

ACCESSORIES & EQUIPMENT

Intuitive Parking Assist System (Diagnostic Codes & Circuit Tests) - Sienna

INTUITIVE PARKING ASSIST SYSTEM

DTC C1AE1: FRONT LEFT SENSOR MALFUNCTION

DESCRIPTION

The No. 1 ultrasonic sensor (front left sensor) is installed on the front bumper. The ECU detects obstacles based on signals received from the No. 1 ultrasonic sensor (front left sensor). If the No. 1 ultrasonic sensor (front left sensor) has an open or other malfunction, it will not function normally.

DTC Code	DTC Detection Condition	Trouble Area
C1AE1	A malfunction of the No. 1 ultrasonic sensor (front left sensor).	- No. 1 ultrasonic sensor (front left sensor) - Clearance warning ECU

INSPECTION PROCEDURE

NOTE: If the DTC is output after repairs, turn the ignition switch to ON and move the shift lever to R. Then clear the DTC.

PROCEDURE

1. CHECK DTC OUTPUT

- Clear the DTCs. Refer to DTC CHECK / CLEAR.
- Check for DTCs. Refer to DTC CHECK / CLEAR.

RESULT

Result	Proceed to
DTC C1AE1 is output	A
No DTC is output	B

B --> See step 4

A: Go to next step

2. REPLACE NO. 1 ULTRASONIC SENSOR (FRONT LEFT SENSOR)

- Replace the No. 1 ultrasonic sensor (front left sensor) with a normally functioning sensor. Refer to **REMOVAL** .

NEXT: Go to next step

3. CHECK DTC OUTPUT

- Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AE1 is output	A
No DTC is output	B

B --> END (NO. 1 ULTRASONIC SENSOR (FRONT LEFT SENSOR) IS DEFECTIVE)

A --> See step 5

- USE SIMULATION METHOD TO CHECK. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
- REPLACE CLEARANCE WARNING ECU. Refer to REMOVAL**

DTC C1AE4: FRONT RIGHT SENSOR MALFUNCTION

DESCRIPTION

The No. 1 ultrasonic sensor (front right sensor) is installed on the front bumper. The ECU detects obstacles based on signals received from the No. 1 ultrasonic sensor (front right sensor). If the No. 1 ultrasonic sensor (front right sensor) has an open circuit or other malfunction, it will not function normally.

DTC Code	DTC Detection Condition	Trouble Area
C1AE4	A malfunction of the No. 1 ultrasonic sensor (front right sensor).	- No. 1 ultrasonic sensor (front right sensor) - Clearance warning ECU

INSPECTION PROCEDURE

NOTE: If the DTC is output after repairs, turn the ignition switch to ON and move the shift lever to R. Then clear the DTC.

PROCEDURE

1. CHECK DTC OUTPUT

- a. Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- b. Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AE4 is output	A
No DTC is output	B

B --> See step 4

A: Go to next step

2. REPLACE NO. 1 ULTRASONIC SENSOR (FRONT RIGHT SENSOR)

- a. Replace the No. 1 ultrasonic sensor (front right sensor) with a normally functioning sensor. Refer to **REMOVAL** .

NEXT: Go to next step

3. CHECK DTC OUTPUT

- a. Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- b. Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AE4 is output	A
No DTC is output	B

B --> END (NO. 1 ULTRASONIC SENSOR (FRONT RIGHT SENSOR) IS DEFECTIVE)

A --> See step 5

- 4. USE SIMULATION METHOD TO CHECK. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
- 5. REPLACE CLEARANCE WARNING ECU. Refer to REMOVAL**

DTC C1AE6: REAR LEFT SENSOR MALFUNCTION

DESCRIPTION

The No. 1 ultrasonic sensor (rear left sensor) is installed on the rear bumper. The ECU detects obstacles based on signals received from the No. 1 ultrasonic sensor (rear left sensor). If the No. 1 ultrasonic sensor (rear left sensor) has an open circuit or other malfunction, it will not function normally.

DTC Code	DTC Detection Condition	Trouble Area
C1AE6	A malfunction of the No. 1 ultrasonic sensor (rear left sensor).	• No. 1 ultrasonic sensor (rear left sensor) • Clearance warning ECU

INSPECTION PROCEDURE

NOTE: If the DTC is output after repairs, turn the ignition switch to ON and move the shift lever to R. Then clear the DTC.

PROCEDURE

- 1. CHECK DTC OUTPUT**
 - a. Clear the DTCs. Refer to DTC CHECK / CLEAR .
 - b. Check for DTCs. Refer to DTC CHECK / CLEAR .

RESULT

Result	Proceed to
DTC C1AE6 is output	A
No DTC is output	B

B --> See step 4

A: Go to next step

2. REPLACE NO. 1 ULTRASONIC SENSOR (REAR LEFT SENSOR)

- a. Replace the No. 1 ultrasonic sensor (rear left sensor) with a normally functioning sensor. Refer to **REMOVAL** .

NEXT: Go to next step

3. CHECK DTC OUTPUT

- a. Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- b. Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AE6 is output	A
No DTC is output	B

B --> END (NO. 1 ULTRASONIC SENSOR (REAR LEFT SENSOR) IS DEFECTIVE)

A --> See step 5

4. **USE SIMULATION METHOD TO CHECK. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
5. **REPLACE CLEARANCE WARNING ECU. Refer to REMOVAL**

DTC C1AE7: REAR LEFT CENTER SENSOR MALFUNCTION

DESCRIPTION

The No. 1 ultrasonic sensor (rear left center sensor) is installed on the rear bumper. The ECU detects obstacles based on signals received from the No. 1 ultrasonic sensor (rear left center sensor). If the No. 1 ultrasonic sensor (rear left center sensor) has an open circuit or other malfunction, it will not function normally.

DTC Code	DTC Detection Condition	Trouble Area
C1AE7	A malfunction of the No. 1 ultrasonic sensor (rear left center sensor).	• No. 1 ultrasonic sensor (rear left center sensor) • Clearance warning ECU

INSPECTION PROCEDURE

NOTE: If the DTC is output after repairs, turn the ignition switch to ON and move the shift lever to R. Then clear the DTC.

PROCEDURE

1. CHECK DTC OUTPUT

- a. Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- b. Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AE7 is output	A
No DTC is output	B

B --> See step 4

A: Go to next step

2. REPLACE NO. 1 ULTRASONIC SENSOR (REAR LEFT CENTER SENSOR)

- a. Replace the No. 1 ultrasonic sensor (rear left center sensor) with a normally functioning sensor. Refer to **REMOVAL** .

NEXT: Go to next step

3. CHECK DTC OUTPUT

- a. Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- b. Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AE7 is output	A
No DTC is output	B

B --> END (NO. 1 ULTRASONIC SENSOR (REAR LEFT CENTER SENSOR) IS DEFECTIVE)

A --> See step 5

- 4. USE SIMULATION METHOD TO CHECK. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
- 5. REPLACE CLEARANCE WARNING ECU. Refer to REMOVAL**

DTC C1AE8: REAR RIGHT CENTER SENSOR MALFUNCTION

DESCRIPTION

The No. 1 ultrasonic sensor (rear right center sensor) is installed on the rear bumper. The ECU detects obstacles based on signals received from the No. 1 ultrasonic sensor (rear right center sensor). If the No. 1 ultrasonic sensor (rear right center sensor) has an open circuit or other malfunction, it will not function normally.

DTC Code	DTC Detection Condition	Trouble Area
C1AE8	A malfunction of the No. 1 ultrasonic sensor (rear right center sensor).	• No. 1 ultrasonic sensor (rear right center sensor) • Clearance warning ECU

INSPECTION PROCEDURE

NOTE: If the DTC is output after repairs, turn the ignition switch to ON and move the shift lever to R. Then clear the DTC.

PROCEDURE

- 1. CHECK DTC OUTPUT**
 - a. Clear the DTCs. Refer to DTC CHECK / CLEAR.
 - b. Check for DTCs. Refer to DTC CHECK / CLEAR.

RESULT

Result	Proceed to
DTC C1AE8 is output	A
No DTC is output	B

B --> See step 4

A: Go to next step

2. REPLACE NO. 1 ULTRASONIC SENSOR (REAR RIGHT CENTER SENSOR)

- a. Replace the No. 1 ultrasonic sensor (rear right center sensor) with a normally functioning sensor.
Refer to **REMOVAL** .

NEXT: Go to next step

3. CHECK DTC OUTPUT

- a. Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- b. Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AE8 is output	A
No DTC is output	B

B --> END (NO. 1 ULTRASONIC SENSOR (REAR RIGHT CENTER SENSOR) IS DEFECTIVE)

A --> See step 5

4. **USE SIMULATION METHOD TO CHECK.** Refer to **HOW TO PROCEED WITH TROUBLESHOOTING**
5. **REPLACE CLEARANCE WARNING ECU.** Refer to **REMOVAL**

DTC C1AE9: REAR RIGHT SENSOR MALFUNCTION

DESCRIPTION

The No. 1 ultrasonic sensor (rear right sensor) is installed on the rear bumper. The ECU detects obstacles based on signals received from the No. 1 ultrasonic sensor (rear right sensor). If the No. 1 ultrasonic sensor (rear right sensor) has an open or other malfunction, it will not function normally.

DTC Code	DTC Detection Condition	Trouble Area
C1AE9	A malfunction of the No. 1 ultrasonic sensor (rear right sensor).	• No. 1 ultrasonic sensor (rear right sensor) • Clearance warning ECU

INSPECTION PROCEDURE

NOTE: If the DTC is output after repairs, turn the ignition switch to ON and move the shift lever to R. Then clear the DTC.

PROCEDURE

1. CHECK DTC OUTPUT

- a. Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- b. Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AE9 is output	A
No DTC is output	B

B --> See step 4

A: Go to next step

2. REPLACE NO. 1 ULTRASONIC SENSOR (REAR RIGHT SENSOR)

- a. Replace the No. 1 ultrasonic sensor (rear right sensor) with a normally functioning sensor. Refer to **REMOVAL** .

NEXT: Go to next step

3. CHECK DTC OUTPUT

- a. Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- b. Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AE9 is output	A
No DTC is output	B

B --> END (NO. 1 ULTRASONIC SENSOR (REAR RIGHT SENSOR) IS DEFECTIVE)

A --> See step 5

4. USE SIMULATION METHOD TO CHECK. Refer to HOW TO PROCEED WITH TROUBLESHOOTING

5. REPLACE CLEARANCE WARNING ECU. Refer to REMOVAL

DTC C1AEC: FRONT SENSOR COMMUNICATION MALFUNCTION

DESCRIPTION

This DTC is stored when there is an open or short circuit in the communication line between the No. 1 ultrasonic sensors (front sensor) and the ECU, or when there is a malfunction in a No. 1 ultrasonic sensor (front sensor).

DTC Code	DTC Detection Condition	Trouble Area
C1AEC	An open or short circuit in the No. 1 ultrasonic sensors (front sensor) and ECU or a malfunction in a No. 1 ultrasonic sensor (front sensor) during initialization mode after the ignition switch is turned to ON.	- No. 1 ultrasonic sensor (front sensor) circuit - Clearance warning ECU

WIRING DIAGRAM

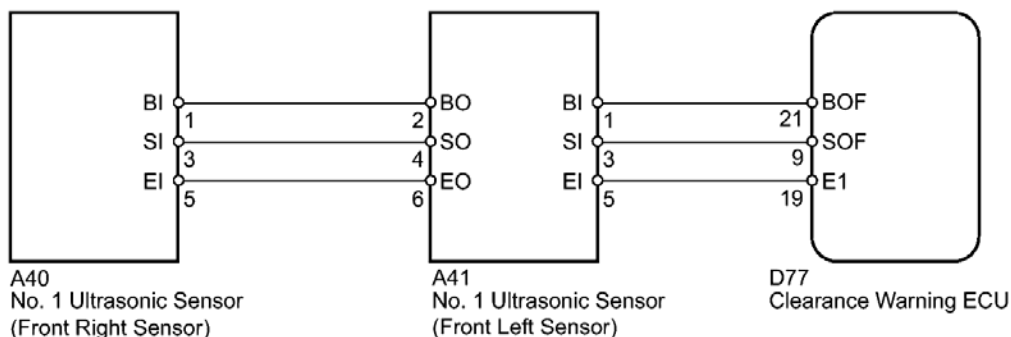


Fig. 1: Clearance Warning ECU Circuit Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. CHECK DTC OUTPUT

- a. Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- b. Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AEC is output	A
No DTC is output	B

B --> See step 11

A: Go to next step

2. INSPECT CLEARANCE WARNING ECU

*a

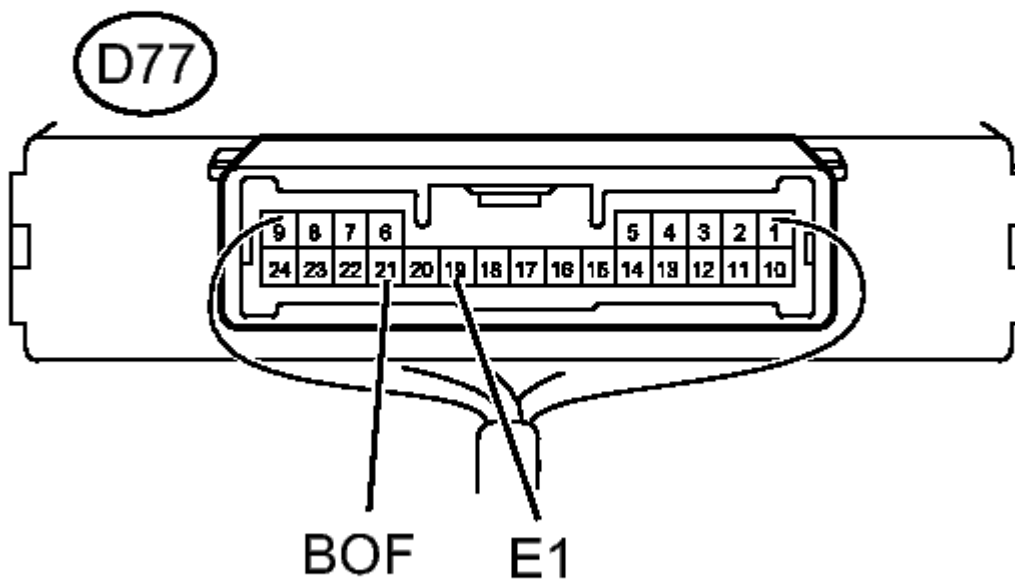


Fig. 2: Inspecting Clearance Warning ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D77-21 (BOF) - Body ground	Ignition switch ON	7.2 to 8.8 V

