SERVICE MANUAL

DATSUN 260Z
MODEL S30 SERIES

SECTION BE

BODY ELECTRICAL SYSTEM

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LIGHTING AND SIGNAL LAMP SYSTEM ..... BE- 8
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BE

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

BODY ELECTRICAL WIRING

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DESCRIPTION

Cables used for body electrical wiring are low tension cables. They are covered with color-coded vinyl for easy identification. Each system (e.g. ignition, lighting, or signal system) has its own distinctive color. This facilitates trouble-shooting. In the wiring diagram, the colors are indicated by one or two alphabetical letters.

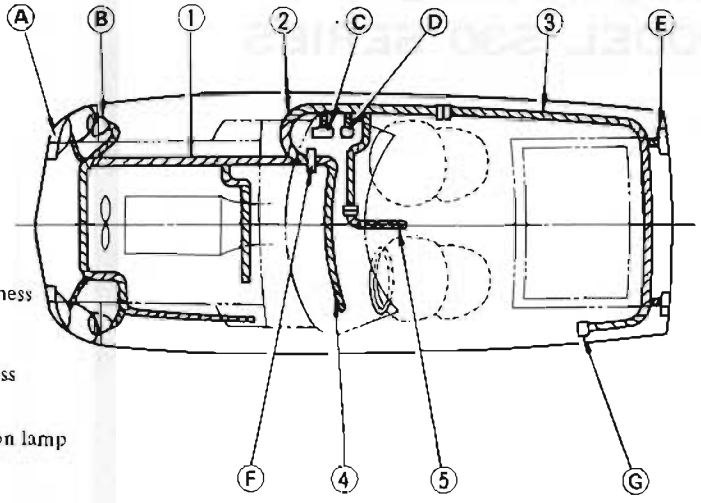
The entire wiring system consists of several harnesses connected one to another by means of connectors; These include engine room harness, instrument harness, dash harness, body harness and console harness.

In addition to these harnesses there are a few additional cables and harnesses.

It is recommended that the battery be disconnected before performing any electrical service other than bulb, or fuse replacement. To protect the electrical devices, fuses are installed in the middle of circuit.

In addition to fuses, some fusible links are installed to protect wiring. Fusible links function almost the same as fuses, though they are slightly different in their characteristics.

For engine harness, refer to Section EE.



1 Engine room harness
2 Dash harness
3 Body harness
4 Instrument harness
5 Console harness

A Front combination lamp
B Headlamp
C Relay bracket
D Fuse block
E Rear combination lamp
F Junction block
G Speaker

BE963

Fig. BE-1 Wiring harness

WIRING HARNESS

COLORS OF CABLES

The system of colors used in the covering of cable conductors are as shown in the following table:

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

The main cable of each system is generally coded with a standard or supplementary color. These colors are represented by such letters as G, W, and B. Minor items of each circuit's terminal are coded with a two-tone color composed of both standard and supplementary colors. These colors are represented by a combination of two letters like RW or GY. The first letter of each combination stands for standard color, and the second for supplementary color.

WIRING

Engine room harness

Engine room harness is connected to instrument harness and dash harness with four connectors at junction block under the right side of instrument panel and has two branches.

One branch goes along right side of engine room, traversing engine room under the radiator and going to ignition coil. This branch services starter motor, ignition emergency switch, voltage regulator, inspection lamp, headlamps, front side marker lamps, front combination lamps, horns, E.G.R. control relay, ignition coil, and some engine sensors.

Another branch goes along rear end of engine room to brake check switch beside brake master cylinder.

This branch services fusible link box, interlock relay, wiper motor, washer motor, and brake check switch.

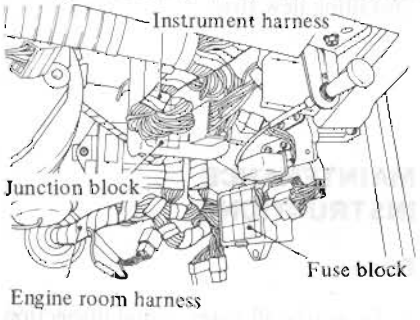
In automatic transmission models, engine room harness is connected to inhibitor switch and kickdown solenoid. In manual transmission models, engine room harness has connectors for back-up lamp switch and neutral switch on the transmission itself. See wiring diagram and Figure BE-144 for details.

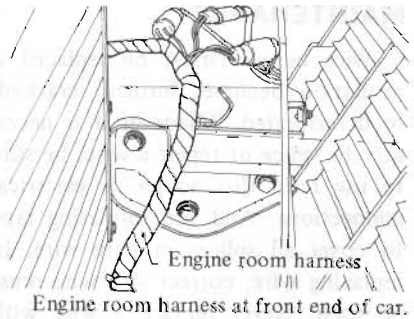
Instrument harness

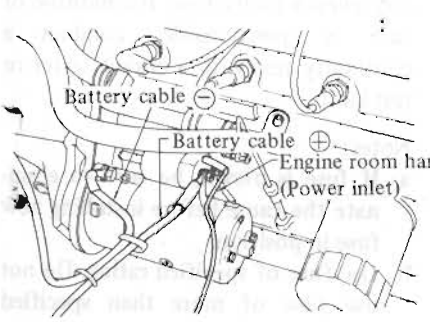
Instrument harness is connected to engine room harness and dash harness with five connectors at junction block under the right side of instrument panel.

Three connectors for dash harness are green, blue and black. Two connectors for engine room harness are brown and green. This harness traverses to the left side of passenger compartment behind instrument panel and services glove box lamp, clock, amperage and fuel gauge, water temperature and oil pressure gauge, speedometer, tachometer, illumination control resistor, combination switch, buzzer, flasher unit, cigarette lighter, door switch (L.H.), stop lamp switch, map lamp and seat belt warning lamp.

See Figure BE-143 for details.







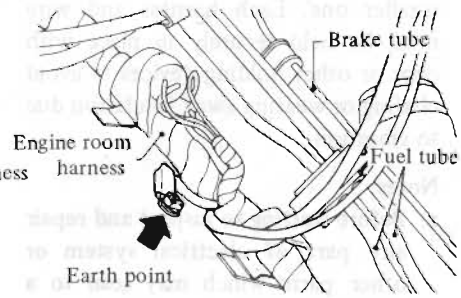
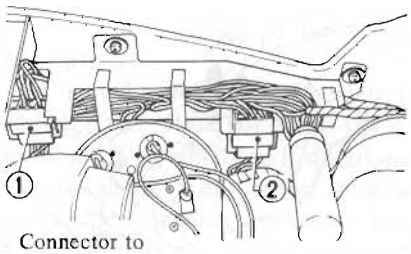


Fig. BE-2 Engine room harness



1 Connector to tachometer
2 Connector to speedometer

BE965

Fig. BE-3 Instrument harness

Dash harness

Dash harness is connected to engine room harness and instrument harness with five connectors at junction block under the right side of instrument panel and goes to right side of car.long instrument panel.

This harness services relay bracket, fuse block, door switch (R.H.), hand brake switch, and passenger seat switch.

This harness also has two pairs of connectors for console harness and body harness.

At relay bracket, this harness services interval wiper amplifier, horn relay, defogger relay, air conditioner relay interlock unit, electric pump cut relay #1 and #2.

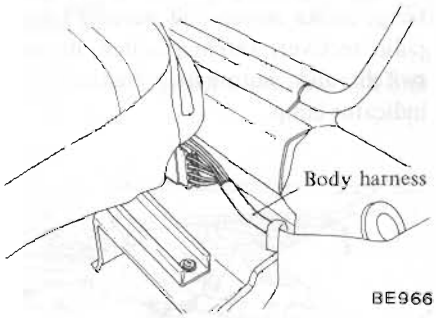
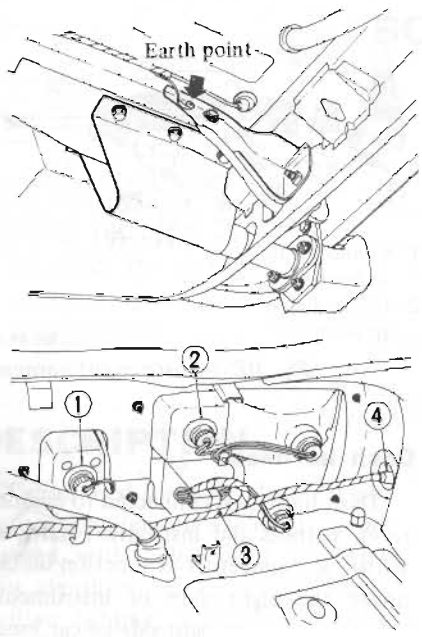


Fig. BE-4 Dash harness

Body harness

Body harness is connected to dash harness at right side of floor. It goes to rear end along right side of body and traverses to the left side along rear end of trunk compartment. This harness services driver's seat switch and belt switch, assistant's belt switch, fuel tank unit, earth point, rear combination lamps, license lamps, rear window defogger, interior lamp, radio antenna and speaker and rear side marker lamps.



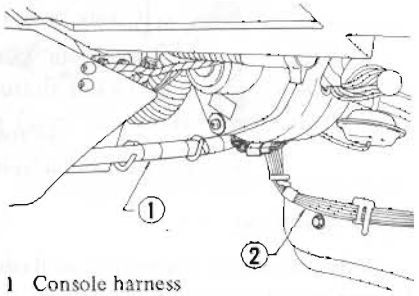
1 Reverse lamp
2 Rear combination
3 Body harness
4 For speaker and antenna

BE967

Fig. BE-5 Body harness

Console harness

Console harness is connected to dash harness with a pair of connectors. It services to fog lamp switch, rear defogger switch, defogger warning lamp, choke switch and warning lamp, radio receiver, antenna switch, hazard switch and automatic transmission indicator lamp.



1 Console harness
2 Dash harness

BE968

Fig. BE-6 Console harness

INSPECTION

Inspect all electrical circuits referring to wiring or citcuit diagrams. Circuits should be tested for continuous or short circuit with a conventional test lamp or low reading voltmeter. Before inspection of circuit, insure the following items.

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

MAINTENANCE

Wire harness must be replaced if insulation becomes burned, cracked, or deteriorated. Whenever it is necessary to splice or repair a wire, be sure to use resin flux solder or electrical connections. And use insulating tape to cover all splices or bare wire. In replacing wire, correct size wire must be used. Never replace a wire with smaller one. Each harness and wire must be held securely in place with clips or other holding devices to avoid chafing or wearing away insulation due to vibration.

Notes:

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 terminals, be sure to clean terminals with a rag. Fasten cable at positive (+) terminal, and then ground cable at negative (–) terminal. Apply grease to the 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 to conduct this check.
c. Never ground an open circuit or circuits under no load. Use a test lamp (12V-3W) or circuit tester as a load.

FUSE BLOCK AND FUSIBLE LINK

DESCRIPTION

The fuse and fusible link are protective devices used in an electric circuit. When current increases beyond rated amperage, fusible metal melts and the circuit is broken, thus protecting cable and electrical equipment from burning. Whenever a fuse is melted for one reason or another, use a systematic procedure to check and eliminate cause of problem before installing new fuse.

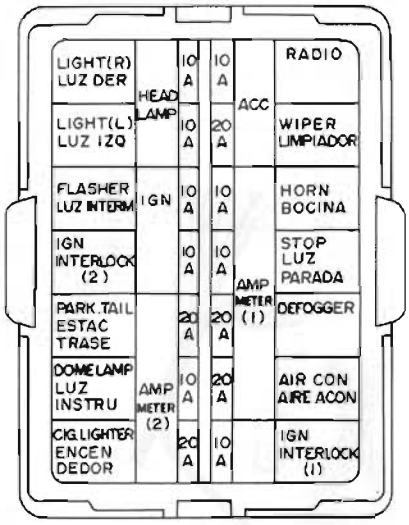
MAINTENANCE INSTRUCTIONS

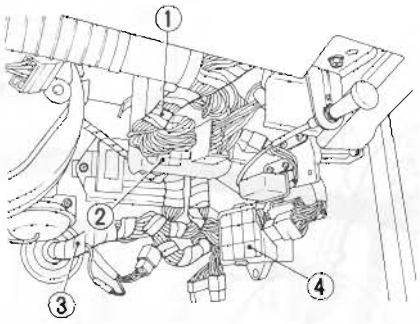
Fuse

In nearly all cases, visual inspection can reveal a faulty fuse. If condition of fuse is questionable, conduct a continuity test with a circuit tester or test lamp.

Notes:

a. If fuse is blown, be sure to eliminate the cause before installing new fuse in position.
b. Use fuse of specified rating. Do not use fuse of more than specified rating. See Figure BE-7.





1 Instrument harness
2 Junction block
3 Engine room harness
4 Fuse block

BE969

Fig. BE-7 Fuse block

c. Check fuse holders for condition. If rust or dirt is found thereon, clean metal parts with fine-grained sandpaper until proper metal-to-metal contact is made.
Poor contact of any fuse holder will often lead to voltage drop or heating in the circuit and could result in improper operation of circuit.

Fusibll link

Color	Size mm² (sq in)
Black	1.25 (0.049)
Green	0.5 (0.020)

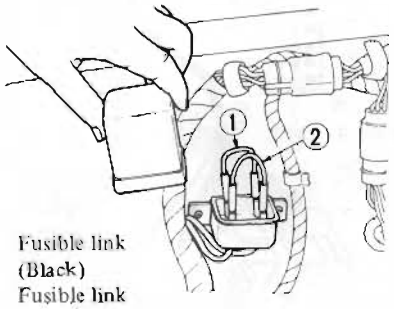
The fusible link holder is mounted at the rear right side of the engine compartment.

A melted fusible link can be detected by either visual or finger-tip inspection. 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.

Notes:

a. Should melting of fusible link occur, it is possible that critical circuit (power supply or large current carrying circuit) is shorted. In such case, carefully check and eliminate the cause of problem.

b. Never wrap periphery of fusible link with vinyl tape. Extreme care should be taken with this link so that it does not come into contact with any other wiring harness or vinyl or rubber parts.



1 Fusible link (Black)
2 Fusible link (Green)

BE970

Fig. BE-8 Fusible link box

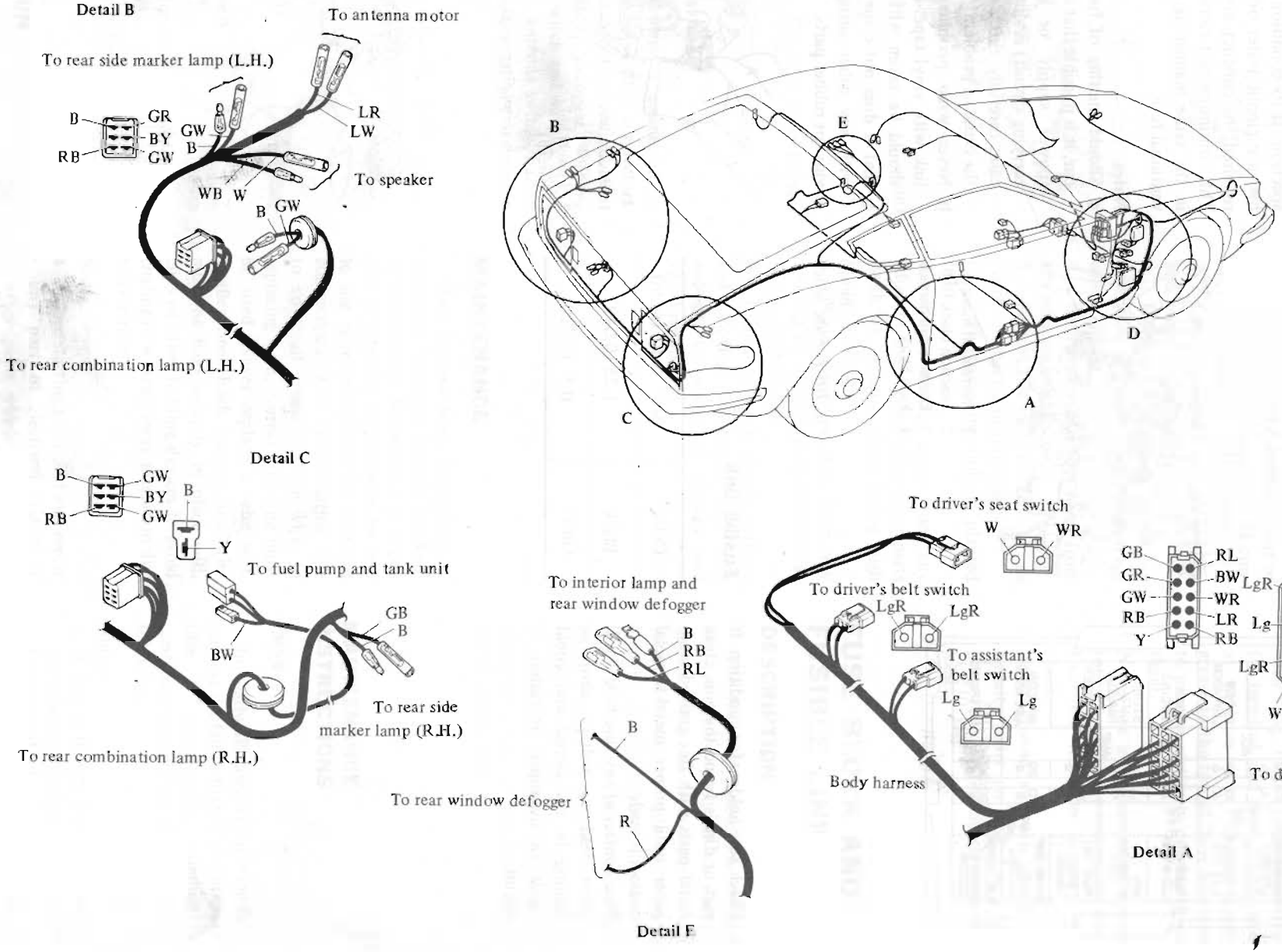
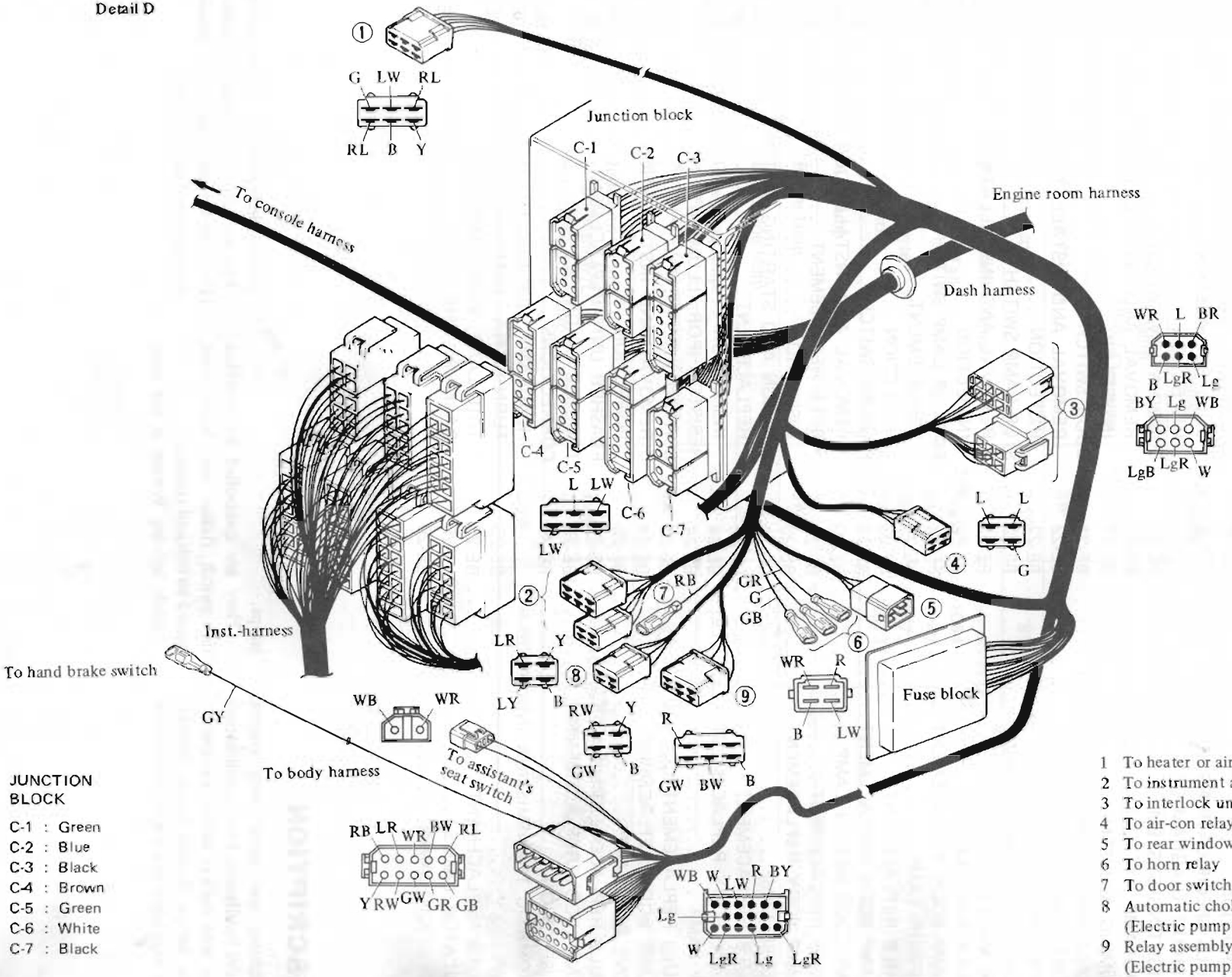


Fig. BE-9 Harness and wire

BE971

Detail D



JUNCTION BLOCK

C-1 : Green
C-2 : Blue
C-3 : Black
C-4 : Brown
C-5 : Green
C-6 : White
C-7 : Black

1 To heater or air conditioner
2 To instrument amplifier
3 To interlock unit
4 To air-con relay
5 To rear window defogger relay
6 To horn relay
7 To door switch (R.H.)
8 Automatic choke heater relay (Electric pump cut relay #1)
9 Relay assembly K15 (Electric pump cut relay #2)

LIGHTING AND SIGNAL LAMP SYSTEM

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INSPECTION BE-27
BACK-UP LAMP SWITCH BE-27
REPLACEMENT BE-27
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DESCRIPTION

Lighting and signal lamp system includes headlamps, front combination lamps, side marker lamps rear combination lamps, license lamps, interior lamp, map lamp and some illumination lamps.

They are controlled by combination switch, flasher unit, hazard unit, hazard switch and resistor.

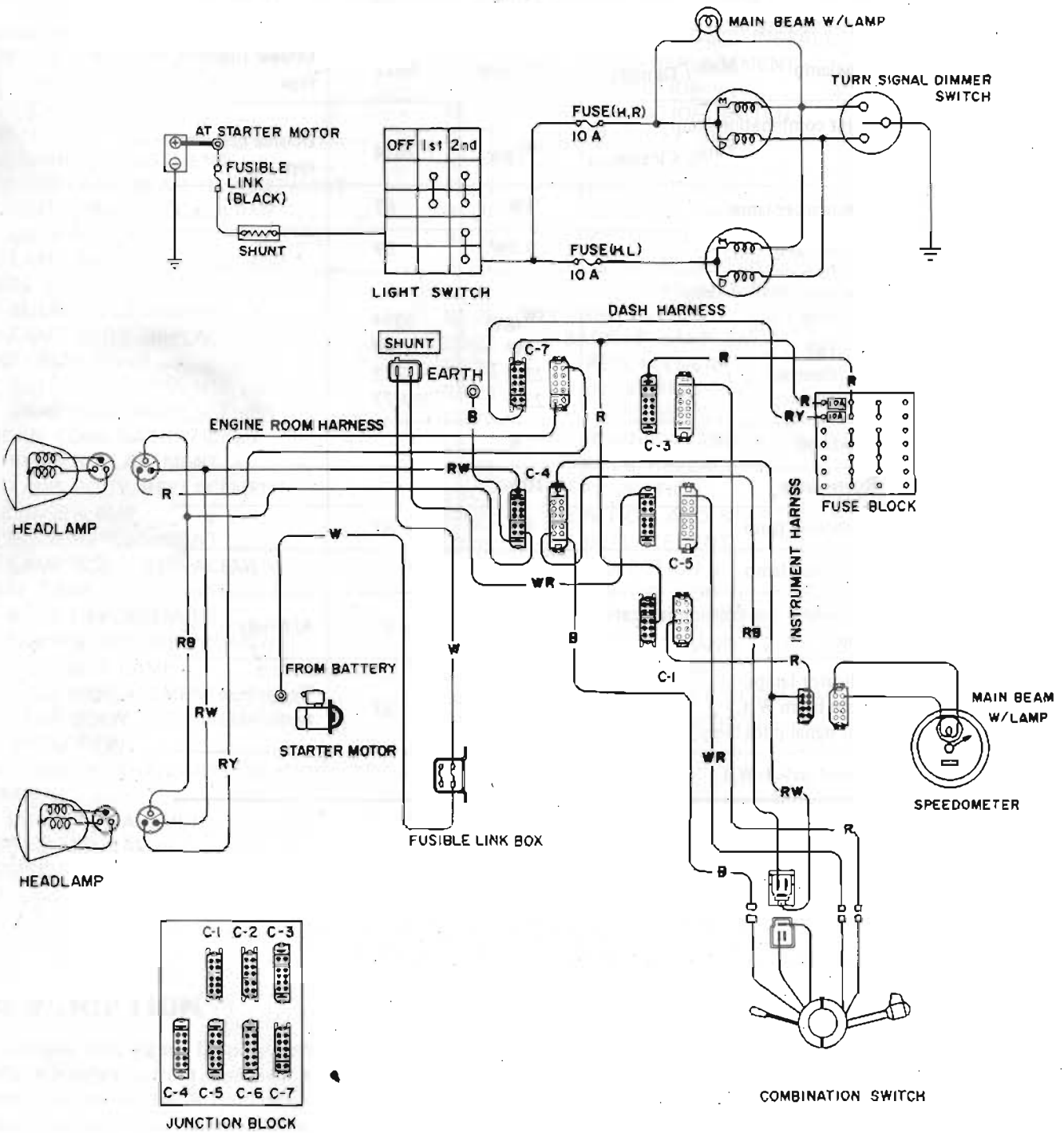
Each lighting system is not completely independent; Consequently, there are some wires used in common. Refer to Circuit Diagram for detailed description of each system.

BULB SPECIFICATIONS

Item	Wattage	SAE trade number	Remarks
Headlamp Main / Dimmer	50W/40W	6012	Double filament type
Front combination lamp Turn / Clearance	23W/8W	1034	Double filament type
Side marker lamp	8W	67	
License lamp	7.5W	89	
Rear combination lamp Stop / Tail Tail Reverse Turn	 23W/8W 8W 23W 23W	 1034 67 1073 1073	
Map lamp	5W	–	
Room lamp	10W	–	
Inspection lamp	8W	67	
Glove box lamp	1.5W	–	
Automatic transmission indicator lamp	3.4W	57	A/T only
Indicator lamps (Main beam W/L turn signal pilot lamp)	3.4W	57	Wedge base type
Hazard switch W/L	1.5W	–	

CIRCUIT DIAGRAM OF LIGHTING SYSTEM

Headlamp system



CONNECTOR

C-1 : Green
C-3 : Black
C-4 : Brown
C-5 : Green
C-7 : Black

COLOR CODE

R : Red
RB : Red with black stripe
RW : Red with white stripe
RY : Red with yellow stripe
W : White
WR : White with red stripe

BE972

Fig. BE-10 Circuit diagram for headlamp

Turn signal lamp system

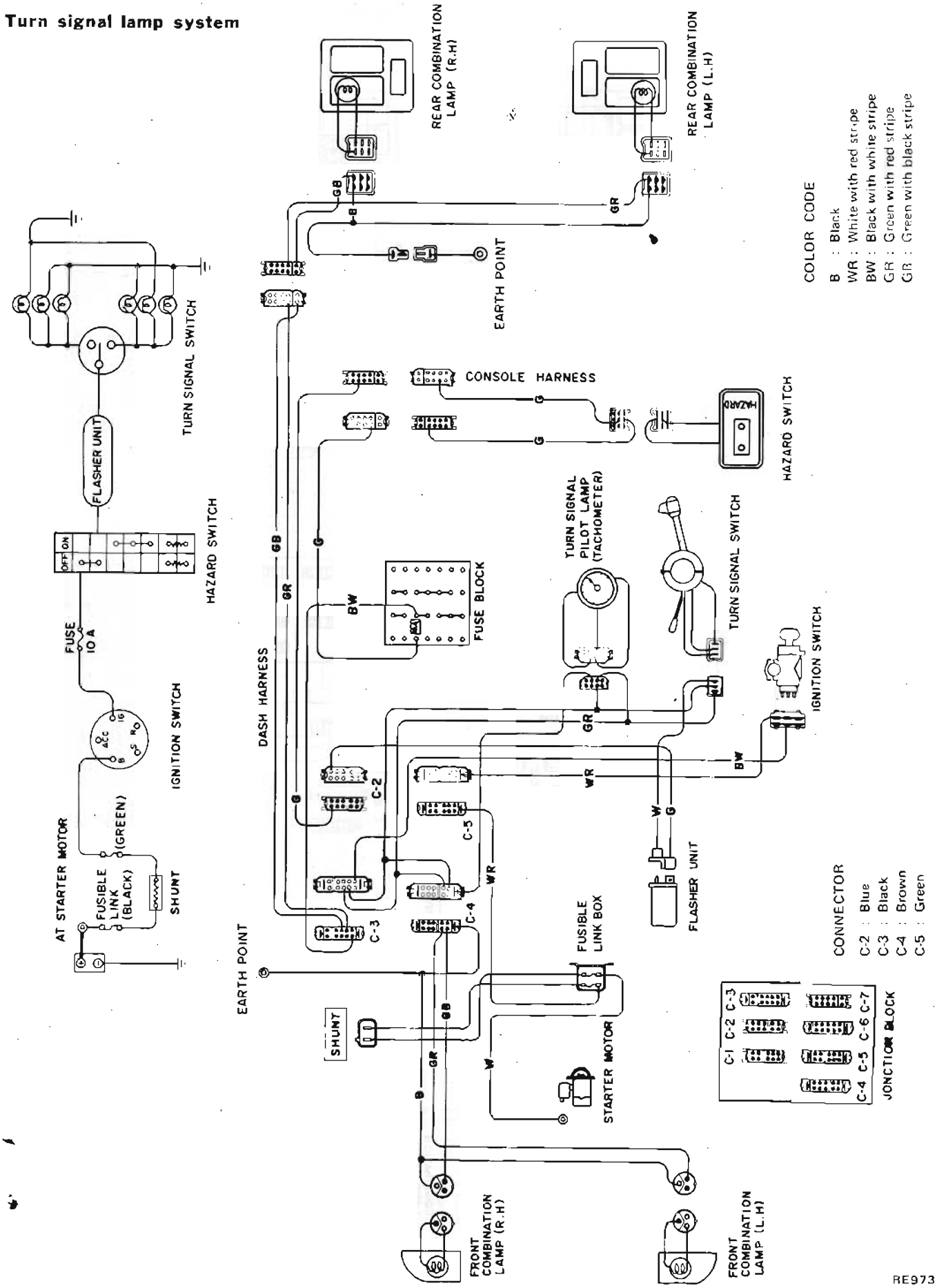
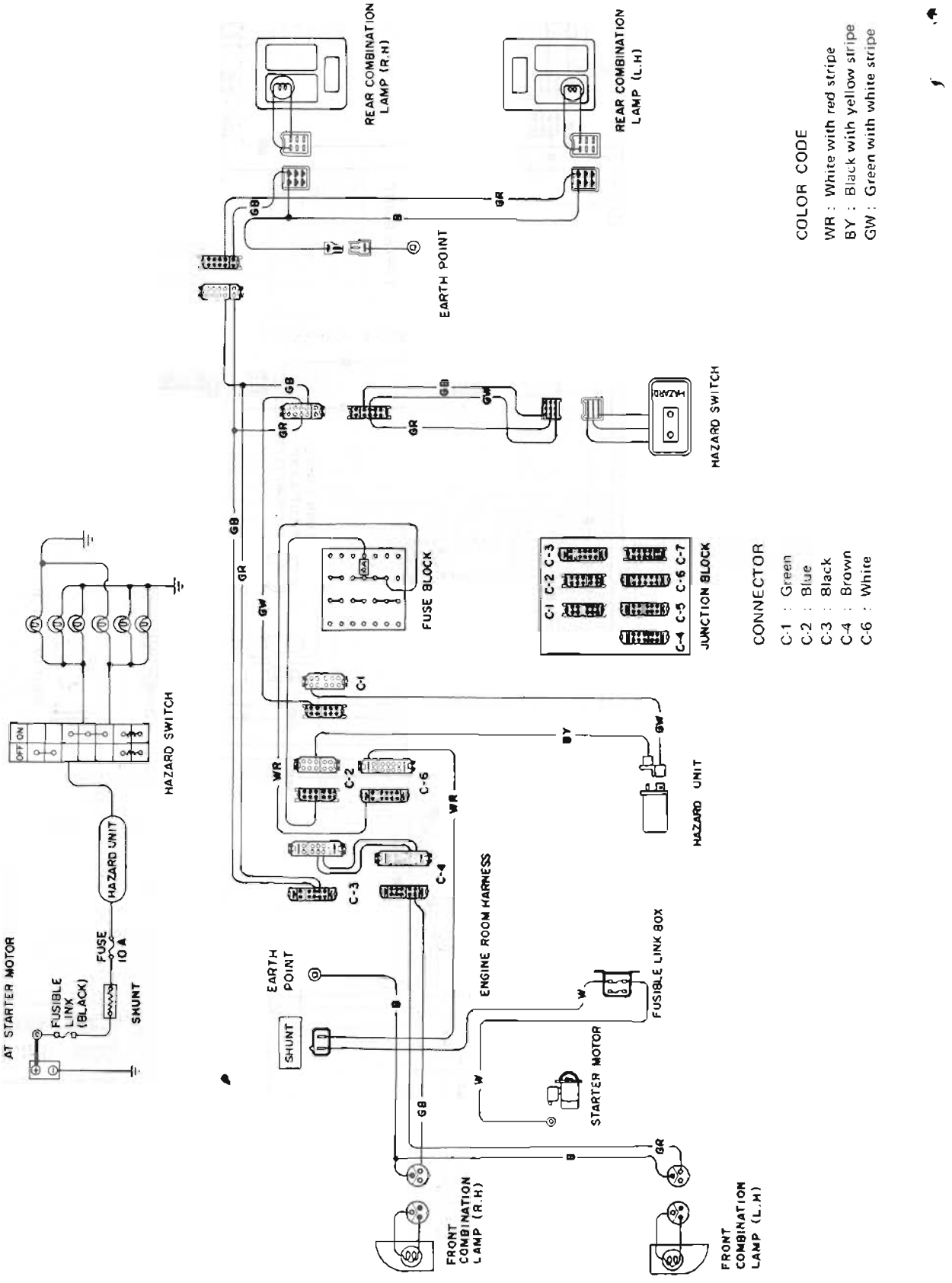


