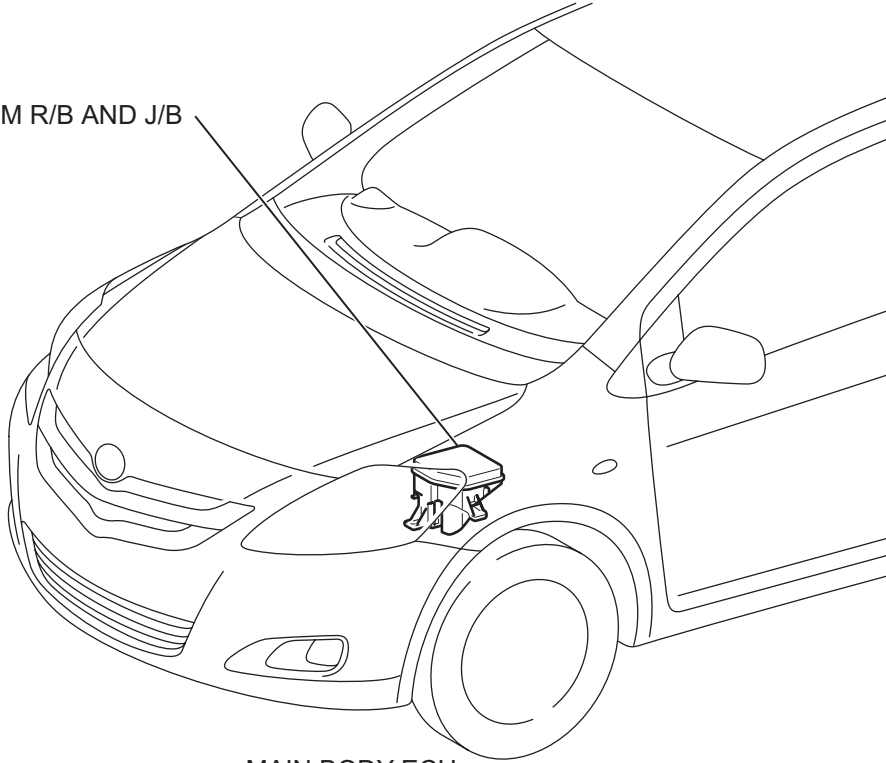


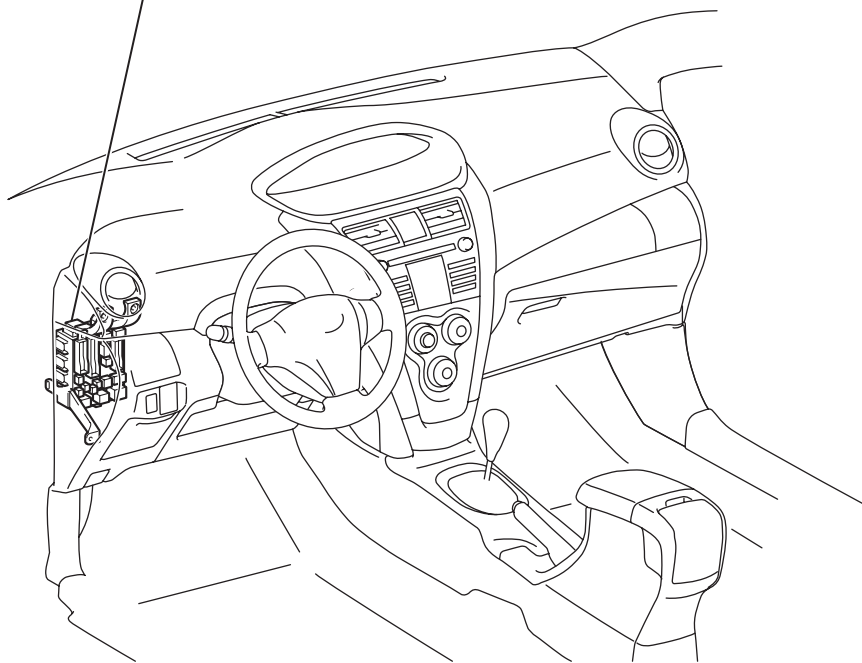
CRUISE CONTROL SYSTEM

PARTS LOCATION

ENGINE ROOM R/B AND J/B



MAIN BODY ECU
(INSTRUMENT PANEL J/B)