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

Standard Resistance

Tester Connection	Condition	Specified Condition
D77-19 (E1) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Component with harness connected (Clearance Warning ECU)
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NG --> See step 10

OK: Go to next step

3. CHECK HARNESS AND CONNECTOR (NO. 1 ULTRASONIC SENSOR (FRONT LEFT SENSOR) - CLEARANCE WARNING ECU)

- Disconnect the A41 No. 1 ultrasonic sensor (front left sensor) connector.
- Disconnect the D77 clearance warning ECU connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
A41-1 (BI) - D77-21 (BOF)	Always	Below 1 ohms
A41-3 (SI) - D77-9 (SOF)	Always	Below 1 ohms
A41-5 (EI) - D77-19 (EI)	Always	Below 1 ohms
A41-1 (BI) - Body ground	Always	10 kohms or higher
A41-3 (SI) - Body	Always	10 kohms or higher

ground		
A41-5 (EI) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (NO. 1 ULTRASONIC SENSOR (FRONT LEFT SENSOR) - NO. 1 ULTRASONIC SENSOR (FRONT RIGHT SENSOR))

- Disconnect the A40 No. 1 ultrasonic sensor (front right sensor) and A41 No. 1 ultrasonic sensor (front left sensor) connectors.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
A41-2 (BO) - A40-1 (BI)	Always	Below 1 ohms
A41-4 (SO) - A40-3 (SI)	Always	Below 1 ohms
A41-6 (EO) - A40-5 (EI)	Always	Below 1 ohms
A41-2 (BO) - Body ground	Always	10 kohms or higher
A41-4 (SO) - Body ground	Always	10 kohms or higher
A41-6 (EO) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. CHECK DTC OUTPUT

- Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AEC is output and multi-information display indicates open circuit (Front Left and Front Right)	A
No DTC is output	B

B --> See step 11

A: Go to next step

6. REPLACE NO. 1 ULTRASONIC SENSOR (FRONT LEFT SENSOR)

- Replace the No. 1 ultrasonic sensor (front left sensor) with a normally functioning sensor. Refer to **REMOVAL** .

NEXT: Go to next step

7. CHECK DTC OUTPUT

- Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AEC is output	A
No DTC is output	B

B --> END (NO. 1 ULTRASONIC SENSOR (FRONT LEFT SENSOR) IS DEFECTIVE)

A: Go to next step

8. REPLACE NO. 1 ULTRASONIC SENSOR (FRONT RIGHT SENSOR)

- a. Replace the No. 1 ultrasonic sensor (front right sensor) with a normally functioning sensor. Refer to REMOVAL .

NEXT: Go to next step

9. CHECK DTC OUTPUT

- a. Clear the DTCs. Refer to DTC CHECK / CLEAR .
- b. Check for DTCs. Refer to DTC CHECK / CLEAR .

RESULT

Result	Proceed to
DTC C1AEC is output	A
No DTC is output	B

B --> END (NO. 1 ULTRASONIC SENSOR (FRONT RIGHT SENSOR) IS DEFECTIVE)

A --> See step 10

10. REPLACE CLEARANCE WARNING ECU. Refer to REMOVAL

11. USE SIMULATION METHOD TO CHECK. Refer to HOW TO PROCEED WITH TROUBLESHOOTING

DTC C1AED: REAR SENSOR COMMUNICATION MALFUNCTION

DESCRIPTION

This DTC is stored when there is an open or short circuit in the communication line between the No. 1 ultrasonic sensors (rear sensor and rear center sensor) and the ECU, or when there is a malfunction in a No. 1 ultrasonic sensor (rear sensor and rear center sensor).

DTC Code	DTC Detection Condition	Trouble Area
C1AED	An open or short circuit in the communication line between the No. 1 ultrasonic sensors (rear sensor and rear center sensor) and ECU or a malfunction in a No. 1 ultrasonic sensor (rear sensor and rear center sensor) during initialization mode after the	• No. 1 ultrasonic sensor (rear sensor and rear center sensor) circuit • Clearance warning ECU

ignition switch is turned to ON.

WIRING DIAGRAM

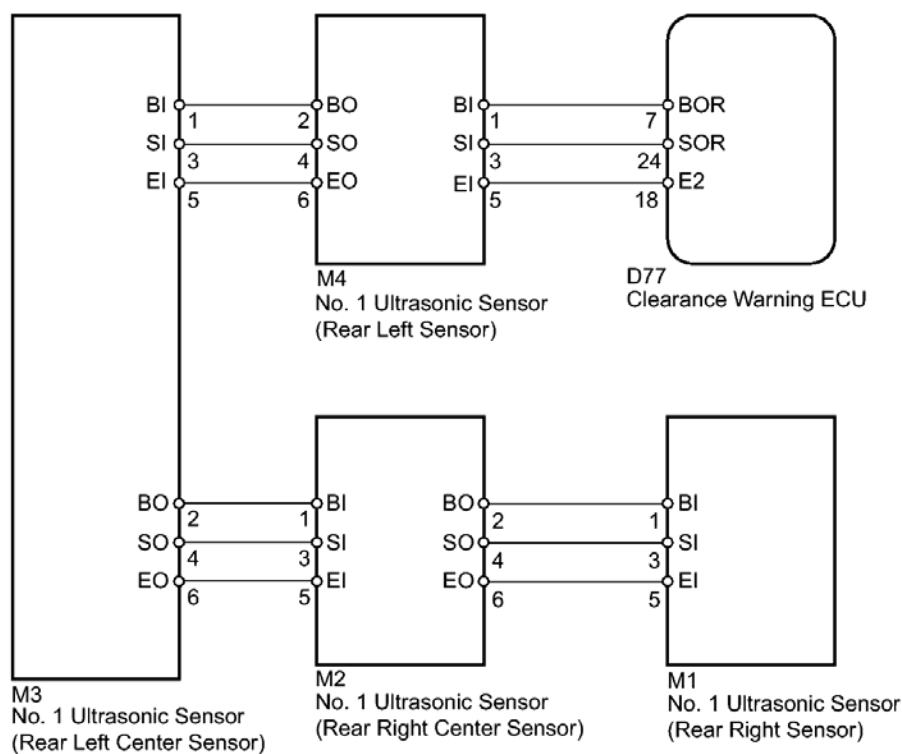


Fig. 3: Ultrasonic Sensor Circuit Wiring Diagram

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. CHECK DTC OUTPUT

- Clear the DTCs. Refer to **DTC CHECK / CLEAR**.
- Check for DTCs. Refer to **DTC CHECK / CLEAR**.

RESULT

Result	Proceed to
DTC C1AED is	A

output	
No DTC is output	B

B --> See step 16

A: Go to next step

2. INSPECT CLEARANCE WARNING ECU

***a**

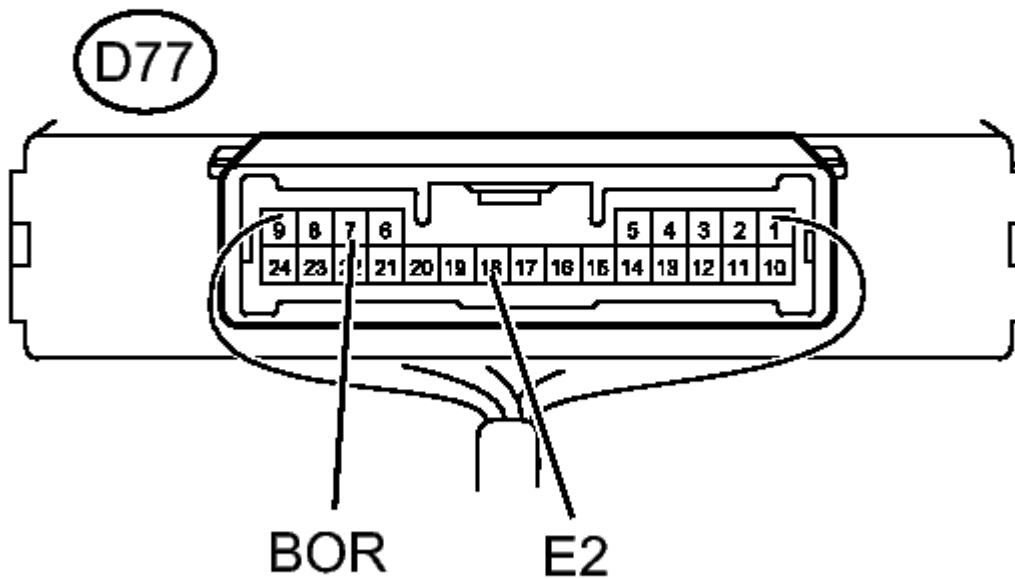


Fig. 4: Inspecting Clearance Warning ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D77-7 (BOR) - Body ground	Ignition switch ON	7.2 to 8.8 V

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

Standard Resistance

Tester Connection	Condition	Specified Condition
D77-18 (E2) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Component with harness connected (Clearance Warning ECU)
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NG --> See step 17

OK: Go to next step

3. CHECK HARNESS AND CONNECTOR (NO. 1 ULTRASONIC SENSOR (REAR LEFT SENSOR) - CLEARANCE WARNING ECU)

- Disconnect the M4 No. 1 ultrasonic sensor (rear left sensor) connector.
- Disconnect the D77 clearance warning ECU connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
M4-1 (BI) - D77-7 (BOR)	Always	Below 1 ohms

M4-3 (SI) - D77-24 (SOR)	Always	Below 1 ohms
M4-5 (EI) - D77-18 (E2)	Always	Below 1 ohms
M4-1 (BI) - Body ground	Always	10 kohms or higher
M4-3 (SI) - Body ground	Always	10 kohms or higher
M4-5 (EI) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (NO. 1 ULTRASONIC SENSOR (REAR LEFT SENSOR) - NO. 1 ULTRASONIC SENSOR (REAR LEFT CENTER SENSOR)

- Disconnect the M3 No. 1 ultrasonic sensor (rear left center sensor) and M4 No. 1 ultrasonic sensor (rear left sensor) connectors.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
M4-2 (BO) - M3-1 (BI)	Always	Below 1 ohms
M4-4 (SO) - M3-3 (SI)	Always	Below 1 ohms
M4-6 (EO) - M3-5 (EI)	Always	Below 1 ohms
M4-2 (BO) - Body ground	Always	10 kohms or higher
M4-4 (SO) - Body ground	Always	10 kohms or higher
M4-6 (EO) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (NO. 1 ULTRASONIC SENSOR (REAR LEFT CENTER SENSOR) - NO. 1 ULTRASONIC SENSOR (REAR RIGHT CENTER SENSOR))

- a. Disconnect the M2 No. 1 ultrasonic sensor (rear right center sensor) and M3 No. 1 ultrasonic sensor (rear left center sensor) connectors.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
M3-2 (BO) - M2-1 (BI)	Always	Below 1 ohms
M3-4 (SO) - M2-3 (SI)	Always	Below 1 ohms
M3-6 (EO) - M2-5 (EI)	Always	Below 1 ohms
M3-2 (BO) - Body ground	Always	10 kohms or higher
M3-4 (SO) - Body ground	Always	10 kohms or higher
M3-6 (EO) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

6. CHECK HARNESS AND CONNECTOR (NO. 1 ULTRASONIC SENSOR (REAR RIGHT CENTER SENSOR) - NO. 1 ULTRASONIC SENSOR (REAR RIGHT SENSOR))

- a. Disconnect the M1 No. 1 ultrasonic sensor (rear right sensor) and M2 No. 1 ultrasonic sensor (rear right center sensor) connectors.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
M2-2 (BO)		Below 1

- M1-1 (BI)	Always	ohms
M2-4 (SO) - M1-3 (SI)	Always	Below 1 ohms
M2-6 (EO) - M1-5 (EI)	Always	Below 1 ohms
M2-2 (BO) - Body ground	Always	10 kohms or higher
M2-4 (SO) - Body ground	Always	10 kohms or higher
M2-6 (EO) - Body ground	Always	10 kohms or higher

NG --> **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK: Go to next step

7. CHECK DTC OUTPUT

- Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AED is output and accessory meter assembly indicates open circuit (Rear Left, Rear Center and Rear Right)	A
DTC C1AED is output and	

accessory meter assembly indicates open circuit (Rear Left and Rear Center)	B
No DTCs are output	C

B --> See step 12

C --> See step 16

A: Go to next step

8. REPLACE NO. 1 ULTRASONIC SENSOR (REAR LEFT SENSOR)

- Replace the No. 1 ultrasonic sensor (rear left sensor) with a normally functioning sensor. Refer to **REMOVAL** .

NEXT: Go to next step

9. CHECK DTC OUTPUT

- Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AED is output and accessory meter assembly indicates open circuit (Rear Left, Rear	A

Center and Rear Right)	
DTC C1AED is output and accessory meter assembly indicates open circuit (Rear Left and Rear Center)	B
No DTC is output	C

B --> See step 12

C --> END (NO. 1 ULTRASONIC SENSOR (REAR LEFT SENSOR) IS DEFECTIVE)

A: Go to next step

10. REPLACE NO. 1 ULTRASONIC SENSOR (REAR RIGHT SENSOR)

- Replace the No. 1 ultrasonic sensor (rear right sensor) with a normally functioning sensor. Refer to **REMOVAL** .

NEXT: Go to next step

11. CHECK DTC OUTPUT

- Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AED is output and accessory meter assembly	

indicates open circuit (Rear Left and Rear Center)	A
DTC C1AED is output and accessory meter assembly indicates open circuit (Rear Left, Rear Center and Rear Right)	B
No DTC is output	C

B --> See step 17

C --> END (NO. 1 ULTRASONIC SENSOR (REAR RIGHT SENSOR) IS DEFECTIVE)

A: Go to next step

12. REPLACE NO. 1 ULTRASONIC SENSOR (REAR LEFT CENTER SENSOR)

- Replace the No. 1 ultrasonic sensor (rear left center sensor) with a normally functioning sensor. Refer to **REMOVAL** .