Fig. BE-11 Circuit diagram for turn signal

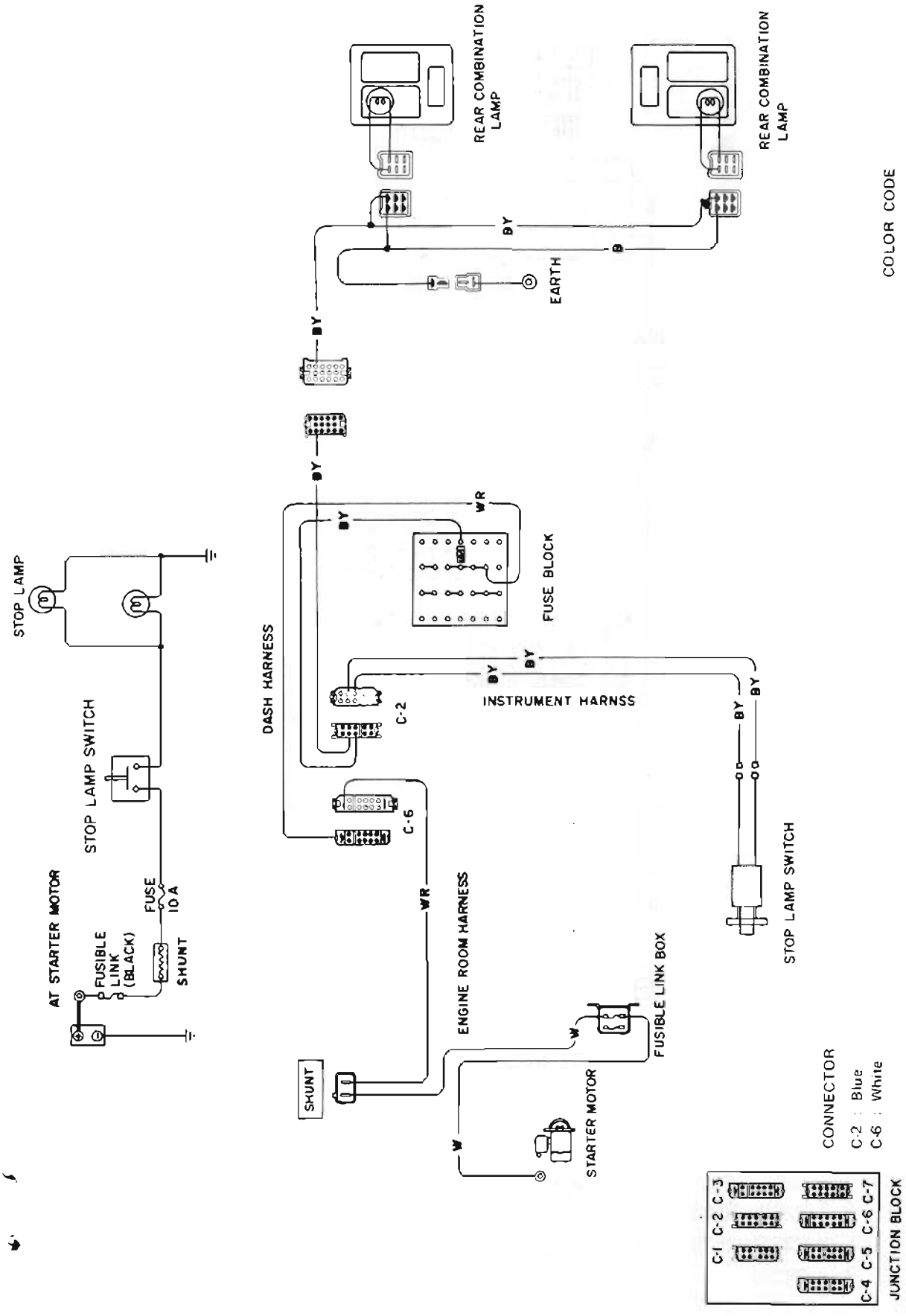
Hazard warning system



BE974

Fig. BE-12 Circuit diagram for hazard warning system

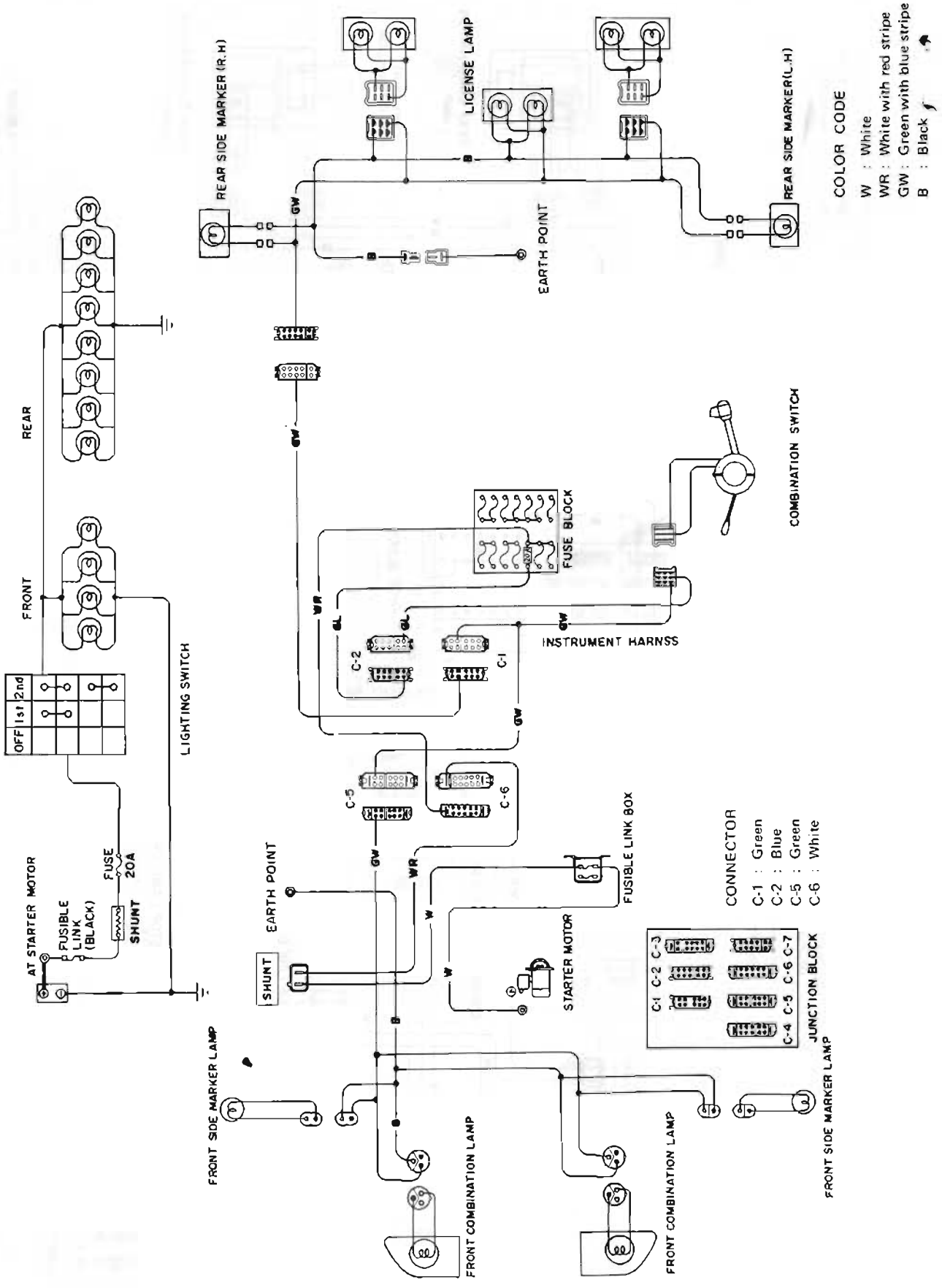
Stop lamp system



BE975

Fig. BE-13 Circuit diagram for stop lamp system

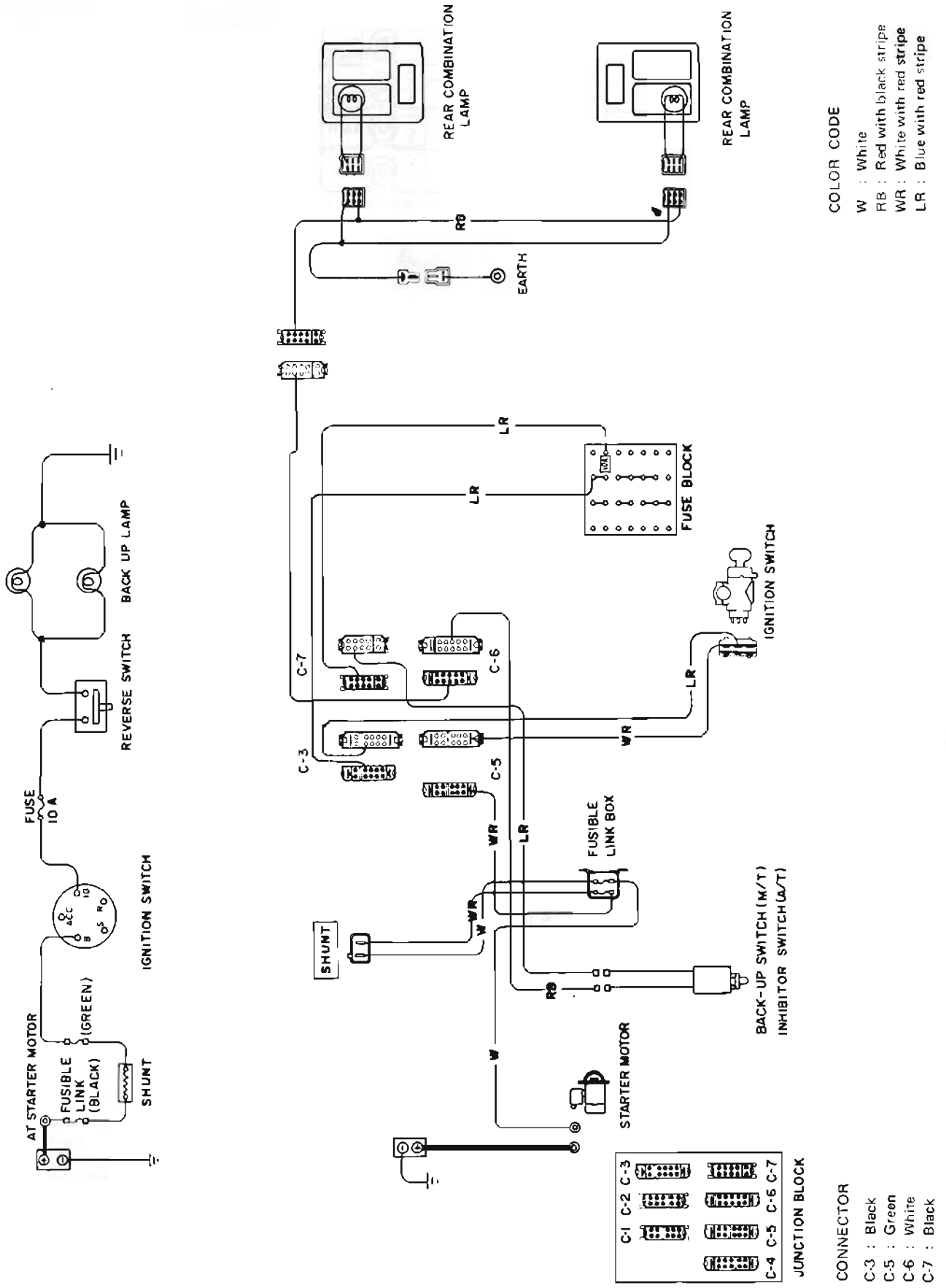
Clearance and tail lamp system



BE976

Fig. BE-14 Circuit diagram for clearance and tail lamp

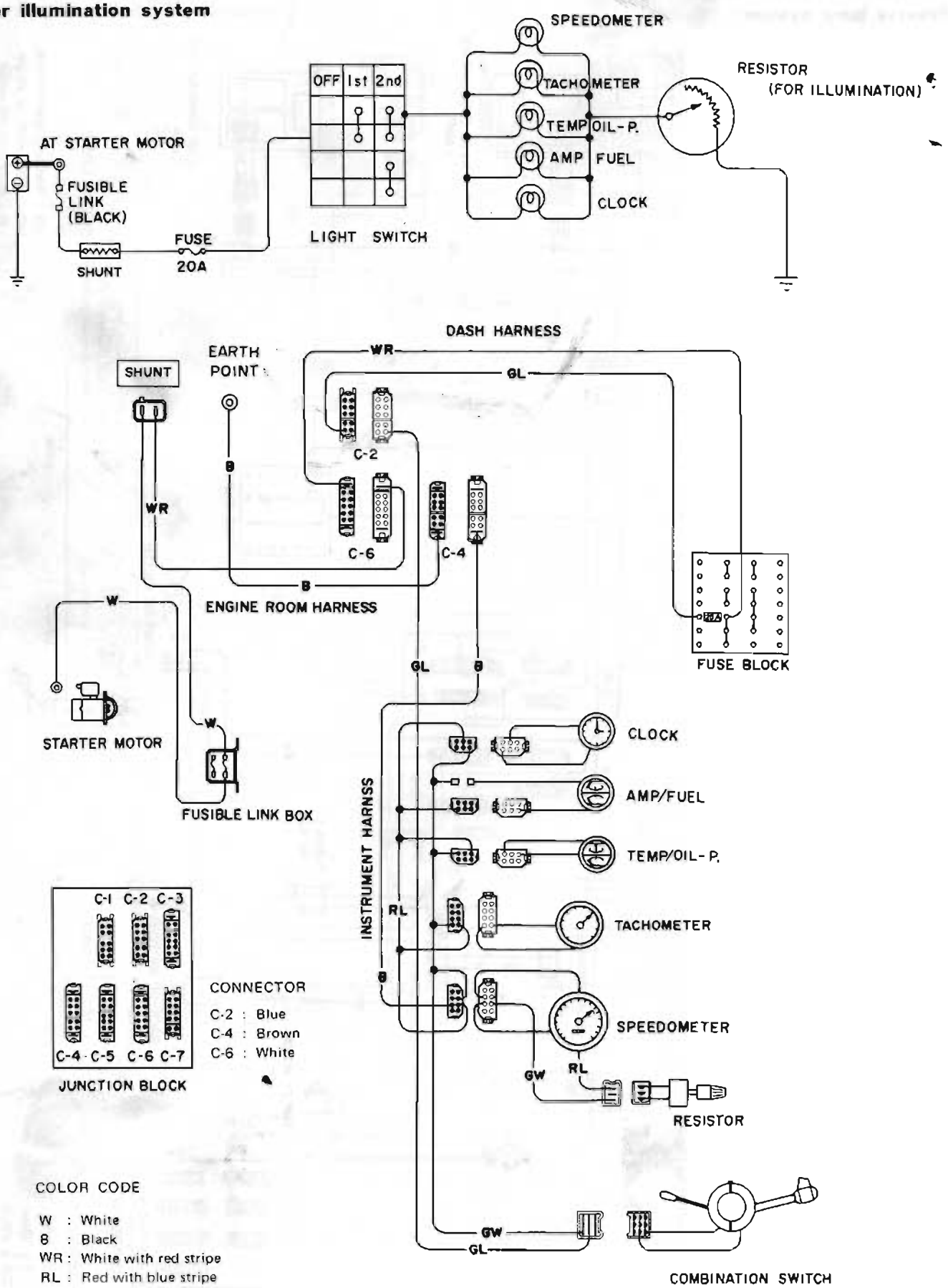
Reverse lamp system



BE977

Fig. BE-15 Circuit diagram for reverse lamp system

Meter illumination system



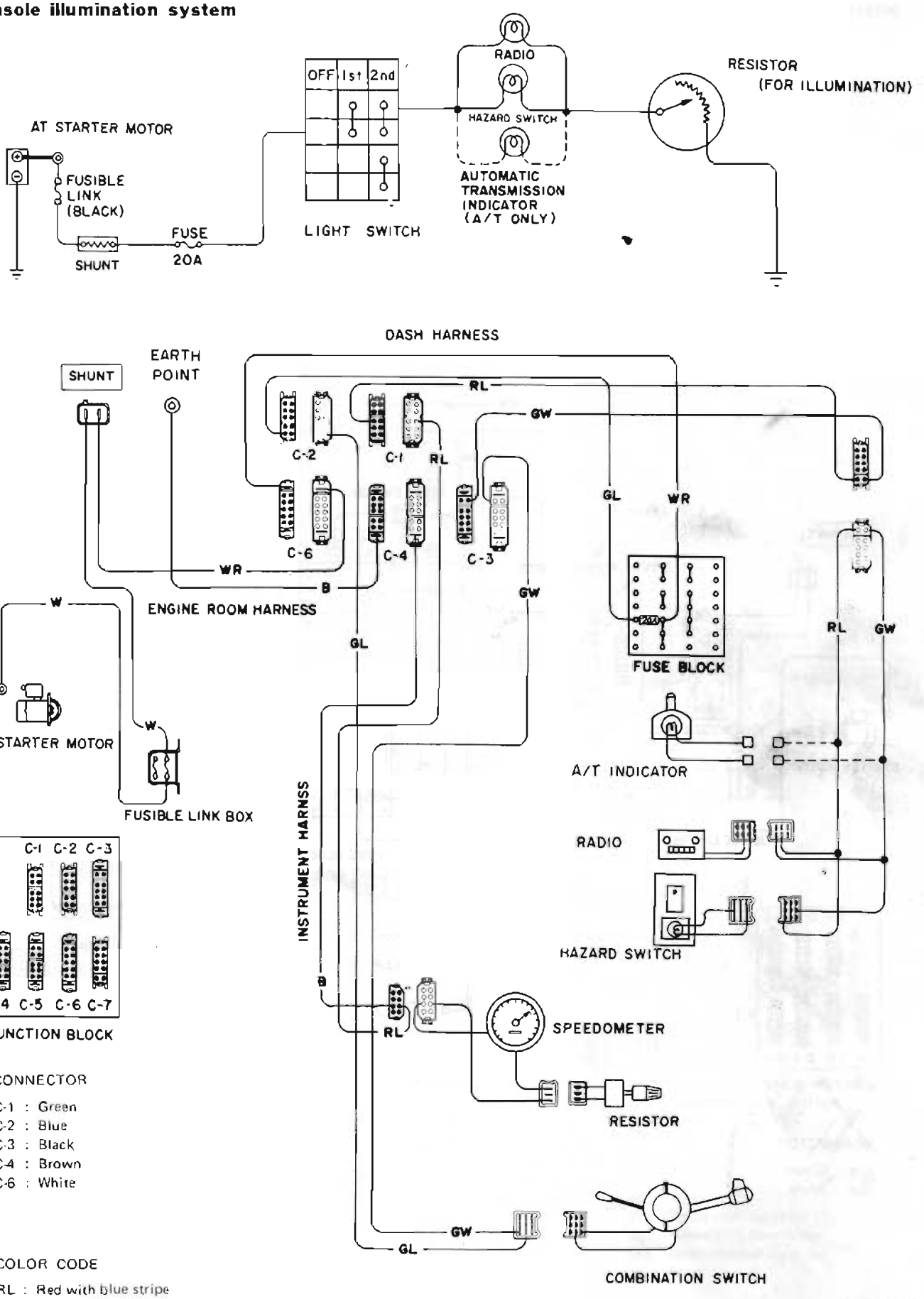
COLOR CODE

W : White
B : Black
WR : White with red stripe
RL : Red with blue stripe
GL : Green with blue stripe
GW : Green with white stripe

BE978

Fig. BE-16 Circuit diagram for meter illumination lamps

Console illumination system



CONNECTOR

C-1 : Green
C-2 : Blue
C-3 : Black
C-4 : Brown
C-6 : White

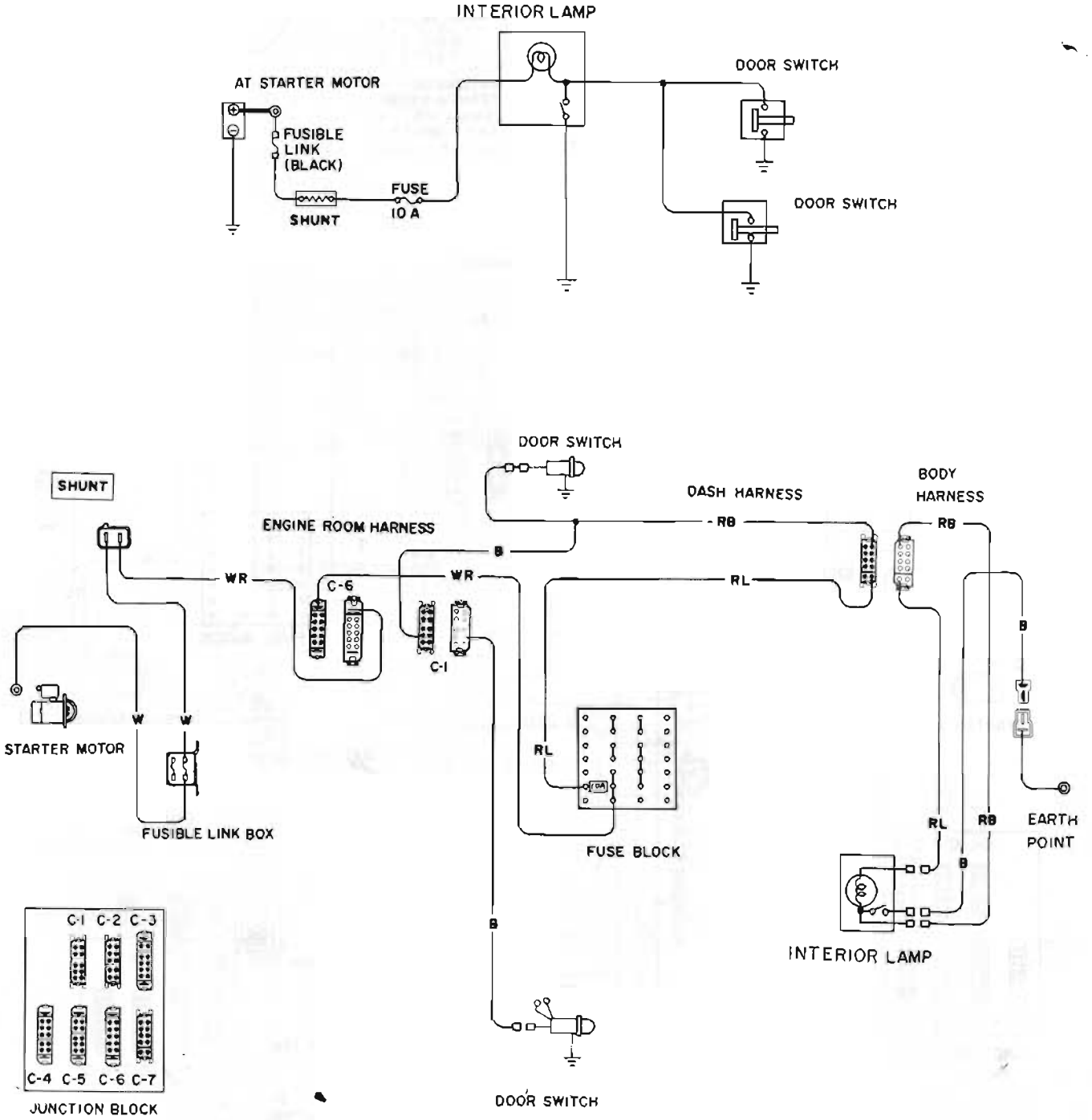
COLOR CODE

RL : Red with blue stripe
GW : Green with white stripe

BE979

Fig. BE-17 Circuit diagram for console illumination

Interior lamp system



CONNECTOR

C-1 : Green
C-6 : White

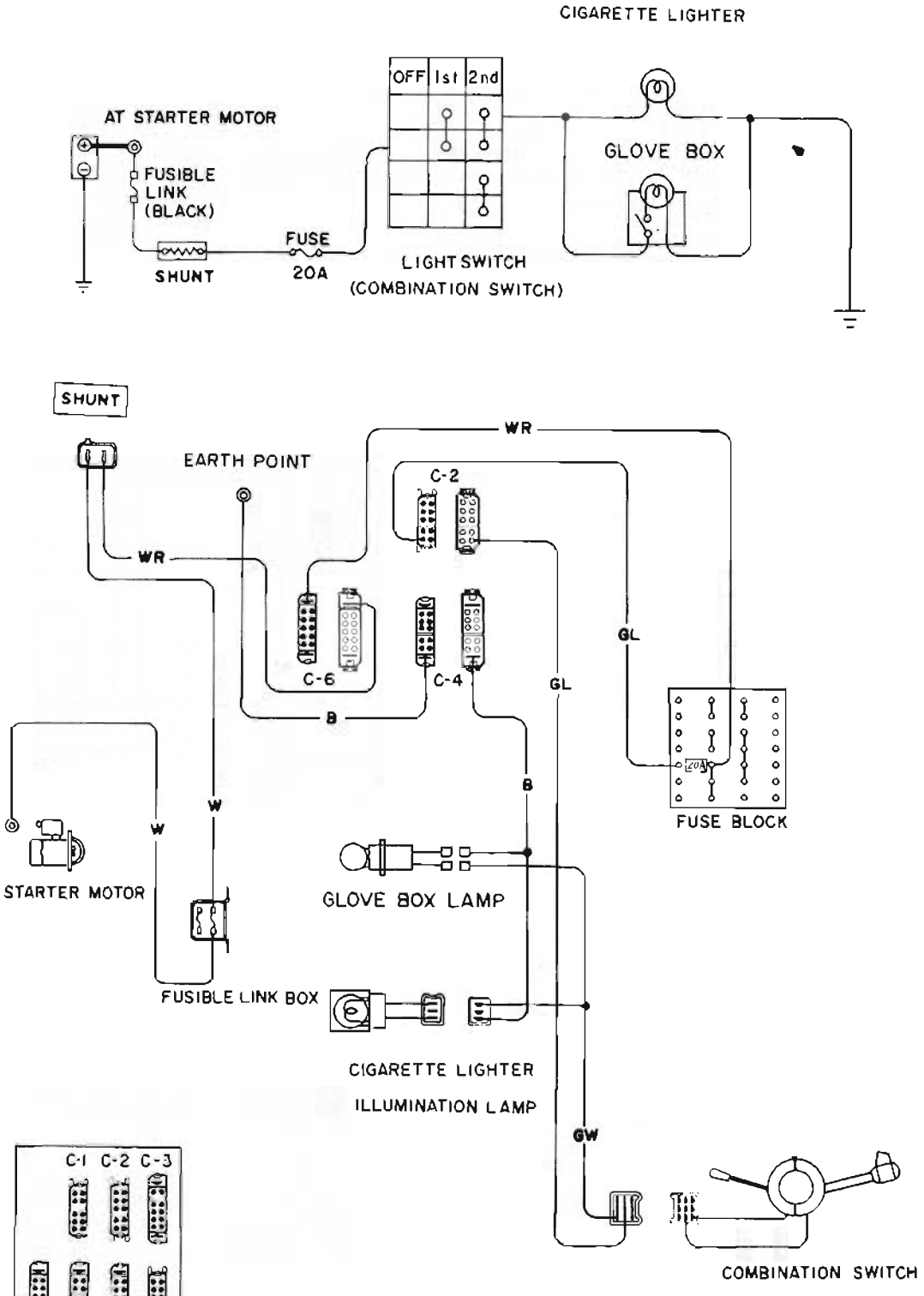
COLOR CODE

W : White
B : Black
WR : White with red stripe
RL : Red with blue stripe
RB : Red with black stripe

BE980

Fig. BE-18 Circuit diagram for interior lamp

Glove box and cigarette lighter illumination system



CONNECTOR

C-2 : Blue
C-4 : Brown
C-6 : White

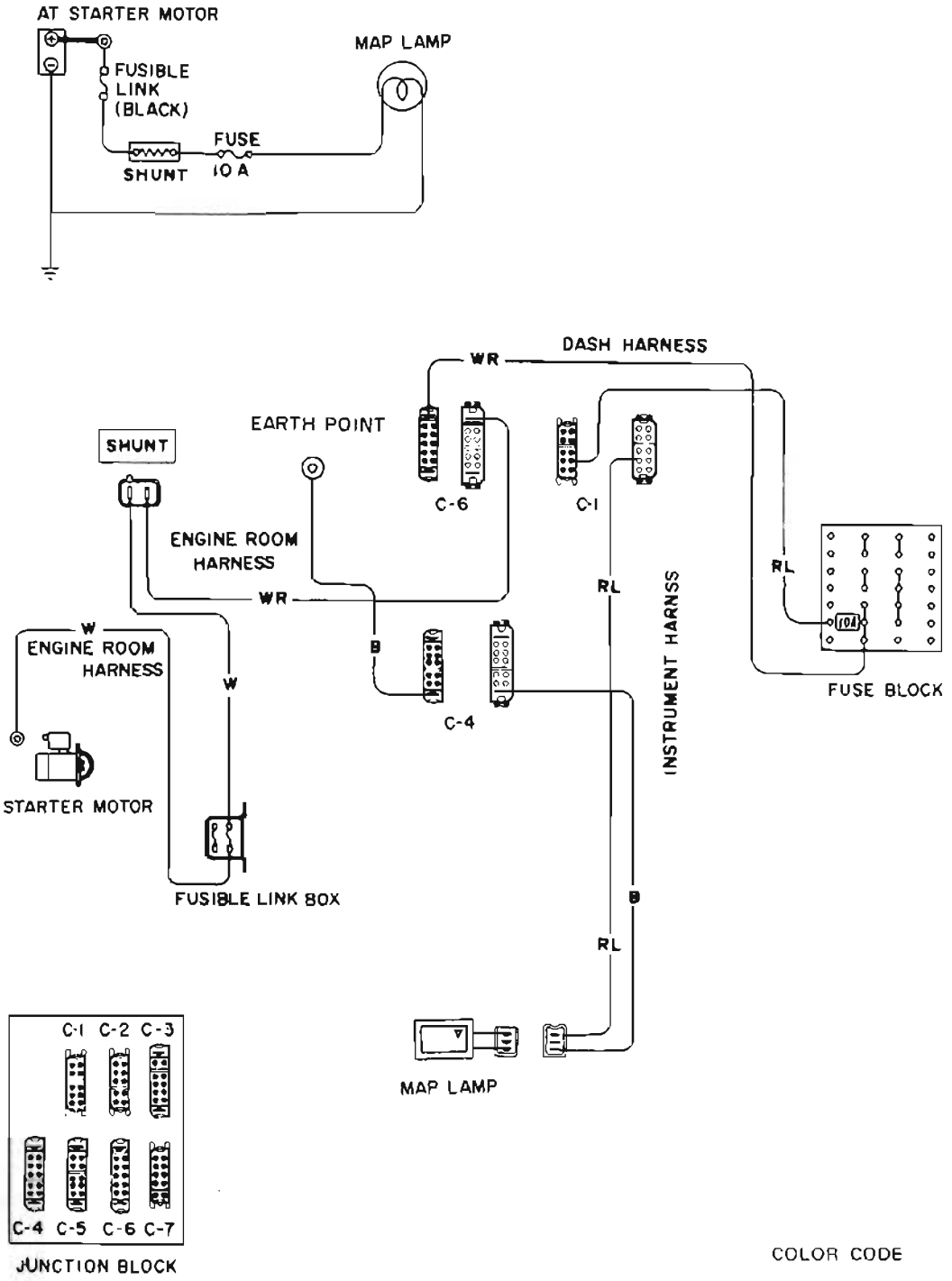
COLOR CODE

W : White
WR : White with red stripe
GL : Green with blue stripe
GW : Green with white stripe
B : Black

BE981

Fig. BE-19 Circuit diagram for glove box and cigarette lighter illumination

Map lamp system



CONNECTOR

C-1 : Green
C-4 : Brown
C-6 : White

COLOR CODE

W : White
WR : White with red stripe
RL : Red with blue stripe
B : Black

BE982

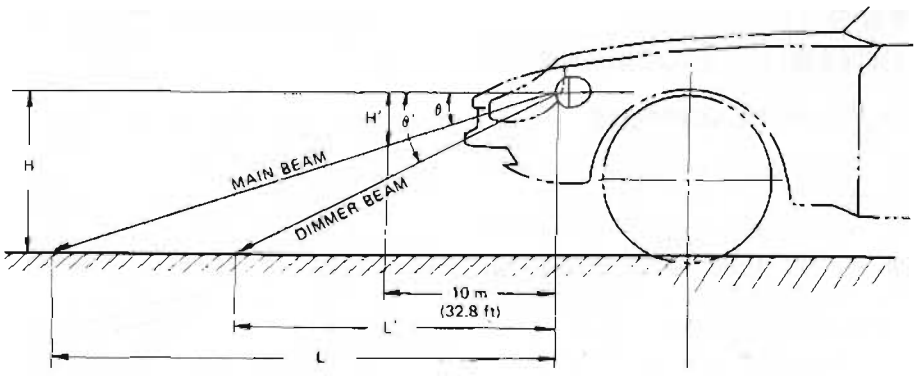
Fig. BE-20 Circuit diagram for map lamp

HEADLAMP

AIMING ADJUSTMENT

Both vertical and horizontal aiming adjustment can be carried out through the cutting hole of headlight case.

Adjust the adjusting screw on upper side of each headlamp to adjust vertical aiming and adjust the adjusting screw on side of each headlamp to adjust horizontal aiming as sketched below.



Dimensions/Angle	Values to which adjusted
H	622.0 mm (24.5 in)
θ	45'
θ'	1°35'
L	47.5 m (155.5 ft)
L'	22.5 m (73.8 ft)
H'	130.9 mm (5.15 in)

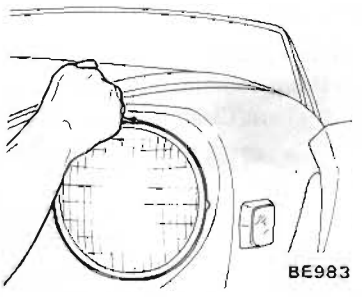


Fig. BE-21 Headlamp aiming adjustment

Notes:

Before making headlamp aiming adjustment, observe the following:

a. Keep all tires inflated to correct pressure.
b. Place car and tester on the same flat surface.
c. See that there is no load in car.
   1) Gasoline, radiator and engine oil pan filled to correct levels.
   2) No passenger.

