BODY ELECTRICAL SYSTEM

PRECAUTION

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

HEADLIGHT SYSTEM

- 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.

SRS (SUPPLEMENTAL RESTRAINT SYSTEM)

- Work must be started after 90 seconds from the time the ignition switch is turned to the "LOCK" position and the negative (–) terminal cable is disconnected from the battery.
- When disconnecting any of the connectors in the SRS, be sure to lock the ignition switch and disconnect the negative (–) terminal cable from the battery first. Since the connectors are twin lock type connectors, disconnect the connectors only after releasing the first stage lock.
- When connecting SRS connectors, be sure to lock them securely. (If the connectors are not locked securely, the system may not operate when needed.)
- Always store the steering wheel pad with the pad surface facing upward. (Storing the pad with its metallic surface up may lead to a serious accident if the SRS inflates for some reason.)
- When installing the spiral cable, be sure the vehicle is in the straight ahead condition and confirm that the spiral cable is in the neutral position when it is installed.
- INFORMATION LABELS (NOTICE) are attached to the periphery of the SRS components. Follow the NOTICE.

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 be sure to note the stations and reset them after the battery terminal is reconnected.
- 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.

MOBILE COMMUNICATION SYSTEM

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

PREPARATION

SST (SPECIAL SERVICE TOOLS)

	09808–14010 Fuel Sender Gauge Tool Assy	
	09843–18020 Diagnosis Check Wire	
	09950–50010 Puller C Set	

RECOMMENDED TOOLS

	09082–00050 TOYOTA Electrical Tester Set	

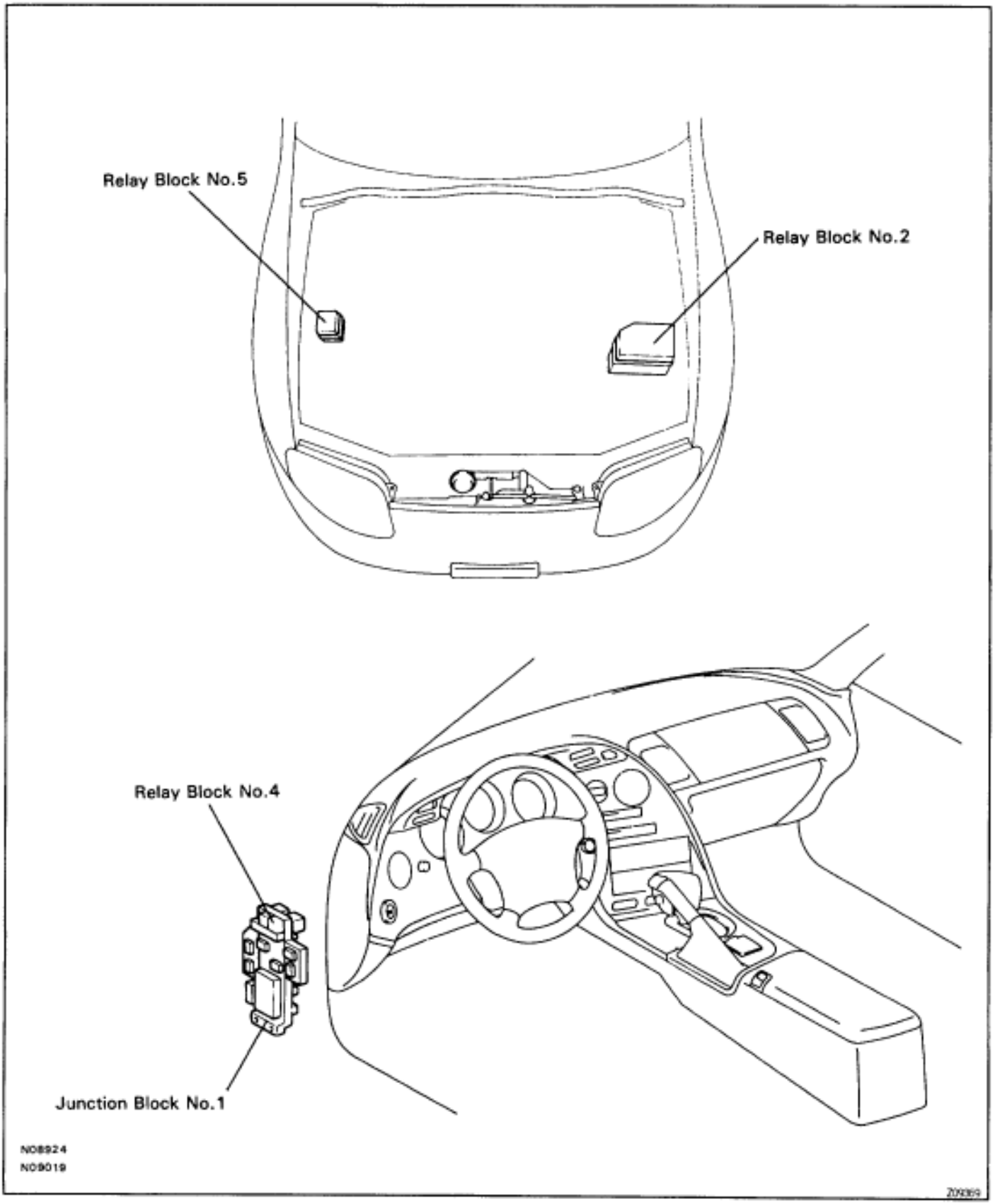
EQUIPMENT

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

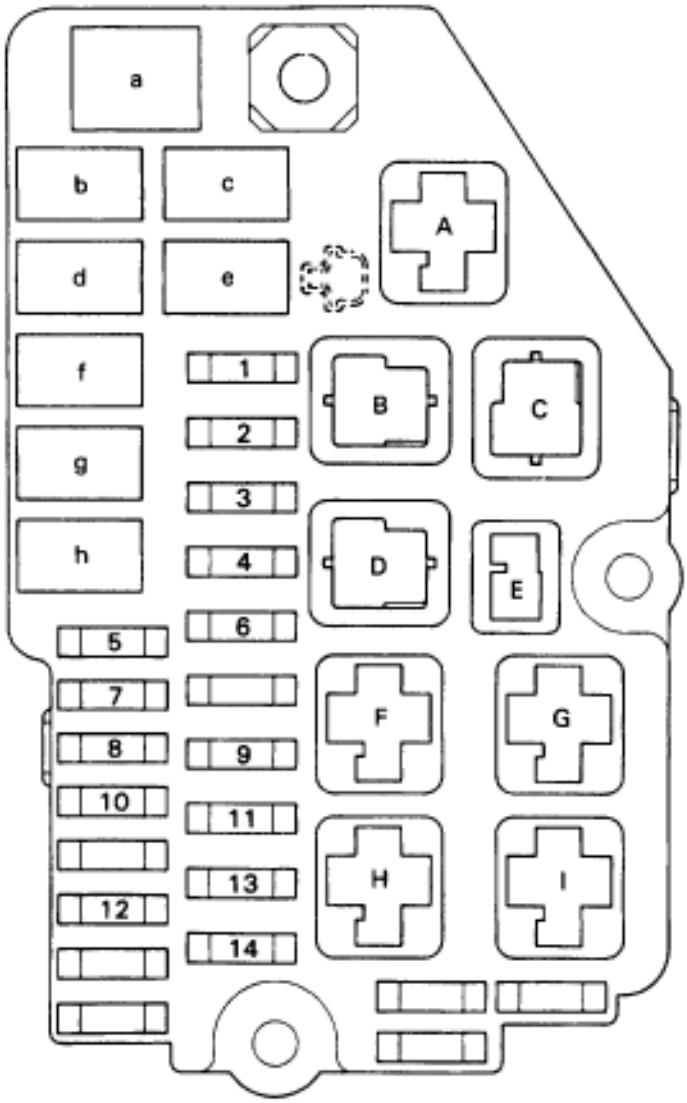
SSM (SPECIAL SERVICE MATERIAL)

	DuPont Paste No. 4817 or equivalent	Rear window defogger

POWER SOURCE
PARTS LOCATION



Relay Block No.2



RELAY
- A. Starter Relay
- B. Heater Relay
- C. Headlight Relay
- D. Dimmer Relay (Daytime Running Light Relay No.2)
- E. Horn Relay
- F. EFI No.2 Relay
- G. EFI Main Relay
- H. Fog Light Relay
- I. A/C Magnetic Clutch Relay

FUSE

High Current Fuses

a. ALT		120 A

Medium Current Fuses

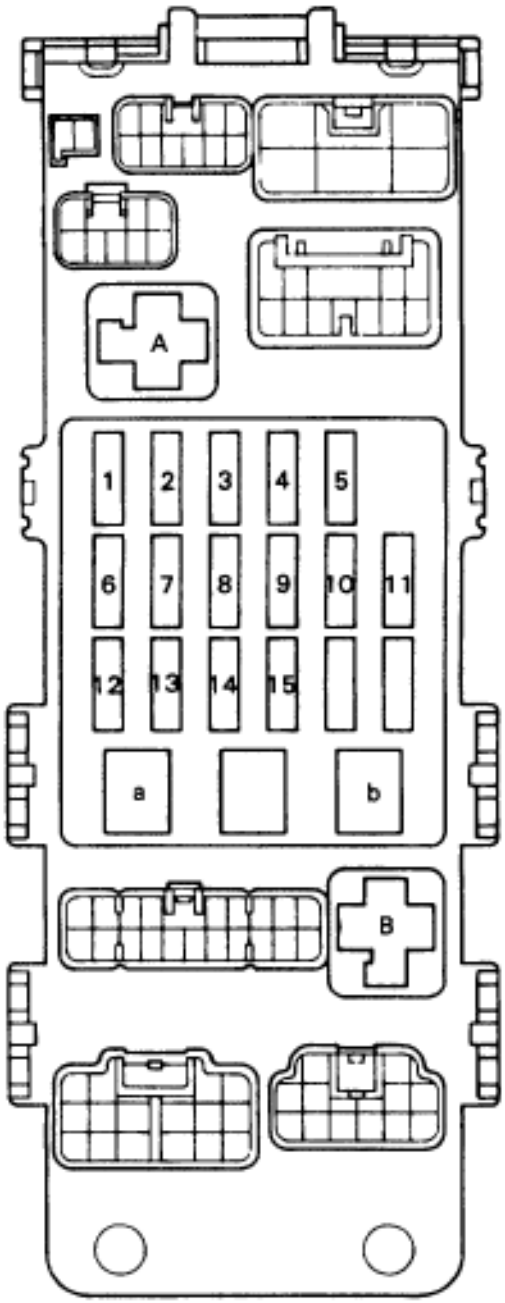
b. HTR		50 A
c. ABS No.2		30 A
d. FAN		30 A
e. MAIN		50 A
f. ABS No.1		60 A
g. AM1	USA	50 A
	CANADA	60 A
h. POWER		60 A

Fuses

1. EFI No.2	30 A
2. EFI No.1	30 A
3. AM2	30 A
4. FOG	15 A
5. USA: HEAD (RH)	15 A
CANADA: HEAD (RH-LWR)	15 A
6. HAZ-HORN	15 A
7. USA: HEAD (LH)	15 A
CANADA: HEAD (LH-LWR)	15 A
8. HEAD (RH-UPR)	15 A
9. TRAC	7.5 A
10. HEAD (LH-UPR)	15 A
11. ALT-S	7.5 A
12. DRL	7.5 A
13. DOME	7.5 A
14. RAD No.1	20 A

N08527

Junction Block No.1



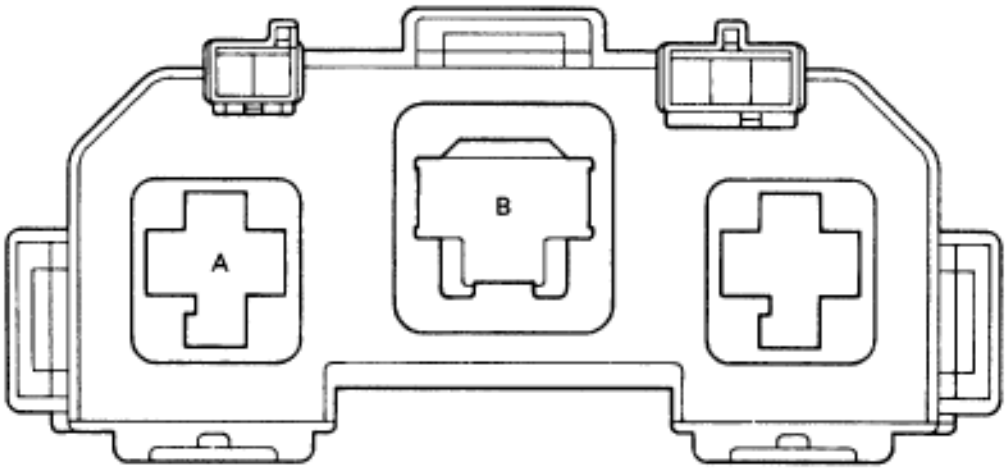
RELAY
A. Taillight Relay
B. Power Main Relay

FUSE

Medium Current Fuses	
a. DOOR	30 A
b. DEFOG	30 A

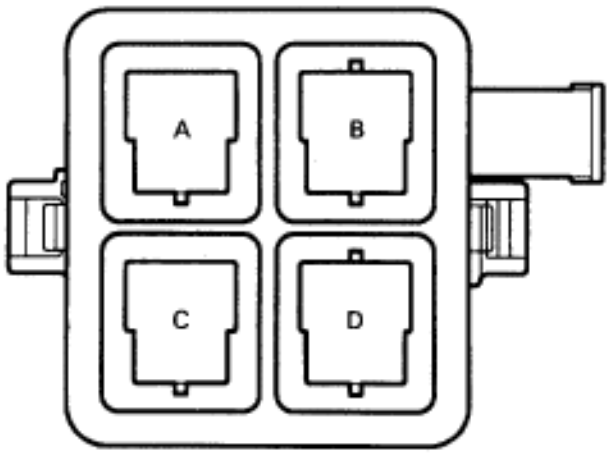
Fuses	
1. WIPER	20 A
2. HTR	7.5 A
3. SEAT-HTR	15 A
4. ST	7.5 A
5. IGN	7.5 A
6. PANEL	10 A
7. MIR-HTR	10 A
8. TURN	7.5 A
9. STOP	15 A
10. CIG	15 A
11. RAD No.2	7.5 A
12. TAIL	10 A
13. ECU-IG	10 A
14. GAUGE	10 A
15. ECU-B	10 A

Relay Block No.4



RELAY
A. Rear Window Defogger Relay
B. Turn Signal Flasher

Relay Block No.5



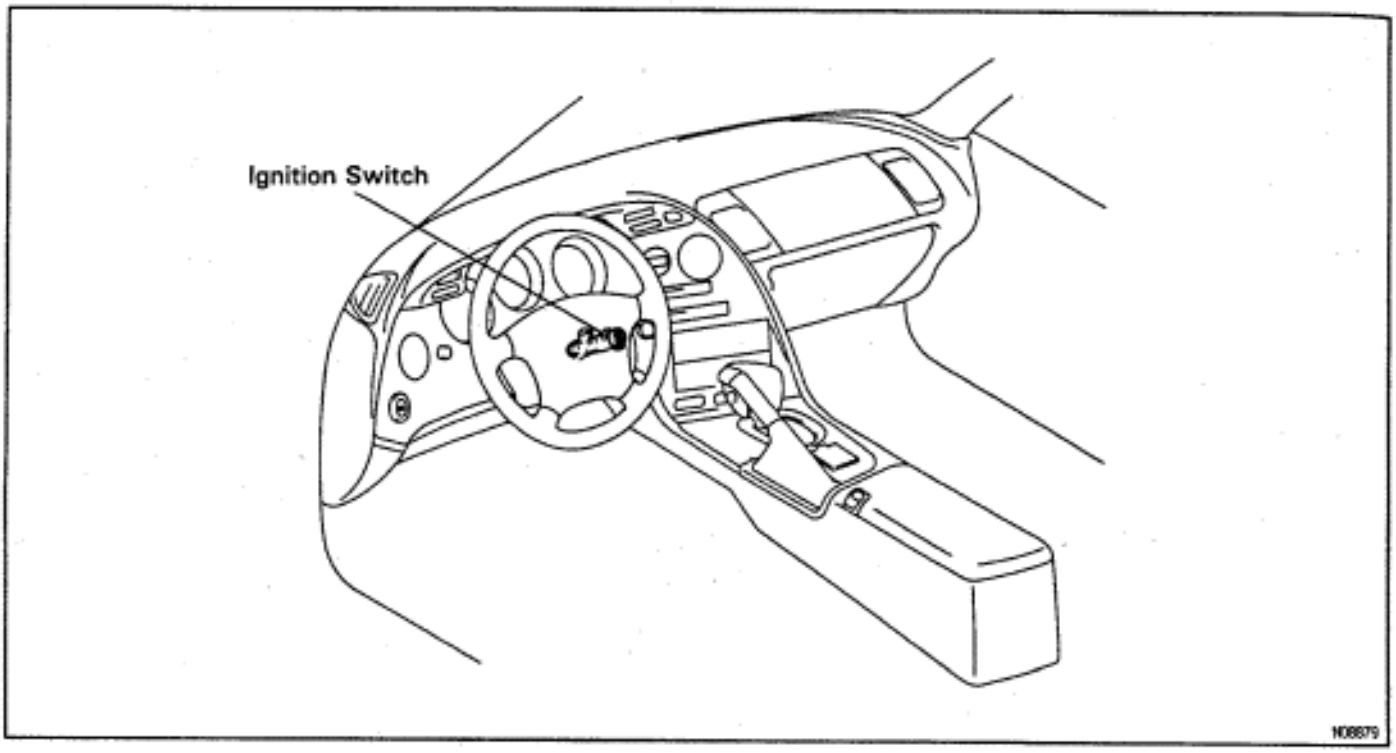
RELAY
A. Traction Solenoid Relay
B. Traction Motor Relay
C. ABS Solenoid Relay
D. ABS Motor Relay

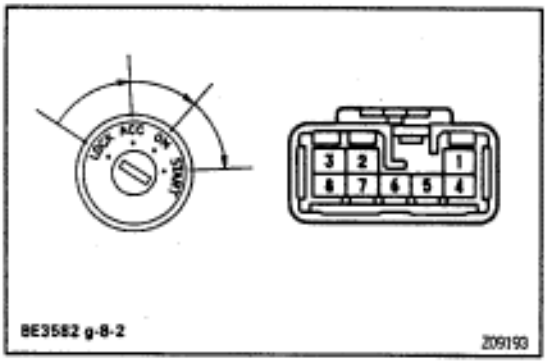
N08700
N08701

209101

IGNITION SWITCH

PARTS LOCATION



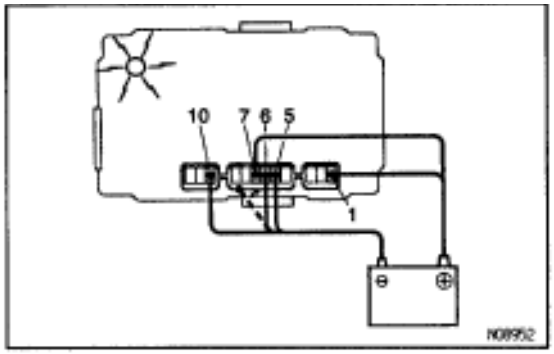


IGNITION SWITCH INSPECTION

INSPECT SWITCH CONTINUITY

Switch position	Tester connection to terminal number	Specified condition
Lock	–	No continuity
ACC	5 – 7	Continuity
ON	4 – 5 – 7 2 – 3	Continuity
START	4 – 7 – 8 1 – 2 – 3	Continuity

If continuity is not as specified, replace the switch



KEY UNLOCK WARNING INSPECTION

1. INSPECT INTEGRATION RELAY OPERATION

(a) Connect the positive (+) lead from the battery to terminal 1, the negative (–) lead to terminals 5 and 10.

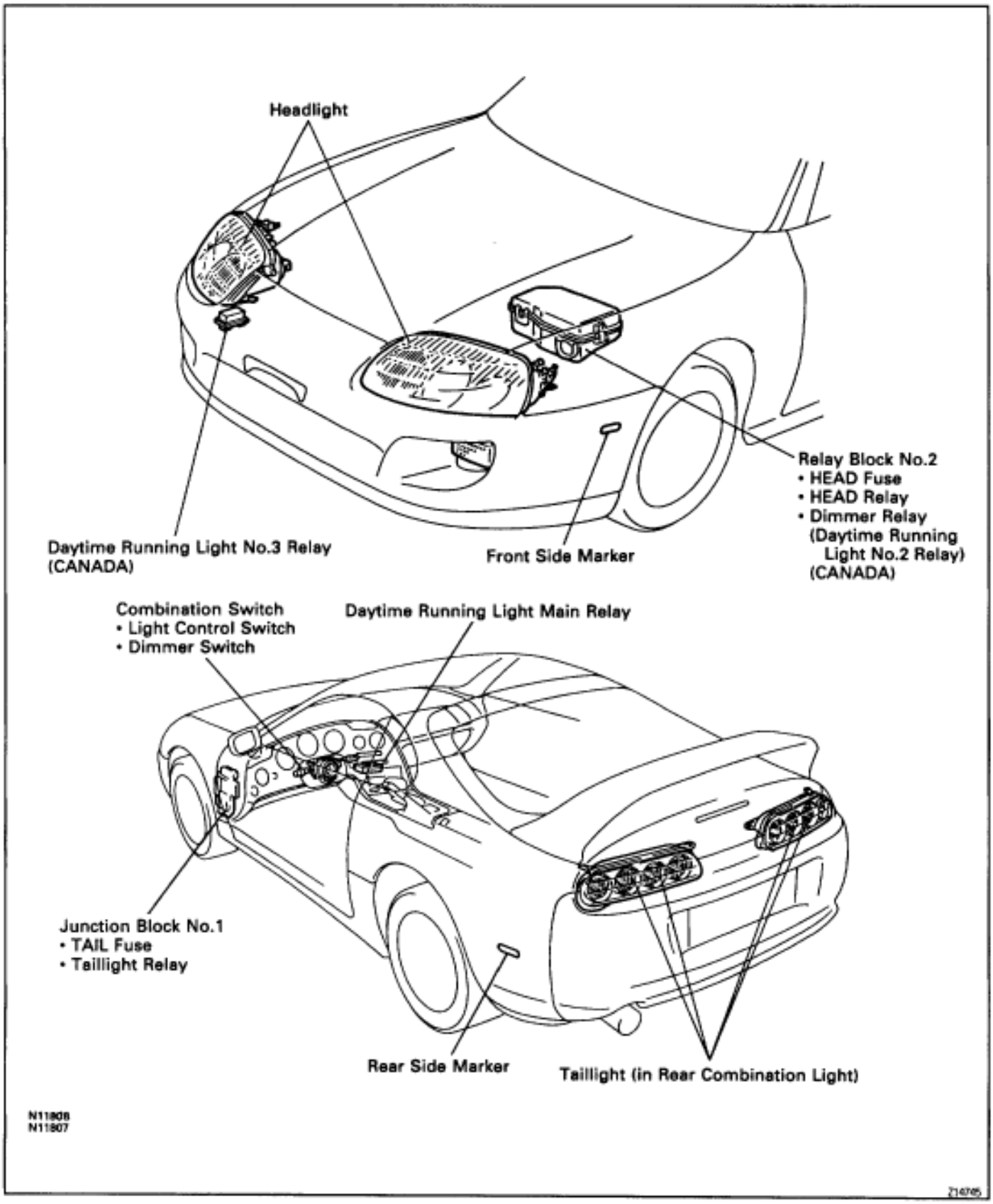
(b) Check that the buzzer sounds when the negative (–) lead from the battery is connected to terminal 6.
If operation is not as specified, replace the relay.

2. INSPECT RELAY CIRCUIT

See page BE–18

HEADLIGHT AND TAILLIGHT SYSTEM

PARTS LOCATION



TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

USA:

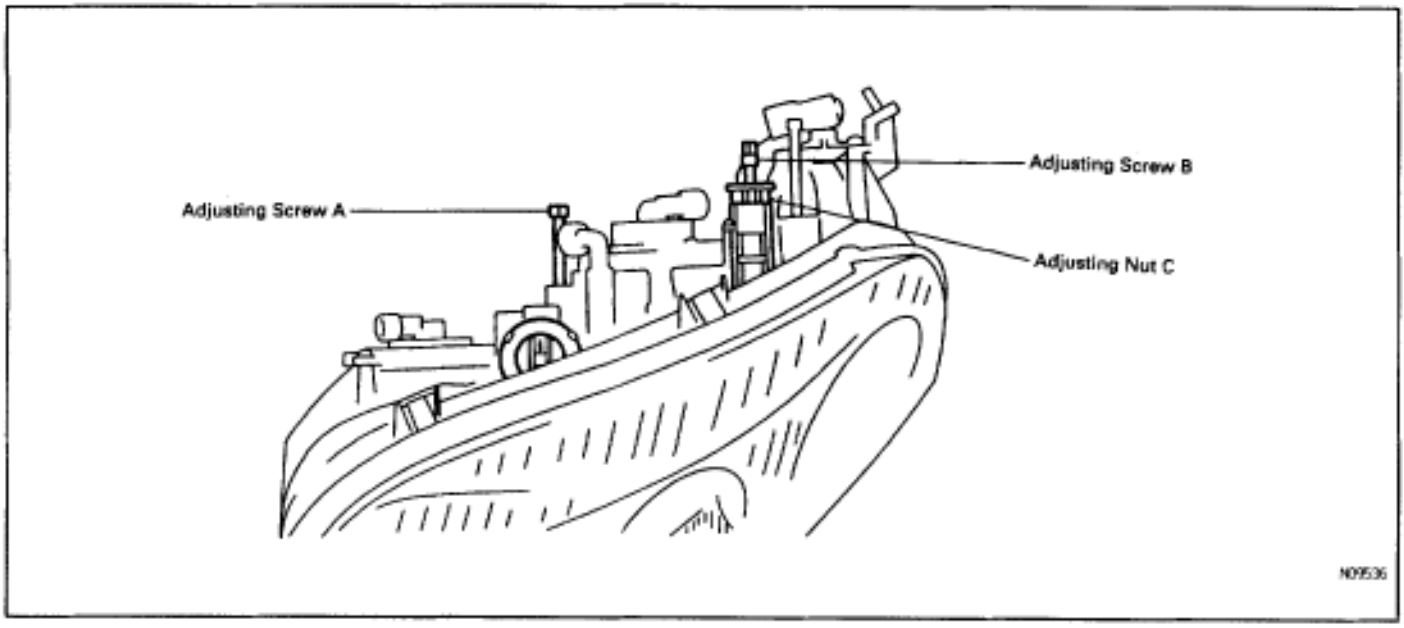
Trouble	Parts name	(See page)
Headlight does not light (Taillight is normal)	1. FL MAIN 2. HEAD Fuse (LH, RH) 3. Headlight Control Relay 4. Headlight Dimmer Switch 5. Light Control Switch 6. Integration Relay 7. Wire Harness 8. Headlight Bulb	 (BE–5) (BE–16) (BE–15) (BE–15) (BE–17)
Headlight does not light (Taillight does not light up)	1. FL MAIN 2. Light Control Switch 3. Integration Relay 4. Wire Harness 5. Headlight Bulb	 (BE–15) (BE–17)
Only one side light does not light	1. HEAD Fuse (LH, RH) 2. Headlight Bulb 3. Wire Harness	(BE–5)
”Lo–Beam” does not light	1. Headlight Dimmer Switch 2. Wire Harness	(BE–15)
”Hi–Beam” does not light	1. Headlight Dimmer Switch 2. Wire Harness	(BE–15)
”Flash” does not light	1. Headlight Dimmer Switch 2. Wire Harness	(BE–15)

CANADA:

Trouble	Parts name	(See page)
Headlight does not light (Taillight is normal)	1. FL MAIN 2. Headlight Control Relay 3. Daytime Running Light Relay 4. Daytime Running Light No.2 and No.3 Relay 5. Headlight Dimmer Switch 6. Light Control Switch 7. Integration Relay 8. Wire Harness 9. Headlight Bulb	 (BE–18) (BE–19) (BE–15) (BE–15) (BE–17)
Headlight does not light (Taillight does not light up)	1. FL MAIN 2. Light Control Switch 3. Daytime Running Light Relay 4. Daytime Running Light No.2 and No.3 Relay 5. Integration Relay 6. Wire Harness	 (BE–15) (BE–18) (BE–19) (BE–17)

Trouble	Parts name	(See page)
Only one side light does not light	1. Headlight Bulb 2. Wire Harness	
”Lo–Beam” does not light (ALL)	1. Headlight Control Relay 2. Wire Harness	(BE–16)
”Lo–Beam” does not light (ONE SIDE)	1. HEAD LH–LWR Fuse 2. HEAD RH–LWR Fuse 3. Headlight Bulb 4. Wire Harness	(BE–5) (BE–5)
”Hi–Beam” does not light (ALL)	1. Headlight Dimmer Switch 2. Daytime Running Light Relay 3. Daytime Running Light No.2 and No.3 Relay 4. Wire Harness	(BE–15) (BE–18) (BE–19)
”Hi–Beam” does not light (ONE SIDE)	1. HEAD LH–UPR Fuse 2. HEAD RH–UPR Fuse 3. Headlight Bulb 4. Wire Harness	(BE–5) (BE–5)
”Flash” does not light	1. Headlight Dimmer Switch 2. Daytime Running Light Relay 3. Daytime Running Light No.2 and No.3 Relay 4. Wire Harness	(BE–15) (BE–18) (BE–19)
”Auto Turn–off System” dose not operate	1. Integration Relay 2. GAUGE Fuse 3. Wire Harness 4. Door Courtesy Switch (driver’s)	(BE–17) (BE–6) (BE–28)
Headlight does not light with light control SW in HEAD.	1. Integration Relay 2. Light Control Switch 3. Daytime Running Light Relay 4. Daytime Running Light No.2 and No.3 Relay 5. Wire Harness	(BE–17) (BE–15) (BE–18) (BE–19)
Headlight does not go out with light control SW in OFF	1. Headlight Control Relay 2. Wire Harness	(BE–16)
Taillight does not light with light control SW in TAIL	1. Taillight Control Relay 2. Integration Relay 3. Light Control Switch 4. Wire Harness	(BE–16) (BE–17) (BE–15)
Taillight does not go out with light control SW in OFF“	1. Taillight Control Relay 2. Integration Relay 3. Light Control Switch 4. Wire Harness	(BE–16) (BE–17) (BE–15)
Headlight and Taillight do not light with engine running and light control SW in OFF	1. GAUGE Fuse 2. Daytime Running Light Relay 3. Daytime Running Light No.2 and No.3 Relay 4. Wire Harness 5. Generator L Terminal 6. Parking Brake Switch	(BE–6) (BE–18) (BE–19) (BE–52)

HEADLIGHT AIM ADJUSTMENT

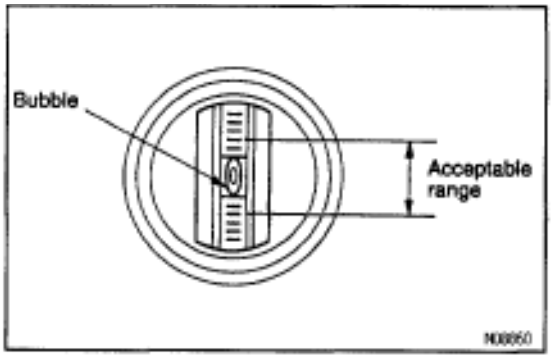


Adjusting headlight aim only

1. INSPECT HEADLIGHT AIM

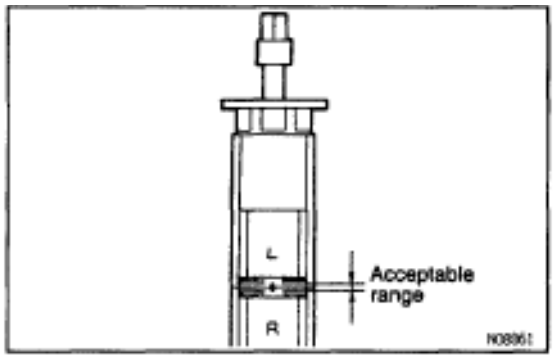
Do the following before inspection.

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



2. ADJUST HEADLIGHT VERTICAL ALIGNMENT

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



3. ADJUST HEADLIGHT HORIZONTAL ALIGNMENT

If the "0" moves away from the mark beyond the acceptable range, adjust the "0" back to the mark using adjusting screw B.

Replacing headlight

1. REPLACE HEADLIGHT

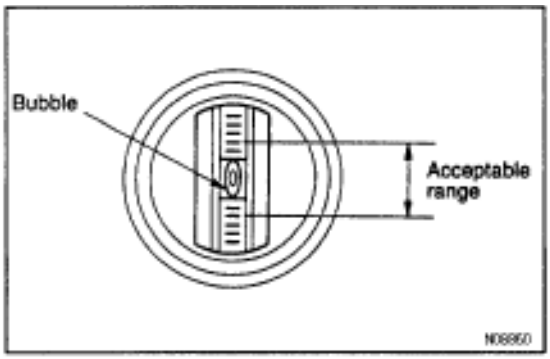
2. INSPECT HEADLIGHT AIM

Do the following before inspection.

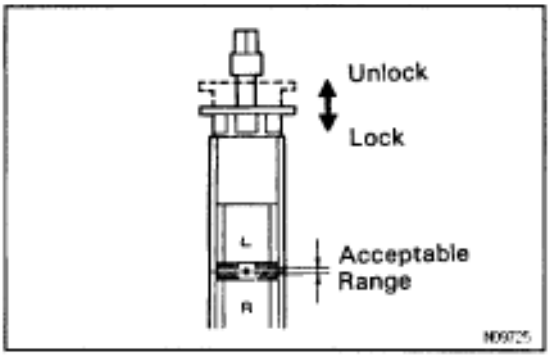
- Make sure the body around the headlight is not deformed.
- Park the vehicle on a level spot.
- The driver gets into the driver's seat and puts the vehicle in a state ready for driving (with a full tank).
- Bounce the vehicle several times.

3. ADJUST HEADLIGHT IN VERTICAL ALIGNMENT

(a) Using adjusting screw A, adjust the headlight aim to within the specifications.



(b) Make sure the gauge bubble is within the acceptable range.
HINT: If the gauge bubble is outside the acceptable range, check that the vehicle is parked on a level spot. Readjust the headlight aim after parking the vehicle on a level spot.



4. ADJUST HEADLIGHT IN HORIZONTAL ALIGNMENT

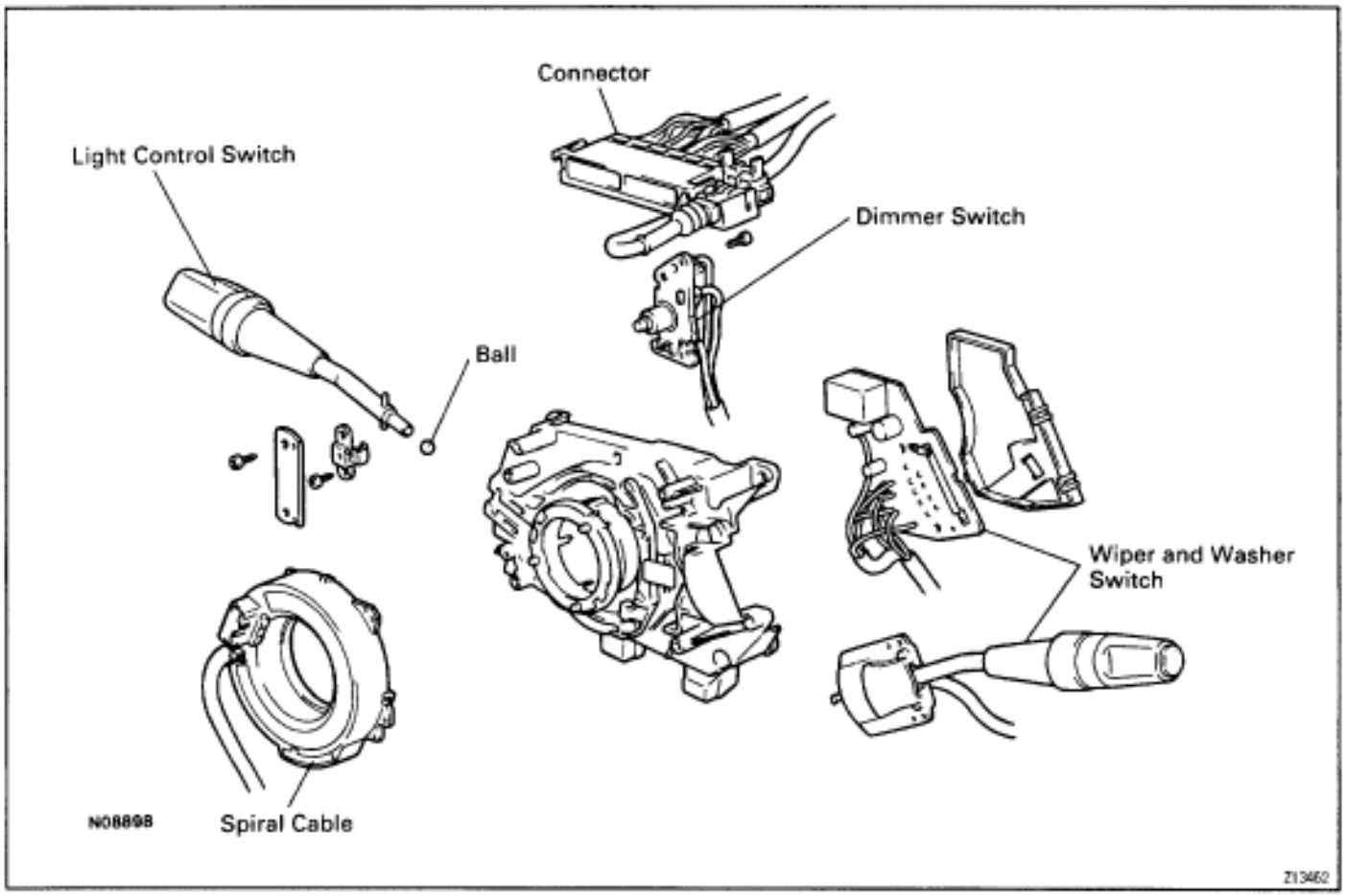
(a) Using adjusting screw B, adjust the headlight aim to within the specifications.

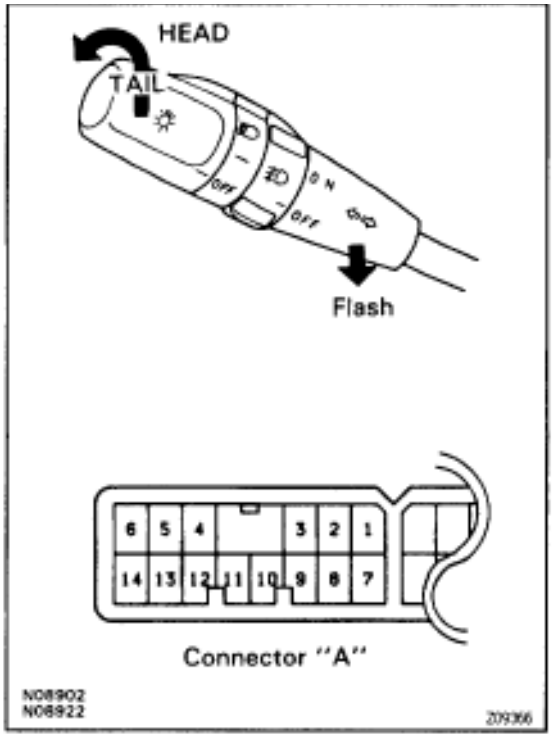
(b) Using adjusting nut C, adjust the "0" back to the mark.
HINT: For adjustment, pull nut C to the rear vehicle to free it. After adjustment, check that the nut C is locked in.

COMBINATION SWITCH REMOVAL AND INSTALLATION

See SR–Section

COMBINATION SWITCH DISASSEMBLY AND ASSEMBLY





COMBINATION SWITCH INSPECTION

1. INSPECT LIGHT CONTROL SWITCH CONTINUITY

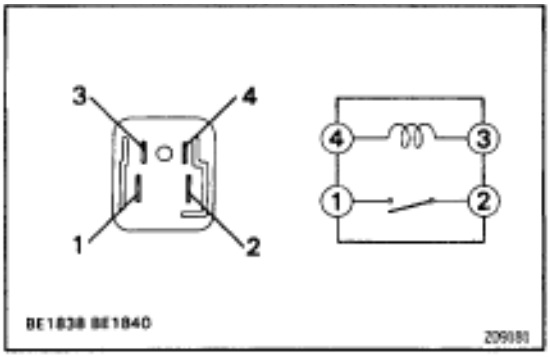
Switch position	Tester connection to terminal number	Specified condition
OFF	–	No continuity
TAIL	A2–A11	Continuity
HEAD	A2–A11–A13	Continuity

If continuity is not as specified, replace the switch.

2. INSPECT DIMMER SWITCH CONTINUITY

Switch position	Tester connection to terminal number	Specified condition
Flash	A9–A12–A14	Continuity
Low beam	A3–A9	Continuity
High beam	A9–A12	Continuity

If continuity is not as specified, replace the switch.

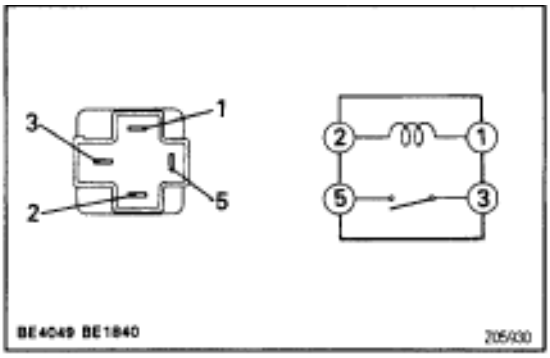


HEADLIGHT CONTROL RELAY INSPECTION

INSPECT RELAY CONTINUITY

Condition	Tester connection to terminal number	Specified condition
Constant	3–4	Continuity
Apply B+ between Terminal 3 and 4.	1–2	Continuity

If continuity is not as specified, replace the relay.

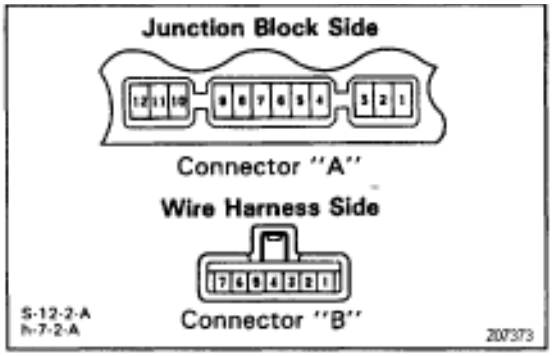


TAILLIGHT RELAY INSPECTION

INSPECT RELAY CONTINUITY

Condition	Tester connection to terminal number	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.



INTEGRATION RELAY INSPECTION

INSPECT RELAY CIRCUIT

Light Auto Turn Off System

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

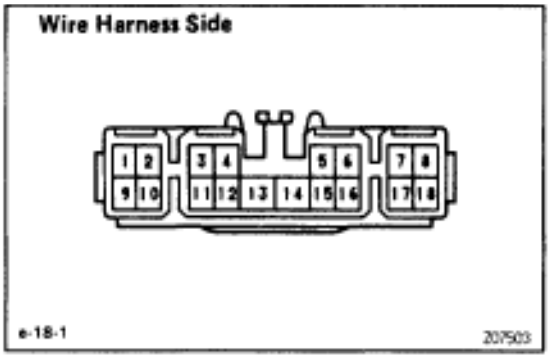
Tester connection to terminal number	Condition	Specified condition
A6–Ground	Driver's door courtesy switch OFF	No continuity
A6–Ground	Driver's door courtesy switch ON	Continuity
A10–Ground	Constant	Continuity
B1–Ground	Light control switch position OFF or TAIL	No continuity
B1–Ground	Light control switch position HEAD	Continuity
B4–Ground	Light control switch position OFF	No continuity
B4–Ground	Light control switch position TAIL or HEAD	Continuity
A1–Ground	Constant	Battery positive voltage
A7–Ground	Ignition switch position LOCK or ACC	No voltage
A7–Ground	Ignition switch position ON	Battery positive voltage
B2–Ground	Constant	Battery positive voltage
B3–Ground	Constant	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.

DOOR COURTESY SWITCH INSPECTION

See page BE–28



DAYTIME RUNNING LIGHT MAIN RELAY INSPECTION

INSPECT RELAY CIRCUIT

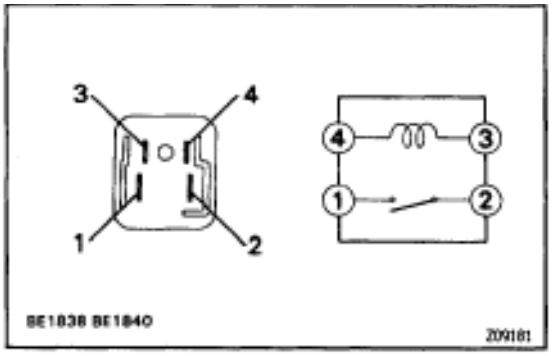
Disconnect the connector from relay and inspect the connector on wire harness side, as shown.

Tester connection to terminal number	Condition	Specified condition
5–Ground	Headlight dimmer switch position Low beam or high beam	No continuity
5–Ground	Headlight dimmer switch position Flash	Continuity
8–Ground	Parking brake switch position OFF	No continuity
8–Ground	Parking brake switch position ON	Continuity
16–Ground	Headlight dimmer switch position Low beam	No continuity
16–Ground	Headlight dimmer switch position Flash or High beam	Continuity
13–Ground	Constant	Continuity
18–Ground	Constant	Continuity
2–Ground	Ignition switch position LOCK or ACC	No voltage
2–Ground	Ignition switch position ON	Battery positive voltage
11–Ground	Engine Stop	No voltage
11–Ground	Engine Running	Battery positive voltage
15–Ground 17–Ground	Constant	Battery positive voltage

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

PARKING BRAKE SWITCH INSPECTION

See page BE–52



DAYTIME RUNNING LIGHT RELAY No.2 INSPECTION

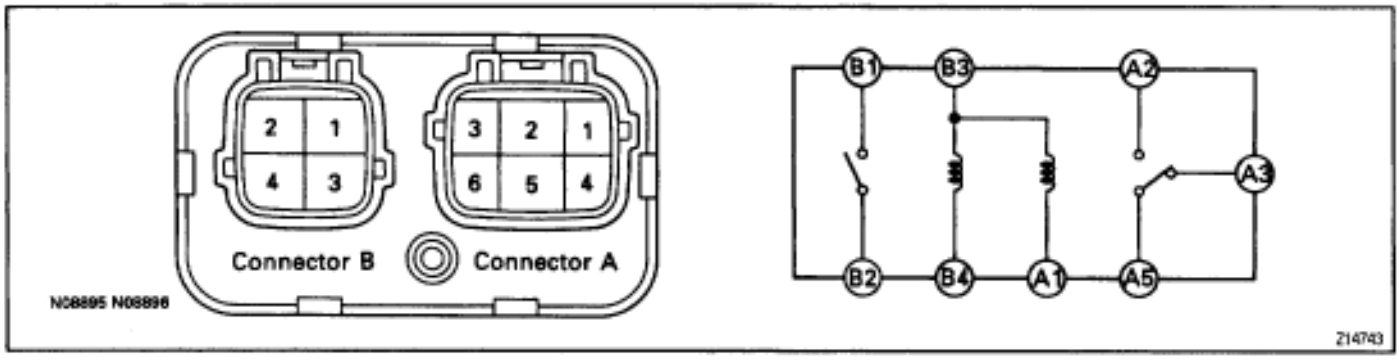
INSPECT RELAY CONTINUITY

Condition	Tester connection to terminal number	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.

DAYTIME RUNNING LIGHT RELAY No.3 INSPECTION

INSPECT RELAY CONTINUITY

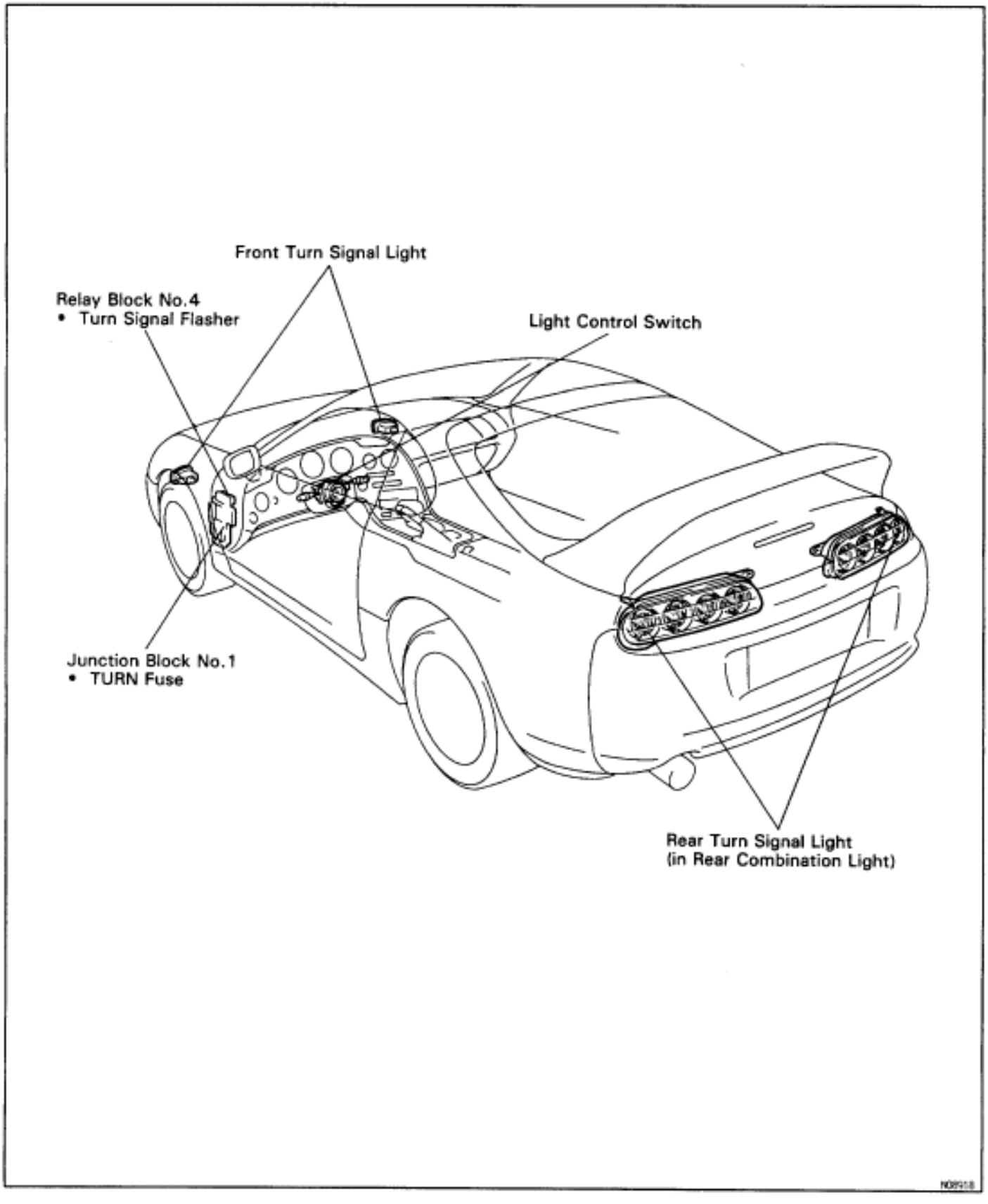


Tester connection to terminal number	Condition	Specified condition
A1–B3	Constant	Continuity
A3–A5	Constant	Continuity
B3–B4	Constant	Continuity
A2–A5	Apply battery positive voltage between terminal A1 and B3.	Continuity
B1–B2	Apply battery positive voltage between terminal B3 and B4.	Continuity

If continuity is not as specified, replace the relay.

TURN SIGNAL AND HAZARD WARNING SYSTEM

PARTS LOCATION

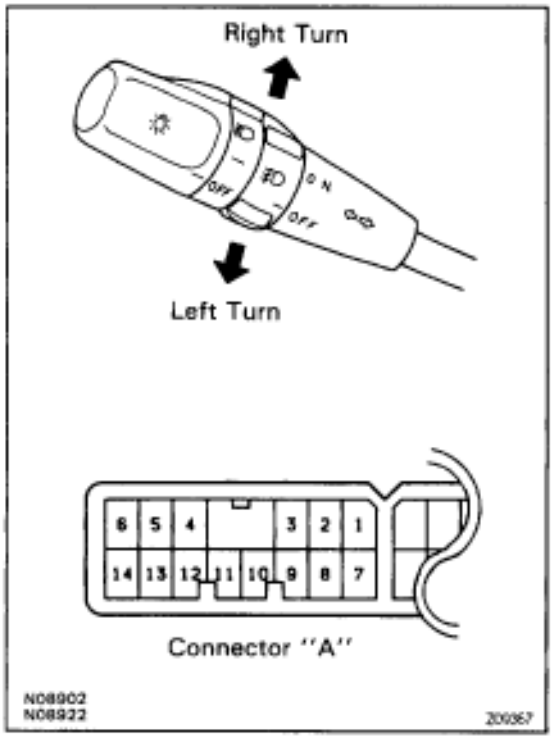


TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
"Hazard" and "Turn" do not light up	1. Hazard Warning Switch 2. Turn Signal Flasher 3. Wire Harness	(BE–22) (BE–22)
The flashing frequency is abnormal	1. Bulb 2. Turn Signal Flasher 3. Wire Harness	(BE–22)
Hazard warning light does not light up (Turn is normal)	1. HAZ–HORN Fuse 2. Wire Harness	(BE–5)
Hazard warning light does not light up in one direction	1. Hazard Warning Switch 2. Wire Harness	(BE–22)
*1 Turn signal does not light up	1. Ignition Switch 2. TURN Fuse 3. Turn Signal Switch 4. Wire Harness	(BE–8) (BE–6) (BE–21)
*2 Turn signal does not light up	1. TURN Fuse 2. Turn Signal Switch 3. Wire Harness	(BE–6) (BE–21)
Turn signal does not light up in one direction	1. Turn Signal Switch 2. Wire Harness	(BE–21)
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.

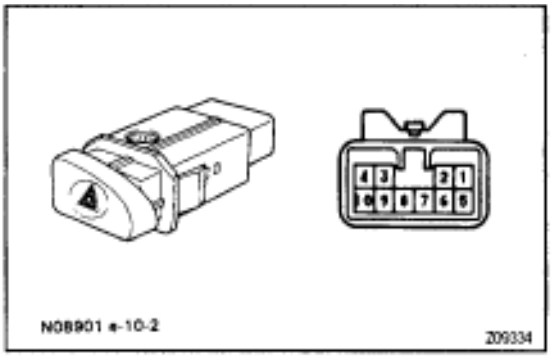


TURN SIGNAL SWITCH INSPECTION

INSPECT SWITCH CONTINUITY

Switch position	Tester connection to terminal number	Specified condition
Left turn	A1 – A5	Continuity
Neutral	–	No continuity
Right turn	A1 – A8	Continuity

If continuity is not as specified, replace the switch.

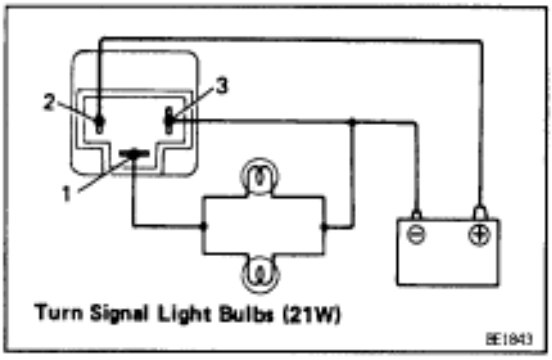


HAZARD WARNING SWITCH INSPECTION

INSPECT SWITCH CONTINUITY

Condition	Tester connection to terminal number	Specified condition
Switch OFF	7–10	Continuity
Switch ON	7–8 4–5–6–9	Continuity
Illumination circuit	2–3	Continuity

If continuity is not as specified, replace the switch.



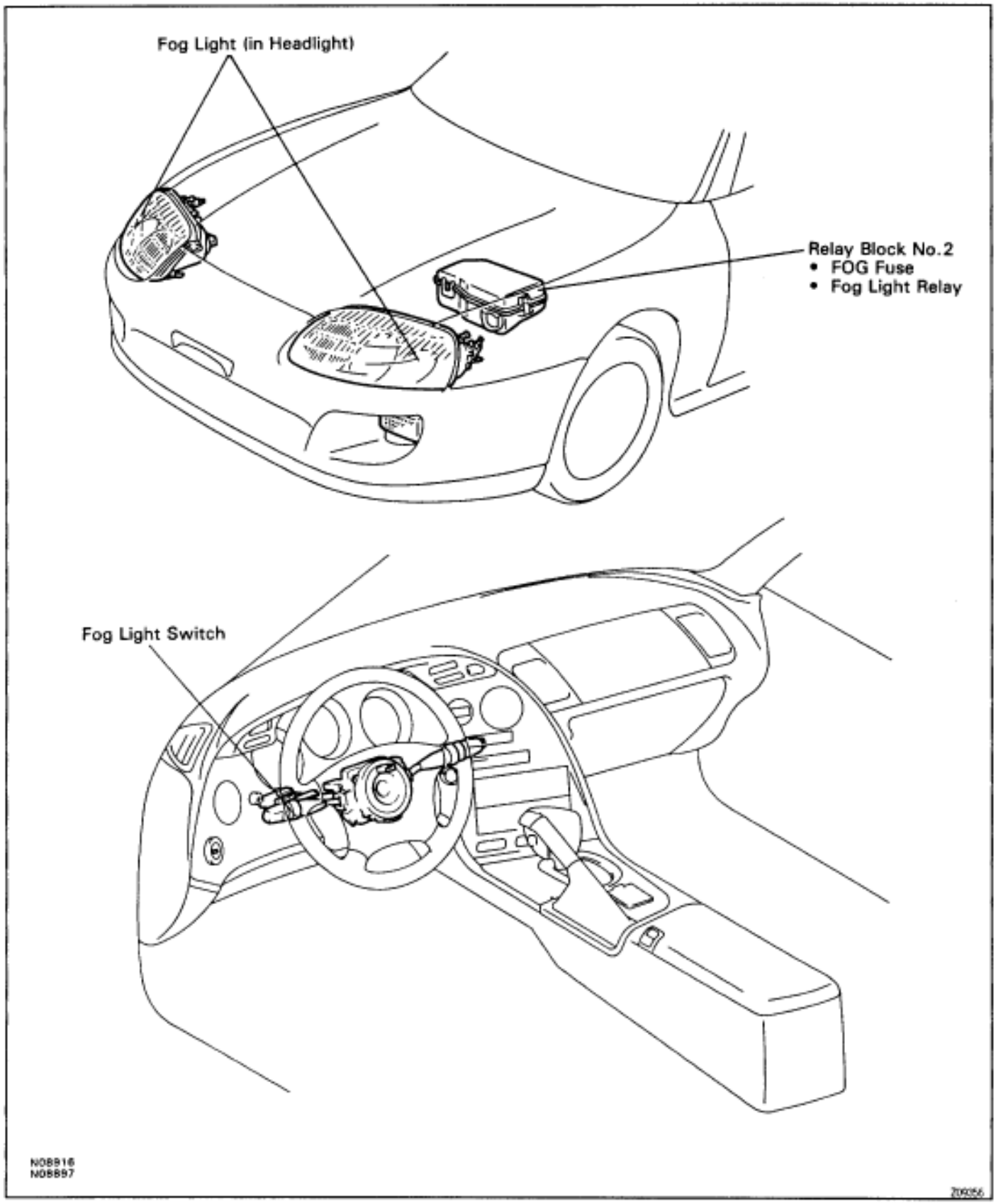
TURN SIGNAL FLASHER INSPECTION

INSPECT FLASHER OPERATION

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

(b) Connect the 2 turn signal light bulbs parallel to each other to terminals 1 and 3, check that the bulbs flash.
HINT: The turn signal lights should flash between 60 and 120 times per minute.

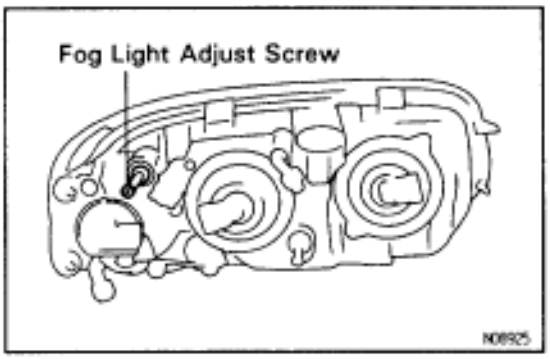
FOG LIGHT SYSTEM
PARTS LOCATION



TROUBLESHOOTING

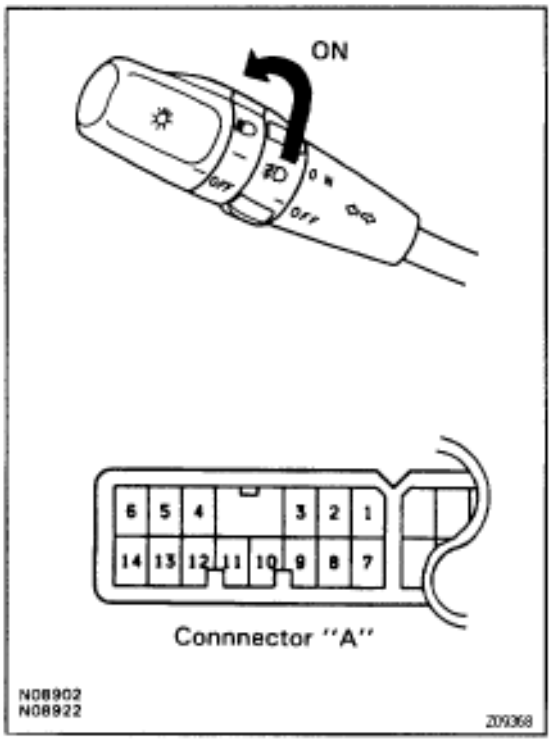
The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Fog light does not light with light control SW HEAD (Headlight is normal).	1. HEAD Fuse 2. Fog Light Relay 3. Fog Light Switch 4. Wire Harness	(BE–5) (BE–25) (BE–24)
Fog light does not light with light control SW HEAD (Headlight does not light).	1. Inspect Headlight system 2. Wire Harness	(BE–10)
Only one light does not light.	1. Bulb 2. Wire Harness	



FOG LIGHT AIM ADJUSTMENT

Adjust Screw: Vertical Direction

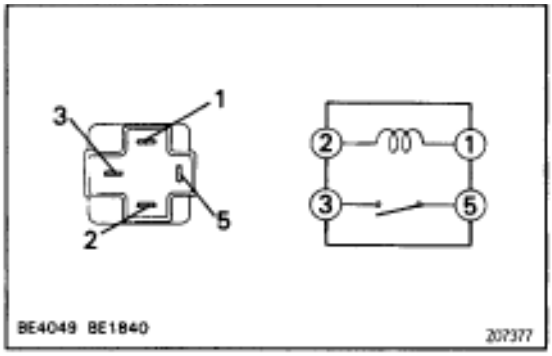


FOG LIGHT SWITCH INSPECTION

INSPECT SWITCH CONTINUITY

Switch position	Tester connection to terminal number	Specified condition
OFF	–	No continuity
ON	A6–A7	Continuity

If continuity is not as specified, replace the switch.



FOG LIGHT RELAY INSPECTION

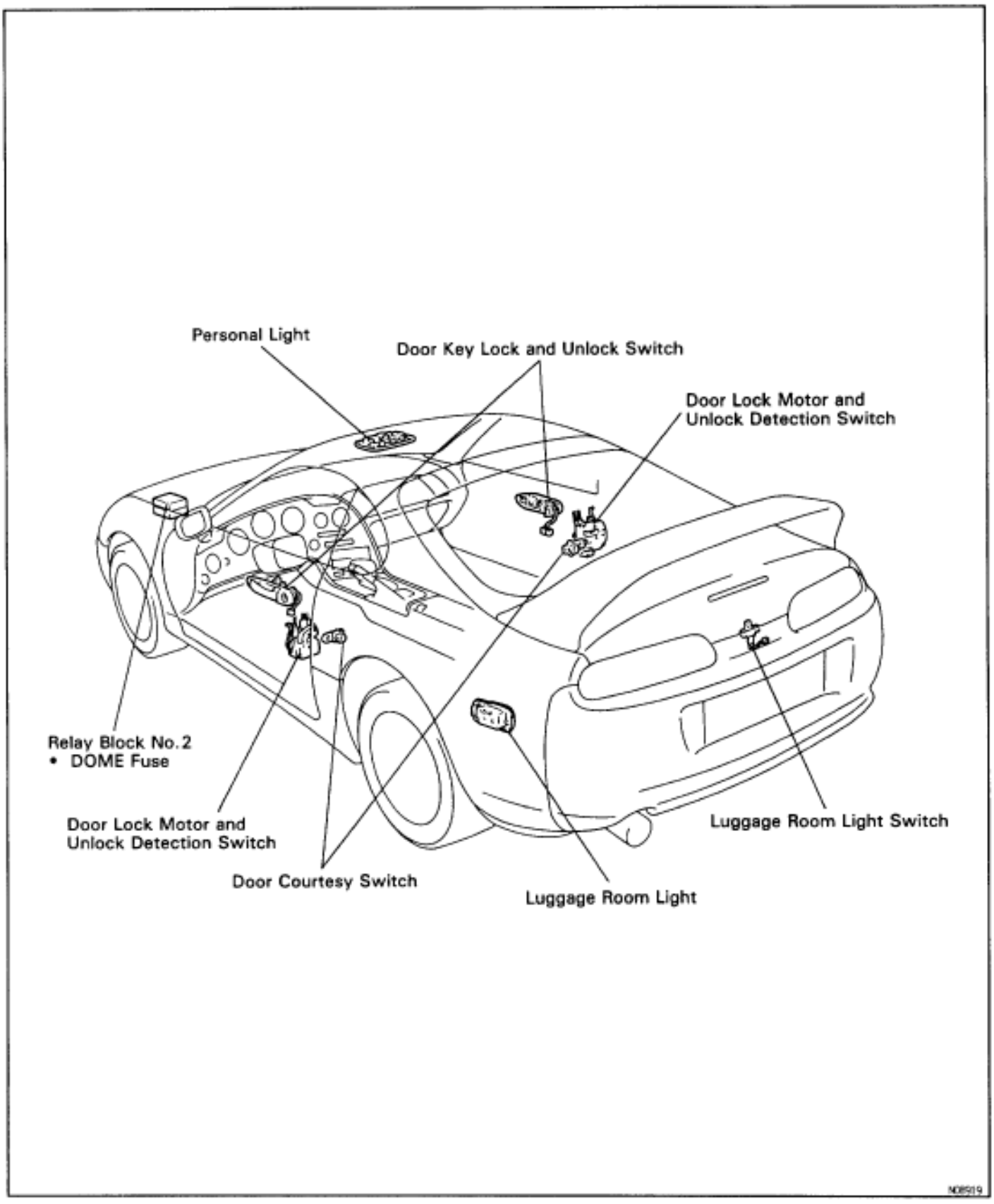
INSPECT RELAY CONTINUITY

Condition	Tester connection to terminal number	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.

INTERIOR LIGHT SYSTEM

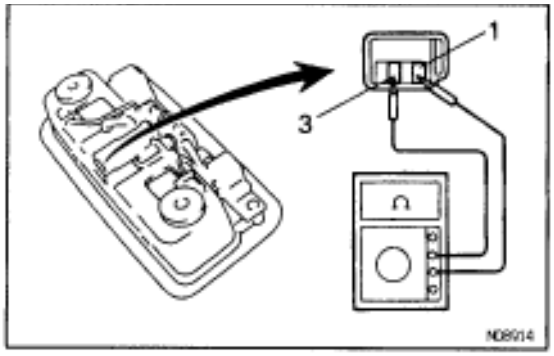
PARTS LOCATION



TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

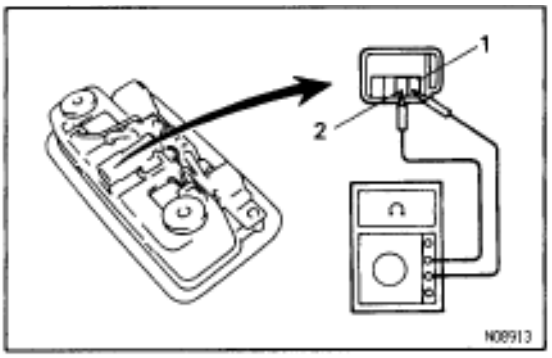
Trouble	Parts name	(See page)
Only one light does not light up.	1. Bulb 2. Wire Harness	
Interior light does not light up (All).	1. DOME Fuse 2. Integration Relay 3. Wire Harness	(BE–5) (BE–29)
”Illuminated Entry System” does not operate.	1. Integration Relay 2. Door Courtesy Switch 3. Door Key Lock and Unlock Switch 4. Door Unlock Detection Switch 5. Wire Harness	(BE–29) (BE–28) (BE–158) (BE–145)
Front personal light does not light up.	1. Bulb 2. Front Personal Light 3. Wire Harness	(BE–27)
Luggage room light does not light up.	1. Bulb 2. Luggage Room Light Switch	(BE–28)



PERSONAL LIGHT SWITCH INSPECTION

1. INSPECT INTERIOR LIGHT CONTINUITY

Switch position	Tester connection to terminal number	Specified condition
DOOR	1–3	Continuity
OFF	–	No continuity

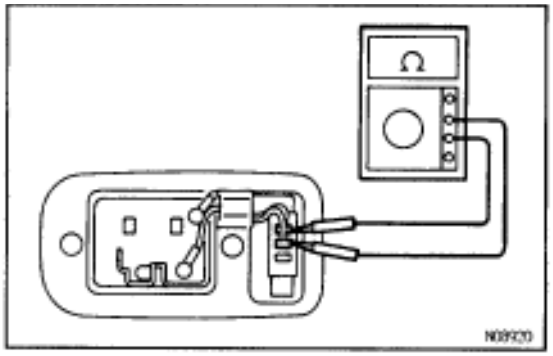


2. INSPECT PERSONAL LIGHT CONTINUITY

Switch position	Tester connection to terminal number	Specified condition
OFF	–	No continuity
*ON	1–2	Continuity

* Set the interior light switch to OFF or DOOR.

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

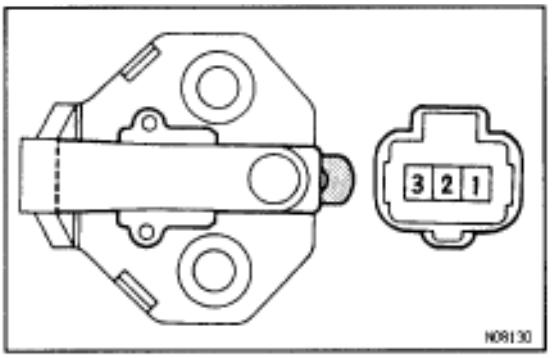


LUGGAGE ROOM LIGHT INSPECTION

INSPECT ROOM LIGHT CONTINUITY

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

If continuity is not as specified, replace the light.