NEXT: Go to next step

13. CHECK DTC OUTPUT

- Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC	

C1AED is output and accessory meter assembly indicates open circuit (Rear Left and Rear Center)	A
No DTC is output	B

B --> END (NO. 1 ULTRASONIC SENSOR (REAR LEFT CENTER SENSOR) IS DEFECTIVE)

A: Go to next step

14. REPLACE NO. 1 ULTRASONIC SENSOR (REAR RIGHT CENTER SENSOR)

- Replace the No. 1 ultrasonic sensor (rear right center sensor) with a normally functioning sensor. Refer to **REMOVAL** .

NEXT: Go to next step

15. CHECK DTC OUTPUT

- Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- Check for DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AED is output and accessory meter assembly indicates open circuit (Rear Left, Rear	A

Center and Rear Right)	
No DTC is output	B

B --> END (NO. 1 ULTRASONIC SENSOR (REAR RIGHT CENTER SENSOR) IS DEFECTIVE)

A --> See step 17

16. USE SIMULATION METHOD TO CHECK. Refer to HOW TO PROCEED WITH TROUBLESHOOTING

17. REPLACE CLEARANCE WARNING ECU. Refer to REMOVAL

DTC C1AEF: SHIFT POSITION INFORMATION

DESCRIPTION

This DTC is stored when a problem with the shift position information sent through the CAN communication system is detected.

DTC Code	DTC Detection Condition	Trouble Area
C1AEF	A problem with the shift position information.	CAN communication

INSPECTION PROCEDURE

PROCEDURE

1. CHECK DTC OUTPUT

- Clear DTCs. Refer to **DTC CHECK / CLEAR** .
- Check DTCs. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC C1AEF is output	A
No DTC is output	B

B --> See step 2

A --> See step 3

2. **USE SIMULATION METHOD TO CHECK.** Refer to HOW TO PROCEED WITH TROUBLESHOOTING
3. **GO TO CAN COMMUNICATION SYSTEM.** Refer to HOW TO PROCEED WITH TROUBLESHOOTING

DTC U0101: LOST COMMUNICATION WITH TCM; DTC U0155: LOST COMMUNICATION WITH INSTRUMENT PANEL CLUSTER CONTROL MODULE (COMBINATION METER)

DESCRIPTION

When the clearance warning ECU self-diagnosis determines that the CAN communication system is malfunctioning, this DTC is stored.

DTC Code	DTC Detection Condition	Trouble Area
U0101	Lost communication with TCM.	CAN communication system
U0155	Lost communication with the Instrument Panel Cluster (IPC) control module.	CAN communication system

HINT:

When 2 or more DTCs starting with "U" are output simultaneously, inspect the connectors and wire harness of each ECU.

INSPECTION PROCEDURE

PROCEDURE

1. **CHECK CAN COMMUNICATION SYSTEM**
 - a. Clear the DTCs. Refer to DTC CHECK / CLEAR .
 - b. Check for DTCs. Refer to DTC CHECK / CLEAR .

RESULT

Result	Proceed to
DTC U0101 or U0155 are output	A
No DTC is output	B

B --> See step 2

A --> See step 3

2. **USE SIMULATION METHOD TO CHECK. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
3. **GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**

CIRCUIT TESTS

Clearance Sonar Main Switch Circuit

DESCRIPTION

When the clearance sonar main switch turns on, the ON signal is input into the clearance warning ECU.

WIRING DIAGRAM

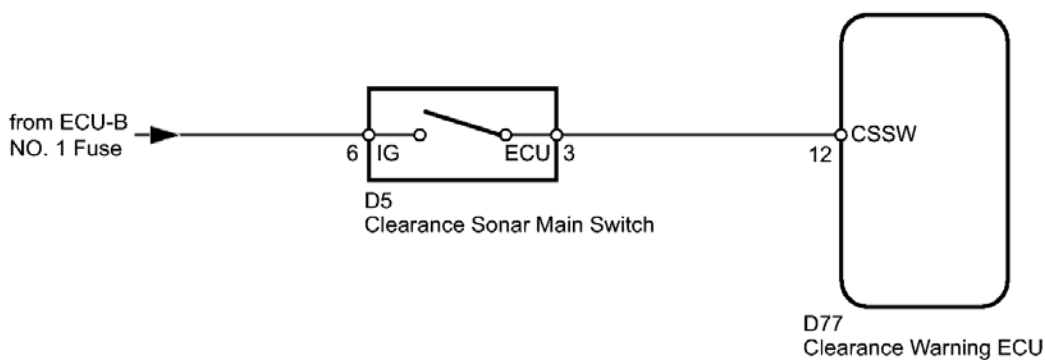


Fig. 5: Clearance Sonar Main Switch Circuit Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: Inspect the fuses for circuits related to this system before performing the following inspection procedure.

PROCEDURE

1. **READ VALUE USING TECHSTREAM (CLEARANCE SONAR MAIN SWITCH)**
 - a. Check the Data List for proper functioning of the clearance sonar main switch.

INTUITIVE P/A

Tester	Measurement	Normal	Diagnostic
--------	-------------	--------	------------

Display	Item/Range	Condition	Note
Main Switch	Clearance sonar main switch/OFF or ON	OFF: Clearance sonar main switch off ON: Clearance sonar main switch on	-

OK

The Techstream display changes according to operation of clearance sonar main switch.

NG --> See step 3

OK --> See step 2

2. **PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE. Refer to PROBLEM SYMPTOMS TABLE**
3. **INSPECT CLEARANCE SONAR MAIN SWITCH**

*a

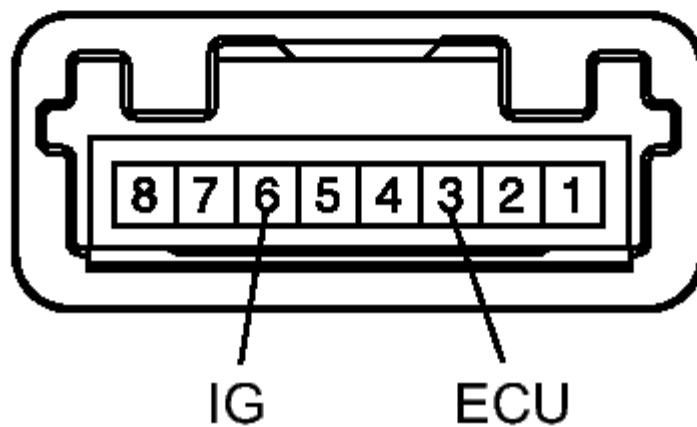
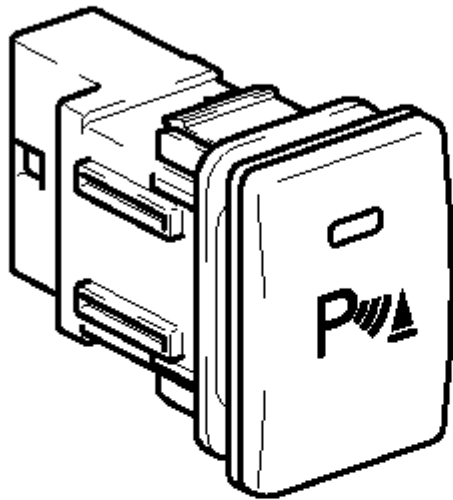


Fig. 6: Inspecting Clearance Sonar Main Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- a. Remove the clearance sonar main switch. Refer to **REMOVAL** .
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
6 (IG) - 3 (ECU)	Clearance sonar main switch on	Below 1 ohms
6 (IG) - 3 (ECU)	Clearance sonar main switch off	10 kohms or higher

TEXT IN ILLUSTRATION

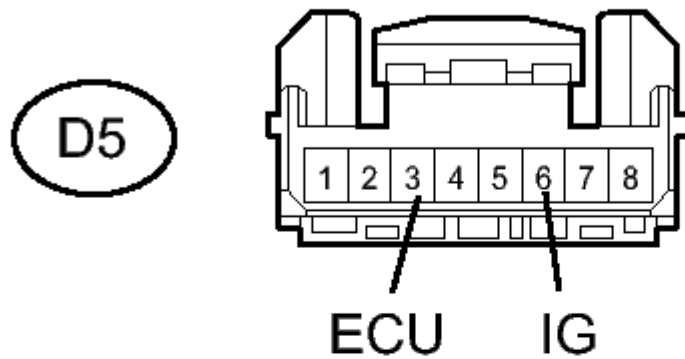
*a	Component without harness connected (Clearance Sonar Main Switch)
----	---

NG --> See step 5

OK: Go to next step

- 4. CHECK HARNESS AND CONNECTOR (CLEARANCE SONAR MAIN SWITCH - CLEARANCE WARNING ECU AND BATTERY)**

*a



*b

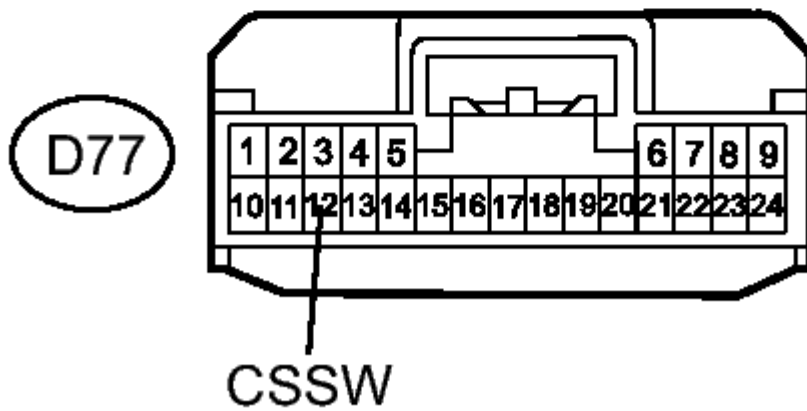


Fig. 7: Checking Harness And Connector (Clearance Sonar Main Switch - Clearance Warning ECU And Battery)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- a. Disconnect the D5 clearance sonar main switch connector.

- b. Disconnect the D77 clearance warning ECU connector.
- c. Measure the voltage according to the value(s) in the table below.

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D5-6 (IG) - Body ground	Ignition switch ON	11 to 14 V
D5-6 (IG) - Body ground	Ignition switch off	Below 1 V

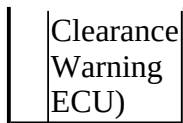
- d. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D5-3 (ECU) - D77-12 (CSSW)	Always	Below 1 ohms
D5-3 (ECU) - Body ground	Always	10 kohms or higher

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Clearance Sonar Main Switch)
*b	Front view of wire harness connector (to



NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 6

5. **REPLACE CLEARANCE SONAR MAIN SWITCH.** Refer to **REMOVAL**

6. **REPLACE CLEARANCE WARNING ECU.** Refer to **REMOVAL**

Clearance Warning Buzzer Circuit

DESCRIPTION

The No. 1 clearance warning buzzer sounds to alert the driver and the buzzed frequency changes depending on the distance to an obstacle.

WIRING DIAGRAM

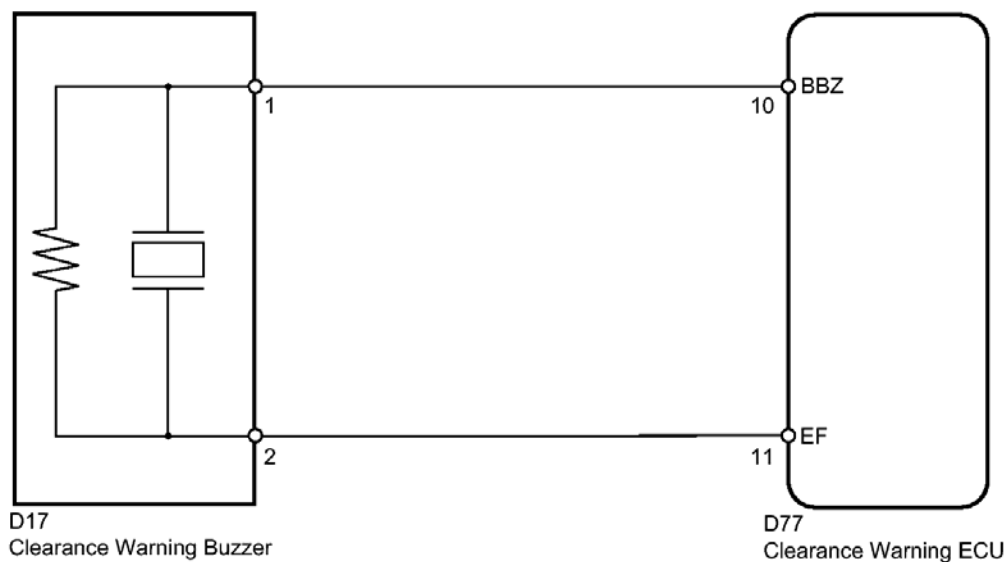


Fig. 8: Clearance Warning Buzzer Circuit Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

PROCEDURE

1. PERFORM ACTIVE TEST USING TECHSTREAM (NO. 1 CLEARANCE WARNING BUZZER)

- a. Select the Active Test, use the Techstream to generate a control command, and then check that the buzzer operates.

INTUITIVE P/A

Tester Display	Test Part	Control Range	Diagnostic Note
Buzzer	Clearance warning buzzer	Operate or Stop	Confirm that the vehicle is stopped and the ignition switch is ON

OK

Clearance warning buzzer sounds.

NG --> See step 2

OK --> See step 4

2. CHECK HARNESS AND CONNECTOR (CLEARANCE WARNING ECU - CLEARANCE WARNING BUZZER)

- a. Disconnect the D77 clearance warning ECU connector.
- b. Disconnect the D17 clearance warning buzzer connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D77-10 (BBZ) - D17-1	Always	Below 1 ohms
D77-11 (EF) - D17-2	Always	Below 1 ohms
D77-10 (BBZ) - Body ground	Always	10 kohms or higher
D77-11		

(EF) - Body ground	Always	10 kohms or higher
-----------------------	--------	-----------------------

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 3

3. REPLACE NO. 1 CLEARANCE WARNING BUZZER. Refer to REMOVAL
4. PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE. Refer to PROBLEM SYMPTOMS TABLE

Clearance Warning ECU Power Source Circuit

DESCRIPTION

This circuit is the power source circuit to operate the clearance warning ECU.

