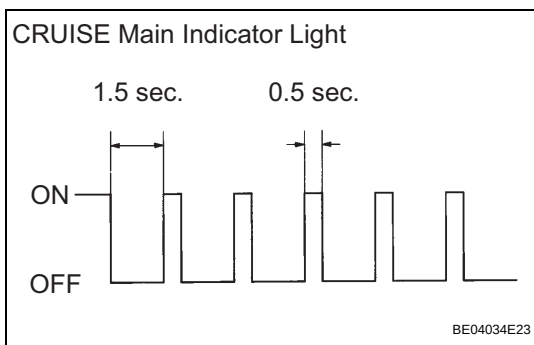
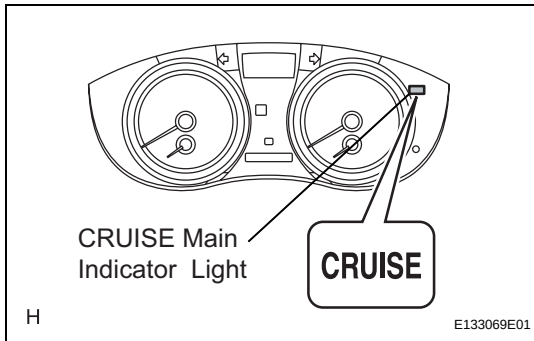


- If communication is still not possible when the tester is connected to another vehicle, the problem may be in the tester itself. Consult the Service Department listed in the tester's instruction manual.

3. CHECK INDICATOR

- (a) Turn the engine switch on (IG).



- (b) Check that the CRUISE main indicator light illuminates when the cruise control main switch is turned on, and that the indicator light turns off when the main switch is turned off. If the results are not as specified, inspect the CRUISE main indicator light circuit (See page [CC-29](#)).

HINT:

While driving with cruise control, the ECM activates AUTO CANCEL of the cruise control system when a malfunction occurs in one of the following: vehicle speed sensors, stop light switch, or other related parts. When AUTO CANCEL is activated, the CRUISE main indicator light outputs the blinking pattern shown to the left. At the same time, data of the malfunction is stored as a DTC.

DTC CHECK / CLEAR

1. DTC CHECK

- (a) Connect the intelligent tester to the DLC3.
- (1) Connect the intelligent tester to the Controller Area Network Vehicle Interface Module (CAN VIM). Then connect the CAN VIM to the Data Link Connector 3 (DLC3).
- (b) Turn the engine switch on (IG).
- (c) Read the DTCs by following the prompts on the tester screen.

HINT:

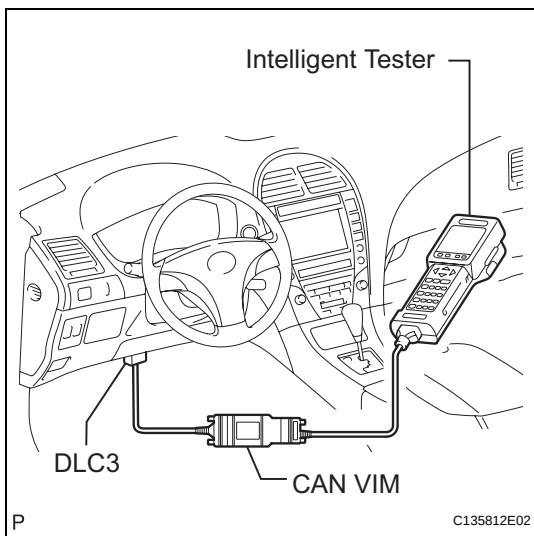
Refer to the intelligent tester operator's manual for further details.

2. DTC CLEAR

- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the engine switch on (IG).
- (c) Operate the intelligent tester to erase the codes.

HINT:

Refer to the intelligent tester operator's manual for further details.



FAIL-SAFE CHART

HINT:

If the following conditions are detected while the cruise control is in operation, the system clears the stored vehicle speed in the ECM and cancels the cruise control operation.

Vehicle Condition	Auto Cancel Condition	Re-operation Condition
CRUISE main indicator light blinks	- There is open or short in stop light switch circuit - There is problem with vehicle speed signal - There is problem with throttle position sensor and motor	Turn cruise control main switch on again
CRUISE main indicator light blinks	- There is problem with input circuit of stop light switch circuit - There is problem with cancel circuit	- Turn cruise control main switch on again - Turn engine switch off then on again
Cruise control is cancelled (The indicator light remains on)	- Vehicle speed is lower than low speed limit (approx. 40 km/h (25 mph)) while running with cruise control on - VSC operates	Push cruise control main switch to + (ACCEL)/RES (RESUME)
	Vehicle speed is lower than stored speed by approx. 16 km/h (9.9 mph) or more	Push cruise control main switch to - (COAST)/SET

DATA LIST / ACTIVE TEST

1. READ DATA LIST

HINT:

Using the intelligent tester's DATA LIST allows switch, sensor, actuator, and other item values to be read without removing any parts. Reading the DATA LIST early in troubleshooting is one way to save time.

- Connect the intelligent tester to the DLC3.
- Turn the engine switch on (IG).
- Read the DATA LIST according to the display on the tester.

ECM (Cruise control):

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
VEHICLE SPD	Vehicle speed / min.: 0 km/h (0 mph), max.: 255 km/h (158 mph)	Actual vehicle speed	-
MEMORY SPD	Cruise control memorized speed / min.: 0 km/h (0 mph), max.: 200 km/h (125 mph)	Actual stored vehicle speed	-
THROTTLE	Throttle opening angle / min.: 0°, max.: 125°	Actual demanded throttle angle	-
CCS OPER STATUS	Cruise control condition / ON or OFF	ON: Cruise control activated OFF: Cruise control operation stopped	-
CRUISE CONTROL	Cruise control system active condition / ON or OFF	ON: Cruise control activated OFF: Cruise control deactivated	-
CCS INDICATOR M	Cruise indicator signal (Main CPU) / ON or OFF	ON: "CRUISE" on OFF: "CRUISE" off	"2"
CCS READY M	Cruise control system standby condition (Main CPU) / ON or OFF	Each time main switch is pushed, ON/OFF changes	"1"
MAIN SW (MAIN)	Main switch signal (Main CPU) / ON or OFF	ON: Main switch on OFF: Main switch off	"3"
MAIN SW (SUB)	Main switch signal (Sub CPU) / ON or OFF	ON: Main switch on OFF: Main switch off	"3"
CANCEL SW	CANCEL switch signal / ON or OFF	ON: CANCEL switch on OFF: CANCEL switch off	-
SET/COAST SW	SET / COAST switch signal / ON or OFF	ON: SET / COAST switch on OFF: SET / COAST switch off	-
RES/ACC SW	RES / ACC switch signal / ON or OFF	ON: RES / ACC switch on OFF: RES / ACC switch off	-
STP LIGHT SW M	Stop light switch signal (Main CPU) / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-

HINT:

- "3" is OK but "1" is NG → ECM failure
- "1" is OK but "2" is NG → DTC output or ECM failure
- "3" is OK but CRUISE main indicator light does not illuminate → CRUISE main indicator light, wire harness, or ECM failure

2. PERFORM ACTIVE TEST

HINT:

Performing the intelligent tester's ACTIVE TEST allows relays, VSVs, actuators, and other items to be operated without removing any parts. Performing the ACTIVE TEST early in troubleshooting is one way to save time. The DATA LIST can be displayed during the ACTIVE TEST.

- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the engine switch on (IG).
- (c) Perform the ACTIVE TEST according to the display on the tester.

HINT:

The engine switch must be turned on (IG) to proceed to ACTIVE TEST using the intelligent tester.



Combination meter

Tester Display	Test Part	Control Range	Diagnostic Note
CRUISE INDIC	Turns CRUISE main indicator light	ON / OFF	-

DIAGNOSTIC TROUBLE CODE CHART

If a trouble code is displayed during the DTC check, check the trouble areas listed for that code in the table below and proceed to the appropriate page.

Cruise control system

DTC Code	Detection Item	Trouble Area	See page
P0500	Vehicle Speed Sensor Malfunction	1. Vehicle speed sensor 2. Vehicle speed sensor signal circuit 3. Combination meter assembly 4. ECM	CC-18
P0503	Vehicle Speed Sensor "A" Intermittent / Erratic / High	1. Vehicle speed sensor 2. Vehicle speed sensor circuit 3. Combination meter assembly 4. ECM	CC-18
P0571	Brake Switch "A" Circuit	1. Stop light switch 2. Stop light switch circuit 3. ECM	CC-19
P0607	Control Module Performance	ECM	CC-22

DTC	P0500	Vehicle Speed Sensor Malfunction
DTC	P0503	Vehicle Speed Sensor "A" Intermittent / Erratic / High

DESCRIPTION

Refer to DTC P0500 (See page [ES-275](#)).

DTC No.	DTC Detection Condition	Trouble Area
P0500	The vehicle speed signal from the vehicle speed sensor is cut for 0.14 sec. or more while cruise control is in operation	• Vehicle speed sensor • Vehicle speed sensor signal circuit • Combination meter • ECM
P0503	Momentary interruption and noise are detected when a rapid change of vehicle speed occurs while cruise control is in operation	• Vehicle speed sensor • Vehicle speed sensor signal circuit • Combination meter • ECM

CC**WIRING DIAGRAM**

Refer to DTC P0500 (See page [ES-276](#)).

INSPECTION PROCEDURE

Refer to DTC P0500 (See page [ES-276](#)).

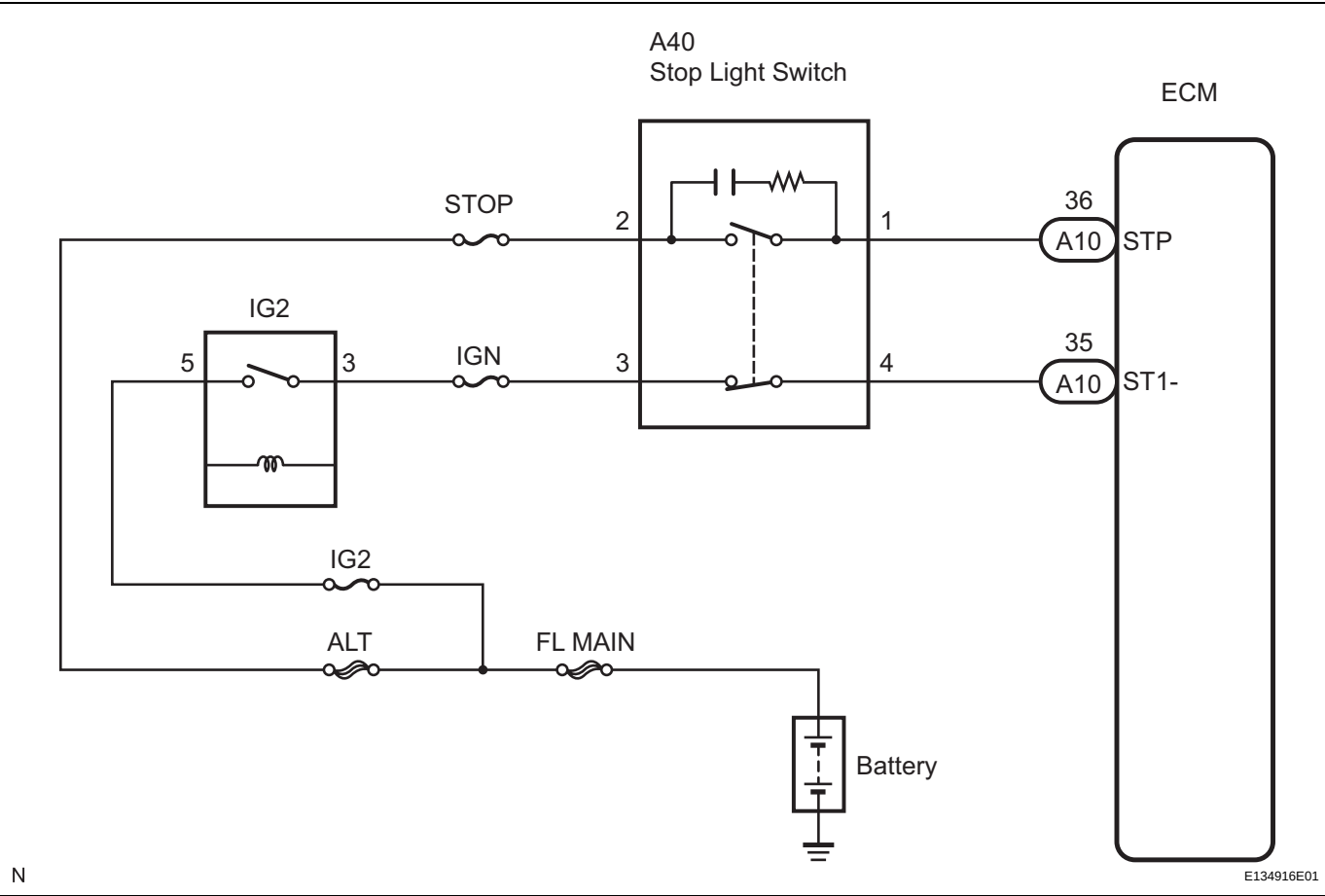
DTC	P0571	Brake Switch "A" Circuit
-----	-------	--------------------------