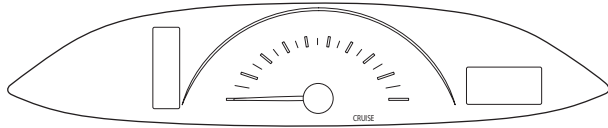


CC

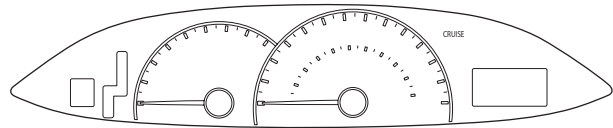
COMBINATION METER ASSEMBLY

- CRUISE MAIN INDICATOR LIGHT

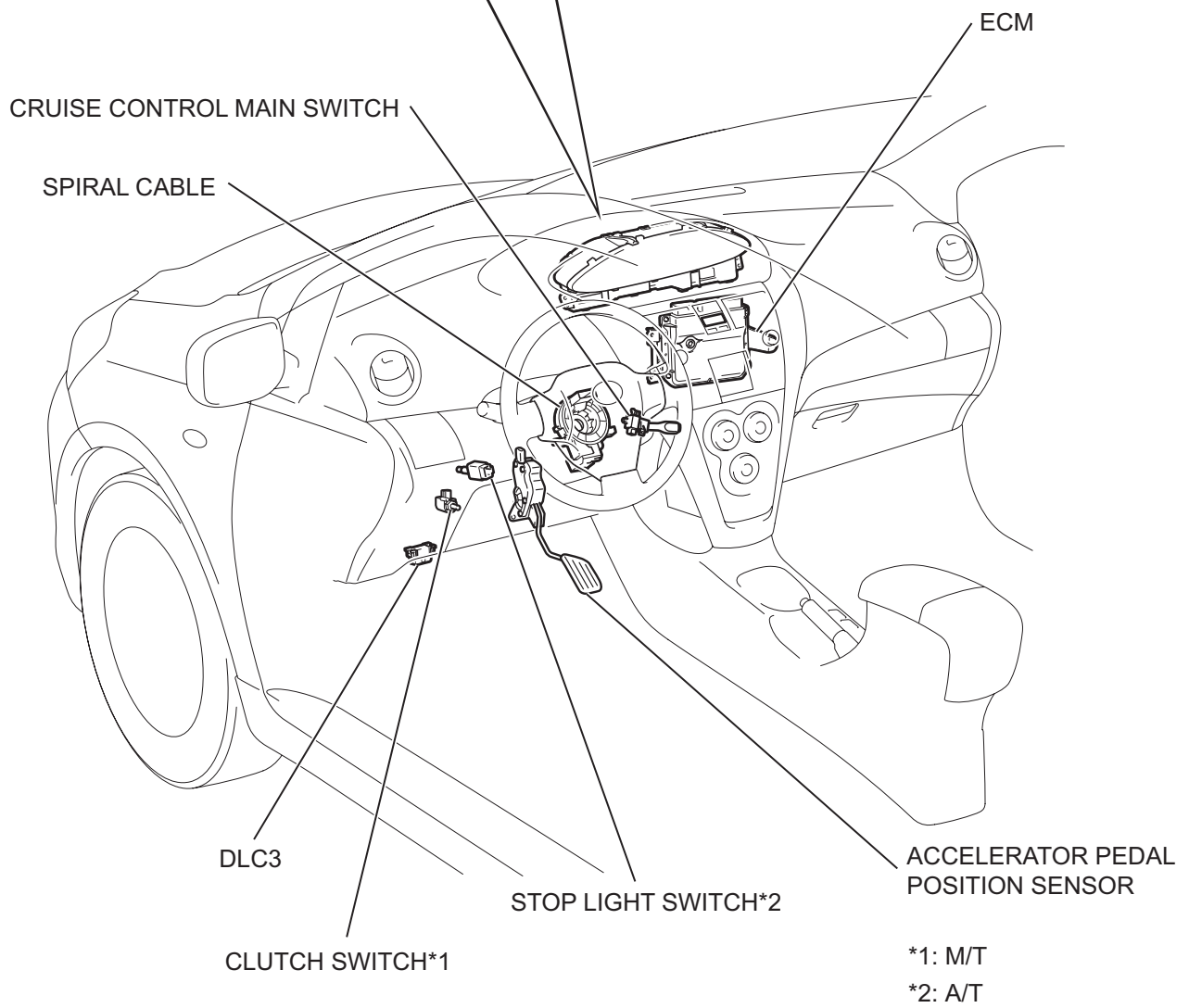
W/O TACHOMETER:

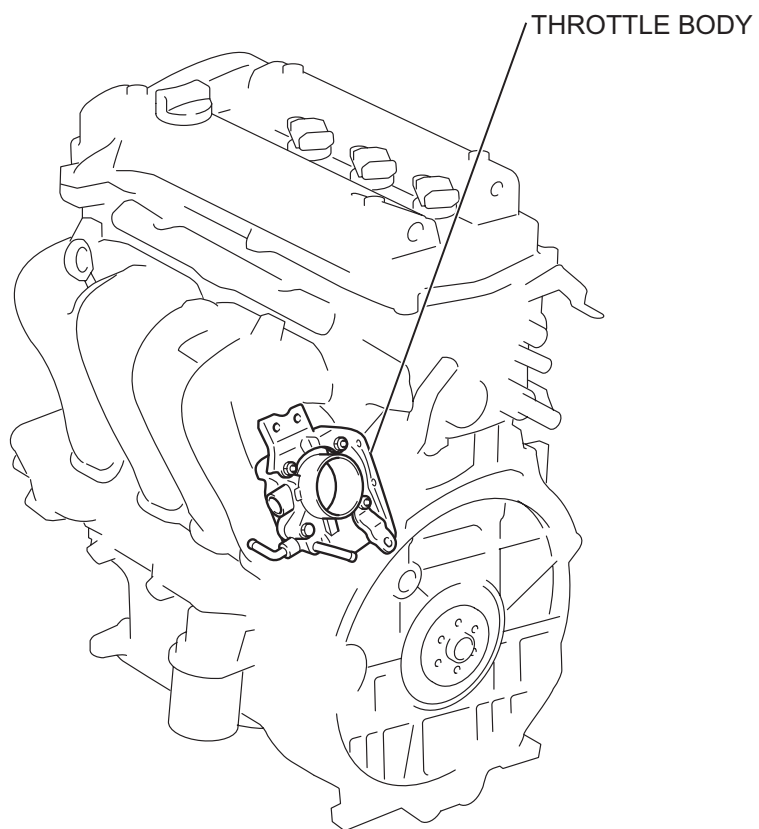


W/ TACHOMETER:



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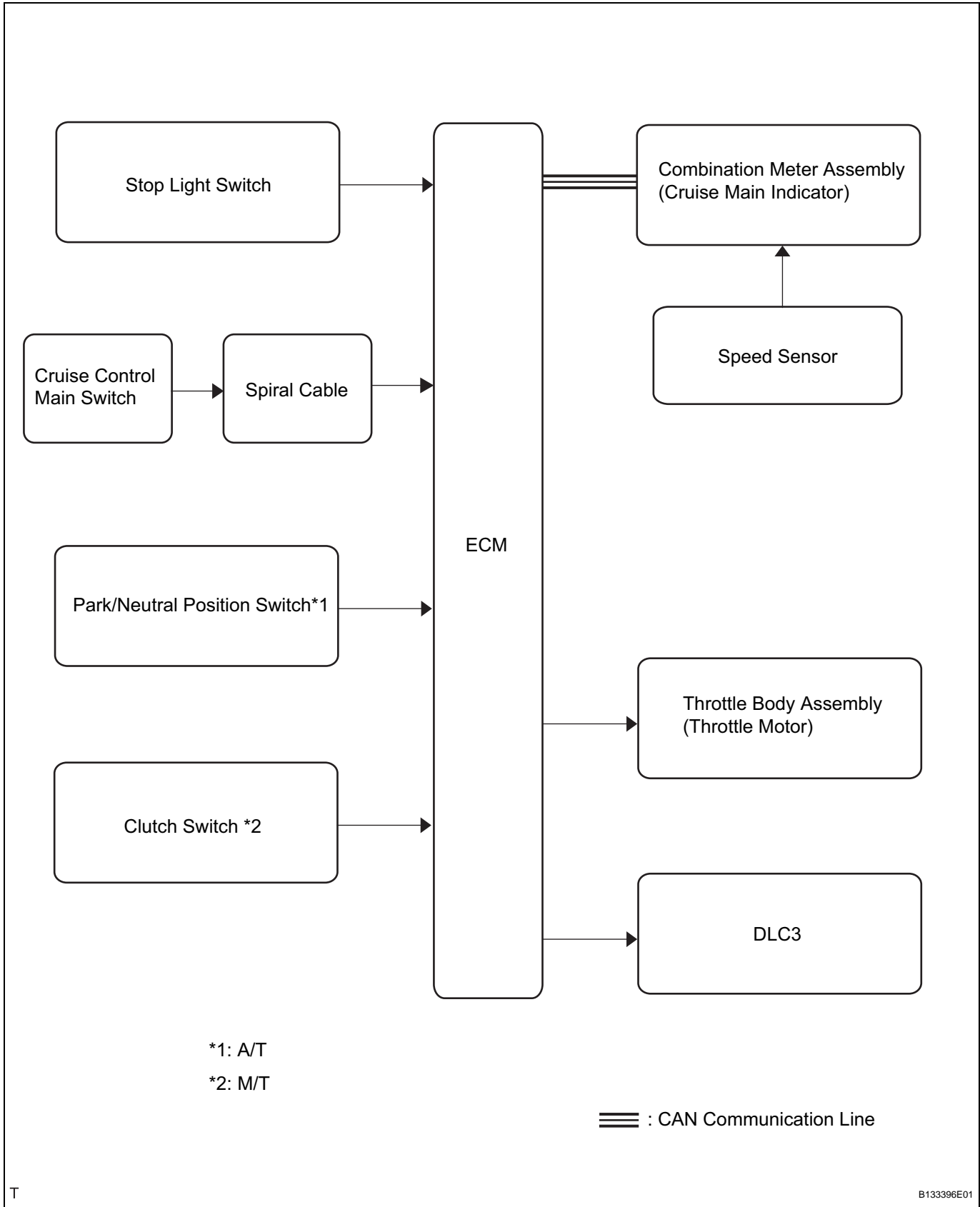




