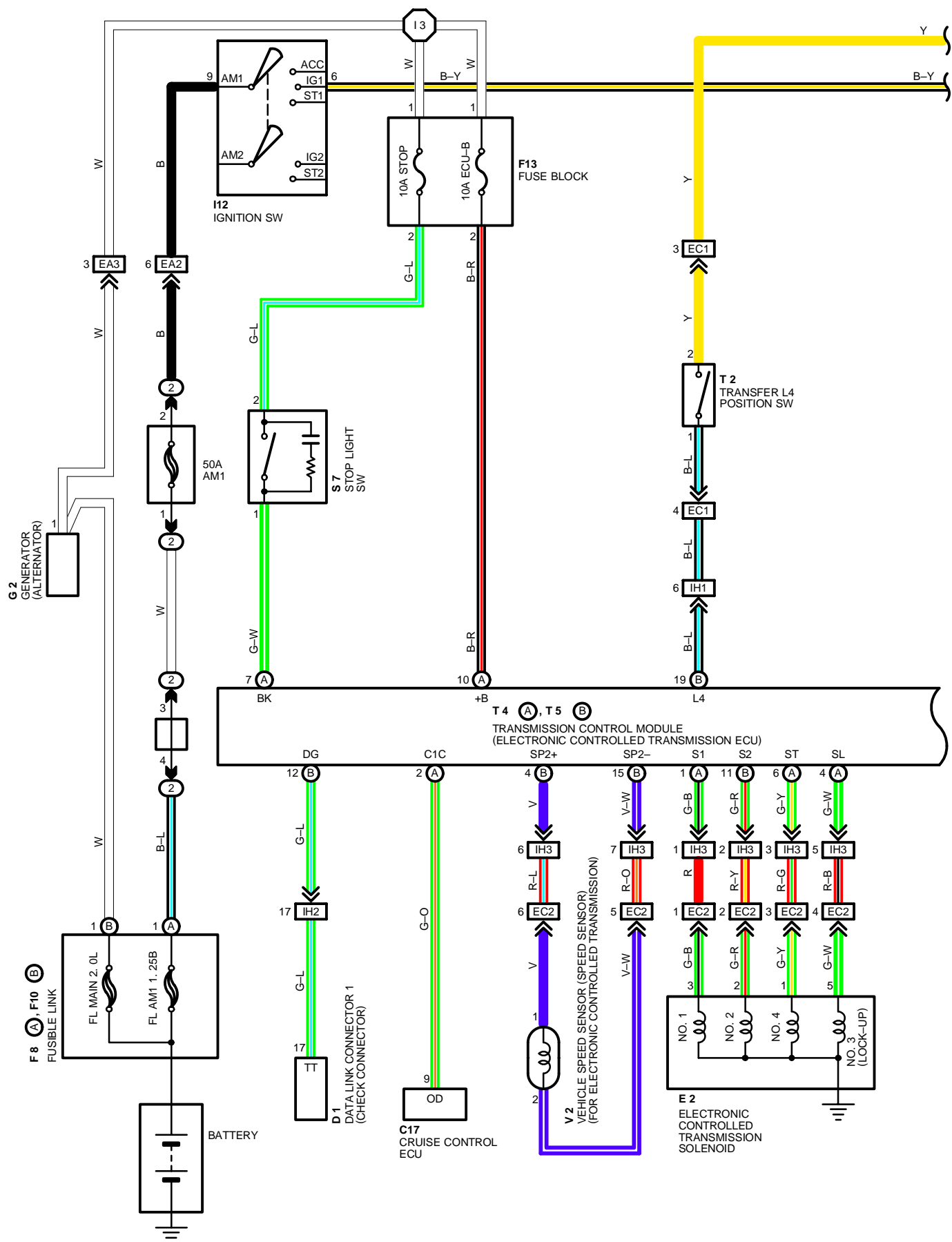
