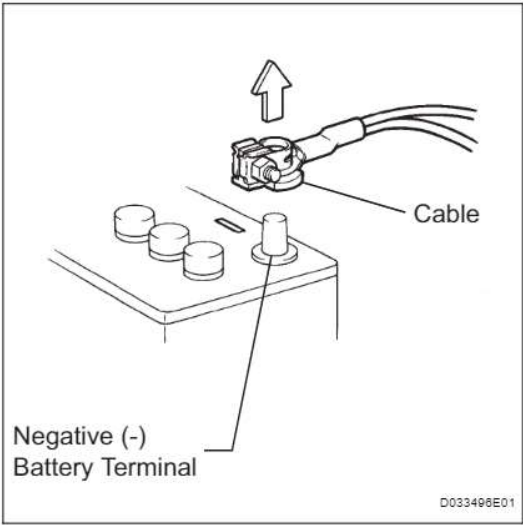


CLEARANCE SONAR SYSTEM

PRECAUTION

1. DISCONNECT AND RECONNECT CABLE OF
NEGATIVE BATTERY TERMINAL
- NOTICE:
- When disconnecting the cable from the negative (-)
battery terminal, initialize the following systems after
the cable is reconnected.

System Name	See procedure
METER / GAUGE SYSTEM	See page ME-10

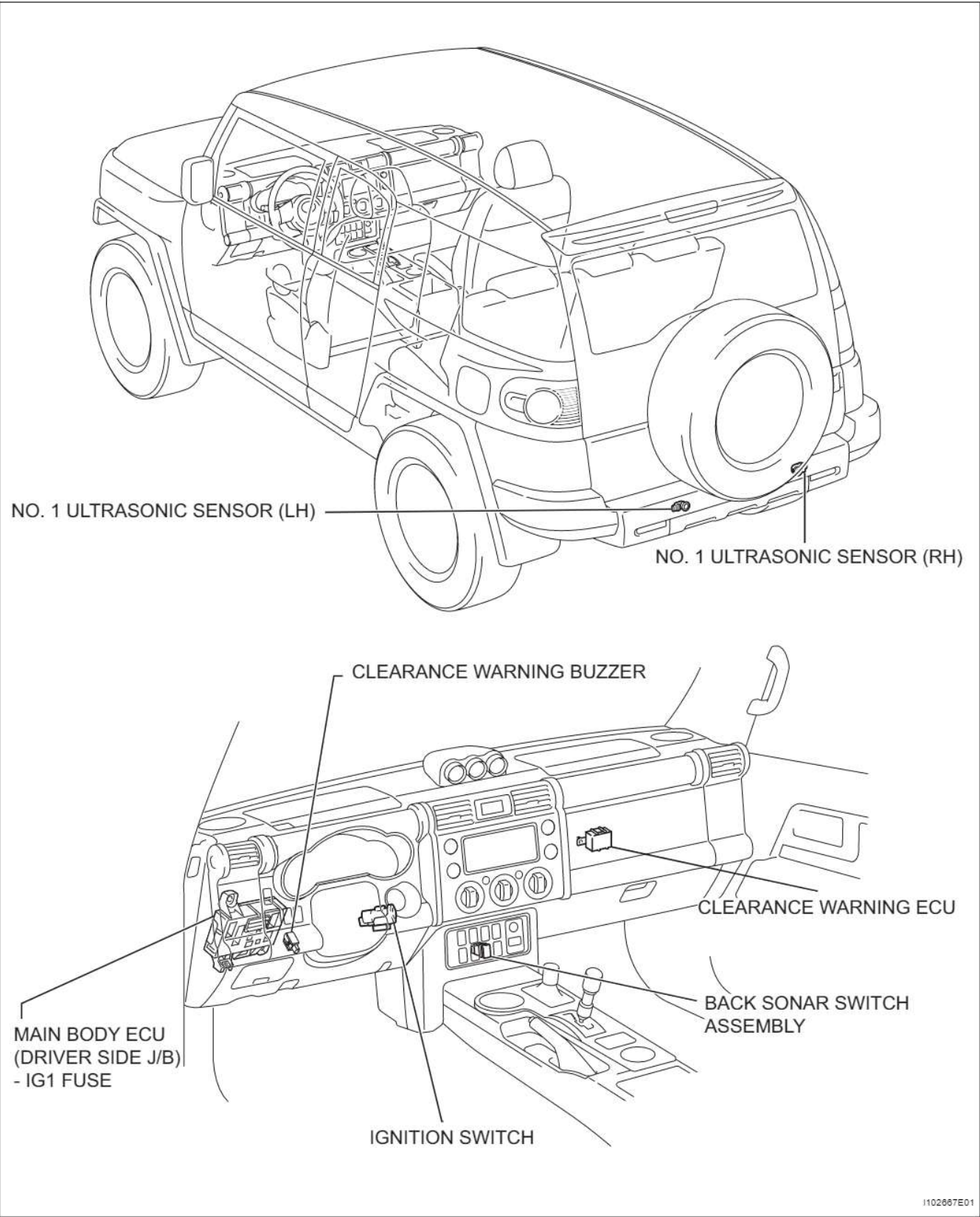


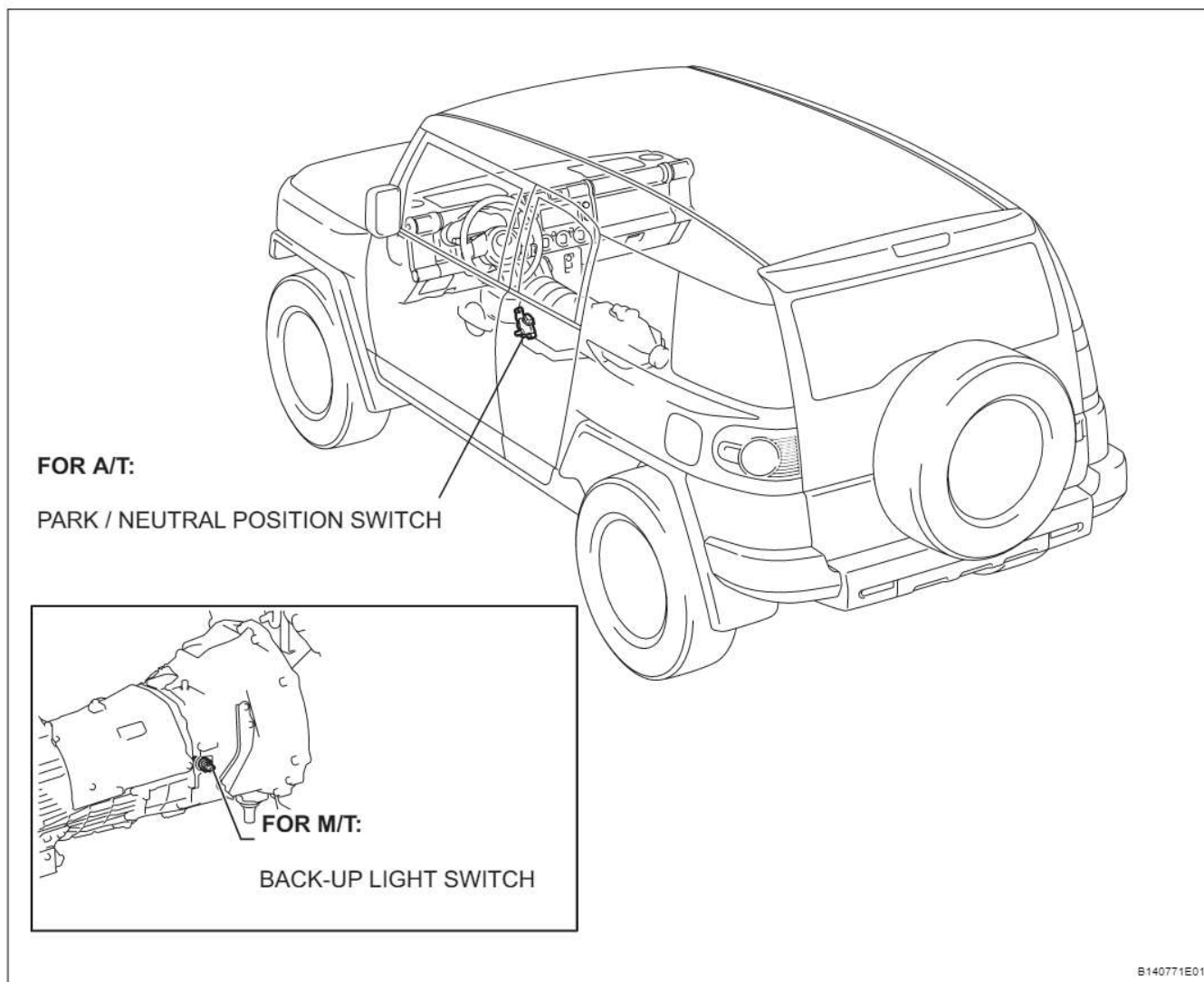
- (a) Before performing electronic work, disconnect the
cable from the negative (-) battery terminal in order
to prevent it from shorting and burning out.
- (b) Before disconnecting and reconnecting the battery
cable, turn the ignition switch OFF and the headlight
dimmer switch OFF. Then loosen the terminal nut
completely. Do not damage the cable or terminal.
- (c) When the battery cable is disconnected, the clock
and radio settings and stored DTCs are erased.
Therefore, before disconnecting the battery cable,
make a notes of them.

PM-2

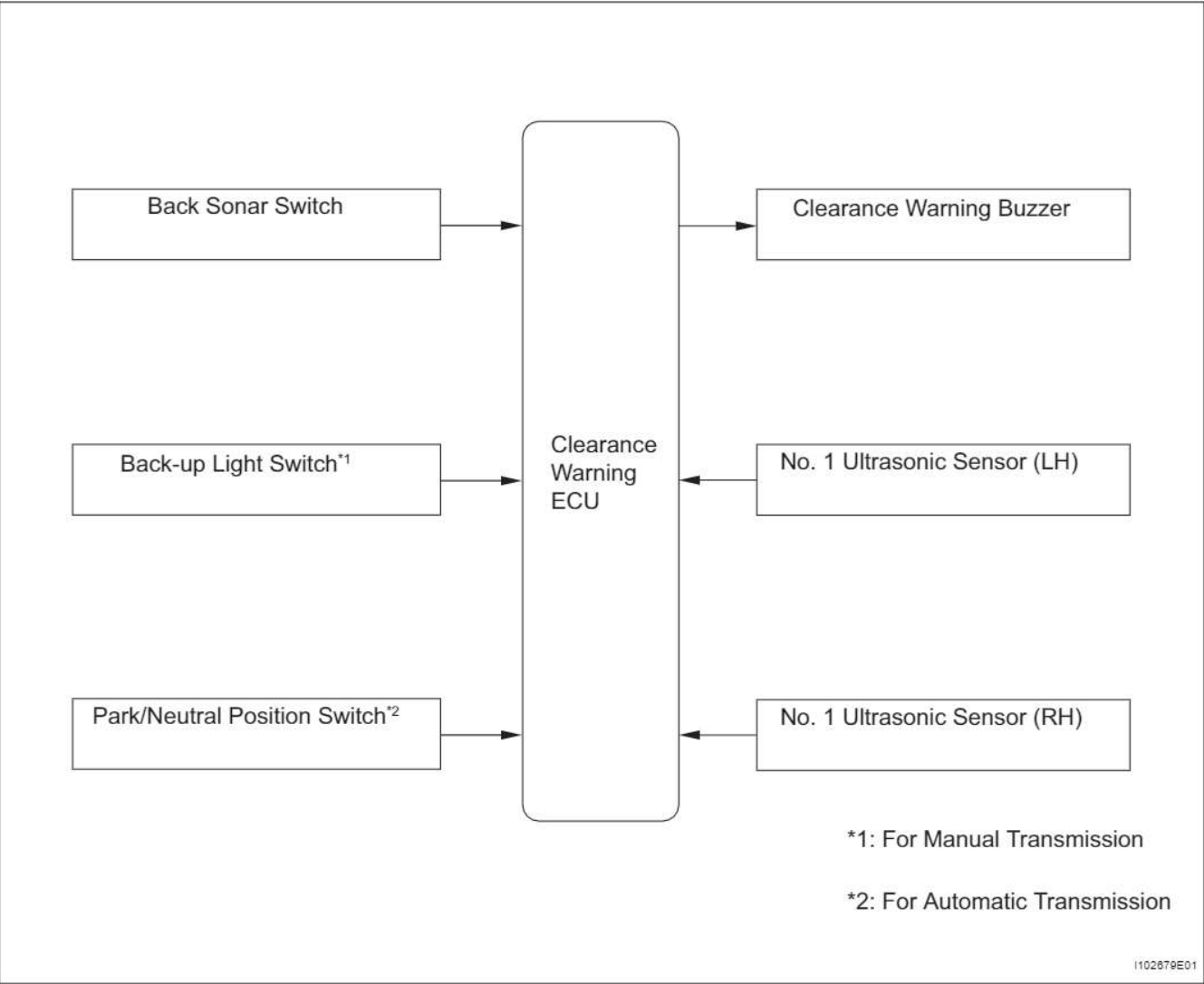
PARK ASSIST / MONITORING – CLEARANCE SONAR SYSTEM

PARTS LOCATION



PARK ASSIST / MONITORING – CLEARANCE SONAR SYSTEM**PM-3**

SYSTEM DIAGRAM



PM

SYSTEM DESCRIPTION

1. GENERAL

- (a) This system uses ultrasonic sensors to detect obstacles at the rear of the vehicle. The system then informs the driver of the approximately distance between the sensors and the obstacles by sounding a buzzer.

2. FUNCTIONS OF COMPONENTS

Components	Function
Ultrasonic Sensor	Detects distance between vehicle and obstacle
Back Sonar Switch	Turns the clearance sonar system on and off
Clearance Warning Buzzer	Emits an intermittent sound to inform the driver that the ECU has detected an obstacle within prescribed ranges
Clearance Warning ECU	- Judges approximate distance between vehicle and obstacle - ECU has buzzer sound volume adjusting knob
Park / Neutral Position Switch (A/T)	Sends a signal that activates the clearance sonar system when the shift lever is moved to the R position
Back-up Light Switch (M/T)	Transmits reverse shift position signal to clearance warning ECU

3. OPERATION EXPLANATION

- (a) The clearance warning ECU determines whether the clearance sonar system should operate or not based on the back sonar switch on/off status and the shift lever position.
- (b) When the system operates, the clearance warning ECU transmits ultrasonic waves from the ultrasonic sensor. If an obstacle is detected within a sensor's detection range, the waves are reflected back to the sensors. The sensor then transmits a signal to the clearance warning ECU. Based on this information, the clearance warning ECU sends signals to the clearance warning buzzer. The approximate distance between the vehicle and the obstacle is then communicated through different types of buzzer sounds.

HINT:

Refer to "OPERATION CHECK" for detailed operation (See page [PM-7](#)).

4. NOTE FOR CLEARANCE SONAR SYSTEM

- (a) Under the following conditions, the ultrasonic sensor may not operate properly.
- (1) Foreign matter such as snow or mud is on sensor (the detection function returns to normal if foreign matter is cleared away).
 - (2) The sensor is frozen (the detection function returns to normal if defrosted).
- HINT:
Especially in cold weather, the sensor may not be able to detect obstacles if it is frozen or otherwise affected by the weather.
- (b) The detection range of the ultrasonic sensor may be affected by the following condition:
- (1) Foreign matter such as snow or mud is on the sensor.

