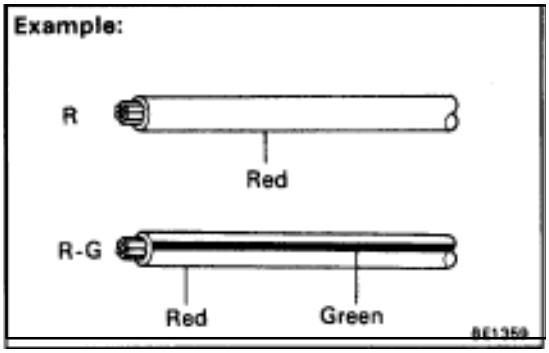
BODY ELECTRICAL SYSTEM



GENERAL INFORMATION

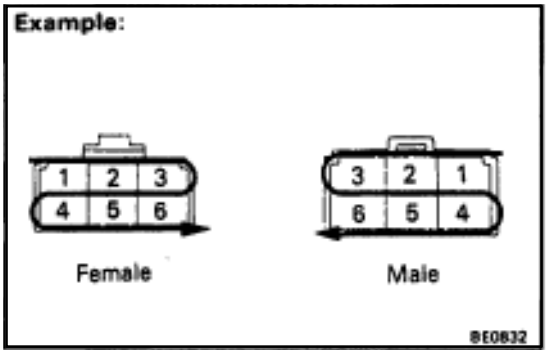
WIRING COLOR CODE

BE0M6–01

Wire colors are indicated by an alphabetical code.

B	=Black	L	=Blue	R	=Red
BR	=Brown	LG	=Light Green	V	=Violet
G	=Green	O	=Orange	W	=White
GR	=Gray	P	=Pink	Y	=Yellow

The first letter indicates the basic wire color and the second letter indicates the color of the stripe.

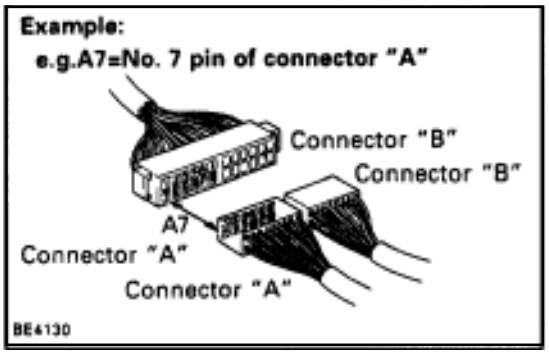


CONNECTOR

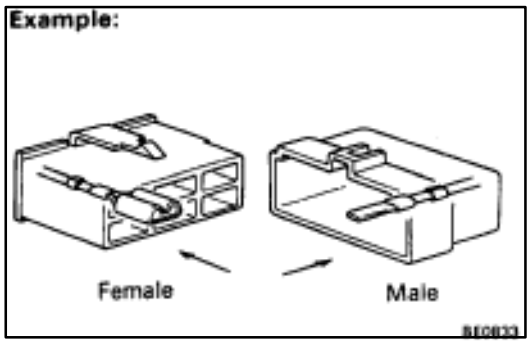
BE0M7–01

1. PIN NUMBERS OF FEMALE CONNECTOR
Numbered in order from upper left to lower right.

2. PIN NUMBERS OF MALE CONNECTOR
Numbered in order from upper right to lower left.



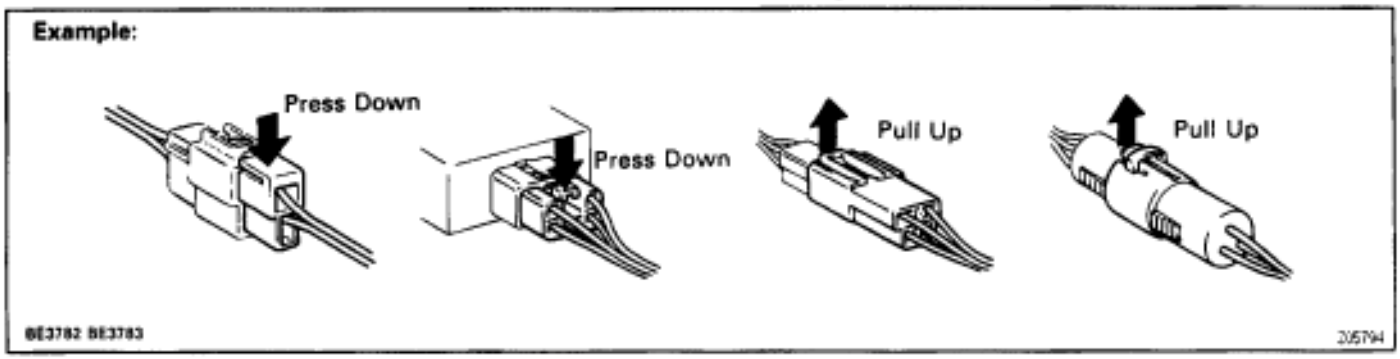
HINT: When connectors with different of the same number of terminals are used with the same parts, each connector name (letter of the alphabet) and pin number is specified.

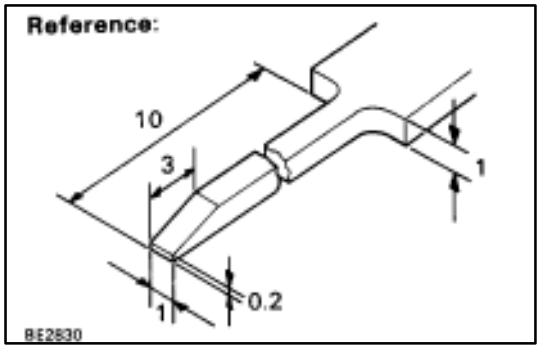


3. DISTINCTION OF MALE AND FEMALE CONNECTORS
Male and female connectors are distinguished by shape of their internal pins.

(a) All connectors are shown from the open end, and the lock is on top.

(b) To pull apart the connectors, pull on the connector itself, not the wires.
HINT: Check to see what kind of connector you are disconnecting before pulling apart.





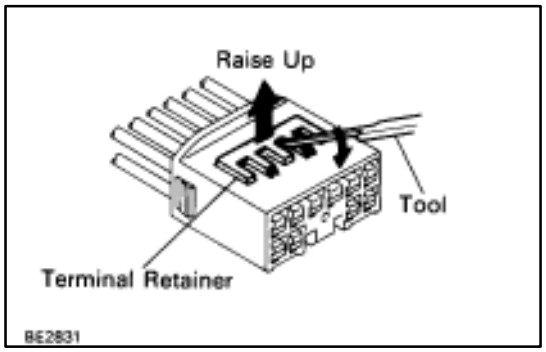
HOW TO REPLACE TERMINAL

(with terminal retainer or secondary locking device)

1. PREPARE THE SPECIAL TOOL

HINT: To remove the terminal from the connector, please construct and use the special tool or like object shown on the left.

2. DISCONNECT CONNECTOR



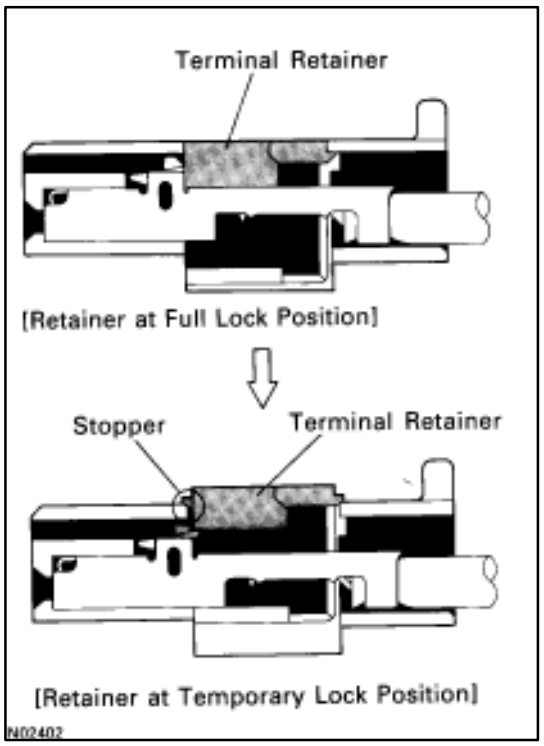
3. DISENGAGE THE SECONDARY LOCKING DEVICE OR TERMINAL RETAINER

(a) Locking device must be disengaged before the terminal locking clip can be released and the terminal removed from the connector.

(b) Use a special tool or the terminal pick to unlock the secondary locking device or terminal retainer.

NOTICE:

Do not remove the terminal retainer from connector body.

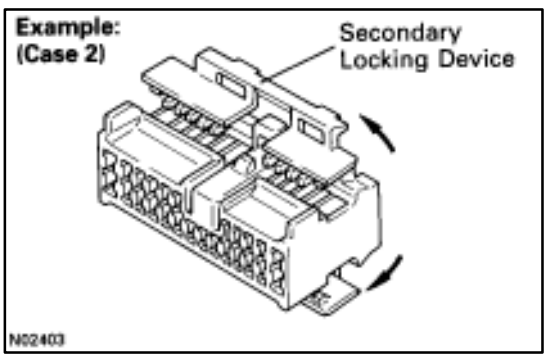


(**A**) For Non–Waterproof Type Connector

HINT: The needle insertion position varies according to the connector's shape (number of terminals etc.), so check the position before inserting it.

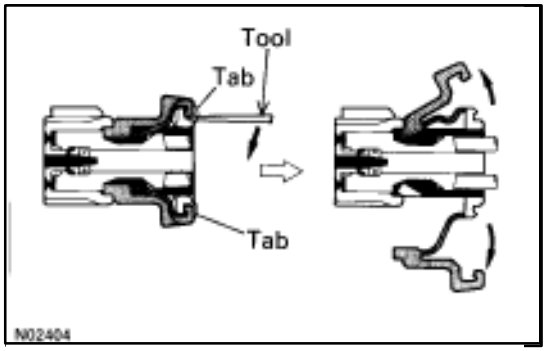
"Case 1"

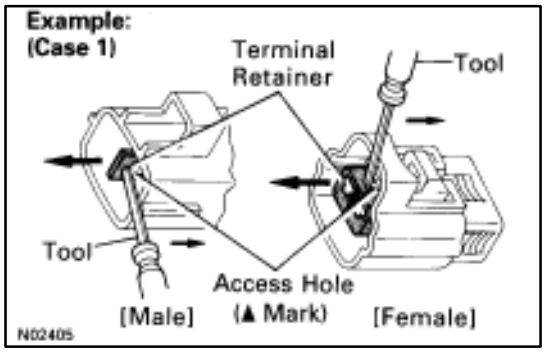
Raise the termlinal retainer up to the temporary lock position.



"Case 2"

Open the secondary locking device



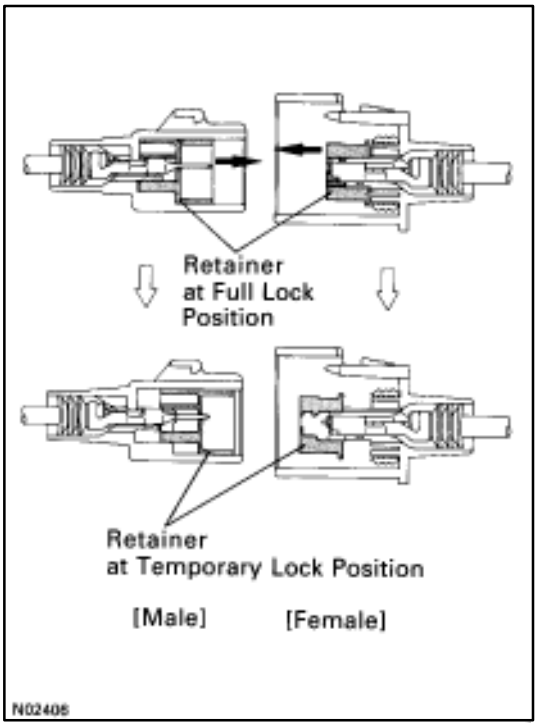


B For Waterproof Type Connector

HINT: Terminal retainer color is different according to connector body.

Example:

Terminal Retainer:	Connector Body
Black or White:	Gray
Black or White:	Dark Gray
Gray or White:	Black

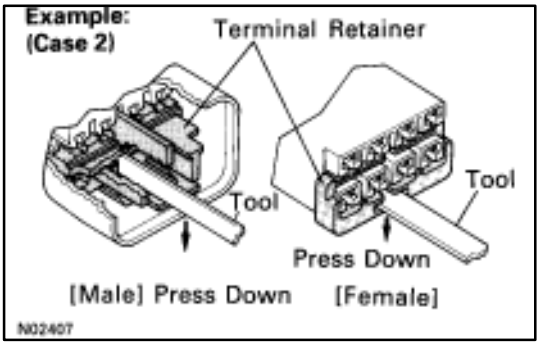


”Case 1”

Type where terminal retainer is pulled up to the temporary lock position (Pull Type).

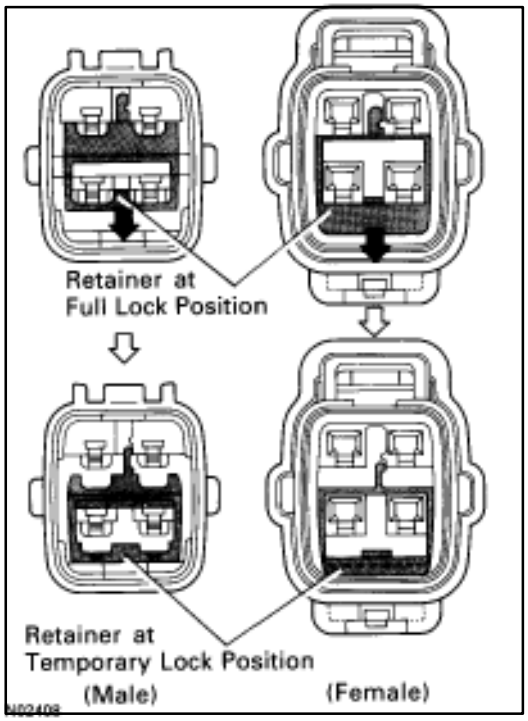
Insert the special tool into the terminal retainer access hole (Mark) and pull the terminal retainer up to the temporary lock position.

HINT: The needle insertion position varies according to the connector’s shape (Number of terminals etc.), so check the position before inserting it.

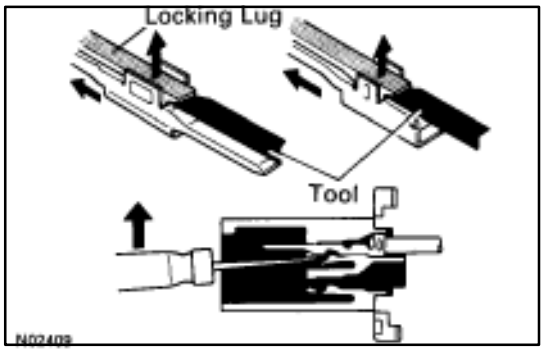


”Case 2”

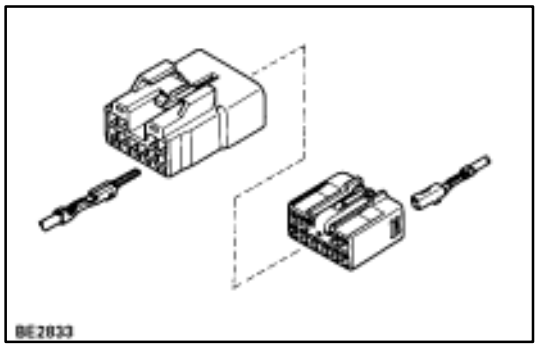
Type which cannot be pulled as far as Power Lock



Insert the tool straight into the access hole of terminal retainer as shown.
Push the terminal retainer down to the temporary lock position.



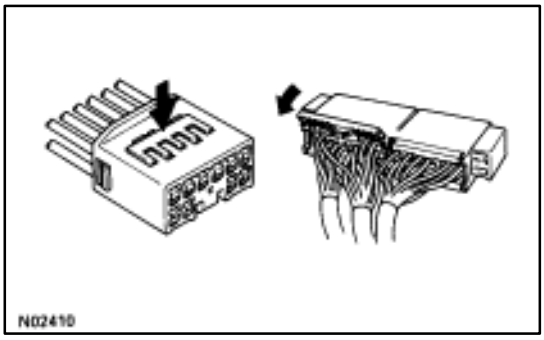
(c) Release the locking lug from terminal and pull the terminal out from rear.



4. INSTALL TERMINAL TO CONNECTOR

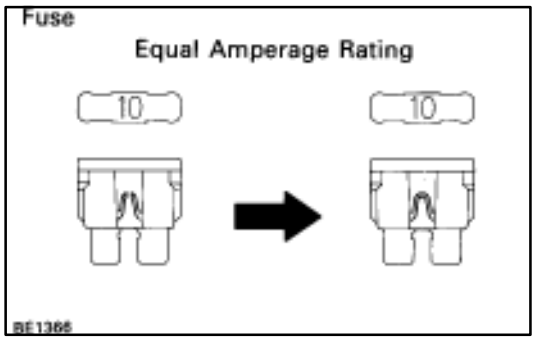
(a) Insert the terminal.

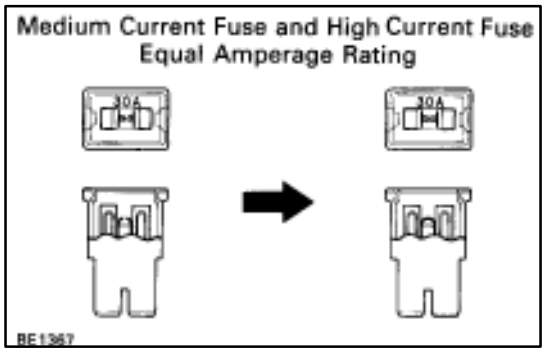
HINT:
1. Make sure the terminal is positioned correctly.
2. Insert the terminal until the locking lug locks firmly.
3. Insert the terminal with terminal retainer in the temporary lock position.

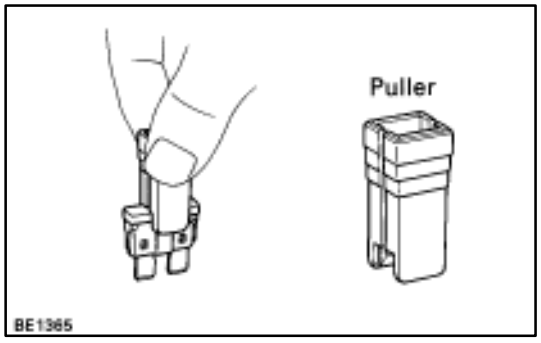


(b) Push the secondary locking device or terminal retainer in to the full lock position.

5. CONNECT CONNECTOR







REPLACEMENT OF FUSE

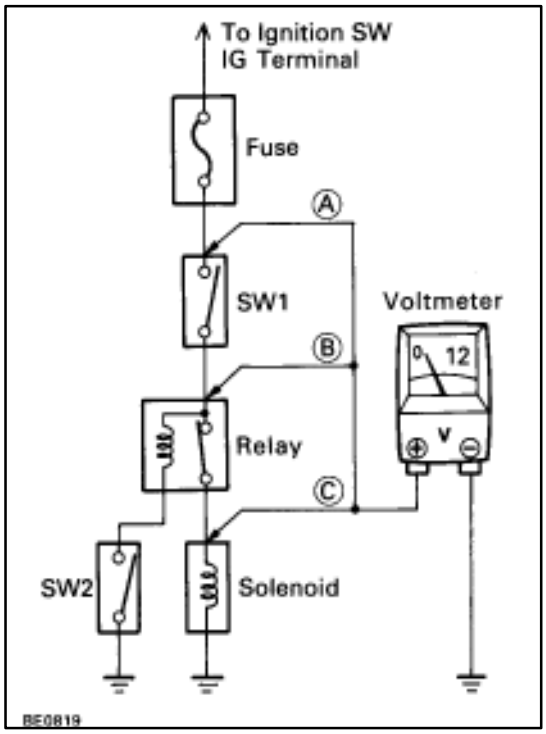
HINT: If replacing the fuse be sure to replace it with a fuse with an equal amperage rating.

NOTICE:

1. **Turn off all electrical components and the ignition switch before replacing a fuse or fusible link. Do not exceed the fuse or fusible link amperage rating.**
2. **Always use a fuse puller for removing and inserting a fuse. Remove and insert straight in and out without twisting. Twisting could force open the terminals too much, resulting in a bad connection.**

If a fuse or fusible link continues to blow, a short circuit is indicated. The system must be checked by a qualified technician.

HINT: The puller is located at Junction Block No.2.



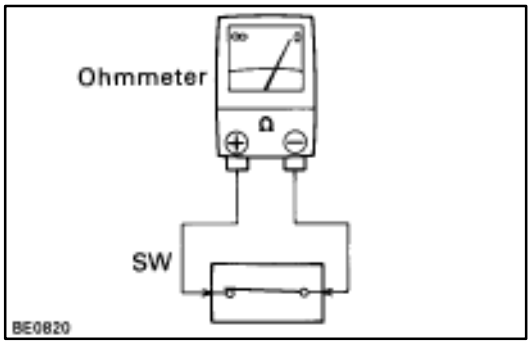
CHECK FOR VOLTAGE

BE0MB–01

(a) Establish conditions in which voltage is present at the check point.

Example:
A–Ignition SW on
B–Ignition SW and SW 1 on
C–Ignition SW, SW 1 and Relay on (SW 2 off)

(b) Using a voltmeter, connect the negative (–) lead to a good ground point or negative (–) battery terminal and the positive (+) lead to the connector or component terminal. This check can be done with a test bulb instead of a voltmeter.

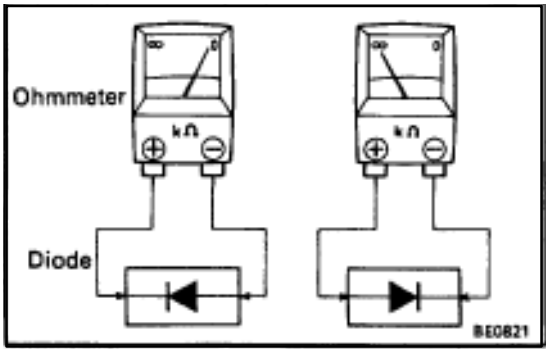


CHECK FOR CONTINUITY AND RESISTANCE

BE0MG–02

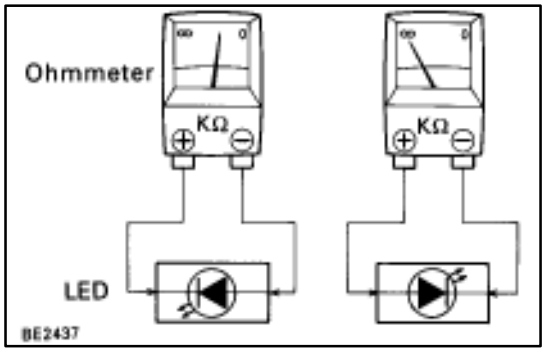
(a) Disconnect the battery terminal or wire so there is no voltage between the check points.

(b) Contact the two leads of an ohmmeter to each of the check points.



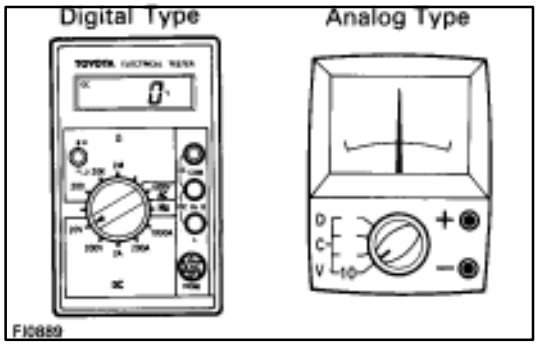
If the circuit has diodes, reverse the two leads and check again.
When contacting the negative (–) lead to the diode positive (+) side and the positive (+) lead to the negative (–) side, there should be continuity. When contacting the two leads in reverse, there should be no continuity.

HINT: Specifications may vary depending on the type of tester, so refer to the tester's instruction manual before performing the inspection.

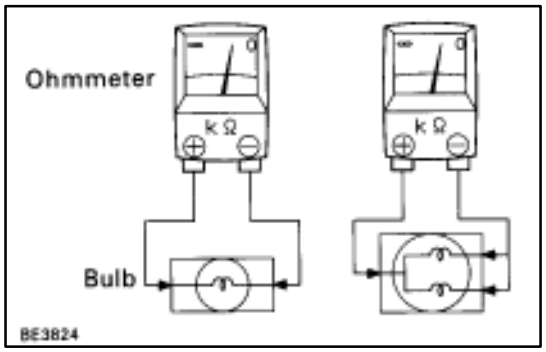


Check LED (Light Emitting Diode) in the same manner as that for diodes.
HINT:

- Use a tester with a power source of 3 V or greater to overcome the circuit resistance.
- If a suitable tester is not available, apply battery positive voltage and check that the LED lights up.



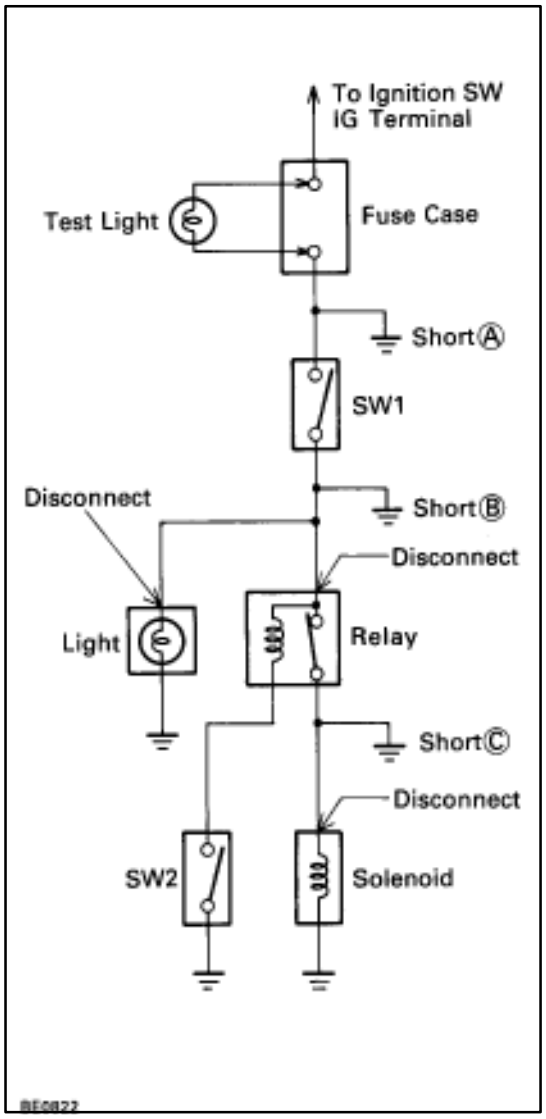
(c) Use a volt/ohmmeter with high impedance (10 k/V minimum) for troubleshooting of the electrical circuit.



CHECK THE BULB

BE0MD–01

(a) Remove the bulb.
(b) There should be continuity between the respective terminals of the bulb together with a certain amount of resistance.
(c) Apply the two leads of the ohmmeter to each of the terminals.
(d) Apply battery positive voltage and check that the bulb light up.



CHECK FOR SHORT CIRCUIT

BE0ME–01

(a) Remove the blown fuse and eliminate all loads from the fuse.
(b) Connect a test bulb in place of the fuse.
(c) Establish conditions in which the test bulb comes on.
Example:
A–Ignition SW on
B–Ignition SW and SW 1 on
C–Ignition SW, SW 1 and Relay on (Connect the Relay) and SW 2 off (or Disconnect SW 2)
(d) Disconnect and reconnect the connectors while watching the test bulb. The short lies between the connector where the test bulb stays lit and the connector where the bulb goes out.
(e) Find the exact location of the short by lightly shaking the problem wire along the body.

PRECAUTIONS

BE0MF–03

Take care to observe the following precautions when performing inspections or removal and replacement of body electrical related parts.

1. SRS AIR–BAG SYSTEM

Work must be started approx. 30 seconds after the ignition is set to the Lock position and the negative (–) terminal cable is disconnected from the battery. (See page AB–2)

When disconnecting any of the connectors in the SRS AIR–BAG system, be sure to Lock the ignition switch and disconnect the battery negative (–) terminal first. Since the connectors are twin lock type connectors, disconnect the conncetors only after releasing the first stage lock.

When connecting SRS AIR–BAG system connectors, be sure to lock them securely. (If the connectors are not locked securely, the system may not operate when needed.)

Always store the steering wheel pad with the pad surface facing upward. (Storing the pad with its metallic surface up may lead to a serious accident if the air bag inflates for some reason.)

When installing the spiral cable, be sure the vehicle is in the straight ahead condition and confirm that the spiral cable is in the neutral position when it is installed. (See page BE–46)

INFORMATION LABELS (NOTICE) are attached to the periphery of the air bag components. Follow the NOTICE.

2. AUDIO SYSTEM

If the battery negative (–) terminal is disconnected, the preset AM, FM 1 and FM 2 stations stored in memory are erased, so be sure to note the stations and reset them after the battery terminal is reconnected.

If the battery negative (–) terminal is disconnected, the ”ANTI–THEFT SYSTEM” will operate when the terminal is reconnected, but the radio, tape player and CD player will not operate. Be sure to input the correct ID number so that the radio, tape player and CD player can be operated again.

PREPARATION

SST (SPECIAL SERVICE TOOLS)

BEOMG–01

	09213–31021	Crankshaft Pulley Puller	For removing steering wheel

RECOMMENDED TOOLS

BEOMH–03

	09082-00015	TOYOTA Electrical Tester	
	09041-00030	Trox Driver T30	For removing and installing steering wheel pad
	09042-00010	Trox Socket T30	For removing and installing steering wheel pad

EQUIPMENT

Voltmeter	
Ammeter	
Ohmmeter	
Test lead	
Thermometer	Engine oil level warning switch, Seat heater
Syphon	Brake fluid level warning switch
Oil bath	Engine oil level warning switch
Bulb (3.4 W)	Fuel sender gauge, Seat belt warning relay
Bulb (21 W)	Turn signal flasher relay
Dry cell battery	Fuel sender gauge
Heat light	Seat heater
Torque wrench	
Masking tape	Rear window defogger wire
Tim foil	Rear window defogger wire

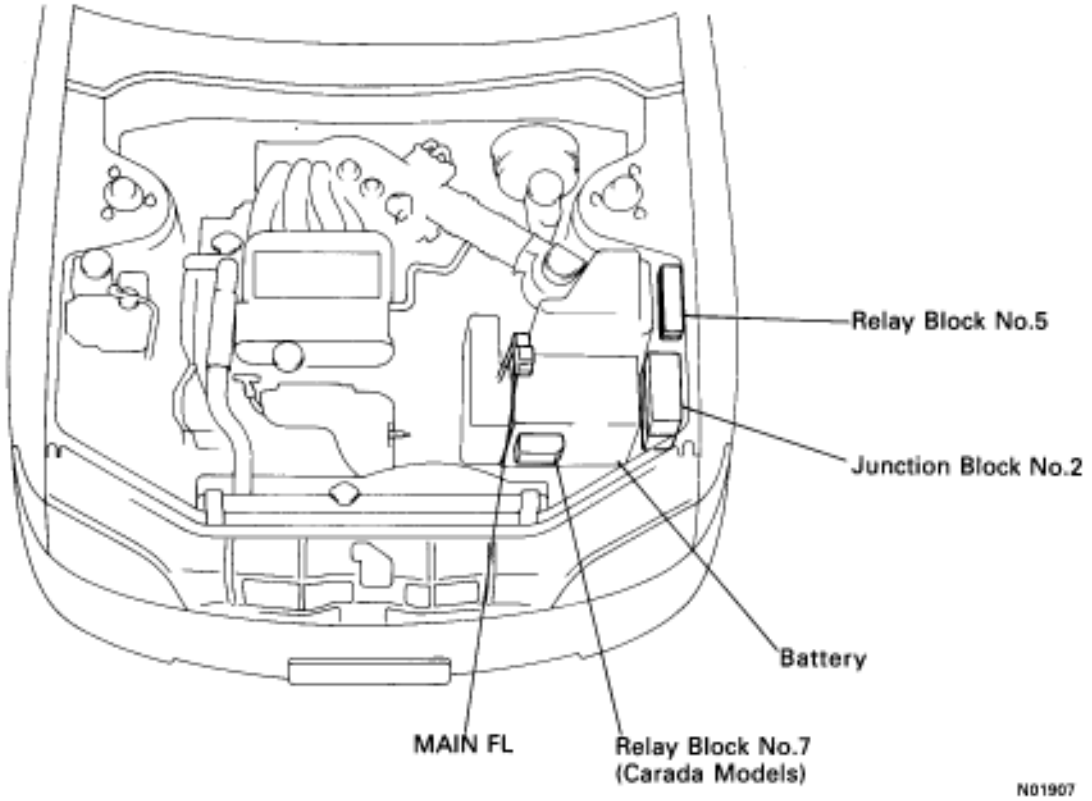
SSM (SPECIAL SERVICE MATERIALS)

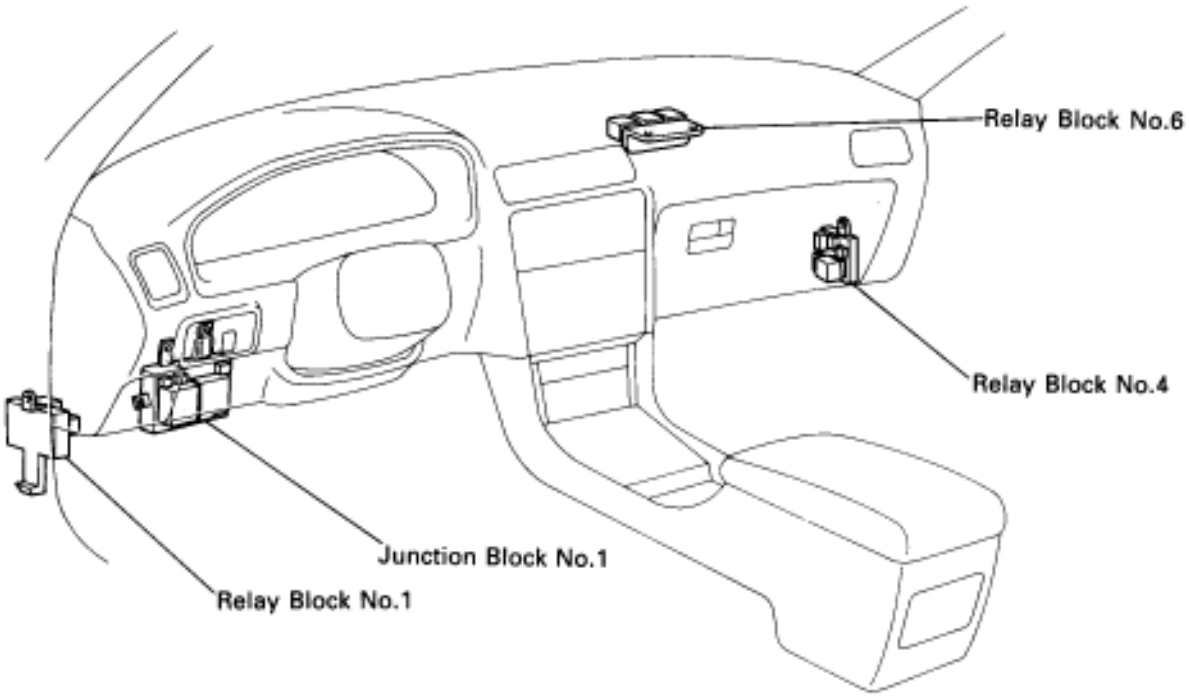
08833–00070	Adhesive 1344 Three bond 1344, Loctite 242 or equivalent	Low oil pressure warning switch Engine coolant temperature sender
–	Dupont paste No.4817	Rear window defogger wire

POWER SOURCE

BE0ML–01

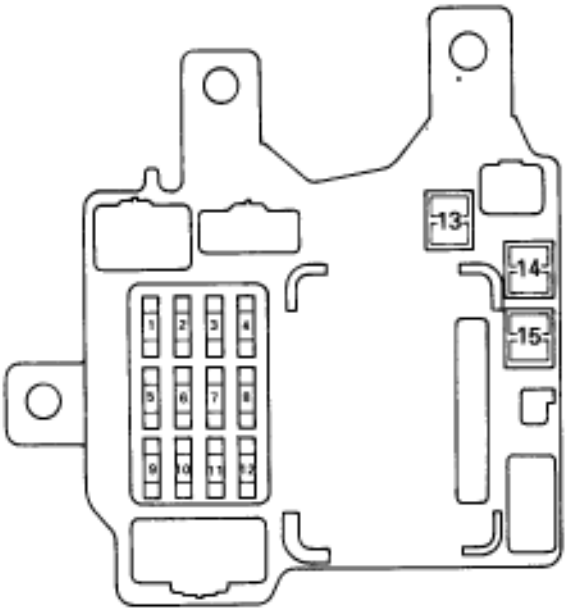
PARTS LOCATION





JUNCTION BLOCK No.1

- **Front Side**



N01803

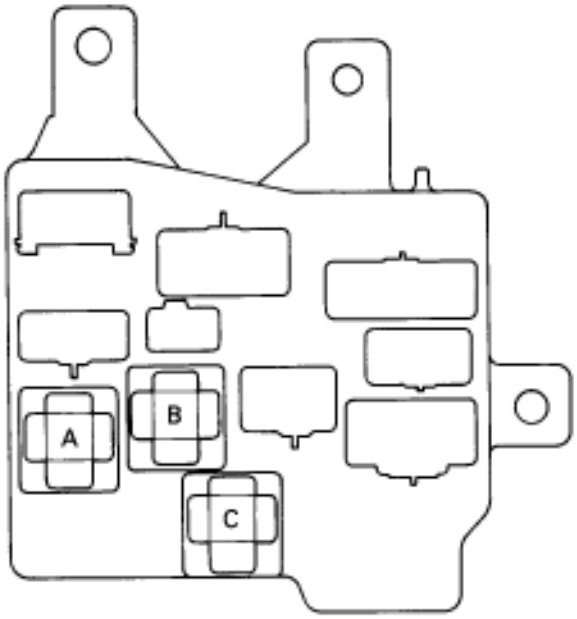
Fuses

1	ECU-IG	15 A
2.	GAUGE	10 A
3.	STOP	25 A
4.	SEAT HTR	15 A
5.	WIPER	20 A
6.	TURN	7.5 A
7.	IG2	7.5 A
8.	CIG/RADIO	15 A
9.	MIR HTR	10 A
10.	TAIL	15 A
11.	ECU-B	15 A
12.	—	

Medium Current Fuses

13.	AMI	40 A
14.	P/W	30 A
15.	DEF	40 A

- **Back Side**

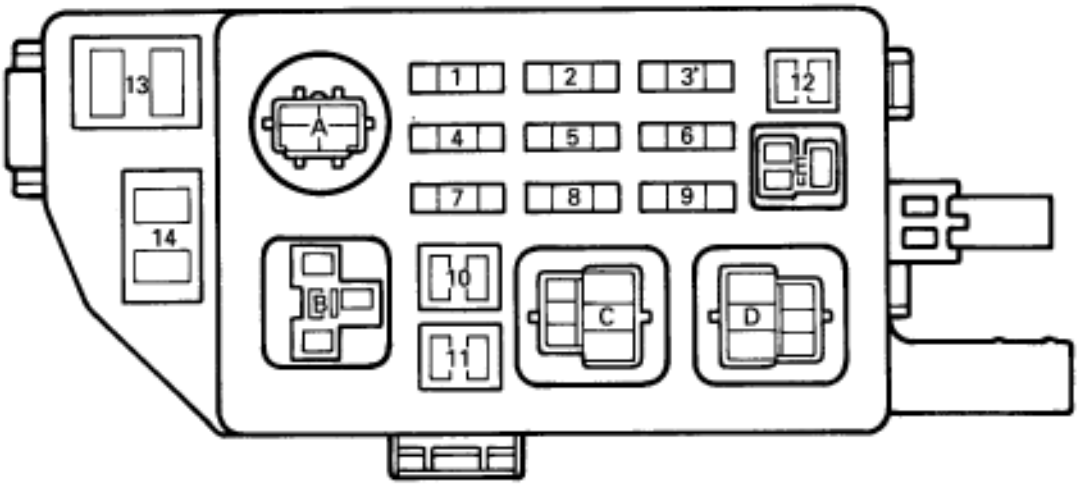


N01804

Relays

A. Power Main
B. Taillight Control
C. Defogger

JUNCTION BLOCK No.2



Fuse

1.	STARTER	10 A
2.	ALT-S	7.5 A
3.	SFI	15 A
4.	HEAD (RH)	15 A [USA]
	HEAD HI (RH)	15 A [Canada]
5.	DOME	20 A
6.	HAZ-HORN	15 A
7.	HEAD (LH)	15 A [USA]
	HEAD HI (LH)	15 A [Canada]
8.	—	
9.	AM2	30 A

Medium Current Fuses

10.	—	
11.	—	
12.	ST MAIN	30 A

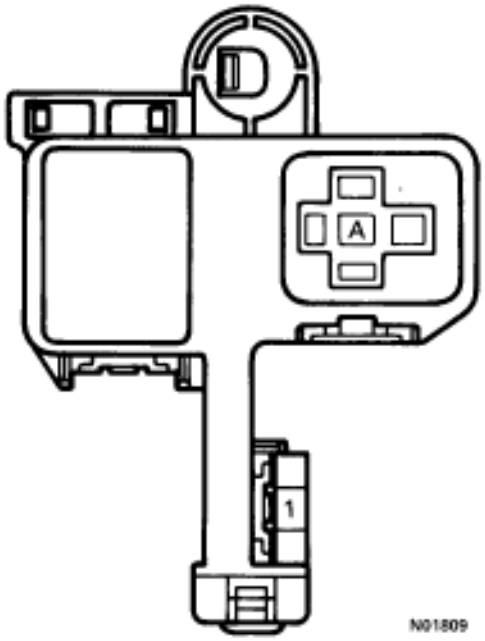
High Current Fuses

13.	ALT	100 A
14.	A.B.S.	60 A

Relays

A. SFI MAIN
B. —
C. —
D. HEAD (Headlight Control)
E. Horn

RELAY BLOCK No.1

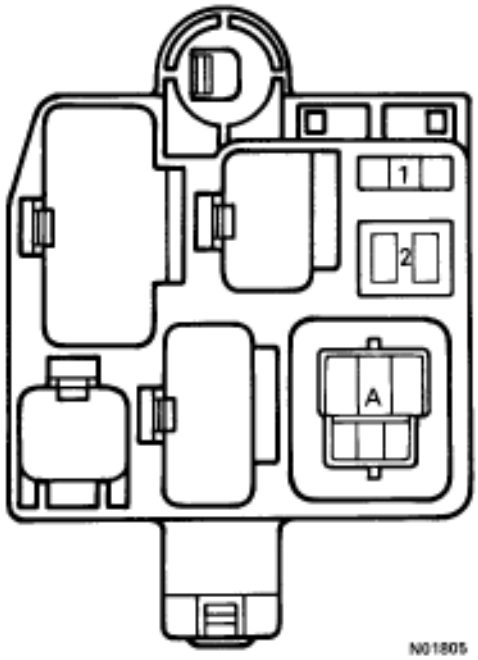


Relay
A. Fog Light

Fuse

1.	FOG	20 A

RELAY BLOCK No.4



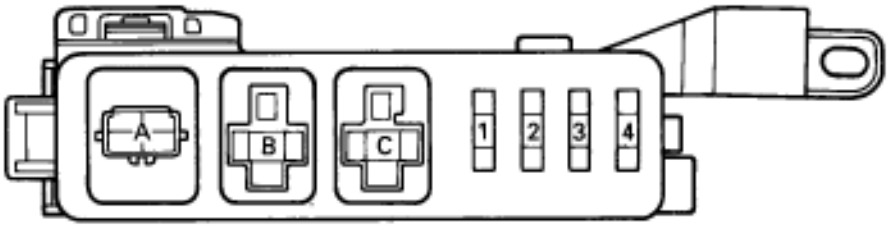
Fuse
1. —

Medium Current Fuse

2.	HTR	40 A

Relay
A. Heater

RELAY BLOCK No.5



N01806

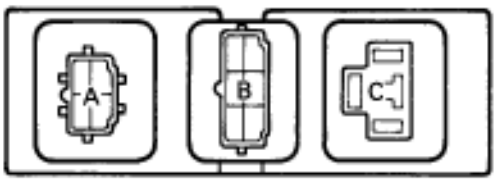
Fuses

1.	RAD	20 A
2.	TEL	15 A
3.	HEAD LO(RH)	15 A [CANADA]
4.	HEAD LO(LH)	15 A [CANADA]

Relays

A. Daytime Running Light No.2 [CANADA]
B. Magnet Clutch
C. —

RELAY BLOCK No.6

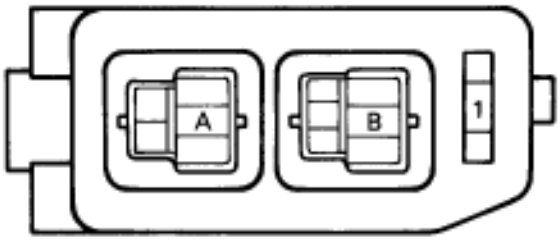


N01807

Relays

A. Starter
B. Circuit Open
C. Turn Signal Flasher

RELAY BLOCK No.7 (Canada models)



N01808

Fuse

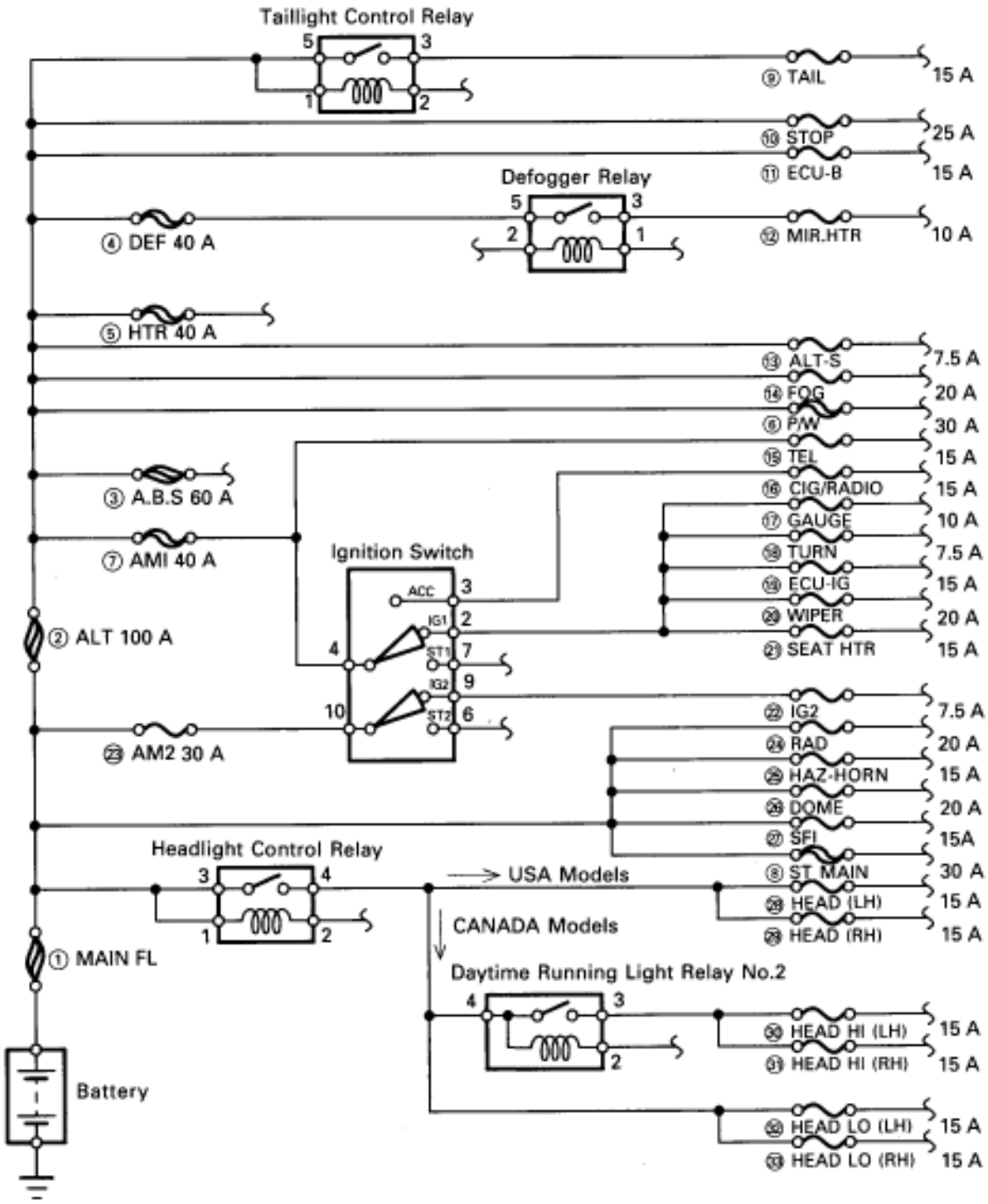
1.	DRL	7.5 A

Relays

A. Daytime Running Light No.4
B. Daytime Running Light No.3

WIRING DIAGRAM

BE0MM–01



DESCRIPTION

The power source supplies power to each of the vehicle's electrical devices.

RELATED SYSTEMS FOR EACH FUSIBLE LINK AND FUSE

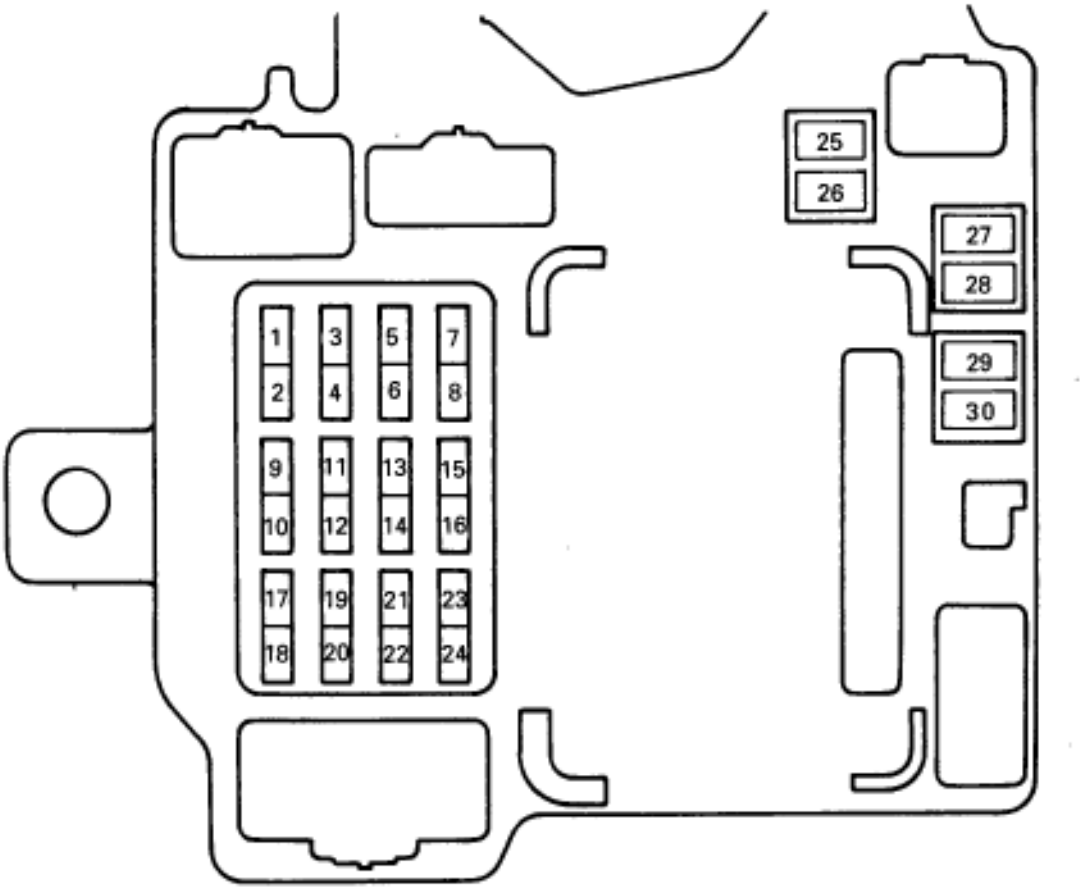
No.	Part Name	Related System or Part	
1	MAIN FL	Headlight System	ST MAIN M–Fuse
		SFI Fuse	DOME Fuse
		HAZ–HORN Fuse	RAD Fuse
		AM2 Fuse	ALT H–Fuse
2	ALT H–Fuse	Charging System	Taillight System
		STOP Fuse	ECU–B Fuse
		DEFOG M–Fuse	HTR M–Fuse
		ALT–S Fuse	FOG Fuse
		P/W M–Fuse	ABS M–Fuse
		AM1 M–Fuse	
3	A.B.S H–Fuse	ABS	
4	DEF M–Fuse	Defogger System	MIR HTR Fuse
5	HTR M–Fuse	Air Conditioning System	
6	P/W M–Fuse	Power Window System	Door Lock Control System
		Theft Deterrent System	Fuel Lid Opener System
		Sliding Roof System	Power Seat Control System
7	AM1 M–Fuse	Ignition Switch	TEL Fuse
8	ST MAIN M–Fuse	Starter System	Theft Deterrent System
9	TAIL Fuse	Taillight System	Illumination System
10	STOP Fuse	Stop Light System	Cruise Control System
11	ECU–B Fuse	ABS	Air Conditioning System
		Combination Meter	Airbag System
12	MIR. HTR Fuse	Mirror Defogger System	
13	ALT–S Fuse	Charging System	
14	FOG Fuse	Fog Light System	
15	TEL Fuse	Cellular Phone	
16	CIG/RADIO Fuse	Cigarette Lighter	Audio System
		Air Conditioning System	Door Lock Control System
		Theft Deterrent System	Airbag System
		Motor Antenna	Power Mirror Control System

No.	Part Name	Related System or Part	
17	GAUGE Fuse	Key Unlock Warning System	Seat Belt Warning System
		Headlight System	Taillight System
		Back–up Light System	Defogger System
		Combination Meter	Illumination System
		Air Conditioning System	
18	TURN Fuse	Turn Signal and Hazard Warning System	
19	ECU–IG Fuse	Cooling Fan System	Cruise Control System
		ABS	Door Lock Control System
		Theft Deterrent System	Motor Antenna
		Celluar Phone	Power Steering
20	WIPER Fuse	Wiper and Washer System	
21	SEAT HTR Fuse	Seat Heater System	
22	IG2 Fuse	SFI System	Combination Meter
		Charging System	Airbag System
23	AM2 Fuse	Ignition Switch	
24	RAD Fuse	Audio System	
25	HAZ–HORN Fuse	Turn Signal and Hazard Warning System	
		Horn System	
26	DOME Fuse	Key Unlock Warning System	Seat Belt Warning System
		Headlight System	Interior Light System
		Combination Meter	Theft Deterrent System
		Door Lock Control System	Sliding Roof System
		Motor Antenna	
		Wireless Door Lock Control System	
27	SFI Fuse	SFI System	
28	HEAD (LH) Fuse	Headlight System	
29	HEAD (RH) Fuse	Headlight System	Fog Light System
30	HEAD HI (LH) Fuse	Headlight System	
31	HEAD HI (RH) Fuse	Headlight System	
32	HEAD LO (LH) Fuse	Headlight System	Fog Light System
33	HEAD LO (RH) Fuse	Headlight System	

POWER SOURCE CIRCUIT

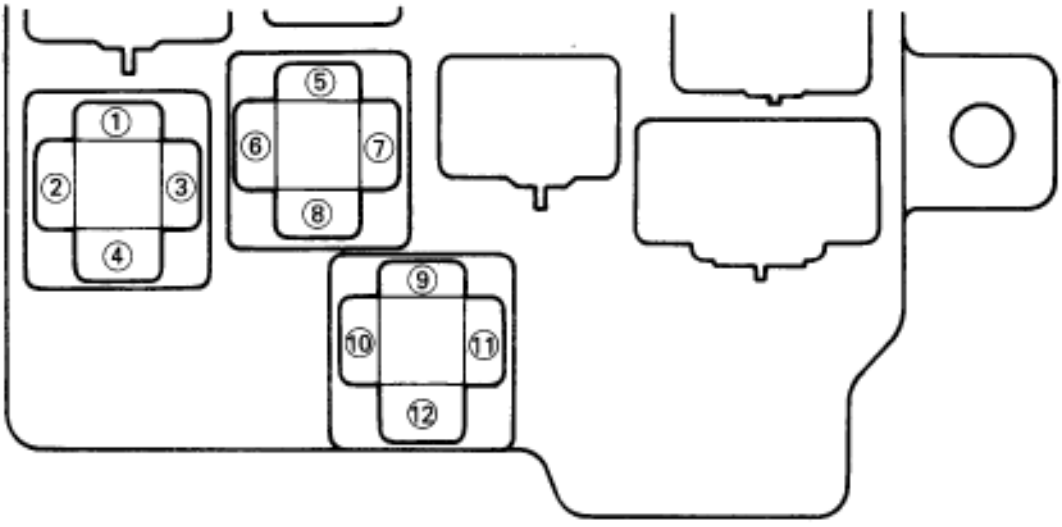
JUNCTION BLOCK NO.1 INSPECTION

- **Front Side**



N01910

- **Rear Side**



N01911

◯: Relay terminal

1. INSPECT FUSE CIRCUIT

Remove the fuse from the junction block and inspect the connector on junction block side as shown.

Fuse	Check for	Tester connection	Condition	Specified value
ECU–IG	Voltage	2–Ground	Ignition switch turned to ON	Battery positive voltage
GAUGE		4–Ground	Ignition switch turned to ON	
STOP		5–Ground	Constant	
SEAT HTR		8–Ground	Ignition switch turned to ON	
WIPER		9–Ground	Ignition switch turned to ON	
TURN		11–Ground	Ignition switch turned to ON	
IG2		13–Ground	Ignition switch turned to ON	
CIG/RADIO		15–Ground	Ignition switch turned to ACC or ON	
MIR.HTR		18–Ground	Defogger switch turned to ON	
TAIL		20–Ground	Light control switch turned to TAIL or HEAD *and Engine running	
ECU–B		21–Ground	Constant	
AM1		25–Ground	Constant	
P/M		28–Ground	Constant	
DEF		29–Ground	Constant	
*: CANADA models				

If the circuit is not as specified, refer to BE–17 wiring diagram and inspect the circuits connected to other parts.

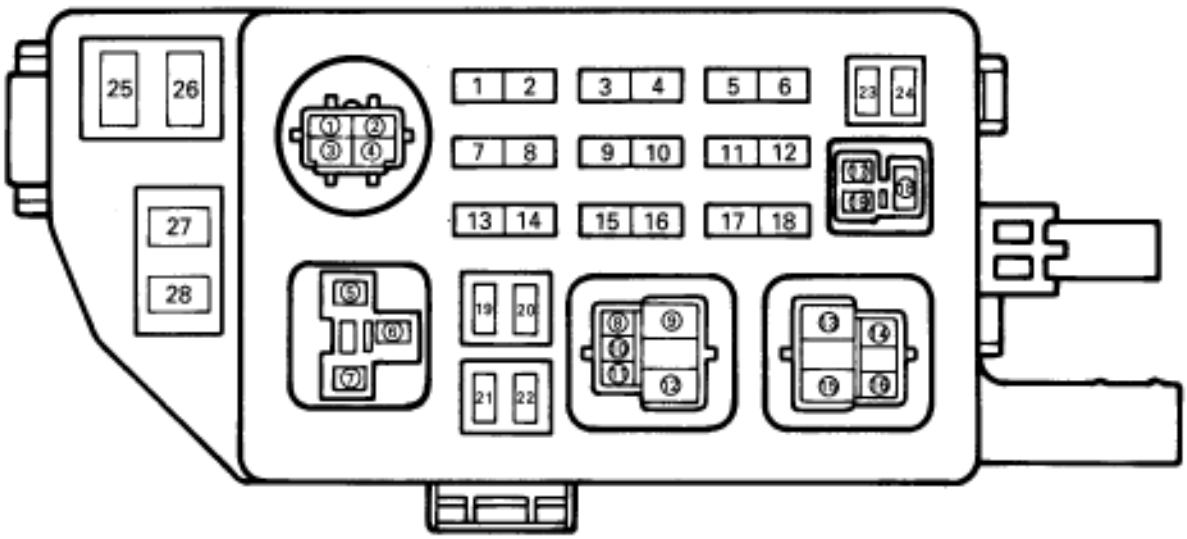
2. INSPECT RELAY CIRCUIT

Remove the relay from the junction block and inspect the connector on junction block side as shown.

Relay	Check for	Tester connection	Condition	Specified value
Power main	Voltage	①–Ground	Constant	Battery positive voltage
	Continuity	②–Ground	Constant	Continuity
Taillight control	Voltage	③–Ground	Constant	Battery positive voltage
		④–Ground	Constant	
Defogger	Voltage	⑨–Ground	Constant	
		⑩–Ground	Ignition Switch turned to ON	

If the circuit is not as specified, refer to BE–17 wiring diagram and inspect the circuits connected to other parts.

JUNCTION BLOCK NO.2 INSPECTION



1. INSPECT FUSE CIRCUIT

Remove the fuse from the junction block and inspect the connector on junction block side as shown.

Fuse	Check for	Tester connection	Condition	Specified value
STARTER	Voltage	2–Ground	Ignition switch turned to START	Battery positive voltage
ALT–S		4–Ground	Constant	
SFI		6–Ground	Constant	
*1 HEAD (RH)		7–Ground	Light control switch turned to HEAD	
*2 HEAD HI (RH)		7–Ground	Light control switch turned to HEAD and headlight dimmer switch turned to High	
DOME		10–Ground	Constant	
HAZ–HORN		11–Ground	Constant	
*1 HEAD (LH)		14–Ground	Light control switch turned to HEAD	
*2 HEAD HI (LH)		14–Ground	Engine running, or light control switch turned to HEAD and headlight dimmer switch turned to High	
AM2		17–Ground	Constant	
ST MAIN		23–Ground	Constant	
ALT		25–Ground	Constant	
A.B.S		28–Ground	Constant	

*1: USA models *2: CANADA models

If the circuit is not as specified, refer to BE–17 wiring diagram and inspect the circuits connected to other parts.

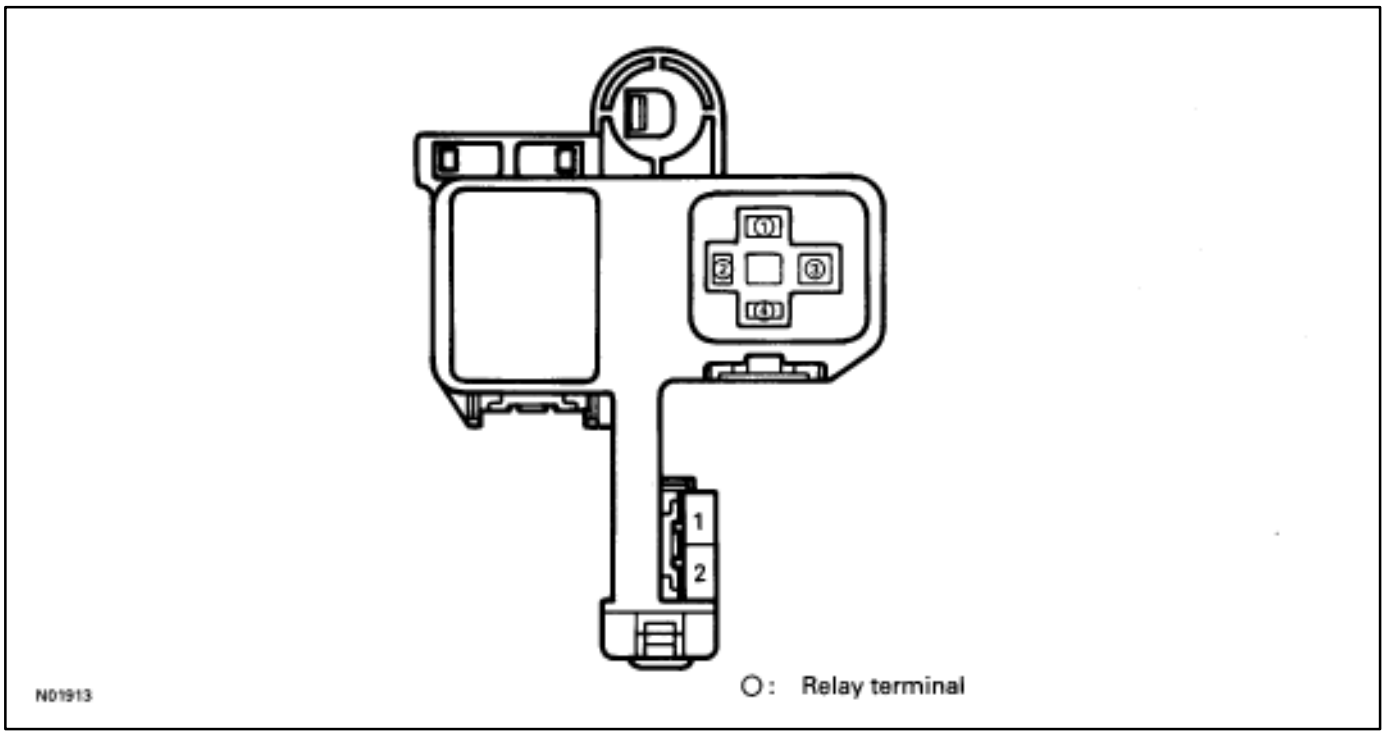
2. INSPECT RELAY CIRCUIT

Remove the relay from the junction block and inspect the connector on junction block side as shown.

Relay	Check for	Tester connection	Condition	Specified value
SFI MAIN	Voltage	(3)–Ground	Constant	Battery positive voltage
	Continuity	(2)–Ground	Constant	Continuity
Headlight Control	Voltage	(13)–Ground	Constant	Battery positive voltage
		(14)–Ground	Constant	
Horn		(17)–Ground	Constant	

If the circuit is not as specified, refer to BE–17 wiring diagram and inspect the circuits connected to other parts.

RELAY BLOCK NO.1 INSPECTION



1. INSPECT FUSE CIRCUIT

Remove the fuse from the relay block and inspect the connector on relay block side as shown.

Fuse	Check for	Tester connection	Condition	Specified value
FOG	Voltage	*1 1 or 2–Ground	Constant	Battery positive voltage

*1: Apply tester to the terminal which was connected to the white (W) wire harness (battery wire harness).
If the circuit is not as specified, refer to BE–17 wiring diagram and inspect circuits connected to other parts.

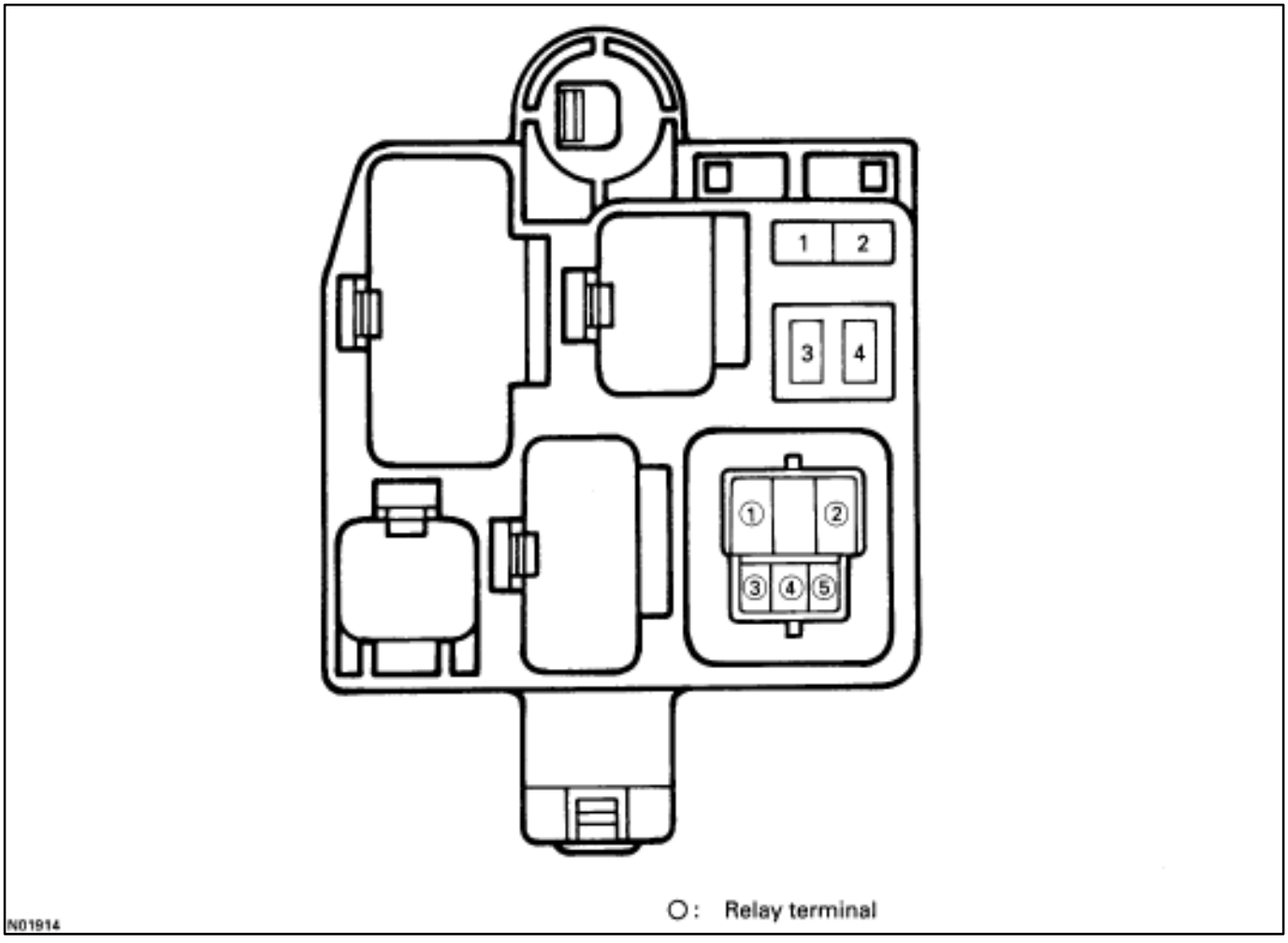
2. INSPECT RELAY CIRCUIT

.Remove the relay from the relay block and inspect the connector on relay block side as shown.

Relay	Check for	Tester connection	Condition	Specified value
Fog Light	Voltage	(1) – Ground	Light control switch turned to HEAD	Battery positive voltage
		(3) – Ground	Constant	

If the circuit is not as specified, refer to BE–17 wiring diagram and inspect the circuits connected to other parts.

RELAY BLOCK NO. 4 INSPECTION



1. INSPECT FUSE CIRCUIT

Remove the fuse from the relay block and inspect the connector on relay block side as shown.

Fuse	Check for	Tester connection	Condition	Specified value
HTR	Voltage	3–Ground	Constant	Battery positive voltage

If the circuit is not as specified, refer to BE–17 wiring diagram and inspect circuits connected to other parts.

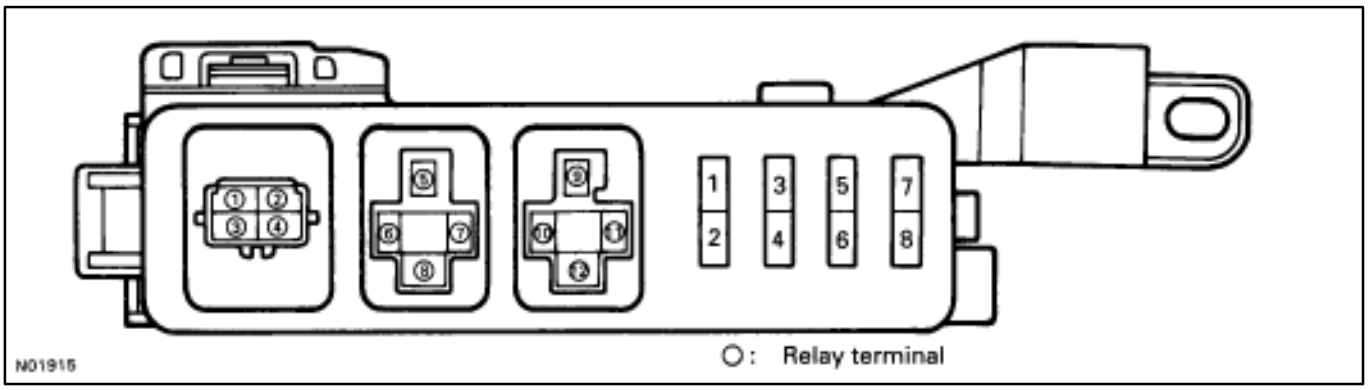
2. INSPECT RELAY CIRCUIT

Remove the relay from the relay block and inspect the connector on relay block side as shown.

Relay	Check for	Tester connection	Condition	Specified value
Heater	Voltage	(1) –Ground	Constant	Battery positive voltage
	Continuity	(4) –Ground	Constant	Continuity
	Voltage	(5) –Ground	Ignition switch turned to ON	Battery positive voltage

If the circuit is not as specified, refer to BE–17 wiring diagram and inspect the circuits connected to other parts.

RELAY BLOCK NO. 5 INSPECTION



1. INSPECT FUSE CIRCUIT

Remove the fuse from the relay block and inspect the connector on relay block side as shown.

Fuse	Check for	Tester connection	Condition	Specified value
RAD	Voltage	2–Ground	Constant	Battery positive voltage
TEL		4–Ground	Constant	
HEAD LO (RH)		6–Ground	Light control switch turned to HEAD	
HEAD LO (LH)		8–Ground	Light control switch turned to HEAD	

If the circuit is not as specified, refer to BE–17 wiring diagram and inspect the circuits connected to other parts.

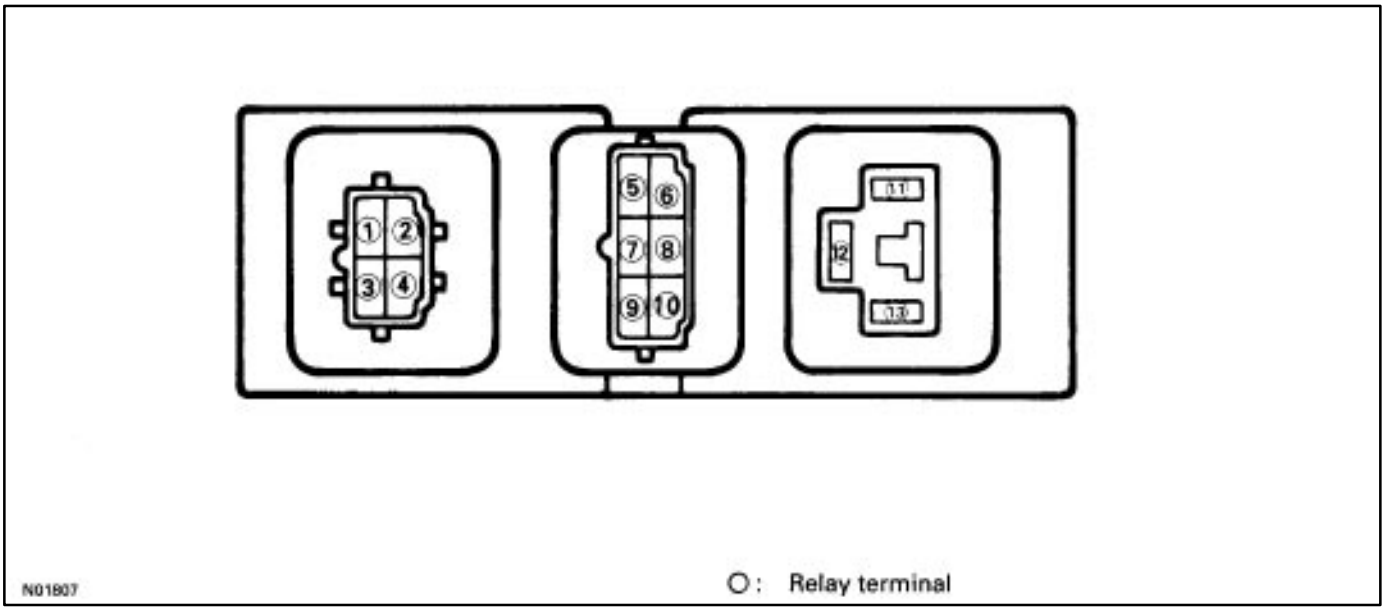
2. INSPECT RELAY CIRCUIT

Remove the relay from the relay block and inspect the connector on relay block side as shown.

Relay	Check for	Tester connection	Condition	Specified value
Daytime Running Lingt No.2	Voltage	(1) –Ground	Constant	Battery positive voltage
Magnet Clutch		(5) – Ground	Ignition switch turned to ON	
		(6) – Ground	Ignition switch turned to ON	

If the circuit is not as specified, refer to BE–17 wiring diagram and inspect the circuits connected to other parts.

RELAY BLOCK NO.6 INSPECTION



INSPECT RELAY CIRCUIT

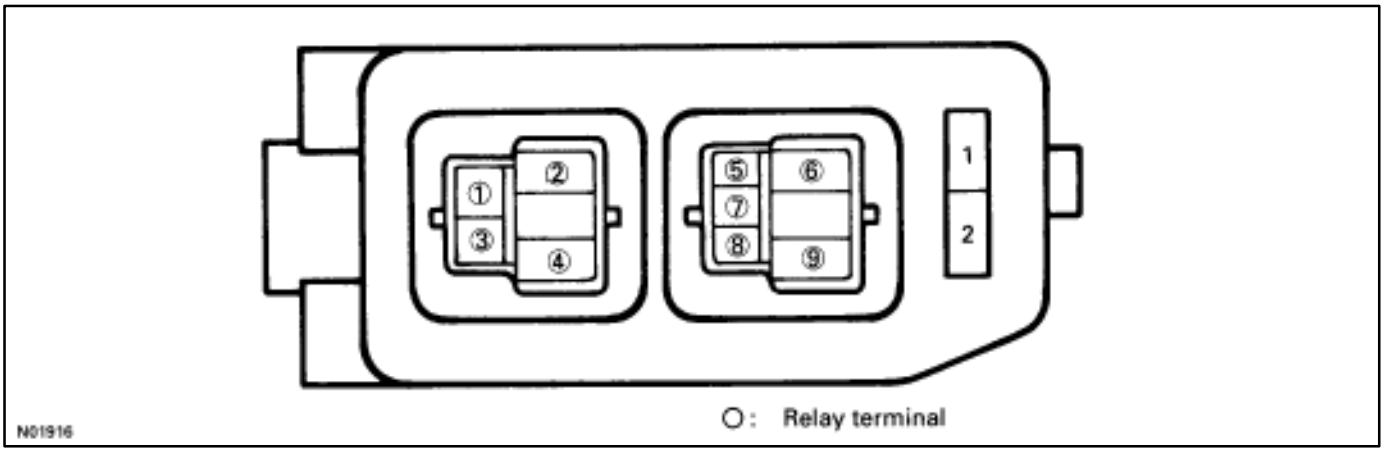
Remove the relay from the relay block and inspect the connector on relay block side as shown.

Relay	Check for	Tester connection	Condition	Specified value
Starter	Voltage	(2)–Ground	*Ignition switch turned to START	Battery positive voltage
		(4)–Ground	Constant	
Circuit open		(7)–Ground	Ignition switch turned to ON	
	Continuity	(9)–Ground	Constant	Continuity
	Voltage	(10)–Ground	*Ignition switch turned to START	Battery positive voltage
Turn signal flasher	Continuity	(11)–Ground	Constant	Continuity
		(13)–Ground	Ignition switch turned to ON, or hazard warning switch turned to ON	Battery positive voltage

*: (M/T) with clutch pedal depressed.
(A/T) with shift lever position is P or N range.

If the circuit is not as specified, refer to BE–17 wiring diagram and inspect circuits connected to other parts.

RELAY BLOCK NO.7 INSPECTION



1. INSPECT FUSE CIRCUIT

Remove the fuse from the relay block and inspect the connector on relay block side as shown.

Fuse	Check for	Tester connection	Condition	Specified value
DRL	Voltage	2–Ground	Light control switch turned to HEAD or headlight dimmer switch turned to flash	Battery positive voltage
	Continuity	1–Ground	Constant	Continuity

If the circuit is not as specified, refer to BE–17 wiring diagram and inspect circuits connected to other parts.

2. INSPECT RELAY CIRCUIT

Remove the relay from the relay block and inspect the connector on relay block side as shown.

Relay	Check for	Tester connection	Condition	Specified value
Daytime Running Light No.4	Continuity	(1)–Ground	Constant	Continuity
		(2)–Ground	Constant	
	Voltage	(3)–Ground	Light control switch turned to HEAD	Battery positive voltage
Daytime Running Light No.3	Continuity	(5)–Ground	Constant	Continuity
		(7)–Ground	Constant	
	Voltage	(8)–Ground	Light control switch turned to HEAD, or headlight dimmer switch turned to flash	Battery positive voltage
		(9)–Ground	Engine running, or light control switch turned to HEAD and headlight dimmer switch turned to HI, or headlight dimmer switch turned to flash	

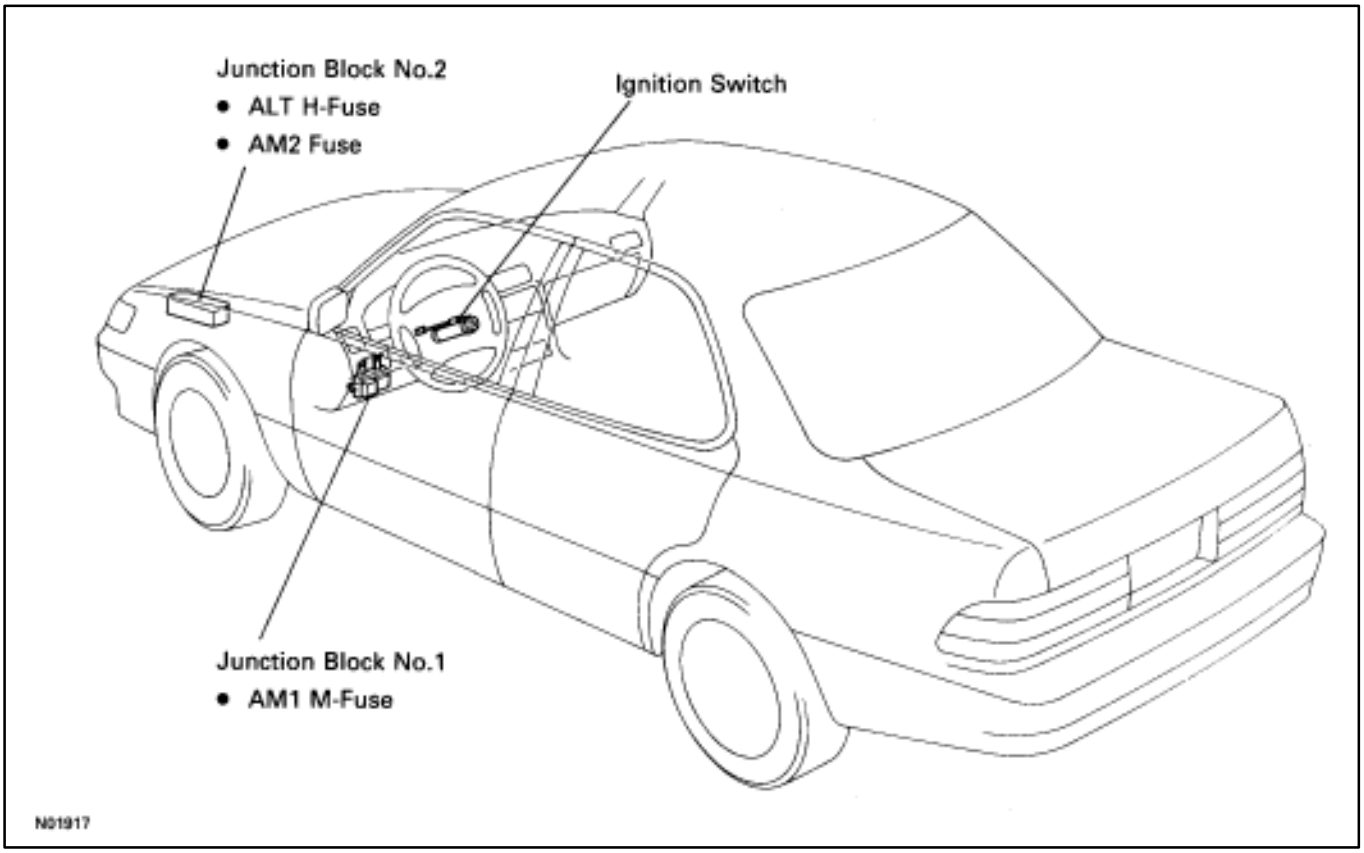
If the circuit is not as specified, refer to BE–17 wiring diagram and inspect the circuits connected to other parts.

IGNITION SWITCH

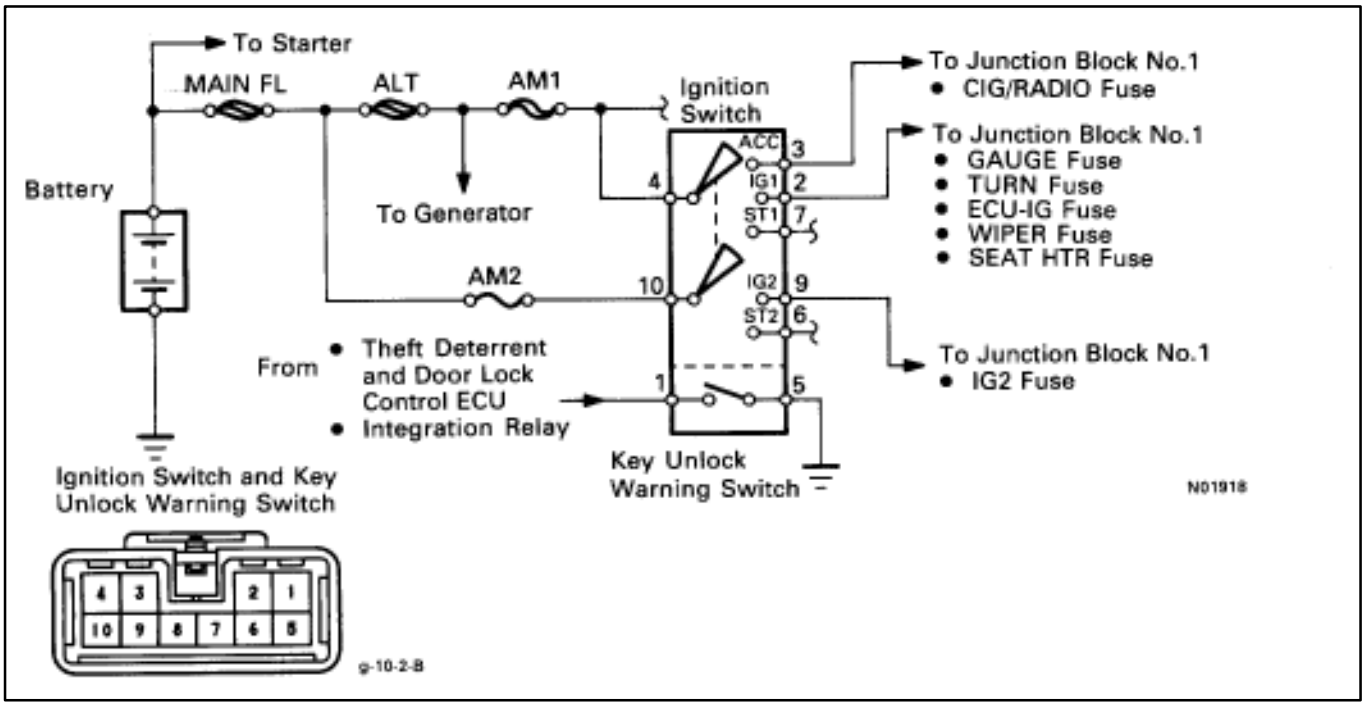
DESCRIPTION

The ignition switch is supplied with power from the battery via a fusible link. Power is supplied to each fuse and relay according to the position of the switch, whether ”ACC” ”ON” or ”START”.

PARTS LOCATION



WIRING AND CONNECTOR DIAGRAMS



IGNITION SWITCH AND KEY UNLOCK WARNING SWITCH

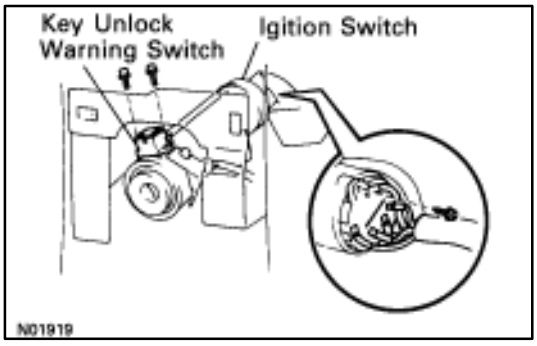
IGNITION SWITCH AND KEY UNLOCK WARNING SWITCH REMOVAL AND INSTALLATION

1. DISCONNECT BATTERY TERMINALS

CAUTION: Work must be started after approx. 30 seconds or longer from the time the ignition switch is turned to the "LOCK" position and negative (–) terminal cable is disconnected from the battery.

2. REMOVE STEERING COLUMN ASSEMBLY

(See page SR–4)



3. REMOVE IGNITION SWITCH

(a) Disconnect connector.

(b) Remove three screws and the switch from the key cylinder and wire harness clamp.

4. INSTALL IGNITION SWITCH

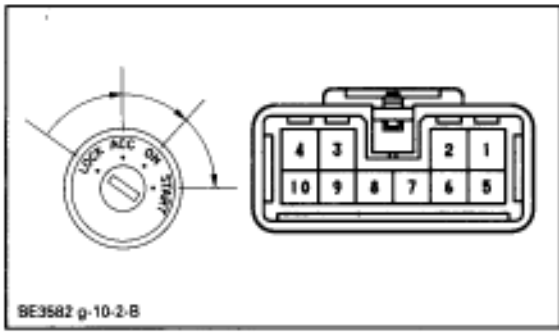
For installation, follow the removal procedure in reverse.

IGNITION SWITCH AND KEY UNLOCK WARNING SWITCH INSPECTION

1. INSPECT IGNITION SWITCH

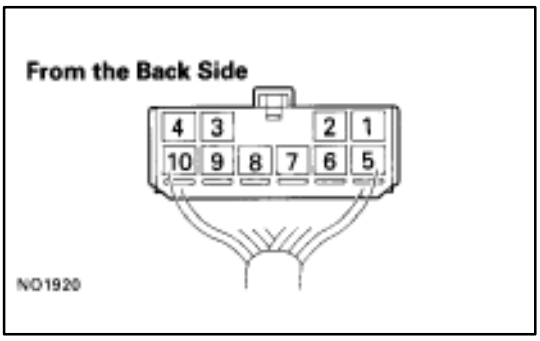
(Switch continuity)

Inspect the switch continuity between terminals.



Terminal / Switch position	2 IG1	3 ACC	4 AM1	6 ST2	7 ST1	9 IG2	10 AM2
LOCK							
ACC		○—○					
ON	○	○—○	○			○—○	
START	○		○	○—○		○—○	

If continuity is not as specified, replace the switch.



(Switch circuit)

Connect the switch connector and inspect the connector on the wire harness side from the back side as shown.

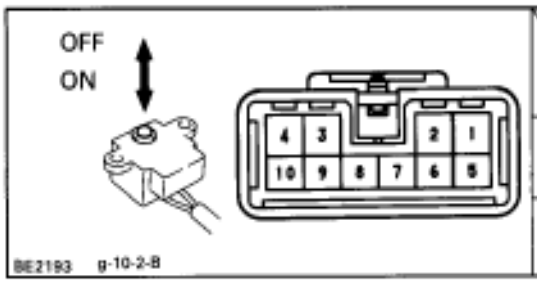
Check for	Tester connection	Condition	Specified value
Voltage	2–Ground	Ignition switch turned to ON	Battery positive voltage
	3–Ground	Ignition switch turned to ACC or ON	
	4–Ground	Constant	
	6–Ground	Ignition switch turned to START	
	9–Ground	Ignition switch turned to ON, START	
	10–Ground	Constant	

If circuit is not as specified, inspect the switch or refer to BE–28 wiring diagram and inspect the circuits connected to other parts.

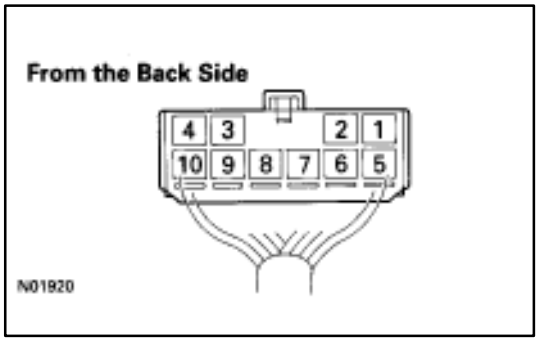
2. INSPECT KEY UNLOCK WARNING SWITCH

(Switch continuity)

Inspect the switch continuity between terminals.



Terminal / Switch position	1	5
OFF (Ignition Key removed)		
ON (Ignition Key set)	o	o



If continuity is not as specified, replace the switch.

(Switch circuit)

Connect the switch connector and inspect the connector on the wire harness side from the back side as shown.

Check for	Tester connection	Condition	Specified value
Continuity	1–Ground	Ignition key removed	No continuity
		Ignition key set	Continuity
	5–Ground	Constant	Continuity

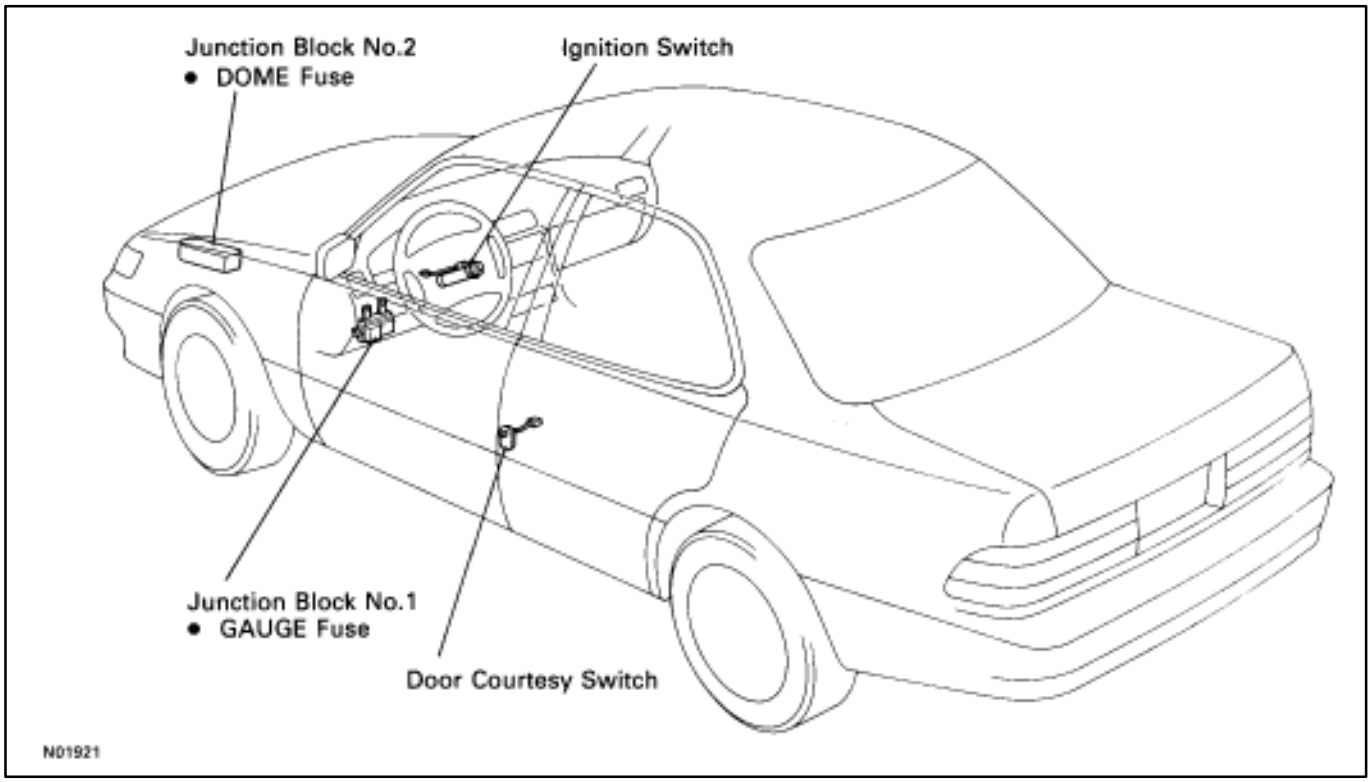
If circuit is not as specified, inspect the switch or wire harness.

KEY UNLOCK WARNING SYSTEM

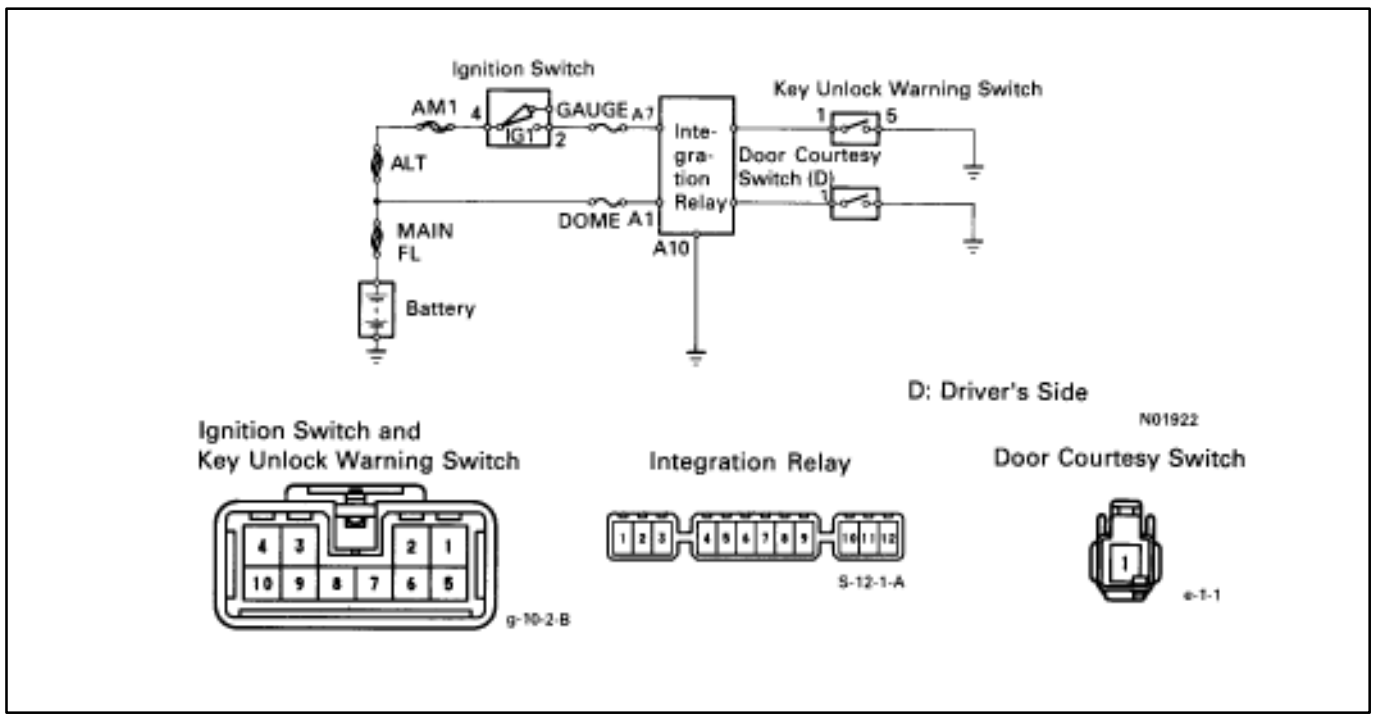
DESCRIPTION

The integration relay receives current from GAUGE and DOME fuses and is connected to the driver's door courtesy switch and the key unlock warning swich. As part of the key unlock warning system, it sounds a chime when the set conditions are fulfilled.

PARTS LOCATION



WIRING AND CONNECTOR DIAGRAMS



IGNITION SWITCH AND KEY UNLOCK WARNING SWITCH

(See page BE–29)

INTEGRATION RELAY

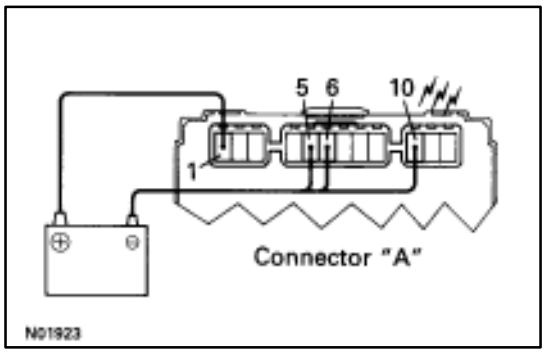
INTEGRATION RELAY REMOVAL AND INSTALLATION

1. REMOVE INTEGRATION RELAY

(a) Remove the LH lower pad.
(b) Remove the junction block No.1
(c) Remove the integration relay from the junction block No.1

2. INSTALL INTEGRATION RELAY

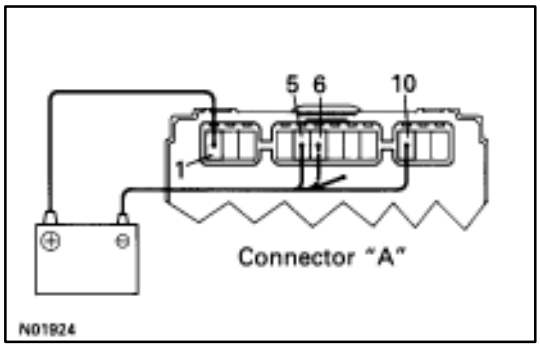
For installation, follow the removal procedure in reverse.



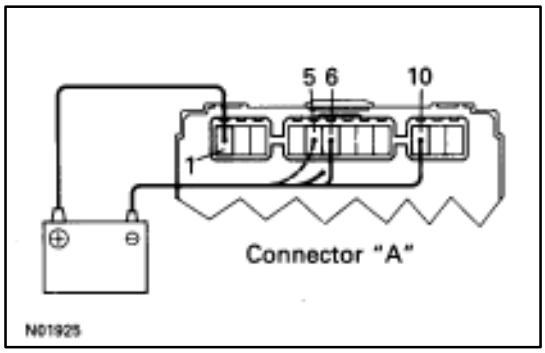
INTEGRATION RELAY INSPECTION

(Operation/Key Unlock Warning)

(a) Connect the positive (+) lead from the battery to terminal A1.
(b) Connect the negative (–) lead from the battery to terminals A5, A6 and A10.
(c) Check the chime sounds.

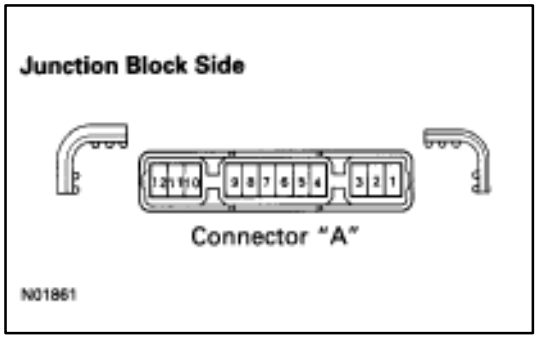


(d) Disconnect the negative (–) lead from the battery to terminals A6.
(e) Check that the chime stops sounding.



(f) Connect the negative (–) lead from the battery to terminals A6.
(g) Disconnect the negative (–) lead from the battery to terminals A5.
(h) Check that the chime stops sounding.

If operation is not as specified, replace the relay.



(Relay Circuit / Key Unlock Warning System)

Remove the relay from the junction block No. 1 and inspect the connectors on the junction block side.

Check for	Tester connection	Condition		Specified value
Continuity	A10–Ground	Constant		Continuity
	A6–Ground	Driver's door courtesy switch	OFF (Door closed)	No continuity
			ON (Door opened)	Continuity
	A5–Ground	Key unlock warning switch	OFF (Key removed)	No continuity
			ON (Key set)	Continuity
Voltage	A7–Ground	Ignition switch position	Lock or ACC	No voltage
			ON	Battery positive voltage
	A1–Ground	Constant		Battery positive voltage

If circuit is as specified, trying replacing the relay with a new one.

Is circuit is not as specified, refer to BE–31 wiring diagram and inspect the circuits connected to other parts.

DOOR COURTESY SWITCH

(See page BE–90)

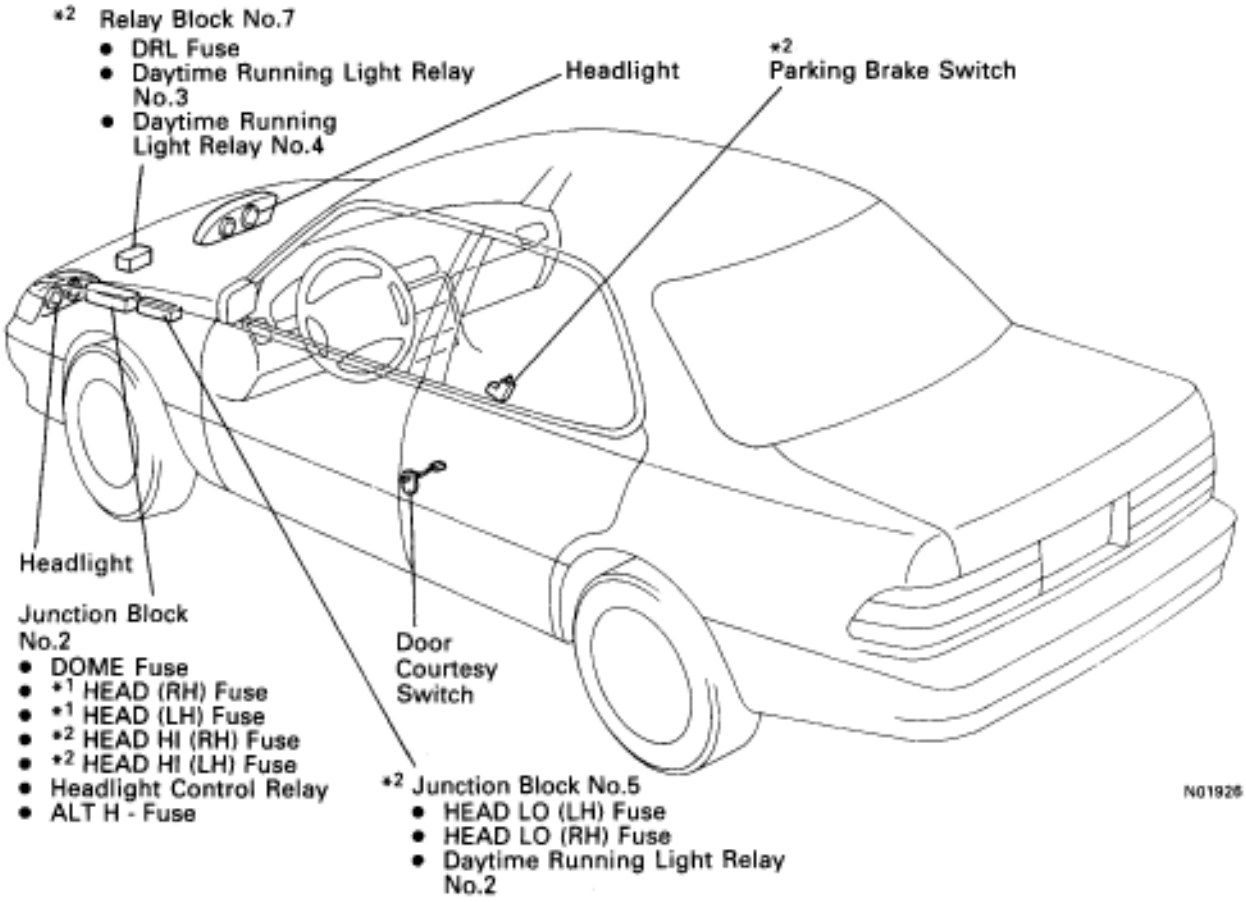
HEADLIGHT SYSTEM

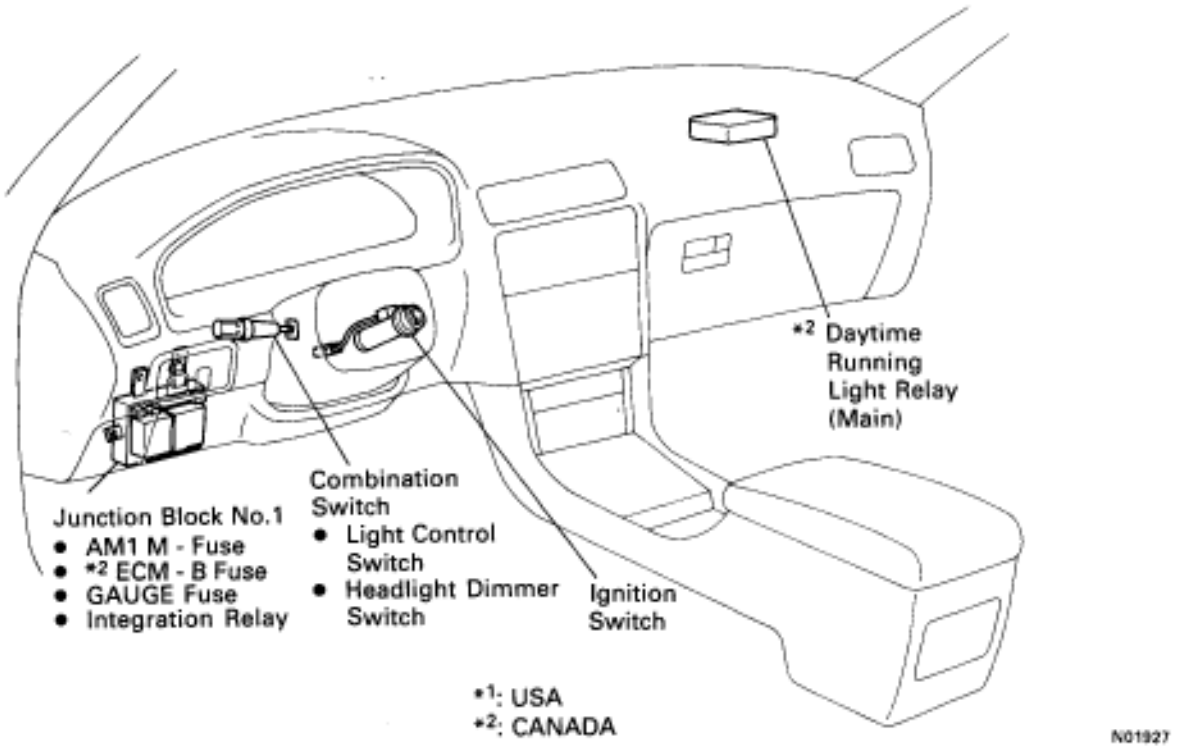
DESCRIPTION

The component parts of this system and their function are described in the following table.

Parts Name	Function
Light Control Switch	(USA) Grounds current from the headlight control relay and taillight control relay via the integration relay, switching each relay and supplying current to the appropriate bulbs in accordance with the switch position. (CANADA) See System Description on BE–36.
Headlight Dimmer Switch	(USA) Grounds current from the headlights in accordance with the switch position, turning on the ”High Beam” lights. In the case of ”FLASH”, it turns the headlight control relay and turns on the ”High Beam” lights. (CANADA) See System Description on BE–36.
Headlight Control Relay	(USA) Turned on by signals from the light control switch and headlight dimmer switch, and supplies current to HEAD–RH and HEAD–LH fuse (CANADA) See System Description on BE–36.
Integration Relay	Carries out ”Light Auto Turn–Off” of the headlights, fog lights and taillights and cuts off current to the light control switch in accordance with signals from the GAUGE fuse and door courtesy switch.
Door Courtesy Switch/Driver’s	Detects when the door is open and sends the appropriate signals to integration relay. (Light Auto Turn–Off System)
Daytime Running Light Relay (CANADA)	See System Description on BE–36.
Parking Brake Switch (CANADA)	Detects when the parking brake lever is released and sends the appropriate signals to daytime running light relay.

PARTS LOCATION

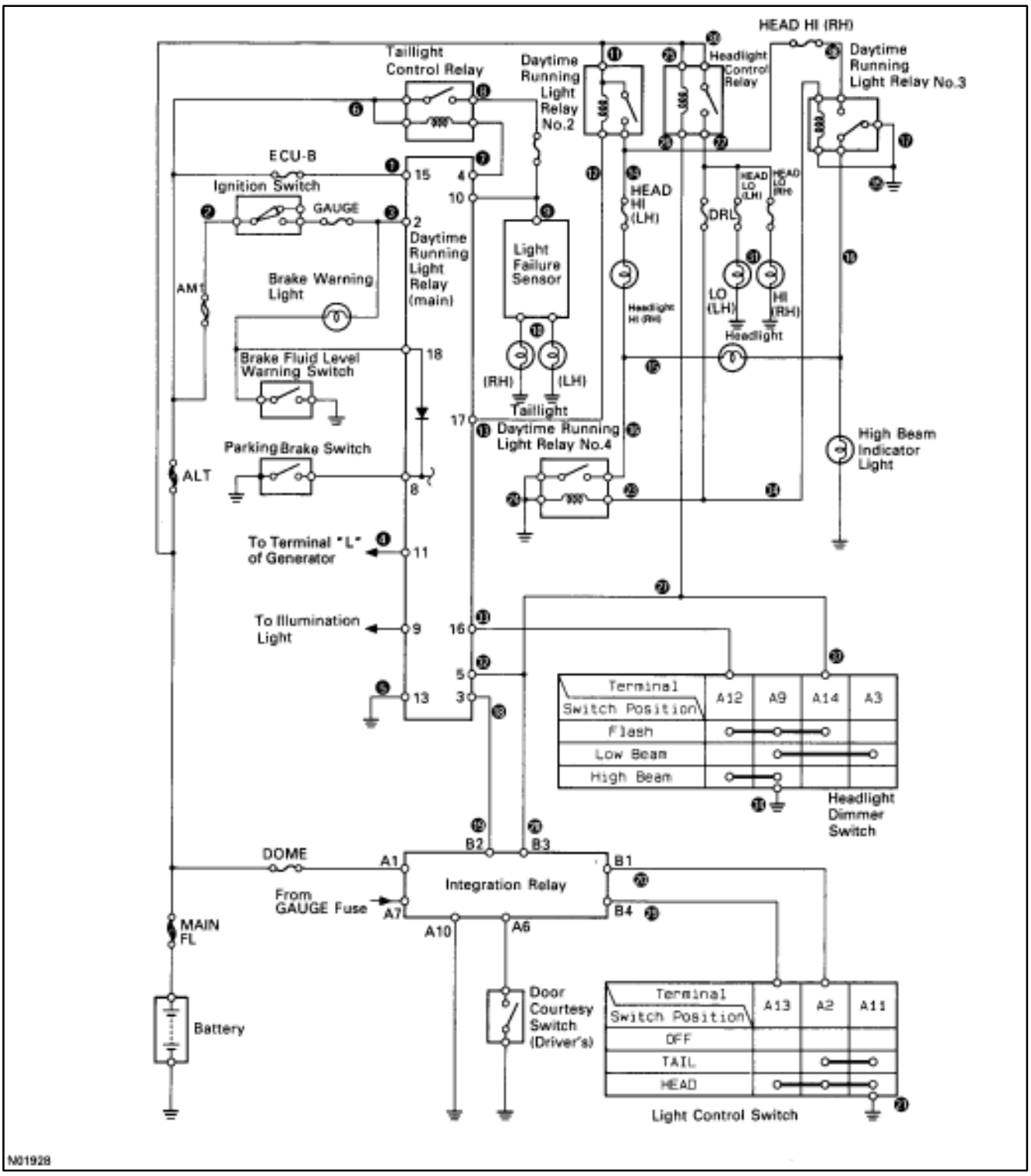




SYSTEM DESCRIPTION (DAYTIME RUNNING LIGHT SYSTEM)

The Daytime Running Light (DRL) system is activated when the engine is started, (but will not light up until brake lever is released. Once the parking brake is released, the DRL light up and will remain on regardless of operation of the parking brake lever.)

In the DRL system of the '92 ES 300, the left and right high beam headlights are connected in series, so the brightness of the DRL system high beam is half the brightness of the high beam headlights in manual operation. The DRL remains on until the ignition switch is turned off.



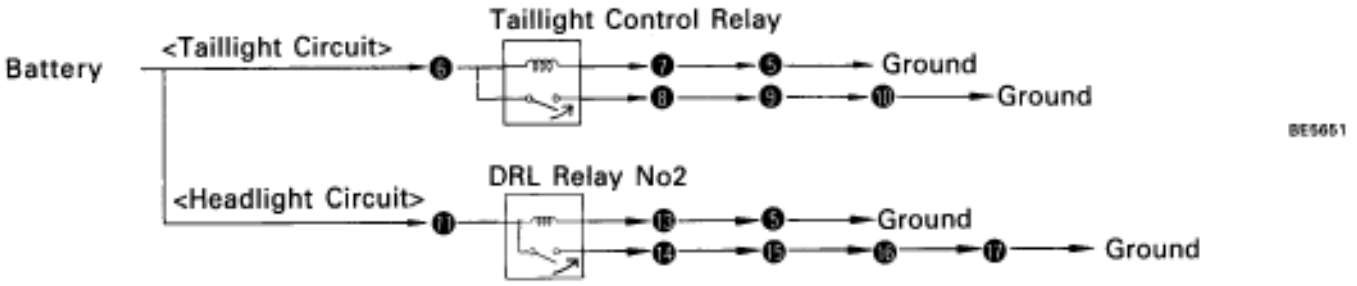
Operation examples (Current flow table)

1. DAYTIME RUNNING LIGHT LIGHTS UP

Switch	Position
Ignition Switch	*ON
Light Control Switch	OFF
Headlight Dimmer Switch	LO or HI

* with Engine running

Condition: Battery positive voltage → **(1)**, Battery positive voltage → **(2)**→**(3)**, Battery positive voltage→**(4)**
Continuity: **(5)** → Ground



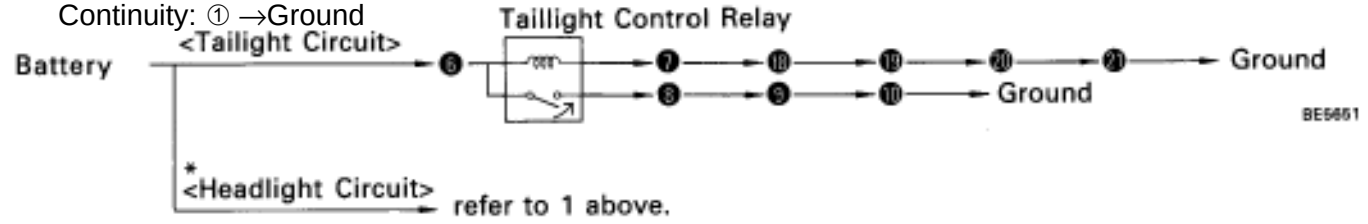
2. TAILLIGHT LIGHTS UP

Switch	Position
Ignition Switch	OFF * or ON
Light Control Switch	TAIL
Headlight Dimmer Switch	LO or HI

N02411

* with Engine running

Condition: Battery positive voltage→ **(1)**, * (Battery positive voltage→ **(2)**→**(3)**, Battery positive voltage→**(4)**)
Continuity: ① →Ground

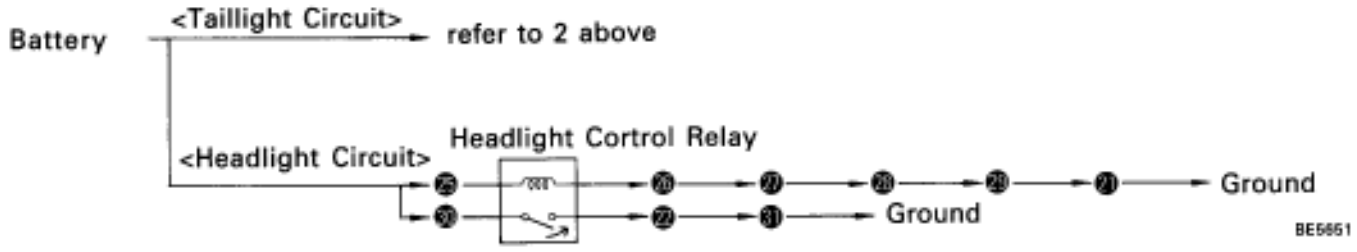


3. HEADLIGHT LOW BEAM LIGHTS UP

Switch	Position
Ignition Switch	OFF * or ON
Light Control Switch	HEAD
Headlight Dimmer Switch	LO

* with Engine running

Condition: Battery positive voltage→ **(1)**, * (Battery positive voltage→ **(2)**→**(3)**, Battery positive voltage→**(4)**)
Continuity: **(5)** →Ground

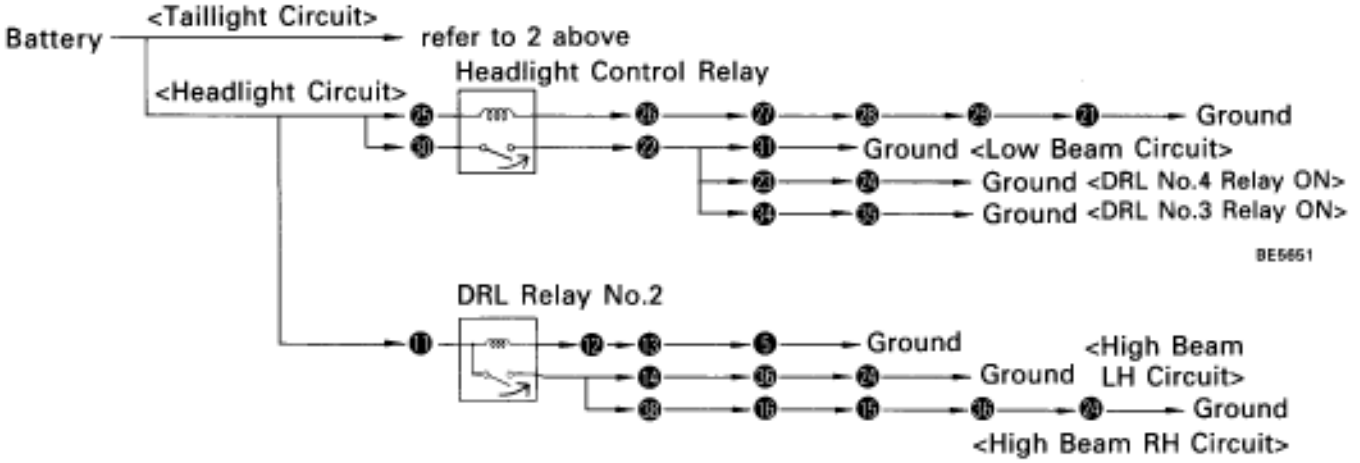


4. HEADLIGHT HIGH BEAM LIGHTS UP

Switch	Position
Ignition Switch	OFF or *ON
Light Control Switch	HEAD
Headlight Dimmer Switch	HI

* with Engine running

Condition: Battery positive voltage→ **(1)**, * (Battery positive voltage→ **(2)**→**(3)**, Battery positive voltage→**(4)**)
Continuity: **(5)** →Ground,**(33)**→**(34)**→Ground

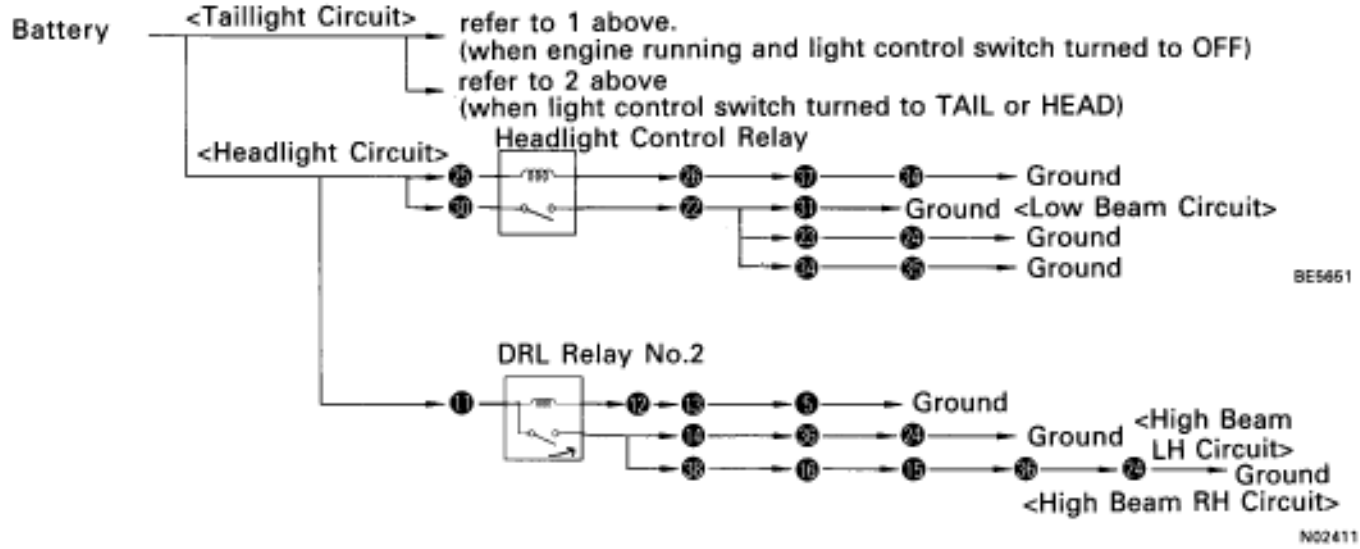


5. HEADLIGHT FLASH

Switch	Position
Ignition Switch	OFF or *ON
Light Control Switch	OFF or TAIL or HEAD
Headlight Dimmer Switch	Flash

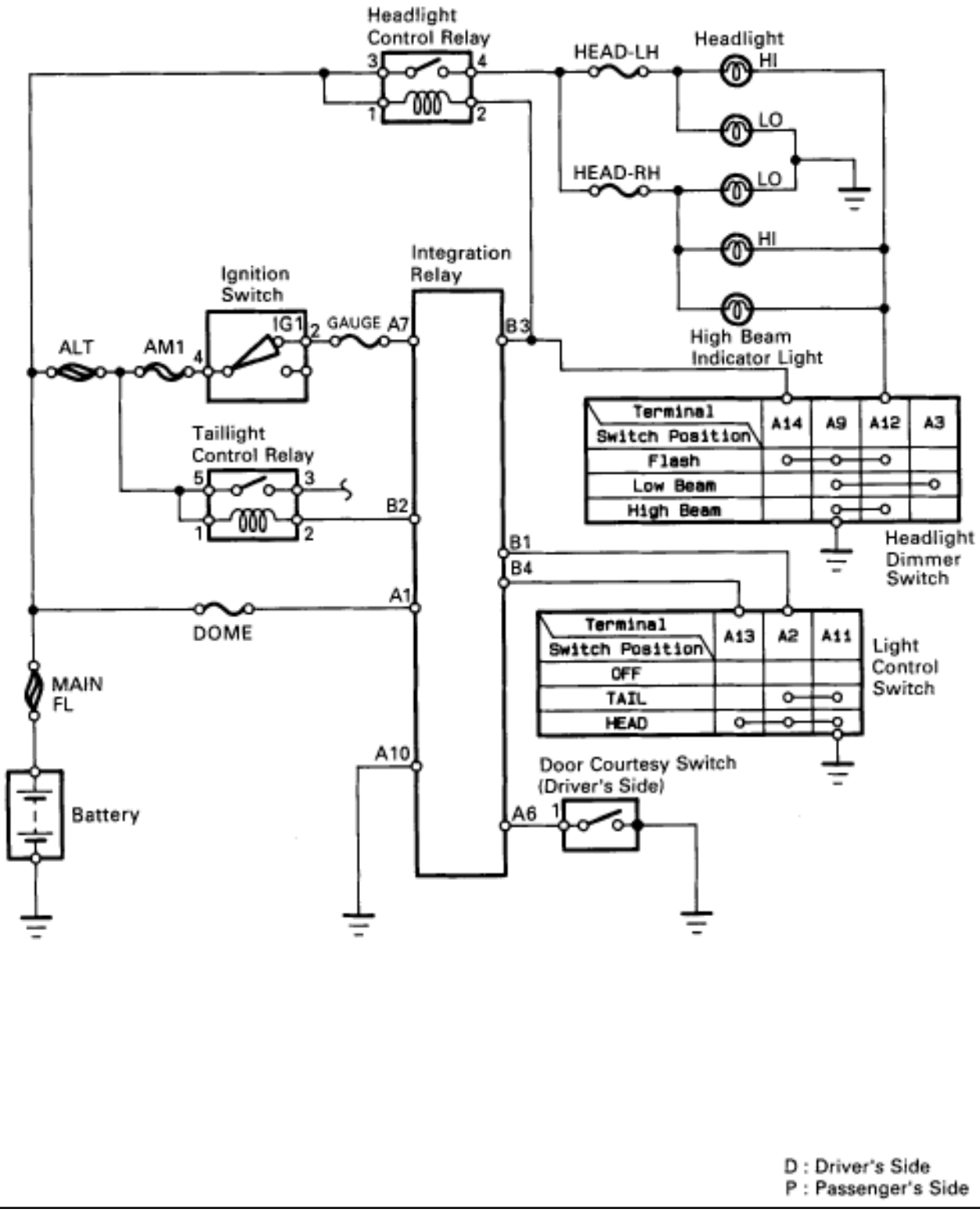
* with Engine running

Condition: Battery positive voltage→ **(1)**, * (Battery positive voltage→ **(2)**→**(3)**, Battery positive voltage→**(4)**)
Continuity: **(5)** → Ground, **(33)**→**(34)**→Ground, **(32)**→**(27)**→**(34)**→Ground

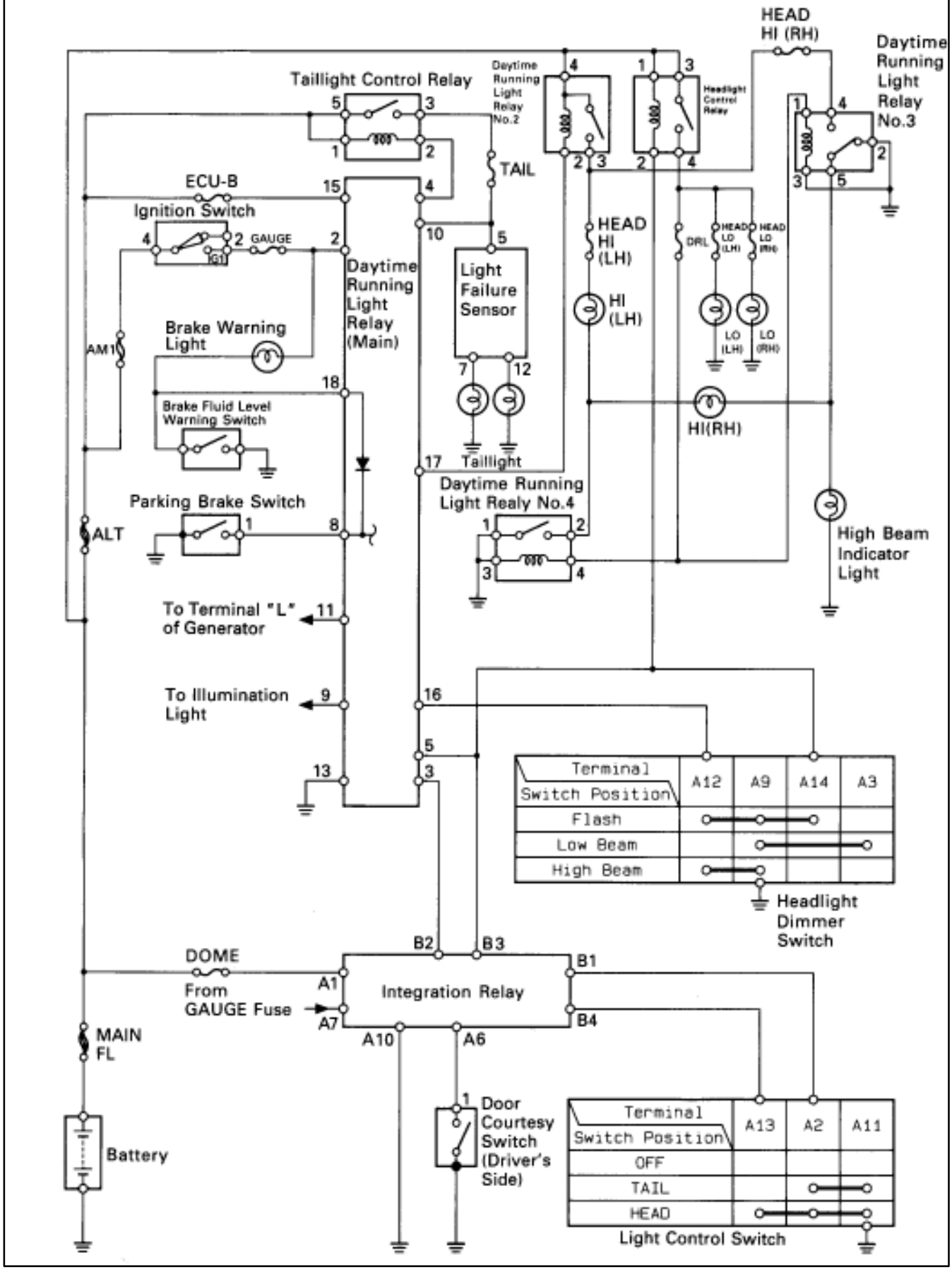


WIRING DIAGRAMS

USA

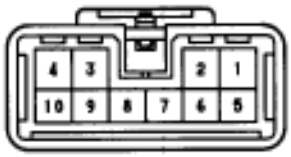


CANADA (Daytime Running Light System)



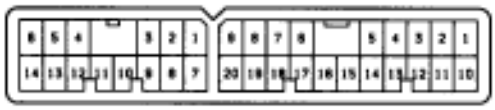
CONNECTOR DIAGRAMS

Ignition Switch



g-10-2-B

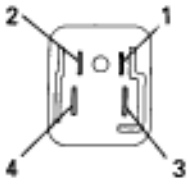
Combination Switch
- Light Control Switch
- Headlight Dimmer Switch



Connector "A" Connector "B"

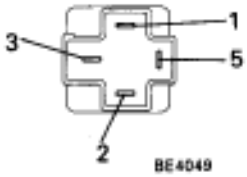
V-34-2

Headlight Control Relay



BE1838

Taillight Control Relay

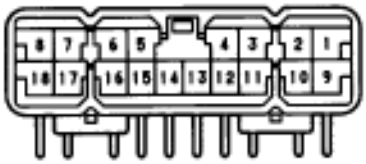


BE4049

Door Courtesy Switch

e-1-1

Daytime Running Light Relay (Main)

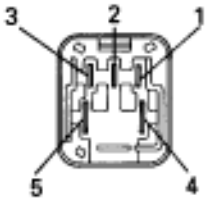


e-18-2-A

Daytime Running Light Relay No.2

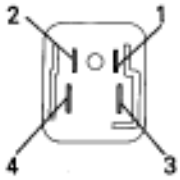
BE1839

Daytime Running Light Relay No. 3



BE1850

Daytime Running Light Relay No.4

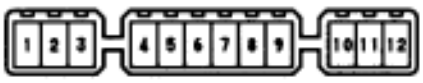


BE1838

Parking Brake Switch

e-1-2

Integration Relay



Connector "A"

S-12-1-A

Connector "B"

h-4-2

TROUBLESHOOTING

You will find the cause of troubles more easily using the table shown below. In this table, the numbers indicate the order priority of the causes in trouble. Check each part in the order shown. If necessary, replace the parts.

(USA)

See page / Part name / Trouble	-	BE–22, 53	BE–6, 22	BE–51	BE–51	BE–6, 22	BE–54	BE–29	BE–6, 20	BE–90	BE–8	-
	MAIN FL	Headlight Control Relay	HEAD - (LH, RH) Fuse	Headlight Dimmer Switch	Light Control Switch	DOME Fuse	Integration Relay	Ignition Switch	GAUGE Fuse	Door Courtesy Switch (Driver's)	Headlight Bulb	Wire Harness
Headlight does not light.(Taillight is normal.)		1	3								4	2
Headlight does not light. (Taillight does not light.)	1	3	4								5	2
Only one side light does not light.			1								2	3
"LO-Beam" does not light.					3						2	1
"HI-Beam" does not light.				1	3							2
"Flash" does not light.				1								2
"Auto Turn-Off System" does not operate.						6	1	3	2	4		5

(CANADA)

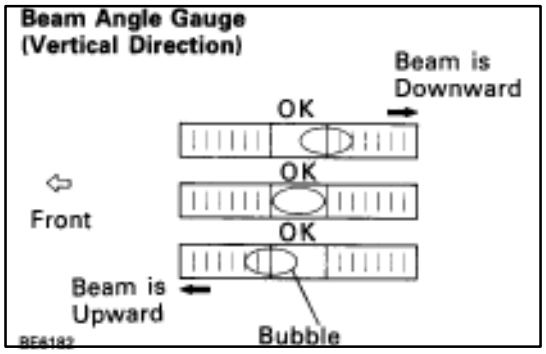
See page / Part name / Trouble	-	MAIN FL	Headlight Control Relay	HEAD LO (LH, RH) Fuse	HEAD HI (LH, RH) Fuse	Headlight Dimmer Switch	Light Control Switch	DOME Fuse	Integration Relay	Ignition Switch	GAUGE Fuse	Door Courtesy Switch (Drivers)	Headlight Bulb	Daytime Running Light Relay (Main)	Daytime Running Light Relay No. 2	Daytime Running Light Relay No. 3	Daytime Running Light Relay No. 4	DRL Fuse	ECU - B Fuse	Wire Harness	Other Parts
	-	BE–53	BE–6, 25	BE–6, 22	BE–51	BE–51	BE–6, 22	BE–54	BE–29	BE–6, 20	BE–90	BE–8	BE–56	BE–25, 53	BE–27, 54	BE–27, 54	BE–6, 27	BE–6, 21	-	-	
Headlight does not light.(Taillight is normal.)																				1	
Headlight does not light. (Taillight does not light.)		1																		2	
Only one side light does not light.				1	1								2							3	
"LO-Beam" does not light.			1	5			2		3				6							4	
"HI-Beam" does not light.					9	7	10		11				10	3	2	4	5	1	6	8	
"Flash" does not light.					9	7							10	3	2	4	5	1	6	8	
"Auto Turn-Off System" does not operate.								6	1	3	2	4								5	
Headlight does not light with engine running and light control SW in OFF					7						1		8	4		5			2	6	*3

*Parking Brake Switch and Terminal L of Generator

HEADLIGHT

HEADLIGHT REPLACEMENT

(See page BO–12)

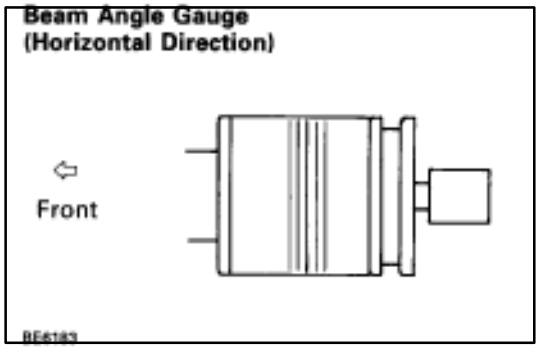


HEADLIGHT AIM INSPECTION

Check the following items before inspection.

- Be sure that the body around the headlight is not deformed.
- Park the vehicle on a level spot.
- The driver gets into the driver's seat and puts the vehicle in a state ready for driving (with a full tank).
- Bounce the vehicle several times.

(Vertical Direction)

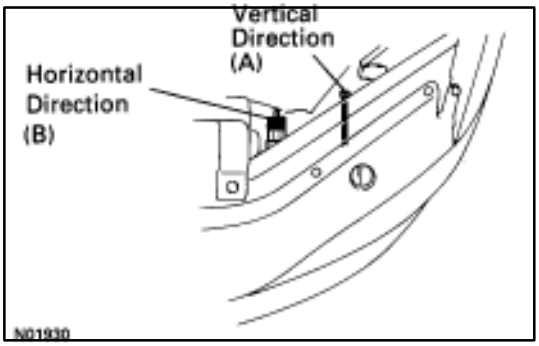


Check that the bubble of the gauge does not deviate from the center of the gauge.

(Horizontal Direction)

Check that the red mark does not deviate for the center of the gauge.

If the error is over the valve specified, adjust headlight aim.



HEADLIGHT AIM ADJUSTMENT

(Vertical Direction)

Turn the bolt A and adjust the bubble of angle gauge to center of the gauge.

HINT: The beam angle will change about 0°19' with one mark.

(Horizontal Direction)

Turn the bolt B and adjust the mark of angle gauge to center of the gauge.

HINT: The beam angle will change about 0°38' with one mark.

NOTICE: The beam angle gauge should only be used when the headlights are correctly installed on the body.

Combination Switch Assembly

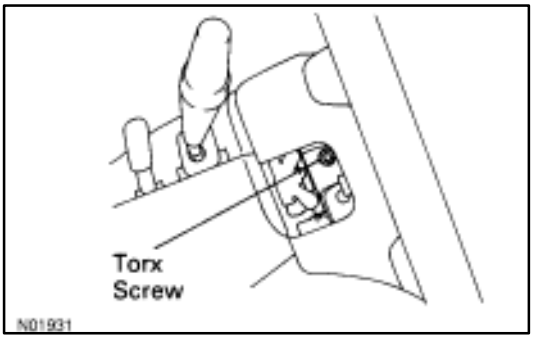
COMBINATION SWITCH ASSEMBLY REMOVAL

1. REMOVE FOLLOWING PARTS:
(See page BO–107)

- Front Pillar Garnish
- Front Inside Scuff Plate
- Front Door Opening Cover
- Cowl Side Trim
- Safety Pad No. 2

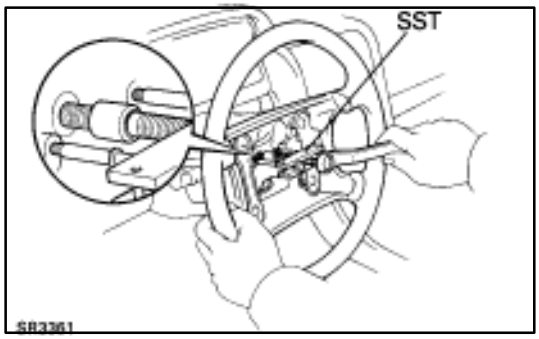
NOTICE:

- **Turn the steering wheel and front wheels to the straight ahead position**
- **Turn the ignition switch to the OFF position, then remove the battery negative terminal.**



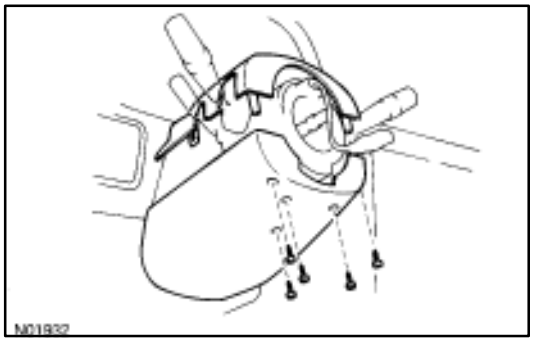
2. REMOVE STEERING WHEEL CENTER PAD

(a) Remove two covers.
(b) Using torx driver or wrench, remove the two torx screws.
Torx wrench T30 (09042–00010)
Torx driver T30 (09041–00030)
(c) Remove center pad and disconnect connector.



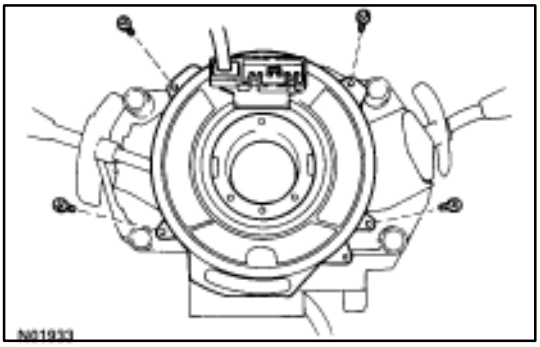
3. REMOVE STEERING WHEEL

(a) Remove the steering nut.
(b) Using SST, remove steering wheel.
SST 09213–31021



4. REMOVE STEERING COLUMN COVER

Remove the five screws and the steering column covers.

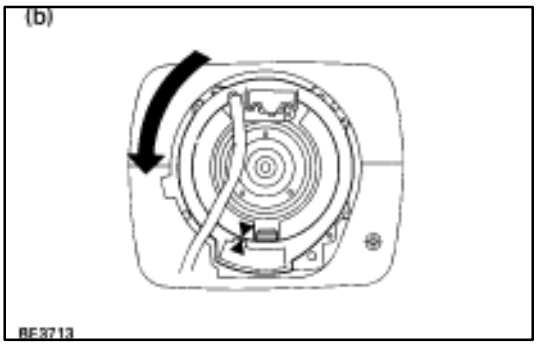


5. REMOVE COMBINATION SWITCH ASSEMBLY

(a) Remove the four screws.

(b) Disconnect connectors. (See page BE–47)
HINT: Since the airbag connector has a 2–stage lock, remove the 1st stage lock, and disconnect the connector.

(c) Remove combination switch assembly from steering column.
HINT: Pull the wire harness spool body to forward and remove wire harness spool body from steering column.



COMBINATION SWITCH INSTALLATION

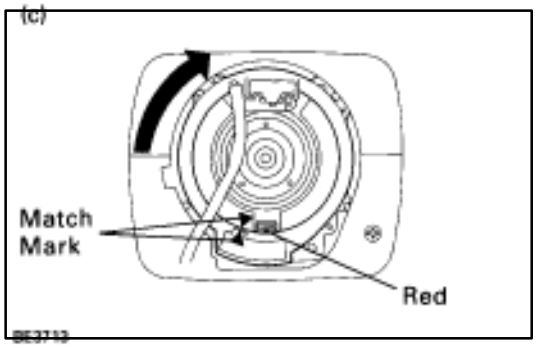
For installation, follow the removal procedure in reverse.

(MAIN POINT OF INSTALLATION)

1. ADJUSTMENT OF SPIRAL CABLE

(a) Check that the front wheels are facing straight ahead.

(b) Turn the spiral cable counterclockwise by hand until it becomes harder to turn the cable.



(c) Then rotate the spiral cable clockwise about 3 turns to align the red mark.
HINT:
- The spiral cable will rotate about 3 turns to either left or right of the center.
- The connector should be straight up.

(d) Install the steering wheel so that the match marks will not be misaligned.

2. INSTALL STEERING SET NUT

Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)

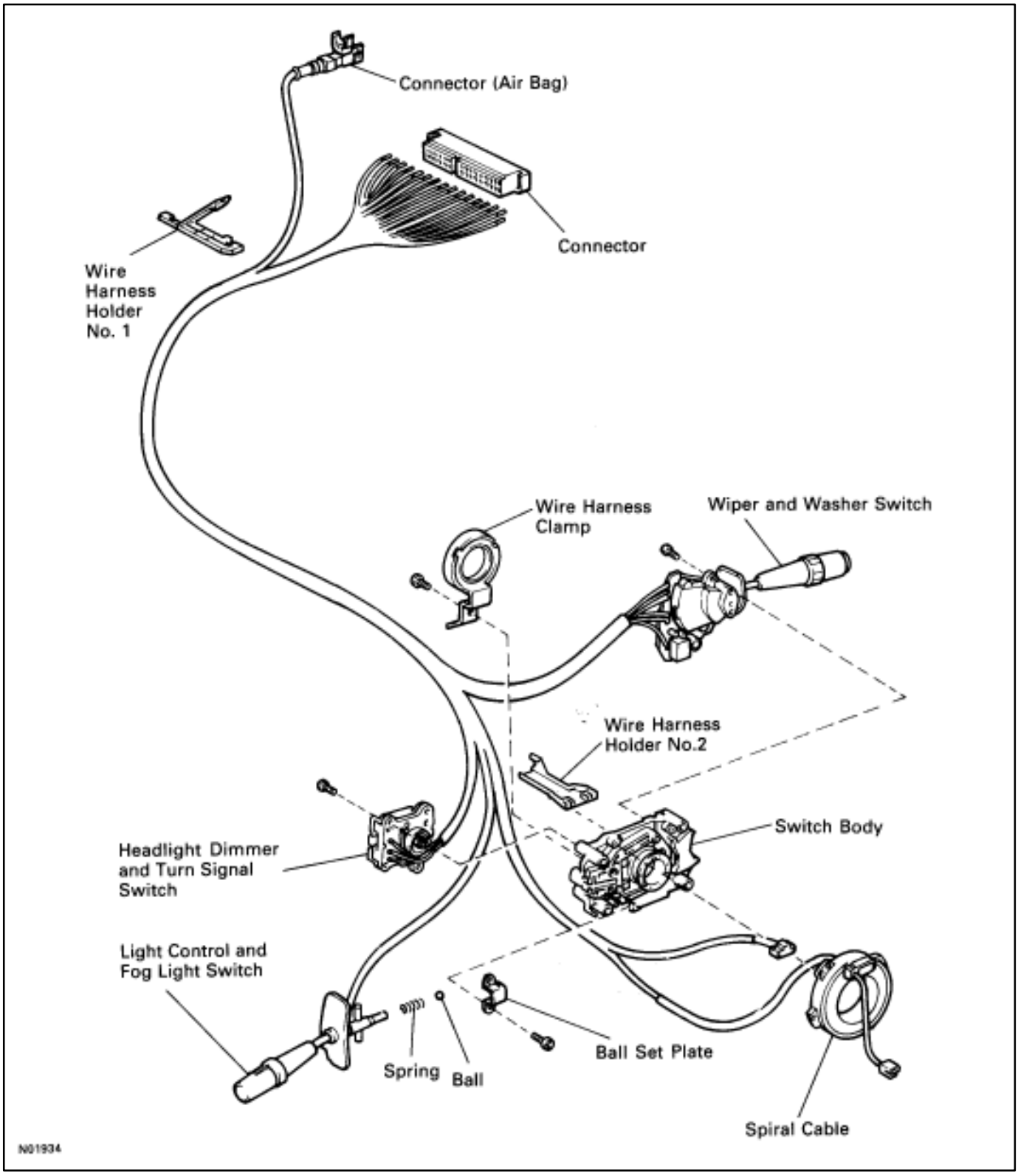
3. INSTALL STEERING WHEEL CENTER PAD

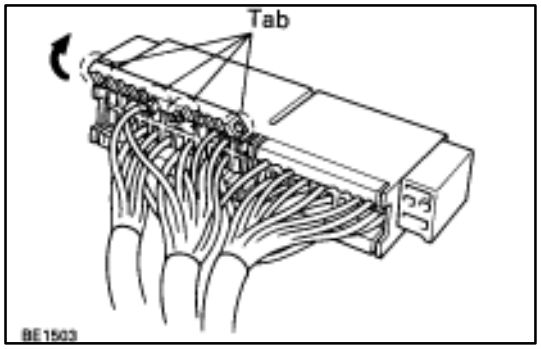
Torque the torx screws.

Torque: 8.8 N·m (90 kgf·cm, 7.8 ft·lbf)

COMBINATION SWITCH ASSEMBLY DISASSEMBLY

(Components)

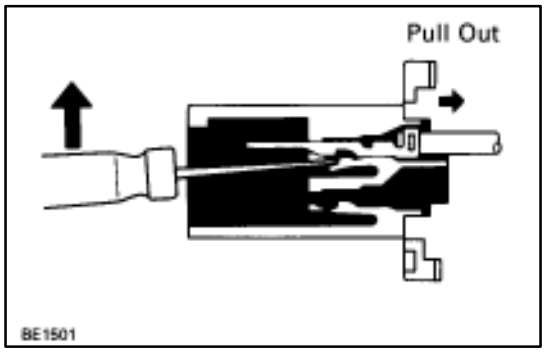




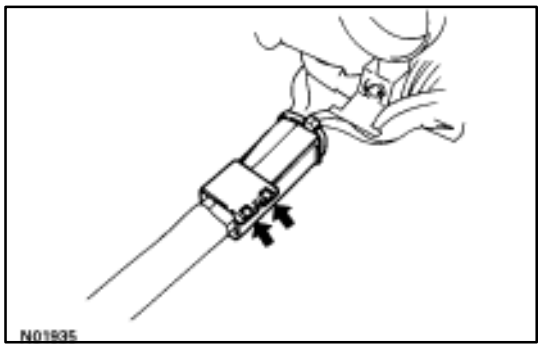
1. REMOVE WIRE HARNESS HOLDER NO. 1

2. REMOVE TERMINALS FROM CONNECTOR

(a) Release four tabs and open the terminal cover.
NOTICE: Do not remove terminal for AIRBAG connector (Yellow).

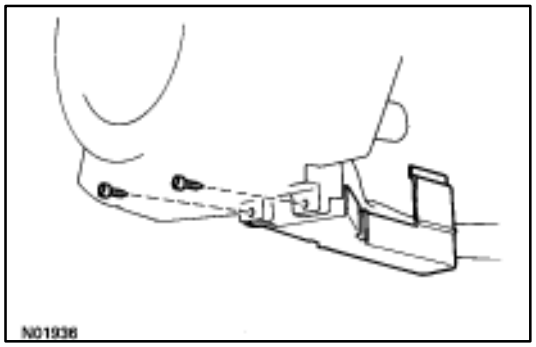


(b) From the open end, insert a miniature screwdriver between the locking lug and terminal.
(c) Pry down the locking lug with the screwdriver and pull the terminal out from the rear.

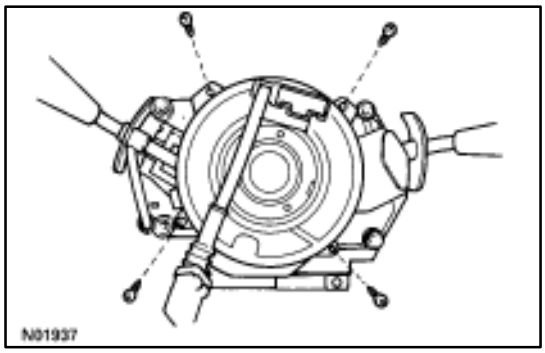


3. REMOVE WIRE HARNESS HOLDER NO. 2

(a) Remove the clamp.
(b) Pry loose two locking lugs

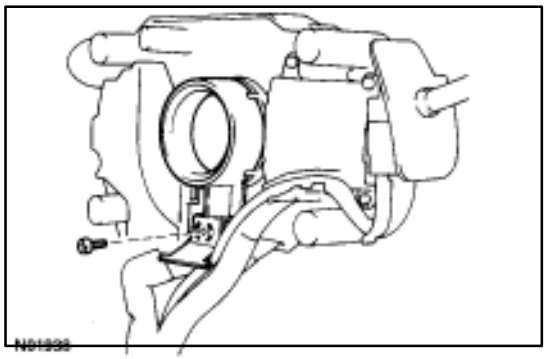


(c) Remove two screws and the wire harness holder No. 2.



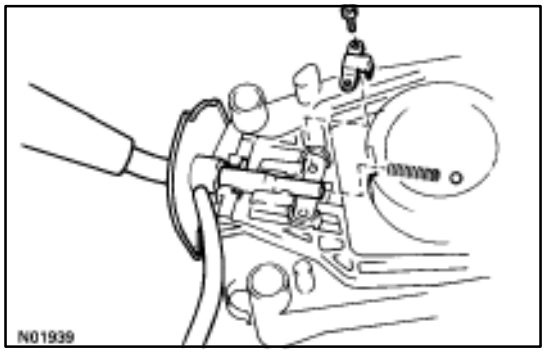
4. REMOVE SPIRAL CABLE SUBASSEMBLY

(a) Disconnect the connector.
(b) Remove the four screws and spiral cable subassembly.



5. REMOVE WIRE HARNESS CLAMP

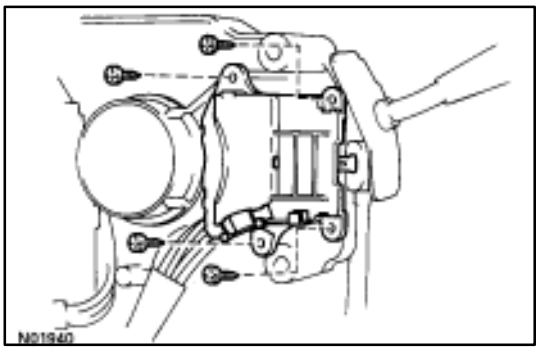
Remove the screw and the wire harness clamp.



6. REMOVE LIGHT CONTROL AND FOG LIGHT SWITCH

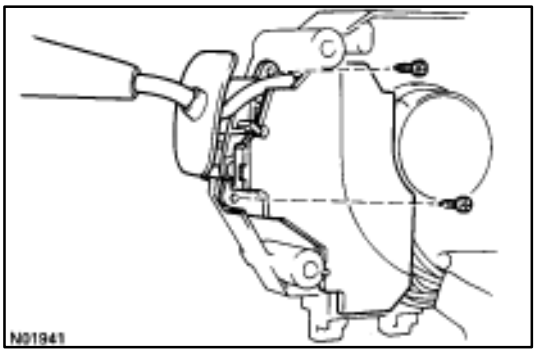
(a) Remove two screws and the ball set plate from the switch body.

(b) Remove the ball and slide out the switch from the switch body with the spring.



7. REMOVE HEADLIGHT DIMMER AND TURN SIGNAL SWITCH

Remove four screws and the headlight dimmer and turn signal switch from the switch body.



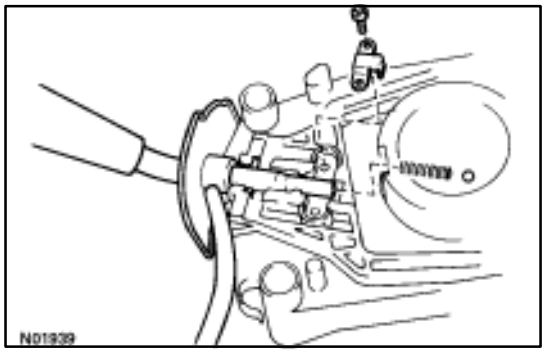
8. REMOVE WIPER AND WASHER SWITCH

Remove two screws and the wiper and washer switch from the switch body.

COMBINATION SWITCH ASSEMBLY

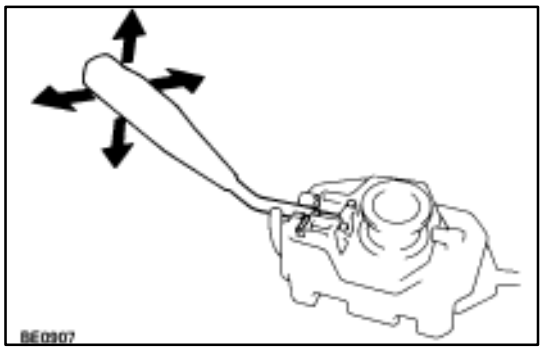
INSTALL PARTS OF COMBINATION SWITCH IN REVERSE SEQUENCE OF DISASSEMBLY

(MAIN POINT OF INSTALLATION)

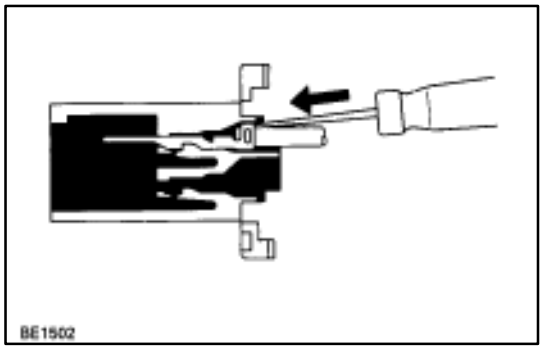


1. INSTALL LIGHT CONTROL SWITCH

(a) Slide the switch and install the switch body.
(b) Set the lever in the HI position, and install the ball and plate.

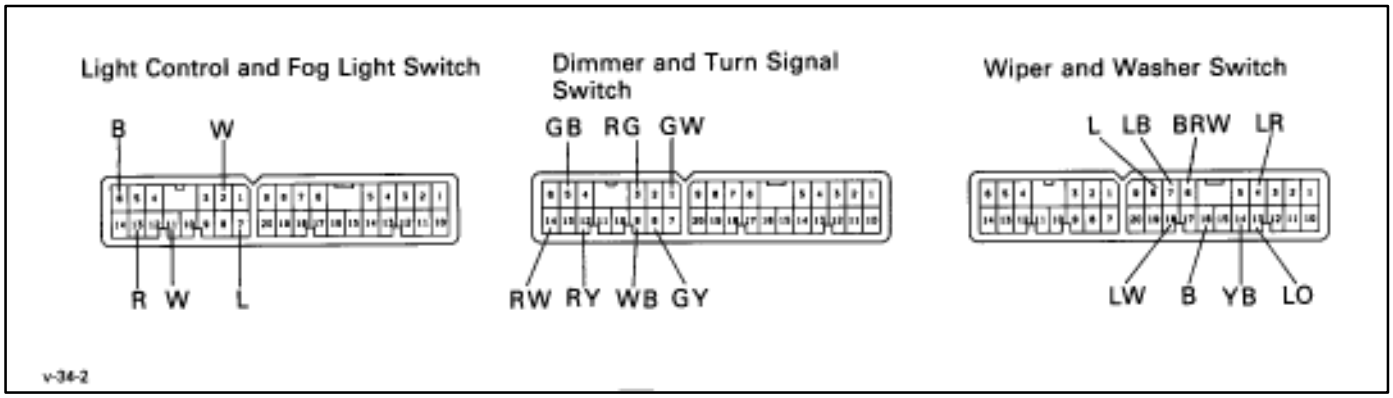


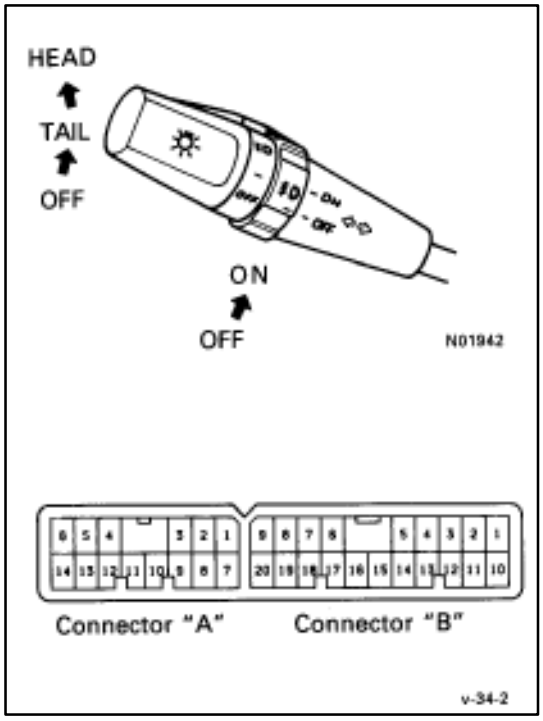
(c) After installing the light control switch to the switch body, insure that the switch operation is smooth.

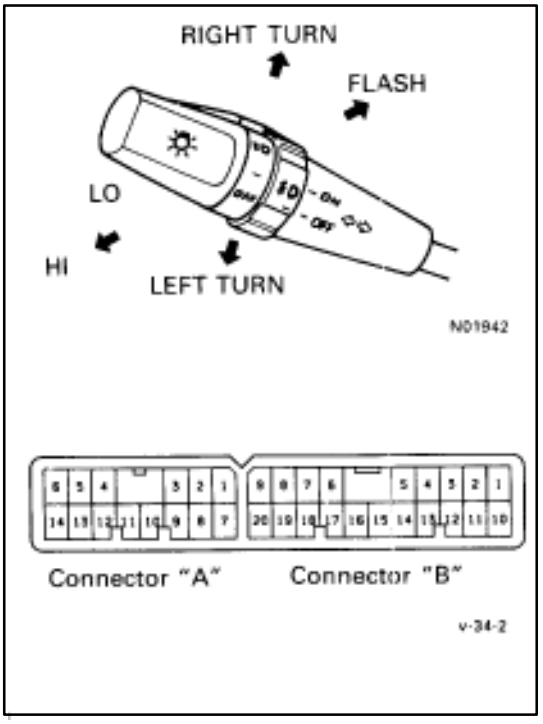


2. INSTALL TERMINALS TO CONNECTOR

- Push in the terminal until it is securely locked in the connector lug.
- Install each switch terminal as shown in the figure.







COMBINATION SWITCH INSPECTION

1. INSPECT LIGHT CONTROL SWITCH (Continuity)

Inspect the switch continuity between terminals.

Terminal / Switch position	A2	A11	A13
OFF			
TAIL	○——	——○	
HEAD	○——	——○	——○

If continuity is not as specified, replace the switch.

2. INSPECT FOG LIGHT SWITCH (Continuity)

Inspect the switch continuity between terminals.

Terminal / Switch position	A6	A7
OFF		
ON	○——	——○

If continuity is not as specified, replace the switch.

3. INSPECT DIMMER SWITCH (Continuity)

Inspect the switch continuity between terminals.

Terminal / Switch position	A3	A9	A12	A14
Flash		○——	——○	——○
Low beam	○——	——○		
High beam		○——	——○	

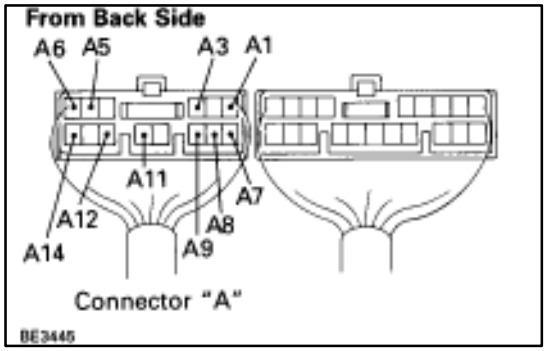
If continuity is not as specified, replace the switch.

4. INSPECT TURN SIGNAL SWITCH (Continuity)

Inspect the switch continuity between terminals.

Terminal / Switch position	A1	A5	A8
Left turn	○——	——○	
Neutral			
Right turn	○——		——○

If continuity is not as specified, replace the switch.



5. INSPECT COMBINATION SWITCH CIRCUIT

Connect the wire harness side connector to the combination switch and inspect wire harness side connector from the back side as shown.

(Light Control Switch Circuit)

Check for	Tester connection	Condition	Specified value
Continuity	A11–Ground	Constant	Continuity

(Fog Light Switch Circuit)

Check for	Tester connection	Condition		Specified value
Voltage	A6–Ground	Light control switch position	HEAD	Battery positive voltage
			OFF or TAIL	No voltage
Continuity	A7–Ground	Headlight dimmer switch position	Low beam	Continuity
			High beam or flash	No continuity

(Headlight Dimmer Switch Circuit)

Check for	Tester connection	Condition		Specified value
Voltage	A3–Ground	Light control switch HEAD and fog light switch position	ON	Battery positive voltage
			OFF	No voltage
	A12–Ground	Light control switch HEAD and Headlight dimmer switch position	High beam or flash	Battery positive voltage
			Low beam	No voltage
	A14–Ground	Constant		Battery positive voltage
Continuity	A9–Ground	Constant		Continuity

(Turn Signal Switch Circuit)

Check for	Tester connection	Condition		Specified value
Voltage	A1–Ground	Hazard warning switch ON		Battery positive voltage↔OV
		Ignition switch ON and turn signal switch position	Left or Right	Battery positive voltage↔OV
			Neutral	No voltage
Continuity	A5–Ground	Constant		*Continuity
	A8–Ground	Constant		*Continuity
*There is resistance because this circuit is grounded through the bulb.				

If the circuit is not as specified, refer to BE–39,40,69 wiring diagram and inspect the circuits connected to other parts.

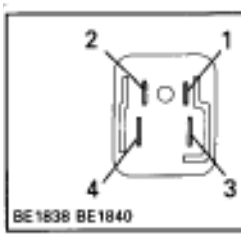
HEADLIGHT CONTROL RELAY

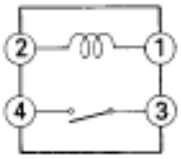
HEADLIGHT CONTROL RELAY INSPECTION

INSPECT HEADLIGHT CONTROL RELAY

(Continuity)

Inspect relay continuity between terminals.





BE1838 BE1840

Terminal / Condition	1	2	3	4
Constant	○	∿	○	
Apply battery positive voltage to terminals 1 and 2.			○	○

If continuity is not as specified, replace the relay.

(Relay Circuit)

(See page BE–22)

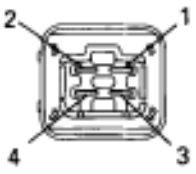
DAYTIME RUNNING LIGHT RELAY NO.2

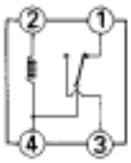
DAYTIME RUNNING LIGHT RELAY NO.2 INSPECTION

INSPECT DAYTIME RUNNING LIGHT RELAY NO.2

(Continuity)

Inspect relay continuity between terminals.





BE1839 BE1842

Terminal / Condition	1	2	3	4
Constant	○	○	∿	○
		○		○
Apply battery positive voltage to terminals 2 and 4.		○		○

If continuity is not as specified, replace the relay.

(Relay Circuit)

(See page BE–25)

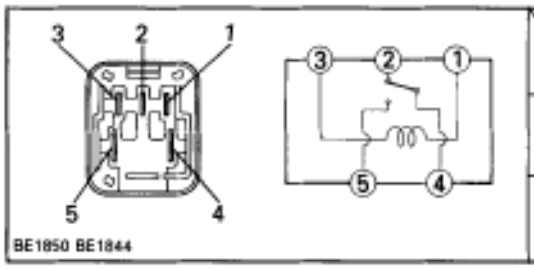
DAYTIME RUNNING LIGHT RELAY NO.3

DAYTIME RUNNING LIGHT RELAY NO.3 INSPECTION

INSPECT DAYTIME RUNNING LIGHT RELAY NO.3

(Continuity)

Inspect relay continuity between terminals.



Terminal / Condition	1	2	3	4	5
Constant	○	○	○	○	
Apply battery positive voltage to terminals 1 and 3.				○	○

If continuity is not as specified, replace the relay.

(Relay Circuit)

(See page BE–27)

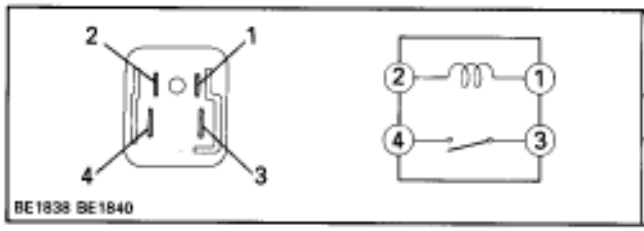
DAYTIME RUNNING LIGHT RELAY NO.4

DAYTIME RUNNING LIGHT RELAY NO.4 INSPECTION

INSPECT DAYTIME RUNNING LIGHT RELAY NO.4

(Continuity)

Inspect relay continuity between terminals.



Terminal / Condition	1	2	3	4
Constant	○	○		
Apply battery positive voltage to terminals 1 and 2.			○	○

If continuity is not as specified, replace the relay.

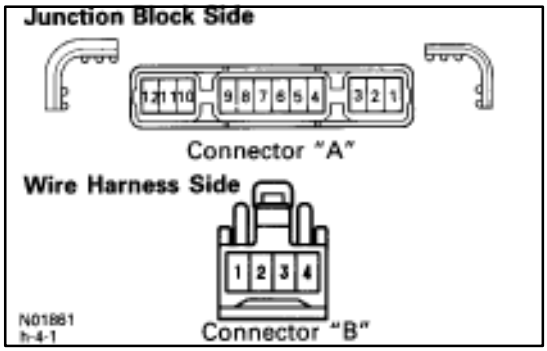
(Relay Circuit)

(See page BE–27)

INTEGRATION RELAY

INTEGRATION RELAY REMOVAL AND INSTALLATION

(See page BE–32)



INTEGRATION RELAY INSPECTION

INSPECT INTEGRATION RELAY

(Relay Circuit/Light Auto Turn Off System)

Remove the relay from junction block and inspect the connectors on the wire harness and junction block side as shown in the chart.

Check for	Tester connection	Condition		Specified value
Continuity	B1–Ground	Light control switch position	OFF	No continuity
			TAIL or HEAD	Continuity
	B4–Ground	Light control switch position	OFF or TAIL	No continuity
			HEAD	Continuity
	A10–Ground	Constant		Continuity
	A6–Ground	Driver's door courtesy Switch	OFF (Door closed)	No continuity
			ON (Door opened)	Continuity
Voltage	B2–Ground	Constant		Battery positive voltage
	B3–Ground	Constant		Battery positive voltage
	A7–Ground	Ignition switch position	LOCK or ACC	No voltage
			ON	Battery positive voltage
	A1–Ground	Constant		Battery positivevoltage

If the circuit is as specified, trying replacing the relay with a new one.

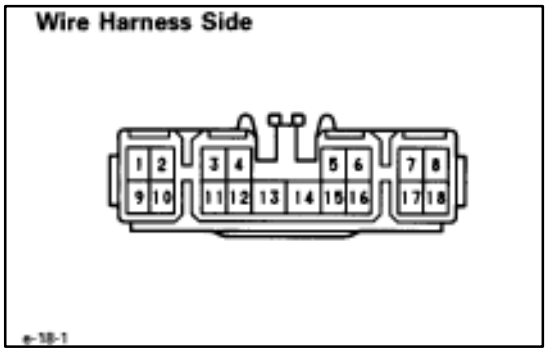
If the circuit is not as specified, refer to BE–39,40 wiring diagram and inspect the circuits connected to other parts.

DAYTIME RUNNING LIGHT RELAY

DAYTIME RUNNING LIGHT RELAY (MAIN) REMOVAL AND INSTALLATION

1. REMOVE DAYTIME RUNNING LIGHT RELAY (MAIN) (See page BO–107)

(a) Remove the safety pad.
(b) Disconnect the connector.
(c) Remove the screw and the relay.



2. INSTALL DAYTIME RUNNING LIGHT RELAY (MAIN)

For installation, follow the removal procedure in reverse.

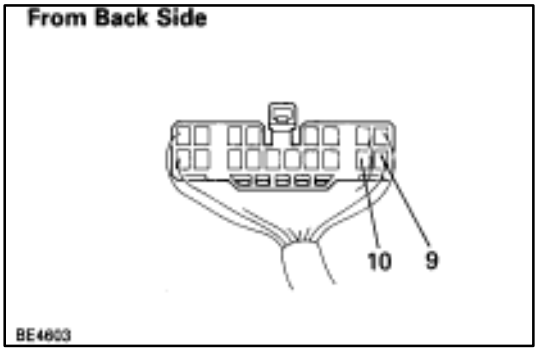
DAYTIME RUNNING LIGHT RELAY (MAIN) INSPECTION

INSPECT DAYTIME RUNNING LIGHT RELAY (MAIN) (Circuit/Wire Harness Side)

Disconnect the connector from relay and inspect the connector on wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Continuity	3–Ground	Light control switchposition	OFF	No continuity
			TAIL or HEAD	Continuity
	5–Ground	Light control switch position	OFF or TAIL	No continuity
			HEAD	Continuity
		Headlight dimmer switch position	Low beam or high beam	No continuity
			Flash	Continuity
	16–Ground	Headlight dimmer switch position	Low beam	No continuity
			Flash or High beam	Continuity
	8–Ground	Parking brake switch position	OFF (Parking brake lever released)	No continuity
			ON (Parking brake lever pulled up)	Continuity
	13–Ground	Constant		Continuity
Voltage	2–Ground 18–Ground	Ignition switch position	LOCK or ACC	No voltage
	4–Ground 15–Ground 17–Ground		ON or START	Battery positive voltage
		Constant		Battery positive voltage
	11–Ground	Engine	Stop	No voltage
			Running	Battery positive voltage

If circuit is as specified, perform the inspection on the following page.
If circuit is not as specified, refer to BE–40 wiring diagram and inspect the circuits.



(Relay Circuit/Connector connected)
Connect the wire harness side connector to the relay and inspect wire harness side connector from the back side as shown.

Check for	Tester connection	Condition		Specified value
Voltage	9–Ground	Light control switch position	OFF	No voltage
			TAIL or HEAD	Battery positive voltage
	10–Ground	Light control switch position	OFF	No voltage
			TAIL or HEAD	Battery positive voltage

If circuit is as specified, trying replacing the relay with a new one.
If circuit is not as specified, refer to BE–40 wiring diagram and inspect the circuits connected to other parts.

TAILLIGHT CONTROL RELAY
(See page BE–61)

DOOR COURTESY SWITCH
(See page BE–90)

PARKING BRAKE SWITCH
(See page BE–166)

IGNITION SWITCH
(See page BE–29)

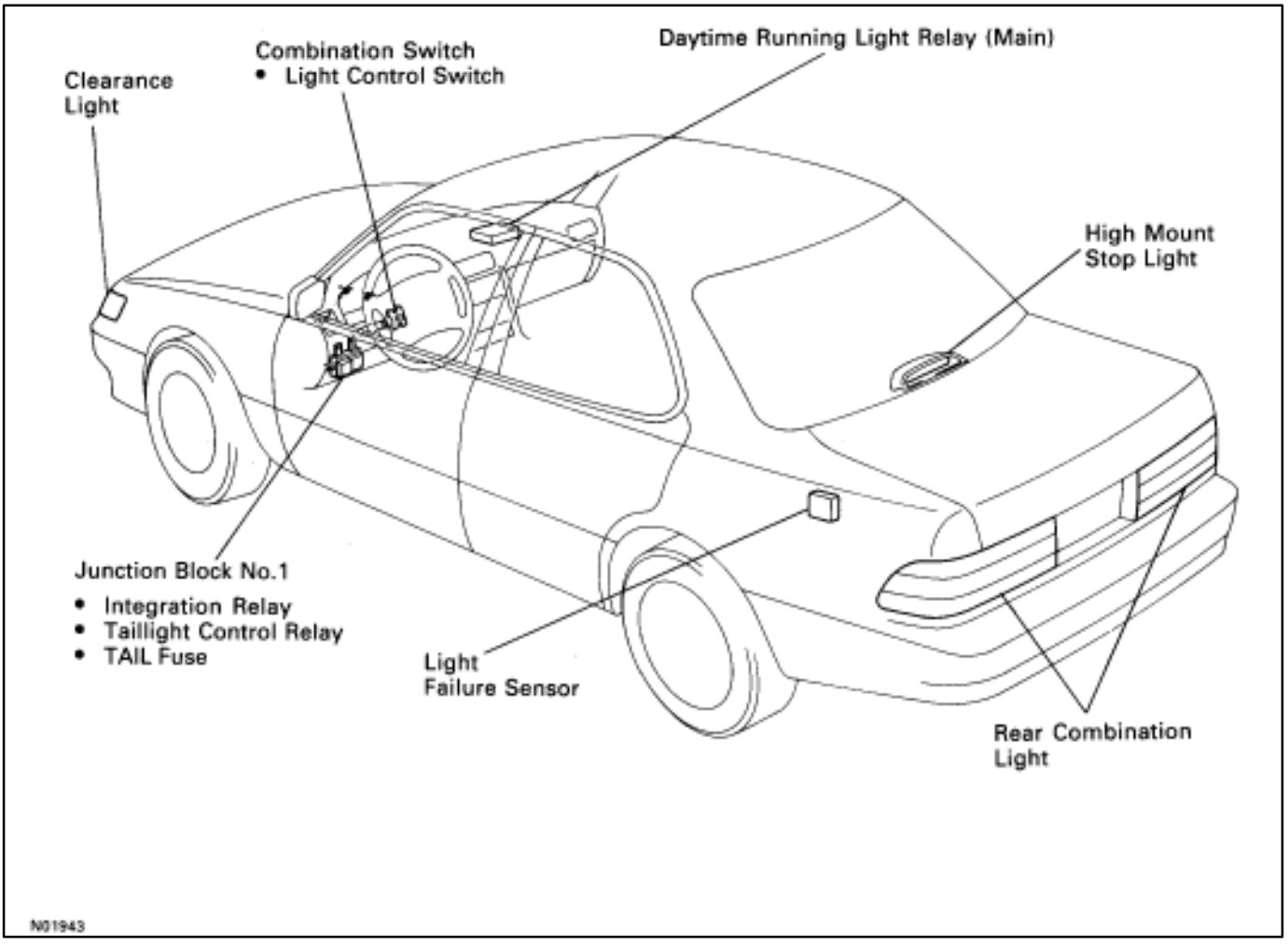
TAILLIGHT SYSTEM

DESCRIPTION

The component parts of this system and their function are as shown in the following table.