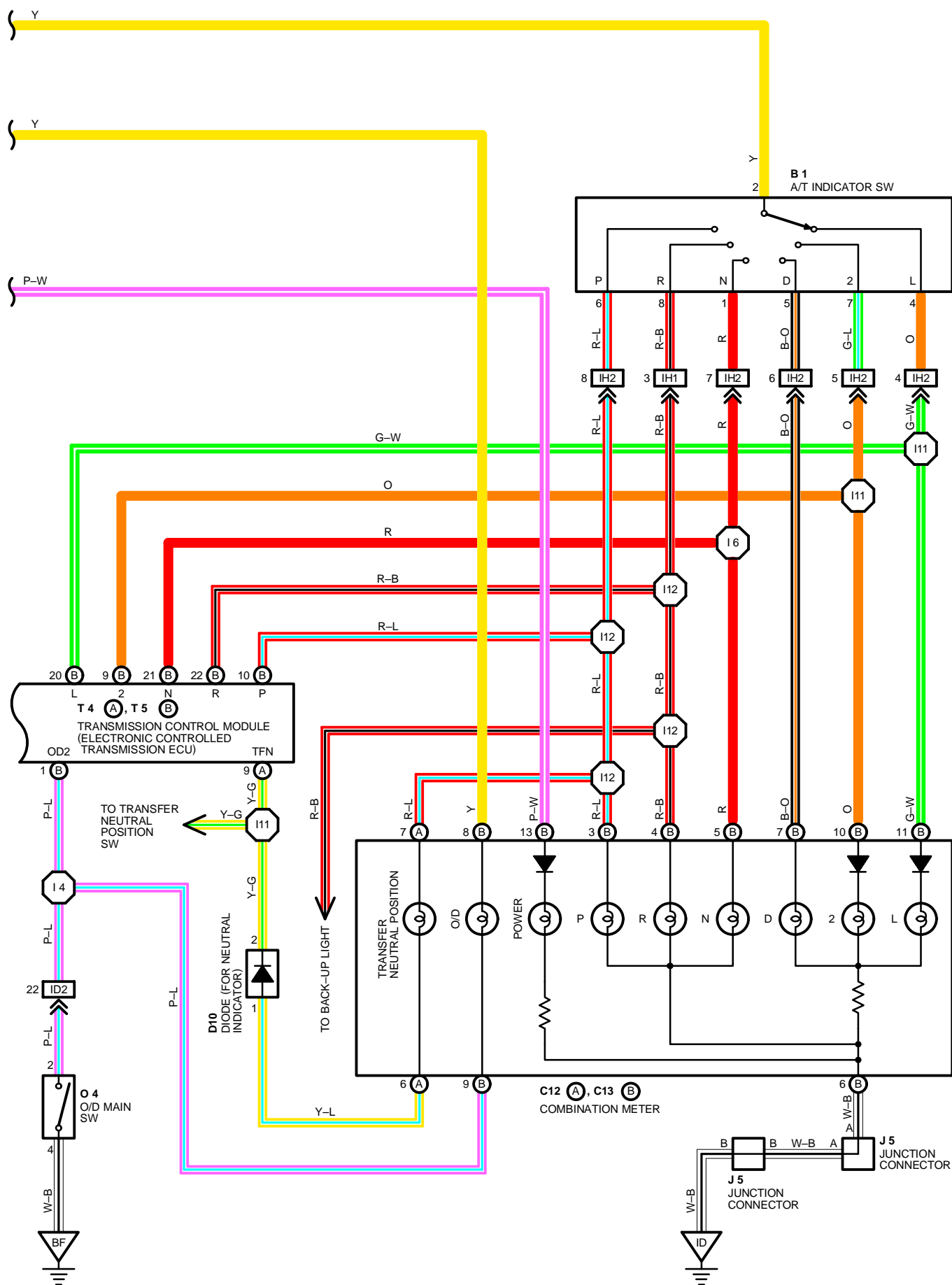


