SECTION BE

BODY ELECTRICAL SYSTEM

CONTENTS

BODY ELECTRICAL WIRING

CAUTION: Before starting to work on any part of electrical system, disconnect battery ground cable.

DESCRIPTION

Cables are covered with color-coded vinyl for easy identification. In the wiring diagram, colors are indicated by one or two alphabetical letters.

It is recommended that the battery be disconnected before performing any electrical service other than bulb or fuse replacement.

In addition to fuses, a fusible link has been installed to protect wiring. The fusible link functions almost the same as a fuse, though its characteristics are slightly different than normal fuses.

CABLE COLORS

Cable colors are generally used as shown in the following table.

Circuit system	Color
Starting and ignition system	B (Black)
Charging system	W (White)
Lighting system	R (Red)
Signal system	G (Green)
Instrument system	Y (Yellow)
Others	L, Br, Lg (Blue), (Brown), (Light green)
Grounding system	B (Black)

The main cable of each system is generally coded with a single color. These colors are represented by such letters as G, W, or Br. Minor items of each circuit's terminal are coded with a two-tone color as follows:

BW : Black with white stripe
LgR : Light green with red stripe

INSPECTION

Inspect all electrical circuits, referring to wiring or circuit diagrams. Circuits should be tested for continuity or short circuit with a conventional test lamp or low reading voltmeter. Before inspecting circuit, ensure that:

1. Each electrical component part or cable is securely fastened to its connector or terminal.
2. Each connection is firmly in place and free from rust and dirt.
3. No cable covering shows any evidence of cracks, deterioration or other damage.
4. Each terminal is at a safe distance away from any adjacent metal parts.
5. Each cable is fastened to its proper connector or terminal.
6. Each grounding bolt is firmly planted.
7. Wiring is kept away from any adjacent parts with sharp edges or high temperature parts (such as exhaust pipe).
8. Wiring is kept away from any rotating or working parts: fan pulley, fan belt, etc.
9. Cables between fixed portions and moving parts are long enough to withstand shocks and vibratory forces.

Note:

a. **Before starting to inspect and repair any part of electrical system or other parts which may lead to a short circuit, disconnect cables at battery terminals as follows:**
Disconnect cable at negative (–) terminal, and then disconnect cable at positive (+) terminal.
Before connecting cables to battery terminal, be sure to clean terminals with a rag. Fasten cable at positive (+) terminal, and then ground cable at negative (–) terminal. Apply grease to top of these terminals to prevent rust from developing on them.
b. **Never use a screwdriver or service tool to conduct a continuity test. Use test leads.**
c. **Never ground an open circuit or circuits under no load. Use a test lamp (12V-3W) or circuit tester as a load.**

FUSE AND FUSIBLE LINK

MAINTENANCE INSTRUCTIONS

Fuse

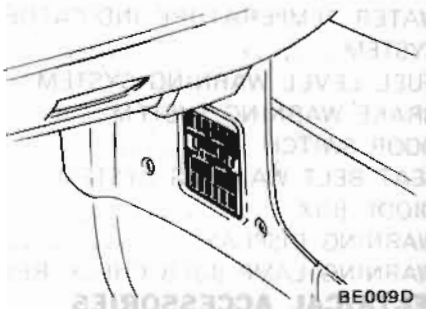

Fig. BE-1 Fuse Box

The fuse box is installed on the side wall under the dash board.

When, for one reason or another, fuse has melted, use systematic procedure to check and eliminate cause of problem before installing new fuse.

Note:

a. If fuse is blown, be sure to eliminate cause of problem before installing new fuse.
b. Use fuse of specified rating. Never use fuse of more than specified rating.
c. Check condition of fuse holders. If much rust or dirt is found thereon, clean metal parts with fine-grained sandpaper until proper metal-to-metal contact is made.
   Poor contact in any fuse holder will often lead to voltage drop or heating in the circuit and could result in improper circuit operation.

Fusible link

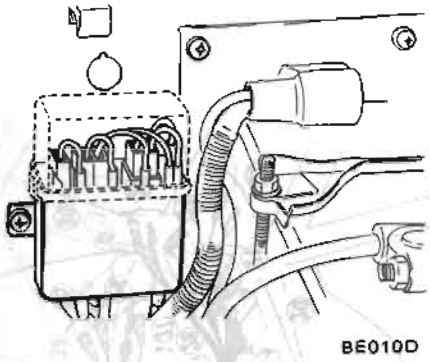

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Fig. BE-2 Fusible Link

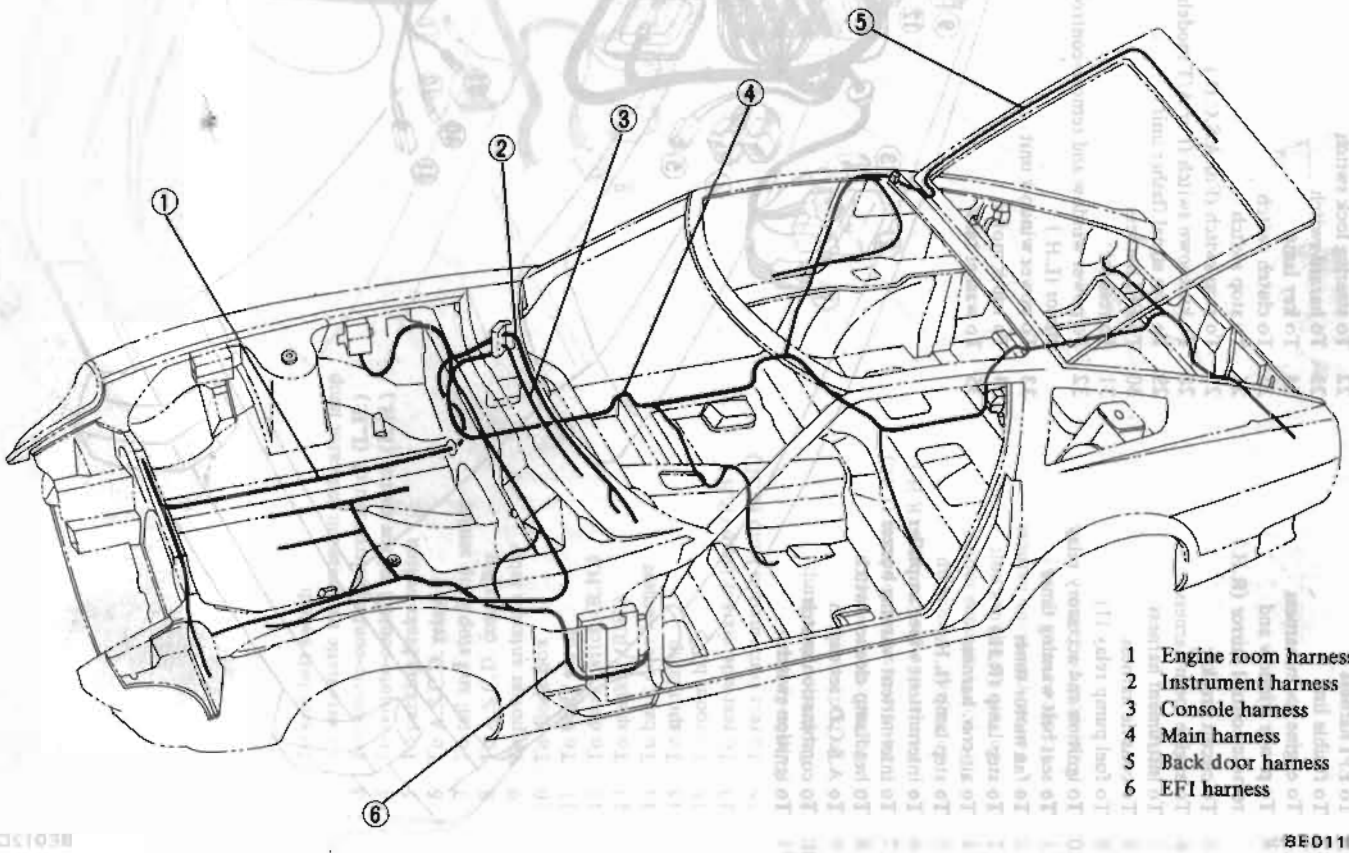
Fusible link protects lighting, starting, charge and accessory circuits.

CAUTION:

a. If fusible link should melt, it is possible that critical circuit (power supply or large current carrying circuit) is shorted. In such a case, carefully check and eliminate cause of problem.
b. Never wrap periphery of fusible link with vinyl tape. Extreme care should be taken with this link to ensure that it does not come into contact with any other wiring harness or vinyl or rubber parts.

A melted fusible link can be detected either by visual inspection or by feeling with finger-tip. If its condition is questionable, use circuit tester or test lamp, as required, to conduct continuity test. This continuity test can be performed in the same manner as for any conventional fuse.

WIRING



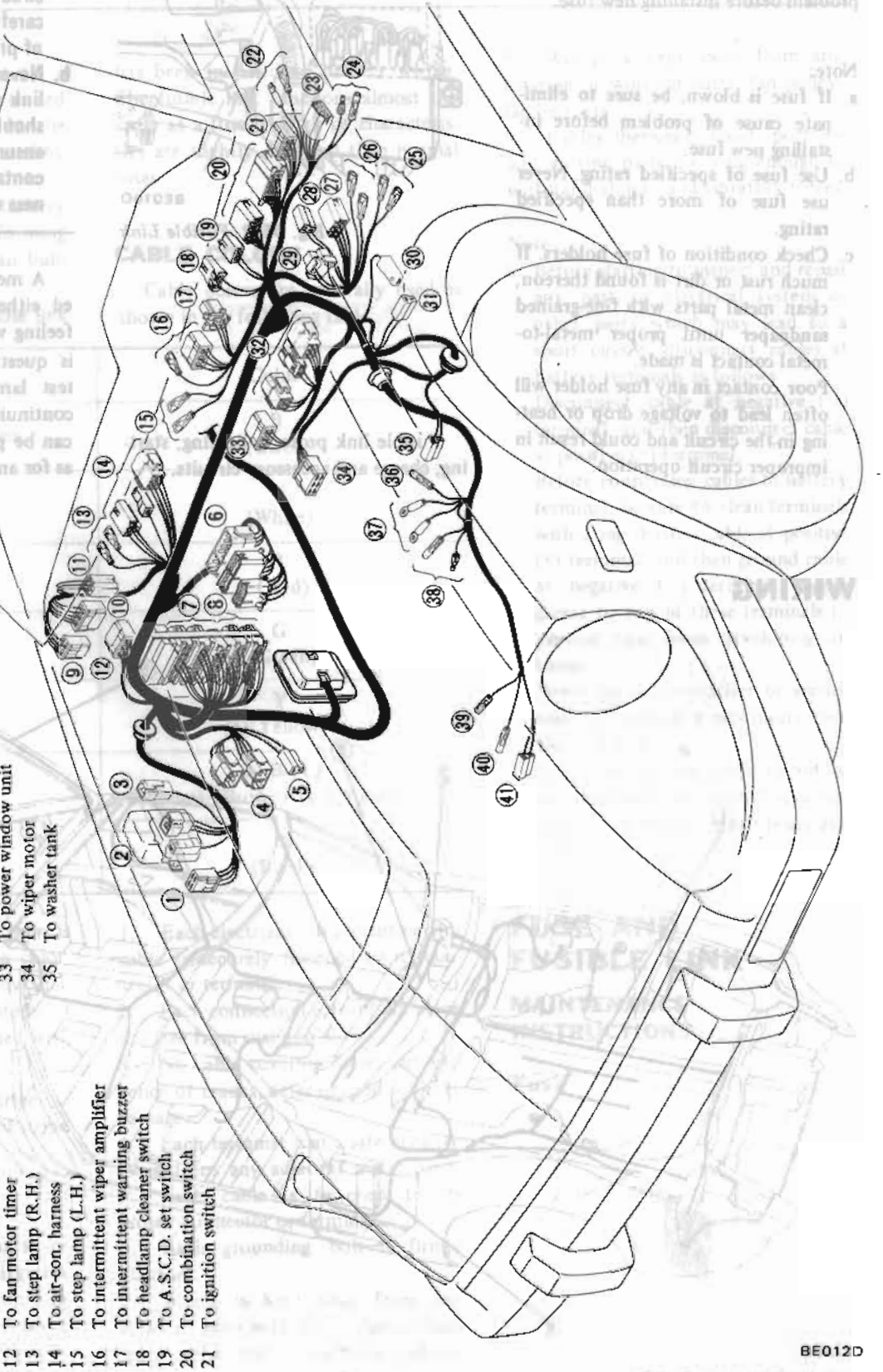
1 Engine room harness
2 Instrument harness
3 Console harness
4 Main harness
5 Back door harness
6 EFI harness

BE011D

Fig. BE-3 Wiring

WIRING HARNESS

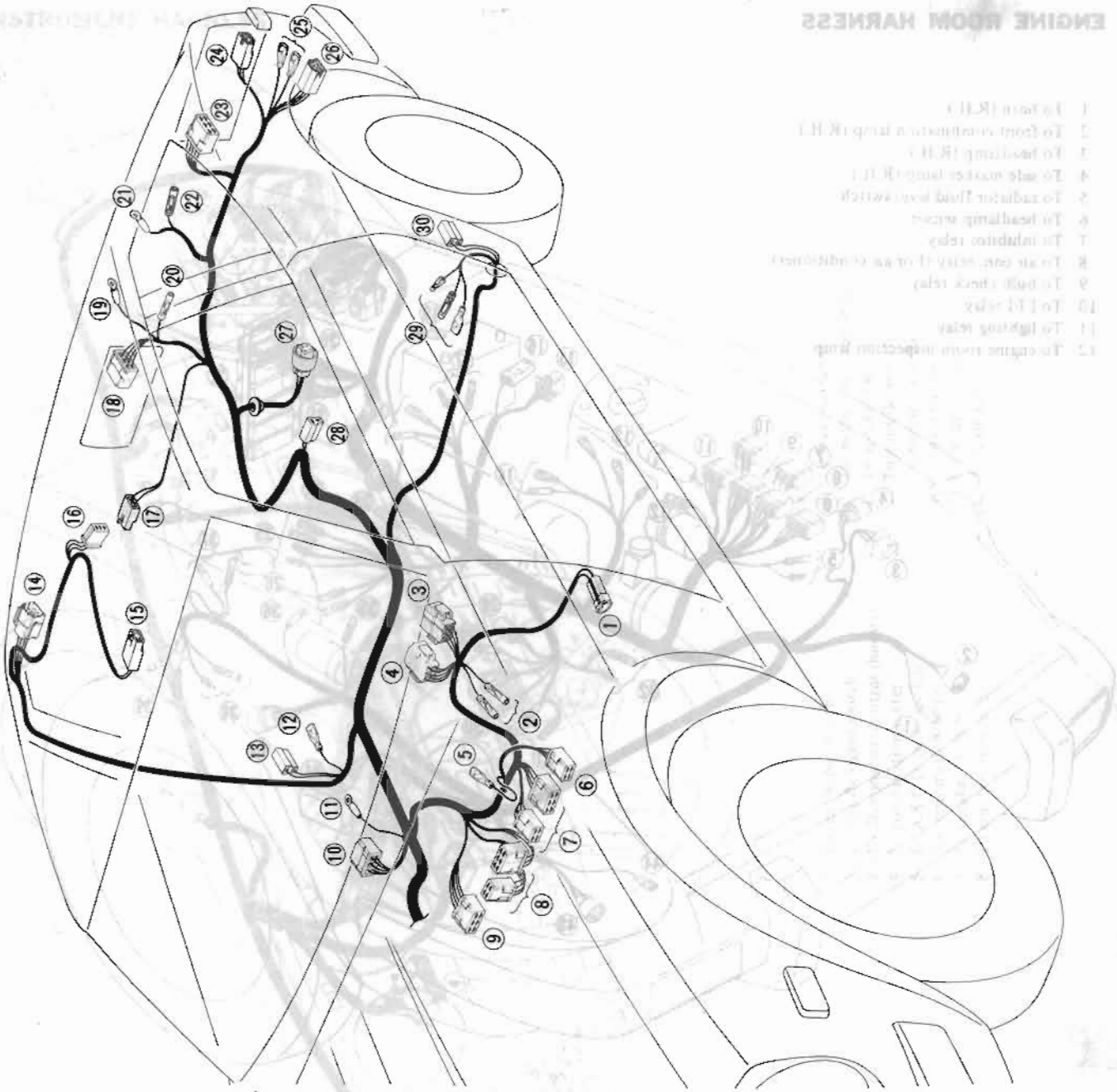
MAIN HARNESS



1 To EFI harness
2 To fusible link
3 To engine room harness
4 To power window and remote-control mirror (R.H.)
5 To circuit breaker
6 To engine room harness
7 To instrument harness
8 To console harness
9 To fuel pump relay (1)
10 To ignition and accessory relay
11 To seat belt warning timer
12 To fan motor timer
13 To step lamp (R.H.)
14 To air-con. harness
15 To step lamp (L.H.)
16 To intermittent wiper amplifier
17 To intermittent warning buzzer
18 To headlamp cleaner switch
19 To A.S.C.D. set switch
20 To combination switch
21 To ignition switch
22 To steering lock switch
23 To hazard switch
24 To key lamp
25 To clutch switch
26 To stop switch
27 To stop switch (For A.S.C.D.)
28 To kickdown switch (For A/T models)
29 To turn signal flasher unit
30 To EFI harness
31 To resistor
32 To power window and remote-control mirror (L.H.)
33 To power window unit
34 To wiper motor
35 To washer tank
36 To condenser
37 To ignition coil
38 To headlamp cleaner
39 To thermal transmitter
40 To water temperature sensing switch
41 To distributor

BE012D

Fig. BE-4-1 Main Harness



1 To seat belt switch
2 To automatic transmission indicator lamp
3 To remote-control mirror switch (L.H.)
4 To remote-control mirror switch (R.H.)
5 To parking brake switch
6 To A.S.C.D. relay
7 To tail and stop lamp sensor
8 To A.S.C.D. controller
9 To power antenna relay
10 To diode box
11 To body earth
12 To door switch (R.H.)
13 To speaker (R.H.)
14 To back door harness
15 To spot lamp
16 To room lamp
17 To rear side marker lamp (R.H.)
18 To rear combination lamp (R.H.)
19 To body earth
20 To license plate lamp
21 To body earth
22 To back door switch
23 To rear combination lamp (L.H.)
24 To rear side marker lamp (R.H.)
25 To luggage room lamp
26 To power antenna motor
27 To fuel tank gauge unit
28 To fuel pump sub harness
29 To door switch (L.H.)
30 To speaker (L.H.)

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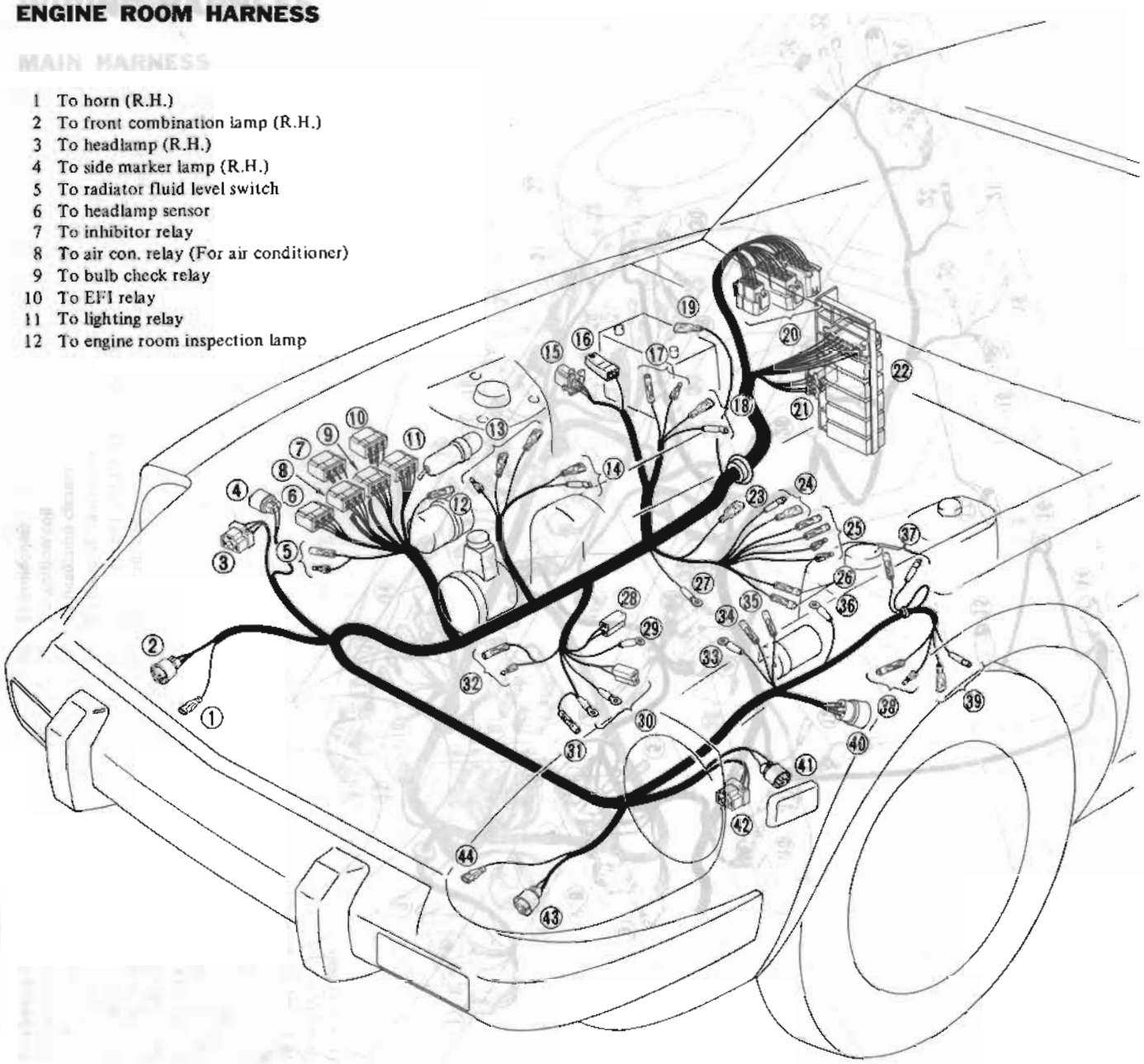
Fig. BE-4-2 Main Harness

ENGINE ROOM HARNESS



1 To horn (R.H.)
2 To front combination lamp (R.H.)
3 To headlamp (R.H.)
4 To side marker lamp (R.H.)
5 To radiator fluid level switch
6 To headlamp sensor
7 To inhibitor relay
8 To air con. relay (For air conditioner)
9 To bulb check relay
10 To EFI relay
11 To lighting relay
12 To engine room inspection lamp
13 To valve solenoid (For air conditioner)
14 To low pressure switch (For air conditioner)
15 To horn relay
16 To main harness
17 To servo valve (For A.S.C.D.)
18 To solenoid valve (For A.S.C.D.)
19 To battery sensor
20 To main harness
21 To console harness
22 To instrument harness
23 To starter motor
24 To kickdown solenoid (A/T only)
25 To inhibitor switch (A/T only)
26 To back-up lamp switch (M/T only)
27 To body earth
28 To oil pressure switch
29 To engine earth
30 To alternator
31 To condenser
32 To auxiliary cooling fan motor (For air conditioner)
33 To body earth
34 To magnet clutch
35 To B.C.D.D. solenoid
36 To engine earth
37 To rear washer motor
38 To brake fluid level switch
39 To washer fluid level switch
40 To check connector
41 To side marker lamp (L.H.)
42 To headlamp (L.H.)
43 To front combination lamp (L.H.)
44 To horn (L.H.)

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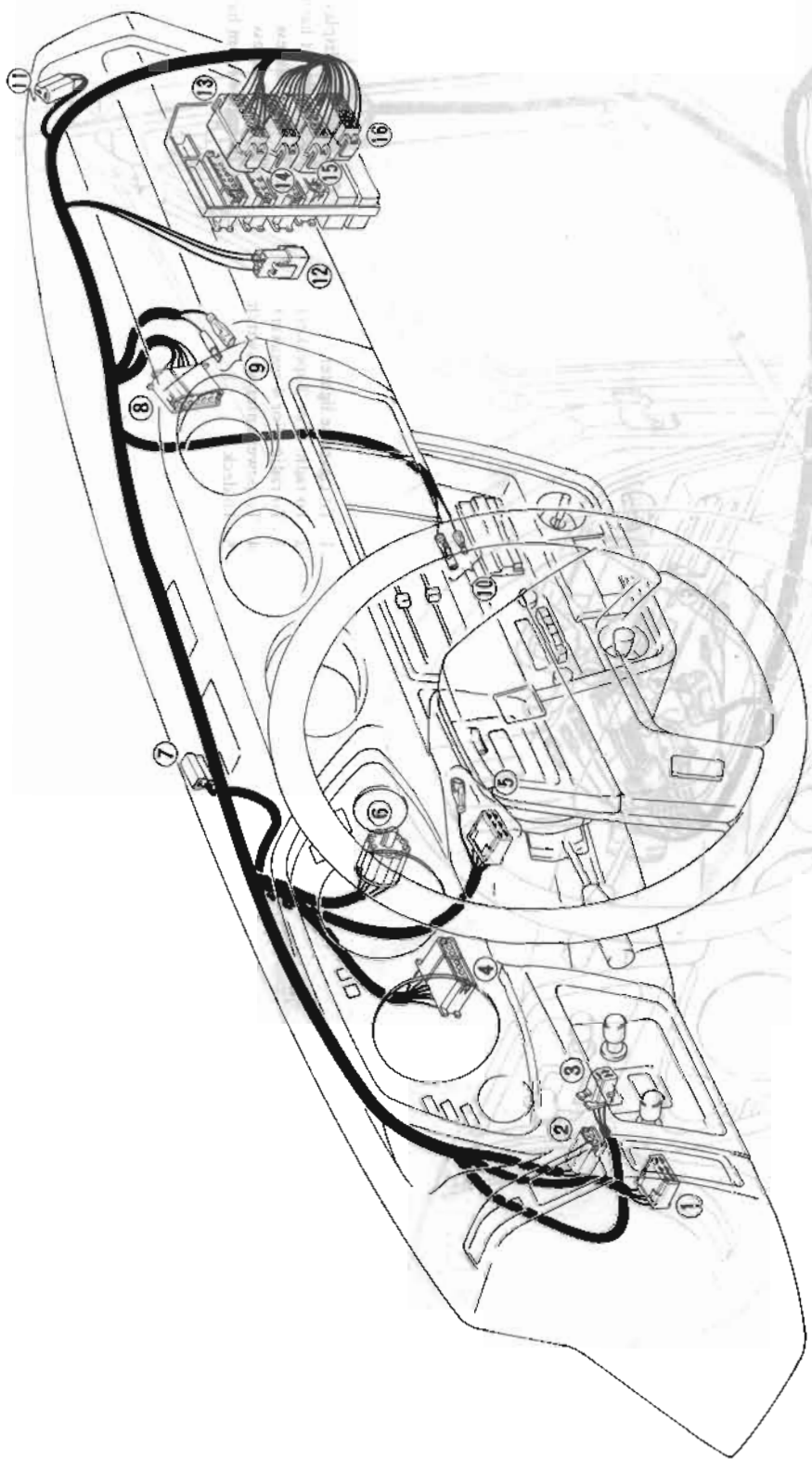
Fig. BE-5 Engine Room Harness

INSTRUMENT HARNESS



1 To rear wiper switch
2 To rear defogger switch
3 To illumination control rheostat
4 To combination meter
5 To A.S.C.D. main switch
6 To combination meter
7 To speaker (L.H.)
8 To combination gauge
9 To make-up lamp
10 To instrument console lamp
11 To speaker (R.H.)
12 To console harness
13 To engine room harness
14 To main harness
15 To main harness
16 To main harness

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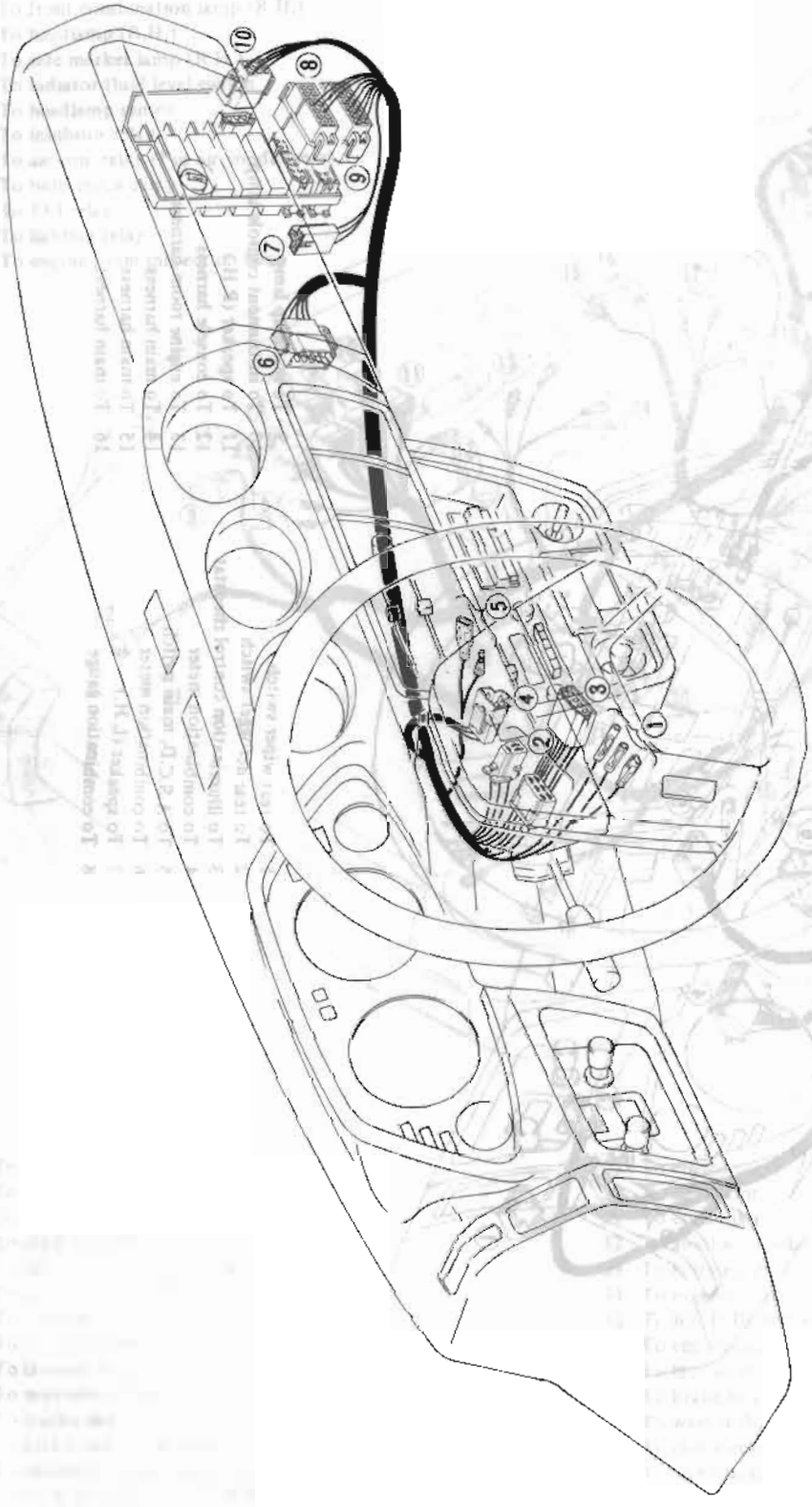
Fig. BE-6 Instrument Harness

CONSOLE HARNESS

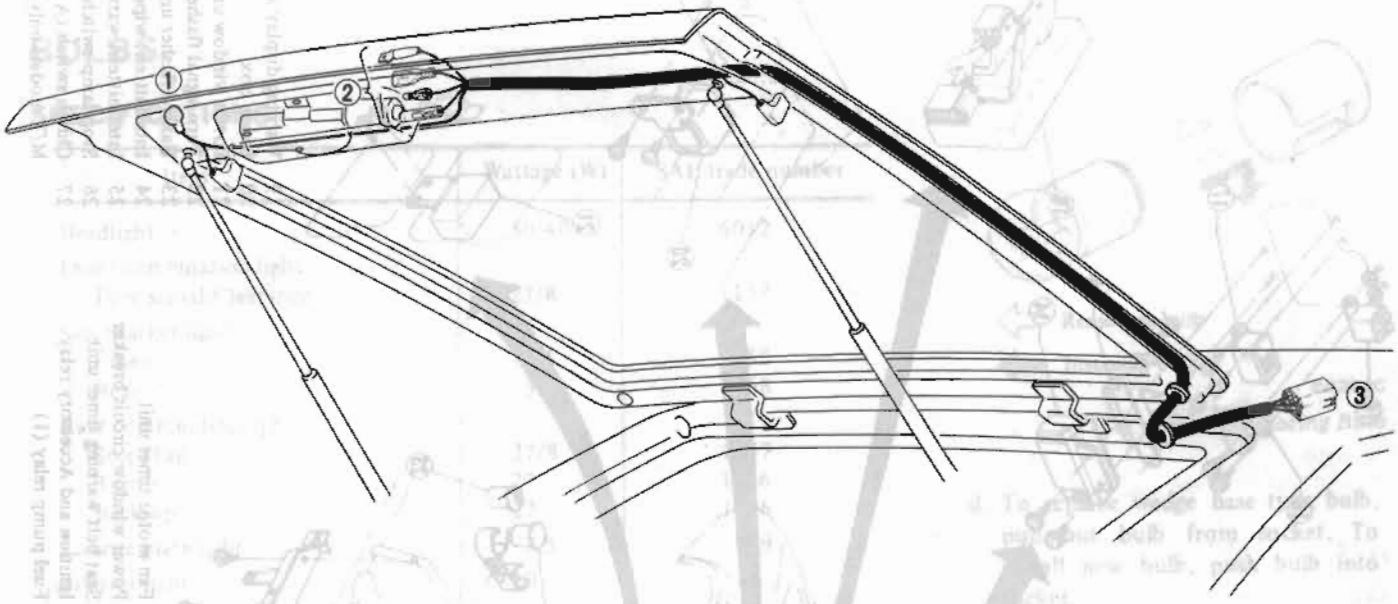


1 To cigarette lighter
2 To radio (For 3-speaker)
3 To radio (For 4-speaker)
4 To power antenna switch
5 To deck
6 To warning display amp.
7 To instrument harness
8 To main harness
9 To Main harness
10 To engine room harness

BE016D

Fig. BE-7 Console Harness

BACK DOOR HARNESS



1 To body ground
2 To rear wiper motor
3 To main harness

BE017D

Fig. BE-8 Back Door Harness

LOCATION OF ELECTRICAL UNIT

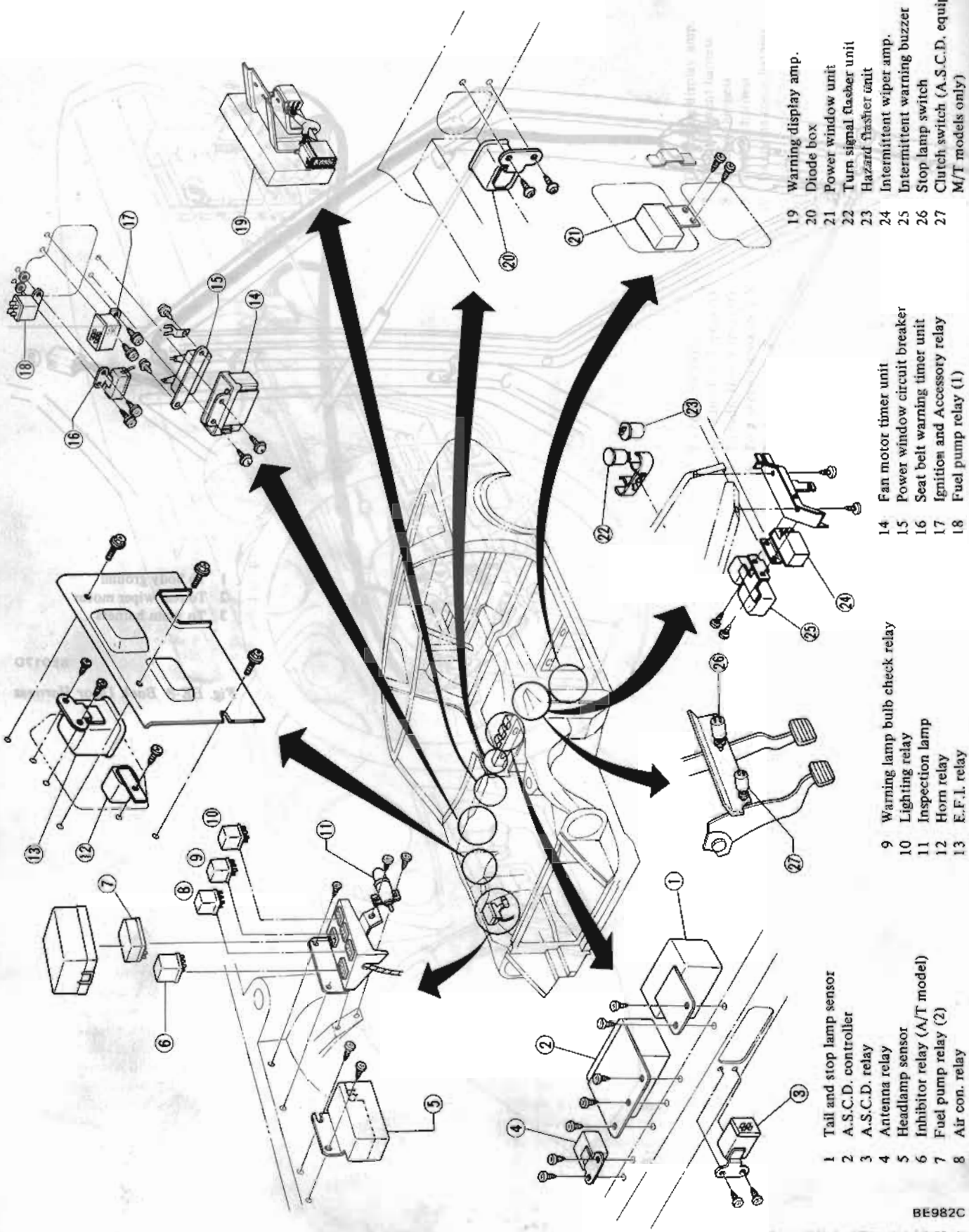


Fig. BE-9 Location of Electrical Unit

ELECTRICAL UNIT OF LIGHTING SYSTEM

CAUTION: Before starting to work on any part of electrical system, disconnect battery ground cable.

BULBS

SPECIFICATIONS

Item	Wattage (W)	SAE trade number
Headlight	50/40	6012
Front combination light		
Turn signal/Clearance	27/8	1157
Side marker light		
Front	3.4	158
Rear	3.4	158
Rear combination light		
Stop/Tail	27/8	1157
Turn	27	1156
Back-up	27	1156
License plate light	7.5	89
Interior light	10	–
Spot light	8	–
Step light	3.4	158
Luggage compartment light	5	–
Inspection light	8	–
Combination meter		
Illumination light	3.4	158
Warning lights	3.4	158
Combination gauge		
Illumination light	2.7	161
Warning lights	3.4	158
Ignition switch illumination light	1.4	–
Instrument console illumination light	1.4	–
Cigarette lighter illumination light	1.7	–
Heater (Air-con) control panel illumination light	1.7	–
Radio illumination light	2.5	–
Glove box light	3	–
Cruise control switch lights	1.4	–
Selector lever illumination light (A/T models)	3.4	158
Rear defroster indicator light	1.4	–

REMOVAL AND INSTALLATION

Note:

a. Disconnect battery ground cable before starting to work.

b. Installation is in the reverse order of removal.

c. To replace bulb, push in on bulb, turn it counterclockwise and remove it from socket. Install new bulb in the reverse order of removal.

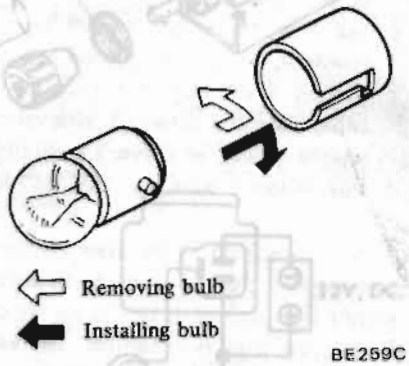


Fig. BE-10 Replacing Bulb

d. To replace wedge base type bulb, pull out bulb from socket. To install new bulb, push bulb into socket.

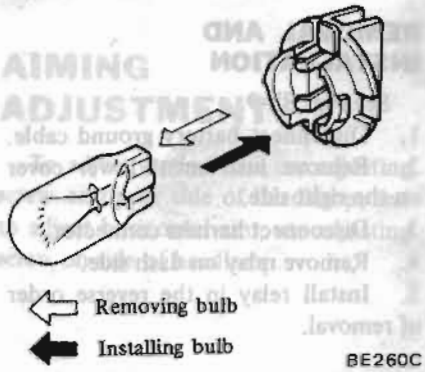


Fig. BE-11 Replacing Wedge Base Type Bulb

e. To replace bulb, pull out bulb from socket. To install new bulb, push bulb into socket.