CC

SYSTEM DIAGRAM

CC



SYSTEM DESCRIPTION

1. CRUISE CONTROL SYSTEM

The cruise control system makes it possible to drive at a desired speed without using the accelerator pedal. The ECM controls the throttle opening angle based on signals from switches and sensors.

The microcomputer which controls the cruise control system is built into the ECM, and uses the throttle position sensor and motor as the actuator.

Constant speed control gets ready when the cruise control main switch ON-OFF button is pushed (the CRUISE MAIN indicator light comes on).

By operating the cruise control main switch, the driver can control the following functions.

HINT:

- The cruise control main switch is an automatic return type switch which operates only while it is pushed in each allow direction and turns off when it is released.
 - "SET" and "-", "RES" and "+", "ON" and "OFF" operations are all controlled by using the same switch.
- (a) 'SET' function
When the cruise control main switch is pushed down to "-/SET", the ECM stores the set speed and compares it with the actual vehicle speed. If the actual driving speed is greater than the set speed, the ECM sends a signal to the throttle position sensor and motor to close the throttle valve. If lower, it opens the throttle valve. The cruise control operative speed range is between the low and high speed limits.
 - (b) '+' function
The cruise set speed increases while the cruise control main switch lever is pushed up to "+/RES". The vehicle begins to cruise at the newly set speed when the cruise control main switch lever is released.
 - (c) Tap-up function
When the cruise control main switch lever is tapped up to "+/RES" (approximately 0.6 seconds), the ECM increases the stored set speed by 1 mph (1.6 km/h) at a time. However, when the difference between the driving and the stored vehicle speeds is more than 3.1 mph (approximately 5 km/h), the stored vehicle speed will not change.
 - (d) '-' function
The cruise set speed decreases while the cruise control main switch lever is pushed down to "-/SET". The vehicle begins to cruise at the newly set speed when the cruise control main switch lever is released.