WIRING DIAGRAM

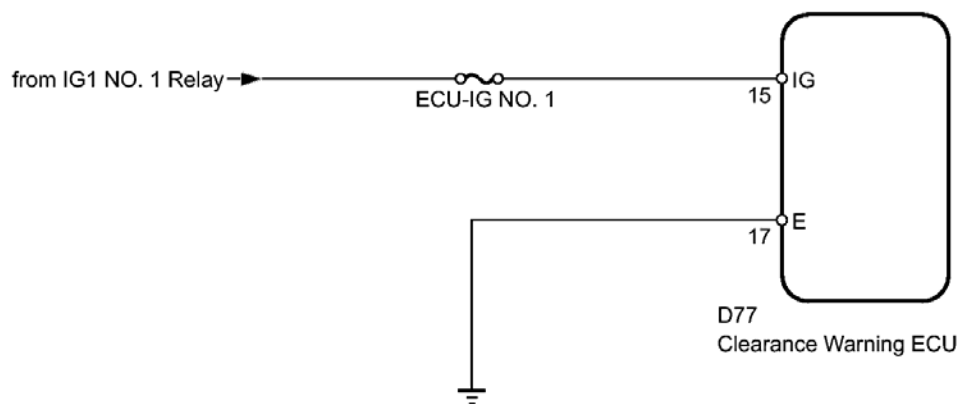


Fig. 9: Clearance Warning ECU Power Source Circuit Wiring Diagram

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: Inspect the fuses for circuits related to this system before performing the following inspection procedure.

PROCEDURE

1. CHECK HARNESS AND CONNECTOR (CLEARANCE WARNING ECU - BATTERY AND BODY GROUND)

*a

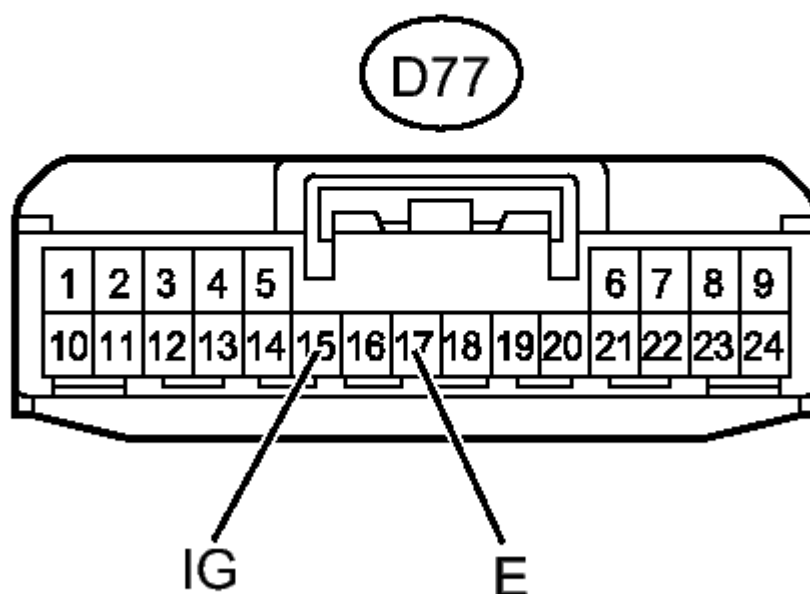


Fig. 10: Checking Harness And Connector (Clearance Warning ECU - Battery And Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Disconnect the D77 clearance warning ECU connector.
- Measure the voltage according to the value(s) in the table below.

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D77-15 (IG) - Body ground	Ignition switch ON	11 to 14 V
D77-15 (IG) - Body	Ignition switch off	Below 1 V

ground		
--------	--	--

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

Standard Resistance

Tester Connection	Condition	Specified Condition
D77-17 (E) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Clearance Warning ECU)
----	---

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 2

2. **PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE. Refer to PROBLEM SYMPTOMS TABLE**

ACCESSORIES & EQUIPMENT

Intuitive Parking Assist System (Diagnostics - Introduction) - Sienna

INTUITIVE PARKING ASSIST SYSTEM

PRECAUTION

PRECAUTION

1. IGNITION SWITCH EXPRESSION

- a. The type of ignition switch used on this model differs according to the specification of the vehicle. The expressions listed in the table below are used in this information.

Expression	Ignition Switch (Position)	Engine Switch (Condition)
Ignition Switch off	LOCK	Off
Ignition Switch ACC	ACC	On (ACC)
Ignition Switch ON	ON	On (IG)
Engine Start	START	Start

2. PRECAUTION FOR INTUITIVE PARKING ASSIST SYSTEM

HINT:

- In very cold weather where a malfunction display appears, the sensor may not detect obstacles.
 - If the malfunction display appears, visually check the sensor first. If the sensor is free of foreign matter but the malfunction display remains, the sensor may have a malfunction.
- a. Under the following conditions, the detection function may not function properly:
1. The sensor is covered with foreign matter, such as mud or snow (detection function returns to normal if sensor is cleaned).
 2. The sensor is frozen (detection function returns to normal when defrosted).
 3. A hand is blocking the sensor.
- b. The detection range may be affected by the following conditions:
1. The sensor is covered with foreign matter, such as mud or snow.
 2. The vehicle is in a very hot or cold area.
- c. Under the following conditions, a detection error may occur:
1. Driving on a bumpy road, on an unpaved road or in tall grass.

2. Things that transmit ultrasonic waves, such as other vehicle horns or sonar systems, motorcycle engines, or large vehicle air brakes, are near the vehicle.
 3. It is raining heavily or water is sprayed on the sensor.
 4. The vehicle is extremely tilted.
 5. The vehicle is equipped with a commercial fender pole or a wireless mechanism antenna.
 6. The sensor is covered with foreign matter, such as mud or snow.
 7. The vehicle is moved forward or backward towards high curbs or objects that are perpendicular to the ground.
- d. The sensor cannot detect the following objects.
1. Thin objects, such as wires and ropes.
 2. Materials that easily absorb ultrasonic waves, such as cotton, snow, etc.
 3. Objects with sharp edges.
 4. Short objects.
 5. Tall objects with a projected upper part.
- e. Other notices:
1. The sensor cannot detect objects directly under the bumper (the sensor may detect low objects and thin poles, and then lose track of the objects).
 2. The sensor may be unable to detect obstacles that are too close to the sensor.
 3. The sensor may be unable to detect obstacles if it is dropped or subjected to a strong impact.

PARTS LOCATION

ILLUSTRATION

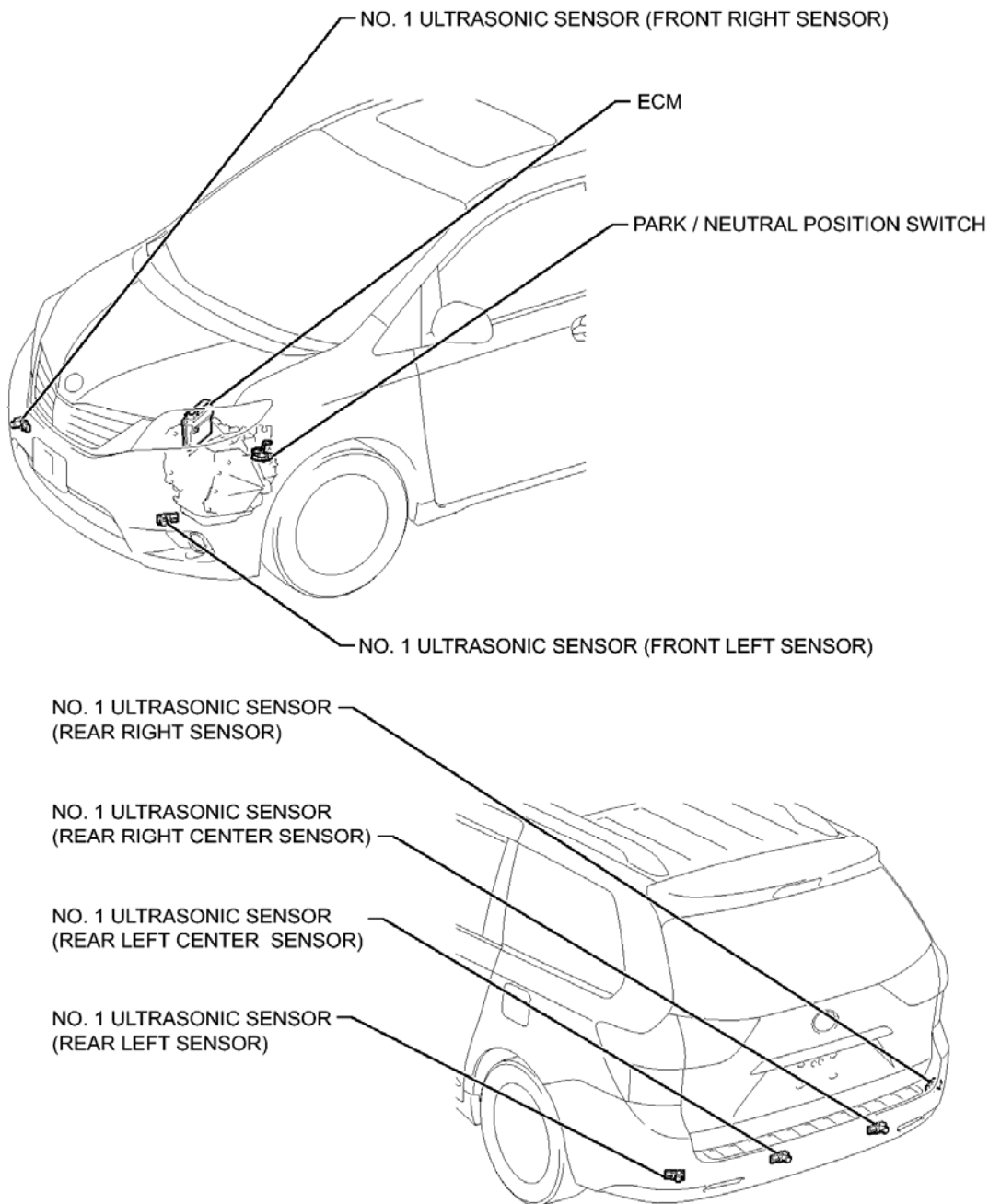


Fig. 1: Intuitive Parking Assist System Components Location (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION

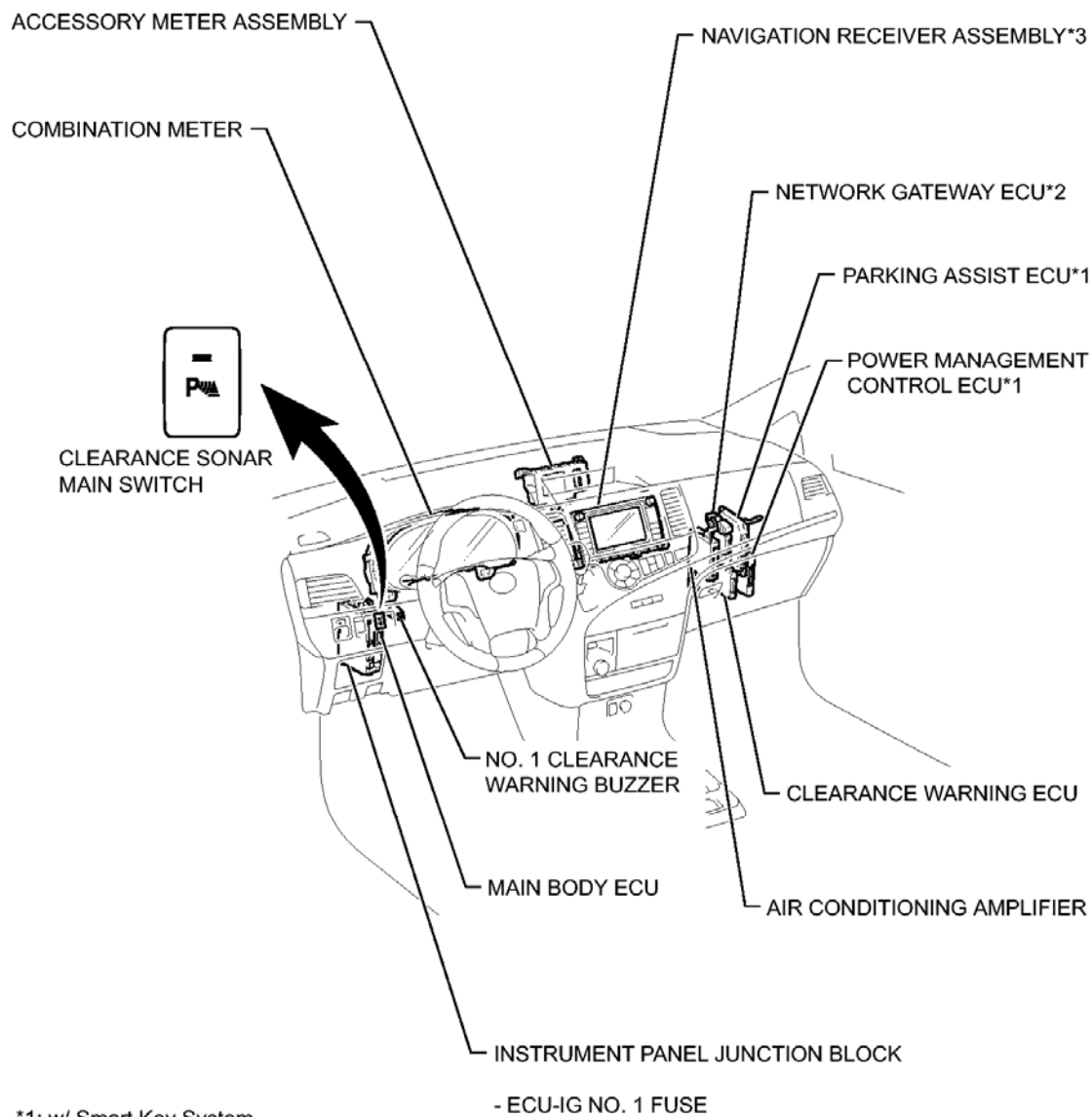


Fig. 2: Intuitive Parking Assist System Components Location (2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