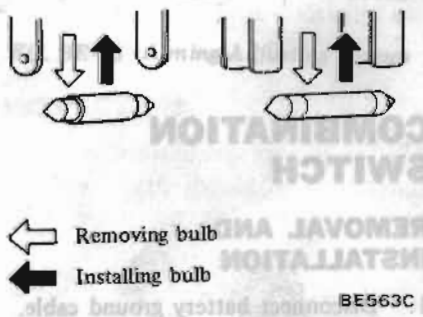
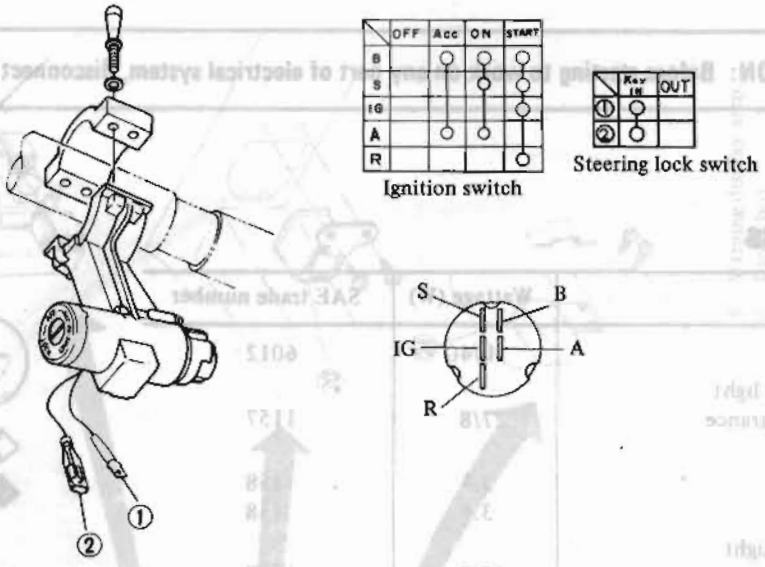


Fig. BE-12 Replacing Bulb

IGNITION SWITCH



BE018D

Fig. BE-13 Ignition Switch

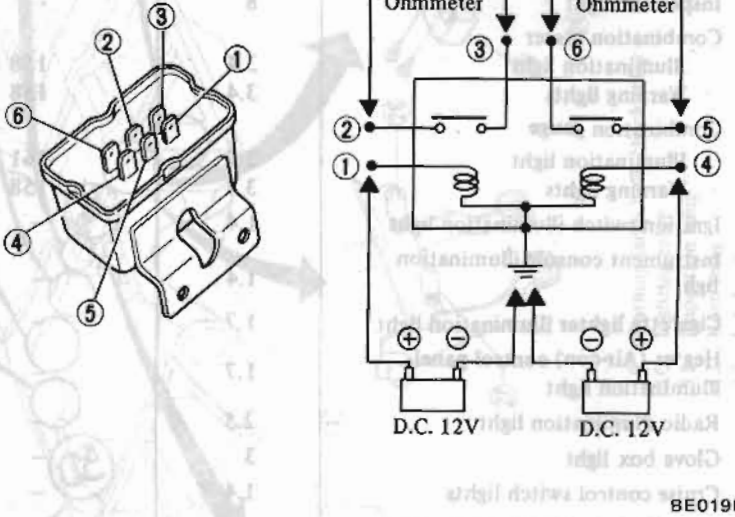
IGNITION AND ACCESSORY RELAY

REMOVAL AND INSTALLATION

See Fig. BE-9.

1. Disconnect battery ground cable.
2. Remove instrument lower cover on the right side.
3. Disconnect harness connector.
4. Remove relay on dash side.
5. Install relay in the reverse order of removal.

INSPECTION



BE019D

Fig. BE-14 Ignition and Accessory Relay

COMBINATION SWITCH

REMOVAL AND INSTALLATION

1. Disconnect battery ground cable.
2. Remove horn pad.
3. Remove steering wheel.
4. Remove steering column cover.
5. Disconnect combination switch wires at connector.
6. Loosen retaining screw and remove combination switch assembly.
7. Install combination switch in the reverse order of removal.

INSPECTION

Test continuity through switch with a test lamp or ohmmeter.

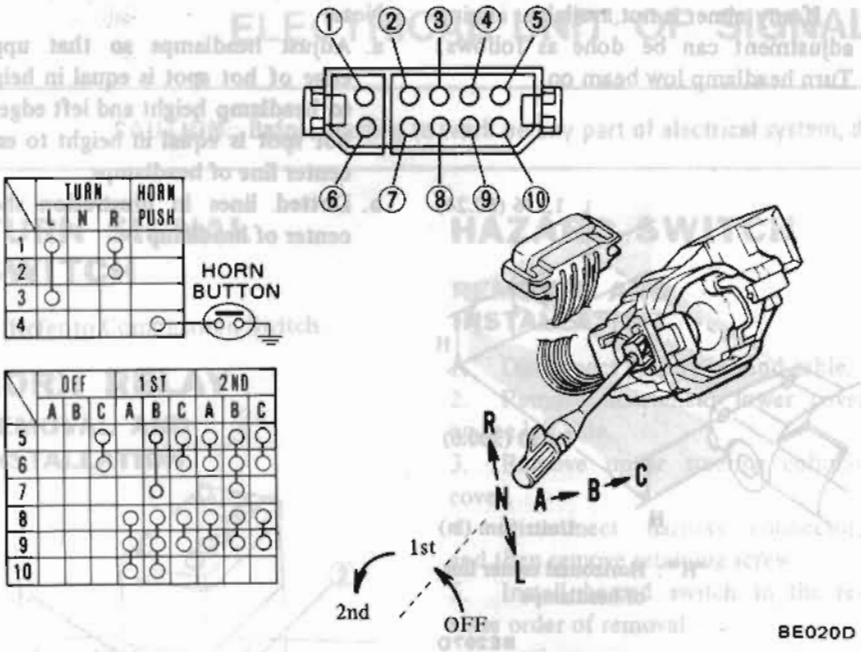


Fig. BE-15 Combination Switch

ILLUMINATION CONTROL RHEOSTAT

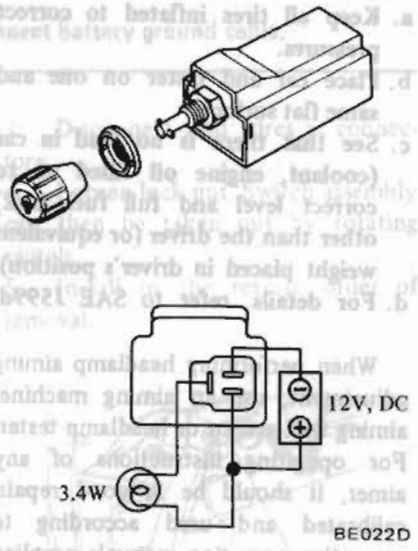
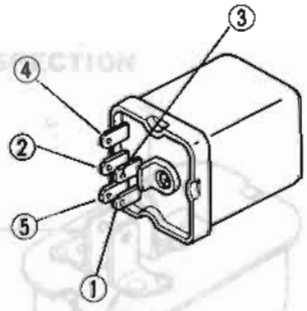


Fig. BE-17 Illumination Control

LIGHTING RELAY

See Fig. BE-16.



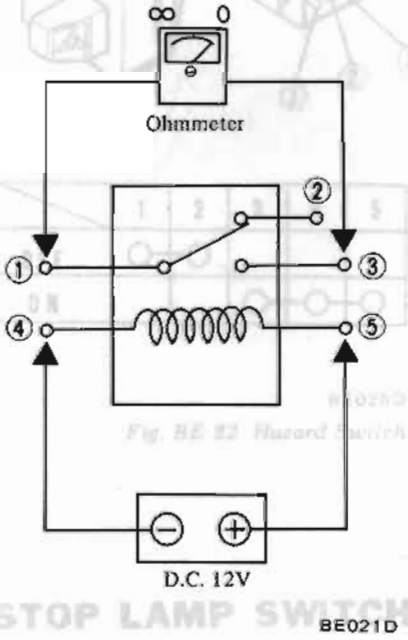


Fig. BE-16 Lighting Relay

AIMING ADJUSTMENT

To adjust vertical aim, use adjusting screw on upper side of headlamp; and to adjust horizontal aim, use adjusting screw on side of headlamp.

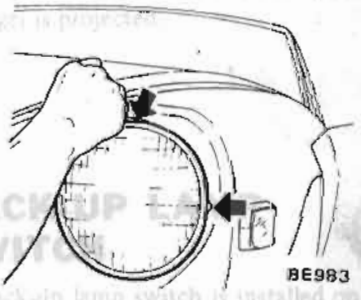


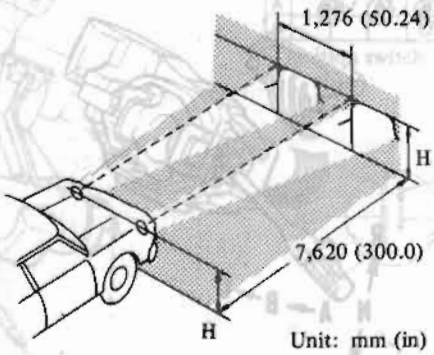
Fig. BE-18 Aiming Adjusting Screws

Note: Before making headlamp aiming adjustment, observe the following instructions.

a. Keep all tires inflated to correct pressures.
b. Place car and tester on one and same flat surface.
c. See that there is no load in car (coolant, engine oil filled up to correct level and full fuel tank) other than the driver (or equivalent weight placed in driver's position).
d. For details, refer to SAE J599d.

When performing headlamp aiming adjustment, use an aiming machine, aiming wall screen or headlamp tester. For operating instructions of any aimer, it should be in good repair, calibrated and used according to respective operation manuals supplied with the unit.

If any aimer is not available, aiming adjustment can be done as follows: Turn headlamp low beam on.



Unit: mm (in)

"H" : Horizontal center line of headlamps

BE297D

Fig. BE-19 Aiming Adjustment

Note:

a. Adjust headlamps so that upper edge of hot spot is equal in height to headlamp height and left edge of hot spot is equal in height to each center line of headlamps.
b. Dotted lines in illustration show center of headlamp.

ELECTRICAL UNIT OF SIGNAL SYSTEM

CAUTION: Before starting to work on any part of electrical system, disconnect battery ground cable.

TURN SIGNAL SWITCH

Refer to Combination Switch.

HORN RELAY

REMOVAL AND INSTALLATION

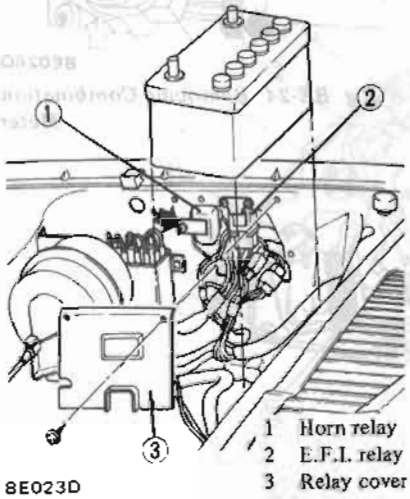


Fig. BE-20 Removing Horn Relay

INSPECTION

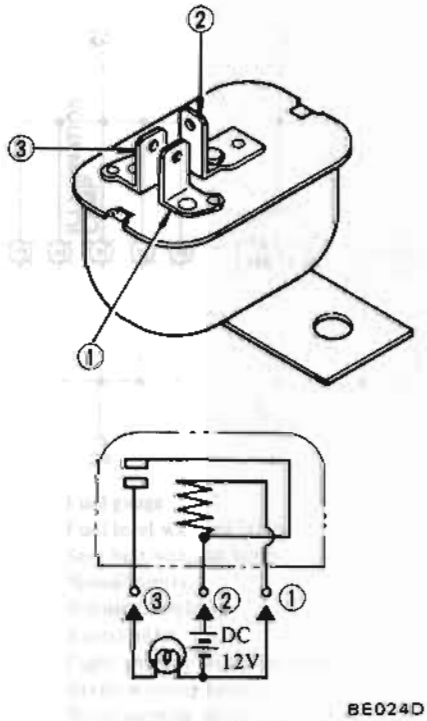
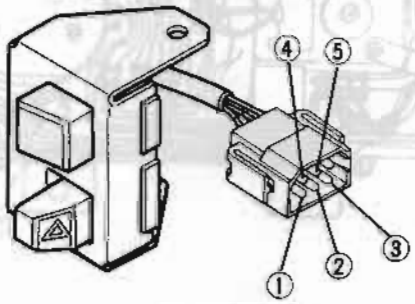


Fig. BE-21 Horn Relay

HAZARD SWITCH

REMOVAL AND INSTALLATION

1. Disconnect battery ground cable.
2. Remove instrument lower cover on the left side.
3. Remove upper steering column cover.
4. Disconnect harness connector, and then remove retaining screw.
5. Install hazard switch in the reverse order of removal.



	1	2	3	4	5
OFF	○	○			
ON			○	○	○

BE025D

Fig. BE-22 Hazard Switch

STOP LAMP SWITCH

REMOVAL AND INSTALLATION

1. Disconnect battery ground cable.
2. Remove instrument lower cover and assist floor nozzle.
3. Disconnect lead wires at connectors.
4. Loosen lock nut. Switch assembly can then be taken out by rotating switch.
5. Install in the reverse order of removal.

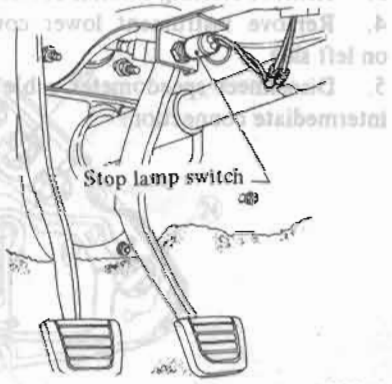


Fig. BE-23 Stop Lamp Switch

INSPECTION

Test continuity through stop lamp switch with a test lamp or ohmmeter.

When plunger is pressed into switch assembly, stop lamp switch contacts are open. Contacts are closed when plunger is projected.

BACK-UP LAMP SWITCH

Back-up lamp switch is installed on transmission.

INSPECTION

When transmission lever is in "R" position, there should be continuity between two terminals.

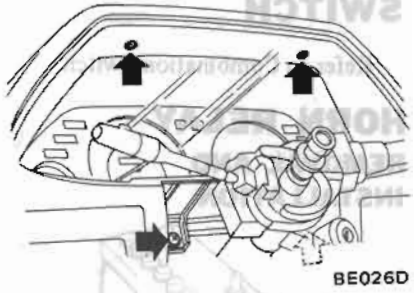
METERS AND GAUGES

CAUTION: Before starting to work on any part of electrical system, disconnect battery ground cable.

COMBINATION METER

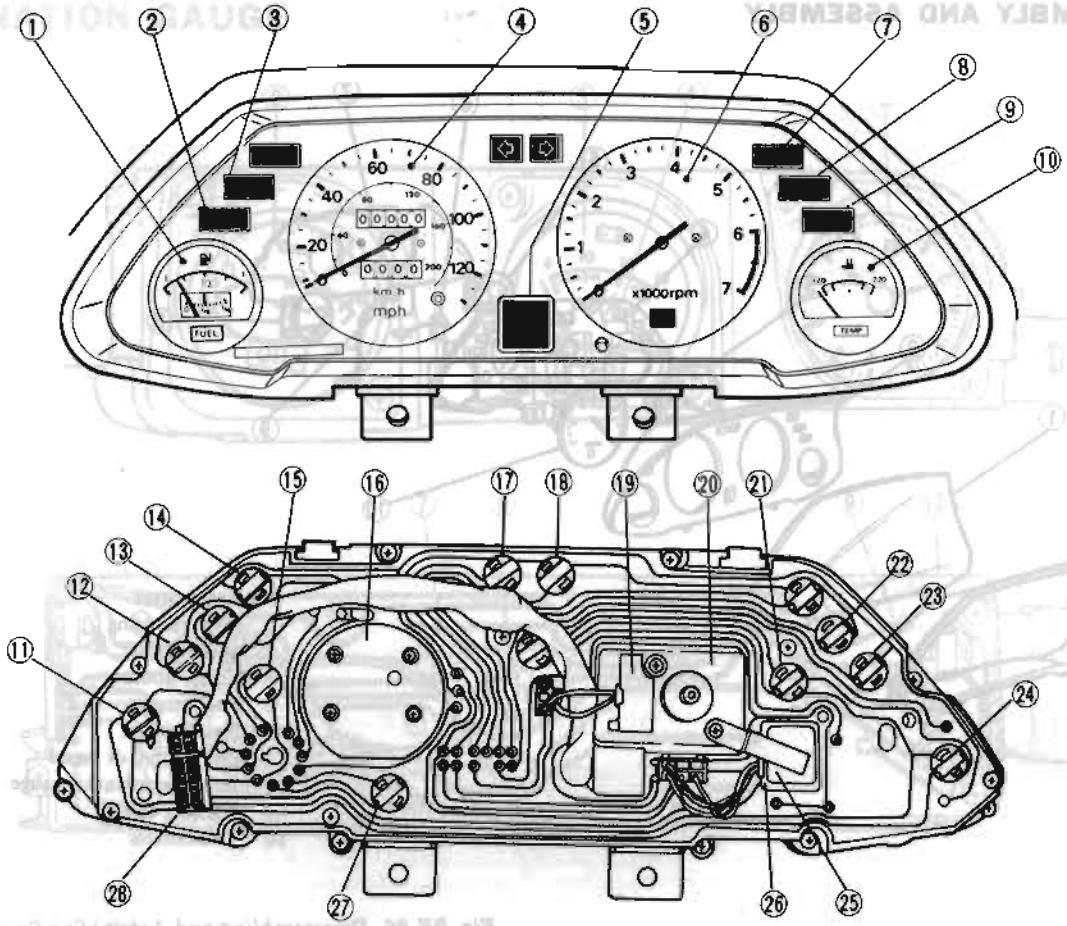
REMOVAL AND INSTALLATION

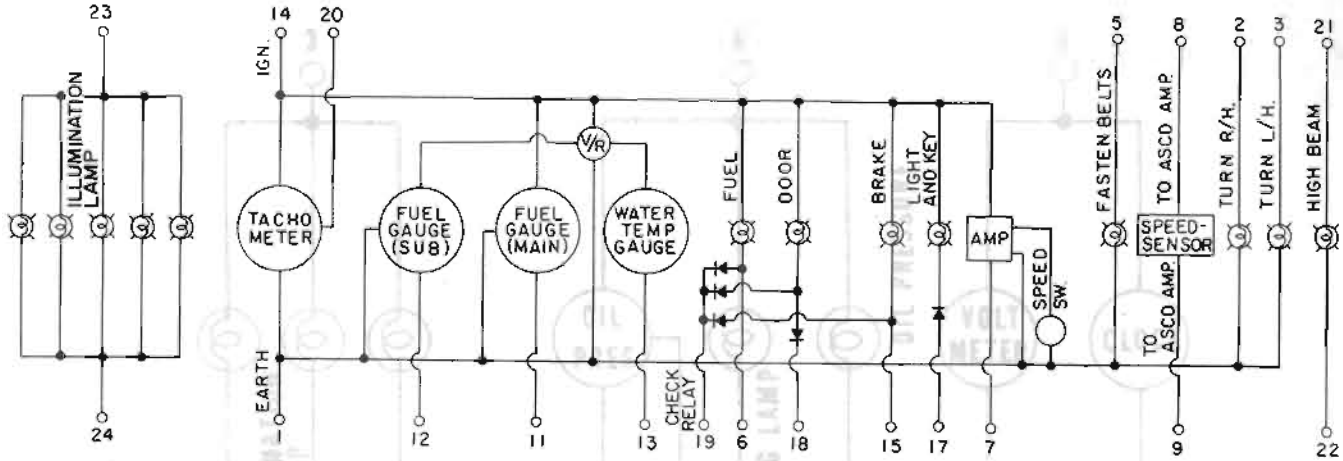
1. Disconnect battery ground cable.
2. Remove steering wheel.
3. Remove steering column cover.
4. Remove instrument lower cover on left side.
5. Disconnect speedometer cable at intermediate connection.
6. Remove combination switch.
7. Remove combination retaining screws.
8. Carefully pull out combination meter and disconnect connector whose leads are connected to combination meter.
9. Install combination meter in the reverse order of removal.



BE026D

Fig. BE-24 Removing Combination Meter



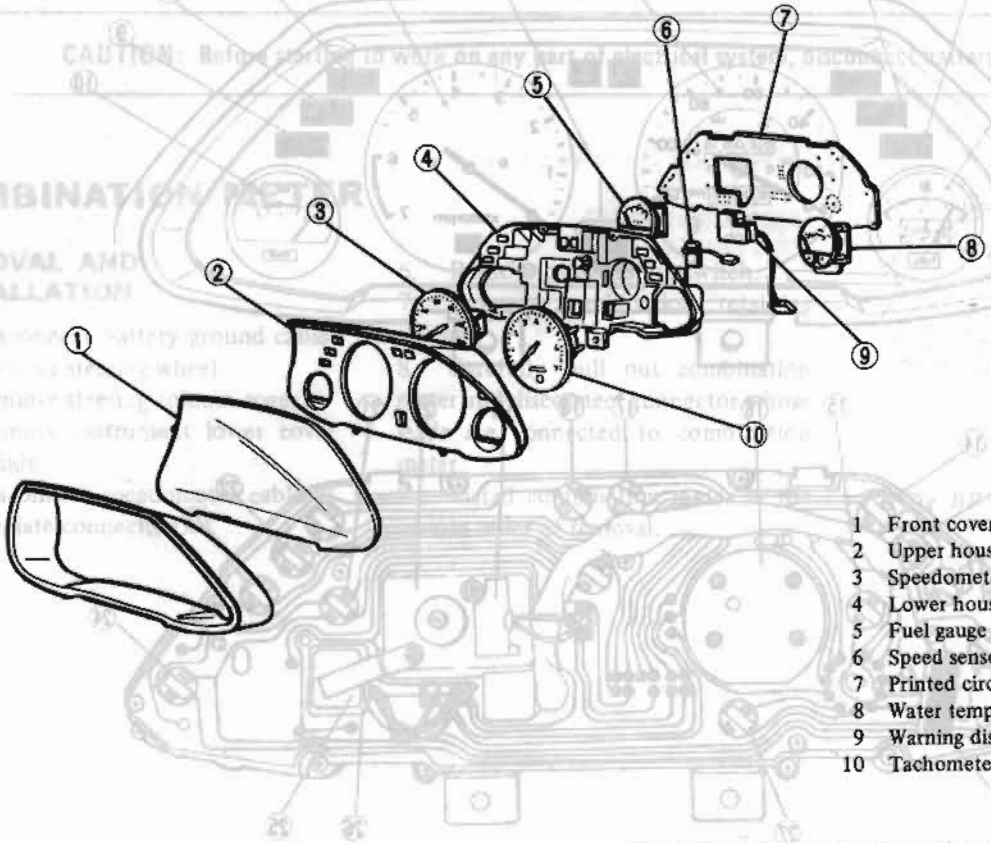


1 Fuel gauge
2 Fuel level warning lamp
3 Seat belt warning lamp
4 Speedometer
5 Warning display
6 Tachometer
7 Light and key warning lamp
8 Brake warning lamp
9 Door warning lamp
10 Water temperature gauge
11 Illumination lamp
12 Door warning lamp
13 Brake warning lamp
14 Light and key warning lamp
15 Illumination lamp
16 Tachometer
17 Turn signal indicator lamp (L.H.)
18 Turn signal indicator lamp (R.H.)
19 Speed sensor
20 Speedometer
21 Illumination lamp
22 Seat belt warning lamp
23 Fuel level warning lamp
24 Illumination lamp
25 Speed switch amplifier
26 Intermittent amplifier
27 High beam pilot lamp
28 Warning display connector

BE027D

Fig. BE-25

DISASSEMBLY AND ASSEMBLY

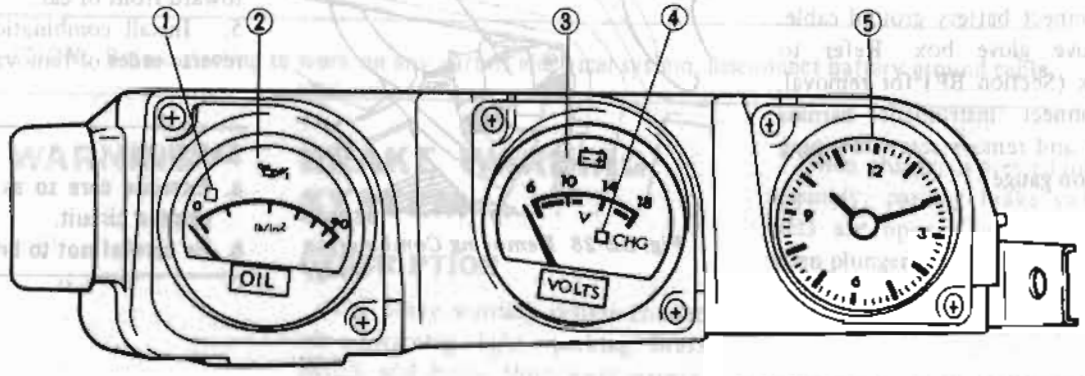


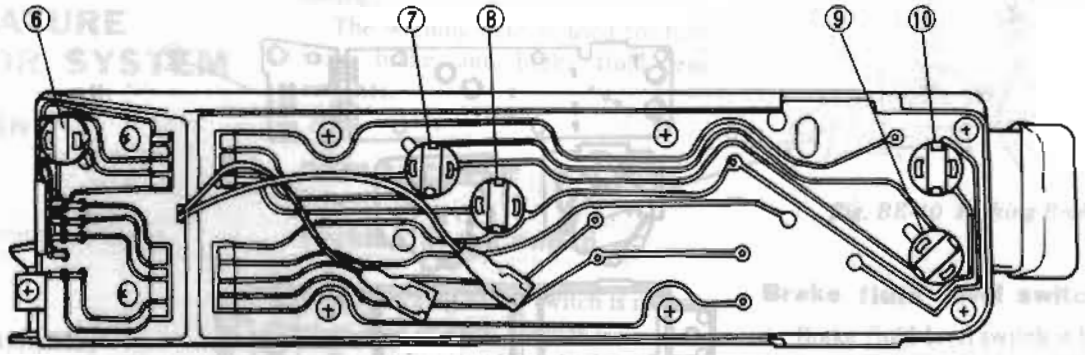
1 Front cover
2 Upper housing
3 Speedometer
4 Lower housing
5 Fuel gauge
6 Speed sensor
7 Printed circuit board
8 Water temperature gauge
9 Warning display
10 Tachometer

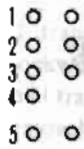
BE028D

Fig. BE-26 Disassembling and Assembling Combination Meter

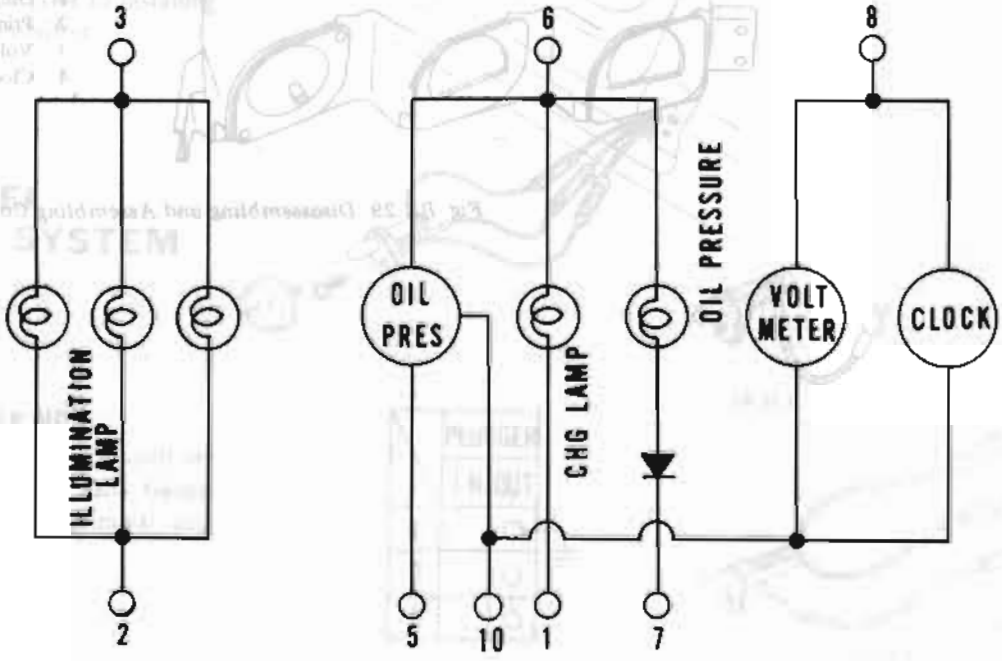
COMBINATION GAUGE







1 Oil pressure warning lamp
2 Oil pressure gauge
3 Voltmeter
4 Charge warning lamp
5 Clock
6 Illumination lamp
7 Illumination lamp
8 Charge warning lamp
9 Illumination lamp
10 Oil pressure warning lamp



BE029D

Fig. BE-27 Combination Gauge

REMOVAL AND INSTALLATION

1. Disconnect battery ground cable.
2. Remove glove box. Refer to Glove Box (Section BF) for removal.
3. Disconnect instrument harness connector and remove screw retaining combination gauge.

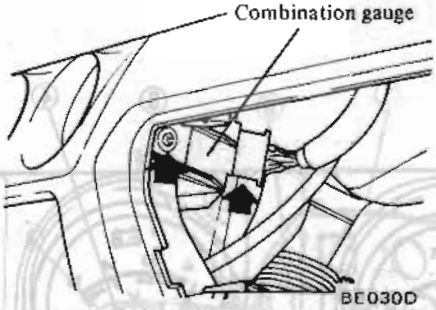


Fig. BE-28 Removing Combination Gauge

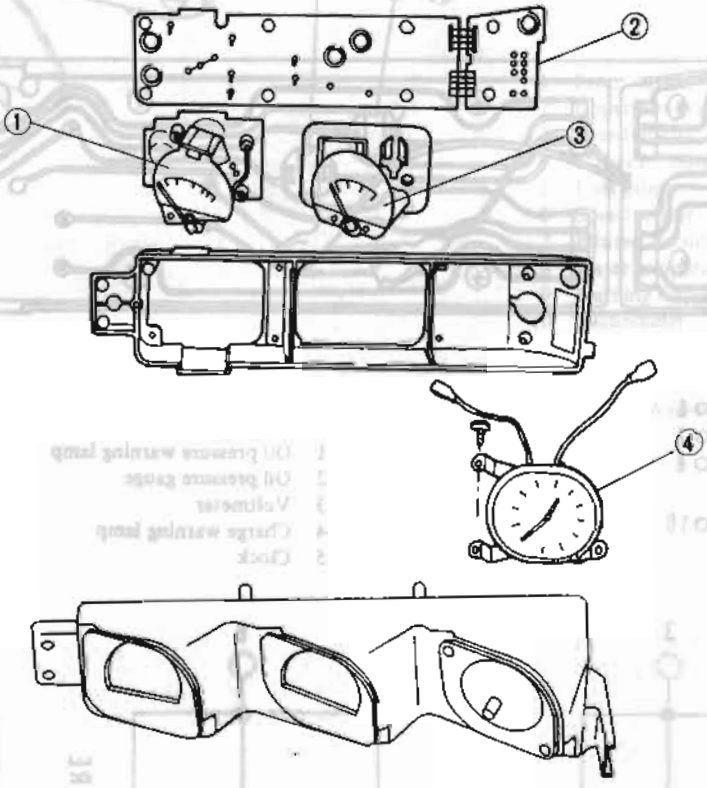
4. Pull out on combination gauge toward glove box while pushing out toward front of car.
5. Install combination gauge in the reverse order of removal.

CAUTION:

a. Exercise care so as not to damage printed circuit.

b. Be careful not to break clock knob.

DISASSEMBLY AND ASSEMBLY



1 Oil pressure gauge
2 Printed circuit board
3 Voltmeter
4 Clock

Fig. BE-29 Disassembling and Assembling Combination Gauge

WARNING SYSTEM

CAUTION: Before starting to work on any part of electrical system, disconnect battery ground cable.

CHARGE WARNING SYSTEM

Refer to Section EE.

WATER TEMPERATURE INDICATOR SYSTEM

REPLACEMENT

Gauge

Refer to Combination Gauge.

Thermal transmitter

1. Disconnect lead wire from terminal.
2. Remove thermal transmitter by loosening it counterclockwise.
3. Install new thermal transmitter in the reverse order of removal.

Note: Be sure to apply conductive sealer to threads prior to installing new thermal transmitter.

FUEL LEVEL WARNING SYSTEM

Warning lamp

See Fig. BE-25.

Fuel tank gauge unit

Fuel tank gauge unit is located on fuel tank. Refer to Fuel Tank Gauge Unit (Section FE) for removal and installation.

BRAKE WARNING SYSTEM

DESCRIPTION

The brake warning system consists of a warning light, parking brake switch and brake fluid level warning switch.

The warning light is used for both hand brake and brake fluid level switches.

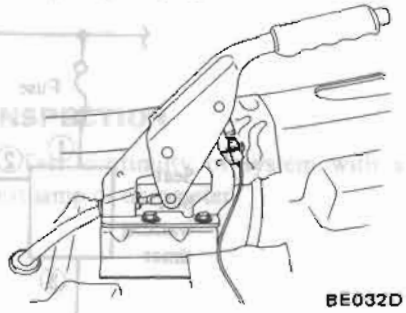
REPLACEMENT

Parking brake switch

The parking brake switch is mounted on lever support bracket.

To replace parking brake switch, disconnect lead wire at connector plug and pull switch assembly out of bracket.

When plunger is pressed into switch assembly, parking brake switch contacts are open. Contacts are closed when plunger is projected.



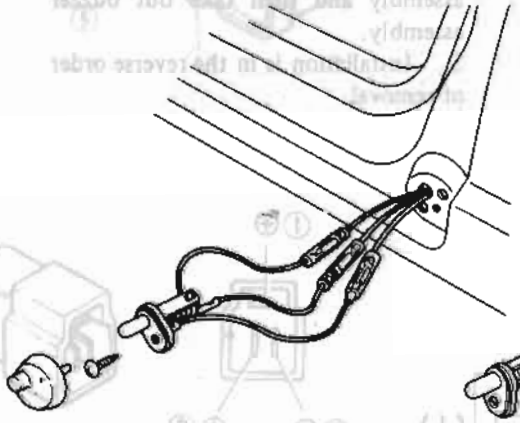
BE032D

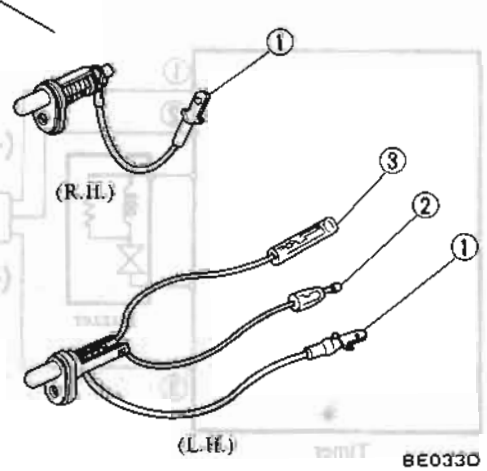
Fig. BE-30 Parking Brake Switch

Brake fluid level switch

Brake fluid level switch is built into brake master cylinder cap. The cap can be easily removed by twisting it after disconnecting lead wire terminals. Then replace cap.

DOOR SWITCH





	PLUNGER	
	IN	OUT
1		○
2		○
3		○

BE033D

Fig. BE-31 Door Switch

SEAT BELT WARNING SYSTEM

DESCRIPTION

This system consists of an ignition switch, a timer unit, a warning light, a driver's seat belt switch and a warning buzzer, and is designed to remind the driver to buckle his seat belt.

When the ignition switch is turned to the "ON" position, the warning light comes on and remains on for 4 to 8 seconds. At the same time, the warning buzzer sounds for 4 to 8 seconds intermittently if the driver's seat belt is not fastened properly. The buzzer is also used as a theft warning buzzer.

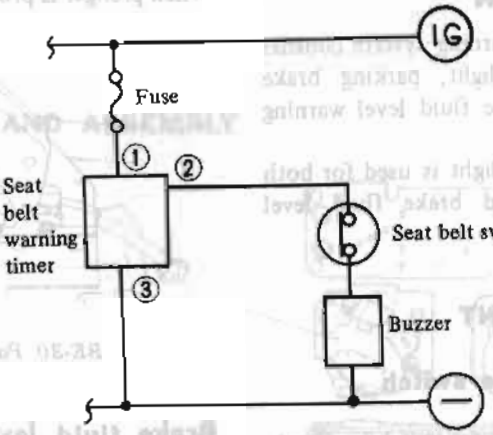


Fig. BE-32 Seat Belt Warning System

REMOVAL AND INSTALLATION

Intermittent warning buzzer

See Fig. BE-9.

1. Disconnect battery ground cable.
2. Remove instrument lower cover and assist floor nozzle on the left side.
3. Disconnect buzzer wire connector.
4. Remove screws retaining buzzer assembly and then take out buzzer assembly.
5. Installation is in the reverse order of removal.

Seat belt warning timer

See Fig. BE-9.

1. Disconnect battery ground cable.
2. Remove instrument lower cover and driver floor nozzle on the right side.
3. Remove glove box.
4. Disconnect wire connector.
5. Loosen screw retaining timer unit on dash side and then take out timer unit.
6. Installation is in the reverse order of removal.

Seat belt switch

1. Disconnect battery ground cable.
2. Slide driver's seat all the way forward.
3. Disconnect harness connector.
4. Remove inner seat belt by removing securing bolt.
5. Install inner seat belt in the reverse order of removal.

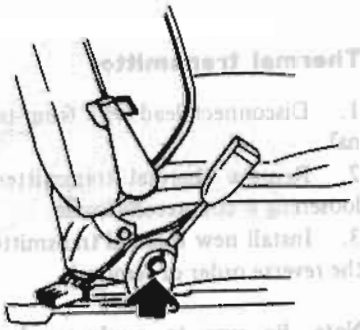
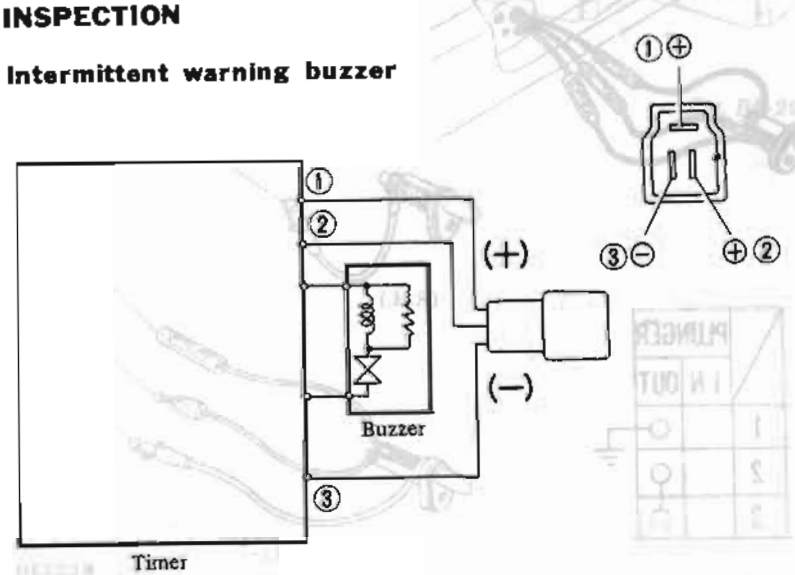
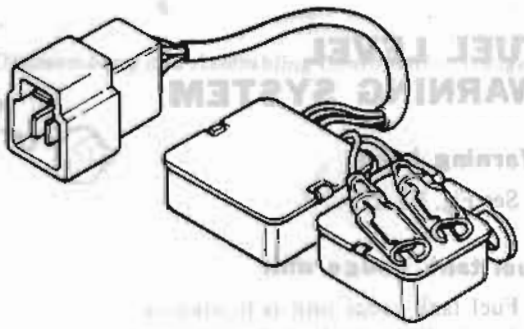


Fig. BE-33 Driver's Inner Seat Belt

INSPECTION

Intermittent warning buzzer





BE035D

Fig. BE-34 Buzzer

Apply 12V direct current between ① – ③ or ② – ③ and check whether buzzer sounds or not. The buzzer must sound when ① – ③ and ② – ③ are connected to power circuit.

Note: Make sure that ⊖ negative terminal of power circuit is always connected to ③ terminal.

Seat belt warning timer

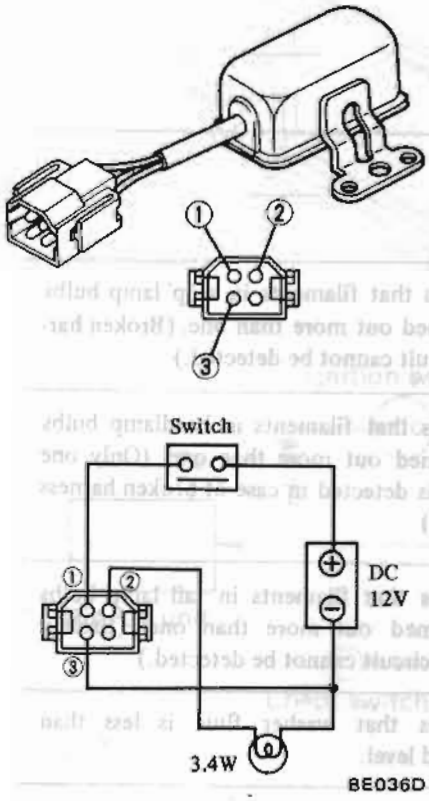


Fig. BE-35 Checking Seat Belt Warning Timer Unit

Seat belt switch

Test continuity through driver's seat belt switch with a test lamp or ohmmeter.

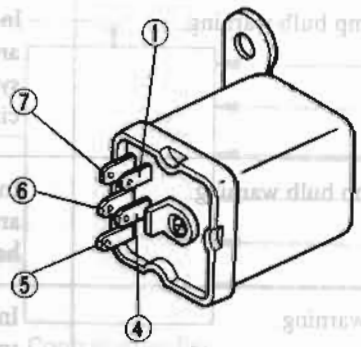
There should be continuity between two terminals when the seat belt is unfastened. Conversely there should not be continuity when fastened.

DIODE BOX

REMOVAL AND INSTALLATION

See Fig. BE-9.

1. Disconnect battery ground cable.
2. Remove kicking plate on the right side.
3. Disconnect harness connector.
4. Remove diode box.
5. Install diode box in the reverse order of removal.



INSPECTION

Test continuity of system with a test lamp or ohmmeter.

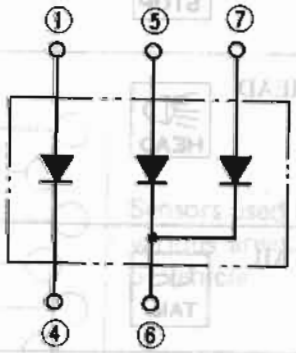


Fig. BE-36 Diode Box

WARNING DISPLAY

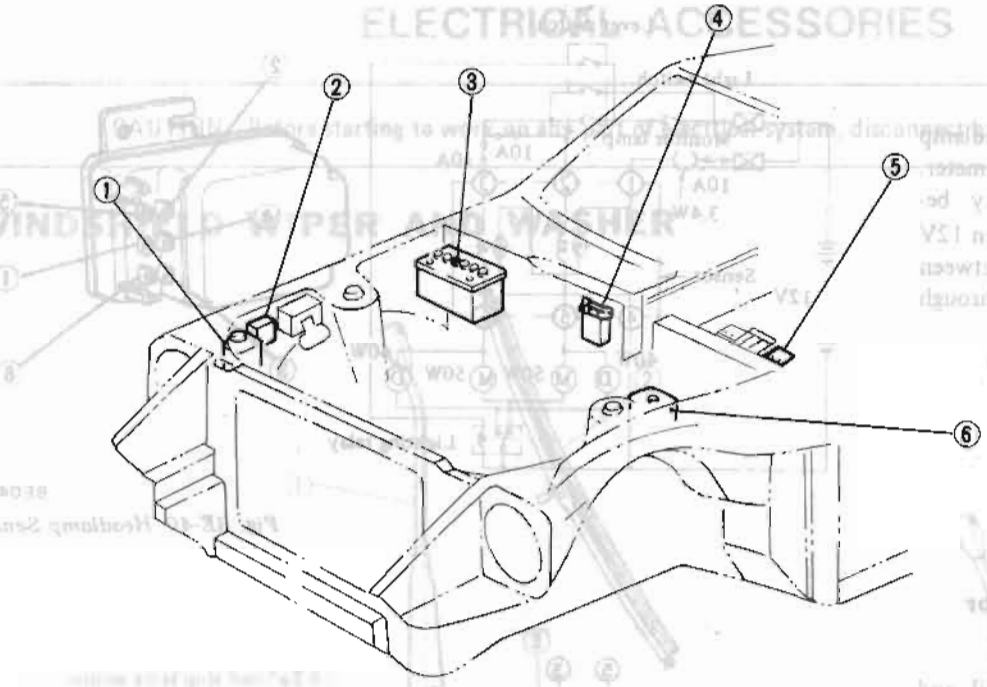
DESCRIPTION

The warning display system consists of a warning indicator, a check switch, a warning display control amplifier, and sensors which are arranged at each part of the car.

