

CRUISE CONTROL

SYSTEM OUTLINE

CURRENT IS APPLIED AT ALL TIMES THROUGH **STOP** FUSE TO **TERMINAL 1** OF THE CONTROL ECU AND **TERMINAL 2** OF STOP LIGHT SWITCH.

WHEN THE IGNITION SWITCH TURNED TO ON, THE CURRENT FLOWS THROUGH **GAUGE** FUSE TO **TERMINAL 5** OF CRUISE CONTROL INDICATOR LIGHT. THE CURRENT THROUGH ECU-IG FUSE FLOWS TO **TERMINAL 14** OF CRUISE CONTROL ECU.

WHEN THE IGNITION SWITCH IS ON AND THE CRUISE CONTROL MAIN SWITCH IS TURNED ON, A SIGNAL IS INPUT FROM **TERMINAL 15** OF CRUISE CONTROL MAIN SWITCH TO **TERMINAL 4** OF CRUISE CONTROL ECU. AS A RESULT, THE CRUISE CONTROL ECU FUNCTIONS AND THE CURRENT TO **TERMINAL 14** OF CRUISE CONTROL ECU TO **TERMINAL 13** OF CRUISE CONTROL ECU → **GROUND**, AND THE CRUISE CONTROL SYSTEM IS IN A CONDITION READY FOR OPERATION.

AT THE SAME TIME, THE CURRENT THROUGH THE **GAUGE** FUSE FLOWS FROM **TERMINAL 5** OF CRUISE CONTROL INDICATOR LIGHT → **TERMINAL 8** → **TERMINAL 5** OF CRUISE CONTROL ECU → **TERMINAL 13** → TO **GROUND**, CAUSING THE CRUISE CONTROL INDICATOR LIGHT TO LIGHT UP, INDICATING THAT THE CRUISE CONTROL IS READY FOR OPERATION.

1. SET OPERATION

WHEN THE CRUISE CONTROL MAIN SWITCH IS TURNED ON AND THE SET SWITCH IS PUSHED WITH THE VEHICLE SPEED WITHIN THE SET LIMIT (APPROX. **36** KM/H, **22** MPH TO **200** KM/H, **124** MPH), A SIGNAL IS INPUT TO **TERMINAL 18** OF THE CRUISE CONTROL ECU AND THE VEHICLE SPEED AT THE TIME THE SET SWITCH IS RELEASED IS MEMORIZED IN THE ECU AS THE SET SPEED.

2. SET SPEED CONTROL

DURING CRUISE CONTROL DRIVING, THE ECU COMPARES THE SET SPEED MEMORIZED IN THE ECU WITH THE ACTUAL VEHICLE SPEED INPUT INTO **TERMINAL 20** OF THE CRUISE CONTROL ECU FROM THE COMBINATION METER, AND CONTROLS THE CRUISE CONTROL ACTUATOR TO MAINTAIN THE SET SPEED.

WHEN THE ACTUAL SPEED IS LOWER THAN THE SET SPEED, THE ECU CAUSES THE CURRENT TO THE CRUISE CONTROL ACTUATOR TO FLOW FROM **TERMINAL 12** → **TERMINAL 6** OF CRUISE CONTROL ACTUATOR → **TERMINAL 7** → **TERMINAL 11** OF CRUISE CONTROL ECU. AS A RESULT, THE MOTOR IN THE CRUISE CONTROL ACTUATOR IS ROTATED TO OPEN THE THROTTLE VALVE AND THE THROTTLE CABLE IS PULLED TO INCREASE THE VEHICLE SPEED. WHEN THE ACTUAL DRIVING SPEED IS HIGHER THAN THE SET SPEED, THE CURRENT TO CRUISE CONTROL ACTUATOR FLOWS FROM **TERMINAL 11** OF ECU → **TERMINAL 7** OF CRUISE CONTROL ACTUATOR → **TERMINAL 6** → **TERMINAL 12** OF CRUISE CONTROL ECU.

THIS CAUSES THE MOTOR IN THE CRUISE CONTROL ACTUATOR TO ROTATE TO CLOSE THE THROTTLE VALVE AND RETURN THE THROTTLE CABLE TO DECREASE THE VEHICLE SPEED.

3. COAST CONTROL

DURING THE CRUISE CONTROL DRIVING, WHILE THE COAST SWITCH IS ON, THE CRUISE CONTROL ACTUATOR RETURNS THE THROTTLE CABLE TO CLOSE THE THROTTLE VALVE AND DECREASE THE DRIVING SPEED. THE VEHICLE SPEED WHEN THE COAST SWITCH IS TURNED OFF IS MEMORIZED AND THE VEHICLE CONTINUES AT THE NEW SET SPEED.