When performing headlamp aiming adjustment, use an aiming device, aiming wall screen or headlamp tester. For operating instructions of any aimer, refer to the operation manuals supplied with the unit.

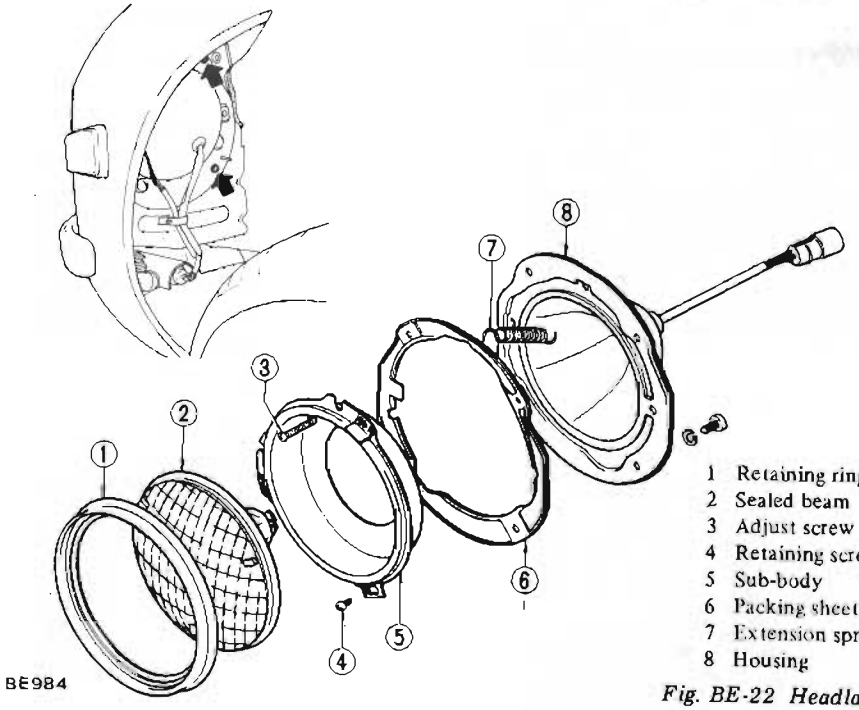
Adjust each headlamp beam as shown in Figure BE-21.

HEADLAMP BEAM REPLACEMENT

1. Disconnect connector behind front fender panel.
2. Remove four screws retaining headlamp housing to fender panel. These screws can be removed through wheel opening of front fender panel.
3. Remove headlamp assembly from body.

Then, remove headlamp retaining ring by loosening three crews. Retaining ring can be taken out by rotating it clockwise.

4. Removing headlamp beam from housing, disconnect a connector. Headlamp beam can then be taken out.
5. Change headlamp beam and connect wiring connector to new beam.
6. Place headlamp beam in position so that three location tabs behind beam fit in with three hollows on mounting ring. Make sure that the letters on beam are in an upright position.
7. Install headlamp retaining ring by rotating it counterclockwise and tighten retaining screws.
8. Install the lamp assembly in the reverse sequence of removal.



1 Retaining ring
2 Sealed beam
3 Adjust screw
4 Retaining screw
5 Sub-body
6 Packing sheet
7 Extension spring
8 Housing

Fig. BE-22 Headlamp

Notes:

a. Whenever beam is replaced, adjust headlamp aiming.
b. Lamp housing for L.H. and R.H. are different from each other. They can be distinguished by the letter "L" and "R" on lamp housing.

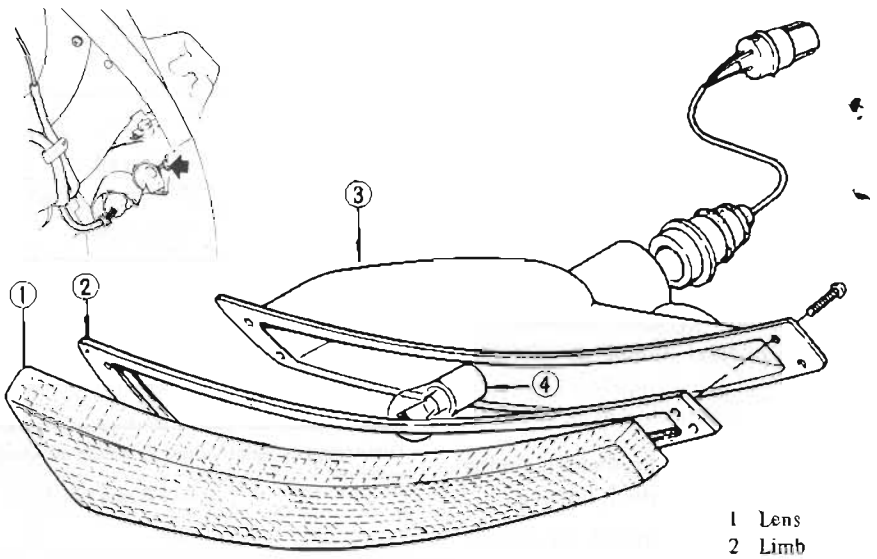
Bulb wattage
Headlamp beam
Main/Dimmer 50W/40W

FRONT COMBINATION LAMP

BULB REPLACEMENT

1. Disconnect connector behind the lamp.
2. Twist the socket and remove bulb with socket from back of lamp body.
3. Push in on bulb, twist it counter-clockwise, and remove it from socket.
4. Insert new bulb into socket, press it inward and rotate it clockwise. Make sure that the bulb is locked in socket.
5. Install socket with bulb in the lamp body.

Bulb wattage
Front combination lamp
Turn/Clearance 23W/8W



1 Lens
2 Limb
3 Lamp body
4 Bulb

BE985

Fig. BE-23 Front combination lamp

LAMP BODY REPLACEMENT

1. Disconnect connector for front combination lamp behind lamp body.
2. Remove two flange nuts retaining lamp body to front fender from back of the panel and remove front combination meter.
3. Installation is in the reverse sequence of removal.

SIDE MARKER LAMP

BULB REPLACEMENT

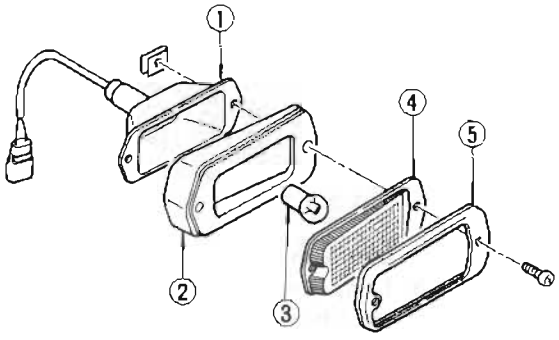
1. Remove two lens retaining screws.
2. Remove lens from lamp body.
3. Push in on bulb, twist it counter-clockwise and remove from socket.
4. Insert new bulb into socket, press it inward and rotate it clockiwse. Make sure that bulb is locked in socket.
5. Install lens in the reverse sequence of removal.

Bulb wattage:
Side marker lamp 8W

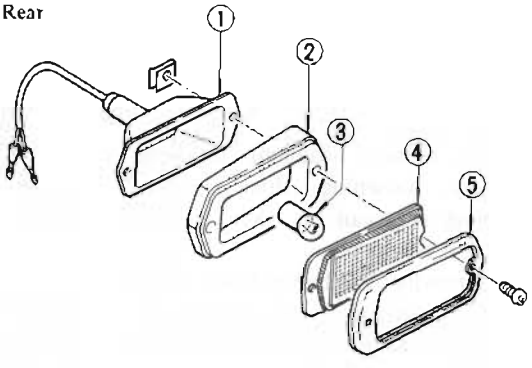
LAMP BODY REPLACEMENT

1. Disconnect lead wire at a connector (front) or at two connectors (rear).
2. Remove two lens retaining screws and take out lamp body assembly.
3. Install new lamp body assembly in the reverse sequence of removal.

Front



Rear



1 Lamp body
2 Adapter
3 Bulb
4 Lens
5 Limb

BE986

Fig. BE-24 Side marker lamp

INTERIOR LAMP

BULB REPLACEMENT

1. Remove interior lamp assembly from roof. Interior lamp is retained by its spring back.
2. Pulling lamp body out a little, disconnect three connectors on its back.
3. Remove bulb from lamp body through the hole in its back.
4. Install new bulb in the reverse sequence of removal.

Bulb wattage:
Room lamp 10W

LAMP BODY REPLACEMENT

1. Remove lamp body from roof.
Lamp body is attached by its spring back.
2. Pulling body out from roof, disconnect three connectors. Lamp body can then be taken out easily.
3. Install new lamp body in the reverse sequence of removal.

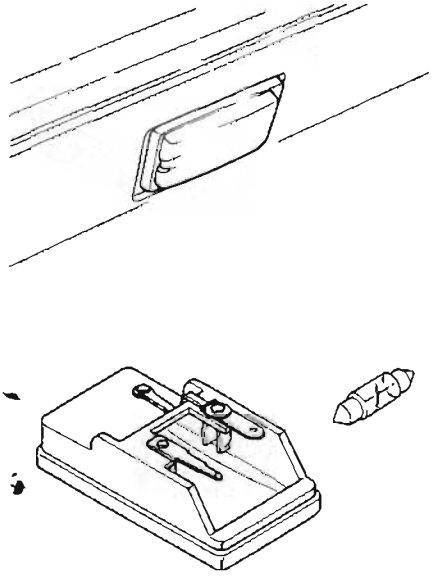


Fig. BE-25 Interior lamp

REAR COMBINATION LAMP

BULB REPLACEMENT

1. Remove four screws retaining trim cover lid from inside of trunk.
2. Through the hole in the rear panel trim lid, twist socket counterclockwise and remove socket with bulb.
3. Press in on bulb, twist it counterclockwise, and remove it from socket.
4. Install new bulb in the reverse sequence of removal.

Bulb wattage:
Stop/Tail 23W/8W
Tail 8W
Turn 23W
Reverse 23W

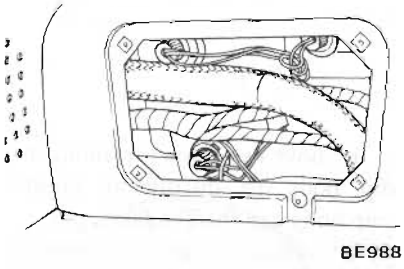
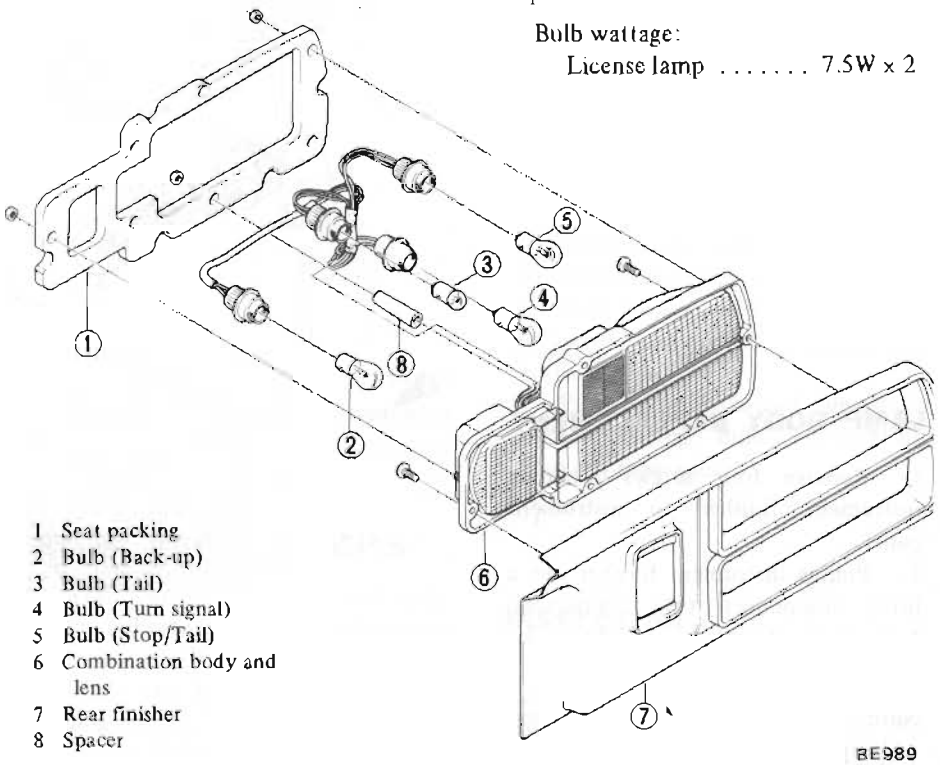


Fig. BE-26 Replacing bulbs



1 Seat packing
2 Bulb (Back-up)
3 Bulb (Tail)
4 Bulb (Turn signal)
5 Bulb (Stop/Tail)
6 Combination body and lens
7 Rear finisher
8 Spacer

Fig. BE-27 Rear combination lamp

LAMP BODY REPLACEMENT

1. Remove plastic rivets retaining rear panel finisher and make rear panel finisher free. Refer to Section BF for details.
2. Remove screws retaining rear trim cover and take out rear trim cover.
3. Disconnect lead wires for rear combination lamp at a connector.
4. Remove six flange nuts retaining rear combination lamp body to rear body panel. Lamp body can then be taken out.
5. Rear panel finisher can be separated by removing four screws.
6. Installation is in the reverse sequence of removal.

LICENSE LAMP

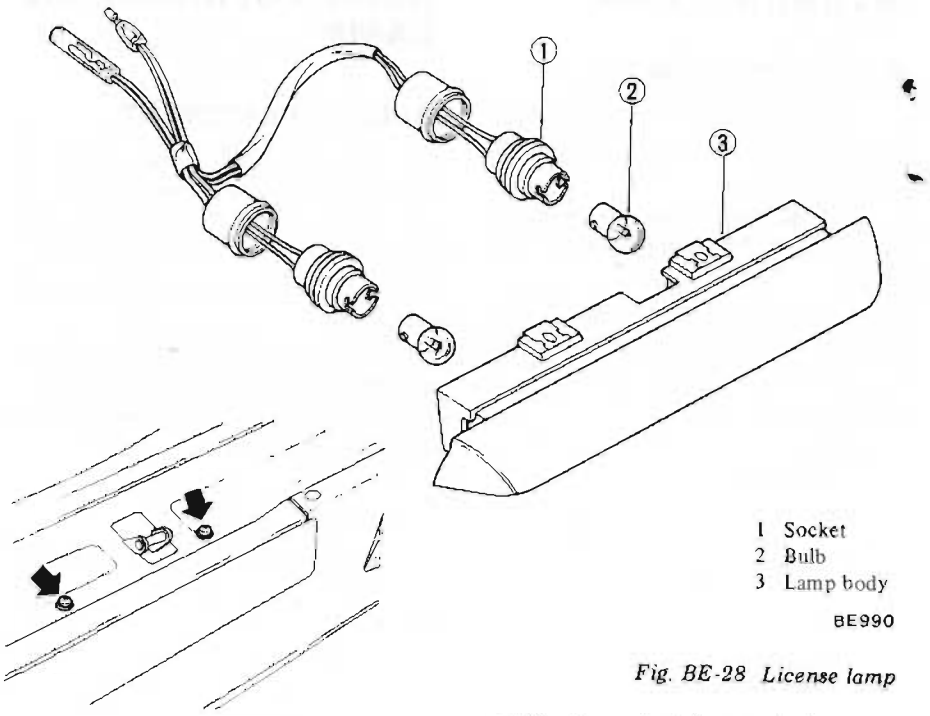
BULB REPLACEMENT

1. Remove two screws retaining lamp body to rear panel and take out lamp body. Refer to Figure BE-28.
2. Twist the socket counterclockwise and remove socket, with bulb, from lamp body.
3. Push in on bulb and twist it counterclockwise. Bulb can then be easily taken out from socket.
4. Install new bulb in the reverse sequence of removal.

Bulb wattage:
License lamp ..... 7.5W x 2

LAMP BODY REPLACEMENT

1. Remove two screws retaining lamp body to rear finisher and take out lamp body.
2. Disconnect pair of lead wires at connectors.
3. Install new lamp body in the reverse sequence of removal.



1 Socket
2 Bulb
3 Lamp body

BE990

Fig. BE-28 License lamp

MAP LAMP

BULB REPLACEMENT

1. Remove four screws retaining instrument finisher to instrument panel.
2. Pulling instrument finisher out a little, disconnect lead wires at two connectors. Instrument finisher can then be removed from instrument panel.

Note: Two connectors are for map lamp and for seat belt warning lamp.

3. Twist socket behind map lamp and remove socket with bulb.
4. Extract bulb from socket.
5. Installation is in the reverse sequence of removal.

Bulb wattage:
Map lamp 5W

3. Remove two screws retaining map lamp body to instrument finisher. Lamp body can then be taken out.
4. Installation is in the reverse sequence of removal.

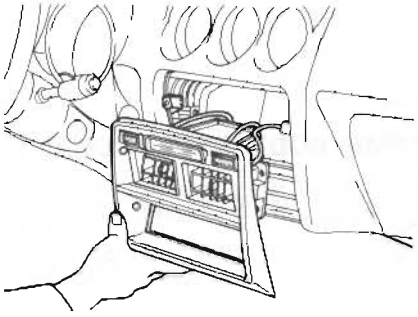
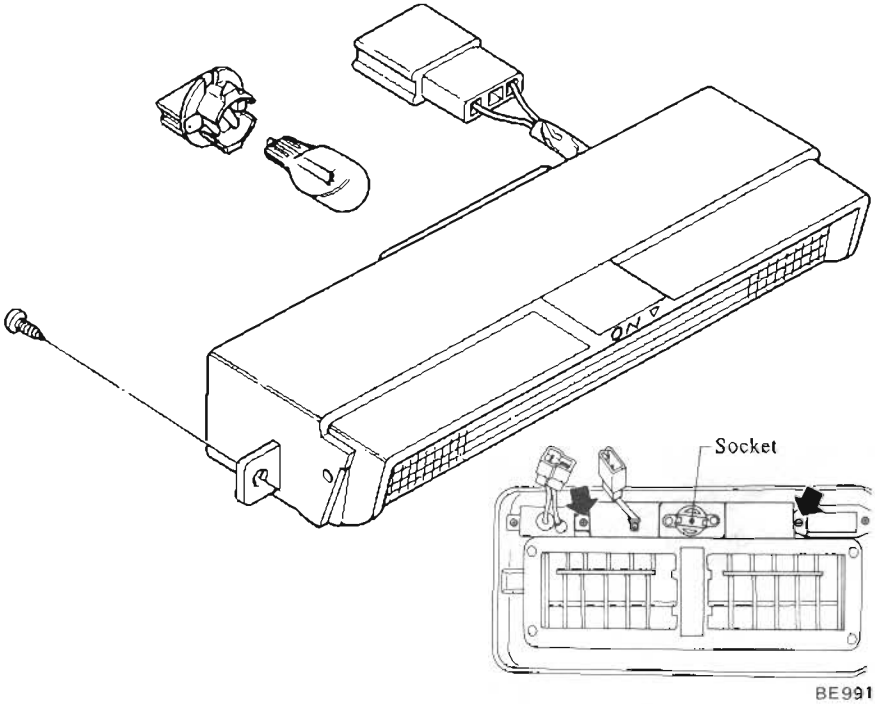


Fig. BE-29 Removing instrument finisher

LAMP BODY REPLACEMENT

1. Remove four screws retaining instrument finisher to instrument panel.
2. Pulling instrument finisher out a little, disconnect two connectors. Instrument finisher can then be removed from instrument panel.

Note: Two connectors are for map lamp and for seat belt warning lamp.



BE991

Fig. BE-30 Map lamp

GLOVE BOX LAMP

BULB REPLACEMENT

Bulb is installed at the bottom of lamp body. Pushing the bulb into switch body, twist it counterclockwise. Bulb can then be taken out. Install new bulb in reverse sequence of removal.

Bulb wattage:

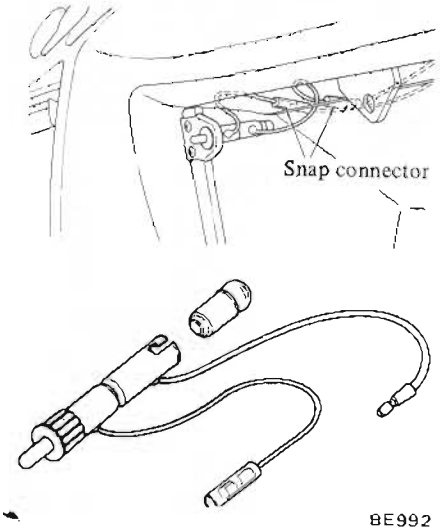
Glove box lamp 1.5W

LAMP BODY REPLACEMENT

1. Disconnect battery ground cable.
2. Disconnect pair of lead wires at connectors in glove box.
3. Pull the lamp body with bulb out from bracket.
4. Installation is in the reverse sequence of removal.

INSPECTION

Test continuity between two lead wires. When plunger is pressed into lamp body, continuity must not exist. Conversely, continuity must exist when the plunger is projecting.



BE992

Fig. BE-31 Glove box lamp

AUTOMATIC TRANSMISSION INDICATOR LAMP

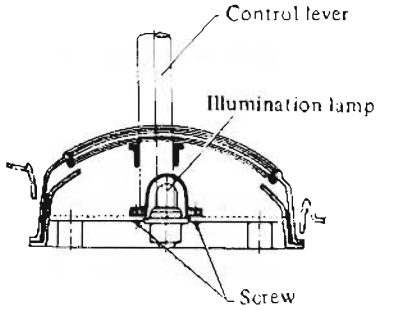
The indicator lamp is located in the indicator finisher and illuminates the indicator of select lever. Removal and installation is described in Section BF.

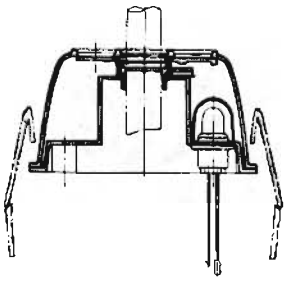
BULB REPLACEMENT

1. Remove console box.
2. Remove torque converter indicator finisher.
3. Remove socket with bulb from beneath indicator finisher.
4. Remove bulb from socket.
5. Install new bulb in the reverse sequence of removal.

Bulb wattage:

Automatic indicator lamp 3.4W





BE513

Fig. BE-32 Automatic transmission indicator lamp

INDICATOR LAMPS

Turn signal pilot lamps and main beam indicator lamp are installed on tachometer and speedometer.

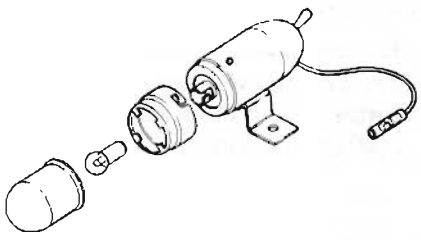
They can be replaced easily by pulling socket, with bulb, from back of meter. Refer to following section "Meters and Gauges".

INSPECTION LAMP

Inspection lamp is located on right side of engine room. Should some mechanical difficulty occur at night, this lamp is extremely useful for detection of the source of the problem and/or illumination of the repair job.

REMOVAL AND INSTALLATION

1. Disconnect lead wire at a connector.
2. Remove two screws retaining lamp to engine room. Lamp assembly can then be taken out easily.
3. Installation is in the reverse sequence of removal.



BE993

Fig. BE-33 Inspection lamp

BULB REPLACEMENT

1. Twist socket and lens and take out them from lamp housing.
2. Push on lens and twist counterclockwise. Lens can then be taken out from socket.
3. Push in on bulb and twist bulb counterclockwise. Bulb can then be taken out from socket.

INSPECTION

Test continuity between terminal for power source harness and body at each step of switch. Test can be carried out by using ohmmeter or test lamp.

COMBINATION SWITCH

The combination switch consists of light switch, wiper switch, washer switch, turn signal and dimmer switch. The two levers on the switch are for turn signal switch and for light and wiper switch. They can be separated into two pieces. Position the turn signal switch lever at the first stop position, left or right direction, when changing lanes. Turn signal lamps operate until the lever is released. Move the lever up and down to change headlamp between high and low beam.

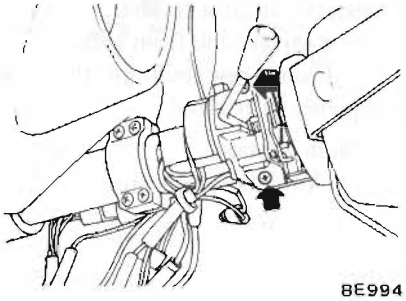
Lighting switch is operated by a dial and a small knob. Wiper switch is operated by outer dial; washer switch is at the top of the switch lever.

REMOVAL AND INSTALLATION

1. Disconnect battery ground cable.
2. Remove all screws retaining shell covers to each other and remove shell covers from steering column jacket.
3. Disconnect lead wires from combination switch at six connectors. They consist of one large connector with nine terminals; two with three terminals and three with one terminal.
4. Remove two screws retaining combination switch to steering column jacket.

The switch will then separate into two pieces and can be easily removed.

Note: There is a lead wire between L.H. and R.H. piece. It is unnecessary to disconnect the connector for it.



BE994

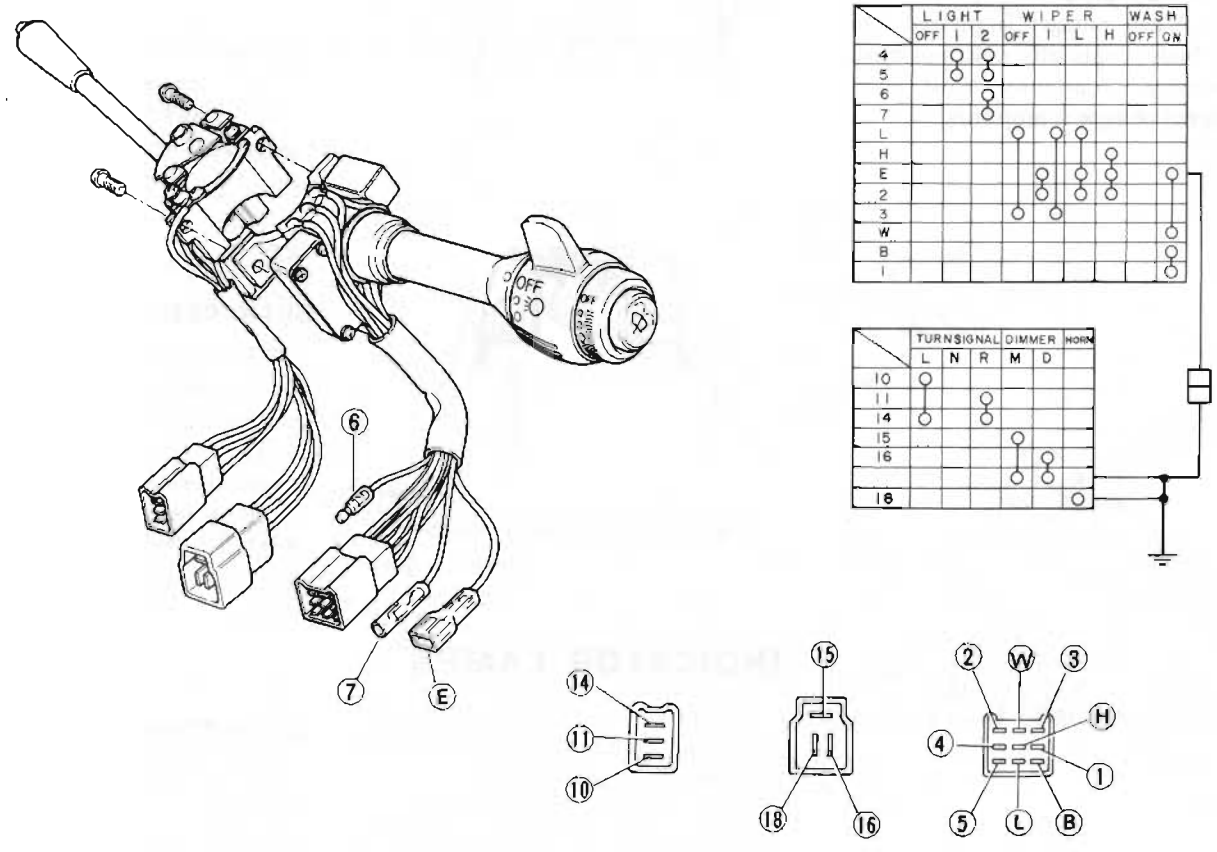
Fig. BE-34 Removing combination switch

5. Installation is in the reverse sequence of removal.

Note: Make sure that location tab of combination switch lines up with hole in steering column jacket. Location tab is inside of turn signal switch.

INSPECTION

Test continuity through turn signal switch at each step and position with a test lamp or ohmmeter. Consult continuity diagram described in Figure BE-35.



BE995

Fig. BE-35 Combination switch

DOOR SWITCH

The switch for L.H. door is different than that for R.H. door.

The switch for L.H. door has three lead wires. Two of them are for the theft protection system and one is for the interior lamp.

The switch for R.H. door has only one lead wire for the interior lamp.

REMOVAL AND INSTALLATION

Door switch is located at L.H. and R.H. front door pillar.

1. Withdraw switch and wire assembly from front pillar.

Note: If it proves difficult to remove by hand, it can be removed easily with aid of screwdriver.
In using screwdriver, however, take care not to damage painted surface.

2. Disconnect lead wires at connectors. Switch can then be taken out.
3. Installation is in the reverse sequence of removal.

INSPECTION

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

When plunger is pressed into switch assembly, door switch contacts are open. Conversely, contacts are closed when plunger is projected.

STOP LAMP SWITCH

REMOVAL AND INSTALLATION

Stop lamp switch is integral part of brake pedal height.

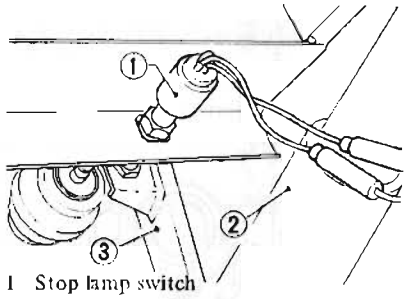
Whenever stop lamp switch is removed, some adjustment is required.

1. Disconnect lead wires at connectors.
2. Loosen lock nut. Switch assembly can then be taken out by rotating switch.
3. Install in reverse sequence of removal.

INSPECTION

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

Test continuity as previously described with a test lamp or ohmmeter.



1 Stop lamp switch
2 Steering column
3 Brake pedal

BE997

Fig. BE-37 Stop lamp switch

BACK-UP LAMP SWITCH

REPLACEMENT

Back-up lamp switch is installed on transmission. In manual transmission, this switch is installed on its rear extension. In automatic transmissions, the switch is an integral part of inhibitor switch. Removal and installation are described in Sections TM and AT.

INSPECTION

When the transmission lever is in R position, continuity between these harnesses for back-up lamp switch must exist.

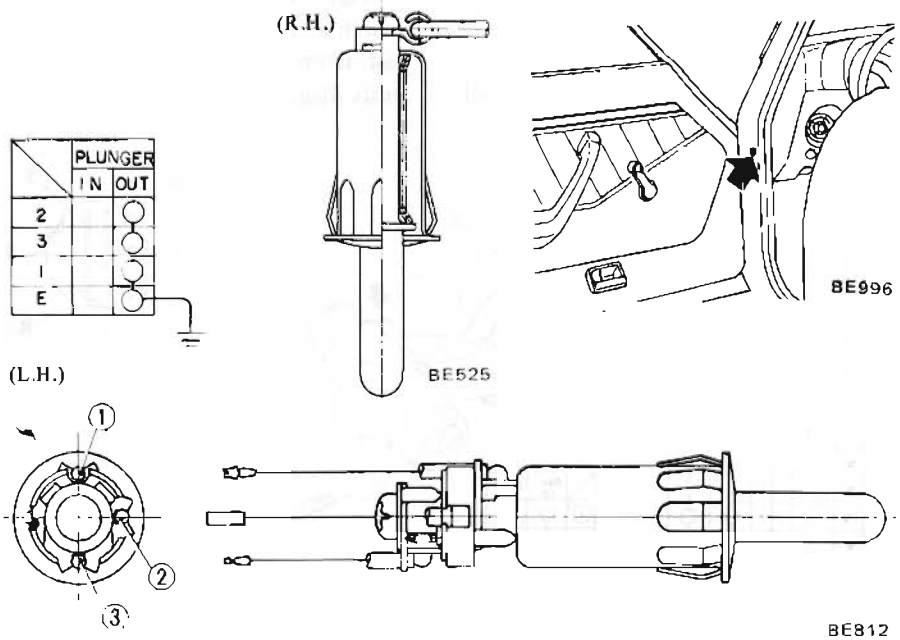


Fig. BE-36 Door switch

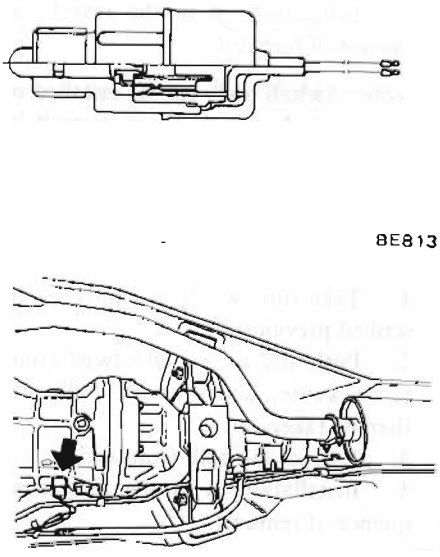


Fig. BE-38 Back-up switch

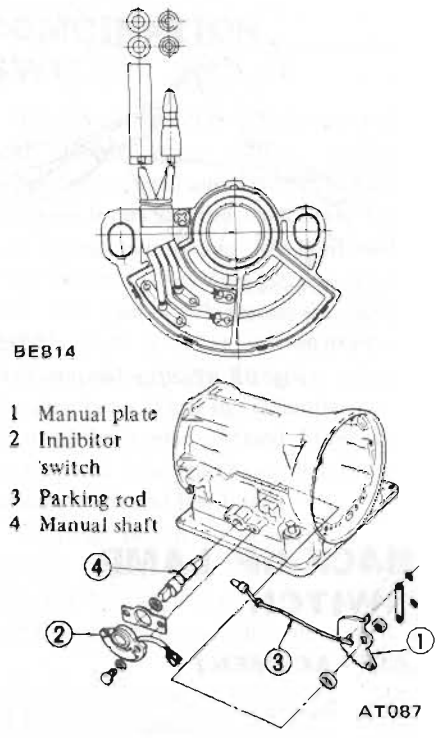


Fig. BE-39 Inhibitor switch

HAZARD SWITCH

REMOVAL AND INSTALLATION

1. Disconnect battery ground cable.
2. Remove console box, referring to Section BF.
3. From behind console box, grasp nail of switch body and push it out of console box.
4. Disconnect lead wires at a connector.
5. Installation is in the reverse sequence of removal.