PM

PM-6**PARK ASSIST / MONITORING – CLEARANCE SONAR SYSTEM**

- (2) In very hot or cold weather.
- (c) Under the following conditions, the clearance sonar system may detect an error.
 - (1) Another vehicle's horn, motorcycle engine sounds, an approaching vehicle's air brake sound, or other things that generate ultrasonic waves are near the vehicle.
 - (2) The vehicle gets caught in a downpour, or mud or water splashes onto the vehicle's body.
 - (3) The vehicle is severely tilted.
 - (4) The vehicle is equipped with a commercial fender pole.
 - (5) Foreign matter such as snow or mud is on the sensor.
 - (6) A vehicle equipped with a sonar system is in the vicinity.
 - (7) The vehicle is equipped with a towing hook.
- (d) The clearance sonar system cannot detect the following objects:
 - (1) Thin objects like wires, ropes or poles.
 - (2) Materials that easily absorb the ultrasonic waves such as cotton, snow, etc.
 - (3) Objects with sharp edges.
 - (4) Short objects.
 - (5) Tall objects with a protruding or overhanging upper part.
- (e) Other conditions
 - (1) The sensor cannot detect an object under the bumper. Also, the sensor may detect an object and then lose track of the object if: 1) the object starts out in the detection range and then ends up below the sensor, or 2) the object is a thin pole, such as a picket.
 - (2) The sensor may be unable to detect objects when the sensor is too close to the objects.
 - (3) The sensor may not operate properly if it is dropped or subjected to a strong impact.

PM

HOW TO PROCEED WITH TROUBLESHOOTING

1 VEHICLE BROUGHT TO WORKSHOP

NEXT

2 INSPECT BATTERY VOLTAGE

Standard voltage:

11 to 14 V

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

NEXT

3 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 5

A

4 OVERALL ANALYSIS AND TROUBLESHOOTING

- (a) Operation check (See page [PM-7](#)).
- (b) Terminals of ECU (See page [PM-11](#)).

NEXT

5 ADJUST, REPAIR OR REPLACE

NEXT

6 CONFIRMATION TEST

NEXT

END

PM

OPERATION CHECK

1. DETECTION RANGE MEASUREMENT AND INDICATOR CHECK

- (a) Turn the ignition switch ON.
- (b) Move the shift lever to the reverse position (when the back sonar is checked).

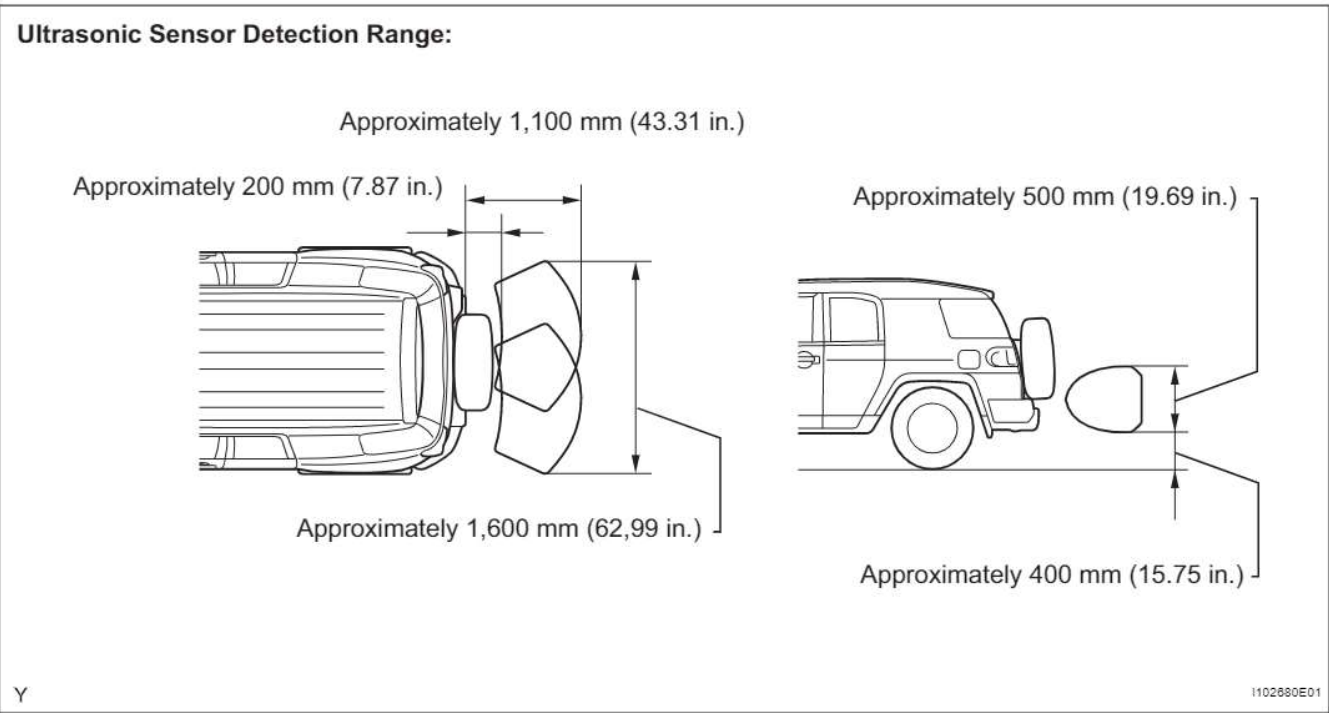
NOTICE:

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

- (c) Turn the back sonar switch ON.
- (d) Move a ϕ 60 mm (2.36 in.) pole around the sensor to measure the detection ranges of the sensor.

NOTICE:

The measured detection ranges are for a ϕ 60 mm (2.36in.) pole. The detection ranges for walls and other obstacles are different.



- (e) Check the buzzer sounding condition when the ultrasonic sensor detects an obstacle.

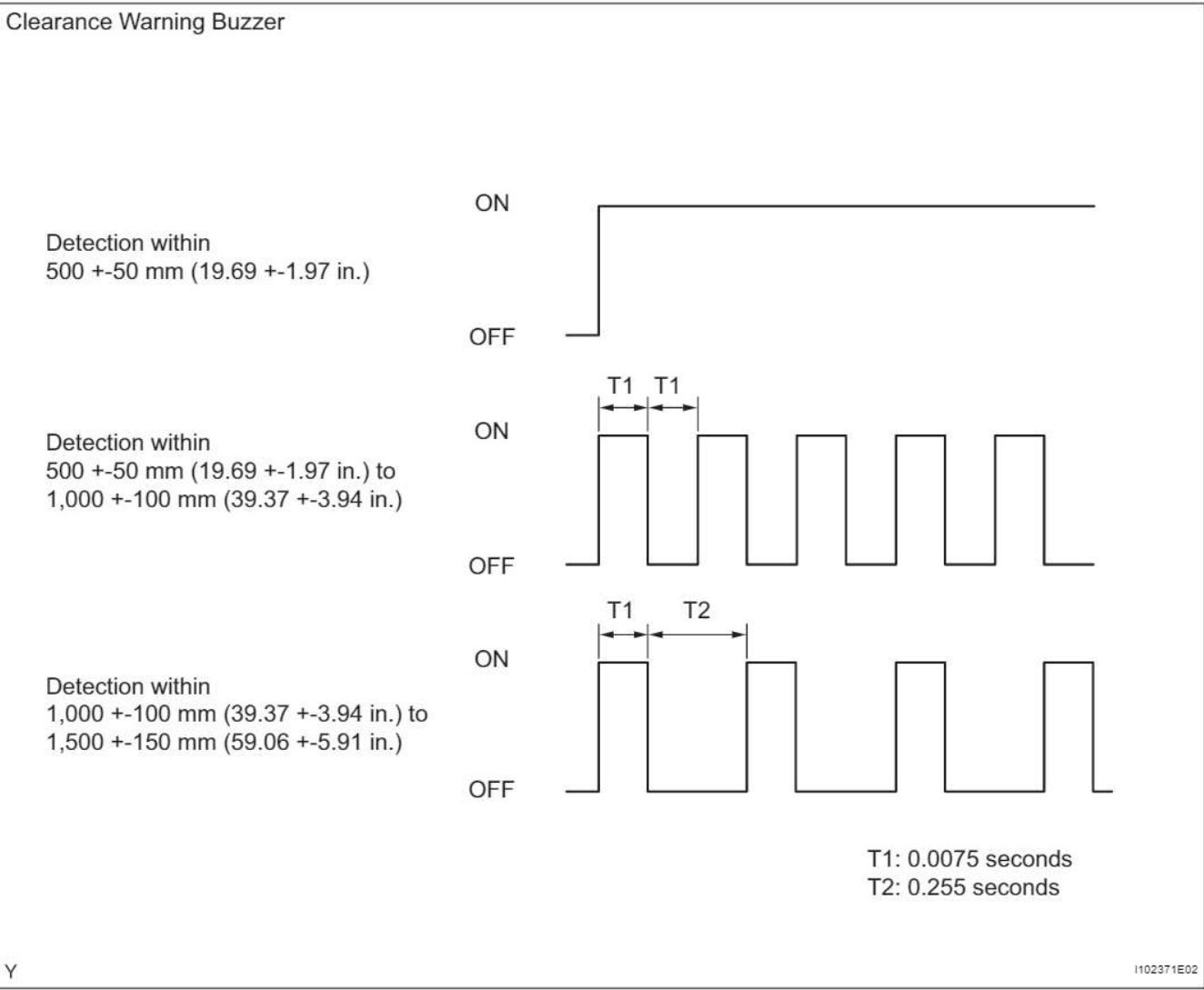
Operation condition

Ignition switch	Clearance sonar main switch	Shift position
ON	ON	Reverse Position

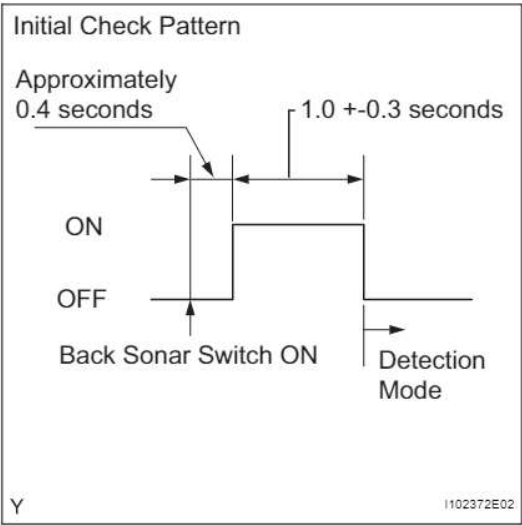
HINT:

Since sound waves are used for the detection range measurement, the detection range may vary a little due to the outside air temperature.

PARK ASSIST / MONITORING – CLEARANCE SONAR SYSTEM



PM

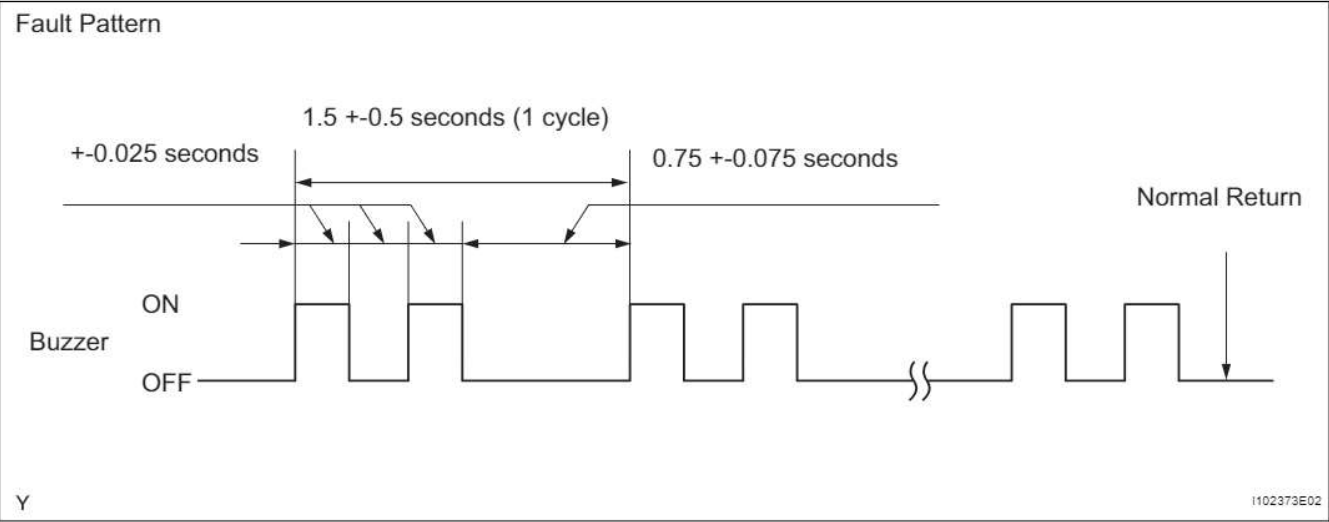


2. CHECK INITIAL CHECK FUNCTION
- (a) Check the initial check function for the buzzer. Turn the ignition switch ON and turn the back sonar switch ON. Regardless of shift lever position, the buzzer will sound after approximately 0.4 seconds. The buzzer sound will continue for approximately 1.0 +/- 0.3 seconds. If the buzzer's initial check pattern does not sound, there may be a malfunction in the ignition switch, back sonar switch, clearance warning buzzer and/or clearance warning ECU.

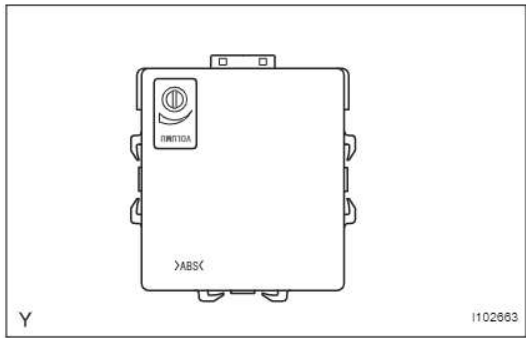
PM-10

PARK ASSIST / MONITORING – CLEARANCE SONAR SYSTEM

- (b) After checking the initial check function, check that the buzzer fault pattern does not sound. If the buzzer fault pattern sounds, there may be a problem with the sensor and/or sensor wire harness. The fault pattern will continue sounding until the problem is fixed.



3. ADJUST BUZZER VOLUME
- (a) Turn the knob on the clearance warning ECU to adjust the volume.



PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of the problem symptom. 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.

Clearance sonar system

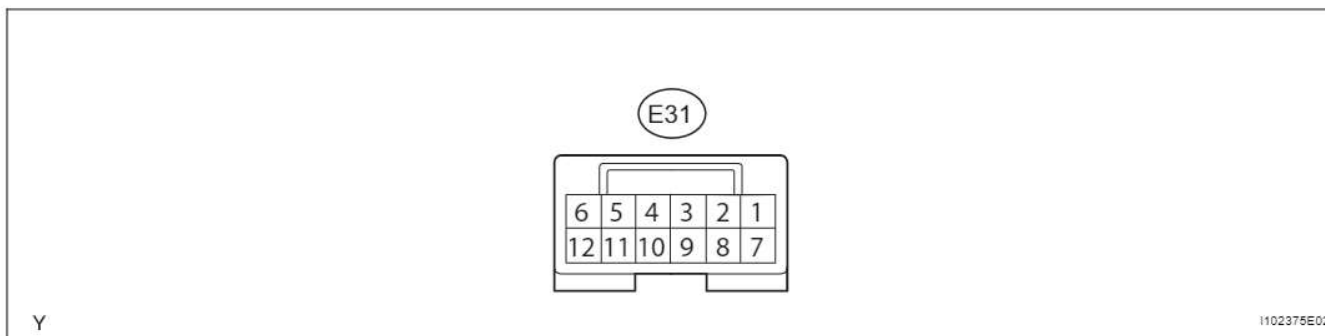
Symptom	Suspected area	See page
Initial check does not function	1. Clearance sonar main switch circuit	PM-19
	2. Clearance sonar buzzer circuit	PM-21
	3. Clearance warning buzzer	PM-21
	4. Wire harness	-
	5. Clearance warning ECU	PM-11
Clearance sonar system does not function (Initial check functions normally)	1. Initial check	-
	2. Back sonar sensor LH circuit	PM-15
	3. Back sonar sensor RH circuit	PM-17
	4. Back-up light switch circuit	PM-12
	5. Wire harness	-
	6. Clearance warning ECU	PM-11
Buzzer volume is too low	1. Adjust buzzer volume	PM-7

PM-12

PARK ASSIST / MONITORING – CLEARANCE SONAR SYSTEM

TERMINALS OF ECU

1. CLEARANCE WARNING ECU



- (a) Disconnect the E31 ECU connector.
- (b) Measure the voltage of the wire harness side connector.