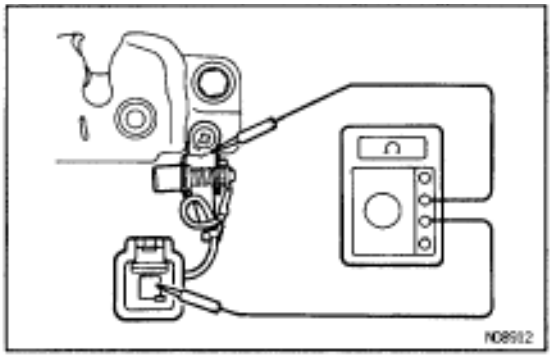


DOOR COURTESY SWITCH INSPECTION

INSPECT SWITCH CONTINUITY

Switch position	Tester connection to terminal number	Specified condition
ON (Switch pin released)	1–2–3	Continuity
OFF (Switch pin pushed in)	–	No continuity

If continuity is not as specified, replace the switch

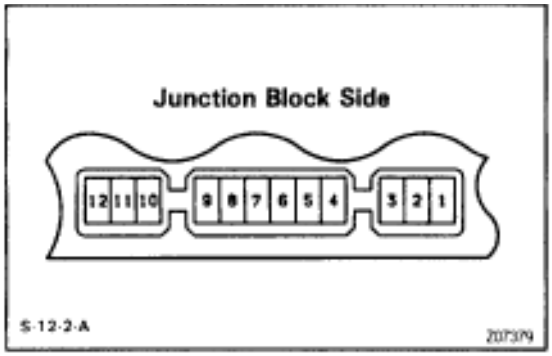


LUGGAGE ROOM LIGHT SWITCH INSPECTION

INSPECT ROOM LIGHT CONTINUITY

Condition	Tester connection	Specified condition
ON (Switch pin released)	1–Switch body	Continuity
OFF (Switch pin pushed in)	1–Switch body	No continuity

If continuity is not as specified, replace the switch.



INTEGRATION RELAY INSPECTION

INSPECT RELAY CIRCUIT

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

Tester connection to terminal number	Condition	Specified condition
4–Ground	Courtesy Switch Position OFF (Door closed)	No continuity
4–Ground	Courtesy Switch Position ON (Door opened)	Continuity
10–Ground	Constant	Continuity
1–Ground	Constant	Battery positive voltage
7–Ground	Ignition switch position / LOCK or ACC	No voltage
7–Ground	Ignition switch position / ON	Battery positive voltage

If circuit is as specified, trying replacing the relay with a new one.
If the circuit is not as specified, inspect the circuits connected to other parts.

DOOR KEY LOCK AND UNLOCK SWITCH INSPECTION

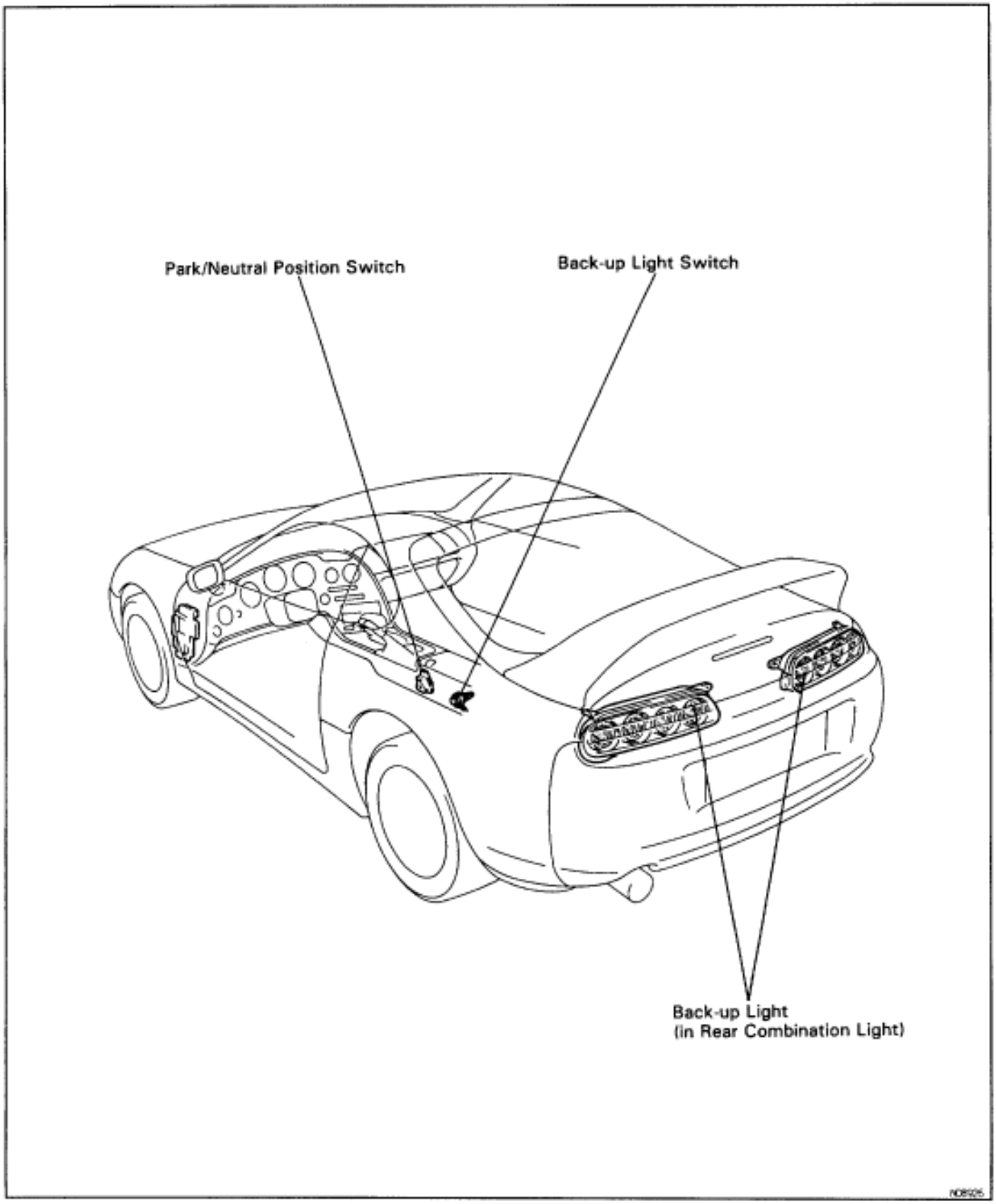
See page BE–158

DOOR UNLOCK DETECTION SWITCH INSPECTION

See page BE–145

BACK–UP LIGHT SYSTEM

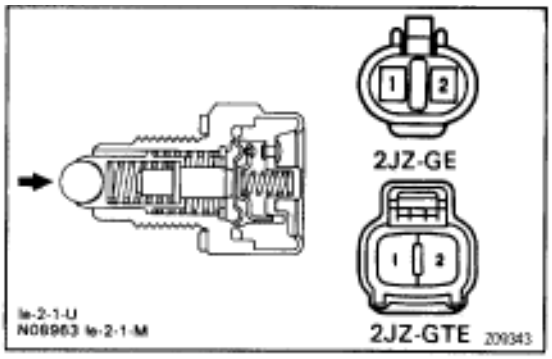
PARTS LOCATION



TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Back Up Light does not light up	1. GAUGE Fuse 2. Ignition Switch 3. Back–up Light Switch (M/T) 4. Park/ Neutral Position Switch (A/T) 5. Wire Harness 6. Bulb	(BE–6) (BE–8) (BE–31) (AT1–Section)
Back Up Light remains always on	1. Wire Harness	
Only one light does not light up	1. Wire Harness 2. Bulb	



BACK UP LIGHT SWITCH INSPECTION

INSPECT SWITCH CONTINUITY

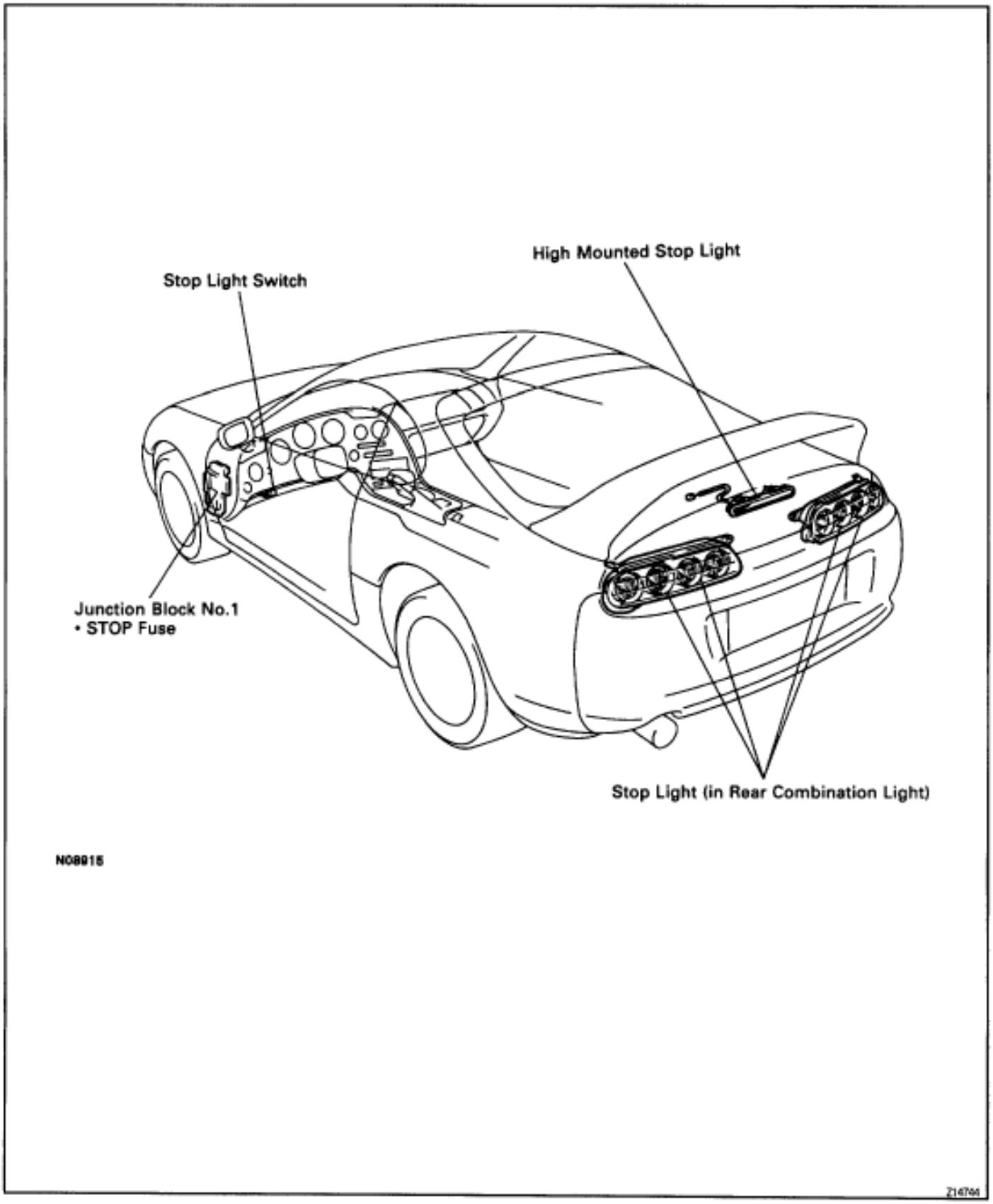
Switch position	Tester connection to terminal number	Specified condition
Free	1–2	No continuity
Push	1–2	Continuity

If continuity is not as specified, replace the switch.

PARK/NEUTRAL POSITION SWITCH INSPECTION

See AT section

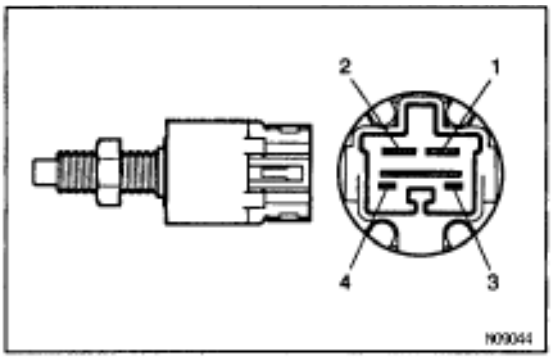
STOP LIGHT SYSTEM
PARTS LOCATION



TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Stop light does not light up	1. STOP Fuse 2. Stop Light Switch 3. Wire Harness 4. Bulb	(BE–6) (BE–33)
Stop light remains always on	1. Stop Light Switch 2. Wire Harness	(BE–33)
Only one light does not light up	1. Wire Harness 2. Bulb	



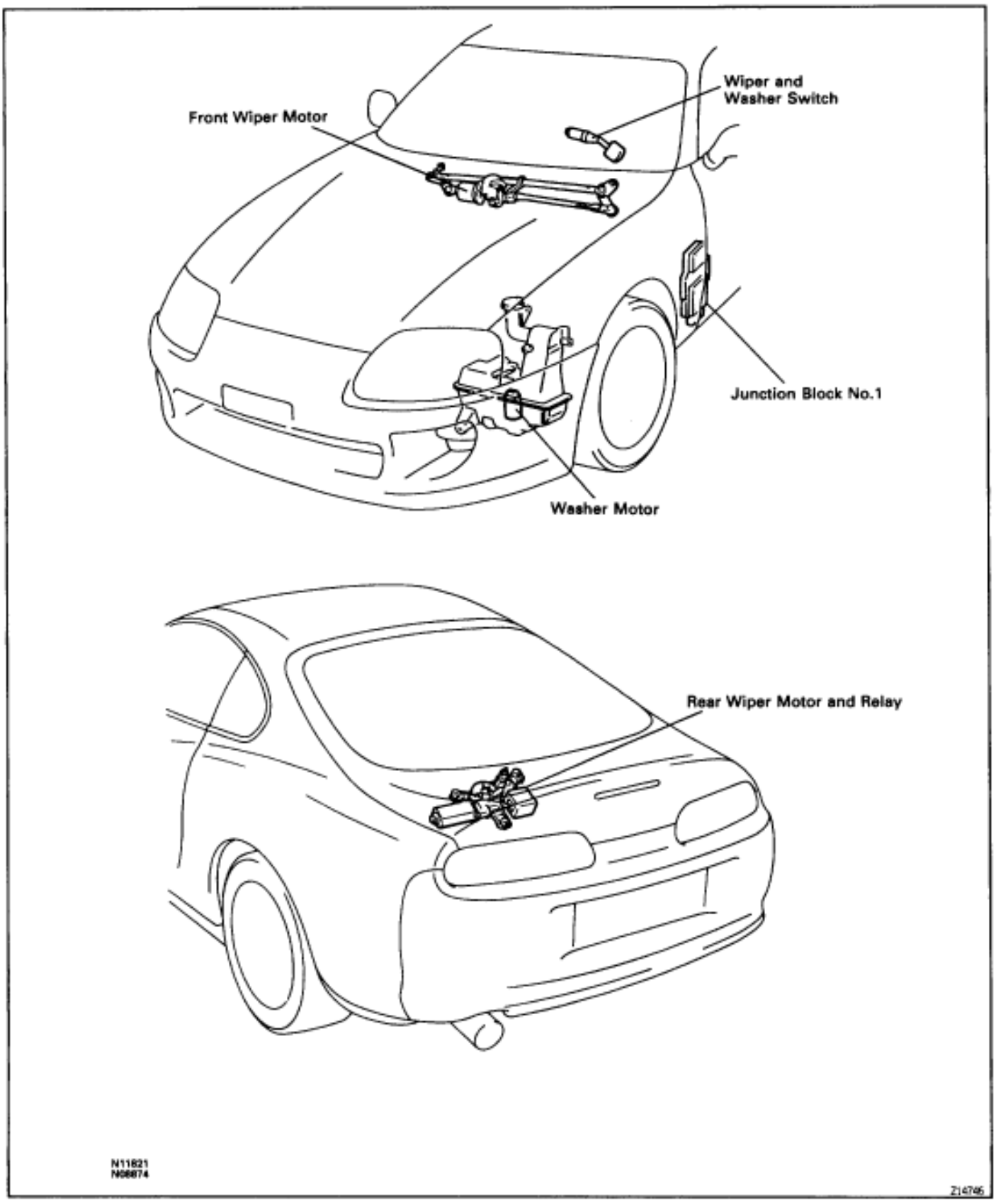
STOP LIGHT SWITCH INSPECTION

INSPECT SWITCH CONTINUITY

Switch position	Tester connection to terminal number	Specified condition
Switch pin free (Pedal depressed)	1–2	Continuity
Switch pin pushed in (Pedal released)	3–4	Continuity

If continuity is not as specified, replace the switch.

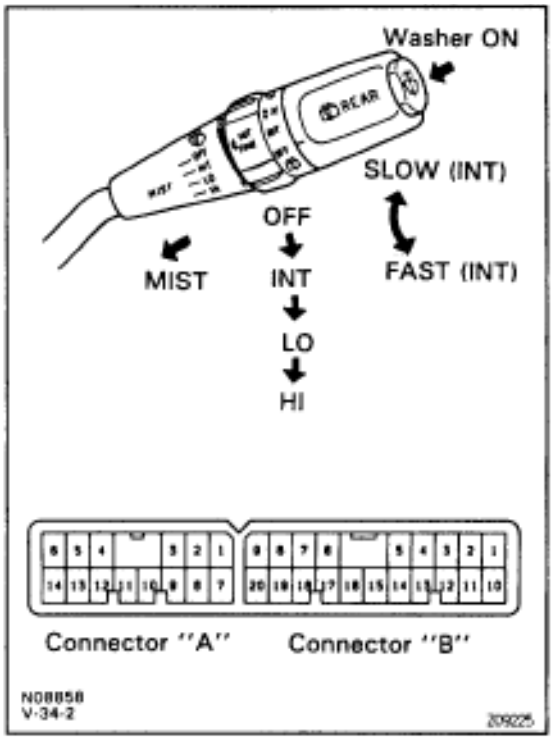
WIPER AND WASHER SYSTEM
PARTS LOCATION



TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Wipers and washers do not operate.	1. ALT Fuse 2. AM1 Fuse 3. WIPER Fuse 4. Ignition Switch 5. Wiper and Washer Switch 6. Wire Harness	(BE–5) (BE–5) (BE–6) (BE–8) (BE–36)
Front wiper does not operate.	1. Front Wiper and Washer Switch 2. Front Wiper Motor 3. Wire Harness	(BE–36) (BE–38)
Rear wiper does not operate.	1. Rear Wiper and Washer Switch 2. Rear Wiper Motor and Relay 3. Wire Harness	(BE–37) (BE–39)
Front washer does not operate.	1. Front Wiper and Washer Switch 2. Washer Motor 3. Wire Harness	(BE–36) (BE–39)
Rear washer does not operate.	1. Rear Wiper and Washer Switch 2. Washer Motor 3. Wire Harness	(BE–37) (BE–39)

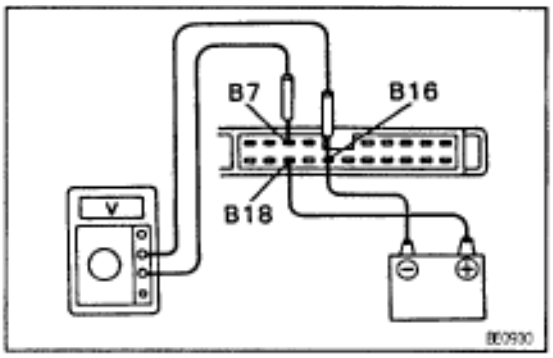


WIPER AND WASHER SWITCH INSPECTION

1. INSPECT FRONT WIPER AND WASHER SWITCH CONTINUITY

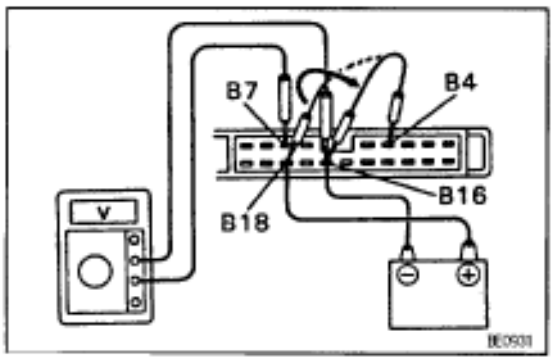
Switch position	Tester connection to terminal number	Specified condition
Wiper OFF	B4–B7	Continuity
Wiper OFF and MIST	B7–B18	Continuity
Wiper INT	B4–B7	Continuity
Wiper INT and MIST	B7–B18	Continuity
Wiper LO	B7–B18	Continuity
Wiper LO and MIST	B7–B18	Continuity
Wiper HI	B13–B18	Continuity
Wiper HI and MIST	B7–B13 B13–B18	Continuity
Washer ON	B8–B16	Continuity

If continuity is not as specified, replace the switch.



Intermittent Operation

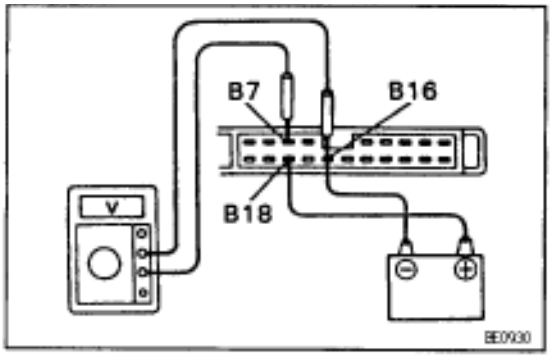
(a) Turn the wiper switch to INT position.
(b) Turn the intermittent time control switch to FAST position.
(c) Connect the positive (+) lead from the battery to terminal B18 and the negative (–) lead to terminal B16.
(d) Connect the positive (+) lead from the voltmeter to terminal B7 and the negative (–) lead to terminal B16, check that the meter needle indicates battery voltage.



(e) After connecting terminal B4 to terminal B18, connect it to terminal B16.
Then, check that the voltage rises from O V to battery positive voltage within the times, as shown in the table.

INT time control switch position	Voltage
FAST	Approx. 1–3 sec. Battery positive voltage 0 volt
SLOW	Approx. 10 –15 sec. Battery positive voltage 0 volt

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

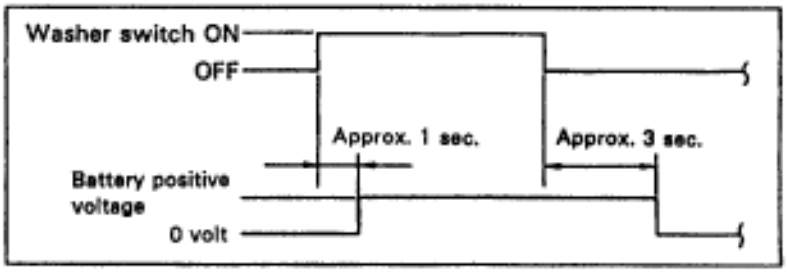


Washer Linked Operation

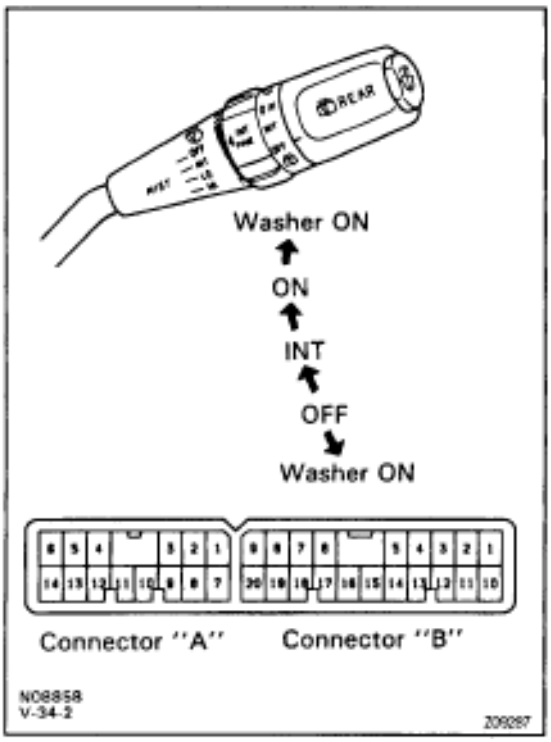
(a) Connect the positive (+) lead from the battery to terminal B18 and the negative (–) lead to terminal B16.

(b) Connect the positive (+) lead from the voltmeter to terminal B7 and the negative (–) lead to terminal B16.

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



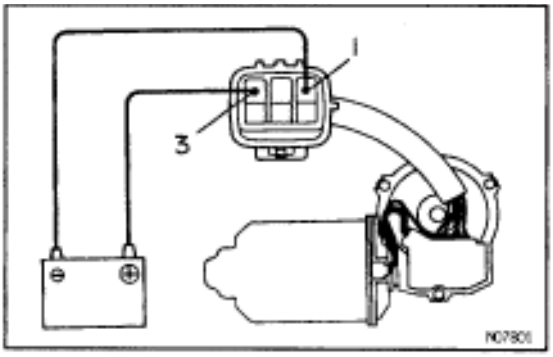
If operation is not as specified, replace the wiper and washer switch.



2. INSPECT REAR WIPER AND WASHER SWITCH CONTINUITY

Switch position	Tester connection to terminal number	Specified condition
Washer ON (Lower)	B2–B16	Continuity
Wiper OFF	–	Continuity
Wiper INT	B10–B16	Continuity
Wiper ON	B1–B16	Continuity
Washer ON (Upper)	B1–B2 B2–B16	Continuity

If continuity is not as specified, replace the switch.



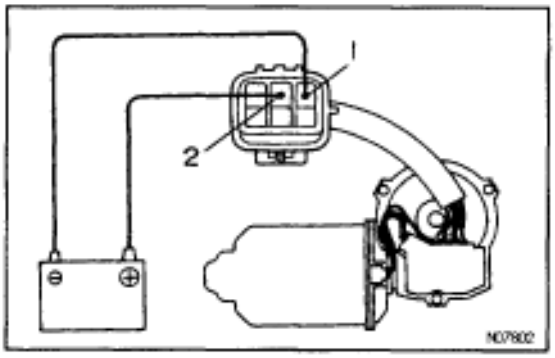
WIPER MOTOR INSPECTION

1. INSPECT FRONT WIPER MOTOR OPERATION

Low Speed

Connect the positive (+) lead from the battery to terminal 3 and the negative (–) lead to terminal 1, check that the motor operates at low speed.

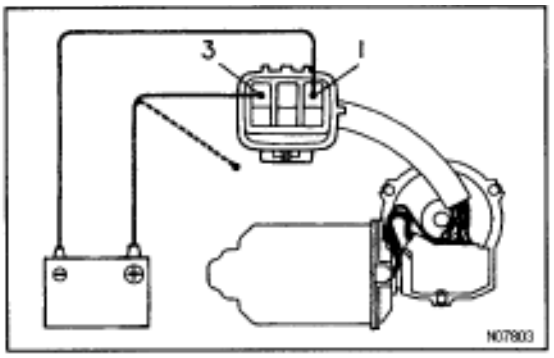
If operation is not as specified, replace the motor.



High Speed

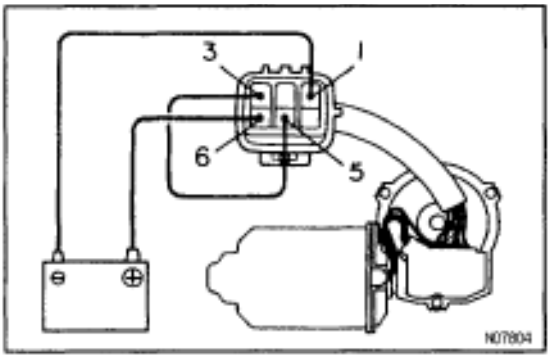
Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 1, check that the motor operates at high speed.

If operation is not as specified, replace the motor.



Stopping at Stop Position

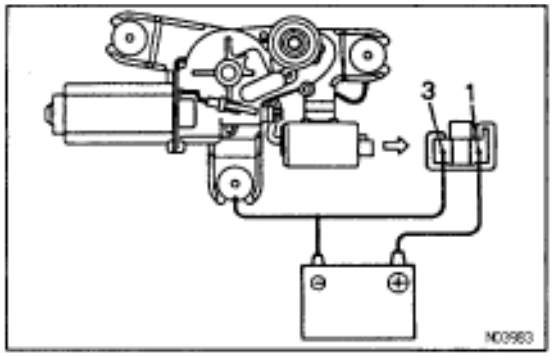
(a) Operate the motor at low speed and stop the motor operation anywhere by disconnecting positive (+) lead from terminal 3.



(b) Connect terminals 3 and 5.

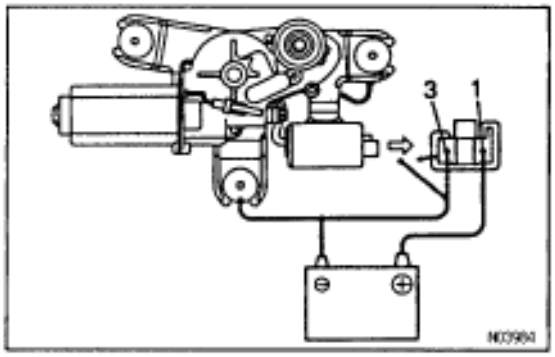
(c) Connect the positive (+) lead from the battery to terminal 6 and negative (–) lead to terminal 1, check that the motor stops running at the stop position after the motor operates again.

If operation is not as specified, replace the motor.

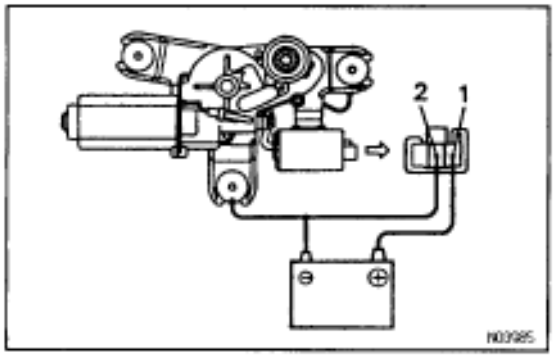


2. INSPECT REAR WIPER MOTOR AND RELAY OPERATION

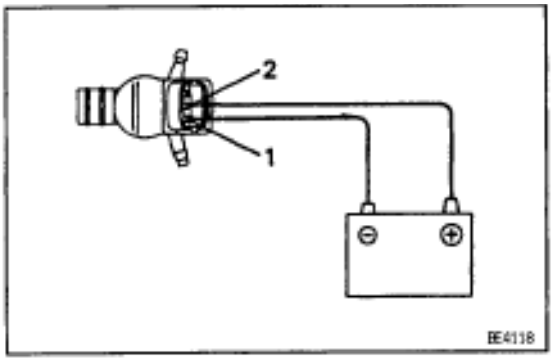
(a) Connect the positive (+) lead from the battery to terminal 1, and the negative (–) lead to terminal 3 and the motor body, check that the motor operates.

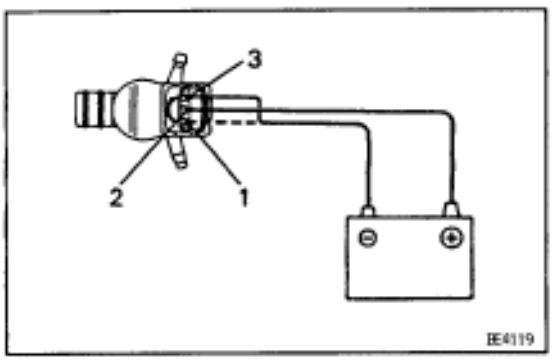


(b) Disconnect the negative (–) lead from terminal 3, check that the motor stops running at the stop position.
If operation is not as specified, replace the motor and relay.



Intermittent Operation
Connect the positive (+) lead from the battery to terminal 1, and the negative (–) lead to terminal 2 and the motor body, check that the motor operates intermittently for 9–15 seconds.
If operation is not as specified, replace the motor and relay.





WASHER MOTOR INSPECTION

INSPECT MOTOR OPERATION

Front Washer

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.

Rear Washer

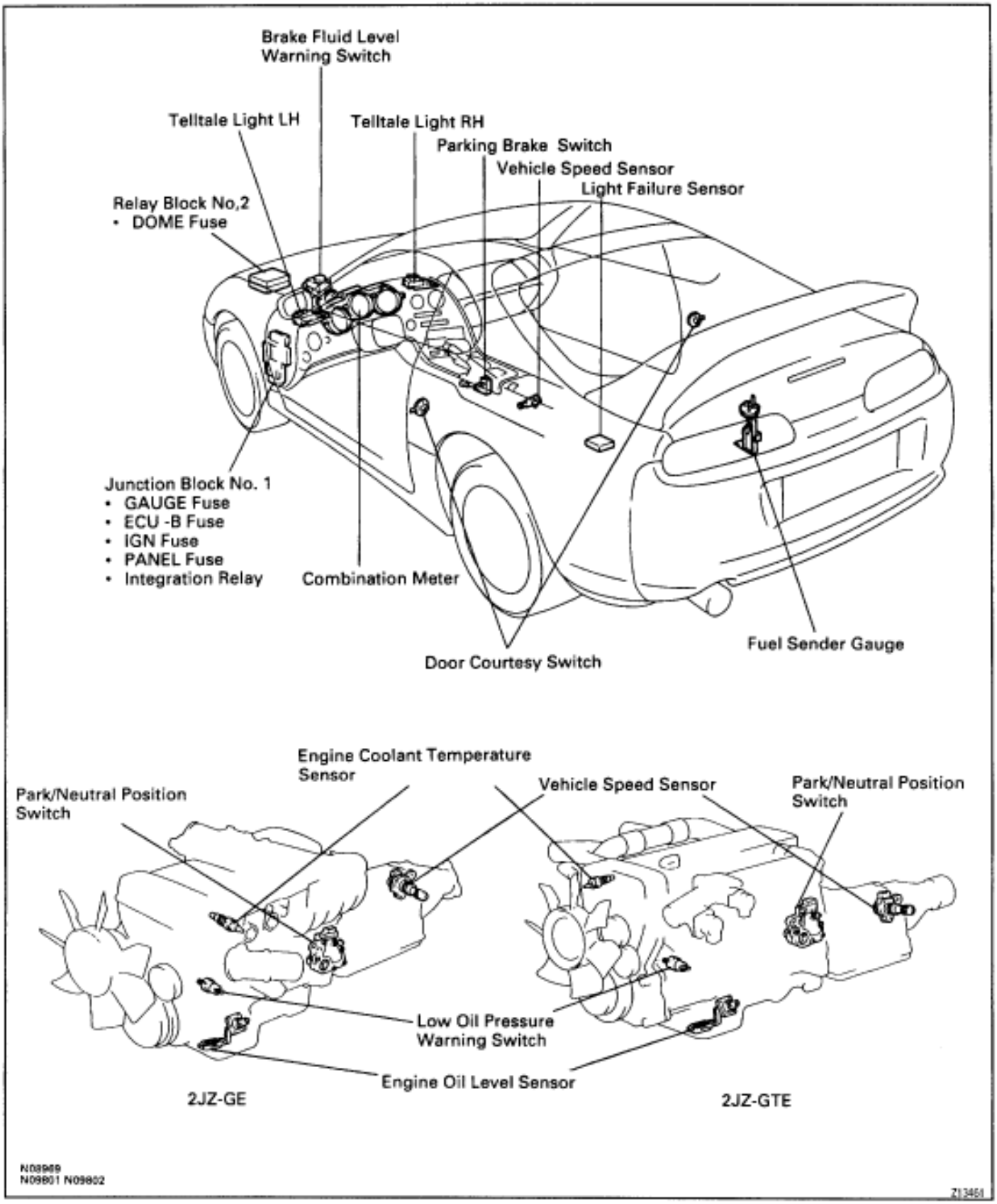
Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 3, check that the motor operates.

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.

COMBINATION METER

PARTS LOCATION



TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

METER, GAUGES AND ILLUMINATION

Trouble	Parts name	(See page)
Tachometer, Fuel Gauge and Engine Coolant Temperature Gauge do not operate	1. GAUGE Fuse 2. Meter Circuit Plate 3. Wire Harness	(BE–6) (BE–44)
Speedometer does not operate	1. Vehicle Speed Sensor 2. Meter Circuit Plate 3. Wire Harness	(BE–46) (BE–44)
Tachometer does not operate	1. Igniter 2. ECM 3. Meter Circuit Plate 4. Wire Harness	 (EG Section) (BE–44)
Fuel Gauge does not operate or abnormal operation	1. Fuel Receiver Gauge 2. Fuel Sender Gauge 3. Meter Circuit Plate 4. Wire Harness	(BE–48) (BE–49) (BE–44)
Engine Coolant Temperature Gauge does not operate or abnormal operation	1. Engine Coolant Temperature Receiver Gauge 2. Engine Coolant Temperature Sender Gauge 3. Meter Circuit Plate 4. Wire Harness	(BE–50) (BE–50) (BE–44)
All illumination lights do not light up	1. TAIL Fuse 2. Light Control Rheostat 3. Meter Circuit Plate 4. Wire Harness	(BE–6) (BE–54) (BE–44)
Only one illumination light does not light up	1. Bulb 2. Meter Circuit Plate	 (BE–44)

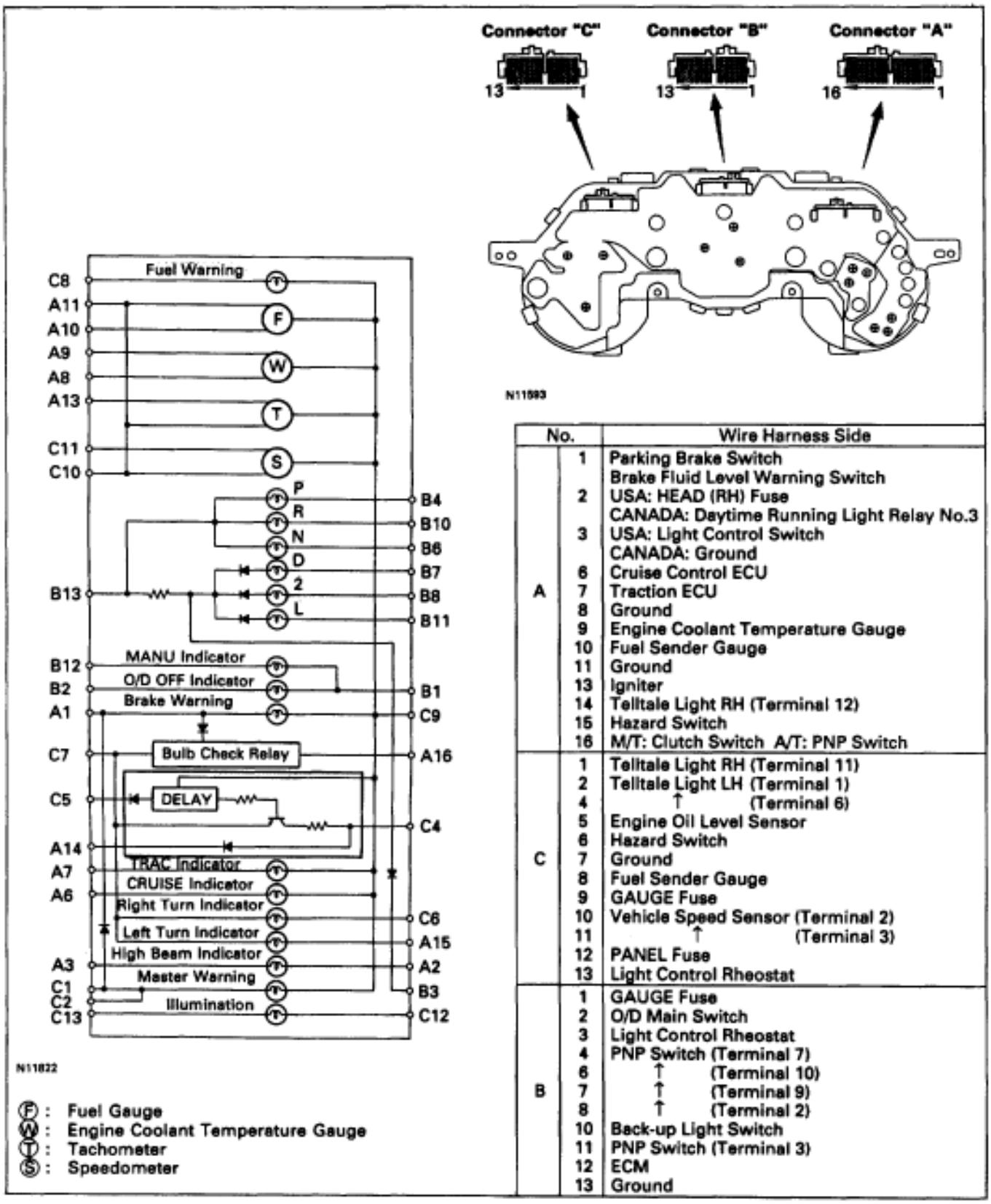
WARNING LIGHTS

Trouble	Parts name	(See page)
Warning lights do not light up (Except Discharge and Door Open)	1. Bulb 2. IGN Fuse 3. Ignition Switch 4. Meter Circuit Plate 5. Wire Harness 6. Generator	 (BE–6) (BE–8) (BE–44)
Brake Warning Light does not light up	1. Bulb 2. Brake Fluid Level Warning Switch 3. Parking Brake Switch 4. Bulb Check Relay 5. Meter Circuit Plate 6. Wire Harness	 (BE–52) (BE–52) (BE–44)
Seat Belt Warning Light does not light up	1. Bulb 2. Seat Belt Buckle Switch 3. Integration Relay 4. Meter Circuit Plate 5. Wire Harness	 (BE–56) (BE–55) (BE–44)
Engine Oil Level Warning Light does not light up	1. Bulb 2. Engine Oil Level Switch 3. Meter Circuit Plate 4. Wire Harness	 (BE–51) (BE–44)
Low Oil Pressure Warning Light does not light up	1. Bulb 2. Low Oil Pressure Warning Switch 3. Meter Circuit Plate 4. Wire Harness	 (BE–51) (BE–44)
Door Open Warning Light does not light up	1. Bulb 2. DOME Fuse 3. Door Courtesy Switch 4. Luggage Room Light Switch 5. Integration Relay 6. Meter Circuit Plate 7. Wire Harness	 (BE–5) (BE–54) (BE–28) (BE–44)
Master Warning Light does not light up	1. Bulb 2. Telltale Light 3. Meter Circuit Plate 4. Wire Harness	 (BE–48) (BE–44)

INDICATOR LIGHTS

Trouble	Parts name	(See page)
SRS Indicator Light does not light up	1. Bulb 2. Wire Harness 3. Center Air Bag Sensor	 (RS Section)
ABS Indicator Light does not light up	1. Bulb 2. Wire Harness 3. Traction ECU	 (BR Section)
Malfunction Indicator Light does not light up	1. Bulb 2. ECM 3. Wire Harness	 (EG Section)
TRAC OFF Indicator Light does not light up	1. Bulb 2. Traction Solenoid Relay 3. Traction ECU 4. Wire Harness	 (BR Section) (BR Section)
Security Indicator Light does not light up	1. Light Emitting Diode 2. Theft Deterrent and Door Lock ECU 3. Wire Harness	 (BE–123)
A/T Shift Position Indicator Light does not light up	1. Bulb 2. Park/Neutral Position Switch 3. Light Control Rheostat 4. Meter Circuit Plate 5. Wire Harness	 (AT1 Section) (BE–54) (BE–44)
MANU Indicator Light does not light up	1. Bulb 2. ECM 3. Meter Circuit Plate 4. Wire Harness	 (EG Section) (BE–44)
O/D OFF Indicator Light does not light up	1. Bulb 2. O/D Main Switch 3. ECM 4. Meter Circuit Plate 5. Wire Harness	 (EG Section) (BE–44)
TRAC Indicator Light does not light up	1. Bulb 2. ABS and Traction ECU 3. Meter Circuit Plate 4. Wire Harness	 (BE–44)
Turn Indicator Light does not light up	1. Bulb 2. Turn Signal and Hazard Warning System 3. Meter Circuit Plate 4. Wire Harness	 (BE–20) (BE–44)
High Beam Indicator Light does not light up	1. Bulb 2. Headlight System 3. Meter Circuit Plate 4. Wire Harness	 (BE–10) (BE–44)
CRUISE Indicator Light does not light up	1. Bulb 2. Cruise Control ECU 3. Meter Circuit Plate 4. Wire Harness	 (BE–170) (BE–44)

METER CIRCUIT



No.		Wire Harness Side
A	1	Parking Brake Switch Brake Fluid Level Warning Switch
	2	USA: HEAD (RH) Fuse CANADA: Daytime Running Light Relay No.3
	3	USA: Light Control Switch CANADA: Ground
	6	Cruise Control ECU
	7	Traction ECU
	8	Ground
	9	Engine Coolant Temperature Gauge
	10	Fuel Sender Gauge
	11	Ground
	13	Igniter
	14	Telltale Light RH (Terminal 12)
	15	Hazard Switch
	16	M/T: Clutch Switch A/T: PNP Switch
C	1	Telltale Light RH (Terminal 11)
	2	Telltale Light LH (Terminal 1)
	4	↑ (Terminal 6)
	5	Engine Oil Level Sensor
	6	Hazard Switch
	7	Ground
	8	Fuel Sender Gauge
	9	GAUGE Fuse
	10	Vehicle Speed Sensor (Terminal 2)
	11	↑ (Terminal 3)
	12	PANEL Fuse
	13	Light Control Rheostat
B	1	GAUGE Fuse
	2	O/D Main Switch
	3	Light Control Rheostat
	4	PNP Switch (Terminal 7)
	6	↑ (Terminal 10)
	7	↑ (Terminal 9)
	8	↑ (Terminal 2)
	10	Back-up Light Switch
	11	PNP Switch (Terminal 3)
	12	ECM
	13	Ground

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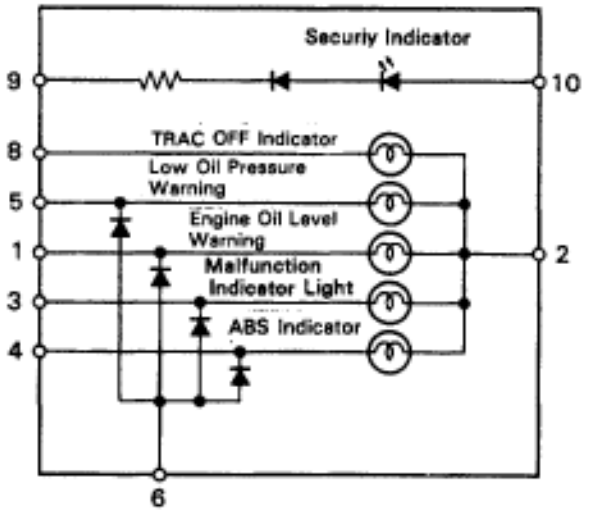
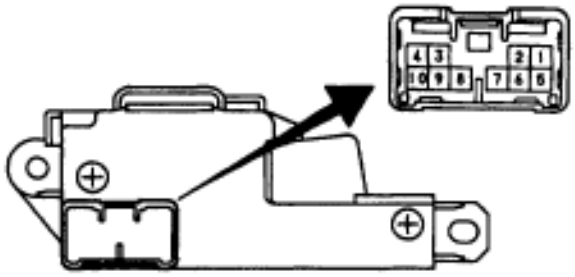
TELLTALE LIGHT CIRCUIT

Telltale Light LH

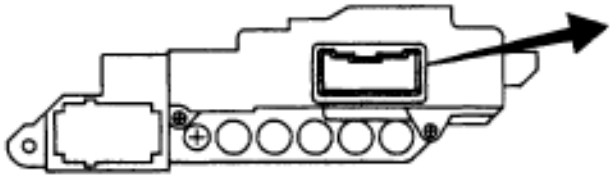


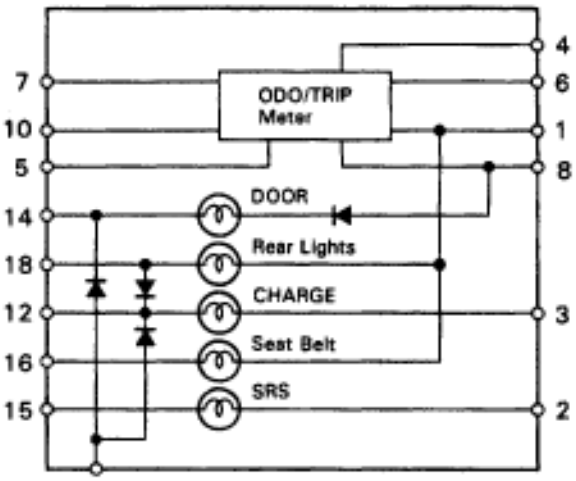


N08982 N08980 h-10-2

No.	Wire Harness Side
1	Combination Meter (Terminal B2)
2	GAUGE Fuse
3	ECM
4	ECM
5	Low Oil Pressure Warning Switch
6	Combination Meter (Terminal B4)
8	TRAC ECU, Traction Solenoid Relay
9	Ground
10	Theft Deterrent and Door Lock ECU

Telltale Light RH





N08981 N08979 h-18-2

No.	Wire Harness Side
1	GAUGE Fuse
2	ECU-B Fuse
3	IGN Fuse
4	PANEL Fuse
5	Vehicle Speed Sensor (Terminal 3)
6	PPS ECU, Cruise Control ECU, ECM Air Conditioner Amplifier
7	Ground
8	DOME Fuse
10	Light Control Rheostat
11	Combination Meter (Terminal B1)
12	ALT terminal L
14	Door Courtesy Switch
15	Center Air Bag Sensor
16	Integration Relay (Terminal 9)
18	Light Failure Sensor

SPEEDOMETER INSPECTION

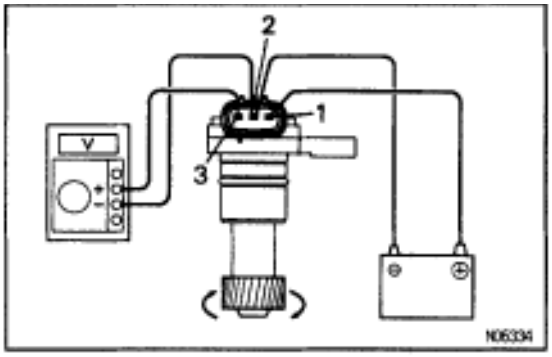
ON–VEHICLE

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

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

If error is excessive, replace the speedometer.

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



VEHICLE SPEED SENSOR INSPECTION

INSPECT SENSOR OPERATION

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

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

(c) Rotate 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 4 times for every revolution of the speed sensor shaft.

If operation is not as specified, replace the sensor.

TACHOMETER INSPECTION

INSPECT TACHOMETER

ON–VEHICLE

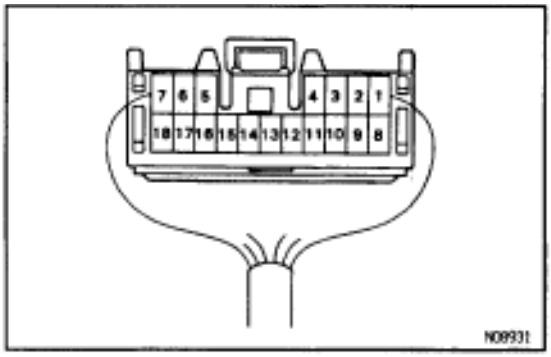
(a) Connect a tune–up test tachometer, and start the engine.

NOTICE: Reversing the connection of the tachometer will damage the transistors and diodes inside.

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

RPM (DC 13.5 V, 25˚C (77˚F))

Standard indication (rpm)	Allowable range (rpm)
700	630–770
1000	915–1115
2000	1920–2220
3000	2890–3350
4000	3940–4400
5000	5025–5425
6500	6650–6950
7000	7025–7625



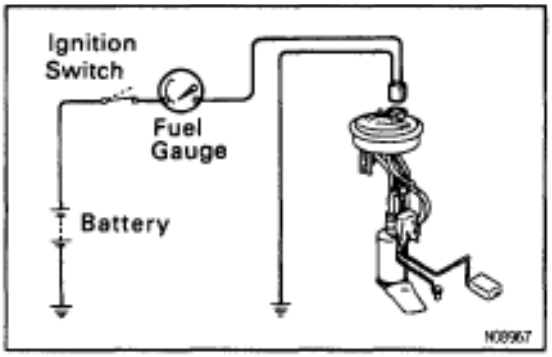
OD TRIP METER INSPECTION

INSPECT OD/TRIP METER (in Telltale Light RH)

(a) Remove the telltale light with connector still connected.
(b) Check the continuity and voltage.

Tester connection to terminal number	Condition	Specified condition
7–Ground*1	Constant	Continuity
1–Ground*1	Ignition Switch ”ON” position	Battery positive voltage
4–Ground*1	Light Control Switch ”TAIL” or ”HEAD” position	Battery positive voltage
5–7*1	Ignition Switch ON Drive the vehicle slowly	0V ↔ Battery positive voltage
6–7*2	Ignition Switch ON Drive the vehicle slowly	0V ↔ more than 5V
8–Ground*1	Constant	Battery positive voltage
10–Ground*1	Ignition Switch ON, Light Control Switch TAIL or HEAD, Turn the light control Rheostat knob to clockwise	6V → 0V

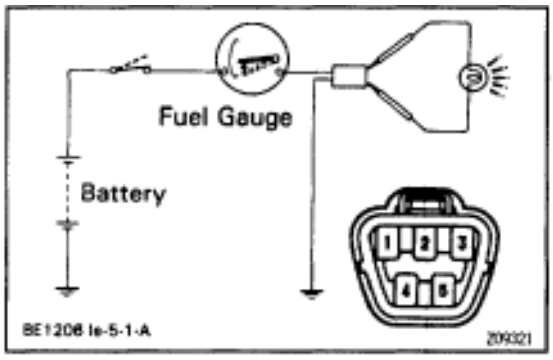
*1: If continuity or voltage are not as specified, check vehicle side.
*2: If voltage is not as specified, replace the telltale light.



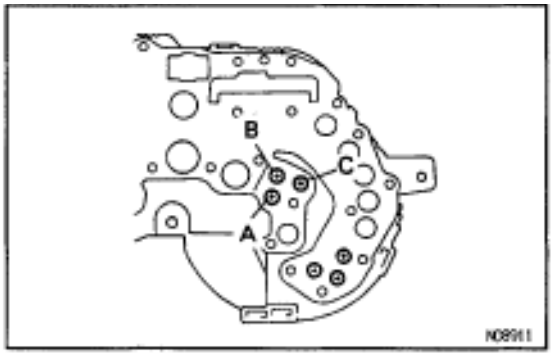
FUEL GAUGE INSPECTION

1. INSPECT RECEIVER GAUGE OPERATION

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



(c) Connect terminals 2 and 3 on the wire harness side connector through a 3.4 W test bulb.
(d) Turn the ignition switch ON, check that the bulb lights up and receiver gauge needle moves toward the full side.
HINT: Because of the silicon oil in the gauge, it will take a short time for the needle to stabilize.
If operation is not as specified, inspect the receiver gauge resistance.

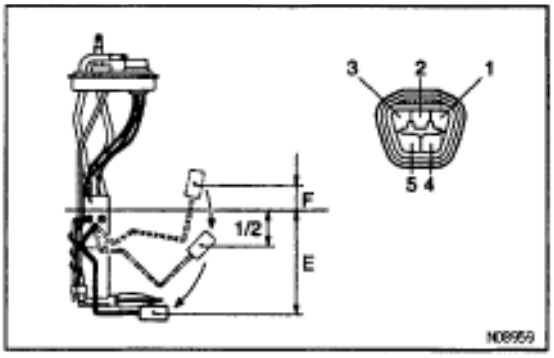


2. INSECT RECEIVER GAUGE RESISTANCE

Measure the resistance between terminals.

Between terminals	Resistance (Ω)
A–B	Approx. 269.7
A–C	Approx. 123.5
B–C	Approx. 146.2

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

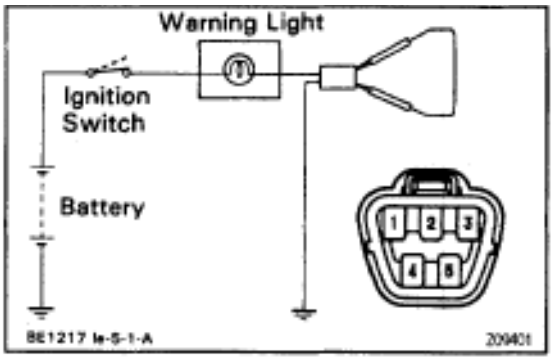


3. INSPECT SENDER GAUGE RESISTANCE

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

Float position mm (in.)		Resistance (Ω)
F	Approx. 33.8 (1.33)	Approx. 4.0
1/2	Approx. 44.8 (1.76)	Approx. 55.0
E	Approx. 141.1 (5.55)	Approx. 107.0

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



FUEL LEVEL WARNING INSPECTION

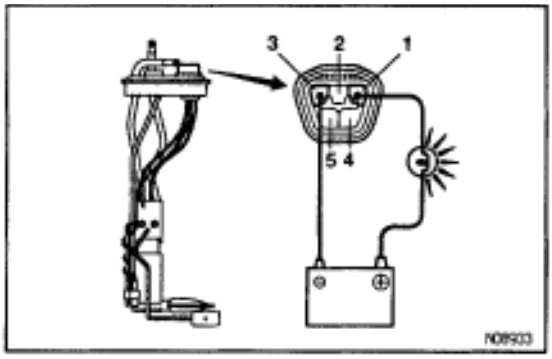
1. INSPECT WARNING LIGHT

(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.

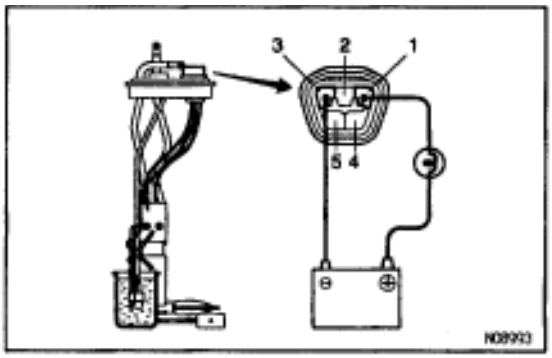
If the warning light does not light up, test the bulb or inspect wire harness.



2. INSPECT SWITCH

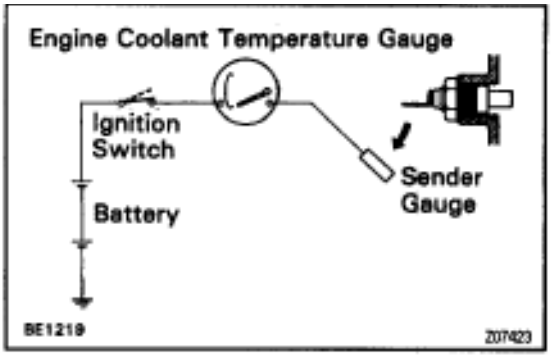
(a) Apply battery positive voltage between terminals 1 and 3 through a 3.4 W test bulb, check that the bulb lights up.

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



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

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

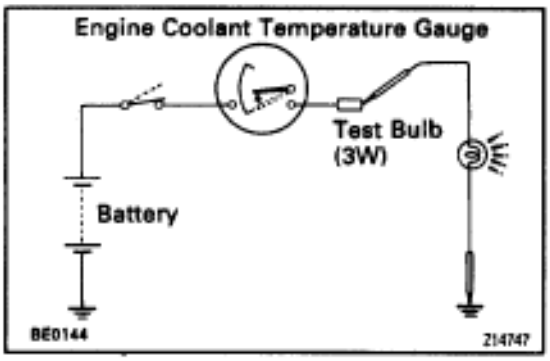


ENGINE COOLANT TEMPERATURE GAUGE INSPECTION

1. INSPECT RECEIVER GAUGE OPERATION

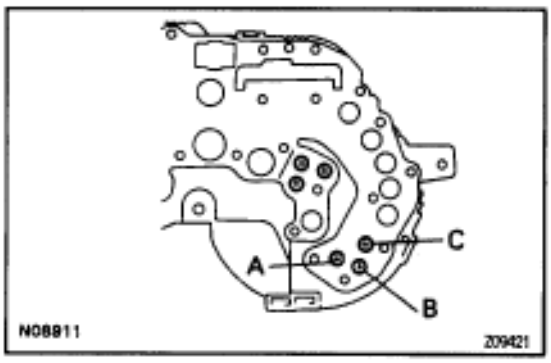
(a) Disconnect the connector from the sender gauge.

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



(c) Ground terminal on the wire harness side connector through a 3 W test bulb.

(d) Turn the ignition switch ON, check that the bulb lights up and the receiver gauge needle moves toward the hot side.
If operation is as specified, replace the sender gauge. Then recheck the system.
If operation is not as specified, measure the receiver gauge resistance.

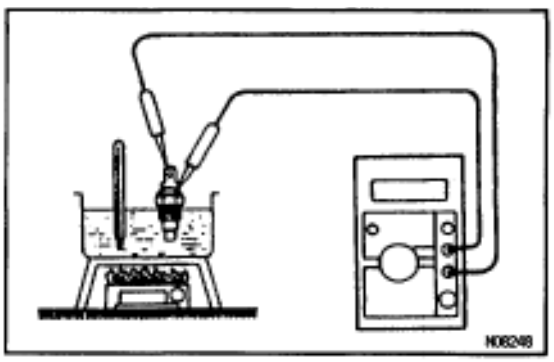


2. INSPECT RECEIVER GAUGE RESISTANCE

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

Between terminals	Resistance (Ω)
A–B	Approx. 229.7
A–C	Approx. 54.0
B–C	Approx. 175.7

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

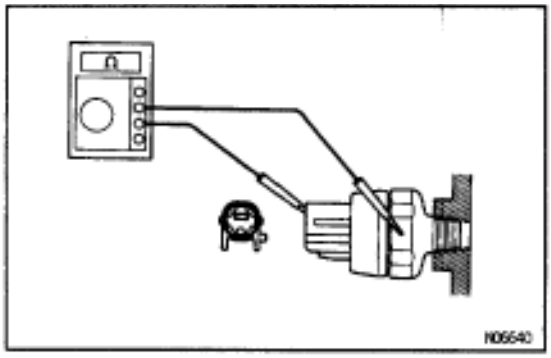


3. INSPECT SENDER GAUGE RESISTANCE

Measure the resistance between 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.



LOW OIL PRESSURE WARNING INSPECTION

1. INSPECT SWITCH

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

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

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

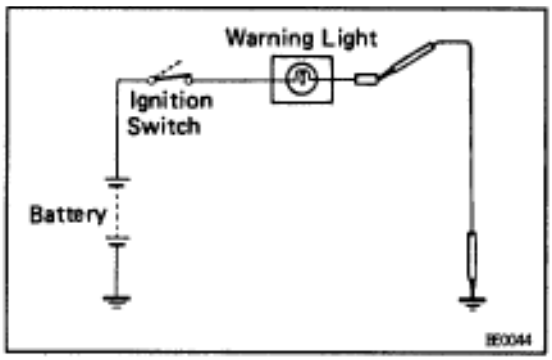
If operation is not as specified, replace the switch.

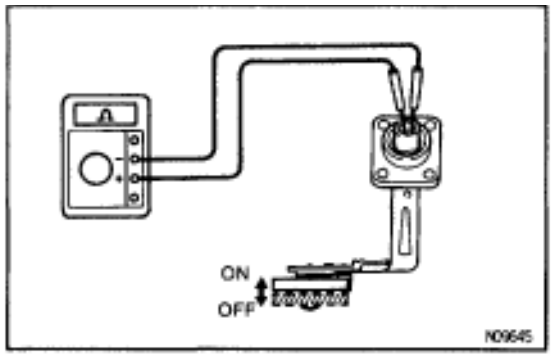
2. INSPECT WARNING LIGHT

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

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

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

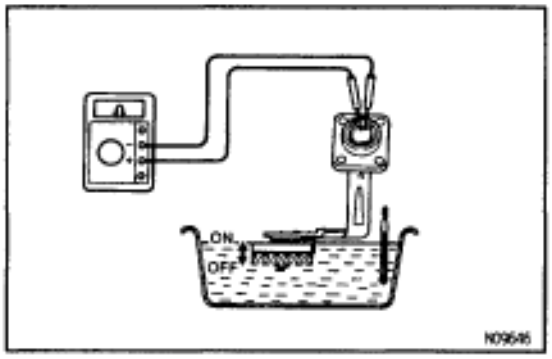




ENGINE OIL LEVEL WARNING INSPECTION

1. INSPECT SWITCH

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

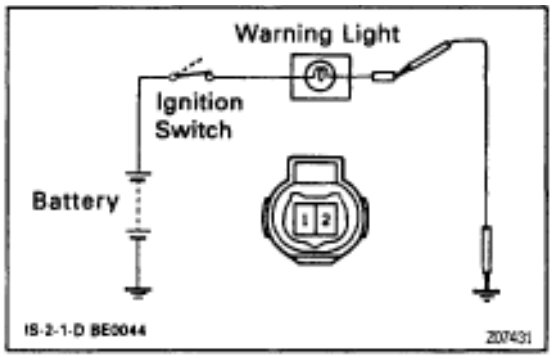


(b) Heat the switch to above 60°C (140°F) in an oil bath.

(c) Check that there is continuity between terminals with the switch ON (float up).

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

If operation is not as specified, replace the switch.



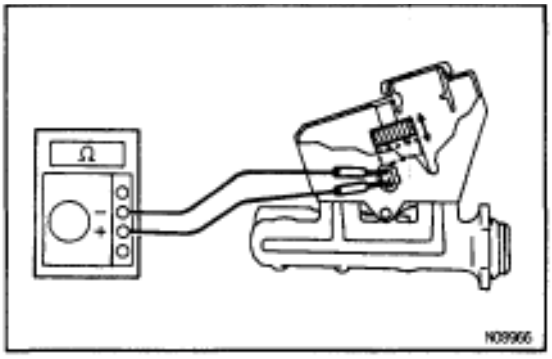
2. INSPECT WARNING LIGHT

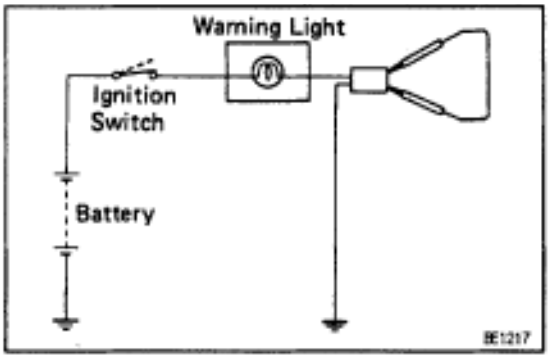
(a) Disconnect the connector from the switch.

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

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

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





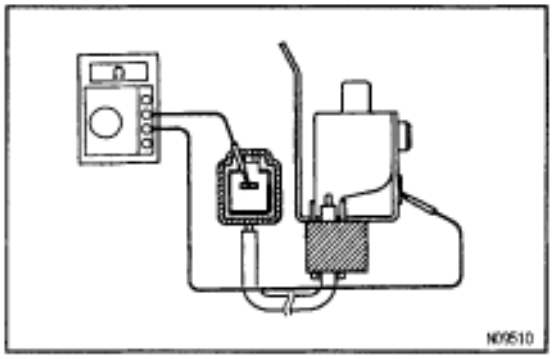
BRAKE FLUID LEVEL WARNING INSPECTION

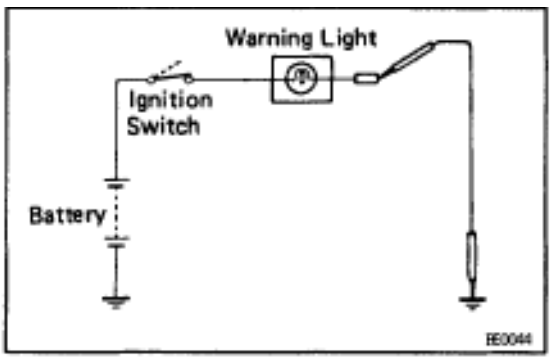
1. INSPECT SWITCH

(a) Remove the reservoir tank cap and strainer.
(b) Disconnect the connector.
(c) Check that there is no continuity between terminals with the switch OFF (float up).
(d) Use syphon, etc. to take fluid out of the reservoir tank.
(e) Check that there is continuity between terminals with the switch ON (float down).
(f) Pour the fluid back in the reservoir tank.
If operation is not as specified, replace the switch.

2. INSPECT WARNING LIGHT

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





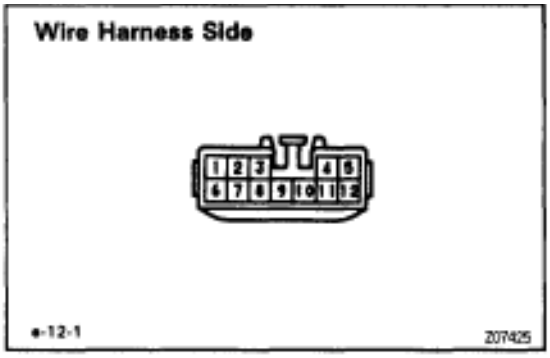
PARKING BRAKE WARNING INSPECTION

1. INSPECT SWITCH

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

2. INSPECT WARNING LIGHT

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



LIGHT FAILURE SENSOR INSPECTION

1. INSPECT SENSOR CIRCUIT

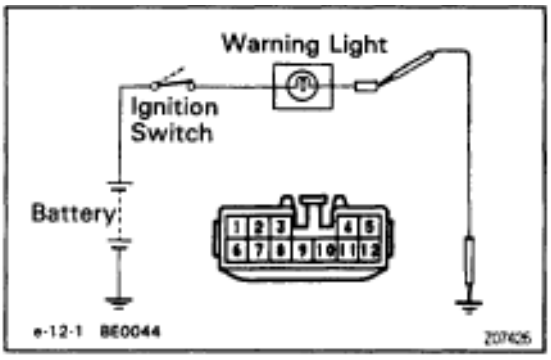
Disconnect the connector from the sensor and inspect the connector on the wire harness side, as shown.

Tester connection to terminal number	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 position OFF	No Voltage
3–Ground	Light control switch position TAIL or HEAD	Battery positive voltage
4–Ground	Ignition switch position LOCK or ACC	No voltage
4–Ground	Ignition switch position ON	Battery positive voltage
7–Ground	Stop light switch position OFF	No voltage
7–Ground	Stop light switch position ON	Battery positive voltage
8–Ground	Engine condition Stop	No voltage
8–Ground	Engine condition Running	Battery positive voltage

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

If circuit is as specified, replace the sensor.

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

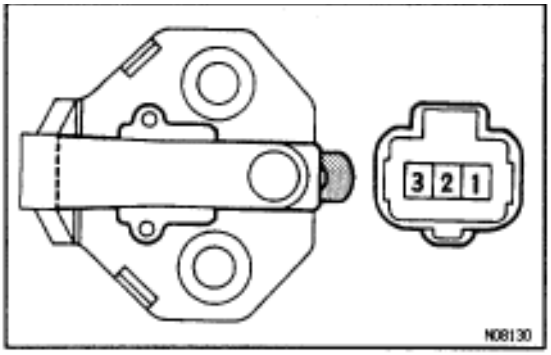


2. INSPECT WARNING LIGHT

(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.