4. ACCEL CONTROL

DURING CRUISE CONTROL DRIVING, WHILE THE ACCEL SWITCH IS TURNED ON, THE CRUISE CONTROL ACTUATOR PULLS THE THROTTLE CABLE TO OPEN THE THROTTLE VALVE AND INCREASE THE DRIVING SPEED. THE VEHICLE SPEED WHEN THE ACCEL SWITCH IS TURNED OFF IS MEMORIZED AND THE VEHICLE CONTINUES AT THE NEW SET SPEED.

5. RESUME CONTROL

UNLESS THE VEHICLE SPEED FALLS BELOW THE MINIMUM SPEED LIMIT (APPROX. **40** KM/H, **25** MPH) AFTER CANCELING THE SET SPEED BY THE CANCEL SWITCH, PUSHING THE RESUME SWITCH WILL CAUSE THE VEHICLE TO RESUME THE SPEED SET BEFORE CANCELLATION.

6. MANUAL CANCEL MECHANISM

IF ANY OF THE FOLLOWING OPERATIONS OCCURS DURING CRUISE CONTROL OPERATION, THE SAFETY MAGNETIC CLUTCH OF THE ACTUATOR MOTOR TURNS OFF AND THE MOTOR ROTATES TO CLOSE THE THROTTLE VALVE AND THE CRUISE CONTROL IS RELEASED.

- * PLACING THE SHIFT LEVER IN "N" POSITION (PARK/NEUTRAK POSITION SW (NEUTRAL START SWITCH) ON). "SIGNAL INPUT TO **TERMINAL 2** OF ECU"
- * DEPRESSING THE BRAKE PEDAL (STOP LIGHT SWITCH ON). "SIGNAL INPUT TO **TERMINAL 16** OF ECU"
- * DEPRESSING THE PARKING BRAKE PEDAL (PARKING BRAKE SWITCH ON). "SIGNAL INPUT TO **TERMINAL 3** OF ECU"
- * PUSH THE CANCEL SWITCH (CANCEL SWITCH ON). "SIGNAL INPUT TO **TERMINAL 18** OF ECU"

7. AUTO CANCEL FUNCTION

A) IF ANY OF THE FOLLOWING OPERATING CONDITIONS OCCURS DURING CRUISE CONTROL OPERATION, THE SET SPEED IS ERASED, CURRENT FLOW TO MAGNETIC CLUTCH IS STOPPED AND THE CRUISE CONTROL IS RELEASED. (MAIN SWITCH TURNS OFF).

WHEN THIS OCCURS, THE IGNITION SWITCH MUST BE TURNED OFF ONCE BEFORE THE MAIN SWITCH WILL TURN ON.

- * OVER CURRENT TO TRANSISTER DRIVING MOTOR AND/OR MAGNETIC CLUTCH.
- * WHEN CURRENT CONTINUED TO FLOW TO THE MOTOR INSIDE THE ACTUATOR IN THE THROTTLE VALVE "OPEN" DIRECTION.
- * OPEN CIRCUIT IN MAGNETIC CLUTCH.
- * MOMENTARY INTERRUPTION OF VEHICLE SPEED SIGNAL.
- * SHORT CIRCUIT IN CRUISE CONTROL SWITCH.
- * MOTOR DOES NOT OPERATE DESPITE THE MOTOR DRIVE SIGNAL BEING OUTPUT.

B) IF ANY OF THE FOLLOWING CONDITIONS OCCURS DURING CRUISE CONTROL OPERATION, THE SET SPEED IS ERASED IS AND THE CRUISE CONTROL IS RELEASED. (THE POWER OF MAGNETIC CLUTCH IS CUT OFF UNTIL THE SET SWITCH IS "ON" AGAIN.)

- * WHEN THE VEHICLE SPEED FALLS BELOW THE MINIMUM SPEED LIMIT, APPROX. **40 KM/H (25 MPH)**
- * WHEN THE VEHICLE SPEED FALLS MORE THAN **16 KM/H (10 MPH)** BELOW THE SET SPEED, E.G. ON AN UPWARD SLOPE.
- * WHEN POWER TO THE CRUISE CONTROL SYSTEM IS MOMENTARILY CUT OFF.

C) IF ANY OF THE FOLLOWING CONDITIONS OCCURS DURING CRUISE CONTROL OPERATION, THE CRUISE CONTROL IS RELEASED.

- * OPEN CIRCUIT FOR **TERMINAL 1** OF CRUISE CONTROL ECU AND SPLICE POINT "I 9".

8. AUTOMATIC TRANSMISSION CONTROL FUNCTION

* IN OVERDRIVE. IF THE VEHICLE SPEED BECOMES LOWER THAN THE OVERDRIVE CUT SPEED (SET SPEED MINUS APPROX. **4 KM/H, 2.5 MPH**) DURING CRUISE CONTROL OPERATION, SUCH AS DRIVING UP A HILL, THE OVERDRIVE IS RELEASED AND THE POWER INCREASED TO PREVENT A REDUCTION IN VEHICLE SPEED.

