BODY ELECTRICAL SYSTEM

BE04P–04

PRECAUTION

HINT:

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

1. HEADLIGHT SYSTEM (Halogen bulb)

Halogen bulbs have pressurized gas inside and require special handling. They can burst if scratched or dropped. Hold a bulb only by its plastic or metal case. Don't touch the glass part of a bulb with bare hands.

2. HEADLIGHT SYSTEM (HID bulb)

- HID bulbs have pressurized gas inside and require special handling.
  They can burst or scatter if scratched or dropped. Hold a bulb only by its plastic or metal case.
  Don't touch the glass part of a bulb with bare hands.
- When high voltage socket of discharge headlight is touched with the light control switch HEAD, high voltage of 20,000 V is momentarily generated. This might lead to a serious accident.
- Never connect the tester to the high voltage socket of discharge headlight for measurement, as this leads to a serious because of high voltage.
- When performing operation related to the discharge headlight, make sure to do it in the place with no water of rain to prevent electric shock, with light control switch OFF, battery terminal removed, connector of light control ECU disconnected.
- When performing operation related to the discharge headlight, make sure to do it after assembling has been completely over and never light up without a bulb installed.

3. SRS (SUPPLEMENTAL RESTRAINT SYSTEM)

The LEXUS ES300 is equipped with an SRS (Supplemental Restraint System) such as the driver airbag and front passenger airbag. Failure to carry out service operation in the correct sequence could cause the SRS to unexpectedly deploy during servicing, possibly leading to a serious accident. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the precautionary notices in the RS section.

4. AUDIO SYSTEM

- If the negative (–) terminal cable is disconnected from the battery, the preset AM, FM 1 and FM 2 stations stored in memory are erased, so make sure to note the stations and reset them after the negative (–) terminal cable is reconnected to the battery.
- If the negative (–) terminal cable is disconnected from the battery, the "ANTI–THEFT SYSTEM" will operate when the cable 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.

5. MOBILE COMMUNICATION SYSTEM

If the vehicle is equipped with a mobile communication system, refer to precautions in the IN section.

- Do not light up the discharge headlight using another power source except vehicle's.
- When there is a defect on the discharge headlight or any shock has been applied to it, replace the light with a new one.
  Even if the light operates normally, there is a possibility that the fail–safe function not works.

TROUBLESHOOTING

BE1BH–01

PROBLEM SYMPTOMS TABLE

POWER OUTLET

Symptom	Suspect Area	See page
Electric power source cannot be taken out of the power outlet.	1. Battery 2. POWER OUTLET Fuse 3. Wire Harness	– – –

HEADLIGHT AND TAILLIGHT SYSTEM:

Symptom	Suspect Area	See page
Only one headlight comes on.	1. Daytime Running Light No.2, 3, 4 Relay 2. Daytime Running Light Main Relay 3. Bulb 4. *Headlight (Light Control ECU) 5. Wire Harness	BE–28 BE–28 – – –
”LO–Beam” does not light (All).	1. Headlight Control Relay 2. *Headlight (Light Control ECU) 3. Wire Harness	BE–28 – –
”LO–Beam” does not light (One side).	1. Bulb 2. HEAD LH(LWR) Fuse 3. HEAD RH(LWR) Fuse 4. *Headlight (Light Control ECU) 5. Wire Harness	– BE–12 BE–12 – –
”HI–Beam” does not light (All).	1. Headlight Dimmer Switch 2. Daytime Running Light Main Relay 3. Wire Harness	BE–28 BE–28 –
”HI–Beam” does not light (One side).	1. Bulb 2. HEAD LH(UPR) Fuse 3. HEAD RH(UPR) Fuse 4. Daytime Running Light No.3 Relay 5. Wire Harness	– BE–12 BE–12 BE–28 –
”Flash” does not light.	1. Headlight Dimmer Switch 2. Daytime Running Light Main Relay 3. Wire Harness	BE–28 BE–28 –
Headlight does not come on.	1. Headlight Control Relay 2. Daytime Running Light Main Relay 3. Daytime Running Light No.2, 3, 4 Relay 4. Headlight Dimmer Switch 5. Light Control Switch 6. Wire Harness 7. *Headlight (Light Control ECU) 8. Bulb	BE–28 BE–28 BE–28 BE–28 BE–28 – – –
Headlight does not come on with light control switch in HEAD.	1. Light Control Switch 2. *Headlight (Light Control ECU) 3. Wire Harness	BE–28 – –
Headlight does not go out with light control switch in OFF.	1. Headlight Control Relay 2. *Headlight (Light Control ECU) 3. Wire Harness	BE–28 – –
Headlight flickers.	1. Bulb 2. *Headlight (Light Control ECU) 3. Wire Harness	– BE–28 –
Headlight is dark.	1. Bulb 2. *Headlight (Light Control ECU) 3. Wire Harness	– – –

Taillight does not come on with light control switch in TAIL.	1. Taillight Control Relay (Instrument Panel J/B) 2. Light Control Switch 3. Wire Harness	BE–28 – –
Taillight does not go out with light control switch in OFF.	1. Taillight Control Relay 2. Light Control Switch 3. Wire Harness	BE–28 BE–28 –
Headlight does not come on with engine running and light control switch in OFF.	1. ECU–B Fuse 2. GAUGE Fuse 3. Daytime Running Light Main Relay 4. Daytime Running Light No.2, 3, 4 Relay 5. Generator L Terminal 6. Parking Brake Switch 7. Wire Harness	BE–12 BE–12 BE–28 BE–28 CH–1 BE–99 –

*: HID Type

HEADLIGHT BEAM LEVEL CONTROL SYSTEM

HINT:

This system fails, the warning light in the instrument cluster comes on.

Symptom	Suspect Area	See page
Beam axis is not controlled. (It is not initialized.) Headlight Beam Level Control System does not operate.	1. PWR–IG Fuse 2. Headlight Beam Level Control Actuator 3. Headlight Beam Level Control ECU 4. Wire Harness Side	– BE–39 BE–39 –
Beam axis is not controlled. (It is initialized.) Headlight Beam Level Control System does not operate.	1. Headlight Beam Level Control ECU 2. Power Source Circuit 3. Height Control Sensor 4. Suspension ECU 5. Headlight Beam Level Control ECU 6. Wire Harness Side	BE–39 BE–39 BE–39 IN–31 BE–39 –
Controlled angle of head light is nnusual. (The angle is controlled.)	1. Height Control Sensor 2. Suspension ECU 3. Headlights 4. Wire Harness Side	BE–39 IN–31 – –
Beam axis position is not stable during driving.	1. ABS System 2. Headlights 3. Wire Harness Side	– – –

FOG LIGHT SYSTEM

Symptom	Suspect Area	See page
Fog light does not light with light control SW HEAD. (Headlight is normal)	1. FOG Fuse (Instrument Panel J/B) 2. Fog Light Relay 3. Fog Light Switch 4. Wire Harness	– BE–43 BE–43 –
Fog light does not light with light control SW HEAD. (Headlight does not light)	1. Other Parts*1 2. Wire Harness	– –
Only one light does not light.	1. Bulb 2. Wire Harness	– –

*1: Inspect Headlight System.

TURN SIGNAL AND HAZARD WARNING SYSTEM

Symptom	Suspect Area	See page
”Hazard” and ”Turn” do not light up.	1. Hazard Warning Switch 2. Turn Signal Flasher 3. Wire Harness	 BE–47 –
The flashing frequency is abnormal.	1. Bulb 2. Turn Signal Switch 3. Wire Harness	– BE–47 –
Hazard warning light does not light up. (Turn signal is normal)	1. HAZARD Fuse (E/G Room J/B) 2. Wire Harness	– –
Either of hazard warning lights does not light up .	1. Hazard Warning Switch 2. Wire Harness	BE–47 –
*1 Turn signal does not light up.	1. Ignition Switch 2. Turn Signal Switch 3. Wire Harness	BE–21 BE–47 –
*2 Turn signal does not light up.	1. TURN Fuse (Instrument Panel J/B) 2. Turn Signal Switch 3. Wire Harness	– BE–47 –
Turn signal does not light up in one direction.	1. Turn Signal Switch 2. Wire Harness	BE–47 –
Only one bulb does not light up.	1. Bulb 2. Wire Harness	– –

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

ILLUMINATION LIGHT SYSTEM

Symptom	Suspect Area	See page
Illumination lights do not light up. (Taillight is normal)	1. PANEL Fuse (Instrument Panel J/B) 2. Wire Harness	– –
Illumination lights do not light up. (Taillight does not light)	1. Taillight Control Relay (Instrument Panel J/B) 2. Other parts* 3. Wire Harness	BE–28 – –
Illumination light with adjustable brightness do not light up.	1. Rheostat Light Control Volume 2. Wire Harness	BE–50 –
Only one light does not light up.	1. Bulb 2. Wire Harness	– –
Brightness does not chang when rheostat volume is trutned. (ALL)	1. Rheostat Light Control Volume 2. Wire Harness	BE–50 –
Brightness does not chang when rheostat volume is trutned. (Only Combination Meter)	1. Combination Meter Assembly 2. Wire Harness	BE–65 –
Glove box does not light up.	1. Glove Box Light Switch 2. Bulb 3. Wire Harness	BE–50 – –

*: Inspect Taillight System.

INTERIOR LIGHT SYSTEM

Symptom	Suspect Area	See page
Only one interior light does not light up.	1. Bulb 2. Wire Harness	– –
Interior lights do not light up (ALL).	1. DOME Fuse (E/G Room J/B) 2. Wire Harness	– –

”Illuminated Entry System” does not operate.	1. Integration Relay (Instrument Panel J/B) 2. Door Courtesy Switch 3. Wire Harness	– BE–53 –
Interior light does not light up.	1. Bulb 2. Interior Light Switch 3. Wire Harness	– BE–53 –
Front personal light does not light up.	1. Bulb 2. Personal Light Switch 3. Wire Harness	– BE–53 –
Vanity light does not light up.	1. Bulb 2. Vanity Light 3. Wire Harness	– BE–53 –
Luggage compartment light does not light up.	1. Bulb 2. Luggage Compartment Door Courtesy Switch 3. Wire Harness	– BE–53 –
Courtesy light does not light up.	1. Bulb 2. Door Courtesy Switch 3. Wire Harness	– BE–53 –

STOP LIGHT SYSTEM

Symptom	Suspect Area	See page
Stop light does not light up.	1. STOP Fuse (Instrument Panel J/B) 2. Stop Light Switch 3. Light Failure Sensor 4. Wire Harness	– BE–58 BE–58 –
Stop light always lights up.	1. Stop Light Switch 2. Wire Harness	BE–58 –
Only one light always lights up.	1. Wire Harness	–
Only one light does not light.	1. Bulb 2. Wire Harness	– –

WIPER AND WASHER SYSTEM

Symptom	Suspect Area	See page
Wiper and washers do not operate.	1. WIPER Fuse (Instrument Panel J/B) 2. Wiper Switch 3. Wire Harness	– BE–61 –
Wipers do not operate in LO or HI.	1. Wiper Switch 2. Wiper Motor 3. Wire Harness	BE–61 BE–61 –
Wipers do not operate in INT.	1. Wiper Switch 2. Wiper Motor 3. Wire Harness	BE–61 BE–61 –
Washer motor does not operate.	1. Washer Switch 2. Washer Motor 3. Wire Harness	BE–61 BE–61 –
Wiper do not operate when washer switch is ON.	1. Washer Motor 2. Wire Harness	BE–61 –
Washer fluid does not operate.	1. Washer Hose and Nozzle	–
●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 is wrong.	1. Wiper Switch* 2. Wire Harness	BE–61 – – – –

*: Inspect wiper arm and blade set position.

DEFOGGER SYSTEM

Symptom	Suspect Area	See page
All defogger systems do not operate.	1. DEFOG Fuse (Instrument Panel J/B) 2. HEATER Fuse (Instrument Panel J/B) 3. Defogger Relay (Instrument Panel J/B) 4. Defogger Switch 5. Wire Harness	– – BE–113 BE–113 –
Rear window defogger does not operate.	1. Defogger Wire 2. Choke Coil 3. Wire Harness	– – –
Mirror defogger does not operate.	1. MIRROR–HEATER Fuse (Instrument Panel J/B) 2. Mirror Defogger 3. Wire Harness	– BE–113 –

POWER WINDOW CONTROL SYSTEM

Symptom	Suspect Area	See page
Power window system abnormal operation.	TROUBLE SHOOTING	BE–21 –

POWER DOOR LOCK CONTROL SYSTEM

Symptom	Suspect Area	See page
”Door lock system” does not operate at all.	1. ECU–IG Fuse (Instrument Panel J/B) 2. DOOR Fuse (Instrument Panel J/B) 3. Integration Relay (Instrument Panel J/B) 4. Wire Harness	– – BE–21 –
Door lock system does not operate by manual switch.	1. Power Window Master Switch 2. Door Lock Control Switch 3. Integration Relay (Instrument Panel J/B) 4. Wire Harness	BE–129 BE–136 BE–21 –
Door lock system does not operate by door key.	1. Door Key Lock and Unlock Switch 2. Integration Relay (Instrument Panel J/B) 3. Wire Harness 4. Door Lock Link Disconnected	BE–136 BE–21 – –
Fault in 2–Operation unlock function of Driver’s side door key lock and unlock switch.	1. Door Key Lock and Unlock Switch 2. Integration Relay (Instrument Panel J/B) 3. Wire Harness	BE–136 BE–21 –
Fault in key confine prevention operate.	1. Integration Relay (Instrument Panel J/B) 2. Key Unlock Warning Switch 3. Door Courtesy Switch 4. Wire Harness	BE–21 BE–21 BE–53 –
Only one door lock does not operation.	1. Door Lock Motor 2. Wire Harness	BE–136 –

SLIDING ROOF SYSTEM

Symptom	Suspect Area	See page
Sliding roof jam protection system does not operate.	1. Sliding Roof Gear Assembly	
*1 Sliding roof system does not operate.	1. Power Main Relay (Instrument Panel J/B) 2. Integration Relay (Instrument Panel J/B) 3. Wire Harness	BE–129 BE–21 –
*2 Sliding roof system does not operate.	1. POWER Fuse (Instrument Panel J/B) 2. Integration Relay (Instrument Panel J/B) 3. Sliding Roof Switch 4. Sliding Roof Control Relay 5. Sliding Roof Gear Assembly 6. Wire Harness	– BE–21 BE–158 BE–158 BE–158 –

Sliding roof system operates abnormally.	1. Sliding Roof Control Relay 2. Limit Switch 3. Sliding Roof Switch	BE–158 BE–158 BE–158
Sliding roof system stops operation half way.	1. Sliding Roof Control Relay 2. Limit Switch 3. Sliding Roof Switch 4. Sliding Roof Gear Assembly (Stones or foreign material trapped in motor assembly)	BE–158 BE–158 BE–158 BE–158 –

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

POWER SEAT CONTROL SYSTEM

Symptom	Suspect Area	See page
Power seat does not operate. (Power door lock system does not operate)	1. Wire Harness 2. POWER Fuse (Instrument Panel J/B)	– –
Power seat does not operate. (Power door lock system is normal)	1. Wire Harness 2. Power Seat Switch (D,P)	– BE–160
Driver's seat does not operate.	1. Power seat Switch (D) 2. Wire Harness	BE–160 –
Passenger's seat does not operate.	1. Power Seat Switch (P) 2. Wire Harness	BE–160 –
"Slide operation" does not operate.	1. Power Seat Switch (D,P) 2. Wire Harness 3. Slide Motor (D,P)	BE–160 – BE–160
"Front vertical operation" does not operate.	1. Power Seat Switch (D,P) 2. Wire Harness 3. Front Vertical Motor (D,P)	BE–160 – BE–160
"Rear Vertical operation" does not operate.	1. Power Seat Switch (D,P) 2. Wire Harness 3. Rear Vertical Motor (D,P)	BE–160 – BE–160
"Reclining operation" does not operate.	1. Power Seat Switch (D,P) 2. Wire Harness 3. Reclining Motor (D,P)	BE–160 – BE–160

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

POWER MIRROR CONTROL SYSTEM (w/o Driving position memory)

Symptom	Suspect Area	See page
Mirror does not operate.	1. CIG Fuse (Instrument Panel J/B) 2. Mirror Switch 3. Mirror Motor 4. Wire Harness	– BE–165 BE–165 –
Mirror operates abnormally.	1. Mirror Switch 2. Mirror Motor 3. Wire Harness	BE–165 BE–165 –

POWER MIRROR CONTROL SYSTEM (w/ Driving position memory)

Symptom	Suspect Area	See page
Both right and left mirrors do not operate.	1. RAD–NO.2 Fuse 2. Mirror Switch 3. Remote control mirror ECU 4. ECU–B Fuse 5. Wire Harness	BE–12 BE–165 BE–165 BE–12 –
Only one side of mirror does not operate.	1. Mirror Motor 2. Wire Harness 3. Remote control mirror ECU	BE–165 – BE–165
The mirror does not return to the memorized position.	1. Mirror Position Sensor (Position is not set) 2. Wire Harness 3. Remote control mirror ECU	BE–165 – BE–165
The memorized position is moved.	1. Mirror Position Sensor (Position is not set) 2. Wire Harness	BE–165 –

ELECTRO CHROMIC MIRROR SYSTEM

Symptom	Suspect Area	See page
Electro Chromic Inner Mirror does not operate.	1. ECU–IG Fuse 2. Electro Chromic Inner Mirror 3. Wire Harness	BE–12 BE–172 –
Electro Chromic Outer Mirror does not operate.	1. ECU–IG Fuse 2. Electro Chromic Outer Mirror 3. Electro Chromic Inner Mirror 4. Wire Harness	BE–12 BE–172 BE–172 –

SEAT HEATER SYSTEM

Symptom	Suspect Area	See page
Seat heaters do not operate. (Driver's and Passenger's)	1. SEAT–HEATER Fuse (Instrument Panel J/B) 2. Wire Harness	– –
Driver's seat heater does not operate.	1. Seat Heater Switch (Driver's) 2. Seat Heater (Driver's) 3. Wire Harness	BE–175 BE–175 –
Passenger's seat heater does not operate.	1. Seat Heater Switch (Passenger's) 2. Seat Heater (Passenger's) 3. Wire Harness	BE–175 BE–175 –
Seat heater temperature is too high.	1. Seat Heater	BE–175

FUEL LID OPENER SYSTEM

Symptom	Suspect Area	See page
Fuel lid opener system does not operate.	1. DOOR Fuse (Instrument Panel J/B) 2. Fuel Lid Opener Switch 3. Fuel Lid Opener Solenoid 4. Wire Harness	– BE–178 BE–178 –

GARAGE DOOR OPENER SYSTEM

Symptom	Suspect Area	See page
The equipment of which code has been registered does not operate.	1. Garage Door Opener Switch 2. Wire Harness 3. *	BE–219 – –
LED does not light up. (Even though either switch is pressed.)	1. Garage Door Opener Switch 2. Wire Harness	BE–219 –
LED does not light up. (Only one switch is pressed.)	1. Garage Door Opener Switch	BE–219

* As the GARAGE DOOR OPENER on the vehicle side seems to be normal, check the OPENER on the equipment side, of which code has been registered.

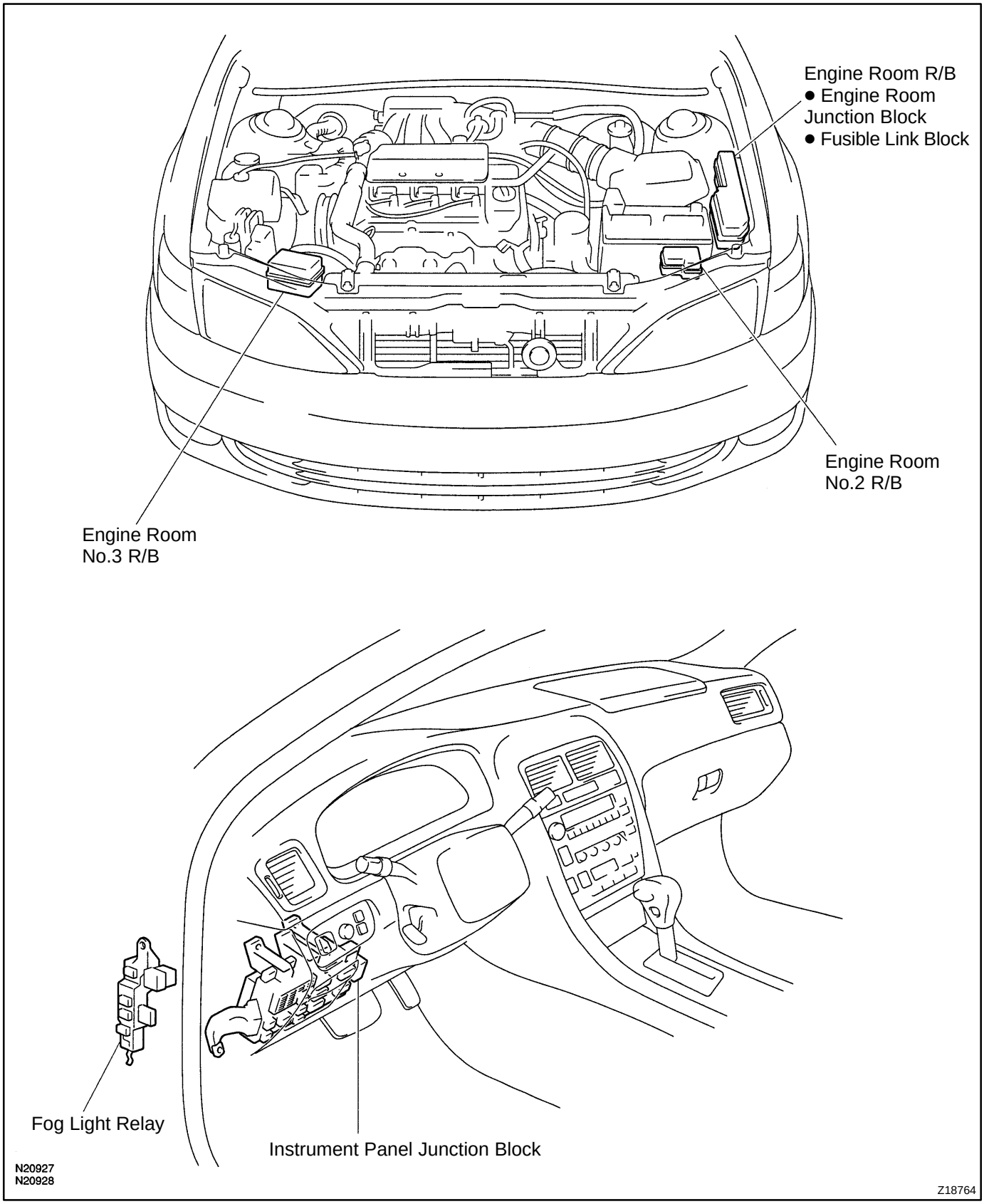
HORN SYSTEM

Symptom	Suspect Area	See page
Horn system does not operate.	1. HORN Fuse (E/G Room J/B) 2. Horn Relay (E/G Room J/B) 3. Horn Switch 4. Horn 5. Wire Harness	– BE–233 BE–233 BE–233 –
Horn blows all the time.	1. Horn Relay (E/G Room J/B) 2. Horn Switch 3. Wire Harness	BE–233 BE–233 –
One horn operates but the other horn does not operate.	1. Horn 2. Wire Harness	BE–233 –
Horns operate abnormally.	1. Horn Relay (E/G Room J/B) 2. Horn 3. Wire Harness	BE–233 BE–233 –

POWER SOURCE

LOCATION

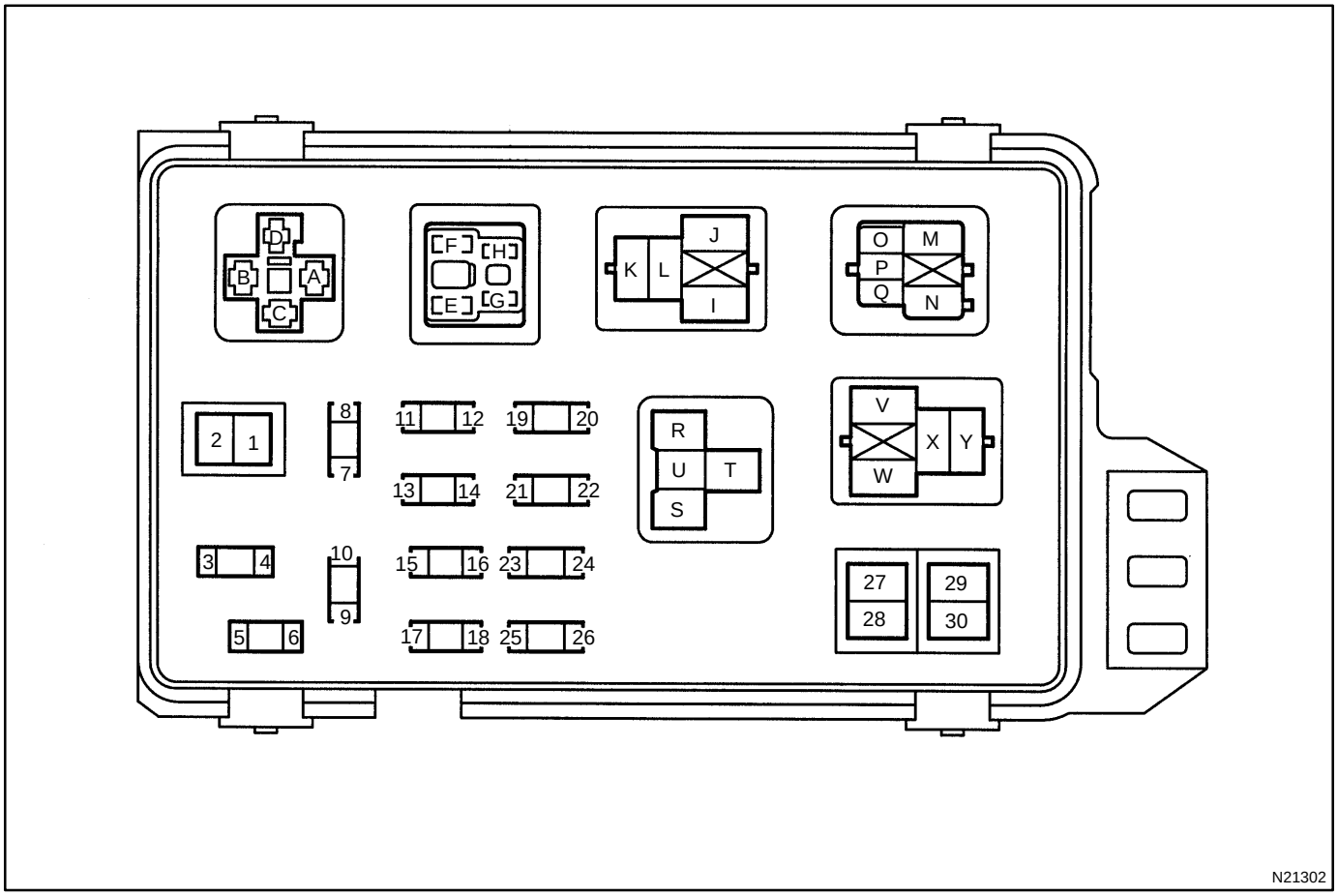
BE04R–02



BE04S–03

INSPECTION

1. INSPECT ENGINE ROOM JUNCTION BLOCK CIRCUIT



(a) Remove the fuse from the junction block and inspect the connector on junction block side.

Fuse	Tester connection	Condition	Specified condition
MAIN	1 – Ground	Constant	Battery positive voltage
DOME	4 – Ground	Constant	Battery positive voltage
ECU–B	6 – Ground	Constant	Battery positive voltage
RADIO No.1	7 – Ground	Ignition switch turned to ACC or ON	Battery positive voltage
SHORT PIN	9 – Ground	Constant	Battery positive voltage
HAZARD	11 – Ground	Constant	Battery positive voltage
AM2	13 – Ground	Constant	Battery positive voltage
TEL	15 – Ground	Constant	Battery positive voltage
HEAD (LH)	17 – Ground	Constant	Battery positive voltage
ALT–S	19 – Ground	Constant	Battery positive voltage
HEAD (RH)	21 – Ground	Constant	Battery positive voltage
EFI	23 – Ground	Constant	Battery positive voltage
HORN	25 – Ground	Constant	Battery positive voltage
RDI	28 – Ground	Constant	Battery positive voltage
CDS	30 – Ground	Constant	Battery positive voltage

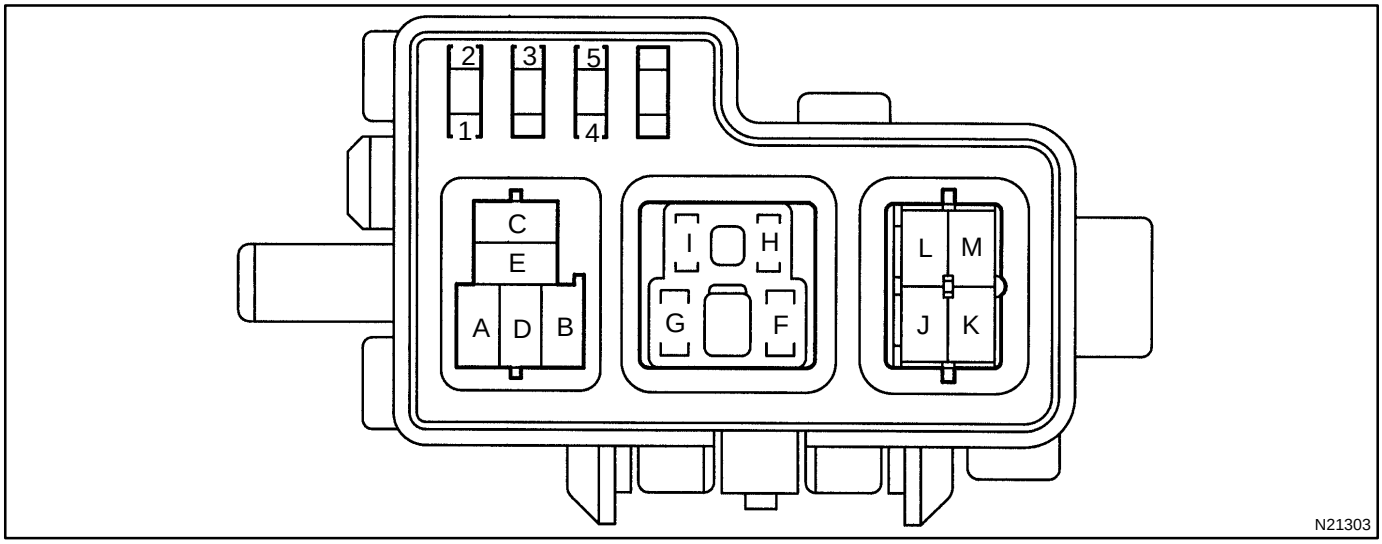
If the circuit is not as specified, inspect the circuits connected to other parts.

(b) Remove the relay from the junction block and inspect the connector on junction block side.

Relay	Tester connection	Condition	Specified condition
ST	C – Ground	Constant	Battery positive voltage
HEAD	E – Ground	Constant	Battery positive voltage
HEAD	H – Ground	Constant	Battery positive voltage
EFI	J – Ground	Constant	Continuity
ENGINE MAIN	M – Ground	Constant	Battery positive voltage
ENGINE MAIN	Q – Ground	Ignition switch turned to ON	Battery positive voltage
FAN No.1	U – Ground	Constant	Battery positive voltage
HORN	V – Ground	Constant	Battery positive voltage
HORN	Y – Ground	Constant	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

2. INSPECT ENGINE ROOM No.2 RELAY BLOCK CIRCUIT



(a) Remove the fuse from the relay block and inspect the connector on relay block side.

Fuse	Tester connection	Condition	Specified condition
H – LP RH (LO)	2 – Ground	Constant	Battery positive voltage
H – LP LH (LO)	3 – Ground	Constant	Battery positive voltage
DRL No.2	5 – Ground	Constant	Battery positive voltage

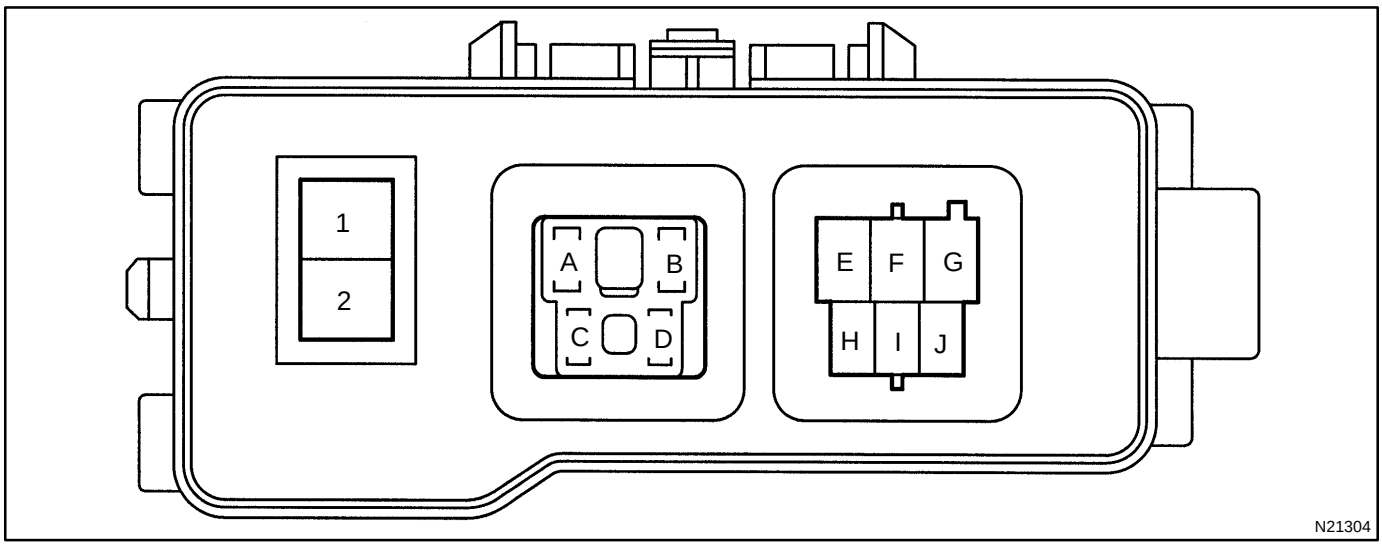
If the circuit is not as specified, inspect the circuits connected to other parts.

(b) Remove the relay from the relay block and inspect the connector on relay block side.

Relay	Tester connection	Condition	Specified condition
DRL No.3	D – Ground	Constant	Continuity
DRL No.3	A – Ground	Constant	Battery positive voltage
DRL No.3	E – Ground	Constant	Battery positive voltage
DRL No.4	H – Ground	Constant	Battery positive voltage
DRL No.4	I – Ground	Constant	Battery positive voltage
DIM	J – Ground	Constant	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

3. INSPECT ENGINE ROOM No.3 RELAY BLOCK CIRCUIT



(a) Remove the fuse from the relay block and inspect the connector on relay block side.

Fuse	Tester connection	Condition	Specified condition
ABS	2 – Ground	Constant	Battery positive voltage

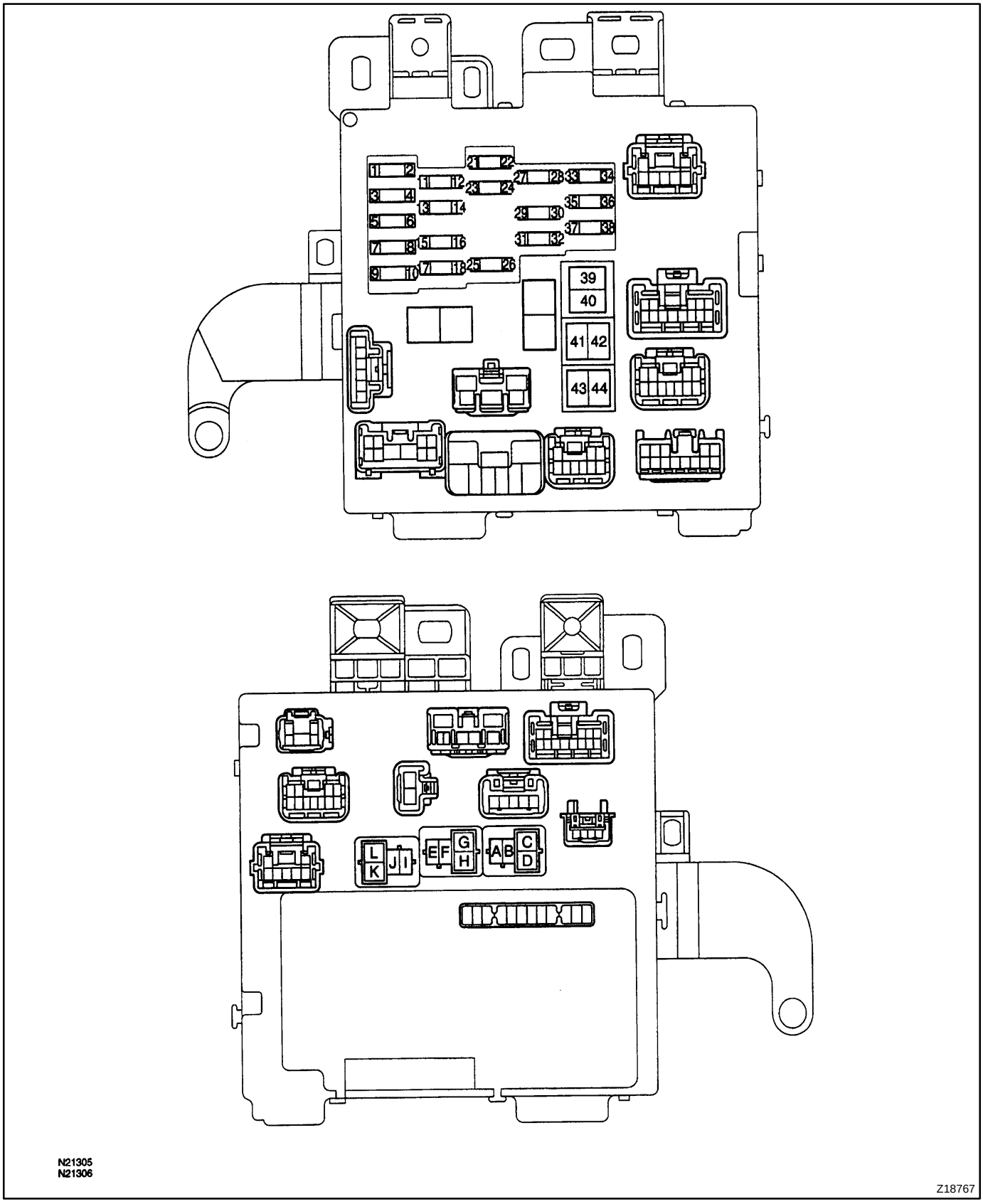
If the circuit is not as specified, inspect the circuits connected to other parts.

(b) Remove the relay from the relay block and inspect the connector on relay block side.

Relay	Tester connection	Condition	Specified condition
ABS SOL	F – Ground	Constant	Continuity
ABS SOL	E – Ground	Constant	Battery positive voltage
ABS MTR	G – Ground	Constant	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

4. INSPECT INSTRUMENT PANEL JUNCTION BLOCK CIRCUIT



(a) Remove the fuse from the instrument panel junction block and inspect the connector on instrument panel junction block side.

Fuse	Tester connection	Condition	Specified condition
S – HTR	2 – Ground	Ignition switch turned to ON	Battery positive voltage
HEATER	3 – Ground	Ignition switch turned to ON	Battery positive voltage
GAUGE	6 – Ground	Ignition switch turned to ON	Battery positive voltage
WIPER	7 – Ground	Ignition switch turned to ON	Battery positive voltage
M – HTR	10 – Ground	Ignition switch turned to ON	Battery positive voltage
ECU – IG	11 – Ground	Ignition switch turned to ON	Battery positive voltage
IGN	14 – Ground	Ignition switch turned to ON	Battery positive voltage
STOP	16 – Ground	Constant	Battery positive voltage
TAIL	18 – Ground	Light control switch turned to TAIL or HEAD and Engine running	Battery positive voltage
PWR	22 – Ground	Ignition switch turned to ON	Battery positive voltage
OBD – 2	24 – Ground	Constant	Battery positive voltage
FOG	26 – Ground	Constant	Battery positive voltage
ST	28 – Ground	Constant	Battery positive voltage
DOOR	29 – Ground	Constant	Battery positive voltage
PANEL	31 – Ground	Constant	Battery positive voltage
TURN	33 – Ground	Ignition switch turned to ON	Battery positive voltage
RAD/2	35 – Ground	Ignition switch turned to ACC or ON	Battery positive voltage
CIG	38 – Ground	Ignition switch turned to ACC or ON	Battery positive voltage
DEF	39 – Ground	Constant	Battery positive voltage
POWER	41 – Ground	Constant	Battery positive voltage
AM1	44 – Ground	Constant	Battery positive voltage

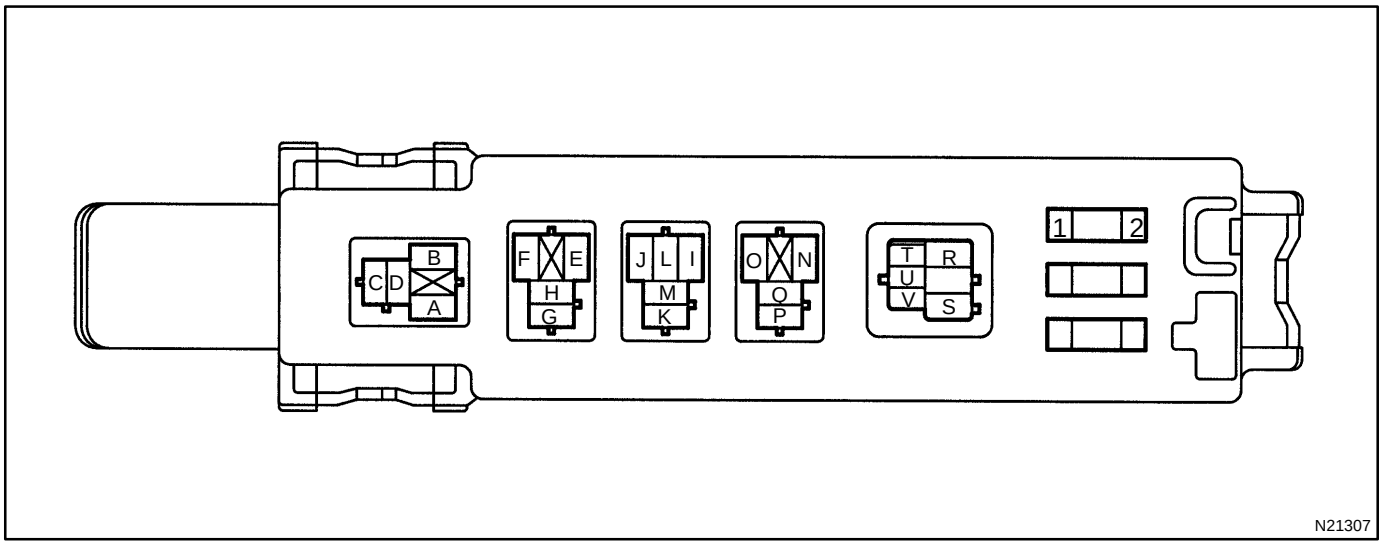
If the circuit is not as specified, inspect the circuits connected to other parts.

(b) Remove the relay from the junction block and inspect inspect the connector on junction block side.

Relay	Tester connection	Condition	Specified condition
Taillight	B – Ground	Constant	Battery positive voltage
Taillight	D – Ground	Constant	Battery positive voltage
Defogger	F – Ground	Constant	Battery positive voltage
Defogger	G – Ground	Defogger switch ON	Battery positive voltage
Power Main	J – Ground	Constant	Battery positive voltage
Power Main	K – Ground	Constant	Continuity

If the circuit is not as specified, inspect the circuits connected to other parts.

5. INSPECT INSIDE ENGINE ROOM JUNCTION BLOCK CIRCUIT



(a) Remove the fuse from the instrument panel junction block and inspect the connector on instrument panel junction block side.

Fuse	Tester connection	Condition	Specified condition
A/F–HTR	2–Ground	Ignition switch turned to ON	Battery positive voltage

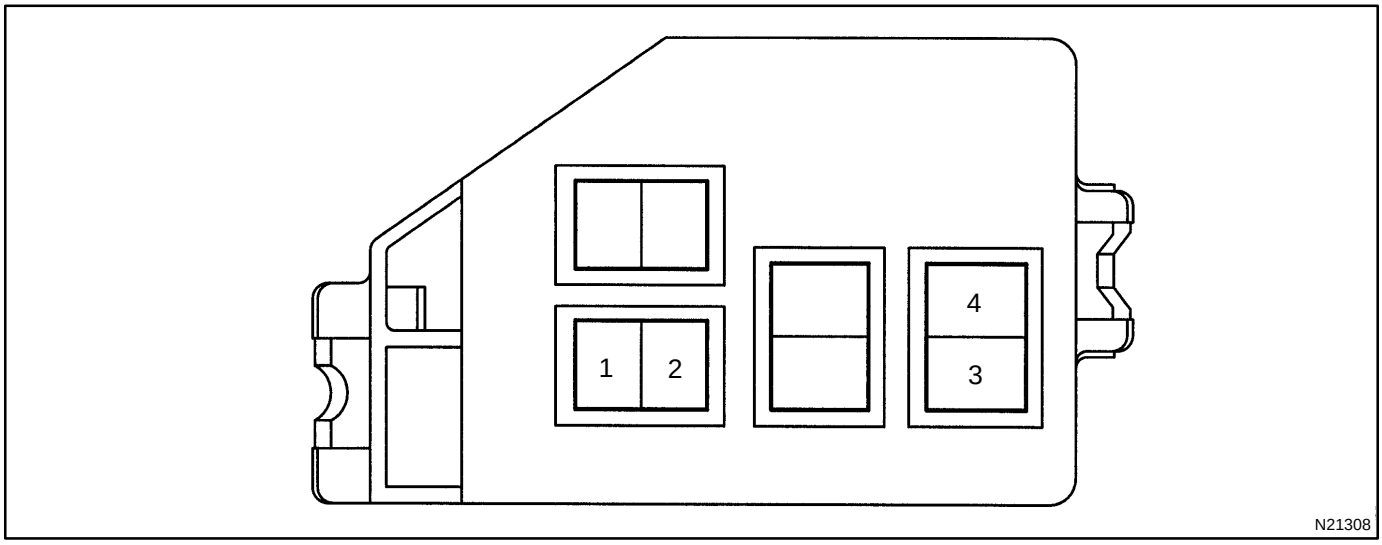
If the circuit is not specified, inspect the circuits connected to other parts.

(b) Remove the relay from the relay block and inspect the connector on relay block side.

Relay	Tester connection	Condition	Specified condition
MG/CLT	C – Ground	Constant	Continuity
MG/CLT	D – Ground	Ignition switch turned to ON	Battery positive voltage
C/OPN	G – Ground	Constant	Continuity
FAN No.2	L – Ground	Constant	Continuity
FAN No.2	J – Ground	Ignition switch turned to ON	Battery positive voltage
FAN No.2	K – Ground	Constant	Battery positive voltage
FAN No.3	P – Ground	Constant	Battery positive voltage
HEATER	U – Ground	Constant	Continuity
HEATER	R – Ground	Ignition switch turned to ON	Battery positive voltage
HEATER	V – Ground	Constant	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

6. INSPECT FUSIBLE LINK BLOCK CIRCUIT



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

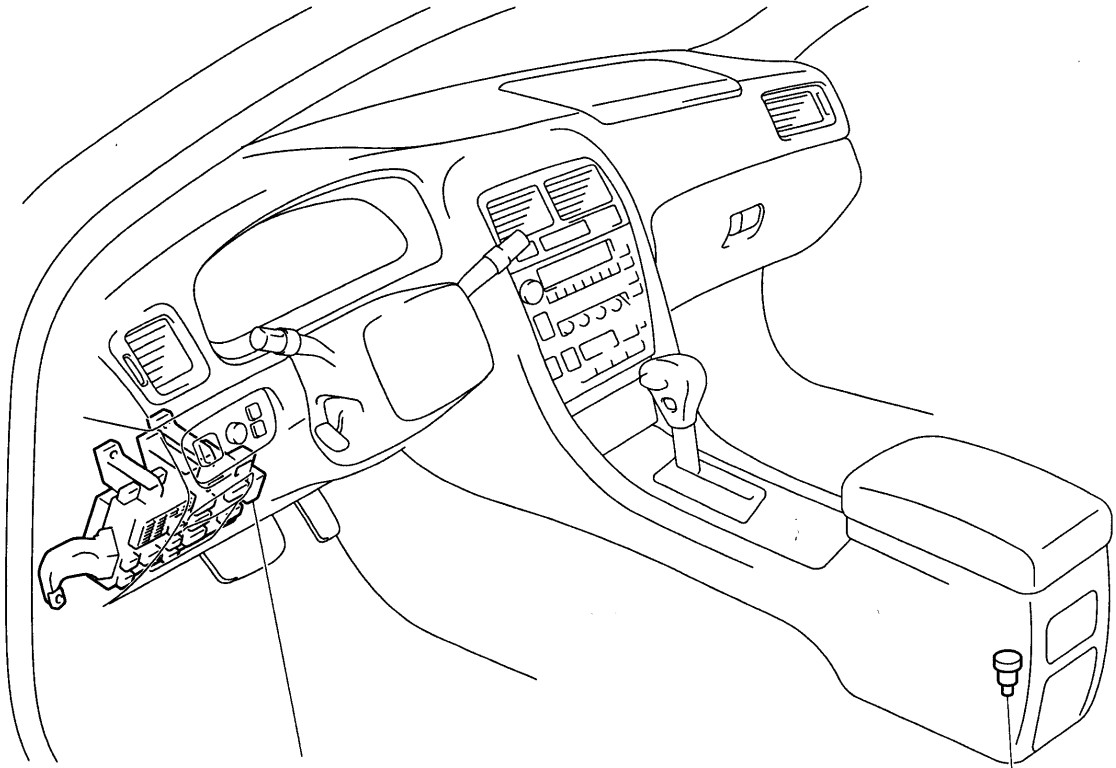
Fuse	Tester connection	Condition	Specified condition
HTR	1 – Ground	Ignition switch turned to ON	Battery positive voltage
ALT	4 – Ground	Constant	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

POWER OUTLET

LOCATION

BE04T–02



Instrument Panel Junction Block
● POWER OUTLET Fuse

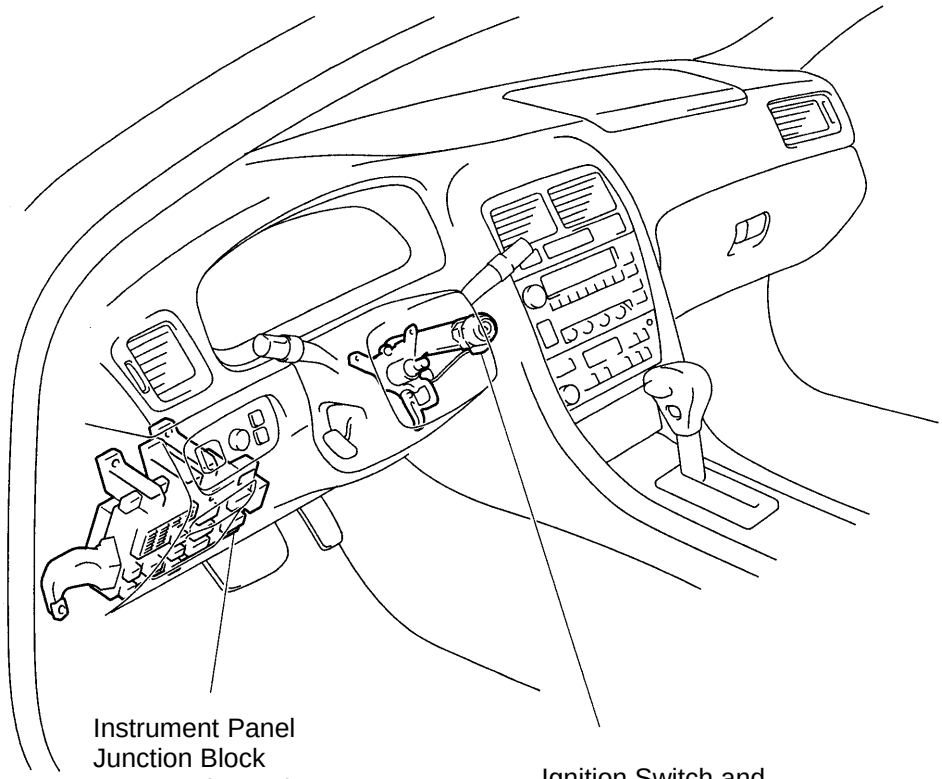
Power Outlet

N21557

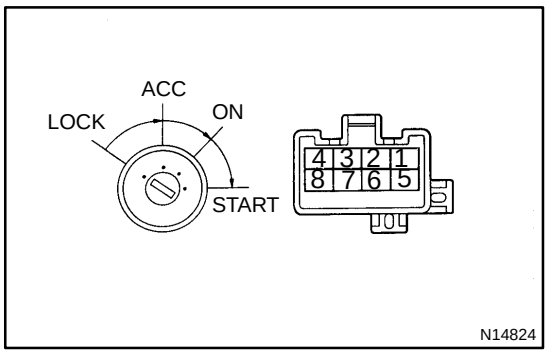
IGNITION SWITCH AND KEY UNLOCK WARNING SWITCH

BE04U–02

LOCATION



BE04V–02

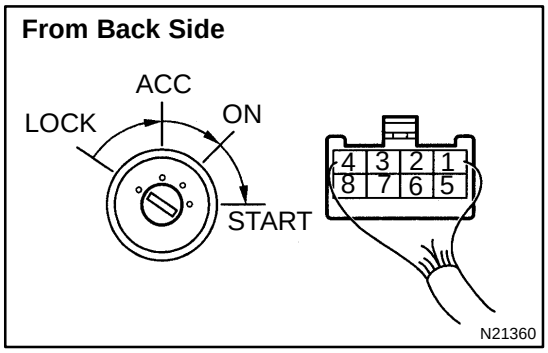


INSPECTION

1. INSPECT IGNITION SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
LOCK	–	No continuity
ACC	2 – 3	Continuity
ON	2 – 3 – 4 6 – 7	Continuity
START	1 – 2 – 4 6 – 7 – 8	Continuity

If continuity is not as specified, replace the switch.

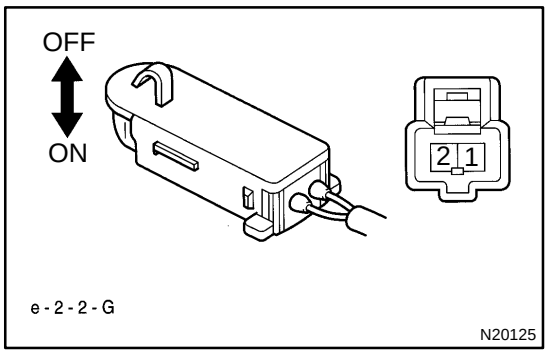


2. INSPECT IGNITION SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
1– Ground	Ignition switch START	Battery positive voltage
2 – Ground	Constant	Battery positive voltage
3 – Ground	Ignition switch ACC or ON	Battery positive voltage
4 – Ground	Ignition switch ON	Battery positive voltage
6 – Ground	Ignition switch ON	Battery positive voltage
7 – Ground	Constant	Battery positive voltage
8– Ground	Ignition switch START	Battery positive voltage

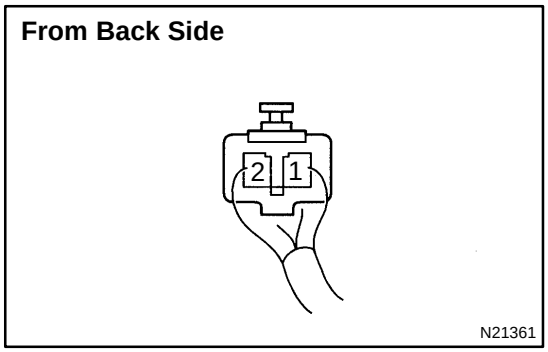
If circuit is not as specified, inspect the switch and circuits connected to other parts.



3. INSPECT KEY UNLOCK WARNING SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF (Key removed)	–	No continuity
ON (Key set)	1 – 2	Continuity

If continuity is not as specified, replace the switch.

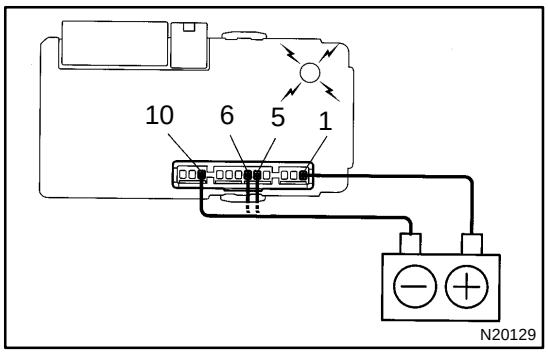


4. INSPECT KEY UNLOCK WARNING SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
2– Ground	Ignition key removed	No continuity
2– Ground	Ignition key set	Continuity
1– Ground	Constant	Continuity

If circuit is not as specified, inspect the switch and circuits connected to other parts.

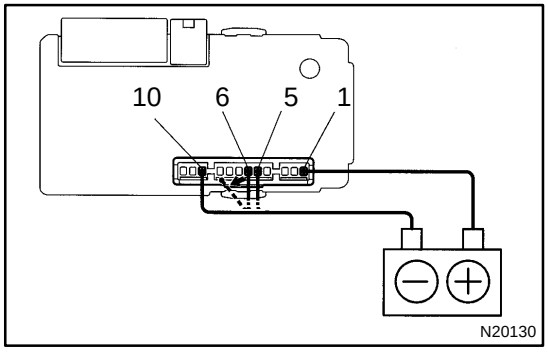


5. Key Unlock Warning System: INSPECT INTEGRATION RELAY OPERATION

(a) Connect the positive (+) lead from the battery to terminal 1.

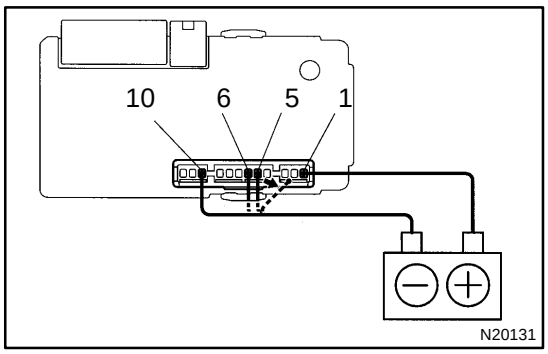
(b) Connect the negative (–) lead from the battery to terminals 5, 6 and 10.

(c) Check the buzzer sounds.



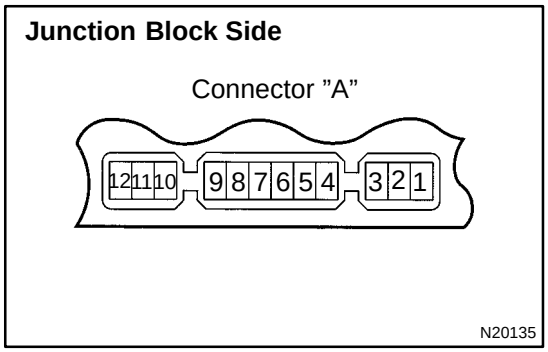
(d) Disconnect the negative (–) lead from the battery to terminal 6.

(e) Check that the buzzer stops sounding.



(f) Connect the negative (–) lead from the battery to terminal 6.
(g) Disconnect the negative (–) lead from the battery to terminal 5.
(h) Check that the buzzer stops sounding.

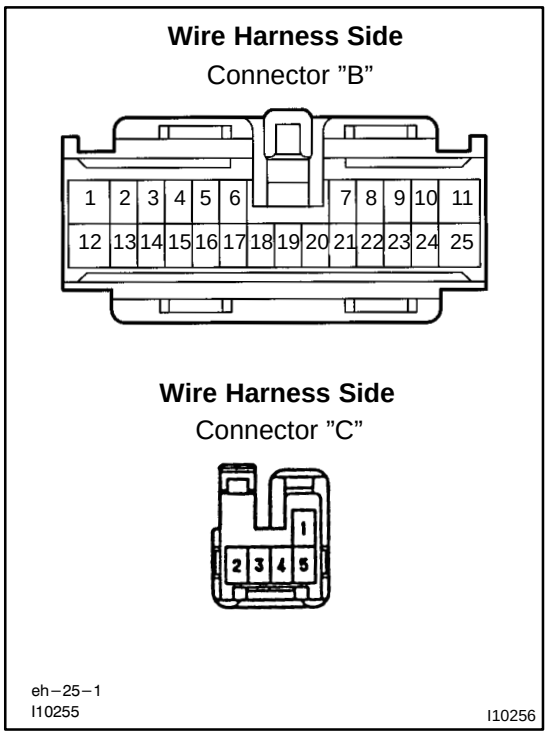
If operation is not as specified, replace the relay.



6. INSPECT INTEGRATION RELAY CIRCUIT

(a) Remove the relay from the junction block No.1 and inspect the connector on the junction block side.

Tester connection	Condition	Specified condition
A4 – Ground	Door courtesy switches except that of the driver's door OFF (Door closed)	No continuity
A4 – Ground	One of the door courtesy switches except that of the driver's door ON (Door opened)	Continuity
A5 – Ground	Key unlock warning switch OFF	No continuity
A5 – Ground	Key unlock warning switch ON	Continuity
A6 – Ground	Driver's door courtesy switch OFF (Door closed)	No continuity
A6 – Ground	Driver's door courtesy switch ON (Door opened)	Continuity
A8 – Ground	Buckle switch OFF (Seat belt unfastened)	No continuity
A8 – Ground	Buckle switch ON (Seat belt fastened)	Continuity
A10 – Ground	Constant	Continuity
A1 – Ground	Constant	Battery positive voltage
A2 – Ground	Constant	Battery positive voltage
A7 – Ground A9 – Ground	Ignition switch LOCK or ACC	No voltage
A7 – Ground A9 – Ground	Ignition switch ON	Battery positive voltage
A11 – Ground	Ignition switch LOCK	No voltage
A11 – Ground	Ignition switch ACC or ON	Battery positive voltage



(b) Disconnect the connector from the integration relay and inspect the connectors on the wire harness side.

Tester connection	Condition	Specified condition
C1, C3, C4 – Ground	Constant	Continuity
B3 – Ground	Constant	Continuity
B5 – Ground	Driver's door unlock detection switch OFF (Door closed)	No continuity
B5 – Ground	Driver's door unlock detection switch ON (Door opened)	Continuity
B6 – Ground	Passenger's door courtesy switch OFF (Door closed)	No continuity
B6 – Ground	Passenger's door courtesy switch ON (Door opened)	Continuity
B7 – Ground	Passenger's door unlock detection switch OFF (Door closed)	No continuity
B7 – Ground	Passenger's door unlock detection switch ON (Door opened)	Continuity
B9 – Ground	Rear door unlock detection switch OFF (Door closed)	No continuity
B9 – Ground	Rear door unlock detection switch ON (Door opened)	Continuity
B11 – B12 B12 – B25	Constant	Continuity
B13 – Ground	Light control switch AUTO	No Continuity
B13 – Ground	Light control switch OFF or TAIL or HEAD	Continuity
B14 – Ground	Light control switch OFF	No continuity
	Light control switch HI or Flash	Continuity
B15 – Ground	Luggage compartment door courtesy switch OFF (Door close)	No continuity
	Luggage compartment door courtesy switch ON (Door opened)	Continuity

B16 – Ground	Door lock manual switch OFF or UNLOCK	No continuity
B16 – Ground	Door lock manual switch LOCK	Continuity
B17 – Ground	Door lock manual switch OFF or LOCK	No continuity
B17 – Ground	Door lock manual switch UNLOCK	Continuity
B18 – Ground	Driver's and passenger's door key lock and unlock switch OFF or UNLOCK	No continuity
B18 – Ground	Driver's or passenger's door key lock and unlock switch LOCK	Continuity
B19 – Ground	Driver's door key lock and unlock switch OFF or LOCK	No continuity
B19 – Ground	Driver's door key lock and unlock switch UNLOCK	Continuity
B20 – Ground	Passenger's door key lock and unlock switch OFF or LOCK	No continuity
B20 – Ground	Passenger's door key lock and unlock switch UNLOCK	Continuity
B22 – Ground	Parking brake switch OFF	No continuity
	Parking brake switch ON	Continuity
B24 – Ground	Brake fluid level warning switch OFF (float up)	No continuity
	Brake fluid level warning switch ON (float down)	Continuity
B1 – Ground	Constant	Battery positive voltage
C2 – Ground	Light control switch OFF	No continuity
C2 – Ground	Light control switch TAIL or HEAD	Continuity
C5 – Ground	Light control switch OFF or TAIL	Continuity
C5 – Ground	Light control switch HEAD	Continuity
B8 – Ground	Engine running	Battery positive voltage

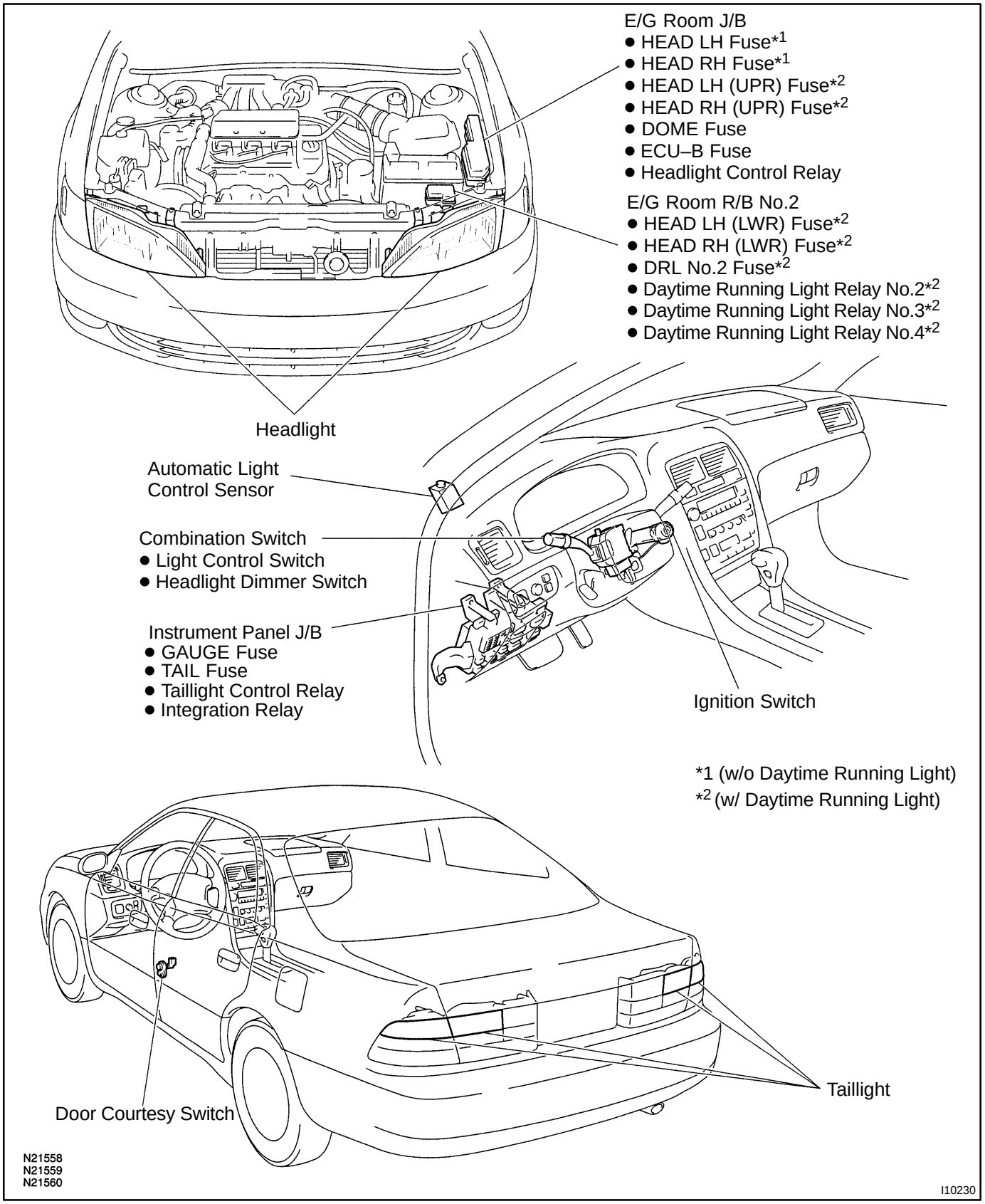
If the circuit is as specified, try replacing the relay with a new one.

If the circuit is not as specified, inspect the circuits connected to other parts.

HEADLIGHT AND TAILLIGHT SYSTEM

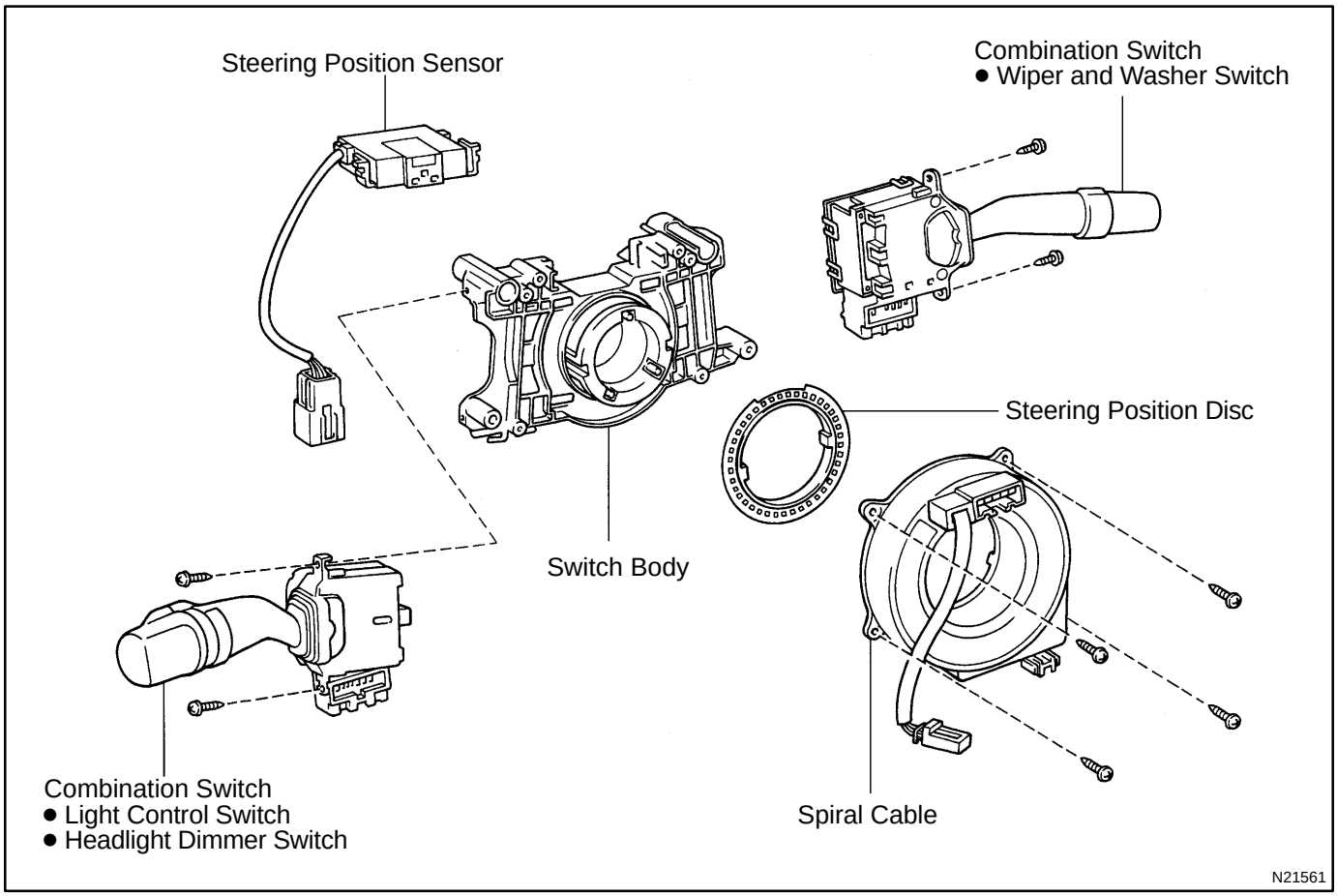
BE04W–10

LOCATION



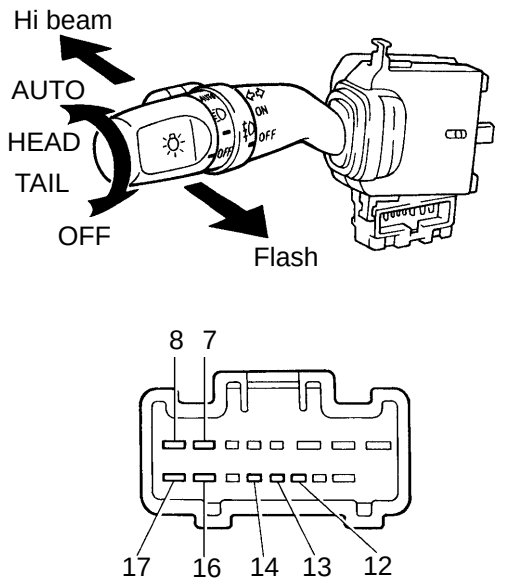
BE04X–05

COMPONENTS



BE10G–03

INSPECTION



1. INSPECT LIGHT CONTROL SWITCH CONTINUITY

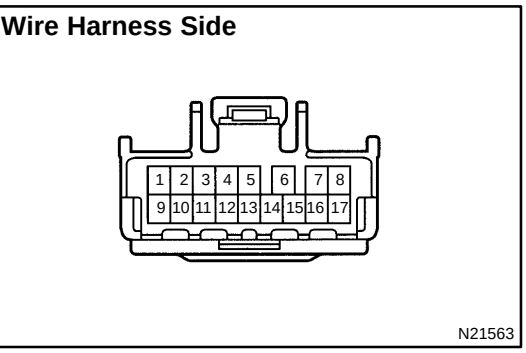
Switch position	Tester connection	Specified condition
OFF	–	No continuity
TAIL	14 – 16	Continuity
HEAD	13 – 14 – 16	Continuity
AUTO	12 – 16	Continuity

If continuity is not as specified, replace the switch.

2. INSPECT HEADLIGHT DIMMER SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
Low beam	16 – 17	Continuity
High beam	7 – 16	Continuity
Flash	7 – 8 – 16	Continuity

If continuity is not as specified, replace the switch.



3. INSPECT COMBINATION SWITCH CIRCUIT

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

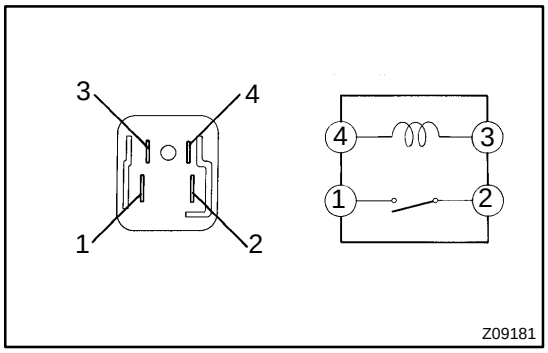
Light Control Switch:

Tester connection	Condition	Specified condition
16 – Ground	Constant	Continuity
12 – Ground	Light control switch OFF, TAIL or HEAD	No voltage
12 – Ground	Light control switch AUTO	Battery positive voltage
13 – Ground	Light control switch OFF or TAIL	No voltage
13 – Ground	Light control switch HEAD	Battery positive voltage
14 – Ground	Light control switch OFF	No voltage
14 – Ground	Light control switch TAIL or HEAD	Battery positive voltage

Headlight Dimmer Switch:

Tester connection	Condition	Specified condition
7 – Ground	Headlight dimmer switch Low Beam	No voltage
7 – Ground	Headlight dimmer switch High Beam or Flash	Battery positive voltage
8 – Ground	Headlight dimmer switch Low Beam or High Beam	No voltage
8 – Ground	Headlight dimmer switch Flash	Battery positive voltage
17– Ground	Headlight dimmer switch High Beam or Flash	No voltage
17– Ground	Headlight dimmer switch Low Beam	Battery positive voltage

If the circuit is not as specified, inspect the circuit connected to other parts.

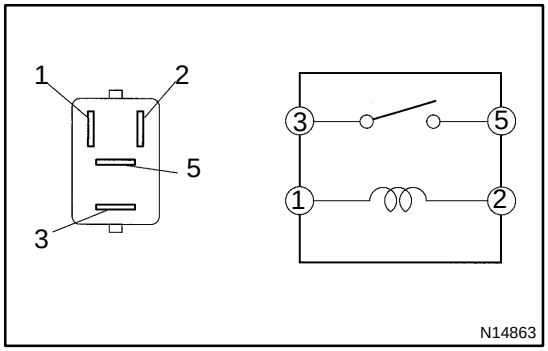


4. INSPECT HEADLIGHT CONTROL RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	3 – 4	Continuity
Apply B+ between terminals 3 and 4.	1 – 2	Continuity

If continuity is not as specified, replace the relay.

5. INSPECT HEADLIGHT CONTROL RELAY CIRCUIT (See page BE–12)



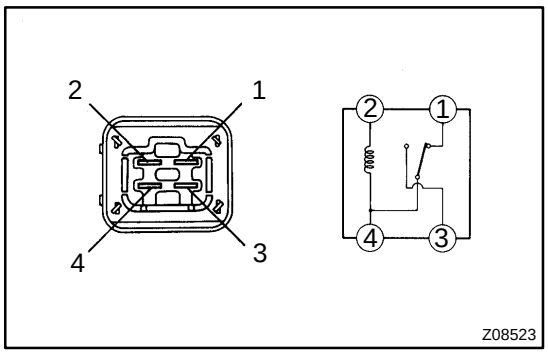
6. INSPECT TAILLIGHT CONTROL RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 – 2	Continuity
Apply B+ between terminals 1 and 2.	3 – 5	Continuity

If continuity is not as specified, replace the relay.

7. INSPECT TAILLIGHT CONTROL RELAY CIRCUIT (See page BE–28)

8. INSPECT DAYTIME RUNNING LIGHT RELAY CIRCUIT (See Integration relay circuit on page BE–21)

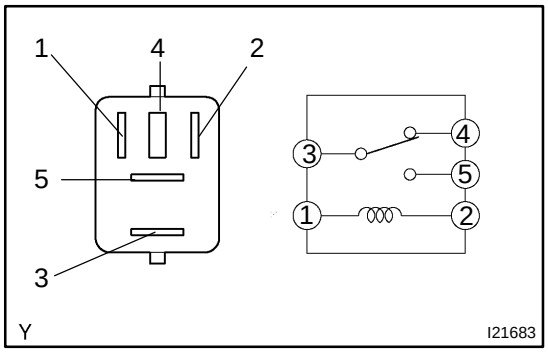


9. INSPECT DAYTIME RUNNING LIGHT NO.2 CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 – 4, 2 – 4	Continuity
Apply B+ between terminals 2 and 4.	3 – 4	Continuity

If continuity is not as specified, replace the relay.

10. INSPECT DAYTIME RUNNING LIGHT NO.2 CIRCUIT (See page BE–12)

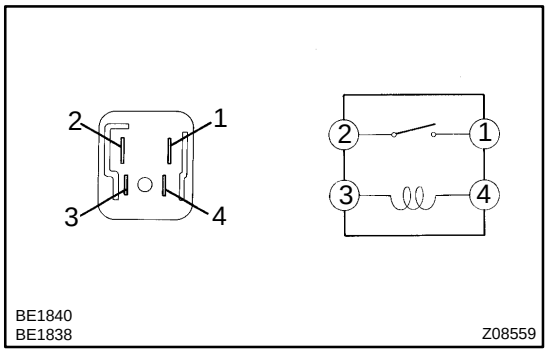


11. INSPECT DAYTIME RUNNING LIGHT NO.3 CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 – 2, 3 – 4	Continuity
Apply B+ between terminals 1 and 2.	3 – 5	Continuity

If continuity is not as specified, replace the relay.

12. INSPECT DAYTIME RUNNING LIGHT NO.3 RELAY CIRCUIT (See page BE–12)



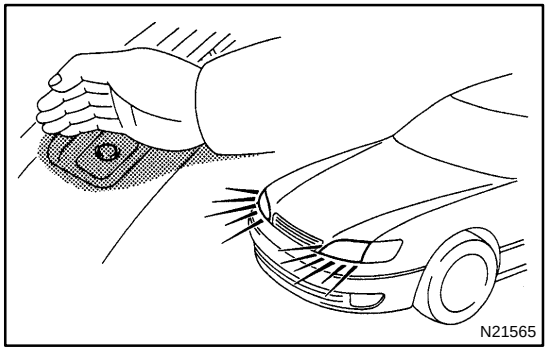
13. INSPECT DAYTIME RUNNING LIGHT NO.4 RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	3 – 4	Continuity
Apply B+ between terminals 3 and 4.	1 – 2	Continuity

If continuity is not as specified, replace the relay.

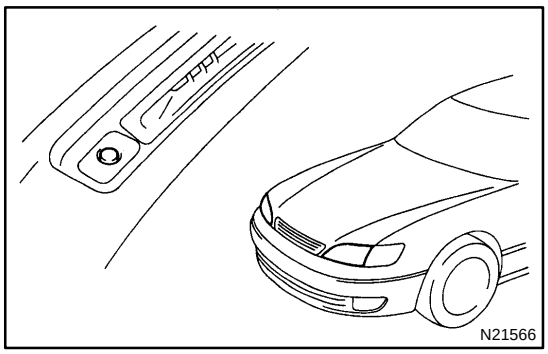
14. INSPECT DAYTIME RUNNING LIGHT NO.4 RELAY CIRCUIT (See page BE–12)

15. INSPECT LIGHT AUTO TURN OFF SYSTEM (See Integration relay circuit on page BE–21)



16. Auto ON:
INSPECT AUTOMATIC LIGHT CONTROL

(a) Turn the ignition switch ON.
(b) Turn the light control switch to AUTO.
(c) Gradually cover the top of the sensor.
(d) Verify that the accessory lights and the headlights turn ON.



17. Auto OFF:
INSPECT AUTOMATIC LIGHT CONTROL

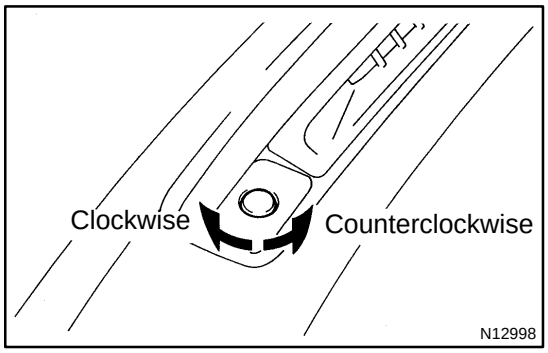
(a) Gradually expose the sensor.
(b) Verify that the headlights and the accessory lights turn OFF.

18. INSPECT LIGHT–OFF CONDITION

(a) Turn the ignition switch ON.
(b) Lights auto ON:
Gradually cover the top of the sensor.
(c) Verify that the lights will go out when light control switch position is OFF or the area surrounding the sensor gets bright or open the driver's door while the ignition switch is OFF.

19. INSPECT LIGHTS–ON CONDITION

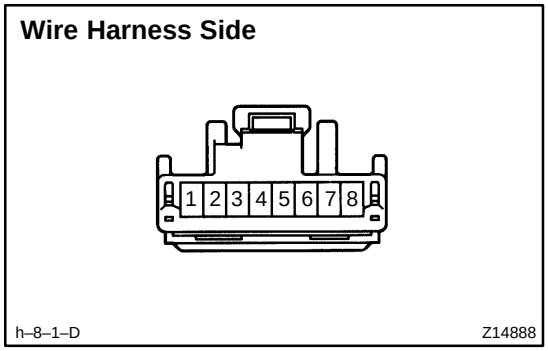
(a) Open the driver's door while the ignition switch is OFF.
(b) Turn the light control switch to AUTO leaving the door open and cover the top of the sensor, and verify that the lights go on when the ignition switch is turned ON.



20. ADJUST AUTOMATIC LIGHT CONTROL SENSOR

(a) Adjustment of the light control is performed by turning the sensitivity knob on the sensor.
(b) This will determine at what light condition the automatic control will take place.

If response is too quick, turn the knob counterclockwise.
If response is too slow, turn the knob clockwise.



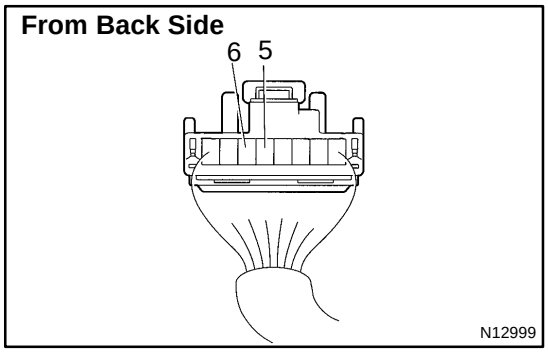
21. Connector disconnected:
INSPECT SENSOR CIRCUIT

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

Tester connection	Condition	Specified condition
6 – Ground	Constant	Continuity
5 – Ground	Ignition switch LOCK or ACC	No voltage
5 – Ground	Ignition switch ON	Battery positive voltage
4 – Ground	Ignition switch LOCK or ACC	No voltage
4 – Ground	Ignition switch ON	5.2 – 9.0 V
6 – Ground	Light control switch AUTO	Continuity

If circuit is as specified, perform the inspection on the following page.

If the circuit is not as specified, inspect the circuit connected to other parts.



22. Connector connected:
INSPECT SENSOR CIRCUIT

Connect the wire harness side connector to the sensor and inspect wire harness side connector from the back side.
HINT:

- Ignition switch ON.
- Light control switch AUTO.
- Vehicle's surroundings are bright.

Tester connection	Condition	Specified condition
6 – Ground	Constant	Continuity
5 – Ground	Ignition switch LOCK or ACC	No voltage
5 – Ground	Ignition switch ON	9.5 V or more
Vehicle is under the direct sun light. (Sensor is not covered)		Taillight and Headlight are ON.

If circuit is as specified, try replacing the sensor with a new one.
If the circuit is not as specified, inspect the circuit connected to other parts.

BE1BF–02

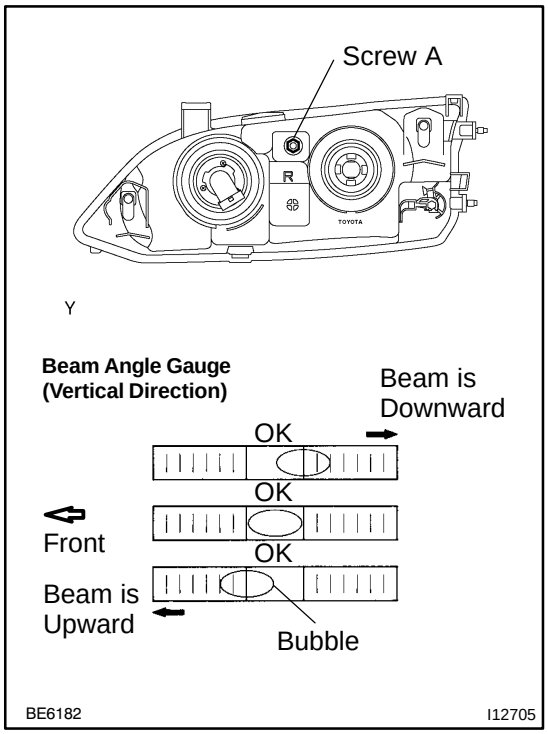
ADJUSTMENT

1. Halogen type:

ADJUST HEADLIGHT AIM

(a) Place the vehicle in the following conditions.

- The area around the headlight is not deformed.
- The vehicle is parked on a level surface.
- Tire inflation pressure is the specified value.
- A driver is in the driver's seat and the vehicle is in a state ready for driving (with a tank full).
- The vehicle has been bounced several times.



(b) Adjust the headlight aim in vertical direction.

If the bubble is outside the acceptable range of the beam angle gauge, adjust it using adjusting screw A.

2. Halogen type:

ADJUST HEADLIGHT AIM (Reference)

HINT:

Adjusting method for the headlight aiming by not using beam angle gauges is shown below.

(a) Inspect the headlight aim.

(1) Place the vehicle in the following conditions.

- The area around the headlight is not deformed.
- The vehicle is parked on a level surface.
- Tire inflation pressure is the specified value.
- A driver is in the driver's seat and the vehicle is in a state ready for driving (with a tank full).
- The vehicle has been bounced several times.

(2) Prepare a thick white paper.

(3) Stand the paper perpendicular to the ground at the position 9.84 ft away from the headlights.

(4) Ensure that the center line of the vehicle and the paper face forms a 90–degree angle as shown in the illustration.

(5) Draw a horizontal line (H line) on the paper, showing where the headlights should strike.

(6) Draw a vertical line (V line) to where the center line of the vehicle is to be.

(7) Draw 2 vertical lines to where the both headlights should strike (V RH and V LH lines).

(8) Draw a horizontal line (by connecting the both low beam center marks) to where the headlights should strike (H RH and H LH lines).

HINT:

The H RH and H LH line is 0.4° below the horizontal line (H line) of the light axis.

(9) Take appropriate measures to prevent influence of other lights.

NOTICE:

Disconnect connectors of the other lights so that the aiming adjustment will not be affected.

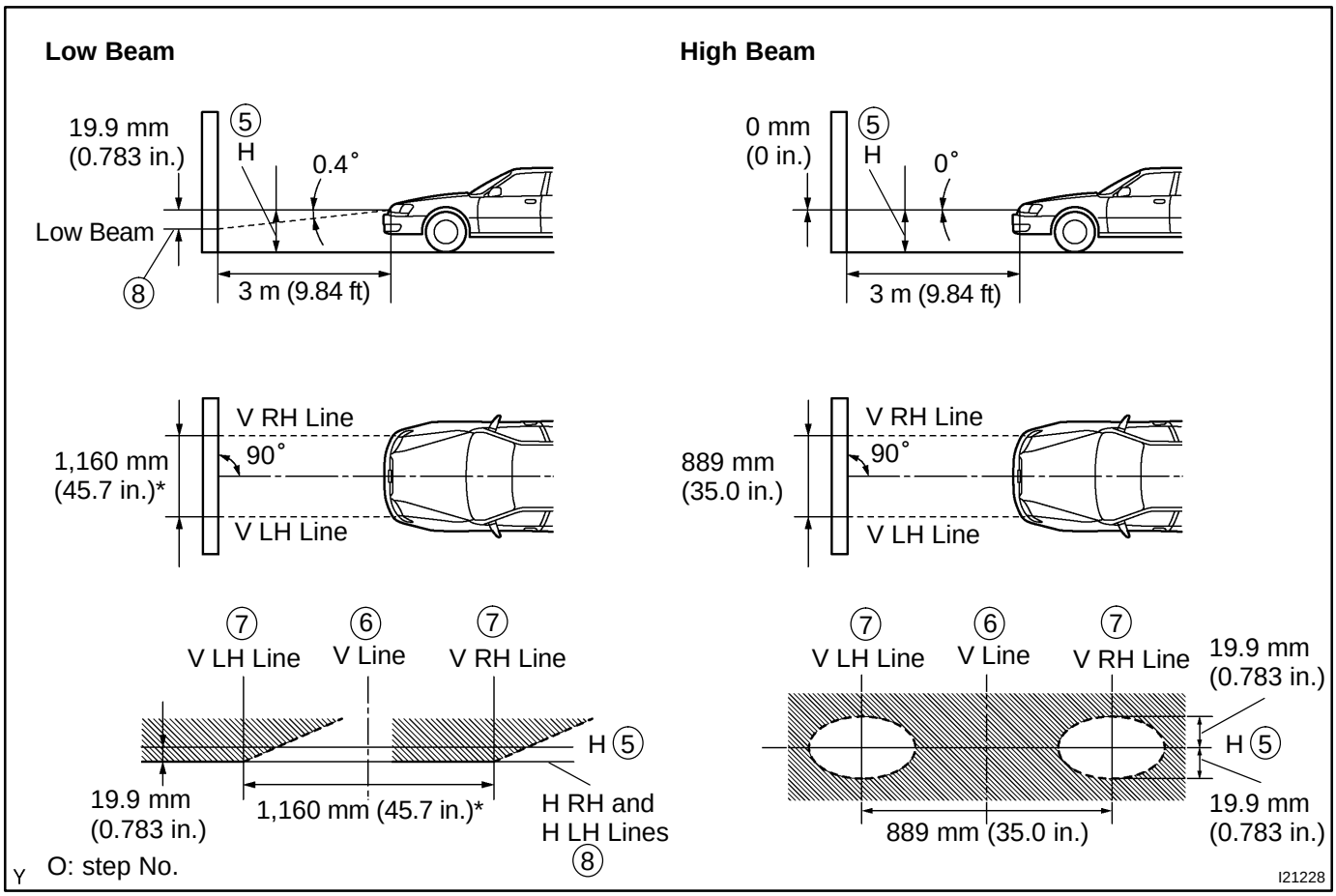
When connecting the connectors again, take care not to make the aiming out of adjustment.

(10) Start the engine.

(11) Turn the headlights ON.

(12) Check that the headlights properly strike the position shown in the illustration.