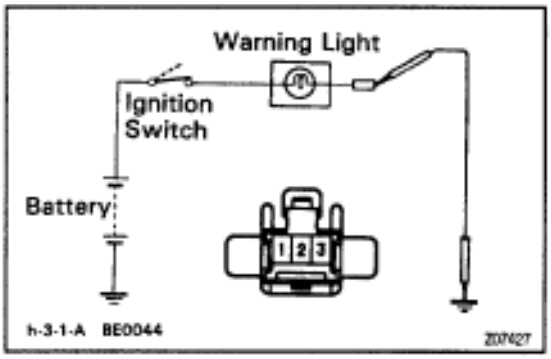


OPEN DOOR WARNING INSPECTION

1. INSPECT DOOR COURTESY SWITCH

Switch Position	Tester connection to terminal number	Specified condition
ON (Switch pin released)	1–2 2–3	Continuity
OFF (Switch pin pushed in)	–	No continuity

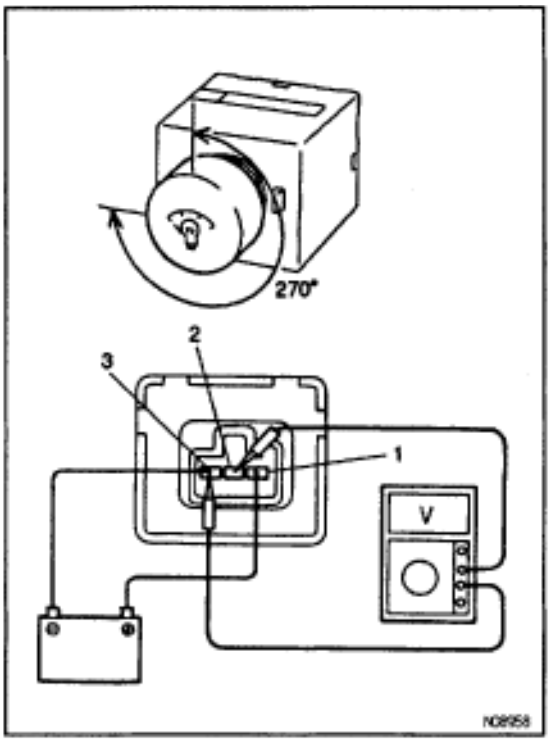
If continuity is not as specified, replace the switch.



2. INSPECT WARNING LIGHT

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

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



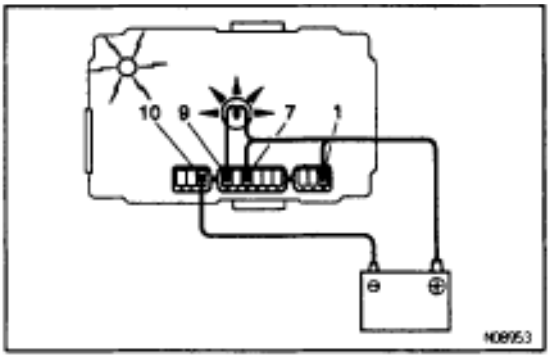
LIGHT CONTROL RHEOSTAT INSPECTION

INSPECT LIGHT CONTROL RHEOSTAT

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

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

(c) Turn the rheostat knob and check that the voltage changes.



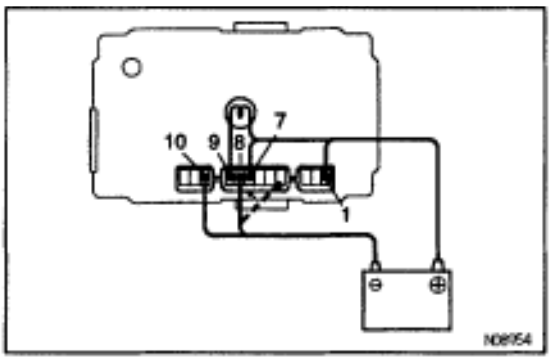
SEAT BELT WARNING INSPECTION

1. INSPECT INTEGRATION RELAY OPERATION

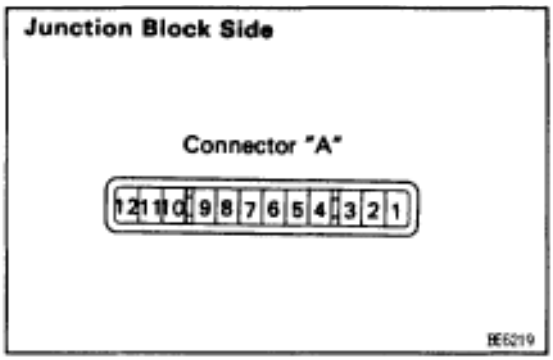
(a) Connect the positive (+) lead from the battery to terminals 1 and 7.

(b) Connect the positive (+) lead from the battery to terminal 9 through a 3.4W test bulb.

(c) Check that the test bulb lights up and buzzer sounds for 4–8 seconds when the negative (–) lead from the battery is connected to terminal 10.



(d) Check that the buzzer sounding in (c) stops when the negative (–) lead from the battery is connected to terminal 8. If operation is not as specified, replace the integration relay.

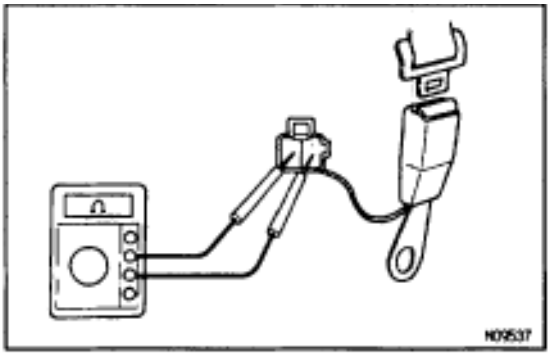


2. INSPECT RELAY CIRCUIT

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

Tester connection to terminal number	Condition	Specified condition
4–Ground	Driver's door open	Continuity
4–Ground	Driver's door close	No continuity
5–Ground	Ignition key Set	Continuity
5–Ground	Ignition key remove	No continuity
8–Ground	Driver's seat belt fasten	Continuity
8–Ground	Driver's seat belt unfasten	No continuity
10–Ground	Constant	Continuity
1–Ground	Constant	Battery positive voltage
9–Ground	Ignition switch position ON	Battery positive voltage
9–Ground	Ignition switch position LOCK or ACC	No voltage

If circuit is not as specified, try replacing the relay with a new one.



3. INSPECT BUCKLE SWITCH CONTINUITY

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

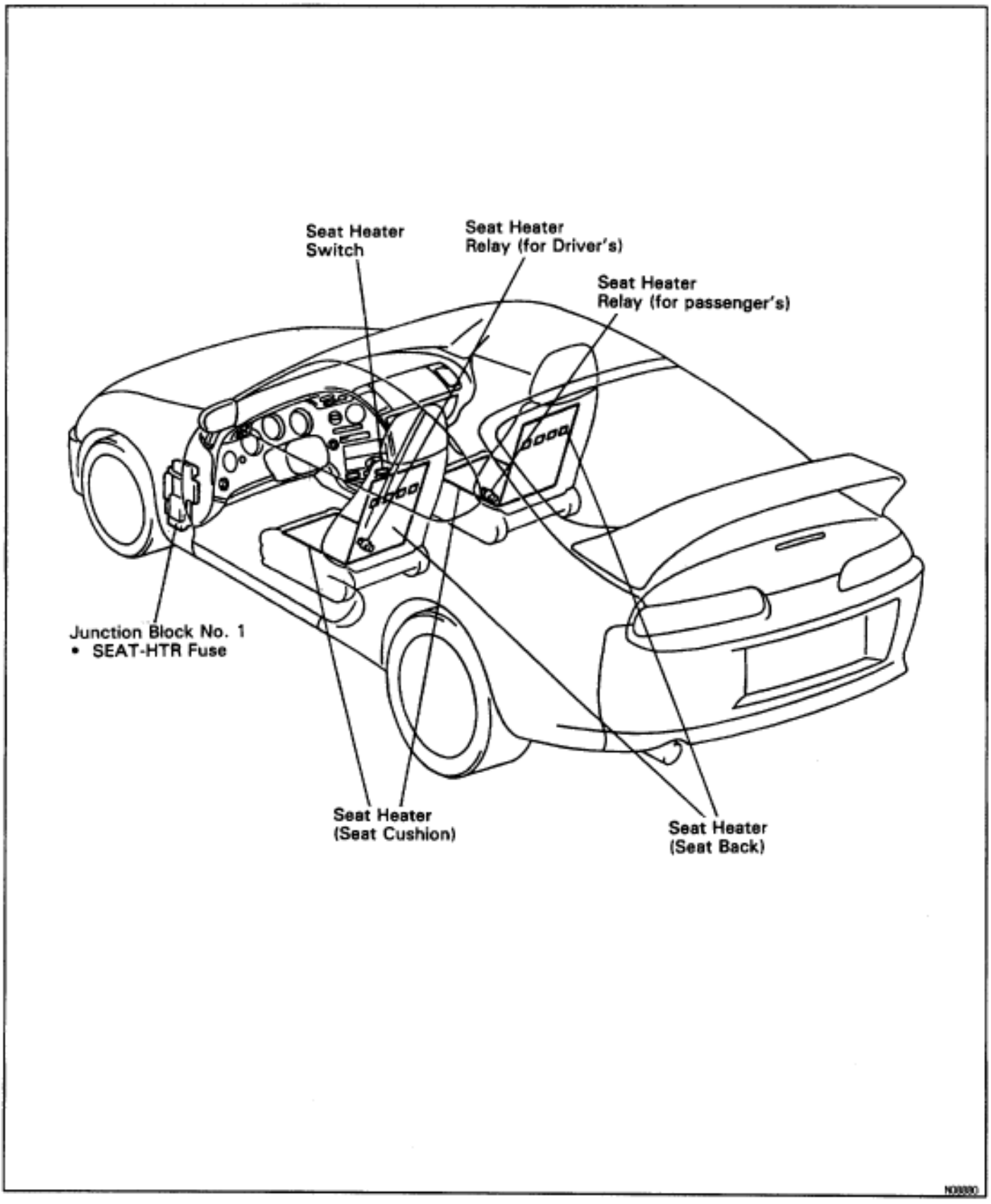
(b) Check that there is no continuity between terminals 1 and 2 on the switch side connector with the switch OFF (belt unfastened).

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

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

SEAT HEATER SYSTEM

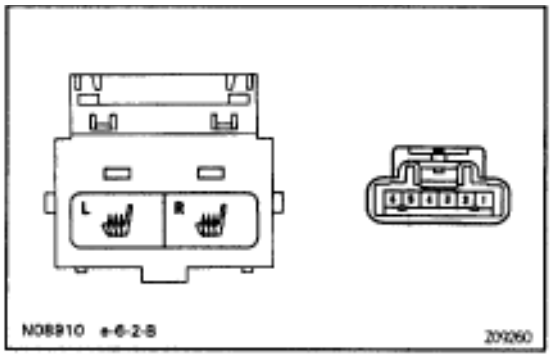
PARTS LOCATION



TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Seat heaters do not operate (Driver's and Passenger's)	1. SEAT HTR Fuse 2. Wire Harness	(BE–6)
Driver's seat heater does not operate	1. Seat Heater Switch (Driver's) 2. Seat Heater 3. Wire Harness	(BE–58) (BE–59)
Passenger's seat heater does not operate	1. Seat Heater Switch (Passenger's) 2. Seat Heater 3. Wire Harness	(BE–58) (BE–59)
Seat heater temperature is too hot	1. Seat Heater	(BE–59)

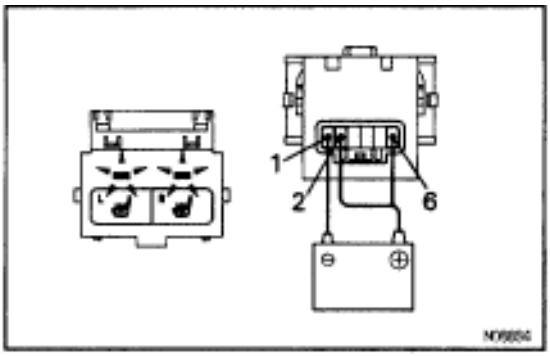


SEAT HEATER SWITCH INSPECTION

1. INSPECT SWITCH CONTINUITY

Condition	Tester connection to terminal number	Specified condition
Switch ON (LEFT)	2–4	Continuity
Switch ON (RIGHT)	4–6	Continuity
Switch OFF	–	No continuity
Illumination circuit	3–5	Continuity

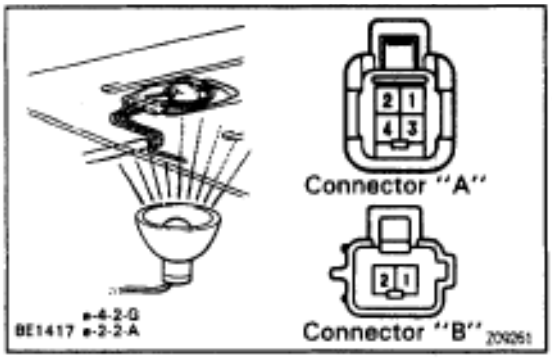
If continuity is not as specified, replace the switch or bulb.



2. INSPECT SWITCH INDICATOR

(a) Connect the positive (+) lead from the battery to terminal 2 and 6 and the negative (–) lead to terminal 1.

(b) Push the switches, check that the indicator lights up. If operation is not as specified, replace the switch and inspect the circuits connected to other parts.



SEAT HEATER INSPECTION

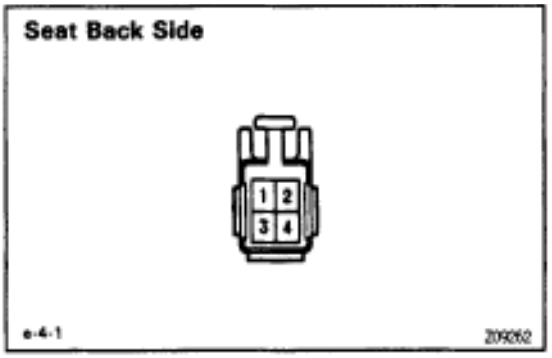
1. INSPECT SEAT CUSHION CONTINUITY

(a) Heat the thermostat with a light.

(b) Inspect the seat heater continuity between terminals.

Tester connection to terminal number	Condition	Specified condition
A1–A2	Constant	Continuity
A1–B2	Constant	Continuity
A2–B2	Constant	Continuity
A3–A4	Seat heater temperature below 25˚C(77˚F)	Continuity
A4–B1	Seat heater temperature below 25˚C(77˚F)	Continuity
A3–A4	Seat heater temperature above 45˚C(113˚F)	No Continuity
A4–B1	Seat heater temperature above 45˚C(113˚F)	No Continuity

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

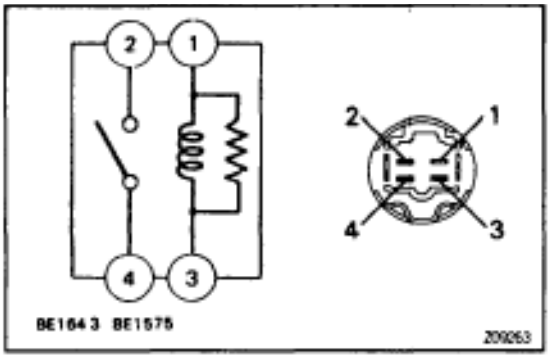


2. INSPECT SEAT BACK CONTINUITY

Inspect the seat heater continuity between terminals, as shown.

Tester connection to terminal number	Condition	Specified condition
1–3	Constant	Continuity
2–4	Constant	Continuity

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



SEAT HEATER RELAY INSPECTION

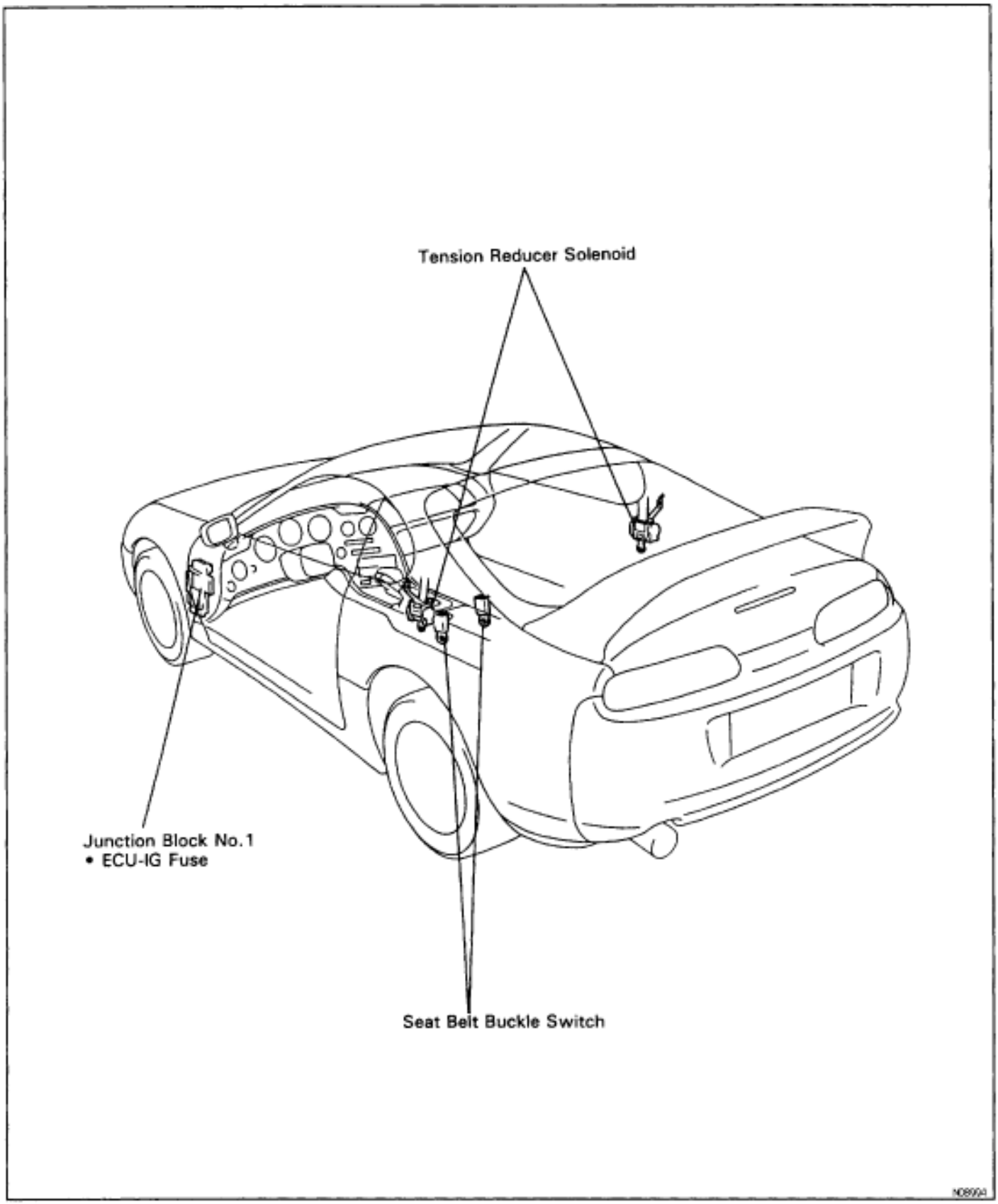
INSPECT RELAY CONTINUITY

Condition	Tester connection to terminal number	Specified condition
Constant	1–3	Continuity
Apply B+ between Terminals 1 and 3.	2–4	Continuity

If continuity is not as specified, replace the relay.

ELECTRIC TENSION REDUCER SYSTEM

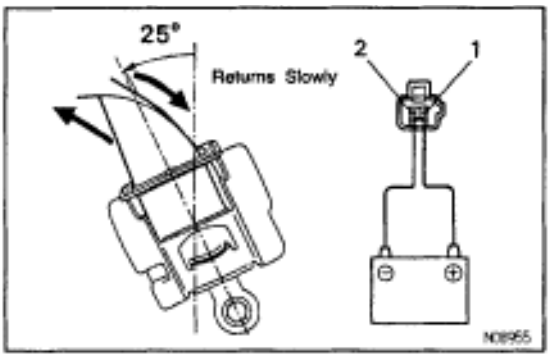
PARTS LOCATION

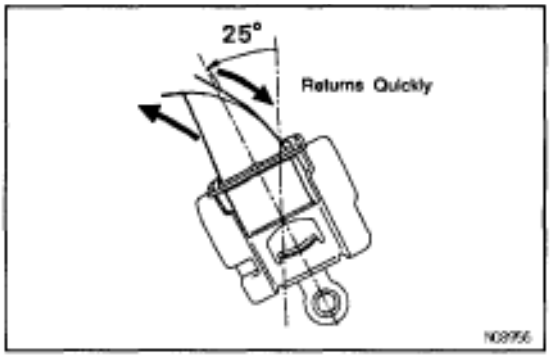


TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Tension Reducer does not operate. (Driver's and Passenger's)	1. ECU–IG fuse 2. Wire Harness	(BE–6)
Tension Reducer does not operate. (Only one side)	1. Buckle Switch 2. Tension Reducer Solenoid 3. Wire Harness	(BE–56) (BE–62)





TENSION REDUCER SOLENOID INSPECTION

INSPECT SOLENOID OPERATION

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

(b) Pull the belt upward and check that the belt is slowly retracted when released.

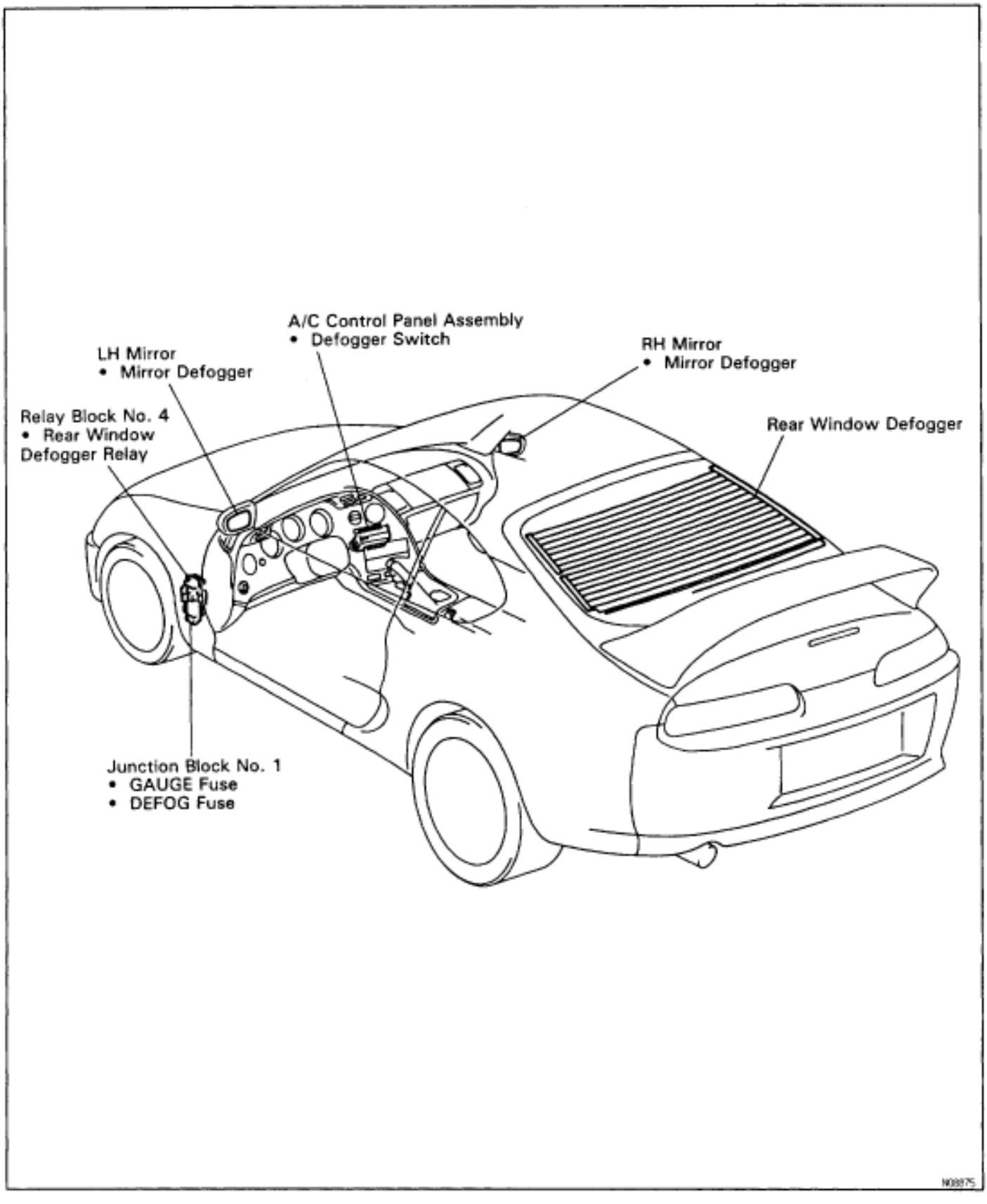
(c) Disconnect the lead from the battery.

(d) Pull the belt upward and check that the belt is retracted more quickly when released than in (b).
HINT: Do not tilt the retractor.
If the operation is not as specified, replace the front seat outer belt assembly.

BUCKLE SWITCH INSPECTION

See page BE–56

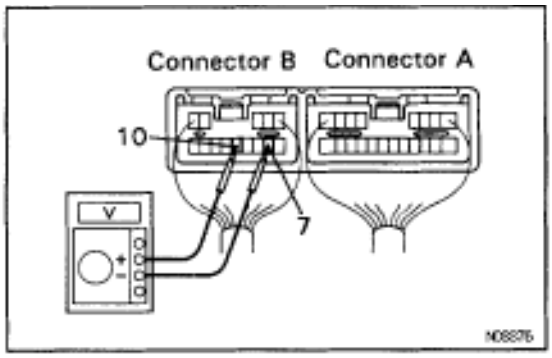
DEFOGGER SYSTEM
PARTS LOCATION



TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
All defogger systems do not operate	1. GAUGE Fuse	(BE–6)
	2. DEFOG Fuse	(BE–6)
	3. Defogger Relay	(BE–65)
	4. Defogger Switch	(BE–64)
	5. A/C Amplifier	(AC Section)
	6. Wire Harness	
Rear window defogger does not operate	1. Defogger Wires	(BE–65)
	2. Wire Harness	
Mirror defogger does not operate	1. MIR–HTR Fuse	(BE–6)
	2. Mirror Defogger	(BE–66)
	3. Wire Harness	

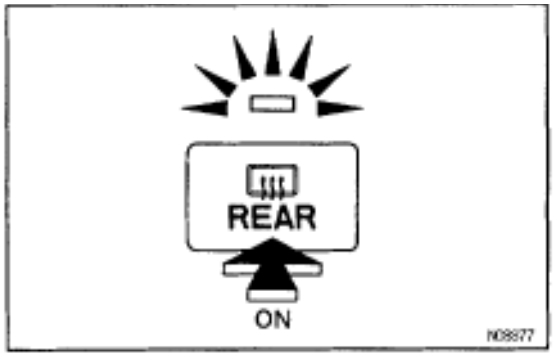


DEFOGGER SWITCH INSPECTION

INSPECT SWITCH OPERATION

(a) Connect the positive (+) lead from the voltmeter to terminal 7 of connector B and the negative (–) lead from voltmeter to terminal 10 of connector B.

(b) When the switch is off, the voltage should be approx. 12 V.

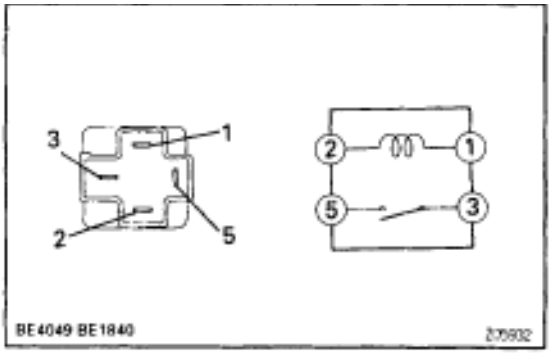


(c) When the switch is on, check that the indicator light lights up and that the voltage is less than 1 V.

(d) After 15 minutes, check that the switch is off and the voltage is approx. 12 V.

A/C AMPLIFIER INSPECTION

See A/C section

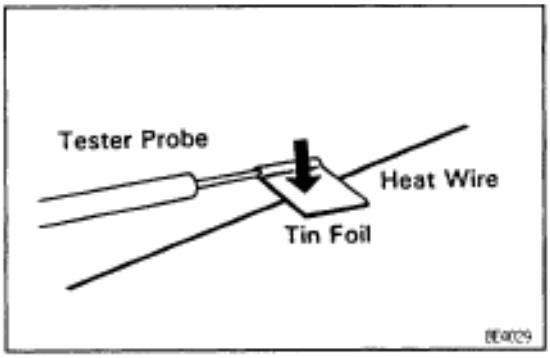


DEFOGGER RELAY INSPECTION

INSPECT RELAY CONTINUITY

Condition	Tester connection to terminal number	Specified condition
Constant	1–2	Continuity
Apply B+ between Terminals 1 and 2.	3–5	Continuity

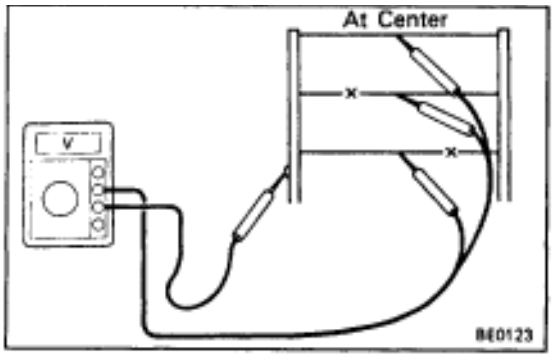
If continuity is not as specified, replace the relay.



DEFOGGER WIRE INSPECTION

NOTICE:

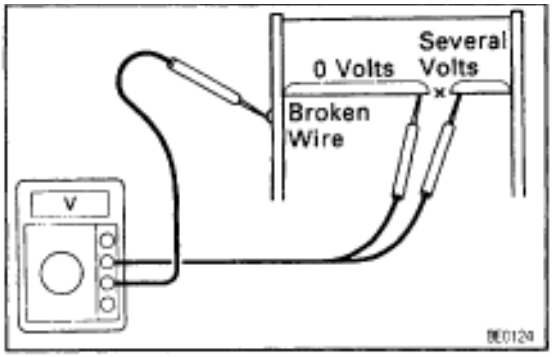
- **When cleaning the glass, use a soft, dry cloth, and wipe the glass in the direction of the wire. Take care not to damage the wires.**
- **Do not use detergents or glass cleaners with abrasive ingredients.**
- **When measuring voltage, wind a piece of tin foil around the top of the negative probe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



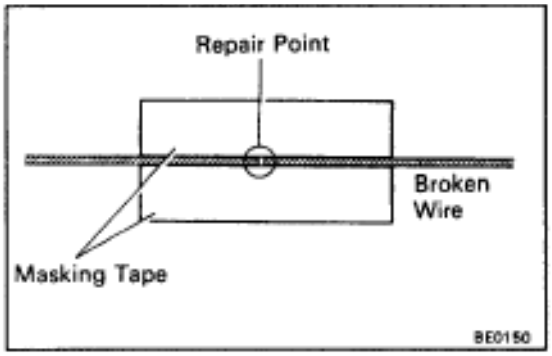
(a) Turn the ignition switch ON.
(b) Turn the defogger switch ON.
(c) Inspect the voltage at the center of each heat wire, as shown.

Voltage	Criteria
Approx. 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.

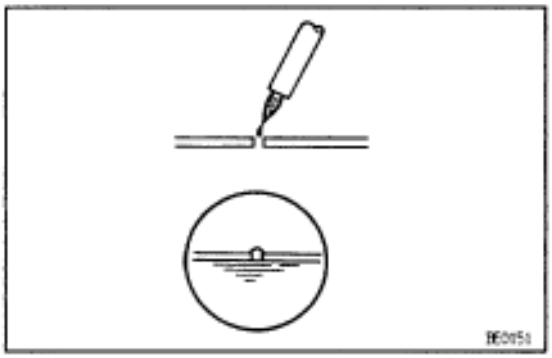


(d) Place the voltmeter positive (+) lead against the defogger positive (+) terminal.
(e) Place the voltmeter negative (–) lead with the foil strip against the heat wire at the positive (+) terminal end and slide it toward the negative (–) terminal end.
(f) The point where the voltmeter deflects from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

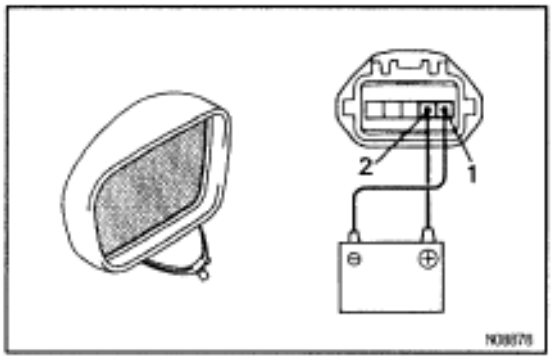


DEFOGGER WIRE REPAIR

(a) Clean the broken wire tips with a grease, wax and silicone remover.
(b) Place the masking tape along both sides of the wire to be repaired.
(c) Thoroughly mix the repair agent (DuPont paste No. 4817).



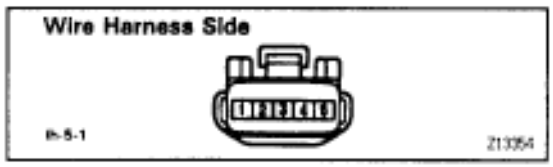
(d) Using a fine tip brush, apply a small amount to the wire.
(e) After a few minutes, remove the masking tape.
(f) Allow the repair to stand at least 24 hours.



MIRROR DEFOGGER INSPECTION

1. 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.



2. INSPECT MIRROR DEFOGGER CIRCUIT

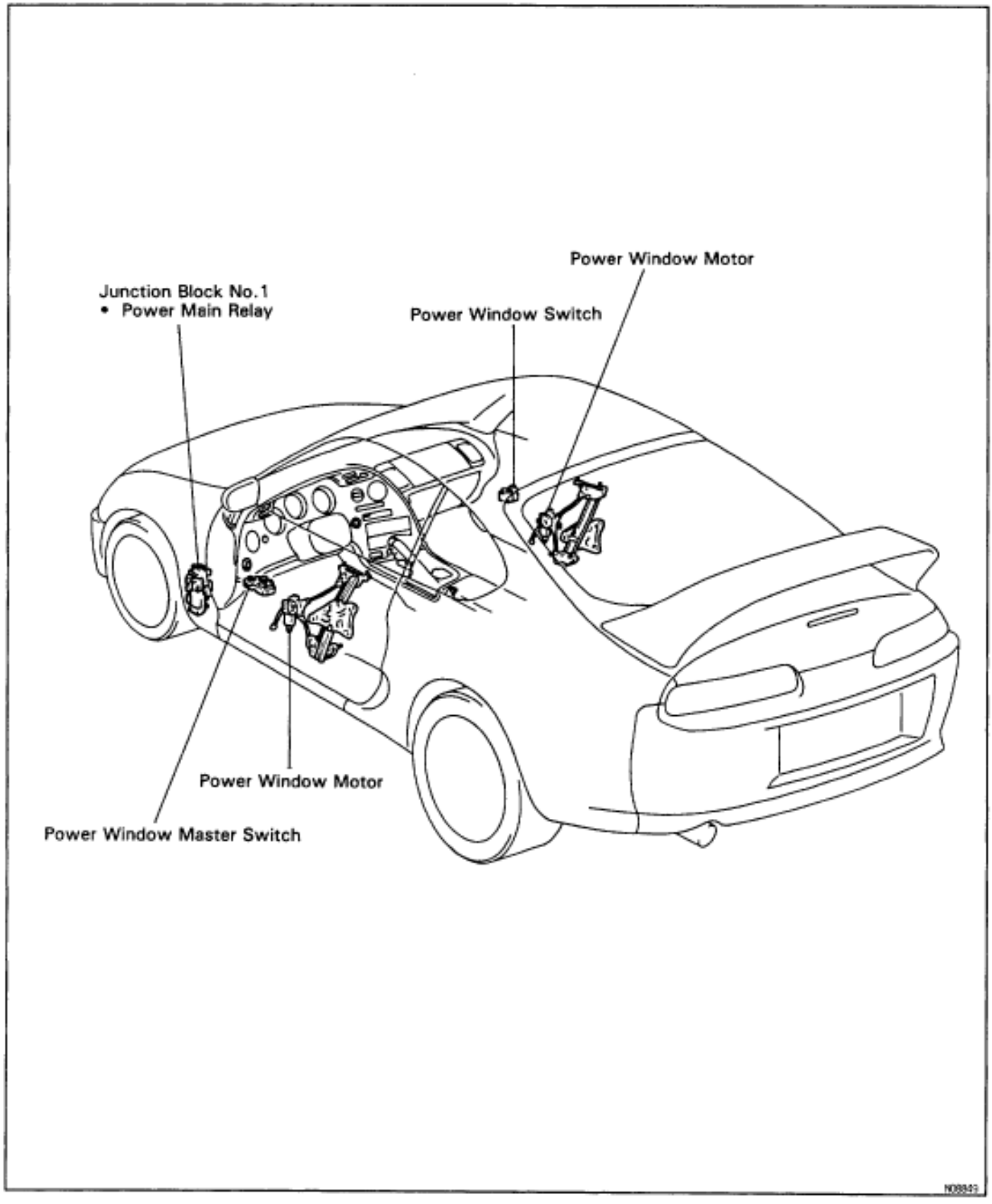
Disconnect the connector from the outside mirror and inspect the connector on the wire harness side, as shown.

Tester connection to terminal number	Condition	Specified condition
1–Ground	Constant	Continuity
2–Ground	Ignition switch ON (Defogger switch OFF)	No voltage
2–Ground	Ignition switch ON (Defogger switch ON)	Battery positive voltage

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

POWER WINDOW CONTROL SYSTEM

PARTS LOCATION

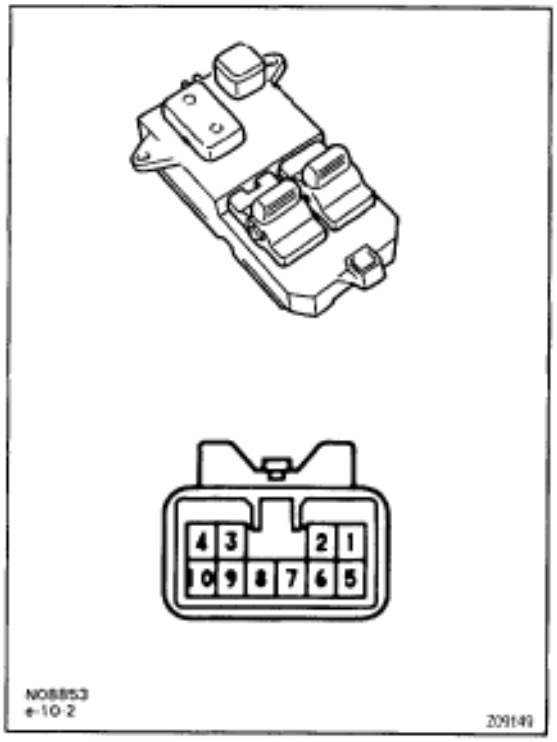


TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
*1 Power window does not operate.	1. ALT Fuse 2. POWER Fuse 3. AM 1 Fuse 4. DOOR Fuse 5. Ignition Switch 6. Power Window Master Switch 7. Wire Harness	(BE–5) (BE–5) (BE–5) (BE–6) (BE–8) (BE–69)
*2 Power Window does not operate.	1. GAUGE Fuse 2. Power Main Relay 3. Ignition Switch 4. Power Window Master Switch 5. Wire Harness	(BE–6) (BE–73) (BE–8) (BE–69)
”One Touch Power Window System” does not operate.	1. Power Window Master Switch	(BE–69)
Only one window glass does not move.	1. Power Window Master Switch 2. Power Window Switch 3. Power Window Motor 4. Wire Harness	(BE–69) (BE–71) (BE–71)
”Window Lock System” does not operate.	1. Power Window Master Switch	(BE–69)
Illumination does not light up.	1. Power Window Master Switch	(BE–69)

*1 Power door lock does not operate.
*2 Power door lock is normal.



POWER WINDOW MASTER SWITCH INSPECTION

1. INSPECT SWITCH CONTINUITY

Driver's Switch

Switch position	Tester connection to terminal number	Specified condition
UP	4–10 8–9	Continuity
OFF	8–10 8–9	Continuity
DOWN	4–9 8–10	Continuity

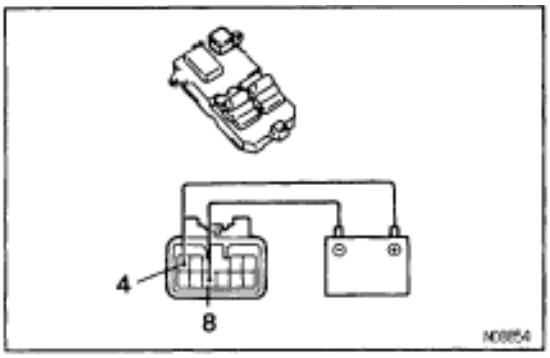
Passenger's Switch (Window unlock)

Switch position	Tester connection to terminal number	Specified condition
UP	4–5 7–8	Continuity
OFF	5–8 7–8	Continuity
DOWN	4–7 5–8	Continuity

Passenger's Switch (Window lock)

Switch position'	Tester connection to terminal number	Specified condition
UP	4–5	Continuity
OFF	5–7	Continuity
DOWN	4–7	Continuity

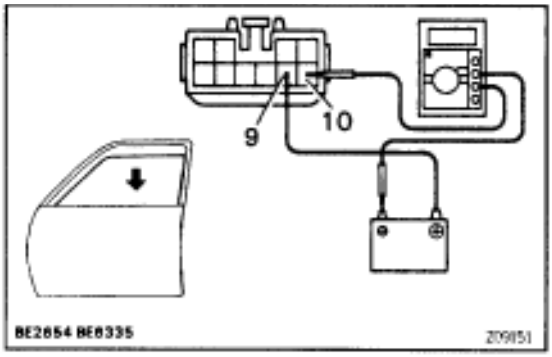
If continuity is not as specified, replace the switch.



2. INSPECT SWITCH ILLUMINATION

Connect the positive (+) lead from the battery to terminal 4 and the negative (–) lead to terminal 8, check that the illumination lights up.

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



3. INSPECT ONE TOUCH POWER WINDOW SYSTEM

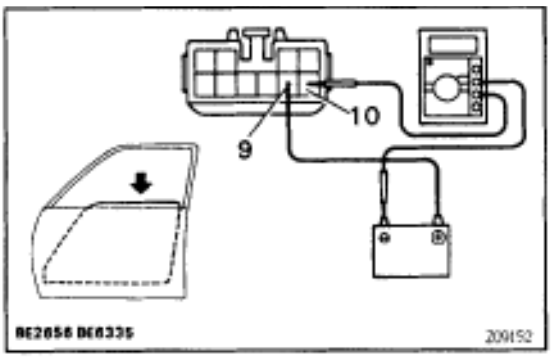
Using an ammeter.

(a) Disconnect the connector from the master switch.

(b) Connect the positive (+) lead from the ammeter to terminal 9 on the wire harness side connector and the negative (–) lead to negative terminal of the battery.

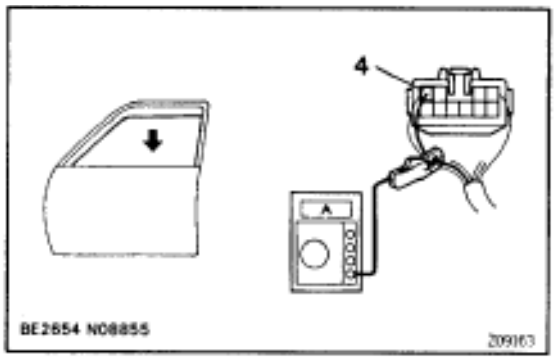
(c) Connect the positive (+) lead from the battery to terminal 10 on the wire harness side connector.

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



(e) Check that the current increases up to approximately 14.5 A or more when the window stops going down.
HINT: The circuit breaker opens some 4–90 seconds after the window stops going down, so that check must be made before the circuit breaker operates.
If the operation is as specified, replace the master switch.

Using an ammeter with a current–measuring probe.

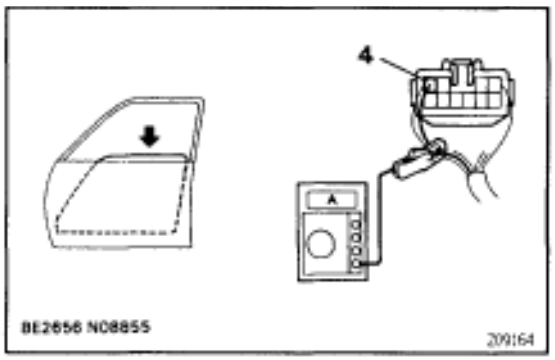


(a) Remove the master switch with connector connected.

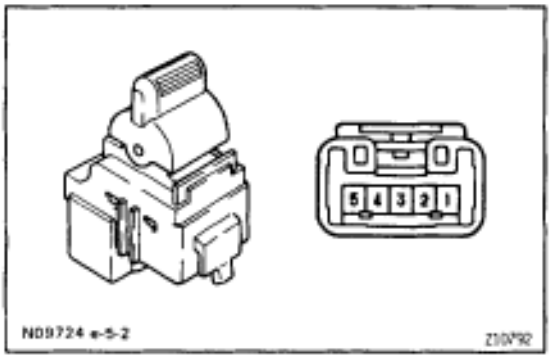
(b) Attach a current–measuring probe to terminal 4 of the wire harness.

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

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



(e) Check that the current increases up to approximately 14.5 A or more when the window stops going down.
HINT: The circuit breaker opens some 9–90 seconds after the window stops going down, so that check must be made before the circuit breaker operates.
If operation is as specified, replace the master switch.

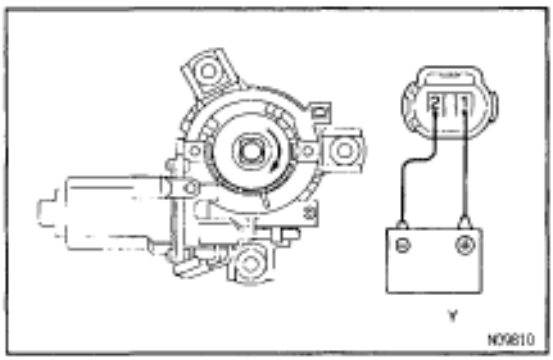


POWER WINDOW SWITCH INSPECTION

INSPECT SWITCH CONTINUITY

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

If continuity is not as specified, replace the switch.

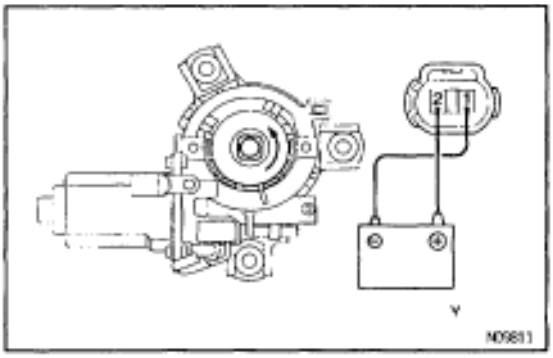


POWER WINDOW MOTOR INSPECTION

1. INSPECT MOTOR OPERATION

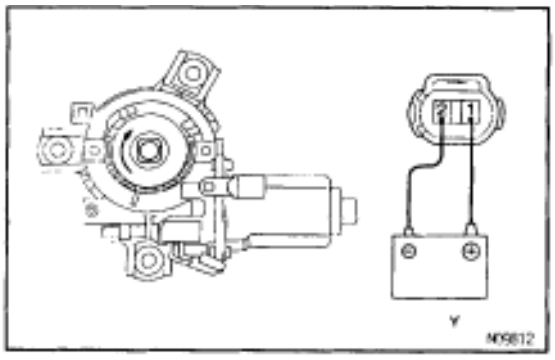
Driver's Door

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



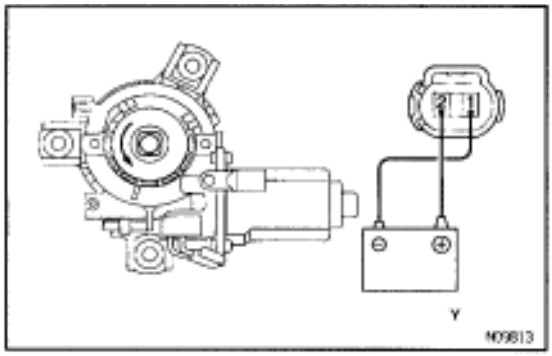
(b) Reverse the polarity, check that the motor turns counterclockwise.

If operation is not as specified, replace the motor.

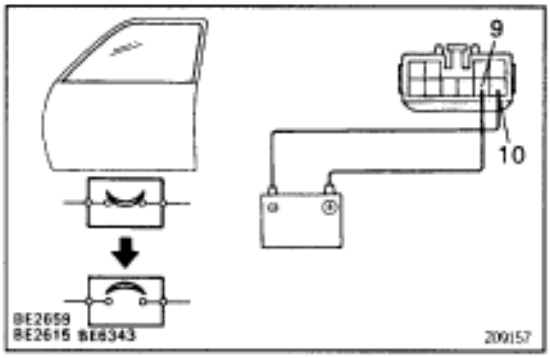


Passenger's Door

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



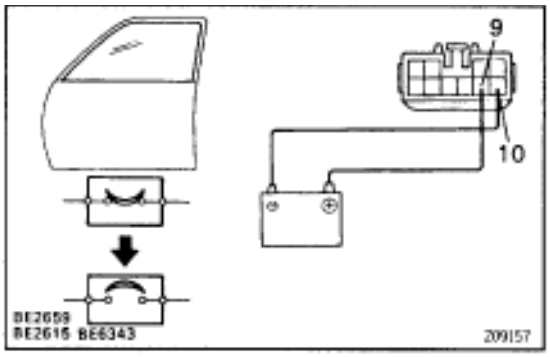
(b) Reverse the polarity, check that the motor turns counterclockwise.
If operation is not as specified, replace the motor.



2. INSPECT PTC OPERATION

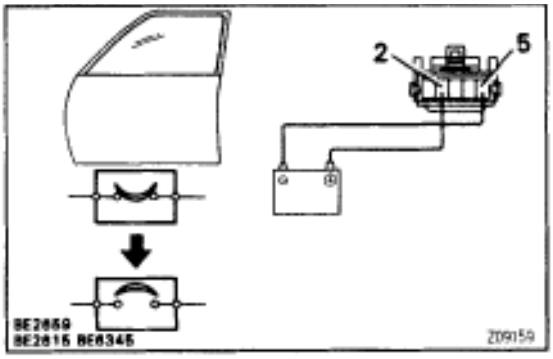
Driver's Door

(a) Disconnect the connector from the master switch.
(b) Connect the positive (+) lead from the battery to terminal 9 and the negative (–) lead to terminal 10 on the wire harness side connector and raise the window to the fully closed position.
(c) Continue to apply voltage, check that there is a PTC operation noise within approximately 4 to 90 seconds.

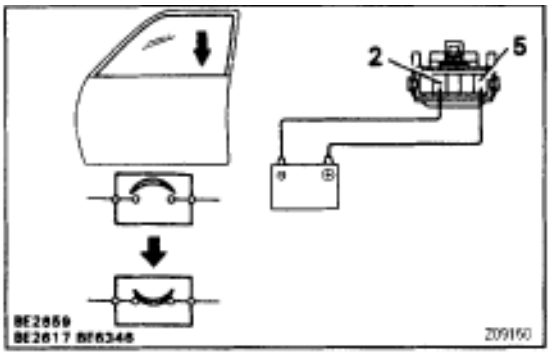


(d) Reverse the polarity, check that the window begins to descend within approximately 60 seconds.
If operation is not as specified, replace the motor.

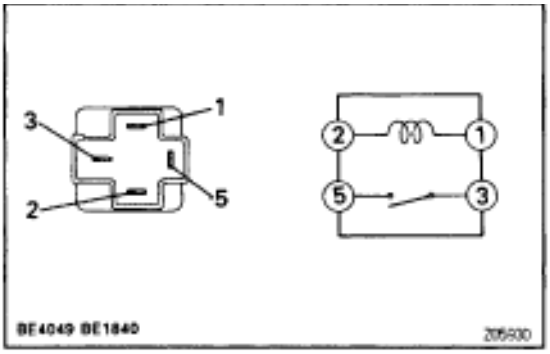
Passenger's Door



(a) Disconnect the connector from the power window switch.
(b) Connect the positive (+) lead from the battery to terminal 2 and the negative (–) lead to terminal 5 on the wire harness side connector, and raise the window to the fully closed position.
(c) Continue to apply voltage, check that there is a PTC operation noise within approximately 4 to 90 seconds.



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



POWER MAIN RELAY INSPECTION

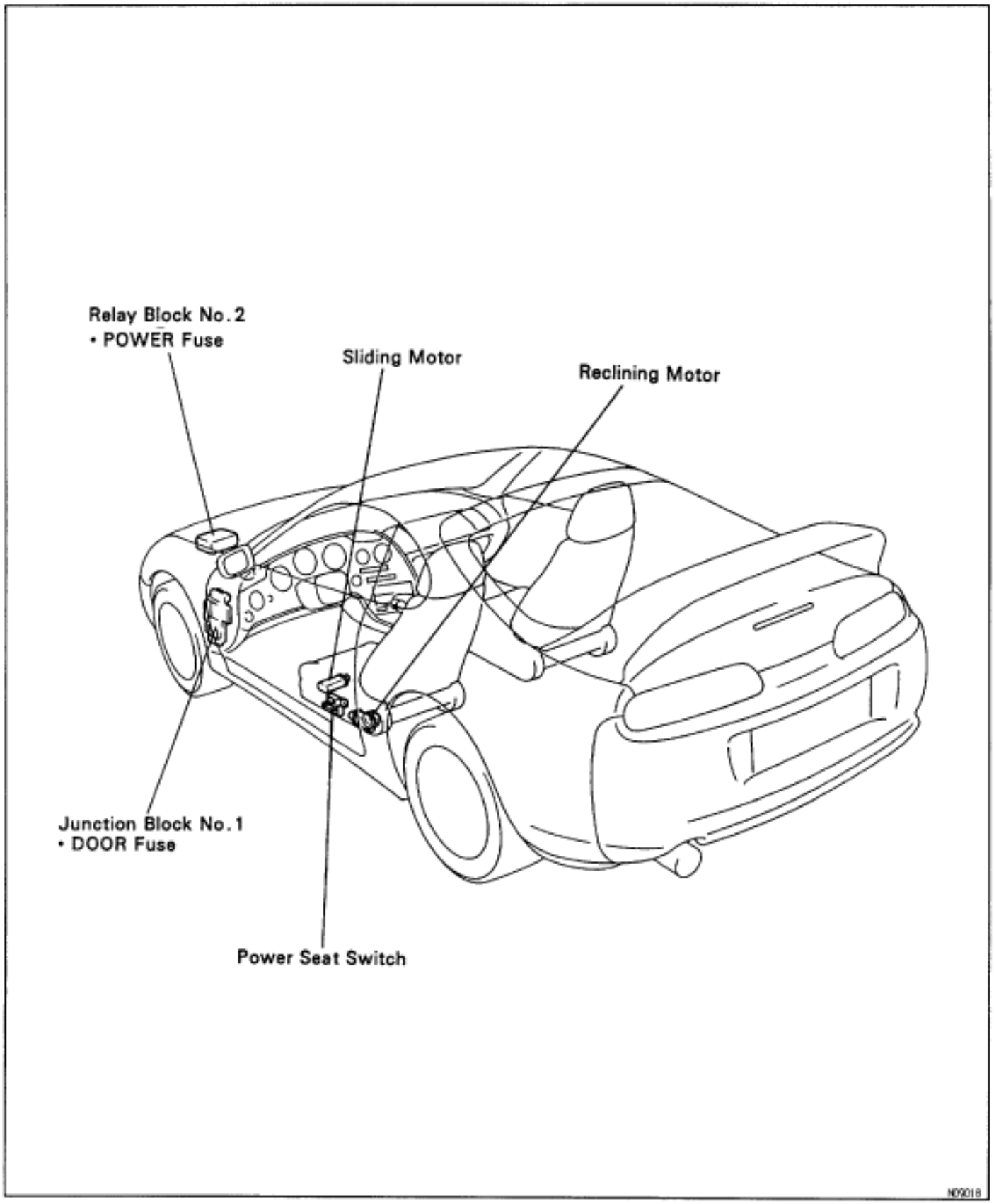
INSPECT RELAY CONTINUITY

Condition	Tester connection to terminal number	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.

POWER SEAT CONTROL SYSTEM

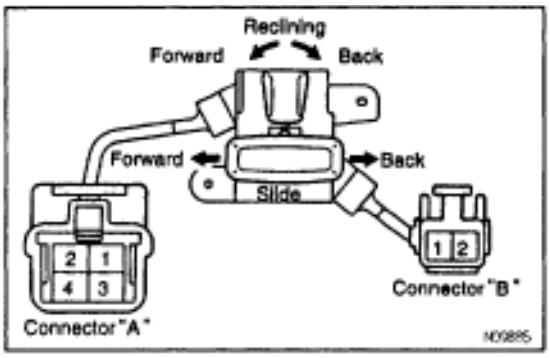
PARTS LOCATION



TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Power seat does not operate	1. POWER Fuse 2. DOOR Fuse 3. Wire Harness 4. Power Seat Switch	(BE–5) (BE–6) (BE–75)
”Slide operation” does not operate	1. Power Seat Switch 2. Wire Harness 3. Sliding Motor	(BE–75) (BE–76)
”Reclining operation” does not operate	1. Power Seat Switch 2. Wire Harness 3. Reclining Motor	(BE–75) (BE–77)



POWER SEAT SWITCH INSPECTION

INSPECT SWITCH CONTINUITY

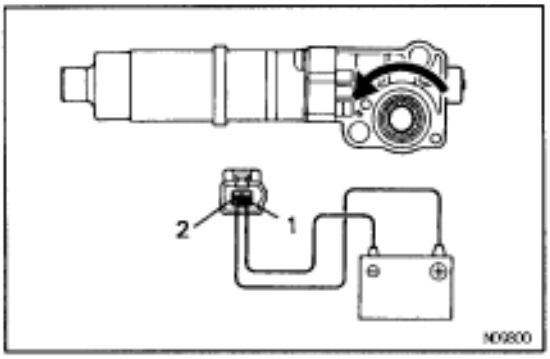
Slide

Switch position	Tester connection to terminal number	Specified condition
Forward	A1–A3 A2–A4	Continuity
Off	A1–A3 A1–A4	Continuity
Back	A1–A4 A2–A3	Continuity

Reclining

Switch position	Tester connection to terminal number	Specified condition
Forward	A1–B1 A2–B2	Continuity
Off	A1–B1 A1–B2	Continuity
Back	A1–B2 A2–B1	Continuity

If continuity is not as specified, replace the switch.

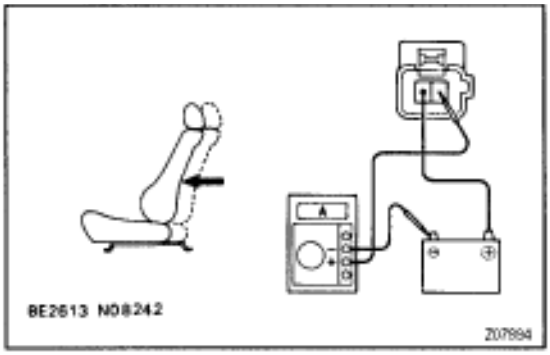


SLIDE MOTOR INSPECTION

1. INSPECT MOTOR OPERATION

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

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

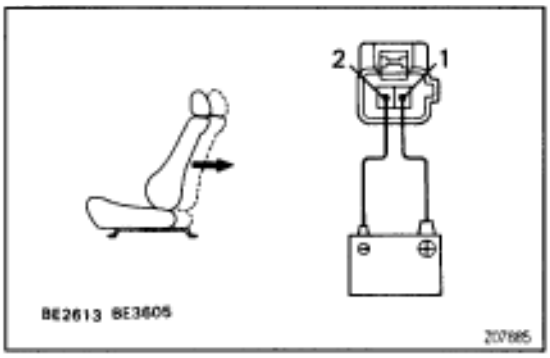


2. INSPECT PTC THERMISTOR OPERATION

(a) Separate power seat adjuster from front seat.

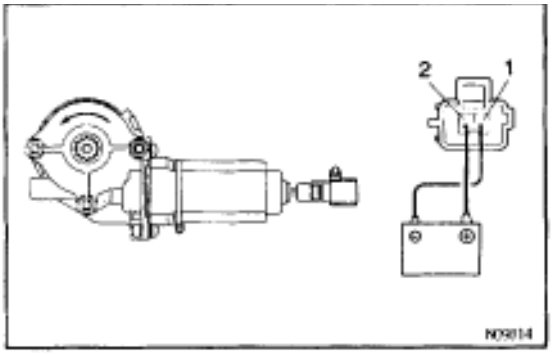
(b) Connect the positive (+) lead from the battery to terminal 2, the positive (+) lead from the ammeter to terminal 1, and the negative (–) lead to battery negative (–) terminal, and move the seat front end position.

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



(d) Disconnect the lead from terminals.

(e) Approximately 60 seconds later, connect the positive (+) lead from battery to terminal 1 and the negative (–) lead to terminal 2, check that the seat begins to move backwards.
If operation is not as specified, replace the motor.

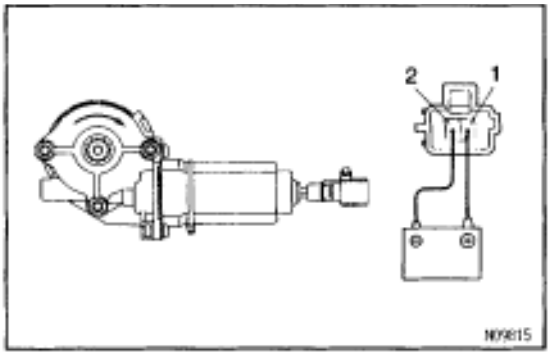


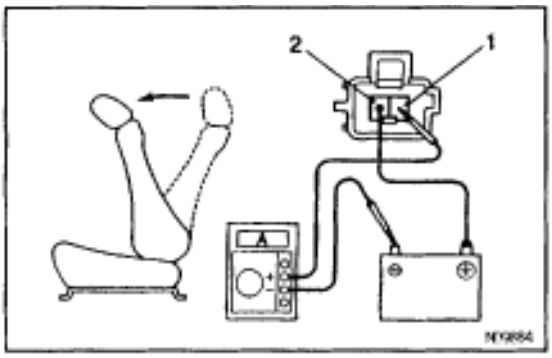
RECLINING MOTOR INSPECTION

1. INSPECT MOTOR OPERATION

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





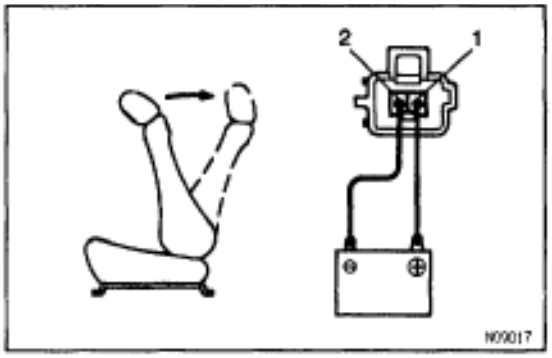
2. INSPECT PTC THERMISTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 2.

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

(c) Check that the seat back is reclined to the most forward position.

(d) Continue to apply voltage, check the current change to less than 1 ampere within 4 to 90 seconds.

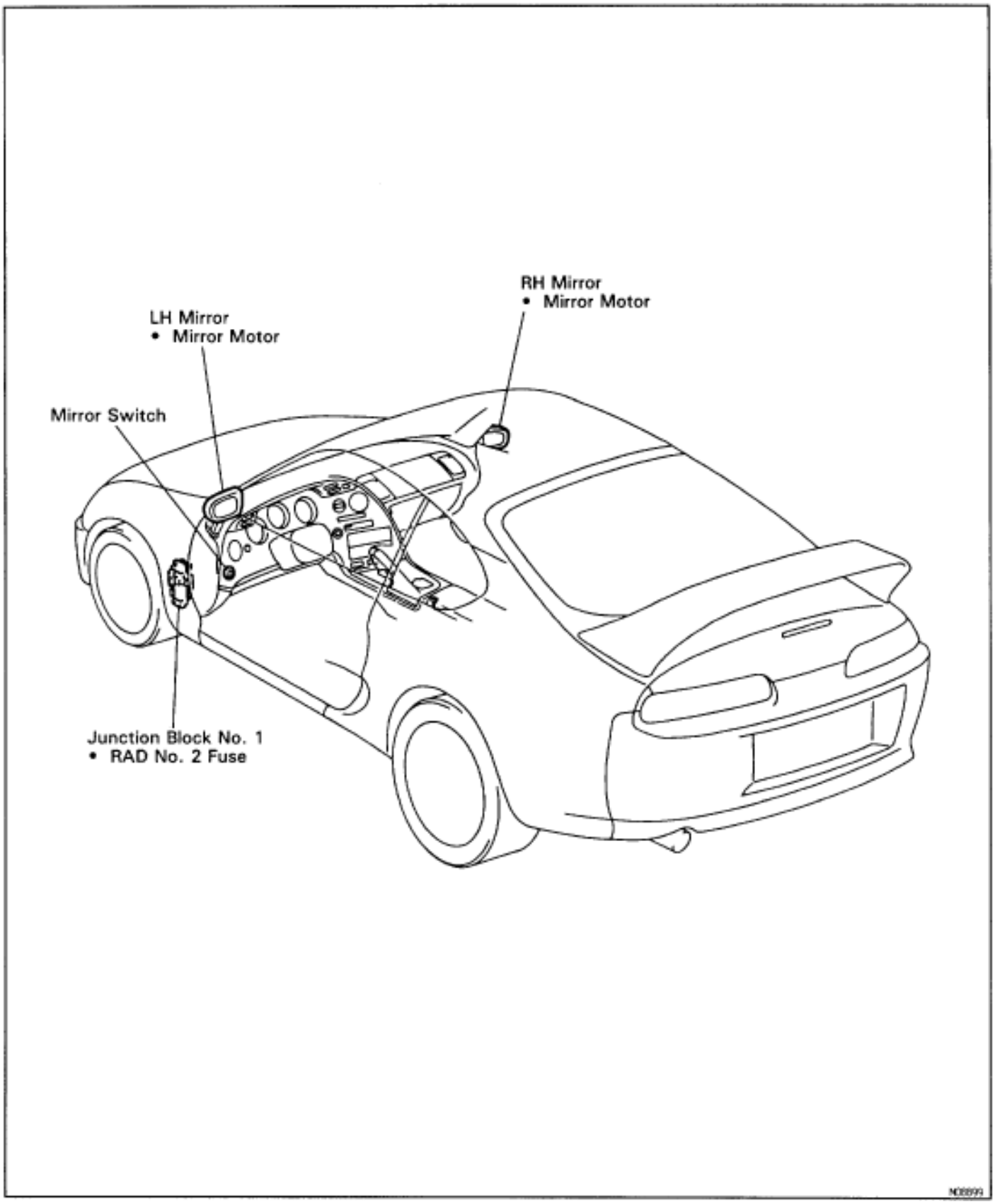


(e) Disconnect the lead from terminals.

(f) 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 backwards.
If operation is not as specified, replace the motor.

POWER MIRROR CONTROL SYSTEM

PARTS LOCATION



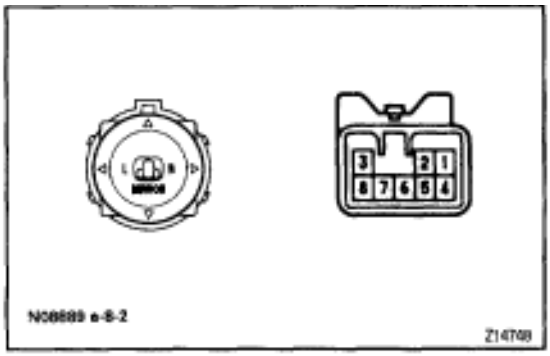
TROUBLESHOOTING

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

Trouble	Parts name	(See page)
Mirror does not operate	1. RAD No.2 Fuse 2. Mirror Switch 3. Mirror Motor 4. Wire Harness	(BE–6) (BE–79) (BE–80)
Mirror operates abnormally	1. Mirror Switch 2. Mirror Motor 3. Wire Harness	(BE–79) (BE–80)

MIRROR SWITCH INSPECTION

INSPECT SWITCH CONTINUITY



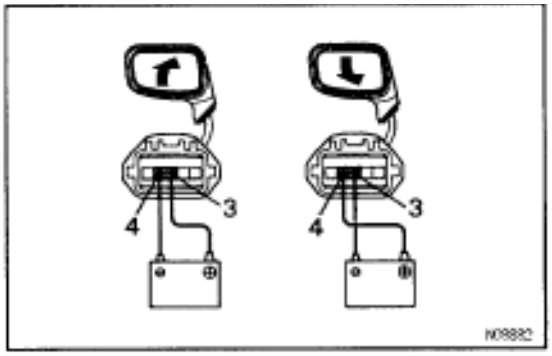
Left Side

Switch position	Tester connection to terminal number	Specified condition
OFF	–	No continuity
UP	2–5 6–8	Continuity
DOWN	2–6 5–8	Continuity
LEFT	1–8 2–5	Continuity
RIGHT	1–2 5–8	Continuity

Right Side

Switch position	Tester connection to terminal number	Specified condition
OFF	–	No continuity
UP	2–5 3–8	Continuity
DOWN	2–3 5–8	Continuity
LEFT	2–5 7–8	Continuity
RIGHT	2–7 5–8	Continuity

If continuity is not as specified, replace the switch.

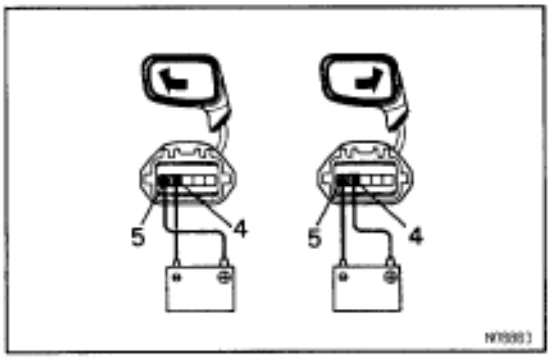


MIRROR MOTOR INSPECTION

INSPECT MOTOR OPERATION

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

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



(c) Connect the positive (+) lead from the battery to terminal 5 and negative (–) lead to terminal 4, check that the mirror turns to left side.

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

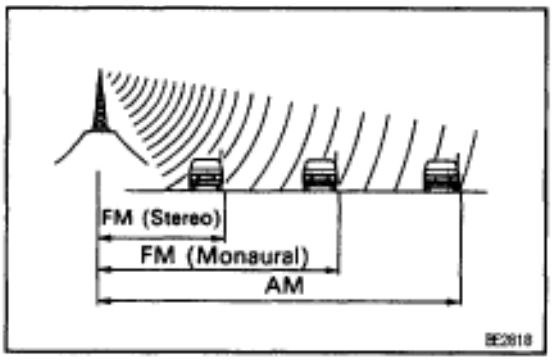
AUDIO SYSTEM
SYSTEM DESCRIPTION

1. RADIO WAVE BAND

The radio wave bands used in radio broadcasting are as follows:

Frequency	30 kHz	300kHz	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



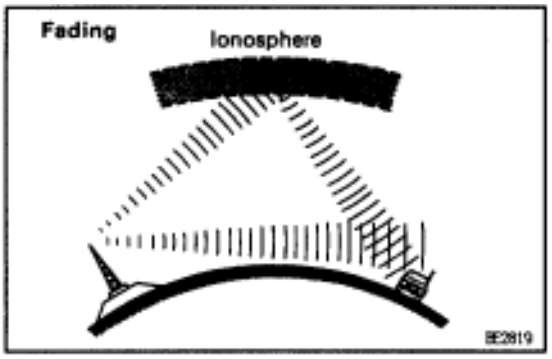
2. SERVICE AREA

There are great differences in the size of the service area for AM, FM monaural, and FM stereo broadcasts cannot be received even though AM comes in very clearly.