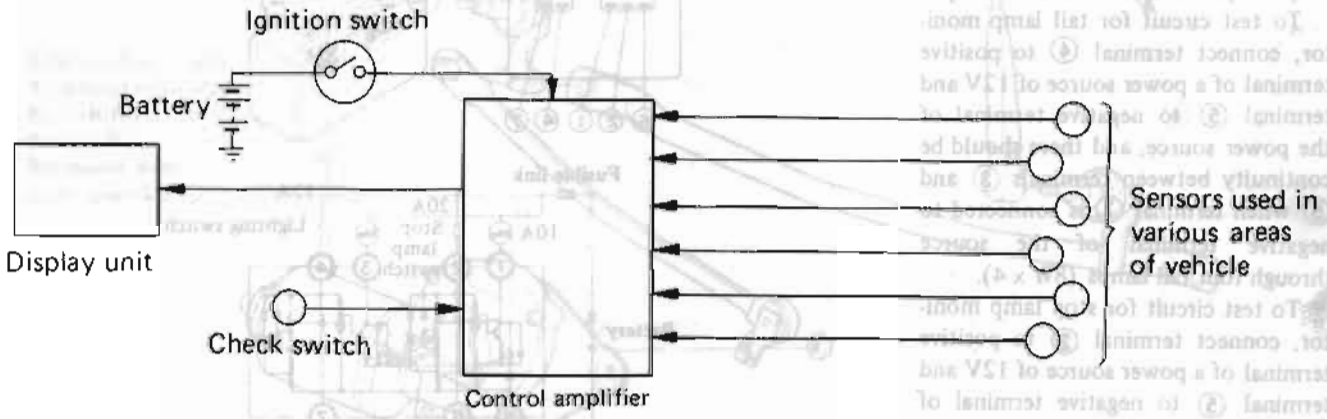
Pushing the check switch on the combination meter will indicate the following on the indicators.

Warning

Indication	Item	Warning
Red all over the surface 	Indication that there is a malfunction.	—
OK 	Indication that there is no malfunction.	—
STOP 	Burned-out stop lamp bulb warning.	Indicates that filaments in stop lamp bulbs are burned out more than one. (Broken harness circuit cannot be detected.)
HEAD 	Burned-out headlamp bulb warning.	Indicates that filaments in headlamp bulbs are burned out more than one. (Only one system is detected in case of broken harness circuits.)
TAIL 	Burned-out tail lamp bulb warning.	Indicates that filaments in tail lamp bulbs are burned out more than one. (Broken harness circuit cannot be detected.)
WASH 	Washer fluid level warning.	Indicates that washer fluid is less than specified level.
BATT 	Battery electrolyte level warning.	Indicates that battery electrolyte is less than specified level.
WATER 	Coolant level warning.	Indicates that engine coolant in radiator reservoir tank is less than specified level.



1 Coolant level sensor (In reservoir tank)
2 Headlamp sensor
3 Battery sensor
4 Control amplifier (Below glove box)
5 Tail and stop sensor
6 Washer fluid level sensor (In washer tank)



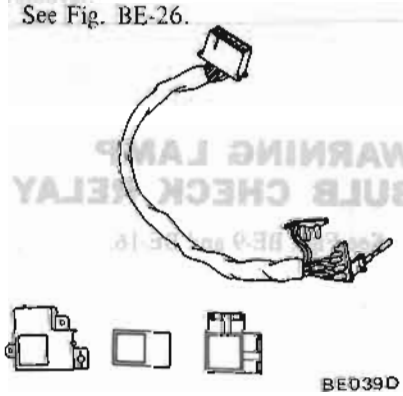
BE038D

Fig. BE-37 Warning Display System

REMOVAL AND INSTALLATION

Display

See Fig. BE-26.

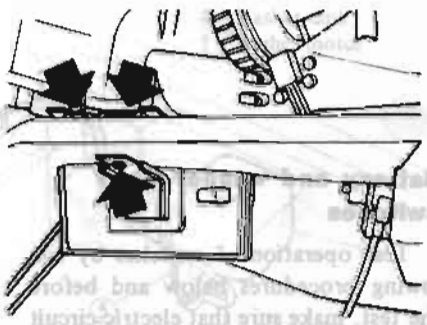


BE039D

Fig. BE-38 Display

Display amplifier

1. Disconnect battery ground cable.
2. Remove instrument lower cover on right side.
3. Remove glove box.
4. Disconnect wire connectors from display amplifier.
5. Remove display amplifier.
6. Installation is in the reverse order of removal.



BE040D

Fig. BE-39 Removing Display Amplifier

INSPECTION

Headlamp sensor

See Fig. BE-9.

Test continuity through headlamp sensor with a test lamp or ohmmeter.

There should be continuity between terminals ① and ④ when 12V direct current is supplied between terminals ② – ⑤ and ③ – ⑥ through headlamps (50/40W).

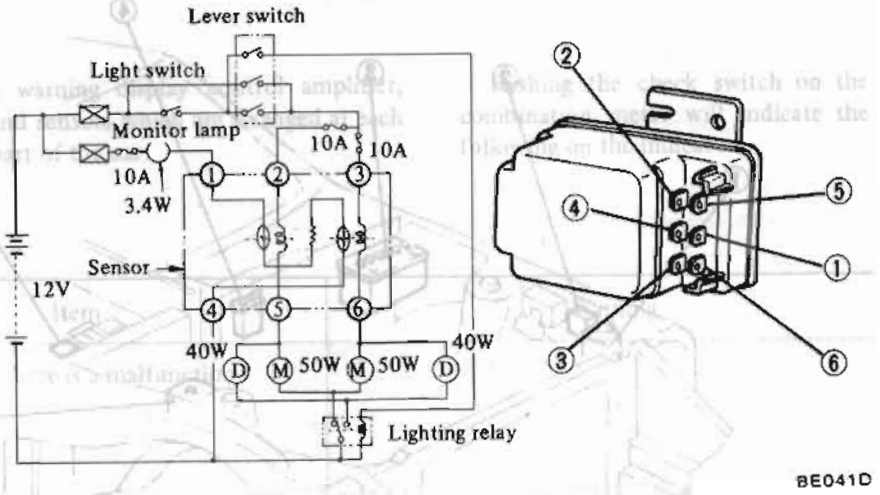


Fig. BE-40 Headlamp Sensor

Tail and stop lamp sensor

See Fig. BE-9.

Test continuity through tail and stop lamp sensor with a test lamp.

To test circuit for tail lamp monitor, connect terminal ④ to positive terminal of a power source of 12V and terminal ⑤ to negative terminal of the power source, and there should be continuity between terminals ③ and ⑤ when terminal ⑦ is connected to negative terminal of the source through four tail lamps (8W x 4).

To test circuit for stop lamp monitor, connect terminal ② to positive terminal of a power source of 12V and terminal ⑤ to negative terminal of the power source, and there should be continuity between terminals ① and ⑤ when terminal ⑥ is connected to negative terminal of the power source through four stop lamps (27W x 4).

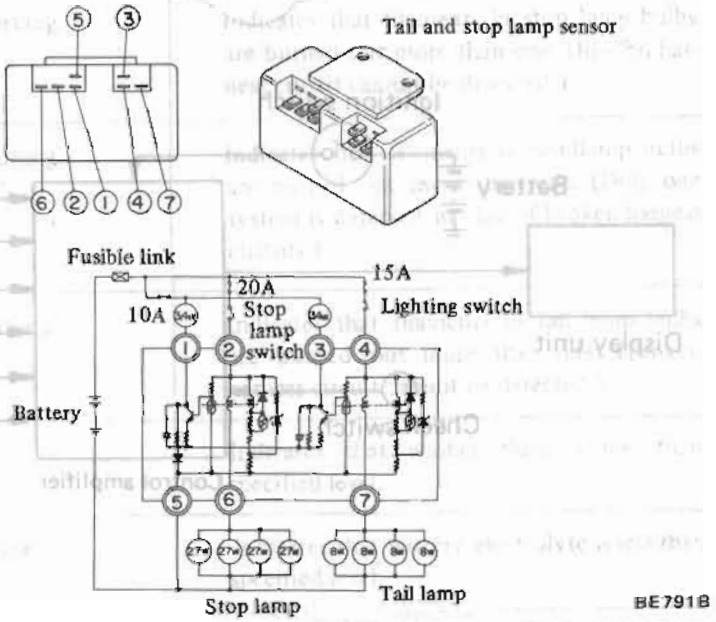


Fig. BE-41 Tail and Stop Lamp Sensor

Battery and washer level switches

Test operation of switches by following procedures below and before the test, make sure that electric circuit and bulbs are in correct condition.

Raise switches gradually and ascertain that warning lamps glow as switches come up off the fluid level.

Radiator fluid level switch

Before testing, make sure that electric circuit and bulb are in correct condition.

Gradually lower float in radiator reservoir tank and make sure that warning lamp glows when float has reached below Low Level.

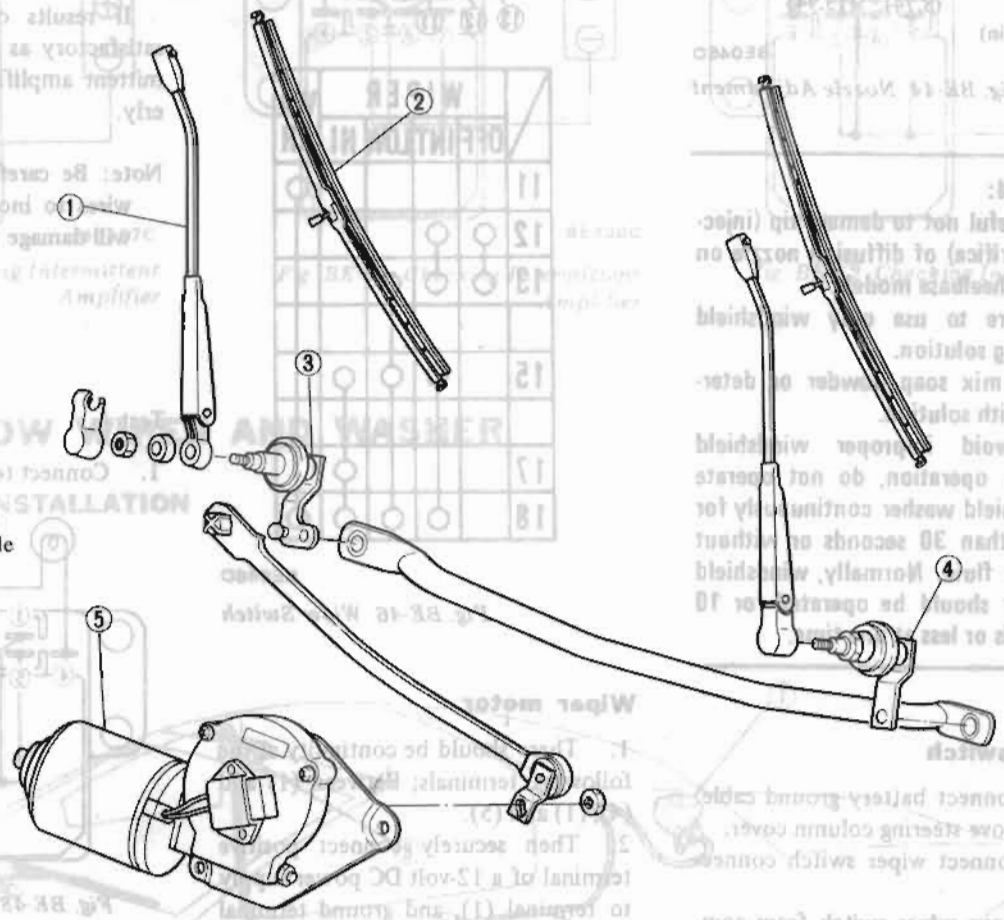
WARNING LAMP BULB CHECK RELAY

See Figs. BE-9 and BE-16.

ELECTRICAL ACCESSORIES

CAUTION: Before starting to work on any part of electrical system, disconnect battery ground cable.

WINDSHIELD WIPER AND WASHER

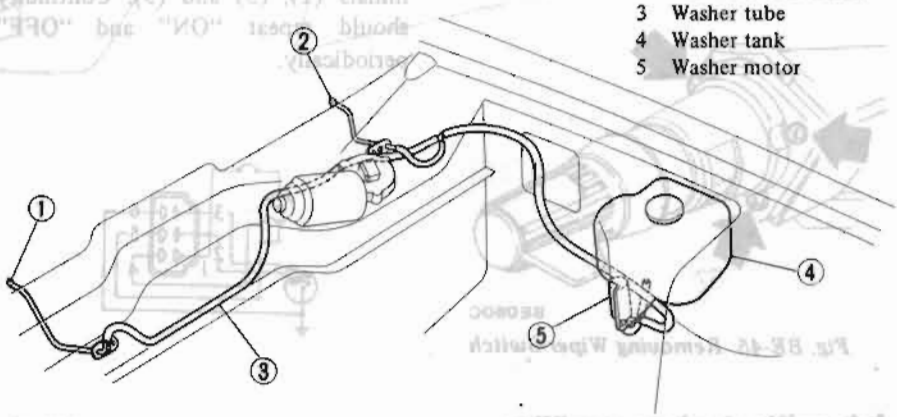


1 Windshield wiper arm
2 Windshield wiper blade
3 Pivot (R.H.)
4 Pivot (L.H.)
5 Windshield wiper motor assembly

BE043D

Fig. BE-42 Wiper Motor and Wiper Linkage

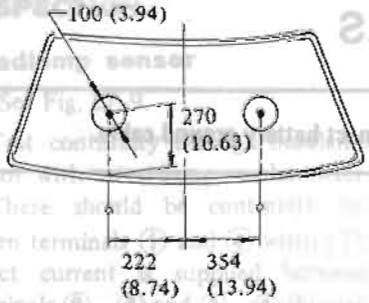
CAUTION:
Be careful not to bend linkage during removal.



1 Washer nozzle (R.H.)
2 Washer nozzle (L.H.)
3 Washer tube
4 Washer tank
5 Washer motor

BE044D

Fig. BE-43 Windshield Washer



Unit: mm (in)

BE045D

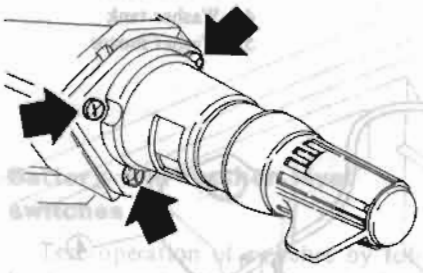
Fig. BE-44 Nozzle Adjustment

CAUTION:

a. **Be careful not to damage tip (injection orifice) of diffusion nozzle on long wheelbase models.**
b. **Be sure to use only windshield washing solution.**
   Never mix soap powder or detergent with solution.
c. **To avoid improper windshield washer operation, do not operate windshield washer continuously for more than 30 seconds or without washer fluid. Normally, windshield washer should be operated for 10 seconds or less at one time.**

Wiper switch

1. Disconnect battery ground cable.
2. Remove steering column cover.
3. Disconnect wiper switch connector.
4. Remove wiper switch from combination switch by removing retaining screws.
5. Install wiper switch in the reverse order of removal.



BE080C

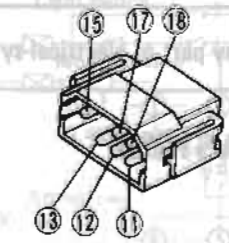
Fig. BE-45 Removing Wiper Switch

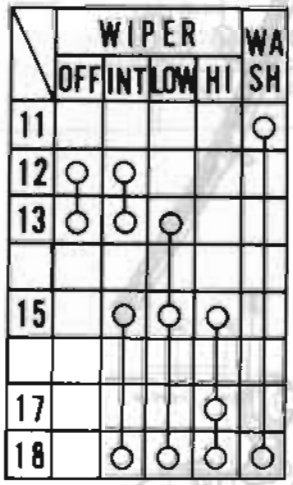
Intermittent wiper amplifier

See Fig. BE-9.

INSPECTION

Wiper switch





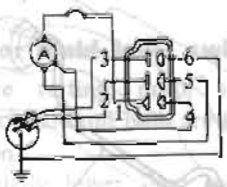
BE046D

Fig. BE-46 Wiper Switch

Wiper motor

1. There should be continuity at the following terminals: Between (1) and (4), (1) and (5).
2. Then securely connect positive terminal of a 12-volt DC power supply to terminal (1), and ground terminal (4) or (5). The motor should run.
3. Ground either terminal (4) or (5) to keep wiper motor running.

Check continuity between terminals (2), (3) and (5). Continuity should repeat "ON" and "OFF" periodically.



BE047D

Fig. BE-47 Wiper Motor

Intermittent amplifier

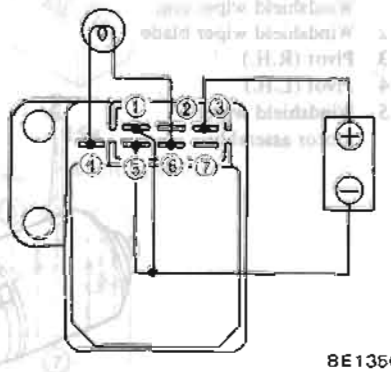
To check intermittent amplifier for proper operation, fabricate adapters shown in Fig. BE-48, and utilize the following procedures in the order enumerated. Failure to observe the order of these test procedures may lead to improper test results.

If results of tests A and B are satisfactory as indicated below, intermittent amplifier is functioning properly.

Note: Be careful not to connect lead wires to incorrect terminals as this will damage transistors.

Test A

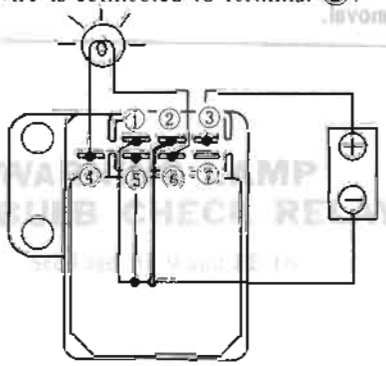
1. Connect test lead wires.



BE135C

Fig. BE-48 Checking Intermittent Amplifier

2. Make sure that test lamp comes on in 0.5 second when negative lead wire is connected to terminal ②.

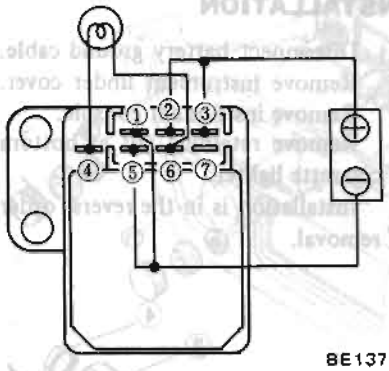


BE136C

Fig. BE-49 Checking Intermittent Amplifier

Test B

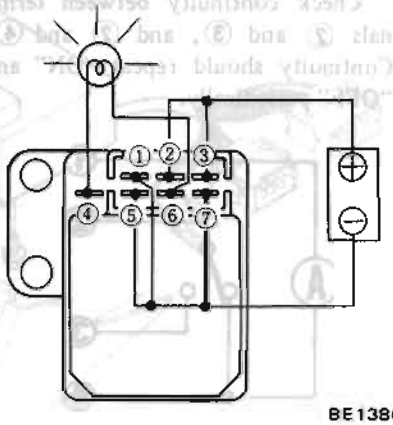
1. Connect test lead wires.



BE137C

Fig. BE-50 Checking Intermittent Amplifier

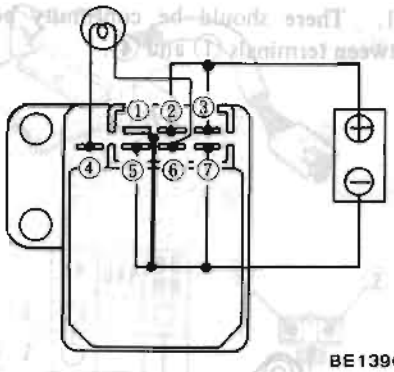
2. Make sure that test lamp comes on when negative lead wire is connected to terminal ⑦.



BE138C

Fig. BE-51 Checking Intermittent Amplifier

3. Disconnect lead wire from terminal ①. See Fig. BE-52. Test lamp should go out and comes on in seven seconds.

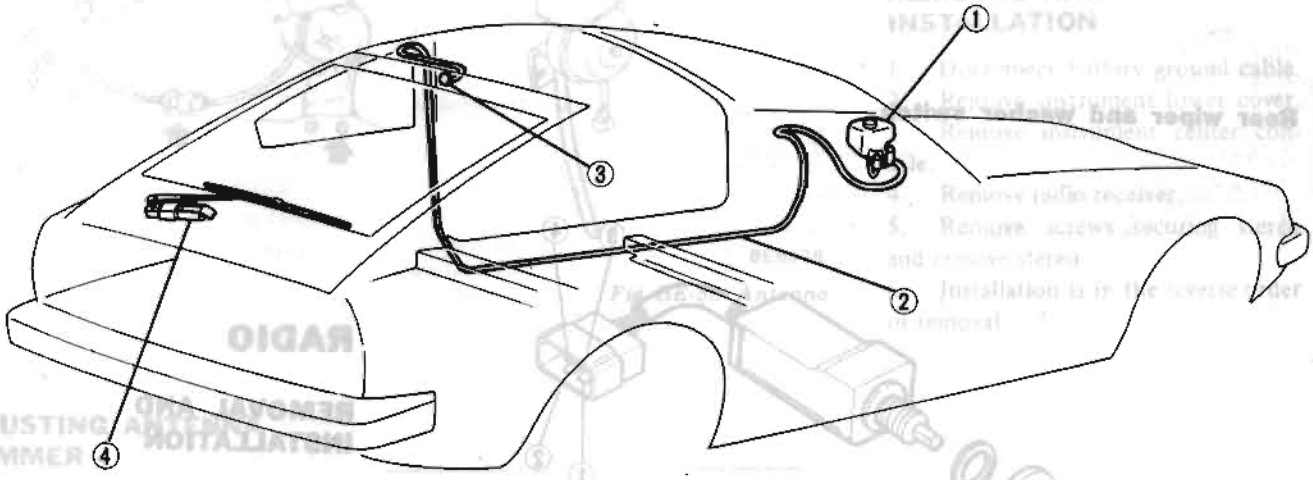


BE139C

Fig. BE-52 Checking Intermittent Amplifier

REAR WINDOW WIPER AND WASHER

REMOVAL AND INSTALLATION



1 Washer tank
2 Washer tube
3 Washer nozzle
4 Wiper motor

BE048D

Fig. BE-53 Rear window wiper and washer

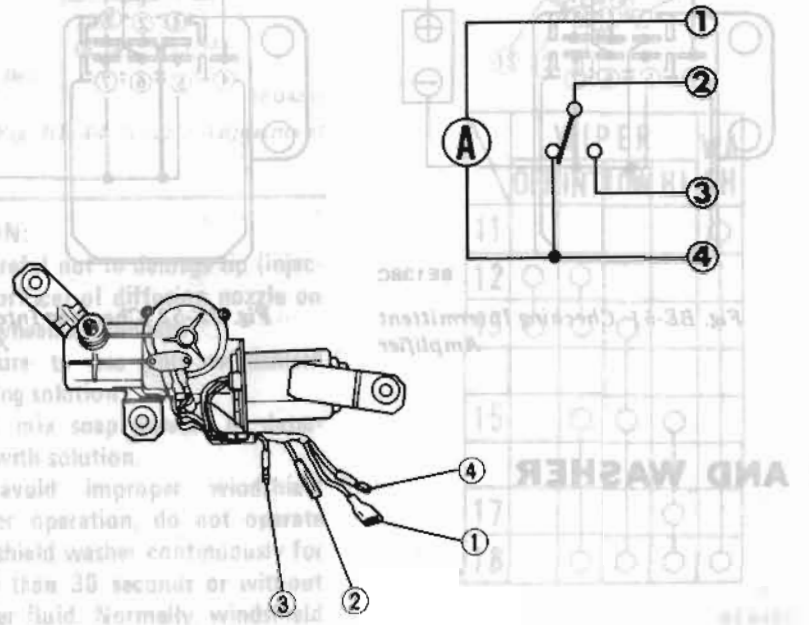
INSPECTION

Wipeer motor

Inspect wiper motor as follows:

1. There should be continuity between terminals ① and ④.
2. Apply positive DC 12 volt to terminal ④ and negative to terminal ①, and motor will rotate.

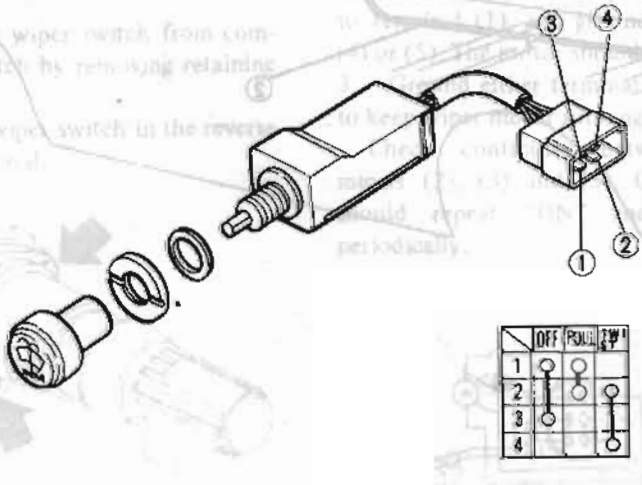
Check continuity between terminals ② and ③, and ② and ④. Continuity should repeat "ON" and "OFF" periodically.



BE049D

Fig. BE-54 Rear Wiper Motor

Rear wiper and washer switch



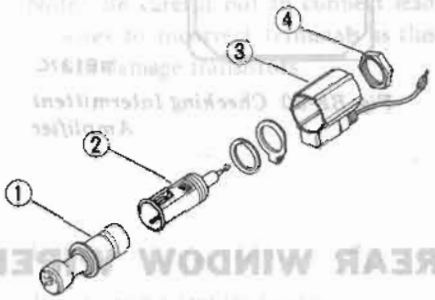
BE050D

Fig. BE-55 Wiper and Washer Switch

CIGARETTE LIGHTER

REMOVAL AND INSTALLATION

1. Disconnect battery ground cable.
2. Remove instrument under cover.
3. Remove instrument console.
4. Remove retaining nut at bottom of cigarette lighter.
5. Installation is in the reverse order of removal.



1 Lighter
2 Housing
3 Housing cover
4 Retaining nut

BE051D

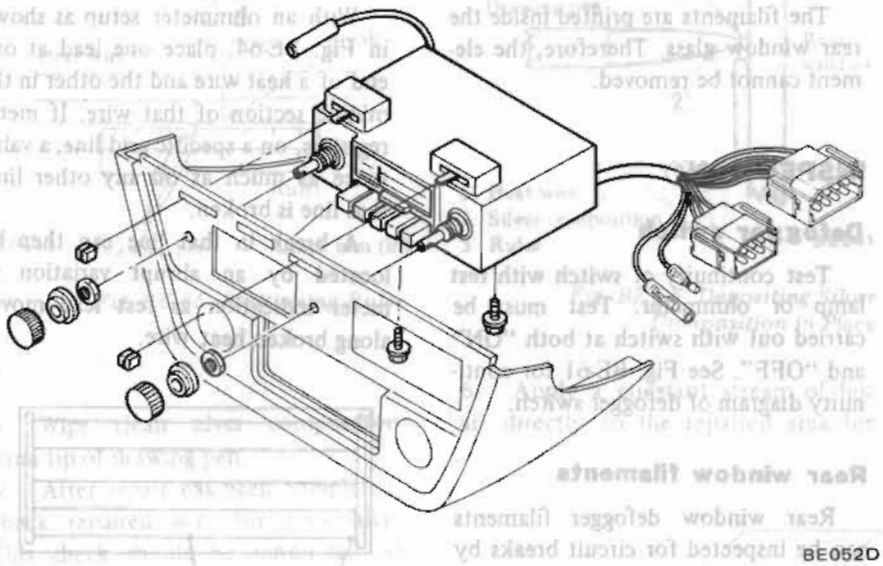
Fig. BE-56 Cigarette Lighter

RADIO

REMOVAL AND INSTALLATION

Radio receiver

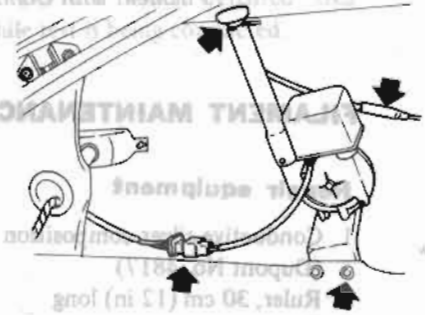
1. Disconnect battery ground cable.
2. Remove instrument under cover.
3. Remove instrument console.
4. Pull out knob and dials on radio receiver and remove nuts retaining escutcheon to radio receiver.
5. Loosen screws retaining radio receiver. Radio receiver can then be taken out.
6. Installation is in the reverse order of removal.

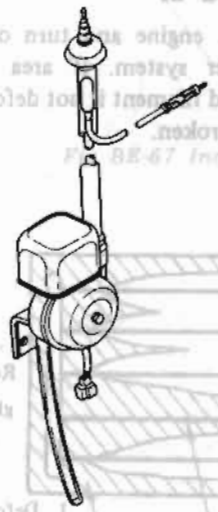


BE052D

Fig. BE-57 Radio Receiver

Antenna





BE652B

Fig. BE-58 Antenna

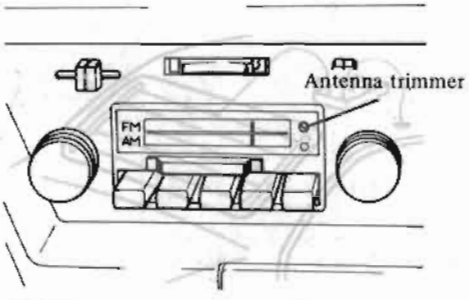
ADJUSTING ANTENNA TRIMMER

When a new radio receiver, antenna or antenna feeder is installed, antenna trimmer should be adjusted.

1. Extend antenna completely.
2. Tune in the weakest station between 12 and 16 (1,200 to 1,600 kHz) on dial.

Noise may be generated, but disregard it.

3. Turn antenna trimmer to left and right slowly and set it at a position where receiving sensitivity is highest.

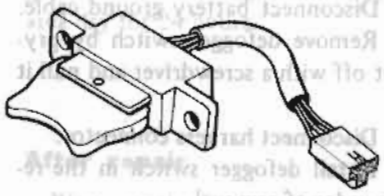


BE053D

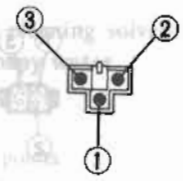
Fig. BE-59 Trimmer Adjusting Screw

INSPECTION

Power antenna switch



	UP	OFF	DOWN
1	○		○
2	○		
3			○



BE054D

Fig. BE-60 Antenna Switch

STEREO

REMOVAL AND INSTALLATION

1. Disconnect battery ground cable.
2. Remove instrument lower cover.
3. Remove instrument center console.
4. Remove radio receiver.
5. Remove screws securing stereo and remove stereo.
6. Installation is in the reverse order of removal.

REAR WINDOW DEFOGGER

DESCRIPTION

The electric rear window defogger system consists of a defogger switch and filaments in the rear window. The filaments are printed on the rear window. Heat from filaments keeps the rear window free of fog and frost.

REMOVAL AND INSTALLATION

Defogger switch

1. Disconnect battery ground cable.
2. Remove defogger switch by prying it off with a screwdriver and pull it out.
3. Disconnect harness connector.
4. Install defogger switch in the reverse order of removal.

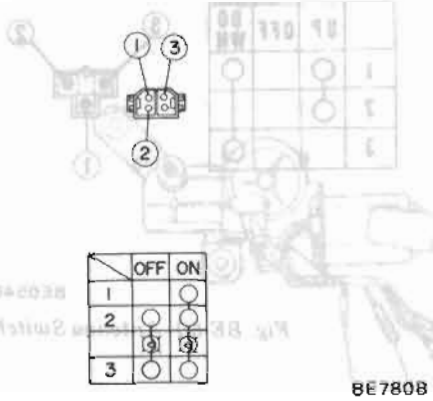


Fig. BE-61 Rear Defogger Switch

Rear window filaments

The filaments are printed inside the rear window glass. Therefore, the element cannot be removed.

INSPECTION

Defogger switch

Test continuity of switch with test lamp or ohmmeter. Test must be carried out with switch at both "ON" and "OFF". See Fig. BE-61 for continuity diagram of defogger switch.

Rear window filaments

Rear window defogger filaments can be inspected for circuit breaks by one of three methods.

Method 1:

Start engine and turn on window defroster system. If area around a specified filament is not defogged, that line is broken.

Method 2:

Start engine and turn on window defroster system. With a direct-current voltmeter setup as shown in Fig. BE-63, check each heat wire for discontinuity. If meter indicates 12 volts or 0 on a specific wire, that line is broken. (Normal indication: 6 volts)

Break in that line can then be detected by moving positive lead of meter along line until an abrupt variation in meter indication is encountered.

Method 3:

With an ohmmeter setup as shown in Fig. BE-64, place one lead at one end of a heat wire and the other in the middle section of that wire. If meter registers, on a specific grid line, a value twice as much as on any other line, that line is broken.

A break in that line can then be located by an abrupt variation in meter indication as test lead moves along broken heat wire.

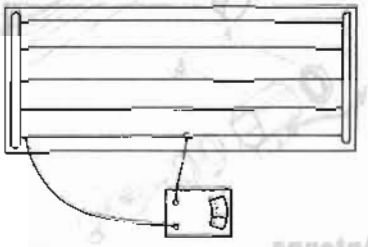


Fig. BE-64 Checking for Broken Filament with Ohmmeter

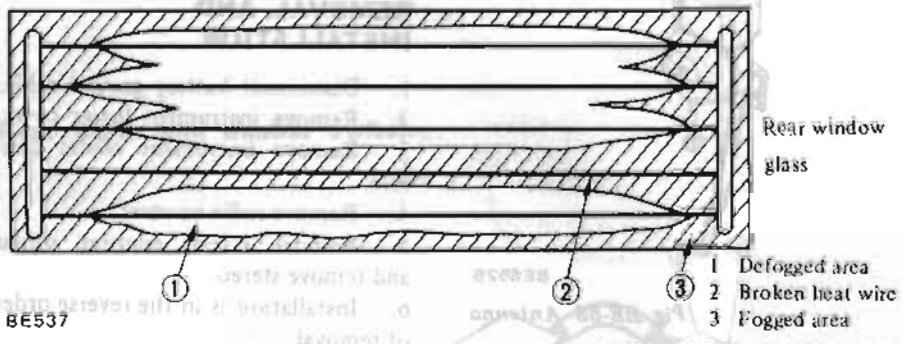


Fig. BE-62 Broken Filament

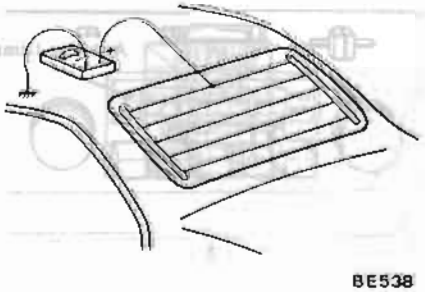


Fig. BE-63 Checking for Broken Filament with D-C

FILAMENT MAINTENANCE

Repair equipment

1. Conductive silver composition (Dupont No. 4817)
2. Ruler, 30 cm (12 in) long
3. Drawing pen
4. Heat gun
5. Alcohol
6. Cloth

Repair procedure

1. Wipe broken heat wire and its surrounding area clean with a cloth dampened in alcohol.
2. Apply a small amount of conductive silver composition to tip of drawing pen.

Note: Shake silver composition container before use.

3. Place ruler on glass along broken line to be repaired as shown in Fig. BE-65. Deposit conductive silver composition on break with drawing pen. Slightly overlap existing heat wire on both sides [preferably 5 mm (0.20 in)] of the break.

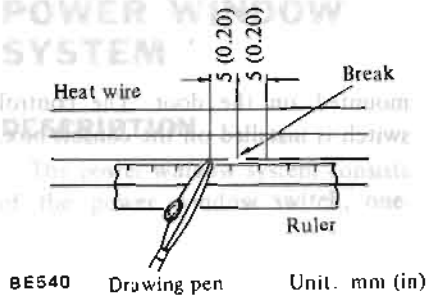


Fig. BE-65 Positioning Ruler

4. Wipe clean silver composition from tip of drawing pen.
5. After repair has been completed, check repaired wire for continuity. This check should be conducted 10 minutes after silver composition is deposited.

Note: Do not touch repaired area while test is being conducted.

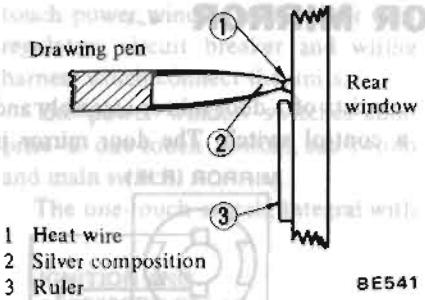


Fig. BE-66 Depositing Silver Composition in Place

6. Apply a constant stream of hot air directly to the repaired area for approximately 20 minutes with a heat gun. A minimum distance of 3 cm (1.2 in) should be kept between repaired area and hot air outlet. If a heat gun is not available, let the repaired area dry for 24 hours.

After repair

Wipe repaired area clean with a soft, clean cloth.

Note: Do not use a cleaning solvent containing much soapy water.

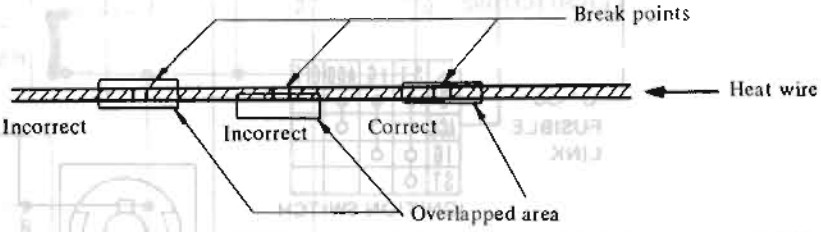


Fig. BE-67 Incorrect and Correct Deposition of Silver Composition

REMOTE-CONTROL DOOR MIRROR

DESCRIPTION

The remote-control door mirror consists of a door mirror assembly and a control switch. The door mirror is mounted on the door. The control switch is installed on the console box.

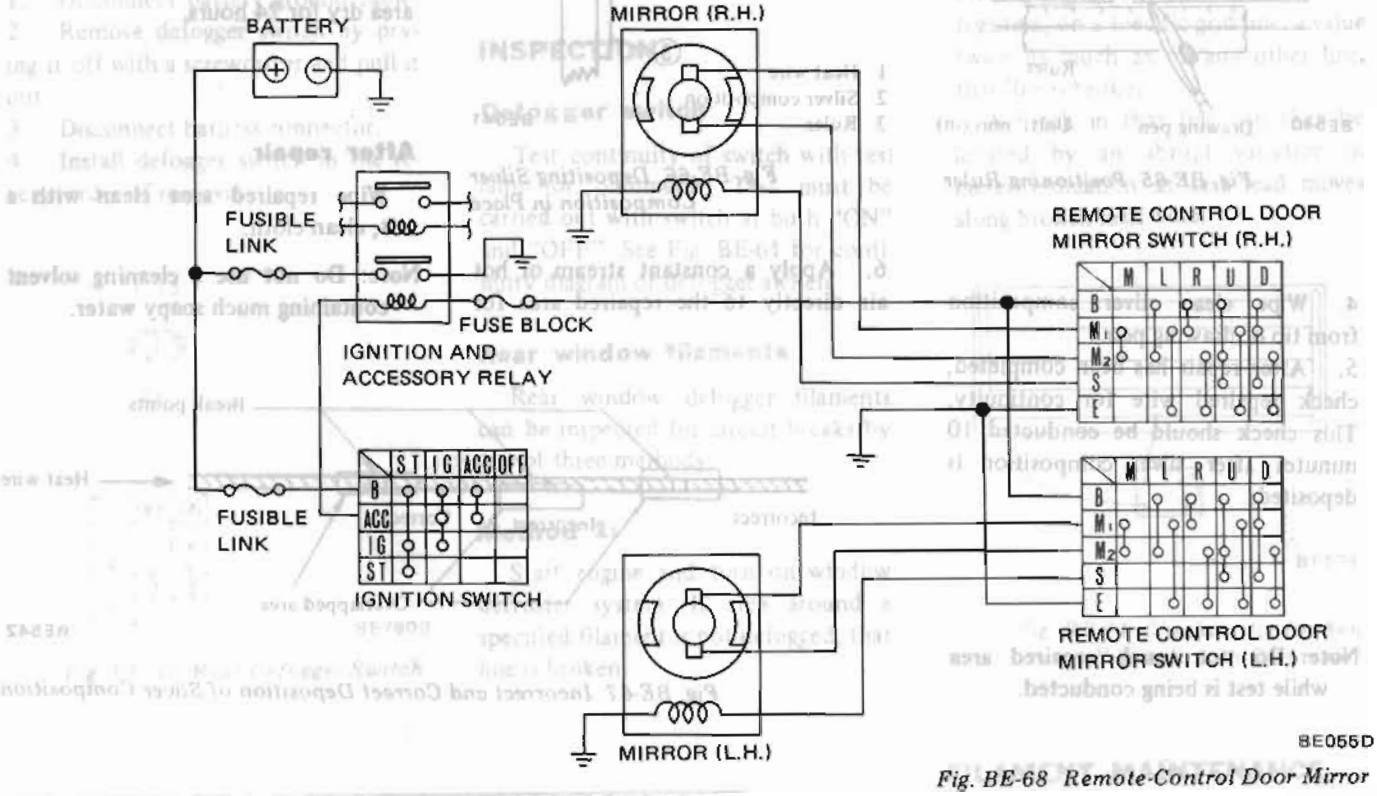


Fig. BE-68 Remote-Control Door Mirror

REMOVAL AND INSTALLATION

Control switch

1. Disconnect battery ground cable.
2. Loosen screws retaining console box, and disconnect wire connectors.
3. Remove ring nuts retaining switch of console box.
4. Switch body can be taken out from behind console box.
5. Installation is in the reverse order of removal.