Standard voltage:

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
+B (E31-3) - Body ground	LG - Body ground	+B power supply	Ignition switch ON, back sonar switch ON	11 to 14 V
			Ignition switch ON, back sonar switch OFF	Below 1 V
E (E31-10) - Body ground	W-B - Body ground	Body ground	Always	Below 1 V

If the result is not as specified, there may be a malfunction on the wire harness side.

- (c) Reconnect the ECU connector.
- (d) Measure the voltage of the connector.

Standard voltage:

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
BBZ (E31-2) - E (E 31-10)	L-B - W-B	Buzzer input	Ignition switch ON, back sonar switch ON	Pulse generation
			Ignition switch ON, back sonar switch OFF	Below 1 V
S6 (E31-12) - E1 (E31-11)	P - Y	No. 1 ultrasonic sensor (LH)	When signal transmitted from ECU to No. 1 ultrasonic sensor (LH)	Pulse generation
S5 (E31-6) - E2 (E31-5)	B - W	No. 1 ultrasonic sensor (RH)	When signal transmitted from ECU to No. 1 ultrasonic sensor (RH)	
RL (E31-8) - Body ground	R-Y - Body ground	Back-up light switch signal input	Ignition switch ON, shift lever in reverse position	11 to 14 V
			Ignition switch ON, shift lever except reverse position	Below 1 V

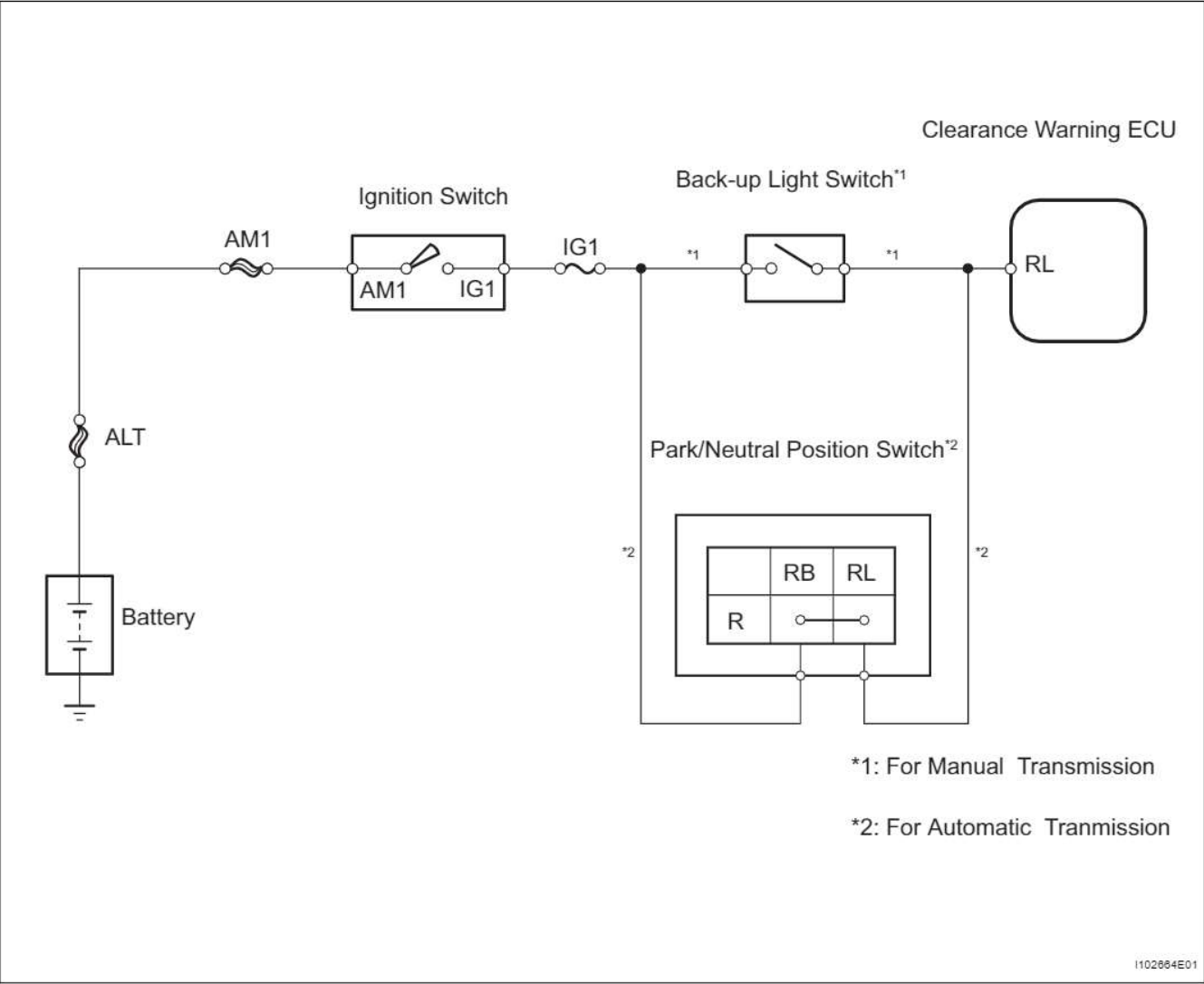
If the result is not as specified, the ECU may have a malfunction.

PM

Back-up Light Circuit

DESCRIPTION
This circuit sends a signal of the back-up light switch or park/neutral position switch to the clearance warning ECU.

WIRING DIAGRAM



INSPECTION PROCEDURE

1

INSPECT BACK-UP LIGHT SWITCH OR PARK/NEUTRAL POSITION SWITCH

Component Side:

Back-up Light Switch



Y

I102381E01

- (a) For manual transmission.
- (1) Remove the back-up light switch.
 - (2) Measure the resistance of the switch.

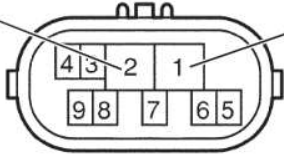
Standard resistance

Tester Connection	Switch Condition	Specified Condition
1 - 2	Pushed	Below 1 Ω
	Not pushed	10 kΩ or higher

- (3) Reinstall the back-up light switch.

Component Side:

Park / Neutral Position Switch



C110340E31

- (b) For automatic transmission.
- (1) Disconnect the B35 park / neutral position switch connector.
 - (2) Measure the resistance.

Standard resistance

Tester Connection	Shift Position	Specified Condition
B35-2 (RB) - B35-1 (RL)	R	Below 1 Ω
B35-2 (RB) - B35-1 (RL)	Except R	10 kΩ or higher

- (3) Reconnect the park / neutral position switch connector.

NG

REPLACE BACK-UP LIGHT SWITCH OR PARK/NEUTRAL POSITION SWITCH

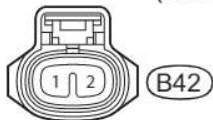
OK

2

CHECK HARNESS AND CONNECTOR (SWITCH - CLEARANCE WARNING ECU AND BATTERY)

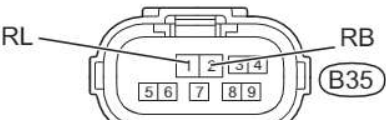
Wire Harness Side:

Back-up Light Switch Connector
(For M/T)



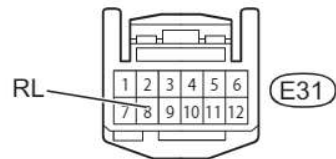
Front View

Park / Neutral Position Switch Connector
(For A/T)



Front View

Clearance Warning ECU Connector



Front View

1102665E01

- (a) Disconnect the B35 or B42 switch connector.
- (b) Disconnect the E31 clearance warning ECU connector.
- (c) Measure the voltage of the wire harness side connector.

Standard voltage

For manual transmission:

Tester Connection	Switch Condition	Specified Condition
B42-2 - Body ground	Ignition switch ON	11 to 14 V

For automatic transmission:

Tester Connection	Switch Condition	Specified Condition
B35-2 (RB) - Body ground	Ignition switch ON	11 to 14 V

- (d) Measure the resistance of the wire harness side connectors.

Standard resistance

For manual transmission:

Tester Connection	Specified Condition
B42-1 - E31-8 (RL)	Below 1 Ω

For automatic transmission:

Tester Connection	Specified Condition
B35-1 (RL) - E31-8 (RL)	Below 1 Ω

- (e) Reconnect the switch connector.
- (f) Reconnect the ECU connector.

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

PM

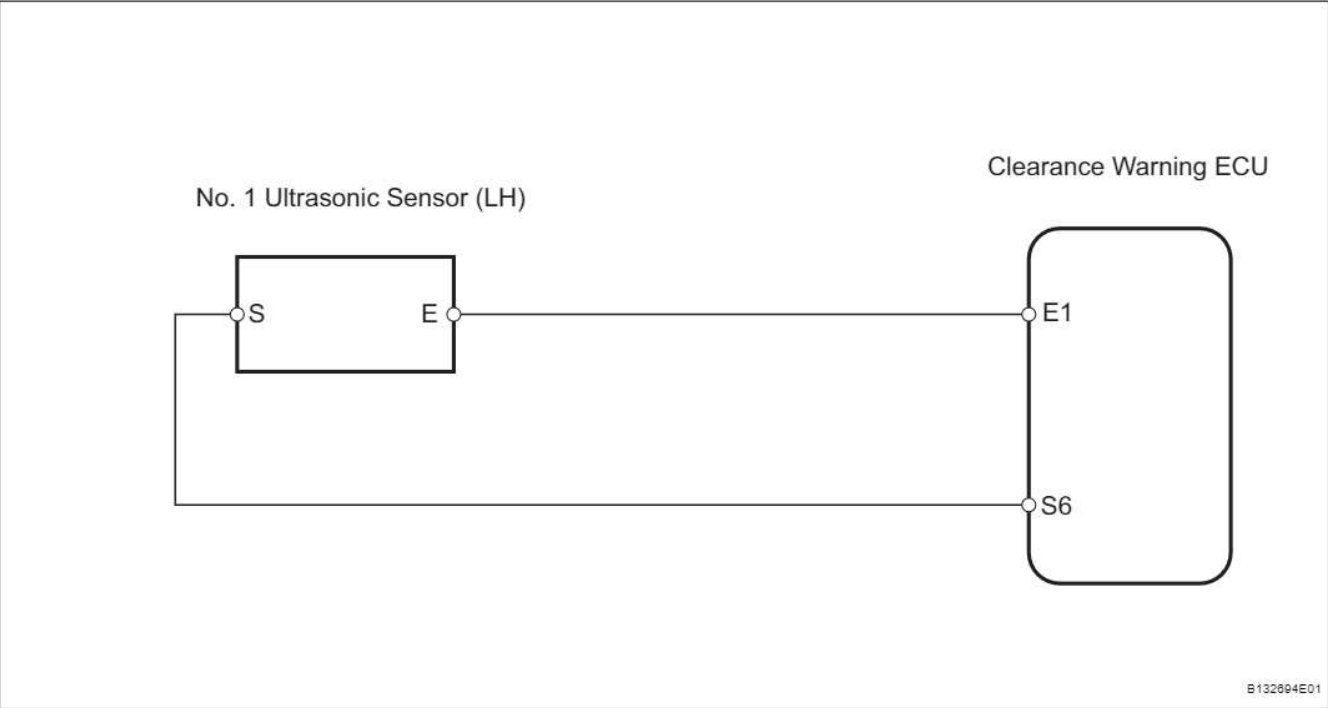
OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Back Sonar Sensor LH Circuit

DESCRIPTION
An ultrasonic sensor consists of a sensor portion that transmits and receives ultrasonic waves and a pre-amplifier that amplifies them. The ultrasonic sensor outputs the ultrasonic waves and sends the received signals to the clearance warning ECU.

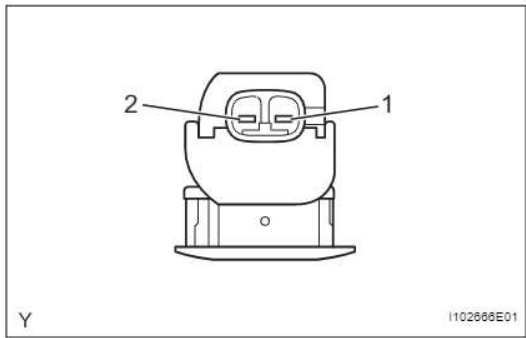
WIRING DIAGRAM



INSPECTION PROCEDURE

1

INSPECT NO.1 ULTRASONIC SENSOR



- (a) Remove the No. 1 ultrasonic sensor.
- (b) Measure the resistance.

Standard resistance	
Tester connection	Specified condition
1 - 2	8 to 12 kΩ

- (c) Reinstall the sensor.

NG

REPLACE NO. 1 ULTRASONIC SENSOR

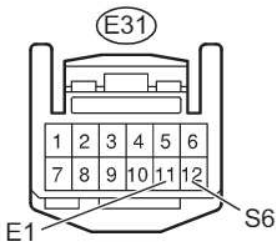
OK

2

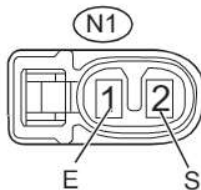
CHECK HARNESS AND CONNECTOR (CLEARANCE WARNING ECU - NO. 1 ULTRASONIC SENSOR)

Wire Harness Side:

Clearance Warning ECU



No. 1 Ultrasonic Sensor (LH)



B132712E03

- (a) Disconnect the E31 clearance warning ECU connector.
- (b) Disconnect the N1 connector from the No. 1 ultrasonic sensor.
- (c) Measure the resistance .

Standard resistance

Tester connection	Specified condition
S6 (E31-12) - S (N1-2)	Below 1 Ω
E1 (E31-11) - E (N1-1)	Below 1 Ω
S6 (E31-12) - Body ground	10 kΩ or higher
E1 (E31-11) - Body ground	10 kΩ or higher

- (d) Reconnect the ECU connector.
- (e) Reconnect the sensor connector.

