wire and Driver Side J/B (Right Kick Panel)
1H	88 (RHD)	Instrument Panel Wire and Driver Side J/B (Right Kick Panel)
1K	82 (LHD)	Engine Room Main Wire and Driver Side J/B (Left Kick Panel)
2A	84 (LHD)	Engine Room Main Wire and Passenger Side J/B (Right Kick Panel)
2B		
2E	84 (LHD)	Instrument Panel Wire and Passenger Side J/B (Right Kick Panel)
	90 (RHD)	Instrument Panel Wire and Passenger Side J/B (Left Kick Panel)
2F	84 (LHD)	Instrument Panel Wire and Passenger Side J/B (Right Kick Panel)
2G	90 (RHD)	Engine Room Main Wire and Passenger Side J/B (Left Kick Panel)
2H	90 (RHD)	Instrument Panel Wire and Passenger Side J/B (Left Kick Panel)
2I	90 (RHD)	Floor No.2 Wire and Passenger Side J/B (Left Kick Panel)
2K	90 (RHD)	Engine Room Main Wire and Passenger Side J/B (Left Kick Panel)
2L	84 (LHD)	Floor Wire and Passenger Side J/B (Right Kick Panel)
	90 (RHD)	Instrument Panel Wire and Passenger Side J/B (Left Kick Panel)
2N	90 (RHD)	Engine Room Main Wire and Passenger Side J/B (Left Kick Panel)

ECT AND A/T INDICATOR

: CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
EA1	112 (LHD)	Engine Wire and Engine Room Main Wire (Inside of the ECU Box)
	122 (RHD)	
IA2	114 (LHD)	Instrument Panel Wire and Engine Room Main Wire (Near the Driver Side J/B)
IA3	114 (LHD)	Instrument Panel Wire and Engine Room Main Wire (Near the Driver Side J/B)
	124 (RHD)	Instrument Panel Wire and Engine Room Main Wire (Near the Passenger Side J/B)
IB1	114 (LHD)	Instrument Panel Wire and Floor No.2 Wire (Near the Driver Side J/B)
IE1	116 (LHD)	Floor No.3 Wire and Floor No.2 Wire (Near the Steering Column)
IF1	126 (RHD)	Instrument Panel No.3 Wire and Instrument Panel Wire (Right Side of the Instrument Panel)

: GROUND POINTS

Code	See Page	Ground Points Location
EA	112 (LHD)	Front Side of Cylinder Head
	122 (RHD)	
EB	112 (LHD)	Rear Side of Cylinder Head
	122 (RHD)	
EC	112 (LHD)	Left Fender Apron
	122 (RHD)	
ID	114 (LHD)	Cowl Side Panel LH
	124 (RHD)	
IH	114 (LHD)	Front Floor Panel Center LH
	124 (RHD)	Front Floor Panel Center RH
BJ	128 (RHD)	Front Floor Panel LH
BK	118 (LHD)	Left Quarter Panel LH
BL	118 (LHD)	Front Floor Panel RH

: SPLICE POINTS

Code	See Page	Wire Harness with Splice Points	Code	See Page	Wire Harness with Splice Points
E7	112 (LHD)	Engine Wire	E8	122 (RHD)	Engine Wire
	122 (RHD)		E9	112 (LHD)	
E8	112 (LHD)			122 (RHD)	Engine Room Main Wire