Note: Switch body can be installed on console box only by pressing it in.

BULB REPLACEMENT

1. Take out switch assembly as described previously.
2. Push the socket and twist counterclockwise; socket with bulb can then be taken out.
3. Extract the bulb from socket.
4. Installation is in the reverse sequence of removal.

Bulb wattage:
Hazard switch indicator lamp 1.5W

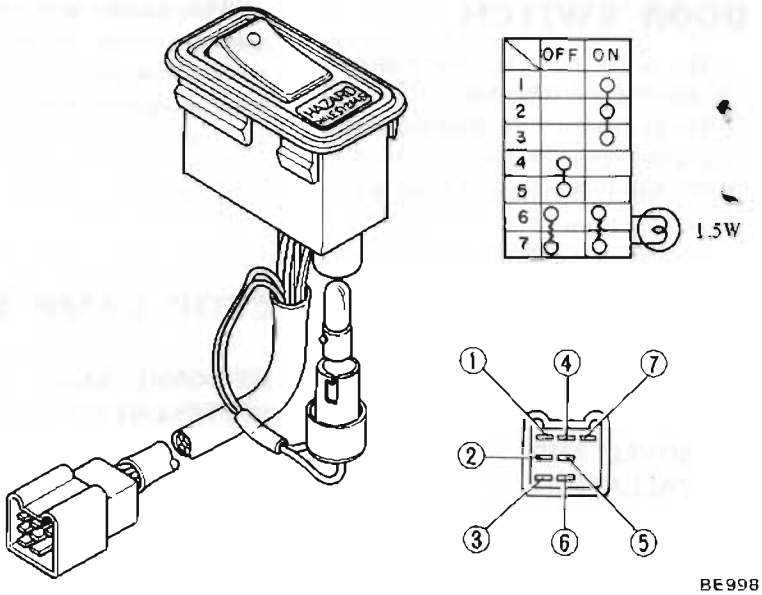


Fig. BE-40 Hazard switch

INSPECTION

Test continuity through the switch at each step with an ohmmeter or test lamp.

The continuity diagram is indicated in the following figure.

IGNITION AND STARTING SWITCH

The ignition switch is installed at bottom of steering lock. For information on engine electrical system, refer to Section EE.

REPLACEMENT

1. Remove screws retaining shell covers to each other.
2. Remove shell covers and disconnect lead wires at a connector.

Note: Connector is at the bottom of steering lock.

3. Remove screw retaining switch to steering lock.

Switch assembly can be taken out easily.

4. Installation is in reverse sequence of removal.

INSPECTION

Test continuity through ignition switch at each step with ohmmeter or test lamp. Refer to following continuity diagram.

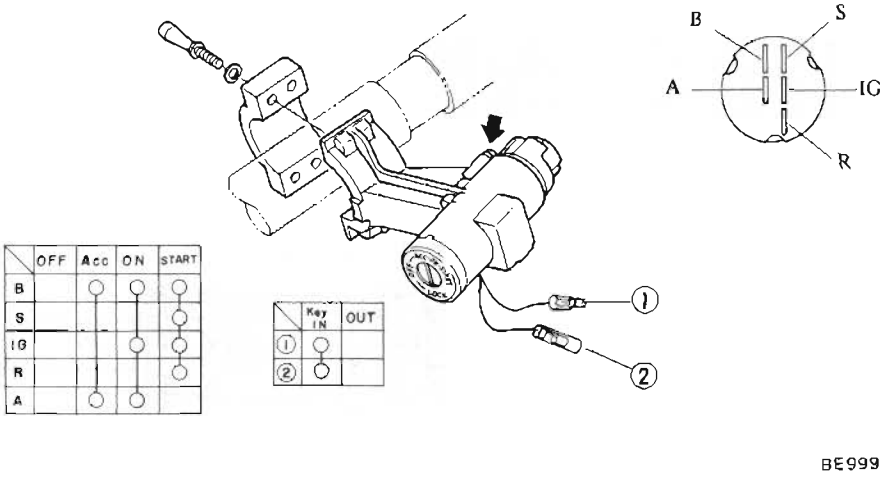


Fig. BE-41 Ignition and starting switch

RESISTOR (For illumination control)

This resistor controls the brightness of illumination for each meter, clock, radio and heater control; it is a variable resistor and its value can be controlled by a knob.

REMOVAL AND INSTALLATION

1. Remove knob of switch; it should come off easily.
2. Remove three screws retaining resistor bracket to instrument panel from behind of instrument panel.
3. Disconnect lead wire to resistor at a connector behind instrument harness.

Switch assembly can then be taken out from behind instrument panel.

4. Remove nut retaining resistor to bracket then resistor can be taken out.
5. Installation is in the reverse sequence of removal.

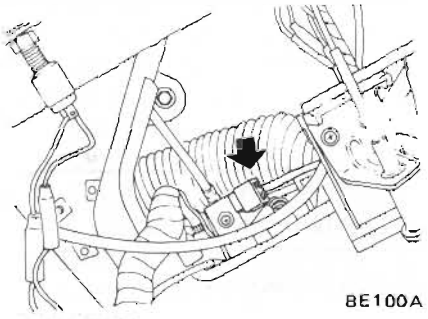


Fig. BE-42 Disconnect connector for resistor

INSPECTION

Test continuity and resistance between two lead wires with ohmmeter.

When switch is in OFF position, continuity must not exist. In ON position the resistance varies from about 10 Ω to 0Ω depending on the setting of the knob.

FLASHER UNIT REPLACEMENT

Two flasher units are installed at L.H. side trim under instrument panel. One is for turn signal and the other is for hazard. They are different from each other.

1. Disconnect battery ground cable.
2. Disconnect lead wires at connector.
3. Remove screw retaining flasher unit to inner side trim.
4. Install new flasher unit in the reverse sequence of removal.

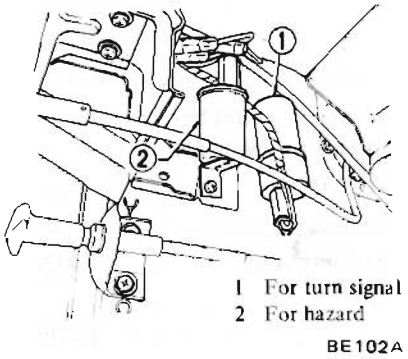


Fig. BE-44 Flasher units

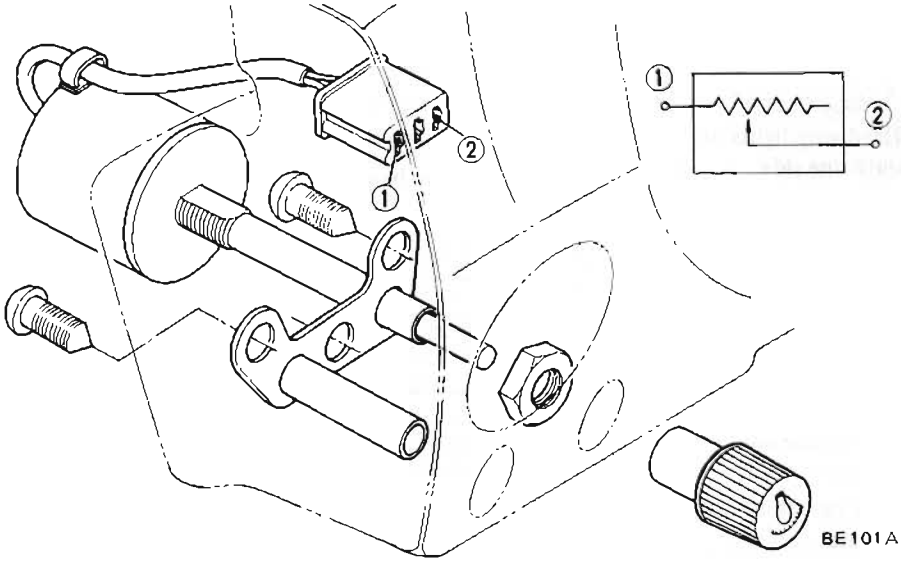


Fig. BE-43 Resistor

TROUBLE DIAGNOSES AND CORRECTIONS

HEADLAMP

Condition	Probable cause	Corrective action
Headlamps do not light for either high or low beams.	Burnt fusible link.	Correct cause and replace fuse.
	Loose connection or open circuit.	Check wiring and/or repair connection.
	Faulty combination switch.	Conduct continuity test and replace if necessary.
	No ground.	Clean and tighten ground terminal.
High beam cannot be switched to low beam or vice versa.	Faulty combination switch.	Conduct continuity test and replace if necessary.
Headlamps dim.	Partly discharged or faulty battery.	Measure specific gravity of electrolyte and recharge or replace battery if necessary.
	Faulty 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.
	Burnt fusible link.	Replace.
Headlamp lights on only one side.	Loose headlamp connection.	Repair.
	Faulty headlamp beam.	Replace.

TURN SIGNAL LAMP

Condition	Probable cause	Corrective action.
Turn signals do not operate.	Burnt fuse.	Correct cause and replace.
	Loose connection or open circuit.	Check wiring and/or repair connection.
	Faulty flasher unit.	Replace.
	Faulty turn signal switch.	Conduct continuity test and replace if necessary.
Flashing cycle is too slow, (Pilot lamp does not go out.) or too fast.	Bulbs of other than specified wattage are being used.	Replace with one specified.
	Burnt bulbs.	Replace.
	Loose connection.	Repair.
	Faulty flasher unit.	Replace.
Flashing cycle is irregular.	Burnt bulb.	Replace.
	Loose connection.	Repair.
	Bulb of other than specified wattage is being used.	Replace with one specified.

TAIL LAMP, STOP LAMP AND BACK-UP LAMP

Condition	Probable cause	Corrective action
Both left and right lamps do not light.	Burnt fuse.	Correct cause and replace.
	Faulty stop lamp switch.	Conduct continuity test and replace if necessary.
	Faulty back-up lamp switch.	Conduct continuity test and replace if necessary.
	Faulty inhibitor switch.	
	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.

METERS AND GAUGES

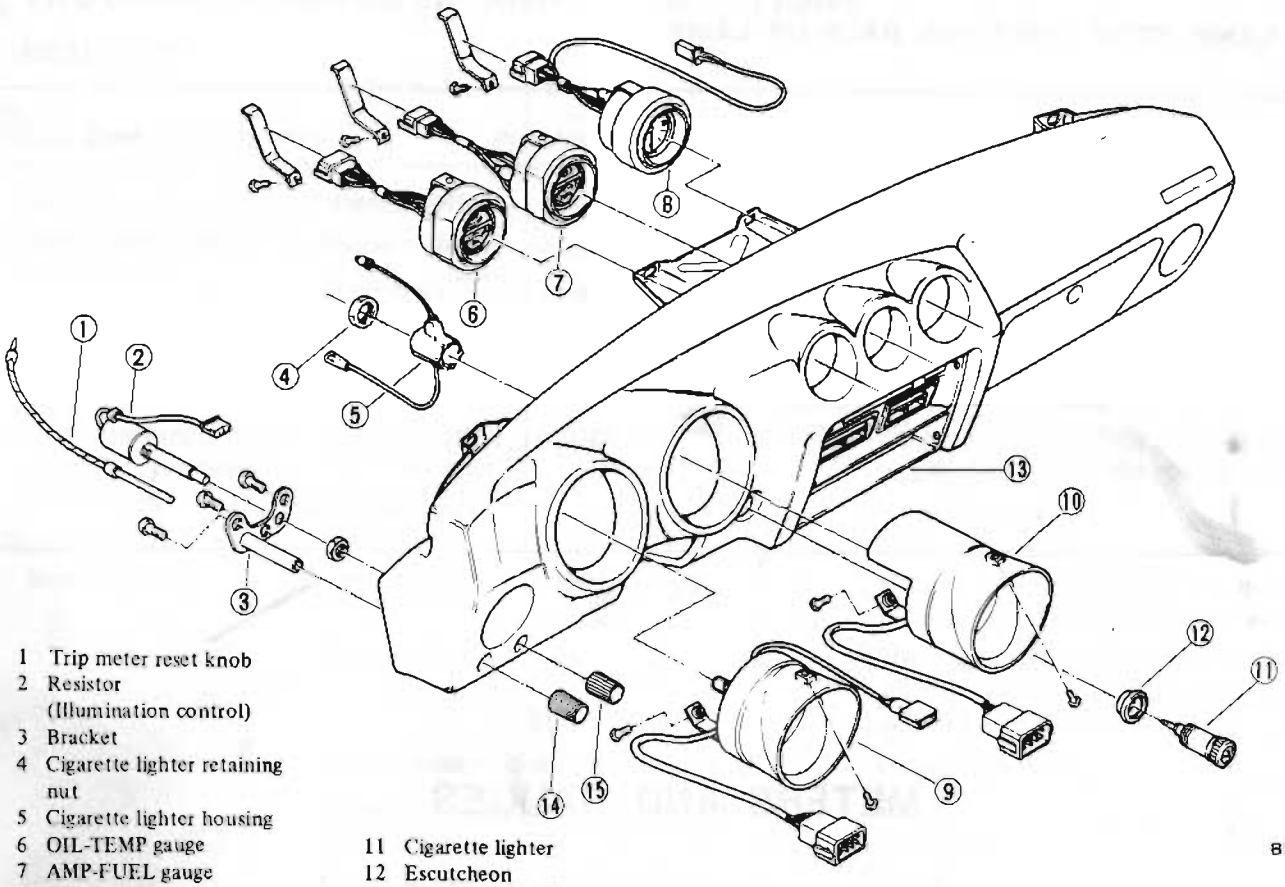
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DESCRIPTION

This section includes information on all meters and gauges. Bulbs for indicator or for illumination can be easily replaced by twisting bulb socket.

All meters and gauges can be easily replaced without removing instrument panel.



1 Trip meter reset knob
2 Resistor (Illumination control)
3 Bracket
4 Cigarette lighter retaining nut
5 Cigarette lighter housing
6 OIL-TEMP gauge
7 AMP-FUEL gauge
8 Clock
9 Speedometer
10 Tachometer
11 Cigarette lighter
12 Escutcheon
13 Instrument finisher
14 Knob (Tripmeter reset)
15 Knob (Resistor)

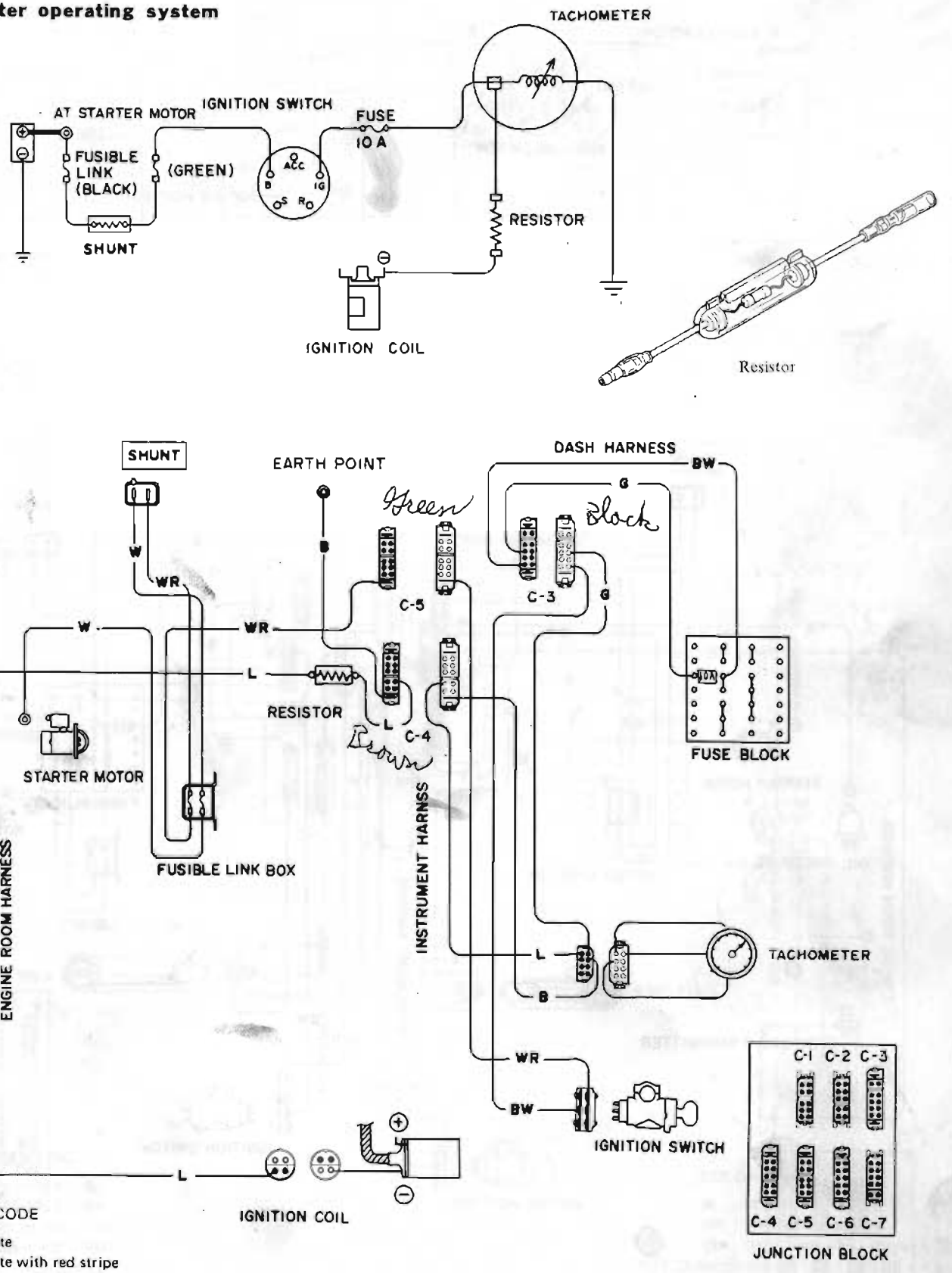
Fig. BE-45 Meter and gauge

BULB SPECIFICATIONS

Item	Wattage	Q'ty	SAE trade number	Remarks
Speedometer Illumination lamp	3.4W	2	57	
Tachometer Illumination lamp	3.4W	2	57	
Brake warning lamp	3.4W	1	57	
OIL-TEMP gauge illumination	3.4W	1	57	
AMP-FUEL gauge illumination	3.4W	1	57	
CLOCK illumination lamp	3.4W	1	57	

CIRCUIT DIAGRAM

Tachometer operating system



COLOR CODE

- W : White
- WR : White with red stripe
- L : Blue
- G : Green
- BW : Black with white stripe
- B : Black

BE104A

Fig. BE-46 Circuit diagram for tachometer

Water temperature and oil pressure indicating system

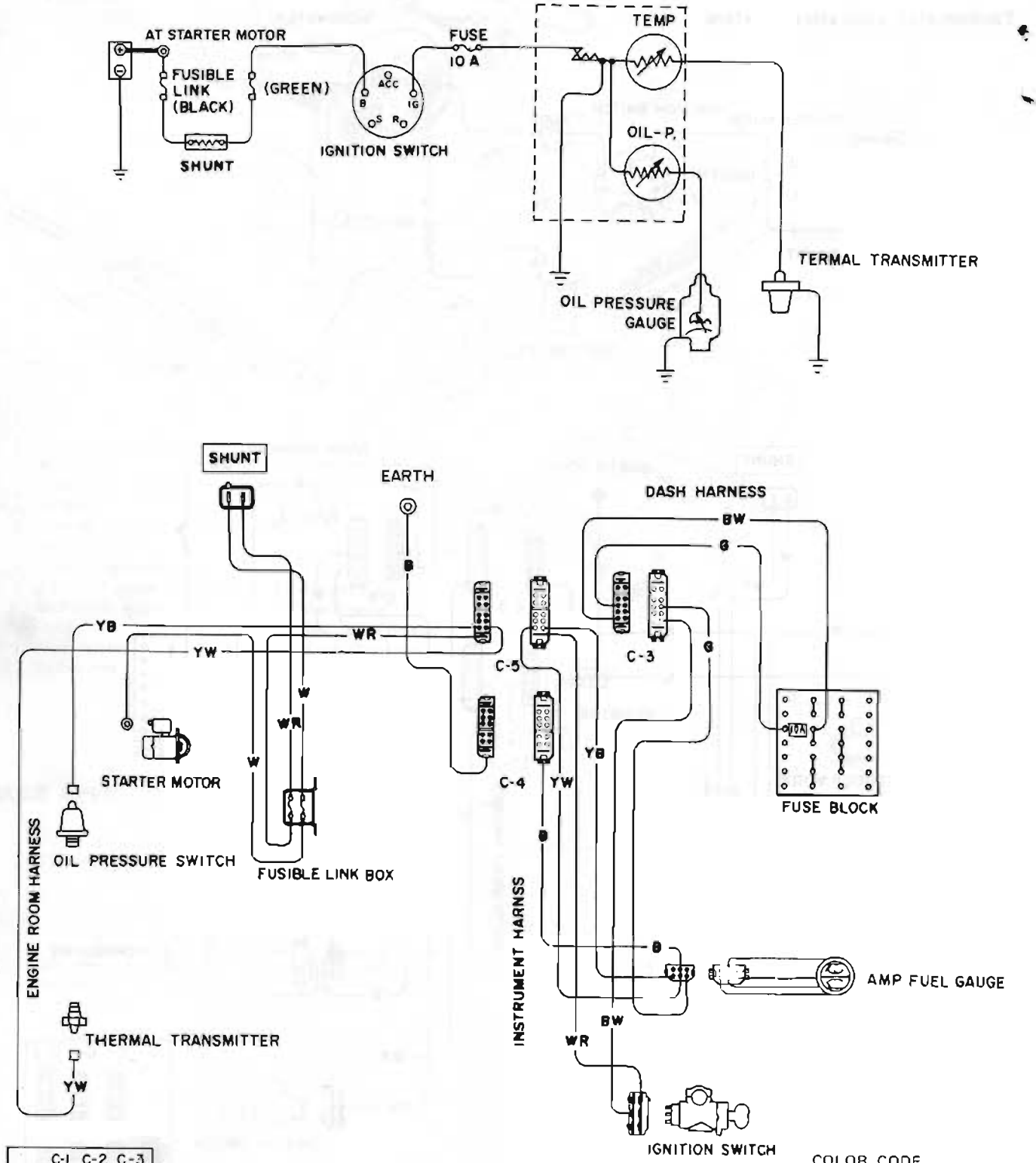
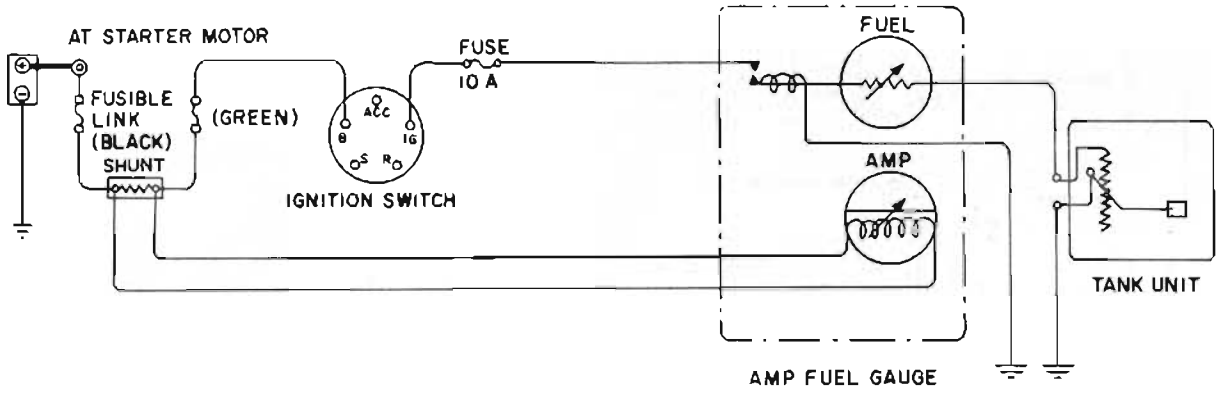


Fig. BE-47 Circuit diagram for water temperature and oil pressure

Amperage and fuel level indicating system



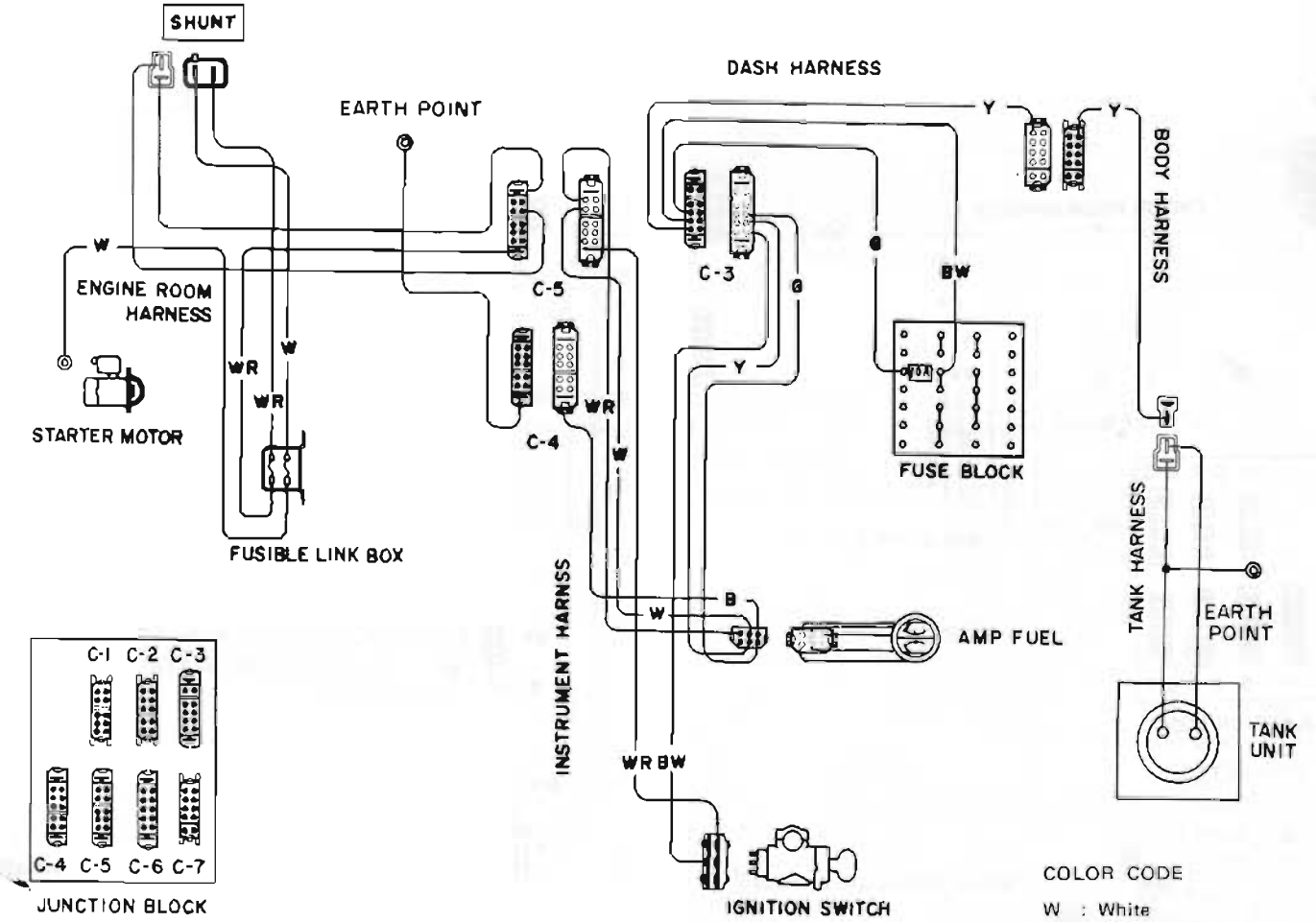
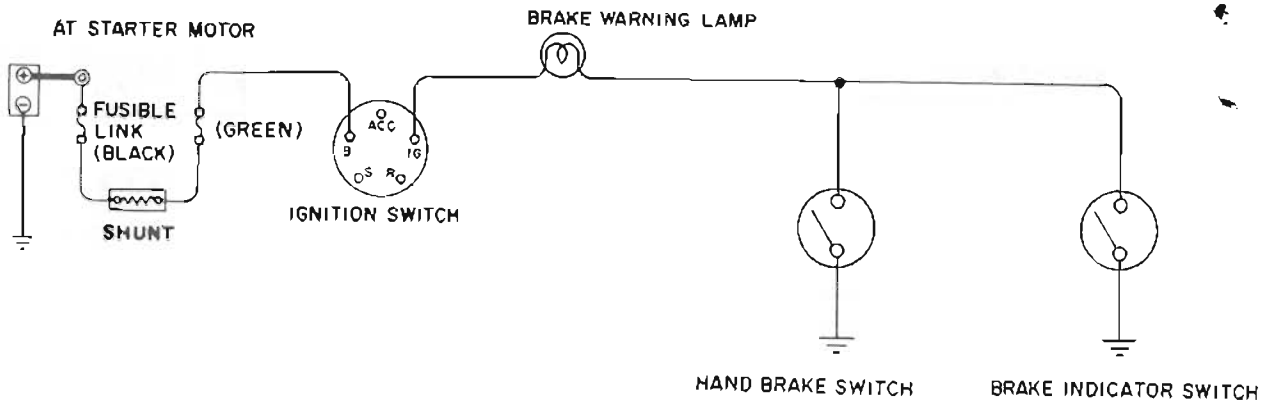
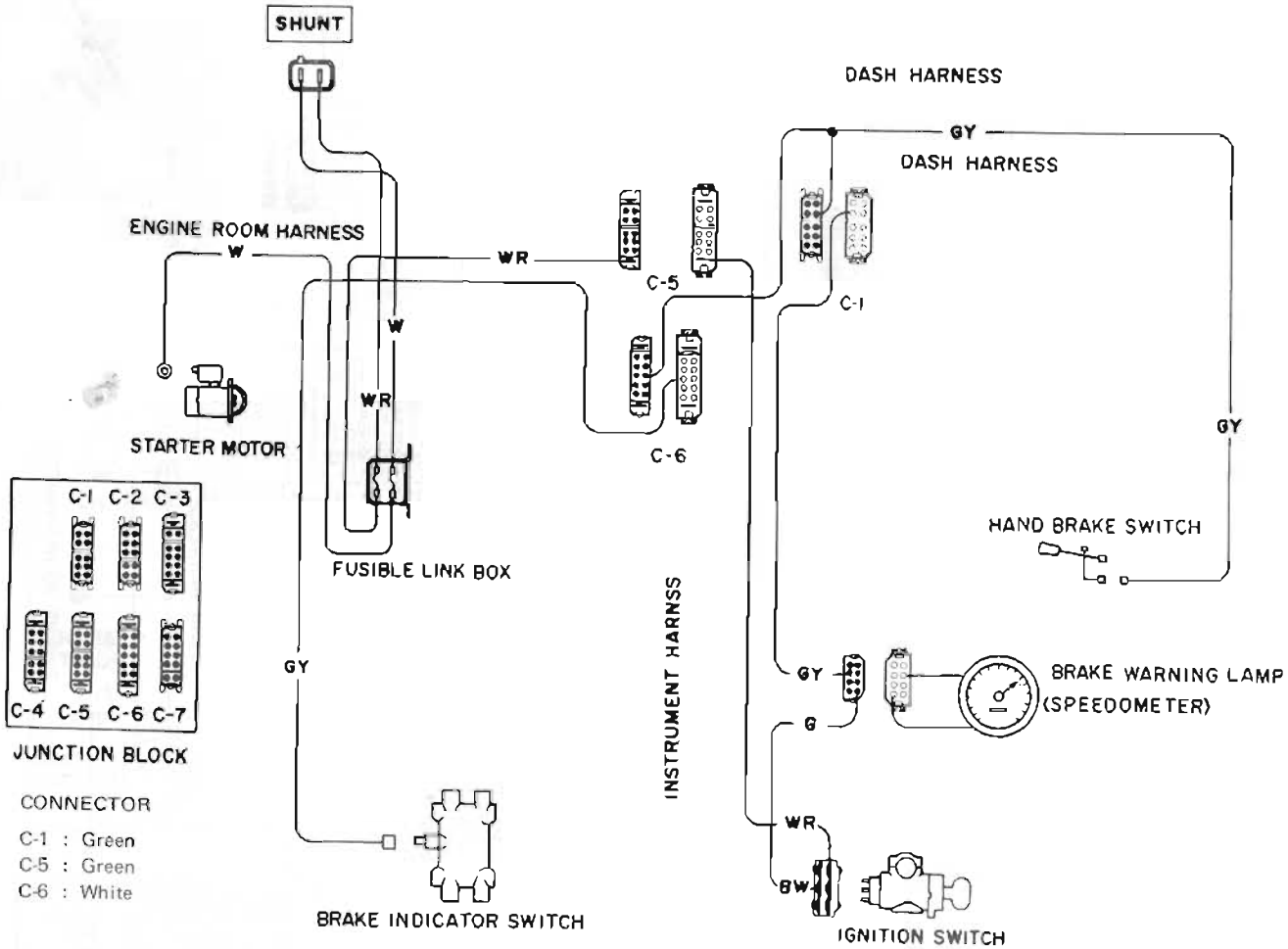


Fig. BE-48 Circuit diagram for AMP and FUEL

Brake warning system



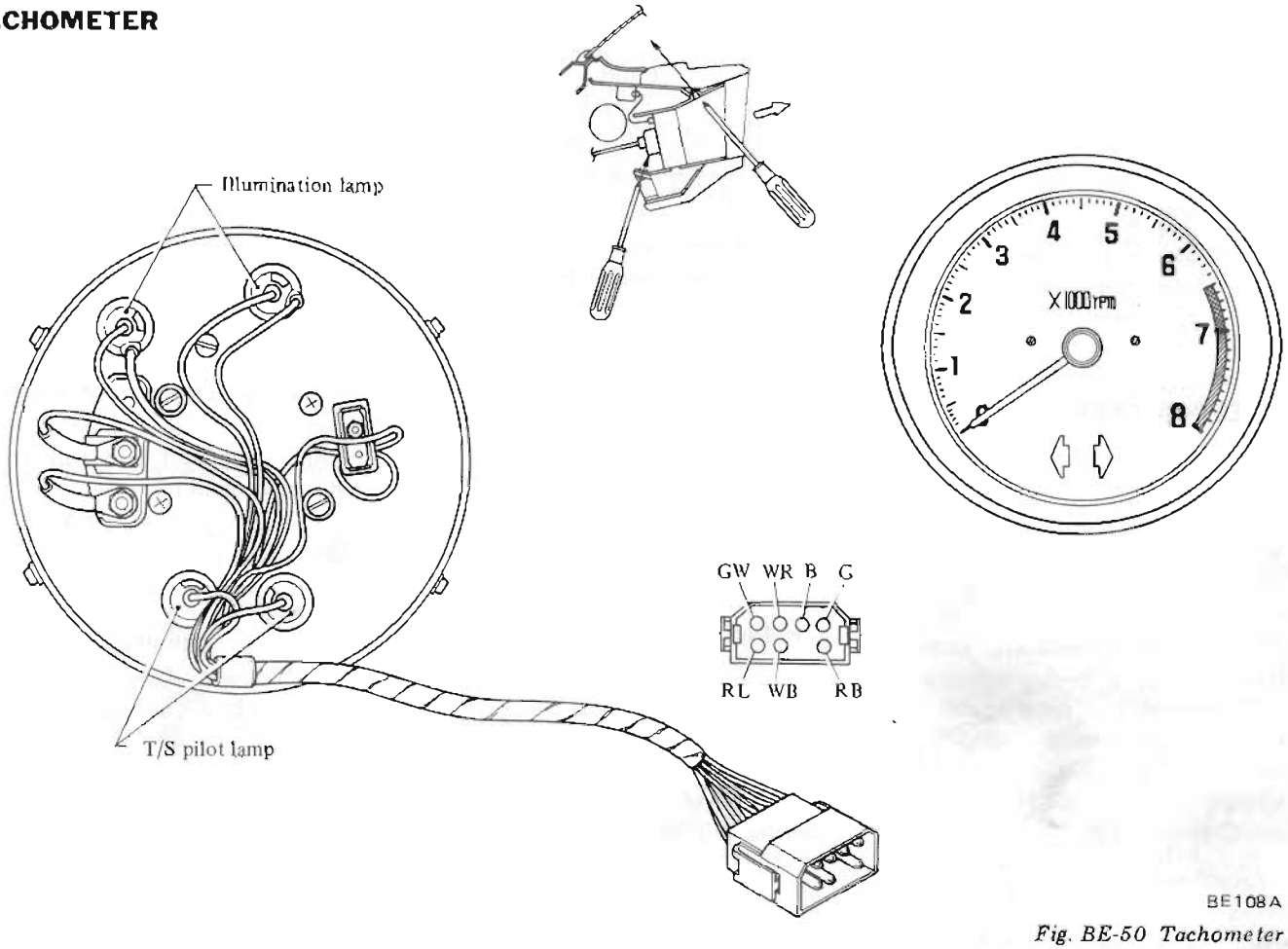


BE107A

Fig. BE-49 Circuit diagram for brake warning

METER AND GAUGE REPLACEMENT

TACHOMETER



BE108A

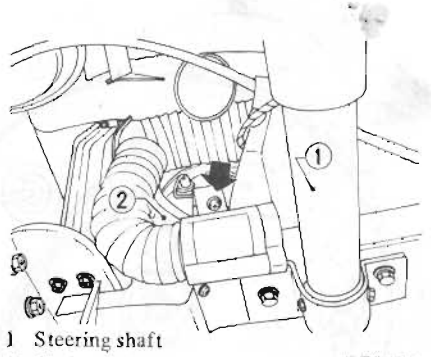
Fig. BE-50 Tachometer

The tachometer is retained by two screws, and can be taken out easily. A pair of turn signal pilot lamps and a pair of illumination lamps are also installed. Their bulbs can be removed easily by twisting socket at back of tachometer.