DESCRIPTION

When the brake pedal is depressed, the stop light switch sends a signal to the ECM. When the ECM receives this signal, it cancels the cruise control. The fail-safe function operates to enable normal driving even if there is a malfunction in the stop light signal circuit. The cancellation condition occurs when voltage is applied to terminal STP. When the brake is applied, voltage is normally applied to terminal STP of the ECM through the STOP fuse and the stop light switch, and the ECM turns the cruise control off.

DTC No.	DTC Detection Condition	Trouble Area
P0571	When voltage of STP terminal and that of ST1- terminal of ECM are less than 1 V for 0.5 sec. or more	• Stop light switch • Stop light switch circuit • ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE ON INTELLIGENT TESTER
---	----------------------------------

- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the engine switch on (IG), and turn the intelligent tester main switch on.

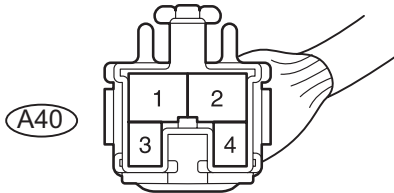
- (c) Check the DATA LIST for proper functioning of the stop light switch.

ECM (Cruise control):

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
STP LIGHT SW M	Stop light switch signal (Main CPU) / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-

OK:

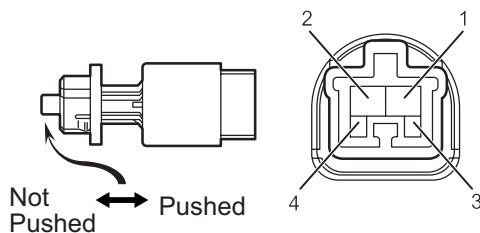
When the brake pedal is operated, the display changes as shown above.

OK**REPLACE ECM (See page ES-543)****NG****CC****2****CHECK HARNESS AND CONNECTOR (STOP LIGHT SWITCH - BATTERY)****Stop Light Switch Wire Harness
Side Connector Front View:**

- (a) Disconnect the A40 connector from the stop light switch.
(b) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection	Condition	Specified Condition
A40-2 - Body ground	Always	10 to 14 V
A40-3 - Body ground	Engine switch on (IG)	10 to 14 V

NG**REPAIR OR REPLACE HARNESS OR CONNECTOR****OK****3****INSPECT STOP LIGHT SWITCH****Stop Light Switch:**

- (a) Remove the stop light switch. (See page BR-59)
(b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Switch Condition	Specified Condition
1 - 2	Switch pin not pushed	Below 1 Ω
3 - 4	Switch pin not pushed	10 k Ω or higher
1 - 2	Switch pin pushed	10 k Ω or higher
3 - 4	Switch pin pushed	Below 1 Ω

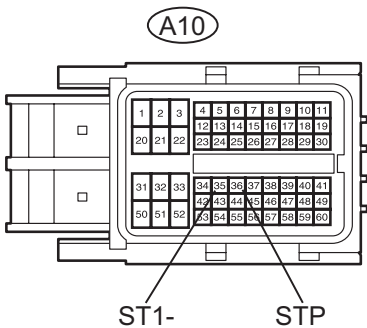
- (c) Install the stop light switch.

NG**REPLACE STOP LIGHT SWITCH (See page BR-59)****OK**

4

CHECK ECM

ECM Wire Harness Side
Connector Front Side View:



- (a) Reconnect the stop light switch connector.
- (b) Disconnect the A10 connector from the ECM.
- (c) Turn the engine switch on (IG).
- (d) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection	Brake Pedal Condition	Specified Condition
A10-36 (STP) - Body ground	Depressed	10 to 14 V
A10-36 (STP) - Body ground	Released	Below 1 V
A10-35 (ST1-) - Body ground	Depressed	Below 1 V
A10-35 (ST1-) - Body ground	Released	10 to 14 V

NG

REPAIR OR REPLACE HARNESS OR
CONNECTOR (STOP LIGHT SWITCH - ECM)

OK

REPLACE ECM (See page [ES-543](#))

DTC**P0607****Control Module Performance****DESCRIPTION**

This DTC indicates internal abnormalities of the ECM.

DTC No.	DTC Detection Condition	Trouble Area
P0607	When both of the following conditions are met: • STP signals input to the ECM supervisory CPU and control ECU are different for 0.15 sec. or more • 0.4 sec. have passed after cruise cancel input signal (STP input) is input to the ECM	ECM

HINT:

The ECM receives signals from each sensor to control all functions of the cruise control system. When a trouble code is detected, the fail-safe function remains on until the engine switch is turned off.

INSPECTION PROCEDURE**1****REPLACE ECM****HINT:**

(See page [ES-543](#))

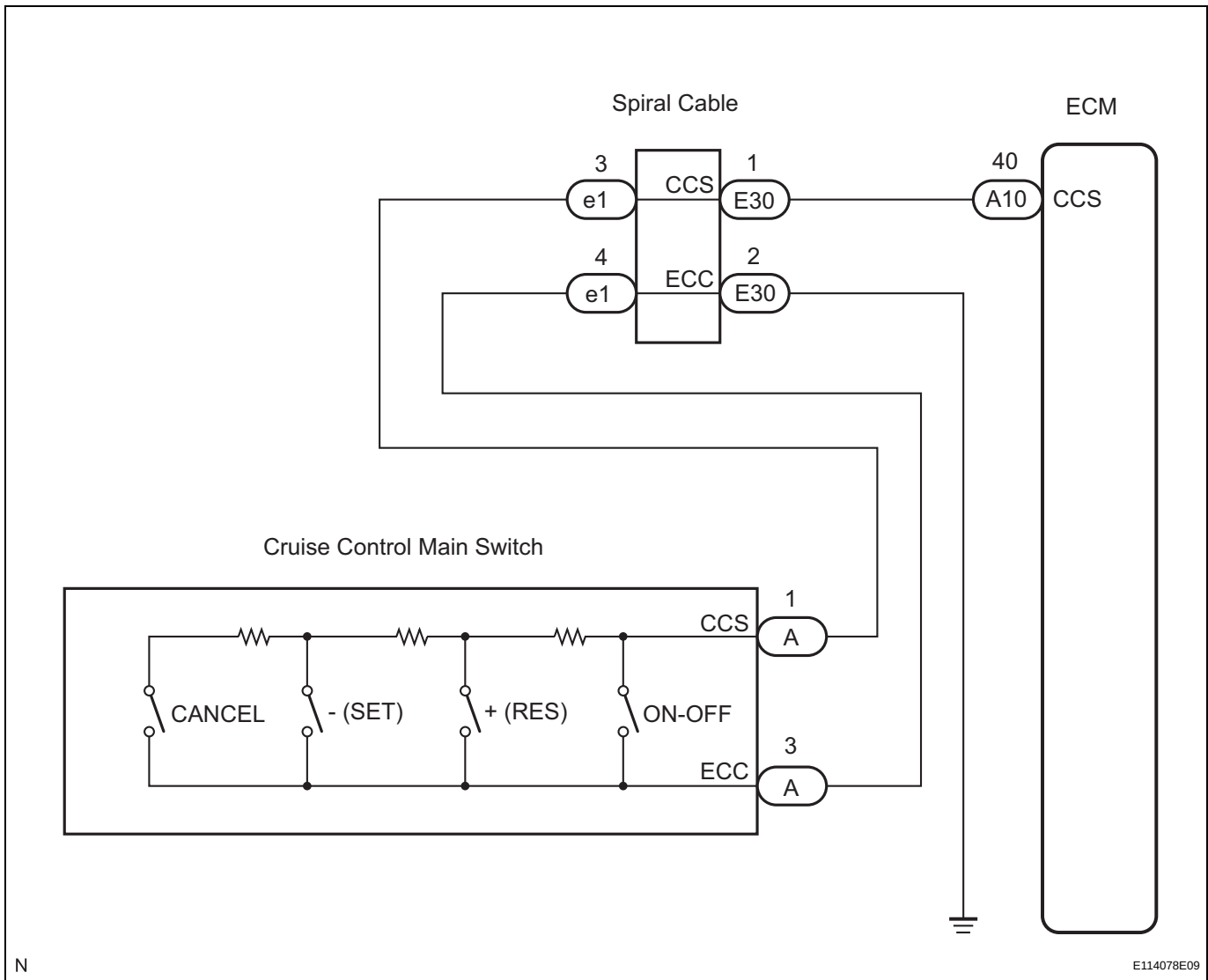
NEXT**END****CC**

Cruise Control Switch Circuit

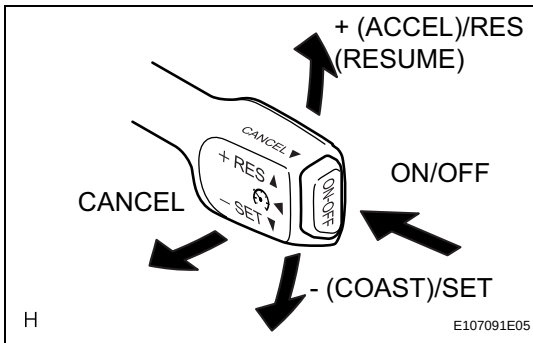
DESCRIPTION

The cruise control main switch operates 7 functions: SET, - (COAST), TAP-DOWN, RES (RESUME), + (ACCEL), TAP-UP, and CANCEL. The SET, TAP-DOWN, and - (COAST) functions, and the RES (RESUME), TAP-UP, and + (ACCEL) functions are operated with the same switch. The cruise control main switch is an automatic return type switch which turns on only while operating it in the direction of each arrow and turns off after releasing it. The internal contact point of the cruise control main switch is turned on with the switch operation. Then the ECM reads the voltage value that has been changed by the switch operation to control SET, - (COAST), RES (RESUME), + (ACCEL), and CANCEL.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 READ VALUE ON INTELLIGENT TESTER

- Connect the intelligent tester to the DLC3.
- Turn the engine switch on (IG) and turn the intelligent tester main switch on.
- Check the DATA LIST for proper functioning of the cruise control main switch.