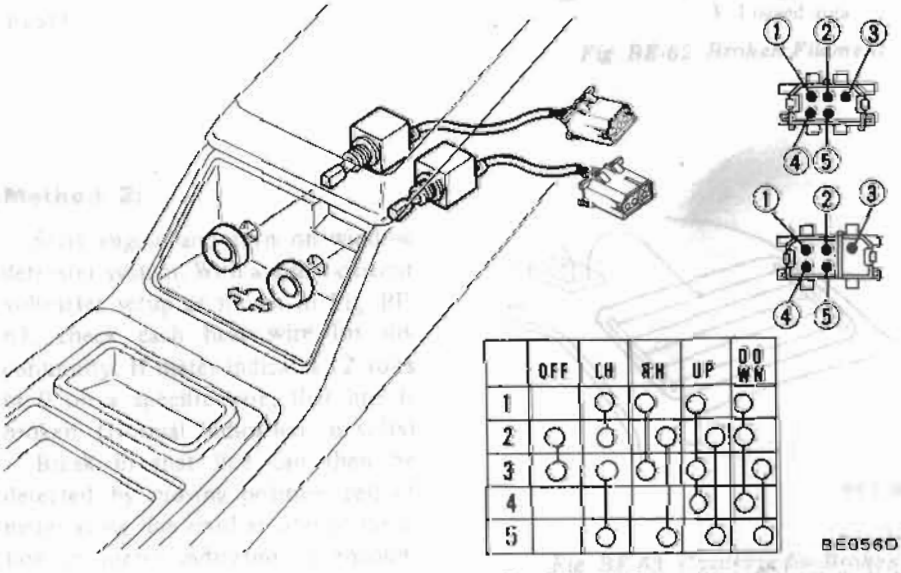


Fig. BE-69 Removing Control Switch

Door mirror assembly

1. Disconnect battery ground cable.
2. Remove door finisher and sealing screen.
3. Disconnect harness connectors.
4. Remove nuts retaining mirror, and remove mirror with harness.

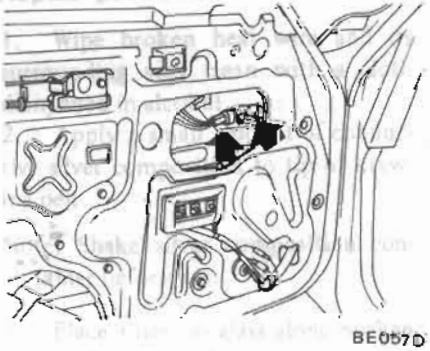


Fig. BE-70 Disconnecting Harness Connectors

5. Installation is in the reverse order of removal.

POWER WINDOW SYSTEM

DESCRIPTION

The power window system consists of the power window switch, one-touch power window unit, motor with regulator, circuit breaker and wiring harness which connect the units.

The power window switches comprise a one-touch switch, sub-switch and main switch.

The one-touch switch, integral with the main switch, is installed on the driver's door trim and can automatically be operated to open or close the window glass fully at the driver's side by lightly pushing the switch.

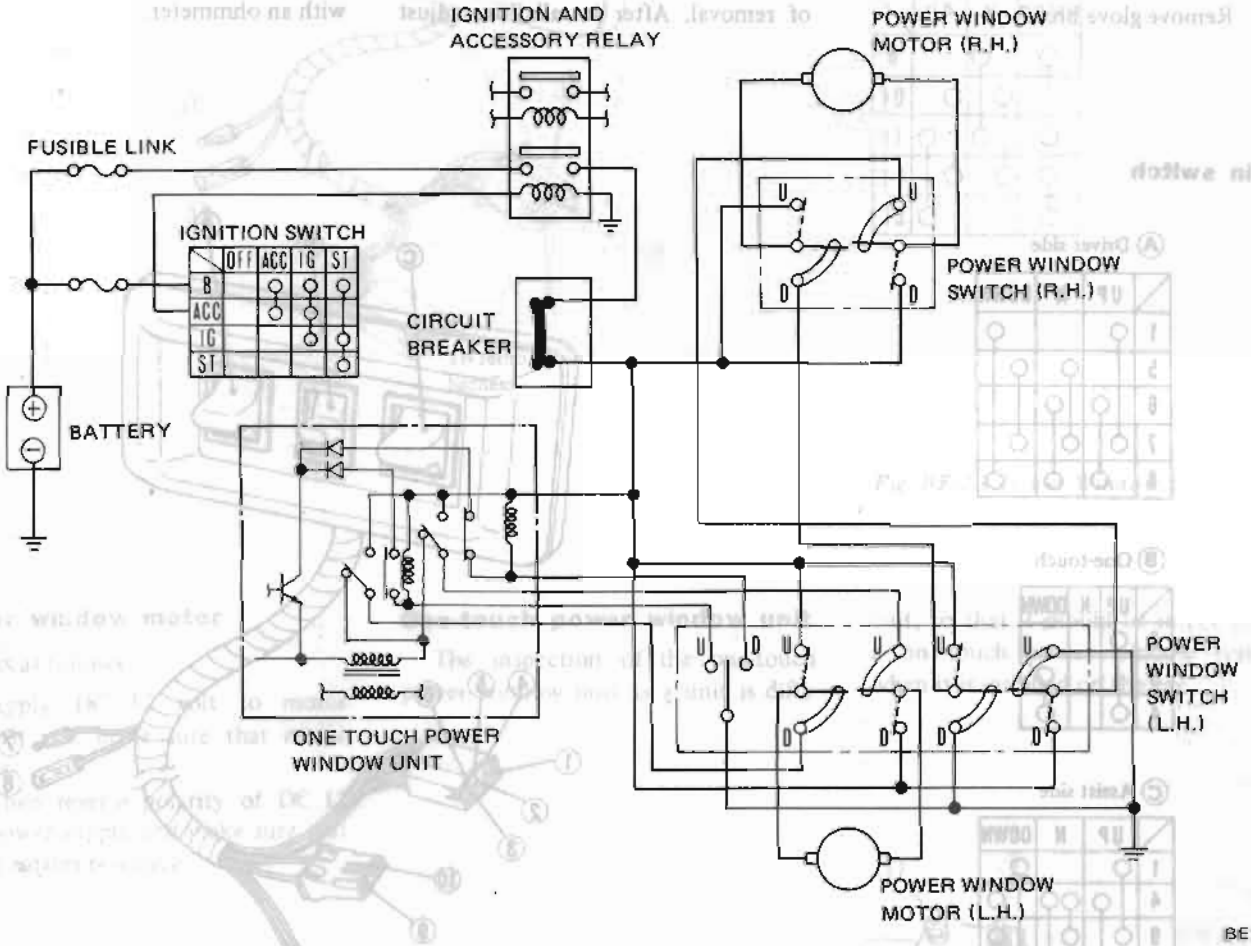


Fig. BE-71 Power Window System

REMOVAL AND INSTALLATION

Power window main switch

1. Disconnect battery ground cable.
2. Remove instrument lower cover on left side.
3. Remove driver side door finisher and sealing screen.
4. Remove door glass and power window regulator. (Refer to Section BF.)
5. Disconnect connectors at dash side and disconnect remote-control mirror harness connectors located inside door.

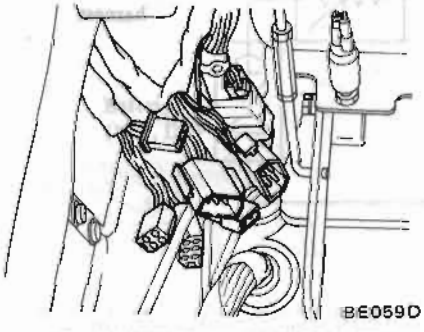


Fig. BE-72 Disconnecting Harness Connectors

6. Remove main switch with harness by loosening retaining screws.

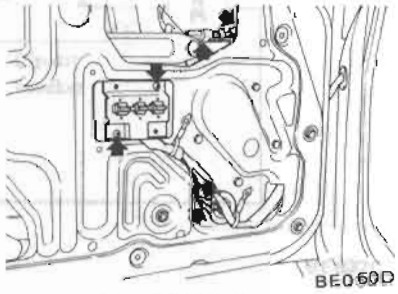


Fig. BE-73 Removing Main Switch

7. Installation is in the reverse order of removal. After installation, adjust door glass. Refer to Door (Section BF) for adjustment.

Sup-switch

1. Disconnect battery ground cable.
2. Remove instrument lower cover on right side.
3. Remove passenger side door finisher and sealing screen.
4. Remove door glass and power window regulator.
5. Remove glove box.
6. Disconnect connectors at dash side and disconnect remote-control mirror harness connectors located inside door.
7. Remove sub-switch with harness by loosening retaining screws. See Fig. BE-75.
8. Installation is in the reverse order of removal. After installation, adjust door glass. Refer to Door Glass (Section BF) for adjustment.

INSPECTION

Test continuity through switch with an ohmmeter.

Main switch

Ⓐ Driver side

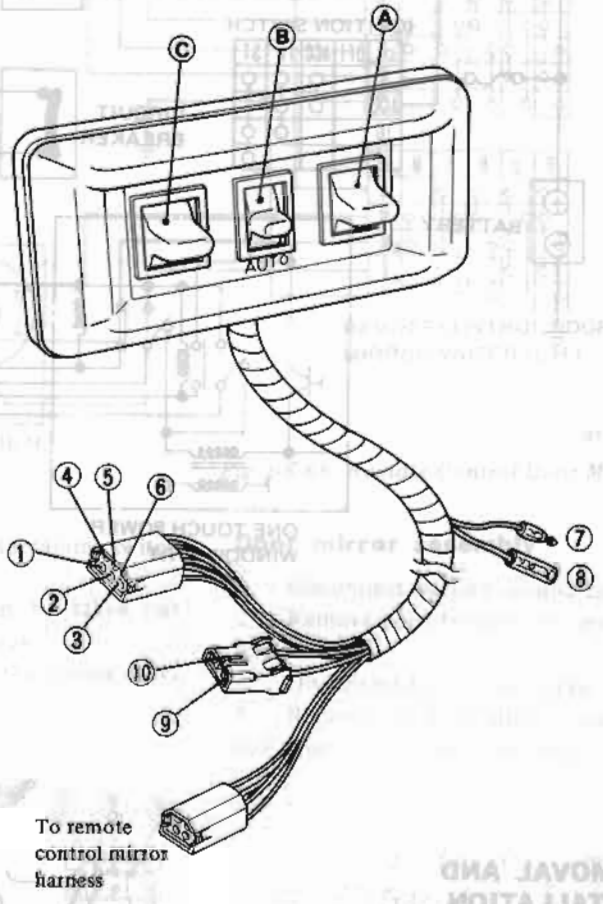
	UP	N	DOWN
1	○		○
5		○	○
6	○	○	
7	○		○
8		○	○

Ⓑ One-touch

	UP	N	DOWN
2	○		
3			○
4	○		○

Ⓒ Assist side

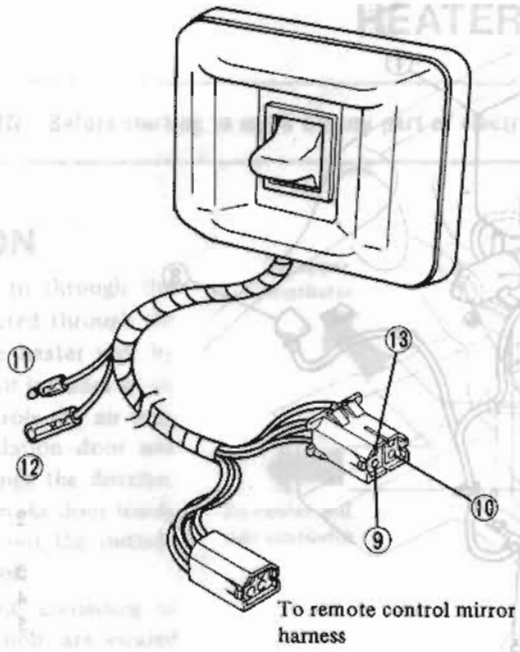
	UP	N	DOWN
1	○		○
4	○	○	○
9	○	○	○
10		○	○



BE061D

Fig. BE-74 Power Window Main Switch

Sup-switch



	UP	N	DOWN
9		○	○
10	○	○	
11	○	○	○
12	○	○	○
13	○		○

BE062D

Fig. BE-75 Power Window Sub-Switch

Power window motor

Test as follows:

1. Apply DC 12 volt to motor terminal and make sure that motor rotates.
2. Then reverse polarity of DC 12 volt power supply and make sure that motor rotates reversely.

Circuit breaker

See Fig. BE-9.

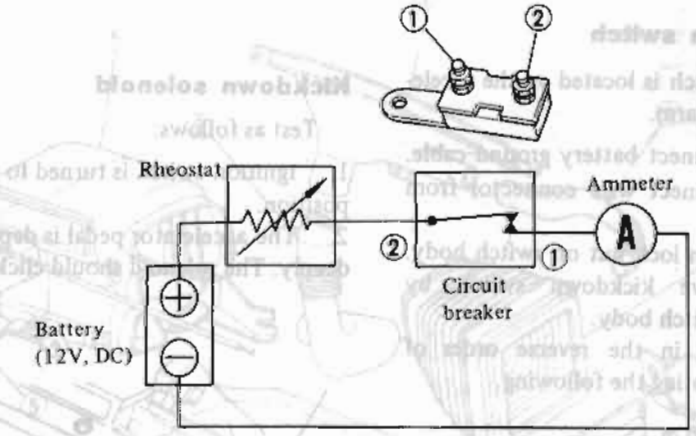
Test as follows:

1. Set up a circuit as shown in Fig. BE-76.
2. Gradually decrease rheostat resistance until ammeter indicates 30 amperes.
3. At this point connector reading should decrease to 0 ampere within between 13 and 35 seconds.

CAUTION:
Use rheostat of below 1 ohm and over 400 watt ratings.

One-touch power window unit

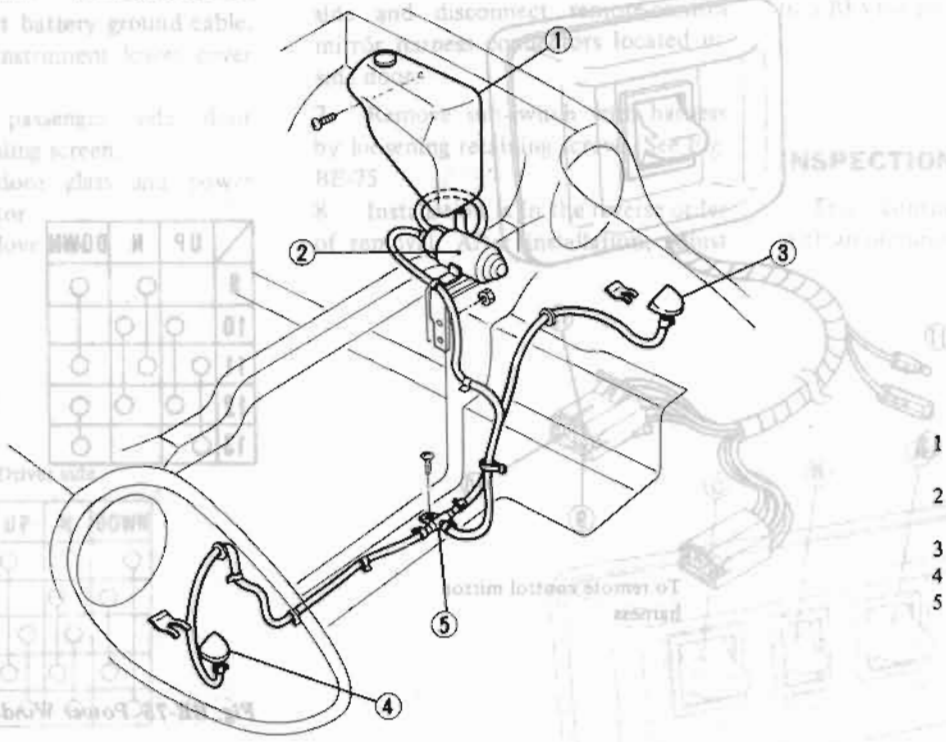
The inspection of the one-touch power window unit as a unit is difficult, so that it should be inspected as a one-touch power window system when it is installed on the car.



BE632C

Fig. BE-76 Circuit Breaker

HEADLAMP CLEANER



1 Headlamp cleaner washer tank
2 Headlamp cleaner pump
3 Nozzle (L.H.)
4 Nozzle (R.H.)
5 "T" valve

BE063D

Fig. BE-77 Headlamp Cleaner

KICKDOWN SYSTEM (For automatic transmission models)

REMOVAL AND INSTALLATION

Kickdown switch

The switch is located on the accelerator pedal arm.

1. Disconnect battery ground cable.
2. Disconnect wire connector from switch.
3. Loosen lock nut on switch body.
4. Remove kickdown switch by rotating switch body.
5. Install in the reverse order of removal, noting the following.

Kickdown solenoid

Refer to Kickdown Solenoid (Section AT) for removal.

INSPECTION

Kickdown switch

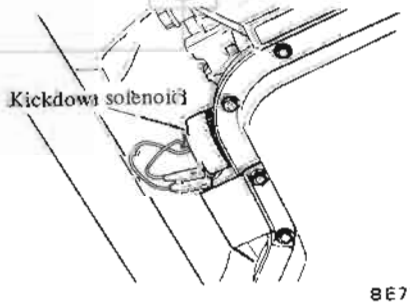
The switch plunger is controlled by the accelerator pedal. When the plunger is pressed into the switch assembly, contacts are closed.

Therefore, there must be continuity only when the plunger is pressed into the switch body.

Kickdown solenoid

Test as follows:

1. Ignition switch is turned to "ON" position.
2. The accelerator pedal is depressed deeply. The solenoid should click.



BE777

Fig. BE-78 Kickdown Solenoid

STARTING SYSTEM (For automatic transmission models)

REPLACEMENT

Inhibitor switch

Refer to Section AT.

Inhibitor relay

See Fig. BE-9.

INSPECTION

Inhibitor switch

Refer to section AT.

Inhibitor relay

See Fig. BE-16.

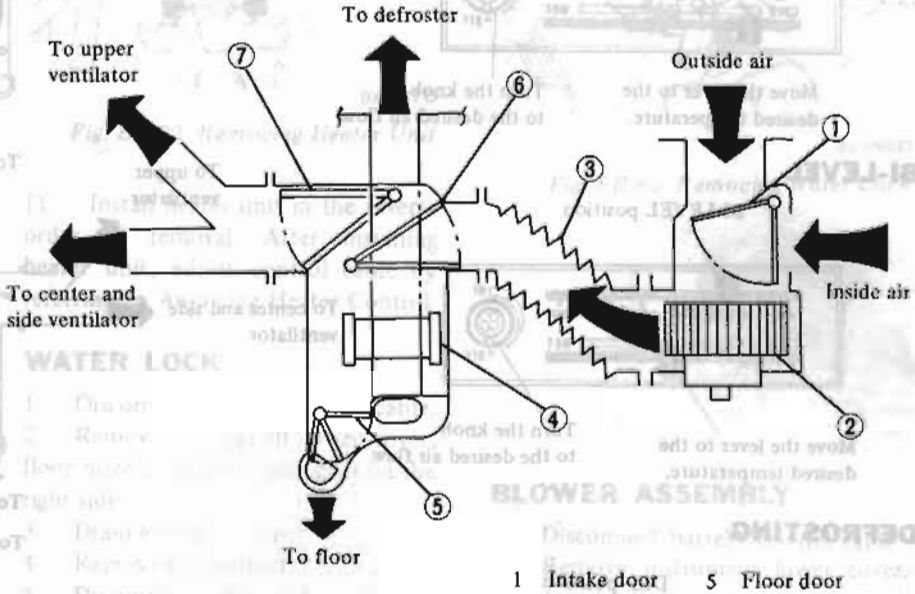
HEATER

CAUTION: Before starting to work on any part of electrical system, disconnect battery ground cable.

DESCRIPTION

Outside air drawn in through the cowl top grille is directed through the air intake box to the heater unit by the fan. The heater unit includes an air mix door which controls the air temperature, and a ventilation door and floor door which change the distribution of air flow. The intake door inside the intake box shuts out the outside air when the heater is off.

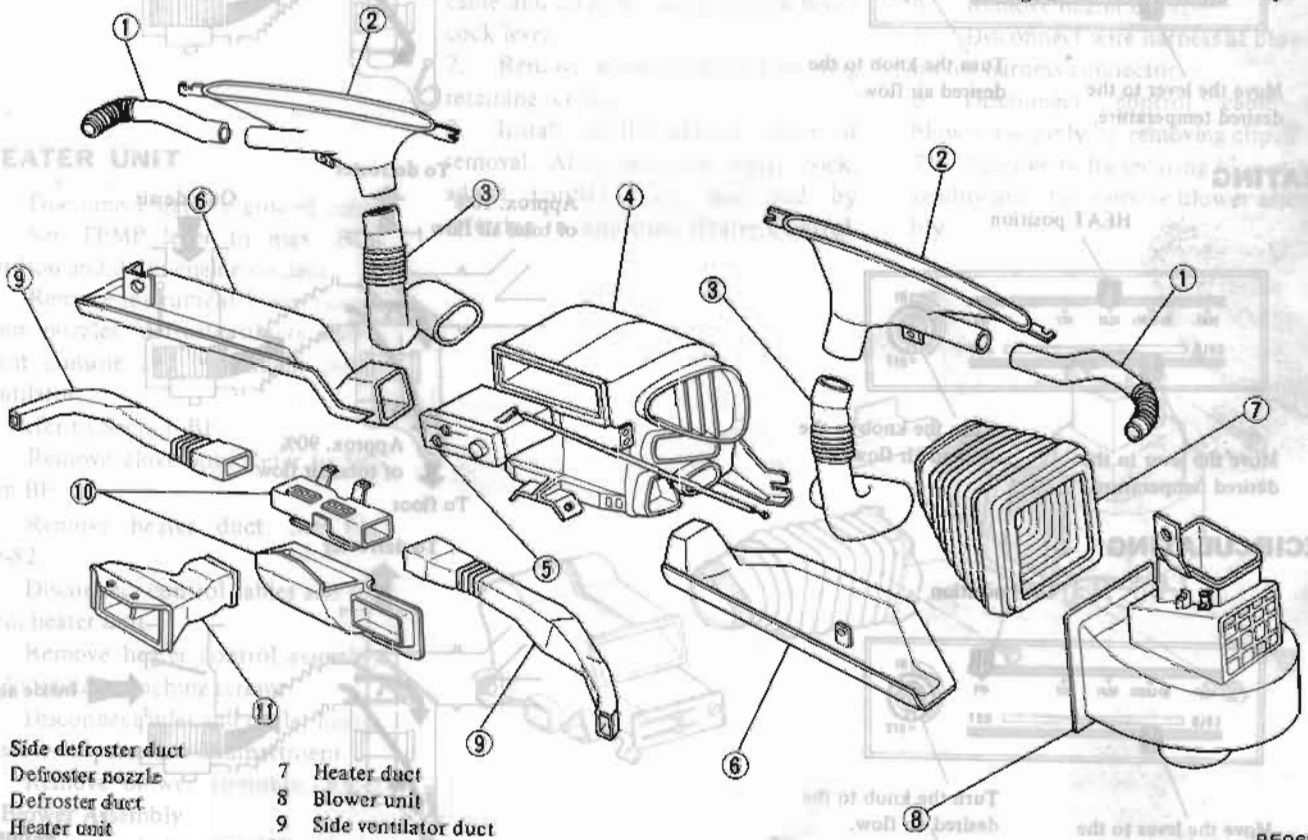
The heater controls, consisting of two levers and one knob, are located in the middle portion of the instrument panel. They are the MODE lever which selects the air outlet, the TEMP lever which controls the temperature and the FAN switch knob which regulates air flow with the fan.



1 Intake door
2 Blower
3 Heater duct
4 Heater core
5 Floor door
6 Air mix door
7 Vent door

BE064D

Fig. BE-79 Heater Unit System



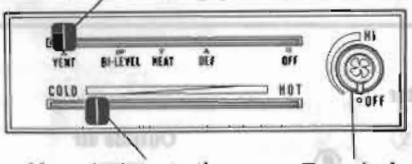
1 Side defroster duct
2 Defroster nozzle
3 Defroster duct
4 Heater unit
5 Heater control assembly
6 Floor nozzle
7 Heater duct
8 Blower unit
9 Side ventilator duct
10 Connector
11 Center ventilator duct

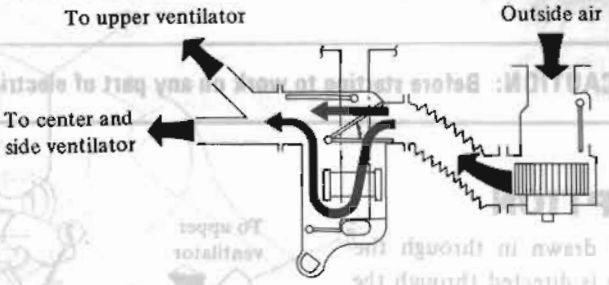
BE065D

Fig. BE-80 Heater Construction

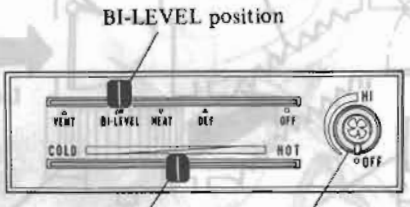
AIR FLOW

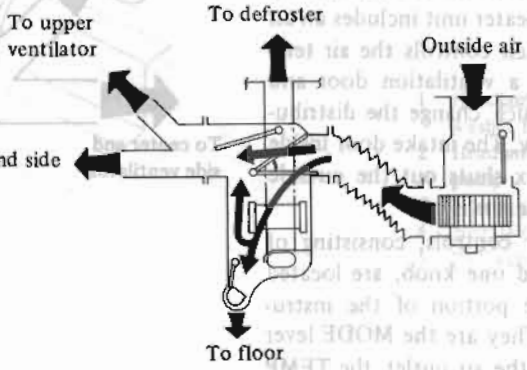
VENTILATING



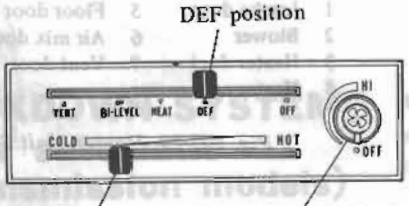


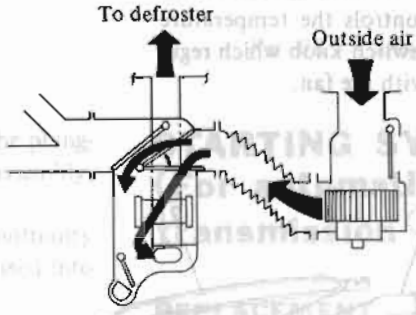
BI-LEVEL



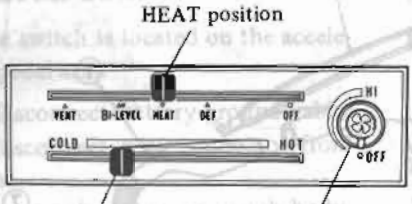


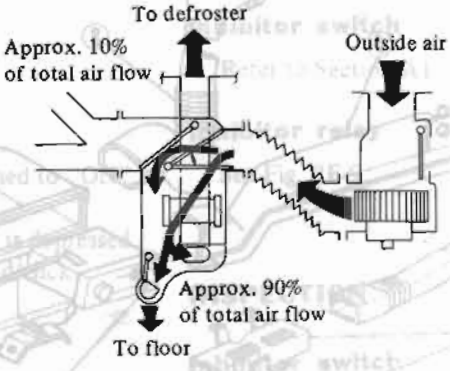
DEFROSTING



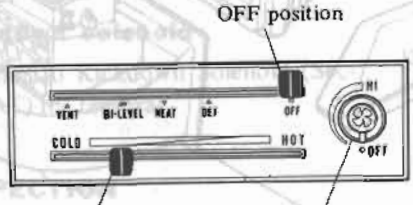


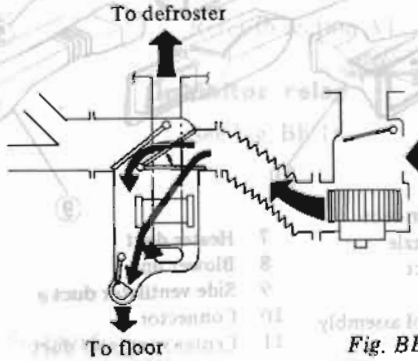
HEATING





RECIRCULATING





BE066D

Fig. BE-81 Air Flow

REMOVAL AND INSTALLATION

HEATER CONTROL ASSEMBLY

1. Disconnect battery ground cable.
2. Remove instrument lower covers, floor nozzles and defroster ducts.
3. Remove instrument console. Refer to Section BF.
4. Remove instrument center ventilator.
5. Disconnect door control cables and rod at each door.
6. Remove heater control assembly by loosening attaching screws.
7. Install heater control assembly in the reverse order of removal. After installing heater control assembly, control cables and rod must be adjusted by referring to Adjusting Heater Control.

HEATER UNIT

1. Disconnect battery ground cable.
2. Set TEMP lever to max. HOT position and drain engine coolant.
3. Remove instrument lower covers, floor nozzles, defroster ducts instrument console and instrument center ventilator.
   Refer to Section BF.
4. Remove glove box. Refer to Section BF.
5. Remove heater duct. See Fig. BE-82.
6. Disconnect control cables and rod from heater unit.
7. Remove heater control assembly by loosening attaching screws.
8. Disconnect inlet and outlet heater hoses from passenger compartment.
9. Remove blower assembly. Refer to Blower Assembly.
10. Remove bolts attaching heater unit and then remove heater unit.

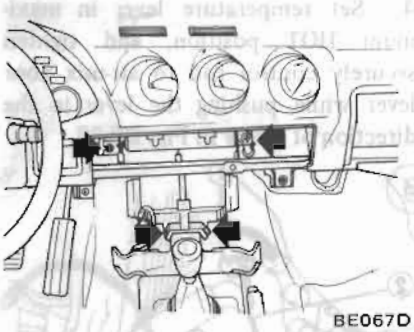


Fig. BE-82 Removing Heater Unit

11. Install heater unit in the reverse order of removal. After installing heater unit, adjust control cable by referring to Adjusting Heater Control.

WATER LOCK

1. Disconnect battery ground cable.
2. Remove instrument lower cover, floor nozzle and defroster duct on the right side.
3. Drain engine coolant.
4. Remove heater duct.
5. Disconnect outlet and inlet hoses, and loosen clamp of hose connecting water cock to heater unit.
6. Disconnect temperature control cable and air-mix door rod from water cock lever.
7. Remove water cock by loosening retaining screws.
8. Install in the reverse order of removal. After installing water cock, adjust control cable and rod by referring to Adjusting Heater Control.

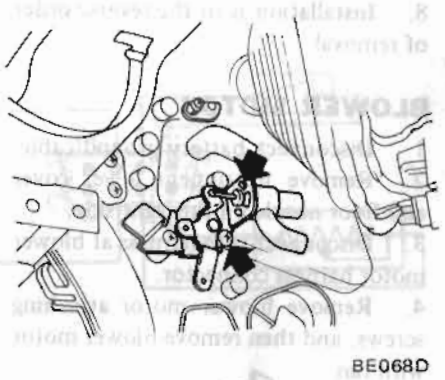


Fig. BE-83 Removing Water Cock

BLOWER ASSEMBLY

1. Disconnect battery ground cable.
2. Remove instrument lower cover and glove box.
3. Remove floor nozzle, defroster duct and side defroster duct on the right side.
4. Remove heater duct.
5. Disconnect wire harness at blower motor harness connector.
6. Disconnect control cable at blower assembly by removing clip.
7. Remove bolts securing blower assembly and then remove blower assembly.

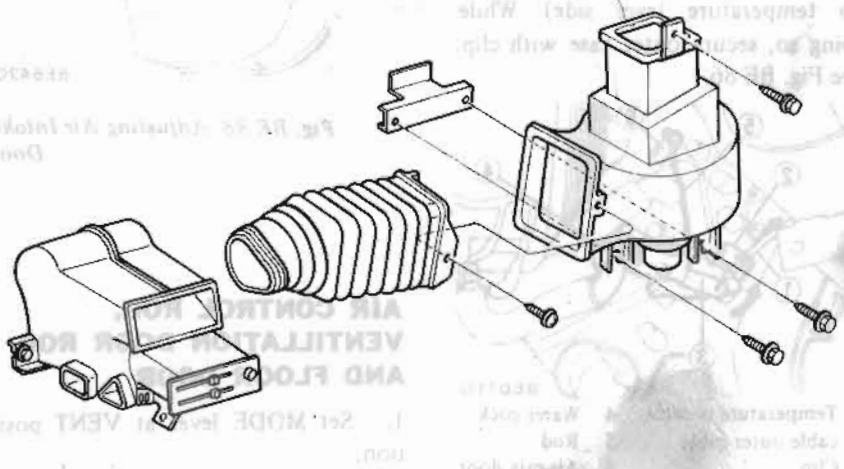


Fig. BE-84 Removing Blower Assembly

8. Installation is in the reverse order of removal.

BLOWER MOTOR

1. Disconnect battery ground cable.
2. Remove instrument lower cover and floor nozzle on the right side.
3. Disconnect wire harness at blower motor harness connector.
4. Remove blower motor attaching screws, and then remove blower motor with fan.

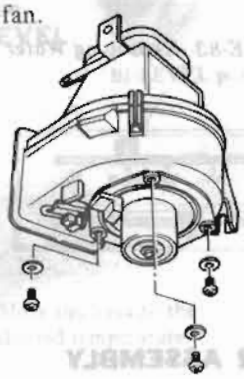


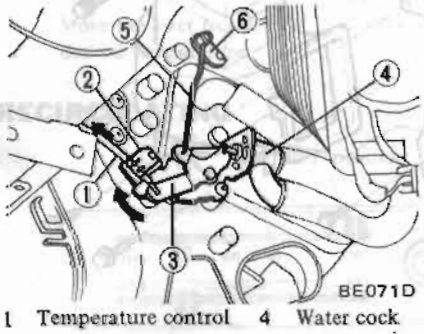
Fig. BE-85 Removing Blower Motor

5. Installation is in the reverse order of removal.

ADJUSTING HEATER CONTROL

TEMPERATURE CONTROL CABLE

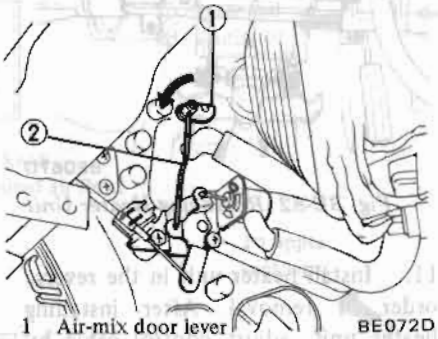
1. Set temperature lever in maximum cold position.
2. Temporarily tighten control rod mounting screw.
3. Push water cock lever in the direction of arrow (to closing side), and press temperature control cable outer case in the direction of arrow (to temperature lever side). While doing so, secure outer case with clip. See Fig. BE-86.



1 Temperature control cable outer cable
2 Clip
3 Water cock lever
4 Water cock
5 Rod
6 Air-mix door lever

Fig. BE-86 Adjusting Temperature Control Lever

4. Set temperature lever in maximum HOT position, and tighten securely control rod to air-mix door lever while pushing the lever in the direction of arrow in Fig. BE-87.



1 Air-mix door lever
2 Rod

Fig. BE-87 Adjusting Air-Mix Door Rod

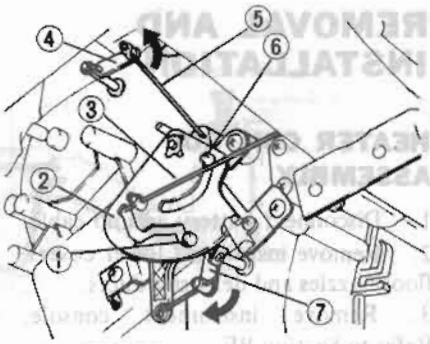
AIR INTAKE DOOR

1. Set MODE lever at OFF position.
2. Push air intake door lever in direction of arrow (to shut out outside air flow), and press air intake door control cable outer case in direction of arrow. While doing so, secure outer case with clip.

Fig. BE-88 Adjusting Air Intake Door

AIR CONTROL ROD, VENTILLATION DOOR ROD AND FLOOR DOOR

1. Set MODE lever at VENT position.
2. Bring link into contact with stoppers A and B and secure air control rod.



1 Stopper A
2 Link
3 Air control rod
4 Ventilation door lever
5 Ventilation door rod
6 Stopper B
7 Floor door lever
8 Floor door rod

Fig. BE-89 Adjusting Air Control Rod

3. Under this condition, push up on ventilation door lever in direction of arrow and secure ventilation door rod. Then push floor door lever in direction of arrow and secure floor door rod. (See Fig. BE-89.)

DISASSEMBLY AND ASSEMBLY OF HEATER UNIT

1. Remove heater unit.
2. Remove water cock.
3. Remove clips securing right and left heater case, then separate heater case.
4. Take out heater core.
5. Assemble heater unit in the reverse order of disassembly.

INSPECTION

Inspect all parts of heater for damage. Refer to Trouble Diagnoses and Corrections. For electrical system, check wiring, fan switch and fan motor for continuity.

If fan motor fails to rotate, check following items.

1. Fuse and fusible link.
2. To check for burned out fuse, follow same procedure as for ordinary fuses using a circuit tester or test lamp.
3. Loose wire connection.

BLOWER MOTOR POWER SUPPLY

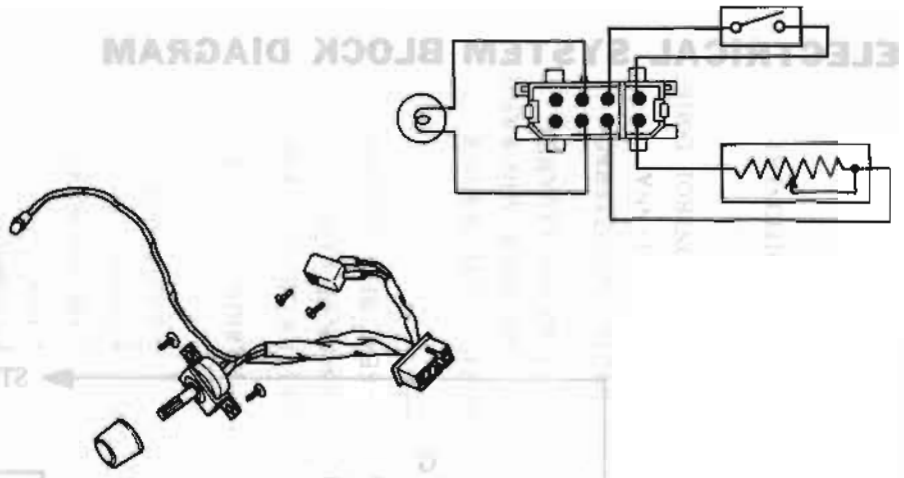
1. Disconnect blower motor harness to connect main harness.
2. Connect one test lamp lead wire to "LB" wire terminal in connector of main harness for blower motor and the other to ground.
3. Turn ignition switch to "ACC" position. Test lamp should go on.

BLOWER MOTOR

1. Disconnect lead wire at 2-pole type connector.
2. Test continuity between lead wires. Continuity should exist.

FAN SWITCH

Test continuity through fan switch with a test lamp or ohmmeter.