This tachometer is a voltage trigger type.

Removal and installation

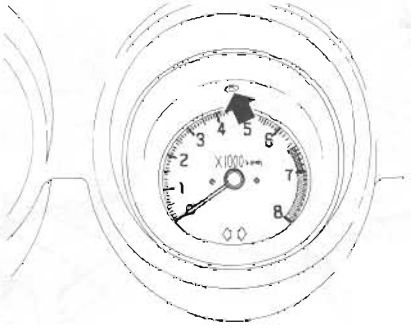
1. Remove screw retaining tachometer at upper side of instrument panel. See following figure.
2. Working from beneath instrument panel, remove the other screw retaining tachometer to bracket of instrument panel.
3. Pulling tachometer assembly out from instrument panel, disconnect connector for instrument harness. Tachometer assembly can then be taken out easily.



1 Steering shaft
2 Tachometer

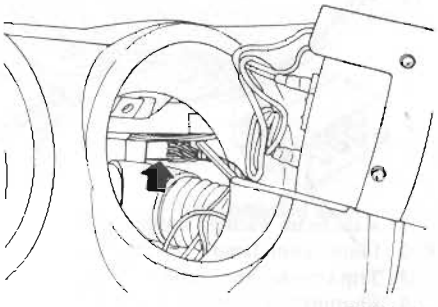
BE110A

Fig. BE-52 Removing screw—2



BE109A

Fig. BE-51 Removing screw—1



BE111A

Fig. BE-53 Disconnecting connector

Bulb replacement

Pull out socket, with bulb, from back of tachometer and extract bulb from socket.

Install new bulb in reverse sequence of removal.

Bulb wattage:

Turn signal pilot lamp ... 3.4W
Illumination lamp 3.4W

SPEEDOMETER

Speedometer is attached by two screws.

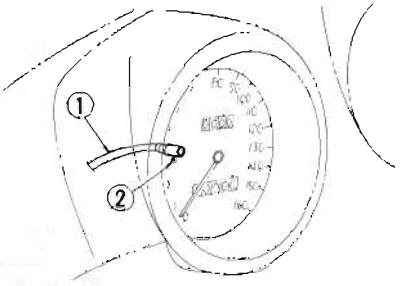
Main beam indicator lamp, brake warning lamp, an odometer and a tripmeter are integral parts of speedometer. On manual transmission models, a speed switch with amplifier is added.

Consequently, speedometer on manual transmission models is different from that on automatic transmission models. All bulbs on speedometer can be replaced easily.

Removal and installation

1. Remove tachometer as described previously.
2. Disconnect speedometer cable at junction screw on back of meter.
3. Through hole in which tachometer is installed, disconnect trip meter reset cable.

Note: Reset cable can be removed from speedometer by loosening a small screw.

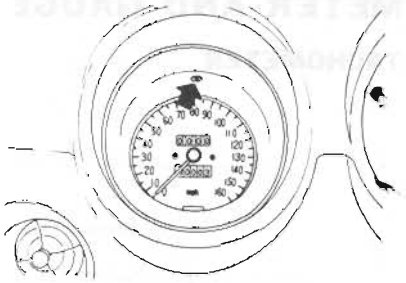


1 Tripmeter reset cable
2 Retaining screw

BE113A

Fig. BE-55 Removing reset cable

4. Remove screw retaining speedometer. See following figure.

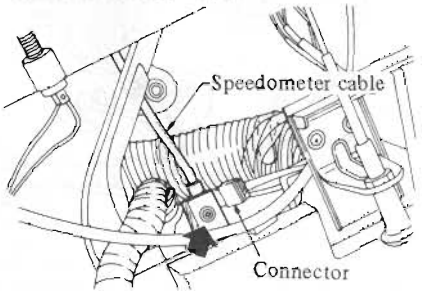


BE114A

Fig. BE-56 Removing screw—1

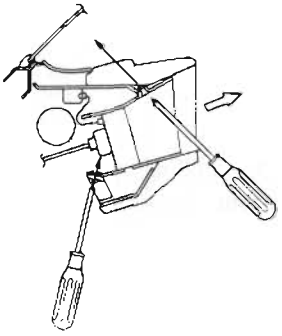
5. Working from beneath instrument panel, remove other screw retaining tachometer to bracket of instrument panel.

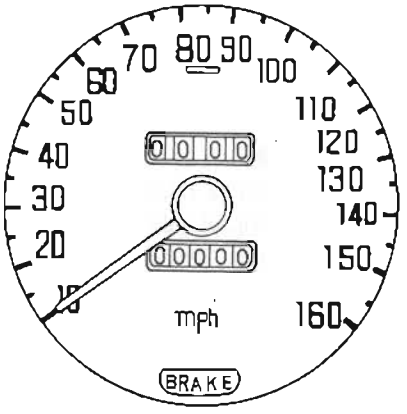
And disconnect lead wire for resistor at a connector.



BE100A

Fig. BE-57 Removing screw—2





1 Main beam warning lamp
2 Illumination lamp
3 Trip counter reset cable
4 Illumination lamp
5 Brake warning lamp

To resistor

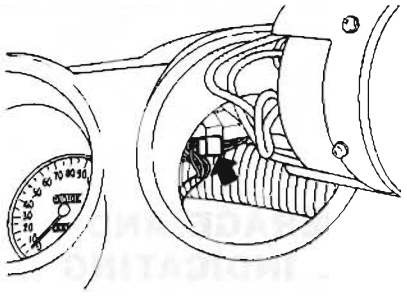
To instrument harness

BE112A

Fig. BE-54 Speedometer

6. Pulling speedometer out from instrument harness, disconnect a connector for instrument harness.

Speedometer can then be taken out.



BE115A

Fig. BE-58 Disconnecting connector

Bulb replacement

Pull out socket, with bulb, from back of speedometer and extract bulb from socket.

Install new bulb in reverse sequence of removal.

Bulb wattage:

Main beam indicator 3.4W
Brake warning lamp 3.4W

TEMP-OIL, AMP-FUEL GAUGE

These gauges are attached to instrument panel with spring bracket. The spring bracket is retained by a screw. Consequently, each gauge can be easily taken out by removing retaining screw.

Removal and installation

1. Remove four screws retaining instrument finisher to instrument panel. Pulling instrument finisher out a little disconnect two connectors.

Instrument finisher can then be taken out.

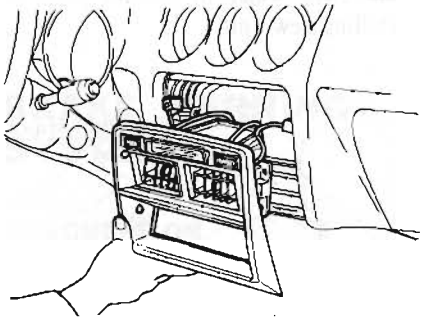


Fig. BE-60 Removing instrument finisher

2. Remove two screws retaining three-way venti-duct to instrument panel and four screw for bracket.

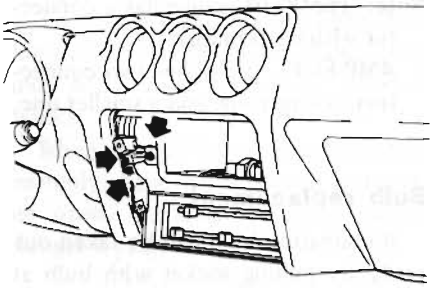
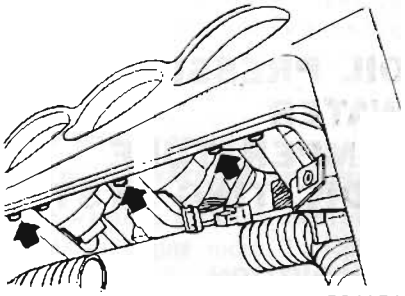


Fig. BE-61 Removing three-way duct retaining screws

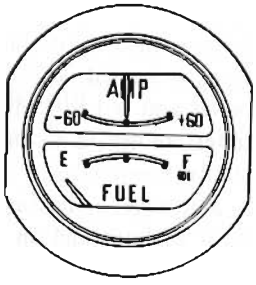
3. Disconnect duct hoses from three-way duct and take out three-way duct.

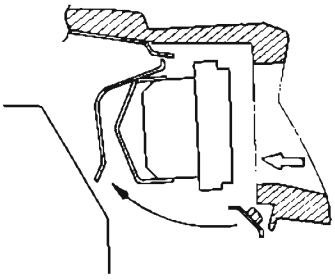
4. Remove screw retaining each gauge to instrument panel.

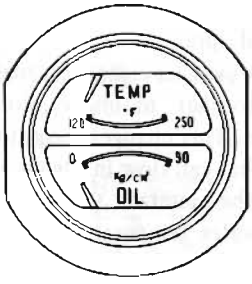


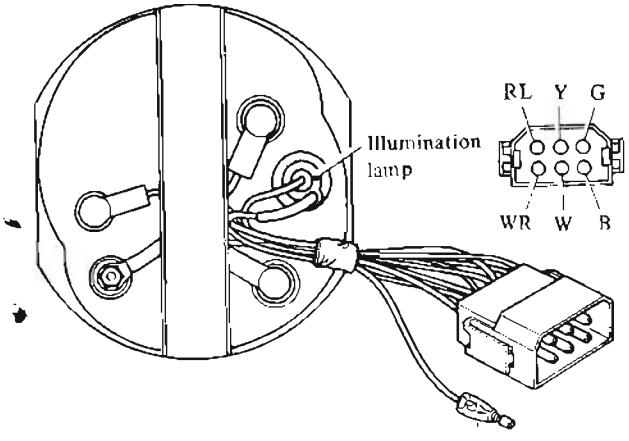
BE117A

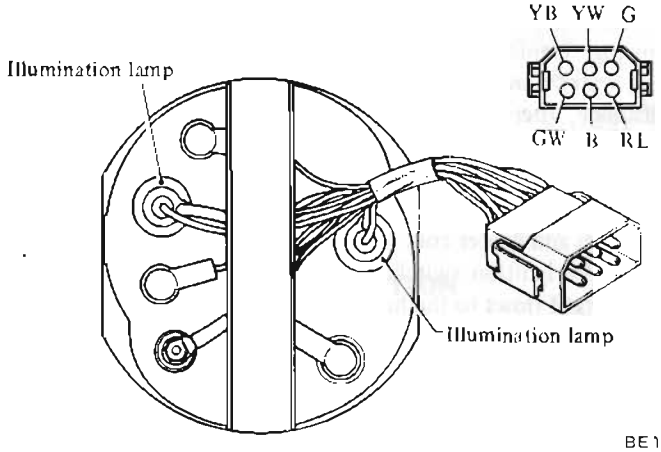
Fig. BE-62 Removing gauge retaining screw











BE116A

Fig. BE-59 TEMP-OIL and AMP-FUEL gauges

5. Pulling gauge out backward, disconnect each connector. Gauge can then be taken out.

Note: TEMP-OIL gauge has a connector with six terminal.
AMP-FUEL gauge has two connectors: a larger one and a smaller one.

Bulb replacement

Illumination bulb can be taken out easily by pulling socket with bulb at back of each gauge.

Extract bulb from socket and install new bulb in reverse sequence of removal.

Bulb wattage:
Illumination bulb 3.4W

OIL PRESSURE AND WATER TEMPERATURE INDICATING SYSTEM

DESCRIPTION

The oil pressure gauge consists of a bimetal meter unit, a variable resistance sensing unit (incorporating a diaphragm) and a voltage regulator.

As oil pressure varies, the diaphragm moves accordingly, causing the sliding contact to move along the resistance. This changes the amount of current that can flow in the circuit and actuates the bimetal.

The water temperature gauge consists of a meter and thermal transmitter located in the engine block. The thermal transmitter is equipped with a thermistor element which converts cooling water temperature variation to a resistance, thereby controlling current flowing to the gauge.

The oil pressure gauge and water temperature gauge are equipped with a bimetal arm and heater coil.

When the ignition switch is set to "ON", current flows to the heater coil, and the heater coil is heated. With this heat, the bimetal arm is bent, thus causing the pointer connected to the bimetal arm to move. The characteristics of both gauges are the same.

If both the oil pressure and water temperature gauges become faulty at the same time, the fault may lie in the voltage regulator.

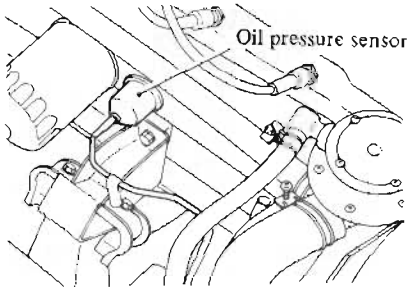
REPLACEMENT

OIL-TEMP gauge

Refer to previous section "Meter and Gauge Replacement".

Oil pressore gauge unit

The oil pressure gauge unit is located on cylinder block beside oil element. The switch can be removed by unscrewing it. Be sure to apply conductive sealer to threads prior to installing new unit.



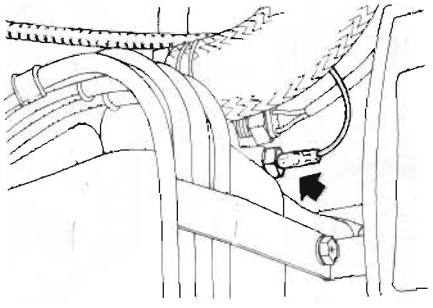
BE118A

Fig. BE-63 Oil pressure gauge unit

Thermal transmitter

To replace thermal transmitter, disconnect lead wire from its terminal and unscrew thermal transmitter from oil filter bracket.

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



BE119A

Fig. BE-64 Thermal transmitter

INSPECTION

Check each unit for proper operation.

Test continuity of oil pressure and water temperature indicating system with test lamp or ohmmeter. See Figure BE-47.

AMPERAGE AND FUEL INDICATING SYSTEM

DESCRIPTION

The fuel level indicating system consists of a tank unit and a fuel level gauge. The tank unit consists of a float which moves up and down in the fuel tank with changes in fuel level, and a sliding contact that slides back and forth on a resistance when the float moves. This changes the amount of electric resistance offered by the tank unit and controls the current flowing to the fuel level gauge. The gauge moves with the changes in current flow.

The fuel gauge is equipped with a bimetal arm and heat coil. When the ignition switch is turned "ON", current flows to the heater coil, and the heater coil is heated. With this heat, the bimetal arm is bent, thus causing the pointer connected to the bimetal arm to move.

The amperage indicating system consists of a shunt and an amperage gauge. Some of the electric current charging the battery from alternator flows in a constant ratio into amperage gauge through shunt. This electric current moves the pointer in gauge by aid of solenoid.

The pointer indicates the enlarged value in the same ratio of shunt.

REPLACEMENT

AMP-FUEL gauge

Refer to previous section "Meter and Gauge Replacement".

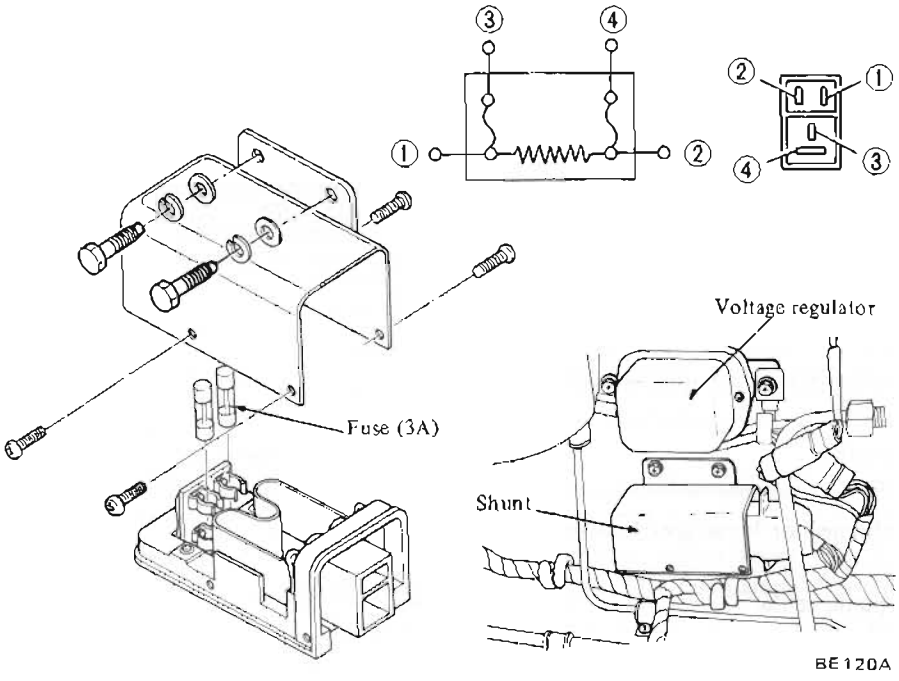


Fig. BE-65 Shunt

Shunt

Shunt is installed in right side of engine room.

1. Detach rubber cover.
2. Disconnect connectors at right end of shunt body.
3. Remove two screws retaining shunt to body panel.
4. Installation is in the reverse sequence of removal.

Fuel tank unit

Refer to Section FE (Fuel Exhaust System) for Replacement.

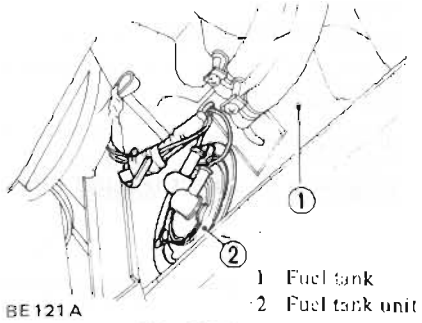


Fig. BE-66 Fuel tank unit

INSPECTION

Test continuity of fuel and water temperature indicating system with test lamp or ohmmeter. See Figure BE-48.

BRAKE WARNING SYSTEM

DESCRIPTION

The brake warning system consists oil warning lamp, hand brake switch and a brake line pressure differential warning switch. The whole circuit is shown in Figure BE-49.

The brake warning lamp glows when the hand brake is applied.

When the ignition switch is set to "ON", current flows from the ignition switch to the warning lamp. When the hand brake is applied, hand brake warning switch is closed and warning lamp glows.

The brake line pressure differential warning switch causes warning lamp to glow when problem occurs in brake lines. For information on brake line pressure differential warning switch, refer to Section BR for Warning Switch.

REPLACEMENT

Brake warning lamp

The brake warning lamp bulb can be easily replaced by pulling socket behind speedometer. Refer to Meter and Gauge Replacement.

Hand brake switch

The hand brake switch is mounted on hand brake stem support bracket on lever support bracket.

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

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

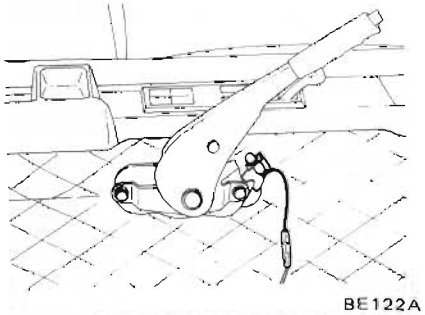


Fig. BE-67 Hand brake switch

Brake line pressure differential warning switch

The warning, switch is located at left side of engine room. To replace warning switch, remove brake tubes and disconnect a lead wire at connector.

Then, remove a retaining bolt.

Installation is in the reverse sequence of removal.

Note: In installing warning switch, refer to Section BR for Instructions.

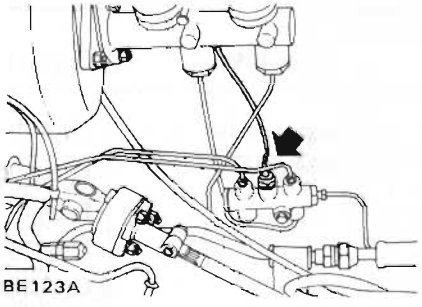


Fig. BE-68 Brake warning switch

INSPECTION

Check each switch for proper operation and test continuity of wiring system with ohmmeter or test lamp. Take care that each connection is correctly secured.

TROUBLE DIAGNOSES AND CORRECTIONS

SPEEDOMETER

Condition	Probable cause	Corrective action
Speedometer pointer and odometer do not operate.	Loose speedometer cable union nut.	Retighten.
	Broken speedometer cable.	Replace.
	Damaged speedometer drive pinion gear (Transmission side).	Replace.
	Faulty speedometer.	Replace.
Unstable speedometer pointer.	Improperly tightened or loose speedometer cable union nut.	Retighten.
	Faulty speedometer cable.	Replace.
	Faulty speedometer.	Replace.
Unusual sound occurs in when driving speed is increased.	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.

OIL PRESSURE GAUGE

Condition	Probable cause	Corrective action
Oil pressure meter does not operate.	Burnt fuse.	Correct cause and replace fuse.
	Faulty meter, voltage regulator.	Replace oil pressure meter.
	Faulty oil pressure gauge unit or loose terminal connection.	Replace gauge unit or correct terminal connection.
	Open circuit.	Repair or replace.
Meter indicates only maximum pressure	Faulty oil pressure gauge unit. (Meter pointer returns to original position when ignition switch is turned off).	Replace.
	Faulty oil pressure meter. (Meter pointer indicates maximum pressure even after ignition switch is turned off).	Replace.

WATER TEMPERATURE AND FUEL GAUGES

Condition	Probable cause	Corrective action
Both water temperature and fuel gauge do not operate.	Burnt fuse. Faulty gauge voltage regulator.	Correct cause and replace fuse. Replace water temperature gauge.
Both water temperature and fuel gauge indicate inaccurately.	Faulty gauge voltage regulator (Gauge pointer fluctuates excessively). Loose or poor connection (Gauge pointer fluctuates slightly).	Replace water temperature gauge. Correct connector contact.
Water temperature gauge Water temperature gauge does not operate.	Faulty thermal transmitter or loose terminal connection. (When thermal transmitter yellow/white wire is grounded, gauge pointer fluctuates). Faulty water temperature gauge. Open circuit.	Replace thermal transmitter or correct terminal connection. Replace water temperature gauge.
Meter indicates only maximum temperature.	Faulty termal transmitter. (Meter pointer returns to original position when ignition switch is turned off). Faulty water temperature gauge. (Meter pointer indicates maximum temperature even after ignition switch is turned off).	Replace thermal transmitter. Replace water temperature gauge.
Water temperature gauge does not operate accurately.	Faulty water temperature gauge. Loose or poor connection.	[Connect a 116Ω resistance between thermal transmitter yellow/white wire and ground. When meter indicates approximately 50°C (122°F), gauge is serviceable]. Correct connector terminal contact.
Fuel gauge Fuel gauge does not operate.	Faulty tank unit or loose unit terminal connection. (Pointer deflects when tank unit yellow wire is grounded.) Faulty fuel gauge. Open circuit.	Replace tank unit or correct terminal connection. Replace fuel gauge.
Pointer indicates only "F" position.	Faulty tank unit. (Pointer drops below "E" mark when ignition switch is turned off.) Faulty fuel gauge. (Pointer still indicates "F" position when ignition switch is turned off.)	Replace tank unit. Replace fuel gauge.
Fuel gauge does not operate accurately.	Faulty tank unit. (Pointer indicates a half level when a 32Ω resistance is connected between tank unit yellow wire and ground.) Faulty fuel gauge. Poor or loose connection.	Replace tank unit. Replace fuel gauge. Correct connector terminal contact.

ELECTRICAL ACCESSORY

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HEATER

DESCRIPTION

The heater unit combines heating and ventilating functions. It is located in the lower part of the instrument panel, to the front of the center console.

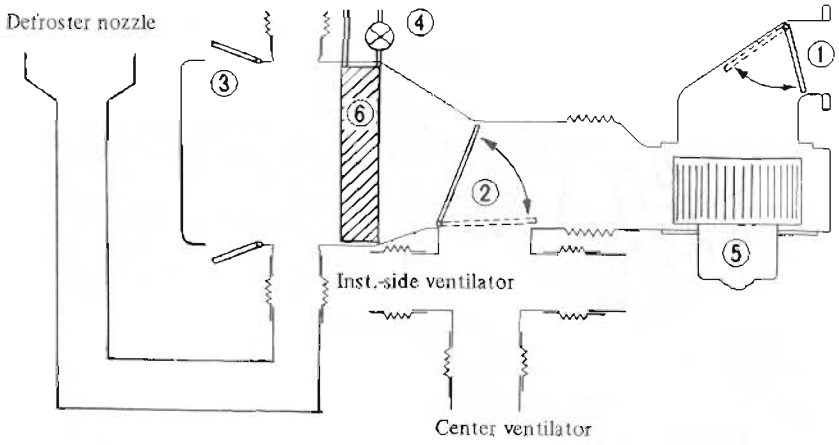
Outside air enters the cowl top grille by the blower through the air intake case. As air is passed through the heater core, heat is picked up from the core. When the air is not passed through the core, the heater unit serves as a ventilating unit.

The heater electrical system consists of fan motor, air-con relay, control illumination lamp, resistor and fan switch.

The fan switch controls the three speed fan motor through a resistor located in the fan unit.

A heater control illumination lamp is located behind the control finisher; its brightness is controlled by an illumination control resistor. Ventilation air duct hoses are installed behind the instrument panel.

AIR FLOW



1 Air intake door
2 Mode door
3 Floor door
4 Water cock
5 Fan
6 Heater core

BE124A

Fig. 1:I-69 Sectional view of heater

Air intake door

The air intake door controls the flow of outside air into the heater unit. Outside air is drawn from the cowl top grille. This door is controlled by AIR lever on heater control.

Mode door

The mode door controls air flowing through heater core and directs fresh cool air flowing from center ventilator and instrument side ventilator. This door is controlled by AIR lever.

Floor door

The floor door controls air flow discharged from heater unit. When the door is open, air is discharged to floor area with a small amount going to the defroster nozzle. When the door is closed, all air is discharged through the defroster nozzle.

AIR lever

The AIR lever controls air flow with the aid of air intake door, mode door and floor door. These three doors can be controlled with a lever. When the AIR lever is set in the VENT position, all air from the blower is discharged through the center and side vents. When the AIR lever is in the HEAT position, all air passes through the heater core and flows to the DEF nozzle and floor area.

TEMP lever

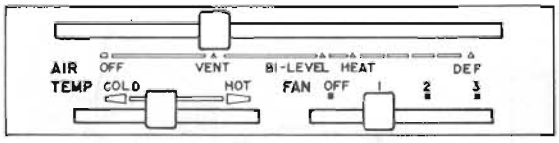
The TEMP lever controls the water cock. The water cock controls the water flowing into heater core and temperature of discharged air.

This heater cock, a flow control type, adequately controls the temperature of the discharged air according to the position of the TEMP lever.

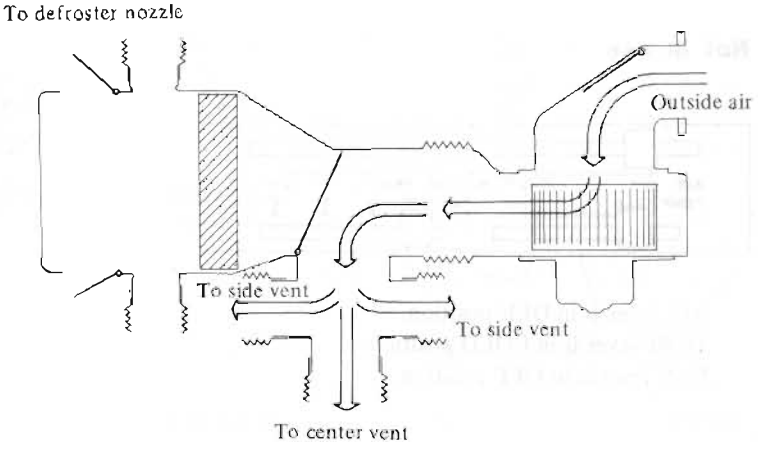
FAN lever

The FAN lever controls fan motor with aid of a resistor located in fan unit. The fan motor controls amount of discharged air.

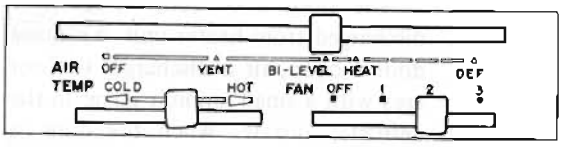
Ventilating



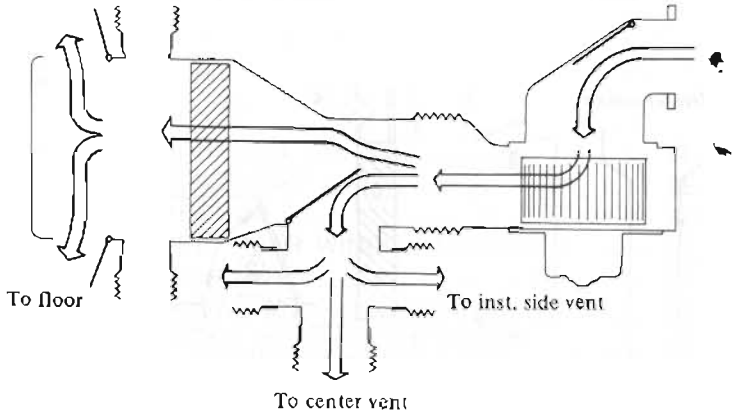
AIR lever is in VENT position. TEMP lever is in any position. Amount of discharged air is controlled by FAN lever. During high speed driving, FAN lever may be useless.



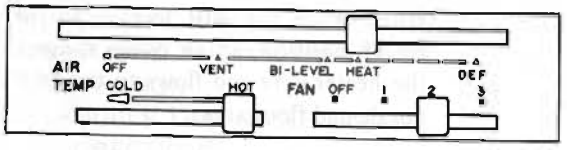
BI-LEVEL



AIR lever is in BI-LEVEL position. TEMP lever controls the temperature of heat air discharged to floor or defroster nozzle. FAN lever controls amount of air discharged.