- (e) Tap-down function
When the cruise control main switch lever is tapped down to "-/SET" (approximately 0.6 seconds), the ECM decreases the stored set speed by 1 mph (1.6 km/h) at a time. However, when the difference between the driving and the stored vehicle speeds is more than 3.1 mph (approximately 5 km/h), the vehicle speed, when the cruise control main switch lever is released from "-/SET", will be stored and constant speed control is maintained.
- (f) Low speed limit
The lowest possible limit of the speed setting range is approximately 25 mph (40 km/h). The cruise control system cannot be set when the vehicle speed is below that low speed limit. Cruise control operation is automatically canceled when the vehicle speed decreases to below the low speed limit while the cruise control is in operation.
- (g) High speed limit
The highest possible limit of the speed setting range is approximately 125 mph (200 km/h). The cruise control system cannot be set when the vehicle speed is over the high speed limit. The speed cannot be increased using "+/RES" with the cruise control main switch assembly to beyond the high speed limit.
- (h) 'RES' function
If the cruise control operation was canceled under the manual cancel condition (other than by turning cruise control main switch ON-OFF button off), and if the driving speed is within the limit range, pushing the cruise control main switch to "+/RES" restores the vehicle speed stored at the time of cancellation, and maintains constant speed control. Even when cruise control is canceled automatically due to the vehicle speed decreasing below the low speed limit, cruise control can be resumed when the vehicle speed returns to over the low speed limit, since the stored vehicle speed remains in the memory.
- (i) MANUAL CANCEL function
The ECM cancels the cruise control while driving under the following conditions:
- The cruise control main switch is pulled to "CANCEL".
 - The brake pedal is depressed.
 - The clutch pedal is depressed (M/T only).
 - The cruise control main switch ON-OFF button is pushed off.
 - The D position circuit in the neutral start switch is turned from ON to OFF. The gear is shifted from the D or 3rd position to any of the N, 2nd or 1st positions (A/T only).

- (j) AUTO CANCEL function
- (1) When any of the following malfunctions occurs, the ECM clears the set vehicle speed and deactivates the cruise control. In this case, the power indicator continues blinking until the cruise control main switch is turned OFF and the ECM allows the cruise control to be reactivated when the main switch is next turned ON again.
- Open or short malfunctions in the stop light switch.
 - Abnormalities in the vehicle speed signal.
 - Malfunctions in the throttle body.
- (2) When any of the following malfunctions occurs, the ECM clears the set vehicle speed and deactivates the cruise control. In this case, the power indicator continues blinking until the cruise control main switch is turned OFF and the ECM allows the cruise control to be reactivated when the ignition switch is next turned ON again.
- Malfunctions in the stop light switch input circuit.
 - Malfunctions in the cancel circuit.
- (3) When the vehicle is in one of the following conditions, the ECM deactivates the cruise control (the cruise control can be reset).
- Actual vehicle speed is below the lower vehicle speed limit (the set vehicle speed is retained).
 - Actual vehicle speed decreases by 10 mph (16 km/h) from the set vehicle speed (the set vehicle speed is cleared).

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use the following procedures to troubleshoot the cruise control system.
- *: Use the intelligent tester.

1 VEHICLE BROUGHT TO WORKSHOP

NEXT

CC

2 PROBLEM SYMPTOM CONFIRMATION

NEXT

3 CHECK CAN COMMUNICATION SYSTEM*

(a) Check for output DTCs.

Result

Result	Proceed to
CAN DTC is not output	A
CAN DTC is output	B

HINT:

The ECM of this system is connected to the CAN communication system. Therefore, before starting troubleshooting, be sure to check that there is no trouble in the CAN communication system.

B PROCEED TO CAN COMMUNICATION SYSTEM

A

4 DTC CHECK AND CLEAR*

Refer to the DTC CHECK / CLEAR (See page [CC-15](#)).

NEXT

5 DTC CHECK (OTHER THAN CAN SYSTEM DTC)*

Result

Result	Proceed to
DTC is not output	A
DTC is output	B

A GO TO STEP 7

B

6 DTC CHART

Refer to the DIAGNOSTIC TROUBLE CODE CHART (See page [CC-17](#)).

NEXT

GO TO STEP 10

7 PROBLEM SYMPTOM CONFIRMATION

Result

Result	Proceed to
Symptom occurs	A
Symptom does not occur	B

A **GO TO STEP 9**

B

8 SYMPTOM SIMULATION

Refer to the ELECTRONIC CIRCUIT INSPECTION PROCEDURE See page [IN-34](#)).

NEXT

9 PROBLEM SYMPTOMS TABLE

Refer to the PROBLEM SYMPTOMS TABLE (See page [CC-11](#)).

NEXT

10 CIRCUIT INSPECTION

NEXT

11 TERMINALS OF ECM

Refer to TERMINALS OF ECM (See page [CC-12](#)).