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

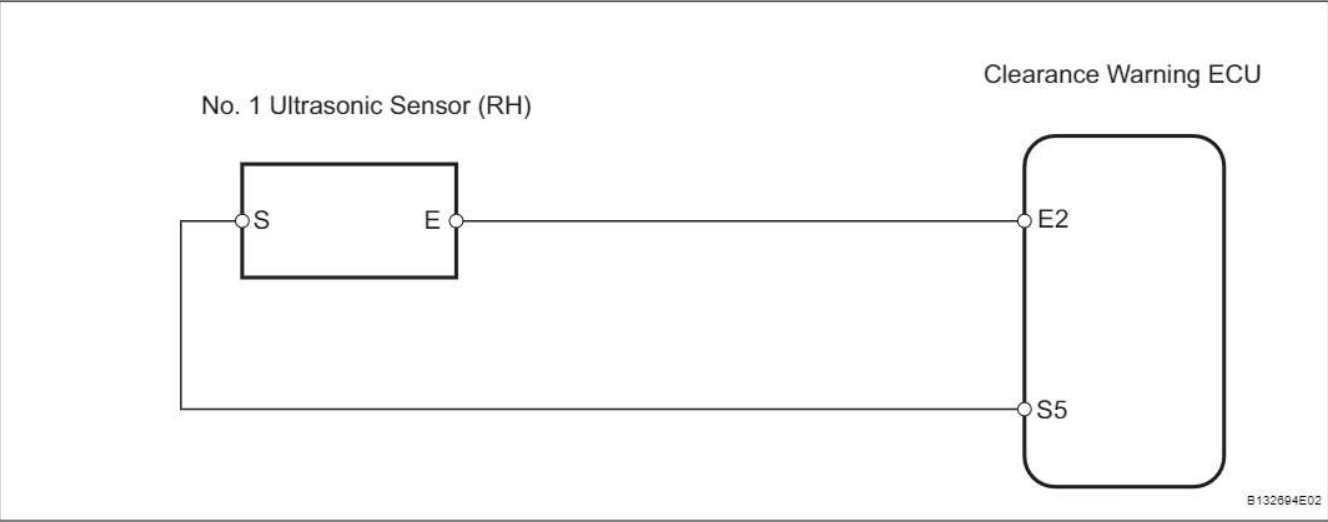
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

PM

Back Sonar Sensor RH Circuit

DESCRIPTION
An ultrasonic sensor consists of a sensor portion that transmits and receives ultrasonic waves and a pre-amplifier that amplifies them. The ultrasonic sensor outputs the ultrasonic waves and sends the received signals to the clearance warning ECU.

WIRING DIAGRAM

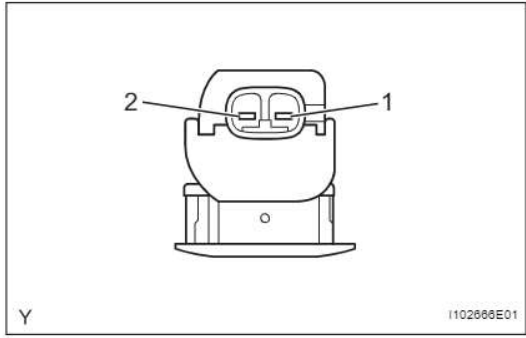


INSPECTION PROCEDURE

1

INSPECT NO. 1 ULTRASONIC SENSOR

PM



- (a) Remove the No. 1 ultrasonic sensor.
- (b) Measure the resistance.

Standard resistance

Tester connection	Specified condition
1 - 2	8 to 12 kΩ

- (c) Reinstall the sensor.

NG

REPLACE NO. 1 ULTRASONIC SENSOR

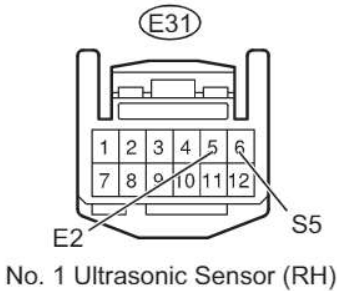
OK

2

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

Wire Harness Side:

Clearance Warning ECU



- (a) Disconnect the E31 clearance warning ECU connector.
- (b) Disconnect the M1 No. 1 ultrasonic sensor connector.
- (c) Measure the resistance.

Standard resistance

Tester connection	Specified condition
S5 (E31-6) - S (M1-2)	Below 1 Ω
E2 (E31-5) - E (M1-1)	Below 1 Ω
S5 (E31-6) - Body ground	10 kΩ or higher
E2 (E31-5) - Body ground	10 kΩ or higher

- (d) Reconnect the ECU connector.
- (e) Reconnect the sensor connector.

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

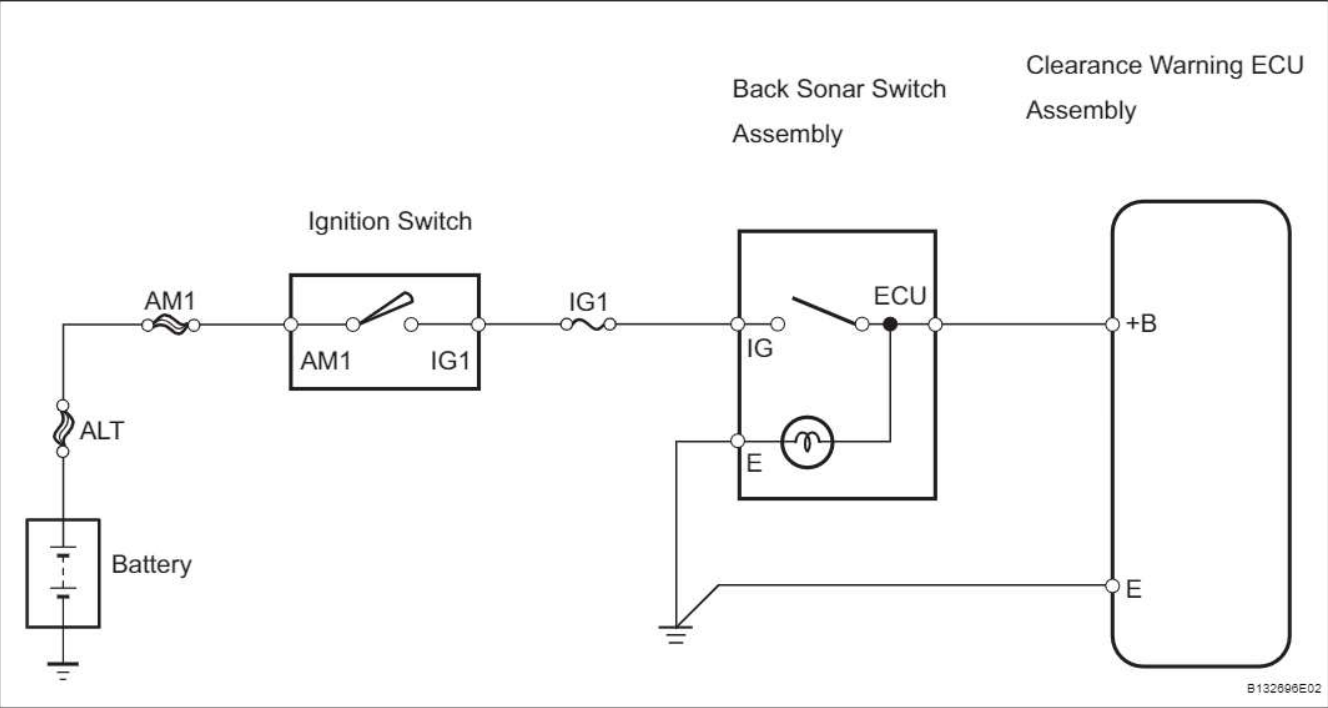
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

PM

Clearance Sonar Main Switch Circuit

DESCRIPTION
Turning this switch on activates the clearance sonar system.

WIRING DIAGRAM

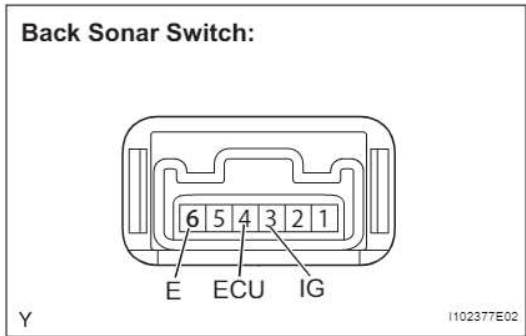


PM

INSPECTION PROCEDURE

1

INSPECT BACK SONAR SWITCH ASSEMBLY



- (a) Remove the back sonar switch.
- (b) Check the resistance.

Standard resistance

Tester Connection	Switch Condition	Specified Condition
3 (IG) - 4 (ECU)	Back sonar switch ON	Below 1 Ω
	Back sonar switch OFF	1 M Ω or higher
3 (IG) - 6 (E)	Back sonar switch ON	Below 30 Ω
	Back sonar switch OFF	10 k Ω or higher

- (c) Reinstall the back sonar switch.

NG

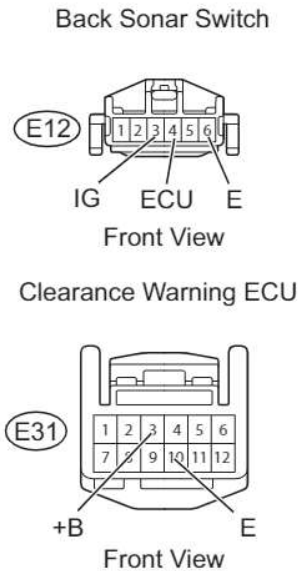
REPLACE BACK SONAR SWITCH ASSEMBLY

OK

2

CHECK HARNESS AND CONNECTOR (SWITCH - ECU, BATTERY AND BODY GROUND)

Wire Harness Side:



- (a) Disconnect the E12 back sonar switch connector.
(b) Disconnect the E31 clearance warning ECU connector.
(c) Measure the voltage of the wire harness side connector.

Standard voltage

Tester Connection	Switch Condition	Specified Condition
E12-3 (IG) - Body ground	Ignition switch ON	11 to 14 V

- (d) Check the resistance.

Standard resistance

Tester Connection	Specified Condition
E12-4 (ECU) - E31-3 (+B)	Below 1 Ω
E12-6 (E) - Body ground	
E31-10 (E) - Body ground	

- (e) Reconnect the switch connector.
(f) Reconnect the ECU connector.

NG

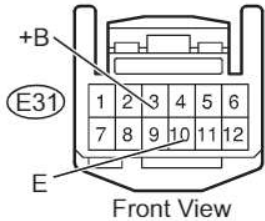
REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

3

CHECK CLEARANCE WARNING ECU ASSEMBLY

Wire Harness Side:



- (a) Disconnect the E31 clearance warning ECU connector.
(b) Measure the voltage of the wire harness side connector.

Standard voltage

Tester Connection	Switch Condition	Specified Condition
E31-3 (+B) - E31-10 (E)	Ignition switch ON, back sonar switch ON	11 to 14 V

- (c) Reconnect the ECU connector.

OK

REPLACE CLEARANCE WARNING ECU ASSEMBLY

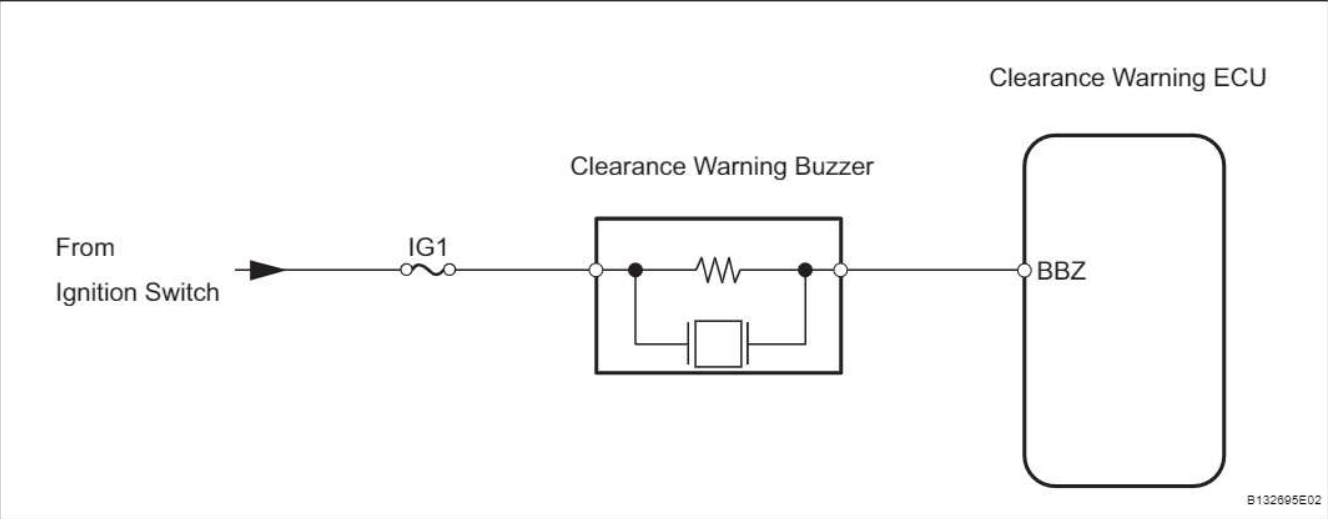
NG

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Clearance Warning Buzzer Circuit

DESCRIPTION
The clearance warning ECU receives the ultrasonic sensor signal to sound the clearance warning buzzer.

WIRING DIAGRAM



INSPECTION PROCEDURE

1

CHECK HARNESS AND CONNECTOR (BUZZER - ECU AND BATTERY)

PM

Wire Harness Side:

Clearance Warning Buzzer

E10

Clearance Warning ECU

BBZ

E31

Y

1102380E02

- (a) Disconnect the E10 clearance warning buzzer connector.
 - (b) Disconnect the E31 clearance warning ECU connector.
 - (c) Measure the voltage of the wire harness side connector.
- Standard voltage**

Tester Connection	Switch Condition	Specified Condition
E10-1 - Body ground	Ignition switch ON	11 to 14 V

- (d) Check the resistance.
- Standard resistance**

Tester Connection	Specified Condition
E10-2 - E31-2 (BBZ)	Below 1 Ω

- (e) Reconnect the buzzer connector.
- (f) Reconnect the ECU connector.