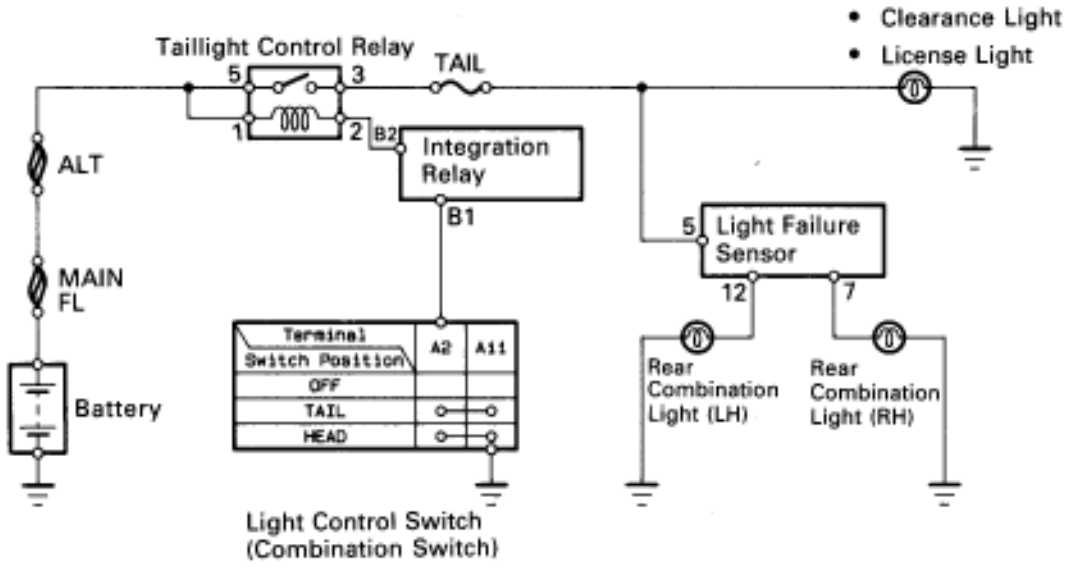
Parts Name	Function
Light Control Switch	Grounds current from the taillight control relay via the integration relay, switching each relay and supplying current to the appropriate bulbs in accordance with the switch position.
Taillight Control Relay	Turned on by signals from the light control switch and supplies current to each bulb.
Integration Relay	Carries out ”Light Auto Turn–Off” of the headlights, fog lights and taillights and cuts off current to the light control switch in accordance with signals from the GAUGE use and door courtesy switch.
Light Failure Sensor	This sensor senses when a bulb in rear combination light is burnt out and lights up a warning light.
Daytime Running Light Relay (CANADA)	Refer to BE–36

PARTS LOCATION



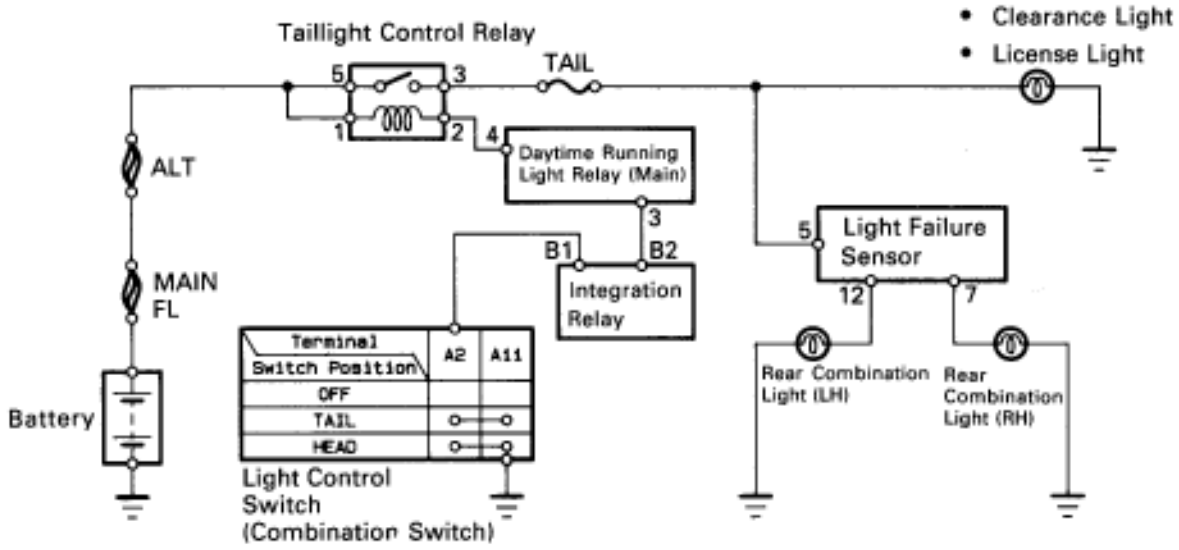
WIRING AND CONNECTOR DIAGRAMS

• USA



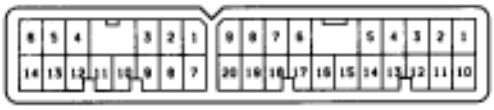
N01944

•CANADA



N01945

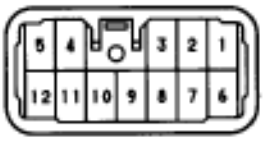
Light Control Switch (Combination Switch)



Connector "A" Connector "B"

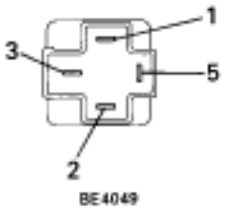
v-34-2

Light Failure Sensor



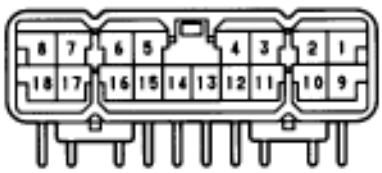
e-12-2-B

Taillight Control Relay



BE4049

Daytime Running Light Relay (Main)



e-18-2-A

Integration Relay

Connector "B"

h-4-2

TROUBLESHOOTING

You will find the cause of troubles more easily using the table well shown below. In this table, the numbers indicate the order priority of the causes in troubles. Check each part in the order shown. If necessary, replace the parts.

	See page	BE–6, 20	BE–20, 61	BE–51	BE–54	BE–66	BE–90	BE–20	BE–56	BE–6, 20	–	BE–8	–
	Part name / Trouble	TAIL Fuse	Taillight Control Relay	Light Control Switch	Integration Relay	Light Failure Sensor	Door Courtesy Switch (Driver's)	GAUGE Fuse	Daytime Running Light Relay(Main)	ECM – B Fuse	Wire Harness	Bulb	Other Parts
USA	Taillight does not light. (Headlight does not light.)			1	2						3		
USA	Taillight does not light. (Headlight is normal.)	1	2	3	4						5		
USA	Only one light does not light.										2	1	
USA	Rear combination light does not light.					2					1	3	
USA	"Light Auto Turn-Off System" does not operate.				1		4	3			2		
CANADA	Taillight does not light. (Headlight does not light.)			1	3				2		4		
CANADA	Taillight does not light. (Headlight is normal.)	1	2	4	5				3		6		
CANADA	Only one light does not light.										2	1	
CANADA	Rear combination light does not light.					2					1	3	
CANADA	"Light Auto Turn-Off System" does not operate.				1		5	2	3		4		
CANADA	Taillight does not light with engine running and light control switch OFF							1	2	3	5		*1 4

*1: Terminal L of Alternator and Parking Brake Switch

Clearance Light

CLEARANCE LIGHT REPLACEMENT
(See page BO–12)

Rear Combination Light

REAR COMBINATION LIGHT REPLACEMENT
(See page BO–60)

Combination Switch Assembly

(See page BE–45)

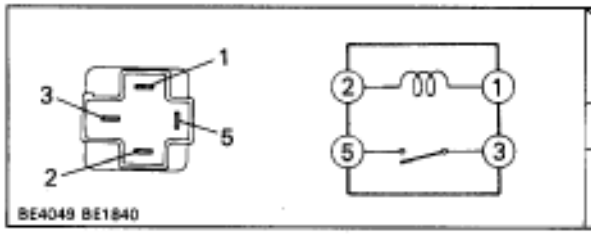
HINT: Inspect the light control switch.

Taillight Control Relay

TAILLIGHT CONTROL RELAY INSPECTION
INSPECT TAILLIGHT CONTROL RELAY

(Continuity)

Inspect relay continuity between terminals.



Terminal / Condition	1	2	3	5
Constant	○—○			
Apply battery positive voltage to terminals 1 and 2.			○—○	

If continuity is not as specified, replace the relay.

(Relay Circuit)
(See page BE–20)

Light Failure Sensor

(See page BE–66)

Integration Relay

(See page BE–54)

HINT: Inspect ”Light Auto Turn–Off System”.

Daytime Running Light Relay (Main)

(See page BE–56)

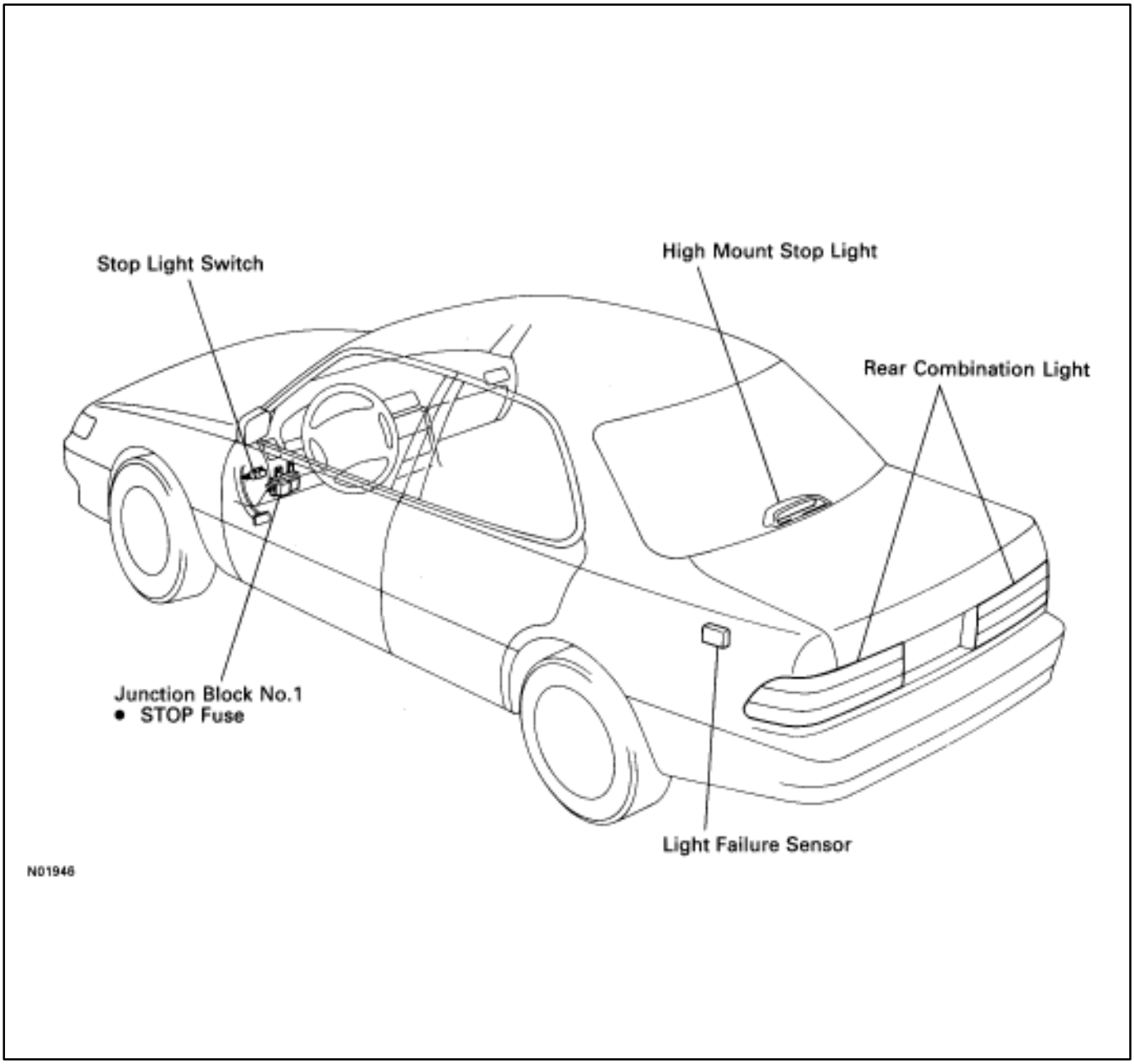
STOP LIGHT SYSTEM

DESCRIPTION

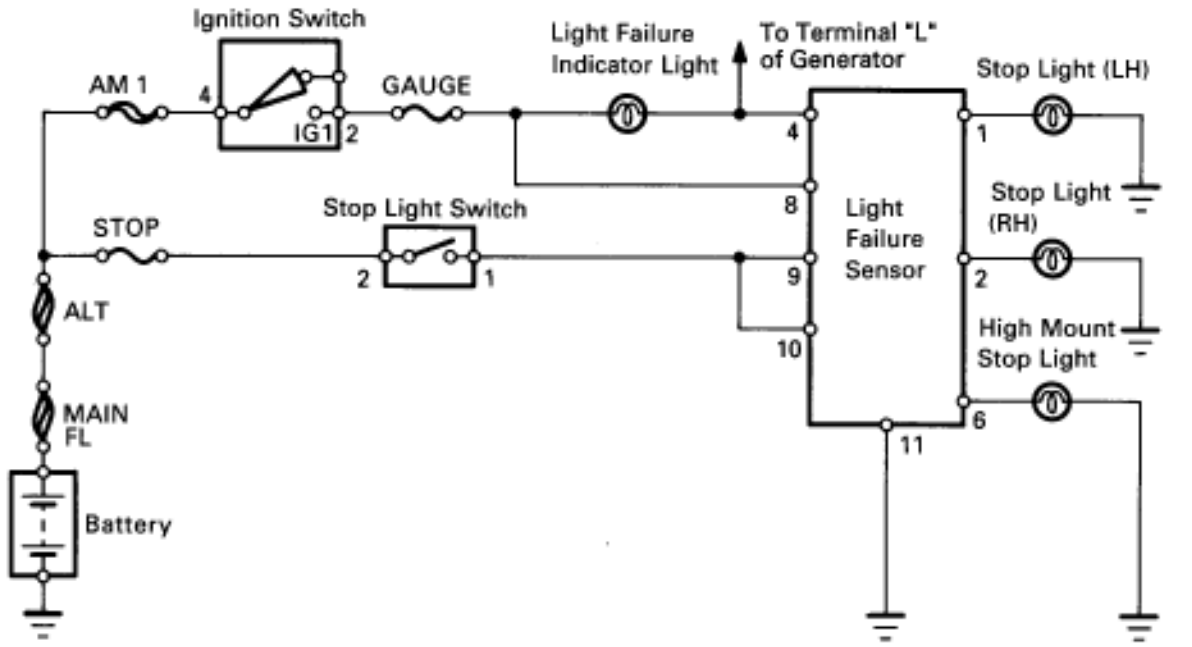
The component parts of this system and their function are as shown in the following table.

Parts Name	Function
Stop Light Switch	Creates a closed circuit for current from the STOP fuse when the brake pedal is depressed, thus turning on the stop lights.
Light Failure Sensor	This sensor senses when a bulb in rear combination light is burnt out and lights up a warning light.

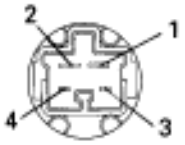
PARTS LOCATION



WIRING AND CONNECTOR DIAGRAMS



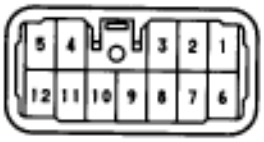
Stop Light Switch



BE6233

BE6234

Light Failure Sensor



e-12-2-B

TROUBLESHOOTING

You will find the cause of trouble more easily using the table shown below. In this table, the numbers indicate the order priority of the causes in trouble. Check each part in the order shown. If necessary, replace the parts.

See page / Part name / Trouble	STOP Fuse	Stop Light Switch	Light Failure Sensor	Wire Harness	Bulb
	BE–6, 20	BE–65	BE–66		BE–8
Stop light does not light up.	1	2	3	4	
Stop light always lights up.		1		2	
Only one light always lights up.				1	
Only one light does not light.				2	1

REAR COMBINATION LIGHT

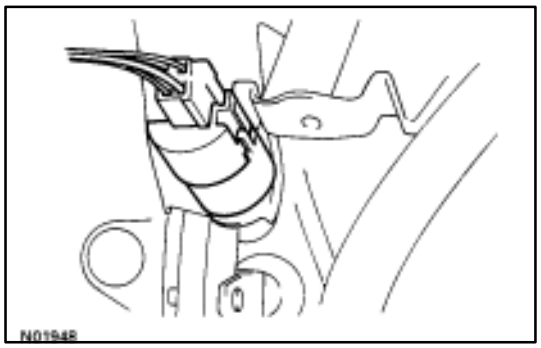
REAR COMBINATION LIGHT REPLACEMENT

(See page BO–60)

HIGH MOUNT STOP LIGHT

HIGH MOUNT STOP LIGHT REPLACEMENT

(See page BO–140)



STOP LIGHT SWITCH

STOP LIGHT SWITCH REMOVAL AND INSTALLATION

1. REMOVE STOP LIGHT SWITCH

(a) Remove instrument panel subassembly cover under No.1 and brake pedal return spring.
(b) Disconnect connector.
(c) Remove a nut and switch.

2. ADJUSTMENT OF STOP LIGHT SWITCH

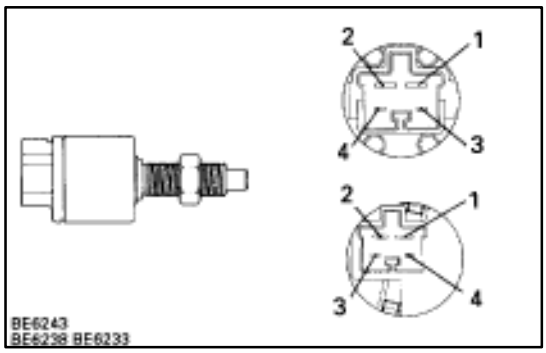
(See step on page BR–8)

3. INSTALL STOP LIGHT SWITCH

For installation, follow the removal procedure in reverse.

STOP LIGHT SWITCH INSPECTION

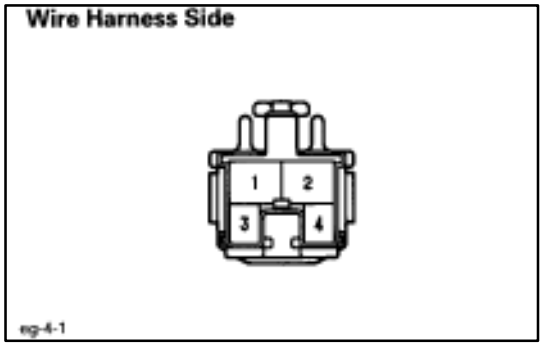
INSPECT STOP LIGHT SWITCH (Continuity)



Inspect the switch continuity between terminals.

Terminals / Switch position	1	2	3	4
Switch pin free (Brake pedal depressed)	○	○		
Switch pin pushed in (Brake pedal released)			○	○

If continuity is not as specified, replace the switch.

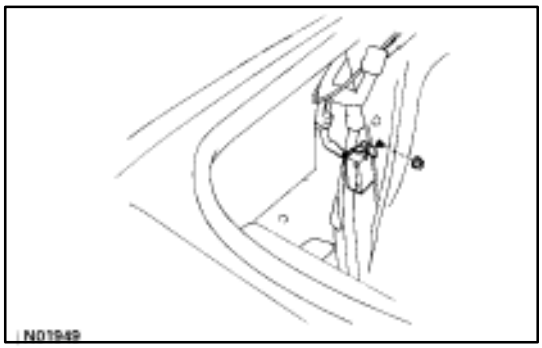


(Switch Circuit)

Disconnect the connector from the switch and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition	Specified value
Voltage	2–Ground	Constant	Battery positive voltage

If circuit is not as specified, inspect power source or wire harness.



LIGHT FAILURE SENSOR

LIGHT FAILURE SENSOR REMOVAL AND INSTALLATION

1. REMOVE LIGHT FAILURE SENSOR

(See page **BO–60**)

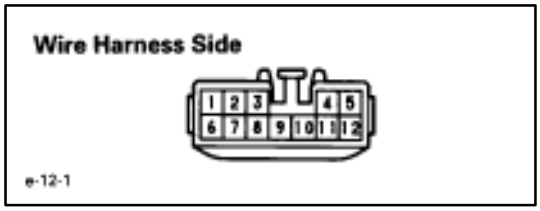
(a) Remove the LH side cover.

(b) Disconnect the connector.

(c) Remove the nut and the light failure sensor.

2. INSTALL LIGHT FAILURE SENSOR

For installation, follow the removal procedure in reverse.



LIGHT FAILURE SENSOR INSPECTION

INSPECT LIGHT FAILURE SENSOR

(Relay Circuit)

Disconnect the connector from the sensor and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Continuity	1–Ground	Constant		*Continuity
	2–Ground	Constant		*Continuity
	6–Ground	Constant		*Continuity
	7–Ground	Constant		*Continuity
	12–Ground	Constant		*Continuity
	11–Ground	Constant		Continuity
Voltage	5–Ground	Light control switch Position	OFF	No voltage
			TAIL or HEAD	Battery positive voltage
	4–Ground	Engine condition	Stop	No voltage
			Running	Battery positive voltage
	9–Ground 10–Ground	Stop light switch position	OFF (brake pedal released)	No voltage
			ON (brake pedal de-pressed)	Battery positive voltage
	8–Ground	Ignition switch position	LOCK or ACC	No voltage
			ON	Battery positive voltage

*: There is resistance because this circuit is grounded through the bulb.

If circuit is as specified, replace the sensor. If the circuit is not as specified, refer to BE–63 wiring diagram and inspect the circuits connected to other parts.

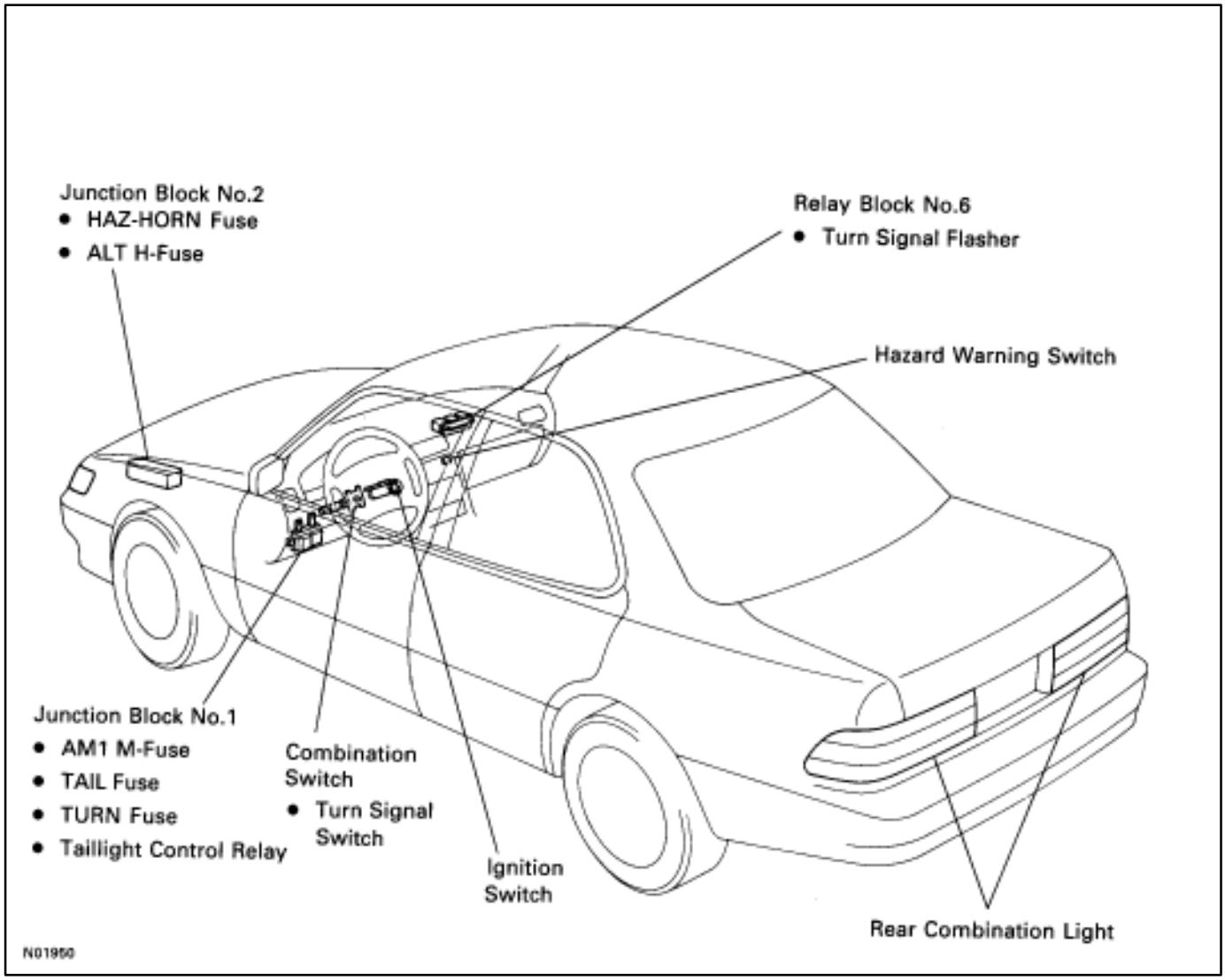
TURN SIGNAL AND HAZARD WARNING SYSTEM

DESCRIPTION

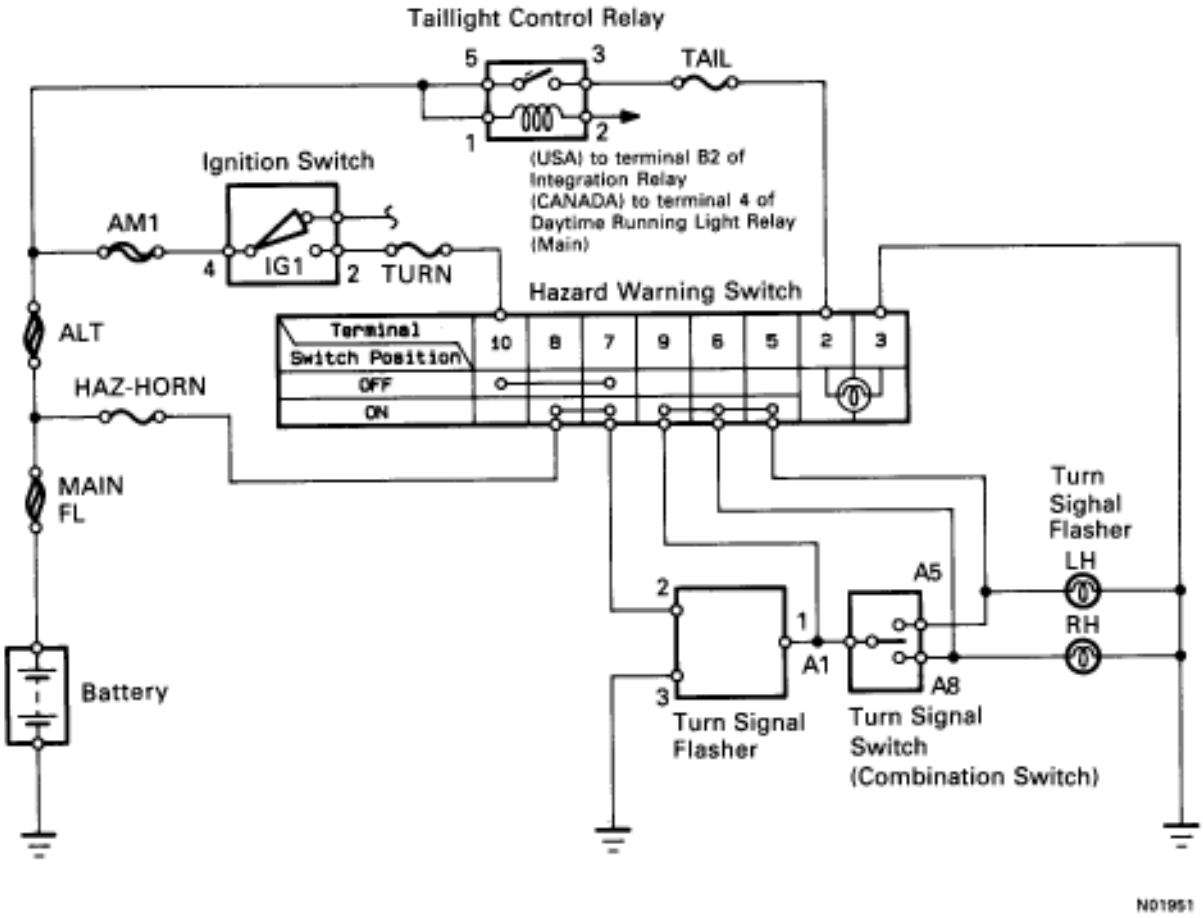
The component parts of this system and their function are as shown in the following table.

Parts Name	Function
Turn Signal Switch	Switches current from the turn signal flasher to the left side or right side.
Hazard Warning Switch	Modifies the circuit to the flasher relay and turn signal switch in accordance with the respective switch positions.
Turn Signal Flasher	Receives current from the hazard warning switch and flashes the turn signal lights by switching the current to the lights ON and OFF.

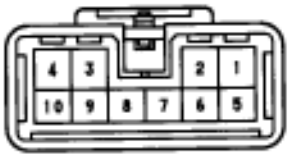
PARTS LOCATION



WIRING AND CONNECTOR DIAGRAMS



Ignition Switch

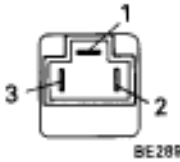


g-10-2-B

Hazard Warning Switch

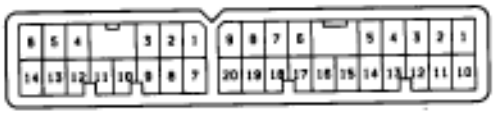
a-10-2

Turn Signal Flasher Relay



BE2896

Turn Signal Switch (Combination Switch)



Connector "A" Connector "B" v-34-2

TROUBLESHOOTING

You will find the cause of trouble more easily using the table shown below. In this table, the numbers indicate the order priority of the causes in trouble. Check each part in the order shown. If necessary, replace the parts.

See page / Part name / Trouble	HAZ-HORN Fuse (BE–6, 22)	TURN Fuse (BE–6, 20)	Ignition Switch (BE–29)	Hazard Warning Switch (BE–72)	Turn Signal Flasher (BE–26, 71)	Turn Signal Switch (BE–51)	Wire Harness (–)	Bulb (BE–8)
"Hazard" and "Turn" do not light up.				1	2		3	
The flashing frequency is abnormal.					2		3	1
Hazard warning light does not light up. (Turn is normal.)	1						2	
Hazard warning light does not light up in one direction.				1			2	
*1 Turn signal does not light up.		2	1			3	4	
*2 Turn signal does not light up.		1				2	3	
Turn signal does not light up in one direction.						1	2	
Only one bulb does not light up.							2	1

* : Combination Meter, Wiper and Washer do not operate.
*⁜ Combination Meter, Wiper and Washer are normal.

FRONT TURN SIGNAL LIGHT

FRONT TURN SIGNAL LIGHT REPLACEMENT

(See page BO–12)

REAR COMBINATION LIGHT

REAR COMBINATION LIGHT REPLACEMENT

(See page BO–60)

COMBINATION SWITCH ASSEMBLY

(See page BE–45)

HINT: Inspect turn signal light switch.

TURN SIGNAL FLASHER

TURN SIGNAL FLASHER INSPECTION

INSPECT TURN SIGNAL FLASHER

(Operation)

(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 3.

(b) Connect the two turn signal light bulbs parallel to each other to terminals 1 and 3, check that the bulbs flash.

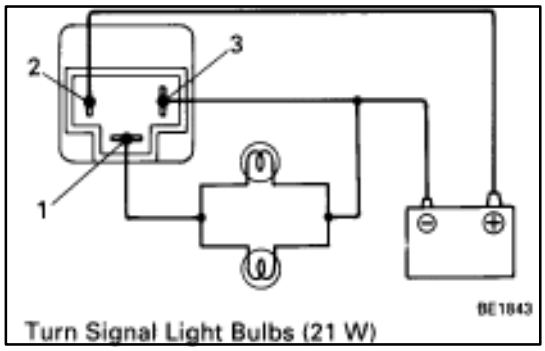
HINT: The turn signal lights should flash 60 to 120 times per minute.

If one of the front or rear turn signal lights has an open circuit, the number of flashes will be more than 140 per minute.

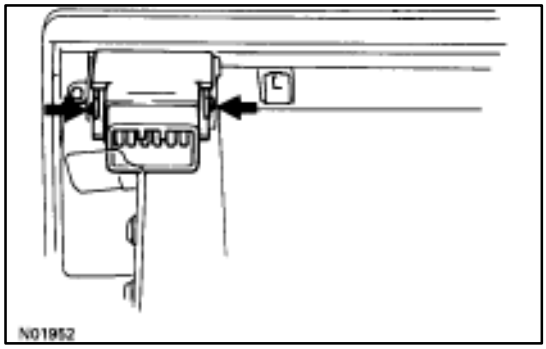
If operation is not as specified, replace the flasher.

(Flasher Circuit)

(See page BE–26)



Turn Signal Light Bulbs (21 W)



HAZARD WARNING SWITCH

HAZARD WARNING SWITCH REMOVAL AND INSTALLATION

1. REMOVE HAZARD WARNING SWITCH
(See page BO–107)

(a) Remove the A/C control panel assembly.

(b) Pry loose the two locking lugs and remove the hazard warning switch.

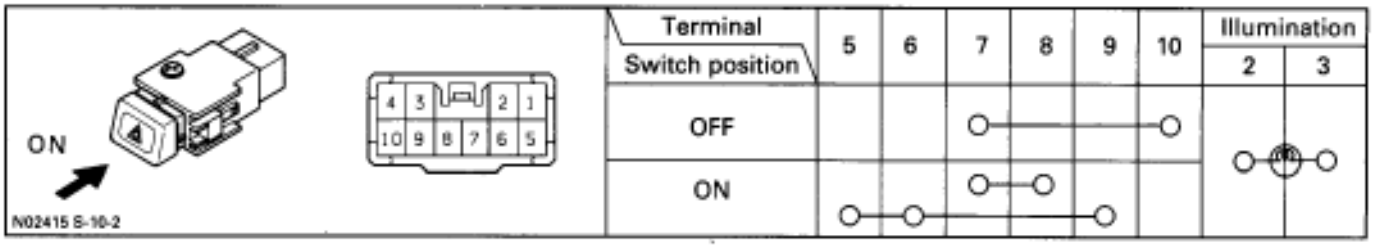
2. INSTALL HAZARD WARNING SWITCH
For installation, follow the removal procedure in reverse.

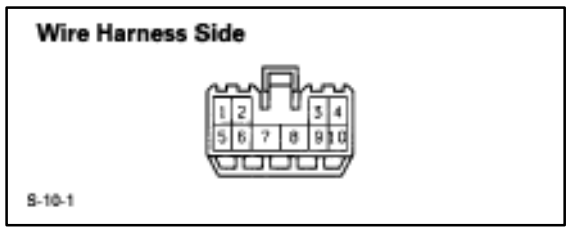
HAZARD WARNING SWITCH INSPECTION

INSPECT HAZARD WARNING SWITCH

(Continuity)

Inspect the switch continuity between terminals.





If continuity is not as specified, replace the switch.

(Switch Circuit)

Disconnect the switch connector and inspect the connection on the wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Voltage	8–Ground	Constant		Battery positive voltage
	10–Ground	Ignition switch position	LOCK or ACC	No voltage
			ON	Battery positive voltage
	*1 2–Ground	Light control switch position	OFF	No voltage
			TAIL or HEAD	Battery positive voltage
Continuity	*1 3–Ground	Constant		Continuity
	5–Ground	Constant		*2Continuity
	6–Ground	Constant		*2Continuity

*1 Illumination
*2 There is resistance because this circuit is grounded through the bulb.

If the circuit is not as specified, refer to BE–69 wiring diagram and inspect the circuits connected to other parts.

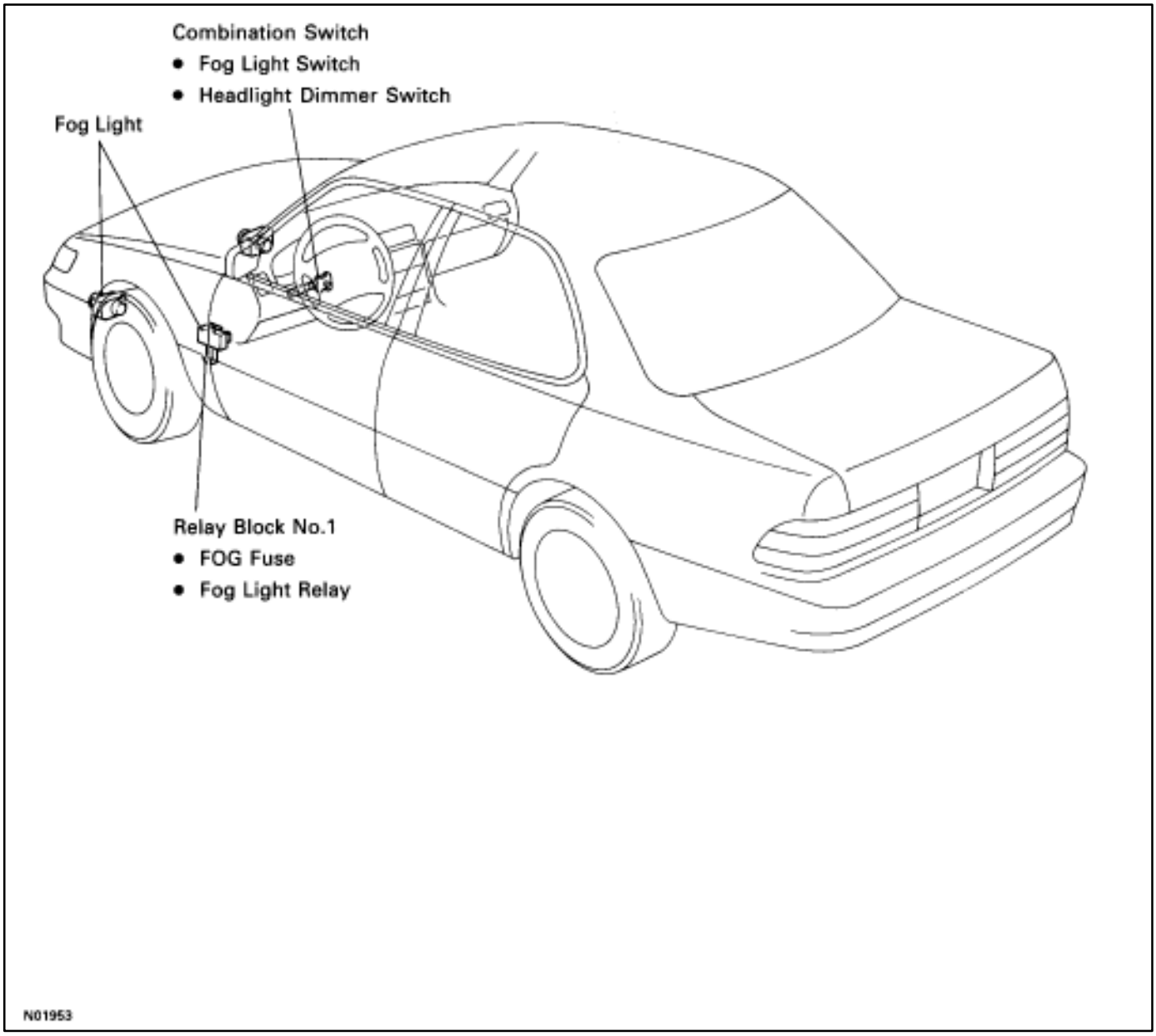
FOG LIGHT SYSTEM

DESCRIPTION

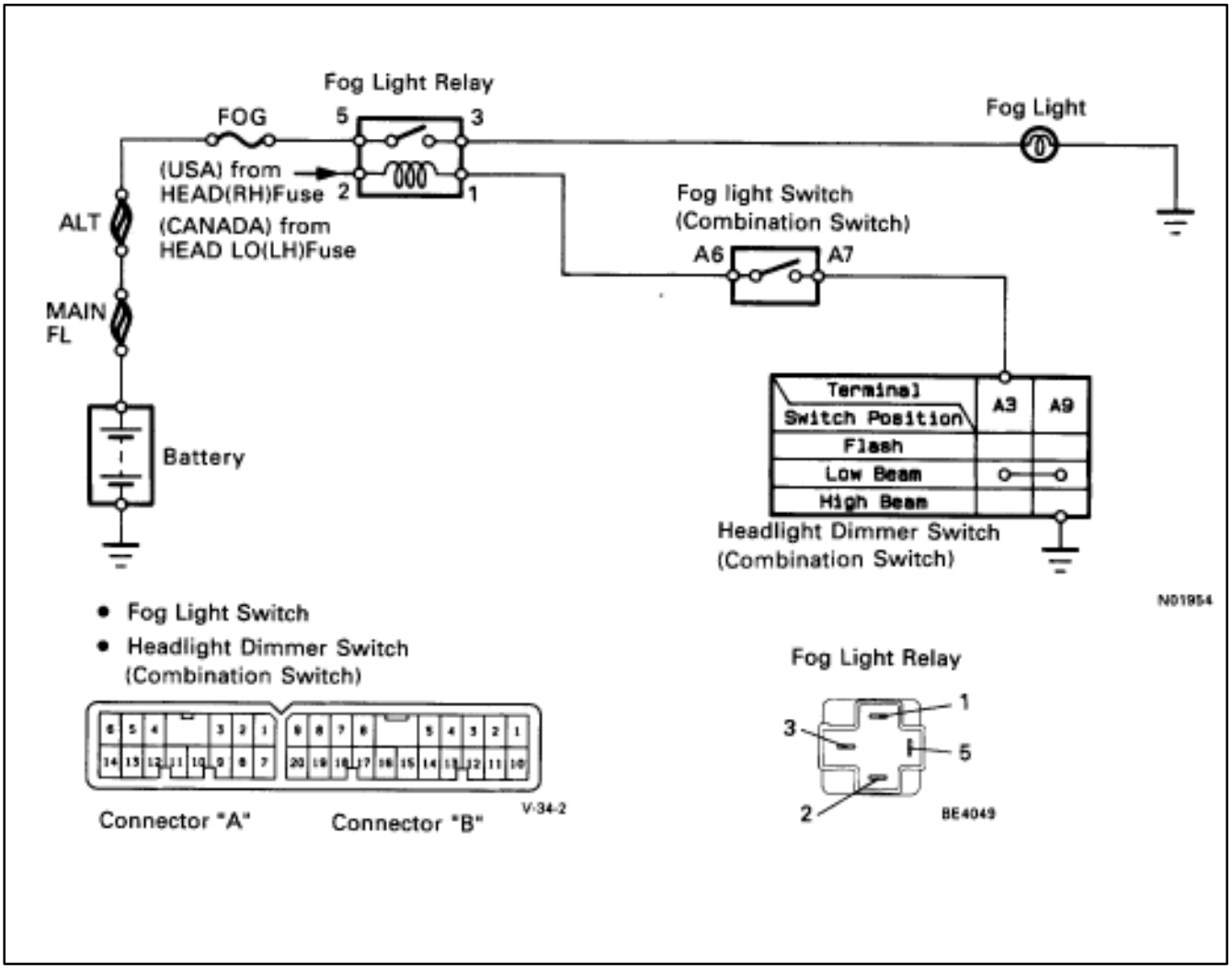
The component parts of this system and their function are as shown in the following table.

Parts Name	Function
Fog Light Switch	Grounds current from the fog light relay, turning the fog light relay ON and turning the fog lights on.
Fog Light Relay	Turned on by signals from the fog light switch and supplies current to fog lights.

PARTS LOCATION



WIRING AND CONNECTOR DIAGRAMS



TROUBLESHOOTING

You will find the cause of troubles more easily using the table shown below. In this table, the numbers indicate the order priority of the causes in trouble. Check each part in the order shown. If necessary, replace the parts.

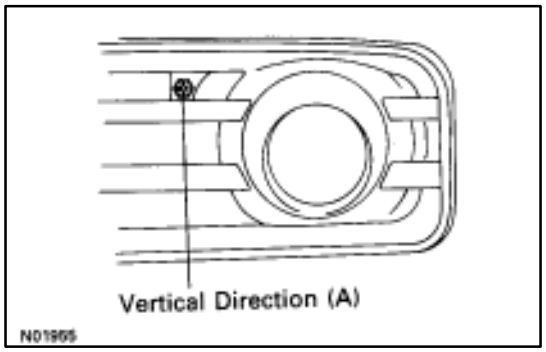
See page / Part name / Trouble	BE–6, 23 FOG Fuse	BE–23, 76 Fog Light Relay	BE–45 Fog Light Switch	BE–8 Bulb	– Wire Harness	– Other Parts
Fog light does not light with light control SW HEAD (Headlight is normal).	1	2	3		4	
Fog light does not light with light control SW HEAD (Headlight does not light).					2	1*1
Only one light does not light.				1	2	

*1: Inspect Headlight System

FOG LIGHT

FOG LIGHT REPLACEMENT

(See page BO–12)



FOG LIGHT AIM ADJUSTMENT

A–bolt: Vertical Direction

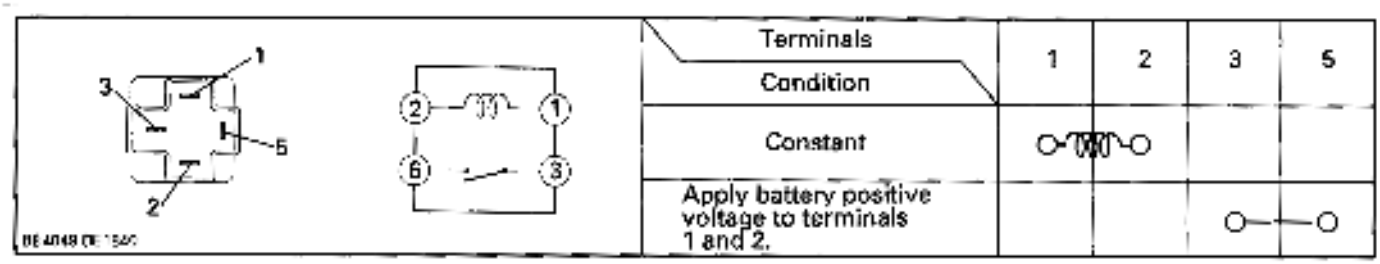
FOG LIGHT RELAY

FOG LIGHT RELAY INSPECTION

INSPECT FOG LIGHT RELAY

(Continuity)

Inspect relay continuity between terminals.



If continuity is not as specified, replace the relay.

(Relay Circuit)

(See page BE–23)

COMBINATION SWITCH ASSEMBLY

(See page BE–45)

HINT: Inspect fog light switch.

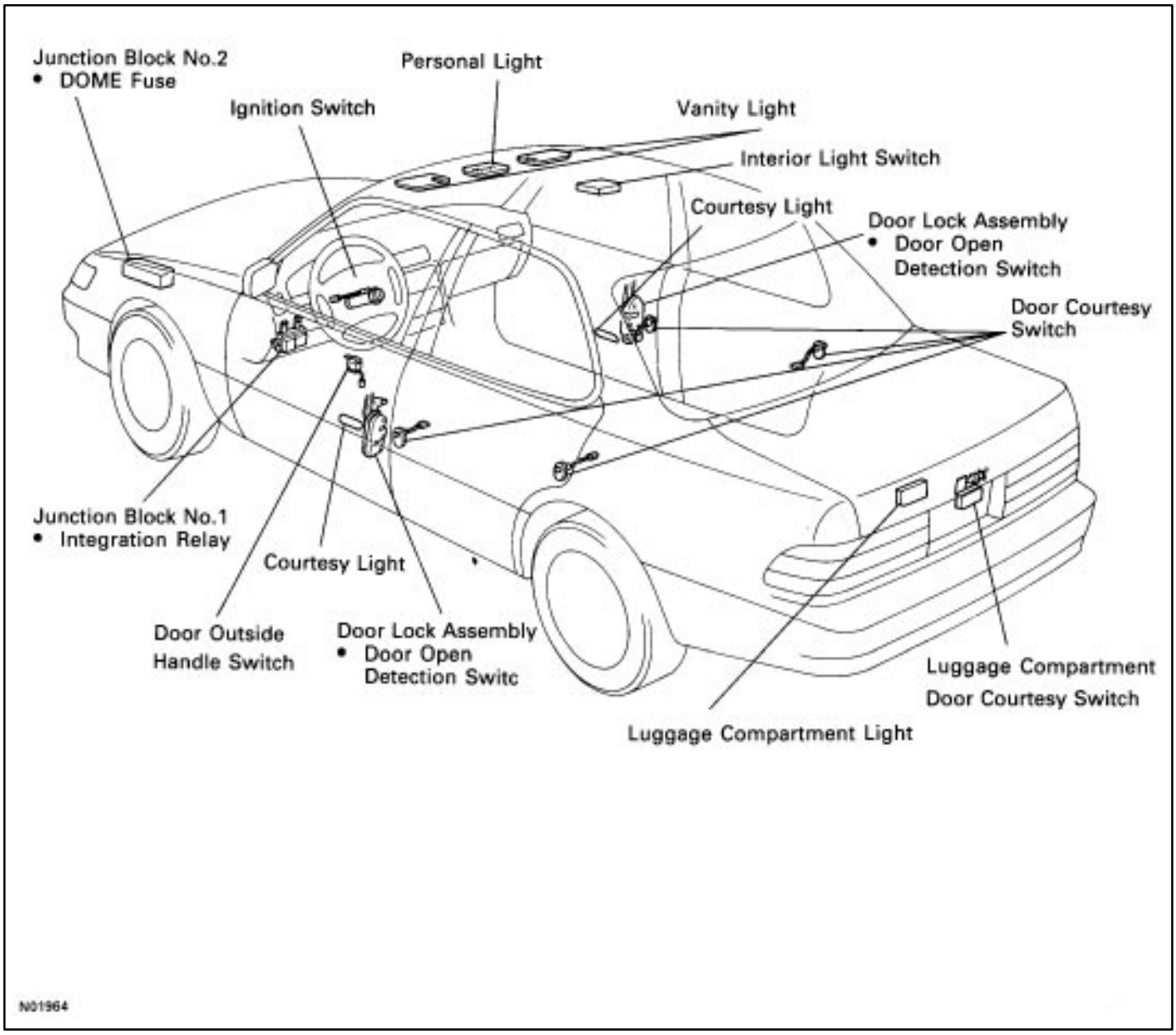
INTERIOR LIGHT SYSTEM

DESCRIPTION

The component parts of this system and their function are as shown in the following table.

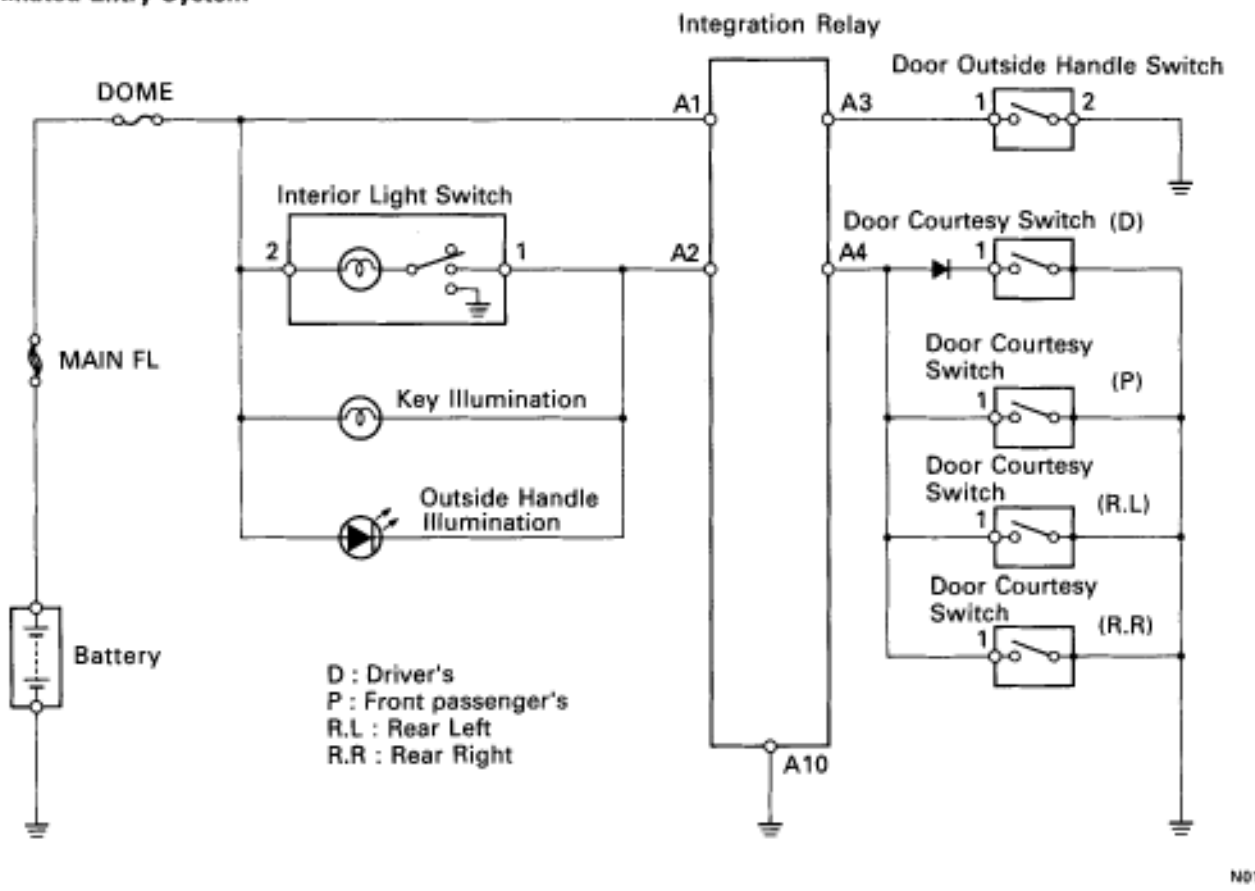
Parts Name	Function
Integration Relay	Fades out some of the interior lights in accordance with signals from the door courtesy switch and outside handle switch. (Illuminated Entry System)
Door Courtesy Switch	Creates a closed circuit when the doors are opened lighting each courtesy light, etc. Also detects when the door is open and sends the appropriate signals to the integration relay.
Door Outside Handle Switch	Detects when the door outside handle is operated and sends the appropriate signals to the integration relay.

PARTS LOCATION

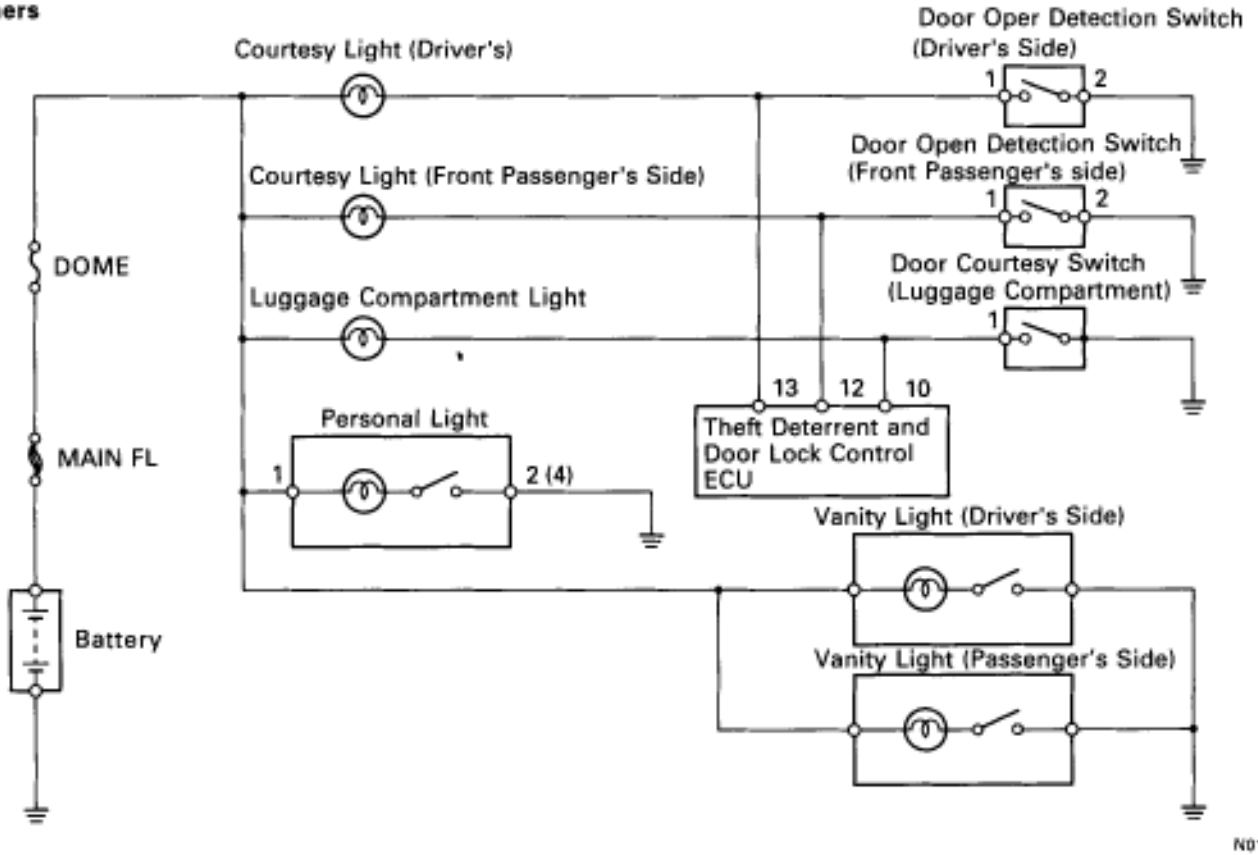


WIRING DIAGRAM

Illuminated Entry System



Others



The number in brackets ( ) applies to vehicles with Sliding Roof System.

CONNECTOR DIAGRAMS

Integration Relay

Connector "A" S-12-1-A

Door Outside handle Switch

lh-2-1

Door Courtesy Switch

e-1-1

Luggage Compartment Door Courtesy Switch

e-1-1

Interior Light Switch

BE5744

Vanity Light

S-2-2-G

Personal Light

(w / o Sliding Roof)

BE5744

(w / Sliding Roof)

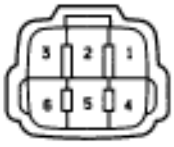
S-6-2-B

Door Open Detection Switch
(in Door Lock Assembly)

(Front Door)

Is-7-2

(Rear Door)



IS-6-2-B

TROUBLESHOOTING

You will find the cause of trouble more easily using the table shown below. In this table, the numbers indicate the order priority of the causes in trouble. Check each part in the order shown. If necessary, replace the parts.

See page / Part name / Trouble	BE–6, 22	BE–316	BE–89	BE–89	BE–88	BE–91	BE–92	-	BE–8
	DOME Fuse	Door Open Detection Switch	Door Outside Handle Switch	Integration Relay	Personal Light	Vanity Light	Luggage Compartment Door Courtesy Switch	Wire Harness	Bulb
Only one interior light does not light up.								2	1
Interior light does not light up. (All)	1							2	
"Illuminated Entry System" dose not operate.		2	3	1				4	
Interior light does not light up. (in front personal light)					2			3	1
Front personal light does not light up.					2			3	1
Vanity light does not light up.						2		3	1
Luggage compartment light does not light up.							2	3	1
Courtesy light does not light up.		2						3	1

PERSONAL LIGHT

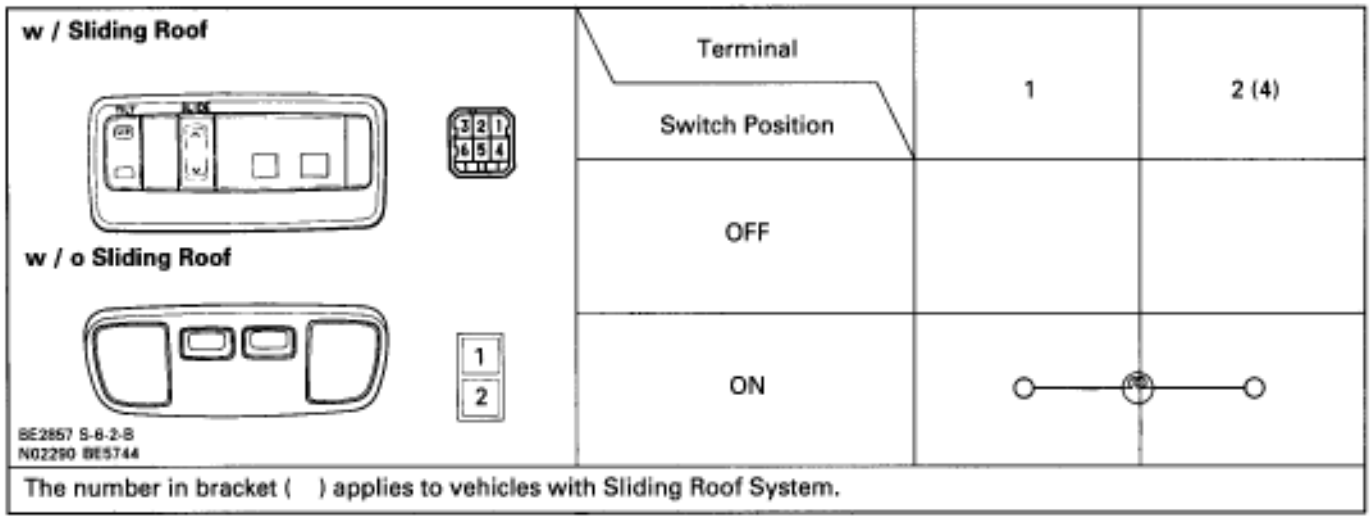
PERSONAL LIGHT REMOVAL AND INSTALLATION

(See page BO–144)

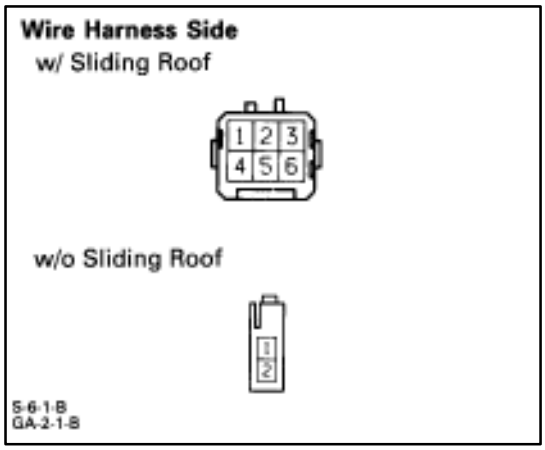
PERSONAL LIGHT INSPECTION

INSPECT PERSONAL LIGHT SWITCH (Continuity)

Inspect the light switch continuity between terminals.



The number in bracket ( ) applies to vehicles with Sliding Roof System.



If continuity is not as specified, replace the light assembly or bulb.

(Switch Circuit)

Disconnect the connector from the switch and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition	Specified value
Voltage	1–Ground	Constant	Battery positive voltage
Continuity	2 (4)–Ground	Constant	Continuity
The number in bracket ( ) applies to vehicles with Sliding Roof System.			

If circuit is not as specified, inspect power source or wire harness.

INTEGRATION RELAY

INTEGRATION RELAY REMOVAL AND INSTALLATION

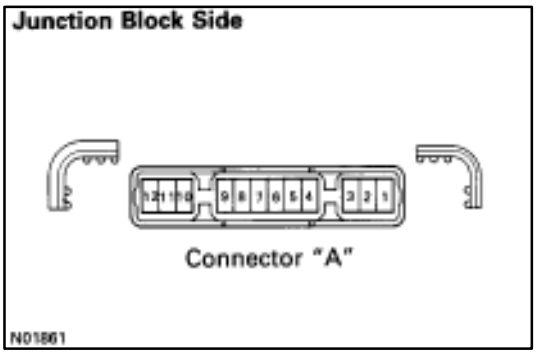
(See page BE–32)

INTEGRATION RELAY INSPECTION

INSPECT INTEGRATION RELAY

(Relay Circuit/Illuminated Entry System)

Remove the relay from junction block and inspect the connector on the junction block side as shown in the chart.



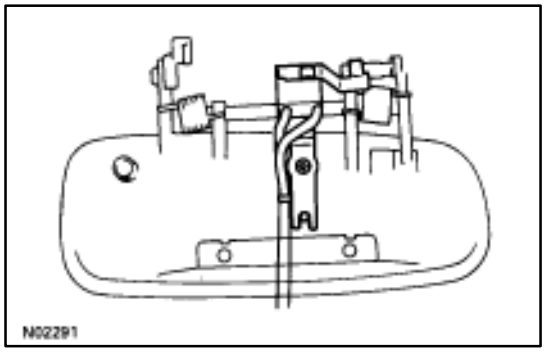
Check for	Tester connection	Condition		Specified value
Continuity	A10–Ground	Constant		Continuity
	A4–Ground	Courtesy Switch Position (except driver's side)	OFF (Door closed)	No continuity
			ON (Door opened)	Continuity
	A3–Ground	Door outside handle Switch Position	OFF	No continuity
			ON	Continuity
Voltage	A2–Ground	Constant		Battery positivevoltage
	A1–Ground	Constant		Battery positivevoltage

If the circuit is as specified, trying replacing the relay with a new one.

If the circuit is not as specified, refer to BE–85 wiring diagram and inspect the circuits connected to other parts.

DOOR OUTSIDE HANDLE SWITCH

DOOR OUTSIDE HANDLE SWITCH REMOVAL AND INSTALLATION

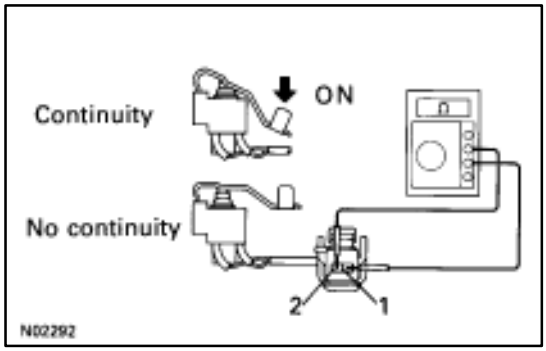


1. **REMOVE DOOR OUTSIDE HANDLE SWITCH**
   (See page BO–34)

(a) Remove the door outside handle.

(b) Remove a screw and separate the switch from door outside handle.

2. **INSTALL DOOR OUTSIDE HANDLE SWITCH**
   For installation, follow the removal procedure in reverse.



DOOR OUTSIDE HANDLE SWITCH INSPECTION

INSPECT DOOR OUTSIDE HANDLE SWITCH

(Continuity)

(a) Check that there is continuity between terminals 1 and 2 when door outside handle is pulled.

(b) Check that there is no continuity between terminals 1 and 2 when door outside handle is released.

If operation is not as specified, replace the switch.

(Switch Circuit)

Disconnect the connector from the switch and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition	Specified value
Continuity	2–Ground	Constant	Continuity

If the circuit is not as specified, refer to BE–85 wiring diagram and inspect the circuits connected to other parts.

DOOR COURTESY SWITCH
DOOR COURTESY SWITCH REMOVAL AND INSTALLATION

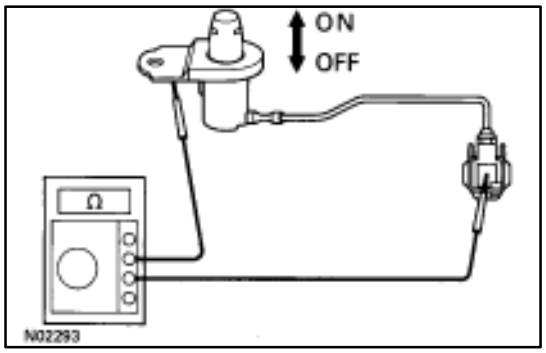
1. REMOVE DOOR COURTESY SWITCH

(a) Remove the courtesy switch.

(b) Disconnect the connector.

2. INSTALL DOOR COURTESY SWITCH

For installation follow the removal procedure in reverse.



DOOR COURTESY SWITCH INSPECTION

INSPECT DOOR COURTESY SWITCH

(a) Check that there is continuity between terminal and switch body with the switch ON (switch pin released).

(b) Check that there is no continuity between terminal and switch body with the switch OFF (switch pin pushed).

If continuity is not as specified, replace the switch.

INTERIOR LIGHT SWITCH

INTERIOR LIGHT SWITCH REMOVAL AND INSTALLATION

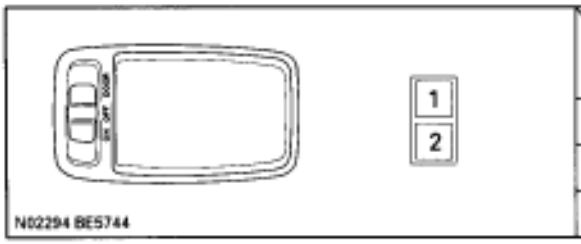
(See page BO–144)

INTERIOR LIGHT SWITCH INSPECTION

INSPECT INTERIOR LIGHT SWITCH

(Continuity)

Inspect the light switch continuity between terminals.

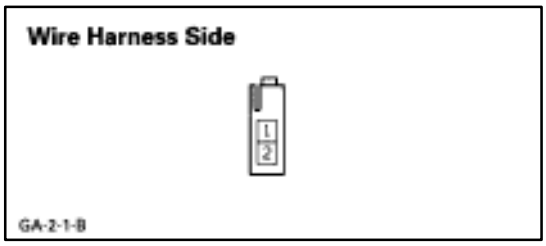


Terminal / Switch position	1	2	Switch Body
DOOR		○—(M)—○	
OFF			
ON	○—(M)—○		

If continuity is not as specified, replace the light assembly or bulb.

(Switch Circuit)

Disconnect the connector from the switch and inspect the connector on the wire harness side as shown.

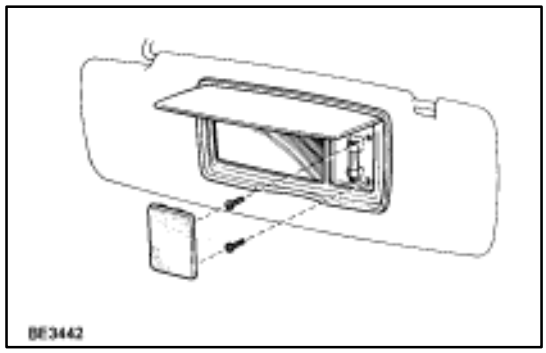


Check for	Tester connection	Condition	Specified value
Voltage	2–Ground	Constant	Battery positive voltage

If circuit is not as specified, inspect power source or wire harness.

VANITY LIGHT SWITCH

VANITY LIGHT SWITCH REMOVAL AND INSTALLATION



1. REMOVE VANITY LIGHT

(a) Release two tabs and remove the lens.

(b) Remove two screws and separate the vanity light from sun visor.

(c) Disconnect connector and remove vanity light.

2. INSTALL VANITY LIGHT

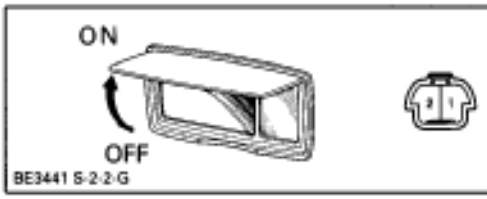
For installation follow the removal procedure in reverse.

VANITY LIGHT INSPECTION

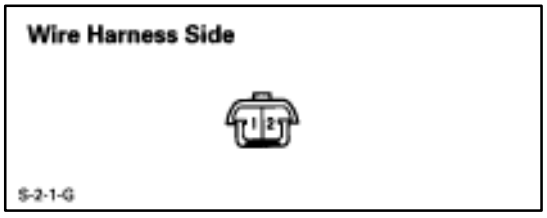
INSPECT VANITY LIGHT SWITCH

(Continuity)

Inspect the vanity light continuity between terminals.



Terminal / Switch position	1	2
OFF (Closed)		
ON (Opened)	○	○



If continuity is not as specified, replace bulb or vanity light.

(Switch Circuit)

Disconnect the connector from the switch and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition	Specified value
Voltage	1–Ground	Constant	Battery positive voltage
Continuity	2–Ground	Constant	Continuity

If circuit is not as specified, inspect power source or wire harness.

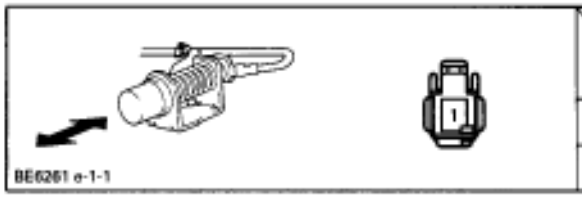
LUGGAGE COMPARTMENT DOOR COURTESY SWITCH

LUGGAGE COURTESY SWITCH INSPECTION

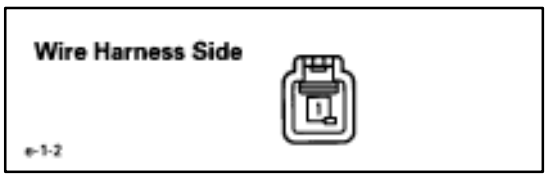
INSPECT LUGGAGE DOOR COURTESY SWITCH

(Continuity)

Inspect the switch continuity between terminal and switch body.



Terminal / Condition	1	Switch body
OFF (Closed)		
ON (Opened)	○	○



If operation is not as specified, replace the switch.

(Switch Circuit)

Disconnect the connector from the switch and inspect the connector on the wire harness as shown.

Check for	Tester connection	Condition	Specified value
Voltage	1–Ground	Constant	Battery positive voltage

If circuit is not as specified, inspect power source or wire harness.

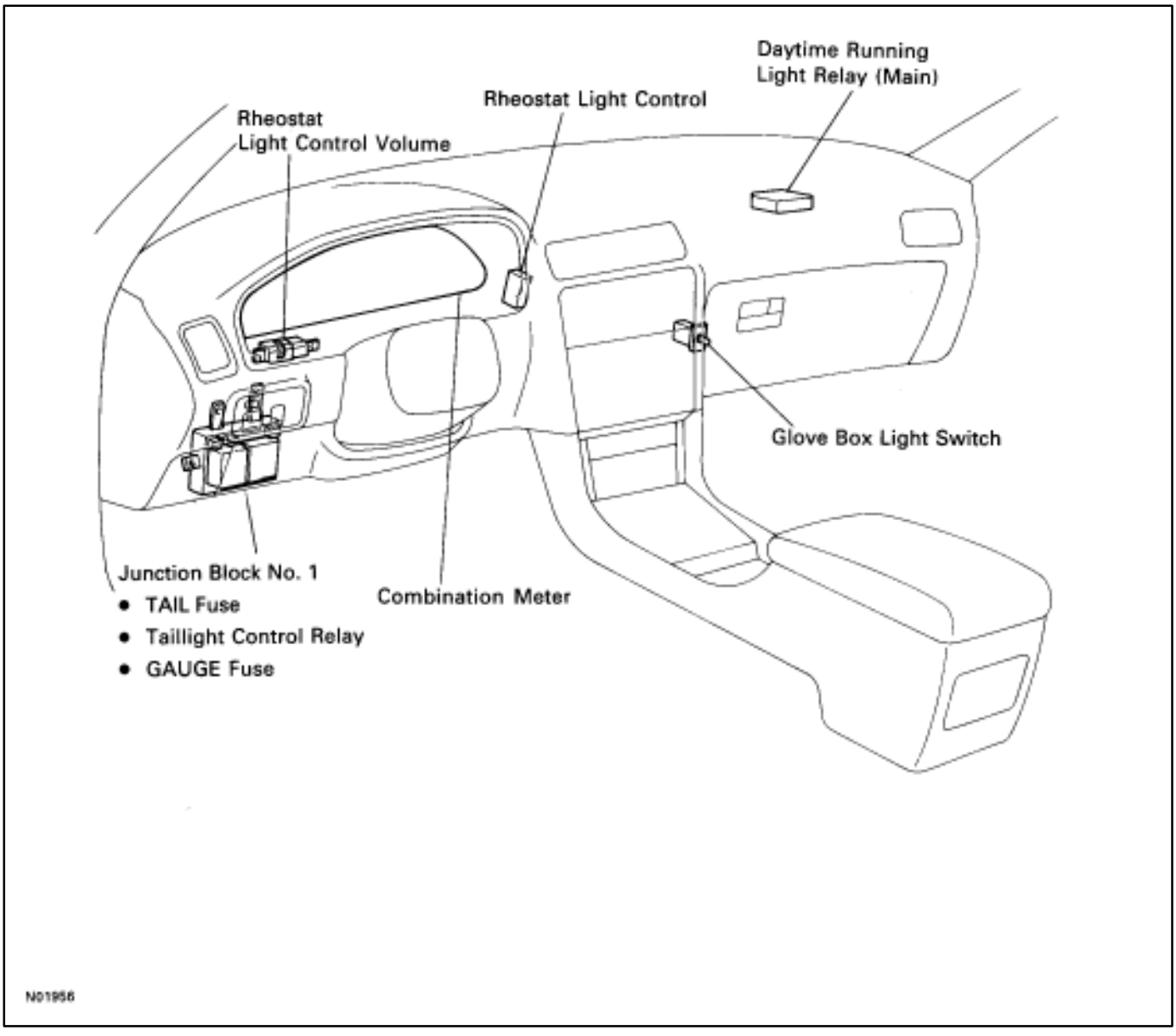
ILLUMINATION LIGHT SYSTEM

DESCRIPTION

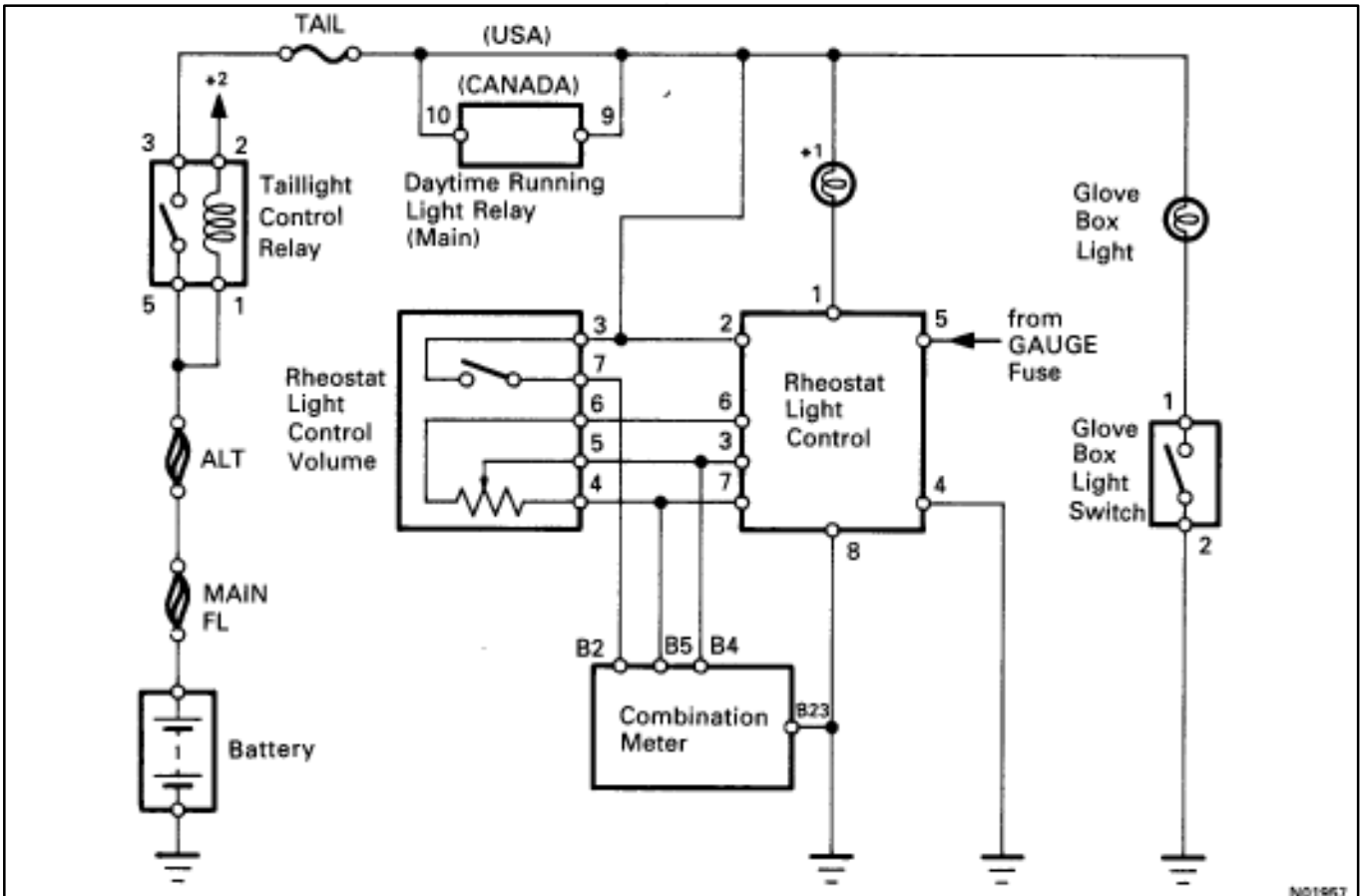
The component parts of this system and their function are described in the following table.

Parts Name	Function
Rheostat Light Control Volume	In order to adjust the degree of illumination light, the resistance value of the built–in variable resistor is sent to the combination meter and rheostat light control.
Rheostat Light Control	This control adjusts the brightness of the illumination light in accordance with the resistance value from the rheostat light control volume.
Daytime Running Light Relay (CANADA)	During daytime running light operation this prevents current flow to the rheostat light control to stop each illumination from lighting up. When the light control switch is at TAIL or HEAD, current is sent to the rheostat light control.

PARTS LOCATION



WIRING AND CONNECTOR DIAGRAMS



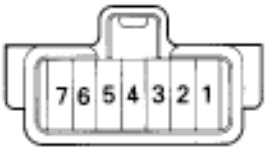
*1
- Audio
- Hazard Warning Switch
- Cigarette Lighter
- A/C Control Panel Assembly
- ECT Pattern Select Switch
- Headlight Cleaner Switch (CANADA)
- Seat Heater Switch

*2 (USA) to terminal B2 of Integration Relay
(CANADA) to terminal 4 of Daytime Running Light Relay

Rheostat Light Control

e-8-2-B

Rheostat Light Control Volume



N01958

Glove Box Light Switch

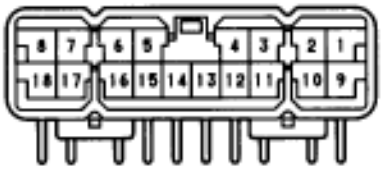
BE3548

Taillight Control Relay

BE4049

Combination Meter

Daytime Running Light Relay



e-18-2-A

TROUBLESHOOTING

You will find the cause of trouble more easily using the table shown below. In this table, the numbers indicate the order priority of the causes in trouble. Check each part in the order shown. If necessary, replace the parts.

See page / Part name / Trouble		Taillight Control Relay (BE–20, 61)	TAIL Fuse (BE–6,20)	Rheostat Light Control (BE–80)	Rheostat Light Control Volume (BE–81)	Daytime Running Light Relay (Main) (BE–56)	Combination Meter Assembly (BE–111)	Glove Box Light Switch (BE–82)	Bulb (BE–8)	Wire Harness (–)	Other parts (–)
Illumination lights do not light. (Taillight is normal.)	USA		1							2	
	CANADA		1			2				3	
Illumination lights do not light. (Taillight does not light.)	USA	1	4							3	*2
	CANADA	1	4			5				3	*2
Illumination lights with adjustable brightness do not light.				1	2					3	
Only one light does not light.									1	2	
Brightness does not changes when rheostat volume is turned.	All (See page BE-78)			1	2					3	
	Only Combination Meter						1			2	
Glove box light does not light.								1	2	3	

*: Inspect Taillight System.

RHEOSTAT LIGHT CONTROL

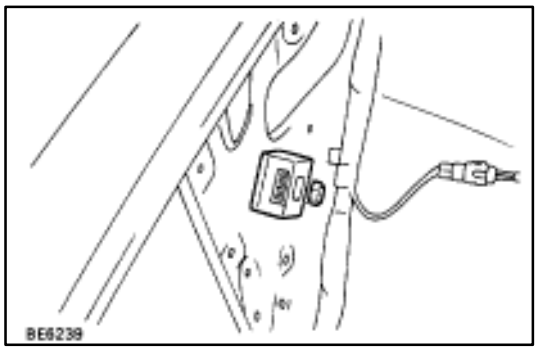
RHEOSTAT LIGHT CONTROL REMOVAL AND INSTALLATION

1. REMOVE RHEOSTAT LIGHT CONTROL
(See page BO–107)

(a) Remove the safety pad.
(b) Disconnect the connector.
(c) Remove the nut and rheostat light control.

2. INSTALL RHEOSTAT LIGHT CONTROL

For installation, follow the removal procedure in reverse.



RHEOSTAT LIGHT CONTROL INSPECTION

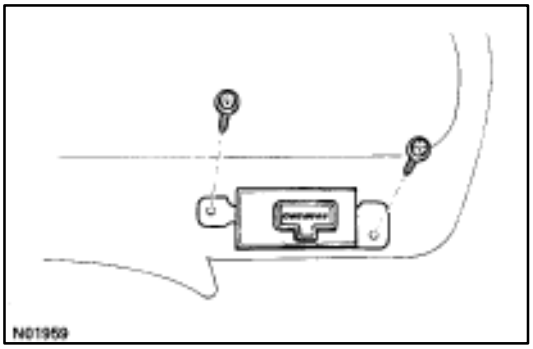
INSPECT RHEOSTAT LIGHT CONTROL

(Circuit)

Disconnect the connector to rheostat light control and inspect connector on wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Voltage	1–Ground 2–Ground	Light control switch position	TAIL or HEAD	Battery positive voltage
			OFF	No voltage
	5–Ground	Ignition switch position	ON	Battery positive voltage
			OFF	No voltage
Continuity	4–Ground 8–Ground	Constant		Continnity
Resistance	3–6	Gradually rotate the switch from most distant position to closest position		Resistance changes From 0 Ω to ↔
	3–7	Gradually rotate the switch from most distant position to closest position		Resistance changes From approx. 10 kΩ to ↔
	6–7	Constant		Approx. 10 kΩ

If circuit is as specified, replace the rheostat light control.
If circuit is not as specified, refer to BE–78 wiring diagrams and inspect the circuits connected to other parts.



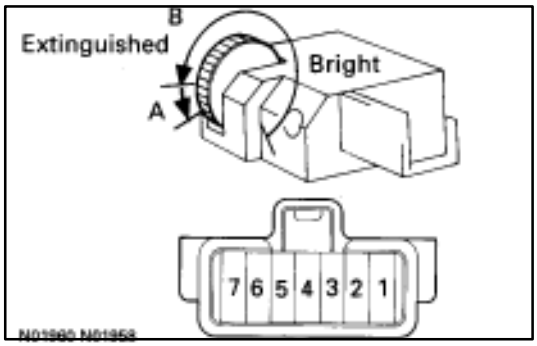
RHEOSTAT LIGHT CONTROL VOLUME

RHEOSTAT LIGHT CONTROL VOLUME REMOVAL AND INSTALLATION

1. REMOVE RHEOSTAT LIGHT CONTROL VOLUME
(See page BO–107)

(a) Remove meter cluster.
(b) Remove the two screws and the rheostat light control volume.

2. INSTALL RHEOSTAT LIGHT CONTROL VOLUME
For installation, follow the removal procedure in reverse.



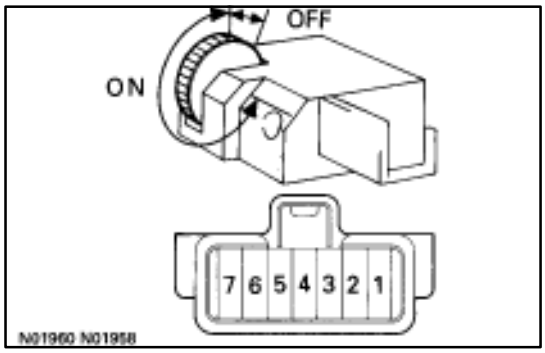
RHEOSTAT LIGHT CONTROL VOLUME INSPECTION

1. INSPECT RHEOSTAT LIGHT CONTROL VOLUME
(Resistance)
Inspect resistance between terminals.

Tester Connection	Condition		Specified value
4–6	Constant		Approx. 10 kΩ
4–5	Gradually rotate the switch from most distant position to closet position.	A	↔
		B	Approx. 10 kΩ 0 Ω

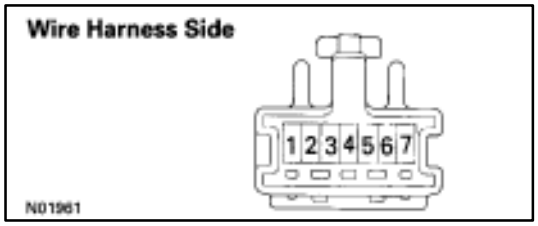
If resistance is not as specified, replace the rheostat light control volume.

(Meter Cancel Switch/Continuity)
Inspect continuity between terminals.



Terminal / Switch position	3	7
OFF (Rotate the switch away from you until it stops)		
ON (Any position other than OFF)	○	○

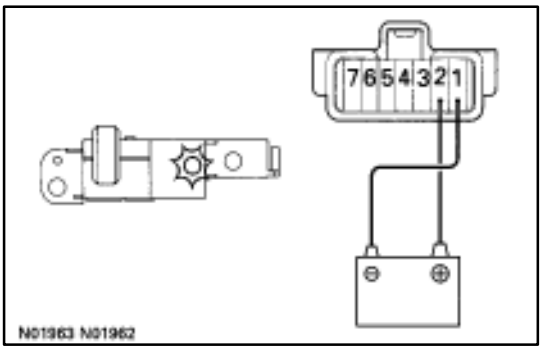
If operation is not as specified, replace the rheostat light control volume.



(Circrit)

Disconnect the connector from the volume and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Voltage	3–Ground	Light control switch position	OFF	No voltage
			TAIL or HEAD	Battery voltage

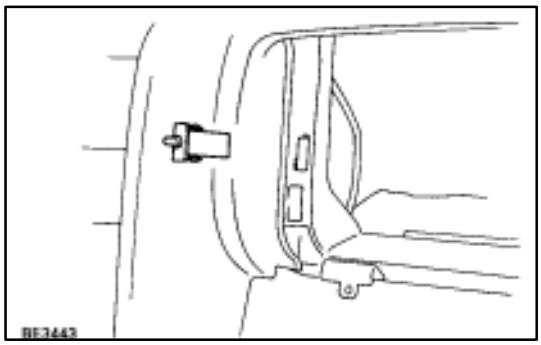


If circuit is as specified, replace the volume. If the circuit is not as specified, refer to BE–78 wiring diagram and inspect the circuits connected to other parts.

2. INSPECT SECURITY WARNING LIGHT

Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1, check that the warning light lights up.

If the warning light does not light up, replace the rheostat light control volume.



GLOVE BOX LIGHT SWITCH

GLOVE BOX LIGHT SWITCH REMOVAL AND INSTALLATION

1. REMOVE GLOVE BOX LIGHT SWITCH

(See page BO–107)

(a) Remove glove compartment.

(b) Release two tabs and remove switch.

2. INSTALL GLOVE BOX LIGHT SWITCH

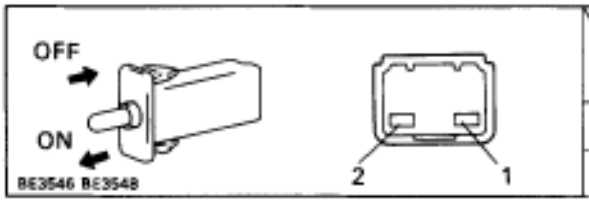
For installation, follow the removal procedure in reverse.

GLOVE BOX LIGHT SWITCH INSPECTION

INSPECT GLOVE BOX LIGHT SWITCH

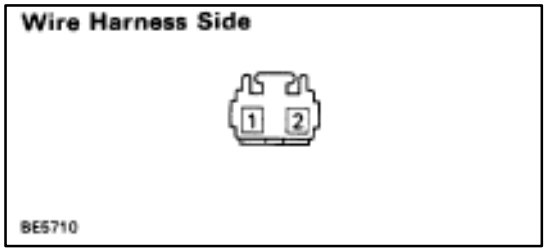
(Continuity)

Inspect the switch continuity between terminals.



Terminal / Switch position	1	2
OFF (Closed)		
ON (Opened)	o	o

If continuity is not as specified, replace the switch.



(Switch Circuit)

Disconnect the connector from the switch and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Continuity	2–Ground	Constant		Continuity
Voltage	1–Ground	Light control switch position	OFF	No voltage
			TAIL or HEAD	Battery positive voltage

If the circuit is not as specified, refer to BE–78 wiring diagram and inspect the circuits connected to other parts.

DAYTIME RUNNING LIGHT RELAY (MAIN)

(See page BE–56)

TAILLIGHT CONTROL RELAY

(See page BE–61)

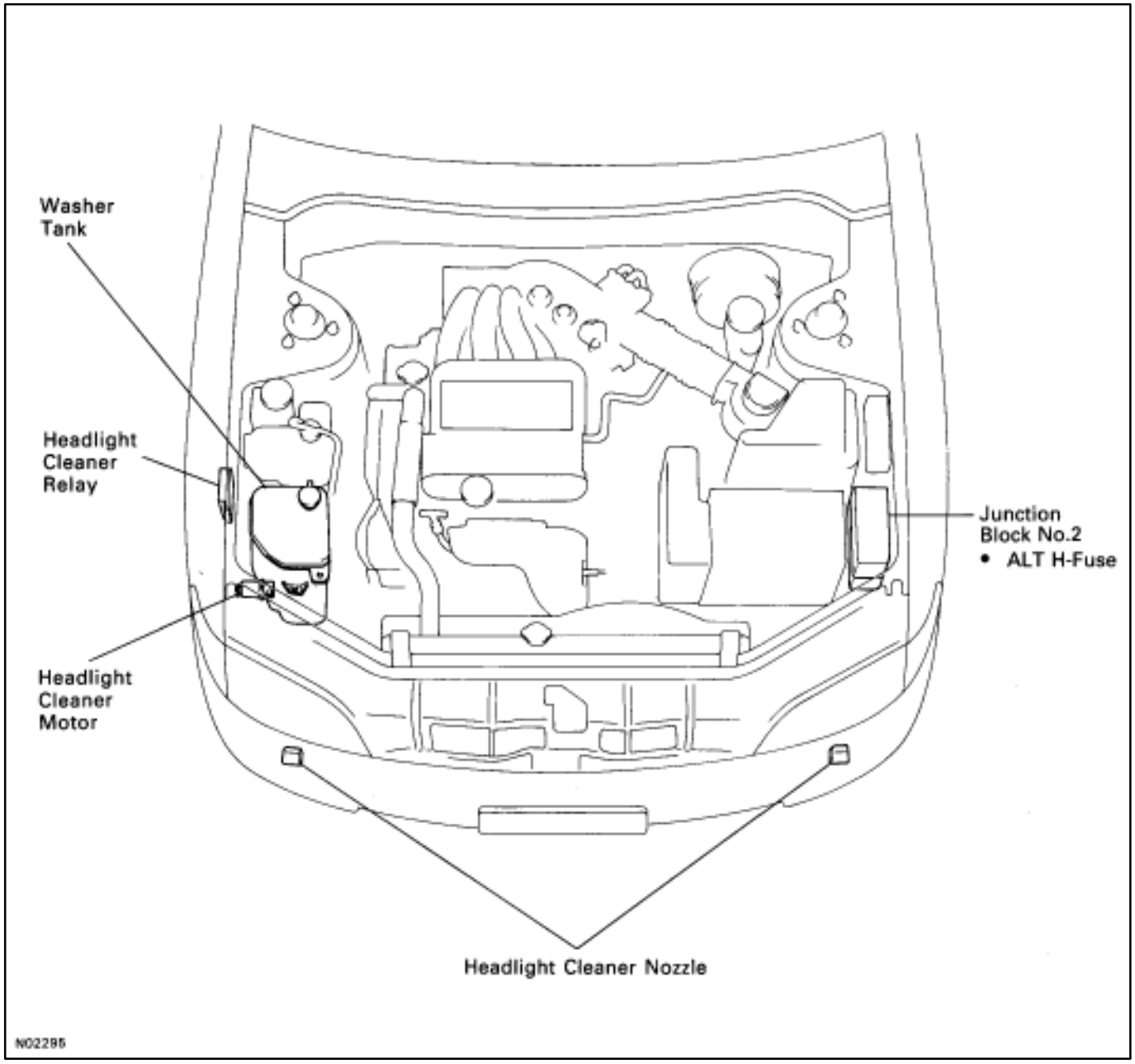
HEADLIGHT CLEANER SYSTEM

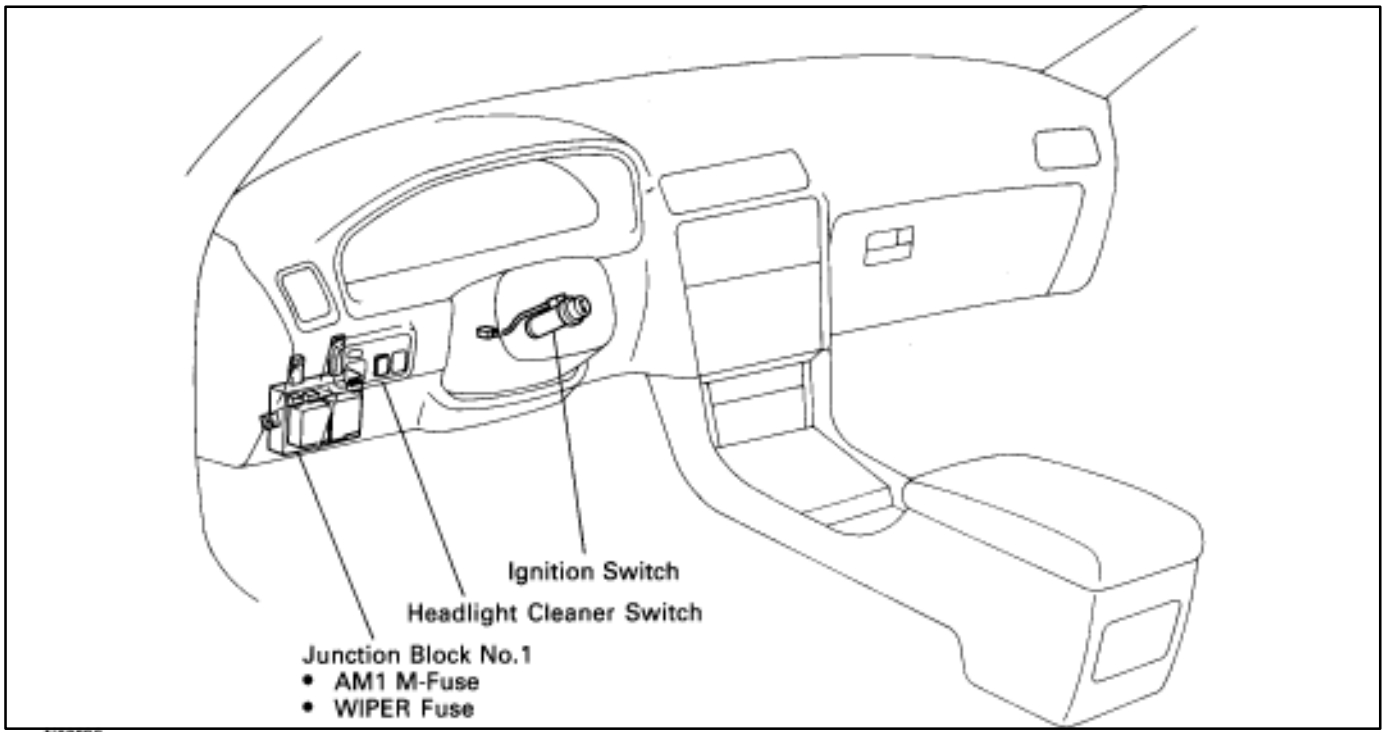
DESCRIPTION

The component parts of this system and their functions are described in the following table.

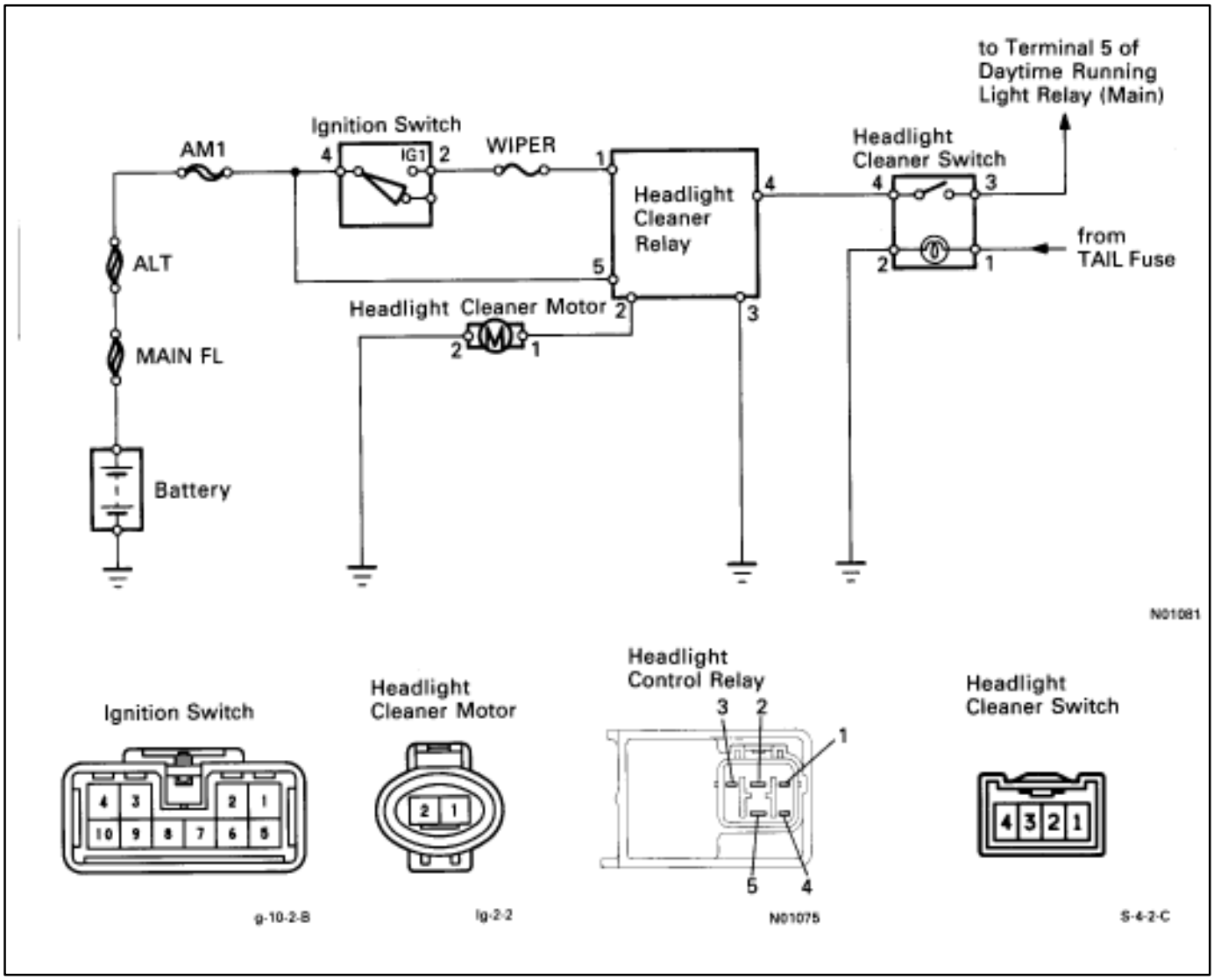
Parts Name	Function
Headlight Cleaner Relay	This receives current from the wiper fuse, the headlight cleaner motor is grounded for a specified period of time (0.4–0.6 seconds) and motor operates–only when the headlights are ON and the headlight cleaner SW is ON.
Headlight Cleaner Switch	The signal from the headlight relay operates the switch, causing ground to be made. (when the headlights are on.)
Headlight Cleaner Motor	An internal centrifugal pump in this motor pumps washer fluid and sprays it out from the Headlight.

PARTS LOCATION





WIRING AND CONNECTOR DIAGRAMS

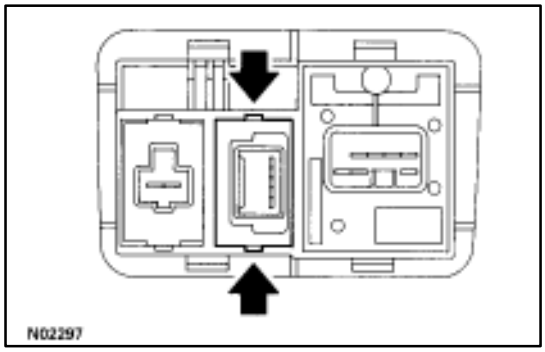


TROUBLESHOOTING

You will find the cause of trouble more easily using the table shown below. In this table, the numbers indicate the order priority of the causes in trouble. Check each part in the order shown. If necessary, replace the parts.

See page / Part name / Trouble		BE–6, 20 AM1 M-Fuse	BE–29 Ignition Switch	BE–6, 20 WIPER Fuse	BE–95 Headlight Cleaner Switch	BE–96 Headlight Cleaner Relay	BE–97 Headlight Cleaner Motor	– Headlight Cleaner Nozzle and Hose	BE–45 Combination Switch (Light Control Switch)	BE–54 Integration Relay	BE–56 Daytime Running Light Relay (Main)	– Wire Harness
"Headlight Cleaner System" does not operate.	Using light control switch								1	2		3
	When operating "Running Light System"										1	2
	All	1	3	2	4	5	6	7				8
Washer fluid does not spray.								1				

HEADLIGHT CLEANER SWITCH



HEADLIGHT CLEANER SWITCH REMOVAL AND INSTALLATION

1. REMOVE HEADLIGHT CLEANER SWITCH

(a) Remove the outer mirror switch set.

(b) Pry loose the two locking lugs and remove the headlight cleaner switch from the outer mirror switch set.

2. INSTALL HEADLIGHT CLEANER SWITCH

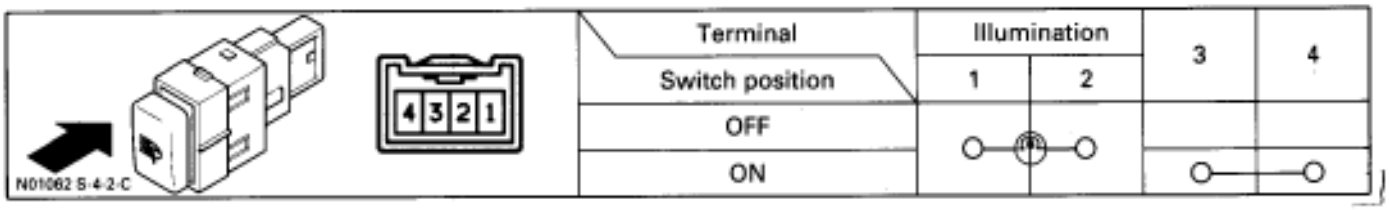
For installation, follow the removal procedure in reverse.

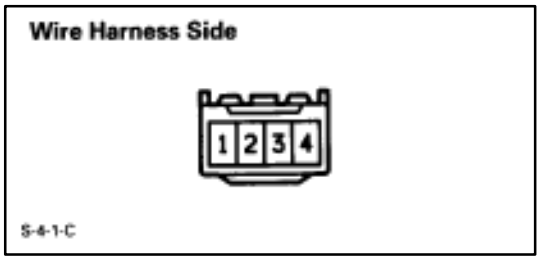
HEADLIGHT CLEANER SWITCH INSPECTION

INSPECT HEADLIGHT CLEANER SWITCH

(Continuity)

Inspect the switch continuity between terminals.





If continuity is not as specified, replace the switch.

(Circuit)

Disconnect the switch connector and inspect the connector on wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Voltage	1–Ground	Headlight or taillight condition	Light on	Battery positive voltage
			Go out	No voltage
	4–Ground	Ignition Switch position	Lock or ACC	No voltage
			ON	Battery positive voltage
Continuity	2–Ground	Constant		Continuity
	3–Ground	Headlight condition	Light on	Continuity
			Go out	No continuity

If circuit is not as specified, inspect the wire harness or refer to BE–94 wiring diagram and inspect the circuits connected to other parts.

HEADLIGHT CLEANER RELAY

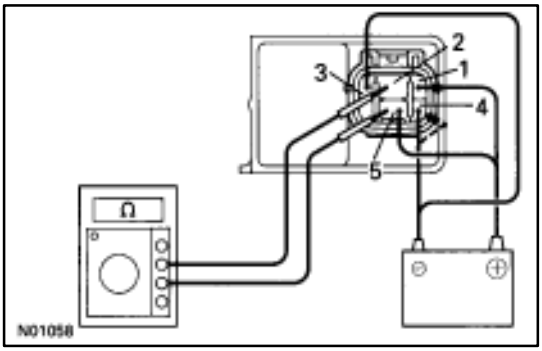
HEADLIGHT CLEANER RELAY REMOVAL AND INSTALLATION

1. REMOVE HEADLIGHT CLEANER RELAY

(a) Remove the fender liner RH.
(b) Disconnect connector.
(c) Remove a bolt and relay.

2. INSTALL HEADLIGHT CLEANER RELAY

For installation, follow the removal procedure in reverse.



HEADLIGHT CLEANER RELAY INSPECTION

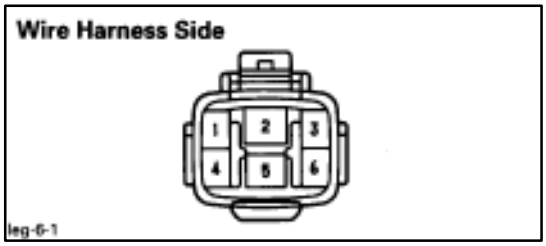
INSPECT HEADLIGHT CLEANER RELAY

(Operation)

(a) Check that there is no continuity between terminals 2 and 5.

(b) Connect the positive (+) lead from the battery to terminals 1 and 5 and the negative (–) lead to terminal 3.

(c) Connect the negative (–) lead from the battery to terminal 4, check that there is continuity between terminals 2 and 5 for 0.4–0.6 seconds, then there is no continuity.



(Circuit)

Disconnect the connector from the relay and inspect the connector on wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Voltage	1–Ground	Ignition switch position	OFF or ACC	No voltage
			ON	Battery positive voltage
	5–Ground	Constant		Battery positive voltage
Continuity	3–Ground	Constant		Continuity
	4–Ground	Ignition switch ON and light control switch turned to HEAD	Cleaner switch ON	Continuity
			Cleaner switch OFF	No continuity

If circuit is not as specified, inspect the wire harness or refer to BE–94 wiring diagram and inspect the circuits connected to other parts.

HEADLIGHT CLEANER MOTOR

HEADLIGHT CLEANER MOTOR REMOVAL AND INSTALLATION

1. REMOVE HEADLIGHT CLEANER MOTOR

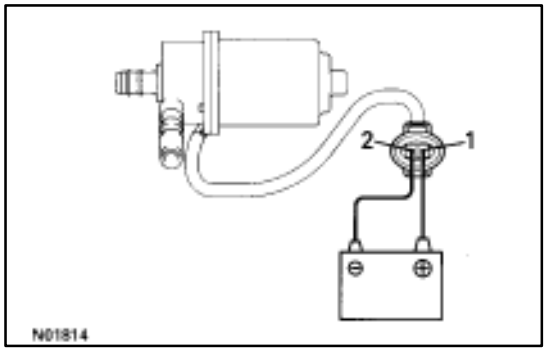
(a) Remove the washer tank.

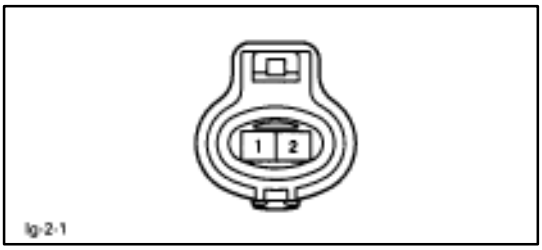
(b) Disconnect the connector and the hose.

(c) Remove the nut and the motor.

2. INSTALL HEADLIGHT CLEANER MOTOR

For installation, follow the removal procedure in reverse.





HEADLIGHT CLEANER MOTOR INSPECTION

INSPECT HEADLIGHT CLEANER MOTOR

(Operation)

Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, check that the motor operates.

NOTICE: There tests must be performed quickly (within 20 seconds) to prevent the coil from burning out.

If operation is not as specified, replace the motor.

(Circuit)

Disconnect the connector from the cleaner motor and inspect the connector on harness side as shown.

Check for	Tester connection	Condition	Specified value
Continuity	2–Ground	Constant	Continuity

If circuit is not as specified, inspect the wire harness or refer to BE–94 wiring diagram and inspect the circuits connected to other parts.

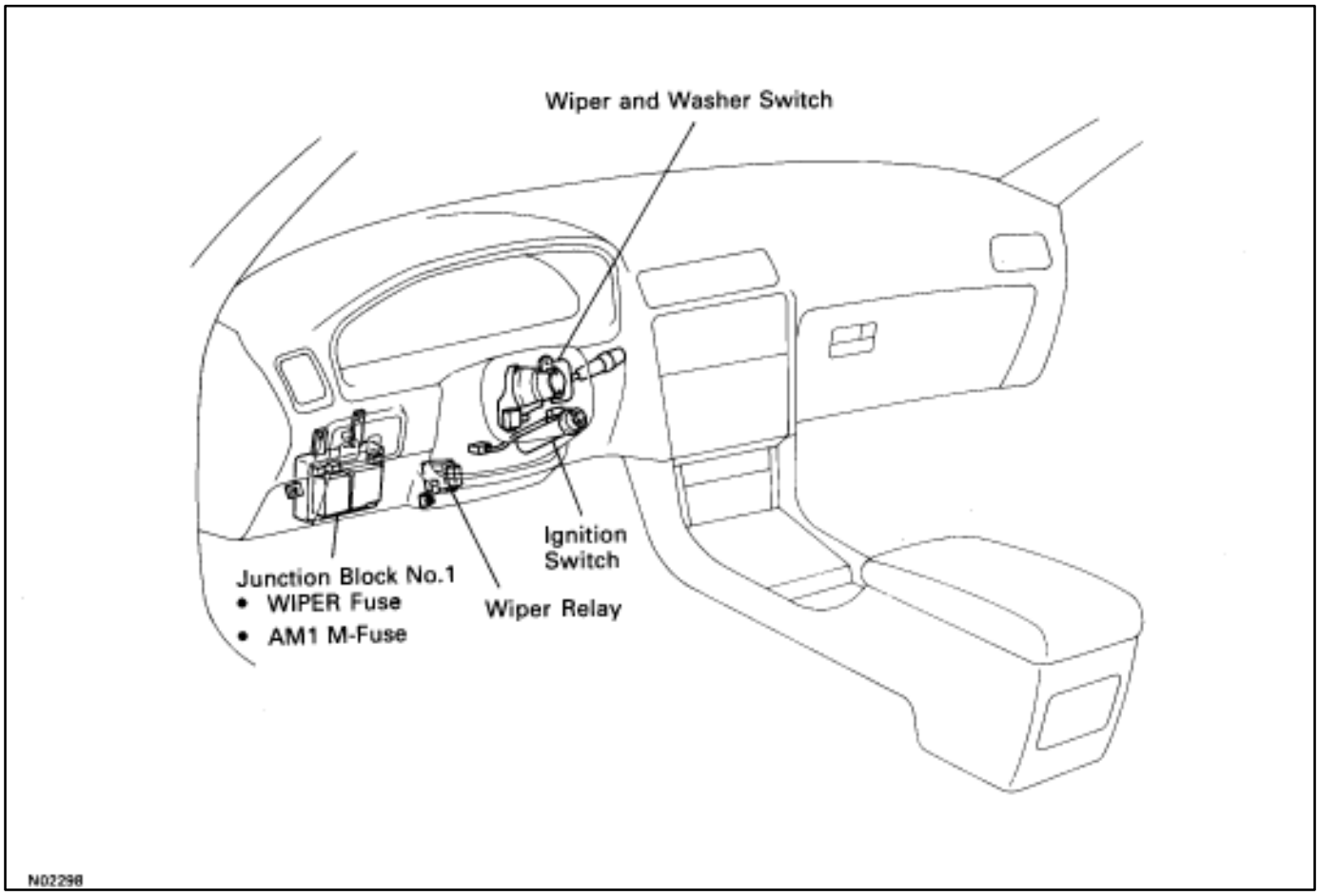
WIPER AND WASHER SYSTEM

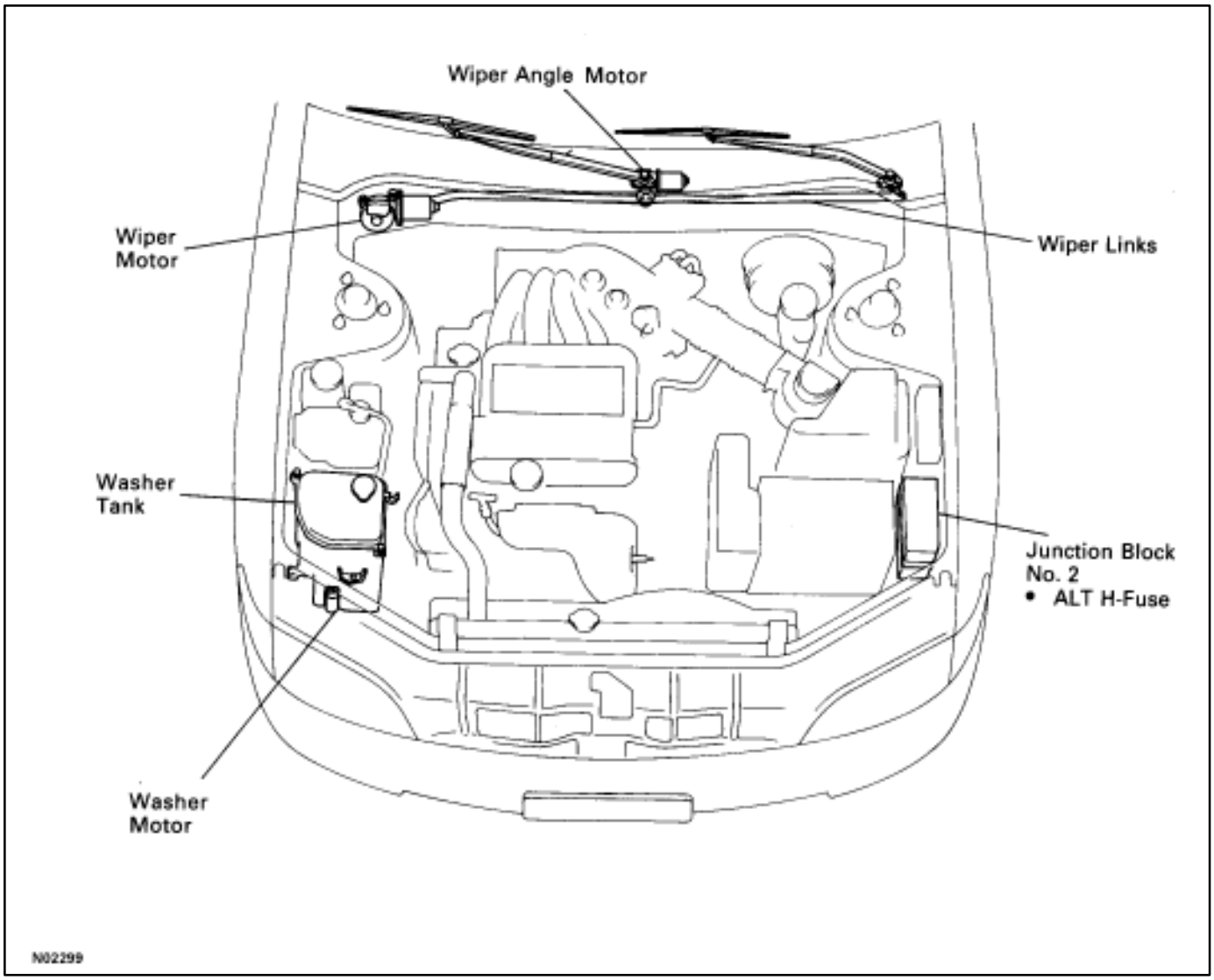
DESCRIPTION

The component parts of this system and their functions are described in the following table.

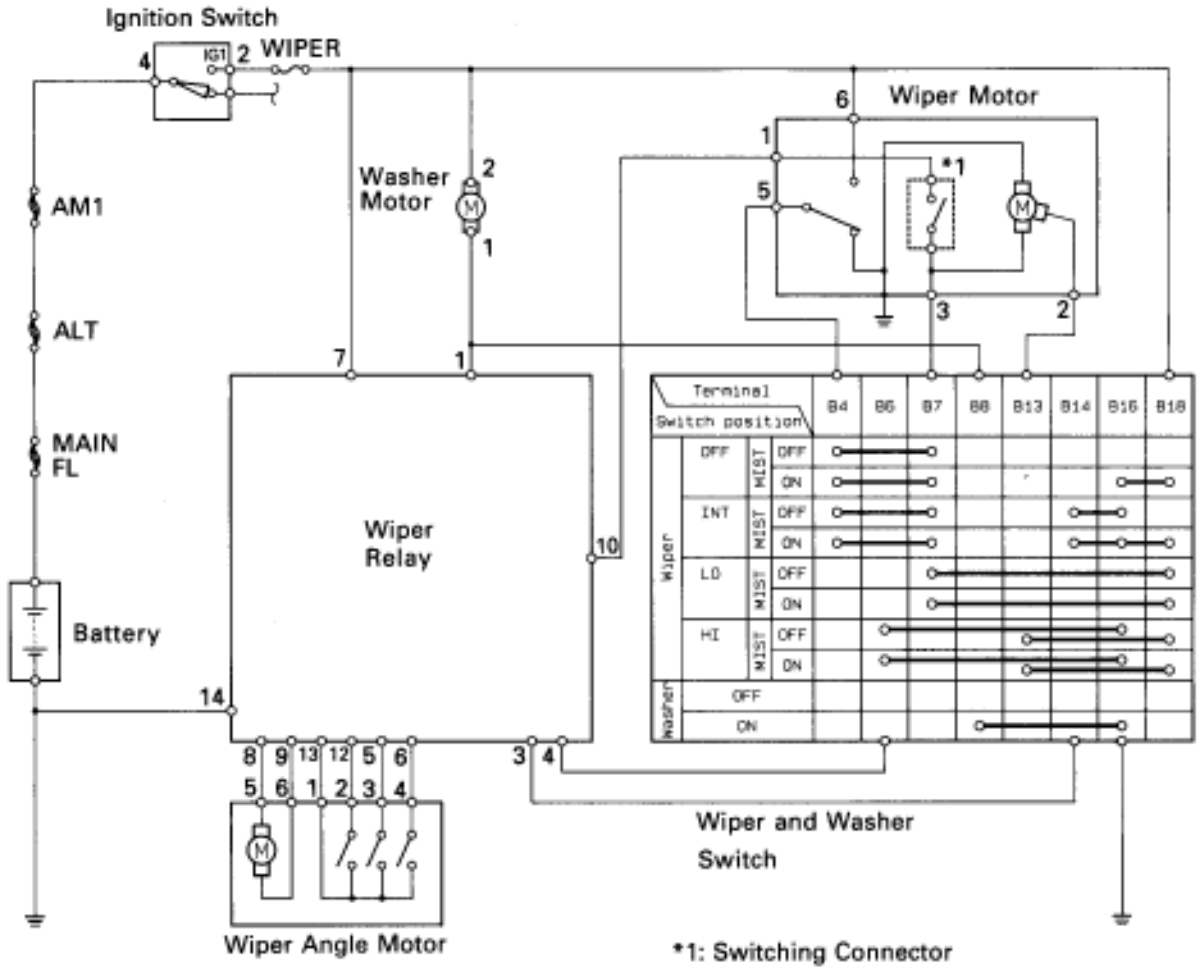
Parts Name	Function
Wiper Switch	This switch turns the current to the wiper motor ON and OFF at intervals and operates the Wipers continuously when the washer switch is ON. A built–in variable resistor is used to adjust the interval for intermittent operation. The switch changes the current from the wiper motor in order to operate the wiper motor at different speeds.
Wiper Relay	This relay operates the wiper angle motor and changes the wiper angle according to the position of the wiper switch.
Wiper Angle Motor	A signal from the wiper relay starts the motor and moves the fulcrum of the link to alter the Wiper angle. (Set position, LO and INT position and HI position)
Wiper Motor	Switching of the current at the wiper switch and wiper relay operates the motor at each speed (HI, LO) and at intervals (INT), thus moving the wiper arms and blades. By disconnecting the switching connector on the wiper motor and reconnecting it with the Sides reversed, the wipers are switched from fully concealed to semi–concealed, or vice–versa.
Washer Switch	By grounding current from the washer motor, this switch operates the washer motor.
Washer Motor	An internal turbine pump in this motor pumps washer fluid and sprays it out from the washer nozzles.

PARTS LOCATION




Wiper Angle Motor
Wiper Motor
Wiper Links
Washer Tank
Junction Block No. 2
• ALT H-Fuse
Washer Motor
N02299

WIRING AND CONNECTOR DIAGRAMS

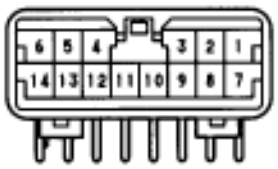


N02300

Wiper Motor

Ie-6-2-F

Wiper Relay



e-14-2-F

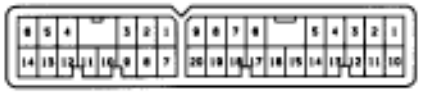
Washer Motor

BE4107

Wiper Angle Motor

Ie-6-2-B

Wiper and Washer Switch (in Combination Switch)



Connector "A" Connector "B"

V-34-2

TROUBLESHOOTING

You will find the cause of trouble more easily using the table shown below. In this table, the number indicate the order priority of the causes in trouble. Check each part in the order shown. If necessary, replace the parts.

See page / Parts name / Trouble	BE–6, 20	BE–103	BE–108	BE–105	BE–106	BE–109	BE–103	BO–68	-
	WIPER Fuse	Wiper Switch	Wiper Relay	Wiper Motor	Wiper Angle Motor	Washer Motor	Washer Switch	Washer Hose and Nozzle	Wire Harness
Wipers and washers do not operate.	1	2		3					4
Wipers do not operate in LO, HI or MIST.		1		2					3
Wipers do not operate in INT.		1		2					3
Washer motor does not operate.						2	1		3
Wipers do not operate when washer switch is ON.						1			2
Washer fluid does not spray.								1	
• At wiper switch HI position, the wiper blade is in contact with the body. • When the wiper switch is OFF, the wiper blade does not retract or the retract position wrong.			1*1		2				3

*1 : Inspect wiper arm and blade set position

COMBINATION SWITCH

COMBINATION SWITCH REMOVAL
(See page BE–45)

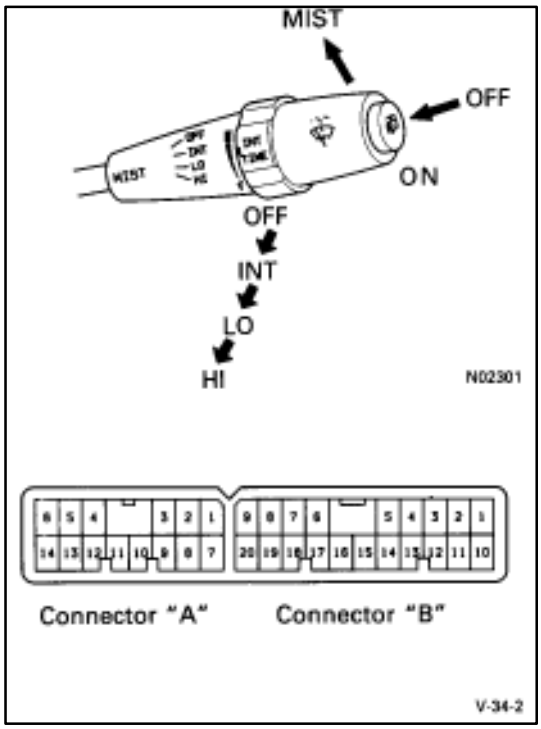
COMBINATION SWITCH INSTALLATION
(See page BE–46)

COMBINATION SWITCH DISASSEMBLY
(See page BE–47)

COMBINATION SWITCH ASSEMBLY
(See page BE–50)

COMBINATION SWITCH INSPECTION
INSPECT WIPER AND WASHER SWITCH
(Continuity)

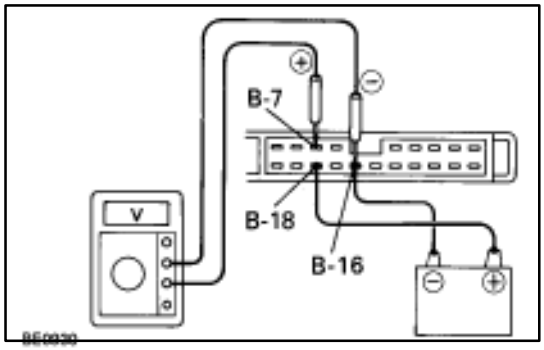
Inspect the switch continuity between terminals.

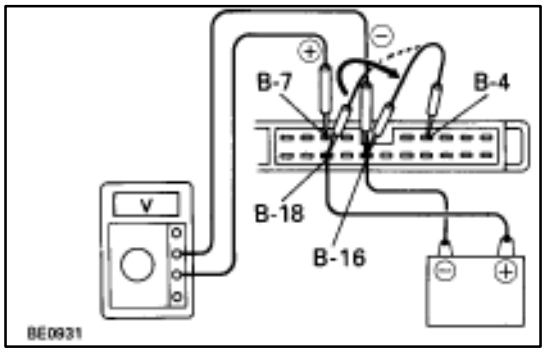


Terminal / Switch position			B4	B6	B7	B8	B13	B14	B16	B18
Wiper	OFF	MIST OFF	○		○					
		MIST ON	○		○				○	○
	INT	MIST OFF	○		○			○	○	
		MIST ON	○		○			○	○	○
	LO	MIST OFF			○					○
		MIST ON			○					○
	HI	MIST OFF		○			○		○	○
		MIST ON		○			○		○	○
Washer	OFF									
	ON					○			○	

Terminal / Condition	B4	B7	B16	B18
*1 Constant	○	○	○	○
*1 Apply battery positive voltage to terminal B16 and B18		○		○
*1: with wiper switch OFF or INT, and MIST ON.				

If continuity is not as specified, replace the switch.



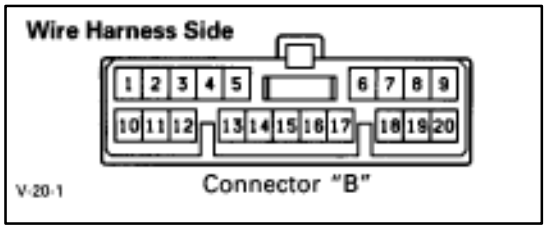


(Intermittent Wiper Operation)

(a) Turn the wiper switch to INT position.
(b) Turn the intermittent time control switch to FAST position.
(c) Connect the positive (+) lead from the battery to terminal B–18 and the negative (–) lead to terminal B–16.
(d) Connect the positive (+) lead from the voltmeter to terminal B–7 and the negative (–) lead to terminal B–16, check that the meter needle indicates battery positive voltage.
(e) After connecting terminal B–4 to terminal B–18, connect to terminal B–16.
Then, check that the voltage rises from 0 V to battery positive voltage within the times as shown in the table.

INT time control switch position	Voltage	
FAST	1.6 ± 1 sec.	Battery positive voltage 0 volts
SLOW	10.7 ± 5 sec.	Battery positive voltage 0 volts

If operation is not as specified, replace the switch.



(Switch Circuit)

Disconnect the connector "B" from the switch and inspect the connector "B" on the wire harness side as shown.

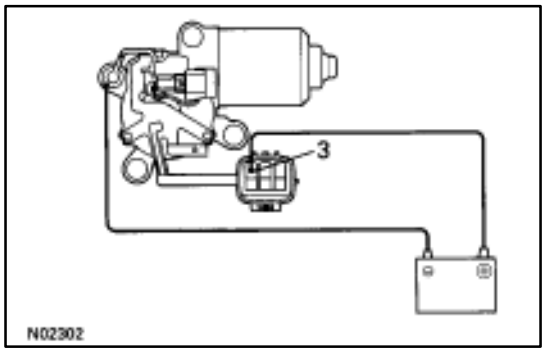
Check for	Tester connection	Condition		Specified value
Continuity	B16–Ground	Constant		Continuity
Voltage	B18–Ground	Ignition switch	LOCK or ACC	No voltage
			ON	Battery positive voltage

If circuit is not as specified, inspect wire harness or power source.

WIPER MOTOR

WIPER MOTOR REMOVAL AND INSTALLATION

(See page BO–68)



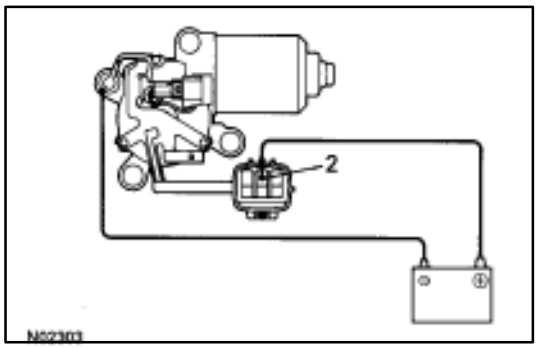
WIPER MOTOR INSPECTION

INSPECT MOTOR

(Operation at Low Speed)

Connect the positive (+) lead from the battery to terminal 3 and the negative (–) lead to the motor body, check that the motor operates at low speed.

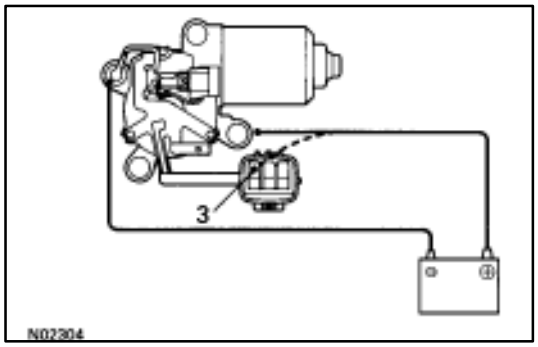
If operation is not as specified, replace the motor.



(Operation at High Speed)

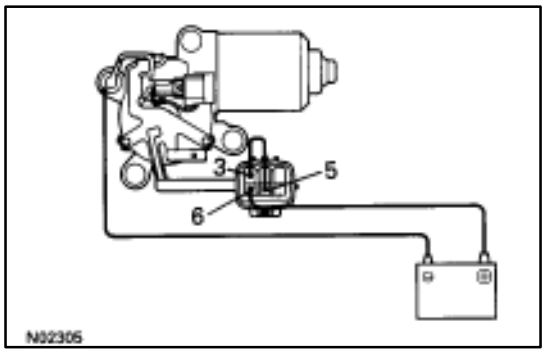
Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to the motor body, check that the motor operates at high speed.

If operation is not as specified, replace the motor.



(Operation, Stopping at Stop Position)

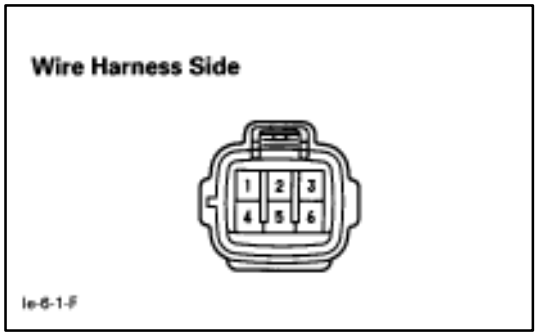
(a) Operate the motor at low speed and stop the motor operation anywhere except at the stop position by disconnecting positive (+) lead from terminal 3.



(b) Connect terminals 3 and 5.

(c) Connect the positive (+) lead from the battery to terminal 6 and the negative (–) lead to the motor body check that the motor stops running at the stop position after the motor operates again.

If operation is not as specified, replace the motor.



(Motor Circuit)

Disconnect the connector from the motor and inspect the connector on the wire harness side as shown.

Check fo	Tester connection	Condition		Specified value
Voltage	2–Ground	Wiper switch position (Ignition switch ON)	OFF or INT, LOW	No voltage
			HIGH	Battery positive voltage
	3–Ground	Wiper switch position (Ignition switch ON)	OFF or INT, HIGH	No voltage
			LOW	Battery positive voltage
	6–Ground	Ignition switch position	OFF or ACC	No voltage
			ON	Battery positive voltage

If circuit is not as specified, refer to BE–101 wiring diagram and inspect the circuits connected to other parts.

WIPER ANGLE MOTOR

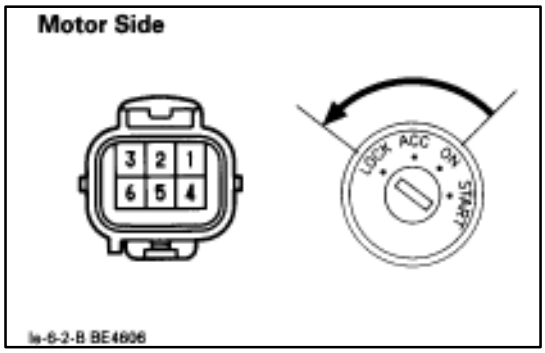
WIPER ANGLE MOTOR REMOVAL AND INSTALLATION (See page BO–68)

WIPER ANGLE MOTOR INSPECTION

INSPECT WIPER ANGLE MOTOR

(Operation at INT and Low position)

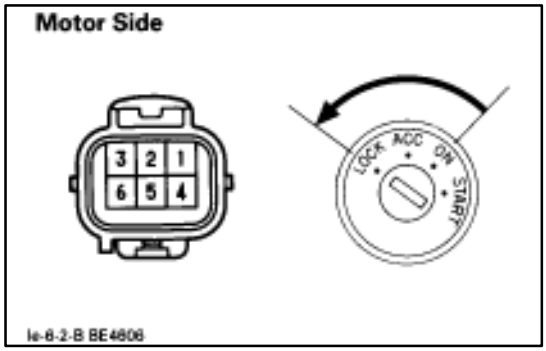
(a) Connect the two connectors.
(b) Turn the ignition switch ON and wiper switch INT or Low position.
(c) Turn the ignition switch LOCK or ACC.



(d) Disconnect the wiper angle motor connector and inspect the motor side as shown.

Terminal	1	2	3	4
Continuity	○	○		○

If operation is not specified, replace the motor or inspect the relay.



(Operation at High position)

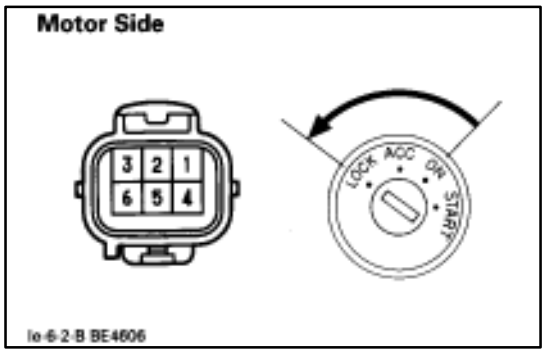
(a) Connect the two connectors.
(b) Turn the ignition switch ON and wiper switch HIGH position.
(c) Turn the ignition switch LOCK or ACC.
(d) Disconnect the wiper angle motor connector and inspect the motor side as shown.

Terminal	1	2	3	4
Continuity	○		○	

If operation is not specified, replace the motor or inspect the relay.

(Operation, Stopping at Stop Position)

(a) Connect the two connector.

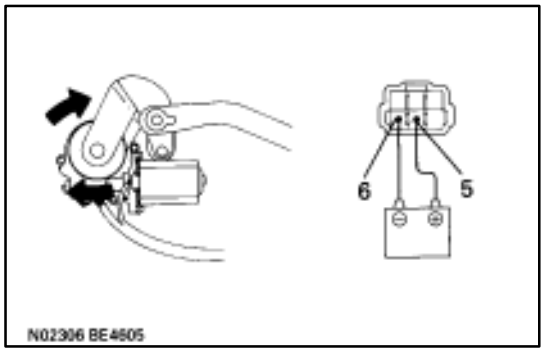


(b) Turn the ignition switch ON and operate the wiper motor once and turn the wiper switch OFF.
(c) Turn the ignition switch OFF.
(d) Disconnect the wiper angle Motor connector and inspect the motor side as shown.

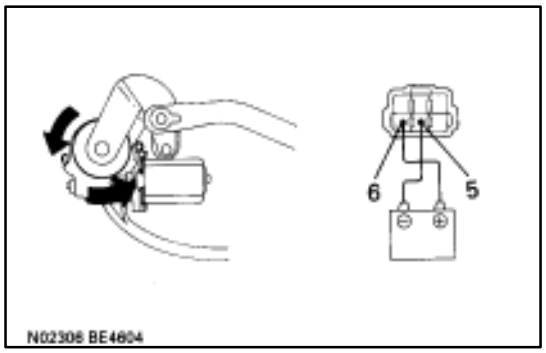
Terminal	1	2	3	4
Continuity	○		○	○

If operation is not as specified, replace the motor or inspect the relay.

(Motor Operation)



(a) Connect the positive (+) lead from the battery to terminal 5 and the negative (–) lead to terminal 6, check that the motor turns clockwise.



(b) Reverse the polarity, check that the motor turns counterclockwise.
If operation is not as specified, replace the motor.

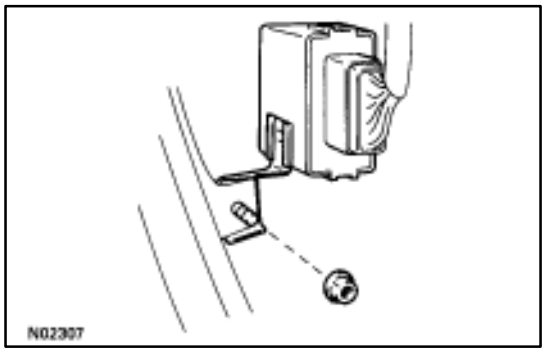
WIPER RELAY

WIPER RELAY REMOVAL AND INSTALLATION

(See page BO–107)

1. REMOVE WIPER RELAY

(a) Remove the safety pad.
(b) Disconnect the connector from the relay.
(c) Remove the nut and the relay from the brake pedal bracket.



2. INSTALL WIPER RELAY

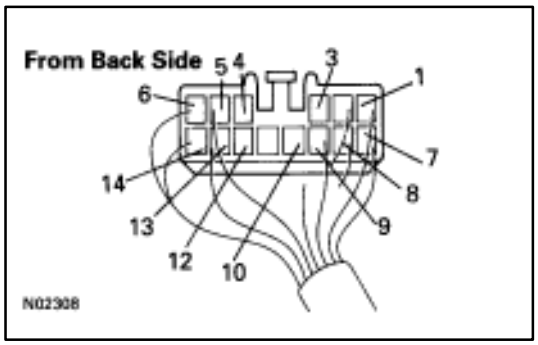
For installation follow the removal procedure in reverse.

WIPER RELAY INSPECTION

INSPECT WIPER RELAY

(Relay Circuit)

Connect the wire harness side connector to the wiper relay and inspect wire harness side connector from the back side as shown.



Check for	Tester connection	Condition		Specified value
Continuity	14 – Ground	*Constant		Continuity
Voltage	1 – Ground	*Washer switch position	ON	No voltage
			OFF	Battery positive voltage
	3 – Ground	*Wiper switch position	INT	No voltage
			OFF or LOW, HIGH	Battery positive voltage
	4 – Ground	*Wiper switch position	HIGH	No voltage
			OFF or INT, LOW	Battery positive voltage
	5 – Ground	*Wiper switch position	OFF, HIGH	No voltage
			INT or LOW	Battery positive voltage
	6 – Ground	*Wiper switch position	OFF or INT, LOW	No voltage
			HIGH	Battery positive voltage
	7 – Ground	Ignition switch position	OFF or ACC	No voltage
			ON	Battery positive voltage
	8 – Ground	*Wiper switch position	OFF → INT or LOW	No voltage → Battery positive voltage
			INT or LOW → HIGH	
	9 – Ground	*Wiper switch position	HIGH → INT or LOW	No voltage → Battery positive voltage
			INT or LOW → OFF	
	10 – Ground	*Wiper switch position	OFF	No voltage
			LOW	Battery positive voltage
	12 – Ground	*Wiper switch position	INT or LOW	No voltage
			OFF or HIGH	Battery positive voltage
	13 – Ground	*Constant		No voltage

* with ignition switch turned to ON

If the circuit is as specified, trying replacing the relay with a new one.

If the circuit is not as specified, refer to BE–101 wiring diagram and inspect the circuits connected to other parts.

WASHER MOTOR

WASHER MOTOR REMOVAL AND INSTALLATION
(See page BO–68)

1. REMOVE WASHER MOTOR

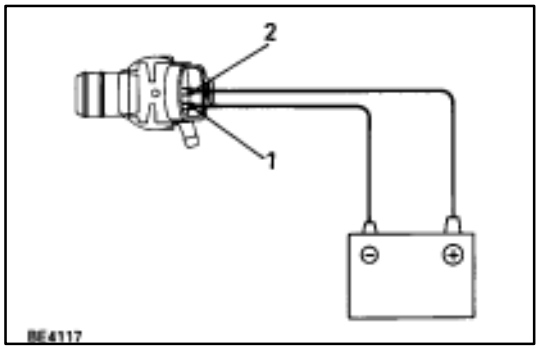
(a) Disconnect the connector and the hose.

(b) Remove the washer tank.

(c) Separate the washer tank and washer motor.

2. INSTALL WASHER MOTOR

For installation follow the removal procedure in reverse.



WASHER MOTOR INSPECTION

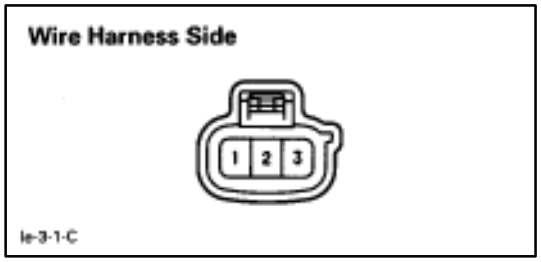
INSPECT WASHER MOTOR

(Operation)

Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1, check that the motor operates.

NOTICE: There tests must be performed quickly (within 20 seconds) to prevent the coil from burning out.

If operation is not as specified, replace the motor.



(Circuit)

Disconnect the connector from the washer motor and inspect the connector on harness side as shown.

Check for	Tester connection	Condition		Specified value
Continuity	1–Ground	Washer switch position	OFF (released)	No continuity
			ON (pushed in)	Continuity
Voltage	2–Ground	Ignition switch position	LOCK or ACC	No voltage
			ON	Battery positive voltage

If circuit is not as specified, inspect wire harness, power source or wiper switch.

COMBINATION METER

DESCRIPTION

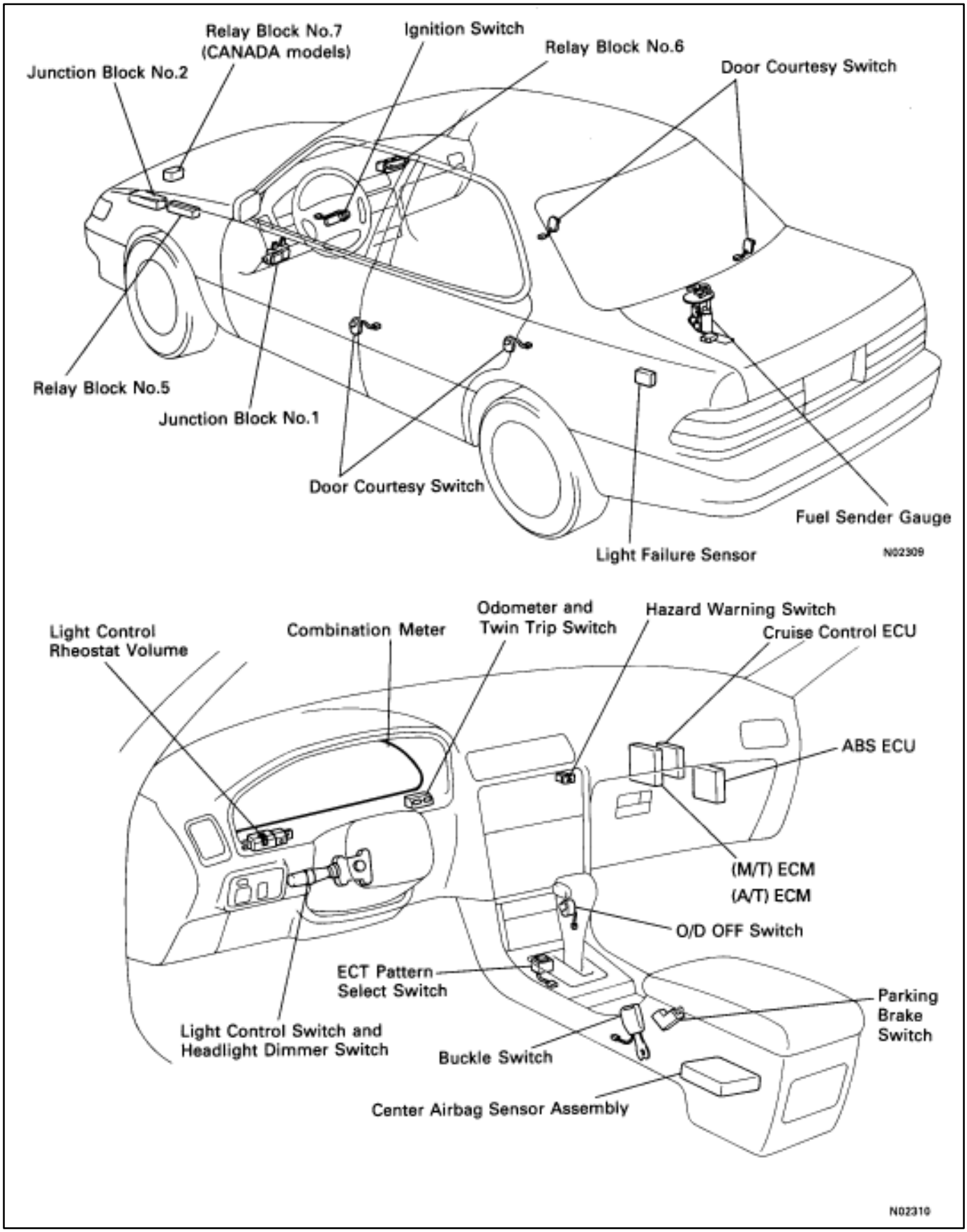
The combination meter has various meters and gauges which show the vehicle's condition, warning lights which monitor abnormalities in the vehicle and inform the driver, indicator lights which inform the driver of the condition of each part of vehicle, and a function for illumination and brightness adjustment of meters and gauges.

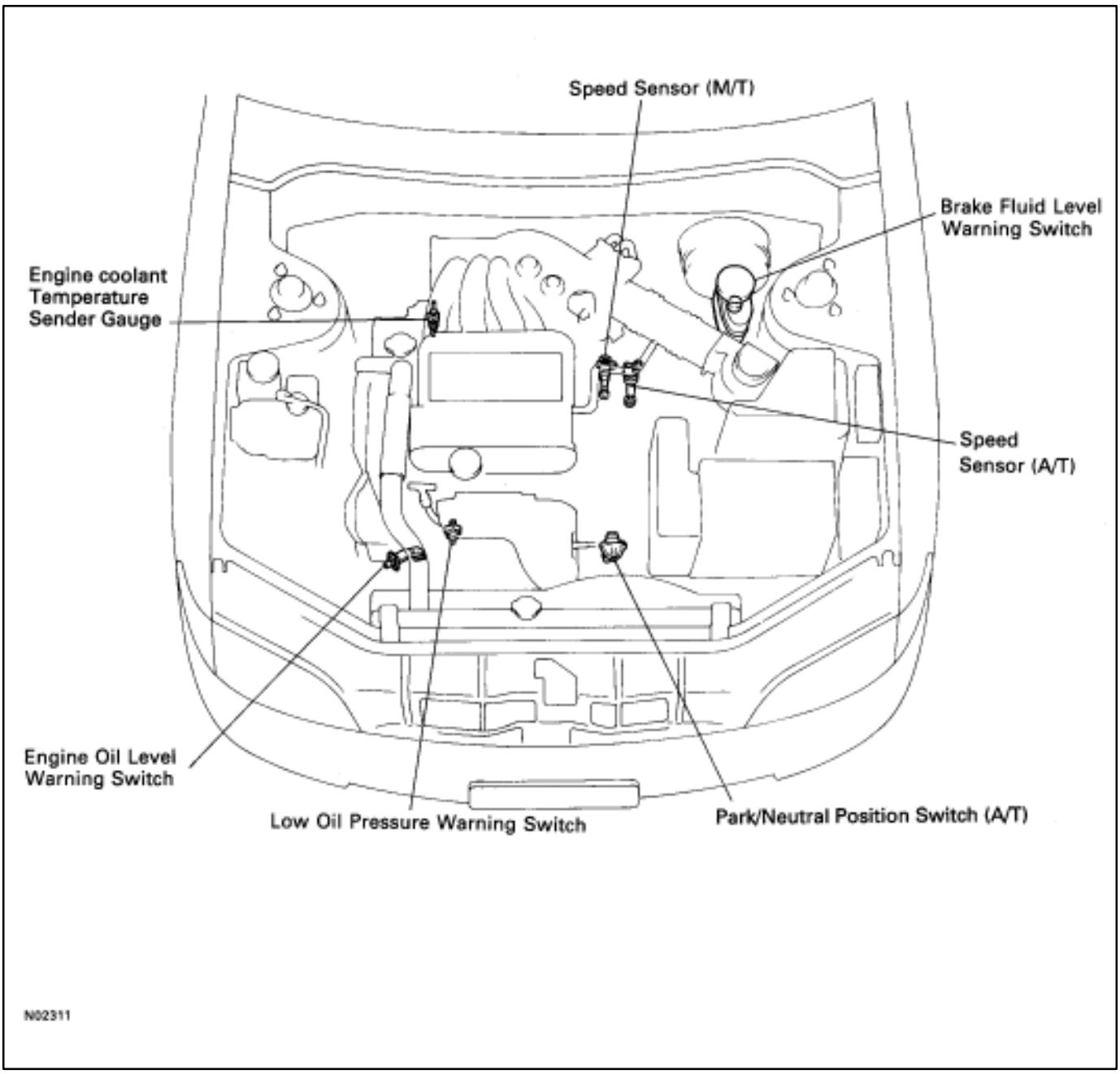
The component parts of this system and their functions are described in the following table.

Parts Name		Function
Combination Meter	Speedometer	The speedometer needle moves in accordance with signals from the speed sensor to indicate the vehicle's speed.
	Tachometer	The tachometer needle moves in accordance with signals from the igniter to indicate the engine's speed.
	Engine Coolant Temperature Gauge	The engine coolant temperature gauge's needle moves in accordance with signals from the sender gauge and indicates the temperature of the engine coolant.
	Fuel Gauge	The fuel gauge needle moves in accordance with signals from the sender gauge, indicating the amount of fuel remaining in the fuel tank.
	Odometer & Twin Trip Meter	The odometer counts the total distance traveled by the vehicle in accordance with pulse signals from the speed sensor. The twin trip meter counts the distance traveled by the vehicle in accordance with pulse signals from the speed sensor. It can be reset using a switch and can be used to switch between trip meters A and B.
Speed Sensor		Mounted in the transmission, this sensor outputs pulse signals to the combination meter in accordance with the speed of the output shaft.
Odometer & Twin Trip Switch		Operation of "ODO/TRIP" switch switches between odometer and twin trip meter. Operation of "TRIP RESET" switch switches between A and B trip meters and sends reset signal to the combination meter.
Engine Coolant Temperature Sender Gauge		This sender converts engine coolant temperatures to a resistance value in signal form to the combination meter.
Fuel Sender Gauge		This sender converts the level of fuel remaining in fuel tank to resistance value and sends the resistance value in signal form to combination meter.
Rheostat Light Control Volume		In order to adjust the degree of illumination of the combination meter, the resistance value of the built-in variable resistor is sent to the combination meter and rheostat light control.
Rheostat Light Control		This control adjusts the brightness of the illumination light in the combination meter in accordance with the resistance value from the rheostat light control volume.
Fuel Level Warning Swith		When the level of fuel remaining falls below a predetermined level, continuity is established with this switch, which is built into the fuel sender gauge, causing a warning light to light up.
Low Oil Pressure Warning Switch		This switch is mounted on the engine block. Continuity is established in this switch when the oil pressure is low, causing a warning light to light up.
Integration Relay		This relay receives current from GAUGE fuse and DOME fuse and is connected to each buckle switch, door courtesy switch, key unlock warning switch and warning light. As part of the seat belt warning system, it sounds a chime and lights a warning light when seat belts are unfastened.

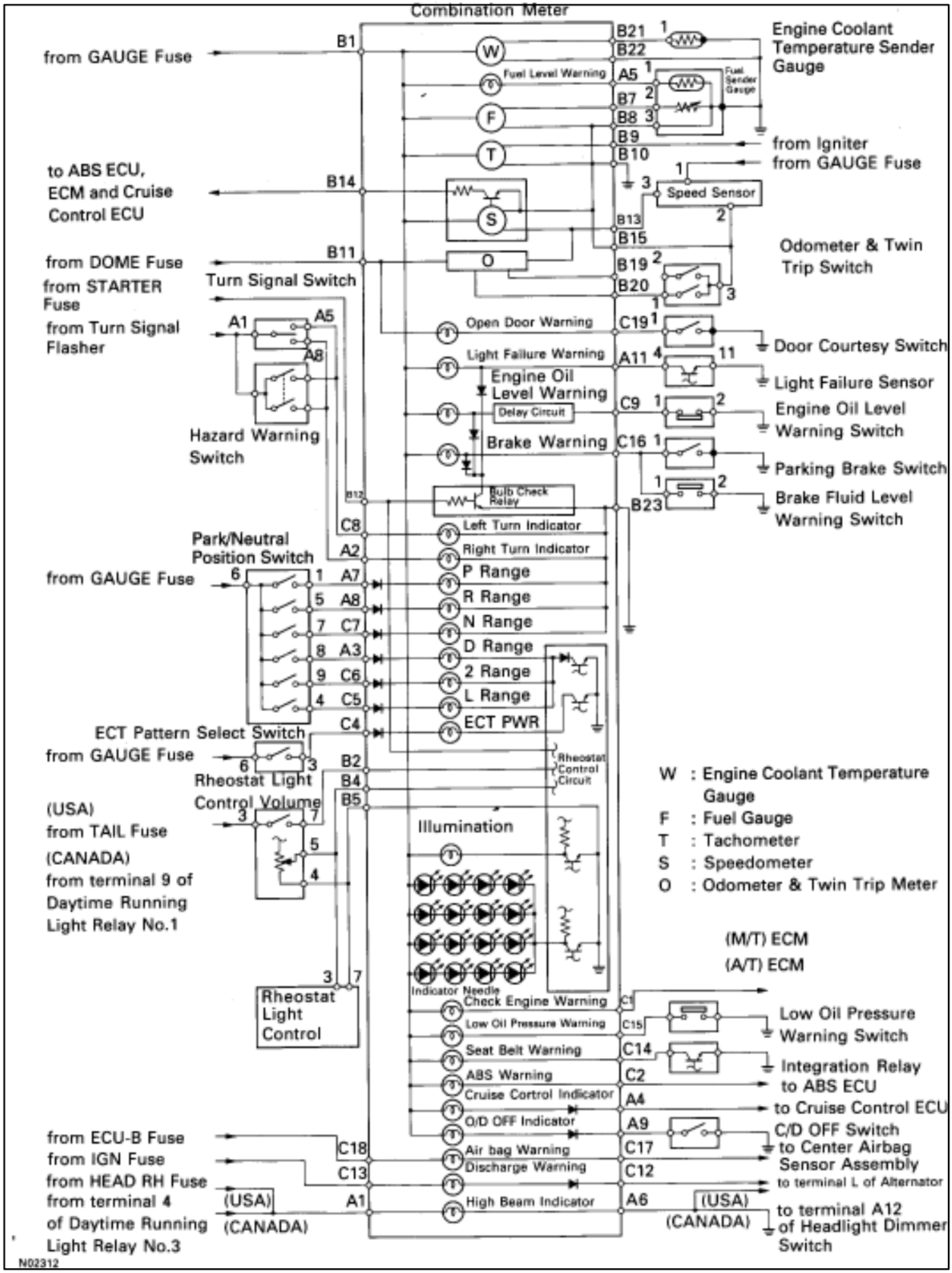
Parts Name	Function
Light Failure Sensor	This sensor senses when a bulb in rear combination light is burnt out and lights up a warning light.
Engine Oil Level Warning Switch	This switch is mounted in the engine oil pan. It lights a warning light when the engine oil level is low.
Brake Fluid Level Warning Switch	This switch is mounted in the brake master cylinder reservoir tank. It lights up a warning light when the brake fluid level is low.
Parking Brake Switch	This switch is on the parking brake lever bracket. Continuity in this switch is established when the lever is released, causing a warning light to light up.
Door Courtesy Switch	Continuity is established in this switch when a door is opened, causing a warning light to light up.
Buckle Switch Warning Lights	Continuity is established in this switch when seat belt is fastened. When an abnormality is detected in the vehicle, current is sent to these lights, or they are grounded, causing them to light up.
Indicator Lights	Current is sent to these lights, or they are grounded, causing them to light up and indicate the vehicle's condition to the driver.

PARTS LOCATION



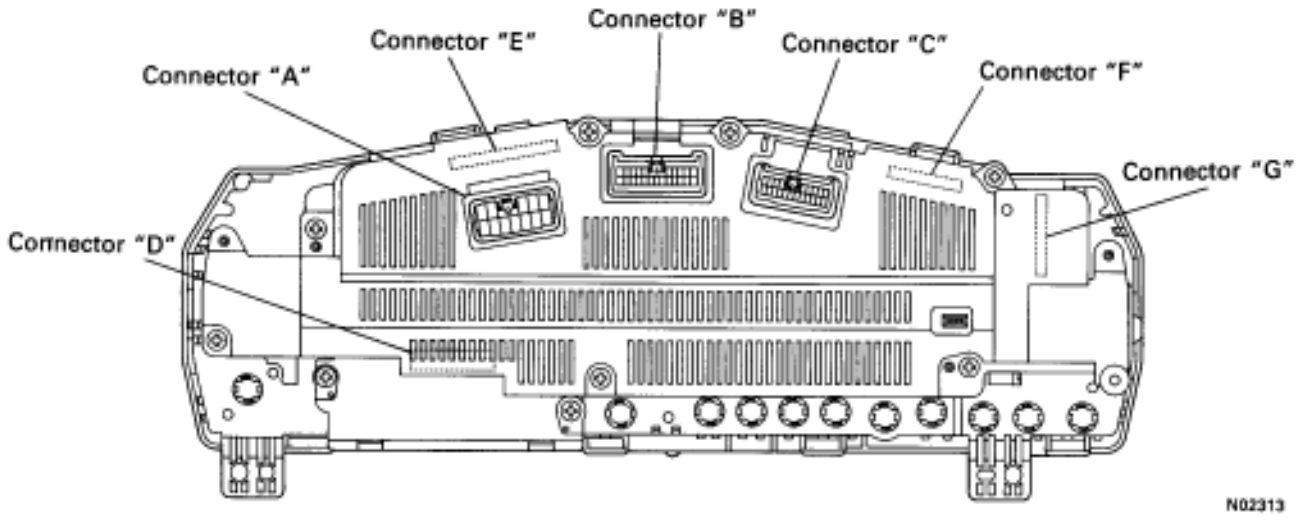

Speed Sensor (M/T)
Brake Fluid Level Warning Switch
Engine coolant Temperature Sender Gauge
Speed Sensor (A/T)
Engine Oil Level Warning Switch
Low Oil Pressure Warning Switch
Park/Neutral Position Switch (A/T)
N02311

WIRING DIAGRAM



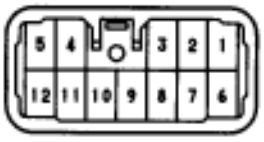
CONNECTOR DIAGRAMS

Combination Meter



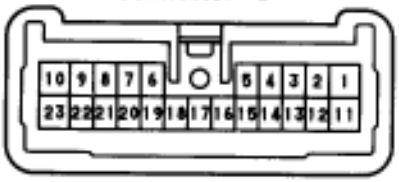
N02313

Connector "A"



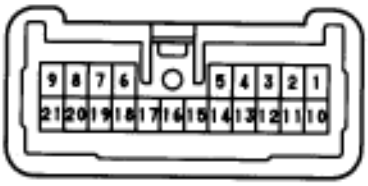
e-12-2-B

Connector "B"



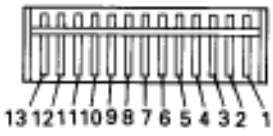
eh-23-2-A

Connector "C"



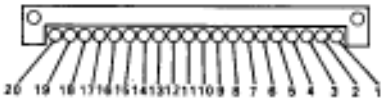
h-21-2

Connector "D"



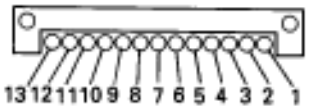
N02314

Connector "E"



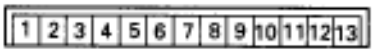
N02315

Connector "F" "G"



N02316

Odometer and Twin Trip Meter



N02317

Speed Sensor

N02331

Odometer and Twin Trip Switch

h-3-2

Fuel Sender Gauge

le-5-2-A

Engine Coolant Temperature Sender Gauge

BE2563

Low Oil Pressure Warning Switch

BE3928

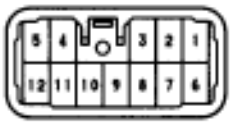
Brake Fluid Level Warning Switch

IS-2-2-0

Parking Brake Switch

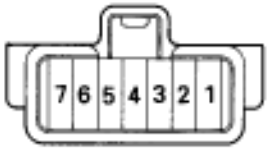
e-1-2

Light Failure Sensor



e-12-2-B

Volume Rheostat Light Control



N01958

Door Courtesy Switch

e-1-1

Engine Oil Level Warning Switch

BE3710

Rheostat Light Control

e-8-2-B

TROUBLESHOOTING

Precaution

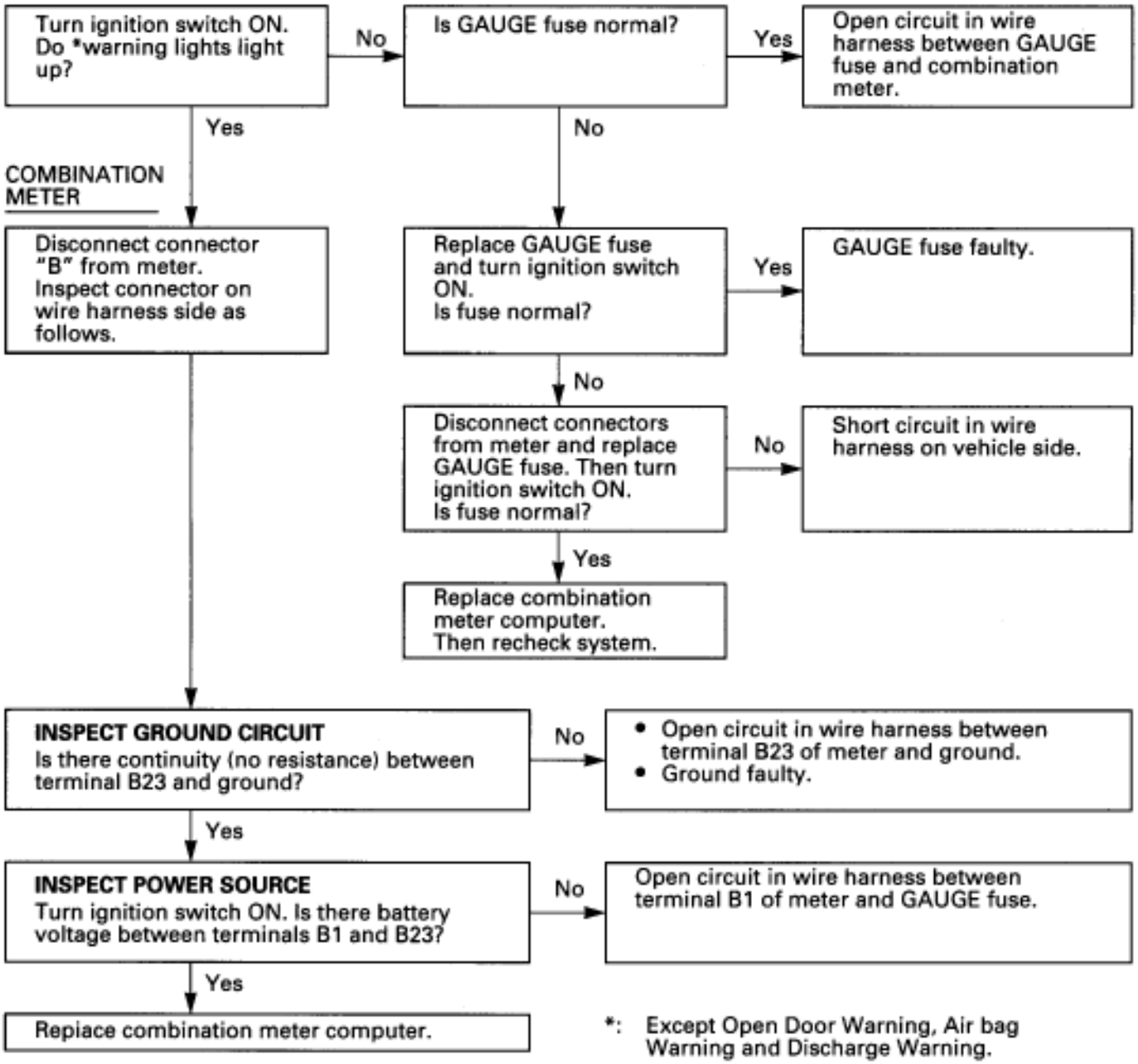
1. **When checking voltage, resistance, etc., use a high impedance type tester (It is impossible with a simple tester).**
2. **When the ignition switch is turned to START, all meters will go out but this is normal.**
3. **When replacing the internal mechanism (computer parts) of the meter, be careful that no part of your body or clothing comes in contact with the terminals of the leads from the IC, etc. of the replacement parts (spare parts).**
4. **Do not disconnect the battery while the engine is running as this would cause an instant reverse charge, resulting in damage to the components.**
5. **Always disconnect the battery terminals before pulling apart connectors or terminals.**
6. **To prevent damage, handle meters with care.**

Trouble		Refer to
All Meters, Gauges, and Illuminations	No display at all.	1
	The four indicator needles do not light up.	Replace combination meter computer
	One indicator needle does not light up.	2
	The entire character plate is not illuminated at all.	3
	The character plate is not illuminated at one or two locations.	4
	Brightness does not change even when light control switch is operated (OFF TAIL).	5
	Brightness does not change even when rheostat volume is turned.	6
	Remains dimmed when the light control switch is turned OFF.	Replace combination meter computer
	Does not go out while starter running.	7
Speedometer	Speedometer does not operate while driving.	8
	Vehicle speed signal (4P) faulty.	9
Tachometer	Tachometer does not operate while engine running.	10
Fuel Gauge	Does not operate or operation is abnormal.	11
Fuel Level Warning	Warning light does not light up or always lights up.	12
Engine Coolant Temperature Gauge	Does not operate or operation is abnormal.	

Trouble		Refer to
Odometer & Twin Trip Meter	Display does not alter during driving.	14
	Display does not reset when RESET switch pressed.	15
	Display is reset even during driving if RESET switch is not pressed.	15
	Display does not change when ODO/TRIP switch pressed.	15
	Display is reset whenever ignition switch is turned off.	16
	Abnormal display.	Replace odometer & twin trip meter
Low Oil Pressure Warning	Abnormal operation or warning light does not light up.	17
Brake Warning	Abnormal operation or warning light does not light up.	18
Light Failure Warning	Abnormal operation or warning light does not light up.	19
Open Door Warning	Abnormal operation or warning light does not light up.	20
Engine Oil Level Warning	Abnormal operation or warning light does not light up.	21
Seat Belt Warning Chime	Abnormal operation or chime does not operate.	See page BE–170
Seat Belt Warning	Abnormal operation or warning light does not light up.	22
Turn Signal Indicator	Abnormal operation or indicator does not light up.	23
Shift Position Indicator	Abnormal operation or indicator does not light up.	24
ECT PWR Indicator	Abnormal operation or indicator does not light up.	25
Check Engine Warning	Abnormal operation or warning light does not light up.	26
ABS Warning	Abnormal operation or warning light does not light up.	27
CRUISE Indicator	Abnormal operation or indicator does not light up.	28
O/D OFF Indicator	Abnormal operation or indicator does not light up.	29
AIRBAG Warning	Abnormal operation or warning light does not light up.	30
Discharge Warning	Abnormal operation or warning light does not light up.	31
High Beam Indicator	Abnormal operation or indicator does not light up.	32

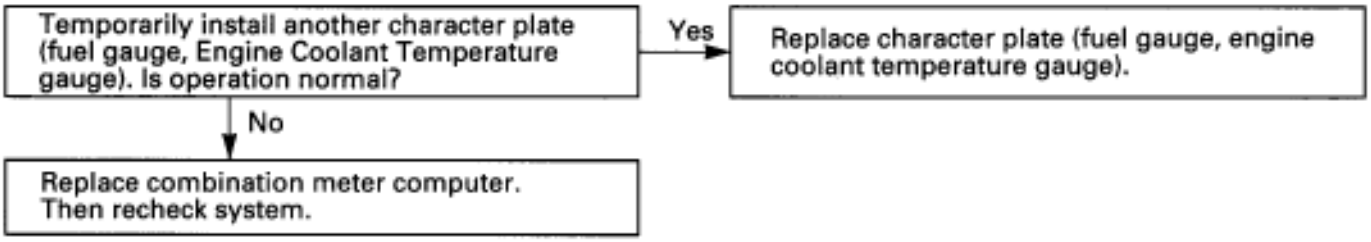
1	**ALL METERS, GAUGES, AND ILLUMINATIONS**	**No display at all.**

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



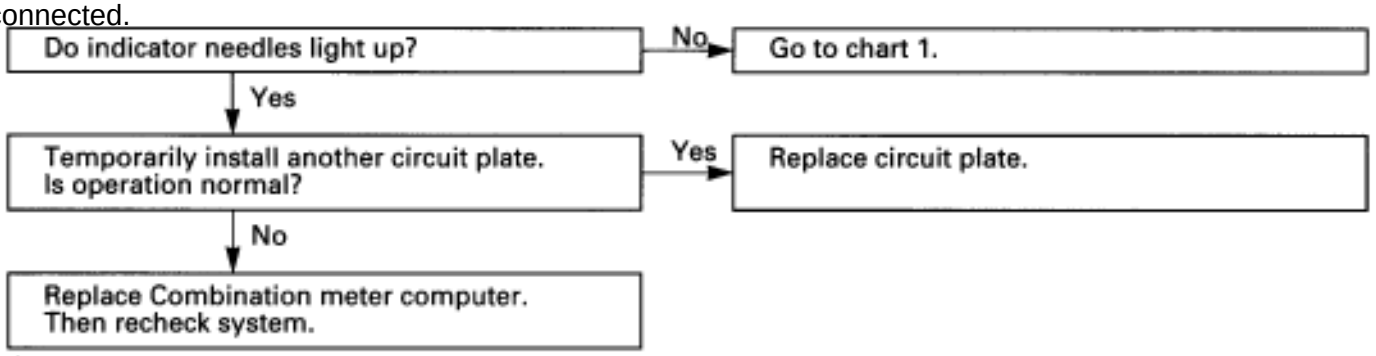
2	**ALL METERS, GAUGES, AND ILLUMINATIONS**	**One indicator needle does not light up.**

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



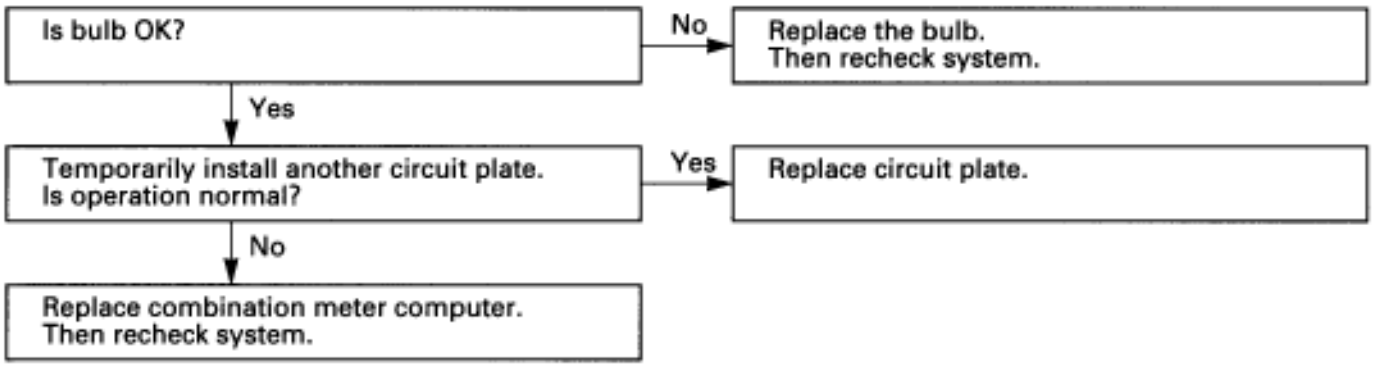
3	**ALL METERS, GAUGES, AND ILLUMINATIONS**	**The entire character plate is not illuminated at all.**

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



4	**ALL METERS, GAUGES, AND ILLUMINATIONS**	**The character plate is not illuminated at one or two locations.**

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



5	ALL METERS AND GUAGES AND ILLUMINATIONS	Brightness does not change even when light control switch is operated. (OFF⊕TAIL)

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

COMBINATION METER

Disconnect connector "B" from meter.
Inspect connector on wire harness side as follows.

INSPECT TAILLIGHT SIGNAL CIRCUIT
Does voltage change between terminal B2 and ground as follows?

Condition		Voltage
Light control switch position	OFF	No voltage
	TAIL or HEAD	Battery positive voltage

No → Taillight signal circuit faulty on vehicle side.
Inspect illumination light system.

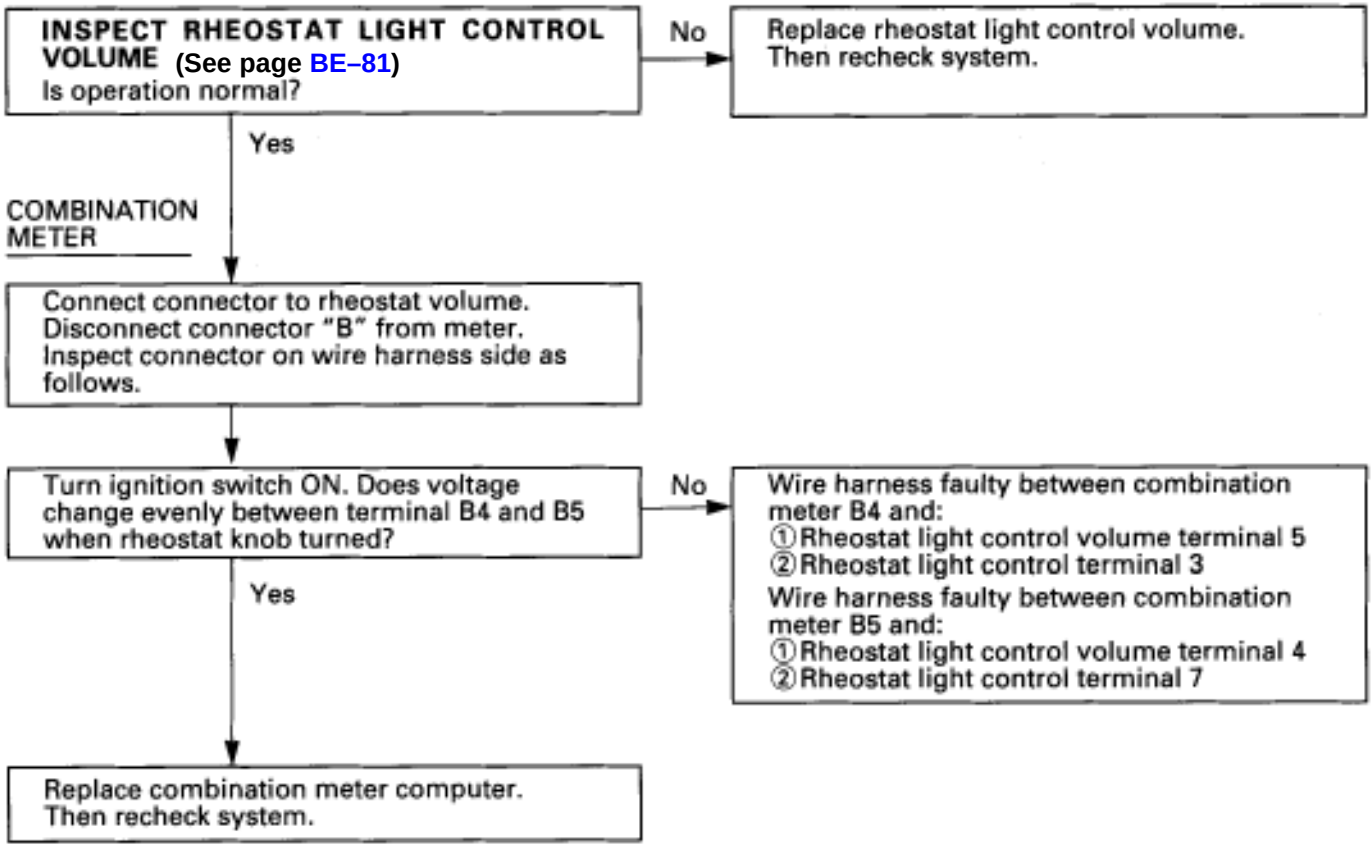
Yes

Replace combination meter computer.
Then recheck system.