* AFTER RELEASING THE OVERDRIVE, VEHICLE SPEED BECOMES HIGHER THAN THE OVER DRIVE RETURN SPEED (SET SPEED MINUS APPROX. **2 KM/H, 1.2 MPH**) AND THE ECU JUDGES BY THE SIGNALS FROM POTENTIONMETER OF THE ACTUATOR THAT THE UPWARD SLOPE HAS FINISHED, OVERDRIVE IS RESUMED AFTER APPROXIMATELY **6 SECONDS**.

* DURING CRUISE CONTROL DRIVING, THE CRUISE CONTROL OPERATION SIGNAL IS OUTPUT FROM THE CRUISE CONTROL ECU TO THE ELECTRONIC CONTROLLED TRANSMISSION ECU UP ON RECEIVING THIS SIGNAL, THE ELECTRONIC CONTROLLED TRANSMISSION ECU CHANGES THE SHIFT PATTERN TO NORMAL.

TO MAINTAIN SMOOTH CRUISE CONTROL OPERATION (ON A DOWNWARD SLOPE ETC.), LOCK-UP RELEASE OF THE TRANSMISSION WHEN THE IDLING POINT OF THE THROTTLE POSITION IS "ON" IS FORBIDDEN.

SERVICE HINTS

C 3 CRUISE CONTROL ACTUATOR

1-3 : APPROX. **2 KΩ**

5-4 : APPROX. **38.5 Ω**

C17 CRUISE CONTROL ECU

14-GROUND: APPROX. **12 VOLTS** WITH IGNITION SW AT **ON** POSITION

1-GROUND : ALWAYS APPROX. **12 VOLTS**

3-GROUND : CONTINUITY WITH PARKING BRAKE LEVER PULLED UP (ONE OF THE CANCEL SW) OR BRAKE FLUID LEVEL SW ON

20-GROUND: **4 PULSE** WITH **1 ROTATION** OF ROTOR SHAFT

17-GROUND: CONTINUITY WITH CANCEL SW ON IN CONTROL SW

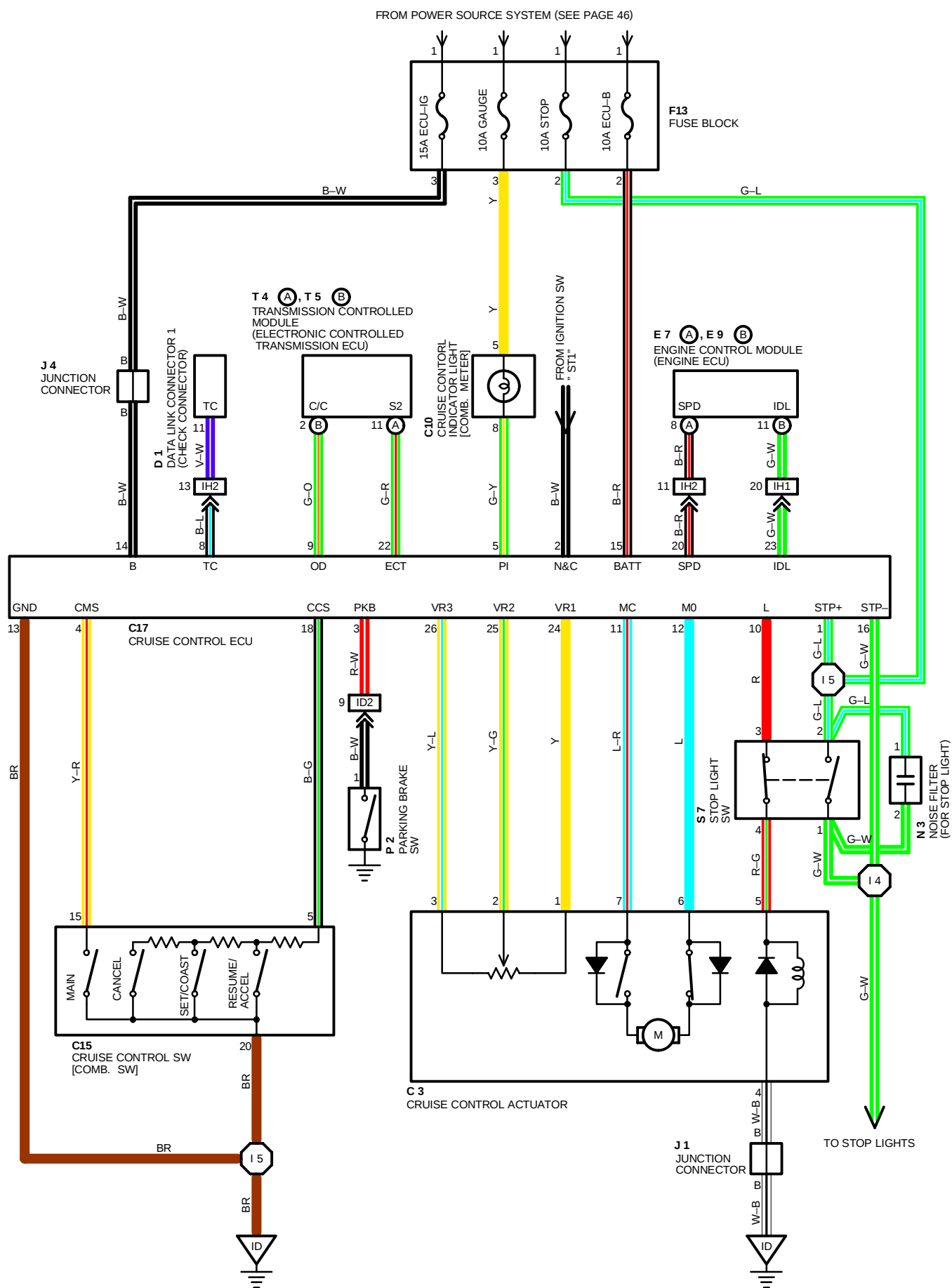
18-GROUND: CONTINUITY WITH RES/ACC SW ON IN CONTROL SW

19-GROUND: CONTINUITY WITH SET/COAST SW ON IN CONTROL SW

4-GROUND : CONTINUITY WITH MAIN SW ON IN CONTROL SW

13-GROUND: ALWAYS CONTINUITY

CRUISE CONTROL



 : PARTS LOCATION