ELECTRONIC CONTROLLED TRANSMISSION AND A/T INDICATOR





ELECTRONIC CONTROLLED TRANSMISSION AND A/T INDICATOR



SYSTEM OUTLINE

PREVIOUS AUTOMATIC TRANSMISSION HAVE SELECTED EACH GEAR SHIFT USING MECHANICALLY CONTROLLED THROTTLE HYDRAULIC PRESSURE, GOVERNOR HYDRAULIC PRESSURE AND LOCK-UP HYDRAULIC PRESSURE. THE ELECTRONIC CONTROLLED TRANSMISSION, HOWEVER, ELECTRICALLY CONTROLS THE GOVERNOR PRESSURE AND LOCK-UP PRESSURE THROUGH THE SOLENOID VALVE. ELECTRONIC CONTROLLED TRANSMISSION ECU OF THE SOLENOID VALVE BASED ON THE INPUT SIGNALS FROM EACH SENSOR MAKES SMOOTH DRIVING POSSIBLE BY SHIFT SELECTION FOR EACH GEAR WHICH IS MOST APPROPRIATE TO THE DRIVING CONDITIONS AT THAT TIME.

1. GEAR SHIFT OPERATION

DURING DRIVING THE ELECTRONIC CONTROLLED TRANSMISSION ECU SELECTS THE SHIFT FOR EACH GEAR WHICH IS MOST APPROPRIATE TO THE DRIVING CONDITIONS, BASED ON INPUT SIGNALS FROM THE ENGINE CONTROL MODULE (ENGINE ECU) TO **TERMINALS (B) 5, (B) 6, (B) 7 AND (B) 13** OF THE ELECTRONIC CONTROLLED TRANSMISSION ECU, AND ALSO THE INPUT SIGNALS TO **TERMINAL (B) 4** OF THE ECU FROM THE SPEED SENSOR DEVOTED TO THE ELECTRONIC CONTROLLED TRANSMISSION. CURRENT IS THEN OUTPUT TO THE ELECTRONIC CONTROLLED TRANSMISSION SOLENOIDS. WHEN SHIFTING TO 1ST SPEED, CURRENT FLOWS FROM **TERMINAL (A) 1** OF THE ECU → **TERMINAL 3** OF THE ELECTRONIC CONTROLLED TRANSMISSION SOLENOID → **GROUND**, AND CONTINUITY TO THE NO.1 SOLENOID CAUSES THE SHIFT. FOR 2ND SPEED, CURRENT FLOWS FROM **TERMINAL (A) 1** OF THE ECU → **TERMINAL 3** OF THE ELECTRONIC CONTROLLED TRANSMISSION SOLENOID → **GROUND**, AND FROM **TERMINAL (B) 11** OF THE ECU → **TERMINAL 2** OF THE ELECTRONIC CONTROLLED TRANSMISSION SOLENOID → **GROUND**, AND CONTINUITY TO SOLENOIDS NO.1 AND NO. 2 CAUSES THE SHIFT. FOR 3RD SPEED, THERE IS NO CONTINUITY TO NO. 1 SOLENOID, ONLY TO NO. 2, CAUSING THE SHIFT. SHIFTING INTO 4TH SPEED (OVERDRIVE) TAKES PLACE WHEN THERE IS NO CONTINUITY TO EITHER NO. 1 OR NO. 2 SOLENOID.

2. LOCK-UP OPERATION

WHEN THE TRANSMISSION CONTROL MODULE (ELECTRONIC CONTROLLED TRANSMISSION ECU) JUDGES FROM EACH SIGNAL THAT LOCK-UP OPERATION CONDITIONS HAVE BEEN MET, CURRENT FLOWS FROM **TERMINAL (A) 4** OF THE ELECTRONIC CONTROLLED TRANSMISSION ECU → **TERMINAL 5** OF THE ELECTRONIC CONTROLLED TRANSMISSION SOLENOID → **GROUND**, CAUSING CONTINUITY TO THE LOCK-UP SOLENOID AND CAUSING LOCK-UP OPERATION.

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 (A) 7** OF THE ECU, THE ECU OPERATES AND CONTINUITY TO THE LOCK-UP SOLENOID IS CUT.

4. OVERDRIVE CIRCUIT

* O/D MAIN SW ON

WHEN THE O/D MAIN SW IS TURNED ON, A SIGNAL IS INPUT TO **TERMINAL (B) 1** OF THE ECU AND ECU OPERATION CAUSES GEAR SHIFT WHEN THE CONDITIONS FOR OVERDRIVE ARE MET.