SYSTEM DIAGRAM

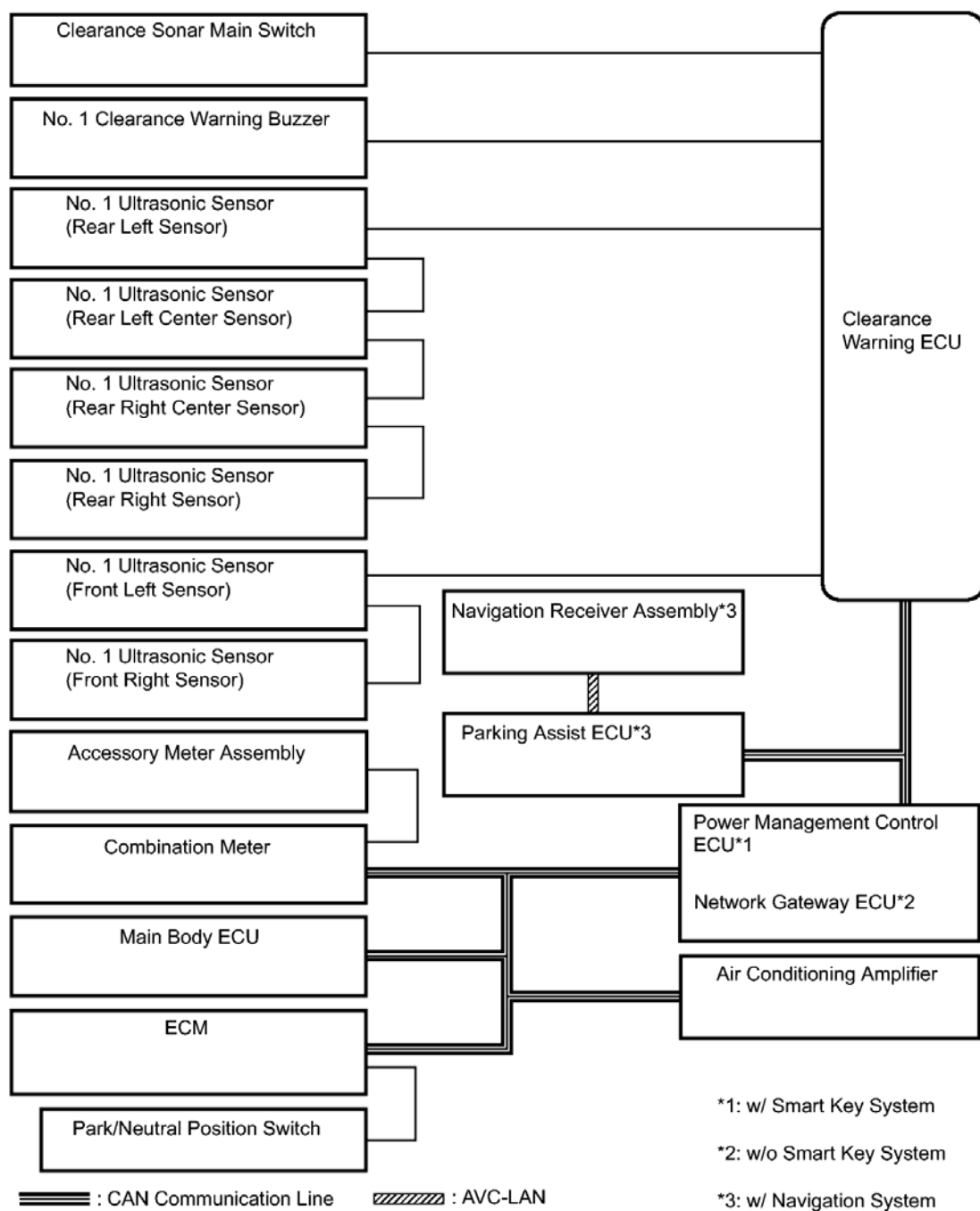


Fig. 3: Intuitive Parking Assist System Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

COMMUNICATION TABLE

Sender ECU	Receiver ECU	Signal	Line
Combination Meter	Clearance Warning ECU	Vehicle speed signal	CAN
ECM	Clearance Warning ECU	Shift position signal	CAN
Air Conditioning			

Amplifier	Clearance Warning ECU	Outside temperature	CAN
Main Body ECU	Clearance Warning ECU	• Dimmer signal • Destination signal • Steering wheel symbol	CAN
Clearance Warning ECU	Combination Meter	Ultrasonic sensor detection signal	CAN
Clearance Warning ECU	Navigation receiver assembly*1	Ultrasonic sensor detection signal	AVC-LAN
Clearance Warning ECU	Parking Assist ECU*1	Ultrasonic sensor detection signal	CAN

*1: w/ Navigation System

SYSTEM DESCRIPTION

SYSTEM DESCRIPTION

1. GENERAL

- When the vehicle is driven at 9 km/h (5.6 mph) or less, the ultrasonic sensors detect any obstacles at the corners and rear of the vehicle. The system then informs the driver of the distance between the sensors and the obstacles as well as their positions by indicating them on the combination meter and by sounding a buzzer.

2. FUNCTION OF COMPONENTS

Components	Function
Ultrasonic sensor	The ultrasonic sensor sends and receives ultrasonic waves. Based on the received wave, the sensor calculates the approximate distance value between the vehicle and obstacle, and sends the distance value as a signal to the clearance warning ECU.
Combination meter	Transmits vehicle speed signal to clearance warning ECU. Receives information from

	clearance warning ECU.
Clearance sonar main switch	Outputs the system ON/OFF signals to the clearance warning ECU.
Clearance warning ECU	• Receives the signals from the ultrasonic sensors and sends the display signal to the accessory meter. • Receives signals from the ultrasonic sensors and sends the display signal to the navigation receiver assembly or the parking assist ECU*1. • Receives signals from the ultrasonic sensors and sends the buzzer signal to the No. 1 clearance warning buzzer.
Park/neutral position	Sends a signal that activates the intuitive parking assist system

switch	when the shift lever is moved to R.
Navigation receiver assembly*1	Receives the information from the parking assist ECU through the AVC-LAN • Display location of obstacle and approximate distance between vehicle and obstacle. • Informs driver if ultrasonic sensors malfunction, or if they freeze or become dirty.
No. 1 clearance warning buzzer	Sounds the buzzer to inform the driver according to the distance to the obstacle.
ECM	Transmits shift position signal to clearance warning ECU.
Air conditioning amplifier	Transmits ambient temperature to clearance warning ECU.
Main body ECU	Transmits destination symbol, dimmer signal and steering wheel symbol to clearance warning ECU.
	Receives

Accessory meter assembly	information from combination meter. • Displays the location of an obstacle and the approximate distance between the vehicle and obstacle. • Informs driver if ultrasonic sensors malfunction, or if they freeze or become dirty.
--------------------------	--

*1: w/ Navigation System

3. OPERATION EXPLANATION

- The clearance warning ECU determines whether the intuitive parking assist system should be operated based on the clearance sonar main switch on/off status, the shift position and the vehicle speed.
- When the system operates, the clearance warning ECU transmits ultrasonic waves from the ultrasonic sensors. If these waves encounter an obstacle within one or more of the sensor ranges, the waves are reflected back to the sensors, which transmit them to the clearance warning ECU. Based on this information, the clearance warning ECU sends signals to the accessory meter assembly, the navigation receiver assembly and the No. 1 clearance warning buzzer. The approximate distance between the vehicle and the obstacle is then indicated, and the buzzer sounds.

HINT:

Refer to "Operation Check" for the detailed operation. Refer to **OPERATION CHECK**.

HOW TO PROCEED WITH TROUBLESHOOTING

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use the following procedures to troubleshoot the intuitive parking assist system.

- *: Use the Techstream.

1. VEHICLE BROUGHT TO WORKSHOP

NEXT: Go to next step

2. INSPECT BATTERY VOLTAGE

Standard Voltage

11 to 14 V

If the voltage is below 11 V, replace or recharge the battery before proceeding.

NEXT: Go to next step

3. CHECK COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM*

- Use the Techstream to check if the CAN communication system is functioning normally.

RESULT

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

B --> Go to CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING

A: Go to next step

4. CHECK DTC OUTPUT*

- Check for DTCs. Refer to DTC CHECK / CLEAR.
- Clear the DTCs. Refer to DTC CHECK / CLEAR.
- Recheck for DTCs. Refer to DTC CHECK / CLEAR.

RESULT

Result	Proceed to
No	

DTC is output	A
DTC is output	B

B --> Go to DIAGNOSTIC TROUBLE CODE CHART. Refer to DIAGNOSTIC TROUBLE CODE CHART

A: Go to next step

5. PROBLEM SYMPTOMS TABLE

- Refer to PROBLEM SYMPTOMS TABLE.

RESULT

Result	Proceed to
Fault is not listed in problem symptoms table	A
Fault is listed in problem symptoms table	B

B --> Go to step 7

A: Go to next step

6. OVERALL ANALYSIS AND TROUBLESHOOTING*

- Operation Check. Refer to OPERATION CHECK.
- Terminals of ECU. Refer to TERMINALS OF ECU.
- Data List / Active Test. Refer to DATA LIST / ACTIVE TEST.

NEXT: Go to next step

7. ADJUST, REPAIR OR REPLACE

NEXT: Go to next step

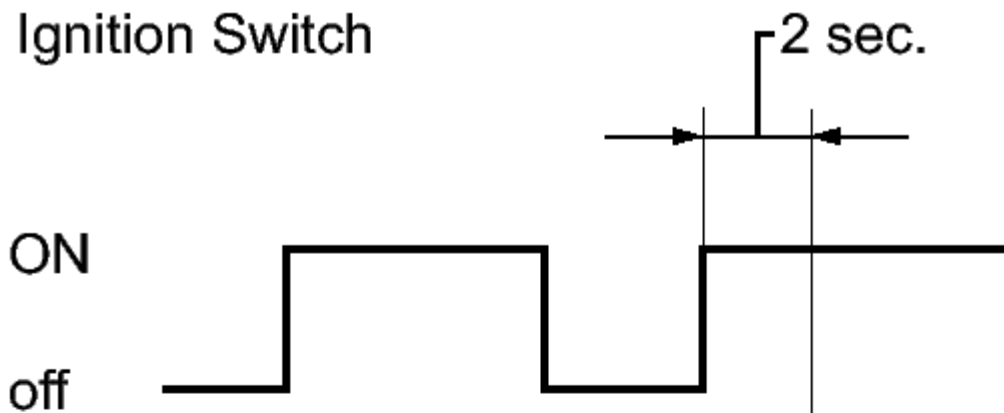
8. CONFIRMATION TEST

NEXT --> END

OPERATION CHECK

OPERATION CHECK

Ignition Switch



Clearance Sonar Main Switch



No. 1 Clearance Warning Buzzer

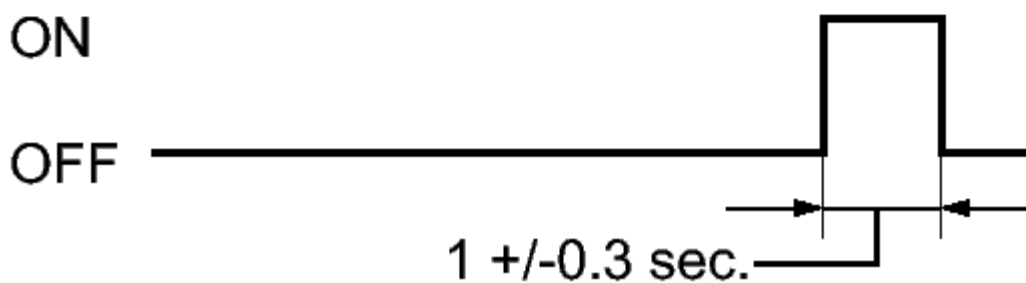


Fig. 4: Identifying Buzzer Sounds With Clearance Pulse Pattern
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1. CHECK INITIAL CHECK FUNCTION
 - a. Turn the ignition switch to ON.

- b. After 2 seconds or more have passed, turn the clearance sonar main switch on. Then check the buzzer sounding condition.

Buzzer sounding

1 +/-0.3 seconds

HINT:

- If a malfunction is detected in the ultrasonic sensor circuits, the location of the malfunctioning sensor blinks on the displayed vehicle graphic. However, after the sensor returns to normal, the display also returns to normal.
- When the ignition switch is turned to ON while the clearance sonar main switch is on, the buzzer will not sound.

2. MALFUNCTION OF ACCESSORY METER ASSEMBLY

- a. Ultrasonic sensor open circuit

1. If there is an open circuit between the ultrasonic sensor and the ECU or a sensor is malfunctioning, the malfunction is displayed as shown in the illustration.