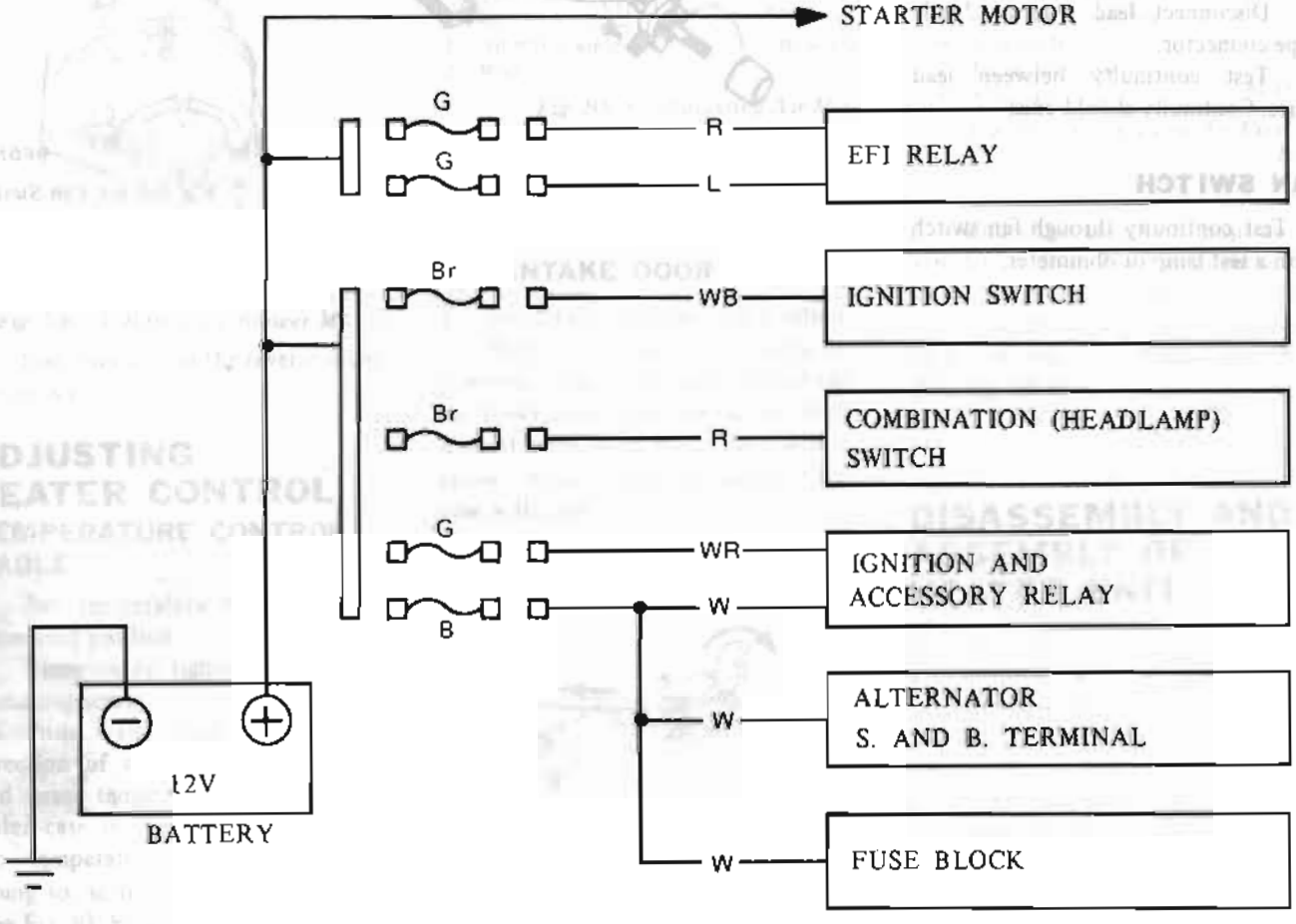


BE074D

Fig. BE-90 Fan Switch

WIRING DIAGRAMS AND TROUBLE DIAGNOSES

ELECTRICAL SYSTEM BLOCK DIAGRAM



BE160D

Fig. BE-91

FUSE BLOCK CIRCUIT SUPPLY ROUTING

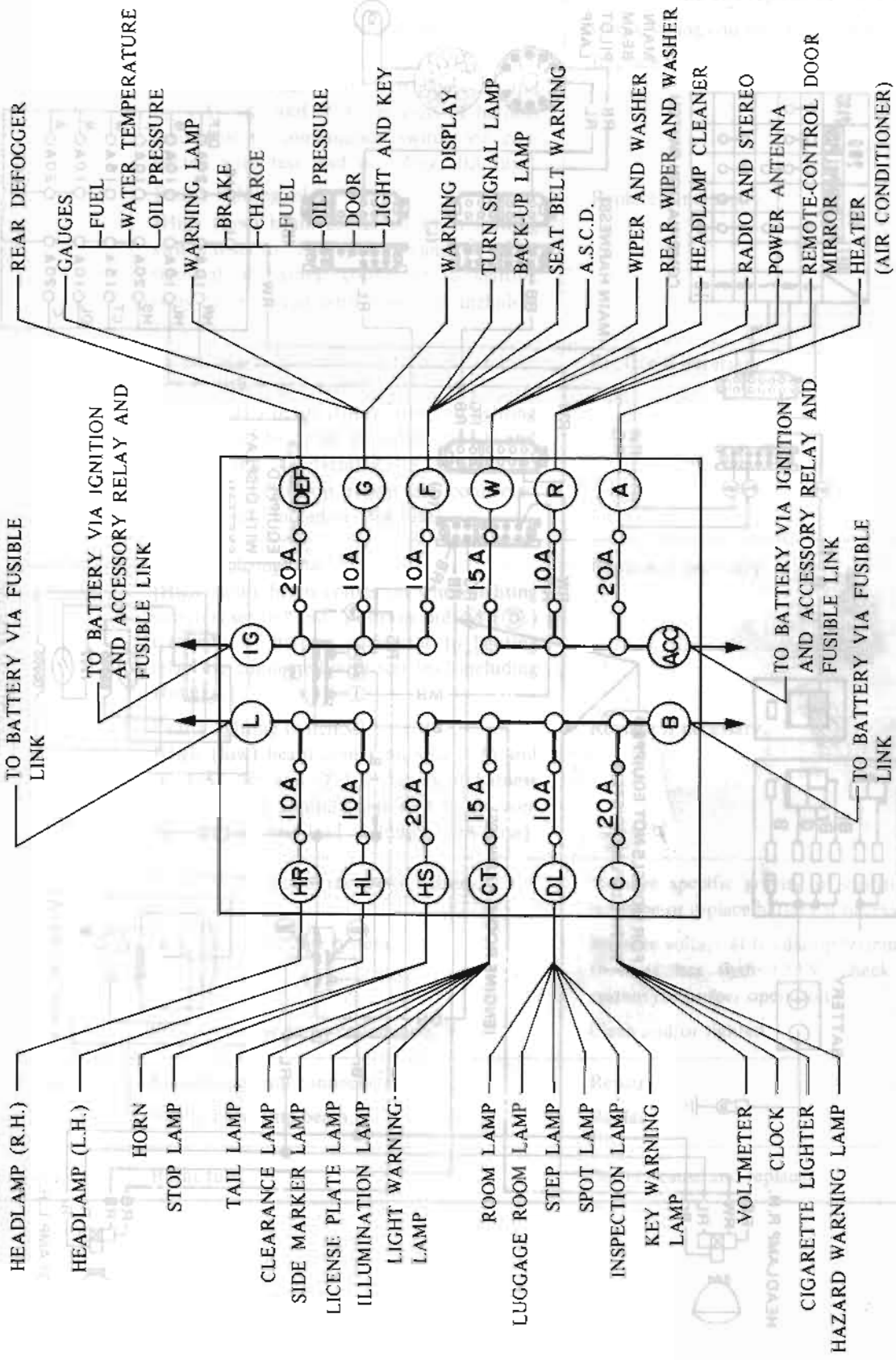
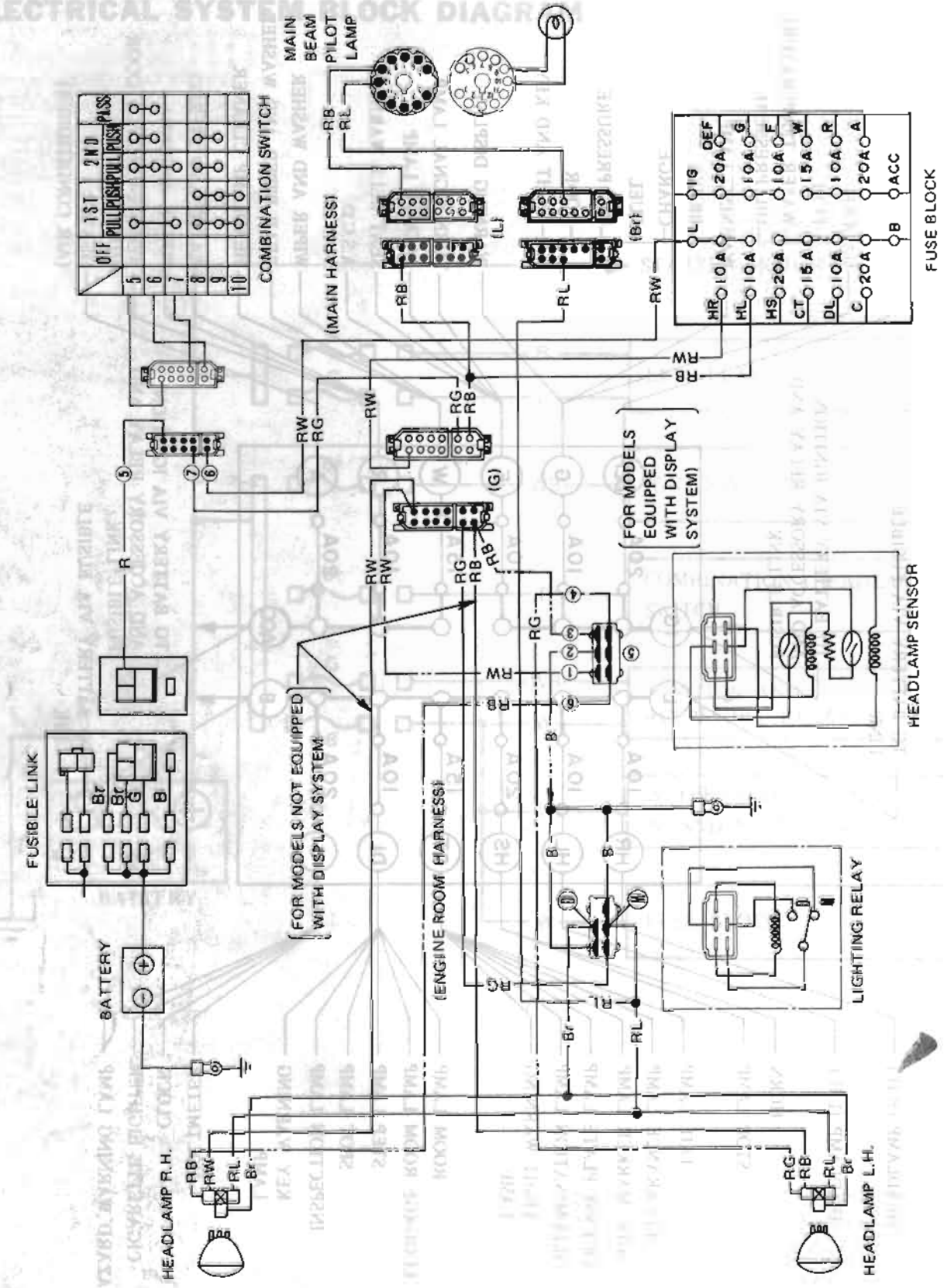


Fig. BE-92 Fuse Block

LIGHTING SYSTEM

HEADLAMP



BE983C

Fig. BE-93 Wiring Diagram for Headlamp

Condition	Probable cause	Corrective action
Headlamps do not come on either high or low beams.	Burnt fusible link.	Correct cause and replace fusible link.
	Loose connection or open circuit.	Check wiring and/or repair connection.
	Faulty lighting switch. [High (low) beam comes on when ⑤ and ⑥ (⑤, ⑥ and ⑦) terminals of harness connector to combination switch are connected with test lead including 10A fuse]	Replace if necessary.
	Faulty lighting relay. [High (low) beam comes on when lighting switch is set to "2nd" position and Ⓜ (Ⓓ) terminal of harness connector to lighting relay is grounded with test lead including 10A fuse].	Replace if necessary.
	Faulty headlamp sensor. (For models equipped with display system) [R.H. (L.H.) beam comes on when lighting switch is set to "2nd" position, and ① and ⑥ (③ and ④) terminals of harness connector to headlamp sensor are connected with test lead including 10A fuse].	Replace if necessary.
High beam cannot be switched to low beam or vice versa.	Faulty lighting relay. [High (low) beam comes on when lighting switch is set to "2nd" position and Ⓜ (Ⓓ) terminals of harness connector to lighting relay are connected with test lead including 10A fuse].	Replace if necessary.
	Faulty lighting switch. [High (low) beam comes on when ⑤ and ⑥ (⑤, ⑥ and ⑦) terminals of harness connector to combination switch are connected with test lead including 10A fuse].	Replace if necessary.
Headlamps dim.	Partly discharged or run-down battery.	Measure specific gravity of electrolyte and recharge or replace battery if necessary.
	Inoperative charging system.	Measure voltage at headlamp terminals. If it is less than 12.8V, check charging system for proper operation.
	Poor ground or loose connection.	Clean and/or tighten.
Headlamp lights on only one side.	Loose headlamp connection.	Repair.
	Faulty headlamp beam.	Replace.
One headlamp dim	Burnt fuse.	Correct cause and replace.

TAIL, CLEARANCE, SIDE MARKER AND LICENSE PLATE LAMP

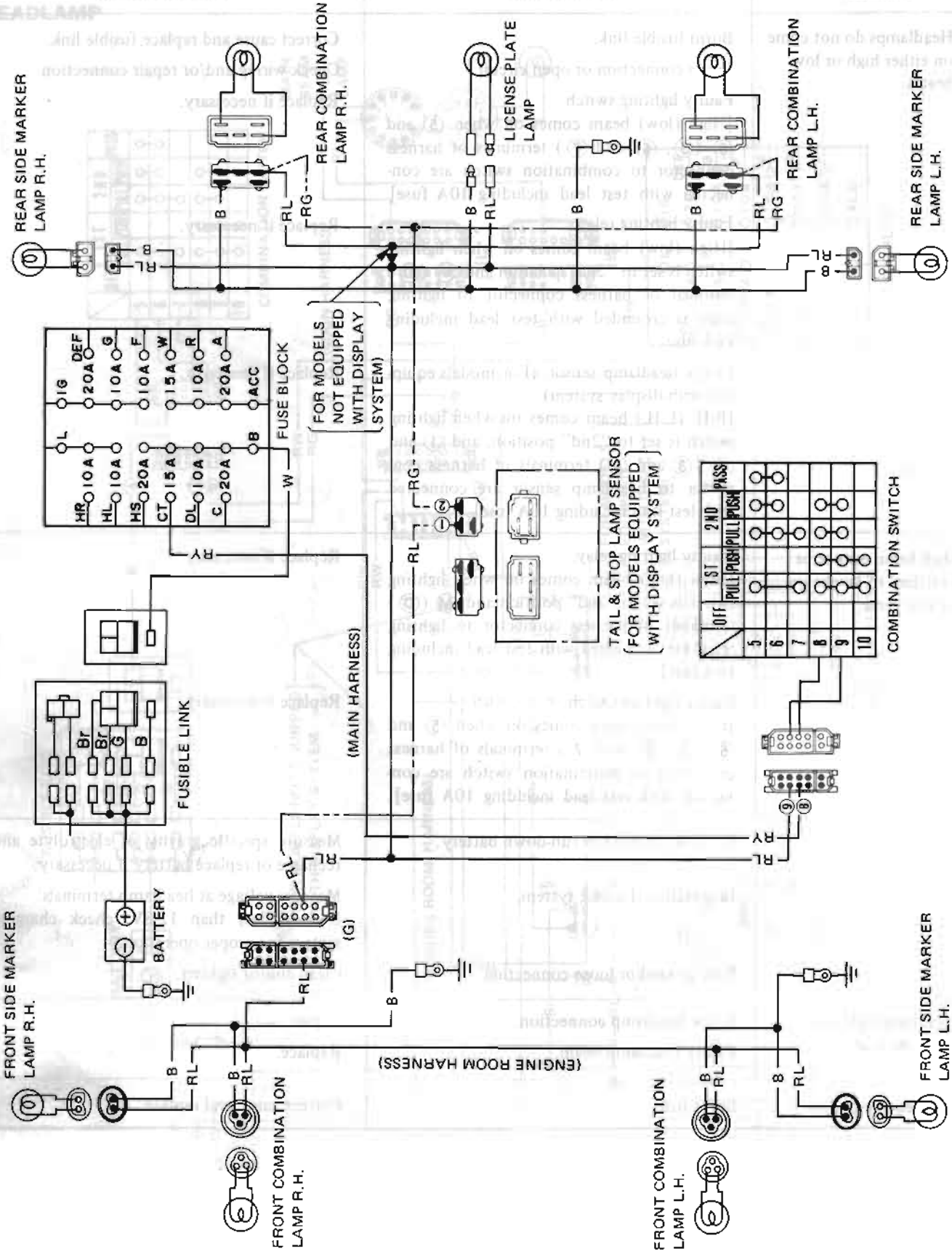
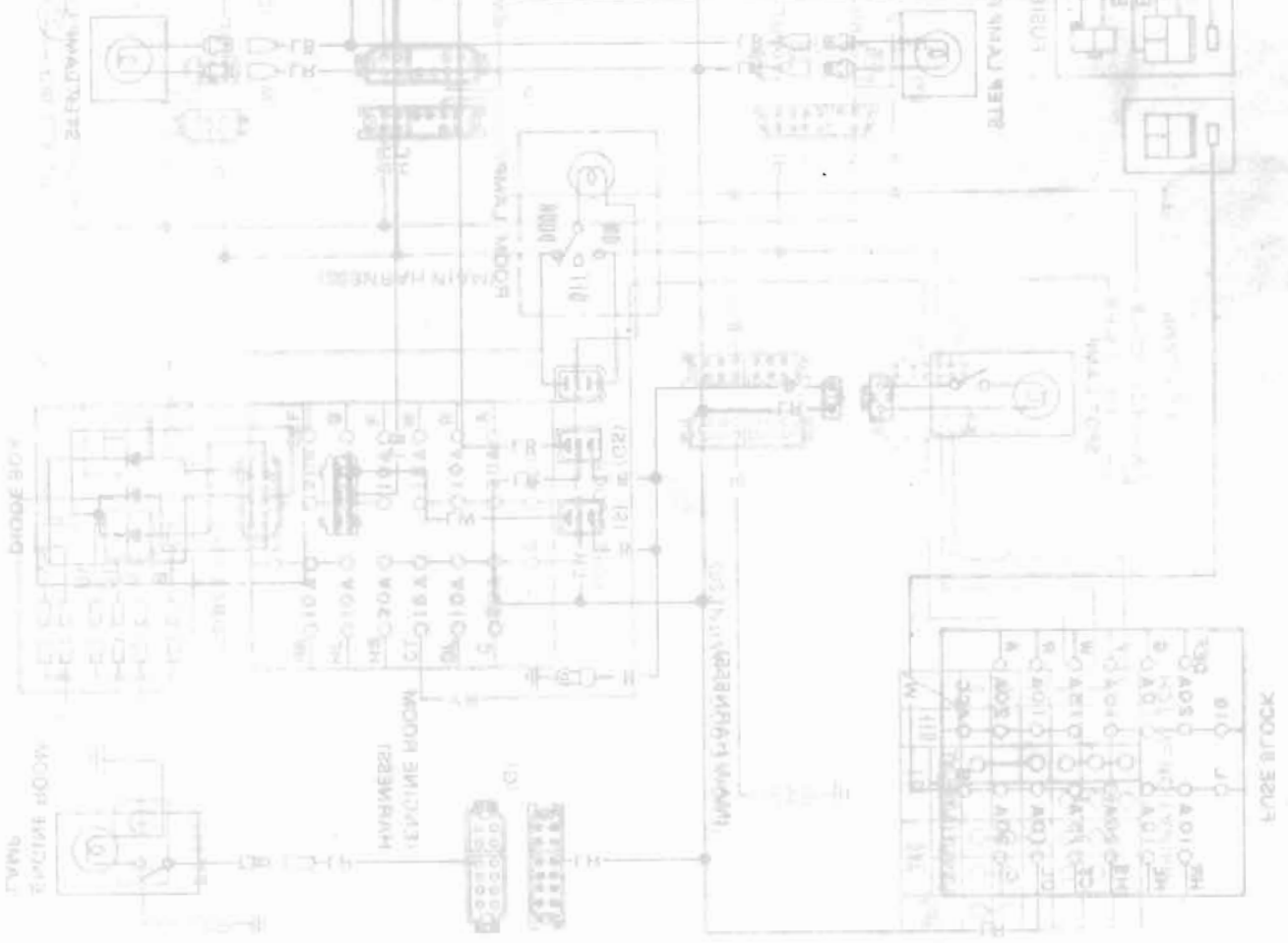
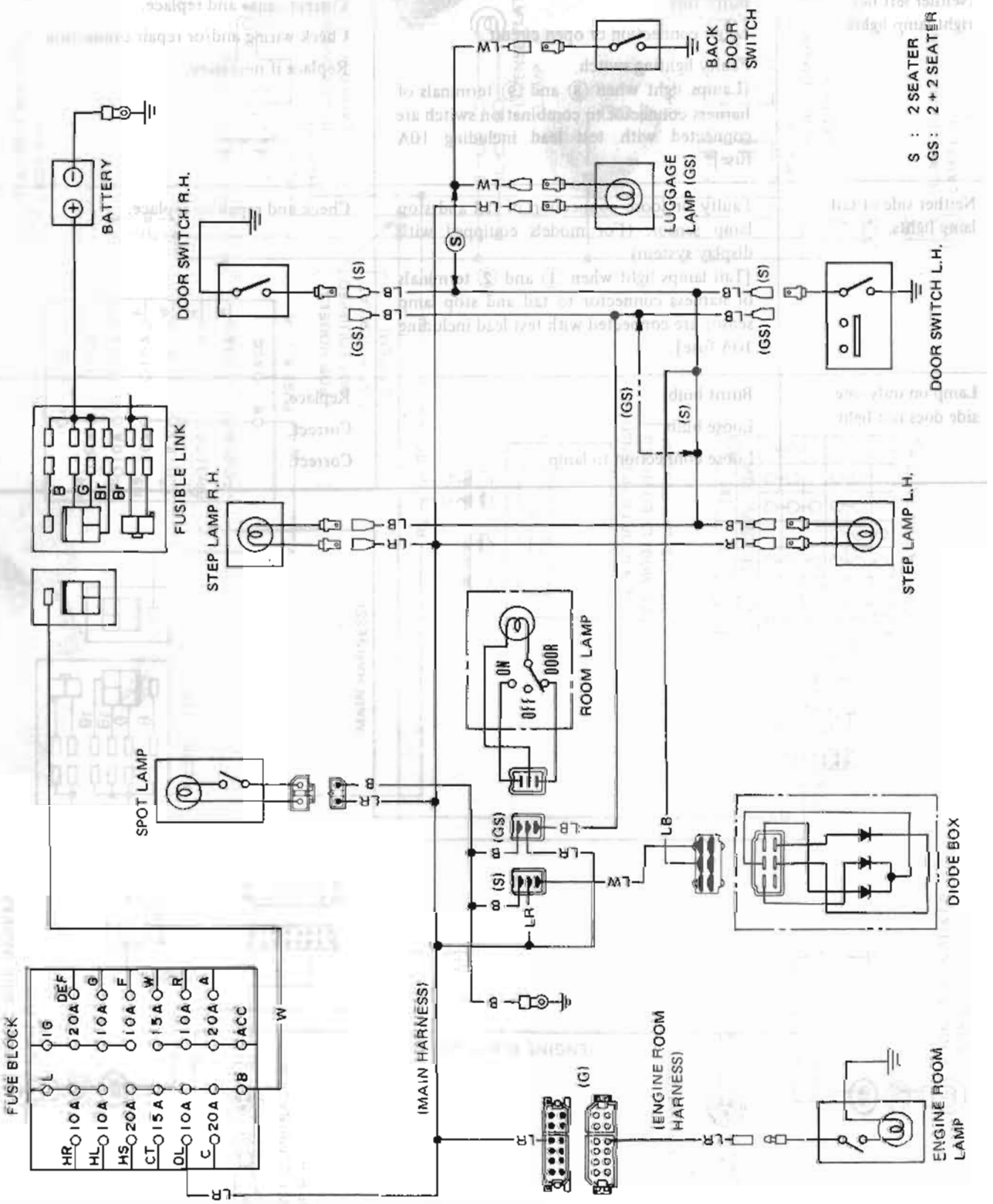


Fig. BE-94 Wiring Diagram for Tail Clearance, Side Marker and License Plate Lamps

Condition	Probable cause	Corrective action
Neither left nor right lamp lights.	Burnt fuse. Loose connection or open circuit. Faulty lighting switch. [Lamps light when ⑧ and ⑨ terminals of harness connector to combination switch are connected with test lead including 10A fuse].	Correct cause and replace. Check wiring and/or repair connection. Replace if necessary.
Neither side of tail lamp lights.	Faulty or loose connection of tail and stop lamp sensor. (For models equipped with display system) [Tail lamps light when ① and ② terminals of harness connector to tail and stop lamp sensor are connected with test lead including 10A fuse].	Check and repair or replace.
Lamp on only one side does not light.	Burnt bulb. Loose bulb. Loose connection to lamp.	Replace. Correct. Correct.



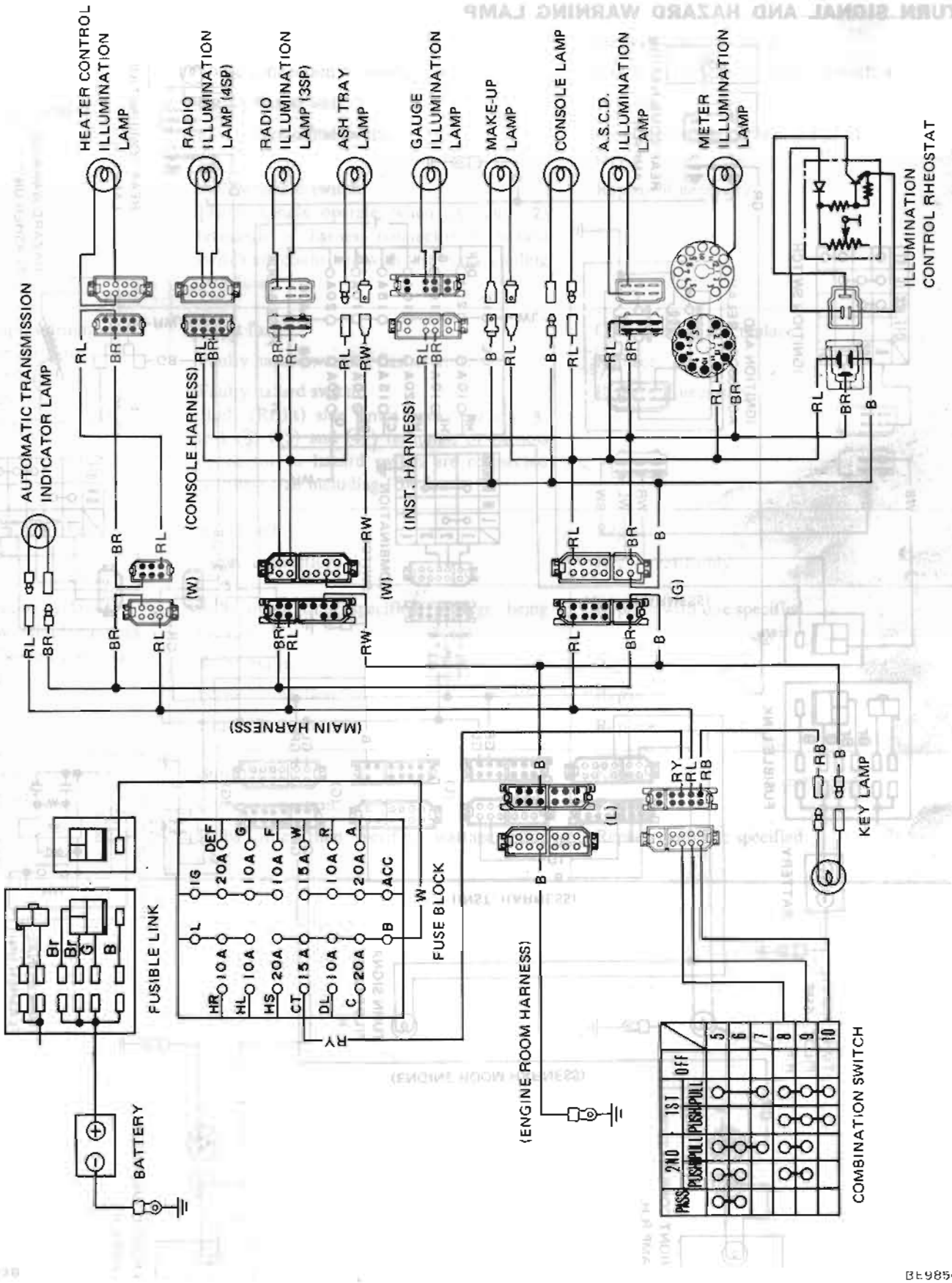
ROOM, LUGGAGE ROOM, STEP, SPOT AND INSPECTION LAMP



8E988C

Fig. BE-95 Wiring Diagram for Room, Luggage Room, Step, Spot and Inspection Lamps

ILLUMINATION LAMP



BE985C

Fig. BE-96 Wiring Diagram for Illumination Lamp

SIGNAL SYSTEM

TURN SIGNAL AND HAZARD WARNING LAMP

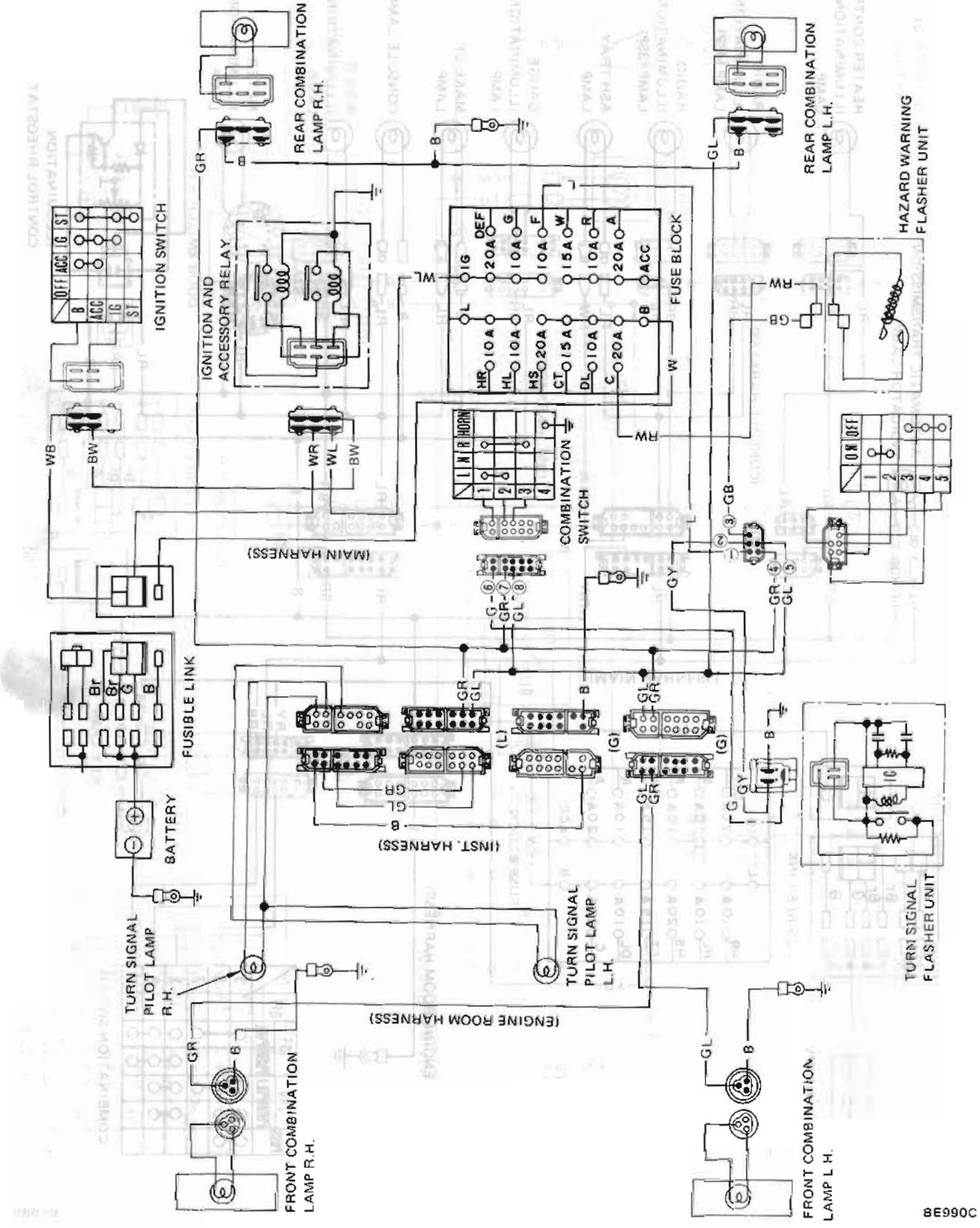
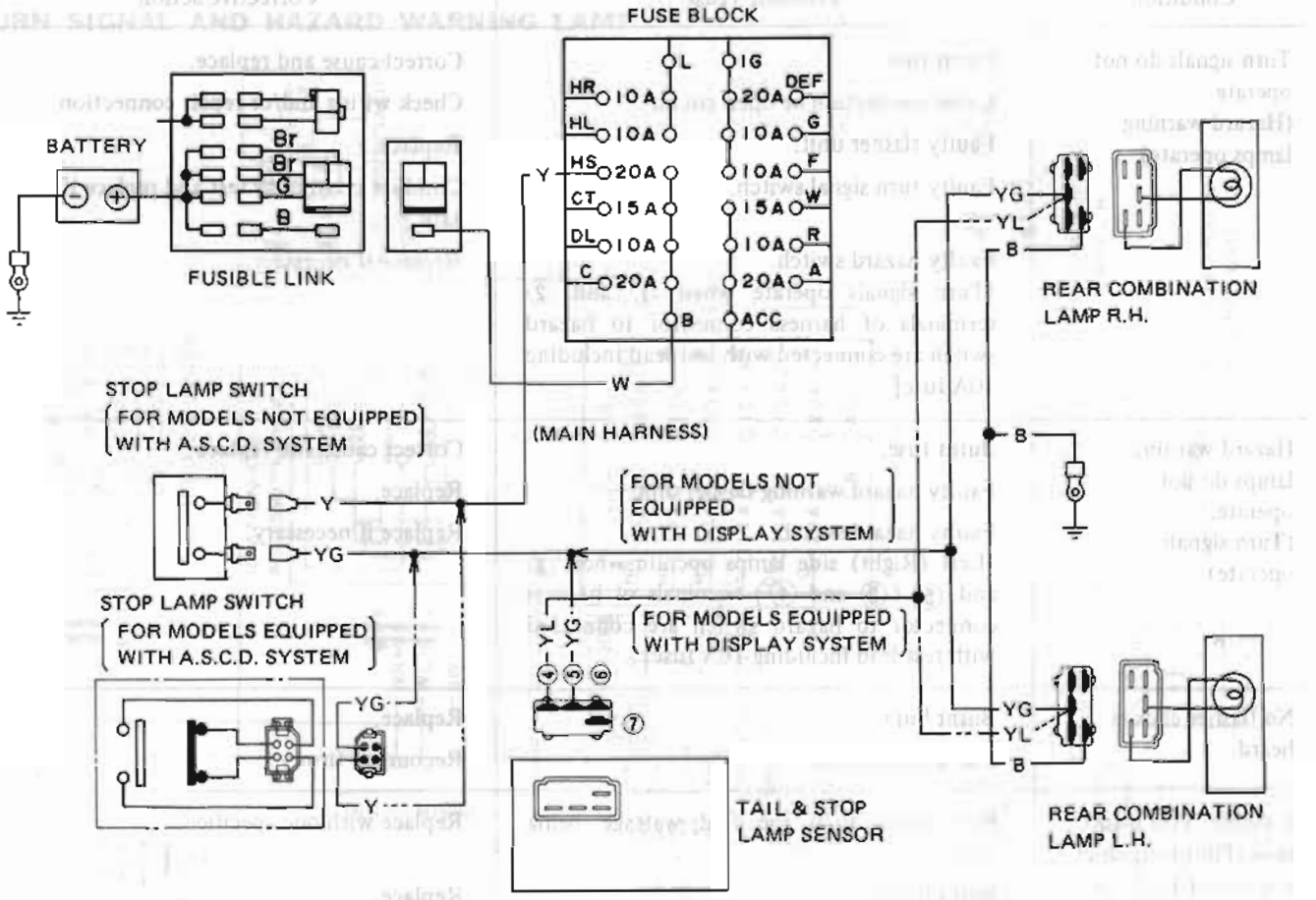


Fig. BE-97 Wiring Diagram for Turn Signal and Hazard Warning Lamp

Condition	Probable cause	Corrective action
Turn signals do not operate. (Hazard warning lamps operate)	Burnt fuse. Loose connection or open circuit. Faulty flasher unit. Faulty turn signal switch. Faulty hazard switch. [Turn signals operate when ① and ② terminals of harness connector to hazard switch are connected with test lead including 10A fuse].	Correct cause and replace. Check wiring and/or repair connection. Replace. Conduct continuity test and replace if necessary. Replace if necessary.
Hazard warning lamps do not operate. (Turn signals operate)	Burnt fuse. Faulty hazard warning flasher unit. Faulty hazard switch. [Left (Right) side lamps operate when ③ and ⑤ (③ and ④) terminals of harness connector to hazard switch are connected with test lead including 10A fuse].	Correct cause and replace. Replace. Replace if necessary.
No flasher click is heard.	Burnt bulb. Loose connection.	Replace. Reconnect firmly.
Flashing cycle is too slow (Pilot lamp does not go out.), or too fast.	Bulb other than specified wattage being used. Burnt bulbs. Loose connection. Faulty flasher unit.	Replace with one specified. Replace. Repair. Replace.
Flashing cycle is irregular.	Burnt bulb. Loose connection. Bulbs other than specified wattage being used.	Replace. Repair. Replace with one specified.

STOP LAMP



BE986C

Fig. BE-98 Wiring Diagram for Stop Lamp

Condition	Probable cause	Corrective action
Neither left nor right lamp lights.	Burnt fuse.	Correct cause and replace.
	Faulty stop switch.	Conduct continuity test and replace if necessary.
	Faulty tail and stop lamp sensor (For models equipped with display system) [Stop lamps light when ④ and ⑤ terminals of main harness connector to tail and stop lamp sensor are connected with test lead including 10A fuse].	Replace if necessary.
	Loose connection or open circuit.	Check wiring and/or repair connection.
Lamp on only one side lights.	Burnt bulb.	Replace.
	Loose bulb.	Repair lamp socket.
	Loose connection or open circuit.	Check wiring and/or repair connection.

BACK-UP LAMP

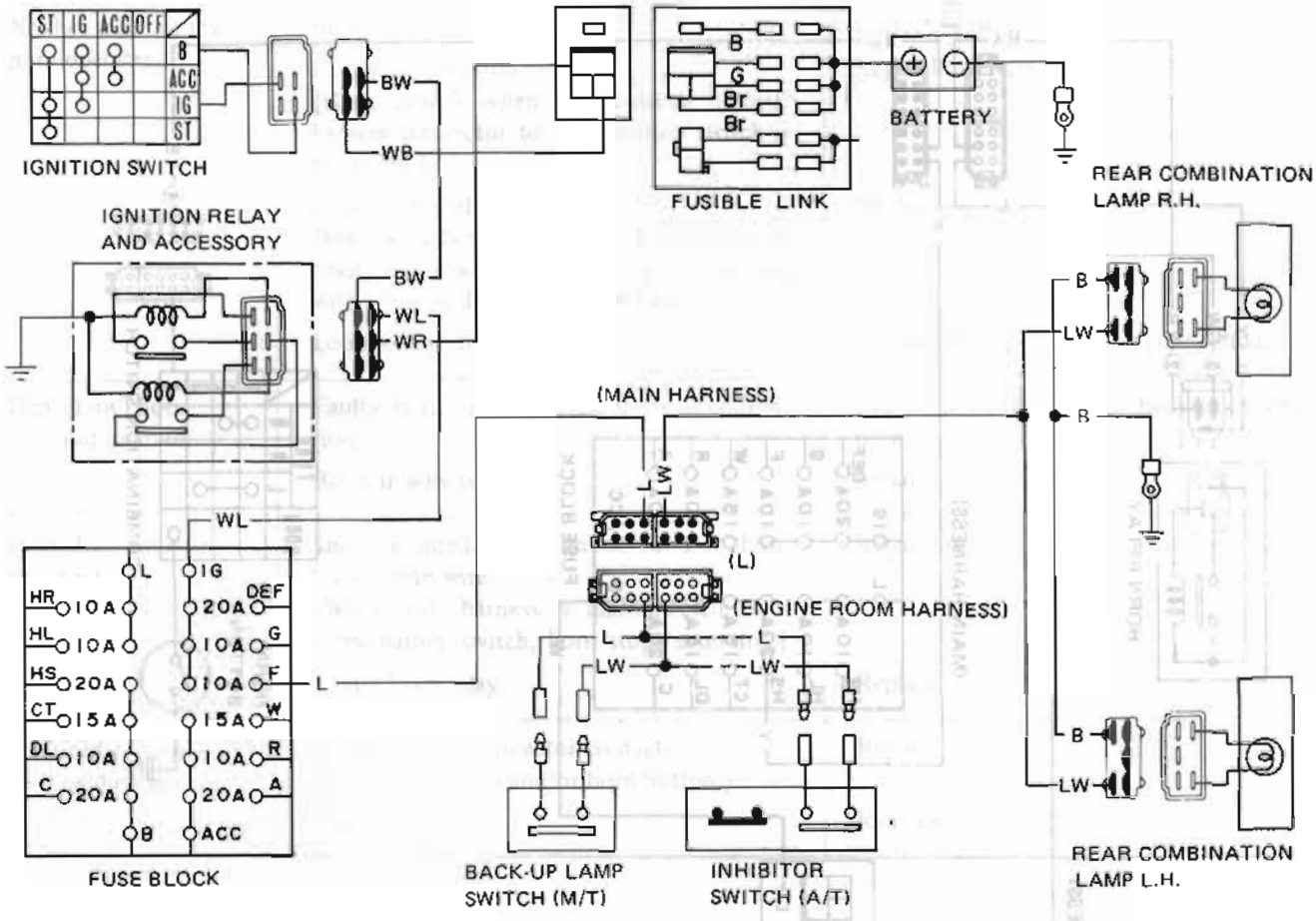


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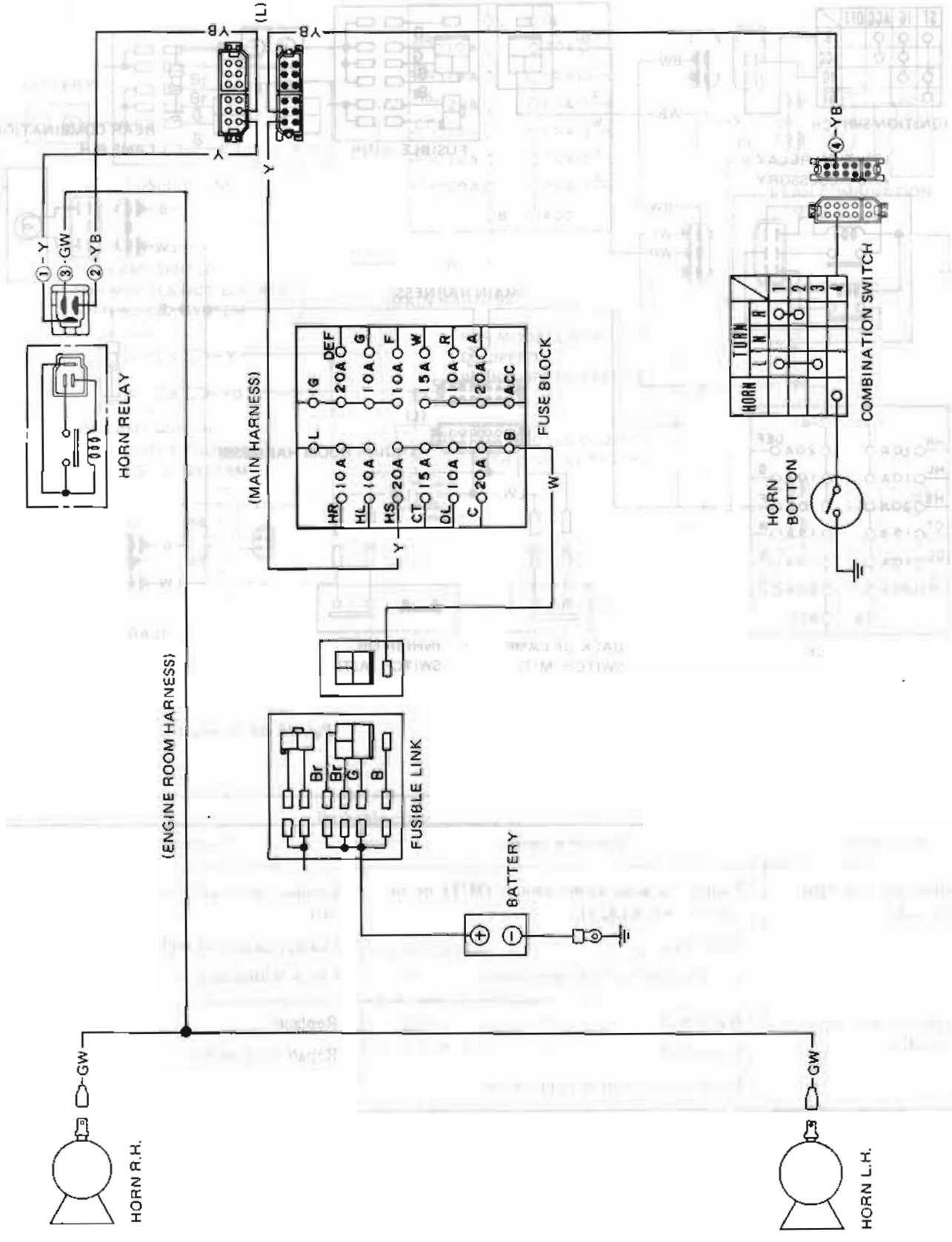
Fig. BE-99 Wiring Diagram for Back-up Lamp

Condition	Probable cause	Corrective action
Neither left nor right lamp lights.	Faulty back-up lamp switch (M/T) or inhibitor switch (A/T).	Conduct continuity test and replace if necessary.
	Burnt fuse.	Correct cause and replace.
	Loose connection or open circuit.	Check wiring and/or repair connection.
Lamp on only one side lights.	Burnt bulb.	Replace.
	Loose bulb.	Repair lamp socket.
	Loose connection or open circuit.	Check wiring and/or repair connection.