NG

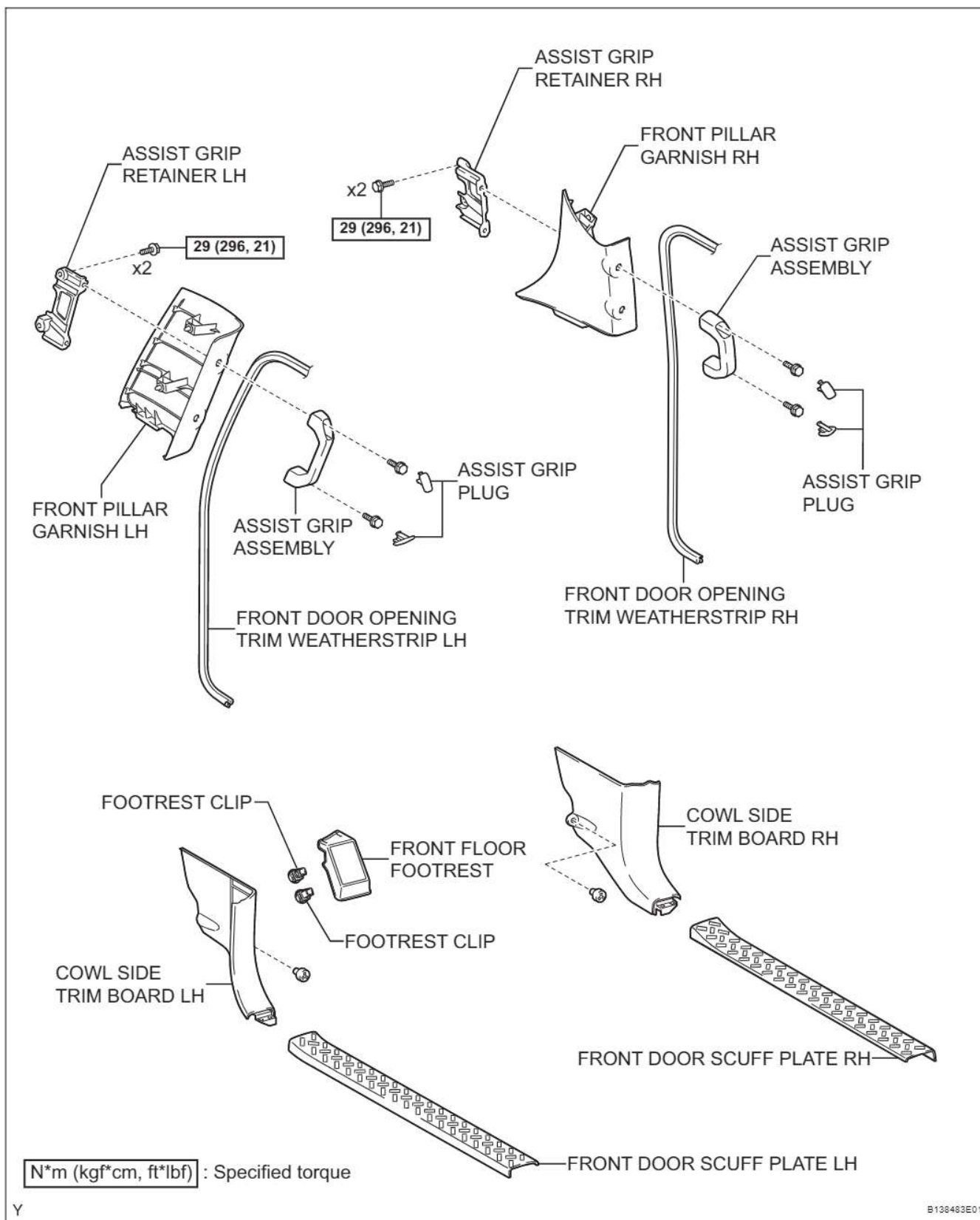
REPAIR OR REPLACE HARNESS OR CONNECTOR



PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

CLEARANCE WARNING ECU

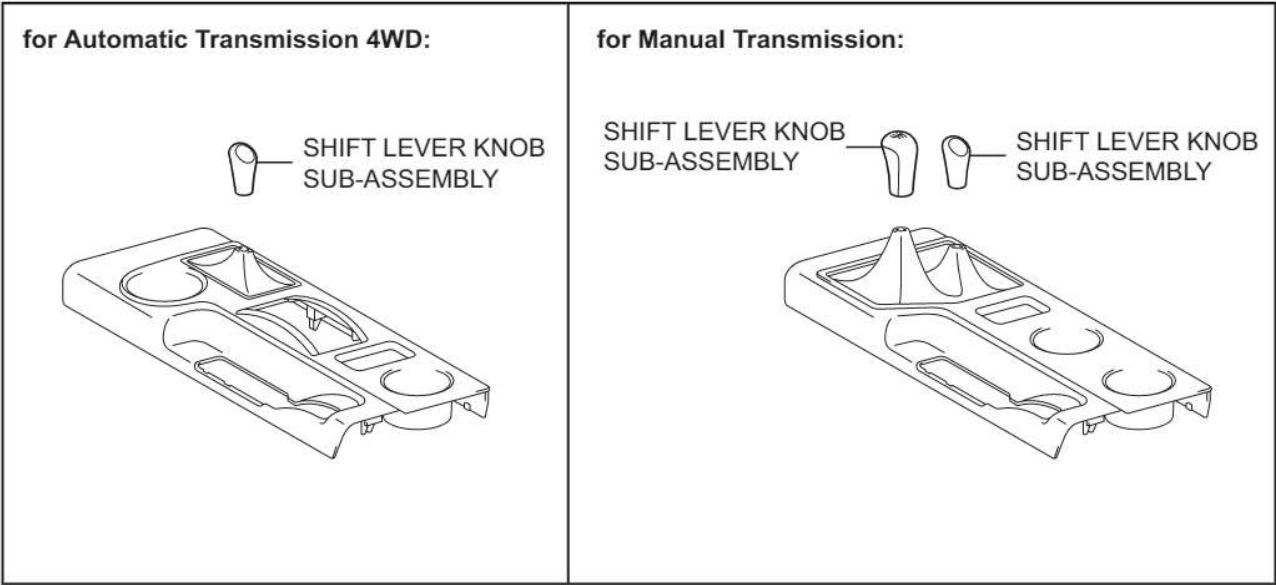
COMPONENTS



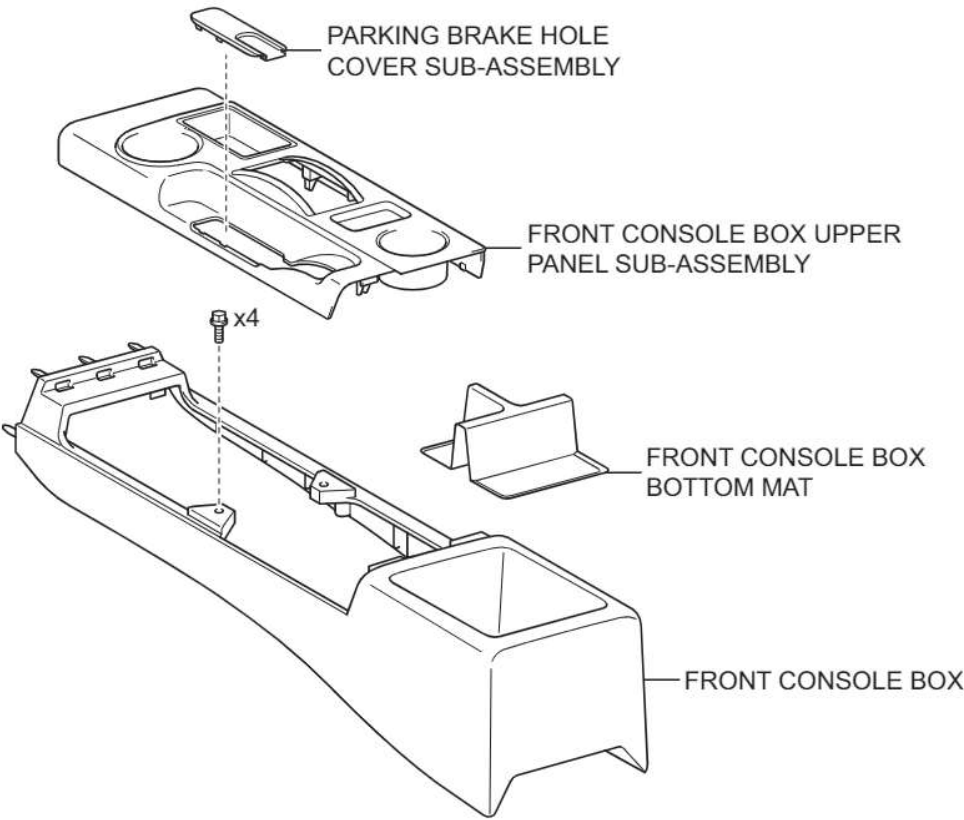
PM

PM-24

PARK ASSIST / MONITORING – CLEARANCE WARNING ECU

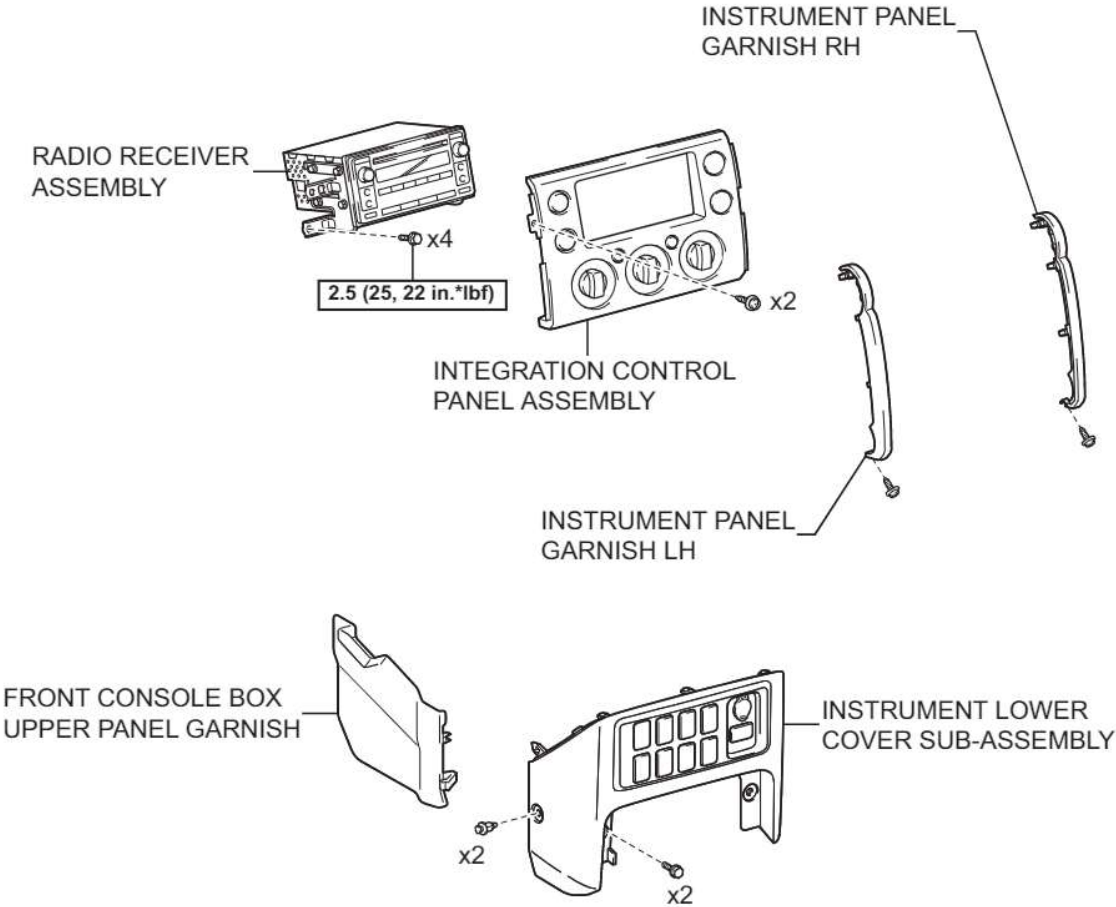


PM



Y

B138838E01

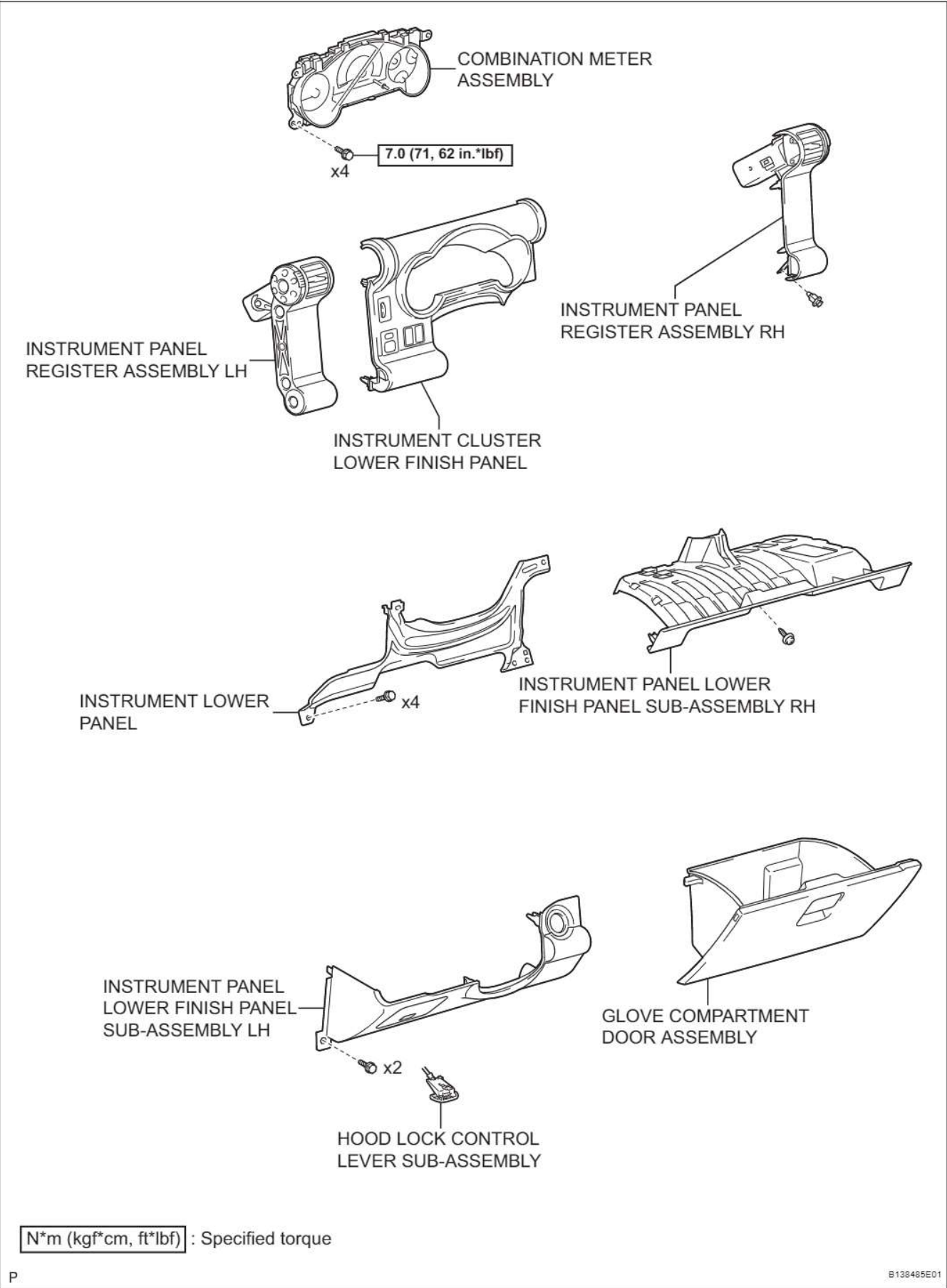


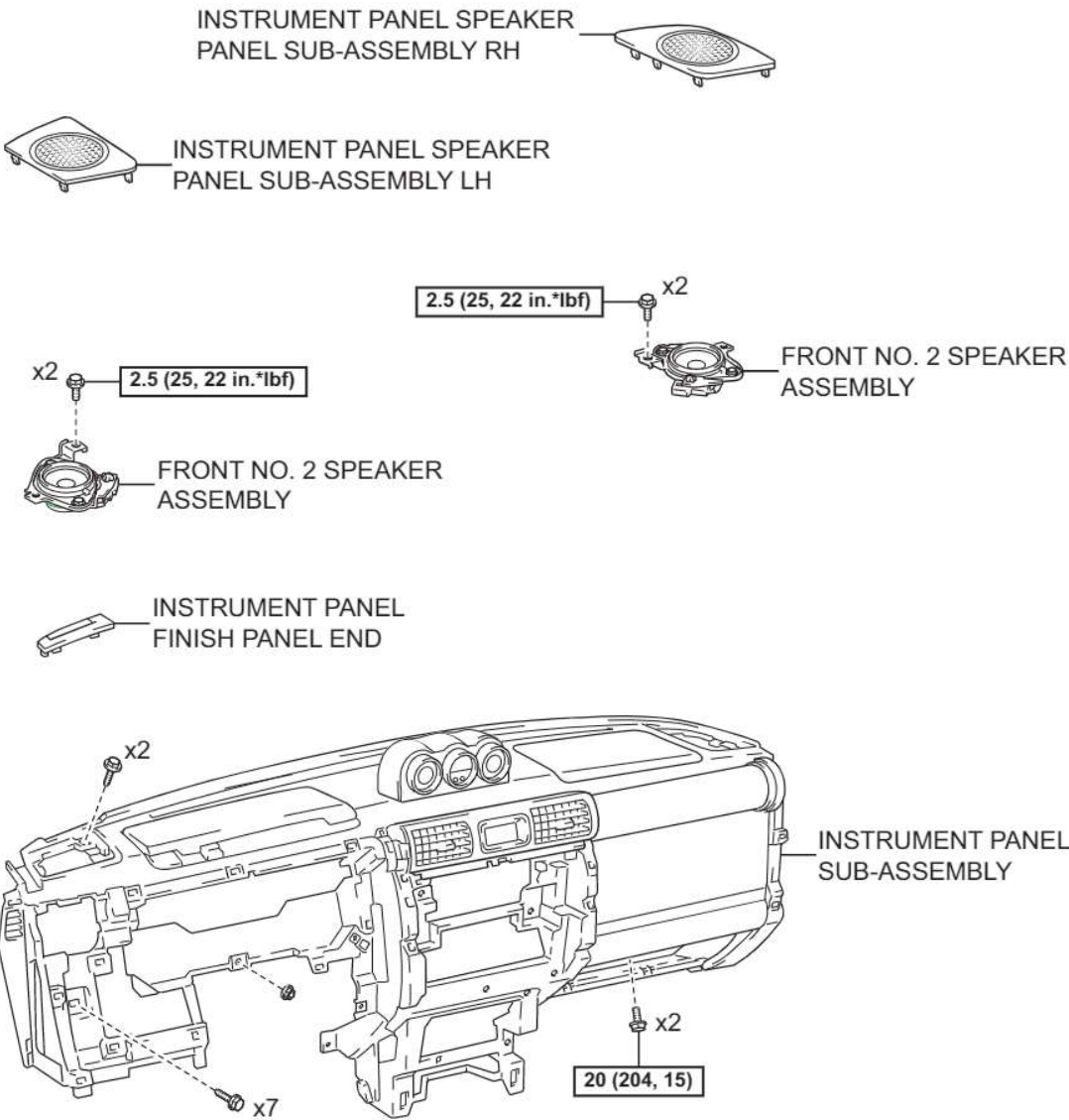
PM

N*m (kgf*cm, ft*lbf) : Specified torque

PM-26

PARK ASSIST / MONITORING – CLEARANCE WARNING ECU



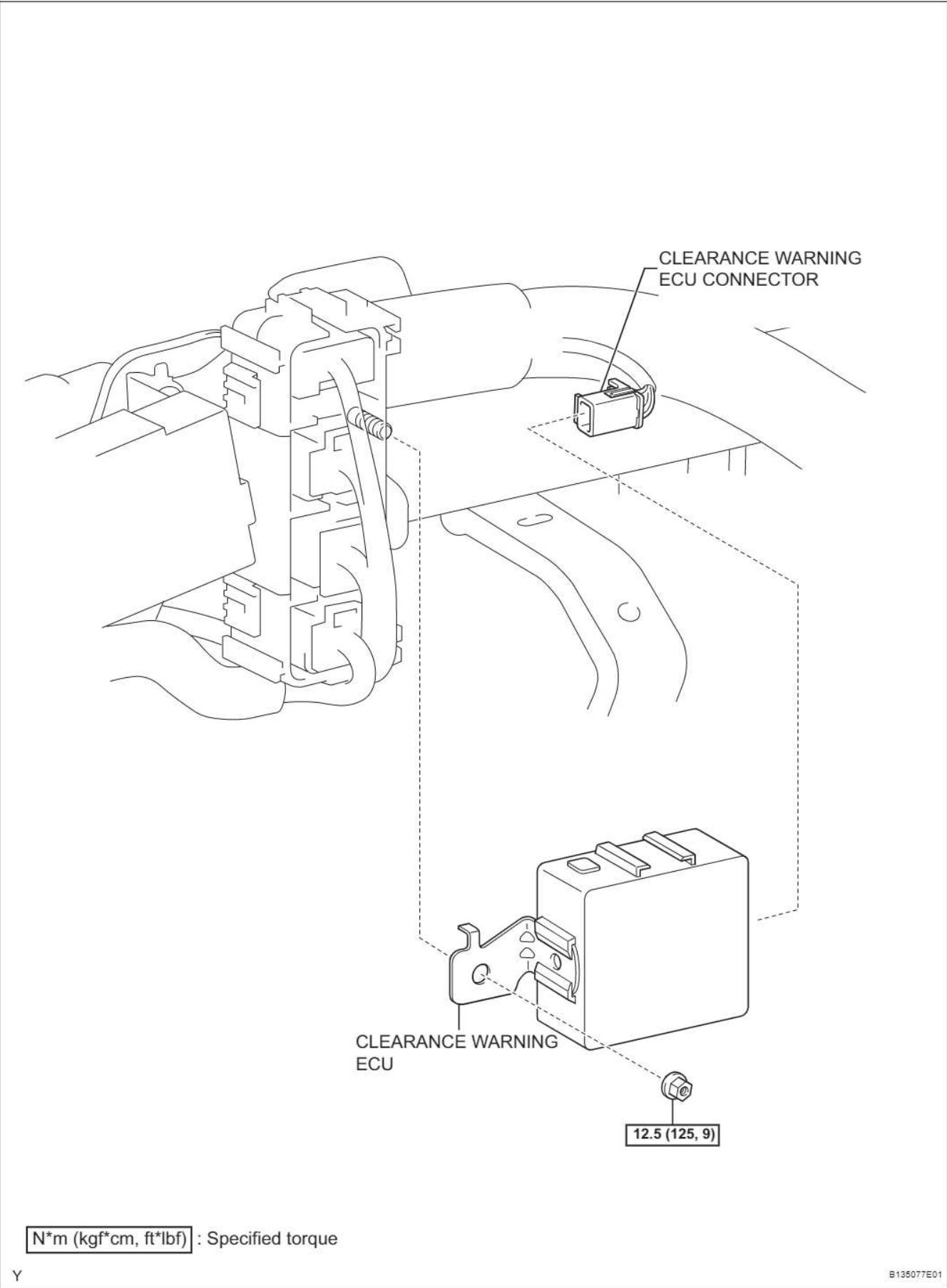


N*m (kgf*cm, ft*lbf) : Specified torque

PM

PM-28

PARK ASSIST / MONITORING – CLEARANCE WARNING ECU



REMOVAL

CAUTION:

Some of these service operations affect the SRS airbag system. Read the precautionary notices concerning the SRS airbag system before servicing (See page [RS-1](#)).

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait for at least 90 seconds after disconnecting the cable to prevent the airbag from working.

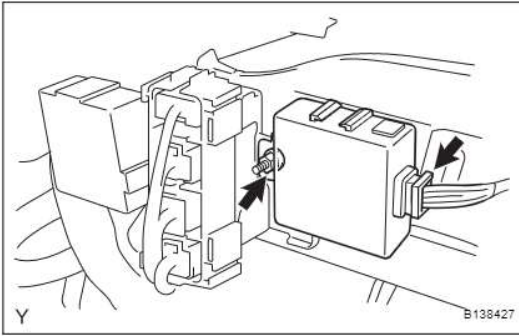
2. REMOVE FRONT DOOR SCUFF PLATE RH (See page [IR-15](#))
3. REMOVE FRONT DOOR SCUFF PLATE LH (See page [IR-15](#))
4. REMOVE FRONT FLOOR FOOTREST (See page [IR-2](#))
5. REMOVE FOOTREST CLIP (See page [IR-2](#))
6. REMOVE COWL SIDE TRIM BOARD RH (See page [IR-15](#))
7. REMOVE COWL SIDE TRIM BOARD LH (See page [IR-15](#))
8. SEPARATE FRONT DOOR OPENING TRIM WEATHERSTRIP RH (See page [AV-98](#))
9. SEPARATE FRONT DOOR OPENING TRIM WEATHERSTRIP LH (See page [AV-98](#))
10. REMOVE ASSIST GRIP PLUG (See page [AV-99](#))
11. REMOVE ASSIST GRIP ASSEMBLY (See page [AV-99](#))
12. REMOVE FRONT PILLAR GARNISH RH (See page [IR-18](#))
13. REMOVE FRONT PILLAR GARNISH LH (See page [IR-18](#))
14. REMOVE ASSIST GRIP RETAINER RH (See page [IP-16](#))
15. REMOVE ASSIST GRIP RETAINER LH (See page [IP-16](#))
16. REMOVE INSTRUMENT PANEL GARNISH LH (See page [IP-10](#))
17. REMOVE INSTRUMENT PANEL GARNISH RH (See page [IP-10](#))
18. REMOVE INTEGRATION CONTROL PANEL ASSEMBLY (See page [IP-11](#))
19. REMOVE RADIO RECEIVER ASSEMBLY (See page [AV-55](#))
20. REMOVE PARKING BRAKE HOLE COVER SUB-ASSEMBLY (See page [IP-11](#))

PM-30

PARK ASSIST / MONITORING – CLEARANCE WARNING ECU

21. REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transmission) (See page [IP-11](#))
22. REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for 4WD) (See page [IP-11](#))
23. REMOVE FRONT CONSOLE BOX UPPER PANEL SUB-ASSEMBLY (See page [IP-12](#))
24. REMOVE FRONT CONSOLE BOX BOTTOM MAT (See page [IP-12](#))
25. REMOVE FRONT CONSOLE BOX (See page [IP-12](#))
26. REMOVE FRONT CONSOLE BOX PANEL GARNISH (See page [IP-12](#))
27. REMOVE INSTRUMENT LOWER COVER SUB-ASSEMBLY (See page [IP-13](#))
28. REMOVE INSTRUMENT PANEL REGISTER ASSEMBLY LH (See page [IP-13](#))
29. REMOVE HOOD LOCK CONTROL LEVER SUB-ASSEMBLY (See page [IP-13](#))
30. REMOVE INSTRUMENT PANEL LOWER FINISH PANEL SUB-ASSEMBLY LH (See page [IP-14](#))
31. REMOVE INSTRUMENT LOWER PANEL (See page [IP-14](#))
32. REMOVE INSTRUMENT CLUSTER LOWER FINISH PANEL (See page [IP-14](#))
33. REMOVE COMBINATION METER ASSEMBLY (See page [IP-14](#))
34. REMOVE GLOVE COMPARTMENT DOOR ASSEMBLY (See page [IP-15](#))
35. REMOVE INSTRUMENT PANEL LOWER FINISH PANEL SUB-ASSEMBLY RH (See page [IP-15](#))
36. REMOVE INSTRUMENT PANEL REGISTER ASSEMBLY RH (See page [IP-16](#))
37. REMOVE INSTRUMENT PANEL SPEAKER PANEL SUB-ASSEMBLY RH (See page [IP-16](#))
38. REMOVE INSTRUMENT PANEL SPEAKER PANEL SUB-ASSEMBLY LH (See page [IP-16](#))
39. REMOVE FRONT NO. 2 SPEAKER ASSEMBLY (See page [AV-101](#))