NEXT

12 IDENTIFICATION OF PROBLEM

NEXT

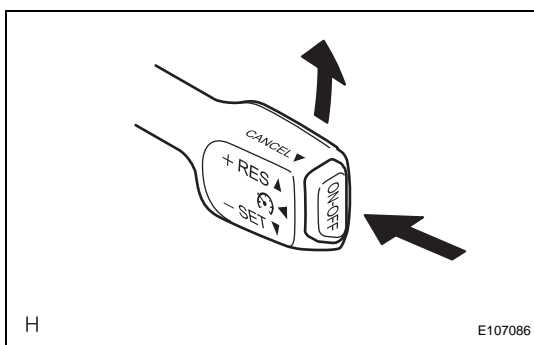
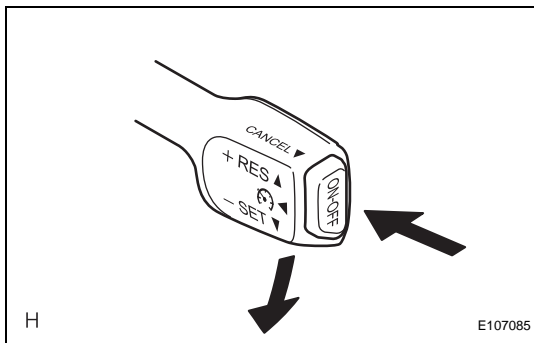
13 REPAIR OR REPLACE

NEXT

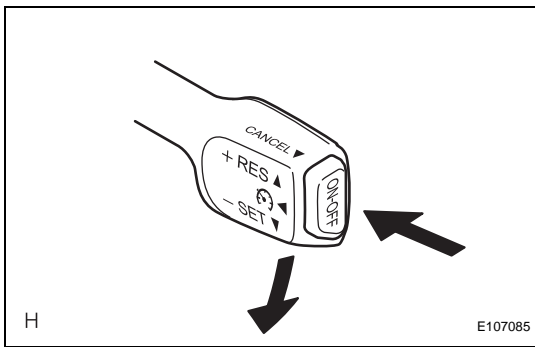
14 CONFIRMATION TEST

NEXT

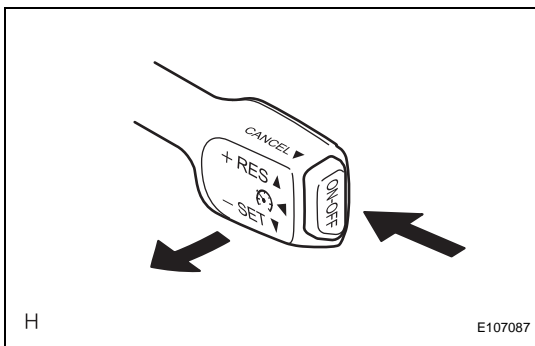
END

**ROAD TEST****1. PROBLEM SYMPTOM CONFIRMATION**

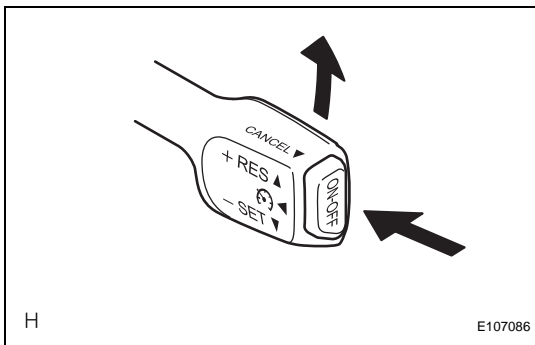
- (a) Inspect the SET function.
 - (1) Turn the cruise control main switch on.
 - (2) Drive at the required speed between 25 mph (40 km/h) and 125 mph (200 km/h).
 - (3) Push the cruise control main switch to - (COAST)/SET.
 - (4) After releasing the switch, check that the vehicle cruises at the set speed.
- (b) Inspect the ACCELERATION function.
 - (1) Turn the cruise control main switch on.
 - (2) Drive at the required speed between 25 mph (40 km/h) and 125 mph (200 km/h).
 - (3) Push the cruise control main switch to - (COAST)/SET.
 - (4) Check that the vehicle speed increases while the cruise control main switch is pushed to + (ACCEL)/RES (RESUME), and that the vehicle cruises at the newly set speed when the switch is released.
 - (5) Push the cruise control main switch to + (ACCEL)/RES (RESUME) and then release it immediately. Check that the vehicle speed increases by approximately 1.0 mph (1.6 km/h) (tap-up control).