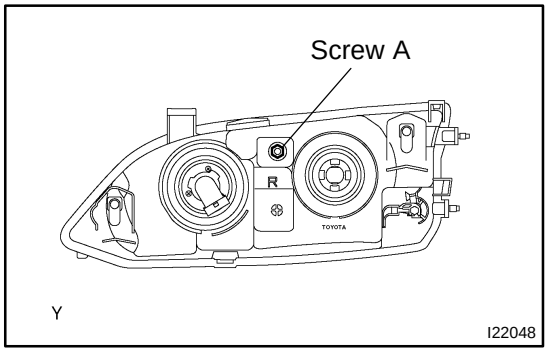
(13) If not, adjust the lights in the vertical direction.



HINT:

- As shown in the illustration, adjust each aim of the RH and LH lights.
- The "High Beam" values in the illustration are reference values. The "*" marked values in the illustration are reference values.

(b) When adjusting it in the vertical direction:
Using adjusting screw A, adjust the headlight aim to within the specified range.



3. HID type:

ADJUST HEADLIGHT AIM

(a) Inspect the headlight aim.

(1) Place the vehicle in the following conditions.

- The area around the headlight is not deformed.
- The vehicle is parked on a level surface.
- Tire inflation pressure is the specified value.
- A driver is in the driver's seat and the vehicle is in a state ready for driving (with a tank full).
- The vehicle has been bounced several times.

(2) Prepare a thick white paper.

(3) Stand the paper perpendicular to the ground at the position 9.84 ft away from the headlights.

(4) Ensure that the center line of the vehicle and the paper face forms a 90–degree angle as shown in the illustration.

(5) Draw a horizontal line (H line) on the paper, showing where the headlights should strike.

(6) Draw a vertical line (V line) to where the center line of the vehicle is to be.

(7) Draw 2 vertical lines to where the both headlights should strike (V RH and V LH lines).

(8) Draw a horizontal line (by connecting the both low beam center marks) to where the headlights should strike (H RH and H LH lines).

HINT:

The H RH and H LH line is 0.4° below the horizontal line (H line) of the light axis.

(9) Take appropriate measures to prevent influence of other lights.

NOTICE:

Disconnect connectors of the other lights so that the aiming adjustment will not be affected.

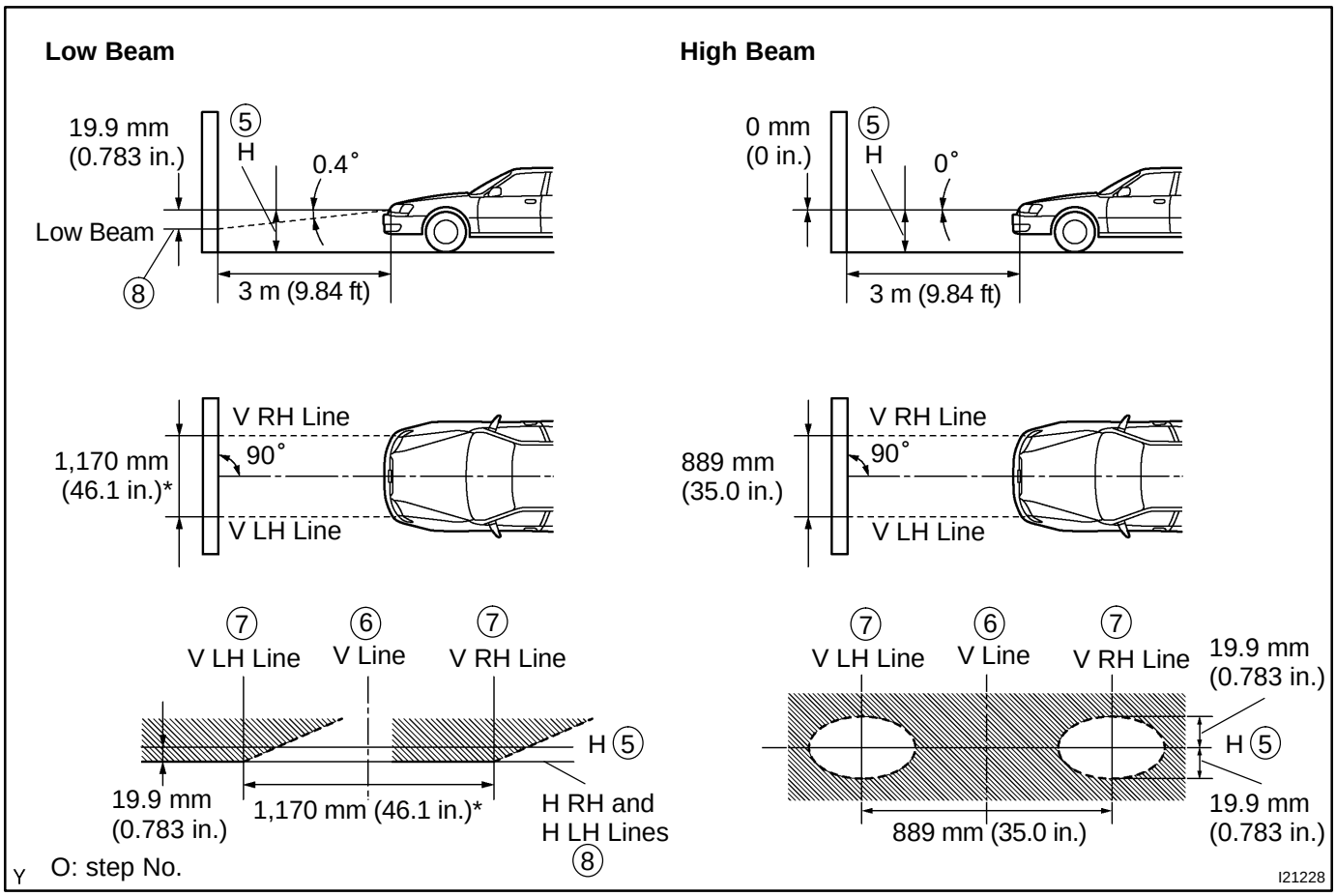
When connecting the connectors again, take care not to make the aiming out of adjustment.

(10) Start the engine.

(11) Turn the headlights ON.

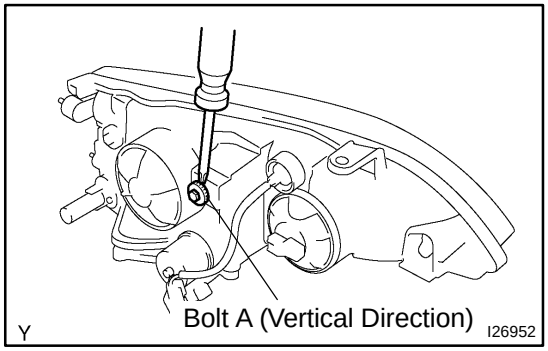
(12) Check that the headlights properly strike the position shown in the illustration.

(13) If not, adjust the lights in the vertical direction.



HINT:

- As shown in the illustration, adjust each aim of the RH and LH lights.
- The "High Beam" values in the illustration are reference values. The "*" marked values in the illustration are reference values.

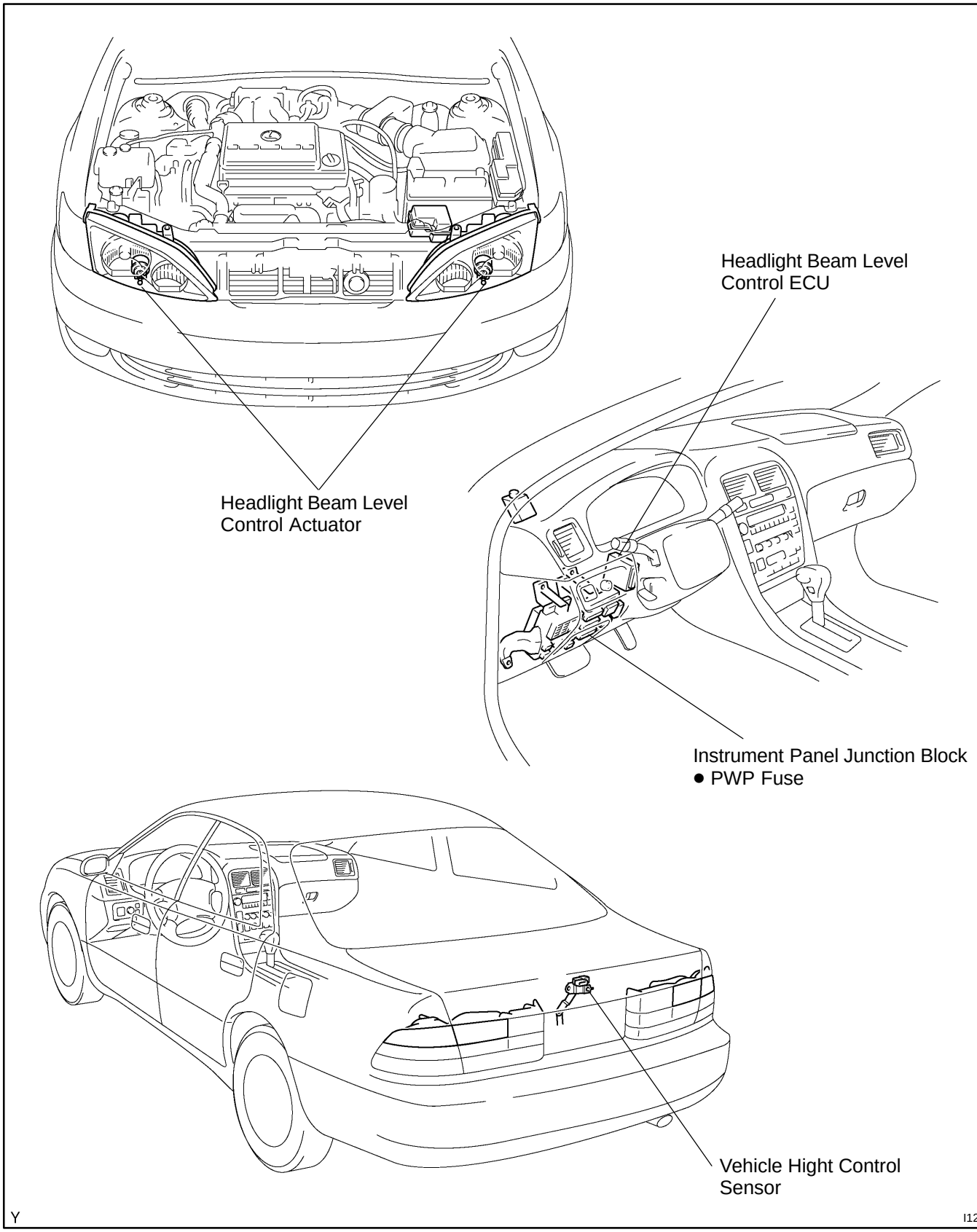


(b) When adjusting it in the vertical direction:
Using adjusting bolt A, adjust the headlight aim to within the specified range.

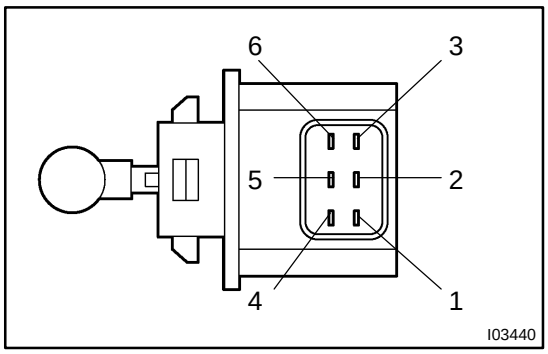
HEADLIGHT BEAM LEVEL CONTROL SYSTEM (HID Type)

BE1BI–01

LOCATION



BE1BJ–01



INSPECTION

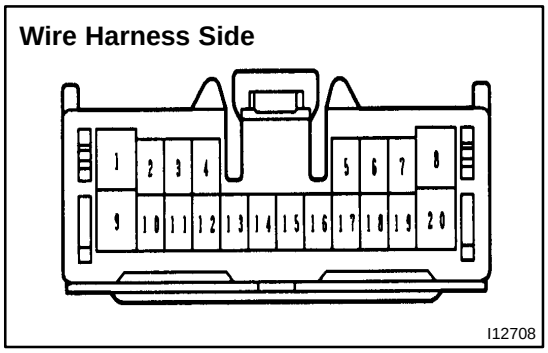
1. INSPECT HEADLIGHT BEAM LEVEL CONTROL ACTUATOR RESISTANCE

(a) Check that continuity exists between terminals 2 and 5.

(b) Check that resistance exists between terminals, as shown in the chart.

Terminal	Resistance (Ω)
2 – 1	26 – 30
2 – 3	26 – 30
2 – 4	26 – 30
2 – 6	26 – 30
5 – 1	26 – 30
5 – 3	26 – 30
5 – 4	26 – 30
5 – 6	26 – 30

If resistance value is not as specified, replace the actuator.

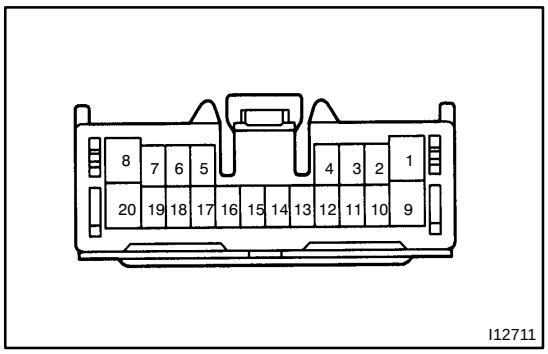


2. INSPECT HEADLIGHT BEAM LEVEL CONTROL ECU CIRCUIT

(a) Disconnect the connector from the ECU and inspect the connector on the wire harness side, as shown.

Tester connection	Condition	Specified condition
IG(1) – RH4(2)	Ignition switch OFF	26 – 30 Ω
IG(1) – LH4(3)	Ignition switch OFF	26 – 30 Ω
IG(1) – RH2(4)	Ignition switch OFF	26 – 30 Ω
IG(1) – LH3(5)	Ignition switch OFF	26 – 30 Ω
IG(1) – LH2(13)	Ignition switch OFF	26 – 30 Ω
IG(1) – RH1(14)	Ignition switch OFF	26 – 30 Ω
IG(1) – LH1(15)	Ignition switch OFF	26 – 30 Ω
IG(1) – RH3(16)	Ignition switch OFF	26 – 30 Ω
HDLP(9) – E1(20)	Ignition switch ON and light control switch HEAD	Below 1.5 V
SHR(6) – SGR(8)	Ignition switch OFF	3.5 – 6.5 kΩ
SBR(7) – SGR(8)	Ignition switch OFF	3.5 – 6.5 kΩ
E1(20) – Body ground	Constant	Continuity

If circuit is not as specified, perform the inspection on the following pages.



(b) Connect the connector from the ECU and inspect the connector, as shown in the table.

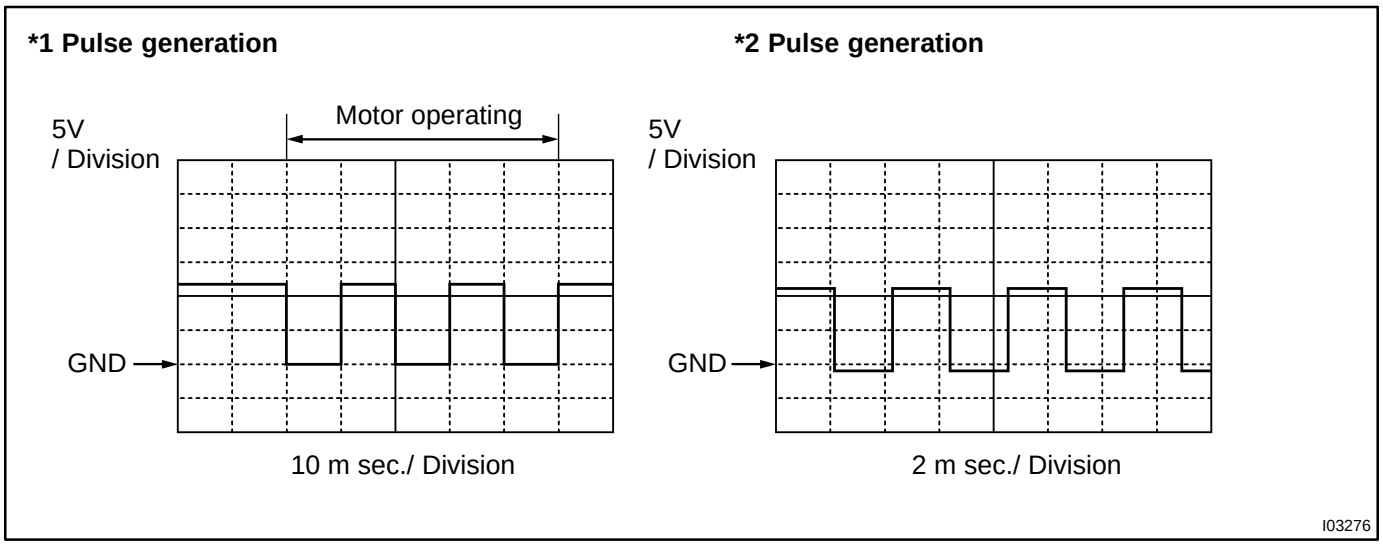
Tester connection	Condition	Specified condition
IG(1) – E1(20)	Ignition switch ON	Battery positive voltage
RH4(2) – E1(20)	Ignition switch ON, when keep and bounce the vehicle	*1 Pulse generation
LH4(3) – E1(20)	Ignition switch ON, when keep and bounce the vehicle	*1 Pulse generation
RH2(4) – E1(20)	Ignition switch ON, when keep and bounce the vehicle	*1 Pulse generation
LH3(5) – E1(20)	Ignition switch ON, when keep and bounce the vehicle	*1 Pulse generation
SHR(6) – E1(20)	Ignition switch ON	Approx. 2.5 V
SBR(7) – SGR(8)	Ignition switch ON	5 V
SGR(8) – E1(20)	Ignition switch OFF	Continuity
HDLP(9) – E1(20)	Ignition switch ON and light control switch HEAD	Below 1.5 V
LH2(13) – E1(20)	Ignition switch ON, when keep and bounce the vehicle	*1 Pulse generation
RH1(14) – E1(20)	Ignition switch ON, when keep and bounce the vehicle	*1 Pulse generation
LH1(15) – E1(20)	Ignition switch ON, when keep and bounce the vehicle	*1 Pulse generation
RH3(16) – E1(20)	Ignition switch ON, when keep and bounce the vehicle	*1 Pulse generation
WNG(18) – E1(20)	Ignition switch ON	No continuity
SPDR(19) – E1(20)	Vehicle driving at about 30 km (18 mph)	*2 Pulse generation
E1(20) – Body ground	Ignition switch OFF	Continuity

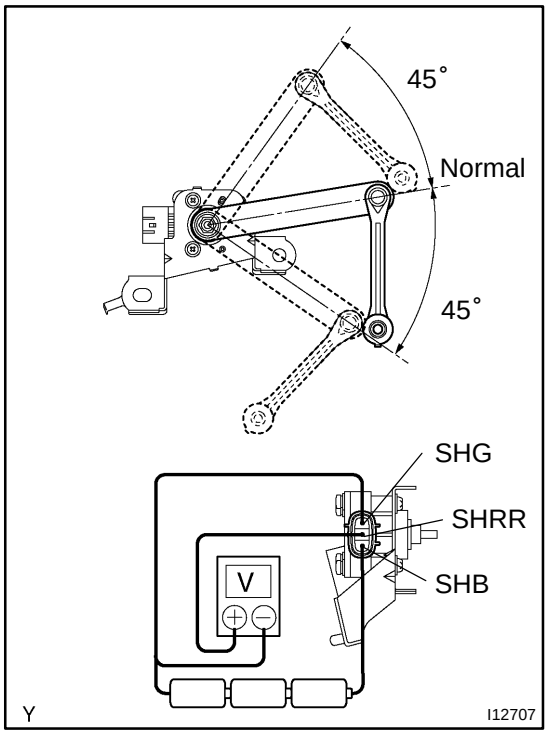
If the circuit is not as specified, replace the ECU.

Reference INSPECTION USING OSCILLOSCOPE

HINT:

The correct waveform is as shown in the illustration.





3. INSPECT VEHICLE HIGHT CONTROL SENSOR

(a) Connect 3 dry batteries of 1.5 V in series.

(b) Connect SHB terminal to the batteries' positive (+) terminal, and SHG terminal to the batteries' negative (–) terminal, apply about 4.5 V between SHB – SHG terminals.

NOTICE:

Do not apply voltage of 6 V or more to terminals VGS and GGND.

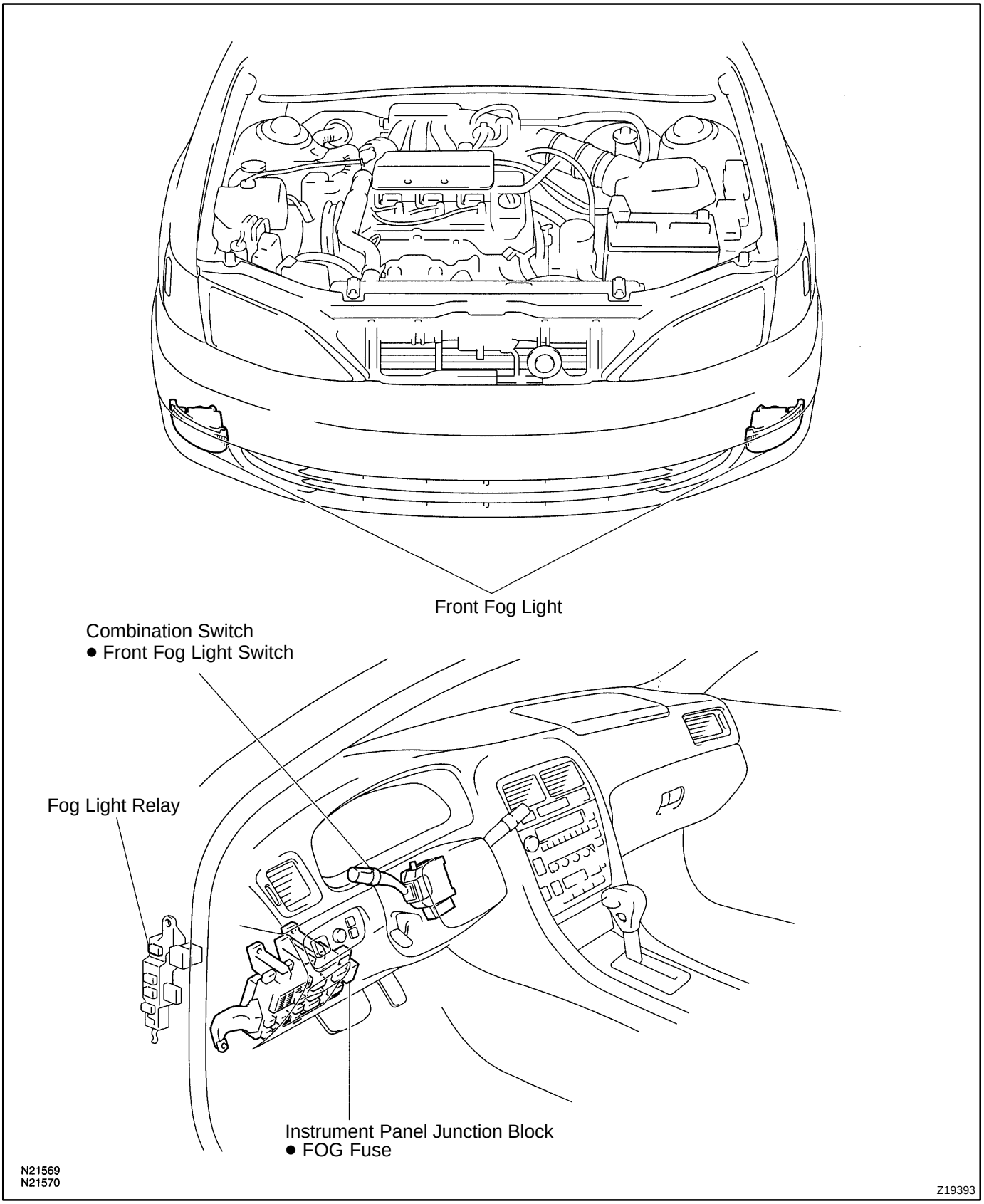
(c) Check the output voltage of SHRR and SHG terminals.

Symbols	Condition	Standard Value
SHRR – SHG	+ 45˚	4.1 V
	Normal position	2.25 V
	– 45˚	0.5 V

FOG LIGHT SYSTEM

LOCATION

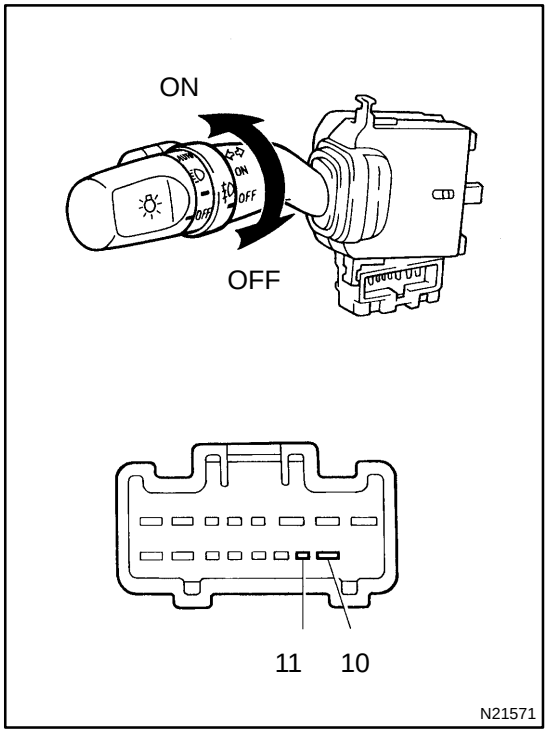
BE050–06



BE051–03

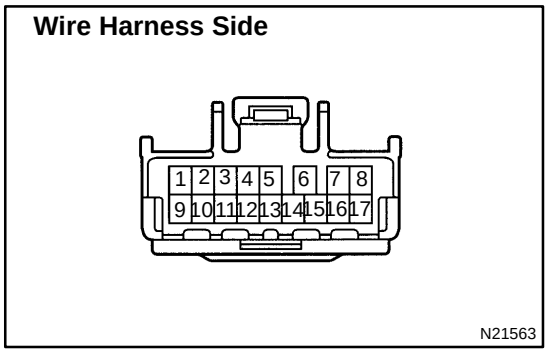
INSPECTION

1. INSPECT FOG LIGHT SWITCH CONTINUITY



Switch position	Tester connection	Specified condition
OFF	–	No continuity
ON	10 – 11	Continuity

If continuity is not as specified, replace the switch.

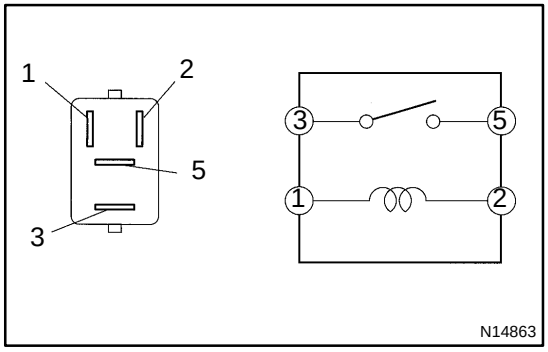


2. INSPECT COMBINATION SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
10– Ground	Headlight dimmer switch High Beam or Flash	No continuity
10– Ground	Headlight dimmer switch Low Beam	Continuity
11 – Ground	Light control switch OFF or TAIL	No voltage
11 – Ground	Light control switch HEAD	Battery positive voltage

If the circuit is not as specified, inspect the circuit connected to other parts.



3. INSPECT FOG LIGHT RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 – 2	Continuity
Apply B+ between terminals 1 and 2.	3 – 5	Continuity

If continuity is not as specified, replace the relay.

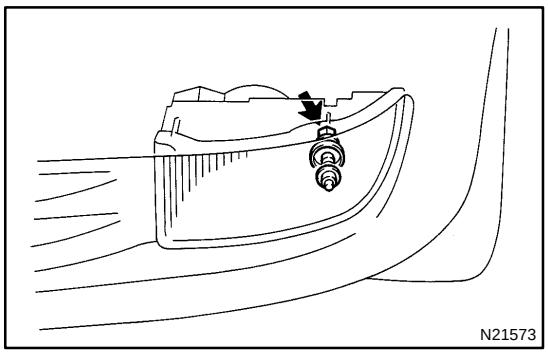
4. INSPECT FOG LIGHT RELAY CIRCUIT

Remove the relay from the driver's side relay block and inspect the connector on relay block side.

Tester connection	Condition	Specified condition
3 – Ground	Constant	Continuity
1 – Ground	Light control switch HEAD	Battery positive voltage
5 – Ground	Constant	Battery positive voltage

If the circuit is not as specified, inspect the circuit connected to other parts.

BE052–06



ADJUSTMENT

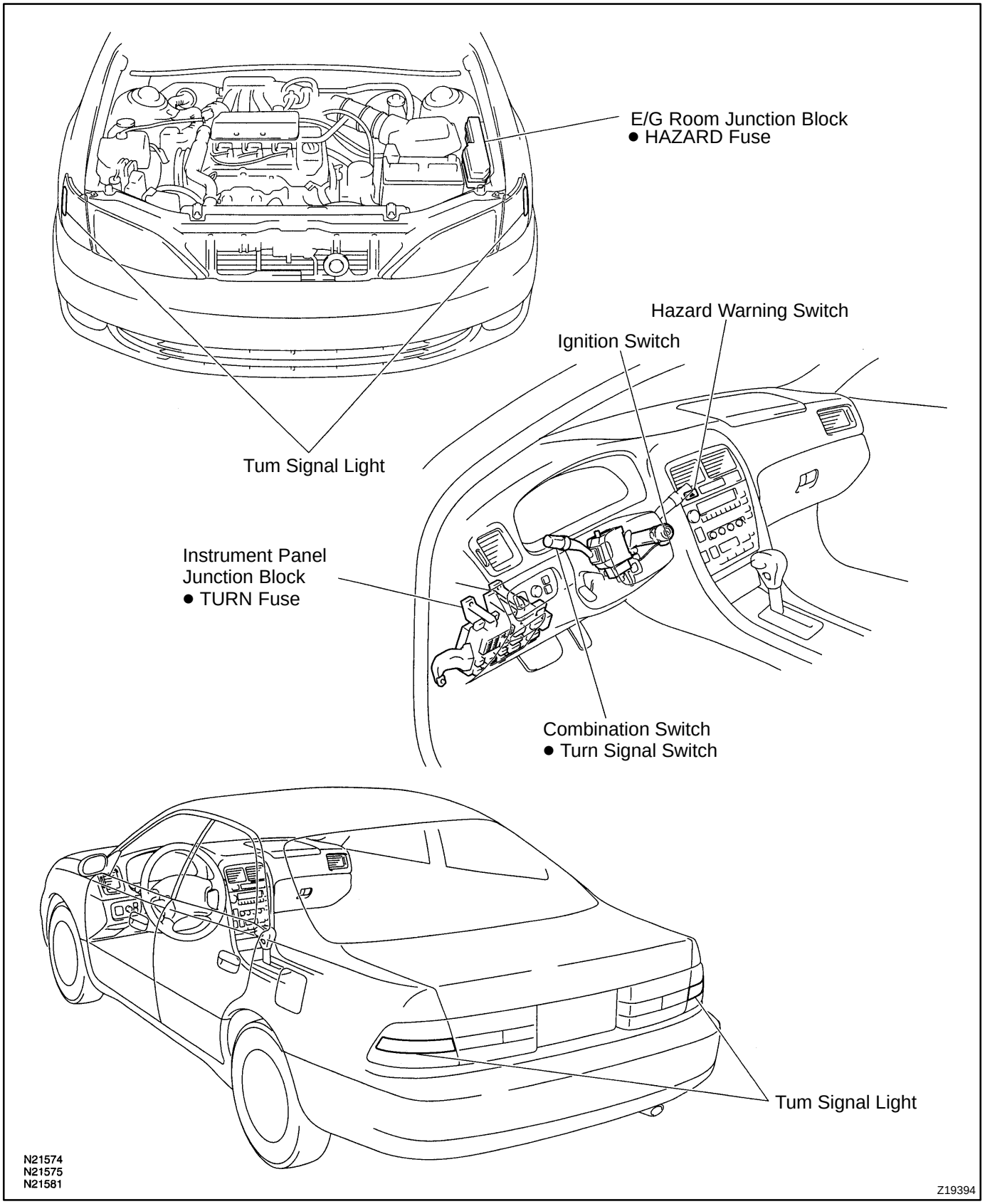
ADJUST FOG LIGHT AIM

A–bolt: Vertical Direction

TURN SIGNAL AND HAZARD WARNING SYSTEM

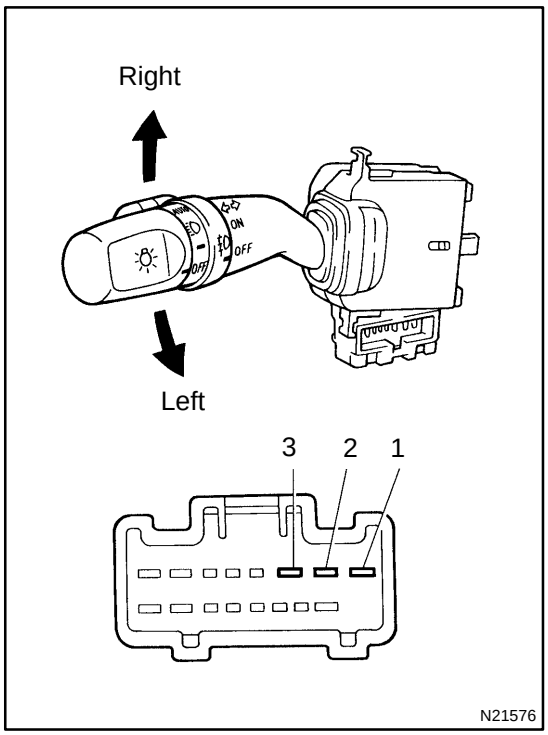
LOCATION

BE053–03



BE054–02

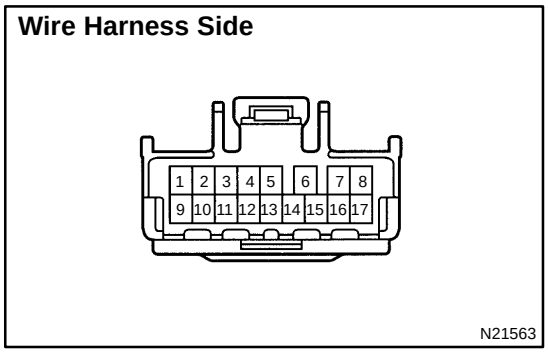
INSPECTION



1. INSPECT TURN SIGNAL SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
Left turn	1 – 2	Continuity
Neutral	–	No continuity
Right turn	2 – 3	Continuity

If continuity is not as specified, replace the switch.



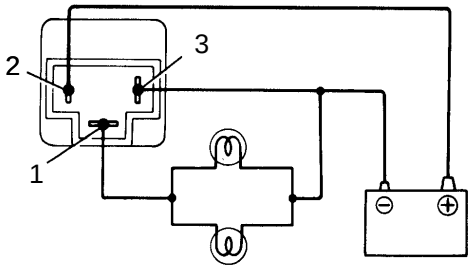
2. INSPECT COMBINATION SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
1 – Ground	Constant	*Continuity
3 – Ground	Constant	*Continuity
2 – Ground	Ignition switch ON and turn signal switch position Neutral	No voltage
2 – Ground	Hazard warning switch ON	Battery positive voltage
2 – Ground	Ignition switch ON and turn signal switch position Left or Right	Battery positive voltage

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

If the circuit is not as specified, inspect the circuit connected to other parts.



Turn Signal Light Bulbs(21W)
BE1843

3. INSPECT TURN SIGNAL FLASHER OPERATION

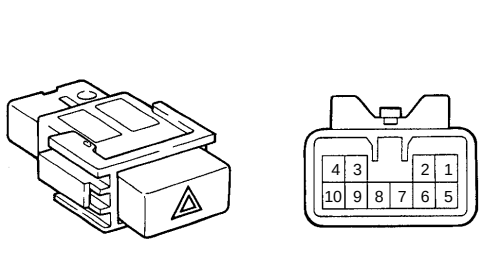
(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 3.

(b) Connect the 2 turn signal light bulbs in 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.

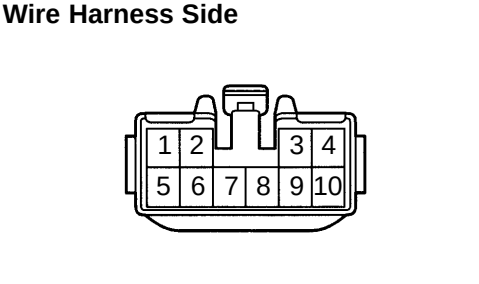


e–10–2
N21578

4. INSPECT HAZARD WARNING SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
Switch OFF	5 – 7	Continuity
Switch ON	1 – 2 – 3 – 4 5 – 6	Continuity
Illumination circuit	8 – 9	Continuity

If continuity is not as specified, replace the switch.



e–10–1
N21579

5. INSPECT HAZARD WARNING SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
1 – Ground	Constant	*2Continuity
2 – Ground	Constant	*2Continuity
*19 – Ground	Constant	Continuity
6 – Ground	Constant	Battery positive voltage
7 – Ground	Ignition switch position LOCK or ACC	No voltage
7 – Ground	Ignition switch position ON	Battery positive voltage
*18 – Ground	Light control switch position OFF	No voltage
*18 – Ground	Light control switch position TAIL or HEAD	Battery positive voltage

*1: Illumination

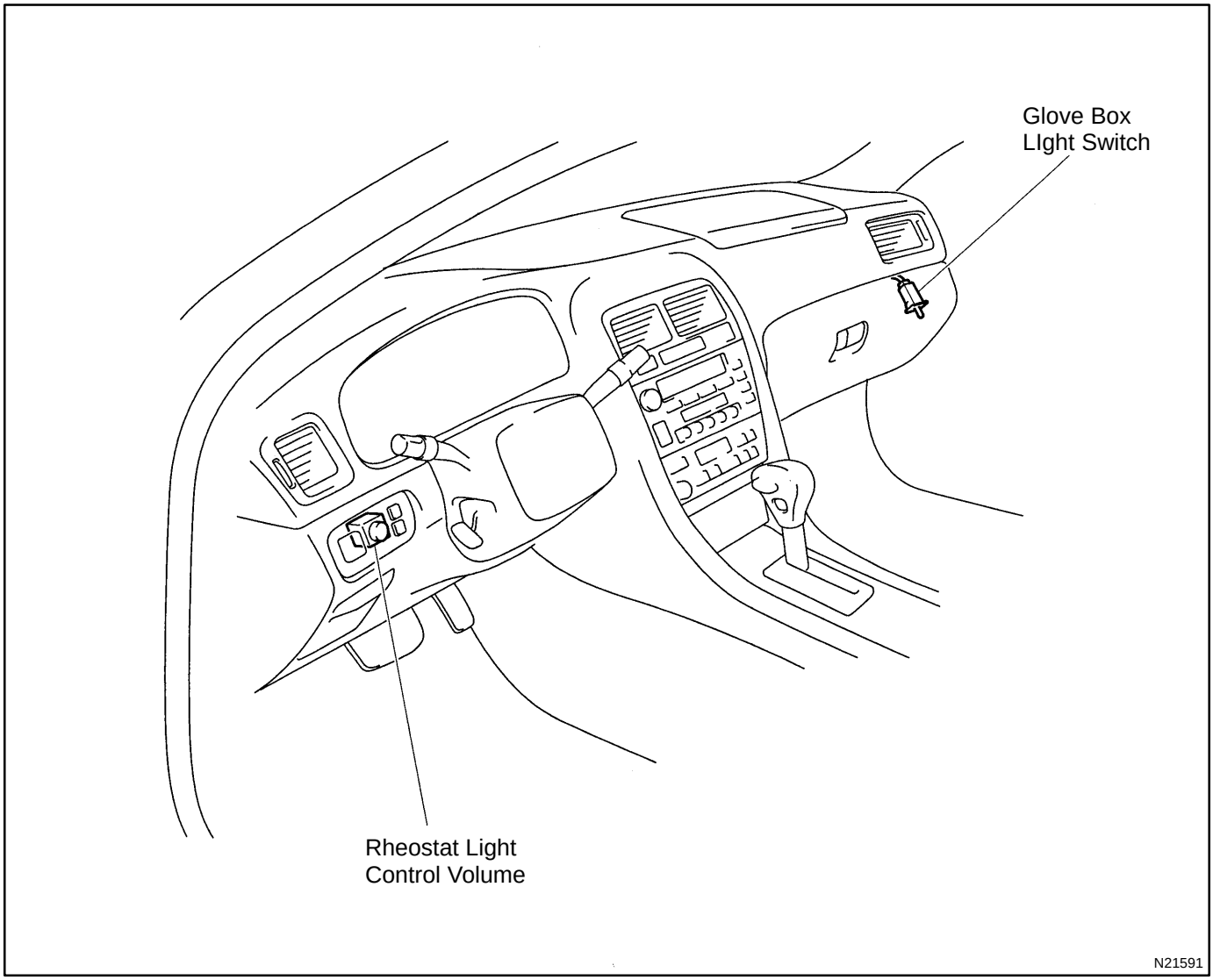
*2: There is resistance because this circuit is grounded through the bulb.

If the circuit is not as specified, inspect the circuits connected to other parts.

ILLUMINATION LIGHT SYSTEM

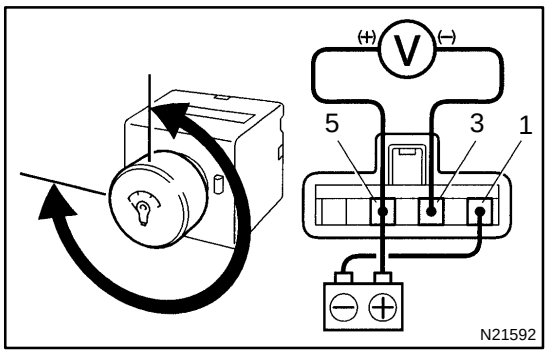
LOCATION

BE055–02



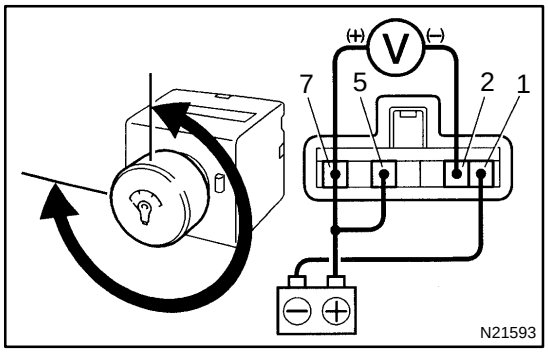
BE056–02

INSPECTION



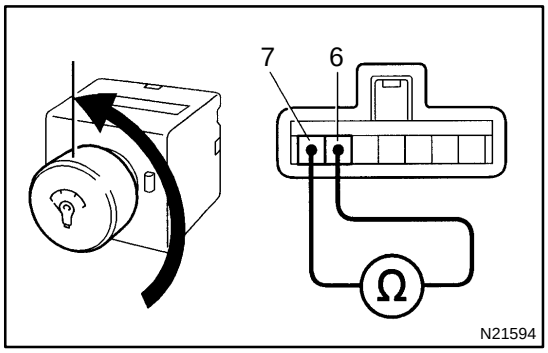
1. Combination Meter Adjustment:
INSPECT RHEOSTAT LIGHT CONTROL VOLUME

(a) Connect the positive (+) lead from the battery to terminal 5 and the negative (–) lead to terminal 1.
(b) Connect the positive (+) lead from the voltmeter to terminal 5 and negative (–) lead to terminal 3.
(c) Turn the rheostat knob and check that the voltage changes.



2. Illumination Adjustment:
INSPECT RHEOSTAT LIGHT CONTROL VOLUME

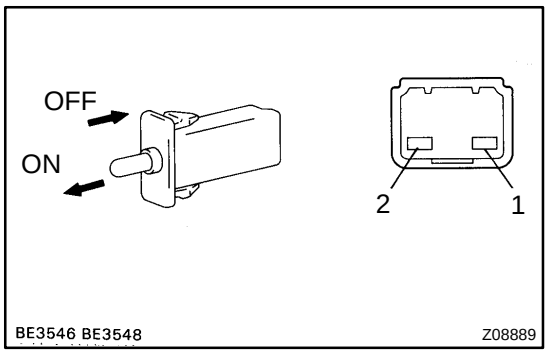
(a) Connect the positive (+) lead from the battery to terminal 5 and 7 and negative (–) lead to terminal 1.
(b) Connect the positive (+) lead from the voltmeter to terminal 7 and negative (–) lead to terminal 2.
(c) Turn the rheostat knob and check that the voltage changes.



3. Tail Cancel:
INSPECT RHEOSTAT LIGHT CONTROL VOLUME

(a) Connect the ohmmeter to terminals 6 and 7.
(b) Turn the rheostat knob fully clockwise and check that current flow stops.

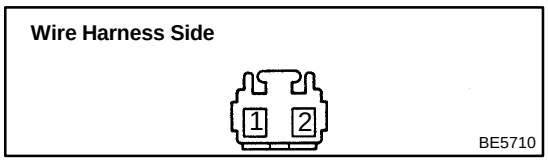
If switch is not as specified, replace the volume.



4. INSPECT GLOVE BOX LIGHT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF (Closed)	–	No continuity
ON (Opened)	1 – 2	Continuity

If continuity is not as specified, replace the relay.



5. INSPECT GLOVE BOX LIGHT SWITCH CIRCUIT

Disconnect the connector fromt the switch and inspect the connector on the wire harness side.

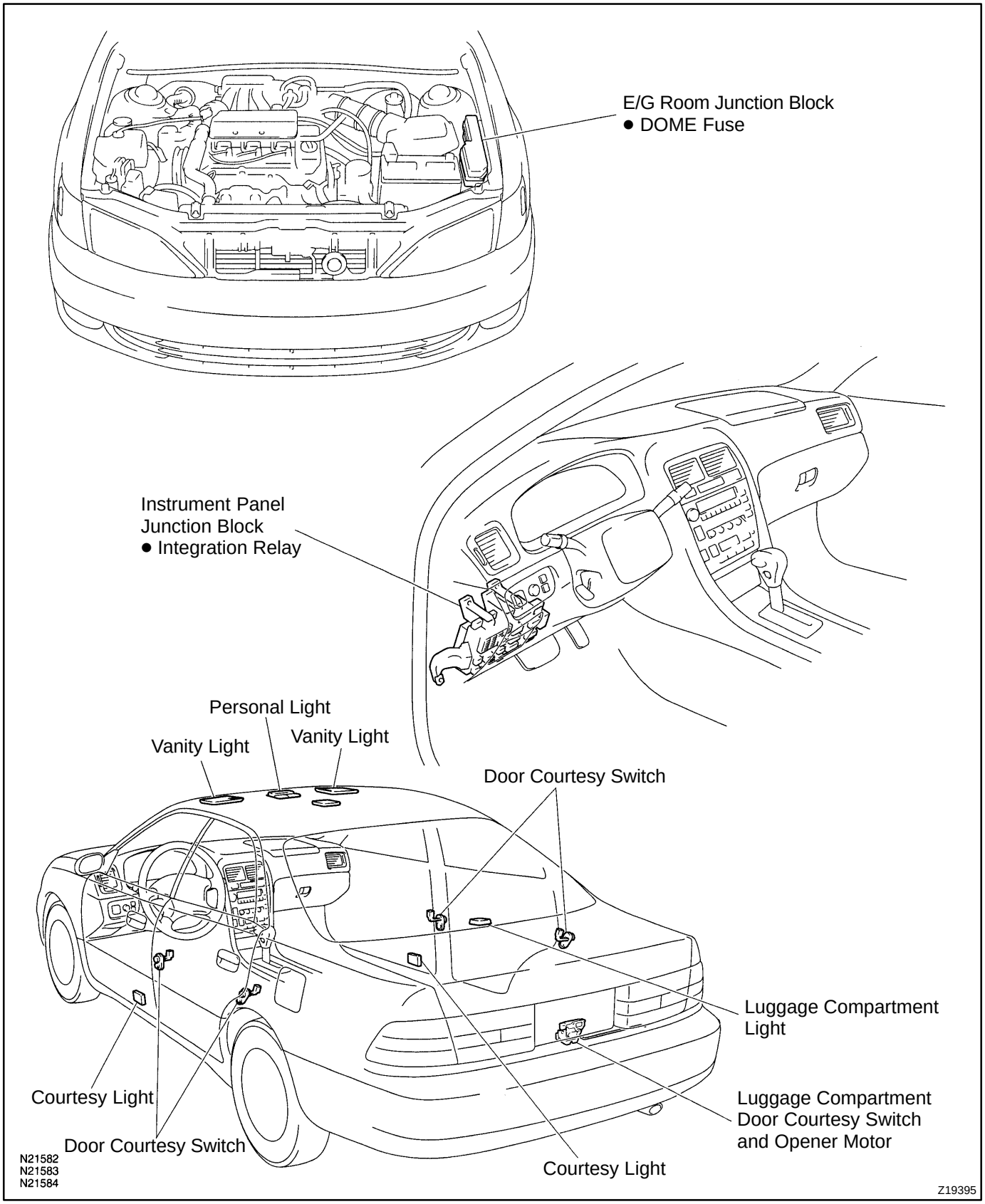
Tester connection	Condition	Specified condition
2 – Ground	Constant	Continuity
1 – Ground	Light control switch position OFF	No voltage
1 – Ground	Light control switch position TAIL or HEAD	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

INTERIOR LIGHT SYSTEM

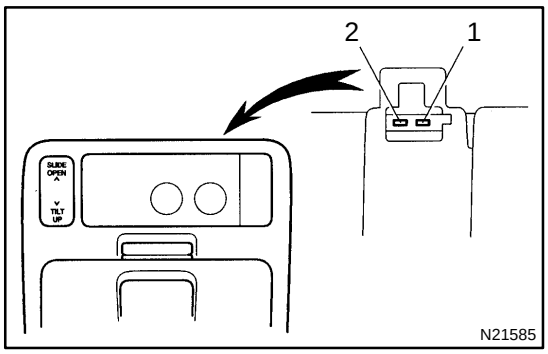
LOCATION

BE057–03



BE058–02

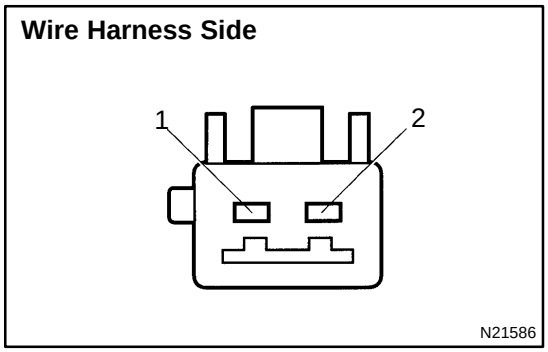
INSPECTION



1. INSPECT PERSONAL LIGHT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF	–	No continuity
ON	1 – 2	Continuity

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

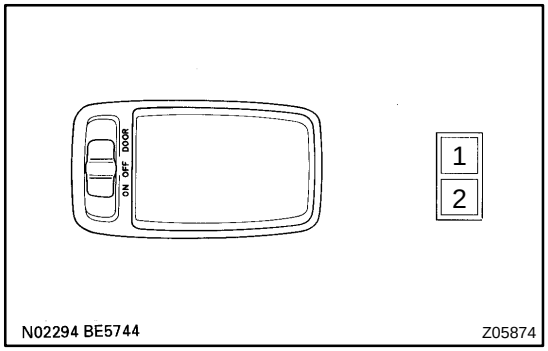


2. INSPECT PERSONAL LIGHT SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
2 – Ground	Constant	Continuity
1 – Ground	Constant	Battery positive voltage

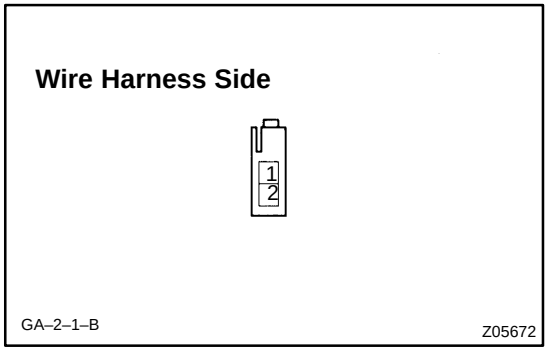
If the circuit is as specified, inspect power source or wire harness.



3. INSPECT INTERIOR LIGHT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
DOOR	2 – Switch body	Continuity
OFF	–	No continuity
ON	1 – 2	Continuity

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

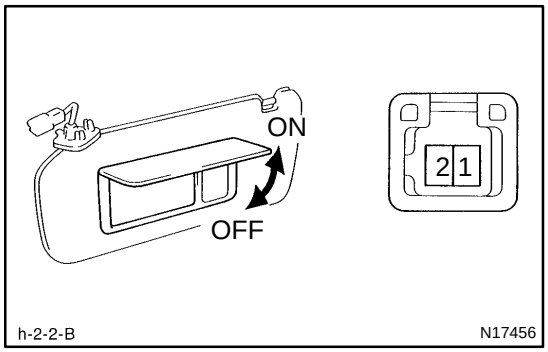


4. INSPECT INTERIOR LIGHT SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
2 – Ground	Constant	Battery positive voltage

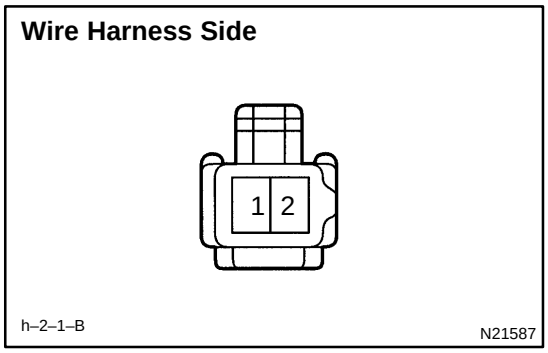
If the circuit is not as specified, inspect power source or wire harness.



5. INSPECT VANITY LIGHT CONTINUITY

Switch position	Tester connection	Specified condition
OFF (Closed)	–	No continuity
ON (Opened)	1 – 2	Continuity

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

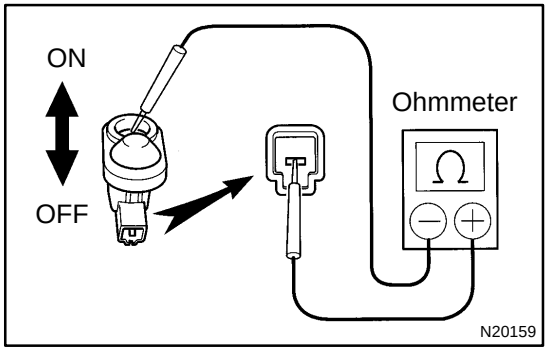


6. INSPECT VANITY LIGHT SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
2 – Ground	Constant	Continuity
1 – Ground	Constant	Battery positive voltage

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

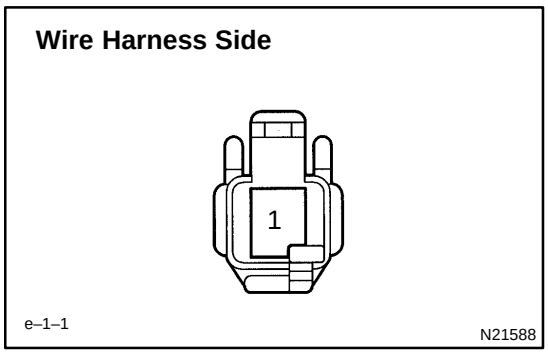


7. INSPECT DOOR COURTESY SWITCH CONTINUITY

(a) Check that continuity exists between terminals and the switch body with the switch ON (switch pin released: opened door).

(b) Check that no continuity exists between terminals and the switch body with the switch OFF (switch pin pushed in: closed doors).

If operation is not as specified, replace the switch.

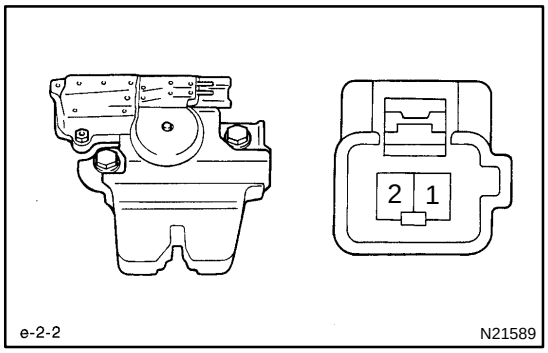


8. INSPECT DOOR COURTESY SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
1 – Ground	Constant	Battery positive voltage

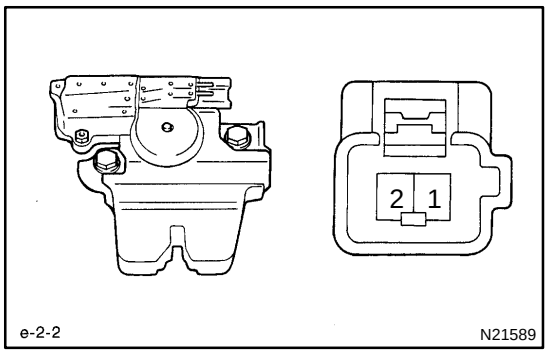
If the circuit is not as specified, inspect power source or wire harness.



9. INSPECT LUGGAGE COMPARTMENT DOOR COURTESY SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
Switch OFF	–	No continuity
Switch ON	2 – Body Ground	Continuity

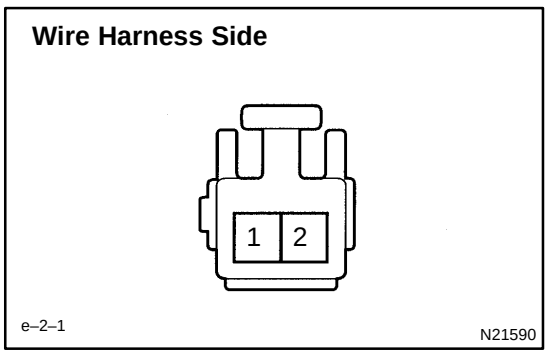
If continuity is not as specified, replace the switch and motor.



10. INSPECT LUGGAGE COMPARTMENT DOOR OPENER MOTOR OPERATION

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

If operation is not as specified, replace the switch and motor.



11. INSPECT LUGGAGE COMPARTMENT DOOR COURTESY SWITCH AND OPENER MOTOR CIRCUIT

Disconnect the connector from the switch and opener motor, and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
1 – Ground	Luggage compartment door opener switch OFF	No voltage
1 – Ground	Luggage compartment door opener switch ON	Battery positive voltage
2 – Ground	Constant	Battery positive voltage

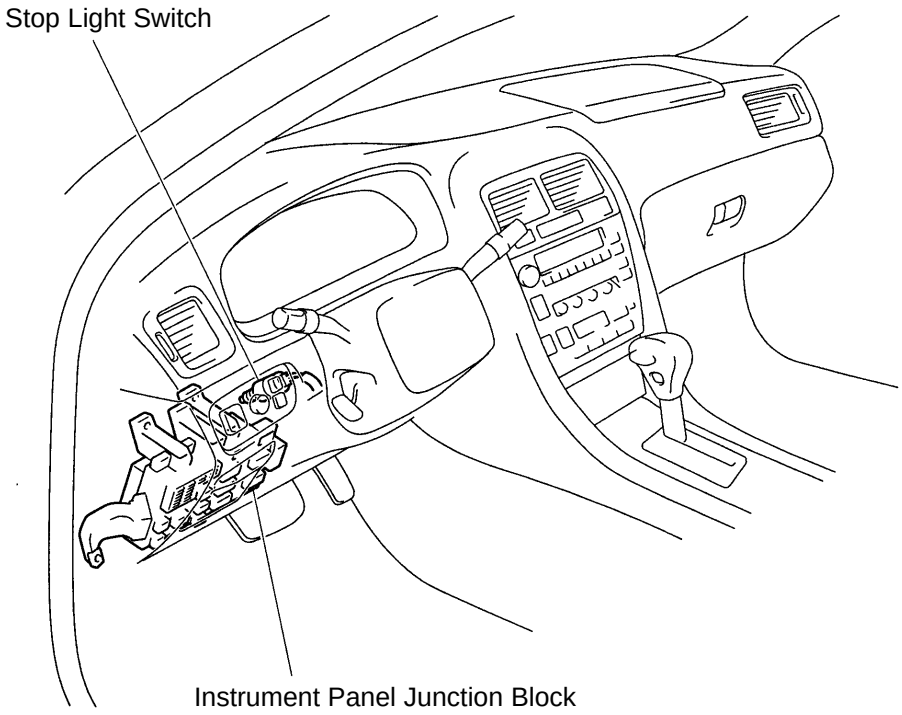
If the circuit is not as specified, inspect power source or wire harness.

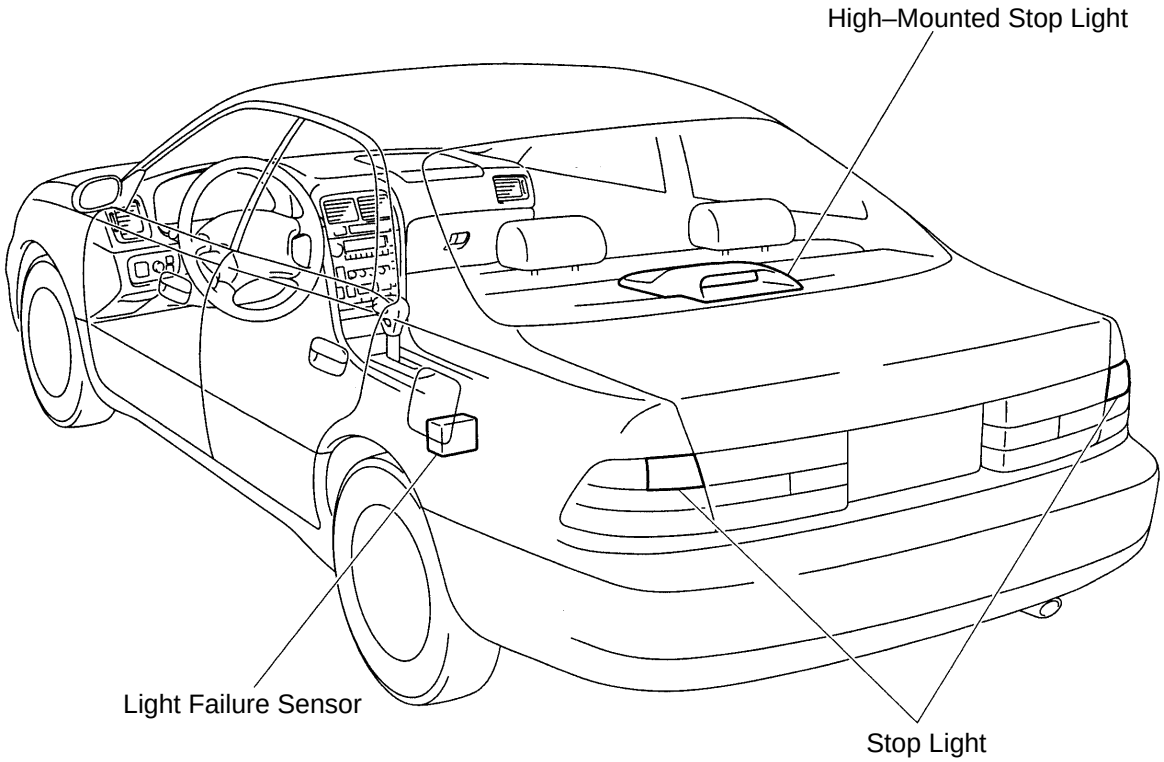
12. INSPECT ILLUMINATED ENTRY SYSTEM
(See integration relay circuit on page BE–21)

STOP LIGHT SYSTEM

LOCATION

BE059–03





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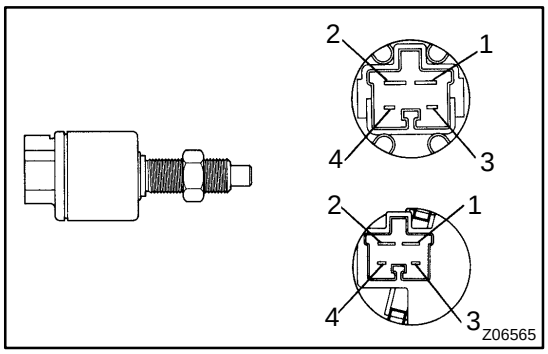
BE05A–03

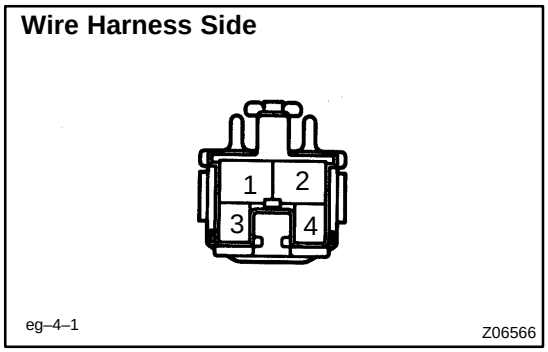


INSPECTION

1. INSPECT STOP LIGHT SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
Switch pin free	1 – 2	Continuity
Switch pin pushed in	3 – 4	Continuity

If continuity is not as specified, replace the switch.

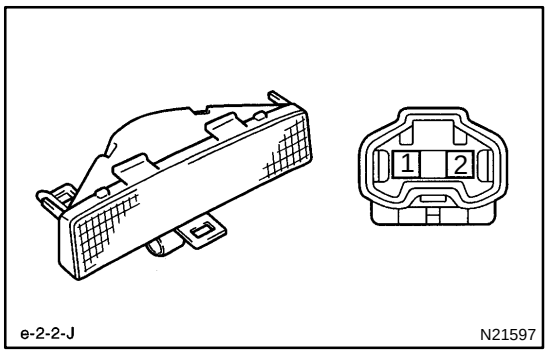


2. INSPECT STOP LIGHT SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
2 – Ground	Constant	Battery positive voltage

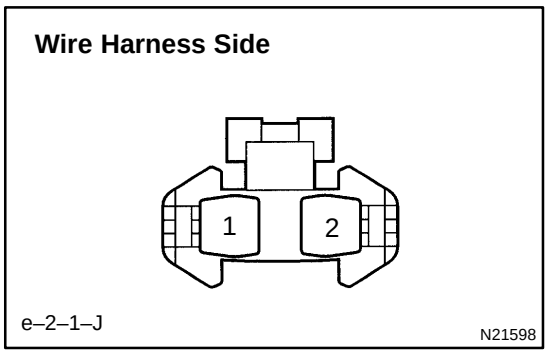
If circuit is not as specified, inspect the power source or wire harness.



3. INSPECT HIGH–MOUNTED STOP LIGHT ASSEMBLY CONTINUITY

Using the ohmmeter, check that continuity exists between terminals.

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

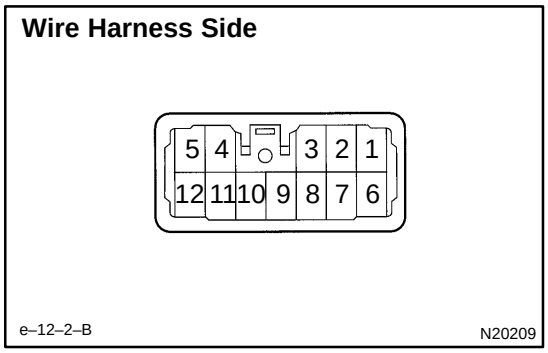


4. INSPECT HIGH–MOUNTED STOP LIGHT ASSEMBLY CIRCUIT

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

Tester connection	Condition	Specified condition
1 – Ground	Constant	Battery positive voltage

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



5. INSPECT LIGHT FAILURE SENSOR CIRCUIT

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

Tester connection	Condition	Specified condition
1 – Ground	Constant	Continuity*
2 – Ground	Constant	Continuity*
9 – Ground	Constant	Continuity*
11 – Ground	Constant	Continuity
3 – Ground	Light control switch OFF	No voltage
3 – Ground	Light control switch TAIL or HEAD	Battery positive voltage
4 – Ground	Ignition switch LOCK or ACC	No voltage
4 – Ground	Ignition switch ON	Battery positive voltage
7 – Ground	Stop light switch OFF	No voltage
7 – Ground	Stop light switch ON	Battery positive voltage
8 – Ground	Ignition switch LOCK or ACC	No voltage
8 – Ground	Ignition switch ON	Battery positive voltage

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

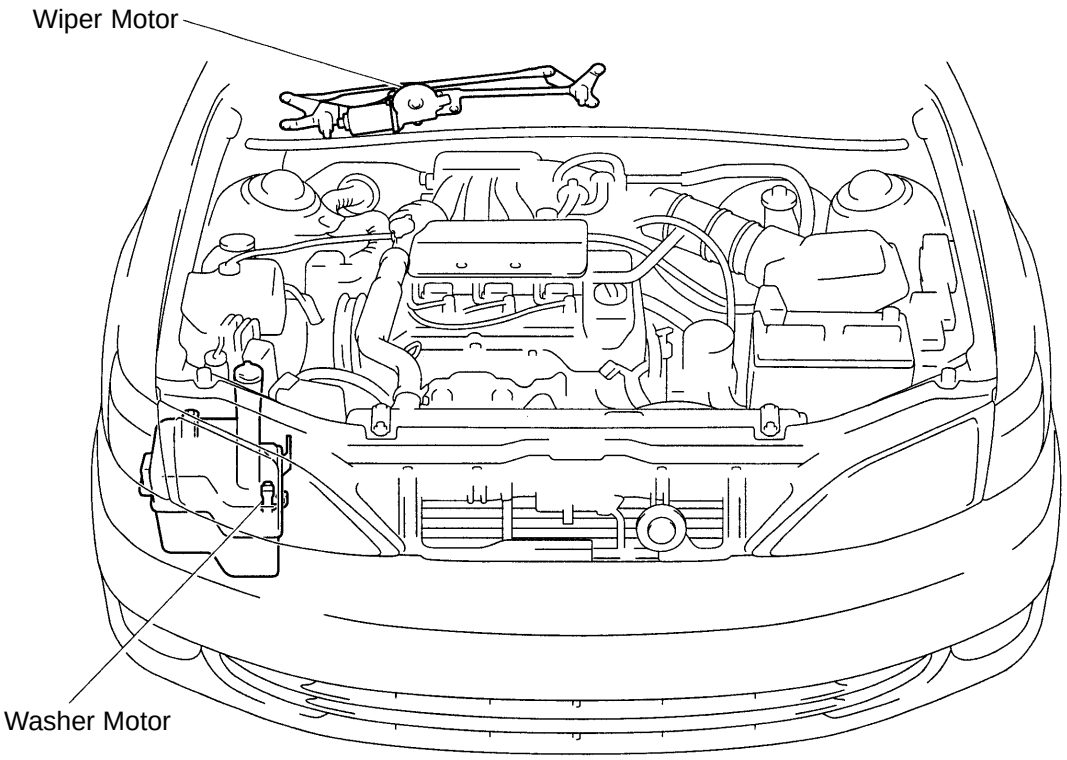
If the circuit is as specified, replace the sensor.

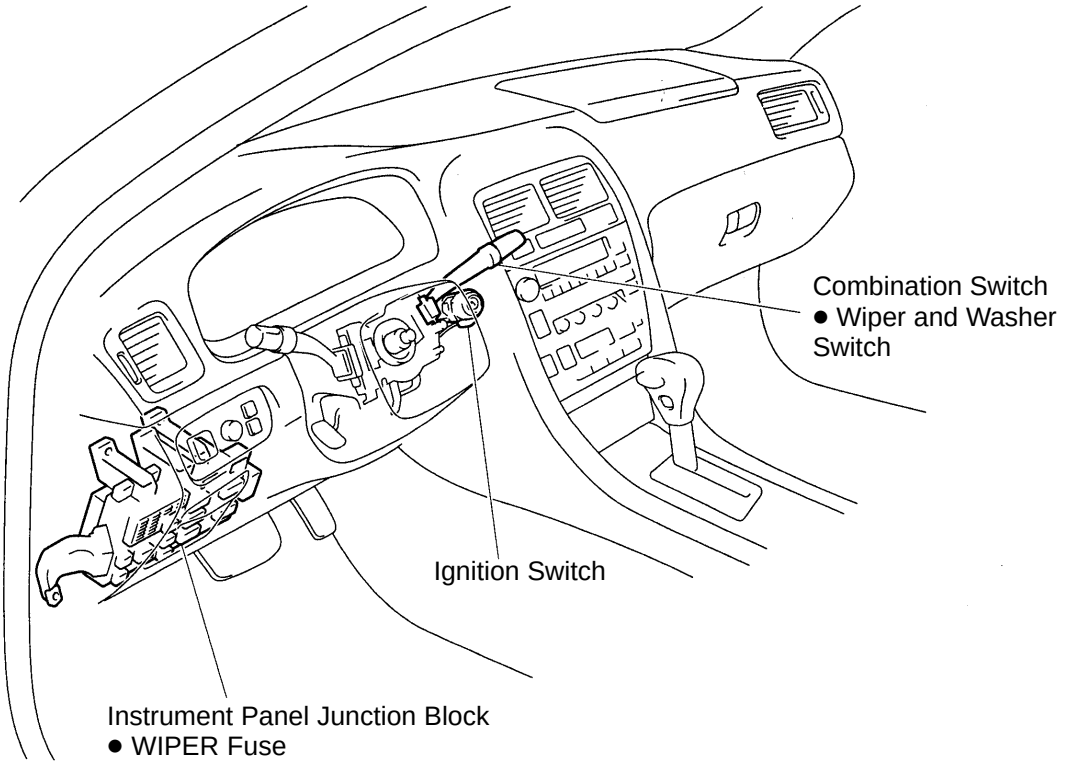
If the circuit is not as specified, inspect the circuits connected to other parts.

WIPER AND WASHER SYSTEM

LOCATION

BE05B–03





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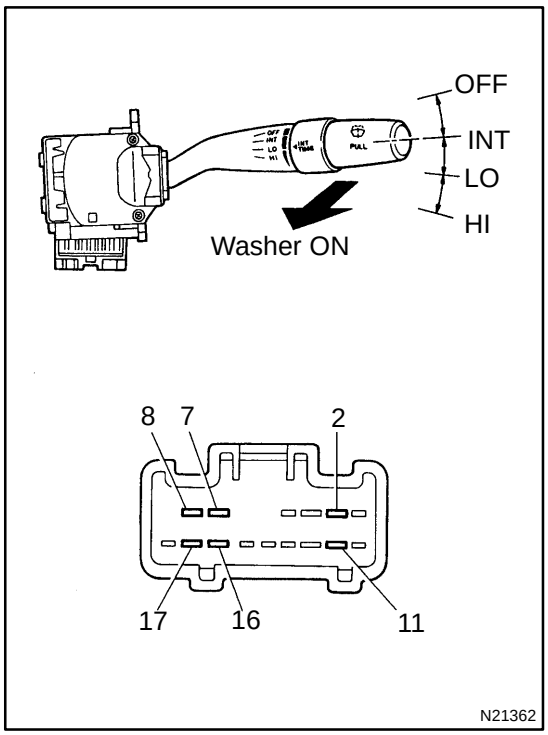
BE05C–02

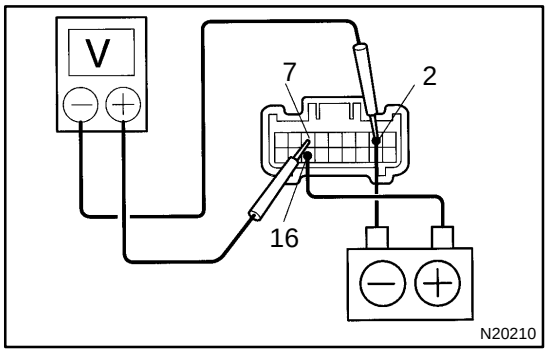
INSPECTION

1. INSPECT FRONT WIPER AND WASHER SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF	7 – 16	Continuity
INT	7 – 16	Continuity
LO	7 – 17	Continuity
HI	8 – 17	Continuity
Washer ON	2 – 11	Continuity

If continuity is not as specified, replace the switch.





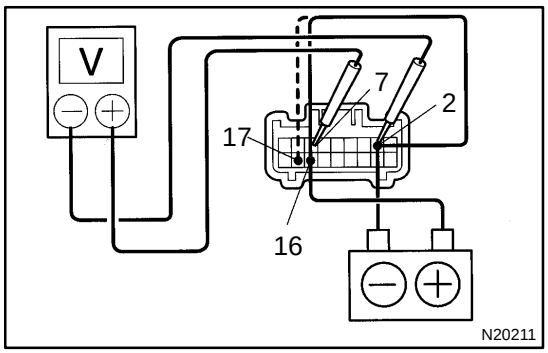
2. INSPECT INTERMITTENT OPERATION

(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 16 and the negative (–) lead to terminal 2.

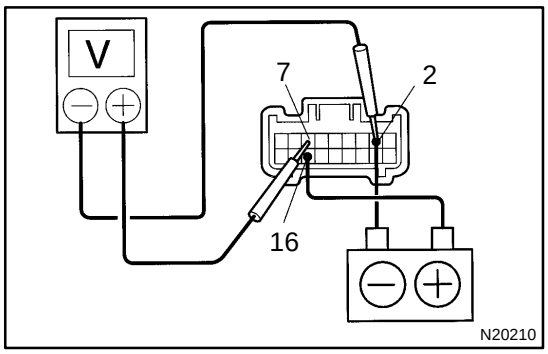
(d) Connect the positive (+) lead from the voltmeter to terminal 7 and the negative (–) lead to terminal 2, check that the meter needle indicates battery positive voltage.



(e) After connecting terminal 16 to terminal 17, connect it to terminal 2, check the voltage rises from 0 volt to battery positive voltage within the time, as shown in the table.

INT time control switch position	Voltage
FAST	Approx. 2 sec. → Battery positive voltage / 0 V
SLOW	10.7 ± 5 sec. → Battery positive voltage / 0 V
Non variable type	3.3 ± 1 sec. → Battery positive voltage / 0 V

If operation is not as specified, replace the wiper and washer switch.

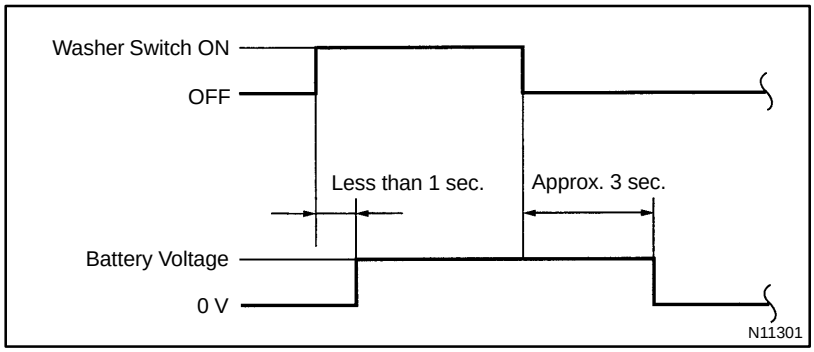


3. INSPECT WASHER LINKED OPERATION

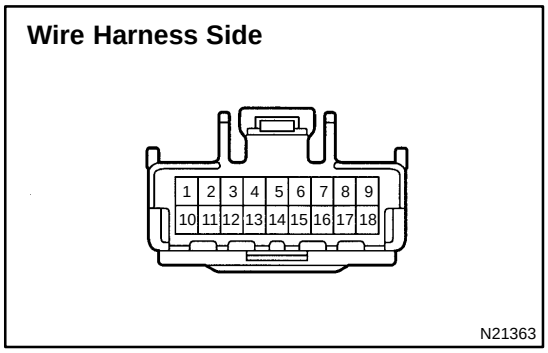
(a) Connect the positive (+) lead from the battery to terminal 16 and the negative (–) lead to terminal 2.

(b) Connect the positive (+) lead from the voltmeter to terminal 7 and the negative (–) lead to terminal 2.

(c) Push in the washer switch, and check that the voltage changes as shown in the table below.



If operation is not as specified, replace the wiper and washer switch.

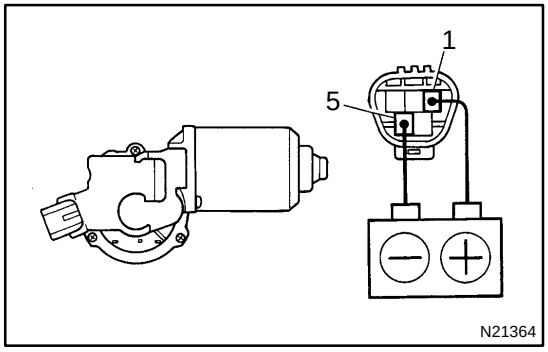


4. INSPECT WIPER SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
2 – Ground	Constant	Continuity
11 – Ground	Ignition switch LOCK or ACC	No voltage
11 – Ground	Ignition switch ON	Battery positive voltage

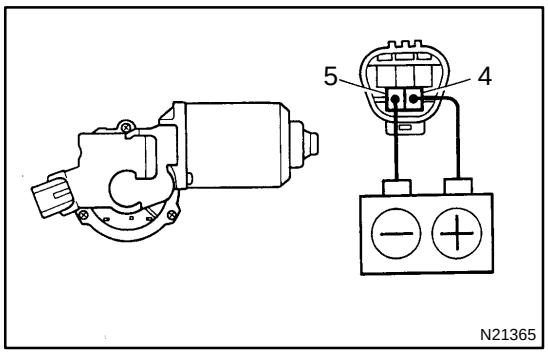
If circuit is not as specified, inspect the circuits connected to other parts.



5. Low speed: INSPECT FRONT WIPER MOTOR OPERATION

Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 5, check that the motor operates at low speed.

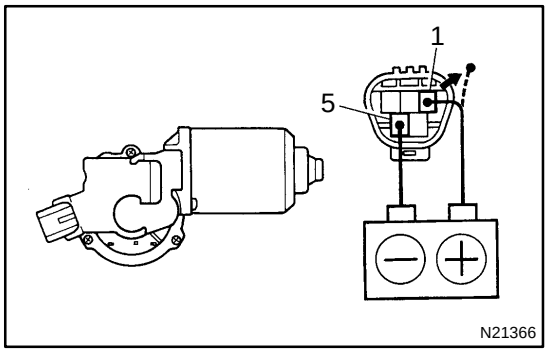
If operation is not as specified, replace the motor.



6. High speed:
INSPECT FRONT WIPER MOTOR OPERATION

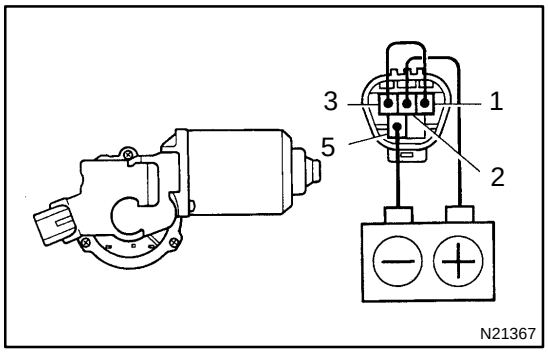
Connect the positive (+) lead from the battery to terminal 4 and the negative (–) lead to terminal 5, check that the motor operates at high speed.

If operation is not as specified, replace the motor.



7. Stopping at stop position:
INSPECT FRONT WIPER MOTOR OPERATION

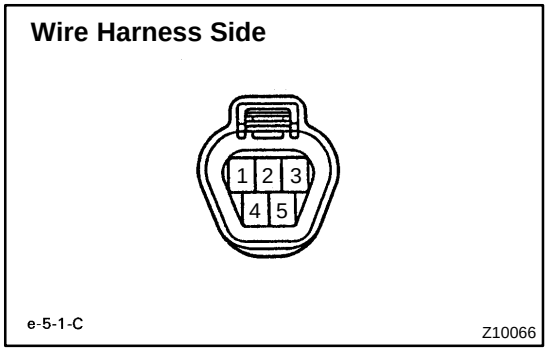
(a) Operate the motor at low speed and stop the motor operation anywhere except at the stop position by disconnecting positive (+) lead from terminal 1.



(b) Connect terminals 1 and 3.

(c) Connect the positive (+) lead from the battery to terminal 2 and negative (–) lead to terminal 5, check that the motor stops running at the stop position after the motor operates again.

If operation is not as specified, replace the motor.

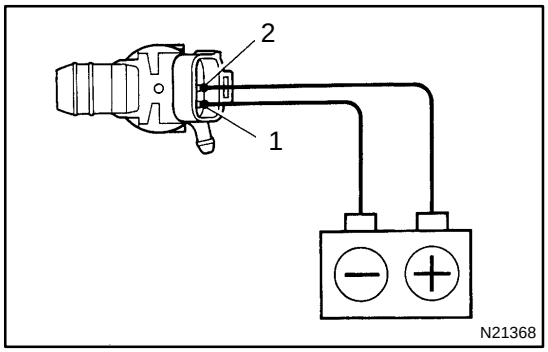


8. INSPECT WIPER MOTOR CIRCUIT

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

Tester connection	Condition	Specified condition
5 – Ground	Constant	Continuity
1 – Ground	* Wiper switch OFF or INT, HIGH	No voltage
1 – Ground	* Wiper switch LOW	Battery positive voltage
2 – Ground	Ignition switch LOCK or ACC	No voltage
2 – Ground	Ignition switch ON	Battery positive voltage
4 – Ground	* Wiper switch OFF or INT, LOW	No voltage
4 – Ground	* Wiper switch HIGH	Battery positive voltage

*: Turn ignition switch ON
If circuit is not as specified, inspect the circuits connected to other parts.



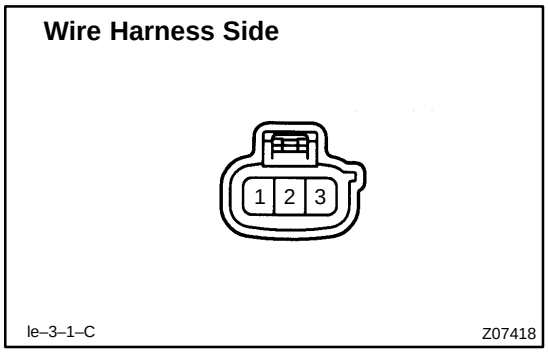
9. INSPECT WASHER MOTOR OPERATION

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

NOTICE:

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

If operation is not as specified, replace the motor.



10. INSPECT WASHER MOTOR CIRCUIT

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

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

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

COMBINATION METER

BE05D–02

TROUBLESHOOTING

PRECAUTIONS

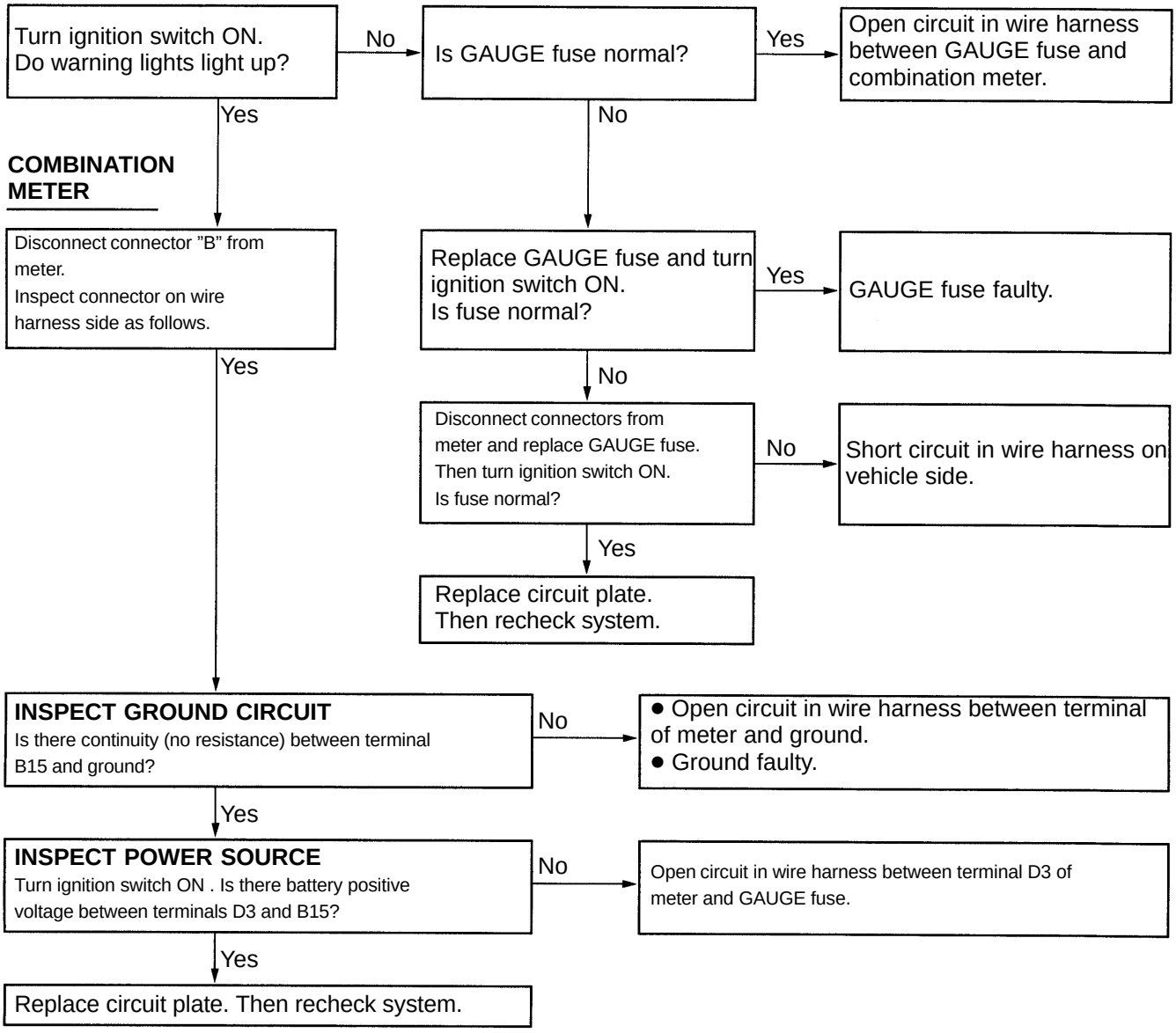
(a) When checking voltage, resistance, etc., use a high impedance type tester (It is impossible to use a simple tester).
(b) When the ignition switch is turned to START, all meters will go out but this is normal.
(c) When replacing the internal mechanism (computer parts) of the meter, be careful that 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).
(d) Do not disconnect the battery while the engine is running as this would cause an instant reverse charge, resulting in damage to the components.
(e) Always disconnect the battery terminals before pulling apart connectors or terminals.
(f) 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 character plate is not illuminated at one or two locations.	3
	Brightness does not change even when light control switch is operated (OFF↔TAIL).	4
	Brightness does not change even when rheostat volume is turned.	5
	Remains dimmed when the light control switch is turned OFF.	Replace combination meter computer.
	Does not go out while starter running.	6
Speedometer	Speedometer does not operate while driving.	7
	Vehicle speed signal (4P) faulty.	8
Tachometer	Tachometer does not operate while engine running.	9
Fuel Gauge	Does not operate or operation is abnormal.	10
Fuel Level Warning	Warning light does not light up or always lights up.	11
Engine Coolant Temperature Gauge	Does not operate or operation is abnormal.	12
Low Oil Pressure warning	Abnormal operation or warning light does not light up.	13
Brake Warning	Abnormal operation or warning light does not light up.	14
Rear Lights Warning	Abnormal operation or warning light does not light up.	15
Open Door Warning	Abnormal operation or warning light does not light up.	16
Engine Oil Level Warning	Abnormal operation or warning light does not light up.	17
Seat Belt Warning Chime	Abnormal operation or chime does not operate.	BE–99
Seat Belt Warning	Abnormal operation or warning light does not light up.	18

Trouble		Refer to
Turn Signal Indicator	Abnormal operation or Indicator does not light up.	19
O/D OFF Indicator	Abnormal operation or Indicator does not light up.	20
Shift Position Indicator	Abnormal operation or Indicator does not light up.	21
Malfunction Indicator	Abnormal operation or warning light does not light up	22
ABS Warning	Abnormal operation or warning light does not light up.	23
CRUISE Indicator	Abnormal operation or Indicator does not light up.	24
SRS Warning	Abnormal operation or warning light does not light up.	25
Discharge Warning	Abnormal operation or warning light does not light up.	26
High Beam Indicator	Abnormal operation or Indicator does not light up.	27
Window Washer Warning	Abnormal operation or warning light does not light up.	28
Taillight Indicator	Abnormal operation or Indicator does not light up.	29
Headlight Indicator	Abnormal operation or Indicator does not light up.	30

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.



V08429

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.

Is LED OK?
- No → Replace the LED. Then recheck system.
- Yes ↓

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

INSPECT GROUND CIRCUIT
Is there continuity (no resistance) between terminal B15 and ground?
- No → ● Open circuit in wire harness between terminal of meter and ground. ● Ground faulty.
- Yes ↓

INSPECT POWER SOURCE
Turn ignition switch ON . Is there battery positive voltage between terminals D3 and B15?
- No → Open circuit in wire harness between terminal D3 of meter and GAUGE fuse.
- Yes ↓

Replace circuit plate. Then recheck system.

3	**ALL METERS, GAUGES, AND ILLUMINATIONS**	**The character plate is illuminated on one side.**

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

Is bulb OK?
- No → Replace the LED. Then recheck system.
- Yes ↓

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

INSPECT GROUND CIRCUIT
Is there continuity (no resistance) between terminal B15 and ground?
- No → ● Open circuit in wire harness between terminal D3 of meter and ground. ● Ground faulty.
- Yes ↓

INSPECT POWER SOURCE
Turn ignition switch ON . Is there battery positive voltage between terminals D3 and B15?
- No → Open circuit in wire harness between terminal D3 of meter and GAUGE fuse.
- Yes ↓

Replace circuit plate. Then recheck system.