ECM (Cruise control):

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
MAIN SW (MAIN)	Main switch signal (Main CPU)/ ON or OFF	ON: Main switch on OFF: Main switch off	-
CANCEL SW	CANCEL switch signal/ON or OFF	ON: CANCEL switch on OFF: CANCEL switch off	-
SET/COAST SW	SET/COAST switch signal/ON or OFF	ON: - (COAST)/SET switch on OFF: - (COAST)/SET switch off	-
RES/ACC SW	RES/ACC switch signal/ON or OFF	ON: + (ACCEL)/RES (RESUME) switch on OFF: + (ACCEL)/RES (RESUME) switch off	-

OK:

When the cruise control main switch is operated, the display changes as shown above.

Result

Result	Proceed to
OK	A
NG (All items are defective)	B
NG (1 to 3 items are defective)	C

A

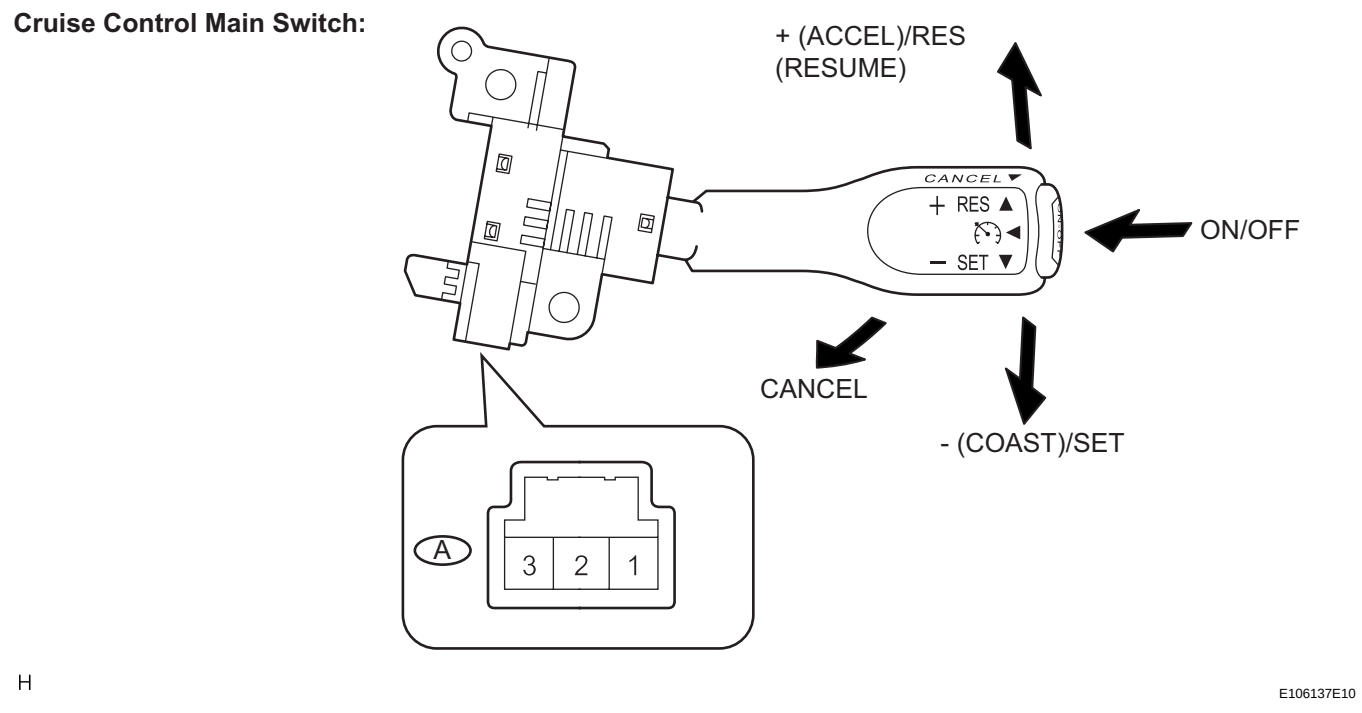
**PROCEED TO NEXT CIRCUIT INSPECTION
SHOWN IN PROBLEM SYMPTOMS TABLE**

C

**REPLACE CRUISE CONTROL MAIN SWITCH
(See page [CC-114](#))**

B**2 INSPECT CRUISE CONTROL MAIN SWITCH**

- Remove the cruise control main switch (See page [CC-114](#)).
- Measure the resistance according to the value(s) in the table below.



Standard resistance

Tester Connection	Switch Condition	Specified Condition
A-1 (CCS) - A-3 (ECC)	Neutral	10 kΩ or higher
	+ (ACCEL)/RES (RESUME)	216 to 264 Ω
	- (COAST)/SET	567 to 693 Ω
	CANCEL	1,386 to 1,694 Ω
	Main Switch on	Below 1 Ω

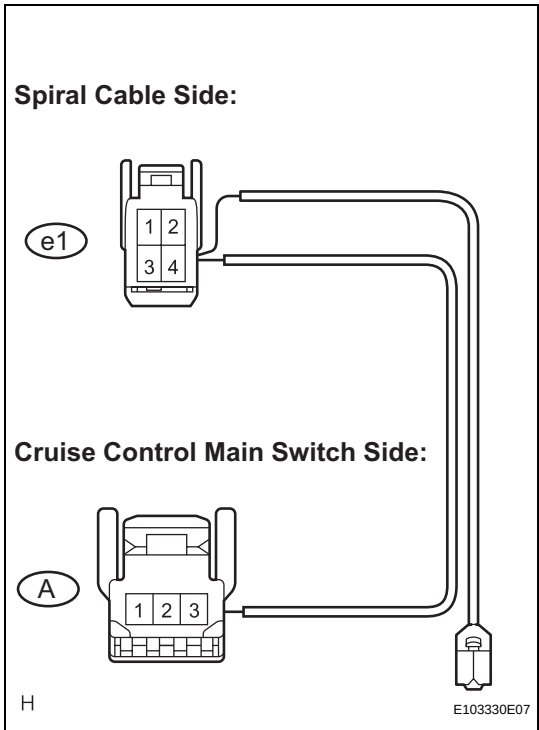
NG

REPLACE CRUISE CONTROL MAIN SWITCH
(See page [CC-114](#))

OK

3

CHECK HARNESS AND CONNECTOR (CRUISE CONTROL MAIN SWITCH - SPIRAL CABLE)



- (a) Disconnect the e1 connector from the spiral cable.
- (b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester connection	Condition	Specified Condition
A-1 - e1-3	Always	Below 1 Ω
A-3 - e1-4	Always	Below 1 Ω

NG

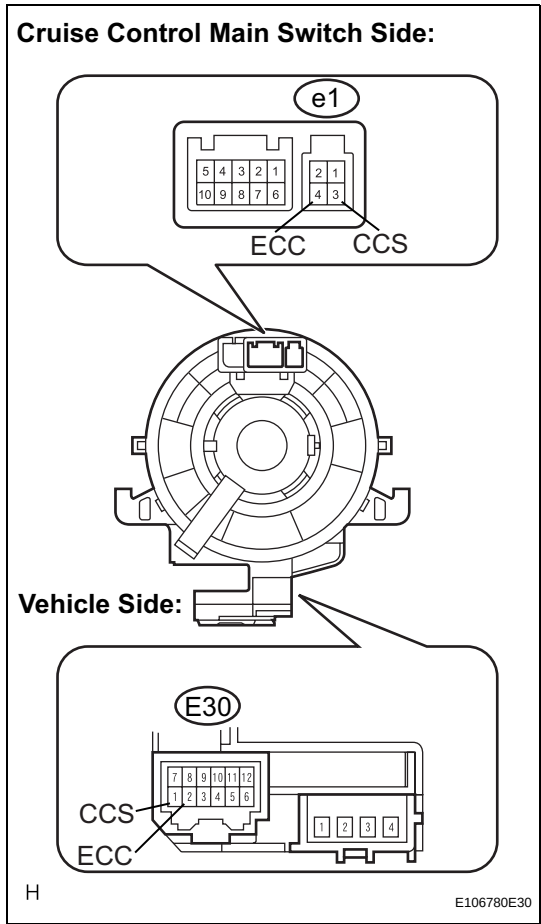
REPAIR OR REPLACE HARNESS OR CONNECTOR

CC

OK

4

CHECK SPIRAL CABLE



NOTICE:
The spiral cable is an important part of the SRS airbag system. Incorrect removal or installation of the spiral cable may cause airbag deployment. Be sure to read the page shown in the brackets.

- HINT:**
- Removal (See page RS-379)
 - Installation (See page RS-382)
- (a) Remove the spiral cable.
- (b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Spiral Cable Position	Specified Condition
e1-3 - E30-1 (CCS)	Center	Below 1 Ω
	2.5 rotations to the left	
	2.5 rotations to the right	
e1-4 - E30-2 (ECC)	Center	Below 1 Ω
	2.5 rotations to the left	
	2.5 rotations to the right	

HINT:
The spiral cable makes a maximum of approximately 5 rotations.

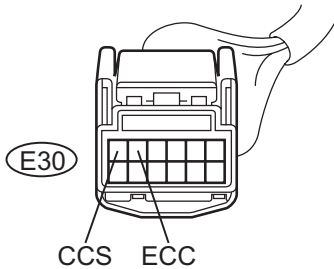
NG

REPLACE SPIRAL CABLE (See page RS-379)

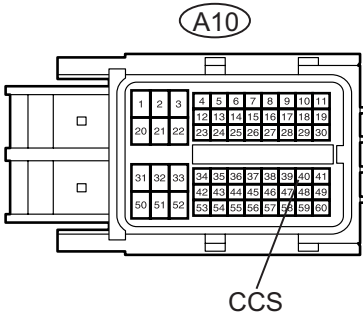
OK

5 CHECK WIRE HARNESS (SPIRAL CABLE - ECM AND BODY GROUND)

Spiral Cable Vehicle Side
Connector Front View:



ECM Wire Harness Side
Connector Front View:



E135383E01

(a) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
E30-1 - A10-40 (CCS)	Always	Below 1 Ω
A10-40 (CCS) - Body ground	Always	10 k Ω or higher
E30-2 (ECC) - Body ground	Always	Below 1 Ω

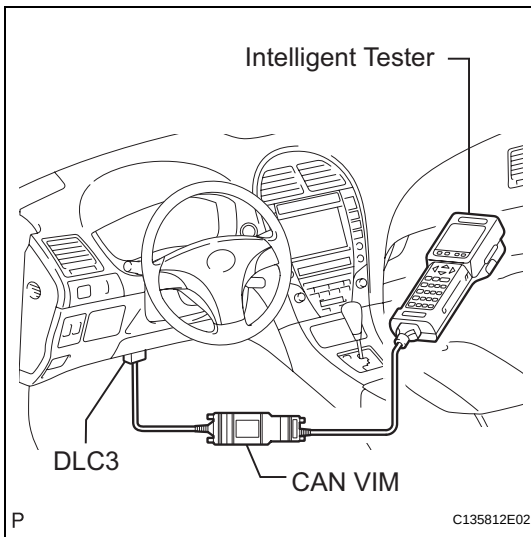
NG

REPAIR OR REPLACE HARNESS OR
CONNECTOR

OK

REPLACE ECM (See page [ES-543](#))