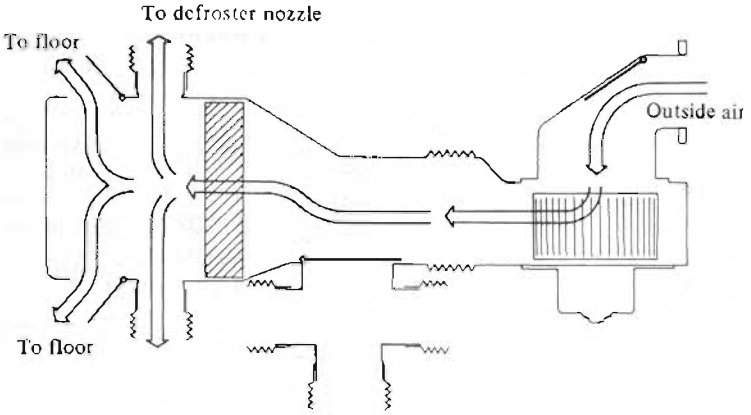


Heating

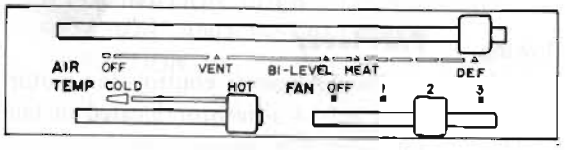


AIR lever is in HEAT position. TEMP lever controls temperature of discharged air.

FAN lever controls amount of air discharged.

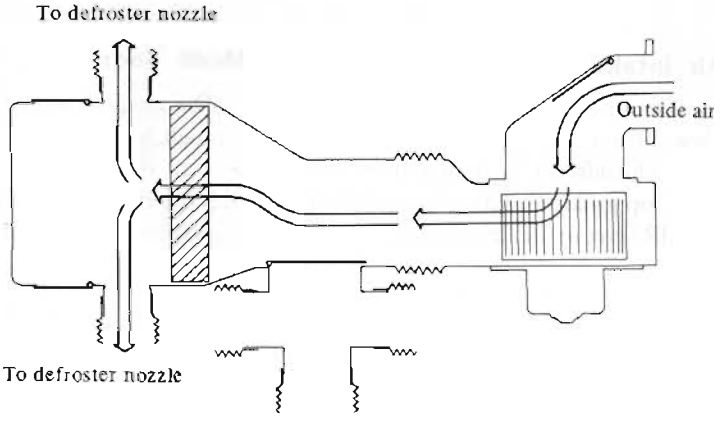


Defrosting

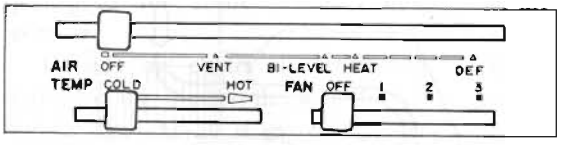


AIR lever is in DEF position. TEMP lever controls the temperature of discharged air.

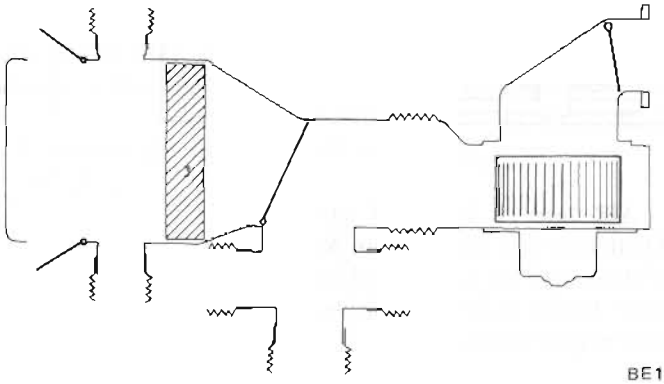
FAN lever controls amount of air discharged.



Not in use



AIR lever is in OFF position.
TEMP lever is in COLD position.
FAN lever is in OFF position.



BE125A

Fig. BE-70 Air flow

REMOVAL AND INSTALLATION

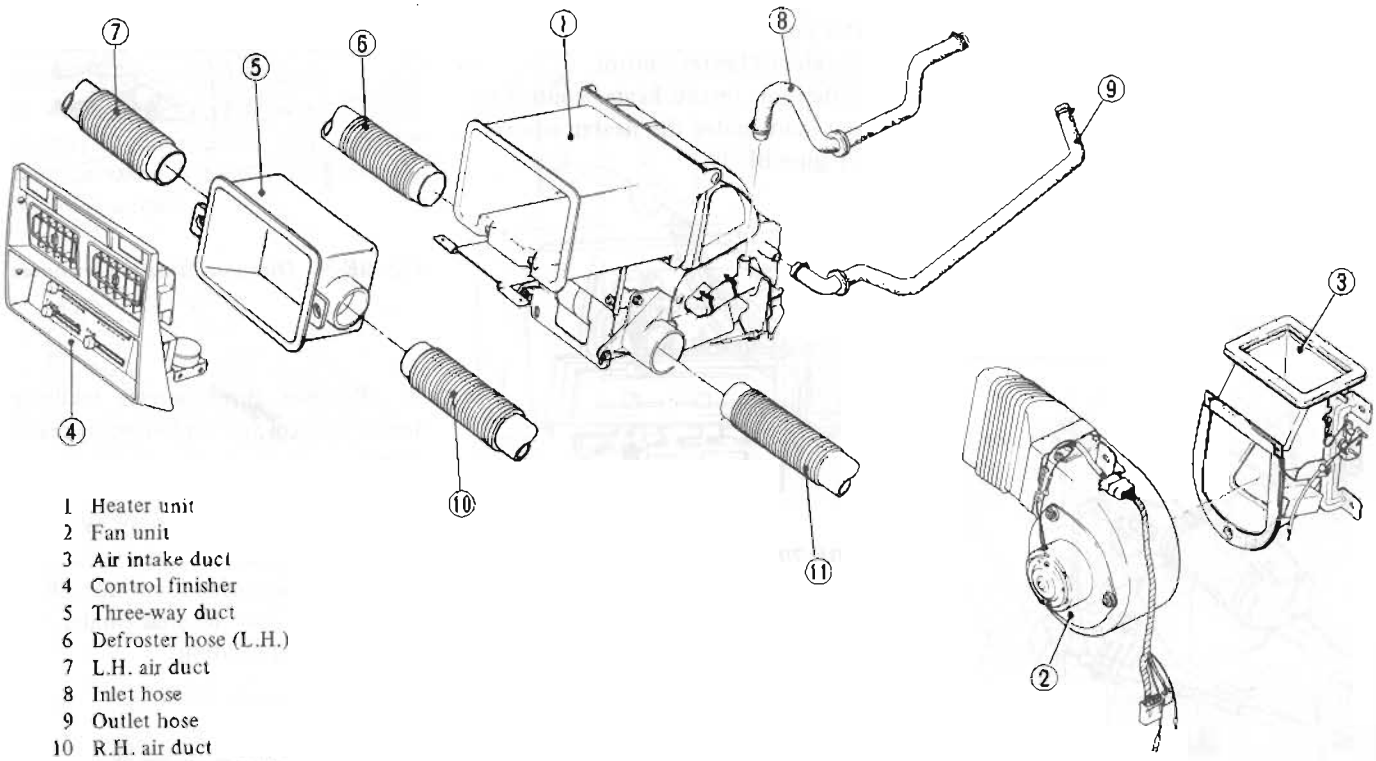


Fig. BE-71 Exploded view of heater

Heater control

1. Disconnect battery ground cable and drain engine coolant.
2. Remove console box referring to Section BF.
3. Remove four screws retaining finisher and take out by moving forward. Disconnect lead wires at two connectors and finisher can then be taken out easily.

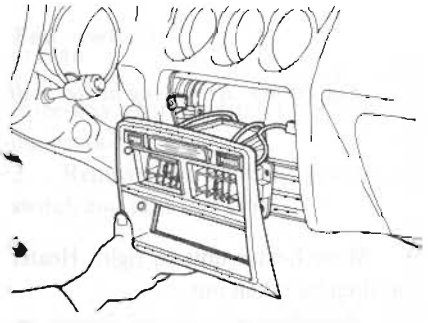


Fig. BE-72 Removing finisher

4. Remove six screws retaining three-way venti-duct to instrument panel. Then disconnect ventilator duct hose from three-way venti-duct and take out three-way unit duct.

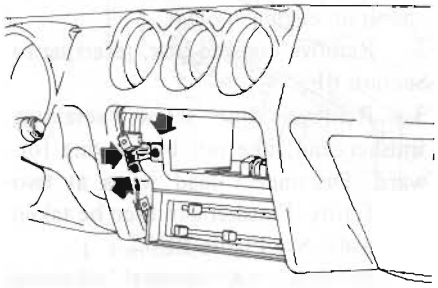


Fig. BE-73 Removing three-way venti-duct

5. Remove control cables at air intake duct, water cock, and floor and mode doors.

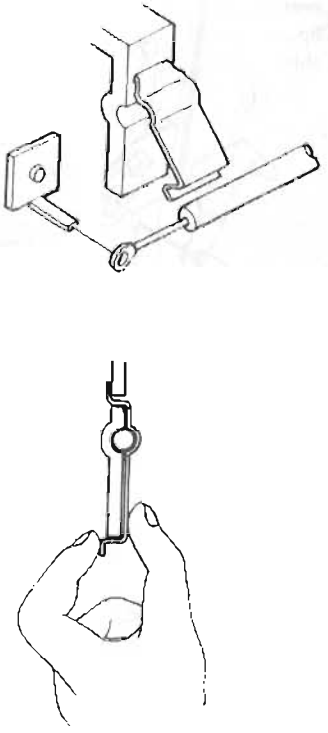


Fig. BE-74 Removing clips

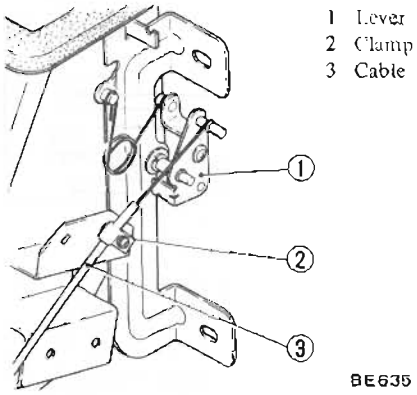


Fig. BE-75 Disconnecting intake door control cable

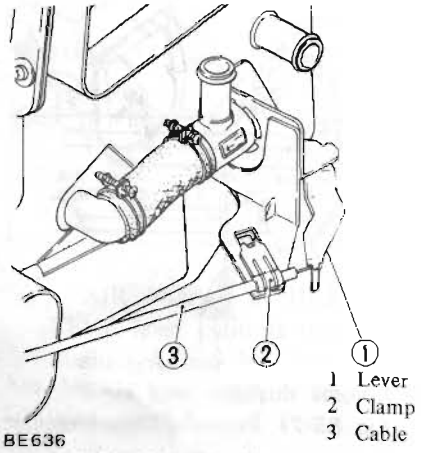


Fig. BE-76 Disconnecting heater cock control cable

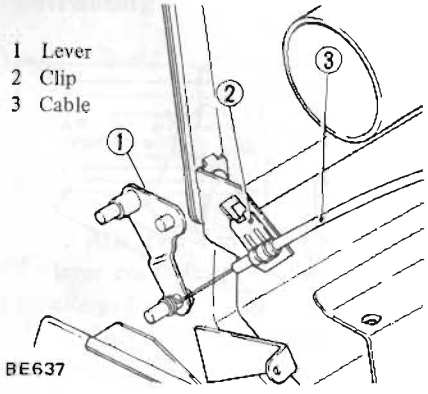


Fig. BE-77 Disconnecting mode door control cable

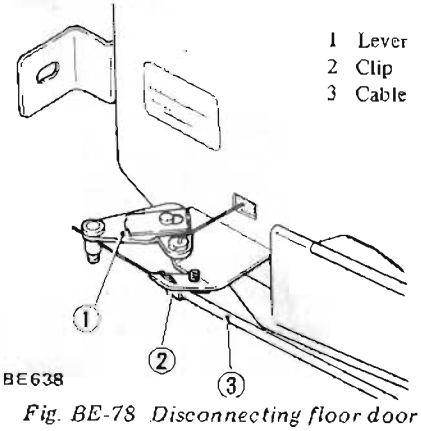


Fig. BE-78 Disconnecting floor door control cable

7. Remove three screws retaining heater control to instrument panel and to heater unit. Two of them retain heater control to instrument panel on both sides of heater control.

Other one retains heater control to heater unit under the heater control. See Figure BE-79.

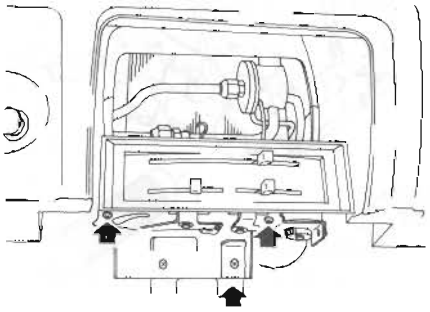


Fig. BE-79 Removing retaining screws

8. Disconnect lead wires from heater control to heater sub-harness at two connectors. Heater control can then be removed from heater unit.

9. Installation is in the reverse sequence of removal. Refer to following Section "Adjustment".

Note: When installing control assembly, be careful not to twist or bend control cables.

Heater unit

1. Disconnect battery ground cable and drain engine coolant.
2. Remove console box, referring to Section BF.
3. Remove four screws retaining finisher and take out by moving forward. Disconnect lead wires at two connectors. Finisher can then be taken out easily. See Figure BE-72.
4. Remove six screws retaining three-way venti-duct to instrument panel. Then disconnect ventilator duct hose from three-way venti-duct and take out three-way venti-duct. See Figure BE-73.
5. Remove heater control as previously described.
6. Disconnect defroster ducts from heater unit and disconnect two heater hoses on right side of heater unit by removing clamps.

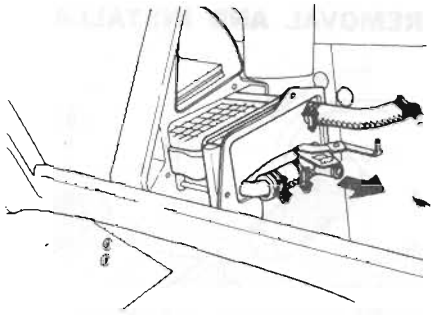
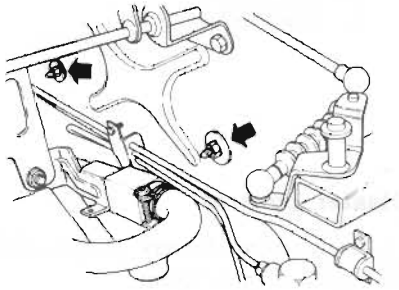
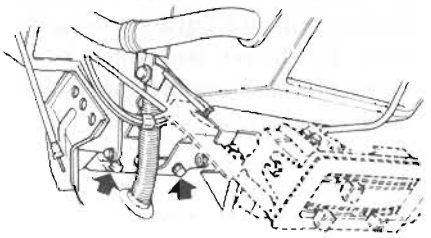


Fig. BE-80 Disconnecting heater hoses

7. Remove three screws retaining heater control and venti-duct to heater unit.
8. Remove two nuts and two screws retaining heater unit to body panel.

Two nuts and two screws can be removed from engine room side. Other two screws are located under the heater control location.





BE127A

Fig. BE-81 Removing heater unit

9. Move heater unit to right. Heater can then be taken out.
10. Installation is in the reverse sequence of removal. Refer to following section "Adjustment".

Fan unit

1. Disconnect battery ground cable.
2. Disconnect control cable for air intake box by removing clamp at air intake duct. See Figure BE-75.
3. Disconnect lead wires for fan and resistor at connectors. Fan unit can then be taken out easily by removing retaining screws.

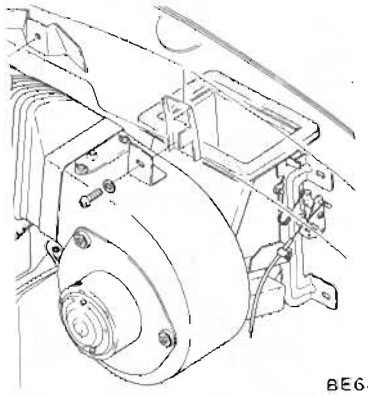
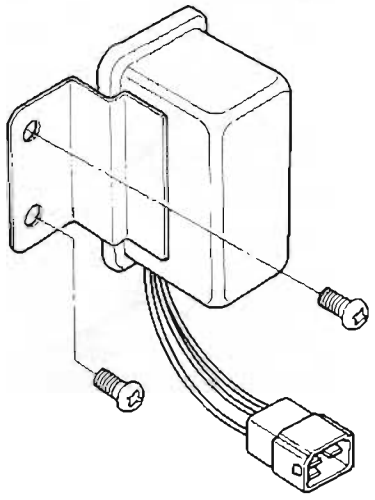
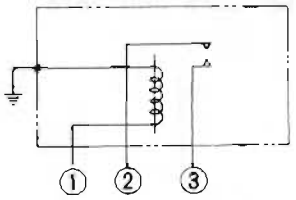
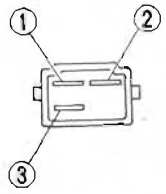


Fig. BE-82 Removing fan unit







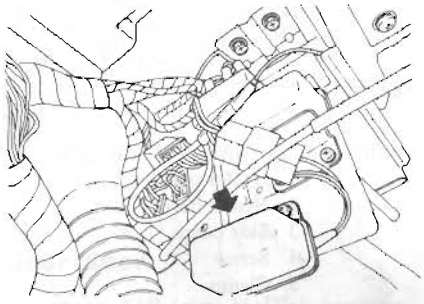


Fig. BE-83 Air con relay

4. Installation is in the reverse sequence of removal.

Air-con relay

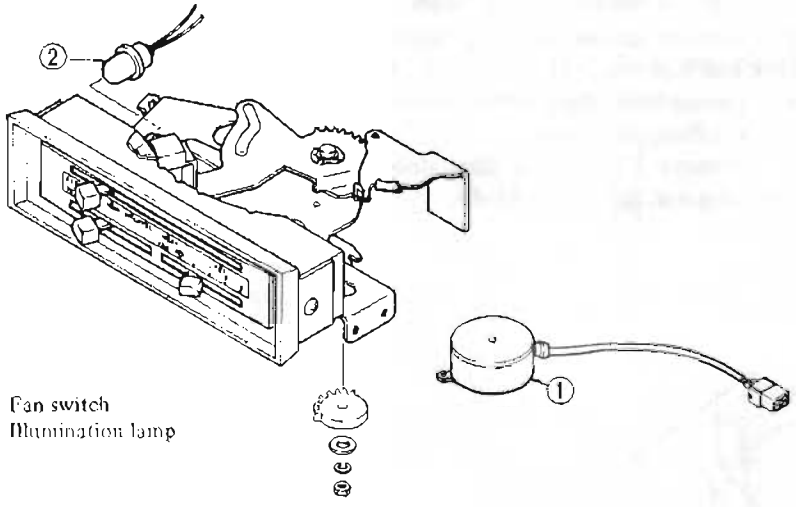
The air-con relay is located on relay bracket.

1. Disconnect battery ground cable.
2. Disconnect lead wires from relay at a connector.
3. Remove two screws retaining relay to relay bracket. Relay can then be taken out.
4. Installation is in the reverse sequence of removal.

DISASSEMBLY AND ASSEMBLY

Fan switch

1. Remove heater control with three-way venti-duct referring to previous section.
2. Remove nut securing gear to fan switch and take out gear.
3. Remove two screws retaining fan switch to heater control. Fan switch can then be taken out easily.
4. Assembly is in the reverse sequence of disassembly.



1 Fan switch
2 Illumination lamp

Fig. BE-84 Disassembling fan switch

Heater cock and core

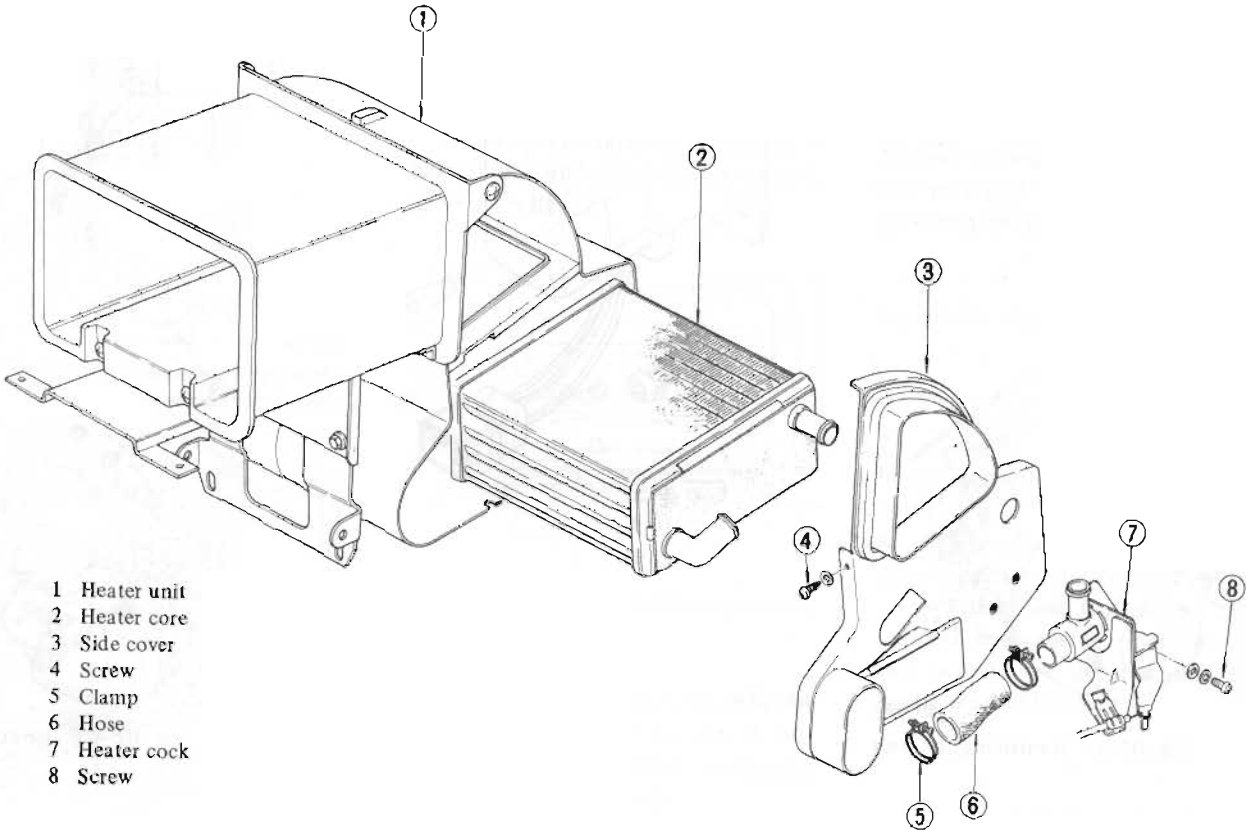


Fig. BE-85 Removing heater cock and core

1. Remove heater unit referring to previous section.
2. Loosen hose clamp on heater cock side.
3. Remove screws retaining heater cock and then remove heater cock.
4. Loosen hose clamp on heater core side and disconnect hose.
5. Remove E-ring from floor door operating rod. See Figure BE-86.
6. Remove five screws and detach side cover. Pull out heater core.

Note: Be sure to detach heater core with floor door opened.

Failure to do so may scratch heater core.

7. Assembly is in the reverse sequence of removal.

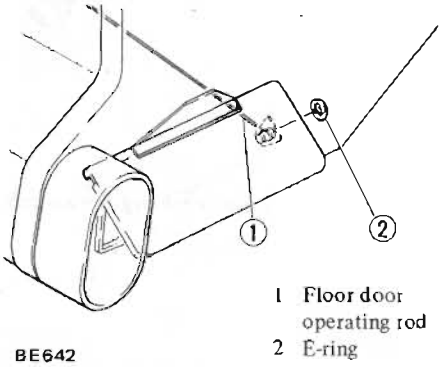


Fig. BE-86 Removing E-ring

Fan unit

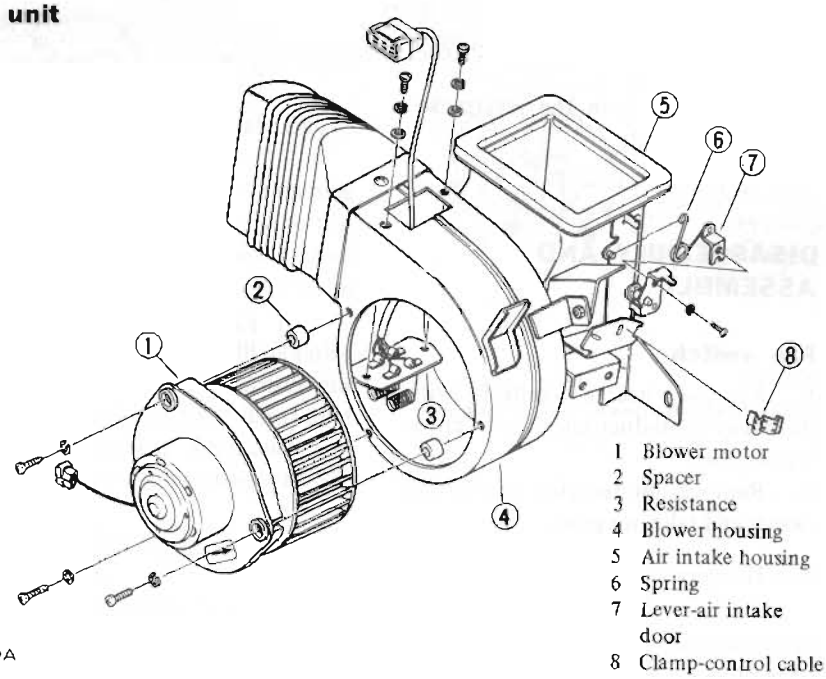


Fig. BE-87 Disassembling fan unit

1. Remove fan unit, referring to previous section.
2. Remove screw retaining air intake duct hose to blower housing and take out duct hose.
3. Remove three screws retaining fan motor to blower housing. Fan motor can then be taken out.
4. Remove two screws retaining resistor to blower housing. Resistor with harness can then be taken out through the hole in which fan motor is installed.
5. Remove four screws retaining intake duct to blower housing. Intake duct can then be taken out.
6. Assembly is in the reverse sequence of disassembly.

HEATER ILLUMINATION BULB REPLACEMENT

three-way venti-duct, referring to previous section.
2. Take out socket with bulb from behind heater control and remove bulb from socket.
3. Install new bulb and then assemble in the reverse sequence of removal. See Figure BE-84.

Bulb wattage:
Heater control
illumination bulb 3.4W

ADJUSTMENT

When a new or reconditioned heater unit is installed, observe the following.

Notes:
a. Make sure that cables are neither twisted nor excessively bent.
b. Be careful not to bend wires when inserting into pin.
c. Be sure to secure cable outer after it is pushed toward heater control.
d. Tighten clamps and clips securely and make sure that control lever functions properly.

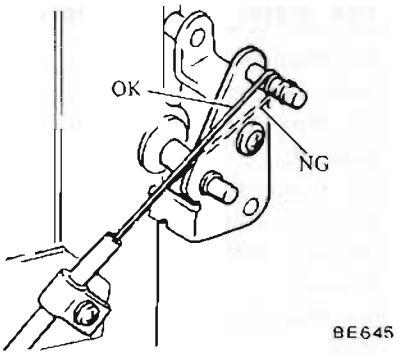
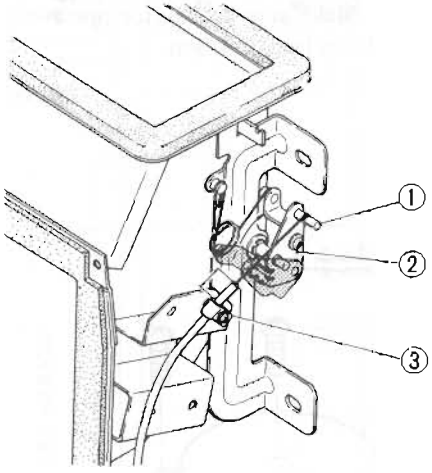


Fig. BE-88 Inserting wire into pin

Air intake door

1. Set AIR lever in OFF position.
2. Close air intake door and fasten cable outer with clamp.

Note: Make sure that the tip end of cable outer is not exposed beyond 10 mm (0.394 in) at clamp location.



1 Pin
2 AIR intake door lever
3 Clamp

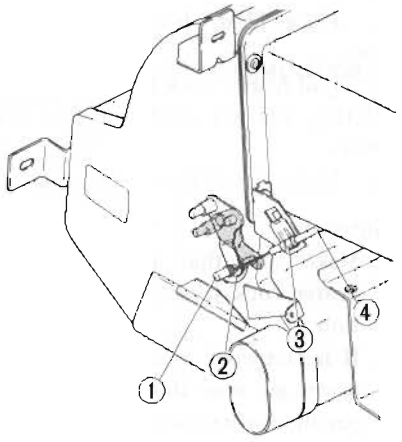
BE131A

Fig. BE-89 Adjusting air intake door

Mode door

1. Place AIR lever in HEAT position.
2. With mode door lever moved toward the dash panel side, fasten outer cable with clip.

Note: Make sure that air vent lever and mode door lever are in HEAT position.



1 Pin
2 Mode door lever
3 Clip
4 Cable

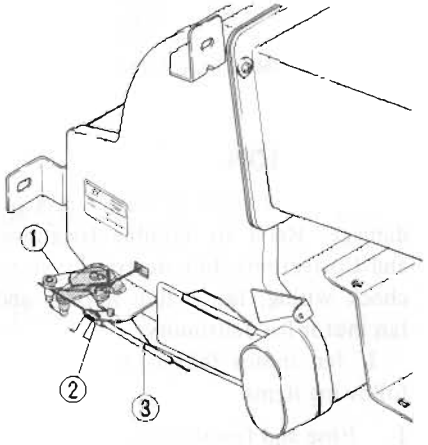
BE132A

Fig. BE-90 Adjusting mode door

Floor door

1. Place AIR lever in DEF position.
2. Move floor door lever to DEF position, and set lead wire at door lever.
3. Fasten cable outer with clamp with the tip end of the cable outer exposed 2 mm (0.118 in) beyond clamp.

Notes:
a. Make sure that AIR lever and floor door lever are moved to DEF position.
b. Make sure that doors are closed when connecting cables.



1 Floor door lever
2 Clamp
3 Cable

BE133A

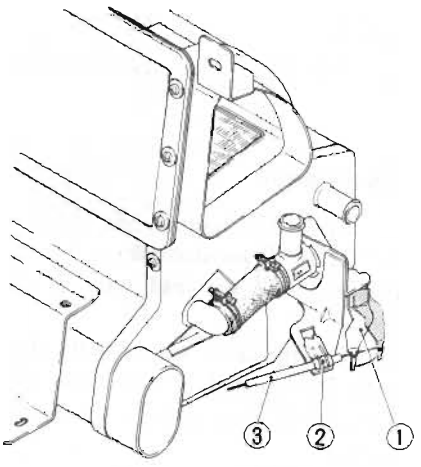
Fig. BE-91 Adjusting floor door

Heater cock

1. Place TEMP lever in HOT position.
2. Pull heater cock lever toward you (HOT), and set cable wire at cock lever.
3. Fasten cable outer with clip.

Notes:

a. Make sure that TEMP lever and heater cock lever are in HOT position.
b. If heater cock is not set properly, warm air may flow into the compartment when not desired.



1 Heater cock lever
2 Clip
3 Cable

BE134A

Fig. BE-92 Adjusting heater cock

INSPECTION

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

Fan motor power supply

1. Disconnect lead wires at connector.
2. Move ignition switch to ON position.
3. Connect test lamp lead wire to green wire terminal in connector plug on dash harness side and other to ground.
4. Make sure test lamp comes on.

Fan motor

1. Disconnect lead wires at connector.
2. Move ignition switch to ON position.
3. Connect test lead to positive side of fuse block power supply and other to terminal in connector plug on fan motor side. Another terminal for fan motor, must be connected to earth (body earth).
4. Make sure fan motor operates at each fan lever position.

Air-con relay

Test continuity through the relay with ohmmeter or test lamp. There must be continuity between ① - relay body. When 12V direct current is given to ① - relay body, there must be continuity between ② - ③. Refer to Figure BE-83.

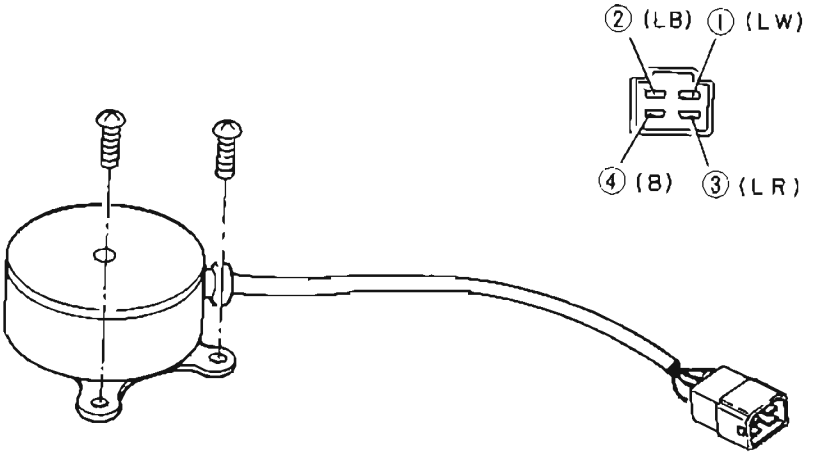
Fan switch

Test continuity through the switch at each step with test lamp or ohmmeter.

Refer to following continuity diagram for fan switch.

Wiring system

Test system continuity with ohmmeter or test lamp. Refer to following wiring diagram for heater and illumination lamp.