V08430

4	**ALL METERS, GAUGES, 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 B8 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 circuit plate. Then recheck system.

5	**ALL METERS, GAUGES, 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

INSPECT RHEOSTAT LIGHT CONTROL VOLUME
(See page BE–50)
Is operation normal?

No → Replace rheostat light control volume. Then recheck system.

Yes ↓

COMBINATION METER

Connect connector to rheostat volume.
Disconnect connector "D" from meter.
Inspect connector on wire harness side as follows.

↓

Turn ignition switch ON. Does voltage change evenly between terminal D1 and D2 when rheostat knob is turned?

No → Wire harness faulty between terminal D1 of meter and terminal D2 of rheostat volume and rheostat light control.

Yes ↓

Replace circuit plate. Then recheck system.

V08431

6	**ALL METERS, 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.

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

↓

Turn ignition switch START.
Is there battery positive voltage between terminal and ground or B16?

No → Wire harness faulty between terminal B16 of Meter and ST fuse.

↓ Yes

Replace circuit plate. Then recheck system.

7	**SPEEDOMETER**	**Speedometer does not operate while driving**

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

INSPECT ODOMETER OPERATION
Does odometer operate while driving?

Yes → **INSPECT TRIP METER OPERATION**
Does trip meter operate while driving?

Yes → Replace speedometer. Then recheck system.

No → Go to step 7–A

↓ No

COMBINATION METER

Disconnect connector ”C” from meter.
Inspect connector on wire harness side as follows.

↓

Jack up the vehicle.
Turn ignition switch ON. Rotate propeller shaft.
Does the voltage between terminals C9 and C10 change (approx. 0V to 11V or more) per revolution of propeller shaft?

Yes → Replace circuit plate. Then recheck system.

↓ No

CONTINUED ON NEXT PAGE

V08432

8	**SPEEDOMETER**	**Vehicle speed signal (4P) faulty**

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

INSPECT ODOMETER OPERATION
Does odometer operate while driving?
No → See chart 18.
Yes ↓

COMBINATION METER

Remove meter with connector connected.
Inspect connector "C" from back side as follows. ↓

Jack up the vehicle. Turn ignition switch ON.
Rotate propeller shaft. Does the voltage between terminals C10 and ground change (approx. 0V to 5V or more) per revolution of propeller shaft?
No → Replace circuit plate. Then recheck system.
Yes ↓

Wire harness between terminal C10 of meter and*ECU faulty.

- ECM
- Suspension ECU
- Power Steering ECU
- ABS and TRAC ECU
- Cruise Control ECU

9	**TACHOMETER**	**Tachometer dose not operate while engine running.**

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

Disconnect connectors "A" and "C" from meter.
Inspect connector on wire harness side as follows. ↓

*** INSPECT TACHOMETER CIRCUIT**
With engine running, does voltage between terminals A13 and C10 fluctuate?
No → Wire harness faulty between terminal A13 of meter and igniter.
Yes ↓

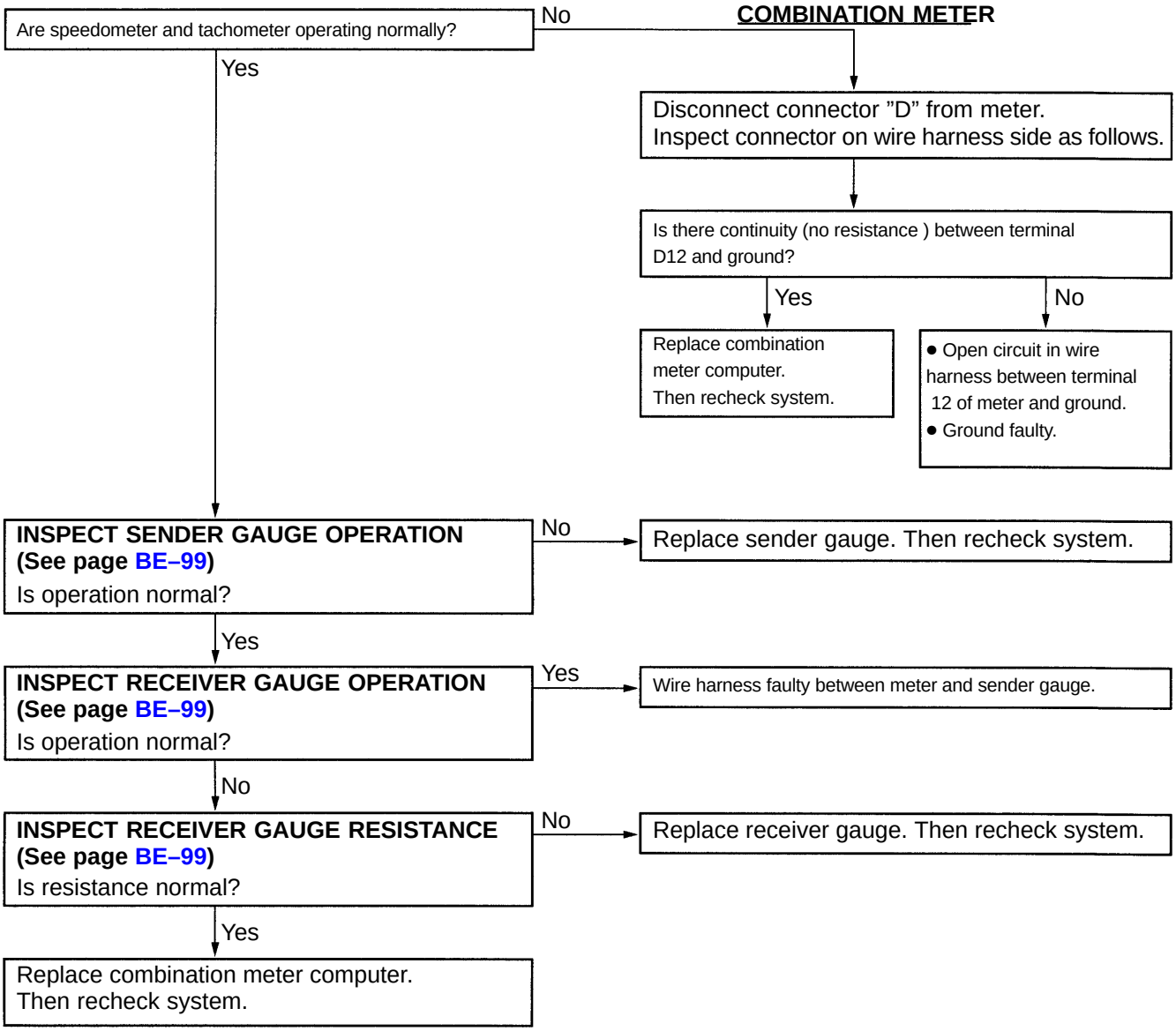
Replace circuit plate. Then recheck system.

* : An electrical tester availble to measure frrequency is necessary for this inspection.
REFERENCE : TOYOTA ELECTRICAL TESTER (09082–00050)

V08433

10	FUEL GAUGE	**Does not operate or operation is abnormal.**

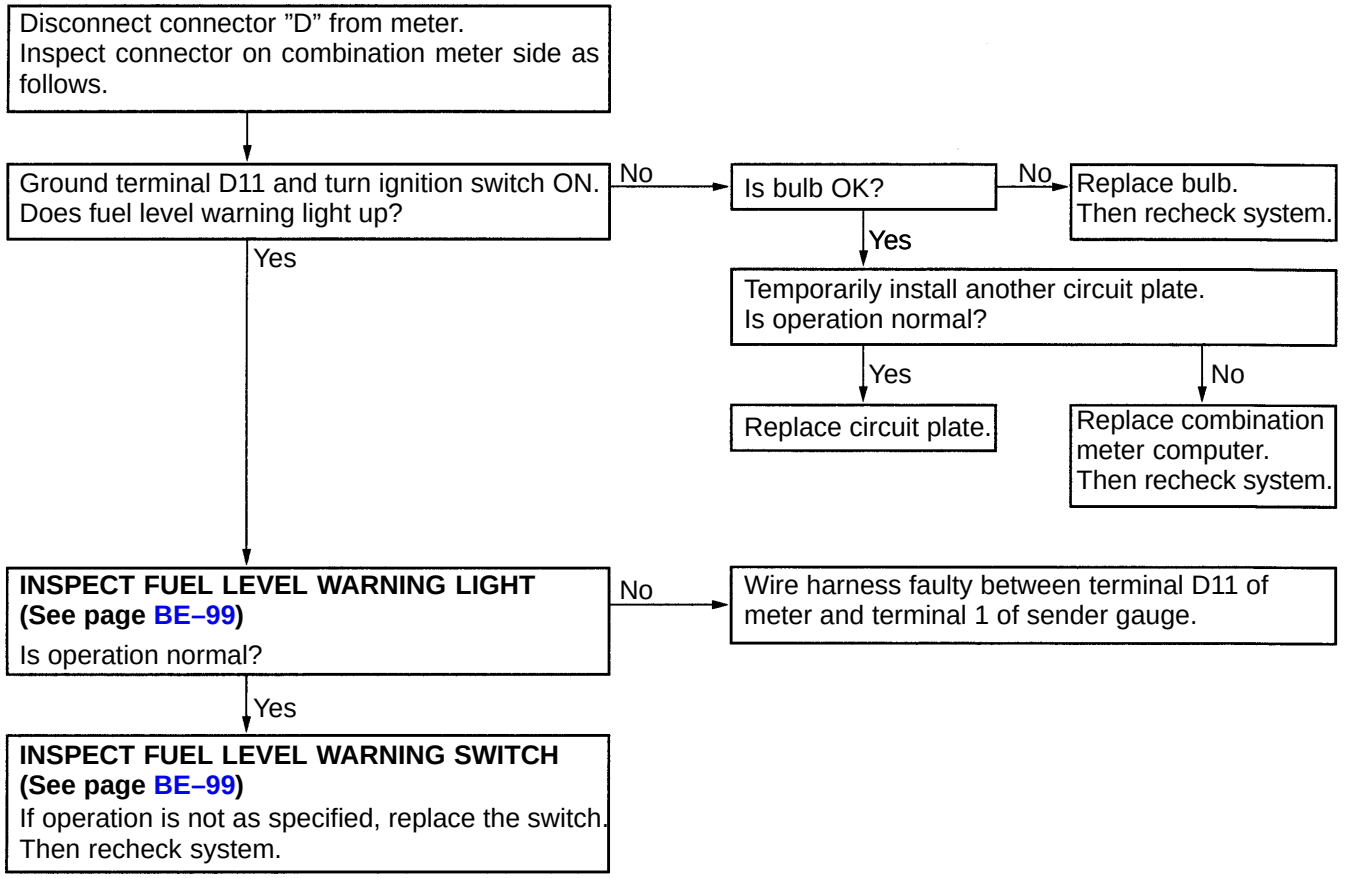
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



V08434

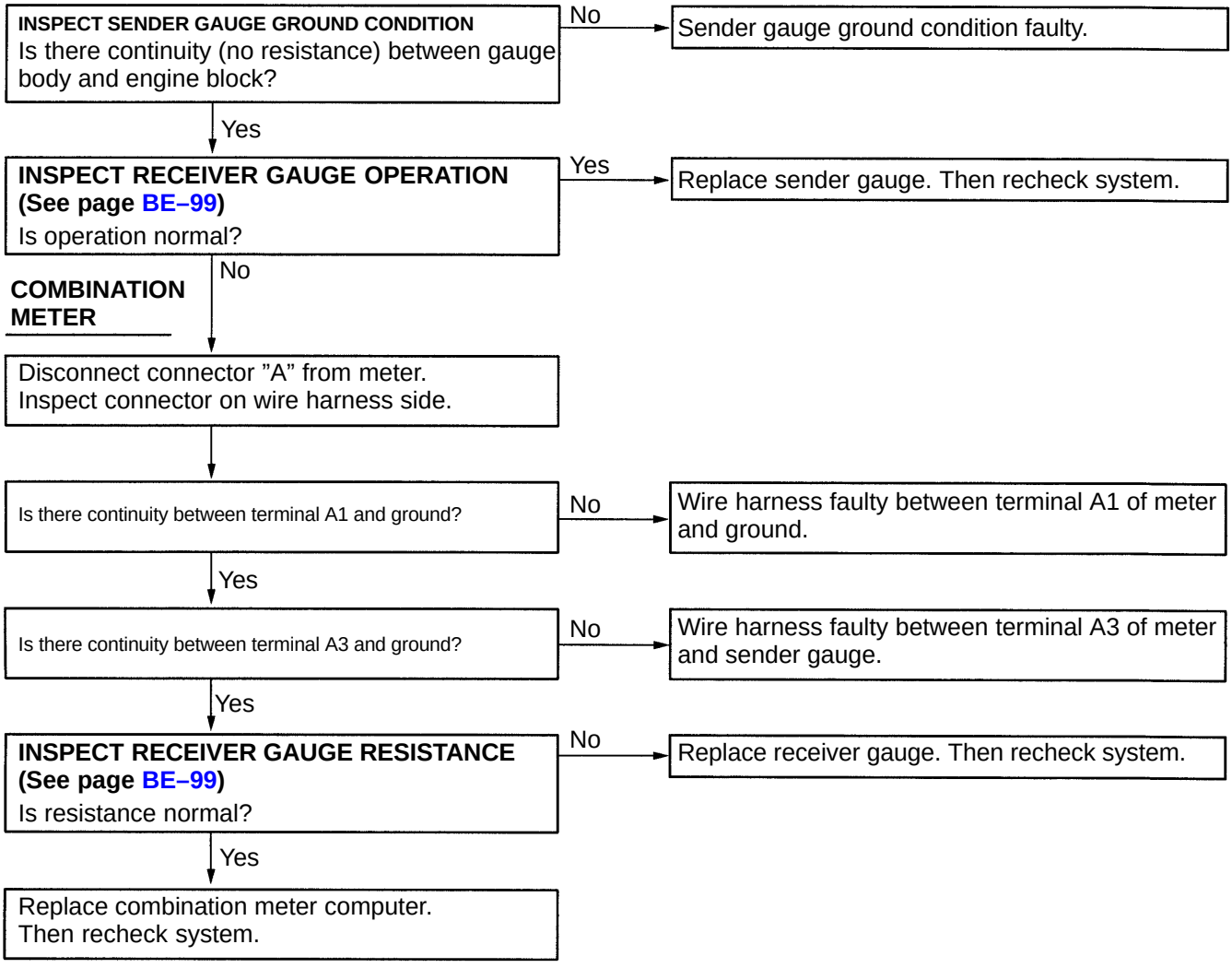
11	FUEL LEVEL WARNING	**Warning light does not light up or always lights up.**

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



12	**ENGINE COOLANT TEMPERATURE GAUGE**	**Does not operate or operation is abnormal.**

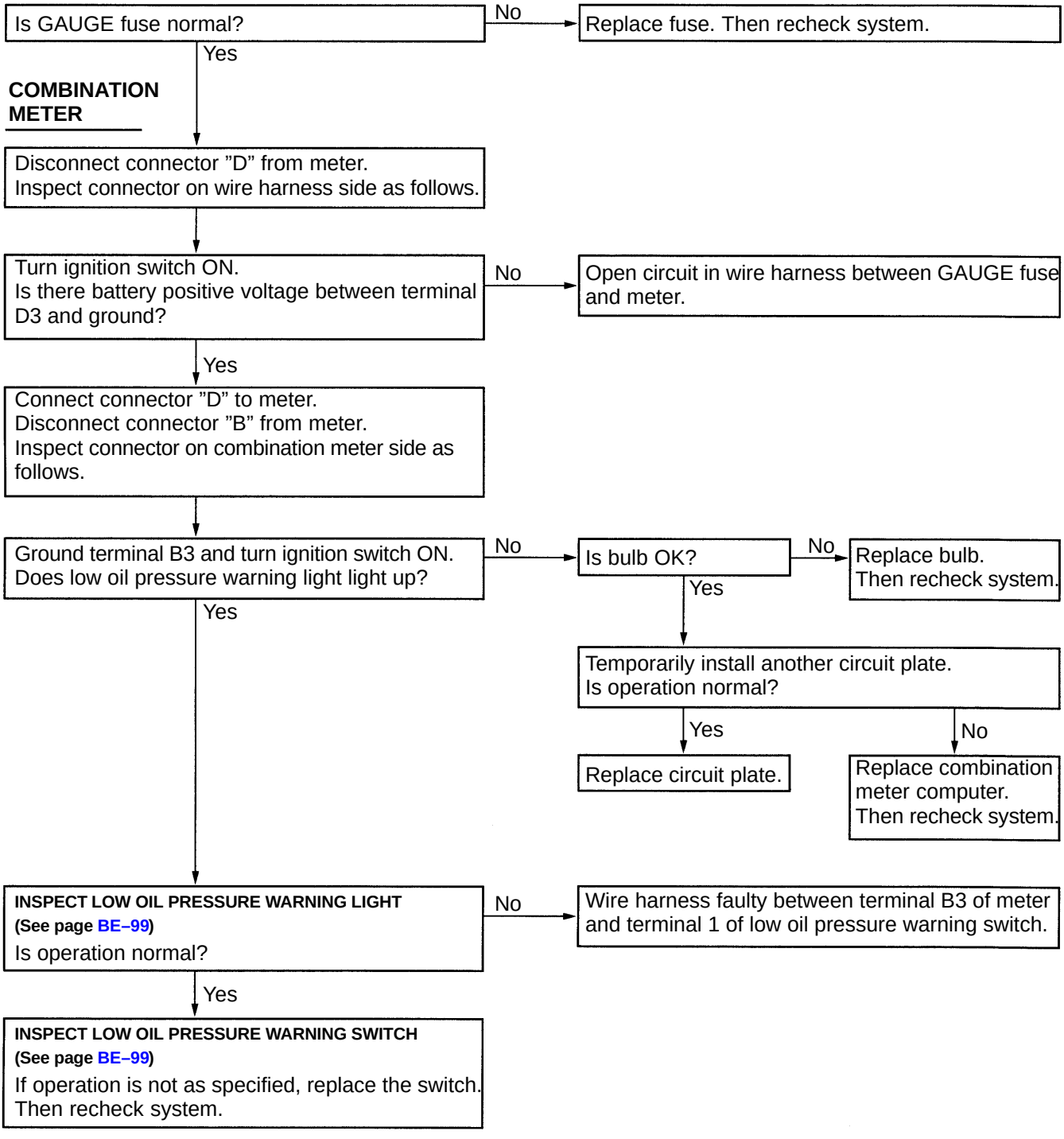
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



V08436

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

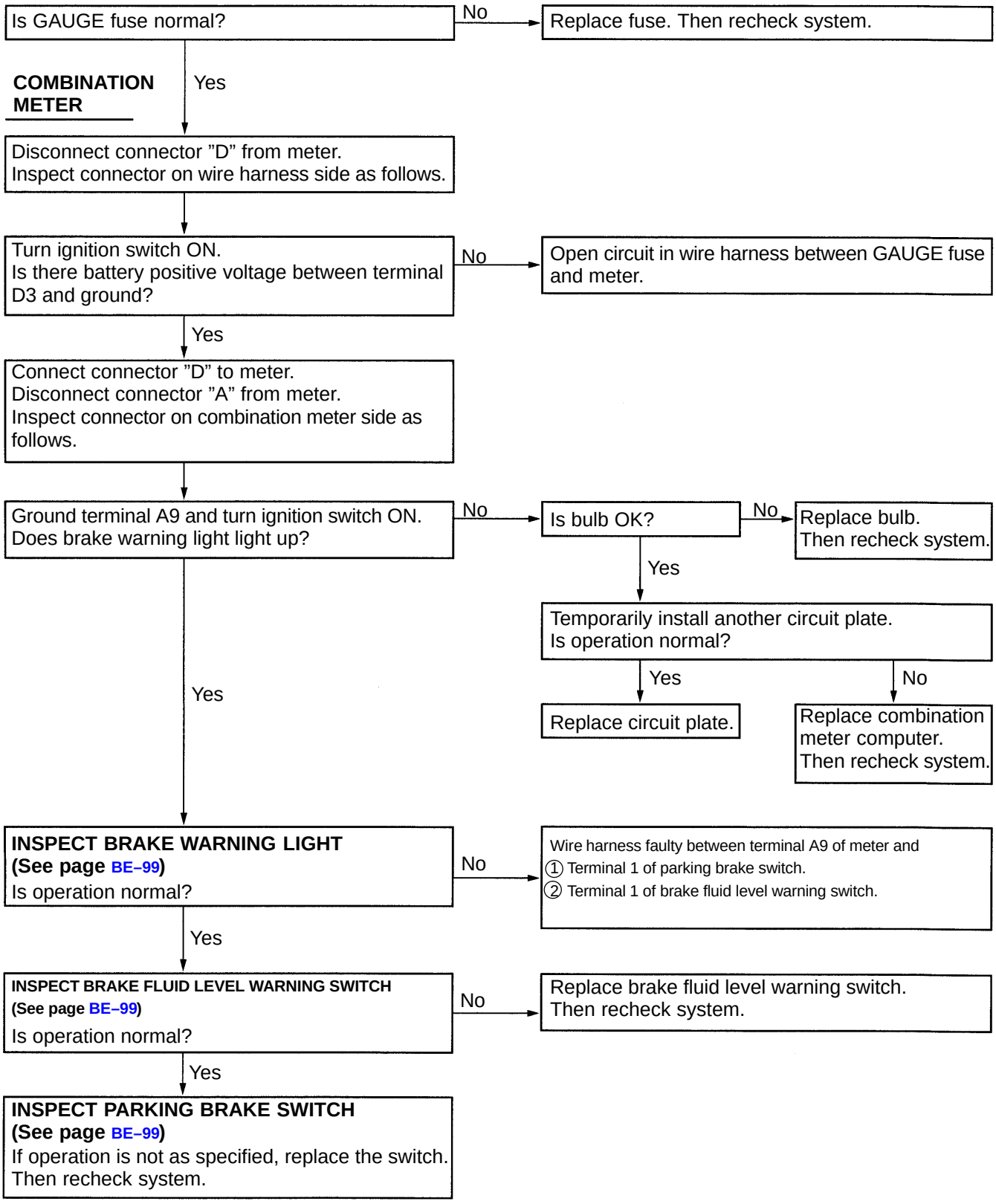
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



V08437

14	**BRAKE WARNING**	**Abnormal operation or warning light does not light up.**

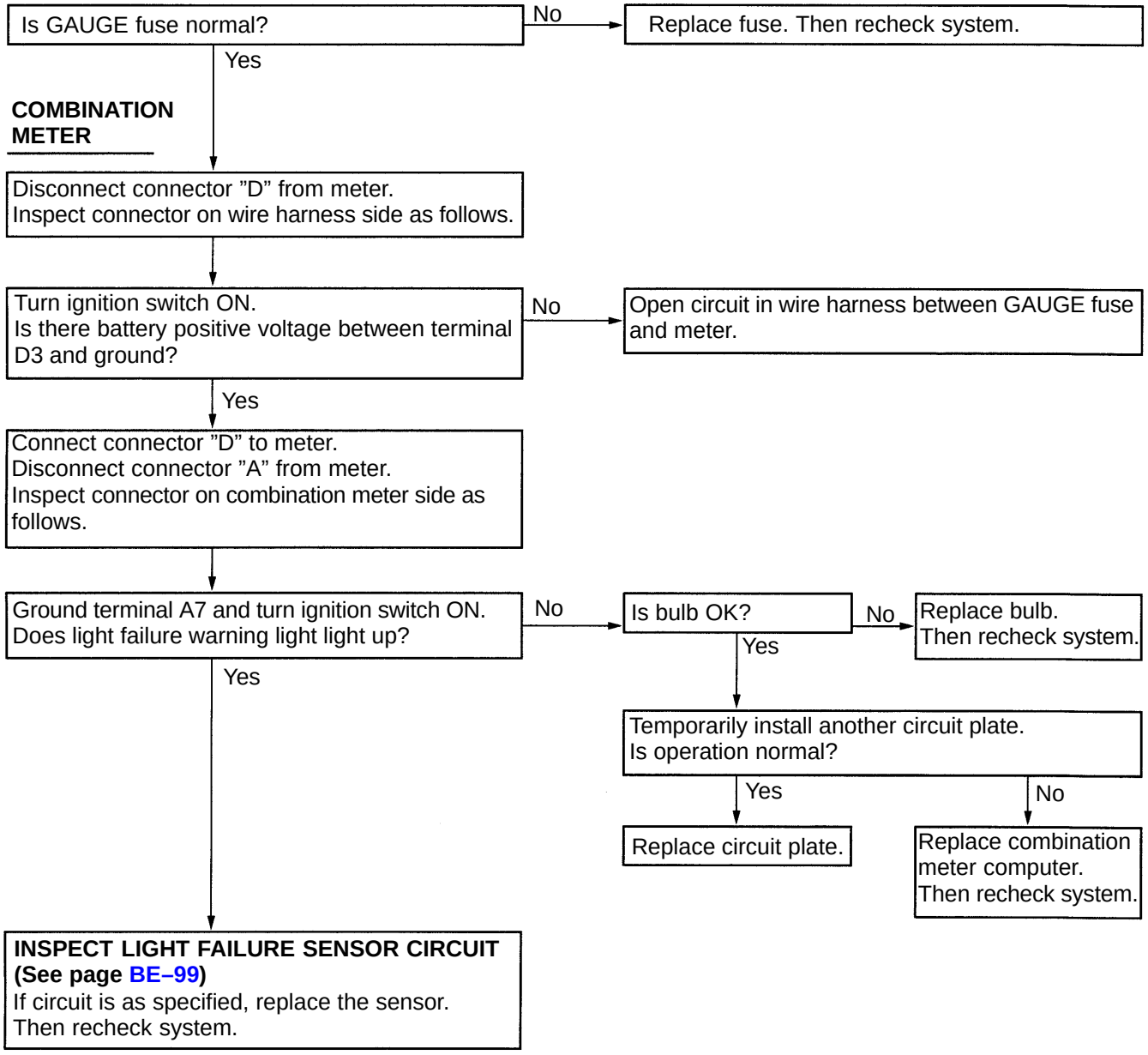
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



V08438

15	**REAR LIGHTS WARNING**	**Abnormal operation or warning light does not light up.**

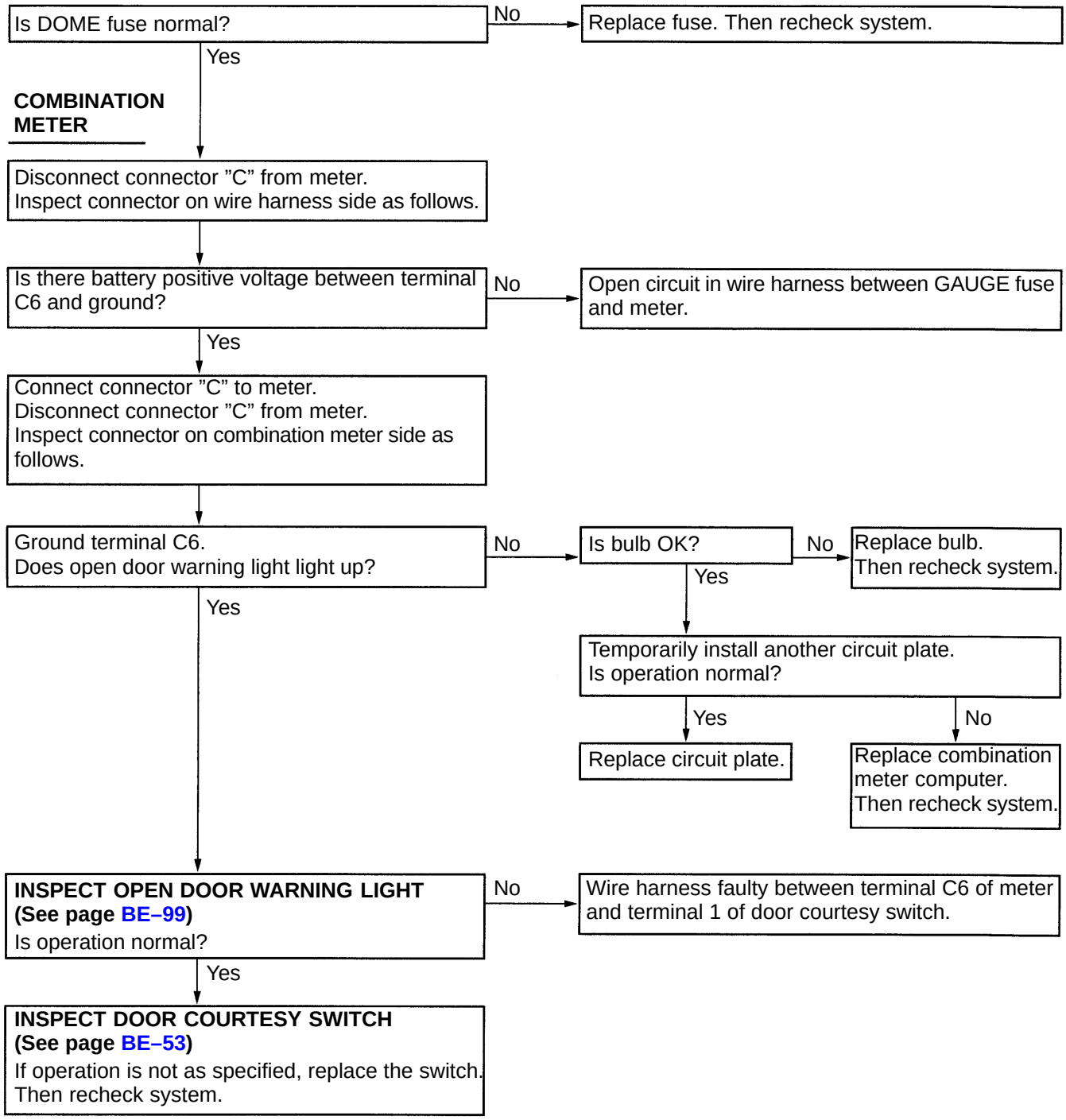
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



V08439

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

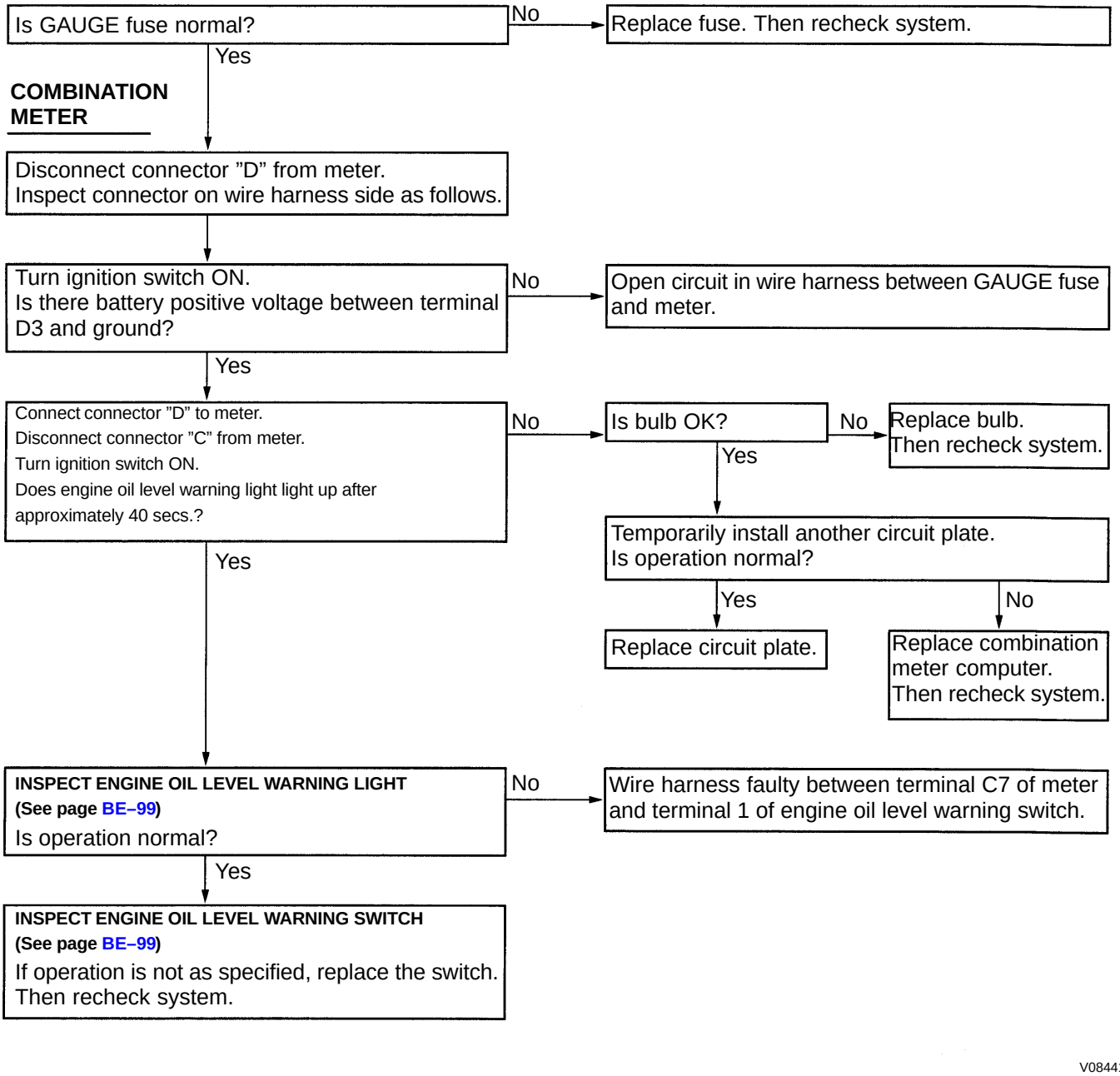
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



V08440

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

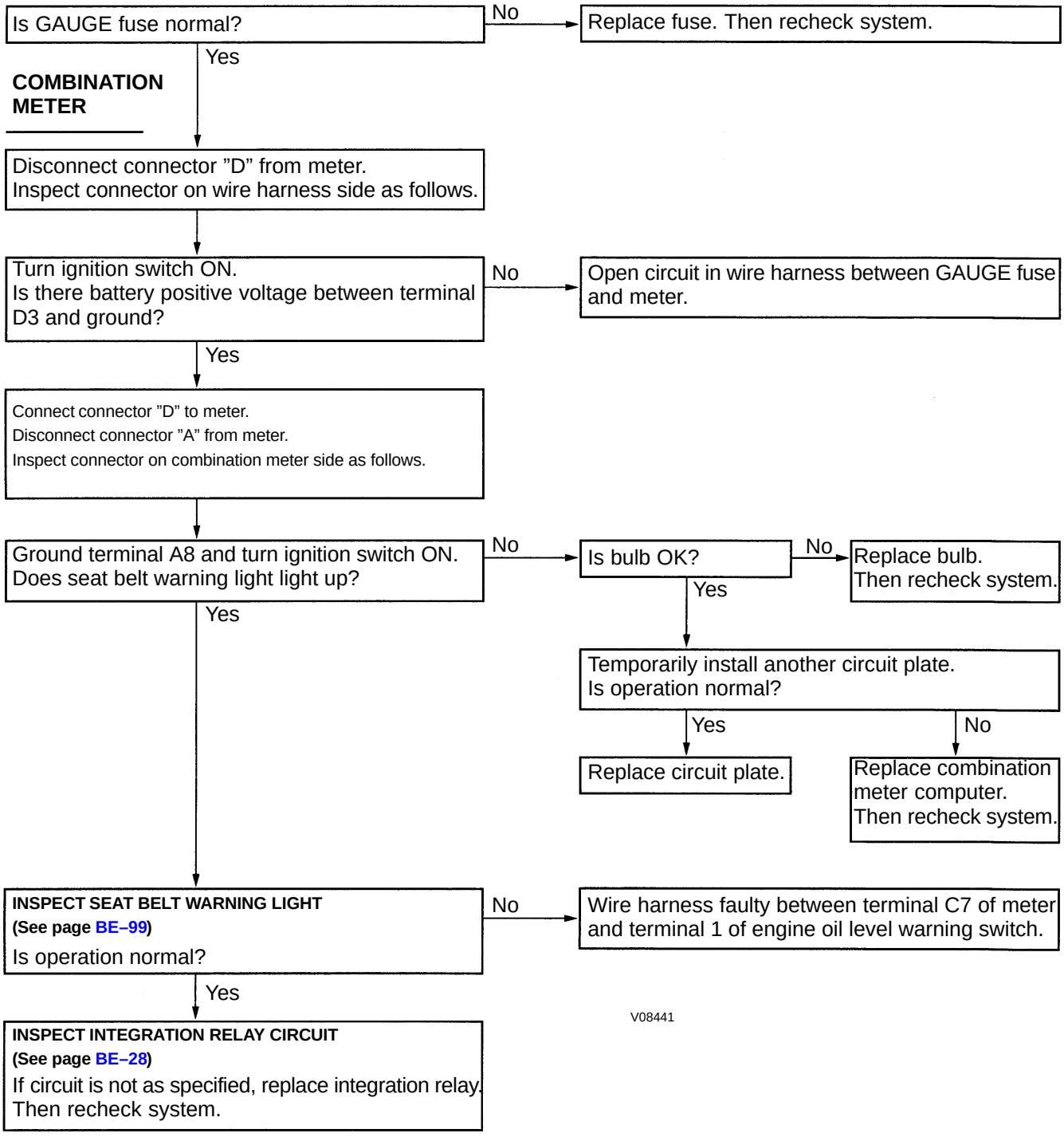
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



V08441

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

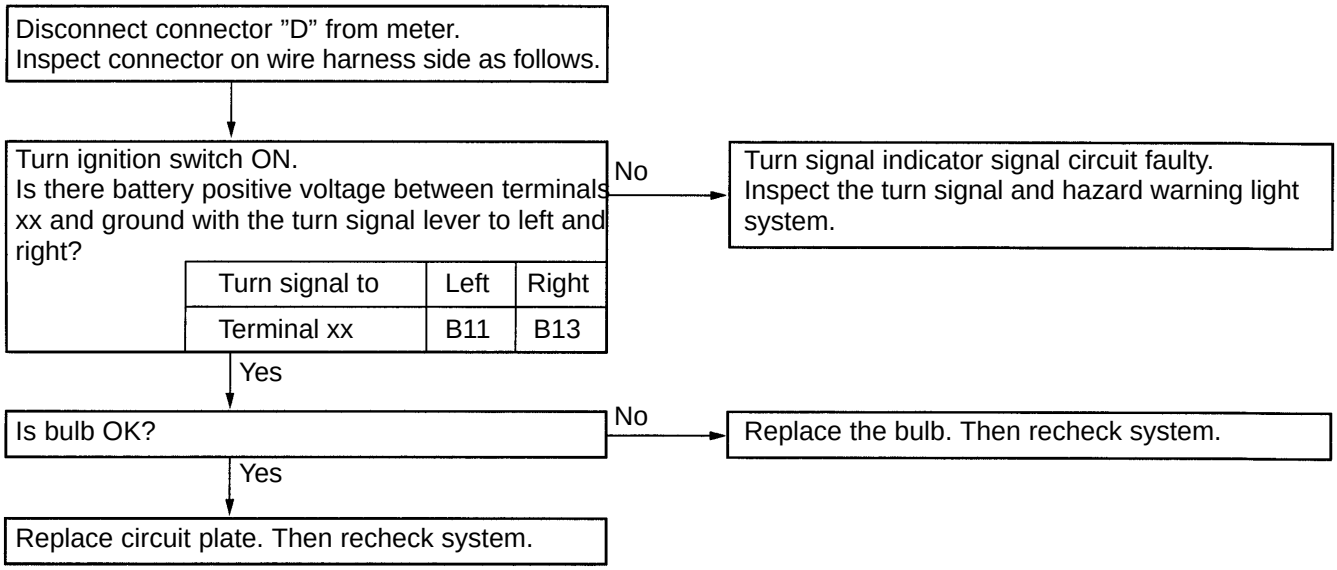
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



V08442

19	**TURN SIGNAL INDICATOR**	**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.



V08443

20	**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.

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

↓

Ground terminal B5 and turn ignition switch ON.
Does O/D OFF indicator light up?

Yes → O/D OFF indicator signal circuit faulty.

↓ No

Is bulb OK?

No → Replace the bulb.

↓ Yes

Replace circuit plate. Then recheck system.

21	**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.

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

↓

Turn ignition switch ON.
Is there battery positive voltage between terminals XX and ground with turn shift lever to P through L

Shift to	P	R	N	D	2	L
Terminal XX	B12	B14	C1	C2	B10	B9

No → Shift position indicator signal circuit faulty.

↓ Yes

Is bulb OK?

No → Replace the bulb. Then recheck system.

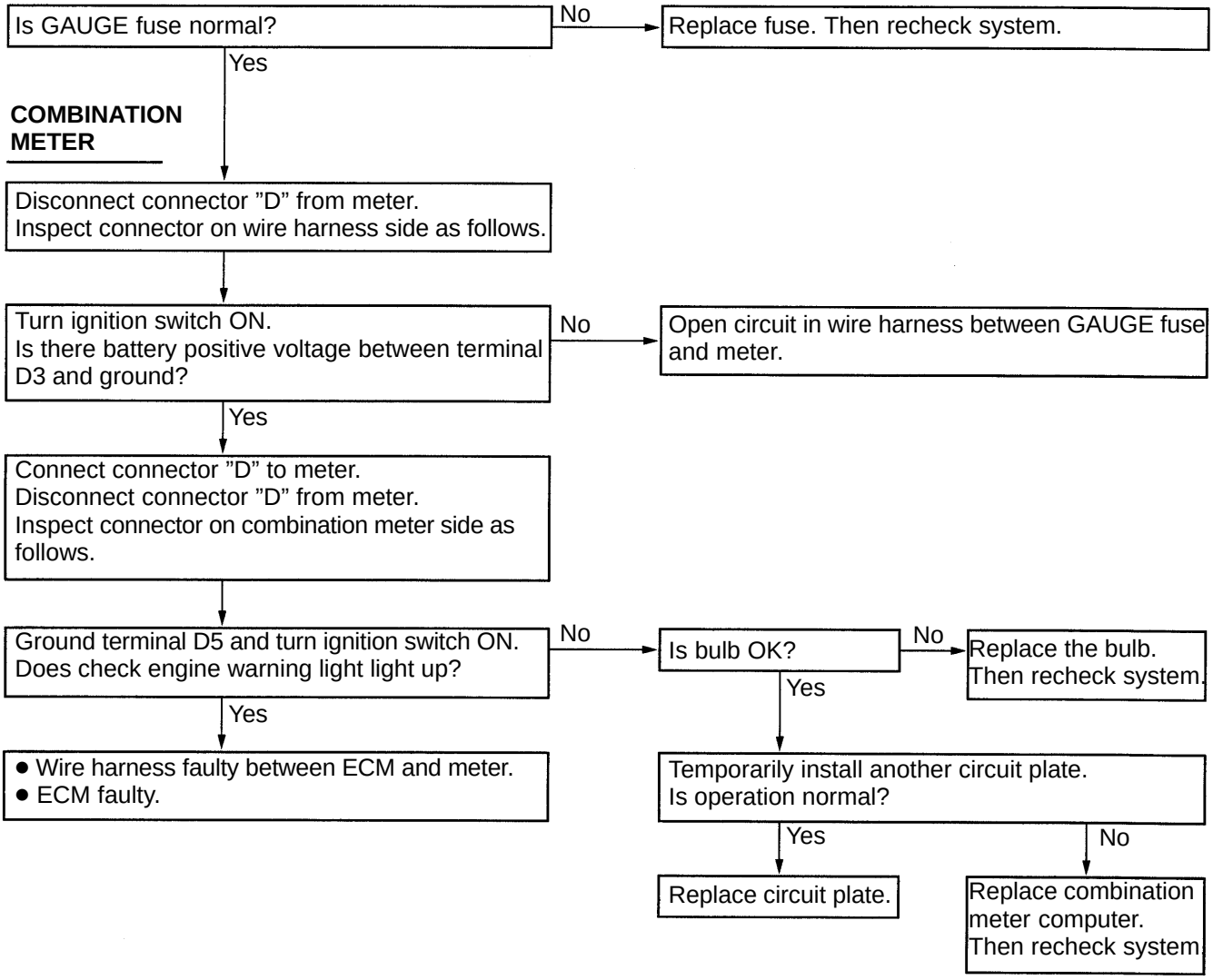
↓ Yes

Replace circuit plate. Then recheck system.

V08444

22	MALFUNCTION WARNING	Abnormal operation or warning light does not light up.

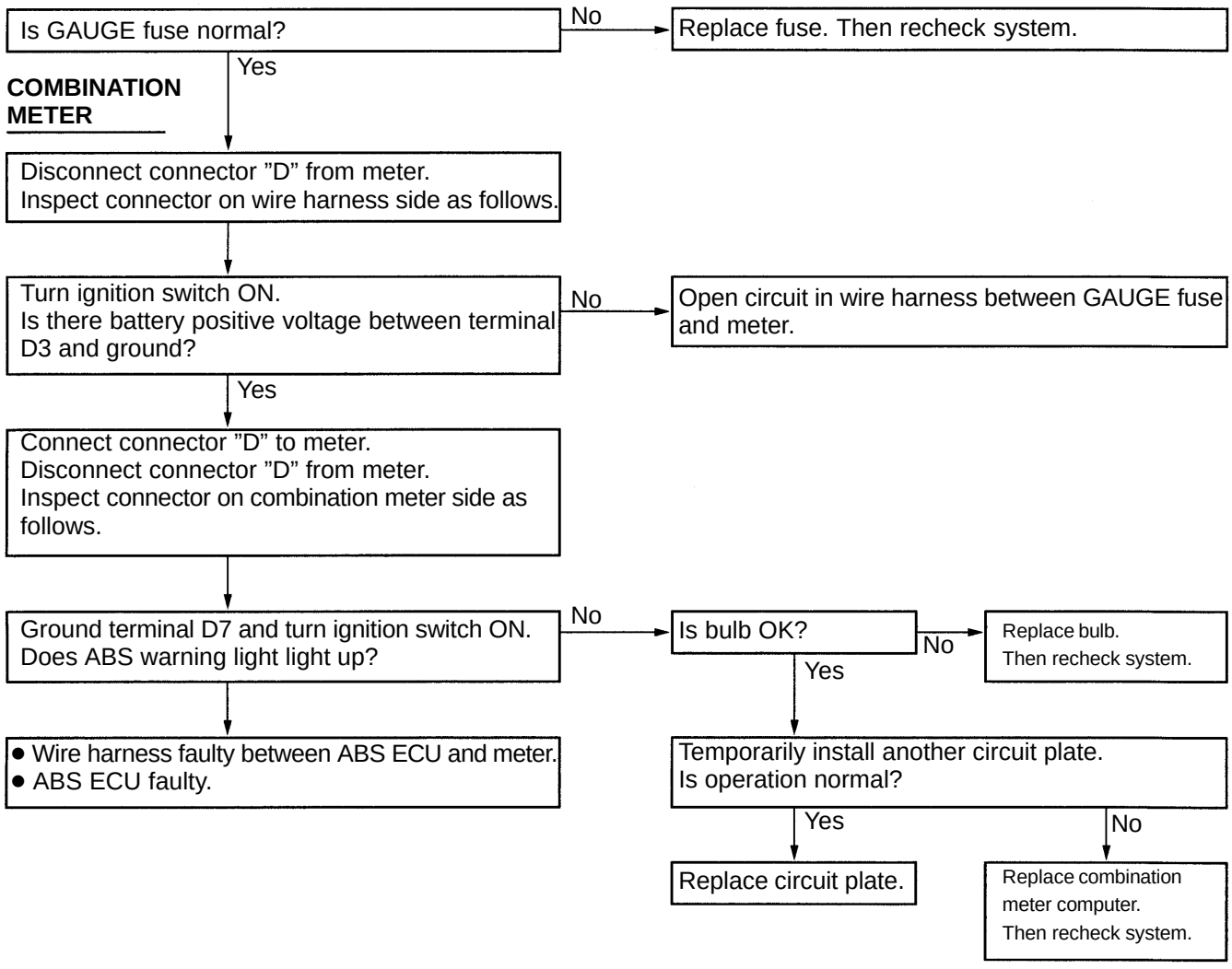
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



V08445

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

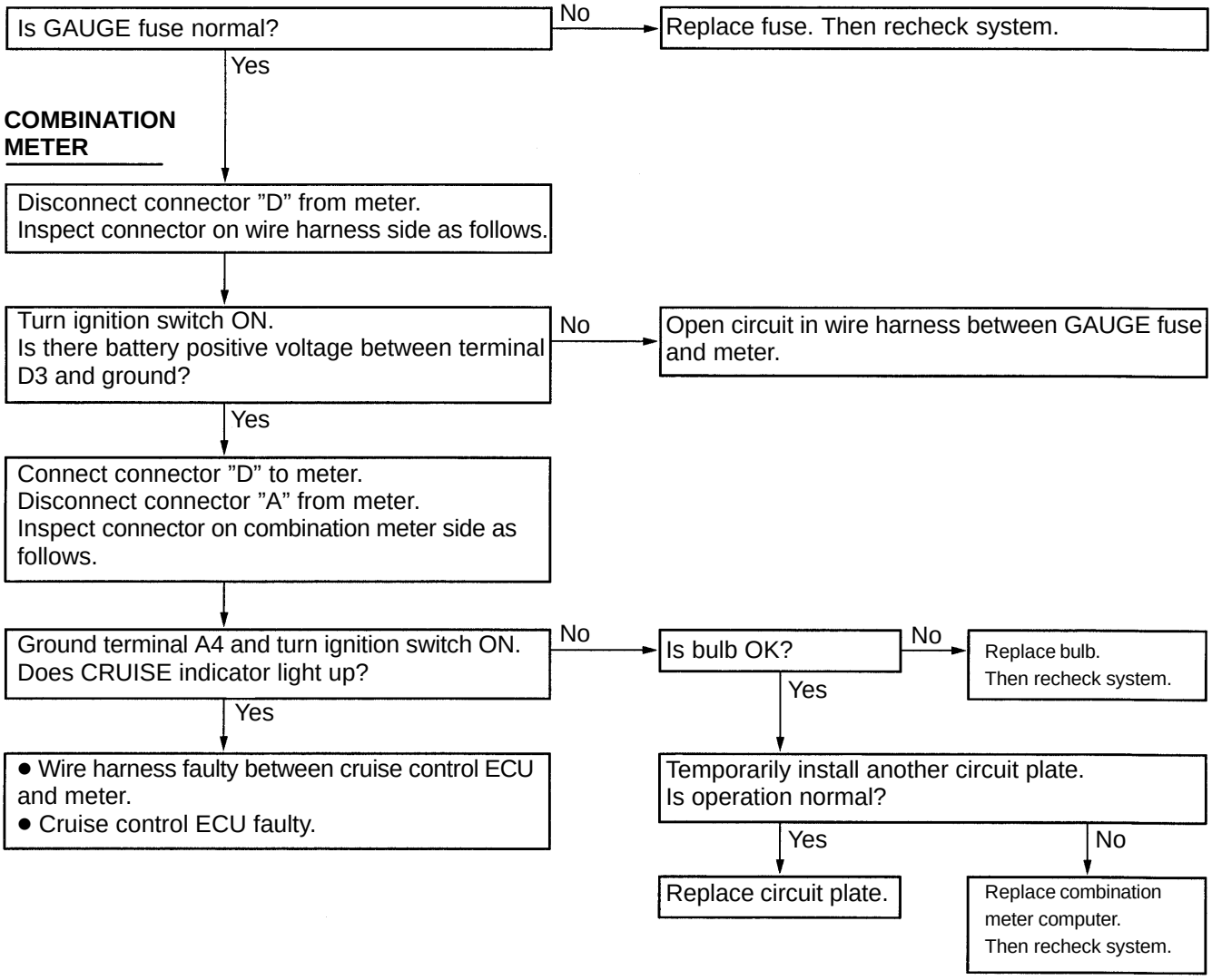
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



V08446

24	**CRUISE INDICATOR**	**Abnormal operation or indicator does not light up.**

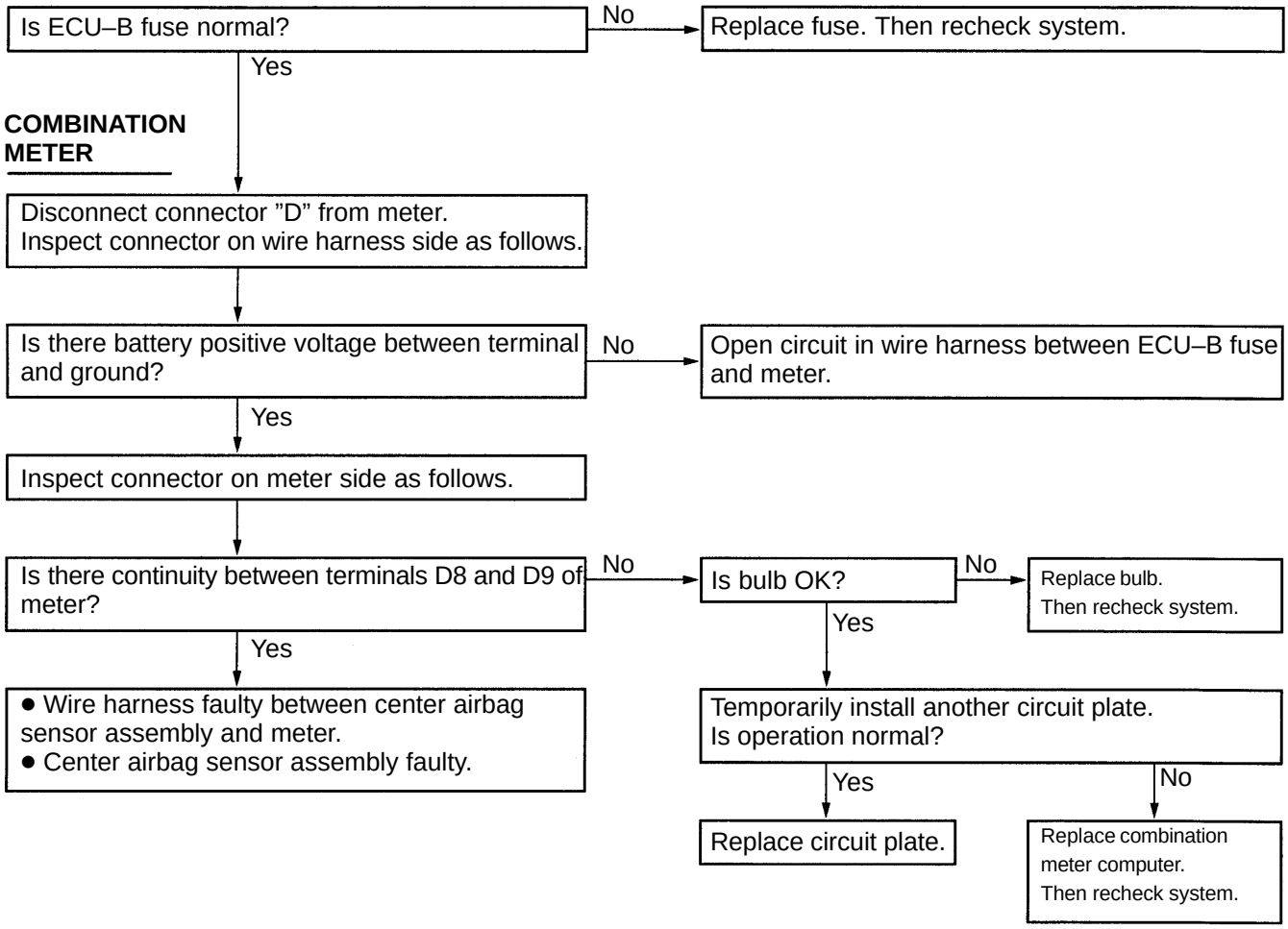
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



V08447

25	SRS WARNING	**Abnormal operation or warning light does not light up.**

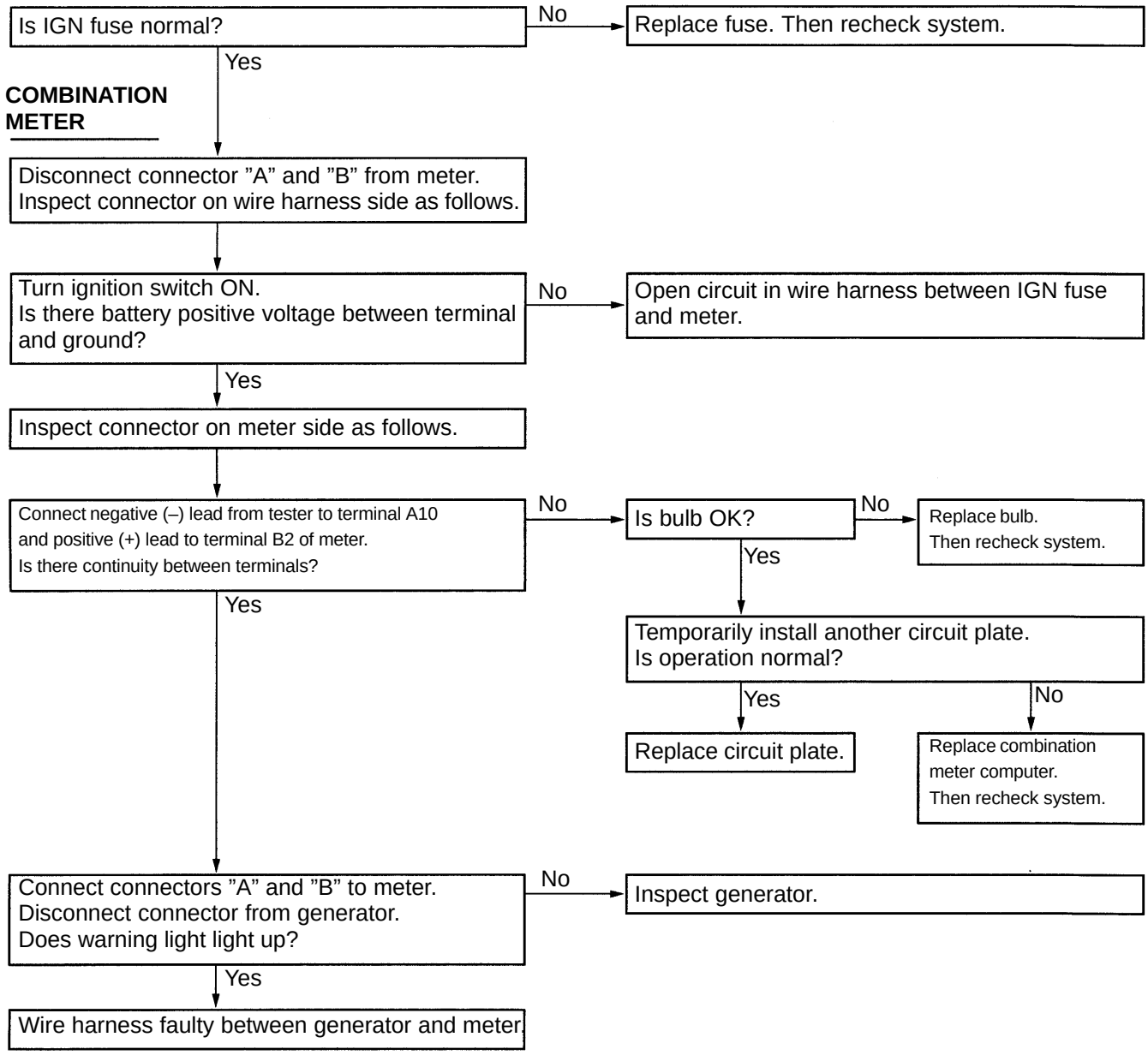
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



V08448

26	DISCHARGE WARNING	**Abnormal operation or warning light does not light up.**

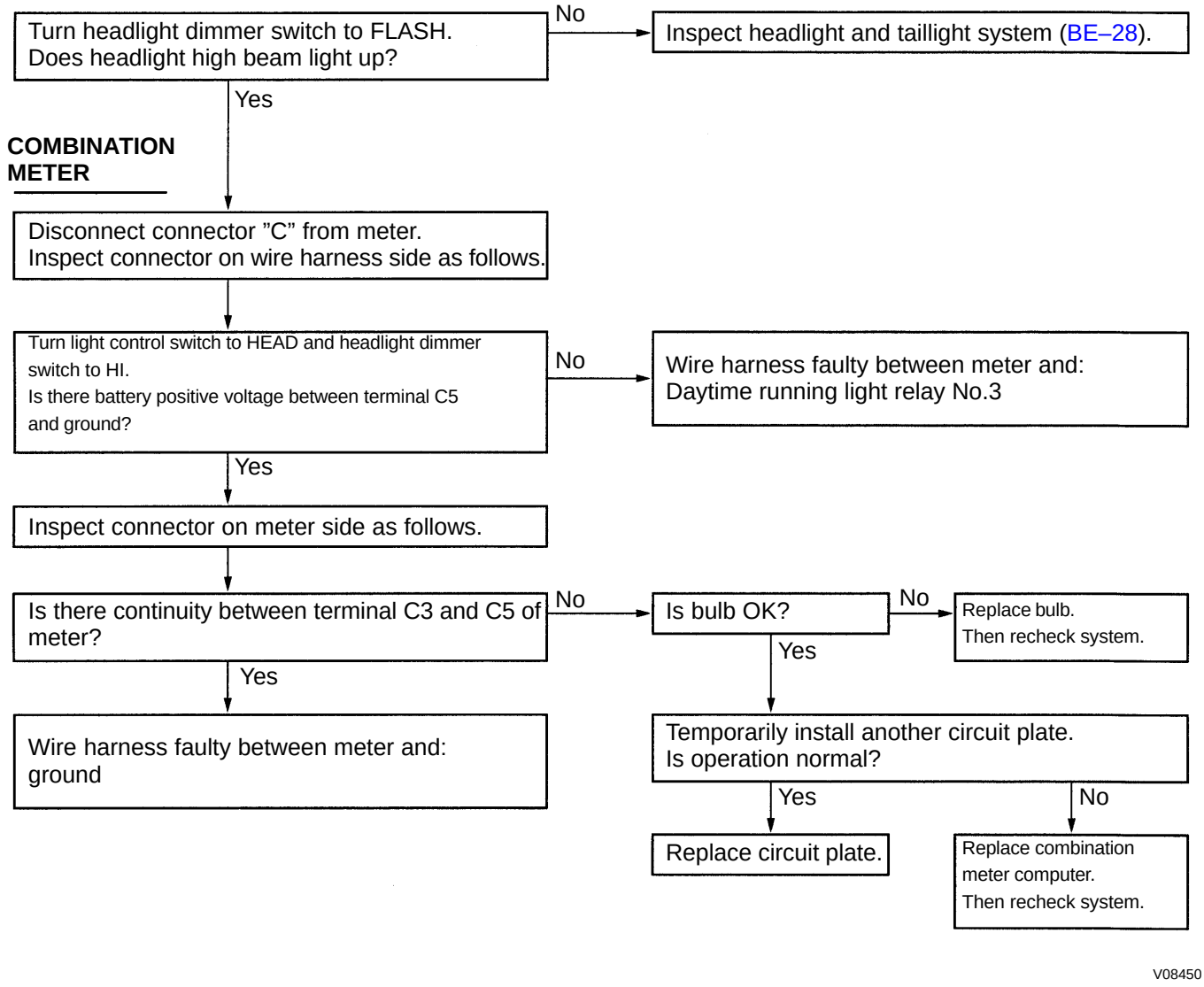
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



V08449

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

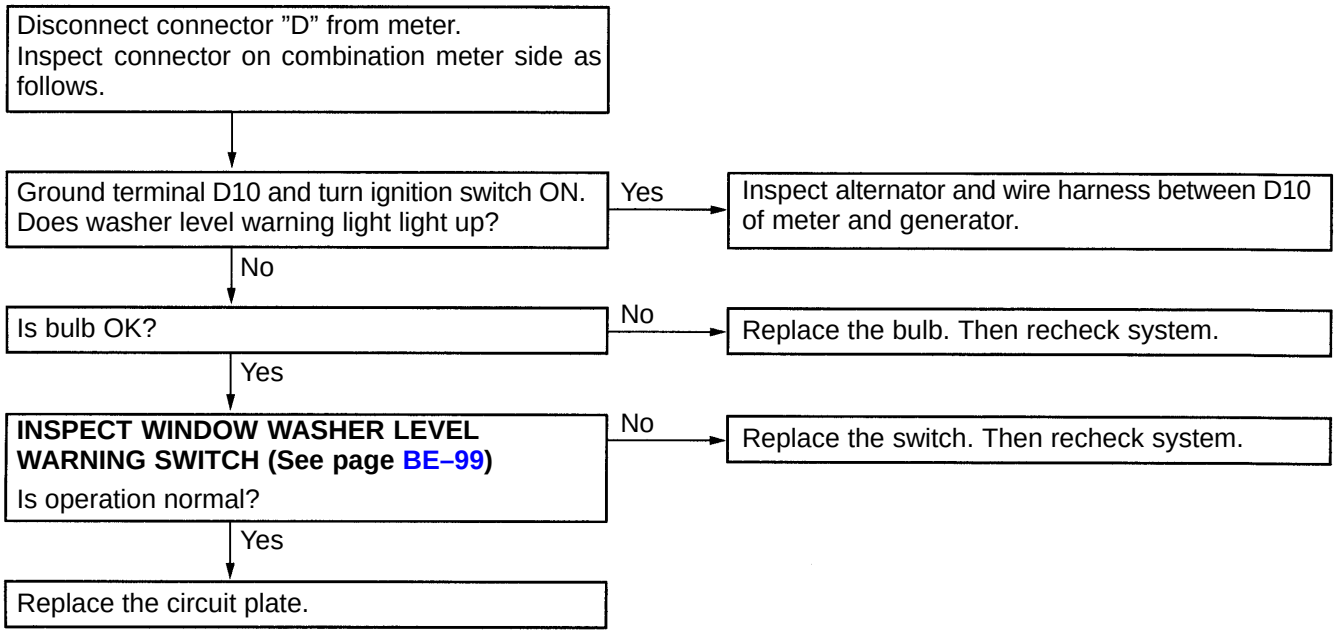
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.



V08450

28	**WINDOW WASHER LEVEL WARNING SWITCH**	**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.



V08451

29	TAILLIGHT 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.

Turn the light control switch to TAIL.
Does taillight light up?

No → Inspect headlight and taillight system.
(See page BE–28).

Yes

COMBINATION METER

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

Is there battery positive voltage (0 V ↔ battery positive voltage) between following terminals with light control switch TAIL?
- C5 and ground.

No → Wire harness faulty between meter and:
- Light control switch.
- Taillight Relay.

Yes

Connect connectors "B" to meter.
Disconnect connector "B" from meter.
Inspect connector on combination meter side as follows.

Ground terminal B7 and turn the light control switch to TAIL. Does taillight indicator light up?

No → Is bulb OK?

No → Replace bulb.
Then recheck system.

Yes → Temporarily install another circuit plate.
Is operation normal?

Yes → Replace circuit plate.

No → Replace combination meter computer.
Then recheck system.

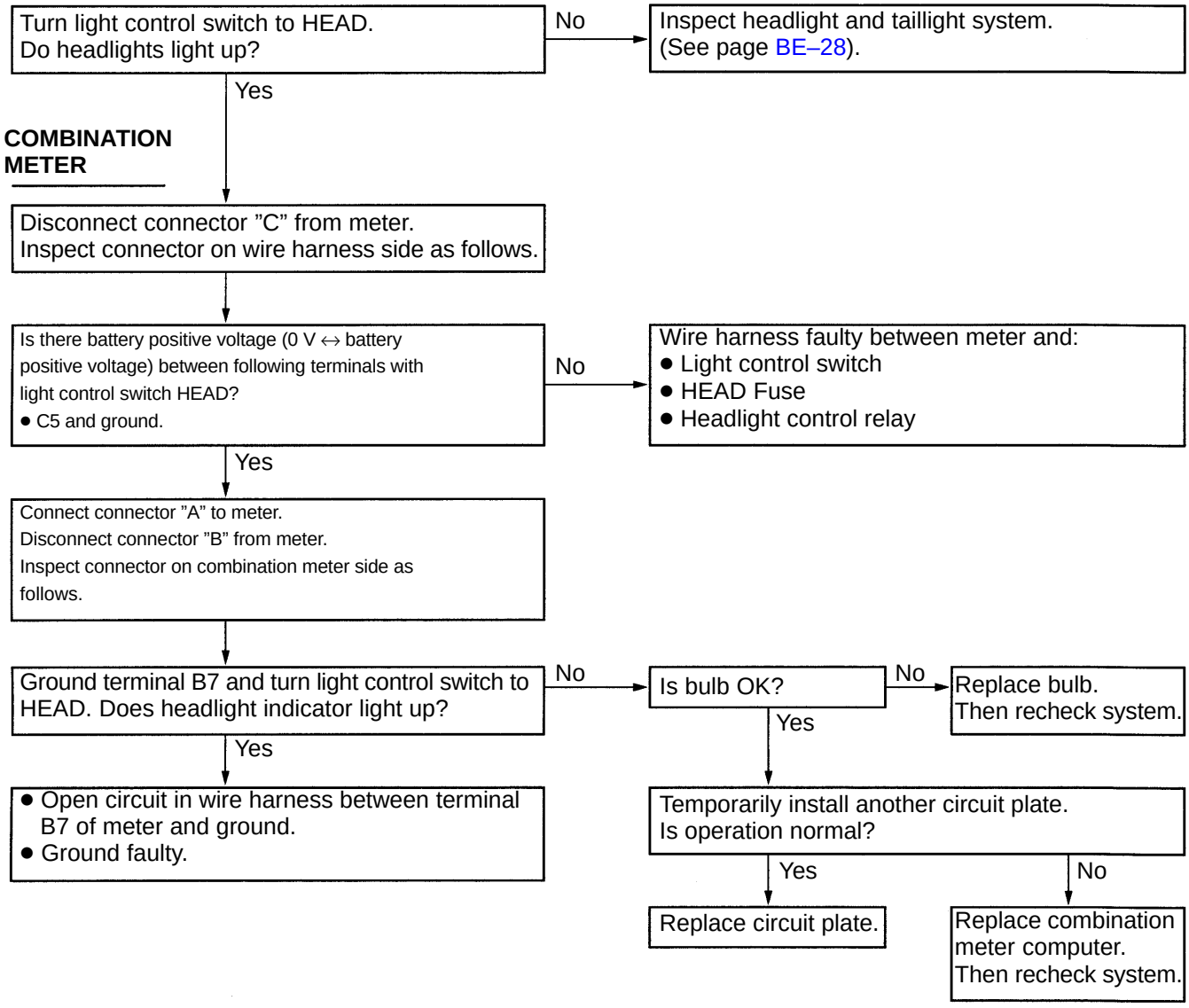
Yes

- Open circuit in wire harness between terminal B7 of meter and ground.
- Ground faulty.

V08452

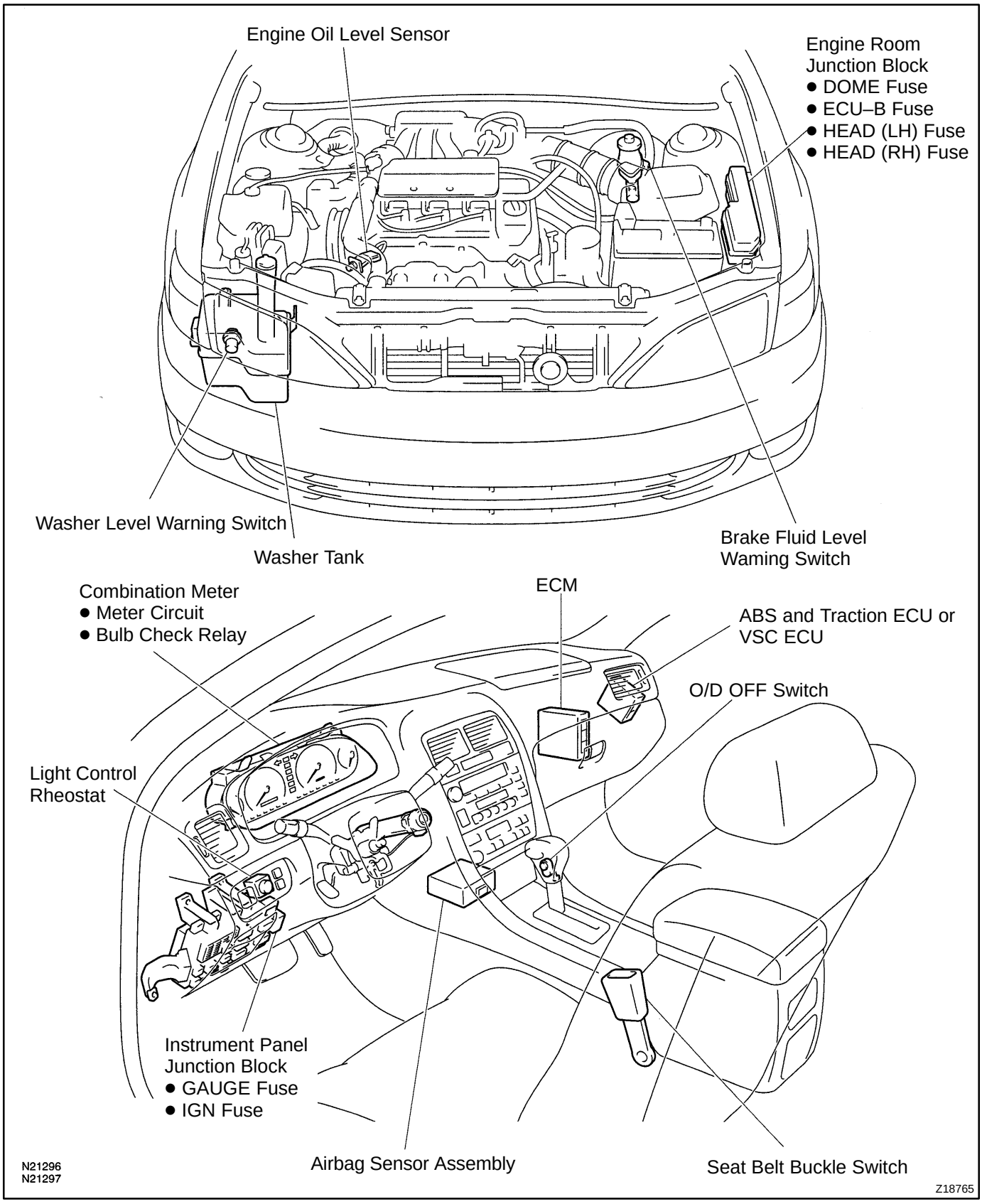
30	**HEADLIGHT INDICATOR**	**Abnormal operation or indicator does not light up.**

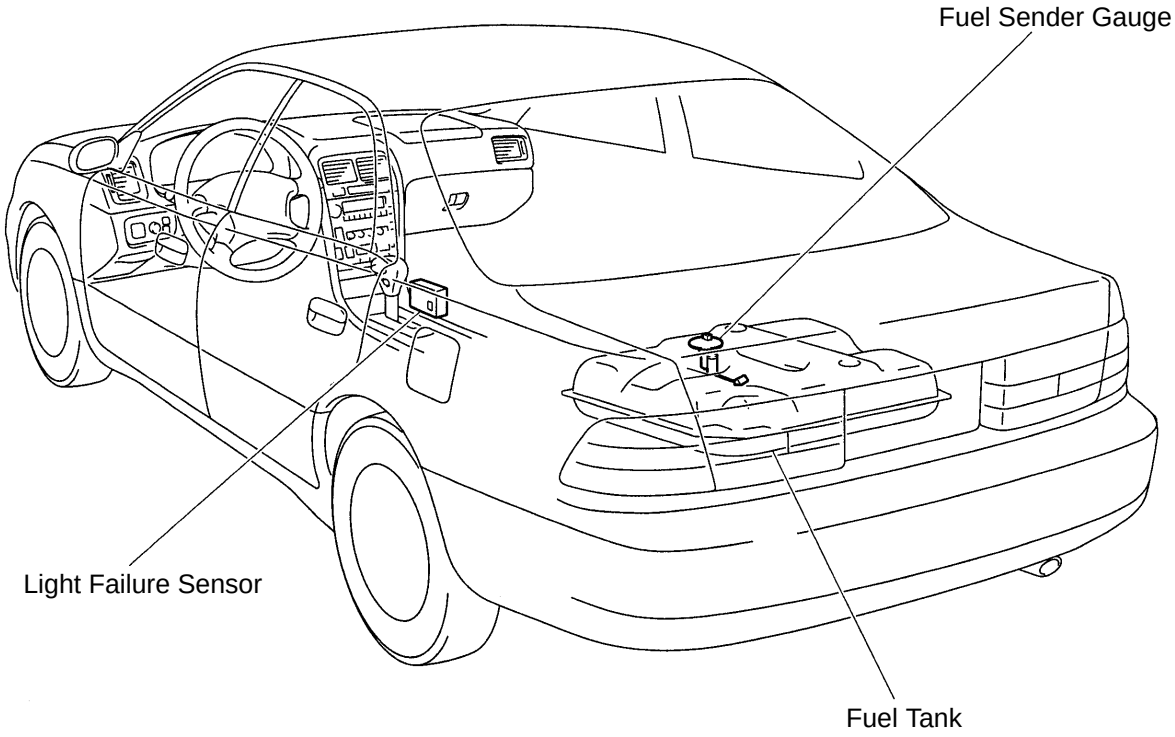
HINT : While carrying out the following inspection, make certain that the connectors and terminals are properly connected.

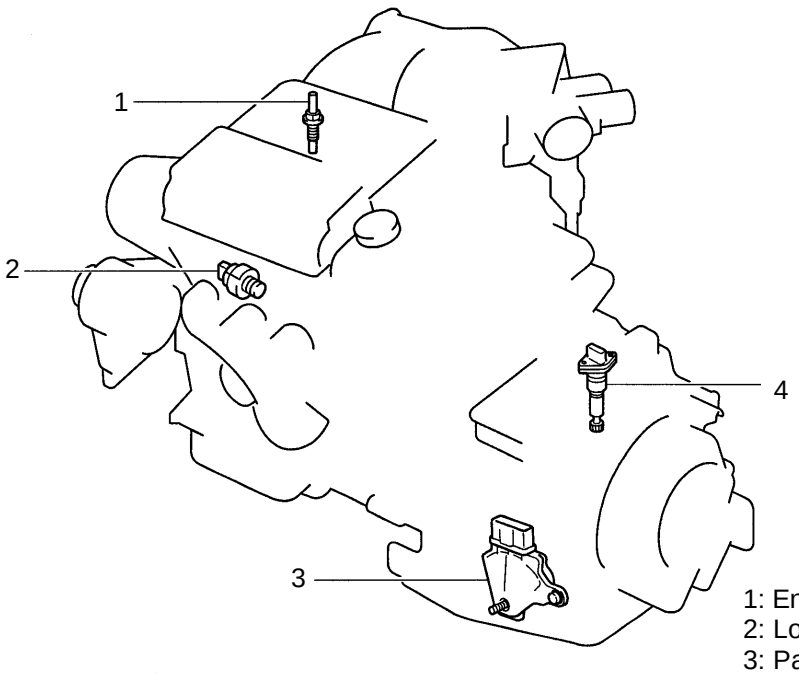


V08453

LOCATION


Engine Oil Level Sensor
Engine Room Junction Block
● DOME Fuse
● ECU–B Fuse
● HEAD (LH) Fuse
● HEAD (RH) Fuse
Washer Level Warning Switch
Washer Tank
Brake Fluid Level Waming Switch
Combination Meter
● Meter Circuit
● Bulb Check Relay
ECM
ABS and Traction ECU or VSC ECU
O/D OFF Switch
Light Control Rheostat
Instrument Panel Junction Block
● GAUGE Fuse
● IGN Fuse
Airbag Sensor Assembly
Seat Belt Buckle Switch
N21296
N21297
Z18765





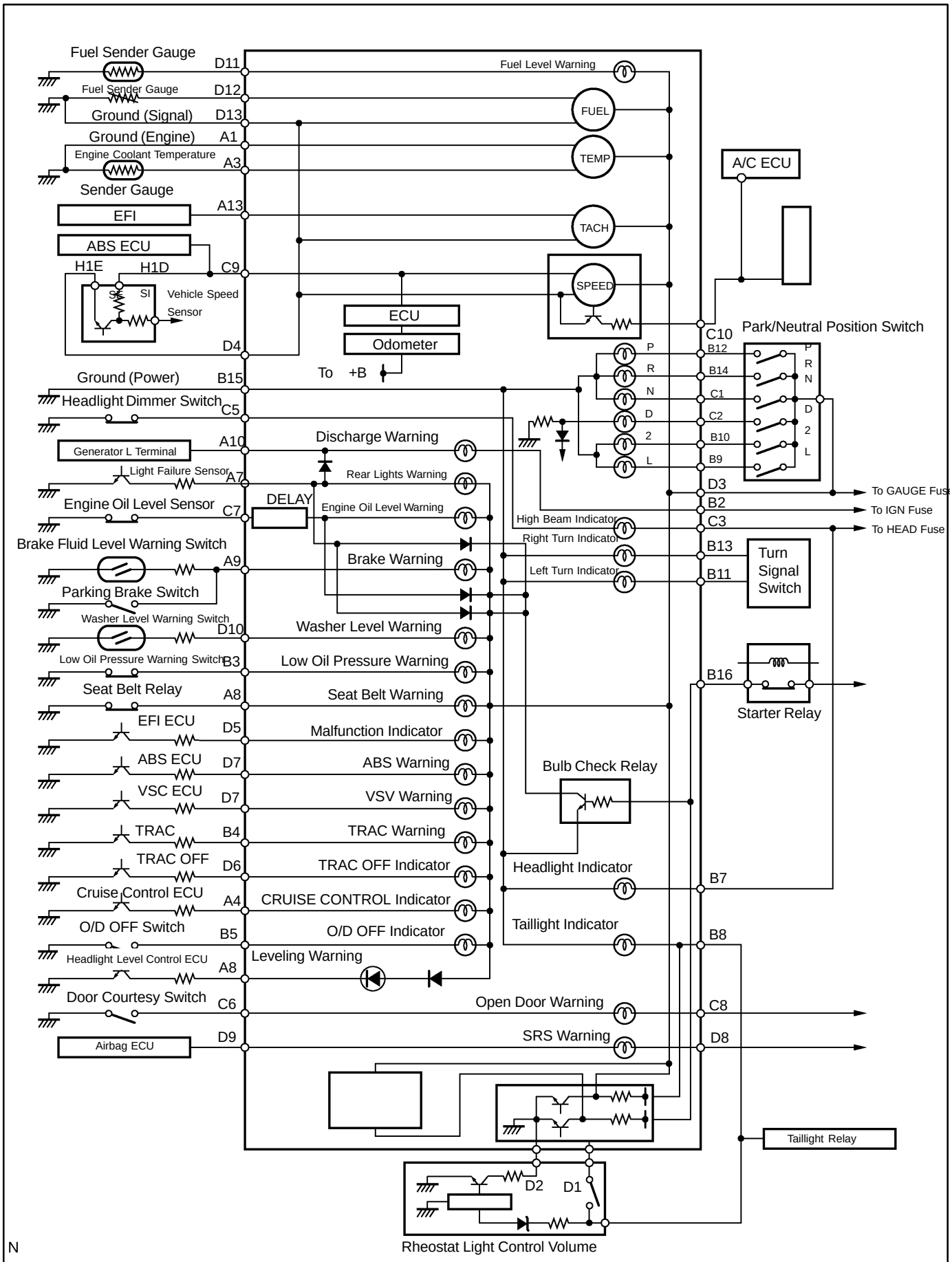
1: Engine Coolant Temperature Sender Gauge
2: Low Oil Pressure Switch
3: Park/Neutral Position Switch
4: Vehicle Speed Sensor

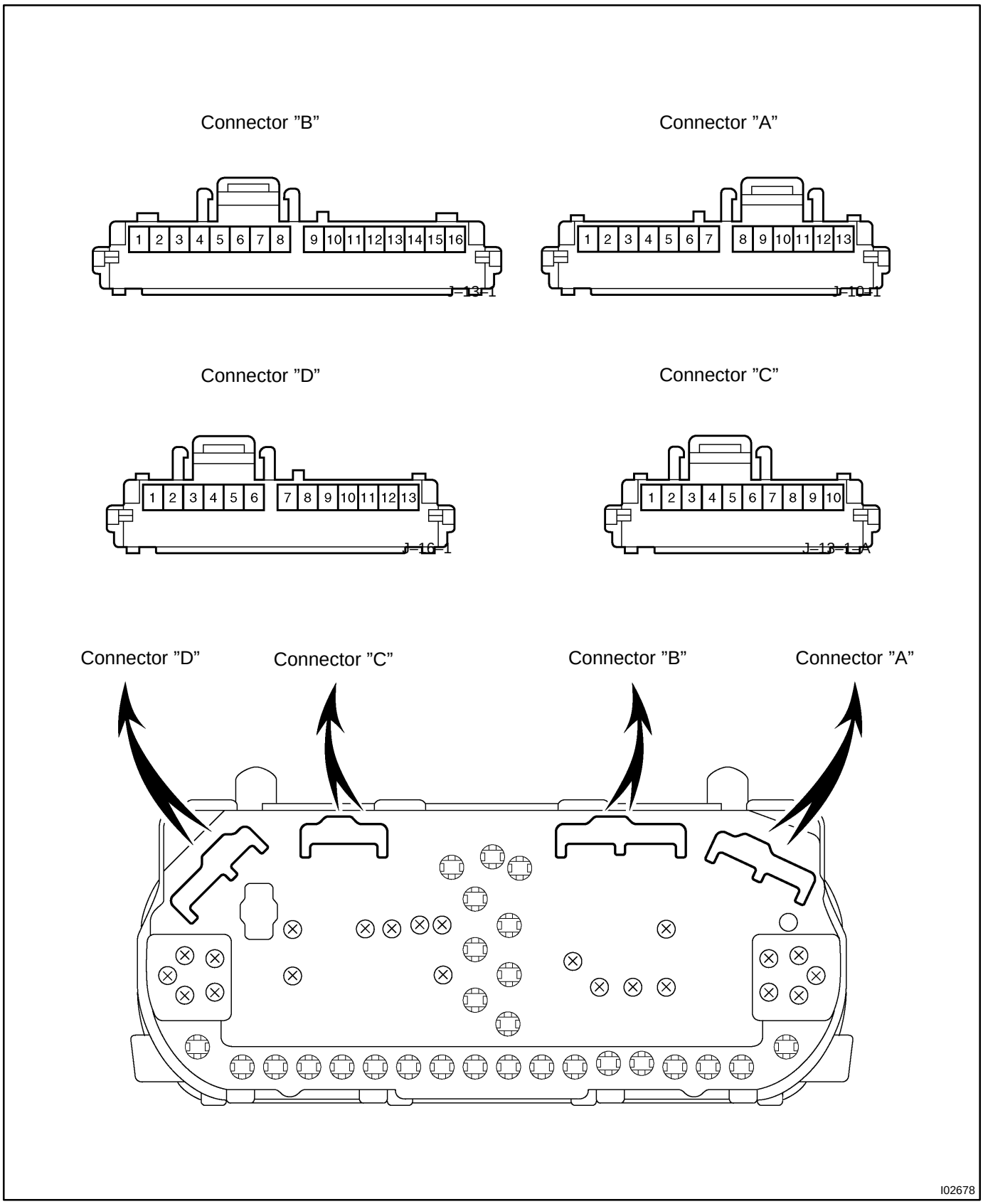
N21298
N21299

Z18766

BE05F–03

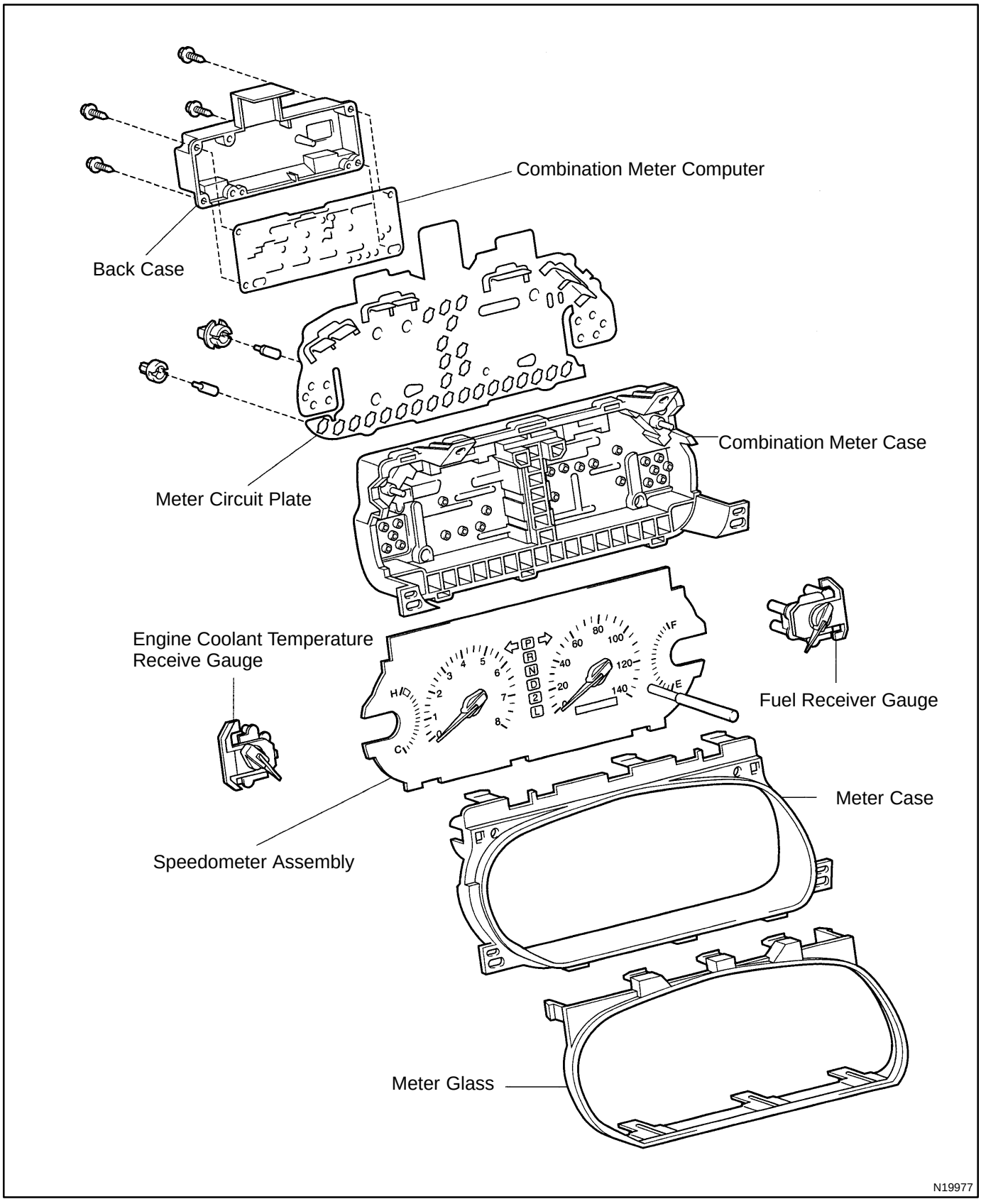
CIRCUIT




Connector ”B”
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
J–13–1
Connector ”A”
1 2 3 4 5 6 7 8 9 10 11 12 13
J–10–1
Connector ”D”
1 2 3 4 5 6 7 8 9 10 11 12 13
J–16–1
Connector ”C”
1 2 3 4 5 6 7 8 9 10
J–13–1–A
Connector ”D”
Connector ”C”
Connector ”B”
Connector ”A”
I02678

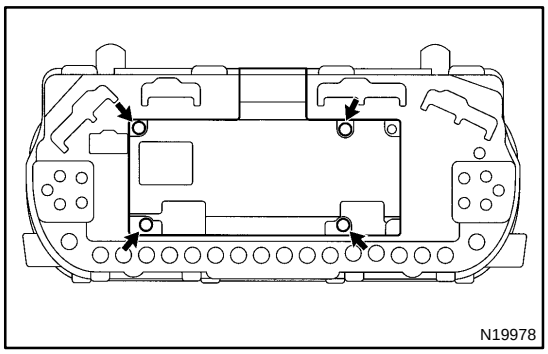
BE05G–02

COMPONENTS



BE05H–02

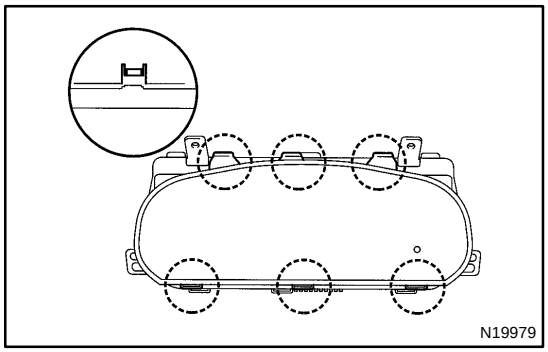
DISASSEMBLY



1. REMOVE BACK COVER

(a) Remove the 4 screws.

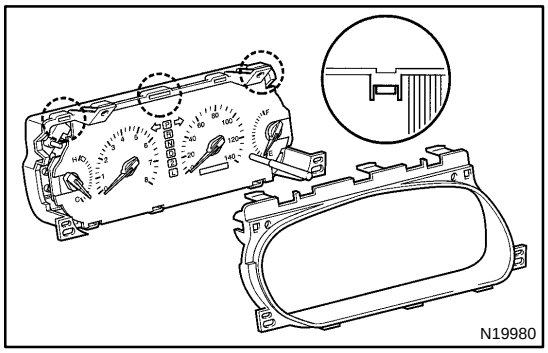
(b) Remove the back cover from the meter case.



2. REMOVE METER GLASS

(a) Remove the 8 claws.