CC



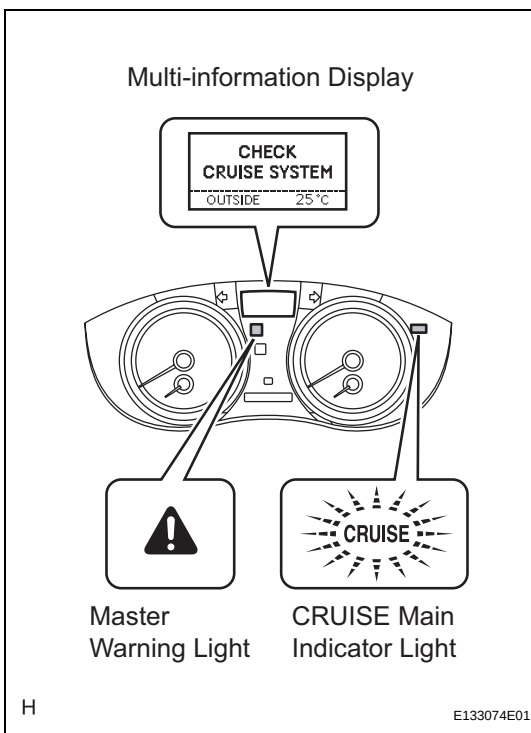
DTC CHECK / CLEAR

1. CHECK DTC

- (a) Connect the intelligent tester to the DLC3.
 - (1) Connect the intelligent tester to the Controller Area Network Vehicle Interface Module (CAN VIM). Then connect the CAN VIM to the Data Link Connector 3 (DLC3).
 - (b) Turn the engine switch on (IG).
 - (c) Read the DTCs by following the prompts on the tester screen.
- HINT:
Refer to the intelligent tester operator's manual for further details.

2. CLEAR DTC

- (a) Connect the intelligent tester to the DLC3.
 - (b) Turn the engine switch on (IG).
 - (c) Operate the intelligent tester to erase the codes.
- HINT:
Refer to the intelligent tester operator's manual for further details.



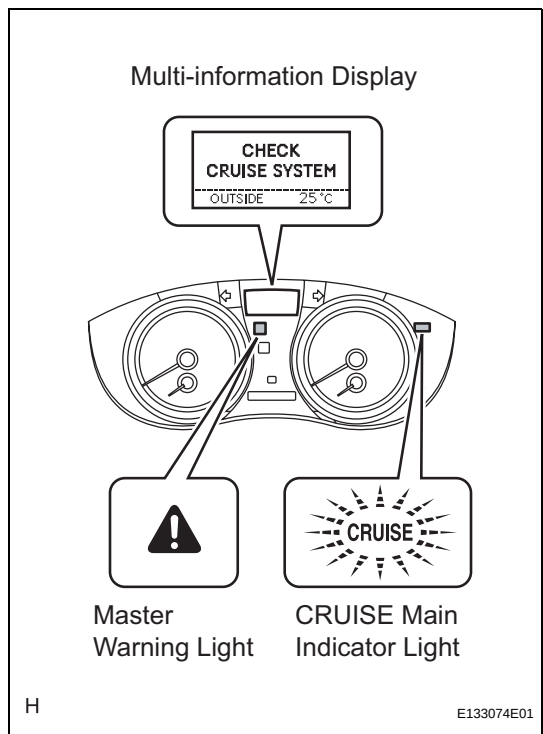
FAIL-SAFE CHART

1. Constant speed control mode and vehicle-to-vehicle distance control mode:

If the following conditions are detected while the dynamic radar cruise control system is in operation, the system clears the stored vehicle speed in the ECM and cancels the dynamic radar cruise control operation.

Vehicle Condition	Auto Cancel Condition	Fail-safe Deactivation Condition
- CRUISE main indicator light blinks - Master warning light comes on "Check Cruise System" is displayed "Pong" warning sound is heard	- Open or short in stop light switch circuit - Problem with vehicle speed signal - Problem with throttle position sensor and motor	Turn cruise control main switch ON again

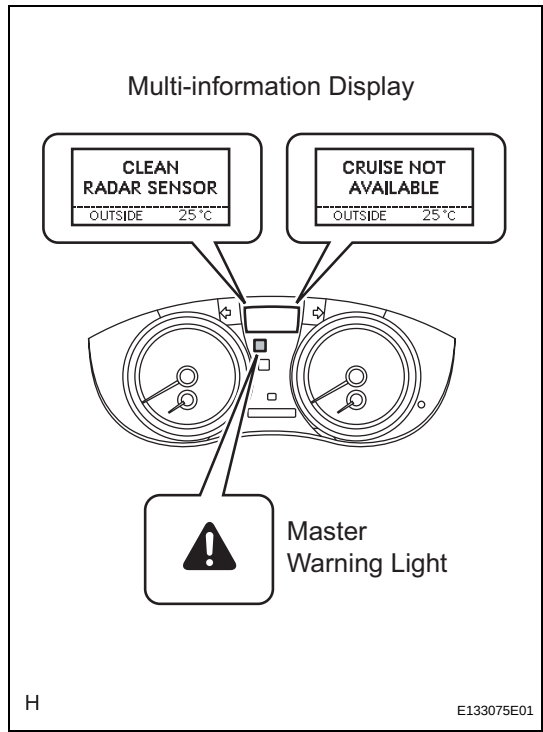
CC



2. Vehicle-to-vehicle distance control mode:

If the following conditions are detected while the dynamic radar cruise control system is in operation, the system clears the stored vehicle speed in the ECM and cancels the dynamic radar cruise control operation.

Vehicle Condition	Auto Cancel Condition	Fail-safe Deactivation Condition
• CRUISE main indicator light blinks • Master warning light comes on • "Check Cruise System" is displayed • "Pong" warning sound is heard	• There is problem with millimeter wave radar sensor • Beam axis of millimeter wave radar sensor deviates	Engine switch on (IG) again



3. Vehicle-to-vehicle distance control mode:

If the following conditions are detected while the dynamic radar cruise control system is in operation, the system maintains the stored vehicle speed in the ECM and cancels the dynamic radar cruise control operation.

Vehicle Condition	Auto Cancel Condition	Fail-safe Deactivation Condition
• Master warning light comes on • "Clean Radar Sensor" is displayed • "Pong" warning sound is heard	There is dirt on millimeter wave radar sensor	Recover from condition on left (RESUME operation is possible after recovery)

Vehicle Condition	Auto Cancel Condition	Fail-safe Deactivation Condition
- Master warning light comes on "Cruise not Available" is displayed "Pong" warning sound is heard	- Wiper switch is in HI position - Millimeter wave radar sensor is least sensitive because of bad weather such as rain, fog, snow, and sandstorms	- Recover from condition on left (RESUME operation is possible after recovery) - Turn cruise control main switch ON again

4. Constant speed control mode and vehicle-to-vehicle distance control mode:

If the following conditions are detected while the dynamic radar cruise control system is in operation, the system clears the stored vehicle speed and cancels the dynamic radar cruise control operation.

Vehicle Condition	Auto Cancel Condition	Fail-safe Deactivation Condition
CRUISE main indicator light goes off	- Vehicle speed is lower than low speed limit (approx. 40 km/h (25 mph)) while running with cruise control on - Vehicle speed is lower than stored vehicle speed by 16 km/h (1.0 mph) or more while running with cruise control on	Push the cruise control main switch to RESUME/ACCEL



DATA LIST / ACTIVE TEST

1. READ DATA LIST

HINT:

Using the intelligent tester's DATA LIST allows switch, sensor, actuator, and other item values to be read without removing any parts. Reading the DATA LIST early in troubleshooting is one way to save time.

- Connect the intelligent tester to the DLC3.
- Turn the engine switch on (IG).
- Read the DATA LIST according to the display on the tester.

ECM (Cruise control):

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ACCEL REQUEST	Accelerator request signal / min.: -2,621.44 k/h/s, max.: 2,621.36 k/h/s	No vehicle in front	-
VEHICLE DISTANC	Millimeter wave radar sensor / min.: 0 m (0 ft), max.: 255 m (836.65 ft)	Distance to vehicle in front	-
L/C OPTION FLAG	Dynamic radar cruise option flag / NO or YES	YES: Dynamic radar cruise control system can be used NO: Dynamic radar cruise control system cannot be used	-
DISTANCE TIME	Vehicle distance time setting condition / SHRT, MID, LONG, NO	Vehicle-to-vehicle distance selected by steering pad switch (distance control switch)	-
O/D CUT RQST	O/D cut request / NOT REQ or REQUEST	NOT REQ: Idling	-
3RD SHIFT DOWN	Shift down request to 3rd gear / NOT REQ or REQUEST	NOT REQ: Idling	-
4TH SHIFT DOWN	Shift down request to 4th gear / NOT REQ or REQUEST	NOT REQ: Idling	-
ALARM RQST	Alarm request signal / NOT REQ or REQUEST	REQUEST: When beeping NOT REQ: When not beeping	-
THROTTLE CLOSE	All throttle close request / NOT REQ or REQUEST	ON: REQUEST OFF: NOT REQUEST	-
BRAKE CTRL RQST	Brake control request / NOT REQ or REQUEST	ON: REQUEST OFF: NOT REQUEST	-
TARG DECL SLOPE	Cruise target deceleration slope / 0.03, 0.06, 0.11, 0.15	0.03, 0.06 0.11, 0.15	-
VEHICLE SPD	Vehicle speed sensor / min.: 0 km/h (0 mph), max.: 255 km/h (158 mph)	Actual vehicle speed	-
MEMORY SPD	Cruise control memorized speed / min.: 36 km/h (22.5 mph), max.: 200 km/h (125 mph)	Memorized speed: Cruise control activated	-
THROTTLE	Throttle opening angle / min.: 0°, max.: 125°	Actual demanded throttle angle	-
CRUISE CONTROL	Cruise control system active condition / ON or OFF	ON: Cruise control activated OFF: Cruise control deactivated	-
MAIN SW (MAIN)	Main switch signal (Main CPU) / ON or OFF	ON: Main switch on OFF: Main switch off	1
CCS READY M	Cruise control system standby condition (Main CPU) / ON or OFF	Each time main switch is pushed, ON/OFF changes	1
CCS INDICATOR M	Cruise indicator signal (Main CPU) / ON or OFF	ON: "CRUISE" on OFF: "CRUISE" off	3

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
CANCEL SW	CANCEL switch signal / ON or OFF	ON: CANCEL switch on OFF: CANCEL switch off	-
SET/COAST SW	SET/COAST switch signal / ON or OFF	ON: - (COAST)/SET switch on OFF: - (COAST)/SET switch off	-
RES/ACC SW	RES/ACC switch signal / ON or OFF	ON: + (ACCEL)/RES (RESUME) switch on OFF: + (ACCEL)/RES (RESUME) switch off	-
STP LIGHT SW M	Stop light switch signal (Main CPU) / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-
CCS OPER STATUS	Cruise control condition / ON or OFF	ON: Cruise control operated OFF: Cruise control operation stopped	-
VSC FAIL SAFE	VSC fail-safe flag / ON or OFF	-	-

CC

HINT:

- 1 is OK, but 2 is NG → ECM failure
- 2 is OK, but 3 is NG → DTC output or ECM failure
- 1 is OK, but CRUISE main indicator light does not illuminate → Cruise main indicator light, wire harness, or ECM failure

2. ACTIVE TEST**HINT:**

Performing the intelligent tester's ACTIVE TEST allows relays, VSVs, actuators, and other items to be operated without removing any parts. Performing the ACTIVE TEST early in troubleshooting is one way to save time. The DATA LIST can be displayed during the ACTIVE TEST.