Not only does FM stereo have the smallest service area, but it also picks up static and other types of interference (”noise”) easily.

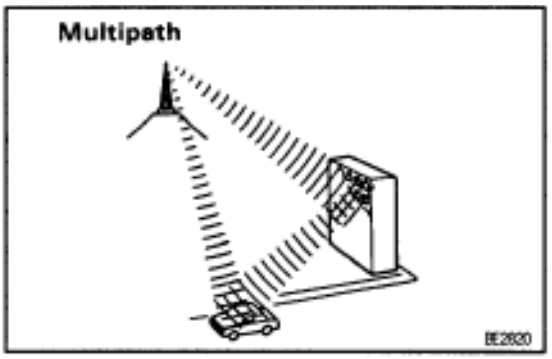
3. RECEPTION PROBLEMS

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.



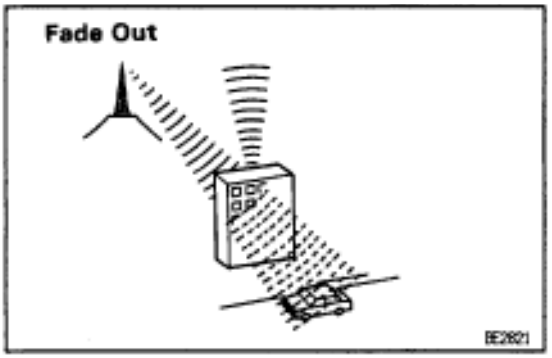
Fading

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”.



Multipath

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



Fade Out

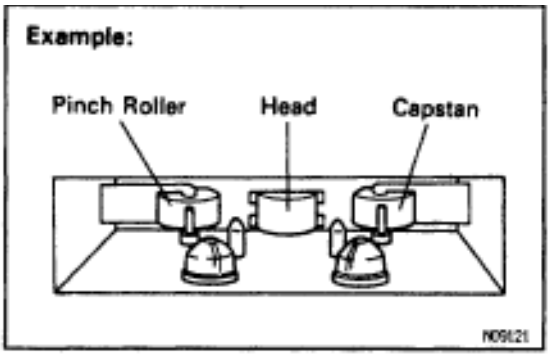
Because FM radio waves are of higher frequencies than AM radio waves, they bounce off buildings, mountains, and other obstructions. For this reason, FM signals often seem to gradually disappear or fade away as the vehicle goes behind a building or other obstruction. This is called ”fade out”.

4. 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.

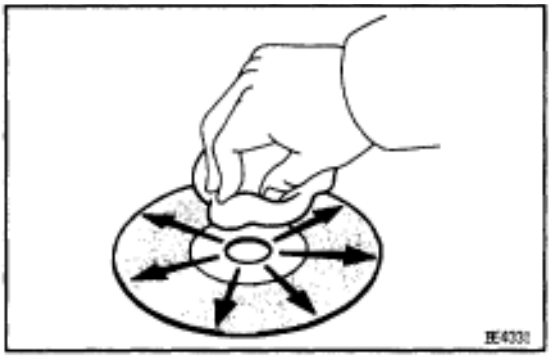


MAINTENANCE

Tape Player/Head Cleaning

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

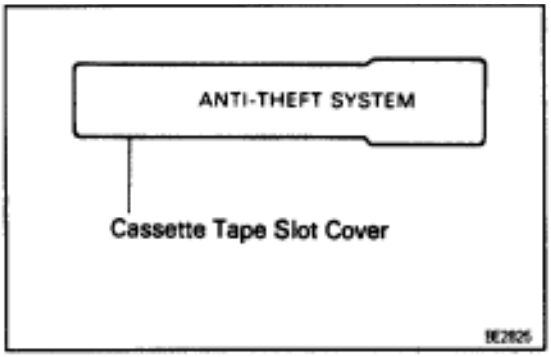
(b) Using a cleaning pen or cotton applicator soaked in cleaner, clean the head surface, punch rollers and capstans.



CD Player/Disc Cleaning

If the disc gets dirty, clean the disc by wiping the surfaces 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.



ANTI–THEFT SYSTEM

HINT: The words ”ANTI–THEFT SYSTEM” are displayed on the cassette tape slot cover.

For operation instructions for the anti–theft system, please consult the audio system section in the Owner’s Manual (hereafter called O/M).

1. SETTING SYSTEM

The system is in operation once the customer has pushed the required buttons and entered the customer–selected 3–digit ID number.

(Refer to the O/M section, ”Setting the anti–theft system”)

HINT:

- When the audio system is shipped the ID number has not been input, so the anti–theft system is not in operation.
- If the ID number has not been input, the audio system remains the same as a normal audio system.

2. ANTI–THEFT SYSTEM OPERATION

If the normal electrical power source (connector or battery terminal) is cut off, the audio system becomes inoperable, even if the power supply resumes.

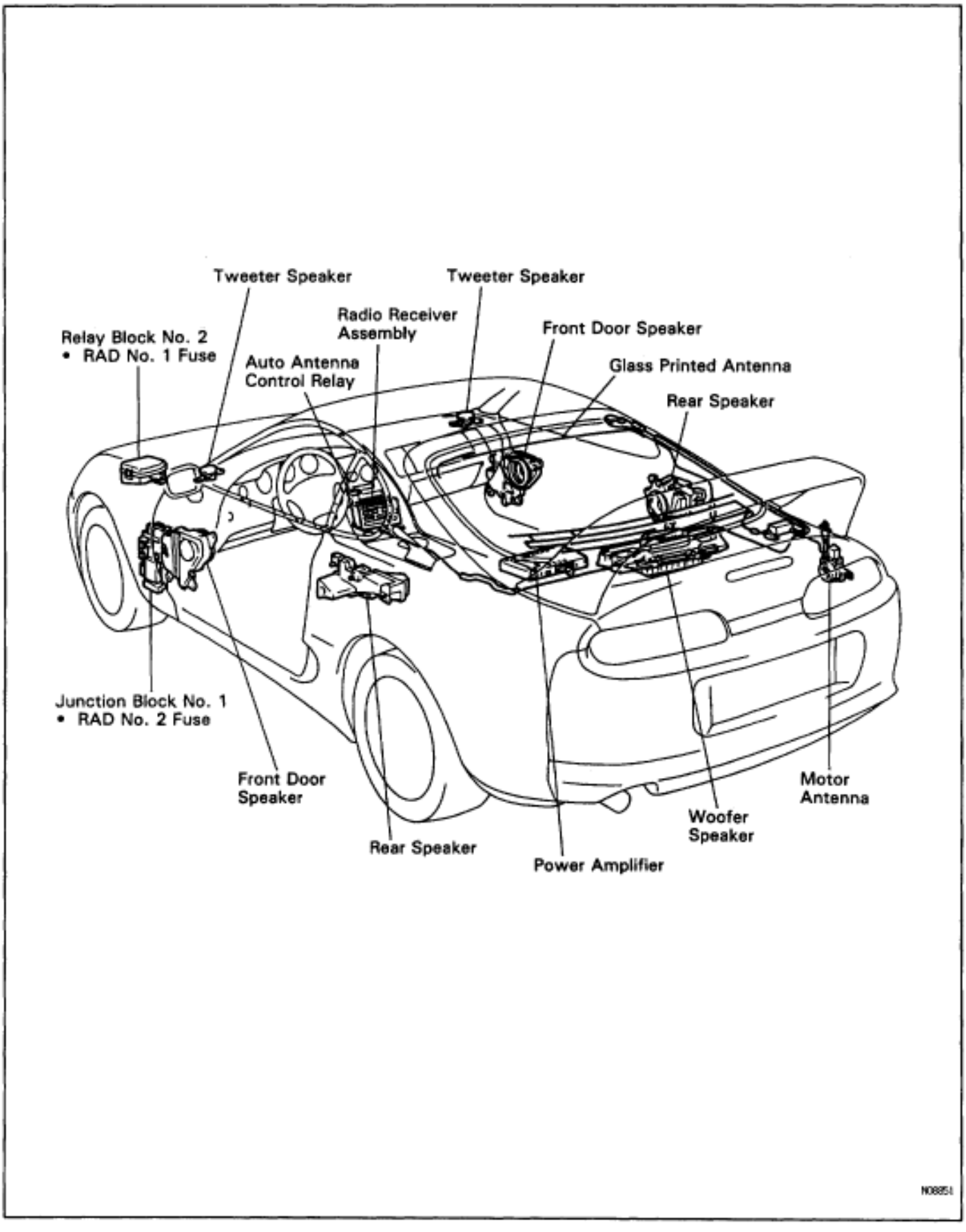
3. CANCELING SYSTEM

The ID number chosen by the customer is input to cancel the anti–theft system.

(Refer to the O/M section, ”If the system is activated”)

HINT: To change or cancel the ID number, please refer to the O/M section ”Cancelling the system”.

PARTS LOCATION



TROUBLESHOOTING

NOTICE: When replacing the internal mechanism (computer part) of the audio system, be careful that no part of your body or clothing comes in contact with the terminals of the leads from the IC, etc. of the replacement part (spare part).

HINT: This inspection procedure is a simple troubleshooting which should be carried out on the vehicle during system operation and is based on the assumption that the cause of trouble lies with the system components (except for the wires and connectors, etc.).

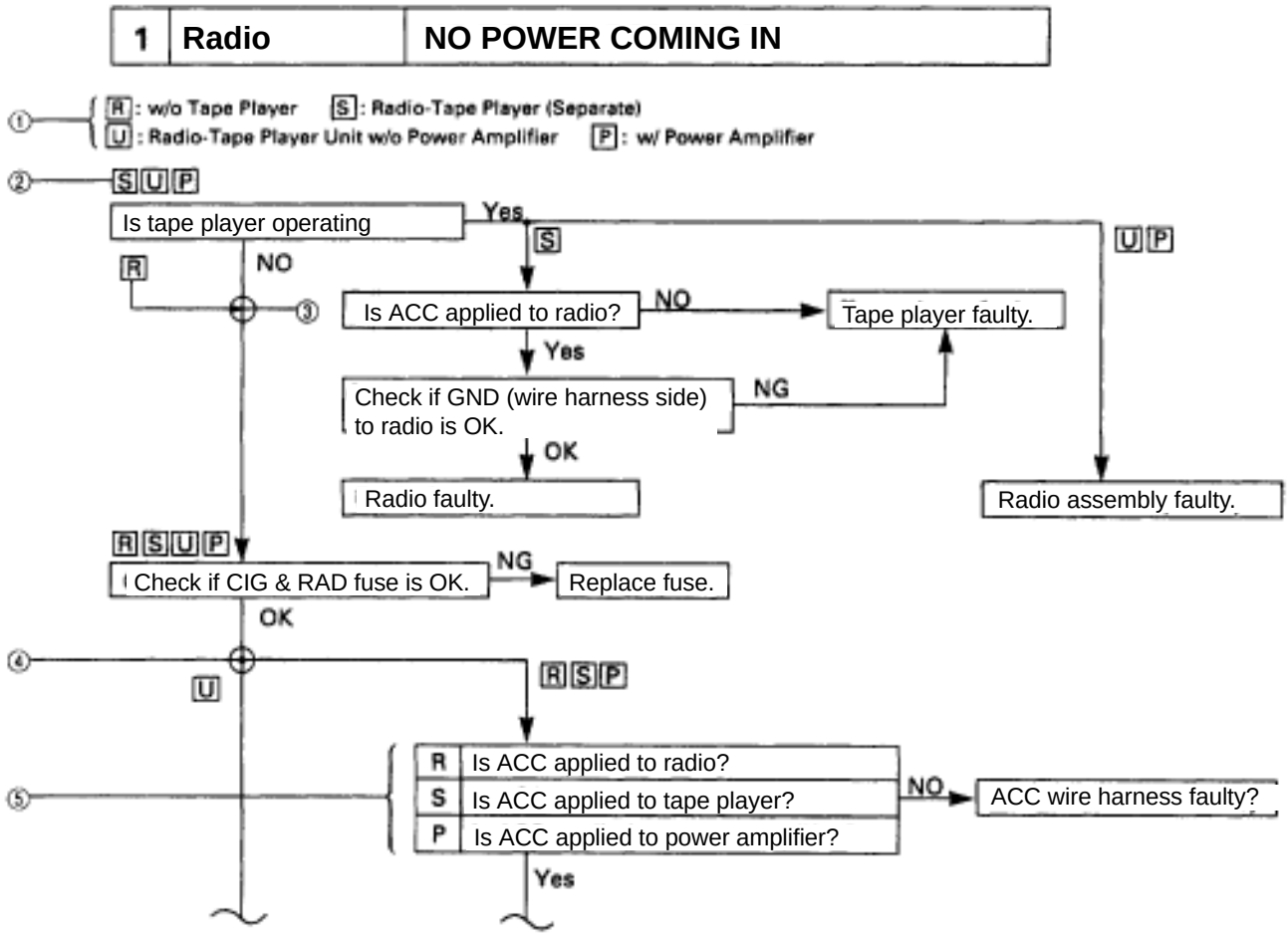
Always inspect the trouble taking the following items into consideration.

- Open or short circuit of the wire harness
- Connector or terminal connection fault
- Troubleshooting items marked *indicate that ”Troubleshooting for ANTI–THEFT SYSTEM” should be carried out first.

Problem		No.
Radio	No power coming in.	*1
	Power coming in, but radio not operating.	2
	Noise present, but AM–FM not operating.	3
	Either speaker does not work.	4
	Woofer speaker does not work.	5
	Either AM or FM does not work.	6
	Reception poor (Volume faint).	6
	Few preset tuning bands.	6
	Sound quality poor.	7
	Cannot set station select button.	8
	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
	Either speaker does not work.	12
	Woofer speaker does not work.	13
	Sound quality poor (Volume faint).	14
	Tape jammed, malfunction with tape speed or auto–reverse.	15
	APS, SKIP, RPT buttons not operating.	16
	Cassette tape will not eject.	*17
CD player	CD cannot be inserted.	18
	CD inserts, but no power.	19
	Power coming in, but CD player not operating.	20
	Sound jumps.	21
	Sound quality poor (Volume faint).	22
	Either speaker does not work.	23
	Woofer speaker does not work.	24
	CD will not eject.	25
Amplifier	No power coming in.	26
	Power coming in, but woofer amplifier (Power amplifier) not operating.	27
	Either speaker does not work.	28
	Woofer speaker does not work.	29

Problem		No.
Noise	Noise produced by vibration or shock while driving.	30
	Noise produced when engine starts.	31
Antenna	Antenna–related.	32
ANTI–THEFT SYSTEM	Troubleshooting for ANTI–THEFT SYSTEM	33

HOW TO USE DIAGNOSTIC CHART



(1) Audio system type and symbol used.
HINT: Confirm the applicable type of audio system.

(2) Symbol for type of audio system the question applies to.
HINT: If the audio system type is not applicable, proceed to next question below.

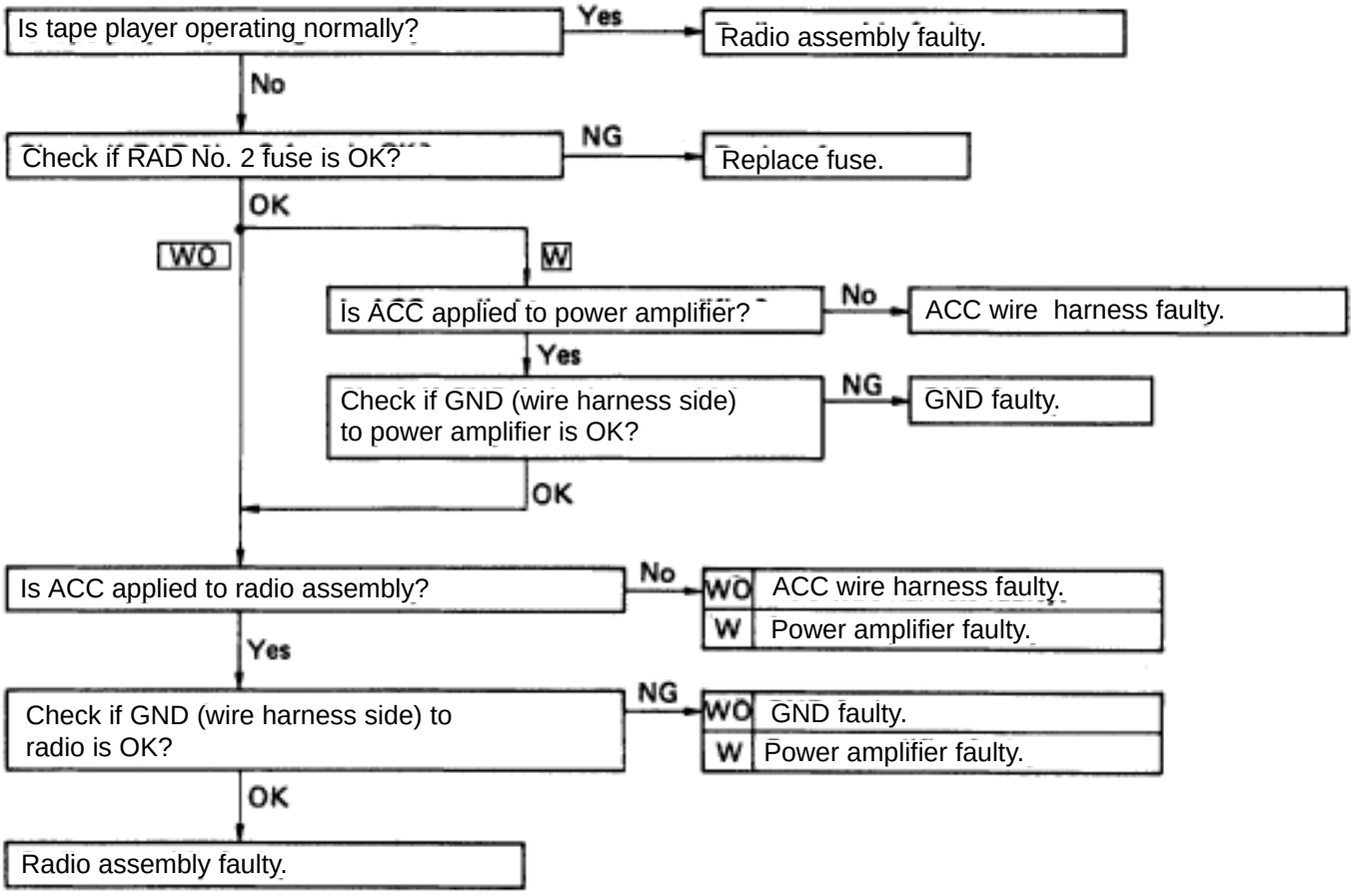
(3) Junction without black circle.
HINT: Proceed to next question below.

(4) Junction with black circle.
HINT: Proceed to question for applicable audio system type.

(5) HINT: Select question for applicable audio system type.

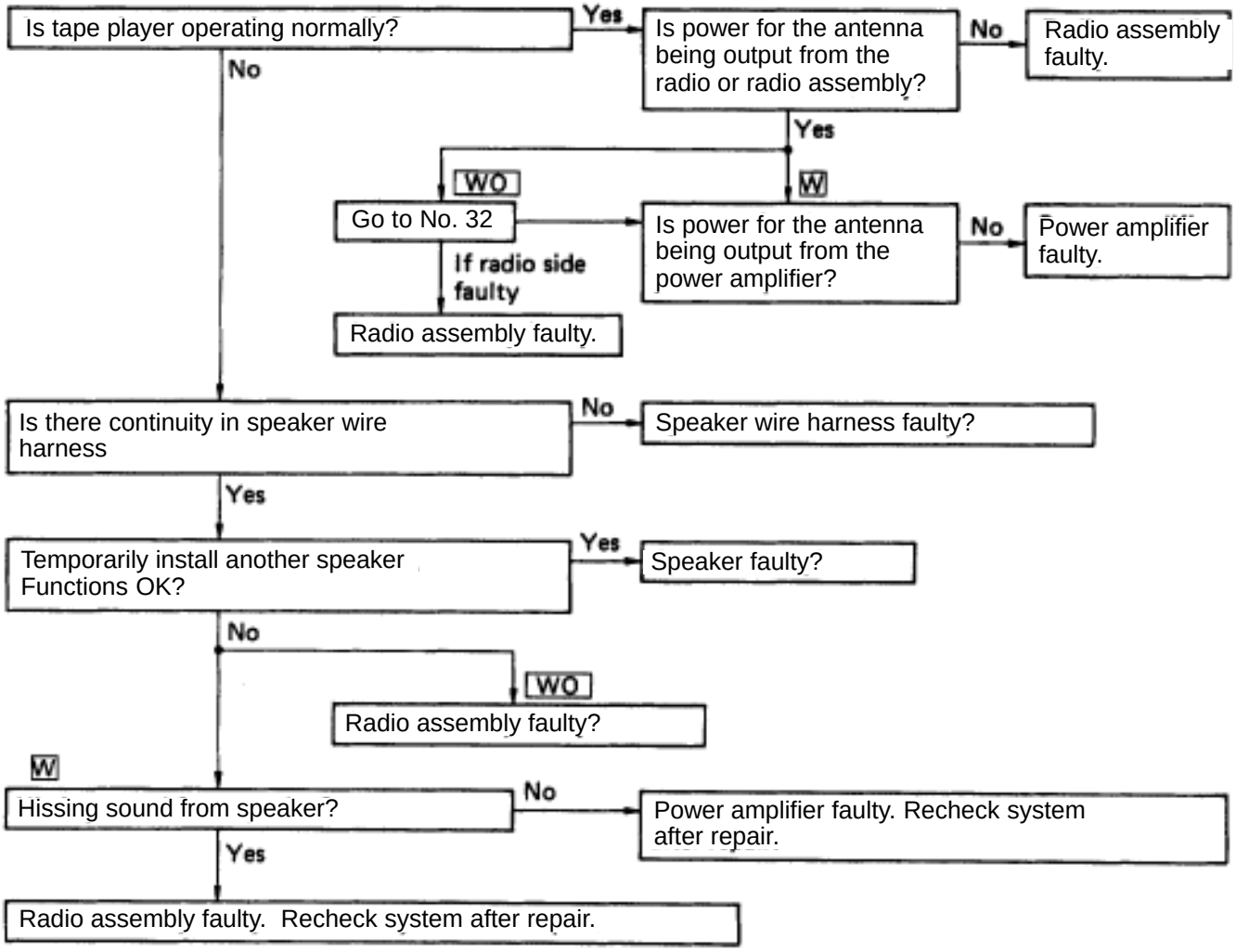
1 Radio NO POWER COMING IN

W : w/ Power Amplifier
WO : w/o Power Amplifier



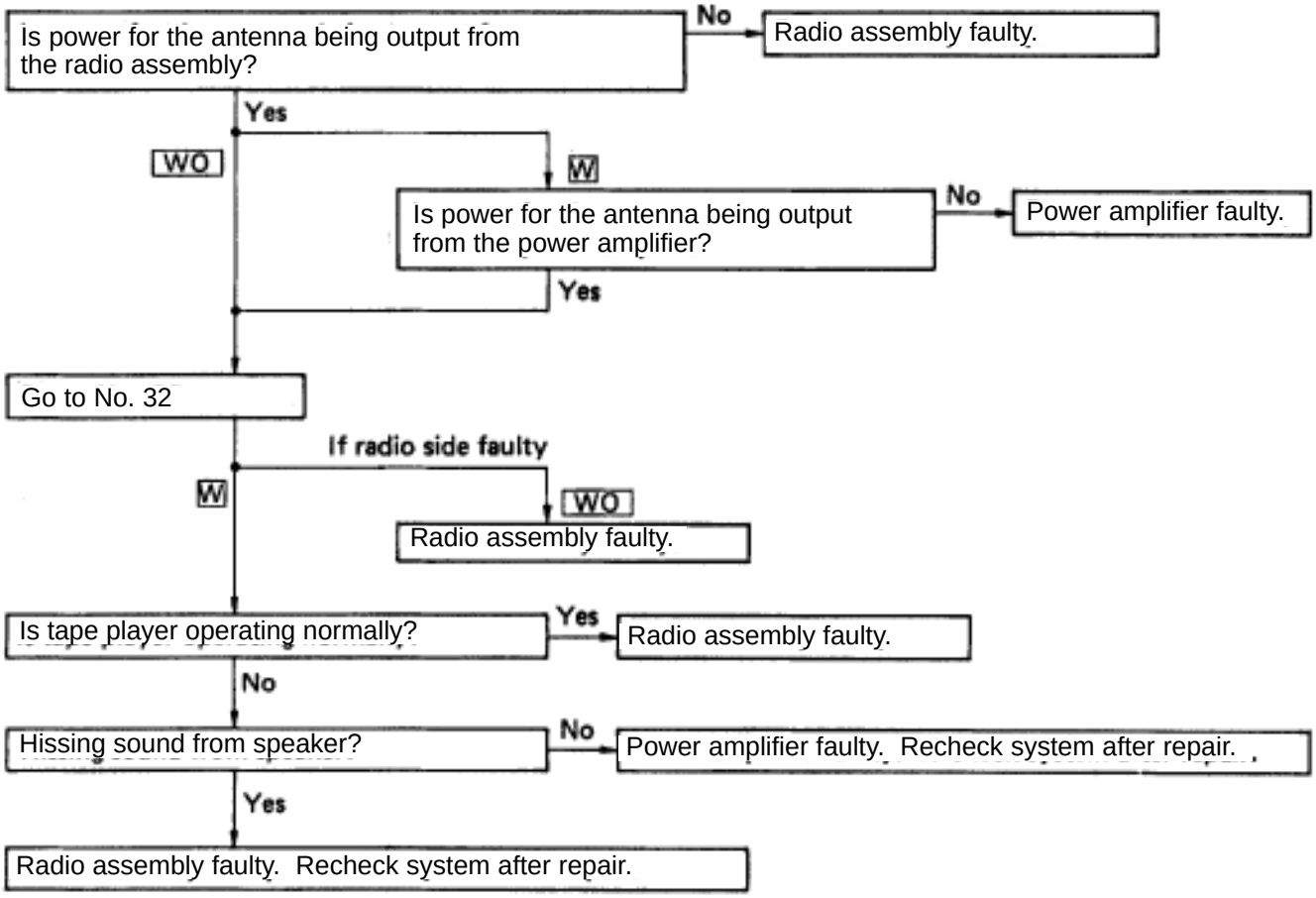
2 Radio POWER COMING IN, BUT RADIO NOT OPERATING

W : w/ Power Amplifier
WO : w/o Power Amplifier



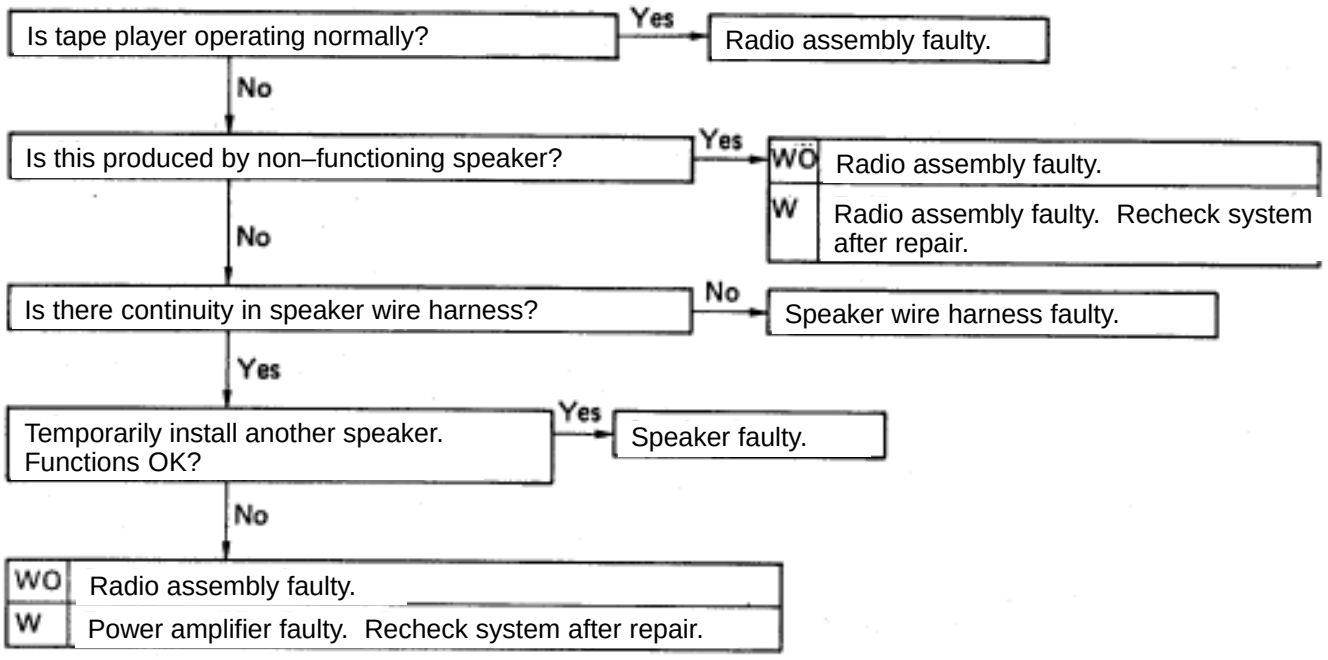
3 Radio NOISE PRESENT BUT AM–FM NOT OPERATING

W : w/ Power Amplifier
WO : w/o Power Amplifier

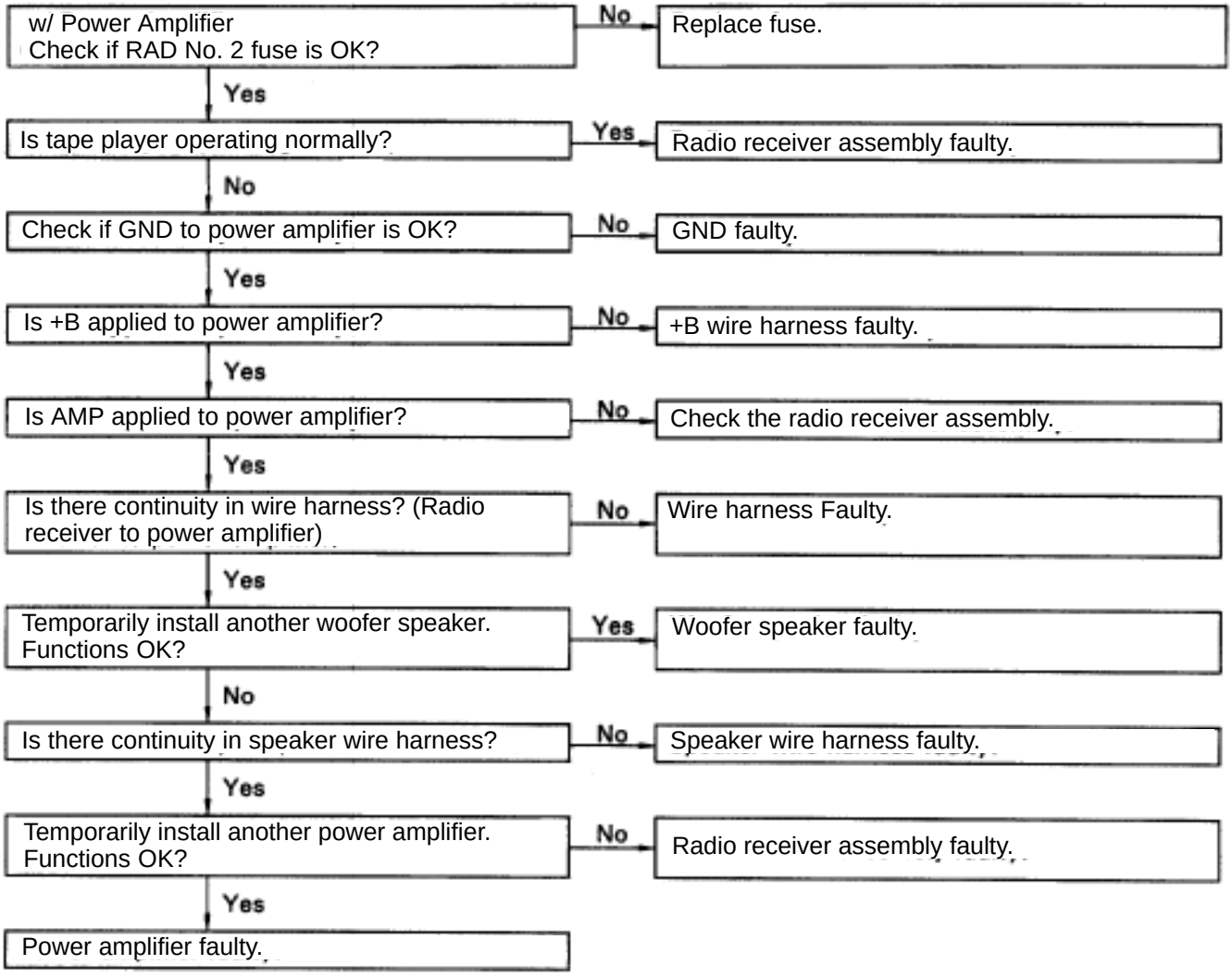


4	Radio	EITHER SPEAKER DOES NOT WORK

W : w/ Power Amplifier
WO : w/o Power Amplifier

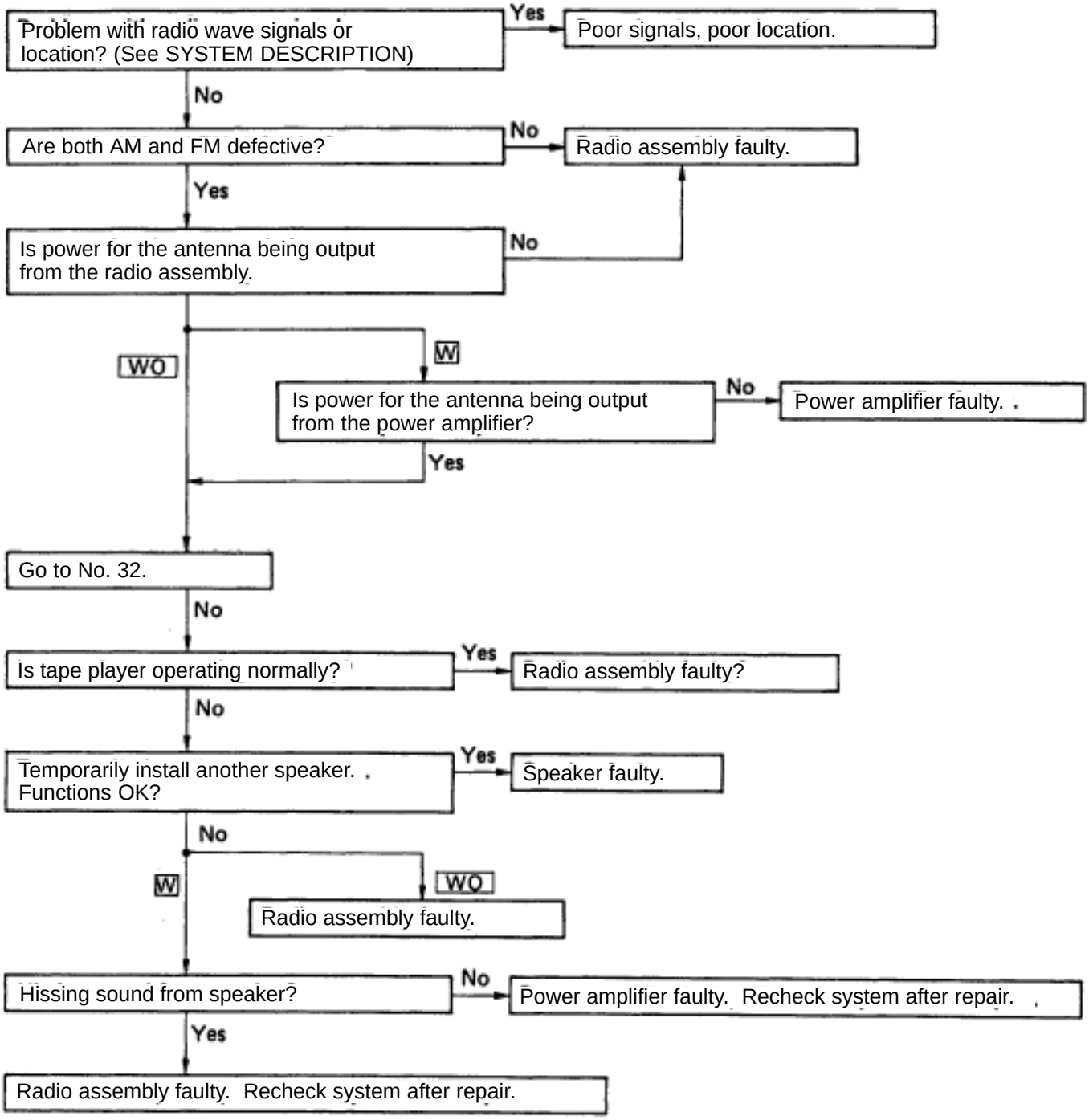


5	Radio	WOOFER SPEAKER DOES NOT WORK



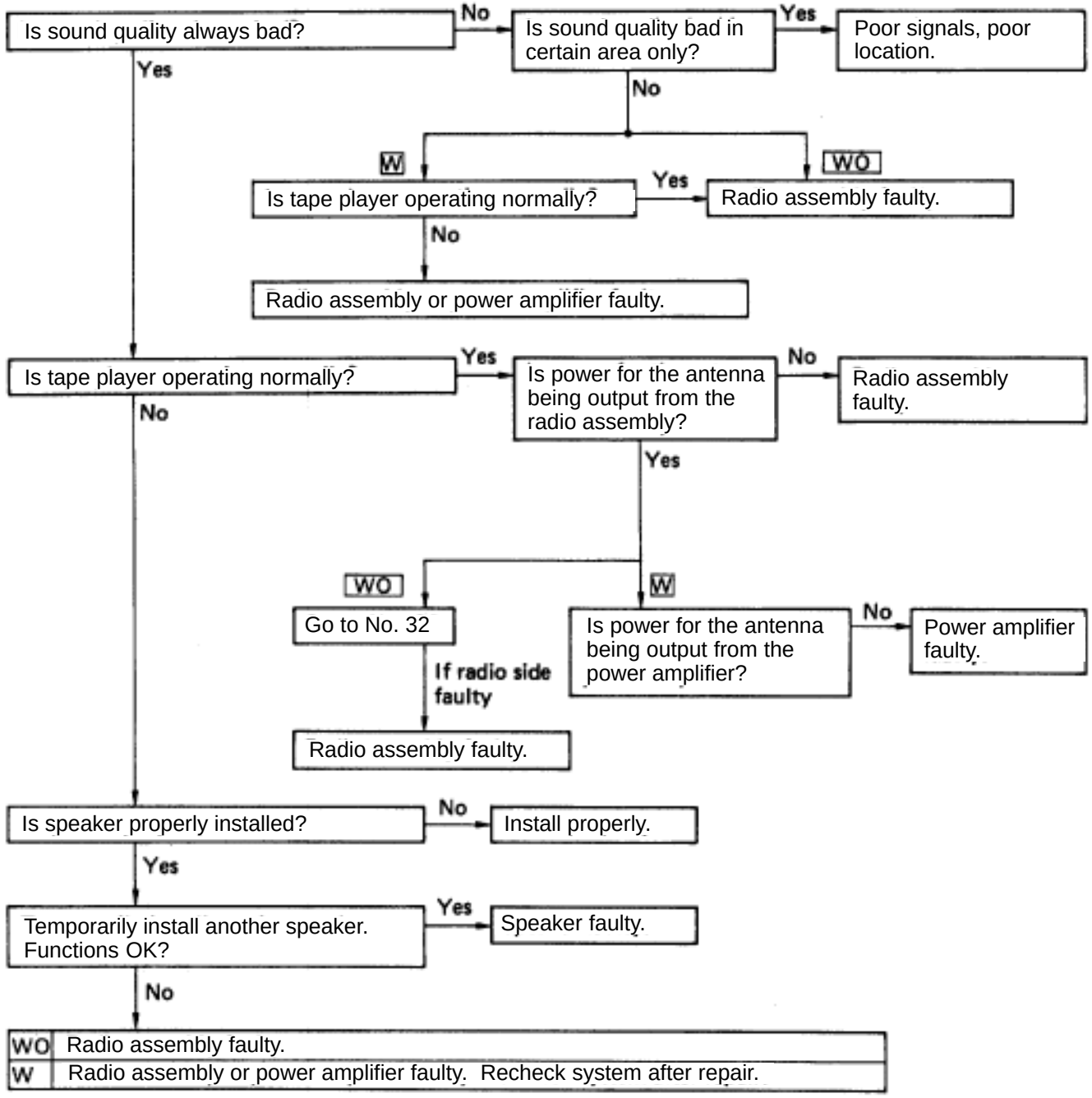
6	Radio	EITHER AM OR FM DOES NOT WORK, RECEPTION POOR (VOLUME FAINT), FEW PRESET TUNING BANDS

W : w/ Power Amplifier
WO : w/o Power Amplifier



7	Radio	SOUND QUALITY POOR

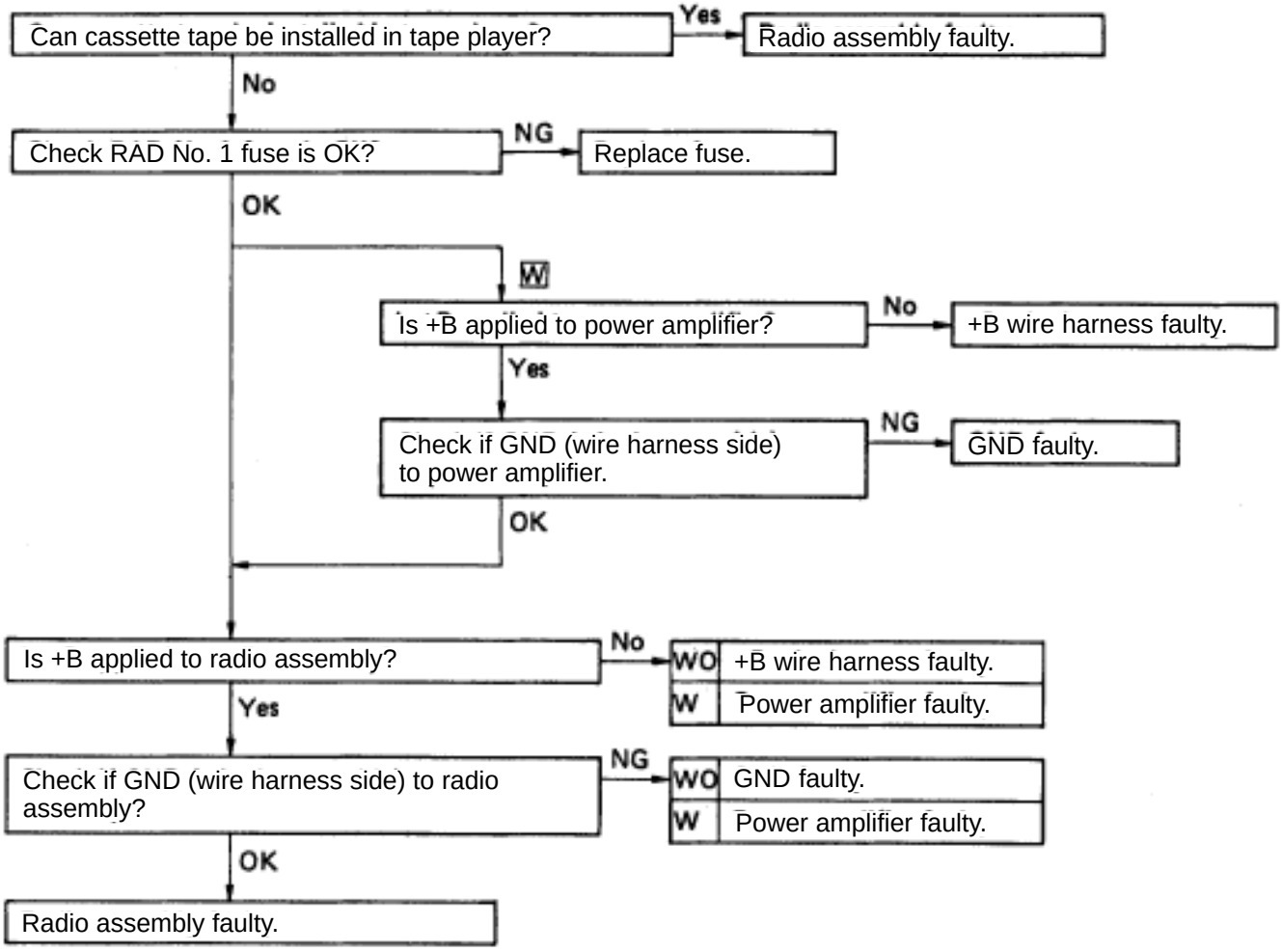
[W] : w/ Power Amplifier
[WO] : w/o Power Amplifier



WO	Radio assembly faulty.
W	Radio assembly or power amplifier faulty. Recheck system after repair.

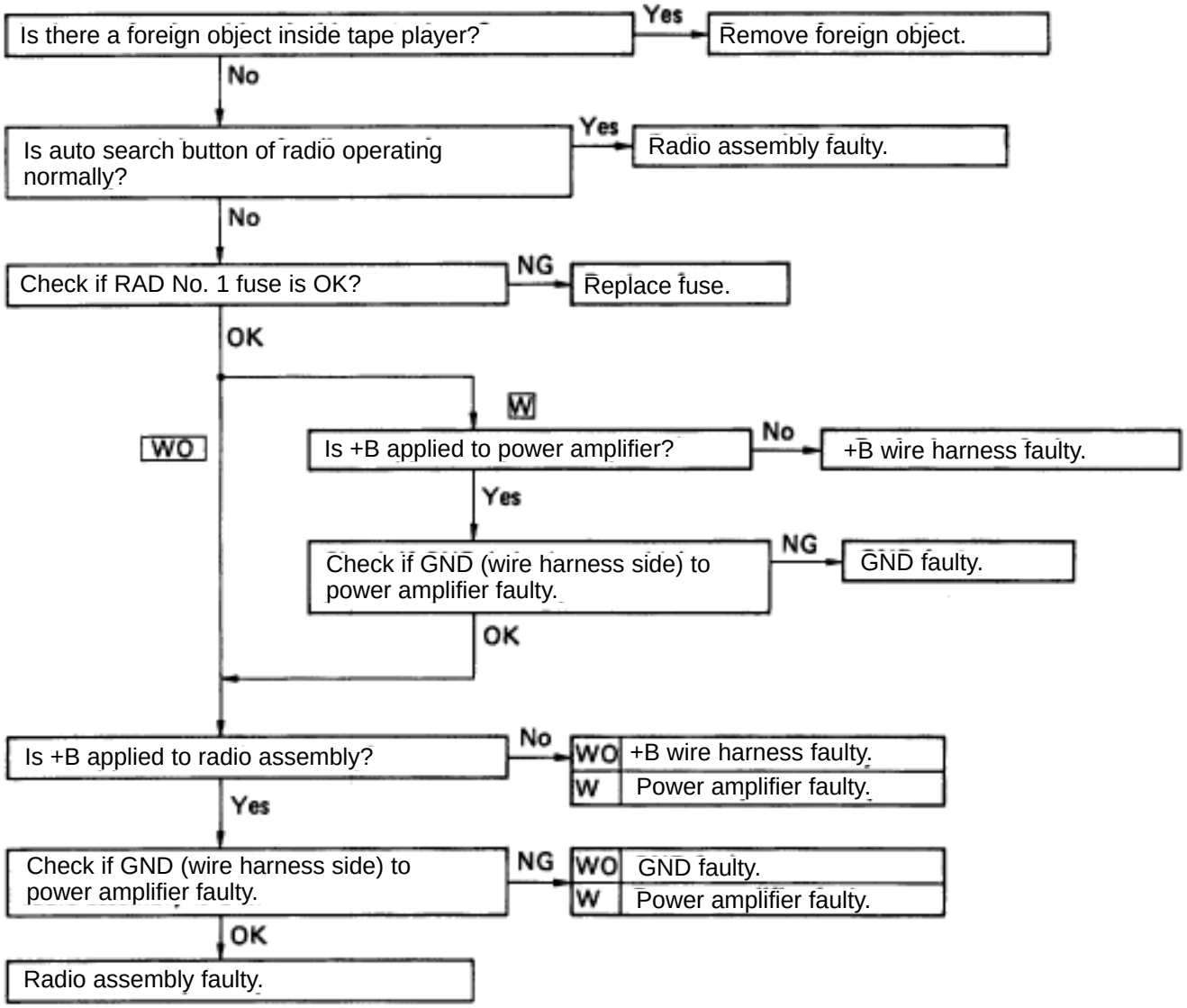
8	Radio	CANNOT SET STATION SELECT BUTTON, PRESET MEMORY DISAPPEARS

W : w/ Power Amplifier
WO : w/o Power Amplifier



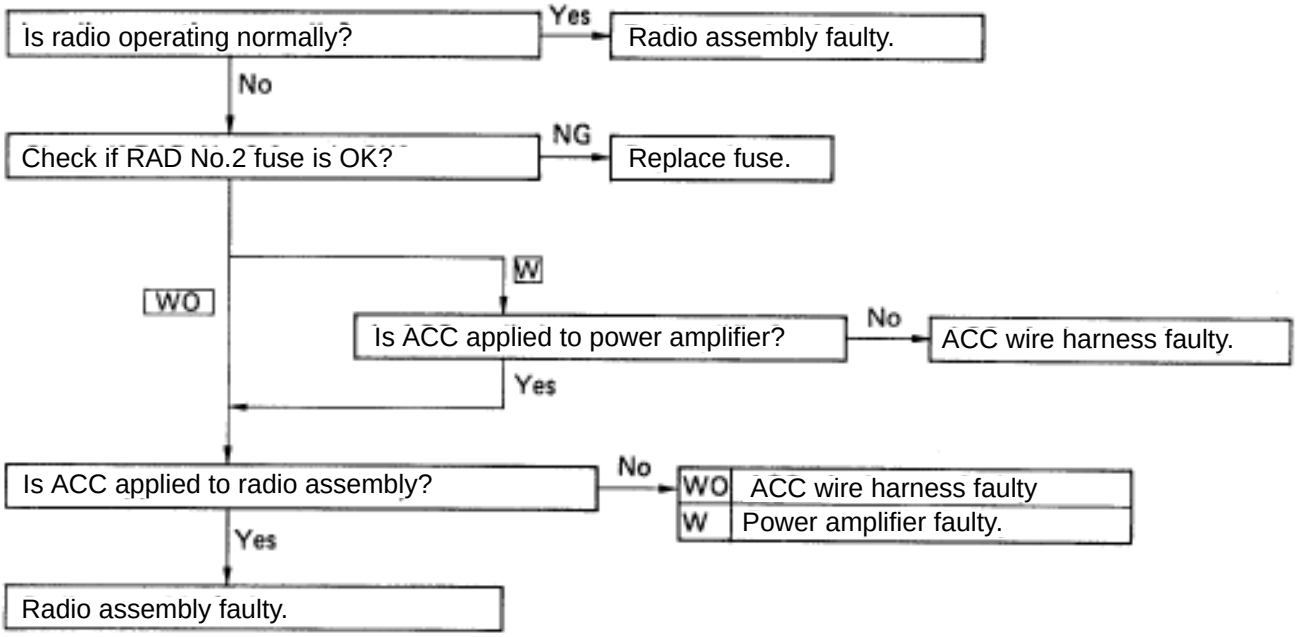
9 Tape Player CASSETTE TAPE CANNOT BE INSERTED

W : w/ Power Amplifier
WO : w/o Power Amplifier



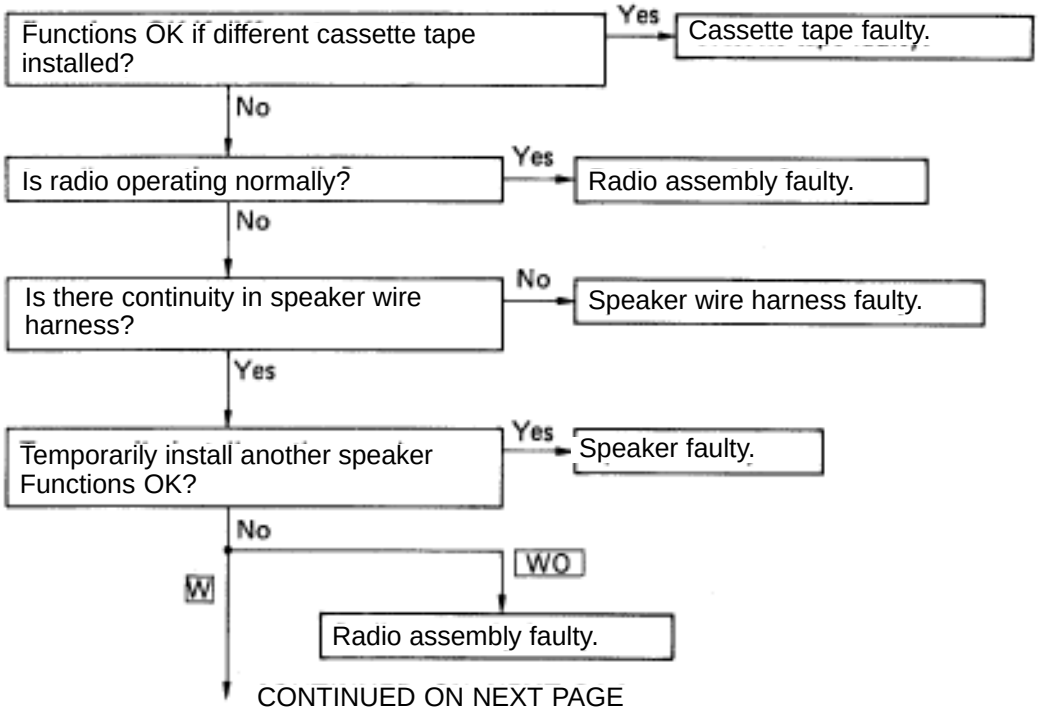
10 Tape Player — CASSETTE TAPE INSERTS, BUT NO POWER

W : w/ Power Amplifier
WO : w/o Power Amplifier



11 Tape Player — POWER COMING IN, BUT TAPE PLAYER NOT OPERATING

W : w/ Power Amplifier
WO : w/o Power Amplifier



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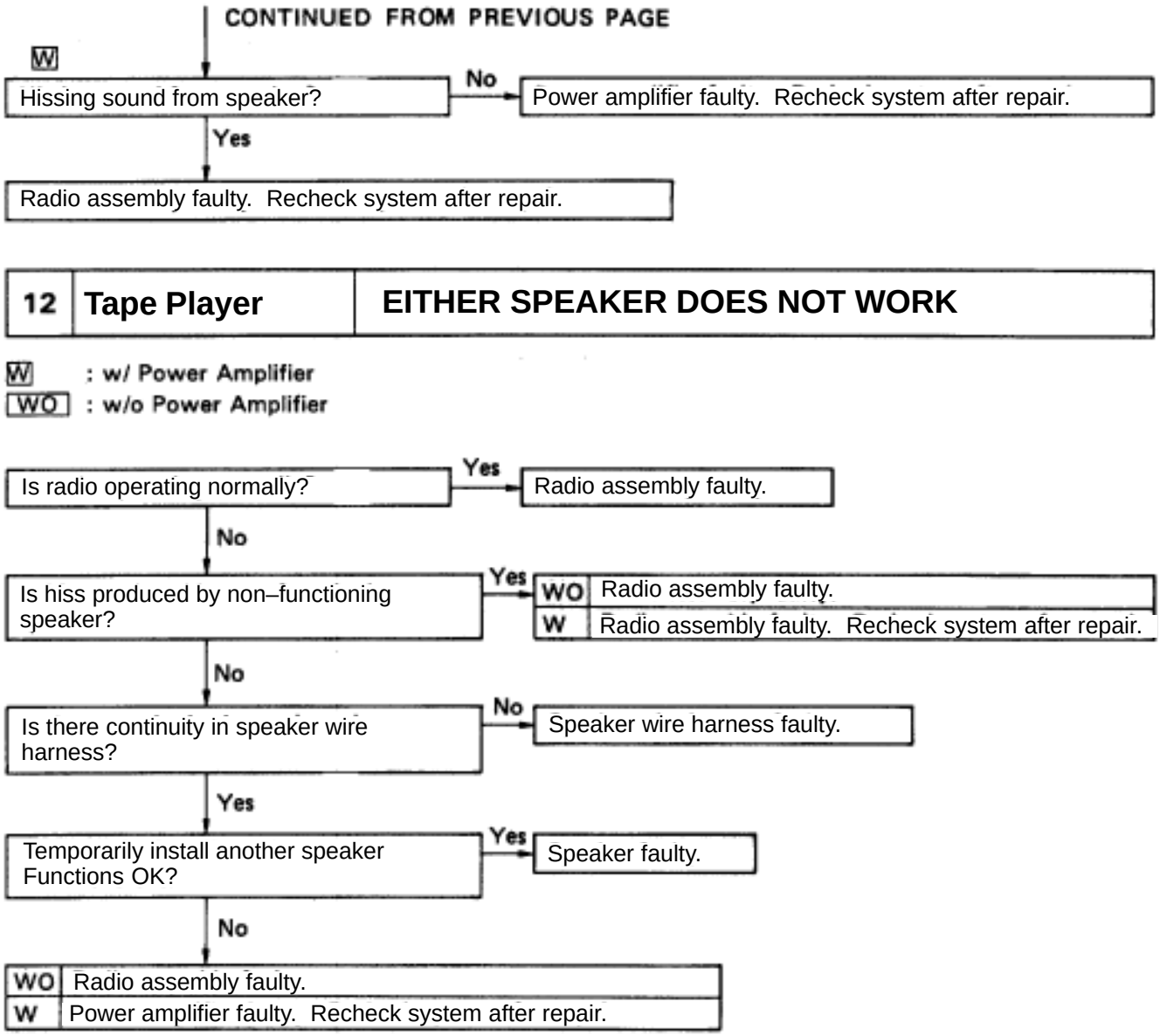

CONTINUED FROM PREVIOUS PAGE
W
Hissing sound from speaker?
No
Power amplifier faulty. Recheck system after repair.
Yes
Radio assembly faulty. Recheck system after repair.
12
Tape Player
EITHER SPEAKER DOES NOT WORK
W : w/ Power Amplifier
WO : w/o Power Amplifier
Is radio operating normally?
Yes
Radio assembly faulty.
No
Is hiss produced by non–functioning speaker?
Yes
WO Radio assembly faulty.
W 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
WO Radio assembly faulty.
W Power amplifier faulty. Recheck system after repair.

13 Tape Player — WOOFER SPEAKER DOES NOT WORK

w/ Power Amplifier
Check if RAD No. 2 fuse is OK?
- No → Replace fuse.
- Yes ↓

Is radio operating normally?
- Yes → Radio receiver assembly faulty.
- No ↓

Check if GND to power amplifier is OK.
- No → GND faulty.
- Yes ↓

Is +B applied to power amplifier?
- No → +B wire harness faulty.
- Yes ↓

Is AMP applied to power amplifier?
- No → Check the radio receiver assembly.
- Yes ↓

Is there continuity in wire harness?
(Radio receiver to power amplifier)
- No → Wire harness faulty.
- Yes ↓

Temporarily install another woofer speaker.
Functions OK?
- Yes → Woofer speaker faulty.
- No ↓

Is there continuity in speaker wire harness?
- No → Speaker wire harness faulty.
- Yes ↓

Temporarily install another power amplifier.
Functions OK?
- No → Radio receiver assembly faulty.
- Yes ↓

Power amplifier faulty.

14 Tape Player — SOUND QUALITY POOR (VOLUME FAINT)

W : w/ Power Amplifier
WO : w/o Power Amplifier

- Function OK if different cassette tape installed? — Yes → Cassette tape faulty?
- No
- Operates normally after cleaning the heads? (See MAINTENANCE OF TAPE PLAYER) — 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. Functions OK? — Yes → Speaker faulty.
- No
- WO: Radio assembly faulty.
- W: Radio assembly or power amplifier faulty.

15 Tape Player — TAPE JAMMED, MALFUNCTION WITH TAPE SPEED OR AUTO REVERSE

W : w/ Power Amplifier
WO : w/o Power Amplifier

- Functions OK is different tape (less than 120 mins.) is installed? — Yes → Cassette tape faulty.
- No
- is there a foreign object inside tape player? — Yes → Remove foreign object.
- No
- Operates normally after cleaning the heads? (See MAINTENANCE OF TAPE PLAYER) — Yes → Head faulty.
- No
- Radio assembly faulty.

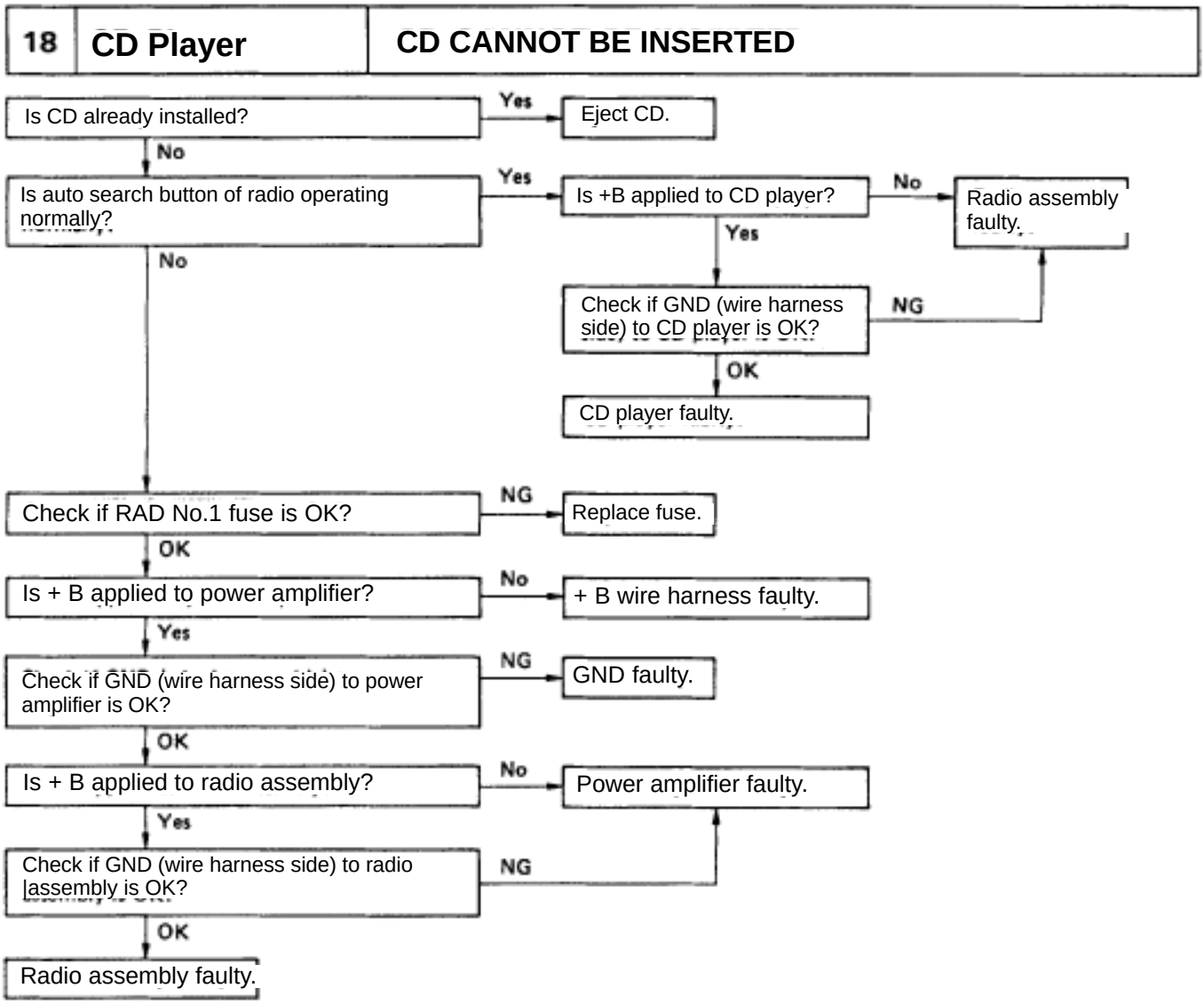
16 Tape Player — APS, SKIP, RPT BUTTONS NOT OPERATING

Functions OK if different cassette tape installed?
- No → Radio assembly faulty.
- Yes → Cassette tape faulty. (Less than 3 secs. of silence between songs (APS, RPT), Less than 15 secs. of silence (SKIP).)

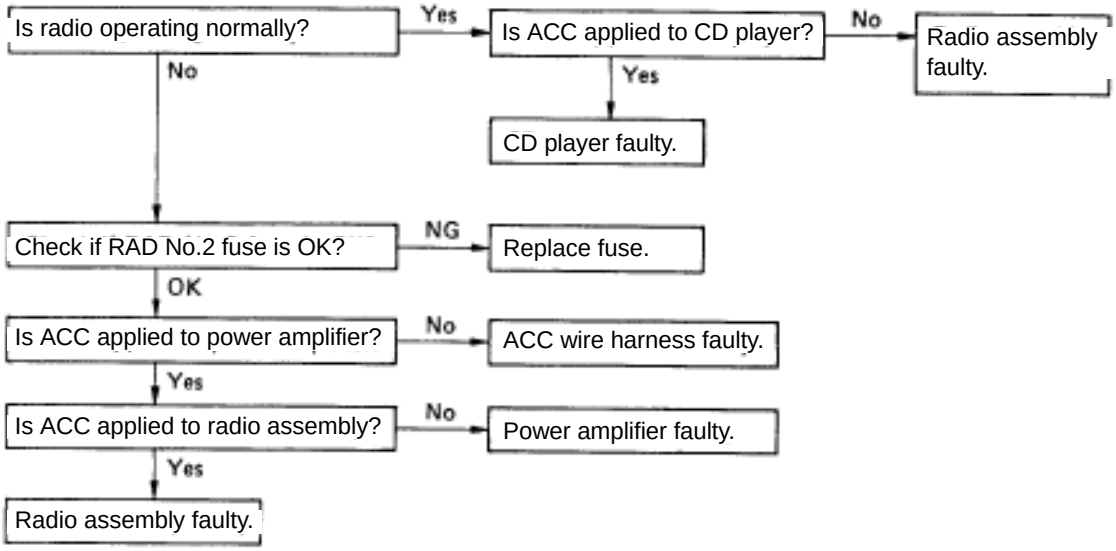
17 Tape Player — CASSETTE TAPE WILL NOT EJECT

W : w/ Power Amplifier
WO : w/o Power Amplifier

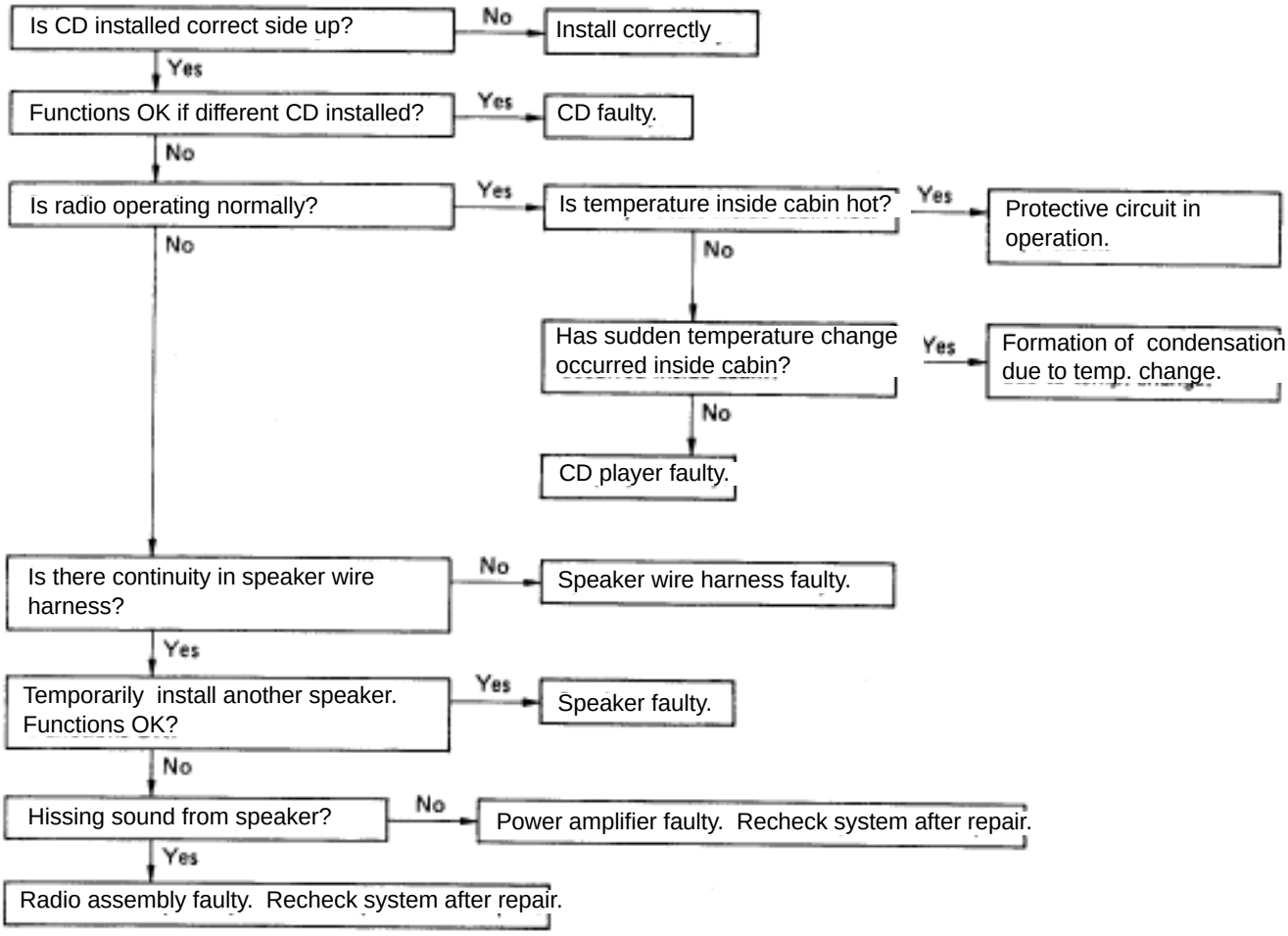
Is tape player operating normally?
- No → Cassette tape jammed.
- Yes → Is auto search button of radio operating normally?
  - Yes → Radio assembly faulty.
  - No → Check if RAD No.1 fuse is OK?
    - NG → Replace fuse.
    - OK → WO: Is +B applied to radio assembly?
      - W: Is +B applied to power amplifier?
        - No → +B wire harness faulty.
        - Yes → Is +B applied to radio assembly?
      - No → WO: +B wire harness faulty; W: Power amplifier faulty.
      - Yes → Radio assembly faulty.