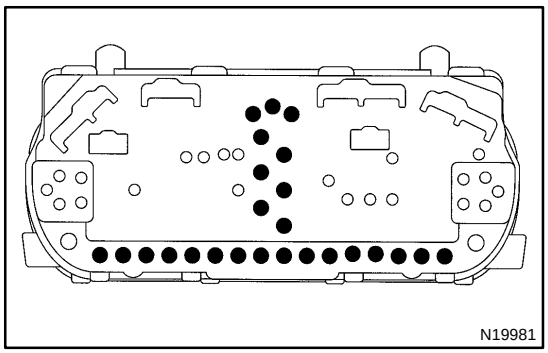
(b) Remove the meter glass from the meter case.



3. REMOVE METER PLATE

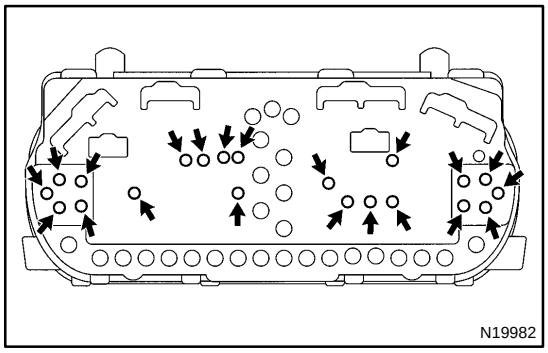
(a) Remove the 8 claws.

(b) Remove the meter plate from the meter case.



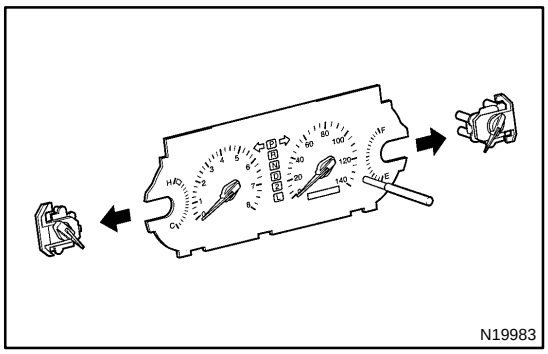
4. REMOVE METER CIRCUIT PLATE

(a) Remove the 27 bulbs.



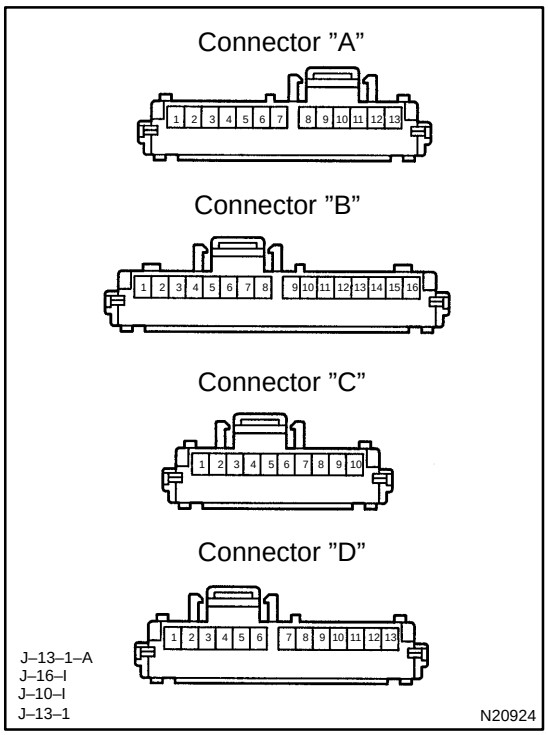
(b) Remove the 22 screws.

(c) Remove the meter circuit plate from the meter case.



5. **REMOVE SPEEDOMETER ASSEMBLY**
6. **REMOVE FUEL GAUGE**
7. **REMOVE ENGINE COOLANT TEMPERATURE GAUGE**

BE05I–02



INSPECTION

1. INSPECT COMBINATION METER WIRING CIRCUIT

Disconnect the connector ”A”, connector ”B”, connector ”C” and connector ”D” from the combination meter and inspect the connectors on the wire harness side.

Park/Neutral Position Switch:

Tester connection	Condition	Specified condition
B12 – Ground	Ignition switch ON and shift lever position ”P”	Battery positive voltage
B14 – Ground	Ignition switch ON and shift lever position ”R”	Battery positive voltage
C1 – Ground	Ignition switch ON and shift lever position ”N”	Battery positive voltage
C2 – Ground	Ignition switch ON and shift lever position ”D”	Battery positive voltage
B10 – Ground	Ignition switch ON and shift lever position ”2”	Battery positive voltage
B9 – Ground	Ignition switch ON and shift lever position ”L”	Battery positive voltage

Turn Signal Switch and Hazard Warning Switch:

Tester connection	Condition	Specified condition
B13 – Ground	Hazard warning switch ON	Battery positive voltage ↔ 0V
B13 – Ground	Ignition switch ON and turn signal switch to ”Right”	Battery positive voltage ↔ 0V
B11 – Ground	Hazard warning switch ON	Battery positive voltage ↔ 0V
B11 – Ground	Ignition switch ON and turn signal switch to ”Left”	Battery positive voltage ↔ 0V

Headlight:

Tester connection	Condition	Specified condition
C3 – C5	Light control switch ”HEAD” (Dimmer switch ”LO”)	No voltage
C3 – C5	Light control switch ”HEAD” (Dimmer switch ”HI” or ”Flash”)	Battery positive voltage

GAUGE Fuse:

Tester connection	Condition	Specified condition
D3 – Ground	Ignition switch position ACC, START	No voltage
D3 – Ground	Ignition switch position ON	Battery positive voltage

IGN Fuse:

Tester connection	Condition	Specified condition
D3 – Ground	*2 Ignition switch position LOCK, ACC, START	No voltage
D3 – Ground	*2 Ignition switch position ON	Battery positive voltage

Fuel Sender Gauge:

Tester connection	Condition	Specified condition
D12 – D13	Float position Full, Approx. 91.1 mm (3.587 in.)	Approx. 4.6V
D12 – D13	Float position 1/2, Approx. 34.2 mm (1.346 in.)	Approx. 2.4V
D12 – D13	Float position Empty, Approx. 30.8 mm (1.213 in.)	Approx. 0.3V
D11 – D12	Ignition switch ON	Approx. 5V

Ground (Signal):

Tester connection	Condition	Specified condition
D13 – Ground	Constant	Continuity

Ground (Engine):

Tester connection	Condition	Specified condition
A1 – Ground	Constant	Continuity

Ground (Power):

Tester connection	Condition	Specified condition
B15 – Ground	Constant	Continuity

Generator ”L” Terminal:

Tester connection	Condition	Specified condition
A10 – Ground	Engine stop	Continuity
A10 – Ground	Engine running	Battery positive voltage

Engine Oil Level Warning Switch:

Tester connection	Condition	Specified condition
C7 – Ground	Oil temperature above approx. 55 ˚C (131 ˚F) and switch position OFF (float down)	No continuity
C7 – Ground	Oil temperature below approx. 55 ˚C (131 ˚F)	Continuity
C7 – Ground	Oil temperature above approx. 55 ˚C (131 ˚F) and switch position ON (float up)	Continuity

DOME fuse:

Tester connection	Condition	Specified condition
C8 – Ground	Constant	Battery positive voltage

Rheostat Light Control:

Tester connection	Condition	Specified condition
D1 – Ground	Light control switch TAIL or HEAD and turn rheostat volume knob.	Voltage changes no voltage or voltage fluctuates

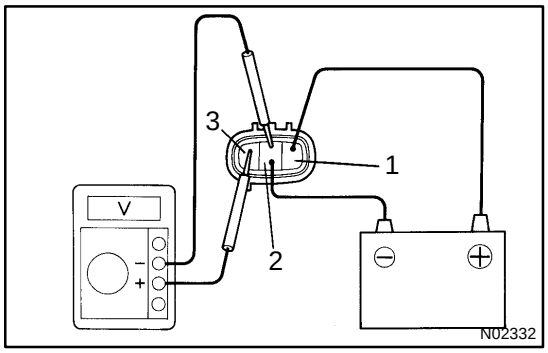
*2 Shift lever position is ”N” or ”P” position.

If circuit is not as specified, refer to BE–60 wiring diagram and inspect the circuit connected to other parts.

2. INSPECT SPEEDOMETER 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.

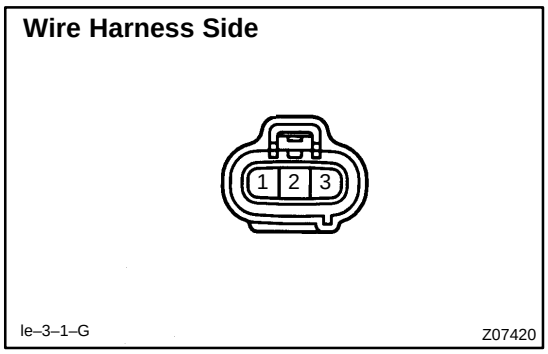
USA (mph)		CANADA (km/h)	
Standard indication	Allowable range	Standard indication	Allowable range
20	18 – 24	20	17 – 24
40	38 – 44	40	38 – 46
60	56 – 66	60	57.5 – 67
80	78 – 88	80	77 – 88
100	98 – 110	100	96 – 109
120	118 – 132	120	115 – 130
		140	134 – 151.5
		160	153 – 173



3. INSPECT VEHICLE SPEED SENSOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 1 and negative (–) lead to terminal 2.
(b) Connect the positive (+) lead from the tester to terminal 3 and the negative (–) lead to terminal 2.
(c) Rotate the shaft.
(d) Check that there is voltage change from approx. 0 V to 11 V or more between terminals 2 and 3.

HINT:
The voltage change should be performed 4 times for every revolution of the speed sensor shaft.
If operation is not as specified, replace the sensor.



4. INSPECT VEHICLE SPEED SENSOR CIRCUIT

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

Tester connection	Condition	Specified condition
1 – Ground	Ignition switch LOCK or ACC	No voltage
1 – Ground	Ignition switch ON	Battery positive voltage

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

5. INSPECT TACHOMETER ON–VEHICLE

(a) Connect a tune–up test tachometer, and start the engine.

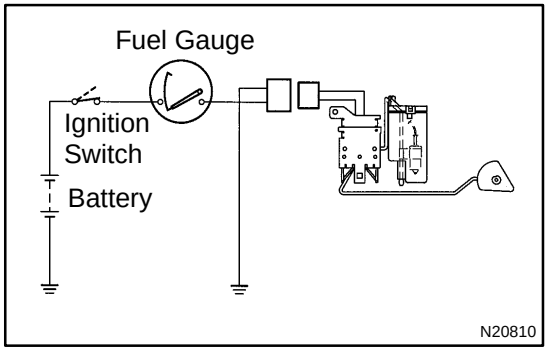
NOTICE:

- **Reversing the connection of the tachometer will damage the transistors and diodes inside.**
- **When removing or installing the tachometer, be careful not to drop or subject it to heavy shocks.**

(b) Compare the tester and tachometer readings.

DC 13.5 V 25 ˚C at (77˚F)

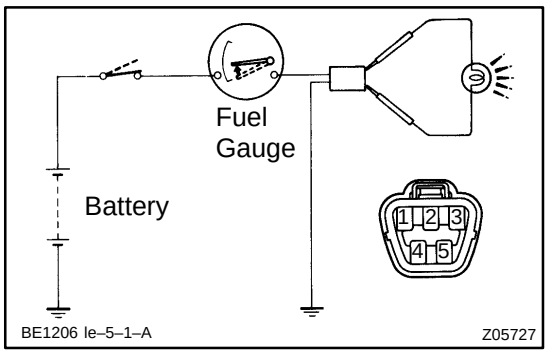
Standard indication	Allowable range
700	630 – 770
1,000	900 – 1,100
2,000	1,850 – 2,150
3,000	2,800 – 3,200
4,000	3,800 – 4,200
5,000	4,800 – 5,200
6,000	5,750 – 6,250
7,000	6,700 – 7,300



6. INSPECT FUEL RECEIVER GAUGE OPERATION

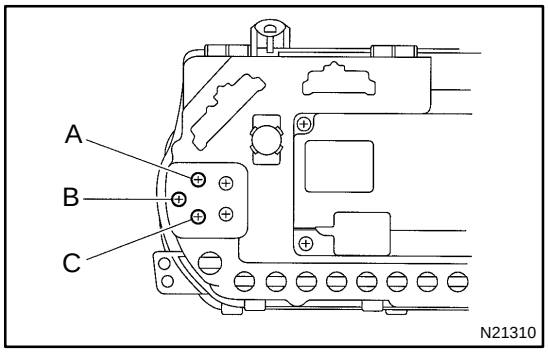
(a) Disconnect the connector from the sender gauge.

(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 the receiver gauge needle moves toward ”E” side.

HINT:
Because of the silicon oil in the gauge, it will take a short time for needle to stabilize.
If operation is not as specified, inspect the receiver gauge resistance.

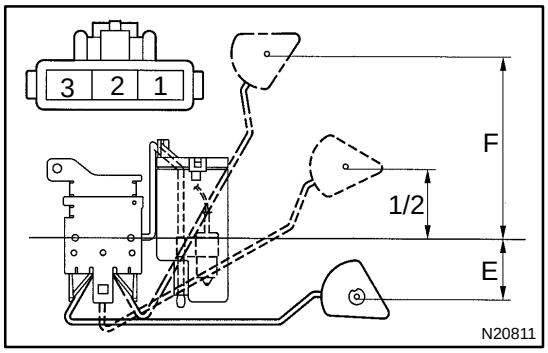


7. INSPECT FUEL RECEIVER GAUGE RESISTANCE

Measure the resistance between terminals.

Tester connection	Resistance (Ω)
A – B	Approx. 270.8
A – C	Approx. 91.3
B – C	Approx. 179.5

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

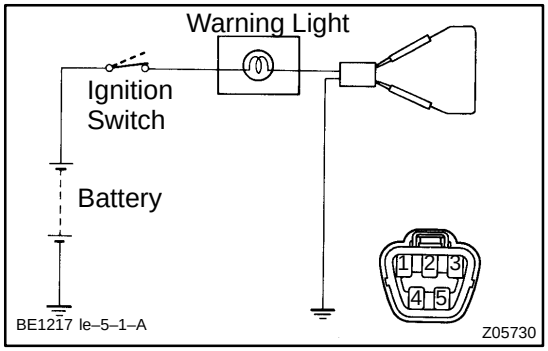


8. INSPECT FUEL SENDER GAUGE RESISTANCE

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

Float position mm (in.)	Resistance (Ω)
F: Approx. 91.1 (3.587)	Approx. 3.0
1/2: Approx. 34.2 (1.346)	Approx. 31.7
E: Approx. 30.8 (1.213)	Approx. 110.0

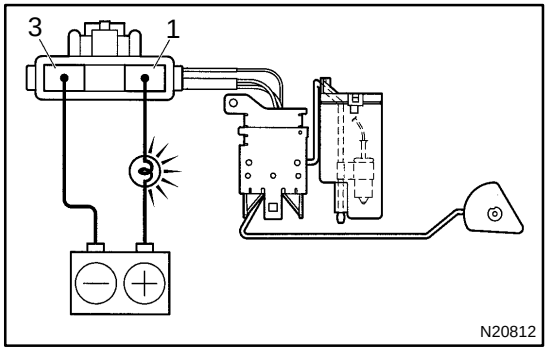
If resistance value is not as specified, replace the sender gauge.



9. INSPECT FUEL LEVEL WARNING LIGHT

(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.

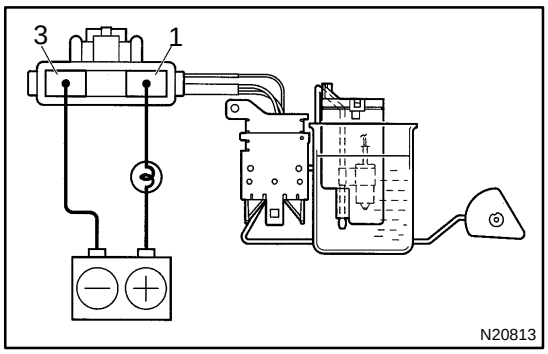
If the warning light does not light up, test the bulb or inspect wire harness.



10. INSPECT FUEL LEVEL WARNING SWITCH

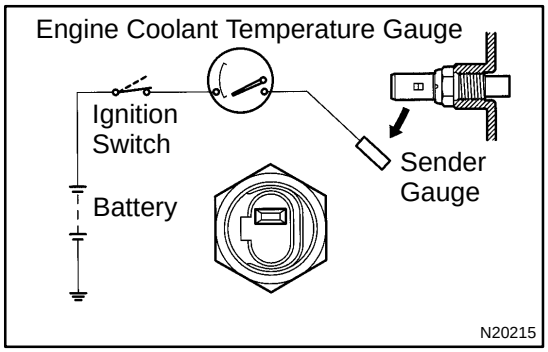
(a) Apply battery positive voltage between terminals 1 and 3 through a 3.4–W test bulb, check that the bulb lights up.

HINT:
It takes a short time for the bulb to light up.



(b) Submerge the switch in fuel, check that the bulb goes out.

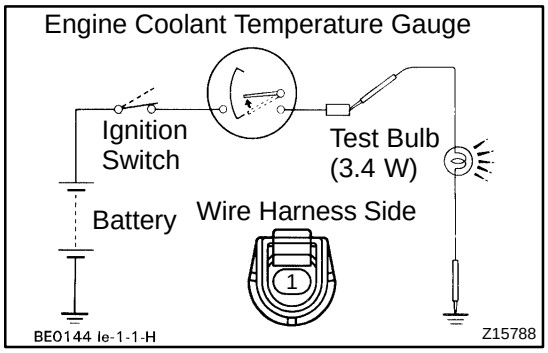
If operation is not as specified, replace the sender gauge.



11. INSPECT ENGINE COOLANT TEMPERATURE RECEIVER GAUGE OPERATION

(a) Disconnect the connector from the sender gauge.

(b) Turn the ignition switch ON and check that the receiver gauge needle indicates COOL.



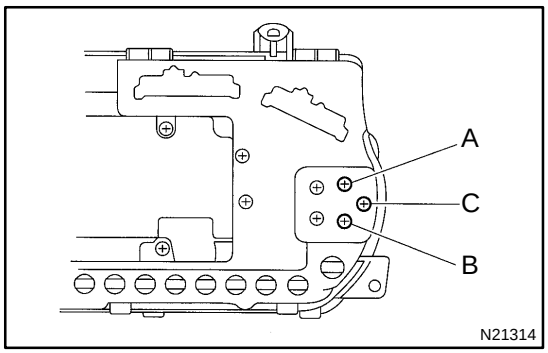
(c) Ground terminal on the wire harness side connector through a 3.4–W test bulb.

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



12. INSPECT ENGINE COOLANT TEMPERATURE RECEIVER GAUGE RESISTANCE

Measure the resistance between terminals.

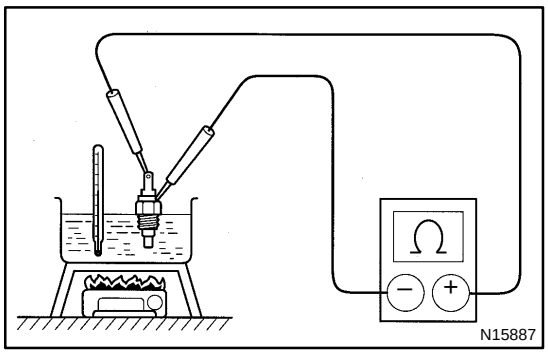
Tester connection	Resistance (Ω)
A – B	Approx. 54.0
A – C	Approx. 175.7
B – C	Approx. 229.7

HINT:

Connect the test leads so that the current from the ohmmeter can flow according to the above order.

This circuit includes the diode.

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

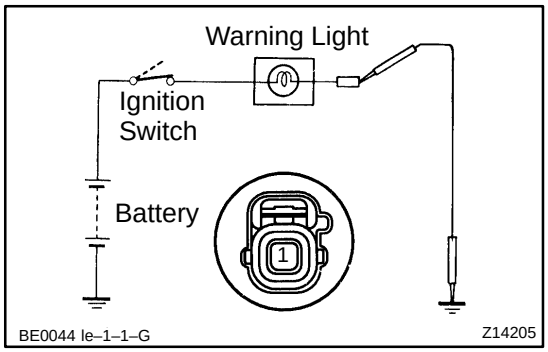


13. INSPECT ENGINE COOLANT TEMPERATURE SENDER GAUGE RESISTANCE

Measure the resistance between the terminal and gauge body.

Temperature ˚C(˚F)	Resistance (Ω)
50 (122.0)	160 – 240
120 (248.0)	17.1 – 21.2

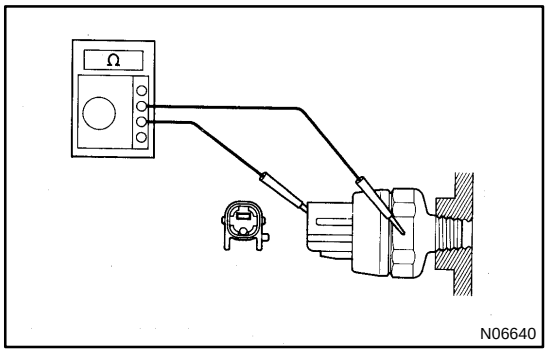
If resistance value is not as specified, replace the engine coolant temperature sender gauge.



14. 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 ignition switch ON and check that the warning light lights up.

If the warning light does not light up, test the bulb.

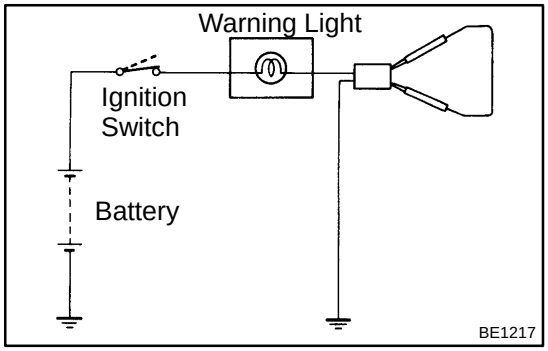


15. INSPECT LOW OIL PRESSURE SWITCH

(a) Disconnect the connector from the switch.
(b) Check that continuity exists between terminal and ground with the engine stopped.
(c) Check that no continuity exists between terminal and ground with the engine running.

HINT:

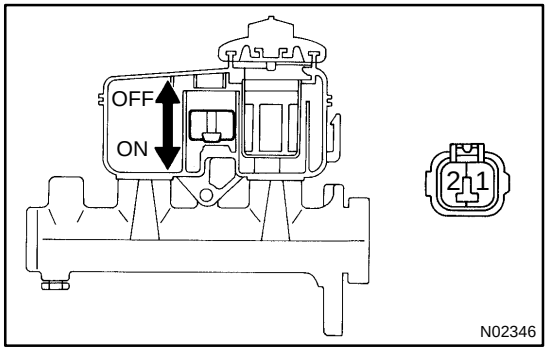
Oil pressure should be over 24.5 kPa (0.25 kgf/cm^2, 3.55 psi).
If operation is not as specified, replace the switch.



16. INSPECT BRAKE SYSTEM WARNING LIGHT

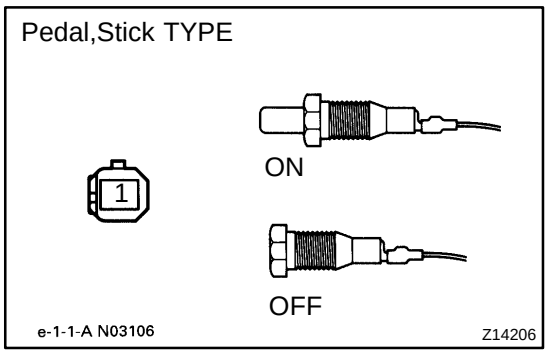
(a) Disconnect the connector from the brake fluid warning switch.
(b) Release the parking brake pedal.
(c) Connect the terminals on the wire harness side of the level warning switch connector.
(d) Start the engine, check that the warning light lights up.

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



17. INSPECT BRAKE FLUID LEVEL WARNING SWITCH

(a) Remove the reservoir tank cap and strainer.
(b) Disconnect the connector.
(c) Check that no continuity exists between the terminals with the switch OFF (float up).
(d) Use syphon, etc. to take fluid out of the reservoir tank.
(e) Check that continuity exists between the terminals with the switch ON (float down)



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

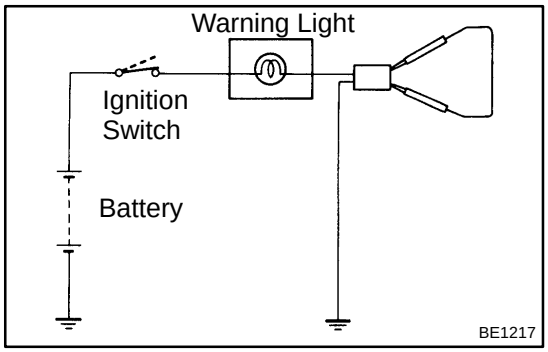
If operation is not as specified, replace the switch.

18. INSPECT PARKING BRAKE SWITCH

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

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

If operation is not as specified, replace the switch or inspect ground point.



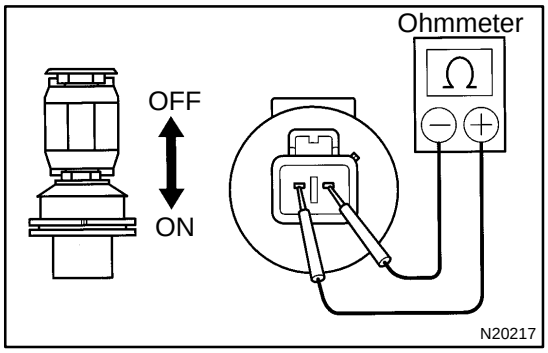
19. INSPECT WASHER LEVEL WARNING LIGHT

(a) Disconnect the connectors from the level warning switch and parking brake switch.

(b) Connect terminals on the wire harness side connector of the level warning switch connector.

(c) Remove the GAUGE fuse and turn the ignition switch ON, and check that the warning light comes on.

If the warning light does not light up, test the bulb.

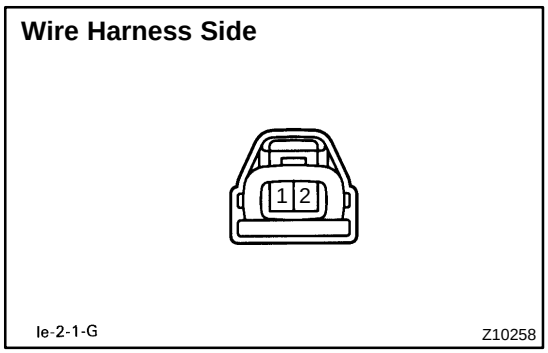


20. INSPECT WASHER LEVEL WARNING SWITCH

(a) Check that no continuity exists between terminals with the switch OFF (float up).

(b) Check that continuity exists between terminals with the switch ON (float down).

If operation is not as specified, replace the switch.

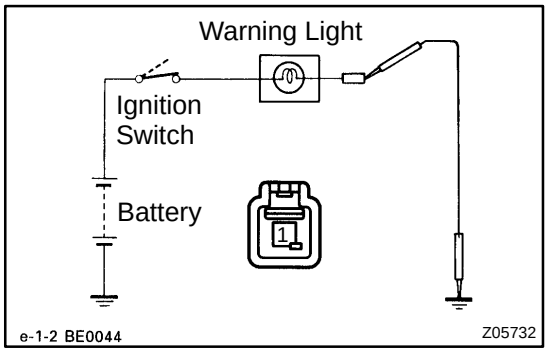


21. INSPECT WINDOW WASHER LEVEL WARNING SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
2 – Ground	Constant	Continuity

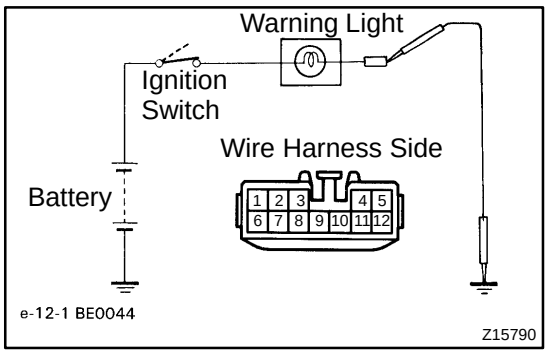
If continuity is not as specified, inspect the wire harness or ground point.



22. INSPECT OPEN DOOR WARNING LIGHT

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

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

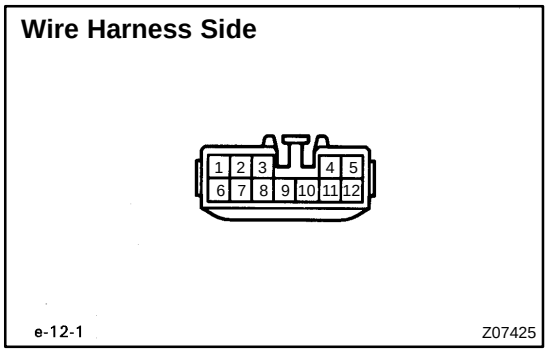


23. INSPECT WARNING LIGHT

(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.



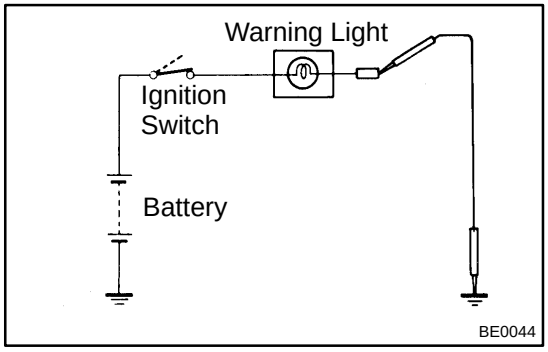
24. INSPECT LIGHT FAILURE SENSOR CIRCUIT

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

Tester connection	Condition	Specified condition
1 – Ground	Constant	Continuity*
2 – Ground	Constant	Continuity*
9 – Ground	Constant	Continuity*
10 – Ground	Constant	Continuity*
11 – Ground	Constant	Continuity*
12 – Ground	Constant	Continuity*
3 – Ground	Light control switch OFF	No voltage
3 – Ground	Light control switch TAIL or HEAD	Battery positive voltage
4.8 – Ground	Ignition switch LOCK or ACC	No voltage
4.8 – Ground	Ignition switch ON	Battery positive voltage
7 – Ground	Stop light switch OFF	No voltage
7 – Ground	Stop light switch ON	Battery positive voltage

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

If the circuit is as specified, replace the sensor. If the circuit is not as specified, inspect the circuits connected to other parts.



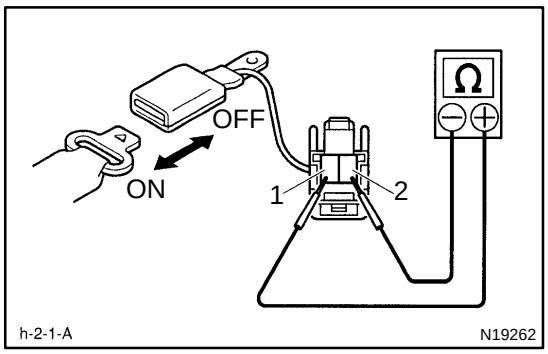
25. INSPECT SEAT BELT WARNING LIGHT

(a) Disconnect the connector from the buckle switch.

(b) Ground terminal 1 on the buckle switch with the connectors still connected.

(c) Turn the ignition switch ON and check that the warning light lights up.

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

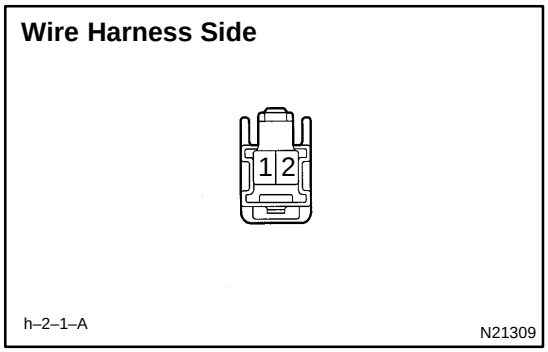


26. INSPECT BUCKLE SWITCH CONTINUITY

(a) Check that continuity exists between terminals 1 and 2 on the switch side connector with the switch ON (belt unfastened).

(b) Check that no continuity exists between terminals 1 and 2 on the switch side connector with the switch OFF (belt fastened).

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

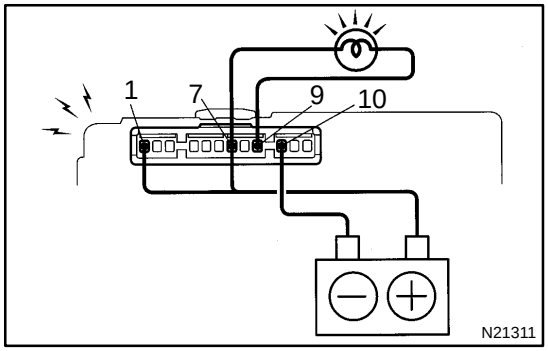


27. INSPECT BUCKLE SWITCH CIRCUIT

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

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

If the circuit is not as specified, inspect the circuits connected to other parts.



28. INSPECT INTEGRATION RELAY SEAT BELT WARNING SYSTEM OPERATION

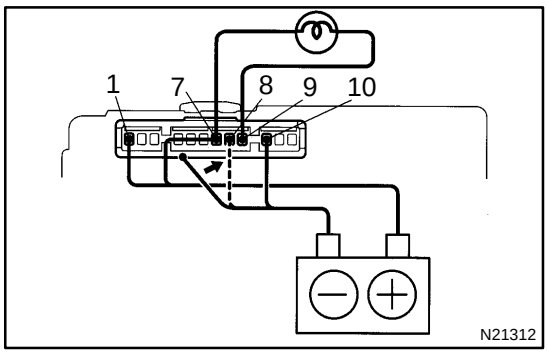
(a) Connect the positive (+) lead from the battery to terminals 1 and 7.

(b) Connect the terminal 7 to terminal 9 through the 3.4 W test bulb.

(c) Connect the negative (–) lead from the battery to terminal 10.

(d) Check that the bulb lights and the buzzer sounds for 4 to 8 seconds.

(e) Return to step (a) and operate the chime again.



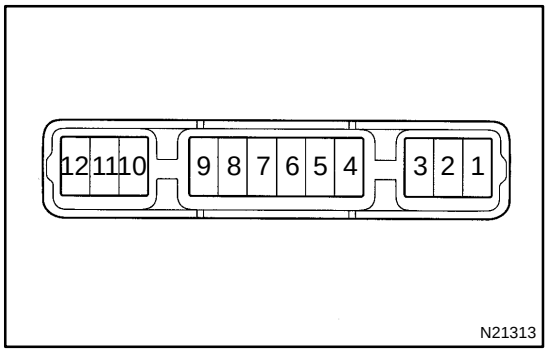
(f) Connect the negative (–) lead from the battery to terminal 8.

(g) Check that the buzzer stops sounding.

HINT:

Check the buzzer within a period of 4 to 8 seconds.

If operation is not as specified, replace the relay.



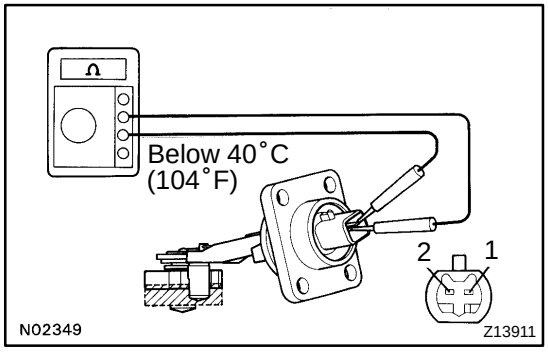
29. Seat belt warning : INSPECT INTEGRATION RELAY CIRCUIT

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

Tester connection	Condition	Specified condition
8 – Ground	Driver's buckle switch OFF (Seat best unfastened)	No continuity
8 – Ground	Driver's buckle switch ON (Seat best fastened)	Continuity
10 – Ground	Constant	Continuity
1 – Ground	Constant	Battery positive voltage
7 – Ground 9 – Ground	Ignition switch position OFF or ACC	No voltage
7 – Ground 9 – Ground	Ignition switch position ON	Battery positive voltage

If the circuit is as specified, try to replace the relay with a new one.

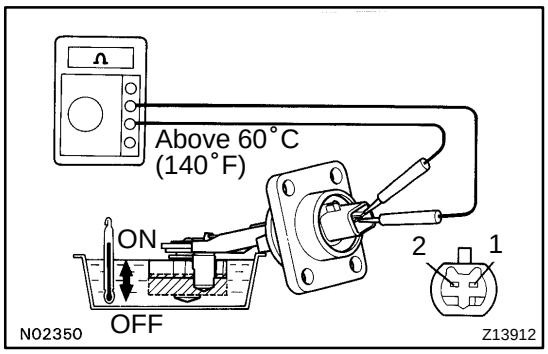
If the circuit is not as specified, inspect the circuits connected to other parts.



30. INSPECT ENGINE OIL LEVEL WARNING SWITCH CONTINUITY

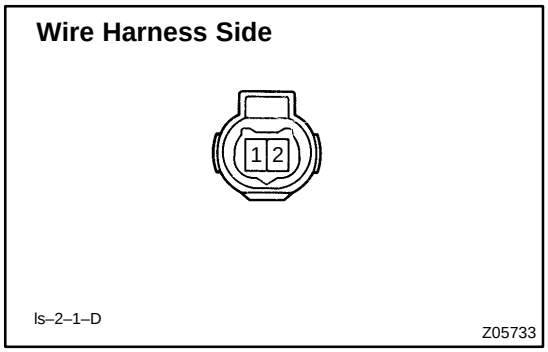
(a) Check that continuity exists between terminal with the switch in each position.

(b) Heat the switch to above 60˚C (140˚F) in an oil bath.



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

If operation is not as specified, replace the switch.

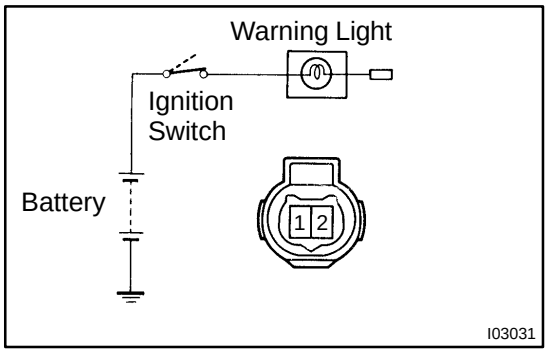


31. INSPECT ENGINE OIL LEVEL WARNING SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
2 – Ground	Constant	Continuity

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

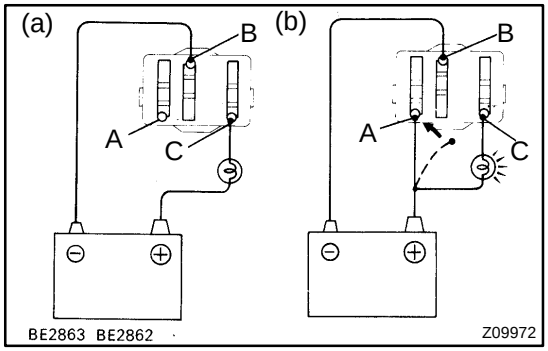


32. INSPECT ENGINE OIL LEVEL WARNING LIGHT

(a) Disconnect the connector from the switch.
(b) Turn the IG switch ON, the warning light lights up.
(c) The warning light lights up after 40 sec. from the engine has started.

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

33. INSPECT LIGHT CONTROL RHEOSTAT
(See page BE–50)



34. INSPECT BULB CHECK RELAY OPERATION

(a) Connect the positive (+) lead from the battery to terminal C through a 1.4–W test bulb and the negative (–) lead to terminal B, check that the test bulb does not light up.
(b) Connect the positive (+) lead from the battery to terminal A and check that the test bulb lights up.

If operation is not as specified, replace the relay.

BE05J–02

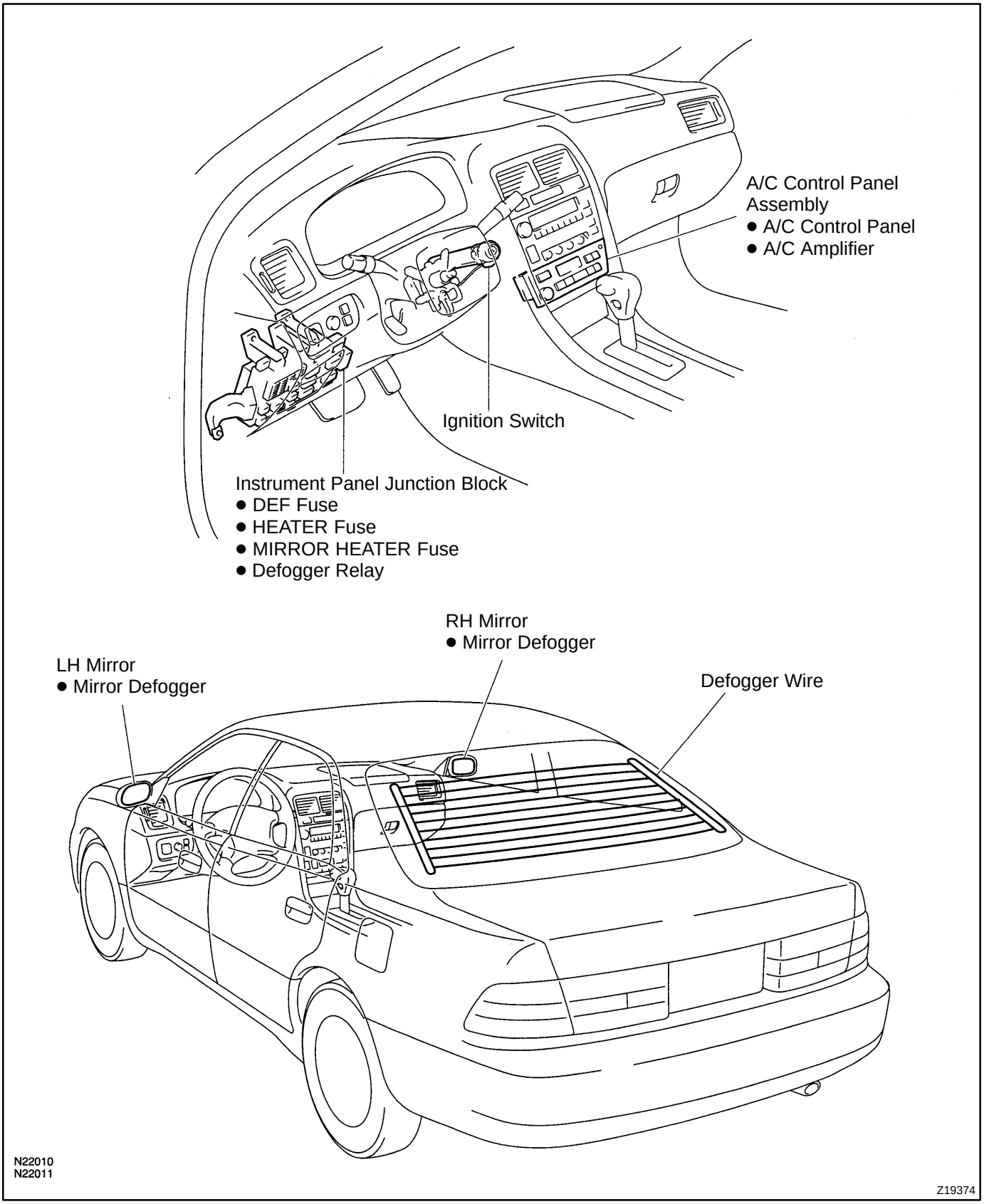
REASSEMBLY

Reassembly is in the reverse of the disassembly(See page BE–97).

DEFOGGER SYSTEM

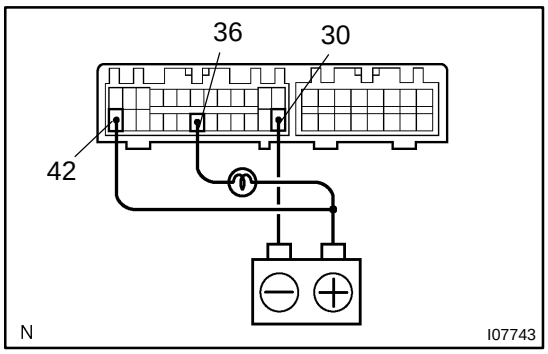
LOCATION

BE05K–03



BE1JP–01

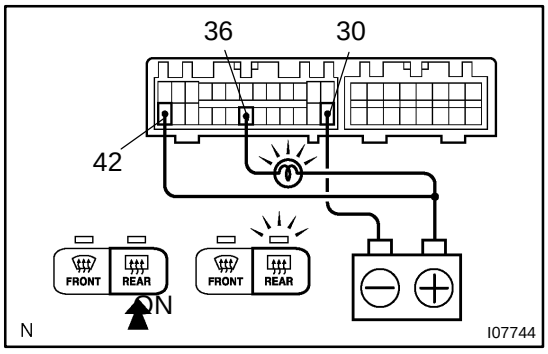
INSPECTION



1. A/C control panel assembly:
INSPECT DEFOGGER SWITCH OPERATION

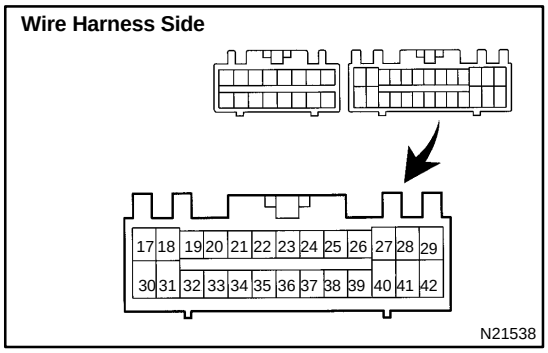
(a) Connect the positive (+) lead from the battery to terminal 42 and negative (–) lead to terminal 30.

(b) Connect the positive (+) lead from the battery to terminal 36 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 approx. 15 minutes.

If operation is not as specified, proceed to inspect the A/C control assembly.
(See page AC–106)

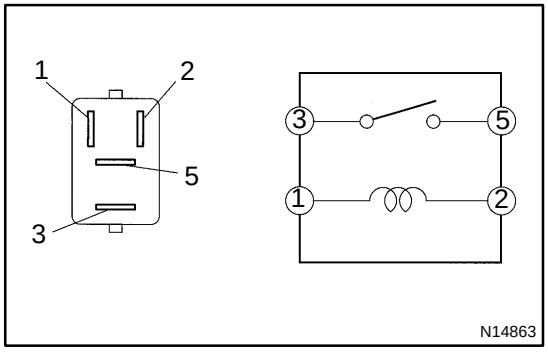


2. INSPECT DEFOGGER SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
30 – Ground	Constant	Continuity
42 – Ground	Ignition switch position ACC or LOCK	No voltage
42 – Ground	Ignition switch position ON	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

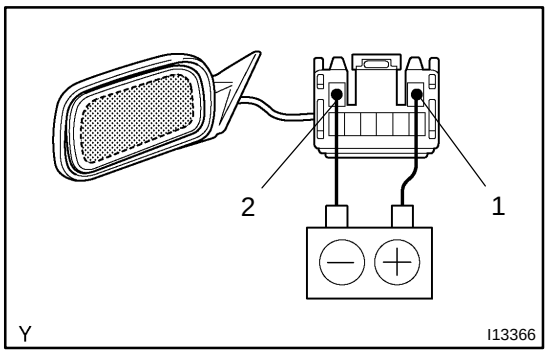


3. INSPECT DEFOGGER RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 – 2	Continuity
Apply B+ between terminals 1 and 2.	3 – 5	Continuity

If continuity is not as specified, replace the relay.

4. INSPECT DEFOGGER RELAY CIRCUIT
(See page BE–12)



5. w/o Driving Position Memory (Driver's door): INSPECT MIRROR DEFOGGER OPERATION

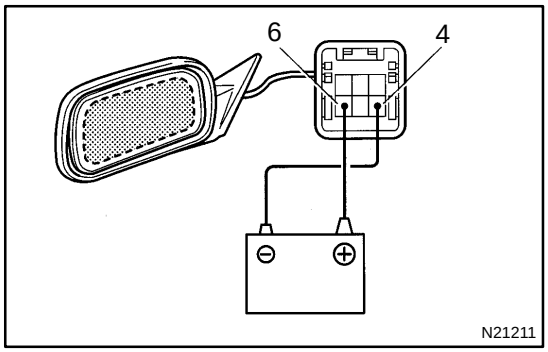
(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2.

(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.



6. w/o Driving Position Memory (Passenger's door): INSPECT MIRROR DEFOGGER OPERATION

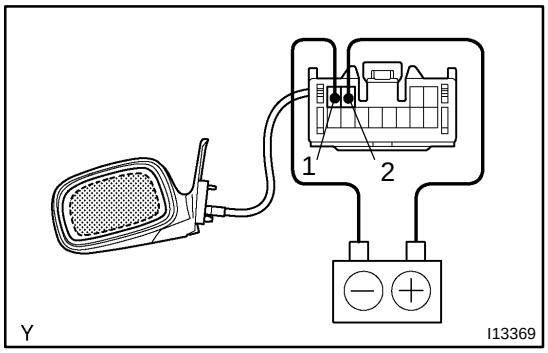
(a) Connect the positive (+) lead from the battery to terminal 6 and the negative (–) lead to terminal 4.

(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.



7. w/ Driving Position Memory: INSPECT MIRROR DEFOGGER OPERATION

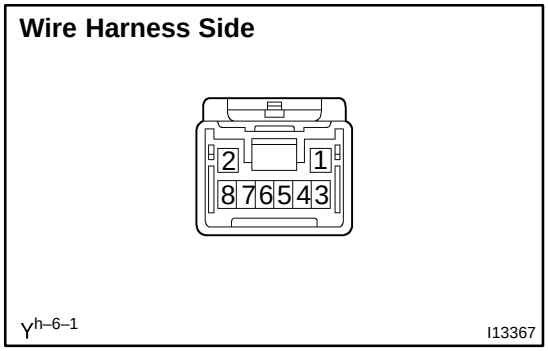
(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1.

(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.



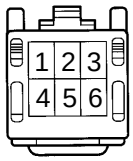
8. w/o Driving Position Memory (Driver's door): INSPECT MIRROR DEFOGGER CIRCUIT

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

Tester connection	Condition	Specified condition
2 – Ground	Constant	Continuity
1 – Ground	Ignition switch ON and Defogger switch OFF	No voltage
1 – Ground	Ignition switch ON and Defogger switch ON	Battery voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

Wire Harness Side



h–6–1 N21539

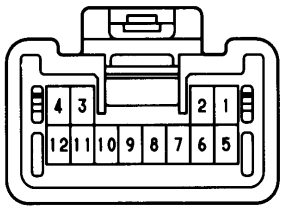
9. w/o Driving Position Memory (Passenger's door): INSPECT MIRROR DEFOGGER CIRCUIT

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

Tester connection	Condition	Specified condition
4 – Ground	Constant	Continuity
6 – Ground	Ignition switch position ON (Defogger switch OFF)	No voltage
6 – Ground	Ignition switch position ON (Defogger switch ON)	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

Wire Harness Side



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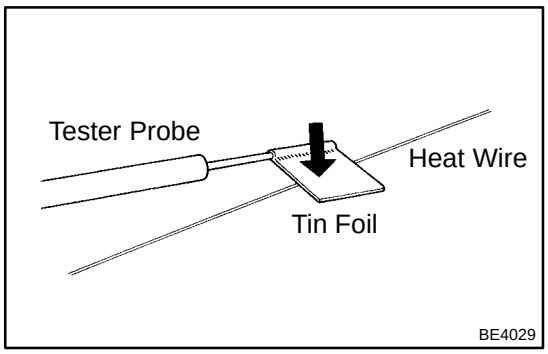
10. w/ Driving Position Memory: INSPECT MIRROR DEFOGGER CIRCUIT

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

Tester connection	Condition	Specified condition
4 – Ground	Constant	Continuity
6 – Ground	Ignition switch position ON (Defogger switch OFF)	No voltage
6 – Ground	Ignition switch position ON (Defogger switch ON)	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.



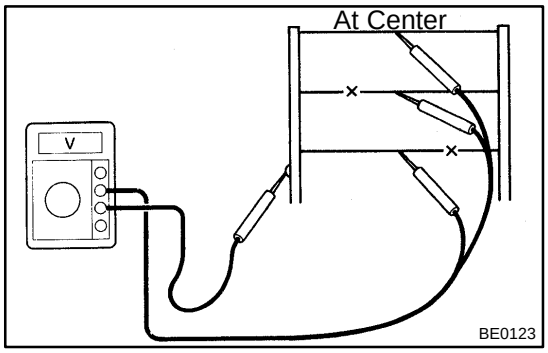
11. INSPECT DEFOGGER WIRE

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.

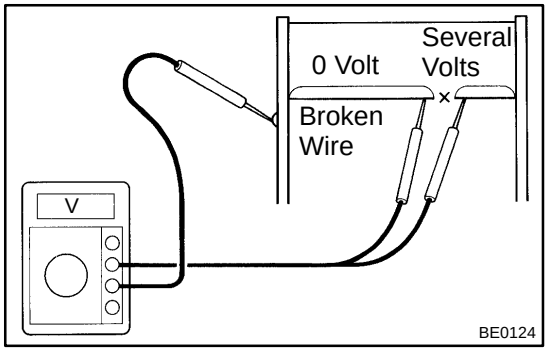


(c) Inspect the voltage at the center of each heat wire.

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



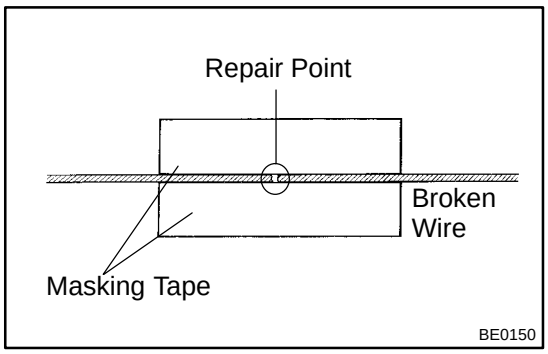
(d) Place the voltmeter positive (+) lead against the defogger positive (+) terminal.

(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 voltage increases to approx. 12 V as the meter probe moves to the other end.

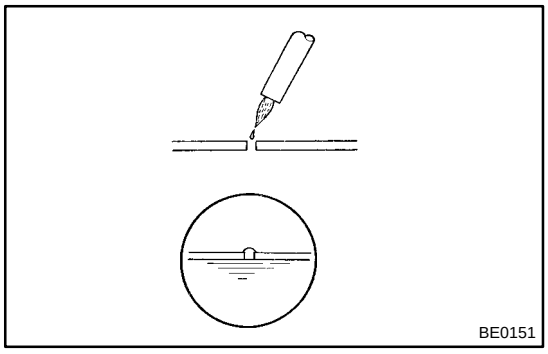


12. IF NECESSARY, REPAIR DEFOGGER WIRE

(a) Clean the broken wire tips with grease, wax and silicone remover.

(b) Place the masking tape along both sides of the wire for repair.

(c) Thoroughly mix the repair agent (Dupont paste No. 4817).



(d) Using a fine tip brush, apply a small amount of the agent to the wire.

(e) After a few minutes, remove the masking tape.

(f) Do not repair the defogger wire for at least 24 hours.

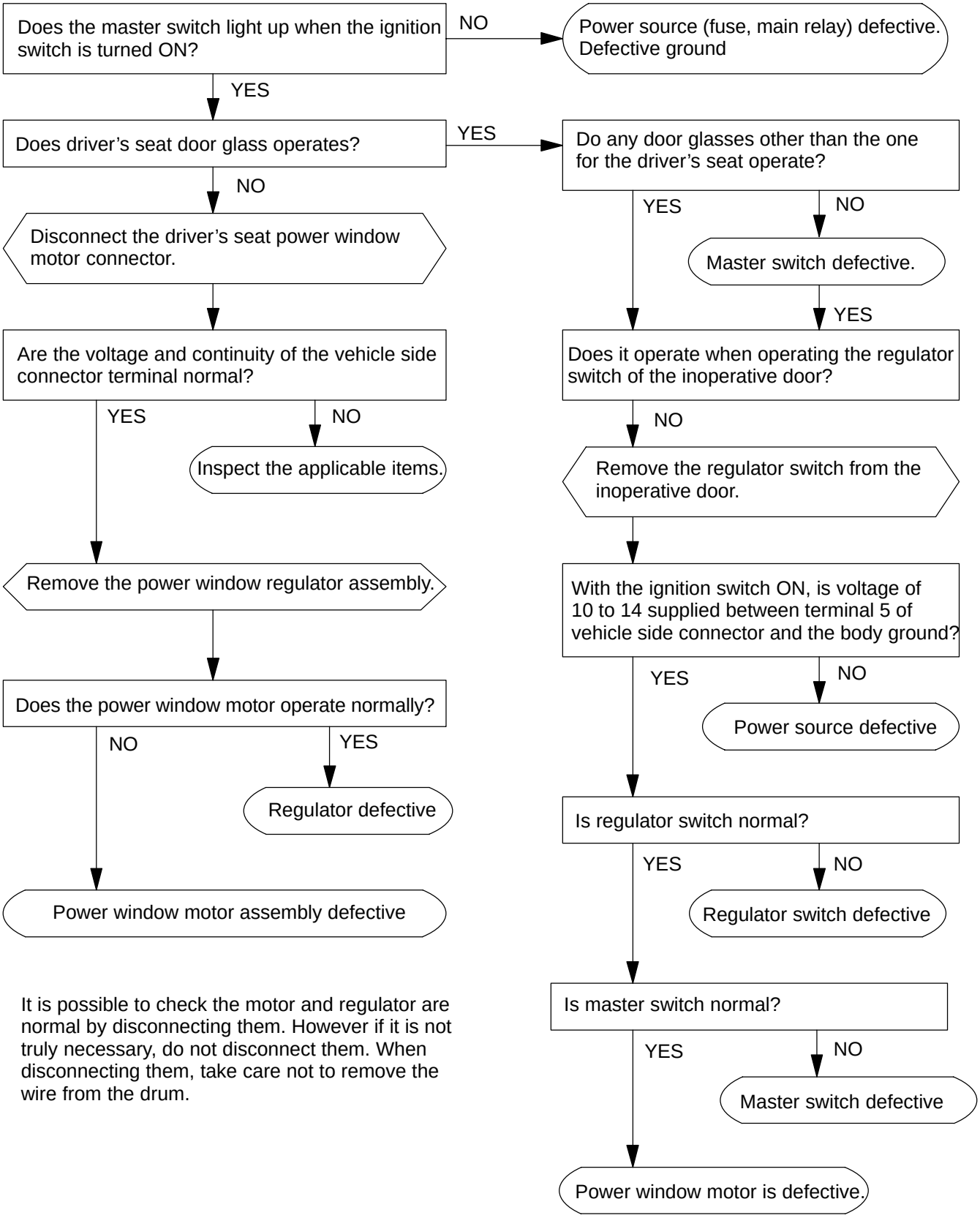
POWER WINDOW CONTROL SYSTEM

BE10L–02

TROUBLESHOOTING

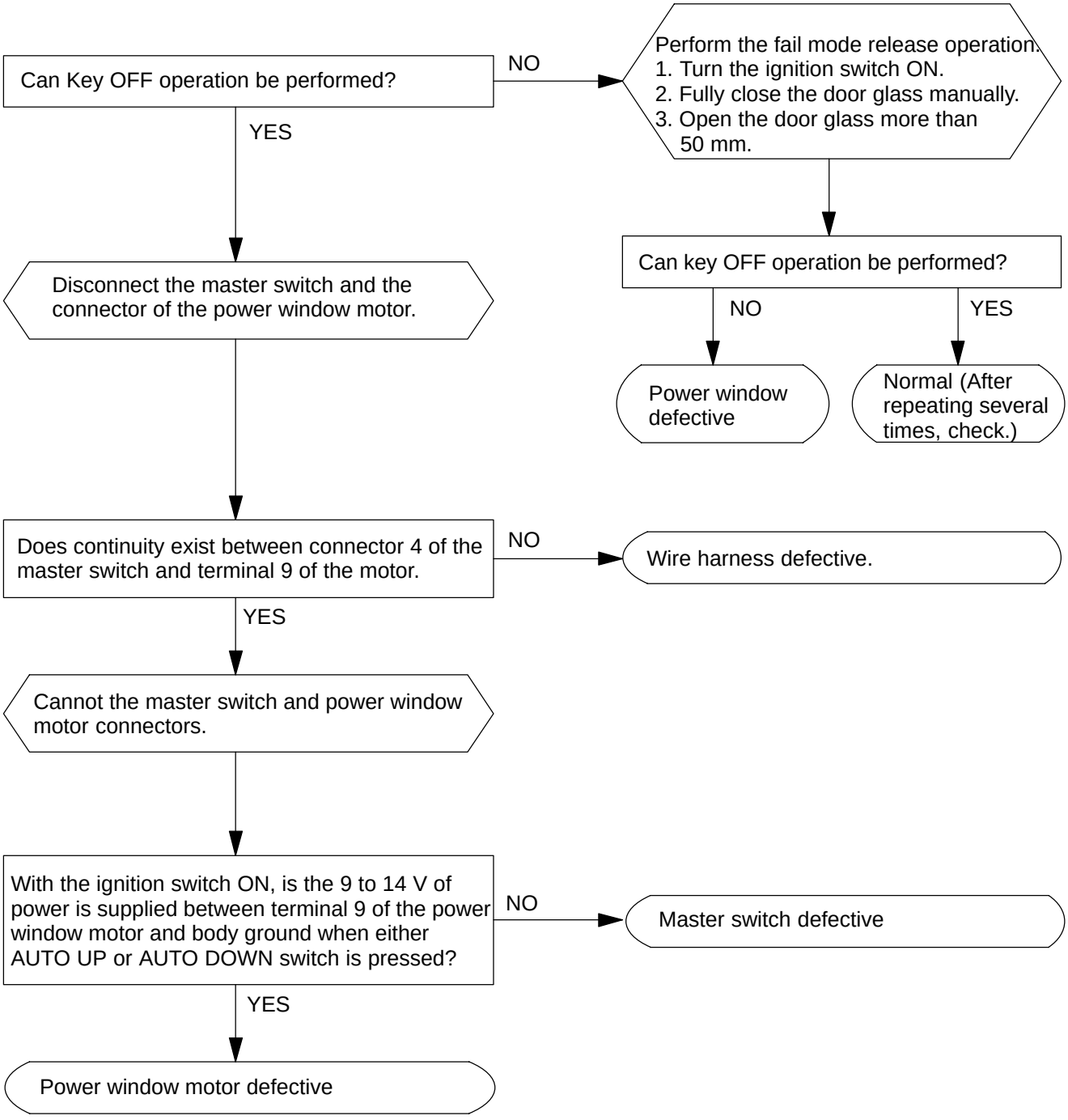
Malfunction		Chart
The power window will not move.	Operation can not be performed with the power window master switch.	1
	AUTO operation for driver's seat door can not be performed.	2
	The driver's seat door can be operated using the switch.	3
	The driver's seat door can be operated using the wireless function.	4
	Key OFF function can be operated.	5
Moves DOWN during UP operation.	During UP operation, DOWN operation starts near fully closed position.	6
	During UP operation, DOWN operation starts anywhere except near fully closed position.	7
Down operation does not start, Even though a foreign object is inserted.		8

1	Operation with the power window master switch can not be performed.

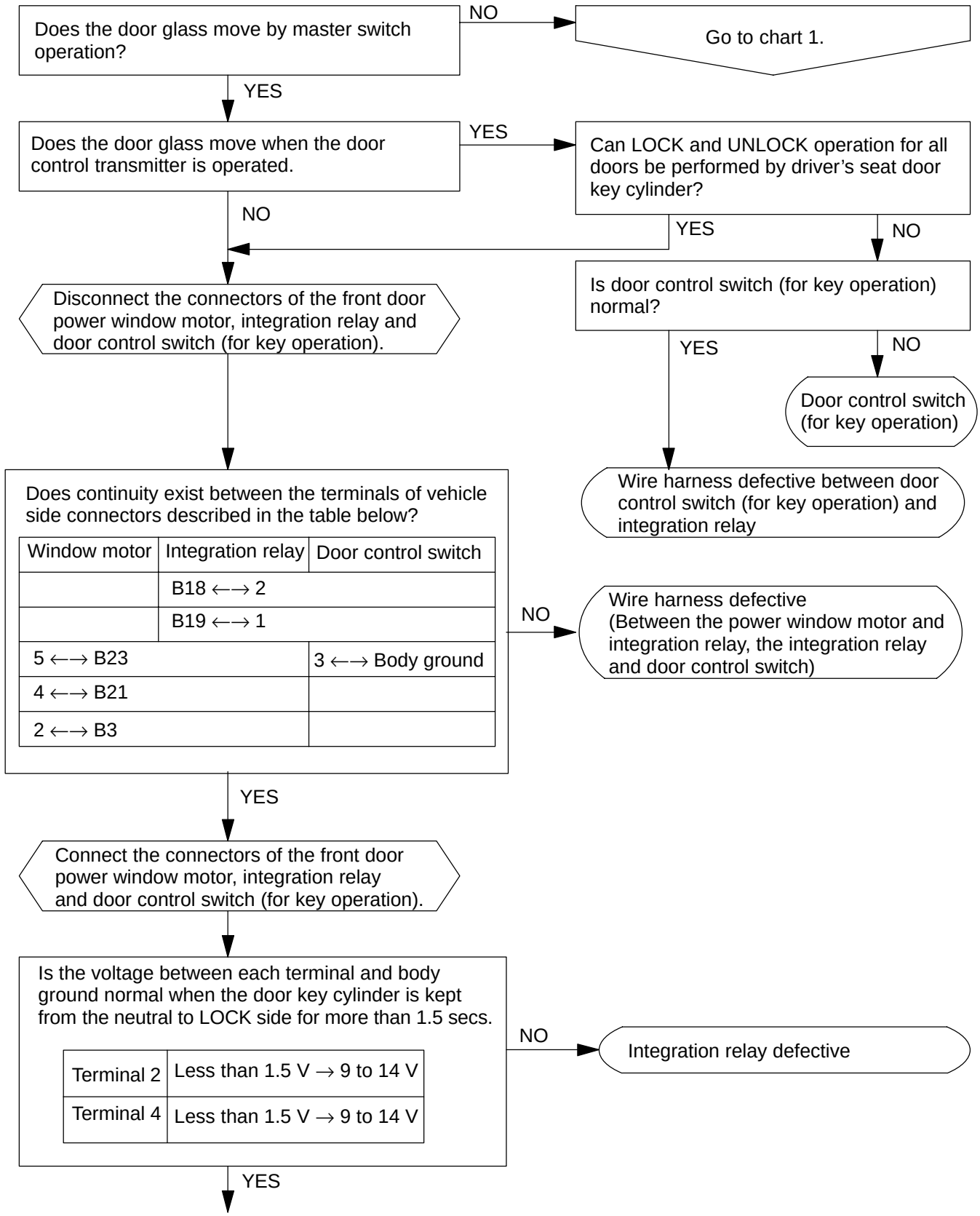


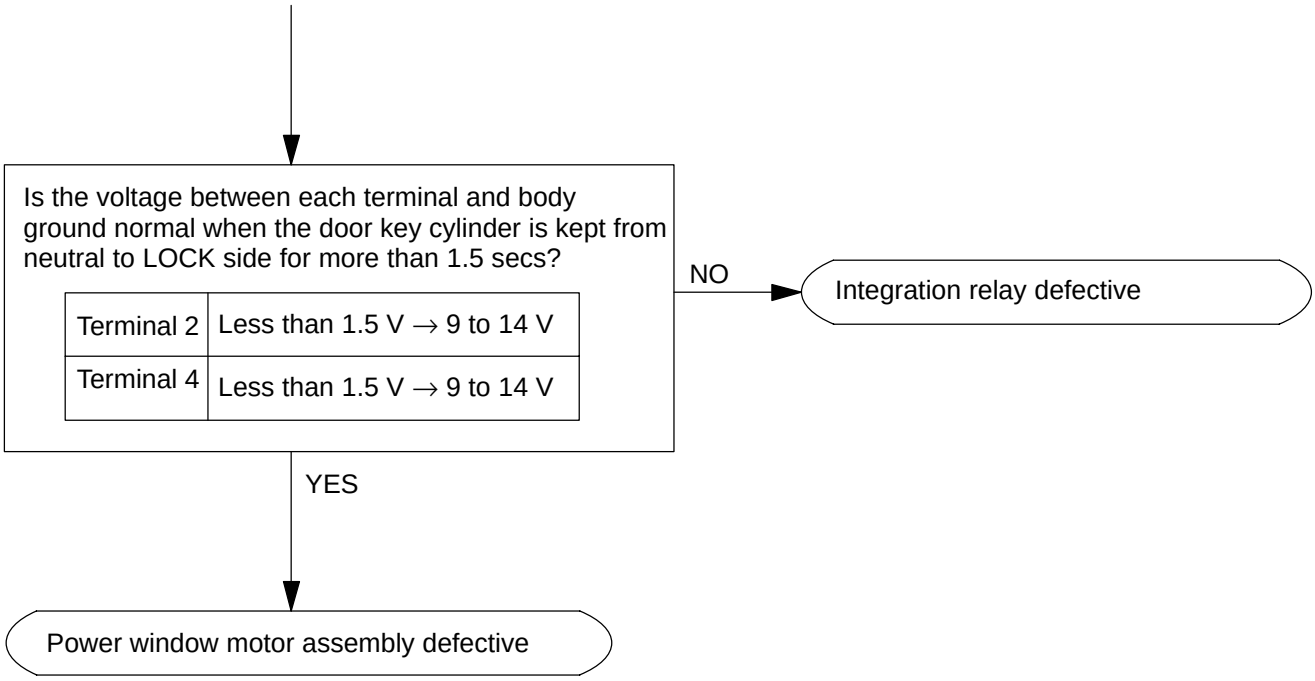
It is possible to check the motor and regulator are normal by disconnecting them. However if it is not truly necessary, do not disconnect them. When disconnecting them, take care not to remove the wire from the drum.

2	AUTO operation for driver's seat door cannot be performed.

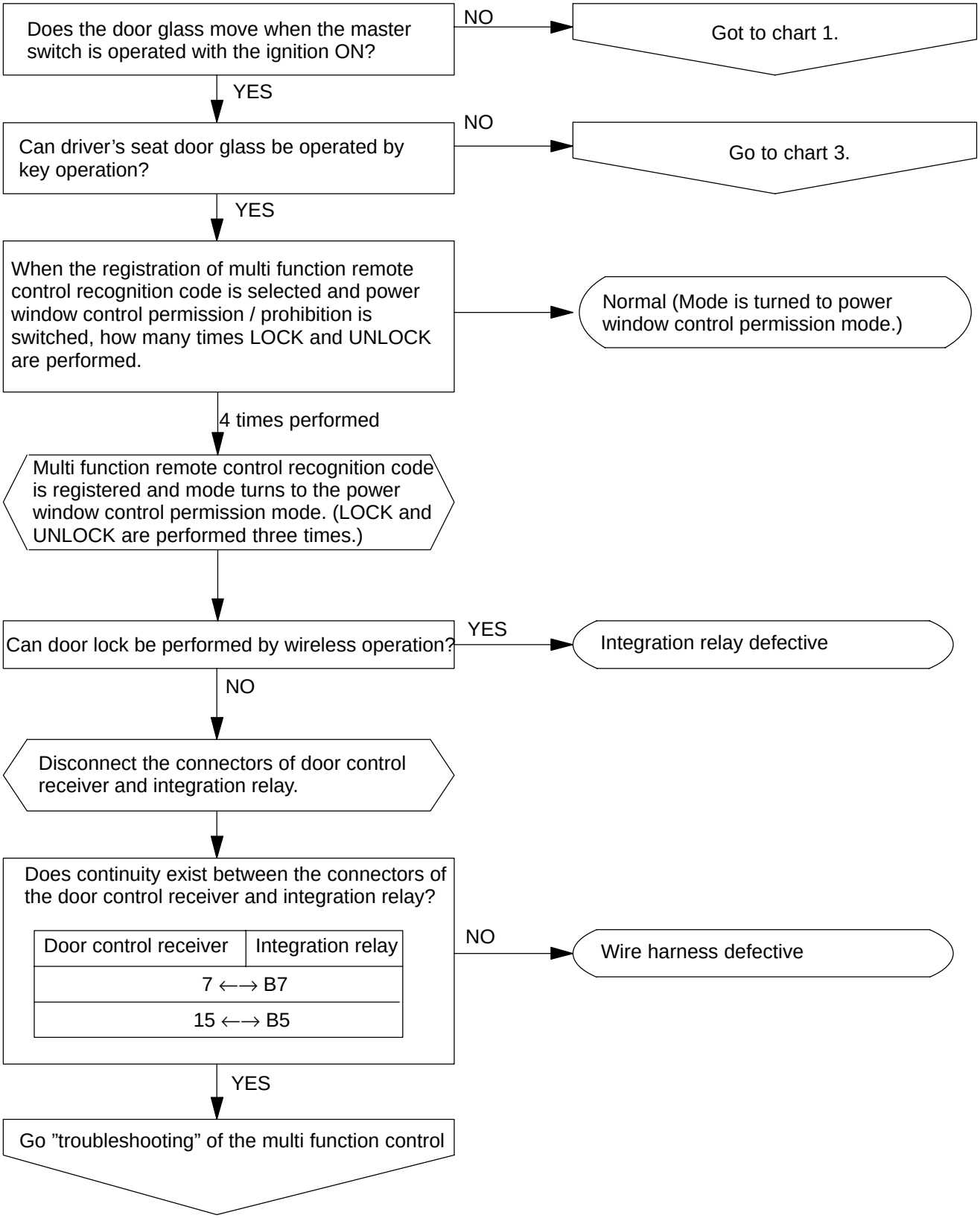


3	Driver's seat door cannot be operated by key operation.

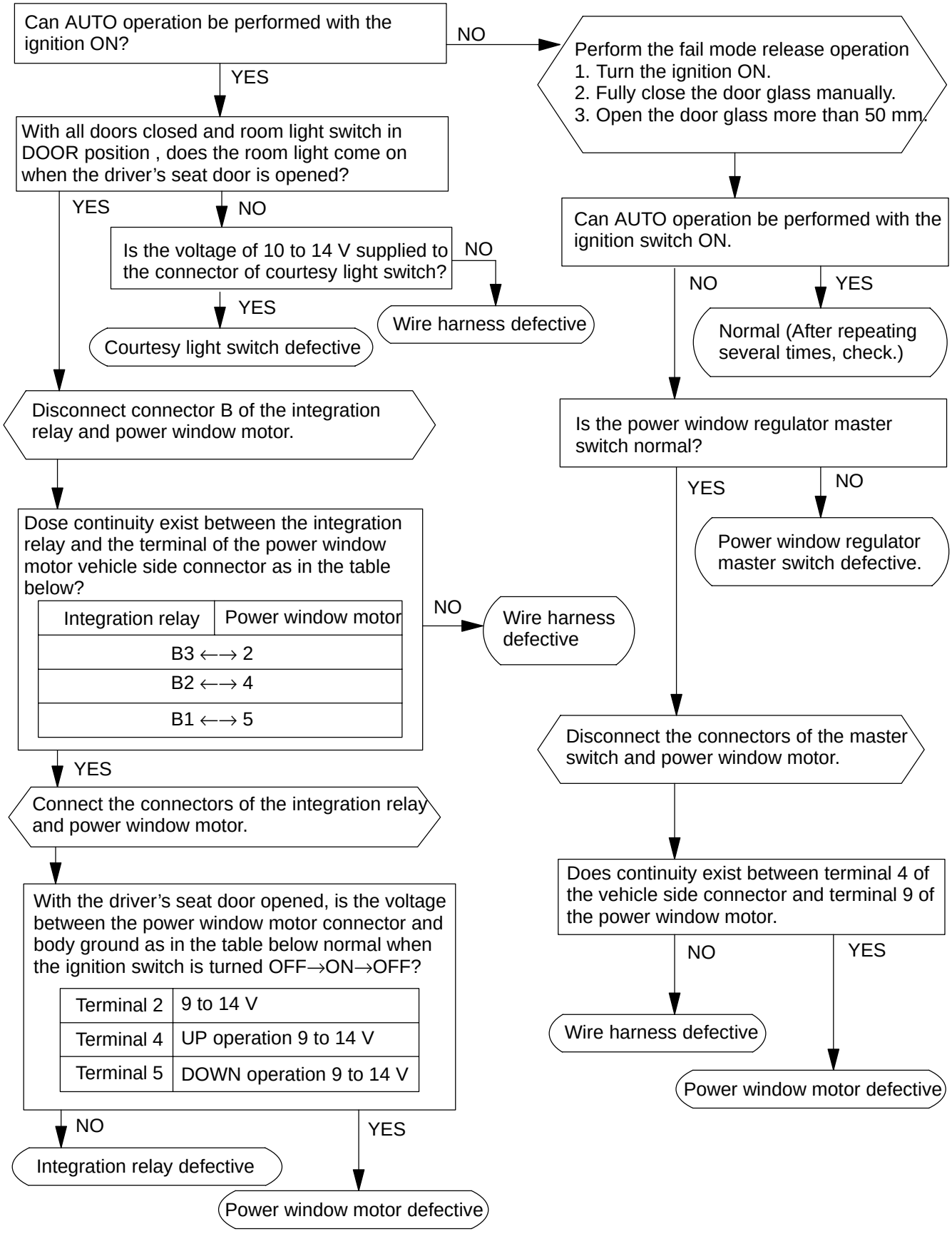



Is the voltage between each terminal and body ground normal when the door key cylinder is kept from neutral to LOCK side for more than 1.5 secs?
Terminal 2
Less than 1.5 V → 9 to 14 V
Terminal 4
Less than 1.5 V → 9 to 14 V
NO
Integration relay defective
YES
Power window motor assembly defective

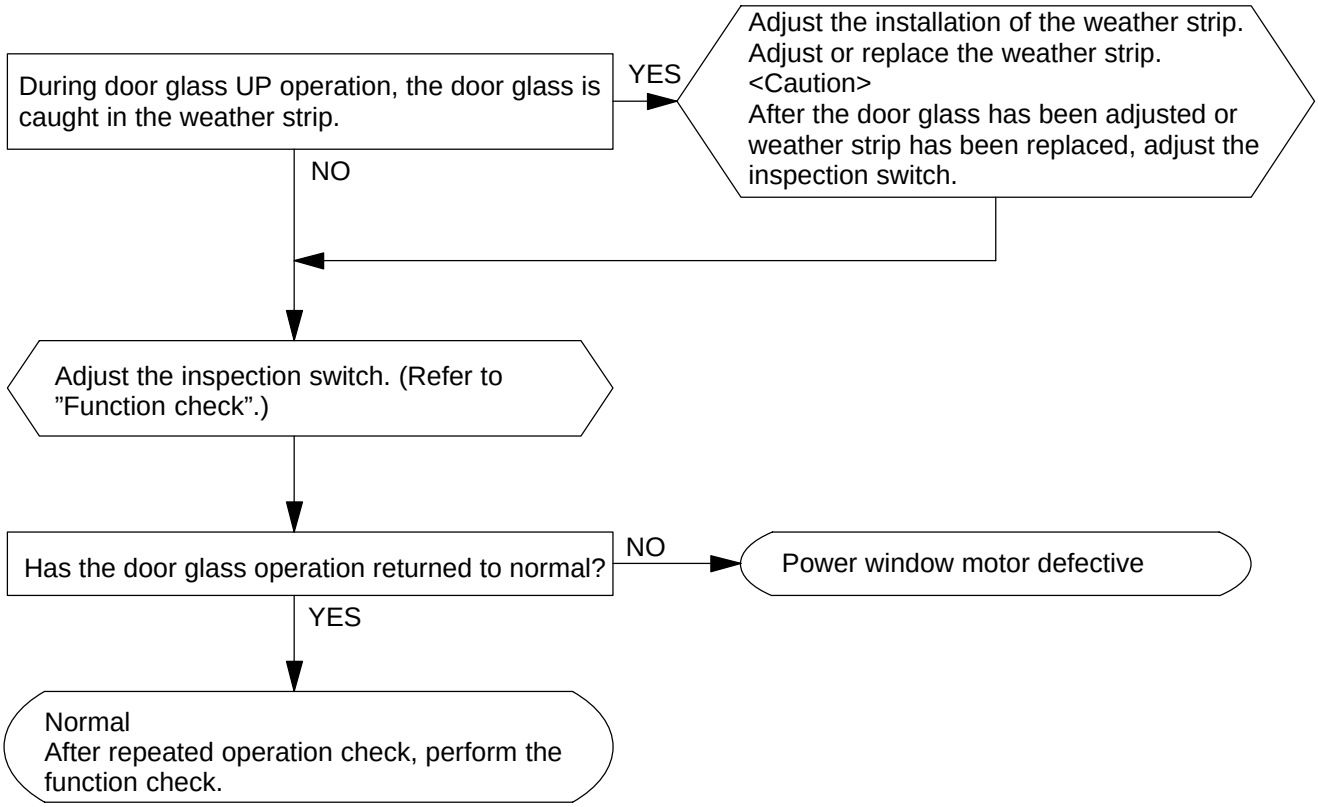
4	Driver's seat door can not be operated by wireless operation



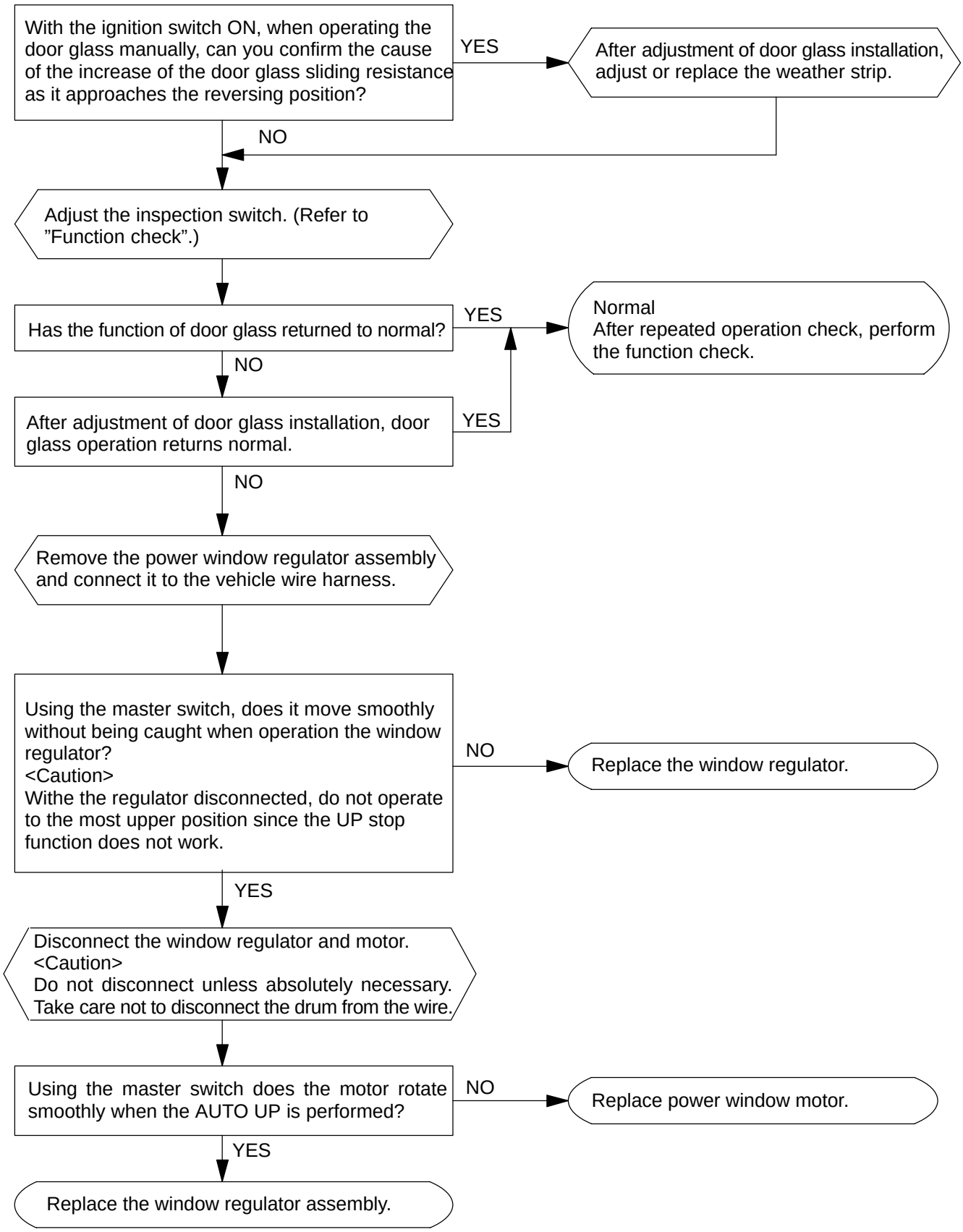
5	Key OFF operation can not be performed.



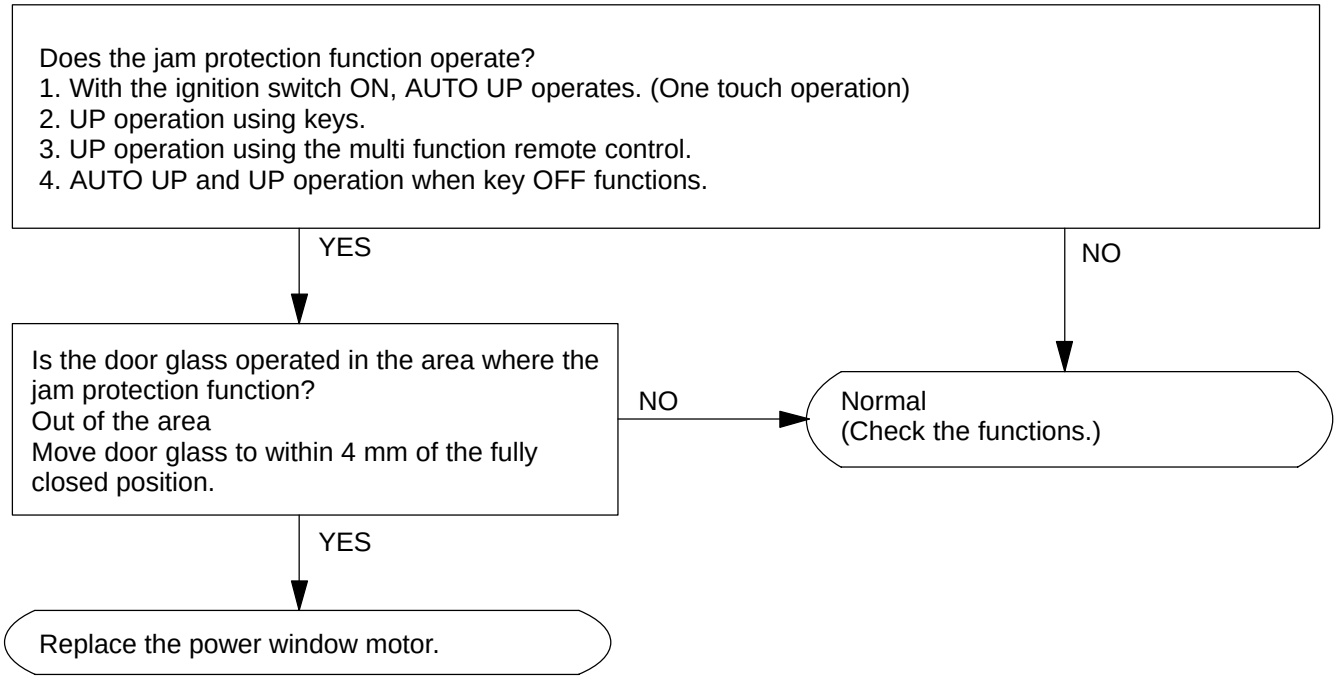
6	During driver’s seat door glass UP operation, the glass moves down.



7	During the driver's seat door UP operation, the door glass moves DOWN near the fully closed position.

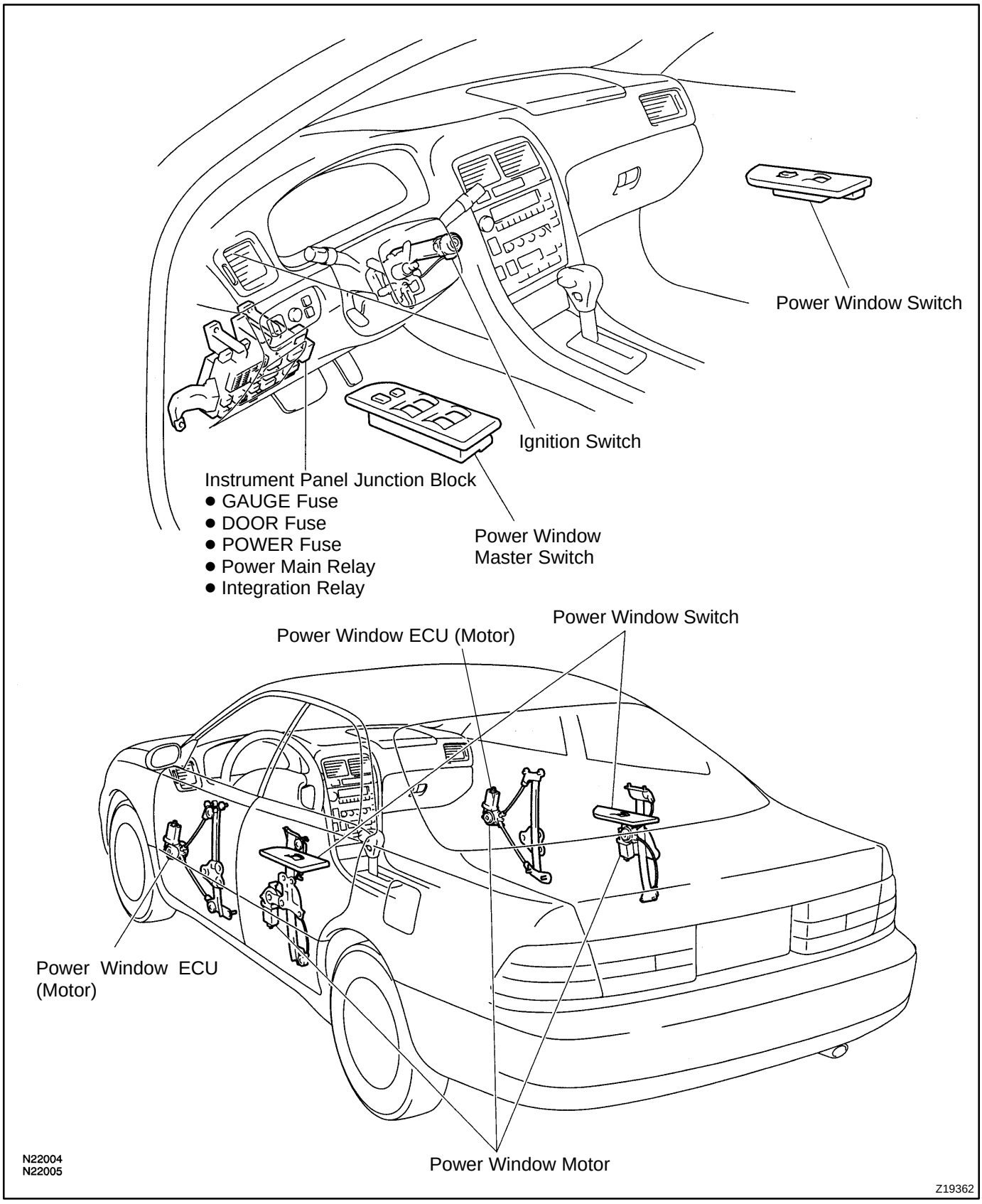


8	DOWN operation does not start even though a foreign object is inserted.

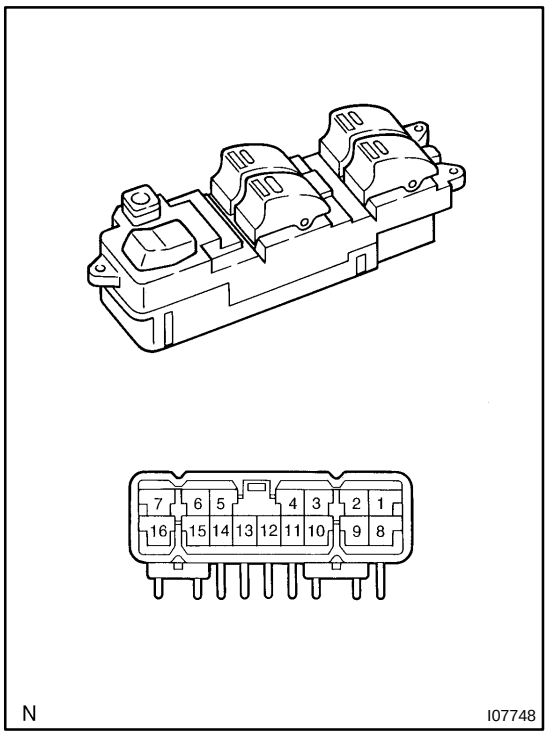


BE05M–04

LOCATION



BE10M–01



INSPECTION

1. INSPECT POWER WINDOW MASTER SWITCH CONTINUITY

(a) Inspect the front driver's switch.

Window unlock:

Switch position	Tester connection	Specified condition
UP AUTO	4 – 9 – 11	Continuity
UP MANUAL	4 – 9	Continuity
OFF	–	No Continuity
DOWN MANUAL	2 – 4	Continuity
DOWN AUTO	2 – 4 – 11	Continuity

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

(b) Inspect the front passenger's switch.

Window unlock:

Switch position	Tester connection	Specified condition
UP AUTO	4 – 13 – 15	Continuity
UP MANUAL	4 – 13	Continuity
OFF	–	No Continuity
DOWN MANUAL	4 – 5	Continuity
DOWN AUTO	4 – 5 – 15	Continuity

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

(c) Inspect the rear left switch.