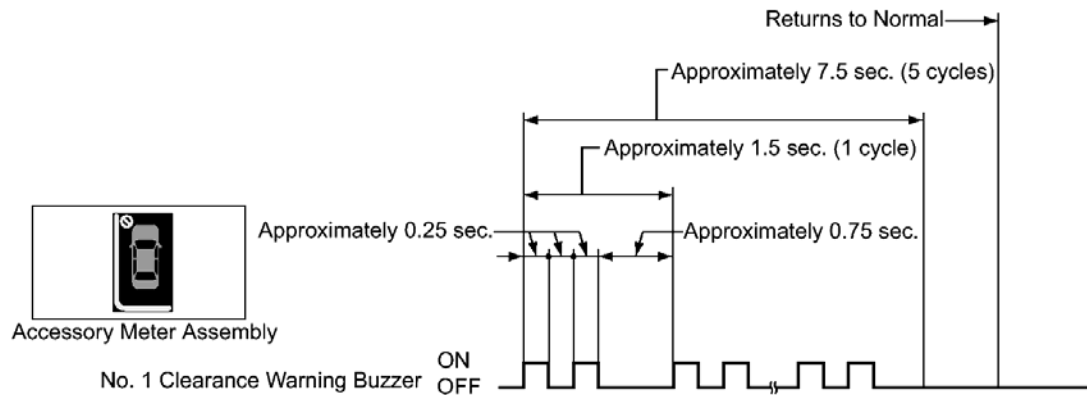


Fig. 5: Identifying Accessory Meter Assembly Pulse Pattern
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

- The example shows an open circuit in the No. 1 ultrasonic sensor (front left sensor).
 - If a sensor has an open circuit, "Check Sonar" is displayed. Refer to "open circuit in front sensor is displayed as a result or self-check" in the problem symptoms table to inspect it.
- b. Ultrasonic sensor frozen

1. If a sensor is covered with foreign matter, such as mud or snow, the affected sensor is displayed as shown in the illustration.

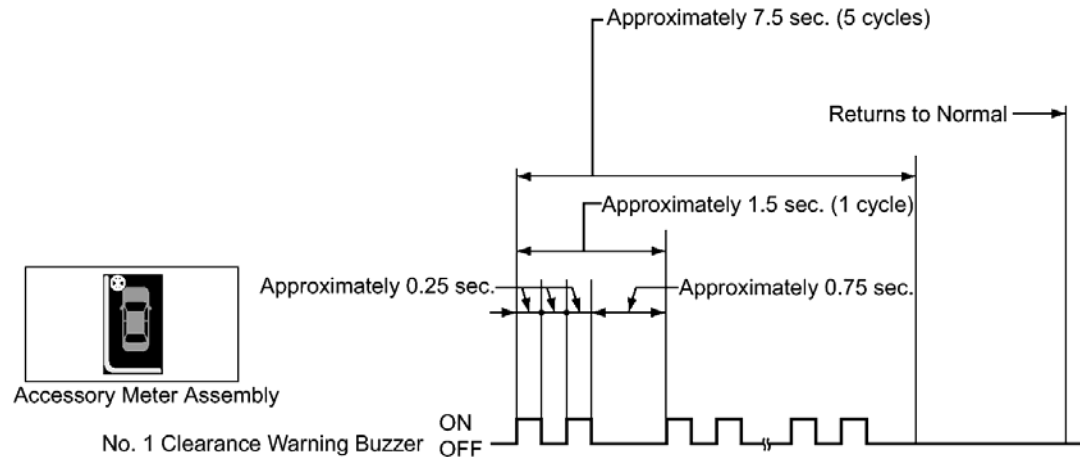


Fig. 6: Identifying Accessory Meter Assembly Pulse Pattern
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

- The example shows that the No. 1 ultrasonic sensor (front left sensor) is covered with foreign matter.
- If "Clean Sonar" is displayed, cleaning the foreign matter from the sensor will return the sensor to normal.

3. MALFUNCTION OF NAVIGATION RECEIVER ASSEMBLY

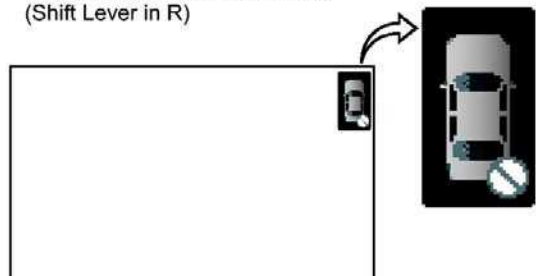
a. Ultrasonic sensor open circuit

1. If there is an open circuit between the ultrasonic sensor and the ECU or a sensor is malfunctioning, the malfunction is displayed as shown in the illustration.

Ultrasonic Sensor Open Circuit:



*Navigation Receiver Assembly
 (Shift Lever in R)



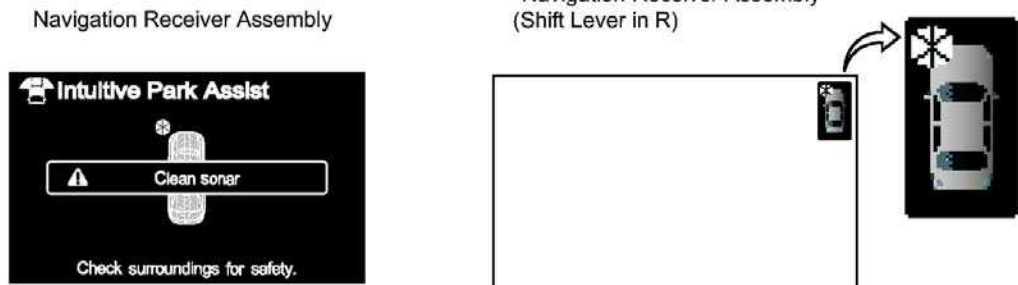
*: w/ Rear View Monitor System

Fig. 7: Ultrasonic Sensor Open Circuit
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

- This example shows an open circuit in the No. 1 ultrasonic sensor (rear right sensor).
 - If a sensor has an open circuit, refer to "open circuit in rear sensor is displayed as a result of self-check" in the problem symptoms table to inspect it.
- b. Ultrasonic sensor frozen
1. If a sensor is covered with foreign matter, such as mud or snow, the affected sensor is displayed as shown in the illustration.

Ultrasonic Sensor Frozen:



*: w/ Rear View Monitor System

Fig. 8: Ultrasonic Sensor Frozen
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

- The example shows that the No. 1 ultrasonic sensor (front left sensor) is covered with foreign matter.
- If "Clean sonar" is displayed, cleaning the foreign matter from the sensor will return the sensor to normal.

4. DETECTION RANGE MEASUREMENT AND DISPLAY CHECK

NOTE: Apply the parking brake securely so that the vehicle does not move.

- a. Turn the ignition switch to ON.
- b. Turn the clearance sonar main switch on.
- c. Move the shift lever to R to check the No. 1 ultrasonic sensors.
- d. Move the shift lever to D and N to check the No. 1 ultrasonic sensors (front sensor).
- e. Move the 60 mm (2.36 in.) pole around the sensor to measure the detection range of the sensor.

NOTE: • These detection ranges are applicable when positioning the 60

mm (2.36 in.) pole parallel or perpendicular to the ground.

- The ranges vary depending on the measuring method and type of obstacle (such as walls).
- For close-range and medium-range detection, the values shown are for when using a pole with a diameter of 60 mm (2.36 in.). For long-range detection, the values shown are for when using walls.
- The detection range of the resin bumper and steel bumper are not the same, as their installation positions are slightly different.

1. No. 1 ultrasonic sensor (front sensor) detection range

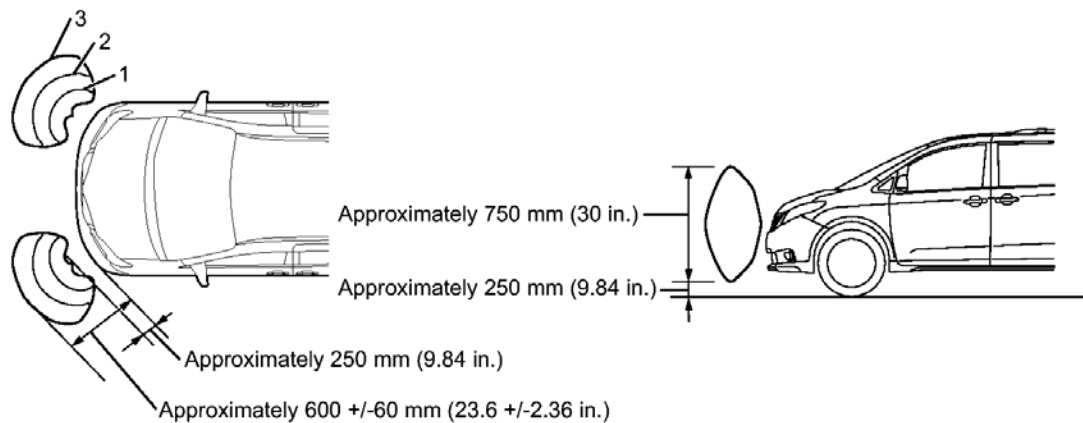


Fig. 9: Identifying No. 1 Ultrasonic Sensor Detection Range
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. No. 1 ultrasonic sensor (rear sensor) detection range

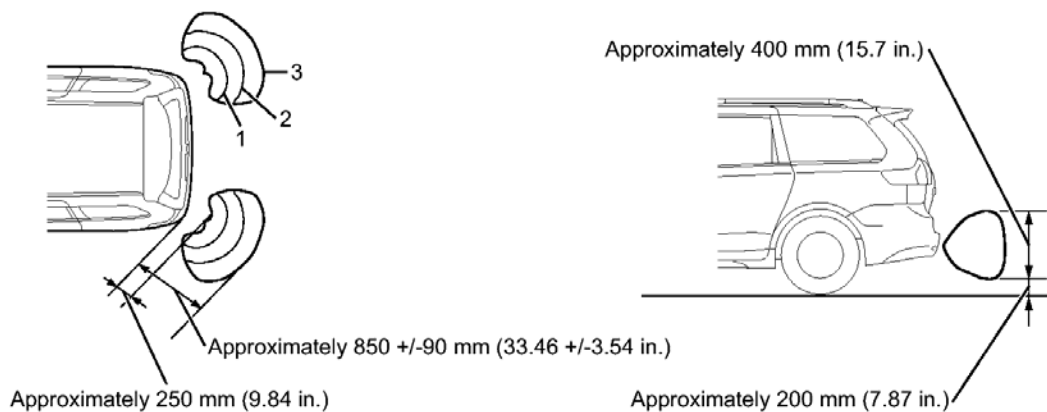


Fig. 10: Identifying No. 2 Ultrasonic Sensor Detection Range
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. No. 1 ultrasonic sensor (rear center sensor) detection range

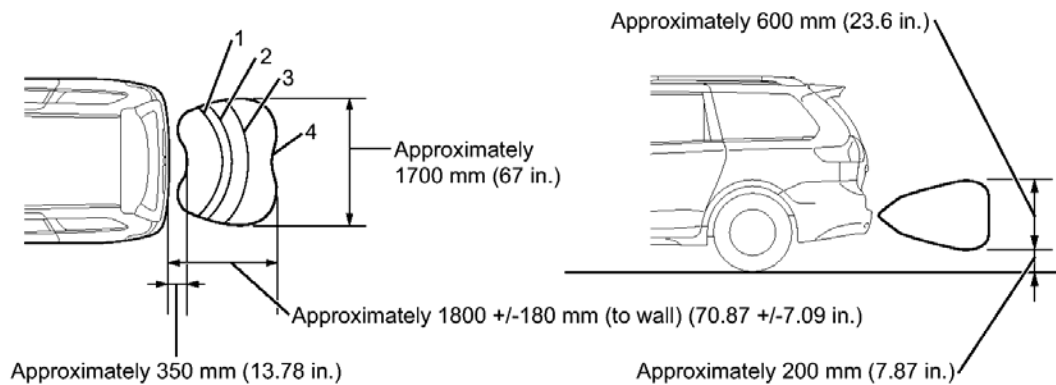


Fig. 11: Identifying No. 3 Ultrasonic Sensor Detection Range
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

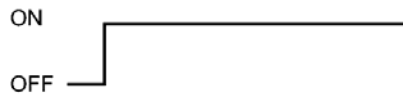
- f. When the ultrasonic sensors have detected an obstacle, check the navigation receiver assembly, accessory meter assembly and that the No. 1 clearance warning buzzer sounds with the clearance sonar main switch on.

OPERATION CONDITION

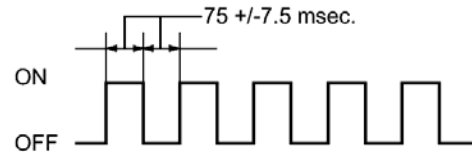
Shift Lever Position	Vehicle Speed	Navigation Receiver Assembly Detection, Accessory Meter Assembly Detection, Buzzer Detection		
		No. 1 Ultrasonic Sensor (Front Sensor)	No. 1 Ultrasonic Sensor (Rear Sensor)	No. 1 Ultrasonic Sensor (Rear Center Sensor)
P	-	Only perform check operation		
D, S, (N)	10 km/h (6.2 mph) or less	o	X	X
R	No limit	o	o	o

1. Check that the buzzer sounds with the clearance sonar main switch on as shown in the illustration.

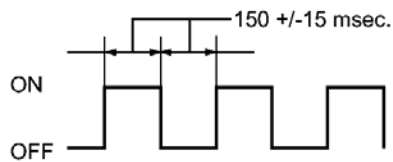
1. Close-range Detection



2. Medium-range Detection



3. Long-range Detection



4. Maximum Long-range Detection

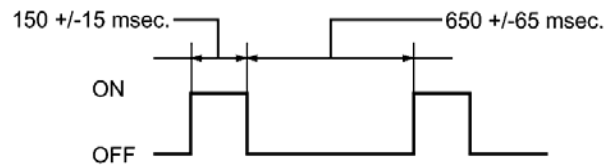


Fig. 12: Identifying Buzzer Sounds With Clearance Sonar Main Switch
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NO. 1 ULTRASONIC SENSOR (FRONT SENSOR) DETECTION RANGE

Detection	Distance
1. Close-range detection	Within 250 +/- 30 mm (9.84 +/- 1.18 in.)
2. Medium-range detection	250 +/- 30 to 375 +/- 40 mm (9.84 +/- 1.18 to 14.76 +/-1.57 in.)
3. Long-range detection	375 +/- 40 to 600 +/- 60 mm (14.76 +/-1.57 to 23.62 +/- 2.36 in.)

NO. 1 ULTRASONIC SENSOR (REAR SENSOR) DETECTION RANGE

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Detection	Distance
1. Close-range detection	Within 250 +/- 30 mm (9.84 +/- 1.18 in.)
2. Medium-range detection	250 +/- 30 to 375 +/- 40 mm (9.84 +/- 1.18 to 14.76 +/-1.57 in.)
3. Long-range detection	375 +/- 40 to 850 +/- 90 mm (14.76 +/-1.57 to 33.46 +/-3.54 in.)