HORN



BE989C

Fig. BE-100 Wiring Diagram for Horn

Condition	Probable cause	Corrective action
Neither high nor low horn operates.	Burnt fuse.	Correct cause and replace fuse.
	Faulty horn button contact. [Horn sounds when ④ terminal of inst. harness connector to combination switch is grounded.]	Repair horn button.
	Faulty horn relay. [Horn sounds when ① and ③ terminals of engine harness to horn relay are connected with a test lead including 10A fuse.]	Replace.
	Loose connection or open circuit.	Check wiring and/or repair connection.
High (Low) horn does not operate.	Faulty horn or loose horn terminal connection.	Correct horn terminal connection or replace horn.
	Break in wire to horn.	Repair.
Horn does not stop to sound.	Short-circuited horn button and/or horn button lead wire. [When inst. harness is disconnected from combination switch, horn stops sounding.]	Repair horn button or its wiring.
	Faulty horn relay.	Replace.
Reduced volume and/ or tone quality.	Loose or poor connector contact. (Fuse, relay, horn and/or horn button.)	Repair.
	Faulty horn.	Replace.

METERS AND GAUGES

WATER TEMPERATURE, OIL PRESSURE AND FUEL LEVEL GAUGES AND VOLTMETER

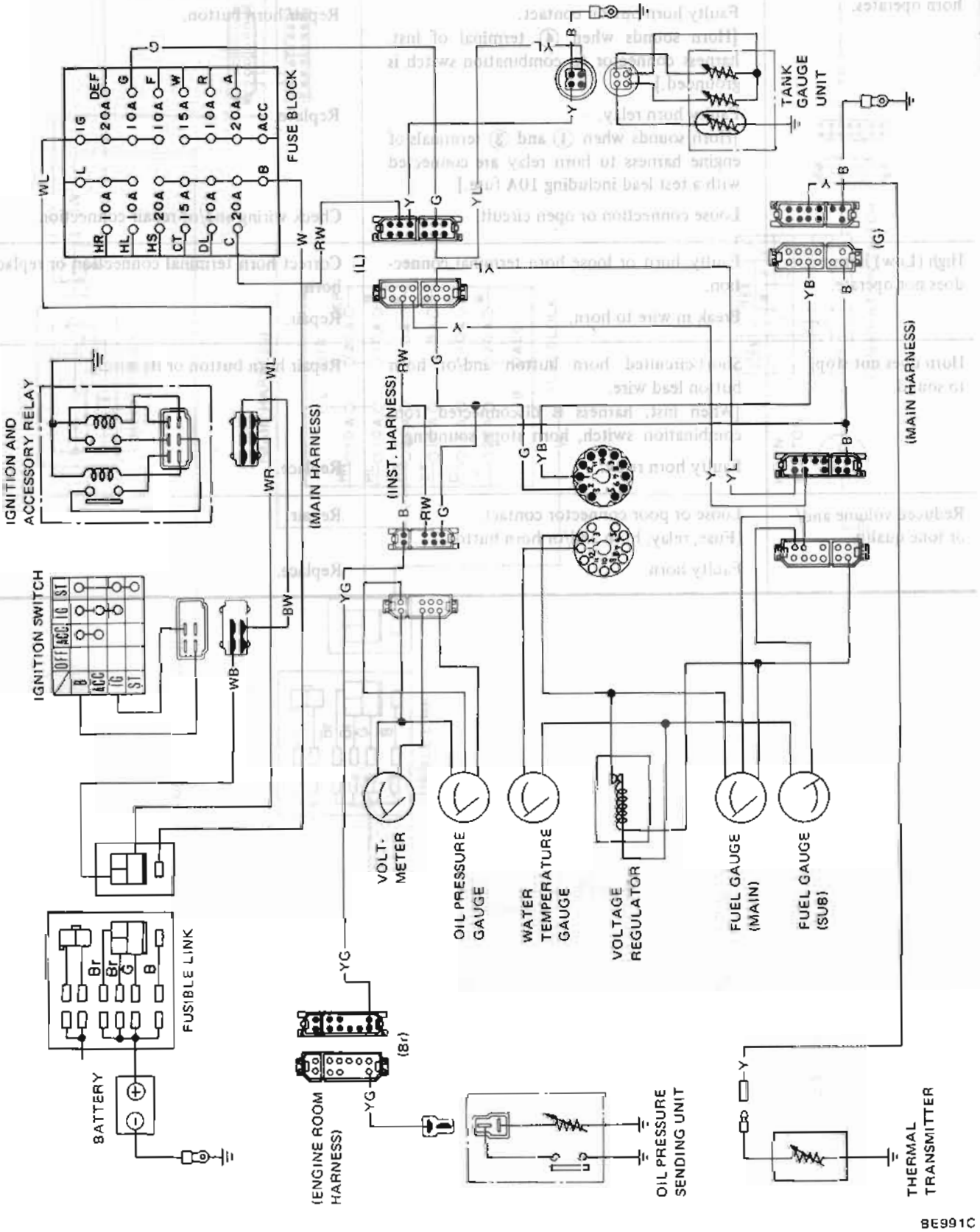
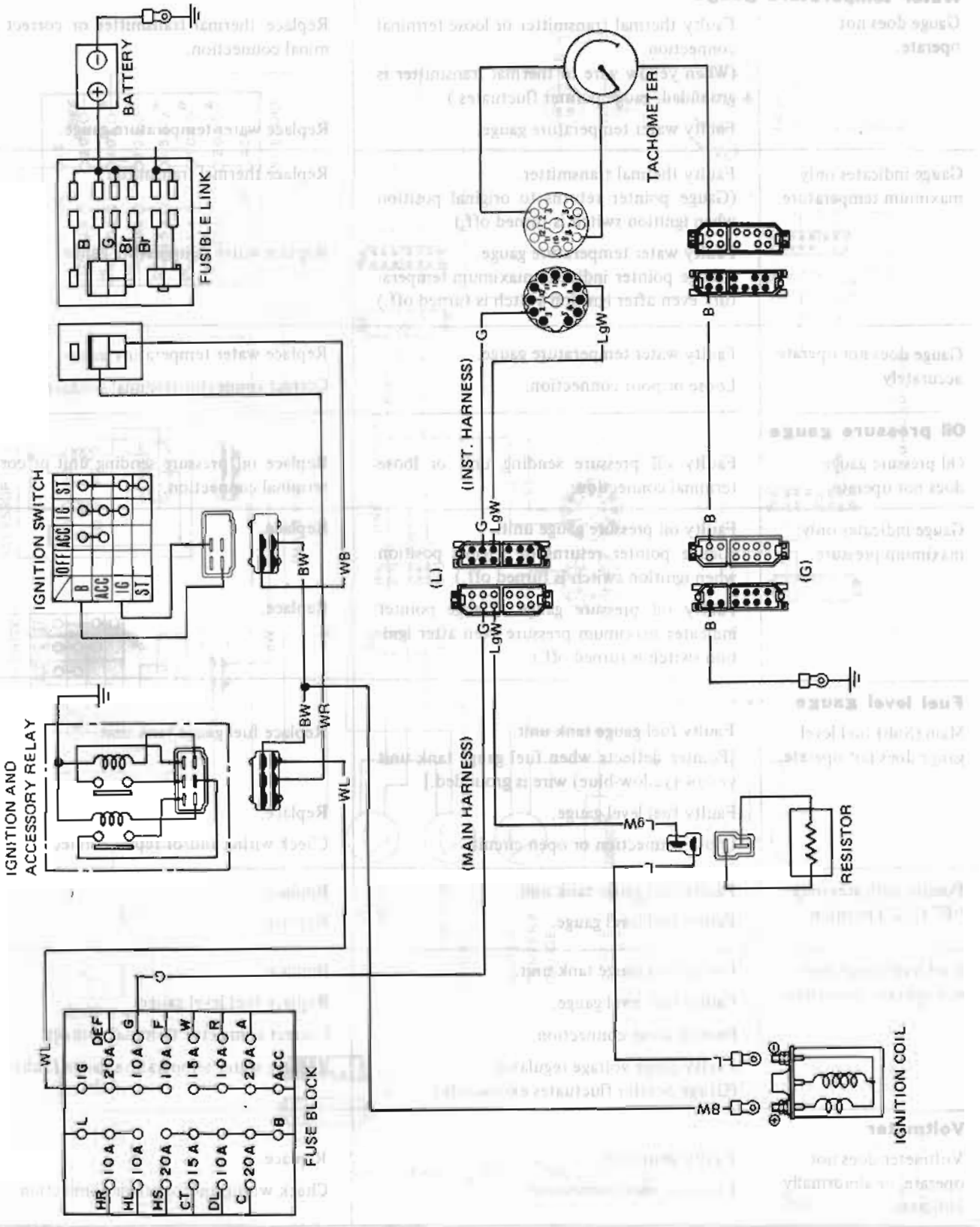


Fig. BE-101 Wiring Diagram for Water Temperature, Oil Pressure and Fuel Level Gauges and Voltmeter

Condition	Probable cause	Corrective action
Water temperature gauge		
Gauge does not operate.	Faulty thermal transmitter or loose terminal connection. (When yellow wire to thermal transmitter is grounded, gauge pointer fluctuates.)	Replace thermal transmitter or correct terminal connection.
	Faulty water temperature gauge.	Replace water temperature gauge.
Gauge indicates only maximum temperature.	Faulty thermal transmitter. (Gauge pointer returns to original position when ignition switch is turned off.)	Replace thermal transmitter.
	Faulty water temperature gauge. (Gauge pointer indicates maximum temperature even after ignition switch is turned off.)	Replace water temperature gauge.
Gauge does not operate accurately.	Faulty water temperature gauge.	Replace water temperature gauge.
	Loose or poor connection.	Correct connector terminal contact.
Oil pressure gauge		
Oil pressure gauge does not operate.	Faulty oil pressure sending unit or loose terminal connection.	Replace oil pressure sending unit or correct terminal connection.
Gauge indicates only maximum pressure.	Faulty oil pressure gauge unit. (Gauge pointer returns to original position when ignition switch is turned off.)	Replace.
	Faulty oil pressure gauge. (Gauge pointer indicates maximum pressure even after ignition switch is turned off.)	Replace.
Fuel level gauge		
Main (Sub) fuel level gauge does not operate.	Faulty fuel gauge tank unit. [Pointer deflects when fuel gauge tank unit yellow (yellow-blue) wire is grounded.]	Replace fuel gauge tank unit.
	Faulty fuel level gauge.	Replace.
	Loose connection or open circuit.	Check wiring and/or repair connection.
Pointer indicates only "F" ("¼") position.	Faulty fuel gauge tank unit.	Replace.
	Faulty fuel level gauge.	Replace.
Fuel level gauge does not operate accurately.	Faulty fuel gauge tank unit.	Replace.
	Faulty fuel level gauge.	Replace fuel level gauge.
	Poor or loose connection.	Correct connector terminal contact.
	Faulty gauge voltage regulator. (Gauge pointer fluctuates excessively)	Replace water temperature gauge (Sub).
Voltmeter		
Voltmeter does not operate, or abnormally indicates.	Faulty voltmeter.	Replace.
	Loose or poor connection.	Check wiring and/or repair connection.

TACHOMETER



BE992C

Fig. BE-102 Wiring Diagram for Tachometer

SPEEDOMETER

Condition	Probable cause	Corrective action
Neither speedometer pointer nor odometer operates.	Loose speedomerer cable union nut.	Retighten.
	Broken speedometer cable No. 1 or No. 2.	Replace.
	Damaged speedometer drive pinion gear (Transmission side).	Replace.
	Faulty speedometer.	Replace.
Unstable speedometer pointer.	Improperly tightened or loose speedometer cable union nut.	Retighten.
	Damaged speedometer cable.	Replace.
	Faulty speedometer.	Replace.
Unusual sound occurs in response to increase in driving speed.	Excessively bent or twisted speedometer cable inner wire or lack of lubrication.	Replace or lubricate.
	Faulty speedometer.	Replace.
Inaccurate speedometer indication.	Faulty speedometer.	Replace.
Inaccurate odometer operation.	Improperly meshed second and third gear or worn gears.	Replace speedometer.
	Faulty feeding due to deformed odometer and pinion carrier.	Replace speedometer.

WARNING SYSTEM

BRAKE, CHARGE, FUEL LEVEL, OIL PRESSURE AND DOOR WARNING

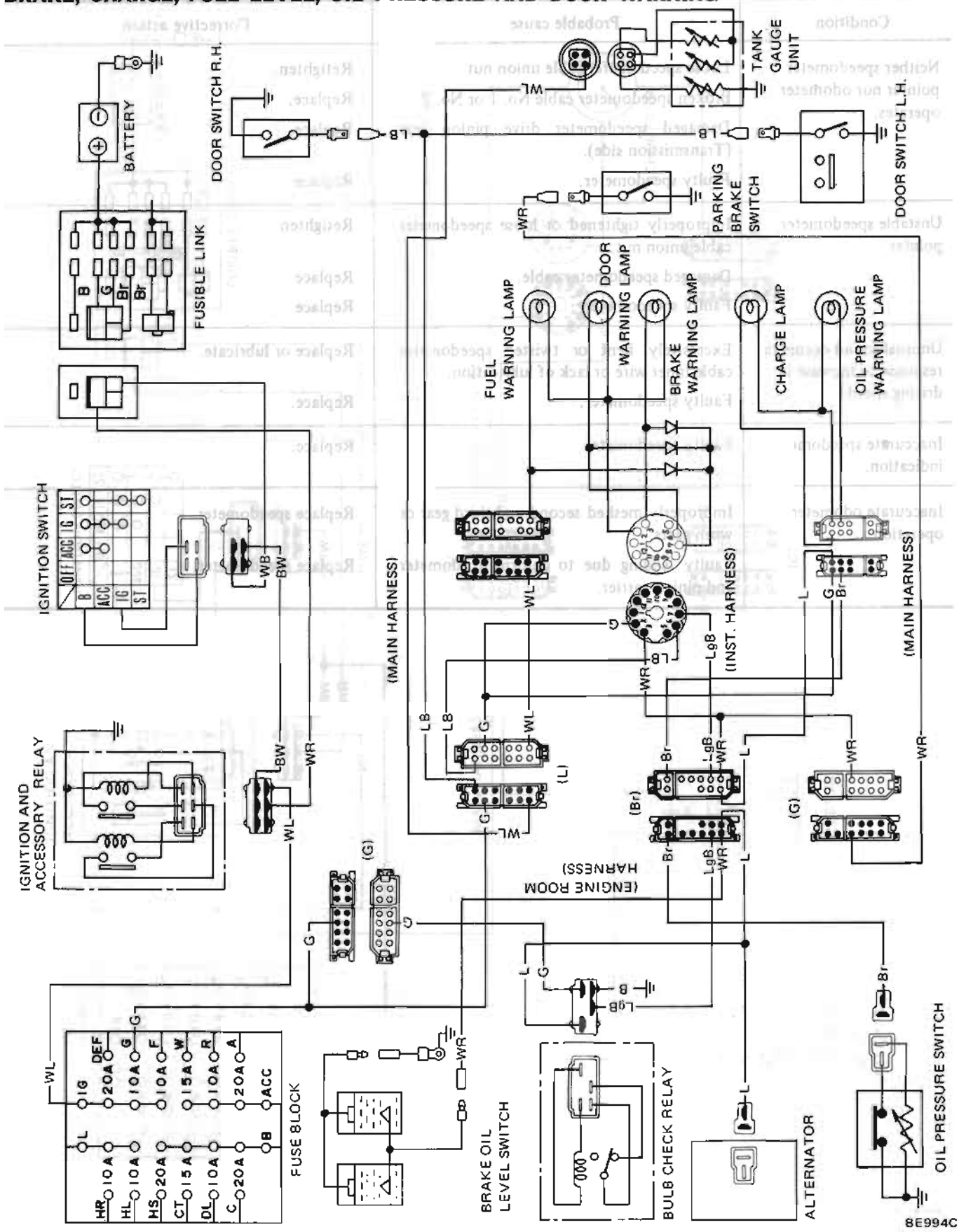


Fig. BE-103 Wiring Diagram for Brake, Charge, Fuel Level, Oil Pressure and Door Warning

Condition	Probable cause	Corrective action
Lamp does not glow when ignition switch is turned "ON" without running engine.	Burnt bulb or loose bulb. Loose or poor connection. Faulty printed circuit board. Faulty bulb check relay. (When door and fuel warning lamps only do not glow.)	Replace bulb or correct. Correct connector terminal contacts. Replace. Replace.
Door, fuel level and charge warning lamp do not go out when engine is started.	Faulty bulb check relay or alternator.	Correct, adjust or replace.
Charge warning lamp Lamp does not go out when engine is started.	Faulty charging system.	Inspect charging system.
Oil pressure warning lamp Lamp does not light when ignition switch is set to "ON".	Faulty oil pressure switch or loose switch terminal connection. (When lead wire connected to switch is grounded, warning lamp lights.)	Replace or correct connection.
Lamp does not go out while engine is being operated.	Lack of engine oil. Oil pressure too low. Faulty oil pressure switch.	Check oil level and add oil as required. Inspect engine oil pressure system. Replace.
Brake warning lamp Lamp does not go out.	Faulty hand brake switch (When hand brake lever is released). Faulty brake fluid level switch (When brake fluid level is normal).	Replace. Replace.
Door warning lamp Lamp does not glow with door opened and engine running.	Faulty door switch.	Replace.
Fuel warning lamp Lamp does not glow when fuel is almost empty [below about 13.5 liters (3⅝ US gal, 3 Imp gal)].	Faulty fuel gauge unit.	Replace.
Lamp does not go out with about specified volume of fuel.	Faulty fuel gauge unit.	Replace.

SEAT BELT WARNING

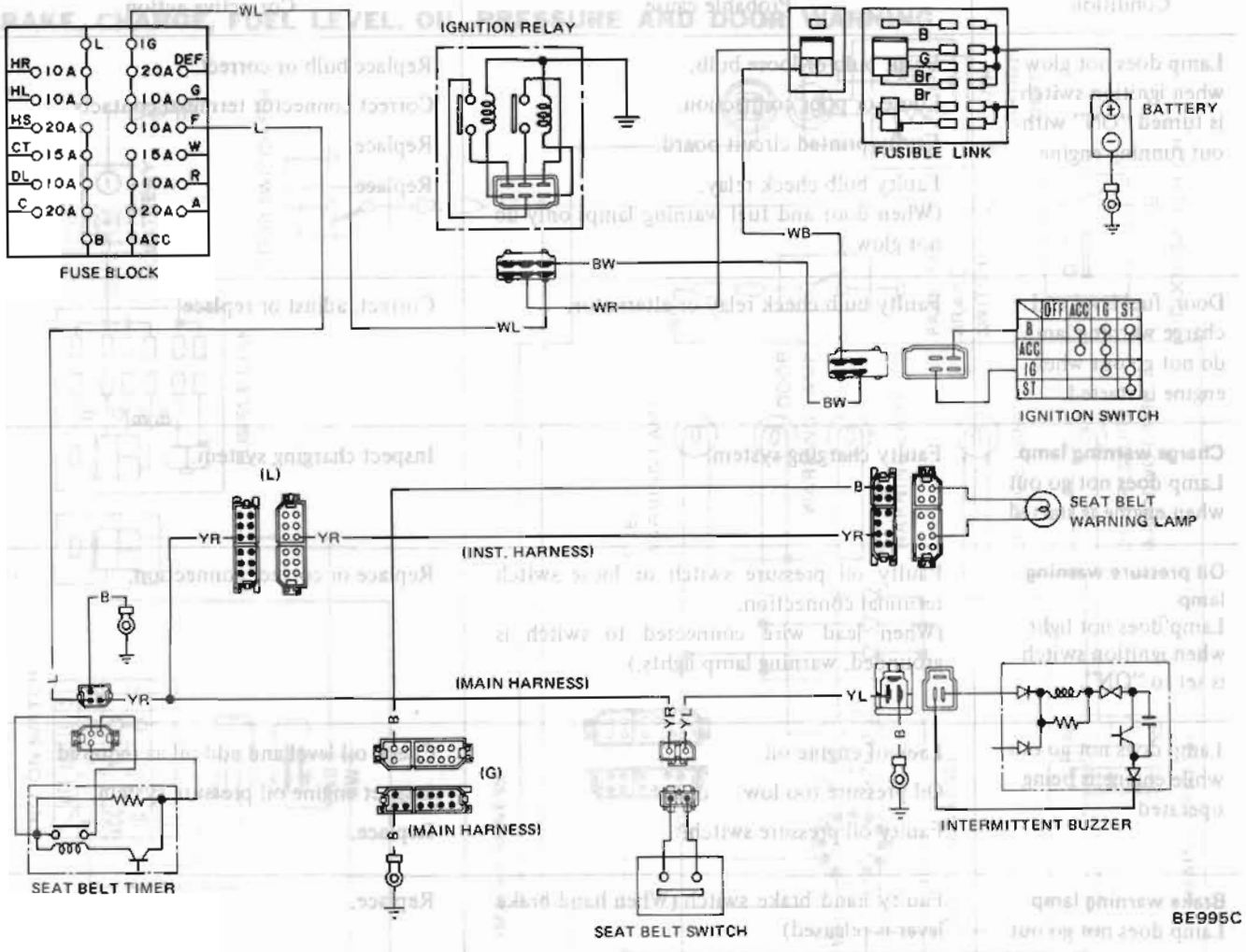


Fig. BE-104 Wiring Diagram for Seat Belt Warning

Condition	Probable cause	Corrective action
Seat belt Neither buzzer sounds nor warning lamp glows when ignition switch is turned to "ON" position. (Lamp should glow for 4 to 8 seconds. Buzzer should sound for 4 to 8 seconds without fastening seat belt).	Loose connection or open circuit. Faulty timer unit.	Correct connector terminal contacts. Replace.
Either buzzer or warning lamp does not operate when ignition switch is turned to "ON" position.	Burnt bulb. Loose connection or open circuit. Faulty seat belt switch. Faulty buzzer.	Replace. Correct connector terminal contacts. Repair or replace. Replace.

LIGHT AND KEY WARNING

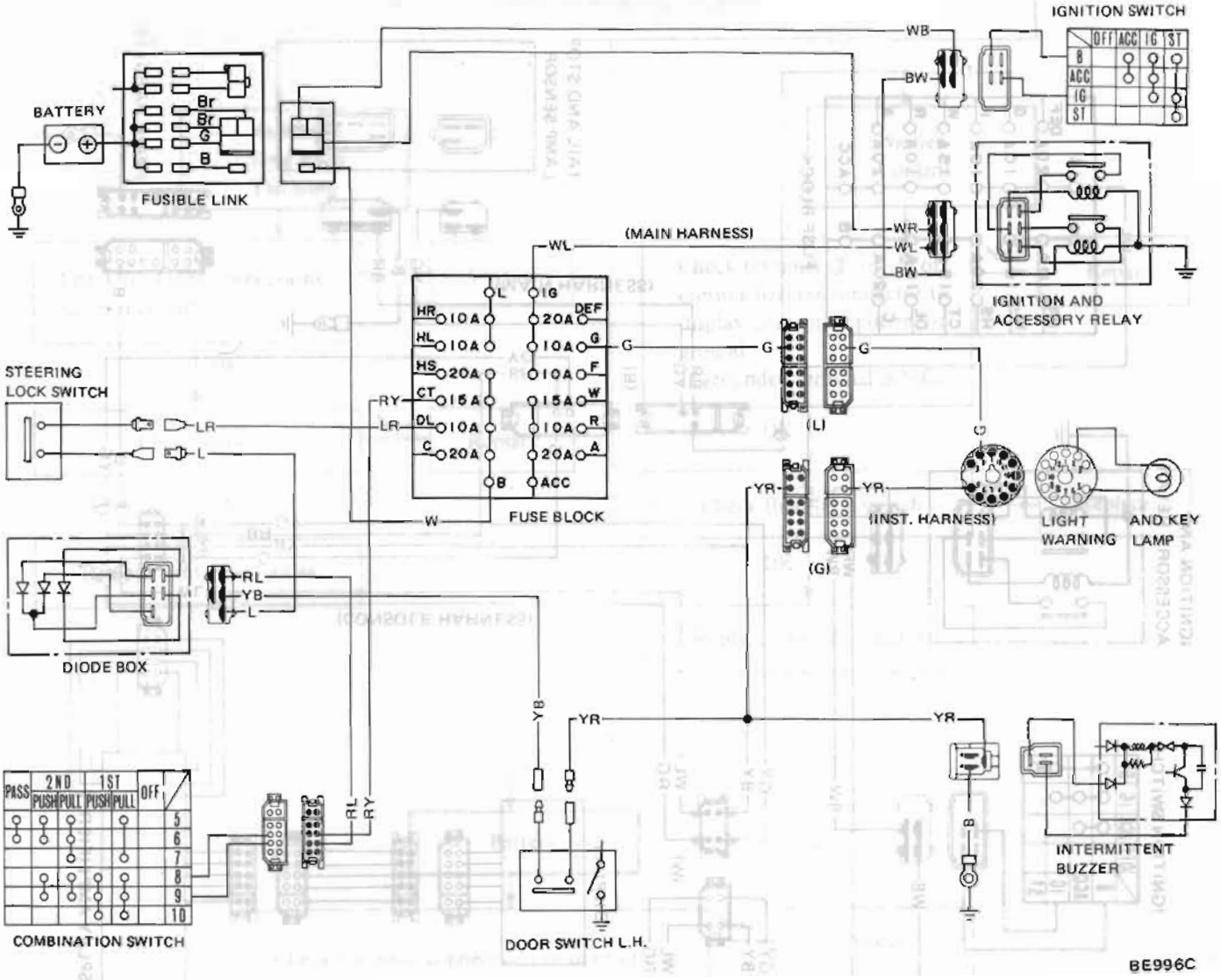


Fig. BE-105 Wiring Diagram for Light and Key Warning

Condition	Probable cause	Corrective action
Light and key		
Neither buzzer sounds nor warning lamp glows with ignition key in ignition switch or lighting switch on, when driver side door is open.	Loose connection or open circuit. Faulty door switch. Faulty steering lock switch. Faulty lighting system. (Clearance lamp does not light).	Correct connector terminal contacts. Repair or replace. Repair or replace. Correct.
Either buzzer or warning lamps do not operate with proper condition.	Loose connection or open circuit. Burnt bulb. Faulty buzzer.	Correct connector terminal contacts. Replace. Replace.

WARNING DISPLAY

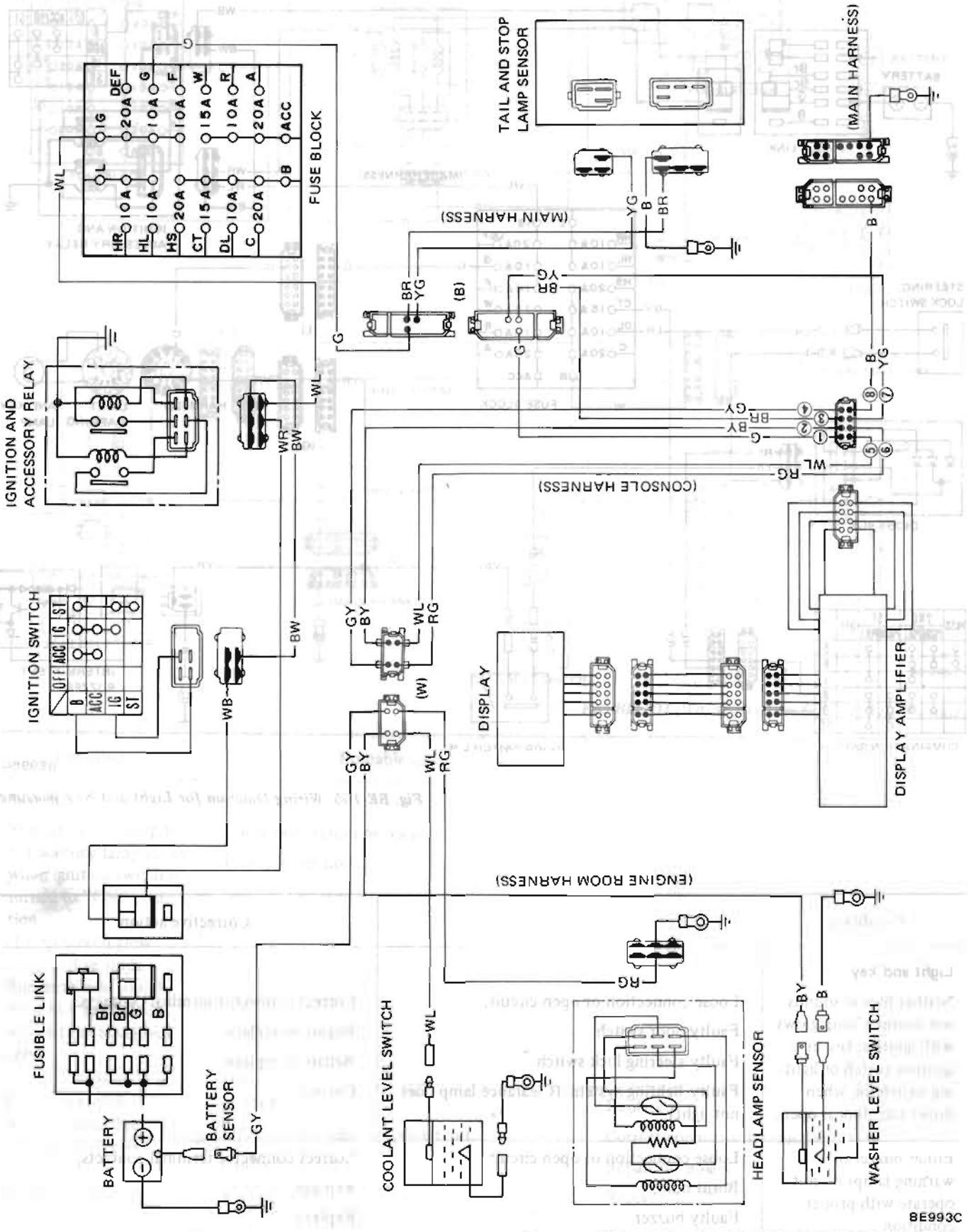
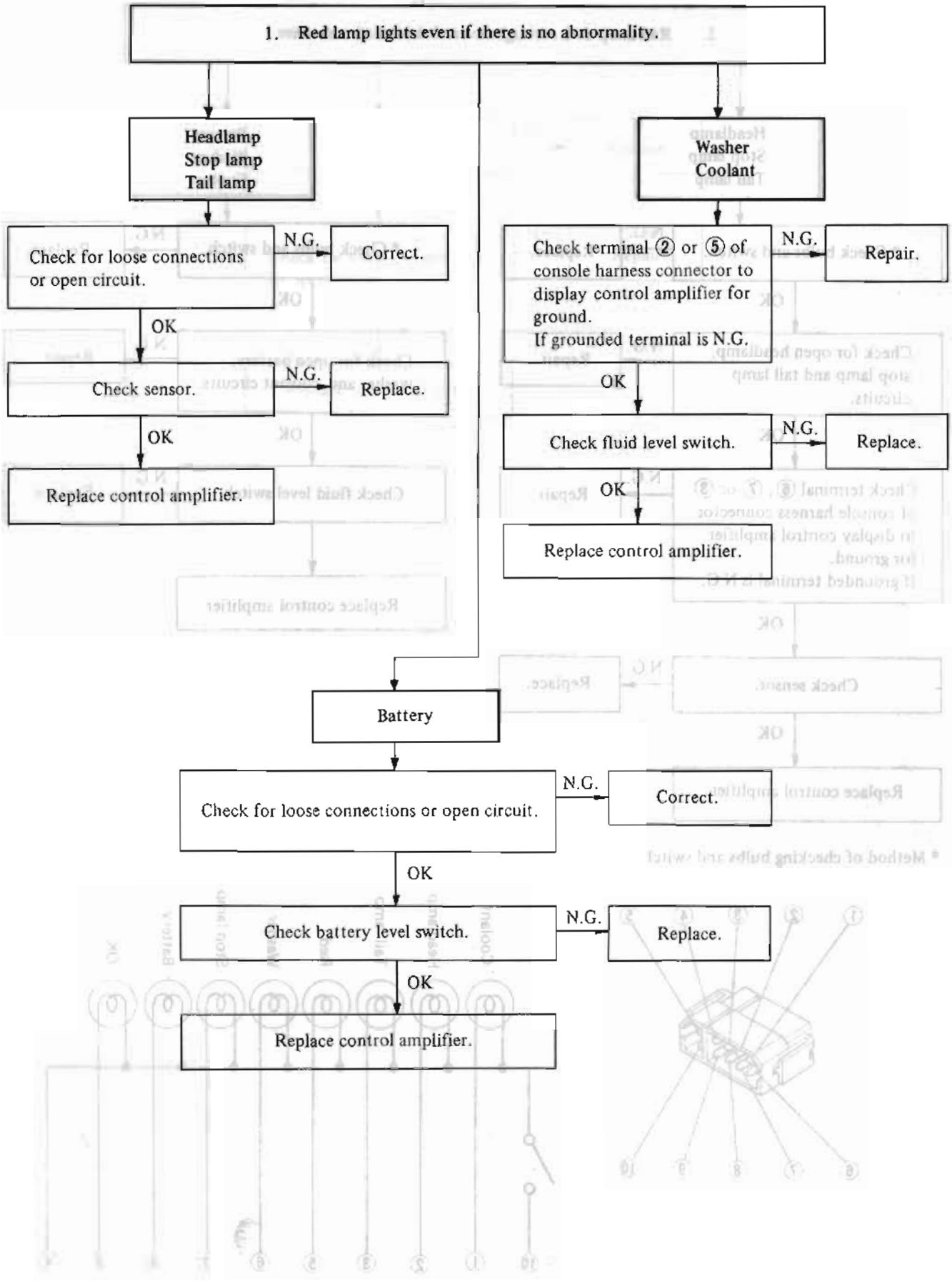


Fig. BE-106 Wiring Diagram for Warning Display


1. Red lamp lights even if there is no abnormality.
Headlamp
Stop lamp
Tail lamp
Check for loose connections or open circuit.
N.G.
Correct.
OK
Check sensor.
N.G.
Replace.
OK
Replace control amplifier.
Washer
Coolant
Check terminal ② or ⑤ of console harness connector to display control amplifier for ground.
If grounded terminal is N.G.
N.G.
Repair.
OK
Check fluid level switch.
N.G.
Replace.
OK
Replace control amplifier.
Battery
Check for loose connections or open circuit.
N.G.
Correct.
OK
Check battery level switch.
N.G.
Replace.
OK
Replace control amplifier.

2. Red lamp does not light even if there is abnormality.

Headlamp
Stop lamp
Tail lamp

* Check bulbs and switch. — N.G. → Replace.
OK
Check for open headlamp, stop lamp and tail lamp circuits. — N.G. → Repair.
OK
Check terminal ⑥, ⑦ or ③ of console harness connector to display control amplifier for ground.
If grounded terminal is N.G. — N.G. → Repair.
OK
Check sensor. — N.G. → Replace.
OK
Replace control amplifier.

Battery
Washer
Coolant

* Check bulbs and switch. — N.G. → Replace.
OK
Check for open battery, washer and coolant circuits. — N.G. → Repair.
OK
Check fluid level switch — N.G. → Replace.
Replace control amplifier.

* Method of checking bulbs and switch

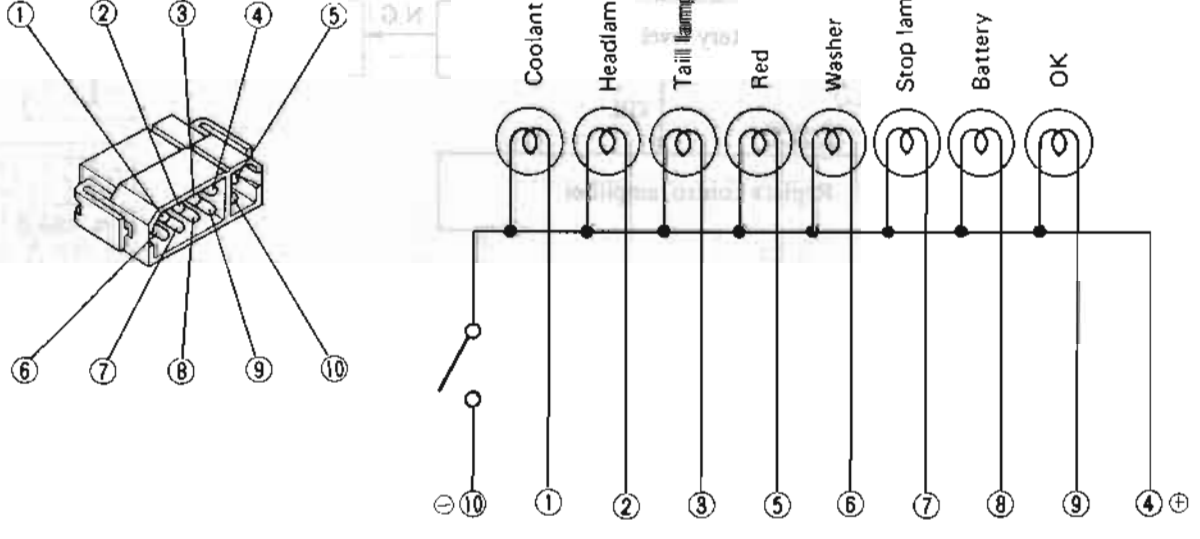
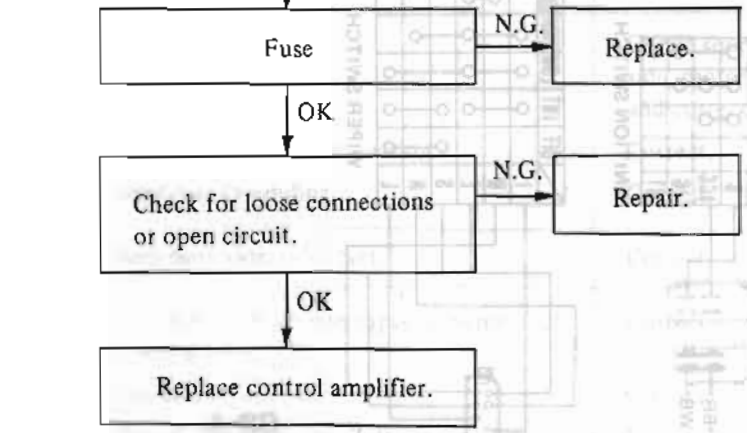


Fig. BE-107

3. No warning is indicated with ignition switch "ON".



ELECTRICAL ACCESSORY SYSTEM

WINDSHIELD WIPER AND WASHER

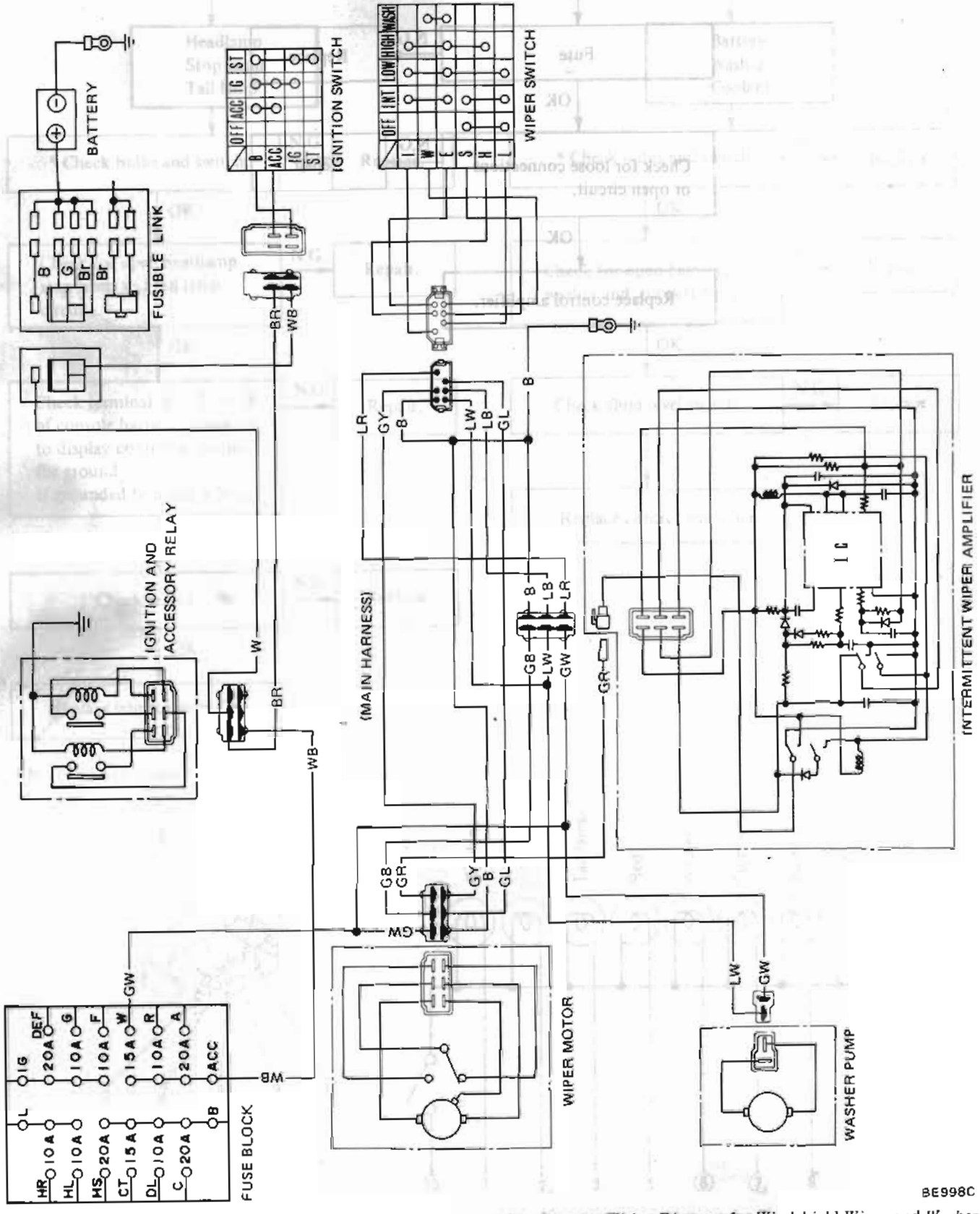


Fig. BE-108 Wiring Diagram for Windshield Wiper and Washer

Condition		Probable cause	Corrective action
Windshield wiper does not operate.	Motor	Broken armature worn motor brush or seized motor shaft.	Replace motor.
	Power supply and cable	Blown fuse.	Check short-circuit, burnt component inside motor or other part for operation, and correct problem.
		Loose, open or broken wiring.	Correct.
		Improper grounding.	Correct.
	Switch	Improper switch contact.	Correct.
	Link	Foreign material interrupts movement of link mechanism.	Correct.
		Disconnect link rod.	Correct.
		Seized or rusted arm shaft.	Lubricate or replace arm shaft.
Windshield wiper operating speed is too slow.	Motor	Short-circuit of motor armature worn motor brush or seized motor shaft.	Replace motor or lubricate bearing with engine oil.
	Power supply and cable	Low source voltage.	Measure voltage, check other electrical parts for operation, and take corrective action for power supply if necessary.
	Link	Humming occurs on motor in arm operating cycle due to seized arm shaft.	Lubricate or replace.
	Switch	Improper switch contact.	Conduct continuity test, and replace if necessary.
Windshield wiper speed can not be adjusted correctly.	Motor	Motor brush for either low or high speed is worn.	Replace motor.
Windshield wiper does not stop correctly. Stops anywhere.	Motor	Contaminated auto-stop relay contacts or improper contact due to foreign matter.	Remove auto-stop device cover, and clean contacts carefully so as not to deform relay plate.
Windshield wiper does not stop correctly. Does not stop.	Motor	Incomplete auto-stop operation (Contact is not interrupted.)	Remove auto-stop device cover, and correct relay plate bending.
Washer motor does not operate when pushing washer switch on.		Burnt fuse.	Correct cause and replace fuse.
		Faulty switch.	Replace.
		Faulty washer motor.	Replace.
		Loosen or poor connection contact at motor or switch.	Repair.
Washer motor operate but washer fluid is not ejected.		Clogged washer nozzle.	Clean nozzle or replace.