18
CD Player
CD CANNOT BE INSERTED
Is CD already installed?
Yes
Eject CD.
No
Is auto search button of radio operating normally?
Yes
Is +B applied to CD player?
No
Radio assembly faulty.
Yes
No
Check if GND (wire harness side) to CD player is OK?
NG
OK
CD player faulty.
Check if RAD 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 is OK?
NG
GND faulty.
OK
Is + B applied to radio assembly?
No
Power amplifier faulty.
Yes
Check if GND (wire harness side) to radio assembly is OK?
NG
OK
Radio assembly faulty.

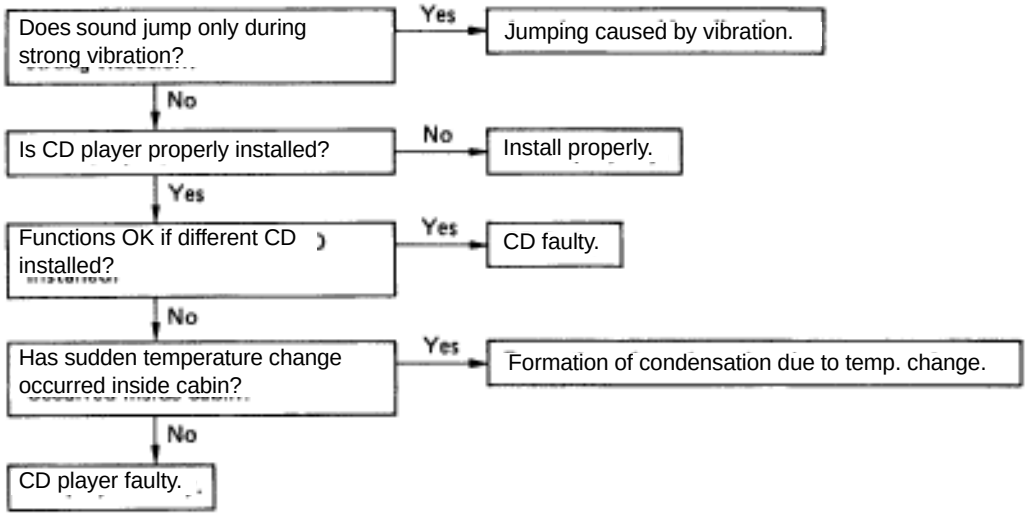
19 CD Player — CD INSERTS, BUT NO POWER



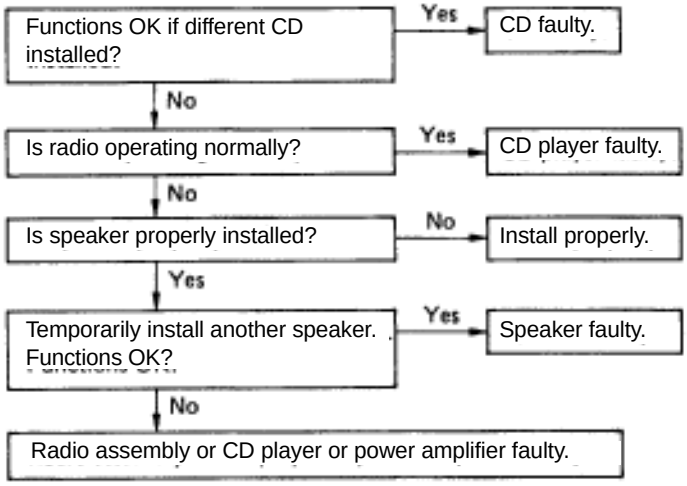
20 CD Player — POWER COMING IN, BUT CD PLAYER NOT OPERATING



21 CD Player — SOUND JUMPS



22 CD Player — SOUND QUALITY POOR (VOLUME FAINT)



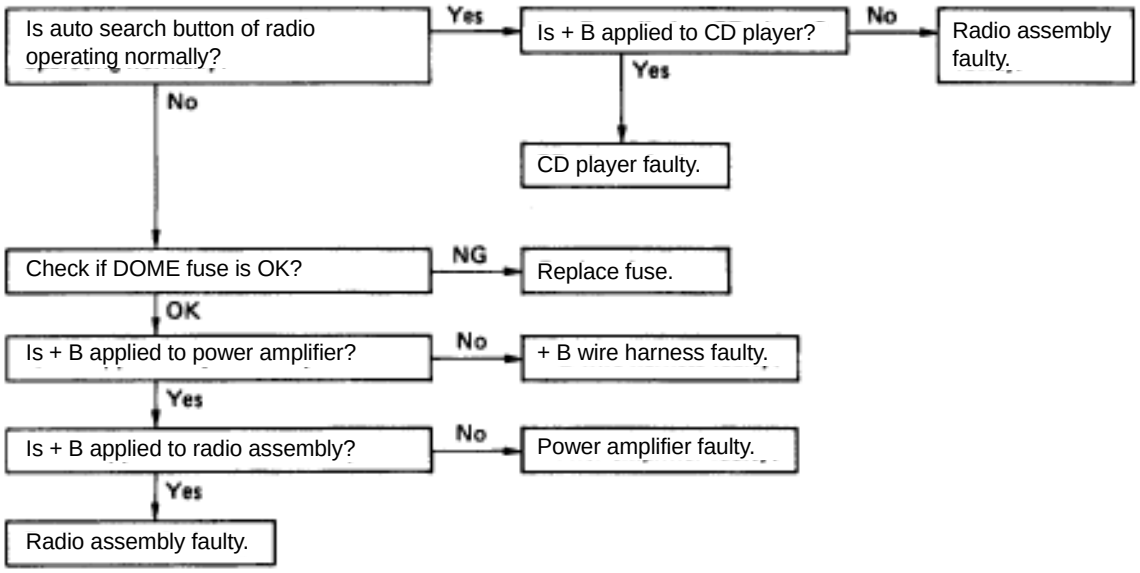
23 CD Player — EITHER SPEAKER DOES NOT WORK

- Is radio operating normally?
  - Yes → CD player faulty.
  - No ↓
- Is hiss 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.

24 CD Player — WOOFER SPEAKER DOES NOT WORK

- Check if RAD No. 1 fuse is OK?
  - No → Replace fuse
  - Yes ↓
- Is radio operating normally?
  - Yes → Radio receiver assembly faulty.
  - No ↓
- Check if GND to power amplifier is OK?
  - No → GND faulty.
  - Yes ↓
- Is +B applied to power amplifier
  - No → +B wire harness faulty.
  - Yes ↓
- Is AMP applied to power amplifier?
  - No → Check the radio receiver assembly.
  - Yes ↓
- Is there continuity in wire harness? (Radio receiver to power amplifier)
  - No → Wire harness faulty.
  - Yes ↓
- Temporarily install another woofer speaker. Functions OK?
  - Yes → Woofer speaker faulty.
  - No ↓
- Is there continuity in speaker wire harness?
  - No → Speaker wire harness faulty.
  - Yes ↓
- Temporarily install another power amplifier. Functions OK?
  - No → Radio receiver assembly faulty.
  - Yes ↓
- Power amplifier faulty.

25	CD Player	CD WILL NOT EJECT



26 Amplifier — NO POWER COMING IN

- Is + B applied to power amplifier?
  - No → Power amplifier faulty.
  - Yes ↓
- Is ACC applied to power amplifier?
  - No → Power amplifier.
  - Yes ↓
- Is there continuity in wire harness? (Radio receiver to power amplifier)
  - No → Wire harness faulty.
  - Yes ↓
- Check if GND to body is OK.
  - No → GND faulty.
  - Yes ↓
- Radio receiver assembly faulty.

27 Amplifier — POWER COMING IN, BUT POWER AMPLIFIER NOT OPERATING

- Is power amplifier operating normally?
  - No → Power amplifier faulty.
  - Yes ↓
- 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.

28 Amplifier — EITHER SPEAKER DOES NOT WORK

- Is power amplifier operating normally?
  - Yes → Radio receiver assembly faulty.
  - No ↓
- Is hiss produced by non–functioning speaker?
  - Yes → Radio receiver assembly 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 ↓
- Power amplifier faulty.

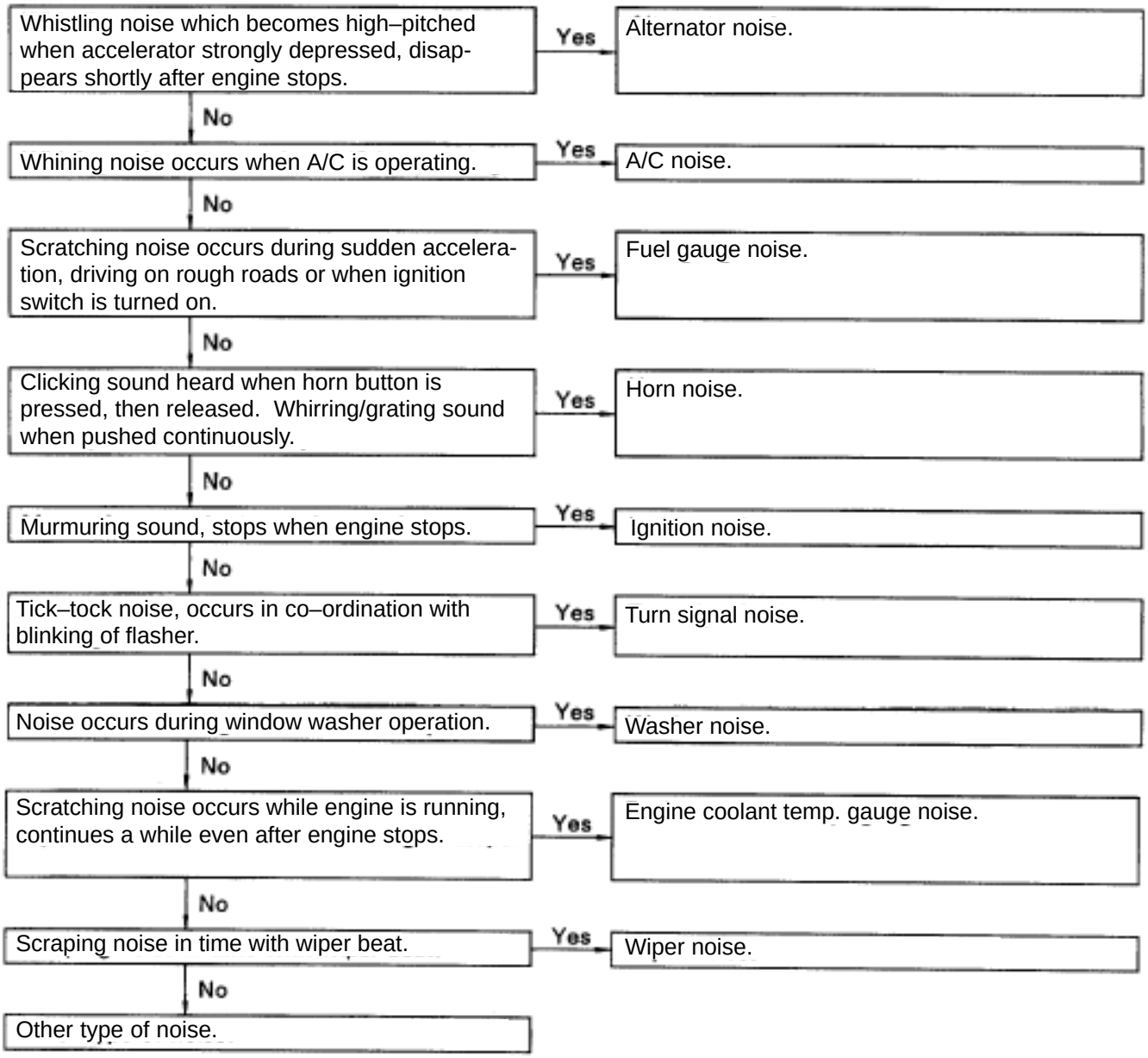
29 Amplifier — WOOFER SPEAKER DOES NOT WORK

- Is power amplifier operating normally?
  - Yes → Radio receiver assembly faulty.
  - No ↓
- Is hiss produced by non–functioning speaker?
  - Yes → Radio receiver assembly 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 ↓
- Woofer amplifier faulty.

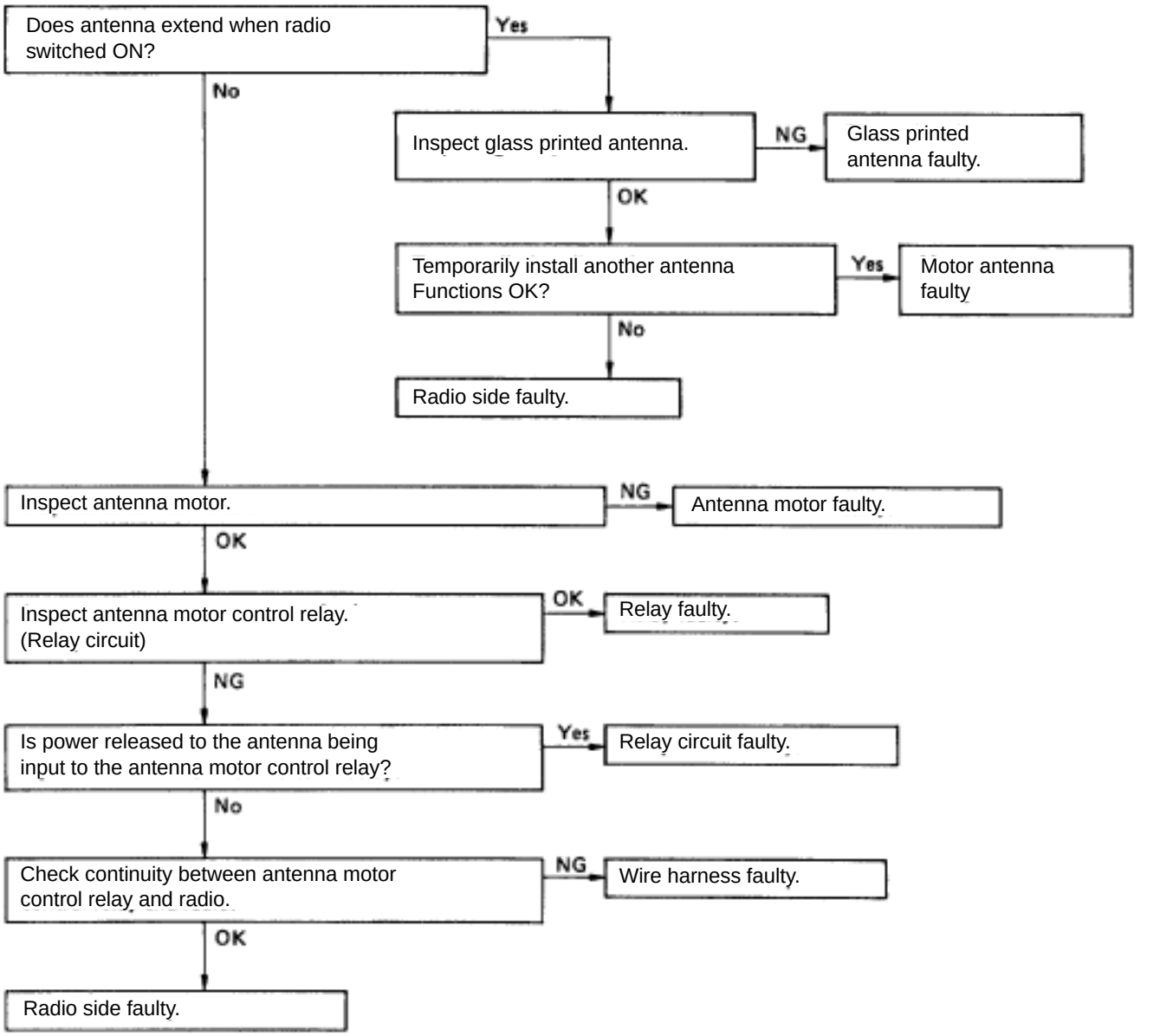
30 Noise — NOISE PRODUCED BY VIBRATION OR SHOCK WHILE DRIVING

- Is speaker properly installed?
  - No → Install properly.
  - Yes ↓
- Is each system correctly installed?
  - No → Install properly.
  - Yes ↓
- With vehicle stopped, lightly tap each system. Is noise produced?
  - Yes → Each system faulty.
  - No ↓
- Noise produced by static electricity accumulating in the vehicle body.

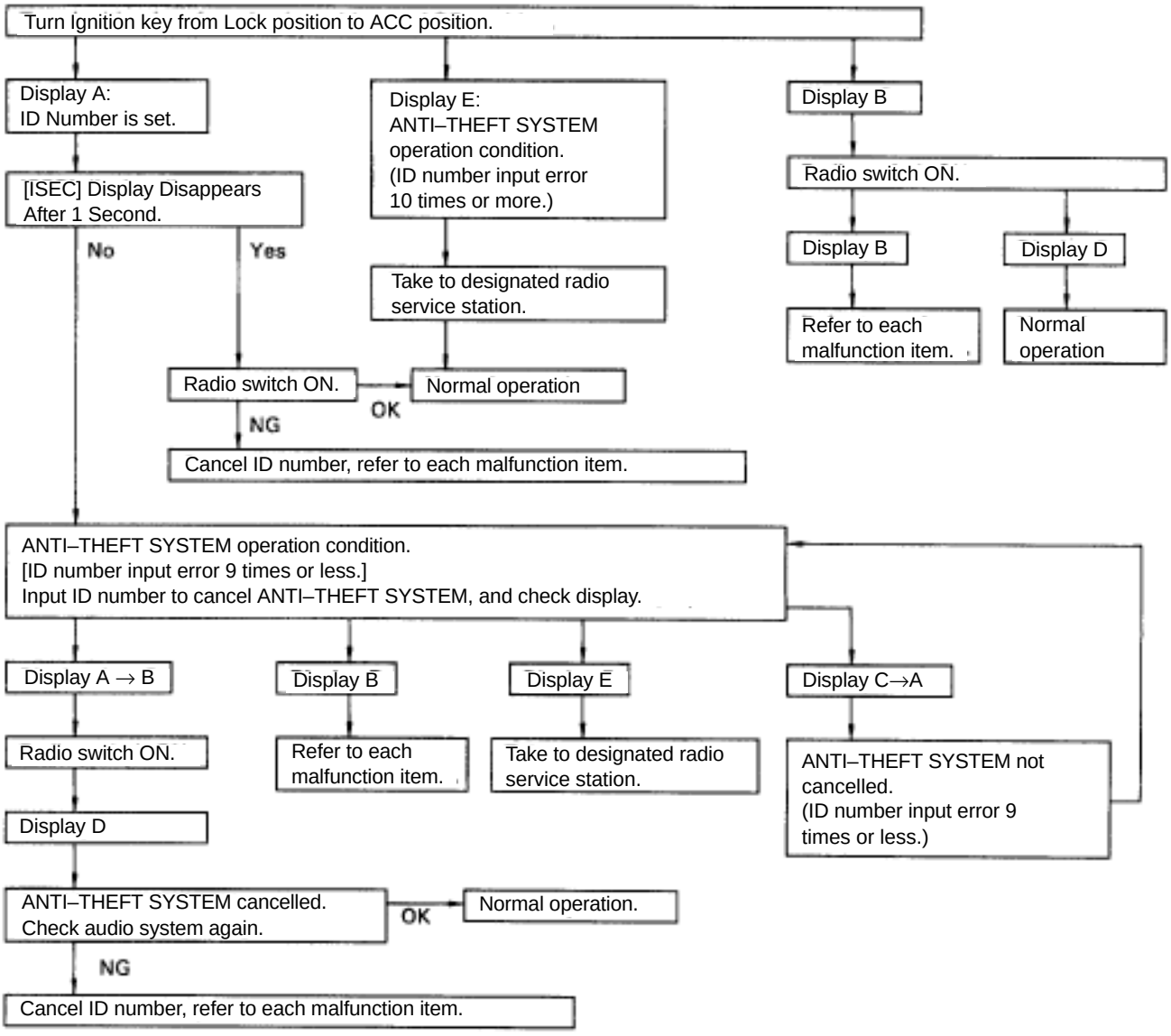
31	Noise	NOISE PRODUCED WHEN ENGINE STARTS



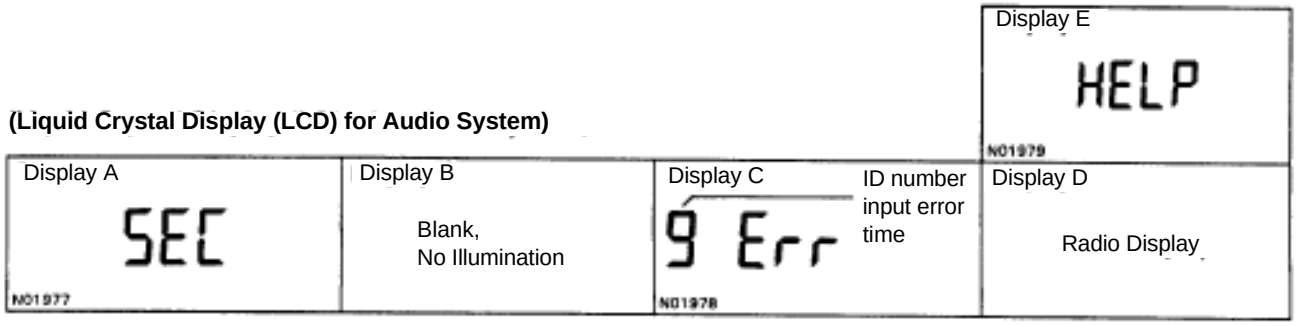
32	Antenna	ANTENNA – RELATED



33 Anti–theft System — TROUBLESHOOTING FOR ANTI–THEFT SYSTEM



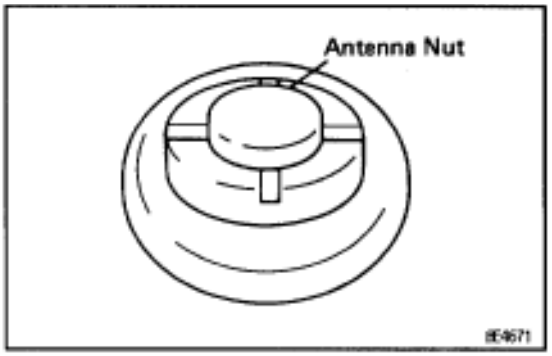
(Liquid Crystal Display (LCD) for Audio System)



HINT:

a) Refer to O/M for operation details of ANTI–THEFT SYSTEM.

b) When the ID number has been cancelled, reset the same number after completing the operation, or inform the customer that it has been cancelled.



ANTENNA ROD REMOVAL AND INSTALLATION

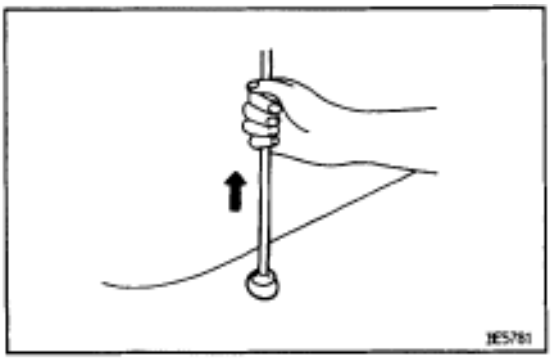
1. REMOVE ANTENNA ROD

HINT: Do this operation with the negative (–) terminal cable connected to the battery.

(a) Turn the ignition switch to ”LOCK” position.

(b) Remove the antenna nut.

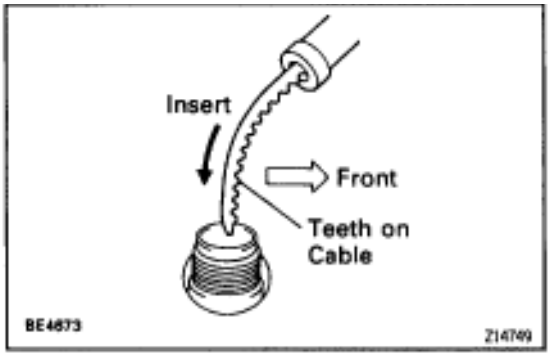
(c) Press the ”AM” button on the radio receiver, and simultaneously turn the ignition switch to ”ACC” position.



HINT:

- The rod will extend fully and be released from the motor antenna.
- After removing the antenna rod, leave the ignition switch at ”ACC”.

NOTICE: To prevent body damage when the antenna rod is released, hold the rod while it comes out.



2. INSTALL ANTENNA ROD

(a) Insert the cable of the rod until it reaches the bottom.

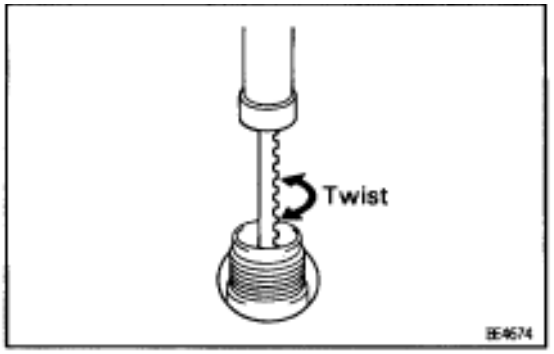
HINT:

- When inserting the cable, the teeth on the cable must face toward the rear of the vehicle.
- Insert the cable approx. 400 mm.

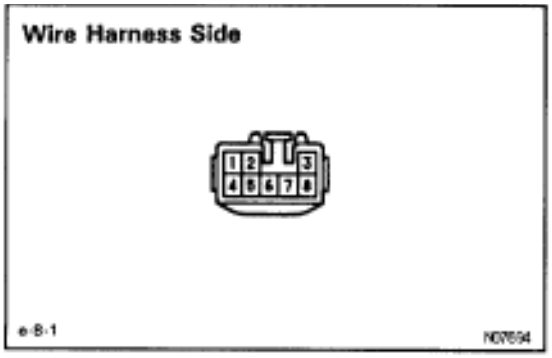
(b) Wind the cable to retract the rod by turning the ignition switch to ”LOCK” position.

HINT:

- If the ignition switch is already in ”LOCK” position, do step 1 (c) first, then turn the ignition switch to ”ACC” position.
- In case the cable is not wound, twist it as shown in the illustration.
- Even if the rod has not retracted fully, install the antenna nut and inspect the antenna rod operation. It will finally retract fully.



(c) Inspect the antenna rod operation by pushing the radio wave band select buttons.



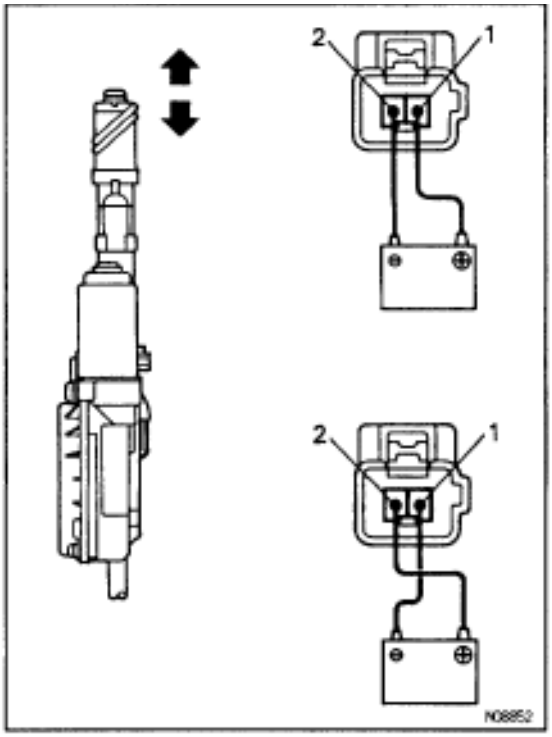
MOTOR ANTENNA CONTROL RELAY INSPECTION

INSPECT RELAY CIRCUIT

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

Tester connection to terminal number	Condition	Specified condition
6–Ground	Constant	Continuity
2–3	Constant	Continuity
1–Ground	Constant	Battery positive voltage
4–Ground	Ignition switch position ON	Battery positive voltage
5–Ground	Ignition switch position ACC or ON	Battery positive voltage
7–Ground	Ignition switch position ACC or ON and radio switch ON	Battery positive voltage
8–Ground	Ignition switch position ACC or ON	Battery positive voltage

If circuit is not as specified, replace the relay.



MOTOR ANTENNA INSPECTION

INSPECT MOTOR ANTENNA

(a) Install antenna nut.

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

(c) Check that the motor turns (moves upward).
NOTICE: These tests must be done quickly (within 3–5 seconds) to prevent the coil from burning out.

(d) Then, reverse the polarity, check that the motor turns the opposite way (moves downward).
NOTICE: These tests must be done quickly (within 3–5 seconds) to prevent the coil from burning out.
HINT: When the motor is normal, lower the antenna to its lowest position.
If operation is not as specified, replace the antenna motor assembly.

GLASS PRINTED ANTENNA INSPECTION

1. INSPECT GLASS PRINTED ANTENNA
(Use same procedure as for ”INSPECT DEFOGGER WIRES”.)

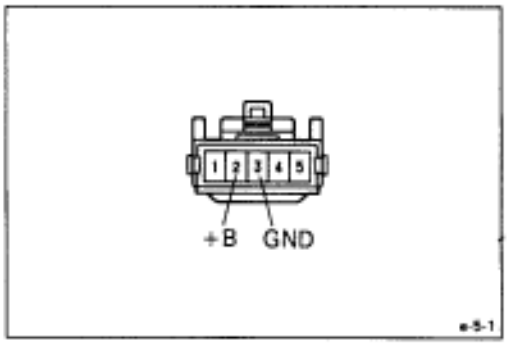
2. REPAIR GLASS PRINTED ANTENNA
(Use same procedure as for ”REPAIR DEFOGGER WIRES”.)

CLOCK
TROUBLESHOOTING

HINT: Troubleshoot the clock according to the table below.

Clock will not operate	1
Clock loses or gains time	2

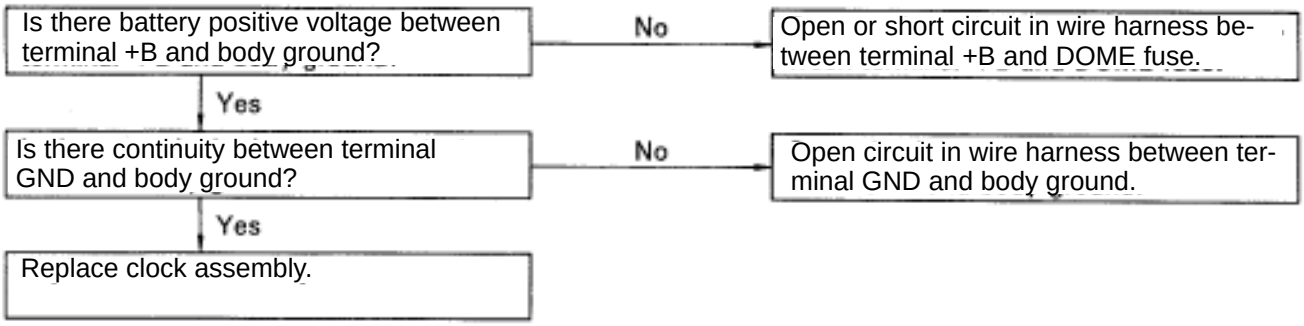
1 CLOCK WILL NOT OPERATE



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

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

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



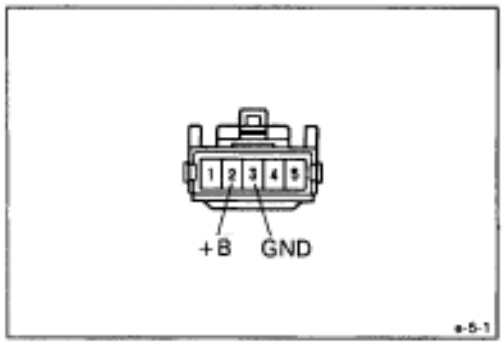
2	CLOCK LOSES OR GAINS TIME

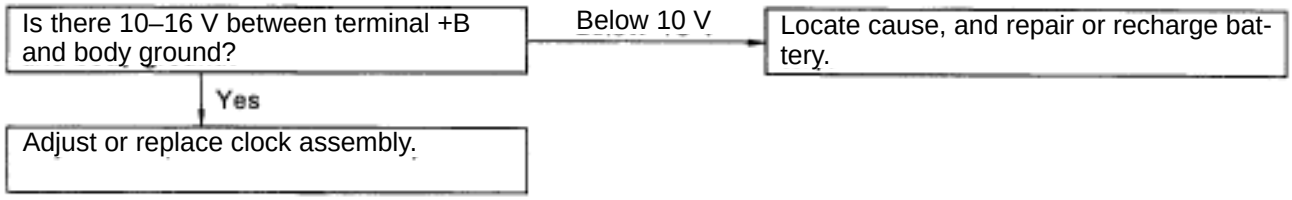
(a) Check that the battery positive voltage is 10 — 16 V.
If voltage is not as specified, replace the battery.

(b) Inspect the error of the clock.
Allowable error (per day): ×2.0 seconds.
If the error exceeds the allowable error, replace the clock assembly.

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

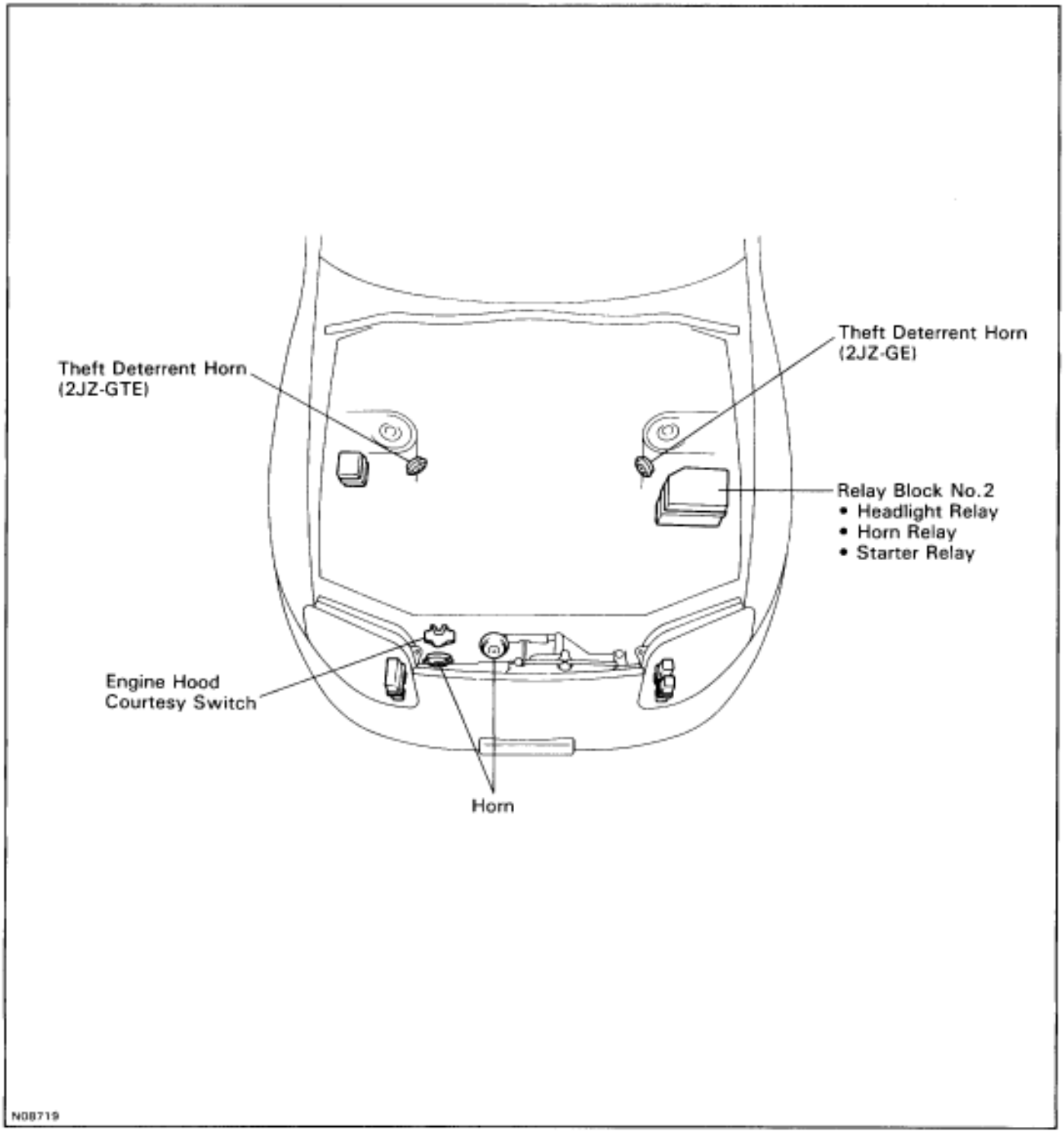
(d) Troubleshoot the clock as follows:
HINT: Inspect the connector on the wire harness side.

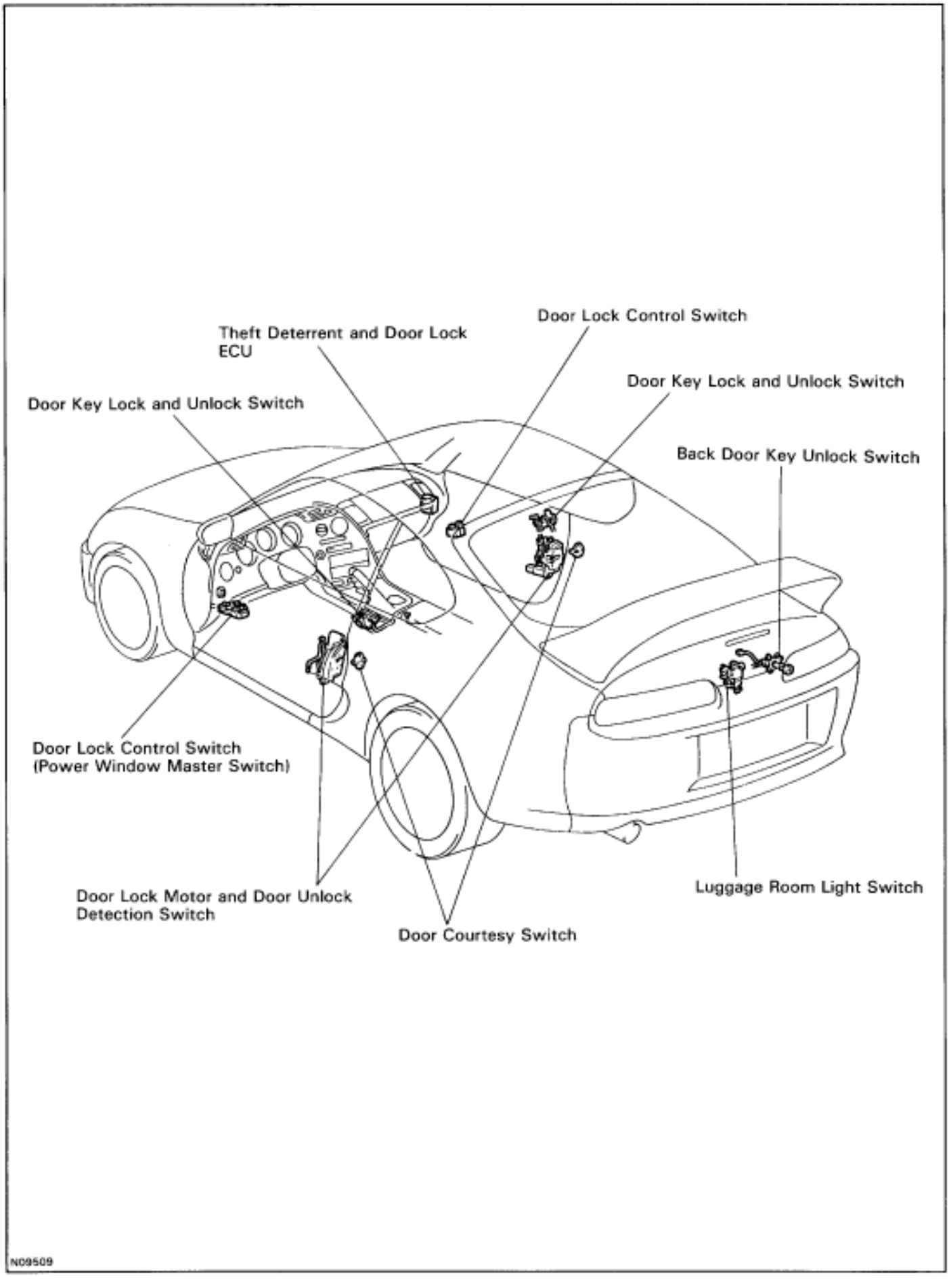




THEFT DETERRENT AND DOOR LOCK CONTROL SYSTEM

PARTS LOCATION




Door Lock Control Switch
Theft Deterrent and Door Lock ECU
Door Key Lock and Unlock Switch
Door Key Lock and Unlock Switch
Back Door Key Unlock Switch
Door Lock Control Switch (Power Window Master Switch)
Door Lock Motor and Door Unlock Detection Switch
Door Courtesy Switch
Luggage Room Light Switch
NO9509

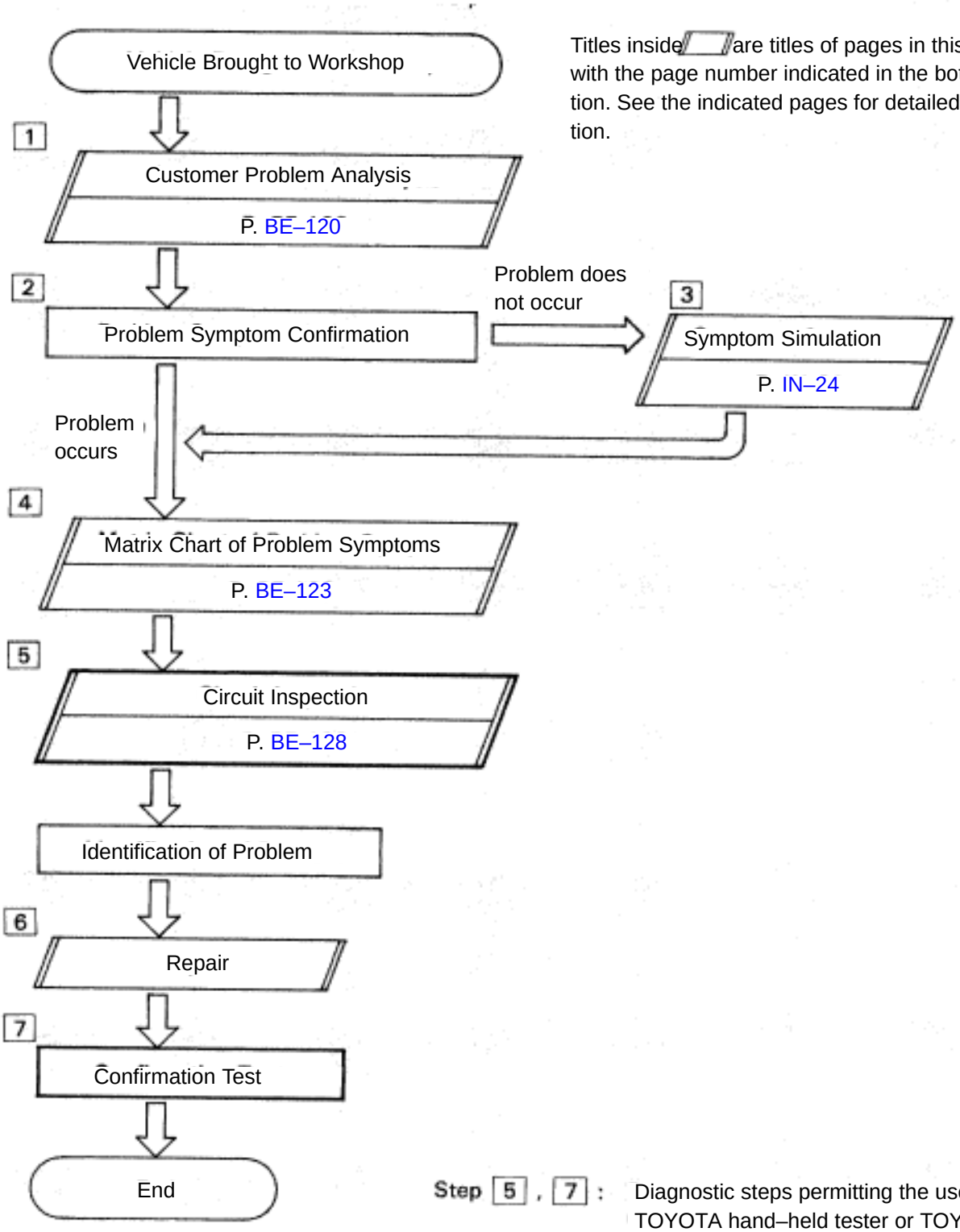
HOW TO PROCEED WITH TROUBLESHOOTING

HINT: Troubleshooting of the theft deterrent system is based on the premise that the door lock control system is operating normally. Accordingly, before troubleshooting the theft deterrent system, first make certain that the door lock control system is operating normally.

For troubleshooting using a volt/ohm meter, see page BE–119.

Be sure to use troubleshooting procedure appropriate to the diagnostic tool being used.

Perform troubleshooting in accordance with the procedure on the following page.



Titles inside ▭ are titles of pages in this manual, with the page number indicated in the bottom portion. See the indicated pages for detailed explanation.

Step 5 , 7 : Diagnostic steps permitting the use of the TOYOTA hand–held tester or TOYOTA brake–out–box.

CUSTOMER PROBLEM ANALYSIS CHECK SHEET

THEFT DETERRENT System Check Sheet

Inspector's Name:

Customer's Name		**Registration No.**	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km Miles

Date Problem First Occurred		/ /
Frequency of Problem Occurs		Constant Sometimes (times per day, month) Once Only
Weather Conditions When Problem Occurred	**Weather**	Fine Cloudy Rainy Snowy Various/Others
	Outdoor Temperature	Hot Warm Cool Cold (Approx. °F (°C))

Problem Symptom

☐ Theft deterrent system cannot be set.

☐ Indicator light does not flash when the theft deterrent system is set. (It stays on or does not light at all.)

☐ Theft deterrent system does not operate.	☐ When unlocked using the door lock knob. ☐ When the engine hood is opened.	Malfunction ☐ Horns only ☐ Theft deterrent horn only ☐ Headlights only ☐ Taillights only ☐ Starter cut only ☐ Door lock operation only
☐ System cannot be cancelled once set.	☐ When door is unlocked using key or wireless door lock control system. ☐ When the key is inserted in the ignition key cylinder and turned to ACC or ON position. (However, only when the system has never operated) ☐ When the luggage compartment door is opened with the key.	
☐ System cannot be cancelled during warning operation.	☐ When door is unlocked using key or wireless door lock control system. ☐ When the key is inserted in the ignition key cylinder and turned to ACC or ON position.	

☐ Warning operation starts when the system is set and the door or luggage compartment door is opened with the key.

☐ Others

SYSTEM INSPECTION

1. SETTING OF THE THEFT DETERRENT SYSTEM

Setting Conditions

(a) Close all the doors.
(b) Close the engine hood and luggage compartment door.
(c) Remove the ignition key from the ignition key cylinder.

Setting Operation

When any of the following operations (a) or (c) is done, the theft deterrent indicator light will light up as described.

(a) Lock the left or right front door using the key.
(All doors are locked by key–interlinked lock operation)
(b) With the rear doors locked and with one of the front doors locked, lock the other front door without using the key (keyless door lock).

Elapsed time after operation	Indicator light
Within about 30 seconds	Lights up
After about 30 seconds	Blinks *1

*1: 1 sec. on, 1 sec. off

HINT: When the theft deterrent system is set, doors cannot be locked or unlocked with the door lock control switch and the luggage compartment door cannot be unlocked with the luggage compartment door opener switch.

2. CANCELLING OF THE THEFT DETERRENT SYSTEM IN THE SET CONDITION

Check if the theft deterrent indicator light is blinking.

Cancelling Operation

When any of the following operation (a), (b), (c) or (d) is done, the theft deterrent system is cancelled and indicator light will go off.

(a) Unlock the left or right front door using the key.
(b) Insert the ignition key in the ignition key cylinder and turn it to the ACC or ON position.
(This is operative only when the theft deterrent system has never operated.)
(c) Unlock the luggage compartment door with the key. *1

*1: The theft deterrent system is temporarily cancelled only while the luggage compartment door is open. Approximately 2 seconds after the luggage compartment door is closed, the theft deterrent system is reset.

3. CHECK OF THE THEFT DETERRENT SYSTEM OPERATION.

Check if the theft deterrent indicator light is blinking.

When any of the following operations (a) or (b) is done, the system sounds the horns and theft deterrent horn and flashes the headlights and taillights for about one minute to alert. At the same time, the system disconnects the starter motor circuit and locks all doors (if all doors are not locked, the system repeats door locking operation every 2 seconds during the one minute alert time).

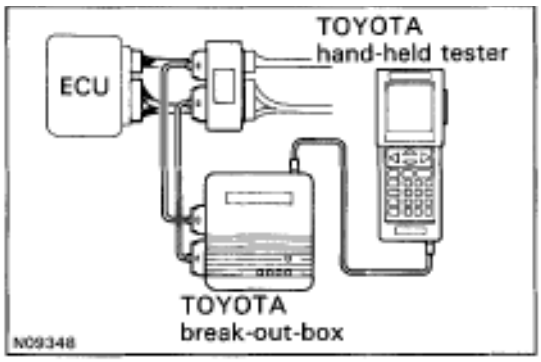
(a) Open the engine hood using the engine hood opener lever.
(b) Unlock any of the front or rear doors without key operation.

4. CANCELLING OF THE THEFT DETERRENT SYSTEM IN OPERATING CONDITION.

The theft deterrent operation can be cancelled when any of the following conditions is met:

No.	Condition	Cancelling Operation
1	Unlock left or right door with the key.	•
2	Unlock doors with wireless door lock control system.	•
3	Insert key into ignition key cylinder and turn it to ACC or ON position.	• *2
4	About 1 minute passes after theft deterrent operation begins.	Automatic stop *1

*1: In this case, the theft deterrent system resets in about 2 seconds after if all doors are closed.
*2: The alarm will be off, but the engine will not operate. To restart the engine, see No.1.



ECU TERMINAL VALUES MEASUREMENT USING TOYOTA BREAK–OUT–BOX AND TOYOTA HAND–HELD TESTER

1. Hook up the TOYOTA break–out box and TOYOTA handheld tester to the vehicle.
2. Read the ECU input/output values by following the prompts on the hand–held tester screen.
   HINT: TOYOTA hand–held tester has a ”Shapshot” function. This records the measured values and is effective in the diagnosis of intermittent problems.
   Please refer to the TOYOTA hand–held tester/TOYOTA break–out–box operator’s manual for further details.

MATRIX CHART OF PROBLEM SYMPTOMS

Proceed to the reference page shown in the matrix chart below for each malfunction symptom and troubleshoot for each circuit.

HINT: Troubleshooting of the theft deterrent system is based on the premise that the door lock control system is operating normally. Accordingly, before troubleshooting the theft deterrent system, first make certain that the door lock control system is operating normally.

Theft Deterrent System

Details of Problem			Inspecting Circuit *1	See Page
The theft deterrent system cannot be set			1. Indicator light circuit	BE–128
			2. Luggage compartment door key lock and unlock switch circuit	BE–142
			3. Luggage Room Light switch circuit	BE–144
			4. Door courtesy switch circuit	BE–147
			5. Engine hood courtesy switch circuit	BE–148
The indicator light does not blink when system is set			Indicator light circuit	BE–128
When the system is set	When the back door is opened by a method other than the key.	The system does not Operate	Luggage compartment door courtesy switch circuit	BE–144
	When the engine hood is opened		Engine hood courtesy switch circuit	BE–148
While the system is in warning operation	Horns do not sound		Horn relay circuit	BE–132
	Theft deterrent horn does not sound		Theft deterrent horn circuit	BE–134
	Headlights do not flash		Headlight control relay circuit	BE–136
	Taillights do not flash		Taillight control relay circuit	BE–138
	The starter cut is not cut off		Starter relay circuit	BE–130
When the System is Set	It is not cancelled when the ignition key is Turned to ACC or ON position		Ignition switch circuit	BE–140
	It still operates when the back door is Opened with the key		Luggage compartment door key lock and unlock switch circuit	BE–142
System is still set even when a rear door is open			Door courtesy switch circuit	BE–147
Even when the System is not set	Horns sound		Horn relay circuit	BE–132
	Theft deterrent horn sounds		Theft deterrent horn circuit	BE–134
	Headlights stay on		Headlight control relay circuit	BE–136
	Taillights stay on		Taillight control relay circuit	BE–138

*1 : If numbers are given to the circuit proceed with troubleshooting in the order indicated by those numbers.

Door Lock System

Trouble	Suspect Area	See Page
Whole function of the door lock control system does not operate.	1. ECU Power Source Circuit 2. Actuator Power Source Circuit 3. Door Lock Motor Circuit 4. Theft Deterrent and Door Lock Control ECU	BE–150 BE–152 BE–154 BE–125
All doors or some doors are not locked and unlocked with the door lock control switch and Key lock and unlock switch.	1. Door Lock Control Switch Circuit 2. Door Key Lock and Unlock Switch Circuit 3. Door Lock Motor Circuit 4. Theft Deterrent and Door Lock Control ECU	BE–156 BE–158 BE–154 BE–125
Doors cannot be locked with the door lock control switch. (Doors lock and unlock normally With the key lock and unlock switch.)	1. Door Lock Control Switch Circuit 2. Key Unlock Warning Switch Circuit 3. Door Courtesy Switch Circuit 4. Theft Deterrent and Door Lock Control ECU	BE–156 BE–160 BE–147 BE–125
Doors are not locked or unlocked with the door key Lock and unlock switch. (Doors lock and unlock normally with the door lock control switch.)	1. Door Key Lock and Unlock Switch Circuit 2. Theft Deterrent and Door Lock Control ECU	BE–158 BE–125
Key confinement prevention function does not Operate. (Doors lock and unlock normally with The door key lock and unlock switch.)	1. Key Unlock Warning Switch Circuit 2. Door Unlock Detection Switch Circuit 3. Theft Deterrent and Door Lock Control ECU	BE–160 BE–145 BE–125

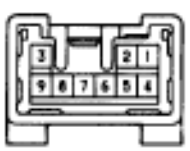
TERMINALS OF ECU

No.	Symbol	Terminal Name
T8–1	+B2	Power Source
T8–2	ACT–	Door Lock Motor
T8–3	ACT+	Door Lock Motor
T8–4	E	Ground
T8–5	–	–
T8–6	RLY	Power Main Relay
T8–7	IG	Ignition Switch ”ON”
T8–8	ACC	Ignition Switch ”ACC”
T8–9	–	–

No.	Symbol	Terminal Name
T9–1	+B1	Power Source
T9–2	–	–
T9–3	–	–
T9–4	DSWL	Luggage Compartment Door Courtesy Switch
T9–5	L1	Door Lock Control Switch (Lock)
T9–6	UL3	Door Key Lock and Unlock Switch
T9–7	DSWD	Door Open Detection Switch
T9–8	UL1	Door Lock Control Switch (Unlock)
T9–9	LUG	Luggage Compartment Door Key Lock and Unlock Switch
T9–10	HEAD	Headlight Control Relay
T9–11	SH	Theft Deterrent Horn
T9–12	IND	Security Indicator Light
T9–13	–	–
T9–14	FOD	Engine Hood Courtesy Switch
T9–15	LSWD, UL2	Door Unlock Detection Switch or Door Key Lock and Unlock Switch
T9–16	–	–
T9–17	–	–
T9–18	–	–
T9–19	DSWP	Door Open Detection Switch
T9–20	KSW	Key Unlock Warning Switch
T9–21	LSWP	Door Unlock Detection Switch
T9–22	L2	Door Key Lock and Unlock Switch
T9–23	TAIL	Taillight Control Relay
T9–24	HORN	HORN Relay
T9–25	SRLY	Ignition Switch ”ST”

T8 T9

Theft Deterrent and Door Lock Control ECU



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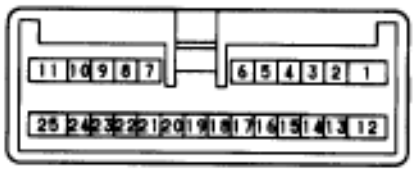

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STANDARD VALUE OF ECU TERMINAL

Terminals	Symbols	Condition	Standard Value
T8–1–Ground (+B2–Ground)	L–W–Ground	Always	10–14 V
T8–2–T8–3 (ACT^-–ACT^+)	LR–LY	Ignition Switch is turned to ”OFF” position.	Below 50 Ω
T8–6–T8 (RLY–PRLY)	R–L–Ground	Always	10–14 V
T8–7–Ground (IG–Ground)	B–R–Ground	Ignition switch is turned to ”ON” position.	10–14 V
T8–7–T8–4 (ACC–E)	LR–WB	Ignition switch is turned to ”ACC” position.	10–14 V
T9–Ground (+B1–Ground)	R–Ground	Always	10–14 V
T9–4–T8–4 (DSWL–E)	LG–WB	Luggage compartment door courtesy switch ON (door opened).	Below 1 Ω
		Luggage compartment door courtesy switch OFF (door closed).	1 MΩ or higher
T9–5–T8–4 (L1–E)	RW–WB	Door lock control switch ”lock” position.	Below 1 Ω
		Door lock control switch OFF or ”unlock” position.	1 M Ω or higher
T9–6–T8–4 (UL3–E)	G–WB	Door key lock and unlock switch ”unlock” position.	Below 1 Ω
		Door key lock and unlock switch OFF or ”lock” position.	1 MΩ or higher
T9–7–T8–4 (DSWD–E)	RB–WB	Door open detection switch (driver’s) ON (door opened).	Below 1 Ω
		Door open detection switch (driver’s) OFF (door closed).	1 M Ω or higher
T9–8–T8–4 (UL1–E)	GR–WB	Door lock control switch ”unlock” position.	Below 1 Ω
		Door lock control switch OFF or ”lock” position	1 MΩ or higher
T9–9–T8–4 (LUG–E)	L–WB	Luggage compartment door key lock and unlock switch ON	Below 1 Ω
		Luggage compartment door key lock and unlock switch OFF	1 MΩ or higher
T9–10–T8–4 (HEAD–E)	RY–WB	Light control switch other than ”HEAD” position.	10–14 V
T9–11–T8–4 (SH–E)	WL–WB	Always	10–14 V

Terminals	Symbols	Condition	Standard Value
T9–12–Ground (IND–Ground)	W–L–Ground	Always	Below 270 Ω
T9–14–T8–4 (FOD–E)	VR–WB	Engine hood courtesy switch ON (hood opened).	Below 1 Ω
		Engine hood courtesy switch OFF (hood closed).	1 M Ω or higher
T9–15–T8–4 (LSWD–E)	LW–WB	Door unlock detection switch ON (door opened).	Below 1 Ω
		Door unlock detection switch OFF (door closed).	1 M Ω or higher
T9–15–T8–4 (UL2–E)	W–WB	Door key lock and unlock switch ”unlock” position	Below 1 Ω
		Door key lock and unlock switch OFF or ”lock” position	1 MΩ or higher
T9–19–T8–4 (DSWP–E)	RL–WB	Door open detection switch (passenger’s) ON (door opened).	Below 1 Ω
		Door open detection switch (passenger’s) OFF (door closed).	1 MΩ or higher
T9–20–T8–4 (KSW–E)	Y–WB	Key unlock warning switch ON.	Below 1 Ω
		Key unlock warning switch OFF.	1 MΩ or higher
T9–21–T8–4 (LSWP–E)	GB–WB	Door unlock detection switch ON (door opened).	Below 1 Ω
		Door unlock detection switch OFF (door closed).	1 MΩ or higher
T9–22–T8–4 (L2–E)	GY–WB	Door key lock and unlock switch ”lock” position.	Below 1 Ω
		Door key lock and unlock switch OFF or ”unlock” position.	1 MΩ or higher
T9–23–T8–4 (TAIL–E)	GW–WB	Light control switch ”TAIL” position.	10–14 V
T9–24–T8–4 (HORN–E)	LR–WB	Horn switch OFF.	10–14 V
T9–25–Ground (SRLY–Ground)	L–O–Ground	Ignition switch is turned to ”ST” position. (When park / neutral position switch ”P” position)	10–14 V

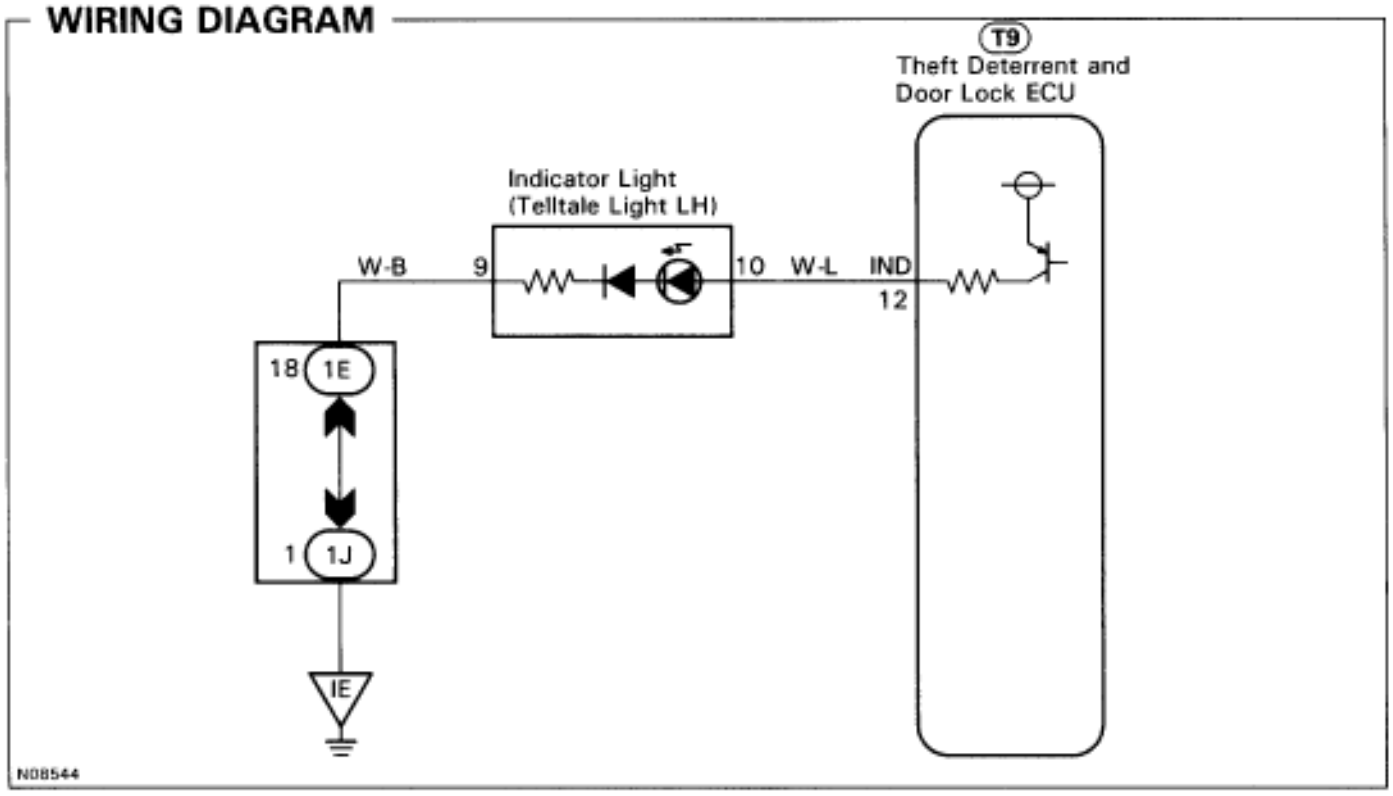
CIRCUIT INSPECTION

Indicator Light Circuit

CIRCUIT DESCRIPTION

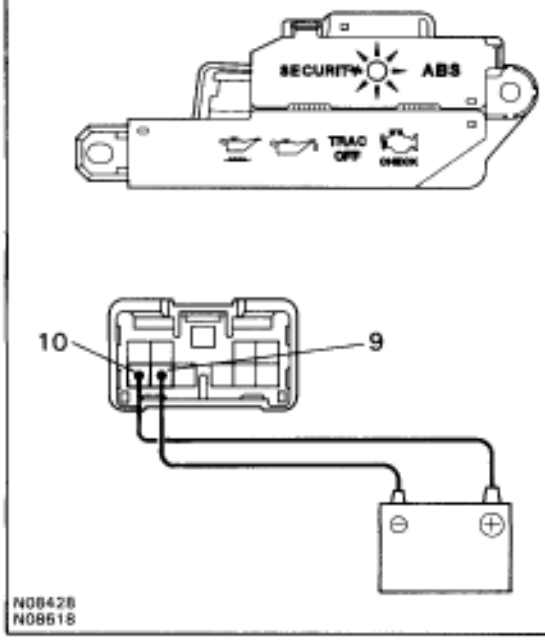
When the theft deterrent system is preparing to set, this circuit lights up the indicator light. When the system has been set, it continually turns the indicator light on for 1 second and turns it off for 1 second, thus blinking the indicator light.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check indicator light



P (2) Remove instrument panel cluster finish panel.
(3) Disconnect telltale light RH connector.

C Connect positive (+) lead to terminal 10 and negative (–) lead to terminal 9 of indicator light connector.

OK **Indicator light comes on.**

OK

NG **Replace telltale light RH.**

2 Check harness and connector between theft deterrent and door lock ECU and indicator light, indicator light and body ground (See page IN–30).

OK

NG **Repair or replace harness or connector.**

Check and replace theft deterrent and door lock ECU. *1

*1: When there is a malfunction that the theft deterrent system cannot be set, proceed to the next numbered circuit inspection shown on matrix chart (See page BE–123).

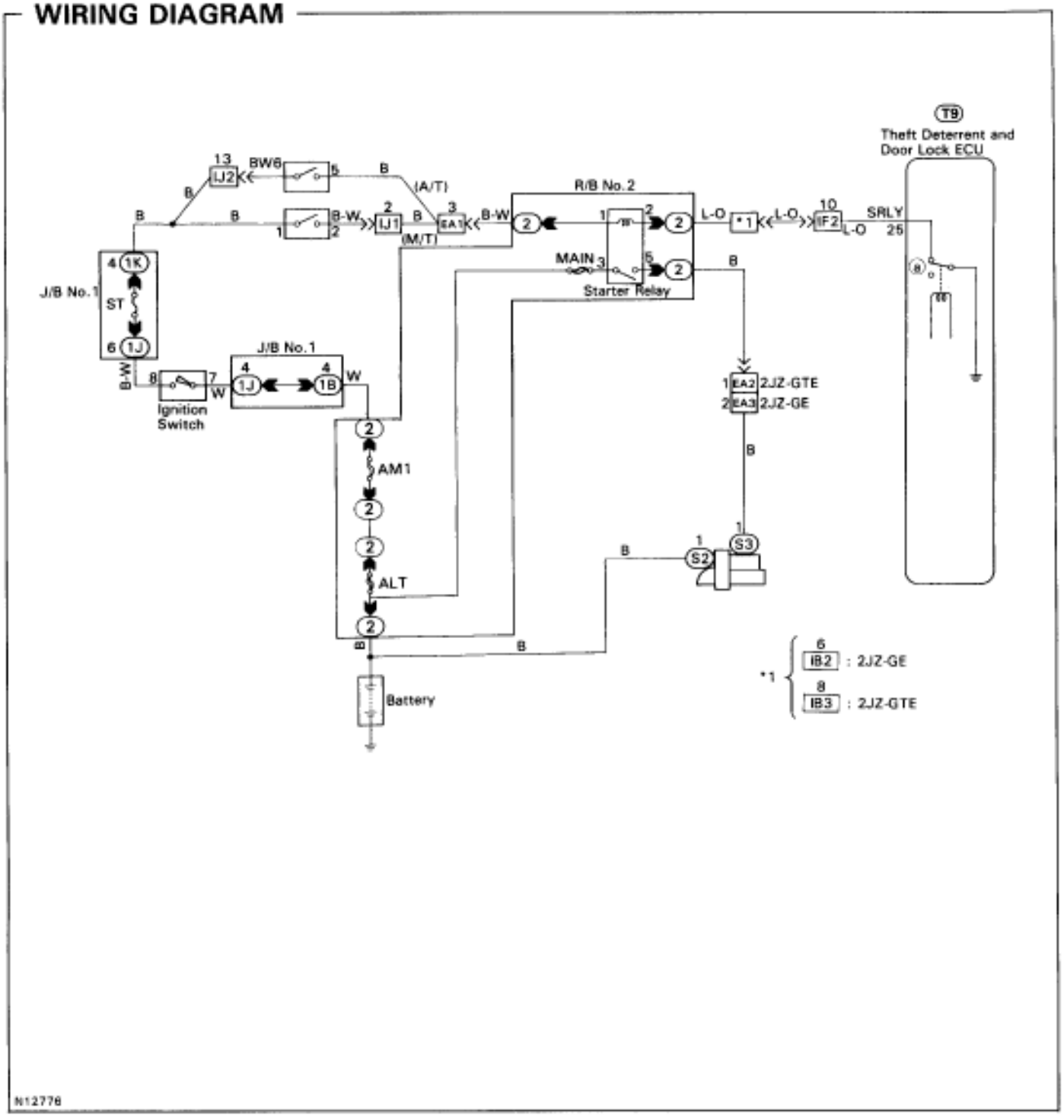
Starter Relay Circuit

CIRCUIT DESCRIPTION

When the theft deterrent system is activated, contact (a) in the ECU becomes open, creating an open circuit in terminal ST circuit and making the starter inoperative (starter cut).
In this condition, if one of the following operations is done, the contact (a) in the ECU is grounded, thus cancelling the starter cut:

(1) The front LH and RH door is unlocked with a key.

WIRING DIAGRAM

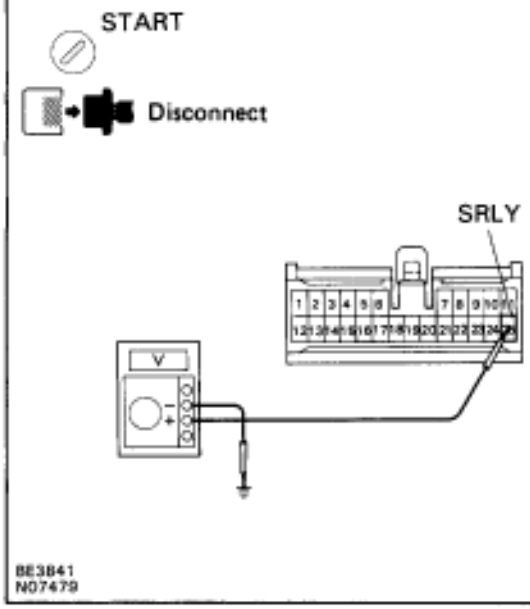


INSPECTION PROCEDURE

HINT: This troubleshooting is based on the premise that engine cranking occurs.

If the engine does not crank, proceed to engine troubleshooting on page EG–381 or 487 (Vol. 1).

1 Check voltage between terminal SRLY of theft deterrent and door lock ECU connector and body ground.



P (1) Remove instrument panel panel. (See BO section.)

(2) Disconnect the ECU connector.

C Measure voltage between terminal SRLY of theft deterrent ECU connector and body ground when ignition switch is turned on.