6	**ALL METERS AND GUAGES AND ILLUMINATIONS**	**Brightness does not change even when rheostat volume is turned.**

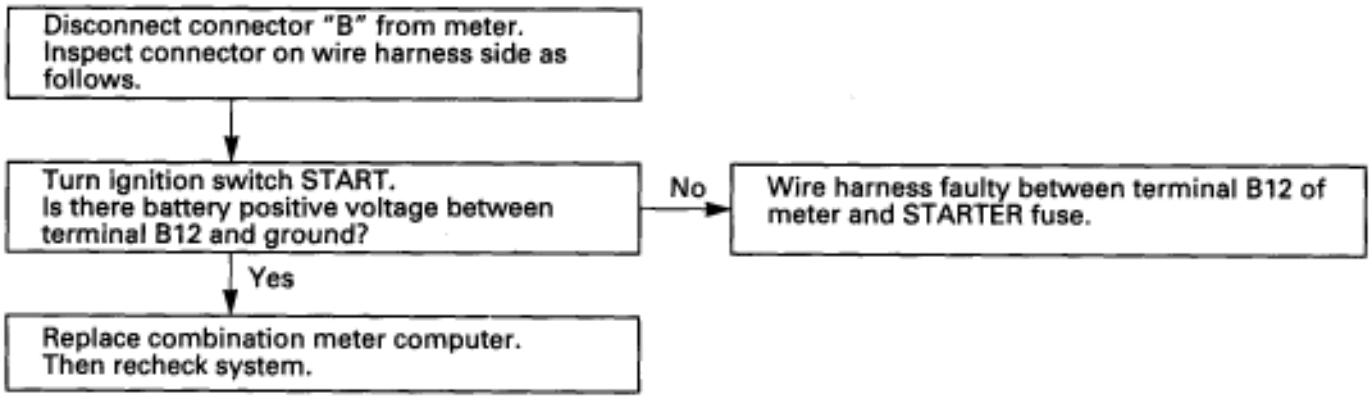
HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

RHEOSTAT LIGHT CONTROL VOLUME



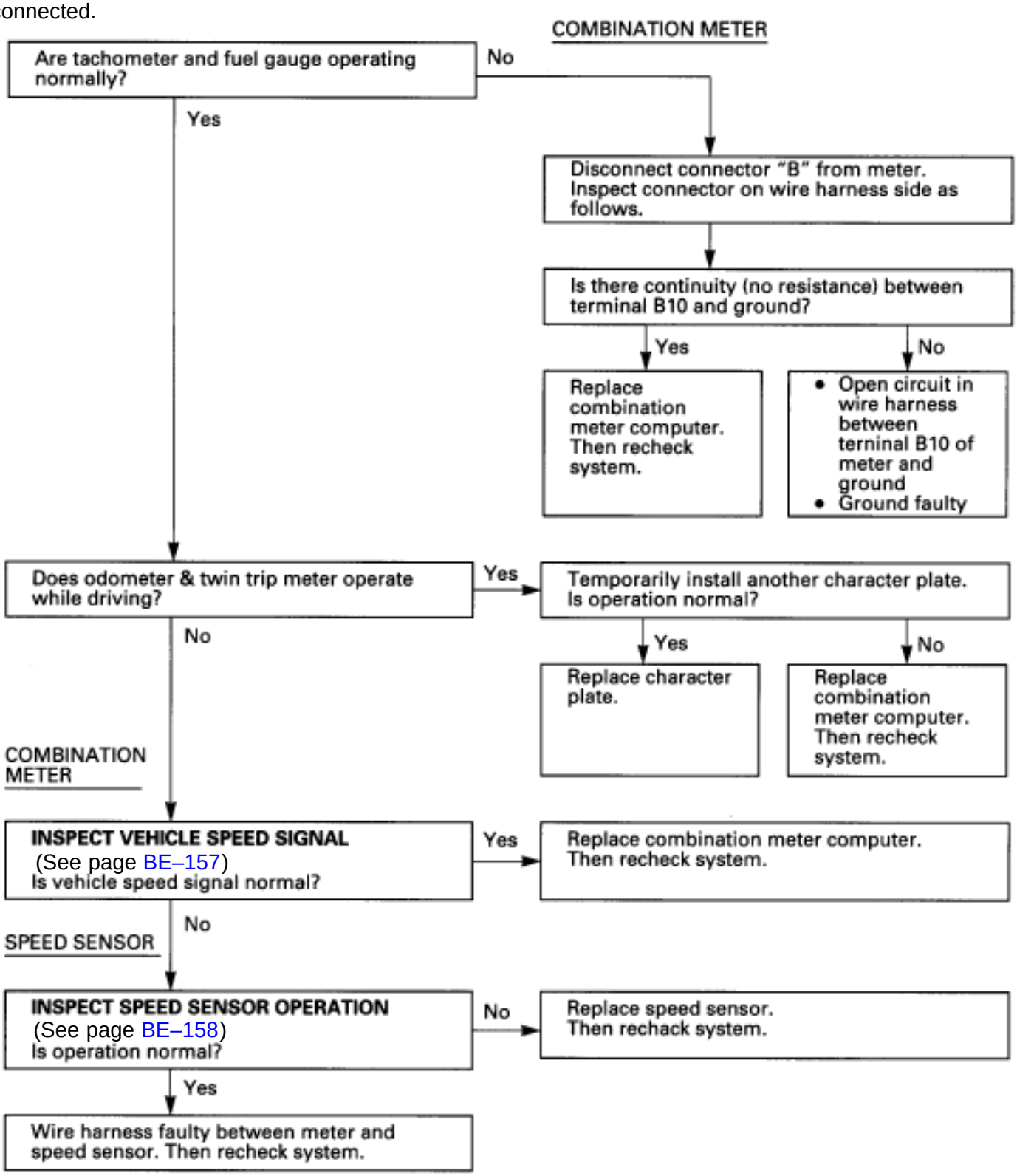
7	**ALL METER, GAUGES, AND ILLUMINATIONS**	**Does not go out while starter running.**

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



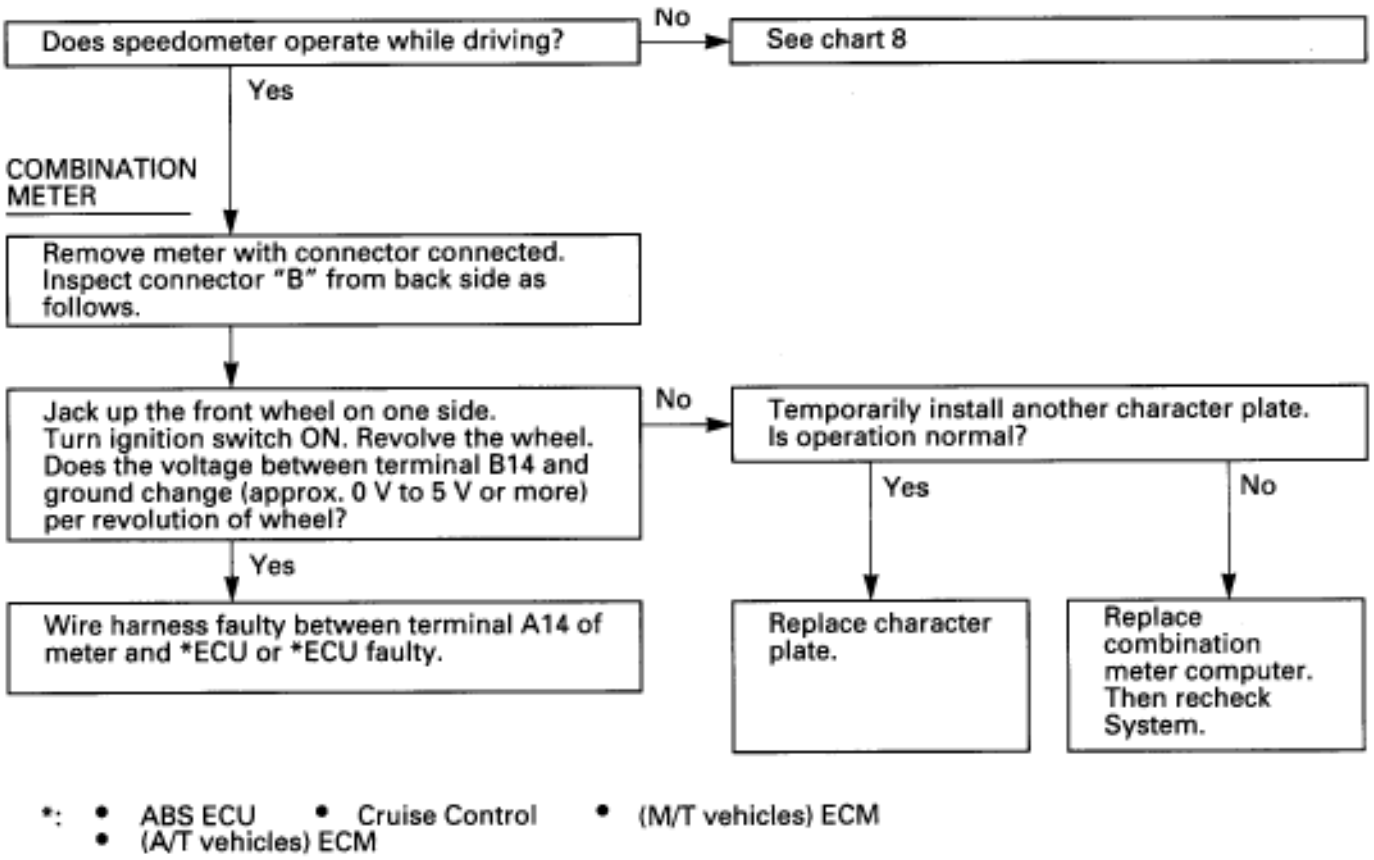
8	SPEEDOMETER	Speedometer does not operate while driving.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



9	SPEEDOMETER	Vehicle speed signal (4P) faulty.

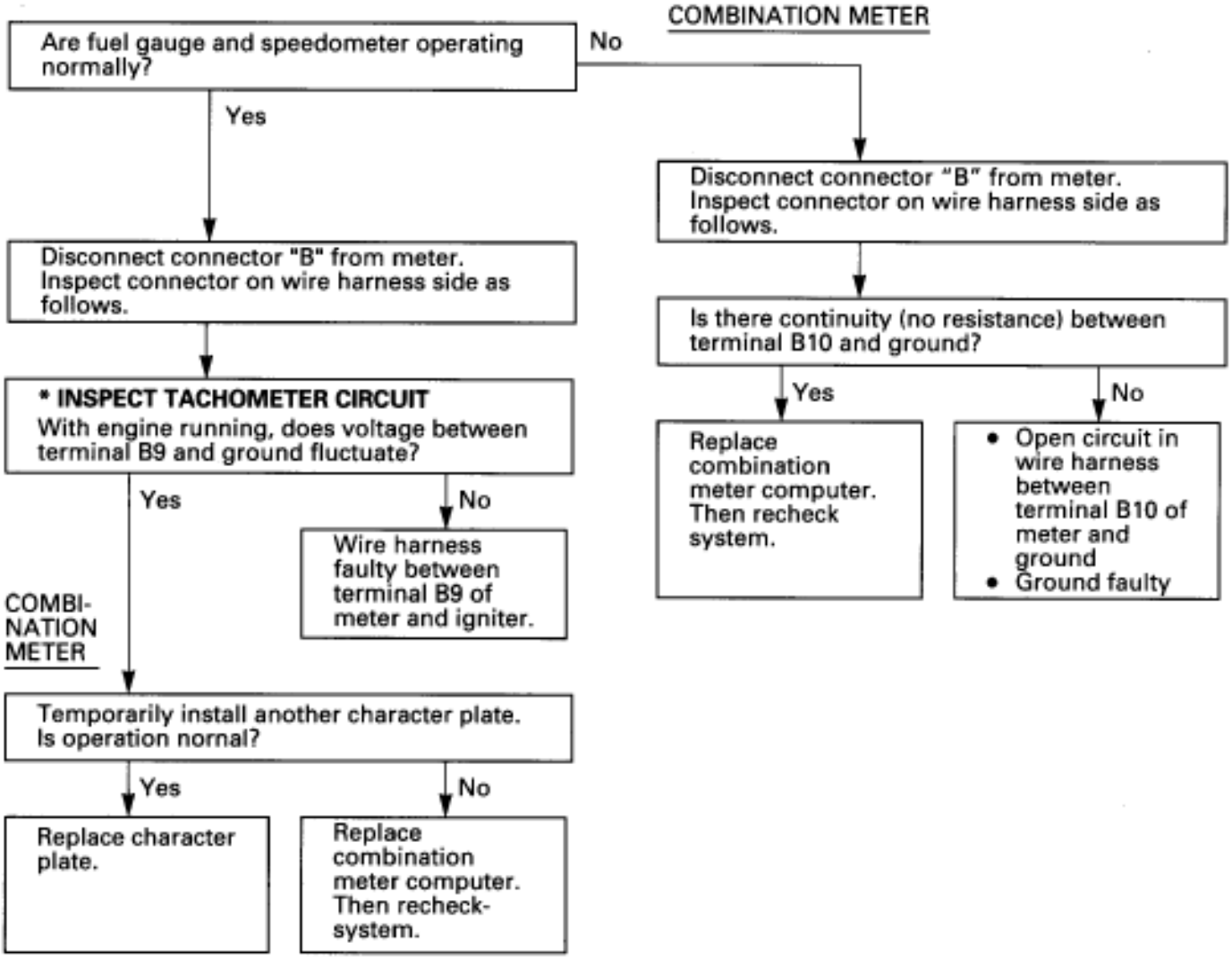
HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



*: • ABS ECU • Cruise Control • (M/T vehicles) ECM
• (A/T vehicles) ECM

10	TACHOMETER	Tachometer does not operate while engine running.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

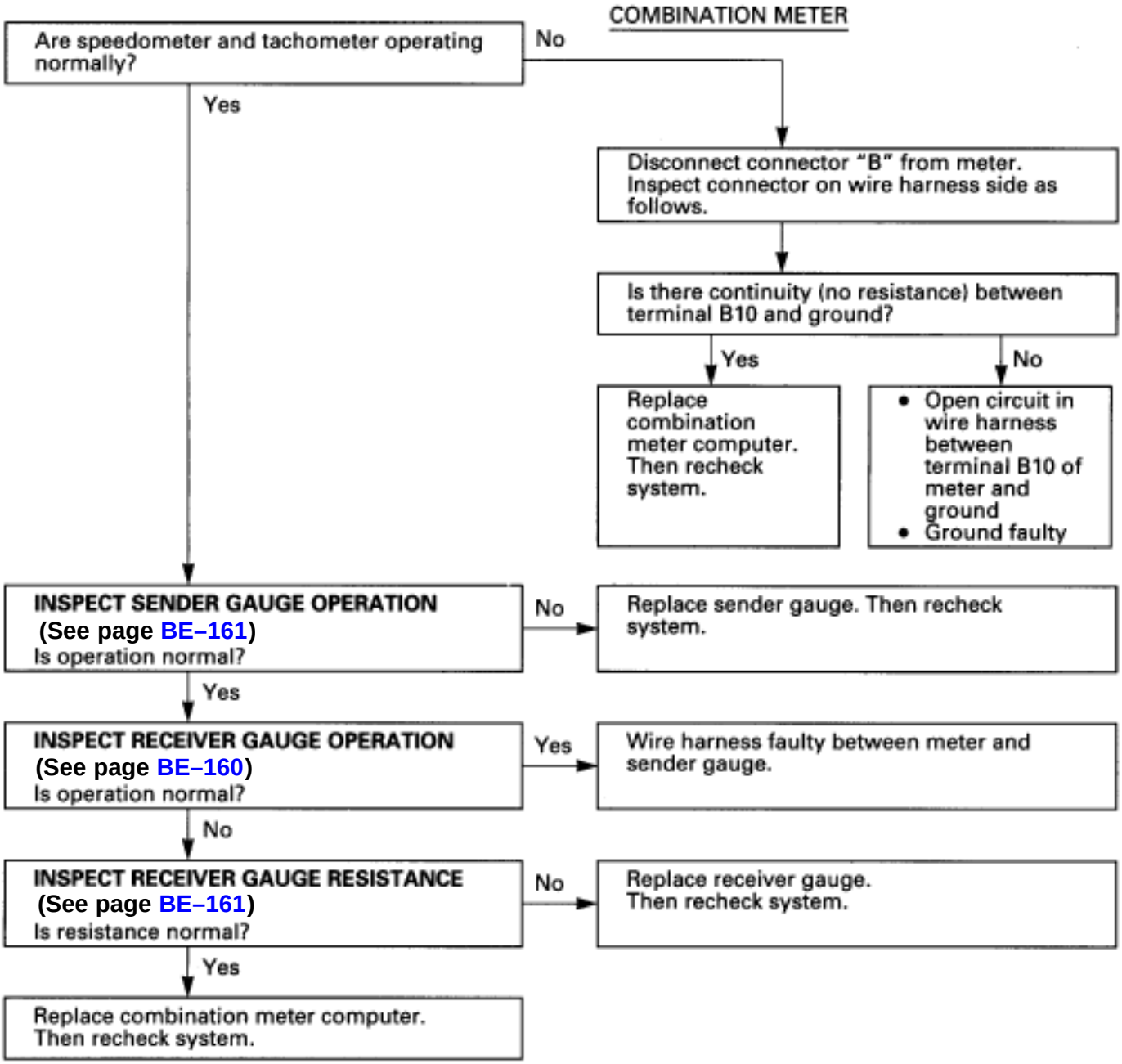


*: An electrical tester with measurements in Hz is necessary for this inspection.

REFERENCE: TOYOTA ELECTRICAL TESTER (09082-00015)

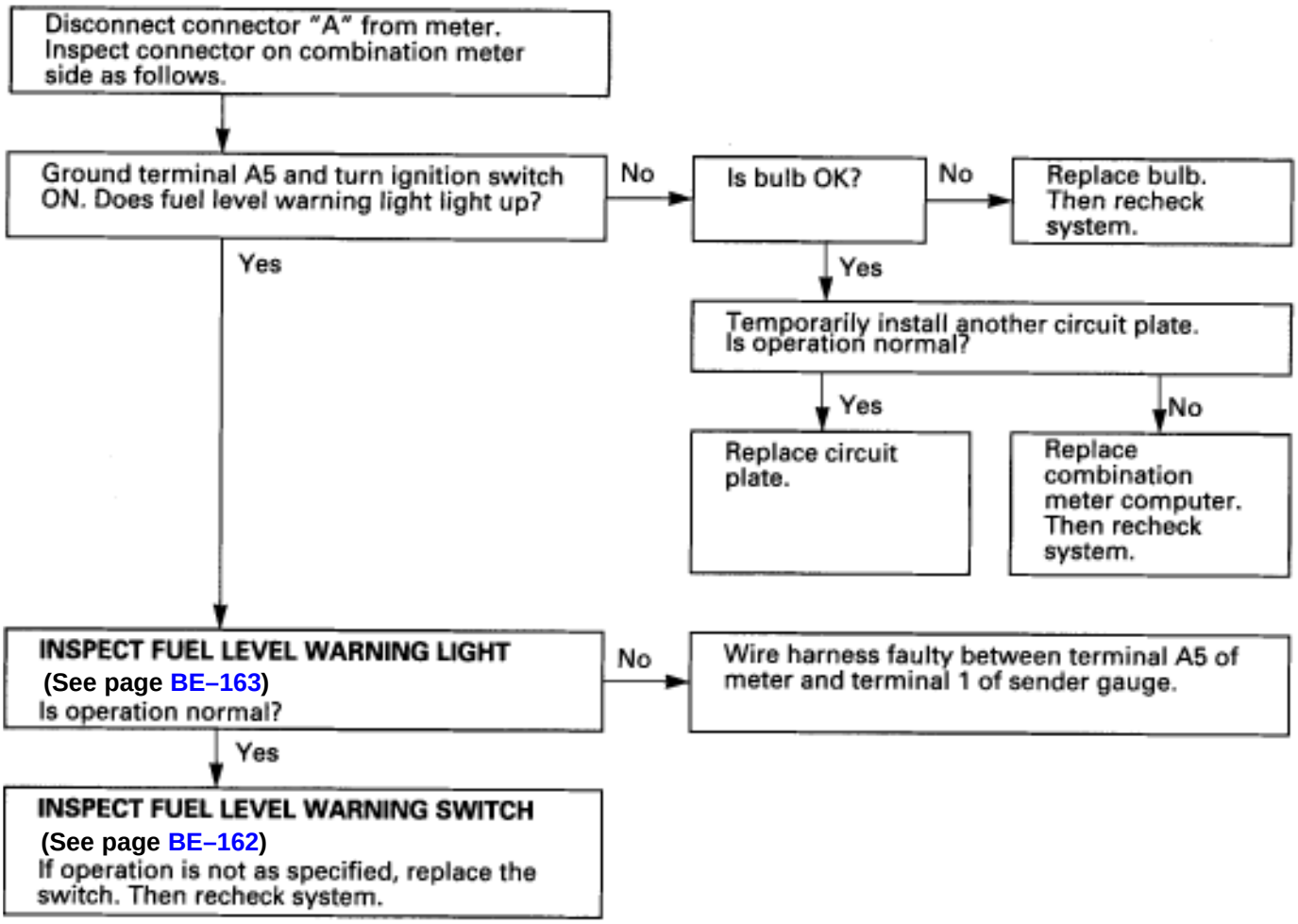
11	FUEL GAUGE	Does not operate or operation is abnormal.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



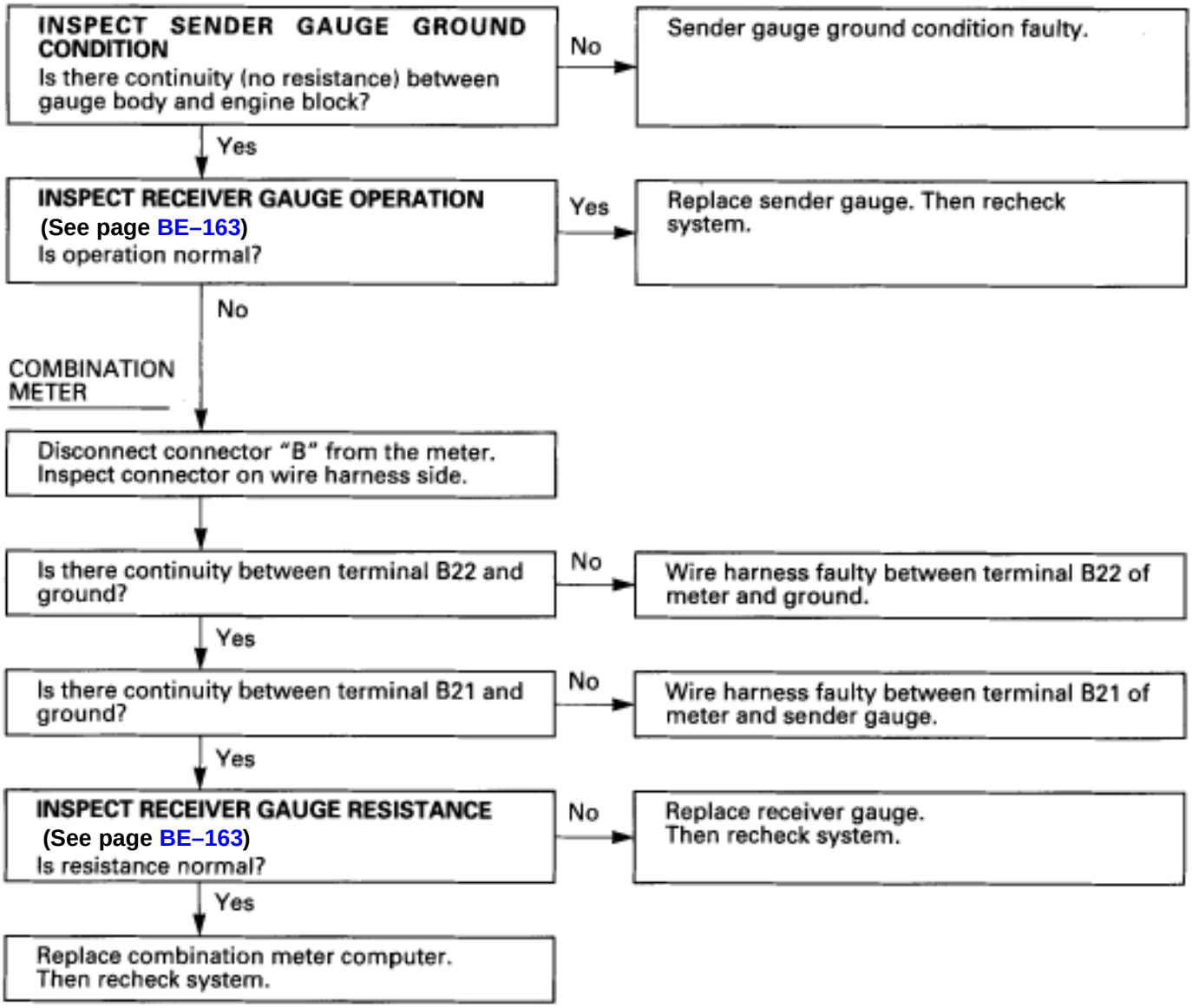
12	FUEL LEVEL WARNING	Warning light does not light up or always lights up.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



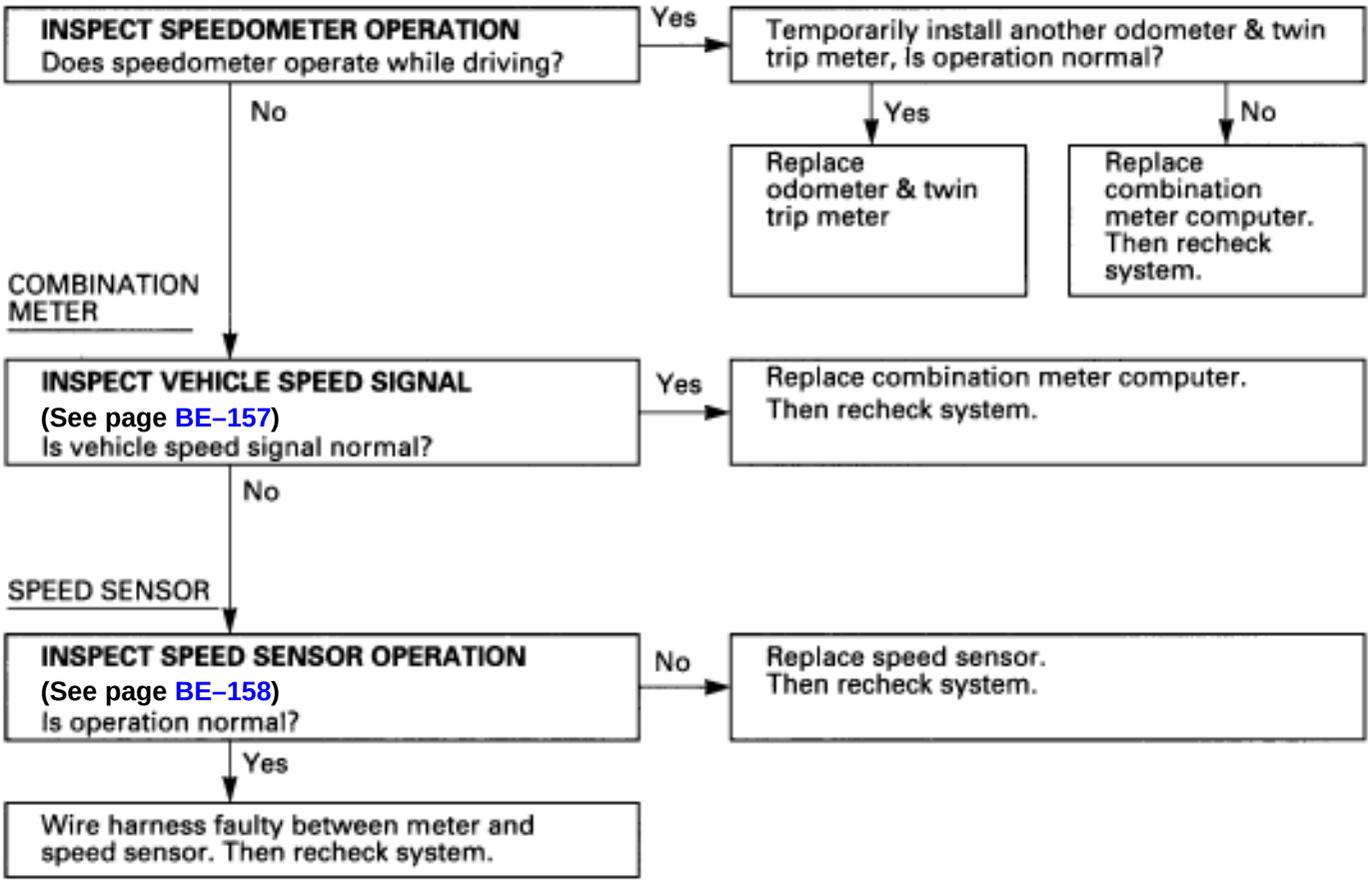
13	ENGINE COOLANT TEMPERATURE GUAGE	Does not operate or operation is abnormal.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



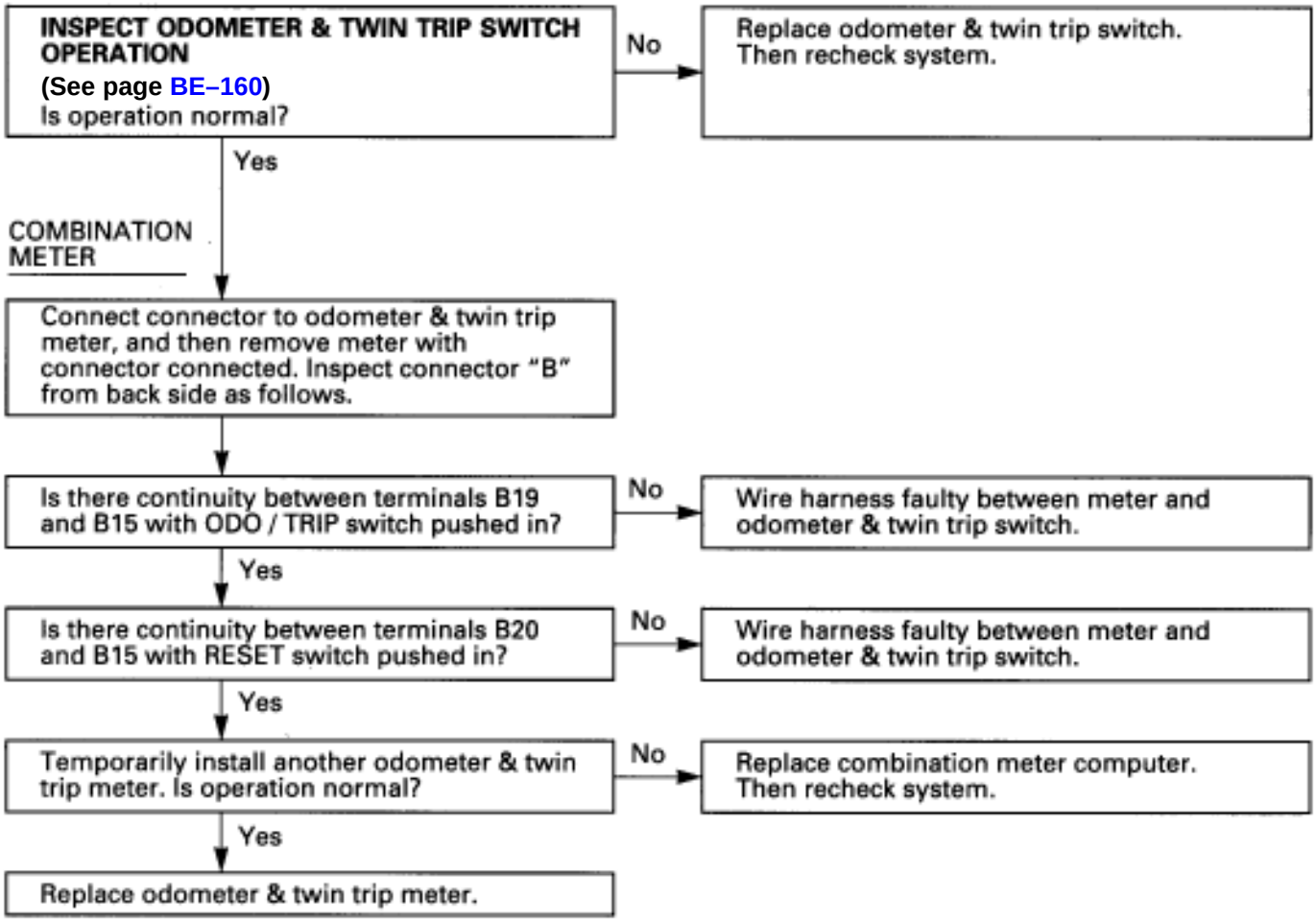
14	ODOMETER & TWIN TRIP METER	Display does not alter during driving.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



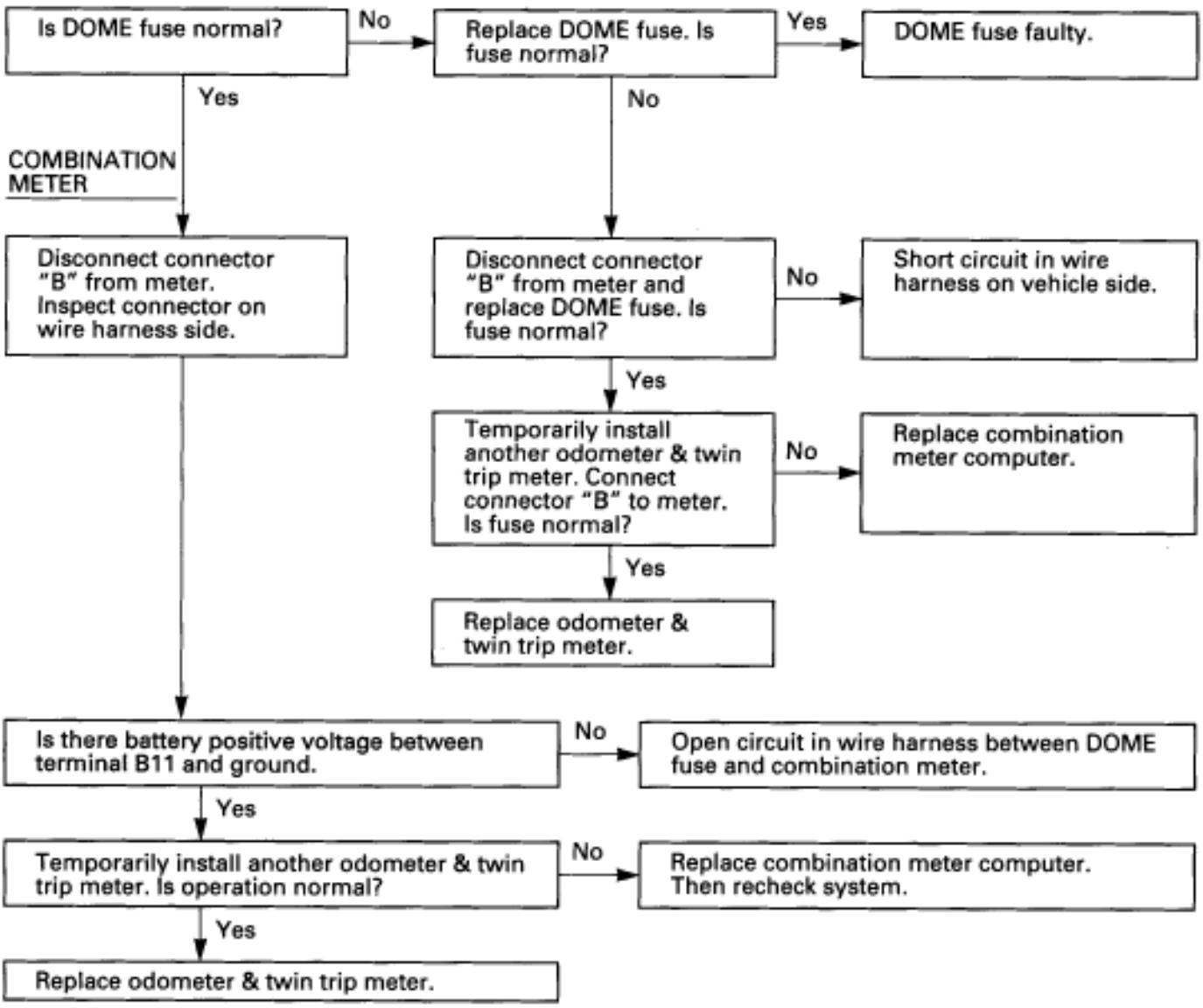
15	ODOMETER & TWIN TRIP METER	Display does not reset when RESET switch pressed. Display is reset even during driving if RESET switch is not pressed. Display does not change when ODO/TRIP pressed.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



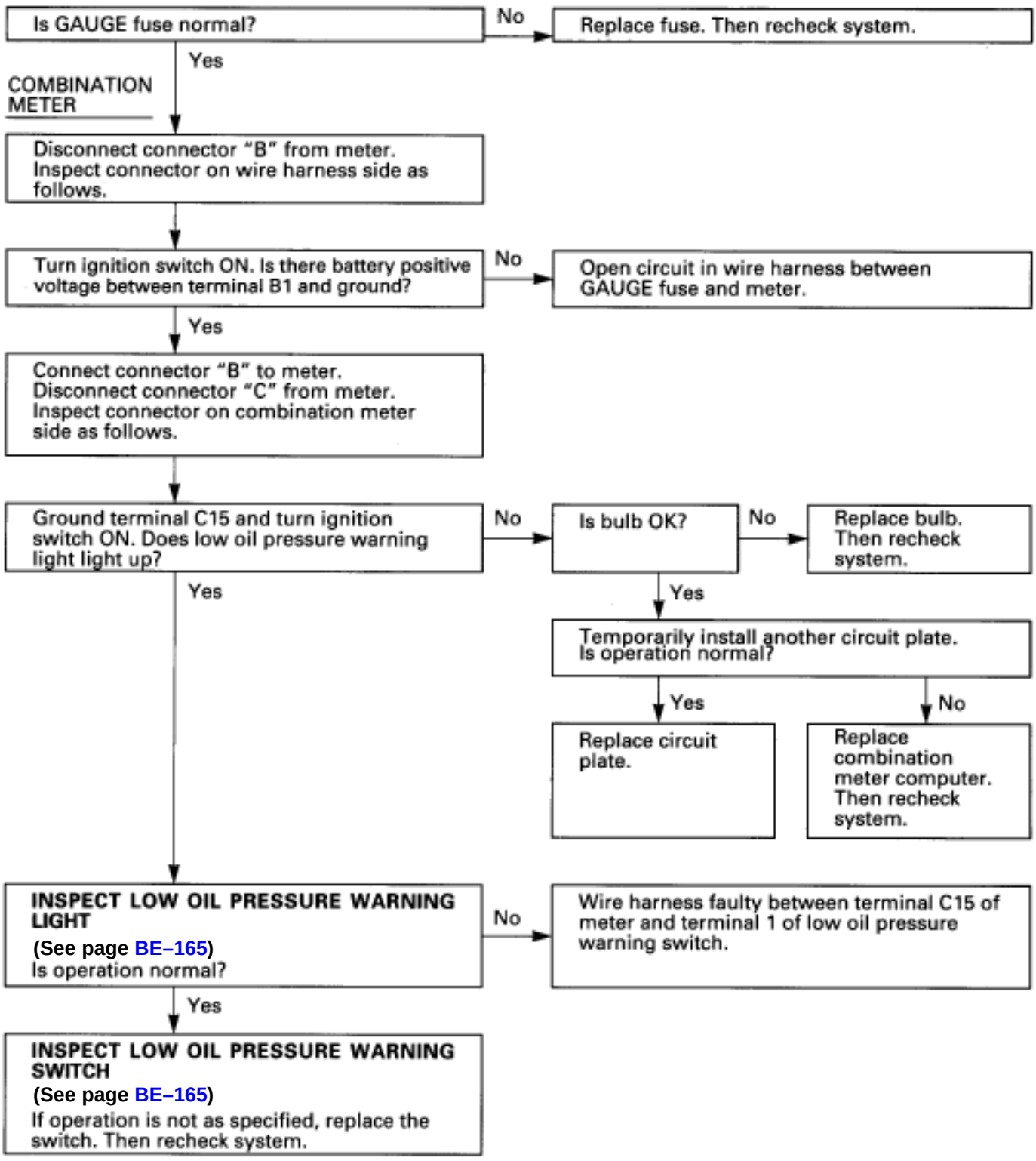
16	ODOMETER & TWIN TRIP METER	Display is reset whenever ignition switch is turned off.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



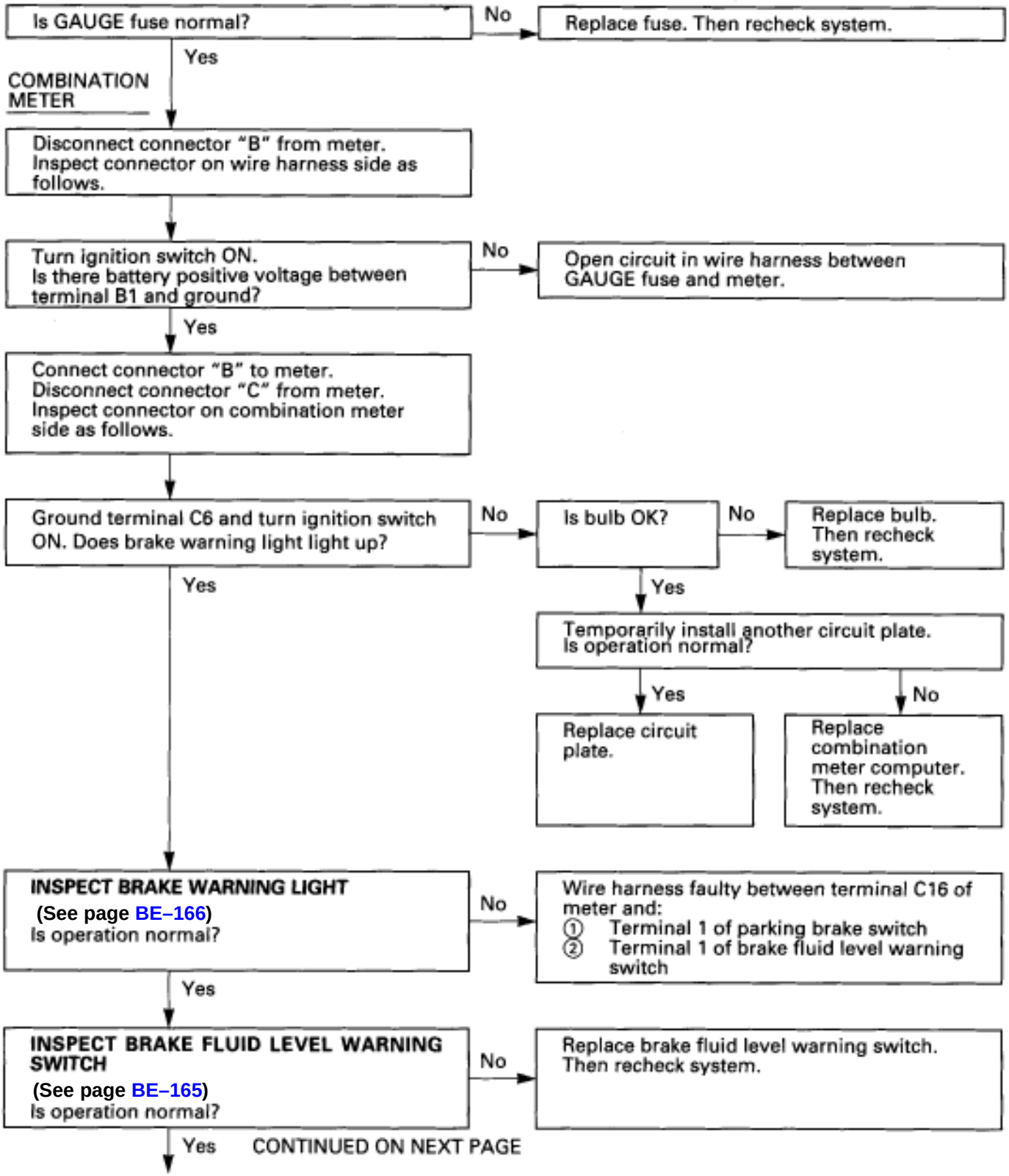
17	LOW OIL PRESSURE WARNING	Abnormal operation or warning light does not light up.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



18	BRAKE WARNING	Abnormal operation or warning light does not light up.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

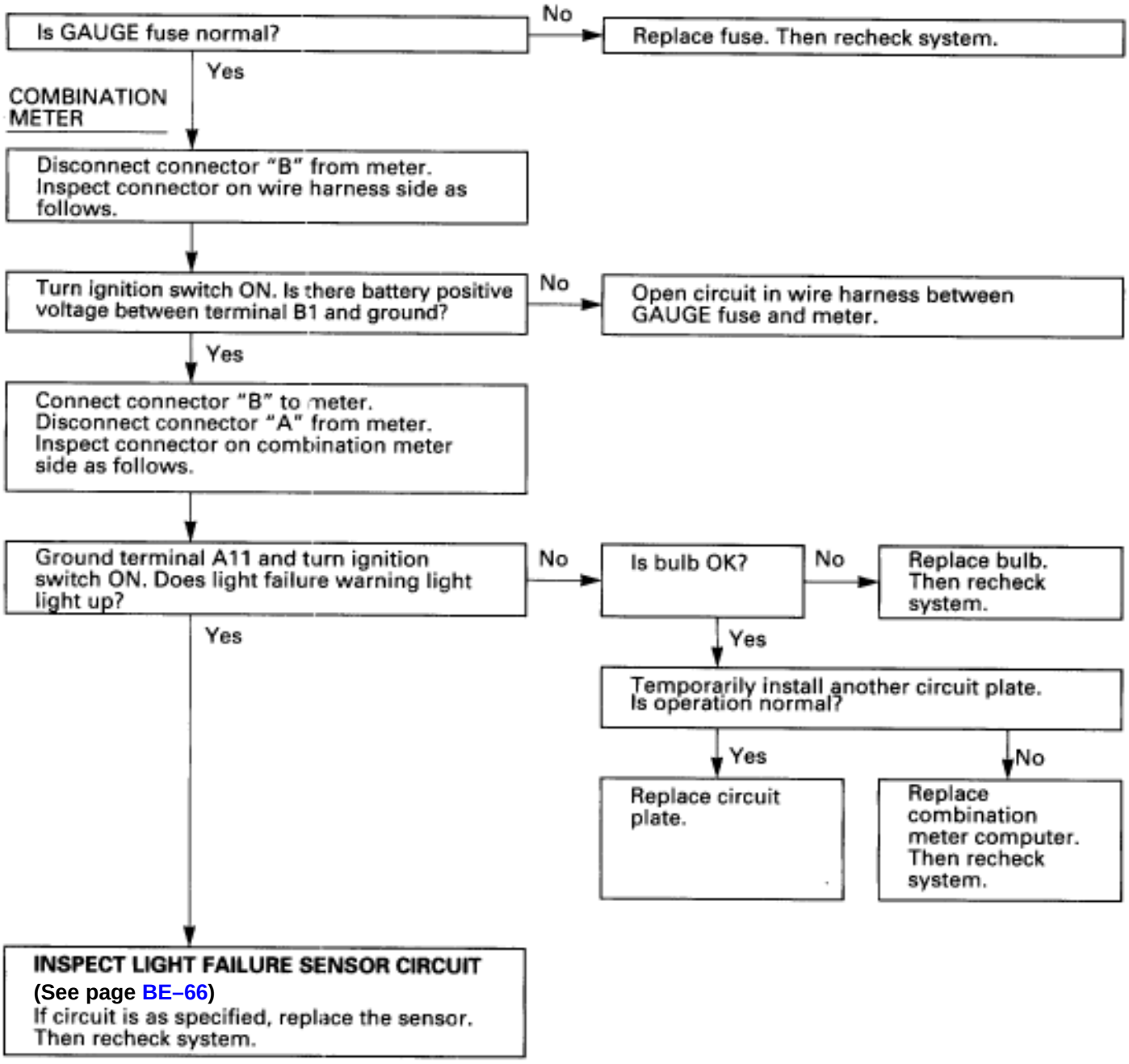


CONTINUED FROM PREVIOUS PAGE

INSPECT PARKING BRAKE SWITCH
(See page BE–166)
If operation is not as specified, replace the switch. Then recheck system.

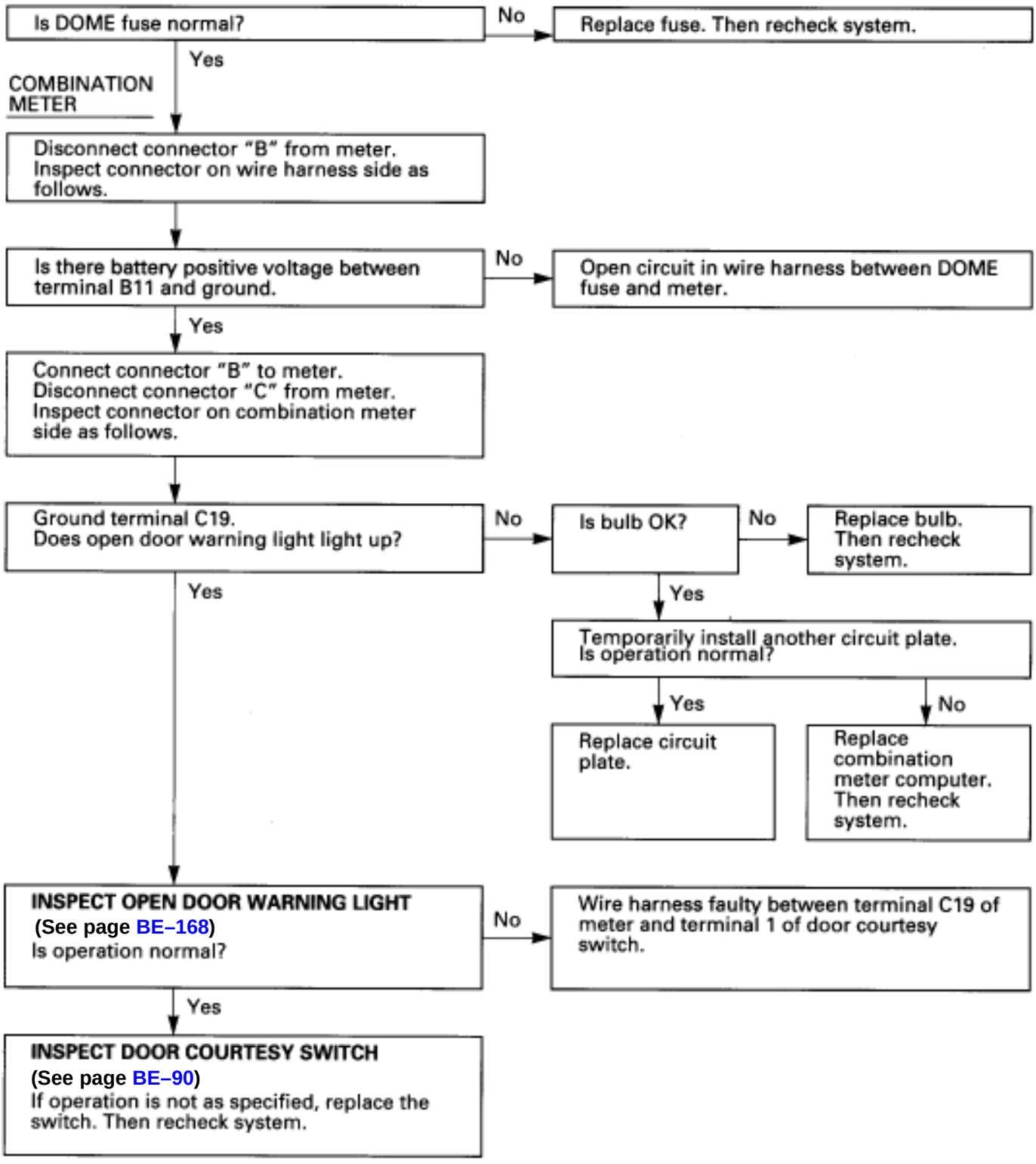
19	LIGHT FAILURE WARNING	Abnormal operation or warning light does not light up.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



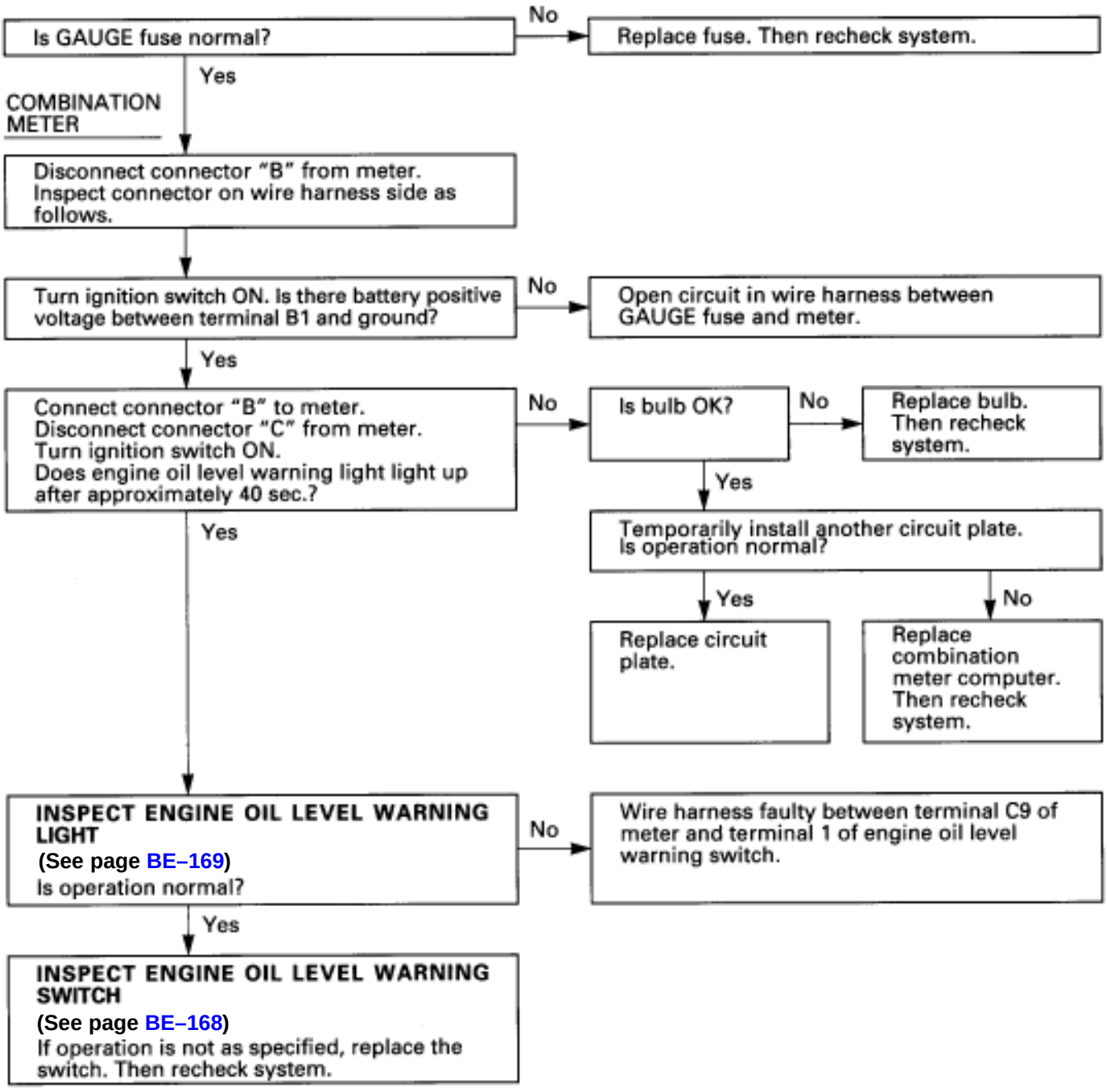
20	OPEN DOOR WARNING	Abnormal operation or warning light does not light up.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



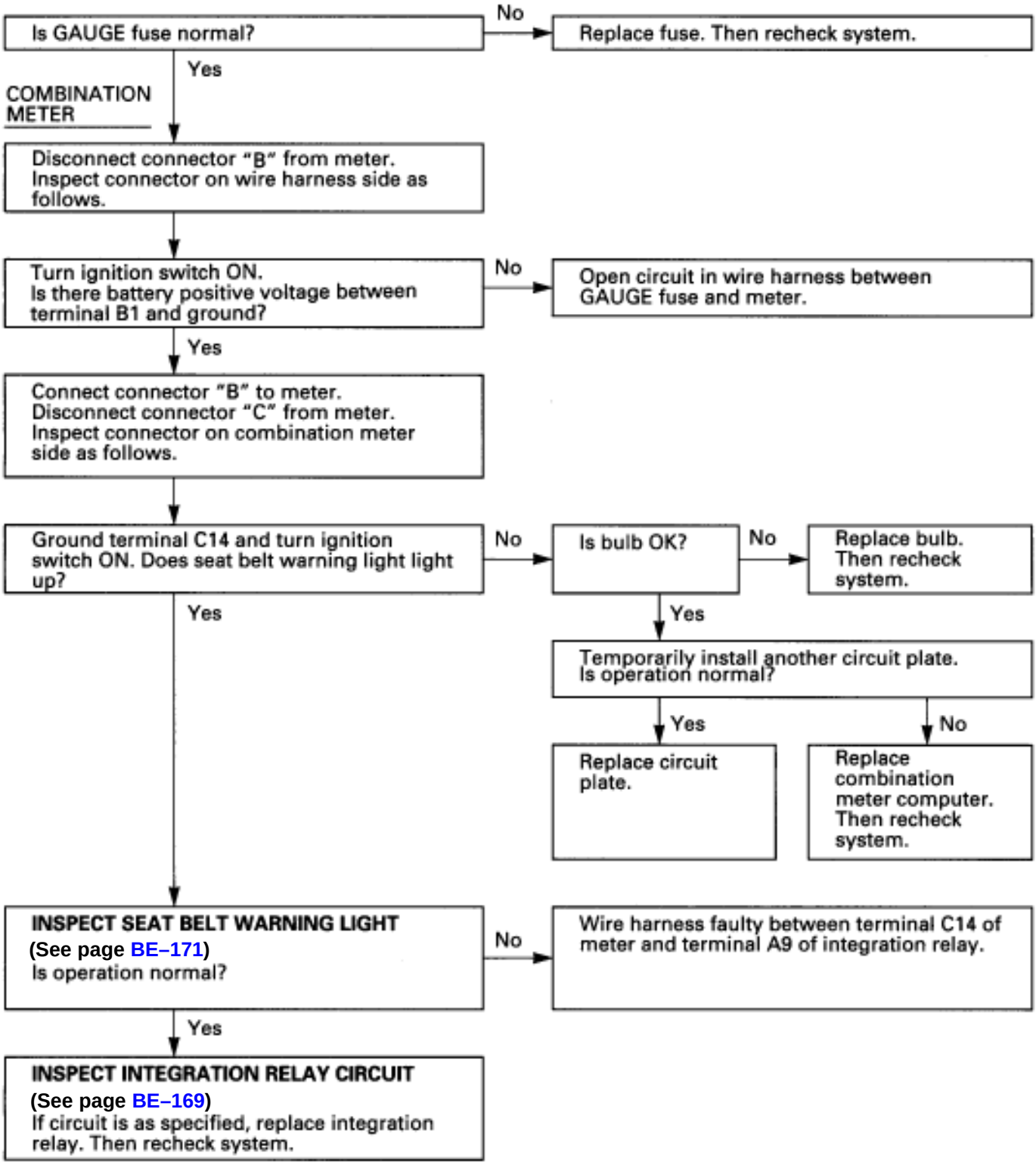
21	ENGINE OIL LEVEL WARNING	Abnormal operation or warning light does not light up.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



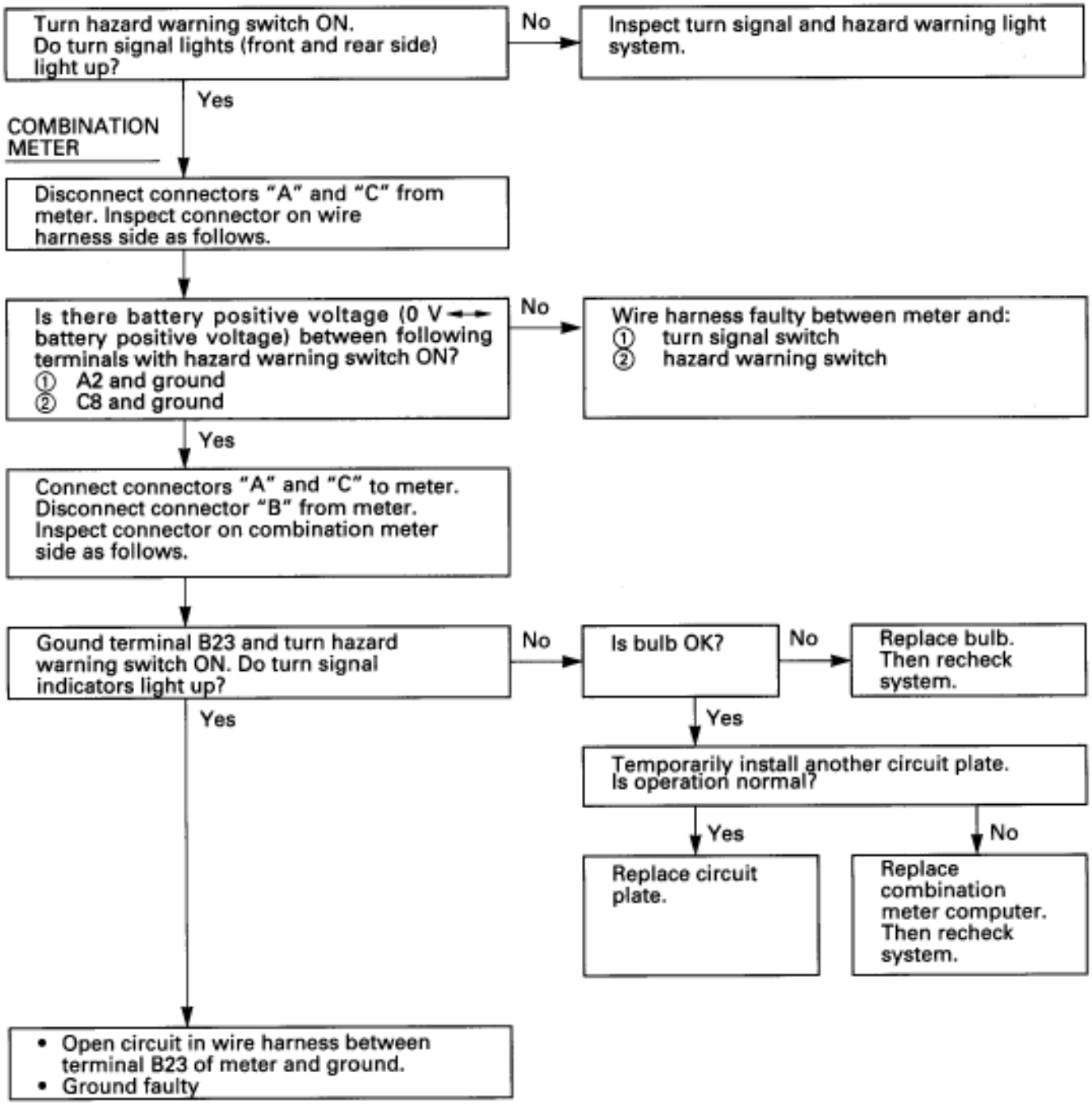
22	SEAT BELT WARNING	Abnormal operation or warning light does not light up.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



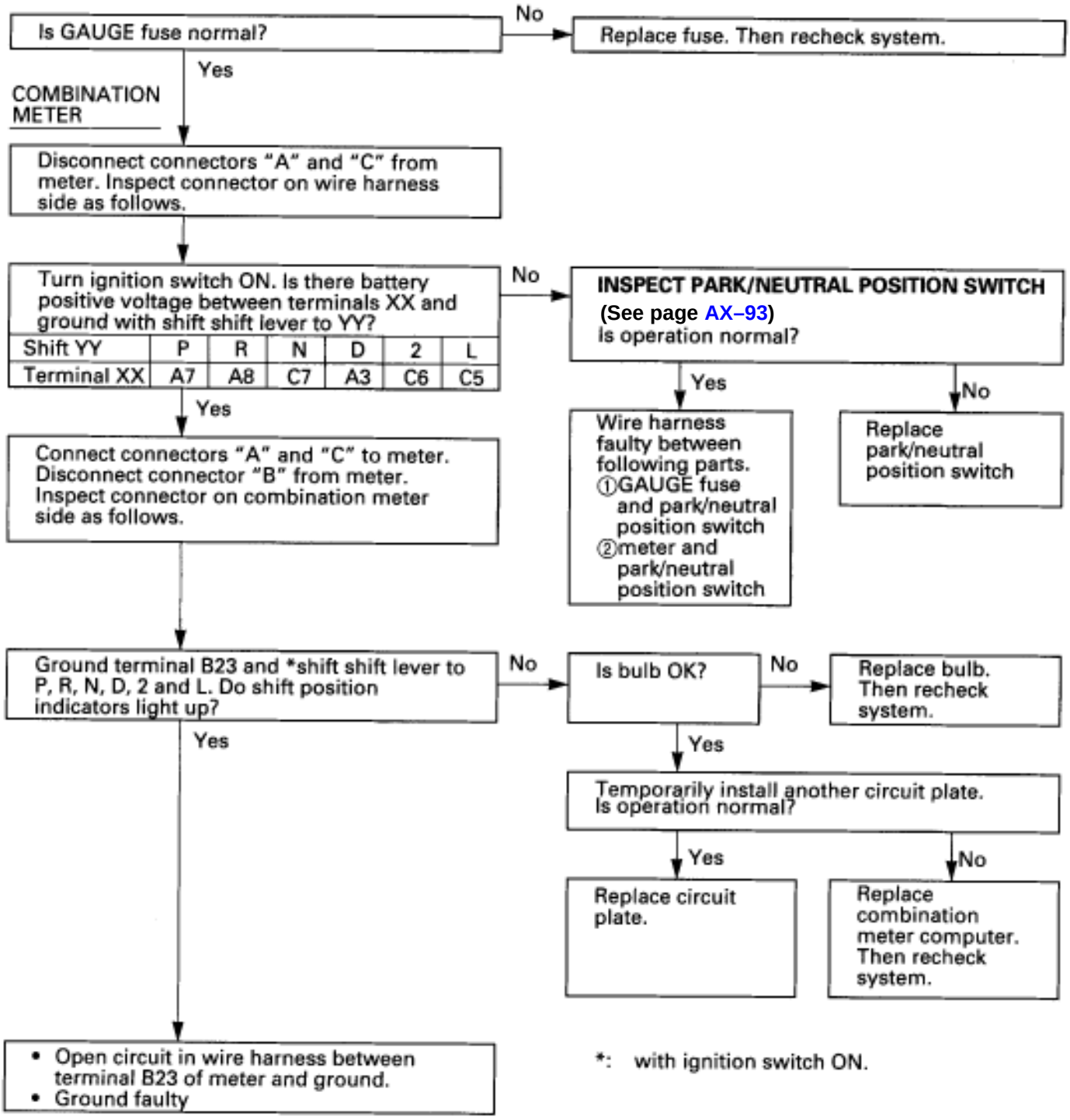
23	TURN SIGNAL INDICATOR	Abnormal operation or indicator does not light up.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



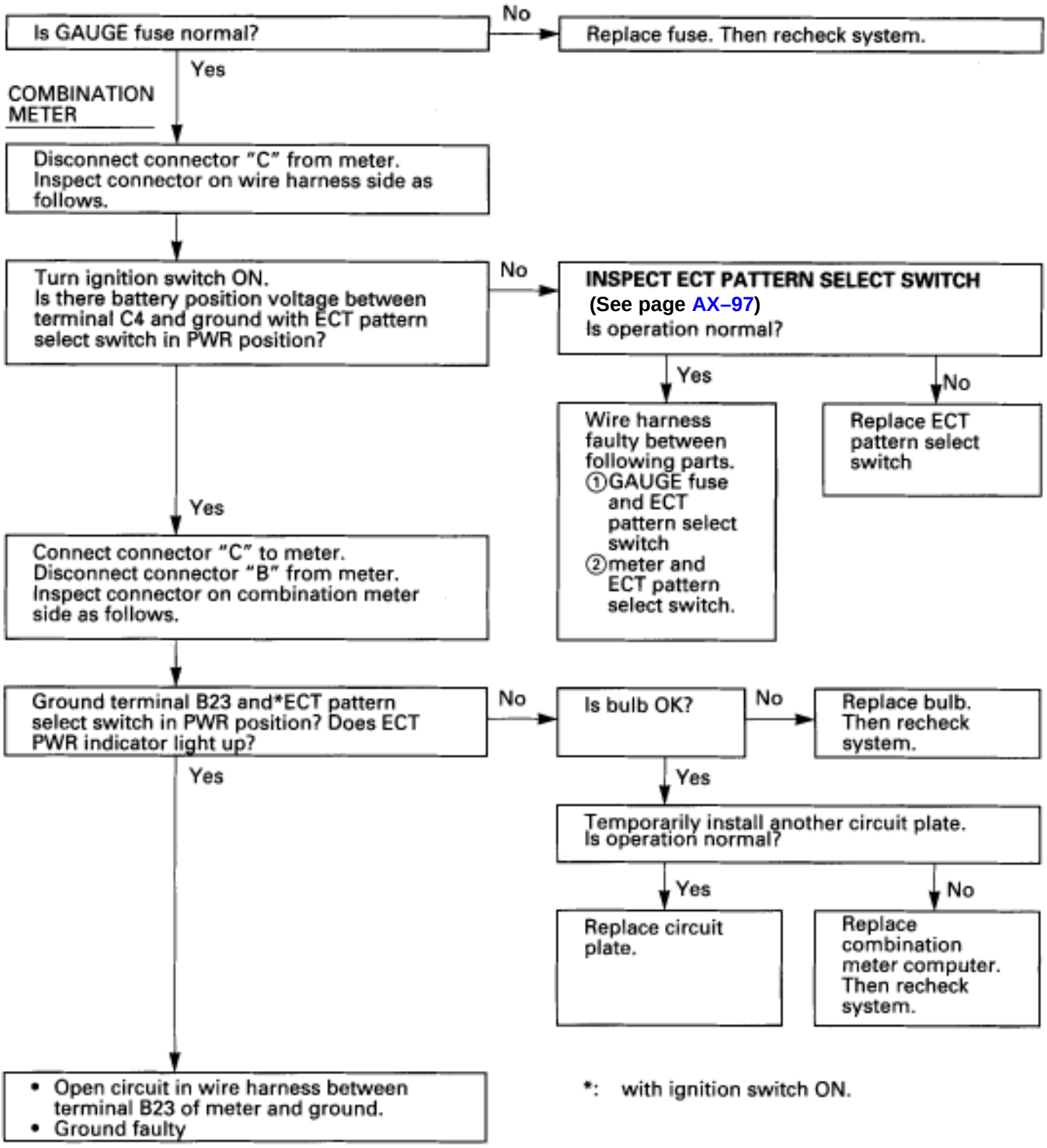
24	SHIFT POSITION INDICATOR	Abnormal operation or indicator does not light up.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



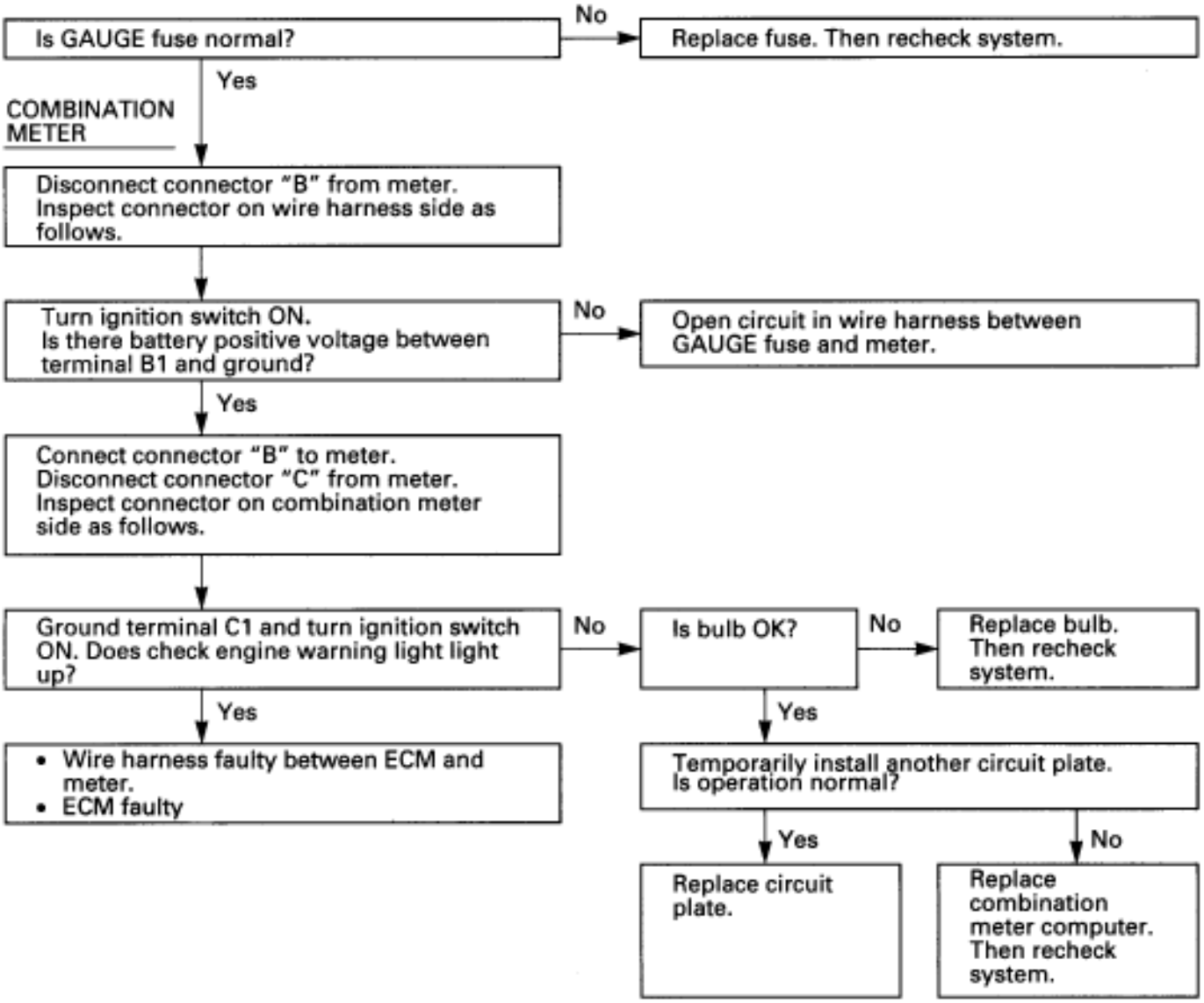
25	ECT PWR INDICATOR	Abnormal operation or indicator does not light up.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



27	**ABS WARNING**	**Abnormal operation or warning light does not light up.**

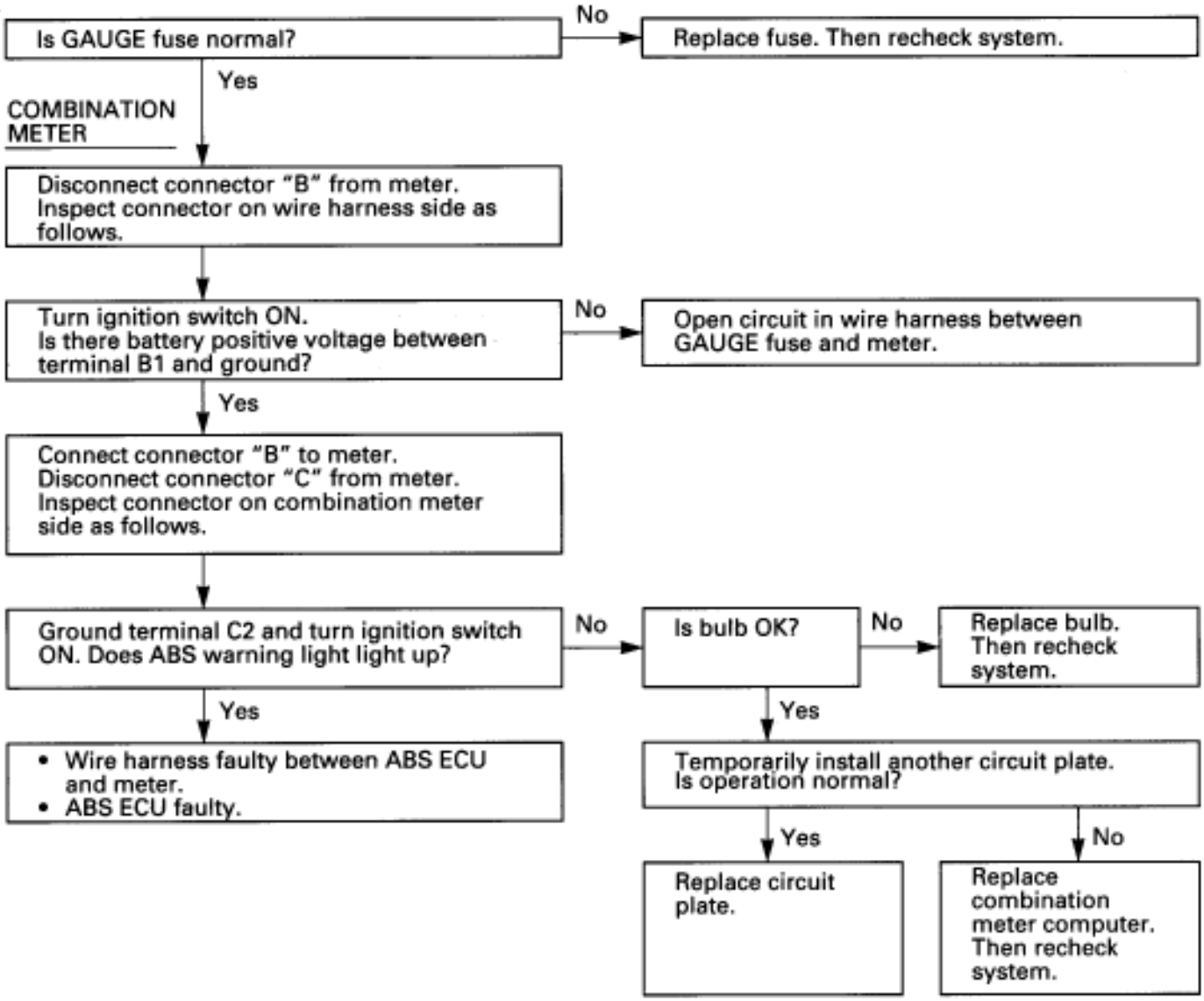
HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



*: A/T vehicles.

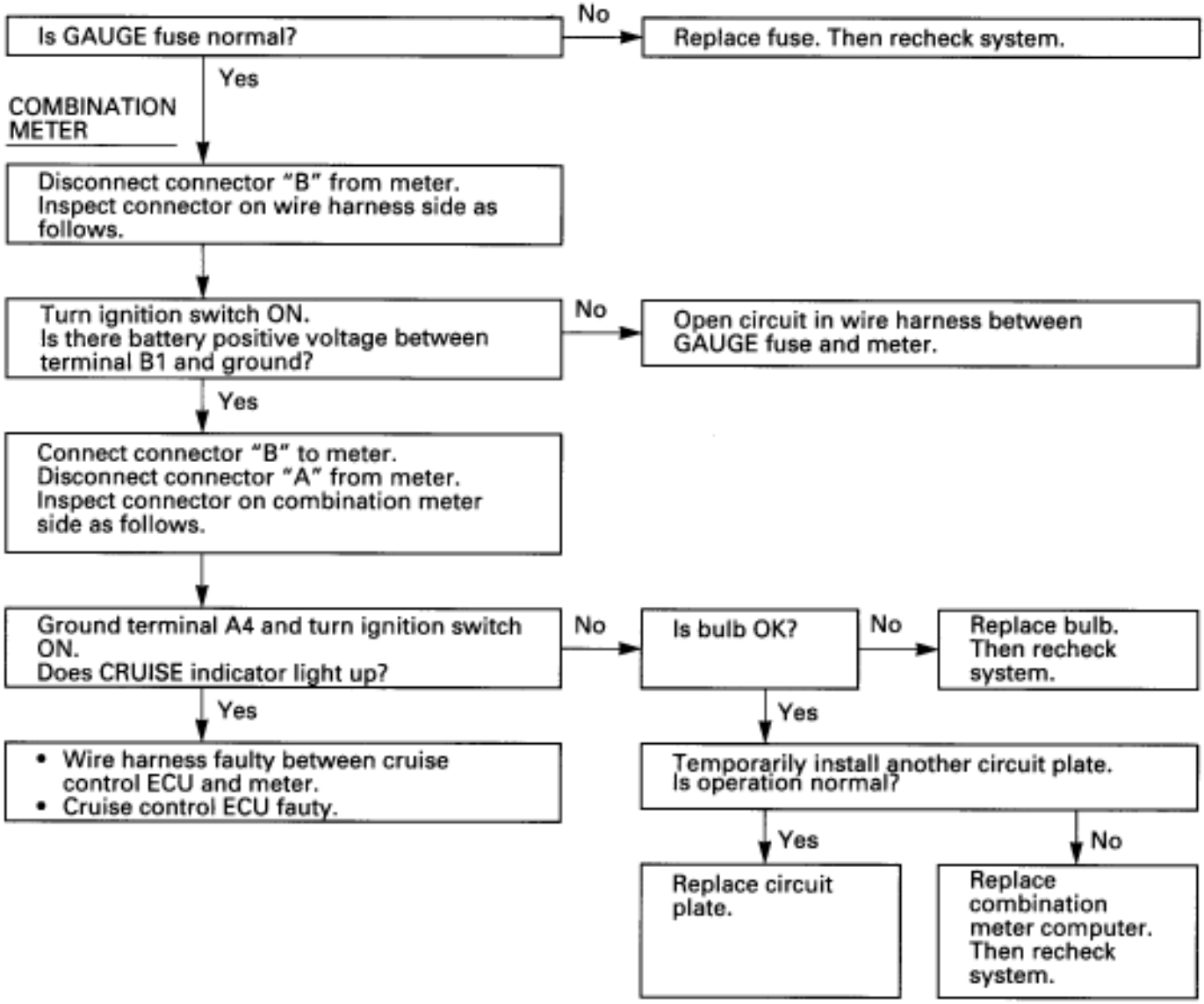
27	**ABS WARNING**	**Abnormal operation or warning light does not light up.**

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



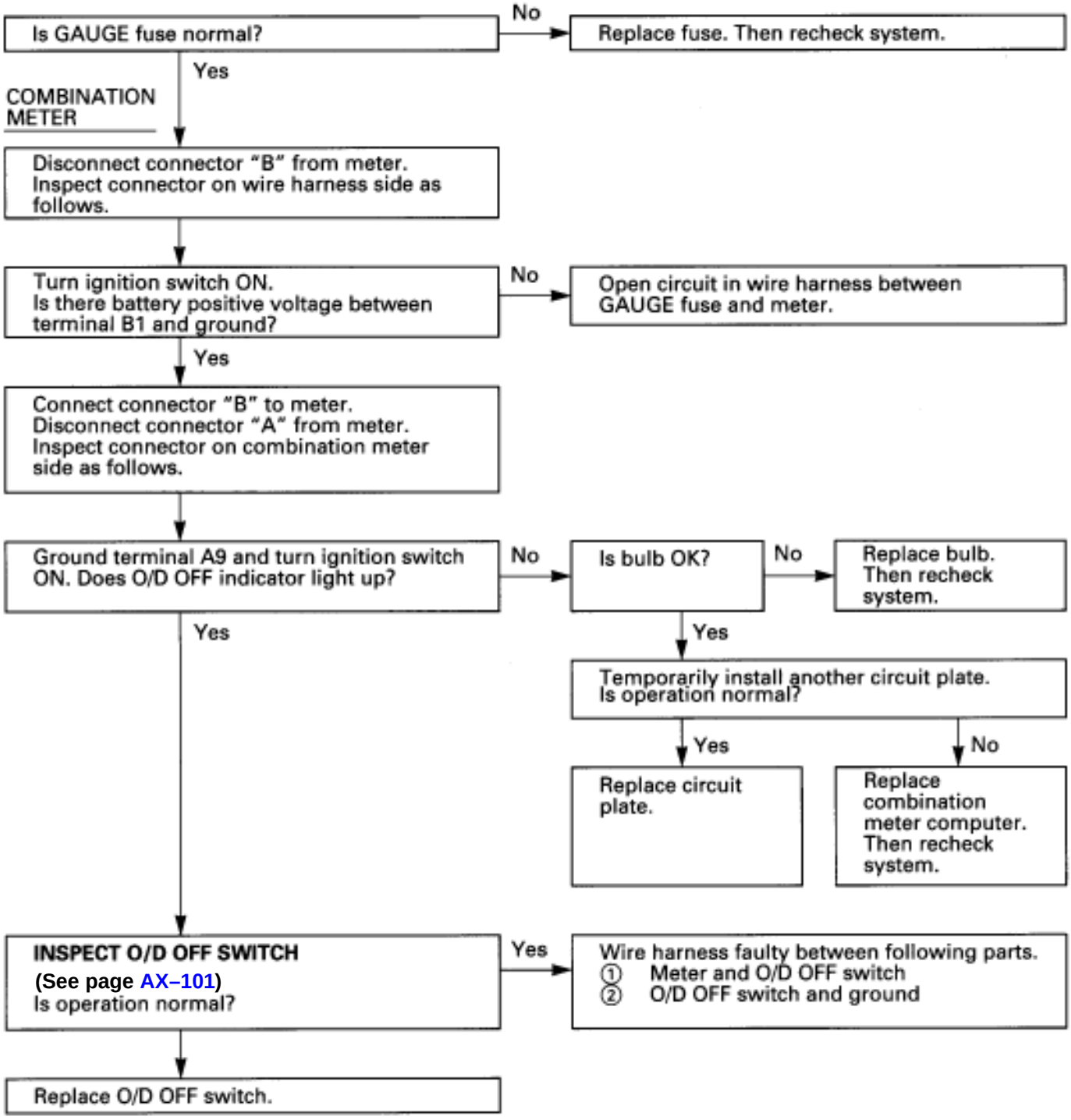
28	CRUISE INDICATOR	Abnormal operation or indicator does not light up.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



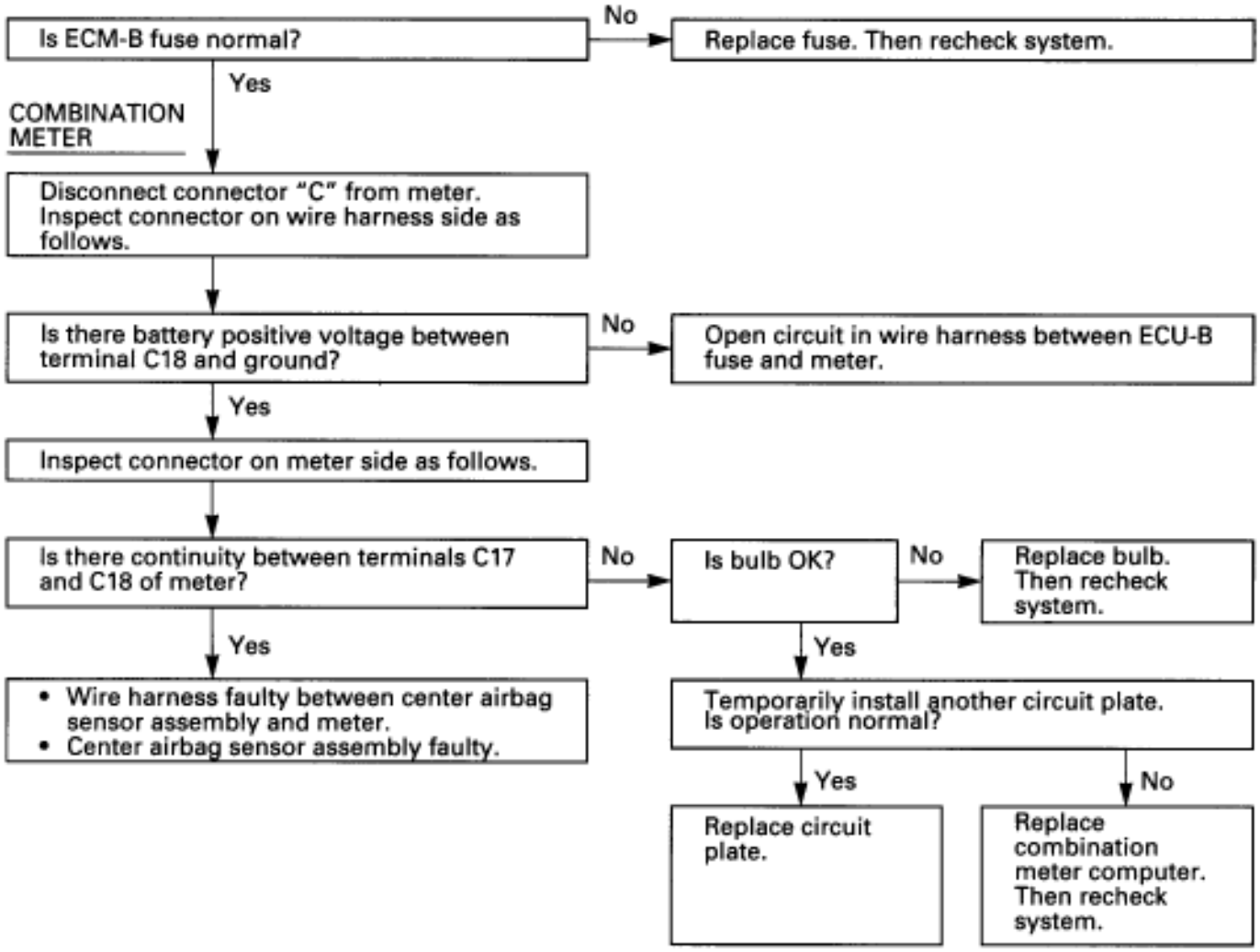
29	O/D OFF INDICATOR	Abnormal operation or indicator does not light up.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



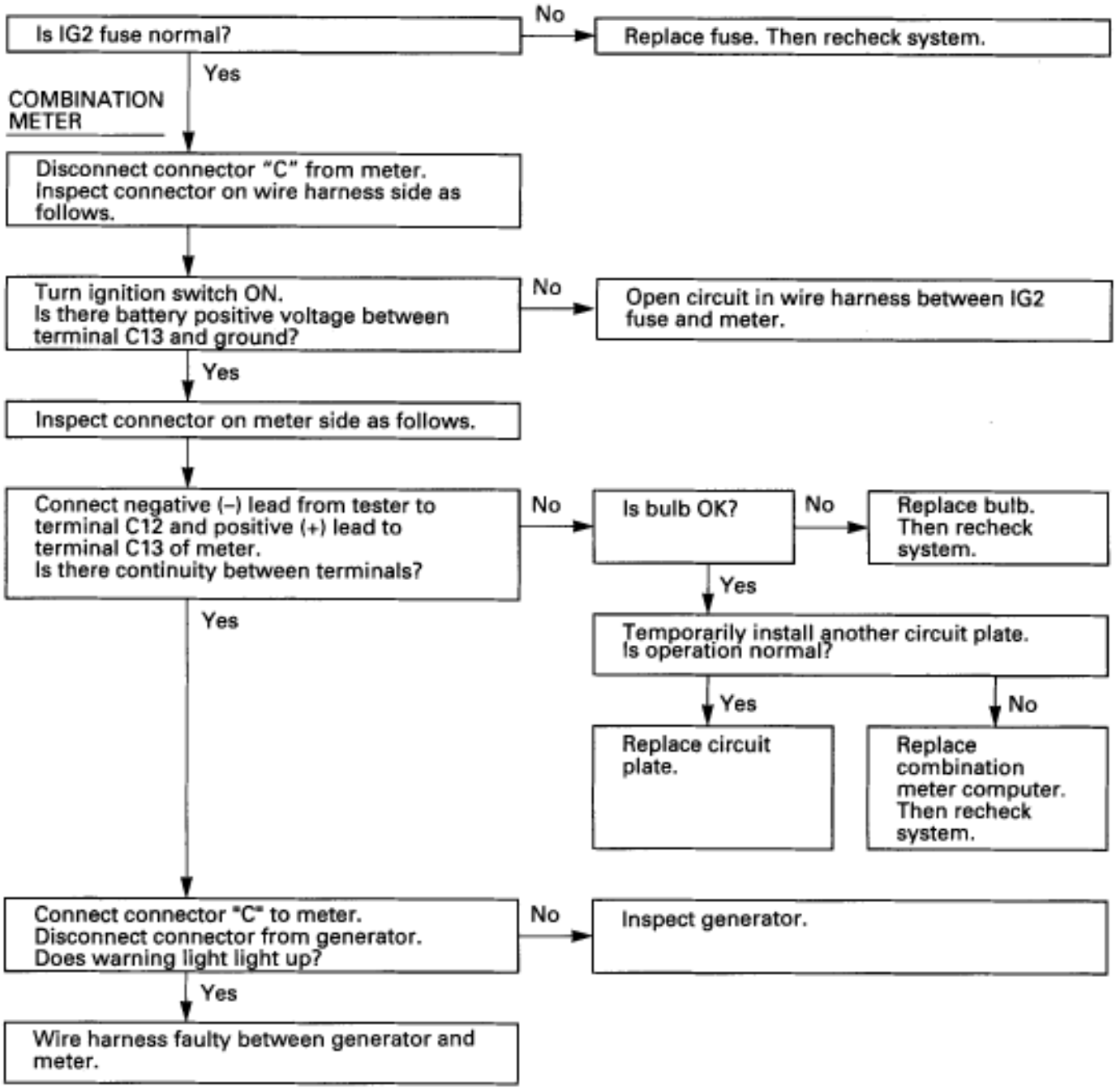
30	**AIRBAG WARNING**	**Abnormal operation or warning light does not light up.**

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



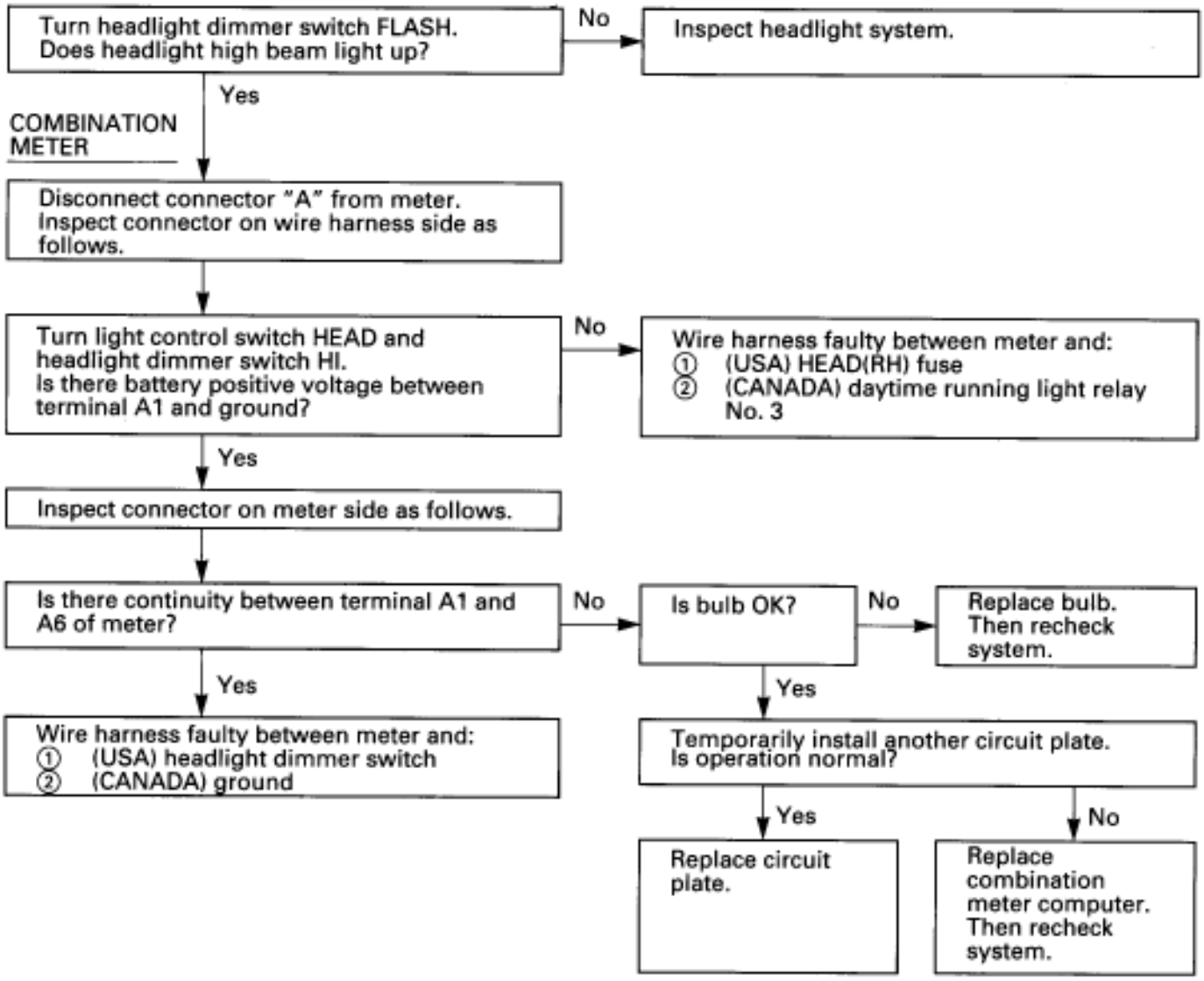
31	DISCHARGE WARNING	Abnormal operation or warning light does not light up.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



32	HIGH BEAM INDICATOR	Abnormal operation or indicator does not light up.

HINT: While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



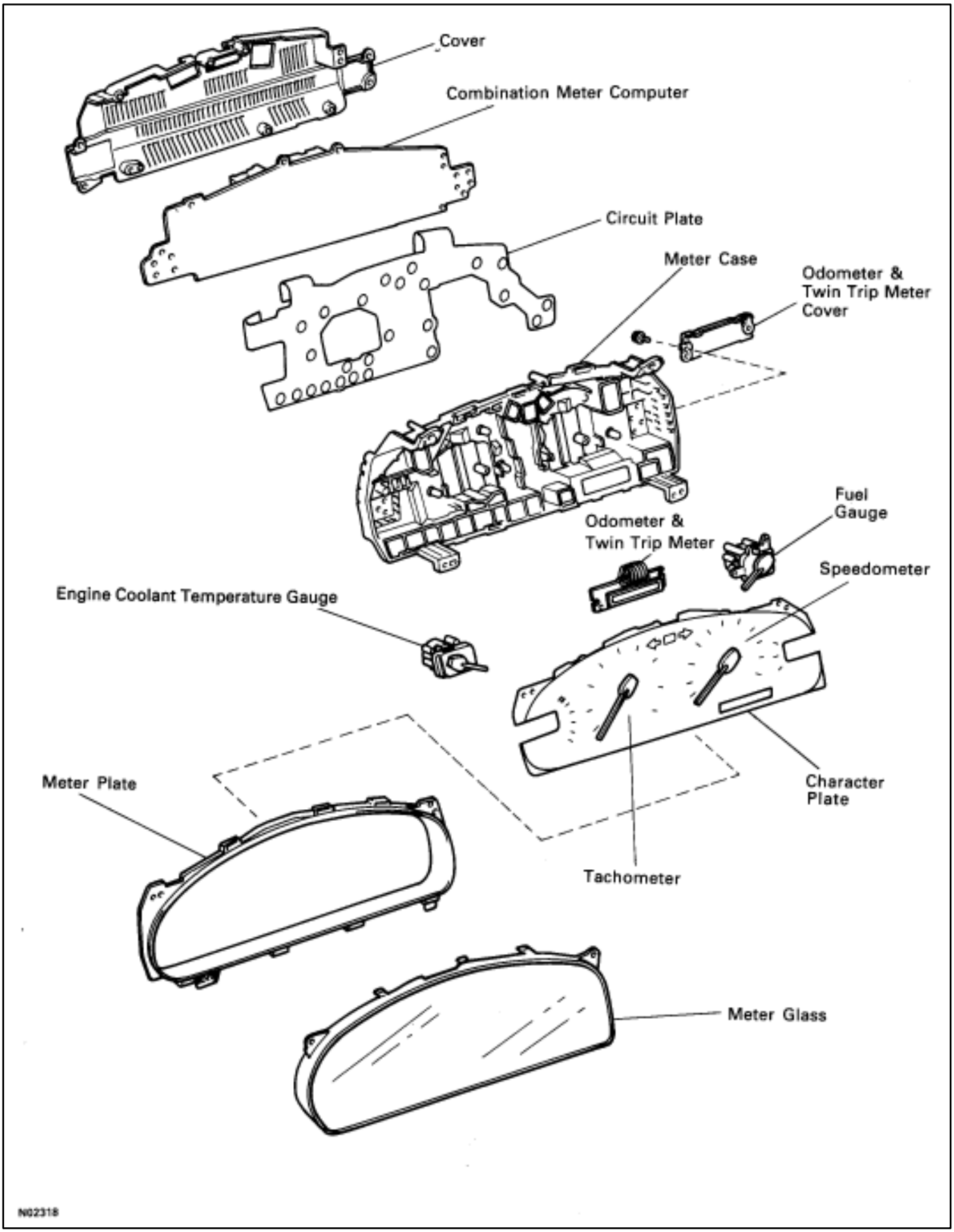
COMBINATION METER ASSEMBLY

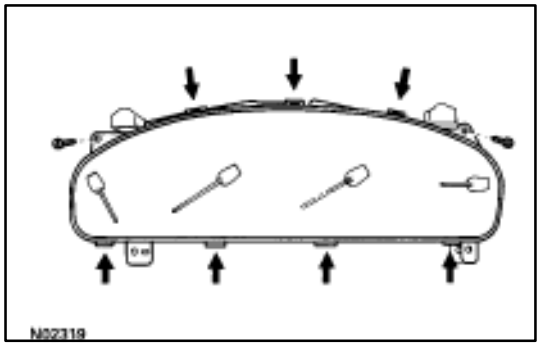
COMBINATION METER ASSEMBLY REMOVAL AND INSTALLATION

(See page BO–107)

COMBINATION METER DISASSEMBLY

(Components)

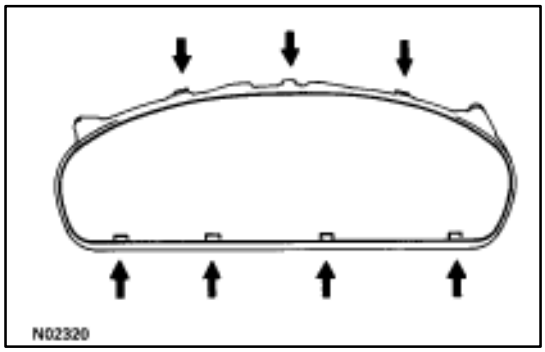




1. REMOVE METER PLATE WITH METER GLASS

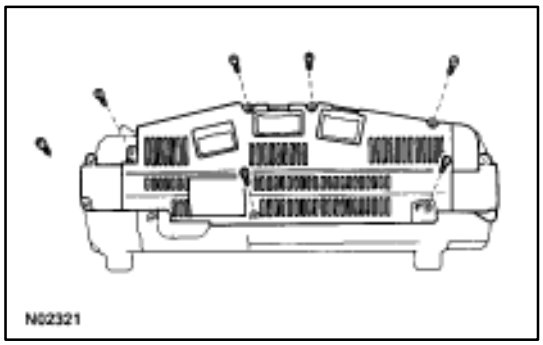
(a) Remove the two screws.

(b) Push down the seven locking lugs and remove the meter plate with the meter glass from the meter case.



2. REMOVE METER GLASS

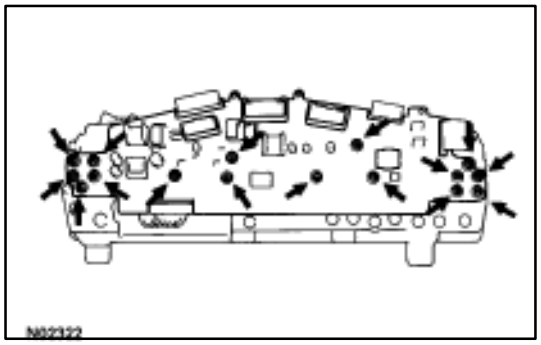
Push down the seven locking lugs and remove the meter glass from the meter plate.



3. REMOVE COVER

(a) Remove the seven screws.

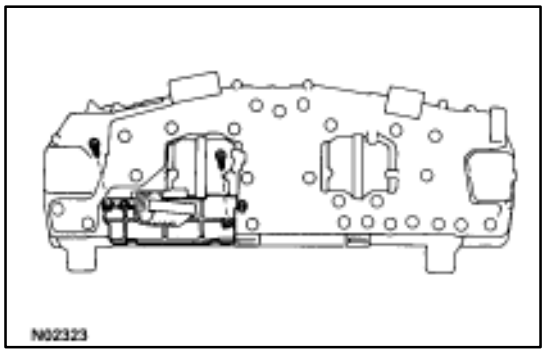
(b) Remove the cover from the meter case.



4. REMOVE COMBINATION METER COMPUTER

(a) Remove the three connectors.

(b) Remove the sixteen screws and the combination meter computer.



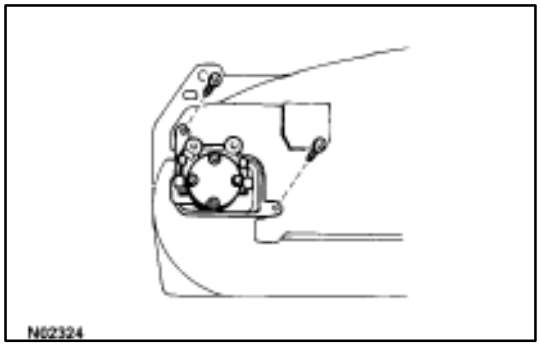
5. REMOVE ODOMETER & TWIN TRIP METER

Remove the two screws and the odometer & twin trip meter.

6. REMOVE CIRCUIT PLATE

(a) Remove the bulbs.

(b) Remove the circuit plate from the case.

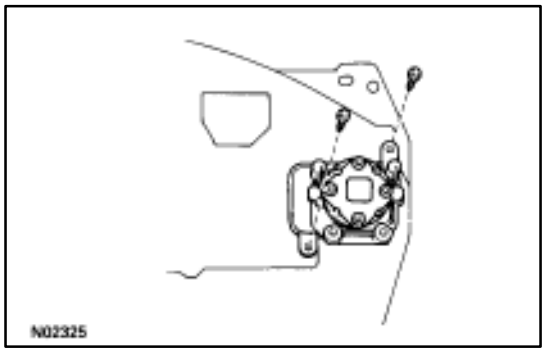


7. REMOVE CHARACTER PLATE

Remove the character plate from the case.

8. REMOVE FUEL GAUGE

Remove the two screws and the fuel gauge.

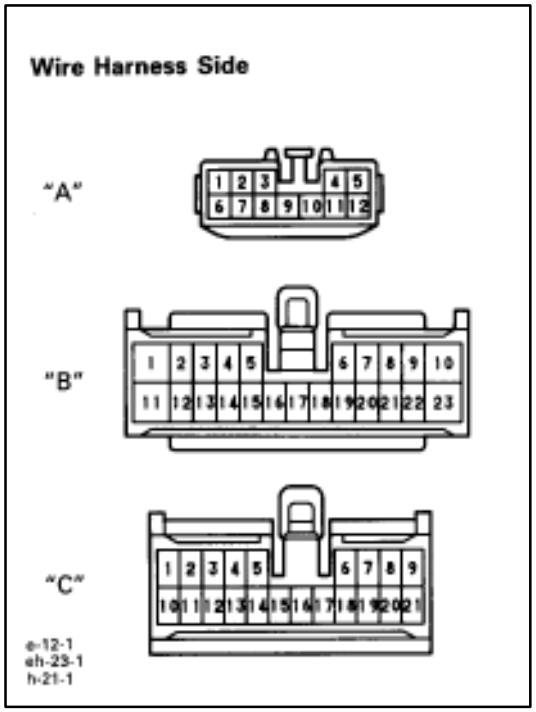


9. REMOVE ENGINE COOLANT TEMPERATURE GAUGE

Remove the two screws and the engine coolant temperature gauge.

COMBINATION METER ASSEMBLY

For installation, follow the removal procedure in reverse.



COMBINATION METER ASSEMBLY INSPECTION

1. INSPECT COMBINATION METER WIRING CIRCUIT

Disconnect connector "A", connector "B" and connector "C" from the combination meter and inspect the connectors on the wire harness side as follows.

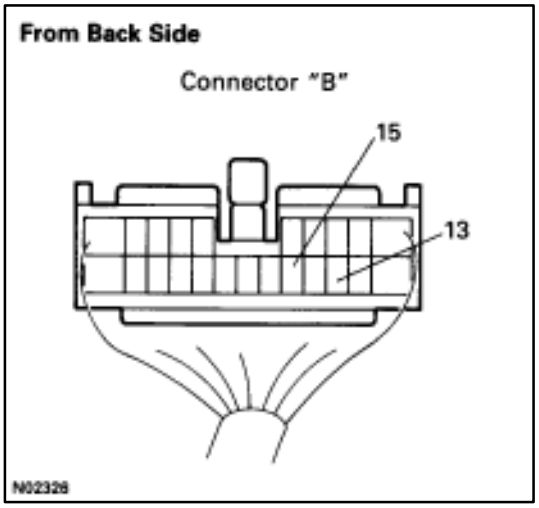
Connection	Check for	Tester connection	Condition		Specified value
*1 HEAD (RH) Fuse	Voltage	A1 – Ground	Light control switch HEAD	Headlight dimmer switch LO	No voltage
				Headlight dimmer switch HI or FLASH	Battery positive voltage
*2 Daytime running light relay No.3	Voltage	A1 – Ground	Light control switch HEAD	Headlight dimmer switch LO	No voltage
				Headlight dimmer switch HI or FLASH	Battery positive voltage
Turn signal switch and hazard warning switch	Voltage	A2 – Ground	Hazard warning switch ON		Battery positive voltage ↔ 0 V
			Ignition switch ON and turn signal switch RIGHT		Battery positive voltage ↔ 0 V
	Voltage	C8 – Ground	Hazard warning switch ON		Battery positive voltage ↔ 0 V
			Ignition switch ON and turn signal switch LEFT		Battery positive voltage ↔ 0 V
Park/neutral position switch	Voltage	A7 – Ground	Ignition switch ON and shift lever position	P	Battery positive voltage
		A8 – Ground		R	Battery positive voltage
		C7 – Ground		N	Battery positive voltage
		A3 – Ground		D	Battery positive voltage
		C6 – Ground		2	Battery positive voltage
		C5 – Ground		L	Battery positive voltage
Fuel sender gauge	Continuity	A5 – Ground	Fuel remainder	Full	No continuity
				Empty	Continuity
	Resistance	B7 – B8	Float position	Full, Approx. 35 mm (1.38 in.)	Approx. 3 Ω
				1/2, Approx. 91 mm (3.58 in.)	Approx. 31 Ω
				Empty, Approx. 157 mm (6.18 in)	Approx. 110 Ω
*1 Headlight dimmer switch	Continuity	A6 – Ground	Headlight dimmer switch position	LO	No continuity
				HI or FLASH	Continuity
*2 Ground	Continuity	A6 – Ground	Constant		Continuity

*1: USA models *2: CANADA models

Connection	Check for	Tester connection	Condition		Specified value
O/D OFF switch	Continuity	A9 – Ground	O/D OFF switch position	ON	Continuity
				OFF	No continuity
GAUGE fuse	Voltage	B1 – Ground	Ignition switch position	Lock or ACC	No voltage
				ON	Battery positive voltage
Rheostat light control volume and Rheostat light control	Voltage	B2 – Ground	Light control switch TAIL or HEAD and rheostat volume switch position	OFF (rotate the switch away from you until it stops)	No voltage
				ON (any position other than OFF	Battery positive voltage
	Voltage	B4 – Ground	Light control switch TAIL or HEAD and rotate rheostat volume switch		Voltage changes from approx. 0 V to 5 V.
Igniter	Voltage	B9 – Ground	Engine running		Voltage fluctuates
Ground	Continuity	B10 – Ground	Constant		Continuity
DOME fuse	Voltage	B11 – Ground	Constant		Battery positive voltage
STARTER fuse	Voltage	B12 – Ground	Ignition switch position	Lock or ACC or ON	No voltage
				START	Battery positive voltage
Odometer & Twin Trip Switch	Continuity	B15 – B19	ODO/TRIP switch position	OFF (switch free)	No continuity
				ON (switch pushed in)	Continuity
	Continuity	B15 – B20	RESET switch position	OFF (switch free)	No continuity
				ON (switch pushed in)	Continuity
Ground	Continuity	B22 – Ground	Constant		Continuity
Ground	Continuity	B23 – Ground	Constant		Continuity
ECT pattern select switch	Voltage	C4 – Ground	Ignition switch ON and ECT pattern select switch position	NORM	No voltage
				PWR	Battery positive voltage
Engine oil level warning switch	Continuity	C9 – Ground	Oil temperature below approx. 55°C(131°F)		Continuity
			Oil temperature above approx. 55°C (131°F) and switch position	ON (float up)	Continuity
				OFF (float down)	No continuity
Generator	Continuity	C12 – Ground	Engine stop		Continuity
	Voltage		Engine running		Battery positive voltage
IG2 fuse	Voltage	C13 – Ground	Ignition switch position	LOCK or ACC	No voltage
				ON	Battery positive voltage
Low oil pressure warning switch	Continuity	C15 – Ground	Engine condition	Running	No continuity
				Stop	Continuity

Connection	Check for	Tester connection	Condition		Specified value
Brake fluid level warning switch and parking brake switch	Continuity	C16 – Ground	Brake fluid level warning switch	ON (float down)	Continuity
				OFF (float up)	No continuity
			Parking brake lever	Pulled up (ON)	Continuity
				Released (OFF)	No continuity
ECM-B fuse	Voltage	C18 – Ground	Constant		Battery positive voltage
Door courtesy switch	Continuity	C19 – Ground	Driver's and passenger's door	Open (ON)	Continuity
				Closed (OFF)	No continuity

If circuit is not as specified, refer to BE–115 wiring diagram and inspect the circuits connected to other parts.



2. INSPECT VEHICLE SPEED SIGNAL

(a) Remove the combination meter with connector connected.
(b) Connect the positive (+) lead from the tester to terminal B13 and the negative (–) lead to terminal B15.
(c) (A/T vehicles)
Shift the shift lever to N range.
(M/T vehicles)
Shift the shift lever to neutral position.
(d) Jack up the front wheel on one side.
(e) Turn ignition switch on.
(f) Revolve the wheel.
(g) Check that there is voltage between terminal B13 and B15 changes from approx. 0 V to 12 V.
If operation is not as specified, inspect speed sensor or wire harness.

(mph/USA)

Standard indication	Allowable range
20	19 – 22
40	39 – 42.5
60	59 – 63
80	79 – 83.5
100	99 – 104
120	119 – 124.5

(km/h/CANADA)

Standard indication	Allowable range
20	19 – 24
40	39 – 43
60	59 – 63.5
80	79 – 84
100	99 – 104
120	119 – 124.5
140	139 – 145
160	159 – 166
180	179 – 187
200	199 – 208

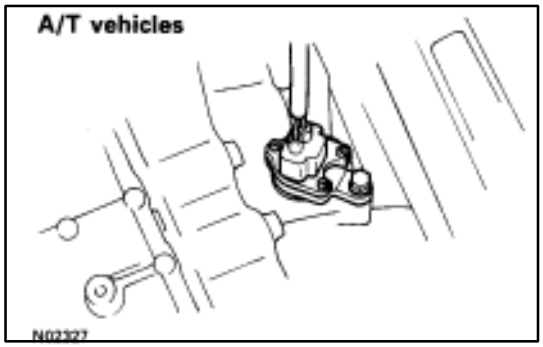
SPEEDOMETER SYSTEM
SPEEDOMETER INSPECTION

(ON–VEHICLE)

Using a speedometer tester, inspect the speedometer for allowable indication error and check the operation of the odometer.

HINT: Tire wear and tire over or under inflation will increase the indication error.

If error is excessive, replace the speedometer.



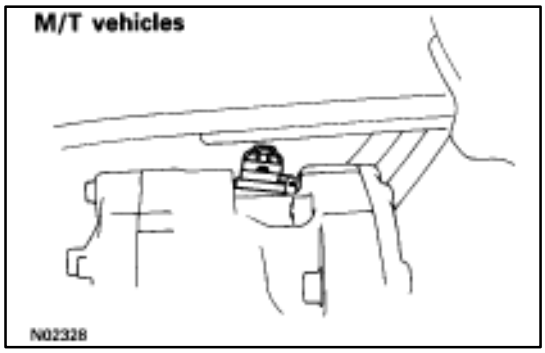
SPEED SENSOR REMOVAL AND INSTALLATION

1. REMOVE SPEED SENSOR

(A/T vehicles)

(a) Disconnect the connector.

(b) Remove a bolt and the sensor.



(M/T vehicles)

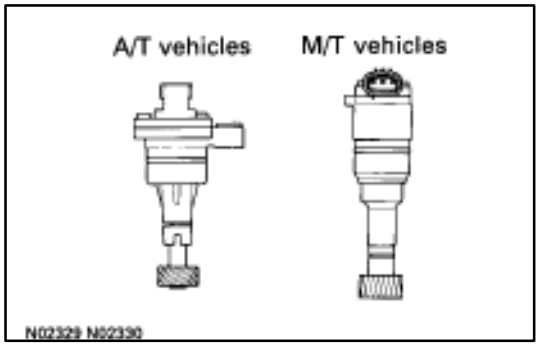
(a) Jack up the vehicle.

(b) Disconnect the connector.

(c) Remove a bolt and the sensor.

2. INSTALL SPEED SENSOR

For installation, follow the removal procedure in reverse.



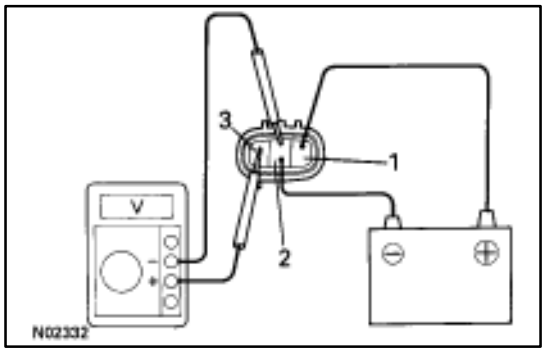
SPEED SENSOR INSPECTION

(Operation)

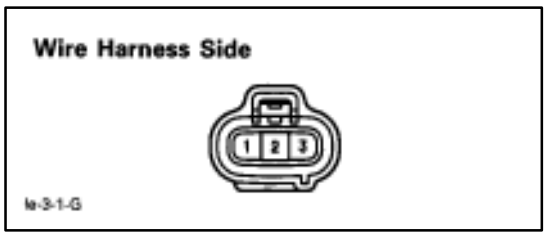
(a) Connect the positive (+) lead from battery to terminal 1 and negative (–) lead to terminal 2.

(b) Connect the positive (+) lead from tester to terminal 3 and negative (–) lead to terminal 2.

(c) Revolve shaft.



(d) Check that there is voltage change from approx. 0 V to 11 V or more between terminal 2 and 3.
HINT: The voltage change should be 4 times per each revolution of the speed sensor shaft.
If operation is not as specified, replace the sensor.



(Sensor circuit)

Disconnect connector from sensor and inspect the connector on wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Voltage	1–Ground	Ignition switch position	ON	Battery positive voltage
			LOCK or ACC	No voltage

If circuit is not as specified, inspect power source or wire harness.

DC 13.5 V, 25°C (77°F) rpm	
Standard indication	Allowable range
700	630 – 770
1000	915 – 1115
2000	1920 – 2220
3000	2890 – 3350
4000	3940 – 4400
5000	5025 – 5425
6500	6650 – 6950
7000	7025 – 7625

TACHOMETER SYSTEM

TACHOMETER INSPECTION

(ON–VEHICLE)

(a) Connect a tune–up test tachometer, and start the engine.
NOTICE:
Reversing the connection of the tachometer will damage the transistors and diodes inside.

(b) Compare the tester and tachometer indications.
If error is excessive, replace the tachometer.

ODOMETER & TWIN TRIP SYSTEM

ODOMETER & TWIN TRIP SWITCH REMOVAL AND INSTALLATION

1. REMOVE ODOMETER & TWIN TRIP SWITCH
(See page BO–107)

(a) Remove the cluster finish panel

(b) Remove the odometer & twin trip switch from the cluster finish panel.

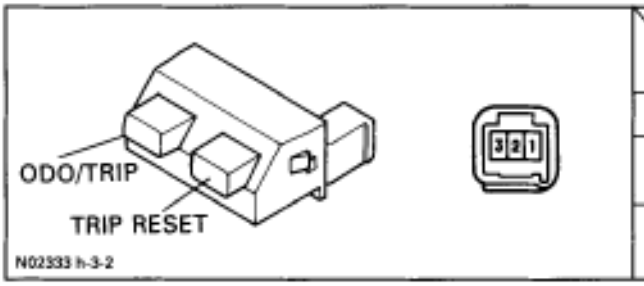
2. INSTALL ODOMETER & TWIN TRIP SWITCH

For installation follow the removal procedure in reverse.

ODOMETER & TWIN TRIP SWITCH INSPECTION

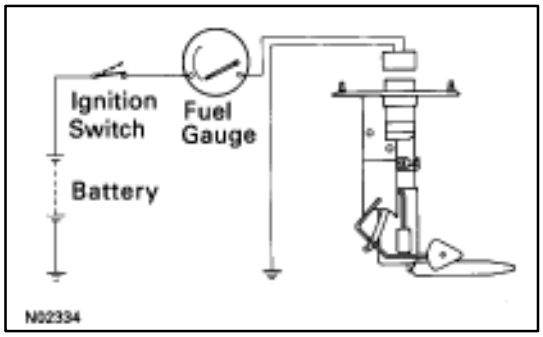
(Continuity)

Inspect continuity between terminals.



Terminals / Switch position	1	2	3
OFF (Switch free)			
ODO/TRIP switch ON (Switch pushed in)		○	○
TRIP RESET switch ON (Switch pushed in)	○		○

If continuity is not as specified, replace the switch.



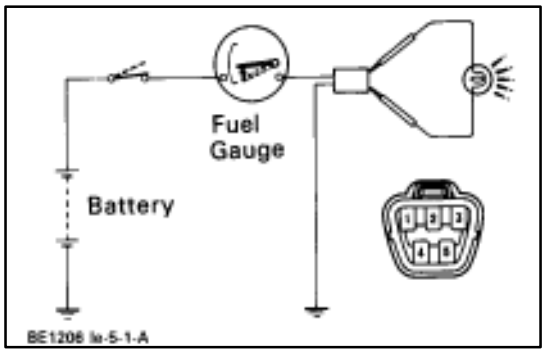
FUEL GAUGE SYSTEM

FUEL RECEIVER GAUGE INSPECTION

(Operation)

(a) Disconnect the connector from the sender gauge assembly.

(b) Turn the ignition switch ON, check that the receiver gauge needle indicates EMPTY.

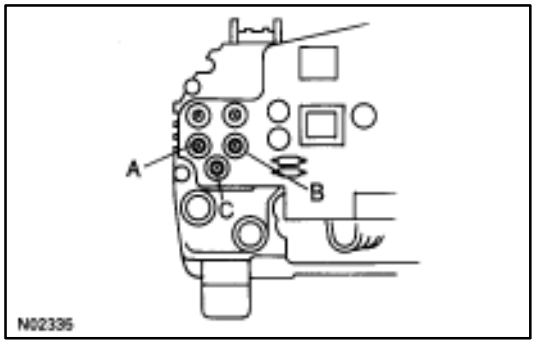


(c) Connect terminals 2 and 3 on the wire harness side connector through a 3.4 W test bulb.

(d) Turn the ignition switch ON, check that the bulb lights up and receiver gauge needle moves toward the full side.

HINT: Because of the silicon oil in the gauge, it will take a short time for the needle to stabilize.

If operation is not as specified, inspect the receiver gauge resistance.

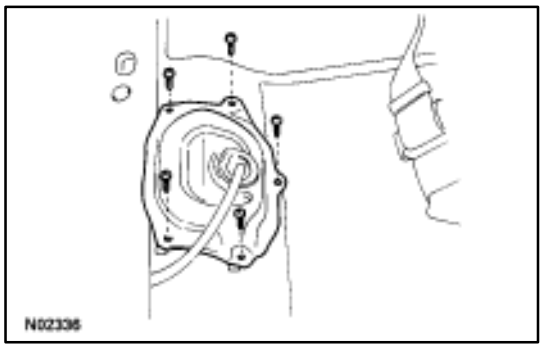


(Resistance)

Measure the resistance between terminals.

Between terminals	Resistance (Ω)
A – B	Approx. 126
A – C	Approx. 102
B – C	Approx. 228

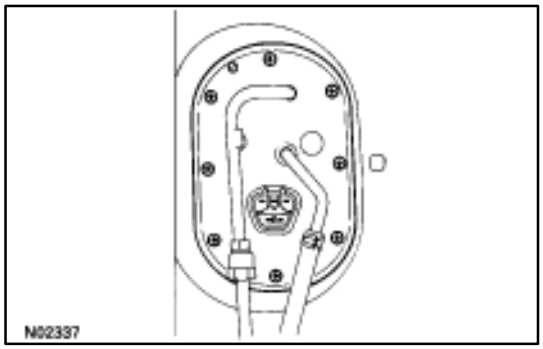
If resistance value is not as specified, replace the fuel receiver gauge.



FUEL SENDER GAUGE REMOVAL AND INSTALLATION

1. REMOVE FUEL SENDER GAUGE

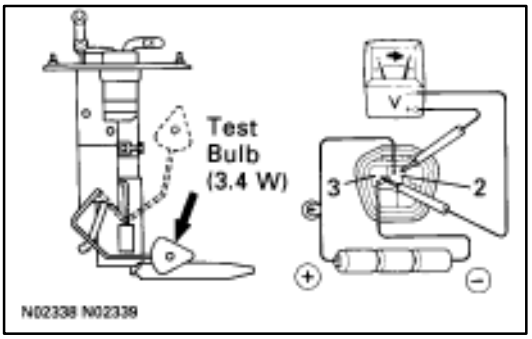
(a) Remove the rear seat.
(b) Remove the five screws and the cover.
(c) Disconnect the connector



(d) Remove the eight screws and the fuel sender gauge assembly.

2. INSTALL FUEL SENDER GAUGE

For installation follow the removal procedure in reverse.



FUEL SENDER GAUGE INSPECTION

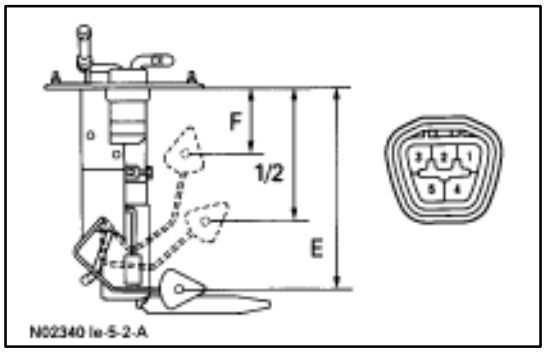
(Operation)

(a) Connect a series of three 1.5 V dry cell batteries.

(b) Connect the positive (+) lead from the dry cell batteries to terminal 2 through a 3.4 W test bulb and the negative (–) lead to terminal 3.

(c) Check that the voltage rises between terminals 2 and 3 as the float is moved from the top to bottom position.

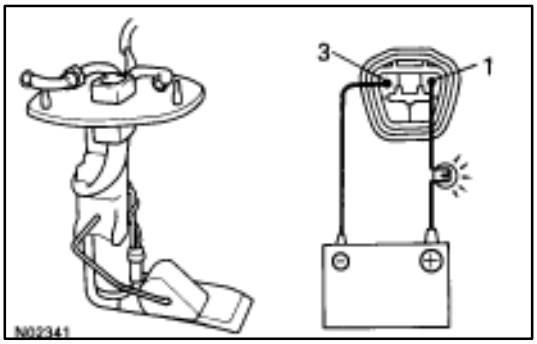
(Resistance)



Measure the resistance between terminals 2 and 3 for each float position.

Float position mm(in.)		Resistance (Ω)
F	Approx. 35 (1.38)	Approx. 3
1/2	Approx. 91 (3.58)	Approx. 31
E	Approx. 157 (6.18)	Approx. 110

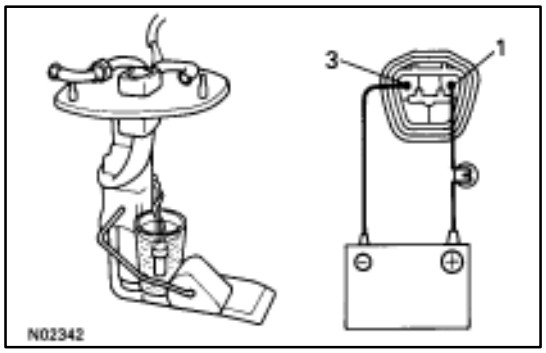
If resistance value is not as specified, replace the sender gauge.



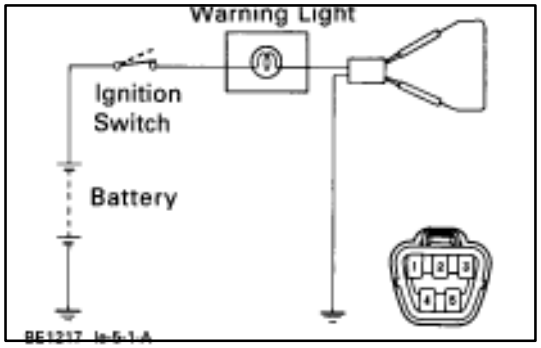
FUEL LEVEL WARNING SYSTEM

FUEL LEVEL WARNING SWITCH INSPECTION

(a) Apply battery voltage between terminals 1 and 3 through a 3.4 W test bulb, check that the bulb lights up.
HINT: It will take a short time for the bulb to light up.

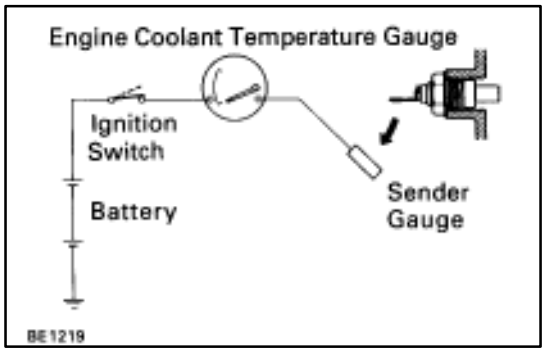


(b) Submerge the switch in fuel, check that the bulb goes out.
If operation is not as specified, replace the sender gauge.



FUEL LEVEL WARNING LIGHT INSPECTION

(a) Disconnect the connector from the sender gauge.
(b) Connect terminals 1 and 3 on the wire harness side connector.
(c) Turn the ignition switch ON, check that the warning light lights up.
If the warning light does not light up, test the bulb or inspect wire harness.

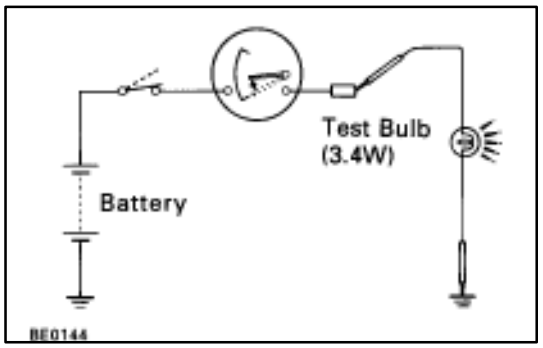


ENGINE COOLANT TEMPERATURE GAUGE SYSTEM

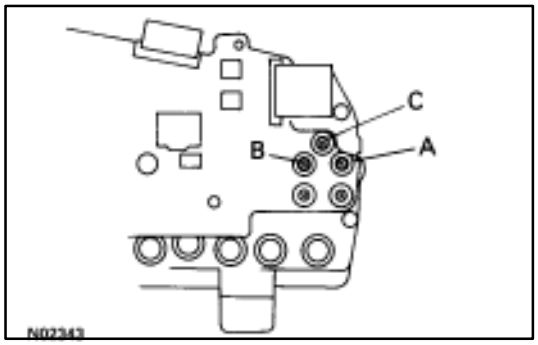
ENGINE COOLANT TEMPERATURE RECEIVER GAUGE INSPECTION

(Operation)

(a) Disconnect the connector from the sender gauge.
(b) Turn the ignition switch ON, check that the receiver gauge needle indicates COOL.



(c) Ground terminal on the wire harness side connector through a 3.4 W test bulb.
(d) Turn the ignition switch ON, check that the bulb lights up and the receiver gauge needle moves toward the hot side.
If operation is as specified, replace the sender gauge. Then recheck the system.
If operation is not as specified, measure the receiver gauge resistance.

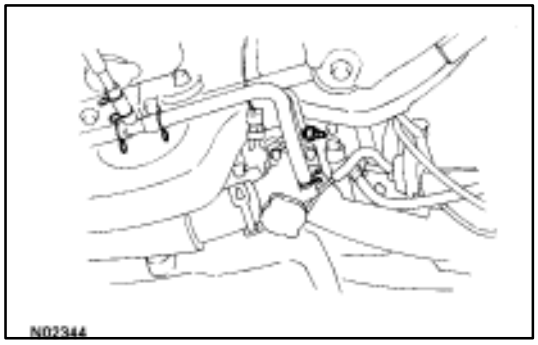


(Resistance)

Measure the resistance between terminals.
HINT: Connect the test leads so that the current from the ohmmeter can flow according to the chart order.

Between terminals	Resistance (Ω)
A – B	Approx. 54
A – C	Approx. 230
B – C	Approx. 176

If resistance value is not as specified, replace the engine coolant temperature receiver gauge.



ENGINE COOLANT TEMPERATURE SENDER GAUGE REMOVAL AND INSTALLATION

1. REMOVE ENGINE COOLANT TEMPERATURE SENDER GAUGE

(a) Disconnect the connector from the sender gauge.

(b) Remove the sender gauge.

NOTICE: Do not remove when engine is hot.

2. INSTALL ENGINE COOLANT TEMPERATURE SENDER GAUGE

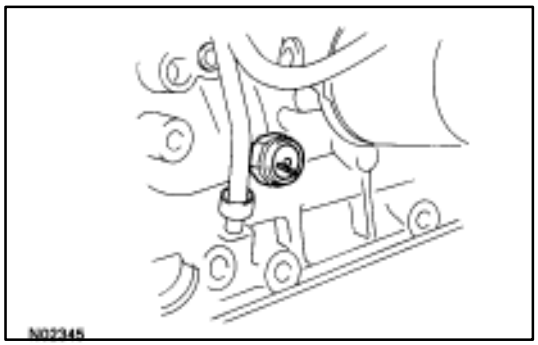
(a) Apply liqued sealant to the bolt threads.

Sealant: Part No. 08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent

(b) Install and torque the sender gauge.

Torque: 15 N·m (150 kgf·cm, 11 ft·lbf)

(c) Connect the connector.



LOW OIL PRESSURE WARNING SYSTEM

LOW OIL PRESSURE WARNING SWITCH REMOVAL AND INSTALLATION

1. REMOVE LOW OIL PRESSURE WARNING SWITCH

(a) Disconnect the connector from the switch.

(b) Remove the switch.

2. INSTALL LOW OIL PRESSURE WARNING SWITCH

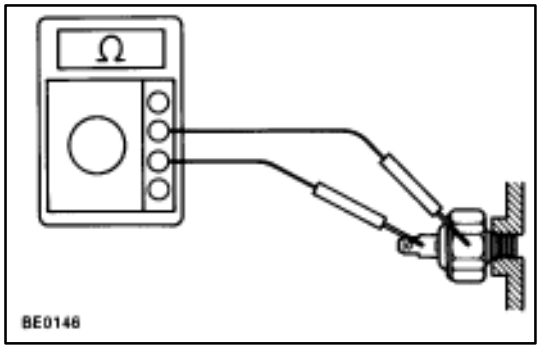
(a) Apply liquid sealant to the bolt threads.

Sealant: Part No.08833–00080, THREE BOND 1344, LOCTITE 242 or equivalent

(b) Install and torque the switch.

Torque: 15 N·m (150 kgf·cm, 11 ft·lbf)

(c) Connect the connector.



LOW OIL PRESSURE WARNING SWITCH INSPECTION

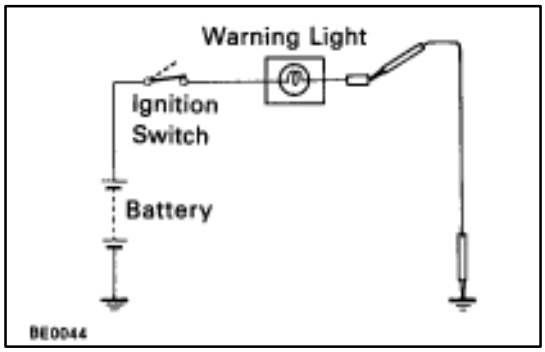
1. INSPECT LOW OIL PRESSURE WARNING SWITCH

(a) Check that there is continuity between terminal and ground with the engine stopped.

(b) Check that there is no continuity between terminal and ground with the engine running.

HINT: Oil pressure should be over 29 kPa (0.3 kg/cm^2, 4.3 psi)

If operation is not as specified, replace the switch.



2. INSPECT LOW OIL PRESSURE WARNING LIGHT

(a) Disconnect the connector from the warning switch and ground terminal on the wire harness side connector.

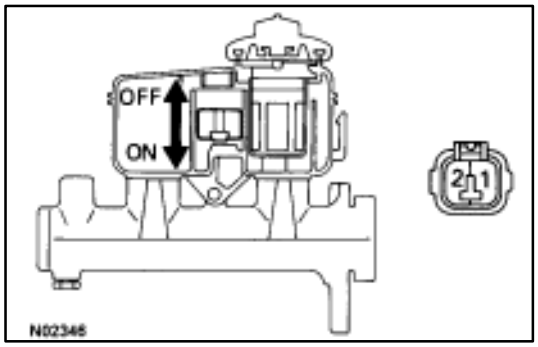
(b) Turn the ingition switch ON, check that the warning light lights up.

If the warning light does not light up, test the bulb or inspect wire harness.

BRAKE WARNING SYSTEM

BRAKE FLUID LEVEL WARNING SWITCH REMOVAL AND INSTALLATION

(See page BR–12)



BRAKE FLUID LEVEL WARNING SWITCH INSPECTION

1. INSPECT BRAKE FLUID LEVEL WARNING SWITCH

(a) Remove the reservoir tank cap and strainer.

(b) Disconnect the connector.

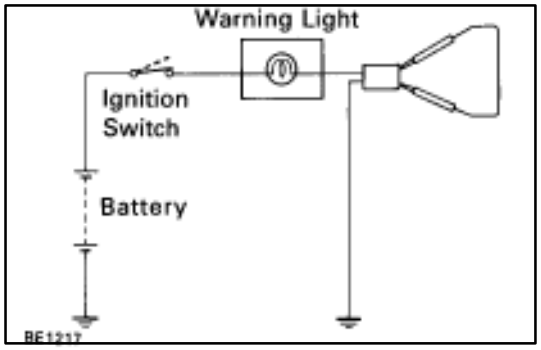
(c) Check that there is no continuity between terminals with the switch OFF (float up).

(d) Use syphon, etc. to take fluid out of the reservoir tank.

(e) Check that there is continuity between terminals with the switch ON (float down).

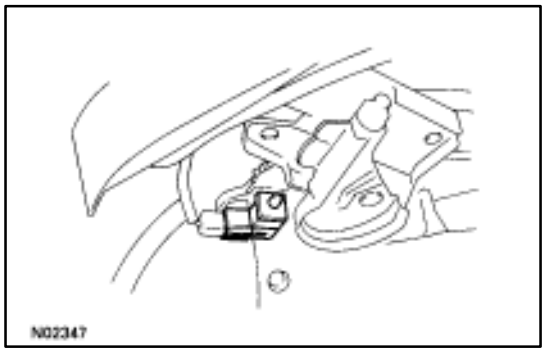
(f) Pour the fluid back in the reservoir tank.

If operation is not as specified, replace the switch.



2. INSPECT BRAKE WARNING LIGHT

(a) Disconnect the connector from the brake fluid warning switch.
(b) Release the parking brake pedal.
(c) Connect terminals on the wire harness side of the level warning switch connector.
(d) Start the engine, check that the warning light lights up.
If the warning light does not light up, test the bulb or wire harness.



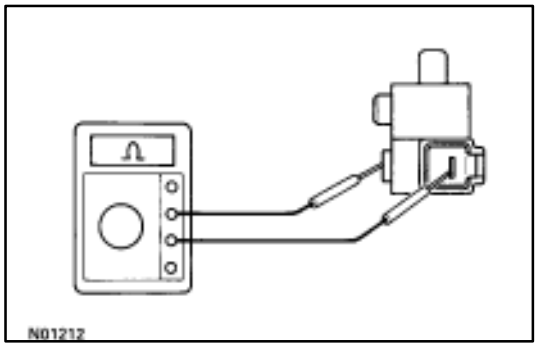
PARKING BRAKE SWITCH REMOVAL AND INSTALLATION

1. REMOVE PARKING BRAKE SWITCH

(a) Remove the console box.
(See page **BO–107**)
(b) Disconnect the connector from the switch.
(c) Remove the screw and the switch.

2. INSTALL PARKING BRAKE SWITCH

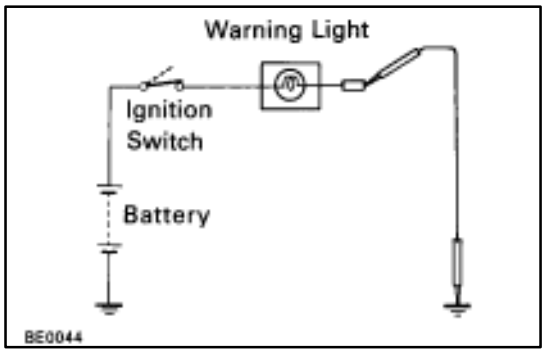
For installation follow the removal procedure in reverse.



PARKING BRAKE SWITCH INSPECTION

1. INSPECT PARKING BRAKE SWITCH

(a) Check that there is continuity between terminal and switch body with the switch ON (switch pin released).
(b) Check that there is no continuity between terminal and switch body with the switch OFF (switch pin pushed in).
If continuity is not as specified, replace the switch or inspect ground point.



2. INSPECT BRAKE WARNING LIGHT

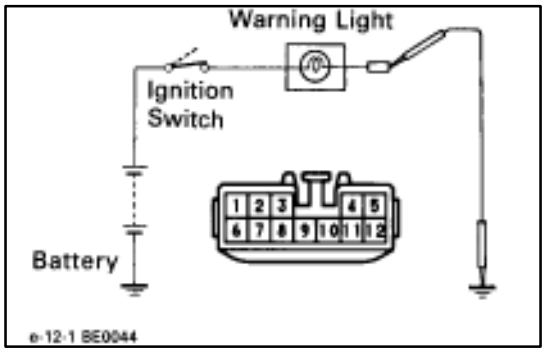
(a) Disconnect the connector from the parking brake switch and the brake fluid warning switch.
(b) Ground terminal on the wire harness side connector.
(c) Start the engine, check that the warning light lights up.
If the warning light does not light up, test the bulb or inspect wire harness.

LIGHT FAILURE WARNING SYSTEM

LIGHT FAILURE SENSOR REMOVAL AND INSTALLATION
(See page BE–66)

LIGHT FAILURE SENSOR INSPECTION

1. INSPECT LIGHT FAILURE SENSOR
(See page BE–67)



2. INSPECT LIGHT FAILURE WARNING LIGHT

(a) Disconnect the connector from the light failure sensor and ground terminal 4 on the wire harness side connector.

(b) Start the engine, check that the warning light lights up.
If the warning light does not light up, test the bulb or inspect wire harness.

METER ILLUMINATION CONTROL SYSTEM

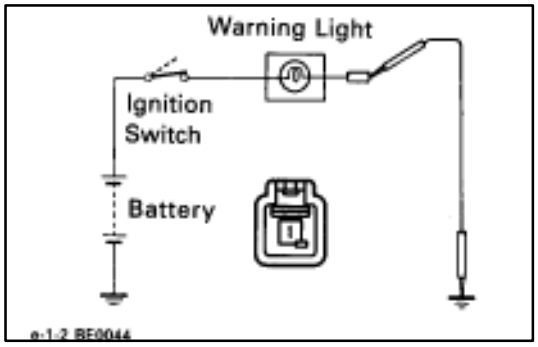
RHEOSTAT LIGHT CONTROL INSPECTION
(See page BE–80)

RHEOSTAT LIGHT CONTROL VOLUME INSPECTION
(See page BE–81)

DOOR COURTESY SWITCH REMOVAL AND INSTALLATION
(See page BE–90)

DOOR COURTESY SWITCH INSPECTION

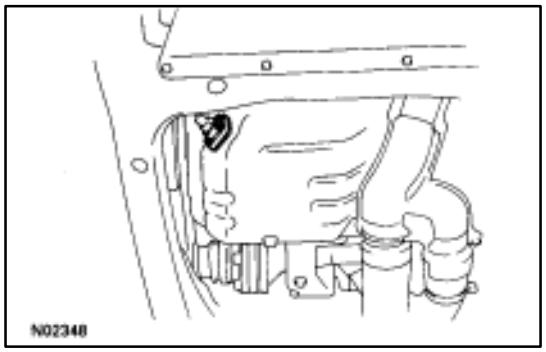
1. INSPECT DOOR COURTESY SWITCH
(See page BE–90)



2. INSPECT OPEN DOOR WARNING LIGHT

Disconnect the connector from the door courtesy switch, and ground terminal 1 on the wire harness side connector and check that the warning light lights up.

If the warning light does not light up, inspect the bulb or wire harness.



ENGINE OIL LEVEL WARNING SYSTEM

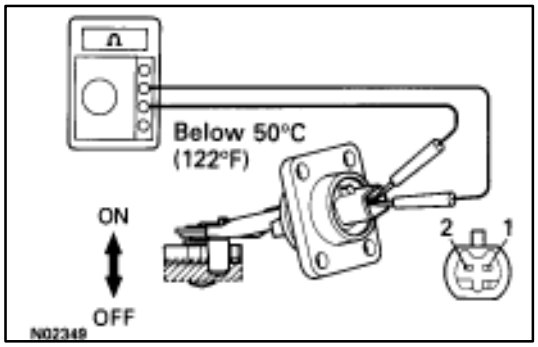
ENGINE OIL LEVEL WARNING SWITCH REMOVAL AND INSTALLATION

1. REMOVE ENGINE OIL LEVEL WARNING SWITCH

(a) Jack up the vehicle.
(b) Disconnect the connector.
(c) Remove four bolts and switch.

2. INSTALL ENGINE OIL LEVEL WARNING SWITCH

(a) Install switch and new gasket.
(b) Install and torque the four bolts.
Torque: 6.9 N·m (70 kgf·cm, 5.1 ft·lbf)
(c) Connect the connector.

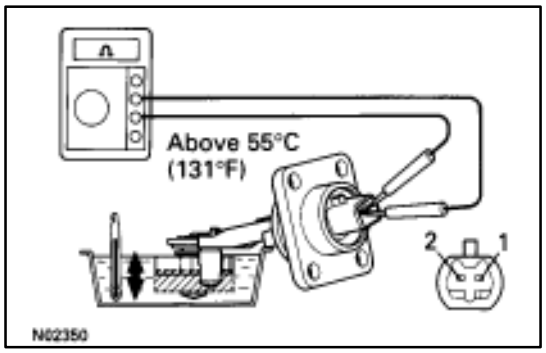


ENGINE OIL LEVEL WARNING SWITCH INSPECTION

1. INSPECT ENGINE OIL LEVEL WARNING SWITCH

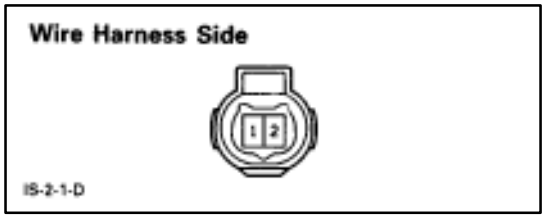
(Continuity)

(a) Check that there is continuity between terminal with the switch each position.
(b) Heat the switch to above 55°C (131°F) in an oil bath.



(c) Check that there is continuity between terminals with the switch ON (float up).
(d) Check that there is no continuity between terminals with the switch OFF (float down).

If operation is not as specified, replace the switch.

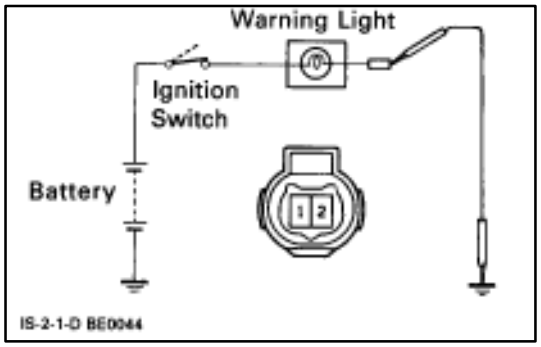


(Circuit)

Disconnect the switch connector and inspect the connector on wire harness side as shown.

Check for	Tester connection	Condition	Specified value
Continuity	2–Ground	Constant	Continuity

If continuity is not as specified, inspect the wire harness or ground point.



2. INSPECT ENGINE OIL LEVEL WARNING LIGHT

(a) Disconnect the connector from the switch.

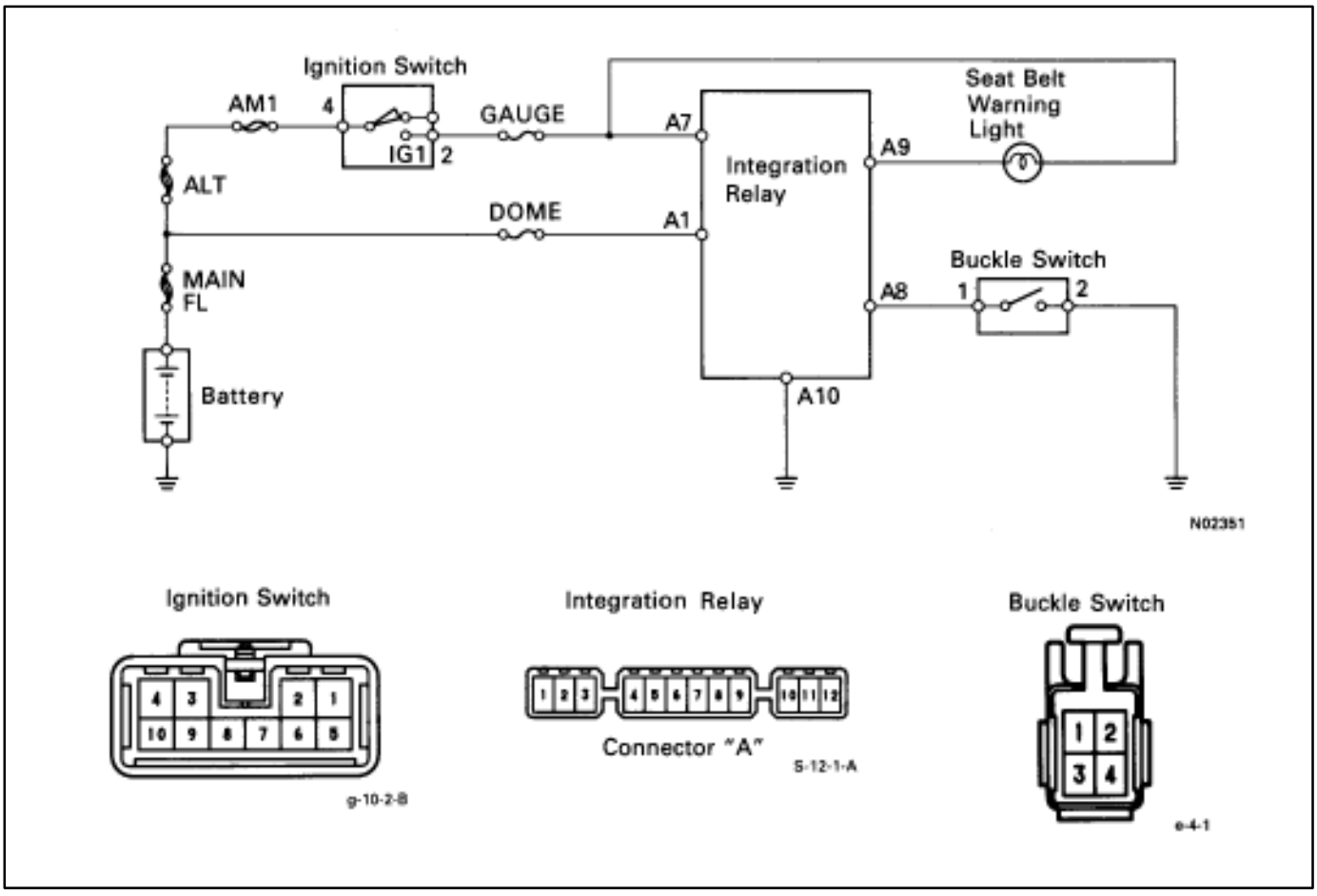
(b) Ground terminal 1 on the wire harness connector.

(c) Turn the ignition switch ON. Check that the warning light lights up approximately 40 seconds later.

If the warning light does not light up, inspect bulb or wire harness.

SEAT BELT WARNING SYSTEM

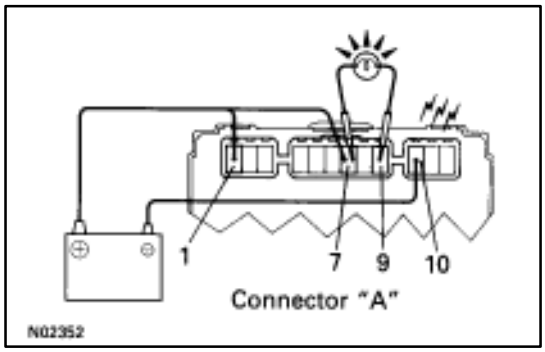
WIRING AND CONNECTOR DIAGRAMS



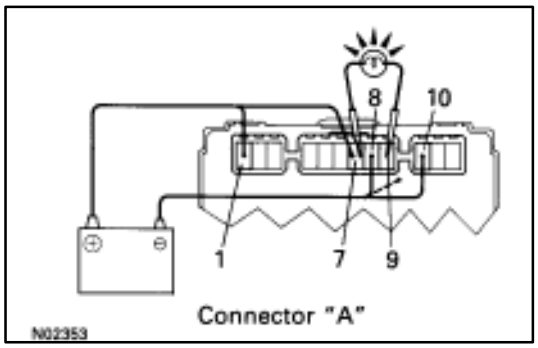
INTEGRATION RELAY REMOVAL AND INSTALLATION
(See page BE–32)

INTEGRATION RELAY INSPECTION

1. INSPECT INTEGRATION RELAY
(Operation/Seat belt warning)

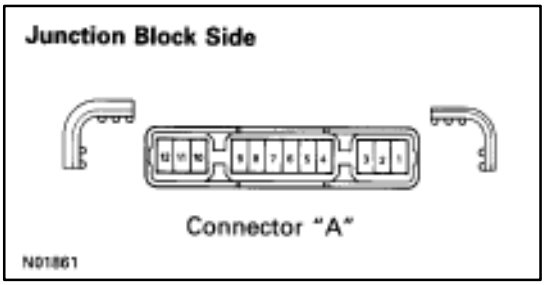


(a) Connect the positive (+) lead from the battery to terminals A1 and A7.
(b) Connect the terminal A7 to terminal A9 through the 3.4 W test bulb.
(c) Connect the negative (–) lead from the battery to terminal A10.
(d) Check that the bulb lights and the chime sounds for 4–8 seconds.
(e) Return to step (a), and operate the chime again.



(f) Connect the negative (–) lead from the battery to terminal A8.
(g) Check that the chime stops sounding.
HINT: Check the chime within a period of 4 to 8 seconds.
If operation is not as specified, replace the relay.

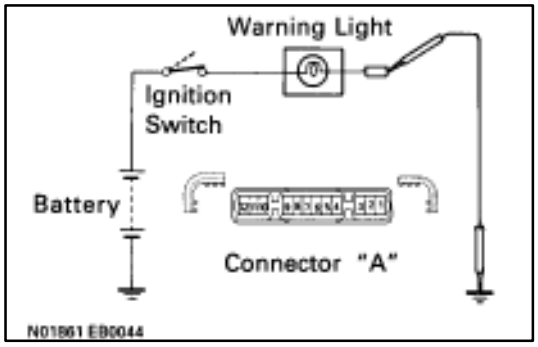
(Relay circuit / Seat belt warning)



Remove the relay from the junction block No.1 and inspect the connectors on the junction block side.

Check for	Tester connection	Condition		Specified value
Continuity	A8–Ground	Driver's buckle switch	OFF (Seat belt unfastened)	No continuity
			ON (Seat belt fastened)	Continuity
	A10–Ground	Constant		Continuity
Voltage	A1–Ground	Constant		Battery positive voltage
	A7–Ground	Ignition switch position	OFF or ACC	No voltage
	A9–Ground		ON	Battery positive voltage

If circuit is as specified, trying replacing the relay with a new one.
Is circuit is not as specified, refer to BE–169 wiring diagram and inspect the circuits connected to other parts.



2. INSPECT SEAT BELT WARNING LIGHT

(a) Remove the integration relay from the junction block No.1.
(b) Ground terminal A9 on the junction block side connector.
(c) Turn the ignition switch ON, check that the warning light lights up.

If the warning light does not light up, inspect the bulb or wire harness.

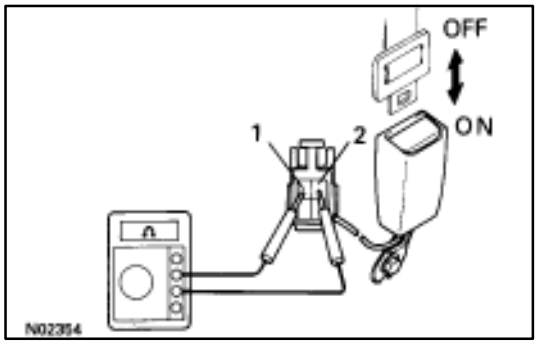
BUCKLE SWITCH REMOVAL AND INSTALLATION

1. REMOVE BUCKLE SWITCH

(a) Remove the driver's seat.
(b) Disconnect buckle switch connector.
(c) Remove seat belt inner belt with buckle switch.

2. INSTALL BUCKLE SWITCH

For installation follow the removal procedure in reverse.



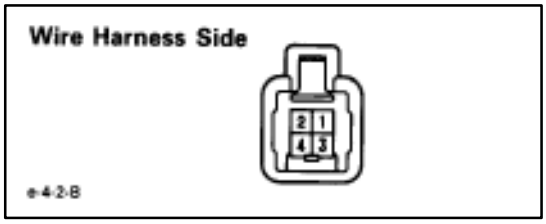
BUCKLE SWITCH INSPECTION

INSPECT BUCKLE SWITCH

(Continuity)

(a) Check that there is continuity between terminals 1 and 2 on the switch side connector with the switch ON (belt fastened).
(b) Check that there is no continuity between terminals 1 and 2 on the switch side connector with the switch OFF (belt unfastened).

If operation is not as specified, replace the seat belt inner belt.



(Switch Circuit)

Disconnect the connector from switch and inspect the connector on wire harness side as shown.

Check for	Tester connection	Condition	Specified value
Chime operation	–	Turn the ignition switch ON	Chime sounds for 4–8 sec.
		Ground terminal 1 and turn the ignition switch ON	No chime sound
Continuity	2–Ground	Constant	Continuity

If the circuit is not as specified, refer to BE–169 wiring diagram, and inspect the circuits connected to other parts.

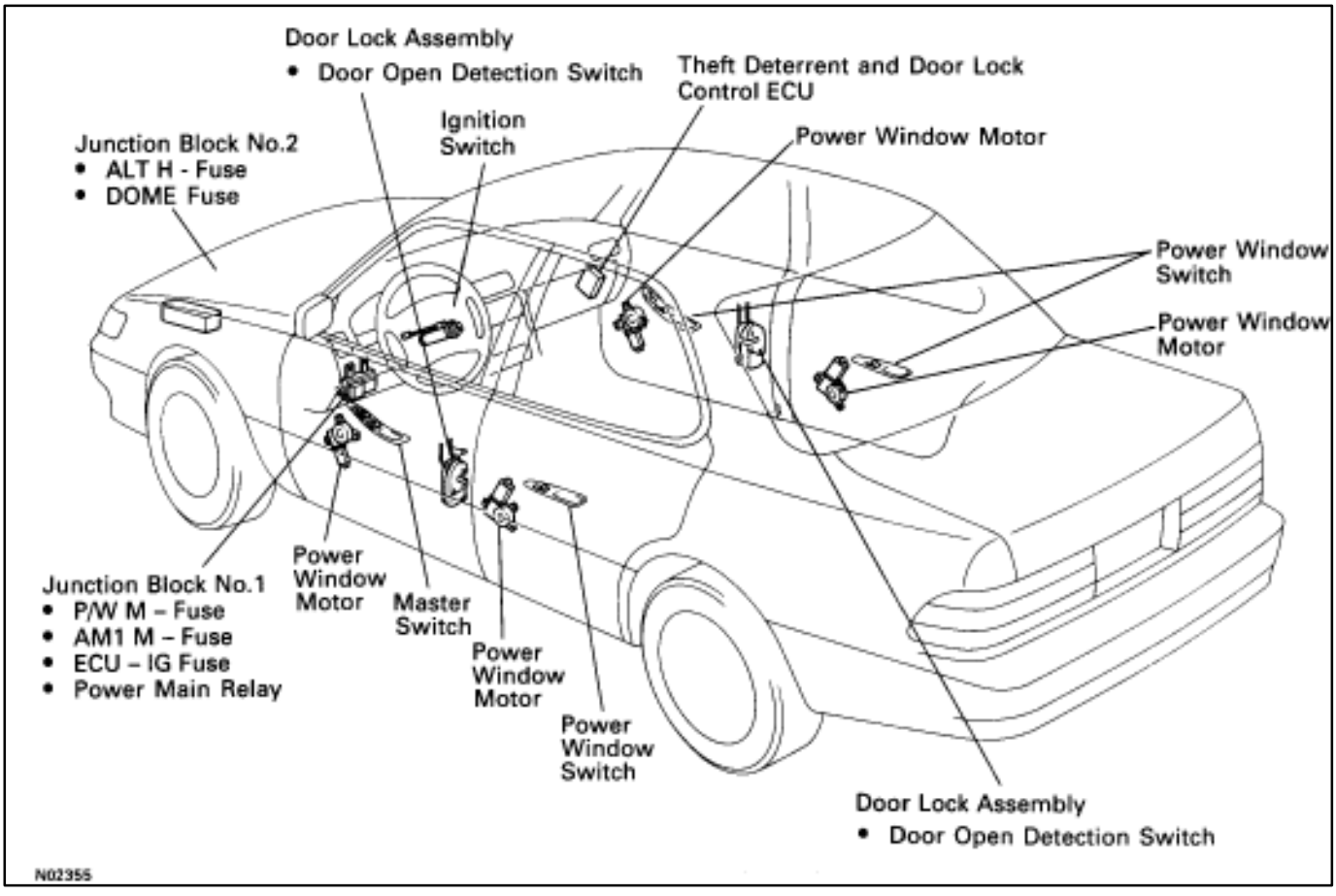
POWER WINDOW CONTROL SYSTEM

DESCRIPTION

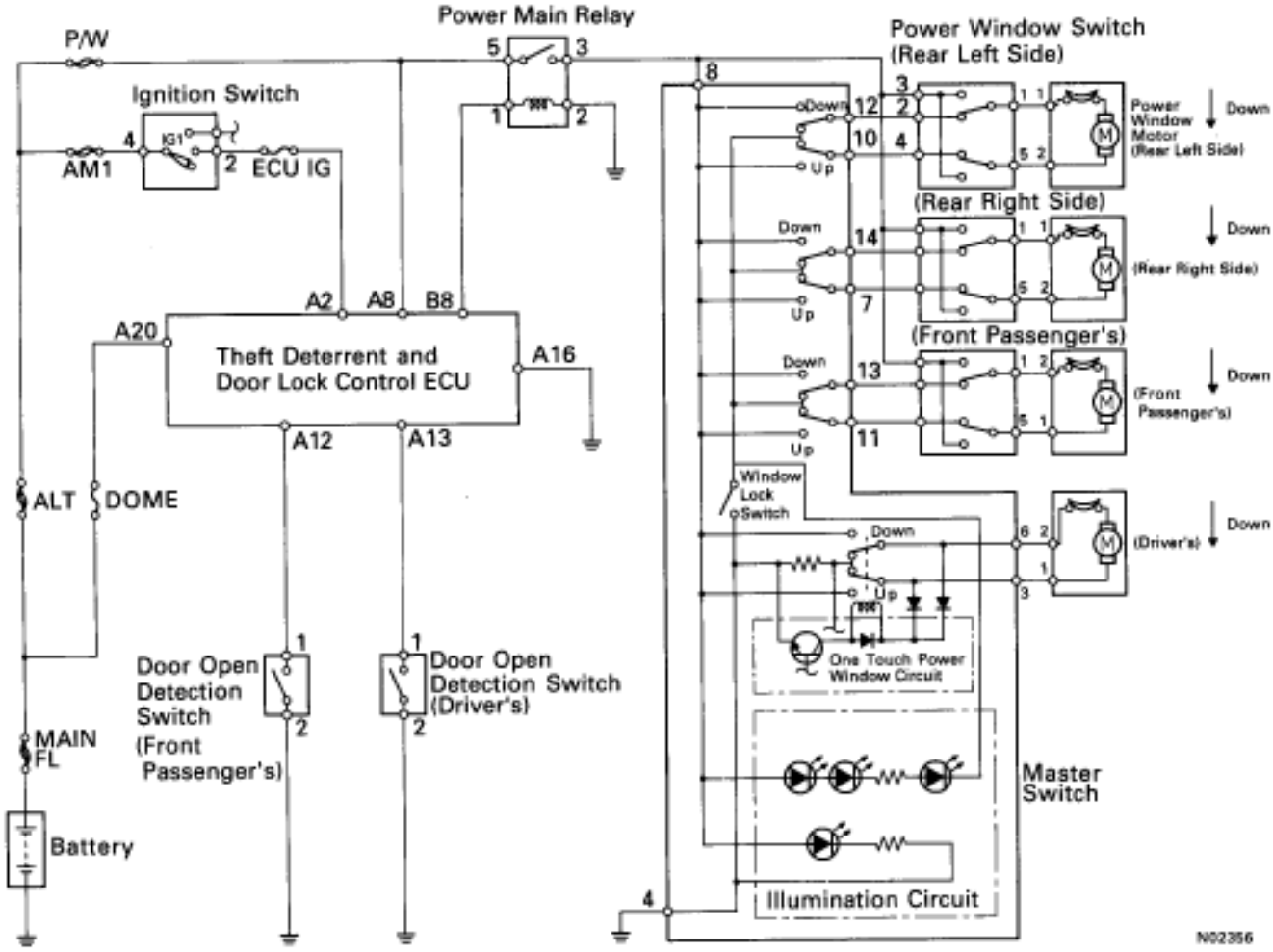
The Power Window System raises and lowers the window glass in each door using electrical power. The component parts of this system and their functions are described in the following table.

Parts Name	Function
P/W M–Fuse	When over current flows in the power window circuit, the P/W M–Fuse breaks the circuit to protect it against damage.
Theft Deterrent and Door Lock Control ECU	Current is sent to the power main relay only when the ignition switch is on or within a specified period after the ignition switch is turned off.
Power Main Relay	Current from the theft deterrent and door lock control ECU to the power main relay switches large current from the master switch ON and OFF.
Master Switch	This switch turns current to each power window motor ON and OFF and switches it. It also includes a circuit for ”One Touch Power Window” use of the driver’s window and a built–in window lock switch which controls the operation of all power window switches.
Power Window Switch	This switch is installed on each door except on the driver’s door. It is supplied with current from the master switch and turns the current to the motor ON and OFF and switches the current. This switch will not operate when the window lock switch inside the master switch is in the LOCK position.
Power Window Motor	This motor moves the window regulator directly when current is supplied to it from the master switch or power window switch. The motor has a built–in circuit breaker.

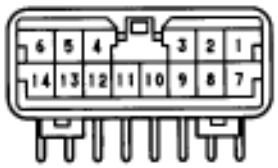
PARTS LOCATION



WIRING AND CONNECTOR DIAGRAMS

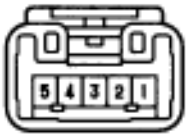


Master Switch



e-14-2-F

Power Window Switch

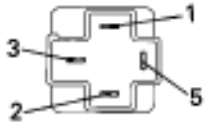


e-5-2

Power Window Motor

IS-2-2-J

Power Window Relay

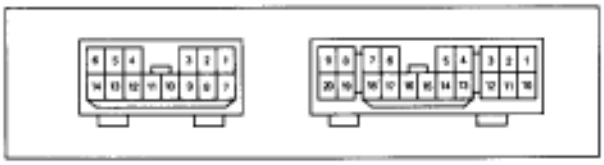


BE4049

Door Open Detection Switch (in Door Lock Assembly)

Ie-7-2

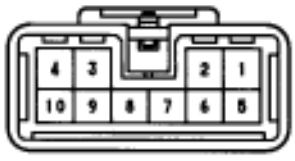
Theft Deterrent and Door Lock Control ECU



Connector "B" Connector "A"

BE5650

Ignition Switch



g-10-2-B

TROUBLESHOOTING

You will find the cause of trouble more easily by properly using the table shown below. In this table, the numbers indicate the order of priority of the causes of trouble. Check each part in the order shown. If necessary, replace the part.

See page / Part name / Trouble	ALT H-Fuse	DOME Fuse	P/W M - Fuse	Theft Deterrent and Door Lock Control ECU	Power Main Relay	Power Window Master Switch	Power Window Switch	Power Window Motor	Ignition Switch	Door Open Detection Switch	ECU-IG Fuse	Wire Harness
	BE–6, 22	BE–6, 22	BE–6, 20	BE–355	BE–20, 179	BE–176	BE–178	BE–180	BE–29	BE–388	BE–6, 20	-
*1 Power window does not operate.	1		2	3								4
*2 Power window does not operate.			3	4	5	6			2		1	7
"One Touch Power Window System" does not operate.						1						
Only one window glass does not move.						1	2	3				4
"Window Lock System" does not operate.						1						
"Window Lock Illumination" does not light up.						1						
Key-off power window does not operate.		1		2					4	5	3	6

*1: Dook Lock does not operate.
*2: Dook Lock is normal.

POWER WINDOW MASTER SWITCH

POWER WINDOW MASTER SWITCH REMOVAL AND INSTALLATION

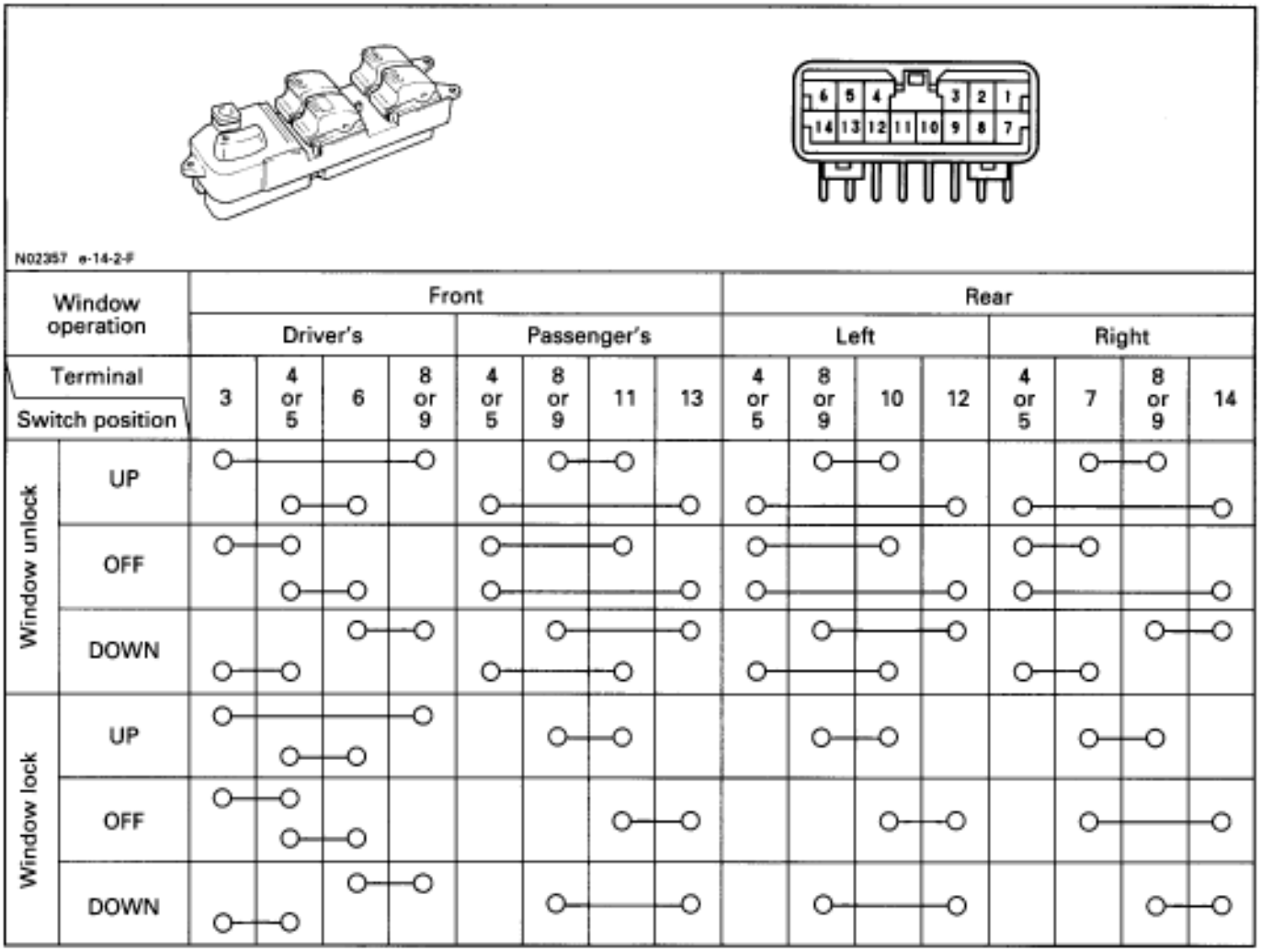
(See page BO–34)

POWER WINDOW MASTER SWITCH INSPECTION

INSPECT POWER WINDOW MASTER SWITCH

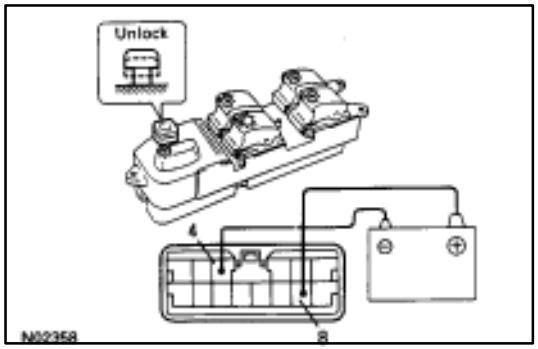
(Continuity)

Inspect the switch continuity between terminals.



Window operation		Front								Rear							
		Driver's				Passenger's				Left				Right			
Terminal / Switch position		3	4 or 5	6	8 or 9	4 or 5	8 or 9	11	13	4 or 5	8 or 9	10	12	4 or 5	7	8 or 9	14
Window unlock	UP	○			○		○	○			○	○			○	○	
			○	○		○			○	○			○	○			○
	OFF	○	○			○	○			○	○			○	○		
			○	○		○			○	○			○	○			○
	DOWN			○	○		○	○			○	○				○	○
		○	○			○			○	○			○	○			
Window lock	UP	○			○		○	○			○	○			○	○	
			○	○													
	OFF	○	○					○	○			○	○		○		○
	DOWN			○	○		○		○		○		○			○	○
		○	○														

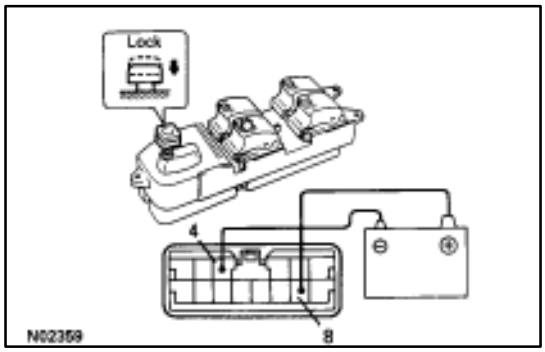
If continuity is not as specified, replace the master switch.



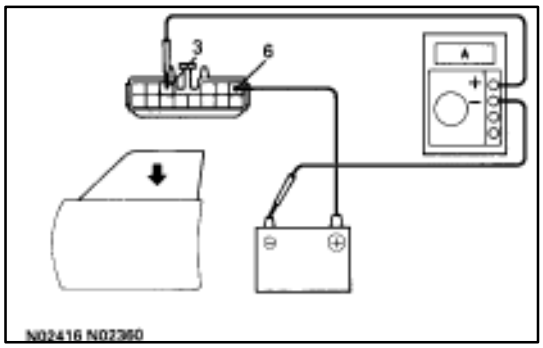
(Illumination)

(a) Set the window lock switch to the unlock position.

(b) Connect the positive (+) lead from the battery to terminal 8 and the negative (–) lead to terminal 4, check that all the illuminations light up.



(c) Set the window lock switch to the lock position, check that all the passenger's power window switch illuminations go out.
If operation is not as specified, replace the master switch.



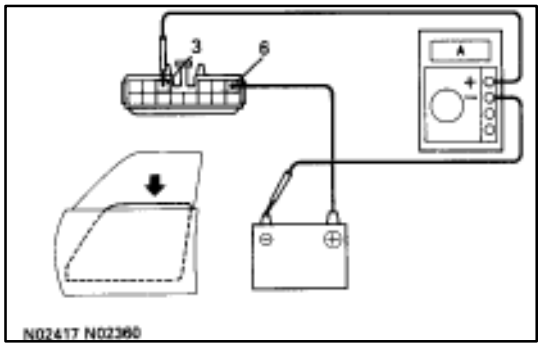
(One Touch Power Window System/Current of Circuit)
Inspection using an ammeter.

(a) Disconnect the connector from the master switch.

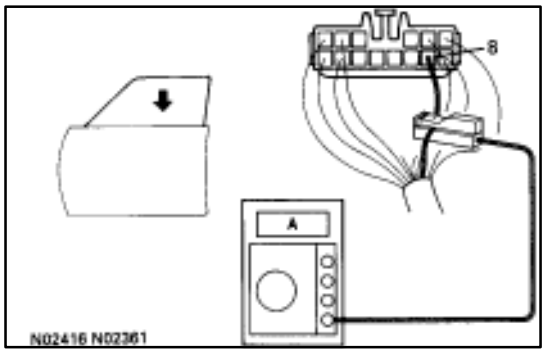
(b) Connect the positive (+) lead from the ammeter to terminal 3 on the wire harness side connector and the negative (–) lead to negative terminal of the battery.

(c) Connect the positive (+) lead from the battery to terminal 6 on the wire harness side connector.

(d) As the window goes down, check that the current flow is approximately 7 A.



(e) Check that the current increases approximately 14.5 A or more when the window stops going down.
HINT: The circuit breaker opens some 4–40 seconds after the window stops going down, so that check must be made before the circuit breaker operates.
If the operation is as specified, replace the master switch.



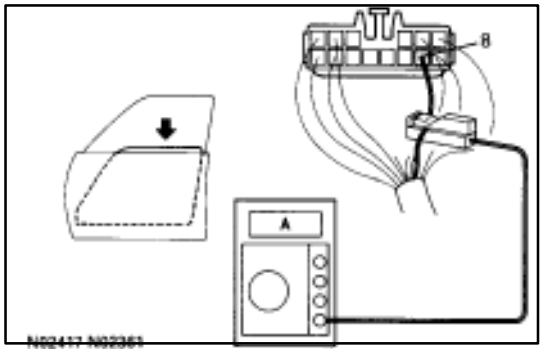
Inspection using an ammeter with a current–measuring probe.

(a) Remove the master switch with connector connected.

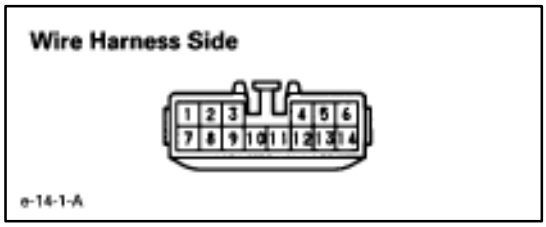
(b) Attach a current–measuring probe to terminal 8 of the wire harness.

(c) Turn the ignition switch ON and set the power window switch in the down position.

(d) As the window goes down, check that the current flow is approximately 7 A.



(e) Check that the current increases approximately 14.5 A or more when the window stops going down.
HINT: The circuit breaker opens some 4–40 seconds after the window stops going down, so that check must be made before the circuit breaker operates.
If operation is as specified, replace the master switch.



(Switch Circuit)
Disconnect the connector from the master switch and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Voltage	8–Ground	Ignition switch position	LOCK or ACC	*No voltage
			ON	Battery positive voltage
Continuity	4–Ground	Constant		Continuity

*: Exceptions: During 60 second period after ignition switch ON → OFF (ACC) or until driver or passenger door is opened after ignition switch ON → OFF (ACC).
If the circuit is not as specified, refer to BE–174 wiring diagram and inspect the circuits connected to other parts.