40. DISCONNECT PASSENGER AIRBAG CONNECTOR (See page [IP-16](#))
41. REMOVE INSTRUMENT PANEL SUB-ASSEMBLY (See page [IP-16](#))
42. REMOVE INSTRUMENT PANEL FINISH PANEL END (See page [IP-21](#))

PM

PARK ASSIST / MONITORING – CLEARANCE WARNING ECU**PM-31**

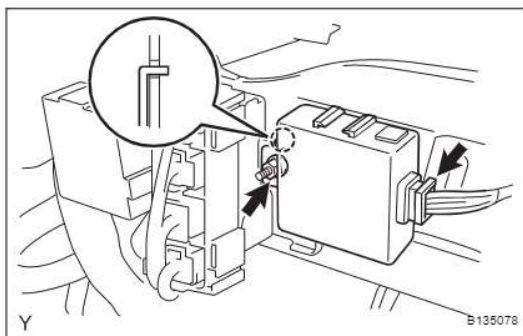
- 43. REMOVE CLEARANCE WARNING ECU ASSEMBLY**
- (a) Disconnect the clearance warning ECU connector.
 - (b) Remove the bolt and the clearance warning ECU.

PM

INSTALLATION

CAUTION:

Some of these service operations affect the SRS airbag system. Read the precautionary notices concerning the SRS airbag system before servicing (See page [RS-1](#)).



1. **INSTALL CLEARANCE WARNING ECU ASSEMBLY**
 - (a) Insert the hook into the instrument panel reinforcement hole and install the clearance warning ECU with the nut.
Torque: 12.5 N*m (125 kgf*cm, 9 ft.*lbf)
 - (b) Connect the clearance warning ECU connector.
2. **INSTALL INSTRUMENT PANEL SUB-ASSEMBLY** (See page [IP-26](#))
3. **CONNECT PASSENGER AIRBAG CONNECTOR** (See page [IP-26](#))
4. **INSTALL INSTRUMENT PANEL FINISH PANEL END** (See page [IP-27](#))
5. **INSTALL FRONT NO. 2 SPEAKER ASSEMBLY** (See page [AV-102](#))
6. **INSTALL INSTRUMENT PANEL SPEAKER PANEL SUB-ASSEMBLY RH** (See page [IP-27](#))
7. **INSTALL INSTRUMENT PANEL SPEAKER PANEL SUB-ASSEMBLY LH** (See page [IP-27](#))
8. **INSTALL INSTRUMENT PANEL REGISTER ASSEMBLY RH** (See page [IP-27](#))
9. **INSTALL INSTRUMENT PANEL LOWER FINISH PANEL SUB-ASSEMBLY RH** (See page [IP-28](#))
10. **INSTALL GLOVE COMPARTMENT DOOR ASSEMBLY** (See page [IP-28](#))
11. **INSTALL COMBINATION METER ASSEMBLY** (See page [IP-28](#))
12. **INSTALL INSTRUMENT CLUSTER LOWER FINISH PANEL** (See page [IP-29](#))
13. **INSTALL INSTRUMENT LOWER PANEL** (See page [IP-29](#))
14. **INSTALL INSTRUMENT PANEL LOWER FINISH PANEL SUB-ASSEMBLY LH** (See page [IP-29](#))
15. **INSTALL HOOD LOCK CONTROL LEVER SUB-ASSEMBLY** (See page [IP-30](#))
16. **INSTALL INSTRUMENT PANEL REGISTER ASSEMBLY LH** (See page [IP-30](#))
17. **INSTALL INSTRUMENT LOWER COVER SUB-ASSEMBLY** (See page [IP-30](#))
18. **INSTALL FRONT CONSOLE BOX UPPER PANEL GARNISH** (See page [IP-31](#))

19. INSTALL FRONT CONSOLE BOX (See page [IP-31](#))
20. INSTALL FRONT CONSOLE BOX BOTTOM MAT (See page [IP-31](#))
21. INSTALL FRONT CONSOLE BOX UPPER PANEL SUB-ASSEMBLY (See page [IP-31](#))
22. INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for 4WD) (See page [IP-32](#))
23. INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transmission) (See page [IP-32](#))
24. INSTALL PARKING BRAKE HOLE COVER SUB-ASSEMBLY (See page [IP-32](#))
25. INSTALL RADIO RECEIVER ASSEMBLY (See page [AV-56](#))
26. INSTALL INTEGRATION CONTROL PANEL ASSEMBLY (See page [IP-32](#))
27. INSTALL INSTRUMENT PANEL GARNISH LH (See page [IP-33](#))
28. INSTALL INSTRUMENT PANEL GARNISH RH (See page [IR-43](#))
29. INSTALL ASSIST GRIP RETAINER RH (See page [IP-27](#))
30. INSTALL ASSIST GRIP RETAINER LH (See page [IP-27](#))
31. INSTALL FRONT PILLAR GARNISH RH (See page [IR-43](#))
32. INSTALL FRONT PILLAR GARNISH LH (See page [IR-43](#))
33. INSTALL ASSIST GRIP ASSEMBLY (See page [AV-103](#))
34. INSTALL ASSIST GRIP PLUG (See page [AV-104](#))
35. INSTALL FRONT DOOR OPENING TRIM WEATHERSTRIP RH (See page [AV-104](#))
36. INSTALL FRONT DOOR OPENING TRIM WEATHERSTRIP LH (See page [AV-104](#))
37. INSTALL COWL SIDE TRIM BOARD RH (See page [IR-45](#))
38. INSTALL COWL SIDE TRIM BOARD LH (See page [IR-45](#))
39. INSTALL FOOTREST CLIP (See page [IR-2](#))
40. INSTALL FRONT FLOOR FOOTREST (See page [IR-2](#))
41. INSTALL FRONT DOOR SCUFF PLATE RH (See page [IR-45](#))
42. INSTALL FRONT DOOR SCUFF PLATE LH (See page [IR-45](#))