* O/D MAIN SW OFF

WHEN THE OVERDRIVE SW IS TURNED OFF, THE CURRENT FLOWING THROUGH THE O/D OFF INDICATOR LIGHT FLOWS THROUGH THE O/D MAIN SW TO **GROUND**, CAUSING THE INDICATOR LIGHT TO LIGHT UP. AT THE SAME TIME, A SIGNAL IS INPUT TO **TERMINAL (B) 1** OF THE ECU AND ECU OPERATION PREVENTS SHIFT INTO OVERDRIVE.

5. ELECTRONIC CONTROLLED TRANSMISSION PATTERN SELECT SW CIRCUIT

IF THE ELECTRONIC CONTROLLED TRANSMISSION PATTERN SELECT SW IS CHANGED FROM NORMAL TO POWER, THE CURRENT FLOWING THROUGH THE POWER INDICATOR FLOWS TO **GROUND**, CURRENT FLOWS TO **TERMINAL (B) 14** OF THE TRANSMISSION CONTROL MODULE (ELECTRONIC CONTROLLED TRANSMISSION ECU), THE ECU OPERATES, AND SHIFT UP AND SHIFT DOWN OCCUR AT HIGHER VEHICLE SPEEDS THAN WHEN THE SW IS IN NORMAL POSITION.

6. TRANSFER SHIFT OPERATION

WHEN THE TRANSFER SHIFT LEVER IS MOVED TO **L4** POSITION, A SIGNAL FROM TRANSFER **L4** POSITION SW IS INPUT TO THE **TERMINAL (A) 9** OF THE TRANSMISSION CONTROL MODULE (ELECTRONIC CONTROLLED TRANSMISSION ECU), THAN SHIFT TO **L4** OCCURS.

ELECTRONIC CONTROLLED TRANSMISSION AND A/T INDICATOR

SERVICE HINTS

T 4(A), T 5(B) TRANSMISSION CONTROL MODULE (ELECTRONIC CONTROLLED TRANSMISSION ECU)