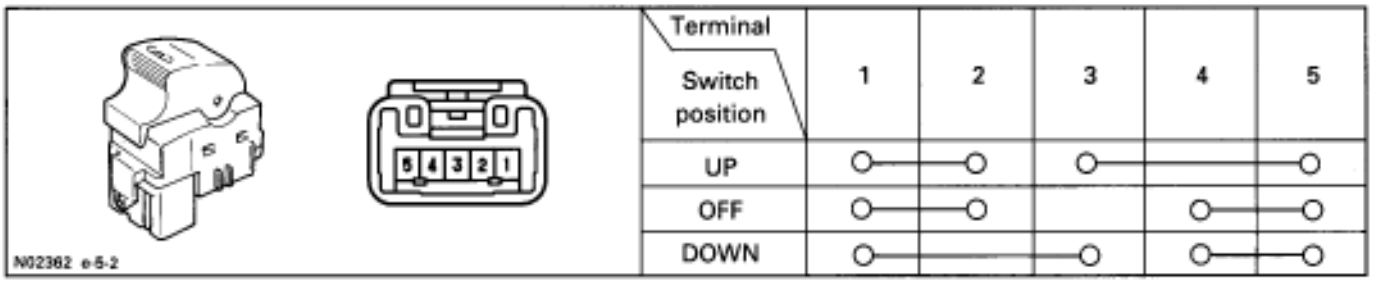
POWER WINDOW SWITCH

POWER WINDOW SWITCH REMOVAL AND INSTALLATION (See pages BO–34, 46)

POWER WINDOW SWITCH INSPECTION

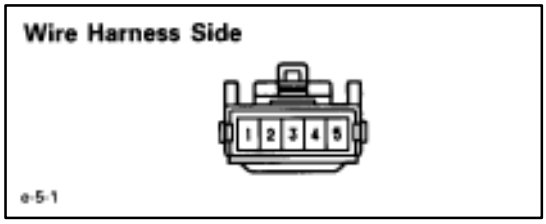
INSPECT POWER WINDOW SWITCH

(Switch Continuity)
Inspect switch continuity between terminals.



Terminal / Switch position	1	2	3	4	5
UP	○	○	○		○
OFF	○	○		○	○
DOWN	○		○	○	○

If continuity is not as specified, replace the switch.



(Switch Circuit)
Disconnect the connector from the switch and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Voltage	3–Ground	Ignition switch position	LOCK or ACC	*No voltage
			ON	Battery positive voltage
	4–Ground	Ignition switch ON and master switch position	UP	Battery positive voltage
			OFF	No voltage
	2–Ground	Ignition switch ON and master switch position	DOWN	Battery positive voltage
			OFF	No voltage

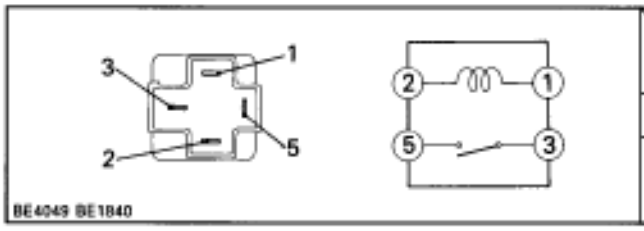
* Exceptions: During 60 second period after ignition switch ON → OFF (ACC) or until driver or passenger door is opened after ignition switch ON → OFF (ACC).
If the circuit is not as specified, refer to BE–174 wiring diagram and inspect the circuits connected to other parts.

POWER MAIN RELAY

POWER MAIN RELAY INSPECTION

INSPECT POWER MAIN RELAY

(Continuity)
Inspect relay continuity between terminals.



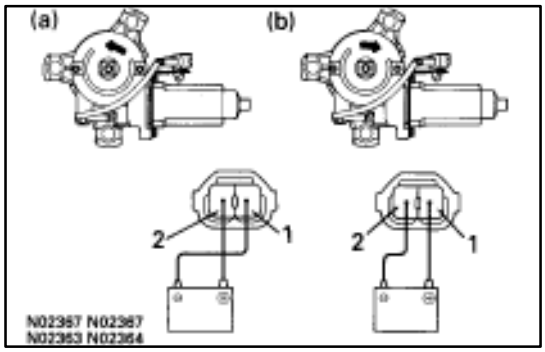
Terminal / Condition	1	2	3	5
Constant	○–∿∿∿–○			
Apply battery positive voltage to terminals 1 and 2.			○–○	

If continuity is not as specified, replace the relay.
(Relay Circuit)
(See page BE–20)

POWER WINDOW MOTOR

POWER WINDOW MOTOR REMOVAL AND INSTALL

(See pages BO–34, 46)



POWER WINDOW MOTOR INSPECTION

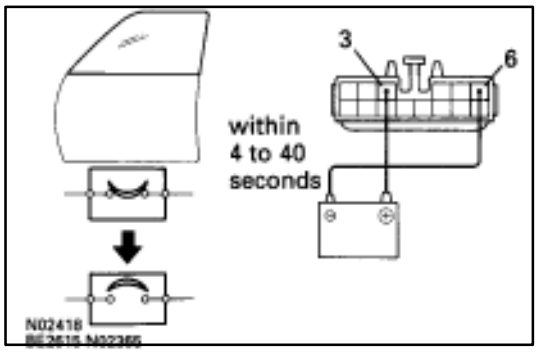
INSPECT POWER WINDOW MOTOR

(Driver's Door Motor / Motor Operation)

(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1, check that the motor turns counterclockwise.

(b) Reverse the polarity, check that the motor turns clockwise.

If operation is not as specified, replace the motor.

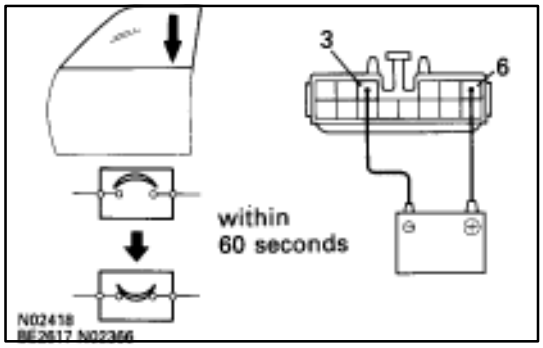


(Driver's Door Motor / Circuit Breaker Operation)

(a) Disconnect the connector from the master switch.

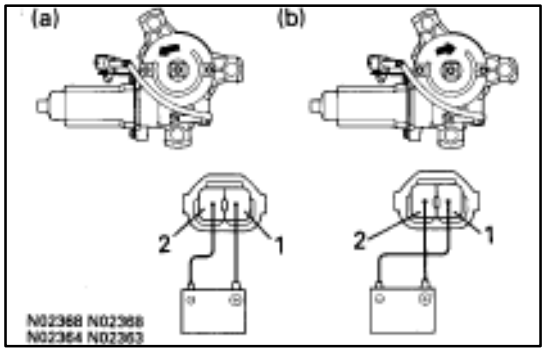
(b) Connect the positive (+) lead from the battery to terminal 3 and the negative (–) lead to terminal 6 on the wire harness side connector and raise the window to full closed position.

(c) Continue to apply voltage, check that there is a circuit breaker operation noise within approximately 4 to 40 seconds.



(d) Reverse the polarity, check that the window begins to descend within approximately 60 seconds.

If operation is not as specified, replace the motor.

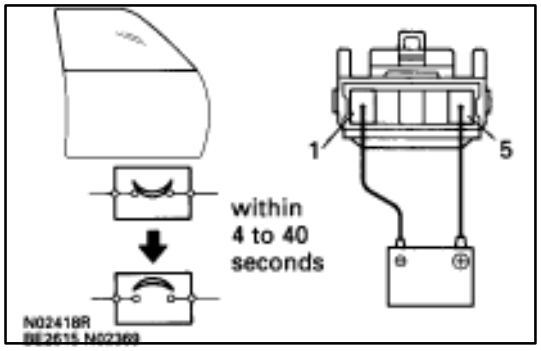


(Front Passenger's Door Motor / Motor Operation)

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, check that the motor turns counterclockwise.

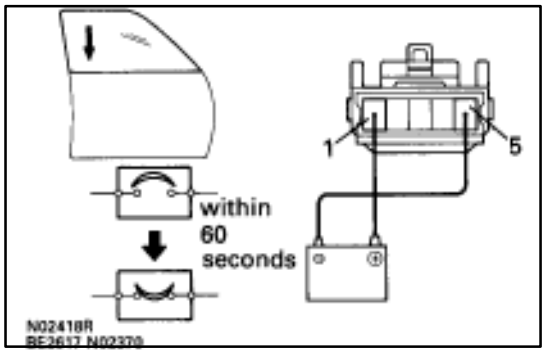
(b) Reverse the polarity, check that the motor turns clockwise.

If operation is not as specified, replace the motor.

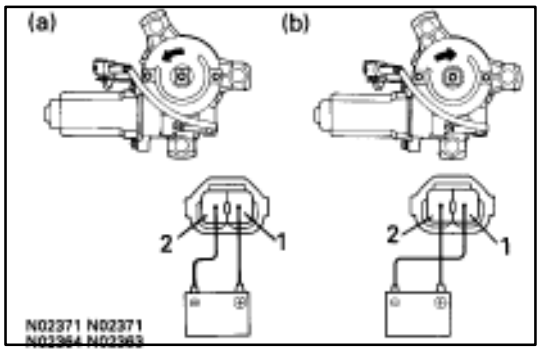


(Front Passenger's Door Motor/Circuit Breaker Operation)

(a) Disconnect the connector from the power window switch.
(b) Connect the positive (+) lead from the battery to terminal 5 and the negative (–) lead to terminal 1 on the wire harness side connector, and raise the window to full closed position.
(c) Continue to apply voltage, check that there is a circuit breaker operation noise within approximately 4 to 40 seconds.



(d) Reverse the polarity, check that the window begins to descend within approximately 60 seconds.
If operation is not as specified, replace the motor.

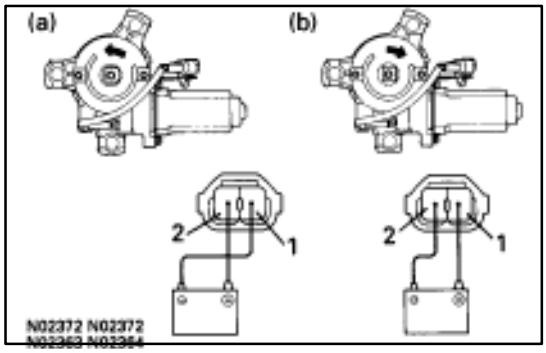


(Rear Left Side Door Motor / Motor Operation)

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, check that the motor turns counterclockwise.
(b) Reverse the polarity, check that the motor turns clockwise.
If operation is not as specified, replace the motor.

(Rear Left Side Door Motor/Circuit Breaker Operation)

See step of Front Passenger Door Motor on page BE–181.

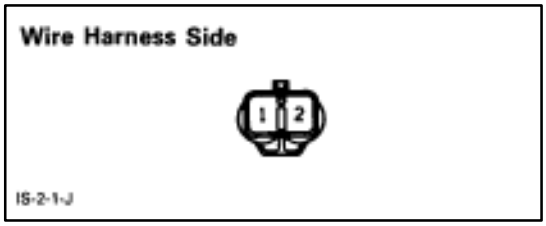


(Rear Right Side Door Motor / Motor Operation)

(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1, check that the motor turns counterclockwise.
(b) Reverse the polarity, check that the motor turns clockwise.
If operation is not as specified, replace the motor.

(Rear Right Side Door Motor/Circuit Breaker Operation)

See step of Front Passenger Door Motor on page BE–181.



(Circuit)

(a) Disconnect the connector from the motor.

(b) Connect the connector to the master switch and power window switch.

(c) Inspect the connector on the wire harness side as shown.

(Front Door Motor)

Check for	Tester connection	Condition (Ignition Switch ON)		Specified value
Voltage	1–Ground	*Master switchposition(Driver / Front passenger)	UP	Battery positive voltage
			DOWN or OFF	No voltage
		*Power window switch position (Front passenger)	UP	Battery positive voltage
			DOWN or OFF	No voltage
	2–Ground	*Master switch position (Driver/Front passenger)	DOWN	Battery positive voltage
			UP or OFF	No voltage
		*Power window switch position (Front passenger)	DOWN	Battery positive voltage
			UP or OFF	No voltage

(Rear Door Motor)

Check for	Tester connection	Condition (Ignition Switch ON)		Specified value
Voltage	1–Ground	*Master switch position	DOWN	Battery positive voltage
			UP or OFF	No voltage
		*Power window switch position	DOWN	Battery positive voltage
			UP or OFF	No voltage
	2–Ground	*Master Switch position	UP	Battery positive voltage
			DOWN or OFF	No voltage
		*Power window switch position	UP	Battery positive voltage
			DOWN or OFF	No voltage

*: Set the window lock switch to the unlock position. (except driver's door motor)

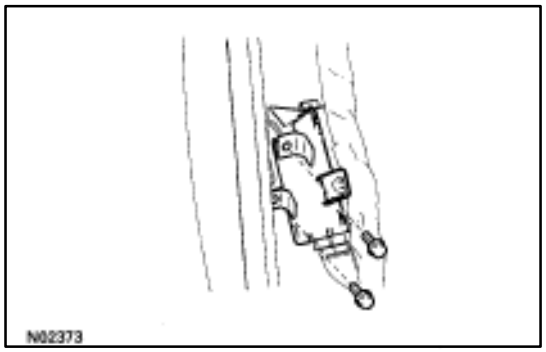
If the circuit is not as specified, refer to BE–174 wiring diagram and inspect the circuits connected to other parts.

THEFT DETERRENT AND DOOR LOCK CONTROL ECU

THEFT DETERRENT AND DOOR LOCK CONTROL ECU REMOVAL AND INSTALLATION

1. REMOVE THEFT DETERRENT AND DOOR LOCK CONTROL ECU

(See page **BO–107**)



(a) Remove the safety pad.

(b) Separate the instrument panel wire from the theft deterrent and door lock control ECU.

(c) Disconnect the two connectors from the theft deterrent and door lock control ECU.

(d) Remove the two bolts and the theft deterrent and door lock control ECU from the safety pad.

2. INSTALL THEFT DETERRENT AND DOOR LOCK CONTROL ECU

For installation, follow the removal procedure in reverse.

THEFT DETERRENT AND DOOR LOCK CONTROL ECU INSPECTION

INSPECT THEFT DETERRENT AND DOOR LOCK CONTROL ECU

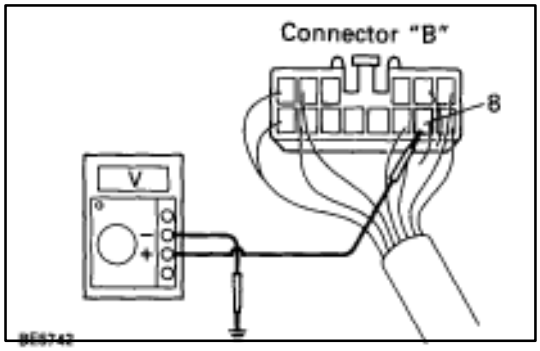
(Circuit)

(a) Inspect ECU Power Source Circuit.
(See page BE–355)

(b) Inspect Actuator Power Source Circuit.
(See page BE–372)

(c) Inspect Ignition Switch Circuit.
(See page BE–310)

(d) Inspect Door Open Detection Switch Circuit
(See page BE–388)
If circuit is as specified, inspect ECU operation.



(Operation)

(a) With the connectors connected, shut all doors.

(b) Check that there is 10 ~ 14 V between terminal B8 and ground when the ignition switch is turned on.

(c) After turning the ignition switch off, check within 60 seconds that there is battery positive voltage between terminal B8 and ground.

(d) Turn the ignition switch on then off, and check that there is 10 ~ 14 V between terminal B8 and ground when the ignition is switched off.

(e) Open the front door within 60 seconds of turning the ignition off and check that there is no voltage between terminal B8 and ground.

(f) Close all the doors and turn the ignition switch on.

(g) When a front door is opened, check that there is battery positive voltage between terminal B8 and ground.

(h) Check that there is no voltage between terminal B8 and ground when the ignition switch is turned to off.
If operation is not as specified, replace the ECU.

DOOR OPEN DETECTION SWITCH

(See page BE–388)

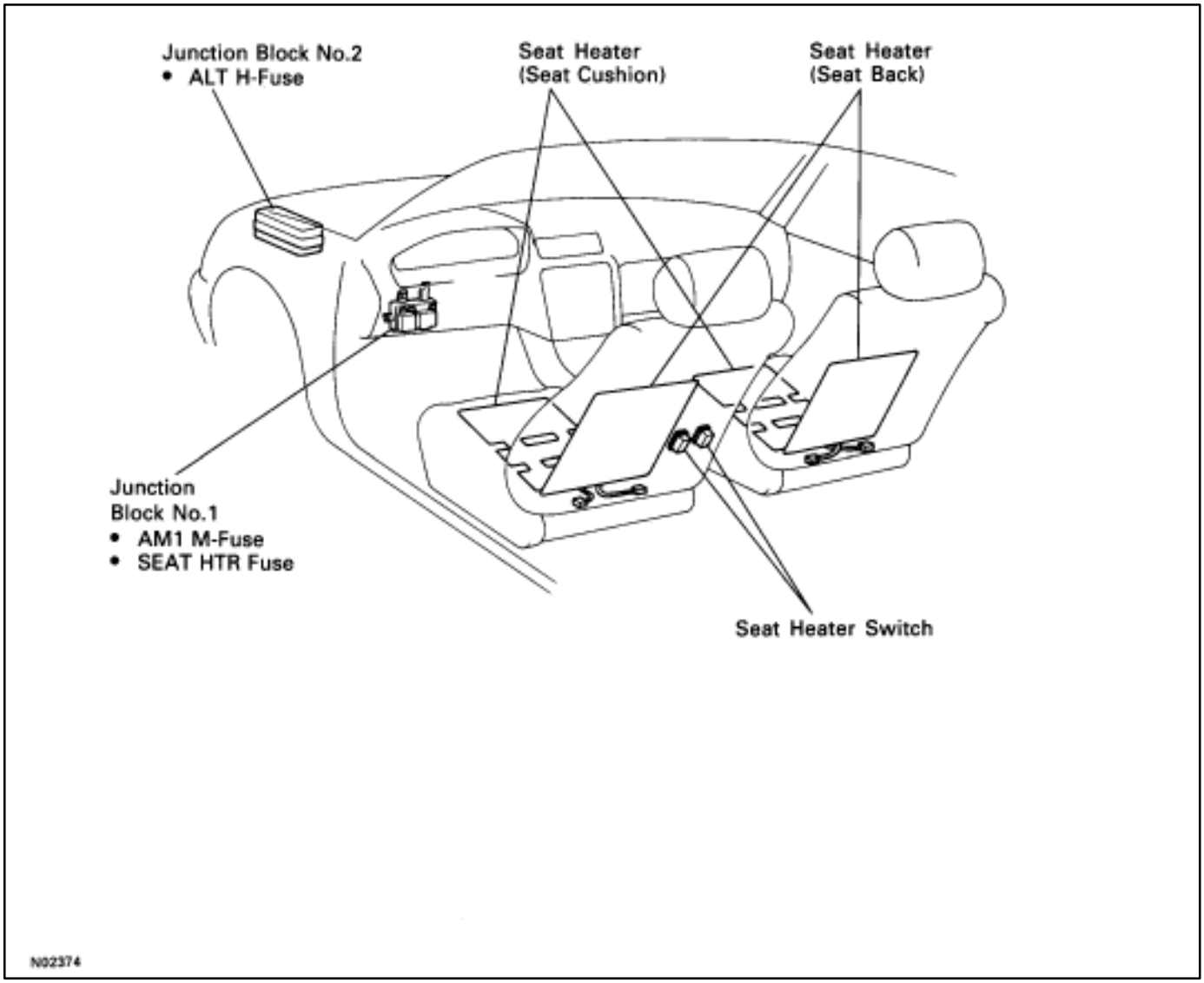
SEAT HEATER SYSTEM

DESCRIPTION

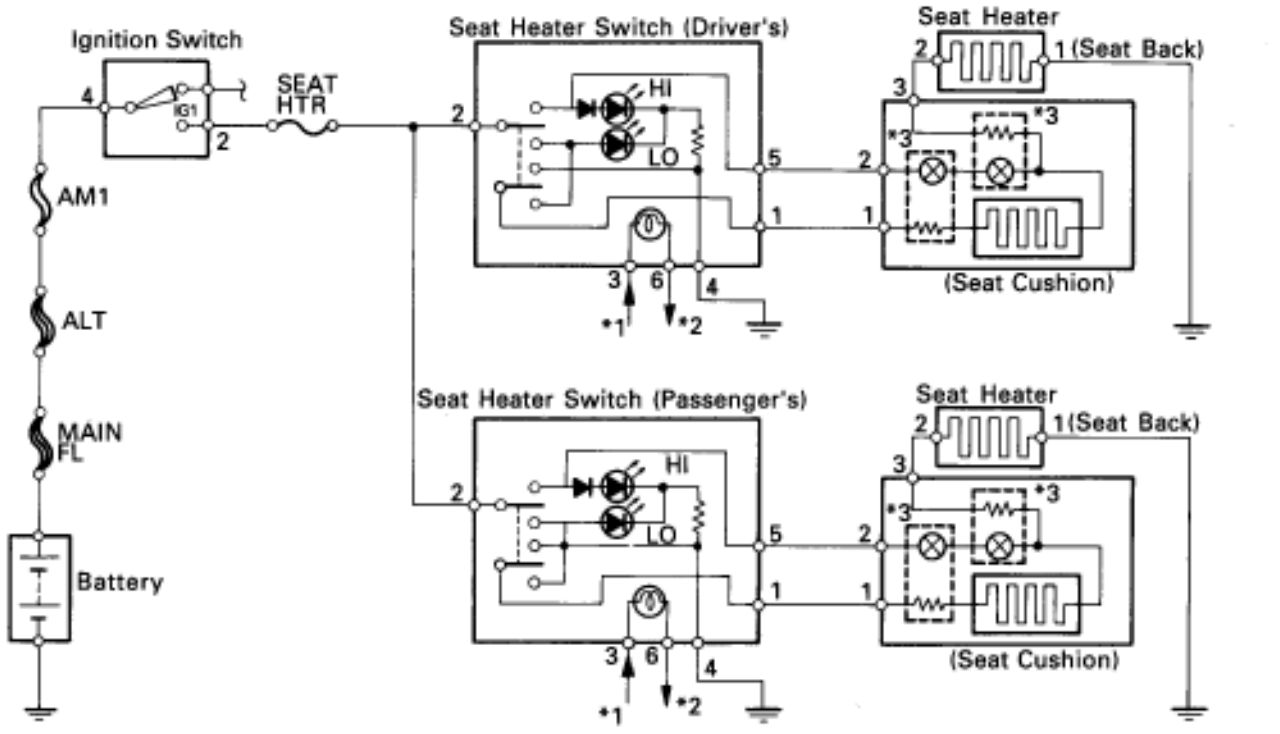
The Seat Heater System utilizes electricity to heat the seat back and cushion of the driver's and front passenger's seat. The component parts of this system and their functions are described in the following table.

Parts Name	Function
Seat Heater Switch	Current from the SEAT HTR fuse is sent to seat heater (seat cushion side).
Seat Heater	These heaters generate heat when current is supplied from the seat heater relays. They contain built–in thermostats which prevent the temperature from rising highter than a set level.

PARTS LOCATION



WIRING AND CONNECTOR DIAGRAMS



N02375

*1: (USA)
from TAIL Fuse
(CANADA)
from terminal 9 of Daytime Running Light Relay (Main)

*2: to terminal 1 of Rheostat Light Control

*3: thermostat

Seat Heater Switch

S-6-2-B

Seat Heater (Seat Cushion)

e-3-1

Seat Heater (Seat Back)

e-2-2-H

TROUBLESHOOTING

You will find the cause of trouble more easily by properly using the table shown below. In this table, the numbers indicate the order priority of the causes of trouble. Check each part in the order shown. If necessary, replace the part.

See page / Parts name / Trouble	BE–6, 20	BE–188	BE–188	BE–189	
	SEAT HTR Fuse	Seat Heater Switch (Driver's)	Seat Heater Switch (Passenger's)	Seat Heater	Wire Harness
Seat heaters do not operate. (Driver's and Passenger's)	1				2
Driver's seat heater does not operate.		1		2	3
Passenger's seat heater does not operate.			1	2	3
Seat heater temperature is too hot.				1	

SEAT HEATER SWITCH

SEAT HEATER SWITCH REMOVAL AND INSTALLATION

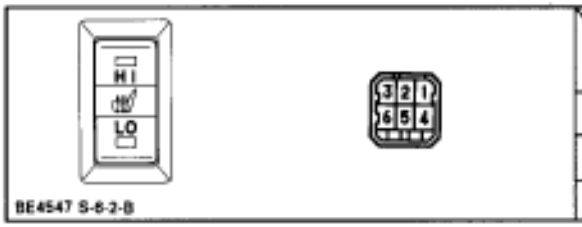
(See page BO–107)

SEAT HEATER SWITCH INSPECTION

INSPECT SEAT HEATER SWITCH

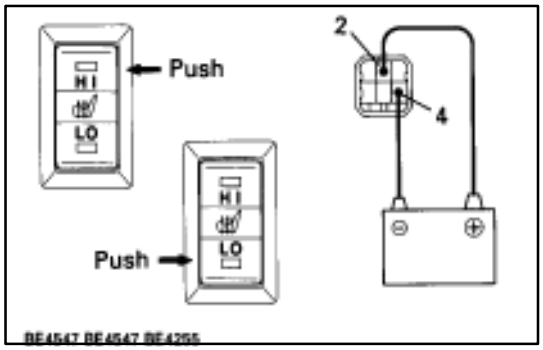
(Continuity)

Inspect the switch continuity between terminals as shown.



Terminal / Switch position	1	4	2	5	Illumination 3	Illumination 6
HI	○——	——○	○——	——○		
OFF					○—(⊕)—○	
LO	○——	——	——○			

If continuity is not as specified, replace the switch or bulb.

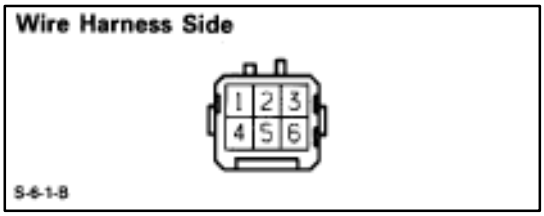


(Indicator)

(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 4.

(b) Push the switch to HI or LO, check that the indicator light of the pushed side lights up.

If operation is not as specified, replace the switch.



(Switch Circuit)

Disconnect the swtich connector and inspect the connector on the wire harness side as shown.

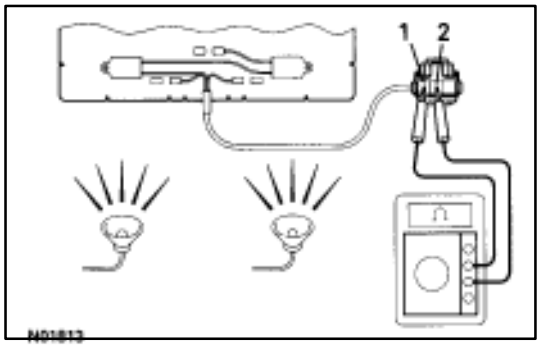
Check for	Tester connection	Condition	Specified value
Continuity	1–Ground	Constant	*Continuity
	4–Ground	Constant	*Continuity
	5–Ground	Constant	Continuity
Voltage	2–Ground	Ignition switch turned to ON.	Battery positive voltage
	3–Ground	Light control switch turned to TAIL or HEAD.	Battery positive voltage
*: There is resistance because this circuit is grounded through the resistance.			

If circuit is not a specified, refer to BE–186 wiring diagram and inspect the circuits connected to other parts.

SEAT HEATER

SEAT HEATER REMOVAL AND INSTALLATION

(See page BO–118)

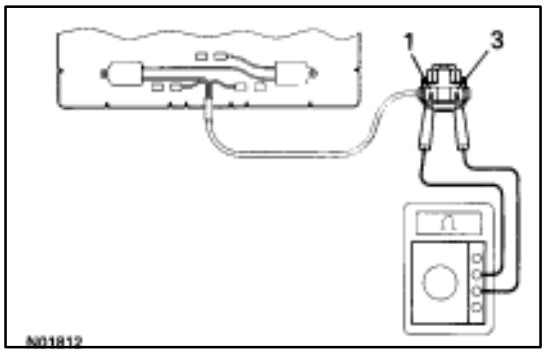


SEAT HEATER INSPECTION

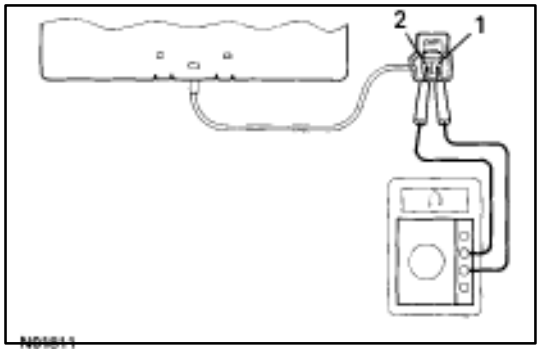
1. INSPECT SEAT HEATER (Continuity/Seat Cushion)

(a) Heat the two thermostats with a light. And check that there is no continuity above 45 C (113 F) between terminal 1 and 2.

(b) Cool the two thermostat below 15 C (59 F). And check that there is continuity between terminals 1 and 2.



(c) Check that there is continuity between terminals 1 and 3. If continuity is not as specified, replace the seat heater.



(Continuity/Seat Back)

Check that there is continuity between terminals 1 and 2.
If continuity is not as specified, replace the seat heater.

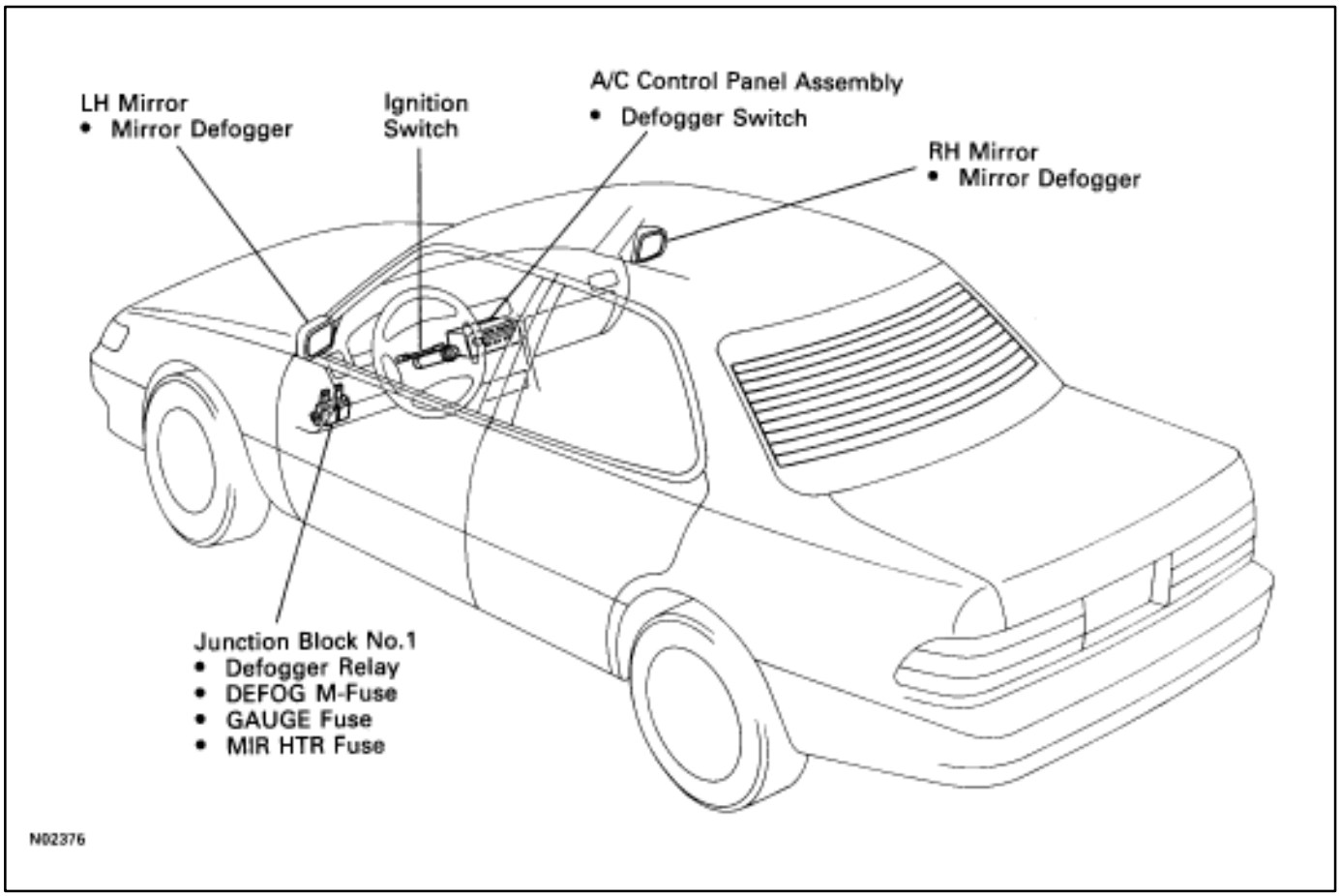
DEFOGGER SYSTEM

DESCRIPTION

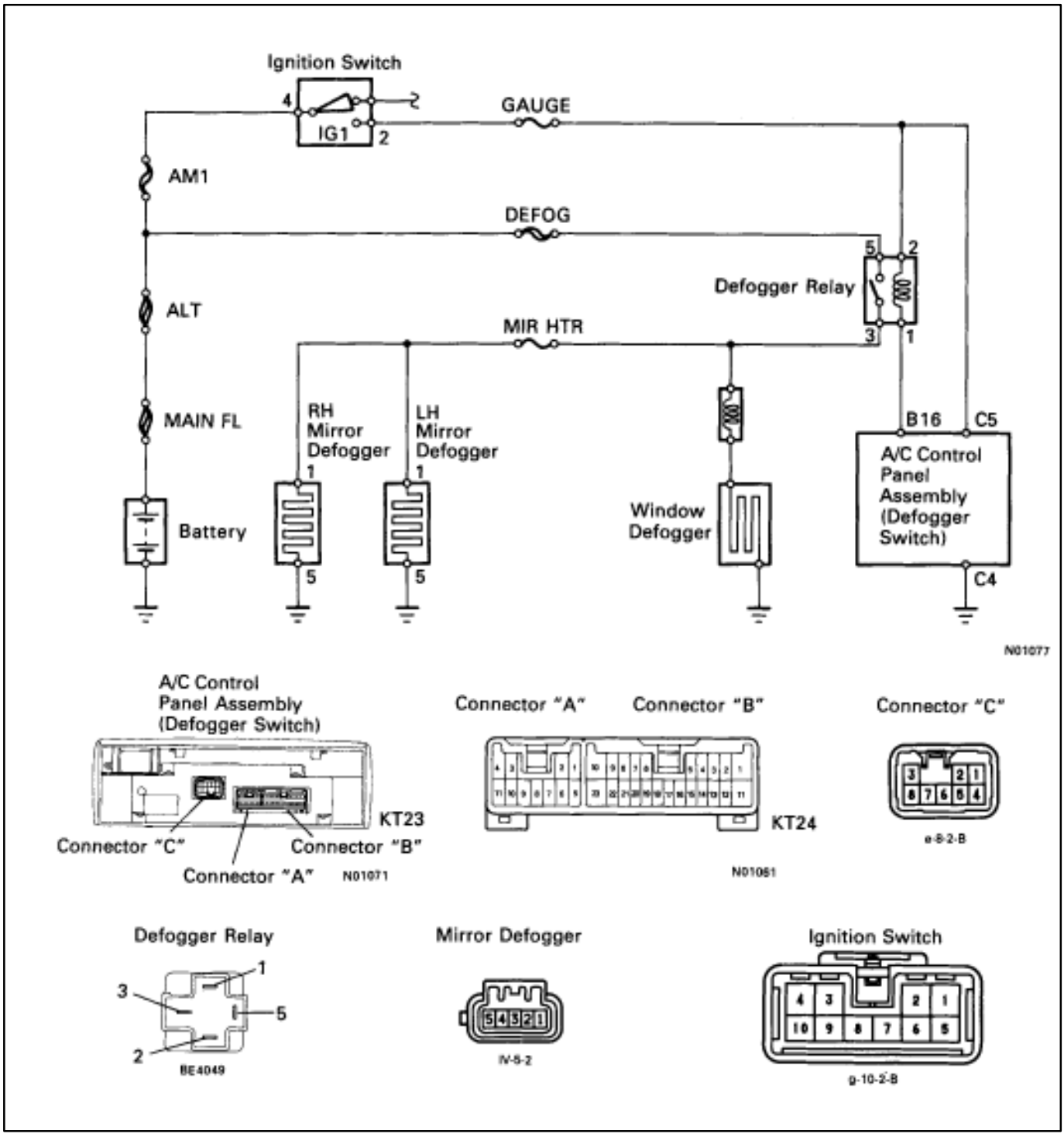
The component parts of this system and their functions are described in the following table.

Parts Name	Function
DEF M–Fuse	When over current flows in the defogger circuit, the DEF M–Fuse breaks the circuit to protect it against damage.
Defogger Relay	This relay is supplied with current from terminal IG1 of ignition switch (Ignition switch ON) and switches large current from the defogger.
A/C Control Panel Assembly Defogger Switch	The defogger switch is built into the A/C Control Panel Assembly. This switch is supplied with current from the relay and GAUGE fuse. Grounds current from the defogger relay, turning the defogger relay ON.
Defogger Rear Window Outer Mirror	These defoggers generate heat when current is supplied from the defogger relay.

PARTS LOCATION



WIRING AND CONNECTOR DIAGRAMS



TROUBLESHOOTING

You will find the cause of trouble more easily using the table shown below. In this table, the number indicate the order priority of the causes in trouble. Check each part in the order shown. If necessary, replace the parts.

See page / Part name / Trouble	BE–6, 20 GAUGE Fuse	BE–6, 20 MIR HTR Fuse	BE–6, 20 DEFOG M-Fuse	BE–194 Defogger Switch	BE–20, 195 Defogger Relay	- Wire Harness	BE–195 Defogger Wires	- Choke Coil	BE–196 Mirror Defogger
All defogger systems do not operate	2		1	4	3	5			
Rear window defogger does not operate						3	1	2	
Mirror defogger does not operate		1				3			2

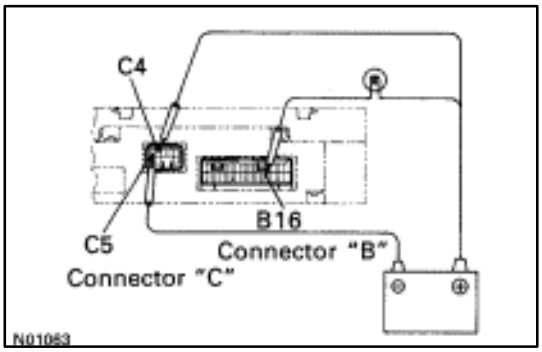
DEFOGGER SWITCH

AIR CONDITIONING CONTROL PANEL ASSEMBLY REMOVAL AND INSTALLATION

(See Instrument Panel on page BO–107)

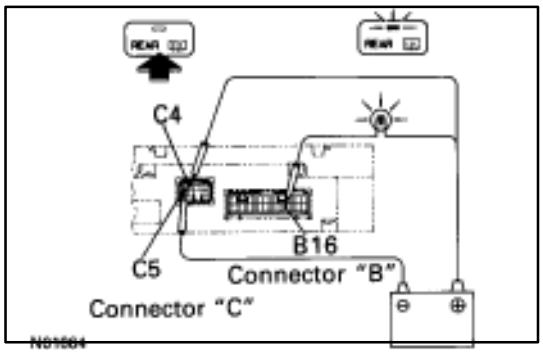
DEFOGGER SWITCH INSPECTION

(Switch Operation)

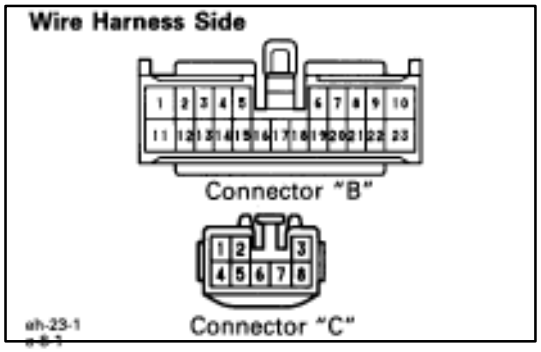


(a) Connect the positive (+) lead from the battery to terminal C5 and negative (–) lead to terminal C4.

(b) Connect the positive (+) lead from the battery to terminal B16 through a 1.4 W test bulb.



(c) Turn the defogger switch ON and check that the test bulb and indicator light turn ON, then turn OFF after about 15 minutes. If operation is not as specified, replace the air conditioning control panel assembly.



(Circuit)

Disconnect two connectors from the air condition control panel assembly and inspect the connectors on the wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Continuity	C4–Ground	Constant		Continuity
Voltage	B16–Ground	Ignition switch position	OFF or ACC	No voltage
	C5–Ground		ON	Battery positive voltage

If the circuit is not as specified, refer to BE–192 wiring diagram and inspect the circuits connected to other parts.

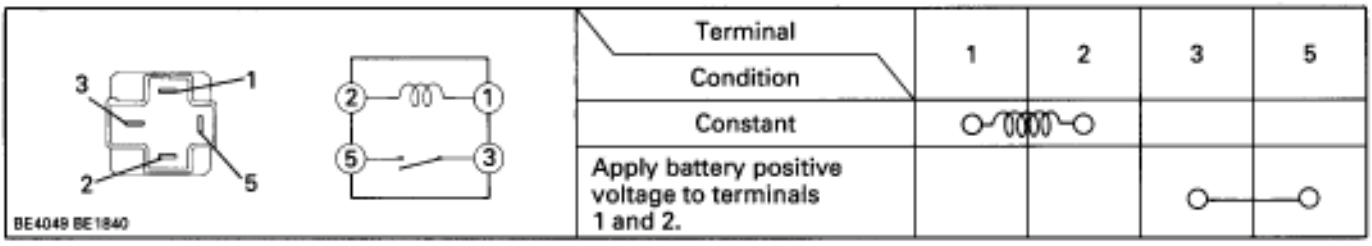
DEFOGGER RELAY

DEFOGGER RELAY INSPECTION

INSPECT DEFOGGER RELAY

(Continuity)

Inspect relay continuity between terminals.



Terminal / Condition	1	2	3	5
Constant	○–∿∿∿–○			
Apply battery positive voltage to terminals 1 and 2.			○ ○	

If continuity is not as specified, replace the relay.

(Relay Circuit)

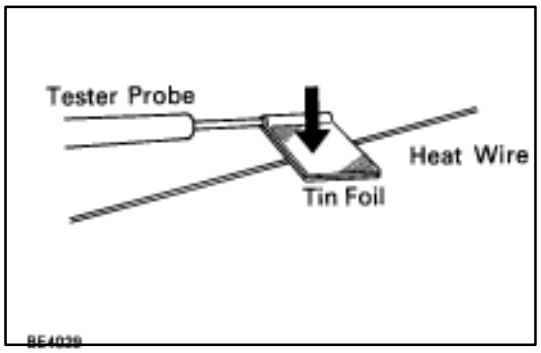
(See page BE–20)

DEFOGGER WIRE

DEFOGGER WIRE INSPECTION

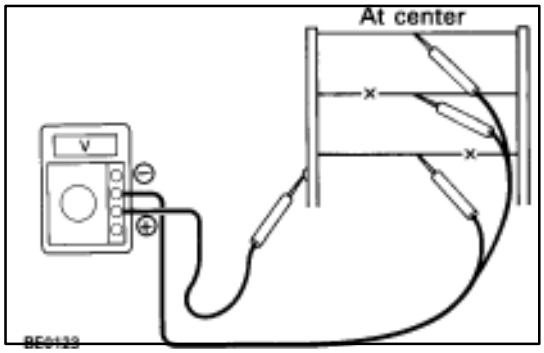
NOTICE:

- **When cleaning the glass, use a soft, dry cloth, and wipe the glass in the direction of the wire. Take care not to damage the wires.**
- **Do not use detergents or glass cleaners with abrasive ingredients.**
- **When measuring voltage, wind a piece of tin foil around the top of the negative probe and press the foil against the wire with your finger as shown.**



(a) Turn the ignition switch ON.

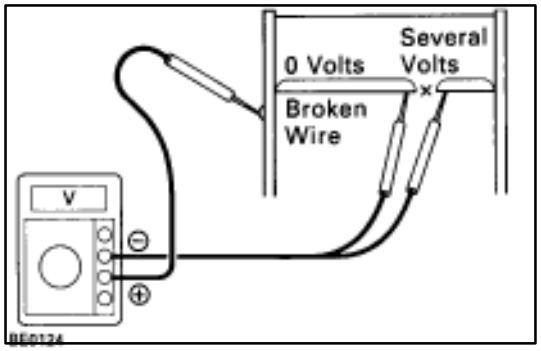
(b) Turn the defogger switch ON.



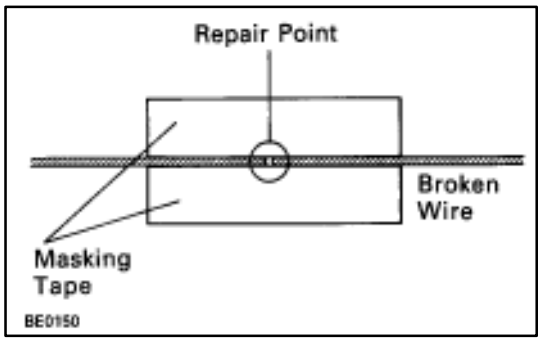
(c) Inspect the voltage at the center of each heat wire as shown.

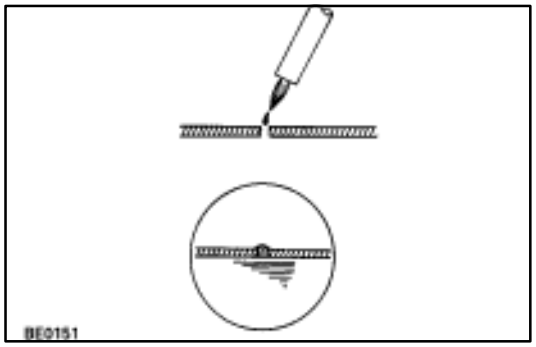
Voltage	Criteria
Approx. 5 V	Okay (No break in wire)
Approx. 10 V or 0 V	Broken wire

HINT: If there is approximately 10 V, the wire is broken between the center of the wire and the positive (+) end. If there is no voltage, the wire is broken between the center of the wire and ground.



(d) Place the voltmeter positive (+) lead against the defogger positive (+) terminal.
(e) Place the voltmeter negative (–) lead with the foil strip against the heat wire at the positive (+) terminal end and slide it toward the negative (–) terminal end.
(f) The point where the voltmeter deflects from zero to several V is the place where the heat wire is broken.
HINT: If the heat wire is not broken, the voltmeter indicates 0 V at the positive (+) end of the heat wire but gradually increases to about 12 V as the meter probe is moved to the other end.



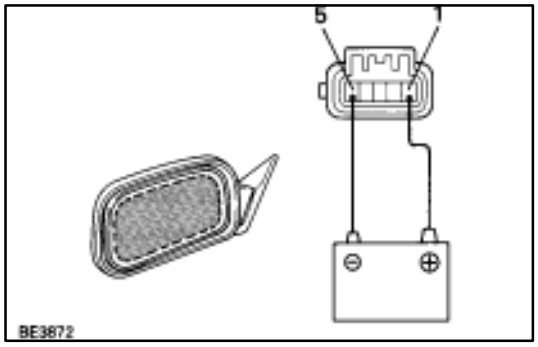


DEFOGGER WIRE REPAIR

(a) Clean the broken wire tips with a grease, wax and silicone remover.
(b) Place the masking tape along both sides of the wire to be repaired.
(c) Thoroughly mix the repair agent (Dupont paste No. 4817).
(d) Using a fine tip brush, apply a small amount to the wire.
(e) After a few minutes, remove the masking tape.
(f) Allow the repair to stand at least 24 hours.

MIRROR DEFOGGER

MIRROR ASSEMBLY REMOVAL AND INSTALLATION
(See Outside Rear View Mirror on page BO–34)



MIRROR DEFOGGER INSPECTION

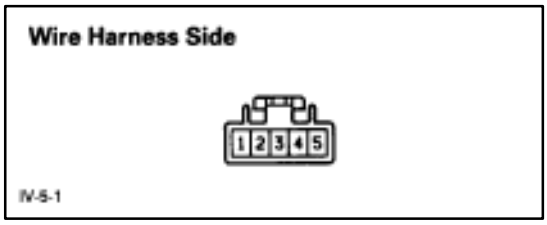
INSPECT MIRROR DEFOGGER

(Mirror Defogger Operation)

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 5.

(b) Check that the mirror becomes warm.

HINT: It will take a short time for the mirror to become warm. If the mirror does not become warm, replace the mirror assembly.



(Circuit)

Disconnect the connector from the outside mirror and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Continuity	5–Ground	Constant		Continuity
Voltage	1–Ground	Ignition switch ON	Defogger switch OFF	No voltage
			Defogger switch ON	Battery positive voltage

If the circuit is not as specified, refer to BE–192 wiring diagram and inspect the circuits connected to other parts.

SLIDING ROOF SYSTEM

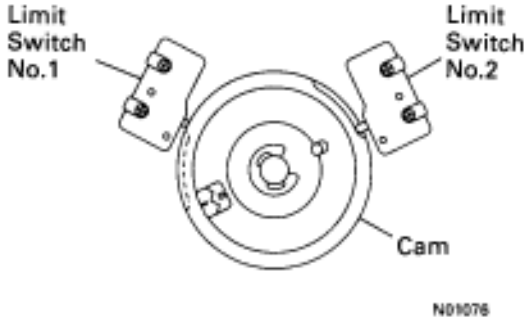
DESCRIPTION

Standby Operation

Current flows from the DOME fuse to terminal 12 of the sliding roof control relay (hereafter called relay). When the ignition switch is ON, the current flows from the power main relay to terminal 6 of the relay.

Operation

1. Limit Switch operation



Roof Position		Fully Open	Momentary Stop		Fully Closed	Down	Up
Function		← Sliding Period →			Idling Period	← Tilting Period →	
Limit Switch No.1	ON						
	OFF						
Limit Switch No.2	ON						
	OFF						
Sliding Roof Control Switch	OPEN	O	O	O	O	×	
	CLOSE	O	O	O	×	×	
	UP	×	×	×	O	O	
	DOWN	×	×	×	×	O	

O: Operational x: Non–operational

2. OPEN operation

When the switch on the ”OPEN” side of the control switch is pushed, continuity is produced between terminal 1 of the relay and body ground. Then the relay operates, the current flows through terminal 6 of the relay → terminal 5 → terminal 1 of the sliding roof motor → terminal 3 → terminal 4 of the relay → terminal 11 → the body ground, and the motor starts to run in order to open the sliding roof.

3. CLOSE operation

When the switch on the ”CLOSE” side of the control switch is pushed, continuity is produced between terminal 2 of the relay and body ground. Then the relay operates, the current flows through terminal 6 of the relay → terminal 4 → terminal 3 of the sliding roof motor → terminal 1 → terminal 5 of the relay → terminal 11 → the body ground, and the motor starts to run in order to close the sliding roof.

Momentary Stop

When the sliding roof reaches about 200 mm (7.87 in.) short of the fully closed position, the limit switch No.1 is turned from ON to OFF, so there is no continuity between terminal 4 of the relay and body ground. As a result, the sliding roof stops at that position.

4. TILT UP operation

When the switch on the ”UP” side of the control switch is pushed, continuity is produced between terminal 3 of the relay and body ground. Then the relay operates, the current flows through terminal 6 of the relay → terminal 4 → terminal 3 of the sliding roof motor → terminal 1 → terminal 5 of the relay → terminal 11 → the body ground, and the motor starts to run in order to tilt up the sliding roof.

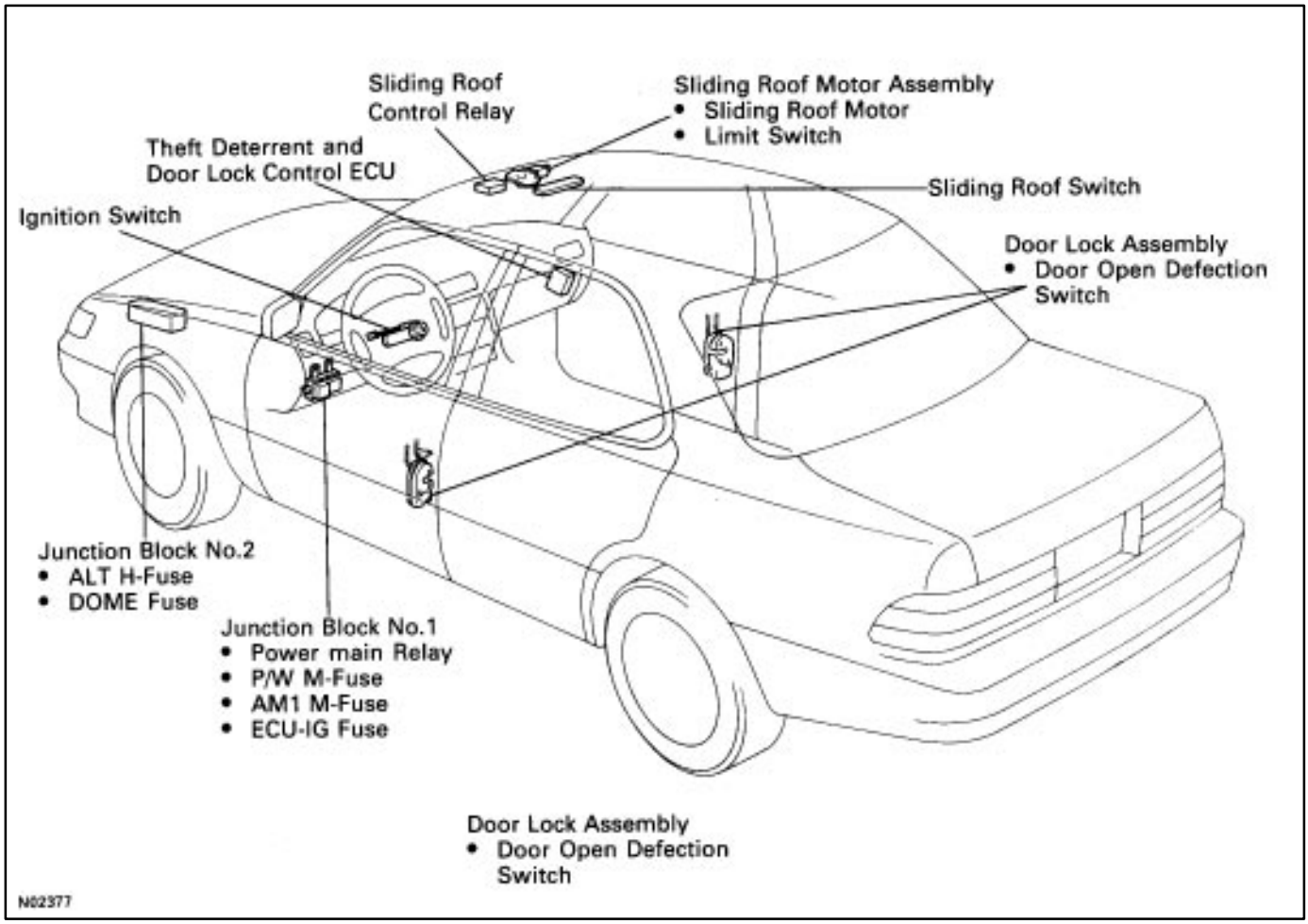
5. TILT DOWN operation

When the switch on the ”DOWN” side of the control switch is pushed, continuity is produced between terminal 7 of the relay and body ground. Then the relay operates, the current flows through terminal 6 of the relay → terminal 5 → terminal 1 of the sliding roof motor → terminal 3 → terminal 4 of the relay → terminal 11 → the body ground, and the motor starts to run in order to tilt down the sliding roof.

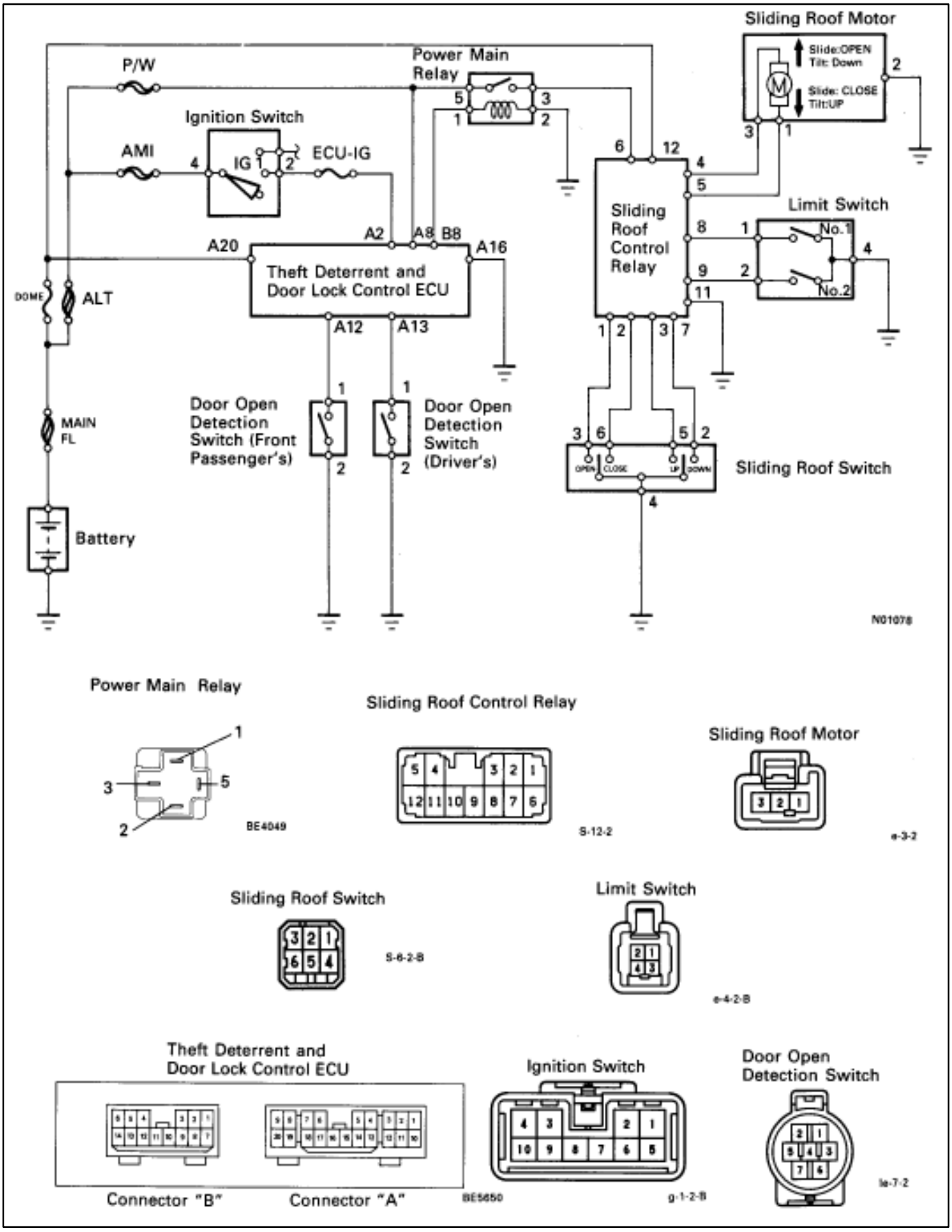
6. TILT UP REMINDER SYSTEM

If the ignition switch is turned from ON to OFF or ACC and the sliding roof remains tilted up, after 60 seconds have elapsed or either the driver or passenger door is opened, a buzzer will sound for approx. 8 seconds as a reminder that the sliding roof is tilted up.

PARTS LOCATION



WIRING AND CONNECTOR DIAGRAMS



TROUBLESHOOTING

You will find the cause of trouble more easily by properly using the table shown below. In this table, the numbers indicate the order of priority of the causes of trouble. Check each part in the order shown. If necessary, replace the part.

See page / Part name / Trouble	ALT H-Fuse	DOME Fuse	P/W M-Fuse	Theft Deterrent and Door Lock Control ECU	Power Main Relay	Sliding Roof Control Relay	Sliding Roof Switch	Sliding Roof Motor	Sliding Roof Motor (Stones to foreign material trapped in motor assembly)	Limit Switch	Ignition Switch	Door Open Detection Switch	ECU-IG Fuse	Wire Harness
See page	BE–6, 22	BE–6, 20	BE–6, 20	BE–355	BE–20, 179	BE–204	BE–202	BE–202	-	BE–205	BE–29	BE–388	BE–6, 20	-
*1 Sliding roof system does not operate	1		2	3										4
*2 Sliding roof system does not operate			3	4	5	7	6	8			2		1	9
Sliding roof system operates abnormally						1	3			2				4
Sliding roof system stops operation half way						1	3		4	2				
Buzzer does not sound		1				2								3
Buzzer sounds abnormally						1								
"Key-off Sliding Roof" operation does not operate		1		2							4	5	3	6

*1: Door Lock does not operate
*2: Door Lock is normal

POWER MAIN RELAY

POWER MAIN RELAY INSPECTION

(See Power Main Relay on page BE–179)

SLIDING ROOF SWITCH

SLIDING ROOF SWITCH REMOVAL AND INSTALLATION

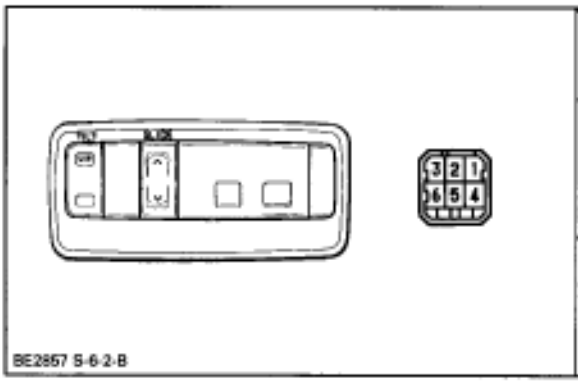
(See Sliding Roof on page BO–93)

SLIDING ROOF SWITCH INSPECTION

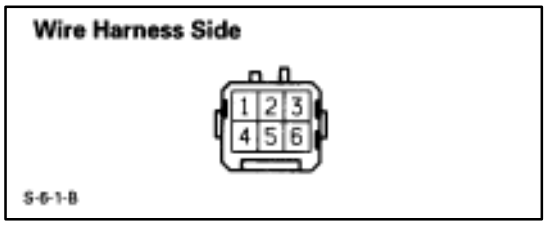
INSPECT SLIDING ROOF SWITCH

(Continuity)

Inspect the switch continuity between terminals.



Switch position		Terminal 2	3	4	5	6
SLIDE	OPEN		○	○		
	OFF					
	CLOSE			○		○
TILT	DOWN	○		○		
	OFF					
	UP			○	○	



If continuity is not as specified, replace the switch.

(Switch Circuit)

Disconnect the connector from the sliding roof switch and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition	Specified value
Continuity	4–Ground	Constant	Continuity

If the circuit is not as specified, refer to BE–200 wiring diagram and inspect the circuits connected to other parts.

SLIDING ROOF MOTOR

SLIDING ROOF MOTOR REMOVAL AND INSTALLATION

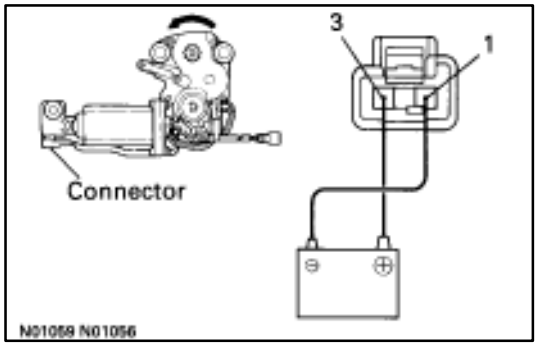
(See Sliding Roof on page BO–93)

SLIDING ROOF MOTOR INSPECTION

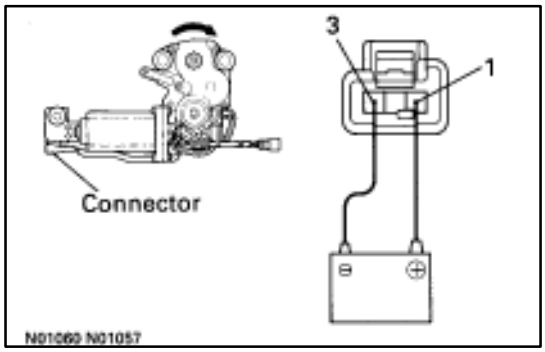
INSPECT SLIDING ROOF MOTOR

(Motor Operation)

(a) Connect the positive (+) lead from the battery to terminal 3 and the negative (–) lead to terminal 1, check that the motor turns to counterclockwise (moves to the close side).

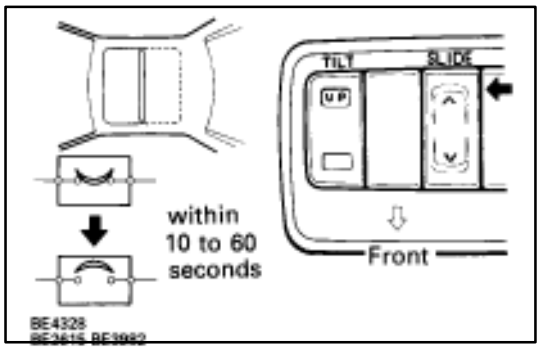


(b) Reverse the polarity, check that the motor turns to clockwise (moves to the open side).
If operation is not as specified, replace the motor.

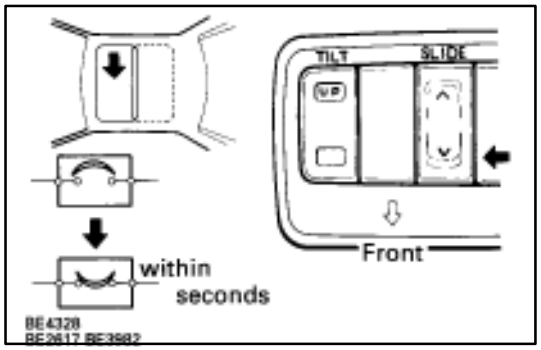


(Circuit Breaker Operation)

(a) With the sliding roof in the fully opened position, hold the sliding roof switch in "OPEN" position and check that there is a circuit breaker operation noise within 10 to 60 seconds.

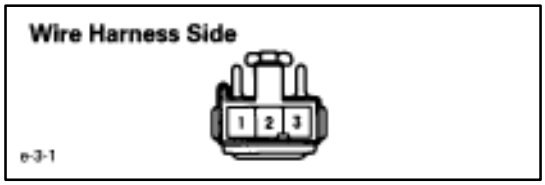


(b) With the sliding roof in fully opened position, hold the sliding roof switch in "CLOSE" position and check that the sliding roof begins to close within 60 seconds.
If operation is not as specified, replace the motor.



(Circuit)

Disconnect the connector from the sliding roof motor and inspect the connector on the wire harness side as shown.



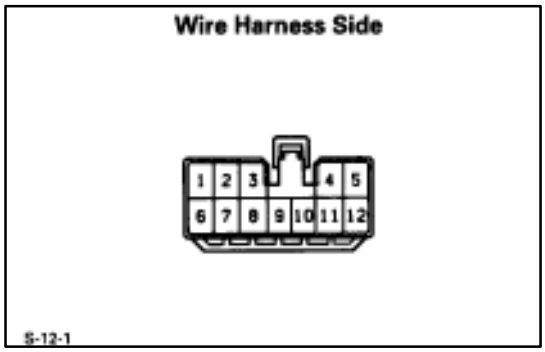
Check for	Tester connection	Condition	Specified value
Continuity	2–Ground	Constant	Continuity

If the circuit is not as specified, refer to BE–200 wiring diagram and inspect the circuits connected to other parts.

SLIDING ROOF CONTROL RELAY

SLIDING ROOF CONTROL RELAY REMOVAL AND INSTALLATION

(See Sliding Roof on page BO–93)



SLIDING ROOF CONTROL RELAY INSPECTION

INSPECT SLIDING ROOF CONTROL RELAY

(Circuit)

Disconnect the connector from the relay and inspect the connector on the wire harness side as shown in the chart.

Check for	Tester connection	Condition		Specified value
Continuity	1 – Ground	Sliding roof control switch position (SLIDE)	OFF or CLOSE	No continuity
			OPEN	Continuity
	2 – Ground	Sliding roof control switch position (SLIDE)	OFF or OPEN	No continuity
			CLOSE	Continuity
	3 – Ground	Sliding roof control switch position (TILT)	OFF or DOWN	No continuity
			UP	Continuity
	4 – Ground	Constant		No continuity
	4 – 5	Constant		Continuity
	5 – Ground	Constant		No continuity
	7 – Ground	Sliding roof control switch position (TILT)	OFF or UP	No continuity
			DOWN	Continuity
	8 – Ground	No. 1 limit switch position	OFF (Sliding roof tilted up or open approx. 200 mm (7.87 in.))	No continuity
			ON (Except for conditions mentioned above)	Continuity
	9 – Ground	No. 2 limit switch position	OFF (Sliding roof closed)	No continuity
			ON (Sliding roof open)	Continuity
	11 – Ground	Constant		Continuity
Voltage	6 – Ground	Ignition switch position	LOCK or ACC	*No voltage
			ON	Battery positive voltage
	12 – Ground	Constant		Battery positive voltage

*: Exceptions: During 60 second period after ignition switch ON OFF (ACC) or until driver or passenger door is opened after ignition switch ON OFF (ACC).

If circuit is as specified, replace the relay.

SLIDING ROOF LIMIT SWITCH

LIMIT SWITCH REMOVAL AND INSTALLATION

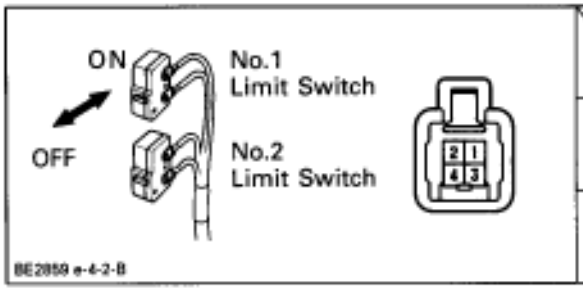
(See Sliding Roof on page BO–93)

LIMIT SWITCH INSPECTION

INSPECT LIMIT SWITCH

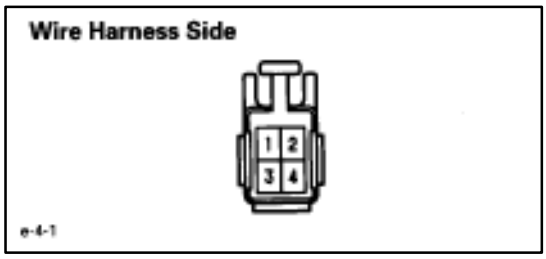
(Continuity)

Inspect the switch continuity between terminals.



Switch position		Terminal 1	Terminal 2	Terminal 4
No.1 limit switch	OFF (SW pin released)			
	ON (SW pin pushed in)	○		○
No.2 limit switch	OFF (SW pin released)			
	ON (SW pin pushed in)		○	○

If continuity is not as specified, replace the switch.



(Circuit)

Disconnect the connector from the limit switch and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition	Specified value
Continuity	4–Ground	Constant	Continuity

If the circuit is not as specified, refer to BE–200 wiring diagram and inspect the circuits connected to other parts.

THEFT DETERRENT AND DOOR LOCK CONTROL ECU

(See page BE–355)

DOOR OPEN DETECTION SWITCH

(See page BE–388)

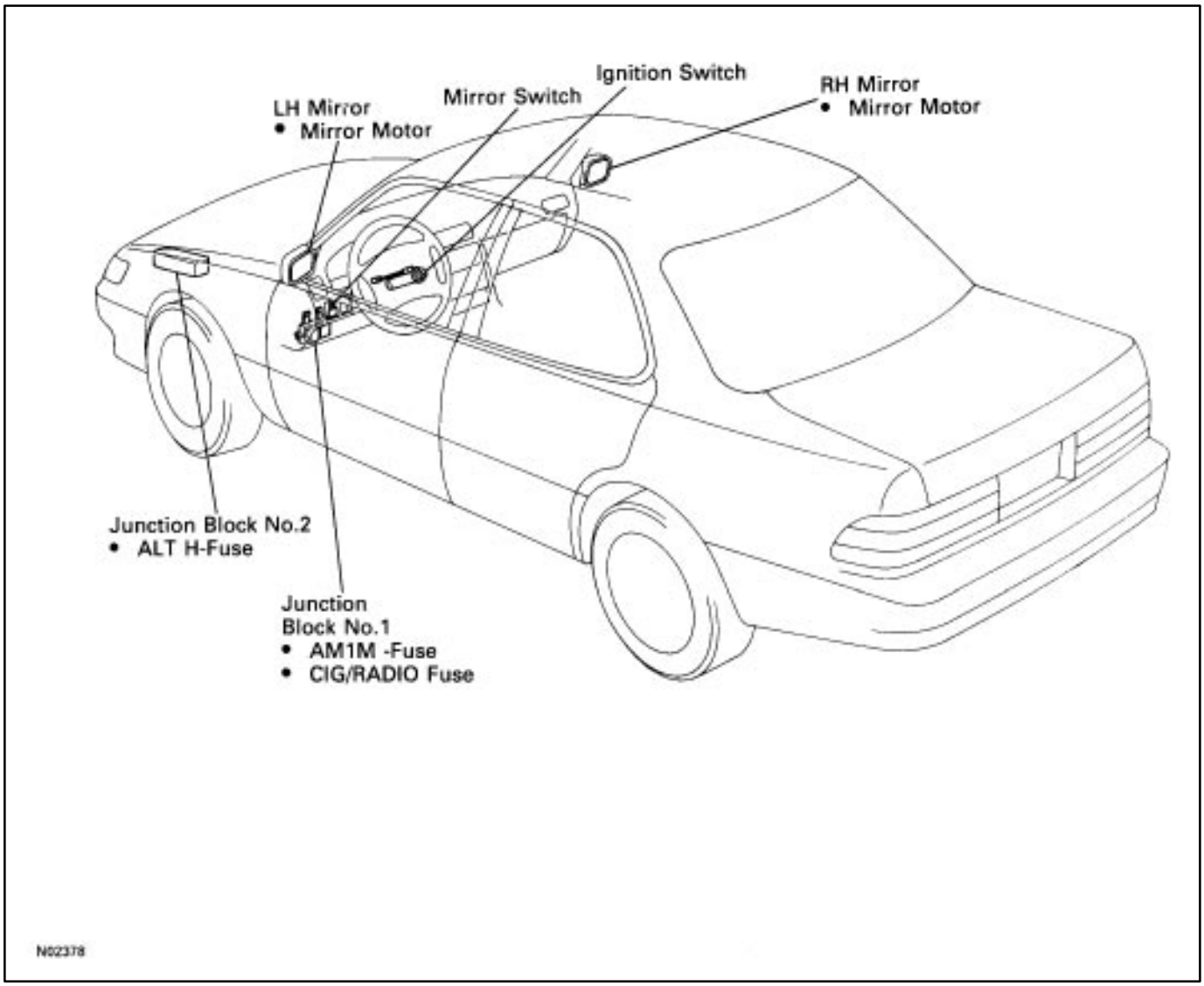
POWER MIRROR CONTROL SYSTEM

DESCRIPTION

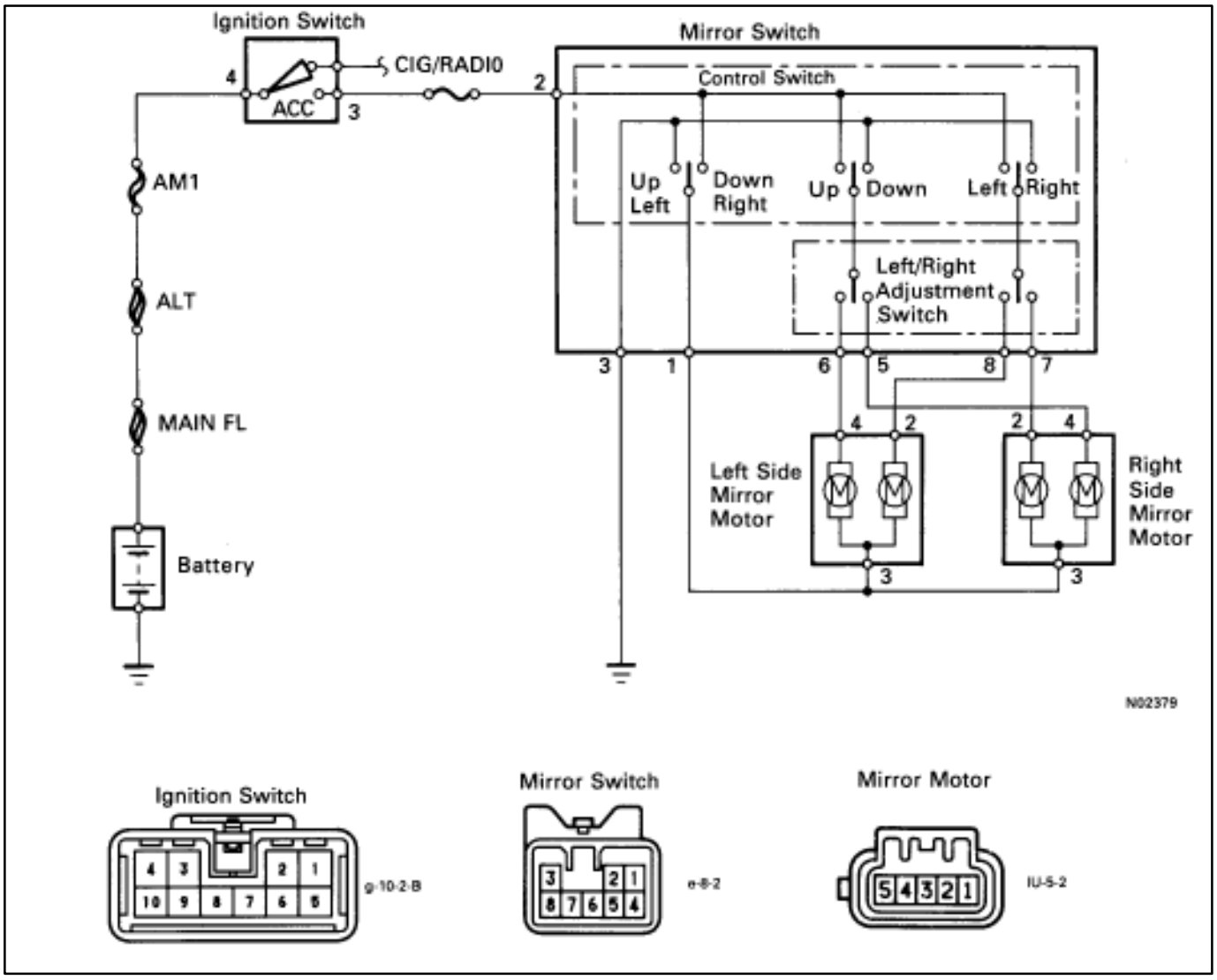
The Power Mirror Control System carries out mirror left/right and up/down adjustments electrically when the Mirror Switch is operated. However, this system has no memory or position return functions. The component parts of this system and their functions are described in the following table.

Parts Name	Function
Mirror Switch	This switch is supplied with current from the CIG/RADIO fuse. It sends current to each motor, controlling the motor's direction of rotation and turning the current ON and OFF.
Mirror Motor	These motors operate on current from the Mirror Switch moving the various parts of the mirror directly.

PARTS LOCATION



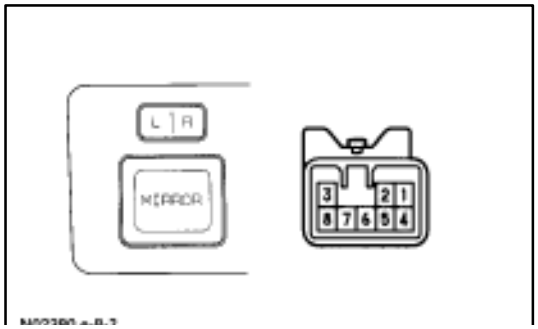
WIRING AND CONNECTOR DIAGRAMS



TROUBLESHOOTING

You will find the cause of trouble more easily by properly using the table shown below. In this table, the numbers indicate the order of priority of the causes of trouble. Check each part in the order shown. If necessary, replace the part.

See page / Part name / Trouble	CIG/RADIO Fuse (BE–6, 20)	Mirror Switch (BE–209)	Mirror Motor (BE–209)	Wire Harness
Mirror does not operate	1	2	3	4
Mirror operates abnormally		1	2	3



MIRROR SWITCH

MIRROR SWITCH REMOVAL AND INSTALLATION

(See Instrument Panel on page BO–107)

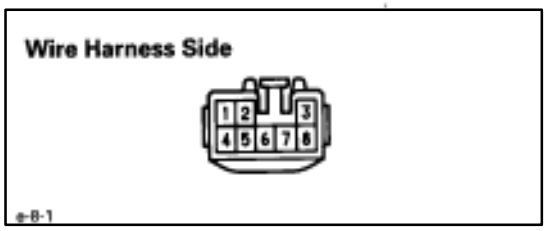
MIRROR SWITCH INSPECTION

INSPECT MIRROR SWITCH

(Continuity)

Inspect the switch continuity between terminals.

Left/Right adjustment switch position	LEFT SIDE					OFF			RIGHT SIDE				
Terminal / Switch position	1	2	3	6	8	1	2	3	1	2	3	5	7
OFF													
UP	○		○			○		○	○		○		
		○		○						○		○	
DOWN	○	○				○	○		○	○			
			○	○							○	○	
LEFT	○		○			○		○	○		○		
		○			○					○			○
RIGHT	○	○				○	○		○	○			
			○		○						○		○



If continuity is not as specified, replace the switch.

(Switch Circuit)

Disconnect the connector from the switch and inspect the connector on the wire harness side as shown.

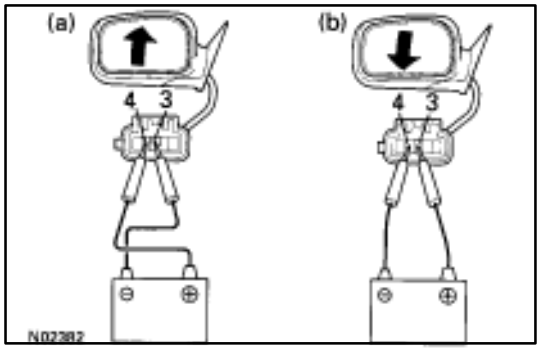
Chack for	Tester connection	Condition		Specified value
Voltage	2–Ground	Ignition switch position	OFF	No voltage
			ACC or ON	Battery positive voltage
Continuity	3–Ground	Constant		Continuity

If the circuit is not as specified, refer to BE–207 wiring diagram and inspect the circuits connected to other parts.

MIRROR MOTOR

OUTSIDE MIRROR ASSEMBLY REMOVAL AND INSTALLATION

(See Outside Rear View Mirror on page BO–34)

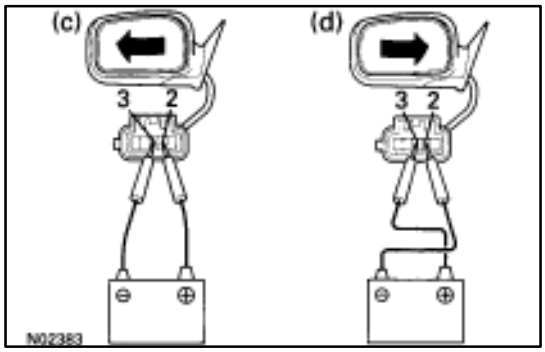


MIRROR MOTOR INSPECTION

1. INSPECT MIRROR MOTOR
(Operation)

(a) Connect the positive (+) lead from the battery to terminal 4 and negative (–) lead to terminal 3, check that the mirror turns upward.

(b) Reverse the polarity, check that the mirror turns to downward.

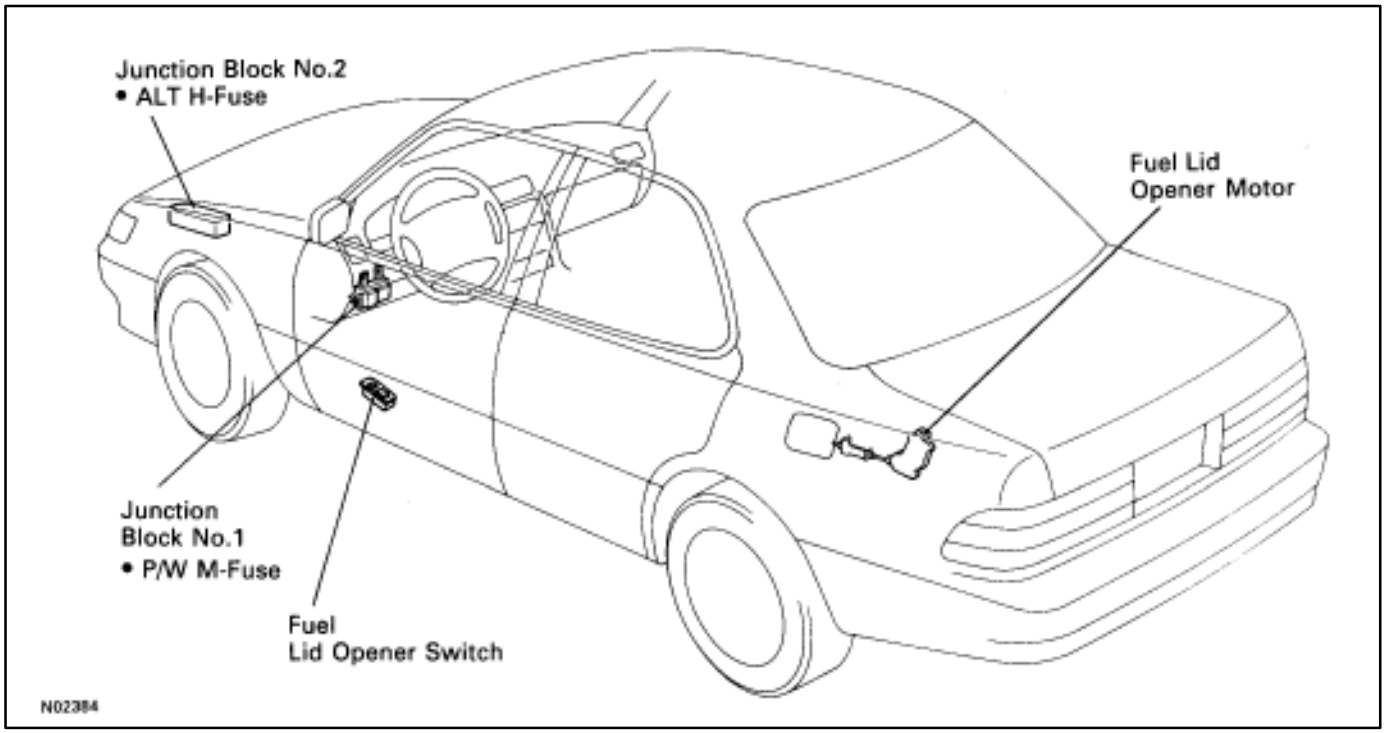


(c) Connect the positive (+) lead from the battery to terminal 2 and negative (–) lead to terminal 3, check that the mirror turns to left side.

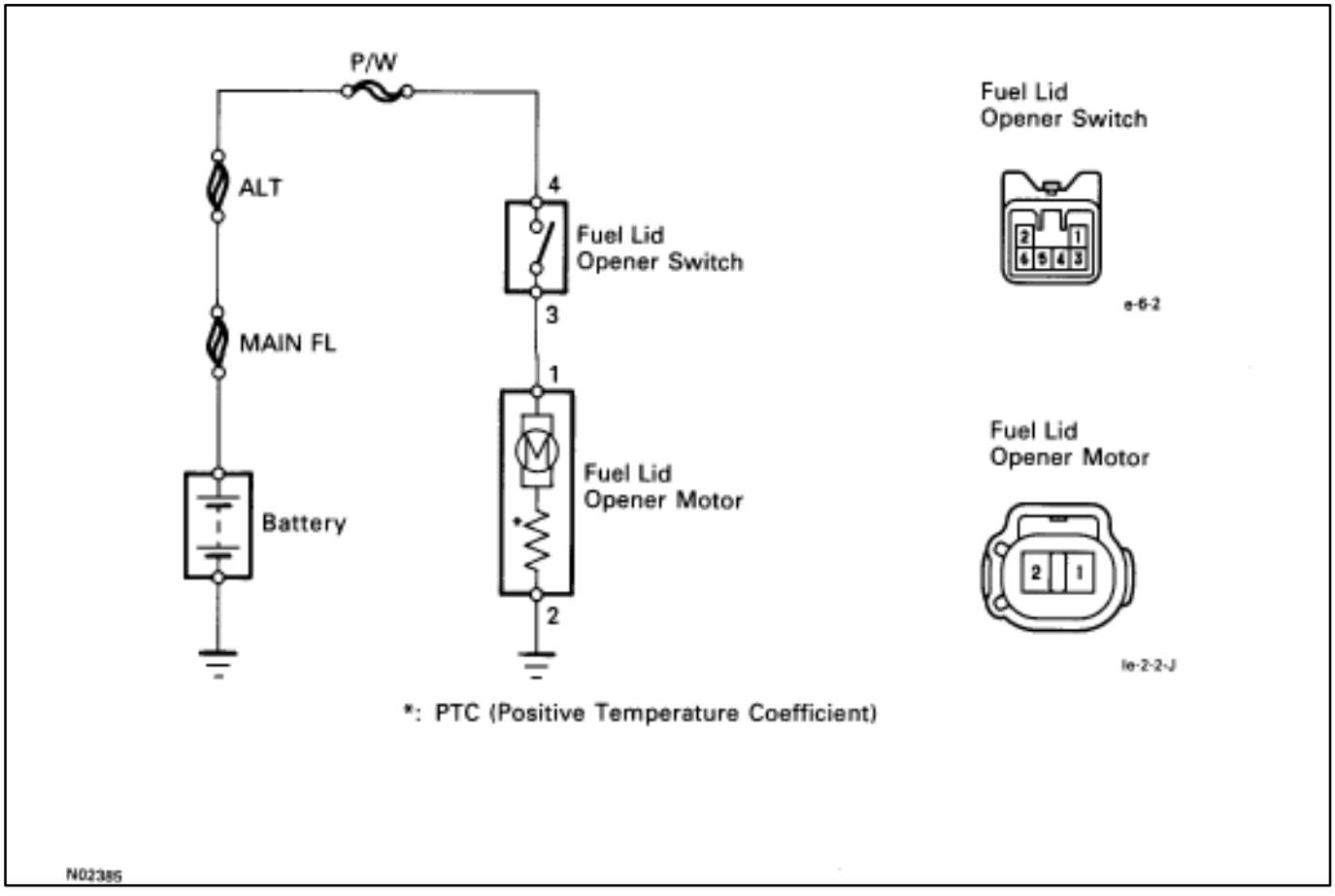
(d) Reverse the polarity, check that the mirror turns to right side. If operation is not as specified, replace the mirror.

FUEL LID OPENER SYSTEM

PARTS LOCATION



WIRING AND CONNECTOR DIAGRAMS



TROUBLESHOOTING

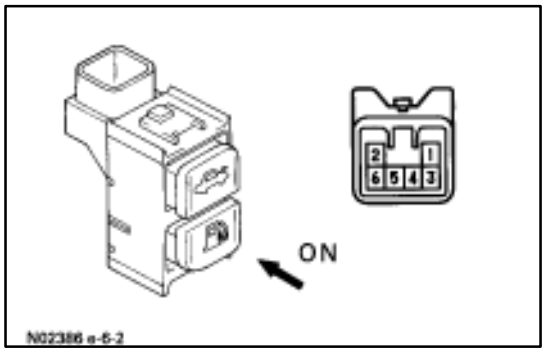
You will find the cause of trouble more easily by properly using the table shown below. In this table, the numbers indicate the order of priority of the causes of trouble. Check each part in the order shown. If necessary, replace the part.

See page / Part name / Trouble	BE–6, 20 P/W M–Fuse	BE–213 Fuel Lid Opener Switch	BE–213 Fuel Lid Opener Motor	– Wire Harness
Fuel lid opener system does not operate	1	2	3	4

FUEL LID OPENER SWITCH

FUEL LID OPENER SWITCH REMOVAL AND INSTALLATION

(See page BO–34)



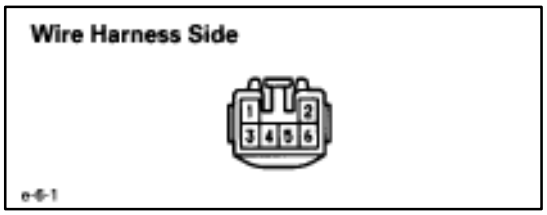
FUEL LID OPENER SWITCH INSPECTION

INSPECT FUEL LID OPENER SWITCH

(Continuity)

(a) Check that there is continuity between terminals 3 and 4 with the switch ON.
(Switch button pushed)

(b) Check that there is no continuity between terminals 3 and 4 with the switch OFF.
(Switch button released)



(Circuit)

Disconnect the connector from the switch and inspect the connector on the wire harness side as shown.

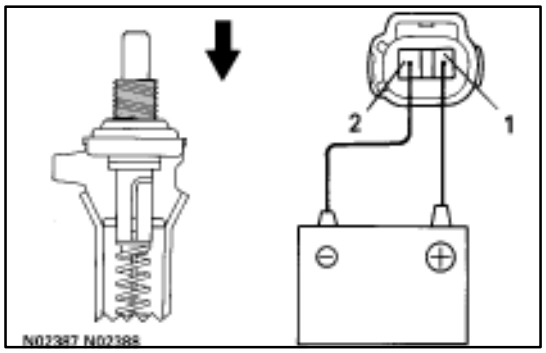
Check for	Tester connection	Condition	Specified value
Voltage	4–Ground	Constant	Battery positive voltage

If circuit is not as specified, inspect power source or wire harness.

FUEL LID OPENER MOTOR

FUEL LID OPENER MOTOR REMOVAL AND INSTALLATION

(See page BO–58)



FUEL LID OPENER MOTOR INSPECTION

(Operation)

Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, check that the motor operates in the open direction.
If operation is not as specified, replace the motor.

(Motor Circuit)

Disconnect the connector from the switch and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Continuity	2–Ground	Constant		Continuity
Voltage	1–Ground	Fuel lid opener switch	OFF	No voltage
			ON	Battery positive voltage

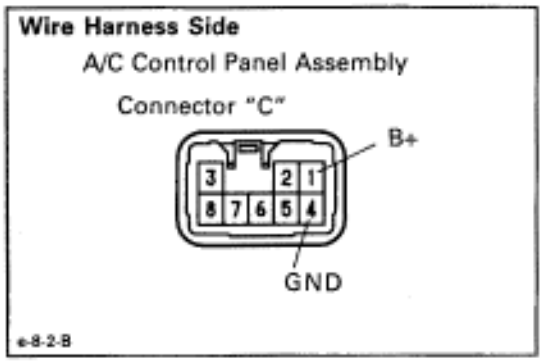
If the circuit is not as specified, refer to BE–211 wiring diagram and inspect the circuits connected to other parts.

CLOCK
TROUBLESHOOTING

HINT: Troubleshoot the clock according to the table below.

Clock will not operate	1
Clock loses or gains time	2

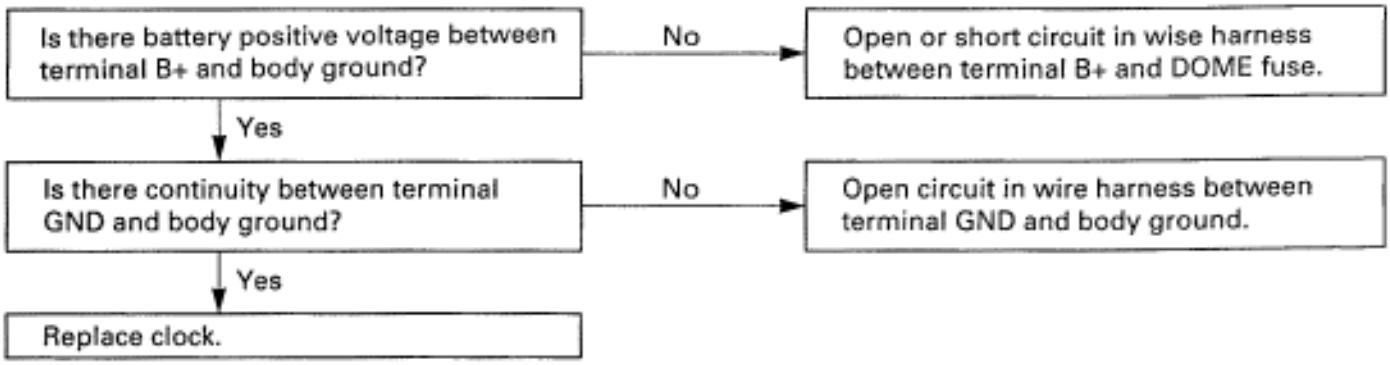
1 CLOCK WILL NOT OPERATE



(a) Check that the battery voltage is 10–16 V.
If voltage is not as specified, replace the battery.

(b) Check that the DOME fuse is not blown.
If the fuse is blown, replace the fuse and check for short.

(c) Troubleshoot the clock as follows.
HINT: Inspect the connector on the wire harness side.



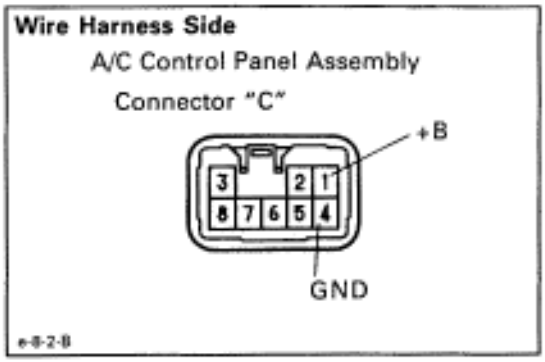
2 CLOCK LOSES OR GAINS TIME

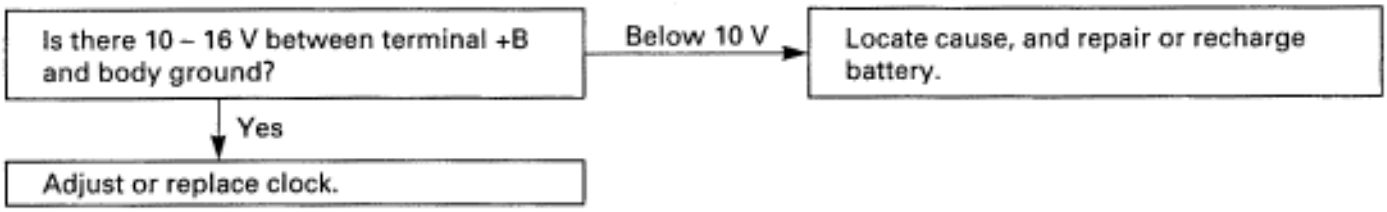
(a) Check that the battery positive voltage is 10–16 V.
If voltage is not as specified, replace the battery.

(b) Inspect the error of the clock.
Allowable error (par day): ± 2.0 seconds
If the error exceeds the allowable error, replace the clock.

(c) Check if the clock adjusting button is sticking in position and has failed to return.
If the button has not returned, repair or replace the clock.

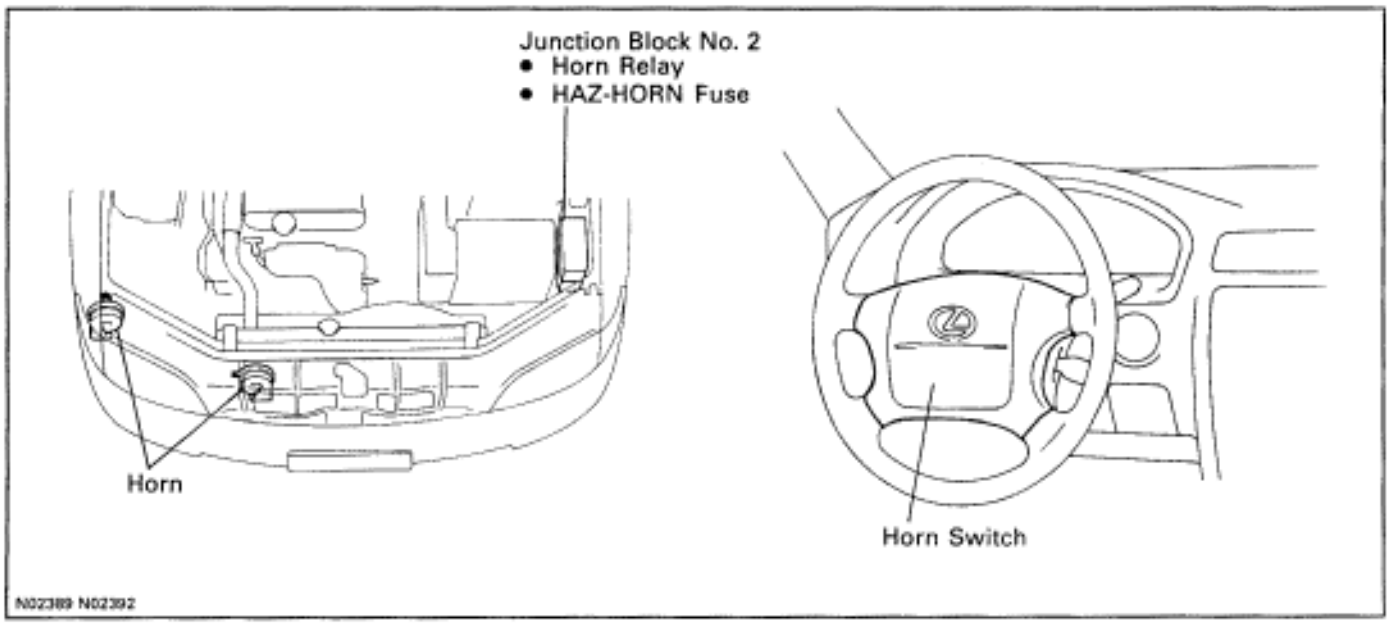
(d) Troubleshoot the clock as follows.
HINT: Inspect the connector on the wire harness side.



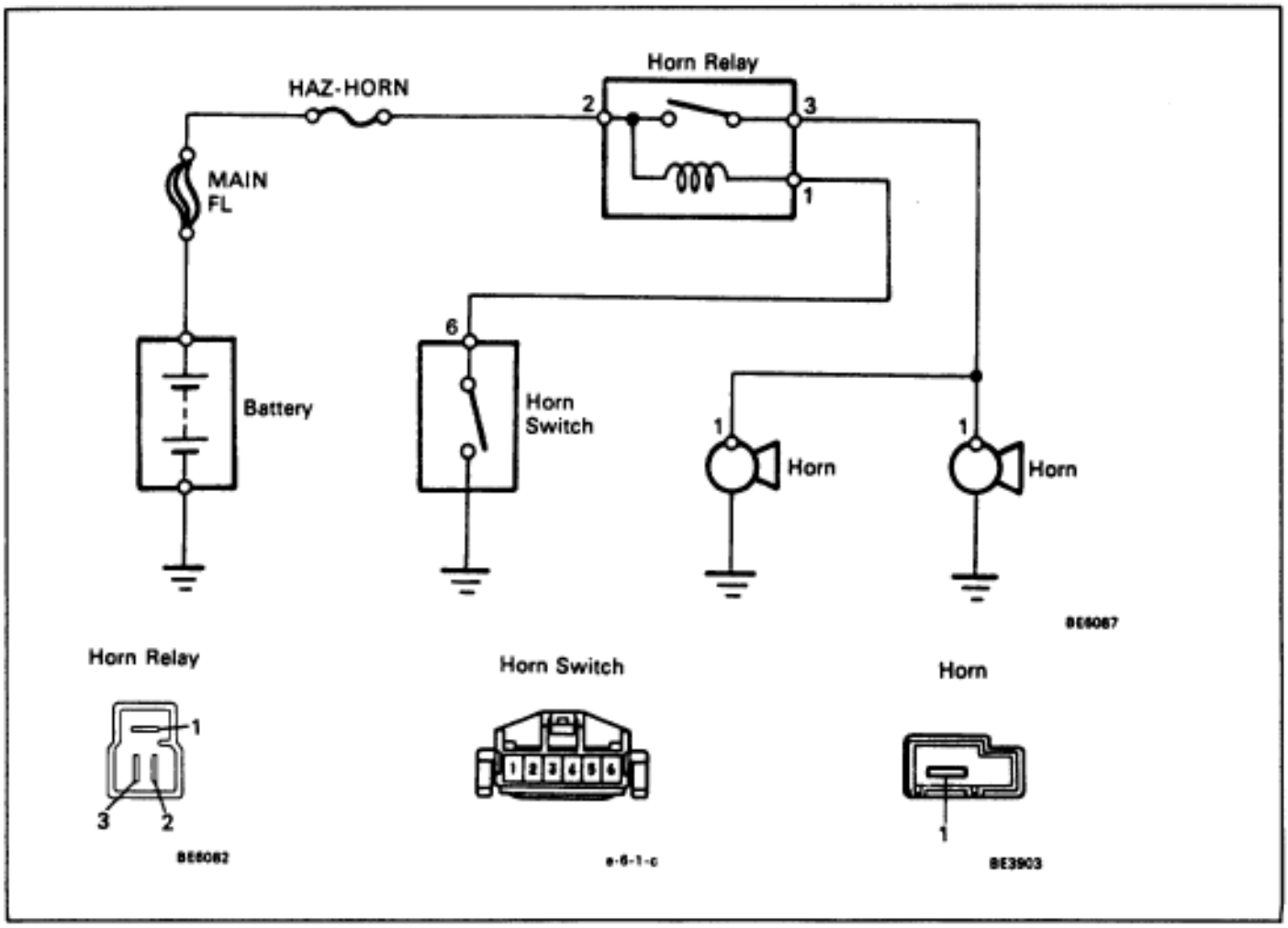


HORN SYSTEM

PARTS LOCATION



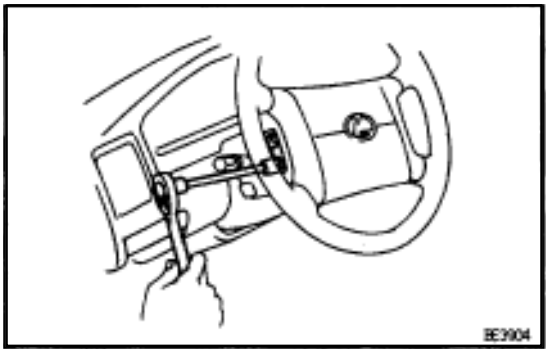
WIRING AND CONNECTOR DIAGRAMS



TROUBLESHOOTING

You will find the cause of trouble more easily by properly using the table shown below. In this table, the numbers indicate the order of priority of the causes of trouble. Check each part in the order shown. If necessary, replace these parts.

See Page / Part name / Trouble	BE–6, 22 HAZ-HORN Fuse	BE–22, 262 Horn Relay	BE–261 Horn Switch	BE–261 Horn	Wire Harness
Horn system does not operate	1	2	3	4	5
Horns blow all the time		1	2		3
One horn operates but other horn does not operate				1	2
Horns operate abnormally		1		2	3

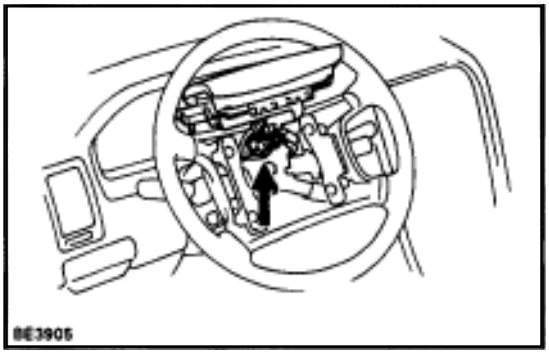


HORN SWITCH

HORN SWITCH INSPECTION

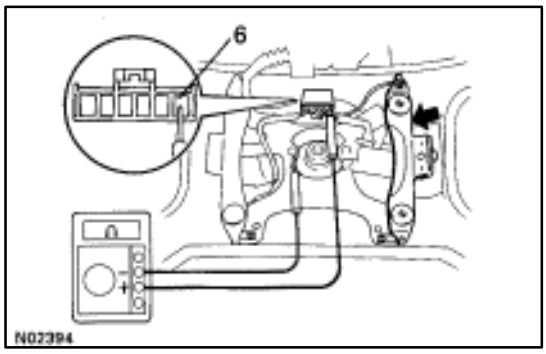
INSPECT HORN SWITCH

(a) Disconnect the negative (–) terminal from the battery.
(b) Remove the left and right covers from the steering wheel.

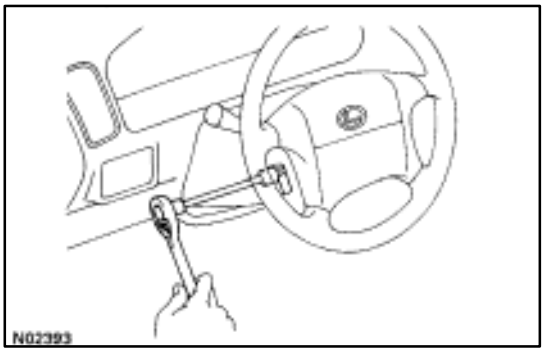


(c) Using a torx wrench, loosen the 4 bolts.

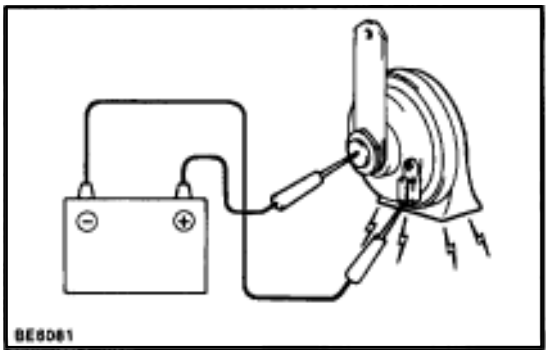
(d) Pull up the horn pad and place it on the steering column, as shown.
HINT: Do not disconnect the connector from the horn pad.
(e) Disconnect the connector from the slip ring.



(f) Check that there is no continuity between terminal 6 of the connector and body ground.
(g) Check that there is continuity between terminal 6 of the connector and body ground when the horn contact plate is pressed against the steering spoke assembly.
If continuity is not as specified, repair or replace the steering wheel or wire harness as necessary.



(h) Install the horn pad in place and using a torx wrench, tighten the 4 bolts.
Torque: 7.0 N·m (72 kgf·cm, 5.1 ft.·lbf)
(i) Install the left and right covers.
(j) Connect the negative (–) terminal to the battery.



HORN

HORN INSPECTION

INSPECT HORN OPERATION

Connect the positive (+) lead from the battery to the terminal and negative (–) lead to the horn body and check that the horn blows.
If operation is not as specified, replace the horn.

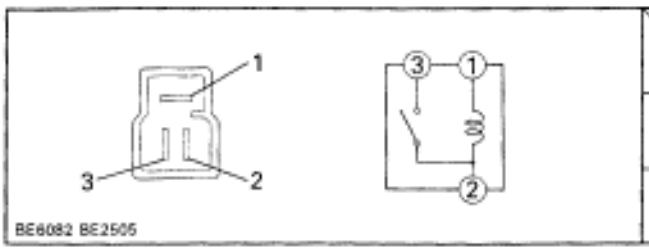
HORN RELAY

HORN RELAY INSPECTION

INSPECT HORN RELAY

(Continuity)

Inspect relay continuity between terminals.



Terminal / Condition	1	2	3
Constant	○–⌇⌇–○		
Apply battery positive voltage to terminals 1 and 2.		○—○	

If operation is not as specified, replace the relay.

If continuity is not as specified, replace the relay.

(Relay Circuit)

(See page BE–22)

POWER SEAT CONTROL SYSTEM

DESCRIPTION

The Power Seat Control System carries out seat slide, front vertical, rear vertical and reclining position adjustments electrically when the Power Seat Switch operated. However, this system has no memory or position return functions. The component parts of this system and their functions are described in the following table.

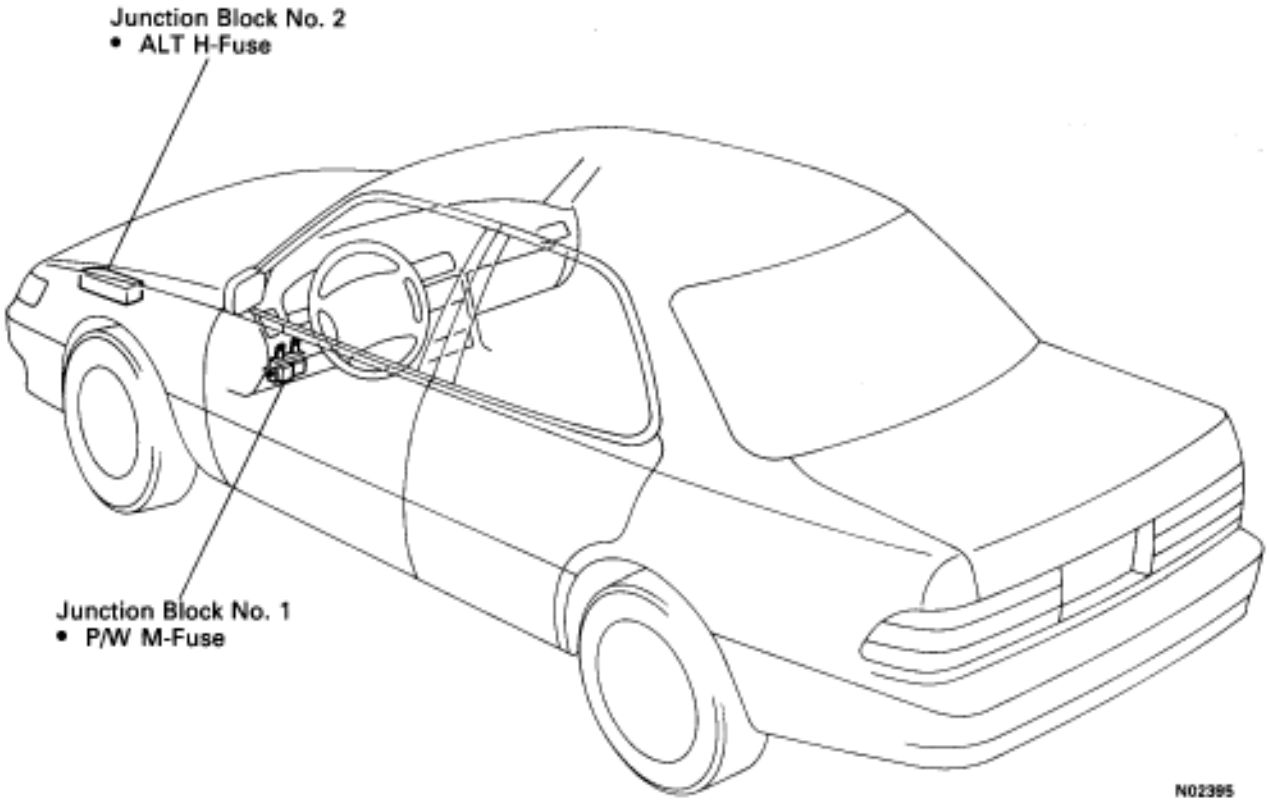
Parts Name	Function
Power Seat Switch	This switch is supplied with current from the P/W M–fuse. It sends current to each motor, controlling the motor's direction of rotation and turning the current ON and OFF.
*Motor	These motors operate on current from the Power Seat Switch, moving the various parts of the seat directly. Each motor has a built–in circuit breaker.

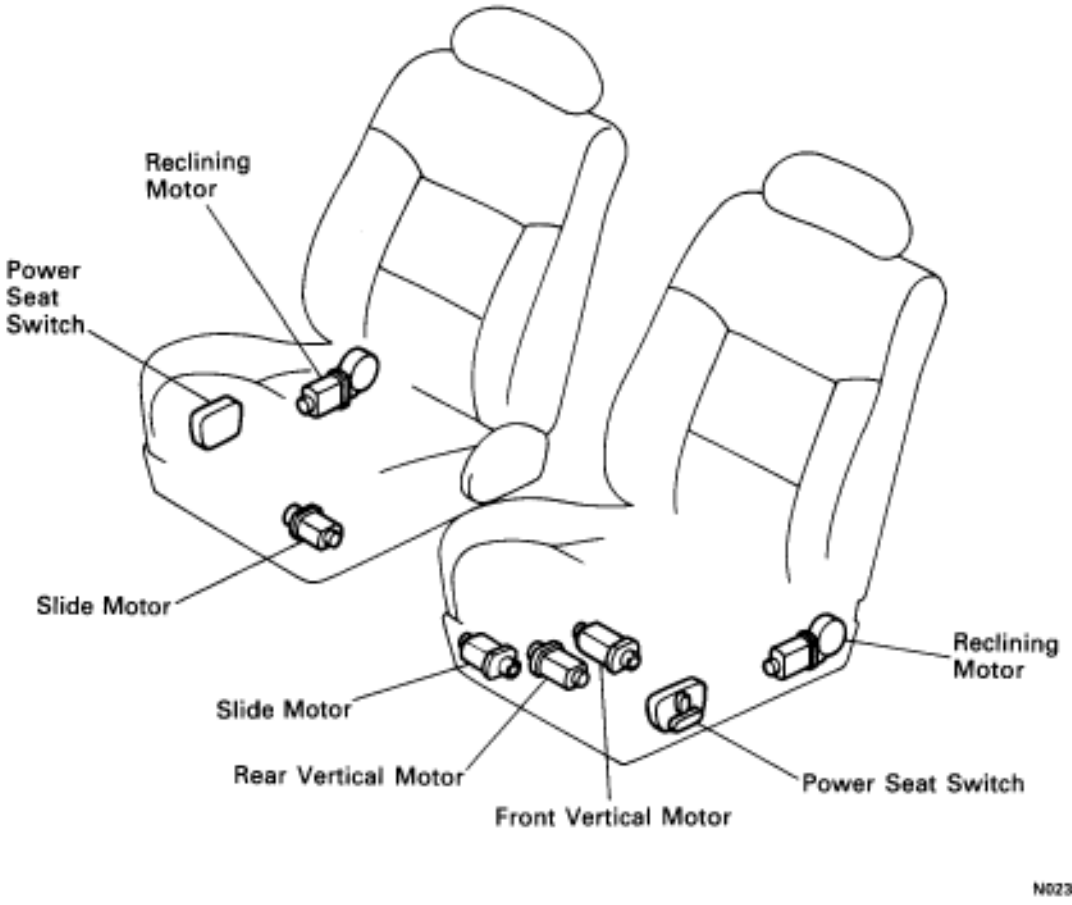
*: Slide, Front Vertical, Rear Vertical

Motors contained in each seat are described in the following table.

Motor / Seat	Slide Motor	Front Vertical Motor	Rear Vertical Motor	Rear Vertical Motor
Driver's Seat				
Passenger's Seat				

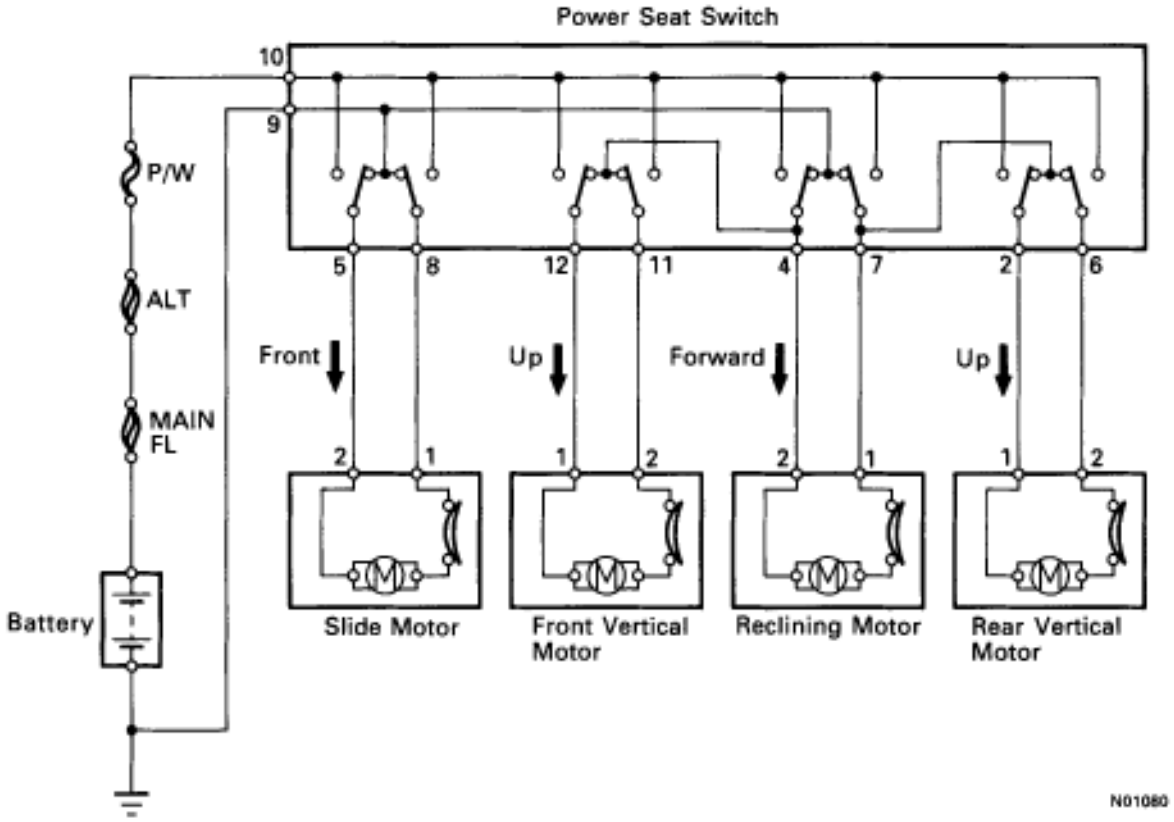
PARTS LOCATION



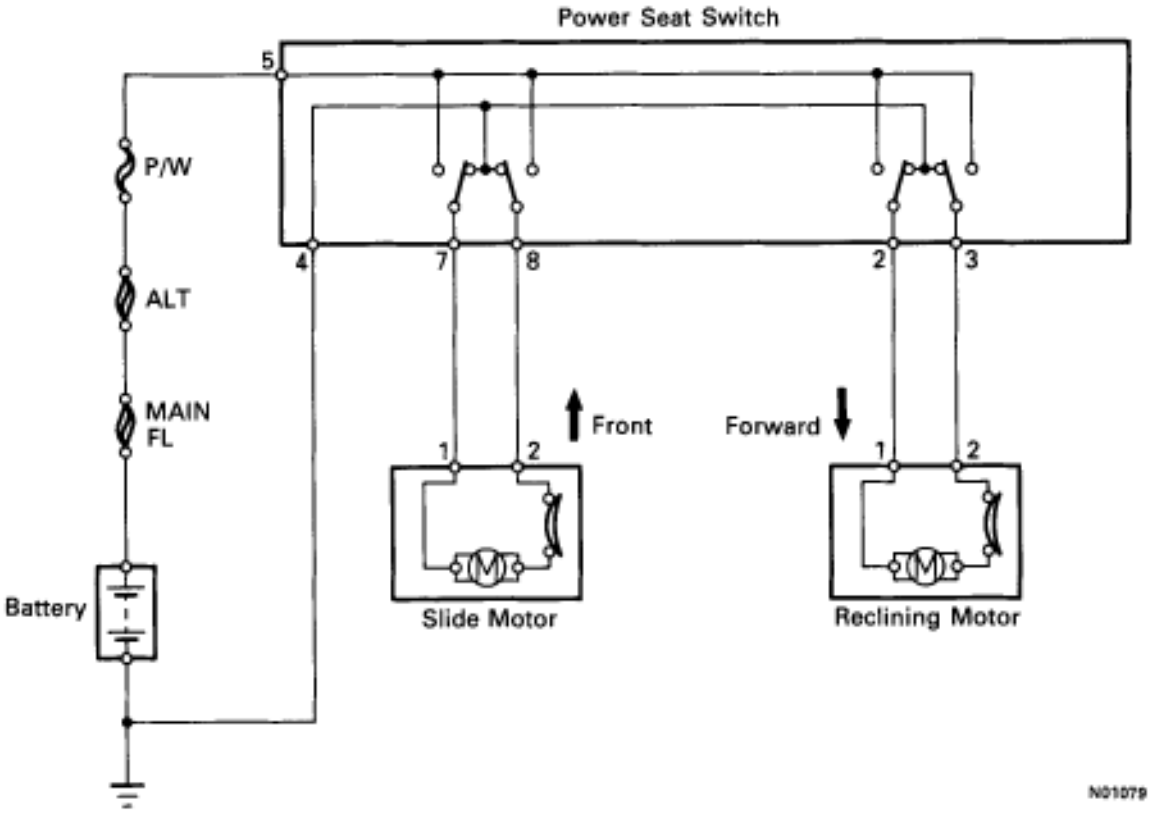


WIRING DIAGRAMS

Driver's Seat



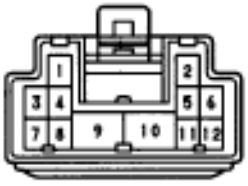
Passenger's Seat



CONNECTOR DIAGRAMS

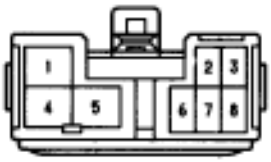
Power Seat Switch

(Driver's Side)



eg-12-1

(Passenger's side)

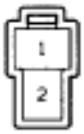


eg-8-1

Reclining Motor

e-2-2-A

Slide Motor, Front Vertical Motor,
Rear Vertical Motor



H-2-2

TROUBLESHOOTING

You will find the cause of trouble more easily by properly using the table shown below. In this table, the numbers indicate the order of priority of the causes of trouble. Check each part in the order shown. If necessary, replace the part.

See Page / Part name / Trouble	BE–6, 22	BE–6, 20	BE–268	BE–269	BE–271	BE–273	BE–274	BE–275	
	ALT H-Fuse	P/W M-Fuse	Power Seat Switch (D)	Power Seat Switch (P)	Slide Motor (D, P)	Front Vertical Motor (D)	Rear Vertical Motor (D)	Reclining Motor (D, P)	Wire Harness
Power seat does not operate. (Defogger system does not operate)	1	3							2
Power seat does not operate. (Defogger system is normal)		1	3	3					2
Driver's seat does not operate.			1						2
Passenger's seat does not operate.				1					2
"Slide operation" does not operate.			1	1	3				2
"Front Vertical Operation" does not operate.			1			3			2
"Rear Vertical Operation" does not operate.			1				3		2
"Reclining Operation" does not operate.			1	1				3	2

(D): Driver's Seat
(P): Passenger's Seat

POWER SEAT SWITCH (DRIVER'S SIDE)

POWER SEAT SWITCH REMOVAL AND INSTALLATION

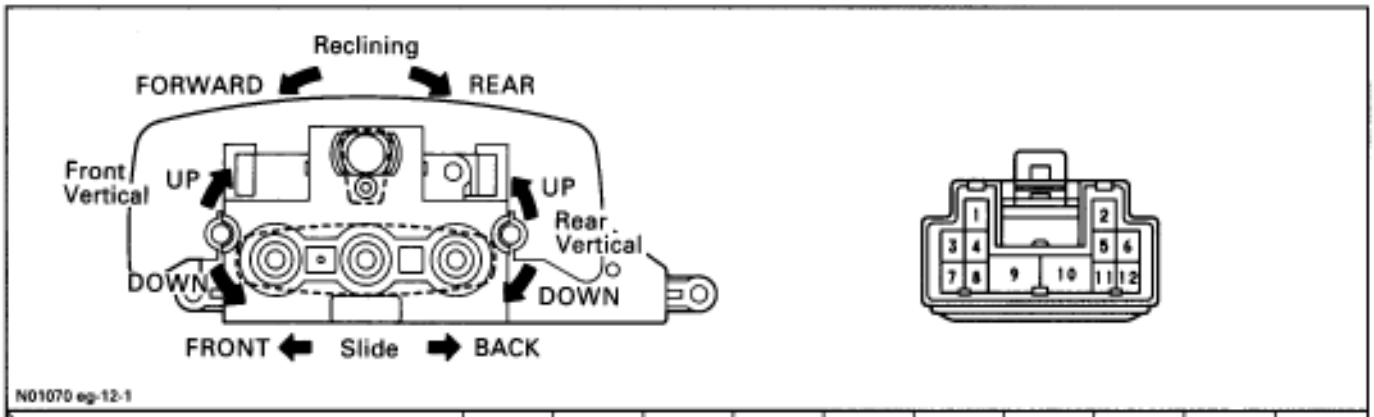
1. **REMOVE POWER SEAT**
   (See page BO–118)
2. **INSTALL POWER SEAT SWITCH**
   For installation follow the removal procedure in reverse.

POWER SEAT SWITCH

INSPECT POWER SEAT SWITCH

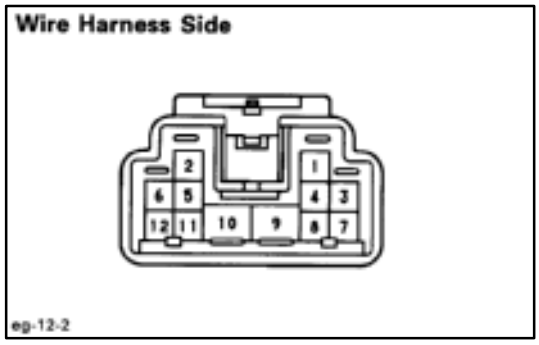
(Continuity)

Inspect the switch continuity between terminals.



Terminal / Switch position		2	4	5	6	7	8	9	10	11	12
Slide Switch	FRONT			○			○	○	○		
	OFF			○			○	○			
	BACK			○			○	○			
Front Vertical Switch	UP		○						○	○	○
	OFF		○							○	○
	DOWN		○						○	○	○
Rear Vertical Switch	UP	○			○	○			○		
	OFF	○			○	○					
	DOWN	○			○	○			○		
Reclining Switch	FORWARD		○			○		○	○		
	OFF		○			○		○			
	REAR		○			○		○	○		

If continuity is not as specified, replace the switch.



(Switch Circuit)

(a) Disconnect the switch connector and connect the seat wire harness to the floor wire harness.

(b) Inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition	Specified value
Continuity	9–Ground	Constant	Continuity
Voltage	10–Ground	Constant	Battery positive voltage

If circuit is not as specified, refer to BE–265 wiring diagram and inspect the circuits connected to other parts.

POWER SEAT SWITCH (PASSENGER'S SIDE)

POWER SEAT SWITCH REMOVAL AND INSTALLATION

1. REMOVE POWER SEAT

(See page BO–118)

2. INSTALL POWER SEAT SWITCH

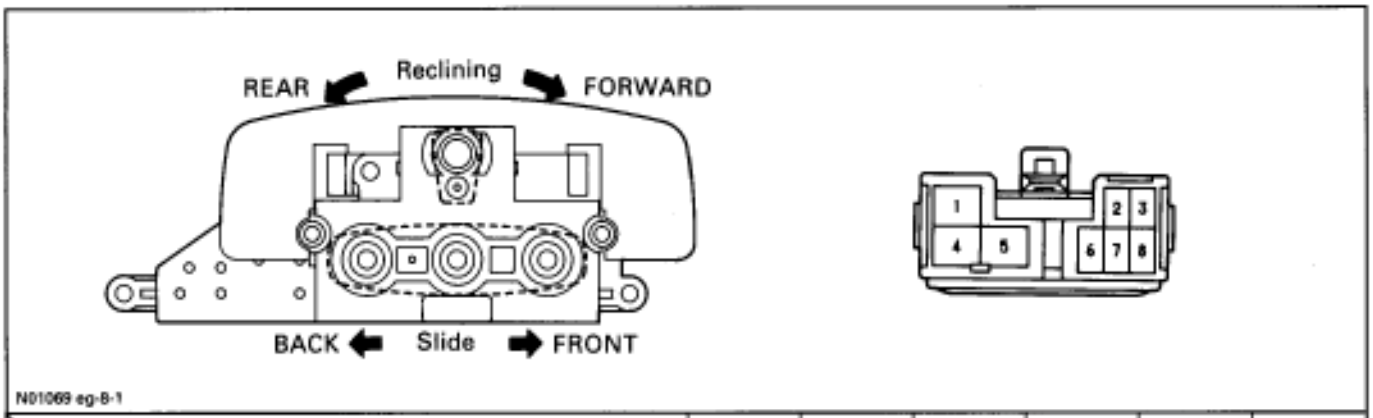
For installation follow the removal procedure in reverse.

POWER SEAT SWITCH INSPECTION

INSPECT POWER SEAT SWITCH

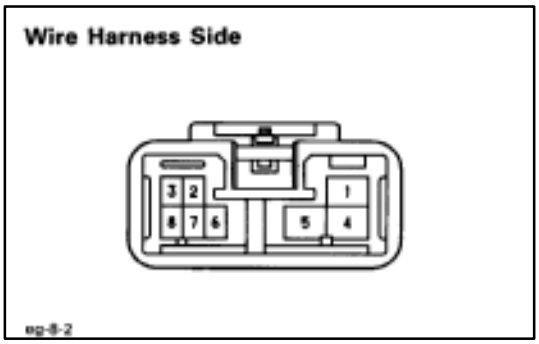
(Continuity)

Inspect the switch continuity between terminals.



Switch position		Terminal 2	3	4	5	7	8
Slide Switch	FRONT			○	○	○	○
	OFF			○		○	○
	BACK			○	○	○	○
Reclining Switch	FORWARD	○	○	○	○		
	OFF	○	○	○			
	REAR	○	○	○	○		

If continuity is not as specified, replace the switch.



(Switch Circuit)

(a) Disconnect the switch connector and connect the seat wire harness to the floor wire harness.

(b) Inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition	Specified value
Continuity	4–Ground	Constant	Continuity
Voltage	5–Ground	Constant	Battery positive voltage

If circuit is not as specified, refer to BE–265 wiring diagram and inspect the circuits connected to other parts.

SLIDE MOTOR (DRIVER'S SIDE)

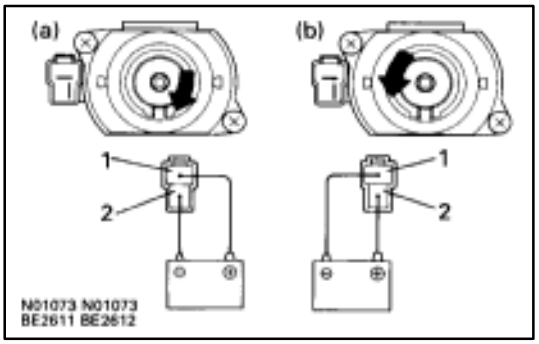
SLIDE MOTOR REMOVAL AND INSTALLATION

(See page BO–118)

INSPECTION SLIDE MOTOR

INSPECT SLIDE MOTOR

(Operation)



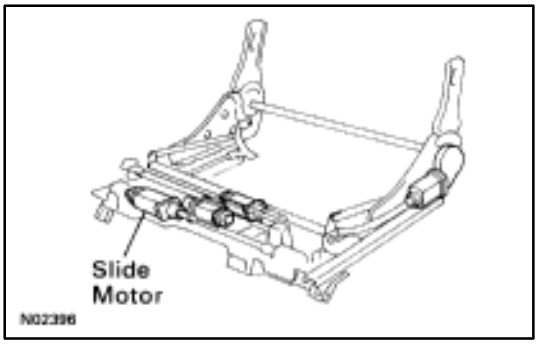
(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, check that the motor turns clockwise.

(b) Reverse the polarity, check that the motor turns counterclockwise.

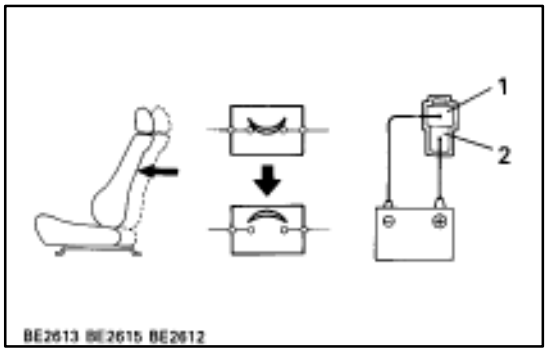
If operation is not as specified, replace the motor.

(Circuit Breaker Operation)

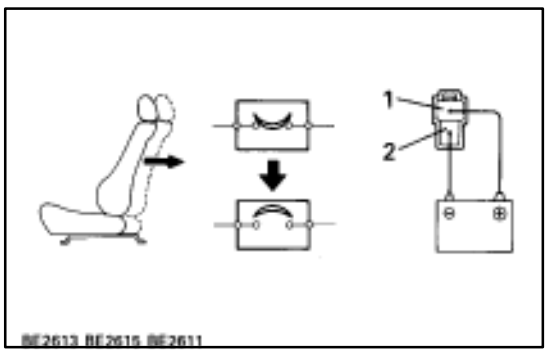
(See page BO–118)



(a) Separate power seat adjuster from front seat.



(b) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1 on the slide motor connector, and move the seat front end position.



(c) Continue to apply voltage, check that there is a circuit breaker operation noise within 3 to 60 seconds.

(d) Reverse the polarity, check that the seat begins to move backwards within approximately 60 seconds.

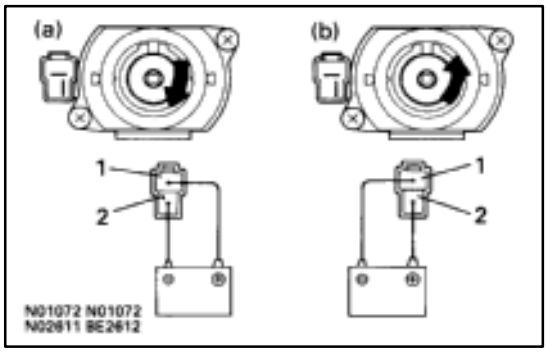
If operation is not as specified, replace the motor.

SLIDE MOTOR (PASSENGER'S SIDE)

SLIDE MOTOR REMOVAL AND INSTALLATION

(See page BO–118)

SLIDE MOTOR INSPECTION



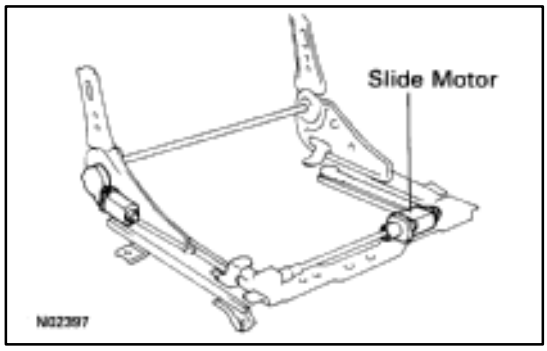
INSPECT SLIDE MOTOR

(Operation)

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, check that the motor turns clockwise.

(b) Reverse the polarity, check that the motor turns counterclockwise.

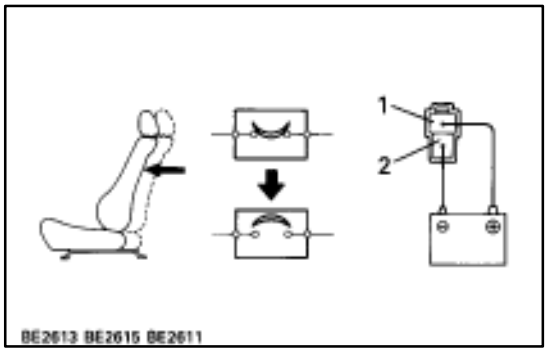
If operation is not as specified, replace the motor.



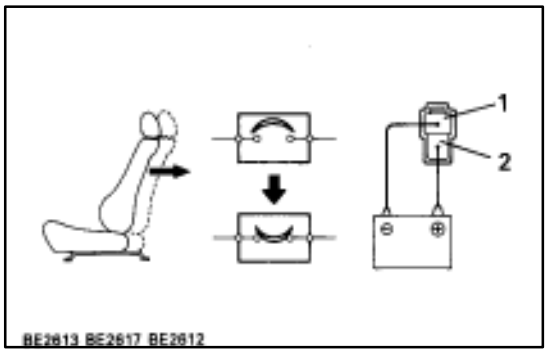
(Circuit Breaker Operation)

(See page BO–118)

(a) Separate power seat adjuster from front seat.



(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2 on the slide motor connector, and move the seat front end position.



(c) Continue to apply voltage, check that there is a circuit breaker operation noise within 3 to 60 seconds.

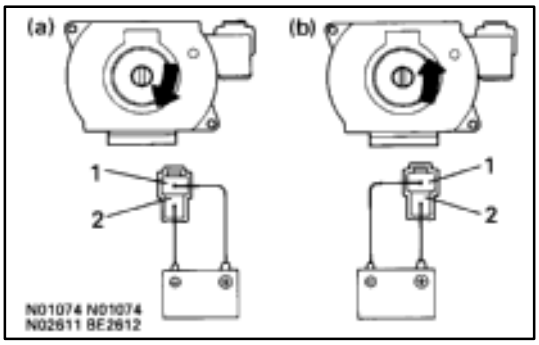
(d) Reverse the polarity, check that the seat begins to move backwards within approximately 60 seconds.

If operation is not as specified, replace the motor.

FRONT VERTICAL MOTOR

FRONT VERTICAL MOTOR REMOVAL AND INSTALLATION

(See page BO–118)



FRONT VERTICAL MOTOR INSPECTION

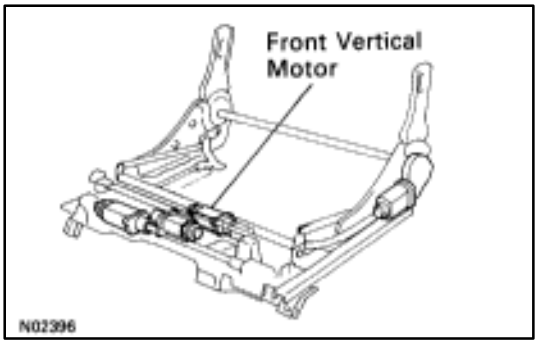
INSPECT FRONT VERTICAL MOTOR

(Operation)

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, check that the motor turns clockwise.

(b) Reverse the polarity, check that the motor turns counterclockwise.

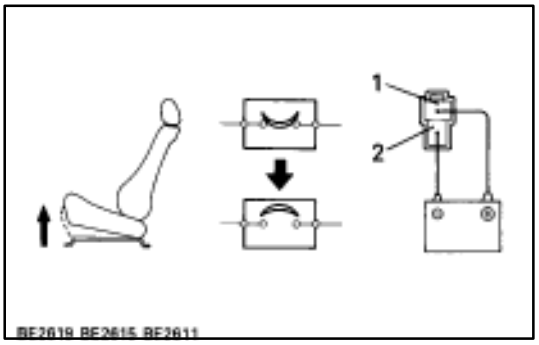
If operation is not as specified, replace the motor.



(Circuit Breaker Operation)

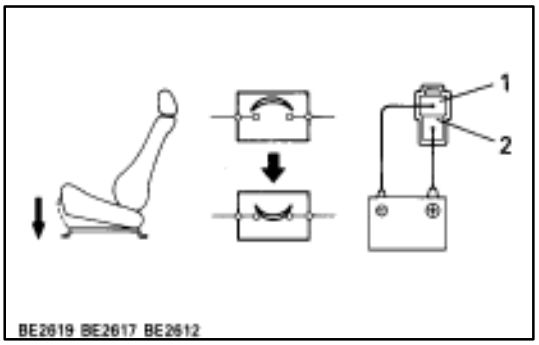
(See page BO–118)

(a) Separate power seat adjuster from front seat.



(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2 on the front vertical motor connector, and move the front edge of seat cushion to the highest position.

(c) Continue to apply voltage, check that there is a circuit breaker operation noise within 4 to 60 seconds.



(d) Reverse the polarity, check that the seat cushion begins to descend within approximately 60 seconds.

If operation is not as specified, replace the motor.

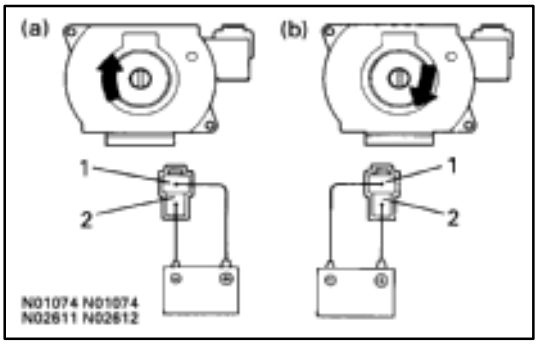
REAR VERTICAL MOTOR

REAR VERTICAL MOTOR REMOVAL AND INSTALLATION

(See page BO–118)

REAR VERTICAL MOTOR INSPECTION

INSPECT REAR VERTICAL MOTOR

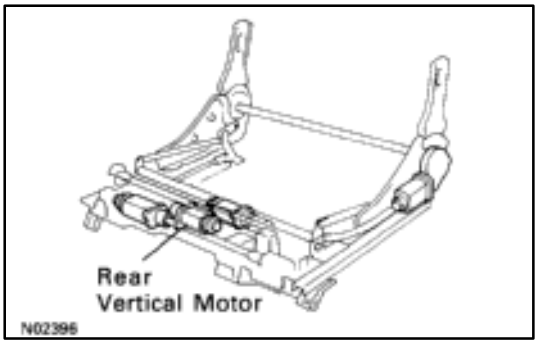


(Operation)

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, check that the motor turns clockwise.

(b) Reverse the polarity, check that the motor turns counterclockwise.

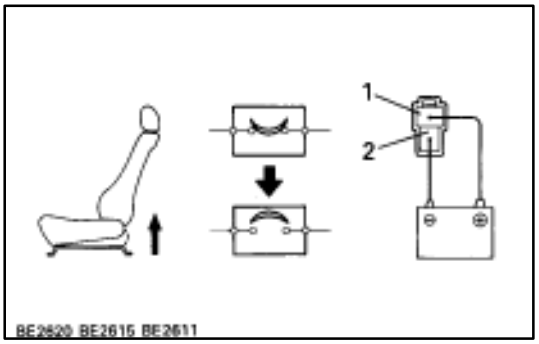
If operation is not as specified, replace the motor.



(Circuit Breaker Operation)

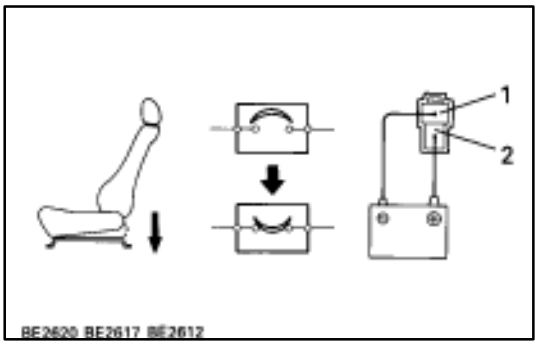
(See page BO–118)

(a) Separate power seat adjuster from front seat.



(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2 on the rear vertical motor connector, and move the rear edge of seat cushion to the highest position.

(c) Continue to apply voltage, check that there is a circuit breaker operation noise within 4 to 60 seconds.



(d) Reverse the polarity, check that the seat cushion begins to descend within approximately 60 seconds.

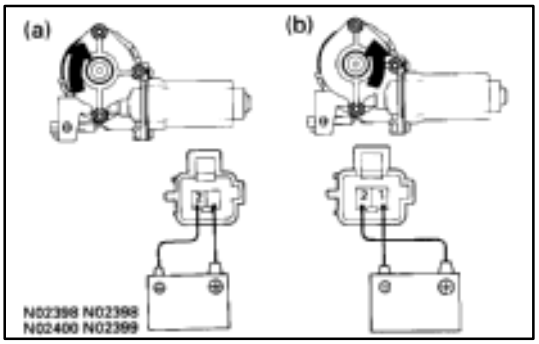
If operation is not as specified, replace the motor.

RECLINING MOTOR (DRIVER'S SIDE)

RECLINING MOTOR REMOVAL AND INSTALLATION

(See page BO–118)

RECLINING MOTOR INSPECTION



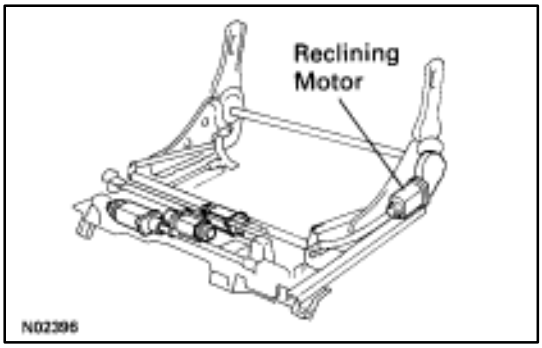
INSPECT SLIDE MOTOR

(Operation)

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, check that the motor turns clockwise.

(b) Reverse the polarity, check that the motor turns counterclockwise.

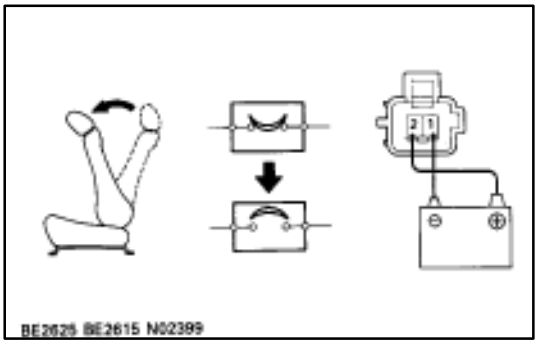
If operation is not as specified, replace the motor.



(Circuit Breaker Operation)

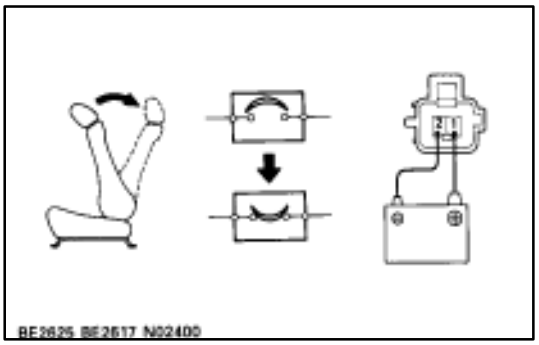
(See page BO–118)

(a) Separate power seat adjuster from front seat.



(b) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1 on the reclining motor connector, and recline the seat back to the most forward position.

(c) Continue to apply voltage, check that there is a circuit breaker operation noise within 4 to 40 seconds.



(d) Reverse the polarity, check that the seat cushion begins to descend within approximately 60 seconds.

If operation is not as specified, replace the motor.

RECLINING MOTOR (PASSENGER'S SIDE)

RECLINING MOTOR REMOVAL AND INSTALLATION

(See page BO–121)

RECLINING MOTOR INSPECTION

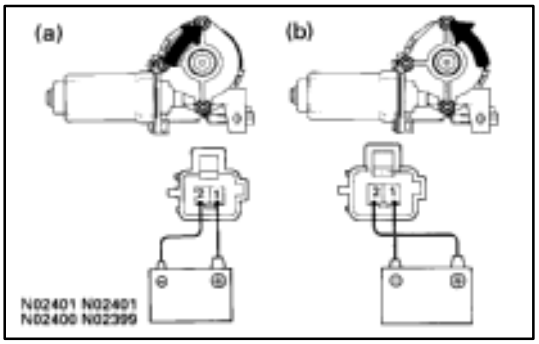
INSPECT SLIDE MOTOR

(Operation)

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, check that the motor turns clockwise.

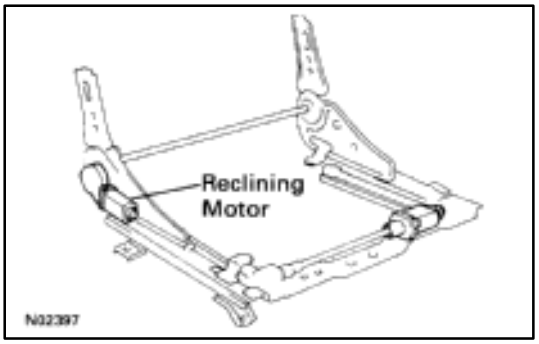
(b) Reverse the polarity, check that the motor turns counterclockwise.

If operation is not as specified, replace the motor.



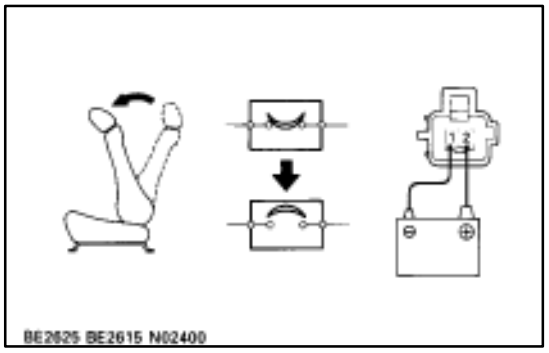
(Circuit Breaker Operation)

(a) Separate power seat adjuster from front seat.



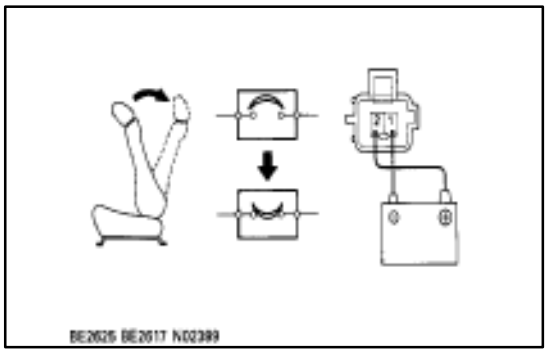
(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2 on the reclining motor connector, and recline the seat back to the most forward position.

(c) Continue to apply voltage, check that there is a circuit breaker operation noise within 4 to 40 seconds.

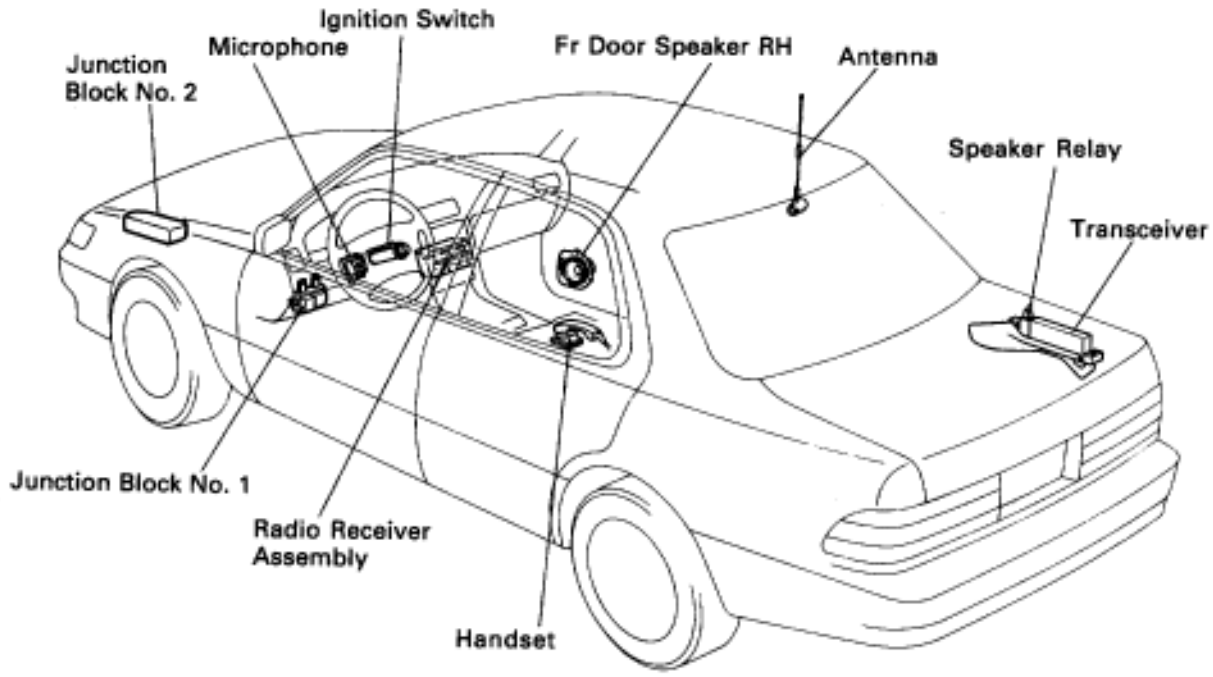


(d) Reverse the polarity, check that the seat back starts to fall backwards within approximately 60 seconds.

If operation is not as specified, replace the motor.

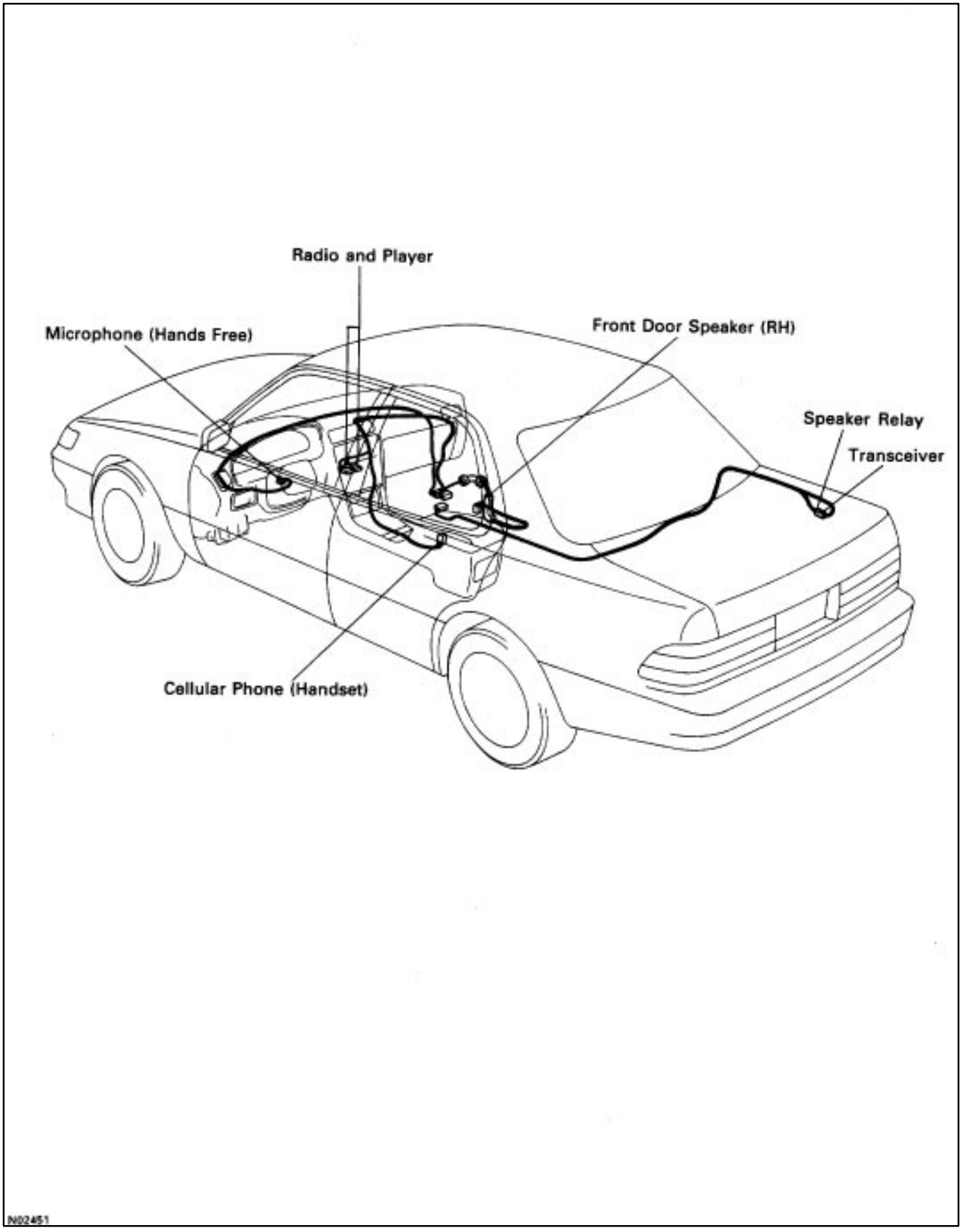


CELLULAR PHONE
PARTS LOCATION

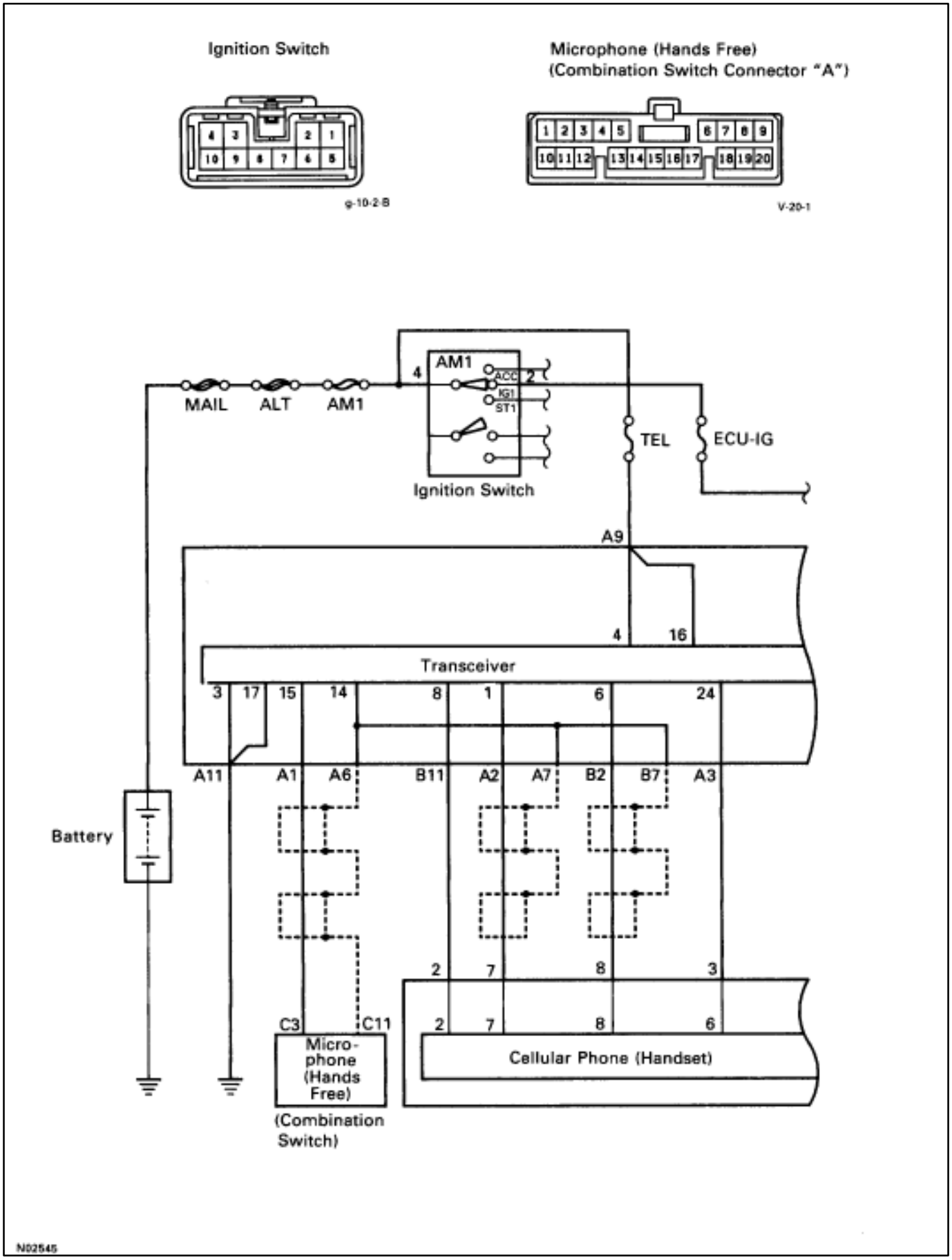


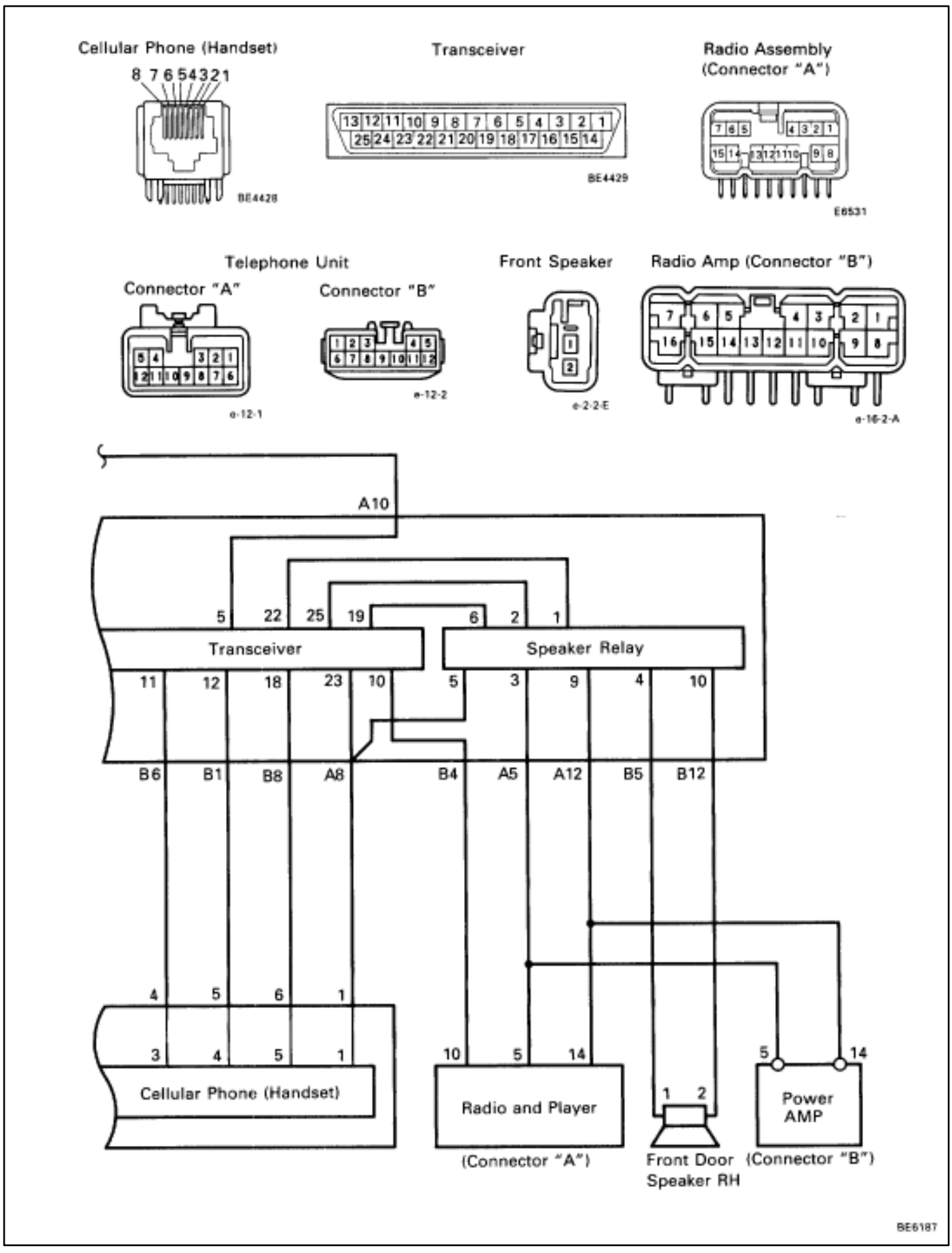
N01981

ELECTRICAL WIRING ROUTING



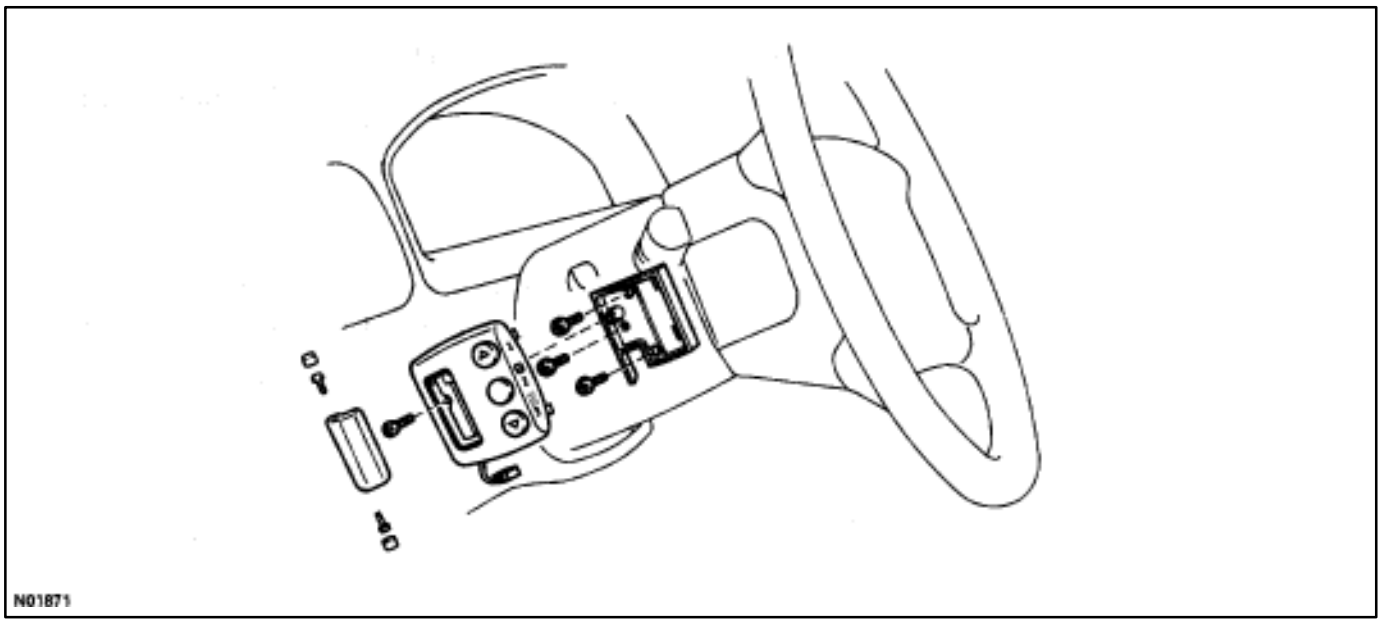
SYSTEM CIRCUIT



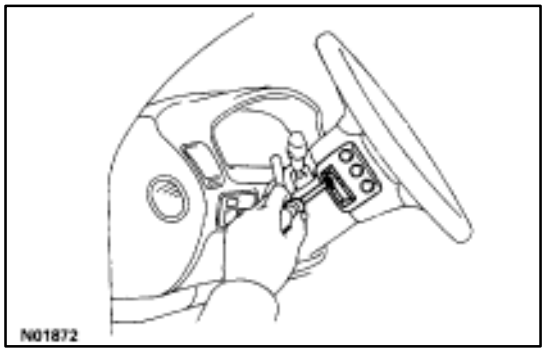

Cellular Phone (Handset)
8 7 6 5 4 3 2 1
BE4428
Transceiver
13 12 11 10 9 8 7 6 5 4 3 2 1
25 24 23 22 21 20 19 18 17 16 15 14
BE4429
Radio Assembly
(Connector "A")
E6531
Telephone Unit
Connector "A"
e-12-1
Connector "B"
e-12-2
Front Speaker
e-2-2-E
Radio Amp (Connector "B")
e-16-2-A
A10
5 22 25 19 6 2 1
Transceiver
Speaker Relay
11 12 18 23 10 5 3 9 4 10
B6 B1 B8 A8 B4 A5 A12 B5 B12
4 5 6 1
3 4 5 1
Cellular Phone (Handset)
10 5 14
Radio and Player
(Connector "A")
1 2
Front Door
Speaker RH
5 14
Power
AMP
(Connector "B")
BE6187

MICROPHONE/HANDS FREE

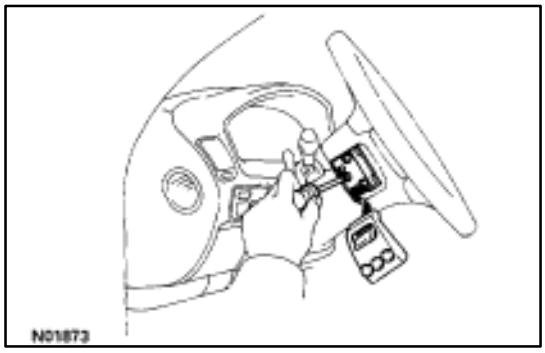
COMPONENTS



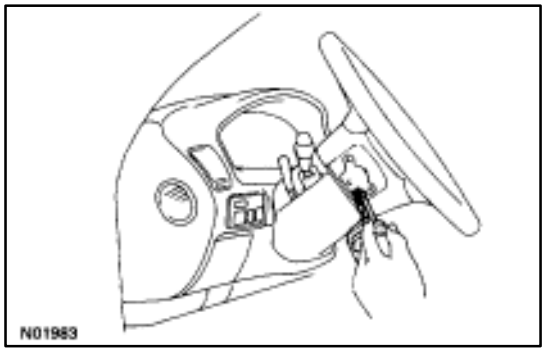
MICROPHONE REMOVAL



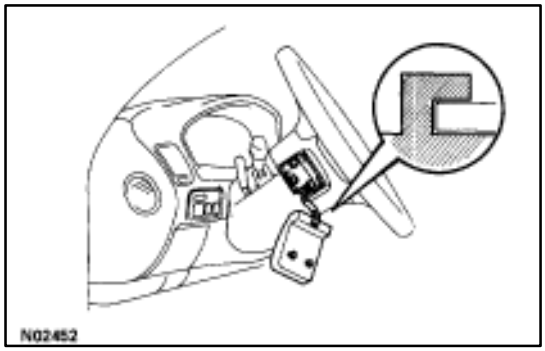
1. **REMOVE CLIP COVER**
2. **REMOVE COMMAND MODULE**
   Remove a screw and separate command module from steering wheel.



3. **REMOVE BASE**
   Remove two screws and base.



4. **DISCONNECT CONNECTOR**
   Using a screw driver, disconnect the connector.



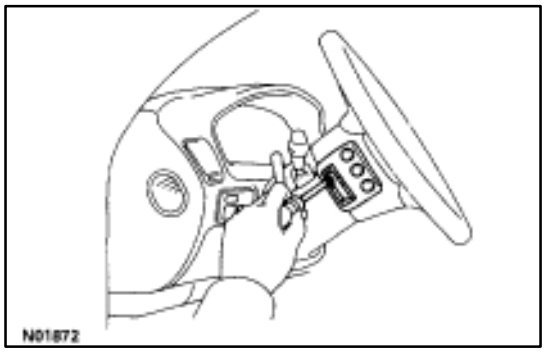
MICROPHONE INSTALLATION

For installation, follow the removal procedure in reverse.

(MAIN POINT OF INSTALLATION)

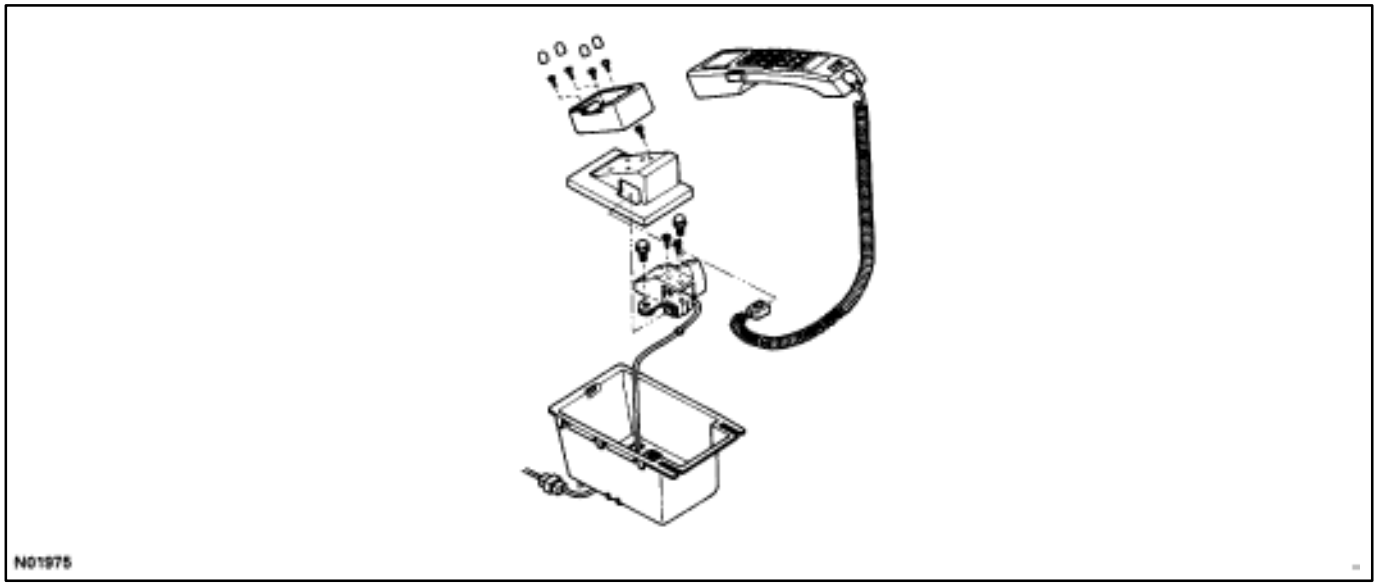
INSTALL COMMAND MODULE

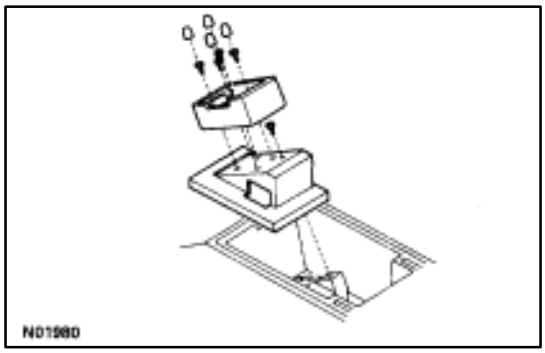
(a) Match the holes in the command module with the 2 projections at the front of base.



(b) Install the command module and a screw.
HINT: Avoid pinching of the wire harness during installation

CELLULAR PHONE/HANDSET COMPONENTS

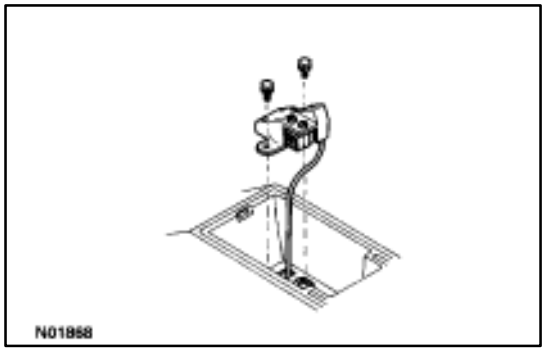




CELLULAR PHONE REMOVAL

1. REMOVE CRADLE AND OUTER BRACKET

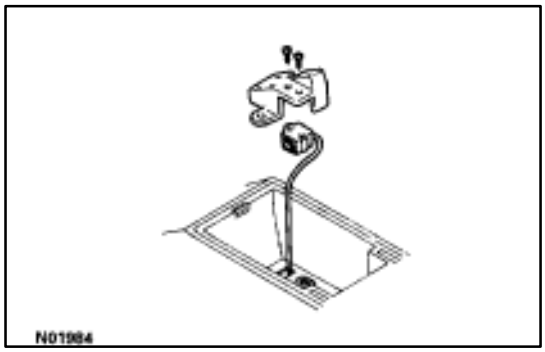
(a) Remove the four screws and cradle.
(b) Disconnect the telephone wire connector.
(c) Remove a screw and bracket.



2. REMOVE INNER BRACKET AND REAR CONSOLE BOX

(a) Remove the two bolts and inner bracket.

(b) Remove the rear console box.