- Connect the intelligent tester to the DLC3.
- Turn the engine switch on (IG).
- Perform the ACTIVE TEST according to the display on the tester.

HINT:

The engine switch must be turned on (IG) to proceed to the ACTIVE TEST using the intelligent tester.

combination meter (Meter ECU)

Tester Display	Test Part	Control Range	Control Range
CRUISE INDIC	Turns CRUISE main indicator light	ON / OFF	-

DIAGNOSTIC TROUBLE CODE CHART

If a trouble code is displayed during the DTC check, check the trouble areas listed for that code in the table below and proceed to the appropriate page.

NOTICE:

- When the distance control ECU and/or ECM are replaced with a new one, initialization must be performed.
- When the millimeter wave radar sensor is replaced with a new one, adjustment of the radar sensor beam axis must be performed.

Dynamic radar cruise control system

CC

DTC Code	Detection Item	Trouble Area	See page
P0500	Vehicle Speed Sensor Malfunction	-Vehicle speed sensor -Vehicle speed sensor signal circuit -Combination meter assembly -ECM	CC-68
P0503	Vehicle Speed Sensor "A" Intermittent / Erratic / High	-Vehicle speed sensor -Vehicle speed sensor signal circuit -Combination meter assembly -ECM	CC-68
P0571	Brake Switch "A" Circuit	-Stop light switch -Stop light switch circuit -ECM	CC-69
P0607	Control Module Performance	-ECM (This DTC indicates malfunction in ECM. When this DTC is output, it is necessary to replace ECM)	CC-72
P1570	Radar Sensor Malfunction	-Millimeter wave radar sensor	CC-73
P1572	Improper Aiming of Radar Sensor Beam Axis	-Millimeter wave radar sensor	CC-74
P1575	Warning Buzzer Malfunction	-Skid control buzzer -Skid control buzzer circuit -ABS & traction actuator (Skid control ECU)	CC-75
P1578	Brake System Malfunction	-VSC system	CC-76
P1615	Communication Error from Distance Control ECU to ECM	-Communication circuit -Distance control ECU -ECM	CC-77
P1616	Communication Error from ECM to Distance Control ECU	-Communication circuit -Distance control ECU -ECM	CC-78
P1617	Distance Control ECU Malfunction	-Distance control ECU	CC-79
P1630	Communication Error from VSC to ECM	-Communication circuit -ABS & traction actuator (Skid control ECU) -ECM	CC-81
P1631	Communication Error from ECM to VSC	-Communication circuit -ECM -ABS & traction actuator (Skid control ECU)	CC-82
U0100	Lost Communication with ECM/PCM "A"	-Communication circuit -ECM -Distance control ECU	CC-78

DTC Code	Detection Item	Trouble Area	See page
U0100	Lost Communication with ECM/ PCM "A"	-Communication circuit -ECM -ABS & traction actuator (Skid control ECU)	CC-82
U0122	Lost Communication with Vehicle Dynamics Control Module	-Communication circuit -ABS & traction actuator (Skid control ECU) -ECM	CC-81
U0123	Communication Error of Yaw Rate Sensor	-Communication circuit -Yaw rate sensor -Distance control ECU -ECM	CC-83
U0126	Lost Communication with Steering Angle Sensor Module	-Communication circuit -Steering angle sensor -Distance control ECU -ECM	CC-84
U0235	Lost Communication with Cruise Control Front Distance Range Sensor	-Communication circuit -Millimeter wave radar sensor -Distance control ECU	CC-85
U1101	Lost Communication with Distance Control ECU	-Communication circuit -Distance control ECU -ECM	CC-77
U1102	Lost Communication with Radar Sensor	-Communication circuit -Millimeter wave radar sensor -Distance control ECU	CC-88

DTC	P0500	Vehicle Speed Sensor Malfunction
DTC	P0503	Vehicle Speed Sensor "A" Intermittent / Erratic / High

DESCRIPTION

Refer to DTC P0500 (See page [ES-275](#)).

DTC No.	DTC Detection Condition	Trouble Area
P0500	The vehicle speed signal from the vehicle speed sensor is cut for 0.14 sec. or more while cruise control is in operation	- Vehicle speed sensor - Vehicle speed sensor signal circuit - Combination meter assembly - ECM
P0503	Momentary interruption and noise are detected when a rapid change of vehicle speed occurs while cruise control is in operation	- Vehicle speed sensor - Vehicle speed sensor signal circuit - Combination meter assembly - ECM

WIRING DIAGRAM

Refer to DTC P0500 (See page [ES-276](#)).

INSPECTION PROCEDURE**NOTICE:**

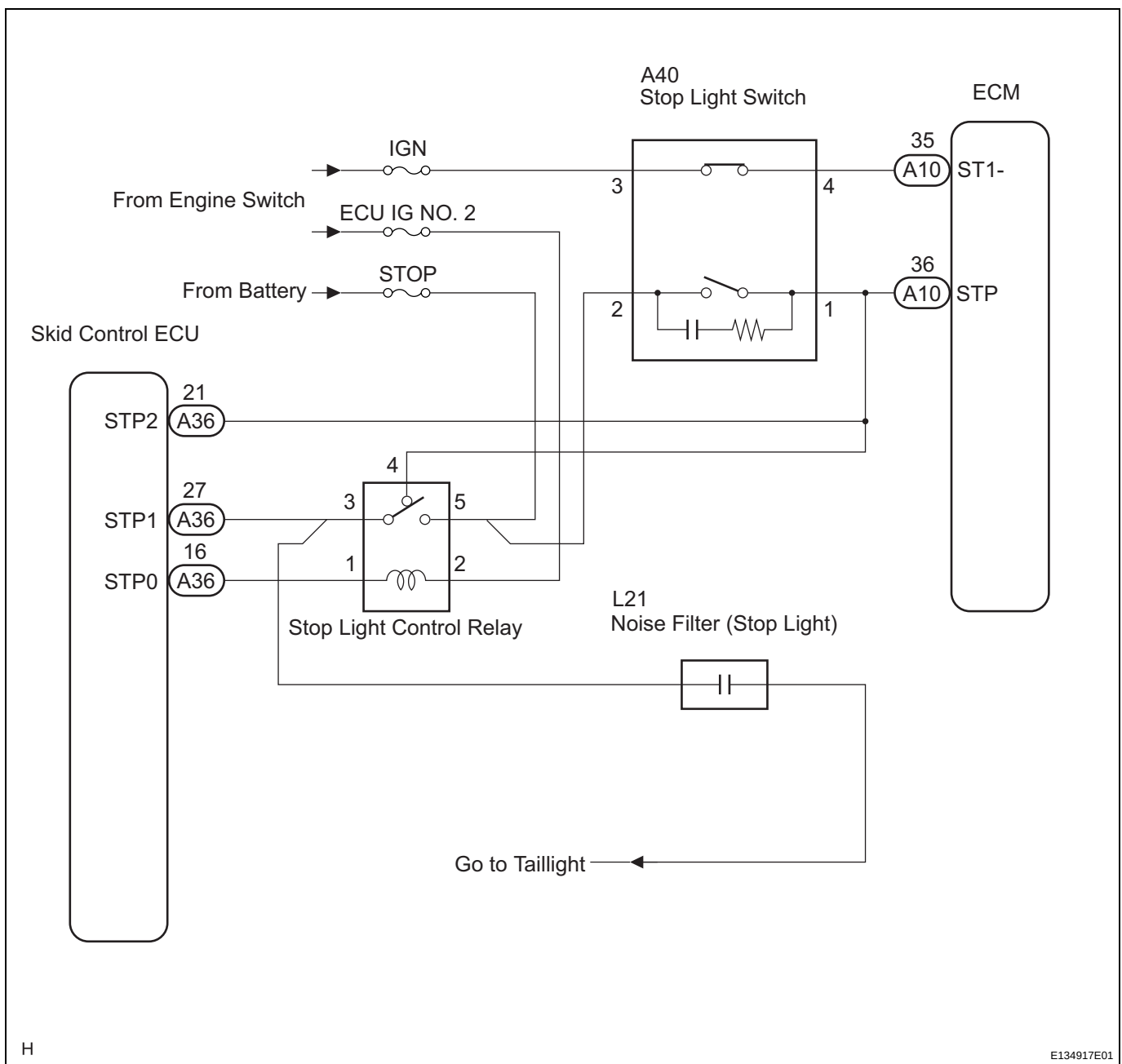
- When the distance control ECU and/or ECM are replaced with a new one, initialization must be performed (See page [CC-119](#)).
- When the millimeter wave radar sensor is replaced with a new one, adjustment of the radar sensor beam axis must be performed (See page [CC-122](#)).

Refer to DTC P0500 (2GR-FSE) (See page [ES-276](#)).

DTC**P0571****Brake Switch "A" Circuit****DESCRIPTION**

When the brake pedal is depressed, the stop light switch sends a signal to the ECM. When the ECM receives this signal, it cancels the cruise control. The fail-safe function operates to enable normal driving even if there is a malfunction in the stop light signal circuit. The cancellation condition occurs when voltage is applied to terminal STP. When the brake is applied, voltage is normally applied to terminal STP of the ECM through the STOP SW fuse and the stop light switch, and the ECM turns the cruise control off.

DTC No.	DTC Detection Condition	Trouble Area
P0571	Voltage of STP terminal and that of ST1-terminal of ECM are less than 1 V for 0.5 sec. or more	- Stop light switch - Stop light switch circuit - ECM

CC**WIRING DIAGRAM**

INSPECTION PROCEDURE

NOTICE:

When the distance control ECU and/or ECM are replaced with a new one, initialization must be performed (See page [CC-119](#)).

1 CHECK DTC

- (a) Check for a DTC (See page [CC-61](#)).

Result

Condition	Proceed to
DTC C1249 and/or C1380 are not output	A
DTC C1249 and/or C1380 are output	B

B

GO TO ANTI-LOCK BRAKE SYSTEM (See page [BC-17](#))

A

2 READ VALUE ON INTELLIGENT TESTER

- (a) Connect the intelligent tester to the DLC3.
 (b) Turn the engine switch on (IG), and turn the intelligent tester main switch on.
 (c) Check the DATA LIST for proper functioning of the stop light switch.

ECM (Cruise control):

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
STP LIGHT SW M	Stop light switch signal (Main CPU) / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-

OK:

When the brake pedal is operated, the display changes as shown above.