OK **Voltage: 10 – 14 V**

NG

OK → **Check and replace theft deterrent ECU.**

Check and repair harness and connector between starter and theft deterrent and door lock ECU (See page IN–30).

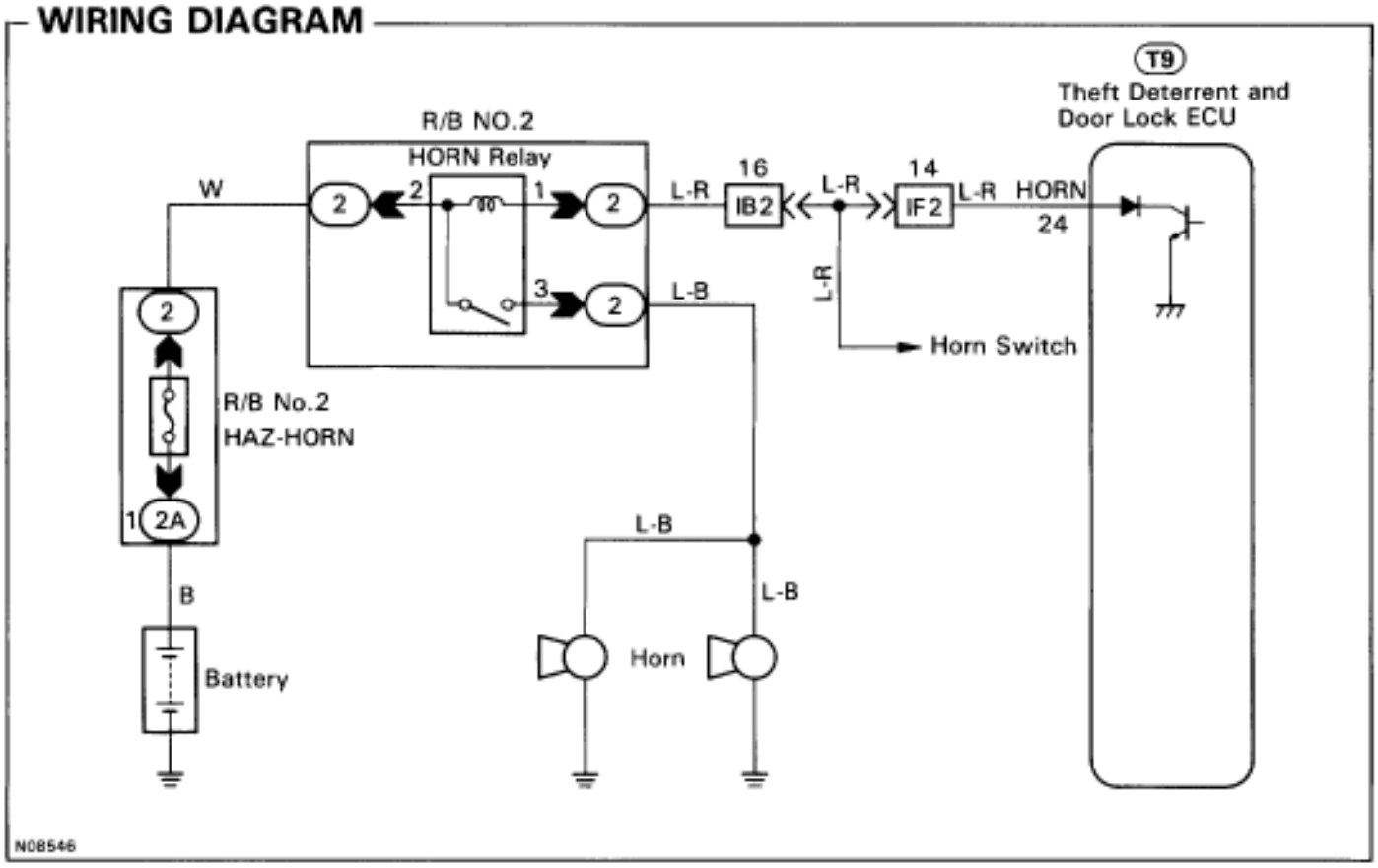
Horn Relay Circuit

CIRCUIT DESCRIPTION

When the theft deterrent system is activated, it causes the Tr in the ECU to switch on and off in approximately 0.2 sec. cycles. This switches the horn relay on and off, thus the horns blow (See the wiring diagram below). In this condition, if any of the following operations is done, the Tr in the ECU goes off and the horn relay switches off, thus stopping the horns from blowing:

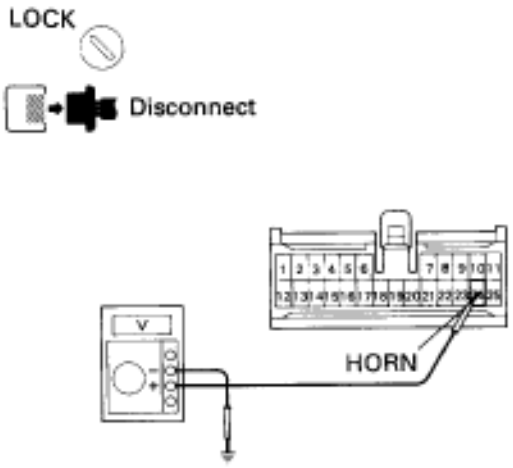
(1) The front LH or RH door is unlocked with a key.
(2) The ignition switch is turned to ACC or ON position.
(3) Approximately 1 minute elapses.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check voltage between terminal HORN of theft deterrent and door lock ECU connector and body ground.**



Replace telltale light RH.

P (1) Remove instrument panel. (See BO section)

(2) Disconnect the ECU connector.

C Measure voltage between terminal HORN of theft deterrent ECU connector and body ground.

OK **Voltage: 10 – 14 V**

NG

OK **Check and replace theft deterrent and door lock ECU.**

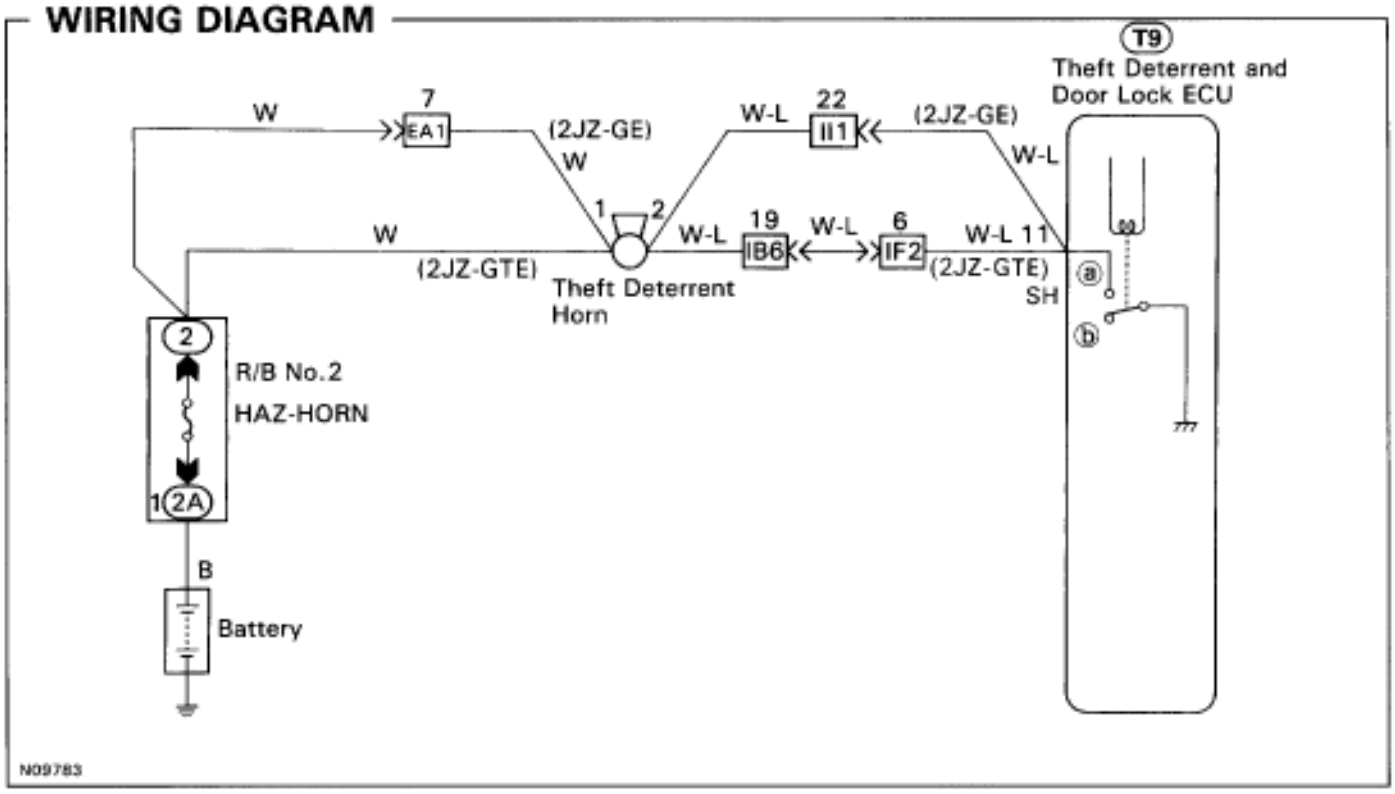
Check and repair harness and connector between theft deterrent and door lock ECU and horn relay (See page IN–30).

Theft Deterrent Horn Circuit

CIRCUIT DESCRIPTION

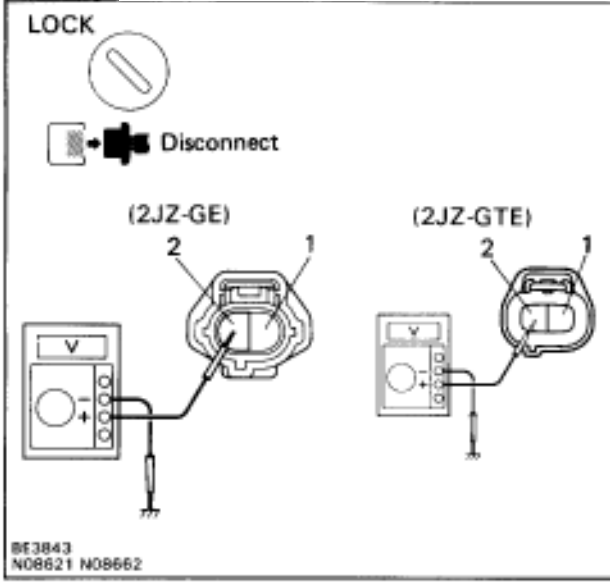
When the theft deterrent system is activated, contact (a) and contact (b) in the ECU close alternately in cycles of approximately 0.2 sec., causing the theft deterrent horn to blow (See the wiring diagram below).
In this condition, if any of the following operations is done, the contact (a) in the ECU opens, thus stopping the theft deterrent horn from blowing:

(1) The front LH or RH door is unlocked with a key.
(2) The ignition switch is turned to ACC or ON position.
(3) Approximately 1 minute elapses.



INSPECTION PROCEDURE

1 Check voltage between terminal SH of theft deterrent horn connector and body ground.



P Remove the theft deterrent horn and disconnect the connector.

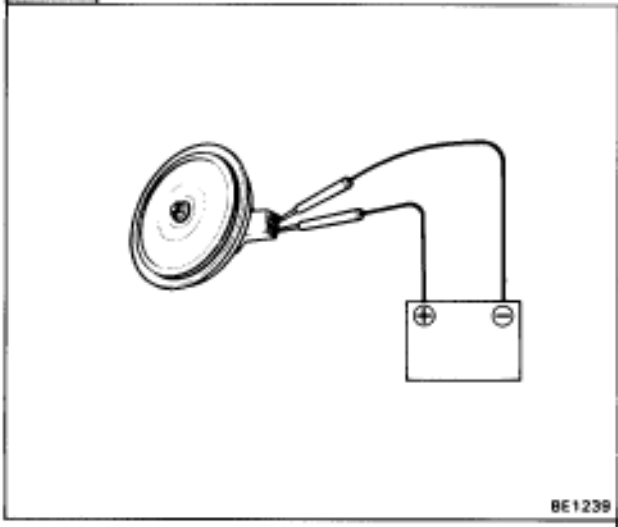
C Measure voltage between terminal 1 of theft deterrent horn connector and body ground.

OK **Voltage: 10 – 14 V**

OK

NG **Check and repair harness and connector between HORN fuse and theft deterrent horn.**

2 Check theft deterrent horn.



C Connect positive (+) lead to terminal 1 and negative (–) lead to terminal 2 of theft deterrent horn connector.

OK **Theft deterrent horn blows.**

OK

NG **Replace theft deterrent horn.**

3 Check harness and connector between theft deterrent and door lock ECU and theft deterrent horn (See page IN–30).

OK

NG **Check and repair harness or connector.**

Check and replace theft deterrent ECU.

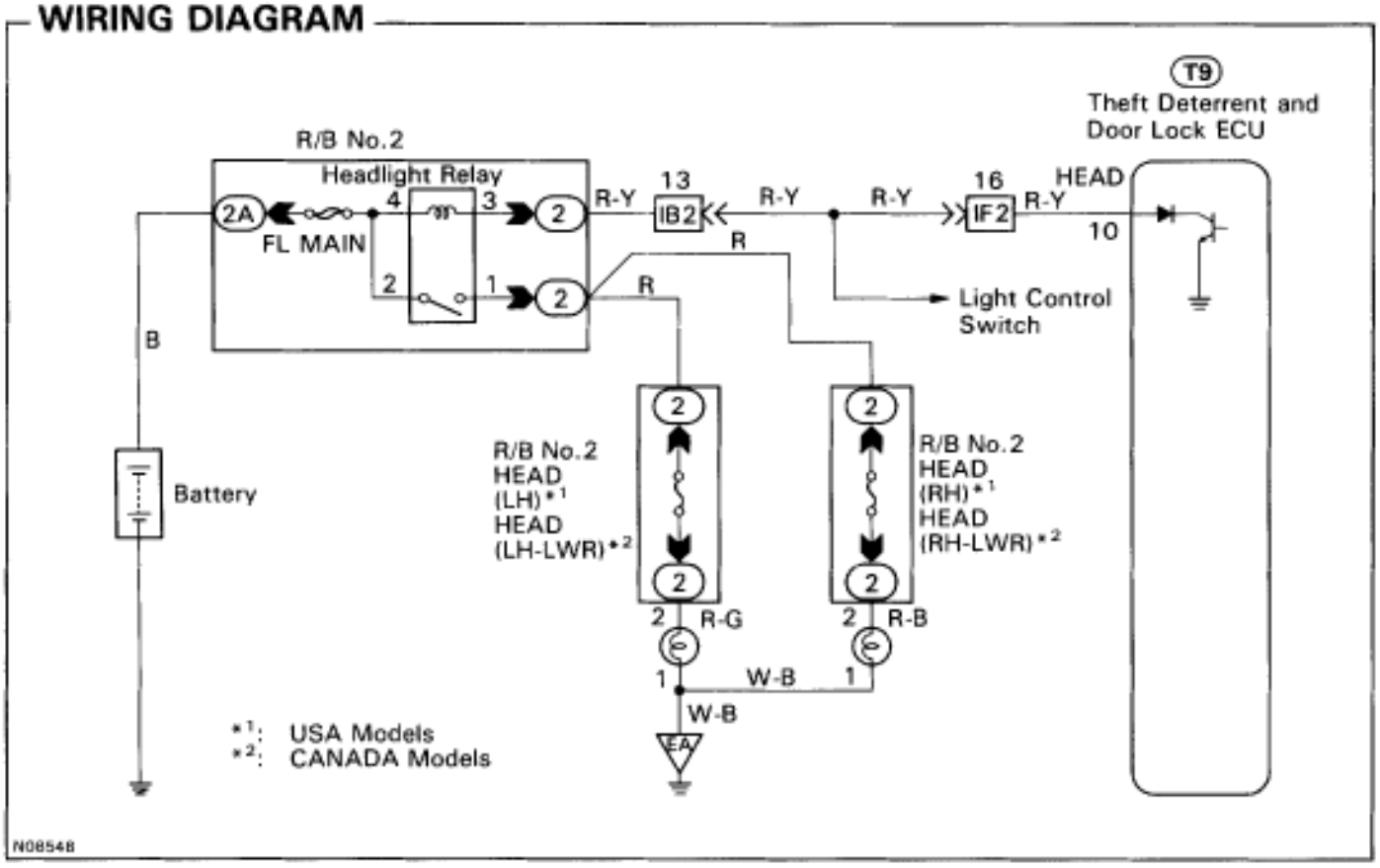
Headlight Control Relay Circuit

CIRCUIT DESCRIPTION

When the theft deterrent system is activated, it causes the Tr in the ECU to switch on and off at approximately 0.2 sec. intervals. This switches the headlight control relay on and off, thus flashing the headlights (See the wiring diagram below).
In this condition, if any of the following operations is done, the Tr in the ECU goes off and the headlight control relay switches off, thus stopping the headlights flashing:

(1) The front LH or RH door is unlocked with a key.
(2) The ignition switch is turned to ACC or ON position.
(3) Approximately 1 minute elapses.

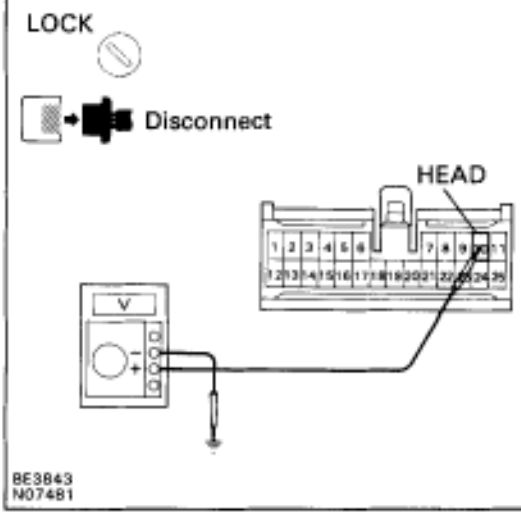
WIRING DIAGRAM



INSPECTION PROCEDURE

HINT: The flow chart below is based on the premise that the headlights light up normally whenever the light control switch is operated. If headlight operation is not normal when the light control switch is operated, proceed to troubleshooting on page BE–11.

1 Check voltage between terminal HEAD of theft deterrent and door lock ECU connector and body ground.



P (1) Remove instrument panel. (See BO section)

(2) Disconnect the ECU connector.

C Measure voltage between terminal HEAD of theft deterrent ECU connector and body ground.

OK **Voltage: 10 – 14 V**

NG → Check and repair harness and connector between theft deterrent and door lock ECU headlight control relay (See page IN–30).

OK → **Check and replace theft deterrent and door lock ECU.**

Taillight Control Relay Circuit

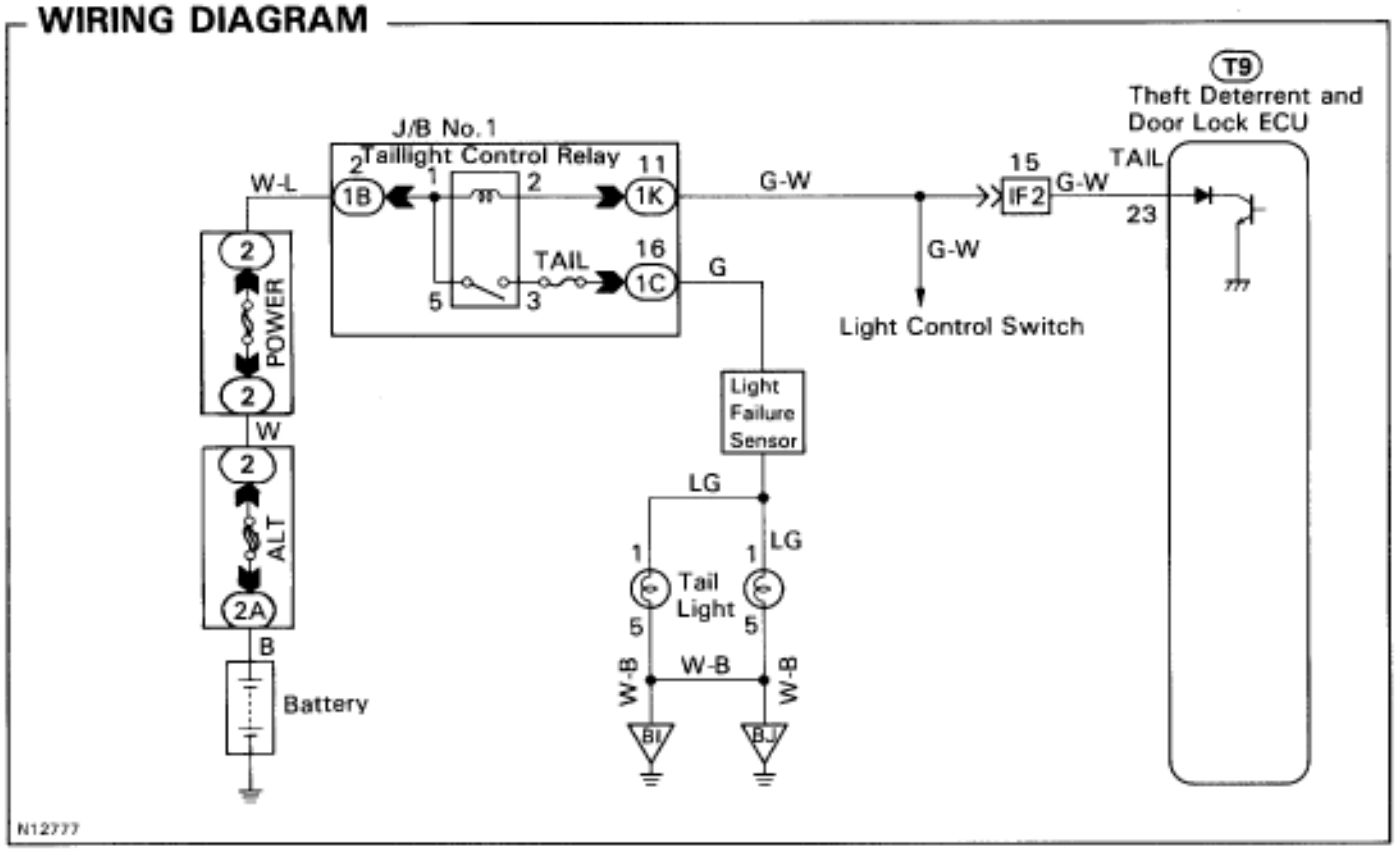
CIRCUIT DESCRIPTION

When the theft deterrent system is activated, it causes the Tr in the ECU to switch on and off at approximately 0.2 sec. intervals. This switches the taillight control relay on and off, thus flashing the taillights (See the wiring diagram below).

In this condition, if any of the following operations is done, the Tr in the ECU goes off and the taillight control relay switches off, thus stopping the taillights flashing:

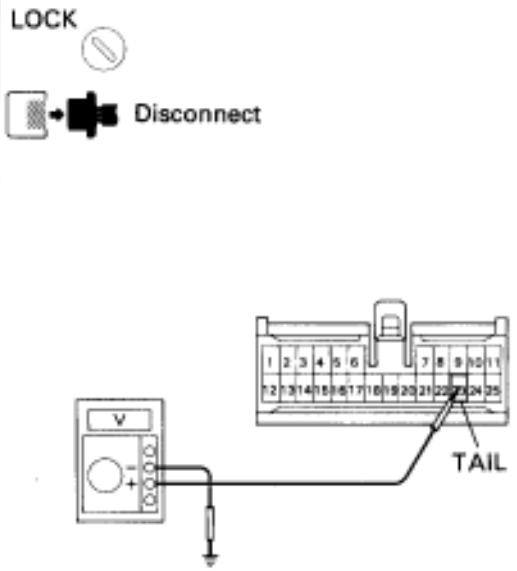
(1) The front LH or RH door is unlocked with a key.
(2) The ignition switch is turned to ACC or ON position.
(3) Approximately 1 minute elapses.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check voltage between terminal TAIL of theft deterrent door lock ECU connector and body ground.**



P (1) Remove instrument panel. (See BO section)

(2) Disconnect the ECU connector.

C Measure voltage between terminal TAIL of theft deterrent and door lock ECU connector and body ground.

OK **Voltage: 10 – 14 V**

NG

OK ⟩ **Check and replace theft deterrent ECU.**

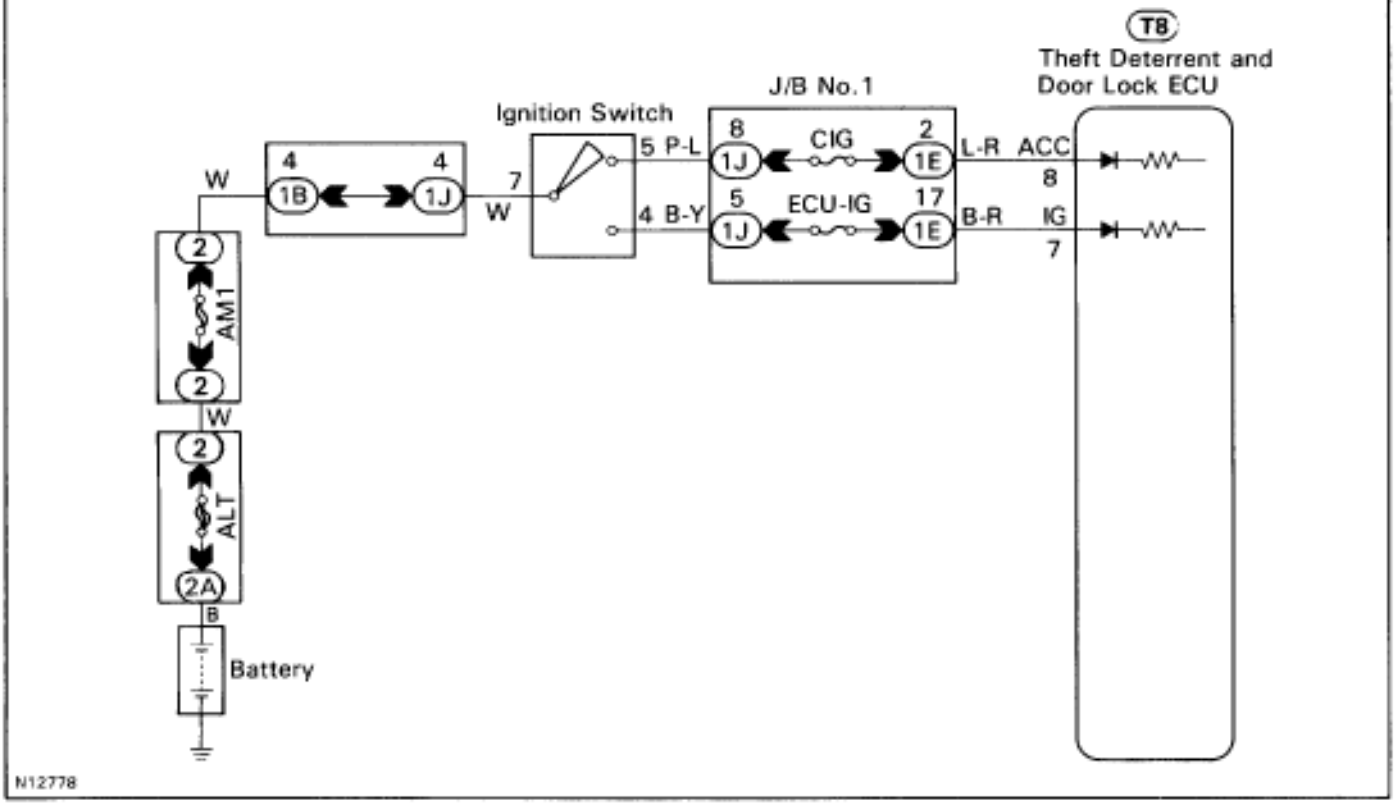
Check and repair harness and connector between theft deterrent and door lock ECU taillight control relay (See page IN–30).

Ignition Switch Circuit

CIRCUIT DESCRIPTION

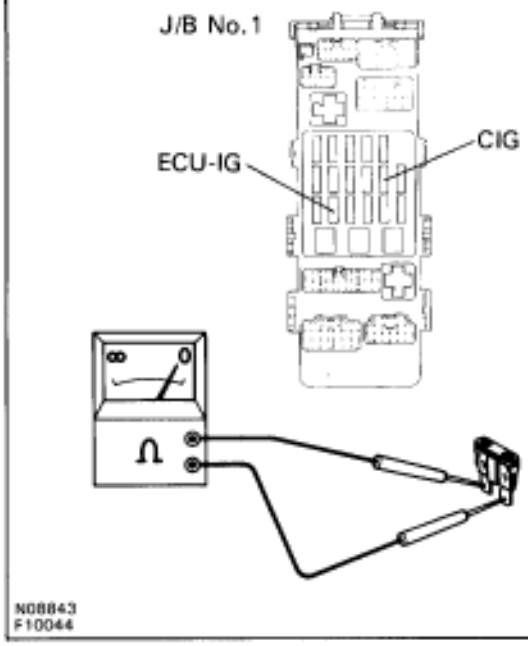
When the ignition switch is turned to the ACC position, battery positive voltage is applied to the terminal ACC of the ECU. Also, if the ignition switch is turned to the ON position, battery voltage is applied to the terminals ACC and IG of the ECU. When the battery positive voltage is applied to the terminal ACC of the ECU while the theft deterrent system is activated, the warning stops. Furthermore, power supplied from the terminals ACC and IG of the ECU is used as power for the door courtesy switch, and position switch, etc.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check CIG and ECU–IG fuses.



P Remove CIG and ECU–IG fuses from J/B NO. 1.

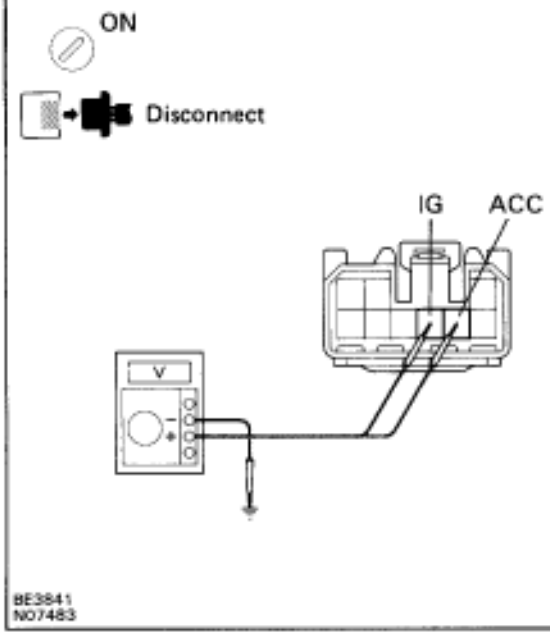
C Check continuity of CIG and ECU–IG fuses.

OK **Continuity**

OK

NG **Check for short in all the harness and components connected to the CIG and ECU–IG fuses (See attached wiring diagram).**

2 Check voltage between terminals IG and ACC of theft deterrent and door lock ECU and body ground.



P (1) Remove instrument panel. (See BO section)
(2) Disconnect the ECU connector.
(3) Turn ignition switch ON.

C Measure voltage between terminal IG and ACC of theft deterrent ECU connector and body ground.

OK **Voltage: 10 – 14 V**

NG

OK **Check and replace theft deterrent and door lock ECU.**

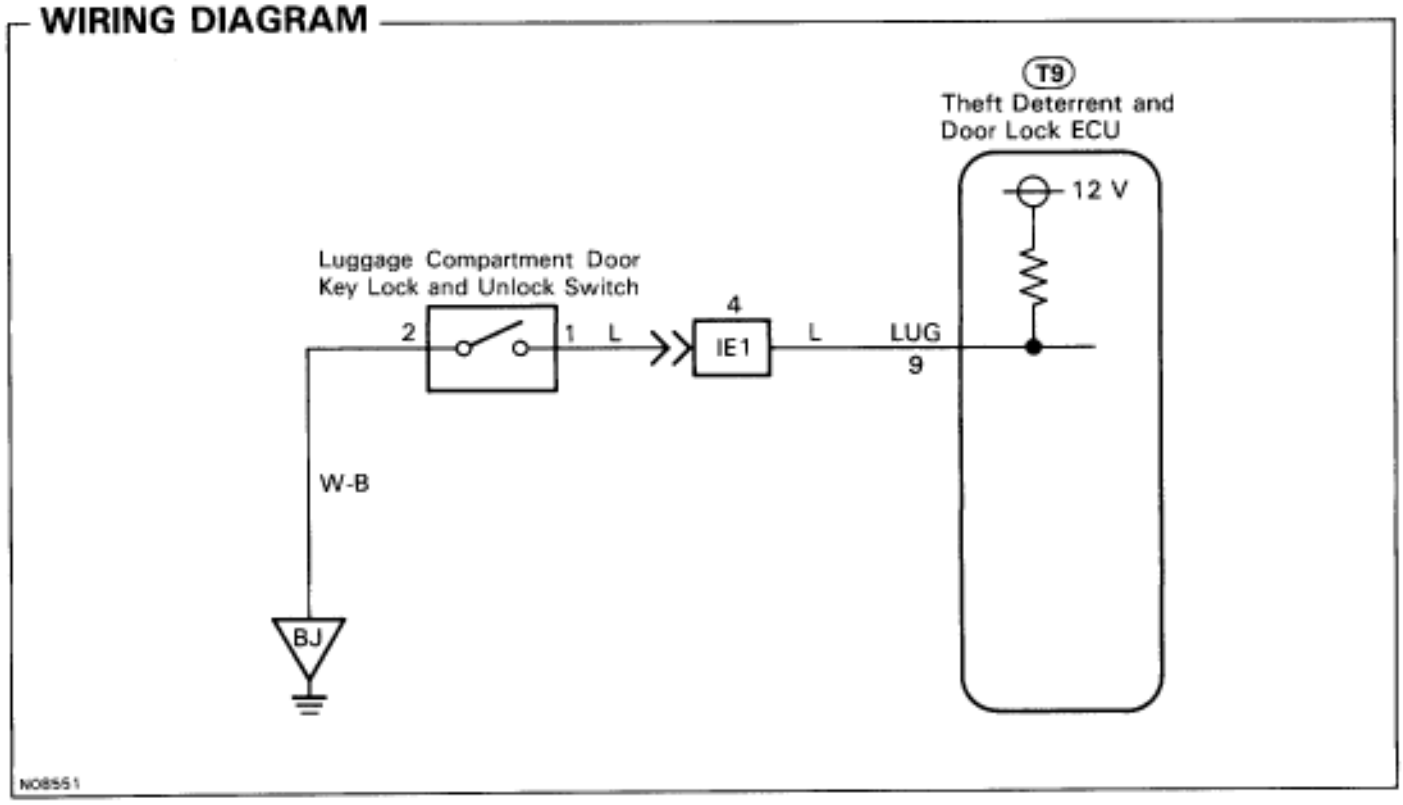
Check and repair harness and connector between theft deterrent and door lock ECU and battery (See page IN–30).

Luggage Compartment Door Key Lock and Unlock Switch Circuit

CIRCUIT DESCRIPTION

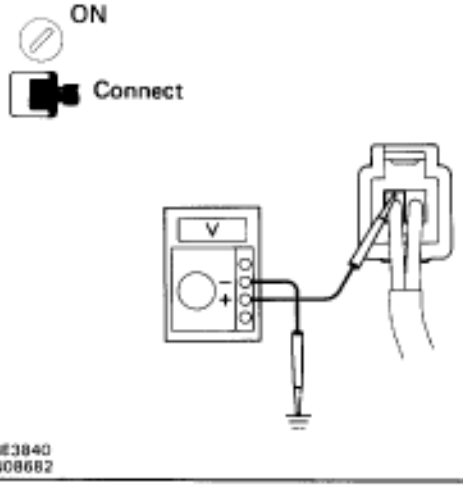
The luggage compartment door key lock and unlock switch goes on when the back door key cylinder is turned to the unlock side with the key.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminal 1 of luggage compartment door key lock and unlock switch connector and body ground.



P
(1) Remove deck trim rear cover.
(2) Turn ignition switch ON.

C
Measure voltage between terminal 1 of luggage compartment door key lock and unlock switch connector and body ground, when the key si turned to the unlock side and not turned.

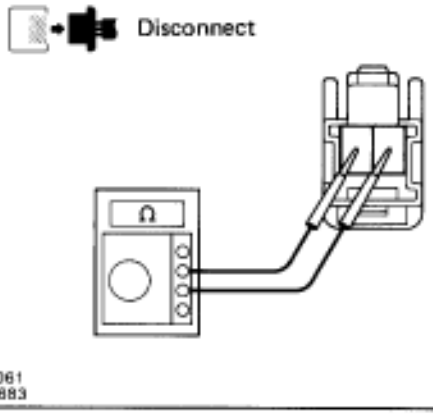
OK

Key operation	Voltage
Turned to the unlock side.	0 V
Not turned	Battery positive voltage

NG

OK → **Check and replace theft deterrent and door lock ECU. *1.**

2 Check luggage compartment door key lock and unlock switch.



P
Disconnect luggage compartment door key lock and unlock switch connector.

C
Check continuity between terminals 1 and 2, when the key si turned to the unlock side and not turned.

OK

Continuity

Key operation	1	2
Turned to the unlock side.	○	○
Not turned		

OK

NG → Repair or replace luggage compartment door key lock and unlock switch.

3 Check harness and connector between theft deterrent and door lock ECU and key unlock switch, key unlock switch and body ground (See page IN–30).

OK

NG → **Repair or replace harness or connector.**

Check and replace theft deterrent and door lock ECU.

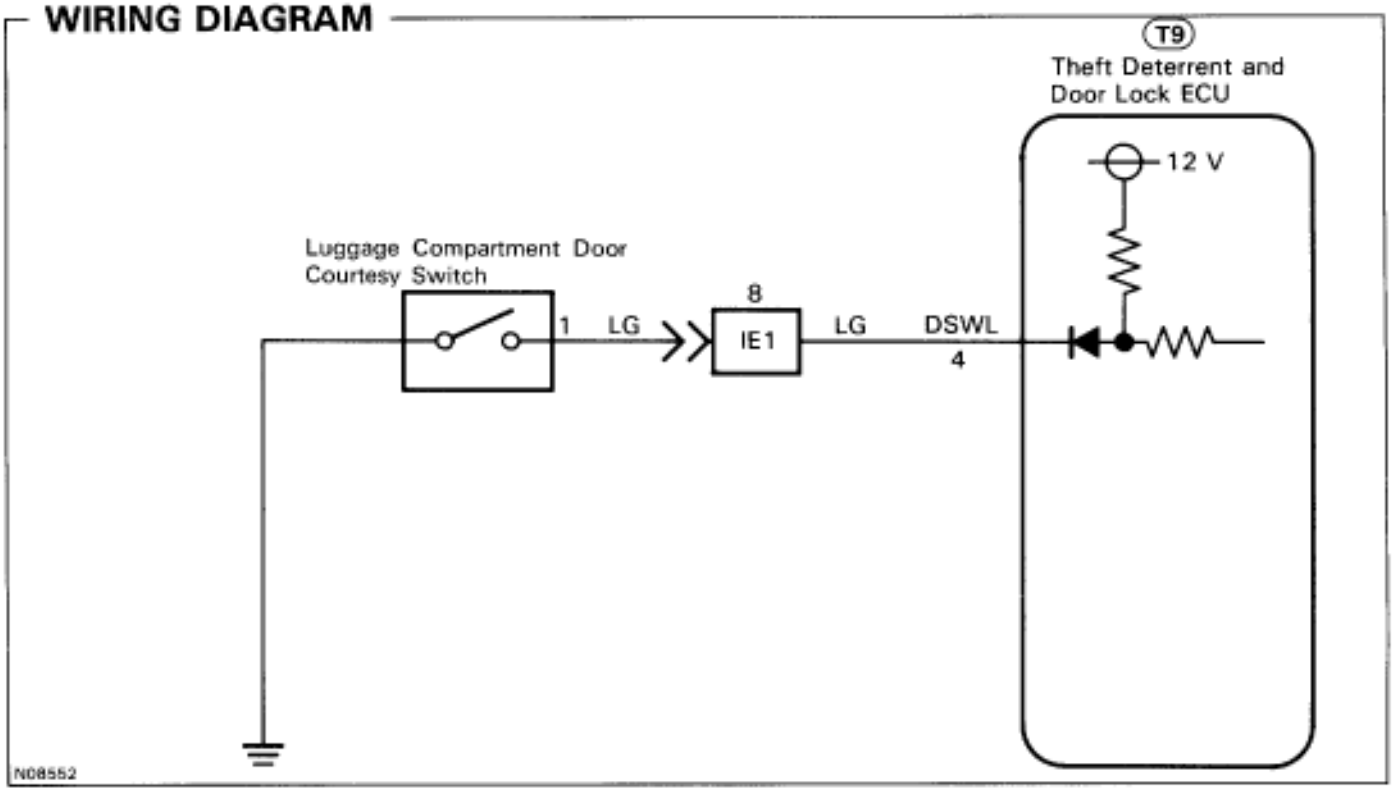
*1: When there is a malfunction that the theft deterrent system cannot be set, proceed to the next numbered circuit inspection shown on the matrix chart (See page Be–123).

Luggage Compartment Door Courtesy Switch Circuit

CIRCUIT DESCRIPTION

The luggage compartment door courtesy switch goes on when the back door is opened and goes off when the back door is closed.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check operation of luggage room light.**

C Check that luggage room light goes off when luggage room light switch is pushed, and comes on when switch is not pushed.

OK

NG → **Check and repair luggage compartment door courtesy light circuit (See page BE–28).**

2 **Check for open in harness and connector between theft deterrent and door lock ECU and luggage compartment door courtesy switch (See page IN–30).**

OK

NG → **Repair or replace harness or connectors.**

Check and replace theft deterrent ECU. *1.

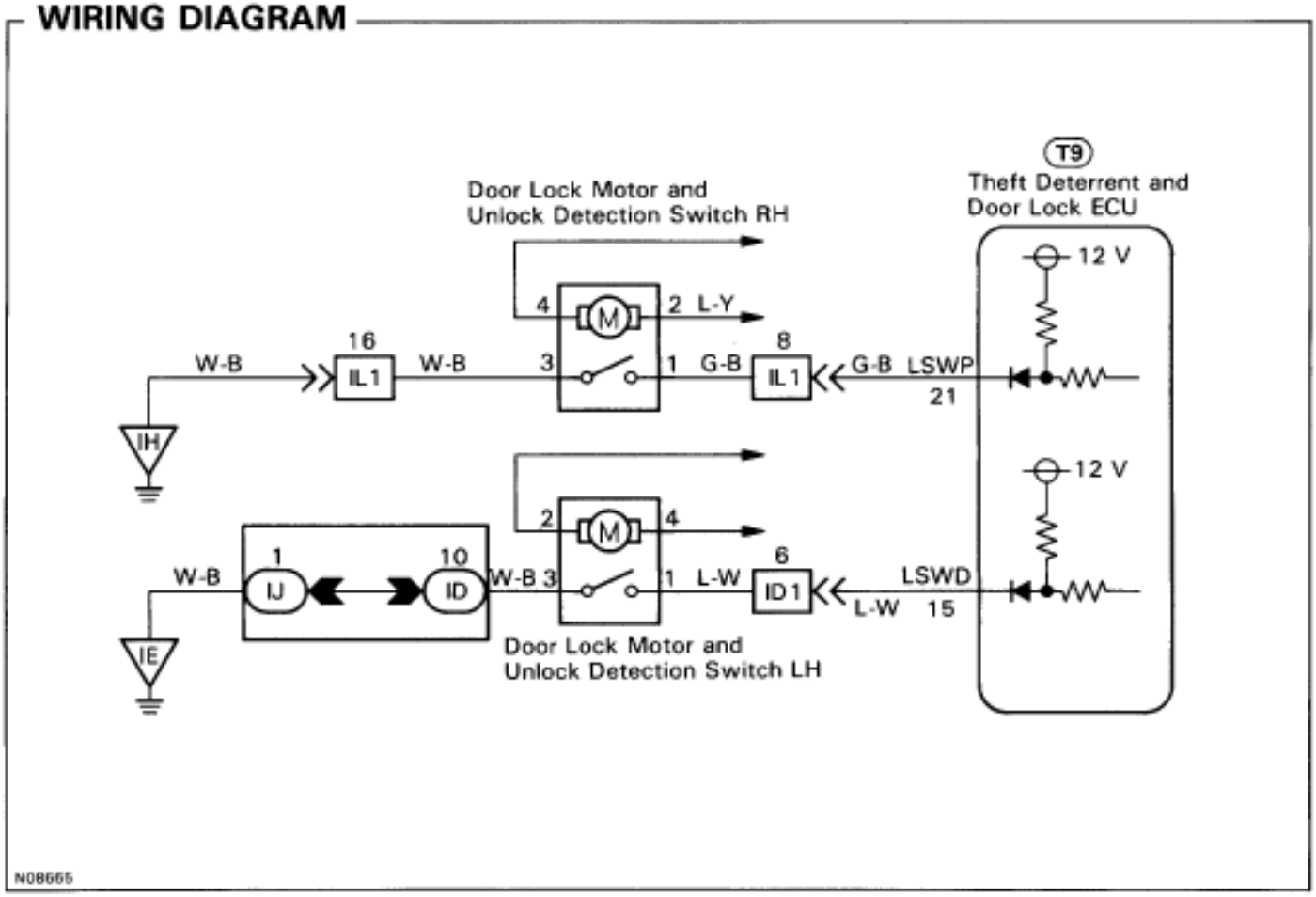
*1: When there is a malfunction that the theft deterrent system cannot be set, proceed to the next numbered circuit inspection shown on matrix chart (See page BE–123).

Door Unlock Detection Switch Circuit

CIRCUIT DESCRIPTION

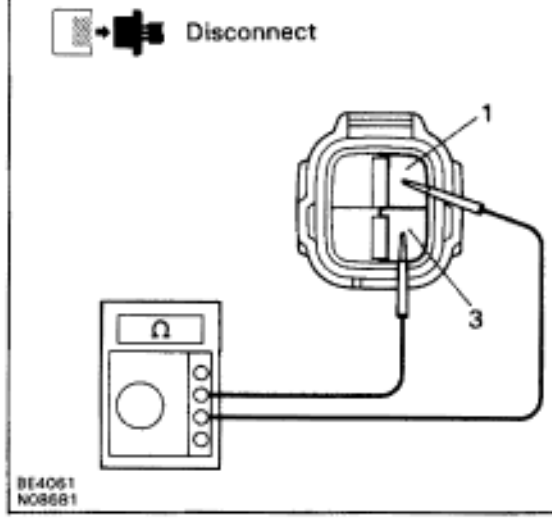
The door unlock detection switch goes off when the door lock knob is operated to the lock position, and comes on when the door lock knob is operated to the unlock position.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check door unlock detection switch.



P
(1) Remove the door trim.
(2) Disconnect door lock motor and door unlock detection switch connector.

C Check continuity between terminals 1 and 3 of door unlock detection switch connector, when door lock knob is operated to the lock side and to the unlock side.

OK

Continuity

Switch condition \ Terminal	1	3
Door unlock	○—○	
Door lock		

OK

NG **Replace door unlock detection switch.**

2 Check harness and connector between theft deterrent and door lock ECU and door unlock detection switch, door unlock detection switch and body ground (See page IN–30).

OK

NG **Repair or replace harness or connector.**

Check and replace theft deterrent and door lock ECU. *1.

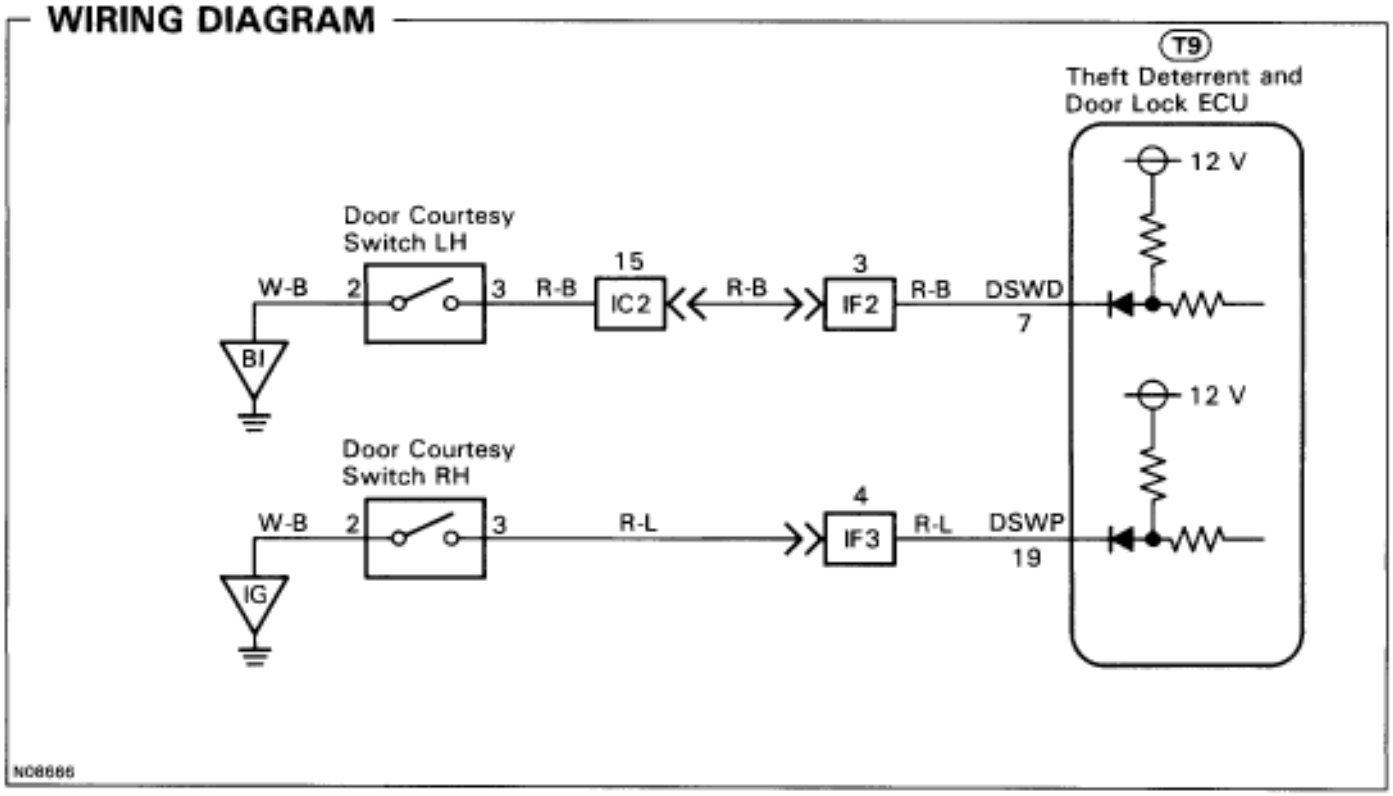
*1: When there is a malfunction that the theft deterrent system cannot be set, proceed to the next numbered circuit inspection shown on matrix chart (See page BE–123).

Door Courtesy Switch Circuit

CIRCUIT DESCRIPTION

The door courtesy switch goes on when the door is opened and goes off when the door is closed.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check operation of open door warning light.**

C Check that open door warning light comes on when each door is opened, and goes off when all doors are closed.

OK

NG → **Check and repair open door warning light circuit**

2 **Check for open in harness and connector between theft deterrent and door lock ECU and door courtesy switch (See page IN–30).**

NG

Repair or replace harness or connector.

OK → **Check and replace theft deterrent ECU. *1.**

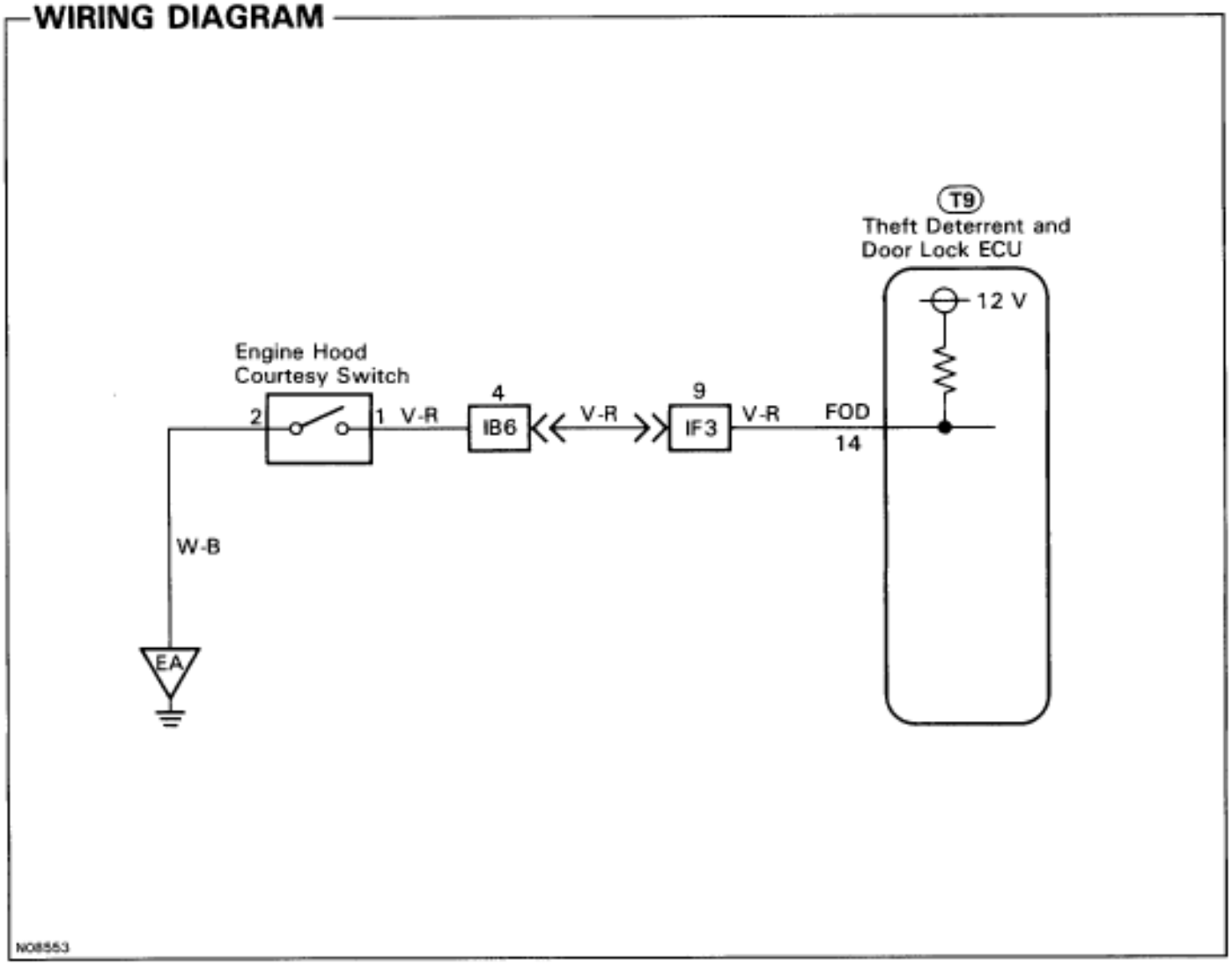
*1: When there is a malfunction that the theft deterrent system cannot be set, proceed to the next numbered circuit inspection shown on matrix chart (See page BE–123).

Engine Hood Courtesy Switch Circuit

CIRCUIT DESCRIPTION

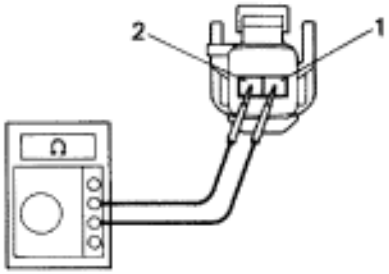
The engine hood courtesy switch is built into the engine hood lock assembly and goes on when the engine hood is opened and goes off when the engine hood is closed.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check engine hood courtesy switch.**



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P (1) Remove engine hood lock assembly.
(2) Disconnect engine hood courtesy switch connector.

C Check continuity between terminals 1 and 2 when engine hood lock is locked and unlocked.

OK

Continuity

Engine hood lock \ Terminal	1	2
Lock		
Unlock	○—○	

OK → **2** **Check harness and connector between theft deterrent and door lock ECU and switch and body ground (See page IN–30).**

NG → **Replace engine hood courtesy switch.**

OK → Check and replace theft deterrent and door lock ECU (See page IN–30).

NG → **Repair or replace harness or connector.**

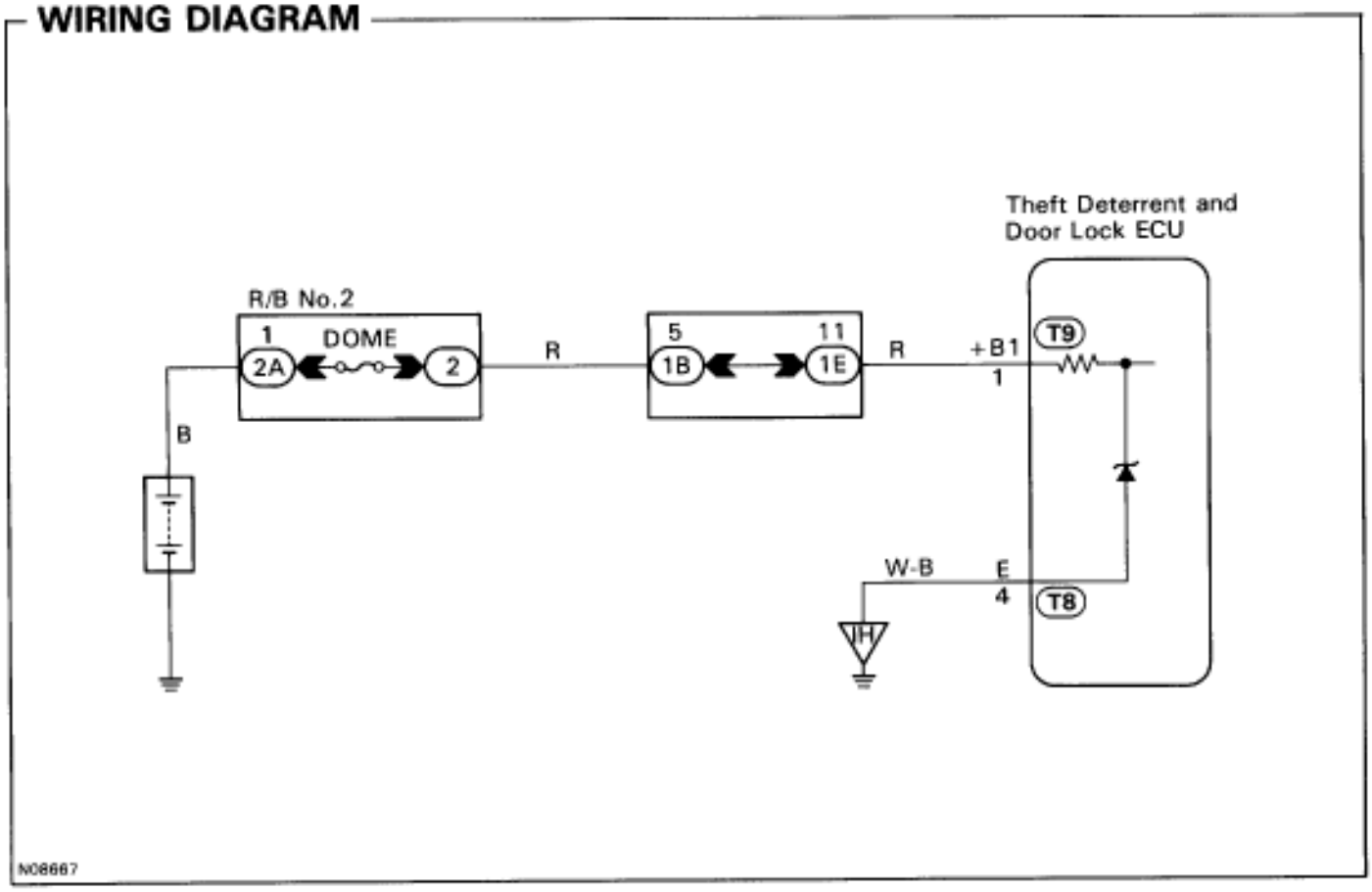
CIRCUIT INSPECTION

ECU Power Source–Circuit

CIRCUIT DESCRIPTION

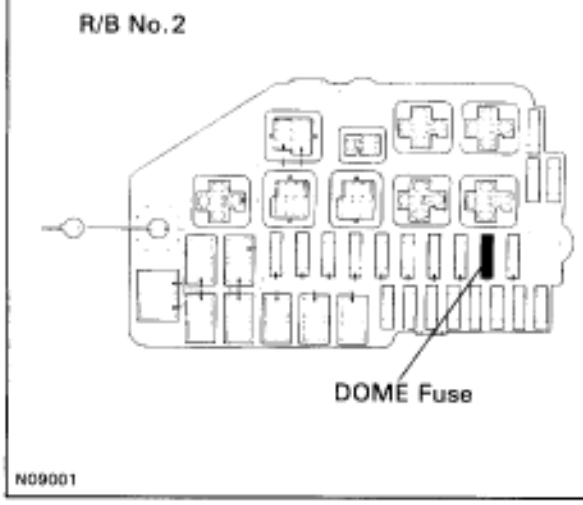
This circuit provides power to operate the theft deterrent and door lock ECU.

WIRING DIAGRAM



INSPECTION PROCEDURES

1 Check DOME fuse.



P Remove DOME fuse from R/B No. 2

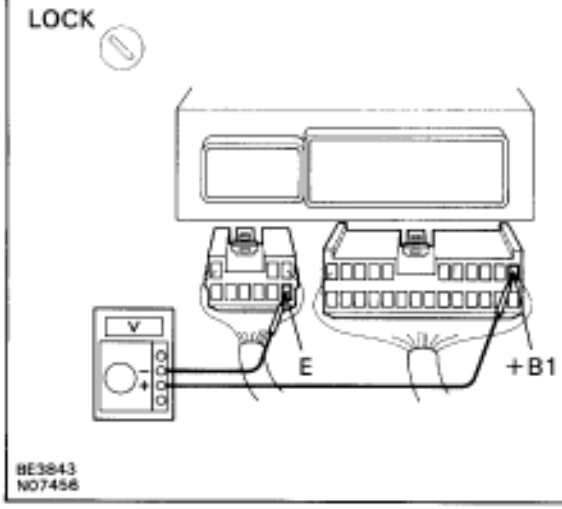
C Check continuity of DOME fuse.

OK **Continuity**

OK

NG **Check for short in all the harness and components connected to the DOME fuse (See attached wiring diagram).**

2 Check voltage between terminals +B1 and E of ECU connector.



P (1) Remove the No. 1 under cover and heater duct.
(2) Disconnect the theft deterrent and door lock ECU connector.

C Measure voltage between terminals +B1 and E of ECU connector.

OK **Voltage: 10 – 14 V**

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–123).**

3 Check for open in harness and connector between ECU and body ground (See page IN–30).

OK

NG **Repair or replace harness or connector.**

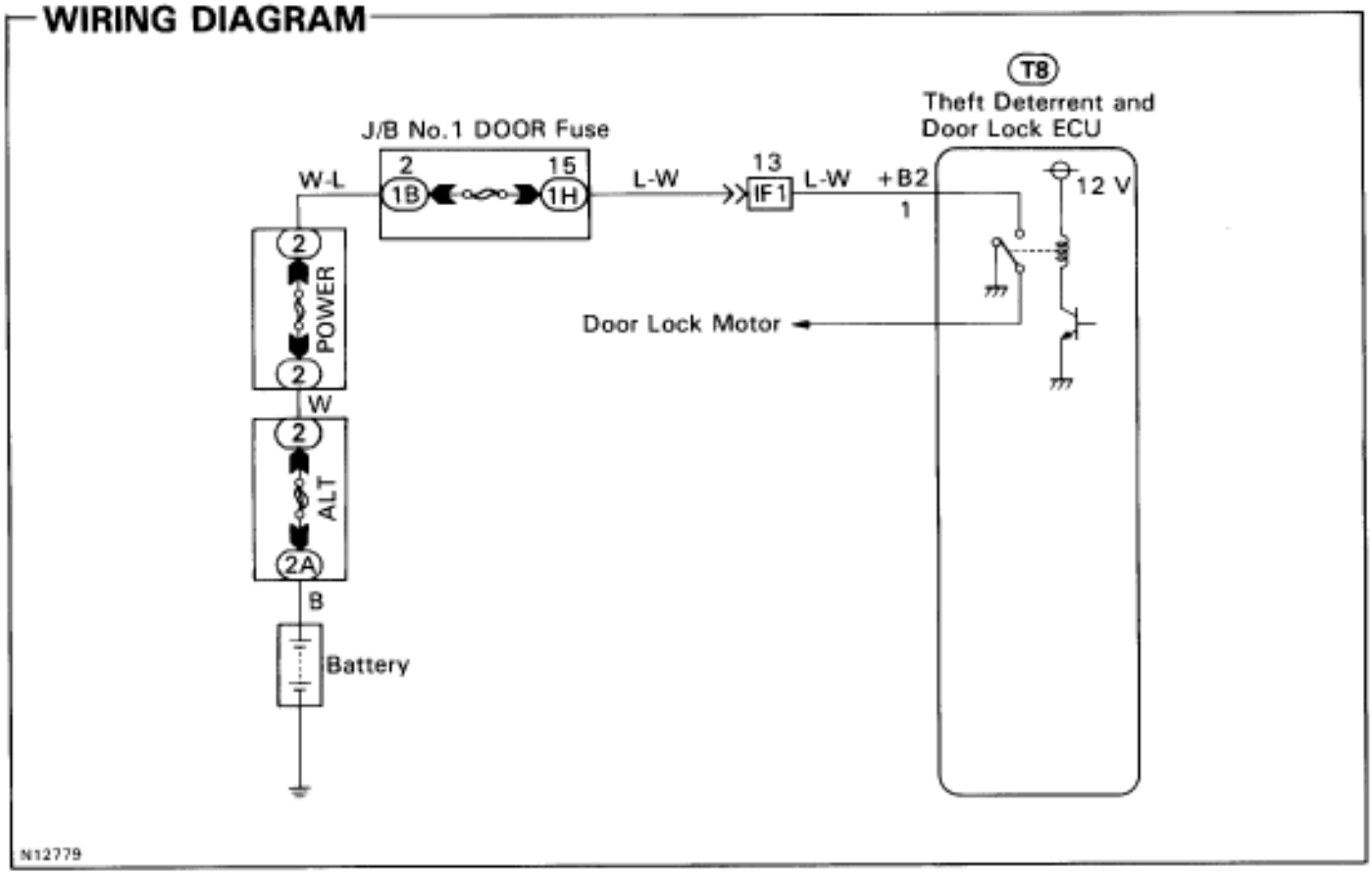
Check and repair harness and connector between ECU and battery.

Actuator Power Source Circuit

CIRCUIT DESCRIPTION

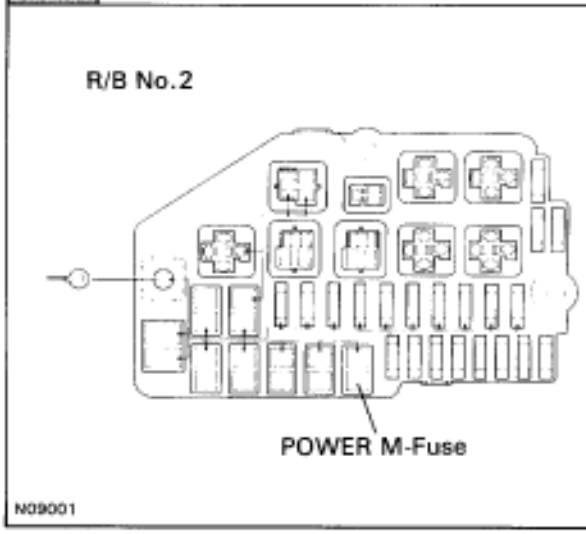
This circuit provides power to drive the door lock motor.

WIRING DIAGRAM



INSPECTION PROCEDURES

1 Check POWER M–fuse.



P Remove POWER M fuse from R/B No. 2

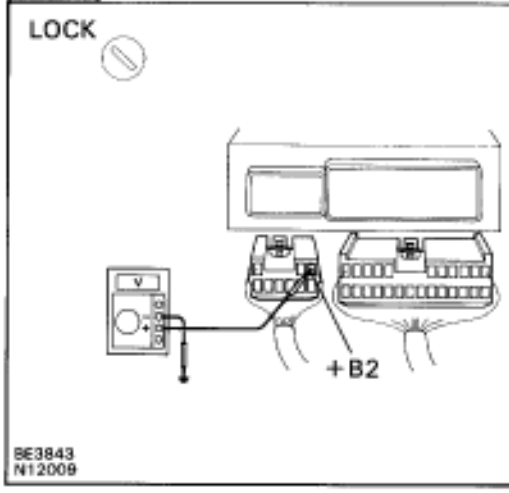
C Check continuity of POWER M–fuse.

OK **Continuity**

OK

NG **Check for short in all the harness and components connected to the DOOR fusible link (See attached wiring diagram). *1**

2 Check voltage between terminals +B2 of ECU connector and body ground.



P (1) Remove the instrument panel.
See BO section.

(2) Disconnect the ECU connector.

C Measure voltage between terminals +B2 of ECU connector and body ground.

OK **Voltage: 10 – 14 V**

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–123).**

Check and repair harness and connectors between ECU and battery (See page IN–30).

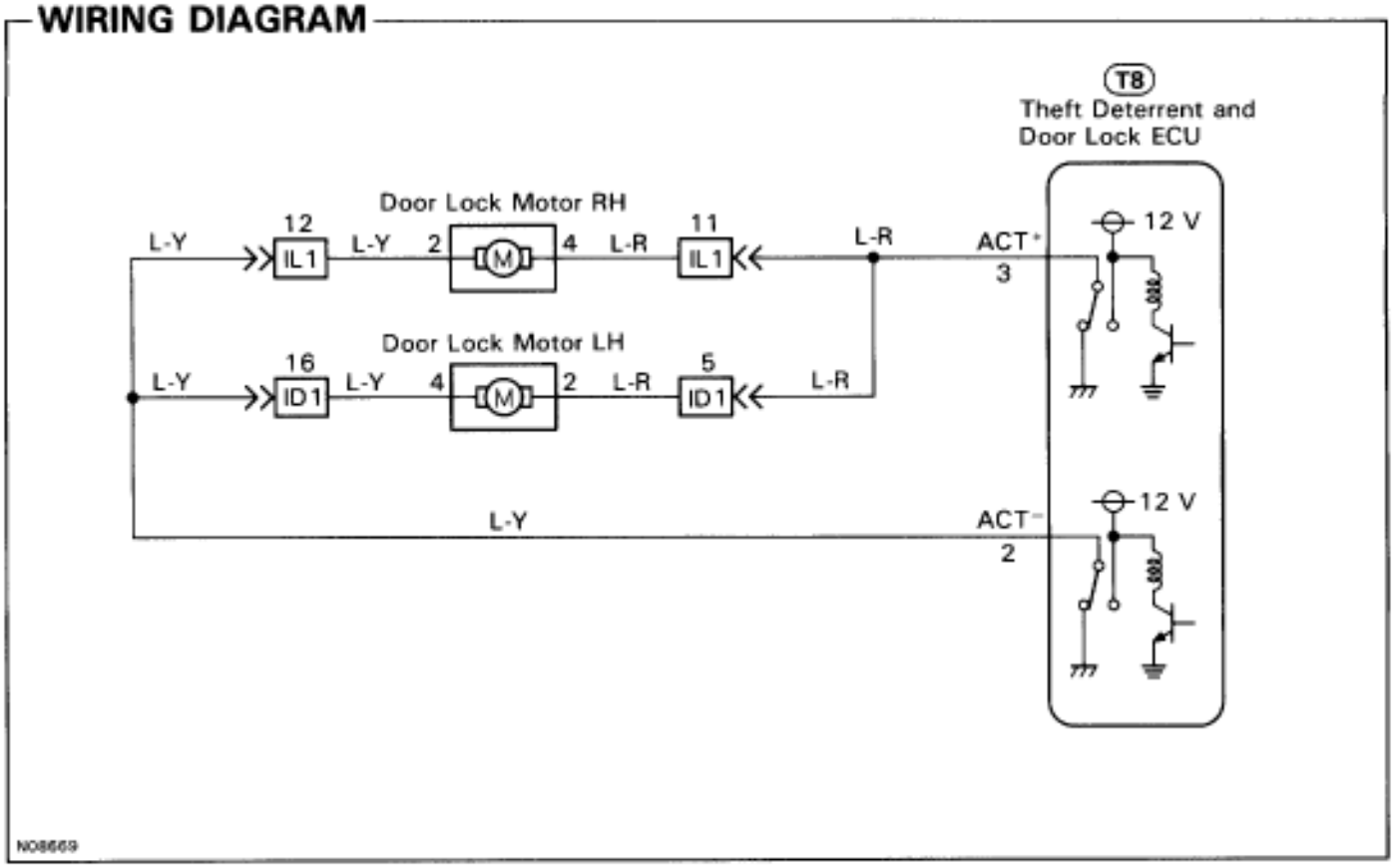
*1: The power source is supplied to the actuator (door lock motor, through the theft deterrent and door lock ECU. Accordingly, if a short circuit of the W/H or actuator occurs in the actuator circuit the POWER M–Fuse may become OPEN, so also inspect the actuator (door lock motor circuit on page BE–154).