Window unlock:

Switch position	Tester connection	Specified condition
UP	8 – 12 7 – 10	Continuity
OFF	7 – 8 – 10	Continuity
DOWN	10 –12 7 – 8	Continuity

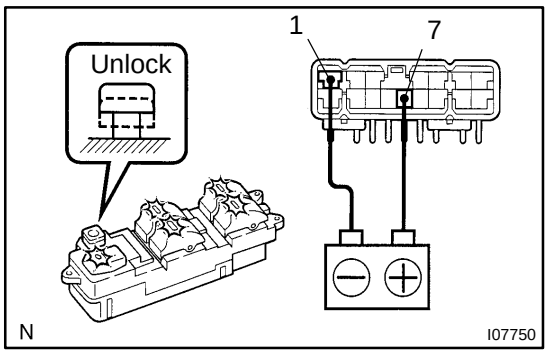
If continuity is not as specified, replace the master switch.

(d) Inspect the rear right switch.

Window unlock:

Switch position	Tester connection	Specified condition
UP	12 – 14 7 – 16	Continuity
OFF	7 – 14 – 16	Continuity
DOWN	12 – 16 7 – 14	Continuity

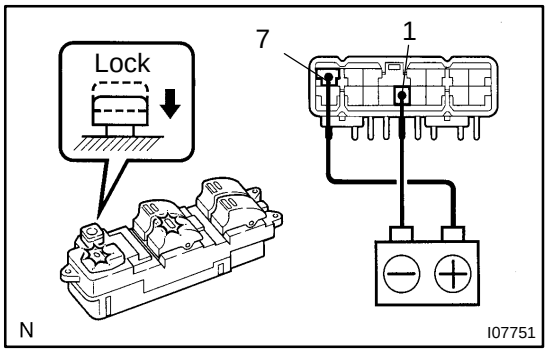
If continuity is not as specified, replace the master switch.



2. INSPECT POWER WINDOW MASTER SWITCH ILLUMINATION

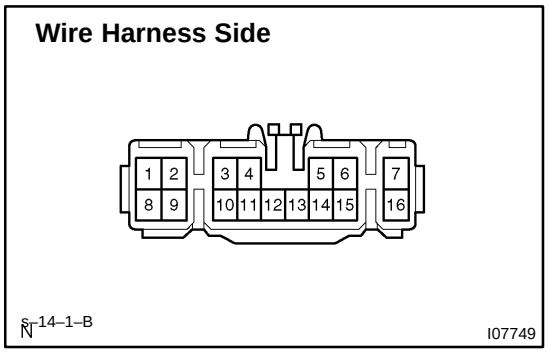
(a) Set the window lock switch to the unlock position.

(b) Connect the positive (+) lead from the battery to terminal 12 and the negative (–) lead to terminal 7, and 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.



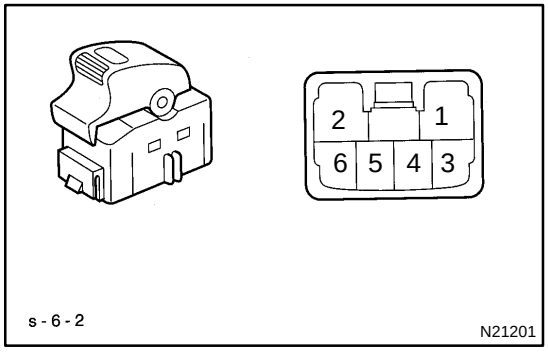
3. INSPECT POWER WINDOW MASTER SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
1 – Ground	Constant	Continuity
7 – Ground	Ignition switch position LOCK or ACC	*No voltage
7 – Ground	Ignition switch position ON	Battery positive voltage

* Exceptions: During 60 seconds after the ignition switch is turned ON → OFF (ACC) or until driver or a passenger's door is opened after the ignition switch is turned ON → OFF (ACC).

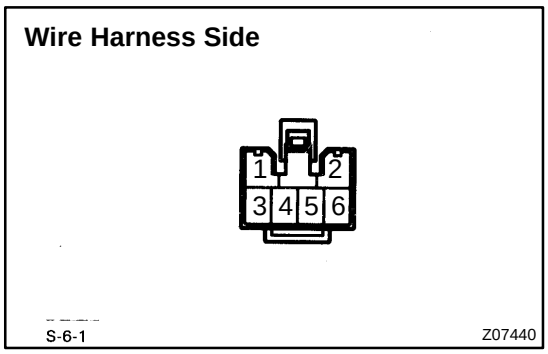
If the circuit is not as specified, inspect the circuits connected to other parts.



4. Passenger's side: INSPECT POWER WINDOW SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
UP MANUAL	3 – 6	Continuity
UP AUTO	3 – 6 3 – 5	Continuity
OFF	–	No Continuity
DOWN AUTO	3 – 4 3 – 5	Continuity
DOWN MANUAL	3 – 4	Continuity

If continuity is not as specified, replace the switch.



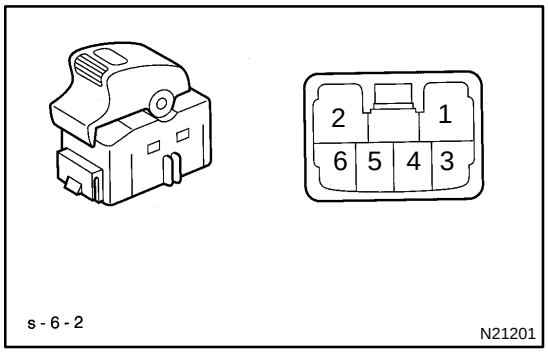
5. INSPECT POWER WINDOW SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
2 – Ground	Constant	Continuity

*Exceptions: During 60 seconds period after the ignition switch is turned ON → OFF (ACC) or until driver or a passenger's door is opened after the ignition switch is turned ON → OFF (ACC).

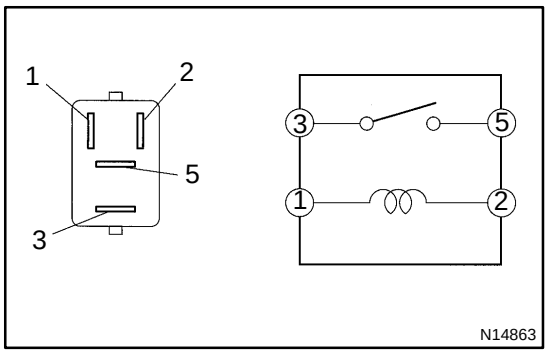
If the circuit is not as specified, inspect the circuits connected to other parts.



6. Rear door side:
INSPECT POWER WINDOW SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
UP	1 – 3 2 – 5	Continuity
OFF	1 – 3 2 – 4	Continuity
DOWN	2 – 4 3 – 5	Continuity

If continuity is not as specified, replace the switch.

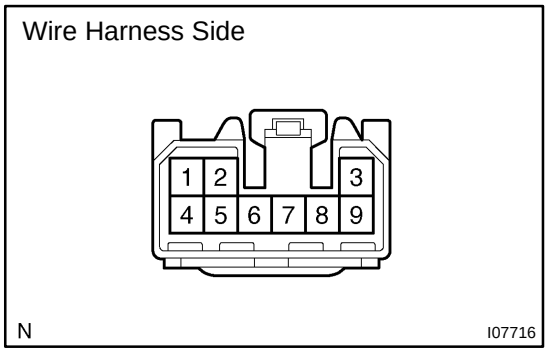


7. INSPECT POWER MAIN RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 – 2	Continuity
Apply B+ between terminals 1 and 2.	3 – 5	Continuity

If continuity is not as specified, replace the relay.

8. INSPECT POWER MAIN RELAY CIRCUIT
(See page BE–12)



9. INSPECT POWER WINDOW ECU (MOTOR) CIRCUIT

Disconnect the connector from the ECU and inspect the connector on the wire harness side.

HINT:

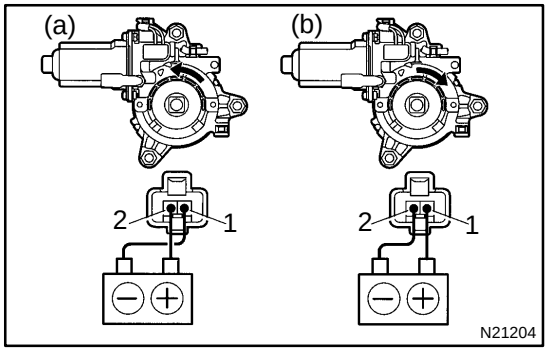
The power window ECU does not operate even if battery voltage is applied to the connector of the driver's door power window ECU directly.

Do not apply the battery voltage directly because this will cause the condroller broken.

Each regulator does not have stop function. Operate manually and never operate to the highest position.

Tester connection	Condition	Specified condition
1 – Ground	Constant	Continuity
2 – Ground	Ignition switch ON	Battery positive voltage
2 – Ground	Ignition switch OFF Door courtesy switch OFF	Below 1.5 V
3 – Ground	Constant	Battery positive voltage
4 – Ground	Using a key, door key cylinder OFF	No voltage
4 – Ground	Using a key, door key cylinder LOCK	Battery positive voltage
5 – Ground	Using a key, door key cylinder OFF	No voltage
5 – Ground	Using a key, door key cylinder UNLOCK	Battery positive voltage
6 – Ground	Ignition switch ON Master switch OFF	No voltage
6 – Ground	Ignition switch ON Master switch UP	Battery positive voltage
7 – Ground	Ignition switch ON Master switch OFF	No voltage
7 – Ground	Ignition switch ON Master switch DOWN	Battery positive voltage
8 – Ground	Ignition switch LOCK or ACC	No voltage
8 – Ground	Ignition switch ON	Battery positive voltage
9 – Ground	Ignition switch ON Master switch DOWN or UP	No voltage
9 – Ground	Ignition switch ON Master switch AUTO DOWN or AUTO UP	Battery positive voltage

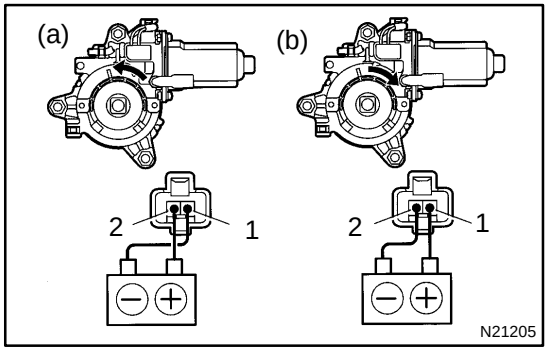
If the circuit is as specified, replace the ECU.
If the circuit is not as specified, inspect the circuits connected to other parts.



10. Rear left side door:
INSPECT POWER WINDOW MOTOR OPERATION

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

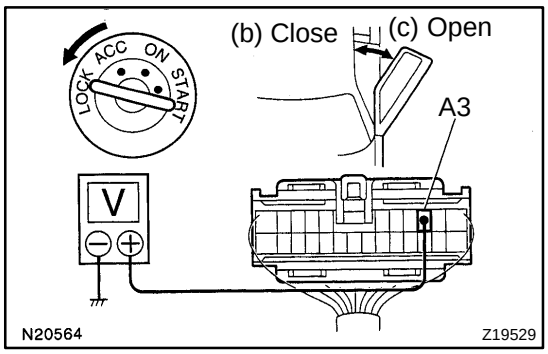
If operation is not as specified, replace the motor.



11. Rear right side door:
INSPECT POWER WINDOW MOTOR OPERATION

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



12. Key–off power window signal:
INSPECT INTEGRATION RELAY OPERATION

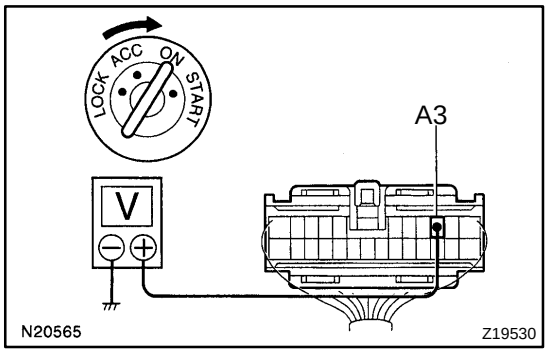
HINT:

When the relay circuit is as specified, inspect the key–off power window signal.

(a) Connect the positive (+) lead from the voltmeter to terminal A3 and the negative (–) lead to body ground.

(b) Close the door with ignition switch turned to LOCK or ACC, and check that the meter needle indicates battery positive voltage.

(c) Open the door and check that the meter needle indicates 0 V.



(d) Turn the ignition switch ON and check that the meter needle indicates battery positive voltage again.

If operation is not as specified, replace the relay.

13. INSPECT INTEGRATION RELAY CIRCUIT (See page BE–21)

Inspect the switch adjustment procedures.

(1) Connect the power window master switch to the wire harness and turn the ignition switch ON.

(2) Fully open the door glass manually.

(3) Using a round bar that is 2 mm^2, press the reset switch.

CAUTION:

When using an iron wire, take care not to use a wire with a sharp edge.

(4) With the reset switch pressed, fully open the door glass with the master switch.

CAUTION:

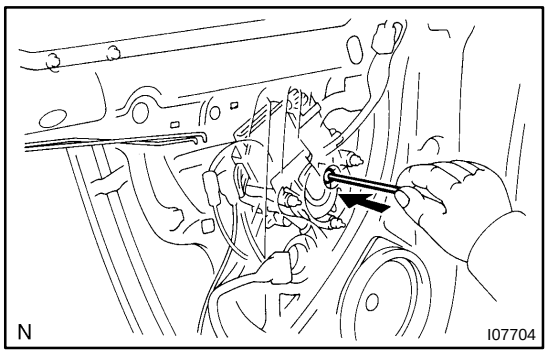
- **Operate manually.**
- **While opening the door glass, if any vibration is felt on the pressed reset switch, pressing force is weak, so repeat step (2).**

(5) Remove the bar and fully open the door glass.

(6) Check that the door glass can be opened and closed fully by AUTO operation.

(7) Checklist for power window malfunction.

BE10N–01



ADJUSTMENT

ADJUST POWER WINDOW MOTOR LIMIT SWITCH

(a) Connect the master switch assembly to the wire harness and turn the ignition switch ON.

(b) Close the window glass fully.

HINT:

Close by manual operation.

(c) Using a 2 mm round bar in diameter, press the reset switch to the force of 30 to 50 N (3 to 5 kgf), open the glass fully with a master switch.

HINT:

- When using a wire or equivalent, make sure that tip of it should be flat.
- Open by manual operation.
- Do not damage the rubber on the reset switch.

(d) Remove the round bar from the reset switch and fully close the window glass.

HINT:

Close by manual operation.

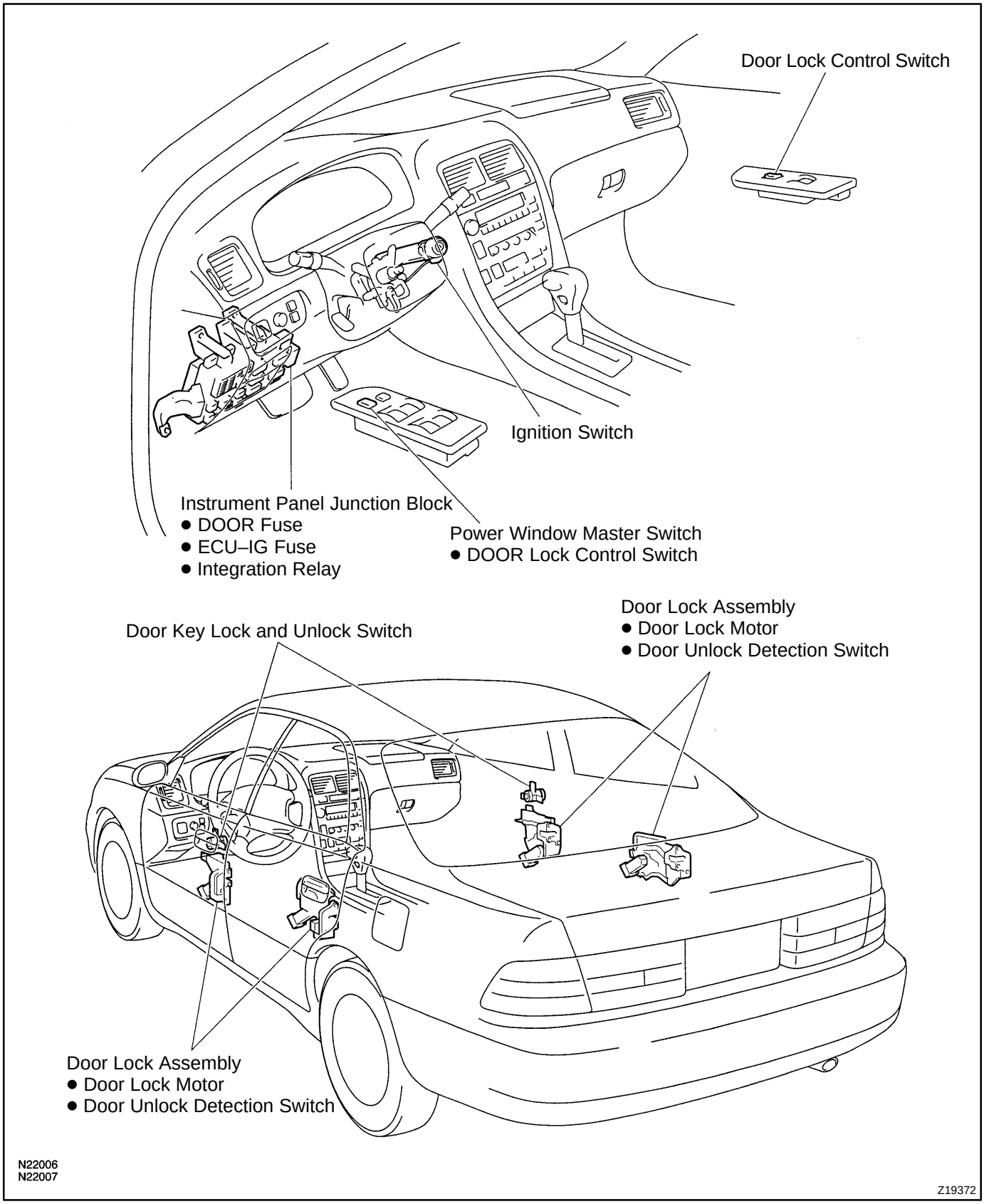
(e) Check that window glass can be fully opened and closed by automatic operation.

(f) Check functioning of power window.

POWER DOOR LOCK CONTROL SYSTEM

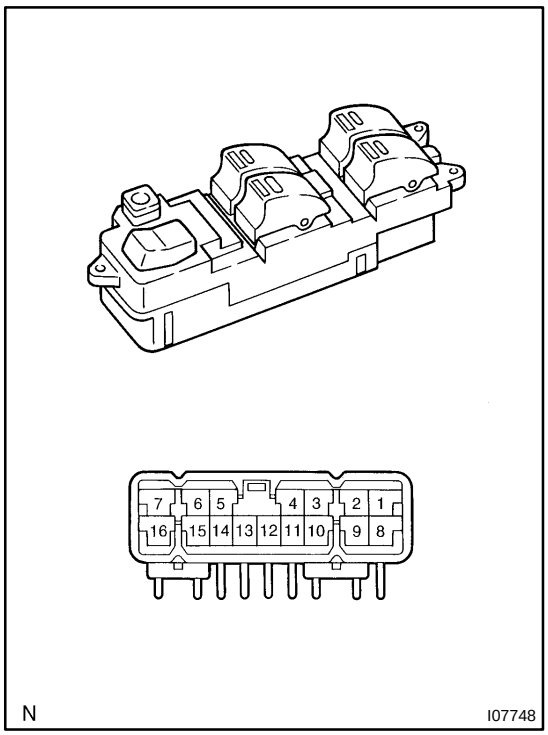
LOCATION

BE05O–02



BE05P–02

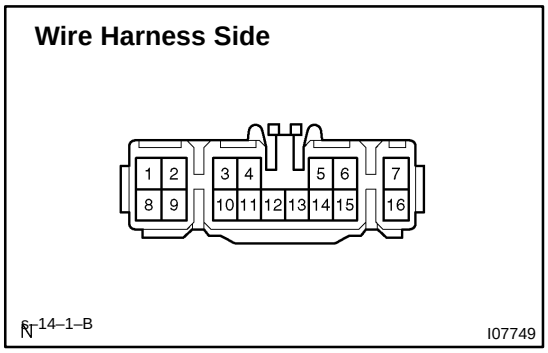
INSPECTION



1. Master switch:
INSPECT DRIVER'S DOOR LOCK CONTROL SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
LOCK	3 – 7	Continuity
OFF	–	No continuity
UNLOCK	1 – 7	Continuity

If continuity is not as specified, replace the switch.

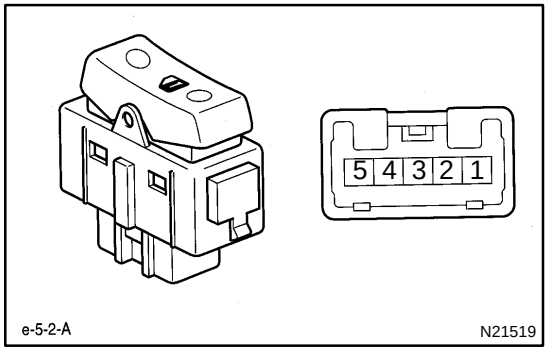


2. Master switch:
INSPECT DRIVER'S DOOR LOCK CONTROL SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
7 – Ground	Constant	Continuity
4 – Ground	Constant	Battery positive voltage
12 – Ground	Constant	Battery positive voltage

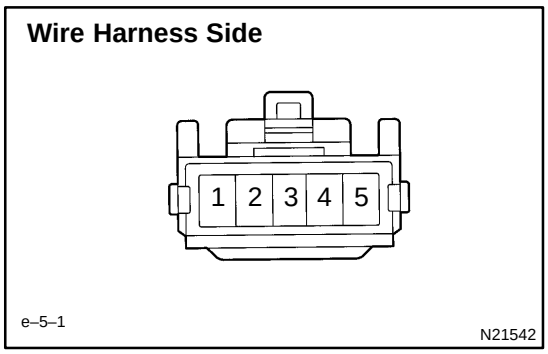
If the circuit is not as specified, inspect the circuits connected to other parts.



3. INSPECT PASSENGER'S DOOR LOCK CONTROL SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
LOCK	2 – 3	Continuity
OFF	–	No continuity
UNLOCK	1 – 2	Continuity

If continuity is not as specified, replace the switch.

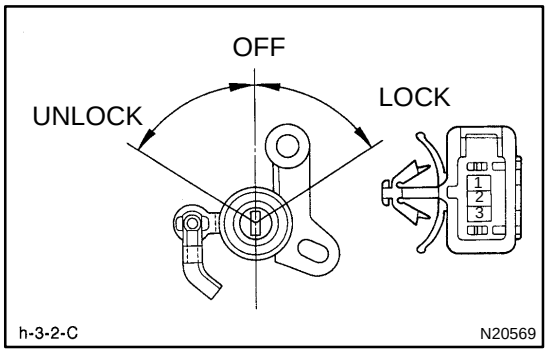


4. INSPECT PASSENGER'S DOOR LOCK CONTROL SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
2 – Ground	Constant	Continuity
1 – Ground	Constant	Battery positive voltage
3 – Ground	Constant	Battery positive voltage
4 – Ground	Ignition switch position LOCK or ACC	No voltage
4 – Ground	Ignition switch position ON	Battery positive voltage

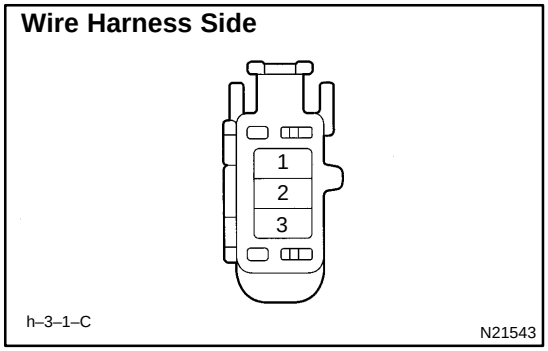
If the circuit is not as specified, inspect the circuits connected to other parts.



5. INSPECT DOOR KEY LOCK AND UNLOCK SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
LOCK	1 – 2	Continuity
OFF	–	No continuity
UNLOCK	1 – 3	Continuity

If continuity is not as specified, replace the switch.

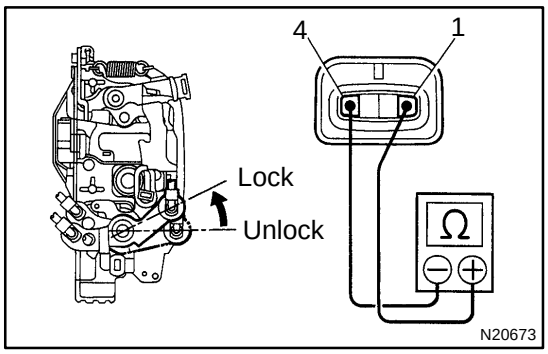


6. INSPECT DOOR KEY LOCK AND UNLOCK SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
1 – Ground	Constant	Continuity
2 – Ground	Constant	Battery positive voltage
3 – Ground	Constant	Battery positive voltage

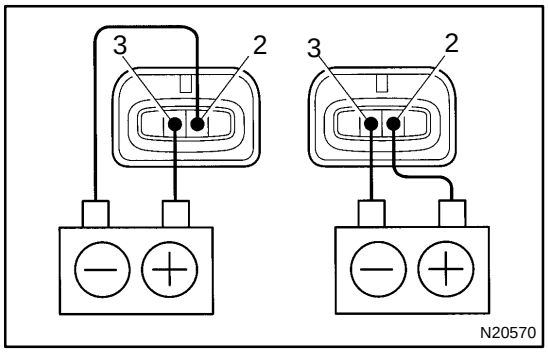
If the circuit is not as specified, inspect the circuits connected to other parts.



7. INSPECT DOOR UNLOCK DETECTION SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF (Door Lock set to LOCK)	–	No continuity
ON (Door Lock set to UNLOCK)	1 – 4	Continuity

If continuity is not as specified, replace the switch.

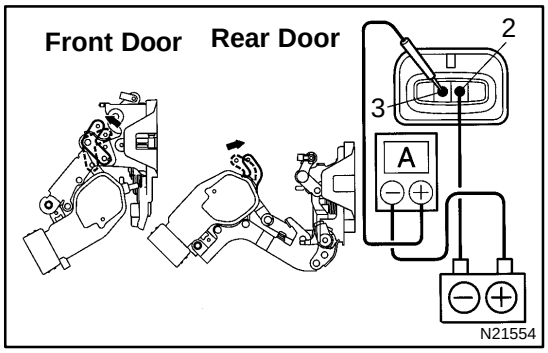


8. INSPECT MOTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 3 and the negative (–) lead to terminal 2, and check that the door lock link moves to UNLOCK position.

(b) Reverse the polarity and check that the door lock link moves to LOCK position.

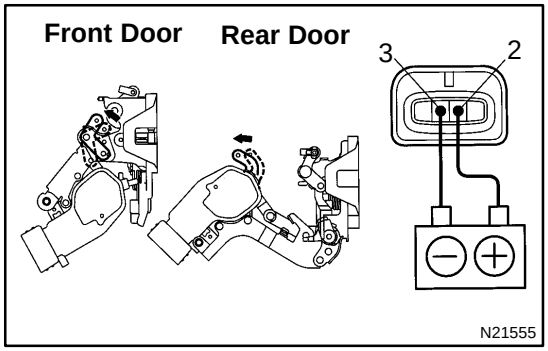
If operation is not as specified, replace the door lock assembly.



9. INSPECT PTC THERMISTOR OPERATION (Using an ammeter)

(a) Connect the positive (+) lead from the battery to terminal 3.

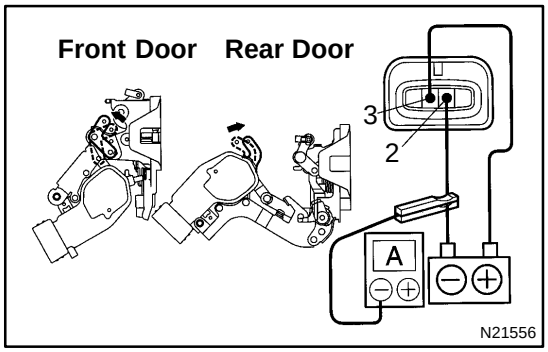
(b) Connect the positive (+) lead from the ammeter to terminal 2 and the negative (–) lead to battery negative (–) terminal, and check that the current changes from approximately 3.2 A to less than 0.5 A within 20 to 70 seconds.



(c) Disconnect the leads from terminals.

(d) Approximately 60 seconds later, connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 3, and check that the door lock moves to the LOCK position.

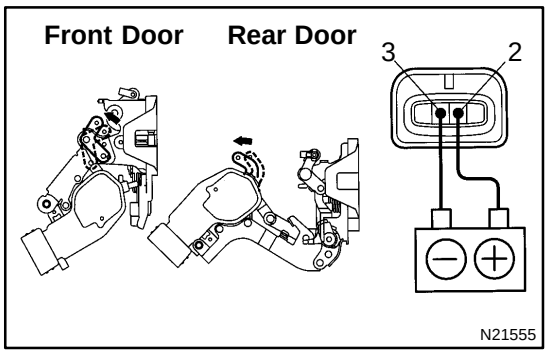
If operation is not as specified, replace the door lock assembly.



10. INSPECT PTC THERMISTOR OPERATION (Using an ammeter with a current–measuring probe)

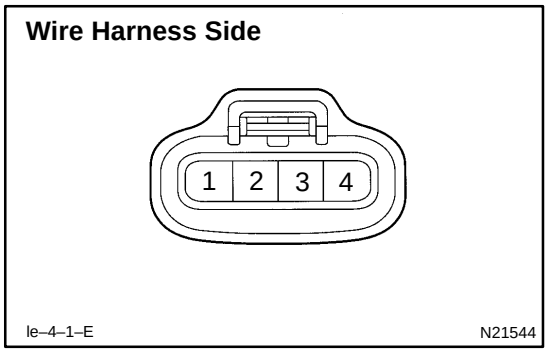
(a) Connect the positive (+) lead from the battery to terminal 3 and the negative (–) lead to terminal 2.

(b) Attach a current–measuring probe to either the positive (+) lead or the negative (–) lead, and check that the current changes from approximately 3.2 A to less than 0.5 A within 20 to 70 seconds.



(c) Disconnect the leads from terminals.
(d) Approximately 60 seconds later, reverse the polarity, and check that the door lock moves to the LOCK position.

If operation is not as specified, replace the door lock assembly.

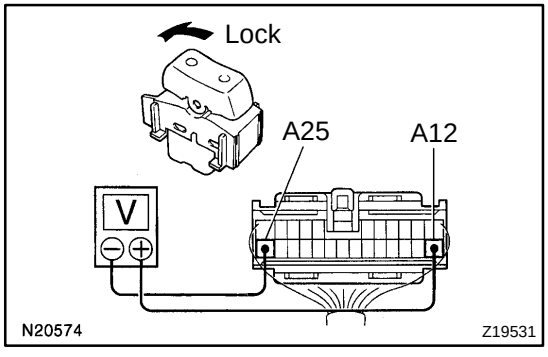


11. INSPECT DOOR LOCK ASSEMBLY CIRCUIT

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

Tester connection	Condition	Specified condition
4 – Ground	Constant	Continuity
1 – Ground 3 – Ground	Door lock manual switch OFF or LOCK	No voltage
1 – Ground 3 – Ground	Door lock manual switch UNLOCK	Battery positive voltage
2 – Ground	Door lock manual switch OFF or UNLOCK	No voltage
2 – Ground	Door lock manual switch LOCK	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

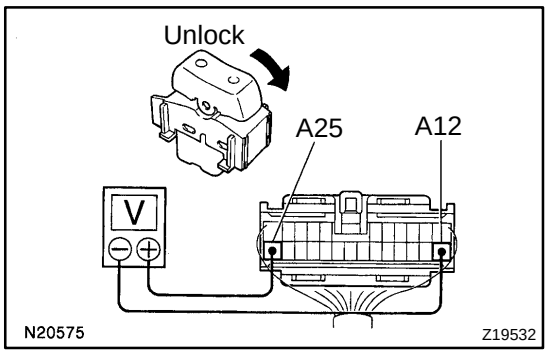


12. Door lock signal: INSPECT INTEGRATION RELAY OPERATION

HINT:

When the relay circuit is as specified, inspect the door lock signal.

(a) Connect the positive (+) lead from the voltmeter to terminal A12 and the negative (–) lead to terminal A25.
(b) Set the door lock control switch to UNLOCK and check that the voltage rises from 0 V to battery positive voltage for approximately 0.2 seconds.



(c) Reverse the polarity of the voltmeter leads.
(d) Set the door lock control switch to LOCK and check that the voltage rises from 0 V to battery positive voltage for approximately 0.2 seconds.

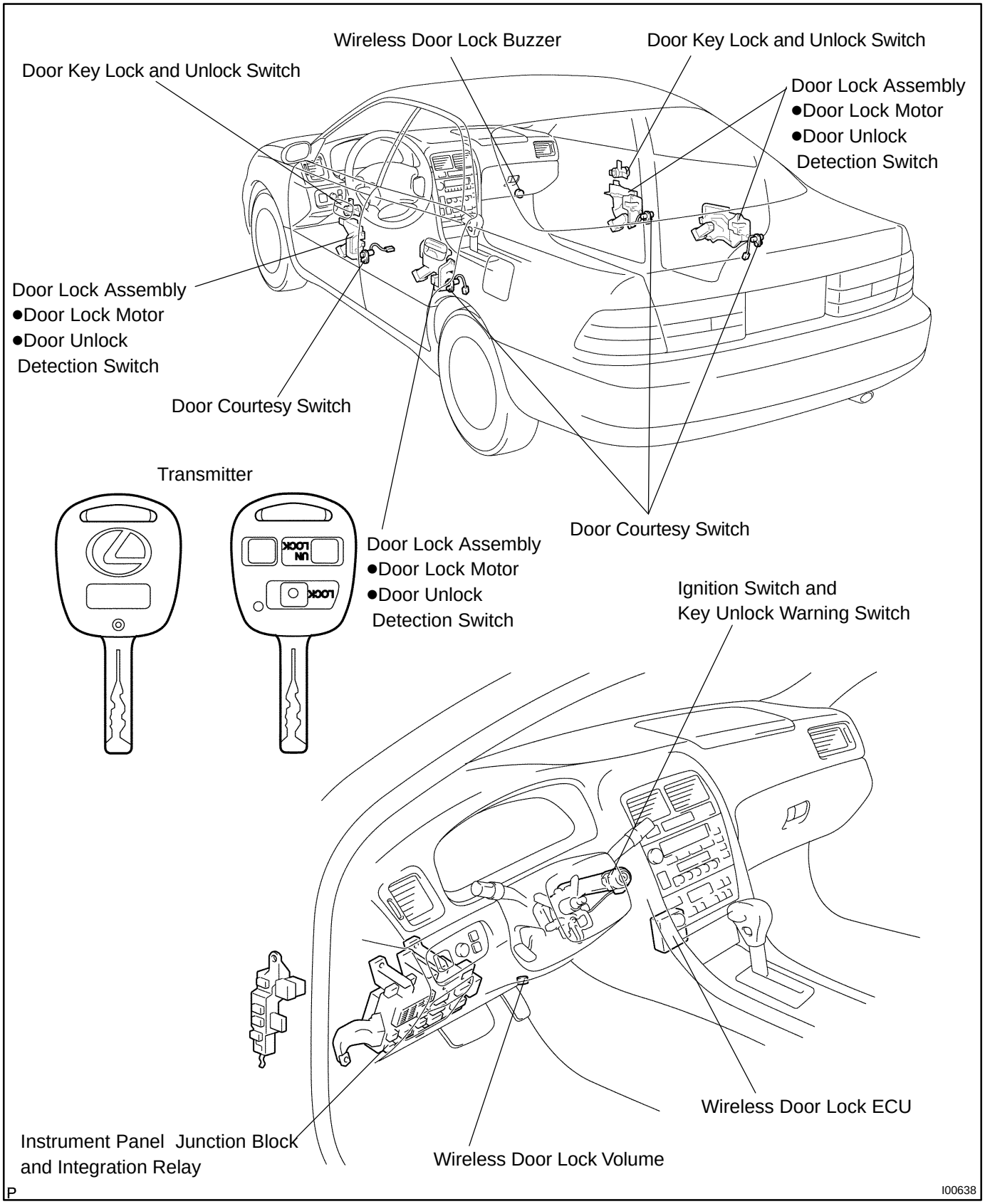
If operation is not as specified, replace the relay.

13. INSPECT INTEGRATION RELAY CIRCUIT
(See page BE–21)

WIRELESS DOOR LOCK CONTROL SYSTEM

LOCATION

BE0IL–08



BE0IM–16

PRE–CHECK

Only wireless function (Remote control) will not operate.
(If a new transmitter or a transmitter of the same type that works properly with the vehicle is not available.)

Put the vehicle in the following conditions (Pre requisite).
(1) Key plate has not been inserted in the ignition key cylinder.
(2) All the doors are closed. (Door warning light is off.)
(3) All the doors are locked.

Basic function check:

Under the standard operation, when repeating the operation of UNLOCK and LOCK switch 3 times or more alternately, check the UNLOCK–LOCK operation from 3rd time onward.
Following procedures are standard operation.
(1) Keep about 1 M away in the right direction from the outside handle of a driver's seat.
(2) Face the transmitter to the vehicle and press one of transmitter switches for about 1 second

No

Yes

Normal
<Reference>
Operative distance may differ according to an operator, the way of holding the transmitter or position.
As weak electric wave is used, when there is strong wave or noise in the used frequency, operation distance might be shortened.

Transmitter battery check:

Replace the transmitter battery with a new or normal one and check UNLOCK–LOCK function works under the standard operation.
<Reference>
The battery should be replaced by only the shops with sufficient skill.
Battery quality can be judged by checking the remaining battery capacity.

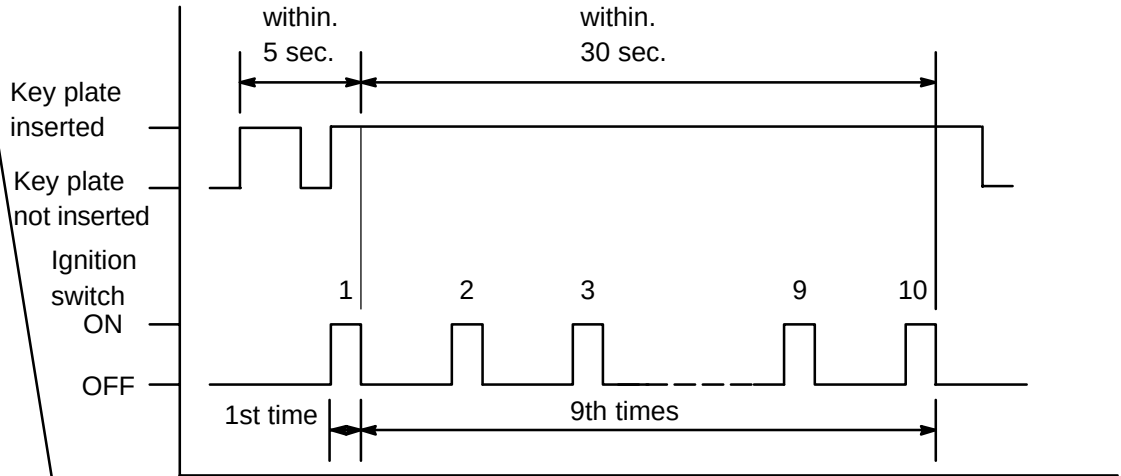
Yes → Battery faulty.

No

Put the vehicle in the same conditions as shown in the previous page. (Pre requisite)

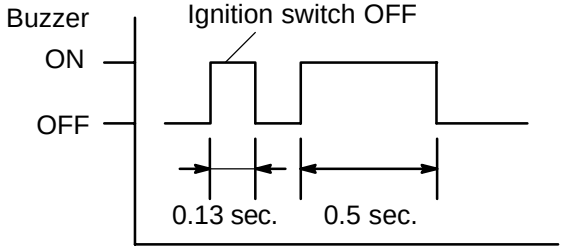
Inspection starts by using self diagnostic mode:

Enter into the self diagnostic mode.
When operating door control receiver in the order of 1 through 2, the mode turns to diagnostic mode.
(1) Insert the key plate in the ignition key cylinder and pull it out, then insert it again and turn the ignition switch
OFF → ON → OFF once within 5 seconds after pulling it out.
(2) After completing the above step within 30 seconds, turn the ignition switch OFF → ON → OFF 9 times.
HINT:
In case that either of (1) and (2) conditions is not satisfied, change to normal mode.
<Reference>
When completing self diagnostic mode, turn the ignition switch ON.
LOCK and UNLOCK operation is not performed under the self diagnostic mode.



Self diagnostic mode operation check:

After the self diagnostic mode input operation has been performed, check that the buzzer chirps.



No
(Not entered in self diagnostic mode)

Is the method to enter into the diagnostic mode correct?

No

Yes

Is the chirping function of operation confirmation buzzer normal?

No

Check door control buzzer.

Yes

Is the function of operation confirmation buzzer normal?

No

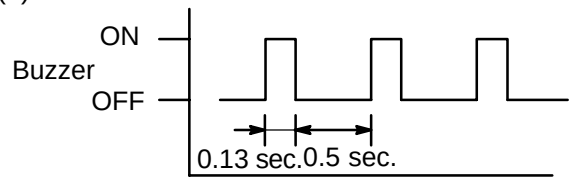
Yes

Yes
(Entered in self diagnostic mode)

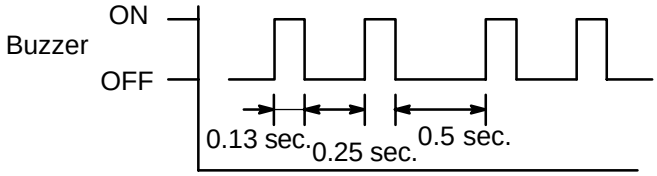
Self diagnostic mode check:

Check that how the buzzer chirps when pressing each transmitter switch.

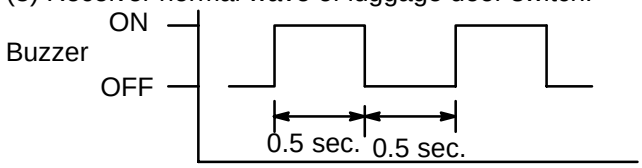
(1) Receiver normal wave of LOCK switch.



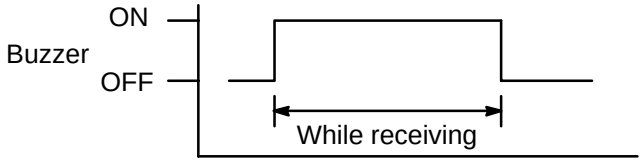
(2) Receiver normal wave of UNLOCK switch.



(3) Receiver normal wave of luggage door switch.



(4) Incompatibility of the recognition code or out from synchronization of rolling code.



<Reference>:
While turning the ignition switch ON in the self diagnostic mode, the mode returns to normal mode.

No response

No response from buzzer.

Transmitter faulty or wireless door lock ECU faulty.
<Reference>
Use another (normal) transmitter and check with the diagnostic mode and in the case that the check result shows the transmitter faulty, it can be judged that wireless door lock ECU is normal.

(1), (2) or (3) are output.

(4) is output.

Check of the recognition code registration function:
Check if it can set to rewrite mode or add mode of the recognition code registration.

Yes → After registering the code, check the operation and operation is normal.
(The rolling code has not been synchronized.)

No

Check the terminal voltage of wireless door lock ECU:
Check each following terminal.
L UL3 IG
CTY LSWD

OK → Vehicle wiring faulty.

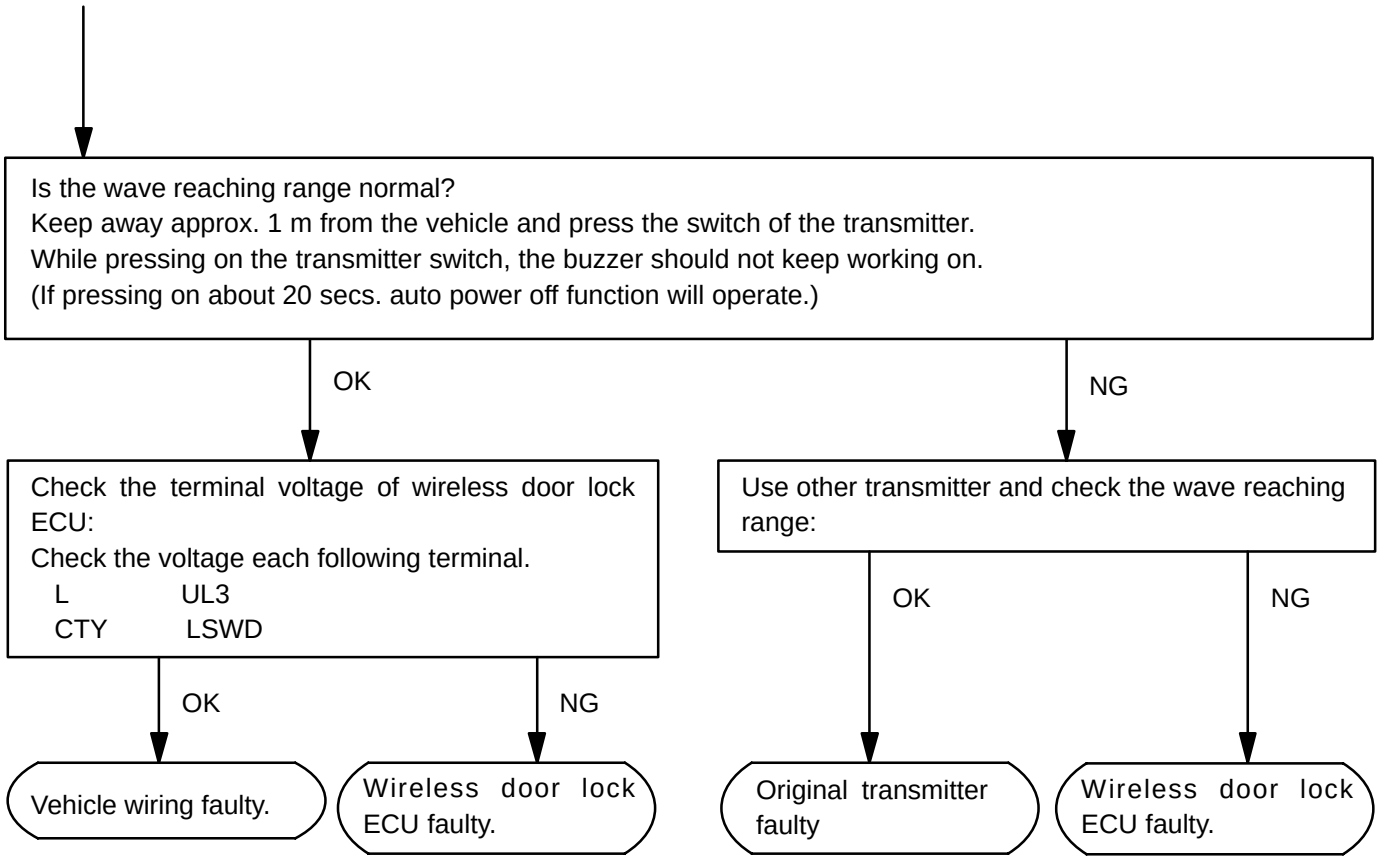
NG → Wireless door lock ECU faulty.

Check the wireless door lock ECU:
Are the continuity and voltage between each terminal of the connector connected to the wireless door lock ECU and body ground normal?

Terminal No.	Item	Checking condition	Standard
10	Voltage	Insert the key plate into the ignition key cylinder →Pull out.	0 V → 10 ~ 14 V
13	Voltage	Ignition switch OFF ↔ ON	0 V → 10 ~ 14 V

Yes → Wireless door lock ECU faulty.

No → Vehicle wiring faulty.



HINT:
The rolling code is the code changing at each time when the wave is transmitted from the transmitter and changing when the wave is synchronized between transmitter side and ECU side.
When the rolling code is not synchronized between the transmitter and ECU, a symptom of ”Only LOCK operation is available.”appears.
In this case, it goes back to normal by synchronizing the rolling code (The method to synchronize it is the same as of the registration of the recognition code.).

BE0OJ–13

INSPECTION

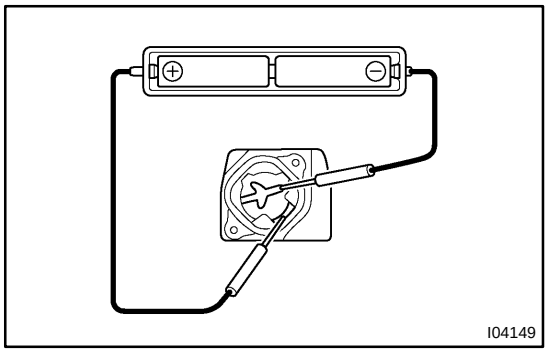
1. INSPECT WIRELESS DOOR LOCK TRANSMITTER OPERATION

HINT:

Refer to ”Wireless door lock control receiver and transmitter replacement”.

(a) Using a screwdriver, remove the cover.

(b) Remove the battery (lithium battery).



(c) Install a new or normal battery (lithium battery).

HINT:

When a new or normal battery can not be obtained, connect 2 new 1.5 V batteries in series, connect the battery (+) to the battery receptacle side terminal and battery (–) to the bottom terminal, then apply 3 V voltage to the transmitter.

(d) In the location where is approx. 1 M away from driver’s outside handle in the right direction, and check the transmitter operation when pressing transmission switch on the side of the transmitter body.

Standard:

Remote control of vehicle door lock can be operated.

HINT:

- The minimum operation distance differs according to operator, the way of holding, and location.
- As weak wave is used, operation distance might be shortened when noise is detected in strong wave or used frequency.

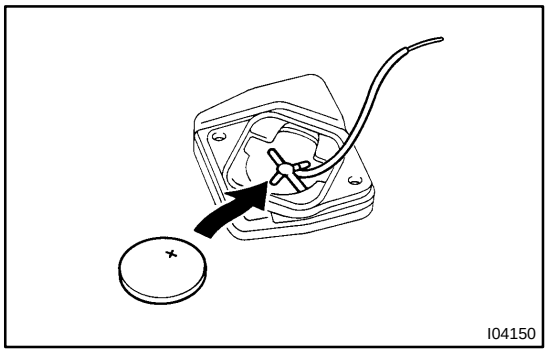
(e) Install the battery (lithium battery).

(f) Install a cover so that rubber is not distorted or slipped off.

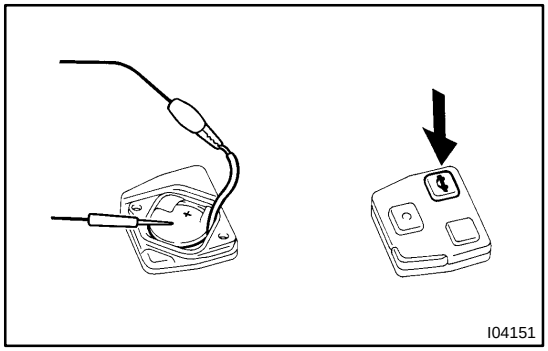
2. CHECK BATTERY CAPACITY

HINT:

- Make sure to use the TOYOTA electrical tester.
- With the battery unloaded, judge can not be made whether the battery is available or not on the test.
- When the transmitter is faulty, the energy amount left in the battery might not be checked correctly.
- On the lithium battery used for the transmitter, the voltage more than 2.5 V with the battery unloaded is shown on the tester until the energy is completely consumed.
  Accordingly when inspecting the energy amount left in the battery, it is necessary to measure the voltage when the battery is loaded. (1.2 kΩ).



(a) Using a screwdriver, remove the screw and cover.
(b) Remove the battery (lithium battery) from the transmitter.
(c) Connect the lead to the (–) terminal of the transmitter and install the battery.



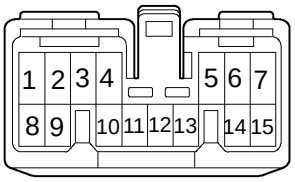
(d) Connect the (+) tester to the (+) battery (lithium battery), and (–) tester to the lead respectively.
(e) Press one of the transmitting switches on the transmitter for approx. 1 second.
(f) Press the transmitting switch on the transmitter again to check the voltage.
Standard:
2.1 V or more

HINT:

- When the temperature of the battery is low, the judge can not be made correctly.
  When the outcome of the test is less than 2.1 V, conduct the test again after leaving the battery in the place at 18˚C for more than 30 minutes.
- By auto power off function, the voltage becomes no load voltage (more than 2.5 V) condition after 20 seconds from the switch was pressed.
  Make sure to read the voltage before of it.
- High voltage might be shown 1 to 2 times after leaving the battery, judge should be made with the voltage shown at the 3rd time or later.

(g) Disconnect the lead.
(h) Set the battery (lithium battery) in the transmitter.
(i) Install the cover, so that the rubber cover is not distorted or slipped off.

Wire Harness Side:



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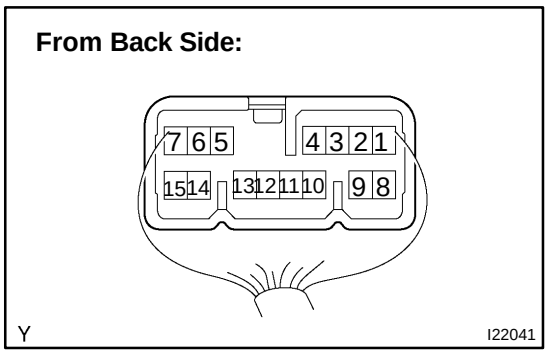
3. INSPECT WIRELESS DOOR LOCK CONTROL RECEIVER CIRCUIT

(a) Disconnect the connector from the receiver and inspect the connector on the wire harness side, as shown below.

Tester connection	Condition	Specified condition
1 – Ground	Constant	Continuity
8 – Ground	Constant	10 – 14 V
10 – Ground	Key unlock warning switch ”ON” (Key inserted into ignition key cylinder)	0 V
	Key unlock warning switch ”OFF” (Key removed from ignition key cylinder)	10 – 14 V
11 – Ground	Driver’s door unlock detection switch ”ON” (Driver’s door lock knob ”LOCK”)	4 – 6 V
	Driver’s door unlock detection switch ”OFF” (Driver’s door lock knob ”UNLOCK”)	0 V
13 – Ground	Ignition switch ”OFF”	0 V
	Ignition switch ”ON”	10 – 14 V
14 – Ground	All door courtesy switches ”OFF” (All doors closed)	10 V or more
	Any of door courtesy switches ”ON” (Any of doors opened)	0 V

If the circuit is not as specified, inspect the circuit connected to other parts.



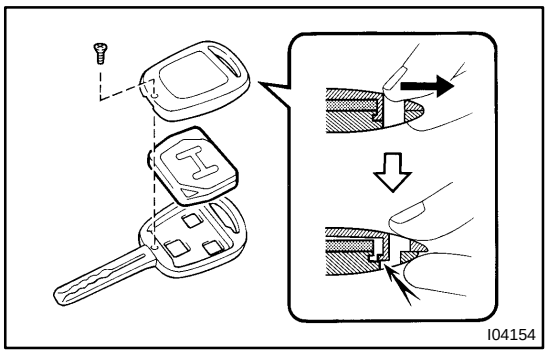
(b) Connect the wire harness side connector to the receiver and inspect the wire harness side connector from the back side, as shown below.

Tester connection Tester ⊕ ↔ Tester ⊖	Condition	Specified condition
3 – 2	All doors closed → All doors locked with transmitter lock switch "ON"	0 V → 10 V or more (Output once)
	All doors closed → All doors unlocked with transmitter unlock switch "ON"	0 V → 10 V or more (Output twice)
	Luggage door unlock switch in transmitter "OFF" → "ON"	0 V → 10 V or more (Output once)
	Any of doors opened → Transmitter lock switch "ON"	0 V → 10 V or more (Output for 10 seconds)
5 – Ground	Luggage door unlock switch in transmitter "OFF" → "ON" (Keeps 0.8 seconds or more)	10 V or more → 0 V → 10 V or more
7 – Ground	All doors closed → Transmitter unlock switch "ON"	0 V → 10 V or more → 0 V
15 – Ground	All doors closed → Transmitter lock switch "ON"	0 V → 10 V or more → 0 V

If circuit is as specified, replace the receiver.
If the circuit is not as specified, inspect the circuit connected to other parts.

BE1BG–02

REPLACEMENT



1. REPLACE TRANSMITTER (LITHIUM) BATTERY

NOTICE:

Special caution should be taken for handling each component as they are precision electronic components.

(a) Using a screwdriver, remove the screw and cover.

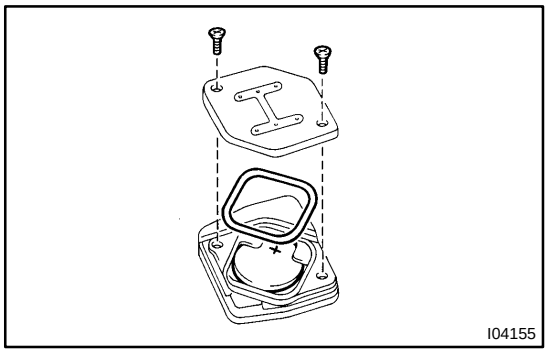
NOTICE:

Do not pry out the cover forcibly.

HINT:

Push the cover with a finger as shown in the illustration, so that there becomes clearance, then pry out the cover from that clearance.

(b) Remove the transmitter.



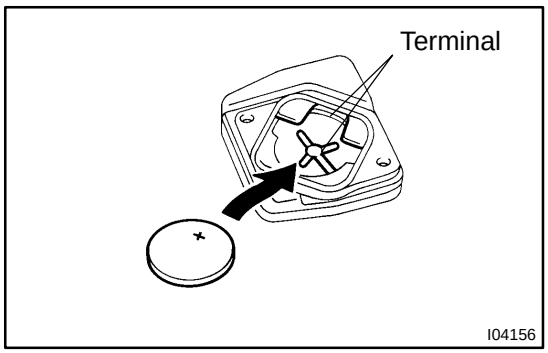
(c) Using a screwdriver, remove the 2 screws and cover.

(d) Remove the battery (lithium battery).

NOTICE:

Do not push the terminals with a finger.

If prying up the battery (lithium battery) forcibly to remove, the terminals are deformed.



(e) Install a battery (lithium battery) as shown in the illustration.

NOTICE:

Face the battery upward. Take care not to deform the terminals.

(f) Check that O–ring is not distorted or slipped off, and install the cover.

(g) Using a screwdriver, tighten the 2 screws.

NOTICE:

When the shrews are tightened loosely, it might cause faulty contact of battery (lithium battery) and terminals.

(h) Assemble the transmitter to the key plate and the cover.

(i) Using a screwdriver, tighten the screw.

2. REPLACE DOOR CONTROL RECEIVER AND TRANSMITTER

NOTICE:

When replacing the door control receiver and transmitter, registration of recognition code is necessary because they are provided as single components.

(a) Select which operation mode should be performed from the following modes.

Add mode
Rewrite mode
Prohibition mode
Confirmation mode

HINT:

The add mode is used to retain codes already registered while you register new recognition codes. This mode is used when adding a transmitter. However, if the number of registered codes exceeds 4 codes, previously registered codes are correspondingly erased in order, starting from the first registered code.

The rewrite mode is used to erase all previously registered codes and register only new recognition codes.

The prohibition mode is used to erase all registered codes and cancels the wireless door lock function. Use this mode when the transmitter is lost.

The confirmation mode is for confirming how many recognition codes are already registered before you register additional recognition codes.

(b) Follow the chart on the following pages to register the transmitter recognition code at the wireless door lock control receiver.

HINT:

When procedure is out of the specified, the operation returns to normal operation.

Maximum 4 recognition codes can be registered.

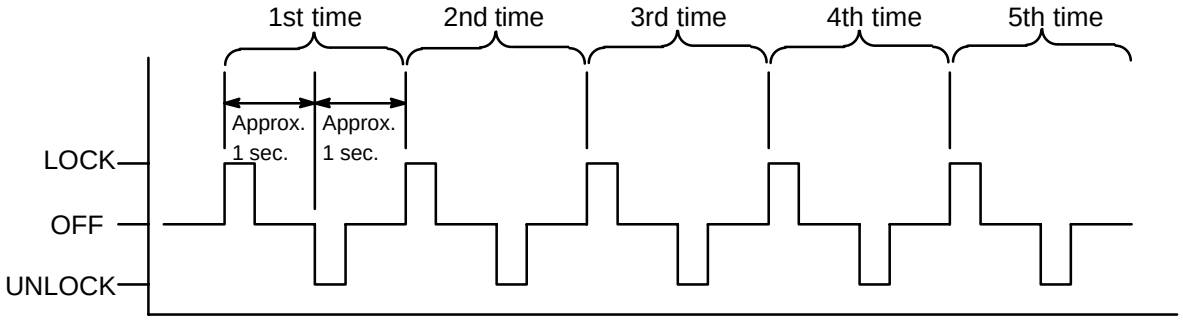
Start registration of recognition code

The vehicle should be in the following conditions.
- The key is not inserted in the ignition key cylinder.
- Driver's door is OPEN. (Other doors are CLOSED)
- Driver's door is UNLOCKED.

Insert the key into the ignition key cylinder, then pull it out.

Within 40 secs.

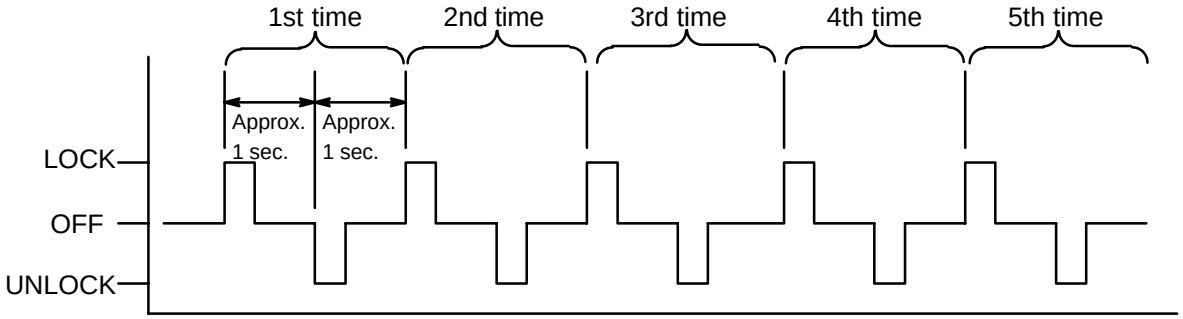
Press the door lock control switch (for manual operation) 5 times to LOCK/UNLOCK at approx. 1 sec. interval.



Close the driver's door, then open it.

Within 40 secs.

Again press the door lock control switch (for manual operation) 5 times to LOCK/UNLOCK at approx. 1 sec. interval.

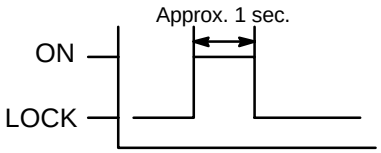


Insert the key into the ignition key cylinder.

Turn the ignition switch from ON to LOCK at approx. 1 sec. interval 1 to 5 times to select the mode.

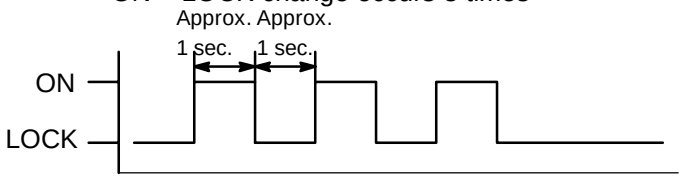
Add mode

ON – LOCK change occurs 1 time



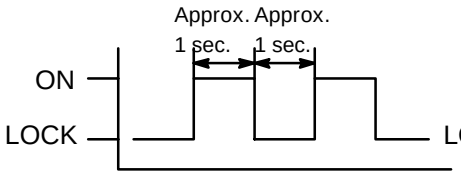
Confirmation mode

ON – LOCK change occurs 3 times



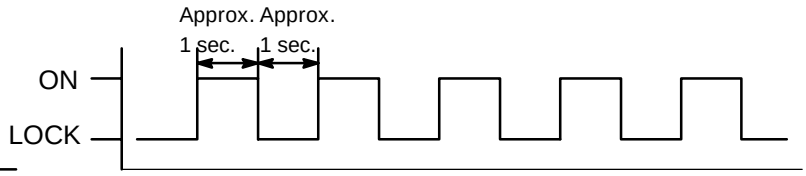
Rewrite mode

ON – LOCK change occurs 2 times



Prohibition mode

ON – LOCK change occurs 5 times



Remove the key from the ignition key cylinder.

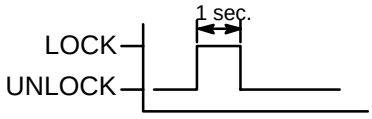
Within 20 secs.

When add mode, rewrite mode or erase mode has been selected.

The receiver automatically performs the LOCK–UNLOCK operation once, twice or 5 times at 1 sec. intervals to inform the technician whether the add mode, rewrite mode or erase mode has been selected.

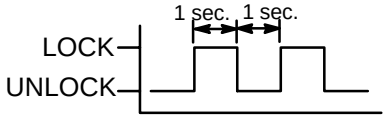
LOCK–UNLOCK occurs once

Indicates that add mode has been selected.



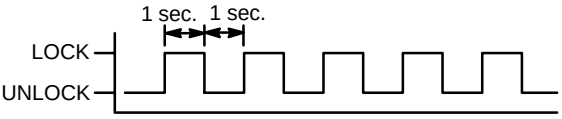
LOCK–UNLOCK occurs twice

Indicates that rewrite mode has been selected.



LOCK–UNLOCK occurs 5 times

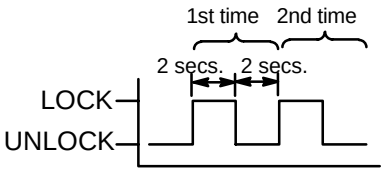
Indicates that erase mode has been selected.



When confirmation mode is selected.

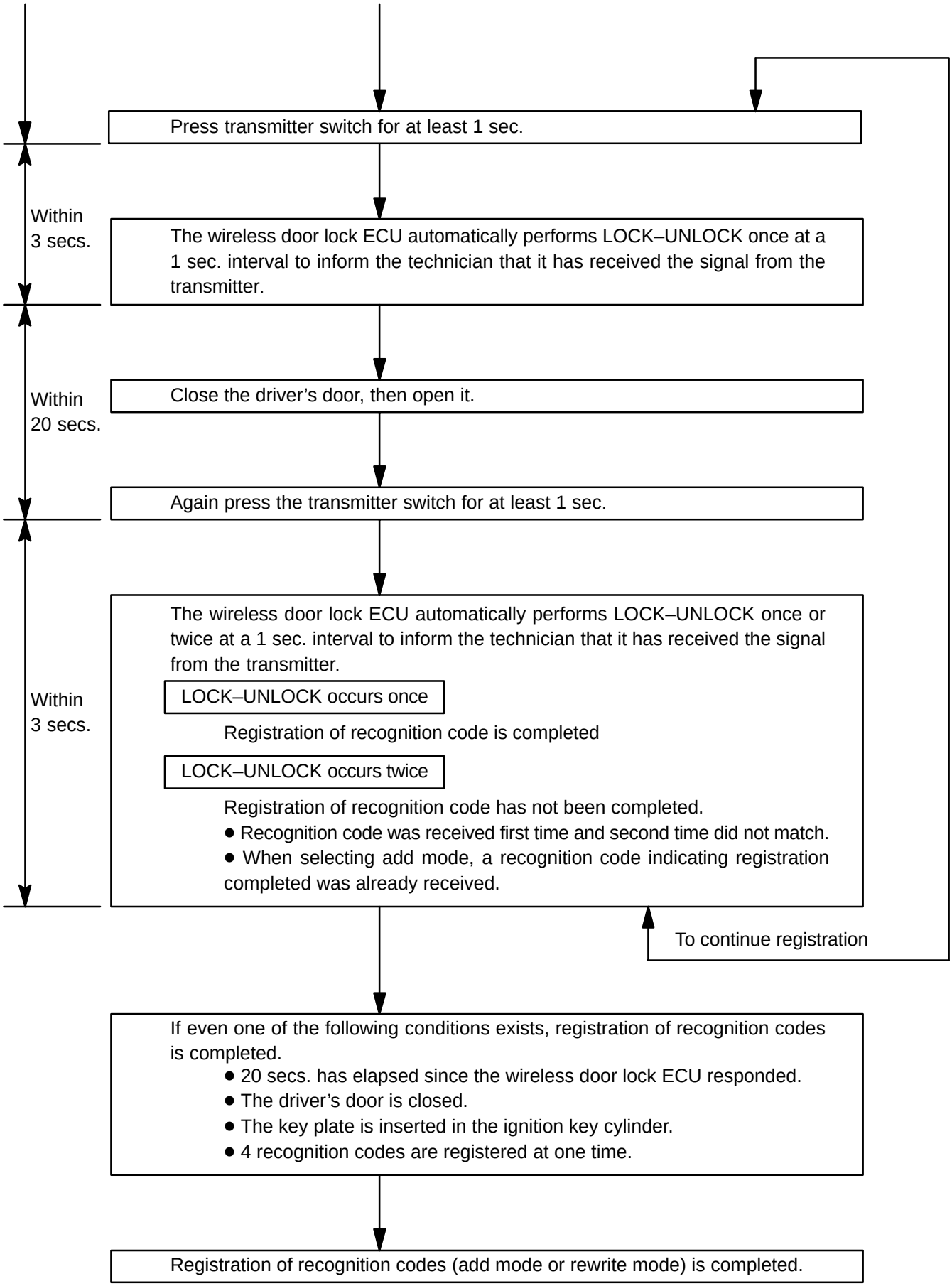
The receiver automatically performs the LOCK–UNLOCK operation 0 to 4 times at 2 sec. intervals to inform the technician of the number of registered codes.

Example:
LOCK–UNLOCK occurs twice:
2 recognition codes are registered.



Registration of recognition code (Confirmation mode) and erase mode completed.

Erase Mode

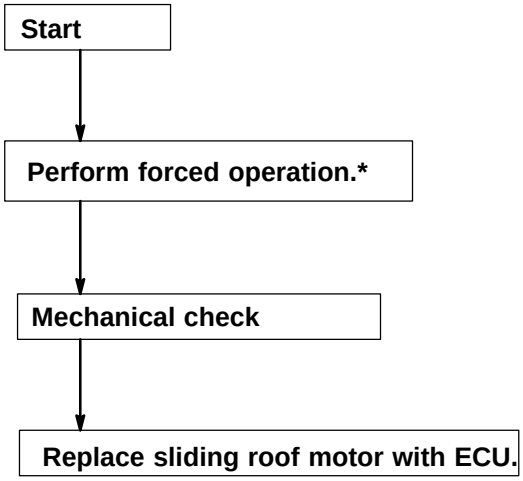

Press transmitter switch for at least 1 sec.
Within 3 secs.
The wireless door lock ECU automatically performs LOCK–UNLOCK once at a 1 sec. interval to inform the technician that it has received the signal from the transmitter.
Within 20 secs.
Close the driver's door, then open it.
Again press the transmitter switch for at least 1 sec.
Within 3 secs.
The wireless door lock ECU automatically performs LOCK–UNLOCK once or twice at a 1 sec. interval to inform the technician that it has received the signal from the transmitter.
LOCK–UNLOCK occurs once
Registration of recognition code is completed
LOCK–UNLOCK occurs twice
Registration of recognition code has not been completed.
● Recognition code was received first time and second time did not match.
● When selecting add mode, a recognition code indicating registration completed was already received.
To continue registration
If even one of the following conditions exists, registration of recognition codes is completed.
● 20 secs. has elapsed since the wireless door lock ECU responded.
● The driver's door is closed.
● The key plate is inserted in the ignition key cylinder.
● 4 recognition codes are registered at one time.
Registration of recognition codes (add mode or rewrite mode) is completed.

SLIDING ROOF SYSTEM

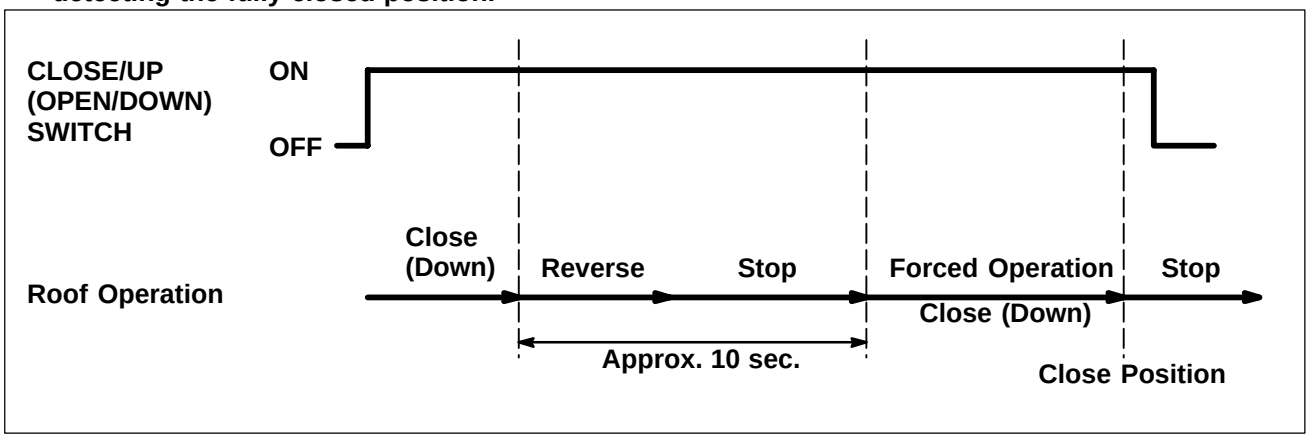
TROUBLESHOOTING

BE0O9–07

Sliding Roof reverses during close (down) operation.



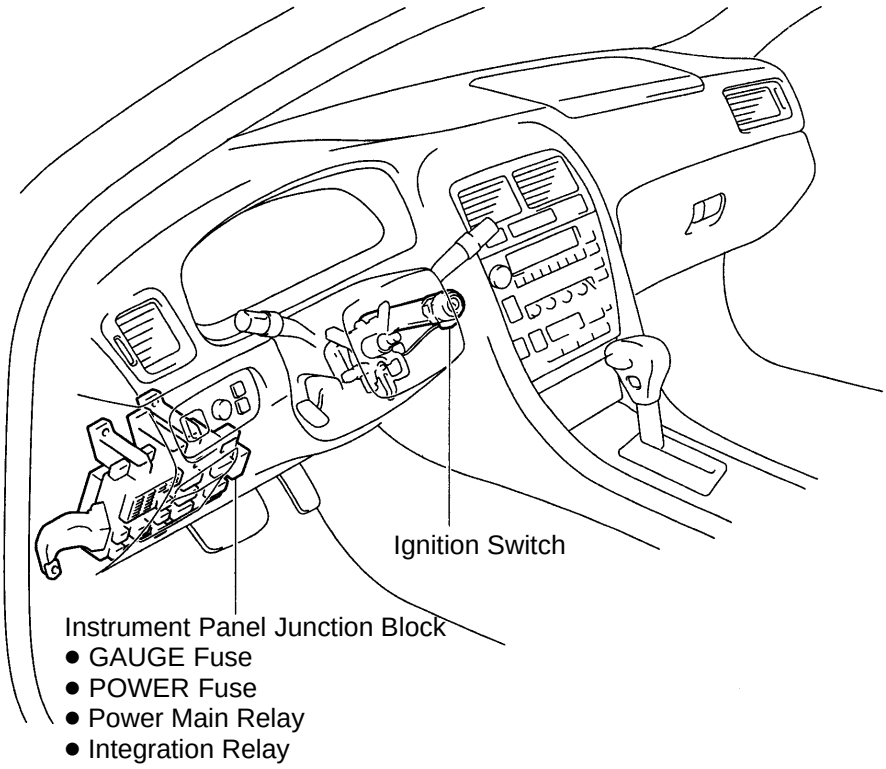
***: Holding the CLOSE/UP (OPEN/DOWN) switch pressed inhibits the jam protection function at approx. 10 sec. after starting the reverse operation.**
If the switch remains pressed any longer, the sliding door starts close operation and it stops when detecting the fully closed position.

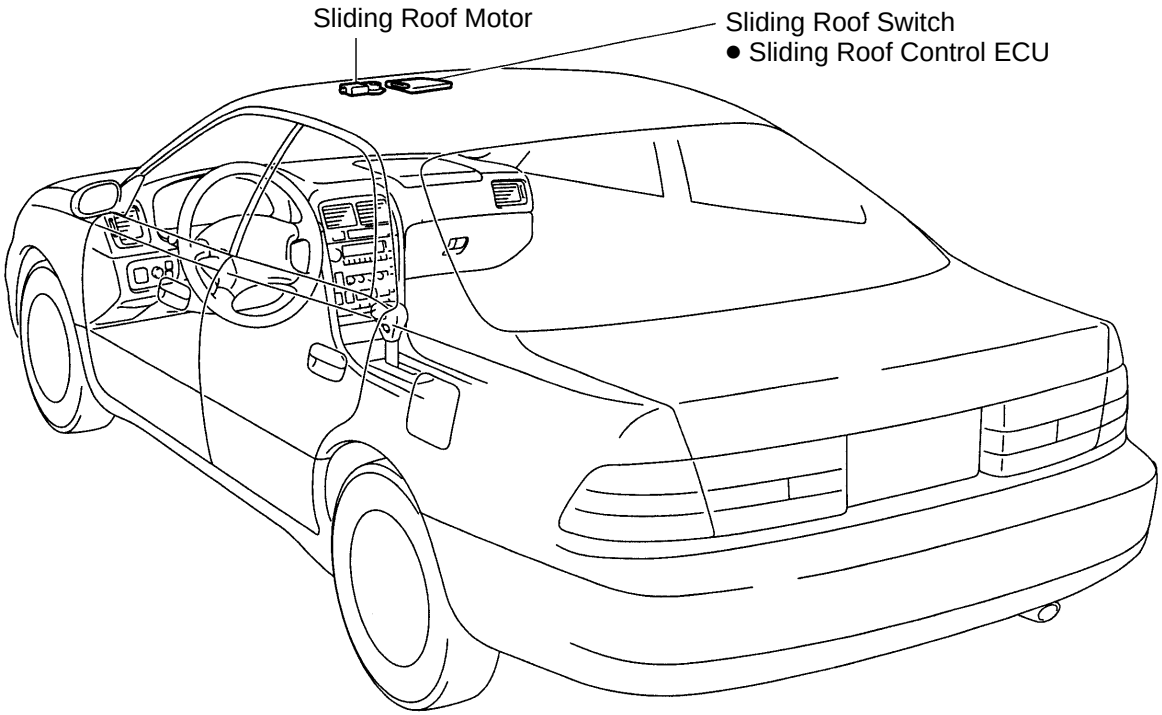


HINT:
At approx. 10 sec. after starting the reverse operation, it is switched to the forced close (down) operation.

BE05Q–02

LOCATION





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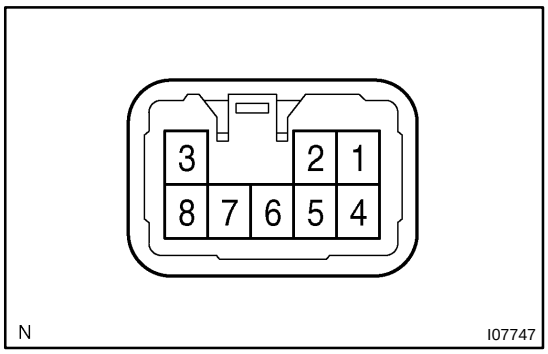
BE10K–04

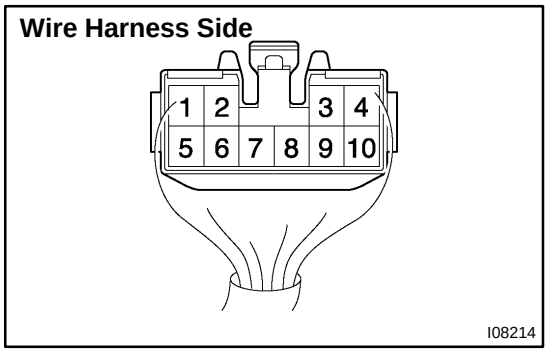
INSPECTION



1. INSPECT SLIDING ROOF CONTROL SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
SLIDE OPEN	4 – 8	Continuity
TILT UP	4 – 6	Continuity

If continuity is not as specified, replace the switch.



2. INSPECT SLIDING ROOF CONTROL ASSEMBLY CIRCUIT

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

Tester connection	Condition	Specified condition
2 – Ground	Sliding roof control switch (TILT) OFF or UP	No continuity
2 – Ground	Sliding roof control switch (TILT) DOWN	Continuity
2 – Ground	Sliding roof control switch (SLIDE) OFF or CLOSE	No continuity
2 – Ground	Sliding roof control switch (SLIDE) OPEN	Continuity
5 – Ground	Sliding roof control switch (TILT) OFF or CLOSE	No continuity
5 – Ground	Sliding roof control switch (TILT) UP	Continuity
5 – Ground	Sliding roof control switch (SLIDE) OFF or OPEN	No continuity
5 – Ground	Sliding roof control switch (SLIDE) CLOSE	Continuity
8, 7 – Ground	Constant	Continuity
10 – Ground	Constant	Continuity
3 – Ground	Ignition switch LOCK or ACC	* No voltage
3 – Ground	Ignition switch ON	Battery positive voltage
4 – Ground	Constant	Battery positive voltage

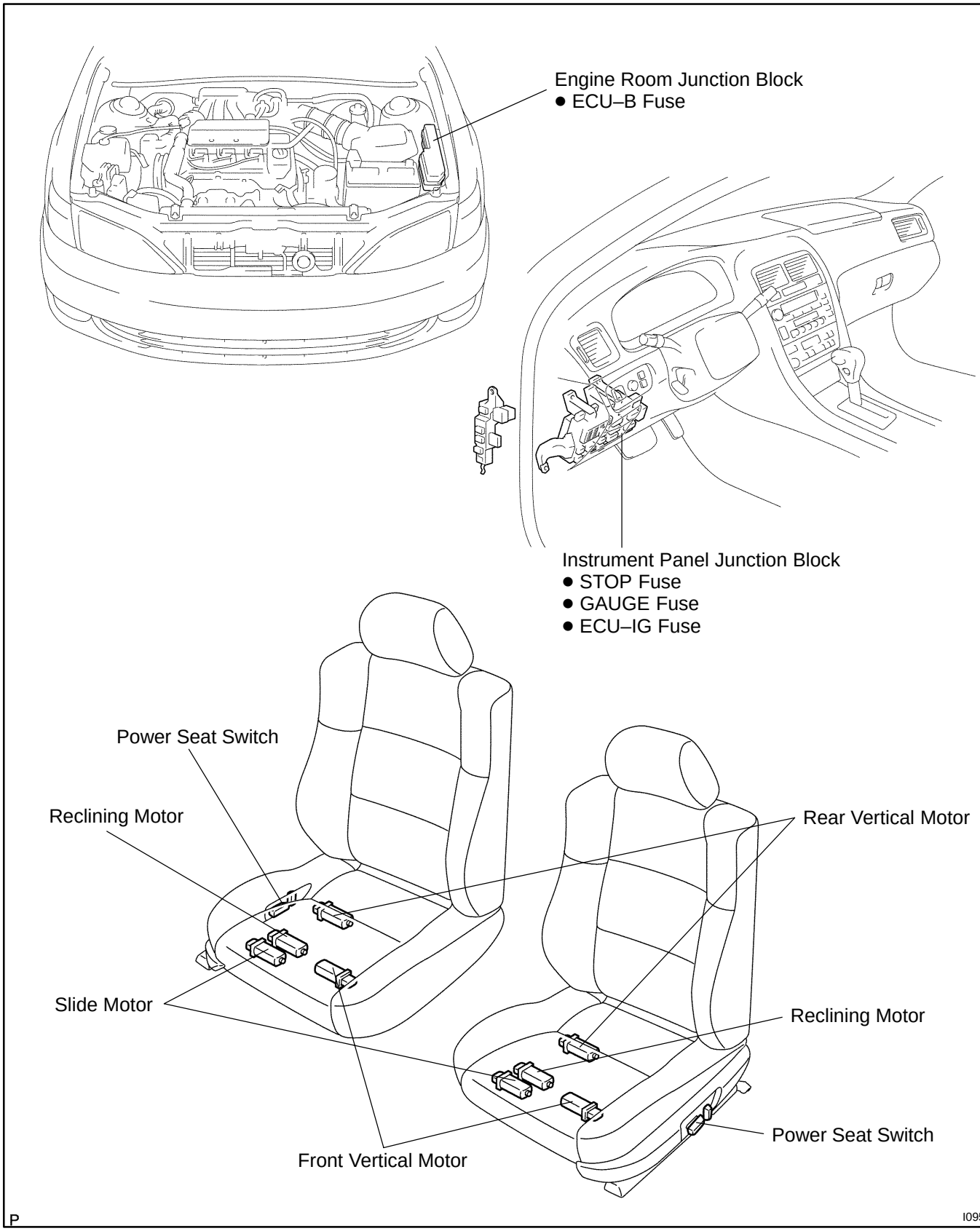
*: Exceptions: During 60 second period after ignition switch ON → OFF (ACC) or until driver of passenger door in opened after ignition switch ON → OFF (ACC).

If circuit is as specified, replace the relay.

POWER SEAT CONTROL SYSTEM

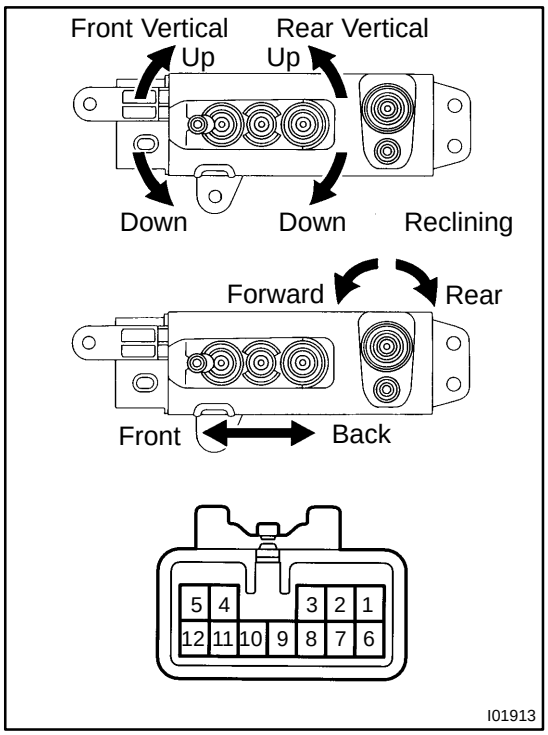
BE05S–05

LOCATION



BE05T–02

INSPECTION



1. INSPECT DRIVER'S POWER SEAT SWITCH CONTINUITY

Slide Switch:

Switch position	Tester connection	Specified condition
FRONT	4 – 7 8 – 11	Continuity
OFF	4 – 7 – 8	Continuity
BACK	4 – 11 7 – 8	Continuity

Front vertical switch:

Switch position	Tester connection	Specified condition
UP	7 – 9 10 – 11	Continuity
OFF	7 – 9 – 10	Continuity
DOWN	7 – 10 9 – 11	Continuity

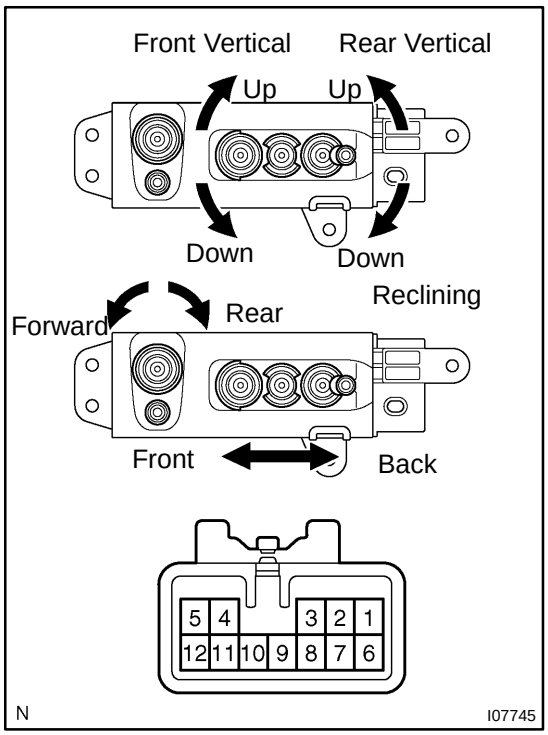
Rear vertical switch:

Switch position	Tester connection	Specified condition
UP	2 – 11 3 – 7	Continuity
OFF	2 – 3 – 7	Continuity
DOWN	2 – 7 3 – 11	Continuity

Reclining switch:

Switch position	Tester connection	Specified condition
FORWARD	1 – 11 5 – 7	Continuity
OFF	1 – 5 – 7	Continuity
REAR	1 – 7 5 – 11	Continuity

If continuity is not as specified, replace the switch.



2. INSPECT PASSENGER'S POWER SEAT SWITCH CONTINUITY

Slide switch:

Switch position	Tester connection	Specified condition
FRONT	4 – 7 8 – 11	Continuity
OFF	4 – 7 – 8	Continuity
BACK	4 – 11 7 – 8	Continuity

Front vertical switch:

Switch position	Tester connection	Specified condition
UP	7 – 10 9 – 11	Continuity
OFF	7 – 9 – 10	Continuity
DOWN	7 – 9 10 – 11	Continuity

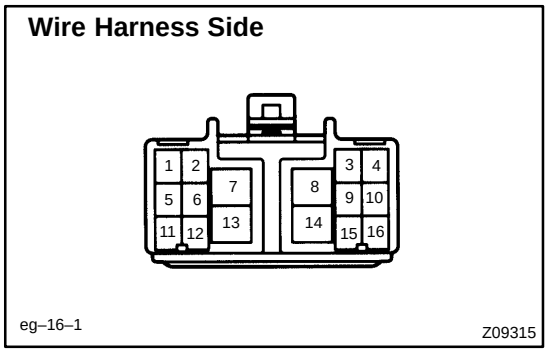
Rear vertical switch:

Switch position	Tester connection	Specified condition
UP	2 – 7 3 – 11	Continuity
OFF	2 – 3 – 7	Continuity
DOWN	2 – 11 3 – 7	Continuity

Reclining switch:

Switch position	Tester connection	Specified condition
FORWARD	1 – 11 5 – 7	Continuity
OFF	1 – 5 – 7	Continuity
REAR	1 – 7 5 – 11	Continuity

If continuity is not as specified, replace the switch.



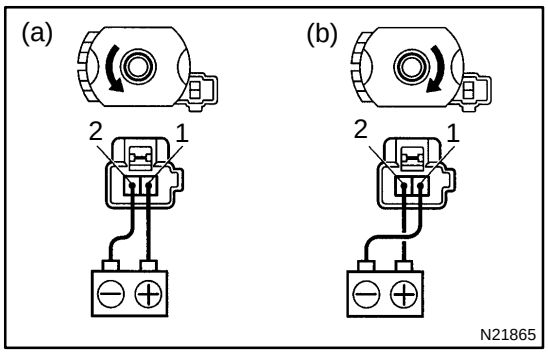
3. INSPECT POWER SEAT SWITCH CIRCUIT

(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.

Tester connection	Condition	Specified condition
7 – Ground	Constant	Continuity
11 – Ground	Constant	Battery positive voltage

If circuit is not as specified, inspect the circuits connected to other parts.

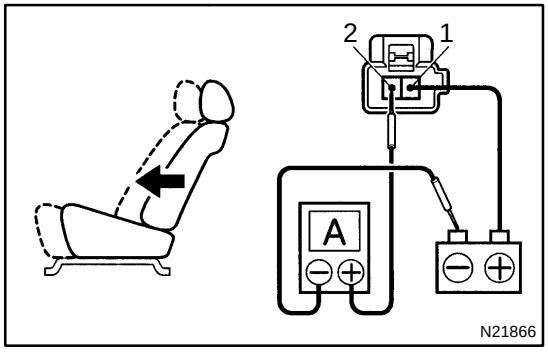


4. INSPECT SLIDE MOTOR OPERATION

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

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

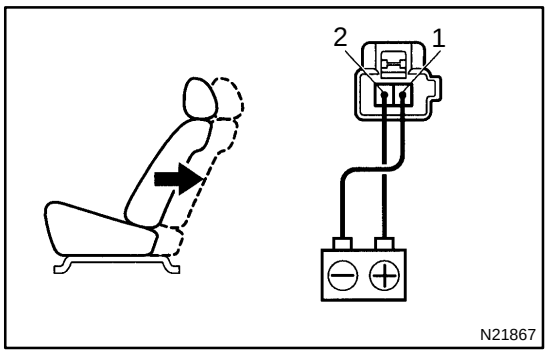
If operation is not as specified, replace the seat adjuster.



5. INSPECT SLIDE MOTOR PTC THERMISTOR OPERATION

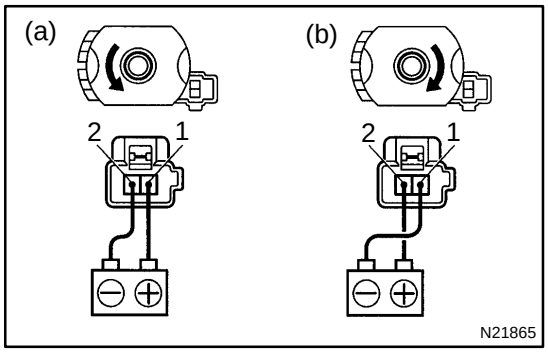
(a) Connect the positive (+) lead from the battery to terminal 1, the positive (+) lead from the ammeter to terminal 2 and the negative (–) lead to the battery negative (–) terminal, then move the seat cushion to the front position.