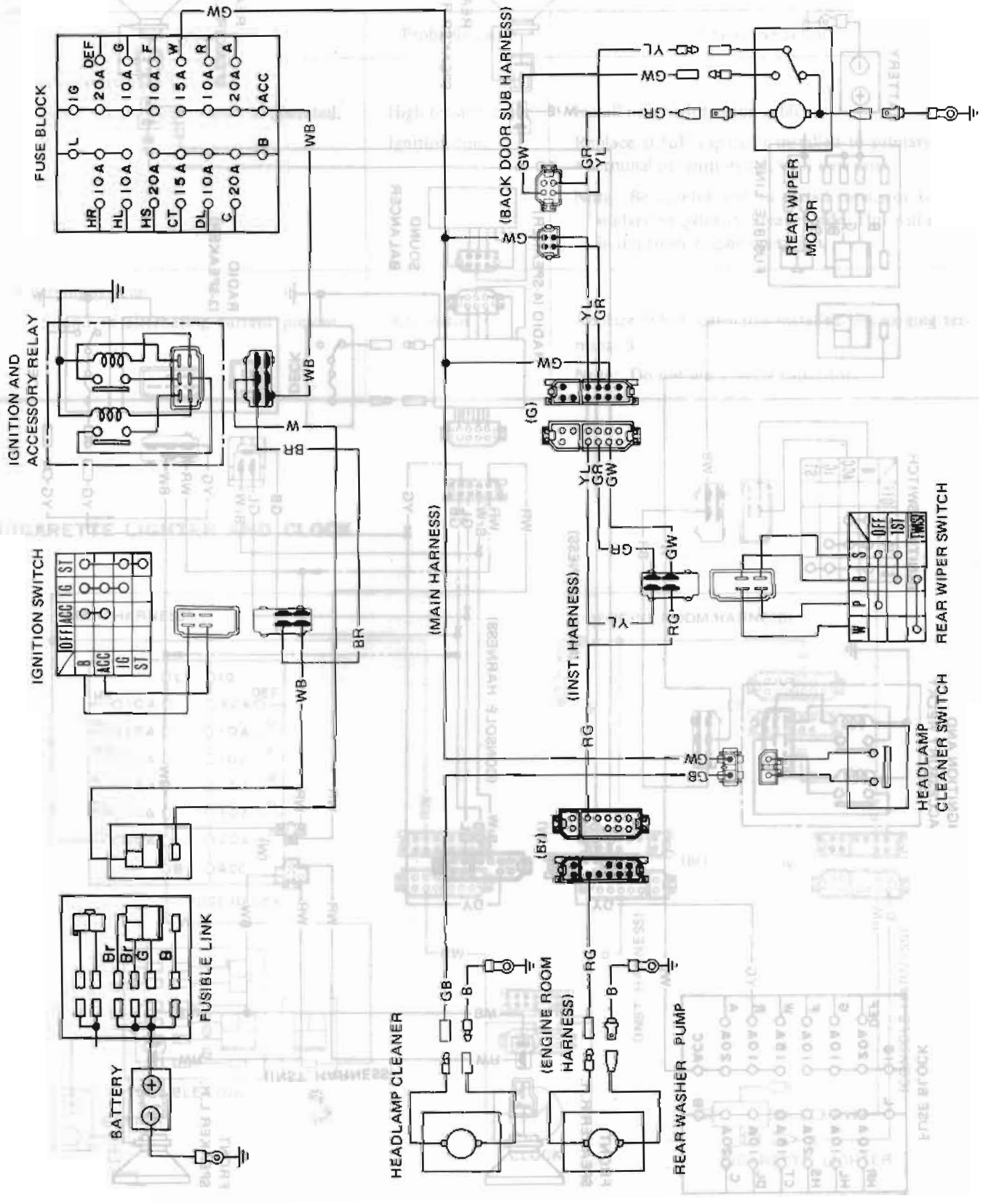
Intermittent windshield wiper

The sign for corrective action

A. Measure voltage across positive (+) and negative (−) terminals of intermittent amplifier with a circuit tester.
B. Check continuity of all wiper switch positions.
C. Check continuity of terminals of wiper motor, wiper switch and intermittent amplifier.
D. Check continuity in wiper motor circuit.
E. Alternator or battery is faulty.

Condition	Probable cause	Corrective action
Wipers do not operate intermittently but operates at Low and High speeds.	• Line voltage below 10 volts • Wiper switch faulty • Wiring faulty • Intermittent amplifier faulty	A: Replace if necessary. B: Correct or replace if necessary. A,C: Repair or replace if necessary. Replace.
Intermittent speed is too short for proper wiping.	• Line voltage too high • Wiper motor (auto-stop mechanism) faulty • Intermittent amplifier faulty	A: Replace if necessary. D: Replace if necessary. Replace
Intermittent speed is too long for proper wiping.	• Line voltage below 10 volts • Wiper switch faulty • Wiring faulty • Intermittent amplifier faulty	A: Replace if necessary. B: Correct or replace if necessary. A,C: Repair or replace if necessary. Replace.
Wipers do not shut off.	• Wiper motor faulty • Intermittent amplifier faulty	D: Replace if necessary. Replace.
Wipers operate intermittently with wiper switch OFF.	• Wiper switch faulty • Wiring faulty • Intermittent amplifier faulty	B: Correct or replace if necessary. A,C: Repair or replace if necessary. Replace.
Intermittent speed is erratic.	• Line voltage fluctuation excessive • Wiper switch faulty • Wiring faulty • Wiper motor faulty • Intermittent amplifier faulty	E: Correct or replace if necessary. B: Correct or replace if necessary. A,C: Repair or replace if necessary. D: Replace if necessary. Replace.
Wipers make a complete wiping stroke only one time with wiper switch ON but do not continue operation.	• Line voltage below 10 volts • Intermittent amplifier faulty	A: Replace if necessary. Replace.
Wiper motor is not interconnected when washer switch is depressed, but intermittent operation is normal.	• Connections poor • Intermittent amplifier faulty	C: Repair or replace if necessary. Replace.
Wiper motor simultaneously operates (or: does not delay) when washer switch is depressed.	• Intermittent amplifier faulty	Replace.
Wipers do not make a complete wiping stroke when washer switch is first turned on and is quickly turned off.	• Intermittent amplifier faulty	Replace.

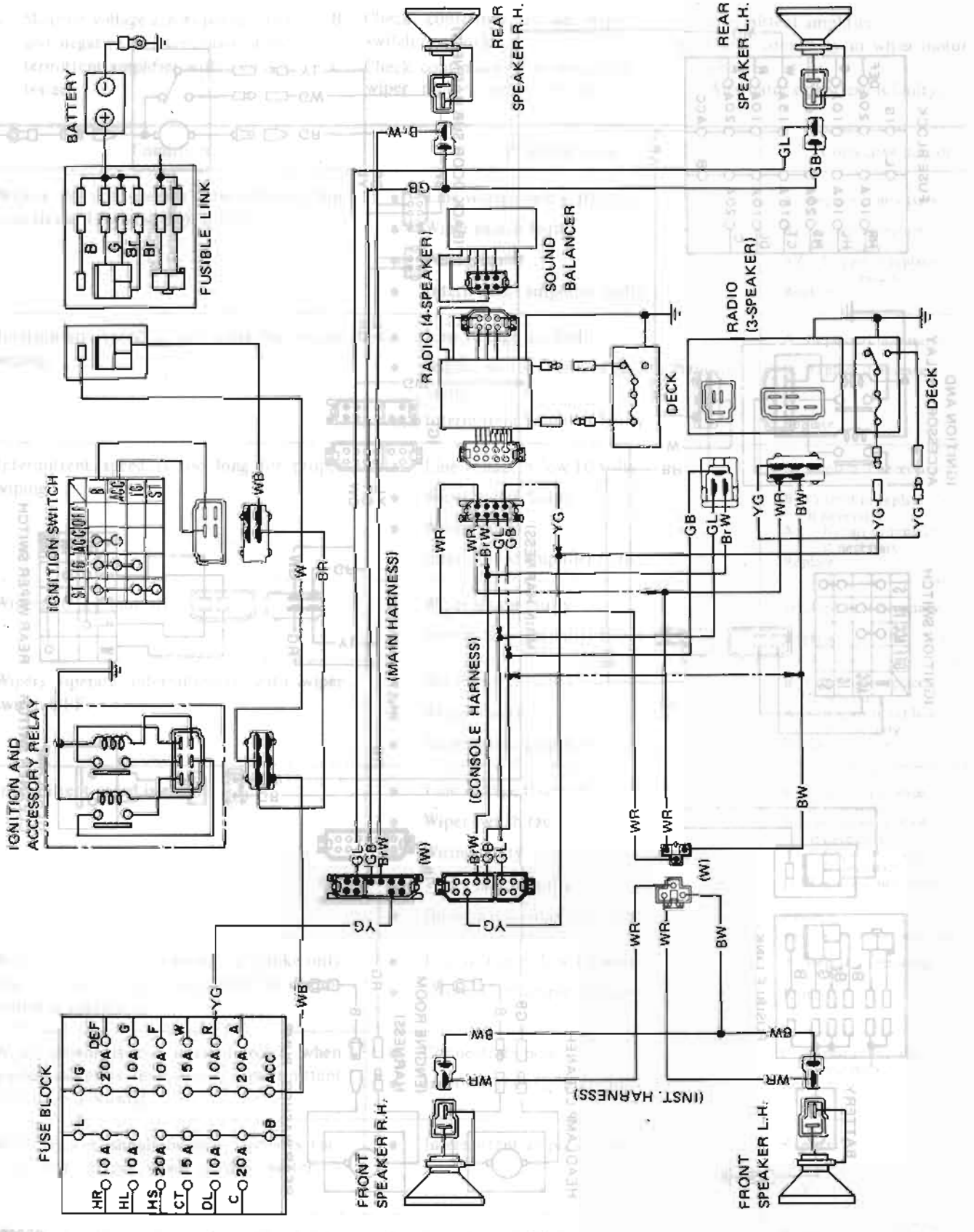
REAR WINDOW WIPER AND WASHER, AND HEADLAMP CLEANER



BE999C

Fig. BE-109 Wiring Diagram for Rear Window Wiper and Washer, and Headlamp Cleaner

RADIO AND STEREO



BE003D

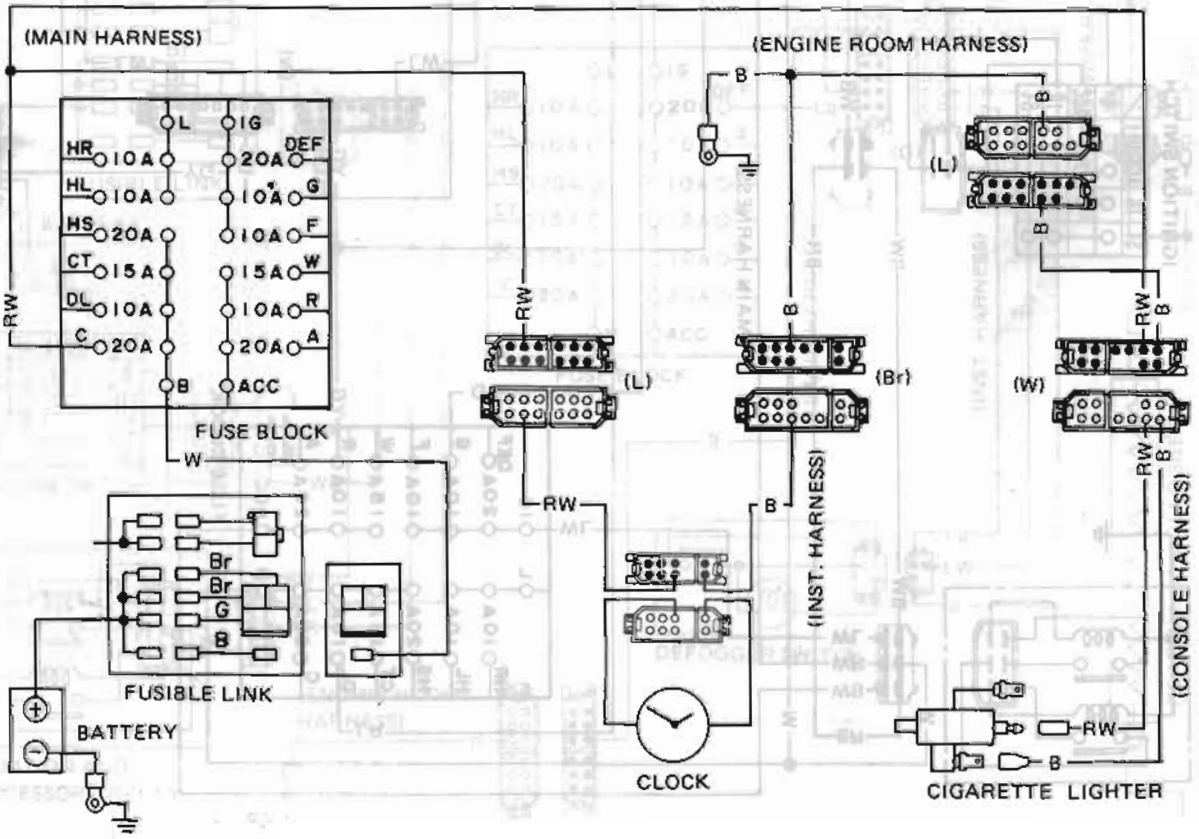
Fig. BE-110 Wiring Diagram for Radio and Stereo

Noise prevention chart

Position car in an open area away from steel buildings, run engine, extend antenna to its maximum length, set volume control to maximum and set dial at a median point where no broadcasting wave is received.

Condition	Probable cause	Corrective action
Ignition system Noise occurs when engine is operated.	High tension cable Ignition coil.	Install new high tension cable. Replace 0.5μF capacitor installed to primary side + terminal of ignition coil with new ones. Note: **Be careful not to install capacitor to secondary or primary breaker side. This will result in improper engine operation.**
Charging system Sound of alternating current present.	Alternator.	Replace 0.5μF capacitor installed to charging terminal B. Note: **Do not use a larger capacitor.**

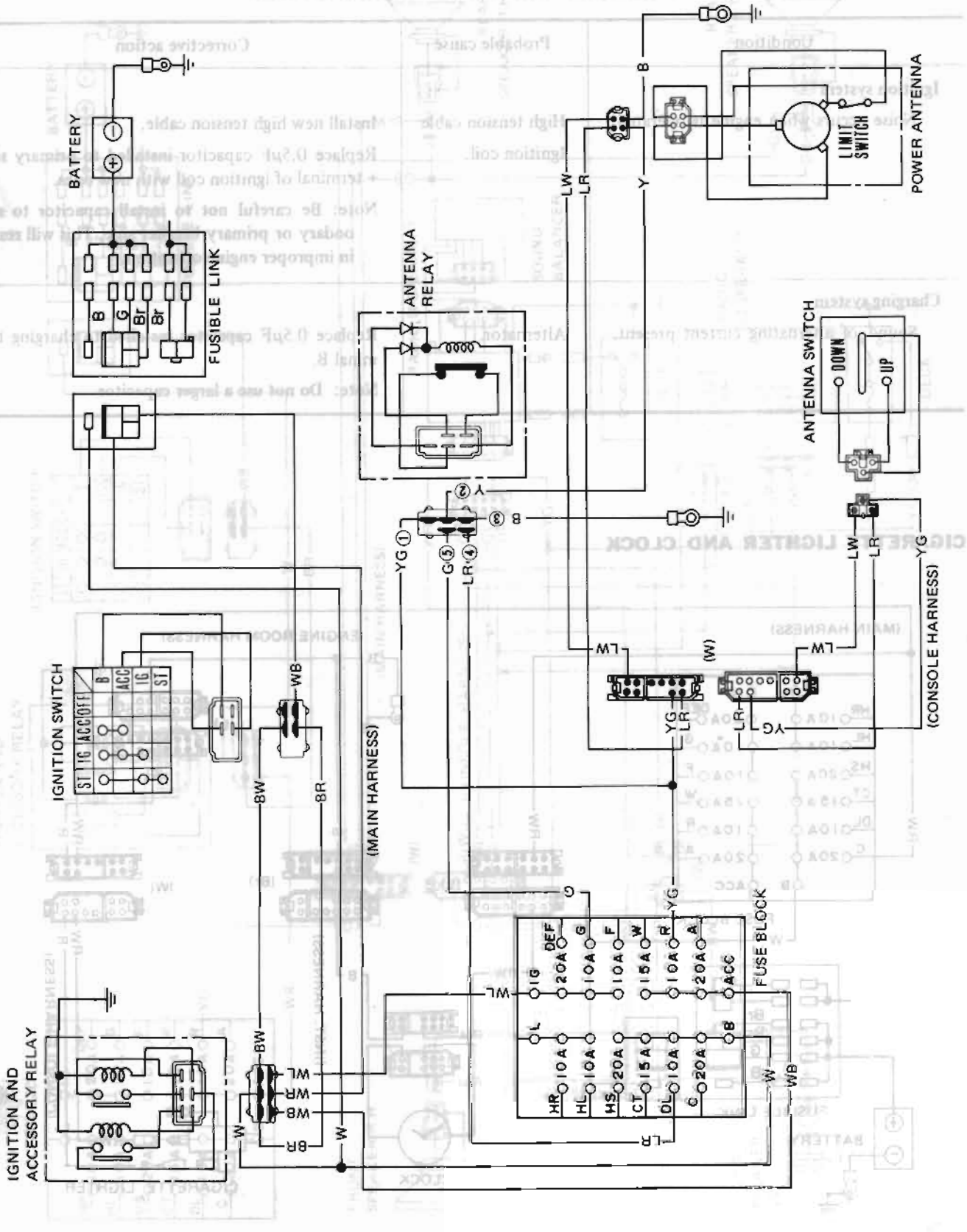
CIGARETTE LIGHTER AND CLOCK



BE001D

Fig. BE-111 Wiring Diagram for Cigarette Lighter and Clock

POWER ANTENNA



BE004D

Fig. BE-112 Wiring Diagram for Power Antenna

Condition	Probable cause	Corrective action
Antenna does not move up or down with antenna switch.	Burnt fuse. [Radio does not operate.]	Correct cause and replace.
	Loose connection or open circuit.	Check wiring and/or repair connection.
	Faulty antenna switch.	Replace.
	Faulty antenna motor.	Replace.
	Faulty antenna relay. [Antenna operates with antenna switch when disconnecting antenna relay].	Replace.
Antenna does not fully retract from fully extended position when ignition switch is turned off.	Faulty antenna relay. [Antenna moves fully down when ② and ⑤ terminals of main harness to antenna relay are connected with test lead including 10A fuse].	Replace.
	Faulty antenna motor.	Replace.

REAR DEFOGGER

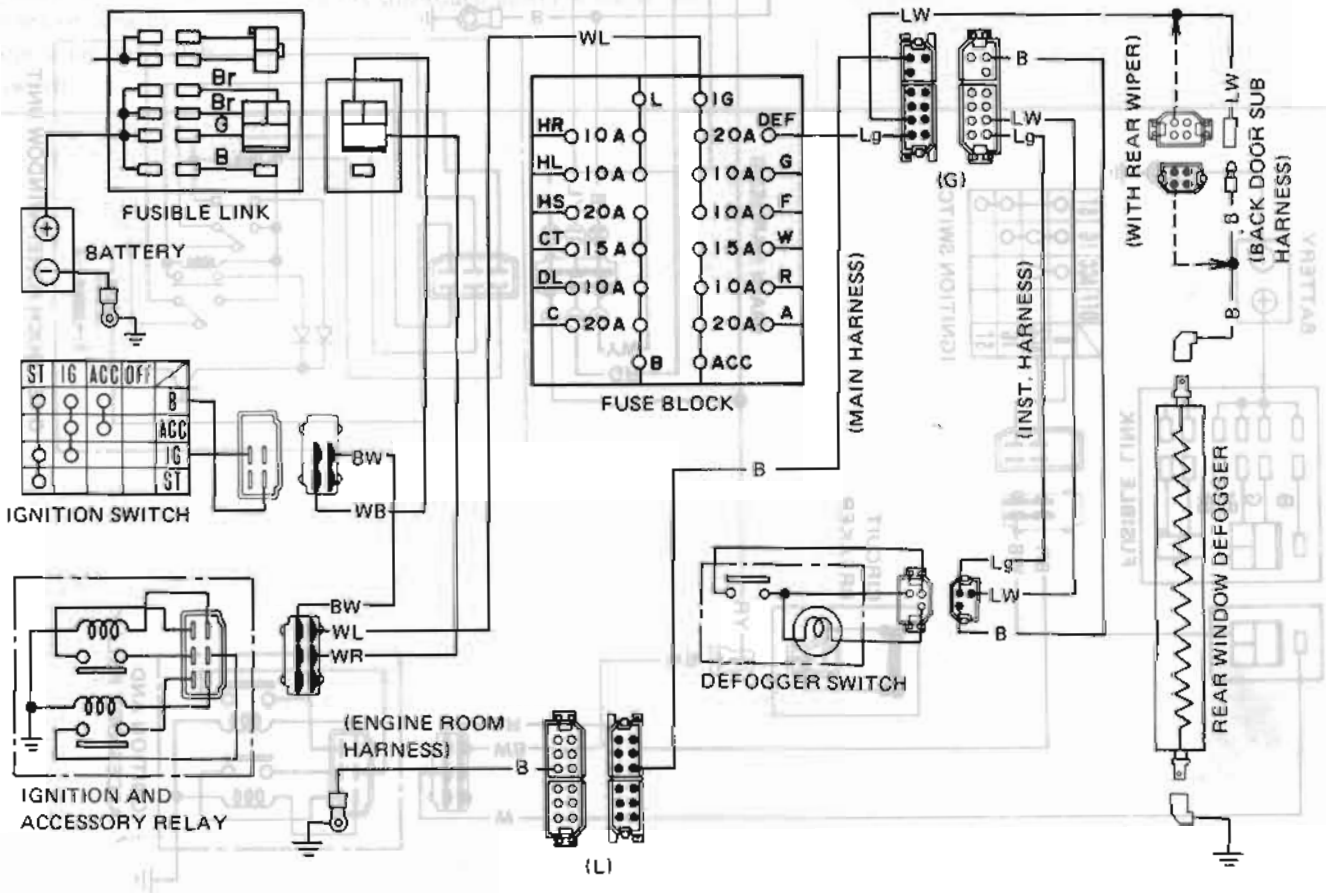


Fig. BE-113 Wiring Diagram for Rear Defogger

POWER WINDOW

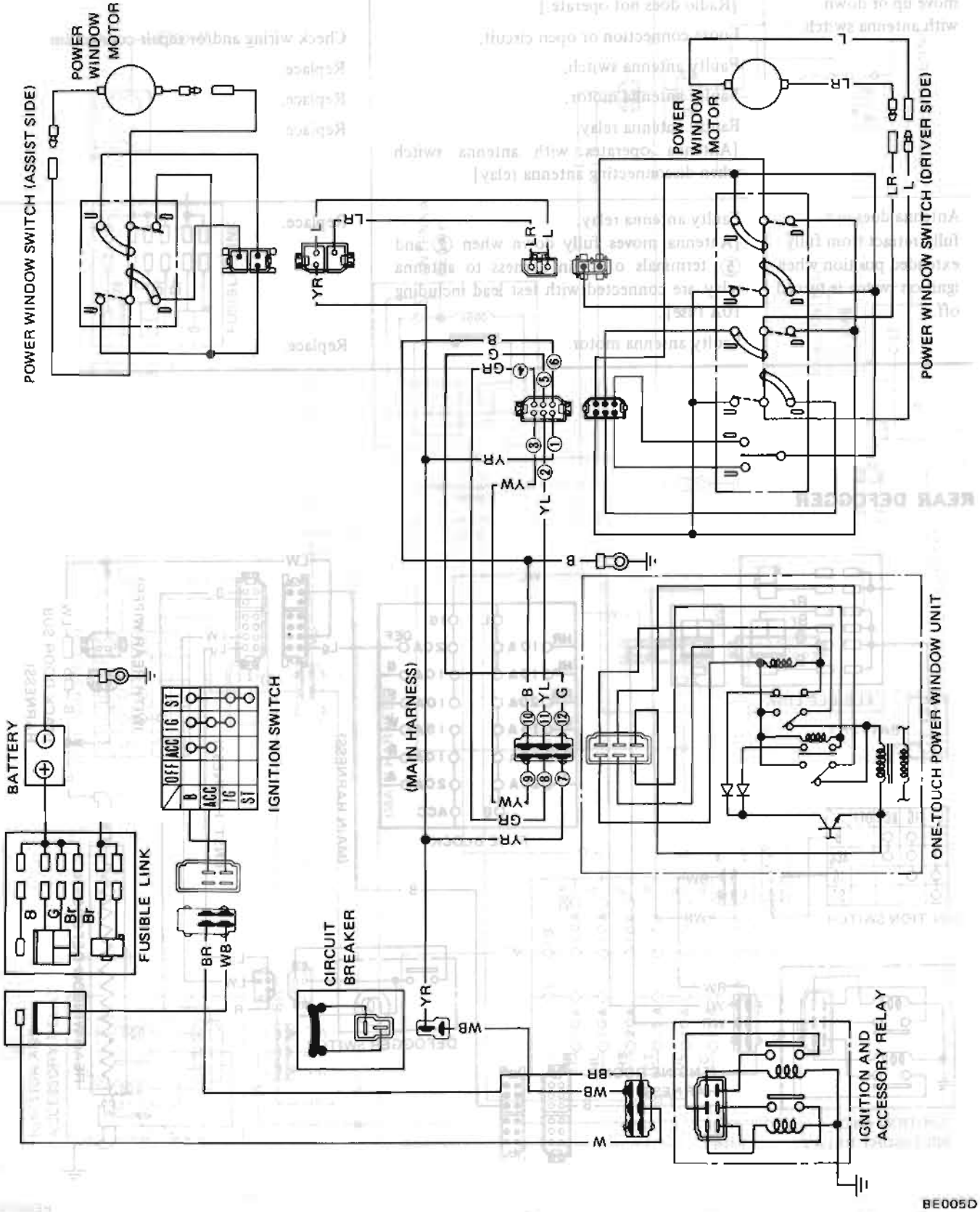
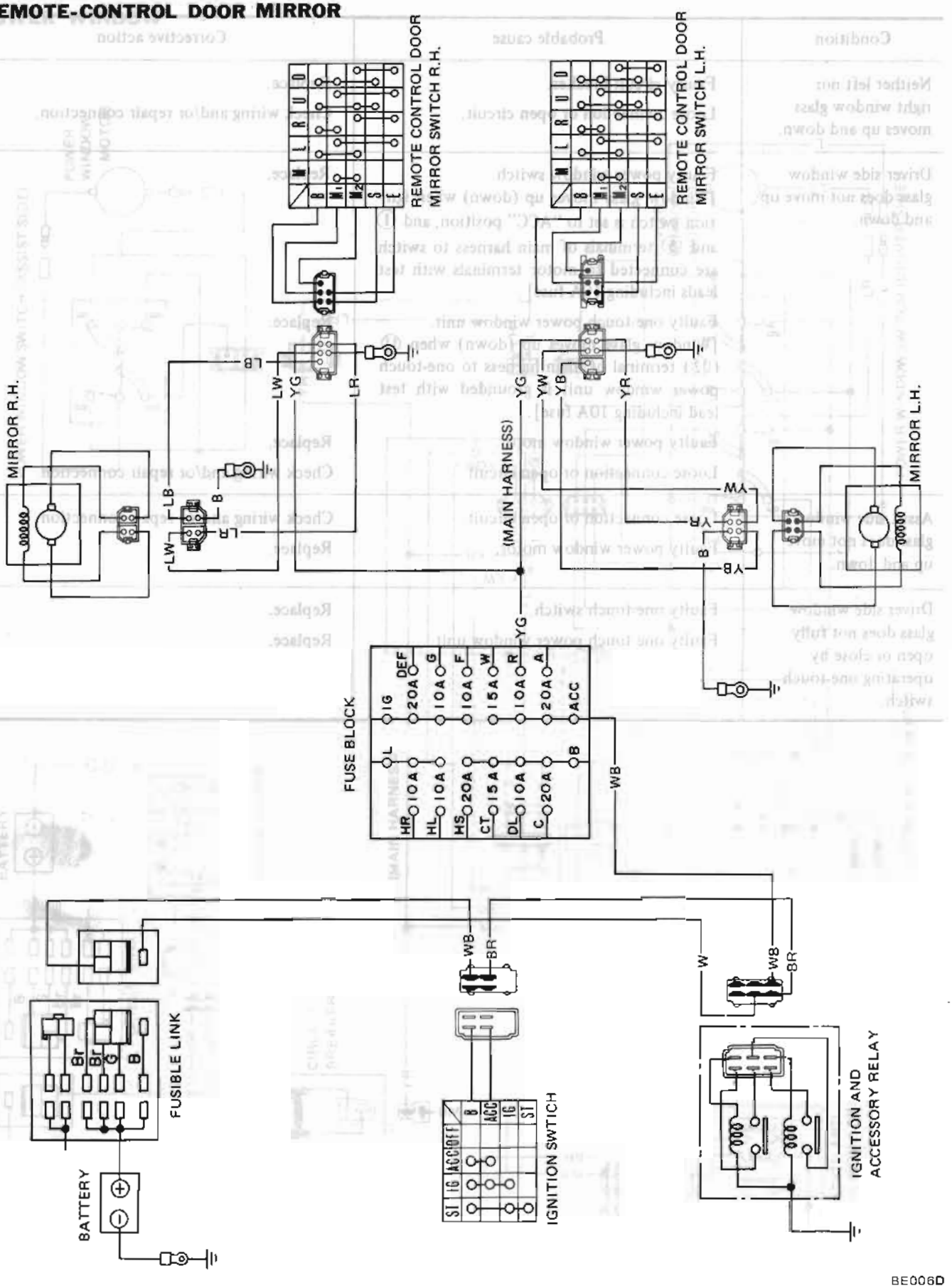


Fig. BE-114 Wiring Diagram for Power Window

Condition	Probable cause	Corrective action
Neither left nor right window glass moves up and down.	Faulty circuit breaker. Loose connection or open circuit.	Replace. Check wiring and/or repair connection.
Driver side window glass does not move up and down.	Faulty power window switch. [Window glass moves up (down) when ignition switch is set to "ACC" position, and ① and ⑤ terminals of main harness to switch are connected to motor terminals with test leads including 10A fuse]. Faulty one-touch power window unit. [Window glass moves up (down) when ⑪ (⑫) terminal of main harness to one-touch power window unit is grounded with test lead including 10A fuse]. Faulty power window motor. Loose connection or open circuit.	Replace. Replace. Replace. Check wiring and/or repair connection.
Assist side window glass does not move up and down.	Loose connection or open circuit. Faulty power window motor.	Check wiring and/or repair connection. Replace.
Driver side window glass does not fully open or close by operating one-touch switch.	Faulty one-touch switch. Faulty one-touch power window unit.	Replace. Replace.

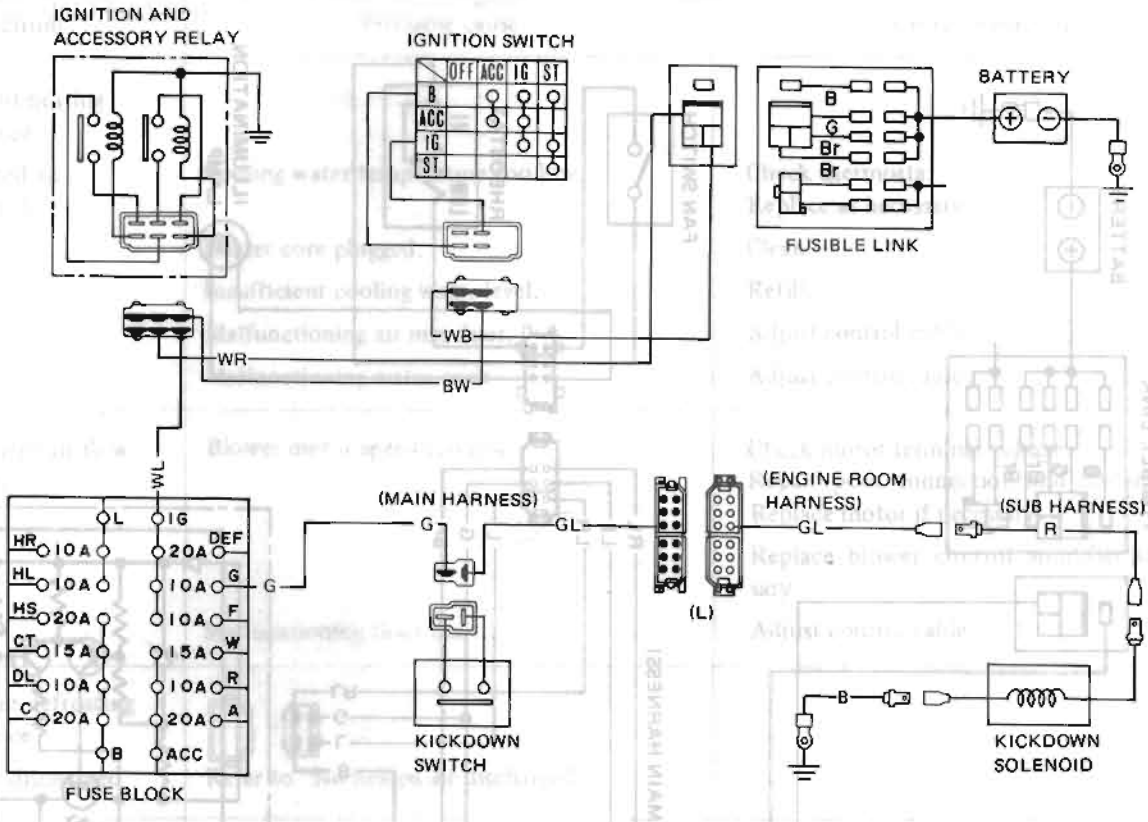
REMOTE-CONTROL DOOR MIRROR



BE006D

Fig. BE-115 Wiring Diagram for Remote-Control Door Mirror

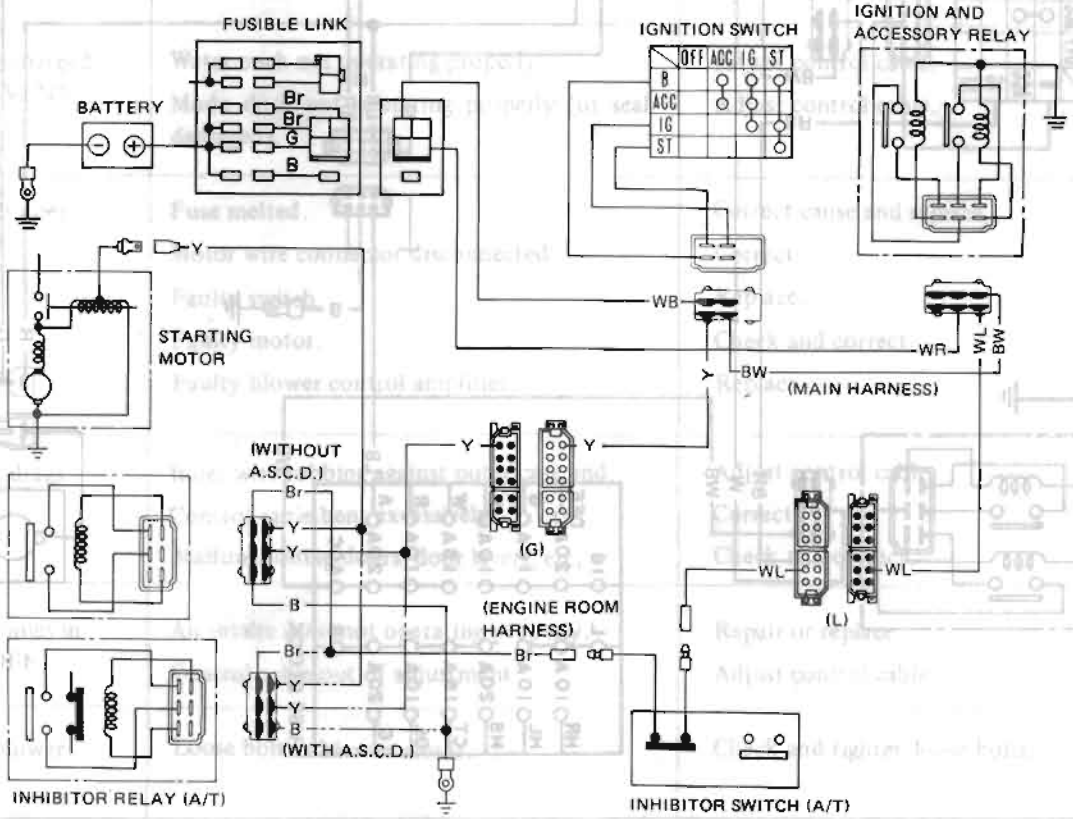
KICKDOWN SYSTEM (A/T Only)



BE007D

Fig. BE-116 Wiring Diagram for Kickdown System

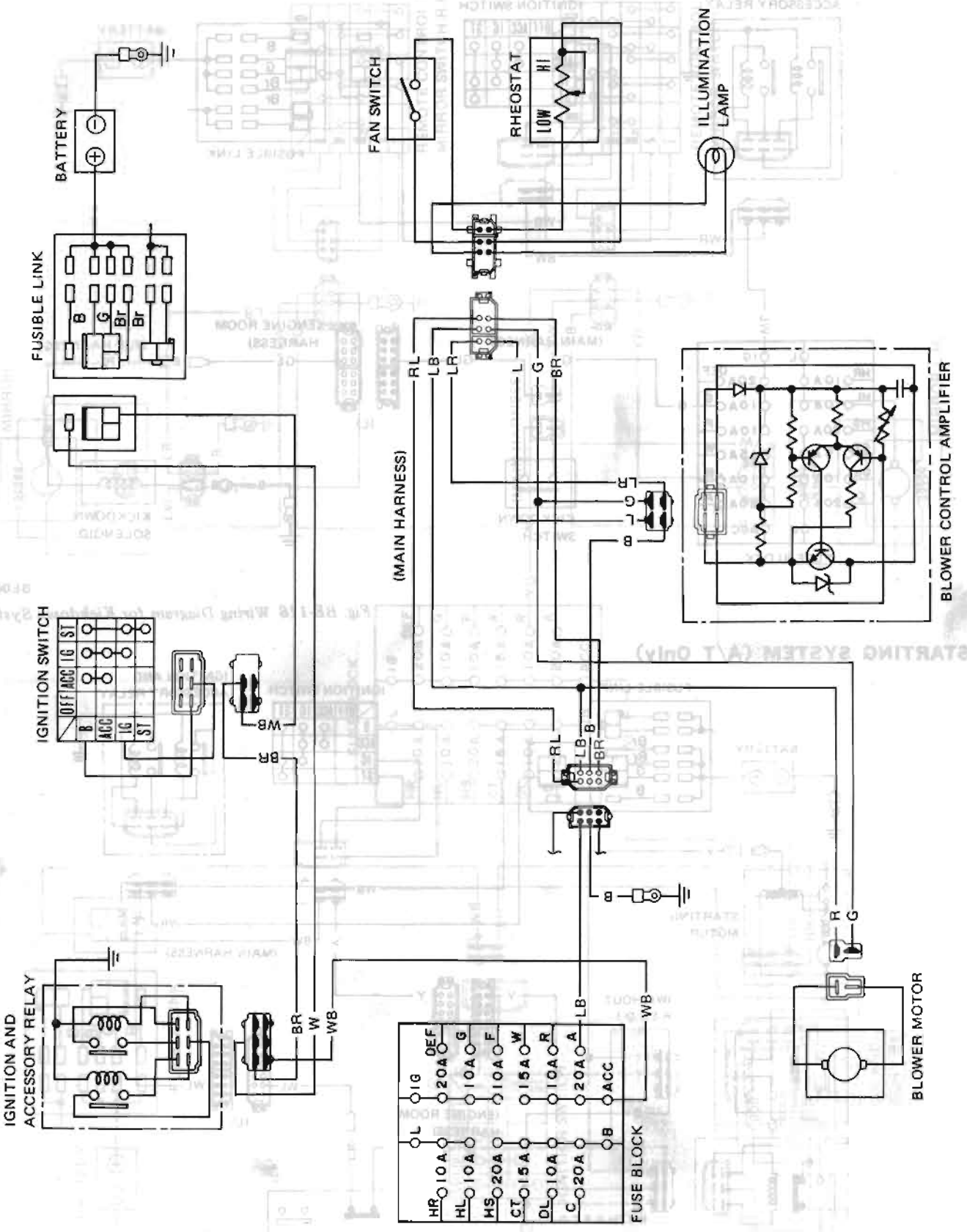
STARTING SYSTEM (A/T Only)



BE008D

Fig. BE-117 Wiring Diagram for Starting System

HEATER



BE090D

Fig. BE-118 Wiring Diagram for Heater

Condition	Probable cause	Corrective action
Insufficient heating performance.		
No heated air discharged.	Cooling water temperature too low.	Check thermostat. Replace as necessary.
	Heater core plugged.	Clean.
	Insufficient cooling water level.	Refill.
	Malfunctioning air mix door.	Adjust control cable.
	Malfunctioning water cock.	Adjust control cable.
Insufficient air flow to floor.	Blower motor speed too low.	Check motor terminal voltage. Repair poor connection and discontinuity. Replace motor if necessary. Replace blower control amplifier if necessary.
	Malfunctioning floor door.	Adjust control cable.
Insufficient defrosting performance.		
Cold air discharged.	Refer to "No heated air discharged".	
Insufficient air flow to defroster.	Malfunctioning floor door (or faulty seal).	Adjust control cable.
	Defroster nozzle plugged.	Clean.
	Leak at defroster duct-to-nozzle connection.	Correct.
Heated air discharged with lever in VENT.	Water cock not operating properly.	Adjust control cable.
	Mode door not operating properly (or seal damaged).	Adjust control cable.
Blower motor does not run.	Fuse melted.	Correct cause and replace.
	Motor wire connector disconnected.	Correct.
	Faulty switch.	Replace.
	Faulty motor.	Check and correct.
	Faulty blower control amplifier.	Replace.
Control lever drags.	Inner wire rubbing against outer case end.	Adjust control cable.
	Control cable bent excessively.	Correct.
	Malfunctioning doors, door levers, etc.	Check and correct.
Outside air comes in with fan in OFF.	Air intake door not operating properly.	Repair or replace.
	Control cable out of adjustment.	Adjust control cable.
Noise from blower motor.	Loose bolt in blower motor.	Check and tighten loose bolts.