Door Lock Motor Circuit

CIRCUIT DESCRIPTION

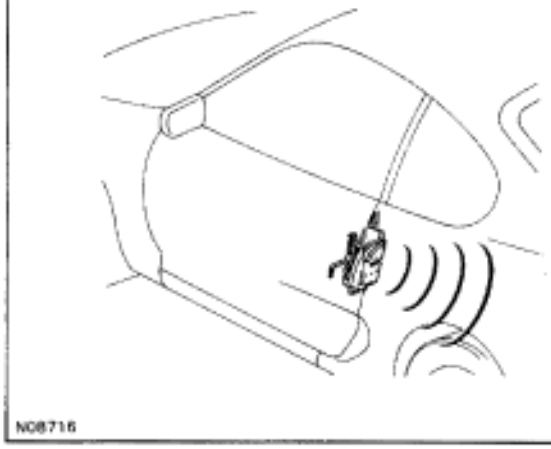
This door lock motor locks and unlocks the door according to signals from the ECU.

WIRING DIAGRAM



INSPECTION PROCEDURES

1 **Check operating sound of door lock motor.**



C Check operating sound of door lock motor, when door lock control switch is pushed to the lock side and unlock side.

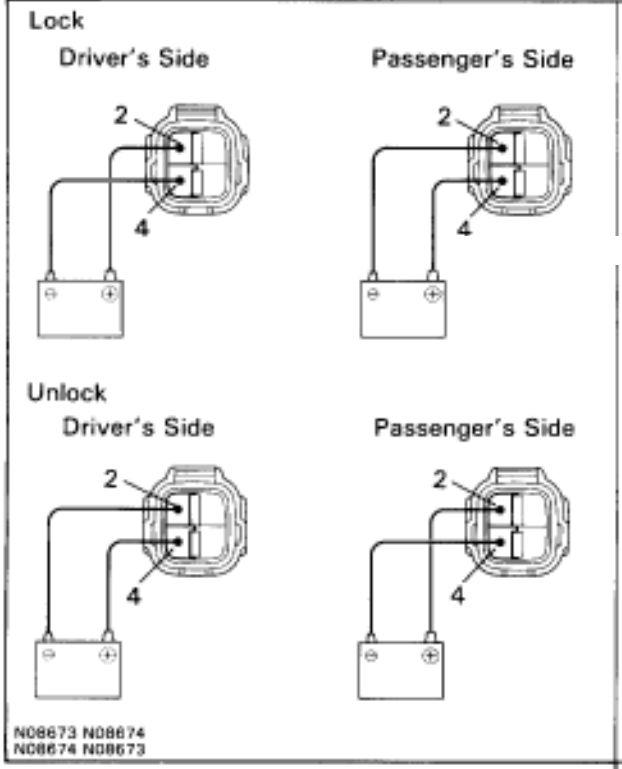
OK **Can hear operating sound of door lock motor.**

Hint Inspect the door which is malfunctioning.

NG

OK **Repair or replace door lock control link.**

2 **Check door lock motor.**



P (1) Remove the door trim and service hole cover..
(2) Disconnect the door lock motor connector.

C (1) Connect positive (+) lead to terminal 2(4) and negative (–) lead to terminal 2(4) of door lock motor connector.
(2) Connect positive (+) lead to terminal 4(2) and negative (–) lead to terminal 2(4) of door lock motor connector.
( ) Passenger's Side

OK **(1) Door lock motor locks door.**
(2) Door lock motor unlocks door.

Hint This inspection must be carried out within 2 seconds.

NG → **Go to step 3.**

OK → **Replace door lock motor.**

3 **Check harness and connectors between ECU and door lock motor (See page IN–30).**

OK → **Proceed to next circuit inspection shown on matrix chart (See page BE–123).**

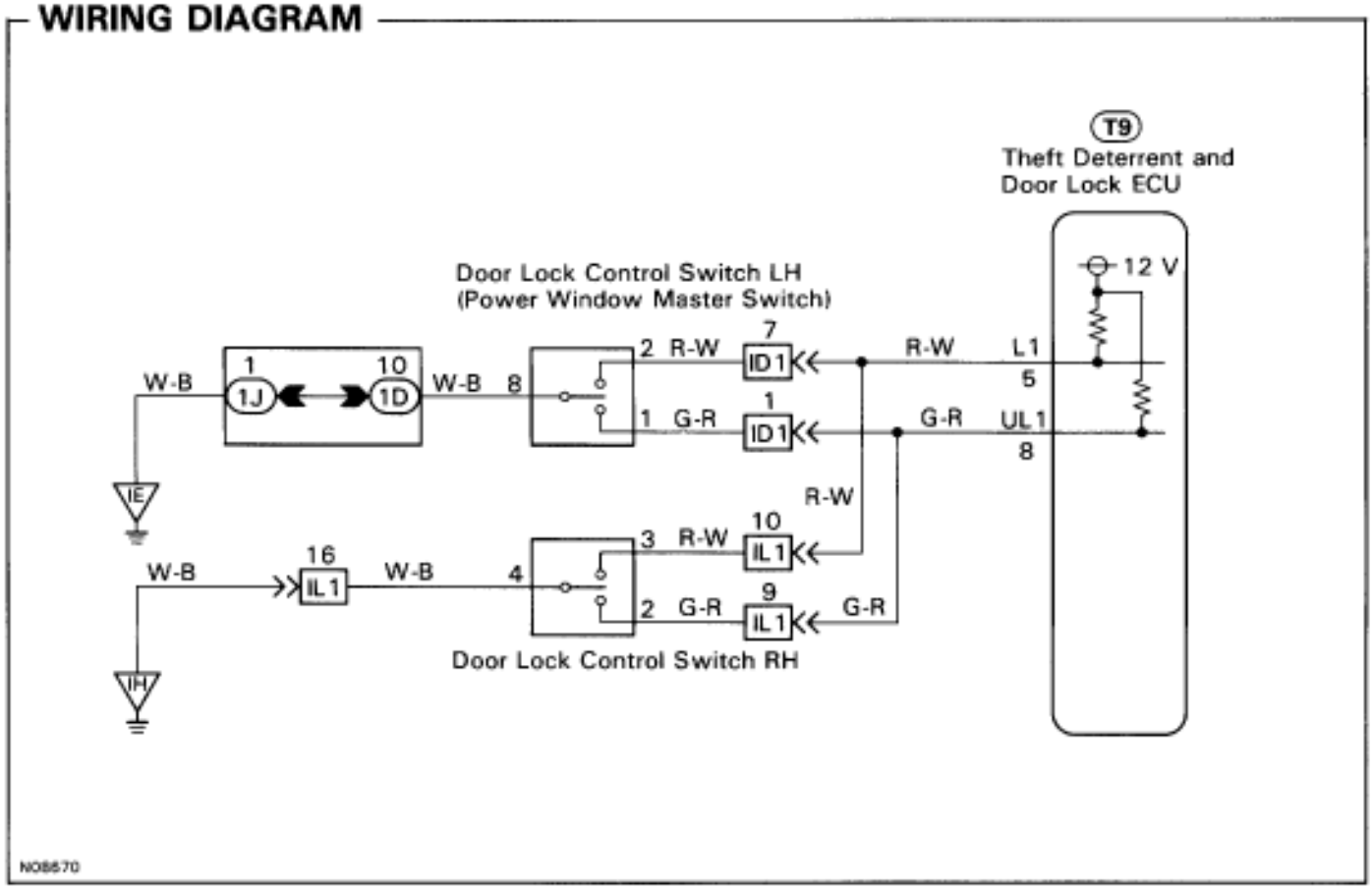
NG → **Repair or replace harness or connector.**

Door Lock Control Switch Circuit

CIRCUIT DESCRIPTION

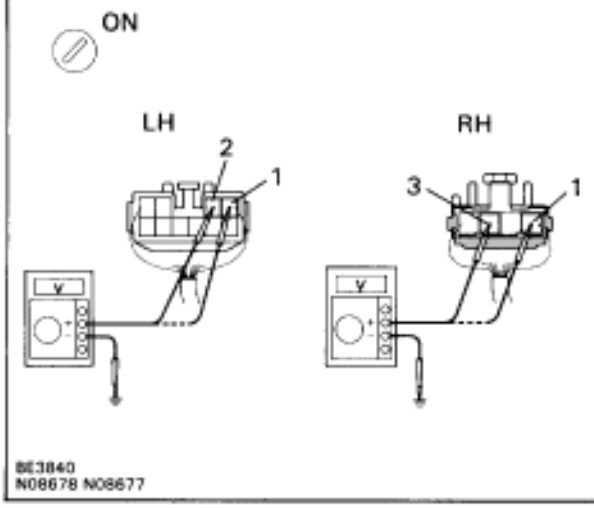
When the door lock control switch is pushed to the lock side, Lock terminal of the switch is grounded, and when the switch is pushed to the unlock side, Unlock terminal is grounded (See wiring diagram below).

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminals 2(3), 1(1) of door lock control switch connector and body ground.



P Remove the door trim.

C (1) Turn ignition switch ON.

(2) Measure voltage between terminals 2(3), 1(1) of door lock control switch connector and body ground, when door lock control switch is pressed to the lock side, unlock side and OFF position.

OK

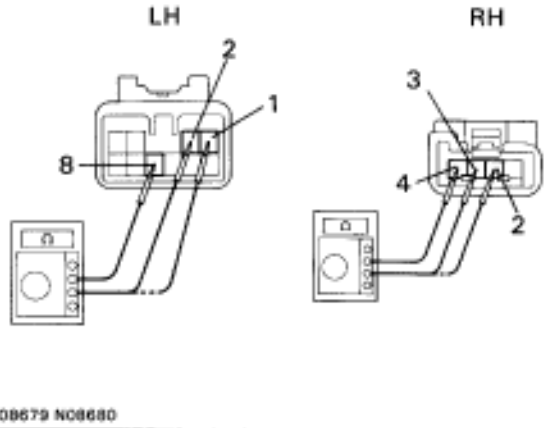
Switch position \ Terminal	2(3)	1(1)
Lock side	Below 1 V	8 – 10 V
Unlock side	8 – 10 V	Below 1 V
OFF	8 – 10 V	8 – 10 V

Hint **The terminal number without brackets is for the LH, the number with brackets is for the RH.**

NG

OK **Proceed to next circuit inspection shown on matrix chart (See page BE–123).**

2 Check door lock control switch.



P Disconnect the door lock control switch connector.

C Check continuity between terminals 2(3), 1(2), 8(4) of door lock control switch connector, when door lock control switch is pressed to the lock side, and unlock side and OFF position.

OK

Continuity

Switch position \ Terminal	2(3)	1(2)	8(4)
Lock side	○		○
Unlock side		○	○
OFF			

Hint **The terminal number without brackets is for the LH, the number with brackets is for the RH.**

OK

NG **Replace door lock control switch.**

3 Check harness and connectors between ECU and door lock control switch, switch and body ground (See page IN–30).

OK

NG **Repair or replace harness or connector.**

Check and replace ECU *1

*1: Malfunction of the ECU can be considered possible only when the problem symptom follows:

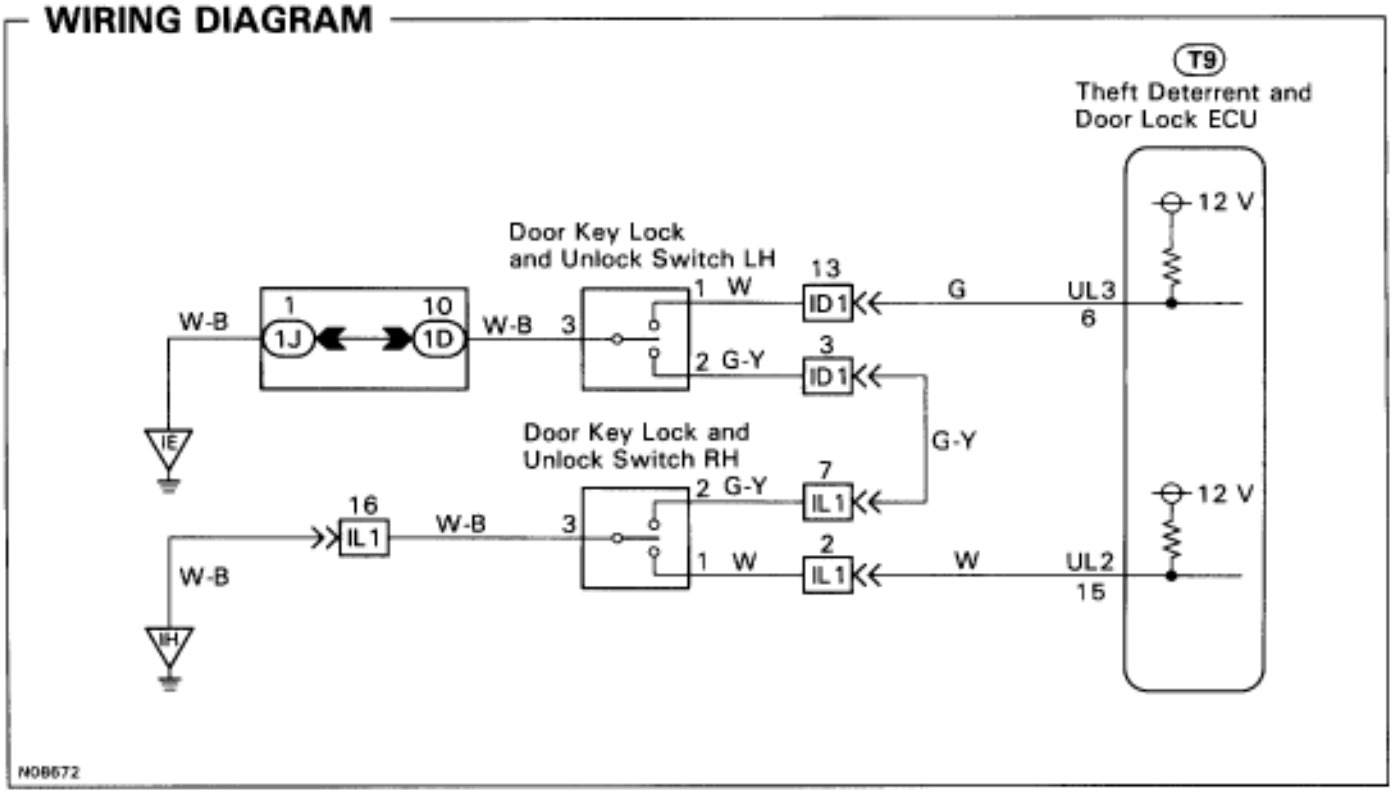
- Lock and/or unlock using the Door Lock Control Switch cannot be done, neither on the driver's side nor on the passenger's side.

Door Key Lock and Unlock Switch Circuit

CIRCUIT DESCRIPTION

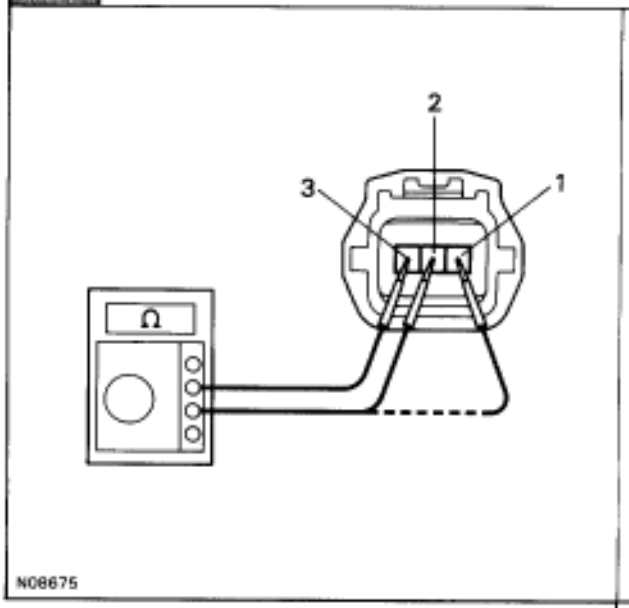
The door key lock and unlock switch is built in the door key cylinder.
When the key is turned to the lock side, terminal 3 of the switch is grounded and when the key is turned to the unlock side, terminal 1 of the switch is grounded.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check door key lock and unlock switch.**



P
(1) Remove the door trim and service hole cover.
(2) Disconnect the door key lock and unlock switch connector.

C
Check continuity between terminals 1, 2 and 3 of door key lock and unlock switch connector, when door key lock and unlock switch is turned to the lock side, unlock side and not turned.

OK

Continuity

Switch position \ Terminal	1	2	3
Lock side		○—○	○—○
Unlock side	○—○		○—○
OFF			

OK

NG → **Replace door key lock and unlock switch.**

2 **Check harness and connectors between ECU and switch, switch and body ground (See page IN–30).**

OK

NG → **Repair or replace harness or connector.**

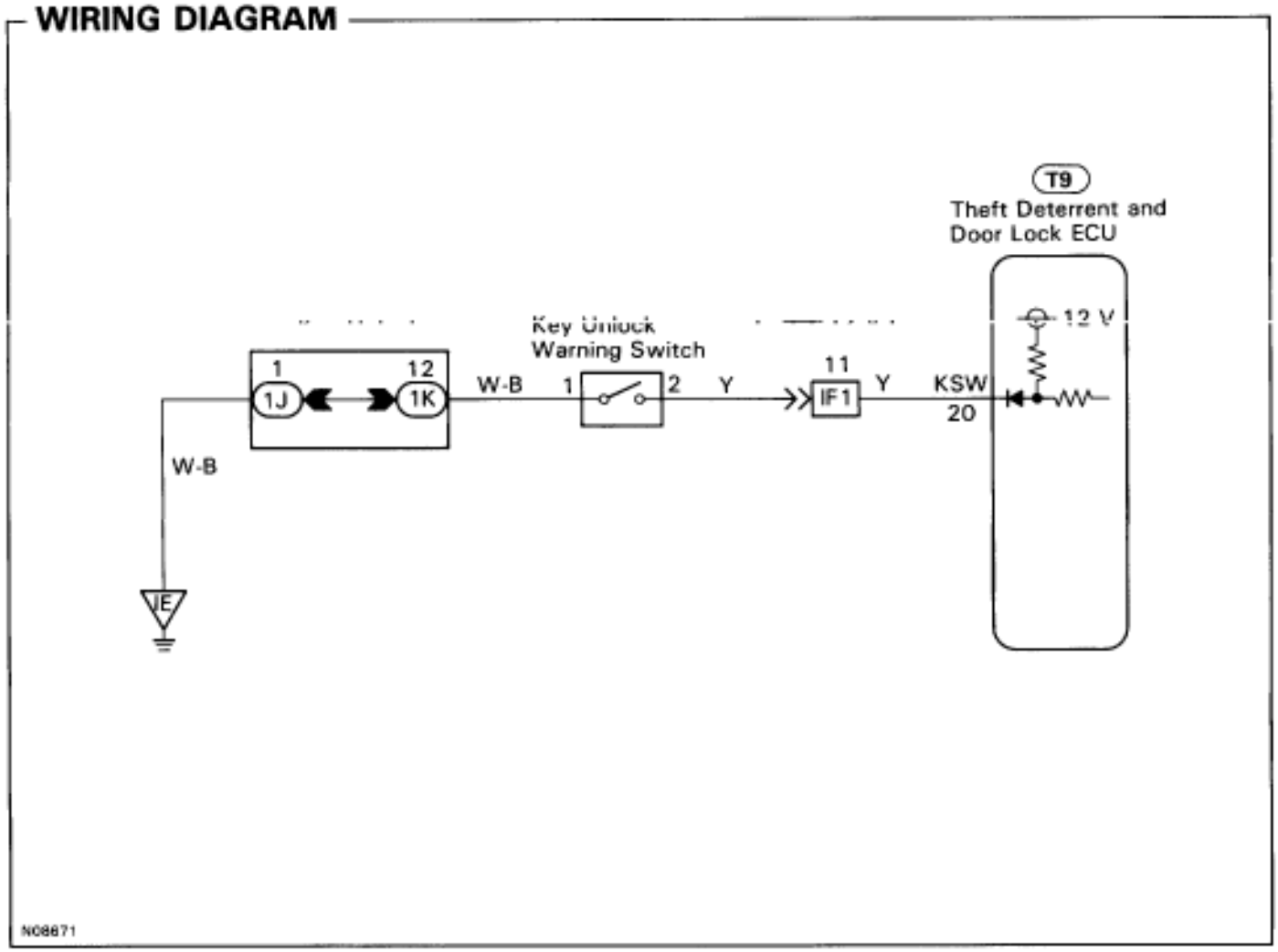
Proceed to next circuit inspection shown on matrix chart (See page BE–123).

Key Unlock Warning Switch Circuit

CIRCUIT DESCRIPTION

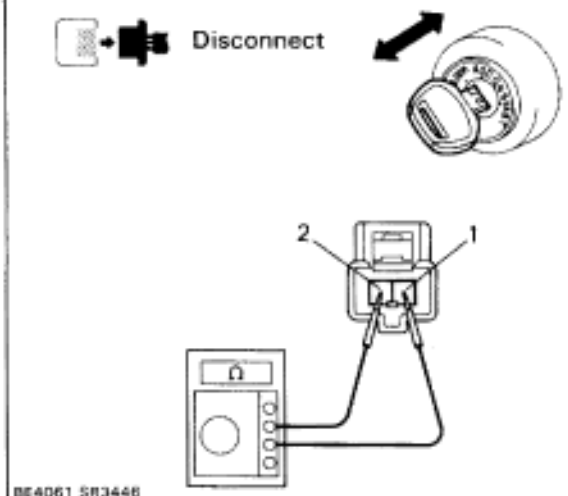
The key unlock warning switch goes on when the ignition key is inserted in the key cylinder and goes off when the ignition key is removed.
The ECU operates the key confinement prevention function while the key unlock warning switch is on.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check key unlock warning switch.**



P Disconnect key unlock warning switch connector.

C Check continuity between terminals 1 and 2 of key unlock warning switch connector, when the key is inserted to the key cylinder or removed.

OK

Continuity

Switch position \ Terminal	1	2
ON (Key inserted)	○—○	
OFF (Key inserted)		

OK → **2** **Check harness and connectors between ECU and key unlock warning switch, key unlock warning switch and body ground (See page IN–30).**

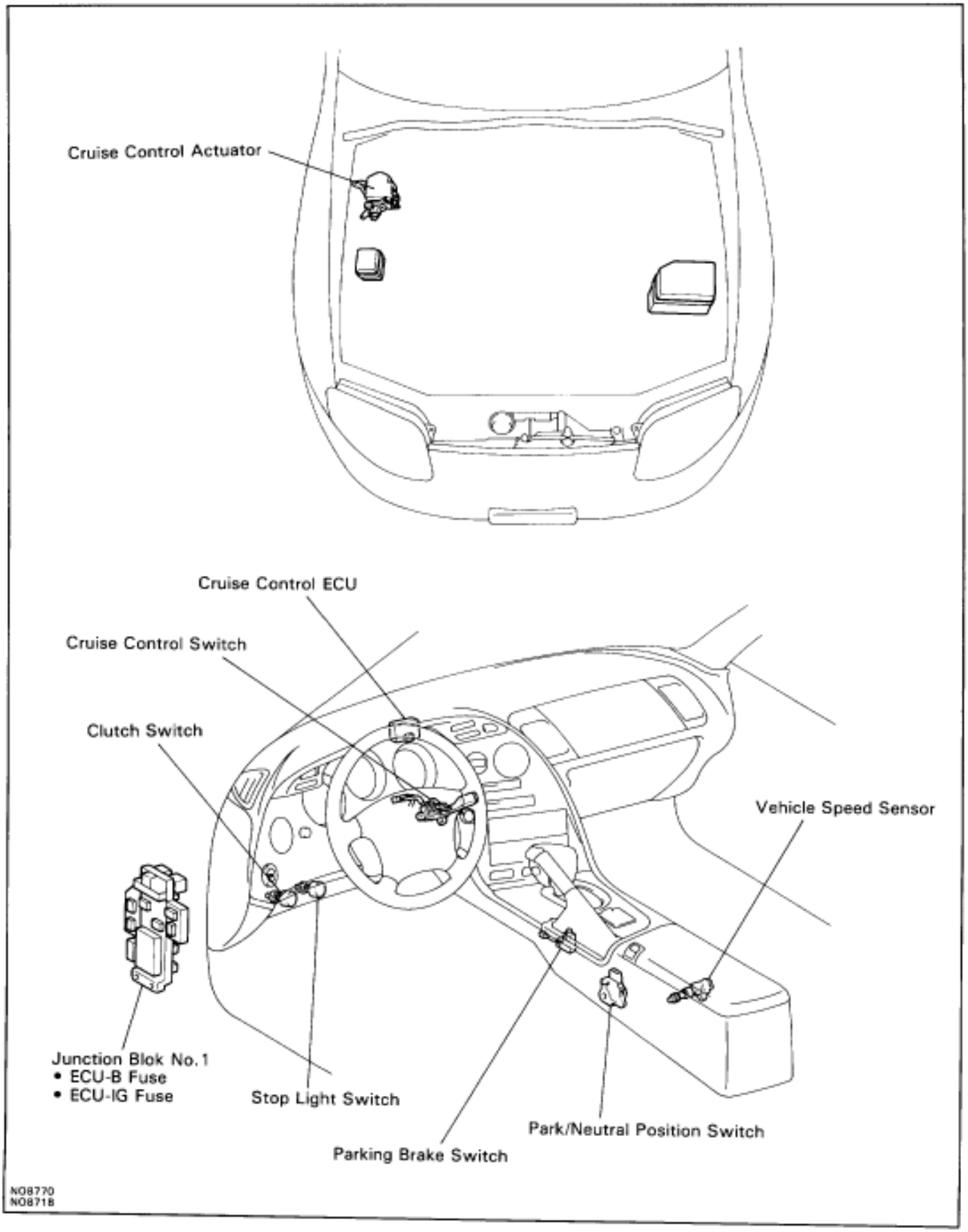
OK → **Proceed to next circuit inspection shown on matrix chart (See page BE–123).**

NG → **Replace key unlock warning switch.**

NG → **Repair or replace harness or connector.**

CRUISE CONTROL SYSTEM

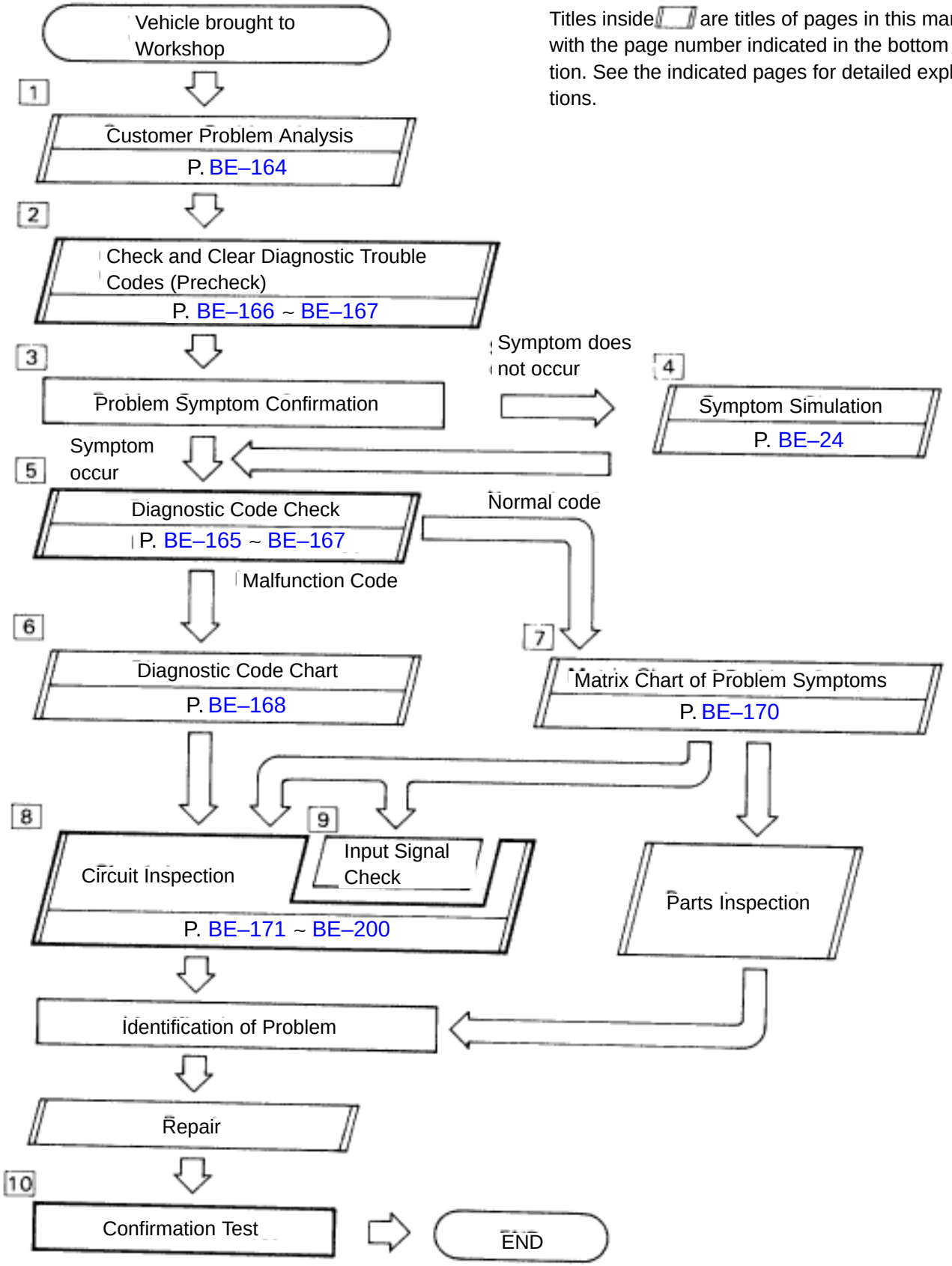
PARTS LOCATION



HOW TO PROCEED WITH TROUBLESHOOTING

Perform troubleshooting in accordance with the procedure on the following page.

Titles inside [ ] are titles of pages in this manual, with the page number indicated in the bottom portion. See the indicated pages for detailed explanations.



Step [2], [5], [8], [10]: Diagnostic steps permitting the use of the TOYOTA hand–held tester or TOYOTA break–out–box.

CUSTOMER PROBLEM ANALYSIS

CRUISE CONTROL Check Sheet

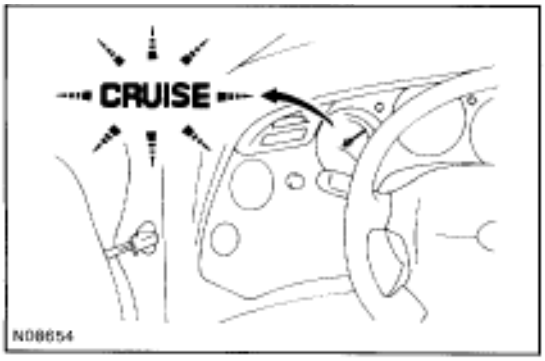
Inspector's Name:

Customer's Name		**Registration No.**	
		Registration Year	/ /
		Frame No.	
Date Vehicle Brought In	/ /	**Odometer Reading**	km Miles

Date Problem First Occurred	/ /
How Often does Problem Occur?	Continuous Intermittent (Times a day)
Vehicle Speed when Problem Occurred	km/h mph

Symptoms	Auto cancel occurs	• Driving condition ¿ City driving ¿ Freeway ¿ Up hill ¿ Down hill • After cancel occurred, did the driver activate cruise control again? ¿ Yes ¿ No
	Cancel does not occur	With brake ON ¿ With parking brake ON ¿ EXCEPT D RANGE ¿ At 40 km/h (25 mph) or less ¿ When control SW turns to CANCEL position
	Cruise control malfunction	Slip to acceleration side Slip to acceleration side Hunting occurs O/D cut off does not occur O/D does not return
	Switch malfunction	SET ACCEL. COAST RESUME CANCEL
	Faulty CRUISE MAIN indicator light	Remains ON Does not light up Blinking

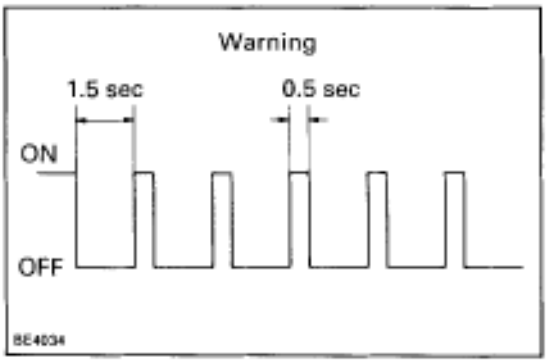
Diagnostic Trouble Code Check	**1st Time**	Normal Code ¿ Malfunction Code (Code)
	2nd Time	Normal Code ¿ Malfunction Code (Code)



DIAGNOSIS SYSTEM

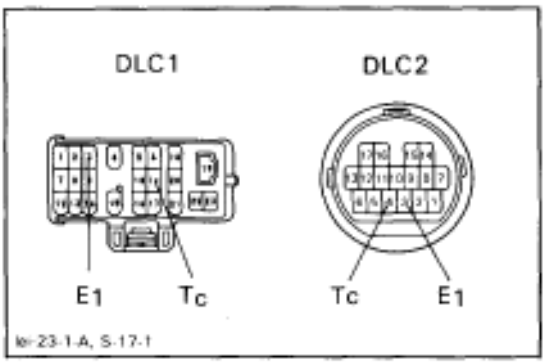
INDICATOR CHECK

1. Turn the ignition switch to ON.
2. Check that the CRUISE MAIN indicator light comes on when the cruise control main switch is turned ON, and that the indicator light goes off when the main switch is turned OFF.
   HINT: If the indicator check result is not normal, proceed to troubleshooting (See page BE–43 for the combination meter section.)



DIAGNOSTIC TROUBLE CODE CHECK

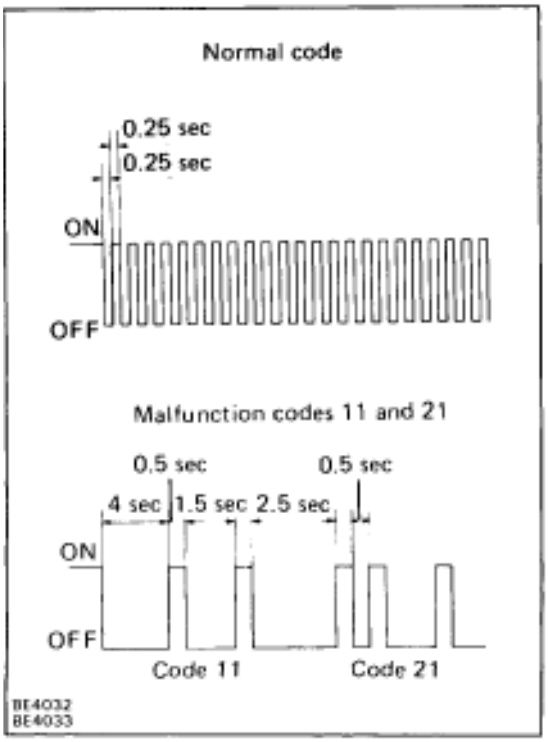
HINT: If a malfunction occurs in the vehicle speed sensors or actuator, etc. during cruise control driving, the ECU actuates AUTO CANCEL of the cruise control and blinks the CRUISE MAIN indicator light to inform the driver of a malfunction. At the same time, the malfunction is stored in memory as a diagnostic trouble code.



OUTPUT OF DIAGNOSTIC TROUBLE CODE

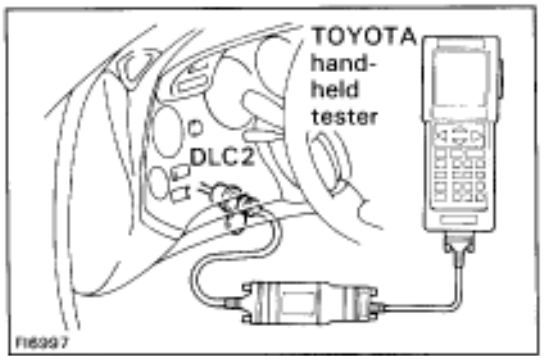
Using diagnosis check wire:

1. Turn the ignition switch ON.
2. Using SST, connect terminals Tc and E_1 of DLC2.
   SST 09843–18020
3. Read the diagnostic trouble code on the CRUISE MAIN indicator light.
   HINT: If the diagnostic trouble code is not output, inspect the diagnosis circuit (See page BE–199).



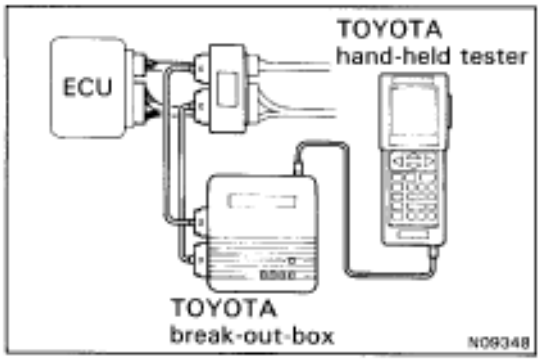
As an example, the blinking patterns for codes; normal, 11 and 21 are shown in the illustration.

4. Check for the problem using the diagnostic trouble code table on the next page.
5. After completing the check, disconnect terminals Tc and E_1, and turn off the display.



Using TOYOTA hand–held tester:

1. Hook up the TOYOTA hand–held tester to the DLC2.
2. Monitor the ECU data by following the prompts on the tester screen.
   HINT: TOYOTA hand–held tester has a ”Snapshot” function which records the monitored data.
   Please refer to the TOYOTA hand–held tester operator’s manual for further details.



ECU TERMINAL VALUES MEASUREMENT USING TOYOTA BREAK–OUT–BOX AND TOYOTA HAND–HELD TESTER

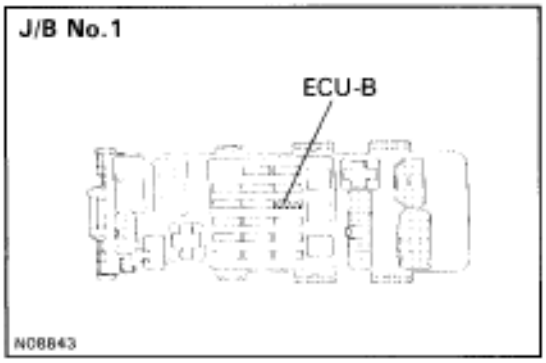
1. Hook up the TOYOTA break–out–box and TOYOTA handheld tester to the vehicle.
2. Read the ECU input/output values by following the prompts on the hand–held tester screen.
   HINT: TOYOTA hand–held tester has a ”Snapshot” function. This records the measured values and is effective in the diagnosis of intermittent problems.
   Please refer to the TOYOTA hand–held tester/TOYOTA break–out–box operator’s manual for further details.

DIAGNOSTIC TROUBLE CODE

DTC	CRUISE MAIN Indicator Light Blinking Pattern	Diagnosis
–		Normal
11		• Overcurrent (short) in motor circuit.
12		• Overcurrent (short) in magnet clutch circuit. • Open in magnet clutch circuit for 0.8 sec.
13		• Position sensor detects abnormal voltage.
14		• Open in actuator motor circuit. • Position sensor signal value does not change when the motor operates.
21		• Speed signal is not input to the ECU while cruise control is set.
*23		• Actual vehicle speed has dropped by 16 km/h (10 mph) or more below the set speed. • Vehicle Speed Sensor Pulse is abnormal.
32		• Short in control switch circuit.
34		• Voltage abnormality in control switch.
41		• Duty ratio of 100% output to motor acceleration side.
42		• Source voltage drop.

HINT: When 2 or more codes are indicated, the lowest numbered code will be displayed first.

(*) When the vehicle speed is reduced on uphill roads, the speed can be set again and driving continued. (This is not a malfunction.)



Diagnostic Trouble Code Clearance

1. After completing repairs the diagnostic trouble code retained in memory can be cleared by removing the ECU–B fuse for 10 seconds or more, with the ignition switch off.
2. Check that the normal code is displayed after connecting the fuse.

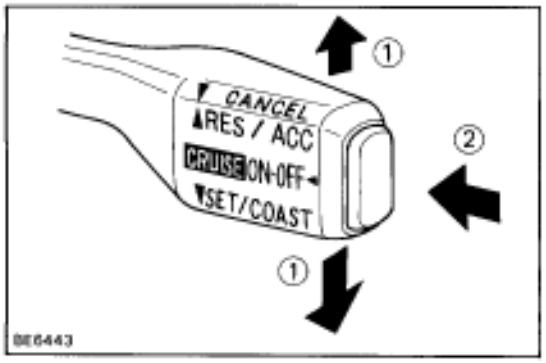
DIAGNOSTIC TROUBLE CODE CHART

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

Code No.	Circuit Inspection	Page
11, 14	• Actuator Motor Circuit.	BE–171
12	• Actuator Magnet Clutch Circuit.	BE–172
13	• Actuator Motor Circuit • Actuator Position Sensor Circuit	BE–171 BE–175
14	• Actuator Motor Circuit • Actuator Position Sensor Circuit	BE–171 BE–175
21	• Speed Sensor Circuit	BE–177
23	• Speed Sensor Circuit	BE–177
32, 34	• Control Switch Circuit. (Cruise Control Switch)	BE–197

HINT:

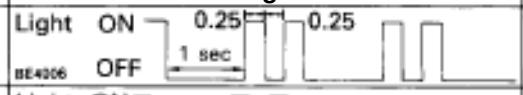
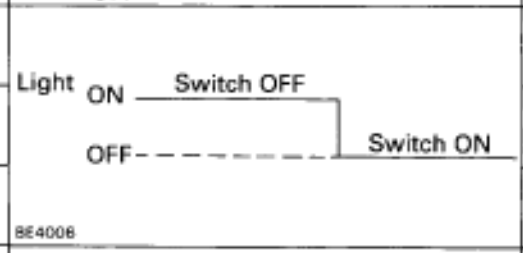
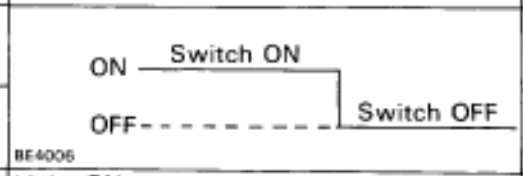
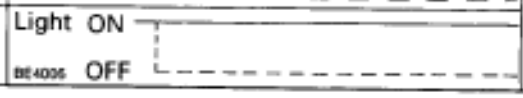
1. If the instruction ”Proceed to next circuit inspection shown on matrix chart” is given in the flow chart for each circuit, proceed to the circuit with the next highest number in the table to continue check.
2. If the trouble still reappears even though there are no abnormalities in any of the other circuits, then check or replace the cruise control ECU as the last step.



INPUT SIGNAL CHECK

Output Code

1. (a) For check No.1 No.3
   Turn the ignition switch on.
   (b) For check No.4
   Jack up the vehicle.
   Start the engine.
2. Turn the control switch to SET/COAST position or RES/ACC position and hold it down or up (1).
3. Push the main switch on (2).
4. Check that the CRUISE MAIN indicator light blinks twice or 3 times repeatedly.
5. Turn the SET/COAST switch or RES/ACC position off.
6. Operate each switch as listed in the table below.
7. Read the blinking pattern of the CRUISE MAIN indicator light.
8. After performing the check, turn the main switch off.
   HINT: When two or more signals are input to the ECU, only the lowest–numbered code is displayed.

No.	Operation Method	CRUISE MAIN Indicator Light Blinking Pattern	Diagnosis
1	Turn SET/COAST switch ON.		SET/COAST switch circuit is normal.
2	Turn RES/ACC switch ON.		RES/ACC switch circuit is normal.
3	Turn CANCEL switch ON.		CANCEL switch circuit is normal.
	Turn stop light switch ON. (Depress brake pedal)		Stop light switch circuit is normal.
	Turn parking brake switch ON. (Pull up the parking brake lever).		Parking brake switch circuit is normal.
	Turn neutral start switch OFF. (Shift to EXCEPT D RANGE).		Neutral start switch circuit is normal.
	Turn clutch switch OFF. (Depress clutch pedal)		Clutch switch circuit is normal.
4	Drive at 40 km/h (25 mph) or higher.		Speed sensor is normal.
	Drive at 40 km/h (25 mph) or below.		

MATRIX CHART OF PROBLEM SYMPTOMS

The table below will be useful for you in troubleshooting these electrical problems. The most likely causes of the malfunction are shown in the order of their probability. Inspect each part in the order shown, and replace the part when it is found to be faulty.

See page			IN–35	BE–171	BE–197	BE–179	BE–182	BE–191	BE–189	BE–177		BE–184	IN–30	BE–165
Inspection Item			Cruise Control ECU	Actuator	Main Switch (in Control Switch)	Control Switch	Stop Light Switch	Clutch Switch or Park/ Neutral Position Switch	Parking Brake Switch	Vehicle Speed Sensor	Speed Control Cable Function	Throttle Position Sensor (IDL)	Wire Harness	Indicator Light
Diagnosis Trouble Code / Problem	Type A	Type B												
• "CRUISE" Indicator light blinks. • Cruise control system does not set. • Cruse control system does not operate.	11	–	3	2									1	
	12	–	4	2			3						1	
	13	–	3	2									1	
	14	–	3	2									1	
	21	–	3							2			1	
	23	–	4							2	3		1	
	32	–	3			2							1	
	34	–	3			2							1	
	41	–	1											
	42	–	Source voltage drop											
Indicator light does not light up			3										1	2
Large speed drop when the cruise control switch turned to SET.			4	3							1	2		
Vehicle speed fluctuates when cruise control switch turned to SET.			4	3							1	2		
Set speed deviates on high or low side.			4	3						1	2			
Acceleration response is sluggish when cruise control switch turned to "ACCEL" or "RESUME"			5	4		3				2	1			
Cruise control system does not set. Cruise control system does not operate.	4	OK	9	8	2	3	4	5	6		7		1	
		NG	2							1				
Set speed does not cancel when brake pedal depressed.	3	OK	1											
		NG	2				1							
Set speed does not cancel when parking brake lever pulled.	3	OK	1											
		NG	2						1					
Cruise control not cancelled, even when transmission is shifted to EXCEPT D RANGE.	3	OK	1											
		NG	2					1						
Set speed does not cancel when clutch pedal depressed.	3	OK	1											
		NG	2					1						
Set speed does not cancel when cruise control switch turned to CANCEL.	3	OK	1											
		NG	2			1								
Vehicles speed does not decrease when cruise control switch turned to COAST.	1	OK	4	1						3	2			
		NG	2			1								
Vehicle speed does not accelerate when cruise control switch turned to ACCEL.	2	OK	4	1						3	2			
		NG	2			1								
Vehicle speed does not return to memorized cruise when control switch turned to RESUME.	2	OK	4	1						3	2			
		NG	2			1								
Speed can be set below about 40 km/h (25 mph.)	4	OK	1											
		NG	2							1				
Cruise control does not disengage even at about 40 km/h (25 mph) or less.	4	OK	2	1										
		NG	2							1				

CIRCUIT INSPECTION

DTC 11 14 41 Actuator Motor Circuit

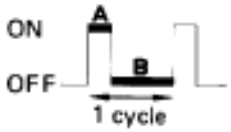
CIRCUIT DESCRIPTION

The actuator motor is operated by signals from the ECU. Acceleration and deceleration signals are transmitted by changes in the Duty Ratio (See note below).

Duty Ratio

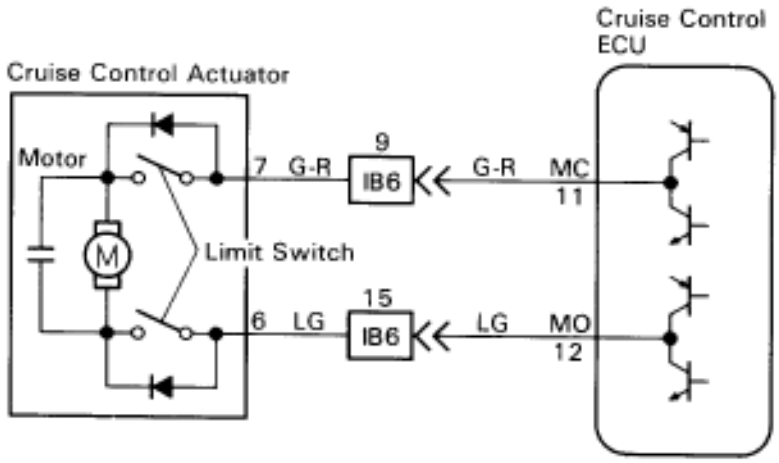
The duty ratio is the ratio of the period of continuity in one cycle. For example, if A is the period of continuity in one cycle, and B is the period of non–continuity, then

$$\text{Duty Ratio} = \frac{A}{A + B} \times 100\ (\%)$$



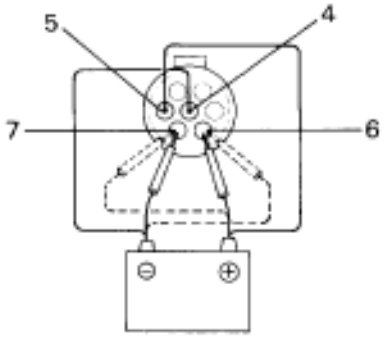
Code	Diagnosis	Trouble area
11	• Overcurrent (short) in motor circuit.	• Cruise control actuator motor • Harness or connector between actuator motor and ECU • ECU
14	• Open in actuator motor circuit.	
41	• Duty ratio of 100 % output to motor acceleration side.	

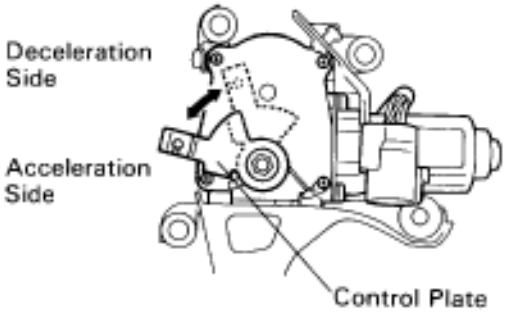
WIRING DIAGRAM



N08429

1 **Check actuator motor.**





NO8717
NO8713

P (1) Remove cruise control actuator.
(2) Disconnect actuator connector.

C (1) Connect positive (+) lead to terminal 5 and negative (–) lead to terminal 4 of actuator connector. (Magnet clutch ON)
(2) When battery positive voltage is applied to each of the actuator connector terminals check that the control plate moves smoothly without hesitating.

○—○ Connect

Moving direction \ Terminal	Positive ⊕	Negative ⊖	6	7
Acceleration side	○		○	
		○		○
Deceleration side	○			○
		○	○	

(3) With the motor rotating as in 2., check that the motor is stopped by limit switches when the control plate moves to fully opened or fully closed position.

OK

NG **Replace actuator assembly.**

2 **Check harness and connectors between cruise control ECU and actuator motor (See page IN–30).**

OK

NG **Repair or replace harness or connector.**

Proceed to next circuit inspection shown on matrix chart (See page BE–170).
However, when diag. trouble code 11, 14, 41 is displayed, check and replace cruise control ECU.

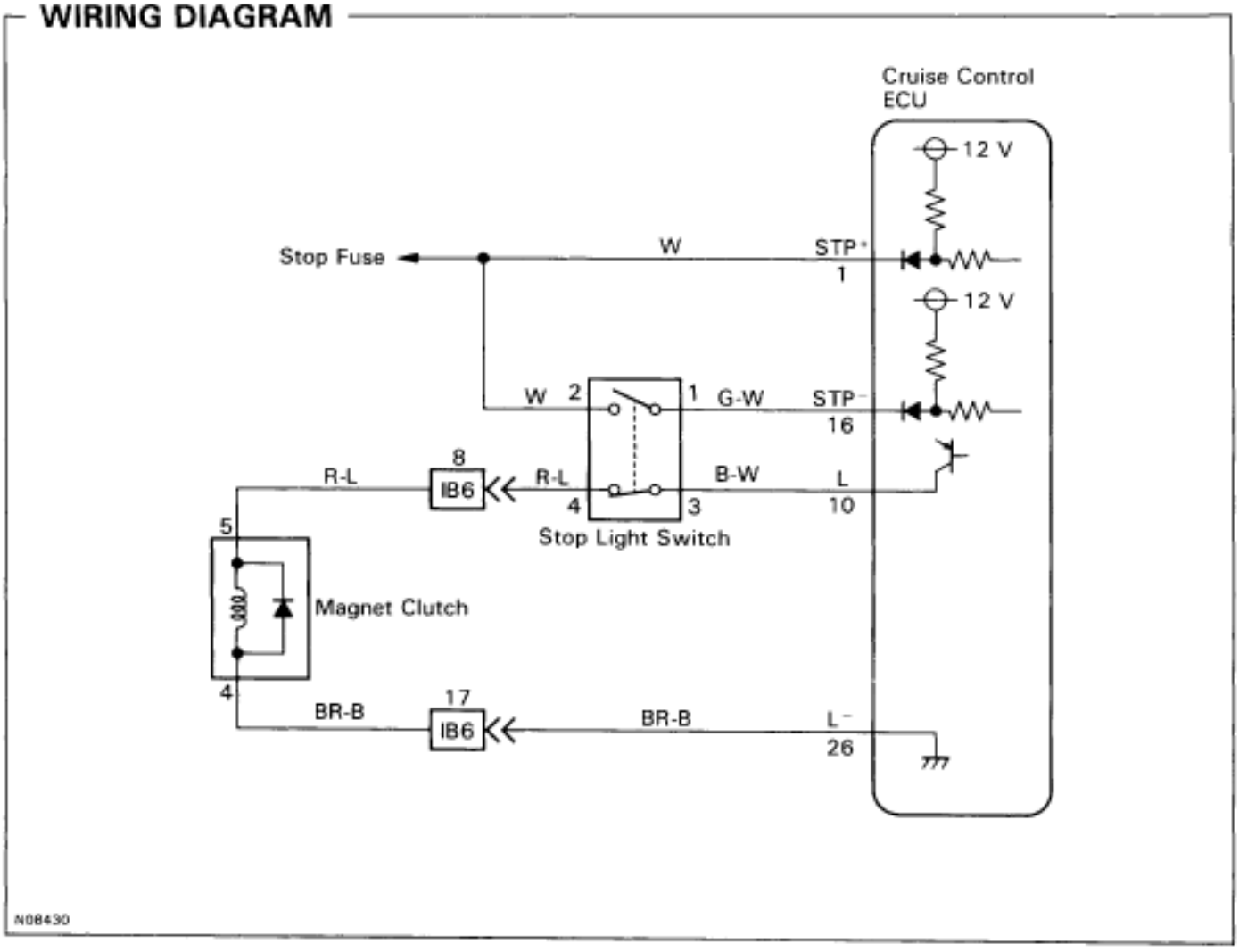
DTC 12 Actuator Magnet Clutch Circuit

CIRCUIT DESCRIPTION

This circuit turns on the magnet clutch inside the actuator during cruise control operation according to the signal from the ECU. If a malfunction occurs in the actuator or speed sensor, etc. during cruise control, the rotor shaft between the motor and control plate is released.
When the brake pedal is depressed, the stoplight switch turns on, supplying electrical power to the stoplight. Power supply to the magnet clutch is mechanically cut and the magnet clutch is turned OFF.
When driving downhill, if the vehicle speed exceeds the set speed by 15 km/h (9 mph), the ECU turns the magnet clutch OFF. If the vehicle speed later drops to within 10 km/h (6 mph) above the set speed, then cruise control at the set speed is resumed.

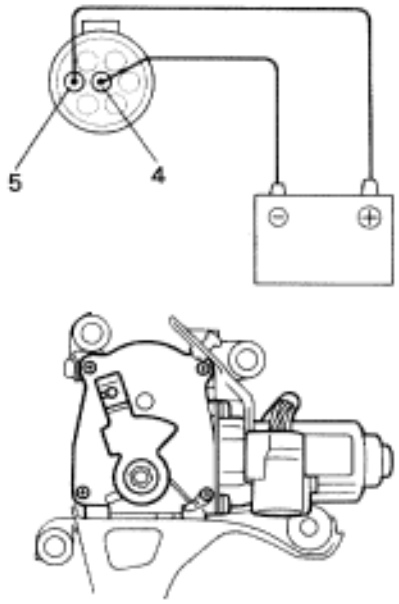
Code No.	Diagnosis	Trouble area
12	• Overcurrent (short) in magnet clutch circuit. • Open (0.8 sec) in magnet clutch circuit.	• Cruise control magnet clutch. • Harness or connector between ECU and magnet clutch, magnet clutch and body ground. • ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check actuator magnet clutch.



N08514
N08714

P (1) Remove cruise control actuator.
(2) Disconnect actuator connector.

C Move the control plate by hand.

OK **Control plate moves. (Magnet clutch off)**

C (1) Connect positive ⊕ lead to terminal 5 and negative ⊖ lead to terminal 4 of actuator connector.

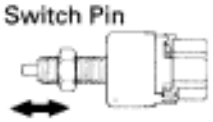
(2) Move the control plate by hand.

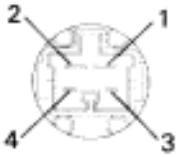
OK **Control plate doesn't move. (Magnet clutch on)**

OK

NG **Replace actuator assembly.**

2 Check stop light switch.





BE1444 BE6234

P Disconnect stop light switch connector.

C Check continuity between terminals.

OK

Continuity

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

OK

NG **Replace stop light switch.**

3 Check for open and short in harness and connectors between ECU and stop light switch, stop light switch and magnet clutch, magnet clutch and body ground. (See page IN–30).

OK

NG **Repair or replace harness or connector.**

Proceed to next circuit inspection shown on matrix chart (See page BE–170).
However, when diag. trouble code 12, is displayed, check harness and connector for loose connection. If connection is normal, check and replace ECU.

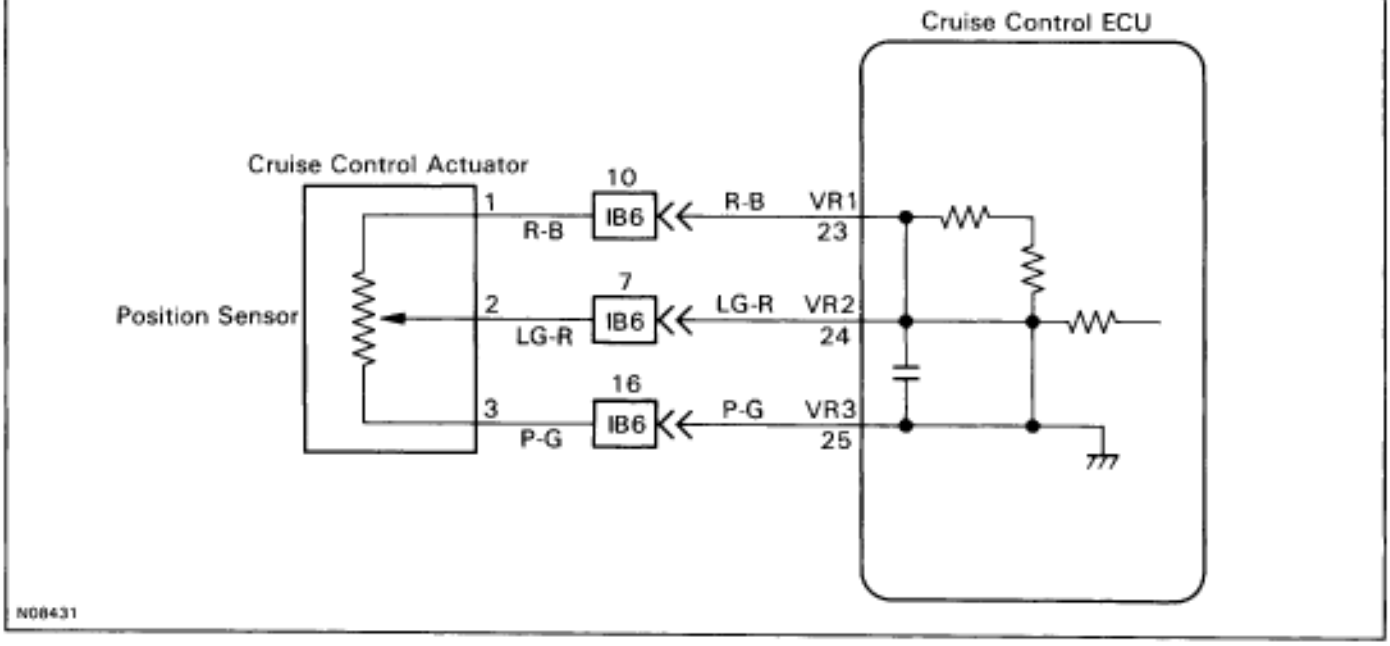
DTC 13 14 Actuator Position Sensor Circuit

CIRCUIT DESCRIPTION

This circuit detects the rotation position of the actuator control plate and sends a signal to the ECU.

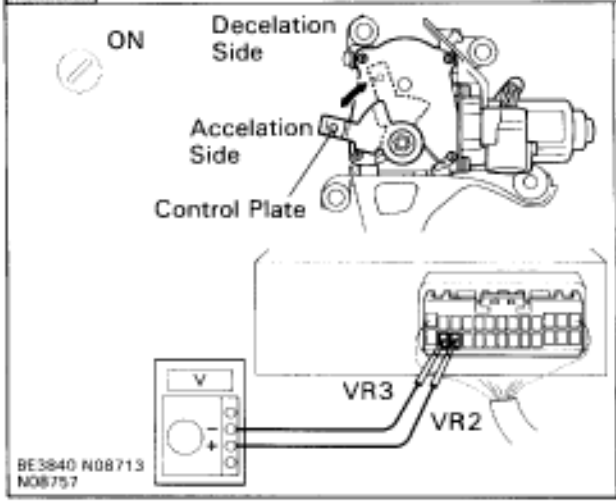
Code No.	Diagnosis	Trouble area
13	• Position sensor detects abnormal voltage.	• Cruise control actuator position sensor. • Harness or connector between actuator position sensor and body ground. • ECU
14	• Position sensor signal value does not change when the motor operates.	

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminals VR2 and VR3 of ECU connector.



P Remove ECU with connectors still connected.

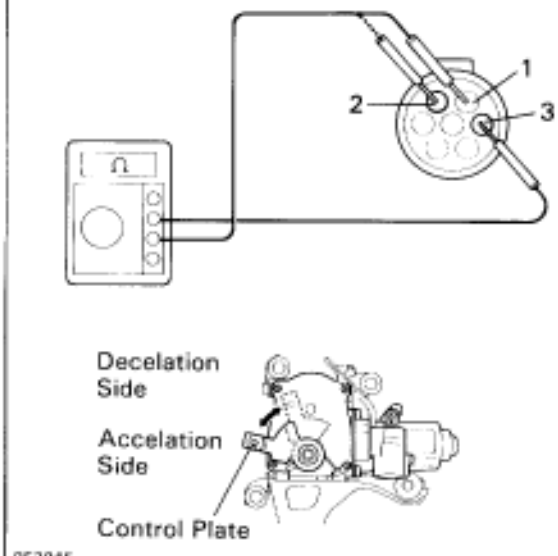
C (1) Turn ignition switch ON.
(2) Measure voltage between terminals VR2 and VR3 of ECU connector while turning control plate slowly by hand from the deceleration side to the acceleration side.

OK **Voltage:**
Fully closed: approx. 1.3 V
Fully opened: approx. 4.1 V
In addition, as the control plate is turned, the voltage should increase gradually without interruption.

NG

OK → **Proceed to next circuit inspection shown on matrix chart (See page BE–170).**

2 Check actuator position sensor.



P (1) Remove cruise control actuator.
(2) Disconnect the actuator connector.

C Measure resistance between actuator terminals 1 and 3 of actuator connector.

OK **Resistance: Approx. 2.2 k Ω**

C Measure resistance between actuator terminals 2 and 3 of actuator connector, while turning the control plate slowly by hand from the deceleration side to the acceleration side.

OK **Resistance:**
Fully closed: Approx. 260 k Ω
Fully opened: Approx. 2.2 k Ω
In addition, as the control plate turns, the resistance should increase gradually without interruption.

OK

NG → **Replace actuator assembly.**

3 Check for open and short in harness and connector between ECU and actuator position sensor (See page IN–30).

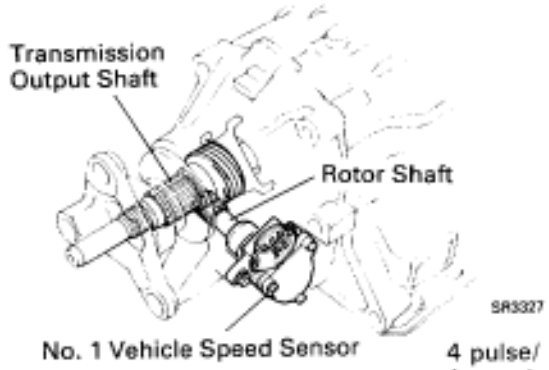
OK

NG → **Repair or replace harness or connector.**

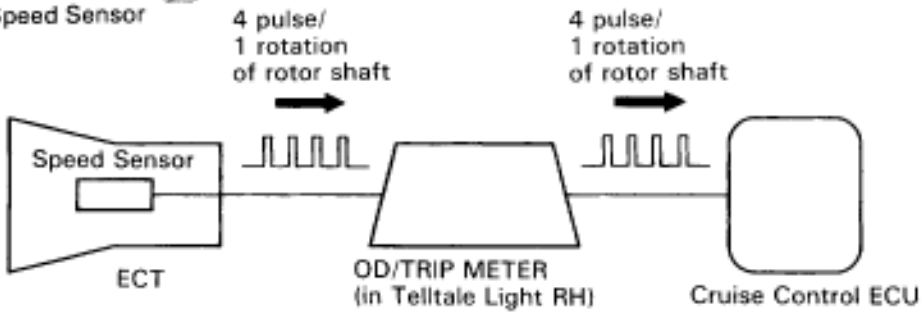
Check harness and connector for loose connection.
If connection is normal check and replace ECU.

DTC 21 23 Speed Sensor Circuit

CIRCUIT DESCRIPTION



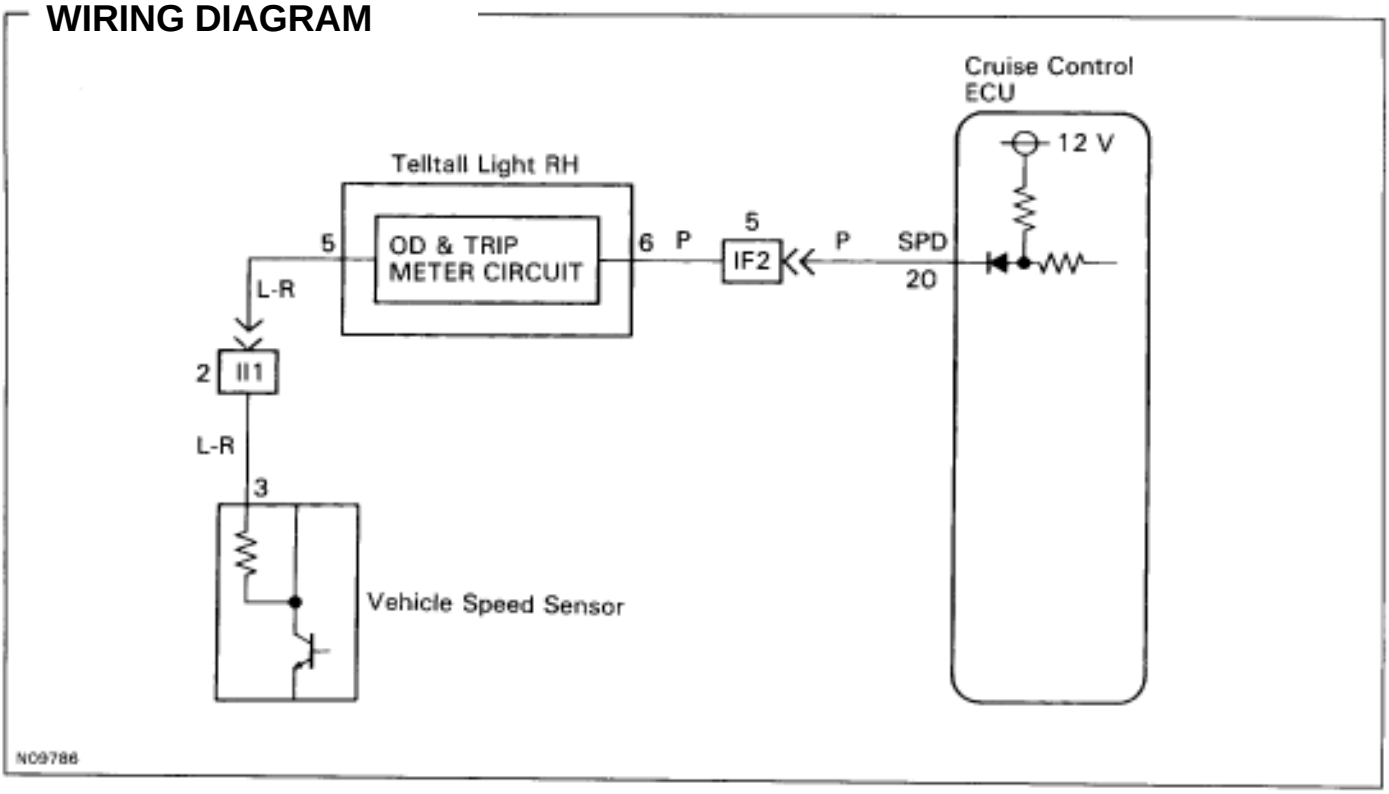
The speed sensor signal is sent to cruise control ECU as vehicle speed signal.
The rotor shaft is driven by the gear of the transmission. For each rotation of the shaft, the speed sensor sends a 4–pulse signal to the combination meter.
This signal is converted inside the combination meter and sent as a 4–pulse signal to the cruise control ECU.
The ECU calculates the vehicle speed from this pulse frequency.