(b) Continue to apply voltage, check that current changes to less than 1 ampere within 4 to 90 seconds.



(c) Disconnect the leads from terminals.
(d) Approximately 60 seconds later, connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1, check that the seat cushion begins to move backwards.

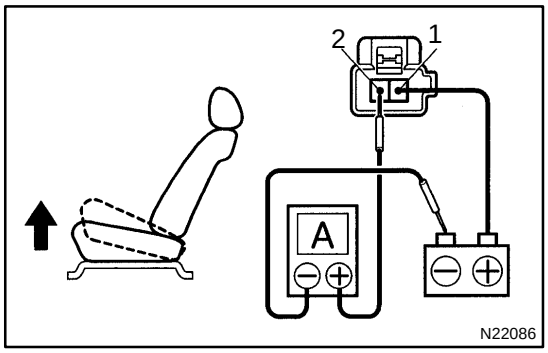
If operation is not as specified, replace the seat adjuster.



6. INSPECT FRONT VERTICAL MOTOR OPERATION

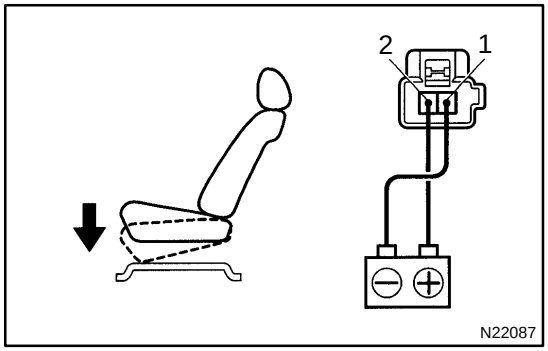
(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, check that the motor turns counterclockwise.
(b) Reverse the polarity, check that the motor turns clockwise.

If operation is not as specified, replace the seat adjuster.



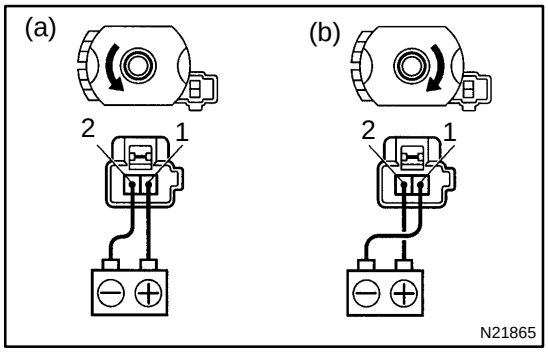
7. INSPECT FRONT VERTICAL MOTOR PTC THERMISTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 1, the positive (+) lead from the ammeter to terminal 2 and the negative (–) lead to the battery negative (–) terminal, then move the seat cushion to the highest position.
(b) Continue to apply voltage, check that the current changes to less than 1 ampere within 4 to 90 seconds.



(c) Disconnect the leads from the terminals.
(d) Approximately 60 seconds later, connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1, check that the seat cushion begins to descend.

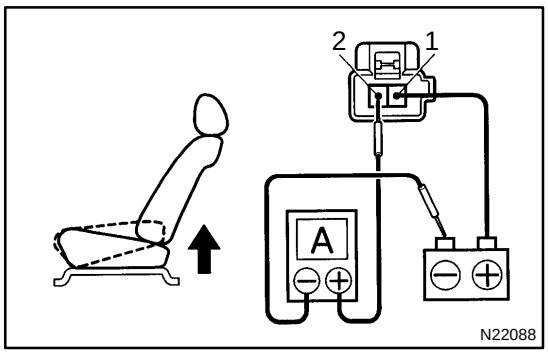
If operation is not as specified, replace the seat adjuster.



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

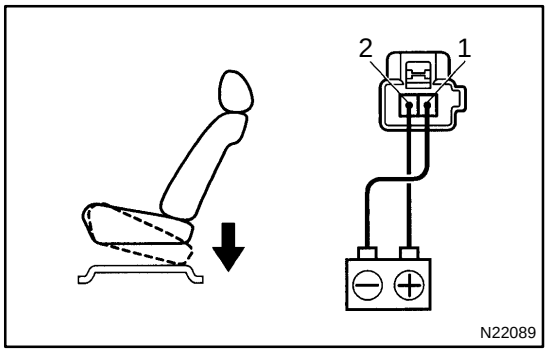
If operation is not as specified, replace the seat adjuster.



9. INSPECT REAR VERTICAL MOTOR PTC THERMISTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 1, the positive (+) lead from the ammeter to terminal 2 and the negative (–) lead to the battery negative (–) terminal, then move the seat cushion to the highest position.

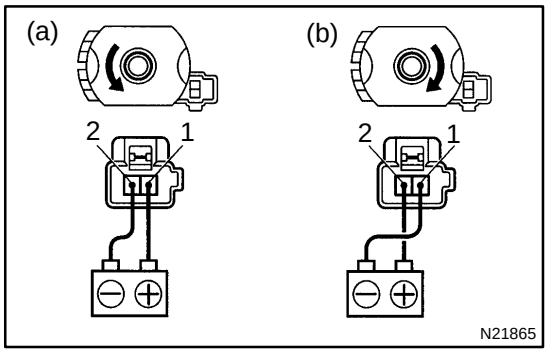
(b) Continue to apply voltage, check that the current changes to less than 1 ampere within 4 to 90 seconds.



(c) Disconnect the leads from the terminals.

(d) Approximately 60 seconds later, connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1, check that the seat cushion begins to descend.

If operation is not as specified, replace the seat adjuster.

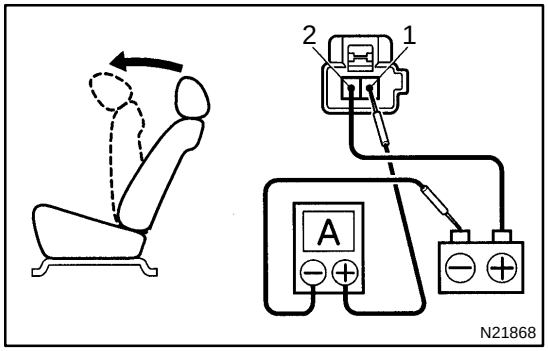


10. INSPECT RECLINING MOTOR OPERATION

(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.

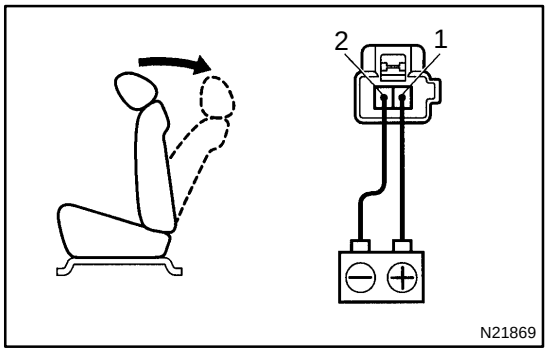
If operation is not as specified, replace the seat adjuster.



11. INSPECT RECLINING MOTOR PTC THERMISTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 2, the positive (+) lead from the ammeter to terminal 1 and the negative (–) lead to the battery negative (–) terminal, then recline the seat back to the most forward position.

(b) Continue to apply voltage, check that the current changes to less than 1 ampere within 4 to 90 seconds.



(c) Disconnect the leads from the terminals.

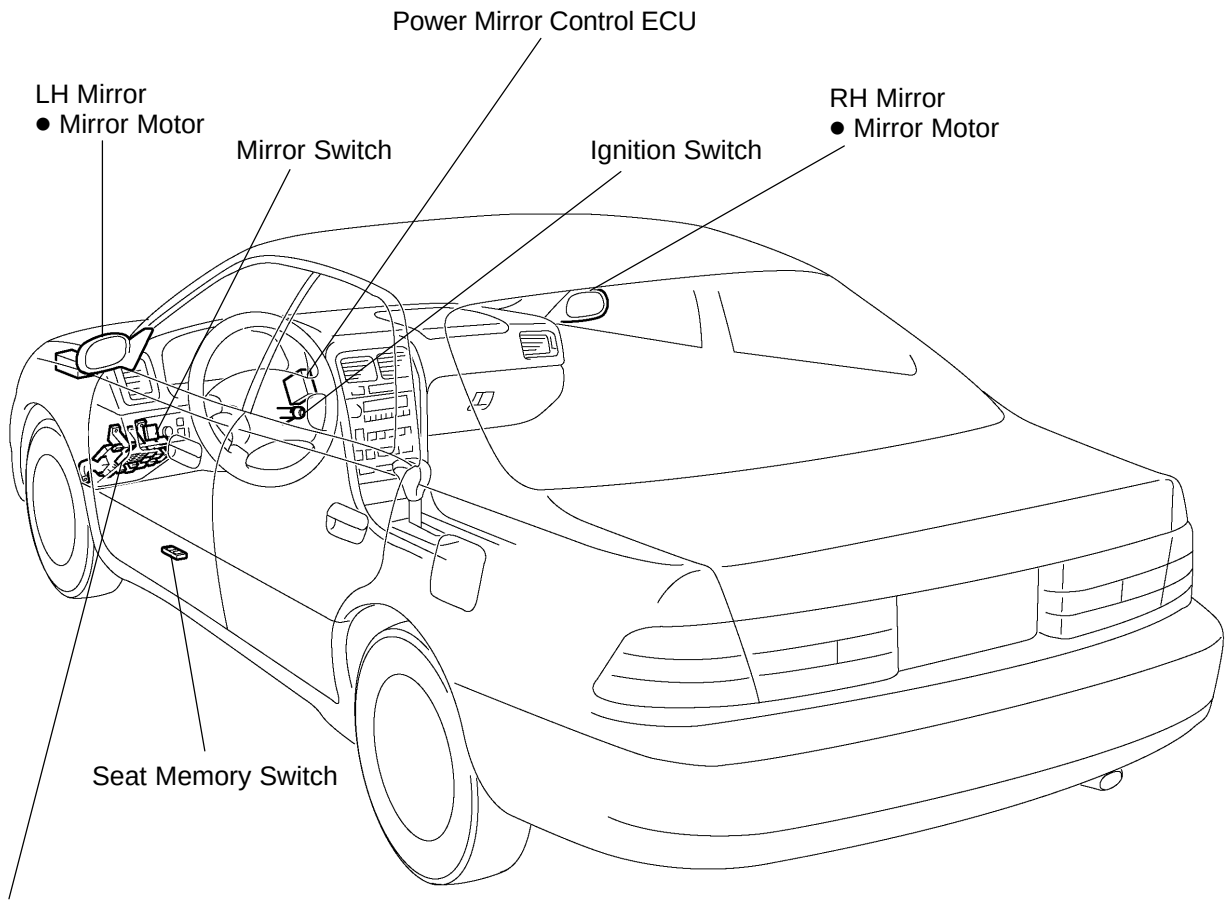
(d) Approximately 60 seconds later, connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 2, check that the seat back starts to fall backward.

If operation is not as specified, replace the seat adjuster.

POWER MIRROR CONTROL SYSTEM

BE05U–03

LOCATION



Y

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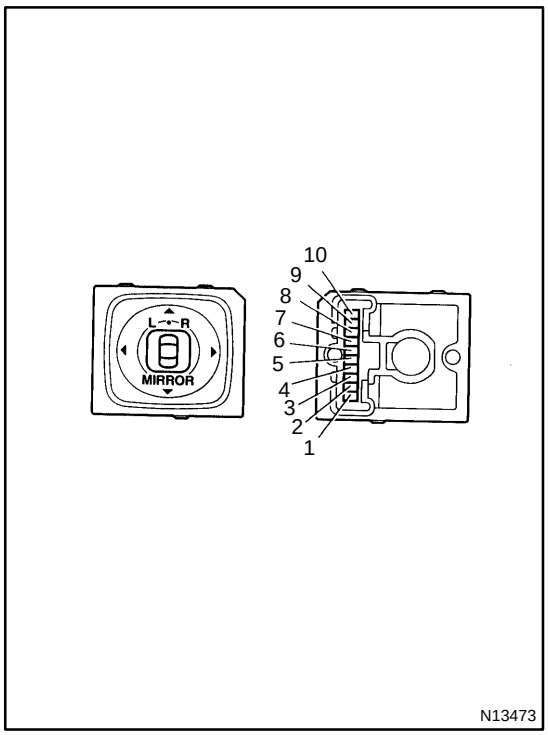
BE1JQ–01



INSPECTION

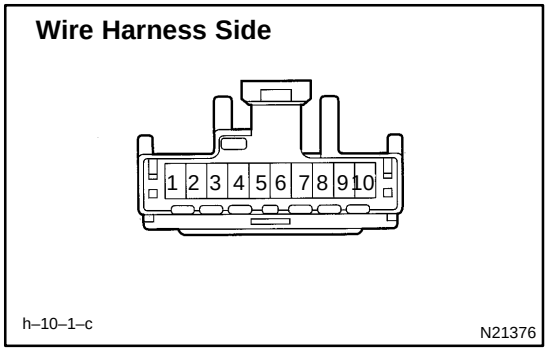
1. Master switch left side:
INSPECT MIRROR SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF	–	No continuity
UP	3 – 4 7 – 8	Continuity
DOWN	3 – 8 4 – 7	Continuity
LEFT	4 – 9 7 – 8	Continuity
RIGHT	4 – 7 8 – 9	Continuity

2. Master switch right side:
INSPECT MIRROR SWITCH CONTINUITY

Switch position	Tester connection	Specified condition
OFF	–	No continuity
UP	2 – 4 1 – 7 – 8	Continuity
DOWN	4 – 7 1 – 2 – 8	Continuity
LEFT	4 – 10 1 – 7 – 8	Continuity
RIGHT	4 – 7 1 – 8 – 10	Continuity

If continuity is not as specified, replace the switch.
If continuity is as specified. inspect the switch circuit.

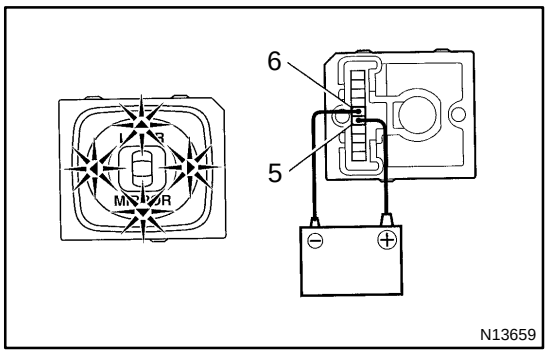


3. INSPECT MIRROR SWITCH CIRCUIT

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

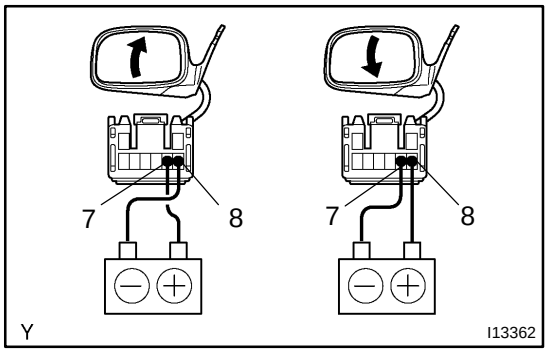
Tester connection	Condition	Specified condition
8 – Ground	Constant	Continuity
4 – Ground	Ignition switch position LOCK	No voltage
4 – Ground	Ignition switch position ACC or ON	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.



4. INSPECT INDICATOR LIGHT OPERATION

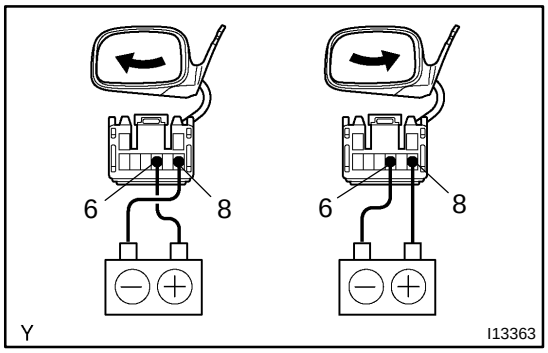
Connect the positive (+) lead from the battery to terminal 5 and the negative (–) lead to terminal 6, and check that the indicator light does not light up, replace the switch.



5. w/o Driving Position Memory (Driver's door): INSPECT MIRROR MOTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 7 and the negative (–) lead to terminal 8, and check that the mirror turns upward.

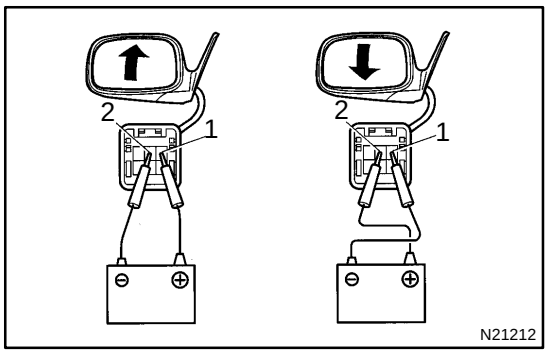
(b) Reverse the polarity, and check that the mirror turns downward.



(c) Connect the positive (+) lead from the battery to terminal 8 and the negative (–) lead to terminal 6, and check that the mirror turns to the left side.

(d) Reverse the polarity, and check that the mirror turns to the right side.

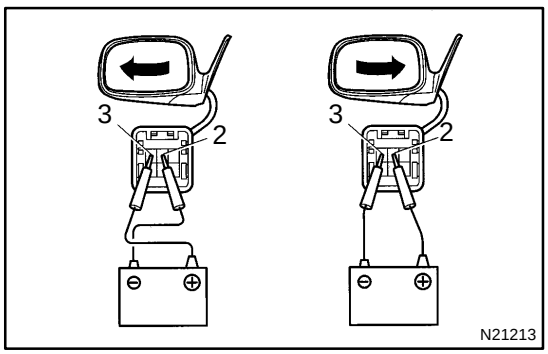
If operation is not as specified, replace the mirror.



6. w/o Driving Position Memory (Passenger's door): INSPECT MIRROR MOTOR OPERATION

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

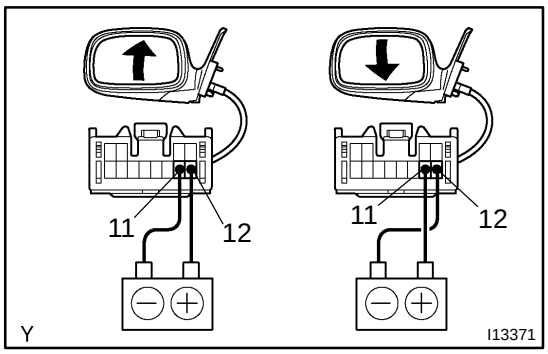
(b) Reverse the polarity, and check that the mirror turns downward.



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

(d) Reverse the polarity, and check that the mirror turns to the right side.

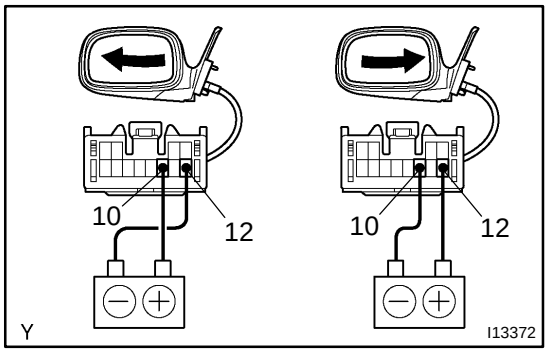
If operation is not as specified, replace the mirror.



7. w/ Driving Position Memory:
INSPECT MIRROR MOTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 12 and the negative (–) lead to terminal 11, and check that the mirror turns upward.

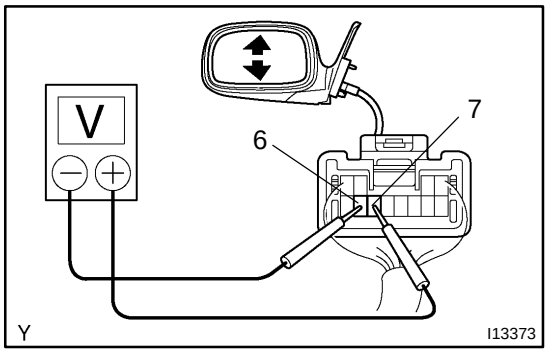
(b) Reverse the polarity, and check that the mirror turns downward.



(c) Connect the positive (+) lead from the battery to terminal 12 and the negative (–) lead to terminal 10, and check that the mirror turns to the left side.

(d) Reverse the polarity, and check that the mirror turns to the right side.

If operation is not as specified, replace the mirror.



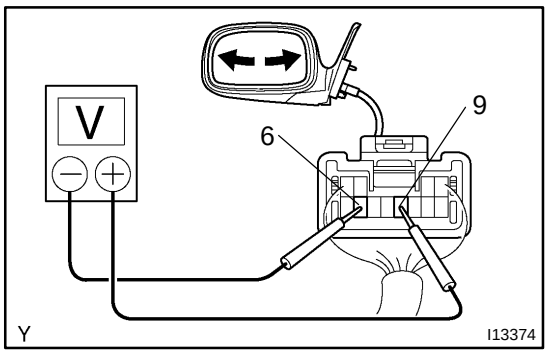
8. w/ Driving Position Memory only:
INSPECT MIRROR POSITION SENSORS OPERATION

(a) Connect the positive (+) lead from the voltmeter to terminal 7 and the negative (–) lead to terminal 6.

(b) Check that the voltage gradually changes according to the table below while the mirror moves between the uppermost position and lowermost position.

Mirror position	Lowermost	→	Uppermost
Voltage	0 – 1.0	Changes gradually	3.0 – 4.0

If voltage value is not as specified, replace the mirror assembly.



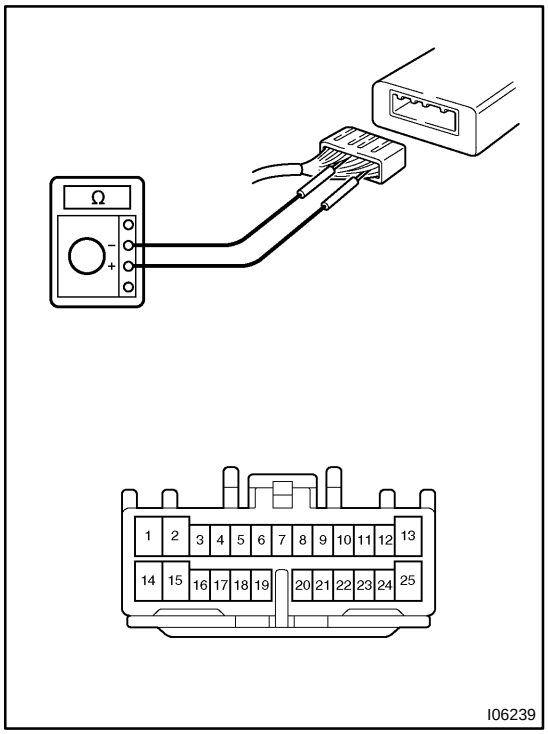
(c) Connect the positive (+) lead from the voltmeter to terminal 9 and negative (–) lead to terminal 6.

(d) Check that the voltage gradually changes according to the table below while the mirror moves between the left–most position and right–most position.

Mirror position	Left–most	→	Right–most
LH Mirror	3.0 – 4.0	Changes gradually	0 – 1.0
RH Mirror	0 – 1.0	Changes gradually	3.0 –4.0

If voltage value is not as specified, replace the mirror assembly.

9. INSPECT DRIVING POSITION MEMORY AND RETURN SWITCH CONTINUITY AND CIRCUIT
(See page DI–587)



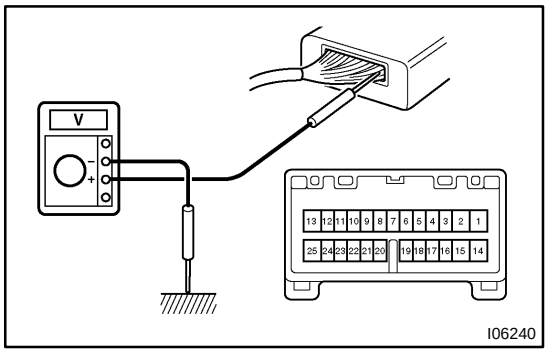
10. INSPECT MIRROR CONTROL ECU CIRCUIT

Disconnect the connector from the ECU and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
3 – 16	Right side mirror switch to RIGHT	Continuity
4 – 16	Left side mirror switch to RIGHT	Continuity
5 – 16	Right side mirror switch to DOWN	Continuity
6 – 16	Left side mirror switch to DOWN	Continuity
3 – 17	Right side mirror switch to LEFT	Continuity
4 – 17	Left side mirror switch to LEFT	Continuity
5 – 17	Right side mirror switch to UP	Continuity
6 – 17	Left side mirror switch to UP	Continuity

7 – 19	Constant	Continuity
10 – 11	Constant	Continuity
10 – 12	Constant	Continuity
14 – Ground	Constant	Continuity
22 – 23	Constant	Continuity
22 – 24	Constant	Continuity
1 – Ground	Constant	Battery positive voltage
2 – Ground	Ignition switch OFF	No voltage
2 – Ground	Ignition switch ACC or ON	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.



11. INSPECT MIRROR CONTROL ECU OPERATION

Connect the connectors and using a voltmeter with high impedance (10 kΩ/V minimum), measure the voltage at each terminal and body ground.

Tester connection	Condition	Specified condition
3 – Ground	Constant	About 12 V
4 – Ground	Constant	About 12 V
5 – Ground	Constant	About 12 V
6 – Ground	Constant	About 12 V
7 – Ground	Right or left side mirror switch to any position except OFF	About 5 V
* 8 – Ground	Left side mirror to lowermost position	0 – 1.0 V
	Left side mirror to uppermost position	3.0 – 4.0 V
* 9 – Ground	Left side mirror to leftmost position	3.0 – 4.0 V
	Left side mirror to rightmost position	0 – 1.0 V
10 – Ground	Left side mirror switch to RIGHT or DOWN	Battery positive voltage
11 – Ground	Left side mirror switch to LEFT or DOWN	Battery positive voltage
12 – Ground	Left side mirror switch to UP or RIGHT	Battery positive voltage
* 20 – Ground	Right side mirror to lowermost position	0 – 1.0 V
	Right side mirror to uppermost position	3.0 – 4.0 V
* 21 – Ground	Right side mirror to leftmost position	0 – 1.0 V
	Right side mirror to rightmost position	3.0 – 4.0 V

22 – Ground	Right side mirror switch to RIGHT or DOWN	Battery positive voltage
23 – Ground	Right side mirror switch to LEFT or DOWN	Battery positive voltage
24 – Ground	Right side mirror switch to UP or RIGHT	Battery positive voltage

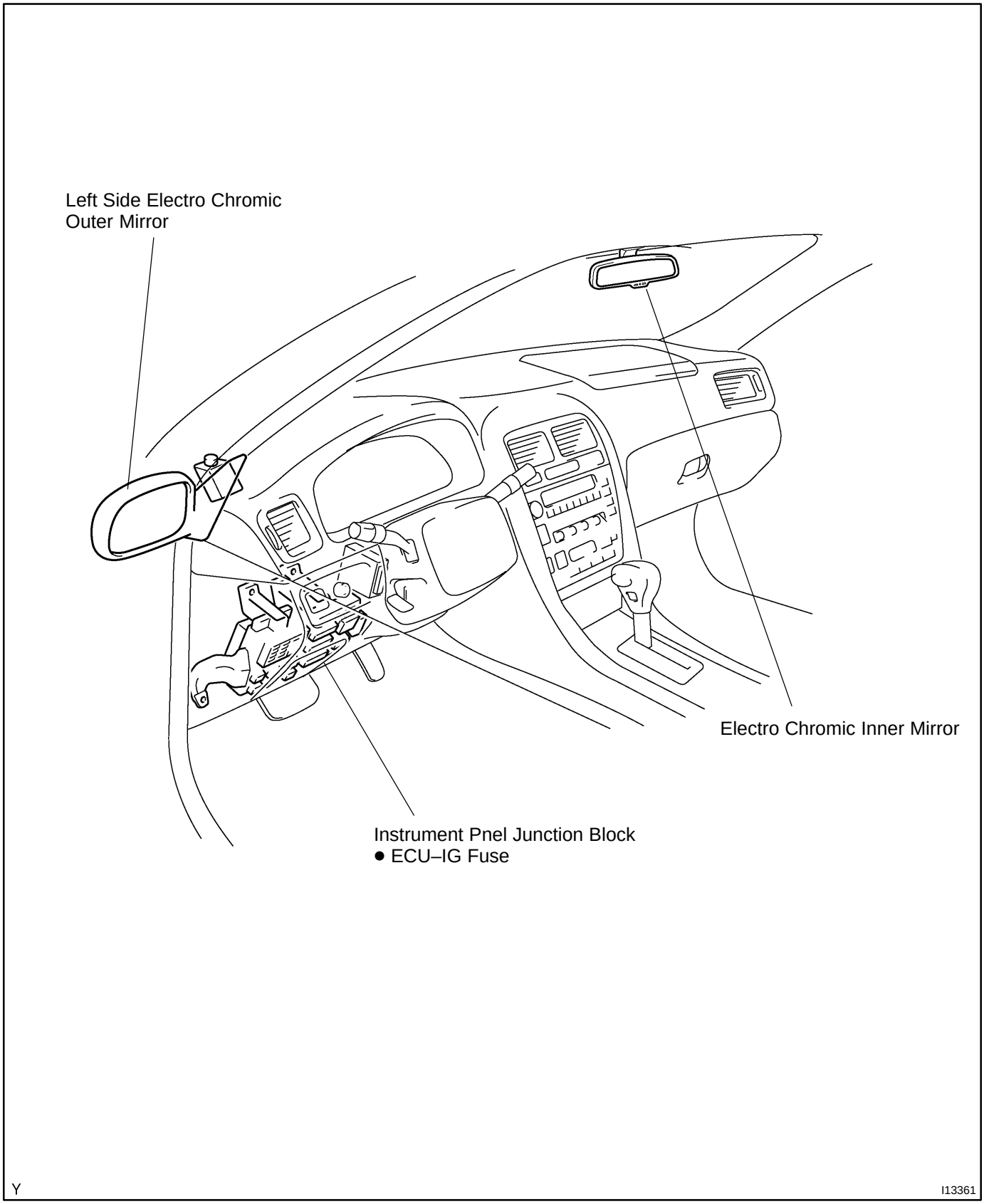
*: Confirm that the voltage changes gradually while the mirror moves.

If the operation is not as specified, inspect the wire harness and mirror switch or motor assembly. Then if these are correct, replace the ECU.

ELECTRO CHROMIC MIRROR SYSTEM

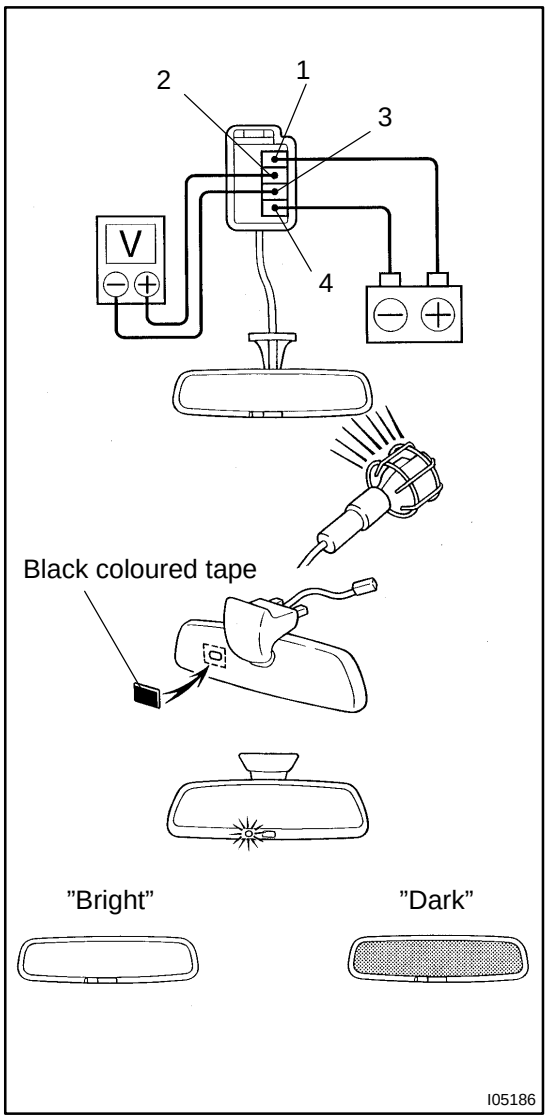
BE0TO–04

LOCATION



BE0TP–03

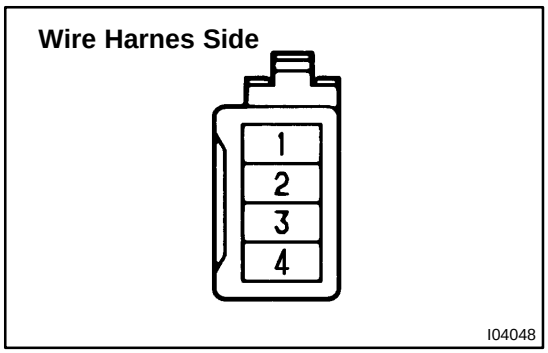
INSPECTION



1. INSPECT ELECTRO CHROMIC INNER MIRROR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (–) lead to terminal 4.
(b) Connect the positive (+) lead from the voltmeter to terminal 2 and the negative (–) lead to terminal 3.
(c) Attach a black coloured tape to forward sensor to prevent it from sensing.
(d) When the mode is turned to AUTO, check that indicator light lights up.
(e) Light up the mirror with an electric light, and check that there is battery positive voltage and mirror surface changes ”bright” to ”dark”.

If operation is not as specified, replace the inner mirror.

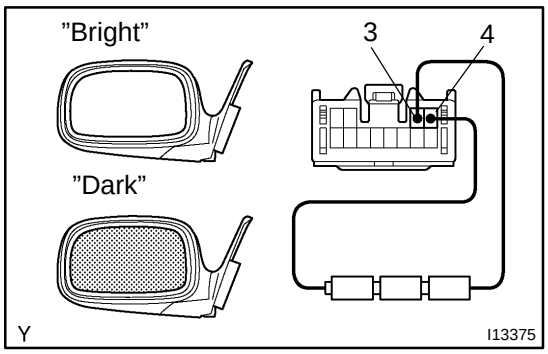


2. INSPECT ELECTRO CHROMIC INNER MIRROR CIRCUIT

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

Tester connection	Condition	Specified condition
4 – Ground	Constant	Continuity
1 – Ground	Ignition switch LOCK or ACC	No voltage
1 – Ground	Ignition switch ON	Battery positive voltage

If circuit is not as specified, inspect the circuits connected to other parts.



3. INSPECT ELECTRO CHROMIC OUTER MIRROR OPERATION

(a) Disconnect the outer mirror connector.

(b) Connect the positive (+) lead from the dry cell battery to terminal 4 and the negative (–) lead to terminal 3, then check that the mirror surface changes to ”dark”.

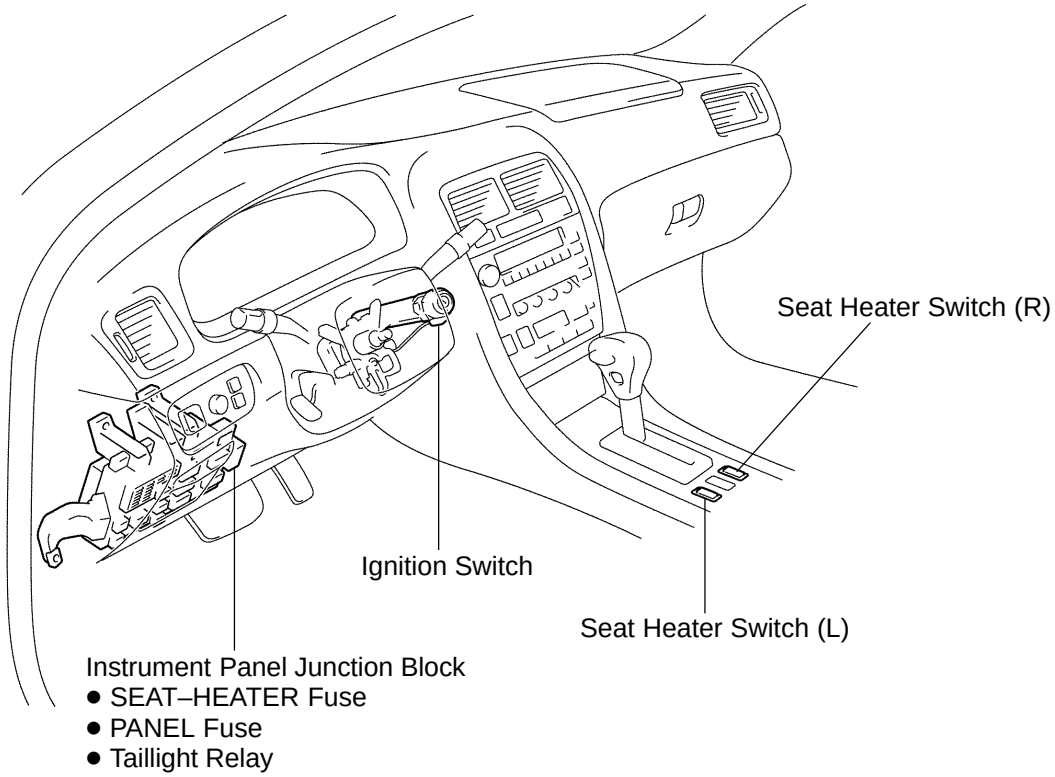
(c) Check the mirror turns to ”bright” after disconnecting the battery.

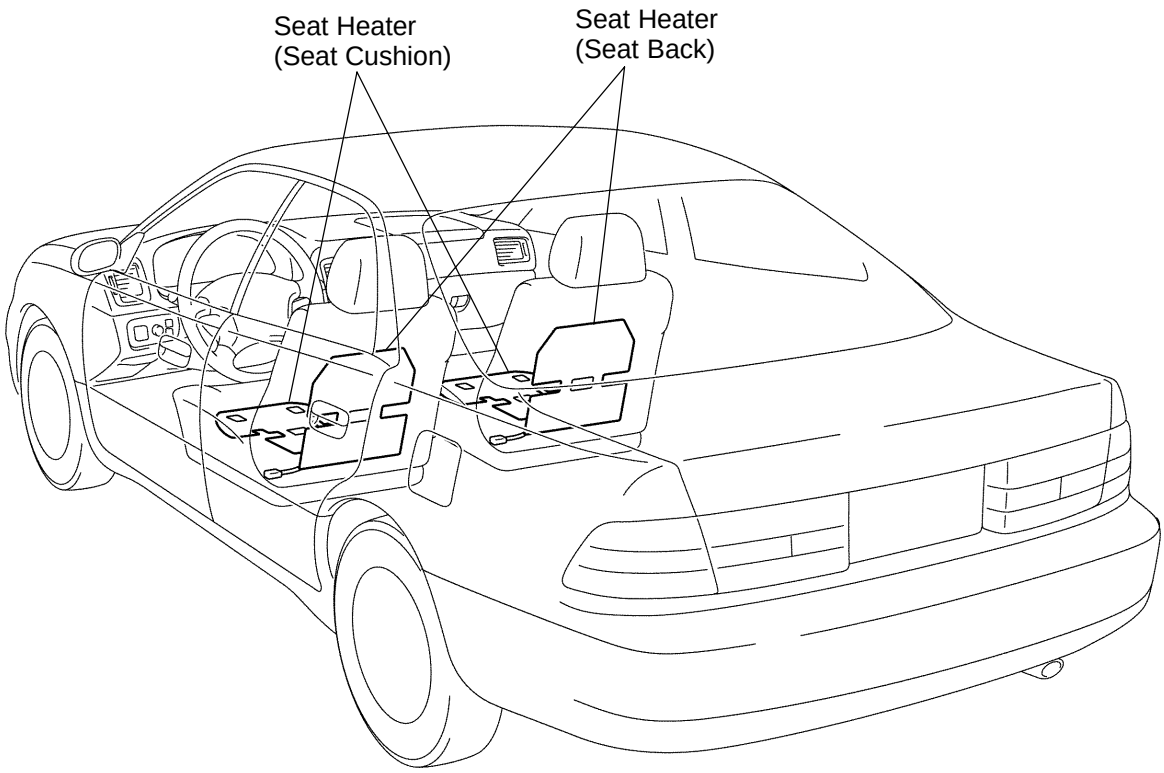
If operation is not as specified, replace the mirror assembly.

SEAT HEATER SYSTEM

BE05W–02

LOCATION





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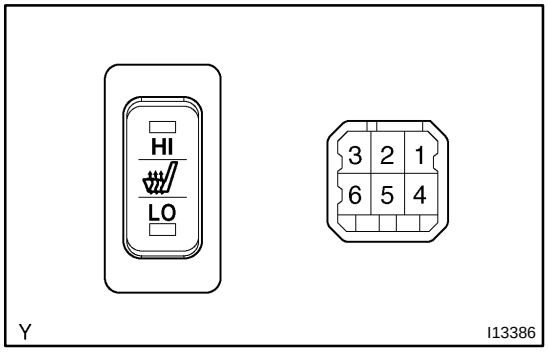
BE05X–04

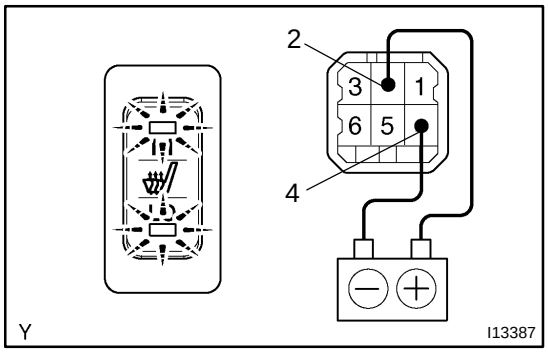
INSPECTION



1. INSPECT SEAT HEATER SWITCH CONTINUITY

Condition	Tester connection	Specified condition
OFF	–	No continuity
HI	2 – 5, 1 – 4	Continuity
LO	1 – 2	Continuity
Illumination circuit	3 – 6	Continuity

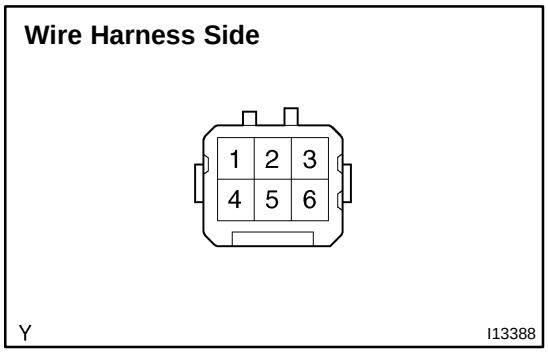
If continuity is not as specified, replace the switch or bulb.



2. INSPECT SEAT HEATER SWITCH INDICATOR

(a) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 4.
(b) Push the switches ”HI” position, check that the indicator of ”HI” position lights up.
(c) Push the switches ”LO” position, check that the indicator of ”LO” position lights up.

If operation is not as specified, replace the switch and inspect the circuits connected to other parts.

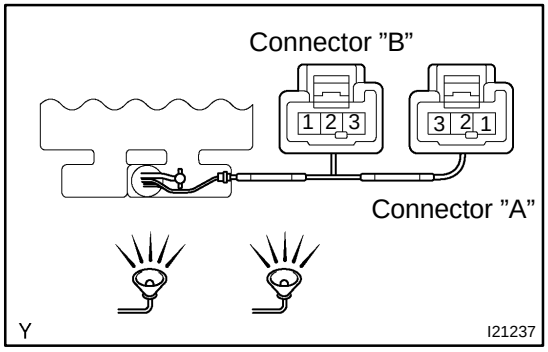


3. INSPECT SEAT HEATER SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
4 – Ground	Constant	Continuity
2 – Ground	Ignition switch position LOCK or ACC	No voltage
	Ignition switch position ON	Battery positive voltage
3 – Ground	Light control switch OFF	No voltage
	Light control switch TAIL or HEAD	Battery positive voltage

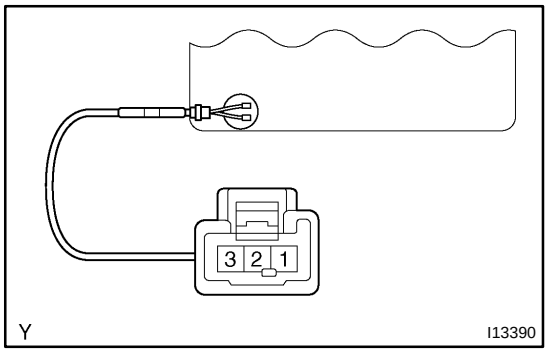
If the circuit is not as specified, inspect the circuits connected to other parts.



4. INSPECT SEAT CUSHION CONTINUITY

(a) Check that continuity exists between terminal 1 of the connector ”A” and terminal 3 of the connector ”B”.
(b) Heat the 2 thermostats with light. Check that no continuity exists above 36 – 44°C (97 – 111°F) between terminal 1 of the connector ”A” and terminal 3 of the connector ”B”.
(c) Heat the 2 thermostats with light. Check that there is no continuity above 46 – 54°C (115 – 129°F) between terminal 2 of the connector ”A” and terminal 1 of the connector ”B”.

(d) Cool the 2 thermostats below 25 – 35˚C (77 – 95˚F). Check that continuity exists between terminal 1 of the connector ”A” and terminal 3 of the connector ”B”, and terminal 2 of the connector ”A” and terminal 1 of the connector ”B”.



5. INSPECT SEAT BACK CONTINUITY

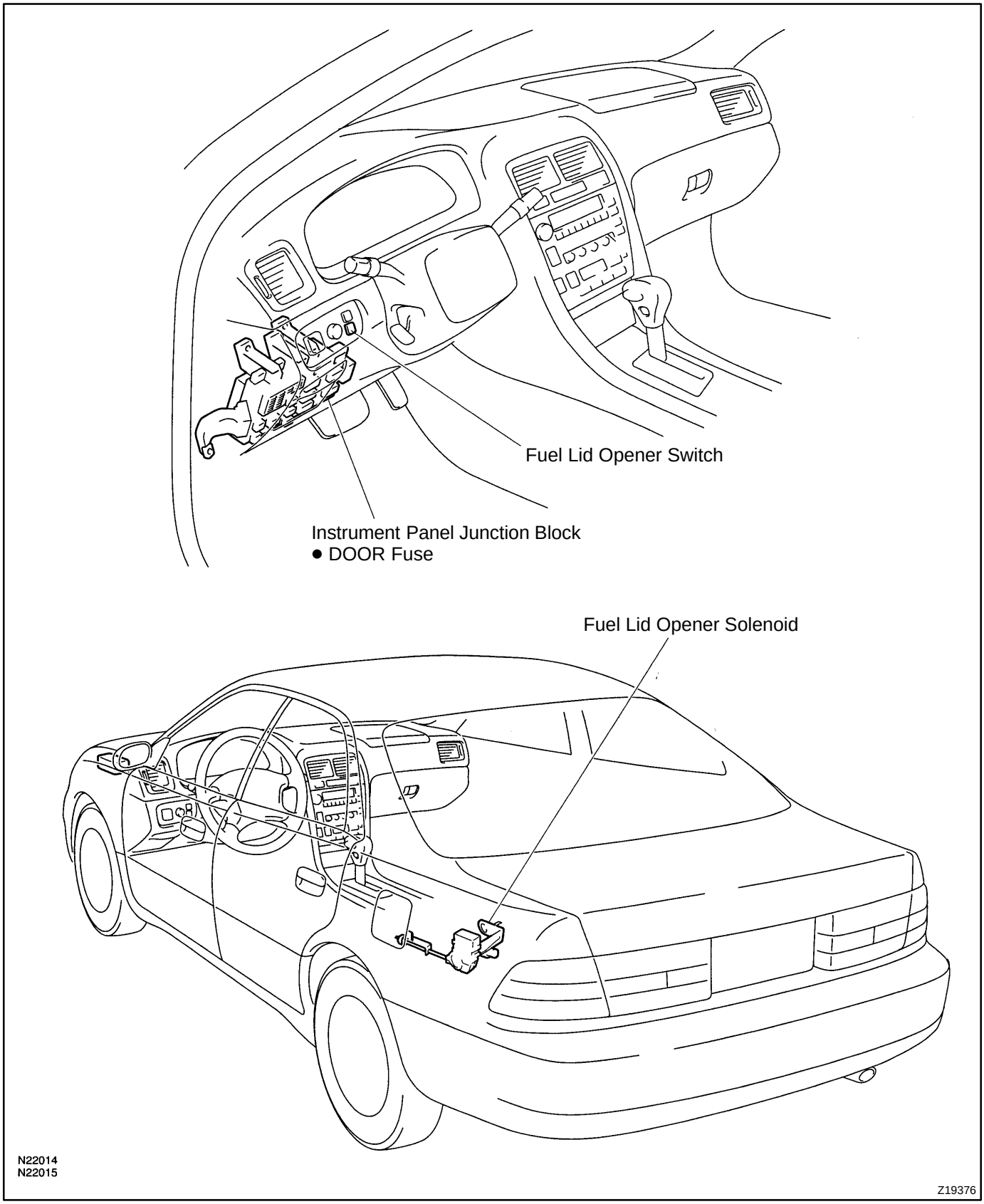
Check that continuity exists between terminals 1 and 2, 1 and 3.

If continuity is not as specified, replace the seat back pad.

FUEL LID OPENER SYSTEM

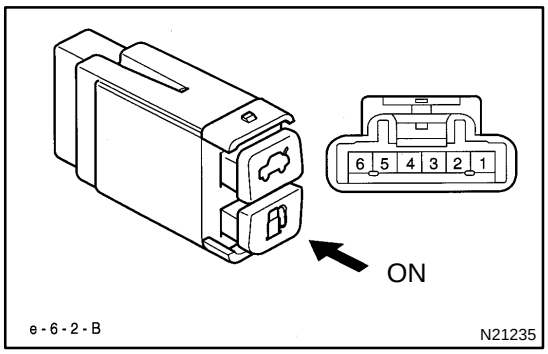
LOCATION

BE05Y–02



BE05Z–02

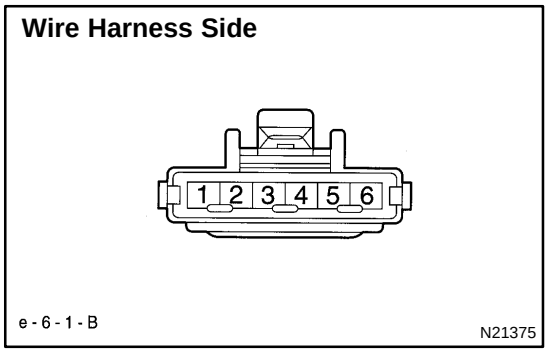
INSPECTION



1. INSPECT FUEL LID OPENER SWITCH CONTINUITY

(a) Check that continuity exists between terminals 2 and 3 with the switch ON.
(Switch button pushed)

(b) Check that no continuity exists between terminals 2 and 3 with the switch OFF.
(Switch button released)

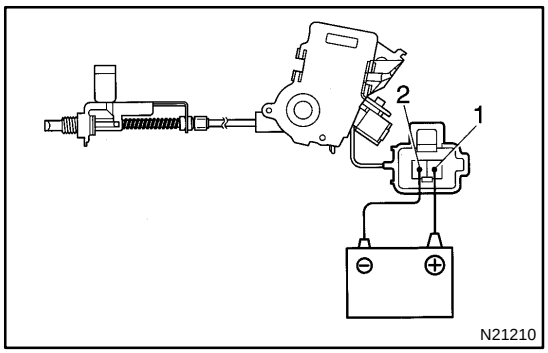


2. INSPECT FUEL LID OPENER SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
2 – Ground	Constant	Continuity
3 – Ground	Constant	Battery positive voltage

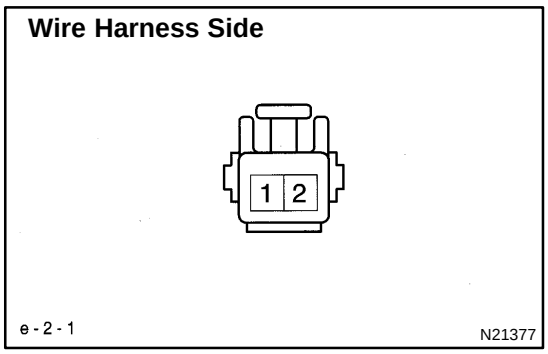
If the circuit is not specified, inspect power source or wire harness.



3. INSPECT FUEL LID OPENER SOLENOID OPERATION

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

If operation is not as specified, replace the solenoid.



4. INSPECT FUEL LID OPENER SOLENOID CIRCUIT

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

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

If the circuit is not as specified, inspect the circuits connected to other parts.

AUDIO SYSTEM

BE10O–02

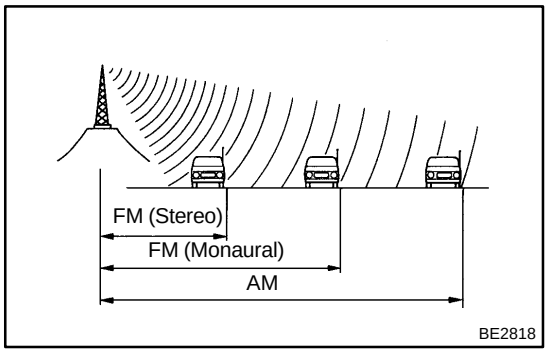
DESCRIPTION

1. 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

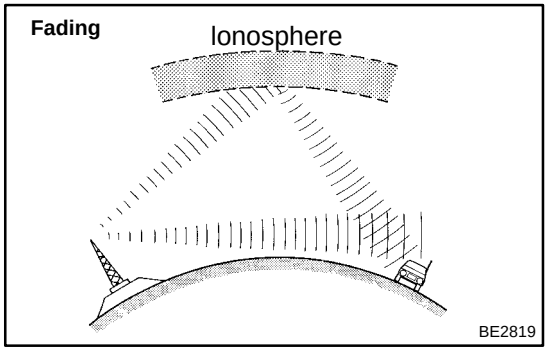


2. SERVICE AREA

There are great differences in the size of the service area for AM and FM monaural. Sometimes FM stereo broadcasts cannot be received even through AM can be received 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.

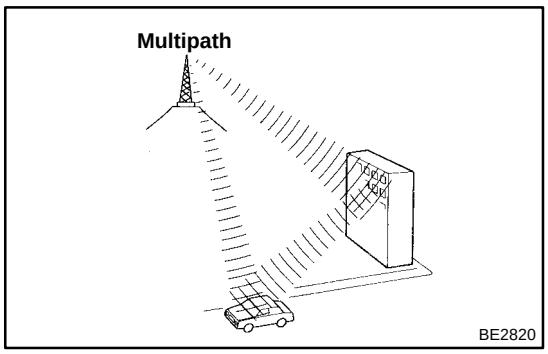
3. RECEPTION PROBLEMS

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.

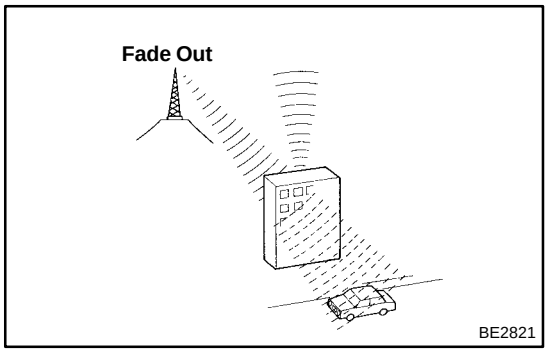


(1) Fading

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”.



(2) Multipath
One type of interference caused by the bounce of radio waves off of obstructions is called ”multipath”. Multipath occurs when a signal from the broadcast transmitter antenna bounces off buildings and mountains and interferes with the signal that is received directly.



(3) Fade Out
Because FM radio waves are of higher frequencies than AM radio waves, they bounce off 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”.

4. NOISE PROBLEMS

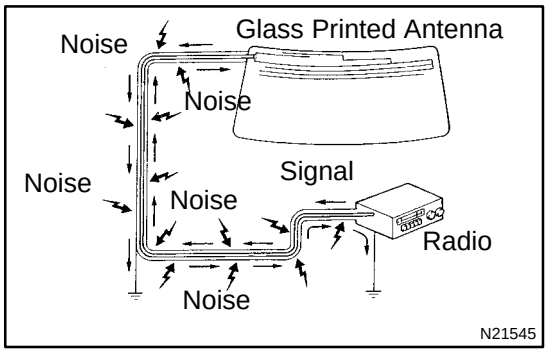
(a) Questionnaire for noise:
It is very important for noise troubleshooting to have good understanding of the claims from the customers, so that make the best use of following questionnaire and diagnose the problem accurately.

AM	Noise occurs at a specific place.	Strong possibility of foreign noise.
	Noise occurs when listening to faint broadcasting.	There is a case that the same program is broadcasted from each local station and that may be the case you are listening different station if the program is the same.
	Noise occurs only at night.	Strong possibility of the beat from a distant broadcasting.
FM	Noise occurs while driving and at a specific place.	Strong possibility of multipath noise and fading noise caused by the changes of FM waves.

HINT:
In the case that the noise occurrence condition does not meet any of the above questionnaire, check based on the ”Trouble Phenomenon”.
Refer to above descriptions for multipath and fading.

(b) Matters that require attention when checking:

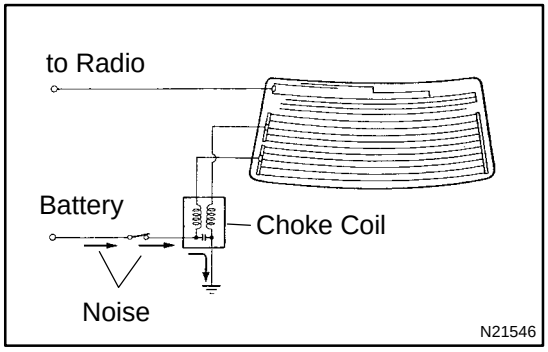
- Noise coming into the radio usually has no harm for practical use as the noise protection is taken and it is hardly thinkable for an extremely loud noise to come in. When extremely loud noise comes into the radio, check if the grounding is normal where the antenna is installed.
- Check if all the regular noise prevention parts are properly installed and if there is any installation of non–authorized parts and non–authorized wiring.
- If you leave the radio under out of tune (not tuning), it is easy to diagnose the phenomenon as noise occurs frequently.



(c) Antenna and noise:

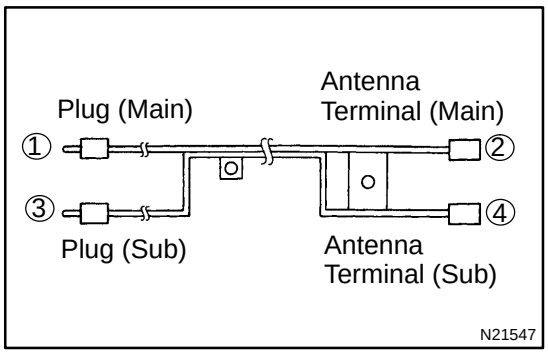
Electronic signal received by the antenna will reach to the radio transmitting through the core wire of the coaxial cable. Any noise wave other than radio wave is mixed into this core wire, that naturally causes noise in the radio and poor sound quality. In order to prevent these noises from mixing into the radio, the core wire inside the coaxial cable is covered with a mesh wire called shield wire. This shield wire shelters the noise and transmits it to the ground, thus preventing noise from mixing in.

If this shield wire has grounding failure, that causes noise.



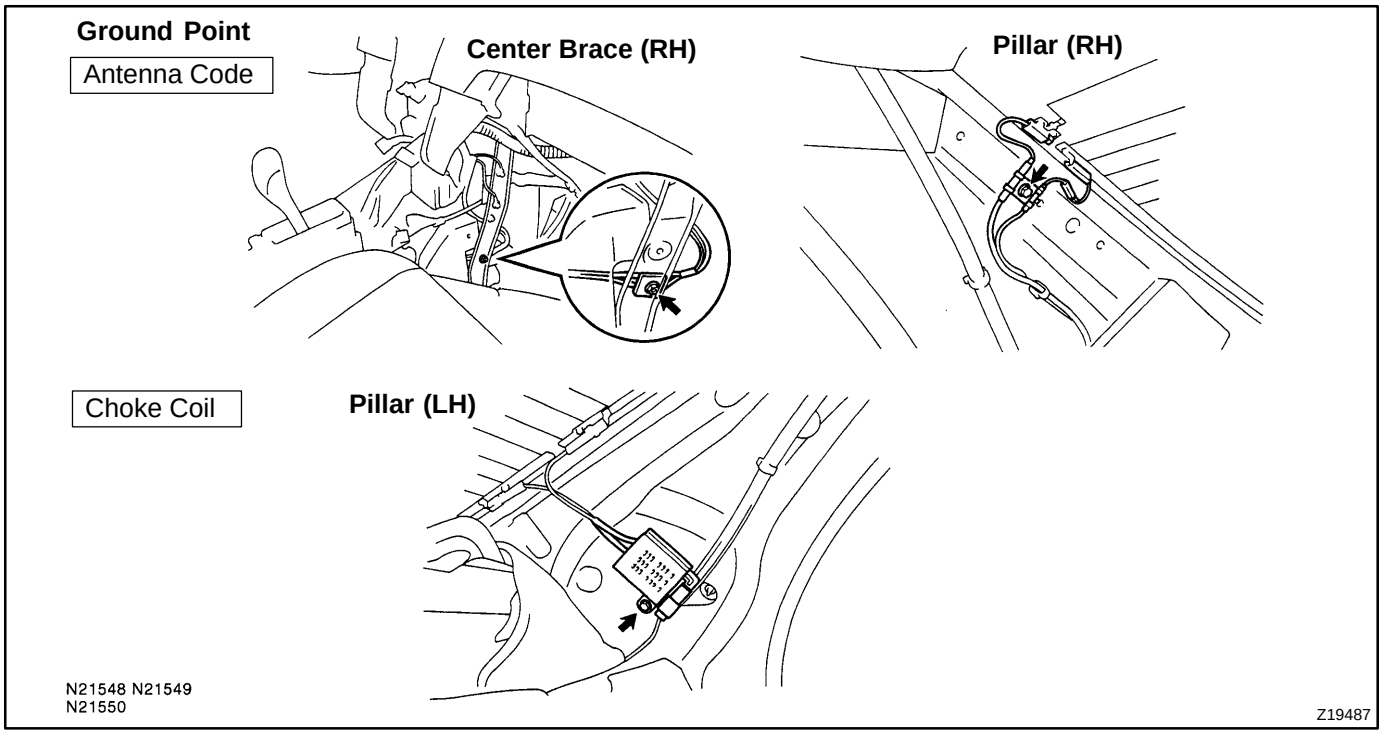
(d) Choke coil and noise:

The choke coil is connected in the rear window defogger circuit. This is connected so to prevent noise from mixing into the radio by making the noise current included in the power source of the rear window defogger flow to the ground.



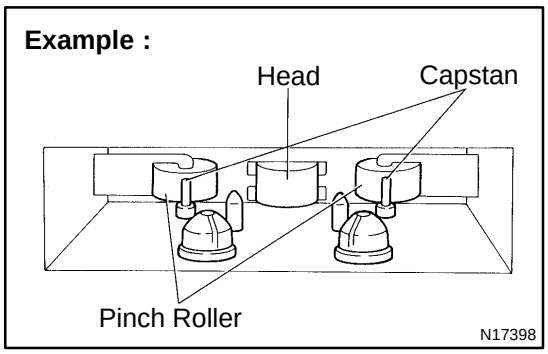
(e) Antenna code continuity check and grounding point:
HINT:
During troubleshooting, in case that the antenna code continuity check, grounding check and grounding check of the choke coil are needed, please check refering to the following illustration.

Terminal connection	Normal condition
(1) ↔ (2)	Continuity
(3) ↔ (4)	No continuity



5. COMPACT DISC PLAYER

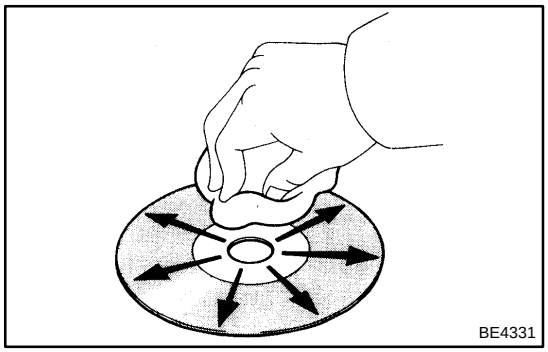
Compact Disc (hereafter called ”CD”) Players use a laser beam pick–up to read the digital signals recorded on the CD and reproduce analog signals of the music, etc. There are 4.7 in. (12 cm) and 3.2 in. (8 cm) discs in the CD player.
HINT:
Never attempt to disassemble or oil any part of the player unit. Do not insert any object other than a disc into the magazine.
NOTICE:
CD players use an invisible laser beam which could cause hazardous radiation exposure. Be sure to operate the player correctly as instructed.



6. Tape player/Head cleaning:
MAINTENANCE

(a) Raise the cassette door with your finger.
Next, using a pencil or similar object, push in the guide.

(b) Using a cleaning pen or cotton applicator soaked in cleaner, clean the head surface, pinch rollers and capstans.



7. CD player/Disc cleaning:
MAINTENANCE

If the disc gets dirty, clean the disc by wiping the surface from the center to outside in the radial directions with a soft cloth.

NOTICE:

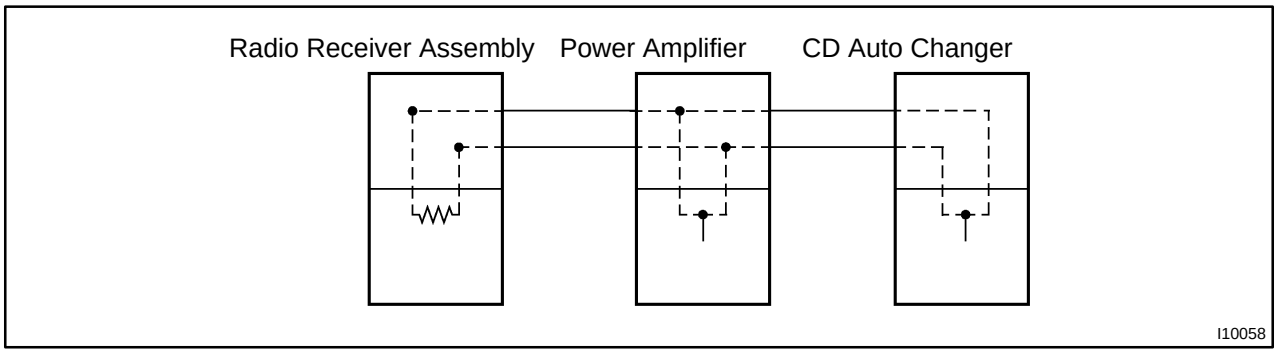
Do not use a conventional record cleaner or anti–static preservative.

8. OUTLINE OF AVC–LAN

(a) What is AVC–LAN?

AVC–LAN is the abbreviation, which stands for Audio Visual Communication–Local Area Network. This is a unified standard co–developed by 6 audio manufactures associated with Toyota Motor Corporation.

The Unified standard covers signals, such as audio signal, visual signal, signal for switch indication and communication signal.



(b) Objectives

Recently the car audio system has been rapidly developed and functions have been changed drastically. The conventional system has been switched to the multi–media type such as a navigation system. At the same time the level of customers needs to audio system has been upgraded. This lies behind this standardization.

The concrete objectives are explained below.

(1) When products by different manufactures were combined together, there used to be a case that malfunction occurred such as sound did not come out. This problem has been resolved by standardization of signals.

(2) Various types of after market products have been able to add or replace freely.
(3) Because of the above (2), each manufacture has become able to concentrate on developing products in their strongest field. This has enabled many types of products provided inexpensively.
(4) Conventionally, a new product developed by a manufacture could not be used due to a lack of compatibility with other manufactures products. Because of this new standard, users can enjoy compatible products provided for them timely.

(c) The above descriptions are the objectives to introduce AVC–LAN. By this standardization, development of new products will no longer cause systematic errors. Thus, this is very effective standard for a product in the future.

BE218–02

TROUBLESHOOTING

1. DIAGNOSIS FUNCTION

HINT:

Error codes over tuner and connected equipment are displayed on the screen of tuner.

(a) Diagnosis start–up

For shifting to diagnosis mode, push ”CD” switch 3 times with pressing ”1” and ”6” of PRESET button at the same time while the audio power is OFF and ACC is ON.

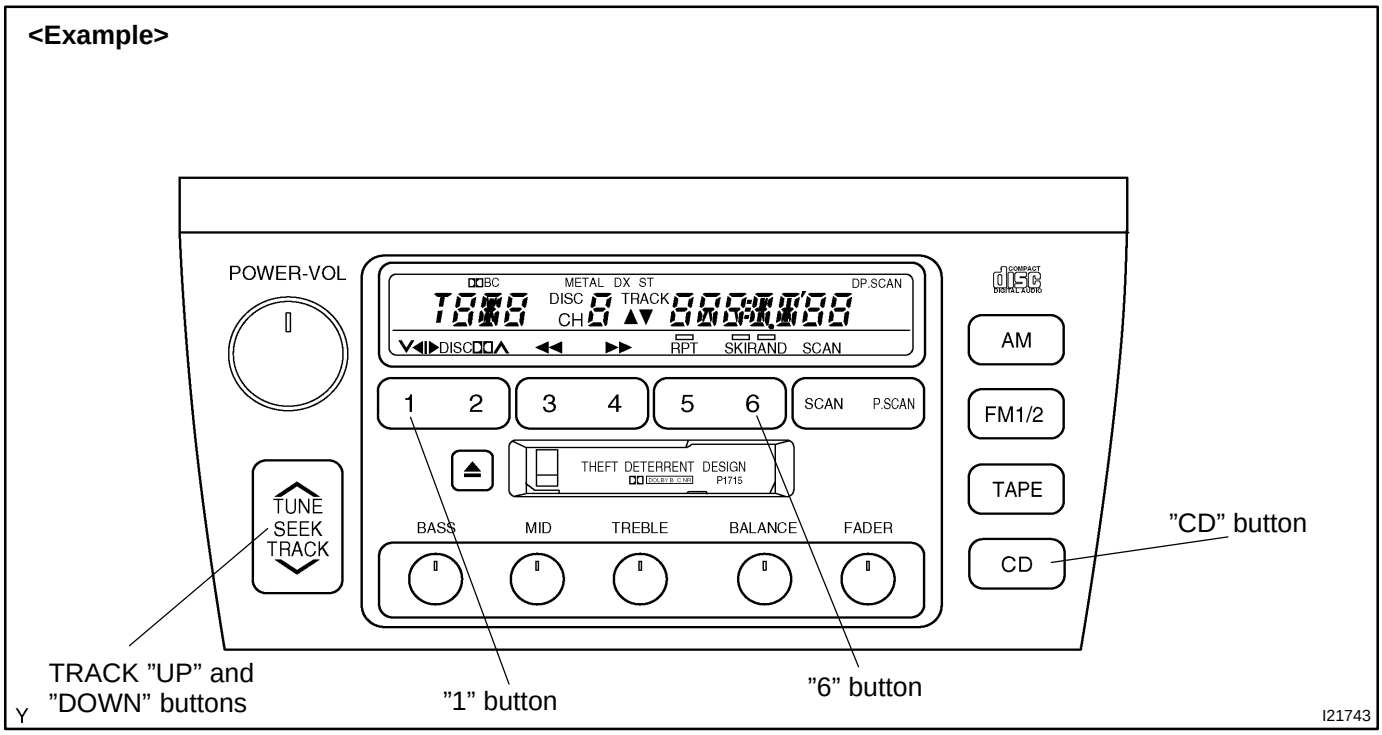
To exit from diagnosis mode, press ”CD” switch for 2 seconds or turn the ignition key OFF.

(When ”1–190” is displayed, the mode is transferred to LAN check mode.)

(b) LAN check

When starting up the diagnosis mode, the mode turns to LAN check mode, the screen displays the code numbers (physical address) of tuner and connected equipment. Smaller codes are displayed in order, displayed code numbers are switched by operating TRACK ”UP” or ”DOWN” switch. In LAN check mode, by pressing ”5” of PRESET button for more than 2 secs., diagnosis memory of each equipment can be deleted, when deletion is completed, the mode returns to LAN check mode.

<Example>



Code No. (physical address) List

Code No. (physical address)	Equipment name
190	Radio receiver assembly (Audio head unit)
240	CD changer (in Luggage room)
360	CD changer(in center console and glove compartment box)
440	Power amplifier

(c) System check

(1) When pressing ”1” of PRESET button in LAN check mode, the mode turns to the system check mode, the system performs self diagnosis of connected equipment and displays the results.(”SYS” (showing the system is under detection) is displayed.)

HINT:

It sometimes takes approx. 40 secs. till the system inspection is completed.

(2) Perform the operation shown in the chart, then read the result of the inspection.

HINT:

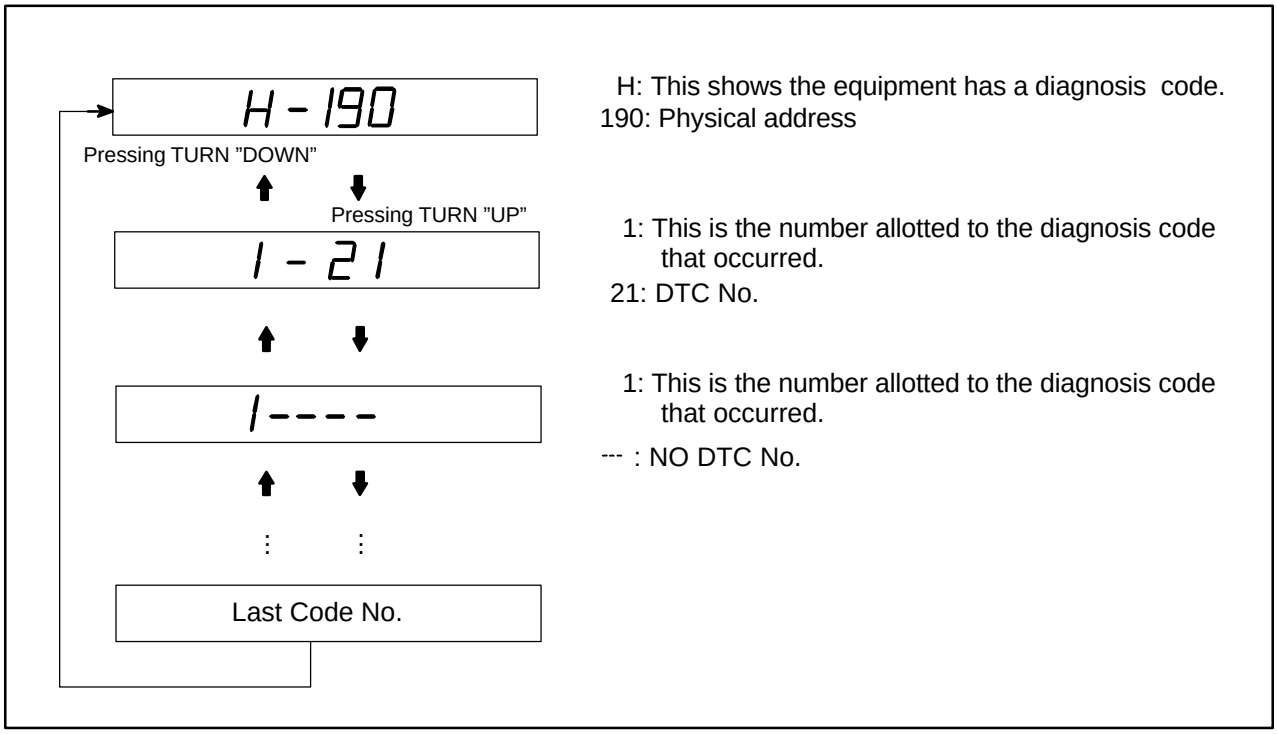
The chart below is an example of when diagnosis code ”21” appears on the physical address (190) equipment. (ROM error occurs on the radio receiver.)

The smaller code numbers (physical address) are displayed in order (code No., diagnosis code, support code of diagnosis code (object equipment)).

When no error is detected in the system, ”00” is displayed.

When an error code is detected, up to 6 codes per one system are displayed. Pressing TRACK ”UP” or ”DOWN” switches the display.

In the system check mode, when pressing ”6” of PRESET button the mode returns to LAN check mode.



(d) Diagnosis memory

(1) In LAN check mode, when pressing ”2” of PRESET button the mode turns to the diagnosis memory mode. (”CODE” is displayed.)

The results of self diagnosis performed over tuner and connected equipment are memorized and displayed.

(2) Perform the operation shown in the following illustration, then read the result of the inspection.

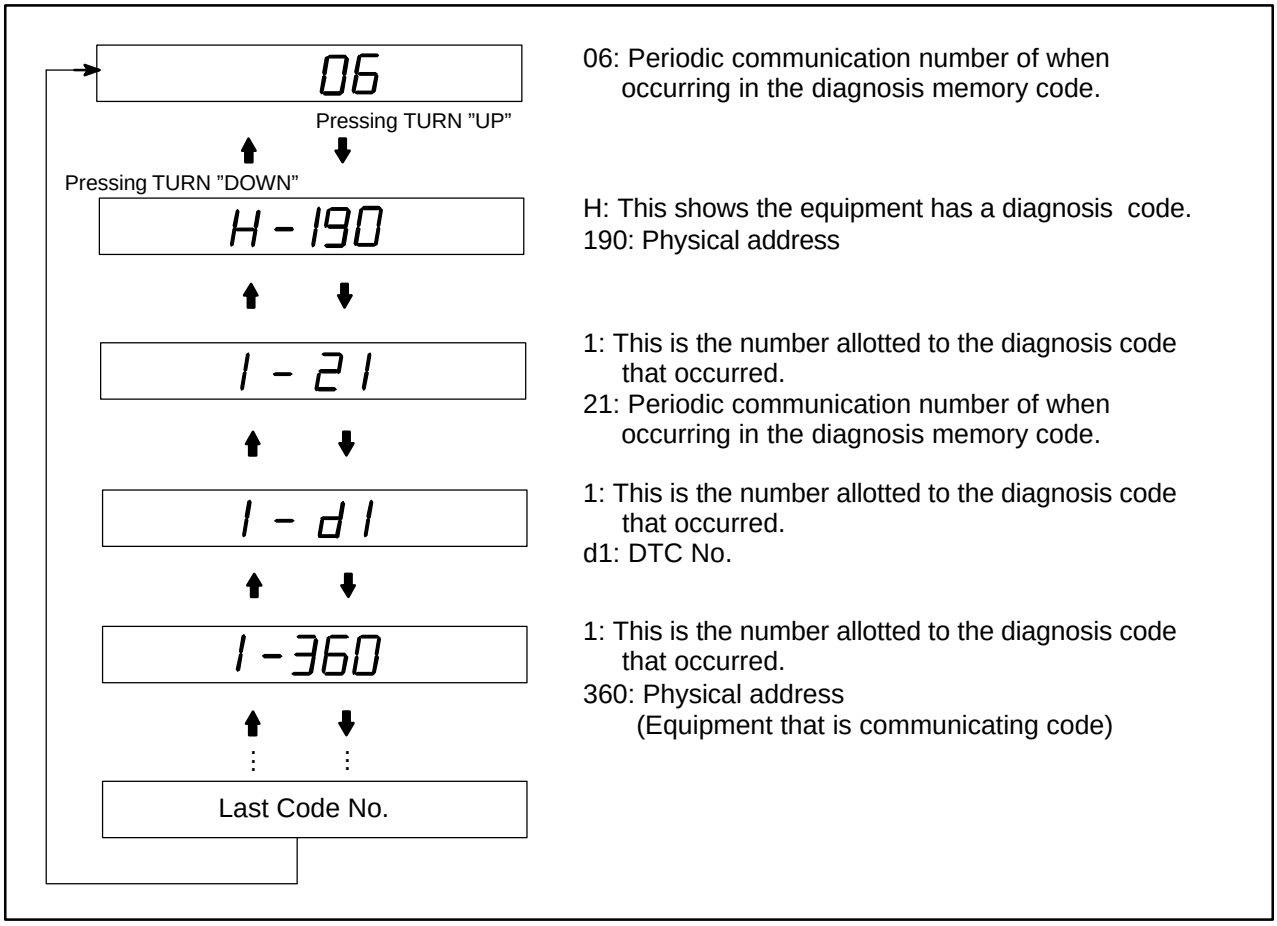
HINT:

The smaller code numbers (physical address) are displayed in order (code No. , periodic communication number when error occurs, diagnosis code, and support code of diagnosis code (object equipment)).

When no error is detected in the system, ”00” is displayed. When an error code is detected, up to 6 codes per one system are displayed. Pressing TRACK ”UP” or ”DOWN” switches the display. Each diagnosis code is same as code in the system check mode.

When pressing ”6” of PRESET button, the mode returns to LAN check mode.

The following illustration below is an example of when diagnosis code ”D1” appears on the code (190) and (240 or 360) equipment. (Communication error occurs between the radio receiver and CD changer.)



(e) Diagnosis memory clear

(1) After error is fixed, start up the diagnosis mode.

(2) Continue pressing function switch ”5” for 2 secs. (CLr is displayed.)

(3) Press the function switch ”2” and transfer to the diagnosis memory mode and check that the normal code (00) is output.

2. DIAGNOSIS CODE LIST

If there is ”O” in the column of system check, an error can be detected when the mode is switched to the system check mode.

If there is ”O” in the column of diagnosis mode each unit is monitoring whether or not it has failure. In case of detecting failure, it memorizes DTC.

Parts Name	DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts	System Check	Diagnosis memory
Head Unit (190)	21	ROM error	There is an error on internal ROM.	Radio receiver check.	○	X
	22	RAM error	There is an error on internal RAM.		○	X
	41	AM tuner error	There is an error in AM tuner.		X	○
	42	FM tuner error	There is an error in FM tuner.		X	○
	50	Cassette error	There is an error in cassette deck.		X	○
	51	Cassette eject error	Cassette can not be ejected from Head Unit.		X	○
	D1	Transmitter error	Communication with the equipment that is communicating has failed successively.	Radio receiver check. Wire harness and connecter check.	○	○
	D2	Periodic communication no response	Error in periodic communication.	● Wire harness and connector	X	○
	D4	Periodic communication error	Connection confirmation has not come from the equipment that is communicating	● Radio receiver check. ● Wire harness check.	X	○
	FF	Diagnosis no response	Result of diagnosis is not issued from start to finish.	Radio receiver check.	○	X
CD (240) (360)	21	ROM error	There is an error on internal ROM.	CD changer check.	○	X
	22	RAM error	There is an error on internal RAM.		○	X
	60	CD error	Error codes other than 61–69 are detected.		X	○
	61	EJECT error	CD is not ejected.	CD changer check. Magazine check.	X	○
	62	DISC inside out/flaw	CD is inserted inside out or it has a flaw.	CD check.	X	○
	63	Pickup temperature detection	High temperature of CD changer is detected.	CD changer check.	X	○
	64	Excessive current detection	Excessive current to CD changer is detected.		X	○
	67	Tray insertion/ discharging error	An error occurs in insertion and discharging operation of CD changer tray.	CD changer check. Magazine check.	X	○

Parts Name	DTC	Diagnosis Item	Diagnosis Content	Countermeasure and Inspected Parts	System Check	Diagnosis Memory
CD (240) (360)	68	Elevator error	An error occurs in elevator of CD changer elevator.	CD changer check.	X	○
	69	Clamp error	An error occurs in CD changer clamp.		X	○
	D1	Transmitter error	Communication with the equipment that is communicating has failed successively.		○	○
	D4	Periodic communication error	Connection confirmation has not come from the equipment that is communicating	● Radio receiver check. ● Wire harness check.	X	○
	FF	Diagnosis no response	Result of diagnosis is not issued from start to finish.	CD changer check.	○	X
AMP (440)	D1	Transmitter error	Communication with the equipment that is communicating has failed successively.	Stereo component amplifier check.	○	○
	D4	Periodic communication error	Connection confirmation has not come from the equipment that is communicating	● Radio receiver check. ● Wire harness check.	X	○
	FF	Diagnosis no response	Result of diagnosis is not issued from start to finish.	Stereo component amplifier check.	○	X

3. PROBLEM SYMPTOM TABLE

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 a simple troubleshooting which should be carried out on the vehicle during system operation and was prepared on the assumption of system component troubles (except for the wires and connectors, etc.).

Always inspect the trouble taking the following items into consideration.

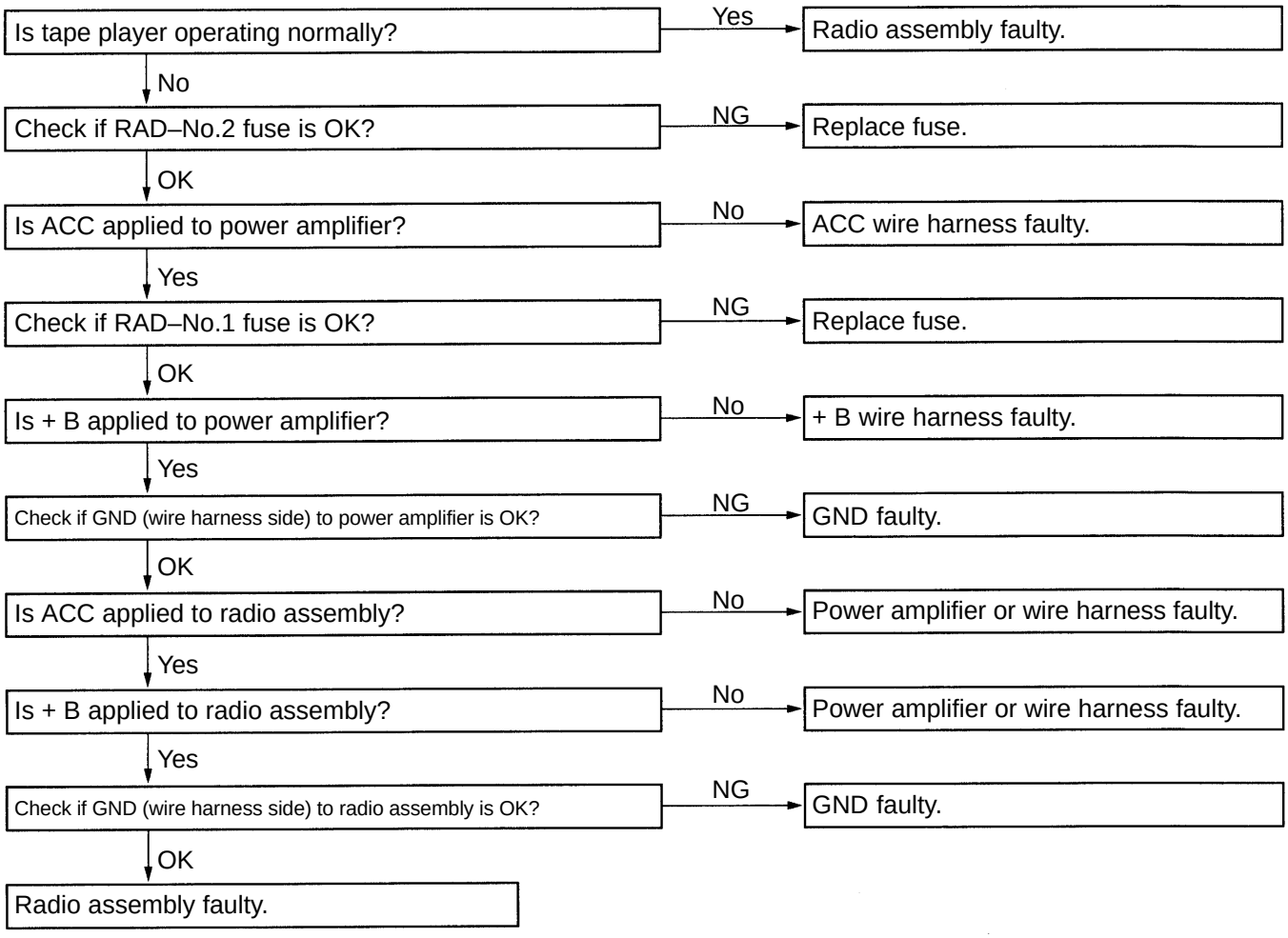
Open or short circuit of the wire harness

Connector or terminal connection fault

	Problem	No.
Radio	Radio not operating when power switch turned to 'ON'.	1
	Display indicates when power switch turned to 'ON', but no sound (including 'noise') is produced.	2
	Noise present, but AM – FM not operating.	3
	Any speaker does not work.	4
	Either AM or FM does not work.	5
	Few preset turning bands.	5
	Reception poor.	6
	Sound quality poor.	7
	Preset memory disappears.	8
Tape Player	Cassette tape cannot be inserted.	9
	Cassette tape inserts, but no power.	10
	Power coming in, but tape player not operating.	11
	Any speaker does not work.	12
	Sound quality poor.	13
	Tape jammed, malfunction with tape speed or auto–reverse.	14
	Cassette tape will not eject.	15
CD Player	CD cannot be inserted.	16
	CD inserted, but no power.	17
	Power coming in, but CD player not operating.	18
	Sound jumps.	19
	Sound quality poor (Volume faint).	20
	Any speaker does not work.	21
	CD will not be ejected.	22
Noise	Noise occurs	23
	Noise produced by vibration or shock while driving.	24
	Noise produced when engine starts.	25

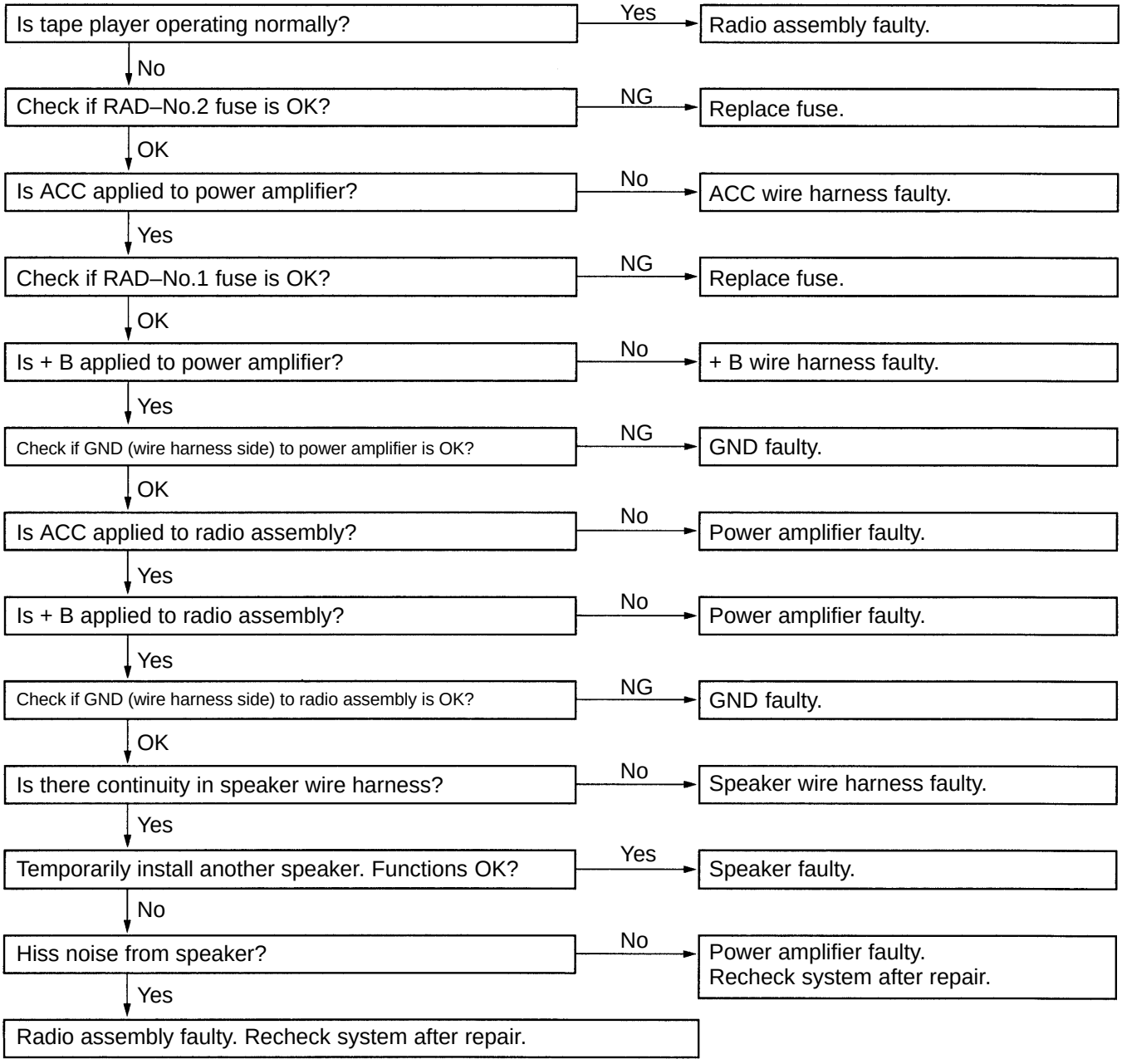
The term "AM" includes LW, MW and SW, and the term "FW" includes UKW.

1	Radio	RADIO NOT OPERATING WHEN POWER SWITCH TURNED TO "ON"



V08480

2	Radio	DISPLAY INDICATES WHEN POWER SWITCH TURNED TO ”ON”, BUT NO SOUND (INCLUDING ”NOISE”) IS PRODUCED



V08481

3	Radio	NOISE PRESENT, BUT AM–FM NOT OPERATING

Go to No.25

If radio side faulty. → Radio faulty.

4	Radio	ANY SPEAKER DOSE NOT WORK

Is tape player operating normally? Yes → Radio assembly faulty.

No ↓

Is hiss noise produced by non–functioning speaker? Yes → Radio assembly faulty. Recheck system after repair.