CODE	SEE PAGE	CODE		SEE PAGE	CODE	SEE PAGE
C 3	22	E 7	A	23	N 3	23
C10	23	E 9	B	23	P 2	24
C15	23	F13		23	S 7	
C17	23	J 1		23	T 4	A 23
D 1	22	J 4		23	T 5	B 23

 : CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

CODE	SEE PAGE	JOINING WIRE HARNESS AND WIRE HARNESS (CONNECTOR LOCATION)
ID2	28	COWL WIRE AND FLOOR NO. 1 WIRE (LEFT KICK PANEL)
IH1	28	ENGINE WIRE AND COWL WIRE (BEHIND GLOVE BOX)
IH2		

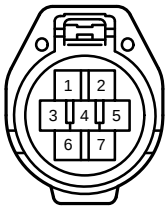
 : GROUND POINTS

CODE	SEE PAGE	GROUND POINTS LOCATION
ID	28	LEFT KICK PANEL

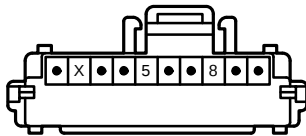
 : SPLICE POINTS

CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS	CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS
I 4	28	COWL WIRE	I 5	28	COWL WIRE

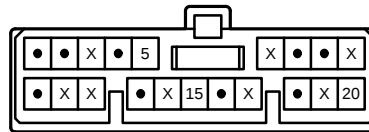
C 3 GRAY



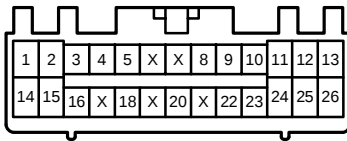
C10 GRAY



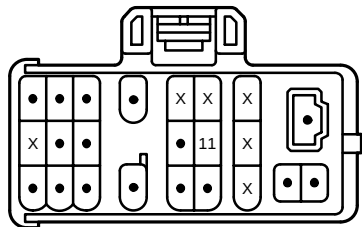
C15



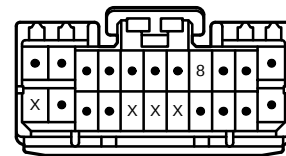
C17



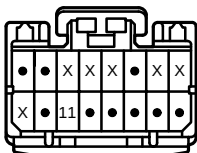
D 1 DARK GRAY



E 7 (A) DARK GRAY



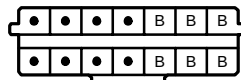
E 9 (B) DARK GRAY



F13

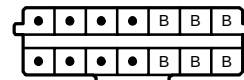
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J 1



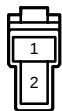
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J 4 ORANGE



(HINT : SEE PAGE 7)

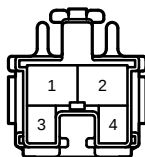
N 3 BLACK



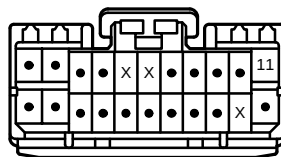
P 2



S 7 BLACK



T 4 (A) DARK GRAY



T 5 (B) DARK GRAY