NO9508

Code No.	Diagnosis	Trouble area
21	Speed signal is not input to the ECU while cruise control is set..	• Speed sensor • Combination meter • Harness or connector between speed sensor and combination meter, combination meter and ECU. • ECU
23	Vehicle speed decrease 16 km/h or more than preset speed. Vehicle speed sensor pulse is abnormal.	• Actuator • Speed sensor • Harness or connector in OD and SPD circuit (Open or short intermittently) • ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Input signal check.

Vehicle speed	Indicator light blinking pattern
Above 40 km/h (25 mph)	ON / OFF — Blinks — 0.25 sec 0.25 sec
Below 40 km/h (25 mph)	ON / OFF — Stays ON

BE4006

C (1) See input signal check on page BE–169.
(2) Check indicator light operation when driving with vehicle speed above 40 km/h (25 mph), and with vehicle speed below 40 km/h (25 mph).

OK **Vehicle speed above 40 km/h (25 mph): Indicator light blinks**
Vehicle speed below 40 km/h (25 mph): Indicator light stays on

NG

OK **Proceed to next circuit inspection shown on matrix chart** (See page BE–170).

2 Check speedometer circuit (See combination meter troubleshooting on page BE–41).

OK

NG **Repair or replace speed sensor, harness, connector or combination meter assembly.**

Check harness and connector for loose connection.
If connection is normal, check and replace ECU.

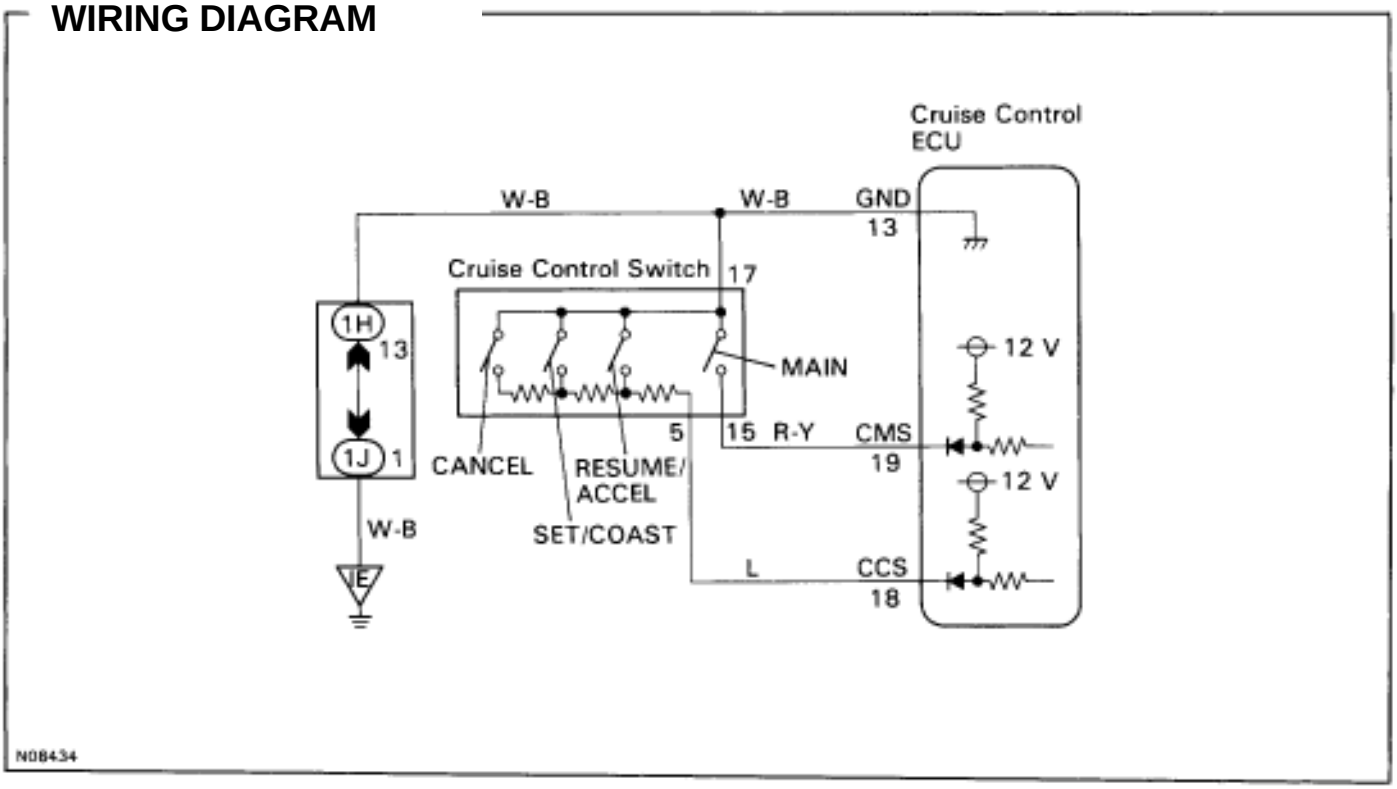
DTC 32 34 Control Switch Circuit (Cruise Control Switch)

CIRCUIT DESCRIPTION

This circuit carries the SET/COAST, RESUME/ACCEL and CANCEL signals (each voltage) to the ECU.

Code No.	Diagnosis	Trouble area
32	Short in, control switch circuit.	• Cruise control switch. • Harness or connector between control switch and ECU. • ECU
34	Voltage abnormality in control switch	

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Input signal check.

Input Signal	Indicator light blinking pattern
SET/COAST SWITCH	2 Pulse: ON / OFF
RESUME/ACCEL SWITCH	3 Pulse: ON / OFF
CANCEL SWITCH	Switch OFF: ON / OFF, Switch ON

BE4006

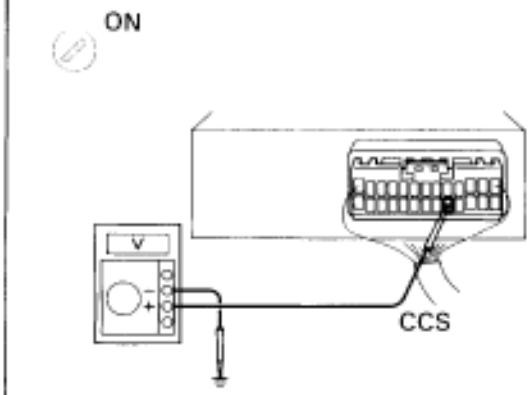
P (1) See input signal check on page BE–169.
(2) Check the indicator light operation when each of the SET/COAST, RESUME/ACCEL and CANCEL is turned ON.

OK **SET/COAST, RESUME/ACCEL Switch**
The signals shown in the table on the left should be output when each switch is ON. The signal should disappear when the switch is turned OFF.
CANCEL Switch.
The indicator light goes off when the cancel switch is turned ON.

NG

OK **Proceed to next circuit inspection shown on matrix chart** (See page BE–170).

2 Check voltage between terminal CCS of ECU connector and body ground.



BE3840
N08761

P Remove ECU with connectors still connected.

C (1) Turn ignition switch ON.
(2) Measure voltage between terminal CCS of ECU connector and body ground, when each of the SET/COAST, RESUME/ACCEL and CANCEL is turned ON.

OK

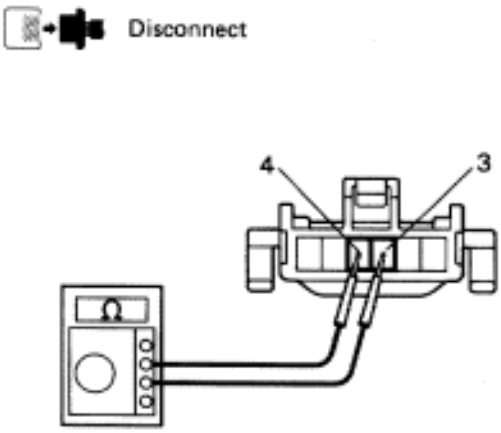
Switch position	Voltage
Neutral	10 – 14 V
RES/ACC	0.7 – 2.5 V
SET/COAST	2.3 – 4.6 V
CANCEL	4.1 – 7.2 V

NG

OK **Proceed to next circuit inspection shown on matrix chart** (See page BE–170).

Go to step [3].

3 **Check control switch.**



P (1) Remove steering wheel center pad.
(2) Disconnect control switch connector (See page RS Section).

C Measure resistance between terminals 3 and 4 of control switch connector when control switch is operated.

OK

Switch position	Resistance
Neutral	1 MΩ or higher
RES/ACC	60 – 80 Ω
SET/COAST	180 – 220 Ω
CANCEL	400 – 440 Ω

Hint When diagnostic trouble code 34 is displayed, carefully check that resistance is always ∞ in neutral position, particularly when switching between RES/ACC and SET/COAST.

OK → **4** **Check for open and short in harness and connector between ECU and control switch (See page IN–30).**

NG → **Replace cruise control switch.**

OK → **Check and replace ECU.**

NG → **Repair or replace harness or connector.**

Stop Light Switch Circuit

CIRCUIT DESCRIPTION

When the brake is on, battery voltage normally applies through the stop fuse and stop switch to terminal STP–of the ECU, and the ECU turns the cruise control off.

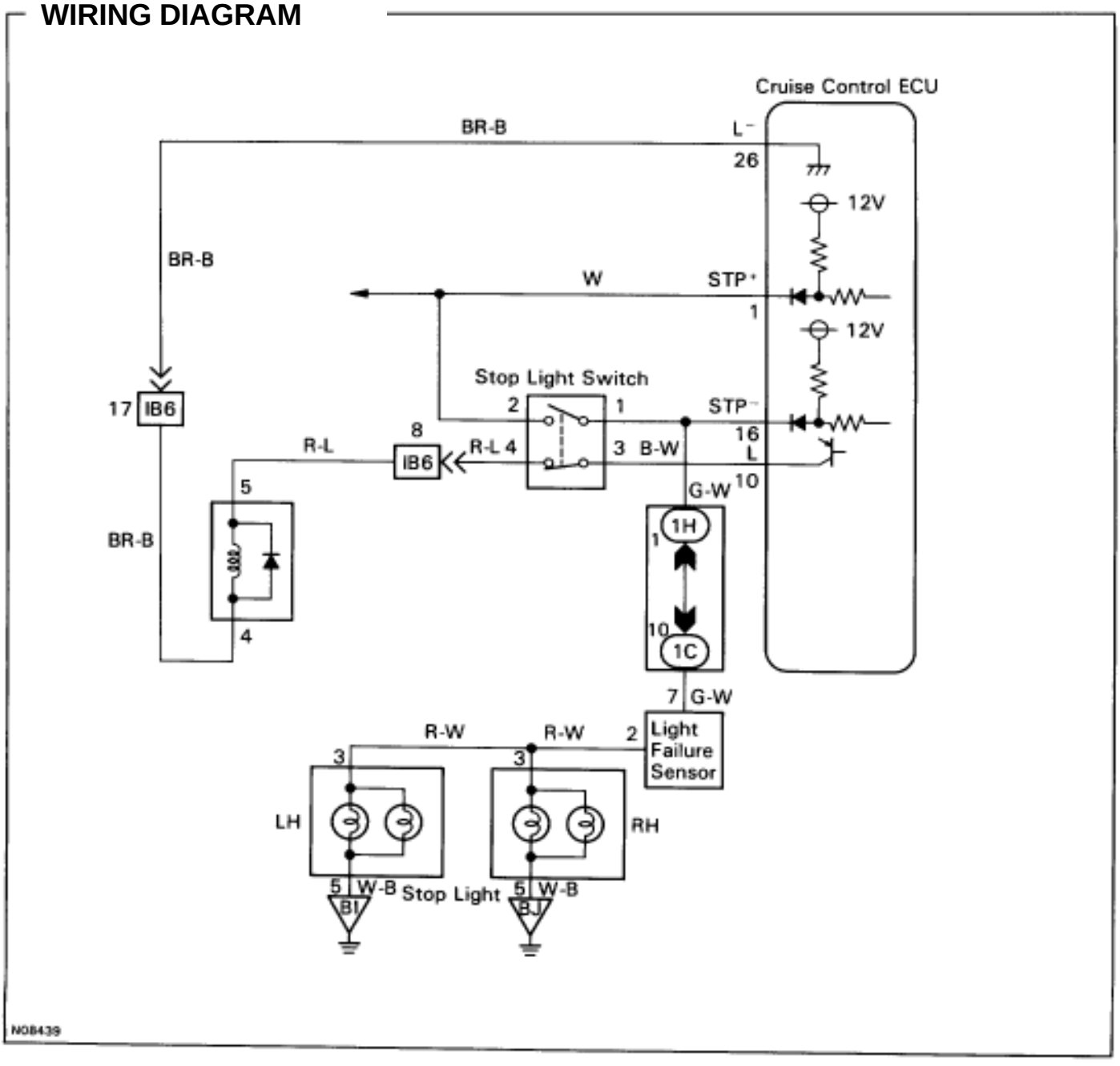
A fail–safe function is provided so that cancel functions normally, even if there is a malfunction in the stop light signal circuit.

(1) If the harness connected to terminal STP–has an open, terminal STP–will have battery positive voltage and the cruise control will be turned off, also SET not occurring.

(2) If the stop fuse is open, terminal STP + becomes approx. 0 V when the brake is turned on, so the ECU performs cancel function normally.

Also, when the brake is on, the magnetic clutch is cut mechanically by the stop light switch, turning the cruise control off. (See page BE–173 for operation of the magnetic clutch.)

WIRING DIAGRAM



INSPECTION PROCEDURE

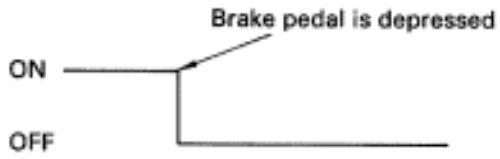
1 Check operation of stop light.

C Check the stop light comes on when the brake pedal is depressed, and turns off when brake pedal is released.

OK

NG → **Check stop light circuit.**

2 Input signal check.



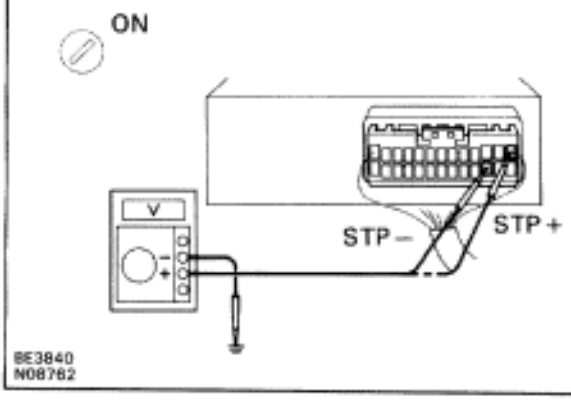
C (1) See input signal check on page BE–169.
(2) Check the indicator light when the brake pedal is depressed.

OK **The indicator light goes off when the brake pedal is depressed.**

NG

OK → **Proceed to next circuit inspection shown on matrix chart** (See page BE–170).

3 Check voltage between terminal STP+, STP– of ECU connector and body ground.



P Remove ECU with connectors still connected.

C (1) Turn ignition switch ON.
(2) Measure voltage between terminal STP+, STP– of ECU connector and body ground, when the brake pedal is depressed and released.

OK

	STP +	STP –
Depressed	10 – 14 V	10 – 14 V
Released	10 – 14 V	Below 1 V

NG

OK → **Proceed to next circuit inspection shown on matrix chart** (See page BE–170).

4 Check for open in harness and connectors between terminal STP+ of ECU and stop light switch, terminal STP– of ECU and stop light switch (See page IN–30).

OK

NG → **Repair or replace harness or connector.**

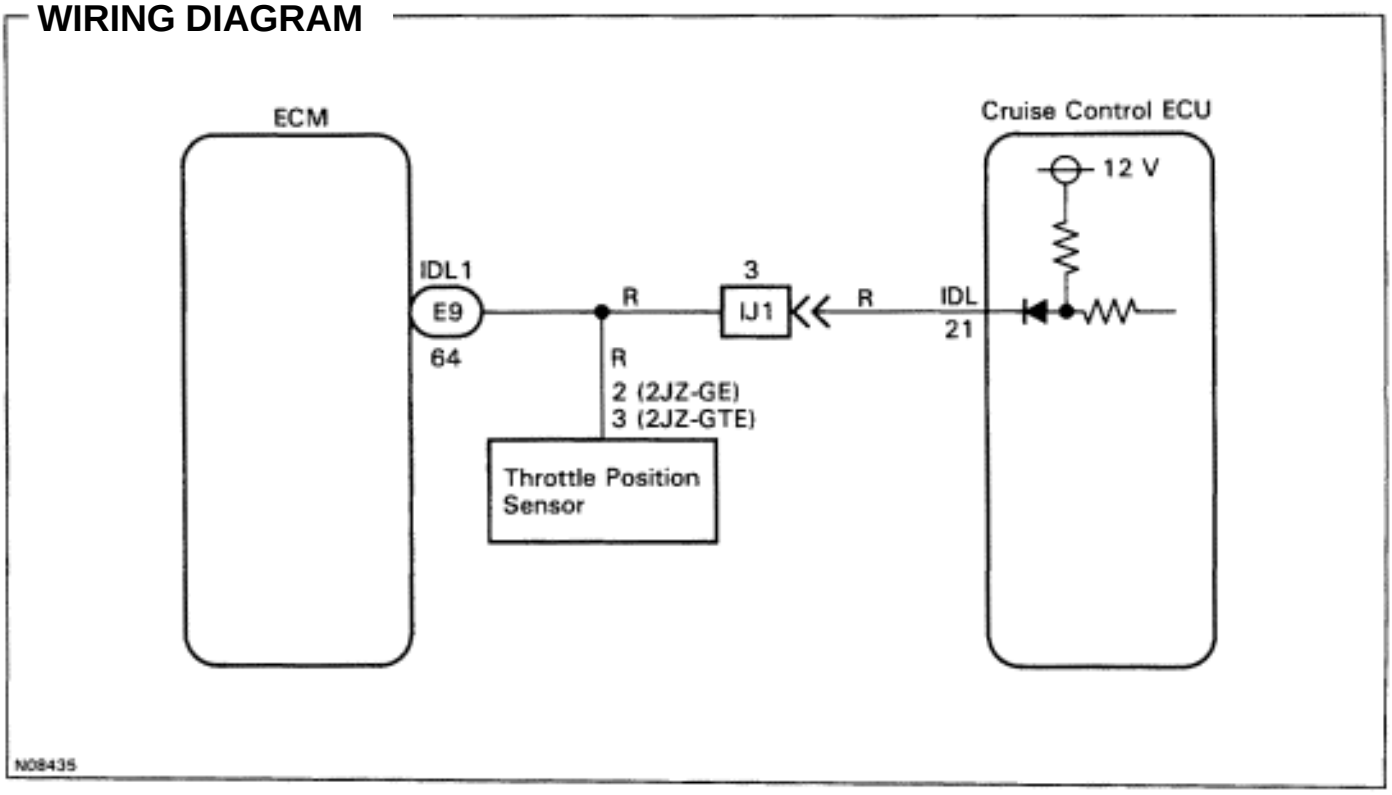
Check and replace ECU.

Idle Switch Circuit

CIRCUIT DESCRIPTION

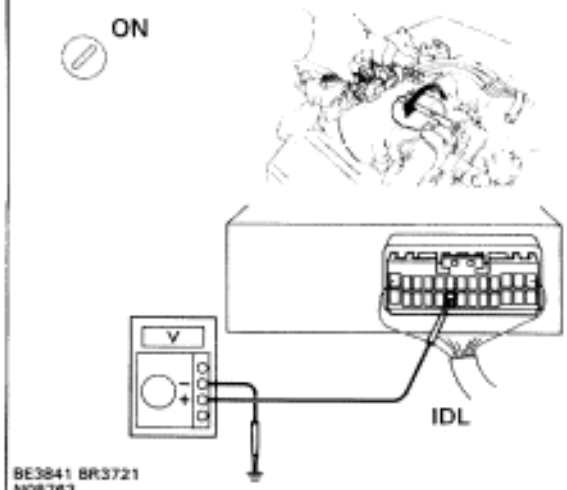
When the idle switch is turned ON, a signal is sent to the ECU. The ECU uses this signal to correct the discrepancy between the throttle valve position and the actuator position sensor value to enable accurate cruise control at the set speed. If the idle switch is malfunctioning, problem symptoms also occur in the engine, so also inspect the engine.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check voltage between terminal IDL of ECU connector and body ground.



P (1) Remove cruise control ECU with connectors still connected.
(2) Disconnect ECM and ABS & TRAC ECU connector.

C (1) Turn ignition switch ON.
(2) Measure voltage between terminal IDL of ECU connector and body ground, when the throttle valve is fully closed and fully opened.

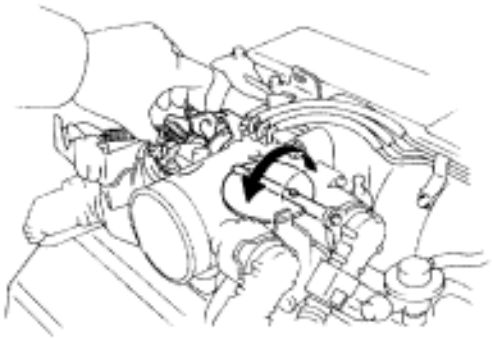
OK

Throttle valve position	Voltage
Fully opened	10 – 14 V
Fully closed	Below 8 V

NG

OK → **Proceed to next circuit inspection shown on matrix chart** (See page BE–170).

2 Check throttle position sensor.



P Disconnect throttle position sensor connector.

C Measure resistance between terminals 1 and 2 of throttle position sensor connector, when the throttle valve is fully closed and fully opened.

OK

Throttle valve position	Voltage
Fully opened	1 MΩ or higher
Fully closed	Below 2 Ω

OK

NG → **Replace throttle position sensor.**

3 Check for open and short in harness and connector between ECU and throttle position sensor, throttle position sensor and body ground (See page IN–30).

OK

NG → **Repair or replace harness or connector.**

Check and replace ECU.

Electronically Controlled Transmission Communication Circuit

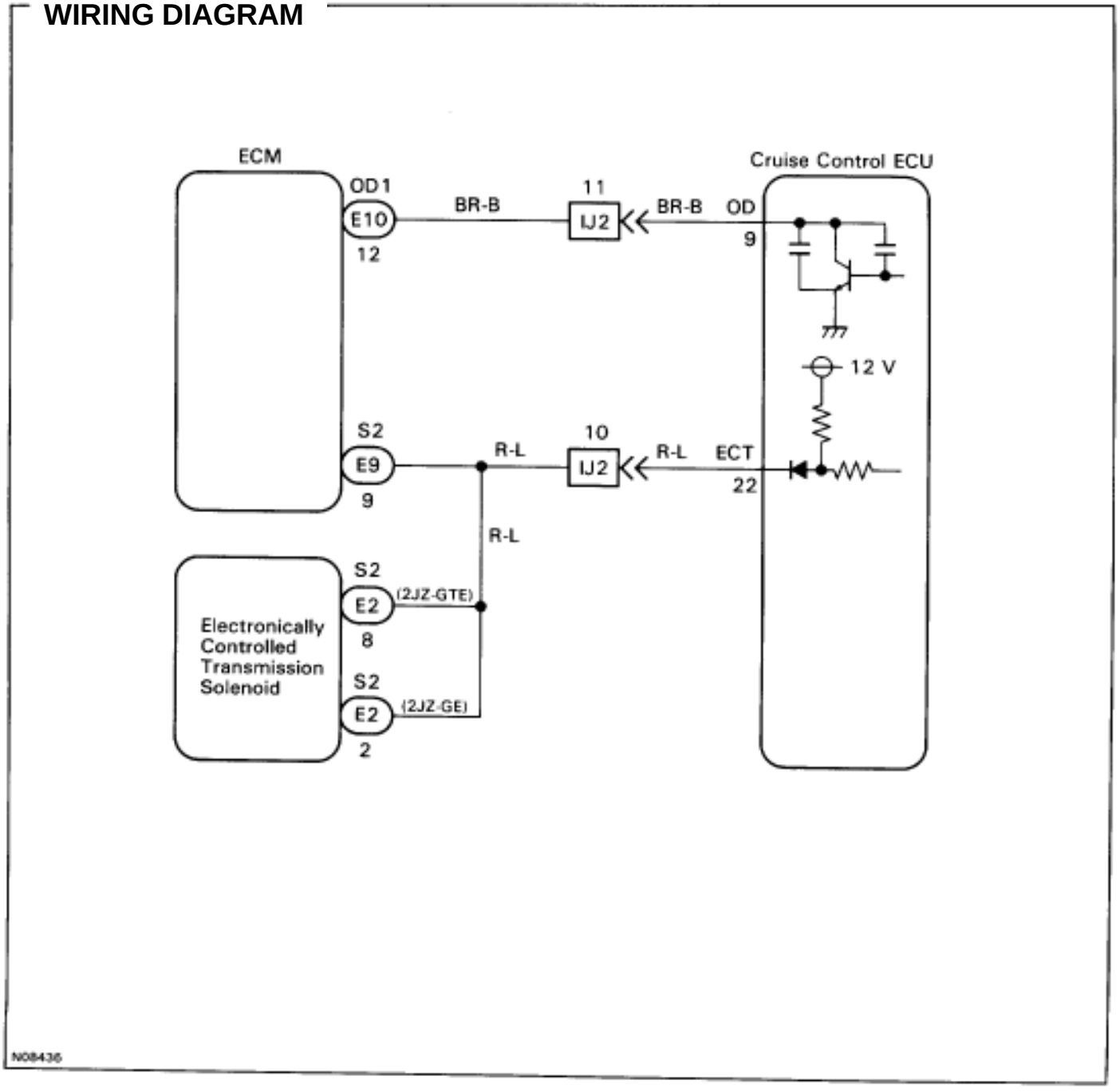
CIRCUIT DESCRIPTION

When driving uphill under cruise control, in order to reduce shifting due to ON–OFF overdrive operation and to provide smooth driving, when down shifting in the electronically controlled transmission occurs, a signal to prevent upshift until the end of the uphill slope is sent from the cruise control ECU to the electronically controlled transmission.

Terminal ECM of the cruise control ECU detects the shift change signal (output to electronically controlled transmission No.2 solenoid) from the electronically controlled transmission.

If vehicle speed down, also when terminal ECT of the cruise control ECU receives down shifting signal, it sends a signal from terminal OD to ECM to cut overdrive until the end of the uphill slope, and the gear shifts are reduced and gear shift points in the electronically controlled transmission are changed.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check operation of overdrive.

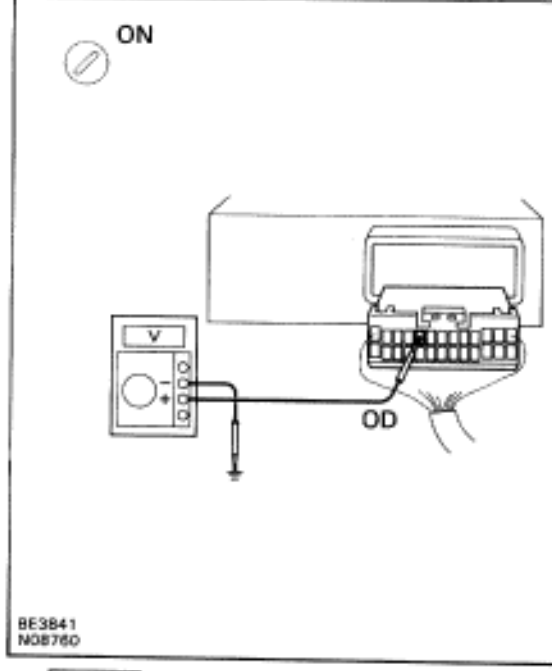
P Test drive after engine warm up.

C Check that overdrive ON ↔ OFF occurs with operation of OD switch ON–OFF.

OK

NG → **Check and Repair Electronically controlled transmission (See AT section).**

2 Check voltage between terminal OD of harness side connector ECU and body ground.



P Remove ECU with connector still connected.

C (1) Disconnect ECU connector.
(2) Turn ignition switch ON.
(3) Measure voltage between terminal OD of harness side connector of ECU and body ground.

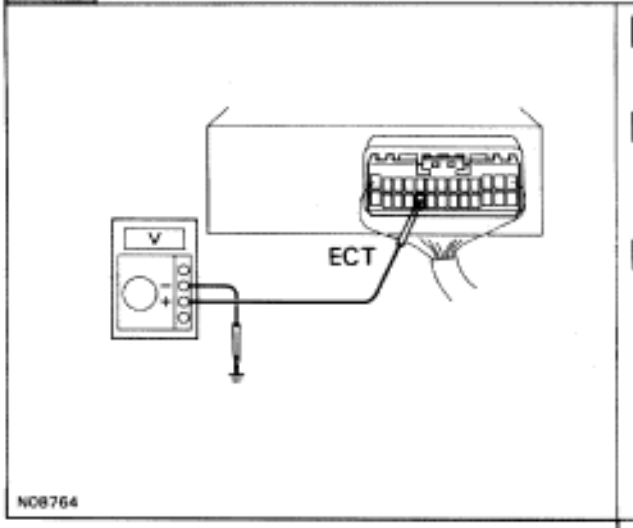
OK **Voltage: 10 – 14 V**

OK

NG → **Go to step 5.**

Go to step 3.

3 **Check voltage between terminal ECT of cruise control ECU connector and body ground (On test drive).**



P
(1) Connect ECU connector.
(2) Test drive after engine warm up.

C
Check voltage between terminal ECT of cruise control ECU connector and body ground when OD switch is on and off.

OK

Gear Position	Voltage
O/D	Below 1 V
3rd	10 – 14 V

NG

OK → **Proceed to next circuit inspection shown on matrix chart (**See page BE–170**).**

4 **Check for open and short in harness and connector between terminal ECT cruise control ECU and electronically controlled transmission solenoid**(See page **IN–30**).

OK

NG → **Repair or replace harness or connector.**

Check and repair ECU.

5 **Check for open and short in harness and connector between terminal OD1 of ECU and terminal OD1 of ECM** (See page **IN–30**).

OK

NG → **Repair or replace harness or connector.**

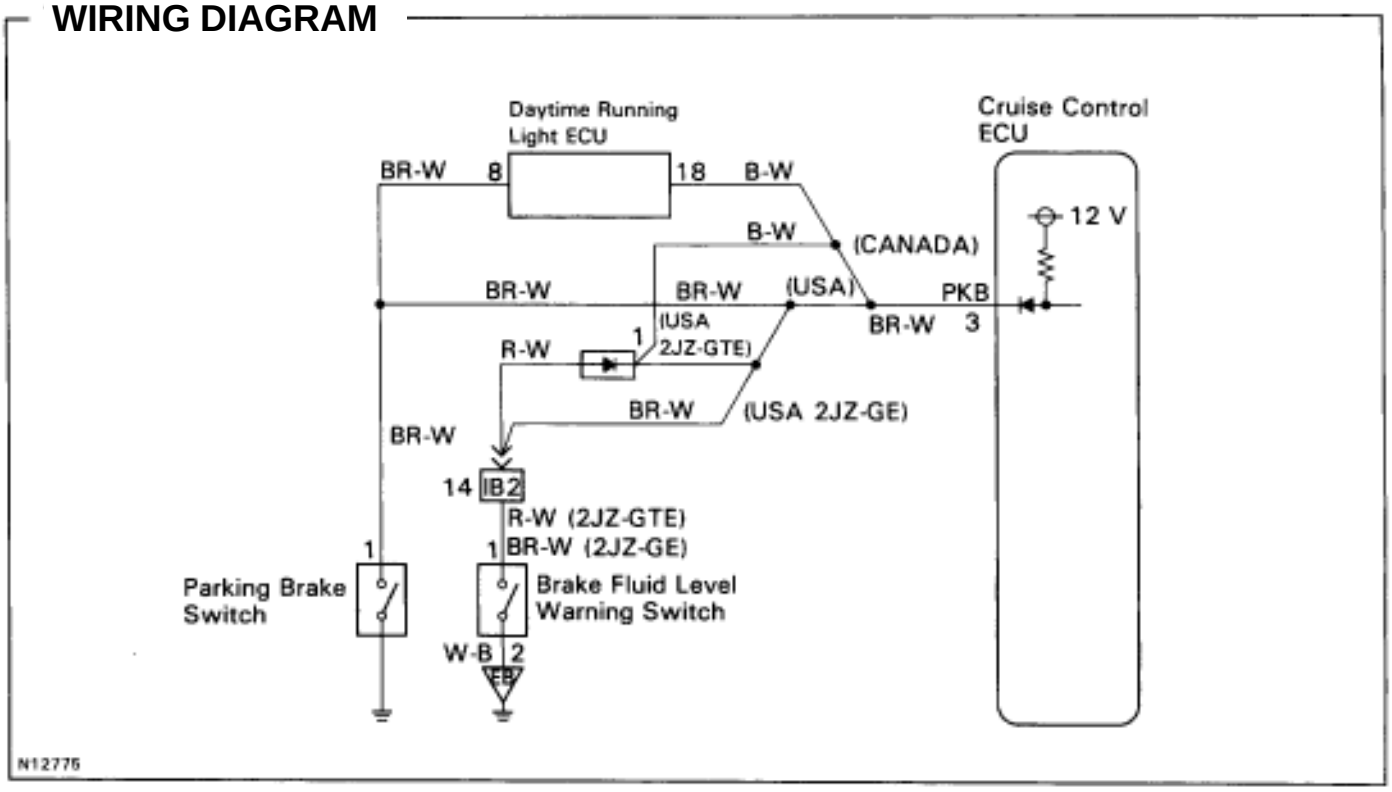
Check and replace ECU.

Parking Brake Switch Circuit

CIRCUIT DESCRIPTION

When the parking brake pedal is depressed, the parking brake switch sends a signal to the ECU. When this signal is input to the ECU during cruise control driving, the ECU cancels cruise control.

WIRING DIAGRAM



1 Check operation of brake warning light.

C Check that the brake warning light in the instrument panel comes on when the parking brake lever is pulled up with the engine running, and the light goes off when the parking brake lever is released.

OK

NG **Check brake warning light circuit** (See page BE–42).

2 Input signal check.

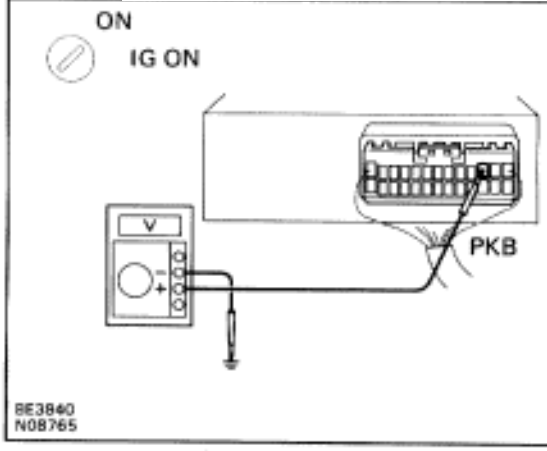
C (1) See input signal check on page BE–169.
(2) Check the indicator light when the parking brake lever is pulled up.

OK **The indicator light goes off when the parking brake lever is pulled up.**

NG

OK **Proceed to next circuit inspection shown on matrix chart** (See page BE–170).

3 Check voltage between terminal PKB of cruise control ECU connector and body ground.



P Remove cruise control ECU with connectors still connected.

C (1) Turn ignition switch ON.
(2) Measure voltage between terminal PKB of cruise control ECU connector and body ground, when the parking brake lever is pulled up and released.

OK

Parking brake lever	Voltage
Pulled up	Below 1 V
Released	10 – 14 V

NG

OK **Proceed to next circuit inspection shown on matrix chart** (See page BE–170).

4 Check for open in harness and connector between cruise control ECU and brake warning light.

OK

NG **Repair or replace harness or connector.**

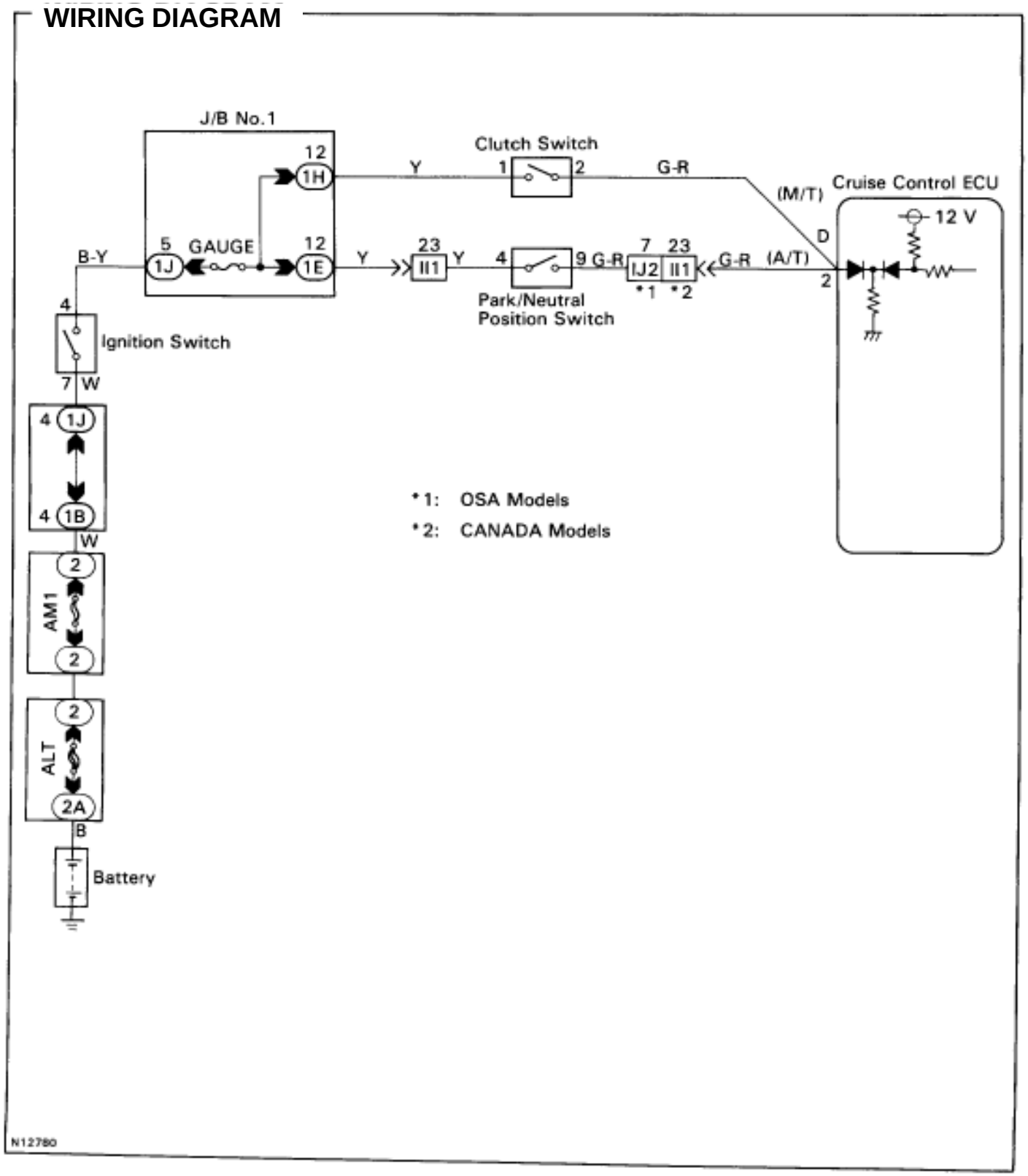
Check and replace cruise control ECU.

Park Neutral Position Switch Circuit

CIRCUIT DESCRIPTION

When the shift position is put in EXCEPT D RANGE, a signal is sent from the park/neutral position switch to the ECU. When this signal is input during cruise control driving, the ECU cancels the cruise control

WIRING DIAGRAM



INSPECTION PROCEDURE

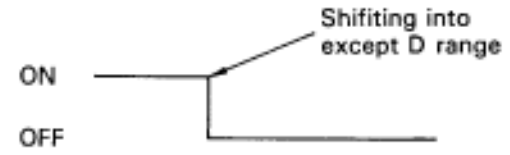
1 Check operation of starter.

C Check that the starter operates normally and that the engine starts.

OK

NG → Proceed to engine troubleshooting (See page EG–381 or EG–487.)

2 Input signal check.



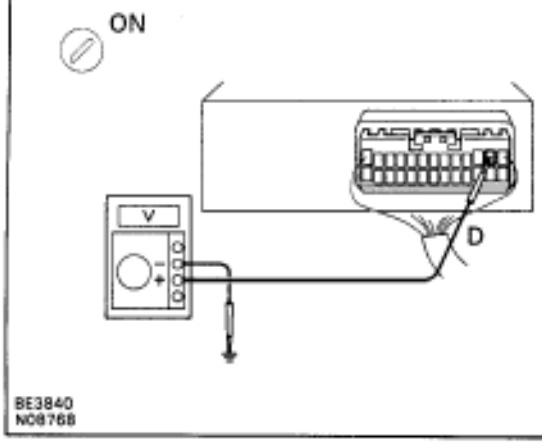
P (1) See input signal check on page BE–169.
(2) Check the indicator light when shifting into except D position.

OK The indicator light goes off when shifting into except D range.

NG

OK → **Proceed to next circuit inspection shown on matrix chart** (See page BE–170).

3 Check voltage between terminal D of ECU connector and body ground.



P Remove ECU with connectors still connected.

C (1) Turn ignition switch ON.
(2) Measure voltage between terminal D of ECU connector and body ground, when shifting into P, N position and other positions.

OK

Shift Position	Voltage
D range	10 – 14 V
Other ranges	Below 1 V

NG

OK → **Proceed to next circuit inspection shown on matrix chart** (See page BE–170).

4 Check for open in harness and connector between ECU and ST fuse (See page IN–30).

OK

NG → **Repair or replace harness or connector.**

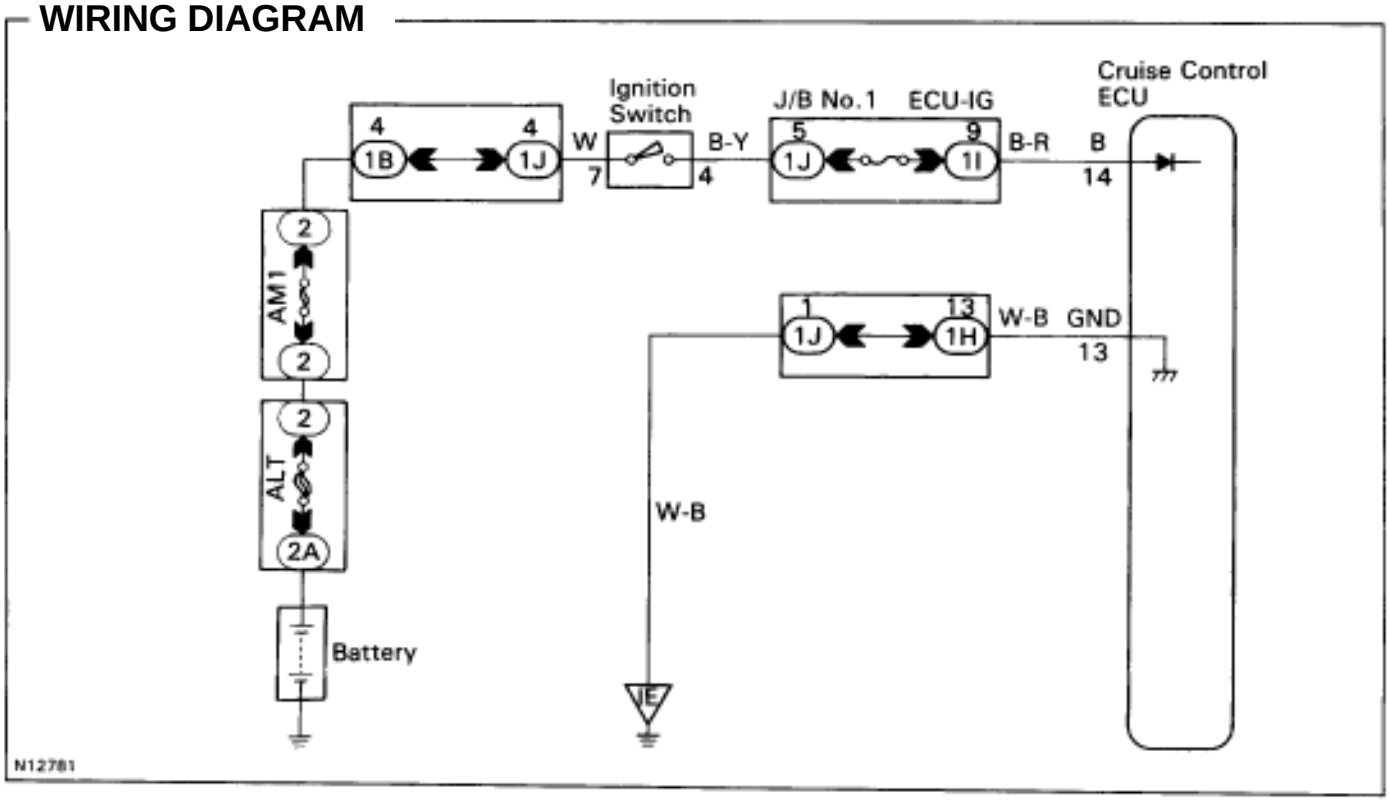
Check and replace ECU.

ECU Power Source Circuit

CIRCUIT DESCRIPTION

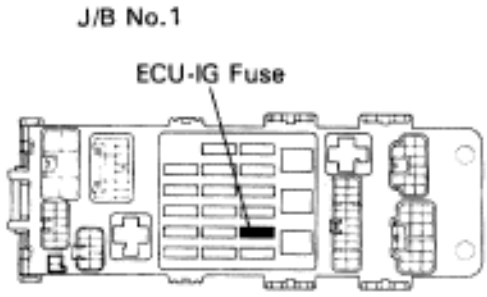
The ECU power source supplies power to the actuator and sensors, etc. Terminal GND and the cruise control ECU case are grounded.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check ECU–IG fuse.**



P Remove ECU–IG fuse from J/B No.1.

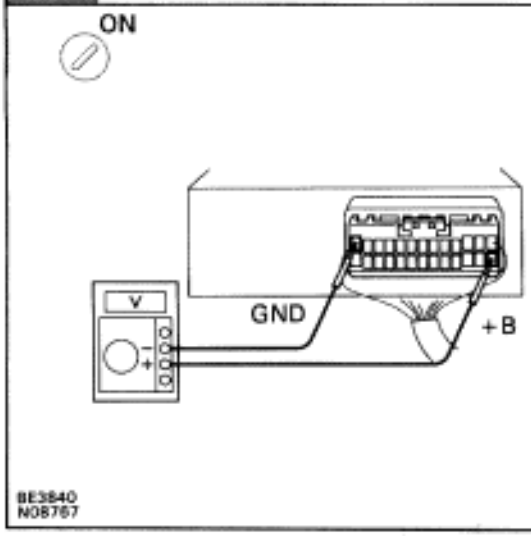
OK Check continuity of ECU–IG fuse.

OK **Continuity**

OK

NG **Check for short in all the harness and components connected to the ECU–IG fuse (See attached wiring diagram).**

2 Check voltage between terminals +B and GND of ECU connector.



P Remove ECU with connectors still connected.

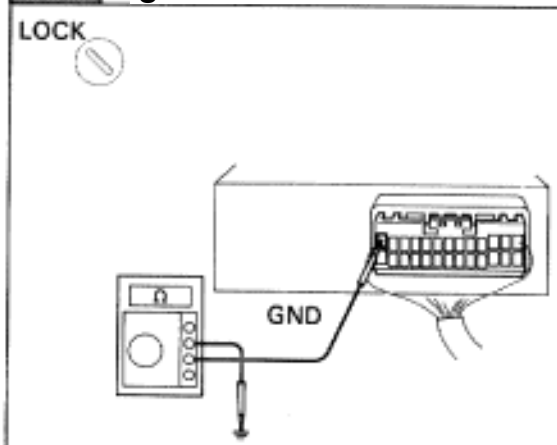
C (1) Turn ignition switch ON.
(2) Measure voltage between terminals +B and GND of ECU connector.

OK **Voltage: 10 – 14 V**

NG

OK → **Proceed to next circuit inspection shown on matrix chart** (See page BE–170).

3 Check continuity between terminal GND of ECU connector and body ground.



C Measure resistance between terminal GND of cruise control ECU connector and body ground.

OK **Resistance: 1 Ω or loss**

OK

NG → **Repair or replace harness or connector.**

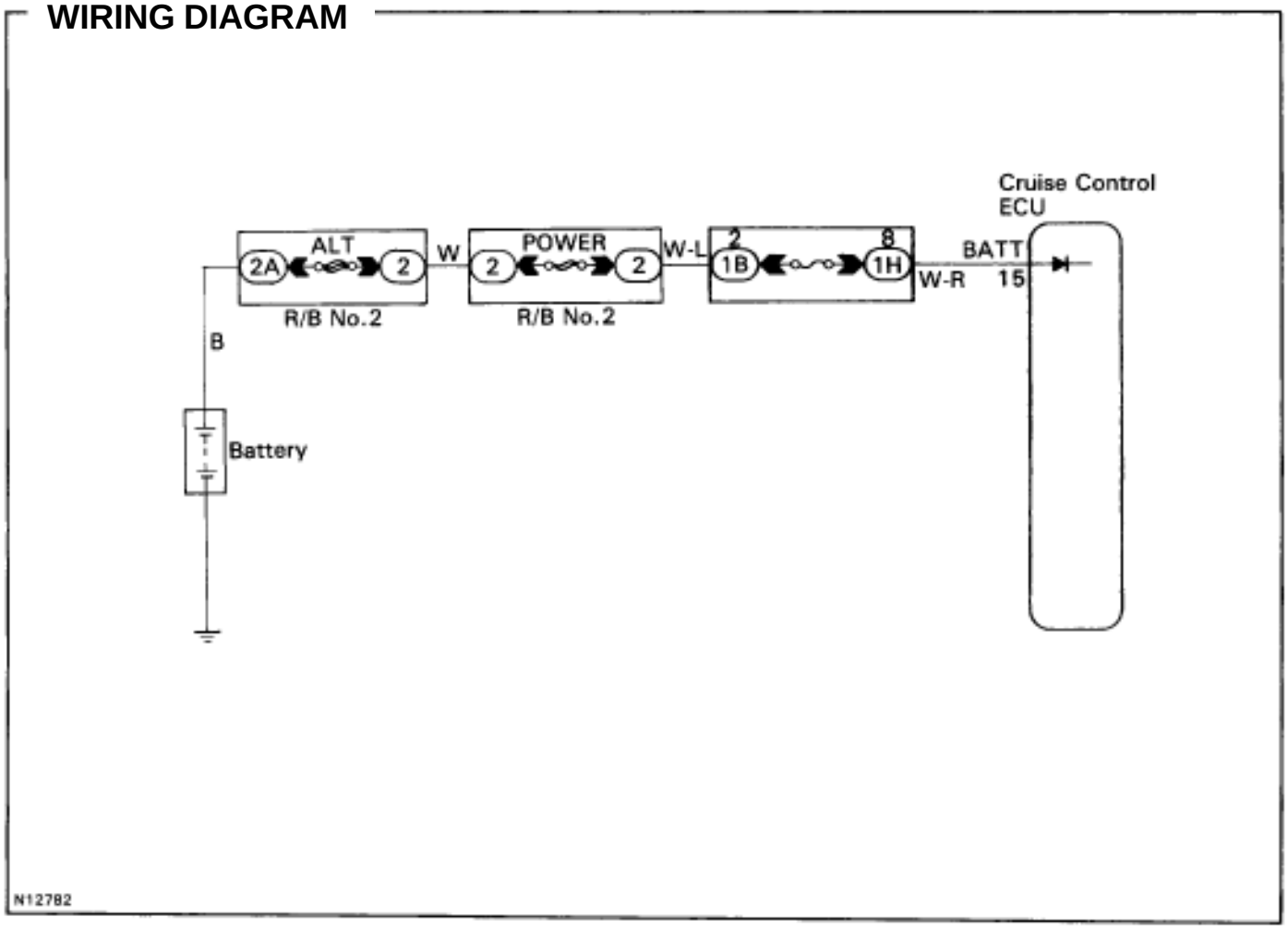
Check and repair harness and connector between battery and ECU.

Back up Power Source Circuit

CIRCUIT DESCRIPTION

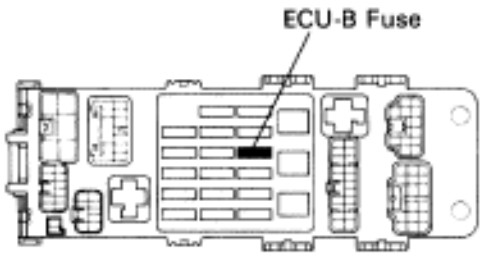
The ECU back–up power source provides power even when the ignition switch is off and is used for diagnostic code memory, etc.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check ECU–B fuse.



N08843

P Remove ECU–B fuse from R/B No.2.

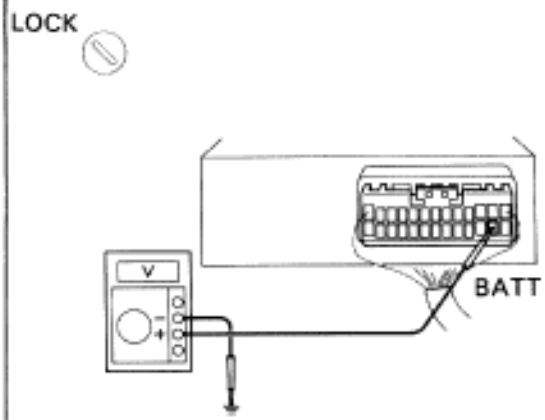
C Check continuity of ECU–B fuse.

OK **Continuity**

OK → **Check for short in all the harness and components connected to the ECU–B fuse (See attached wiring diagram).**

NG

2 Check continuity between terminal BATT of ECU connector and body ground.



BE3842
N08758

P Remove ECU with connectors still connected.

C Measure voltage between terminal BATT of ECU connector and body ground.

OK **Voltage: 10 – 14 V**

NG → **Check and repair harness and connector between battery and ECU.**

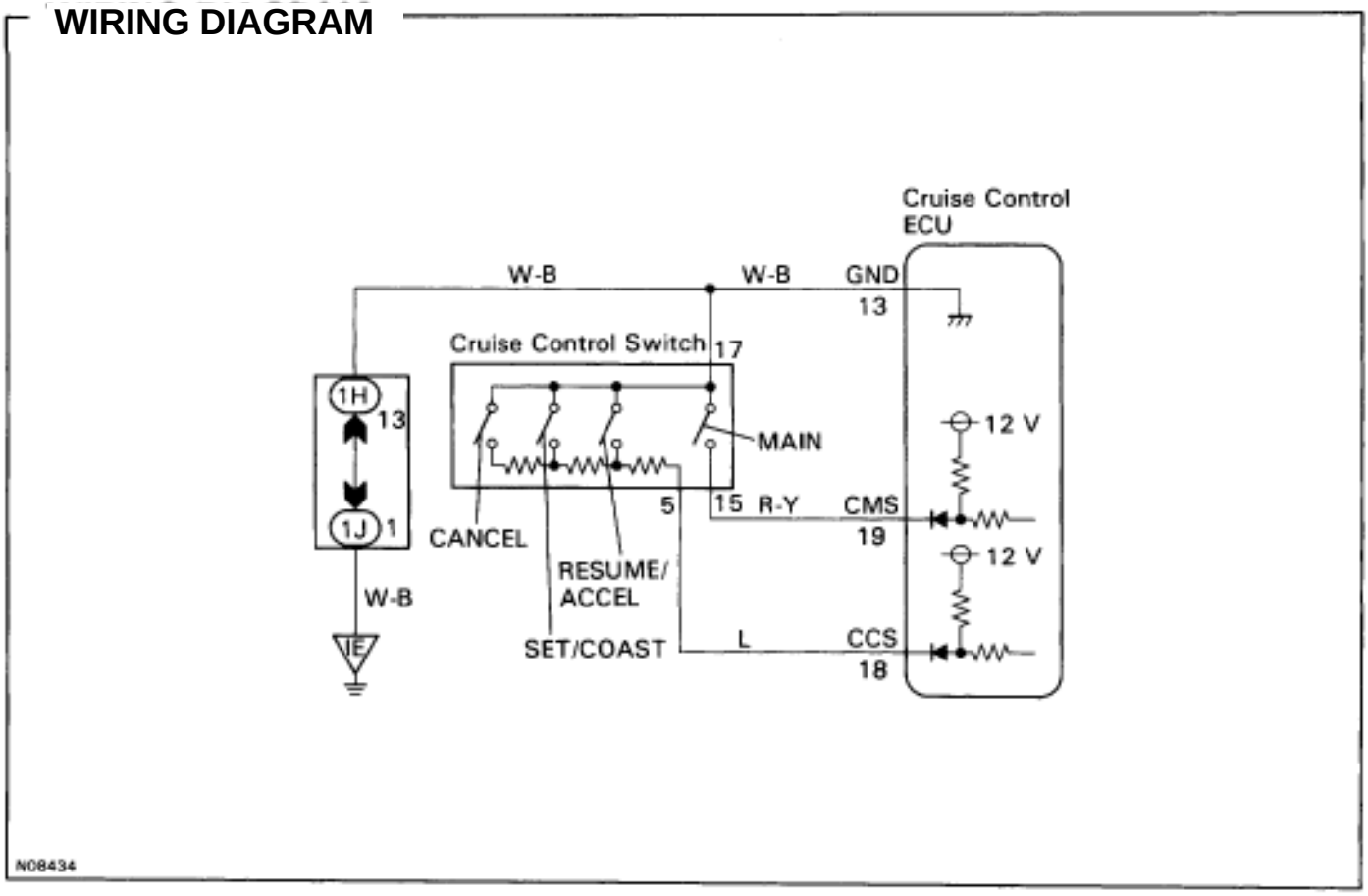
OK → **Proceed to next circuit inspection shown on matrix chart** (See page BE–170).

Main Switch Circuit (Cruise Control Switch)

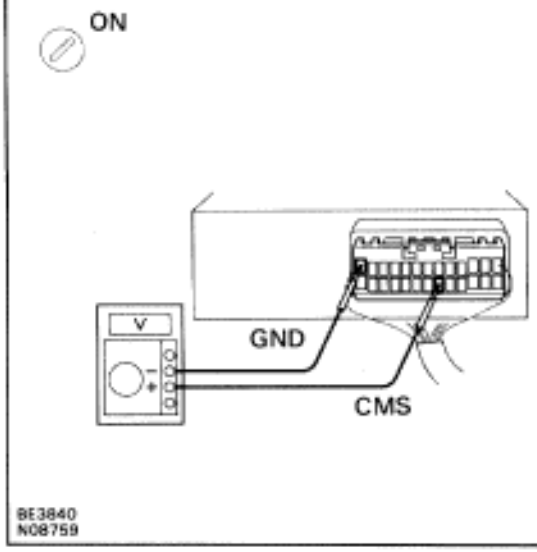
CIRCUIT DESCRIPTION

When the cruise control main switch is turned off, the cruise control does not operate.

WIRING DIAGRAM



1 Check voltage between terminal CMS and GND of cruise control ECU connector



P Remove cruise control ECU with connectors still connected.

C
(1) Turn ignition switch ON.
(2) Measure voltage between terminal CMS and GND of cruise control ECU connector when main switch is held on and off.

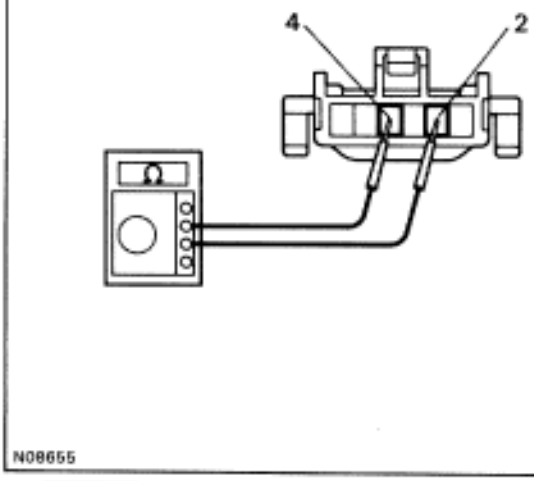
OK

Main switch	Voltage
OFF	10 – 14 V
ON	Below 2 V

NG

OK **Proceed to next circuit inspection shown on matrix chart** (See page BE–170).

2 Check main switch.



P
(1) Remove steering wheel center pad (See page RS Section).
(2) Disconnect cruise control switch connector.

C Check continuity between terminals 2 and 4 of cruise control switch connector when main switch is held on and off.

OK ○—○ Continuity

Terminals / Main switch	2	4
OFF		
Hold ON	○	○

OK

NG **Replace control switch.**

3 Check harness and connector between cruise control ECU and main switch, main switch and body ground. (See page IN–30).

OK

NG **Repair or replace harness or connector.**

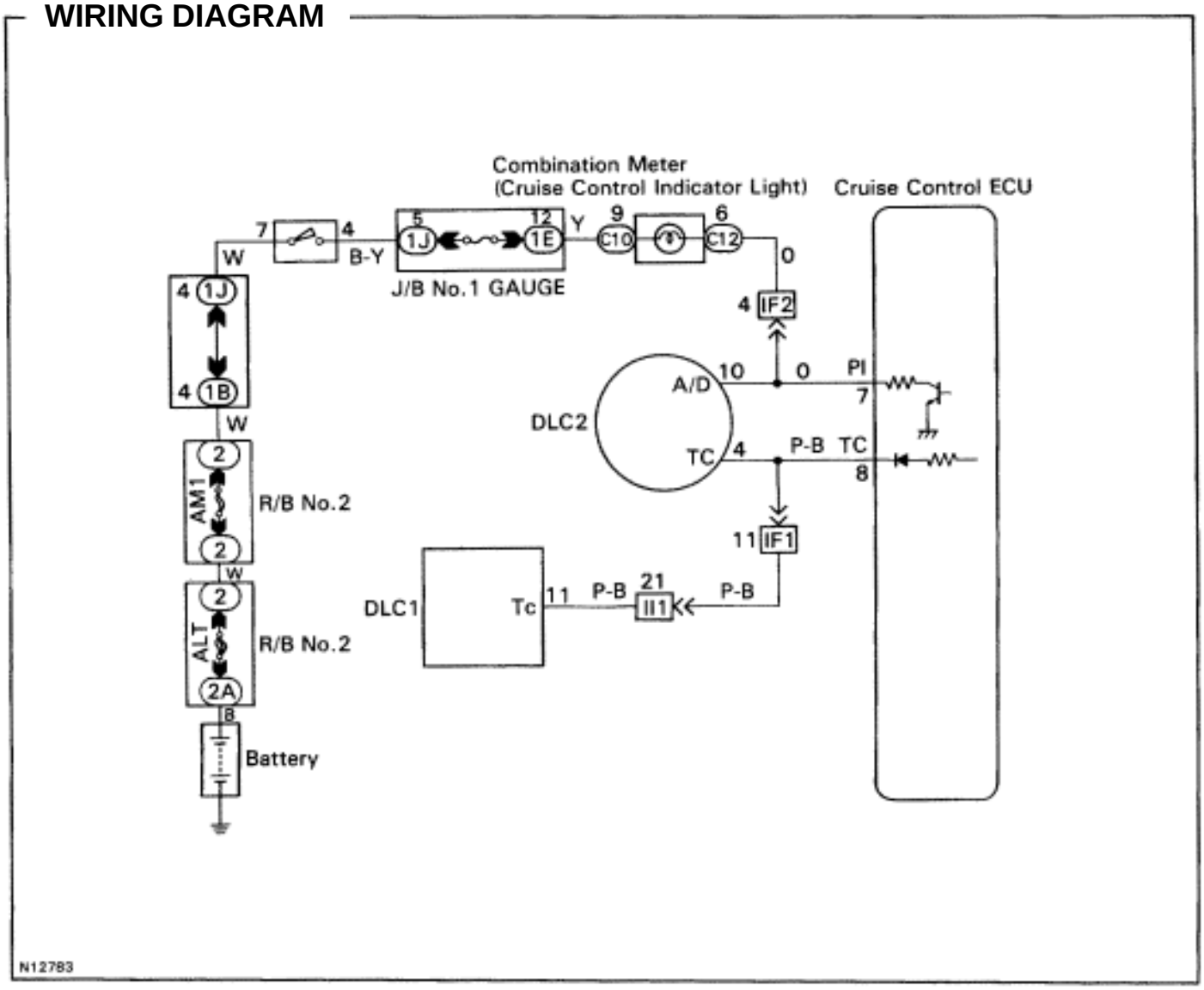
Check and replace cruise control ECU.

TC Circuit

CIRCUIT DESCRIPTION

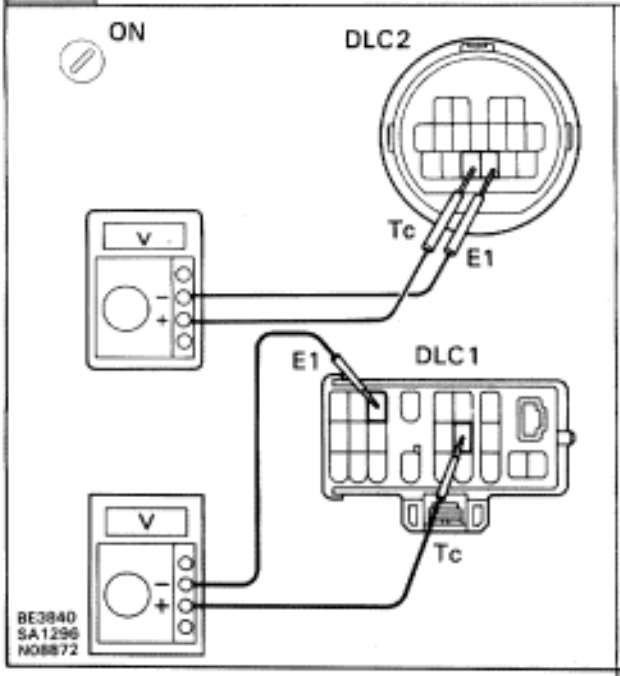
This circuit sends a signal to the ECU that diagnostic code output is required.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 **Check voltage between terminals Tc and E1 of DLC.**



C (1) Turn ignition switch ON.
(2) Measure voltage between terminals Tc and E1 of DCL.

OK **Voltage: 10 – 14 V**

NG

OK → **Proceed to next circuit inspection shown on matrix chart** (See page BE–170).

2 **Check for open and short in harness and connector between ECU and TDCL, TDCL and body ground.** (See page **IN–30**).

OK

NG → **Repair or replace harness or connector.**

Check and replace ECU.

SERVICE SPECIFICATIONS

SERVICE DATA

INTEGRATION RELAY (Light Auto Cut System)	
B2 – Ground (Constant)	Battery positive voltage
B3 – Ground (Constant)	Battery positive voltage
A7 – Ground (Ignition SW position LOCK or ACC)	No voltage
A7 – Ground (Ignition SW position ON)	Battery positive voltage
A1 – Ground (Constant)	Battery positive voltage
DAYTIME RUNNING LIGHT MAIN RELAY (Wire Harness Side)	
2 – Ground (Ignition SW position LOCK or ACC)	No voltage
2 – Ground (Ignition SW position ON)	Battery positive voltage
11 – Ground (Engine stop)	No voltage
11 – Ground (Engine running)	Battery positive voltage
15 – Ground (Constant)	Battery positive voltage
17 – Ground (Constant)	Battery positive voltage
TURN SIGNAL FLASHER	
Flashes/Minute	60 – 120
INTEGRATION RELAY (Interior Light System)	
9 – Ground (Ignition SW position LOCK or ACC)	No voltage
9 – Ground (Ignition SW position ON)	Battery positive voltage
1 – Ground (Constant)	Battery positive voltage
SPEEDOMETER (USING A SPEEDOMETER TESTER)	
Standard indication (mph)	Allowable range (mph)
20	18 – 24
40	38 – 44
60	58 – 66
80	78 – 88
100	98 – 110
120	118 – 132
Standard indication (km/h)	Allowable range (km/h)
20	17 – 24
40	38 – 46
60	57.5 – 67
80	77 – 88
100	96 – 109
120	115 – 130
140	134 – 151.5
160	153 – 173

TACHOMETER (ON–VEHICLE)	
Standard indication (rpm)	Allowable range (rpm)
700	630 – 770
1000	915 – 1115
2000	1920 – 2220
3000	2890 – 3350
4000	3940 – 4400
5000	5025 – 5425
6500	6650 – 6950
7000	7025 – 7625
OD/TRIP METER (CONNECTOR CONNECTED)	
1 – Ground (Ignition SW position ON)	Battery positive voltage
4 – Ground (Light Control SW position TAIL or HEAD)	Battery positive voltage
5 – 7 (Ignition SW ON and drive the vehicle slowly)	OV ↔ Battery positive voltage
6 – 7 (Ignition SW ON and drive the vehicle slowly)	OV ↔ more than 5V
8 – Ground (Constant)	Battery positive voltage
10 – Ground (Ignition SW ON, Light Control SW TAIL or HEAD and turn the Light Control Rheostat knob to clockwise)	6V → 0V
FUEL RECEIVER GAUGE	
A – B	Approx. 269.7 Ω
A – C	Approx. 123.5 Ω
B – C	Approx. 146.2 Ω
FUEL SENDER GAUGE	
Float position: F	Approx. 4.0 Ω
Float position: 1/2	Approx. 55.0 Ω
Float position: E	Approx. 107.0 Ω
ENGINE COOLANT TEMPERATURE RECEIVER GAUGE	
A – B	Approx. 229.7 Ω
A – C	Approx. 54.0 Ω
B – C	Approx. 175.7 Ω
ENGINE COOLANT TEMPERATURE SENDER GAUGE	
50 °C (122.0 °F)	160 – 240 Ω
120 °C (248.0 °F)	17.1 – 21.2 Ω
LIGHT FAILURE SENSOR	
3 – Ground (Light Control SW position OFF)	No voltage
3 – Ground (Light Control SW position TAIL or HEAD)	Battery positive voltage
4 – Ground (Ignition SW position LOCK or ACC)	No voltage
4 – Ground (Ignition SW position ON)	Battery positive voltage
7 – Ground (Stop Light SW position OFF)	No voltage
7 – Ground (Stop Light SW position ON)	Battery positive voltage
8 – Ground (Engine stop)	No voltage
8 – Ground (Engine running)	Battery positive voltage
INTEGRATION RELAY (Seat Belt Warning)	
1 – Ground (Constant)	Battery positive voltage
9 – Ground (Ignition SW LOCK or ACC)	No voltage
9 – Ground (Ignition SW ON)	Battery positive voltage

ANTENNA MOTOR CONTROL RELAY (Wire Harness Side)	
1 – Ground (Constant)	Battery positive voltage
4 – Ground (Ignition SW position ON)	Battery positive voltage
5 – Ground (Ignition SW position ACC or ON)	Battery positive voltage
7 – Ground (Ignition SW position ACC or ON and radio SW ON)	Battery positive voltage
8 – Ground (Ignition SW position ACC or ON)	Battery positive voltage