No ↓

Is there continuity in speaker wire harness? No → Speaker wire harness faulty.

Yes ↓

Temporarily install another speaker? Functions OK? Yes → Speaker faulty.

No ↓

Power amplifier faulty. Recheck system after repair.

5	Radio	EITHER AM OR FM DOES NOR WORK FEW PRESET TUNING BANDS

Problem with radio wave signals or location? Yes → Poor signals, poor location.

No ↓

Are both AM and FM defective? Yes → Radio assembly faulty.

No ↓

Is power for the antenna being output from the radio assembly? No → Radio assembly faulty.

Yes ↓

Go to No. 23

Is tape player operating normally? Yes → Radio assembly faulty.

No ↓

Temporarily install another speaker. Functions OK? Yes → Speaker faulty.

No ↓

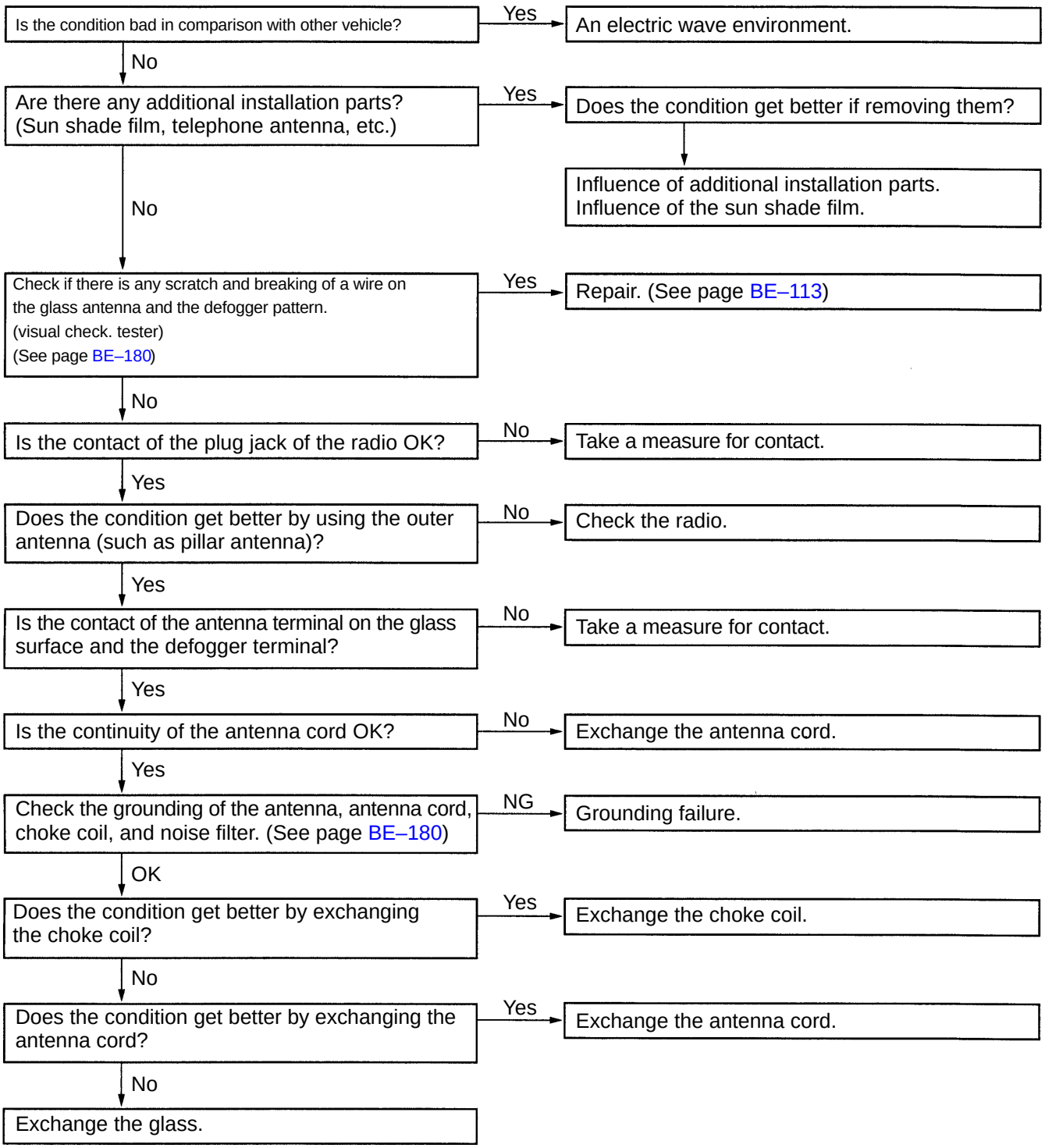
Hiss noise from speaker? No → Power amplifier faulty. Recheck system after repair.

Yes ↓

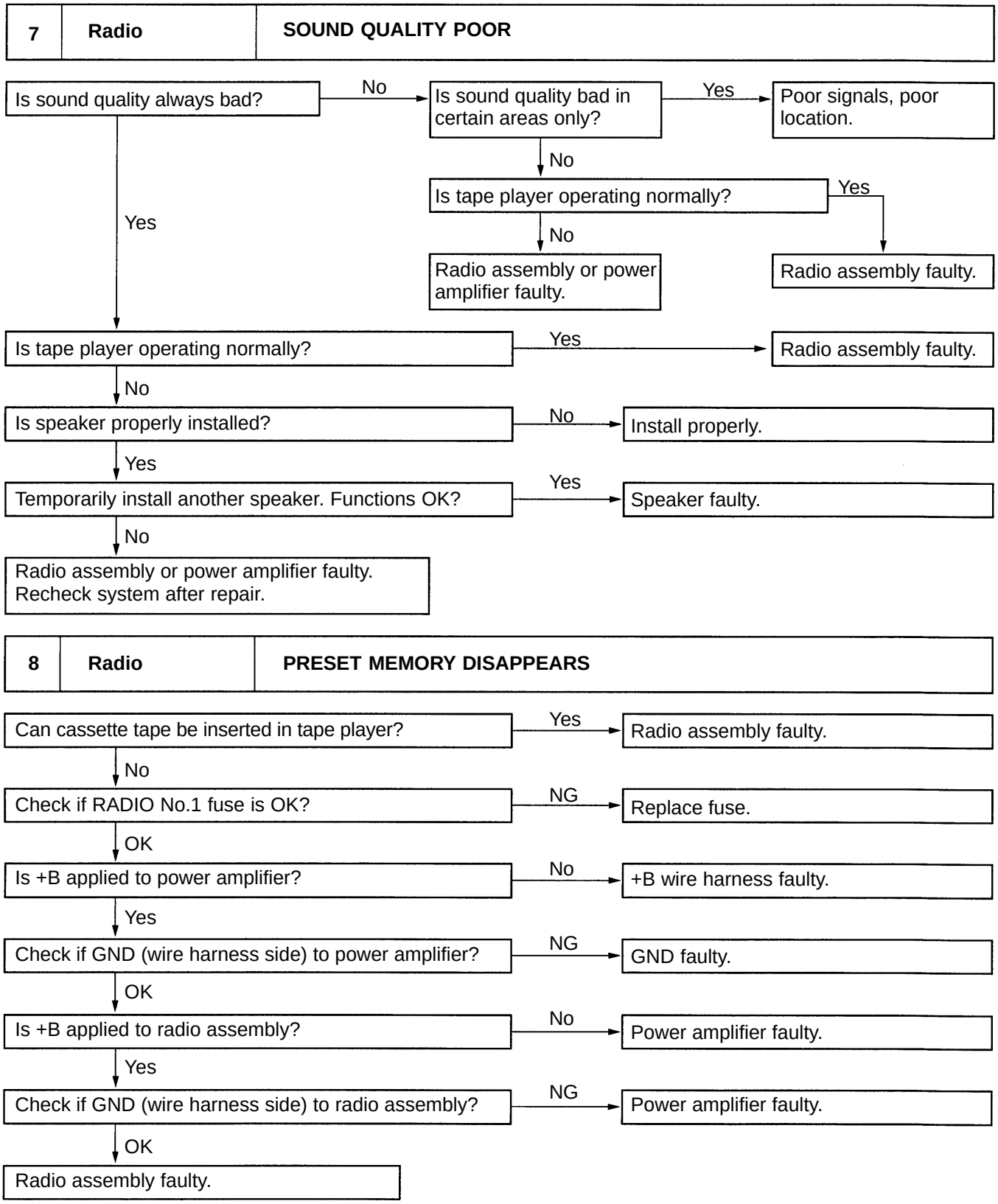
Radio assembly faulty. Recheck system after repair.

V08482

6	Radio	POOR RECEPTION

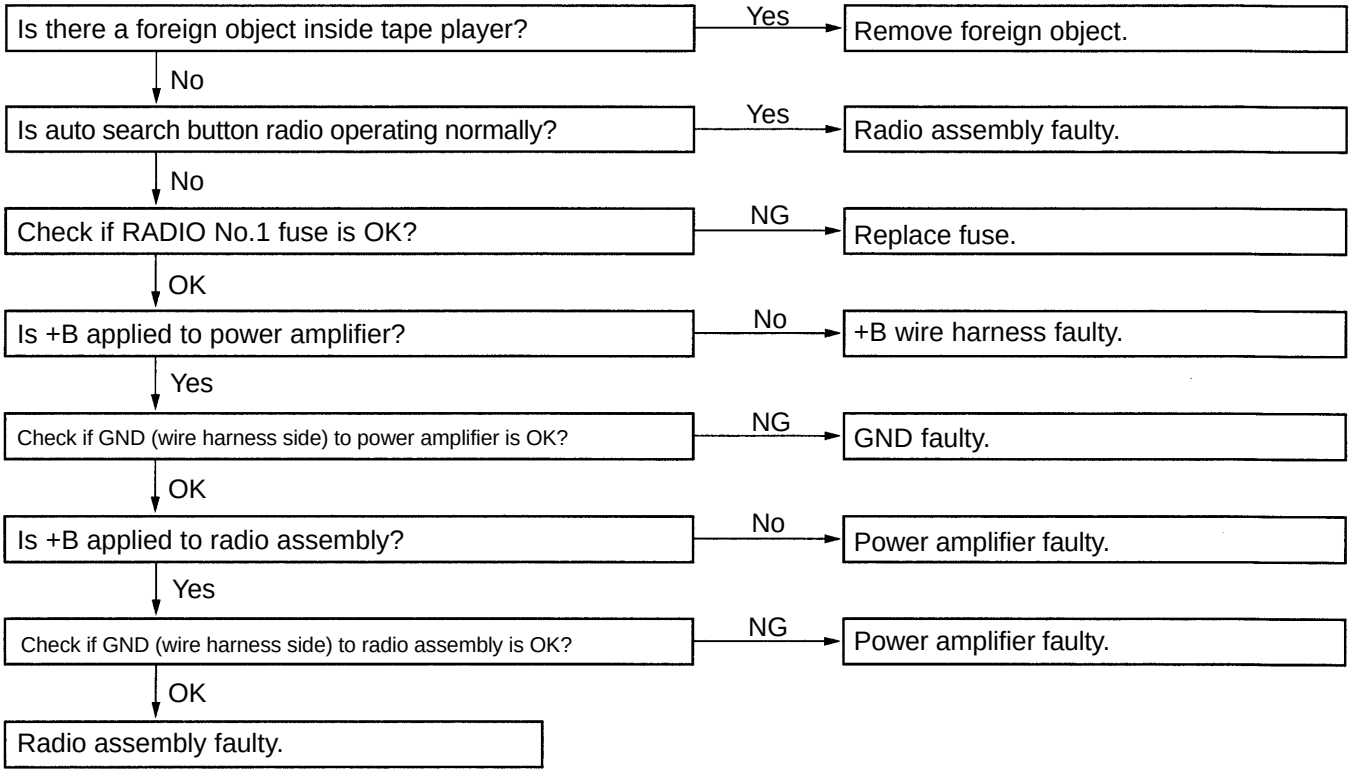


V08549

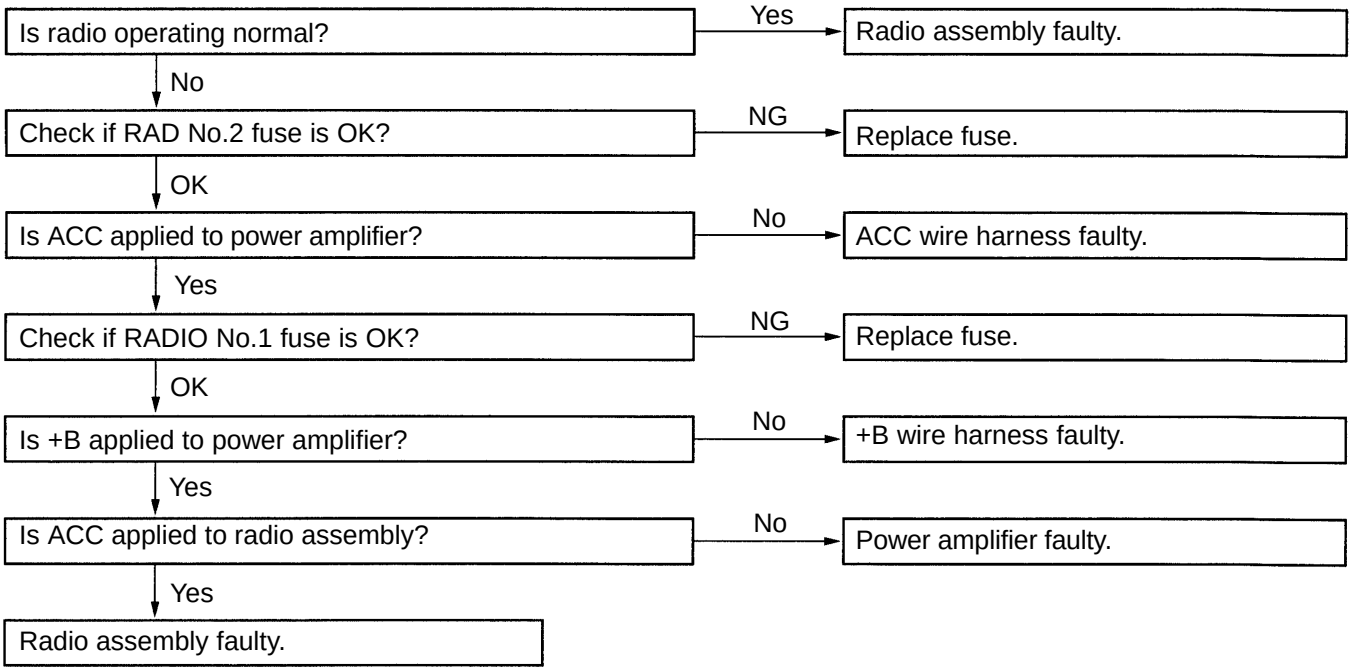

7
Radio
SOUND QUALITY POOR
Is sound quality always bad?
No
Is sound quality bad in certain areas only?
Yes
Poor signals, poor location.
No
Is tape player operating normally?
Yes
Radio assembly faulty.
No
Radio assembly or power amplifier faulty.
Yes
Is tape player operating normally?
Yes
Radio assembly faulty.
No
Is speaker properly installed?
No
Install properly.
Yes
Temporarily install another speaker. Functions OK?
Yes
Speaker faulty.
No
Radio assembly or power amplifier faulty.
Recheck system after repair.
8
Radio
PRESET MEMORY DISAPPEARS
Can cassette tape be inserted in tape player?
Yes
Radio assembly faulty.
No
Check if RADIO No.1 fuse is OK?
NG
Replace fuse.
OK
Is +B applied to power amplifier?
No
+B wire harness faulty.
Yes
Check if GND (wire harness side) to power amplifier?
NG
GND faulty.
OK
Is +B applied to radio assembly?
No
Power amplifier faulty.
Yes
Check if GND (wire harness side) to radio assembly?
NG
Power amplifier faulty.
OK
Radio assembly faulty.

V08483

9	Tape Player	CASSETTE TAPE CANNOT BE INSERTED



10	Tape Player	CASSETTE TAPE INSERTED, BUT NO POWER



V08484

11	Tape Player	POWER COMING IN, BUT TAPE PLAYER NOT OPERATING

Function OK if different cassette tape inserted?
- Yes → Cassette tape faulty.
- No ↓

Is radio operating normally?
- Yes → Radio assembly faulty.
- No ↓

Is there continuity in speaker wire harness?
- No → Speaker wire harness faulty.
- Yes ↓

Temporarily install another speaker. Function OK?
- Yes → Speaker faulty.
- No ↓

Hiss noise from speaker?
- No → Power amplifier faulty. Recheck system after repair.
- Yes ↓

Radio assembly faulty. Recheck system after repair.

12	Tape Player	EITHER SPEAKER DOES NOT WORK

Is radio operating normally?
- Yes → Radio assembly faulty.
- No ↓

Is hiss noise produced by non–functioning speaker.
- Yes → Radio assembly faulty. Recheck system after repair.
- No ↓

Is there continuity in speaker wire harness?
- No → Speaker wire harness faulty.
- Yes ↓

Temporarily install another speaker. Function OK?
- Yes → Speaker faulty.
- No ↓

Radio assembly or power amplifier faulty.

V08485

13	Tape Player	SOUND QUALITY POOR (VOLUME FAINT)

Function OK if different cassette tape inserted?
- Yes → Cassette tape faulty.
- No → Operates normally after cleaning the heads?
  - Yes → Head dirty.
  - No → Is radio operating normally?
    - Yes → Radio assembly faulty.
    - No → Is speaker properly installed?
      - No → Install properly.
      - Yes → Temporarily install another speaker. Function OK?
        - Yes → Speaker faulty.
        - No → Radio assembly faulty.

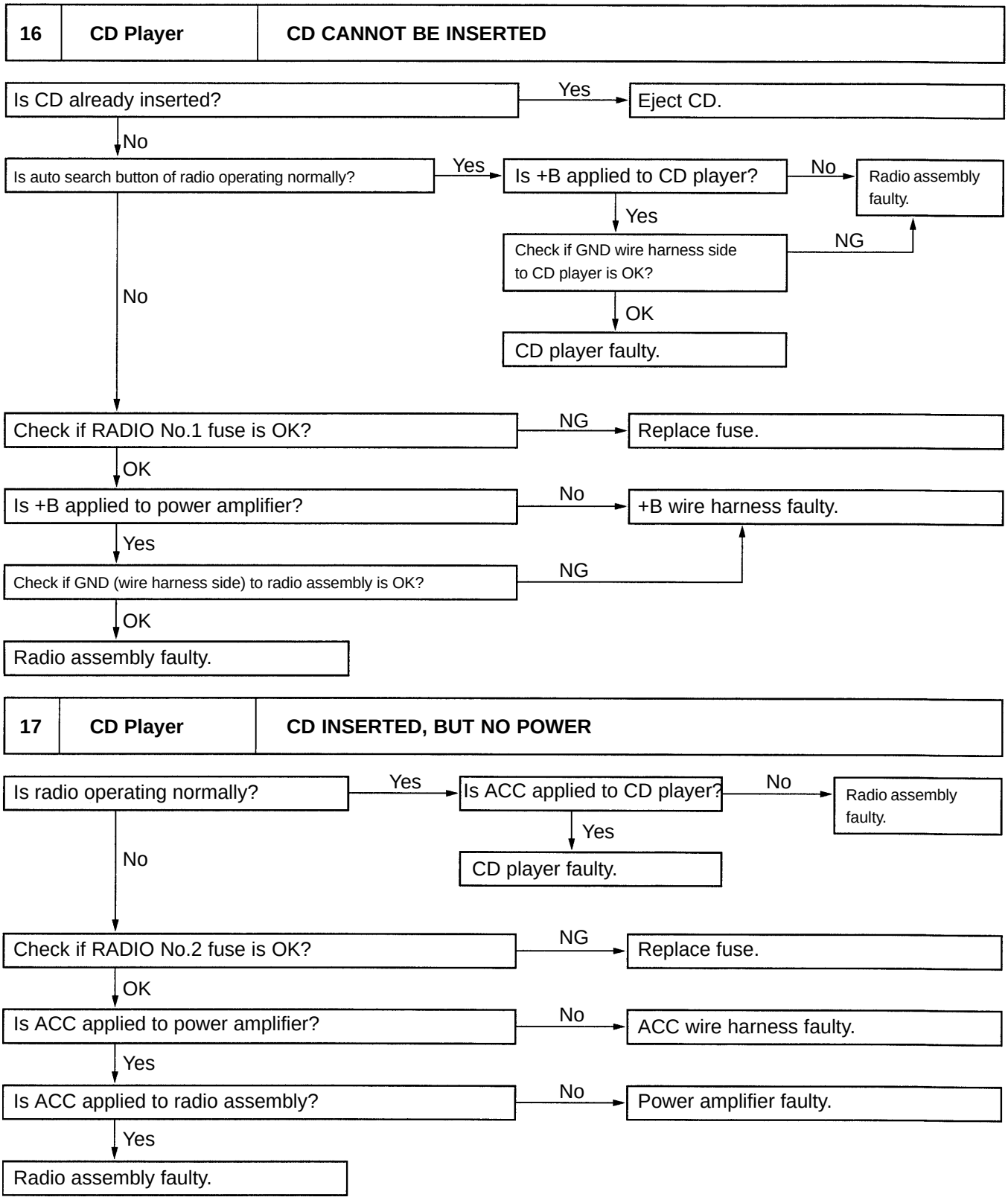
14	Tape Player	TAPE JAMMED MALFUNCTION WITH TAPE SPEED OR AUTO–REVERSE

Function OK if different tape (less than 120 mins.) is inserted?
- Yes → Cassette tape faulty.
- No → Is there a foreign object inside tape player?
  - Yes → Remove foreign object.
  - No → Operates normally after cleaning the heads?
    - Yes → Head dirty.
    - No → Radio assembly faulty.

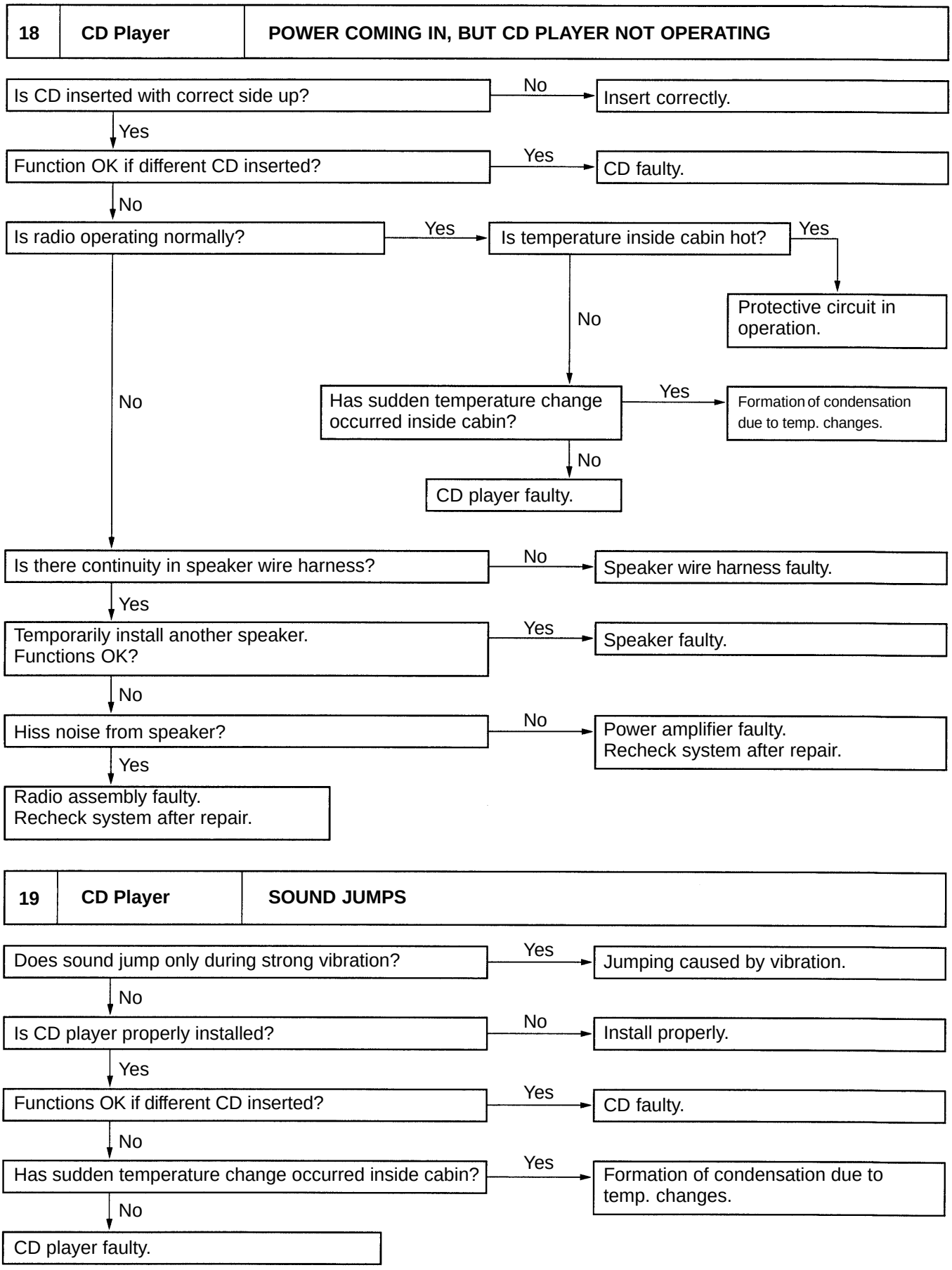
15	Tape Player	CASSETTE TAPE WILL NOT EJECTED

Is tape player operating normally?
- No → Cassette tape jammed.
- Yes → Is auto search button of radio operating normally?
  - Yes → Radio assembly faulty.
  - No → Check if RADIO No.1 fuse is OK?
    - NG → Replace fuse.
    - OK → Is –B applied to power amplifier?
      - No → +B wire harness faulty.
      - Yes → Is +B applied to radio assembly?
        - No → Power amplifier faulty.
        - Yes → Radio assembly faulty.

V08486

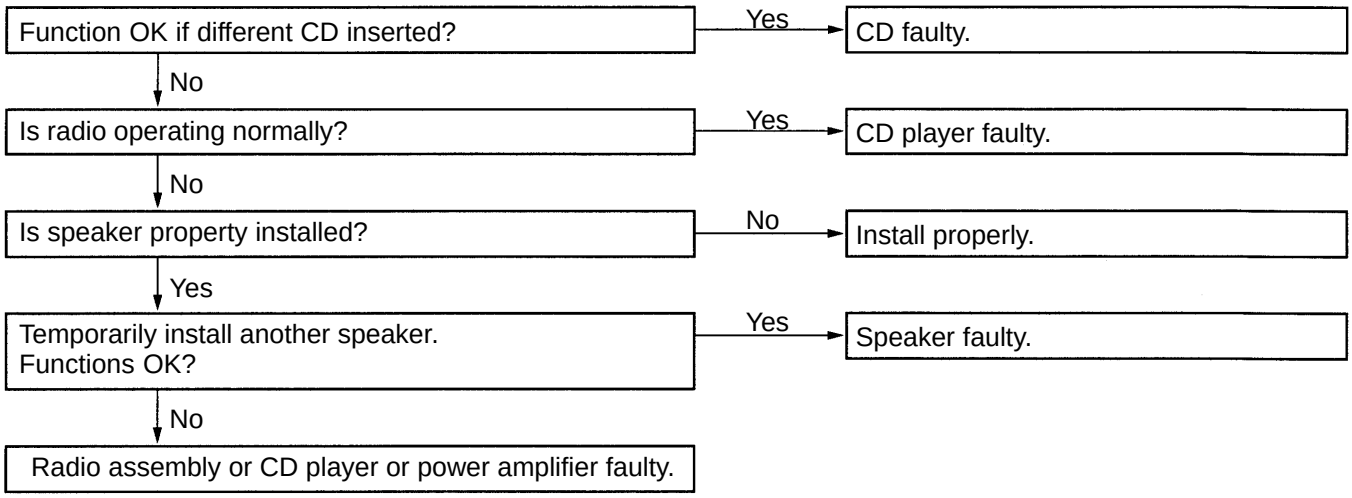

16
CD Player
CD CANNOT BE INSERTED
Is CD already inserted?
Yes
Eject CD.
No
Is auto search button of radio operating normally?
Yes
Is +B applied to CD player?
No
Radio assembly faulty.
Yes
Check if GND wire harness side to CD player is OK?
NG
OK
CD player faulty.
No
Check if RADIO No.1 fuse is OK?
NG
Replace fuse.
OK
Is +B applied to power amplifier?
No
+B wire harness faulty.
Yes
Check if GND (wire harness side) to radio assembly is OK?
NG
OK
Radio assembly faulty.
17
CD Player
CD INSERTED, BUT NO POWER
Is radio operating normally?
Yes
Is ACC applied to CD player?
No
Radio assembly faulty.
Yes
CD player faulty.
No
Check if RADIO No.2 fuse is OK?
NG
Replace fuse.
OK
Is ACC applied to power amplifier?
No
ACC wire harness faulty.
Yes
Is ACC applied to radio assembly?
No
Power amplifier faulty.
Yes
Radio assembly faulty.

V08487

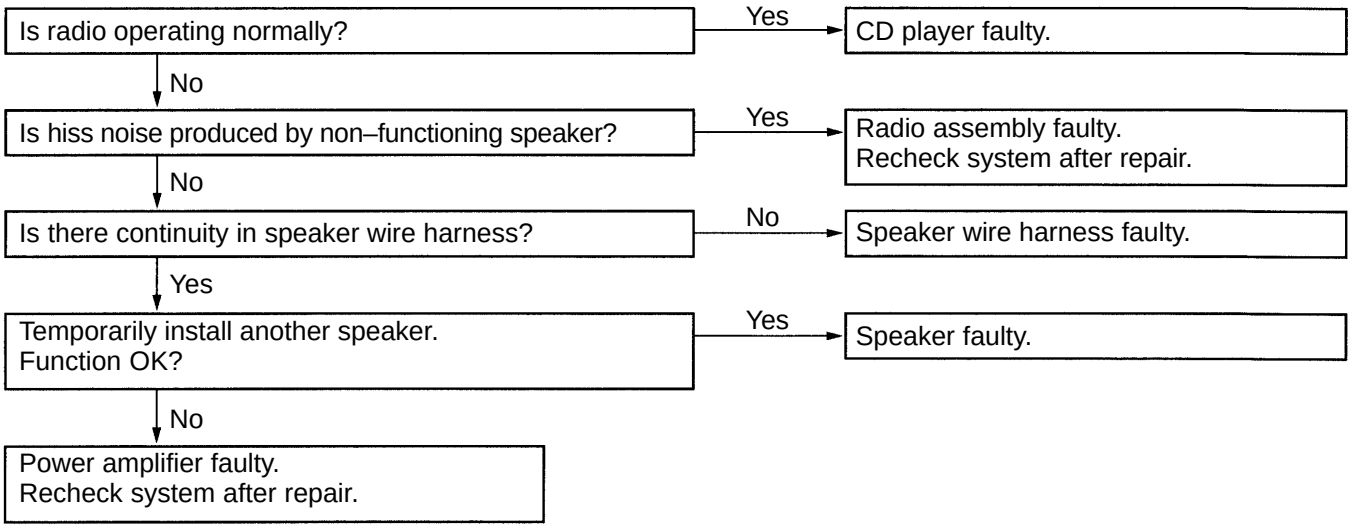

18
CD Player
POWER COMING IN, BUT CD PLAYER NOT OPERATING
Is CD inserted with correct side up?
No
Insert correctly.
Yes
Function OK if different CD inserted?
Yes
CD faulty.
No
Is radio operating normally?
Yes
Is temperature inside cabin hot?
Yes
Protective circuit in operation.
No
Has sudden temperature change occurred inside cabin?
Yes
Formation of condensation due to temp. changes.
No
CD player faulty.
No
Is there continuity in speaker wire harness?
No
Speaker wire harness faulty.
Yes
Temporarily install another speaker. Functions OK?
Yes
Speaker faulty.
No
Hiss noise from speaker?
No
Power amplifier faulty. Recheck system after repair.
Yes
Radio assembly faulty. Recheck system after repair.
19
CD Player
SOUND JUMPS
Does sound jump only during strong vibration?
Yes
Jumping caused by vibration.
No
Is CD player properly installed?
No
Install properly.
Yes
Functions OK if different CD inserted?
Yes
CD faulty.
No
Has sudden temperature change occurred inside cabin?
Yes
Formation of condensation due to temp. changes.
No
CD player faulty.

V08550

20	CD Player	SOUND QUALITY POOR (VOLUME FAINT)

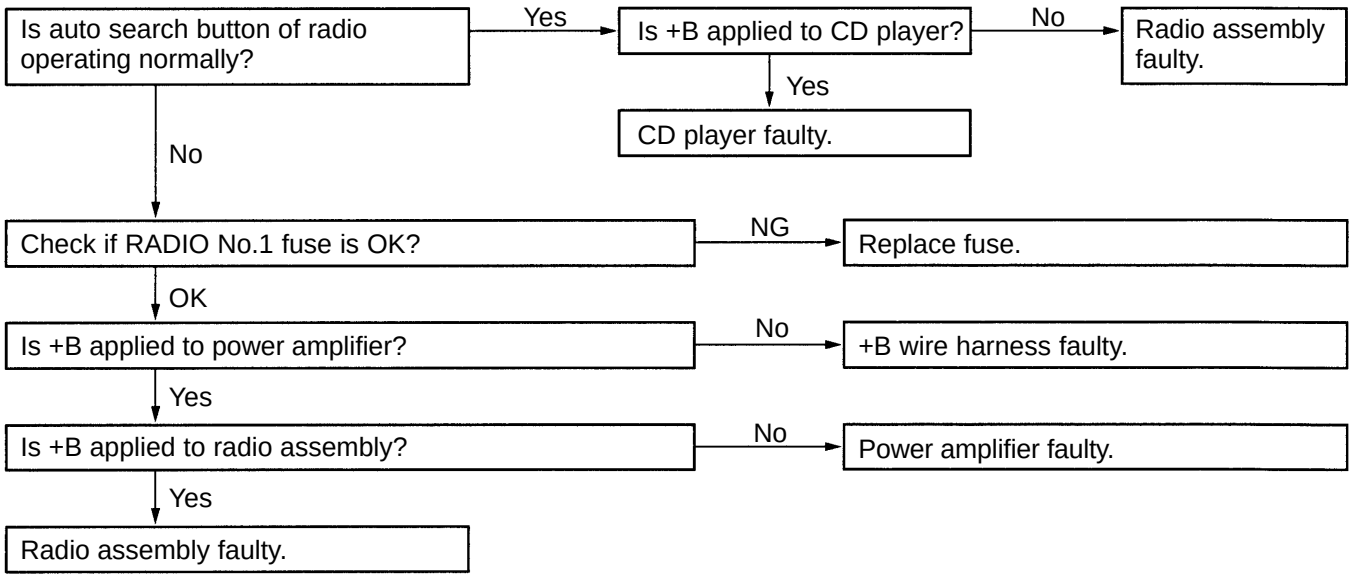


21	CD Player	EITHER SPEAKER DOES NOT WORK



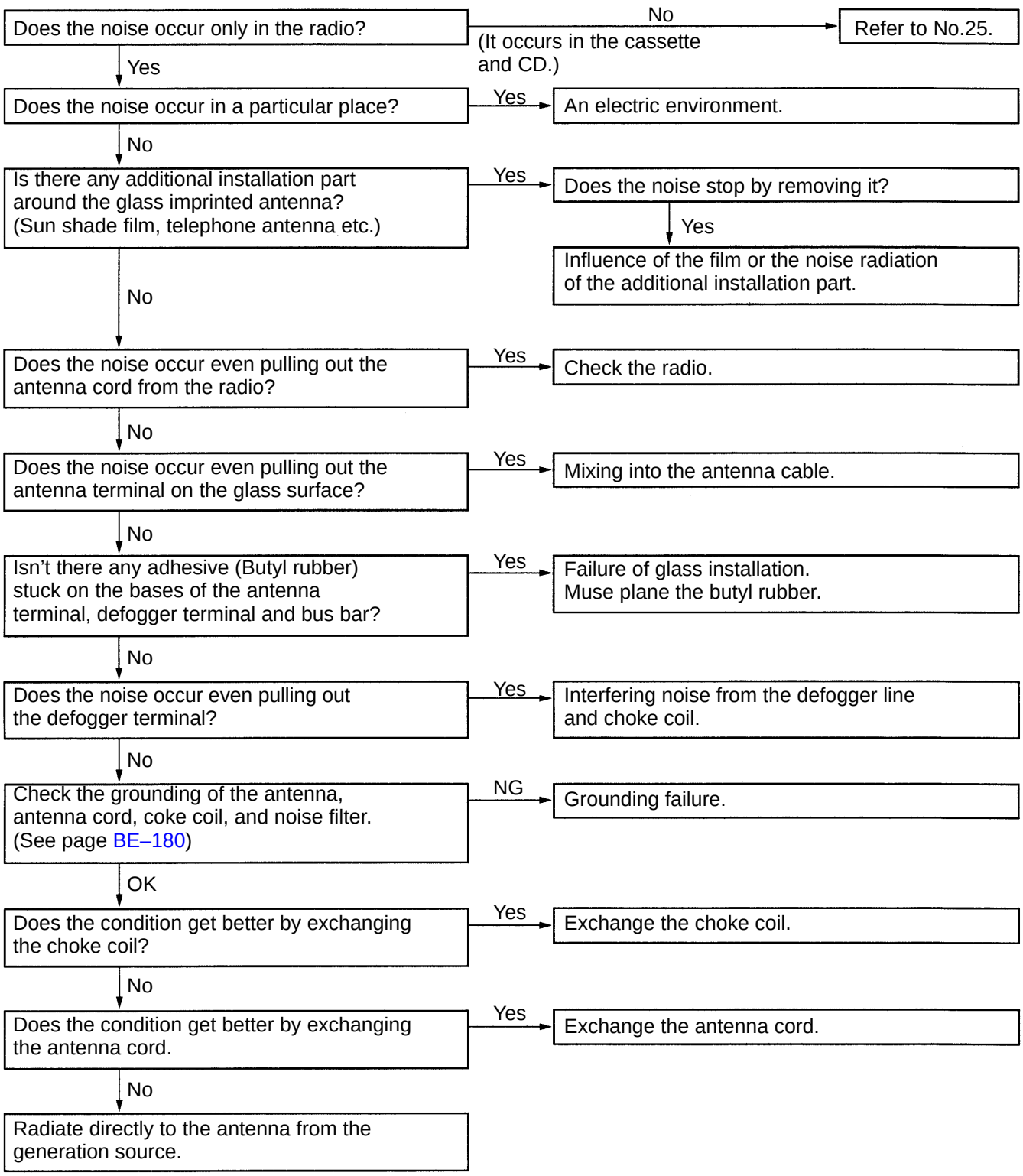
V08551

22	CD Player	CD WILL NOT BE EJECTED



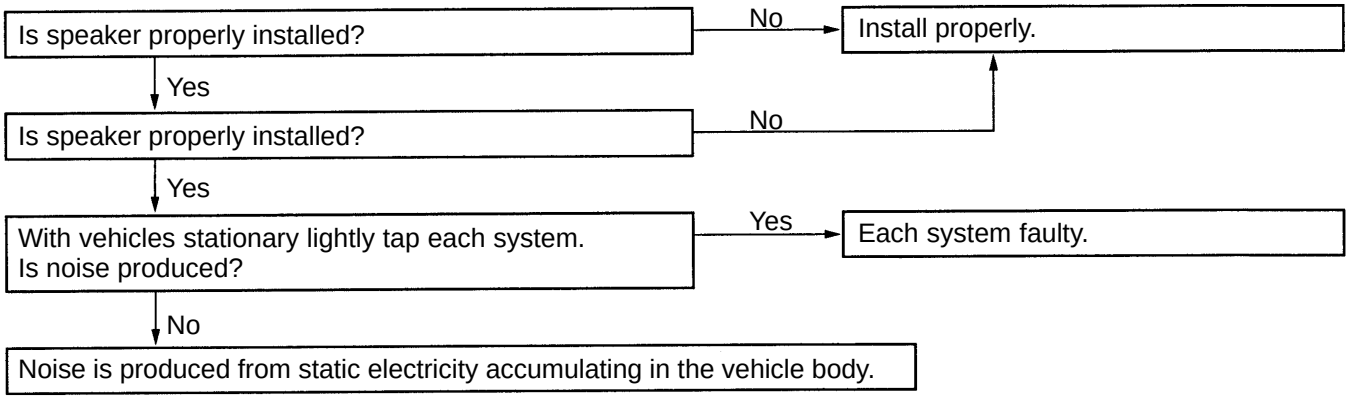
V08488

23	Noise	NOISE OCCURS



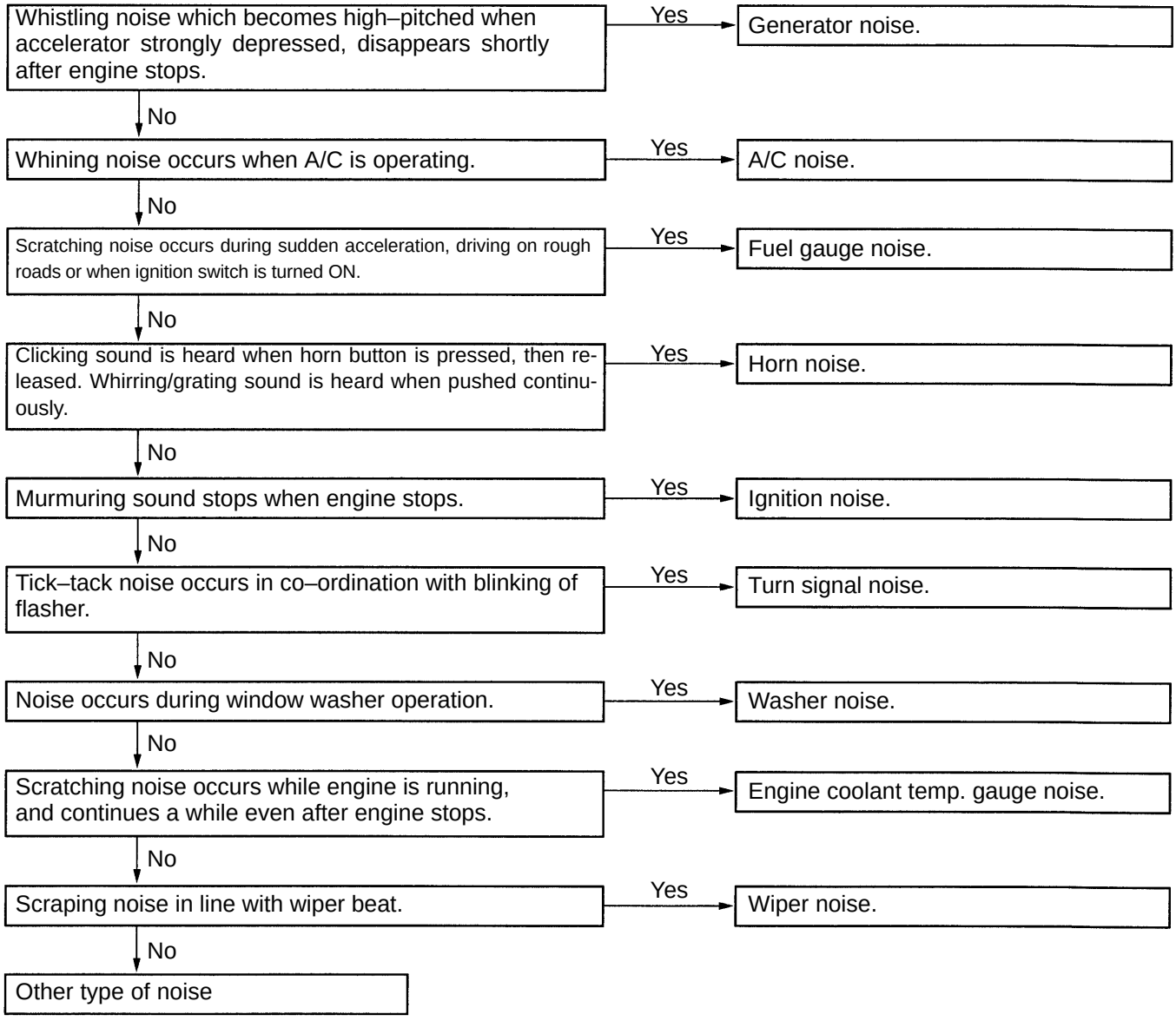
V08552

24	Noise	NOISE PRODUCED BY VIBRATION OR SHOCK WHILE DRIVING



V08553

25	Noise	NOISE PRODUCED WHEN ENGINE STARTS



V08554

BE218–02

TROUBLESHOOTING

1. DIAGNOSIS FUNCTION

HINT:

Error codes over tuner and connected equipment are displayed on the screen of tuner.

(a) Diagnosis start–up

For shifting to diagnosis mode, push ”CD” switch 3 times with pressing ”1” and ”6” of PRESET button at the same time while the audio power is OFF and ACC is ON.

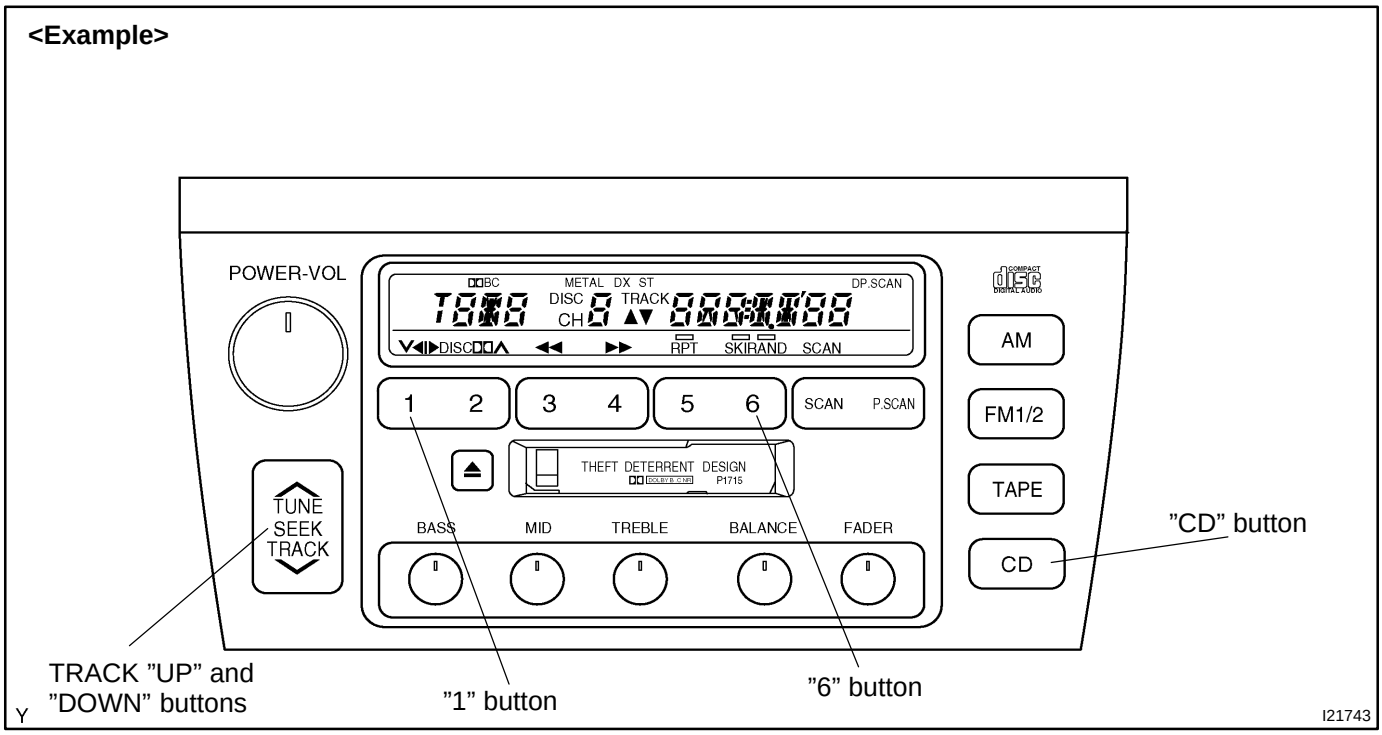
To exit from diagnosis mode, press ”CD” switch for 2 seconds or turn the ignition key OFF.

(When ”1–190” is displayed, the mode is transferred to LAN check mode.)

(b) LAN check

When starting up the diagnosis mode, the mode turns to LAN check mode, the screen displays the code numbers (physical address) of tuner and connected equipment. Smaller codes are displayed in order, displayed code numbers are switched by operating TRACK ”UP” or ”DOWN” switch. In LAN check mode, by pressing ”5” of PRESET button for more than 2 secs., diagnosis memory of each equipment can be deleted, when deletion is completed, the mode returns to LAN check mode.

<Example>



Code No. (physical address) List

Code No. (physical address)	Equipment name
190	Radio receiver assembly (Audio head unit)
240	CD changer (in Luggage room)
360	CD changer(in center console and glove compartment box)
440	Power amplifier

(c) System check

(1) When pressing ”1” of PRESET button in LAN check mode, the mode turns to the system check mode, the system performs self diagnosis of connected equipment and displays the results.(”SYS” (showing the system is under detection) is displayed.)

HINT:

It sometimes takes approx. 40 secs. till the system inspection is completed.

(2) Perform the operation shown in the chart, then read the result of the inspection.

HINT:

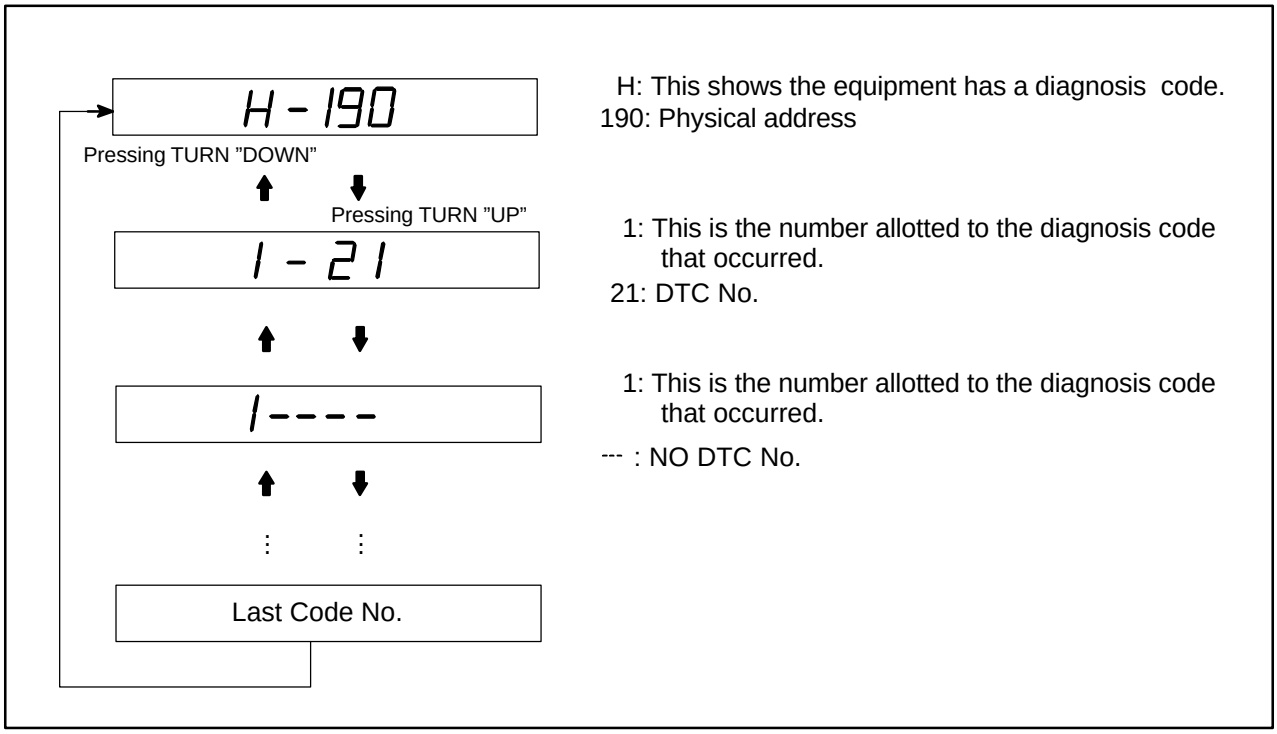
The chart below is an example of when diagnosis code ”21” appears on the physical address (190) equipment. (ROM error occurs on the radio receiver.)

The smaller code numbers (physical address) are displayed in order (code No., diagnosis code, support code of diagnosis code (object equipment)).

When no error is detected in the system, ”00” is displayed.

When an error code is detected, up to 6 codes per one system are displayed. Pressing TRACK ”UP” or ”DOWN” switches the display.

In the system check mode, when pressing ”6” of PRESET button the mode returns to LAN check mode.



(d) Diagnosis memory

(1) In LAN check mode, when pressing ”2” of PRESET button the mode turns to the diagnosis memory mode. (”CODE” is displayed.)

The results of self diagnosis performed over tuner and connected equipment are memorized and displayed.

(2) Perform the operation shown in the following illustration, then read the result of the inspection.

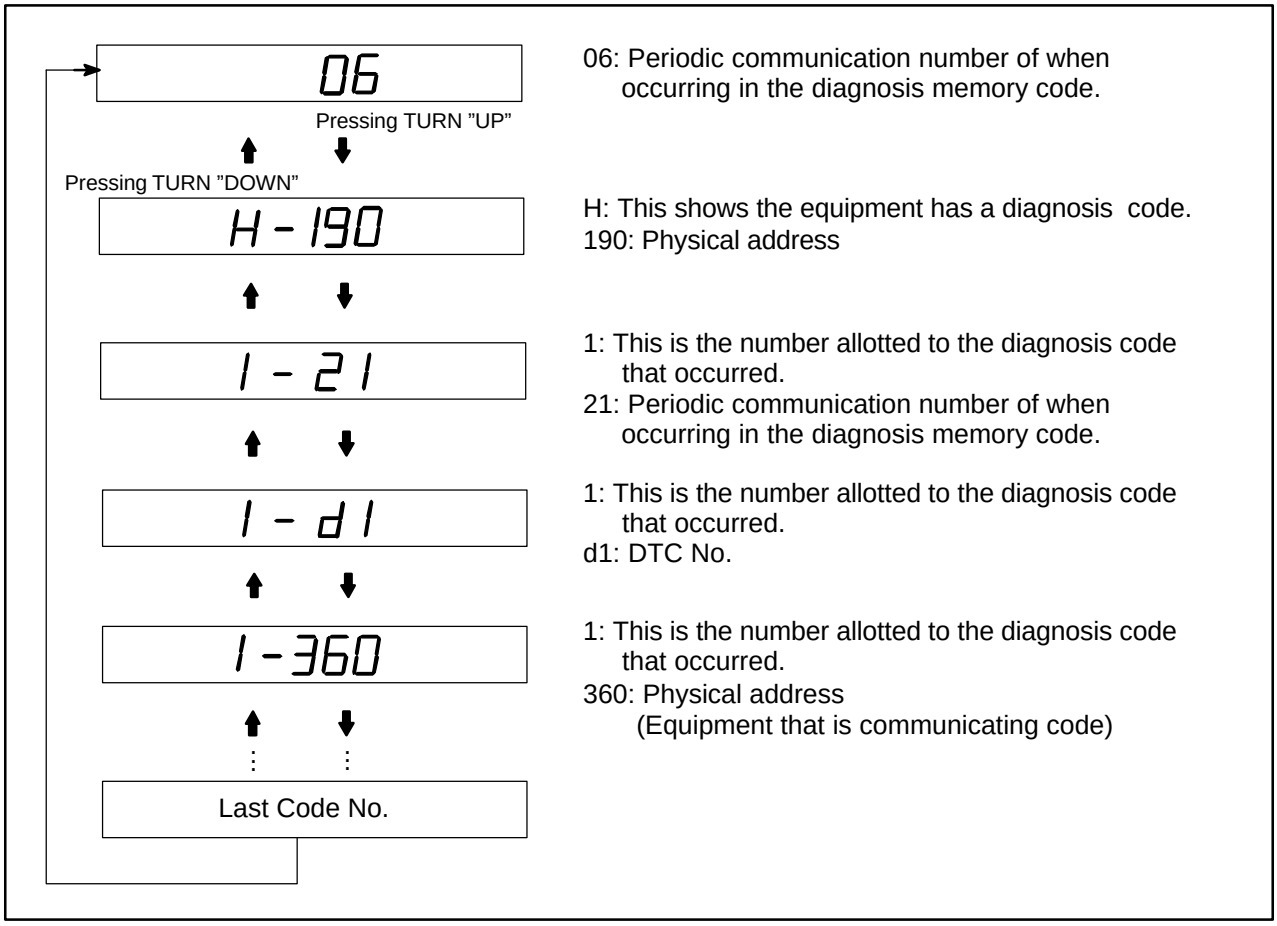
HINT:

The smaller code numbers (physical address) are displayed in order (code No. , periodic communication number when error occurs, diagnosis code, and support code of diagnosis code (object equipment)).

When no error is detected in the system, ”00” is displayed. When an error code is detected, up to 6 codes per one system are displayed. Pressing TRACK ”UP” or ”DOWN” switches the display. Each diagnosis code is same as code in the system check mode.

When pressing ”6” of PRESET button, the mode returns to LAN check mode.

The following illustration below is an example of when diagnosis code ”D1” appears on the code (190) and (240 or 360) equipment. (Communication error occurs between the radio receiver and CD changer.)



(e) Diagnosis memory clear

(1) After error is fixed, start up the diagnosis mode.

(2) Continue pressing function switch ”5” for 2 secs. (CLr is displayed.)

(3) Press the function switch ”2” and transfer to the diagnosis memory mode and check that the normal code (00) is output.

2. DIAGNOSIS CODE LIST

If there is ”O” in the column of system check, an error can be detected when the mode is switched to the system check mode.

If there is ”O” in the column of diagnosis mode each unit is monitoring whether or not it has failure. In case of detecting failure, it memorizes DTC.

Parts Name	DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts	System Check	Diagnosis memory
Head Unit (190)	21	ROM error	There is an error on internal ROM.	Radio receiver check.	○	X
	22	RAM error	There is an error on internal RAM.		○	X
	41	AM tuner error	There is an error in AM tuner.		X	○
	42	FM tuner error	There is an error in FM tuner.		X	○
	50	Cassette error	There is an error in cassette deck.		X	○
	51	Cassette eject error	Cassette can not be ejected from Head Unit.		X	○
	D1	Transmitter error	Communication with the equipment that is communicating has failed successively.	Radio receiver check. Wire harness and connecter check.	○	○
	D2	Periodic communication no response	Error in periodic communication.	● Wire harness and connector	X	○
	D4	Periodic communication error	Connection confirmation has not come from the equipment that is communicating	● Radio receiver check. ● Wire harness check.	X	○
	FF	Diagnosis no response	Result of diagnosis is not issued from start to finish.	Radio receiver check.	○	X
CD (240) (360)	21	ROM error	There is an error on internal ROM.	CD changer check.	○	X
	22	RAM error	There is an error on internal RAM.		○	X
	60	CD error	Error codes other than 61–69 are detected.		X	○
	61	EJECT error	CD is not ejected.	CD changer check. Magazine check.	X	○
	62	DISC inside out/flaw	CD is inserted inside out or it has a flaw.	CD check.	X	○
	63	Pickup temperature detection	High temperature of CD changer is detected.	CD changer check.	X	○
	64	Excessive current detection	Excessive current to CD changer is detected.		X	○
	67	Tray insertion/ discharging error	An error occurs in insertion and discharging operation of CD changer tray.	CD changer check. Magazine check.	X	○

Parts Name	DTC	Diagnosis Item	Diagnosis Content	Countermeasure and Inspected Parts	System Check	Diagnosis Memory
CD (240) (360)	68	Elevator error	An error occurs in elevator of CD changer elevator.	CD changer check.	X	○
	69	Clamp error	An error occurs in CD changer clamp.		X	○
	D1	Transmitter error	Communication with the equipment that is communicating has failed successively.		○	○
	D4	Periodic communication error	Connection confirmation has not come from the equipment that is communicating	● Radio receiver check. ● Wire harness check.	X	○
	FF	Diagnosis no response	Result of diagnosis is not issued from start to finish.	CD changer check.	○	X
AMP (440)	D1	Transmitter error	Communication with the equipment that is communicating has failed successively.	Stereo component amplifier check.	○	○
	D4	Periodic communication error	Connection confirmation has not come from the equipment that is communicating	● Radio receiver check. ● Wire harness check.	X	○
	FF	Diagnosis no response	Result of diagnosis is not issued from start to finish.	Stereo component amplifier check.	○	X

3. PROBLEM SYMPTOM TABLE

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 a simple troubleshooting which should be carried out on the vehicle during system operation and was prepared on the assumption of system component troubles (except for the wires and connectors, etc.).

Always inspect the trouble taking the following items into consideration.

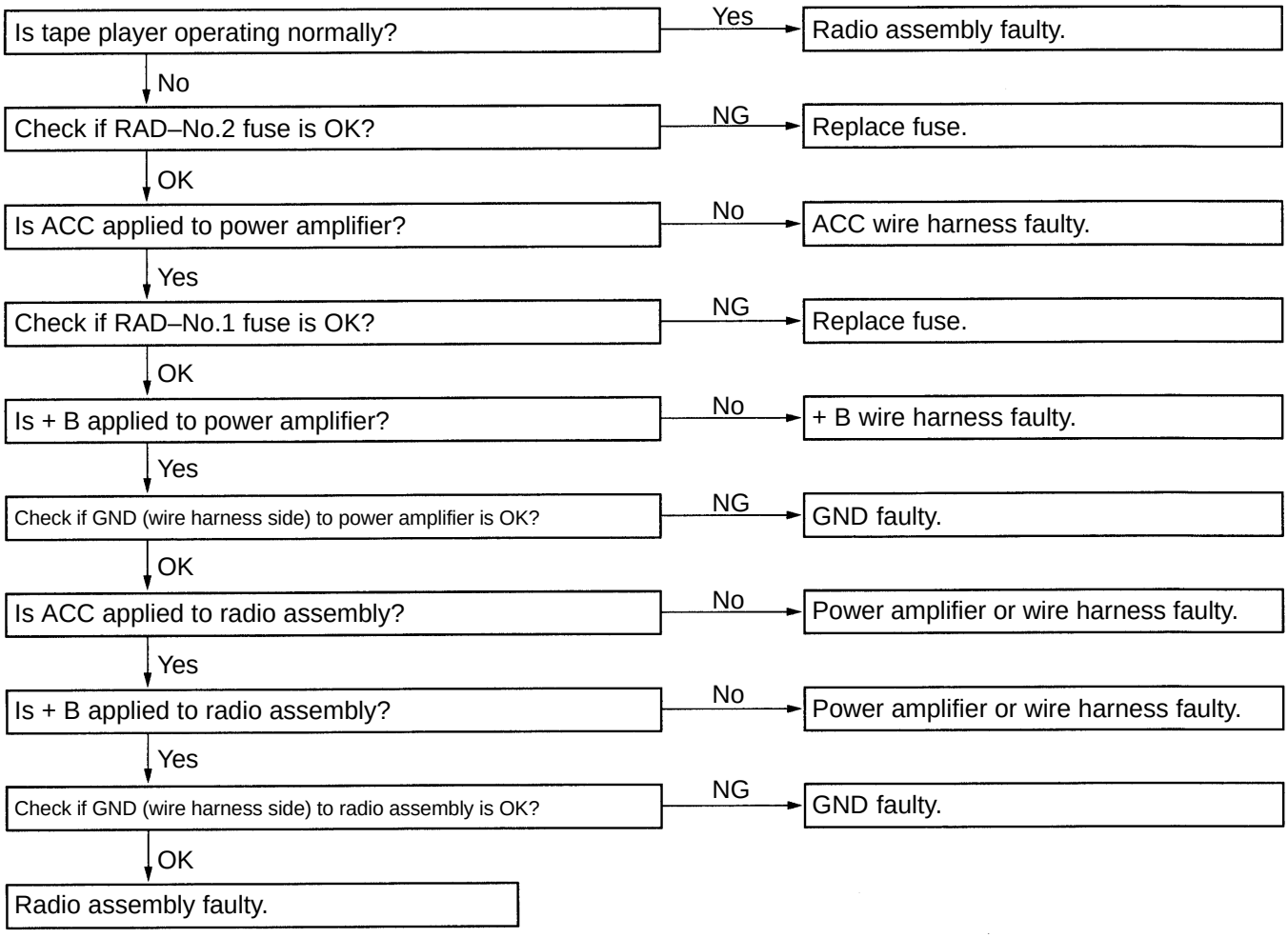
Open or short circuit of the wire harness

Connector or terminal connection fault

	Problem	No.
Radio	Radio not operating when power switch turned to 'ON'.	1
	Display indicates when power switch turned to 'ON', but no sound (including 'noise') is produced.	2
	Noise present, but AM – FM not operating.	3
	Any speaker does not work.	4
	Either AM or FM does not work.	5
	Few preset turning bands.	5
	Reception poor.	6
	Sound quality poor.	7
	Preset memory disappears.	8
Tape Player	Cassette tape cannot be inserted.	9
	Cassette tape inserts, but no power.	10
	Power coming in, but tape player not operating.	11
	Any speaker does not work.	12
	Sound quality poor.	13
	Tape jammed, malfunction with tape speed or auto–reverse.	14
	Cassette tape will not eject.	15
CD Player	CD cannot be inserted.	16
	CD inserted, but no power.	17
	Power coming in, but CD player not operating.	18
	Sound jumps.	19
	Sound quality poor (Volume faint).	20
	Any speaker does not work.	21
	CD will not be ejected.	22
Noise	Noise occurs	23
	Noise produced by vibration or shock while driving.	24
	Noise produced when engine starts.	25

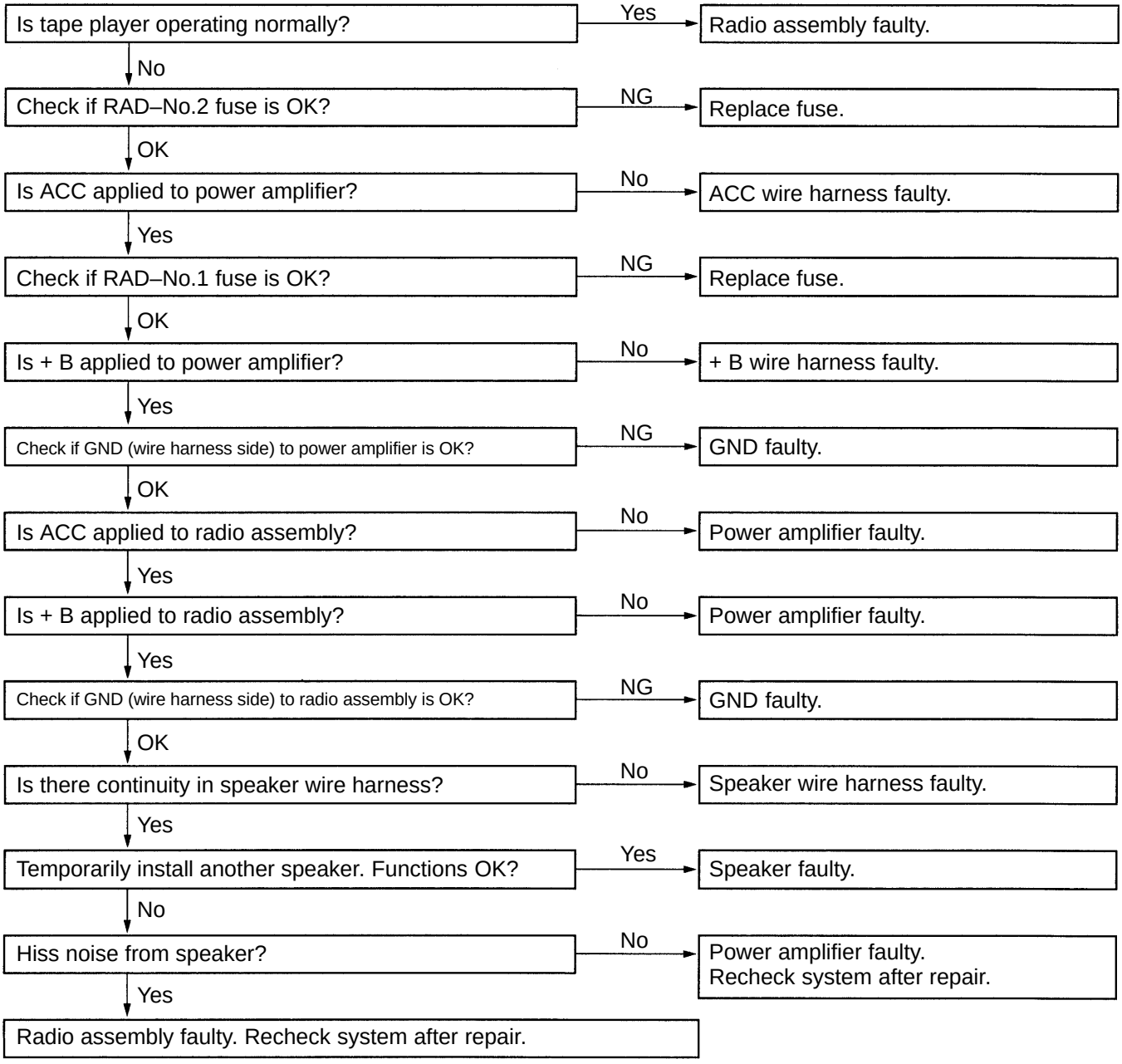
The term "AM" includes LW, MW and SW, and the term "FW" includes UKW.

1	Radio	RADIO NOT OPERATING WHEN POWER SWITCH TURNED TO "ON"



V08480

2	Radio	DISPLAY INDICATES WHEN POWER SWITCH TURNED TO ”ON”, BUT NO SOUND (INCLUDING ”NOISE”) IS PRODUCED



V08481

3	Radio	NOISE PRESENT, BUT AM–FM NOT OPERATING

Go to No.25

If radio side faulty. → Radio faulty.

4	Radio	ANY SPEAKER DOSE NOT WORK

Is tape player operating normally? Yes → Radio assembly faulty.

No ↓

Is hiss noise produced by non–functioning speaker? Yes → Radio assembly faulty. Recheck system after repair.

No ↓

Is there continuity in speaker wire harness? No → Speaker wire harness faulty.

Yes ↓

Temporarily install another speaker? Functions OK? Yes → Speaker faulty.

No ↓

Power amplifier faulty. Recheck system after repair.

5	Radio	EITHER AM OR FM DOES NOR WORK FEW PRESET TUNING BANDS

Problem with radio wave signals or location? Yes → Poor signals, poor location.

No ↓

Are both AM and FM defective? Yes → Radio assembly faulty.

No ↓

Is power for the antenna being output from the radio assembly? No → Radio assembly faulty.

Yes ↓

Go to No. 23

Is tape player operating normally? Yes → Radio assembly faulty.

No ↓

Temporarily install another speaker. Functions OK? Yes → Speaker faulty.

No ↓

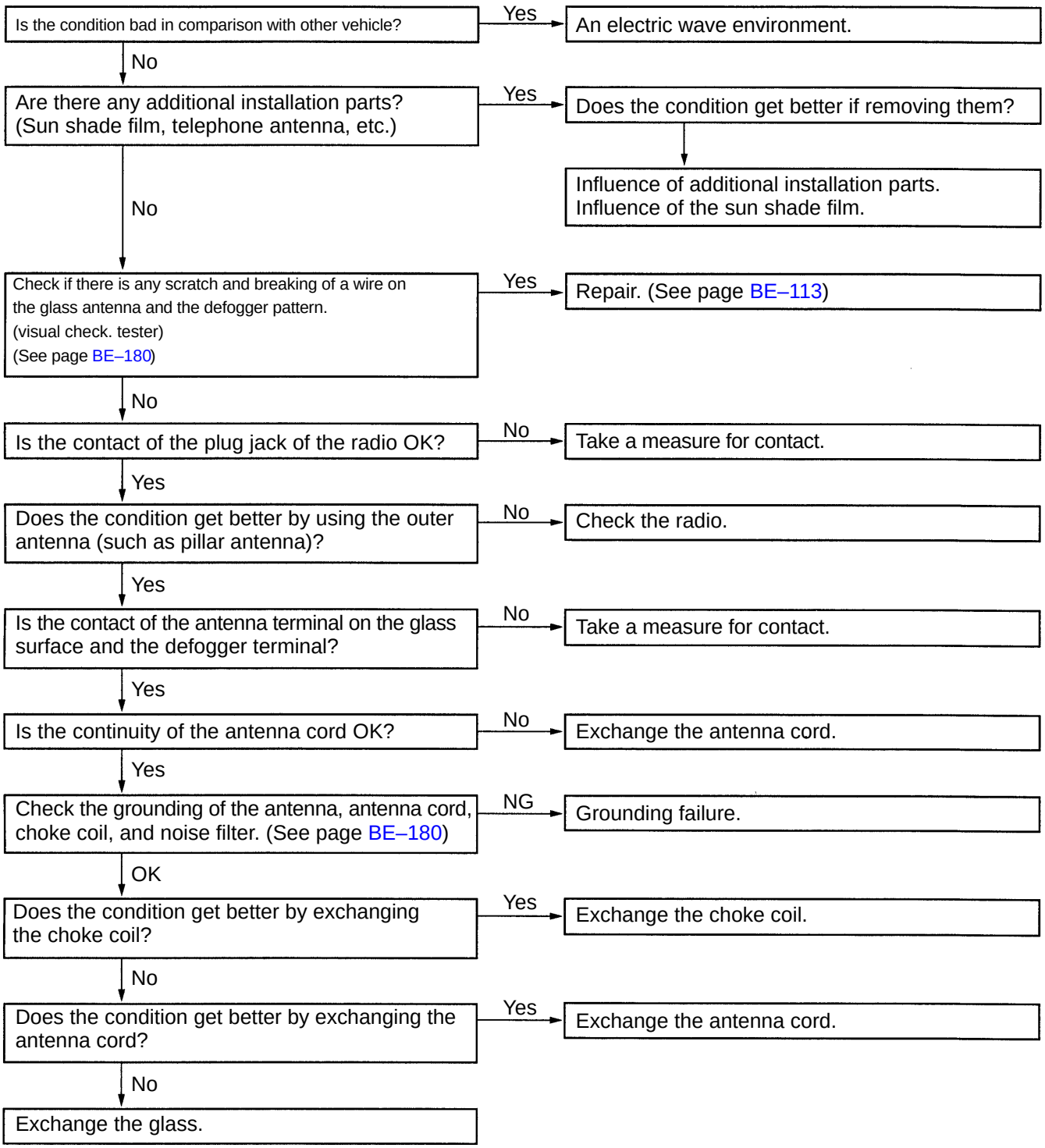
Hiss noise from speaker? No → Power amplifier faulty. Recheck system after repair.

Yes ↓

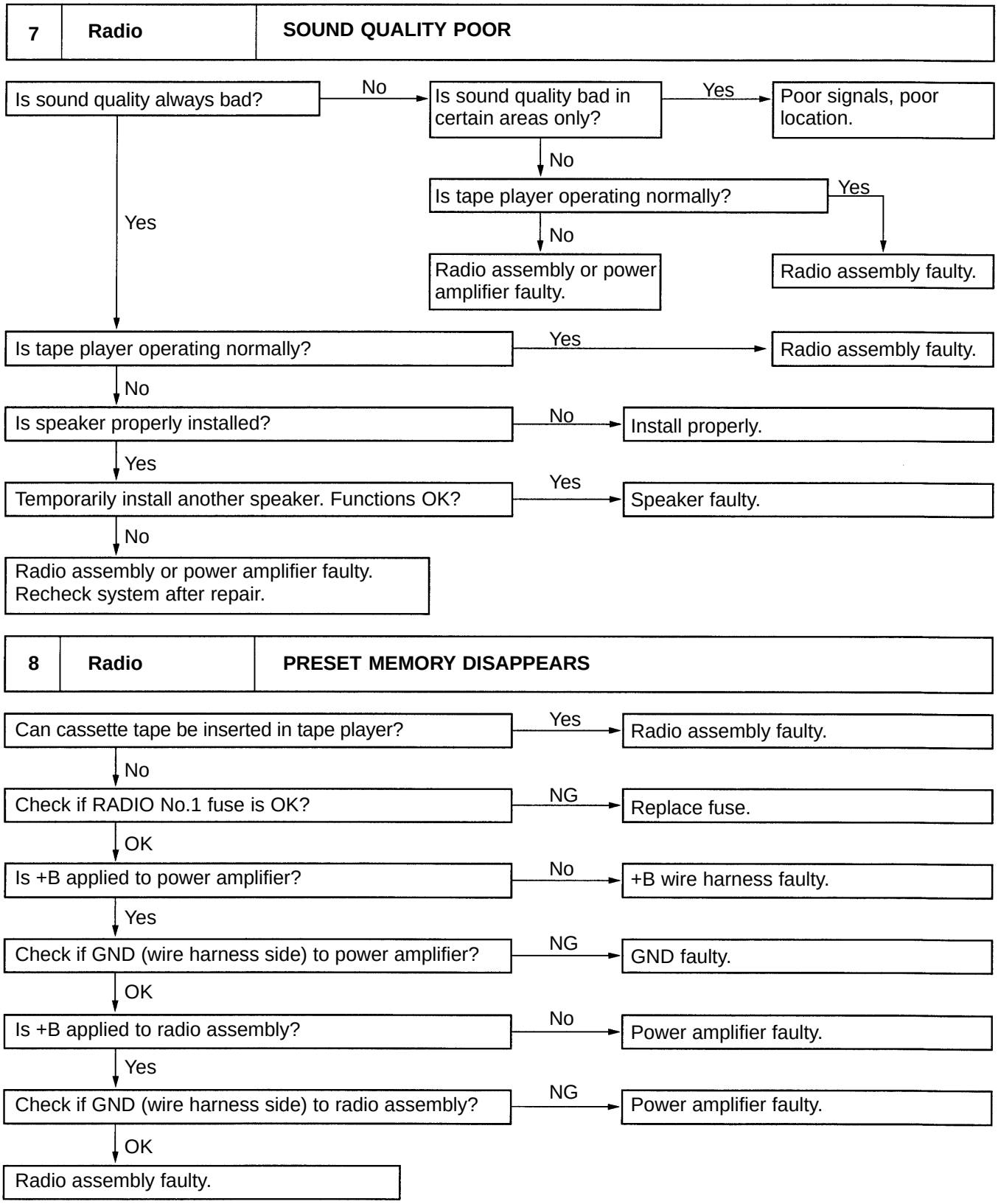
Radio assembly faulty. Recheck system after repair.

V08482

6	Radio	POOR RECEPTION

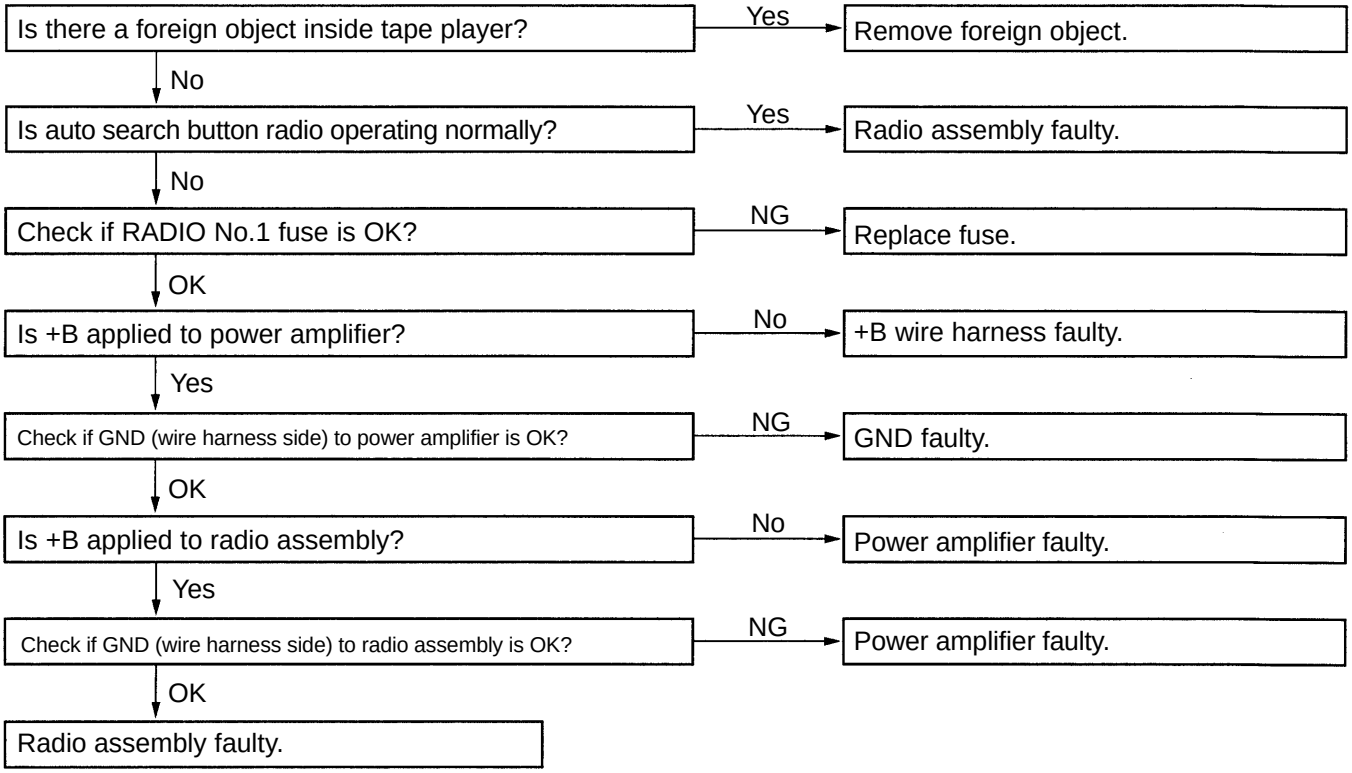


V08549

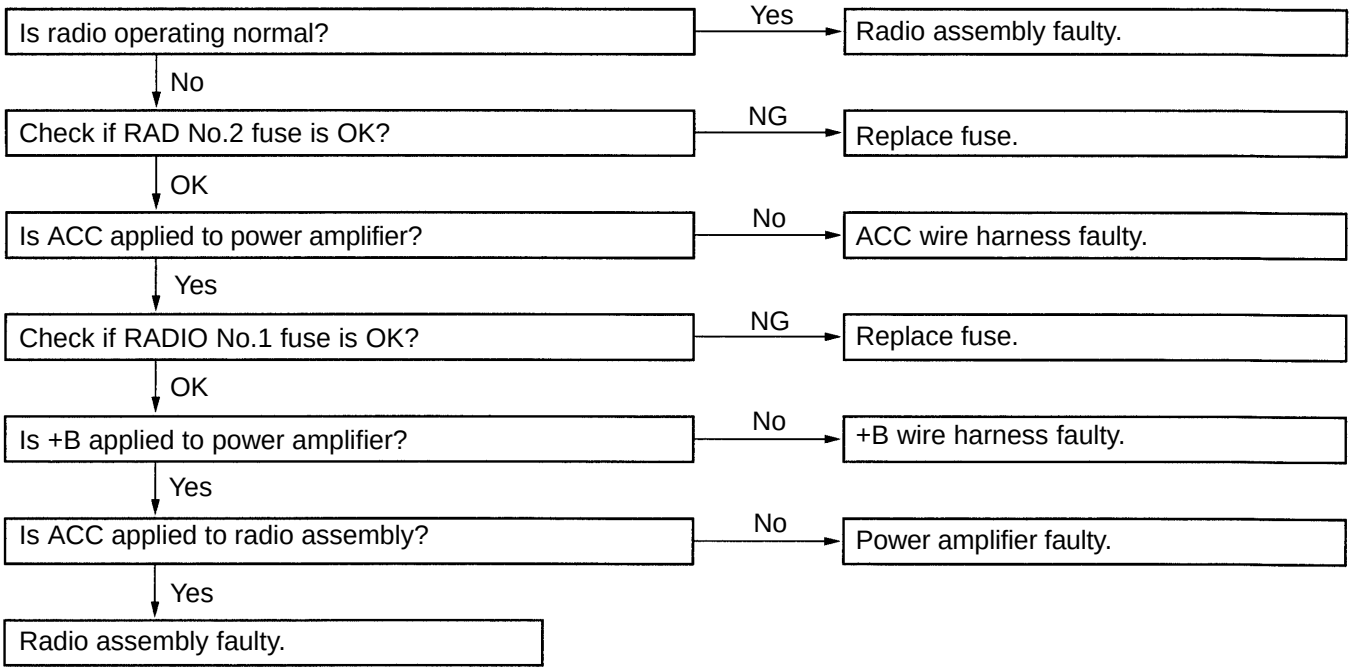

7
Radio
SOUND QUALITY POOR
Is sound quality always bad?
No
Is sound quality bad in certain areas only?
Yes
Poor signals, poor location.
No
Is tape player operating normally?
Yes
Radio assembly faulty.
No
Radio assembly or power amplifier faulty.
Yes
Is tape player operating normally?
Yes
Radio assembly faulty.
No
Is speaker properly installed?
No
Install properly.
Yes
Temporarily install another speaker. Functions OK?
Yes
Speaker faulty.
No
Radio assembly or power amplifier faulty.
Recheck system after repair.
8
Radio
PRESET MEMORY DISAPPEARS
Can cassette tape be inserted in tape player?
Yes
Radio assembly faulty.
No
Check if RADIO No.1 fuse is OK?
NG
Replace fuse.
OK
Is +B applied to power amplifier?
No
+B wire harness faulty.
Yes
Check if GND (wire harness side) to power amplifier?
NG
GND faulty.
OK
Is +B applied to radio assembly?
No
Power amplifier faulty.
Yes
Check if GND (wire harness side) to radio assembly?
NG
Power amplifier faulty.
OK
Radio assembly faulty.

V08483

9	Tape Player	CASSETTE TAPE CANNOT BE INSERTED



10	Tape Player	CASSETTE TAPE INSERTED, BUT NO POWER



V08484

11	Tape Player	POWER COMING IN, BUT TAPE PLAYER NOT OPERATING

Function OK if different cassette tape inserted?
- Yes → Cassette tape faulty.
- No ↓

Is radio operating normally?
- Yes → Radio assembly faulty.
- No ↓

Is there continuity in speaker wire harness?
- No → Speaker wire harness faulty.
- Yes ↓

Temporarily install another speaker. Function OK?
- Yes → Speaker faulty.
- No ↓

Hiss noise from speaker?
- No → Power amplifier faulty. Recheck system after repair.
- Yes ↓

Radio assembly faulty. Recheck system after repair.

12	Tape Player	EITHER SPEAKER DOES NOT WORK

Is radio operating normally?
- Yes → Radio assembly faulty.
- No ↓

Is hiss noise produced by non–functioning speaker.
- Yes → Radio assembly faulty. Recheck system after repair.
- No ↓

Is there continuity in speaker wire harness?
- No → Speaker wire harness faulty.
- Yes ↓

Temporarily install another speaker. Function OK?
- Yes → Speaker faulty.
- No ↓

Radio assembly or power amplifier faulty.

V08485

13	Tape Player	SOUND QUALITY POOR (VOLUME FAINT)

Function OK if different cassette tape inserted?
- Yes → Cassette tape faulty.
- No → Operates normally after cleaning the heads?
  - Yes → Head dirty.
  - No → Is radio operating normally?
    - Yes → Radio assembly faulty.
    - No → Is speaker properly installed?
      - No → Install properly.
      - Yes → Temporarily install another speaker. Function OK?
        - Yes → Speaker faulty.
        - No → Radio assembly faulty.

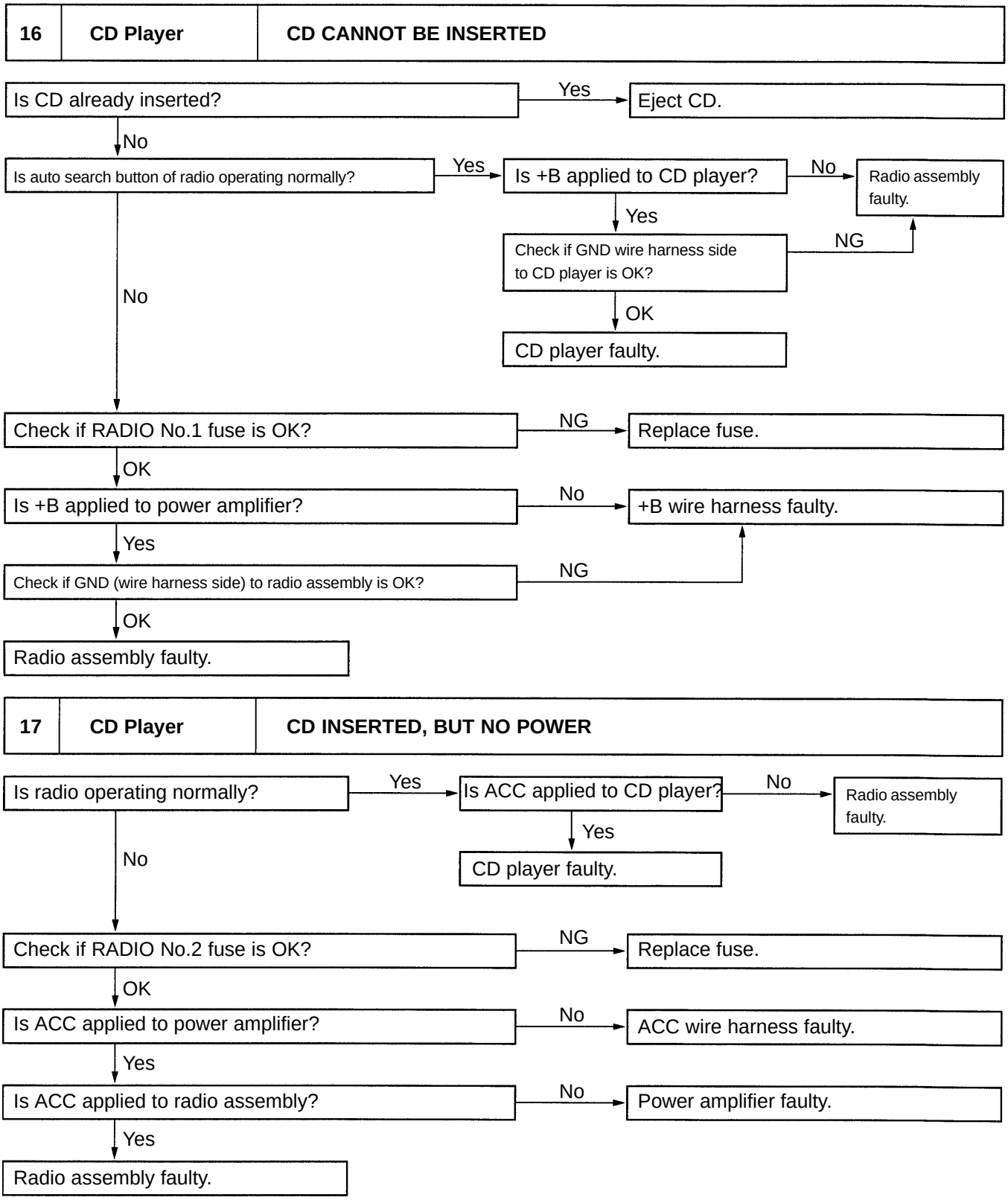
14	Tape Player	TAPE JAMMED MALFUNCTION WITH TAPE SPEED OR AUTO–REVERSE

Function OK if different tape (less than 120 mins.) is inserted?
- Yes → Cassette tape faulty.
- No → Is there a foreign object inside tape player?
  - Yes → Remove foreign object.
  - No → Operates normally after cleaning the heads?
    - Yes → Head dirty.
    - No → Radio assembly faulty.