3. REMOVE CONNECTOR

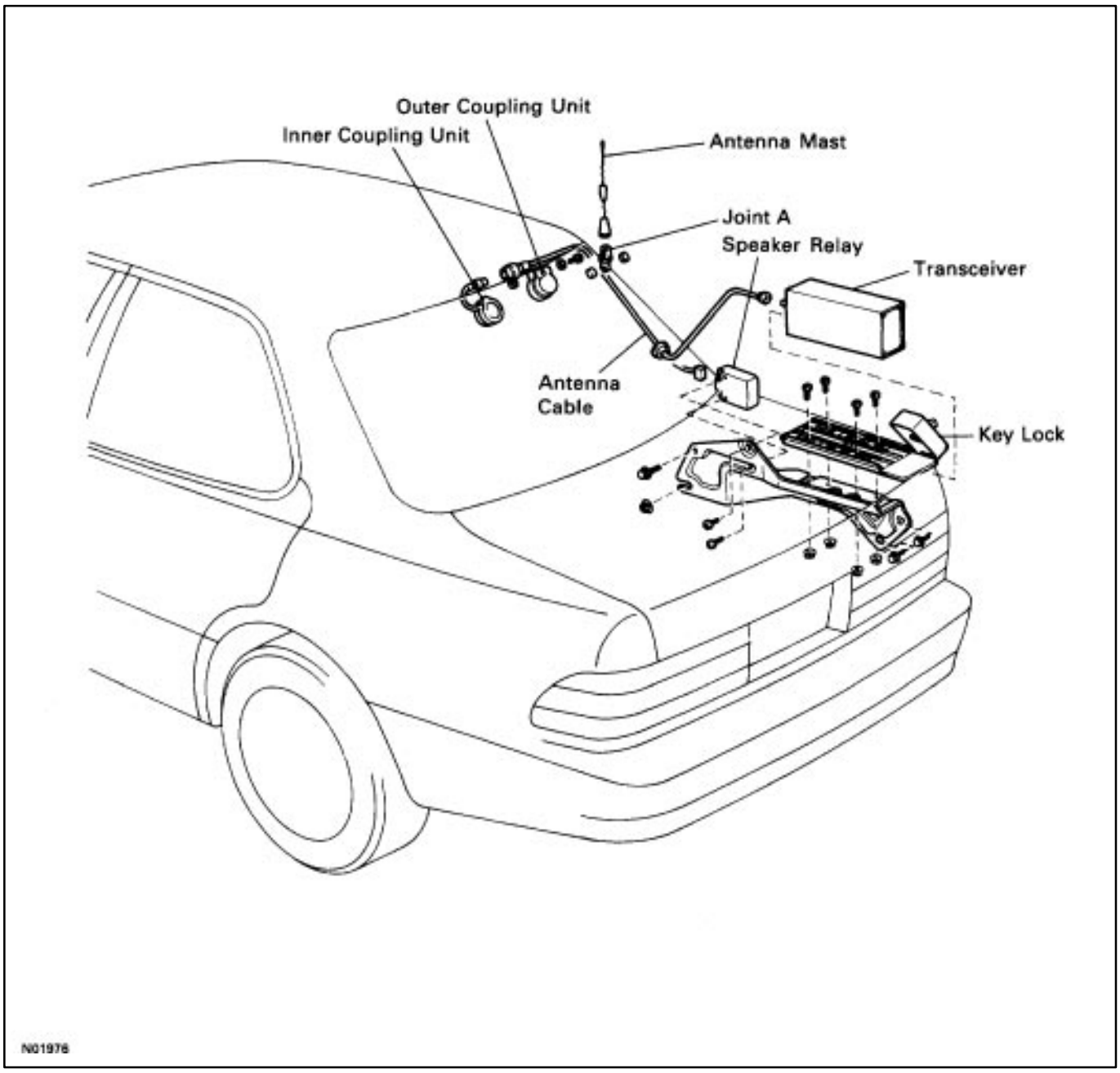
Remove two screws.

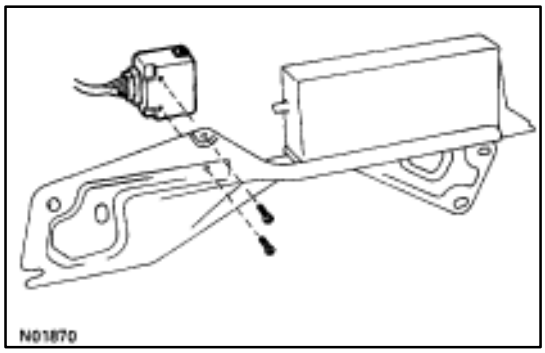
CELLULAR PHONE INSTALLATION

For installation follow the removal procedure in reverse.

ANTENNA, TRANSCEIVER AND SPEAKER RELAY

COMPONENTS

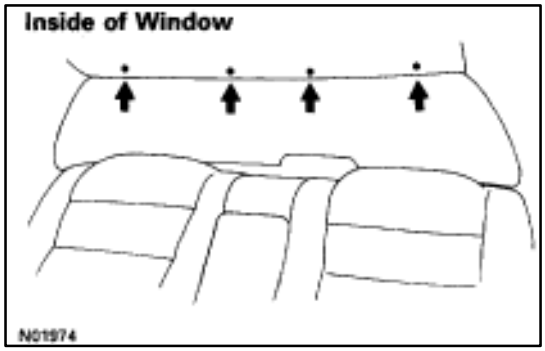




SPEAKER RELAY REMOVAL

REMOVE SPEAKER RELAY

(a) Remove the luggage LH cover.
(b) Disconnect connectors and antenna cable from the transceiver.
(c) Remove the transceiver.
(d) Disconnect connector from speaker relay.
(e) Remove the two screws and speaker relay.



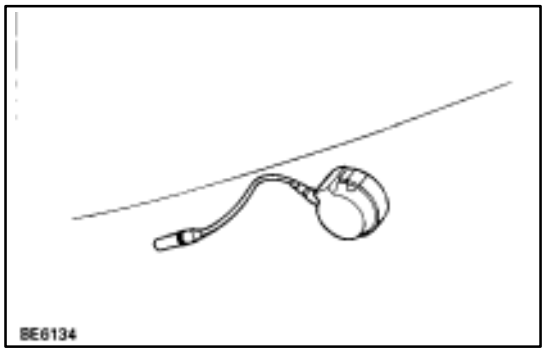
SPEAKER RELAY INSTALLATION

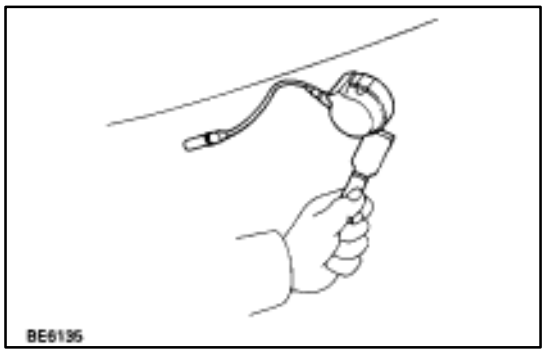
For installation, follow the removal procedure in reverse.

ANTENNA REMOVAL

1. REMOVE INNER COUPLING UNIT

(a) Remove four crips.
(b) Pull out antenna cable from roof head lining.
(c) Disconnect antenna cable from coupling unit.

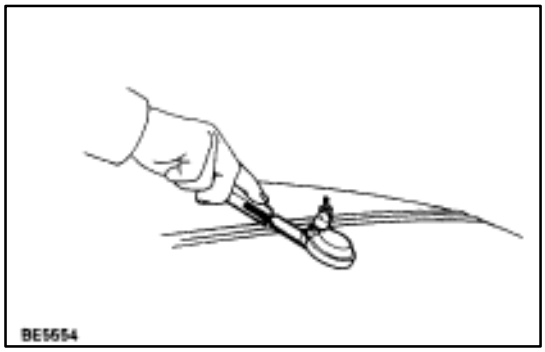




(d) Using a scraper or screw driver, remove inner coupling unit from back window glass.
NOTICE: Take care not to damage the back window glass.

2. REMOVE ANTENNA MAST

(a) Remove a antenna mast from joint A.
(b) Remove a screw, washer and joint A.



3. REMOVE OUTER COUPLING UNIT

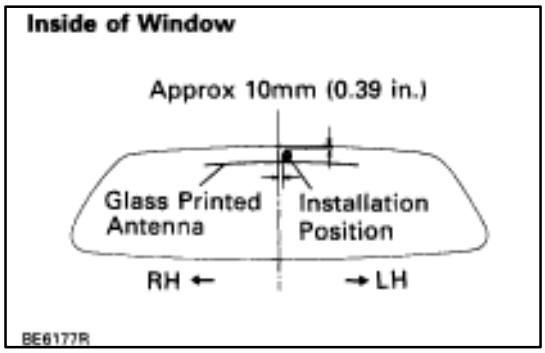
Using a scraper or screw driver, remove outer coupling unit.
NOTICE: Take care not to damage the back window glass.

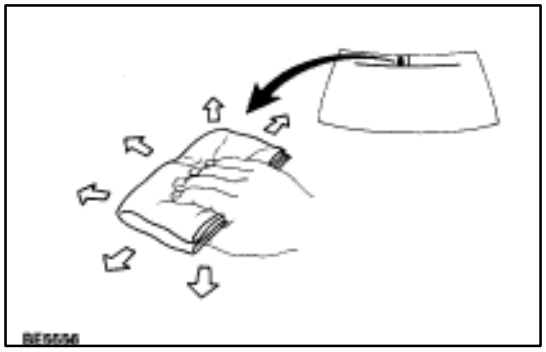
ANTENNA INSTALLATION

1. SELECT ANTENNA INSTALLATION POSITION

Install the antenna in the position shown in the figure.
HINT:

- The antenna must not be touching the glass printed antenna.
- After temporarily positioning the antenna cable and coupling unit against the glass, install the antenna in position opposite where the upper edge of the coupling unit touches the roof head lining.





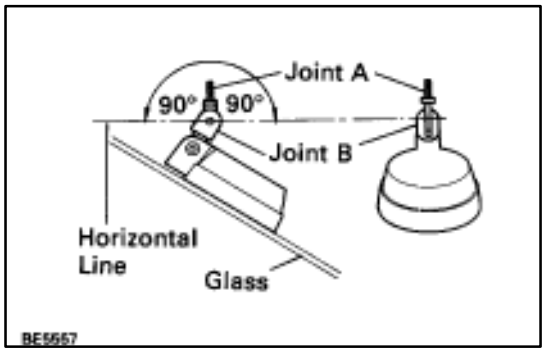
2. CLEAN SURFACE FOR ANTENNA INSTALLATION

(a) Clean the glass surface for installation of the inner coupling unit and outer coupling unit.

(b) Clean the glass again using the window cleaner contained in the kit.

(c) Wipe the glass surface dry using a dry paper towel.

HINT: Wipe the glass radially.



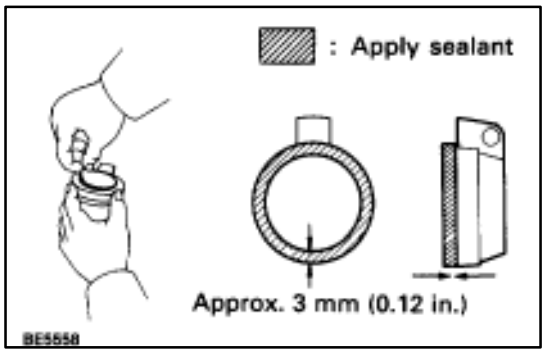
3. INSTALL OUTER COUPLING UNIT ON THE OUTSIDE OF THE WINDOW GLASS

(a) Remove joint A from antenna mast. Install joint A to joint B.

NOTICE: When replace the mast, replace the mast and joint A set.

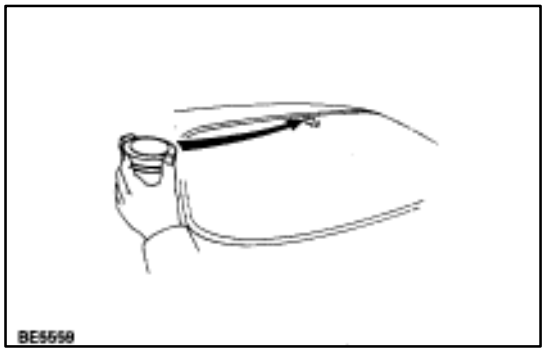
(b) Put the outer coupling unit in the selected location. Make sure it is possible to adjust the joint A and outer coupling unit.

NOTICE: Do not remove the protective paper from the adhesive on the bottom of outer coupling unit.



(c) Remove the protective paper from the outer coupling unit and apply sealant in plenty to the bottom surface of the coupling unit as shown in the figure.

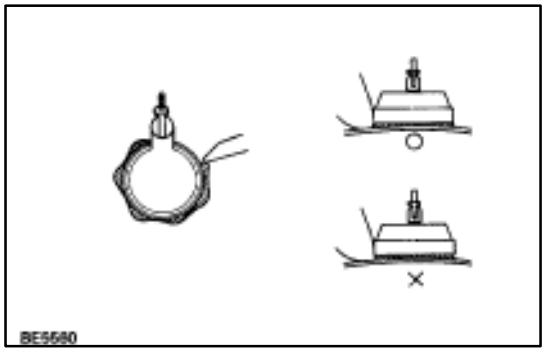
HINT: Use the sealant contained in the kit.



(d) Adhere the outer coupling unit strongly against the installation location until the entire double–sided tape comes in contact with the glass and the sealant comes out.

NOTICE: The adhesive pad will stick to the glass instantly and cannot be removed without having to replace it. Be sure the position of the outer coupling unit is correct before it touches the glass.

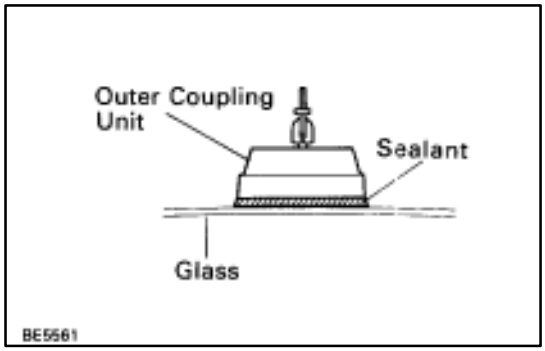
(e) Using a scraper or spatula, remove excess sealant.



HINT: Using a rag, wipe excess sealant which could not be removed by a spatula. When wiping by a rag, care should be taken not to have the rag in between glass and outer coupling unit.

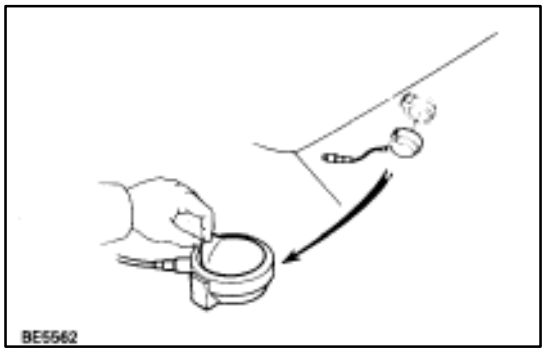
NOTICE:

- **Confirm that the sealant is covering the doublesided tape making it waterproof.**
  If not, reapply sealant and fill up the gap.
- **Keep the antenna mast off for 24 hours until the sealant is completely cured.**



- **Both the tape and silicone adhesives take longer to set and cure when the surfaces are cold. If the installation takes place in an area where temperatures are below 50 F (10 C) let the adhesive cure for least 48 hours before attaching the antenna mast.**

(f) Install the antenna mast to joint A.

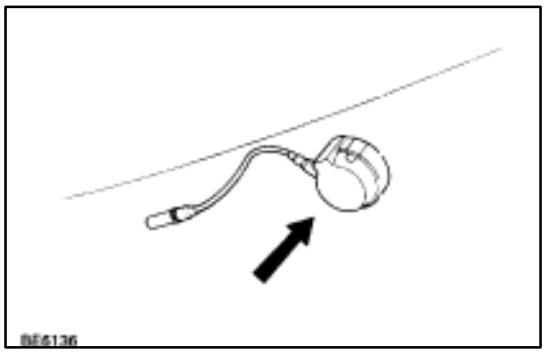


4. INSTALL INNER COUPLING UNIT ON THE INSIDE OF THE WINDOW GLASS

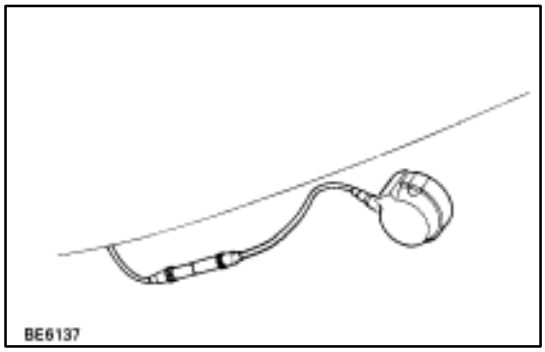
(a) Verify the positioning of the inner coupling unit so that it will be centered over the outer coupling unit on the outside, with the connector positioned horizontally to the right side of the vehicle.

(b) Remove the protective paper from the coupling unit.

NOTICE: The adhesive pad will stick to the glass instantly and cannot be removed without having to replace it. Be sure the position of the coupling unit is correct before it touches the glass.



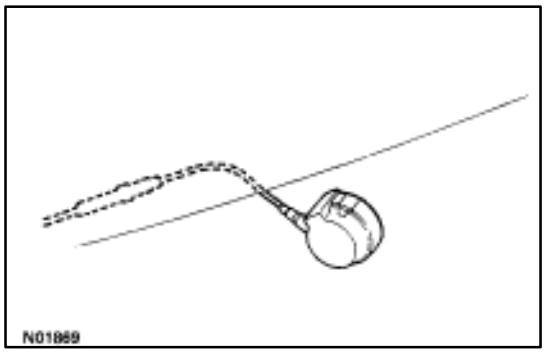
(c) Install the inner coupling unit to the glass.



(d) Connect the antenna cable.

(e) Wrap the sponge round the connector.

HINT: Use the sponge contained in the kit.



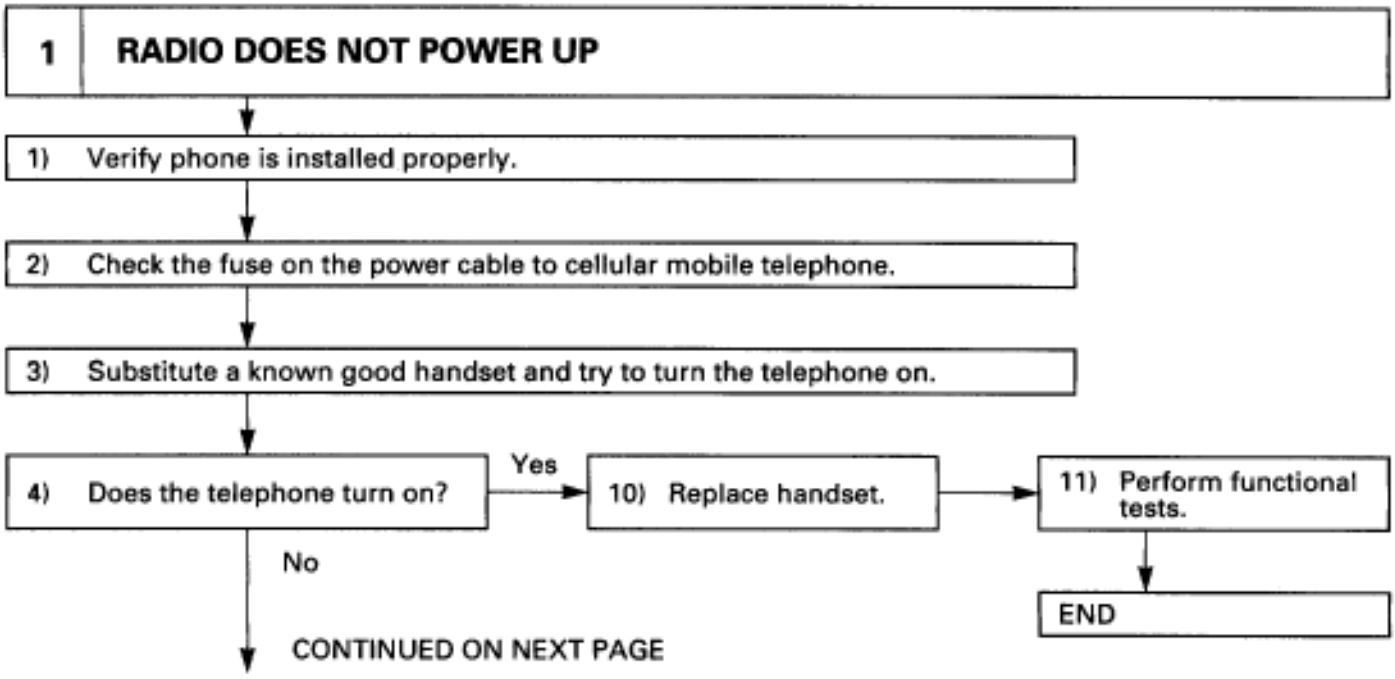
(f) Install the connector back to its original position.

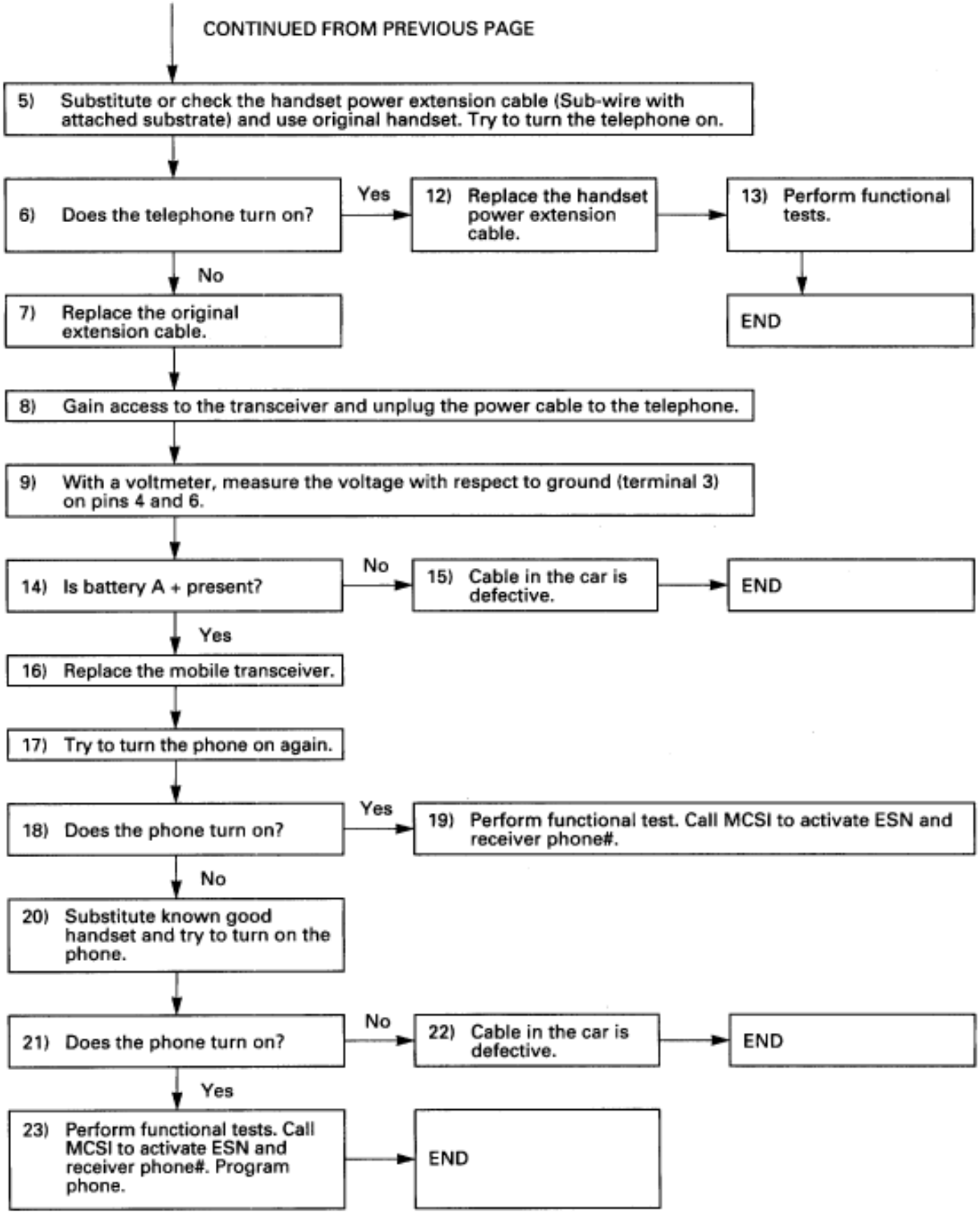
TROUBLESHOOTING

You can easily find the cause of trouble using the table shown below.

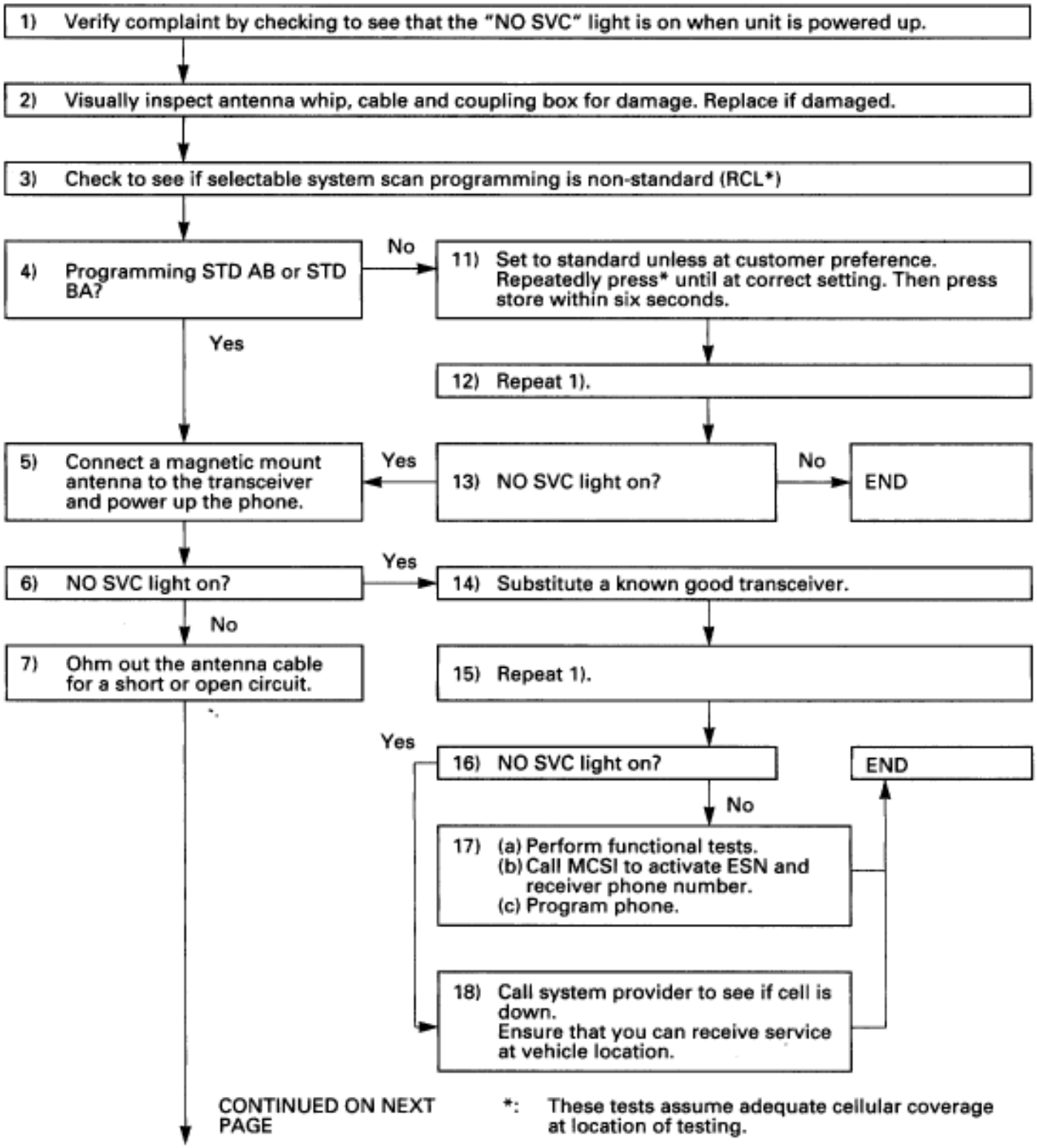
Chart No.	Trouble	See page
1	Radio does not power up.	BE–462
2	*"NO SVC" light stays on.	BE–464
3	*Static during calls/Dropped calls.	BE–466
4	Fast busy signal or recording received when placing calls.	BE–467
5	Dialing problems with controller.	BE–468
6	No hands free transmit audio.	BE–469
7	No hands free audio or tones from right front speaker.	BE–470
8	No AM/FM radio out of right front speaker.	BE–471
9	AM/FM radio does not mute during calls.	BE–472
10	Radio will not go into programming mode.	BE–473

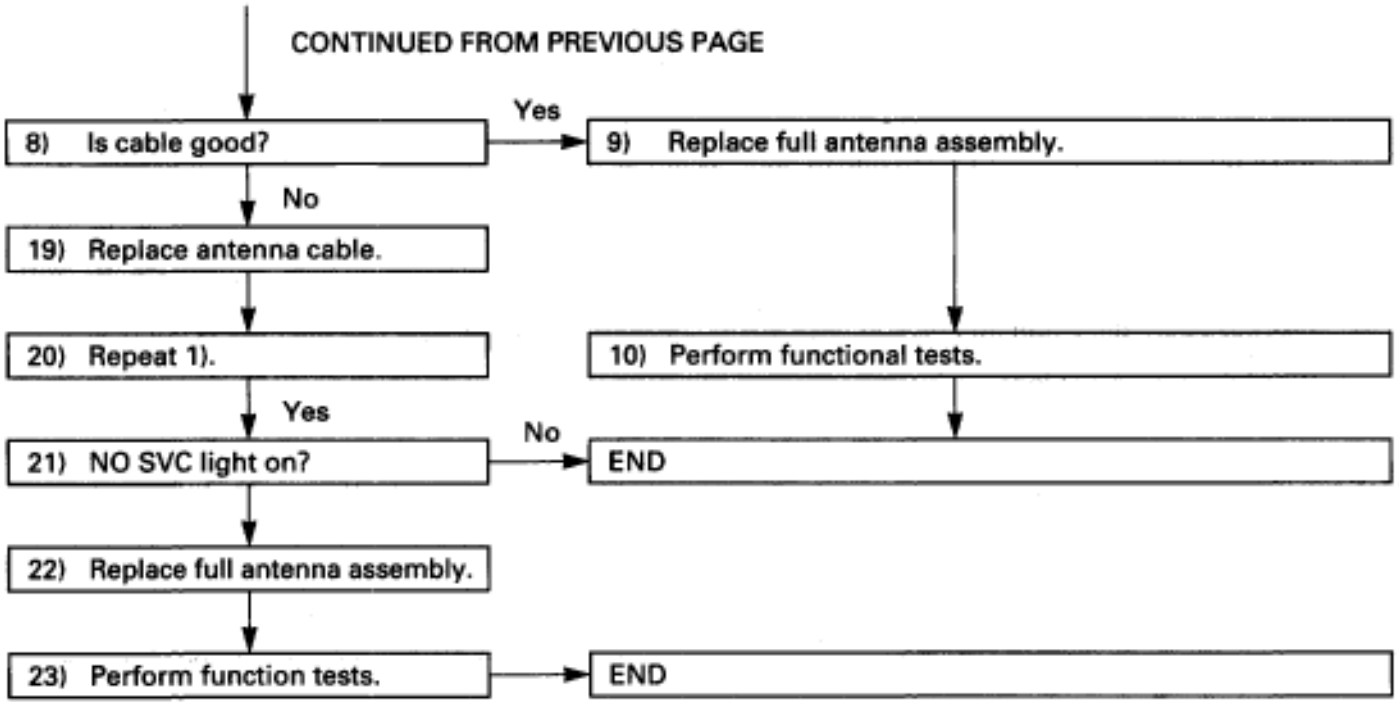
*: These tests assume adequate cellular coverage at location of testing.



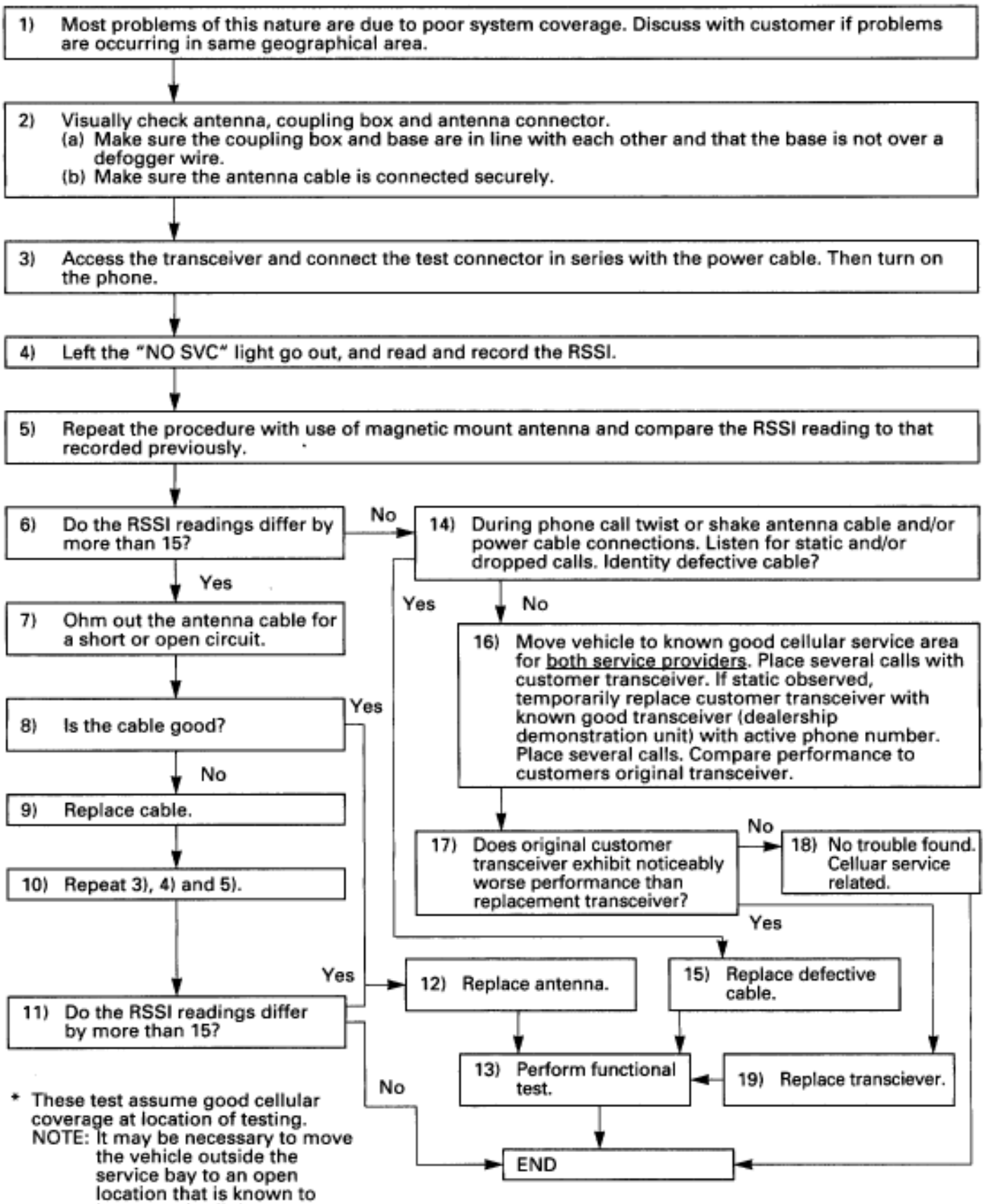

CONTINUED FROM PREVIOUS PAGE
5) Substitute or check the handset power extension cable (Sub-wire with attached substrate) and use original handset. Try to turn the telephone on.
6) Does the telephone turn on?
Yes
12) Replace the handset power extension cable.
13) Perform functional tests.
END
No
7) Replace the original extension cable.
8) Gain access to the transceiver and unplug the power cable to the telephone.
9) With a voltmeter, measure the voltage with respect to ground (terminal 3) on pins 4 and 6.
14) Is battery A + present?
No
15) Cable in the car is defective.
END
Yes
16) Replace the mobile transceiver.
17) Try to turn the phone on again.
18) Does the phone turn on?
Yes
19) Perform functional test. Call MCSI to activate ESN and receiver phone#.
No
20) Substitute known good handset and try to turn on the phone.
21) Does the phone turn on?
No
22) Cable in the car is defective.
END
Yes
23) Perform functional tests. Call MCSI to activate ESN and receiver phone#. Program phone.
END

2 “NO SVC” LIGHT* STAYS ON

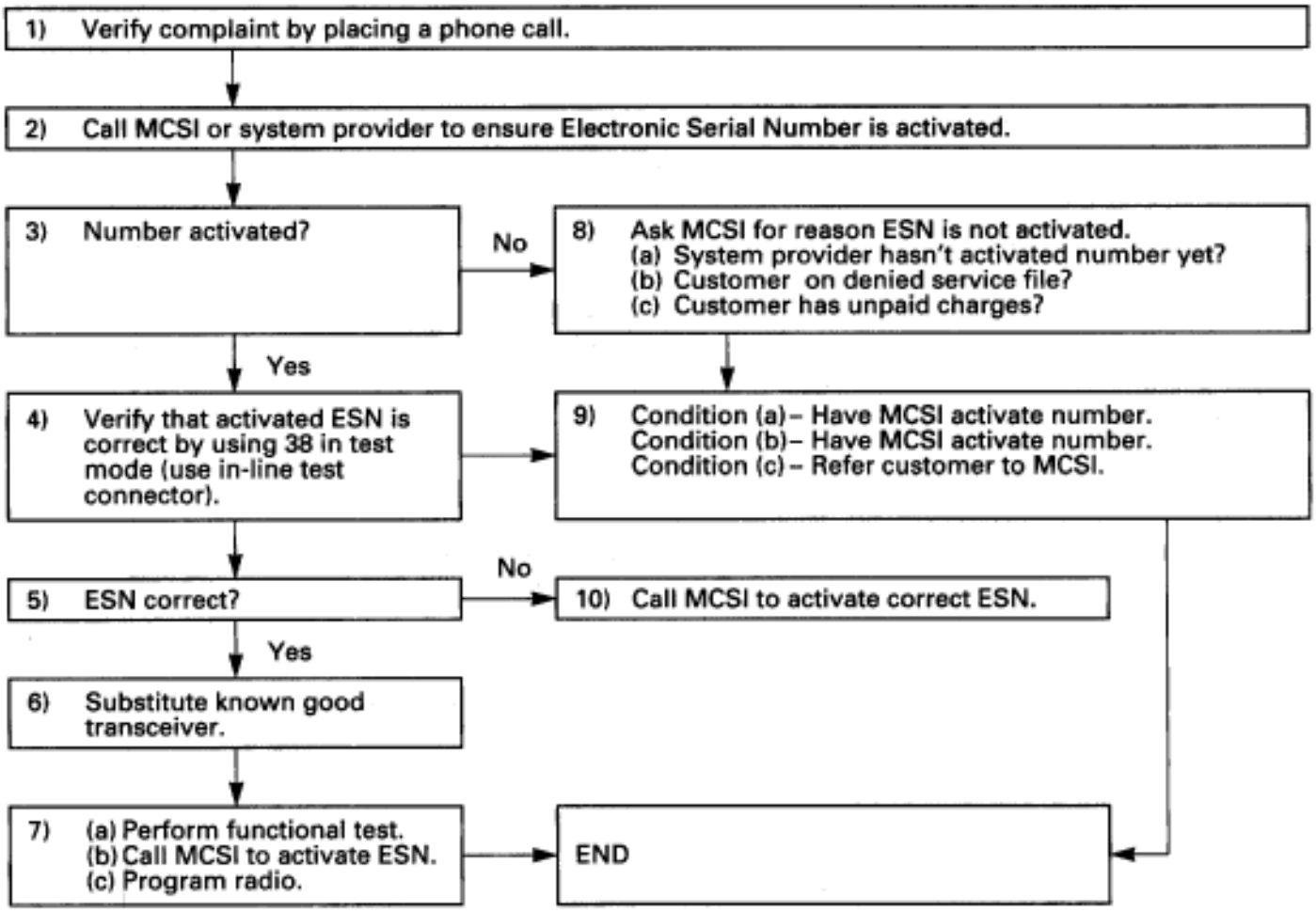



CONTINUED FROM PREVIOUS PAGE
8) Is cable good?
Yes
9) Replace full antenna assembly.
No
19) Replace antenna cable.
20) Repeat 1).
10) Perform functional tests.
Yes
21) NO SVC light on?
No
END
22) Replace full antenna assembly.
23) Perform function tests.
END

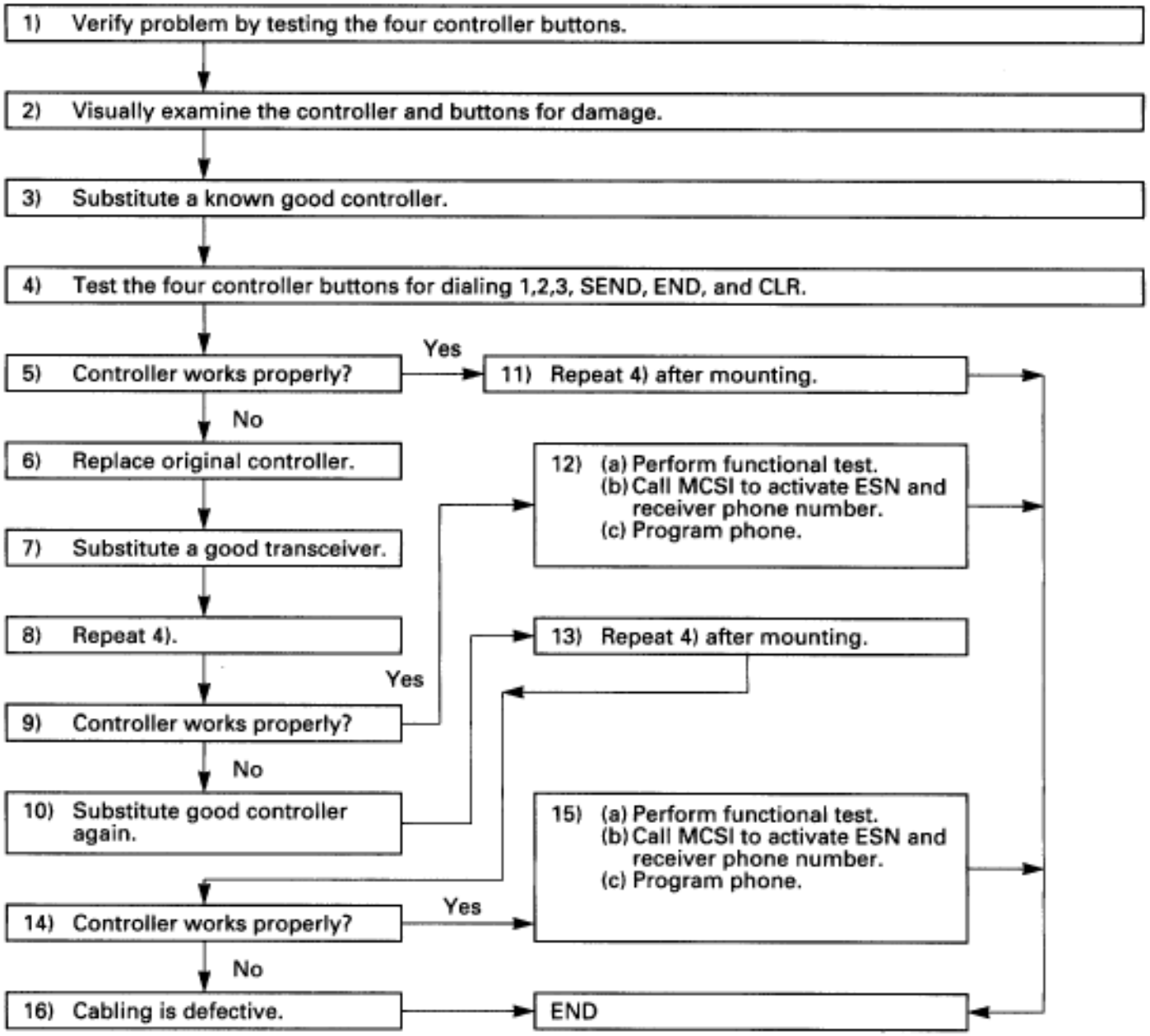
3 * STATIC DURING CALLS/DROPPED CALLS



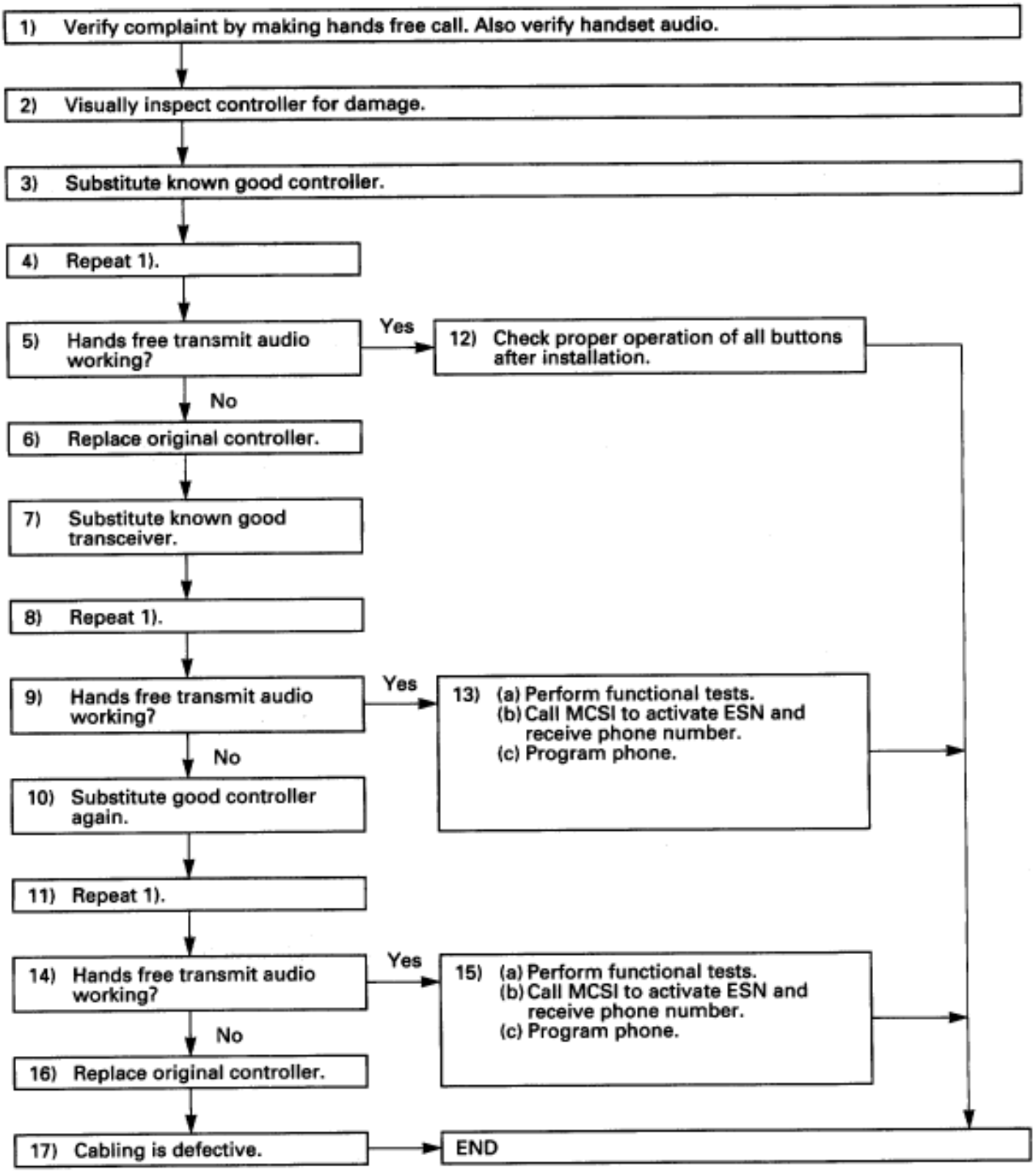
4 FAST BUSY SIGNAL OR RECORDING RECEIVED WHEN PLACING CALLS



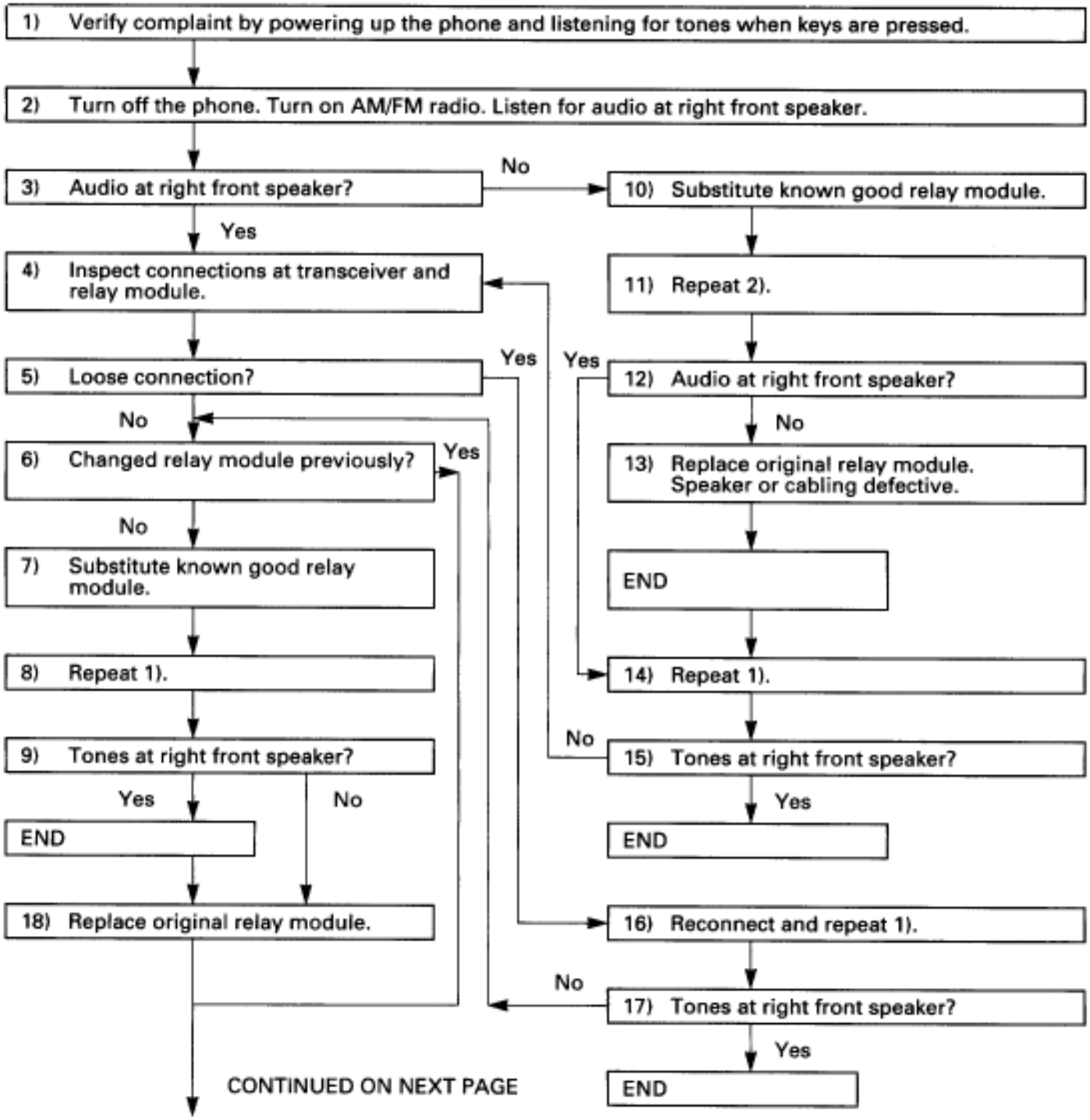
5 DIALING PROBLEMS WITH CONTROLLER

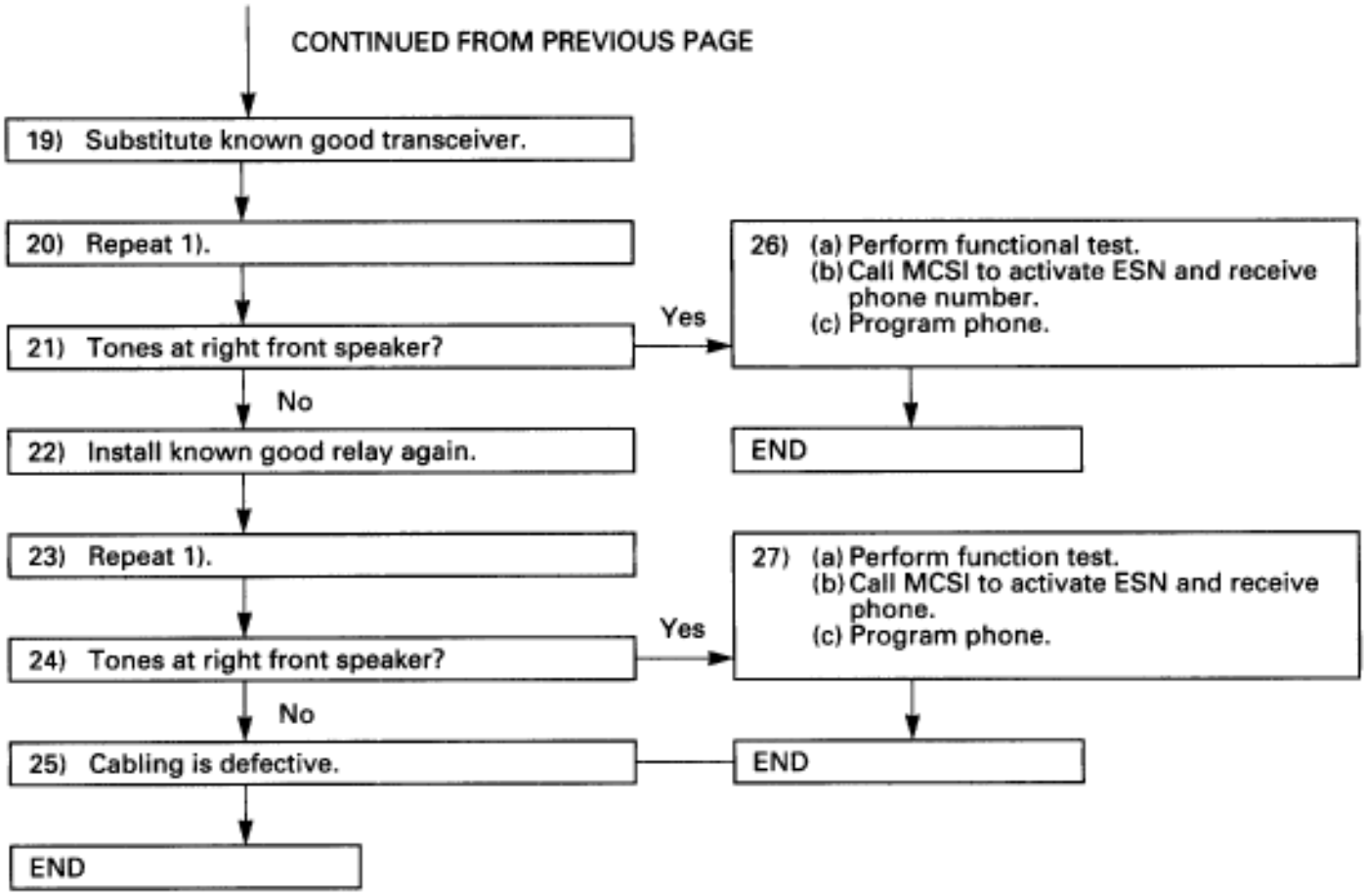


6 NO HANDS FREE TRANSMIT AUDIO

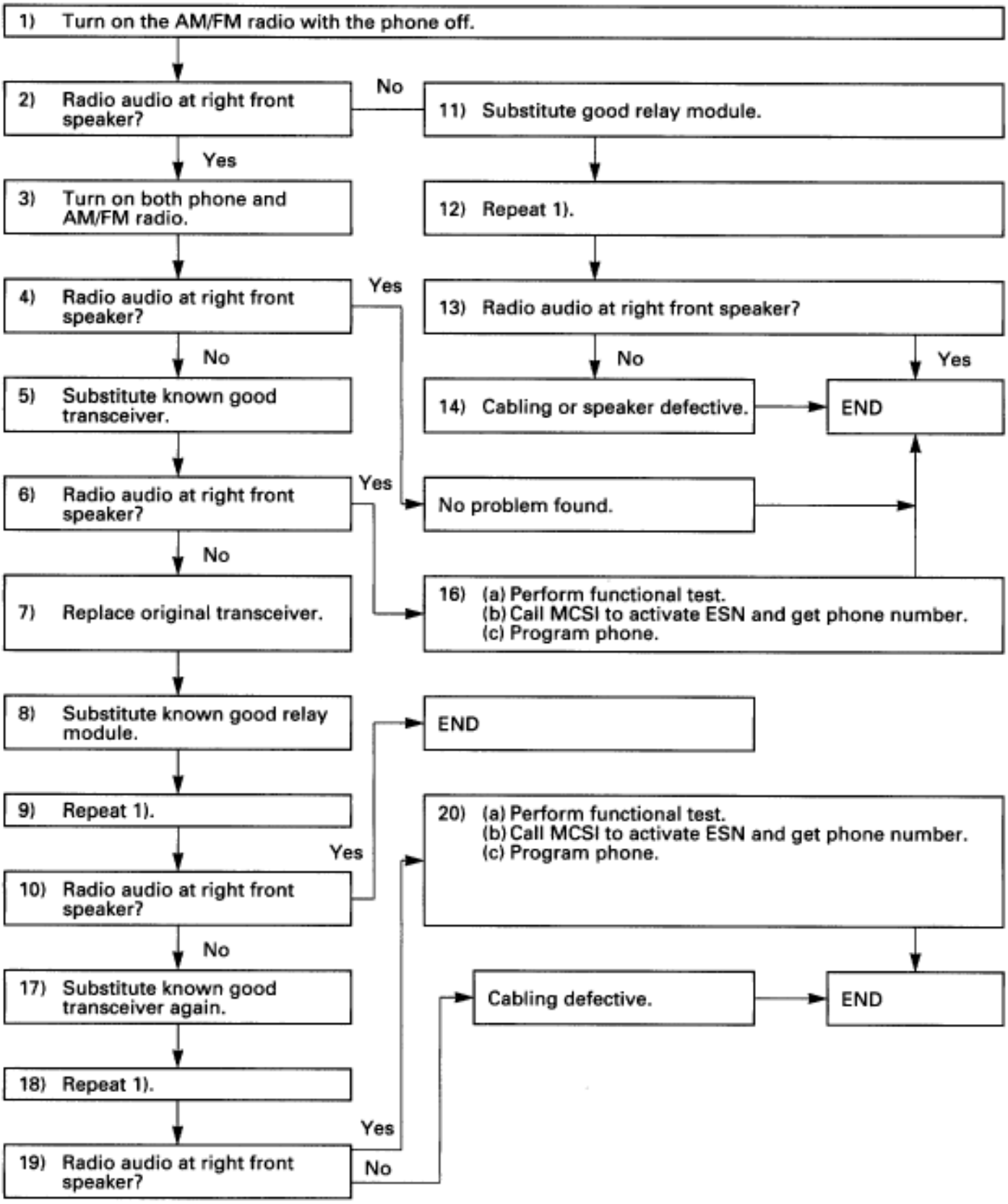


7 NO HANDS FREE AUDIO OR TONES FROM RIGHT FRONT SPEAKER

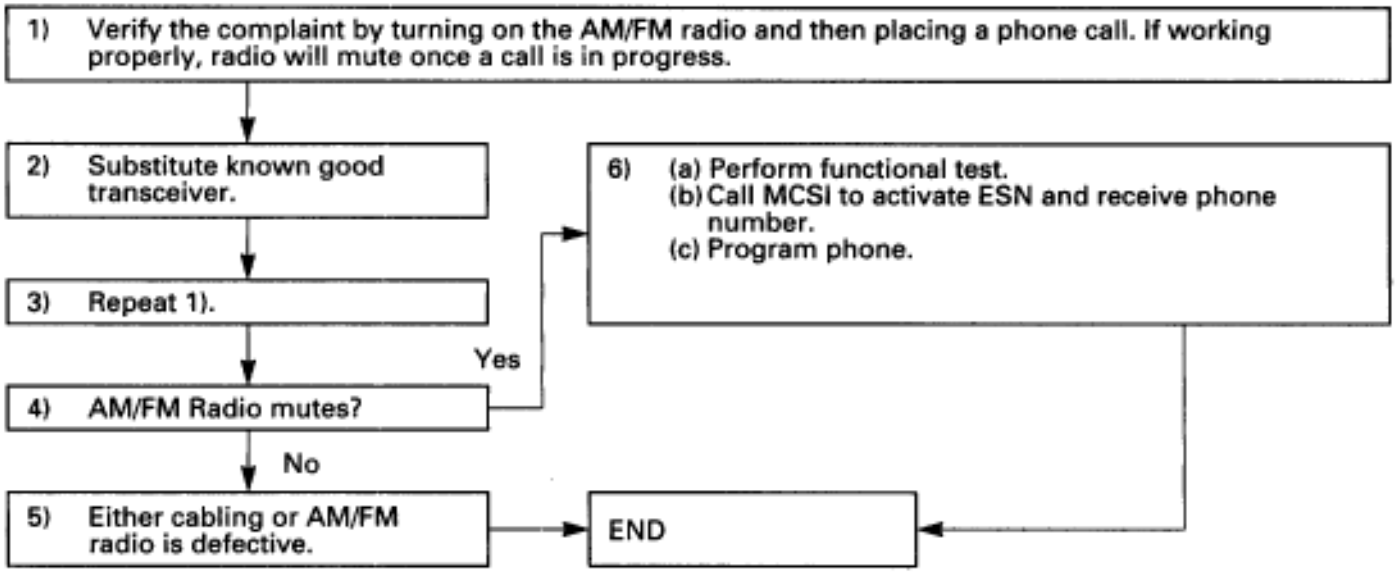



CONTINUED FROM PREVIOUS PAGE
19) Substitute known good transceiver.
20) Repeat 1).
21) Tones at right front speaker?
Yes
26) (a) Perform functional test.
(b) Call MCSI to activate ESN and receive phone number.
(c) Program phone.
END
No
22) Install known good relay again.
23) Repeat 1).
24) Tones at right front speaker?
Yes
27) (a) Perform function test.
(b) Call MCSI to activate ESN and receive phone.
(c) Program phone.
END
No
25) Cabling is defective.
END

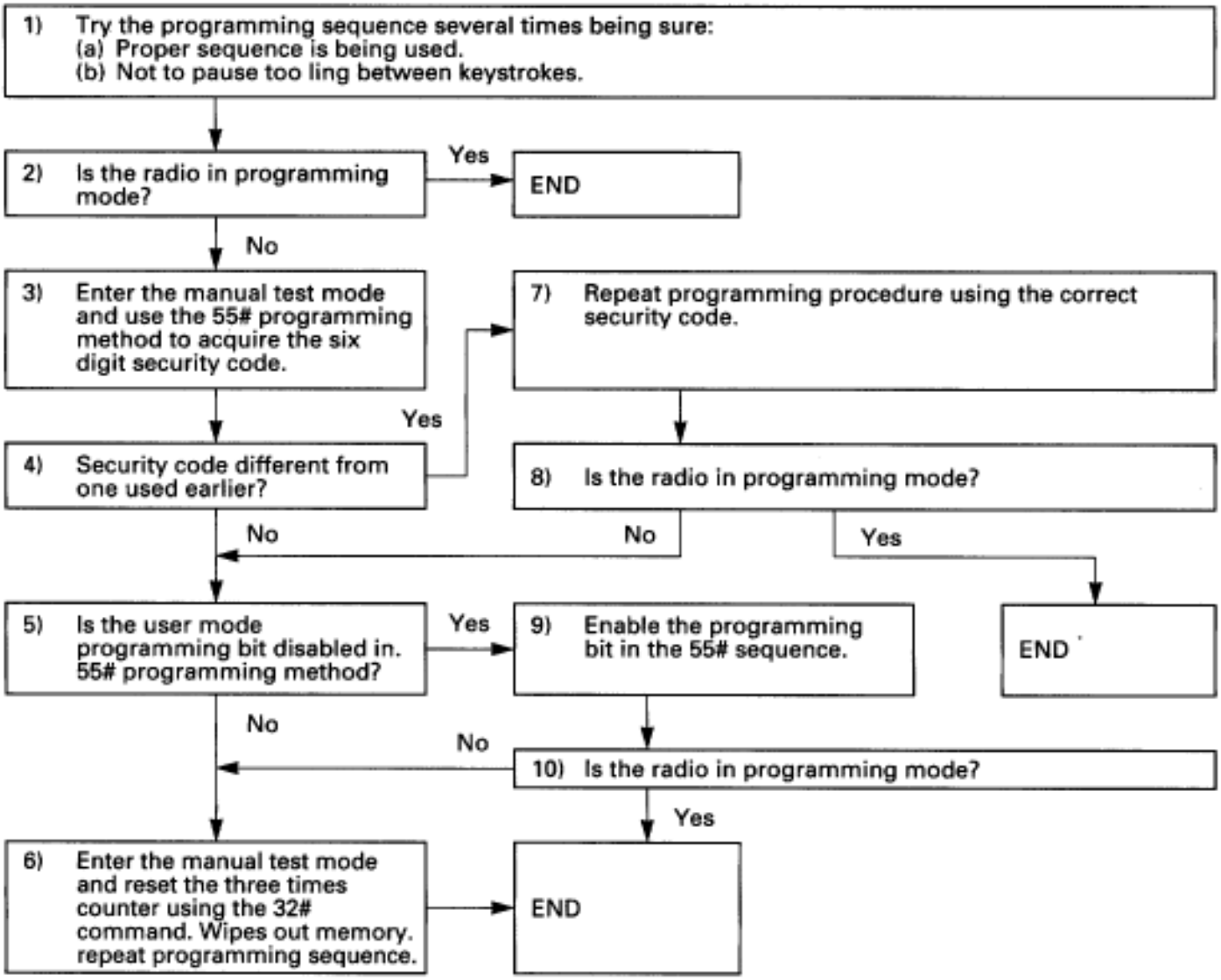
8 NO AM/FM RADIO OUT OF RIGHT FRONT SPEAKER

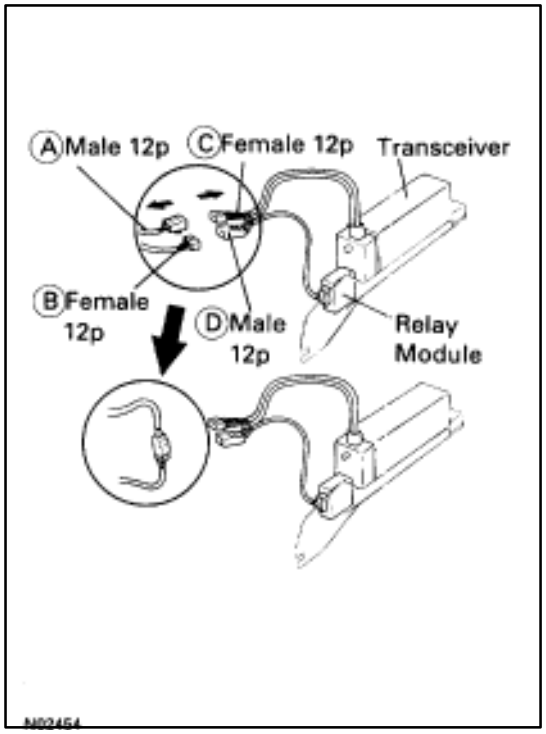


9 AM/FM RADIO DOES NOT MUTE DURING CALLS



10 RADIO WILL NOT GO INTO PROGRAMMING MODE





DIAGNOSIS PROCEDURE FOR CABLING

DIAGNOSIS PROCEDURE

(Step 1)

Disconnect connectors (**A**) and (**C**), (**B**) and (**D**), then connect (**A**) and (**B**).

This method returns the audio connection to the original condition before connection of the receiver and relay module, so that is can be judged whether the rear speaker and vehicle wire are normal or not.

(Step 2)

If the result in step 1 is normal, replace the subwire.

AUDIO SYSTEM
SYSTEM DESCRIPTION

RADIO WAVE BAND

The radio wave bands used in radio broadcasting are as follows:

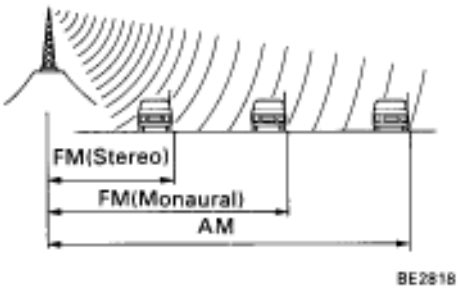
Frequency	30 kHz	300 kHz	3 MHz	30 MHz	300 MHz
Designation	LF	MF	HF	VHF	
Radio wave		AM ⊕		FM ⊕	
Modulation method	Amplitude modulation			Frequency modulation	

LF: Low Frequency MF: Medium Frequency HF: High Frequency VHF: Very High Frequency

SERVICE AREA

There are great differences in the size of the service area for AM, FM monaural, and FM stereo broadcasting. Thus it may happen that FM broadcasts cannot be received even though AM comes in very clearly.

Not only does FM stereo have the smallest service area, but it also picks up static and other types of interference (”noise”) easily.



BE2818

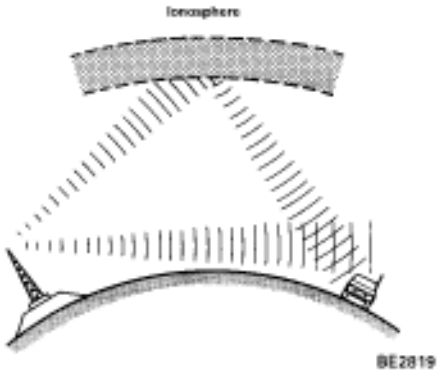
RECEPTION PROBLEMS

Besides the problem of static, there are also the problems called ”fading”, ”multipath” and ”fade out”. These problems are caused not by electrical noise but by the nature of the radio waves themselves.

Fading

Besides electrical interference, AM broadcasts are also susceptible to other types of interference, especially at night. This is because AM radio waves bounce off the ionosphere at night. These radio waves then interfere with the signals from the same transmitter that reach the vehicle’s antenna directly. This type of interference is called ”fading”.

Fading

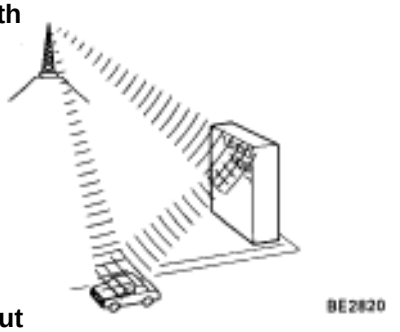


BE2819

Multipath

One type of interference caused by the bouncing of radio waves off of obstructions is called ”multipath”. Multipath occurs when a signal from the broadcast transmitter antenna bounces off of buildings and mountains and interferes with the signal that is received directly.

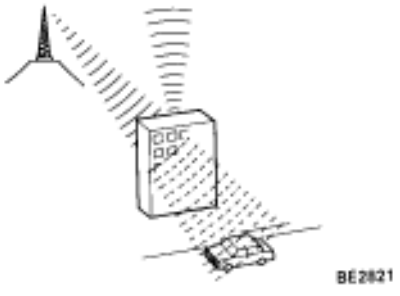
Multipath


BE2820

Fade Out

Because FM radio waves are of higher frequencies than AM radio waves, they bounce off of buildings, mountains, and other obstructions. For this reason, FM signals often seem to gradually disappear or fade away as the vehicle goes behind a building or other obstruction. This is called ”fade out”.

Fade Out


BE2821

MAINTENANCE OF TAPE PLAYER

Head Cleaning

Using a moist–type cleaning tape, clean the head surface, pinch rollers and capstans.

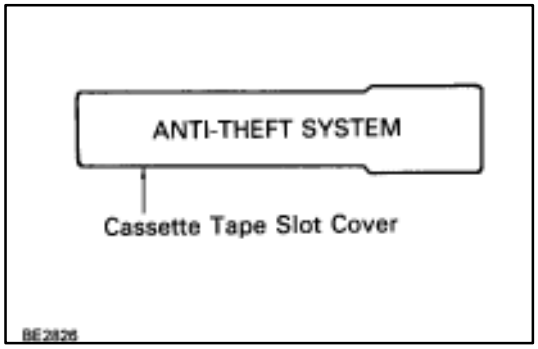
COMPACT DISC PLAYER

Compact Disc (hereafter called ”CD”) players use a laser beam pick–up to read the digital signals recorded on the CD and reproduce analog signals of the music, etc. There are 4.7 in. (12 cm) and 3.2 in. (8 cm) CD available, but it is recommended that you do not use 3.2 in. (8 cm) discs in the CD player.

HINT: Never attempt to disassemble or oil any part of the player unit. Do not insert any object other than a disc into the magagine.

NOTICE: CD players use on invisible laser beam which could cause hazardous radiation exposure. Be sure to operate the player correctly as instructed.

ANTI–THEFT SYSTEM



HINT: The words ”ANTI–THEFT SYSTEM” are displayed on the cassette tape slot cover.

For operation instructions for the anti–theft system, please consult the audio system section in the Owner’s Manual (hereafter called O/M).

1. SETTING SYSTEM

The system is in operation once the customer has pushed the required buttons and entered the customer–selected 3–digit ID number.

(Refer to the O/M section, ”Setting the anti–theft system”)

HINT:

When the audio system is shipped the ID number has not been input, so the anti–theft system is not in operation.

If the ID number has not been input, the audio system remains the same as a normal audio system.

2. ANTI–THEFT SYSTEM OPERATION

If the normal electrical power source (connector or battery terminal) is cut off, the audio system becomes inoperable, even if the power supply resumes.

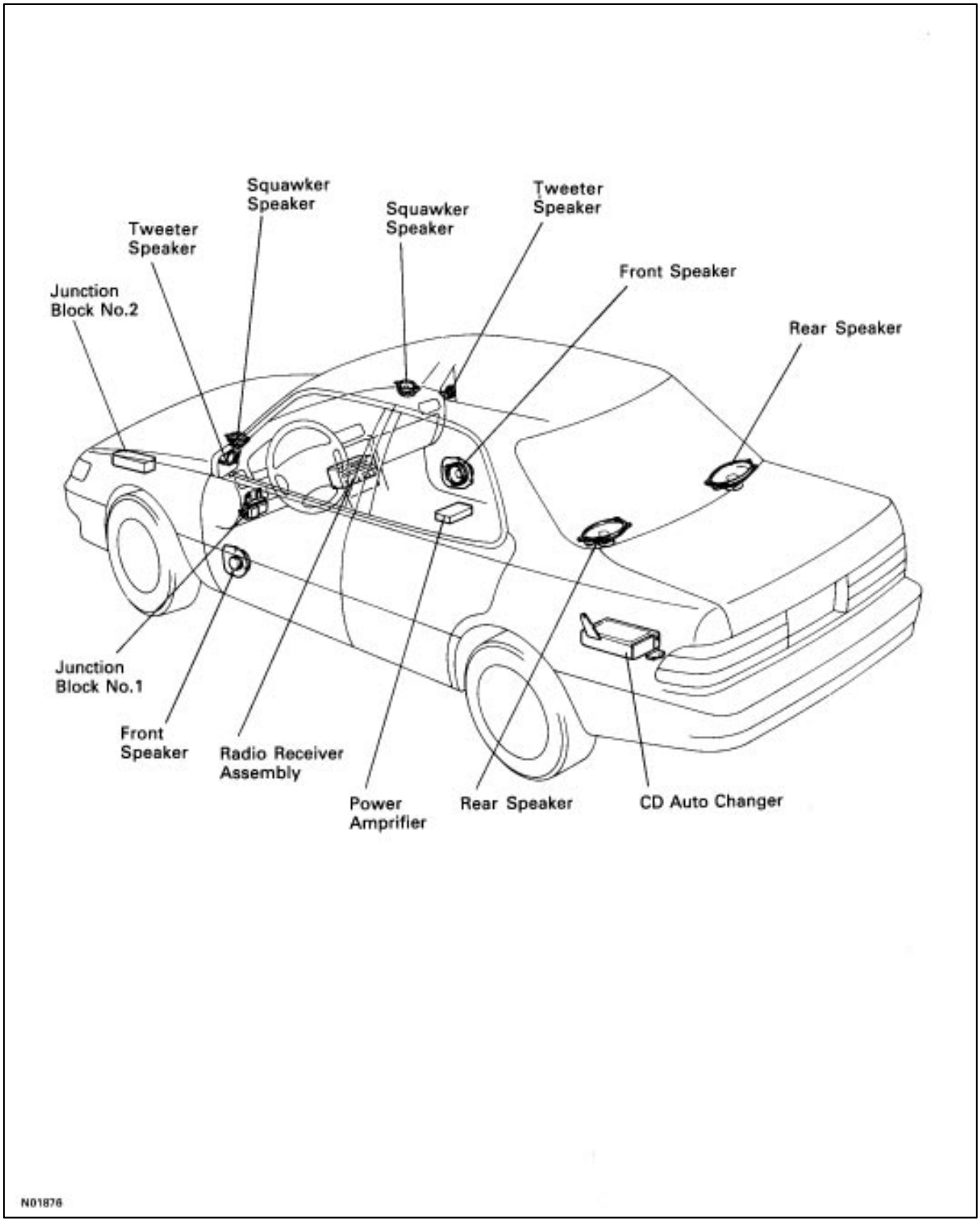
3. CANCELLING SYSTEM

The ID number chosen by the customer is input to cancel the anti–theft system.

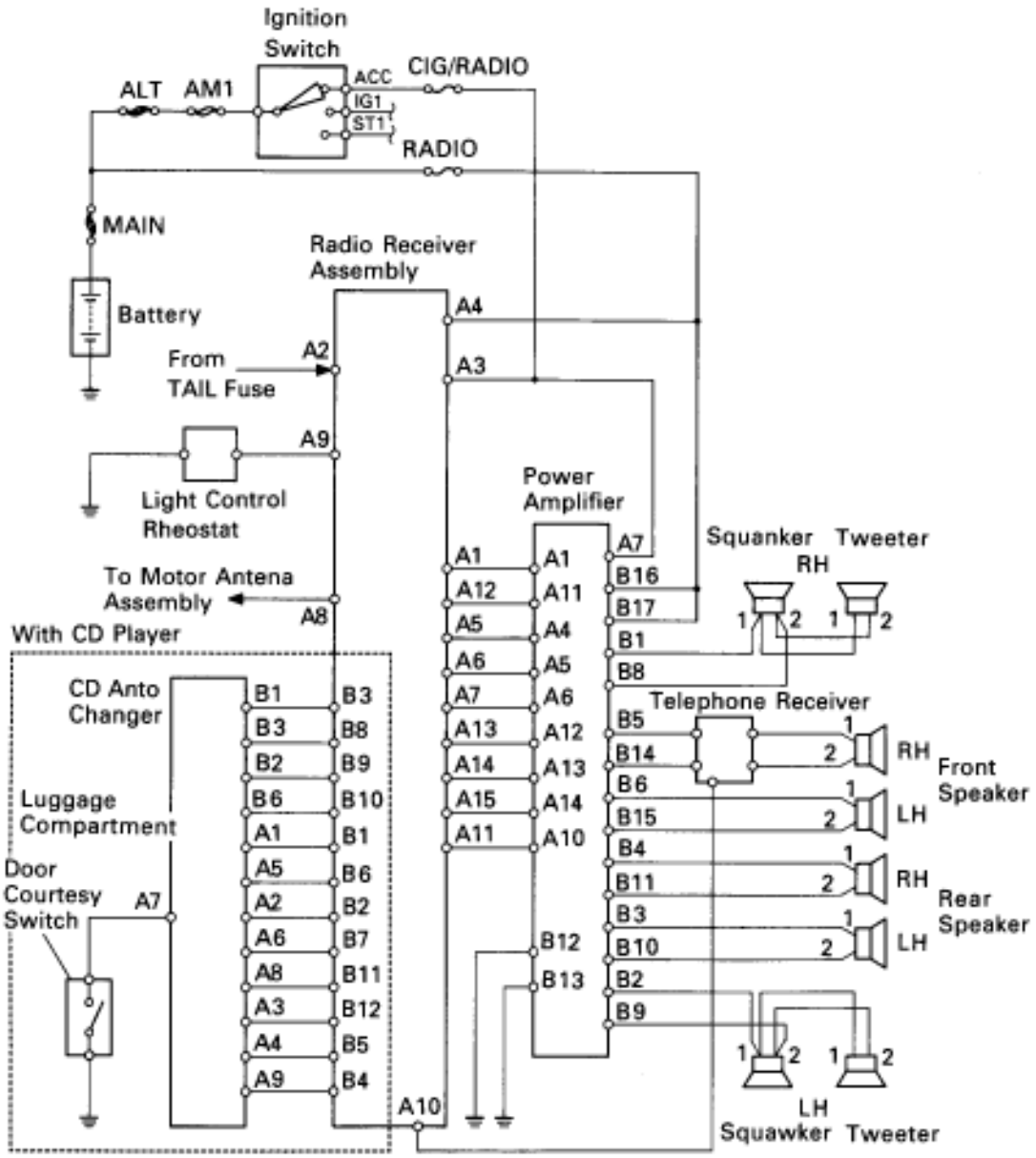
(Refer to the O/M section, ”If the system is activated”)

HINT: To change or cancel the ID number, please refer to the O/M section, ”Cancelling the system”.

PARTS LOCATION

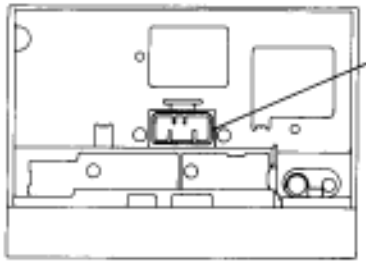


WIRING AND CONNECTOR DIAGRAM



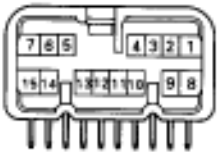
N01985

Radio Receiver Assembly
Without CD player



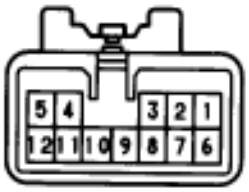
N01877

Connector "A"



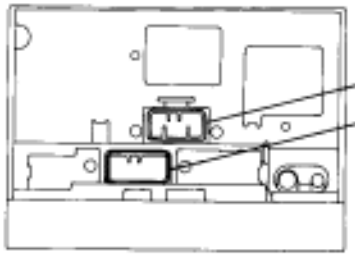
BE6531

Connector "B"



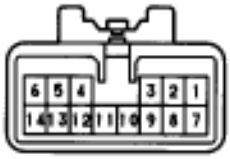
e-12-2

Radio Recerver Assembly
with CD player



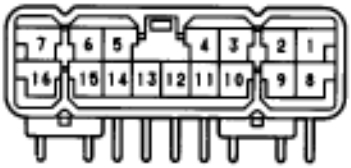
N01879

Connector "A"



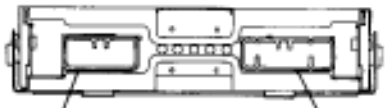
e-14-2-A

Connector "B"



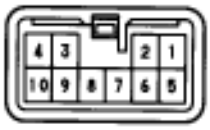
e-16-2-A

Power Amplipier



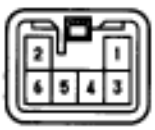
N01878

Connector "A"



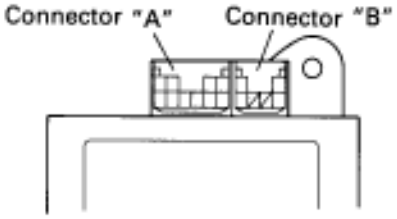
le-10-2

Connector "B"



le-16-2-A

CD Auto Changer



N02453

Front Speaker

e-2-2-E

Tweeter

e-2-1-E

Squawker

g-2-2

Rear Speaker

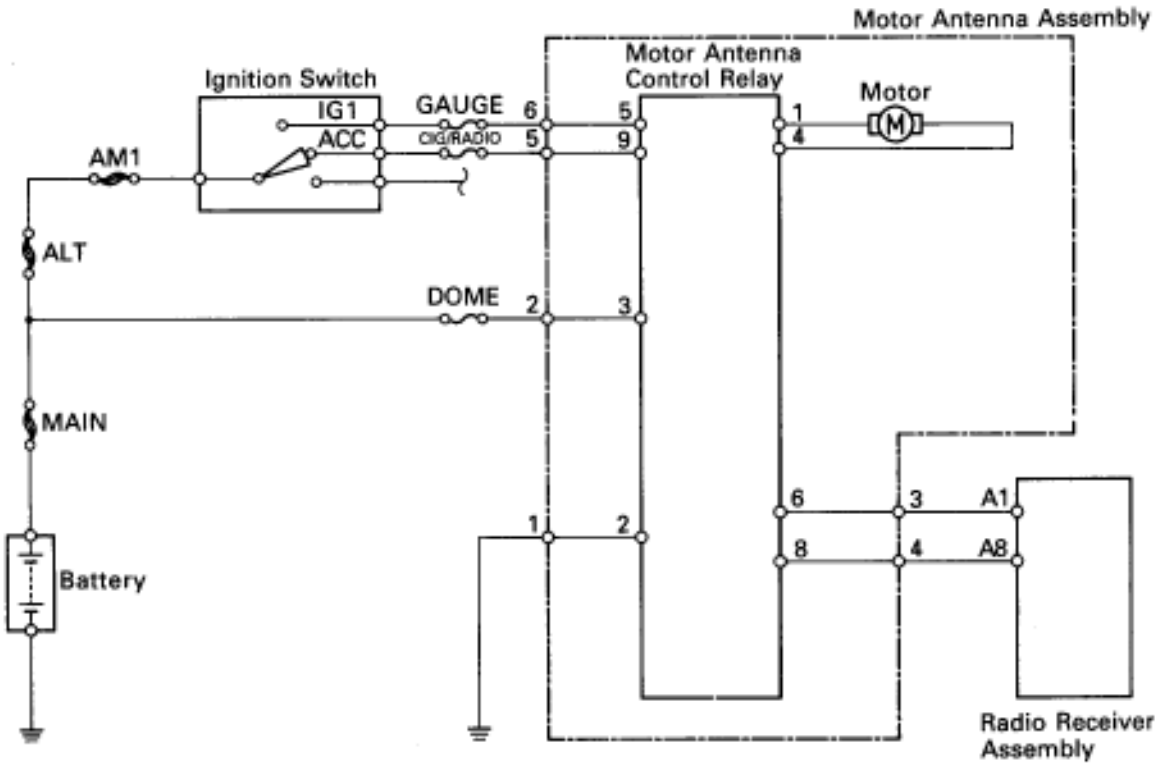
e-2-2

Motor Antenna Assembly

e-6-2

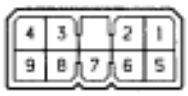
WIRING AND CONNECTOR DIAGRAMS

Motor Antenna



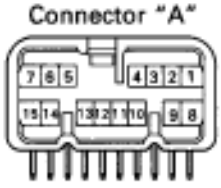
Motor Antenna Assembly

Motor Antenna Control Relay



Radio Receiver Assembly

Connector "A"



RADIO RECEIVER ASSEMBLY

RADIO RECEIVER ASSEMBLY REMOVAL AND INSTALLATION

(See page BO–107)

RADIO RECEIVER ASSEMBLY INSPECTION

INSPECT RADIO RECEIVER ASSEMBLY

(Circuit)

Disconnect the connectors from the radio receiver assembly. And inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Voltage	A4–Ground	Constant		Battery positive voltage
	A3–Ground	Ignition switch position	ACC or ON	Battery positives voltage
			LOCK	No voltage
	A2–Ground	Light Control switch position	TAIL or HEAD	Battery positive voltage
			OFF	No voltage

If circuit is not as specified. Refer to BE–218 wiring diagrams and inspect the circuits connected to other parts.

HINT: Check the wire harness between radio receiver assembly and the CD auto changer, between radio receiver assembly and power amplifier, in accordance with the wiring diagrams in BE–218.

FRONT DOOR SPEAKER

FRONT DOOR SPEAKER REMOVAL AND INSTALLATION

(See page BO–34)

Tweeter

TWEETER REMOVAL AND INSTALLATION

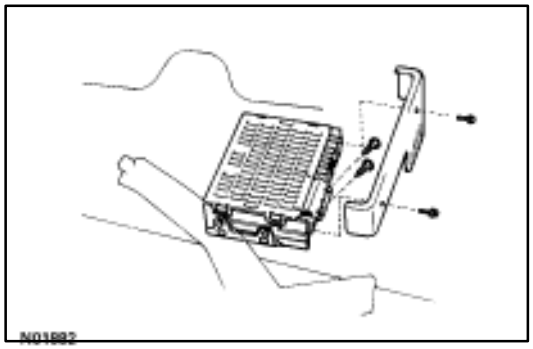
(See page BO–34)

SQUAWKER

SQUAWKER REMOVAL AND INSTALLATION
(See page BO–107)

REAR SPEAKER

REAR SPEAKER REMOVAL AND INSTALLATION
(See page BO–140)

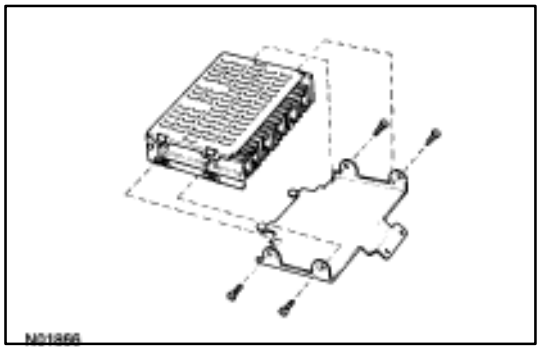


POWER AMPLIFIER

POWER AMPLIFIER REMOVAL AND INSTALLATION

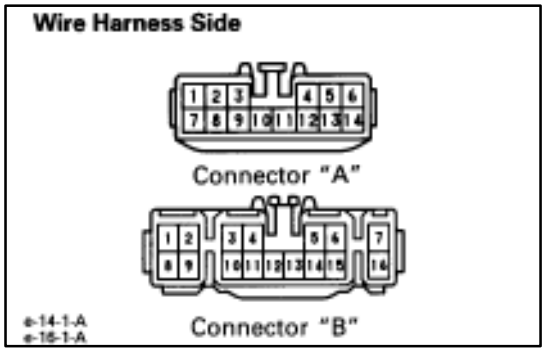
1. REMOVE POWER AMPLIFIER

(a) Remove the LH side front seat.
(b) Disconnect the connector and remove two bolt and the woofer amplifier with the bracket.
(c) Remove four bolts and the woofer amplifier.
HINT: See page BO–118 to remove LH side front seat



2. INSTALL POWER AMPLIFIER

For installation, follow the removal procedure in reverse.



POWER AMPLIFIER INSPECTION

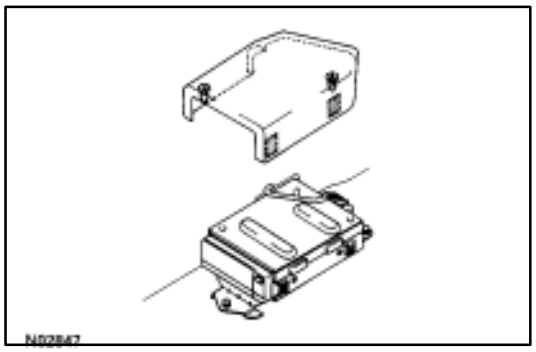
INSPECT POWER AMPLIFIER

(Circuit)

Disconnect the connector from power amplifier and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Continuity	B–16–Ground B–7–Ground	Constant		Continuity
Voltage	B–12–Ground	Constant		Battery positive voltage
	A7–Ground A1–Ground	Ignition switch position	ACC or ON	Battery positive voltage
			LOCK	No voltage

If circuit is not as specified, refer to BE–218 wiring diagrams and inspect the circuits connected to other parts.

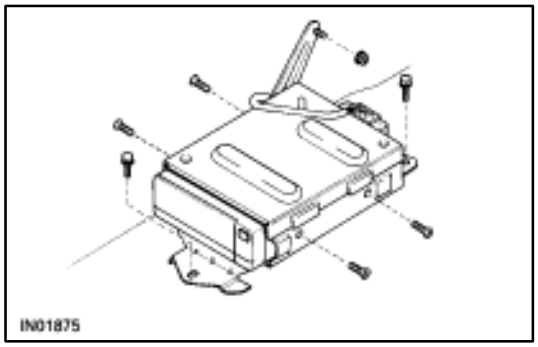


CD AUTO CHANGER

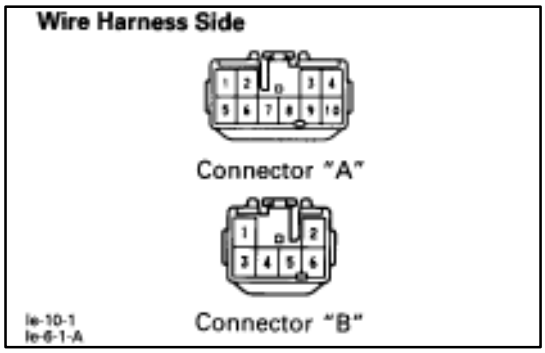
REMOVAL AND INSTALLATION OF CD AUTO CHANGER

1. REMOVE CD AUTO CHANGER

(a) Remove LH side cover.
(b) Remove CD changer cover.



(c) Disconnect two connectors.
(d) Remove four screws and guard plate.
(e) Remove two bolts, one nut and CD auto changer.



INSPECTION OF CD AUTO CHANGER

INSPECT CD AUTO CHANGER

(Circuit)

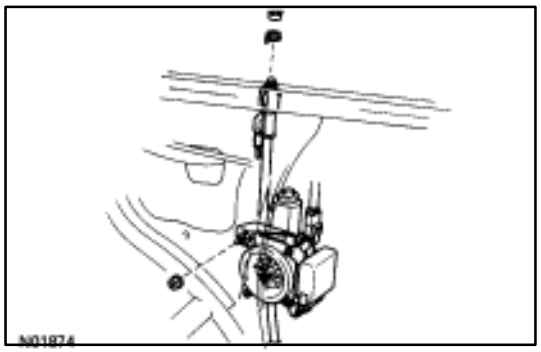
Disconnect connectors from CD auto changer and inspect the connector on the wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Voltage	A4–Ground	Constant		Battery positive voltage
	A3–Ground	Ignition switch position	ACC or ON	Battery positive voltage
			LOCK	No voltage
Continuity	A7–Ground	Luggage compartment door courtesy switch	Push (OFF)	No continuity
			Free (ON)	Continuity

If circuit is not as specified, refer to BE–218 wiring diagrams and inspect the circuits connected to other parts.

HINT:

- Check the wire harness between the radio receiver assembly and the CD auto changer in accordance with the wiring diagrams in BE–218.
- Since the signals to and from the CDL+, CDL, CDR+, CDR, TXM+, TXM, TXS+ and TXS terminals are serial signals, they cannot ordinarily be measured with a tester.



MOTOR ANTENNA

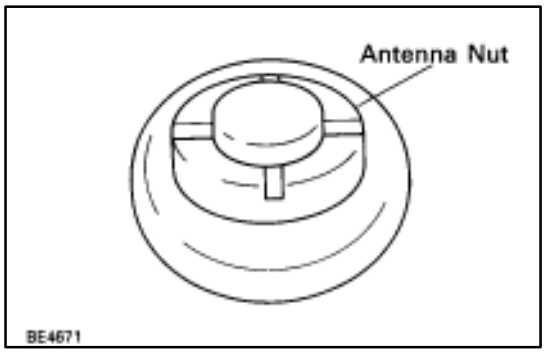
MOTOR ANTENNA REMOVAL AND INSTALLATION

1. REMOVE MOTOR ANTENNA

(a) Remove the antenna nut.
(b) Remove the RH side cover.
(c) Disconnect the motor antenna connector.
(d) Remove the nut and the motor antenna assembly.
(e) Disconnect the antenna cord.
(f) Remove the drain hose.

2. INSTALL MOTOR ANTENNA

(a) Connect the motor antenna connector and the antenna cord.
(b) Install the antenna nut.
(c) Install the nut.
(d) Connect the drain hose.

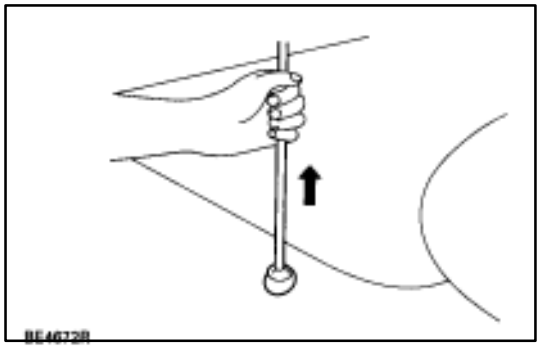


ANTENNA ROD REMOVAL AND INSTALLATION

1. REMOVE ANTENNA ROD

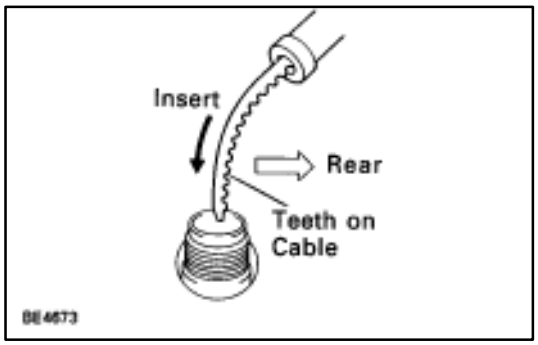
HINT: Perform this operation with the battery negative (–) cable connected to the battery terminal.

(a) Turn the ignition switch to ”LOCK” position.
(b) Remove the antenna nut.



(c) Press the ”AM” or ”FM” button on the radio receiver, and simultaneously turn the ignition switch to ”ACC” position.
HINT:
- The rod will extend fully and be released from the motor antenna.
- After removing the antenna rod, leave the ignition switch at ”ACC”.

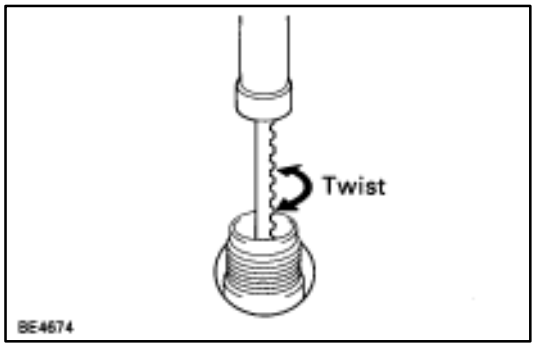
NOTICE: To prevent body damage when the antenna rod is released, hold the rod while it comes out.



2. INSTALL ANTENNA ROD

(a) Insert the cable of the rod until it reaches the bottom.
HINT:
- When inserting the cable, the teeth on the cable must face toward the rear of the vehicle.
- Insert the cable approx. 400 mm.

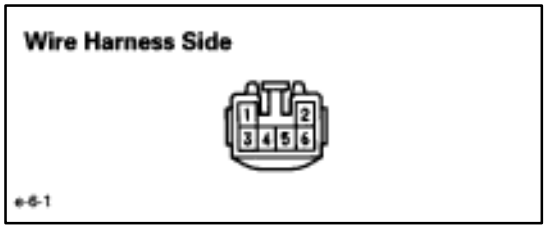
(b) Wind the cable to retract the rod by turning the ignition switch to ”LOCK” position.
HINT:



- If the ignition switch is already in ”LOCK” position, perform step 1 (c) first, then turn the ignition switch to ”ACC” position.
- In case the cable is not wound, twist it as shown in the illustration.
- Even if the rod has not retracted fully, install the antenna nut and inspect the antenna rod operation. It will finally retract fully.

(c) Inspect the antenna rod operation by pushing the radio wave band select buttons.

MOTOR ANTENNA INSPECTION



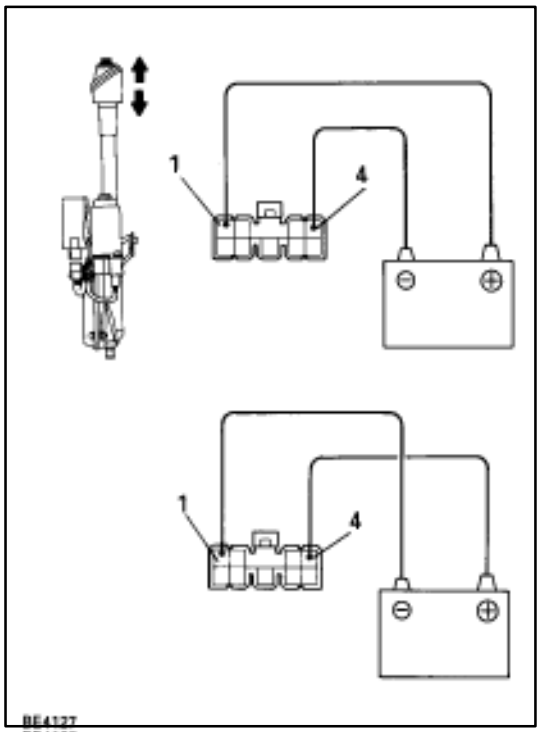
1. INSPECT MOTOR ANTENNA

(Circuit)

Disconnect the motor antenna connector from the body wire harness and inspect the connector on body wire harness side as shown.

Check for	Tester connection	Condition		Specified value
Continuity	1–Ground	Constant		Continuity
Voltage	2–Ground	Constant		Battery positive voltage
	6–Ground	Ignition switch position	ACC or ON	Battery positive voltage
			LOCK	No voltage
	5–Ground	Ignition switch position	ON	Battery positive voltage
			ACC or LOCK	No voltage
	4–Ground	Ignition switch ACC or ON	Radio switch ON	Battery positive voltage
			Radio switch OFF	No voltage
	3–Ground	Ignition switch ACC or ON and radio switch ON	AM or FM (87.9–96.0 MHz)	Battery positive voltage
			Others	No voltage

If circuit is not as specified, inspect radio or wire harness.
If circuit is as specified, replace motor antenna.



1. INSPECT ANTENNA MOTOR

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 4.

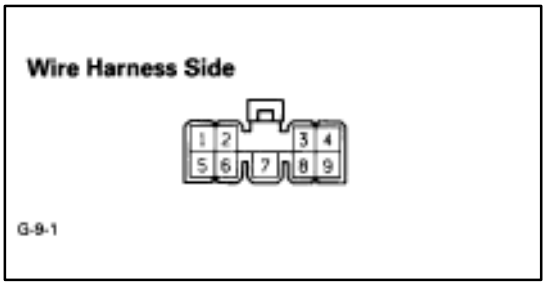
(b) Check that the motor turns (moves upward).

NOTICE: These tests must be performed quickly (within 3–5 seconds) to prevent the coil from burning out.

(c) Then, reverse the polarity, check that the motor turns the opposite way (moves downward).

NOTICE: These tests must be performed quickly (within 3–5 seconds) to prevent the coil from burning out.

If operation is not as specified, replace the motor.



2. INSPECT ANTENNA MOTOR CONTROL RELAY (Relay Circuit)

Disconnect the connector from the relay and inspect the connector on wire harness side as shown in the chart.

Check for	Tester connection	Condition			Specified value
Continuity	1–4	Constant			Continuity
	2–Ground	Constant			Continuity
Voltage	3–Ground	Constant			Battery positive voltage
	5–Ground	Ignition switch position	LOCK		No voltage
			ACC or ON		Battery positive voltage
	6–Ground	Ignition switch position	LOCK		No voltage
			ACC or ON	Radio switch and cassette OFF	No voltage
				Radio switch or cassette ON	Battery positive voltage
	8–Ground	Ignition switch position	LOCK		No voltage
			ACC or ON	Radio switch OFF or cassette ON	No voltage
				Radio switch ON and cassette OFF	Battery positive voltage
	9–Ground	Ignition switch positive	LOCK or ACC		No voltage
			ON		Battery positive voltage

If circuit is as specified, replace the relay.

GLASS PRINTED ANTENNA

GLASS PRINTED ANTENNA INSPECTION

1. INSPECT GLASS PRINTED ANTENNA

(Use same procedure as for ”INSPECT DEFOGGER WIRES” on page BE–195.)

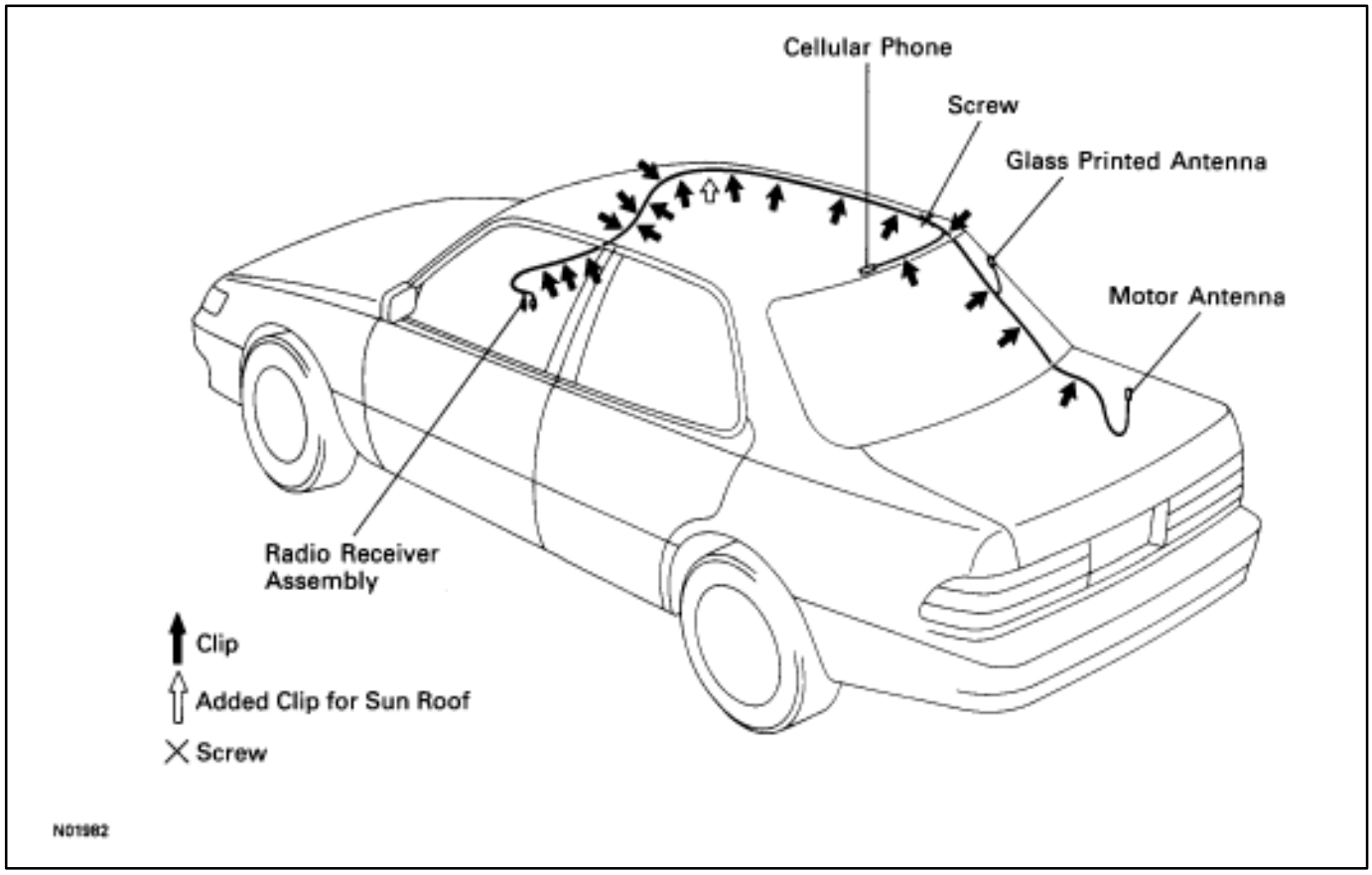
2. REPAIR GLASS PRINTED ANTENNA

(Use same procedure as for ”REPAIR DEFOGGER WIRES” on page BE–195.)

ANTENNA CORD

ANTENNA CORD REMOVAL AND INSTALLATION

1. REMOVE ANTENNA CORD



(a) Remove the following parts:
- Instrument panel assembly
- Right front pillar garnish
- Roof headlining
- Roof side inner garnish
- Right center pillar garnish
- Right rear pillar garnish
- Package tray trim
- Room partition trim
- Luggage compartment LH cover
- Luggage compartment trim front cover

HINT: See BO–section.

(b) Remove antenna cord from motor antenna and glass printed antenna.

(c) Disconnect the connectors shown in the figure.

(d) Remove the clips and antenna cord assembly.

2. INSTALL ANTENNA CORD

For installation follow the removal procedure in reverse.

TROUBLESHOOTING

NOTICE: When replacing the internal mechanism (computer part) of the audio system, be careful that no part of your body or clothing comes in contact with the terminals of the leads from the IC, etc. of the replacement part (spare part).

HINT:

This inspection procedure is simple troubleshooting which should be carried out on the vehicle during system operation and is based on the assumption that the cause of trouble lies with the system components (excluding the wires and connectors, etc.).

Always inspect the trouble taking the following items into consideration.

Open or short circuit of the wire harness

Connector or terminal connection fault

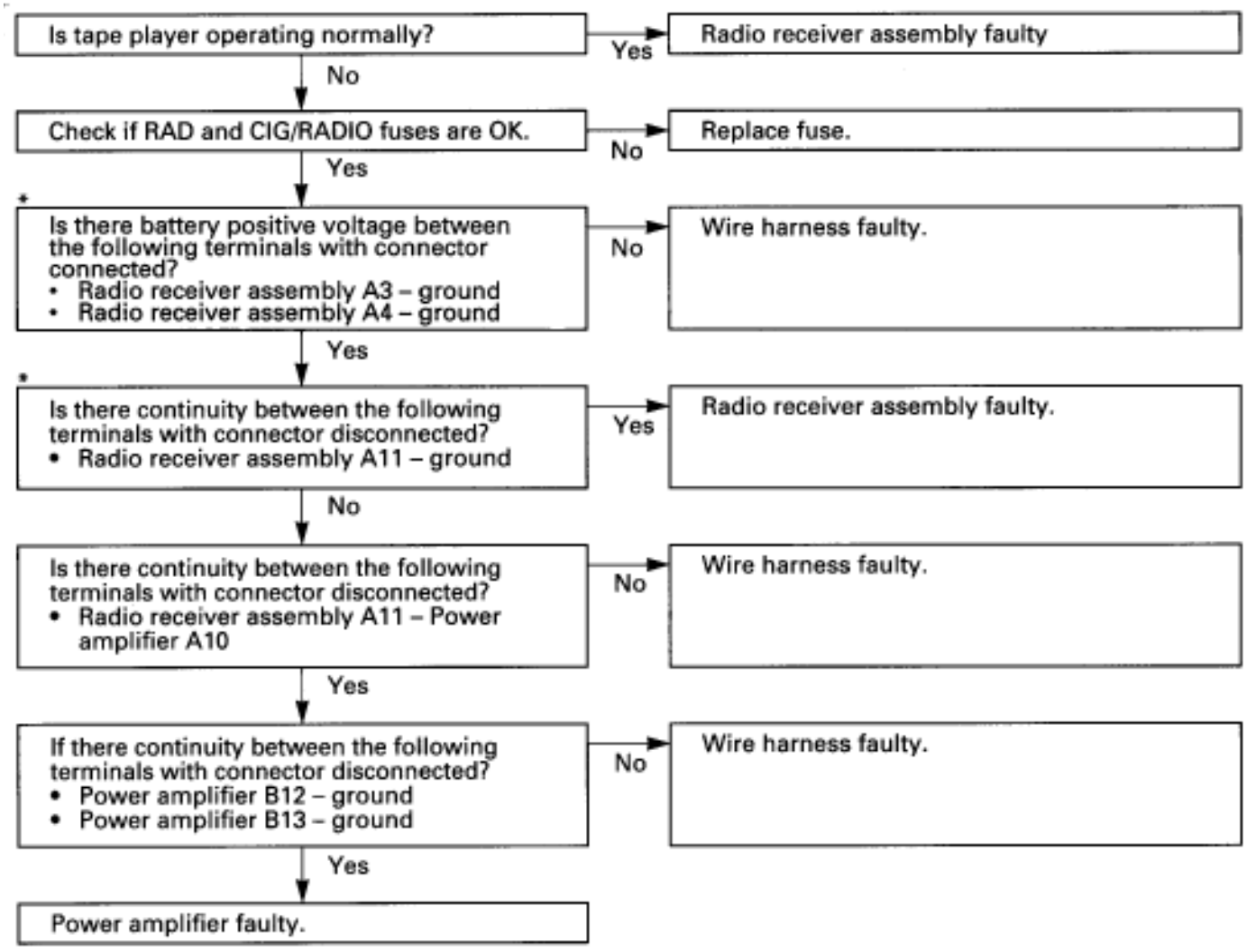
The cassette tape or compact disc itself may be causing the trouble, so when troubleshooting the tape player or CD player, always use a different cassette tape or compact disc first of all to check operation of the tape player or CD player.

For some of problems in the following problem chart, the AUDIO SYSTEM CHECKER can be used to inspect malfunctions of the Radio or Tape Player, and the CD PLAYER CHECKER can be used to inspect the CD player.

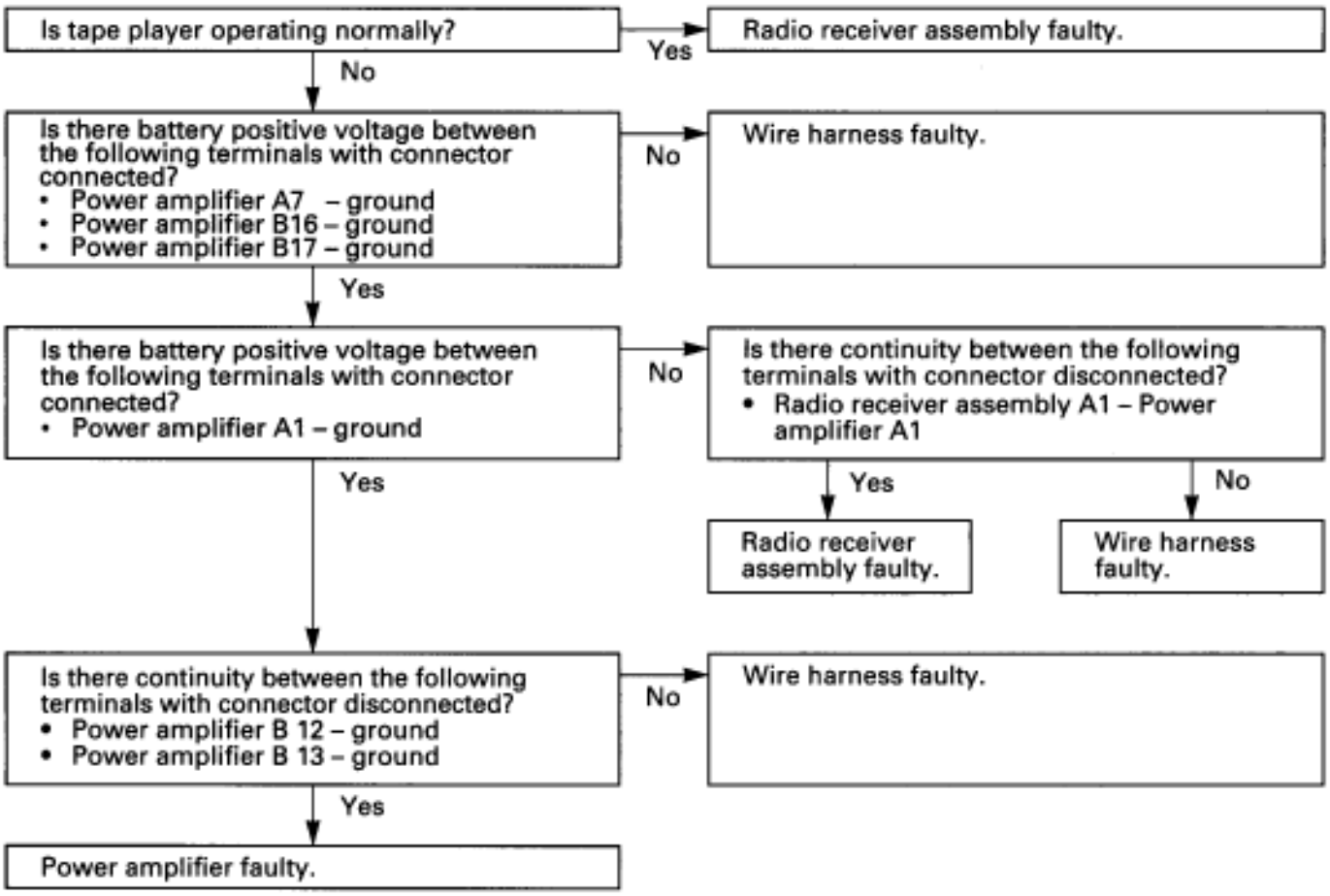
The portions indicated by *on the flow charts on the following pages can be inspected using a CHECKER. For instructions on how to connect the checker to the vehicle and how to use the checker, please refer to the instruction Manual for AUDIO SYSTEM CHECKER or CD PLAYER CHECKER.

Problem		No.
Radio	Radio not operating when power switch turned to ”ON”	1
	Display indicates, but no sound (including ”NOISE”) is produced	2
	Noise present, but AM–FM not operating	3
	Any speaker does not work	4
	Volume faint	5
	Reception poor	6
	Present memory disappears	7
Tape player	Cassette tape cannot be inserted	8
	Cassette tape will not eject	9
	Display indicates, but no sound is produced	10
	Sound quality poor	11
	Volume faint	12
	Any speaker does not work	13
CD player	Magazine cannot be inserted into auto changer	14
	Magazine is inserted, but display does not indicate ”CD”	15
	Display indicates, but no sound is produced	16
	Any speaker does not work	17
	Volum faint	18
	RH channel or LH channel speak volume faint	19
	Sound quality poor	20
Noise	Noise produced by vibration or shock while driving	21
	Noise produced when engine starts	22
Antenna	Antenna–related	23
Anti–theft system	Trouble shooting for ANTI–THEFT SYSTEM	24

1	Radio	RADIO NOT OPERATING WHEN POWER SWITCH TURNED TO "ON"



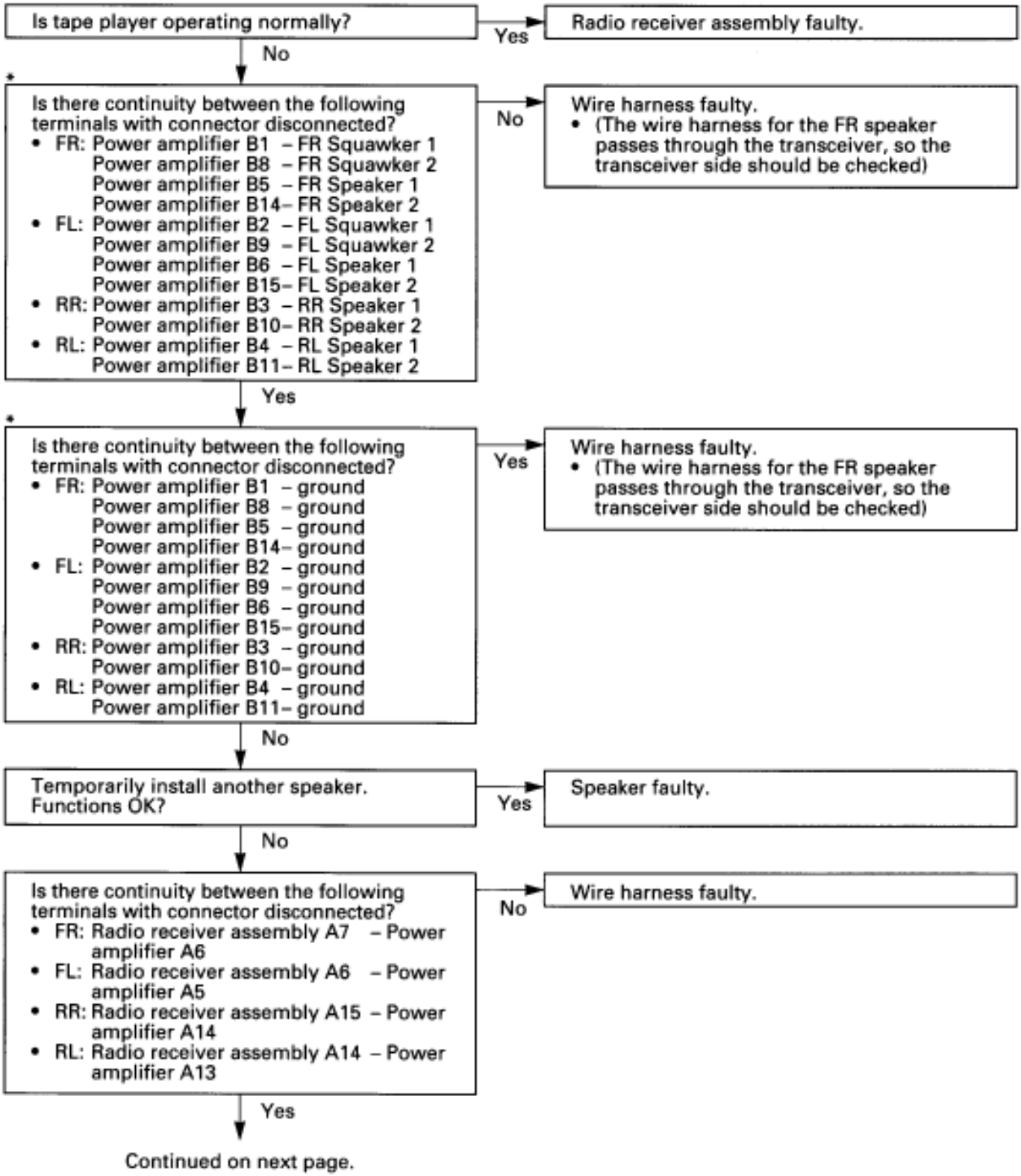
2	Radio	DISPLAY INDICATES, BUT NO SOUND (INCLUDING “NOISE”) IS PRODUCED



3	Radio	NOISE PRESENT, BUT AM–FM NOT OPERATING

If radio side faulty

4	Radio	ANY SPEAKER DOES NOT WORK



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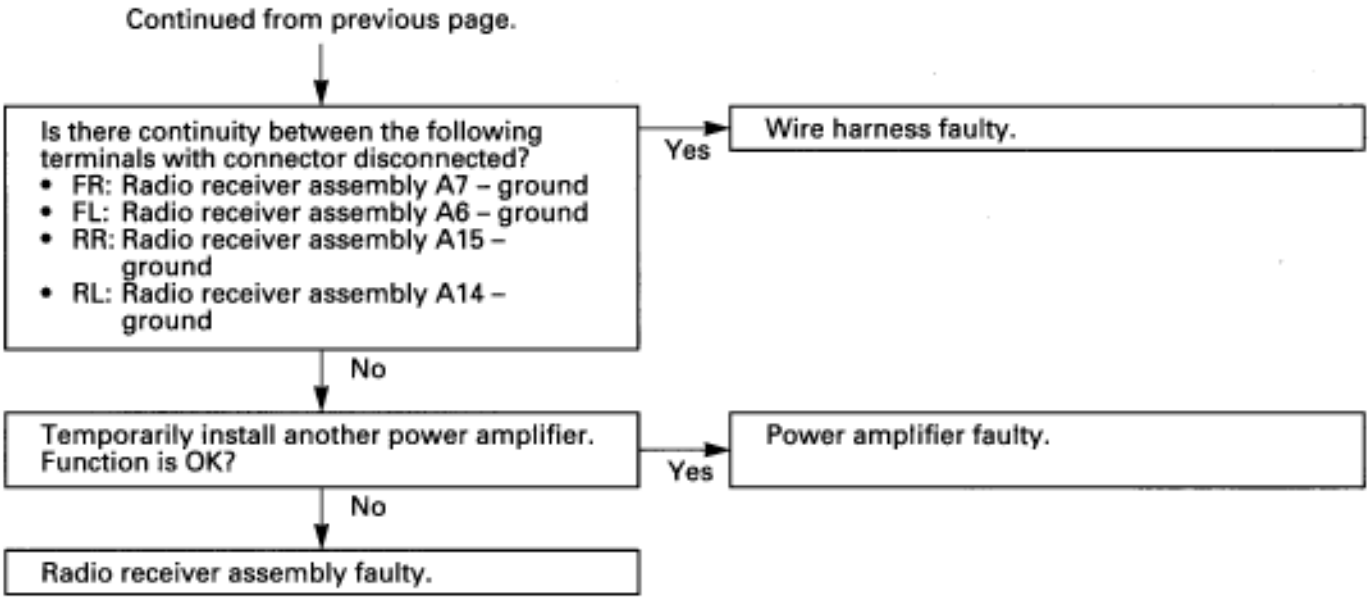
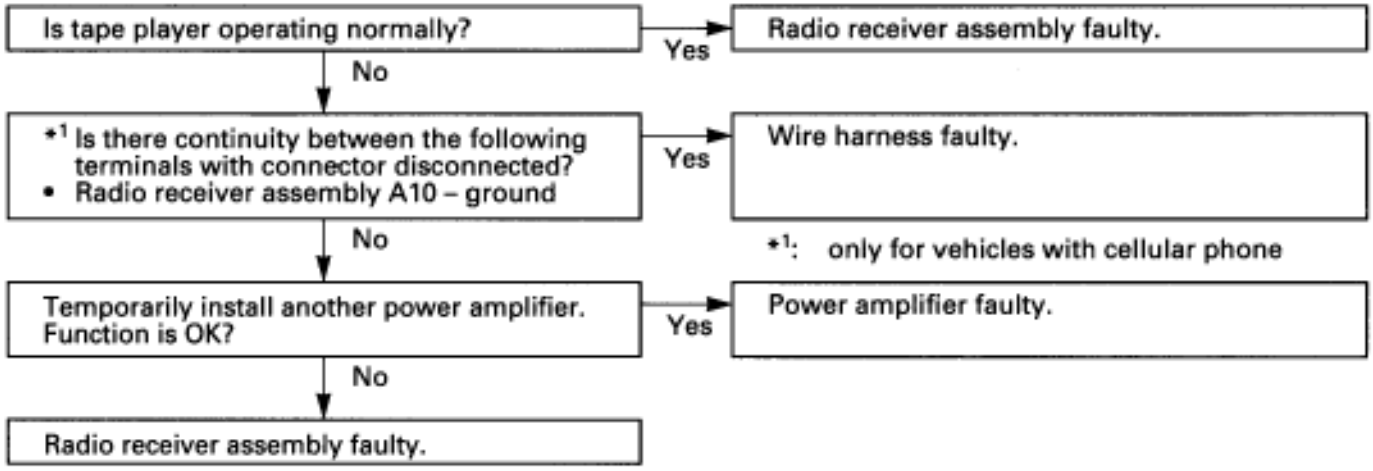
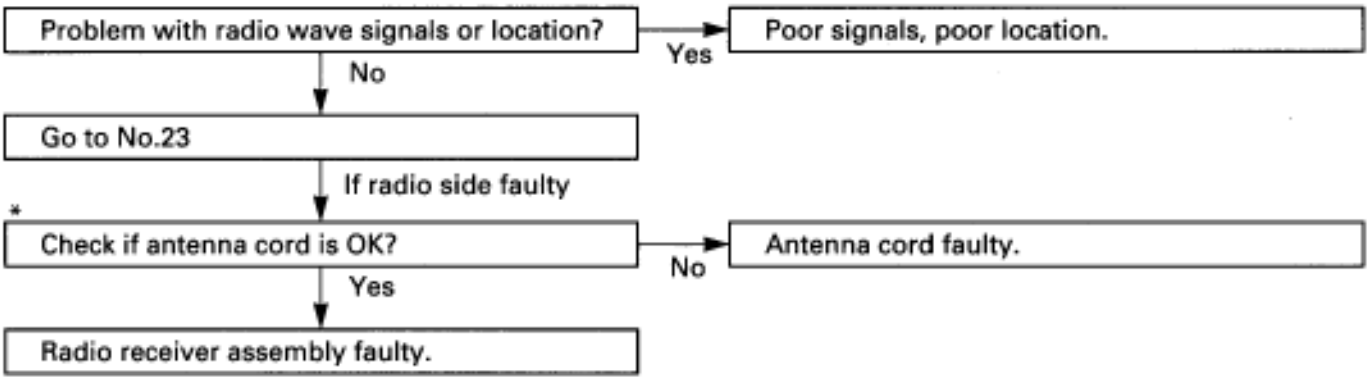

Continued from previous page.
Is there continuity between the following terminals with connector disconnected?
• FR: Radio receiver assembly A7 – ground
• FL: Radio receiver assembly A6 – ground
• RR: Radio receiver assembly A15 – ground
• RL: Radio receiver assembly A14 – ground
Yes
Wire harness faulty.
No
Temporarily install another power amplifier. Function is OK?
Yes
Power amplifier faulty.
No
Radio receiver assembly faulty.

5	Radio	VOLUME FAINT

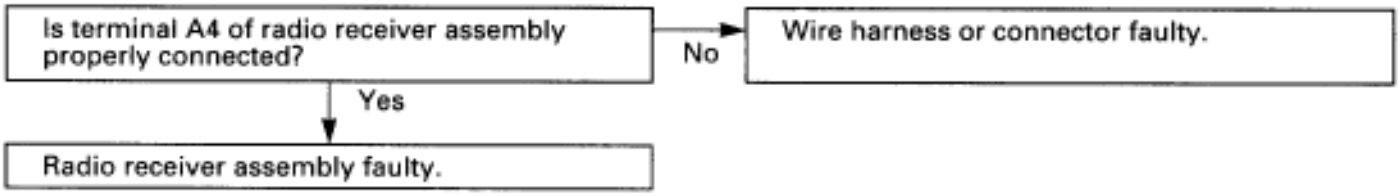


*1: only for vehicles with cellular phone

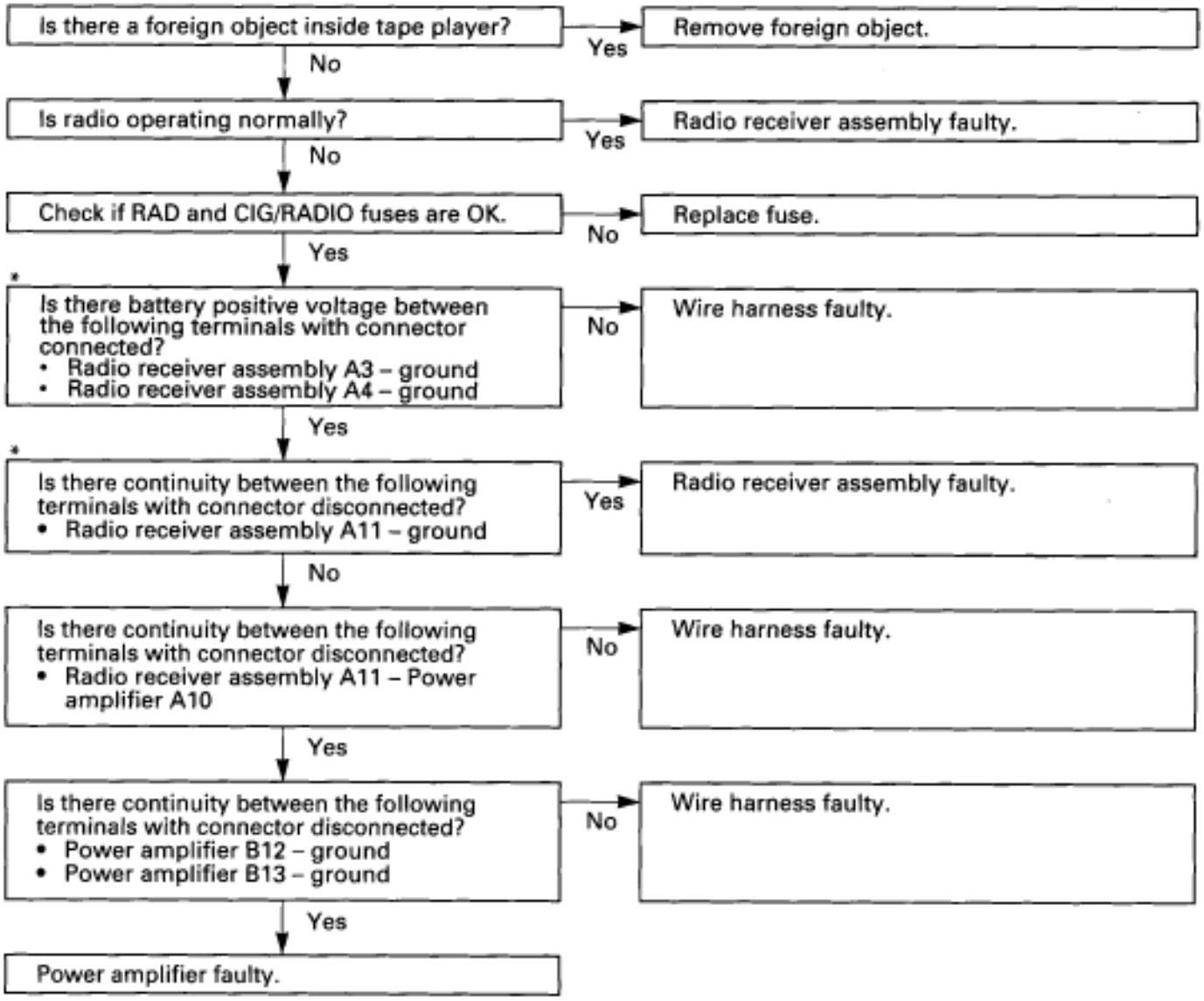
6	Radio	RECEPTION POOR



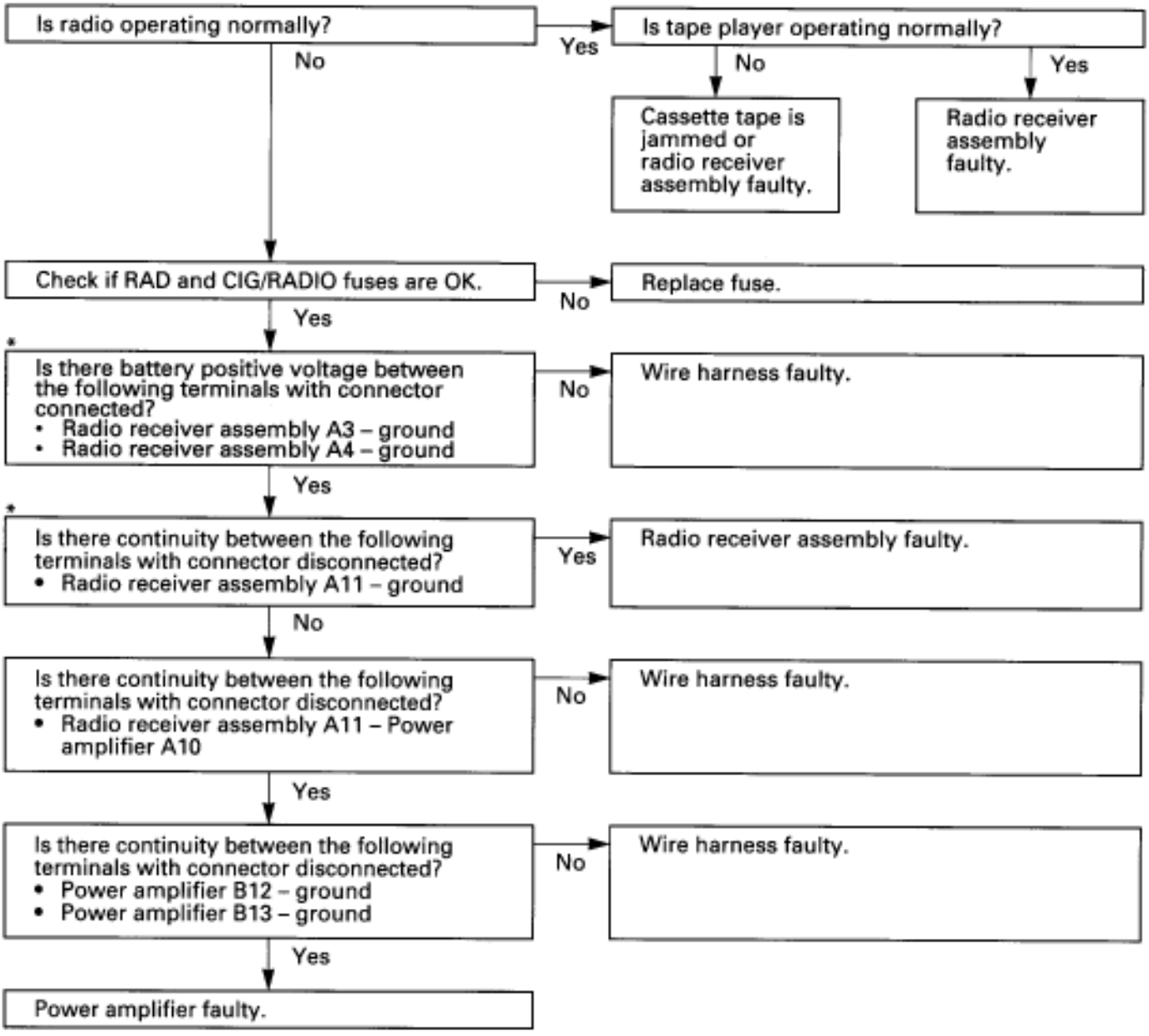
7	Radio	PRESET MEMORY DISAPPEARS



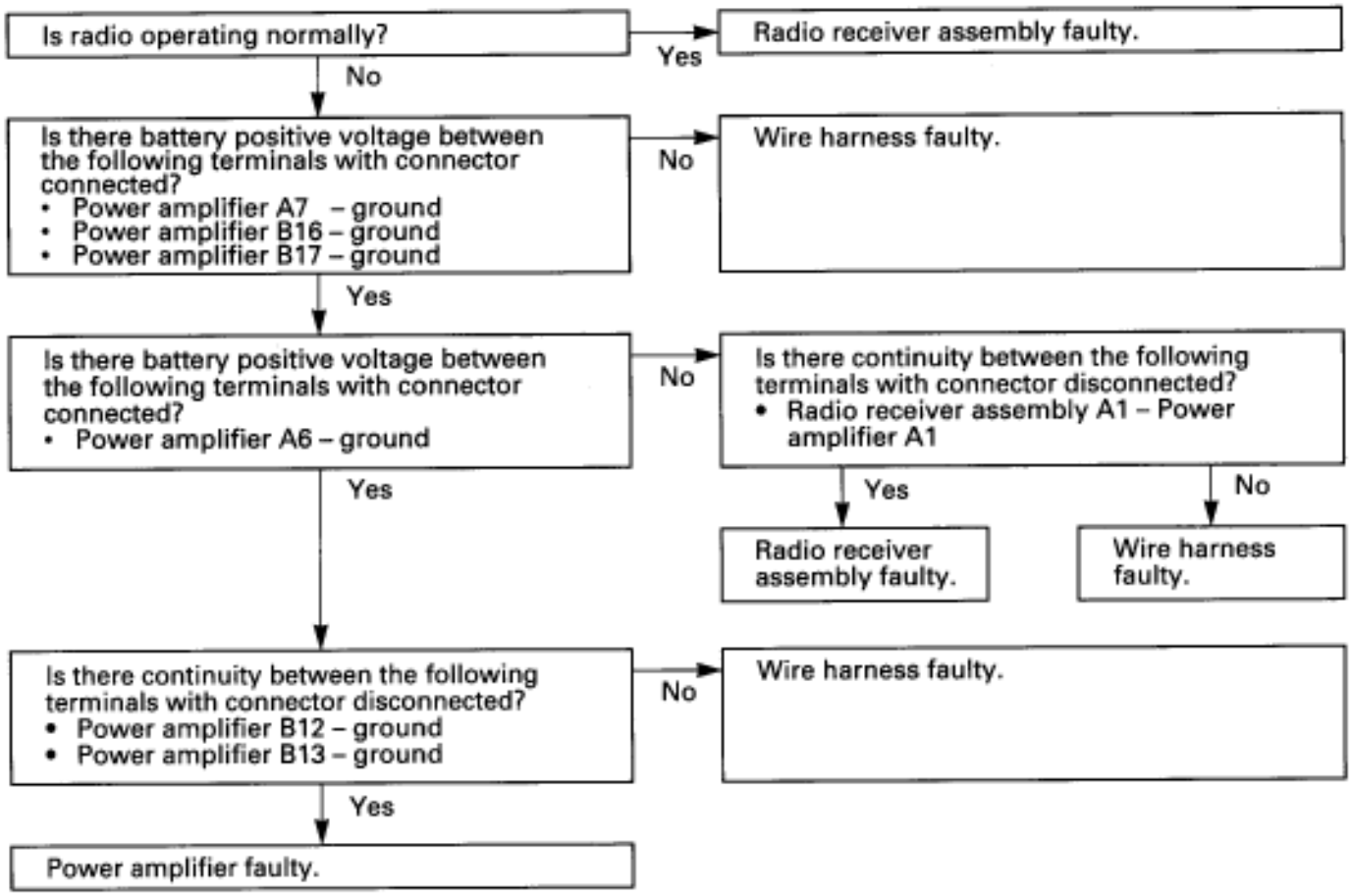
8	Tape player	CASSETTE TAPE CANNOT BE INSERTED



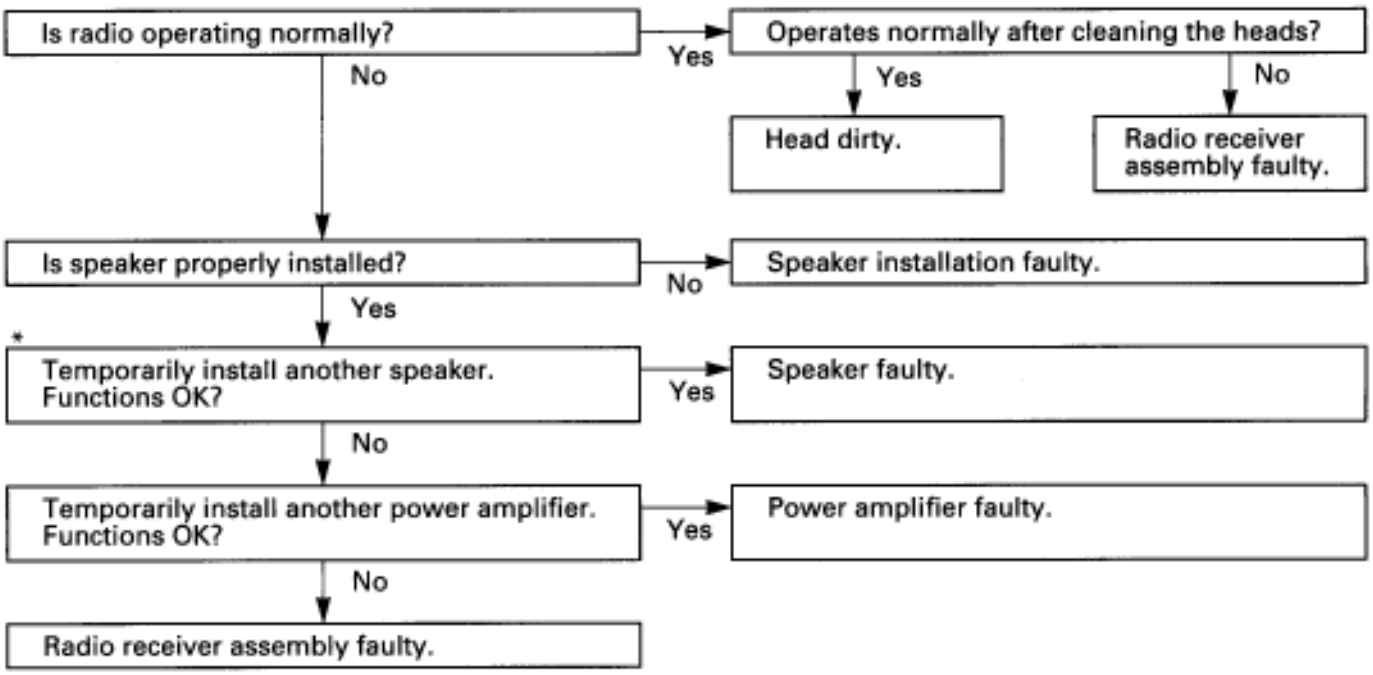
9	Tape player	CASSETTE TAPE WILL NOT EJECT



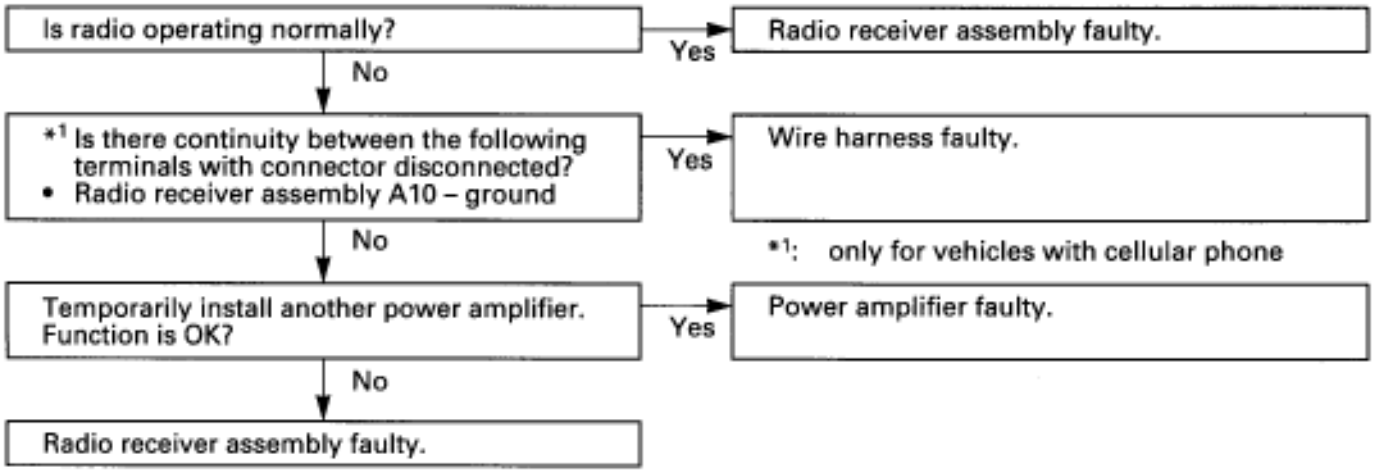
10	Tape player	DISPLAY INDICATES, BUT NO SOUND IS PRODUCED



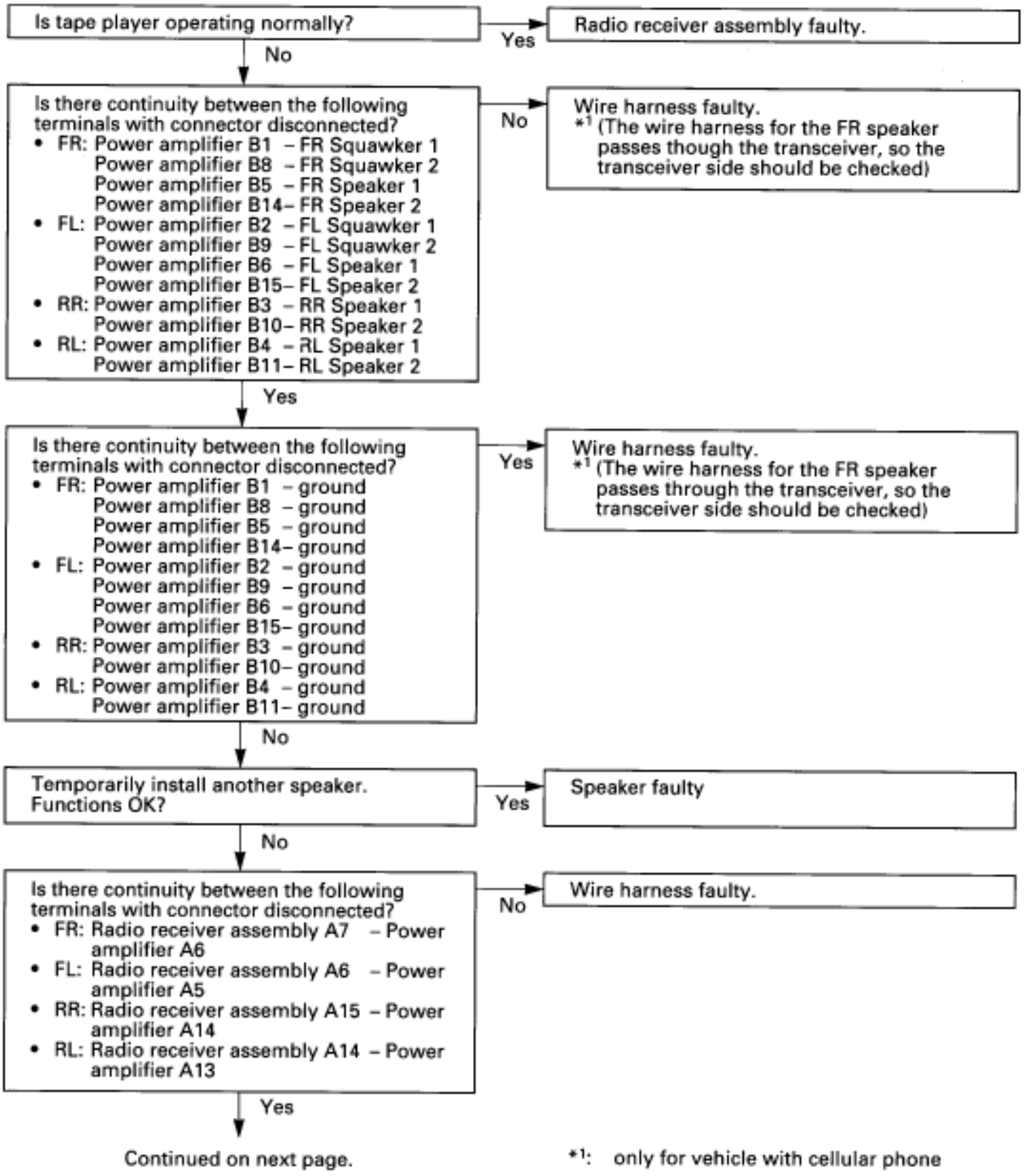
11	Tape player	SOUND QUALITY POOR



12	Tape player	VOLUME FAINT



13	Tape player	ANY SPEAKER DOES NOT WORK



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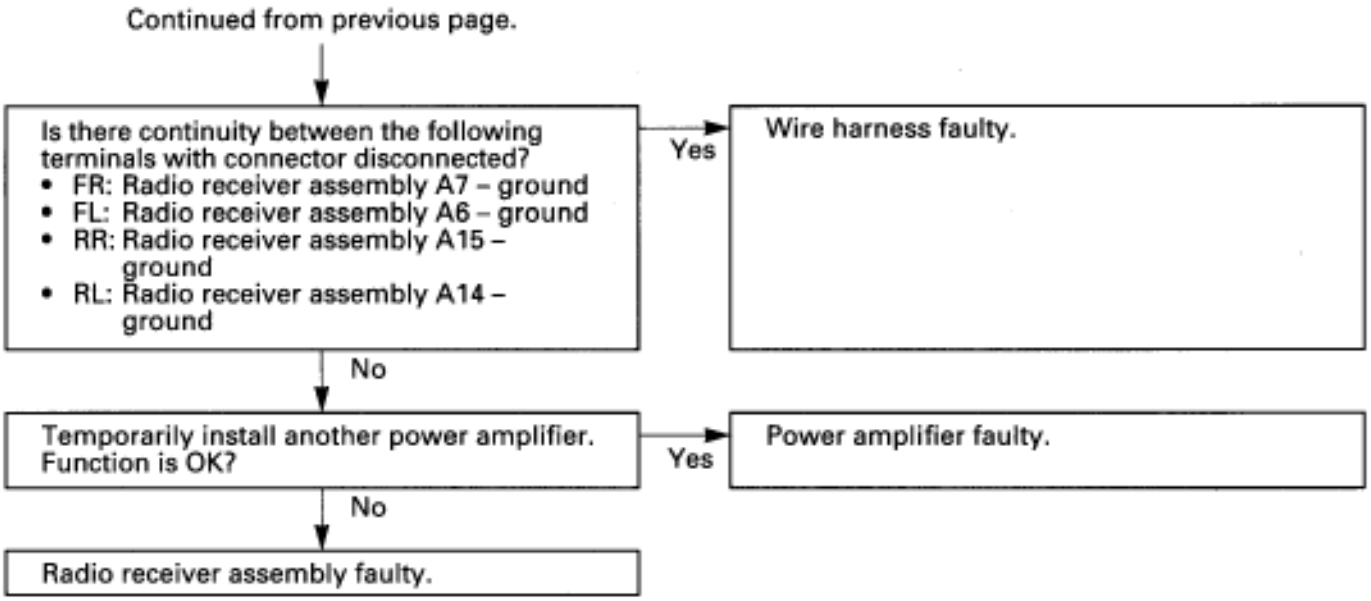
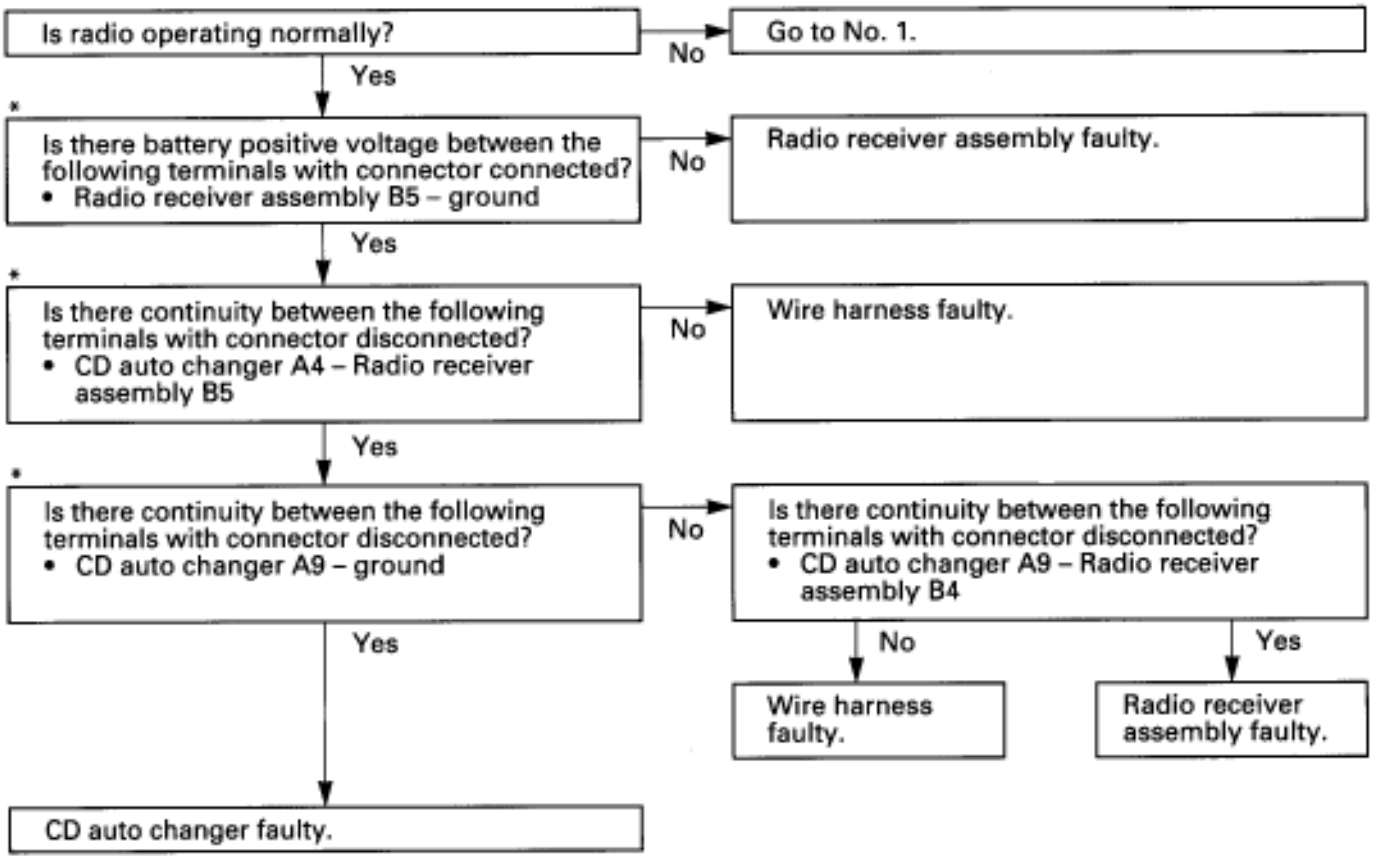
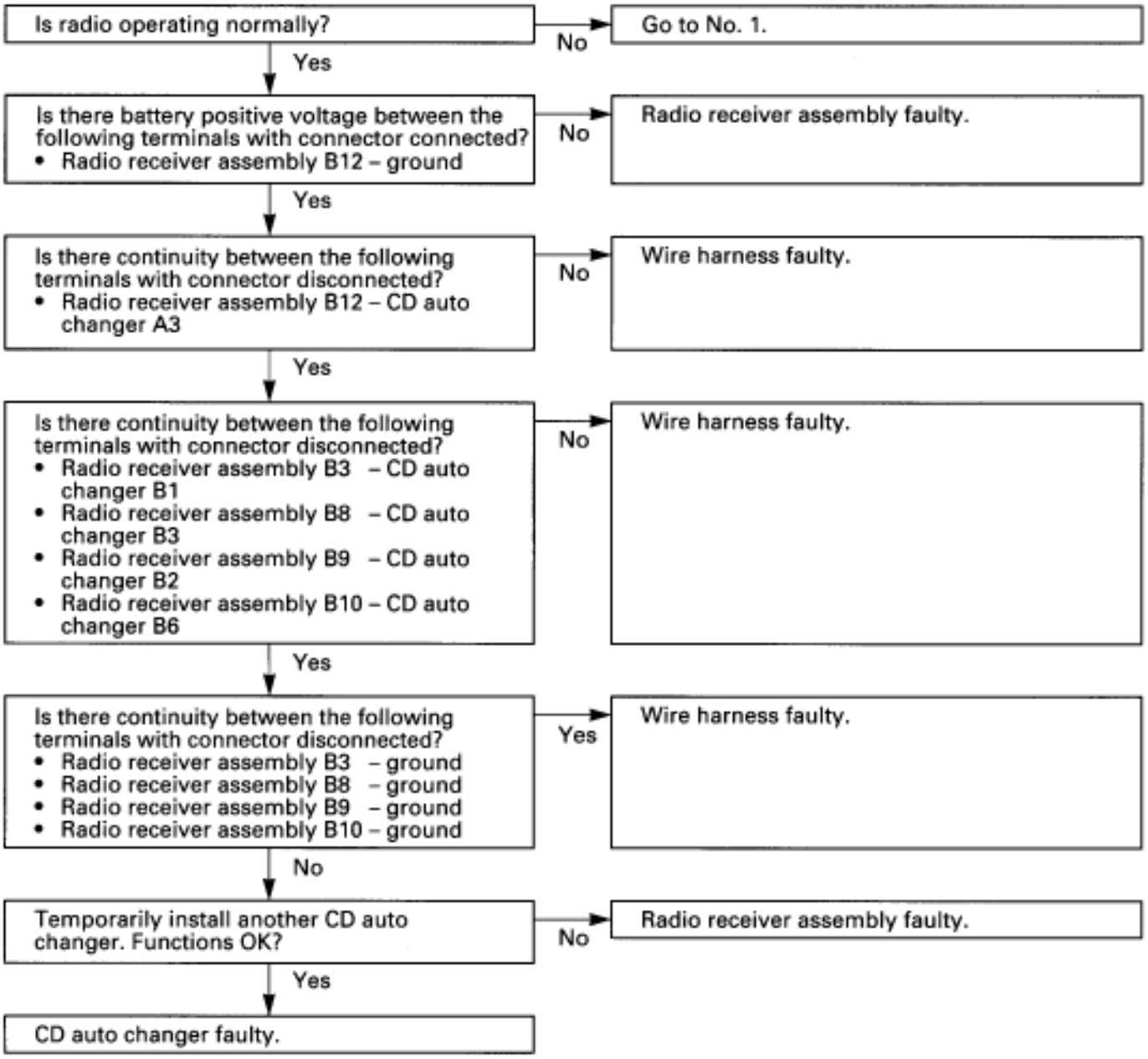
*1: only for vehicle with cellular phone


Continued from previous page.
Is there continuity between the following terminals with connector disconnected?
• FR: Radio receiver assembly A7 – ground
• FL: Radio receiver assembly A6 – ground
• RR: Radio receiver assembly A15 – ground
• RL: Radio receiver assembly A14 – ground
Yes
Wire harness faulty.
No
Temporarily install another power amplifier. Function is OK?
Yes
Power amplifier faulty.
No
Radio receiver assembly faulty.

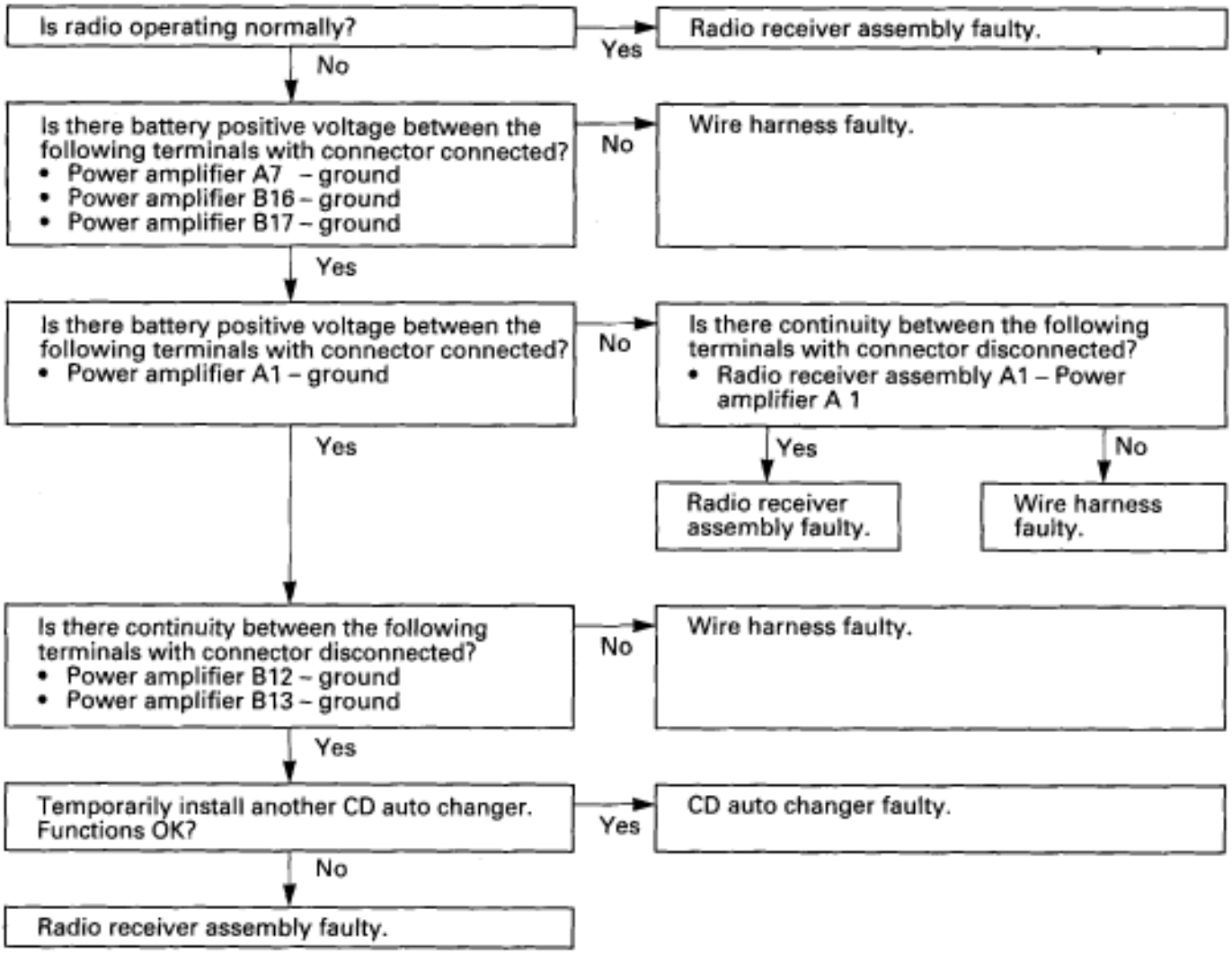
14	CD player	MAGAZINE CANNOT BE INSERTED INTO AUTO CHANGER



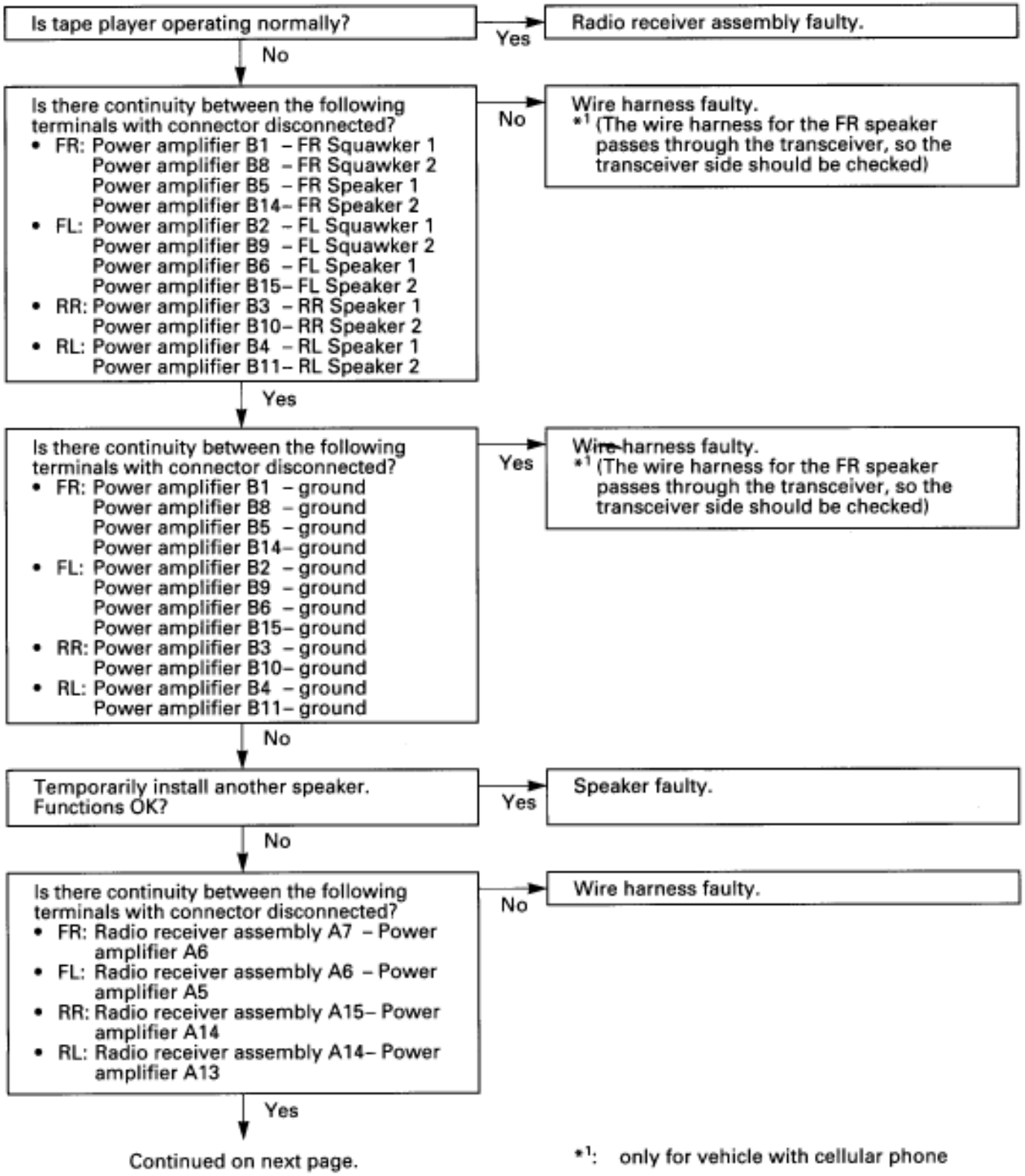
15	CD player	MAGAZINE IS INSERTED, BUT DISPLAY DOES NOT INDICATE "CD"

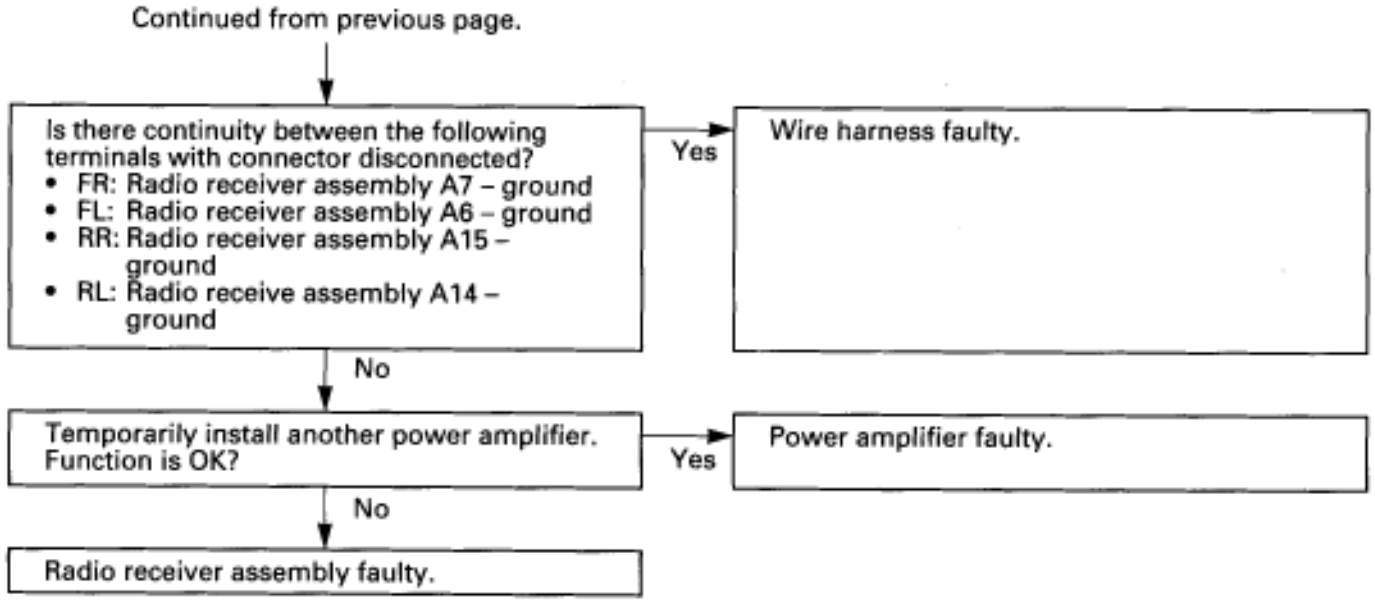


16	CD player	DISPLAY INDICATES, BUT NO SOUND IS PRODUCED

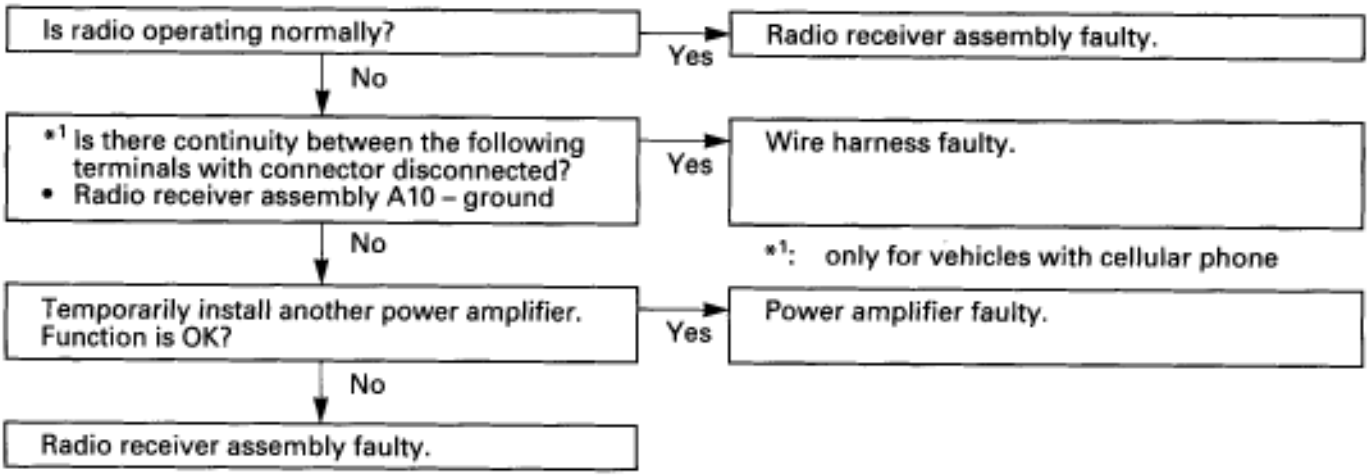


17	CD player	ANY SPEAKER DOES NOT WORK

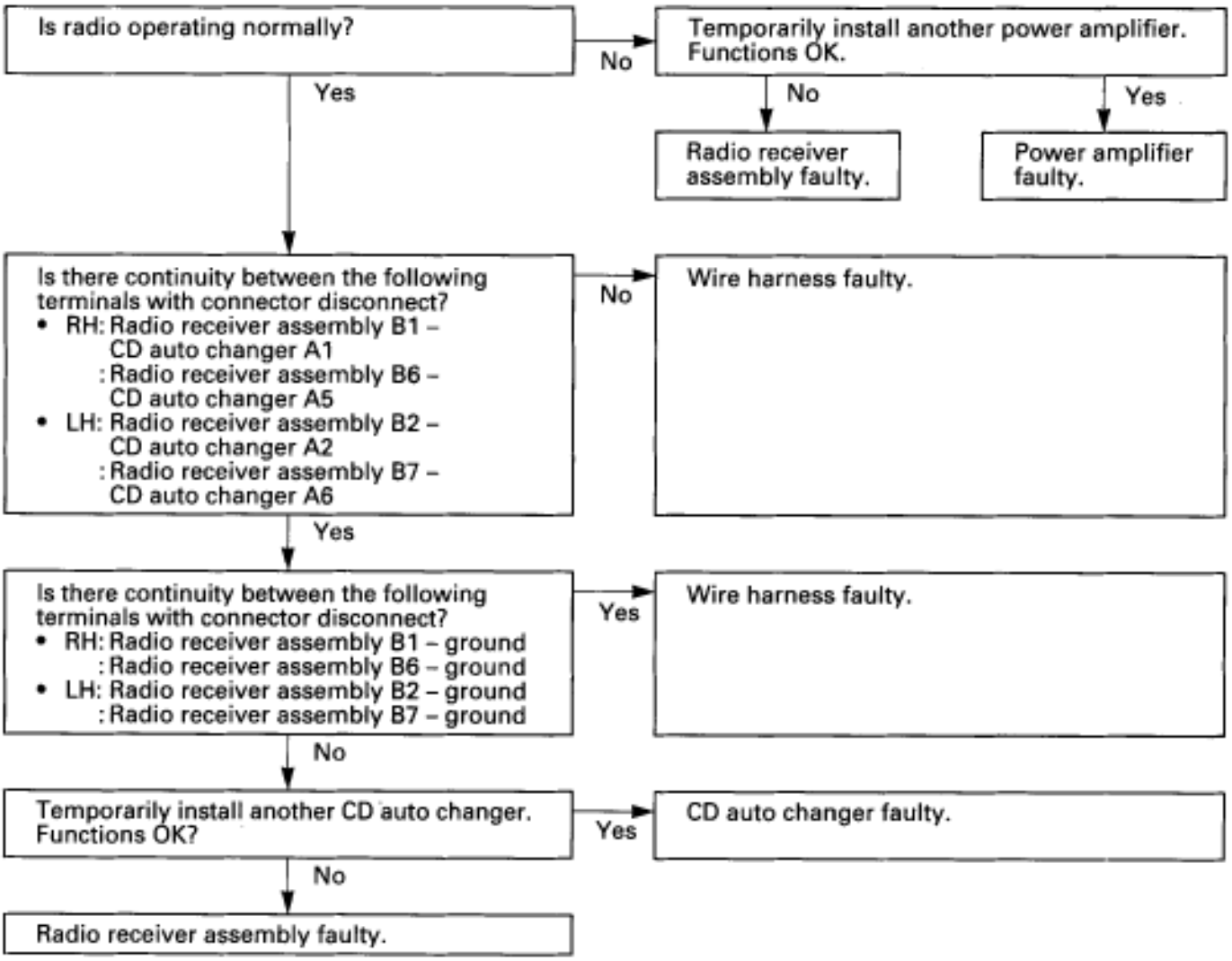




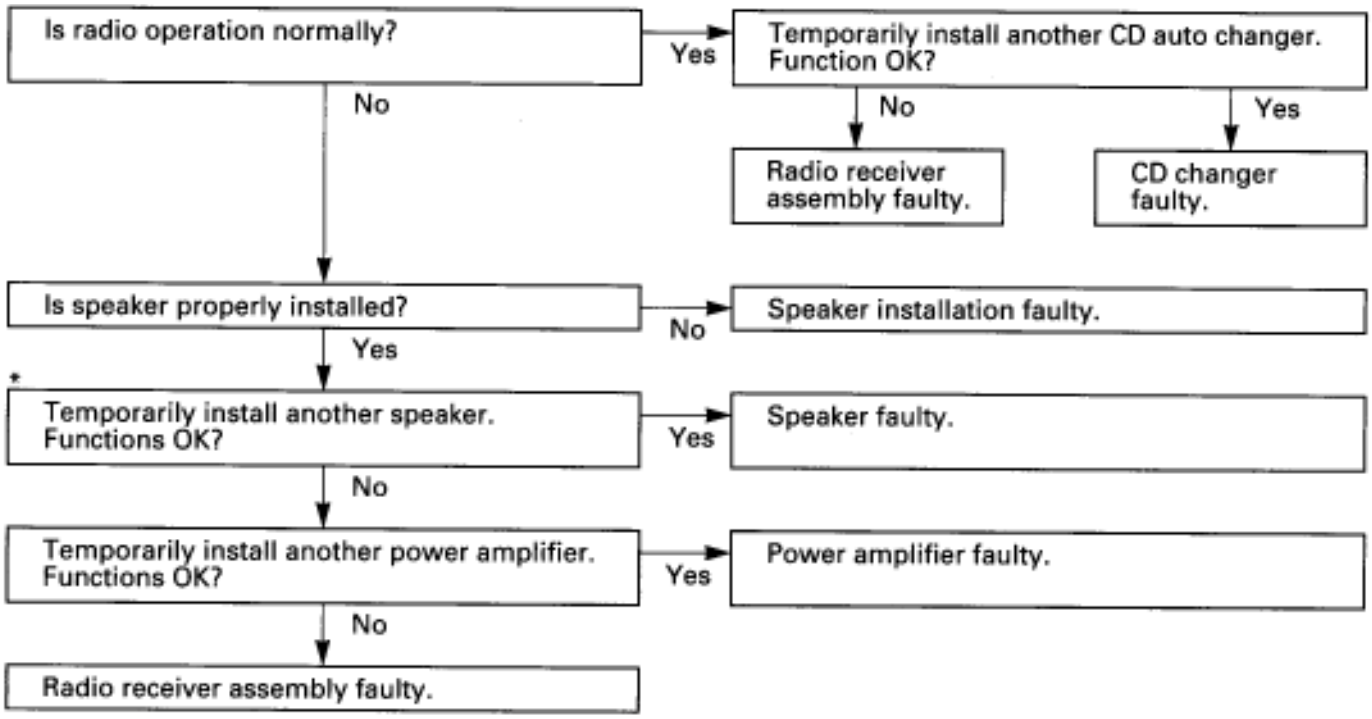
18	CD player	VOLUME FAINT



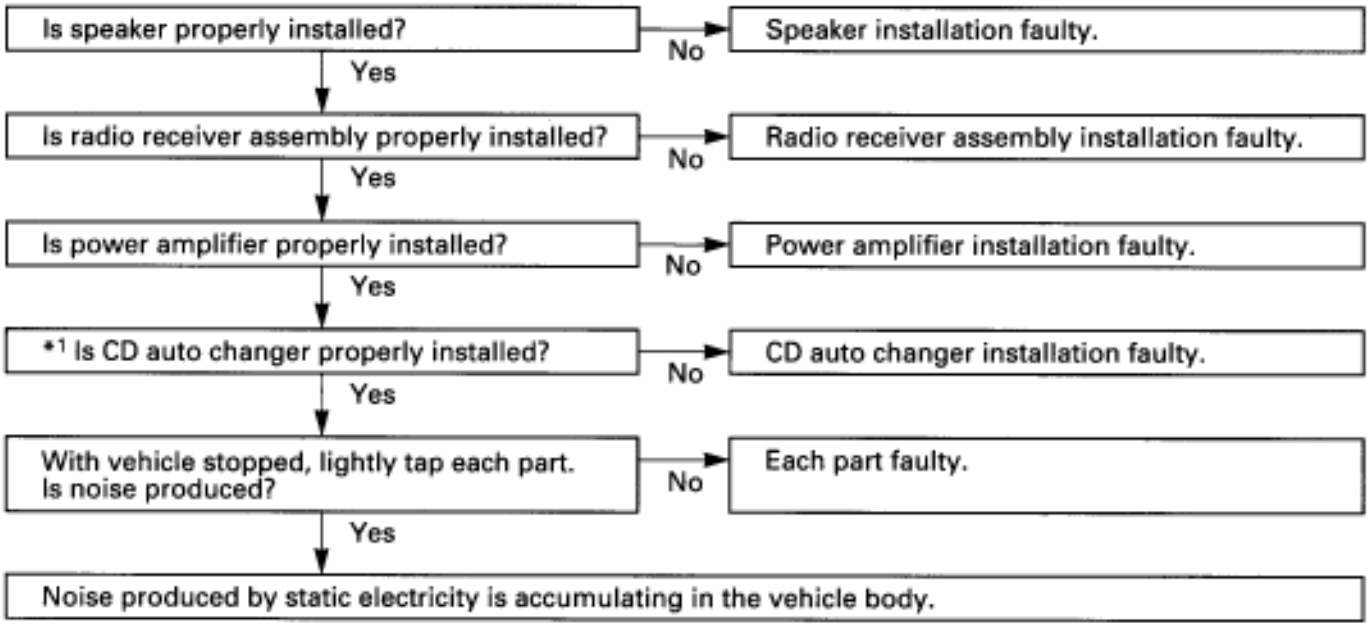
19	CD player	RH CHANNEL OR LH CHANNEL SPEAKER VOLUME FAINT



20	CD player	SOUND QUALITY POOR

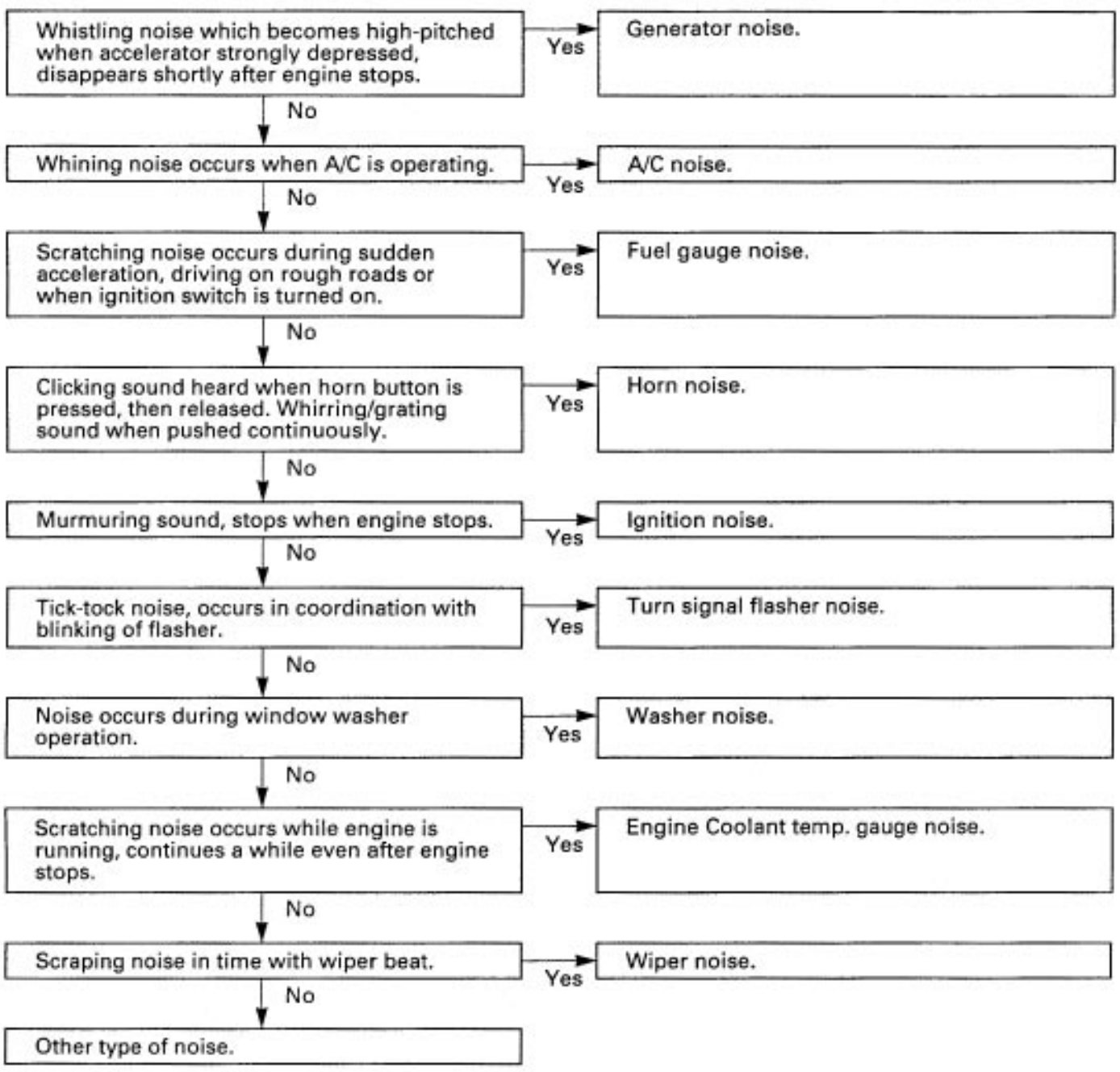


21	Noise	NOISE PRODUCED BY VIBRATION OR SHOCK WHILE DRIVING

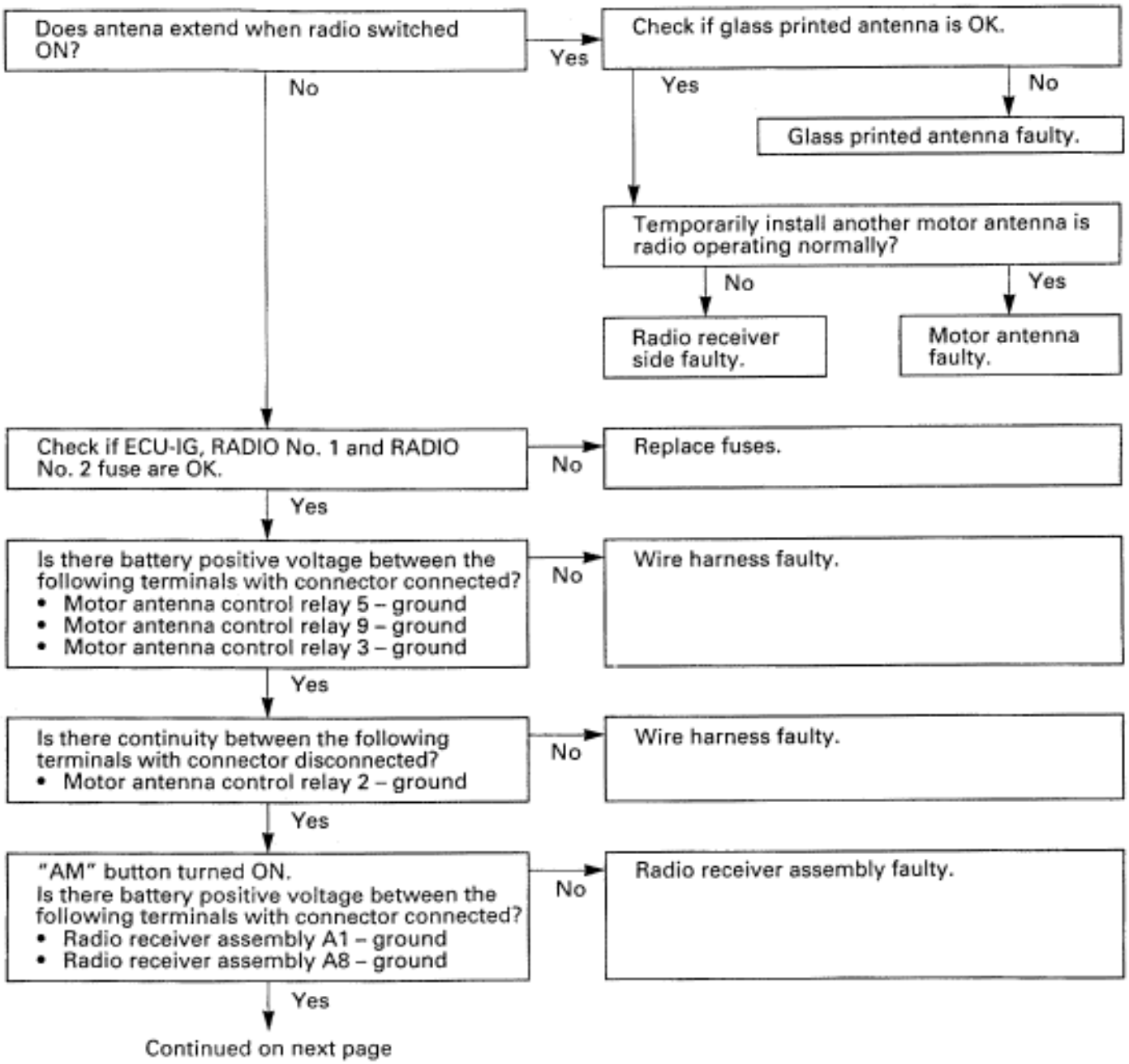


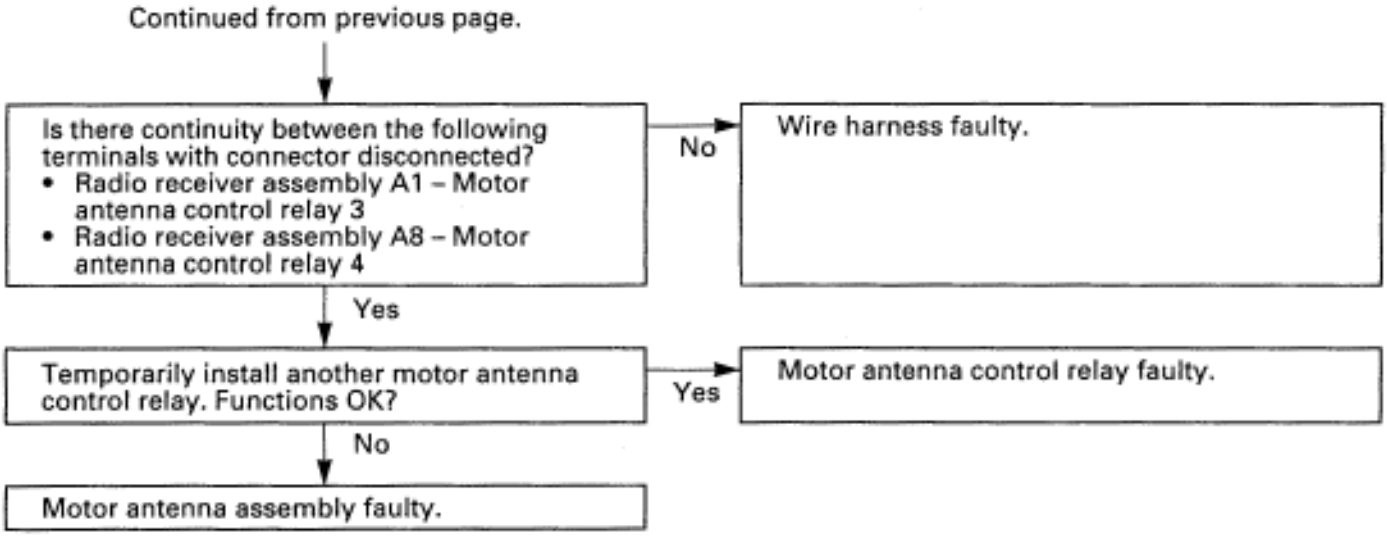
*1: only for vehicles with CD player.