- (c) Inspect the - (COAST) function.
- (1) Turn the cruise control main switch on.
 - (2) Drive at the required speed between 25 mph (40 km/h) and 125 mph (200 km/h).
 - (3) Push the cruise control main switch to - (COAST)/SET.
 - (4) Check that the vehicle speed decreases while the cruise control main switch is pushed to - (COAST)/SET, and the vehicle cruises at the newly set speed when the switch is released.
 - (5) Push the cruise control main switch to - (COAST)/SET, and then release it immediately. Check that the vehicle speed decreases by approximately 1.0 mph (1.6 km/h) (tap-down control).



- (d) Inspect the CANCEL function.
- (1) Turn the cruise control main switch on.
 - (2) Drive at the required speed between 25 mph (40 km/h) and 125 mph (200 km/h).
 - (3) Push the cruise control main switch to - (COAST)/SET.
 - (4) When performing any one of the following, check that the cruise control system is canceled and that the normal driving mode is reset.
 - Depressing the brake pedal
 - Depressing the clutch pedal (M/T only)
 - The shift lever is moved from the D or 3rd position to any of the N, 2nd, or L positions (A/T only)
 - Turning the cruise control main switch off
 - Pulling the cruise control main switch to CANCEL



- (e) Inspect the RES (RESUME) function.
- (1) Turn the cruise control main switch on.
 - (2) Drive at the required speed between 25 mph (40 km/h) and 125 mph (200 km/h).
 - (3) Push the cruise control main switch to - (COAST)/SET.
 - (4) Cancel the cruise control system by performing any of the above operations (other than turning the main switch off).
 - (5) After pushing the cruise control main switch to + (ACCEL)/RES (RESUME) at a driving speed of more than 25 mph (40 km/h), check that the vehicle resumes the speed set prior to the cancellation.

PROBLEM SYMPTOMS TABLE

HINT:

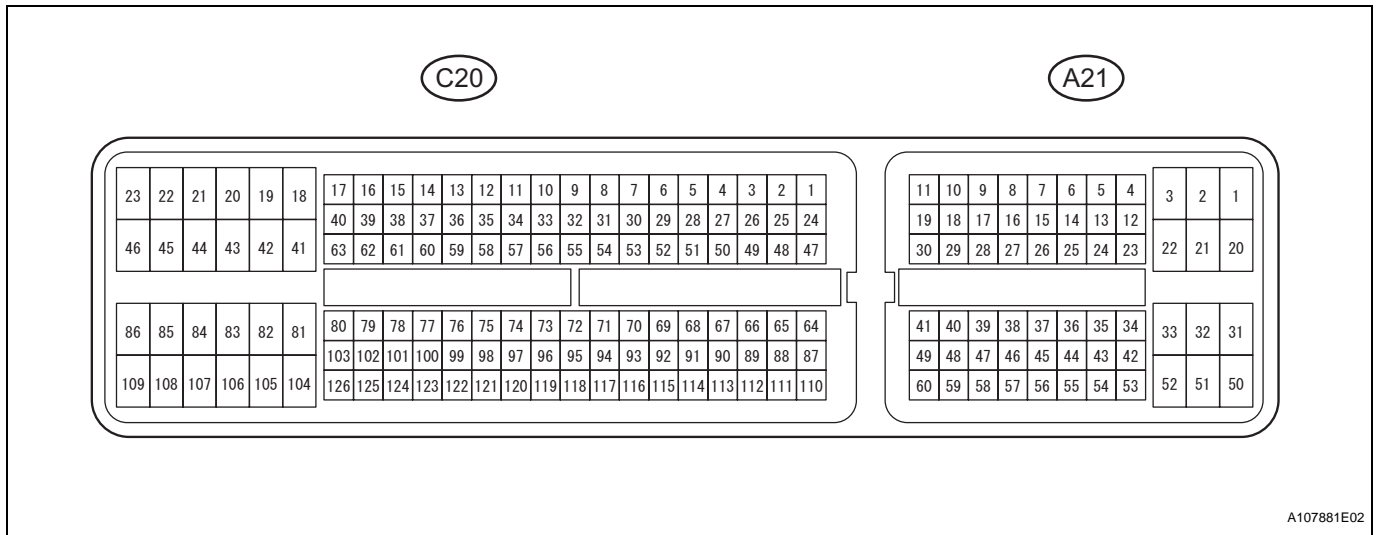
Use the table below to help determine the causes of the problem symptom. The potential cases of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.