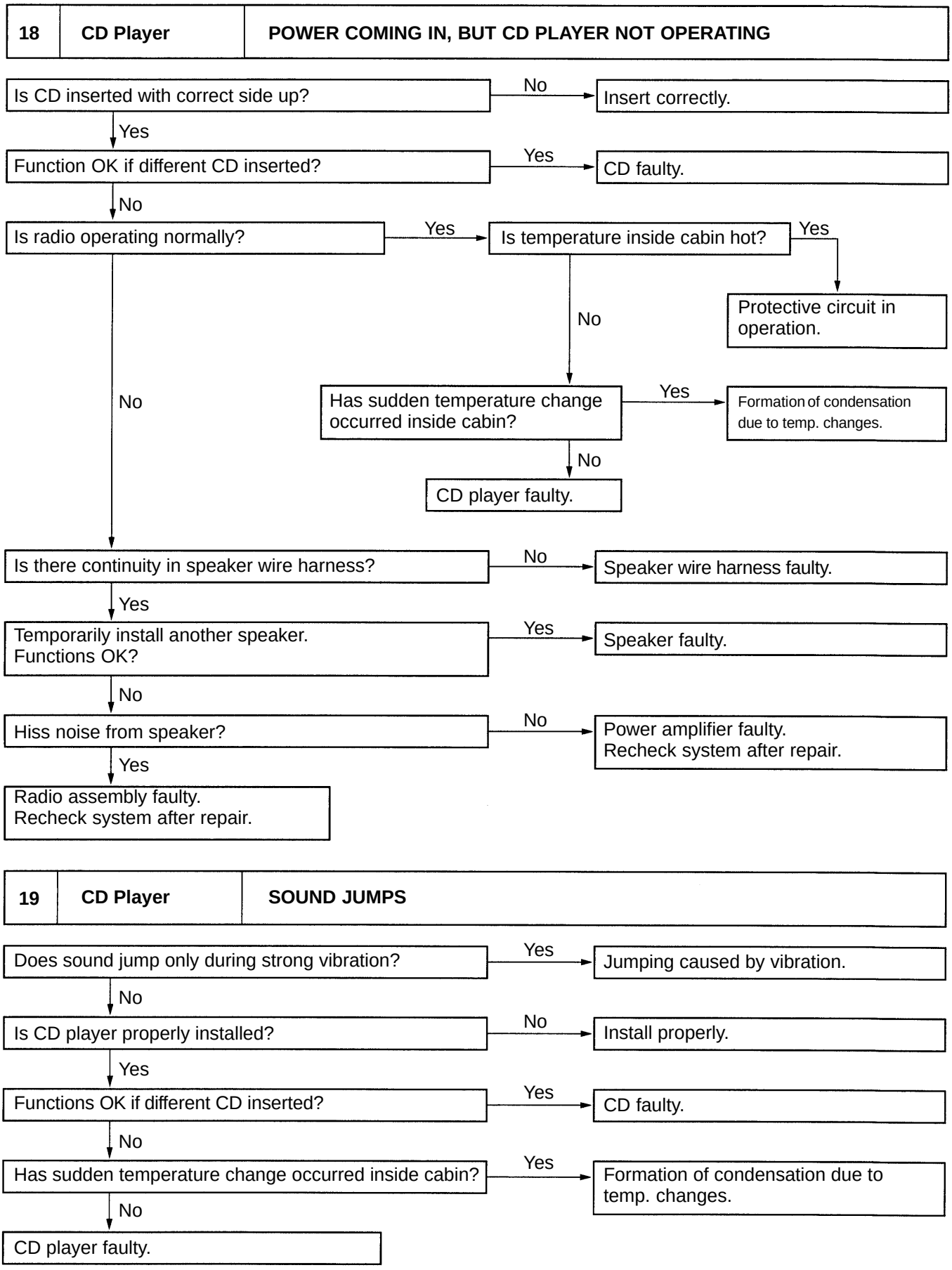
15	Tape Player	CASSETTE TAPE WILL NOT EJECTED

Is tape player operating normally?
- No → Cassette tape jammed.
- Yes → Is auto search button of radio operating normally?
  - Yes → Radio assembly faulty.
  - No → Check if RADIO No.1 fuse is OK?
    - NG → Replace fuse.
    - OK → Is –B applied to power amplifier?
      - No → +B wire harness faulty.
      - Yes → Is +B applied to radio assembly?
        - No → Power amplifier faulty.
        - Yes → Radio assembly faulty.

V08486

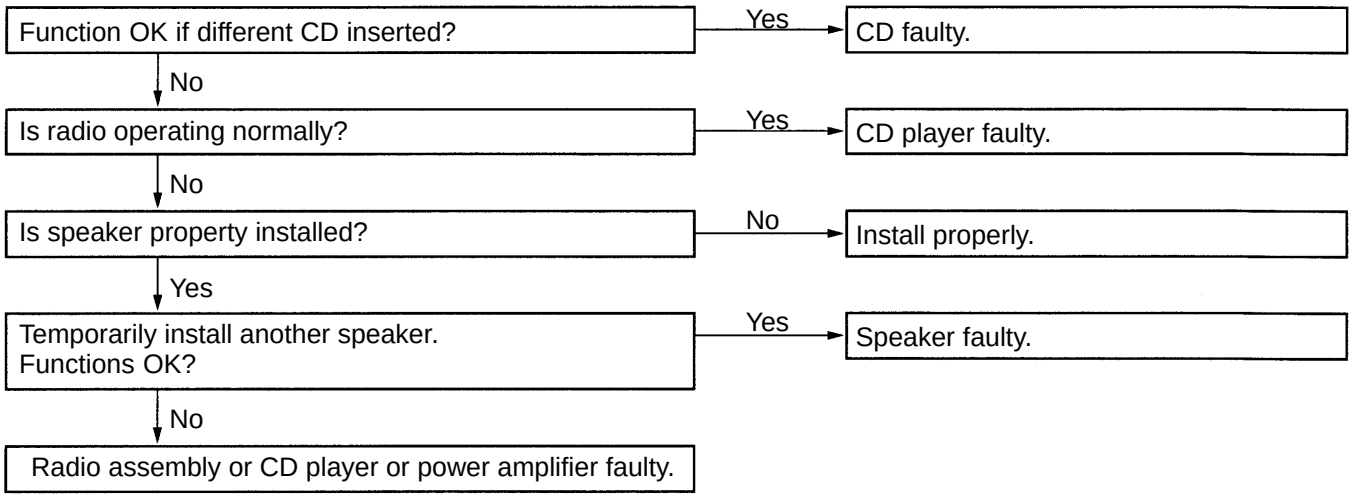

16
CD Player
CD CANNOT BE INSERTED
Is CD already inserted?
Yes
Eject CD.
No
Is auto search button of radio operating normally?
Yes
Is +B applied to CD player?
No
Radio assembly faulty.
Yes
Check if GND wire harness side to CD player is OK?
NG
OK
CD player faulty.
No
Check if RADIO No.1 fuse is OK?
NG
Replace fuse.
OK
Is +B applied to power amplifier?
No
+B wire harness faulty.
Yes
Check if GND (wire harness side) to radio assembly is OK?
NG
OK
Radio assembly faulty.
17
CD Player
CD INSERTED, BUT NO POWER
Is radio operating normally?
Yes
Is ACC applied to CD player?
No
Radio assembly faulty.
Yes
CD player faulty.
No
Check if RADIO No.2 fuse is OK?
NG
Replace fuse.
OK
Is ACC applied to power amplifier?
No
ACC wire harness faulty.
Yes
Is ACC applied to radio assembly?
No
Power amplifier faulty.
Yes
Radio assembly faulty.

V08487

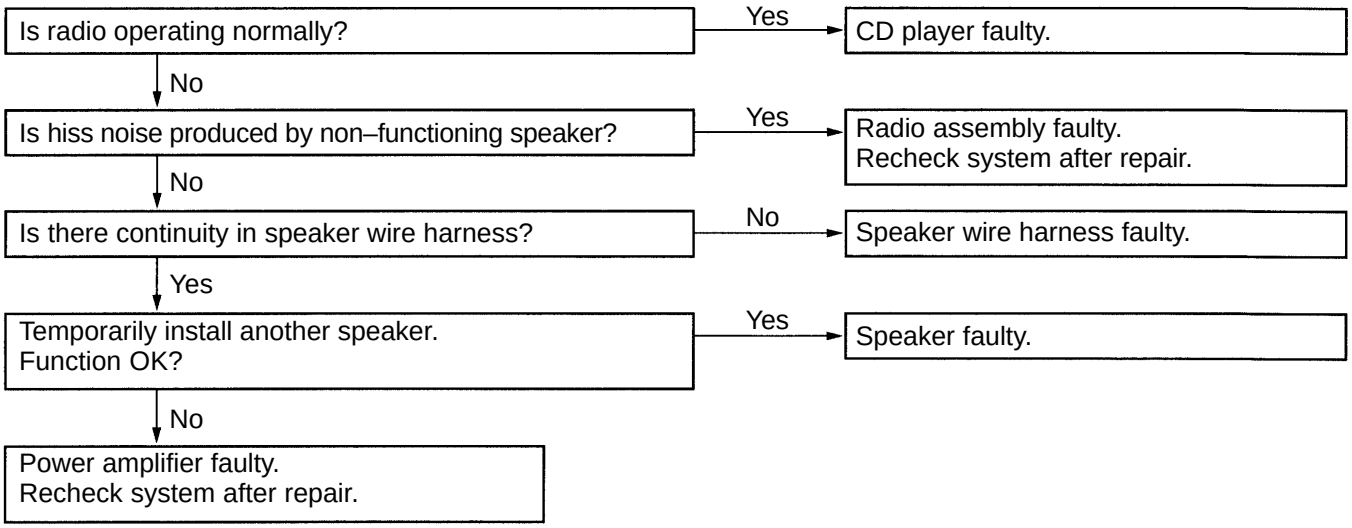

18
CD Player
POWER COMING IN, BUT CD PLAYER NOT OPERATING
Is CD inserted with correct side up?
No
Insert correctly.
Yes
Function OK if different CD inserted?
Yes
CD faulty.
No
Is radio operating normally?
Yes
Is temperature inside cabin hot?
Yes
Protective circuit in operation.
No
Has sudden temperature change occurred inside cabin?
Yes
Formation of condensation due to temp. changes.
No
CD player faulty.
No
Is there continuity in speaker wire harness?
No
Speaker wire harness faulty.
Yes
Temporarily install another speaker. Functions OK?
Yes
Speaker faulty.
No
Hiss noise from speaker?
No
Power amplifier faulty. Recheck system after repair.
Yes
Radio assembly faulty. Recheck system after repair.
19
CD Player
SOUND JUMPS
Does sound jump only during strong vibration?
Yes
Jumping caused by vibration.
No
Is CD player properly installed?
No
Install properly.
Yes
Functions OK if different CD inserted?
Yes
CD faulty.
No
Has sudden temperature change occurred inside cabin?
Yes
Formation of condensation due to temp. changes.
No
CD player faulty.

V08550

20	CD Player	SOUND QUALITY POOR (VOLUME FAINT)

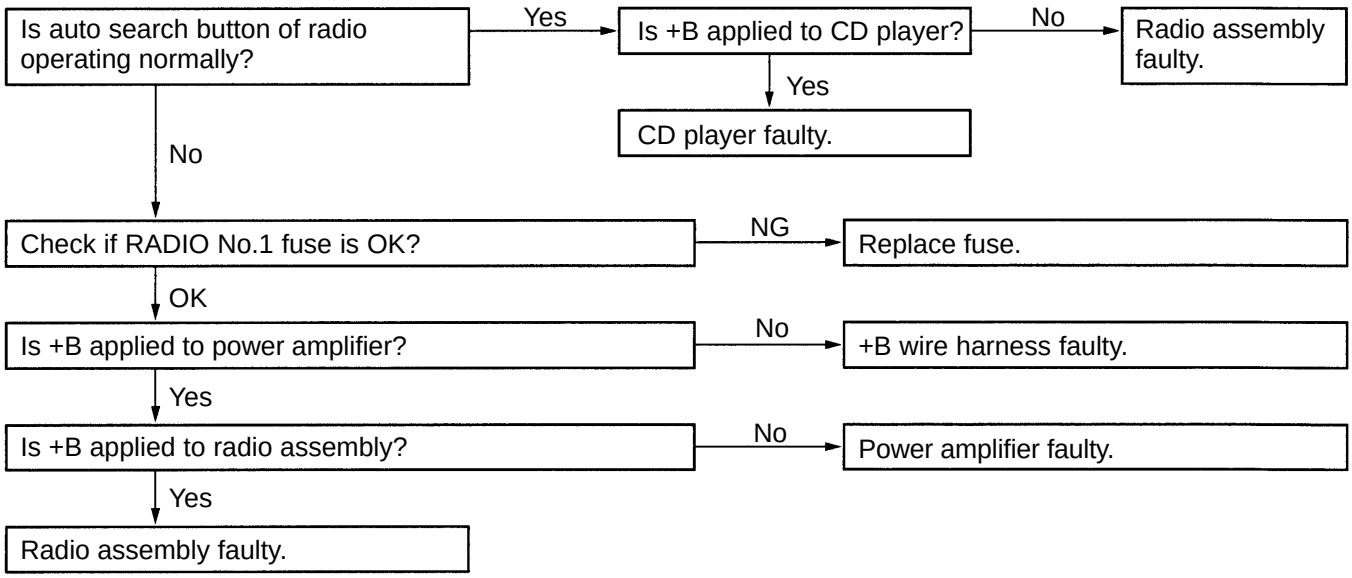


21	CD Player	EITHER SPEAKER DOES NOT WORK



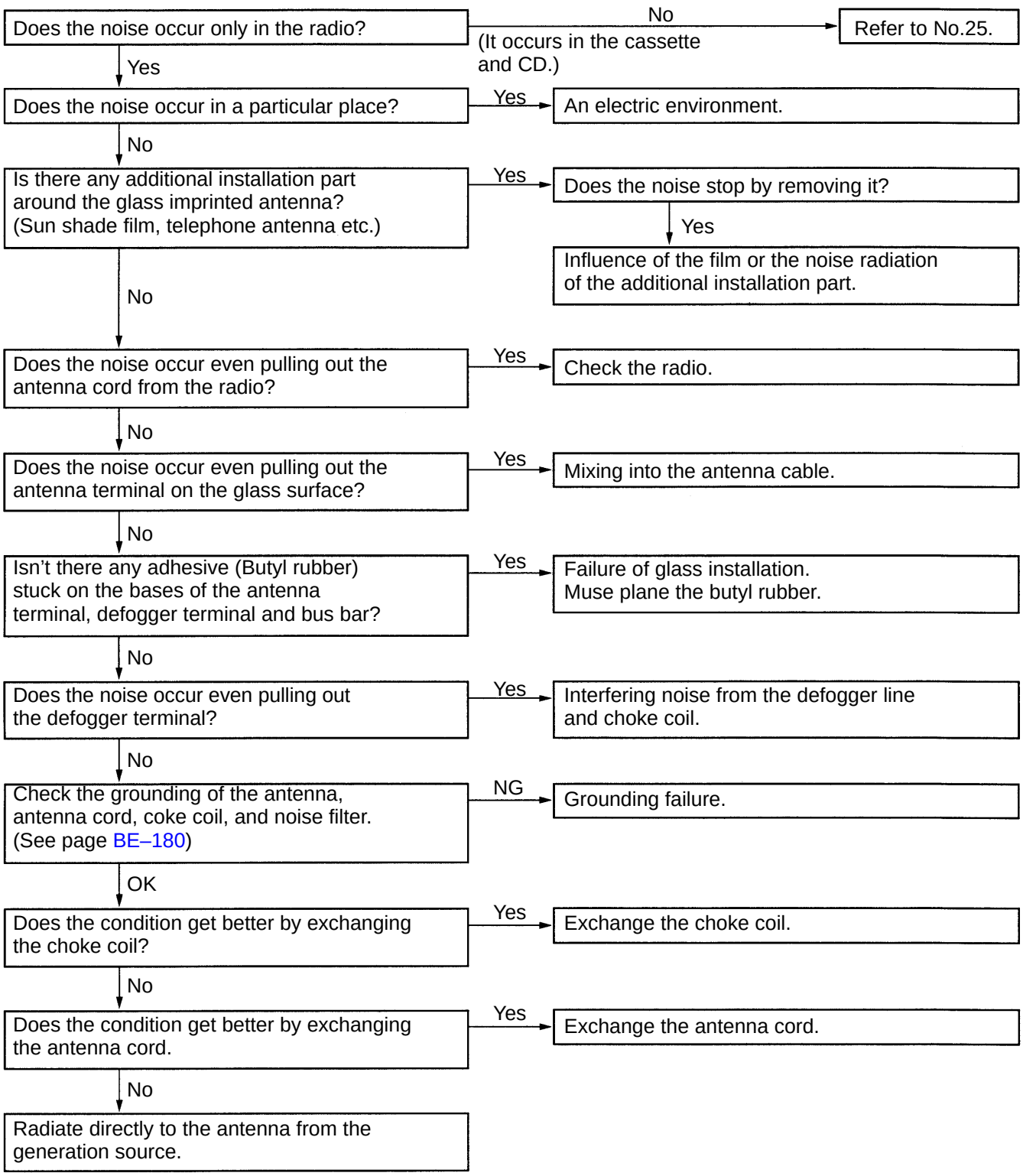
V08551

22	CD Player	CD WILL NOT BE EJECTED



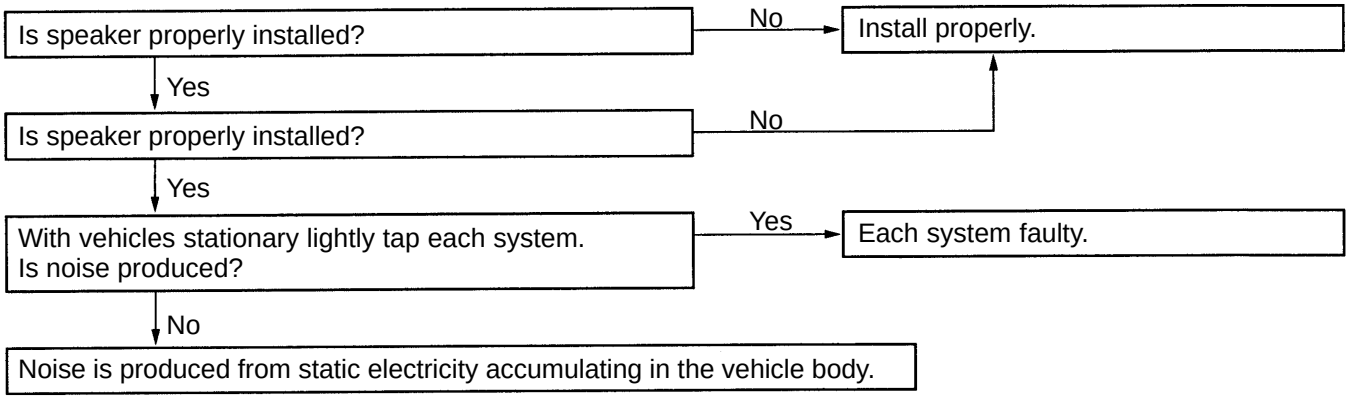
V08488

23	Noise	NOISE OCCURS



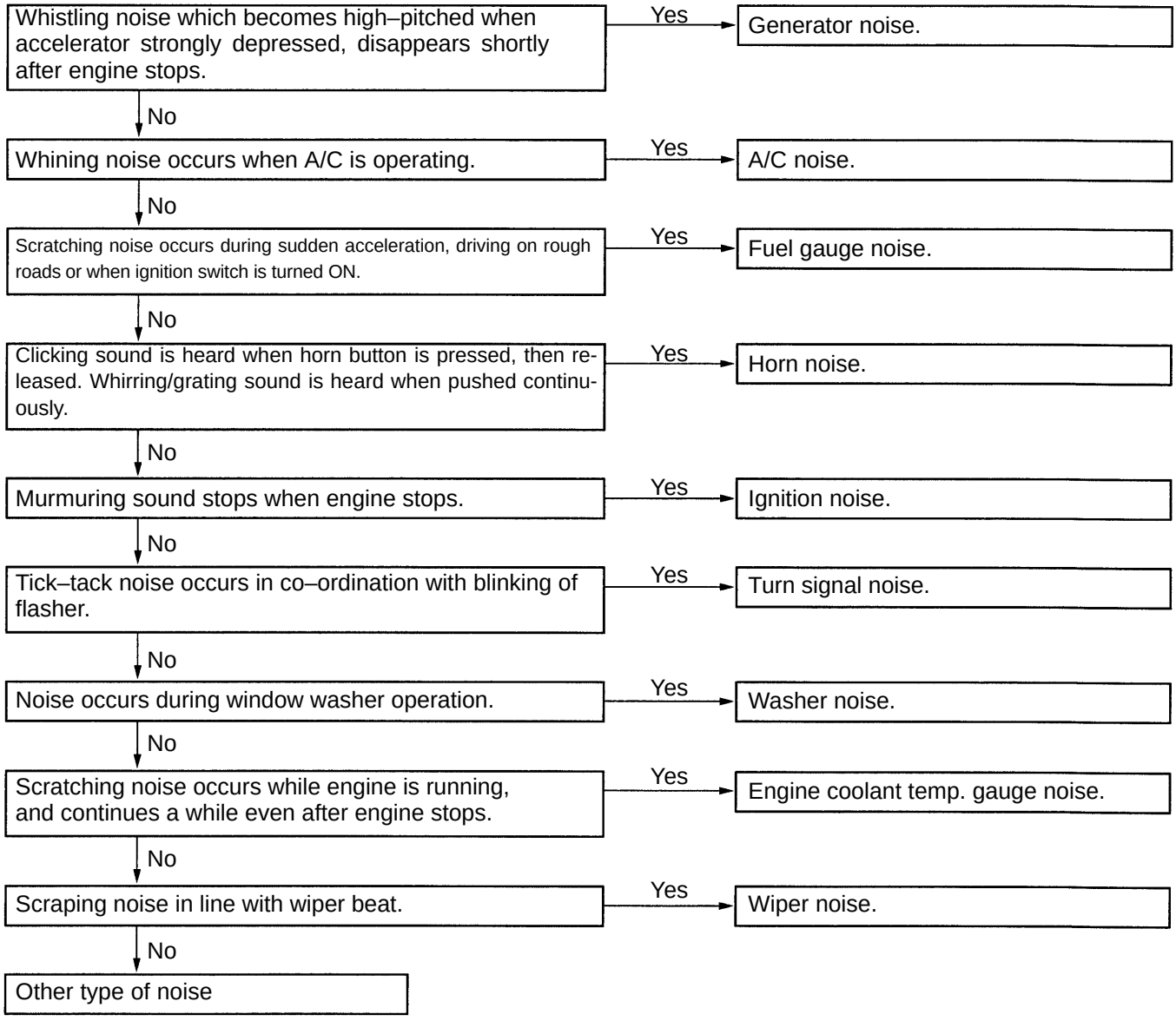
V08552

24	Noise	NOISE PRODUCED BY VIBRATION OR SHOCK WHILE DRIVING



V08553

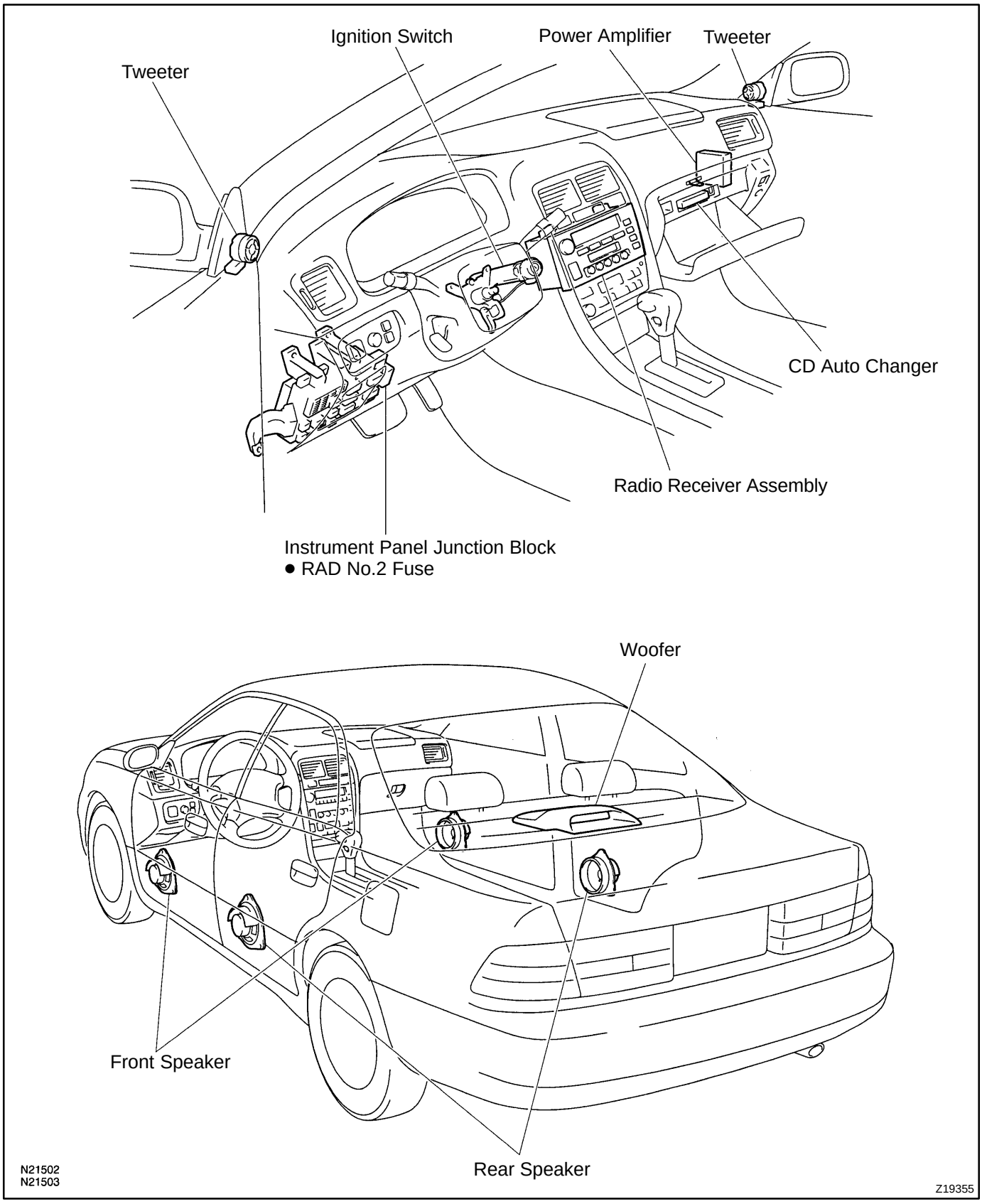
25	Noise	NOISE PRODUCED WHEN ENGINE STARTS



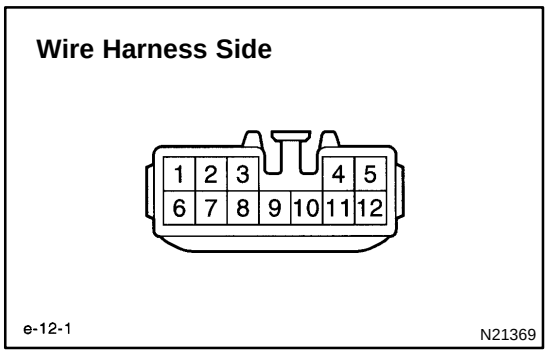
V08554

BE062–02

LOCATION



BE063–03



INSPECTION

1. INSPECT CD AUTO CHANGER CIRCUIT

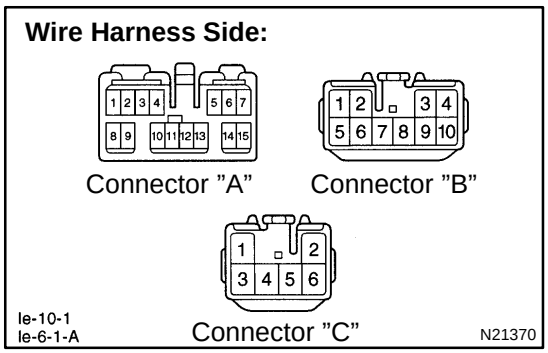
Disconnect connectors from CD auto changer and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
8 – Ground	Constant	Continuity
5 – Ground	Constant	Battery positive voltage
12 – Ground	Ignition switch LOCK	No voltage
12 – Ground	Ignition switch ACC or ON	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

HINT:

- Check the wire harness between the radio receiver assembly and the CD auto changer.
- Since the signals to and from the MUTE, R^-, R^+, L^-, L^+, TX^- and TX^+ terminals are serial signals, they cannot ordinarily be measured with a tester.

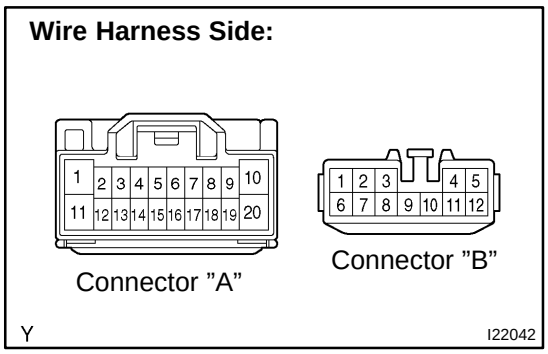


2. INSPECT POWER AMPLIFIER CIRCUIT

Disconnect the connector from power amplifier and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
B7 – Ground	Constant	Continuity
B3 – Ground	Ignition switch LOCK	No voltage
B3 – Ground	Ignition switch ACC or ON	Battery positive voltage
B4 – Ground	Constant	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.



3. INSPECT RADIO RECEIVER ASSEMBLY CIRCUIT

Disconnect the connectors from the radio receiver assembly, and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
A20 – Ground	Constant	Continuity
A1 – Ground	Constant	Battery positive voltage
A11 – Ground	Ignition switch LOCK	No voltage
A11 – Ground	Ignition switch ACC or ON	Battery positive voltage

If the circuit is not as specified, 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.

4. INSPECT GLASS IN PRINTED ANTENNA (Use same procedure as for "INSPECT DEFOGGER WIRES" on page BE–113.)

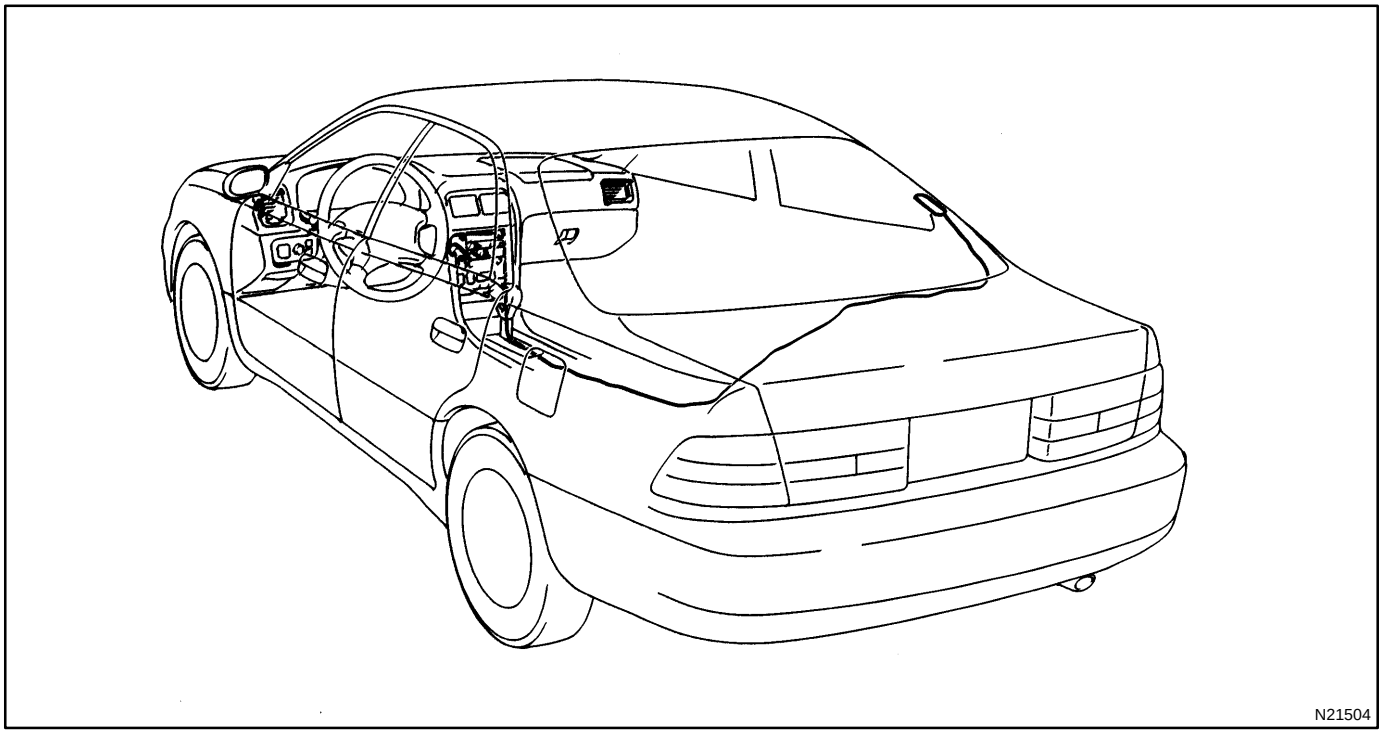
5. REPAIR GLASS PRINTED ANTENNA (Use same procedure as for "REPAIR DEFOGGER WIRES" on page BE–113.)

ANTENNA CORD

BE064–02

REMOVAL

REMOVE ANTENNA CORD



(a) Remove the following parts:
- Instrument panel assembly (See page BO–79)
- Console box (See page BO–79)
- Rear seat (See page BO–111)
- Right rear poller garnish (See page BO–33)
- Package tray trim (See page BO–33)
- Room partition trim (See page BO–33)

(b) Remove antenna cord from glass printed antenna.

(c) Disconnect the connectors shown in the illustration.

(d) Remove the clips and antenna cord assembly.

BE065–02

INSTALLATION

Installation is in the reverse order of removal (See page BE–210).

CLOCK

BE066–02

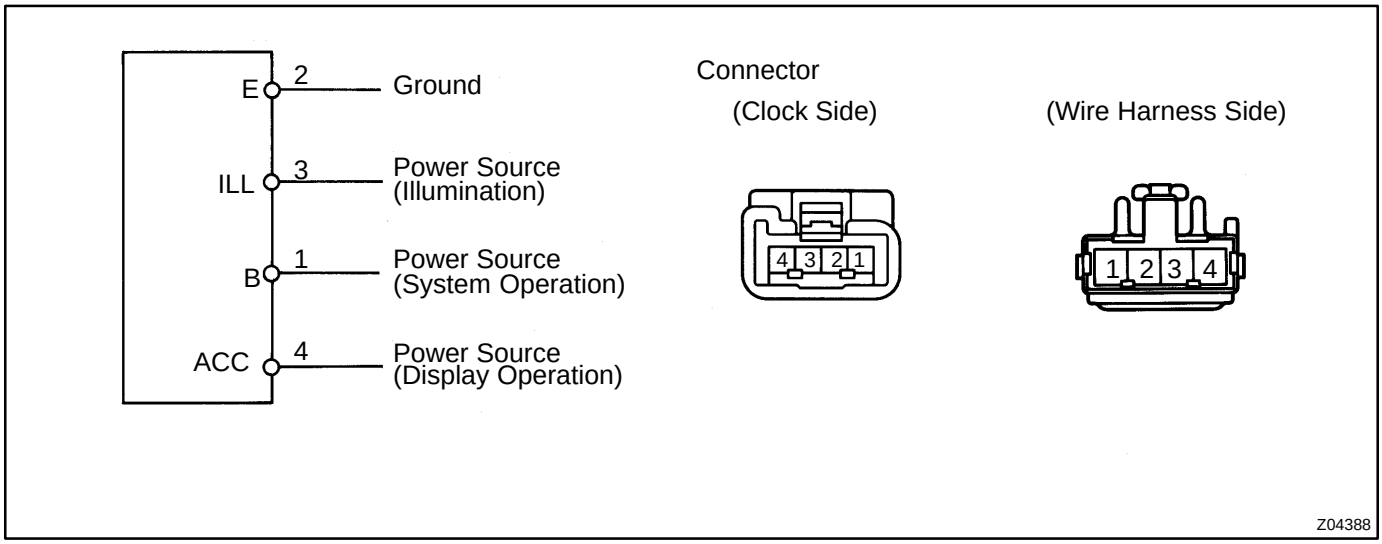
TROUBLESHOOTING

HINT:

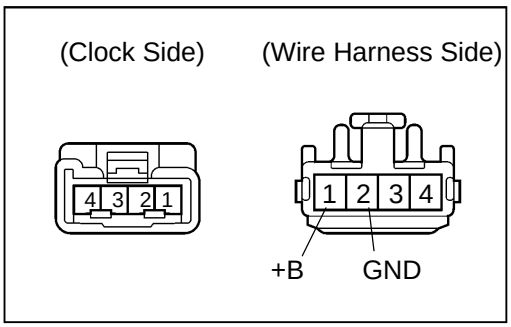
Troubleshoot the clock according to the table below.

Clock will not operate	1
Clock loses or gains time	2

± 1.5 seconds / day



1	CLOCK WILL NOT OPERATE



(a) Check that the battery positive voltage is 10 –14 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 circuit.

(c) Troubleshoot the clock as follows.

HINT:
Inspect the connector on the wire harness side.

Is there battery voltage between terminal +B and body ground?

No → Open or short circuit in wire harness between terminal +B and DOME fuse.

Yes

Does continuity exist between terminal GND and body ground?

No → Open circuit in wire harness between terminal GND and body ground.

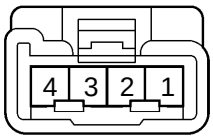
Yes

Replace clock.

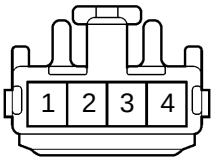
I01417

2	CLOCK LOSES OR GAINS TIME

(Clock Side)



(Wire Harness Side)



(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 (per day): ± 1.5 sec.
If the error exceeds the allowable error, replace the clock.

(c) Check that the clock adjusting button is caught in position, and does not return.
If the button is not returned, repair or replace the clock.

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

Is there 10 – 16 V between terminal +B and body ground?

Below 10V → Detect cause and repair, or recharge battery.

Yes ↓

Adjust or replace clock.

I01418

GARAGE DOOR OPENER SYSTEM

BE0TY–02

REGISTRATION PROCEDURE

1. NEW CODE REGISTRATION

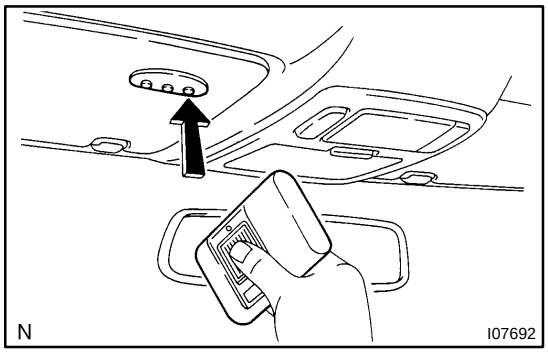
NOTICE:

- **If pressing the switch of the original transmitter to register the code, the system might operate.**
- **When registering the transmitter codes such as for garage or gate, check that there is nobody around those places then register.**

(a) Press the switch for the item to be registered for 20 seconds

HINT:

When transferring to registration mode, LED (red) blinks in 1 Hz cycle.

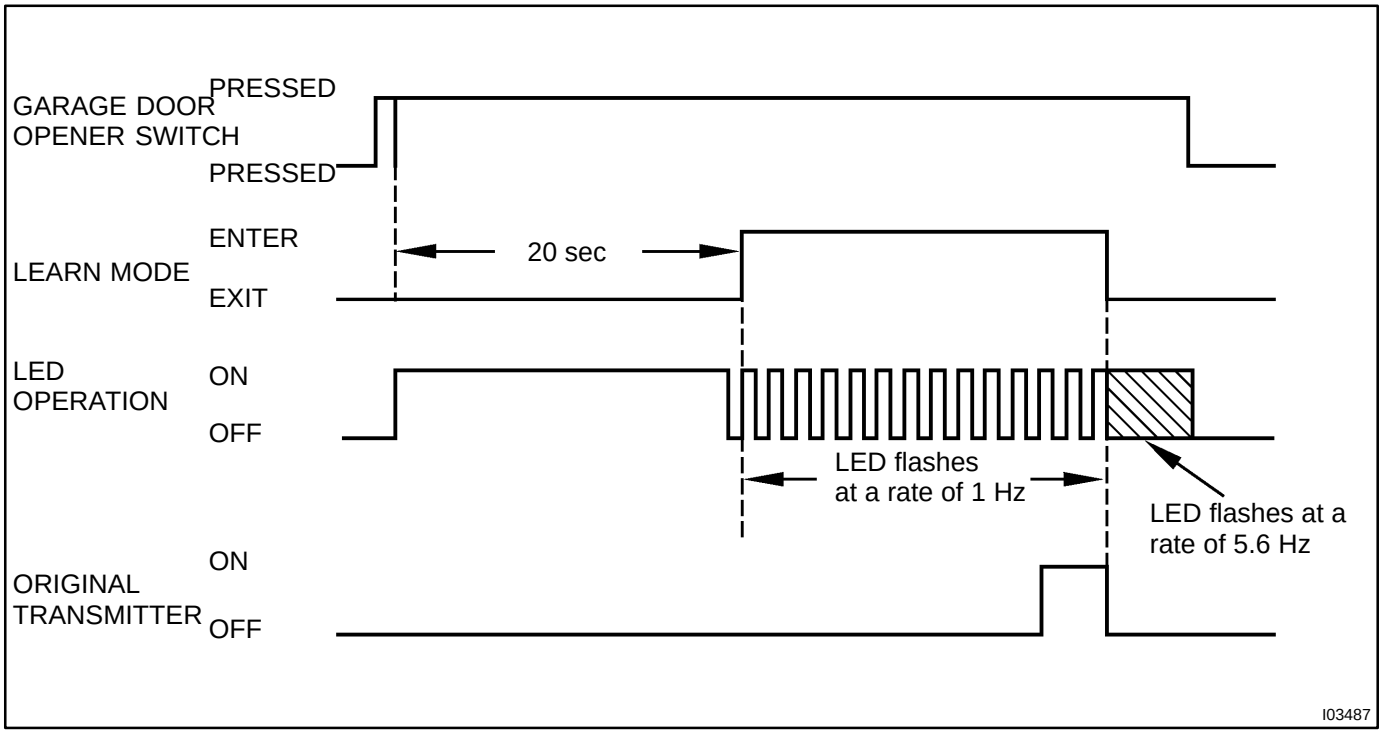


(b) In the condition of (a), bring the original transmitter to within 1–inch area around the garage door opener and press the switch. (code transmitting).

HINT:

When code registration completes correctly, LED (red) blinks in 5.6 Hz cycle.

New code registration timing chart.



If a code can not be registered, observe the following conditions.

HINT:

- If the battery of original transmitter is consumed.
- Press the switch of the transmitter repeatedly in registration mode, as some transmitters stop transmitting for 1 to 2 seconds.
- This system is not applicable to the garage door opener which had been made before 1982.

2. CODE DELETION

(a) Press the switches at both ends of garage door opener simultaneously for 20 seconds.

HINT:

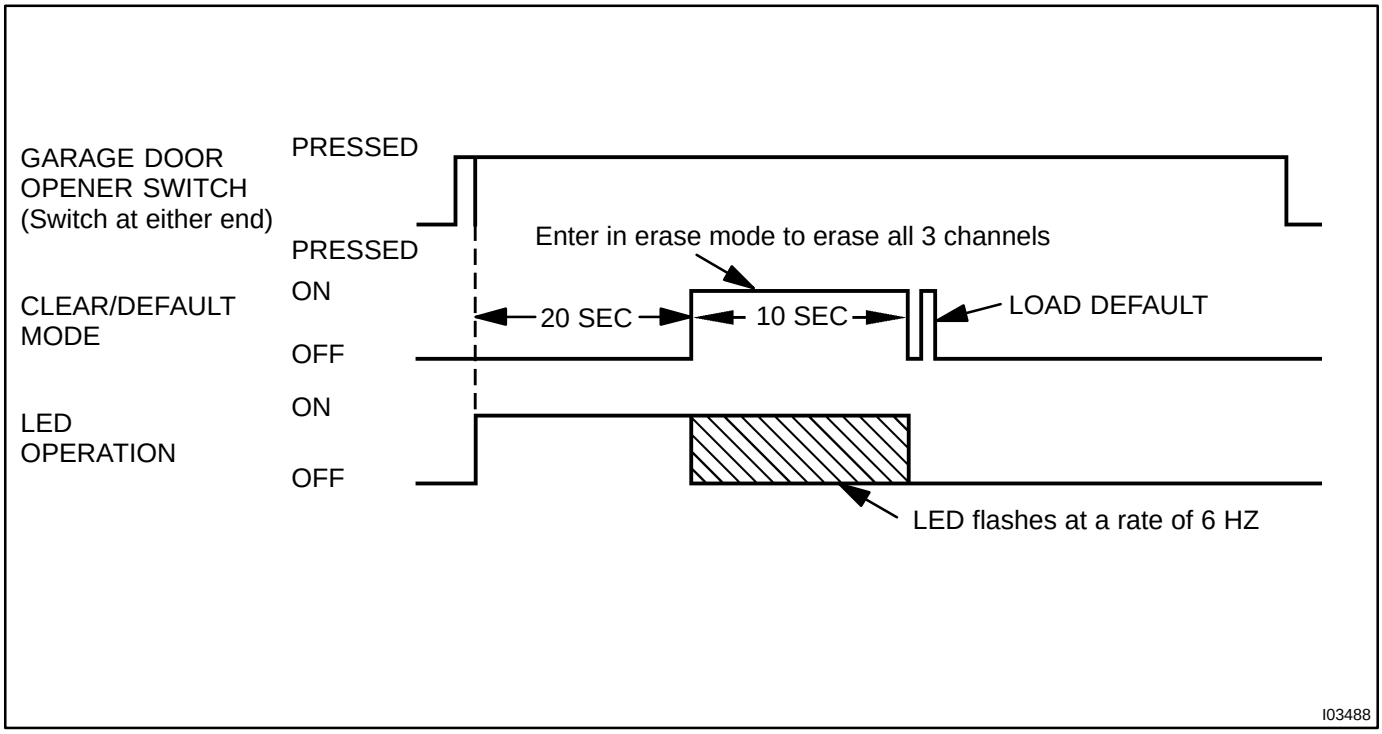
When transferring to deletion mode, LED (red) blinks in 6 Hz cycle.

(b) When releasing the switch within 10 seconds after transferring to deletion mode, all the registered codes will be erased.

HINT:

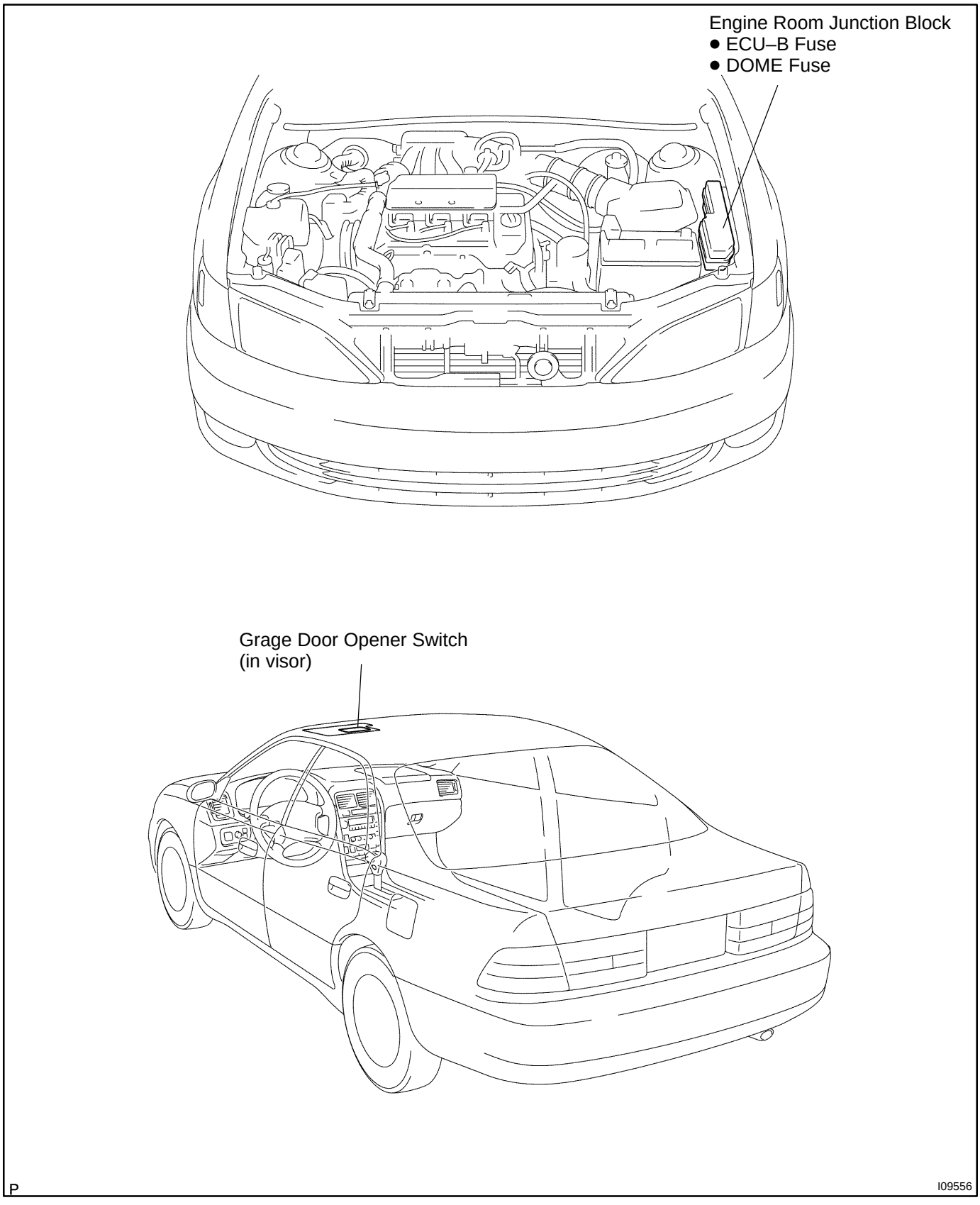
Press the switch until blinking in 6 Hz cycle stops, so that the default code for check is set.

Code deletion timing chart



BE0TZ–02

LOCATION



BE10Q–01

REMOVAL

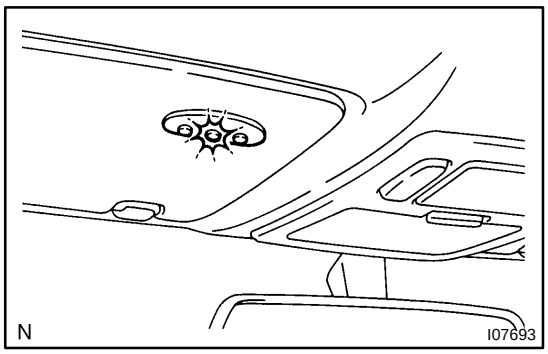
REMOVE LH SIDE SUN VISOR

(a) Remove the 2 screws.

(b) Disconnect the garage door opener switch connector.

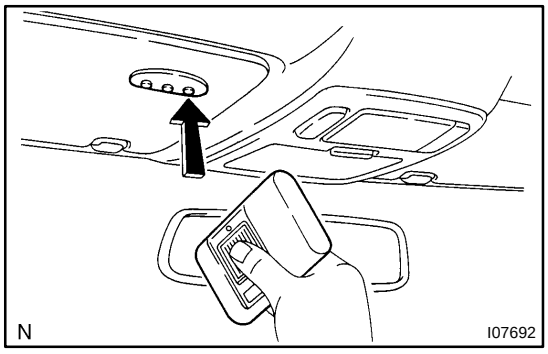
BE0U0–02

INSPECTION



1. INSPECT GARAGE DOOR OPENER SWITCH

Press the switch and check that each LED (red) lights up.
Even if only one switch is found not to light up, replace it.

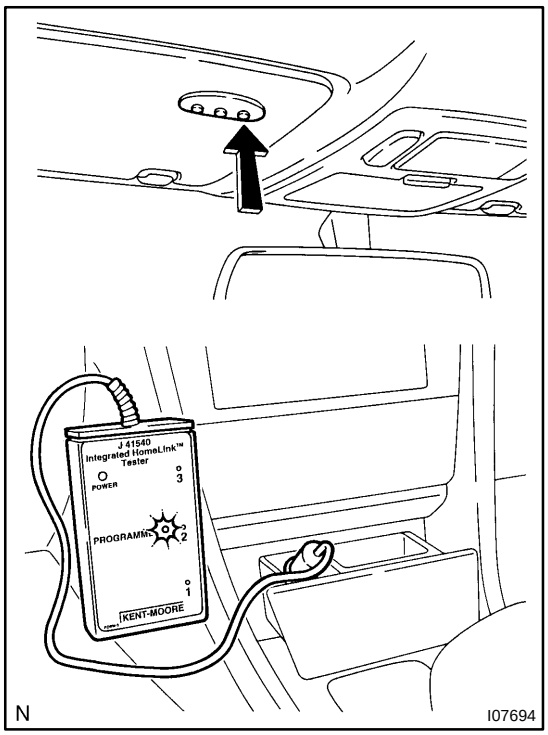


2. INSPECT GARAGE DOOR OPENER REGISTRATION AND TRANSMITTING

HINT:
Use the home link tester made by KENT MOORE for this test. As it is necessary to record the code of the hand held transmitter, customer's code will be erased. When the inspection completes, please register the customer's again.

(a) Check that the code of hand held transmitter for inspection can be recorded.
(See page

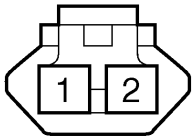
If the code can not be registered, replace garage door opener.



(b) Press the switch which an inspection code has been registered for and check that LED (green) of the home link tester lights up.

If the LED (green) does not light up, replace the garage door opener.

Wire Harness Side



I04287

3. INSPECT GARAGE DOOR OPENER SWITCH CIRCUIT

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

Tester connection	Condition	Specified condition
1 – Ground	Constant	Continuity
2 – Ground	Constant	Battery positive voltage

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

BE10R–01

INSTALLATION

INSTALL GARAGE DOOR OPENER SWITCH

(a) Connect the garage door opener switch connector.

(b) Install the 2 screws and the LH side sun visor.

ENGINE IMMOBILISER SYSTEM

REGISTRATION PROCEDURE

HINT:

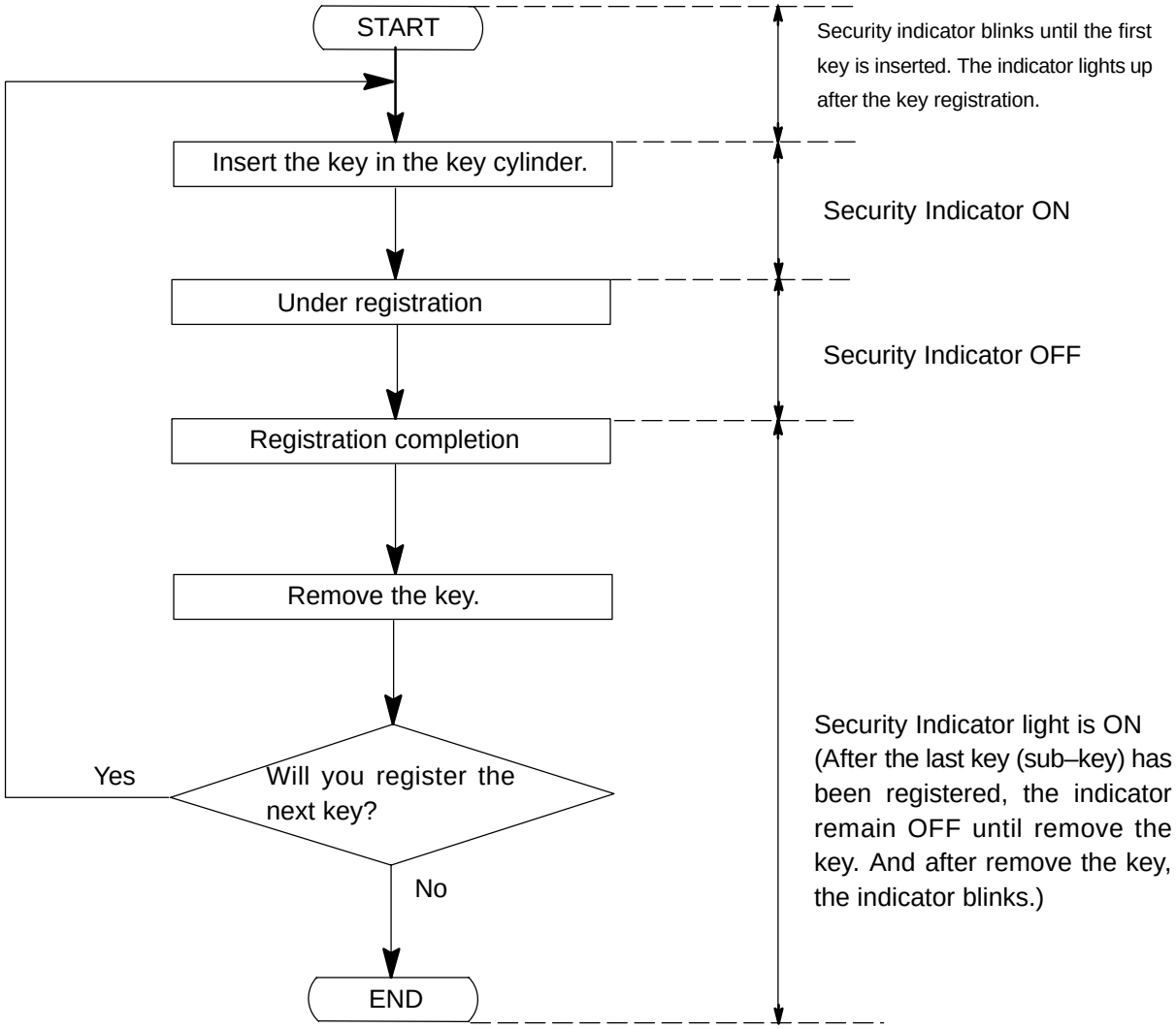
In case of having lost all the already registered master keys, you are not able to do additional registration or deletion. Change the ECM and then must register the new key codes according to the following registration procedure of the automatic registration mode.

1. KEY REGISTRATION IN AUTOMATIC REGISTRATION MODE

(a) Registration of a new transponder key.

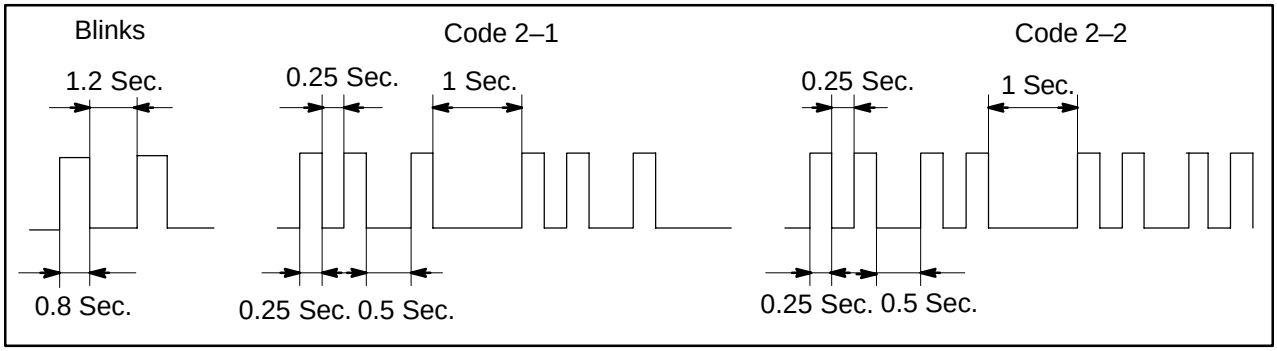
HINT:

- This must be done when you install a new ECM.
- The new ECM is on the automatic key code registration mode. The already fixed number of key codes for this ECM can be registered.
  On this type of vehicle, up to 3 key codes can be registered.
- In the automatic registration mode, the last key registered becomes sub–key.



HINT:

- When a key is not inserted in the key cylinder on the automatic registration mode, the security indicator always lights on.
- When the immobiliser system operates normally and the key is pull out, the security indicator blinks.
- When key code registration could not be performed on the automatic registration mode, code 2–1 is output from the security indicator and when inserting the already registered key, code 2–2 is output.



(b) Automatic registration mode completion

If completing the mode forcibly when more than 1 key code have been registered on the automatic registration mode, perform the following procedures.

After 1 more key code have been registered with master key, perform step (1) or (2) without pulling the key out or inserting the already registered key.

(1) Depress and release brake pedal 5 times or more within 15 sec.

(2) With the LEXUS hand–held tester, require automatic registration mode completion.

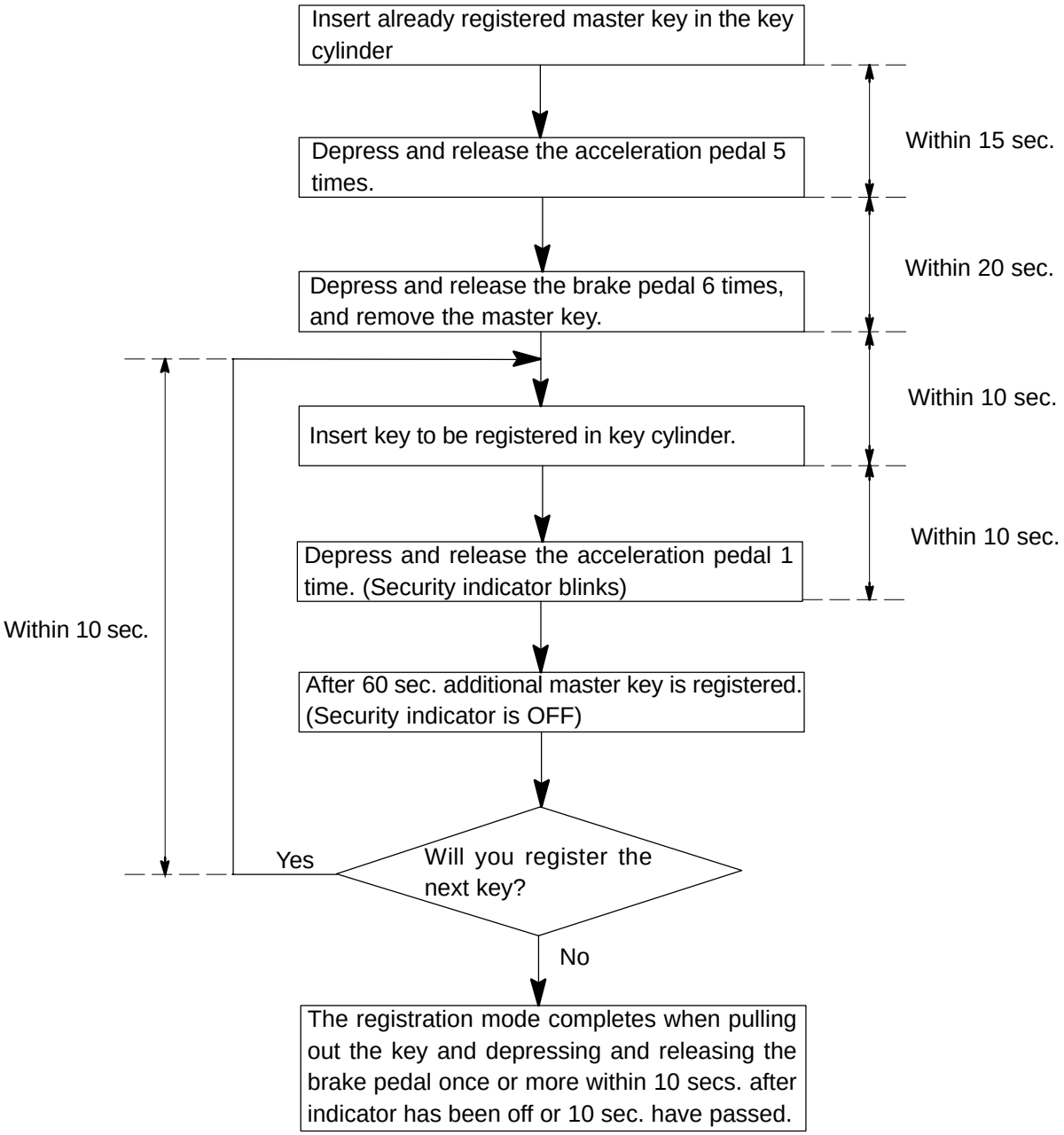
2. REGISTRATION OF ADDITIONAL MASTER KEY

There are 2 ways for registration of additional master key, one way is depressing brake pedal and acceleration pedal and the other way is using LEXUS hand–held tester.

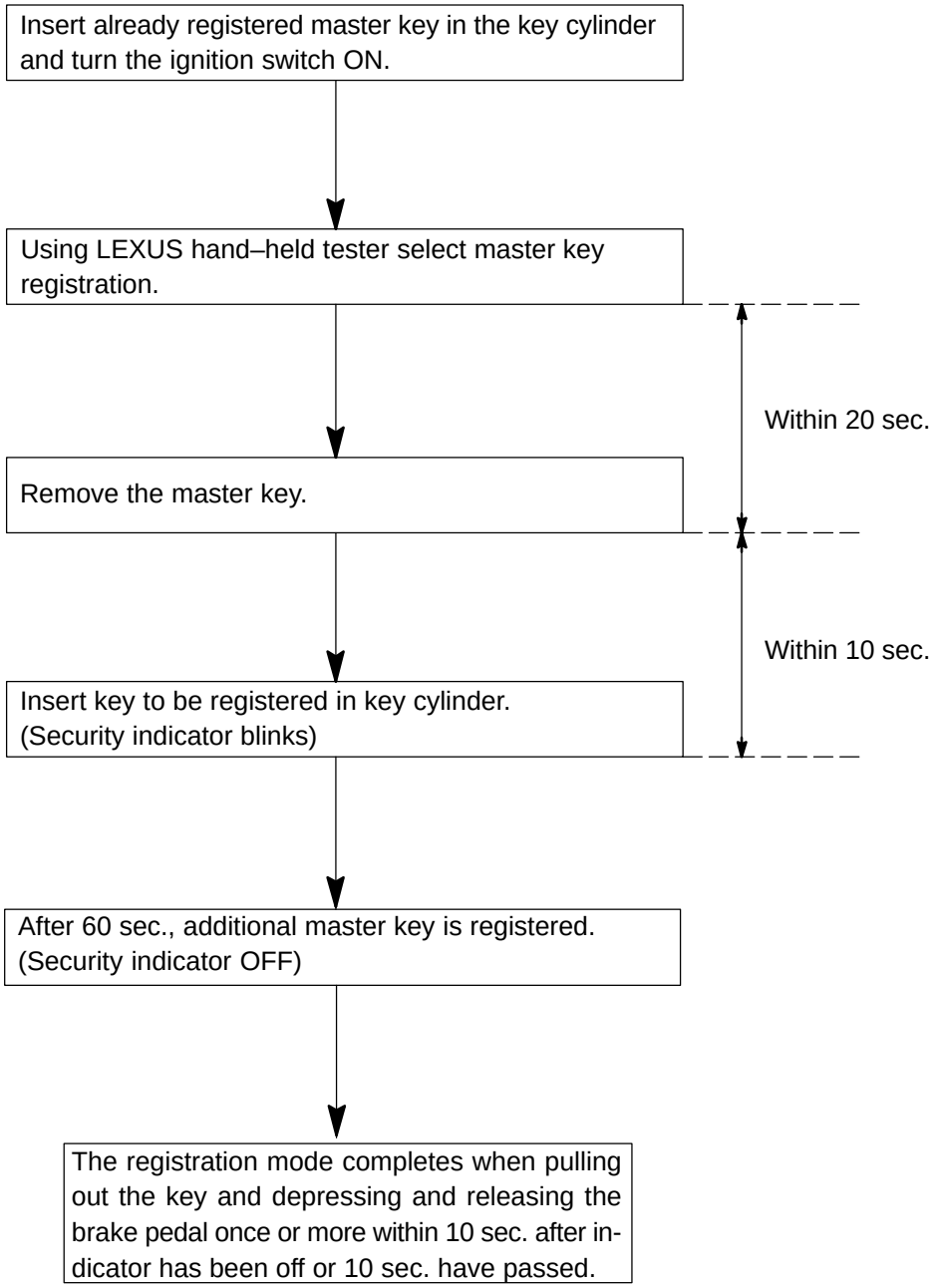
HINT:

- It is possible to register up to 7 master key codes including the already registered key code.
- When any operation time described below is over, registration mode completes.
- When the next procedure is performed while the timer is working, the timer completes counting time, then next timer starts.
- When replacing ”Ignition Cylinder Key Set” or ”Lock Cylinder Set” and register according to the following procedure using the original master key. However, after the registration of the additional master key, as the original master key and the original sub–key is not necessary any more, so erase registration of those key codes.

  (1) Depressing brake pedal and acceleration pedal:



(2) Using LEXUS hand–held tester:



HINT:
Please follow the screen of the LEXUS hand–held tester for more detailed procedure.

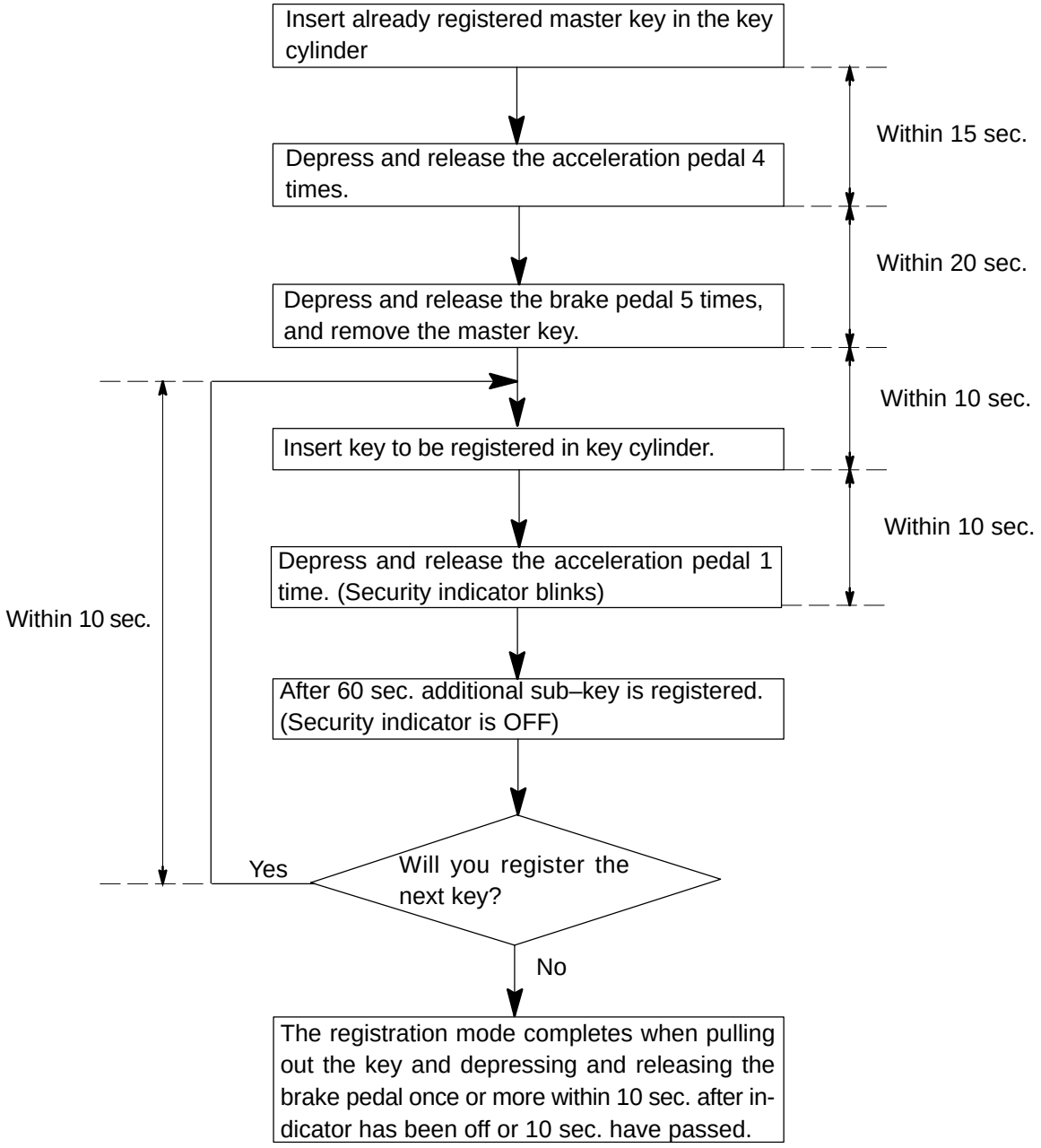
3. REGISTRATION OF ADDITIONAL SUB–KEY

There are 2 ways for registration of additional sub–key, one way is depressing brake pedal and acceleration pedal and the other way is using LEXUS hand–held tester.

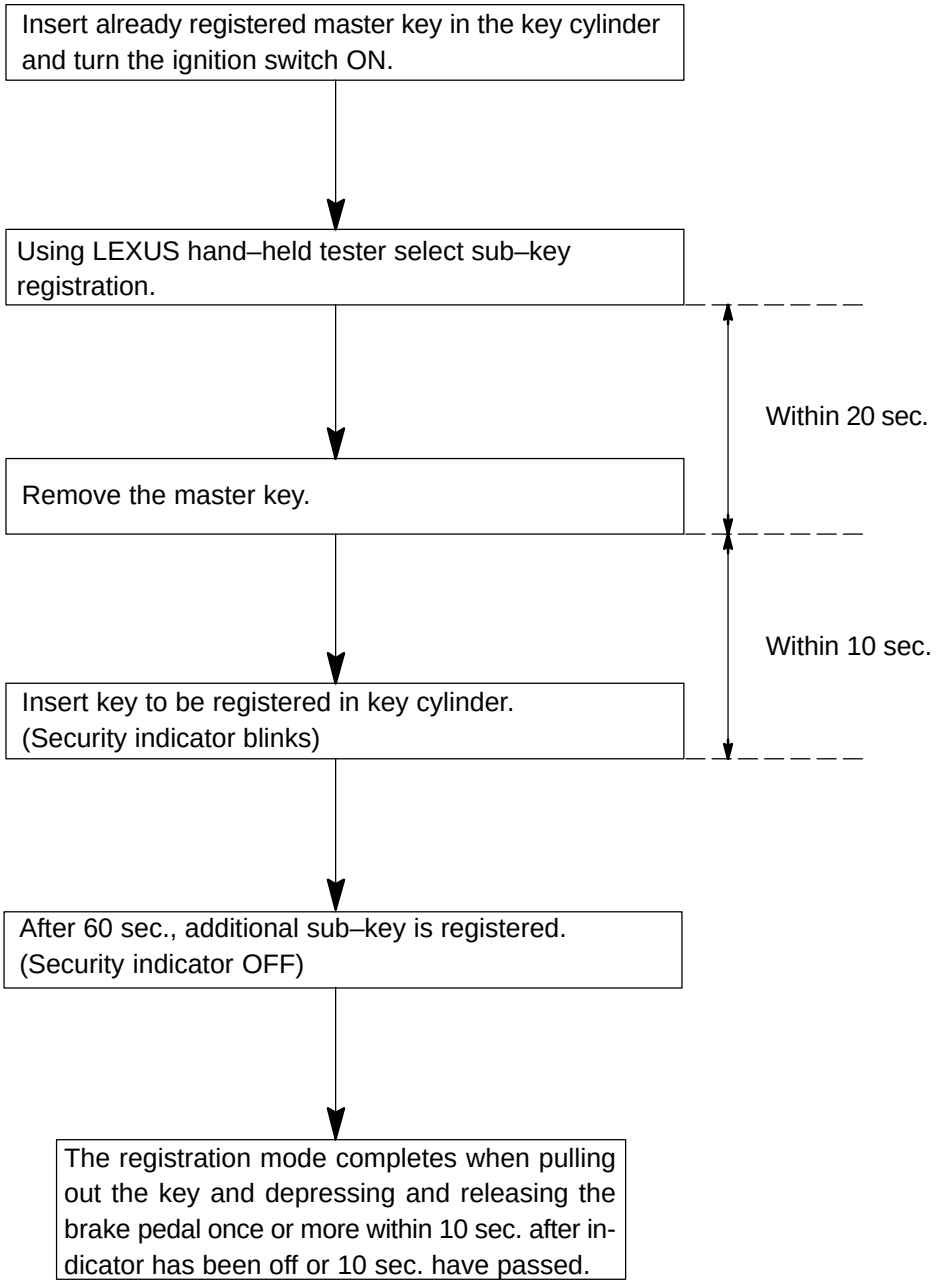
HINT:

- It is possible to register up to 3 sub–key codes including the already registered key code.
- When any operation time described below is over, registration mode completes.
- When the next procedure is performed while the timer is working, the timer completes counting time, then next timer starts.

(1) Depressing brake pedal and acceleration pedal:



(2) Using LEXUS hand–held tester:



HINT:
Please follow the screen of the LEXUS hand–held tester for more detailed procedure.

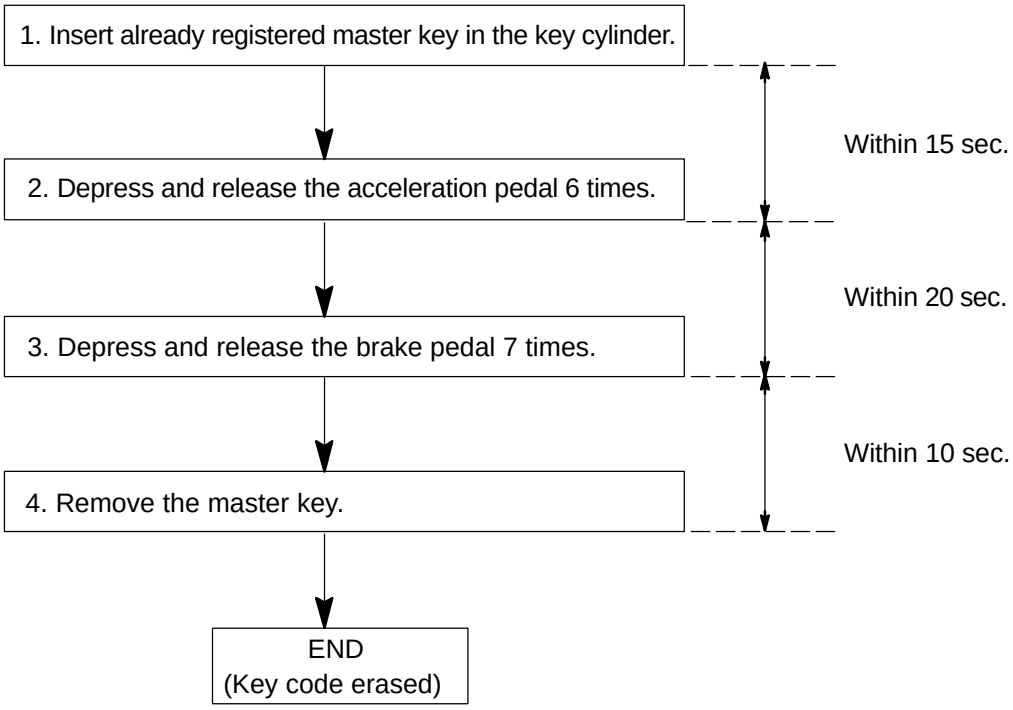
4. ERASURE OF TRANSPONDER KEY CODE

There are 2 ways for erasure of transponder key code, one way is depressing brake pedal and acceleration pedal and the other way is using LEXUS hand–held tester.

HINT:

- Delete all other master and sub–key codes leaving the master key code to use the operation. When using the key which was used before deletion, it is necessary to register the code again.
- When any operation time described below is over, registration mode completes.
- When the next procedure is performed while the timer is working, the timer completes counting time, then next timer starts.

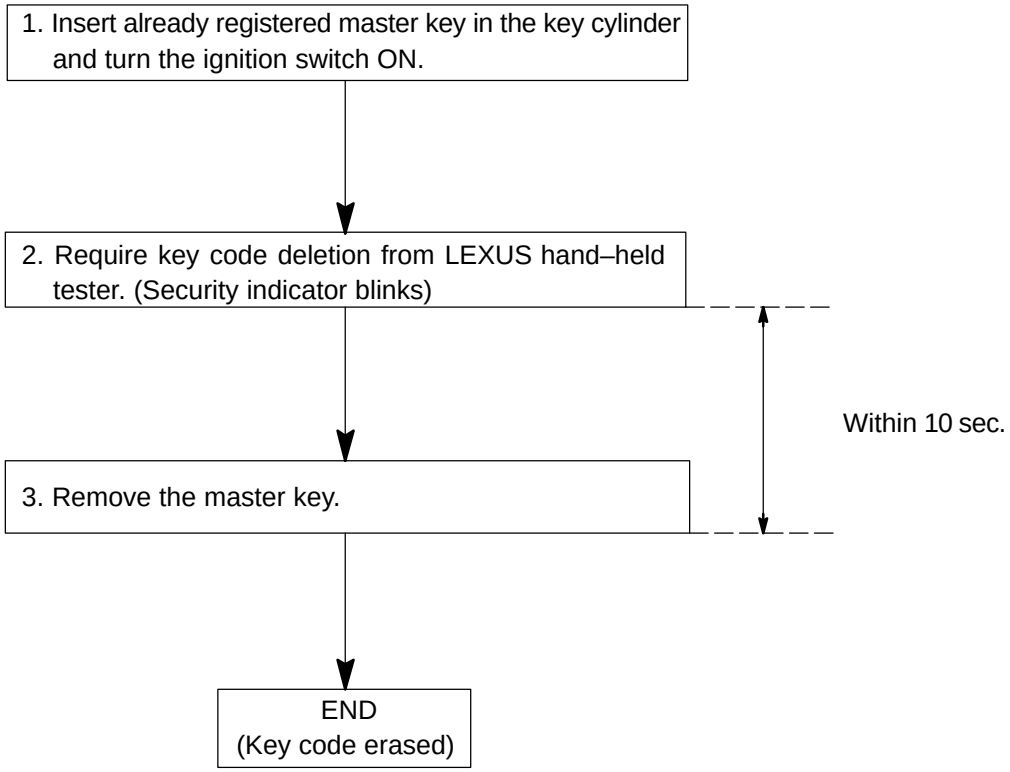
(1) Depressing brake pedal and acceleration pedal:



HINT:

When the key cannot be pulled out in the step 4, key code deletion is canceled.

(2) Using LEXUS hand–held tester:

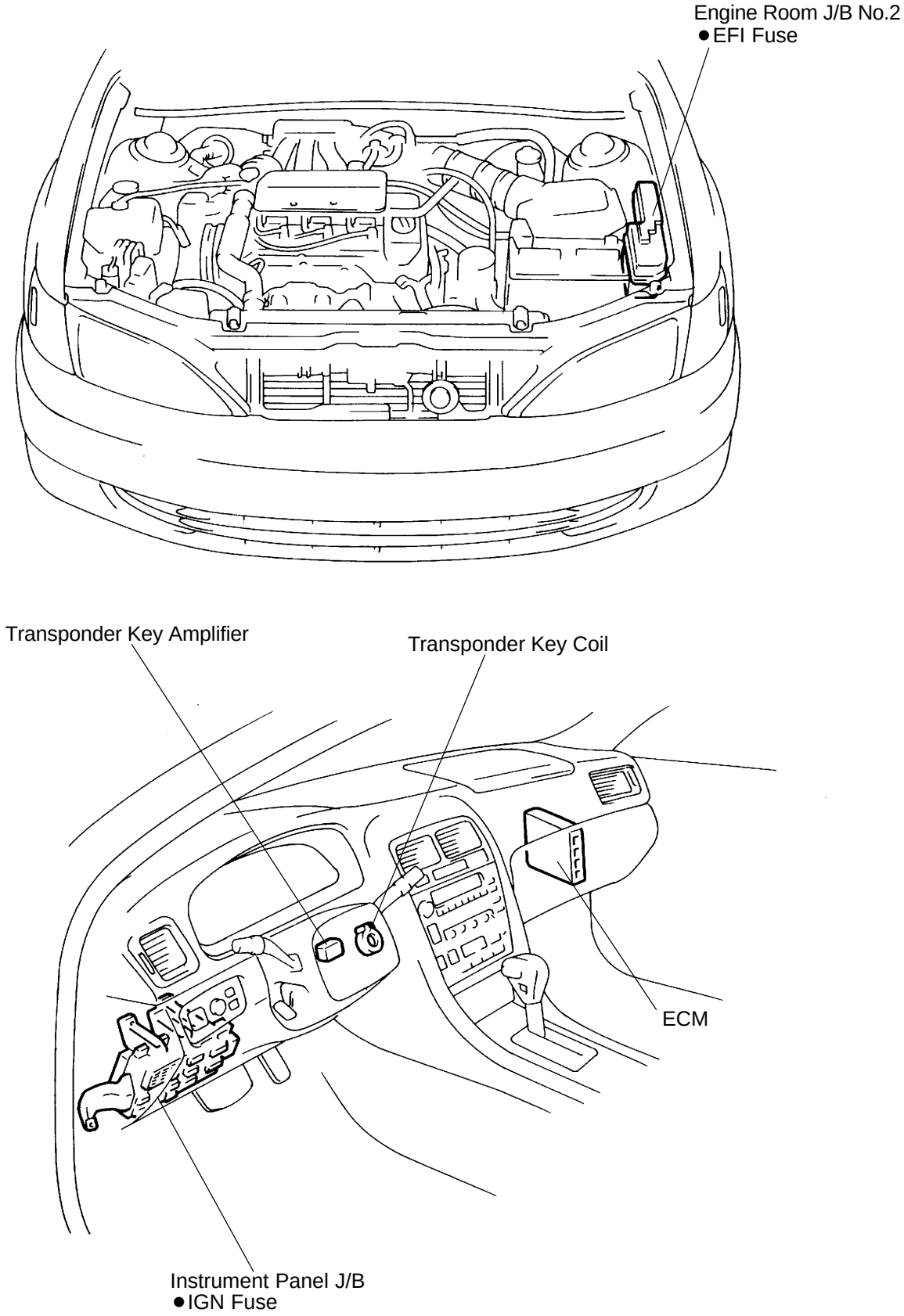


HINT:

- When the key cannot be pulled out in the step 3, key code deletion is canceled. (Security indicator is OFF.)
- Please follow the screen of the hand–held tester for more detailed procedure.

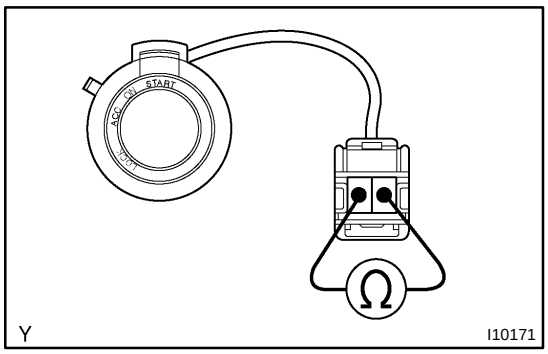
BE06A–03

LOCATION



I02683

BE06B–05



INSPECTION

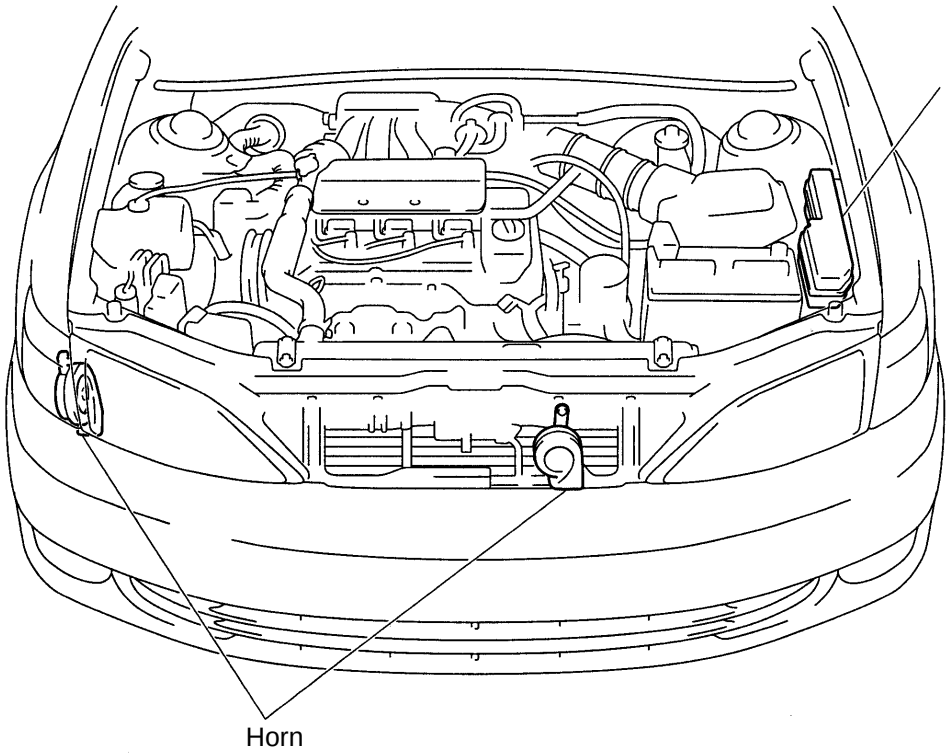
INSPECTION TRANSPONDER KEY COIL CONTINUITY

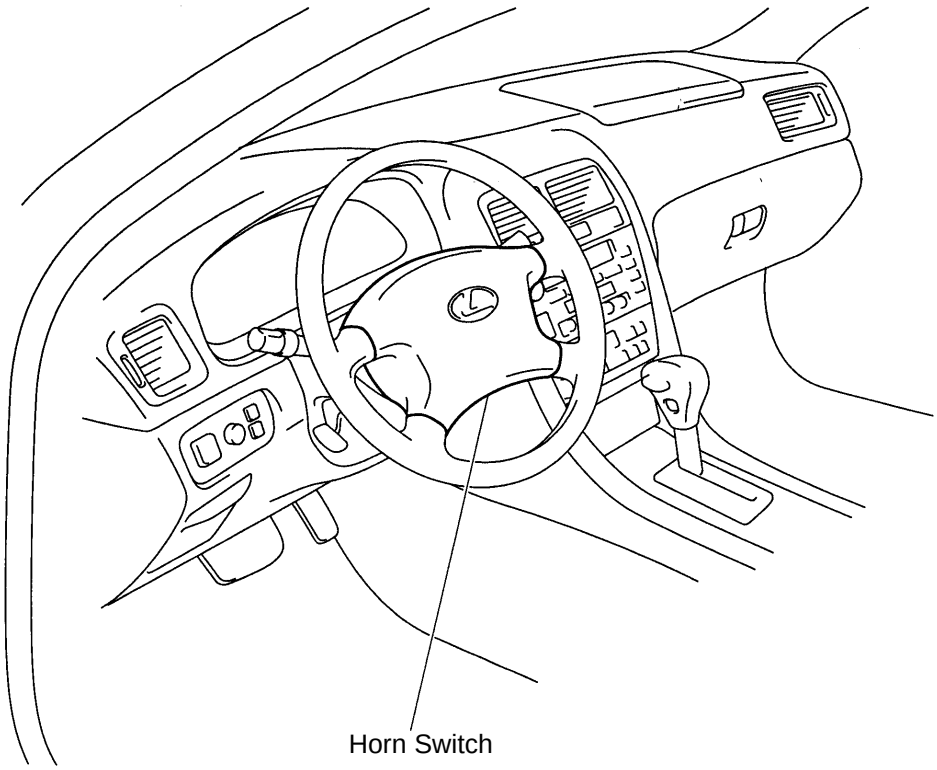
Check that there is continuity between terminal 1 and 2.
If continuity is not as specified, replace the coil.

HORN SYSTEM

LOCATION

BE067–02



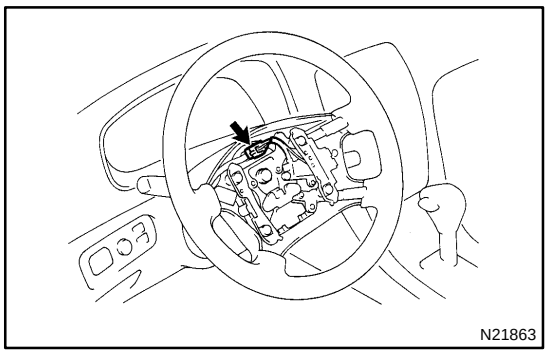


N21630
N21631

Z19485

BE10V–01

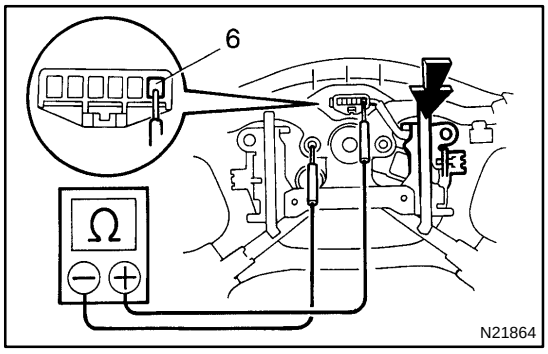
INSPECTION



1. 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 socket wrench, loosen the 2 bolts.
(d) Pull up the horn pad and place it on the steering column, as shown.

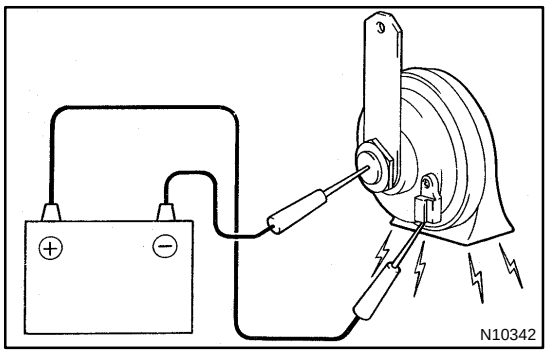
HINT:
Do not disconnect the connector from the horn pad.



(e) Disconnect the connector from the slip ring.
(f) Check that no continuity exists between terminal 6 of the connector and body ground.
(g) Check that continuity exists 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.

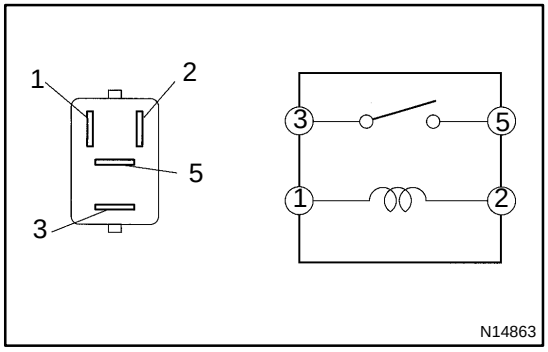
(h) Install the horn pad in place and using a torx socket wrench, torque the 2 bolts.
Torque: 7.1 N·m (72 kgf·cm, 62 in.·lbf)
(i) Install the left and right covers.
(j) Connect the negative (–) terminal to the battery.



2. 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.



3. INSPECT HORN RELAY CONTINUITY

Condition	Tester connection	Specified condition
Constant	1 – 2	Continuity
Apply B+ between terminals 1 and 2.	3 – 5	Continuity

If continuity is not as specified, replace the relay.