NO. 1 ULTRASONIC SENSOR (REAR CENTER SENSOR) DETECTION RANGE

Detection	Distance
1. Close-range detection	Within 350 +/- 40 mm (13.78 +/-1.57 in.)
2. Medium-range detection	350 +/- 40 to 450 +/- 50 mm (13.78 +/-1.57 to 17.72 +/-1.96 in.)
3. Long-range	450 +/- 50 to 850 +/- 90 mm (17.72

detection	+/-1.96 to 33.46 +/-3.54 in.)
4. Maximum long- range detection	850 +/- 90 to 1800 +/- 180 mm (33.46 +/-3.54 to 70.87 +/-7.09 in.)

HINT:

Ultrasonic waves are used to measure the detection range. However, the detection range may vary depending on the ambient temperature.

2. When the No. 1 ultrasonic sensors (front sensor) have detected an obstacle, check the displays and buzzer sounds.

OPERATION CONDITION

Ignition Switch	Clearance Sonar Main Switch	Shift Lever Position	Vehicle Speed
ON	On	D, N	10 km/h (6.2 mph) or less



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Fig. 13: View Of Detected Obstacle From No. 1 Ultrasonic Sensor
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ACCESSORY METER ASSEMBLY

Detection	Buzzer	Indication
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Range		
Close-range detection	Sounds continuously	Illumination (red)
Medium-range detection	Sounds intermittently (ON: 75 msec. / OFF: 75 msec.)	Blinking (yellow)
Long-range detection	Sounds intermittently (ON: 150 msec. / OFF: 150 msec.)	Blinking (yellow)

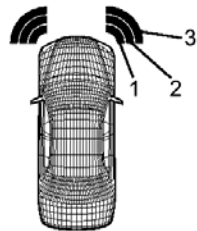


Fig. 14: Identifying Multi-Information Display
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NAVIGATION RECEIVER ASSEMBLY

Detection Range	Buzzer	Number of Bars Displayed
1. Close-range detection	Sounds continuously	1 (red illumination)
2. Medium-range detection	Sounds intermittently (ON: 75 msec. / OFF: 75 msec.)	2 (yellow illumination)
3. Long-range detection	Sounds intermittently (ON: 150 msec. / OFF: 150 msec.)	3 (yellow illumination)

HINT:

Ultrasonic waves are used to measure the detection range. However, the detection range may vary depending on the ambient temperature.

3. When the No. 1 ultrasonic sensors (rear sensor and rear center sensor) have detected an obstacle, check the displays and buzzer sounds.

OPERATION CONDITION

Ignition Switch	Clearance Sonar Main Switch	Shift Lever Position
ON	On	R



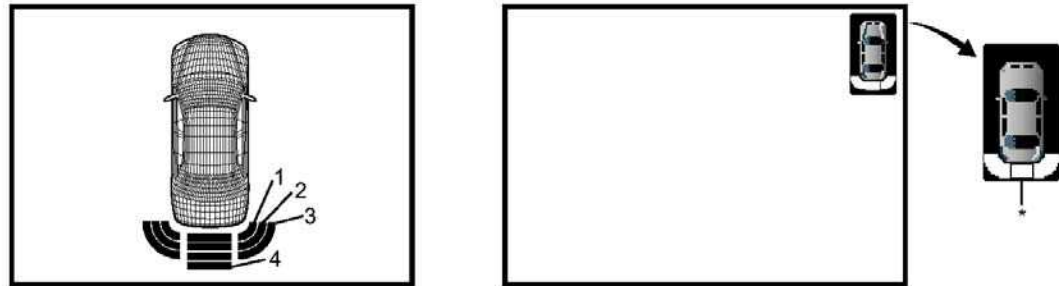
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Fig. 15: View Of Detected Obstacle From No. 2 & No. 3 Ultrasonic Sensor
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ACCESSORY METER ASSEMBLY

Detection Range	Buzzer	Number of Bars Displayed
Close-range detection	Sounds continuously	Illumination (red)
Medium-range detection	Sounds intermittently (ON: 75 msec. / OFF: 75 msec.)	Blinking (yellow)
Long-range detection	Sounds intermittently (ON: 150 msec. / OFF: 150 msec.)	Blinking (yellow)
Maximum long-range detection (for rear	Sounds intermittently (ON: 150 msec. / OFF:	Blinking (yellow)

center sensors)	650 msec.)	
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*: w/ Rear View Monitor System

Fig. 16: Identifying Multi-Display With W/Rear View Monitor System
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NAVIGATION RECEIVER ASSEMBLY

Detection Range	Buzzer	Number of Bars Displayed
1. Close-range detection	Sounds continuously	1 (red illumination) *: Illumination (red)
2. Medium-range detection	Sounds intermittently (ON: 75 msec. / OFF: 75 msec.)	2 (yellow illumination) *: Blinking (yellow)
3. Long-range detection	Sounds intermittently (ON: 150 msec. / OFF: 150 msec.)	3 (yellow illumination) *: Blinking (yellow)
4. Maximum long-range detection (for rear center sensors)	Sounds intermittently (ON: 150 msec. / OFF: 650 msec.)	4 (yellow illumination) *: Blinking (yellow)

HINT:

Ultrasonic waves are used to measure the detection range. However, the detection range may vary depending on the ambient temperature.

CUSTOMIZE PARAMETERS

CUSTOMIZE PARAMETERS

1. CUSTOMIZE PARAMETERS

NOTE:

- **When the customer requests a change in a function, first make sure that the function can be customized.**
- **Be sure to make a note of the current settings before customizing.**
- **When troubleshooting a function, first make sure that the function is set to the default setting.**

- a. Connect the Techstream to the DLC3.
- b. Turn the ignition switch to ON.
- c. Turn the Techstream on.
- d. Enter the following menus: Customize Setting.
- e. Select the setting by referring to the table below.

WARNING

Display	Default	Contents	Setting
Rr Sensor Onset Range	Wide	Sets the buzzer activation range for the rear sensors.	Narrow or Wide
Keep Sense Buzzer	Avail	Makes the buzzer sound when the distance between the vehicle and obstacle does not change for more	Not Avail or Avail

		than 3 seconds.	
Fr & Rr Buzzer Volume	H	Changes the buzzer volume setting.	L, M1, M2, M3 or H

SENSOR

Display	Default	Contents	Setting
Sensor Condition N	Avail	Makes the sensors available when the shift lever is in N.	Not Avail or Avail
Reverse Range Front Sensor	F	Changes the operation setting for the vehicle front sensors when the shift lever is in R.	F or F Stop
Non P/R Range Rear Sensor	R Stop	Changes the operation setting for the vehicle rear sensors when the shift lever is not in P or R.	R, Rcm or R Stop

DISPLAY

Display	Default	Contents	Setting

Display Mode	All	The display mode setting (when the intuitive parking assist system is normal).	All or Undisp
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PROBLEM SYMPTOMS TABLE

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes 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.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

GENERAL

Symptom	Suspected Area	See
System does not operate at all (self-check function does not operate)	Clearance Warning ECU Power Source Circuit	Refer to <u>Clearance Warning ECU Power Source Circuit</u>
	Clearance Sonar Main Switch Circuit	Refer to <u>Clearance Sonar Main Switch Circuit</u>
	Clearance Warning ECU	Refer to <u>REMOVAL</u>
ECU does not operate when clearance sonar main switch is turned on or off	Clearance Sonar Main Switch Circuit	Refer to <u>Clearance Sonar Main Switch Circuit</u>
	Read value using the Techstream (EEPROM status)	Refer to <u>DATA LIST / ACTIVE TEST</u>
	Clearance Warning ECU	Refer to <u>REMOVAL</u>

SONAR FUNCTION

Symptom	Suspected Area	See
Freeze condition is displayed as a result of self-check	Remove ice, mud or snow from the ultrasonic sensor	-
Open circuit in front sensors is displayed as a result of self-	Front Left Sensor Malfunction	Refer to <u>DTC C1AE1: Front Left Sensor Malfunction</u>
	Front Right Sensor Malfunction	Refer to <u>DTC C1AE4: Front Right Sensor</u>

check		<u>Malfunction</u>
	Clearance Warning ECU	Refer to <u>REMOVAL</u>
Open circuit in rear sensors is displayed as a result of self-check	Rear Left Sensor Malfunction	Refer to <u>DTC C1AE6: Rear Left Sensor Malfunction</u>
	Rear Right Sensor Malfunction	Refer to <u>DTC C1AE9: Rear Right Sensor Malfunction</u>
	Rear Left Center Sensor Malfunction	Refer to <u>DTC C1AE7: Rear Left Center Sensor Malfunction</u>
	Rear Right Center Sensor Malfunction	Refer to <u>DTC C1AE8: Rear Right Center Sensor Malfunction</u>
	Clearance Warning ECU	Refer to <u>REMOVAL</u>
Detection operation operates even when vehicle speed is more than 13 km/h (8 mph)	CAN Communication System	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Clearance Warning ECU	Refer to <u>REMOVAL</u>

DISPLAY FUNCTION

Symptom	Suspected Area	See
Detection operation is normal but sonar displays do not appear on accessory meter assembly	CAN communication system	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Clearance Warning ECU	Refer to <u>REMOVAL</u>
	Accessory Meter Assembly	Refer to <u>REMOVAL</u>
Detection operation is normal but sonar displays do not appear on navigation receiver assembly	CAN Communication System	Refer to <u>HOW TO PROCEED WITH TROUBLESHOOTING</u>
	Clearance Warning ECU	Refer to <u>REMOVAL</u>
	Parking Assist ECU*1	Refer to <u>REMOVAL</u>
	AVC-LAN*1	-
Detection operation is normal but clearance sonar main switch indicator does not illuminate	Navigation Receiver Assembly	Refer to <u>REMOVAL</u>
	Clearance Sonar Main Switch Circuit	Refer to <u>Clearance Sonar Main Switch Circuit</u>
	Clearance Warning ECU	Refer to <u>REMOVAL</u>

*1: w/ Navigation System

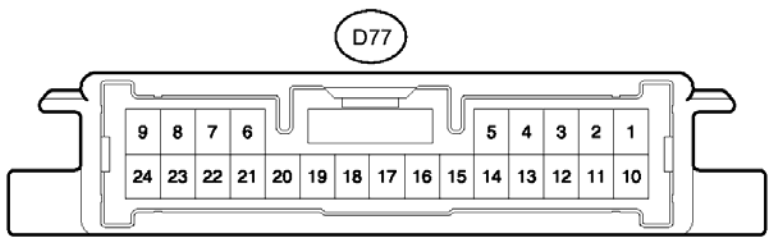
BUZZER FUNCTION

Symptom	Suspected Area	See
Detection operation is normal but buzzer operation is intermittent	Clearance Warning Buzzer Circuit	Refer to <u>Clearance Warning Buzzer Circuit</u>
	Clearance Warning ECU	Refer to <u>REMOVAL</u>

TERMINALS OF ECU

TERMINALS OF ECU

1. CHECK CLEARANCE WARNING ECU



T

Fig. 17: Clearance Warning ECU Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- a. Disconnect the D77 clearance warning ECU connector.
- b. Measure the voltage and resistance according to value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
D77-15 (IG) - D77-17 (E)	L - W-B	IG power source signal	Ignition switch ON	11 to 14 V
D77-15 (IG) - D77-17 (E)	L - W-B	IG power source signal	Ignition switch off	Below 1 V
D77-12 (CSSW) - D77-17 (E)	SB - W-B	Clearance sonar main switch power source signal	Ignition switch ON, clearance sonar main switch on	11 to 14 V
D77-12 (CSSW) - D77-17	SB - W-B	Clearance sonar main switch power	Ignition switch ON, clearance	Below 1 V

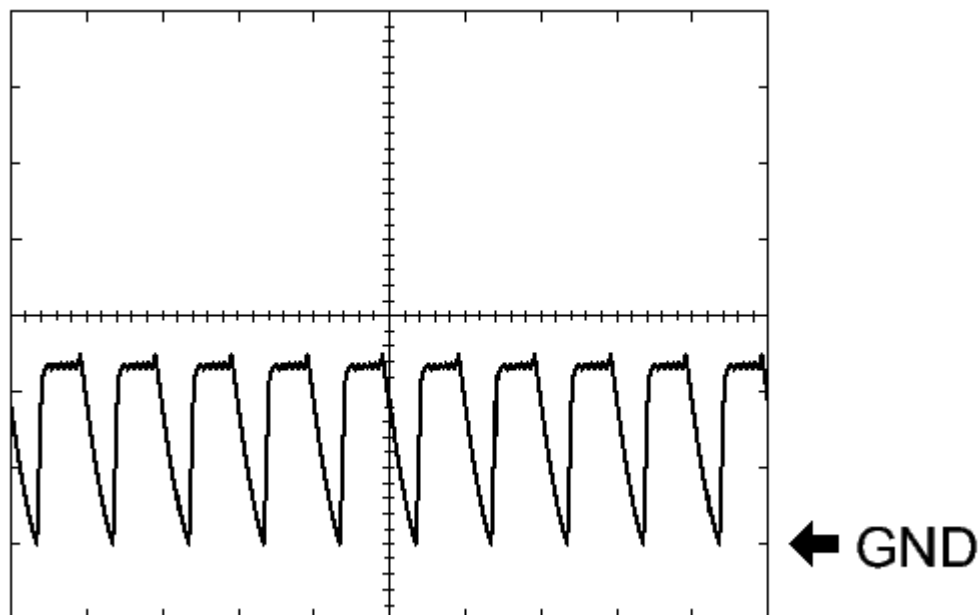
(E)		source signal	sonar main switch off	
D77-17 (E) - Body ground	W-B - Body ground	ECU ground	Always	Below 1 ohms

- c. Reconnect the D77 clearance warning ECU connector.
- d. Measure the voltage and waveform according to value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
D77-10 (BBZ) - D77-11 (EF)	W - B	No. 1 clearance warning buzzer signal	Buzzer not sounding	Below 1 V
D77-10 (BBZ) - D77-11 (EF)	W - B	No. 1 clearance warning buzzer signal	Buzzer sounding	See Fig. 18
D77-21 (BOF) - D77-19 (E1)	B - R	No. 1 ultrasonic sensor (front sensor) circuit power source	Ignition switch ON, clearance sonar main switch on	7.2 to 8.8 V
D77-21 (BOF) - D77-19 (E1)	B - R	No. 1 ultrasonic sensor (front sensor) circuit power source	Ignition switch off	Below 1 V
D77-9 (SOF) - D77-19 (E1)	G - R	No. 1 ultrasonic sensor (front sensor) communication signal	Ignition switch ON, clearance sonar main switch on	See Fig. 19
D77-7 (BOR) - D77-18 (E2)	B - W	No. 1 ultrasonic sensor (rear sensor and rear center sensor)	Ignition switch ON, clearance sonar	7.2 to 8.8 V

		circuit power source	main switch on	
D77-7 (BOR) - D77-18 (E2)	B - W	No. 1 ultrasonic sensor (rear sensor and rear center sensor) circuit power source	Ignition switch off	Below 1 V
D77-24 (SOR) - D77-18 (E2)	G - W	No. 1 ultrasonic sensor (rear sensor and rear center sensor) communication signal	Ignition switch ON, clearance sonar main switch on	See Fig. 19

- e. Using an oscilloscope, check waveform 1.