22	Noise	NOISE PRODUCED WHEN ENGINE STARTS

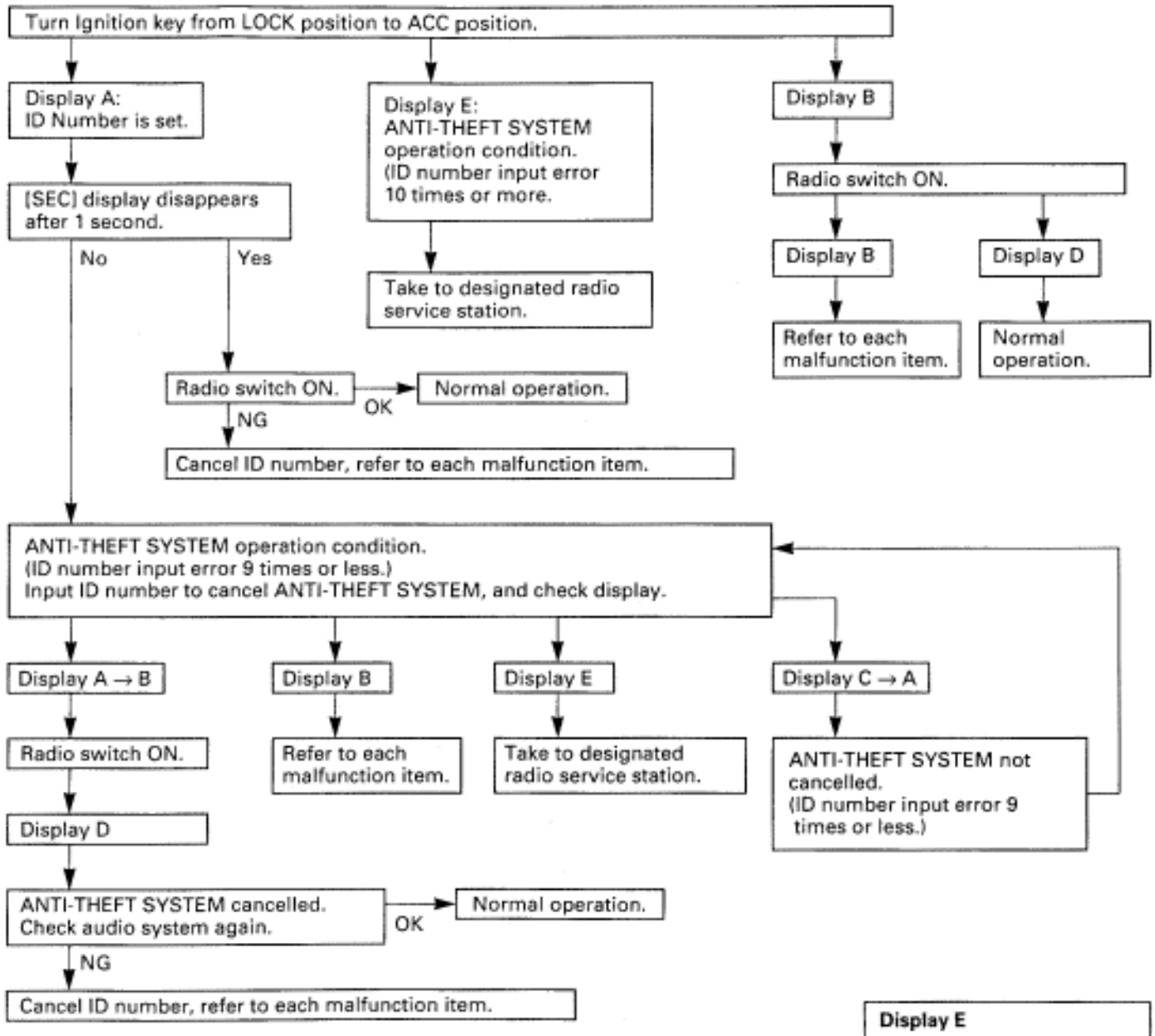


23	Antenna	ANTENNA – RELATED




Continued from previous page.
Is there continuity between the following terminals with connector disconnected?
• Radio receiver assembly A1 – Motor antenna control relay 3
• Radio receiver assembly A8 – Motor antenna control relay 4
No
Wire harness faulty.
Yes
Temporarily install another motor antenna control relay. Functions OK?
Yes
Motor antenna control relay faulty.
No
Motor antenna assembly faulty.

24 Anti–Theft System | TROUBLESHOOTING FOR ANTI–THEFT SYSTEM



(Liquid Crystal Display (LCD) for Audio System)

Display A	Display B	Display C	Display D
SEC (N01977)	Blank, No Illumination	9 Err (N01978) ID number input error time	Radio Display

Display E

HELP (N01979)

HINT:

a) Refer to O/M for operation details of ANTI–THEFT SYSTEM.

b) When the ID number has been cancelled, reset the same number after completing the operation, or inform the customer that it has been cancelled.

THEFT DETERRENT SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

HINT: Troubleshooting of the theft deterrent system is based on the premise that the door lock control system is operating normally. Accordingly, before troubleshooting the theft deterrent system, first make certain that the door lock control system is operating normally.
For troubleshooting using a volt/ohm meter, see pages BE–278, 279.
For troubleshooting using both volt/ohm meter and Theft Deterrent System (TDS) checker, see page BE–280.
Be sure to use troubleshooting procedure appropriate to the diagnostic tool being used.
Perform troubleshooting in accordance with the procedure on the following page.

How to Proceed with Troubleshooting Using Volt/Ohm Meter

CUSTOMER PROBLEM ANALYSIS

Using the customer problem analysis check sheet for reference, ask the customer in as much detail as possible about the problem.

9 **PROBLEM SYMPTOM CONFIRMATION, ⁜ SYMPTOM SIMULATION**

Confirm the problem symptoms referring to the system inspection on page BE–289. If the problem does not reappear, be sure to simulate the problem, using the “Problem Simulation Method”.

4 **MATRIX CHART OF PROBLEM SYMPTOMS**

Confirm the order of inspection for each applicable problem symptom on the Matrix Chart.

5 **CIRCUIT INSPECTION**

Proceed with diagnosis of each circuit in accordance with the inspection order confirmed in 4. Judge whether the cause of the problem is in the sensor, actuators, wire harness and connectors, or the ECU.

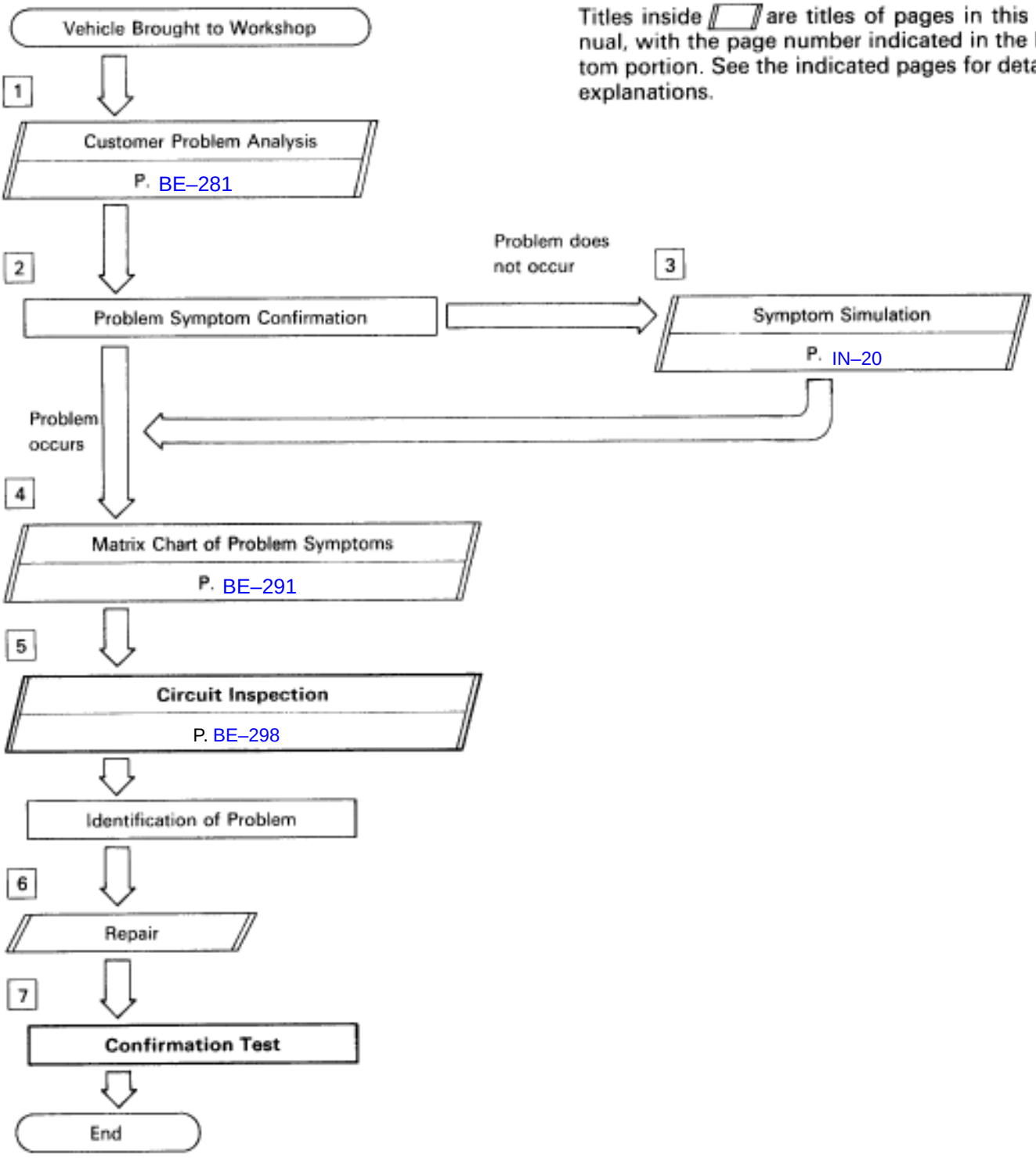
6 **REPAIR**

If the cause of the problem is found in 5, perform repairs.

7 **CONFIRMATION TEST**

After completing repairs, confirm not only that the problem is eliminated but also make sure the theft deterrent system is operating normally in accordance with the system inspection on page BE–289.

Titles inside ▱ are titles of pages in this manual, with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.



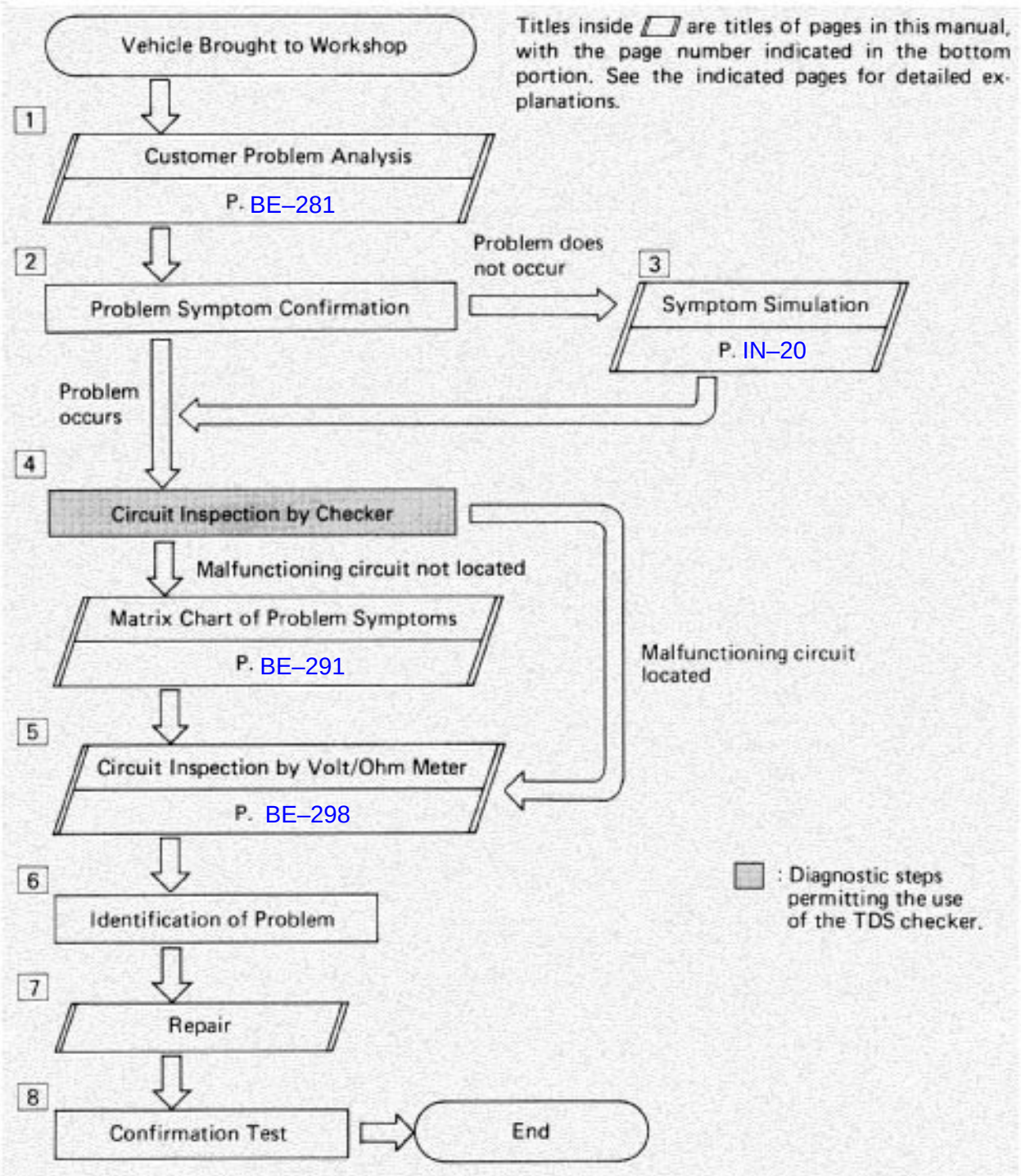
How to Proceed with Troubleshooting Using Theft Deterrent System (TDS) Checker

For the explanation for ✳ and 5 ~ 8 see the explanation for the same titles on page BE–278.

4 CIRCUIT INSPECTION USING A TDS CHECKER

After confirming the symptoms, connect the TDS checker and inspect all the systems which can be checked using the checker. If a malfunction is discovered during this inspection, proceed to Circuit Inspection by Volt/Ohm Meter, and inspect the applicable circuit by volt/ohm meter to find out if the malfunction is in the sensors, actuator, W/H, connector or ECU. If the malfunctioning circuit is not found, proceed to the Matrix Chart of Problem Symptoms and continue troubleshooting.

For instructions on how to connect the checker to the vehicle and how to use the checker, please refer to the Instruction Manual for TDS checker.



CUSTOMER PROBLEM ANALYSIS CHECK SHEET

Theft Deterrent System Check Sheet

Inspector's Name:

Customer's Name		**Registration No.**	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km Miles

Date of Problem Occurrence		/ /
Frequency of Problem Occurrence		∗Continuous ∗Sometimes(times a day, month) ∗Once Only
Conditions at Time of Problem Occurrence	**Weather**	∗Fine ∗Cloudy ∗Snowy ∗Rainy ∗Various/Others
	Outdoor Temperature	∗Hot ∗Warm ∗Cool ∗Cold (Approx. °F(°C))

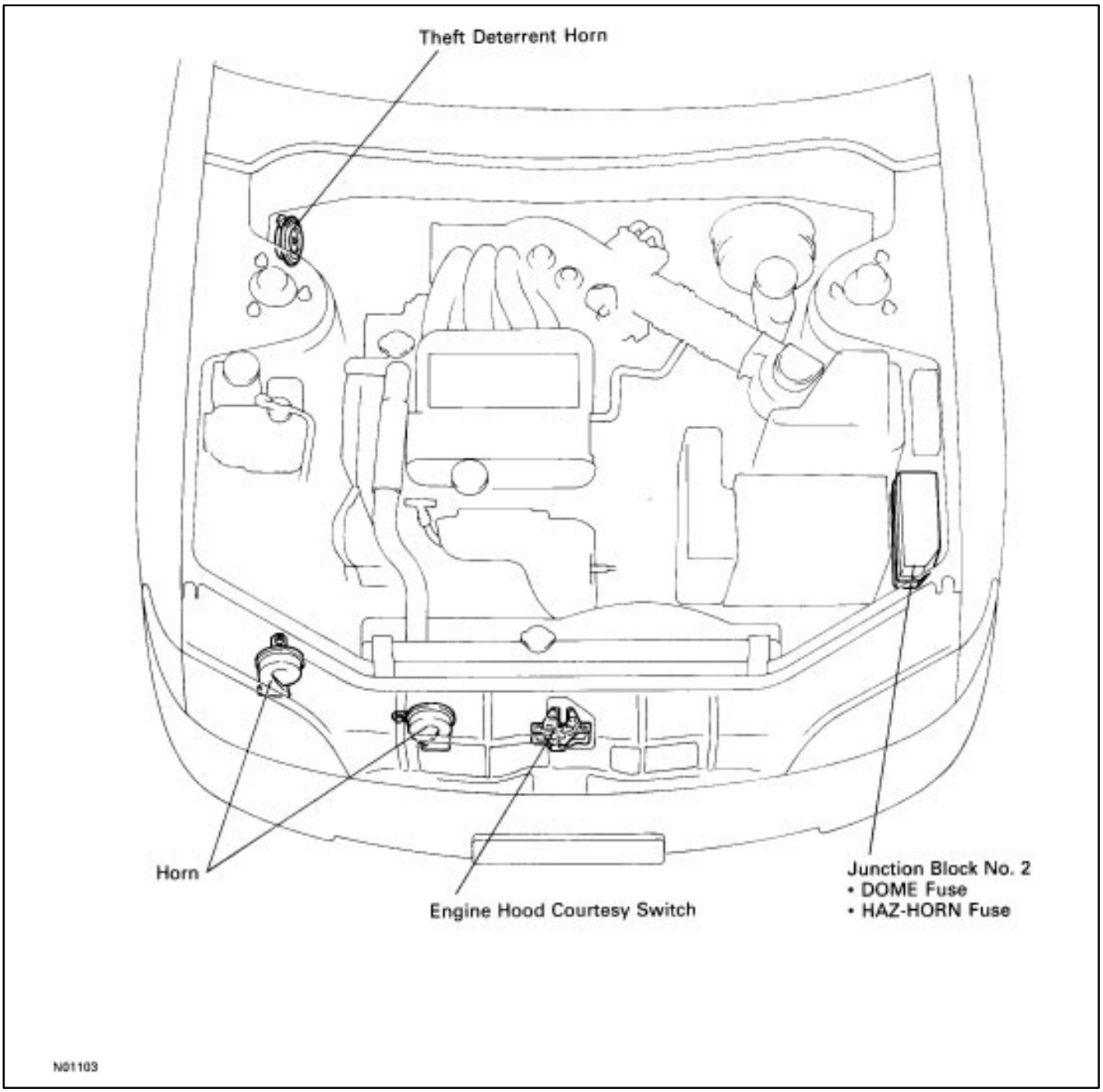
Problem Symptom	∗ Theft deterrent system cannot be set.		
	∗Indicator light does not flash when the theft deterrent system is set. (It stays on or does not light at all.)		
	∗ Theft deterrent system does not operate.	∗ When unlocked using the door lock knob. ∗ When the engine hood is opened.	Malfunction ∗Horns only ∗Theft deterrent horn only ∗Headlights only ∗Taillights only ∗Starter cut only ∗Door lock operation only
	∗ Theft deterrent system does not operate.	∗ When unlocked using the door lock knob. ∗ When the engine hood is opened.	Malfunction ∗Horns only ∗Theft deterrent horn only ∗Headlights only ∗Taillights only ∗Starter cut only ∗Door lock operation only
	∗ System cannot be canceled once set.	∗ When door is unlocked using key or wireless door lock control system. ∗When the key is inserted in the ignition key cylinder and turned to ACC or ON position. (However, only when the system has never operated) ∗When the luggage compartment door is opened with the the key.	
	∗ System cannot be canceled during warning operation.	∗ When door is unlocked using key or wireless door lock control system. ∗When the key is inserted in the ignition key cylinder and turned to ACC or On position.	
	∗Warning operation starts when the system is set and the door or luggage compartment door is opened with the key.		
	∗Others		

Description

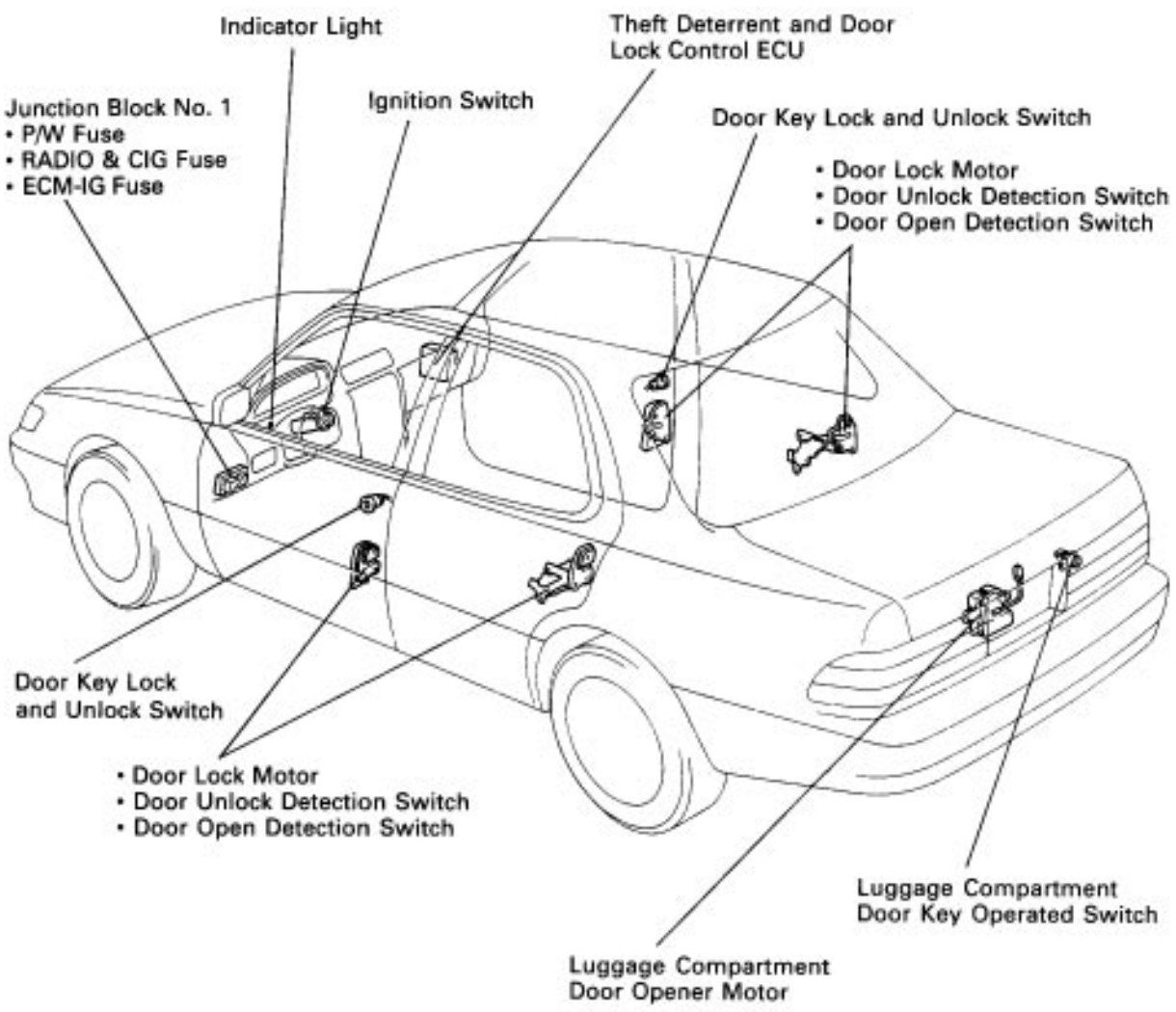
The theft deterrent system uses the door lock control system components and some other parts. When somebody attempts to forcibly enter the vehicle or open the engine hood or luggage compartment door without a key, or when the battery terminals are removed and reconnected, the theft deterrent system sounds the horns and flashes the headlights and taillights for about one minute as an alert. At the same time, it locks all the doors and electrically disconnects the starter.

For the function of component parts of this system, refer to the circuit description in troubleshooting section.

Parts Location



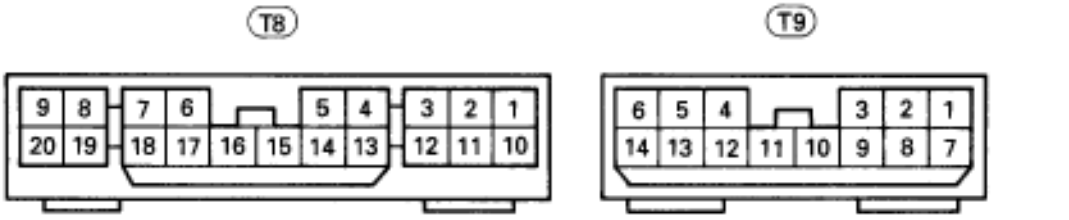
PARTS LOCATION (Cont'd)



N01104

TERMINALS OF ECU

No.	Symbol	Terminal Name	No.	Symbol	Terminal Name
T8–1	SRLY	Ignition Switch ”ST”	T9–1	LUG	Luggage Compartment Door Key Operated Switch
T8–2	IG	Ignition Switch ”ON”	T9–2	LSWR	Door Unlock Detection Switch
T8–3	ACT–	Door Lock Motor	T9–3	CTY	Door open Detection Switch
T8–4	ACT+	Door Lock Motor	T9–4	SH	Theft Deterrent Horn
T8–5	TO	Luggage Compartment Door Opener Motor	T9–5	HEAD	Headlight
T8–6	KSW	Key Unlock Warning Switch	T9–6		
T8–7	LSWP	Door Unlock Detection Switch	T9–7	ACC	Ignition Switch ”ACC”
T8–8	B+2	Power Source	T9–8	PRLY	Power Main Relay
T8–9	IND	Security Indicator Light	T9–9		
T8–10	UL3	Door Key Lock and Unlock Switch	T9–10	DSWL	Luggage Compartment Door Courtesy Switch
T8–11	LSWD	Door Unlock Detection Switch	T9–11	HORN	Horn
T8–12	DSWP	Door Open Detection Switch	T9–12	DSWH	Engine Hood Courtesy Switch
T8–13	DSWD	Door Open Detection Switch	T9–13	TAIL	Taillight
T8–14	L1	Door Key Lock and Unlock Switch	T9–14		
T8–15	UL1	Door Key Lock and Unlock Switch			
T8–16	E	Ground			
T8–17	L2	Door Lock Control Switch (Lock)			
T8–18	UL2	Door Lock Control Switch (Unlock)			
T8–19	TSW	Luggage Compartment Door Opener Switch			
T8–20	B+1	Power Source			

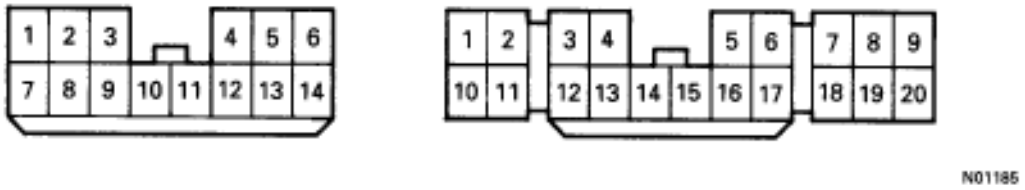


STANDARD VALUE OF ECU TERMINAL

Terminals	Symbols	Wiring color	Condition	Standard Value
T8–1 → ← Ground	SRLY → ← Ground	B–Y	Ignition switch is turned to ST position. (When neutral start switch ”P” range)	10–14 V
T8–2 → ← Ground	IG → ← Ground	B–R	Ignition switch is turned to ”ON” position	10–14 V
T8–3 → ← T8–4	ACT– → ← ACT+	L–B → ← L–R	Ignition switch OFF.	Below 50 Ω
T8–5 → ← T8–16	TO → ← E	L → ← W–B	Luggage compartment door opener switch ”pulled”.	10–14 V
			Luggage compartment door opener switch ”not pulled”.	Below 1 V
T8–6 → ← T8–16	KSW → ← E	L–B → ← W–B	Key unlock warning switch ON. (Key is inserted into key cylinder).	Below 1 Ω
			Key unlock warning switch OFF. (Key is not inserted into key cylinder).	1 MΩ or higher
T8–7 → ← T8–16	LSWP → ← E	Y → ← W–B	Door unlock detection switch ON. (passenger’s)	Below 1 Ω
			Door unlock detection switch OFF.	1 MΩ or higher
T8–8 → ← T8–16	B+2 → ← E	W–L → ← W–B	Always	10–14 V
T8–9 → ← T8–16	IND → ← E	R–Y → ← W–B	Indicator light circuit	Below 1 Ω
T8–10 → ← T8–16	UL3 → ← E	R–L → ← W–B	Door key lock and unlock switch ”unlock” position.	Below 1 Ω
			Door key lock and unlock switch OFF or ”lock” position.	1 MΩ or higher
T8–11 → ← T8–16	LSWD → ← E	P → ← W–B	Door unlock detection switch ON. (driver’s)	Below 1 Ω
			Door unlock detection switch OFF. (driver’s)	1 MΩ or higher
T8–12 → ← T8–16	DSWP → ← E	R–W → ← W–B	Door open detection switch (passenger’s) ON (door opened)	Below 1 Ω
			Door open detection switch (passenger’s) OFF (door closed)	1 MΩ or higher
T8–13 → ← T8–16	DSWD → ← E	R–G → ← W–B	Door open detection switch (driver’s) ON (door opened)	Below 1 Ω
			Door open detection switch (driver’s) OFF (door closed)	1 MΩ or higher
T8–14 → ← T8–16	L1 → ← E	Y–R → ← W–B	Door key lock and unlock switch ”lock” position.	Below 1 Ω
			Door key lock and unlock switch OFF or ”unlock” position.	1 MΩ or higher

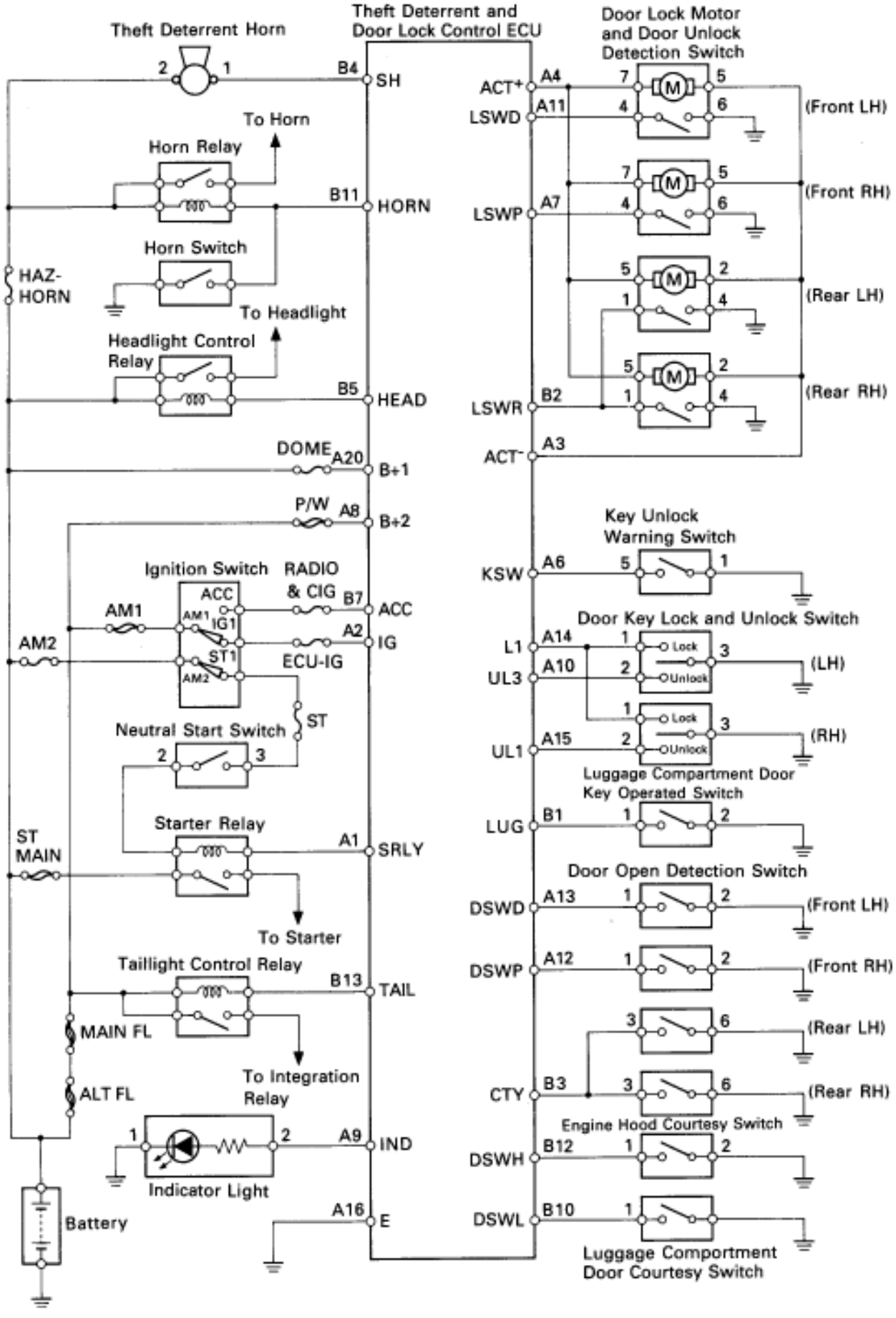
Terminals	Symbols	Wiring color	Condition	Standard Value
T8–15 → ← T8–16	UL1 → ← E	Y–L → ← W–B	Door key lock and unlock switch ”unlock” position.	Below 1 Ω
			Door key lock and unlock switch OFF or ”lock” Position.	1 MΩ or higher
T8–16 → ← Ground	E → ← Ground	W–B	Always	Below 1 Ω
T8–17 → ← T8–16	L2 → ← E	P–B → ← W–B	Door lock control switch ”lock” position.	Below 1 Ω
			Door lock control switch OFF or ”lock” position.	1 MΩ or higher
T8–18 → ← T8–16	UL2 → ← E	G → ← W–B	Door lock control switch ”unlock” position.	Below 1 Ω
			Door lock control switch OFF or ”lock” position.	1 MΩ or higher
T8–19 → ← T8–16	TSW → ← E	L–Y → ← W–B	Luggage compartment door opener switch ON.	Below 1 Ω
			Luggage compartment door opener switch OFF.	1 MΩ or higher
T8–20 → ← T8–16	+B1 → ← E	R → ← W–B	Always	10–14 V
T9–1 → ← T8–16	LUG → ← E	G–W → ← W–B	Luggage compartment door key operated switch ON.	Below 1 Ω
			Luggage compartment door key operated switch OFF.	1 MΩ or higher
T9–2 → ← T8–16	LSWR → ← E	L–Y → ← W–B	Door unlock detection switch ON. (Rear door)	Below 1 Ω
			Door unlock detection switch OFF. (Rear door)	1 MΩ or higher
T9–3 → ← T8–16	CTY → ← E	R–B → ← W–B	Door open detection switch (Rear door) ON (door opened)	Below 1 Ω
			Door open detection switch (Rear door) OFF (door closed)	1 MΩ or higher
T9–4 → ← T8–16	SH → ← E	W–L → ← W–B	Always	10–14 V
T9–5 → ← T8–16	HEAD → ← E	R–B → ← W–B	Light control switch other than ”HEAD” position.	10–14 V
T9–7 → ← T8–16	ACC → ← E	L–R → ← W–B	Ignition switch is turned to ”ACC” position.	10–14 V

Terminals	Symbols	Wiring color	Condition	Standard Value
T9–10 → ← T8–16	DSWL → ← E	R–W → ← W–B	Luggage compartment door courtesy switch ON.	Below 1 Ω
			Luggage compartment door courtesy switch OFF.	1 MΩ or higher
T9–11 → ← T8–16	HORN → ← E	G–B → ← W–B	Horn switch OFF.	10–14 V
T9–12 → ← T8–16	DSWH → ← E	B → ← W–B	Engine hood courtesy switch ON.	Below 1 Ω
			Engine hood courtesy switch OFF.	1 MΩ or higher
T9–13 → ← T8–16	TAIL → ← E	G–R → ← W–B	Light control switch ”TAIL” position	10–14 V



When checking the voltage or resistance of theft deterrent and door lock ECU terminal, disconnect the ECU connector.

Wiring Diagram



SYSTEM INSPECTION

1. SETTING OF THE THEFT DETERRENT SYSTEM

Setting Conditions

(a) Close all the doors.
(b) Close the engine hood and luggage compartment door.
(c) Remove the ignition key out of the ignition key cylinder.

Setting Operation

When any of the following operations (a), (b) or (c) is performed, the theft deterrent indicator light will light up as shown below.

(a) Lock the left or right door using the key
(All doors are locked by key–interlinked lock operation)
(b) Lock all the doors using the wireless door lock control system.
(c) With the rear doors locked and with one of the front doors locked, the other front door without using the key (keyless door lock).

Elapsed time after operation	Indicator light
Within about 30 seconds	Light up
After about 30 seconds	Blinks*1

*1: 1 sec on, 1 sec. off

HINT: When the theft deterrent system is set, doors cannot be locked or unlocked with the door lock control switch and the luggage compartment door cannot be unlocked with the luggage compartment door opener switch.

2. CANCELING OF THE THEFT DETERRENT SYSTEM IN THE SET CONDITION

Check if the theft deterrent indicator light is blinking.

Cancelling Operation

When any of the following operations (a), (b), (c) or (d) is performed, the theft deterrent system is canceled and indicator light will go off.

(a) Unlock the left or right door using the key.
(b) Unlock all the doors using the wireless door lock control system.
(c) Insert the ignition key in the ignition key cylinder and turn it to the ACC or ON position. (This is operative only when the theft deterrent system has never operated.)
(d) Unlock the luggage compartment door with the key.*1

*1: The theft deterrent system is temporarily canceled only while the luggage compartment door is open. Approximately 2 seconds after the luggage compartment door is closed, the theft deterrent system is reset.

3. CHECK OF THE THEFT DETERRENT SYSTEM OPERATION

Check if the theft deterrent indicator light is blinking.

When any of the following operation (a) or (b) is performed, system sounds the horns and theft deterrent horn and flashes the headlights and taillights for about one minute to alert. At the same time, the system disconnects the starter motor circuit and locks all doors (if all doors are not locked, the system repeats door locking operation every 2 seconds during the one minute alert time).

(a) Open the engine hood using the engine hood opener lever.
(b) Unlock any of the front of rear doors without key operation.

4. CANCELING OF THE THEFT DETERRENT SYSTEM IN OPERATING CONDITION

The theft deterrent operation can be canceled when any of the following conditions is met:

No.	Condition	Canceling Operation
1	Unlock left or right door with the key	
2	Unlock doors with wireless door lock control system.	
3	Insert key into ignition key cylinder and turn it to ACC or ON position.	
4	About 1 minute passes after theft deterrent operation begins	Automatic stop*1

*1: In this case, the theft deterrent system resets in about 2 seconds after if all doors are closed.

MATRIX CHART OF PROBLEM SYMPTOMS

Proceed to the reference page shown in the matrix chart below for each malfunction symptom and troubleshoot for each circuit.

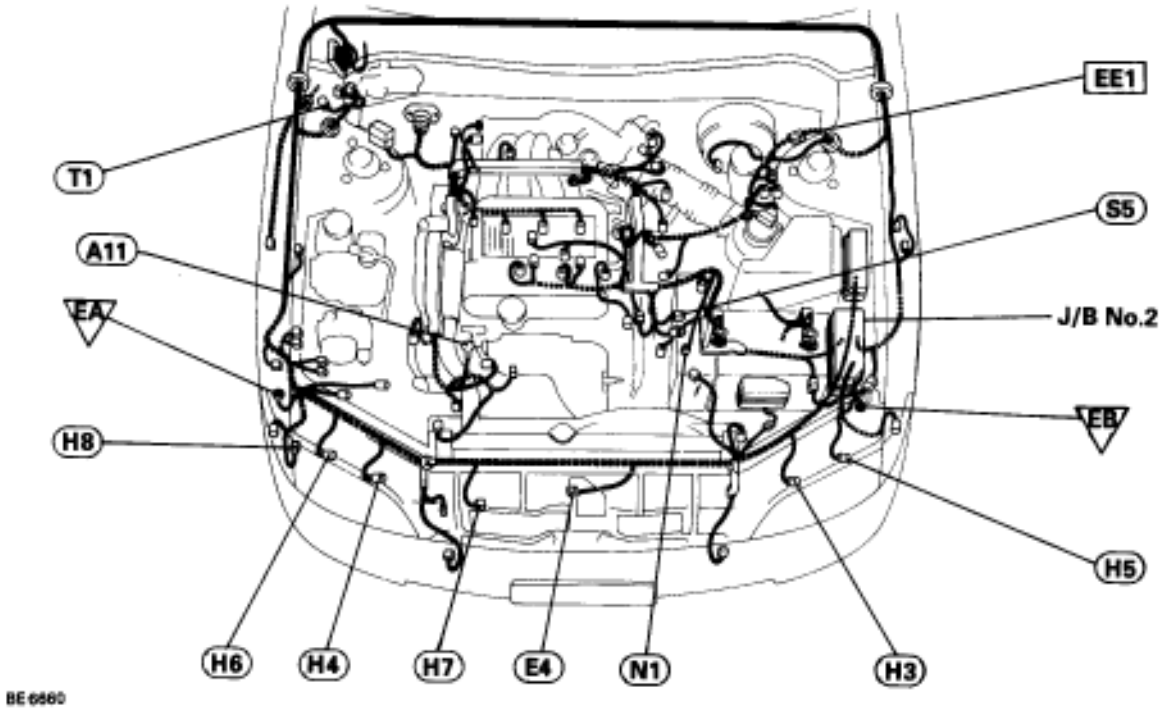
HINT: Troubleshooting of the theft deterrent system is based on the premise that the door lock control system is operating normally. Accordingly, before troubleshooting the theft deterrent system, first make certain that the door lock control system is operating normally.

Details of Problem			Inspection Circuit *1	See Page
The theft deterrent system cannot be set			1. Indicator light circuit	BE–298
			2. Luggage compartment door key operated switch circuit	BE–312
			3. Luggage compartment door courtesy switch circuit	BE–314
			4. Door open detection switch	BE–316
			5. Door unlock detection switch circuit	BE–318
			6. Engine hood courtesy switch circuit	BE–320
The indicator light does not blink when system is set			Indicator light circuit	BE–298
When the system is set	When the rear door is unlocked	The system does not operate	Door unlock detection switch circuit (Rear)	BE–318
	When the luggage compartment door is opened by a method other than the key		Luggage compartment door courtesy switch circuit	BE–314
	When the engine hood is opened		Engine hood courtesy switch circuit	BE–320
While the system is in warning operation	Horns do not sound		Horn relay circuit	BE–302
	Theft deterrent horn does not sound		Theft deterrent horn circuit	BE–304
	Headlights do not flash		Headlight control relay circuit	BE–306
	Taillights do not flash		Taillight control relay circuit	BE–308
	The starter cut is not cut off		Starter relay circuit	BE–300
	The rear door lock is not locked in unlock condition		Door unlock detection switch circuit	BE–318
When the system is set	It is not canceled when the ignition key is turned to ACC or ON position		Ignition switch circuit	BE–310
	It still operates when the luggage compartment door is opened with the key		Luggage compartment door key operated switch circuit	BE–312
Even when the system is not set	Horns sound		Horn relay circuit	BE–302
	Theft deterrent horn sounds		Theft deterrent horn circuit	BE–304
	Headlights stay on		Headlight control relay circuit	BE–306
	Taillights stay on		Taillight control relay circuit	BE–308

*1: If numbers are given to the circuit proceed with troubleshooting in the order indicated by those numbers.

CONNECTOR LOCATION

Location of Connector in Engine Compartment



A11 Generator

E4 Engine Hood Courtesy Switch

H3 **H5** Headlight LH

H4 **H6** Headlight RH

H7 Horn LH

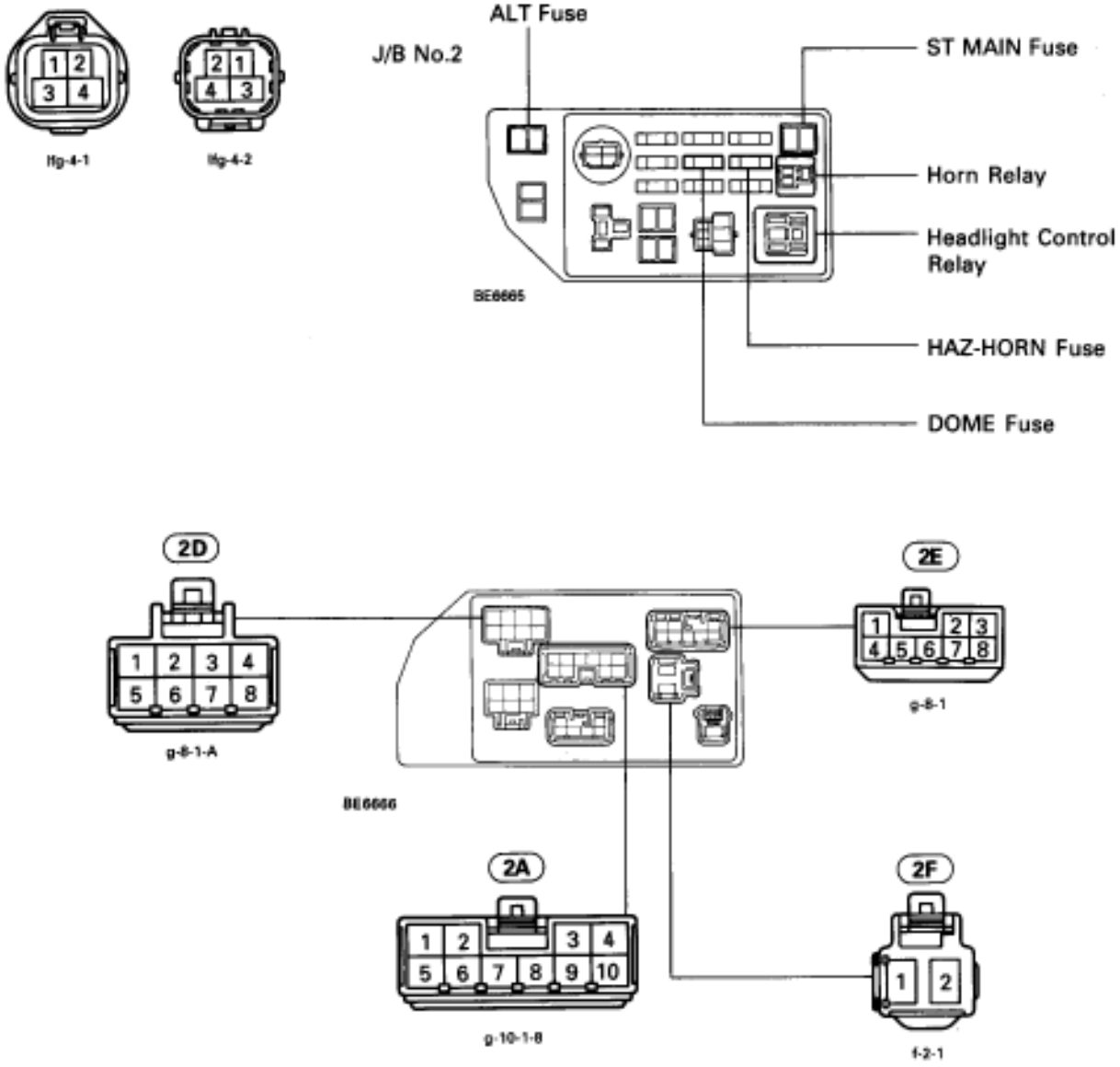
H8 Horn RH

N1 Park/Neutral Position Switch (A/T)

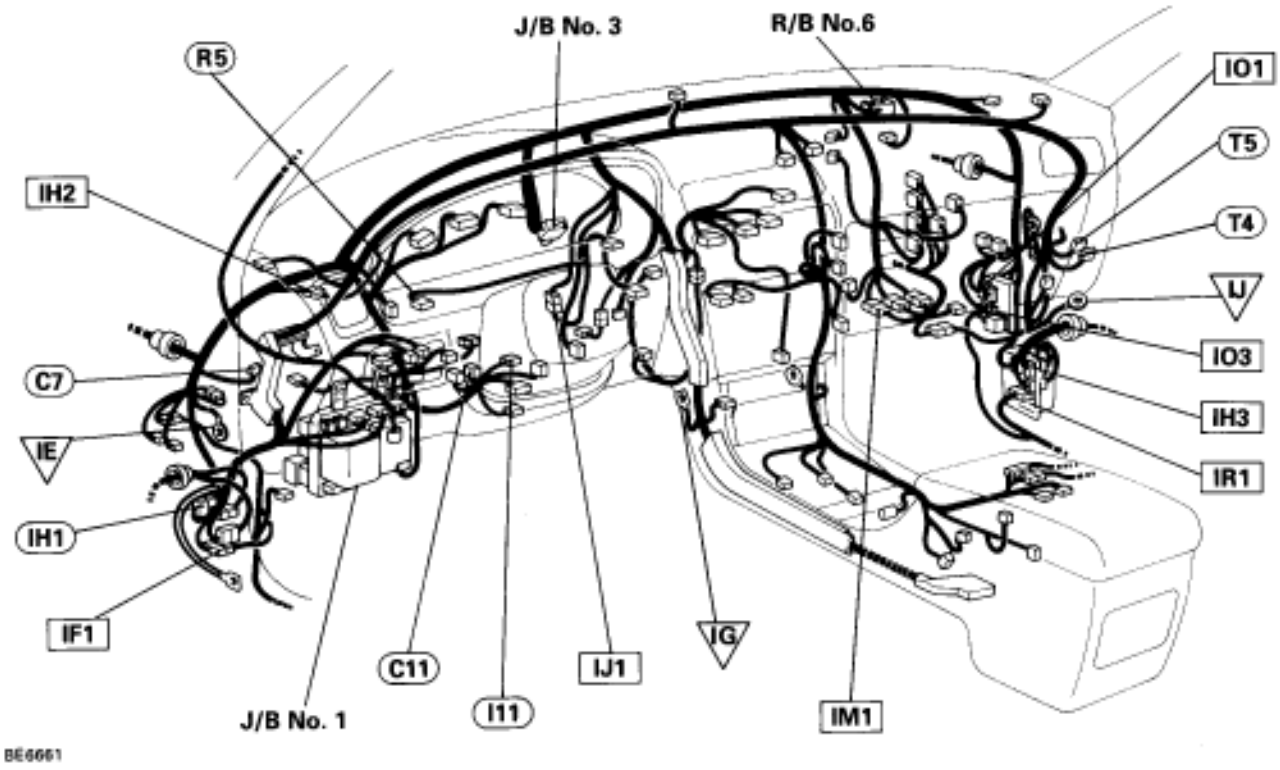
S5 Starter

T1 Theft Deterrent Horn

EE1


1 2
3 4
Hg-4-1
2 1
4 3
Hg-4-2
ALT Fuse
J/B No.2
ST MAIN Fuse
Horn Relay
Headlight Control Relay
HAZ-HORN Fuse
DOME Fuse
BE6665
2D
1 2 3 4
5 6 7 8
g-8-1-A
2E
1 2 3
4 5 6 7 8
g-8-1
BE6666
2A
1 2 3 4
5 6 7 8 9 10
g-10-1-8
2F
1 2
f-2-1

Location of Connectors in Instrument Panel



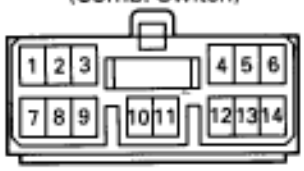
C7

Clutch Start Switch (M/T)

e-2-1

C11

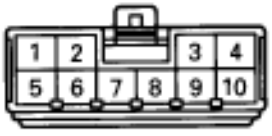
Horn Switch (Comb. Switch)



V-14-1

I11

Ignition Switch



g-10-1-B

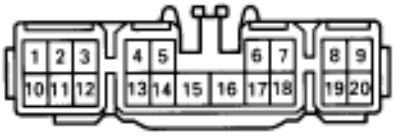
R5

Theft Deterrent Indicator Light

h-7-1

T4 T5

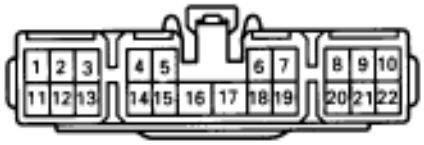
Theft Deterrent and Door Lock ECU



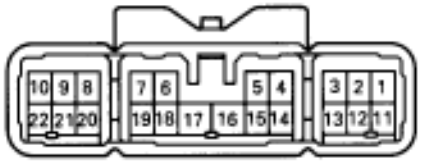
e-20-1

e-14-1-A

IF1

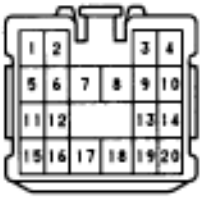


e-22-1

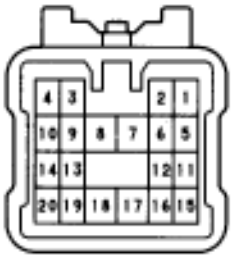


e-22-2

IG1



e-20-1-A



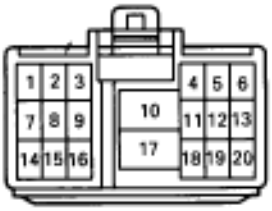
e-20-2-A

IH1

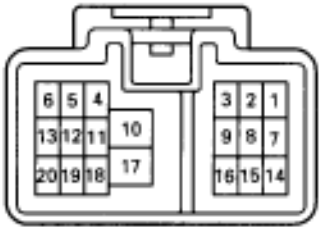
e-15-1

e-15-2

IH2



e-20-1-B



e-20-2-B

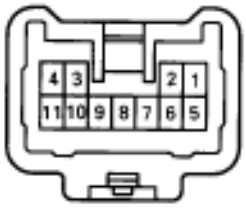
IH3

e-16-1

e-16-2

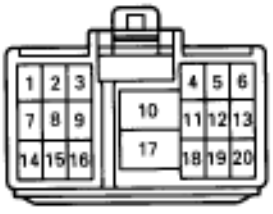
IJ1

h-11-1-A

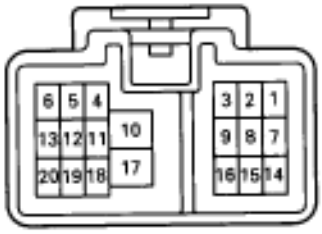


h-11-2-A

IM1



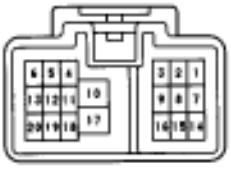
e-20-1-B



e-20-2-B

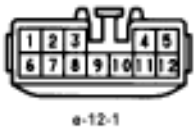
IO1

e-20-1-B

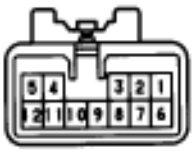


e-20-2-B

IO3



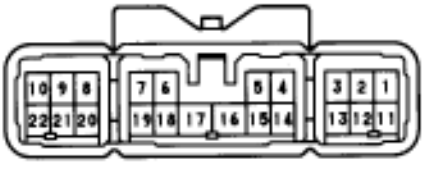
e-12-1



e-12-2

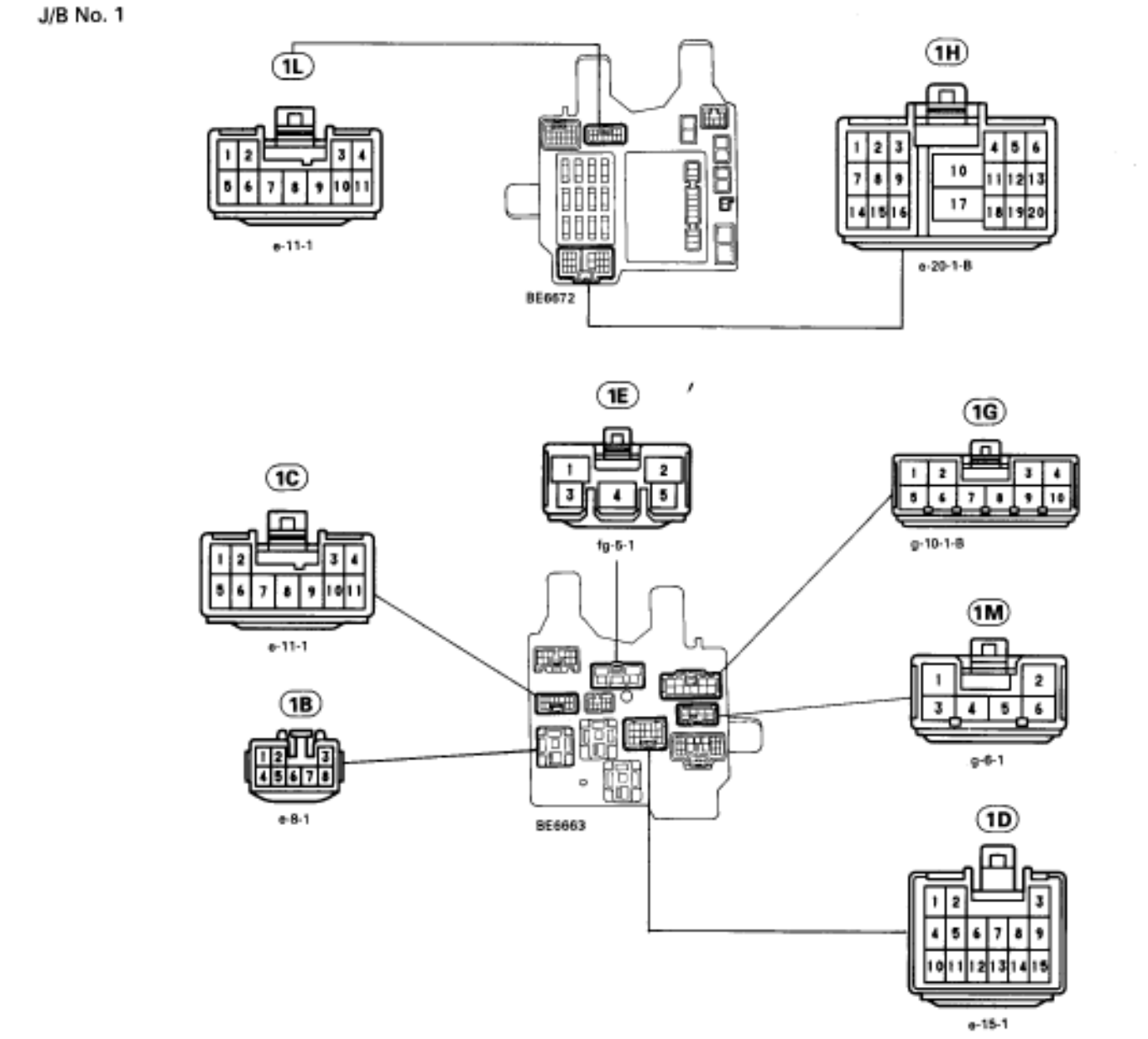
IR1

e-22-1

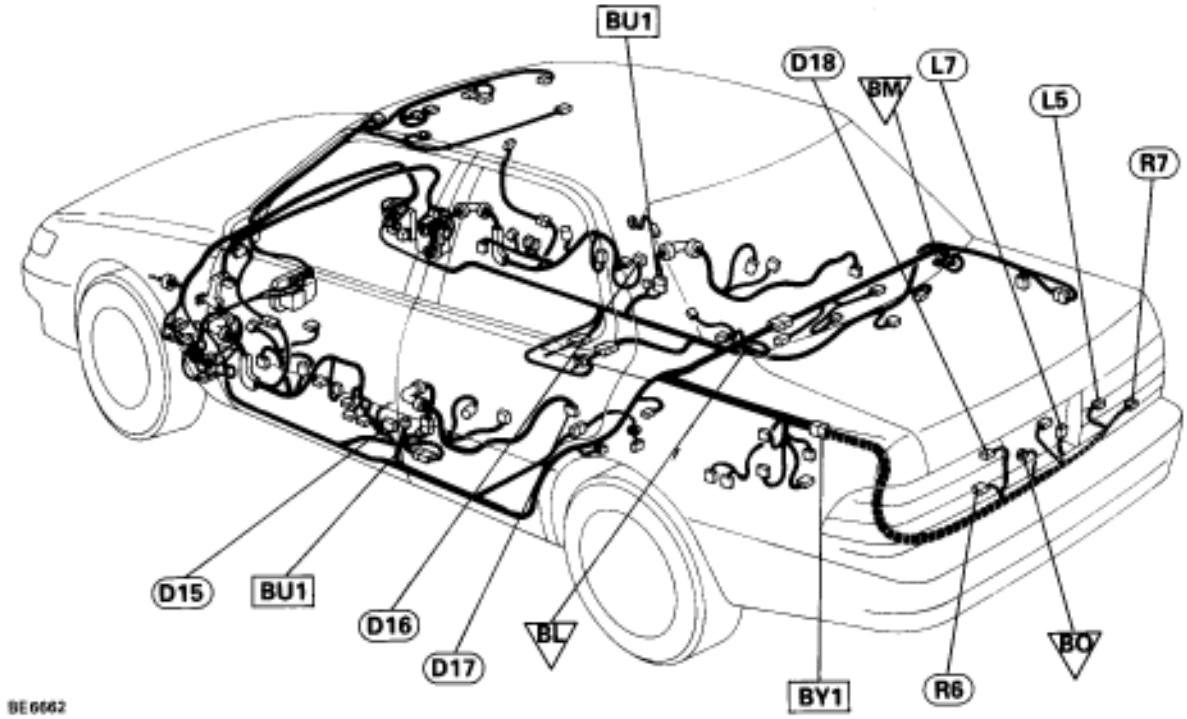


e-22-2

Location of Connector in Instrument Panel



Location of Connector in Body



D15
Door Unlock Detection Switch Front LH

D16
Door Unlock Detection Switch Front RH

D17
Door Unlock Detection Switch Rear LH

D18
Door Unlock Detection Switch Rear RH

L5
Luggage Compartment Door Key Operated Switch

L6
Luggage Compartment Door Courtesy Light

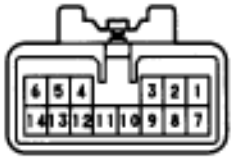
L7
Luggage Compartment Door Courtesy Switch

R6 R7
Taillight LH, RH

BU1

BV1

BY1



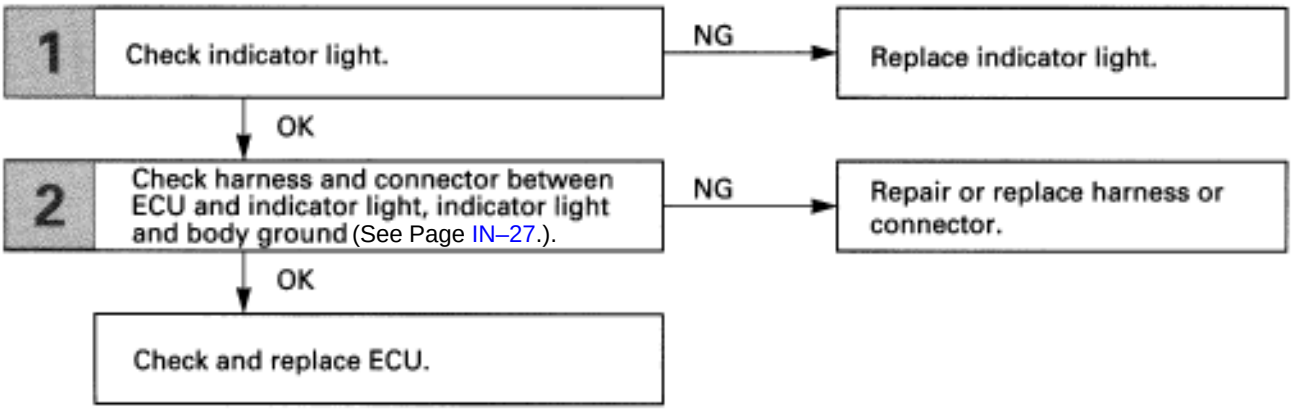
CIRCUIT INSPECTION

Indicator Light Circuit

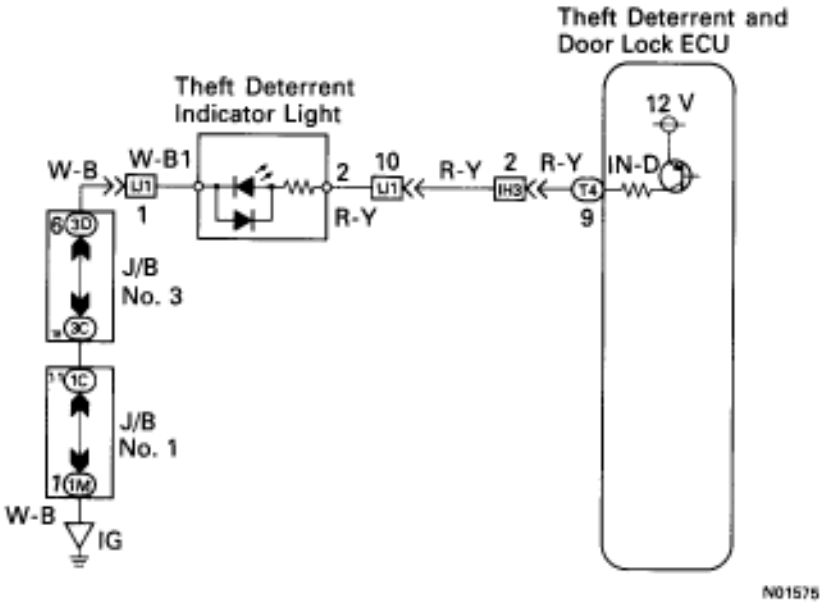
CIRCUIT DESCRIPTION

When the theft deterrent system is preparing to set, this circuit lights up the indicator light. When the system has been set, it continually turns the indicator light on for 1 second and turns it off for 1 second, thus blinking the indicator light.

DIAGNOSTIC CHART



WIRING DIAGRAM



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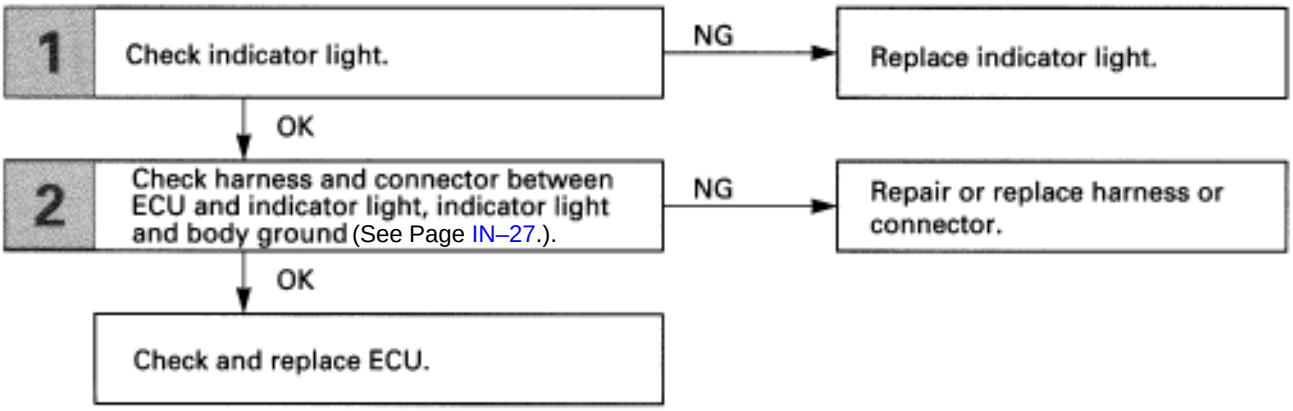
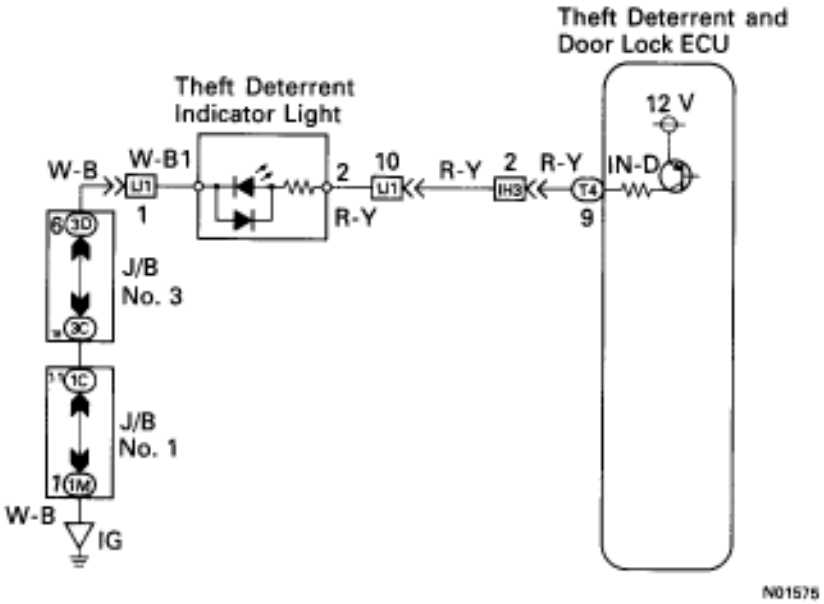
DIAGNOSTIC CHART

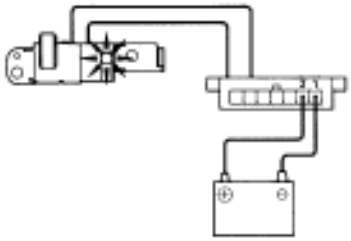


WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check indicator light.**



P 1. Remove combination meter cluster (See page BE–153 for removal and installation).

C 2. Disconnect indicator light connector.

OK **Indicator light comes on.**

OK → **NG** → **Replace indicator light.**

2 **Check harness and connector between ECU and indicator light, indicator light and bvody ground (See page IN–27).**

OK → **NG** → **Repair or replace harness or connector.**

Check and replace ECU.

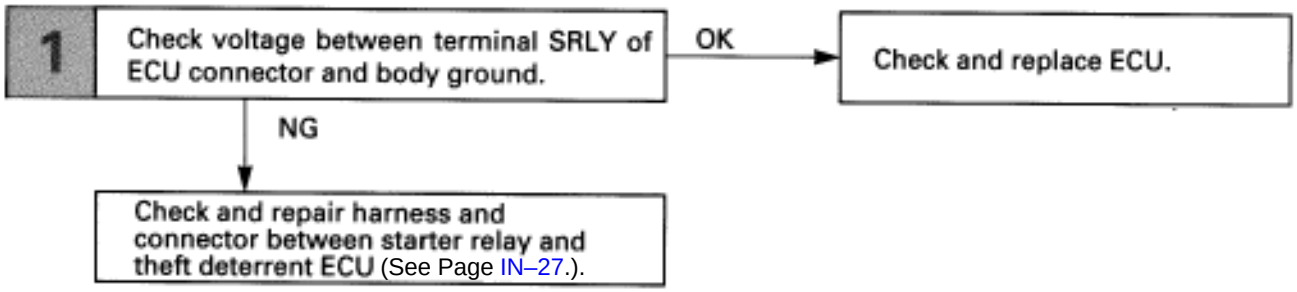
Starter Relay Circuit

CIRCUIT DESCRIPTION

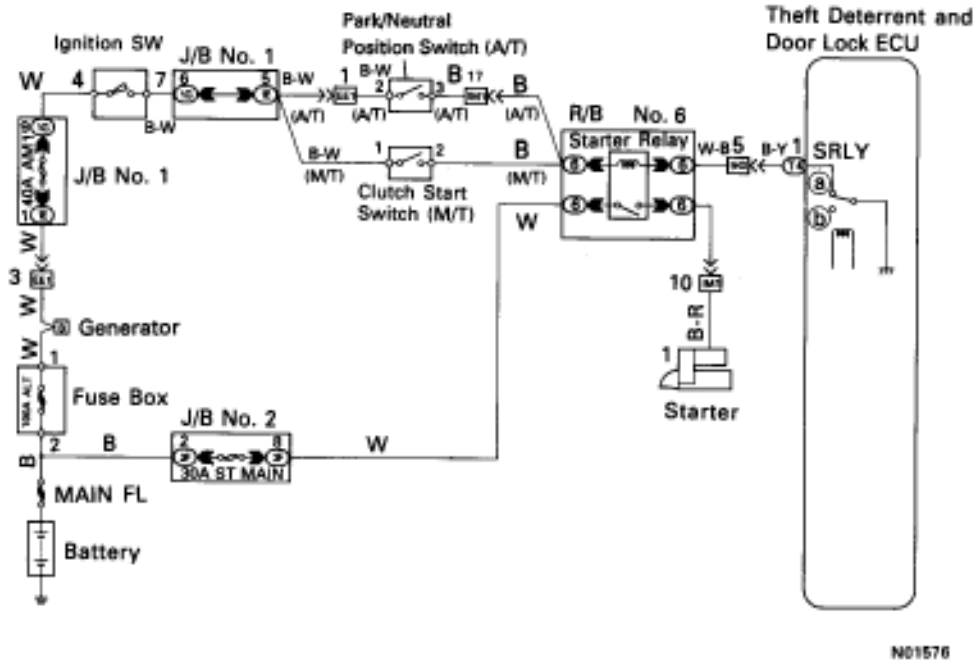
When the theft deterrent system is activated, contact (a) in the ECU becomes open, creating an open circuit in terminal ST circuit and making the starter inoperative (starter cut).
In this condition, if one of the following operations in done, the contact (a) in the ECU is grounded, thus canceling the starter cut:

① Unlock the front LH or RH door with key.
② Unlock the doors with the wireless door lock control system.

DIAGNOSTIC CHART

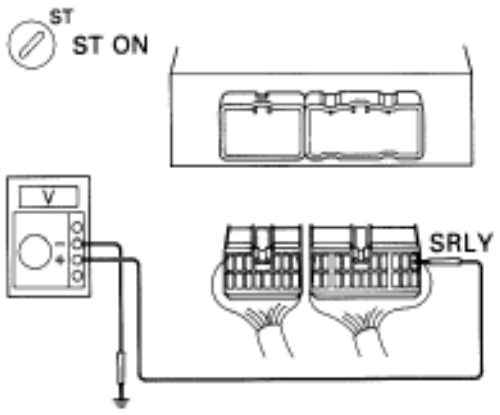


WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check voltage between terminal SRLY of ECU connector and body ground.**



P
(1.) Remove the glove box.
(2.) Disconnect the ECU connector.
(3.) Transmission in neutral position.

C Measure voltage between terminal SRLY of ECU connector and body ground, when ignition switch is turned to ST position.

OK **Voltage:** **10 ~ 14 V**

NG

Check and repair harness and connector between starter relay and ECU (See page IN–27).

OK

Check and replace ECU.

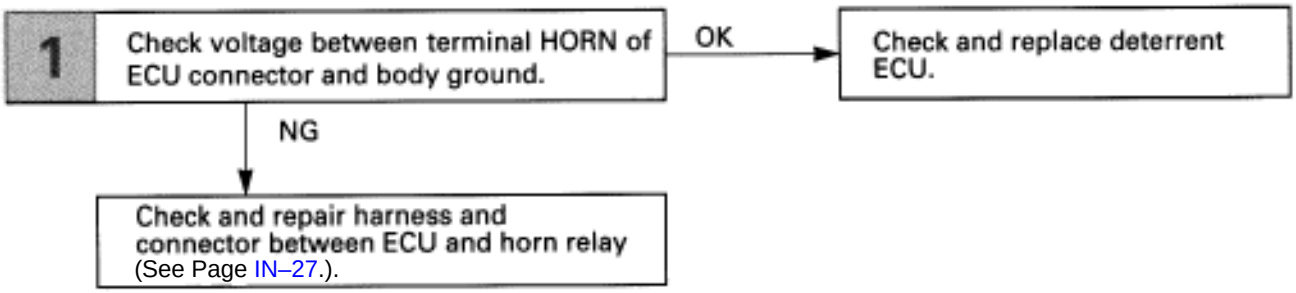
Horn Relay Circuit

CIRCUIT DESCRIPTION

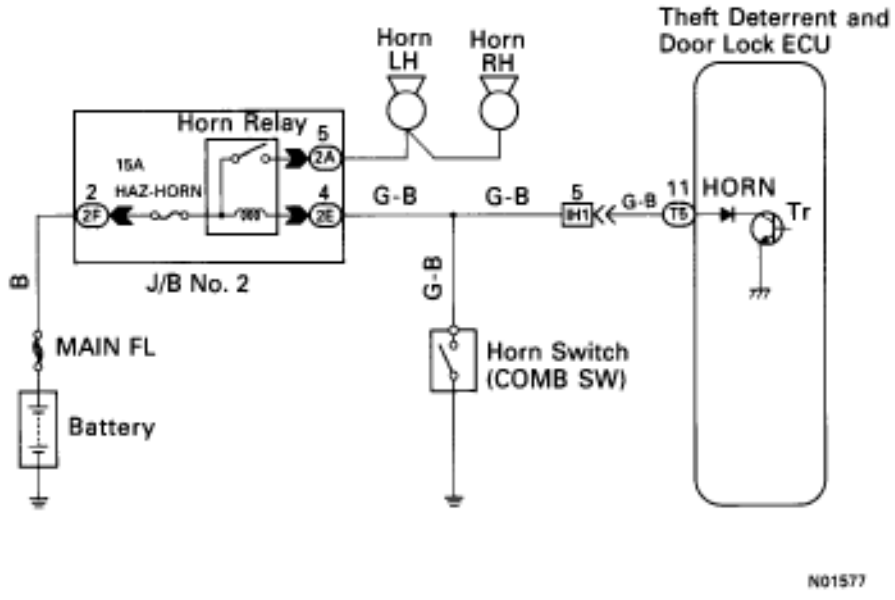
When their theft deterrent system is activated, it causes the Tr in the ECU to switch on and off in approximately 0.4 sec. cycles. This switches the horn relay on and off, thus the horns blow (See the wiring diagram below). In this condition, if any of the following operations is done, the Tr in the ECU goes off and the horn relay switches off, thus stopping the horns blow:

① Unlock the front LH or RH door with key.
② Turn the ignition switch to ACC or ON position.
③ Unlock the doors with the wireless door lock control system.
④ Wait for approximately 1 minute.

DIAGNOSTIC CHART



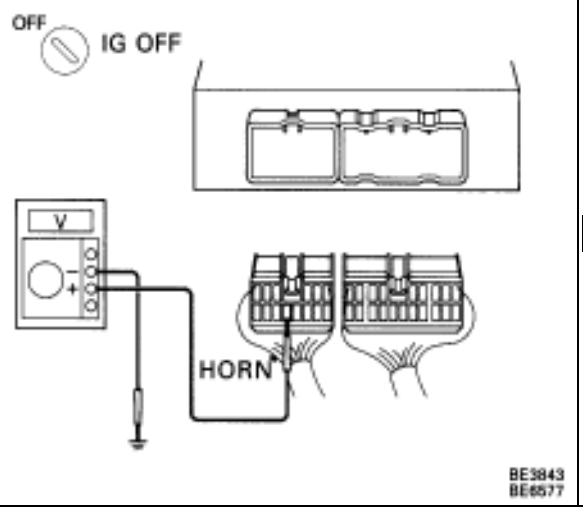
WIRING DIAGRAM



INSPECTION PROCEDURE

HINT: The flow chart below is based on the premise that the horns blow normally whenever the horn switch is operated. If horn operation is not normal when the horn switch is operated, proceed to troubleshooting on page BE–260.

1 **Check voltage between terminal HORN of ECU connector and body ground.**



P
1. Remove the glove box.
2. Disconnect the ECU connector.

C Measure voltage between terminal HORN of ECU connector and body ground.

OK **Voltage:** **10 ~ 14 V**

NG

OK **Check and replace theft deterrent ECU.**

Check and repair harness and connector between ECU and horn relay (See page IN–27).

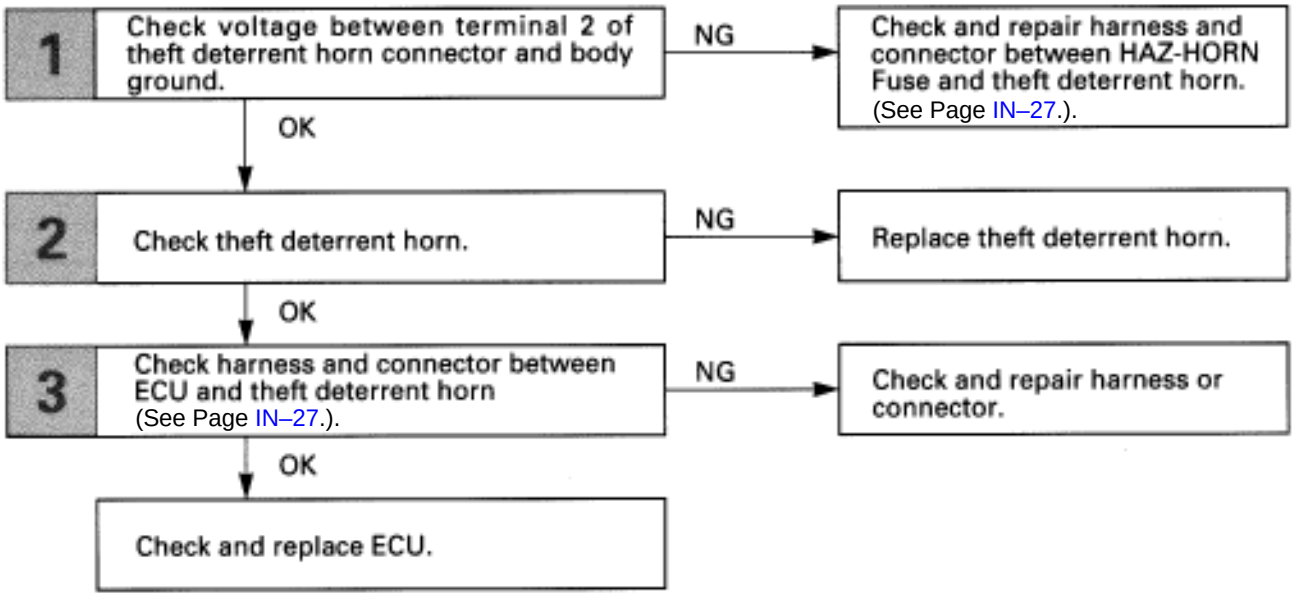
Theft Deterrent Horn Circuit

CIRCUIT DESCRIPTION

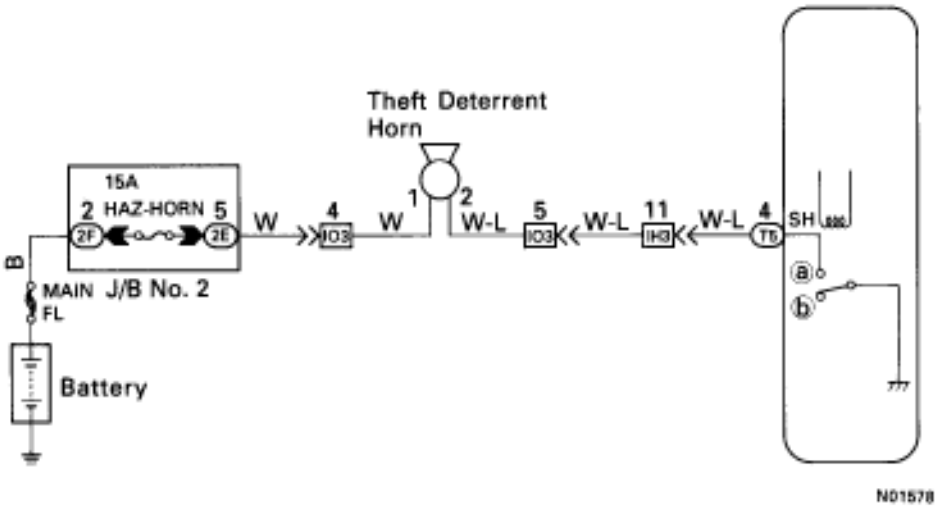
When the theft deterrent system is activated, contact (**a**) and contact (**b**) in the ECU close alternately in cycles of approximately 0.4 sec., causing the theft deterrent horn to blow (See the wiring diagram below).
In this condition, if any of the following operations is done, the contact (**a**) in the ECU opens, thus stopping the theft deterrent horn blow:

① Unlock the front LH or RH door with key.
② Turn the ignition switch to ACC or ON position.
③ Unlock the doors with the wireless door lock control system.
④ Wait for approximately 1 minute.

DIAGNOSTIC CHART

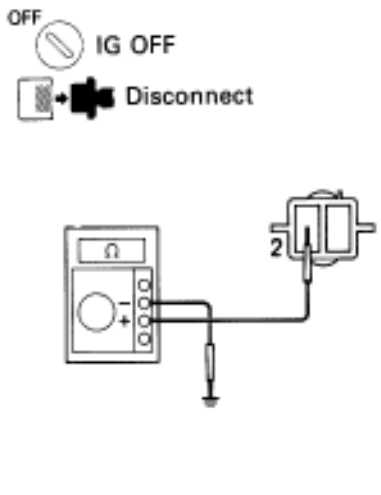


WIRING DIAGRAM



INSPECTION PROCEDURES

1 **Check voltage between terminal 2 of theft deterrent horn connector and body ground.**



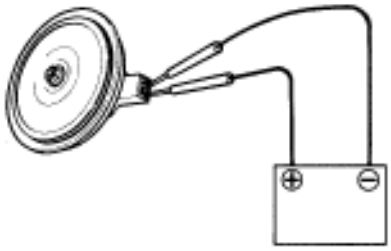
P Remove the theft deterrent horn and disconnect the connector.

C Measure voltage between terminal 2 of theft deterrent horn connector and body ground.

OK **Voltage:** **10 ~ 14 V**

OK → **NG** → **Check and repair harness and connector between HAZ–HORN fuse and theft deterrent horn. (See page IN–27)**

2 **Check theft deterrent horn.**



C Connect positive ⊕ lead to terminal 2 and negative ⊖ lead to terminal 1 of theft deterrent horn connector.

OK **Theft deterrent horn blows.**

OK → **NG** → **Replace theft deterrent horn.**

3 **Check harness and connector between ECU and theft deterrent horn (See page IN–27).**

OK → **NG** → **Check and repair harness or connector.**

Check and replace ECU.

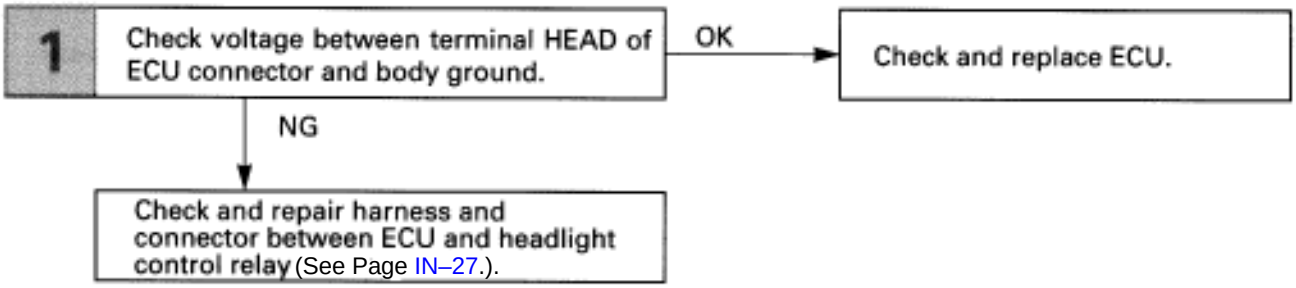
Headlight Control Relay Circuit

CIRCUIT DESCRIPTION

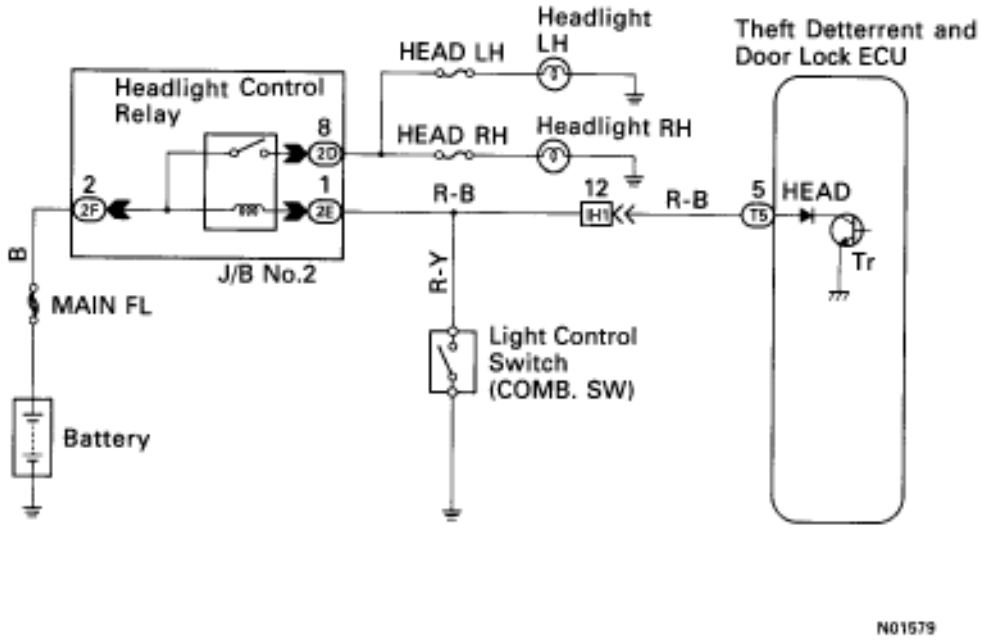
When the theft deterrent system is activated, it causes the Tr in the ECU to switch on and off at approximately 0.4 sec. intervals. This switches the headlight control relay on and off, thus flashing the headlights (See the wiring diagram below).
In this condition, if any of the following operations is done, the Tr in the ECU goes off and the headlight control relay switches off, thus stopping the headlights flashing:

① Unlock the front LH or RH door with key.
② Turn the ignition switch to ACC or ON position.
③ Unlock the doors with the wireless door lock control system.
④ Wait for approximately 1 minute.

DIAGNOSTIC CHART



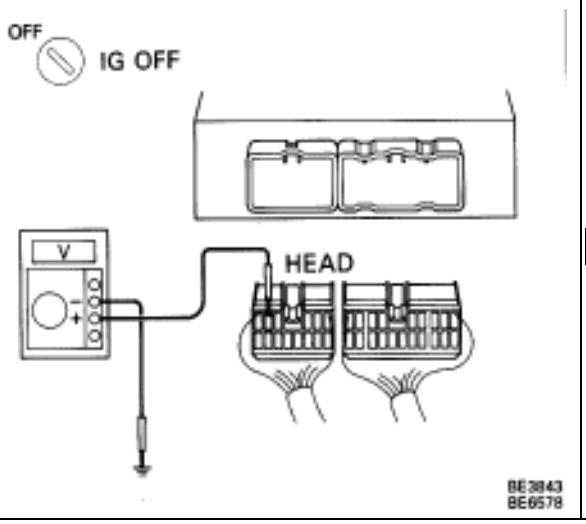
WIRING DIAGRAM



INSPECTION PROCEDURE

HINT: The flow chart below is based on the premise that the headlights light up normally whenever the light control switch is operated. If headlight operation is not normal when the light control switch is operated, proceed to troubleshooting on page BE–42.

1 **Check voltage between terminal HEAD of ECU connector and body ground.**



P
1. Remove the glove box.
2. Disconnect the ECU connector.

C Measure voltage between terminal HEAD of ECU connector and body ground.

OK **Voltage:** **10 ~ 14 V**

NG → **Check and repair harness and connector between ECU and headlight control relay (See page IN–27).**

OK → **Check and replace ECU.**

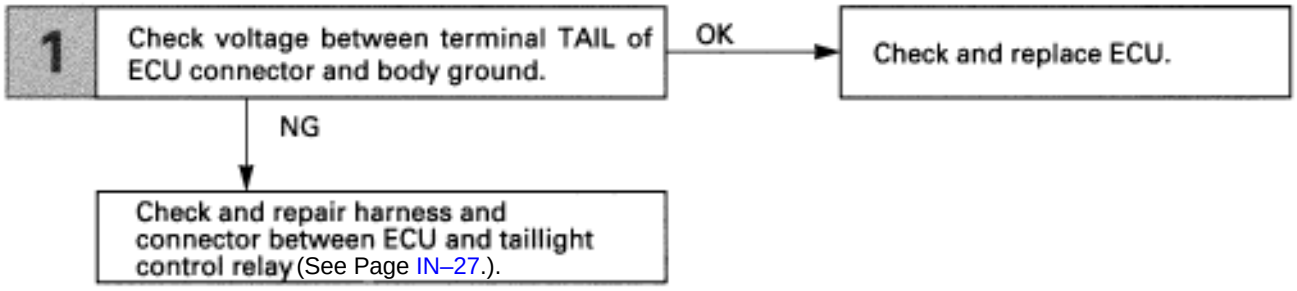
Taillight Control Relay Circuit

CIRCUIT DESCRIPTION

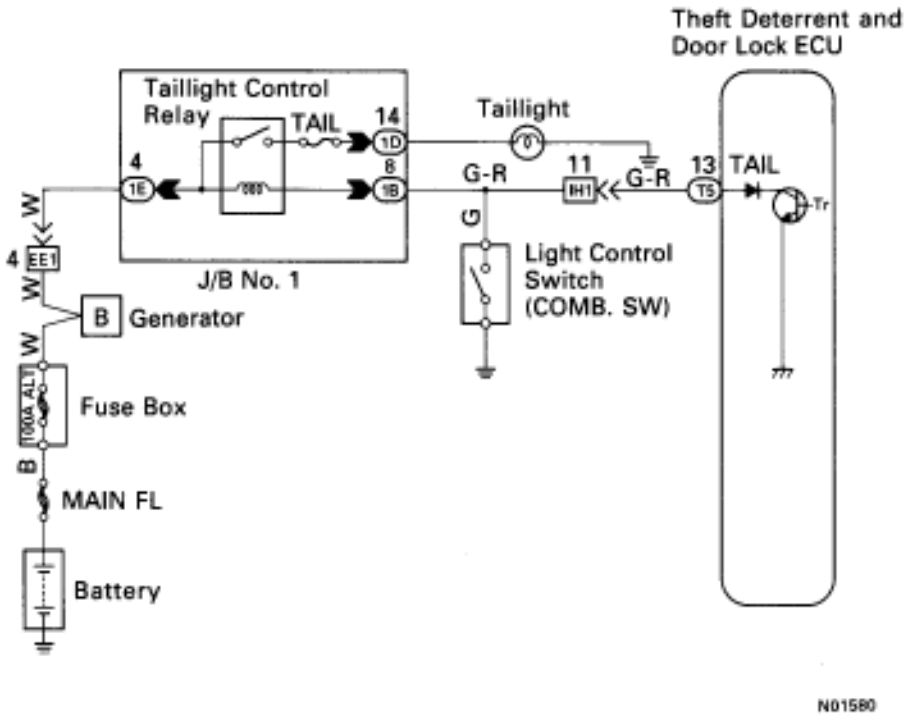
When the theft deterrent system is activated, it causes the Tr in the ECU to switch on and off at approximately 0.4 sec. intervals. This switches the taillight control relay on and off, thus flashing the taillights (See the wiring diagram below).
In this condition, if any of the following operations is done, the Tr in the ECU goes off and the taillight control relay switches off, thus stopping the taillights flashing:

① Unlock the front LH or RH door with key.
② Turn the ignition switch to ACC or ON position.
③ Unlock the doors with the wireless door lock control system.
④ Wait for approximately 1 minute.

DIAGNOSTIC CHART



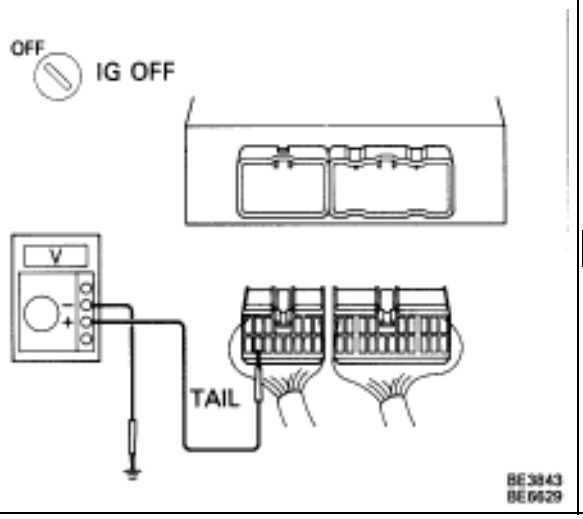
WIRING DIAGRAM



INSPECTION PROCEDURE

HINT: The flow chart below is based on the premise that the taillights light up normally whenever the light control switch is operated. If taillight operation is not normal when the light control switch is operated, proceed to trouble-shooting on page BE–60.

1 **Check voltage between terminal TAIL of ECU connector and body ground.**



P
1. Remove the glove box.
2. Disconnect the ECU connector.

C Measure voltage between terminal TAIL of ECU connector and body ground.

OK **Voltage:** **10 ~ 14 V**

NG

Check and repair harness and connector between ECU and taillight control relay (See page IN–27).

OK

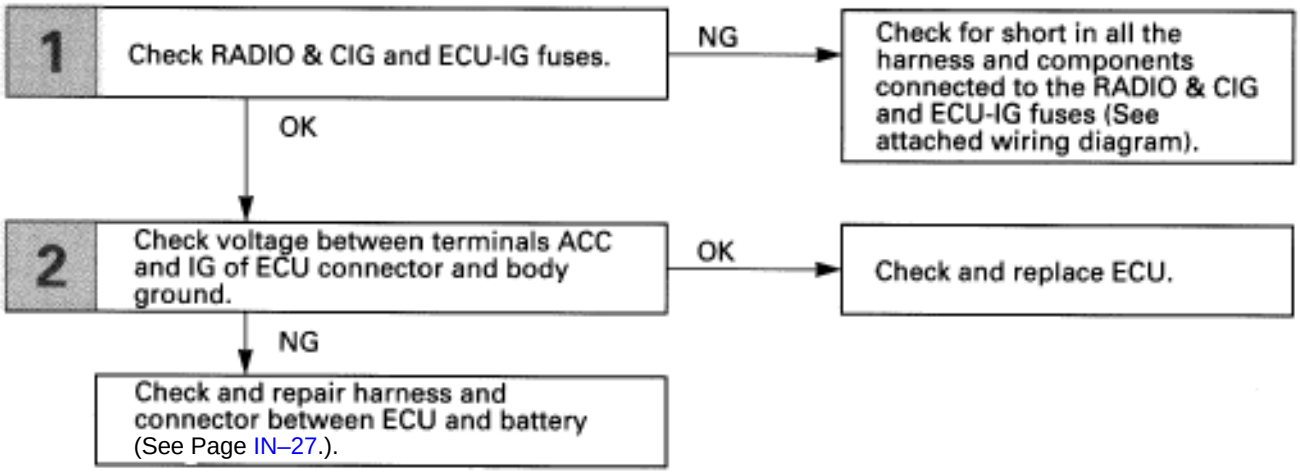
Check and replace ECU.

Ignition Switch Circuit

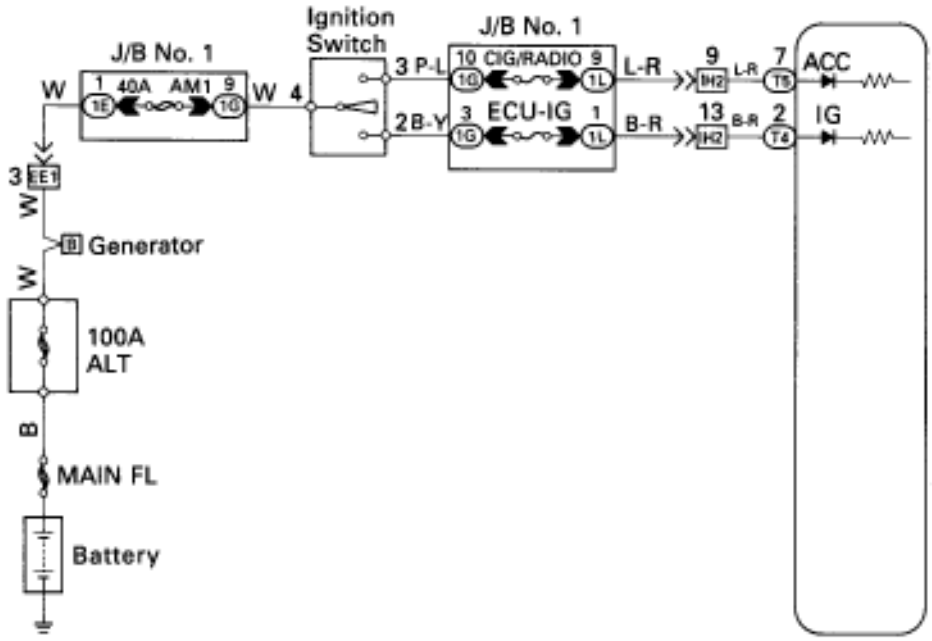
CIRCUIT DESCRIPTION

When the ignition switch is turned to the ACC position, battery positive voltage is applied to the terminal ACC of the ECU. Also, if the ignition switch is turned to the ON position, battery positive voltage is applied to the terminals ACC and IG of the ECU. When the battery positive voltage is applied to the terminal ACC of the ECU while the theft deterrent system is activated, the warning stops. Furthermore, power supplied from the terminals ACC and IG of the ECU is used as power for the door open detection switch, etc.

DIAGNOSTIC CHART



WIRING DIAGRAM



N01581

INSPECTION PROCEDURE

1 **Check RADIO & CIG and ECU–IG fuses.**

N01207

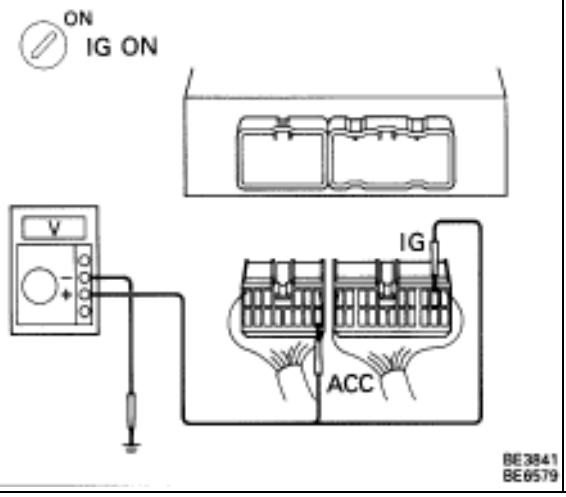
P
1. Remove the front lower panel.
2. Remove the RADIO & CIG and ECU–IG fuses from J/B No. 1.

C Check continuity of RADIO & CIG and ECU–IG fuses.

OK **Continuity**

OK → **NG** → **Check for short in all the harness and components connected to the RADIO & CIG and ECU–IG fuses (See attached wiring diagram).**

2 **Check voltage between terminals IG and ACC of ECU and body ground.**



BE3841
BE6579

P
1. Remove the glove box.
2. Disconnect the ECU connectors.
3. Turn ignition switch on.

C Measure voltage between terminals IG and ACC of ECU connector and body ground.

OK **Voltage:** **10 ~ 14 V**

NG → **OK** → **Check and replace ECU.**

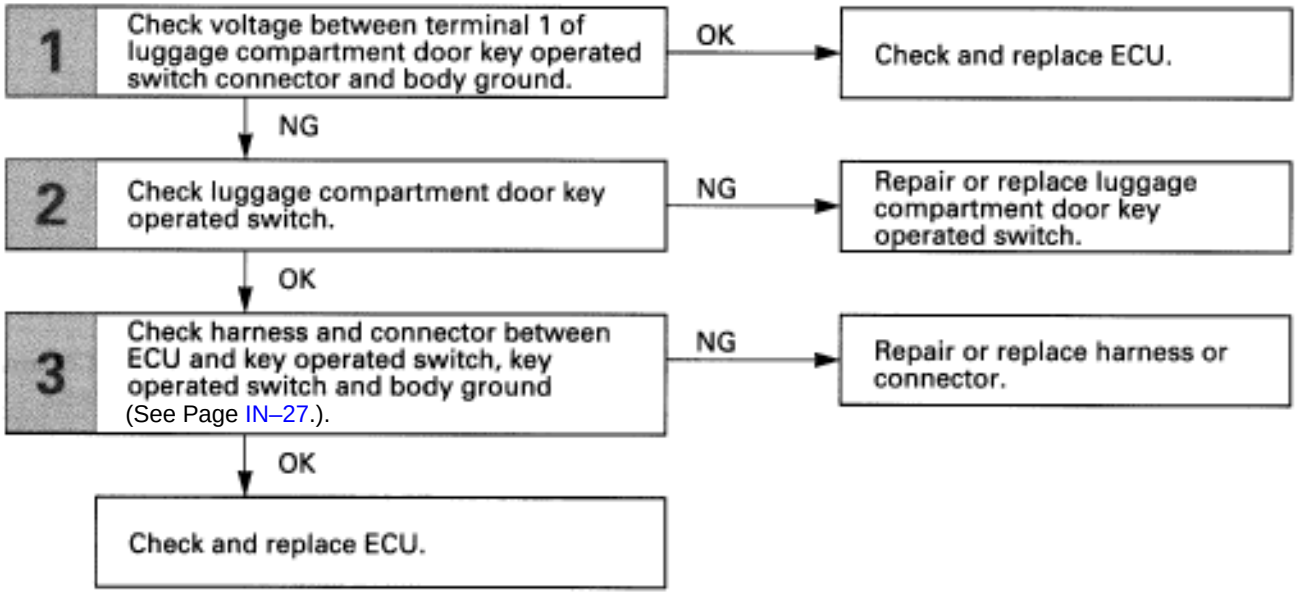
Check and repair harness and connector between ECU and battery (See page IN–27).

Luggage Compartment Door Key Operated Switch Circuit

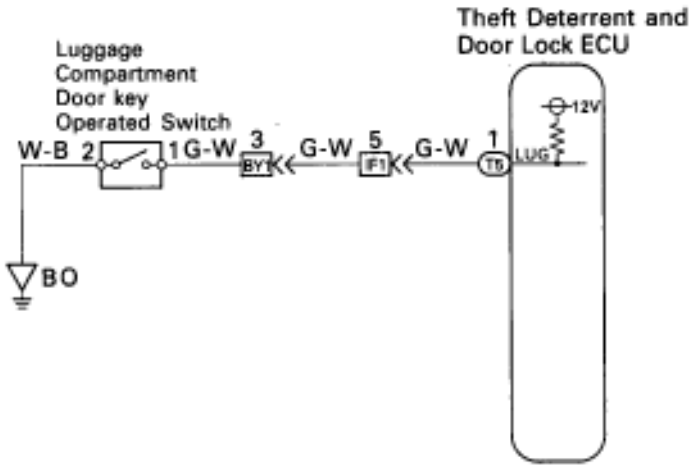
CIRCUIT DESCRIPTION

The luggage compartment door key operated switch goes on when the luggage compartment door key cylinder is turned to the unlock side with the key.

DIAGNOSTIC CHART

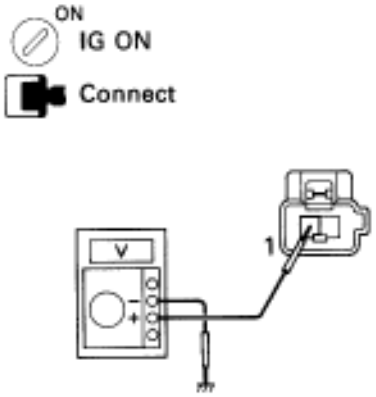


WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check voltage between terminal 1 of luggage compartment door key operated switch connector and body ground.**



P
1. Remove luggage compartment door trim.
2. Turn ignition switch on.

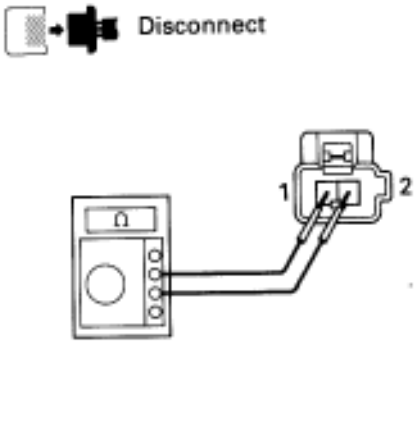
C Measure voltage between terminal 1 of luggage compartment door key operated switch connector and body ground, when the key is turned to the unlock side and not turned.

OK

Key operation	Voltage
Turned to the unlock side	Below 1 V
Not turned	10 ~ 14 V

NG → **OK** → **Check and replace ECU.**

2 **Check luggage compartment door key operated switch.**



P Disconnect luggage compartment door key operated switch connector.

C Check continuity between terminals 1 and 2, when the key is turned to the unlock side and not turned.

OK

Key operation	1	2
Turned to unlock side	○—○ Continuity	
Not turned		

OK → **NG** → **Repair or replace luggage compartment dor key operated switch.**

3 **Check harness and connector between ECU and key operated switch, key operated switch and body ground (See page IN–27).**

OK → **NG** → **Check and repair harness or connector.**

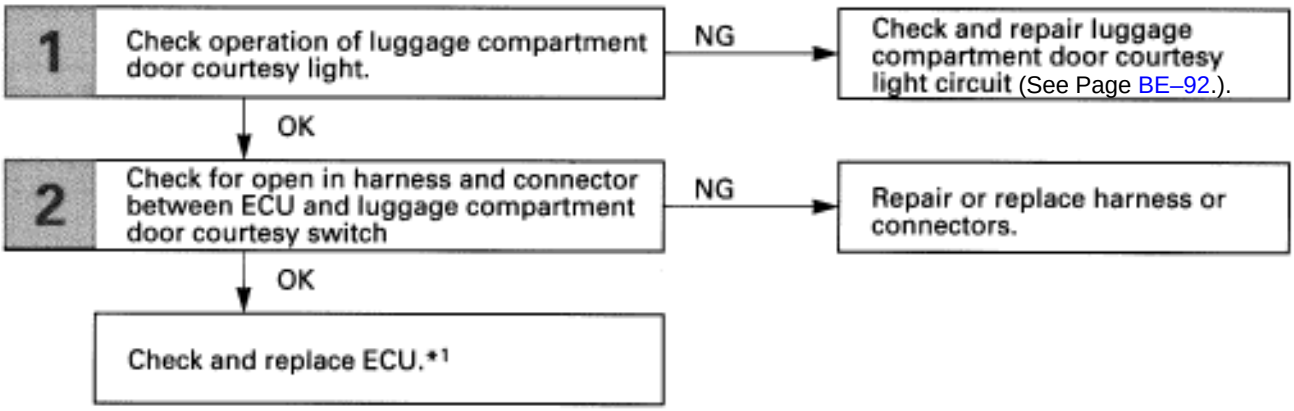
Check and replace ECU.

Luggage Compartment Door Key Operated Switch Circuit

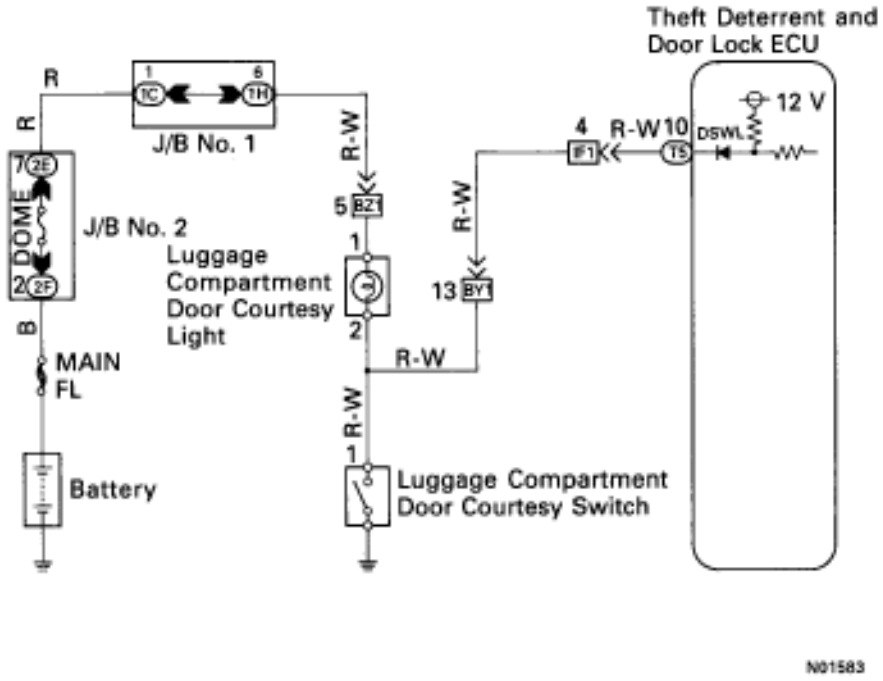
CIRCUIT DESCRIPTION

The luggage compartment door courtesy switch goes on when the luggage compartment door is opened and goes off when the luggage compartment door is closed.

DIAGNOSTIC CHART



WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check operation of luggage compartment door courtesy light.**
C	Check that luggage compartment door courtesy light goes off when luggage compartment door courtesy switch is pushed, and comes on when switch is not pushed.

OK

NG → **Check and repair luggage compartment door courtesy light circuit (See page BE–92)**

2	**Check for open in harness and connector between ECU and luggage compartment door courtesy switch (See page IN–27).**

OK

NG → **Repair or replace harness or connectors.**

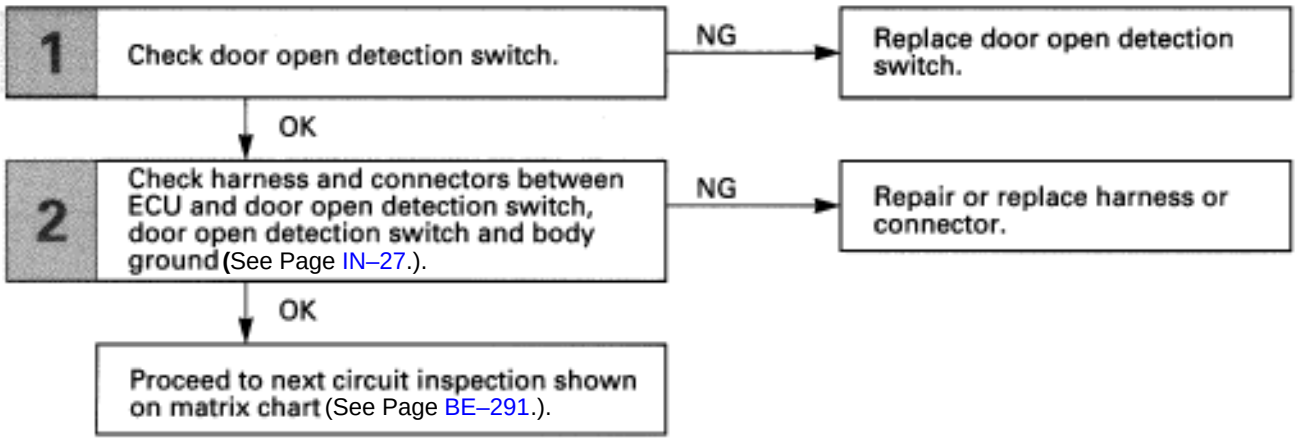
Check and replace ECU.

Door Open Detection Switch Circuit

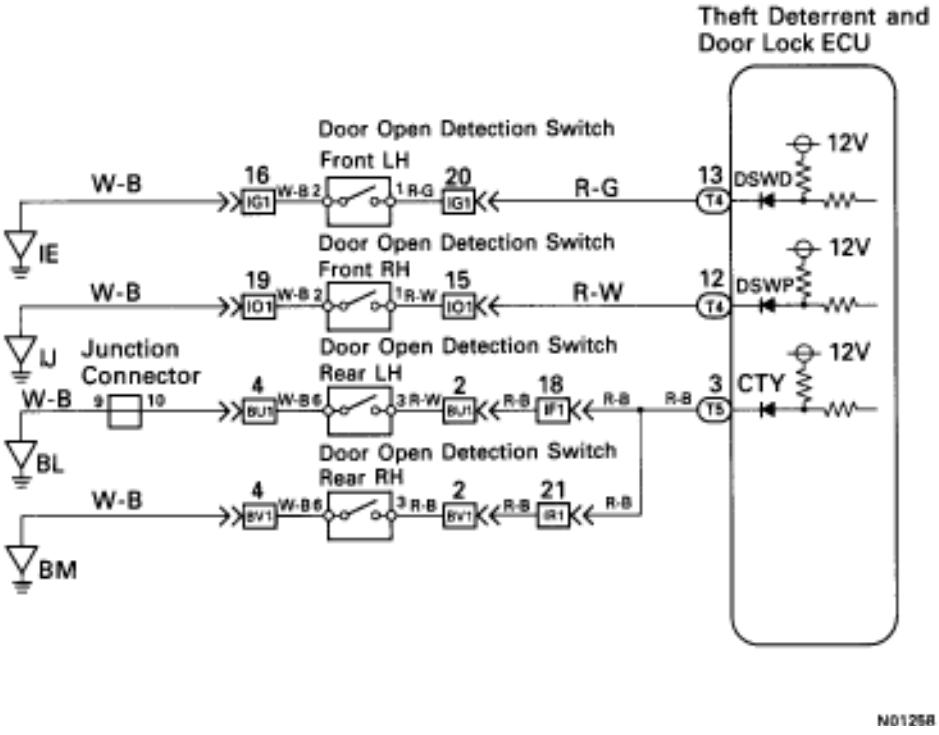
CIRCUIT DESCRIPTION

The door open detection switch is built in the door lock assembly.
It is on when the door is open and off when the door is closed.

DIAGNOSTIC CHART

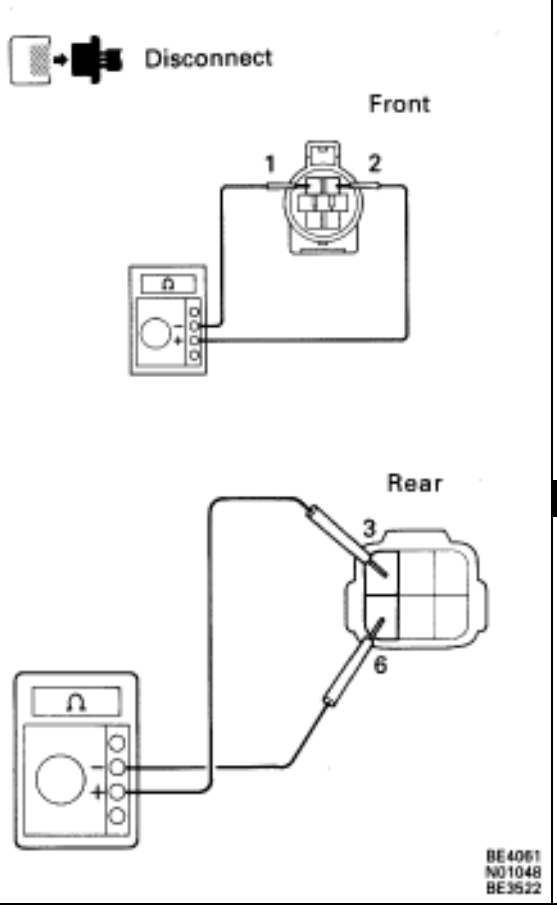


WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check door open detection switch.**



P
1. Remove the door trim and service hole cover.
2. Disconnect door open detection switch connector.

C Check continuity between terminals 1 (3) and 2 (6) of door open detection switch connector, when the front door is opened and closed.

OK

Continuity

Switch condition \ Terminal	1 (3)	2 (6)
ON (Door opened)	○	○
OFF (Door closed)		

Hint The terminal number without bracket is for the Front, the number with bracket is for the Rear.

OK → **NG** → **Replace door open detection switch.**

2 **Check harness and connectors between ECU and door open detection switch, door open detection switch and body ground (See page IN–27).**

OK → **NG** → **Repair or replace harness or connectors.**

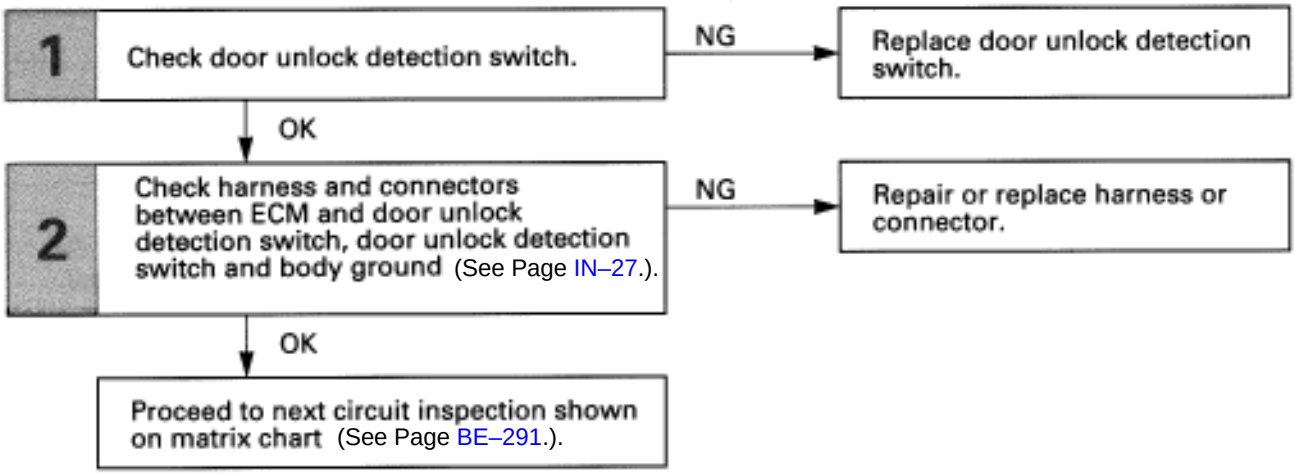
Proceed to next circuit inspection shown on matrix chart (See page BE–291).

Door Unlock Detection Switch Circuit

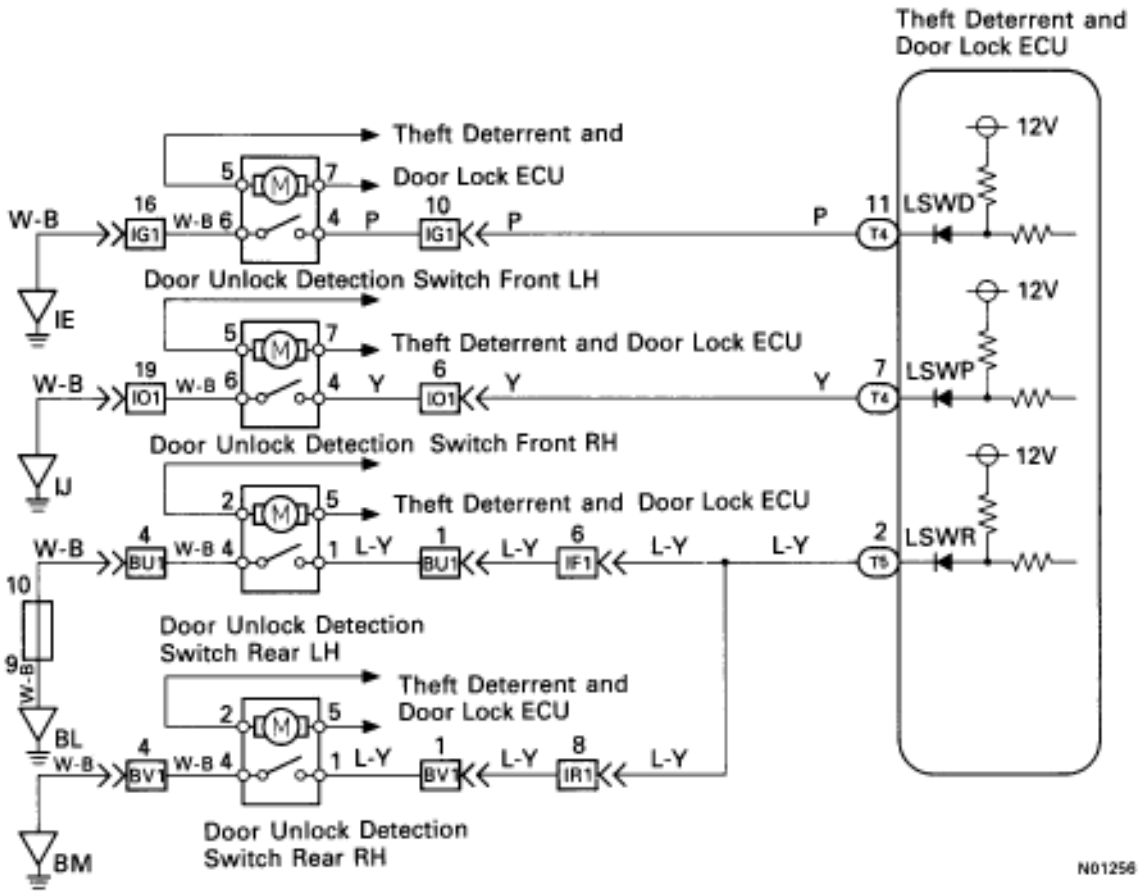
CIRCUIT DESCRIPTION

The door unlock detection switch is built in the door lock motor assembly. This switch is on when the door lock knob is in the unlock position and off when the lock knob is in the lock position.
The ECU detects the door lock knob conditions in this circuit. It is used as one of the operating conditions for the key confinement prevention function.

DIAGNOSTIC CHART

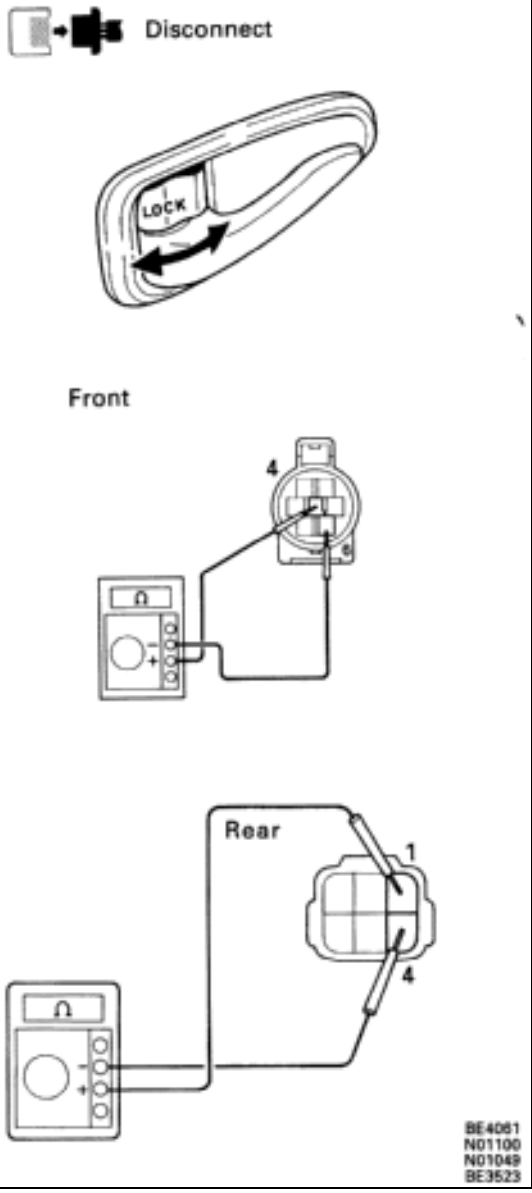


WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check Door Unlock Detection Switch.**



P
1. Remove the door trim and service hole cover.
2. Disconnect door unlock detection switch connector.

C Check continuity between terminals 4 (1) and 6 (4) of door unlock detection switch connector, when the door lock knob is operated to the lock side and unlock side.

OK

○—○ Continuity

Switch condition \ Terminal	4 (1)	6 (4)
Door unlock	○	○
Door lock		

Hint The terminal number without bracket is for the Front, the number with bracket is for the Rear.

OK → **2**

NG → **Replace door open detection switch.**

2 **Check harness and connectors between ECU and door open detection switch, door open detection switch and body ground (See page IN–27).**

OK → **Proceed to next circuit inspection shown on matrix chart (See page BE–291).**

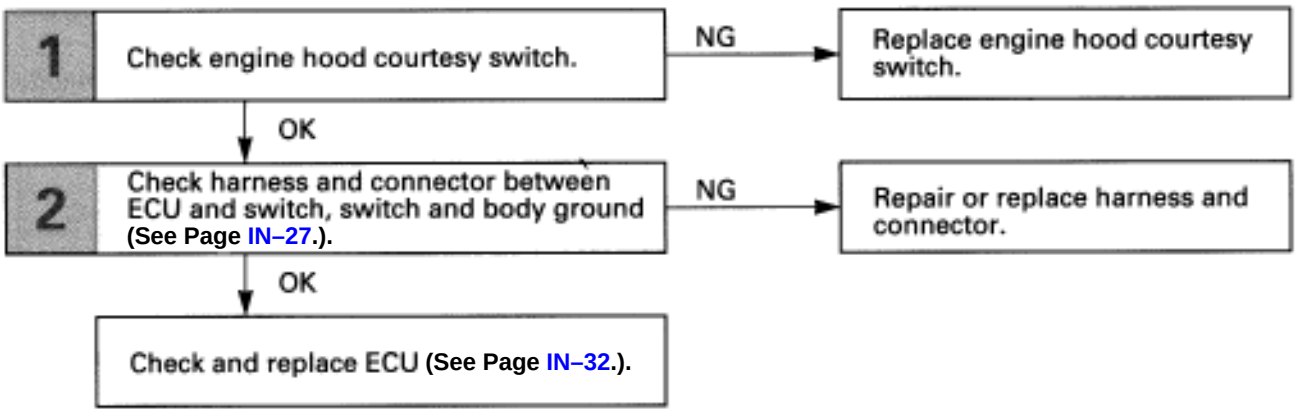
NG → **Repair or replace harness or connectors.**

Engine Hood Courtesy Switch Circuit

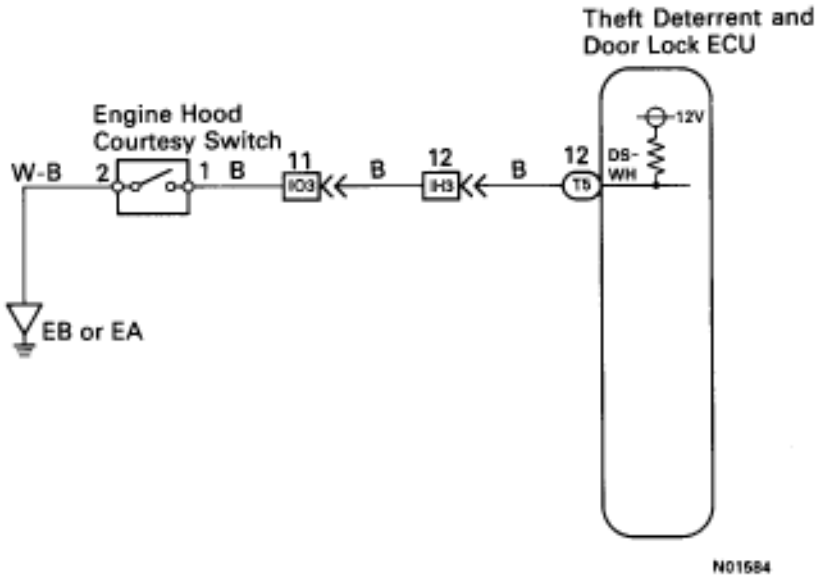
CIRCUIT DESCRIPTION

The engine hood courtesy switch is built into the engine hood lock assembly and goes on when the engine hood is opened and goes off when the engine hood is closed.

DIAGNOSTIC CHART

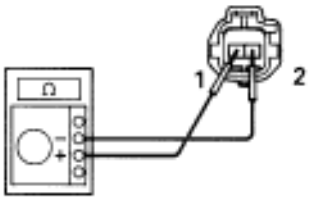


WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check engine hood courtesy switch.**



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P Disconnect engine hood courtesy switch connector.

C Check continuity between terminals 1 and 2 when engine hood lock is locked and unlocked.

OK

Continuity

Engine hood lock \ Terminal	1	2
Lock		
Unlock	○——	——○

OK → **NG** → **Replace door open detection switch.**

2 **Check harness and connectors between ECU and door open detection switch, door open detection switch and body ground (See page IN–27).**

OK → **NG** → **Repair or replace harness or connector.**

Check and replace ECU (See page IN–32).

WIRELESS DOOR LOCK CONTROL SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

HINT: Troubleshooting of the wireless door lock control system is based on the premise that the door lock control system is operating normally. Accordingly, before troubleshooting the wireless door lock control system, first make certain that the door lock control system is operating normally.
Perform troubleshooting in accordance with the procedure on the following page.

CUSTOMER PROBLEM ANALYSIS

Using the customer problem analysis check sheet for reference, ask the customer in as much detail as possible about the problem.

2 PROBLEM SYMPTOM CONFIRMATION, ⁜ SYMPTOM SIMULATION

Confirm the problem symptoms. If the problem does not reappear, be sure to simulate the problem, using the ”Problem Simulation Method”.

At this stage check whether the whole wireless door lock control system fails to operate, or whether only some of the particular functions fail to operate.

4 PRECHECK TYPE I, 5 PRECHECK TYPE II

Using the self diagnosis function of the wireless door lock ECU, perform Precheck Type I to find out if the system is normal (system non–operation due to external noise, etc.) or if the abnormality lies with the vehicle. In Precheck Type II, locate if the cause of problem lies in the transmitter, the antenna or the vehicle.
Perform Precheck Type I when whole wireless door lock control system fails to operate only at a specific locality.

Perform Precheck Type II when whole wireless door lock control system fails to operate no matter where the locality is.

When only some functions of wireless door lock control system do not operate, proceed to 8 on the Matrix Chart of Problem Symptoms.

6 INSPECTION OF TRANSMITTER, 7 INSPECTION OF ANTENNA CIRCUIT

If it is found in Precheck Type II that the cause of the problem is in the transmitter or antenna, proceed to the appropriate pages and start troubleshooting.

8 MATRIX CHART OF PROBLEM SYMPTOMS

Confirm the order of inspection for each applicable problem symptom on the matrix chart.

9 CIRCUIT INSPECTION

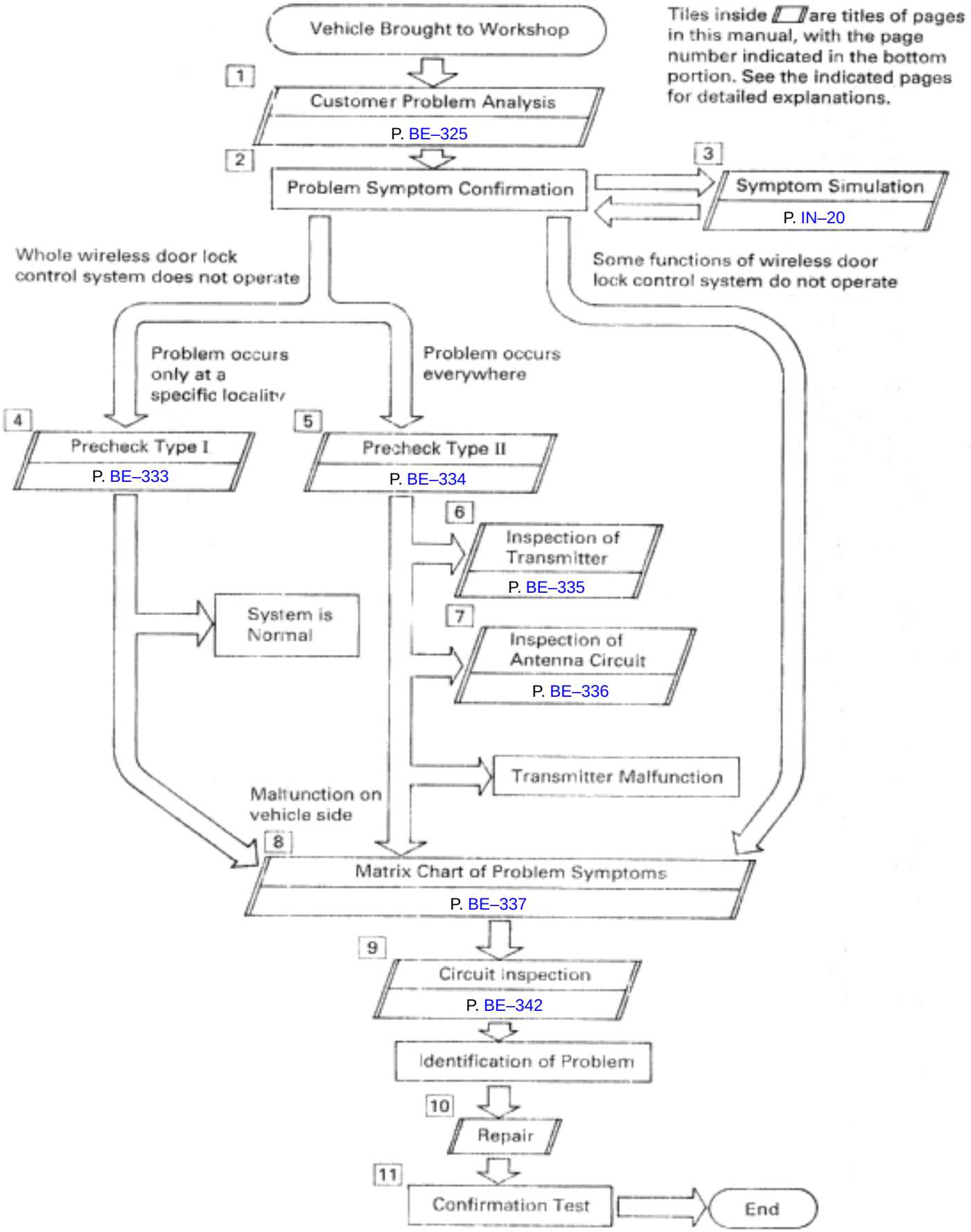
Proceed with diagnosis of each circuit in accordance with the inspection order confirmed in 8. Judge whether the cause of the problem is in the sensor, wire harness and connectors, or the ECU.

10 REPAIR

If the cause of the problem is found in 9 perform repairs.

[11] CONFIRMATION TEST

After completing repairs, confirm that the problem is eliminated and that all functions of the wireless door lock control system are normal.


Vehicle Brought to Workshop
Tiles inside are titles of pages in this manual, with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.
1
Customer Problem Analysis
P. BE–325
2
Problem Symptom Confirmation
3
Symptom Simulation
P. IN–20
Whole wireless door lock control system does not operate
Some functions of wireless door lock control system do not operate
Problem occurs only at a specific locality
Problem occurs everywhere
4
Precheck Type I
P. BE–333
5
Precheck Type II
P. BE–334
6
Inspection of Transmitter
P. BE–335
System is Normal
7
Inspection of Antenna Circuit
P. BE–336
Transmitter Malfunction
Malfunction on vehicle side
8
Matrix Chart of Problem Symptoms
P. BE–337
9
Circuit Inspection
P. BE–342
Identification of Problem
10
Repair
11
Confirmation Test
End

CUSTOMER PROBLEM ANALYSIS CHECK SHEET

WIRLESS DOORLOCK CONTROL System Check Sheet

Inspector's Name:

Customer's Name		**Registration No.**	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km Miles

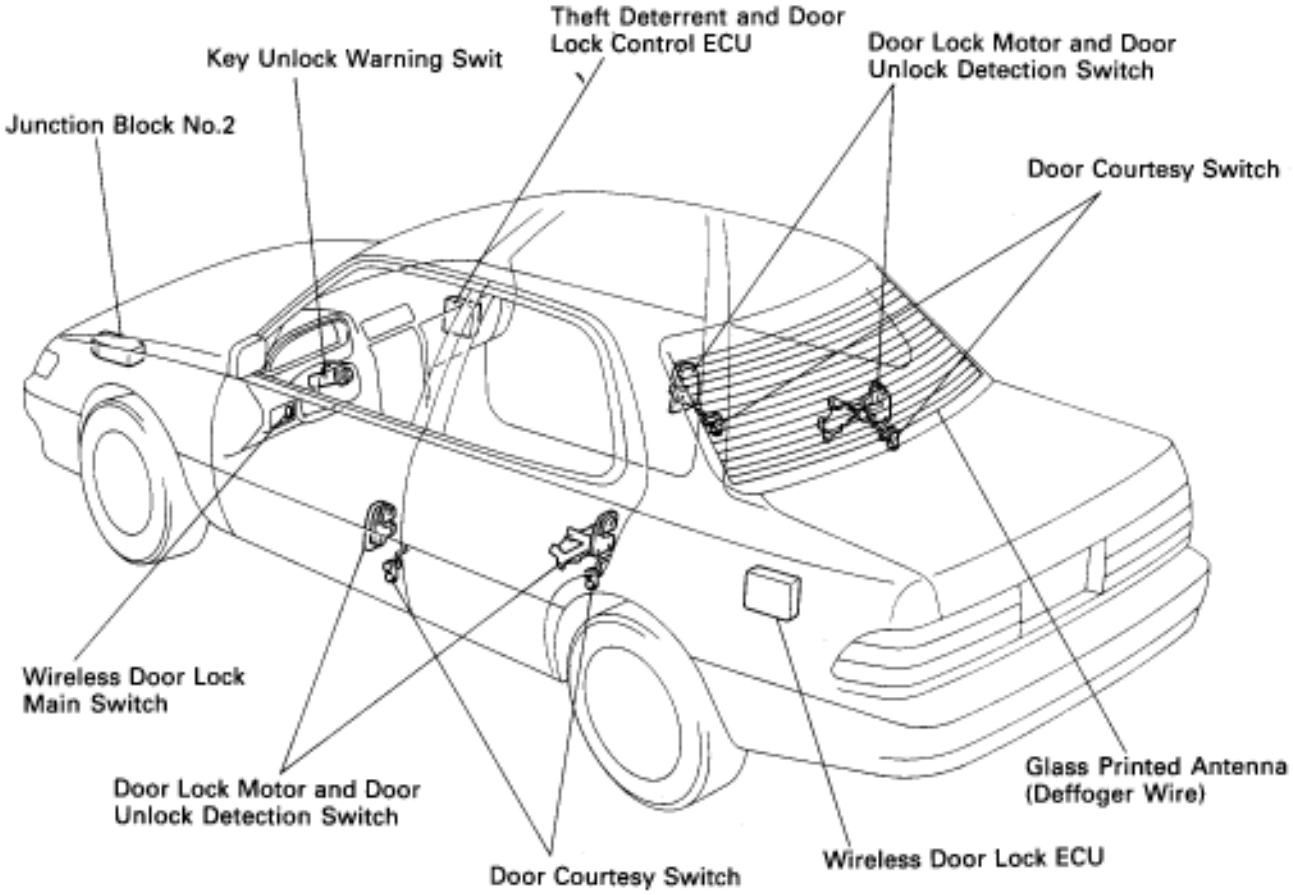
Date of Problem Occurrence		/ /
Frequency of Problem Occurrence		∗Continuous ∗Sometimes(times a day, month) ∗Once Only
Conditions at Time of Problem Occurrence	**Weather**	∗Fine ∗Cloudy ∗Rainy ∗Snowy ∗Various/Others
	Outdoor Temperature	∗Hot ∗Warm ∗Cool ∗Cold (Approx. °F(°C))
	Place	∗Everywhere ∗Specific Locality ( )
Date Transmitter Battery Last Replaced		/ /

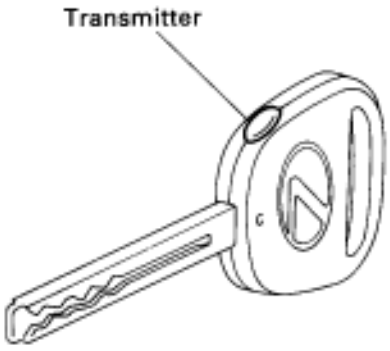
Problem Symptom	∗ Whole wireless door lock control system does not operate.	
	∗Only door unlock operation is not possible	
	∗Only door lock operation is not possible.	
	∗Wireless door lock function operates even when each door is opened.	
	∗Wireless door lock function incorrectly. (Although one door is locked, when the transmitter switch is pressed, all doors unlock.)	∗When Front RH door is unlocked ∗When Front LH door is unlocked ∗When Rear RH door is unlocked ∗When Rear LH door is unlocked
	∗Others	

Description

The wireless door lock control system is to lock and unlock all the doors at a distance, transmitting a weak radio wave from a transmitter contained in the master ignition key.
The weak radio wave (coded differently for each key) is sent to the receiver via the rear window defogger wiring.
For the function of the component parts of this system, refer to the circuit description in the circuit inspection.

Parts Location





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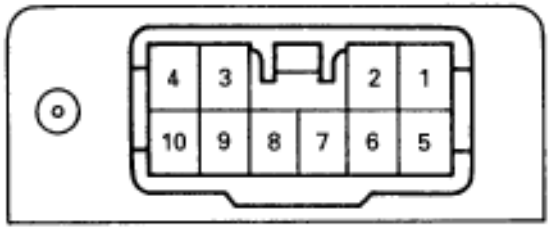
TERMINALS OF ECU

Wireless Door Lock ECU

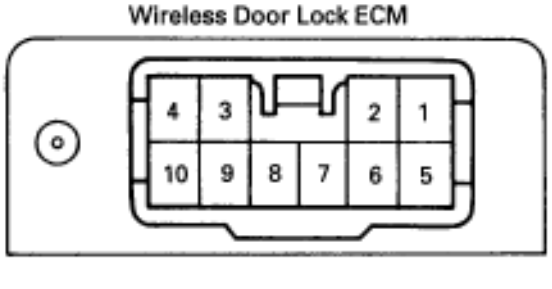


BE6491

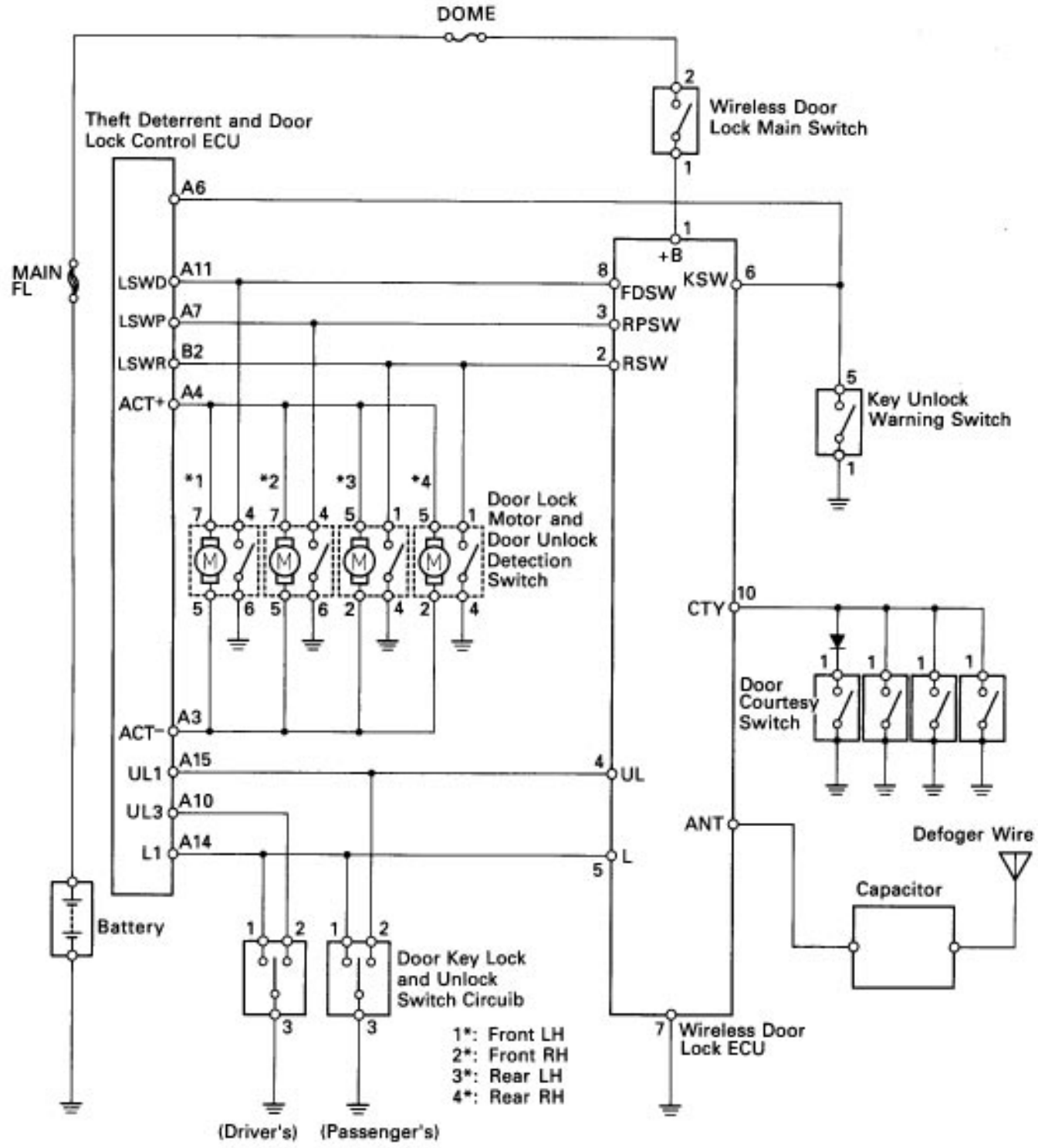
No.	Symbol	Terminal Name	No.	Symbol	Terminal Name
W8–1	B+	Power Source	W8–6	KSW	Key Unlock Warning Switch
W8–2	RSW	Door Lock Motor Rear	W8–7	GND	Ground
W8–3	RPSW	Door Lock Motor Front RH	W8–8	FDSW	Door Lock Motor Front LH
W8–4	UL	Door Key Lock and Unlock Switch	W8–9		
W8–5	L	Door Key Lock and Unlock Switch	W8–10	CTY	Door Courtesy Switch

STANDARD VALUE OF ECU TERMINAL

Terminals	Symbols	Wiring Color	Condition	Standard Value
W8–1 → ← W8–7	B+ → ← E	R–Y → ← W–B	Wireless door lock main switch ON	10–14 V
			Wireless door lock main switch OFF	Below 1 V
W8–2 → ← Ground	RSW → ← Ground	L–Y → ← Ground	Door lock knob of rear door LOCK	8–10 V
			Door lock knob of rear door UNLOCK	Below 1 V
W8–3 → ← Ground	RPSW → ← Ground	Y → ← Ground	Door lock knob of passenger's door LOCK	8–10 V
			Door lock knob of passenger's door UNLOCK	Below 1 V
W8–4 → ← Ground	UL → ← Ground	Y–L → ← Ground	Door key lock and unlock switch right UNLOCK	Below 1 V
			Expect above mention	8–10 V
W8–5 → ← Ground	L → ← Ground	Y–R → ← Ground	Door key lock and unlock switch left and right LOCK	Below 1 V
			Door key lock and unlock switch left or right LOCK	
			Expect above mention	8–10 V
W8–6 → ← Ground	KSW → ← Ground	L–B → ← Ground	Ignition key insert key cylinder	Below 1 V
			Ignition key pull out key cylinder	10–14 V
W8–7 → ← Ground	GND → ← Ground	W–B → ← Ground	Always	Below 1 V
W8–8 → ← Ground	FDSW → ← Ground	P → ← Ground	Door lock knob of driver's door LOCK	8–10 V
			Door lock knob of driver's door UNLOCK	Below 1 V
W8–10 → ← Ground	CTY → ← Ground	R–W → ← Ground	Door courtesy switch left and right ON	Below 1 V
			Door courtesy switch left or right ON	
			Door courtesy switch left or right OFF	
			Door courtesy switch left and right OFF	10–14 V



WIRING DIAGRAM



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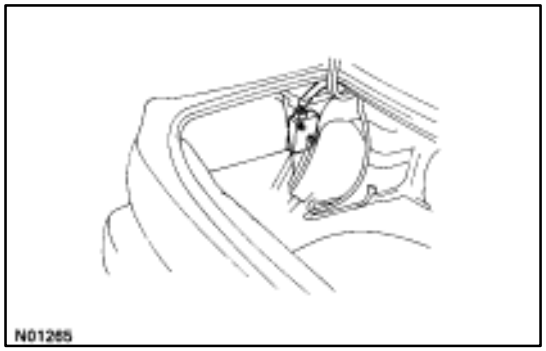


Parts Replacement

REMOVAL AND INSTALLATION OF WIRELESS DOOR LOCK ECU

1. REMOVE WIRELESS DOOR LOCK ECU

(a) Remove luggage compartment LH side cover.
(b) Remove the two nuts.
(c) Disconnect the connectors.
(d) Remove the ECU.

2. INSTALL WIRELESS DOOR LOCK ECU

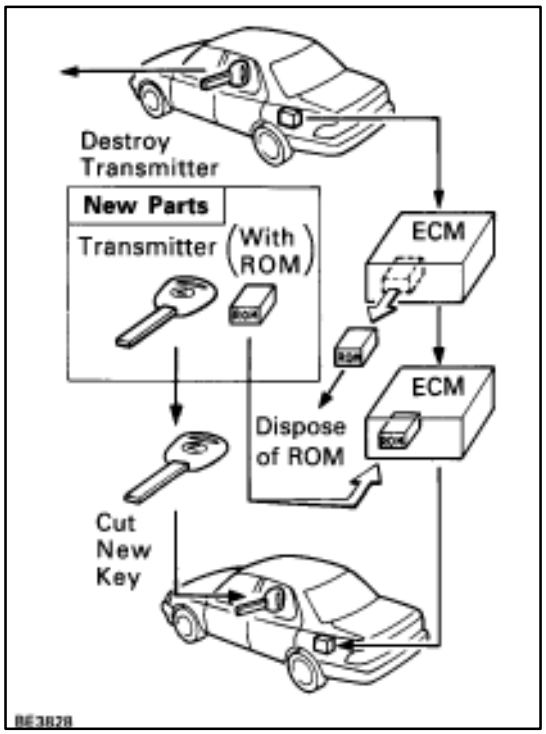
For installation, follow the removal procedure in reverse.

REPLACEMENT OF WIRELESS DOOR LOCK ECU AND TRANSMITTER

Disassembly and assembly of the wireless door lock ECU and transmitter includes details of spare parts and replacement procedure for defective parts found through troubleshooting.

Each part is a precision electronic component so handle with care.

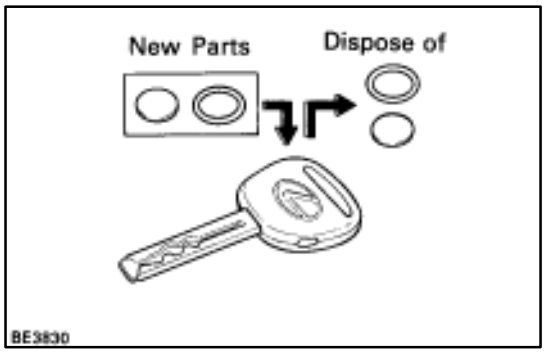
Destroy old ROM and transmitter to prevent reuse.



1. SPARE PARTS AND REPLACEMENT PROCEDURE FOR MALFUNCTIONING PARTS

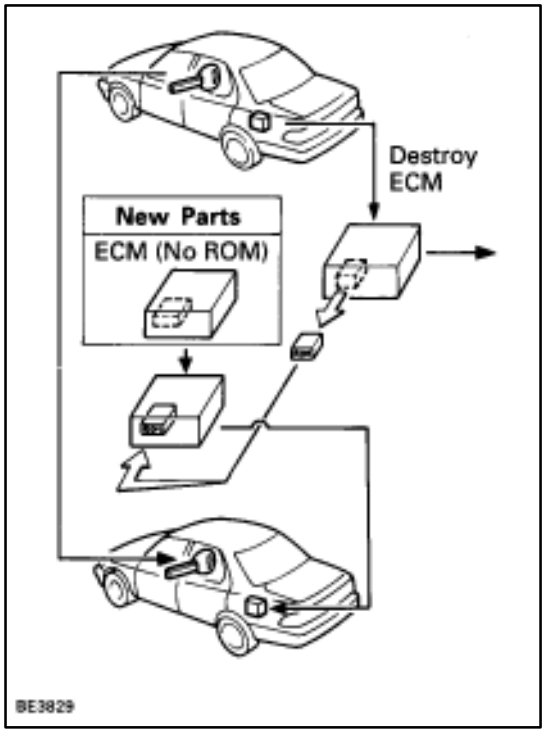
(For malfunctioning transmitter)

(a) Prepare the new transmitter (with ROM).
(b) Remove the ECU form the vehicle.
(c) Remove the ROM form the ECU.
(d) Install the new ROM into the ECU.
(e) Install the ECU into the vehicle.
(f) Check that door lock remote control operation works.
(g) Cut the new key to the shape of the replaced key.



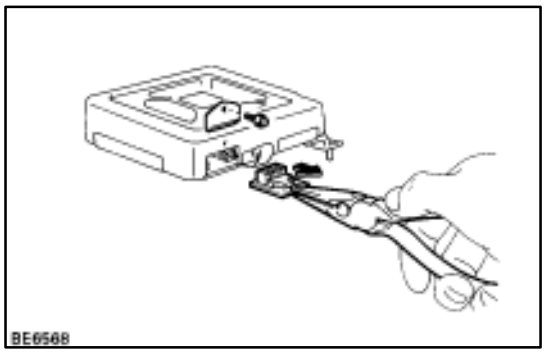
(For non–functioning battery)

(a) Prepare new battery (with O–ring).
(b) Remove battery and O–ring from transmitter.
(c) Install new battery and O–ring into transmitter.



(For malfunctioning ECU)

(a) Prepare the new ECU (without ROM).
(b) Remove the ECU from the vehicle.
(c) Remove the ROM from the ECU.
(d) Install the ROM into the new ECU.
(e) Install the new ECU into the vehicle.

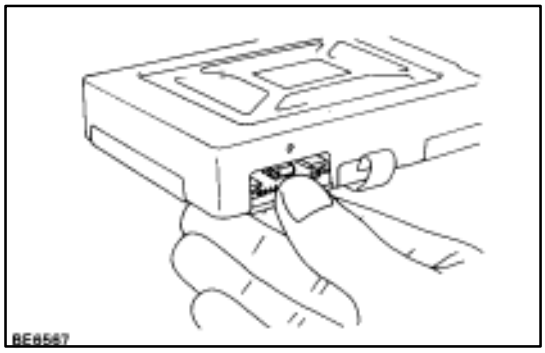


2. REMOVAL OF ROM FROM ECU

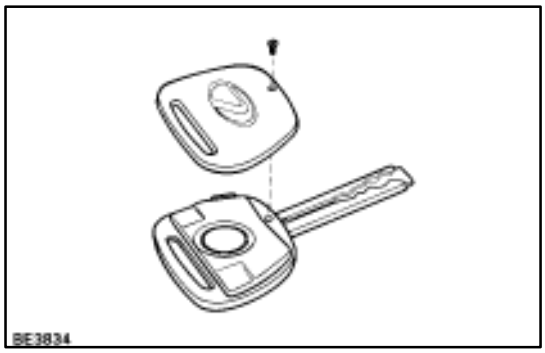
(a) Remove the cover from the hole for ROM insertion.
(b) Using long nosed pliers, grasp the center of the print board (ROM) and remove it.

NOTICE:

- **When replacing the ROM, always disconnect the ECU connector first.**
- **When removing the ROM always grasp the board and do not touch the IC parts or print wiring on the board.**

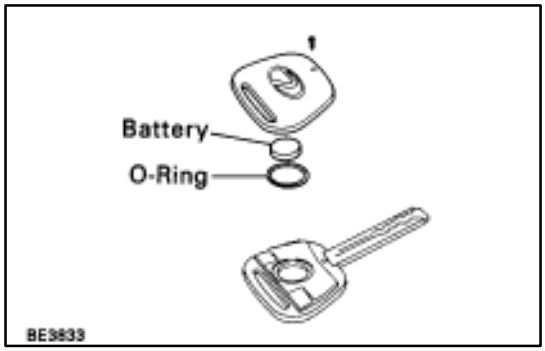


(c) Insert the new print board (ROM) along the rails on both sides and push it in with your finger until the terminal on the end is completely inserted.
(d) Install the cover to the hole for ROM insertion.



3. REPLACEMENT OF BATTERY FOR TRANSMITTER

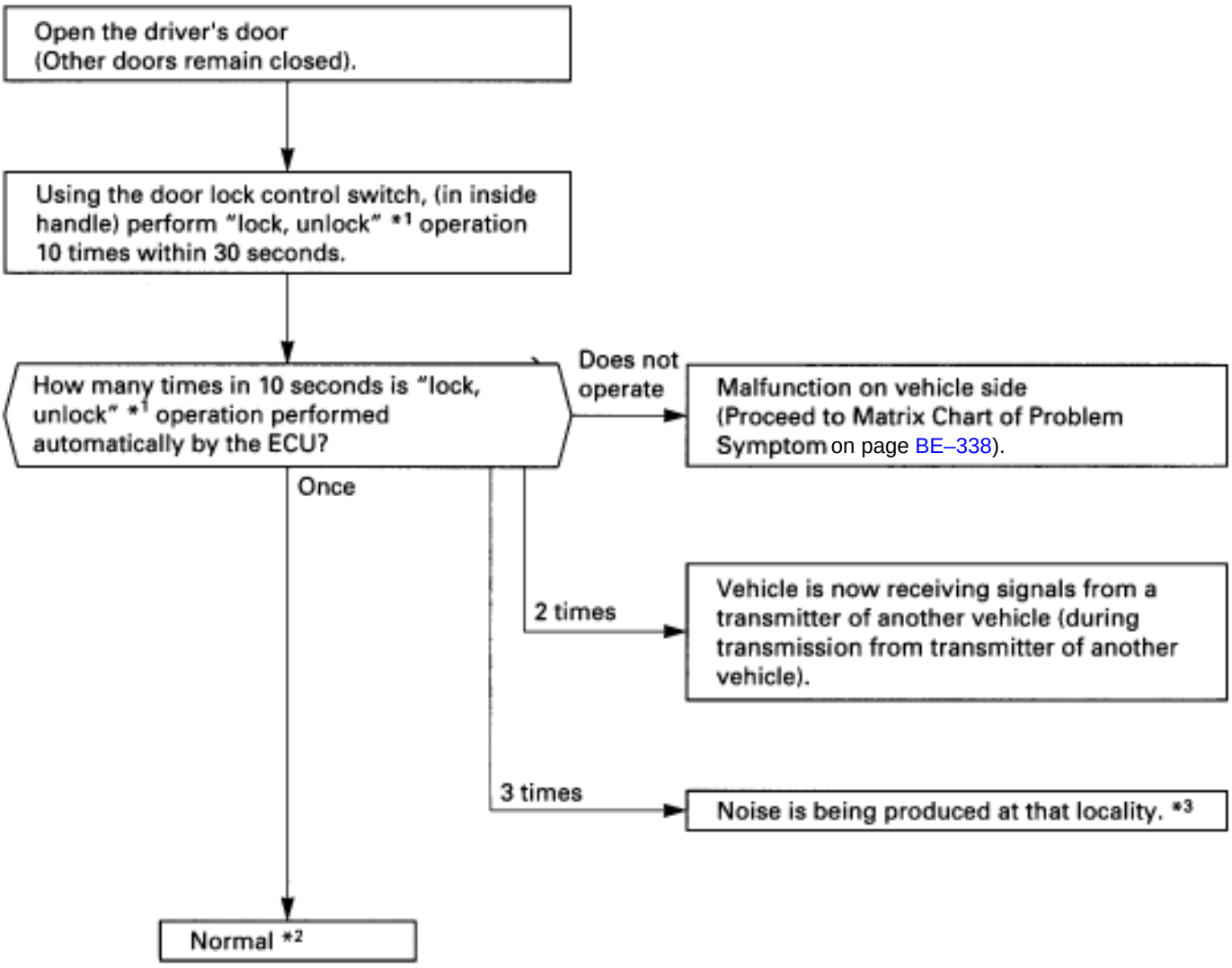
(a) Remove the screw from the transmitter.
(b) Remove the cover.



(c) Remove the O–ring and Battery
(d) Set the new battery and O–ring into the transmitter.
(e) Install the cover to the transmitter body taking care not to twist or displace the O–ring.
(f) Tighten the screw.

PRECHECK TYPE I

In cases where the wireless door lock control system fails to operate only at a specific locality, perform this check at that locality.



*1: Performing lock and unlock once counts as one time.

*2: If noise is not constantly produced at the locality being used and inspection is performed on an occasion when there is no noise, then it may happen that the system is judged normal.

*3: If the conclusion is that noise is produced in the locality the vehicle is used, then transmitter use is limited in that locality. Limitations on usage are described below.

HINT:

Because the transmitter uses weak electromagnetic waves, it is easily affected by noise, so remote control within the normal range becomes difficult.

To reduce the influence of noise, bring the transmitter as close as possible to the back window glass (antenna section), or touch (ground) the grooved key tip of the transmitter to the door key cylinder and then operate the transmitter switch; this should make door lock remote control operation possible.

If door lock remote control operation is still not possible, insert the key in the door key cylinder and press the transmitter switch.

PRECHECK TYPE II

Perform this check in cases where the wireless door lock control system fails to operate anywhere.

Open the driver's door
(Other doors remain closed).

Using the door lock control switch, perform "lock, unlock" *1 operation 10 times with in 30 seconds.

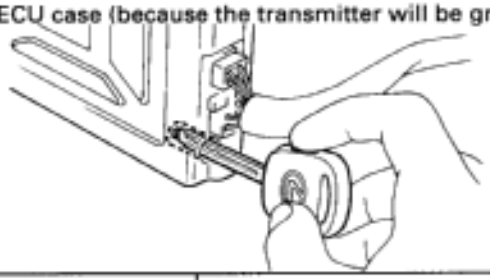
Soon (less than 2 secs.) after performing the above, continue to press the transmitter switch for 10 seconds.

How many times does "lock, unlock" *1 operation of all doors occur during the time the transmitter is operated (approx. 10 secs.)?

- Does not operate → Malfunction on vehicle side (Proceed to Matrix Chart of Problem Symptom on page BE–338).
- 2 times → Wrong transmitter parts (exclusive code does not match). [Replace transmitter and ROM in ECU (See Page BE–330).
- 3 times → Transmitter fault on page BE–335). (Inspect transmitter
- Once

Close all doors.

Disconnect the antenna cable from the ECU, directly insert the transmitter (grooved section of key) and press the transmitter switch. In this case do not let the transmitter come in contact with the ECU case (because the transmitter will be grounded).



Do all doors lock and unlock?

- YES → Malfunction on antenna circuit (Inspect antenna circuit on page BE–336).
- NO

Tune the FM radio to 94.9 MHz.

Is there noise on the radio while the transmitter switch is being pushed ? *2

- YES → Malfunction on vehicle side (Proceed to Matrix Chart of Problem Symptom on page BE–338).
- NO

Inspect transmitter on page BE–335).

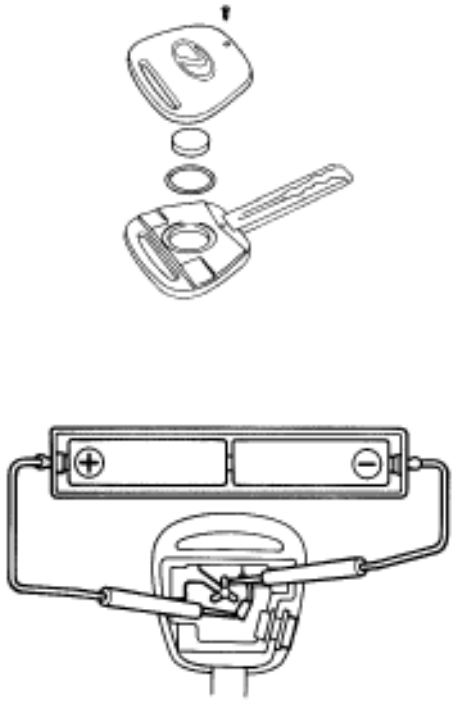
*1: Performing lock and unlock once counts as one time.

*2: In some localities, inspection cannot be carried out because the local FM radio broadcast is also at 94.9 MHz. When this occurs, perform inspection using a portable radio in a place indoors free from the influence of FM broadcasts.

INSPECTION OF TRANSMITTER

HINT: Perform this inspection only when transmitter is judged to be faulty in precheck type II.

1 Transmitter battery capacity check.



HINT:
This inspection is not directly for the purpose of checking the capacity of the transmitter battery, but is performed when remote control operation becomes difficult or impossible, in order to ascertain if this is caused by low battery capacity.

P

1. Remove the transmitter screw.
2. Remove the cover.
3. Remove the O–ring and battery.

C

1. Connect two new 1.5 dry–cell batteries in series. Connect the battery ⊕ terminal to the battery receptacle side terminal and the battery ⊖ terminal to the bottom terminal to provide 3 V to the transmitter.
2. In the condition in (1), push the wireless door lock remote control switch on the side of the transmitter body and operate the door lock by remote control.

OK **Remote Control operation possible.**

NG

Replace transmitter and ROM in ECU (See page BE–330).

OK

Replace the battery for transmitter (See page BE–331).

INSPECTION OF ANTENNA CIRCUIT

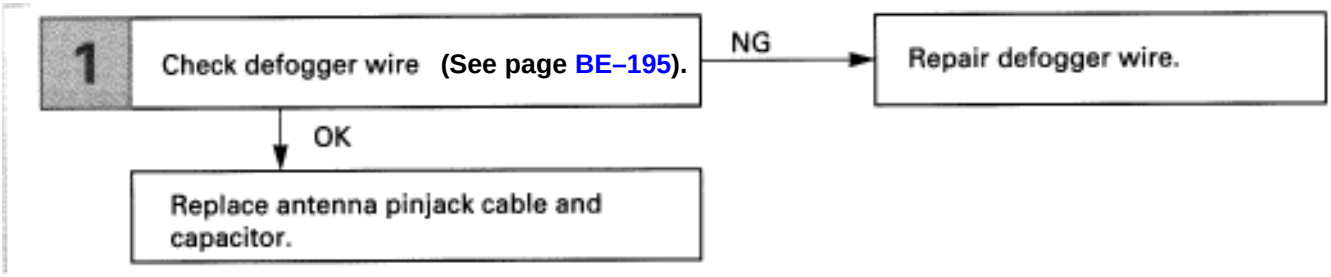
Antenna Circuit

CIRCUIT DESCRIPTION

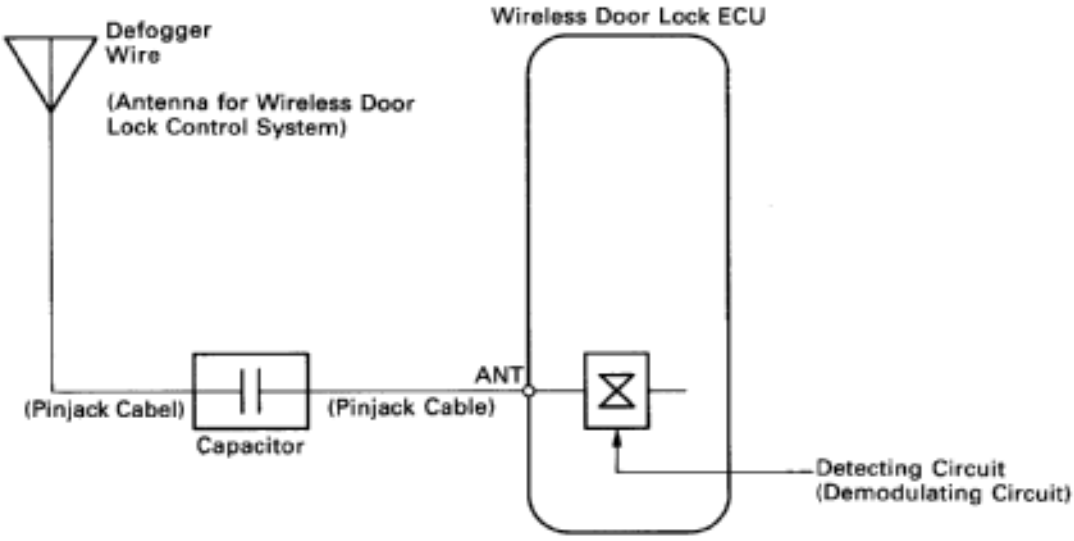
The antenna receives the electromagnetic wave emitted by the transmitter and sends it to the wireless door lock ECU.