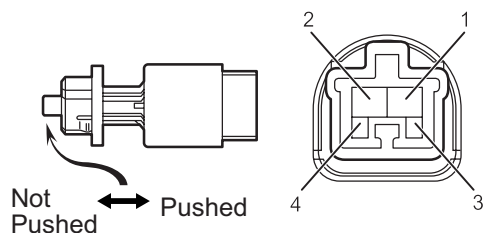
OK

REPLACE ECM (See page [ES-543](#))

NG

3 INSPECT STOP LIGHT SWITCH

Stop Light Switch:



E133721E01

- (a) Disconnect the stop light switch connector.
 (b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Switch Condition	Specified Condition
1 - 2	Switch pin not pushed	Below 1 Ω
3 - 4	Switch pin not pushed	10 k Ω or higher
1 - 2	Switch pin pushed	10 k Ω or higher
3 - 4	Switch pin pushed	Below 1 Ω

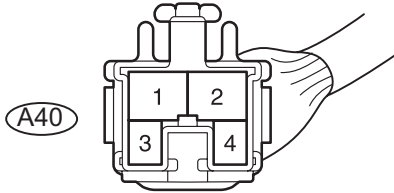
NG

REPLACE STOP LIGHT SWITCH (See page [BR-59](#))

OK

4 CHECK WIRE HARNESS (STOP LIGHT SWITCH - BATTERY)

**Stop Light Switch Wire Harness
Side Connector Front View:**



N

E135377E01

- (a) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection	Condition	Specified Condition
A40-2 - Body ground	Always	10 to 14 V
A40-3 - Body ground	Engine switch on (IG)	10 to 14 V

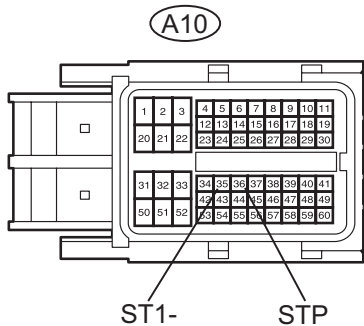
NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

5 CHECK ECM

**ECM Wire Harness Side
Connector Front Side View:**



E135382E02

- (a) Reconnect the stop light switch connector.
 (b) Disconnect the A10 connector from the ECM.
 (c) Turn the engine switch on (IG).
 (d) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection	Brake Pedal Condition	Specified Condition
A10-36 (STP) - Body ground	Depressed	10 to 14 V
A10-36 (STP) - Body ground	Released	Below 1 V
A10-35 (ST1-) - Body ground	Depressed	Below 1 V
A10-35 (ST1-) - Body ground	Released	10 to 14 V

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR (STOP LIGHT SWITCH - ECM)

OK

REPLACE ECM (See page [ES-543](#))

DTC**P0607****Control Module Performance****DESCRIPTION**

This DTC indicates a malfunction in the ECM.

HINT:

The ECM receives signals from each sensor to control all the functions of the cruise control with the microcomputer. When a malfunction is detected, fail-safe remains on until the engine switch is turned off.

DTC No.	DTC Detection Condition	Trouble Area
P0607	The ECM has a supervisory CPU and control ECU inside. When each input STP signal is different for 0.15 sec. or more, this trouble code is output. This trouble code is also output after 0.4 sec. has passed from the time a cruise cancel input signal (STP input) is input to the ECM.	ECM

INSPECTION PROCEDURE

NOTICE:

When the distance control ECU and/or ECM are replaced with a new one, initialization must be performed (See page [CC-119](#)).

1**REPLACE ECM**

HINT:

(See page [CC-119](#))

NEXT**END**

DTC**P1570****Radar Sensor Malfunction****DESCRIPTION**

The millimeter wave radar sensor emits radar beams towards an object in front and measures the distance and direction of the object by receiving the beam reflections. Based on the reflections, the sensor calculates the difference in speed between your own vehicle and an object in front. This data is transmitted to the distance control ECU.

DTC No.	DTC Detection Condition	Trouble Area
P1570	The ECM detects a radar sensor malfunction signal for 0.15 sec. or more while the dynamic radar cruise control is in operation	Millimeter wave radar sensor

HINT:

The millimeter wave radar sensor monitors the millimeter wave circuit activation by itself. This DTC is output when one of the following occurs: 1) the monitor is malfunctioning, 2) an EEPROM error is detected, 3) a voltage error is detected, and 4) the radar sensor is not adjusted. When raindrops or snowflakes strike the millimeter wave radar sensor face, the distance between the vehicle in front and your own vehicle cannot be measured correctly. The dynamic radar cruise control system functions by detecting the beam reflections from the vehicle directly in front. In the following cases, the system may not be able to detect the vehicle in front and may not properly maintain the correct vehicle-to-vehicle distance:

- The vehicle in front is a tall trailer.
- Emission from the vehicle in front or vehicle in other lanes are heavy.

INSPECTION PROCEDURE**NOTICE:**

When the millimeter wave radar sensor is replaced with a new one, adjustment of the radar sensor beam axis must be performed (See page [CC-119](#)).

1**ADJUST MILLIMETER WAVE RADAR SENSOR**

Refer to adjustment (See page [CC-122](#)).

HINT:

It is necessary to make the ECM recognize specification information (whether the vehicle is equipped with the dynamic radar cruise control system or not). When this procedure has not been carried out, this DTC may be output.

- (a) Clear the DTCs and then recheck for DTCs.

OK:

DTC is not output

NG

REPLACE MILLIMETER WAVE RADAR SENSOR (See page [CC-122](#))

OK**SYSTEM IS OK****CC**

DTC**P1572****Improper Aiming of Radar Sensor Beam Axis****DESCRIPTION**

This DTC is output when the scanning angle of the millimeter wave radar sensor is incorrect. This DTC is also output when the millimeter wave radar sensor beam axis is determined to be in an incorrect position.

DTC No.	DTC Detection Condition	Trouble Area
P1572	The ECU detects that the millimeter wave radar sensor beam axis is in an incorrect position (0.15 sec. or more) while the dynamic radar cruise control is in operation	Millimeter wave radar sensor

CC**INSPECTION PROCEDURE****NOTICE:**

When the millimeter wave radar sensor is replaced with a new one, adjustment of the radar sensor beam axis must be performed (See page [CC-122](#)).

1**ADJUST MILLIMETER WAVE RADAR SENSOR**

Refer to adjustment (See page [CC-122](#)).

HINT:

It is necessary to make the ECM recognize specification information (whether the vehicle is equipped with the dynamic radar cruise control system or not). If this procedure has not been carried out, this DTCs may be output.

(a) Clear the DTCs and then recheck for DTCs.

OK:

DTC is not output

NG

REPLACE MILLIMETER WAVE RADAR SENSOR (See page [CC-122](#))

OK**SYSTEM IS OK**

DTC**P1575****Warning Buzzer Malfunction****DESCRIPTION**

The ABS & traction actuator (skid control ECU) receives an alarm demand signal from the ECU and operates the skid control buzzer. The buzzer sounds to warn that the distance between the vehicle in front and your own vehicle is decreasing.

DTC No.	DTC Detection Condition	Trouble Area
P1575	The ECM receives a buzzer abnormal signal for 0.2 sec. or more while the dynamic radar cruise control is in operation	• Skid control buzzer • Skid control buzzer circuit • ABS & traction actuator (Skid control ECU)

HINT:

If the vehicle ahead in the same lane significantly decreases its speed or another vehicle moves in front of your vehicle, adequate deceleration cannot be applied and the vehicle-to-vehicle distance will shorten. At this time, the system sounds the buzzer and the master warning light blinks to inform the driver. This circuit uses CAN communication. Therefore, if there are any malfunctions in the communication circuit, one or more DTCs in the CAN communication system are output.

CC**WIRING DIAGRAM**

Refer to the skid control buzzer circuit (See page [BC-170](#)).

INSPECTION PROCEDURE

Refer to the skid control buzzer circuit (See page [BC-170](#)).

DTC	P1578	Brake System Malfunction
-----	-------	--------------------------

DESCRIPTION

This DTC is output when the VSC system has a problem. Check the VSC system when this DTC is output.

DTC No.	DTC Detection Condition	Trouble Area
P1578	The ECM receives a brake system error signal for 0.2 sec. or more while the dynamic radar cruise control is in operation	VSC system

INSPECTION PROCEDURE

CC

HINT:
This circuit uses CAN communication. Therefore, if there are any malfunctions in the communication circuit, one or more DTCs in the CAN communication system are output.

1	CHECK BRAKE SYSTEM
---	--------------------

- (a) Refer to HOW TO PROCEED WITH TROUBLESHOOTING (See page [BC-17](#)).



END

DTC	P1615	Communication Error from Distance Control ECU to ECM
DTC	U1101	Lost Communication with Distance Control ECU

DESCRIPTION

The distance control ECU receives information about the area in front of the vehicle from the millimeter wave radar sensor and then sends a brake control demand signal (deceleration demand) and diagnosis signals, such as millimeter wave radar sensor grime signals or millimeter wave radar sensor malfunction signals, to the ECM.

DTC No.	DTC Detection Condition	Trouble Area
P1615	While the dynamic radar cruise control is either preparing for operation or operating, if communication data from the distance control ECU is logically inconsistent for a certain amount of time, the ECM records this logical error code	• Communication circuit • Distance control ECU • ECM
U1101	While the dynamic radar cruise control is either preparing for operation or operating, if communication data from the distance control ECU is invalid for a certain amount of time, the ECM records this communication cut off code	• Communication circuit • Distance control ECU • ECM

CC**INSPECTION PROCEDURE****NOTICE:**

When the distance control ECU and/or ECM are replaced with a new one, initialization must be performed (See page [CC-119](#)).

HINT:

This circuit uses CAN communication. Therefore, if there are any malfunctions in the communication circuit, one or more DTCs in the CAN communication system are output.

1	CHECK CAN COMMUNICATION SYSTEM
----------	---------------------------------------

- (a) Refer to HOW TO PROCEED WITH TROUBLESHOOTING (See page [CA-11](#)).

NEXT**END**

DTC	P1616	Communication Error from ECM to Distance Control ECU
------------	--------------	---

DTC	U0100	Lost Communication with ECM/PCM "A"
------------	--------------	--

DESCRIPTION

The ECM receives signals from each sensor and ECU, then sends signals such as A/T signals, cruise control operation signals, low speed operation signals, brake control operation signals, and radar light emission prohibiting signals, to the distance control ECU. The ECM is the only component that has a function to record and output the DTCs in the dynamic radar cruise control system. Therefore, if the distance control ECU detects a communication error from the ECM, it sends a malfunction signal back to the ECM.

DTC No.	DTC Detection Condition	Trouble Area
P1616	While the dynamic radar cruise control is either preparing for operation or operating, if the ECM continuously receives a logical error signal from the distance control ECU for more than a specific amount of time, the ECM records this logical error code	• Communication circuit • ECM • Distance control ECU
U0100	While the dynamic radar cruise control is either preparing for operation or operating, if the ECM continuously receives a communication cut off signal from the distance control ECU for more than a specific amount of time, the ECM records this communication cut off code	• Communication circuit • ECM • Distance control ECU

INSPECTION PROCEDURE

NOTICE:

When the distance control ECU and/or are replaced with a new one, initialization must be performed (See page [CC-119](#)).

HINT:

This circuit uses CAN communication. Therefore, if there are any malfunctions in the communication circuit, one or more DTCs in the CAN communication system are output.

1	CHECK CAN COMMUNICATION SYSTEM
----------	---------------------------------------

- (a) Refer to HOW TO PROCEED WITH TROUBLESHOOTING (See page [CA-11](#)).

NEXT

END

DTC**P1617****Distance Control ECU Malfunction****DESCRIPTION**

In the dynamic radar cruise control system, the ECM and the distance control ECU communicate with one another to control the system based on some designation information. If the designation information of the ECM and distance control ECU is different or the distance control ECU is malfunctioning, this DTC is recorded.