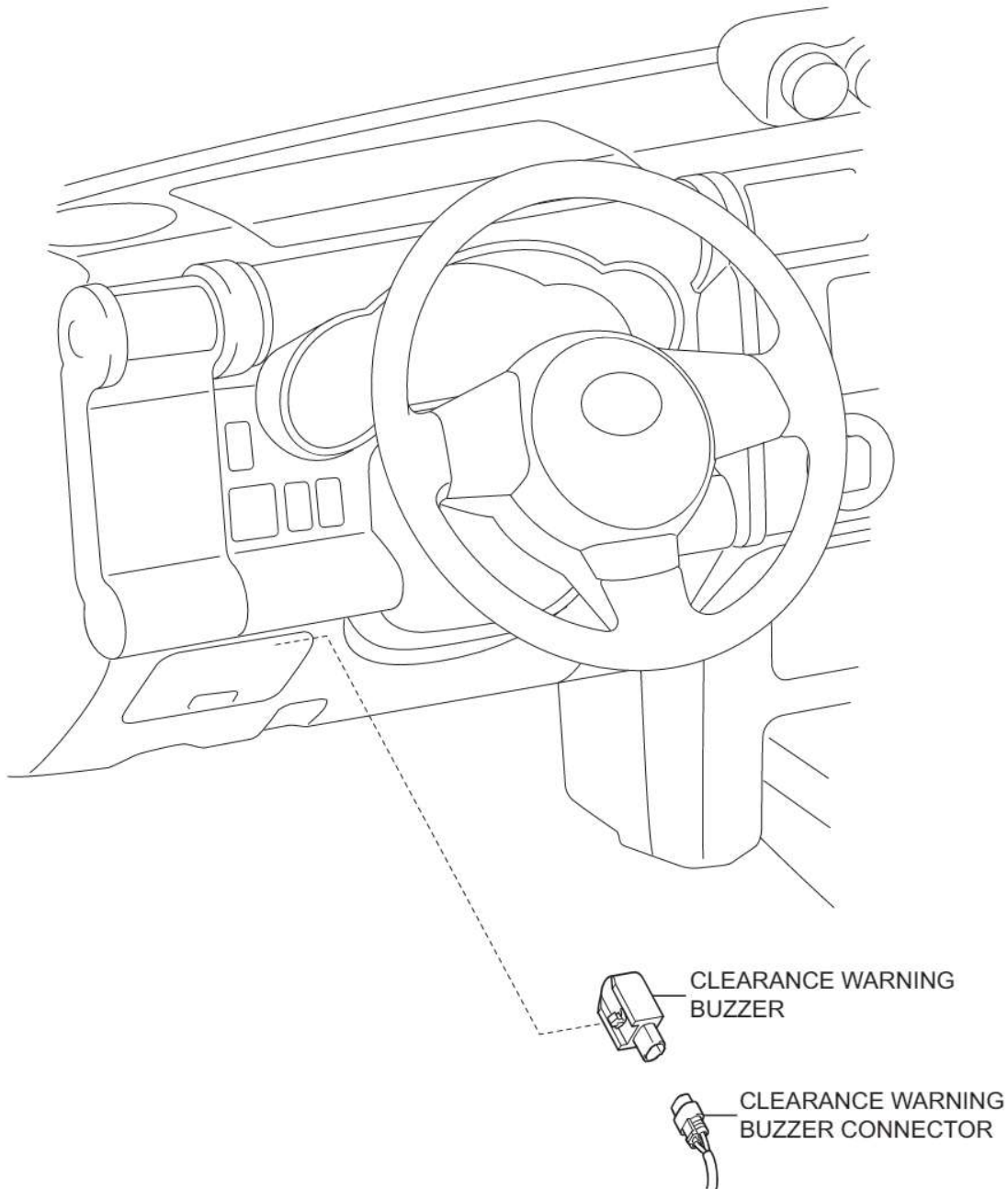
PM-34**PARK ASSIST / MONITORING – CLEARANCE WARNING ECU**

- 43. CONNECT CABLE TO NEGATIVE BATTERY
TERMINAL**
Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)
- 44. INSPECT SRS WARNING LIGHT**
(See page [RS-29](#))

PM-34

PARK ASSIST / MONITORING – CLEARANCE WARNING BUZZER

CLEARANCE WARNING BUZZER COMPONENTS



Y

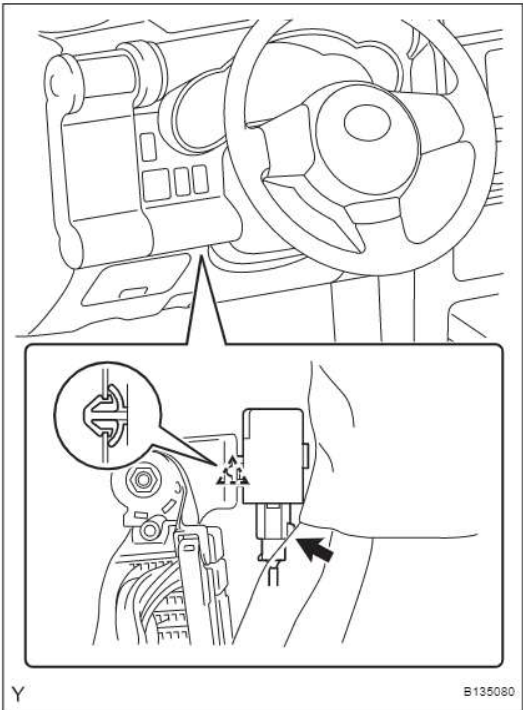
B135079E01

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
2. REMOVE CLEARANCE WARNING BUZZER

(a) Disconnect the clearance warning buzzer connector.

(b) Disengage the clamp and remove the clearance warning buzzer.



INSPECTION

1. INSPECT CLEARANCE WARNING BUZZER

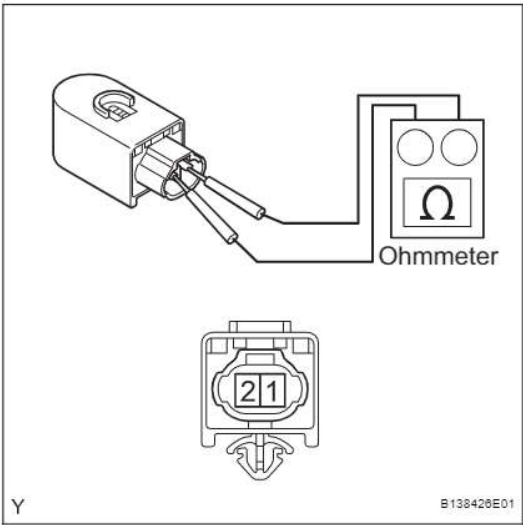
(a) Check the resistance.

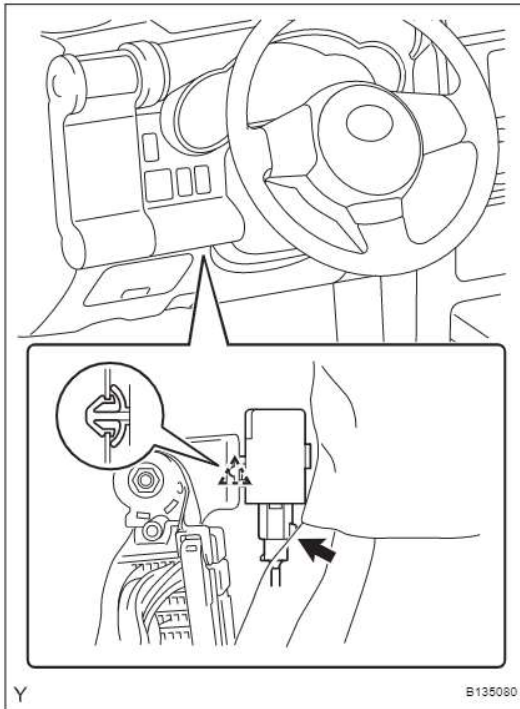
(1) Using an ohmmeter, measure the resistance between the terminals.
- Standard resistance

PM

Tester Connection	Specified Condition
1 - 2	Approximately 1 kΩ

If the result is not as specified, replace the clearance warning buzzer.

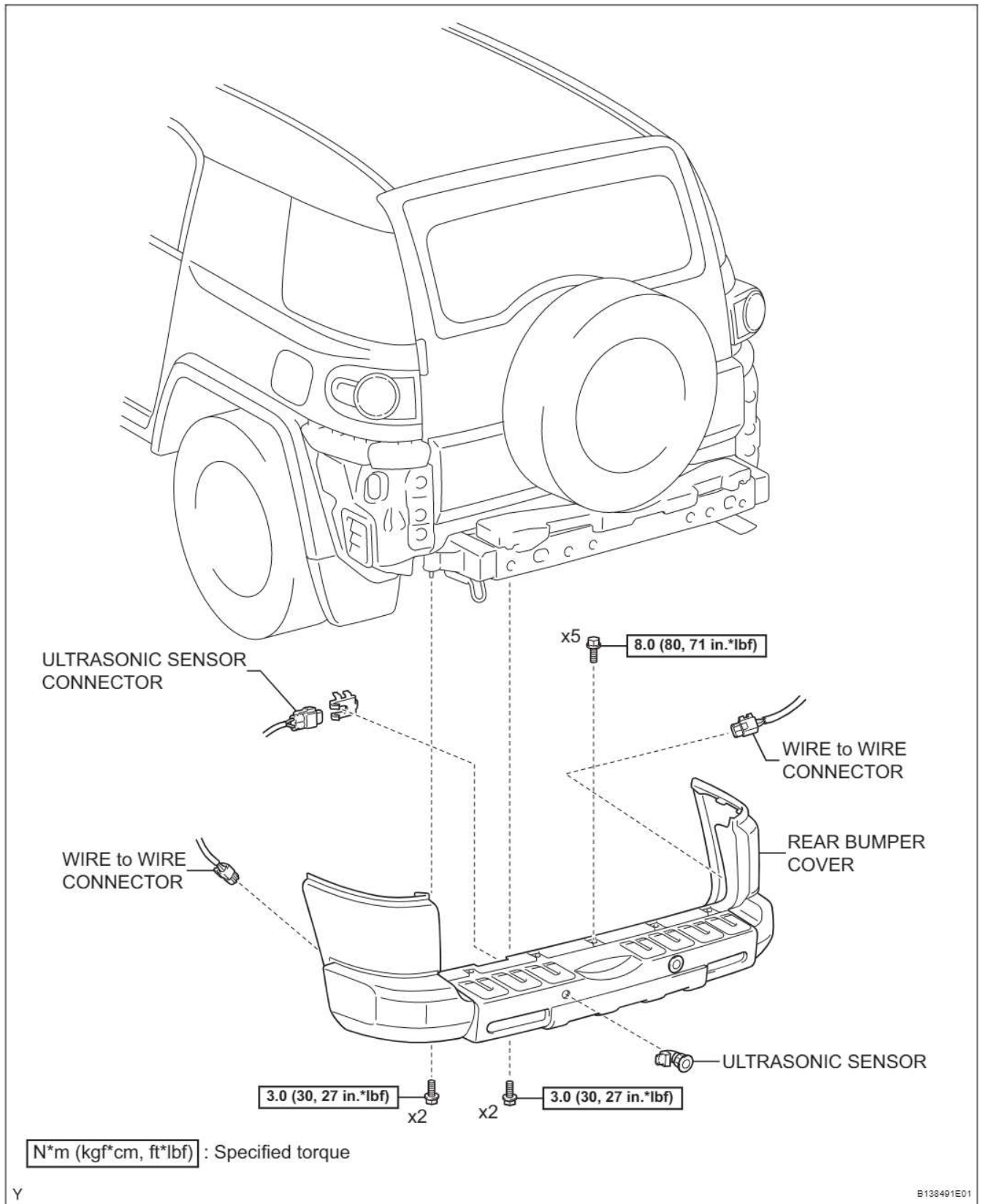


PM-36**PARK ASSIST / MONITORING – CLEARANCE WARNING BUZZER****INSTALLATION**

- 1. INSTALL CLEARANCE WARNING BUZZER**
 - (a) Engage the clamp and install the clearance warning buzzer.
 - (b) Connect the clearance warning buzzer connector.
- 2. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**

Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)

ULTRASONIC SENSOR COMPONENTS

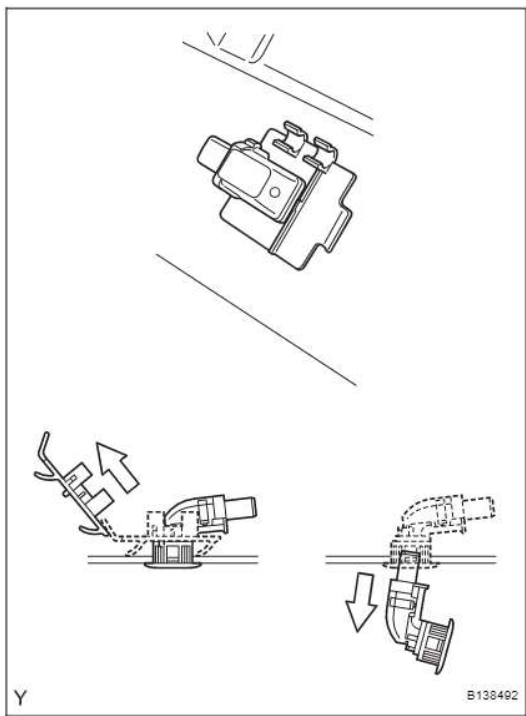


REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY
TERMINAL
2. REMOVE REAR BUMPER COVER (See page ET-17)
3. REMOVE ULTRASONIC SENSOR

(a) Disconnect the ultrasonic sensor connector.

(b) Remove the retainer and the ultrasonic sensor as
shown in the illustration.



INSPECTION

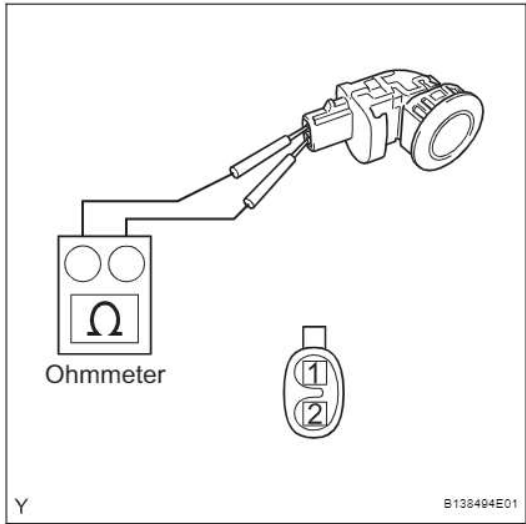
1. INSPECT ULTRASONIC SENSOR

(a) Check the resistance.