	OFF	LOW	Mea	Hi
1				○
2			○	
3		○		○
4		○	○	○

BE135A

Fig. BE-93 Fan switch

Heater illumination

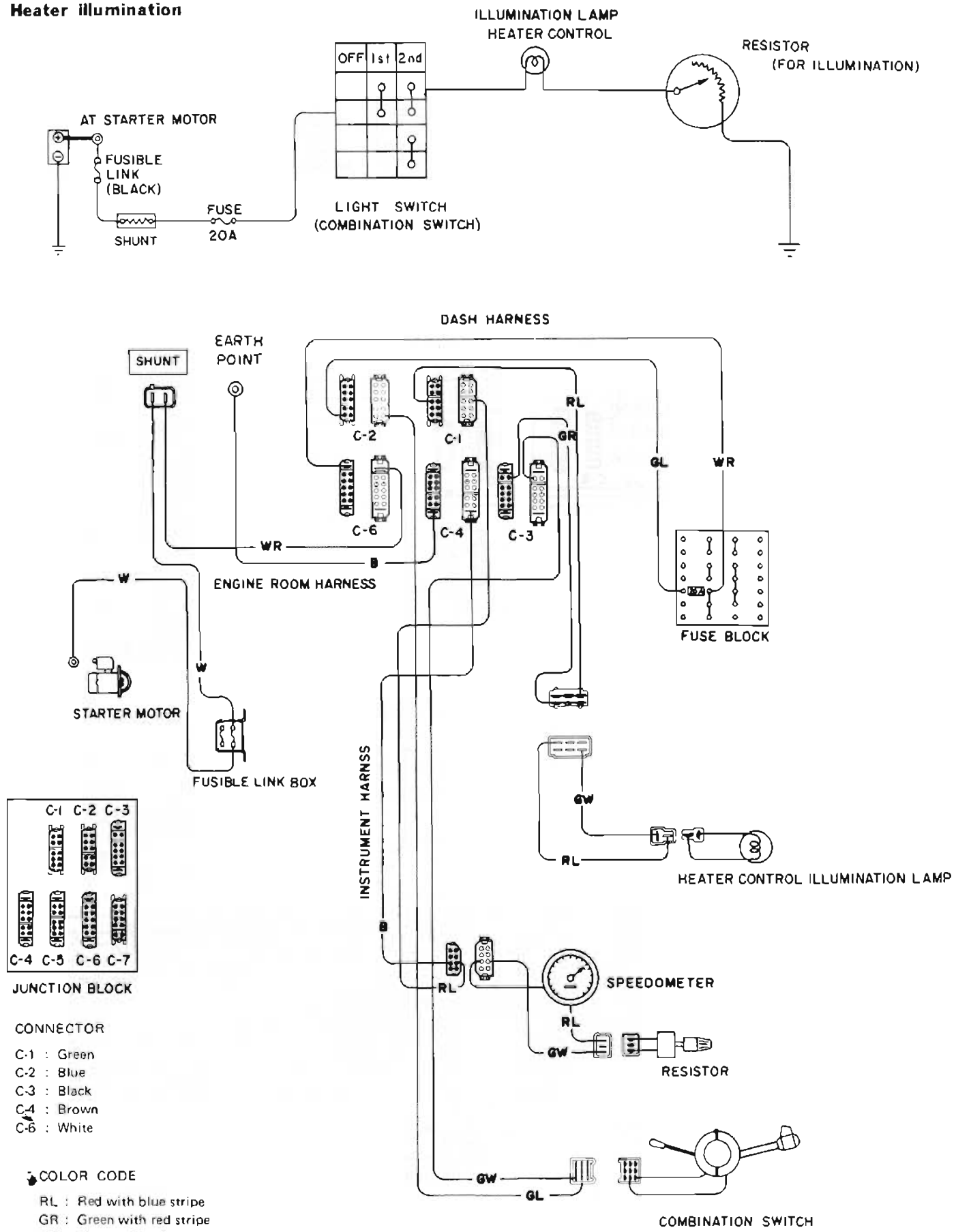
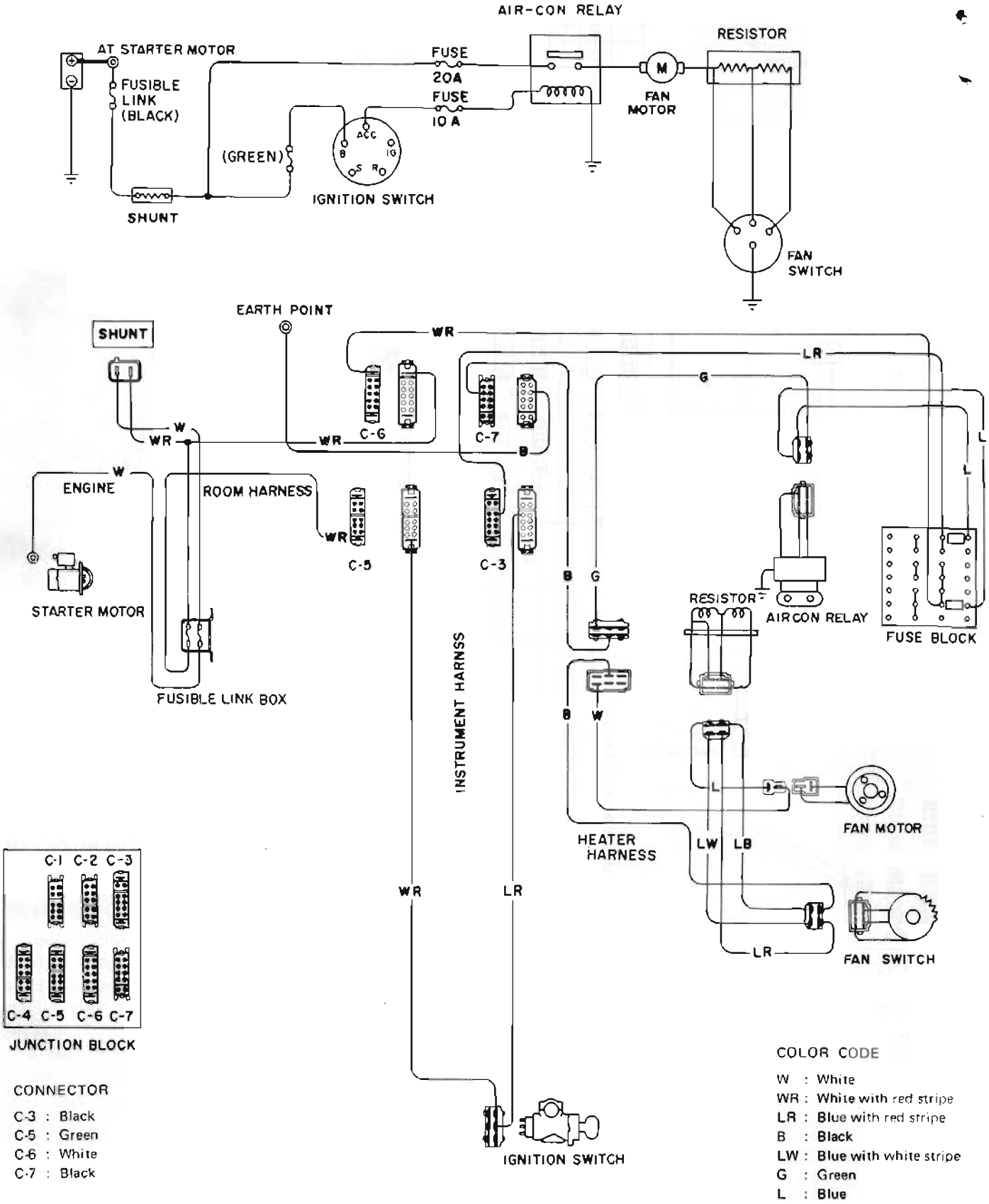


Fig. BE-94 Circuit diagram for heater illumination

Heater



CONNECTOR

C-3 : Black
C-5 : Green
C-6 : White
C-7 : Black

COLOR CODE

W : White
WR : White with red stripe
LR : Blue with red stripe
B : Black
LW : Blue with white stripe
G : Green
L : Blue

BE137A

Fig. BE 95 Circuit diagram for heater

TROUBLE DIAGNOSES AND CORRECTIONS

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.
	Water cock not operating properly.	Adjust control cable.
	Mode door not operating properly.	Adjust control cable.
Insufficient air flow to floor.	Fan motor speed too low.	Check motor terminal voltage. Repair poor connection and discontinuity. Replace motor if necessary.
	Floor door and mode door not operating properly.	Adjust control cable.
Insufficient defrosting performance.		
Cold air discharged.	Refer to "No heated air discharged".	
Insufficient air flow to defroster.	Floor door and mode door not operating properly (or seal damaged).	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.
Failure of fan to run.	Fuse melted.	Replace.
	Motor wire connector disconnected.	Correct.
	Switch damaged.	Replace.
	Motor damaged.	Check and correct.
Control lever drags.	Inner wire rubbing against outer case end.	Adjust control cable.
	Control cable bent excessively.	Correct.
	Doors, door levers, etc. not operating properly.	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 fan motor.	Unusual noise from fan motor.	Check and tighten loose bolts.

HORN

DESCRIPTION

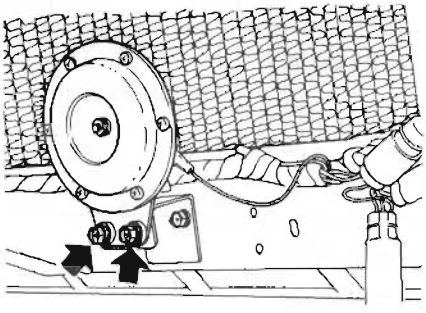
The horn electrical system consists of horn switch, horn relay, two horns and lead wire connecting these parts to each other. Horn is dual type, one low tone and other high tone. They can be distinguished by the letter L or R printed on their body. Horn relay is installed on relay bracket.

REMOVAL AND INSTALLATION

Horn

A pair of horns are installed in front of radiator.

1. Disconnect horn lead wire at connector.
2. Remove two screws retaining horn to bracket.
3. Installation is in the reverse sequence of removal.



BE138A

Fig. BE-96 Removing horn

Horn switch

The horn switch is an integral part of steering column.

The combination switch has a lead wire for horn, so refer to Figure BE-35 for combination switch.

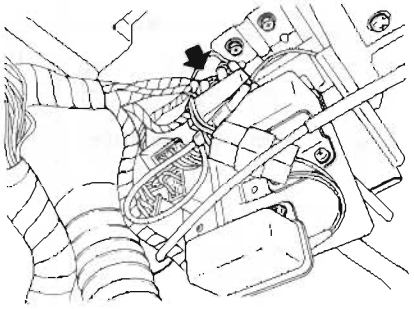
Horn relay

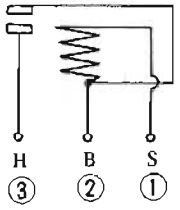
The horn relay is installed on relay bracket.

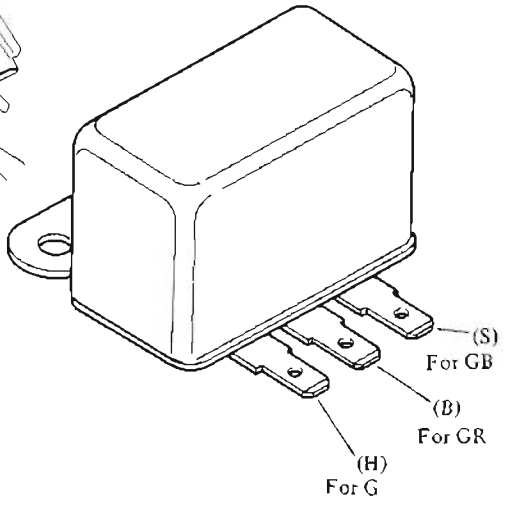
1. Disconnect battery ground cable.
2. Disconnect three lead wires for horn relay at connectors.
3. Remove screw retaining horn relay to relay bracket. Horn relay can then be taken out.
4. Installation is in the reverse sequence of removal.

INSPECTION

Test system continuity and each unit with test lamp or ohmmeter. Refer to Figure BE-97 for horn relay and BE-98 for horn system. In testing horn relay, there must be continuity between ①-②. When 12V direct current is given to ①-②, there must be continuity between ①-③.







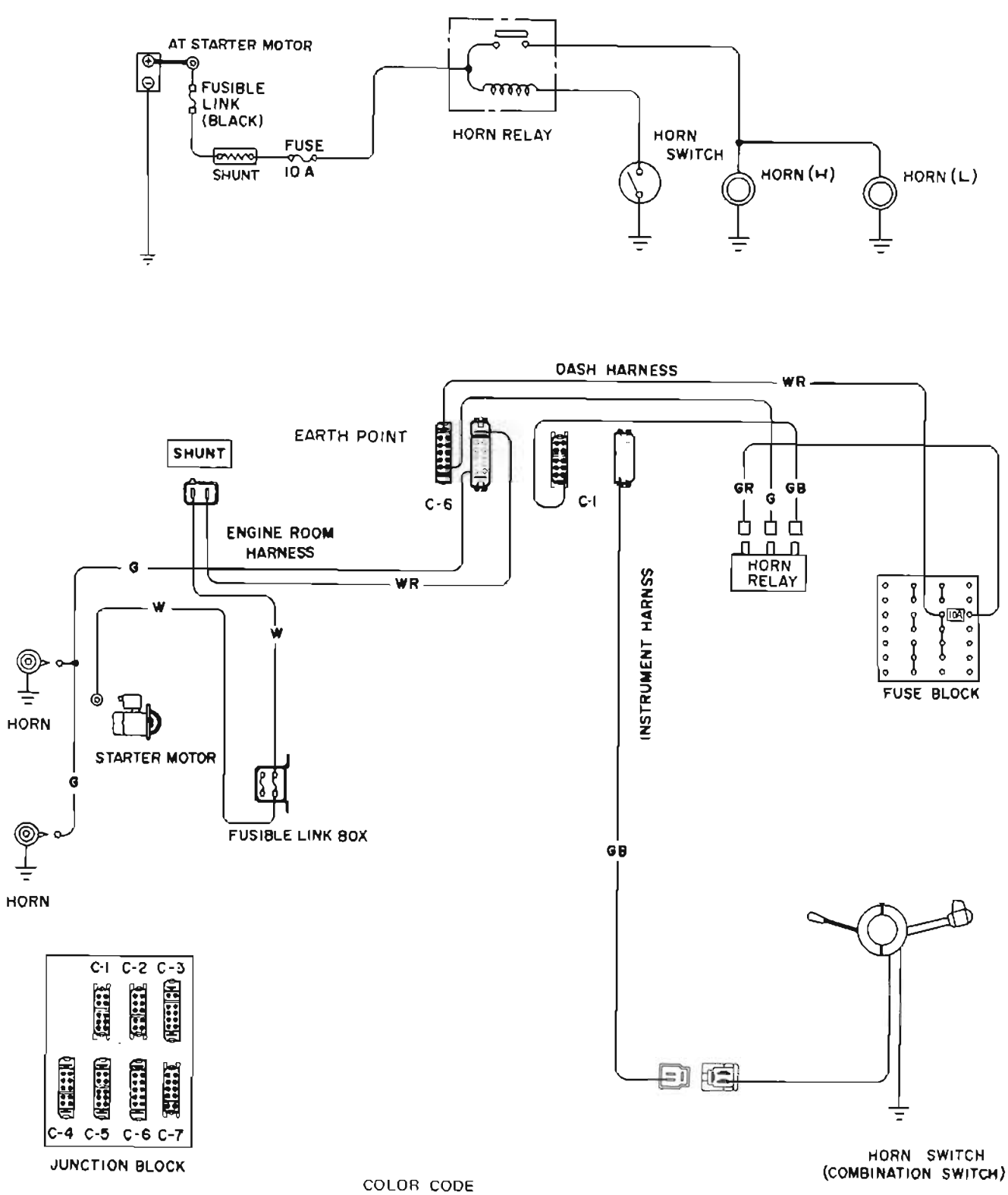
BE139A

Fig. BE-97 Horn relay

TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Horn does not operate.	Discharged battery. (Measure specific gravity of electrolyte.)	Recharge or replace battery.
	Burnt fuse.	Correct cause and replace fuse.
	Faulty horn button contact. [Horn sounds when horn relay terminal(1) is grounded.]	Repair horn button.
	Faulty horn relay. [Horn sounds when ② and ③ horn relay terminals are connected with a test lead.]	Replace horn relay.
	Faulty horn or loose horn terminal connection.	Correct horn terminal connection or replace horn.
Horn sounds continuously.	Short-circuited horn button and/or horn button lead wire. [When black lead wire is disconnected from horn relay terminal①, horn stops sounding.]	Repair horn button or its wiring.
	Faulty horn relay.	Replace horn relay.
Reduced volume and/or tone quality.	Loose or poor connector contact. (Fuse, relay, horn and/or horn button.)	Repair.
	Faulty horn.	Replace.

Horn



CONNECTOR

C-1 : Green
C-6 : White

COLOR CODE

W : White
WR : White with red stripe
G : Green
GB : Green with black stripe
GR : Green with red stripe

BE140A

Fig. BE-98 Circuit diagram for horn

WINDSHIELD WIPER AND WASHER

DESCRIPTION

The windshield wiper and washer system consists of wiper motor, wiper link and arm, washer nozzle, washer tank, washer motor, intermittent amplifier and wiper switch. The wiper switch is an integral part of combination switch. Washer motor operates when the knob at the top end of combination switch lever is pressed into the lever. The wiper system is also has an intermittent amplifier.

This wiper system is equipped with a rise-up mechanism. Wiper motor revolves reversely for one turn at the end of use with the aid of relay. Then, wiper linkage varies in length and stops wiper blades at lower position than normal wiping area.

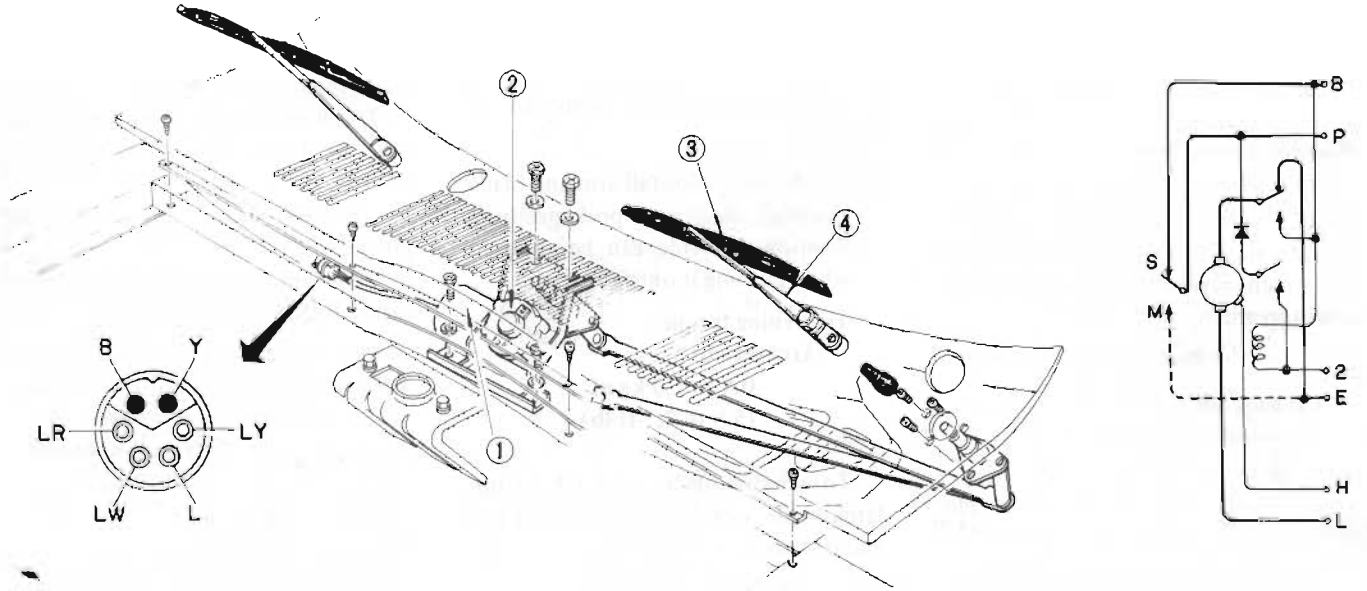
Both the wiper motor and the intermittent amplifier have contacts. Refer to Figure BE-110. The motor contacts are controlled by the wiper switch, while amplifier contacts are controlled by an integrated circuit in the amplifier, that is, electric current flowing through the coil (RL) is not powerful enough to switch the contacts in the amplifier.

When the condenser (C_2) is charged with electric current flowing through the coil (RL), however, the transistors (Tr_1 and Tr_2) switch on and electric current increases. The contacts are then changed.

Amplifier contacts are for by-passing the auto-stop mechanism in the wiper motor. Consequently, when the amplifier contacts change, the motor begins to rotate. The condenser (C_2) discharges electric current as the wiper link rotates one turn and the contacts revert to their original position. Wiper motor then stops with the aid of the auto-stop mechanism.

When the condenser is re-charged, the motor starts again. Wiper motor contacts are for changing rotating direction; normal rotation or reverse rotation. When the wiper switch is turned off, the motor contacts change. Consequently as soon as the switch is turned off, the motor begins to rotate reversely and stops. If a washer is in use, condensers (C_1 and C_2) are charged with electric current through washer motor circuit and change contacts in amplifier; wiper motor thus rotates without auto-stop mechanism.

If washer motor is stopped, condensers (C_1 and C_2) begin to discharge electric current. The amplifier contacts revert back to their original positions and the wiper motor stops with the aid of auto-stop mechanism.



COLOR CODE

- L ..... Blue
- Y ..... Yellow
- B ..... Black
- R ..... Red
- W ..... White
- G ..... Green

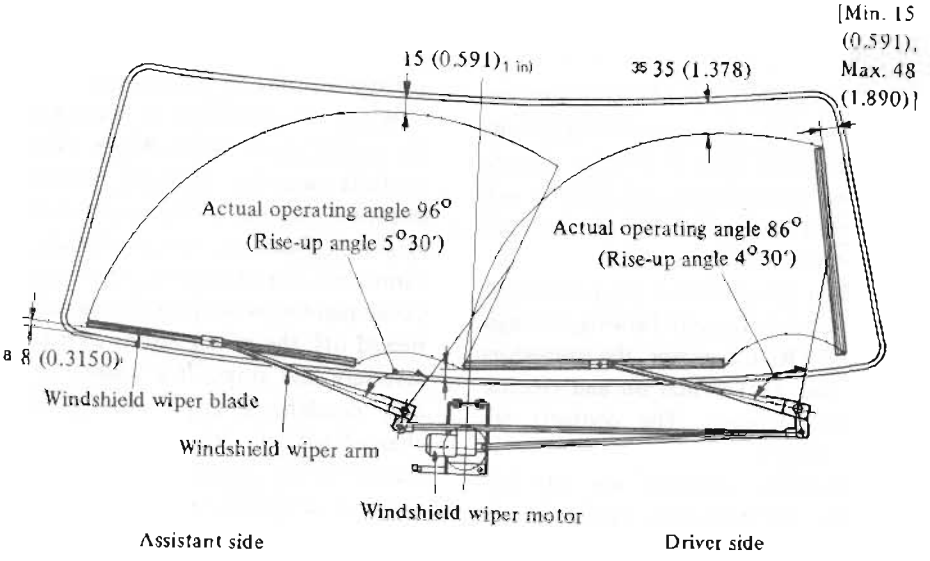
1 Windshield wiper motor assembly
2 Auto-stop mechanism
3 Windshield wiper blade
4 Windshield wiper arm

BE141A

Fig. BE-99 Windshield wiper and washer system

ADJUSTMENT

Wiping area



Unit: mm (in)

BE142A

Fig. BE-100 Wiping area

To adjust wiping area, loosen arm set nut and adjust blade to correct installation angle to obtain correct sweeping zone as sketched in figure above.

Then, secure nut at specified tightening torque.

Tightening torque:
Wiper blade arm lock nut:
0.8 to 1.0 kg-m
(5.8 to 7.2 ft-lb)

Nozzle direction

Adjust nozzle direction so that fluid is sprayed in proper range by bending nozzle with screwdriver. This adjustment can be carried out through cowl top grille.

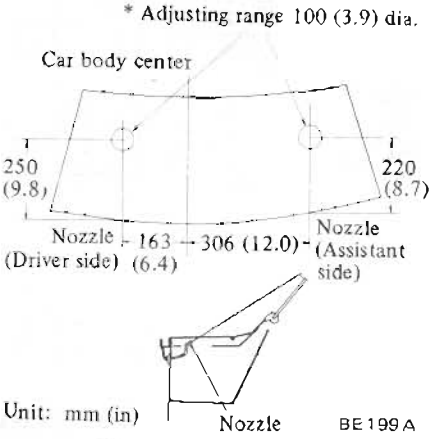


Fig. BE-101 Nozzle direction

REMOVAL AND INSTALLATION

Wiper arm and wiper blade

Remove arm and blade assembly from pivot in this sequence.

1. Raise wiper blade from windshield glass.
2. Unscrew arm set nut. Arm can then be pulled off pivot.
3. Install in reverse sequence of removal.

Note: Be sure to install arm and blade assembly in correct peak position. Position of blade can be adjusted when pushing it onto pivot.

Tightening torque:
Arm set nut:
0.8 to 1.0 kg-m
(5.8 to 7.2 ft-lb)

To remove blade, raise tab to unlatch blade lock and pull blade off top end of arm.

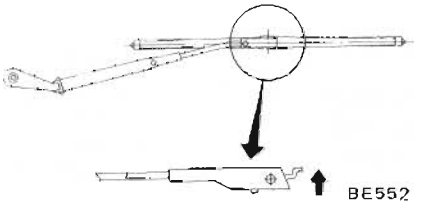
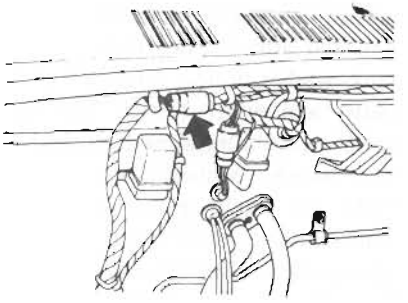


Fig. BE-102 Removing wiper blade

Wiper motor and linkage

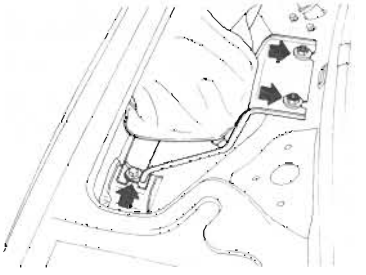
1. Remove wiper arm referring to previous section.
2. Open hood, and disconnect wiper motor connector.



BE143A

Fig. BE-103 Connector for wiper motor

3. Remove cowl top grille by removing cowl top retaining screws.



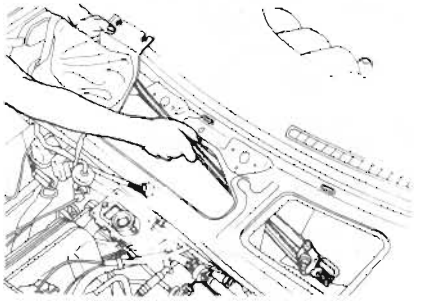
BE144A

Fig. BE-104 Wiper motor

4. Remove four screws retaining wiper motor bracket.

The bracket with wiper motor can then be taken out. Refer to Figure BE-104.

5. Remove three screws retaining pivot.
6. The linkage can then be taken out easily. Refer to Figure BE-105.

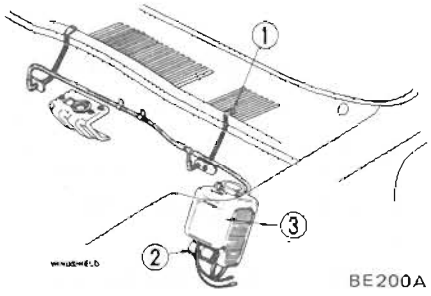


BE145A

Fig. BE-105 Removing link assembly

Washer nozzle

1. Remove washer nozzle fixing screws from cowl top panel.
2. Take out washer nozzle with tube.
3. Install in reverse sequence of removal.



1 Nozzle
2 Windshield washer motor
3 Windshield washer tank

Fig. BE-106 Washer nozzle

Washer pump and tank

The washer pump is installed at bottom of washer tank.

1. Remove washer tank with washer motor from tank bracket in engine room.
2. Disconnect two washer pump lead wires at connectors.
3. Remove hoses from washer pump and drain washer fluid.
4. Separate washer pump from washer tank.
5. Install washer tank and motor assembly in reverse sequence of removal.

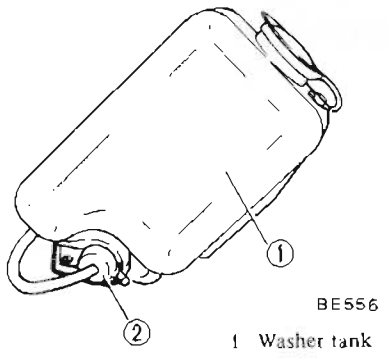
Note: In assembling washer motor and washer tank, it is recommended that soapy water be used to facilitate the operation.

Caution for windshield washer operation

1. Be sure to use only washing solution.

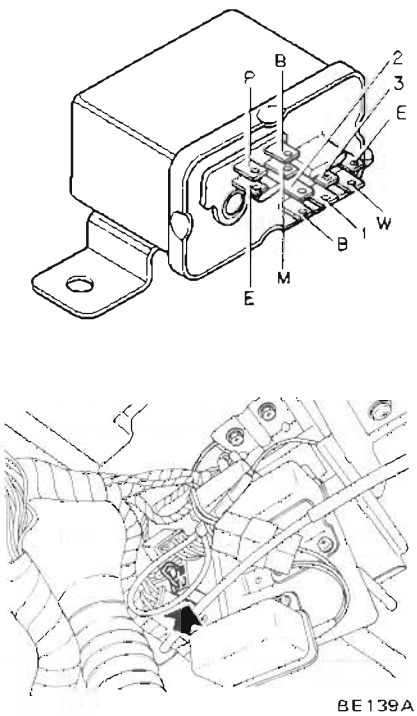
Never mix soap powder or detergent with solution.

2. Do not operate windshield washer continuously for more than 30 seconds or without washer fluid. This often causes improper windshield washer operation. Normally, windshield washer should be operated 10 seconds or less at one time.



1 Washer tank
2 Washer pump

Fig. BE-107 Washer pump and tank



Wiper switch

Wiper switch and washer switch are integral parts of combination switch, so, refer to page BE-26 for Removal of Combination Switch.

Intermitter wiper relay

The intermittent wiper relay is installed on relay bracket.

1. Disconnect two connectors for intermittent wiper relay.
2. Remove intermittent wiper relay retaining screws.

Then, intermittent wiper relay can be taken out of bracket.

3. Installation is in the reverse sequence of removal.

INSPECTION

Check operation of each part of wiper system and test continuity of system with ohmmeter or test lamp.

For electrical wiring, refer to Figures BE-109 and BE-110 windshield wiper circuit diagram.

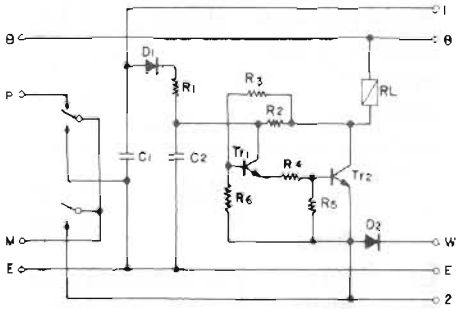


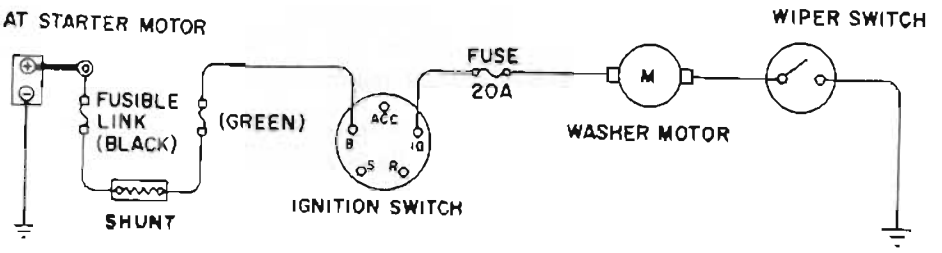
Fig. BE-108 Intermitter wiper relay

TROUBLE DIAGNOSES AND CORRECTIONS

Condition		Probable cause		Corrective action
Windshield wiper does not operate.		Motor	No current flows to motor due to:	
			Broken armature.	Replace motor.
			Worn motor brush.	Replace motor.
			Motor is overheated due to seized motor shaft.	Replace motor.
			Windshield wiper fuse (10A) is easily fused due to short-circuit, rate short-circuit, or inside motor component burnt.	Replace motor or repair short-circuited part.
		Power supply and cable	Blown fuse due to problem in other part of windshield wiper circuit.	Check other part for operation and correct problem.
			Loose, open or broken wiring.	Check wiring near motor and connector for proper connection. Correct if necessary.
			Erroneous wiring.	Check each wire for color code, and correct if necessary.
			Improper grounding.	Correct.
		Switch	Improper switch contact.	Correct.
		Link	Foreign materials interrupt movement of windshield wiper circuit.	Correct.
			Disconnected link rod.	Correct.
			Seized or rusted arm shaft.	Lubricate or replace arm shaft.
		Windshield wiper blade	Windshield wiper blade sticks on windshield glass.	Raise arm and operate windshield wiper without applying load. Clean windshield glass and/or replace wiper blade.
Windshield wiper speed cannot be adjusted correctly.		Motor	Low or high speed motor brush 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.
		Cable and switch	Improper connection between 1st and 2nd switch steps.	Remove switch, and make sure that 1st and 2nd steps are not connected at "OFF" position. If connected, replace switch.
	Does not stop.	Motor	Incomplete auto-stop operation (Contact is not interrupted.).	Remove auto-stop device cover, and correct relay plate bending.