H

Fig. 18: Identifying Waveform 1

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

WAVEFORM 1 (REFERENCE)

Item	Content
Terminal No. (Symbol)	D77-10 (BBZ) - D77-11

	(EF)
Tool Setting	5 V/DIV., 1 msec./DIV.
Condition	Buzzer sounding

NOTE: The waveform amplitude varies depending on the volume setting.

- f. Using an oscilloscope, check waveform 2.

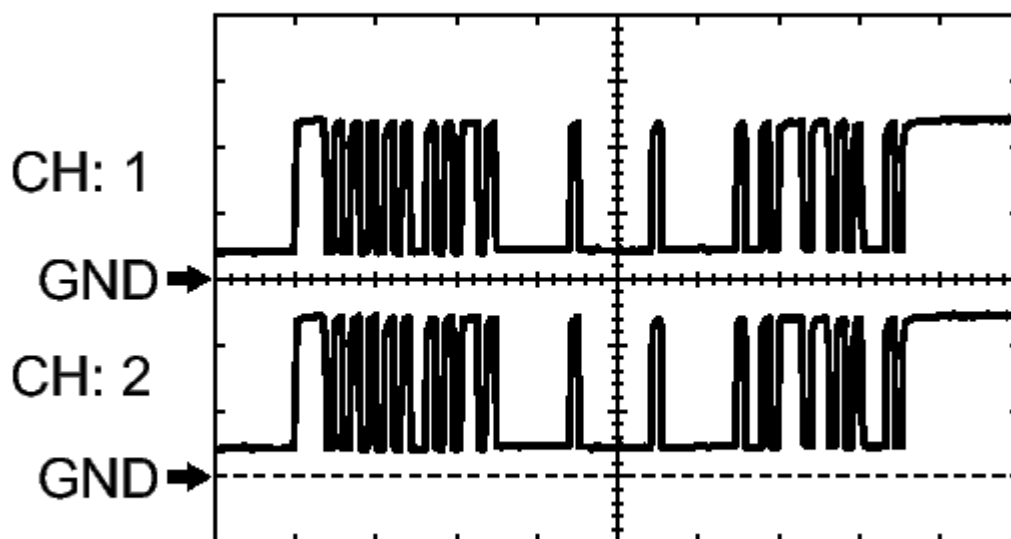


Fig. 19: Identifying Waveform 2

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

WAVEFORM 2 (REFERENCE)

Item	Content
Terminal No. (Symbol)	- CH: 1 D77-9 (SOF) - D77-19 (E1) - CH: 2 D77-24

	(SOR) - D77- 18 (E2)
Tool Setting	2 V/DIV., 1 msec./DIV.
Condition	Ignition switch ON, clearance sonar main switch on

DTC CHECK / CLEAR

DTC CHECK / CLEAR

1. CHECK DTC

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus:

Body Electrical / Intuitive P/A / Trouble Codes.

- Read the DTCs.

2. CLEAR DTC

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus:

Body Electrical / Intuitive P/A / Trouble Codes.

- Clear the DTCs.

DATA LIST / ACTIVE TEST

DATA LIST / ACTIVE TEST

1. DATA LIST

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and

other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTE: In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

- a. Connect the Techstream to the DLC3.
- b. Turn the ignition switch to ON.
- c. Turn the intuitive parking assist system on.
- d. Turn the Techstream on.
- e. Enter the following menus: Body Electrical / Intuitive P/A / Data List.
- f. According to the display on the Techstream, read the Data List.

INTUITIVE P/A

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Main Switch	Clearance sonar main switch/OFF or ON	OFF: Clearance sonar main switch off ON: Clearance sonar main switch on	-
Intuitive P/A ECU Type	Type of intuitive P/A ECU/Normal	Normal: Normal clearance sonar type	-
Fr Left Sensor	Front left sensor information/Undetect, Close R, Mid Y, Mid L Y, Freeze, Open or Blink	Undetect: Not detected Close R: Detected (Close-range) [Red] Mid Y: Detected (Medium-range) [Yellow] Mid L Y: Detected (Long-range) [Yellow]	-

		Freeze: Sensor frozen Open: Open in sensor Blink: All displays blinking	
Fr Right Sensor	Front right sensor information/Undetect, Close R, Mid Y, Mid L Y, Freeze, Open or Blink	Undetect: Not detected Close R: Detected (Close- range) [Red] Mid Y: Detected (Medium- range) [Yellow] Mid L Y: Detected (Long-range) [Yellow] Freeze: Sensor frozen Open: Open in sensor Blink: All displays blinking	-
Rr Left Sensor	Rear left sensor information/Undetect, Close R, Mid Y, Mid L Y, Freeze, Open or Blink	Undetect: Not detected Close R: Detected (Close- range) [Red] Mid Y: Detected (Medium- range) [Yellow] Mid L Y: Detected (Long-range) [Yellow] Freeze: Sensor	-

		frozen Open: Open in sensor Blink: All displays blinking	
Rr Left Center Sensor	Rear left center sensor information/Undetect, Close R, Mid Y, Mid L Y, Long Y, Freeze, Open or Blink	Undetect: Not detected Close R: Detected (Close- range) [Red] Mid Y: Detected (Medium- range) [Yellow] Mid L Y: Detected (Long-range) [Yellow] Long Y: Detected (Longest- range) [Yellow] Freeze: Sensor frozen Open: Open in sensor Blink: All displays blinking	-
Rr Right	Rear right center sensor information/Undetect,	Undetect: Not detected Close R: Detected (Close- range) [Red] Mid Y: Detected (Medium- range) [Yellow] Mid L Y: Detected (Long-range)	

Center Sensor	Close R, Mid Y, Mid L Y, Long Y, Freeze, Open or Blink	[Yellow] Long Y: Detected (Longest-range) [Yellow] Freeze: Sensor frozen Open: Open in sensor Blink: All displays blinking	-
Rr Right Sensor	Rear right sensor information/Undetect, Close R, Mid Y, Mid L Y, Freeze, Open or Blink	Undetect: Not detected Close R: Detected (Close-range) [Red] Mid Y: Detected (Medium-range) [Yellow] Mid L Y: Detected (Long-range) [Yellow] Freeze: Sensor frozen Open: Open in sensor Blink: All displays blinking	-
Rr Sensor Onset Range	Buzzer activation range (for rear center sensors)/Narrow or Wide	Narrow: 600 mm (23.62 in.) Wide: 1500 mm (59.06 in.)	Customized value displayed
Keep Sense Buzzer	Keep sense buzzer operation/Not Avail or Avail	Not Avail: Buzzer stops Avail: Buzzer	Customized value displayed

		sounds continuously	
Fr & Rr Buzzer Volume	Buzzer volume setting/L, M1, M2, M3 or H	L: Low volume M1: Medium low volume M2: Medium volume M3: Medium high volume H: High volume	Customized value displayed
Reverse Range Front Sensor	Operation setting for front sensors/F or F Stop	F: Front sensors operate F Stop: Front sensors stop	Customized value displayed
Non P/R Range Rear Sensor	Operation setting for rear sensors (rear center, rear corner)/R, Rcrn or R Stop	R: All rear sensors operate Rcrn: Rear corner sensors operate R Stop: All rear sensors stop	Customized value displayed
Sensor Condition N	Front sensor operation/Not Avail or Avail	Not Avail: Front sensors not available Avail: Front sensors available	Customized value displayed
Display Mode	Display mode setting/All or Undisp	All: Display displays all sensors Undisp: Display does not display	Customized value displayed
Parking Signal	Parking signal/OFF or ON	OFF: Shift lever in any position except P ON: Shift lever in P	-
		OFF: Shift lever in any	

Reverse Signal	Reverse signal/OFF or ON	position except R ON: Shift lever in R	-
Vehicle Speed Info	Vehicle speed signal/Snr Stop or Snr Work	Snr Stop: Vehicle speed 15 km/h (9.3 mph) or more (when accelerating) or 10 km/h (6.2 mph) or more (when decelerating) Snr Work: Vehicle speed less than 15 km/h (9.3 mph) (when accelerating) or less than 10 km/h (6.2 mph) (when decelerating)	-
Sonar Detection	Sonar detection condition/Stop or Work	Stop: Sonar detection not operating Work: Sonar detection operating	-
Intuitive P/A ECU	ECU information/Normal or Abnormal	Normal: ECU normal Abnormal: ECU not normal	-
Rr Right Freezed History	Rear right sensor frozen history/Not Rec or Recorded	Not Rec: No record history Recorded: Record history	-
Rr Right Center Freezed	Rear right center sensor frozen history/Not Rec or	Not Rec: No record history Recorded:	-

History	Recorded	Record history	
Rr Left Center Freezed History	Rear left center sensor frozen history/Not Rec or Recorded	Not Rec: No record history Recorded: Record history	-
Rr Left Freezed History	Rear left sensor frozen history/Not Rec or Recorded	Not Rec: No record history Recorded: Record history	-
Fr Right Freezed History	Front right sensor frozen history/Not Rec or Recorded	Not Rec: No record history Recorded: Record history	-
Fr Left Freezed History	Front left sensor frozen history/Not Rec or Recorded	Not Rec: No record history Recorded: Record history	-
AT/MT Recognition	AT/MT recognition/AT, MT or Unknown	AT: Automatic transmission MT: Manual transmission Unknown: Transmission not recognized	-
# Codes	Number of stored trouble codes/min.: 0, max.: 255	Number of DTCs will be displayed	-

2. ACTIVE TEST

HINT:

Using the Techstream to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while

performing Active Tests.

- a. Connect the Techstream to the DLC3.
- b. Turn the ignition switch to ON.
- c. Turn the intuitive parking assist system on.
- d. Turn the Techstream on.
- e. Enter the following menus: Body Electrical / Intuitive P/A / Active Test.
- f. According to the display on the Techstream, perform the Active Test.

INTUITIVE P/A

Tester Display	Test Part	Control Range	Diagnostic Note
Buzzer	Clearance warning buzzer	Operate or Stop	Confirm that the vehicle is stopped and the ignition switch is ON

DIAGNOSTIC TROUBLE CODE CHART

DIAGNOSTIC TROUBLE CODE CHART

HINT:

If a trouble code is output during the DTC check, inspect the trouble areas listed for that code. For details of the code, refer to the appropriate information below.

INTUITIVE PARKING ASSIST SYSTEM

DTC Code	Detection Item	Trouble Area	See
C1AE1	Front Left Sensor Malfunction	- No. 1 ultrasonic sensor (front left sensor) - Clearance warning ECU	Refer to <u>DTC C1AE1: Front Left Sensor Malfunction</u>
C1AE4	Front Right Sensor Malfunction	- No. 1 ultrasonic sensor (front right sensor) - Clearance warning ECU	Refer to <u>DTC C1AE4: Front Right Sensor Malfunction</u>

C1AE6	Rear Left Sensor Malfunction	- No. 1 ultrasonic sensor (rear left sensor) - Clearance warning ECU	Refer to <u>DTC C1AE6: Rear Left Sensor Malfunction</u>
C1AE7	Rear Left Center Sensor Malfunction	- No. 1 ultrasonic sensor (rear left center sensor) - Clearance warning ECU	Refer to <u>DTC C1AE7: Rear Left Center Sensor Malfunction</u>
C1AE8	Rear Right Center Sensor Malfunction	- No. 1 ultrasonic sensor (rear right center sensor) - Clearance warning ECU	Refer to <u>DTC C1AE8: Rear Right Center Sensor Malfunction</u>
C1AE9	Rear Right Sensor Malfunction	- No. 1 ultrasonic sensor (rear right sensor) - Clearance warning ECU	Refer to <u>DTC C1AE9: Rear Right Sensor Malfunction</u>
C1AEC	Front Sensor Communication Malfunction	- No. 1 ultrasonic sensor (front sensor) circuit - Clearance warning ECU	Refer to <u>DTC C1AEC: Front Sensor Communication Malfunction</u>
C1AED	Rear Sensor Communication Malfunction	- No. 1 ultrasonic sensor (rear sensor and rear center sensor) circuit - Clearance warning ECU	Refer to <u>DTC C1AED: Rear Sensor Communication Malfunction</u>
C1AEF	Shift Position Information	CAN communication system	Refer to <u>DTC C1AEF: Shift Position Information</u>
U0101	Lost Communication with TCM	CAN communication system	Refer to <u>DTC U0101: Lost Communication with TCM;</u> <u>DTC U0155: Lost Communication with Instrument Panel Cluster Control Module (Combination Meter)</u>
	Lost		

U0155	Communication with Instrument Panel Cluster Control Module (Combination Meter)	CAN communication system	Refer to <u>DTC U0101: Lost Communication with TCM;</u> <u>DTC U0155: Lost Communication with Instrument Panel Cluster Control Module (Combination Meter)</u>
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