DIAGNOSTIC CHART

HINT: Perform this inspection only when vehicle antenna is judged to be faulty in precheck type II.



WIRING DIAGRAM



BE3695

MATRIX CHART OF PROBLEM SYMPTOMS

Perform troubleshooting of the circuits for the applicable problem symptom in the order given in the chart below.

Proceed to the page located for each circuit.

HINT:

Troubleshooting of the wireless door lock control system is based on the premise that the door lock control system is operating normally. Accordingly, before troubleshooting the wireless door lock control system, first make certain that the door lock control system is operating normally.

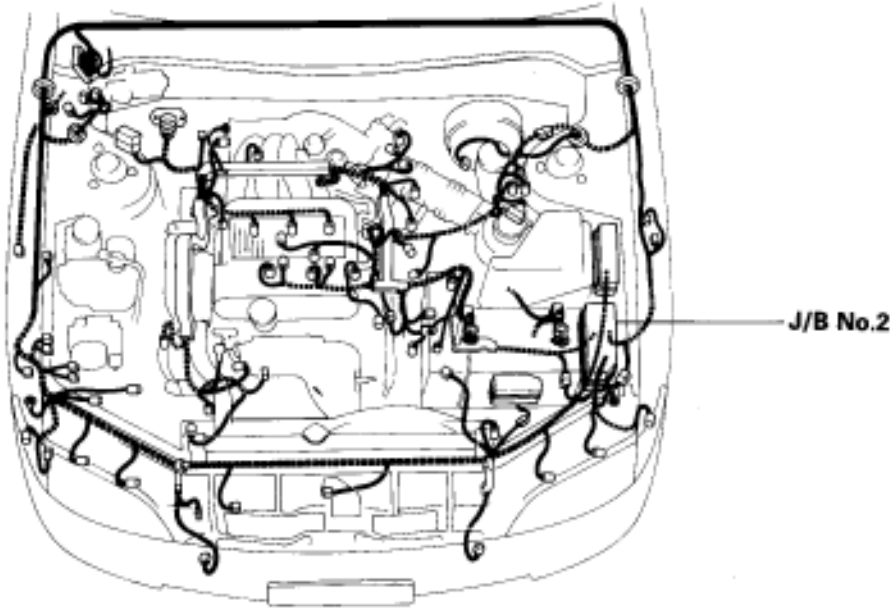
If the instruction ”Proceed to next circuit inspection shown on matrix chart” is given in the flow chart for each circuit, proceed to the circuit with the next highest number in the table to continue the check.

If the trouble still reappears even though there are no abnormalities in any of the other circuits, then check and replace the Wireless Door Lock ECU as the last step.

See page / Suspect Area / Symptom	BE–342 ECU Power Source Circuit	BE–345 Door Unlock Detection Switch Circuit	BE–347 Door Key Lock and Unlock Switch Circuit (Unlock Side)	BE–349 Door Key Lock and Unlock Switch Circuit (Lock Side)	BE–351 Key Unlock Warning Switch Circuit	BE–353 Door Courtesy Switch Circuit	IN–32 Wireless Door Lock ECU
All functions of wireless door lock control system do not operate.	1		3	4	5	2	6
Only door unlock operation is not possible (Lock operation is possible).		2	1				3
Only door lock operation is not possible (Unlock operation is possible).				1			2
Only transmitter misoperation prevention function is not possible.					1		2
• Wireless door lock function operates even when each door is opened. • Automatic lock function operates even if any door is opened within 30 seconds after all doors are unlocked by wireless door lock control system.						1	2
Wireless door lock functions incorrectly. (Although one door is unlocked, when the transmitter switch is pressed, all doors unlock.)		1					2

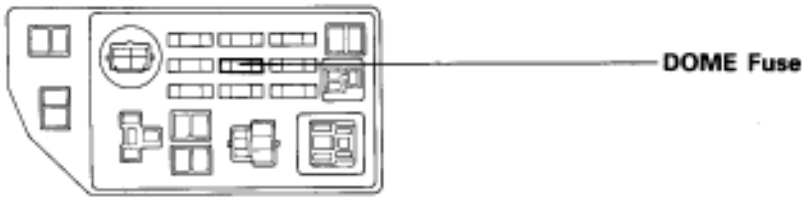
LOCATION OF CONNECTORS

Location of Connectors in Engine Compartment

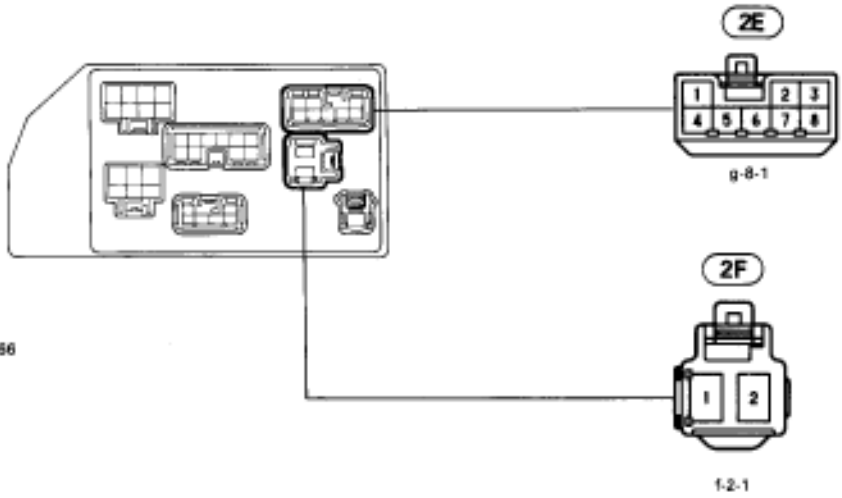


BE6660

J/B No.2

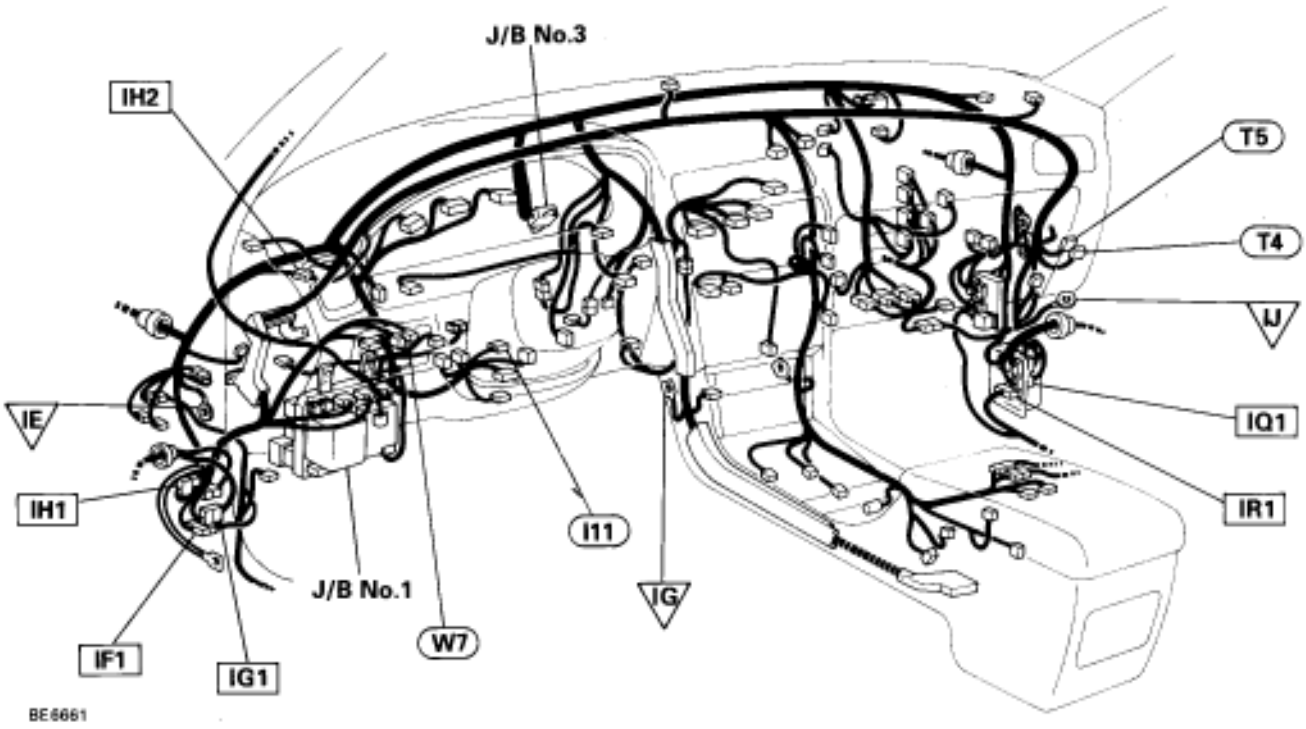


BE6665

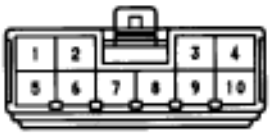


BE6666

Location of Connectors in Instrument Panel



I11
Key Unlock Warning Switch



g-10-1-B

T4
Theft Deterrent and Door Lock ECU

e-20-1

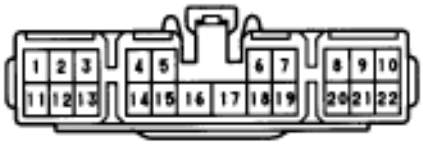
T5
Theft Deterrent and Door Lock ECU

e-14-1-A

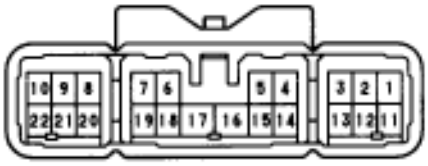
W7
Wireless Door Lock Main Switch

e-2-2-G

IF1

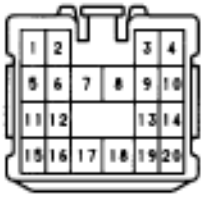


e-22-1

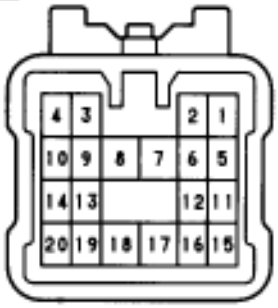


e-22-2

IG1



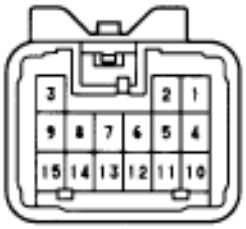
e-20-1-A



e-20-2-A

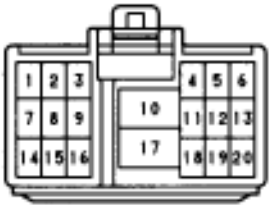
IH1

e-15-1

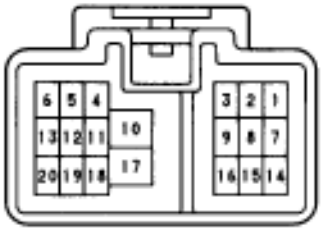


e-15-2

IH2

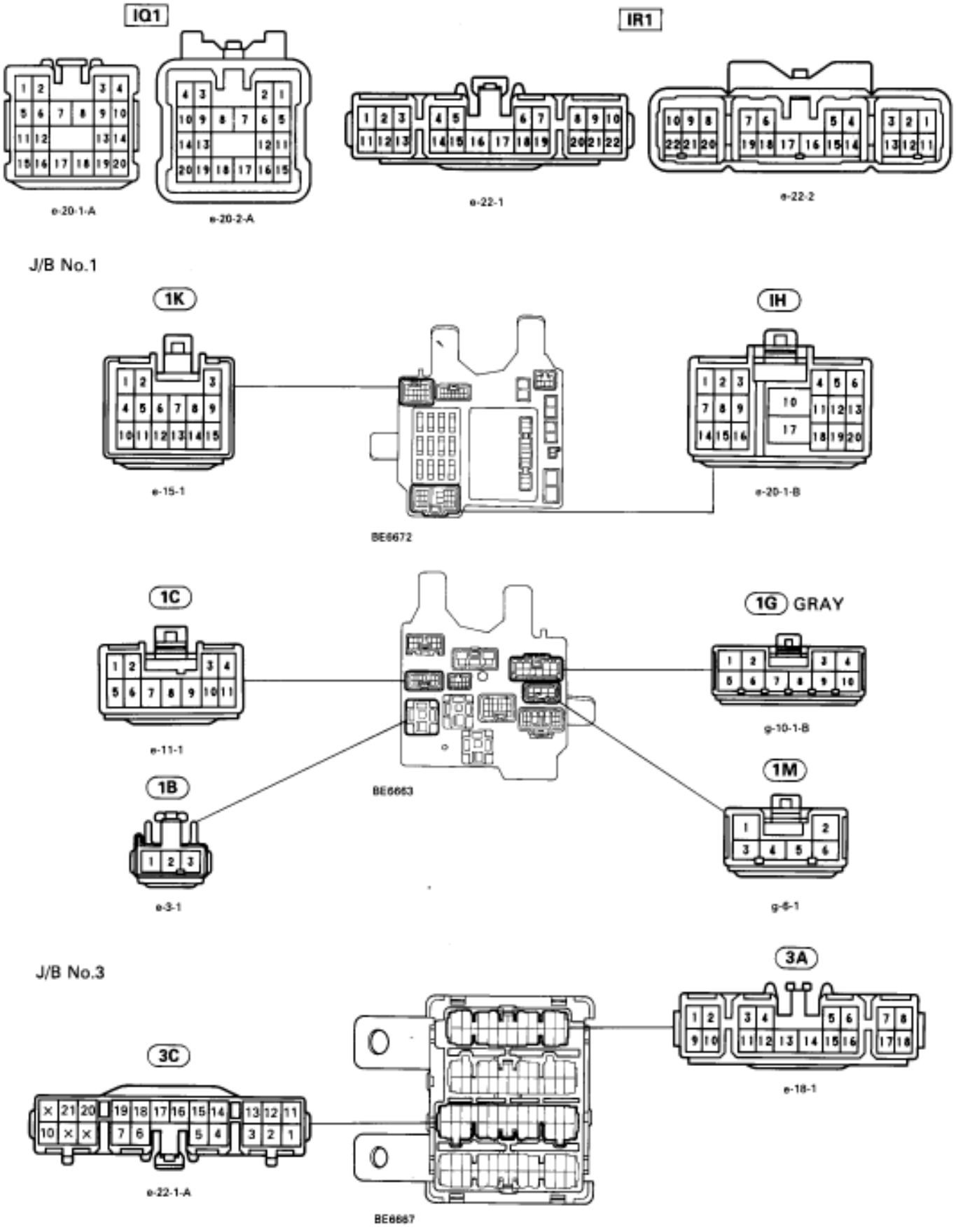


e-20-1-B

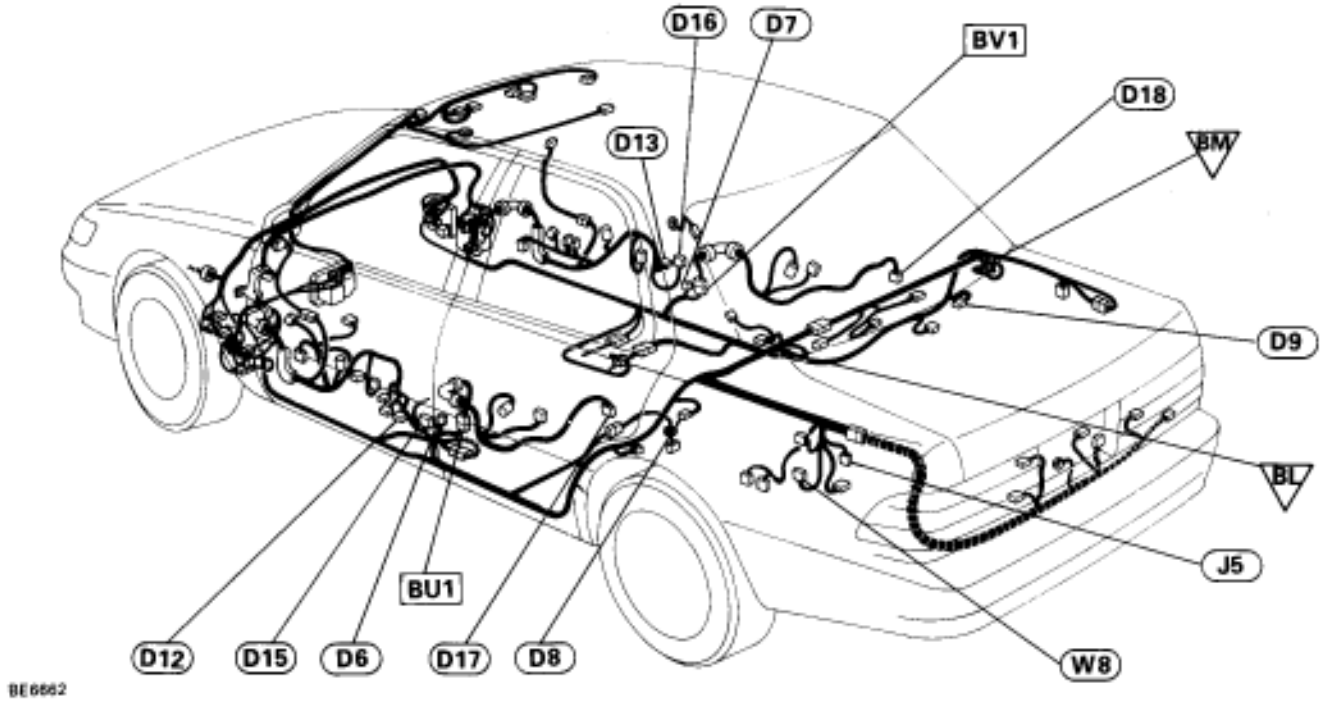


e-20-2-B

Location of Connectors in Instrument Panel



Location of Connectors in Body



D6 Door Courtesy Switch Front LH

e-1-2

D7 Door Courtesy Switch Front RH

e-1-2

D8 Door Courtesy Switch Rear LH

e-1-2

D9 Door Courtesy Switch Rear RH

e-1-2

D12 Door Key Lock and Unlock Switch LH

Ih-3-2

D13 Door Key Lock and Unlock Switch RH

Ih-3-2

D15 Door Unlock Detection Switch Front LH

Ie-7-1

D16 Door Unlock Detection Switch Front RH

Ie-7-1

D17 Door Unlock Detection Switch Rear LH

IS-6-1-B

D18 Door Unlock Detection Switch Rear RH

IS-6-1-B

J5 Junction Connector

e-10-1

W8 Wireless Door Lock ECU

e-10-1

BU1

e-8-1 e-8-2

BV1

e-8-1 e-8-2

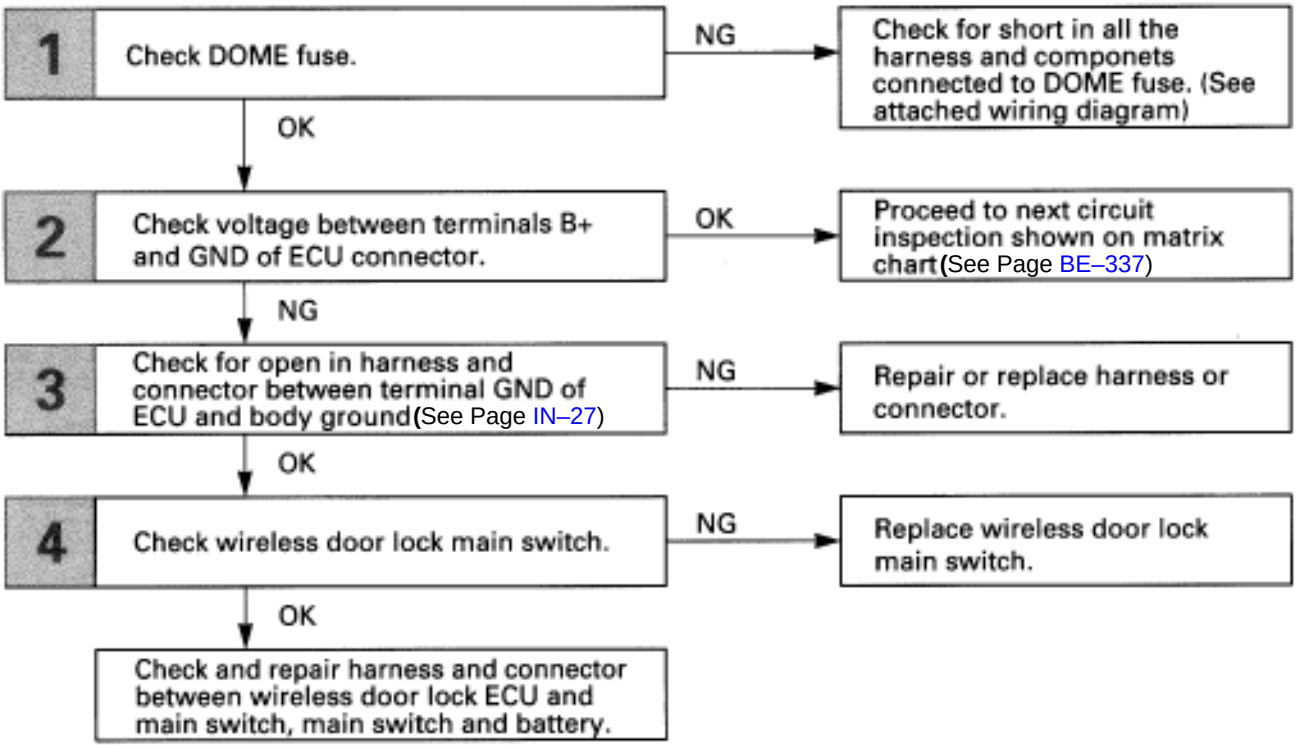
CIRCUIT INSPECTION

ECU Power Source Circuit

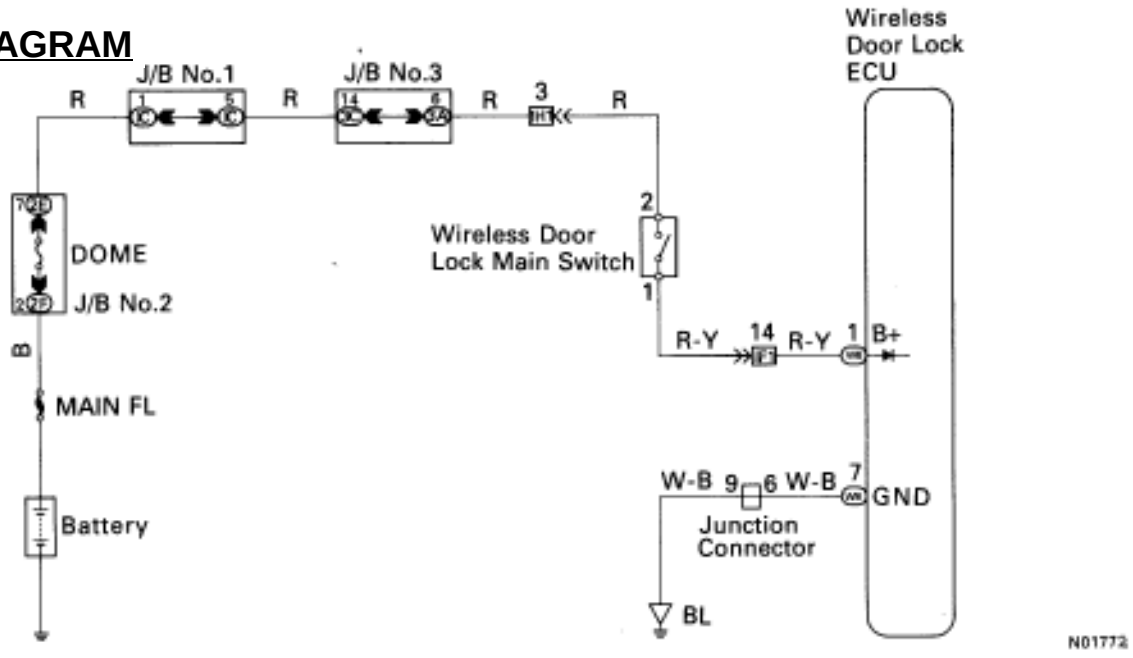
CIRCUIT DESCRIPTION

When the wireless door lock main switch in ON, battery positive voltage is applied to terminal B+ of the wireless door lock ECU, causing the ECU to operate.
When the wireless door lock main switch is OFF, battery positive voltage is not applied to terminal B+ and the ECU does not operate.

DIAGNOSTIC CHART



WIRING DIAGRAM



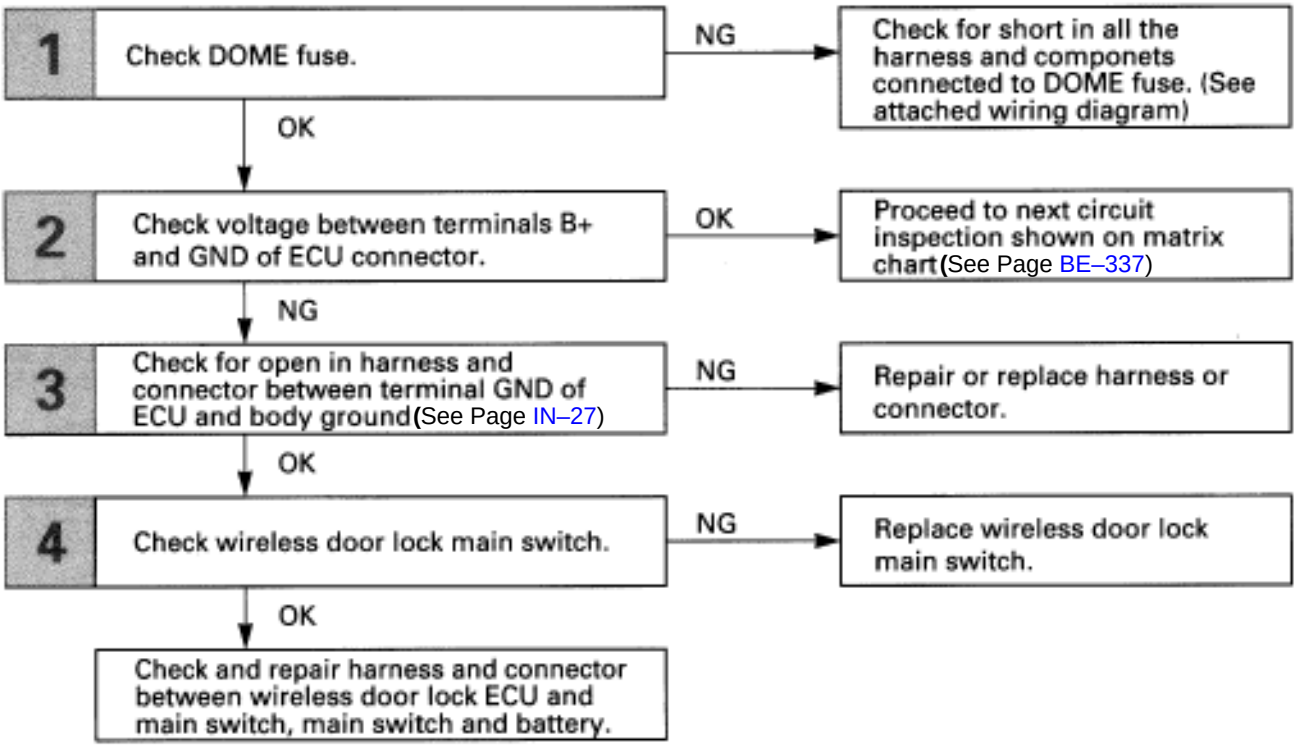
CIRCUIT INSPECTION

ECU Power Source Circuit

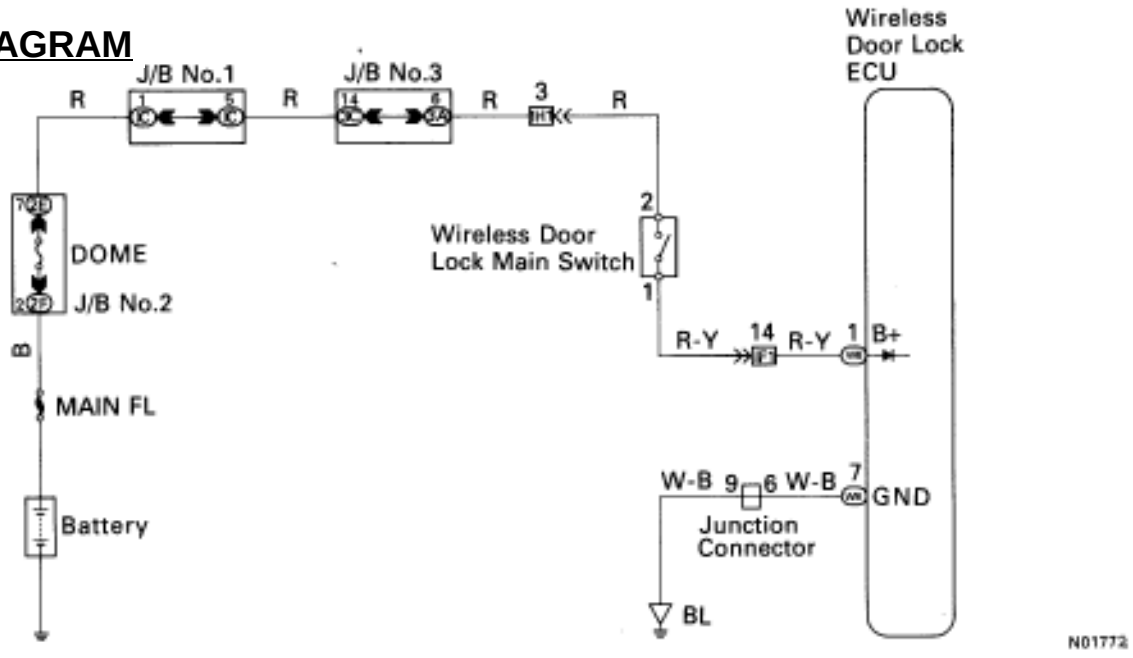
CIRCUIT DESCRIPTION

When the wireless door lock main switch in ON, battery positive voltage is applied to terminal B+ of the wireless door lock ECU, causing the ECU to operate.
When the wireless door lock main switch is OFF, battery positive voltage is not applied to terminal B+ and the ECU does not operate.

DIAGNOSTIC CHART



WIRING DIAGRAM



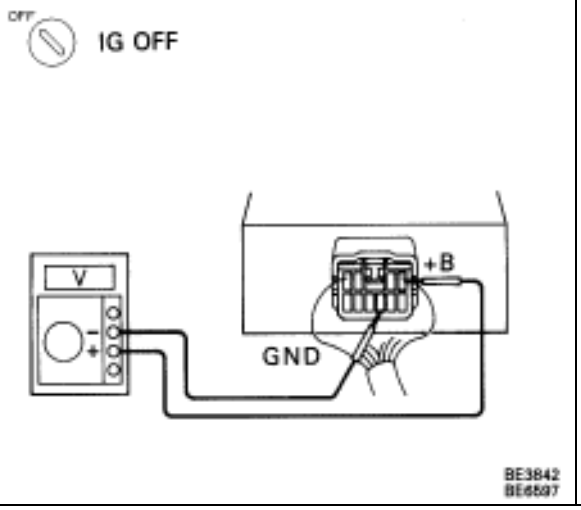
INSPECTION PROCEDURE

1 **Check DOME fuse.**

OK

NG **Check for short in all the harness and components connected to DOME fuse (See attached wiring diagram).**

2 **Check voltage between terminals B+ and GND of ECU connector.**



P
1. Remove DOME fuse from J/B No.2
2. Remove the ECU

C Measure voltage between terminals B+ and of ECU connector, when wireless door lock main switch is on and off.

OK

Wireless door lock main switch	Voltage
ON	10 – 14 V
OFF	Below 1 V

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–337).**

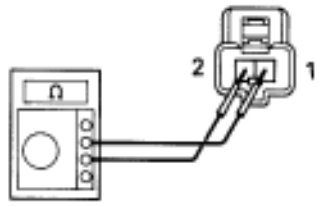
3 **Check for open in harness and connector between terminal GND of ECU and body ground (See page IN–27).**

OK

NG **Repair or replace harness or connector.**

Go to step

4 **Check wireless door lock main switch.**



N01116

P
1. Remove the instrument lower finish panel.
2. Remove wireless door lock main switch.
3. Disconnect the connector.

C Measure resistance between terminals of wireless door lock main switch connector, when main switch is on and off.

OK

Wireless door lock main switch	Resistance
ON	Continuity
OFF	1 MΩ or higher

OK

NG **Replace wireless door lock main switch.**

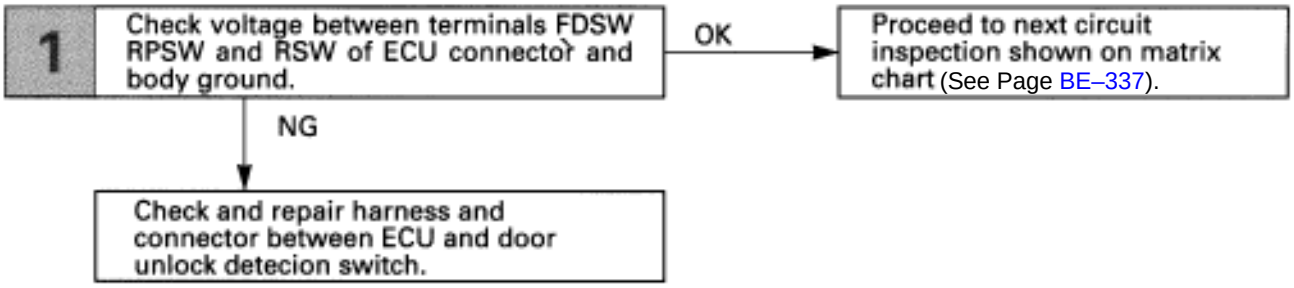
Check and repair harness and connector between ECU and main switch, main switch and battery.

Door Unlock Detection Switch Circuit

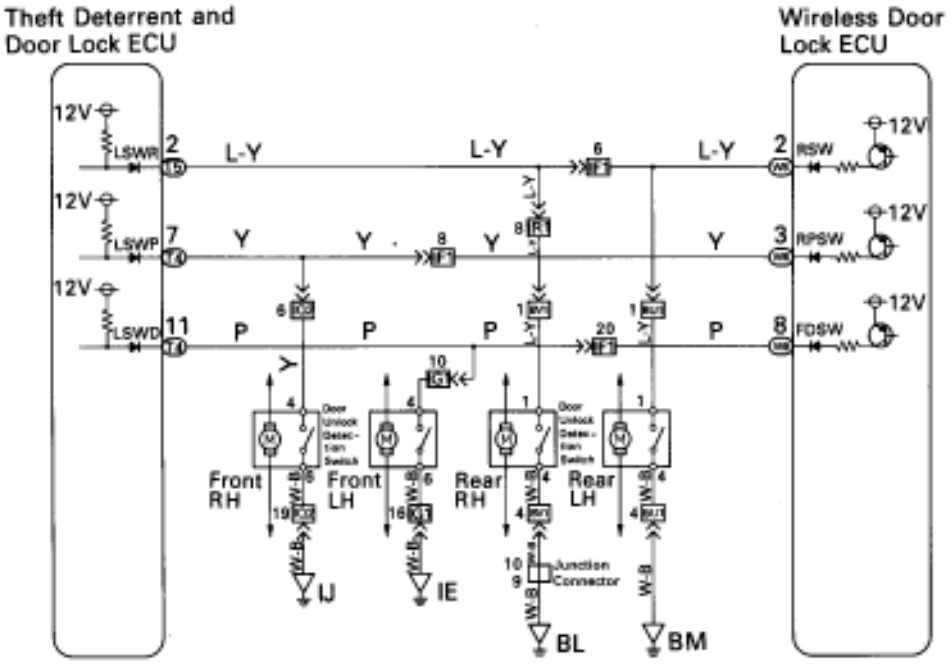
CIRCUIT DESCRIPTION

The door unlock detection switch is built into the door lock motor assembly. The switch is OFF when the door lock knob is in Lock position, and is ON when the knob is in Unlock position.
Furthermore, the door unlock detection switch circuit has terminal B+ connected inside the theft deterrent ECU, when the door unlock detection switch is OFF, battery positive voltage is applied to the terminal of the door unlock detection switch circuit of the wireless door lock ECU.

DIAGNOSTIC CHART



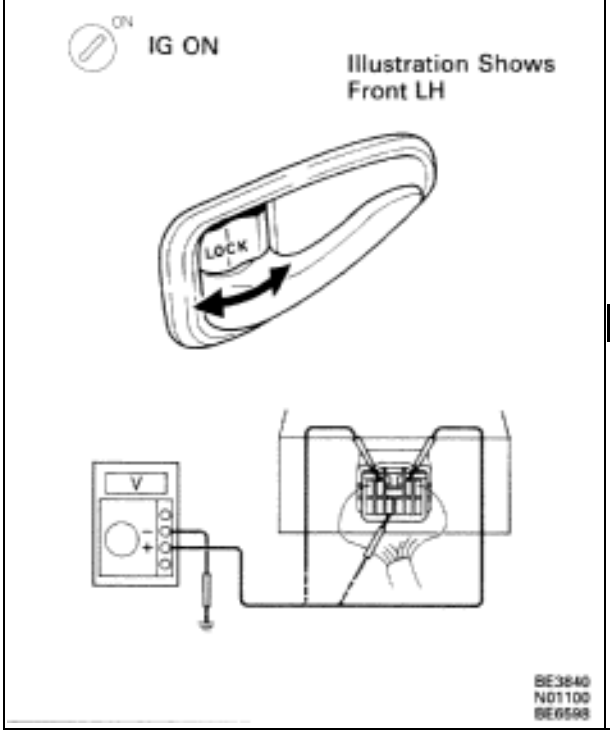
WIRING DIAGRAM



N01773

INSPECTION PROCEDURE

1 **Check voltage between terminals FDSW, RPSW and RSW of ECU connector and body ground.**



P
1. Remove the luggage compartment LH side cover.
2. Remove the ECU
3. Turn ignition switch on.

C Measure voltage between terminals FDSW, RPSW and RSW of ECU connector and body ground, when the respective door lock knob involved is pushed to the lock side.

OK **Voltage:** **8 ~ 10 V**

NG

Check and repair harness and connector between ECU and door unlock detection switch.

OK

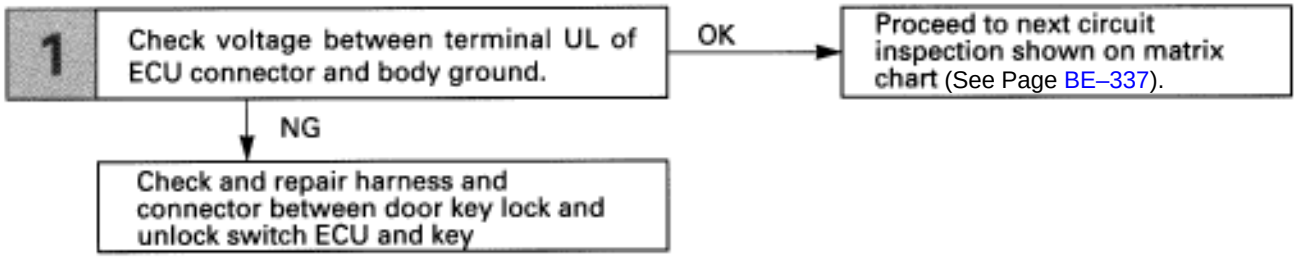
Proceed to next circuit inspection shown on matrix chart (See page BE–337).

Door Key Lock and Unlock Switch Circuit (Unlock Side)

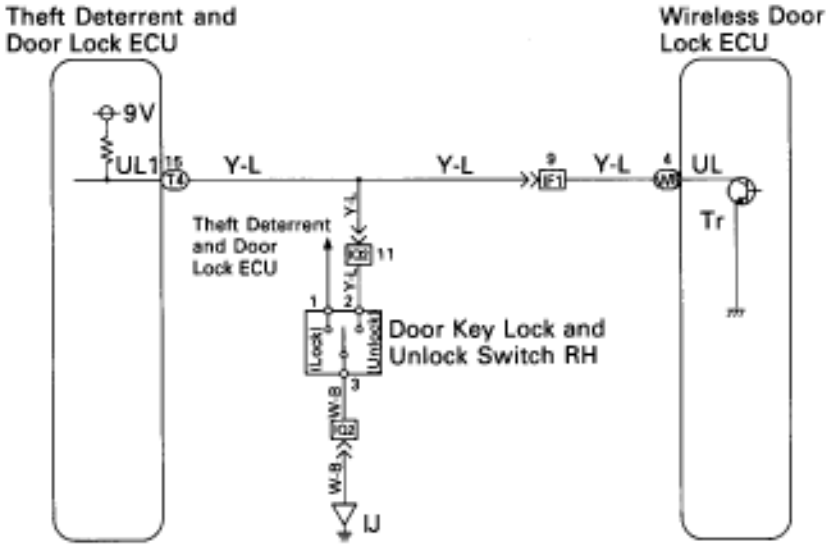
CIRCUIT DESCRIPTION

The door key lock and unlock switch is built into the door key cylinder. When the key is turned to the lock side, the lock terminal of the switch is grounded, and when the key is turned to the unlock side the unlock terminal is grounded.
Furthermore, the door key lock and unlock switch circuit has terminal B+ connected inside the theft deterrent and door lock ECU, when neither the lock or unlock terminal of the door key lock and unlock switch are grounded, battery positive voltage is applied to switch circuit of the wireless door lock ECU. (Tr inside the ECU coming ON causes the wireless door lock ECU to output a signal to unlock all the doors.)

DIAGNOSTIC CHART



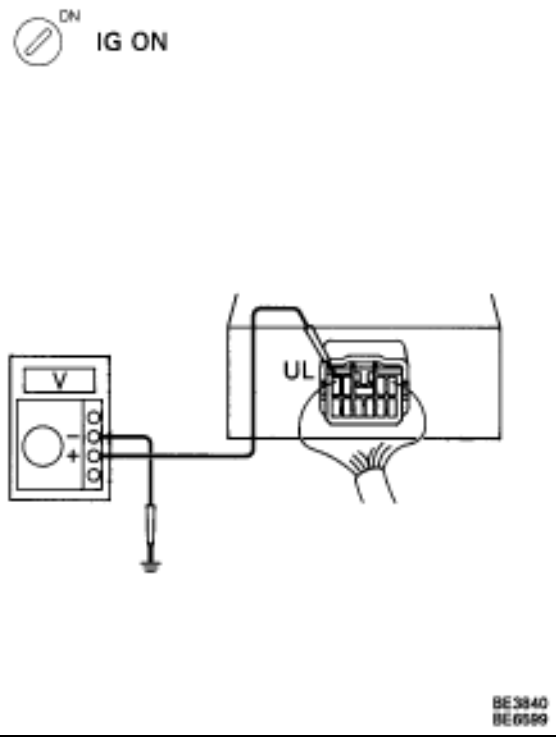
WIRING DIAGRAM



N01774

INSPECTION PROCEDURE

1 **Check voltage between terminal UL of wireless door lock ECU connector and body ground.**



P
1. Remove the luggage compartment LH side cover.
2. Remove the ECU
3. Turn ignition switch on.

C Measure voltage between terminals UL of ECU connector and body ground.

OK **Voltage:** **8 ~ 10 V**

NG

Check and repair harness and connector between ECU and door key lock and unlock switch.

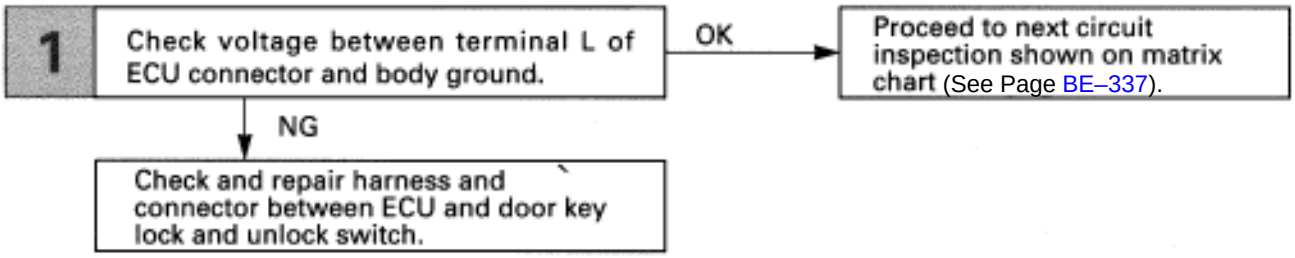
OK **Proceed to next circuit inspection shown on matrix chart (See page BE–337).**

Door Key Lock and Unlock Switch Circuit (Lock Side)

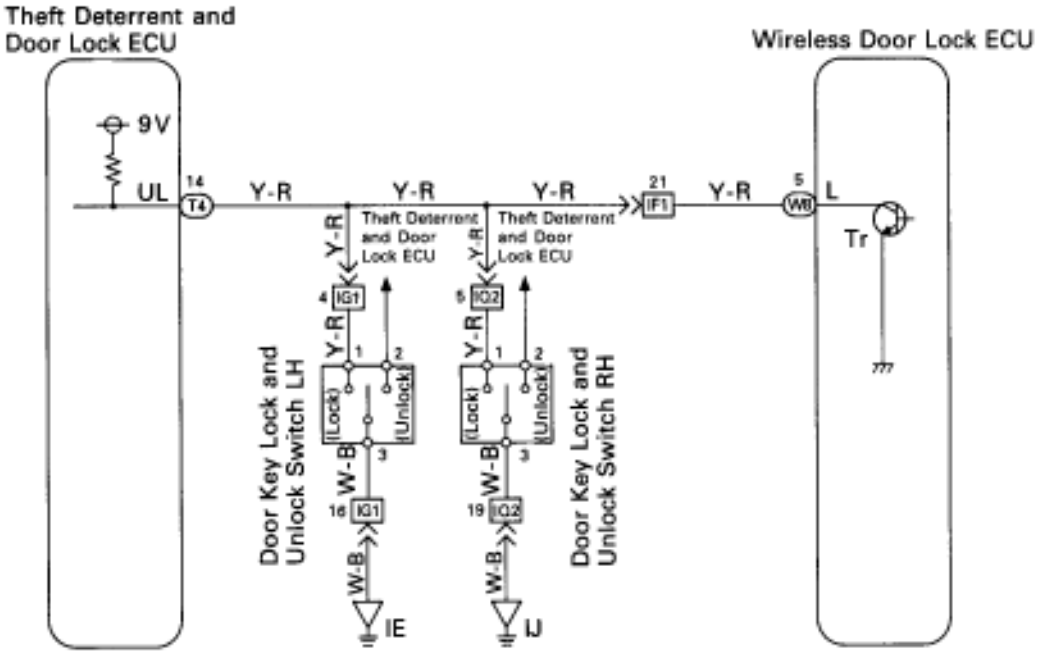
CIRCUIT DESCRIPTION

Refer to page BE–347.
Tr inside the ECU coming ON causes the wireless door lock ECU to output a signal to lock all the doors.

DIAGNOSTIC CHART



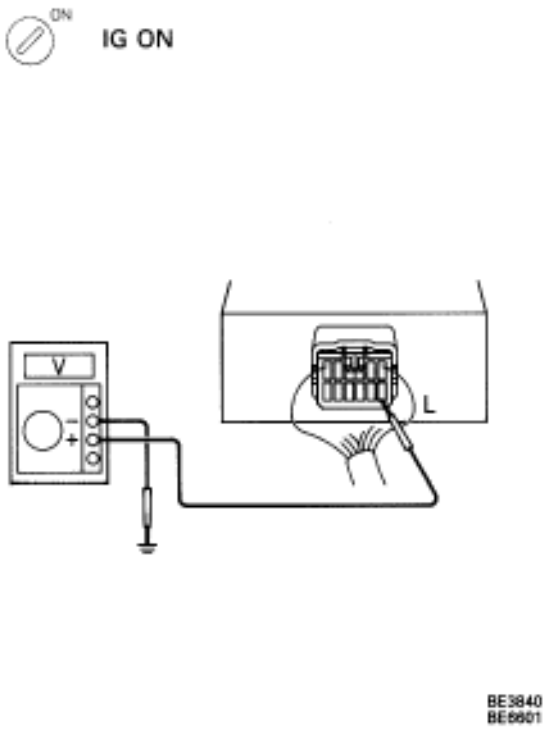
WIRING DIAGRAM



N01775

INSPECTION PROCEDURE

1 **Check voltage between terminal L of wireless door lock ECU connector and body ground.**



P
1. Remove the luggage compartment LH side cover.
2. Remove the ECU
3. Turn ignition switch on.

C Measure voltage between terminals L of ECU connector and body ground.

OK **Voltage: 8 ~ 10 V**

NG

Check and repair harness and connector between ECU and door key lock and unlock switch.

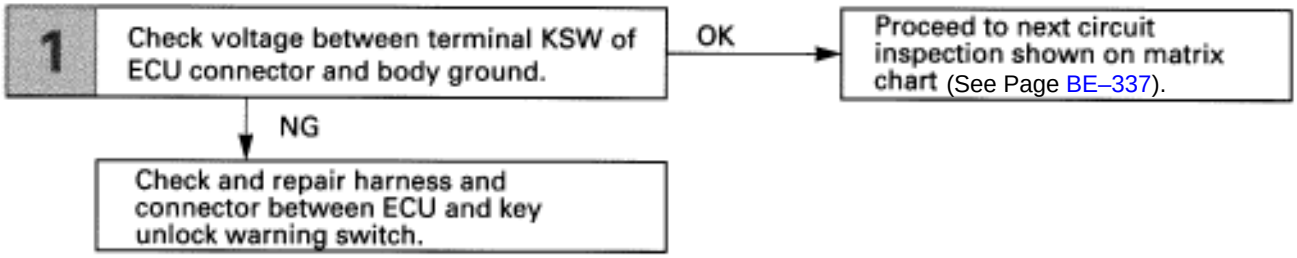
OK **Proceed to next circuit inspection shown on matrix chart (See page BE–337).**

Key Unlock Warning Switch Circuit

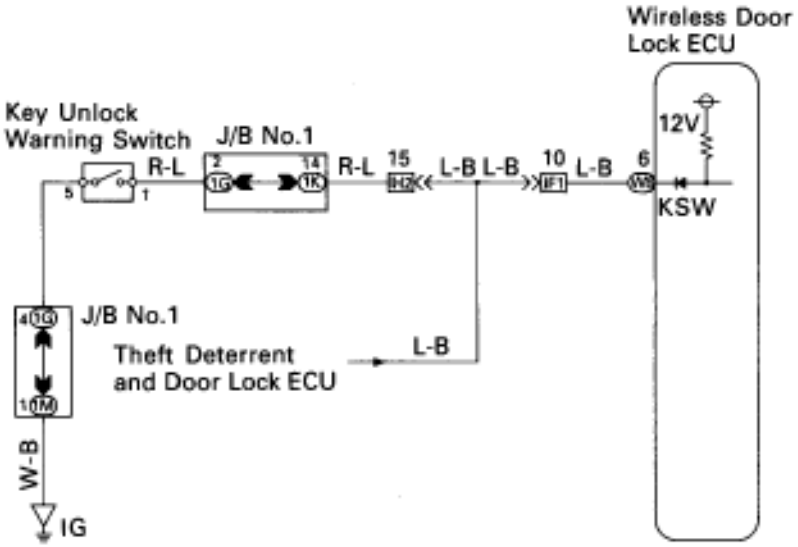
CIRCUIT DESCRIPTION

When the key is inserted in the ignition key cylinder the key unlock warning switch comes ON, and when the key is not inserted the switch is OFF.
When the key unlock warning switch is ON, the ECU operates the transmitter misoperation prevention function.

DIAGNOSTIC CHART



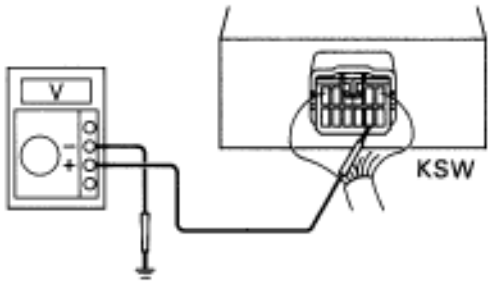
WIRING DIAGRAM



N01776

INSPECTION PROCEDURE

1 **Check voltage between terminal KSW of wireless door lock ECU connector and body ground.**



P
1. Remove the luggage compartment LH side cover.
2. Remove the ECU
3. Disconnect the ECU connector.

C Measure voltage between terminals KSW of ECU connector and body ground, when key plate is not inserted in the key cylinder.

OK **Voltage: 10 ~ 14 V**

NG

Check and repair harness and connector between ECU and key unlock warning switch.

OK

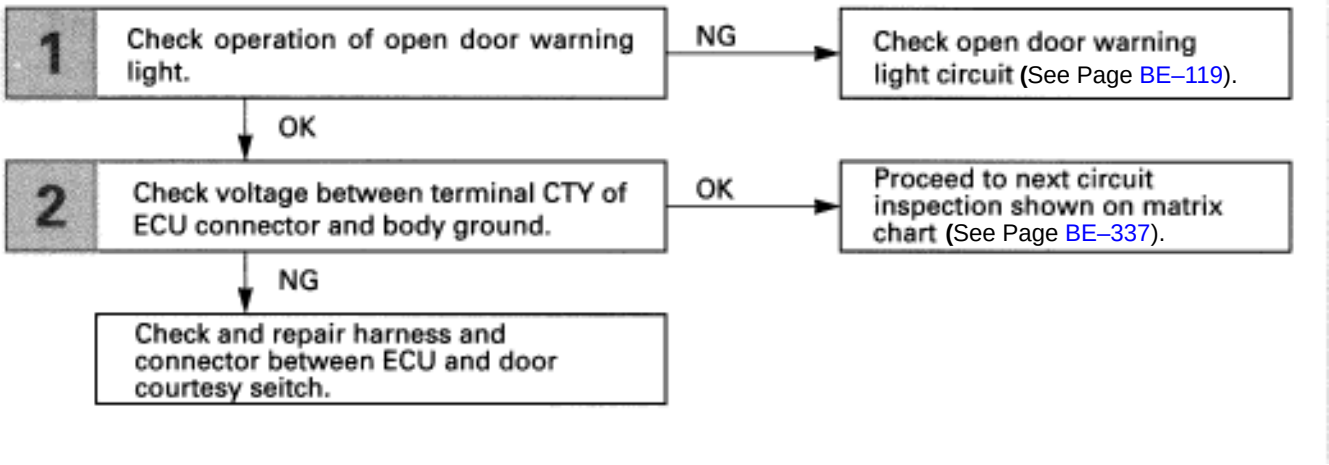
Proceed to next circuit inspection shown on matrix chart (See page BE–337).

Door Courtesy Switch Circuit

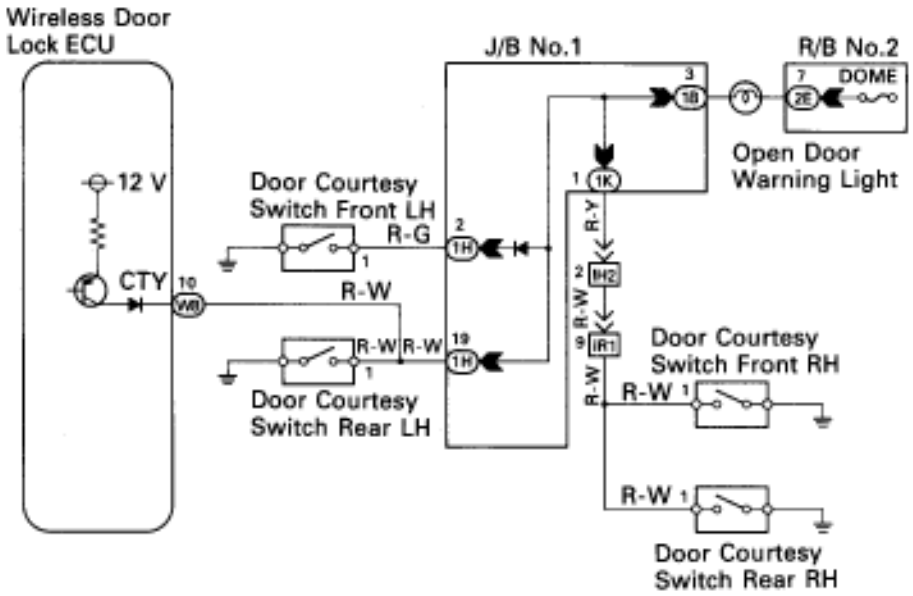
CIRCUIT DESCRIPTION

The door courtesy switch comes ON when the door is opened and goes OFF when the door is closed. Battery positive voltage is applied to terminal CTY of the ECU when all doors are closed, i.e., when the door courtesy switch of all doors are OFF.

DIAGNOSTIC CHART



WIRING DIAGRAM



N01777

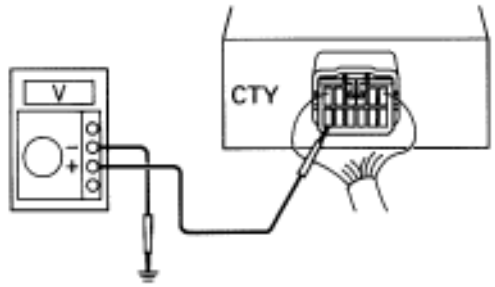
INSPECTION PROCEDURE

1	Check operation of open door warning light.
C	Check that open door warning light comes on when each door is opened, and goes off when all doors are closed.

OK

NG → **Check open door warning light circuit (See page BE–119).**

2	Check voltage between terminal CTY of ECU connector and body ground.



P
1. Remove the luggage compartment LH side cover.
2. Remove the ECU
3. Wireless door lock main switch on.

C Measure voltage between terminal CTY of ECU connector and body ground, when all doors are closed.

OK **Voltage: 10 ~ 14 V**

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page BE–337).**

Check and repair harness and connector between ECU and door courtesy switch.

DOOR LOCK CONTROL SYSTEM

HOW TO PROCEED WITH TROUBLESHOOTING

Perform troubleshooting in accordance with the procedure on the following page.

CUSTOMER PROBLEM ANALYSIS

Using the customer problem analysis check sheet for reference, ask the customer is as much detail as possible about the problem.

8 **PROBLEM SYMPTOM CONFIRMATION, ⁎ SYMPTOM SIMULATION**

Confirm the problem symptoms. If the problem does not reappear, be sure to simulate the problem using ”Problem Simulation Method”.

For example, if the malfunction involves failure of the door to lock or unlock during operation of the Door Lock Control Switch, check if lock and unlock operation of the door using the key is normal or abnormal, and also check if key confinement prevention function and luggage compartment door opener function are normal or not. And having fully checked the extent of the malfunction.

4 **MATRIX CHART OF PROBLEM SYMPTOMS**

Confirm the order of inspection for each applicable problem symptom on the matrix chart.

5 **CIRCUIT INSPECTION**

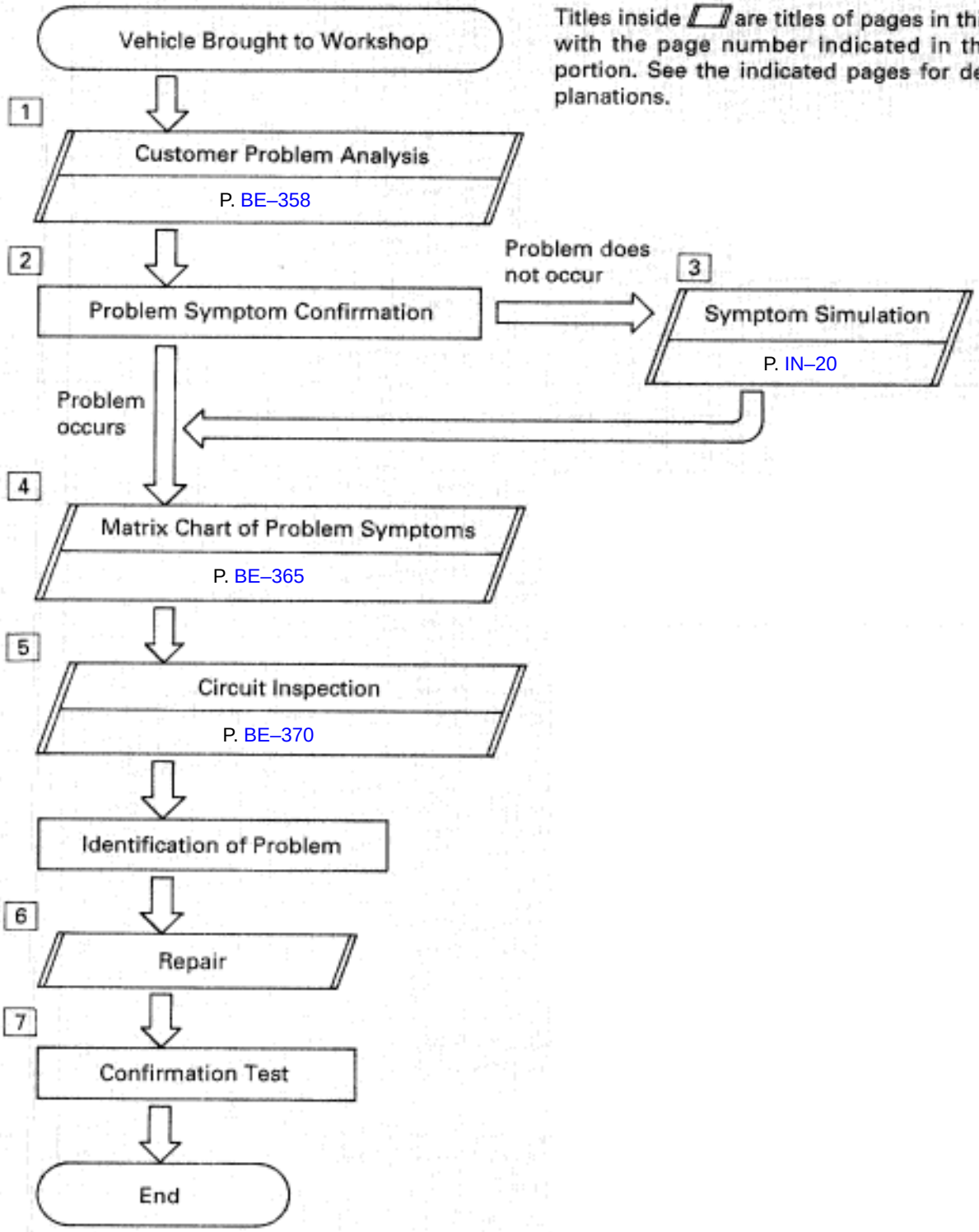
Proceed with diagnosis of each circuit in accordance with the inspection order confirmed in 4. Judge whether the cause of the problem is in the sensor, wire harness and connectors, or the ECU.

6 **REPAIR**

When the cause of the problem is found in 5, perform repairs.

7 **CONFIRMATION TEST**

After completing repairs, confirm that the problem is eliminated and that all functions of the door lock control system are normal.


Vehicle Brought to Workshop
Titles inside ▱ are titles of pages in this manual, with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.
1
Customer Problem Analysis
P. BE–358
2
Problem Symptom Confirmation
Problem does not occur
3
Symptom Simulation
P. IN–20
Problem occurs
4
Matrix Chart of Problem Symptoms
P. BE–365
5
Circuit Inspection
P. BE–370
Identification of Problem
6
Repair
7
Confirmation Test
End

CUSTOMER PROBLEM ANALYSIS CHECK SHEET

DOOR LOCK CONTROL System Check Sheet

Inspector's Name:

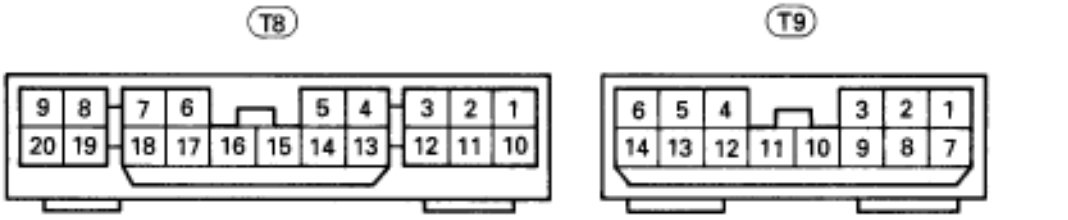
Customer's Name		**Registration No.**	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km Miles

Date of Problem Occurrence		/ /
Frequency of Problem Occurrence		∗Constant ∗Sometimes(times a day, month) ∗Once Only
Conditions at Time of Problem Occurrence	**Weather**	∗Fine ∗Cloudy ∗Rainy ∗Snowy ∗Various/Others
	Outdoor Temperature	∗Hot ∗Warm ∗Cool ∗Cold (Approx. °F(°C))

Problem Symptom	∗ Malfunction in Door Lock/Unlock Operation Using Door Lock Control Switch.	∗ Driver's door lock control switch	∗Driver's door ∗Passenger's door ∗Rear RH door ∗Rear LH door
		∗ Passenger's door lock control switch	∗Driver's door ∗Passenger's door ∗Rear RH door ∗Rear LH door
	∗ Malfunction in Door Lock/Unlock Operation Using key.	∗ Driver's door key operated switch.	∗Driver's door ∗Passenger's door ∗Rear RH door ∗Rear LH door
		∗ Passenger's door key operated switch	∗Driver's door ∗Passenger's door ∗Rear RH door ∗Rear LH door
		∗ 2–operation unlock function of driver's door key operated switch	
	∗Malfunction in Key Confinement Prevention Function.		
	∗Malfunction in Luggage Compartment Door Opener Function.		
	∗Others		

TERMINALS OF ECU

No.	Symbol	Terminal Name	No.	Symbol	Terminal Name
T8–1	SRLY	Ignition Switch ”ST”	T9–1	LUG	Luggage Compartment Door Key Operated Switch
T8–2	IG	Ignition Switch ”ON”	T9–2	TSWR	Door Unlock Detection Switch
T8–3	ACT–	Door Lock Motor	T9–3	CTY	Door Open Detection Switch
T8–4	ACT+	Door Lock Motor	T9–4	SH	Theft Deterrent Horn
T8–5	TO	Luggage Compartment Door Opener Motor	T9–5	HEAD	Headlight
T8–6	KSW	Key Unlock Warning Switch	T9–6		
T8–7	LSWP	Door Unlock Detection Switch	T9–7	ACC	Ignition Switch ”ACC”
T8–8	IB2	Power Source	T9–8	PRLY	Power Main Relay
T8–9	IND	Security Indicator Light	T9–9		
T8–10	UL3	Door Key Lock and Unlock Switch	T9–10	DSWL	Luggage Compartment Door Courtesy Switch
T8–11	LSWD	Door Unlock Detection Switch	T9–11	HORN	Horn
T8–12	DSWP	Door Open Detection Switch	T9–12	DSWH	Engine Hood Courtesy Switch
T8–13	DSWD	Door Open Detection Switch	T9–13	TAIL	Taillight
T8–14	L1	Door Key Lock and Unlock Switch	T9–14		
T8–15	UL1	Door Key Lock and Unlock Switch			
T8–16	E	Ground			
T8–17	L2	Door Lock Control Switch (Lock)			
T8–18	UL2	Door Lock Control Switch (Unlock)			
T8–19	TSW	Luggage Compartment Door Opener Switch			
T8–20	B+1	Power Source			

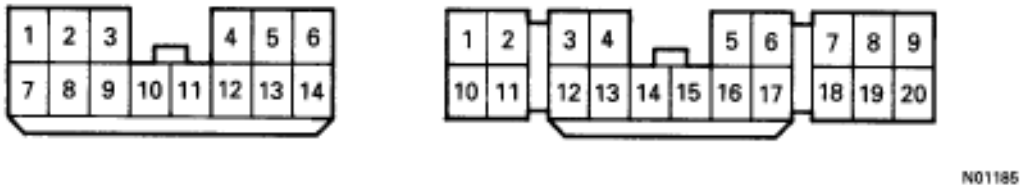


STANDARD VALUE OF ECU TERMINAL

Terminals	Symbols	Wiring color	Condition	Standard Value
T8–1 → ← Ground	SRLY → ← Ground	B–Y	Ignition switch is turned to ST position. (When neutral start switch ”P” range)	10–14 V
T8–2 → ← Ground	IG → ← Ground	B–R	Ignition switch is turned to ”ON” position	10–14 V
T8–3 → ← T8–4	ACT– → ← ACT+	L–B L–R	Ignition switch OFF.	Below 50 Ω
T8–5 → ← T8–16	TO → ← E	L → ← W–B	Luggage compartment door opener switch ”pulled”.	10–14 V
			Luggage compartment door opener switch ”not pulled”.	Below 1 V
T8–6 → ← T8–16	KSW → ← E	L–B → ← W–B	Key unlock warning switch ON. (Key is inserted into key cylinder).	Below 1 Ω
			Key unlock warning switch OFF. (Key is not inserted into key cylinder).	1 MΩ or higher
T8–7 → ← T8–16	LSWP → ← E	Y → ← W–B	Door unlock detection switch ON. (passenger’s)	Below 1 Ω
			Door unlock detection switch OFF.	1 MΩ or higher
T8–8 → ← T8–16	B+2 → ← E	W–L → ← W–B	Always	10–14 V
T8–9 → ← T8–16	IND → ← E	R–Y → ← W–B	Indicator light circuit	Below 1 Ω
T8–10 → ← T8–16	UL3 → ← E	R–L → ← W–B	Door key lock and unlock switch ”unlock” position.	Below 1 Ω
			Door key lock and unlock switch OFF or ”lock” position.	1 MΩ or higher
T8–11 → ← T8–16	LSWD → ← E	P → ← W–B	Door unlock detection switch ON. (driver’s)	Below 1 Ω
			Door unlock detection switch OFF. (driver’s)	1 MΩ or higher
T8–12 → ← T8–16	DSWP → ← E	R–W → ← W–B	Door open detection switch (passenger’s) ON (door opened)	Below 1 Ω
			Door open detection switch (passenger’s) OFF (door closed)	1 MΩ or higher
T8–13 → ← T8–16	DSWD → ← E	R–G → ← W–B	Door open detection switch (driver’s) ON (door opened)	Below 1 Ω
			Door open detection switch (driver’s) OFF (door closed)	1 MΩ or higher
T8–14 → ← T8–16	L1 → ← E	Y–R → ← W–B	Door key lock and unlock switch ”lock” position.	Below 1 Ω
			Door key lock and unlock switch OFF or ”unlock” position.	1 MΩ or higher

Terminals	Symbols	Wiring color	Condition	Standard Value
T8–15 → ← T8–16	UL1 → ← E	Y–L → ← W–B	Door key lock and unlock switch ”unlock” position.	Below 1 Ω
			Door key lock and unlock switch OFF or ”lock” Position.	1 MΩ or higher
T8–16 → ← Ground	E → ← Ground	W–B	Always	Below 1 Ω
T8–17 → ← T8–16	L2 → ← E	P–B → ← W–B	Door lock control switch ”lock” position.	Below 1 Ω
			Door lock control switch OFF or ”unlock” position.	1 MΩ or higher
T8–18 → ← T8–1632	UL2 → ← E	G → ← W–B	Door lock control switch ”unlock” position.	Below 1 Ω
			Door lock control switch OFF or ”lock” position.	1 MΩ or higher
T8–19 → ← T8–16	TSW → ← E	L–Y → ← W–B	Luggage compartment door opener switch ON.	Below 1 Ω
			Luggage compartment door opener switch OFF.	1 MΩ or higher
T8–20 → ← T8–16	B+1 → ← E	R → ← W–B	Always	10–14 V
T9–1 → ← T8–16	LUG → ← E	G–W → ← W–B	Luggage compartment door key operated switch ON.	Below 1 Ω
			Luggage compartment door key operated switch OFF.	1 MΩ or higher
T9–2 → ← T8–16	LSWR → ← E	L–Y → ← W–B	Door unlock detection switch ON. (Rear door)	Below 1 Ω
			Door unlock detection switch OFF. (Rear door)	1 MΩ or higher
T9–3 → ← T8–16	CTY → ← E	R–B → ← W–B	Door open detection switch (Rear door) ON (door opened)	Below 1 Ω
			Door open detection switch (Rear door) OFF (door closed)	1 MΩ or higher
T9–4 → ← T8–16	SH → ← E	W–L → ← W–B	Always	10–14 V
T9–5 → ← T8–16	HEAD → ← E	R–B → ← W–B	Light control switch other than ”HEAD” position.	10–14 V
T9–7 → ← T8–16	ACC → ← E	L–R → ← W–B	Ignition switch is turned to ”ACC” position.	10–14 V

Terminals	Symbols	Wiring color	Condition	Standard Value
T9–10 → ← T8–16	DSWL → ← E	R–W → ← W–B	Luggage compartment door courtesy switch ON.	Below 1 Ω
			Luggage compartment door courtesy switch OFF.	1 MΩ or higher
T9–11 → ← T8–16	HORN → ← E	G–B → ← W–B	Horn switch OFF.	10–14 V
T9–12 → ← T8–16	PSWH → ← E	B → ← W–B	Engine hood courtesy switch ON.	Below 1 Ω
			Engine hood courtesy switch OFF.	1 MΩ or higher
T9–13 → ← T8–16	TAIL → ← E	G–R → ← W–B	Light control switch ”TAIL” position	10–14 V



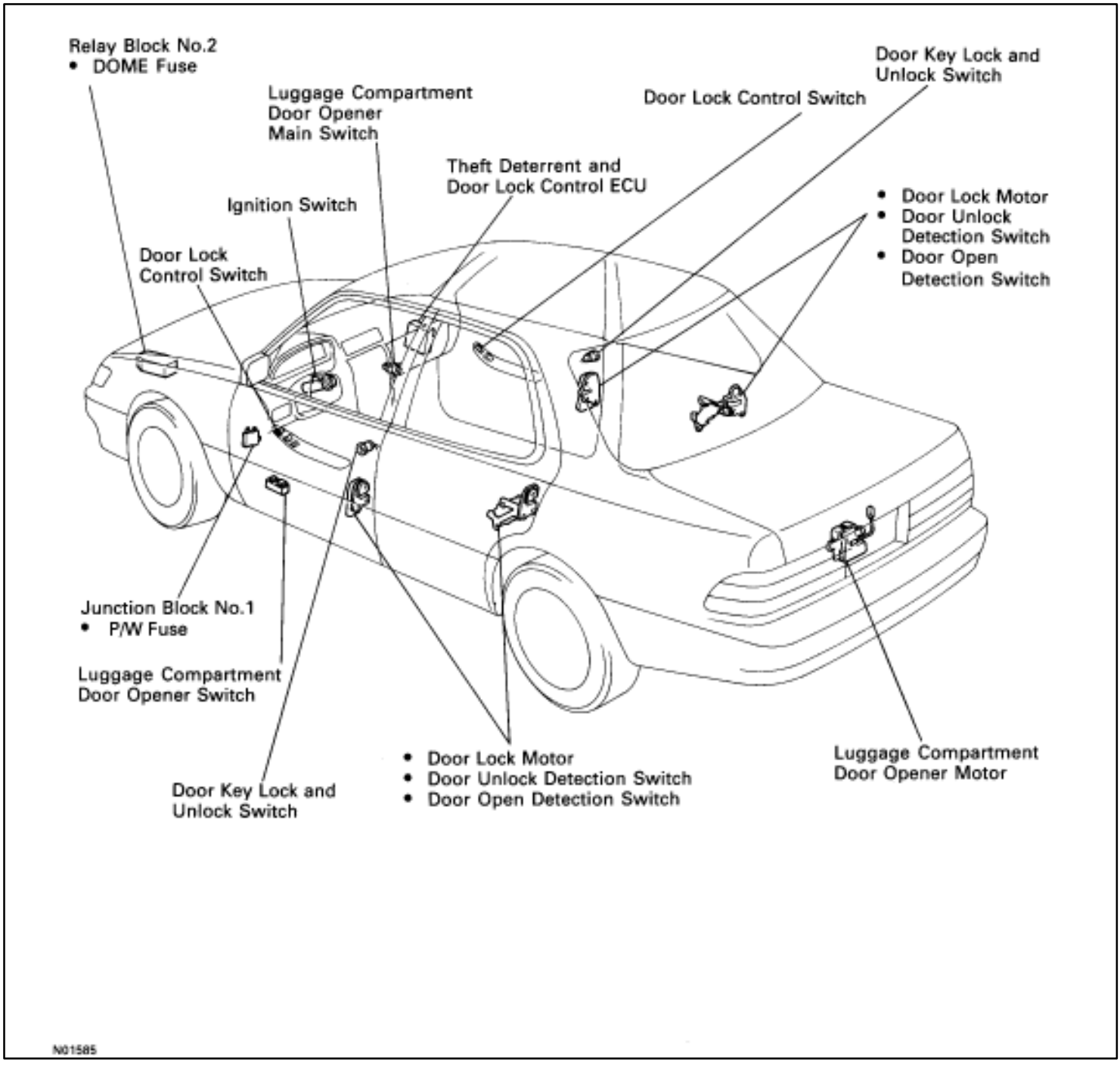
When checking the voltage or resistance of theft deterrent and door lock ECU terminal, disconnect the ECU connector.

Description

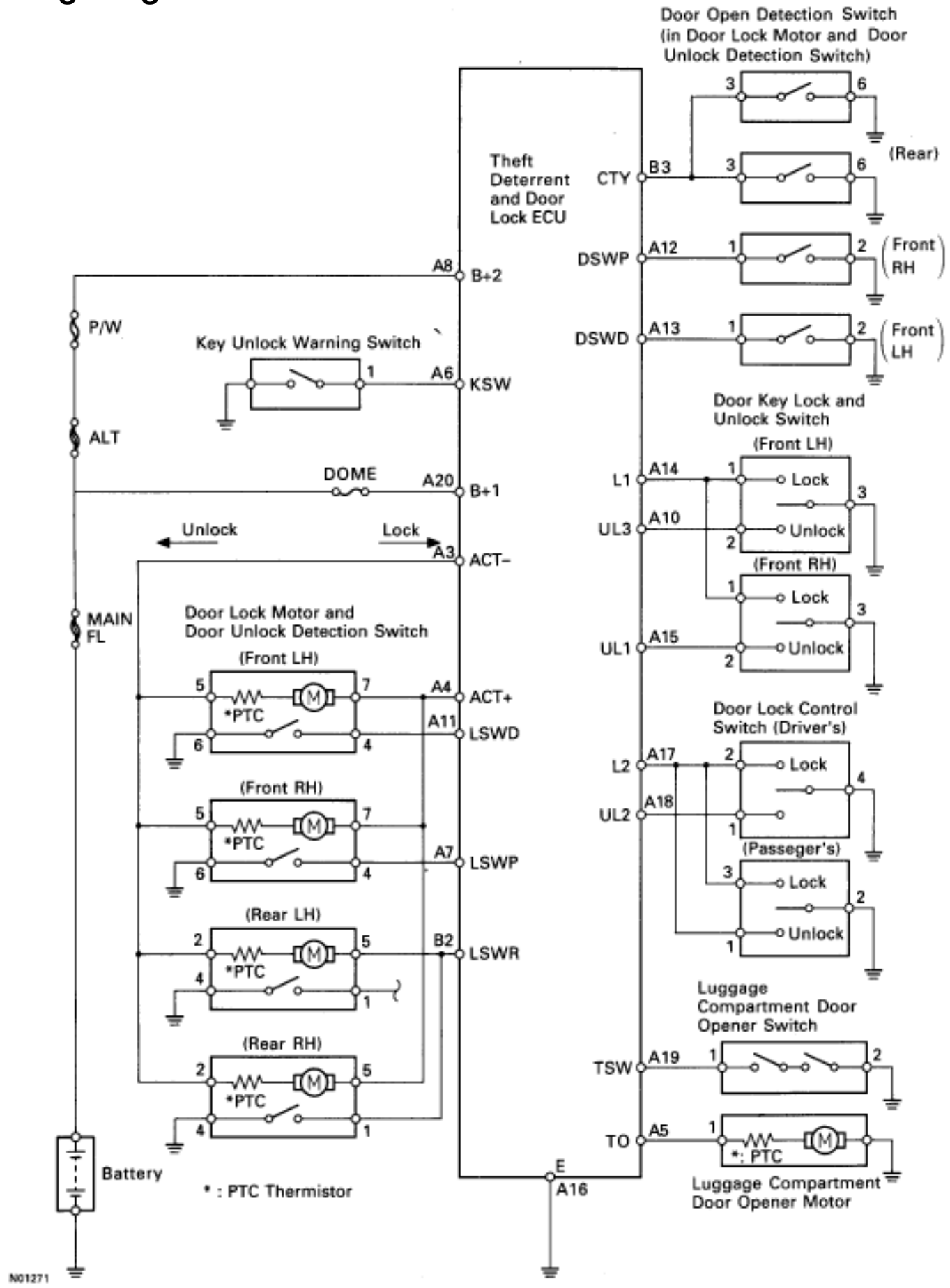
The door lock control system has a key–interlocked door lock and unlock function and a key–confine prevention function. All doors can be locked and unlocked simultaneously by key operation at the front right or left door (the key needs to be operated twice to unlock the doors at the driver's door). If the door lock operation is performed when one of the front doors is open and the ignition key inserted in the key cylinder, doors are unlocked automatically to prevent the ignition key from being left inside the vehicle. The luggage compartment door can be opened by electromagnetic opener.

For the function of component parts of this system, refer to the circuit description in the troubleshooting section.

Parts Location



Wiring Diagram



MATRIX CHART OF PROBLEM SYMPTOMS

Perform troubleshooting of the circuits for the applicable problem symptom in the order given in the chart below. Proceed to the page located for each circuit.

HINT:

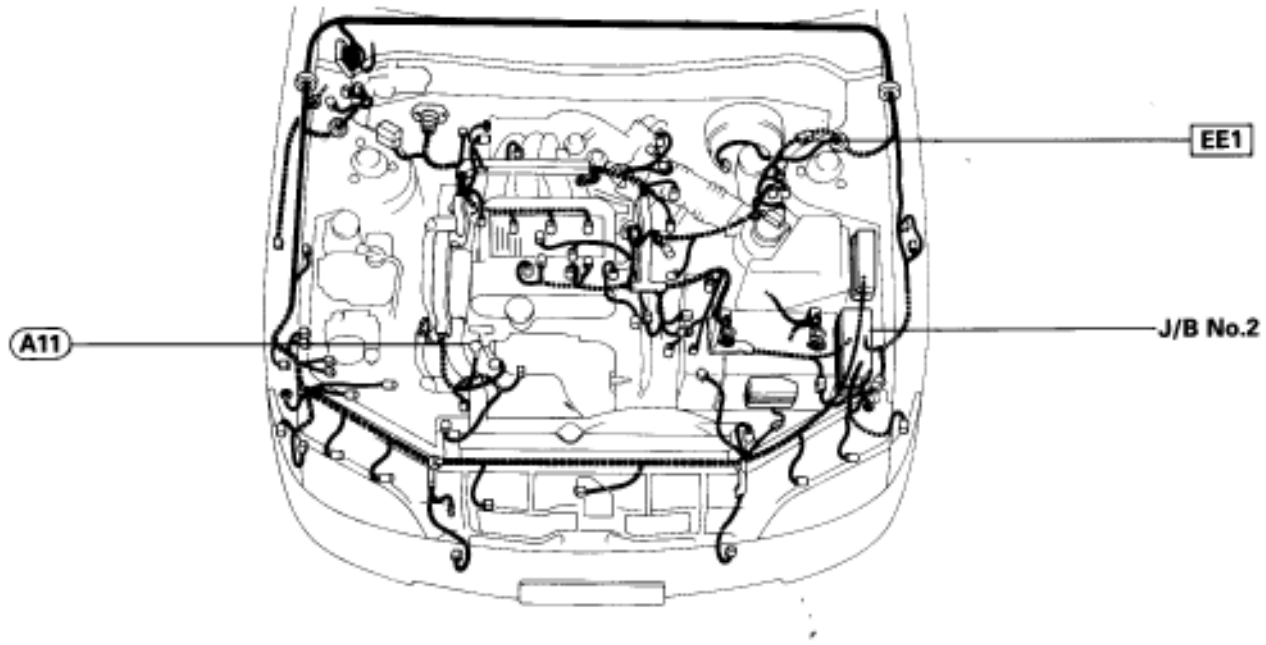
If the instruction ”Proceed to next circuit inspection shown on matrix chart” is given in the flow chart for each circuit, proceed to the circuit with the next highest number in the table to continue the check.

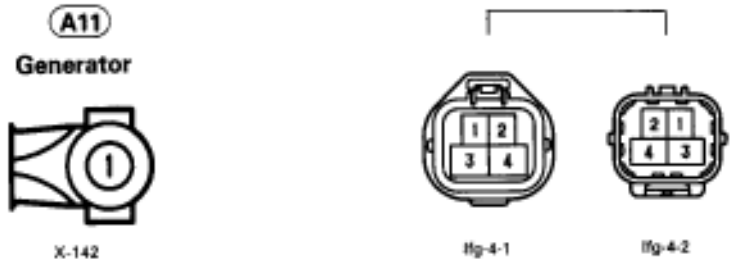
If the trouble still reappears even though there are no abnormalities in any of the other circuits, then check or replace the Theft Deterrent ECU as the last step.

See page / Suspect Area / Symptom	BE–370 ECU Power Source Circuit	BE–372 Actuator Power Source Circuit	BE–374 Door Lock Motor Circuit	BE–376 Luggage Compartment Door Opener Motor Circuit	BE–378 Door Lock Control Switch Circuit	BE–380 Door key Lock and Unlock Switch Circuit	BE–382 Key Unlock Warning Switch Circuit	BE–384 Door Unlock Detection Switch Circuit	BE–386 Luggage Compartment Door Opener Main Switch and Opener Switch Circuit	BE–388 Door Open Detection Switch Circuit	IN–32 Theft Deterrent ECU
Whole functions of the door lock control system does not operate.	1	2	4	3							5
All doors or some doors are not locked and unlocked with the Door Lock Control Switch and Key Operated Switch. (Luggage compartment door opener function normally operate.)			3		1	2					4
Doors cannot be locked or unlocked with the door lock control switch. (Doors lock and unlock normally with the key operated switch.)					1		2			3	4
Doors are not locked or unlocked with the key operated switch. (Doors lock and unlock normally with the door lock control switch.)						1					2
Key confinement prevention function does not operate. (Doors lock and unlock normally with the key operated switch.)							1	2		3	4
Luggage compartment door opener function does not operate.				2					1		3

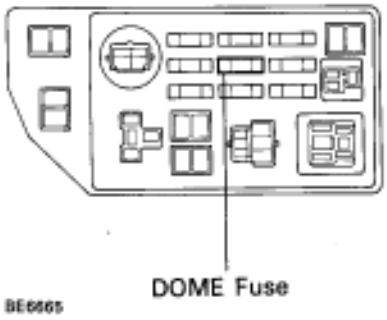
LOCATION OF CONNECTORS

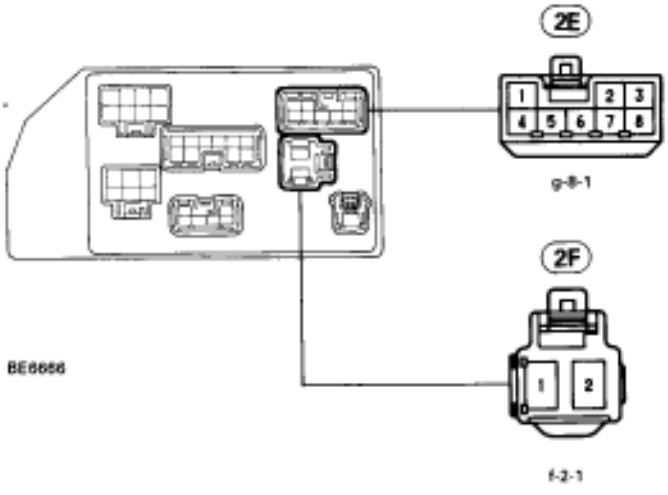
Location of Connectors in Engine Compartment



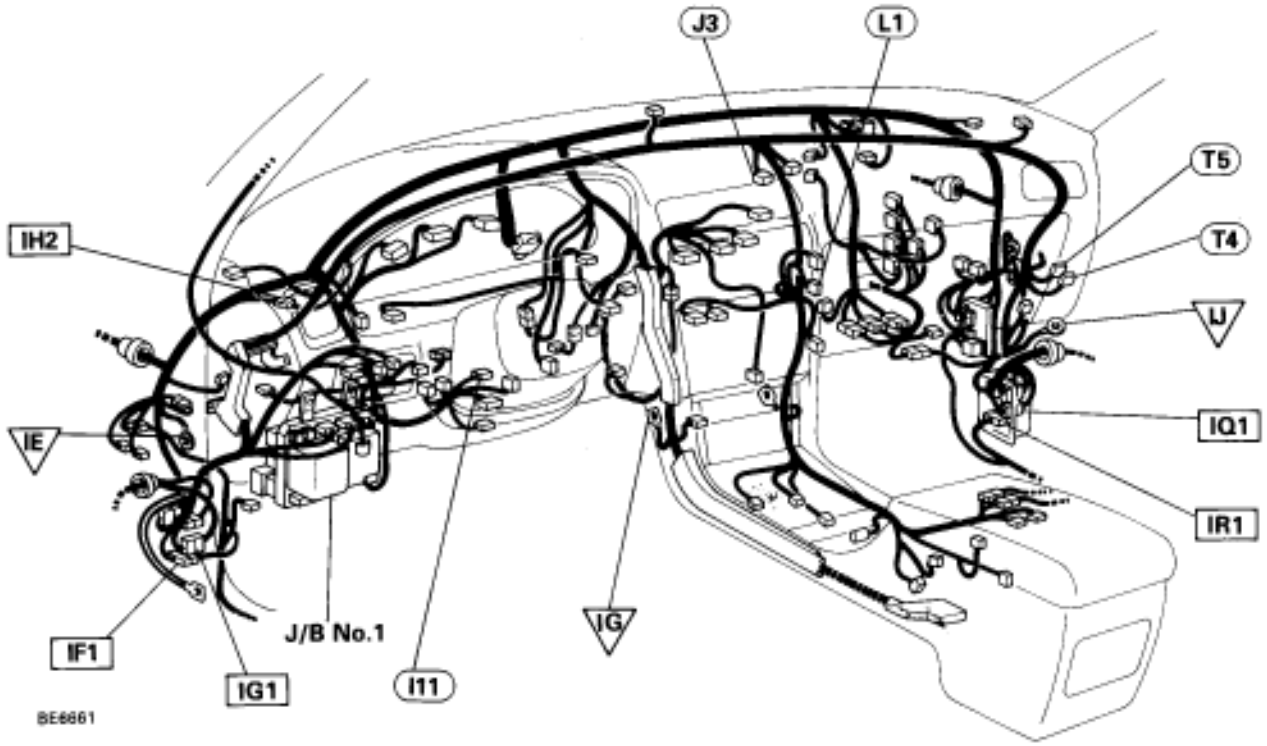


J/B No.2

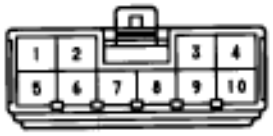




Location of Connectors in Instrument Panel



I11
Key Unlock Warning Switch

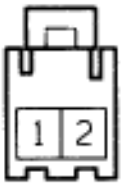


g-10-1-B

J3
Junction Connector

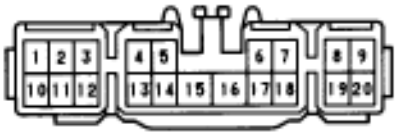
e-14-1-A

L1
Luggage Compartment Door Opener Main Switch



G-2-1

T4
Theft Deterrent and Door Lock ECU



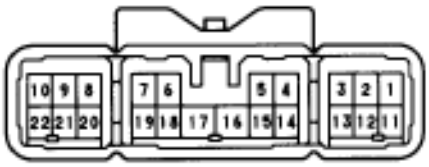
e-20-1

T5
Theft Deterrent and Door Lock ECU

e-14-1-A

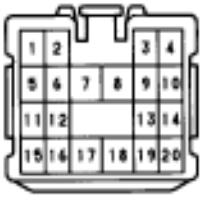
e-22-1

IF1



e-22-2

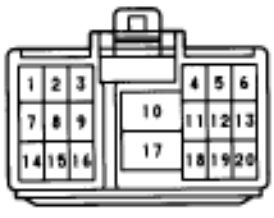
IG1



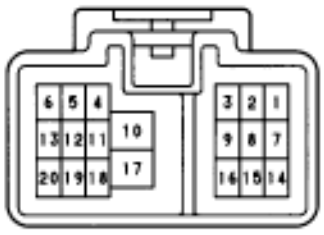
e-20-1-A

e-20-2-A

IH2

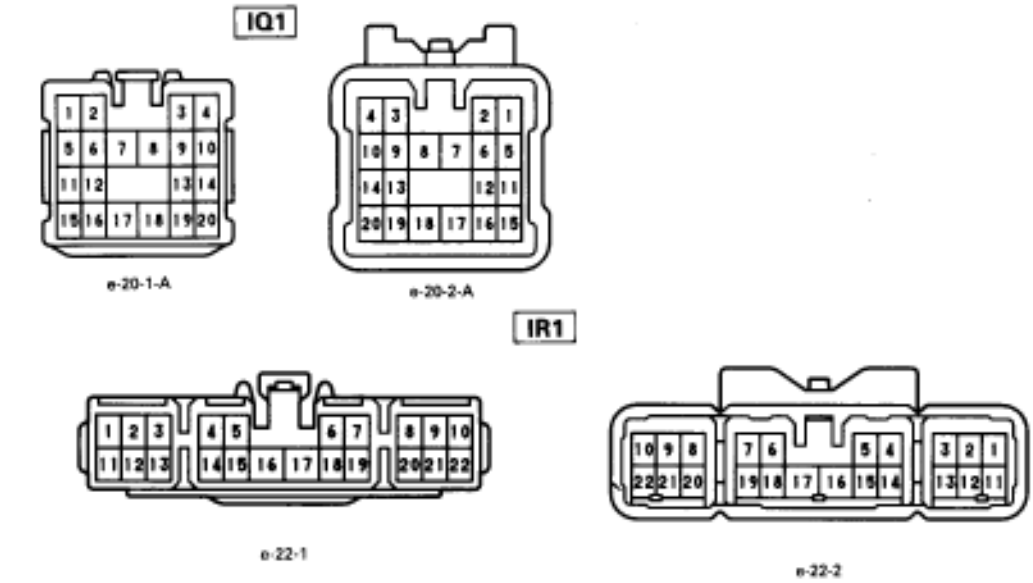


e-20-1-B

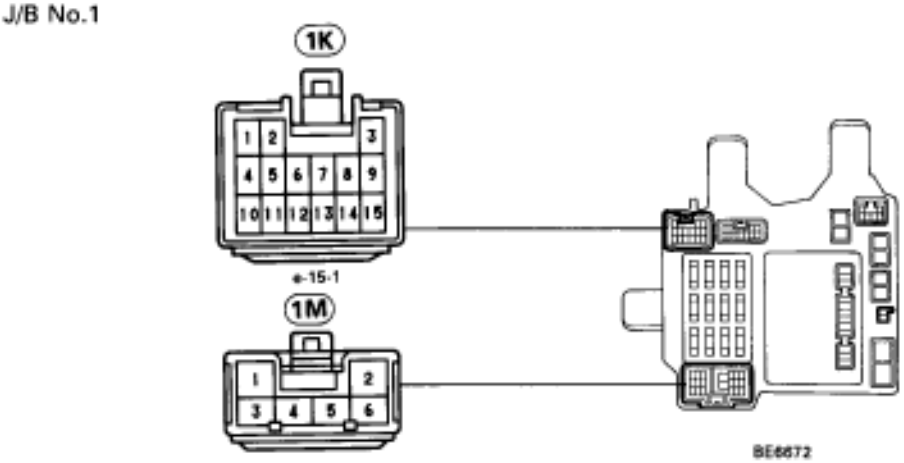


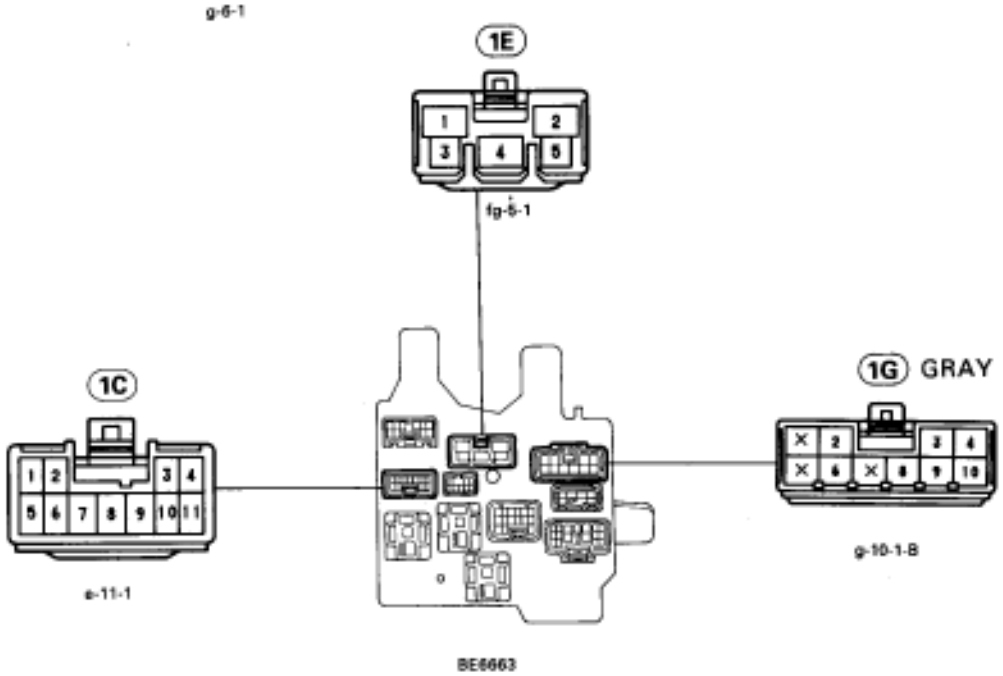
e-20-2-B

Location of Connectors in Instrument Panel

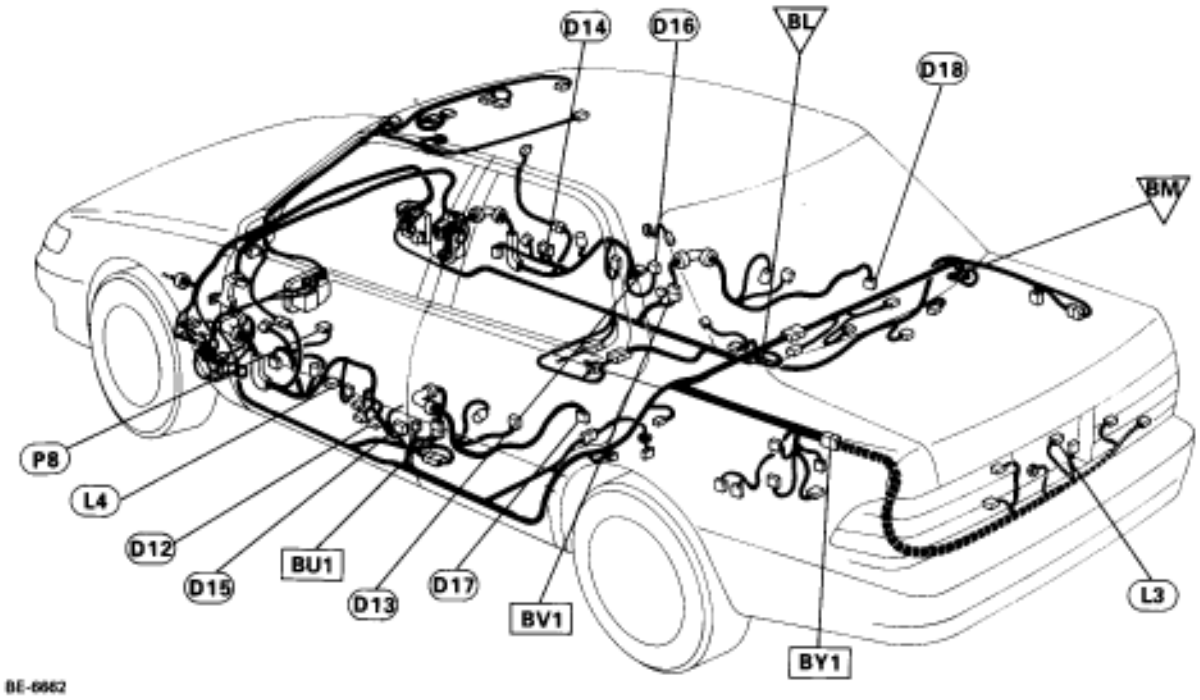


J/B No.1





Location of Connectors in Body



D12 Door Key Lock and Unlock Switch LH

D13 Door Key Lock and Unlock Switch RH

D14 Door Lock Control Switch RH

D15 Door Unlock Detection Switch Front LH

D16 Door Unlock Detection Switch Front RH

D17 Door Unlock Detection Switch Rear LH

D18 Door Unlock Detection Switch Rear RH

L3 Luggage Compartment Door Opener Motor

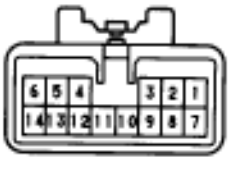
L4 Luggage Compartment Door Opener Switch

P8 Door Lock Control Switch Front LH

BU1

BV1

BY1



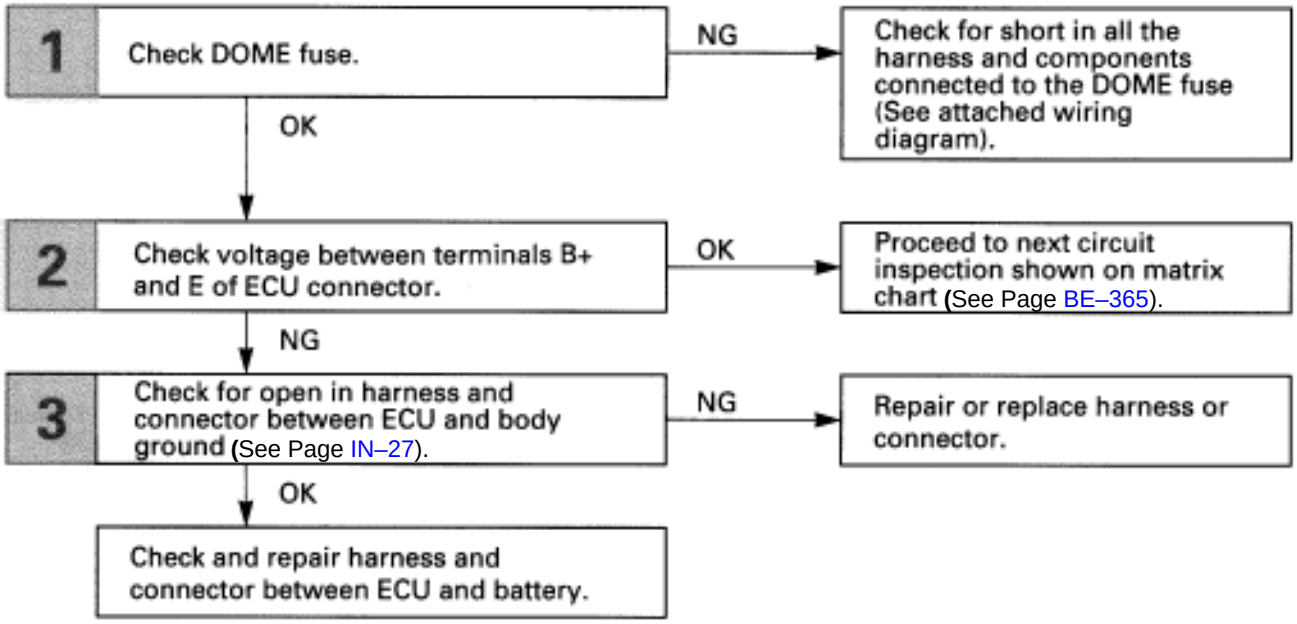
CIRCUIT INSPECTION

ECU Power Source Circuit

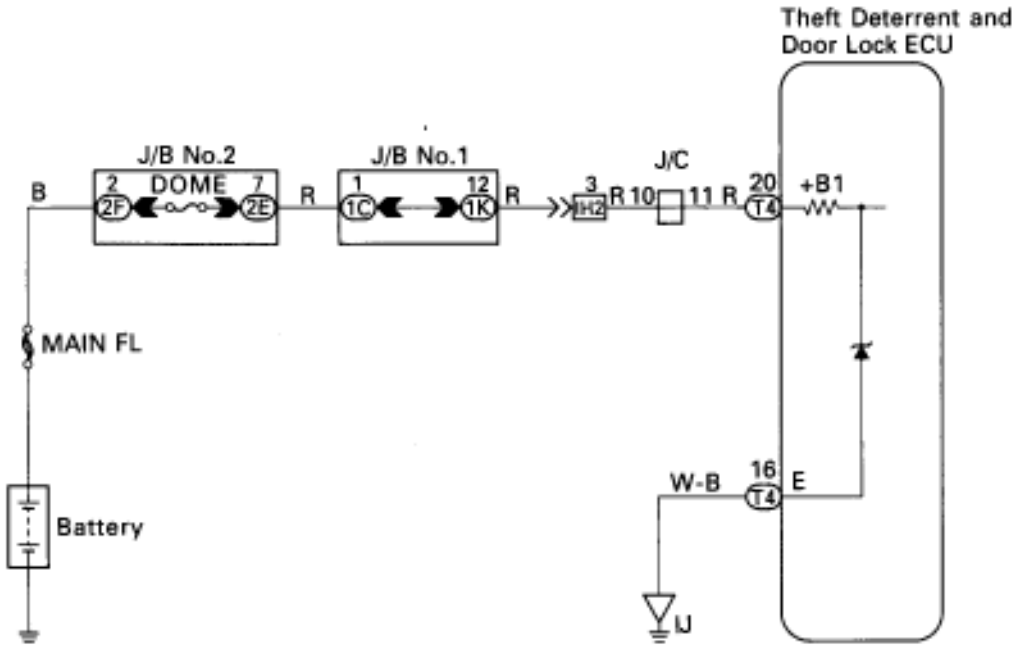
CIRCUIT DESCRIPTION

This circuit provides power to operate the theft deterrent and door lock ECU.

DIAGNOSTIC CHART



WIRING DIAGRAM



N01250

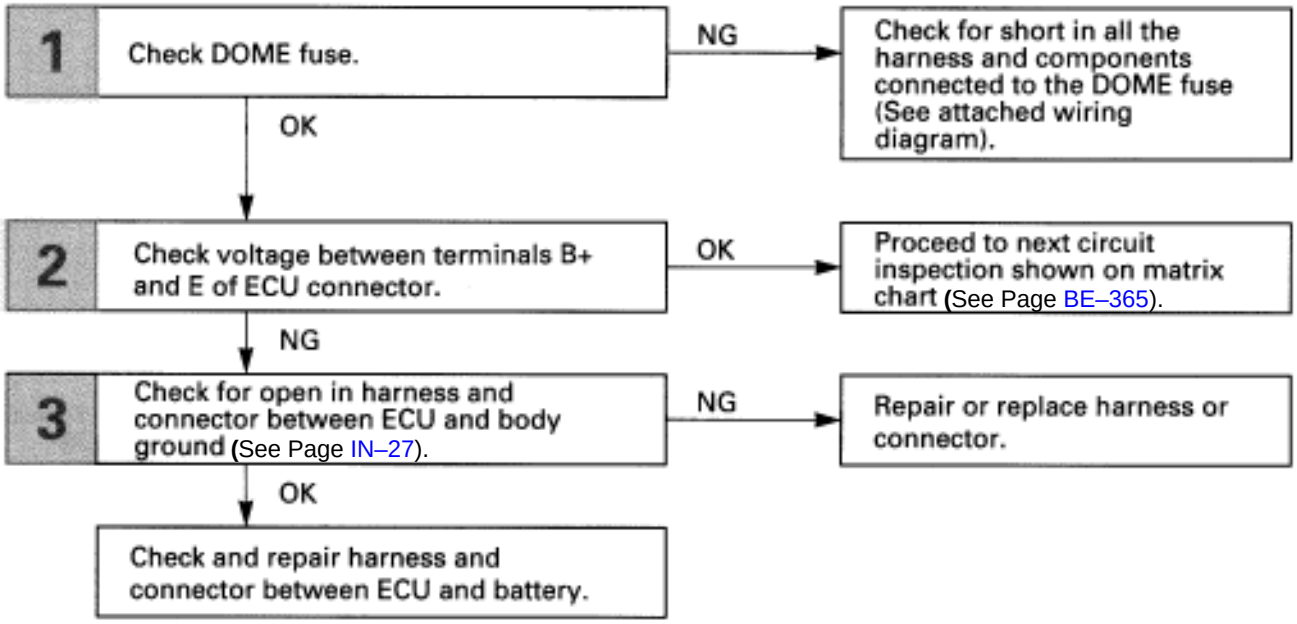
CIRCUIT INSPECTION

ECU Power Source Circuit

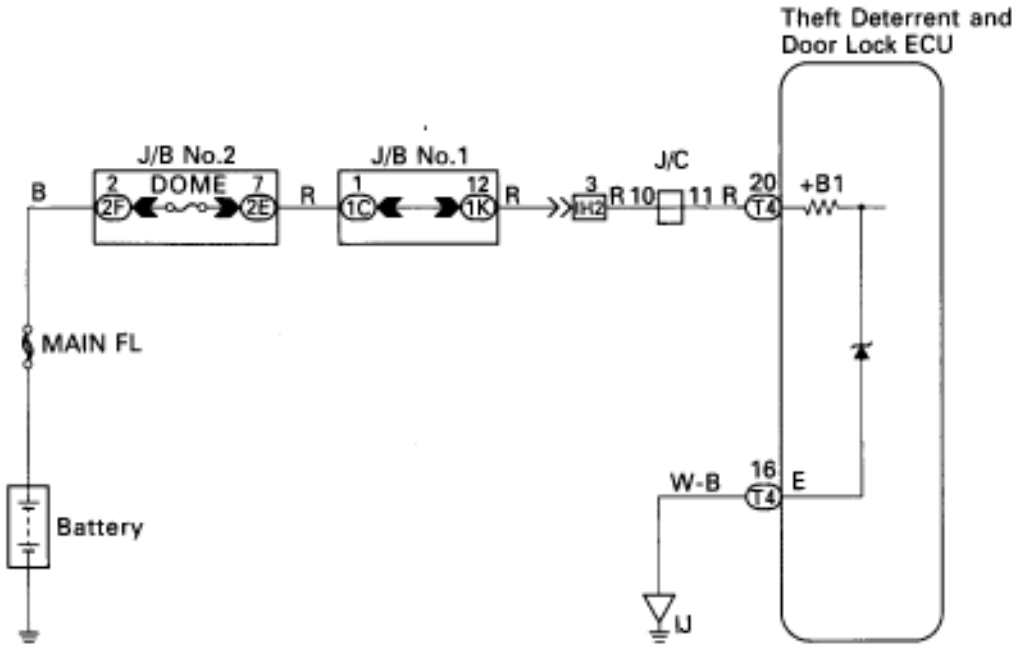
CIRCUIT DESCRIPTION

This circuit provides power to operate the theft deterrent and door lock ECU.

DIAGNOSTIC CHART



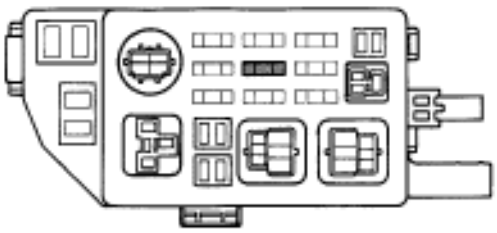
WIRING DIAGRAM



N01250

INSPECTION PROCEDURES

1 **Check DOME fuse.**



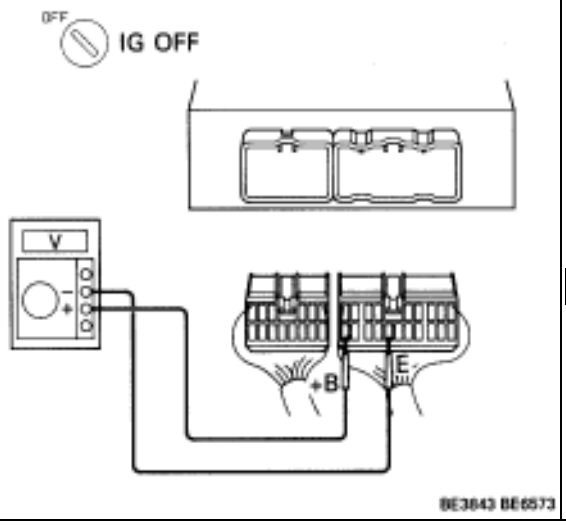
P Remove DOME fuse fro J/B No.2.

C Check continuity of DOME fuse.

OK **Continuity**

OK → **NG** → **Check for short in all the harness and components connected to the DOME fuse (See attached wiring diagram).**

2 **Check voltage between terminals B+ and E of ECU connector.**



P
1. Remove the glove box.
2. Disconnect the theft deterrent and door lock ECU connector.

C Measure voltage between terminals B+ and E of ECU connector.

OK **Voltage:** **10 ~ 14 V**

NG → **OK** → **Proceed to next circuit inspection shown on matrix chart (See page BE–365).**

3 **Check for open in harness and connector between ECU and body ground (See page IN–27).**

OK → **NG** → **Check and repair harness or connector.**

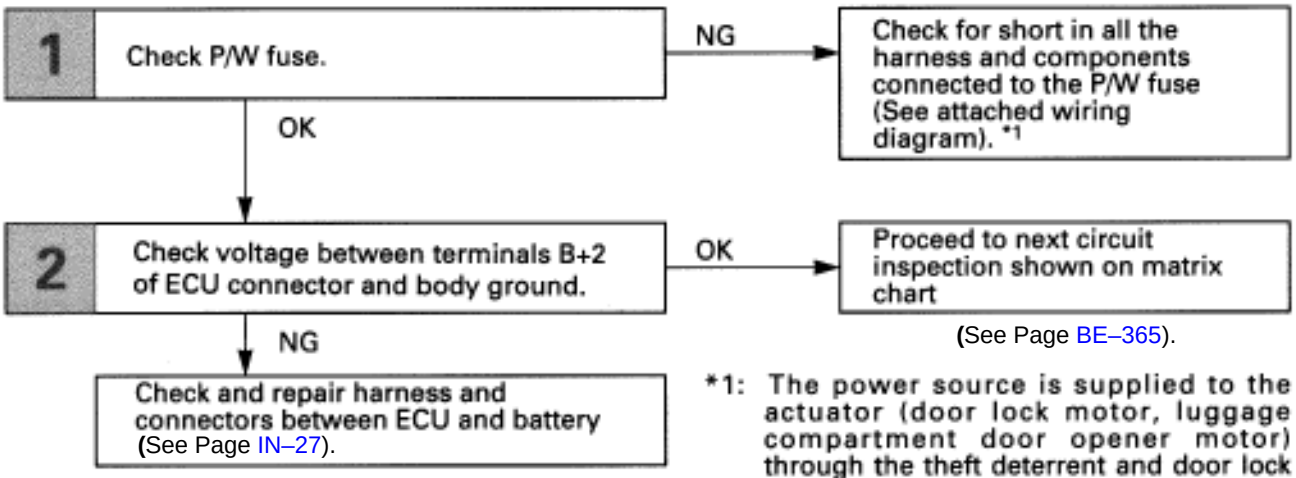
Check and repair harness and connector between ECU and battery.

Actuator Power Source Circuit

CIRCUIT DESCRIPTION

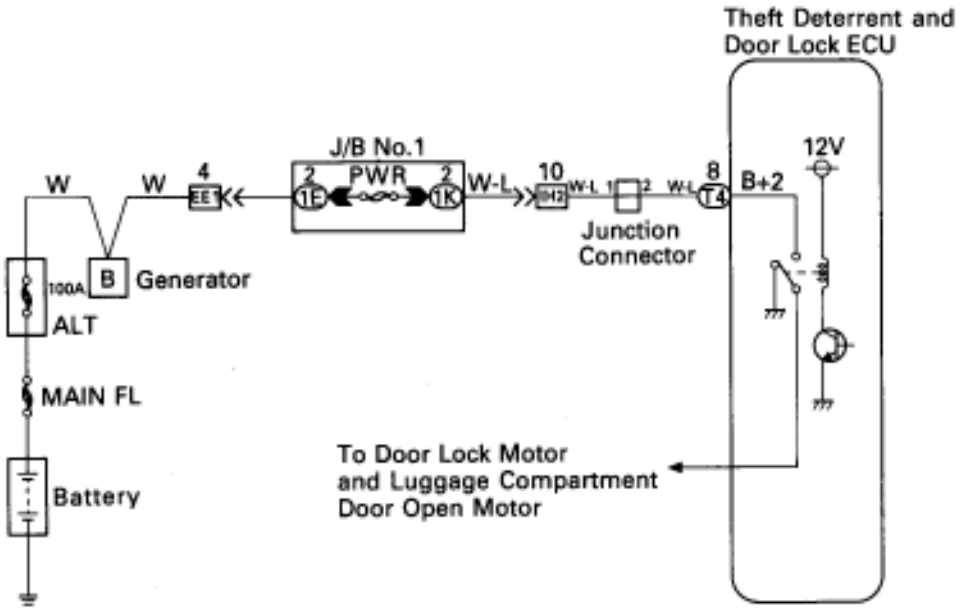
This circuit provides power to drive the door lock motor and the luggage compartment door opener motor.

DIAGNOSTIC CHART



*1: The power source is supplied to the actuator (door lock motor, luggage compartment door opener motor) through the theft deterrent and door lock ECU. Accordingly, if a short circuit of the W/H or actuator occurs in the actuator circuit, the P/W fuse may become OPEN, so also inspect the actuator (door lock motor circuit on page BE–374, and the luggage compartment door opener motor circuit on page BE–376).

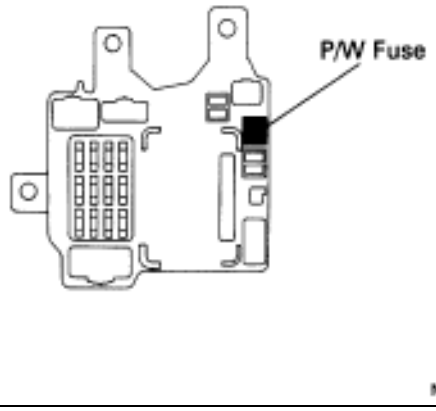
WIRING DIAGRAM



N01251

INSPECTION PROCEDURE

1 **Check P/W fuse.**



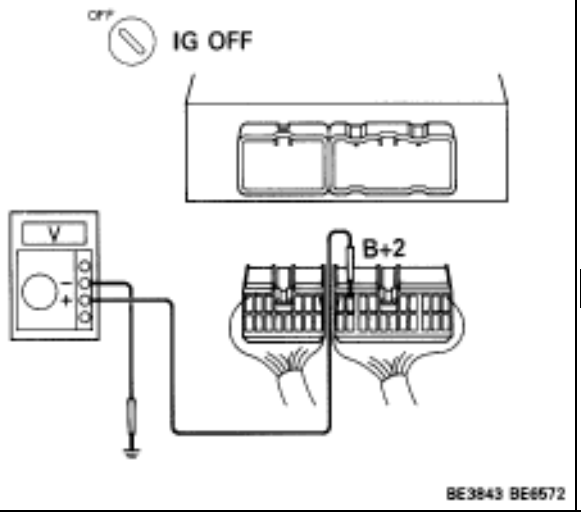
P
1. Remove the front lower panel.
2. Remove P/W fuse from J/B No. 1.

C Check continuity of P/WE fuse.

OK **Continuity**

OK → **NG** → **Check for short in all the harness and components connected to the P/W fuse (See attached wiring diagram).*1**

2 **Check voltage between terminal B+2 of theft deterrent ECU connector and body ground.**



P
1. Remove the glove box.
2. Disconnect the theft deterrent and door lock ECU connector.

C Measure voltage between terminals B+2 of theft deterrent ECU connector and body ground.

OK **Voltage:** **10 ~ 14 V**

NG → **OK** → **Proceed to next circuit inspection shown on matrix chart (See page BE–365).**

Check and repair harness and connector between ECU and battery (See page IN–27).

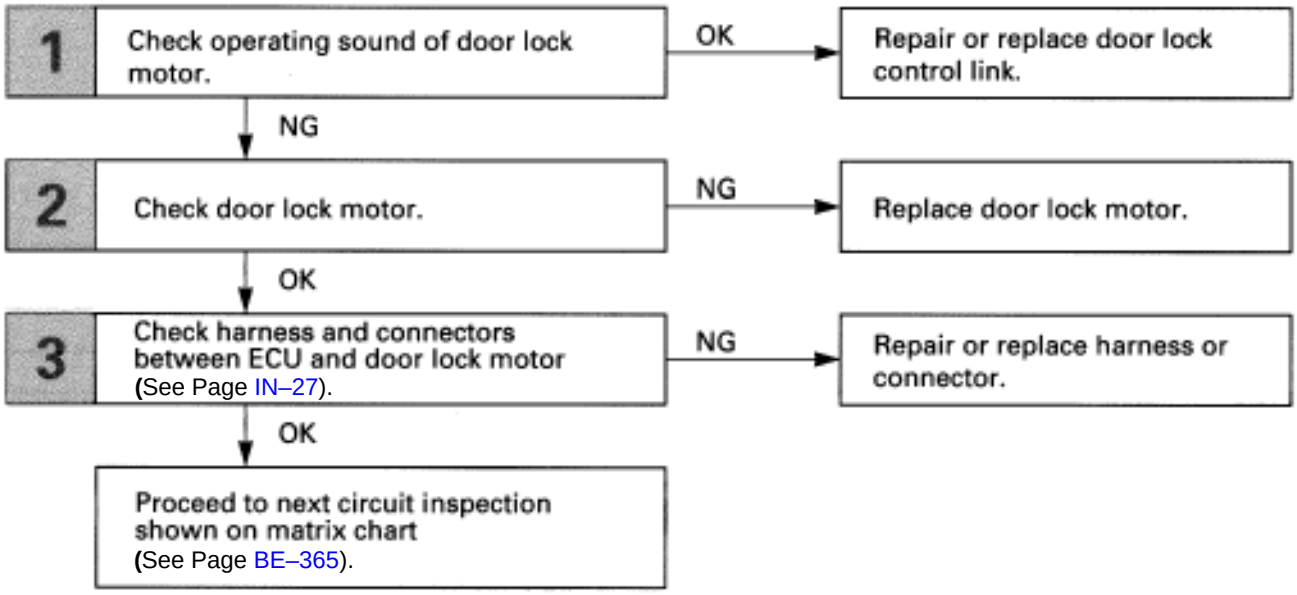
Door Lock Motor Circuit

CIRCUIT DESCRIPTION

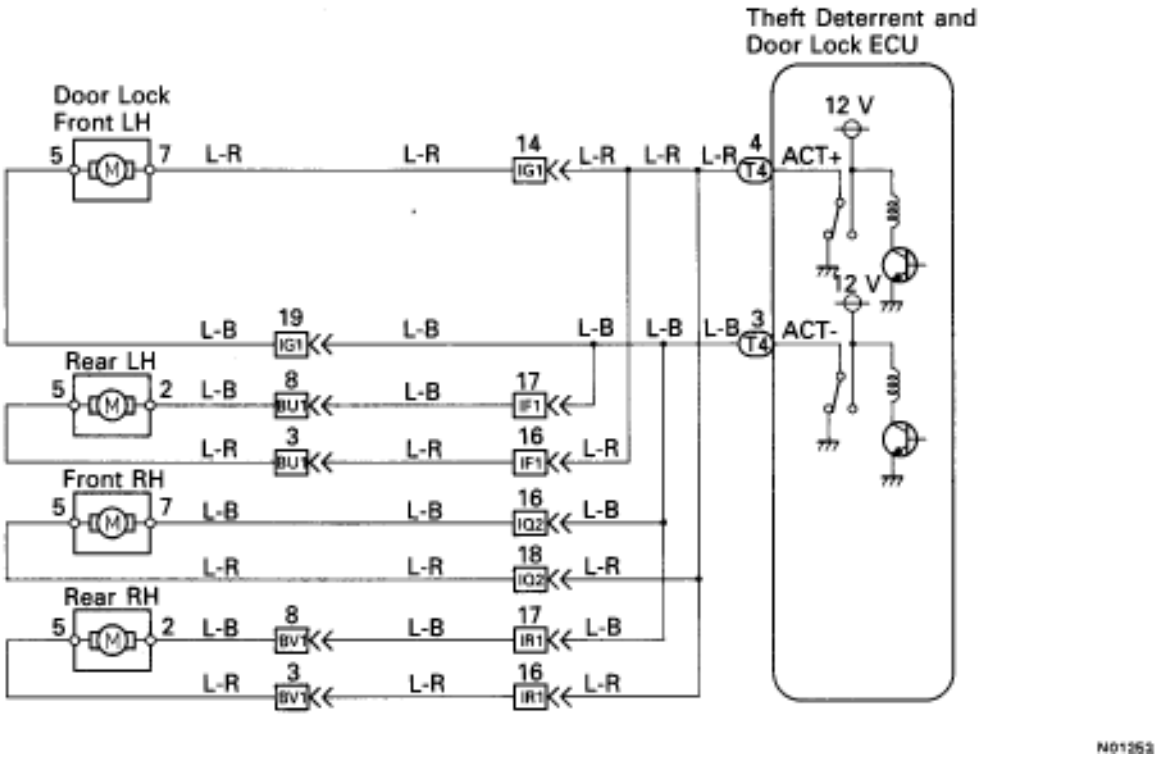
The door lock motor locks and unlocks the door in accordance with signals from the ECU.

DIAGNOSTIC CHART

HINT: Inspect the door which is malfunctioning.

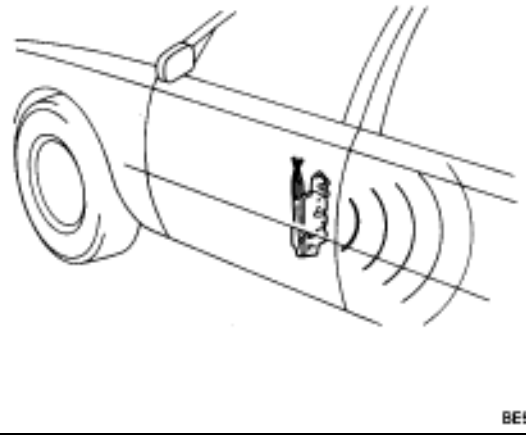


WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check operating sound of door lock motor.**



C Check operating sound of door lock motor, when door lock control switch is pushed to the lock side and unlock side.

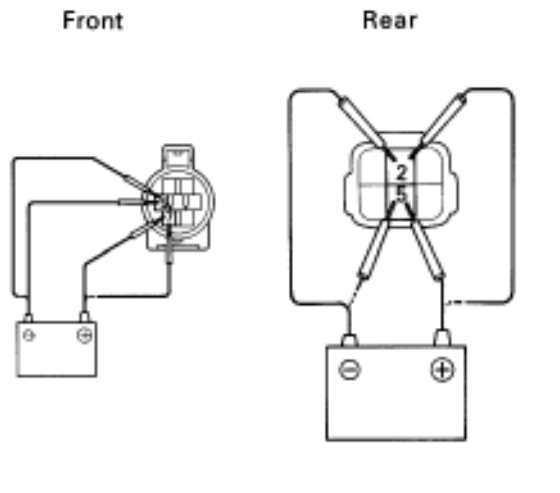
OK **Can hear operating sound of door lock motor.**

Hint Inspect the door which is malfunctioning.

NG

OK **Repair or replace door lock control link.**

2 **Check door lock motor.**



P
1. Remove the door trim and service hole cover.
2. Disconnect the door lock motor connector.

C
1. Connect positive ⊕ lead to terminal 7(5) and negative ⊖ lead to terminal 5(2) of door lock motor connector.
2. Connect positive ⊕ lead to terminal 5(2) and negative ⊖ lead to terminal 7(5) of door lock motor connector.

OK
1. **Door lock motor locks door.**
2. **Door lock motor unlocks door.**

Hint Perform inspection in a short time (within 2 seconds). The terminal number without bracket is for the Front, the number with bracket is for the Rear.

OK

NG **Replace door lock motor.**

3 **Check harness and connector between ECU and door lock motor (See page IN–27).**

OK

NG **Repair or replace harness or connector.**

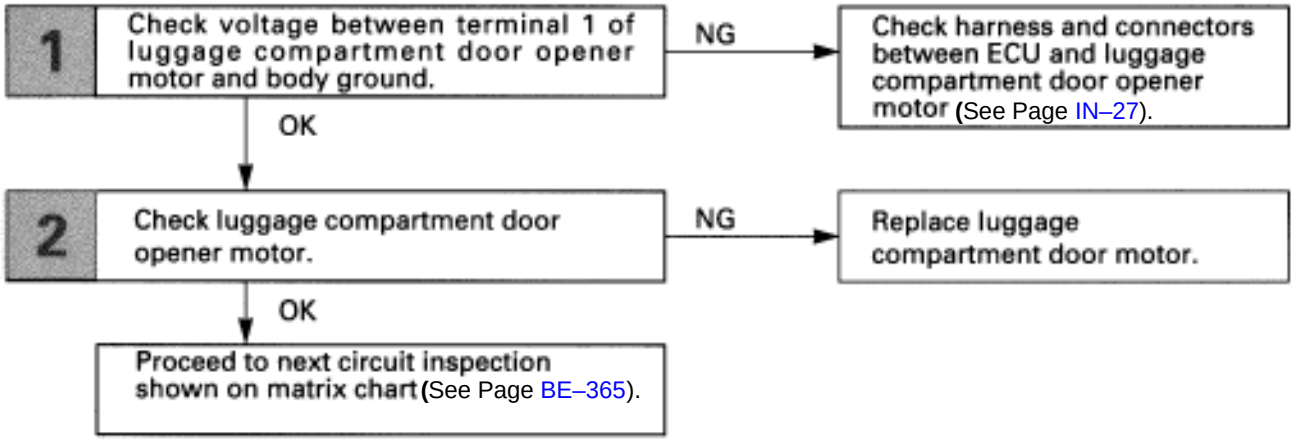
Proceed to next circuit inspection shown on matrix chart (See page BE–365).

Luggage Compartment Door Opener Motor Circuit

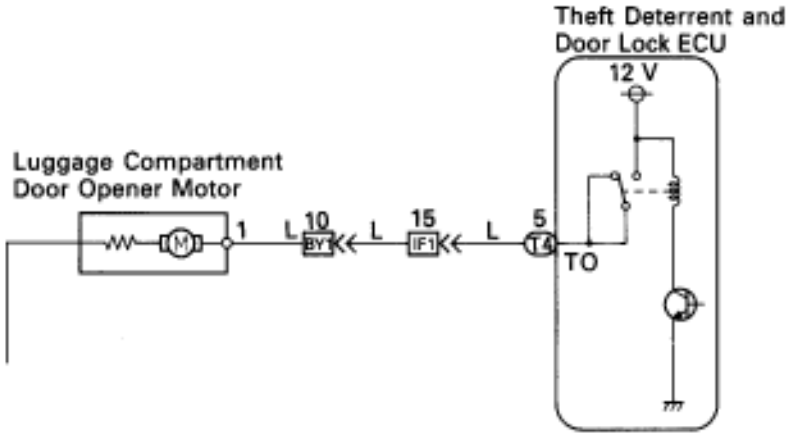
CIRCUIT DESCRIPTION

This circuit unlocks the luggage compartment door when the ECU sends signals to the luggage compartment door opener motor.

DIAGNOSTIC CHART



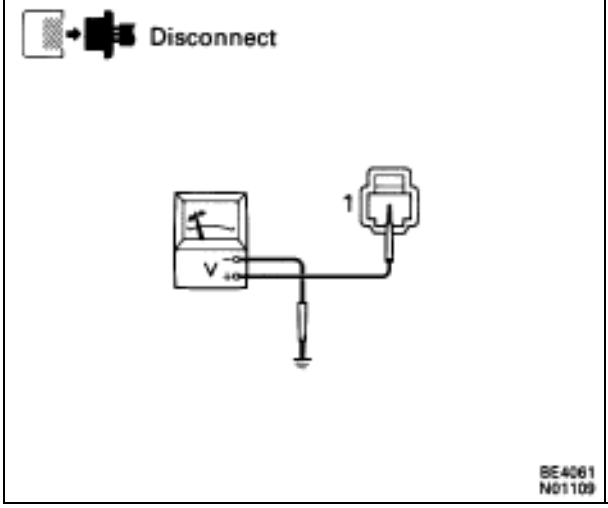
WIRING DIAGRAM



N01253

INSPECTION PROCEDURE

1 **Check voltage between terminal 1 of luggage compartment door opener motor and body ground.**



P
1. Remove the door trim rear cover.
2. Disconnect the opener motor connector.

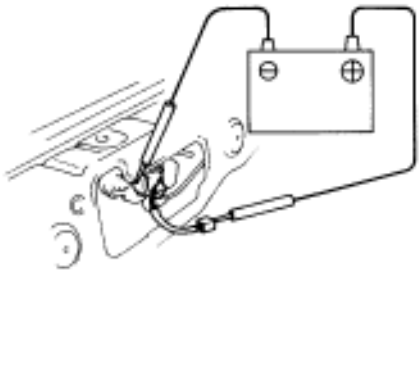
C Measure voltage between terminal 1 of luggage compartment door opener motor and body ground, when opener switch is pulled and not pulled.

OK

Opener switch	Voltage
Pulled	5 – 14 V
Not pulled	Below. 1V

OK → **NG** → **Check harness and connectors between ECU and luggage compartment door opener Motor (See page IN–27)**

2 **Check luggage compartment door opener motor.**



C Connect positive ⊕ lead to opener motor connector and negative ⊖ lead to the body of the opener motor.

OK Operated motor shaft and gear.

Hint Perform inspection in a short time (within1 second).

OK → **NG** → **Replace luggage compartment door opener motor.**

Proceed to next circuit inspection shown on matrix chart (See page BE–365).

Door Lock Control Switch Circuit

CIRCUIT DESCRIPTION

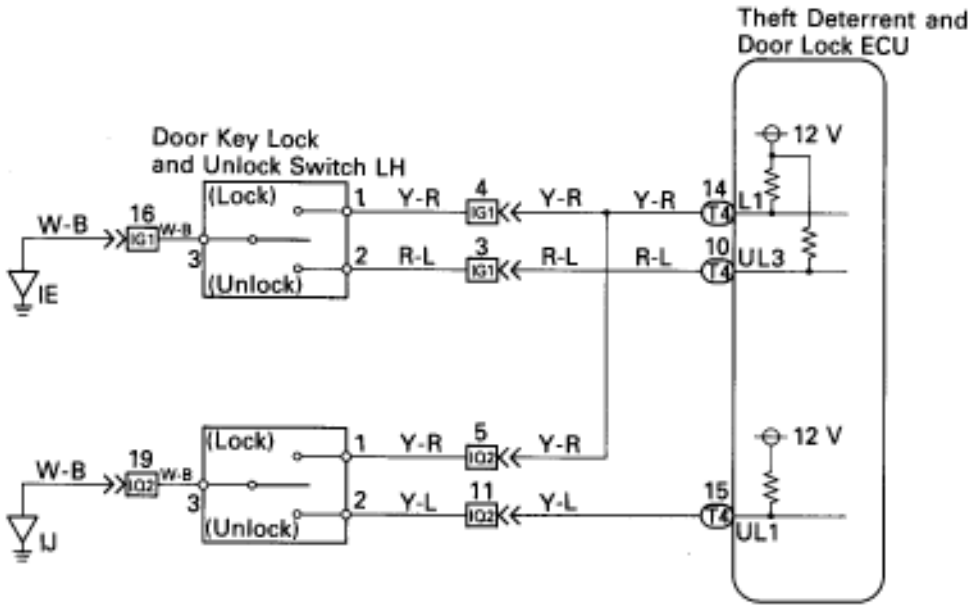
When the door lock control switch is pushed to the lock side. Lock terminal of the switch is grounded, and when the switch is pushed to the unlock side, Unlock terminal is grounded (See wiring diagram below).

DIAGNOSTIC CHART

1	Check voltage between terminals 2(3), 1(1) of door lock control switch connector and body ground.	OK	Proceed to next circuit inspection shown on matrix chart (See Page BE–365).
	NG		
2	Check door lock control switch.	NG	Replace door lock control switch.
	OK		
3	Check harness and connectors between ECU and door lock control switch, switch and body ground (See Page IN–27).	NG	Repair or replace harness or connector.
	OK		
	Check and replace ECU.		

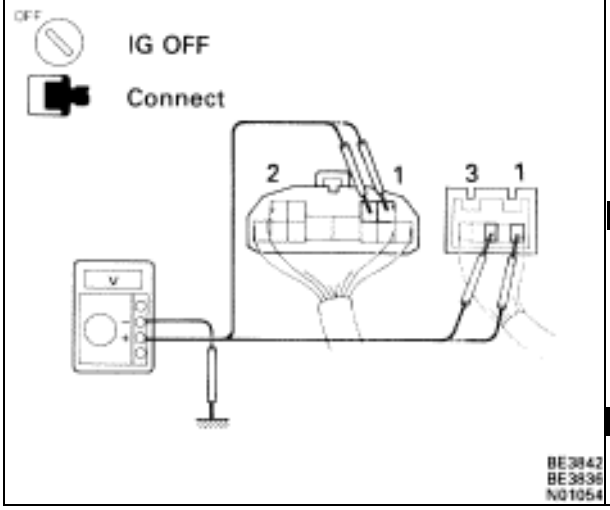
( ): for the RH

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminals 2(3), 1(1) of door lock control switch connector and body ground.



P Remove the door trim and service hole cover.

C Measure voltage between terminals 2(3), 1(1) of door lock control switch connector and body ground, when door lock control switch is pressed to the lock side, unlock side and not pressed.

OK

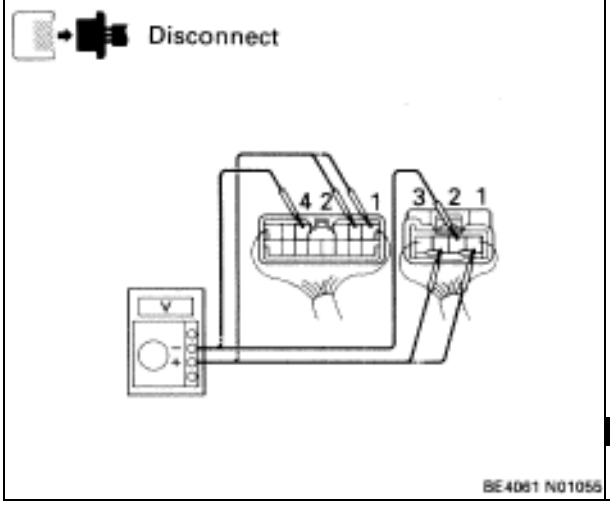
Switch position \ Terminal	2 (3)	1 (1)
Lock side	Below 1 V	10 – 14 V
Unlock side	10 – 14 V	Below 1 V
OFF	10 – 14 V	10 – 14 V

Hint The terminal number without brackets is for the LH, the number with brackets is for the RH.

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page BE–365).**

2 Check door lock control switch.



P Disconnect the door lock control switch connector.

C Check continuity between terminals 2(3), 1(1), and 4(2) of door lock control switch connector, when door lock control switch is pressed to the lock side, and unlock side and not pressed.

OK

Continuity

Switch position \ Terminal	2 (3)	1 (1)	4 (2)
Lock side	○		○
Unlock side		○	○
OFF			

Hint The terminal number without brackets is for the LH, the number with brackets is for the RH.

OK

NG → **Replace door lock control switch.**

3 Check harness and connectors between ECU and door lock control switch, switch and body ground (See page IN–27).

OK

NG → **Repair or replace harness or connector.**

Check and replace ECU. *

*1: Malfunction of the ECU can be considered possible when the problem symptom is the following:

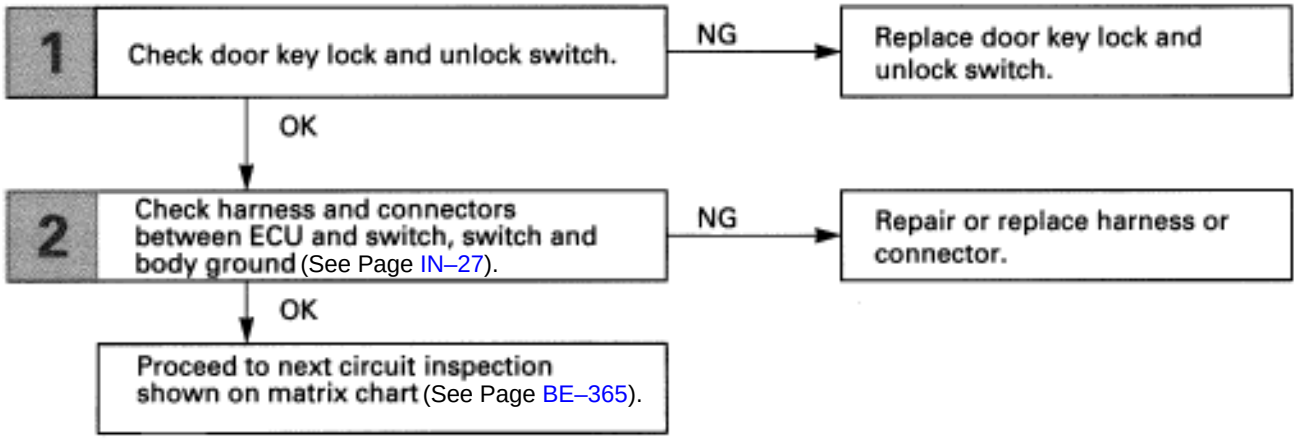
- Lock and/or unlock using the Door Lock Control Switch cannot be done, neither the driver's side nor on the passenger's side.

Door Key Lock and Unlock Switch Circuit

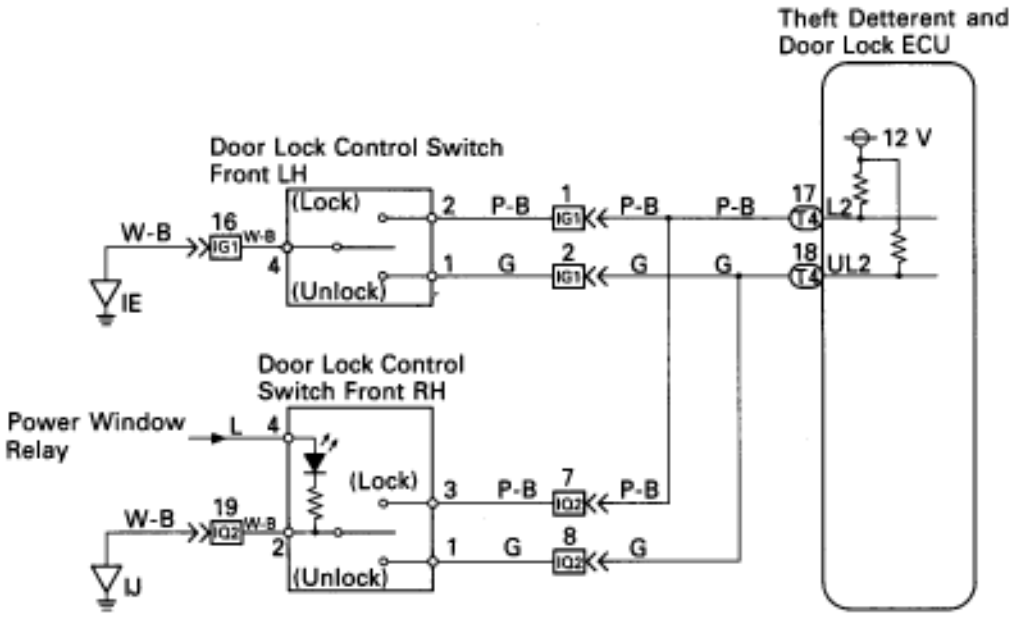
CIRCUIT DESCRIPTION

The door key lock and unlock switch is built in the door key cylinder. When the key is turned to the lock side, terminal 1 of the switch is grounded and when the key is turned to the unlock side, terminal 2 of the switch is grounded.

DIAGNOSTIC CHART



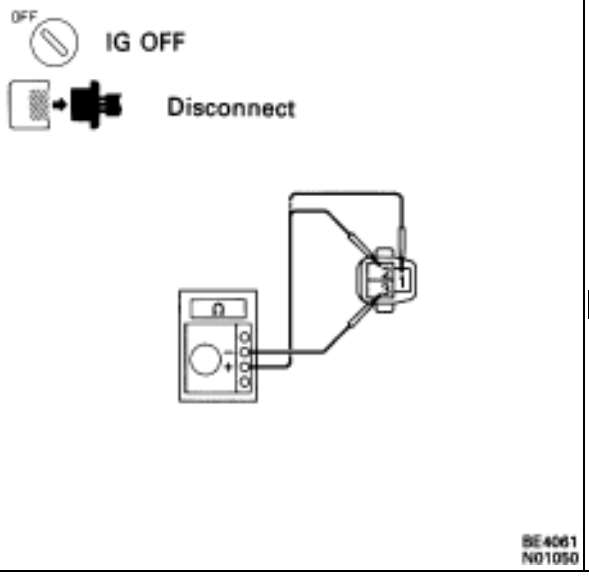
WIRING DIAGRAM



N01255

INSPECTION PROCEDURE

1 **Check door key lock and unlock switch.**



P
1. Remove the door trim and service hole cover.
2. Disconnect the door key lock and unlock switch connector.

C Check continuity between terminals 1, 2 and 3 of door key lock and unlock switch connector, when door key, lock and unlock switch is turned to the lock side, unlock side and not turned.

OK

Continuity

Switch position \ Terminal	1	2	3
Lock side	○		○
Unlock side		○	○
OFF			

OK → **2**

NG → **Replace door key lock and unlock switch.**

2 **Check harness and connectors between ECU and switch, switch and body ground (See page IN–27).**

OK → **Proceed to next circuit inspection shown on matrix chart (See page BE–365).**

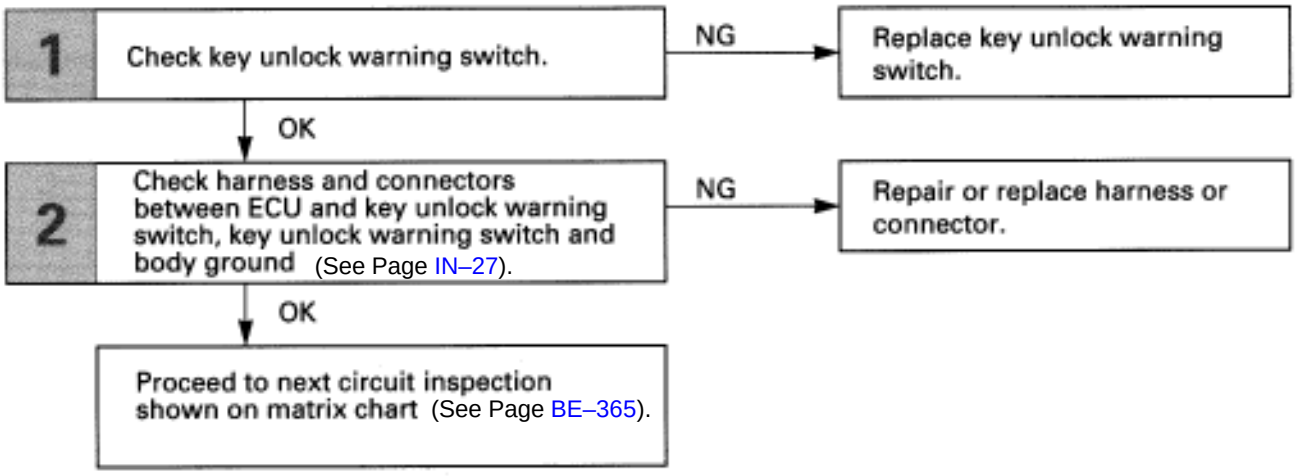
NG → **Repair or replace harness or connector.**

Key Unlock Warning Switch Circuit

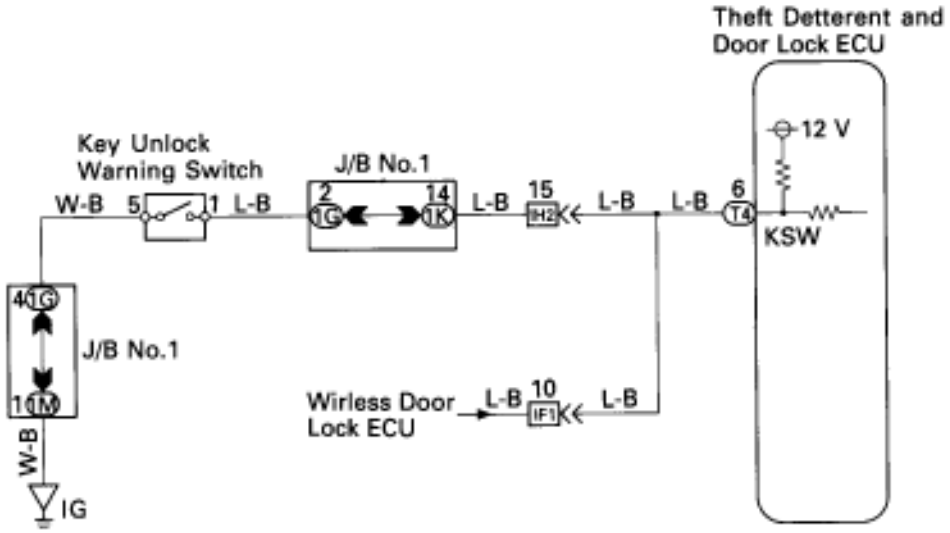
CIRCUIT DESCRIPTION

The key unlock warning switch goes on when the ignition key is inserted in the key cylinder and goes off when the ignition key is removed.
The ECU operates the key confinement prevention function while the key unlock warning switch is on.

DIAGNOSTIC CHART



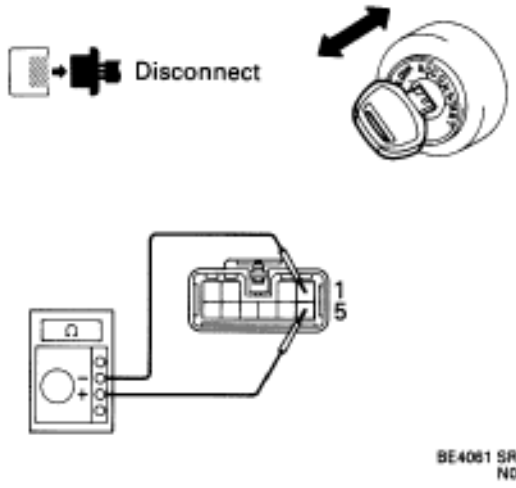
WIRING DIAGRAM



N01259

INSPECTION PROCEDURE

1 **Check key unlock warning switch.**



P Disconnect key unlock warning switch connector.

C Check continuity between terminal 1 and 5 of key unlock warning switch connector, when the key is inserted in the key cylinder or removed.

OK

Continuity

Switch position \ Terminal	1	5
ON (Key inserted)	○——	——○
OFF (Key removed)		

OK → **Replace key unlock warning switch.** (NG)

2 **Check harness and connectors between ECU and key unlock warning switch, key unlock warning switch and body ground (See page IN–27).**

OK → **Repair or replace harness or connector.** (NG)

Proceed to next circuit inspection shown on matrix chart (See page BE–365).

Door Unlock Detection Switch Circuit

CIRCUIT DESCRIPTION

The door unlock detection switch is built in the door lock motor assembly. This switch is on when the door lock knob is in the unlock position and off when the lock knob is in the lock position. The ECU detects the door lock knob conditions is this circuit. It is used as one of the operating conditions for the key confinement prevention function.

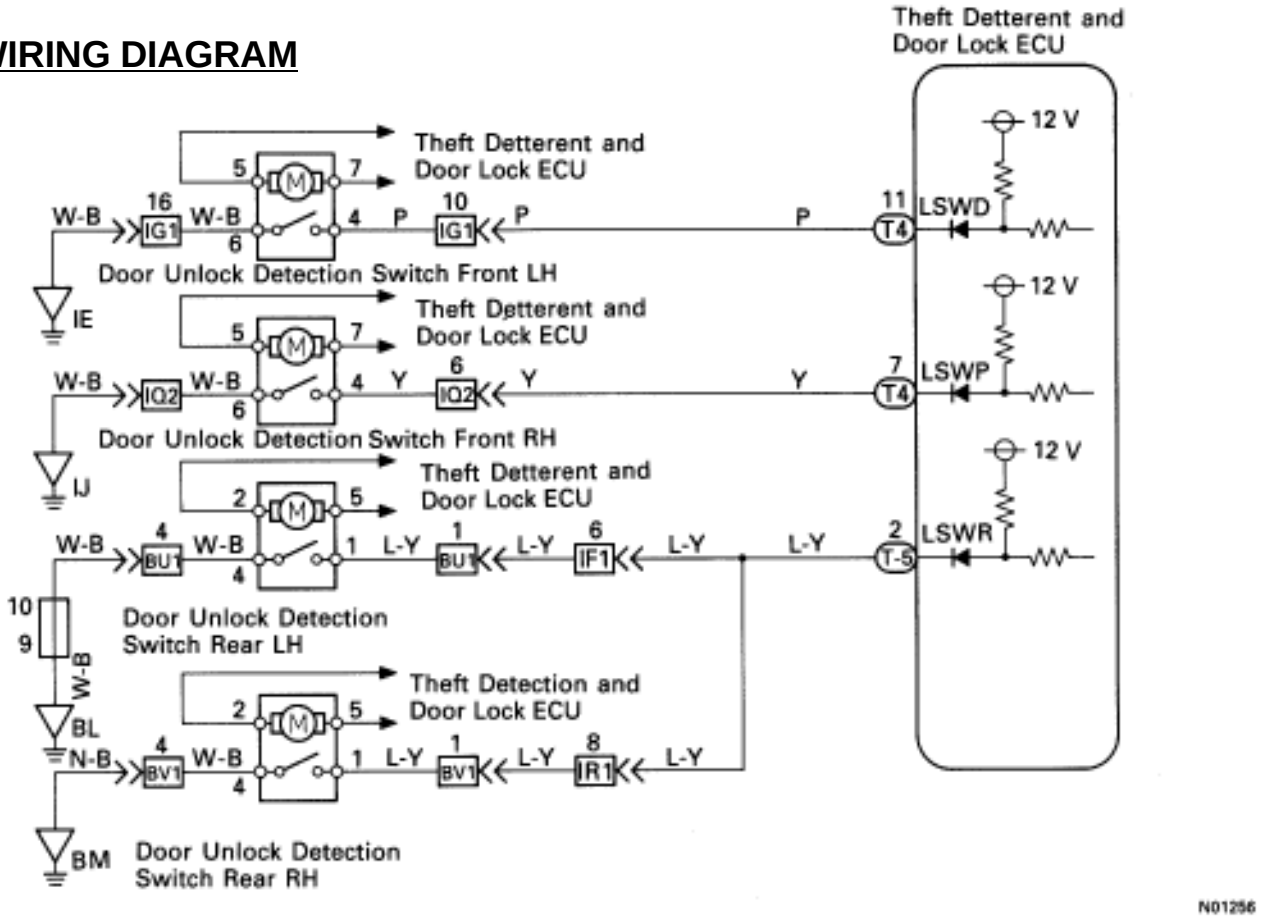
DIAGNOSTIC CHART

1 Check door unlock detection switch.
- NG → Replace door unlock detection switch.
- OK ↓

2 Check harness and connectors between ECU and door unlock detection switch, door unlock detection switch and body ground (See Page IN–27).
- NG → Repair or replace harness or connector.
- OK ↓

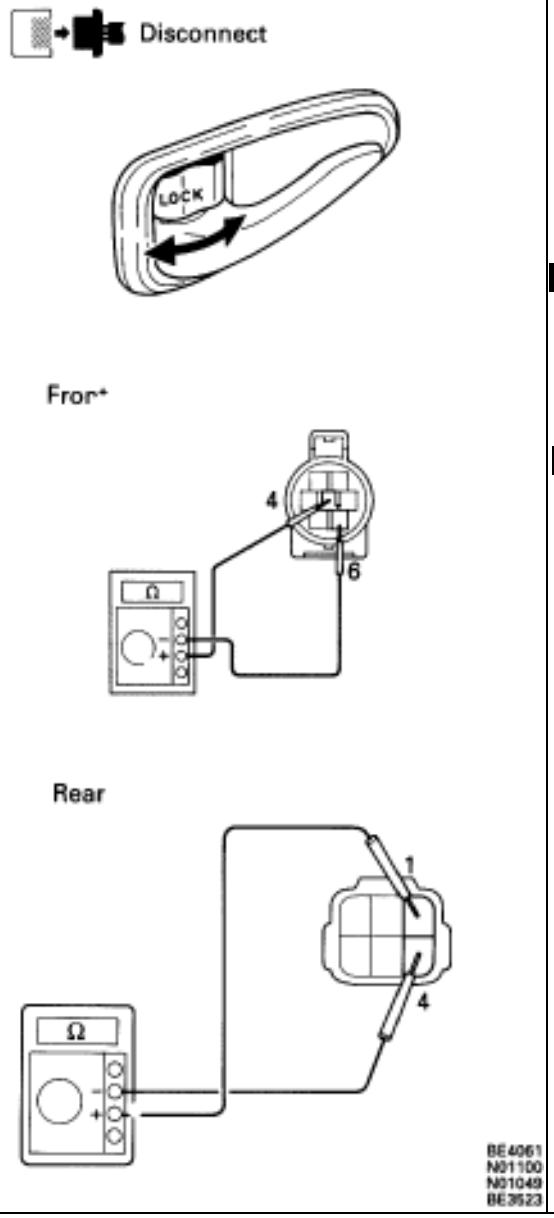
Proceed to next circuit inspection shown on matrix chart (See Page BE–365).

WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check Door Unlock Detection Switch.**



P
1. Remove the door trim and service hole cover.
2. Disconnect door unlock detection switch connector.

C Check continuity between terminals 4(1) and 6(4) of door unlock detection switch connector, when the door lock knob is operated to the lock side and unlock side.

OK

Continuity

Switch condition \ Terminal	4 (1)	6 (4)
Door unlock	○——	——○
Door lock		

Hint The terminal number without the bracket is for the Front, the number with the bracket is for the Rear.

OK → **NG** → **Replace door unlock detection switch.**

2 **Check harness and connectors between ECU and door unlock detection switch, door unlock detection switch and body ground (See page IN–27).**

OK → **NG** → **Repair or replace harness or connector.**

Proceed to next circuit inspection shown on matrix chart (See page BE–365).

Luggage Compartment Door Opener Main Switch and Opener Switch Circuit

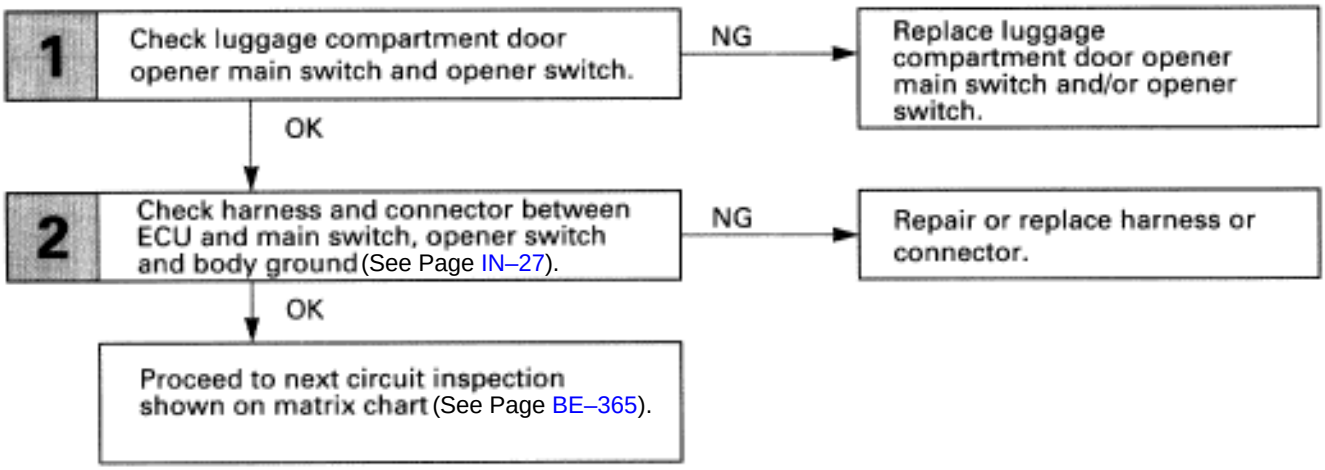
CIRCUIT DESCRIPTION

The luggage compartment door opener main switch is off when it is pushed in, and the luggage compartment door opener switch is on when it is pulled.
The ECU energizes the luggage compartment door opener solenoid only when the main switch and opener switch are together.

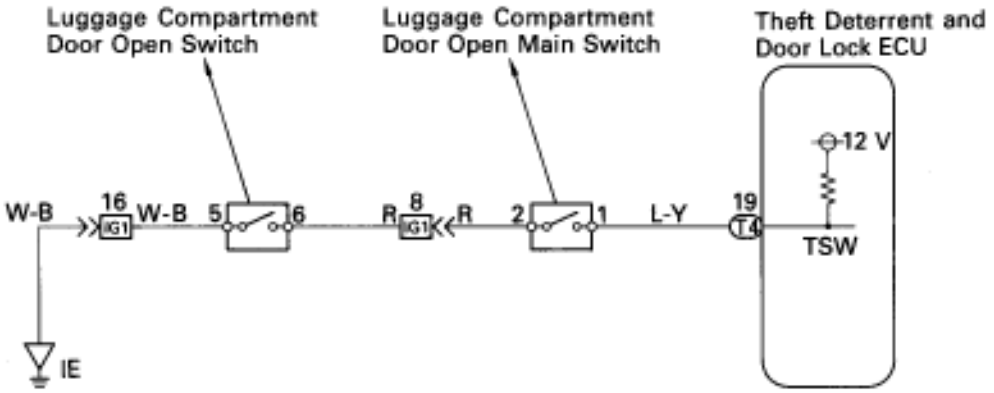
Luggage Compartment. Door Opener Main Switch — N01101

Luggage Compartment. Door Opener Switch — N01102

DIAGNOSTIC CHART



WIRING DIAGRAM

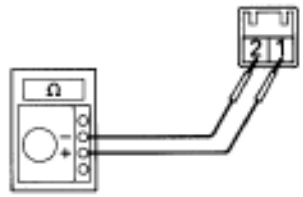


N01257

INSPECTION PROCEDURE

1 **Check luggage compartment door opener main switch and opener switch.**

Luggage Compartment Door Opener Main Switch



N01047

P Disconnect the luggage compartment door opener main switch and opener switch connector.

C Check luggage compartment door opener main switch. Check continuity between terminals of main switch connector.

OK

○—○ Continuity

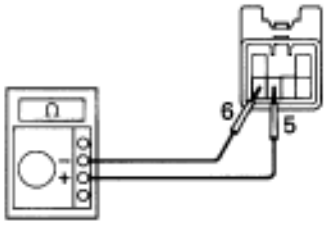
Switch position \ Terminal	1	2
ON	○—○	
OFF		

C Check luggage compartment door opener switch. Check continuity between terminals of main switch and opener switch connector.

OK

Switch position \ Terminal	5	6
ON	○—○	
OFF		

Luggage Compartment Door Opener Switch



N01112

OK → **NG** → **Replace luggage compartment door opener main switch and/or opener switch.**

2 **Check harness and connector between ECU and main switch, opener switch and body ground (See page IN–27).**

OK → **NG** → **Repair or replace harness or connector.**

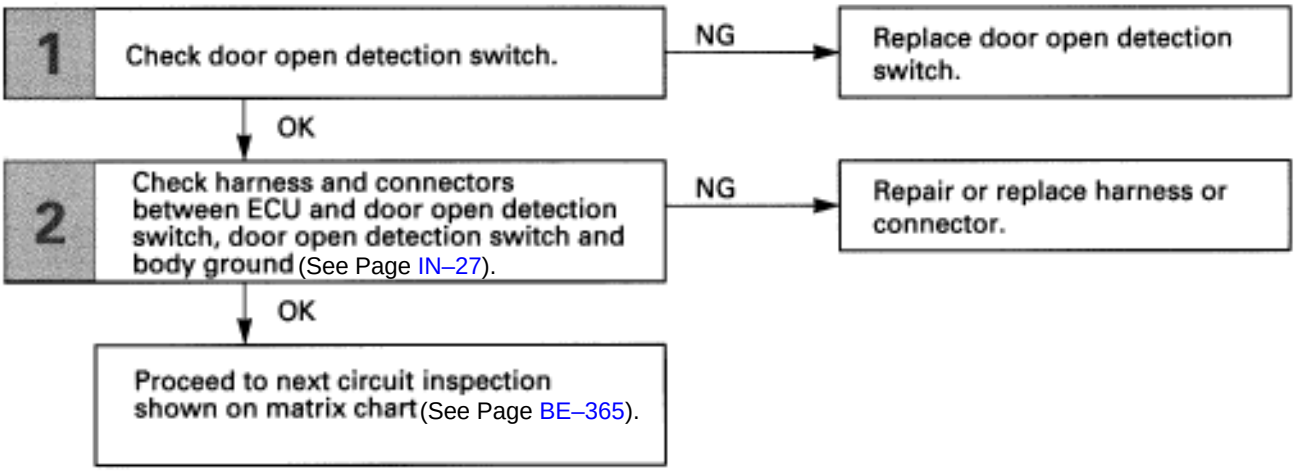
Proceed to next circuit inspection shown on matrix chart (See page BE–365).

Door Lock Control Switch Circuit

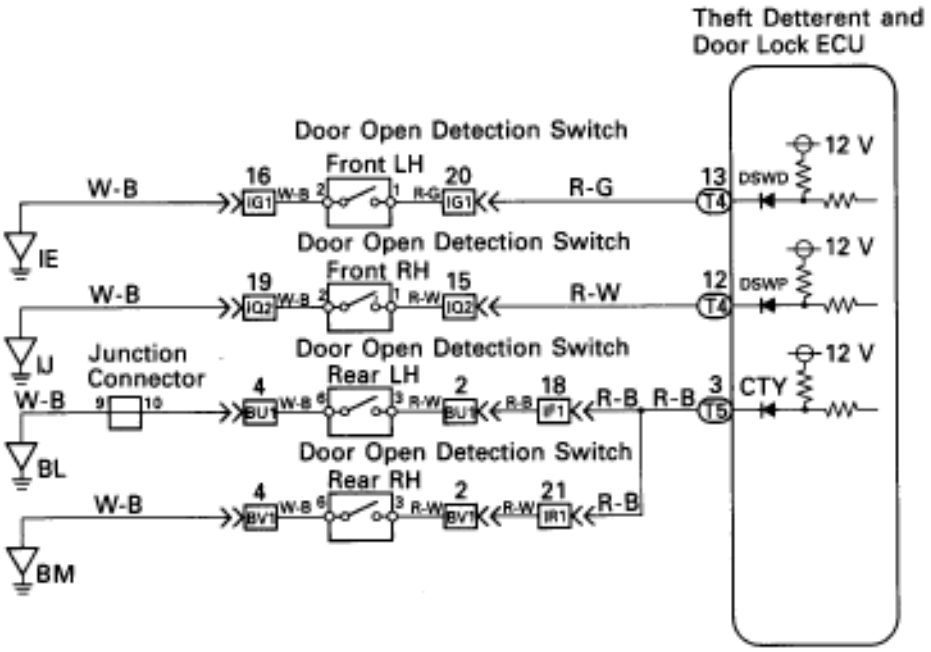
CIRCUIT DESCRIPTION

The door open detection switch is built in the door lock assembly. It is on when the door is open and off when the door is closed.

DIAGNOSTIC CHART



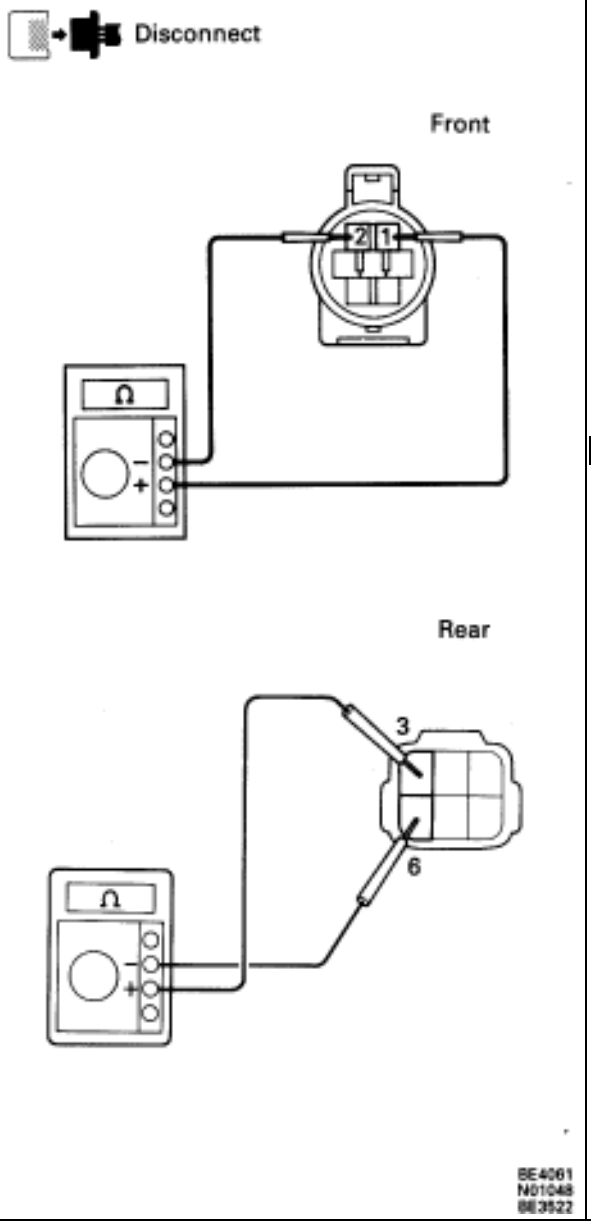
WIRING DIAGRAM



ND1258

INSPECTION PROCEDURE

1 **Check door open detection switch.**



P
1. Remove the door trim and service hole cover.
2. Disconnect door open detection switch connector.

C Check continuity between terminals 1(3) and 2(6) of door open detection switch connector, when the front door is opened and closed.

Continuity

OK

Switch condition \ Terminal	1 (3)	2 (6)
ON (Door opened)	○	○
OFF (Door closed)		

Hint The terminal number without bracket is for the Front, the number with the bracket is for the Rear.

OK → **NG** → **Replace door open detection switch.**

2 **Check harness and connectors between ECU and door open detection switch, door open detection switch and body ground (See page IN–27).**

OK → **NG** → **Repair or replace harness or connector.**

Proceed to next circuit inspection shown on matrix chart (See page BE–365).

CRUISE CONTROL SYSTEM

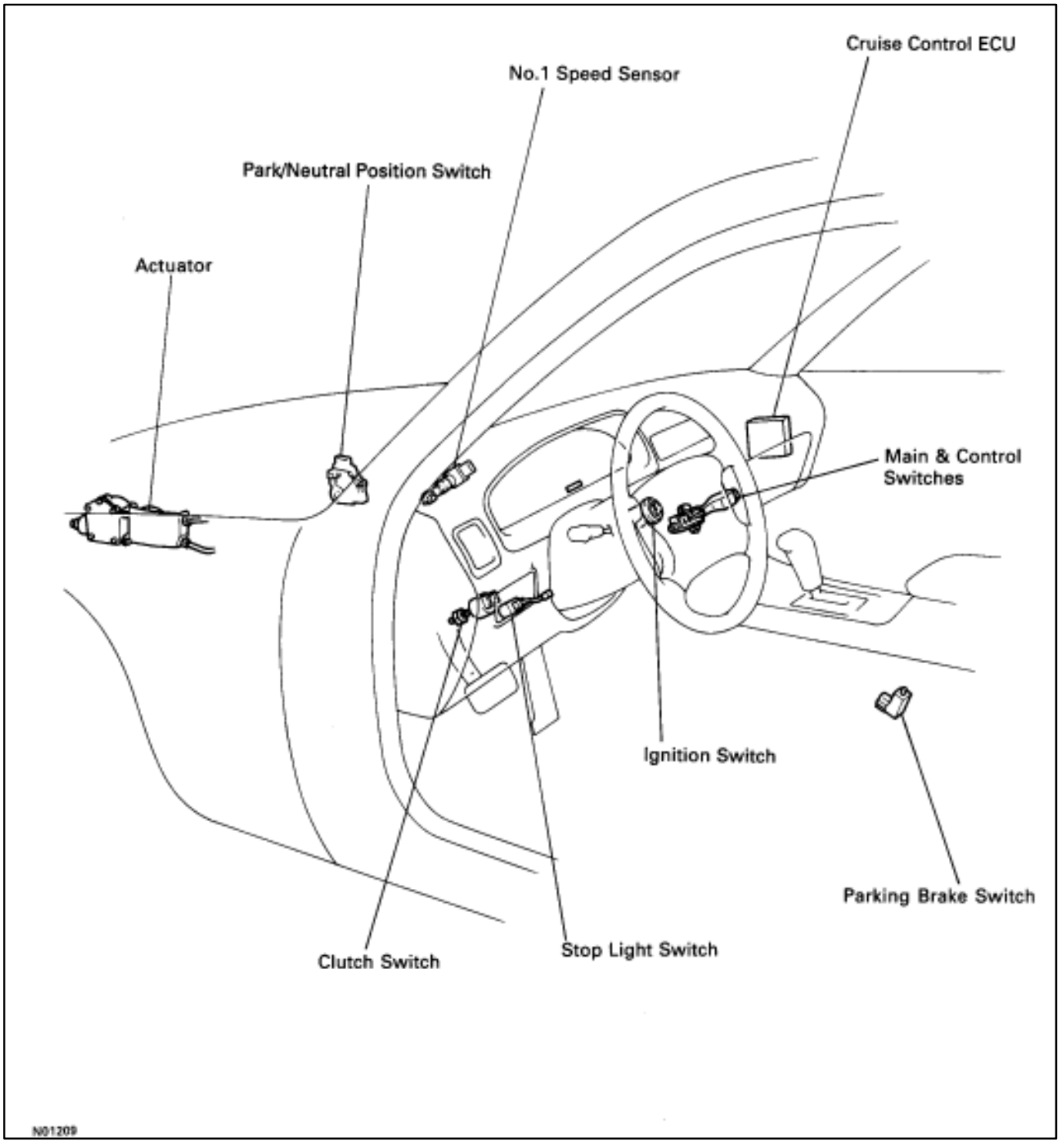
Description

The cruise control system is standard, which is convenient when driving continuously at a constant speed.

The cruise control ECU controls all cruise control functions.

A diagnosis function is built in. In the unlikely event of a malfunction in the system, the problem area is detected by the cruise control ECU and it causes the power indicator light on the combination meter to blink, warning the driver that there is an abnormality as well as storing a malfunction code in the ECU memory for the service technician to retrieve.

Parts Location



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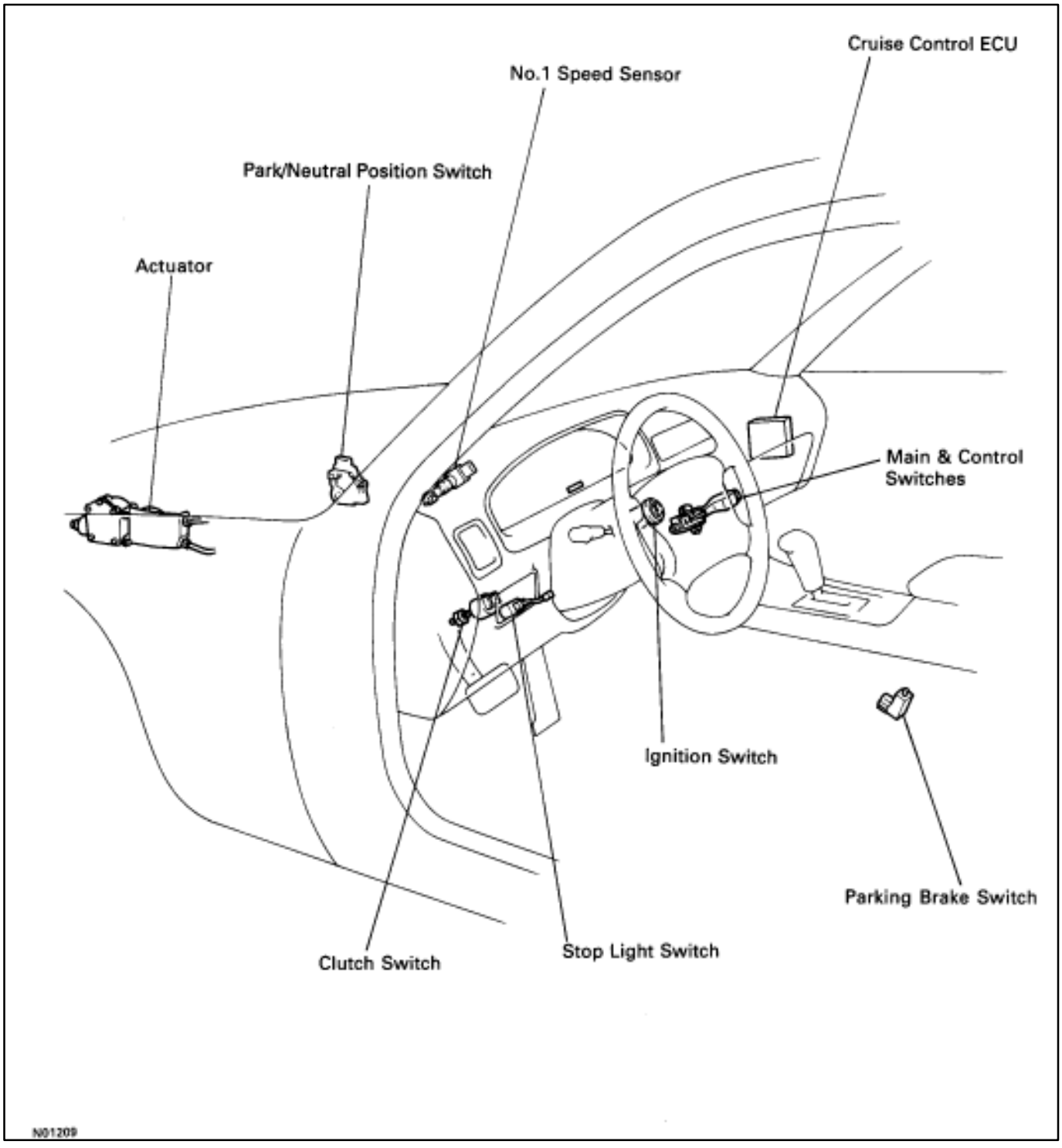


HOW TO PROCEED WITH TROUBLESHOOTING

Perform troubleshooting in accordance with the procedure on the following page.

CUSTOMER PROBLEM ANALYSIS

Using the customer problem analysis check sheet for reference, ask the customer in as much detail as possible about the problem.

2 CHECK AND CLEAR THE DIAGNOSTIC TROUBLE CODES (PRECHECK)

When there is a problem with the cruise control being canceled or failing to set, first check the diagnostic trouble code if there are any trouble codes stored in memory. If there are trouble codes, make a note of them, then clear them and proceed to" ⁎ Problem Symptom Confirmation".

⁎ PROBLEM SYMPTOM CONFIRMATION, 4 SYMPTOM SIMULATION

Comfirm the problem symptoms. If the problem does not reappear, be sure to simulate the problem by mainly checking the circuits indicated by the diagnostic trouble code in step 2, using "Problem Simulation Method".

5 DIAGNOSTIC TROUBLE CODE CHECK

Check the diagnostic trouble codes. Determine if the problem is in the sensors or the wire harness.

If a malfunction code is present, proceed to" 6 Diagnostic Trouble Code Chart". If the normal code is output, proceed to " 7 Matrix Chart of Problem Symptoms".

Be sure to proceed to " 6 Diagnostic Trouble Code Chart" after 2 and ⁎.

If troubleshooting is attempted after only the first malfunction code in the memory is output, errors could be made in the diagnosis.

6 DIAGNOSTIC TROUBLE CODE CHART

If a trouble code is confirmed in the diagnostic trouble code check, proceed to the check procedure indicated by the matrix chart for each diagnostic trouble code.

7 MATRIX CHART OF PROBLEM SYMPTOMS

If the normal code is confirmed in the diagnostic trouble code check, perform inspection in accordance with the inspection order in the matrix chart of problem symptoms.

8 CIRCUIT INSPECTION

Proceed with diagnosis of each circuit in accordance with the inspection order in 6 and 7.