AUTOMATIC SPEED CONTROL DEVICE (A.S.C.D.)

CAUTION: Before starting to work on any part of electrical system, disconnect battery ground cable.

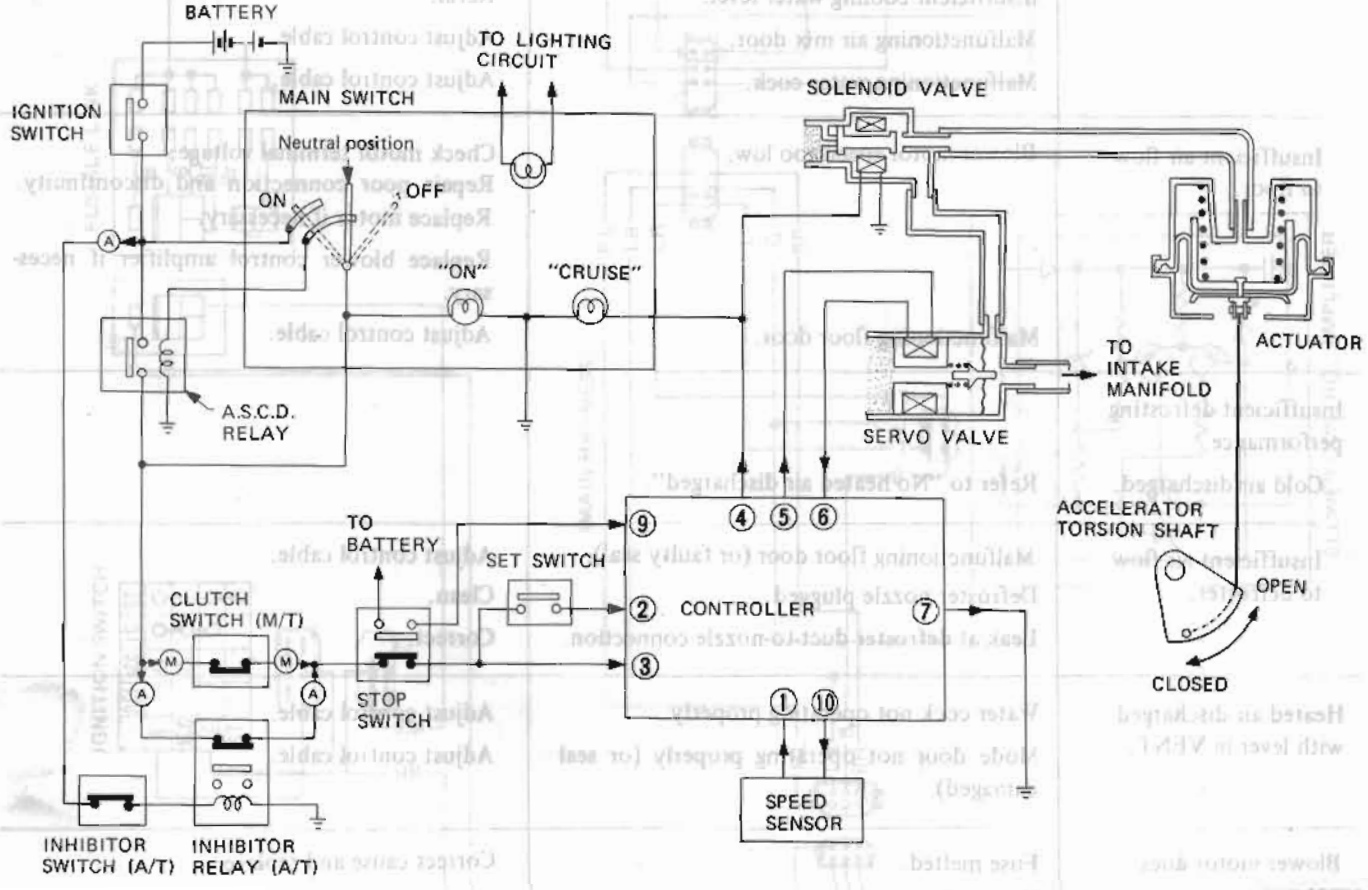


Fig. BE-119 A.S.C.D. System Diagram

DESCRIPTION

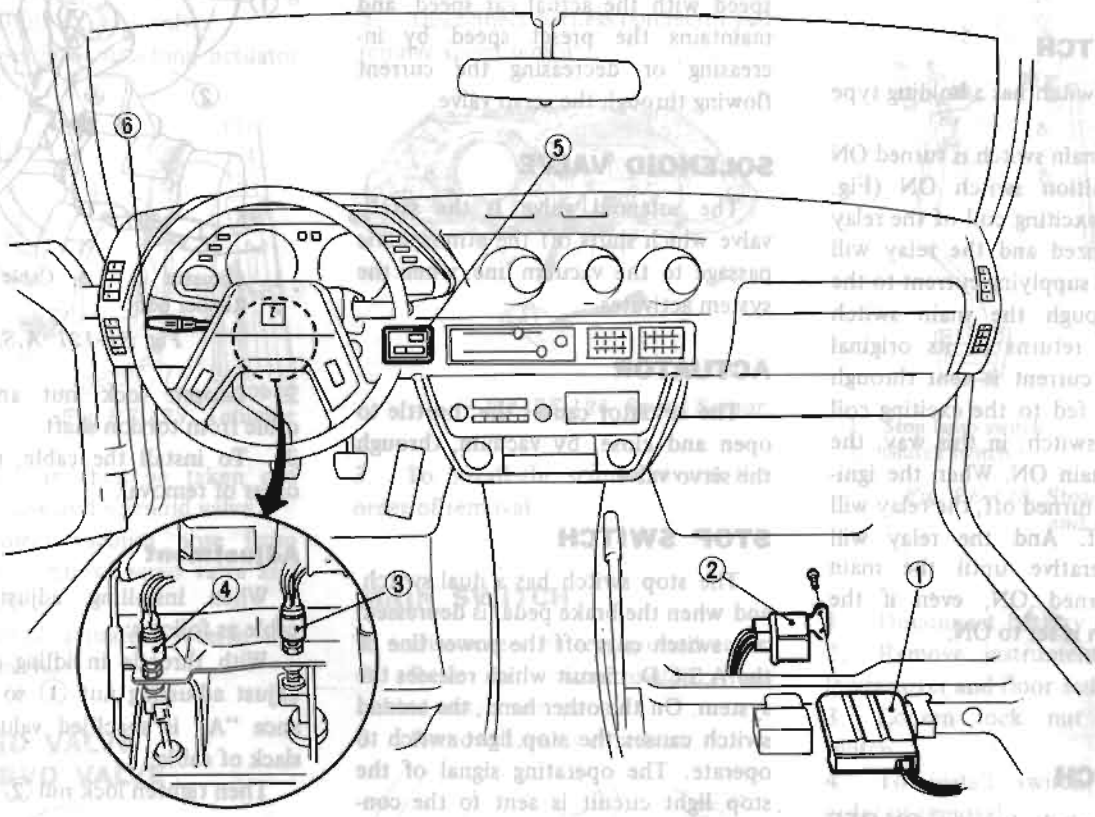
The Automatic Speed Control Device (subsequently referred to as "A.S.C.D.") is a combined unit of electronic circuits with vacuum mechanisms.

The construction of this system and the location of each component part are shown in Fig. BE-119.

The A.S.C.D. controller generates an electrical signal equivalent to the difference between the preset speed and the actual speed picked up by the speed sensor.

The servo valve converts this signal into corresponding vacuum and operates the actuator which adjusts the throttle valve opening.

Note: Speed sensor is incorporated in speedometer.



1 Controller
2 A.S.C.D. relay
3 Stop switch
4 Clutch switch (M/T only)
5 Main switch
6 Set switch
7 Actuator
8 Servo valve
9 Solenoid valve
10 Vacuum hose
11 A.S.C.D. cable
12 Inhibitor relay (A/T only)

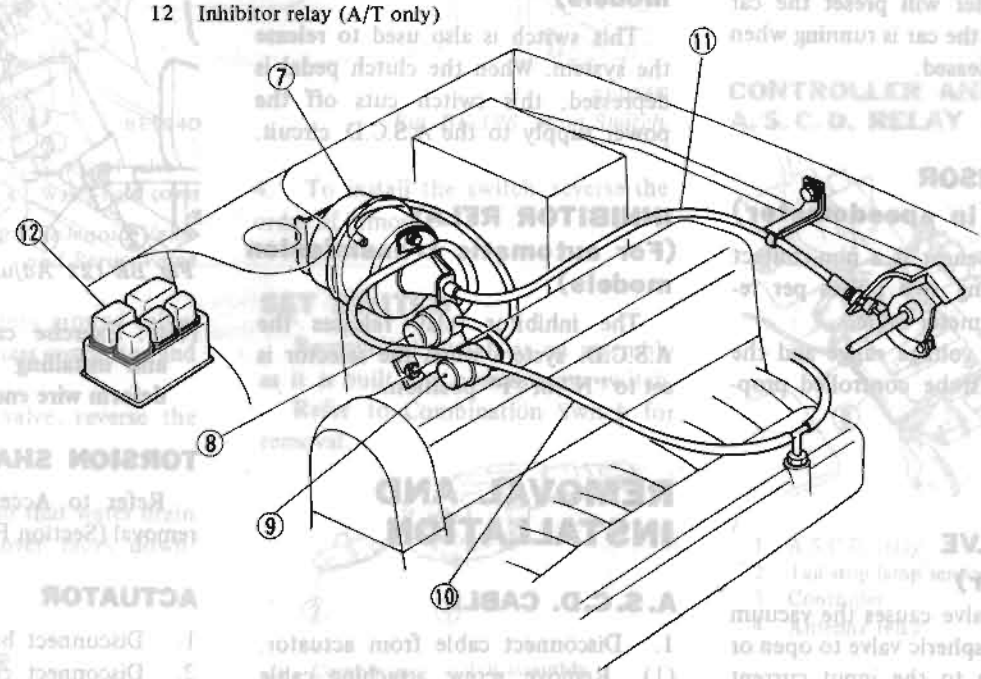


Fig. BE-120 Component Parts and Locations

FUNCTION AND OPERATION

MAIN SWITCH

The main switch has a holding type of circuit.

When the main switch is turned ON with the ignition switch ON (Fig. BE-119), the exciting coil of the relay will be energized and the relay will turn ON, thus supplying current to the system. Although the main switch automatically returns to its original position, the current is sent through the relay and fed to the exciting coil via the main switch; in this way, the relay will remain ON. When the ignition switch is turned off, the relay will also turn off. And the relay will remain inoperative until the main switch is turned ON, even if the ignition switch is set to ON.

SET SWITCH

The set switch has an ON-OFF switch type of circuit.

When the set switch is depressed, the CRUISE light illuminates. With the switch depressed, the controller cancels the preset car speed.

The controller will preset the car speed at which the car is running when the switch is released.

SPEED SENSOR (Contained in speedometer)

The speed sensor is a non-contact sensor generating two pulses per revolution of the meter cable.

The output voltage range and the duty cycle must be controlled properly.

SERVO VALVE (Transducer)

The servo valve causes the vacuum valve and atmospheric valve to open or close according to the input current and adjusts the vacuum from the intake manifold.

Controller

The controller compares the preset speed with the actual car speed, and maintains the preset speed by increasing or decreasing the current flowing through the servo valve.

SOLENOID VALVE

The solenoid valve is the safety valve which shuts off the atmospheric passage to the vacuum line, when the system activates.

ACTUATOR

The actuator causes the throttle to open and close, by vacuum, through the servo valve.

STOP SWITCH

The stop switch has a dual switch, and when the brake pedal is depressed, one switch cuts off the power line of the A.S.C.D. circuit which releases the system. On the other hand, the second switch causes the stop light switch to operate. The operating signal of the stop light circuit is sent to the controller in order to release the system.

CLUTCH SWITCH (For manual transmission models)

This switch is also used to release the system. When the clutch pedal is depressed, this switch cuts off the power supply to the A.S.C.D. circuit.

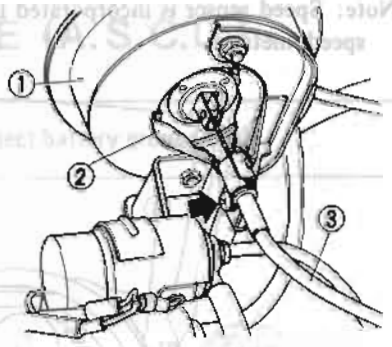
INHIBITOR RELAY (For automatic transmission models)

The inhibitor relay releases the A.S.C.D. system when the selector is set to "N" or "P" position.

REMOVAL AND INSTALLATION

A.S.C.D. CABLE

1. Disconnect cable from actuator.
   (1) Remove screw attaching cable bracket.
   (2) Remove rubber boots.



1 Actuator 3 Cable
2 Rubber boot BE091D

Fig. BE-121 A.S.C.D. Cable

2. Loosen lock nut and remove cable from torsion shaft.
3. To install the cable, reverse the order of removal.

Adjustment

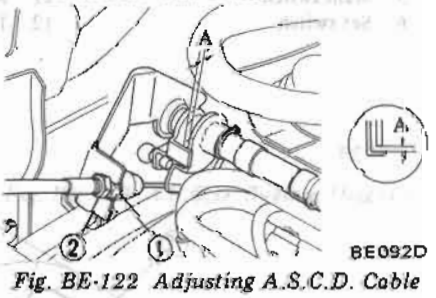
When installing, adjust A.S.C.D. cable as follows:

With throttle in idling conditions, adjust adjusting nut ① so that clearance "A" is specified value with no slack of cable.

Then tighten lock nut ②.

Clearance "A":
2 to 3 mm (0.08 to 0.12 in)

Note: Do not increase tension of cable excessively, as this may cause throttle lever to rotate.



BE092D

Fig. BE-122 Adjusting A.S.C.D. Cable

Note: Exercise care when removing and installing wire, so as not to deform wire end.

TORSION SHAFT

Refer to Accelerator Linkage for removal (Section FE).

ACTUATOR

1. Disconnect battery ground cable.
2. Disconnect cable from actuator.

Refer to A.S.C.D. cable for removal.

3. Disconnect harness connector of servo valve and solenoid valve, and disconnect vacuum hose connecting intake manifold to servo valve.
4. Remove bolt attaching actuator to body.

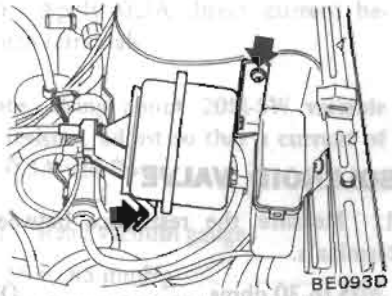
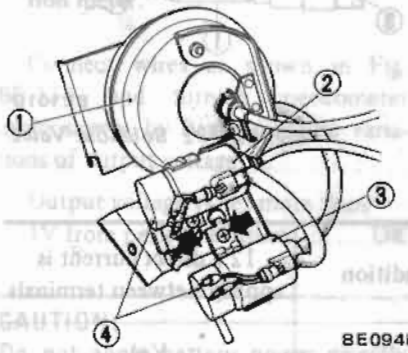


Fig. BE-123 Actuator

Actuator can then be taken out with servo valve and solenoid valve.
5. Disconnect vacuum hose from actuator and remove servo valve and solenoid valve.
6. To install actuator, reverse the order of removal.

SOLENOID VALVE AND SERVO VALVE



1 Actuator
2 Servo valve
3 Solenoid valve
4 Water-tight cover

Fig. BE-124 Solenoid Valve and Servo Valve

1. Disconnect battery ground cable.
2. Disconnect harness connector and remove valve.
3. To install the valve, reverse the order of removal.

Note: Install valve so that water drain of water-tight cover faces downward.

SPEED SENSOR

The speed sensor is built into the combination meter.

1. Remove cluster lid.
Refer to Combination Meter for removal.
2. Disconnect harness connector and remove speed sensor.

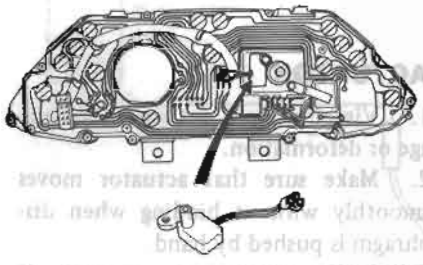


Fig. BE-125 Speed Sensor

3. To install the sensor, reverse the order of removal.

MAIN SWITCH

1. Disconnect battery ground cable.
2. Push out main switch from behind instrument panel.
3. Remove harness connector.

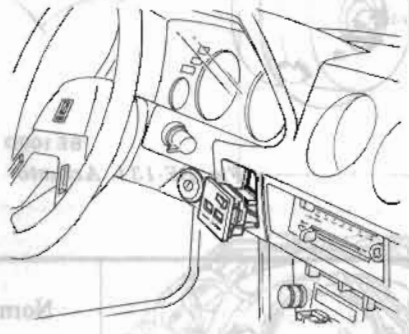
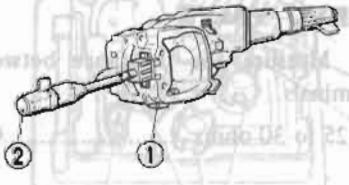


Fig. BE-126 Main Switch

4. To install the switch, reverse the order of removal.

SET SWITCH

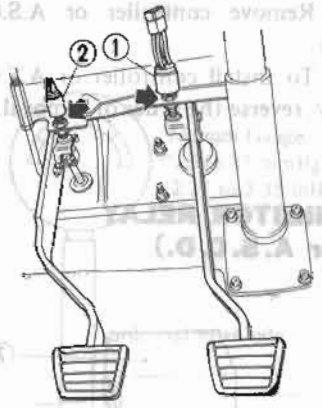
Remove set switch as an assembly as it is built into combination switch.
Refer to Combination Switch for removal.



1 Combination switch assembly
2 Set switch

Fig. BE-127 Set Switch

STOP LAMP SWITCH AND CLUTCH SWITCH



1 Stop lamp switch
2 Clutch switch

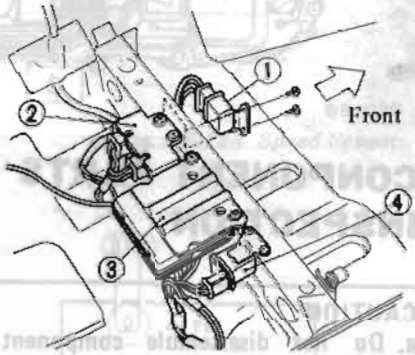
Fig. BE-128 Stop Lamp Switch and Clutch Switch

1. Disconnect battery ground cable.
2. Remove instrument panel L.H. lower cover and floor assist nozzle.
3. Loosen lock nut and remove switch.
4. To install switch, reverse the order of removal.

Adjustment

Refer to Brake Pedal or Clutch Pedal for adjustment (Section BR or CL).

CONTROLLER AND A.S.C.D. RELAY

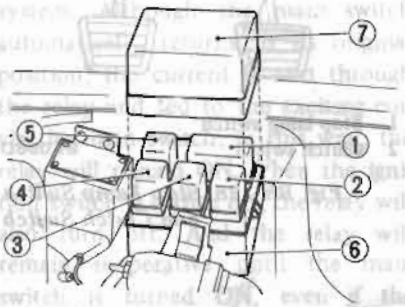


1 A.S.C.D. relay
2 Tail stop lamp sensor
3 Controller
4 Antenna relay

Fig. BE-129 Controller and A.S.C.D. Relay

1. Disconnect battery ground cable.
2. Remove passenger seat.
3. Remove controller or A.S.C.D. relay.
4. To install controller or A.S.C.D. relay, reverse the order of removal.

INHIBITOR RELAY (For A.S.C.D.)



1 Fuel pump relay (2)
2 Dimmer relay
3 Bulb check relay
4 Air conditioner relay
5 Inhibitor relay
6 Relay bracket
7 Relay bracket cover

EF380A

Fig. BE-130 Inhibitor Relay

1. Disconnect battery ground cable
2. Remove relay cover.
3. Remove relay from relay fixing board.
4. To install relay, reverse the order of removal.

CONPONENT PARTS INSPECTION

CAUTION:
a. Do not disassemble component parts when checking as all of them are replaced as assemblies.
b. When checking by using battery or circuit tester, be careful not to touch adjacent terminal at the same time. Extreme care must be taken in handling controller.

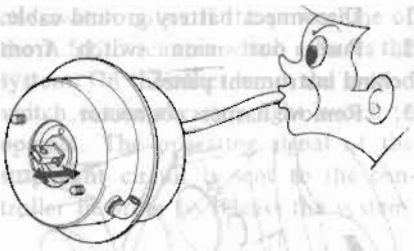
A.S.C.D. CABLE AND TORSION SHAFT

Visually check A.S.C.D. cable and torsion shaft for rust, damage or looseness.

ACTUATOR

1. Visually check actuator for damage or deformation.
2. Make sure that actuator moves smoothly without binding when diaphragm is pushed by hand.
3. Apply vacuum to actuator. If diaphragm moves to full position, it is normal.

Plug hose with vacuum applied. Make sure that actuator remains in full position.



BE100D

Fig. BE-131 Actuator

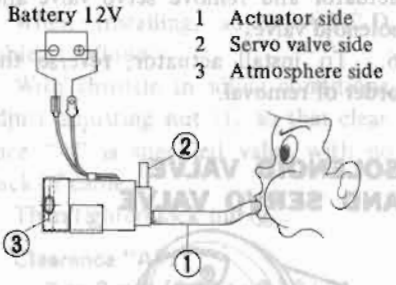
CAUTION:
When checking actuator by applying vacuum, do not apply engine vacuum directly.

SOLENOID VALVE

1. Measure the resistance between terminals.

25 to 30 ohms ..... OK

2. Check to be sure that the valve opens or closes by blowing air through port on actuator side.



BE101D

Fig. BE-132 Solenoid Valve

	Normal condition	12V direct current is applied between terminals
Normal condition	Yes	Yes
Plug port at servo valve side with a finger.	Yes	No

Yes: Air flow should exist.
No: Air flow should not exist.

SERVO VALVE

1. Measure the resistance between terminals.

25 to 30 ohms ..... OK

2. Check to be sure that output vacuum of valve is proper.

Note: This check should be performed with the valve installed on car.

CAUTION:
With servo valve connected to system, do not apply current to servo valve. Be sure to disconnect solenoid valve side vacuum hose.

(1) Disconnect solenoid valve side vacuum hose at solenoid valve and connect vacuum gauge.
(2) Start engine and warm up engine until water temperature indicator points to the middle of gauge.
(3) Apply 0.3A direct current between terminals.

Note: Using about 20Ω-5W variable resistor, adjust so that a current of 0.3A will flow.

(4) Read vacuum gauge.

55 to 85 mmHg (2.17 to 3.35 inHg) .....OK

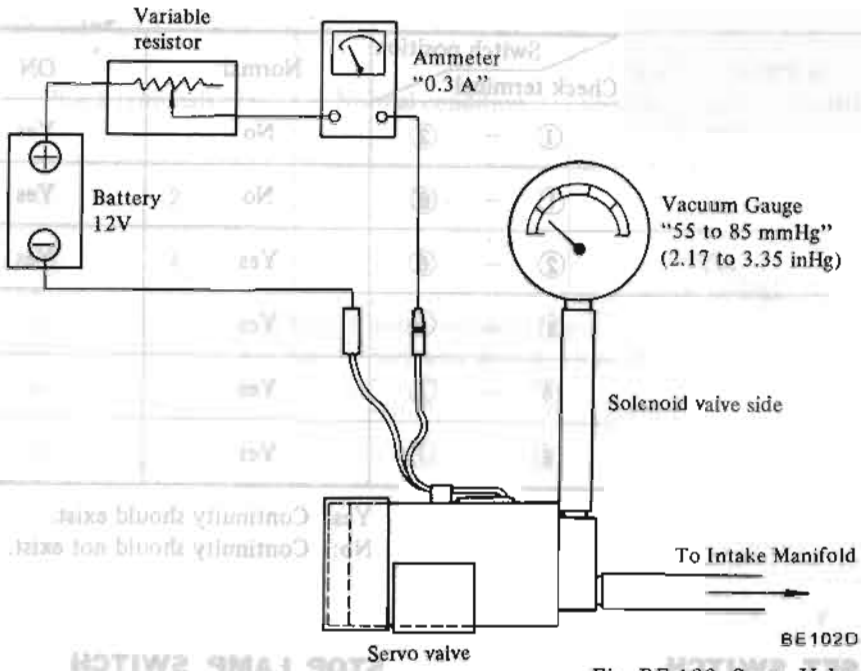


Fig. BE-133 Servo Valve

SPEED SENSOR

Note: Inspection must be made with speed sensor installed to combination meter.

Connect wires as shown in Fig. BE-134, and turning speedometer cable slowly by hand, measure variations of output voltage.

Output voltage varies more than 1V from peak to bottom ..... OK

CAUTION:
Do not apply battery power directly to speed sensor.

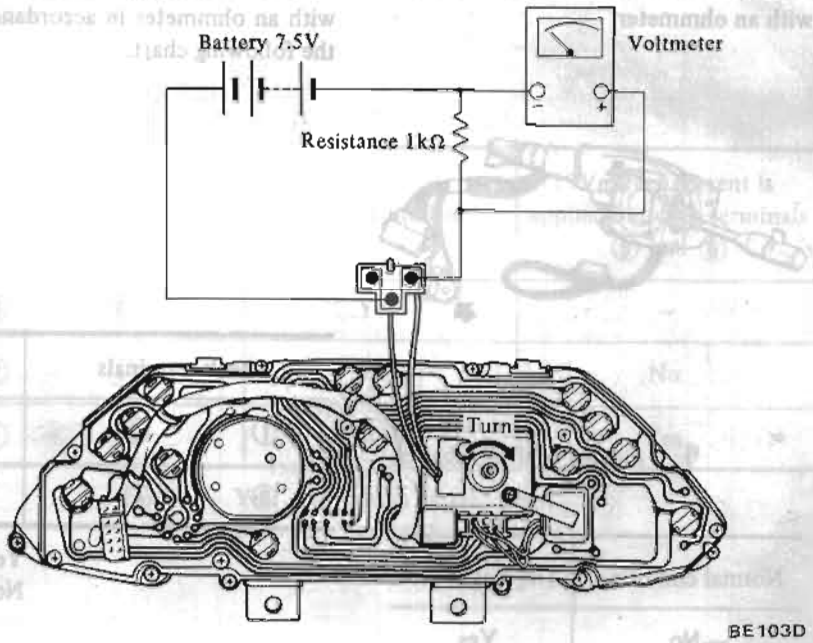


Fig. BE-134 Speed Sensor

MAIN SWITCH

Test continuity through switch or light with an ohmmeter in accordance with the following chart.

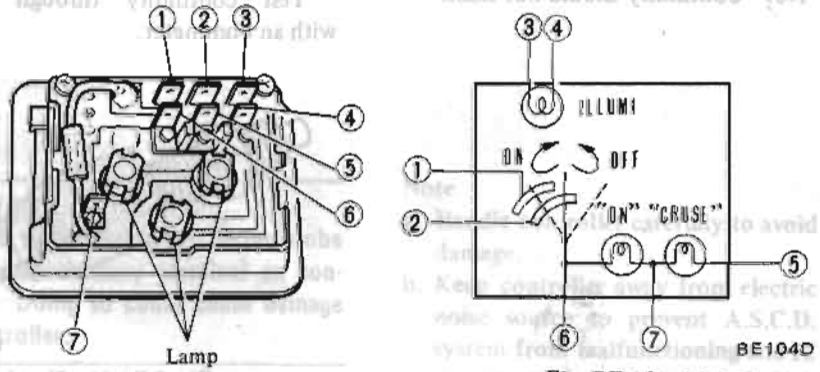


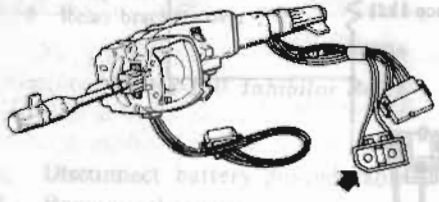
Fig. BE-135 Main Switch

Switch position / Check terminal	Normal	ON	OFF
① – ②	No	Yes	No
① – ⑥	No	Yes	No
② – ⑥	Yes	Yes	No
③ – ④	Yes	–	–
⑤ – ⑦	Yes	–	–
⑥ – ⑦	Yes	–	–

Yes: Continuity should exist.
No: Continuity should not exist.

SET SWITCH

Test continuity through switch with an ohmmeter.



BE107D

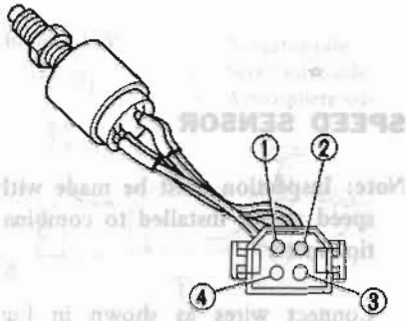
Fig. BE-136 Set Switch

Normal condition	Depress switch
No	Yes

Yes: Continuity should exist.
No: Continuity should not exist.

STOP LAMP SWITCH

Test continuity through switch with an ohmmeter in accordance with the following chart.



BE105D

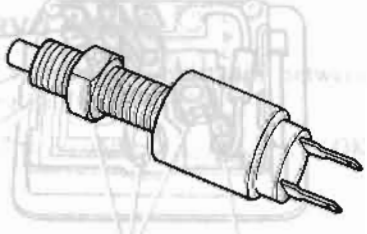
Fig. BE-137 Stop Lamp Switch

Check terminals	Normal condition	Push plunger
① – ②	Yes	No
③ – ④	No	Yes

Yes: Continuity should exist.
No: Continuity should not exist.

CLUTCH SWITCH

Test continuity through switch with an ohmmeter.



BE106D

Fig. BE-138 Clutch Switch

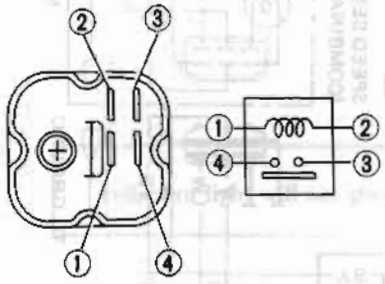
Normal condition	Push plunger
No	Yes

Yes: Continuity should exist.
No: Continuity should not exist.

RELAY

Test continuity through relay with an ohmmeter in accordance with the following chart.

A.S.C.D. relay



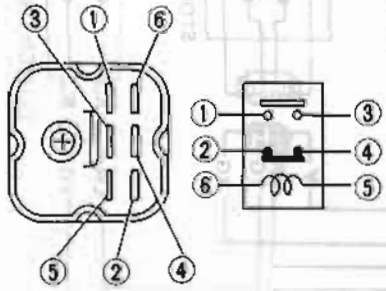
BE108D

Fig. BE-139 A.S.C.D. Relay

Check terminals	Normal condition	12V direct current is applied between terminals ① and ②
① – ②	Yes	–
③ – ④	No	Yes

Yes: Continuity should exist.
No: Continuity should not exist.

Inhibitor relay (For A.S.C.D.)



BE109D

Fig. BE-140 Inhibitor Relay (For A.S.C.D.)

Check terminals	Normal condition	12V direct current is applied between terminals ⑤ and ⑥
⑤ – ⑥	Yes	–
② – ④	Yes	No
① – ③	No	Yes

Yes: Continuity should exist.
No: Continuity should not exist.

CONTROLLER

Controller must not be checked as a single part. Check controller for operation as a system, referring to Diagnosis.

CAUTION:
Do not touch the circuit tester probe to any unnecessary terminal on controller. Doing so could cause damage to controller.

Note:
a. Handle controller carefully to avoid damage.
b. Keep controller away from electric noise source to prevent A.S.C.D. system from malfunctioning and IC circuit, etc. from being degraded.

WIRING DIAGRAM AND TROUBLE DIAGNOSIS

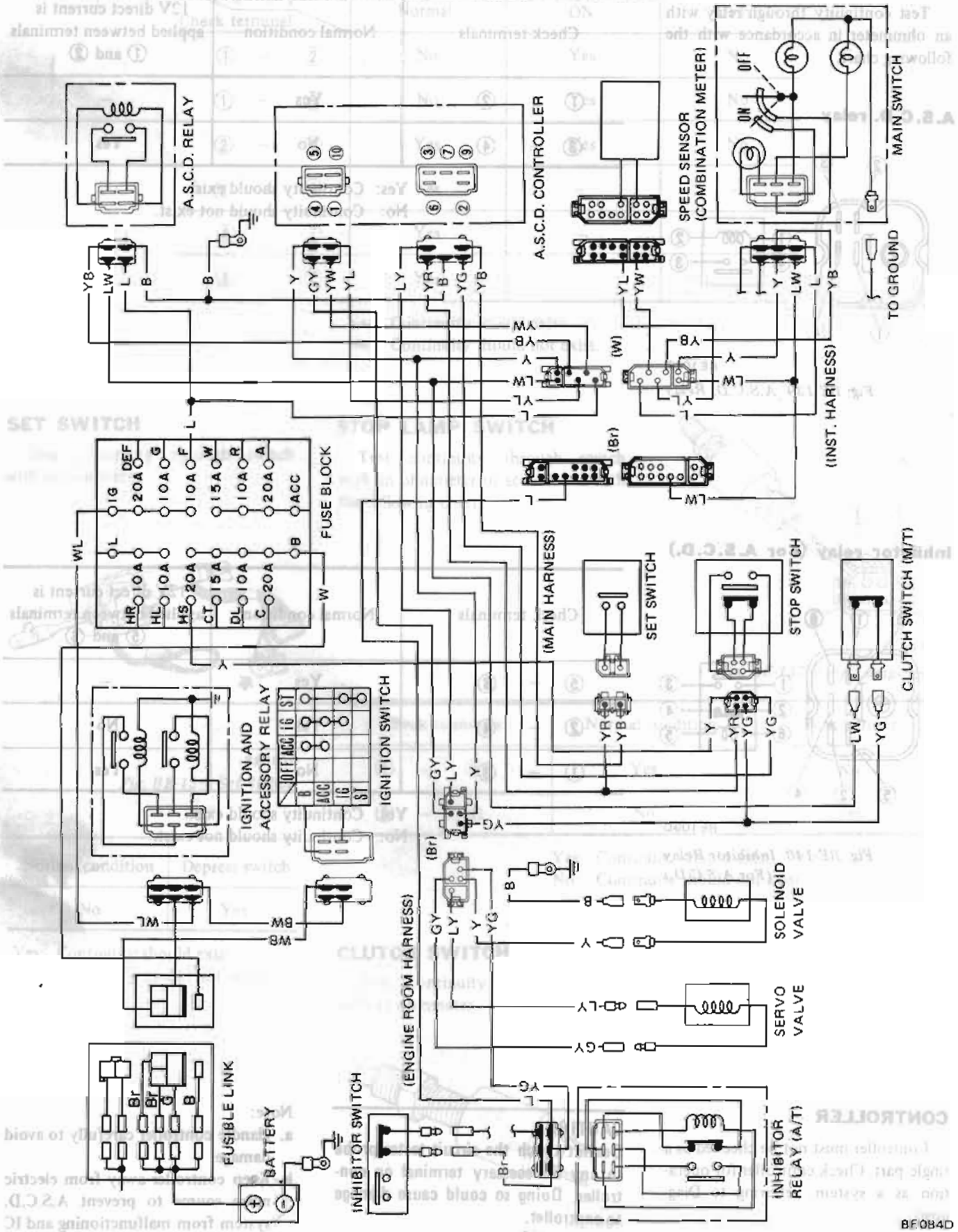


Fig. BE-141 Wiring Diagram for A.S.C.D.

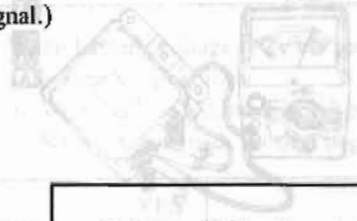
TEST CONDITIONS

If a malfunction is found, be sure to check the following before performing the system test.

1. Turn signal operates. (Supply circuit is used in common with turn signal.)
2. All wiring harness connectors must be securely connected.
3. A.S.C.D. cable must be securely installed with proper adjustment.
4. Vacuum hoses must be properly attached with no abnormal conditions such as vacuum leakage, sharp bends or kinks.

DIAGNOSIS

WARNING:
All following system tests can be performed without running engine. Avoid making test while driving car or running engine.



Indicator light will not glow, even if "ON" button of main switch is depressed, with ignition switch ON.

- Burnt bulb
- Faulty main switch
- Faulty A.S.C.D. relay

Cruise light will not glow, even if set switch is depressed and released at proper car speed, with main switch ON. (Speed not set in system.)

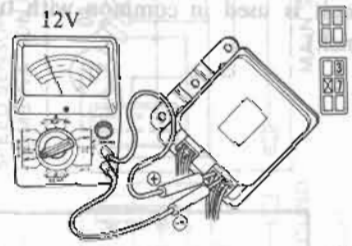
With main switch ON, battery voltage (12V) is present between terminals (3) and (7) of main harness connector which hooks into controller.

Note: On automatic transmission models, set selector lever at any position other than "P" and "N" positions.

YES

NO

Open circuit



BE086D

Fig. BE-140

Faulty or improperly adjusted stop switch

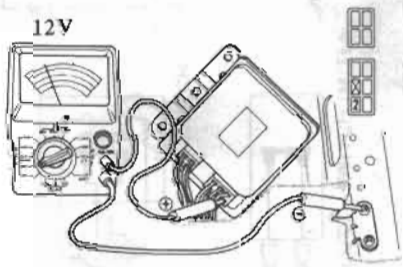
Faulty or improperly adjusted clutch switch (Faulty inhibitor switch)

When set switch is depressed with main switch ON, battery voltage (12V) is present at terminal ② of main harness connector which hooks into controller.

YES

NO

Faulty set switch



BE086D

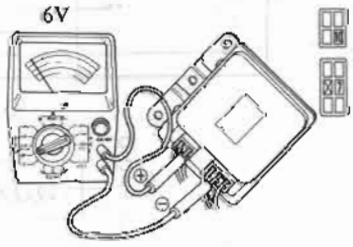
Fig. BE-141

With main switch ON, potential difference of 6V is present between terminals ⑩ and ⑦ of main harness connector which hooks into controller.

YES

NO

Faulty controller



BE087D

Fig. BE-142

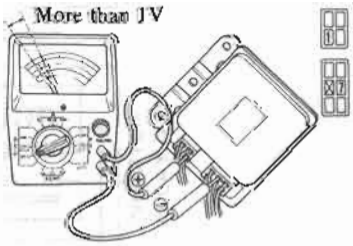
With main switch ON, manually rotate meter cable slowly.
Potential difference between terminals ① and ⑦ of controller varies more than 1V from peak to bottom.

YES

NO

Faulty controller

Faulty speed sensor



BE088D

Fig. BE-143

Cruise light illuminates when speed setting operation is made, but speed is not actually set.

When battery voltage (12V) is applied to the solenoid valve terminal, the following are possible:
1. With "A" closed, no suction possible at "B".
2. With "A" opened, suction begun at "B".

YES

NO → Faulty solenoid valve

Servo valve operates normally. (Refer to Servo Valve for Inspection.).

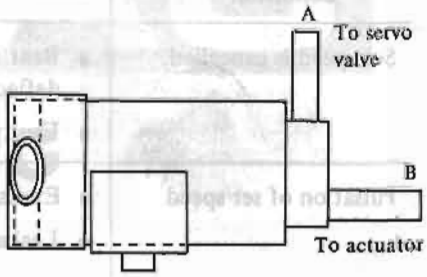
YES

NO → Faulty servo valve

Actuator operates smoothly when actuator vacuum port is suctioned. (This operation must be performed with A.S.C.D. cable released.)

YES → Faulty controller

NO → Faulty actuator



BE089D

Fig. BE-144

Other malfunctions and faulties

Condition	Probable cause	Corrective action
Set speed is cancelled.	• Bent meter cable (excessive meter needle deflection.) • Faulty controller	• Check and repair meter cable, or renew cable. • Renew.
Pulsation of set speed	• Excessive play or binding of A.S.C.D. cable • Leakage or clogging in vacuum hose • Binding in actuator • Faulty servo valve • Faulty controller	• Adjust. • Check and repair piping route, or renew hose. • Renew actuator. • Renew servo valve. • Renew controller.
Excessive setting error	• Excessive play or binding in A.S.C.D. cable • Leakage or clogging in vacuum hose • Faulty actuator • Faulty servo valve • Faulty controller • Faulty speed sensor	• Readjust. • Check and repair piping route, or renew hose. • Renew actuator. • Renew servo valve. • Renew controller. • Renew speedometer.
Speed drops immediately after setting	• Excessive play in A.S.C.D. cable • Leakage or clogging in vacuum hose • Faulty solenoid valve • Faulty servo valve • Faulty controller	• Readjust. • Check and repair piping route, or renew hose. • Renew solenoid valve. • Renew servo valve. • Renew controller.
Cancel circuit inoperative	• Faulty controller	• Renew controller.