- S1 –GND : 9.0–14.0 VOLTS WITH STOP VEHICLE AT **N** OR **D** POSITION
- S2 –GND : 0–1.5 VOLTS WITH STOP VEHICLE
- SL –GND : 0–1.5 VOLTS WITH STOP VEHICLE
- ST –GND : 0–1.5 VOLTS WITH STOP VEHICLE
- BK –GND : 7.5–14.0 VOLTS WITH BRAKE PEDAL DEPRESSED
0–1.5 VOLTS WITH BRAKE PEDAL RELEASED
- TFN –GND : 0–3.0 VOLTS WITH TRANSFER POSITION IS **N** POSITION
9.0–14.0 VOLTS WITH TRANSFER POSITION IS EXCEPT **N** POSITION
- B+ –GND : ALWAYS 9.0–14.0 VOLTS
- IG –GND : 9.0–14.0 VOLTS WITH STOP ENGINE AND IGNITION SW ON
- OD2 –GND : 0–3.0 VOLTS WITH O/D MAIN SW TURNED ON
9.0–14.0 VOLTS WITH O/D MAIN SW TURNED OFF
- C/C –GND : 9.0–14.0 VOLTS WITH STOP ENGINE AND IGNITION SW ON
- ECT1 –GND : 9.0–14.0 VOLTS WITH STOP ENGINE AND IGNITION SW ON
- OD1 –GND : 9.0–14.0 VOLTS WITH ENGINE COOLANT TEMP. 55°C (121°F) MORE THAN
0–3.0 VOLTS WITH ENGINE COOLANT TEMP. 55°C (121°F) OR LESS
- SP2+ –SP2– : PULSE GENERATION WITH VEHICLE MOVING
- SP1 –GND : PULSE GENERATION WITH VEHICLE MOVING
- NE –GND : PULSE GENERATION WITH ENGINE IDLING SPEED
- IDL –GND : 0–3.0 VOLTS WITH THROTTLE VALVE FULLY CLOSE
9.0–14.0 VOLTS WITH THROTTLE VALVE FULLY OPEN
- VA –GND : 3.5–4.5 VOLTS WITH THROTTLE VALVE FULLY CLOSE
2.5–3.5 VOLTS WITH THROTTLE VALVE FULLY OPEN
- 2 –GND : 7.5–14.0 VOLTS WITH SHIFT LEVER AT **2** POSITION
0–1.5 VOLTS WITH SHIFT LEVER AT EXCEPT **2** POSITION
- P –GND : 7.5–14.0 VOLTS WITH SHIFT LEVER AT **P** POSITION
0–1.5 VOLTS WITH SHIFT LEVER AT EXCEPT **P** POSITION
- L –GND : 7.5–14.0 VOLTS WITH SHIFT LEVER AT **L** POSITION
0–1.5 VOLTS WITH SHIFT LEVER AT EXCEPT **L** POSITION
- N –GND : 7.5–14.0 VOLTS WITH SHIFT LEVER AT **N** POSITION
0–1.5 VOLTS WITH SHIFT LEVER AT EXCEPT **N** POSITION
- R –GND : 7.5–14.0 VOLTS WITH SHIFT LEVER AT **R** POSITION
0–1.5 VOLTS WITH SHIFT LEVER AT EXCEPT **R** POSITION
- DG –GND : 0–1.5 VOLTS STOP ENGINE AND IGNITION SW ON
- ECT2 –GND : 2.0–3.0 VOLTS WITH ENGINE COOLANT TEMP. 80°C (176°F) MORE THAN
- PWR –GND : 7.5–14.0 VOLTS WITH PATTERN SELECT SW AT **POWER** POSITION
0–1.5 VOLTS WITH PATTERN SELECT SW AT **NORMAL** POSITION
- ESA1 –GND : 4.5–5.5 VOLTS WITH ENGINE IDLING SPEED (ENGINE START AFTER 10 SECONDS)
- ESA2 –GND : 4.5–5.5 VOLTS WITH ENGINE IDLING SPEED (ENGINE START AFTER 10 SECONDS)
- ESA3 –GND : 4.5–5.5 VOLTS WITH ENGINE IDLING SPEED (ENGINE START AFTER 10 SECONDS)
- L4 –GND : 7.5–14.0 VOLTS WITH TRANSFER POSITION **L4** POSITION
0–1.5 VOLTS WITH TRANSFER POSITION **L4** POSITION

E 2 ELECTRONIC CONTROLLED TRANSMISSION SOLENOID

- 1, 2, 3, 4, 5–GROUND : 11–15 Ω

E 6 ELECTRONIC CONTROLLED TRANSMISSION PATTERN SELECT SW

- 7–8 : CLOSED WITH ELECTRONIC CONTROLLED TRANSMISSION PATTERN SELECT SW AT **POWER** POSITION

O 4 O/D MAIN SW

- 2–4 : OPEN WITH O/D MAIN SW AT **ON** POSITION
CLOSE WITH O/D MAIN SW AT **OFF** POSITION

○ : PARTS LOCATION

CODE	SEE PAGE	CODE	SEE PAGE	CODE	SEE PAGE
B 1	22	E 6	23	J 4	23
C11	B 23	E 7	A 23	J 5	23
C12	A 23	E 9	B 23	O 4	24
C13	B 23	F 8	A 22	S 7	23
C17	23	F10	B 22	T 2	22
D 1	22	F13	23	T 4	A 23
D10	23	G 2	22	T 5	B 23
E 2	22	I12	23	V 2	22

○ : RELAY BLOCKS

CODE	SEE PAGE	RELAY BLOCKS (RELAY BLOCK LOCATION)
2	18	R/B NO. 2 (FRONT SIDE OF LEFT FENDER)

□ : CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

CODE	SEE PAGE	JOINING WIRE HARNESS AND WIRE HARNESS (CONNECTOR LOCATION)
EA2	26	COWL WIRE AND ENGINE ROOM MAIN WIRE (LEFT FENDER)
EA3		
EC1	26	ENGINE WIRE AND TRANSMISSION WIRE (NEAR THE STARTER)
EC2		
ID2	28	COWL WIRE AND FLOOR NO. 1 WIRE (LEFT KICK PANEL)
IH1		
IH2	28	ENGINE WIRE AND COWL WIRE (BEHIND GLOVE BOX)
IH3		
IF1	28	INSTRUMENT PANEL WIRE AND COWL WIRE (INSTRUMENT PANEL CENTER)

▽ : GROUND POINTS

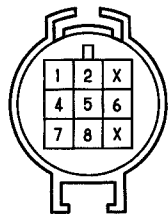
CODE	SEE PAGE	GROUND POINTS LOCATION
ID	28	LEFT KICK PANEL
IE	28	RIGHT KICK PANEL
BF	30	UNDER THE CENTER CONSOLE BOX

○ : SPLICE POINTS

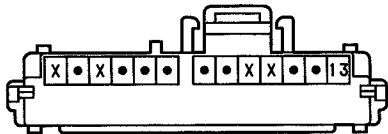
CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS	CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS
E 6	26	ENGINE ROOM MAIN WIRE	I 6		
E 9	26	ENGINE WIRE	I 9	28	COWL WIRE
I 3	28		I11		
I 4		COWL WIRE	I12		

ELECTRONIC CONTROLLED TRANSMISSION AND A/T INDICATOR

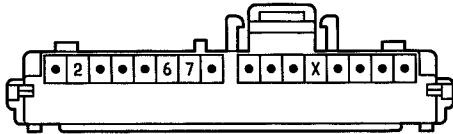
B 1 GRAY



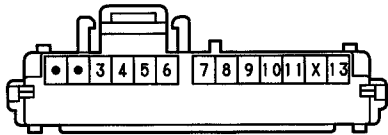
C11 (B) BLUE



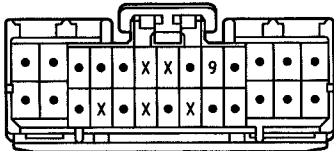
C12 (A)



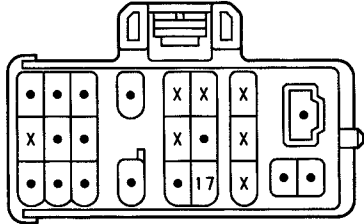
C13 (B) BROWN



C17 GRAY



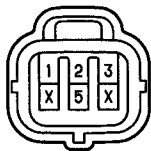
D 1 BLACK



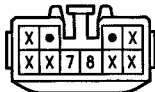
D10 BLACK



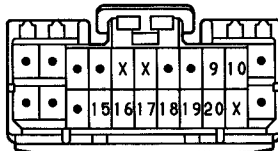
E 2 BLACK



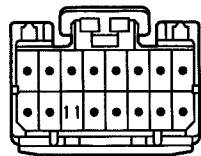
E 6 BLUE



E 7 (A) DRAK GRAY



E 9 (B) DRAK GRAY



F 8 (A), F10 (B)



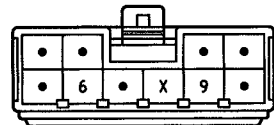
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(SEE PAGE 20)

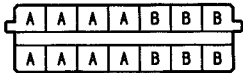
G 2



I12 BLACK

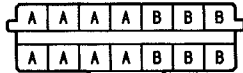


J 4 ORANGE



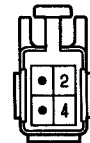
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J 5 ORANGE

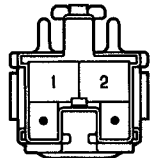


(HINT:SEE PAGE 7)

O 4 BLUE



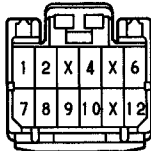
S 7 BLACK



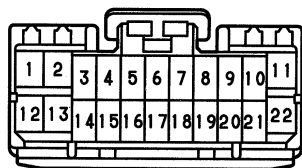
T 2 GRAY



T 4 (A)



T 5 ⑧



V 2 BLACK