Cruise Control System

Symptom	Suspected area	See page
Main switch cannot be turned ON (Indicator light on the combination meter does not come on)	Cruise control switch circuit	CC-26
	CRUISE MAIN indicator light circuit	CC-31
	ECM	-
Desired speed cannot be set (Indicator light on the combination meter comes on when the main switch is turned ON, but goes off when operating the "SET" function)	Cruise control switch circuit	CC-26
	ECM	-
Desired speed cannot be set (Indicator light on the combination comes on when the main switch is turned ON and it remains ON, while operating the "SET" function)	Cruise control switch circuit	CC-26
	Stop light switch circuit	CC-19
	Clutch switch circuit (M/T)	CC-23
	Park/neutral position switch circuit (A/T)	AX-6
	Combination meter system	ME-8
	Vehicle speed sensor circuit	CC-18
While cruise control driving, the set speed is canceled (Indicator light remains ON)	ECM	-
	Cruise control switch circuit	CC-26
	Vehicle speed sensor circuit	CC-18
	Stop light switch circuit	CC-19
	Combination meter system	ME-8
	Clutch switch circuit (M/T)	CC-23
	Park/neutral position switch circuit (A/T)	AX-6
Hunting occurs (Speed is not constant)	ECM	-
	Vehicle speed sensor circuit	CC-18
Speed setting cannot be canceled ("CANCEL" function failure only)	ECM	-
	Cruise control switch circuit	CC-26
DTC is not output, or is output when should not be	DLC3 circuit	CC-32
	ECM	-
Cruise control cannot be canceled when vehicle speed decreases to below low speed limit	ECM	-
	Vehicle speed sensor circuit	CC-18
Cruise control cannot be canceled when brake pedal is depressed	ECM	-
	Stop light switch circuit	CC-19
Cruise control cannot be canceled when shift lever is operated (A/T)	ECM	-
	Park/neutral position switch circuit (A/T)	AX-6
Cruise control cannot be canceled when clutch pedal is depressed (M/T)	ECM	-
	Clutch switch circuit (M/T)	CC-23

TERMINALS OF ECM

1. CHECK ECM



A107881E02

(a) Measure the voltages of the wire harness side connectors.

Standard voltage:

Symbols (Terminals No.)	Wiring Color	Terminal Description	Condition	Specified Condition
TC (A21-27) - E1 (C20-104)	P - W	DTC output signal	Ignition switch ON	10 to 14 V
TC (A21-27) - E1 (C20-104)	P - W	DTC output signal	Ignition switch ON Connect terminals TC and CG of DLC3	Below 2 V
ST1- (A21-35) - E1 (C20-104)	Y - W	Cruise cancel input signal	Ignition switch ON Depress brake pedal	Below 1 V
ST1- (A21-35) - E1 (C20-104)	Y - W	Cruise cancel input signal	Ignition switch ON Release brake pedal	10 to 14 V
STP (A21-36) - E1 (C20-104)	G - W	Stop light switch input signal	Ignition switch ON Depress brake pedal	10 to 14 V
STP (A21-36) - E1 (C20-104)	G - W	Stop light switch input signal	Ignition switch ON Release brake pedal	Below 1 V
CCS (A21-40) - E1 (C20-104)	L - W	Cruise control main switch output signal	Ignition switch ON	10 to 14 V
CCS (A21-40) - E1 (C20-104)	L - W	Cruise control main switch output signal	Ignition switch ON CANCEL switch held ON	6.6 to 10.1 V
CCS (A21-40) - E1 (C20-104)	L - W	Cruise control main switch output signal	Ignition switch ON -/SET switch held ON	4.5 to 7.1 V
CCS (A21-40) - E1 (C20-104)	L - W	Cruise control main switch output signal	Ignition switch ON +/RES switch held ON	2.3 to 4.5 V
CCS (A21-40) - E1 (C20-104)	L - W	Cruise control main switch output signal	Ignition switch ON MAIN switch held ON	Below 1 V
E1 (C20-104) - Body ground	W - Body ground	Ground	Always	Below 1 V
D (C20-56) - E1 (C20-104)	L - W	Clutch switch input signal	Ignition switch ON Depress clutch pedal	Below 1 V
D (C20-56) - E1 (C20-104)	L - W	Clutch switch input signal	Ignition switch ON Release clutch pedal	10 to 14 V
CANH (A21-41) - E1 (C20-104)	L - W	CAN communication line	Ignition switch ON	Pulse generation (see waveform 1)
CANL (A21-49) - E1 (C20-104)	W - W	CAN communication line	Ignition switch ON	Pulse generation (see waveform 2)