DTC No.	DTC Detection Condition	Trouble Area
P1617	While the dynamic radar cruise control is either preparing for operation or operating, if a designation signal from the ECM and a designation return signal from the distance control ECU do not match or the distance control ECU is malfunctioning for more than a specific amount of time, the ECM records this trouble code	Distance control ECU

CC**INSPECTION PROCEDURE****NOTICE:**

When the distance control ECU and/or ECM are replaced with a new one, initialization must be performed (See page [CC-119](#)).

1**CONFIRM DESIGNATION INFORMATION**

- (a) Confirm the designation information.
- (1) Turn the engine switch on (IG).
 - (2) Turn the cruise control main switch on.
 - (3) With the brake pedal depressed, push the cruise control main switch to + (ACCEL)/RES (RESUME) 3 times within 3 seconds. Check that the skid control buzzer sounds at this time.

OK:

The skid control buzzer sounds. (Initialization is performed.)

NOTICE:

- Do not turn the light control switch on at this time because the beam axis automatic adjustment mode has already started, which could lead to incorrect beam axis. If the light control switch is turned on by mistake, readjust the beam axis (refer to page for beam axis adjustment) (See page [CC-122](#)).
- If initialization cannot be performed, first inspect the stop light switch circuit, cruise main switch circuit, and skid control buzzer circuit.

NG**REPLACE DISTANCE CONTROL ECU (See page [CC-118](#))****OK**

2

CHECK DTC

(a) Clear the DTCs and then recheck for DTCs.

Result

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

HINT:
If DTC P1617 is still output after replacing the distance control ECU, replace the ECM.

B

REPLACE DISTANCE CONTROL ECU (See page CC-118)

A

END

DTC	P1630	Communication Error from VSC to ECM
DTC	U0122	Lost Communication with Vehicle Dynamics Control Module

DESCRIPTION

The skid control ECU sends signals such as cruise control cancel demand signals and brake operation demand from ECM response signals to the ECM when the dynamic radar cruise control system is in operation.

DTC No.	DTC Detection Condition	Trouble Area
P1630	While the dynamic radar cruise control is either preparing for operation or operating, if communication data from the skid control ECU is logically inconsistent for a certain amount of time, the ECM records this logical error code	• Communication circuit • ABS & traction actuator (Skid control ECU) • ECM
U0122	While dynamic radar cruise control is either preparing for operation or operating, if communication data from the skid control ECU is invalid for a certain amount of time, the ECM records this communication cut off code	• Communication circuit • ABS & traction actuator (Skid control ECU) • ECM

CC**INSPECTION PROCEDURE****NOTICE:**

When the distance control ECU and/or ECM are replaced with a new one, initialization must be performed (See page [CC-119](#)).

HINT:

This circuit uses CAN communication. Therefore, if there are any malfunctions in the communication circuit, one or more DTCs in the CAN communication system are output.

1	CHECK CAN COMMUNICATION SYSTEM
----------	---------------------------------------

- (a) Refer to HOW TO PROCEED WITH TROUBLESHOOTING (See page [CA-11](#)).

NEXT**END**

DTC	P1631	Communication Error from ECM to VSC
DTC	U0100	Lost Communication with ECM/PCM "A"

DESCRIPTION

The ECM sends signals such as A/T information signals, dynamic radar cruise control operation signals, brake operation demand signals, and buzzer operation demand signals to the skid control ECU when the dynamic radar cruise control is in operation. The ECM is the only component that has a function to record and output the DTCs in the dynamic radar cruise control system. Therefore, if the skid control ECU detects a communication error from the ECM, it sends a malfunction signal back to the ECM.

DTC No.	DTC Detection Condition	Trouble Area
P1631	While the dynamic radar cruise control is either preparing for operation or operating, if the ECM continuously receives a logical error signal from the skid control ECU for a certain amount of time, the ECM records this logical error code	• Communication circuit • ECM • ABS & traction actuator (Skid control ECU)
U0100	While the dynamic radar cruise control is either preparing for operation or operating, if the ECM continuously receives a communication cut off signal from the ABS & traction actuator (skid control ECU) for a certain amount of time, the ECM records this communication cut off code	• Communication circuit • ECM • ABS & traction actuator (Skid control ECU)

INSPECTION PROCEDURE**NOTICE:**

When the distance control ECU and/or ECM are replaced with a new one, initialization must be performed (See page [CC-119](#)).

HINT:

This circuit uses CAN communication. Therefore, if there are any malfunctions in the communication circuit, one or more DTCs in the CAN communication system are output.

1	CHECK CAN COMMUNICATION SYSTEM
----------	---------------------------------------

Refer to HOW TO PROCEED WITH TROUBLESHOOTING
(See page [CA-11](#)).

NEXT

END

DTC**U0123****Communication Error of Yaw Rate Sensor****DESCRIPTION**

This circuit detects the yaw rate of the vehicle and transmits its signal to the skid control ECU and distance control ECU.

DTC No.	DTC Detection Condition	Trouble Area
U0123	While the dynamic radar cruise control is either preparing for operation or operating, the ECM continuously receives a yaw rate sensor malfunction signal for a certain amount of time	• Communication circuit • Yaw rate sensor • Distance control ECU • ECM

INSPECTION PROCEDURE**NOTICE:**

When the distance control ECU and/or ECM are replaced with a new one, initialization must be performed (See page [CC-119](#)).

HINT:

This circuit uses CAN communication. Therefore, if there are any malfunctions in the communication circuit, one or more DTCs in the CAN communication system are output.

1**CHECK CAN COMMUNICATION SYSTEM**

- (a) Refer to HOW TO PROCEED WITH TROUBLESHOOTING (See page [CA-11](#)).

NEXT**END****CC**

DTC	U0126	Lost Communication with Steering Angle Sensor Module
------------	--------------	---

DESCRIPTION

This circuit detects the angle and direction of the steering wheel and automatically transmits a signal to the skid control ECU and distance control ECU.

DTC No.	DTC Detection Condition	Trouble Area
U0126	While the dynamic radar cruise control is either preparing for operation or operating, if the ECM continuously receives a steering sensor communication error signal for a certain amount of time, the distance control ECU sends a signal to the ECM to record this trouble code	• Communication circuit • Steering angle sensor • Distance control ECU • ECM

INSPECTION PROCEDURE**NOTICE:**

When the distance control ECU and/or ECM are replaced with a new one, initialization must be performed (See page [CC-119](#)).

HINT:

This circuit uses CAN communication. Therefore, if there are any malfunctions in the communication circuit, one or more DTCs in the CAN communication system are output.

1	CHECK CAN COMMUNICATION SYSTEM
----------	---------------------------------------

- (a) Refer to HOW TO PROCEED WITH TROUBLESHOOTING (See page [CA-11](#)).

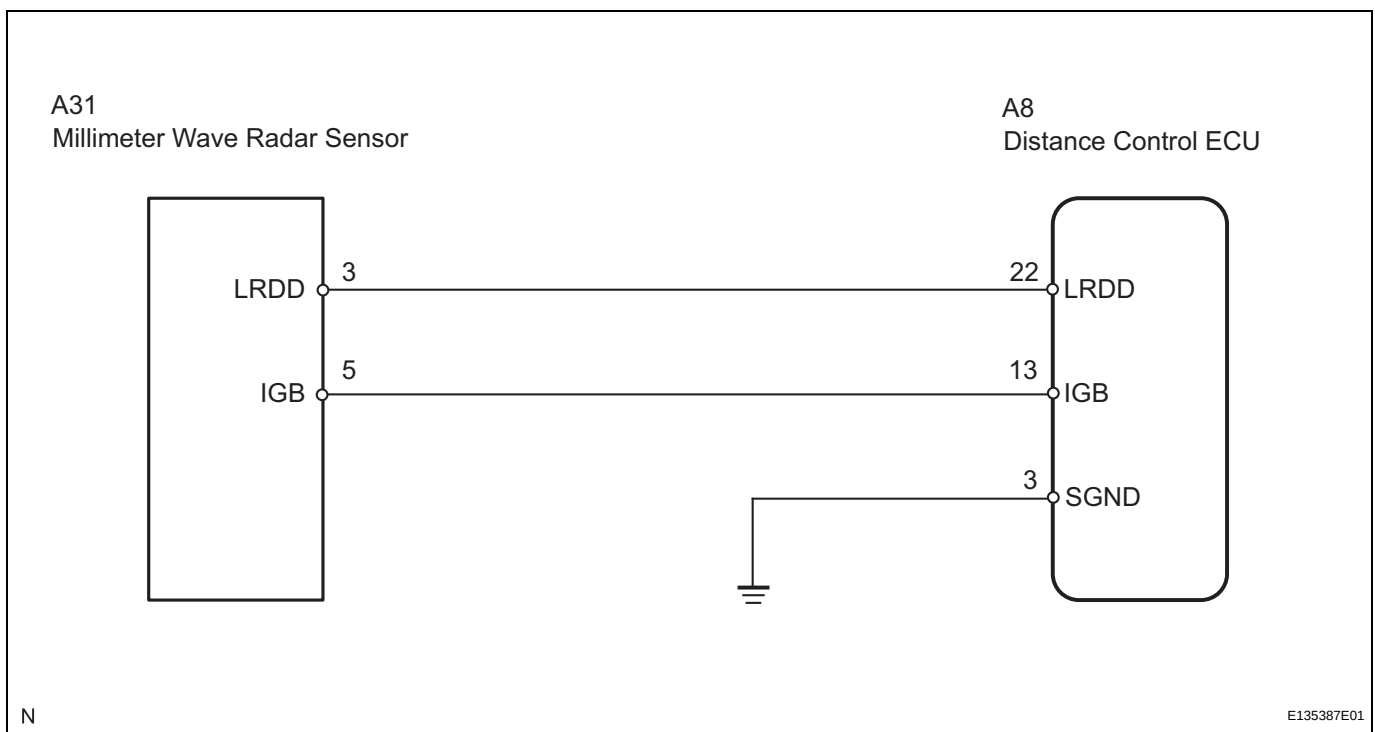
NEXT

END

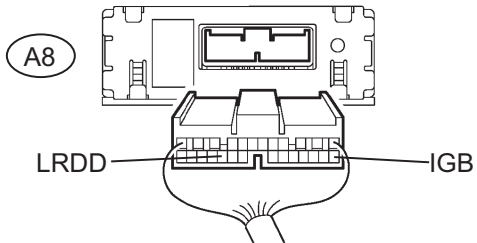
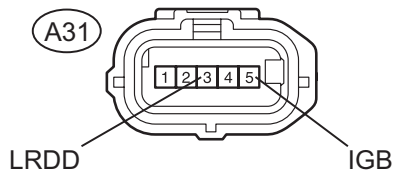
DTC**U0235****Lost Communication with Cruise Control Front Distance Range Sensor****DESCRIPTION**

The millimeter wave radar sensor and distance control ECU transmit the data for general vehicle control and diagnosis function along the communication line. The millimeter wave radar sensor transmits information about the vehicle in front to the distance control ECU.

DTC No.	DTC Detection Condition	Trouble Area
U0235	The ECM detects a communication error signal (from the millimeter wave radar sensor to the distance control ECU) for 0.15 sec. or more while the dynamic radar cruise control is in operation	• Communication circuit • Millimeter wave radar sensor • Distance control ECU

CC**WIRING DIAGRAM****INSPECTION PROCEDURE****NOTICE:**

- When the distance control ECU and/or ECM are replaced with a new one, initialization must be performed (See page [CC-119](#)).
- When the millimeter wave radar sensor is replaced with a new one, adjustment of the radar sensor beam axis must be performed (See page [CC-122](#)).