(1) Using an ohmmeter, measure the resistance
between the terminals.
- Standard resistance

Tester Connection	Specified Condition
1 (E) - 2 (S)	8 to 12 kΩ

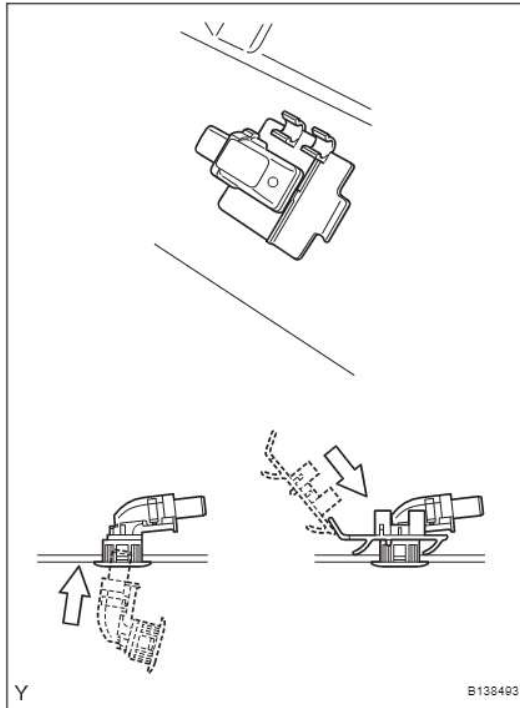
If the result is not as specified, replace the ultrasonic sensor.



INSTALLATION

HINT:

The procedure described below is for the LH side. Use the same procedure for both the RH and LH sides, unless otherwise specified.



1. INSTALL ULTRASONIC SENSOR

- (a) Install the ultrasonic sensor with the retainer as shown in the illustration.
- (b) Connect the ultrasonic sensor connector.

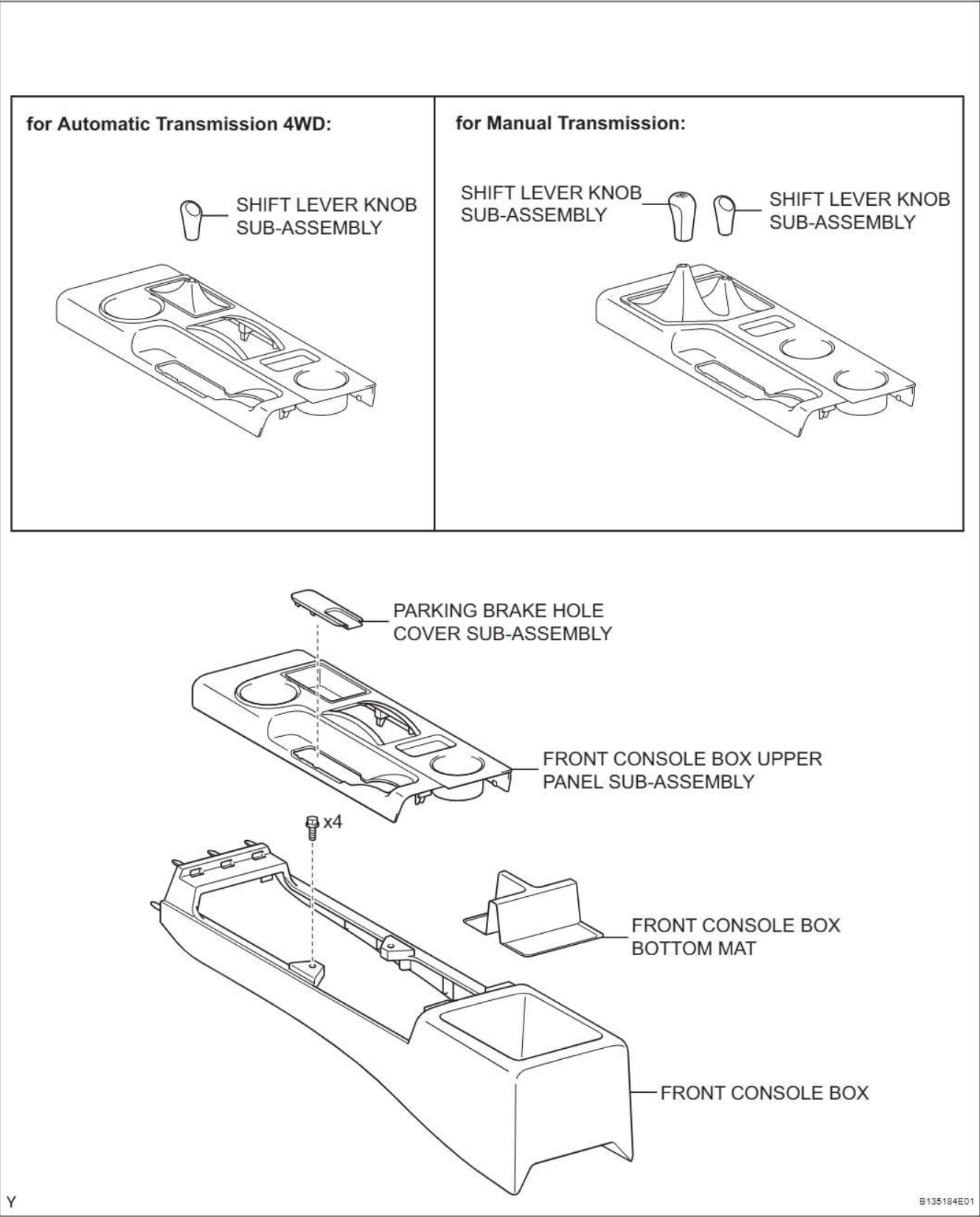
2. INSTALL REAR BUMPER COVER (See page [ET-25](#))

3. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)

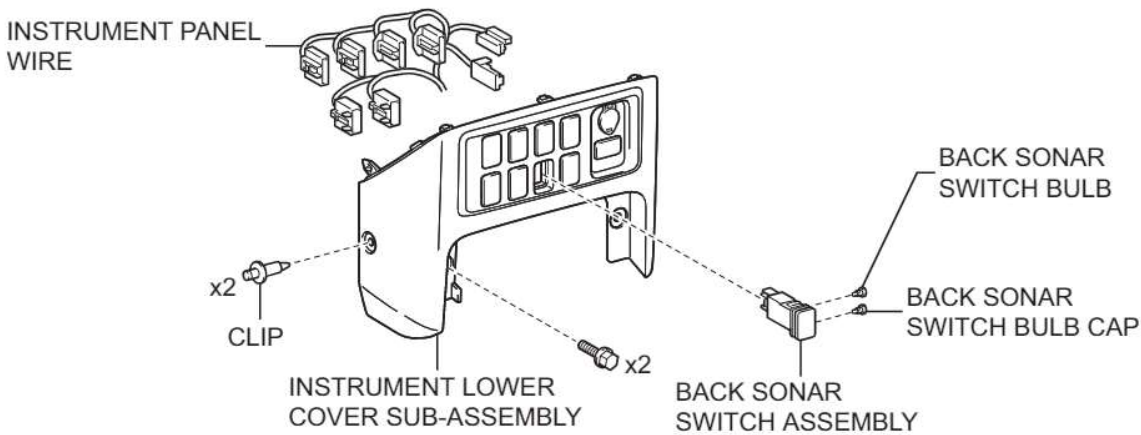
BACK SONAR SWITCH ASSEMBLY

COMPONENTS



PARK ASSIST / MONITORING – BACK SONAR SWITCH ASSEMBLY

PM-41



PM

Y

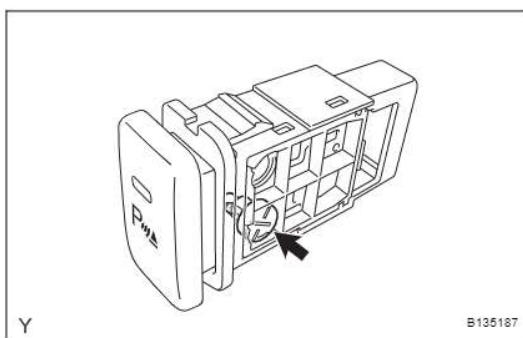
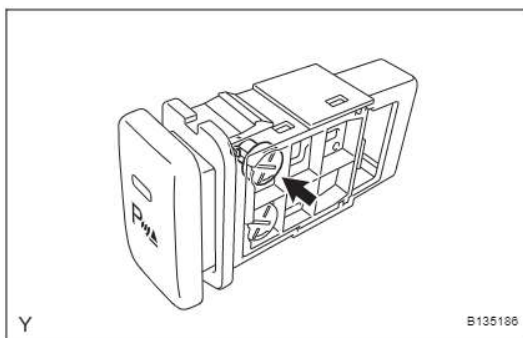
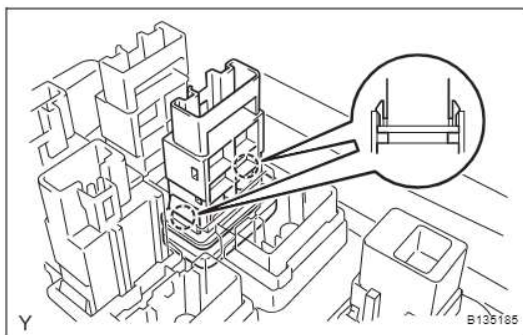
B138461E01

PM-42

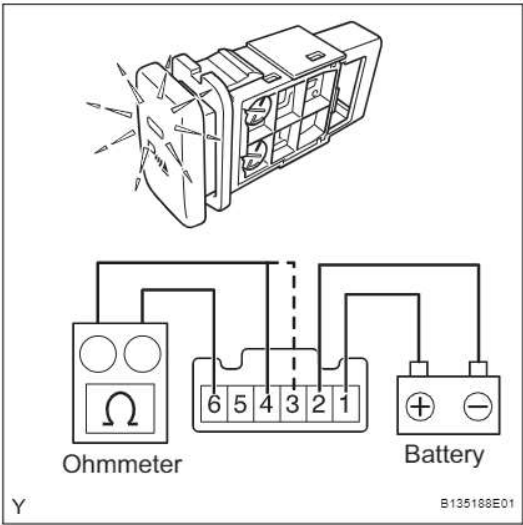
PARK ASSIST / MONITORING – BACK SONAR SWITCH ASSEMBLY

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
2. REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transmission) (See page [IP-11](#))
3. REMOVE SHIFT LEVER KNOB SUB-ASSEMBLY (for 4WD) (See page [IP-11](#))
4. REMOVE PARKING BRAKE HOLE COVER SUB-ASSEMBLY (See page [IP-11](#))
5. REMOVE FRONT CONSOLE BOX UPPER PANEL SUB-ASSEMBLY (See page [IP-12](#))
6. REMOVE FRONT CONSOLE BOX BOTTOM MAT (See page [IP-12](#))
7. REMOVE FRONT CONSOLE BOX (See page [IP-12](#))
8. REMOVE INSTRUMENT LOWER COVER SUB-ASSEMBLY (See page [IP-13](#))
9. REMOVE BACK SONAR SWITCH ASSEMBLY
 - (a) Disengage the 2 claws and remove the back sonar switch.



10. REMOVE BACK SONAR SWITCH BULB
 - (a) Remove the back sonar switch bulb.
11. REMOVE BACK SONAR SWITCH BULB CAP
 - (a) Remove the back sonar switch bulb cap.



INSPECTION

1. INSPECT BACK SONAR SWITCH ASSEMBLY

- (a) Check the resistance.
- (1) Using an ohmmeter, measure the resistance between the terminals.

Standard resistance

Tester Connection	Condition	Specified Condition
4 (ECU) - 6 (E)	OFF	Below 1 Ω
3 (IG) - 6 (E)	ON	Below 1 Ω
4 (ECU) - 6 (E)		Below 1 Ω

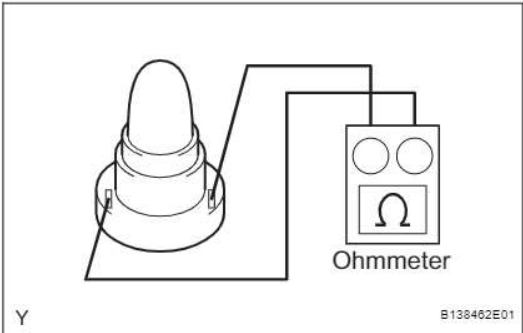
If the result is not as specified, replace the back sonar switch.

- (b) Check the operation.
- (1) Apply battery voltage to the terminals and check that the indicator illuminates.

Standard

Condition	Standard
Positive battery - Terminal 1 (ILL+) Negative battery - Terminal 2 (ILL-)	Illuminates

If the result is not as specified, check the back sonar switch bulb.



2. INSPECT BACK SONAR SWITCH BULB

- (a) Check the resistance.
- (1) Using an ohmmeter, measure the resistance between the terminals.

Standard resistance:

7 to 11 Ω at 20°C (68°F)

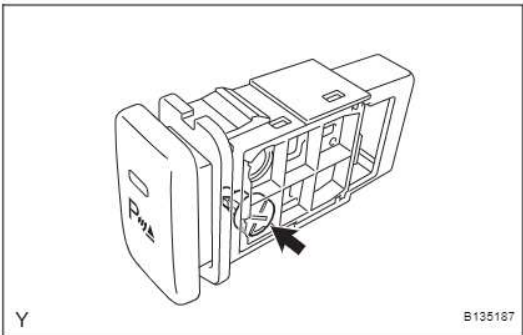
If the result is not as specified, replace the back sonar switch bulb.

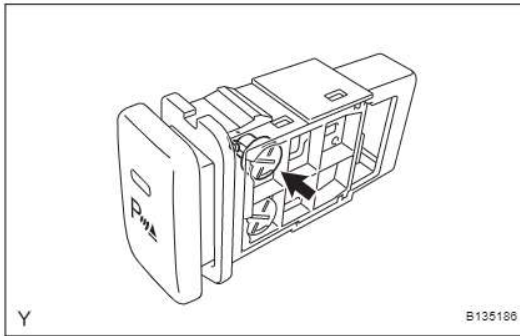
PM

INSTALLATION

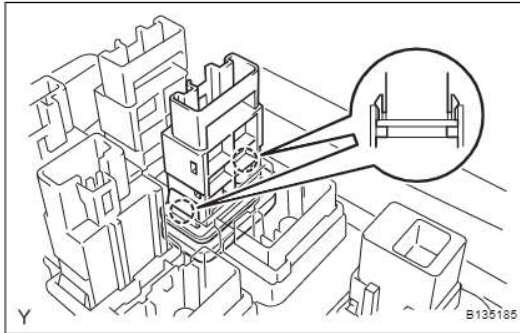
1. INSTALL BACK SONAR SWITCH BULB CAP

- (a) Install the back sonar switch bulb cap.



PM-44**PARK ASSIST / MONITORING – BACK SONAR SWITCH ASSEMBLY****2. INSTALL BACK SONAR SWITCH BULB**

- (a) Install the back sonar switch bulb.

**3. INSTALL BACK SONAR SWITCH ASSEMBLY**

- (a) Engage the 2 claws and install the back sonar switch.

4. INSTALL INSTRUMENT LOWER COVER SUB-ASSEMBLY (See page [IP-30](#))**5. INSTALL FRONT CONSOLE BOX (See page [IP-31](#))****6. INSTALL FRONT CONSOLE BOX BOTTOM MAT (See page [IP-31](#))****7. INSTALL FRONT CONSOLE UPPER PANEL SUB-ASSEMBLY (See page [IP-31](#))****8. INSTALL PARKING BRAKE HOLE COVER SUB-ASSEMBLY (See page [IP-32](#))****9. INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for 4WD) (See page [IP-32](#))****10. INSTALL SHIFT LEVER KNOB SUB-ASSEMBLY (for Manual Transmission) (See page [IP-32](#))****11. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**

Torque: 3.9 N*m (40 kgf*cm, 35 in.*lbf)

PM