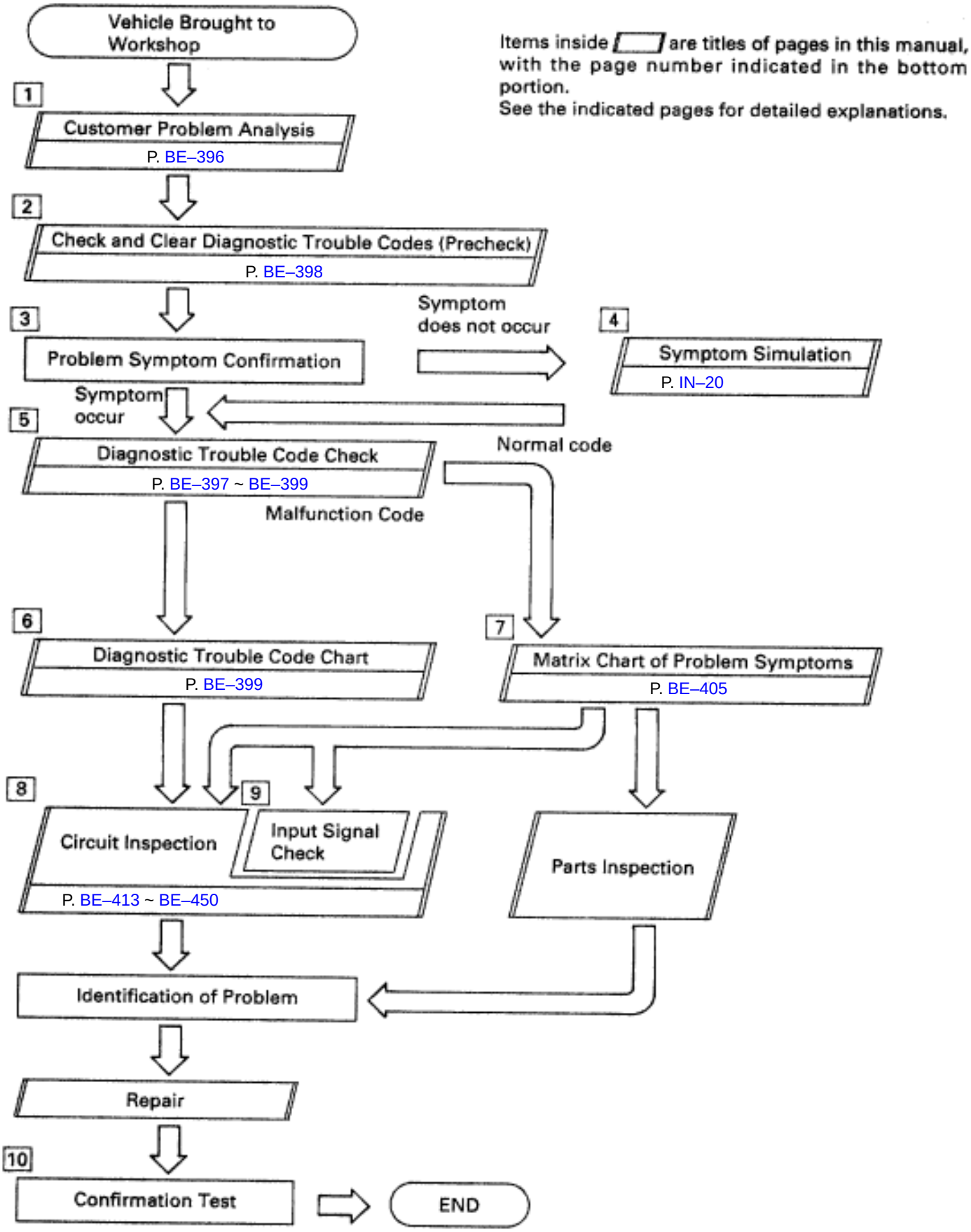
Determine whether the cause of the problem is in the sensor, actuators, wire harness and connectors, or the ECU.

9 INPUT SIGNAL CHECK

Check whether signals from the stop light switch and park/neutral position switch, etc. are input normally to the ECU. This check is indicated in the flow chart for each circuit.

10 CONFIRMATION TEST

After completing repairs, confirm not only that the malfunction is eliminated, but also perform a drive test, etc. to make sure the entire cruise control system is operating correctly.


Vehicle Brought to Workshop
Items inside [ ] are titles of pages in this manual, with the page number indicated in the bottom portion.
See the indicated pages for detailed explanations.
1
Customer Problem Analysis
P. BE–396
2
Check and Clear Diagnostic Trouble Codes (Precheck)
P. BE–398
3
Problem Symptom Confirmation
Symptom does not occur
4
Symptom Simulation
P. IN–20
Symptom occur
5
Diagnostic Trouble Code Check
P. BE–397 ~ BE–399
Normal code
Malfunction Code
6
Diagnostic Trouble Code Chart
P. BE–399
7
Matrix Chart of Problem Symptoms
P. BE–405
8
Circuit Inspection
9
Input Signal Check
P. BE–413 ~ BE–450
Parts Inspection
Identification of Problem
Repair
10
Confirmation Test
END

HOW TO PROCEED WITH TROUBLESHOOTING USING VOLT/OHM METER AND CRUISE CONTROL CHECKER

For the explanation of steps ~ and 9 ~ [12], see the explanation of steps with the same title on page BE–392.

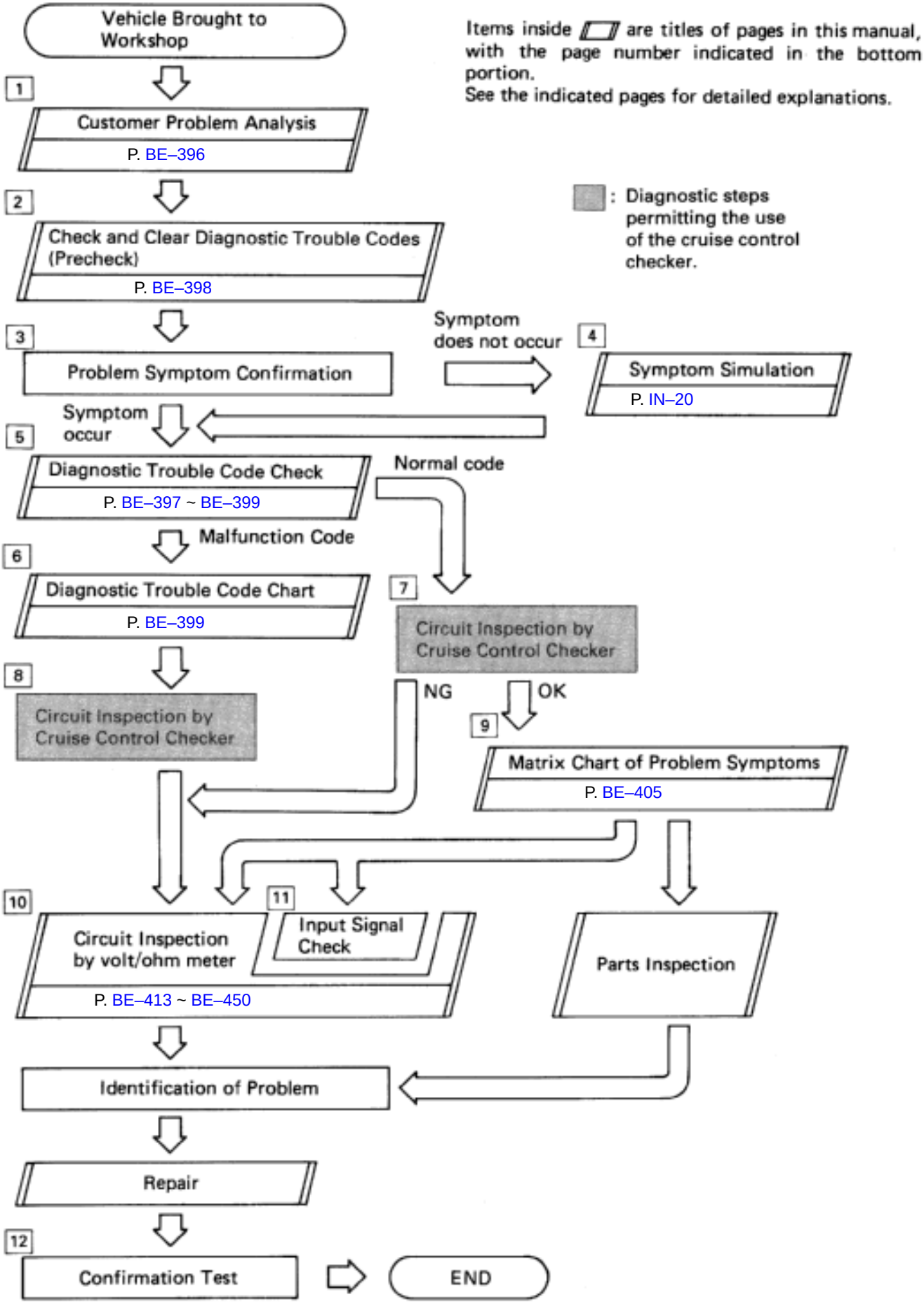
7 8 CIRCUIT INSPECTION BY CRUISE CONTROL CHECKER

If the Normal code is displayed in the diagnostic trouble code check, check all the circuits which can be inspected using the checker.

If a malfunctioning circuit is then detected, proceed to ”Circuit Inspection by Volt/Ohm Meter” and check the applicable circuit using a volt/ohm meter. Determine if the malfunction is in the sensor, actuator, wire harness, connector or the ECM. If the malfunctioning circuit cannot be detected using the checker, proceed to ”Matrix Chart of Problem Symptoms” and perform troubleshooting.

If a malfunction code is displayed in the diagnostic trouble code check, use the checker to inspect the circuit indicated by the diagnostic trouble code chart for the displayed code.

For instructions on how to connect the checker to the vehicle and how to use the checker, please refer to the Instruction Manual for Cruise Control.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1
Customer Problem Analysis
P. BE–396
2
Check and Clear Diagnostic Trouble Codes (Precheck)
P. BE–398
: Diagnostic steps permitting the use of the cruise control checker.
3
Problem Symptom Confirmation
Symptom does not occur
4
Symptom Simulation
P. IN–20
Symptom occur
5
Diagnostic Trouble Code Check
P. BE–397 ~ BE–399
Normal code
Malfunction Code
6
Diagnostic Trouble Code Chart
P. BE–399
7
Circuit Inspection by Cruise Control Checker
8
Circuit Inspection by Cruise Control Checker
NG
OK
9
Matrix Chart of Problem Symptoms
P. BE–405
10
Circuit Inspection by volt/ohm meter
11
Input Signal Check
P. BE–413 ~ BE–450
Parts Inspection
Identification of Problem
Repair
12
Confirmation Test
END

CUSTOMER PROBLEM ANALYSIS CHECK SHEET

CRUISE CONTROL Check Sheet

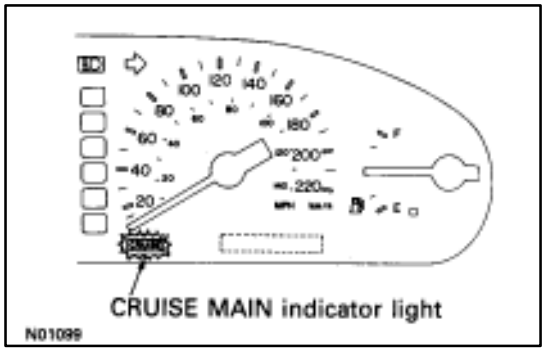
Inspector's Name:

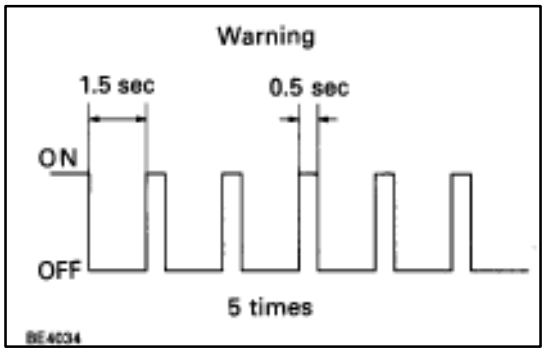
Customer's Name		**Registration No.**	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km Miles

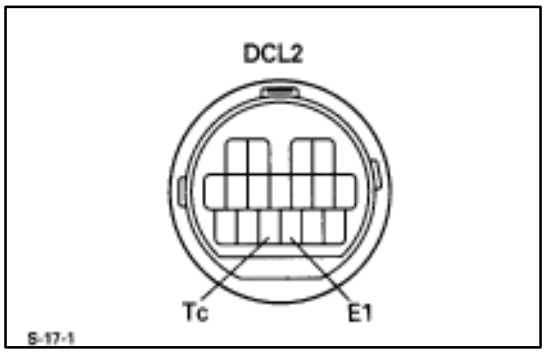
Condition of Problem Occurrence	**Date of Problem Occurence**	/ /
	How Often Does Problem occur?	4 Continuous 4 Intermittent (Times a day)
	Vehicle Speed when Problem Occurred	km/h mile/h

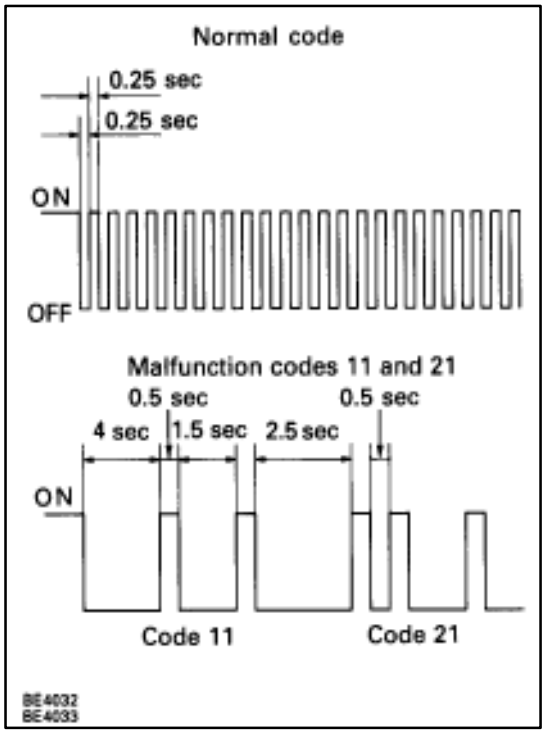
Symptoms	4 Auto cancel occurs	* Driving condition 4 City driving 4 Freeway 4 Up hill 4 Down hill * After cancel occurred, did the driver activate cruise control again? 4 Yes 4 No
	4 Cancel does not occur	4 With brake ON 4 With parking brake ON 4 With clutch ON 4 During N range shift 4 At 40 km/h (25 mph) or less 4 When control SW turns to CANCEL position
	4 Cruise control malfunction	4 Slip to acceleration side 4 Slip to aeceleration side 4 Hunting occurs 4 O/D cut off does not occur 4 O/D does not return
	4 Switch malfunction	4 SET 4 ACCEL. 4 COAST 4 RESUME 4 CANCEL
	4 Faulty CRUISE MAIN indicator light	4 Remains ON 4 Does not light up 4 Blinking

Diagnostic Trouble Code Check	1st Time	4 Normal Code 4 Malfunction Code (Code)
	2nd Time	4 Normal Code 4 Malfunction Code (Code)









DIAGNOSIS SYSTEM

INDICATOR CHECK

1. Turn the ignition switch to ON.
2. Check that the CRUISE MAIN indicator light comes on when the cruise control main switch is turned on, and that the indicator light goes off when the main switch is turned OFF.
   HINT: If the indicator check result is not normal, proceed to troubleshooting (See page BE–146) for the combination meter section.

DIAGNOSTIC TROUBLE CODE CHECK

HINT: If a malfunction occurs in the speed sensors or actuator, etc. during cruise control driving, the ECU actuates AUTO CANCEL of the cruise control and blinks the CRUISE MAIN indicator light 5 times to inform the driver of a malfunction. At the same time, the malfunction is stored in memory as a diagnostic trouble code.

Output of Diagnostic Trouble Code

1. Turn the ignition switch ON.
2. Using SST, connect terminals Tc and E, of DCL2.
   SST 09843–18020
3. Read the diagnostic trouble code on the CRUISE MAIN indicator light.
   HINT: If the diagnostic trouble code is not output, inspect the Tc circuit (See page BE–448).

   As an example, the blinking patterns for codes; normal, 11 and 21 are shown in the illustration.
4. Check for the problem using the diagnostic trouble code table on the next page.
5. After completing the check, disconnect terminals Tc and E, and turn off the display.

DIAGNOSTIC TROUBLE CODE

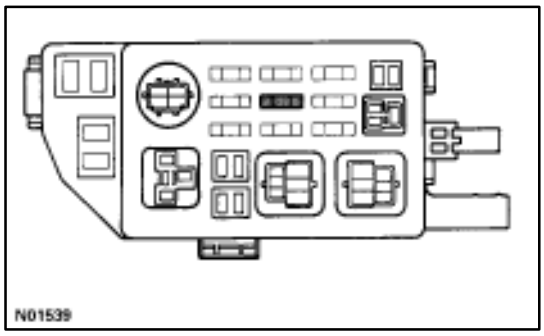
Code No.	CRUISE MAIN Indicator Light Blinking Pattern	Diagnosis
–	ON OFF  BE3931	Normal
11	ON OFF  BE3931	• Continuous output to motor acceleration side. • Overcurrent (short) in motor circuit.
12	ON OFF  BE3931	• Overcurrent (short) in magnet clutch circuit. • Open in magnet clutch circuit.
13	ON OFF  BE3931	• Open in actuator motor circuit. • Position sensor detects abnormal voltage. • Position sensor signal value does not change when the motor operates.
21	ON OFF  BE3932	• Speed signal is not input to the ECU.
*23	ON OFF  BE3932	• Actual vehicle speed has dropped by 16 km/h (10 mph) or more below the set speed during crusing.
32	ON OFF  BE3933	• Short in control switch circuit.
34	ON OFF  BE3933	• Voltage abnormality in control switch circuit.

When 41 code is indicated, replace the cruise control ECU.

41	ON OFF  BE3934	

HINT: When two or more codes are indicated, the lowest numbered code will be displayed first.

(*) When the vehicle speed is reduced on uphill roads, the speed can be set again and driving continued. (This is not a malfunction.)



Diagnostic Trouble Code Clearance

1. After completing trepairs the diagnostic trouble code retained in memory can be cleared by removing the DOME fuse for 10 seconds or more, with the ignition switch off.
2. Check that the normal code is displayed after connecting the fuse.

DIAGNOSTIC TROUBLE CODE CHART

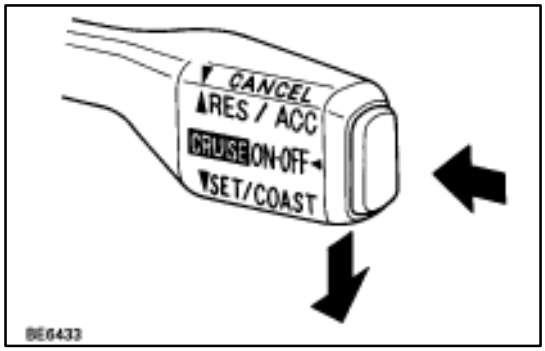
If a malfunction code is displayed during the diagnostic trouble code check, check the circuit listed for that code in the table below and proceed to the page given.

The circuits indicated by on the matrix chart can be inspected using the cruise control checker.

Code No.	Circuit Inspection	Page
11	4 ✳ Actuator Motor Circuit	BE–413
12	4 ✳ Actuator Magnet Clutch Circuit	BE–415
13	4 ✳ Actuator Motor Circuit 4 ✳ Actuator Position Sensor Circuit	BE–413 BE–418
21	4 ✳ Speed Sensor Circuit	BE–420
23	4Actuator Control Cable 4 ✳ Speed Sensor Circuit 4 ✳ Actuator Motor Circuit	BE–450 BE–420 BE–413
32, 34	4 ✳ Control switch circuit. (cruise control switch)	BE–423

HINT:

1. If the instruction ”Proceed to next circuit inspection shown on matrix chart” is given in the flow chart for each circuit, proceed to the circuit with the next highest number in the table to continue the check.
2. If the trouble still reappears even though there are no abnormalities in any of the other circuits, then check or replace the Cruise control ECU as the last step.

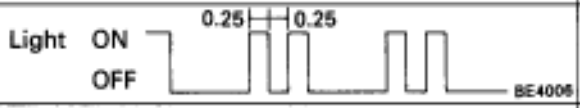
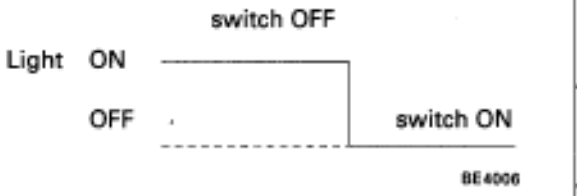


INPUT SIGNAL CHECK

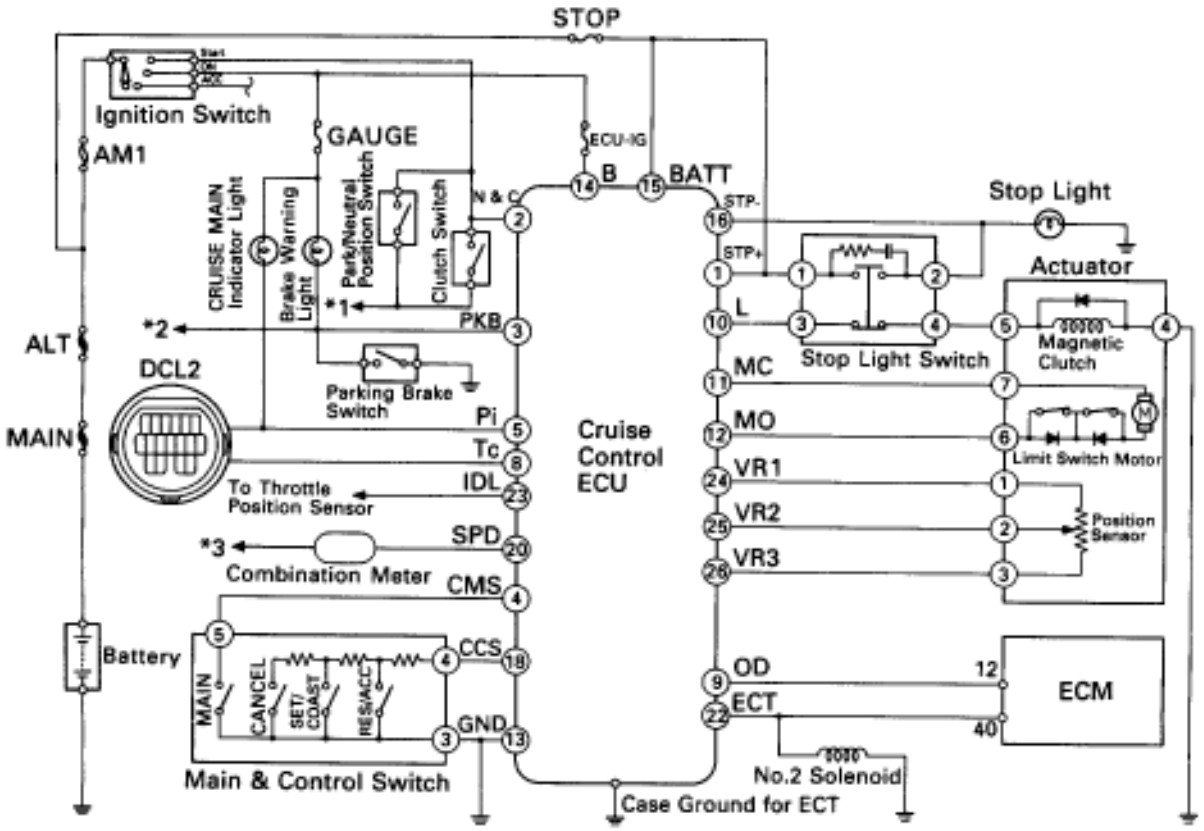
Output of Code

1. (a) For check No.1 ~ No.7
Turn the ignition switch on.
(b) For check No. 8 ~ No. 9
(1) Jack up the vehicle.
(2) Start the engine.

2. Press the control switch to SET/COAST or RES/ACC position and hold it down ①.
3. Push the main switch on ②.
4. Check that the CRUISE MAIN indicator light blinks twice or 3 times repeatedly after 3 seconds.
5. Turn the SET/COAST or RES/ACC switch off.
6. Operate each switch as listed in the table below.
7. Read the blinking pattern of the CRUISE MAIN indicator light.
8. After performing the check, turn the main switch off.
HINT: When two or more signals are input to the ECU, only the lowest–numbered code is displayed.

No.	Operation Method	CRUISE MAIN Indicator Light Blinking Pattern	Diagnosis
1	Turn SET/COAST switch ON.		SET/COAST switch circuit is normal.
2	Turn RES/ACC switch ON.		RES/ACC switch circuit is normal.
3	Turn CANCEL switch ON.		CANCEL switch circuit is normal.
4	Turn stop light switch ON. (Depress brake pedal)		Stop light switch circuit is normal.
5	Turn parking brake switch ON.		Parking brake switch circuit is normal.
6	Turn park/neutral position switch ON. (Shift to N or P range).		Park/neutral position switch circuit is normal.
7	Turn clutch start switch ON. (Depress clutch pedal.)		Clutch switch circuit is normal.
8	Drive at 40 km/h (25 mph) or higher.		Speed sensor is normal.
9	Drive at 40 km/h (25 mph) or below.		

Wiring Diagram



*1 : To Stater Relay

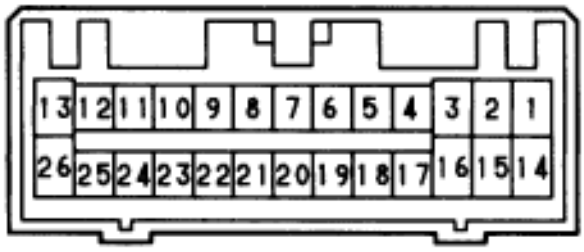
*2 : To Regulator

*3 : To No.1 Speed Sensor

N01272

TERMINALS OF ECU

CRUISE Control ECU



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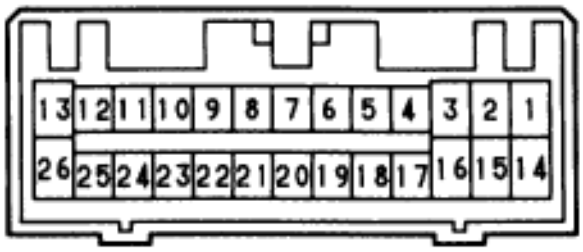
No.	Symbol	Terminal Name	No.	Symbol	Terminal Name
1	STP+	Stop Light Switch	14	B	Power Source
2	N & C	Park/Neutral Position Switch or Clutch Switch	15	BATT	Backup Power Source
3	PKB	Parking Brake Switch	16	STP–	Stop Light Switch
4	CMS	Cruise Main Switch	17		
5	Pi	CRUISE MAIN Indicator Light	18	CCS	CRUISE Control Switch
6			19		
7			20	SPD	Speed Sensor
8	Tc	DCL2	21		
9	OD	ECM	22	ECT	ECT No. 2 Solenoid
10	L	Magnet Clutch (Actuator)	23	IDL	Throttle Position Sensor
11	MC	Motor (Actuator)	24	VR1	Position Sensor (Actuator)
12	MO	Motor (Actuator)	25	VR2	Position Sensor (Actuator)
13	GND	Ground	26	VR3	Position Sensor (Actuator)

STANDARD VALUE OF ECU TERMINAL

Terminals	Symbols	Wiring Color	Condition	Standard Value
C19–1 ← → C19–13	STP+ ← → GND	G–R ← → W–B	Always	10–14 V
C19–2 ← → C19–13	N&C ← → GND	B ← → W–B	IG ON. Depress clutch pedal or P or N ranges	Below 1 V
			IG ON. Release clutch pedal and other ranges.	10–14 V
C19–3 ← → C19–13	PKB ← → GND	R–W ← → W–B	IG ON. Parking brake is operating.	Below 1 V
			IG ON. Parking brake is not operating.	10–14 V
C19–4 ← → C19–13	CMS ← → GND	W–L ← → W–B	IG ON. Main switch hold ON. (Indicator light ON)	Below 1 V
			IG ON. Main switch OFF. (Indicator light OFF.)	10–14 V
C19–5 ← → C19–13	Pi ← → GND	G–L ← → W–B	IG ON. Main switch ON. Main indicator light ON.	Below 1 V
			IG ON. Main switch OFF. Main indicator light OFF.	10–14 V
C19–8 ← → C19–13	TC ← → GND	LG–R ← → W–B	Ignition switch ON.	10–14 V
C19–9 ← → C19–13	OD ← → GND	Y–B ← → W–B	Ex. during cruise control driving.	10–14 V
			During cruise control driving and O/D switch OFF(3rd driving)	Below 1 V
C19–10 ← → C19–13	L ← → GND	G–B ← → W–B	During cruise control driving.	10–14 V
			Ex. during cruise control driving.	Below 1 V
C19–11 ← → C19–13	MC ← → GND	R–B ← → W–B	During cruise control driving and SET/COAST Switch hold ON.	8–14 V
			Ex. during cruise control driving.	Below 1 V
C19–12 ← → C19–13	MD ← → GND	R–G ← → W–B	During cruise control driving.	8–14 V
			Ex. during cruise control driving.	Below 1 V
C19–13 ← → Body Ground	GND ← → Body Ground	W–B ← → Body Ground	Always	Below 1 V
C19–14 ← → C19–13	B ← → GND	B–R ← → W–B	Ignition switch ON.	10–14 V
C19–15 ← → C19–13	BATT ← → GND	G–R ← → W–B	Always	10–14 V

Terminals	Symbols	Wiring color	Condition	Standard Value
C19–16 ← → C19–13	STP–← → GND	G–W ← → W–B	Depress brake pedal.	10–14 V
			Release brake pedal.	Below 1 V
C19–18 ← → C19–13	CCS ← → GND	W ← → W–B	IG ON. Main switch ON. Switch neutral position.	10–14 V
			IG ON. Main switch ON. CANCEL Switch hold ON.	4.2–8.7 V
			IG ON. Main switch ON. SET/COAST Switch hold ON.	2.5–6.2 V
			IG ON. Main switch ON. RESUME/ACCEL Switch hold ON.	0.8–3.6 V
C19–20 ← → C19–13	SPD ← → GND	V–Y ← → W–B	English start. Stop a vehicle.	4.5–5.5 V
			During driving.	Repeatedly changes from Below IV to 4.5–5.5 V
C19–22 ← → C19–13	ECT ← → GND	V–R ← → W–B	During cruise control driving. O/D Switch ON.	Below 1 V
			During cruise control driving. O/D Switch OFF (3rd driving)	10–14 V
C19–23 ← → C19–13	IDL ← → GND	L ← → W–B	IG ON. Throttle valve fully opened.	10–14 V
			IG ON. Throttle valve fully closed.	Below 1 V
C19–24 ← → C19–13	VR1 ← → GND	L ← → W–B	Ignition switch ON.	4.5–5.5 V
C19–25 ← → C19–26	VR2 ← → VR3	L–B ← → P	During cruise control driving.	1.1–4.5 V
			IG ON. Control plate fully opened.	3.8–4.5 V
			IG ON. Control plate fully closed.	1.1–1.4 V
C19–26 ← → C19–13	VR3 ← → GND	L–R ← → W–B	Always	Below 1 V

C19 CRUISE Control ECU



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MATRIX CHART OF PROBLEM SYMPTOMS

If a normal code is displayed during the diagnostic trouble code check but the trouble still occurs (reappears), perform troubleshooting for each problem symptom, checking the circuits for each symptom in the order given in the table below. Proceed to the page located for each circuit.
The circuits indicated by on the matrix chart can be inspected using the cruise control checker.

See Page / Suspect Area / Symptom	BE–413 BE–415 BE–418 ✻ Actuator	BE–420 ✻ Speed Sensor Circuit	BE–423 ✻ Control Switch Circuit (Cruise Control Switch)	BE–426 ✻ Stop Light Switch Circuit	BE–429 ✻ Idle Switch Circuit (main throttle position sensor)	BE–433 ✻ ECT Communication Circuit	BE–435 ✻ Parking Brake Switch Surcuit
SET not occurring or CANCEL occurring. (DTC is Normal)	8	2	3	4			7
SET not occurring or CANCEL occurring. DTC does not output.							
Actual vehicle speed deviates above or below the set speed.	4	2			5	3	
Gear shifting is frequent between 3rd and OD when driving on uphill road. (Hunting)						1	
Cruise control not cancelled, even when parking brake pedal is depressed.	3			1			
Cruise control not cancelled, even when parking brake is operating.	3						1
Cruise control not cancelled, even when clutch pedal is depressed.	3						
Cruise control not cancelled, even when transmission is shifted to "N" range.	3						
Control switch does not operate. (SET/COAST, ACC/RES, CANCEL not possible)	3		1				
SET possible at 40 km/h (25 mph) or less, or CANCEL does not operate at 40 km/h (25 mph) or less.	3	1					
Poor response in ACCEL and RESUME modes.	3					2	
O/D does not Resume, even though the road is not uphill.						1	
Diagnostic trouble code memory is erased.							
Diagnostic trouble code is not output, or is output when it should not be.							
Cruise MAIN indicator light remains ON or fail to light up.	Combination meter troubleshooting on page BE–118						

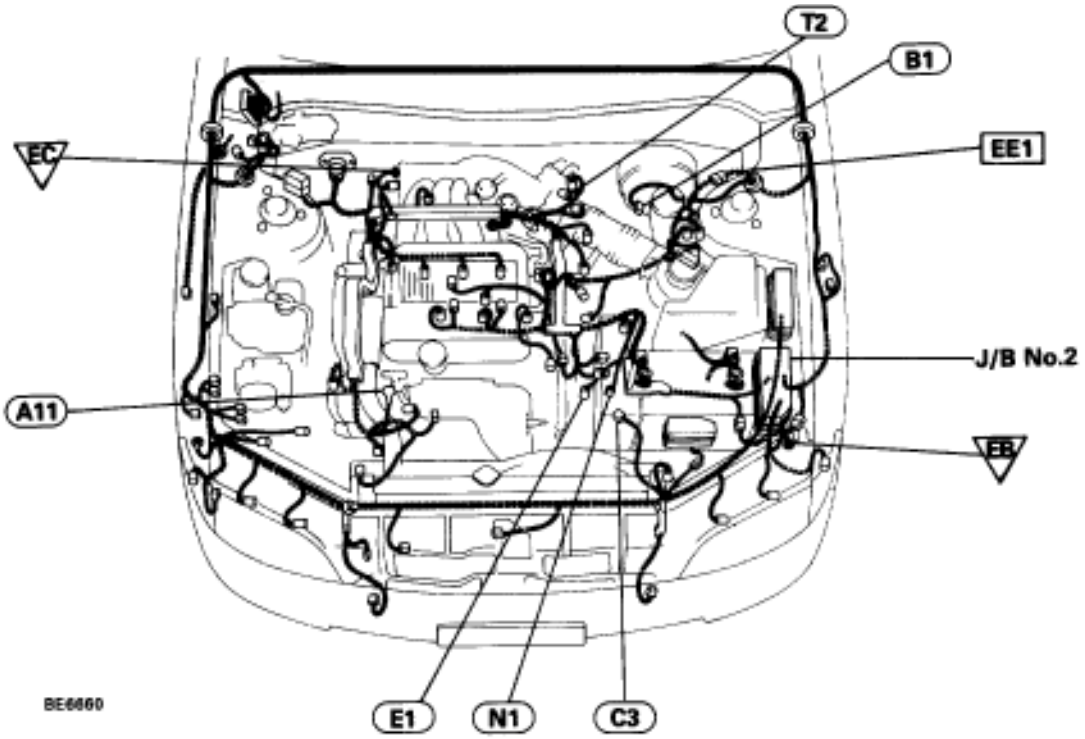
HINT:

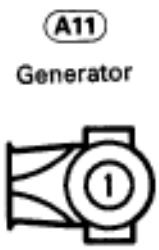
1. If the instruction ”Proceed to next circuit inspection shown on matrix chart” is given in the flow chart for each circuit, proceed to the circuit with the next highest number in the table to continue the check.
2. If the trouble still reappears even though there are no abnormalities in any of the other circuits, then check or replace the cruise control ECU as the last step.

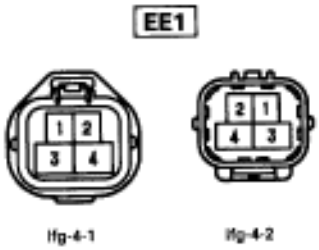
See Page / Suspect Area / Symptom	Park/Neutral Position Switch Circuit ⁜ BE–437	Clutch switch Circuit BE–439	ECU Power Source Circuit ⁜ BE–441	Back-up Power Source Circuit ⁜ BE–444	Main Switch Circuit (Cruise Control Switch) ⁜ BE–446	TC Terminal Circuit BE–448	Actuator Control Cable BE–450	Cruise Control ECU IN–32
SET not occurring or CANCEL occurring. (DTC is Normal)	5	6			1			9
SET not occurring or CANCEL occurring. DTC does not output.			1					2
Actual vehicle speed deviates above or below the set speed.							1	6
Gear shifting is frequent between 3rd and OD when driving on uphill road. (Hunting)								3
Cruise control not cancelled, even when parking brake pedal is depressed.								2
Cruise control not cancelled, even when parking brake is operating.								2
Cruise control not cancelled, even when clutch pedal is depressed.		1						2
Cruise control not cancelled, even when transmission is shifted to “N” range.	1							2
Control switch does not operate. (SET/COAST, ACC/RES, CANCEL not possible)								2
SET possible at 40 km/h (25 mph) or less, or CANCEL does not operate at 40 km/h (25 mph) or less.								2
Poor response in ACCEL and RESUME modes.							1	4
O/D does not Resume, even though the road is not uphill.								2
Diagnostic trouble code memory is erased.				1				2
Diagnostic trouble code is not output, or is output when it should not be.						1		2
Cruise MAIN indicator light remains ON or fail to light up.	Combination meter troubleshooting on page BE–118							

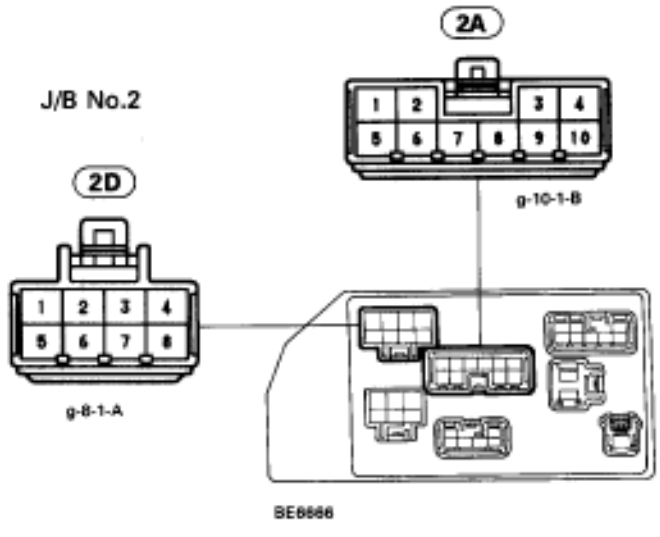
LOCATION OF CONNECTORS

Location of Connectors in Engine Compartment

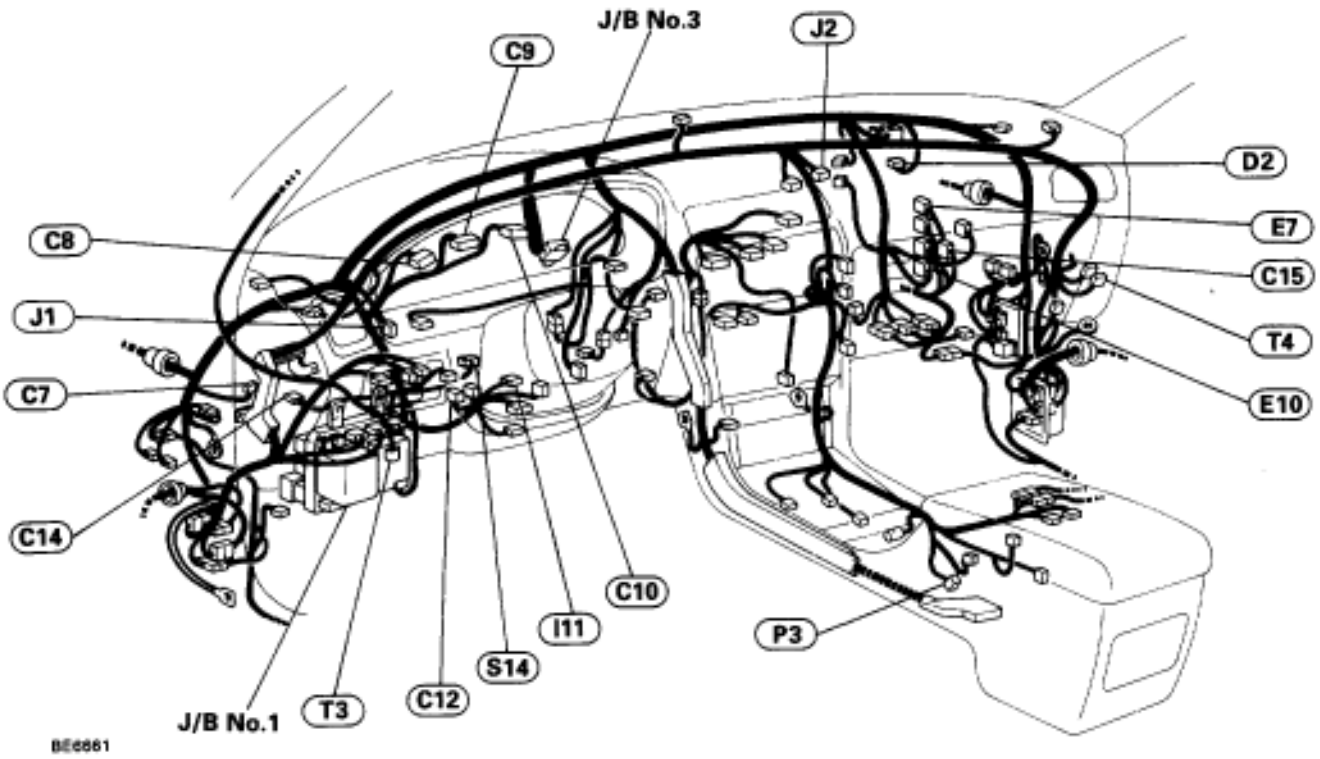


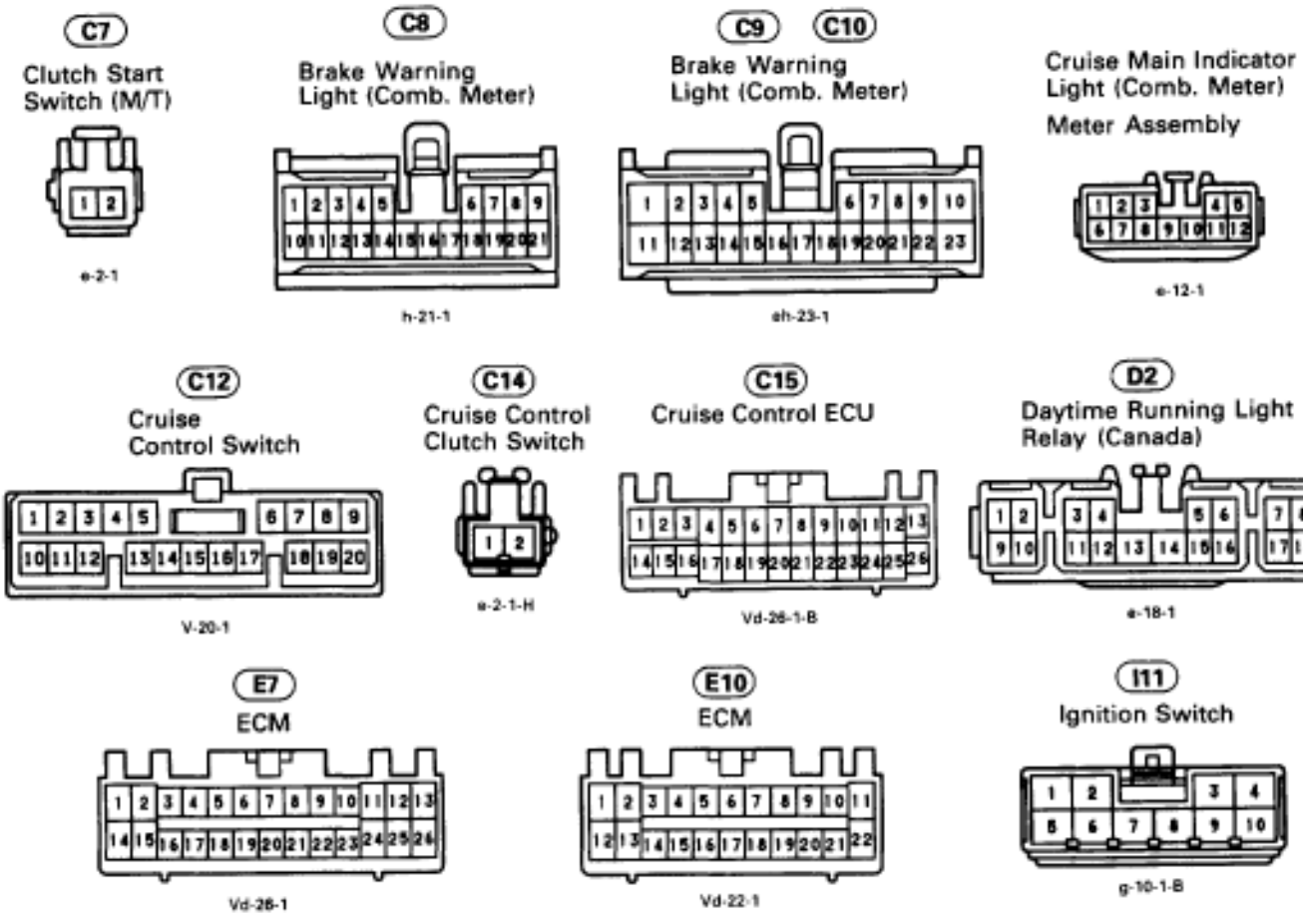




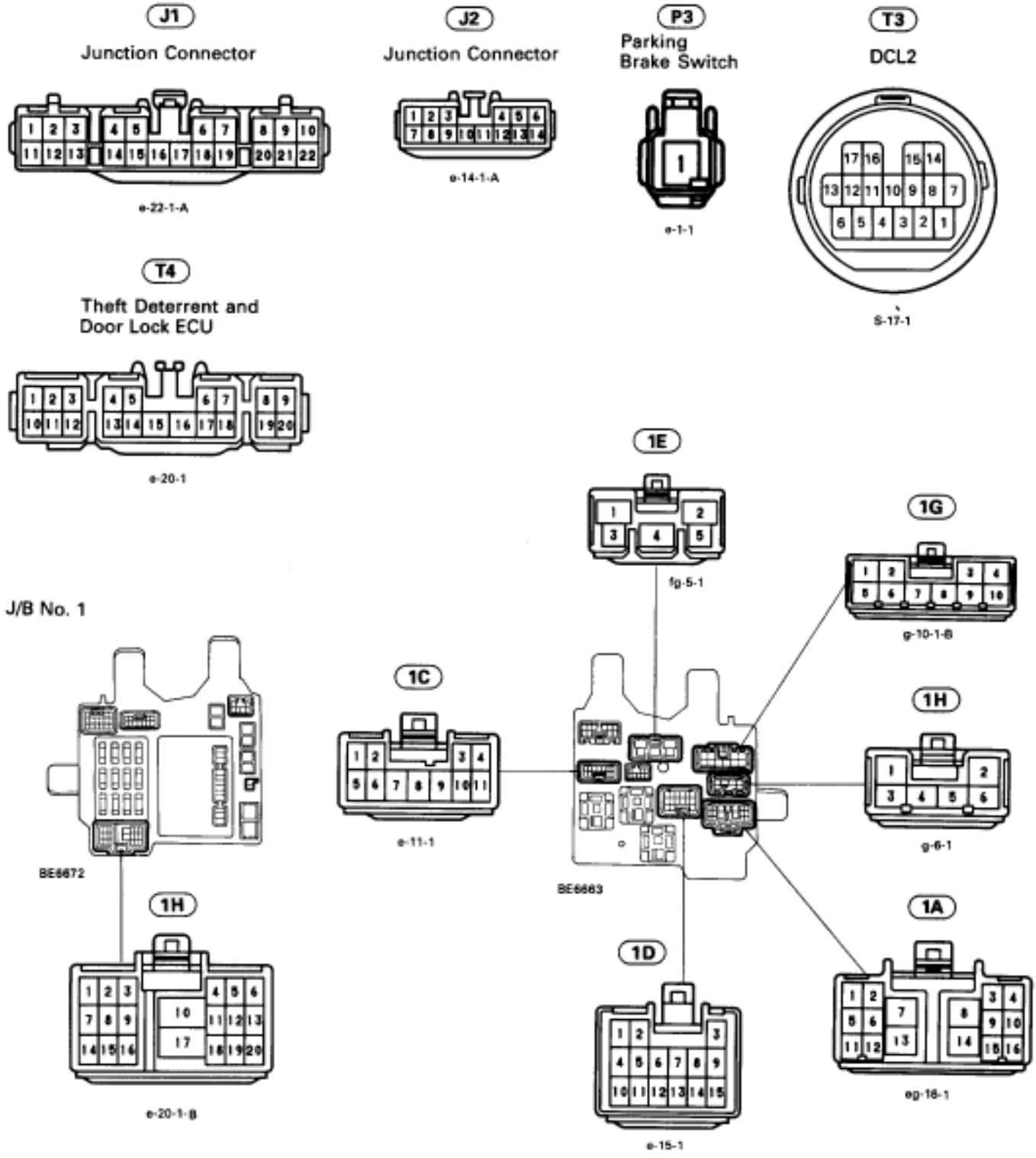


Location of Connectors in Instrument Panel

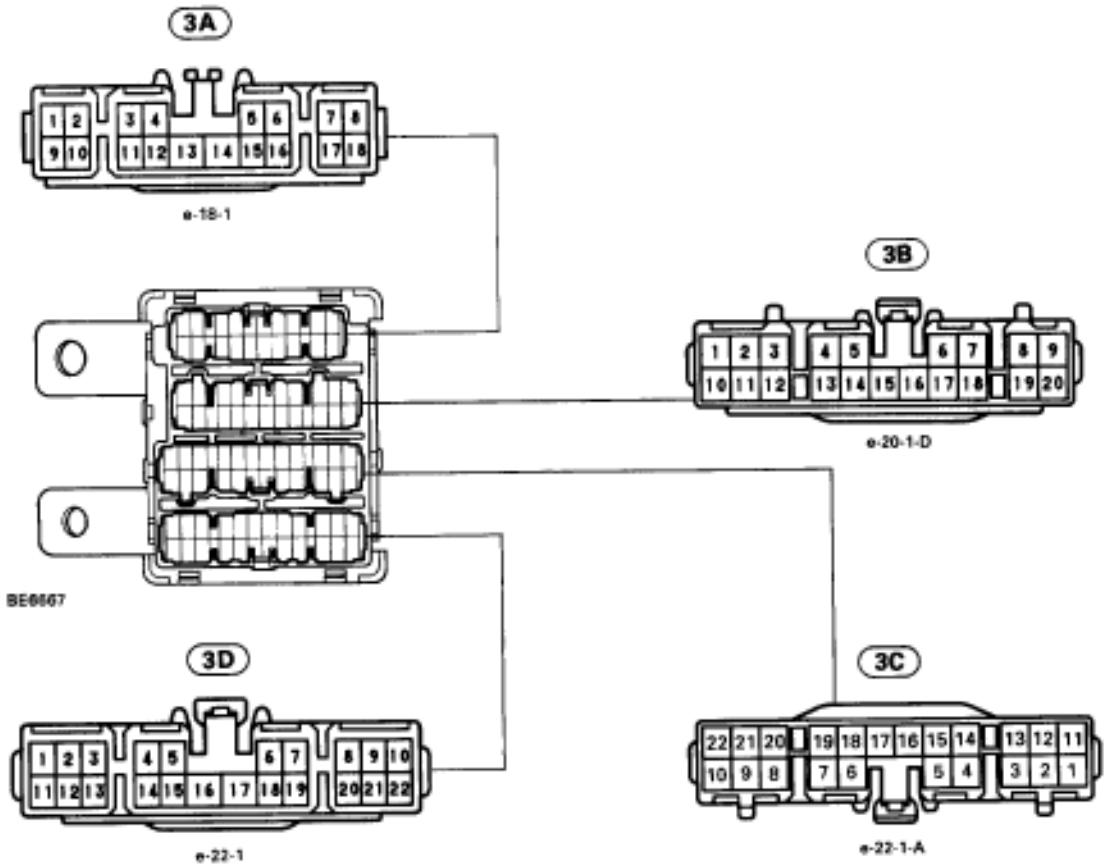




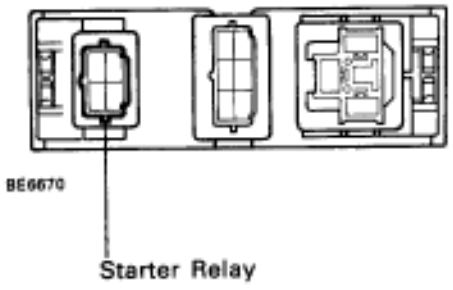
Location of Connectors in Instrument Panel



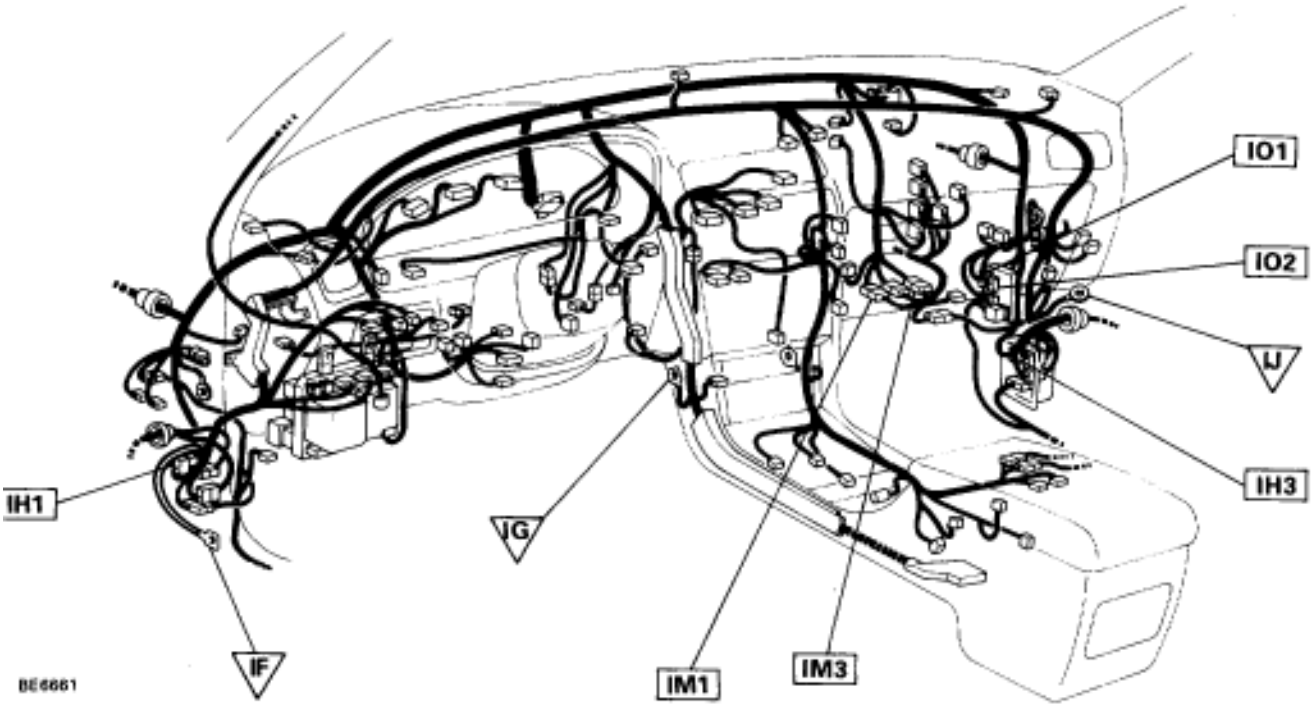
J/B No.3

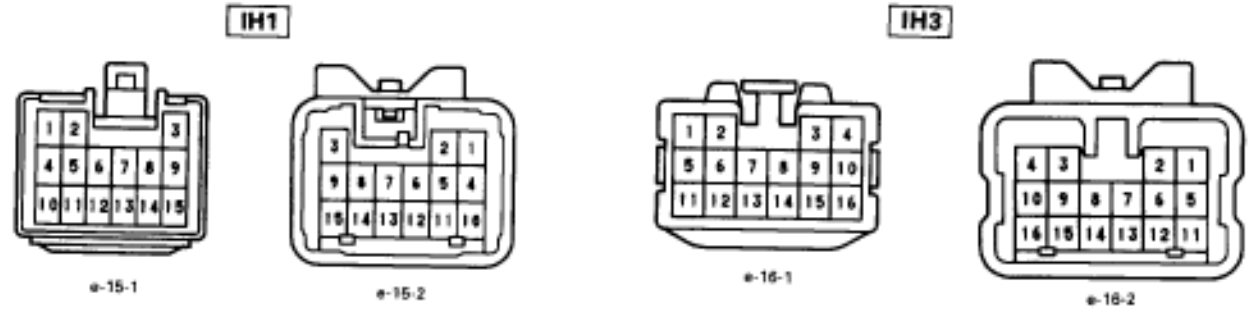

3A
e-18-1
3B
e-20-1-D
BE6667
3D
e-22-1
3C
e-22-1-A

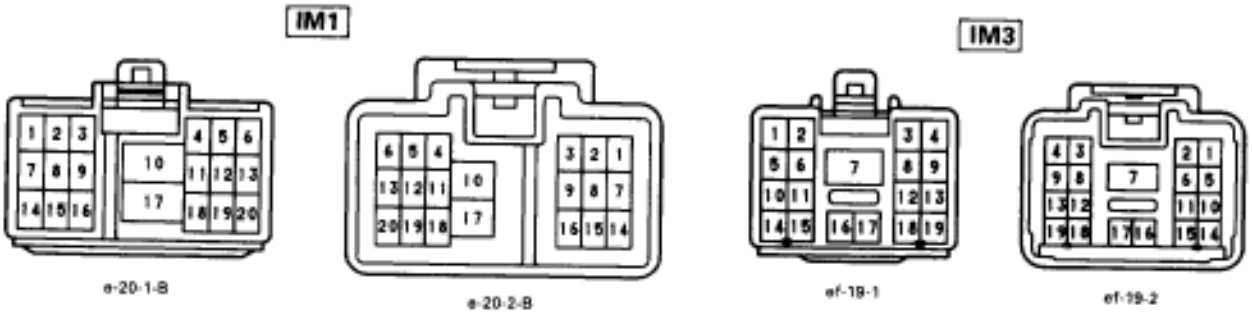
R/B No.6

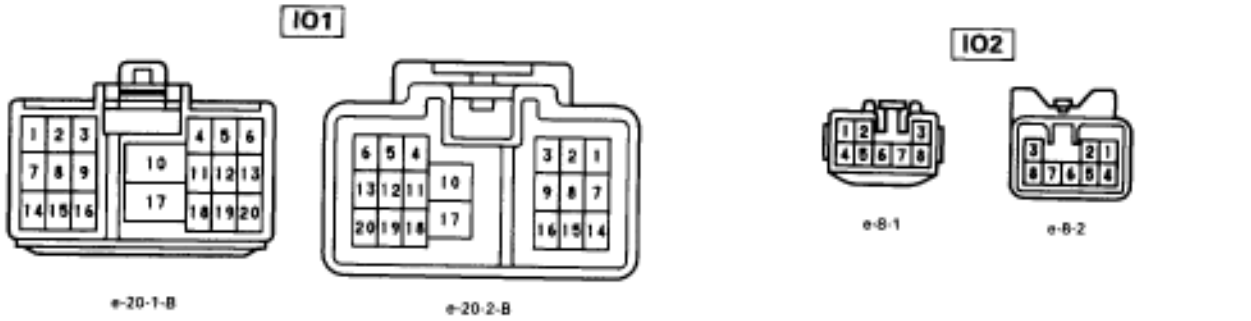

BE6670
Starter Relay

Location of Connectors in Instrument Panel

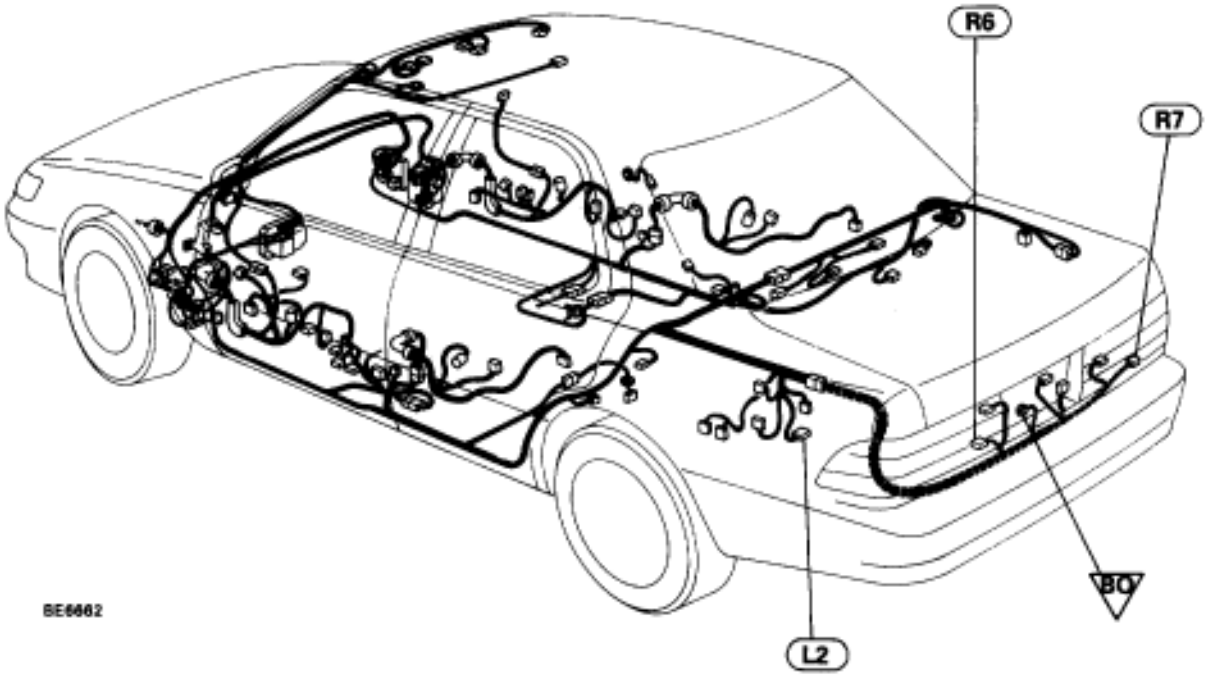








Location of Connectors in Body



L2
Light Failure Sensor

e-12-1

R6
Stop Light LH

e-6-2

R7
Stop Light RH

e-6-2

Circuit Inspection

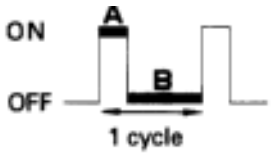
DTC	11, 13	Actuator Motor Circuit

CIRCUIT DESCRIPTION

The actuator motor is operated by signals from the ECU. Acceleration and deceleration signals are transmitted by changes in the Duty Ratio (See note below).

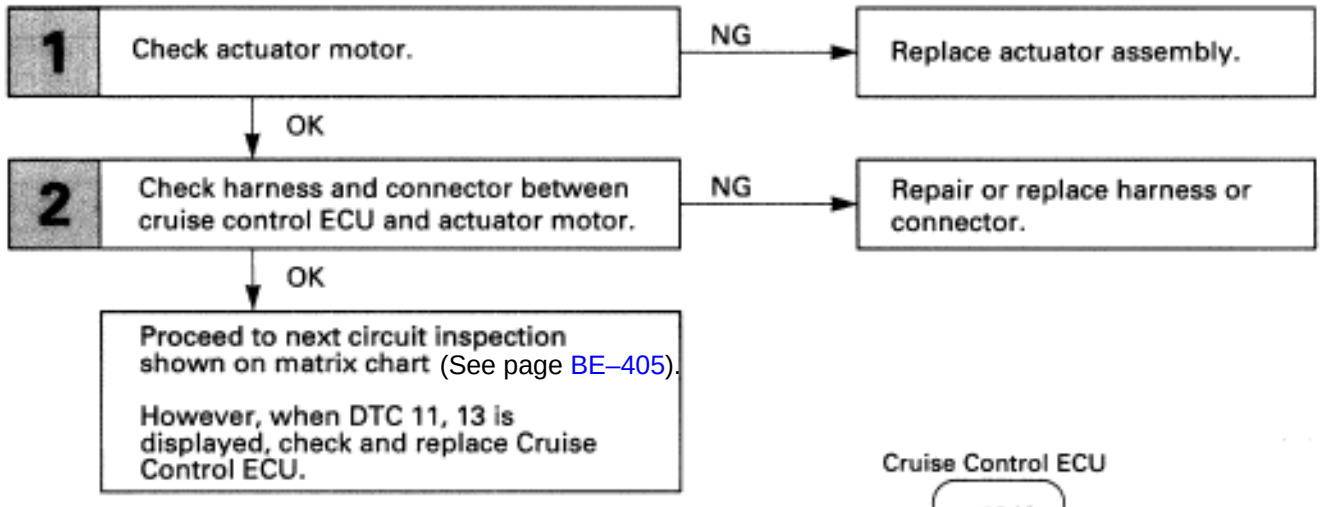
Duty Ratio
The duty ratio is the ratio of the period of continuity in one cycle. For example, if A is the period of continuity in one cycle, and B is the period of non–continuity, then

$$\text{Duty Ratio} = \frac{A}{A + B} \times 100\ (\%)$$

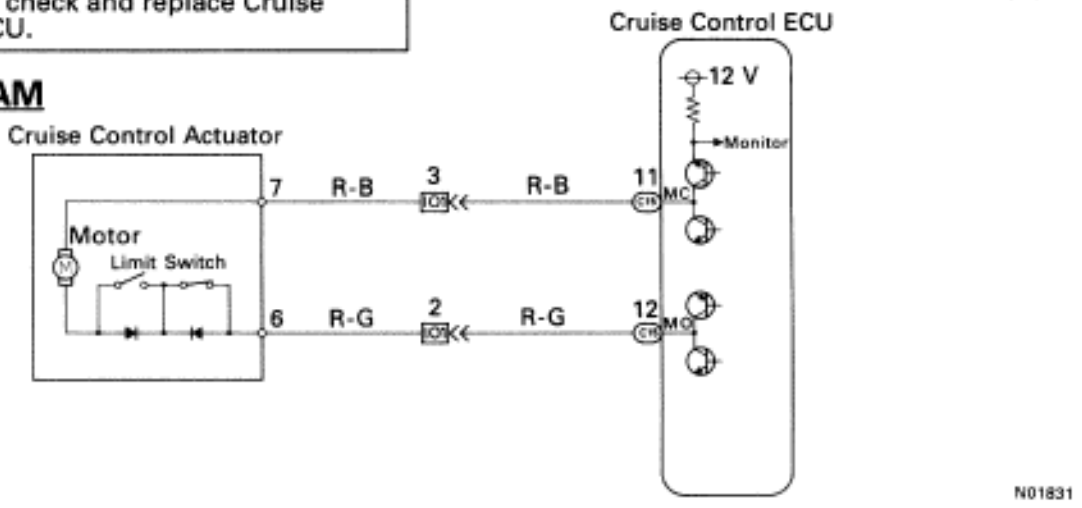


Code No.	Diagnosis	Trouble Area
11	Continuous output to motor acceleration side. Overcurrent (short) in motor circuit.	Cruise control actuator motor. Harness or connector between actuator motor and ECU. ECU
13	Open in actuator motor circuit.	

DIAGNOSTIC CHART

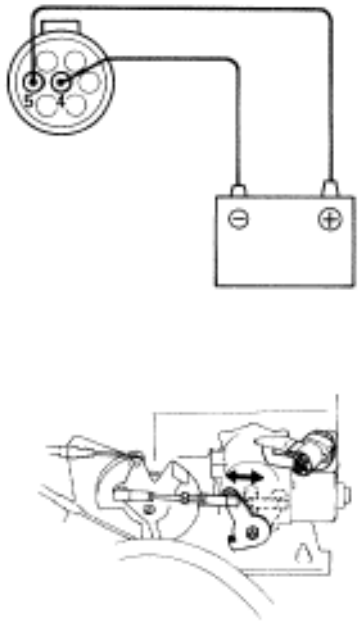


WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check actuator motor.**



BE3531
N01263

P
1. Remove cruise control actuator.
2. Disconnect actuator connector.

C
1. Connect positive ⊕ lead to terminal 5 and negative ⊖ lead to terminal 4 of actuator connector. (Magnet clutch ON)
2. When battery positive voltage is applied to each terminal of actuator connector, check that the control plate moves smoothly without hesitating.

○—○ Connect

Moving direction \ Terminal	Positive ⊕	Negative ⊖	6	7
Acceleration side	○	○	○	
		○		○
Deceleration side	○			○
		○	○	

3. With the motor rotating as in 2, check that the motor is stopped by limit switches when the control plate moves to fully opened or fully closed position.

OK → **NG** → **Replace actuator assembly.**

2 **Check harness and connector between cruise control ECU and actuator motor. (See page IN–27).**

OK → **NG** → **Repair or replace harness or connector.**

Proceed to next circuit inspection shown on matrix chart (See page BE–405).

However, when diag. code 11, 13 is displayed, check and replace Cruise Control ECU.

DTC 12 Actuator Magnet Clutch Circuit

CIRCUIT DESCRIPTION

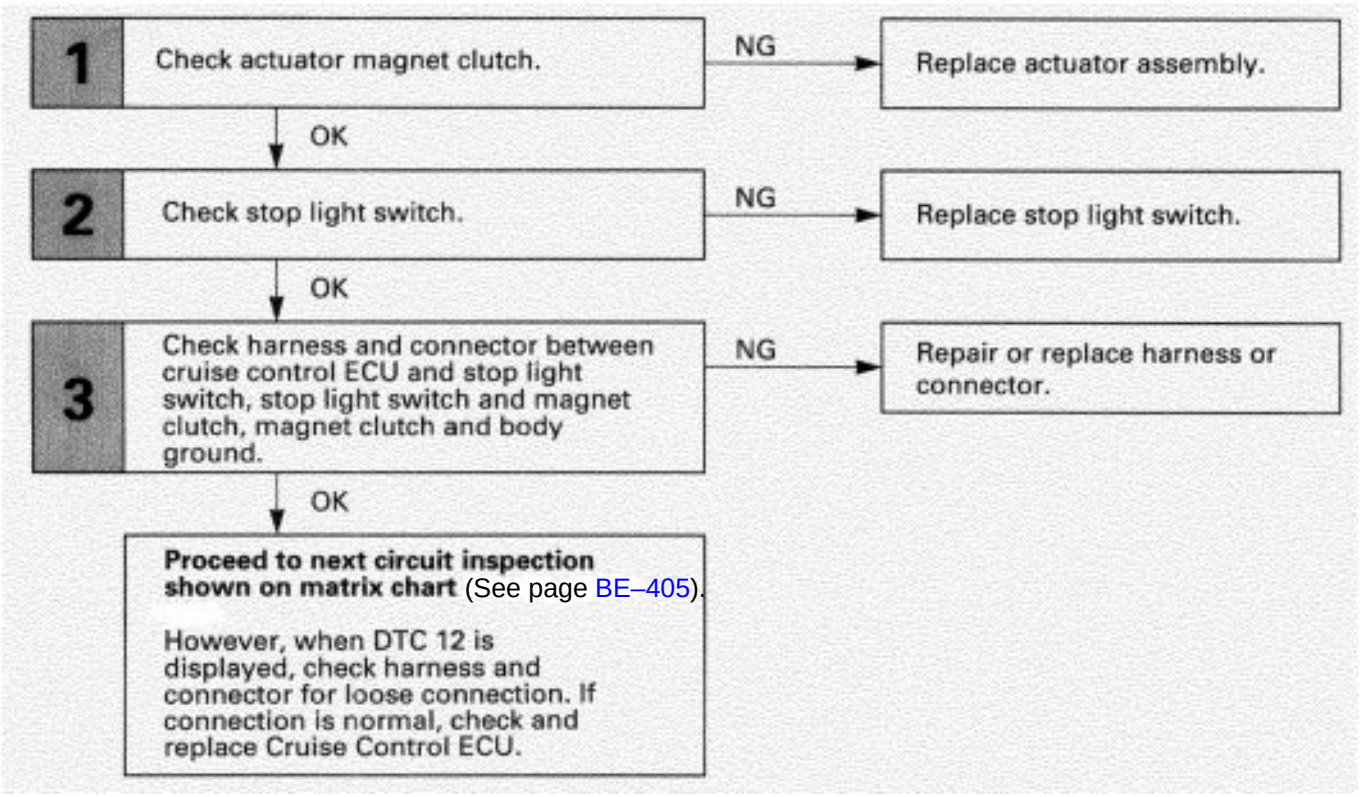
This circuit turns on the magnet clutch inside the actuator during cruise control operation according to the signal from the ECU. If a malfunction occurs in the actuator or speed sensor, etc. during cruise control, the rotor shaft between the motor and control plate is released.

When the brake pedal is depressed, the stoplight switch turns on, supplying electrical power to the stoplight. Power supply to the magnet clutch is mechanically cut and the magnet clutch is turned OFF.

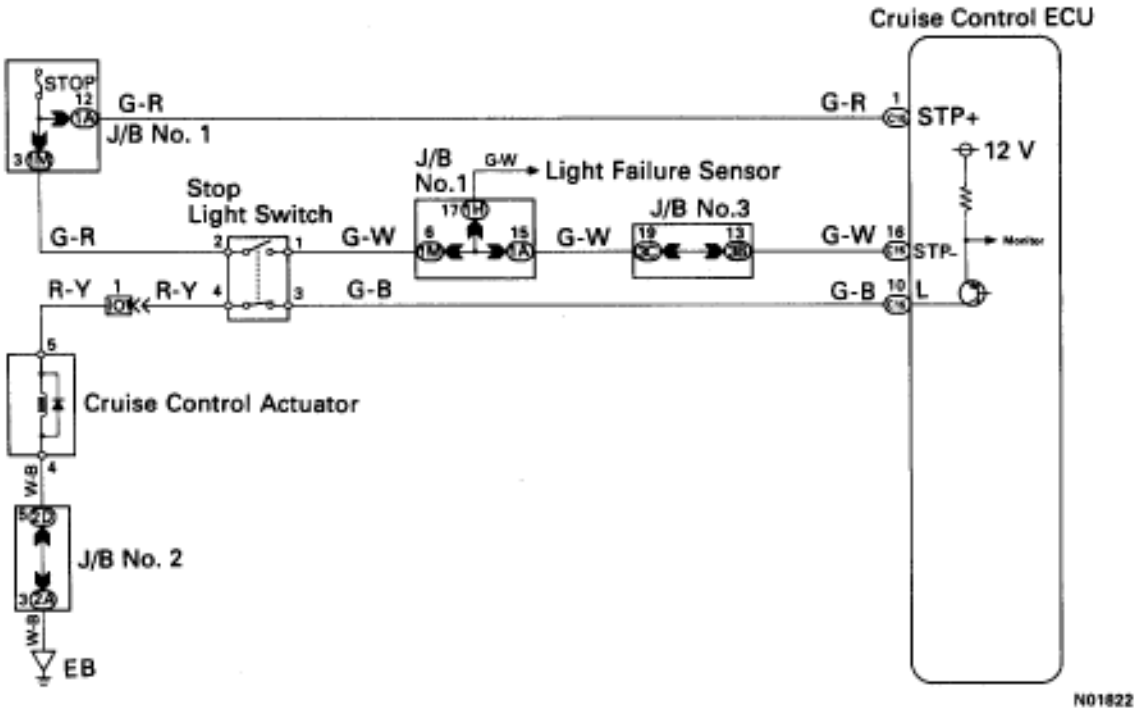
When driving downhill, if the vehicle speed exceeds the set speed by 15 km/h (9 mph), the ECU turns the magnet clutch OFF. If the vehicle speed later drops to within 10 km/h (6 mph) above the set speed, then cruise control at the set speed is resumed.

Code No.	Diagnosis	Trouble Area
12	Overcurrent (short) in magnet clutch circuit. Open in magnet clutch circuit.	Cruise control magnet clutch. Harness or connector between ECU and magnet clutch, magnet clutch and body ground. ECU

DIAGNOSTIC CHART

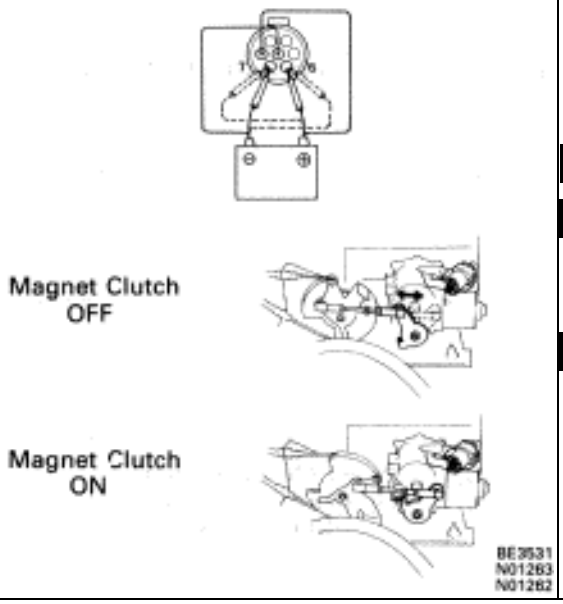


WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check actuator magnet clutch.**



P
1. Remove cruise control actuator.
2. Disconnect actuator connector.

C Move the control plate by hand.

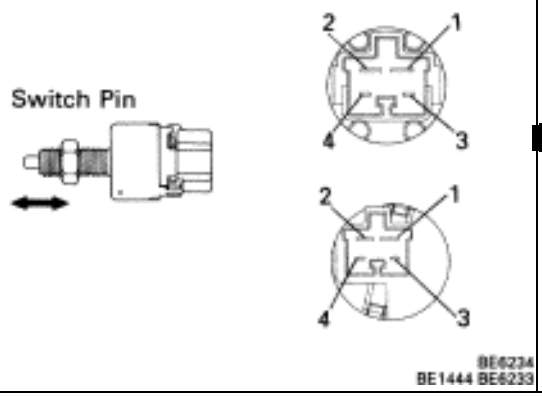
OK **Control plate moves. (Magnet clutch off).**

C
1. Connect positive ⊕ lead to terminal 5 and negative ⊖ lead to terminal 4 of actuator connector.
2. Move the plate by hand.

OK **Control plate doesn't move. (Magnet clutch on)**

OK → **NG** → **Replace actuator assembly.**

2 **Check stop light switch.**



P Disconnect stop light switch connector.

C Check continuity between terminals.

OK

○—○ Continuity

Switch position \ Terminal	1	2	3	4
Switch pin free (Brake pedal depressed)	○	○	○	○
Switch pin pushed in (Brake pedal released)				

OK → **NG** → **Replace stop light switch.**

3 **Check harness and connectors between cruise control ECU and stop light switch, stop light switch and magnet clutch, magnet clutch and body ground. (See page IN–27).**

OK → **NG** → **Repair or replace harness or connector.**

Proceed to next circuit inspection shown on matrix chart (See page BE–405). However, when diag trouble code 12 is displayed, check harness and connector for loose connection. If connection is normal, check and replace Cruise Control ECU.

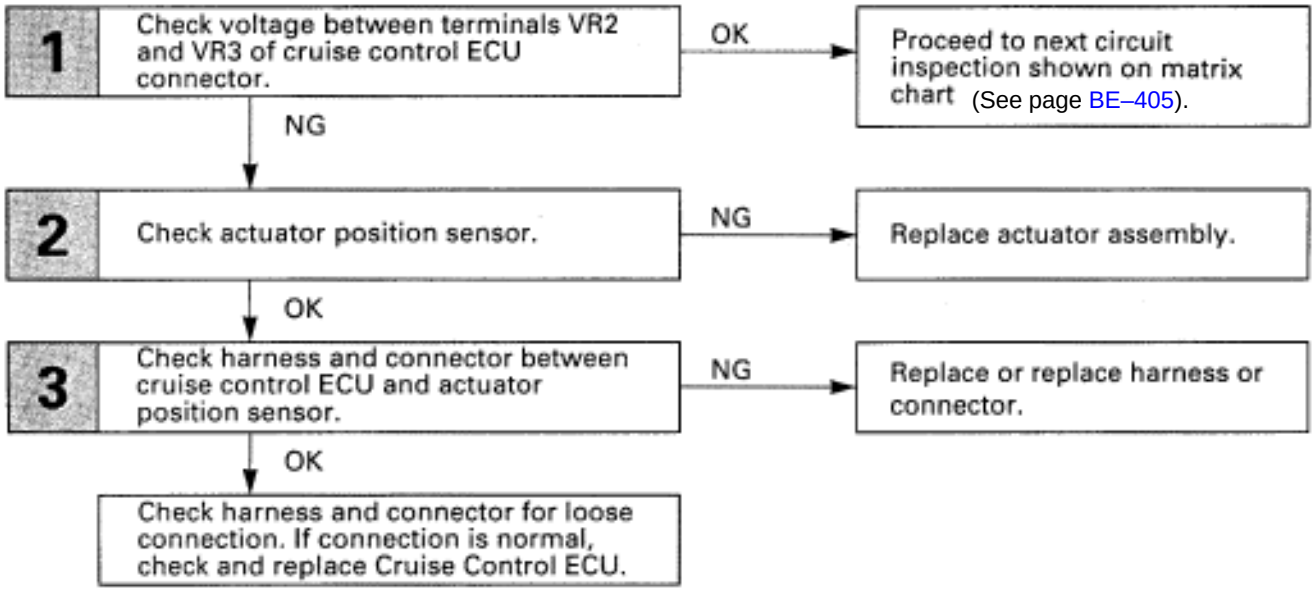
DTC 13 Actuator Position Sensor Circuit

CIRCUIT DESCRIPTION

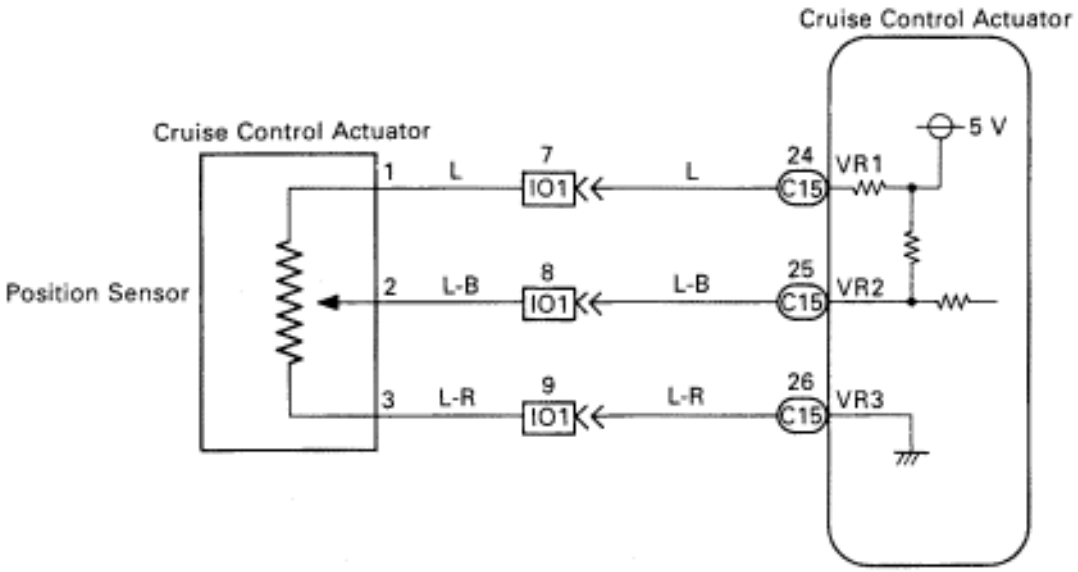
This circuit detects the rotation position of the actuator control plate and sends signal to the ECU.

Code No.	Diagnosis	Trouble Area
13	Position sensor detects abnormal voltage. Position sensor signal value does not change when the motor operates.	Cruise control actuator Position sensor. Harness or connector between actuator position sensor and body ground. ECU

DIAGNOSTIC CHART

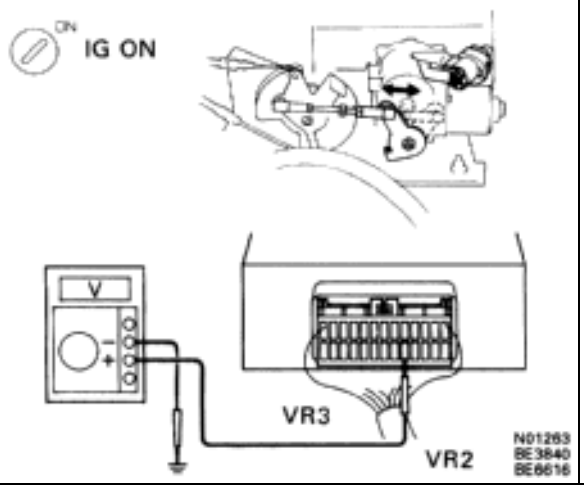


WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check voltage between terminals VR2 and VR3 of cruise control ECU connector.**



P Remove cruise control ECU with connectors still connected.

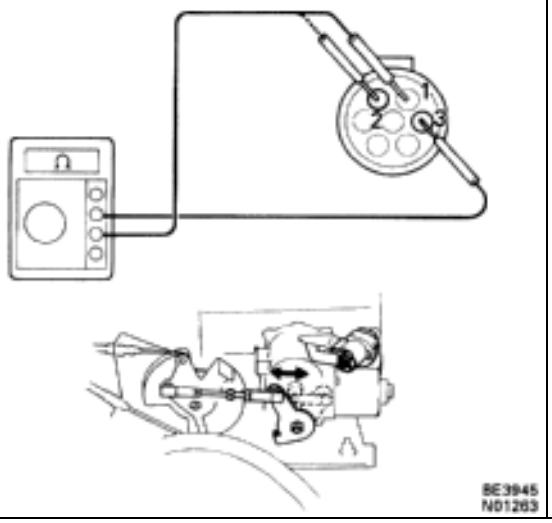
C
1. Turn ignition switch on.
2. Measure voltage between terminals VR2 and VR3 of cruise control ECU connector while turning control plate slowly by hand from the deceleration side to the acceleration side.

OK **Voltage:**
Fully closed: 1.1 – 1.4 V
Fully opened: 3.8 – 4.5 V
In addition, as the control plate is turned, the voltage should increase gradually without interruption.

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

2 **Check actuator position sensor.**



P
1. Remove cruise control actuator.
2. Disconnect the actuator connector.

C Measure resistance between actuator terminals 1 and 3 of actuator connector.

OK **Resistance: 1.8 – 2.2 kΩ**

C Measure resistance between terminals 2 and 3 of actuator connector, while turning the control plate slowly by hand from the deceleration side to the acceleration side.

OK **Resistance:**
Fully closed: 500 – 550 Ω
Fully opened: 1.5 – 2.0 kΩ
In addition, as the control plate turns, the resistance should increase gradually without interruption.

OK

NG **Replace actuator assembly.**

3 **Check harness and connector between cruise control ECU and actuator position sensor. (See page IN–27)**

OK

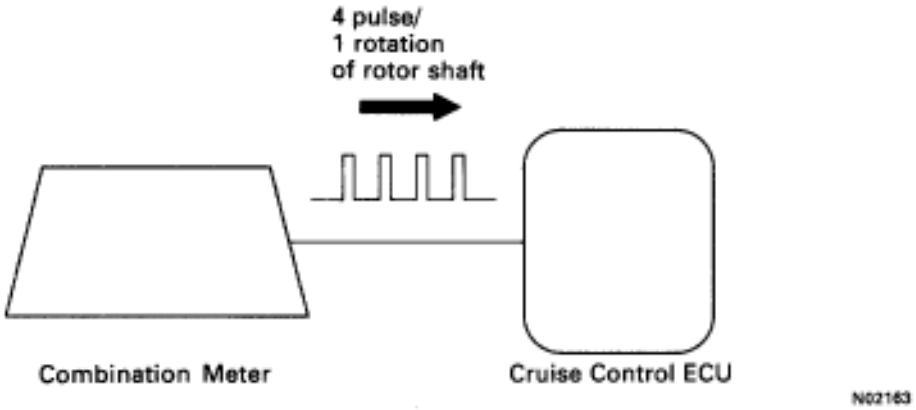
NG **Repair or replace harness or connector.**

Check harness and connector for loose connection. If connection is normal check and replace cruise control ECM.

DTC 21, 23 Actuator Sensor Circuit

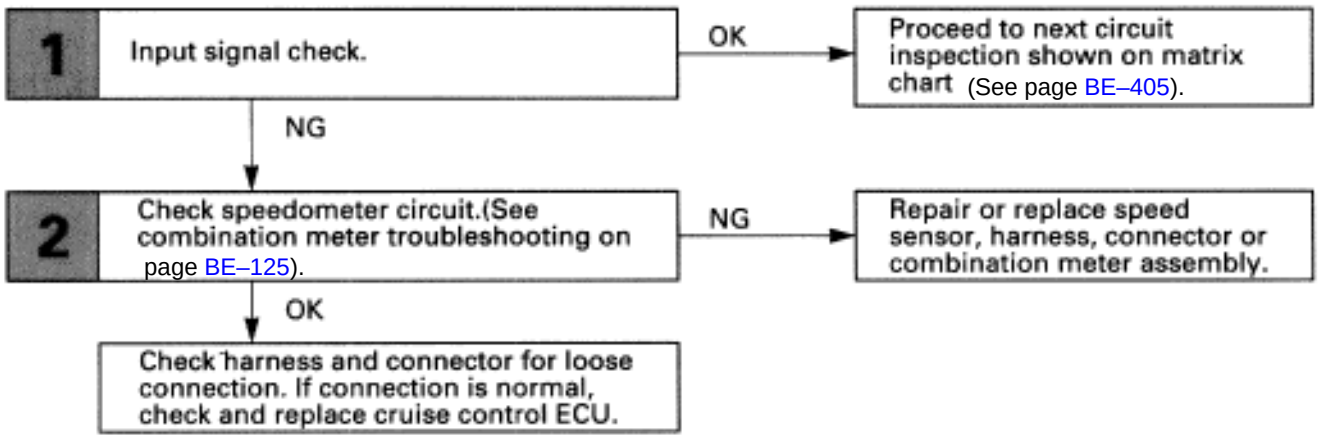
CIRCUIT DESCRIPTION

The speed sensor signal is sent to cruise control ECU as vehicle speed signal.

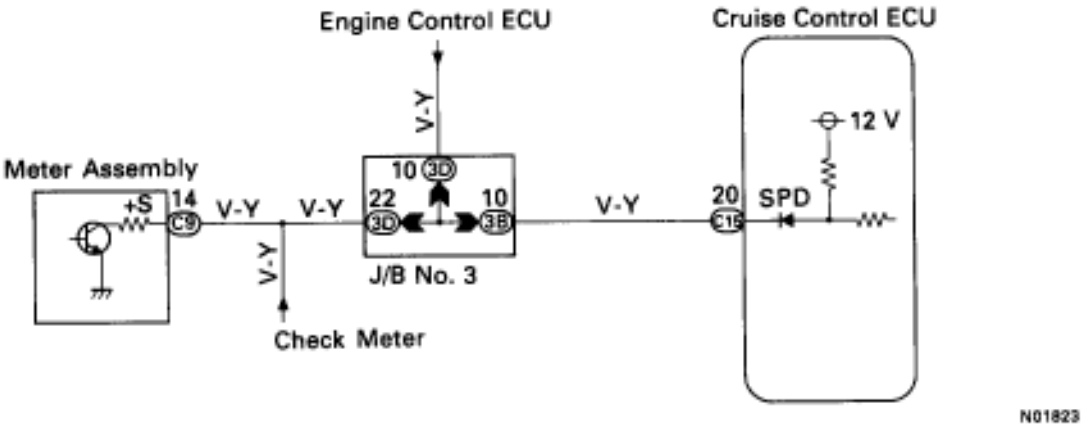


Code No.	Diagnosis	Trouble Area
21	Speed signal is not input to the ECU	Speed sensor Combination meter Harness or connector between speed sensor and combination meter, combination meter and ECU. ECU
23	Actula vehicle speed has dropped by 16 km/h (10 mph) or more below the set speed during cruising. HINT: When speed sensor circuit is opened intermittently (Below 0.2 sec), code 23 is output.	Actuator Actuator control cable Speed sensor Harness or connector in OD and SPD circuit (Open or short intermittently) ECU

DIAGNOSTIC CHART

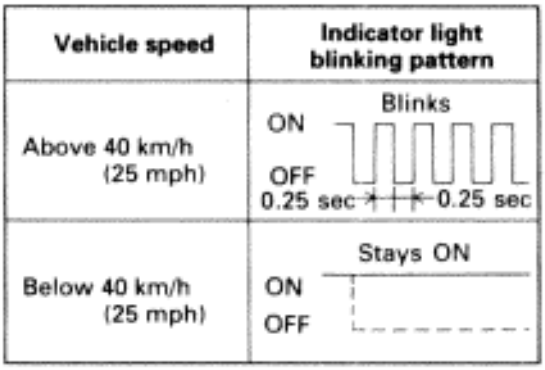


WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Input signal check.**



C
1. See input signal check on page BE–400.
2. Check indicator light operation when driving with vehicle speed above 40 km/h (25 mph), and with vehicle speed below 40 km/h (25 mph).

OK
Vehicle speed above 40 km/h (25 mph)
: Indicator light blinks.
Vehicle speed below 40 km/h (25 mph)
: Indicator light stays on

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

2 **Check speedometer circuit. (See combination meter troubleshooting on page BE–125).**

OK

NG **Repair or replace speed sensor, harness, connector or combination meter assembly.**

Check harness and connector for loose connection.

If connection is normal, check and replace cruise control ECU.

DTC	32, 34	Control Switch Circuit (Cruise Control Switch)

CIRCUIT DESCRIPTION

This circuit carries the SET/COAST, RESUME/ACCEL and CANCEL signals (each voltage) to the ECU.

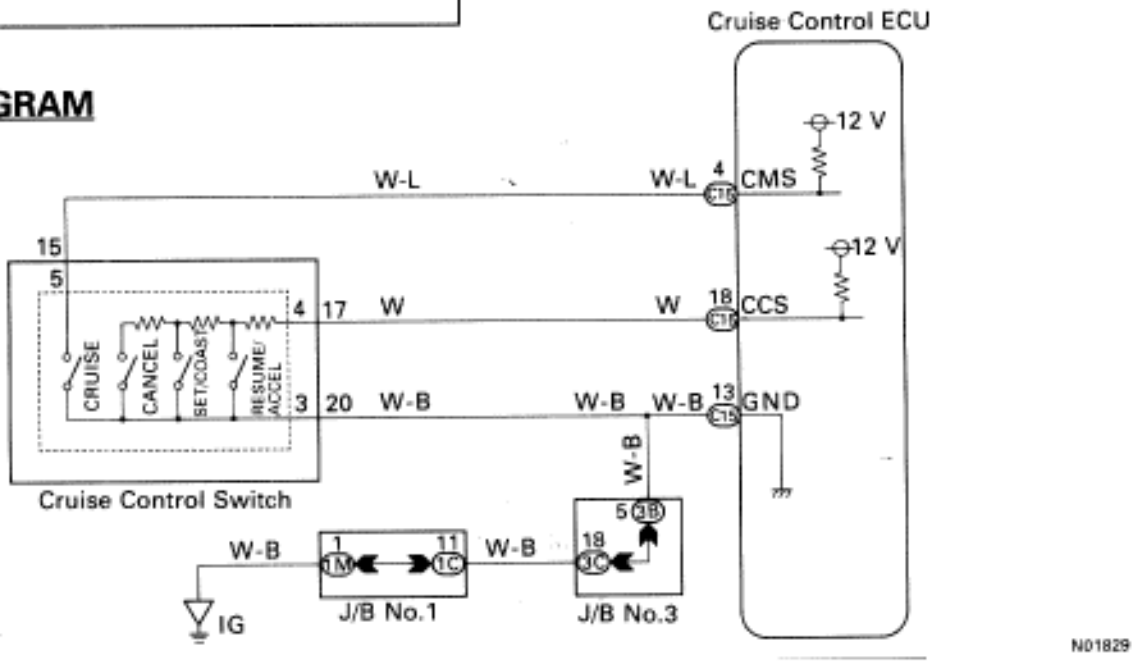
Code No.	Diagnosis	Trouble Area
32	Short in, control switch circuit.	Cruise control switch. Harness or connector between control switch and ECU. ECU
34	Voltage abnormality in control switch circuit	

DIAGNOSTIC CHART

1. Input signal check.
   - OK → Proceed to next circuit inspection shown on matrix chart (See page BE–405).
   - NG ↓
2. Check voltage between terminal CCS of cruise control ECU connector and body ground.
   - OK → Proceed to next circuit inspection shown on matrix chart (See page BE–405).
   - NG ↓
3. Check control switch.
   - NG → Replace cruise control switch.
   - OK ↓
4. Check harness and connector between cruise control ECU and control switch.
   - NG → Repair or replace harness or connector.
   - OK ↓

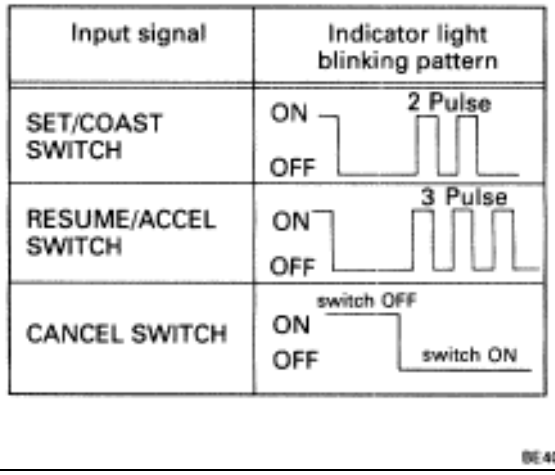
Check and replace cruise control ECU.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Input signal check.



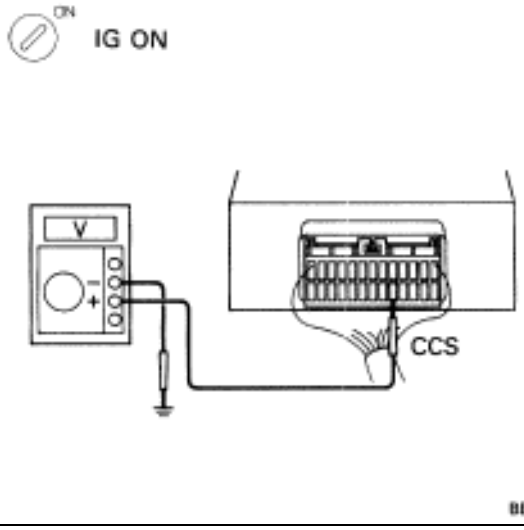
C
1. See input signal check on page BE–400.
2. Check the indicator light operation when each of the SET/COAST, RESUME/ACCEL and CANCEL is turned ON.

OK **SET/COAST, RESUME/ACCEL switch**
The signals shown in the table on the left should be output when each switch is ON. The signal should disappear when the switch is turned OFF.
CANCEL switch
The indicator light goes off when the cancel switch is turned ON.

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

2 Check voltage between terminal CCS of cruise control ECU connector and body ground.



P Remove cruise control ECU with connectors still connected.

C
1. Turn ignition switch ON.
2. Measure voltage between terminal CCS of cruise control ECU connector and body ground, when each of the SET/COAST, RESUME/ACCEL and CANCEL is turned ON.

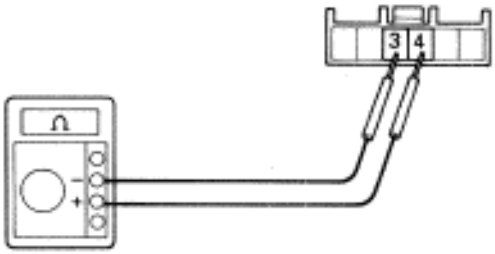
OK

Switc position	Voltage
Neutral	10–14 V
RES/ACC	0.7–2.5 V
SET/COAST	2.4–4.6 V
CANCEL	4.1–7.2 V

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

3 **Check control switch.**



P
1. Remove steering wheel center pad.
2. Disconnect control switch connector (See page AB–17).

C Measure resistance between terminals 3 and 4 of control switch connector when control switch is operated.

OK

Switch position	Resistance
Neutral	1 MΩ or higher
RES/ACC	60–80 Ω
SET/COAST	190–210 Ω
CANCEL	410–430 Ω

Hint When diagnostic trouble code 34 is displayed, carefully check that resistance is always 1 MΩ or higher in neutral position, particularly when switching between REC/ACC and SET/COAST.

OK → **NG** → **Replace cruise control switch.**

4 **Check harness and connector between cruise control ECU and control switch (See page IN–27)**

OK → **NG** → **Repair or replace harness or connector.**

Check and replace cruise control ECU.

Stop Light Switch Circuit

CIRCUIT DESCRIPTION

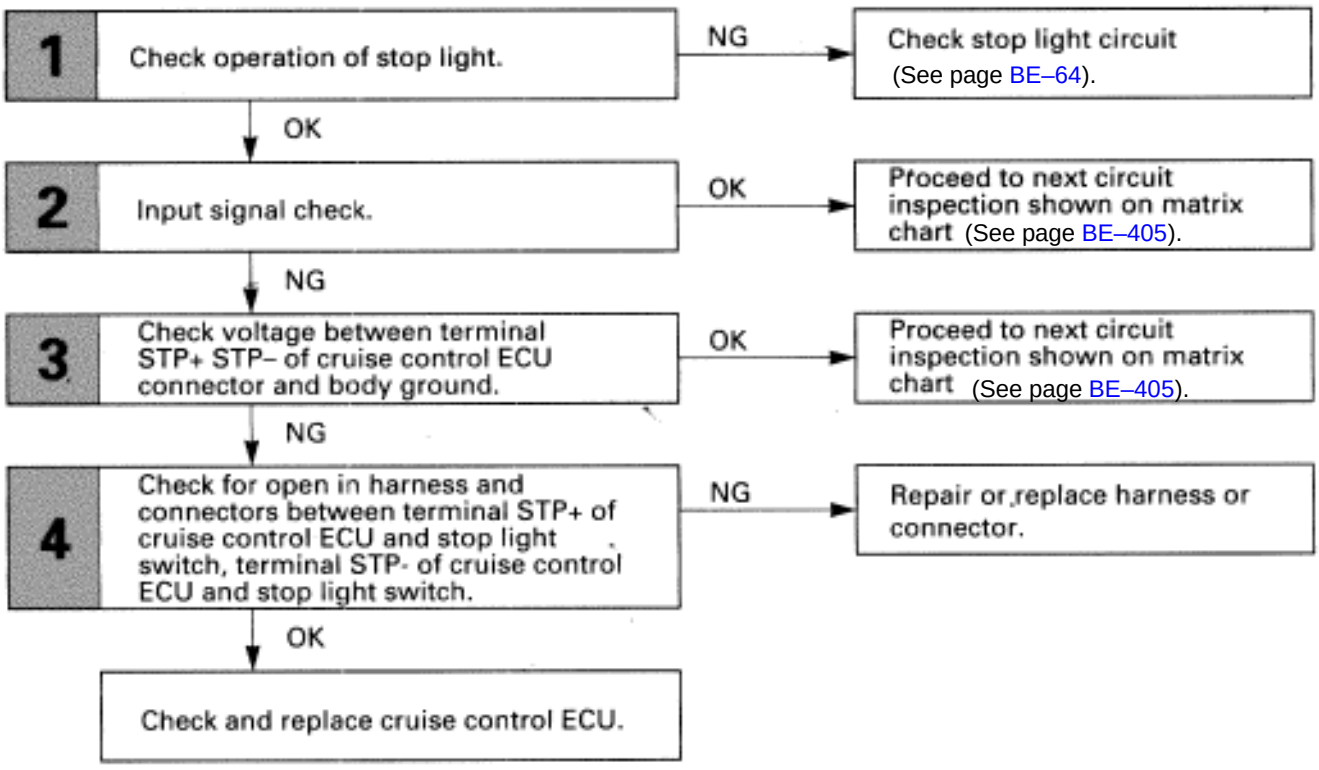
When the brake is on, battery positive voltage normally applies through the stop fuse and stop switch to terminal STP–of the ECU, and the ECU turns the cruise control off.

A fail–safe function is provided so that the cancel functions normally, even if there is a malfunction in the stop light signal circuit.

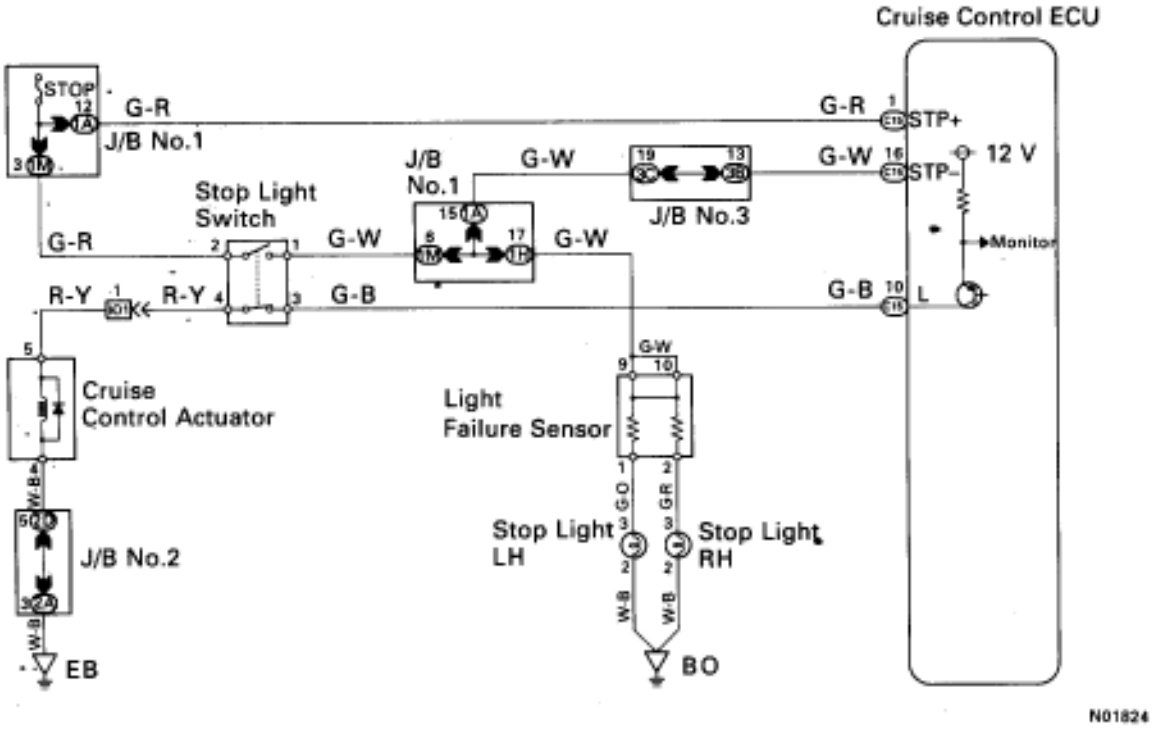
1 If the harness connected to terminal STP–has an open, terminal STP–will have battery positive voltage and the cruise control will be turned off, also SET not occurring.
2 If the stop fuse is open, terminal STP+ becomes approx. 0 V when the brake is turned on, so the ECU performs cancel function normally.

Also, when the brake is on, the magnet clutch circuit is cut mechanically by the stop light switch, turning the cruise control off. (See page BE–415 for operation of the magnet clutch.)

DIAGNOSTIC CHART



WIRING DIAGRAM



INSPECTION PROCEDURE

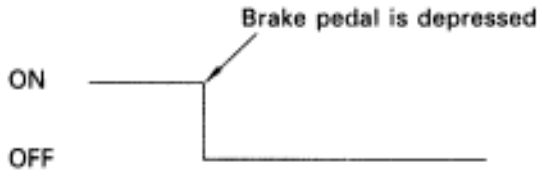
1 **Check operation of stop light.**

C Check that stop light comes on when brake pedal is depressed, and turns off when brake pedal is released.

OK

NG **Check stop light circuit (See page BE–64).**

2 **Input signal check.**



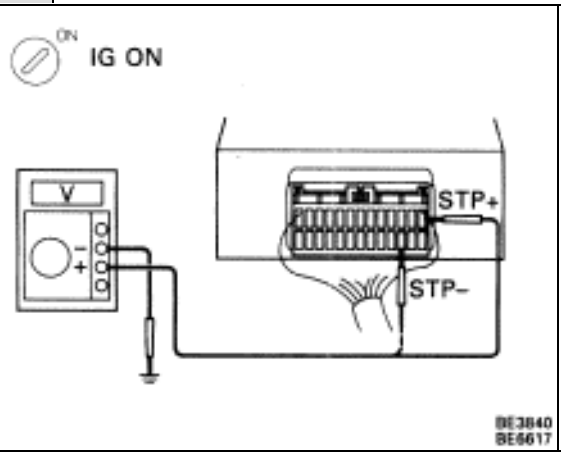
C
1. See input signal check on page BE–400.
2. Check the indicator light when the brake pedal is depressed.

OK **The indicator light goes off when the brake pedal is depressed.**

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

3 **Check voltage between terminal STP+, STP– of cruise control ECU connector and body ground.**



P Remove cruise control ECU with connectors still connected.

C
1. Turn ignition switch ON.
2. Measure voltage between terminals STP+, STP– of cruise control ECU connector and body ground, when the brake pedal is depressed and released.

OK

	STP+	STP-
Depressed	10 – 14 V	10 – 14 V
Released	10 – 14 V	Below 1 V

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

4 **Check for open in harness and connectors between terminals STP+ of cruise control ECU and stop light switch, terminal STP– of cruise control ECU and stop light switch. (See page IN–27)**

OK

NG **Repair or replace harness or connector.**

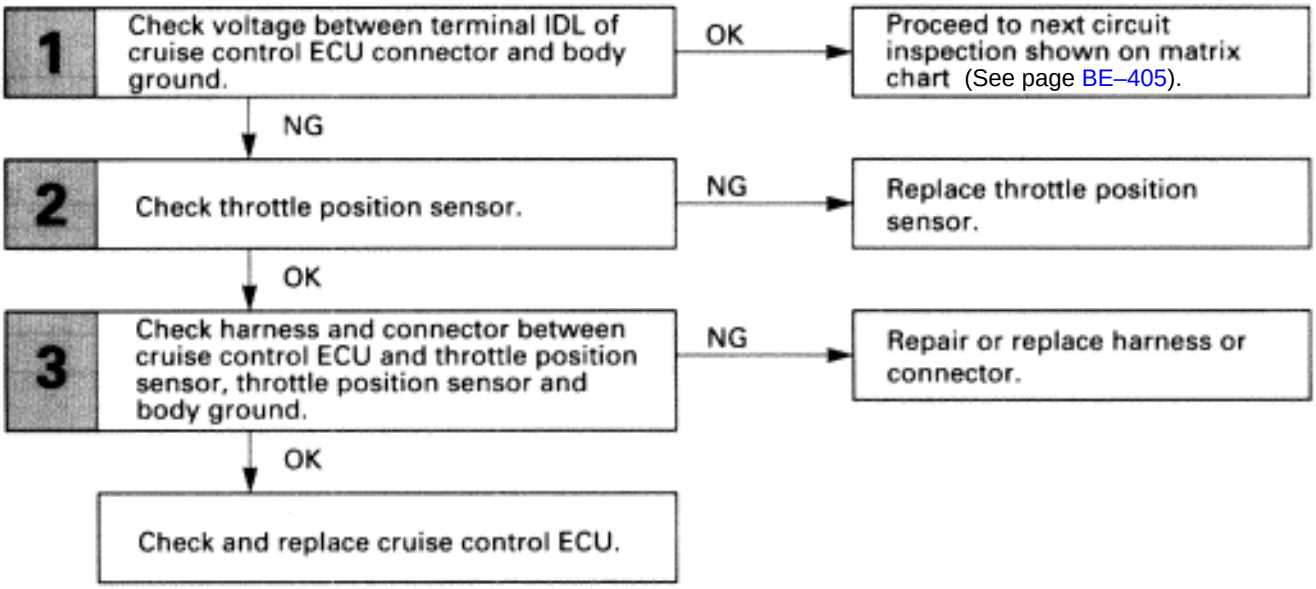
Check and replace cruise control ECU.

Idle Switch Circuit

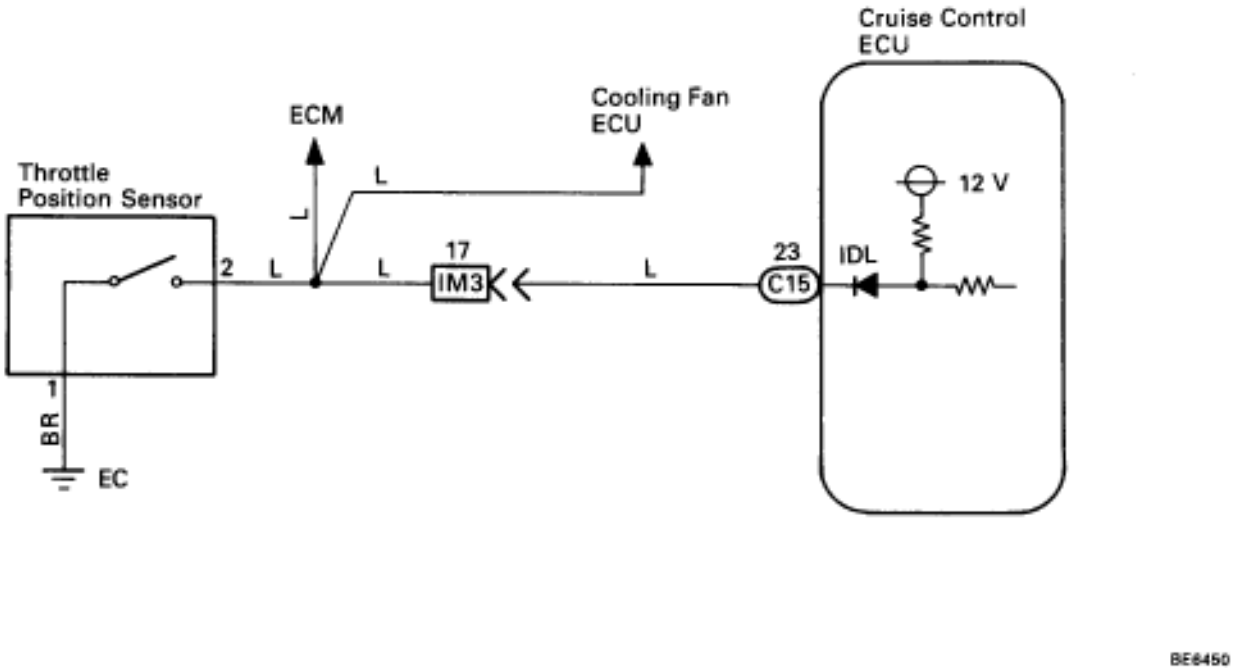
CIRCUIT DESCRIPTION

When the idle switch is turned ON, a signal is sent to the ECU. The ECU uses this signal to enable accurate cruise control at the set speed quickly. If the idle switch is malfunctioning, problem symptoms also occur in the engine, so also inspect the engine.

DIAGNOSTIC CHART

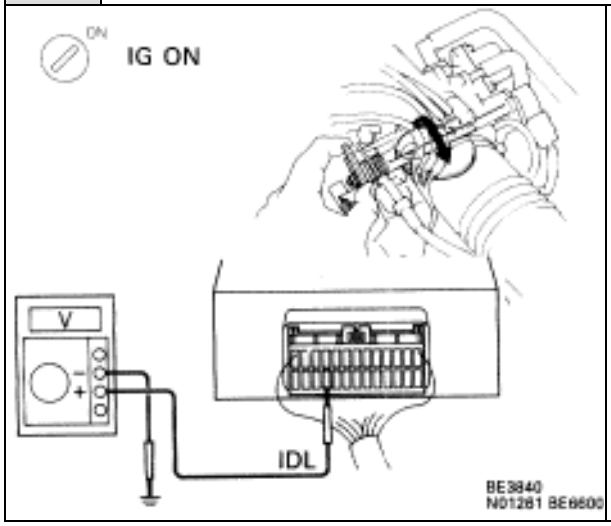


WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check voltage between terminal IDL of cruise control ECU connector and body ground.**



P
1. Remove cruise control ECU with connectors still connected.
2. Disconnect Engine & ECT and ABS & TRAC ECU connector.

C
1. Turn ignition switch ON.
2. Measure voltage between terminal IDL of cruise control ECU connector and body ground, when the throttle valve is fully closed and fully opened.

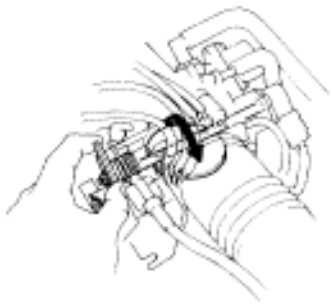
OK

Throttle valve position	Voltage
Fully opened	10 – 14 V
Fully closed	Below 1 V

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

2 **Check throttle position sensor.**



P Disconnect throttle position sensor connector.

C Measure resistance between terminals 1 and 2 of throttle position sensor connector, when the throttle valve is fully closed and fully opened.

OK

Throttle valve position	Resistance
Fully opened	1 MΩ or higher
Fully closed	Below 2 Ω

OK

NG → **Replace throttle position sensor.**

3 **Check harness and connector between cruise control ECU and throttle position sensor, throttle position sensor and body ground. (See page IN–27)**

OK

NG → **Repair or replace harness or connector.**

Check and replace cruise control ECM.

ECT Communication Circuit

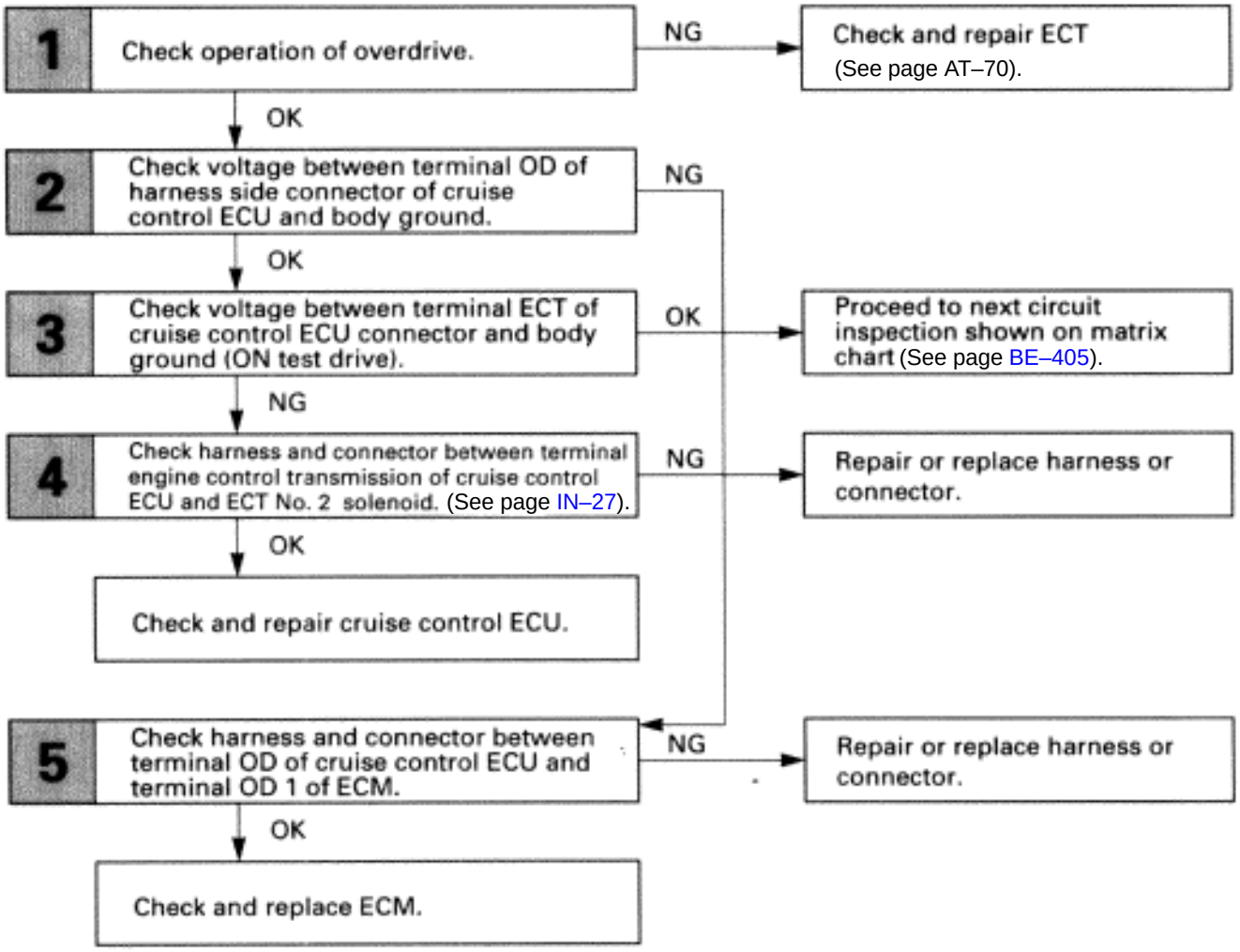
CIRCUIT DESCRIPTION

When driving uphill under cruise control, in order to reduce shifting due to ON–OFF overdrive operation and to provide smooth driving, when down shifting in the ECT occurs, a signal to prevent upshift until the end of the uphill slope is sent from the cruise control ECU to the ECM.

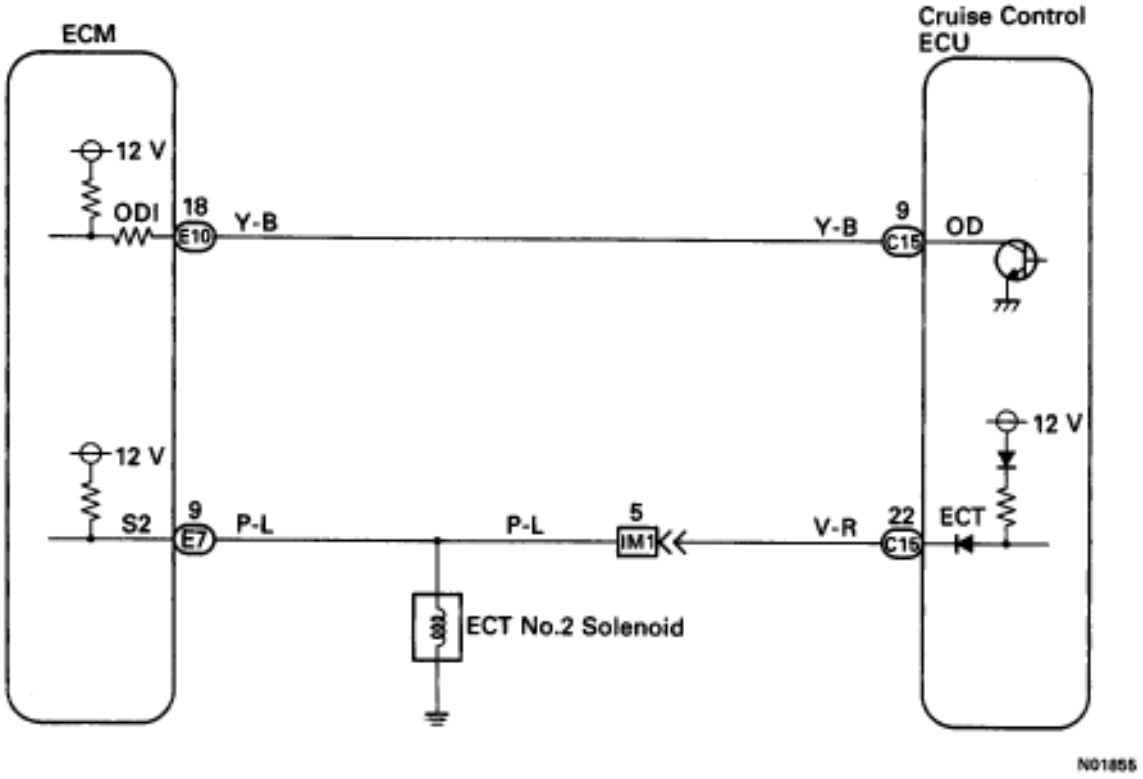
Terminal ECT of the cruise control ECU detects the shift change signal (output to ECT No.2 solenoid) from the ECM.

If vehicle speed down and terminal ECT of the cruise control ECU receives down shifting signal, it sends a signal from terminal OD to ECM to cut overdrive until the end of the uphill slope, and the gear shifts are reduced.

DIAGNOSTIC CHART



WIRING DIAGRAM



INSPECTION PROCEDURE

1	Check operation of overdrive.

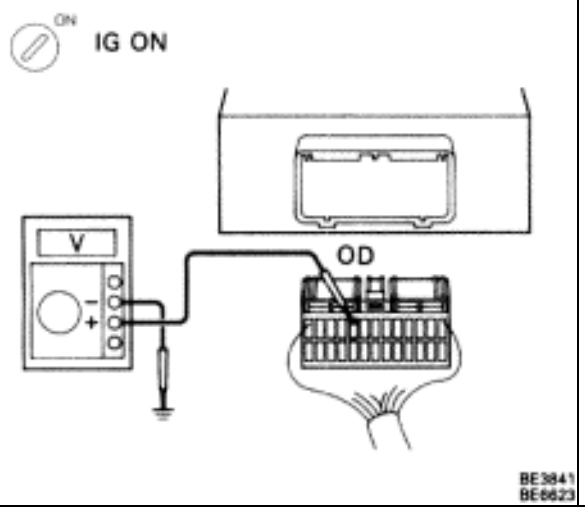
P Test drive after engine warms up.

C Check that overdrive ON ↔ OFF occurs with operation of OD switch ON–OFF.

OK

NG **Check and Repair ECT (See page AX–41).**

2	Check voltage between terminal OD of harness side connector of cruise control ECU and body ground.



P Remove cruise control ECU with connectors still connected.

C
1. Disconnect cruise control ECU connector.
2. Turn ignition switch ON.
3. Measure voltage between terminal OD of harness side connector of cruise control ECU and body ground.

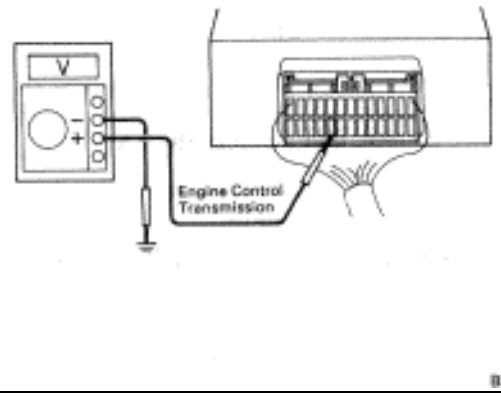
OK **Voltage: 10 – 14 V**

OK

NG **Go to step ✳**

Go to step .

3	Check voltage between terminal engine control transmission of cruise control ECU connector and body ground (On test drive).



P
1. Connect cruise control ECU connector.
2. Test drive after engine warms up.

C Check voltage between terminal TCM of cruise control ECU connector and body ground when OD switch is on and off.

OK

Gear Position	Voltage
O/D	Below 1 V
3rd	10 – 14 V

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

4	Check harness and connector between terminal engine control transmission of cruise control ECU and engine control transmission solenoid. (See page IN–27).

OK

NG **Repair or replace harness or connector.**

Check and repair cruise control ECU.

5	Check harness and connector between terminal OD of cruise control ECU and terminal OD1 of ECM. (See page IN–29).

OK

NG **Repair or replace harness or connector.**

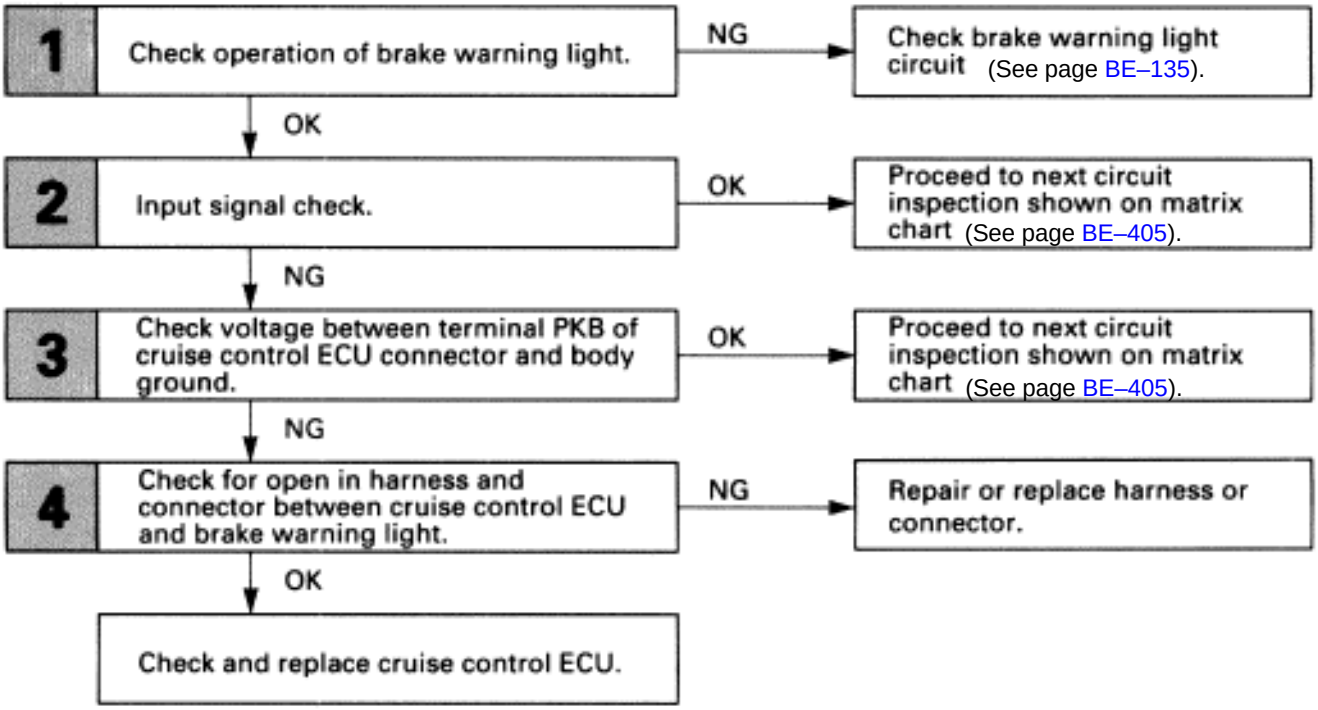
Check and replace ECM.

Parking Brake Switch Circuit

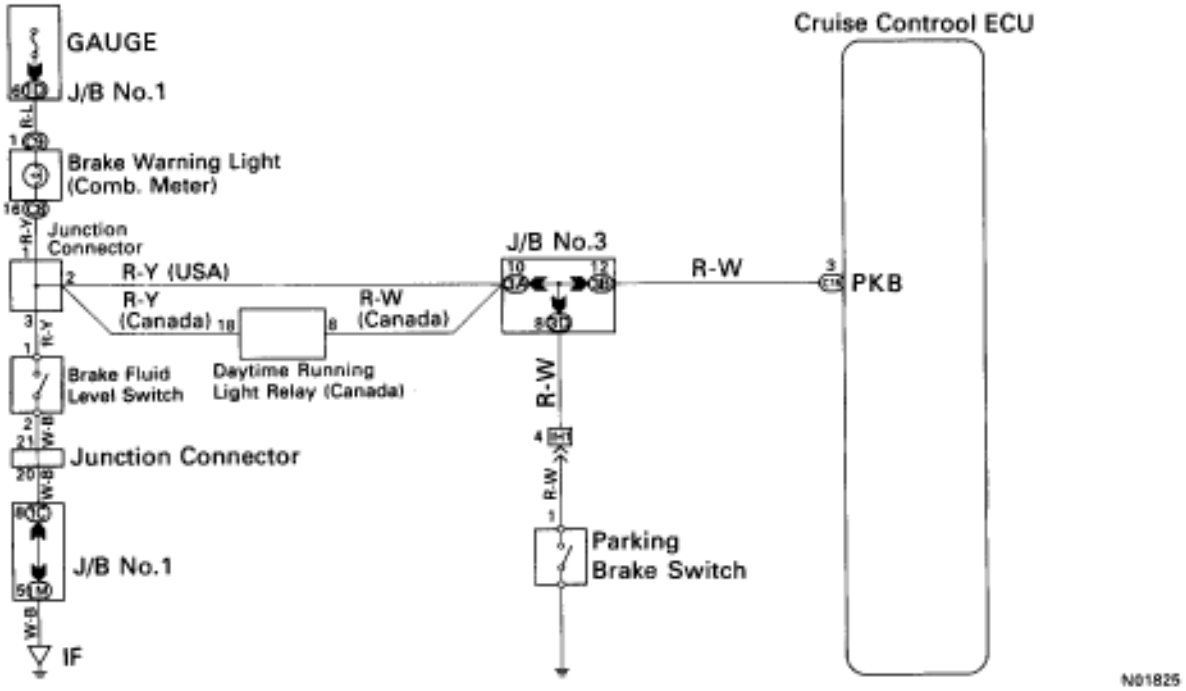
CIRCUIT DESCRIPTION

When the parking brake is operating, the parking brake switch sends a signal to the ECU. When this signal is input to the ECU during cruise control driving, the ECU cancels cruise control.

DIAGNOSTIC CHART



WIRING DIAGRAM



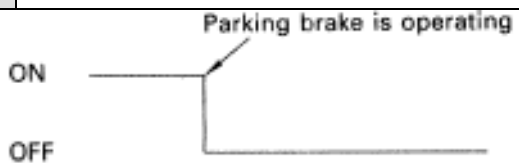
INSPECTION PROCEDURE

1	Check operation of brake warning light.
C	Check that the brake warning light in the instrument panel comes on when the parking brake is operating with the engine running, and the light goes off when the parking brake is not operating.

OK

NG → **Check brake warning light circuit (See page BE–135).**

2	Input signal check.



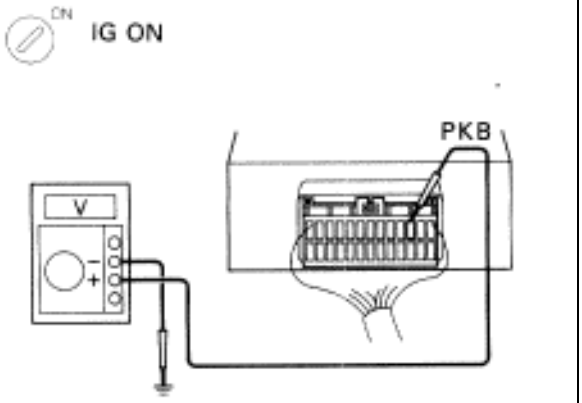
C
1. See input signal check on page BE–400.
2. Check the indicator light when the parking brake is operating.

OK **The indicator light goes off when the parking brake is operating.**

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

3	Check voltage between terminal PKB of cruise control ECU connector and body ground.



P Remove cruise control ECU with connectors still connected.

C
1. Turn ignition switch ON.
2. Measure voltage between terminal PKB of cruise control ECU connector and body ground, when the parking brake lever is operating.

OK

Switch Position	Voltage
ON (lever pulled)	Below 1 V
OFF (lever released)	10 – 14 V

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

4	Check for open in harness and connector between cruise control ECU and brake warning light. (See page IN–27).

OK

NG → **Repair or replace harness or connector.**

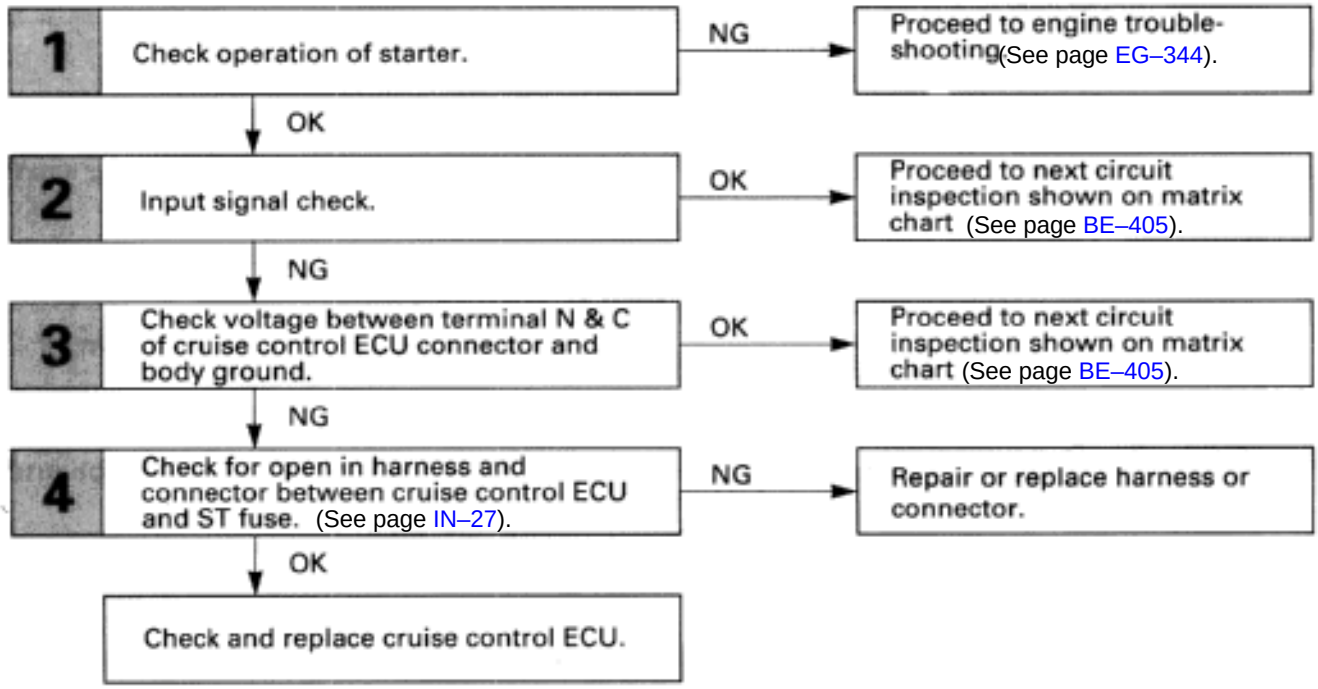
Check and replace cruise control ECM.

Park/Neutral Position Switch

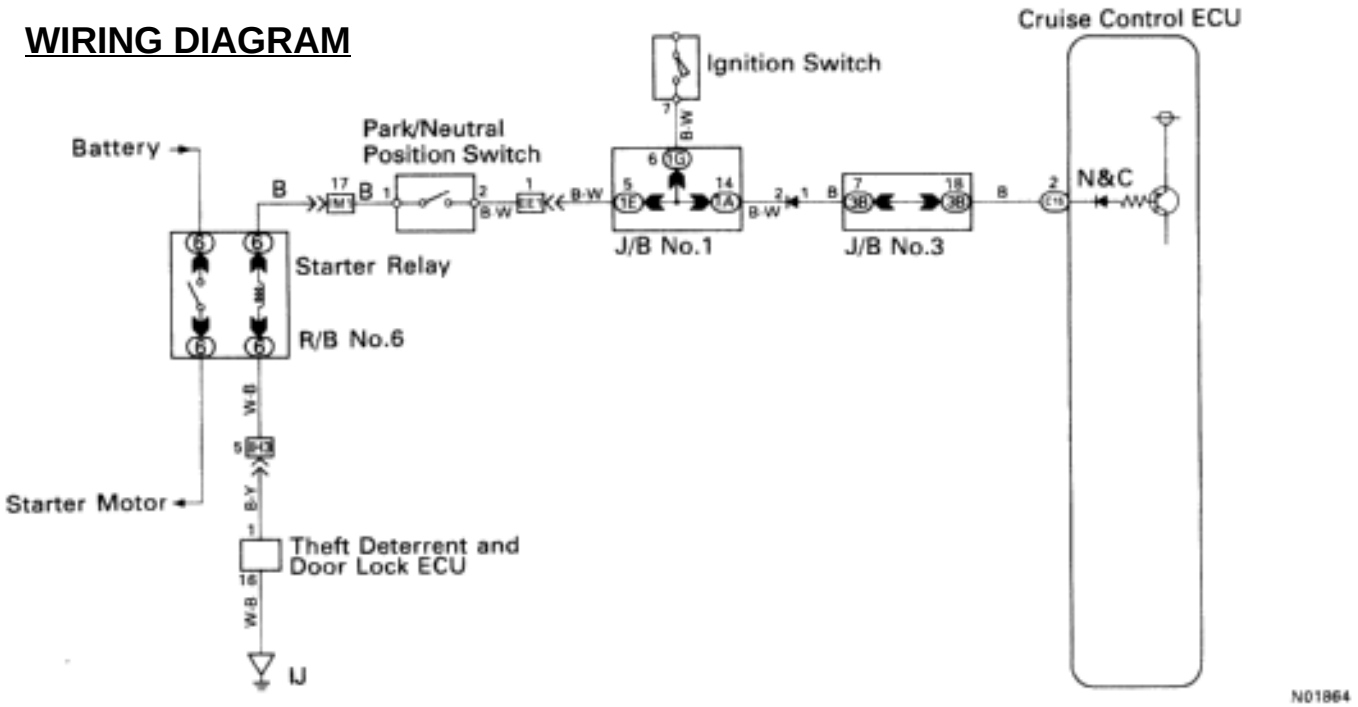
CIRCUIT DESCRIPTION

When the shift position is put in P or N, a signal is sent from the park/neutral position switch to the ECU. When this signal is input during cruise control driving, the ECU cancels the cruise control.

DIAGNOSTIC CHART



WIRING DIAGRAM



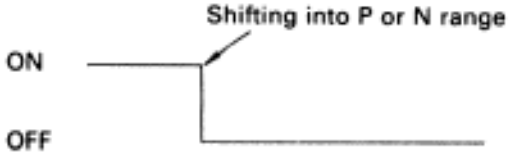
INSPECTION PROCEDURE

1	Check operation of starter.
C	Check that the starter operates normally and that the engine starts.

OK

NG **Proceed to engine troubleshooting (See page EG–344).**

2	Input signal check.



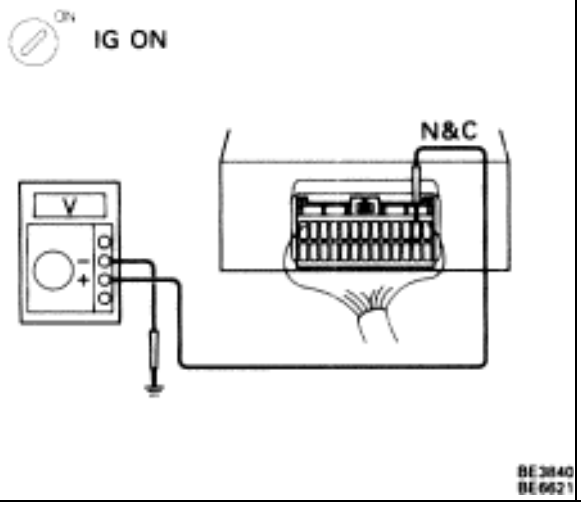
C
1. See input signal check on page BE–400.
2. Check the indicator light when shifting into P range or N range.

OK **The indicator light goes off when shifting into P range or N range.**

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

3	Check voltage between terminal N & C of cruise control ECU connector and body ground.



P Remove cruise control ECU with connectors still connected.

C
1. Turn ignition switch ON.
2. Measure voltage between terminal N & C of cruise control ECU connector and body ground, when shifting into P, N, range and other ranges.

OK

Switch Position	Voltage
P or N range	Below 1 V
Other ranges	10 – 14 V

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

4	Check for open in harness and connector between cruise control ECU and ST fuse. (See page IN–27).

OK

NG **Repair or replace harness or connector.**

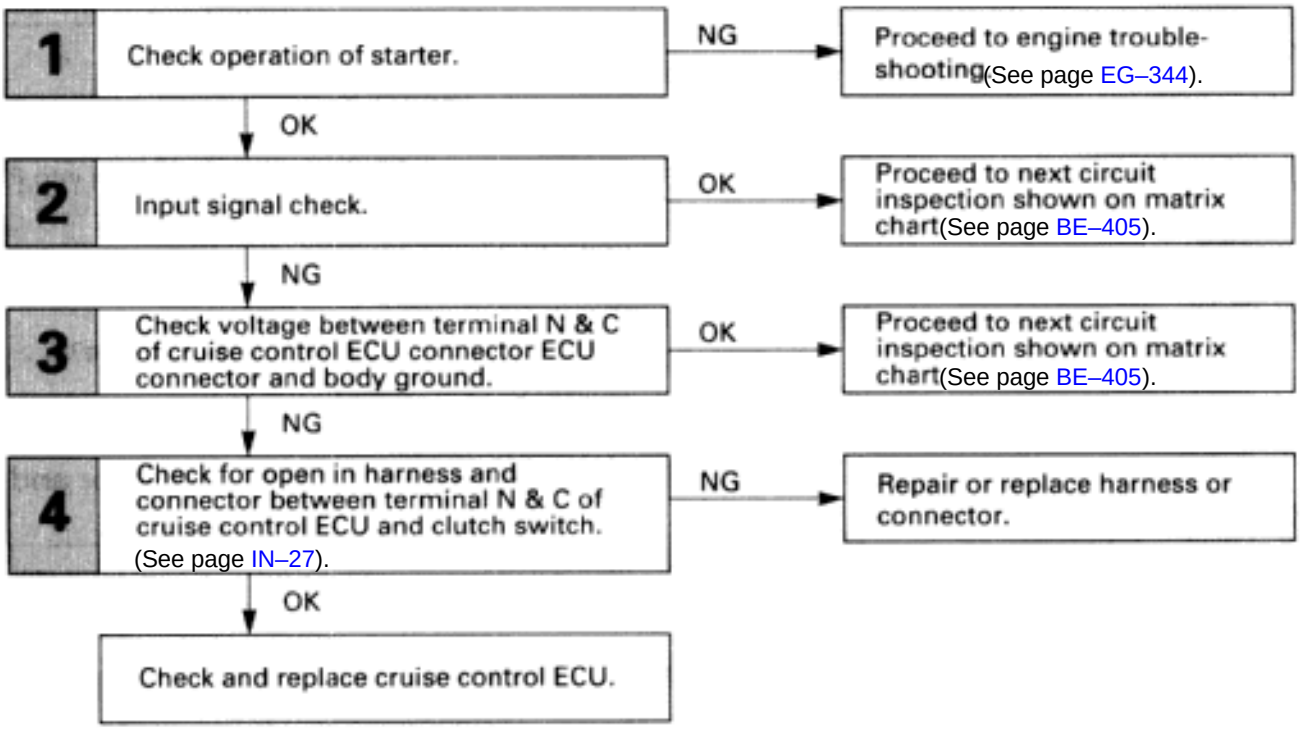
Check and replace cruise control ECU.

Clutch Switch Circuit

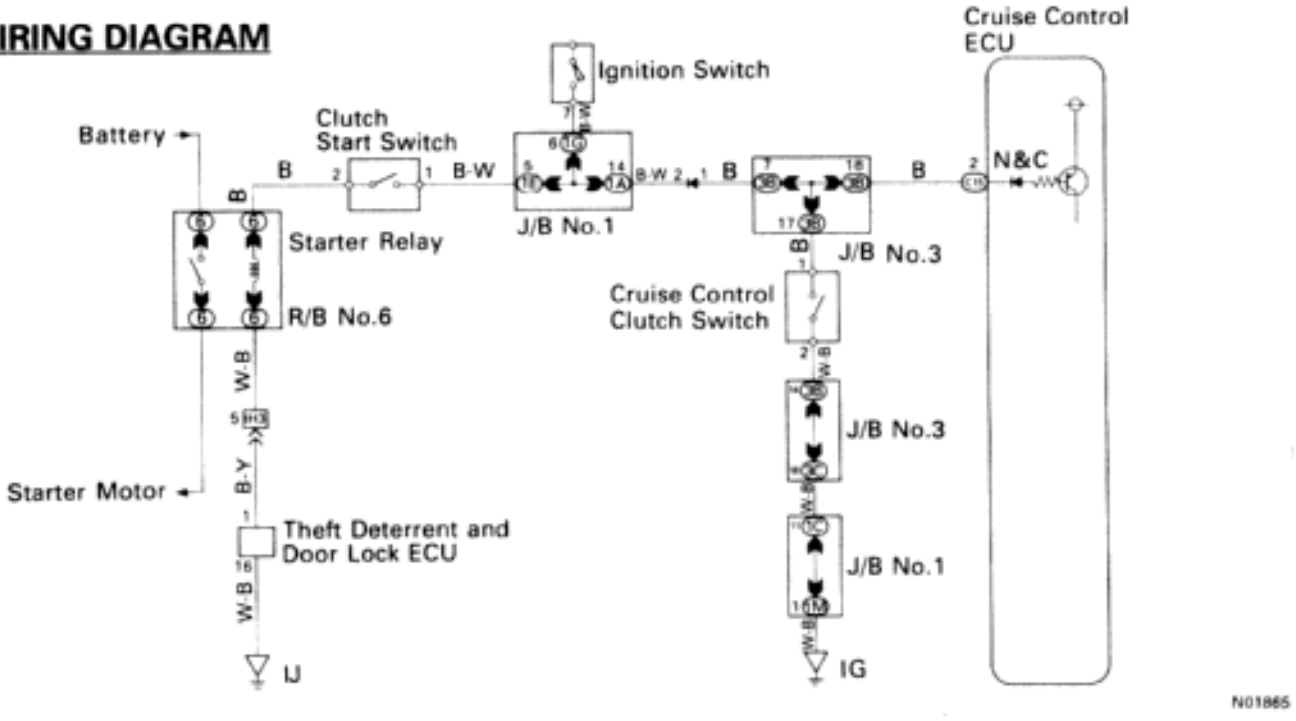
CIRCUIT DESCRIPTION

When the clutch pedal is depressed, the clutch switch sends a signal to the ECU, when this signal is input to the ECU during cruise control driving, the ECU cancels cruise control.

DIAGNOSTIC CHART



WIRING DIAGRAM



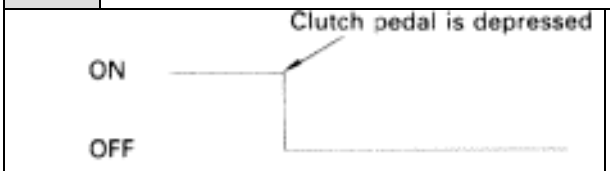
INSPECTION PROCEDURE

1	Check operation of starter.
C	Check that the starter operates normally and that the engine starts.

OK

NG **Proceed to engine troubleshooting (See page EG–344).**

2	Input signal check.



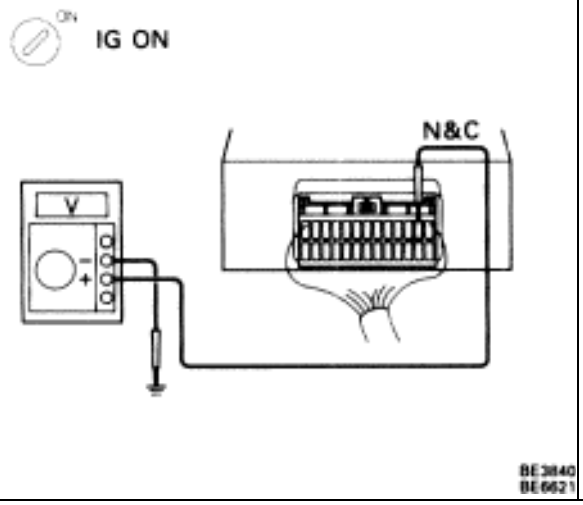
C
1. See input signal check on page BE–400.
2. Check the indicator light when shifting into P range or N range.

OK **The indicator light goes off when the clutch pedal is depressed.**

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

3	Check voltage between terminal N & C of cruise control ECU connector and body ground.



P Remove cruise control ECU with connectors still connected.

C
1. Turn ignition switch ON.
2. Measure voltage between terminal N & C of cruise control ECU connector and body ground, when the clutch pedal is depressed.

OK

Switch Position	Voltage
ON (pedal depressed)	Below 1 V
OFF	10 – 14 V

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

4	Check for open in harness and connector between cruise control ECU and ST fuse.

OK

NG **Repair or replace harness or connector.**

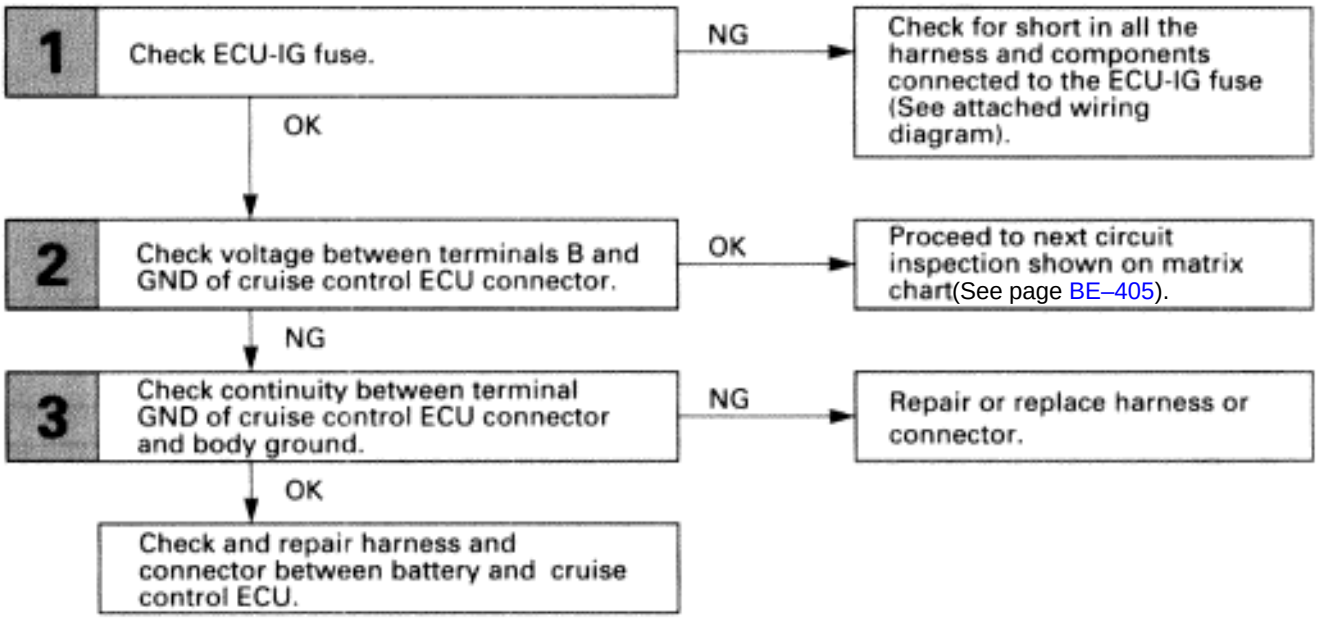
Check and replace cruise control ECU.

ECU Power Source Circuit

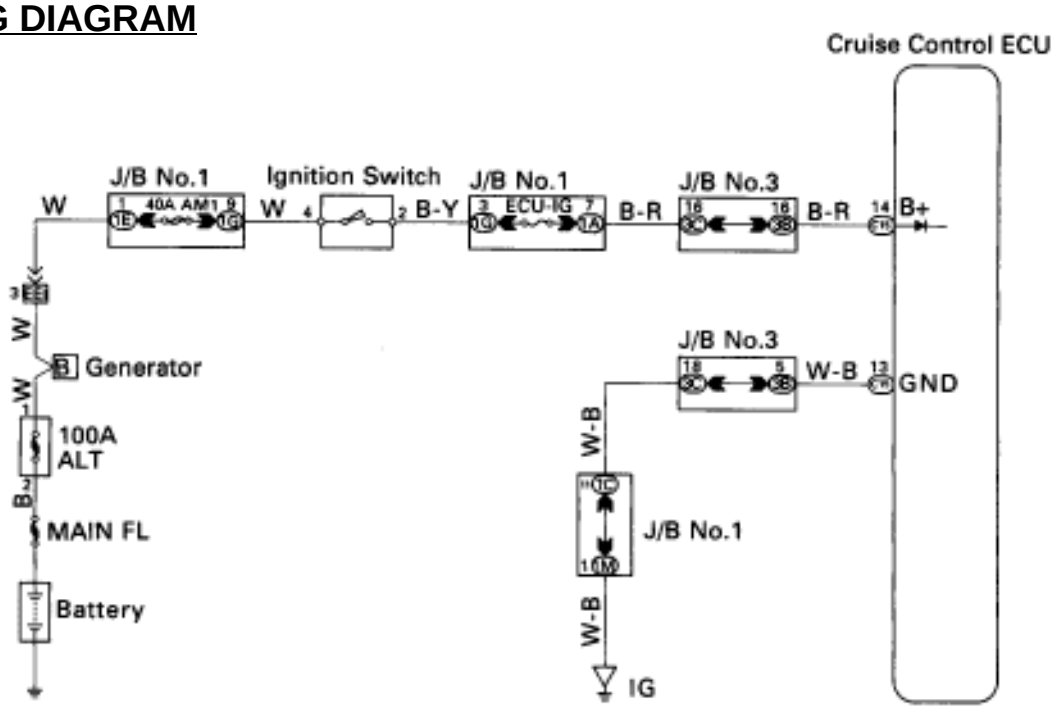
CIRCUIT DESCRIPTION

The ECU power source supplies power to the actuator. Terminal GND and the cruise control ECU case are grounded.

DIAGNOSTIC CHART



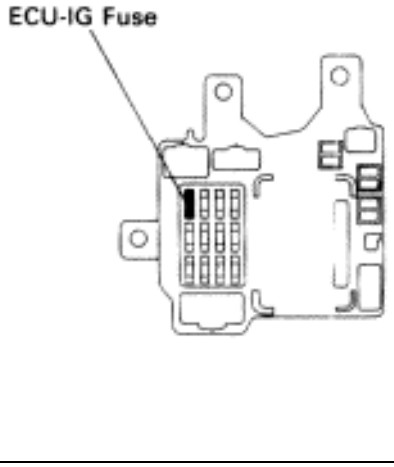
WIRING DIAGRAM



N01826

INSPECTION PROCEDURE

1 **Check ECU–IG fuse.**



P Remove ECU–IG fuse from J/B No. 1.

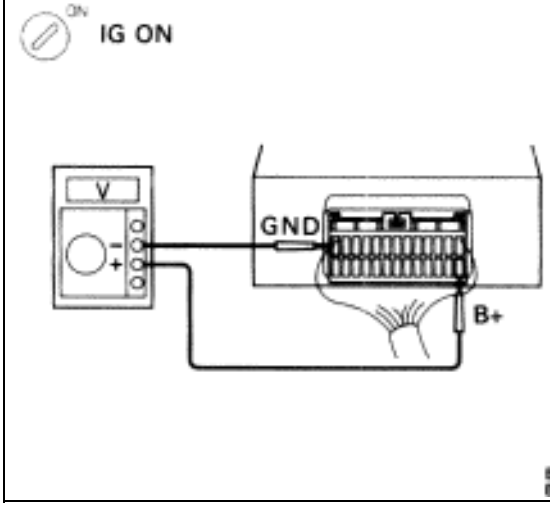
C Check continuity of ECU–IG fuse.

OK **Continuity**

OK

NG **Check for short in all the harness and components connected to the ECU–IG fuse (See attached wiring diagram).**

2 **Check voltage between terminals B+ and GND of cruise control ECU connector.**



P Remove cruise control ECU with connectors still connected.

C
1. Turn ignition switch ON.
2. Measure voltage between terminals B+ and GND of cruise control ECU connector.

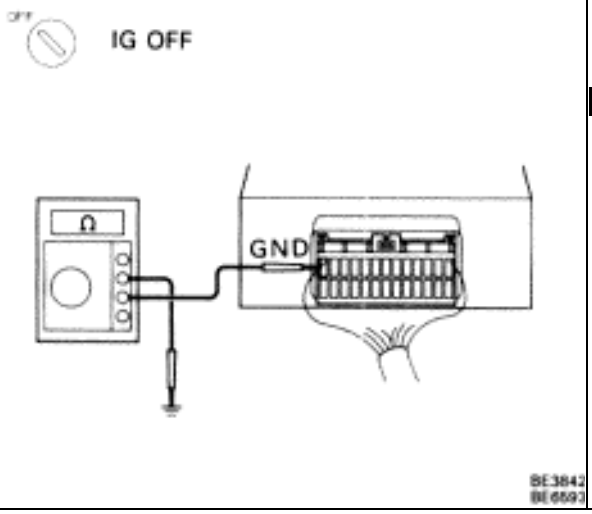
OK **Voltage:** **10 – 14 V**

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–405)**

Go to step .

3	Check continuity between terminal GND of cruise control ECU connector and body ground.



C Measure resistance between terminal GND of cruise control ECU connector and body ground.

OK **Resistance: Below 1 Ω**

OK → **NG** → **Repair or replace harness or connector.**

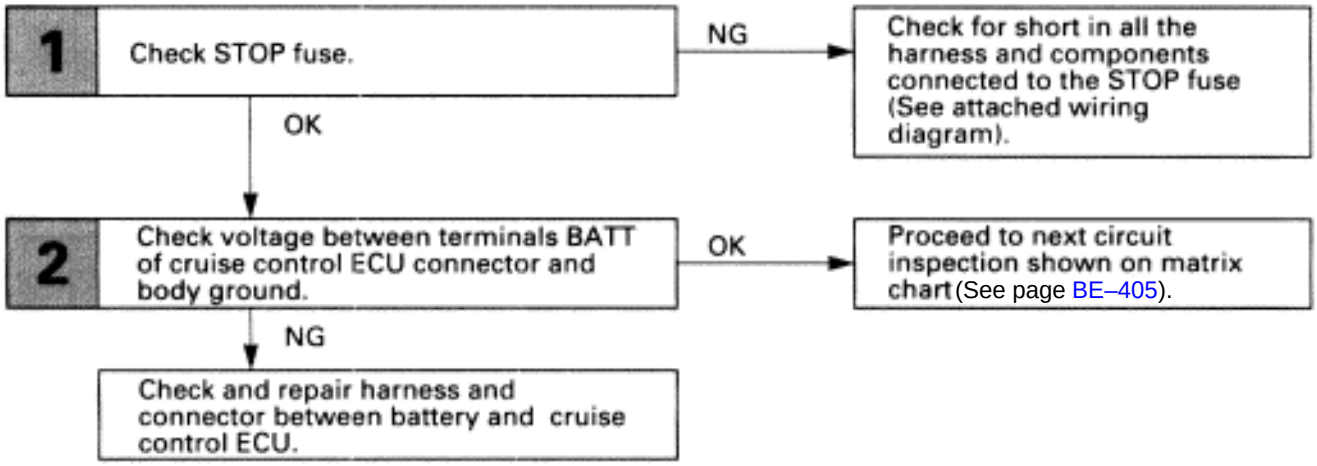
Check and repair harness and connector between battery and cruise control ECU.

Back–up Power Source Circuit

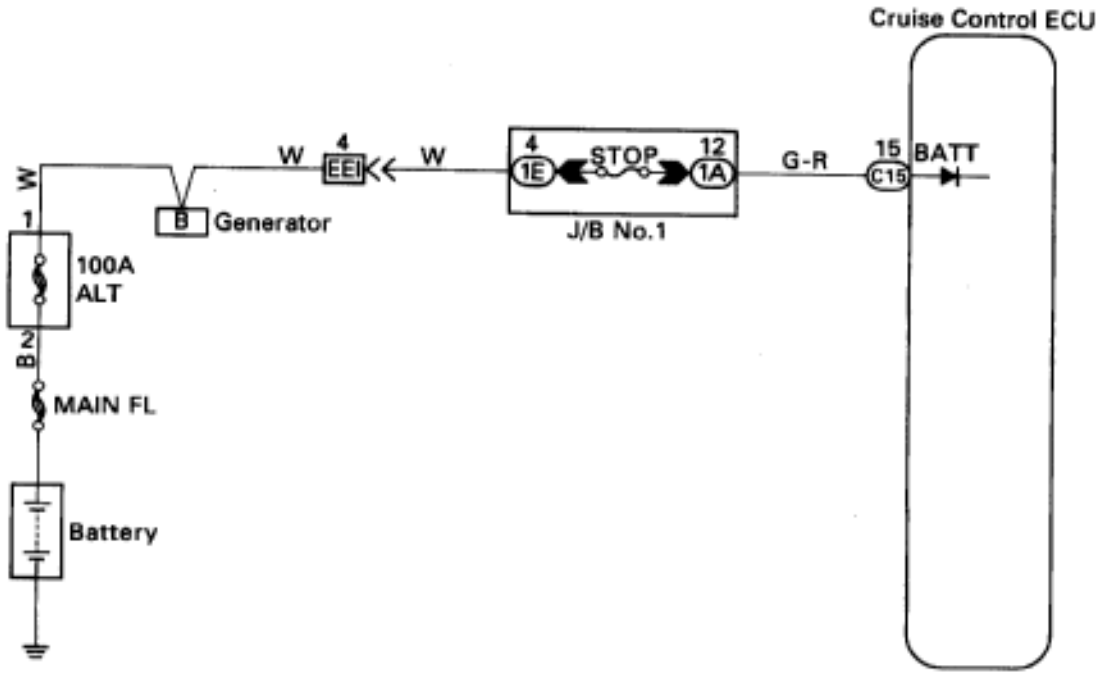
CIRCUIT DESCRIPTION

The ECU back–up power source provides power even when the ignition switch is off and is used for diagnostic trouble code memory, etc.

DIAGNOSTIC CHART



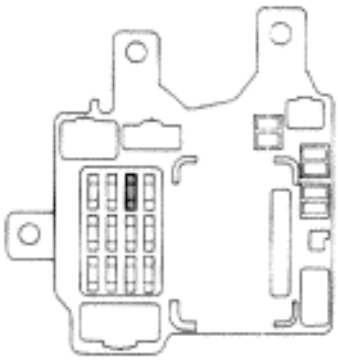
WIRING DIAGRAM



N01827

INSPECTION PROCEDURE

1 **Check STOP fuse.**



P Remove STOP fuse from J/B No. 1.

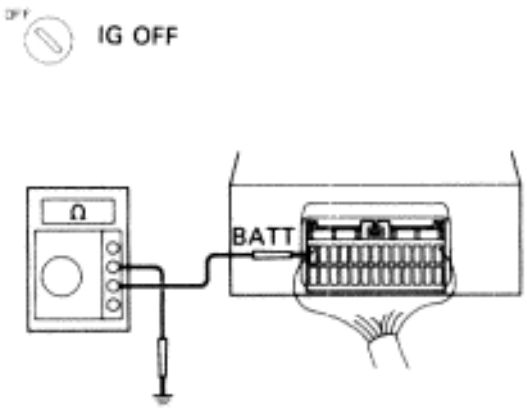
C Check continuity of STOP fuse.

OK **Continuity**

OK

NG **Check for short in all the harness and components connected to the STOP fuse (See attached wiring diagram).**

2 **Check voltage between terminals BATT of cruise control ECU connector and body ground.**



P Remove cruise control ECU with connectors still connected.

C Measure voltage between terminal BATT of cruise control ECU connector and body ground.

OK **Voltage:** **10 – 14 V**

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–405)**

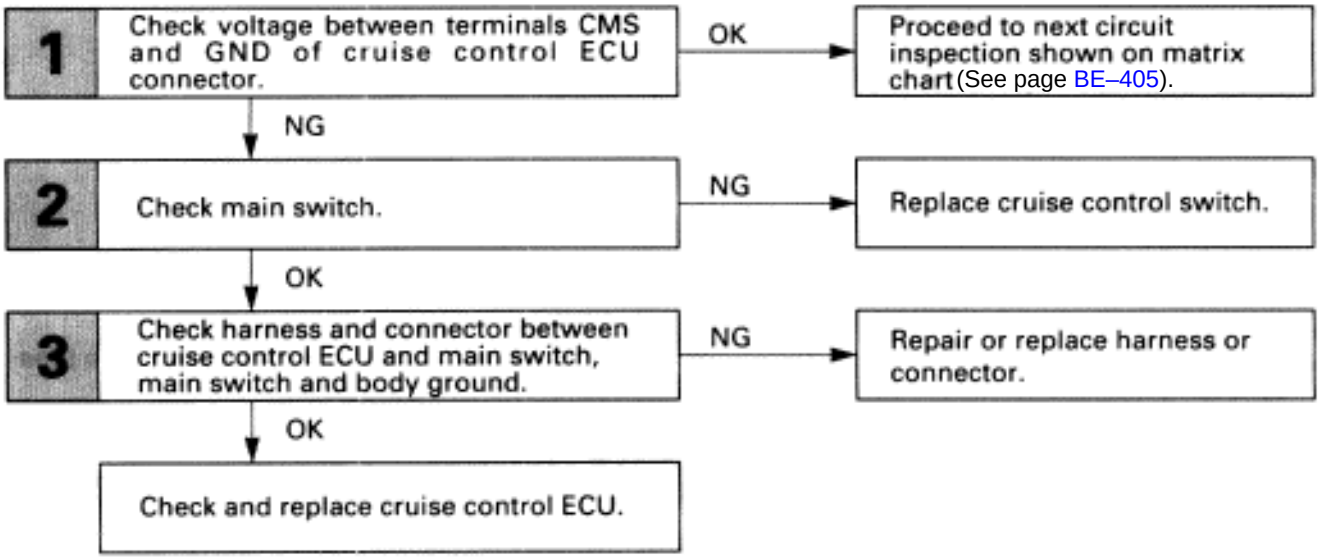
Check and repair harness and connector between battery and cruise control ECU.

Main Switch Circuit (Cruise Control Switch)

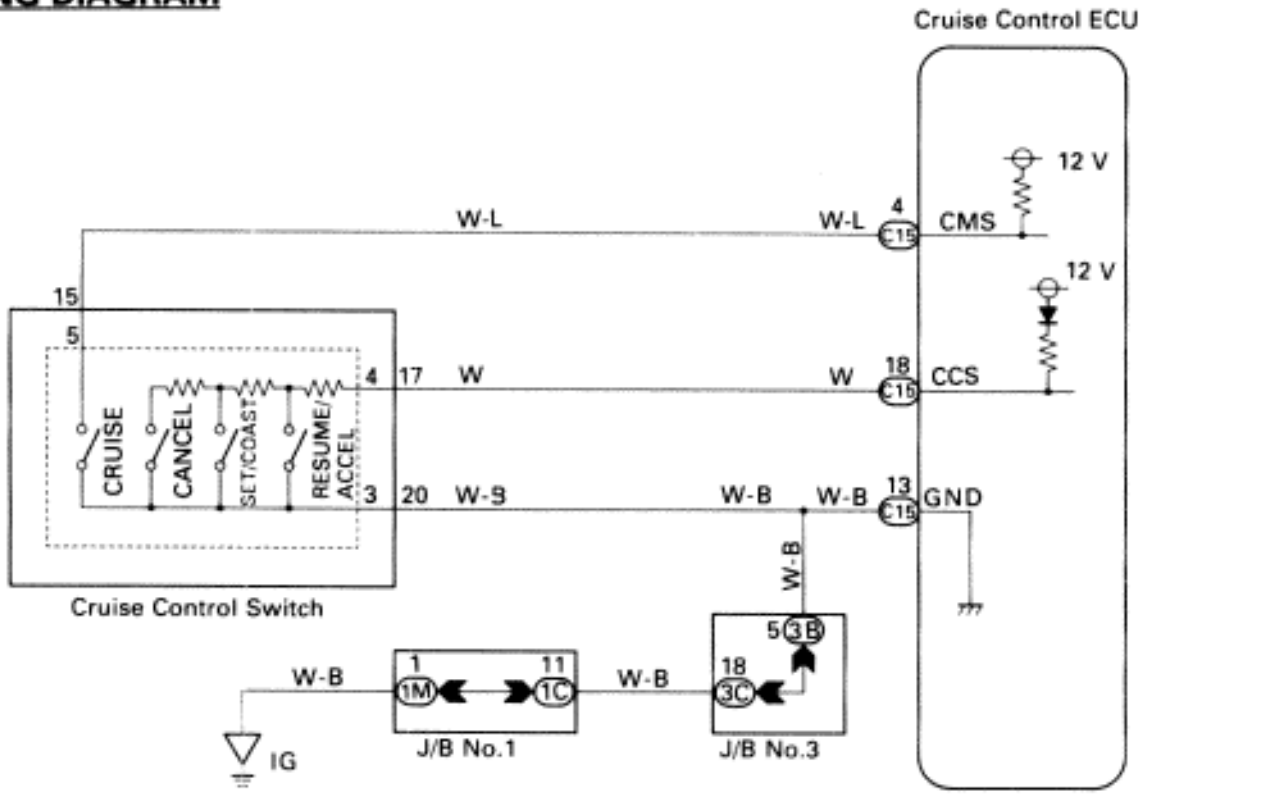
CIRCUIT DESCRIPTION

When the cruise control main switch is turned off, the cruise control does not operate.

DIAGNOSTIC CHART

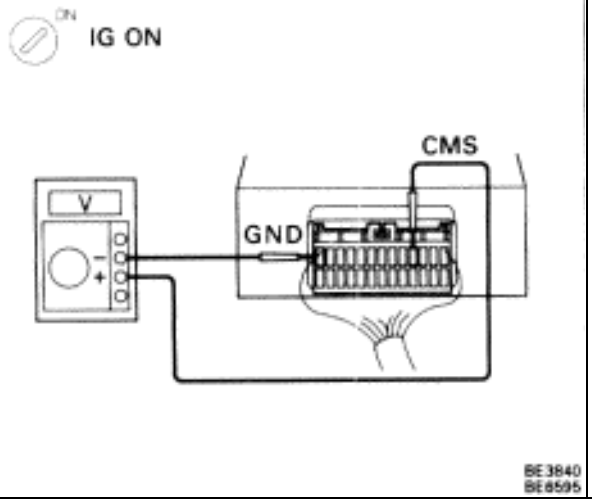


WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check voltage between terminals CMS and GND of cruise control ECU connector.**



P
1. Remove cruise control ECU with connectors still connected.
2. Turn ignition switch ON.

C Measure voltage between terminals CMS and GND of cruise control ECU connector when main switch is held on and off.

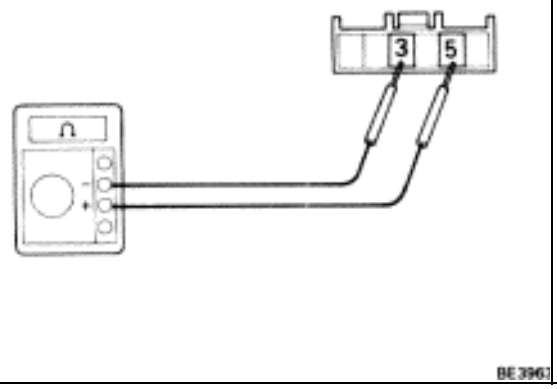
OK

Main switch	Voltage
OFF	10 – 14 V
Hold on	Below 1 V

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

2 **Check main switch .**



P
1. Remove steering wheel center pad (See page AB–14).
2. Disconnect cruise control switch connector.

C Check continuity between terminals 3 and 5 of cruise control switch connector when main switch is held on and off.

OK

Terminals / Main switch	3	5
OFF		
Hold on	○—○	

○—○ continuity

OK

NG → **Replace control switch.**

3 **Check harness and connector between cruise control ECU and main switch, main switch and body ground.**

OK

NG → **Repair or replace harness or connector.**

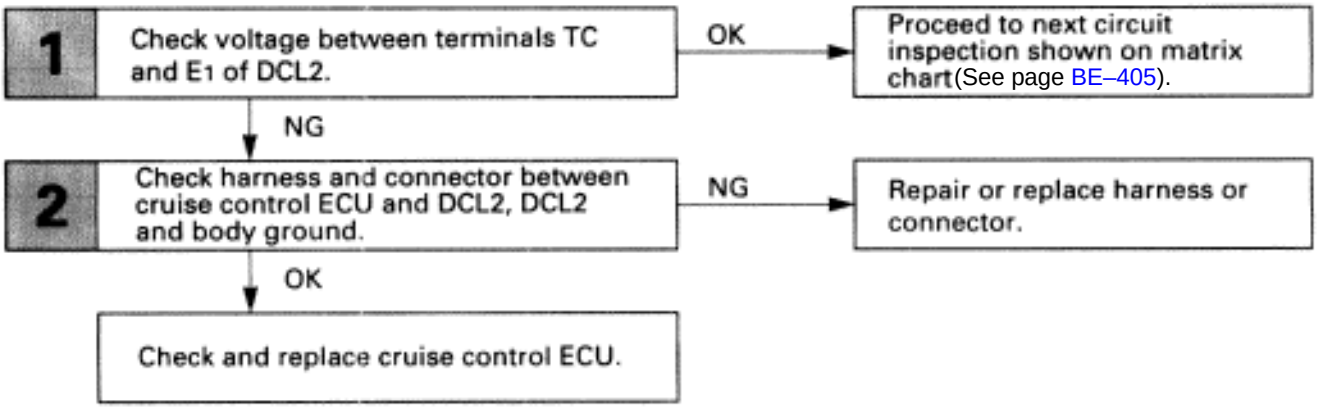
Check and replace cruise control ECM.

TC Circuit

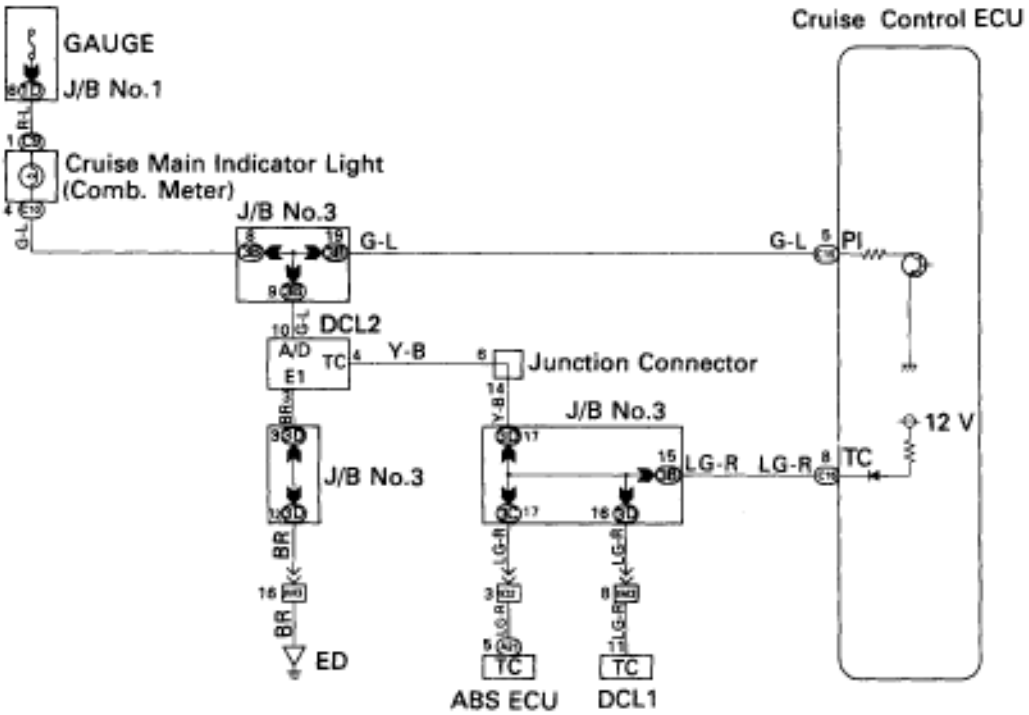
CIRCUIT DESCRIPTION

This circuit sends a signal to the ECU that diagnostic trouble code output is required.

DIAGNOSTIC CHART



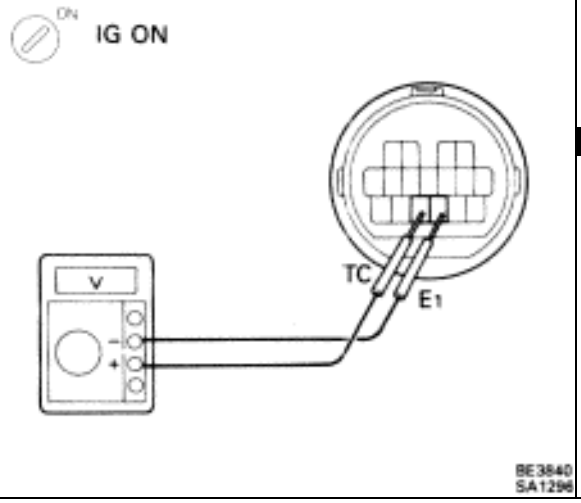
WIRING DIAGRAM



NO1830

INSPECTION PROCEDURE

1 **Check voltage between terminals TC and E1 of DCL2.**



C
1. Turn ignition switch ON.
2. Measure voltage between terminals TC and E1 of DCL2.

OK **Voltage: 10 – 14 V**

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–405).**

2 **Check harness and connector between cruise control ECU and DCL2, DCL2 and body ground. (See page IN–27).**

OK

NG **Repair or replace harness or connector.**

Check and replace cruise control ECU.

Actuator Control Cable Inspection

C

1. Check that the actuator, control cable and throttle link are properly installed and that the cable and link are connected correctly.
2. Check that the actuator and throttle link are operating smoothly.
3. Check that the cable is not loose or too tight.

Hint

1. If the control cable is very loose, the vehicle's loss of speed going uphill will be large.
2. If the control cable is too tight, the idle rpm will become high.