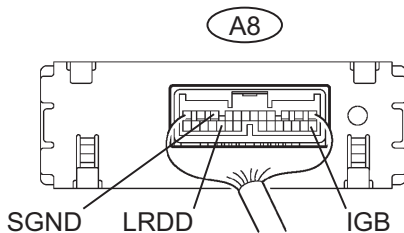
1**CHECK HARNESS AND CONNECTOR (DISTANCE CONTROL ECU - MILLIMETER WAVE RADAR SENSOR)****Distance Control ECU
Wire Harness View:****Millimeter Wave Radar
Sensor Wire Harness View:**

E135385E01

- (a) Disconnect the distance control ECU and millimeter wave radar sensor connectors.
 (b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
A8-22 (LRDD) - A31-3 (LRDD)	Always	Below 1 Ω
A8-13 (IGB) - A31-5 (IGB)	Always	Below 1 Ω
A8-22 (LRDD) - Body ground	Always	10 k Ω or higher
A8-13 (IGB) - Body ground	Always	10 k Ω or higher

NG**REPAIR OR REPLACE HARNESS OR CONNECTOR****OK****2****CHECK DISTANCE CONTROL ECU****Distance Control ECU
Wire Harness View:**

E135386E02

- (a) Disconnect the millimeter wave radar sensor connector.
 (b) Measure the voltage according to the value(s) in the table below.

Standard voltage

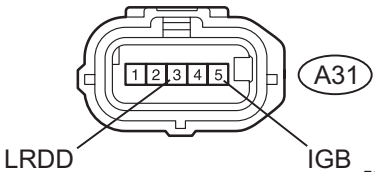
Tester Connection	Condition	Specified Condition
A8-13 (IGB) - Body ground	Engine switch on (IG)	10 to 14 V
A8-22 (LRDD) - A8-10 (SGND)	Engine switch on (IG)	4.5 to 5.5 V

NG**REPLACE DISTANCE CONTROL ECU (See page CC-118)**

OK

3 CHECK MILLIMETER WAVE RADAR SENSOR

Millimeter Wave Radar Sensor Wire
Harness Side Connector Front View:

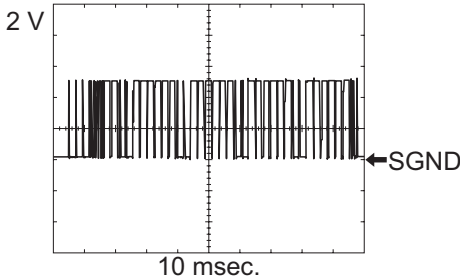


- (a) Reconnect the millimeter wave radar sensor connector.
- (b) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester connection	Condition	Specified Condition
A31-5 (IGB) - Body ground	Engine switch on (IG)	10 to 14 V

CC



- (c) Check the signal waveform.

Item	Contents
Terminal	A31-3 (LRDD) - Body ground
Tool setting	2 V/DIV., 10 msec./DIV.
Vehicle condition	Engine switch on (IG)

OK:

A waveform similar to that in the illustration on the left is output.

NG

REPLACE MILLIMETER WAVE RADAR
SENSOR (See page [CC-122](#))

OK

END (INTERMITTENT PROBLEM IS PRESENT)

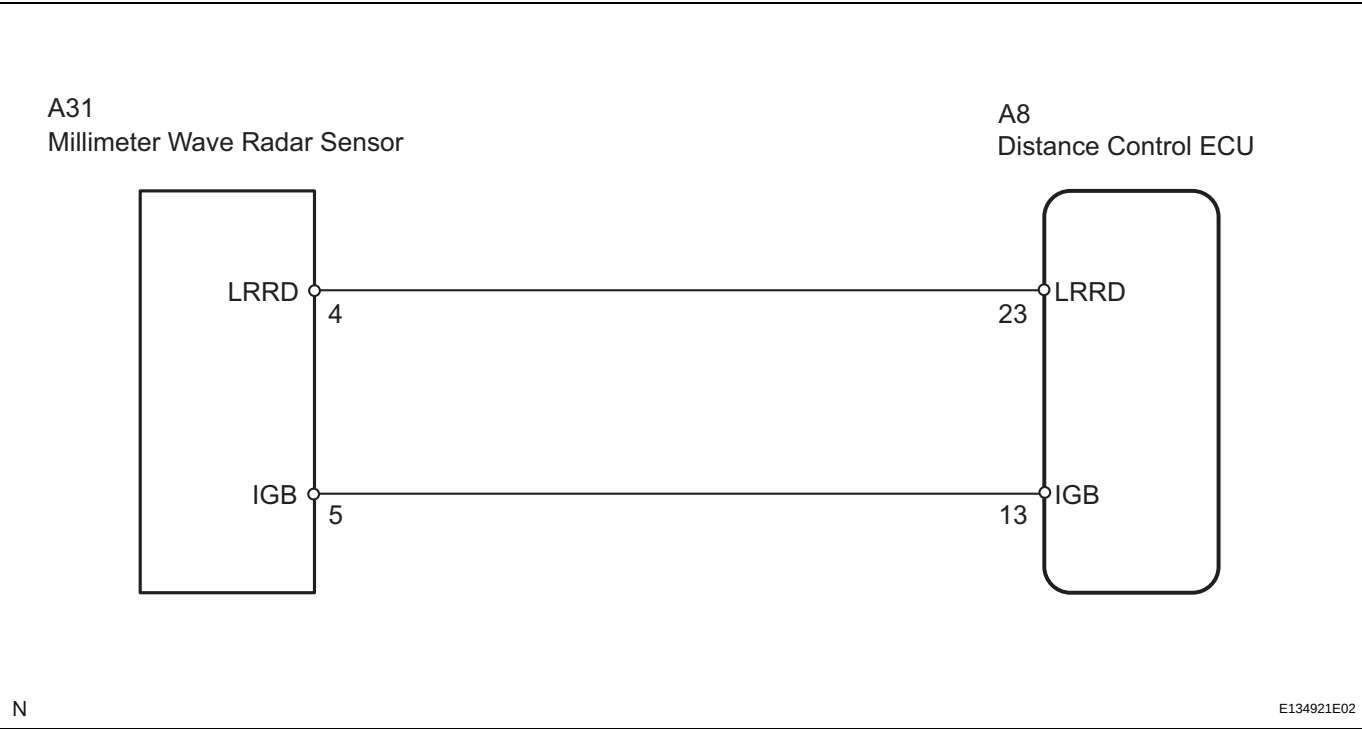
DTC	U1102	Lost Communication with Radar Sensor
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DESCRIPTION

The millimeter wave radar sensor and distance control ECU transmit the data for general vehicle control and diagnosis function along the communication line. The distance control ECU determines the curve radius information based on signals from the steering wheel and yaw rate sensor. The distance control ECU transmits the current vehicle speed and curve radius information to the millimeter wave radar sensor.

DTC No.	DTC Detection Condition	Trouble Area
U1102	The ECM detects a communication error signal (from the distance control ECU to the millimeter wave radar sensor) for 0.15 sec. or more while the dynamic radar cruise control is in operation	• Communication circuit • Millimeter wave radar sensor • Distance control ECU

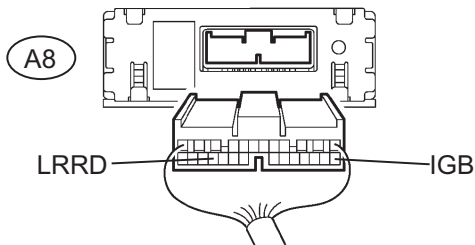
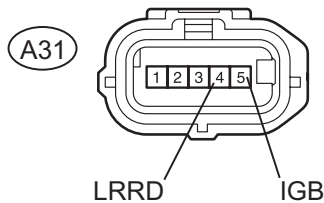
WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

- When the distance control ECU and/or ECM are replaced with a new one, initialization must be performed (See page CC-119).
- When the millimeter wave radar sensor is replaced with a new one, adjustment of the radar sensor beam axis must be performed (See page CC-122).

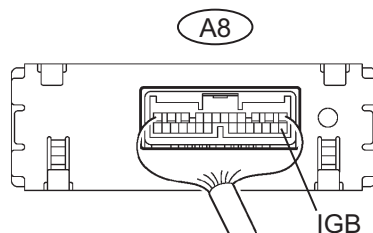
1**CHECK HARNESS AND CONNECTOR (DISTANCE CONTROL ECU - MILLIMETER WAVE RADAR SENSOR)****Distance Control ECU
Wire Harness View:****Millimeter Wave Radar
Sensor Wire Harness View:**

E135385E02

- (a) Disconnect the distance control ECU and millimeter wave radar sensor connectors.
- (b) Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Condition	Specified Condition
A8-23 (LRRD) - A31-4 (LRRD)	Always	Below 1 Ω
A8-13 (IGB) - A31-5 (IGB)	Always	Below 1 Ω
A8-23 (LRRD) - Body ground	Always	10 k Ω or higher
A8-13 (IGB) - Body ground	Always	10 k Ω or higher

NG**REPAIR OR REPLACE HARNESS OR CONNECTOR****OK****2****CHECK DISTANCE CONTROL ECU****Distance Control ECU
Wire Harness View:**

E135386E04

- (a) Measure the voltage according to the value(s) in the table below.

Standard voltage

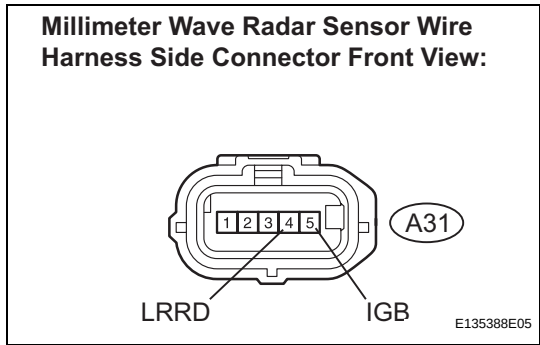
Tester Connection	Condition	Specified Condition
A8-13 (IGB) - Body ground	Engine switch on (IG)	10 to 14 V

NG**REPLACE DISTANCE CONTROL ECU (See page [CC-118](#))**

OK

3

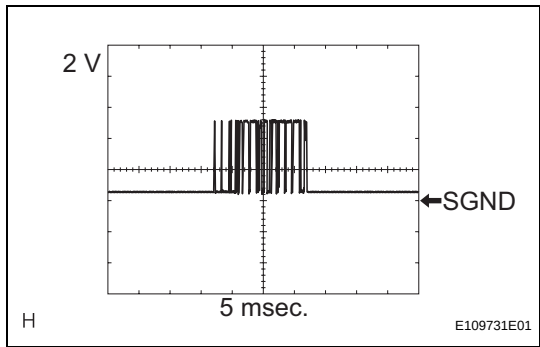
CHECK MILLIMETER WAVE RADAR SENSOR



(a) Measure the voltage according to the value(s) in the table below.

Standard voltage

Tester Connection	Condition	Specified Condition
A31-5 (IGB) - Body ground	Engine switch on (IG)	10 to 14 V



(b) Check the signal waveform.

Item	Contents
Terminal	A31-4 (LRRD) - Body ground
Tool setting	2 V/DIV., 10 msec./DIV.
Vehicle condition	Engine switch on (IG)

OK:

A waveform similar to that in the illustration on the left is output.

NG

REPLACE MILLIMETER WAVE RADAR SENSOR (See page [CC-122](#))

OK

END (INTERMITTENT PROBLEM IS PRESENT)