Condition	Probable cause		Corrective action
Windshield wiper operating speed is too slow.	Motor	With arm raised, excessive current still flows due to rare short-circuit of motor armature.	Replace motor.
		Windshield wiper stops when lightly held with hand due to worn motor brush.	Replace motor.
		With arm raised, excessive current still flows (3 to 5A) due to 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



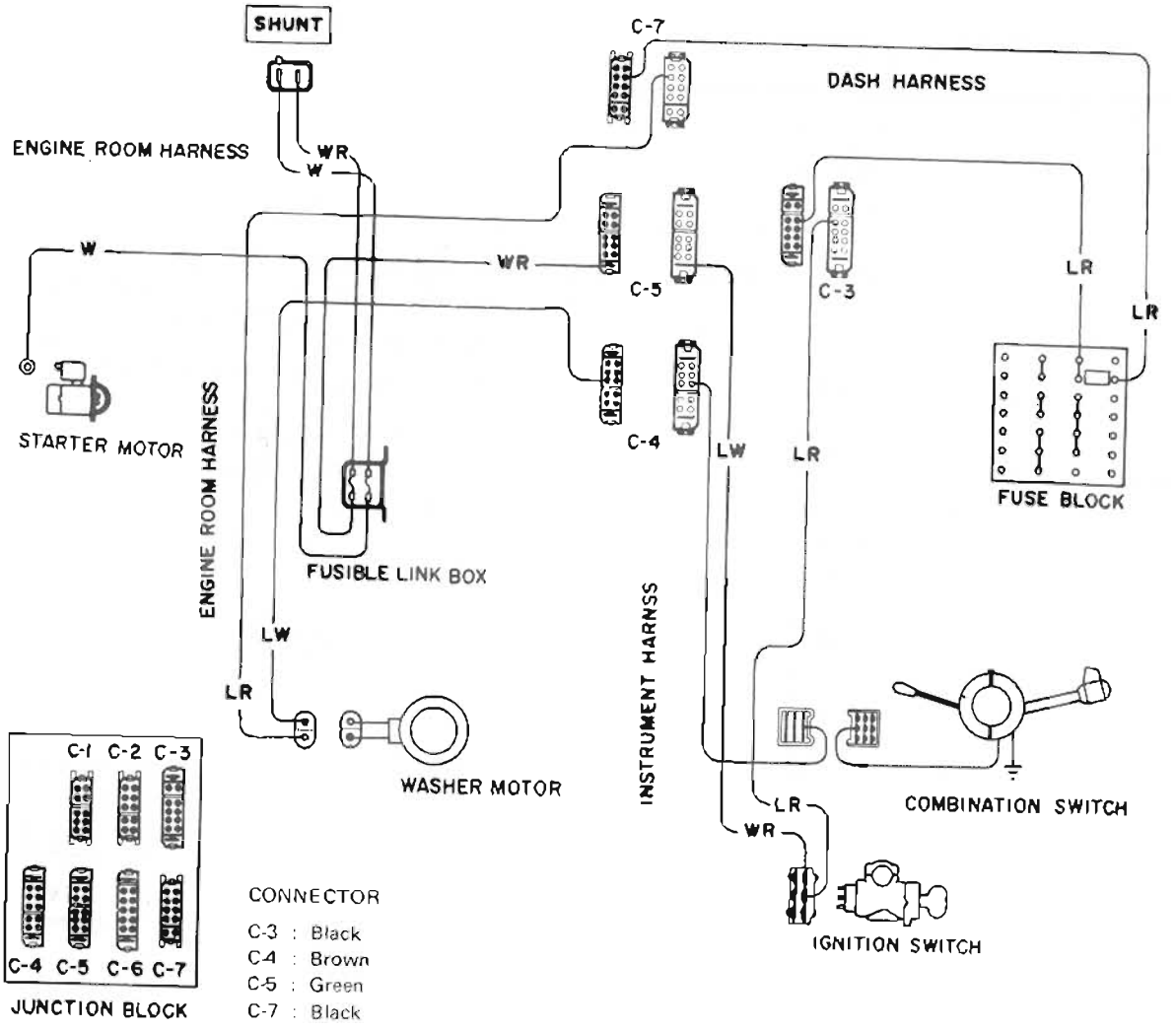
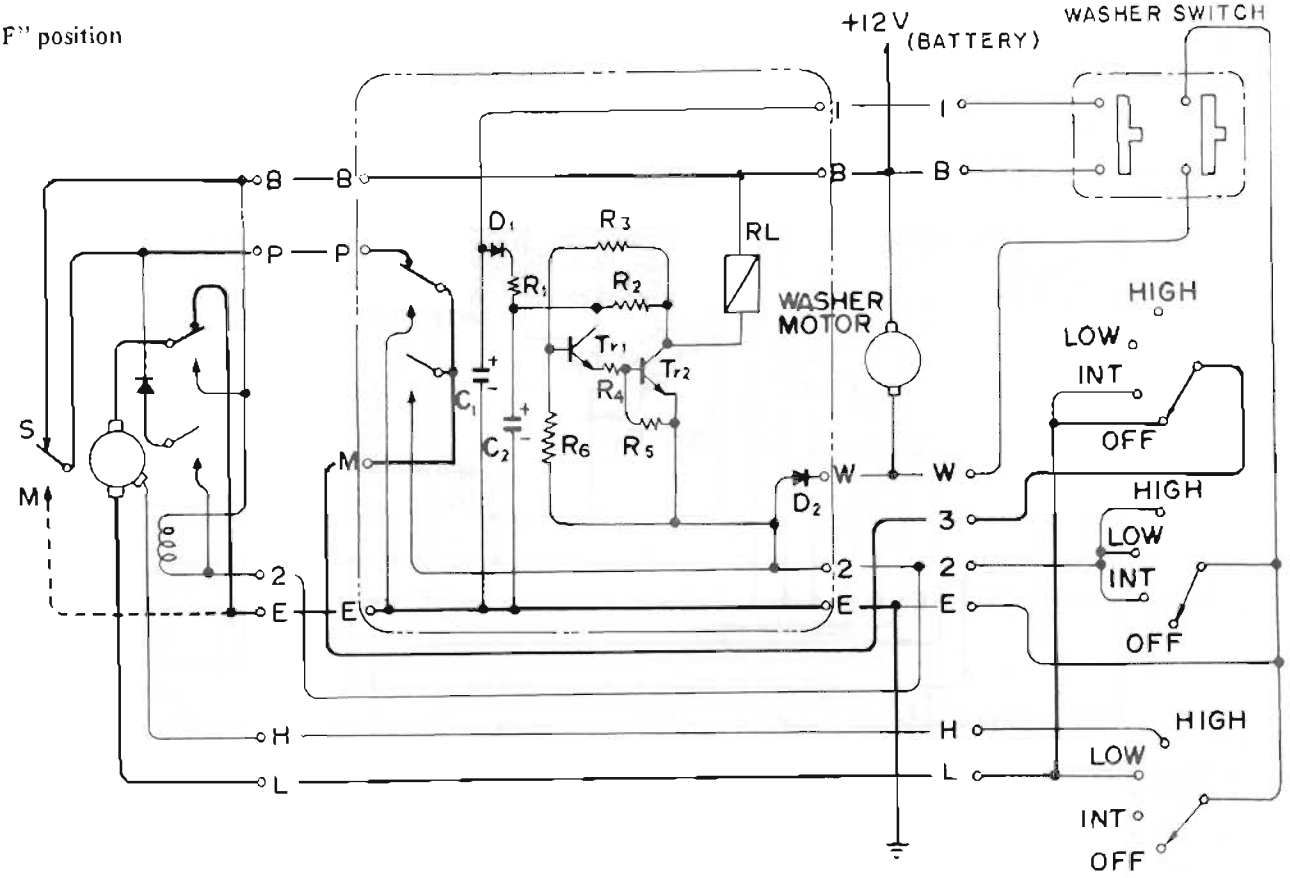


Fig. BE-109 Circuit diagram for windshield washer

Wiper

"OFF" position



"Int" position

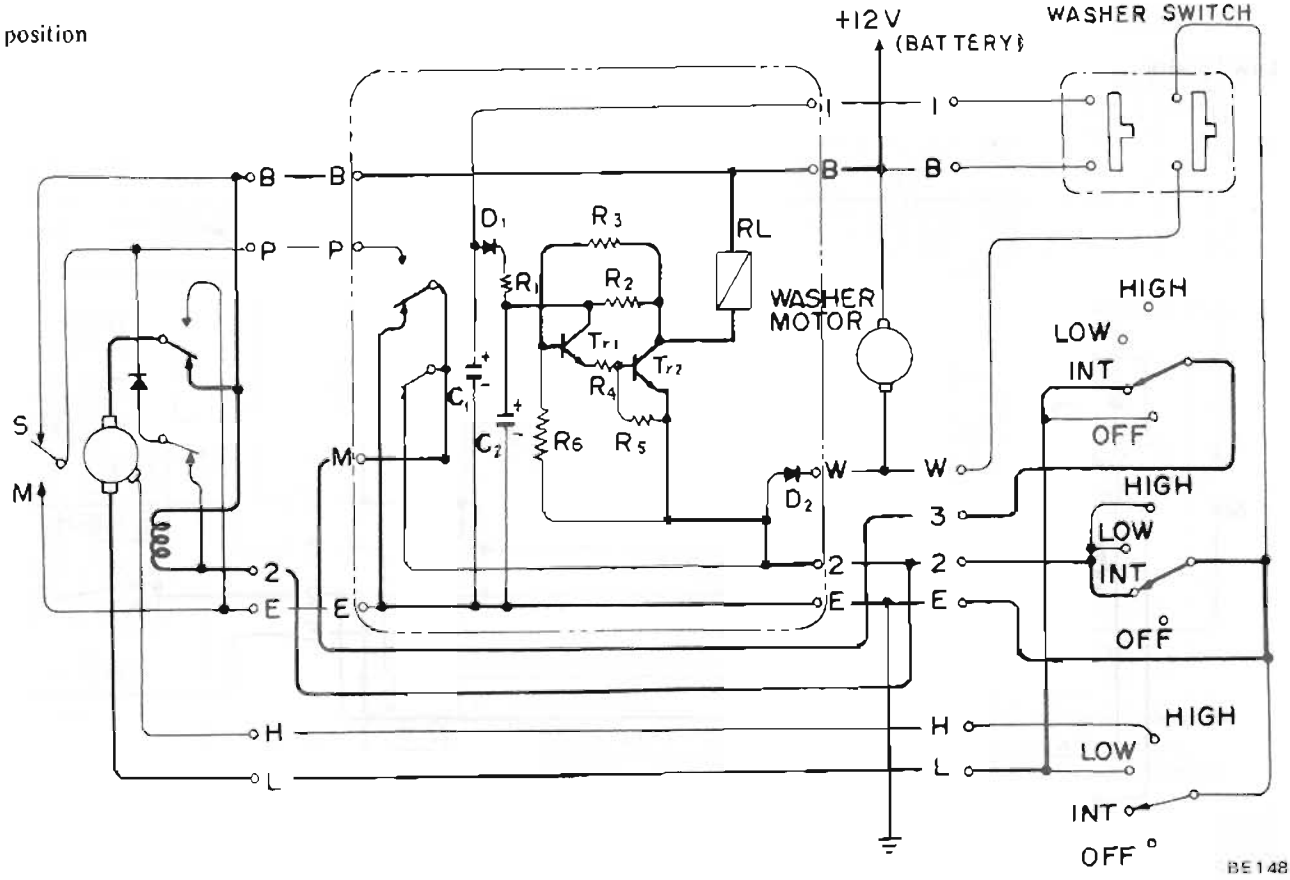
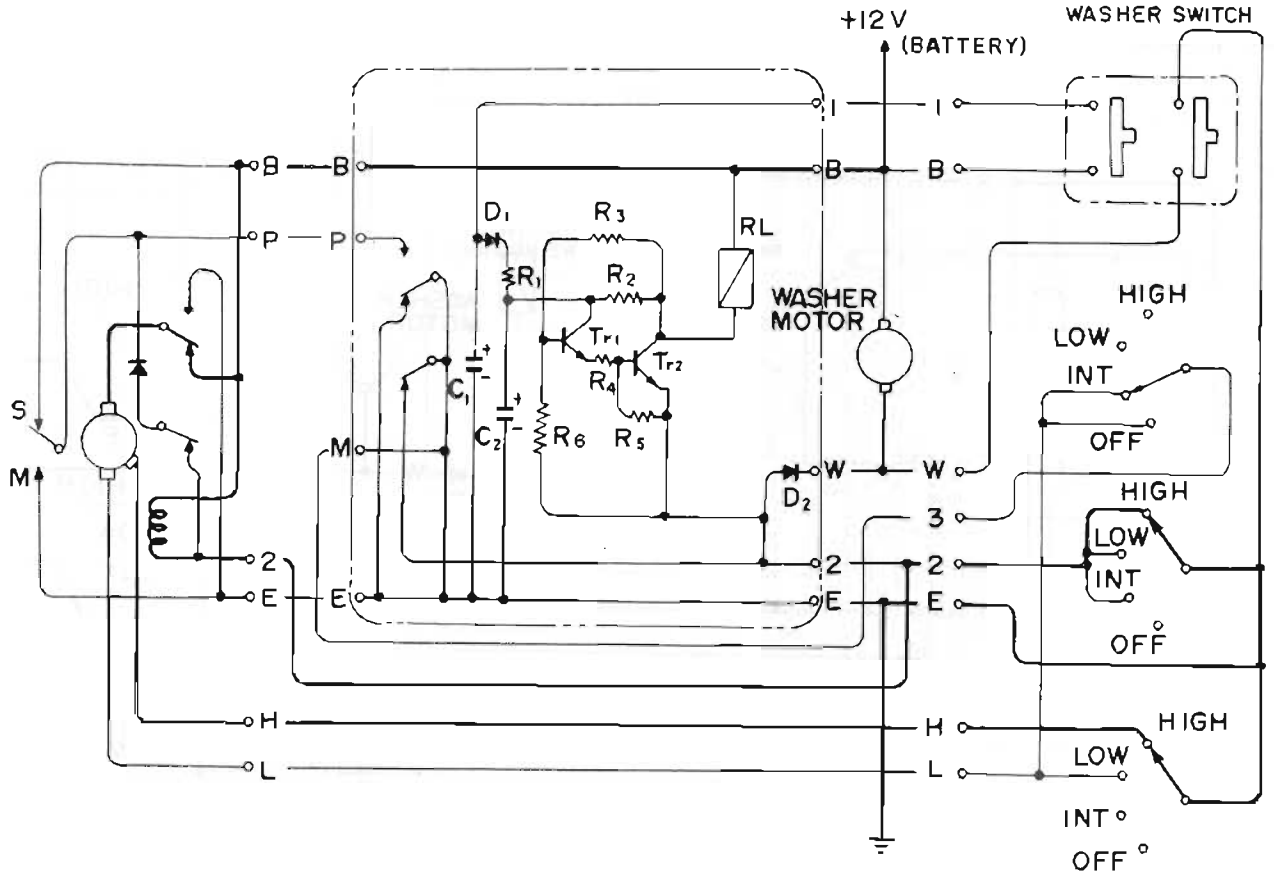


Fig. BE110-1 Circuit diagram for windshield wiper

"High" position



"Low" position

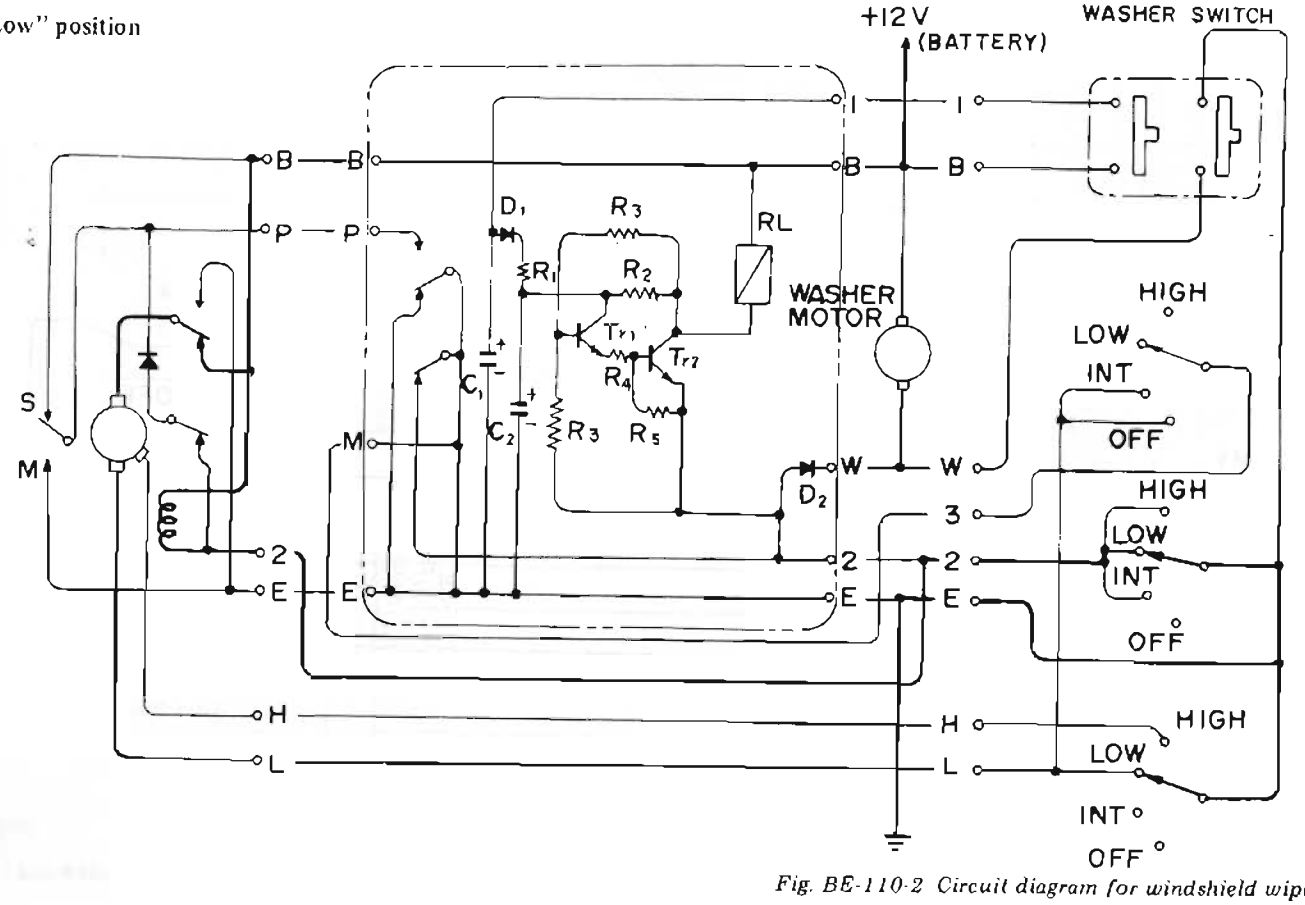
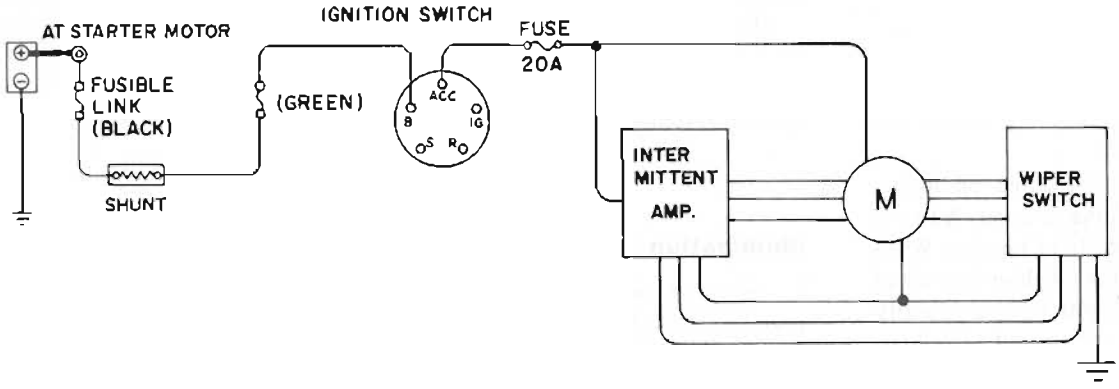
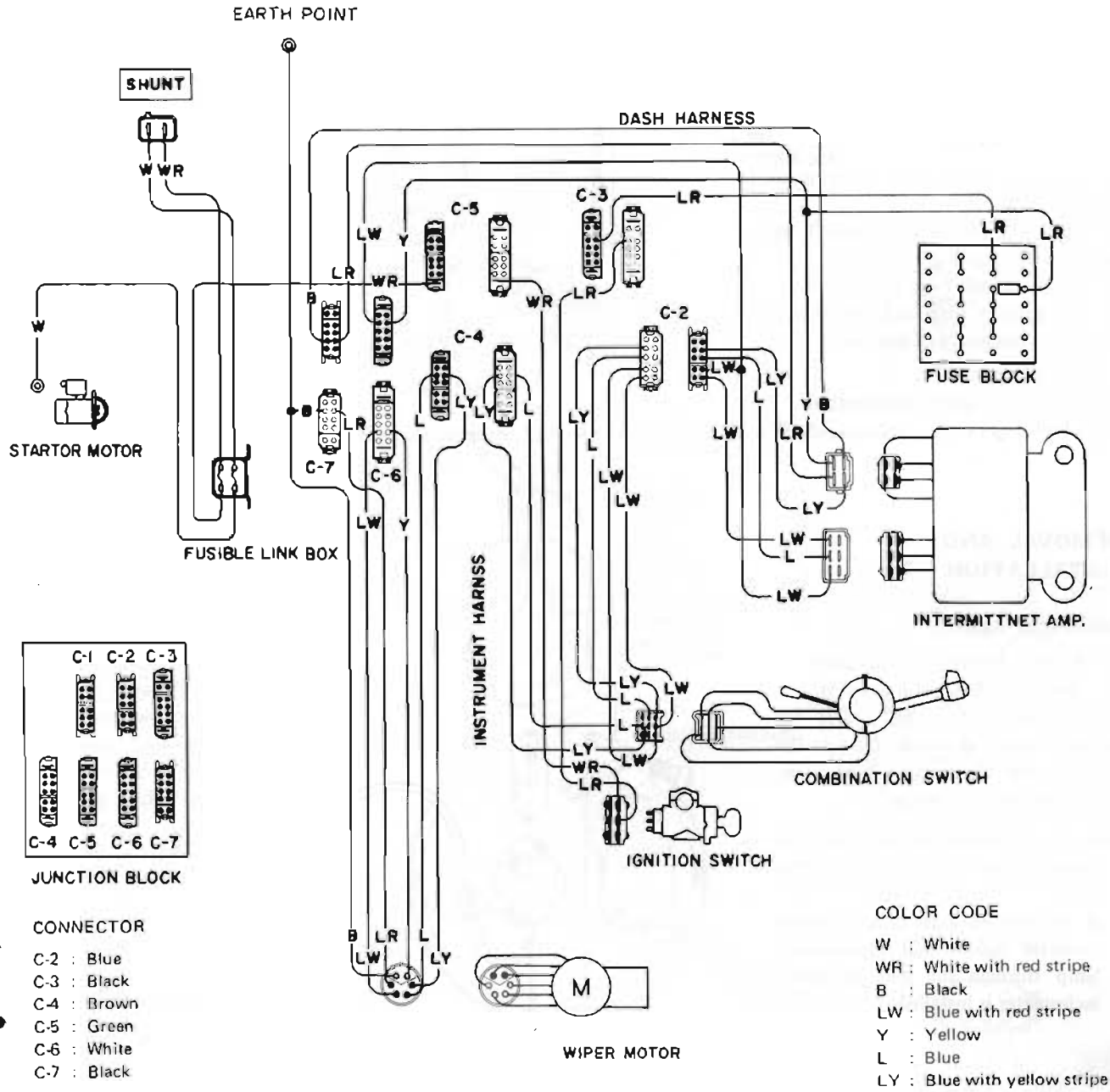


Fig. BE-110-2 Circuit diagram for windshield wiper





CONNECTOR

C-2 : Blue
C-3 : Black
C-4 : Brown
C-5 : Green
C-6 : White
C-7 : Black

COLOR CODE

W : White
WR : White with red stripe
B : Black
LW : Blue with red stripe
Y : Yellow
L : Blue
LY : Blue with yellow stripe

Fig. BE-110-3 Circuit diagram for windshield wiper

CIGARETTE LIGHTER

DESCRIPTION

The cigarette lighter consists of lighter, housing, housing cover, and illumination lamp.

The housing is secured on instrument panel by housing cover. A fuse is added at the bottom of housing. When pushed into housing, lighter is retained by nails in housing and gets continuity through heater coil at end of lighter.

When heater is warmed enough, the bi-metal nail frees lighter. Lighter then pops out by spring back, and breaks its continuity.

ILLUMINATION BULB REPLACEMENT

1. Remove tachometer referring to page BE-37 for Removal.
2. Pull out socket with bulb from housing. Refer to Figure BE-112.
3. Remove bulb from socket.
4. Install new bulb and assemble in the reverse sequence of removal.

Bulb wattage:
Cigarette lighter illumination bulb 3.4W

REMOVAL AND INSTALLATION

Cigarette lighter

1. Remove battery ground cable.
2. Remove lighter from housing.
3. Disconnect two lead wires for cigarette lighter at connectors and the fiber scope at illumination lamp housing by twisting fiber scope.

Note: It is recommended that tachometer be removed prior to this step.
It is easy to remove and install cigarette lighter and illumination lamp through the hole in which tachometer is installed.

4. Remove retaining nut at bottom of cigarette lighter.

Housing and housing cover can then be taken out from instrument panel.

5. Installation is in the reverse sequence of removal.

Illumination lamp

1. Remove tachometer referring to page BE-37 for Removal.
2. Disconnect lead wires for illumination lamp at a connector.
3. Remove illumination lamp retaining screw and take out lamp assembly through the hole in which tachometer is installed.

INSPECTION

Test continuity of whole system with test lamp or ohmmeter, referring to cigarette lighter circuit diagram.

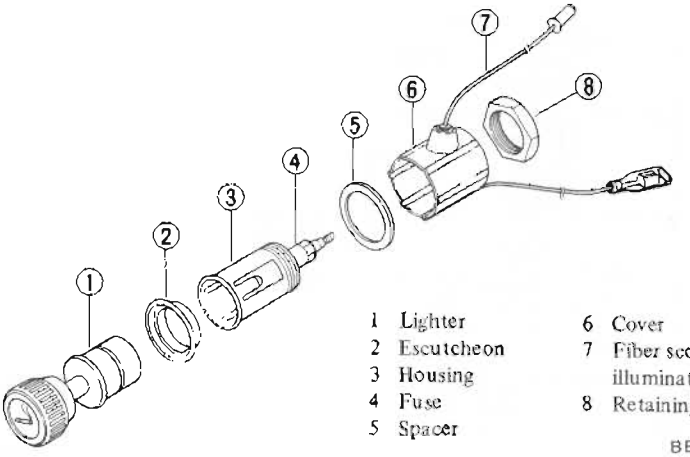


Fig. BE-111 Cigarette lighter

Fiber scope for cigarette lighter illuminator

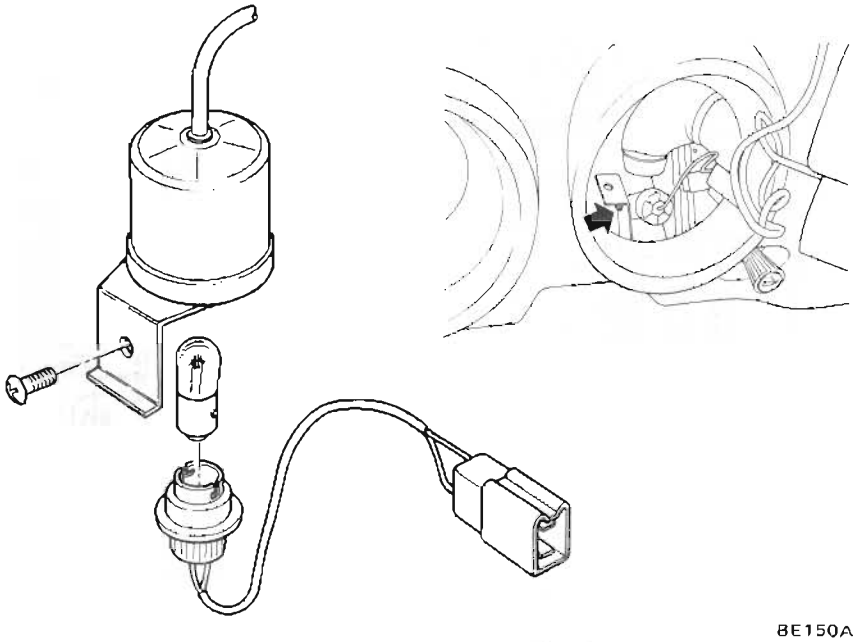


Fig. BE-112 Illumination lamp

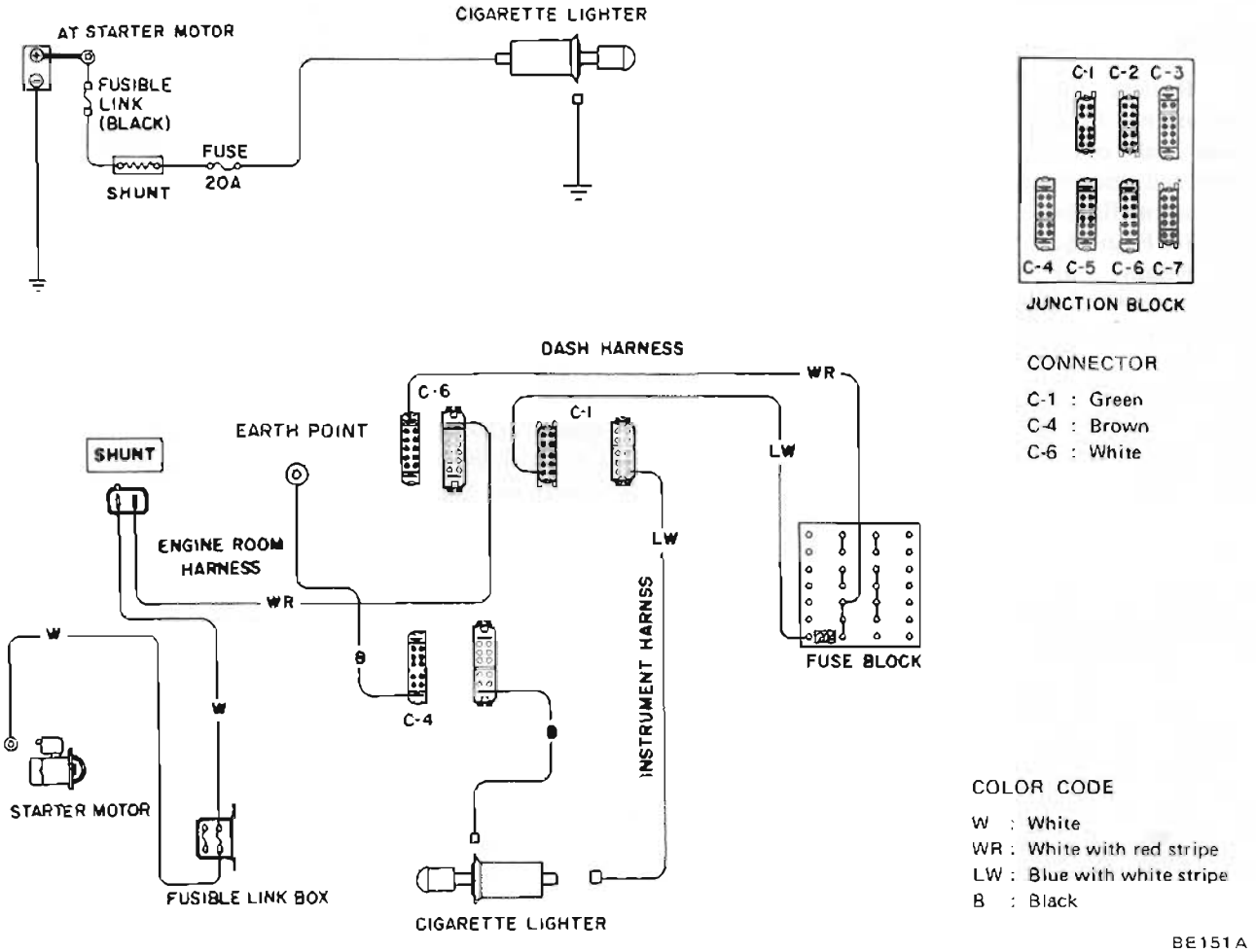


Fig. BE-113 Circuit diagram for cigarette lighter

CLOCK

DESCRIPTION

The clock is installed on instrument panel; removal procedure is the same as for the other two gauges. It has a connector with four terminals. The illumination bulb can be easily taken out by pulling socket from back of clock.

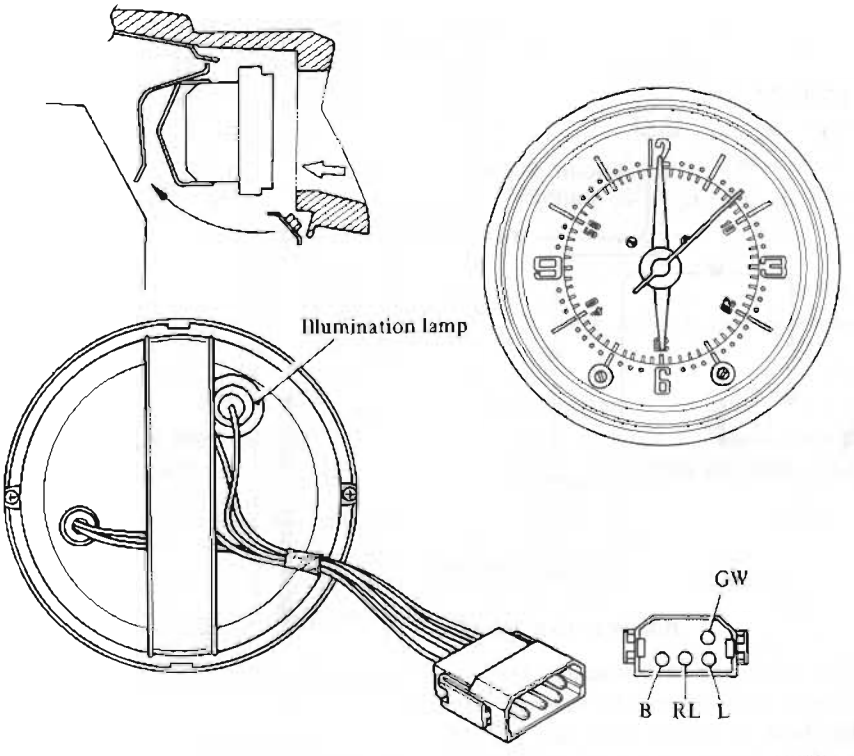
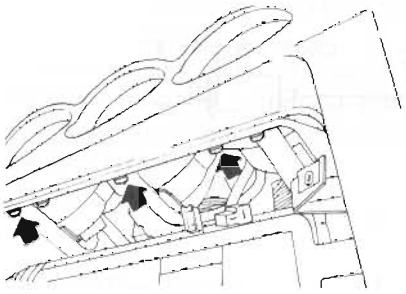


Fig. BE-114 Clock

REPLACEMENT

Clock

1. Remove four screws retaining instrument finisher to instrument panel. Take out instrument finisher a little and disconnect two connectors. Instrument finisher can then be taken out. See Figure BE-72.
2. Remove six screws retaining three-way venti-duct to instrument panel. See Figure BE-73.
3. Disconnect duct hoses from three-way duct and take out three-way duct.
4. Remove screw retaining clock to instrument panel.



BE117A

Fig. BE-115 Removing clock retaining screw

5. Take out clock backward and disconnect lead wires at connector. Clock can then be taken out.

Bulb replacement

The illumination bulb can be easily taken out by pulling socket with bulb at back of clock.

Remove bulb from socket and install new bulb.

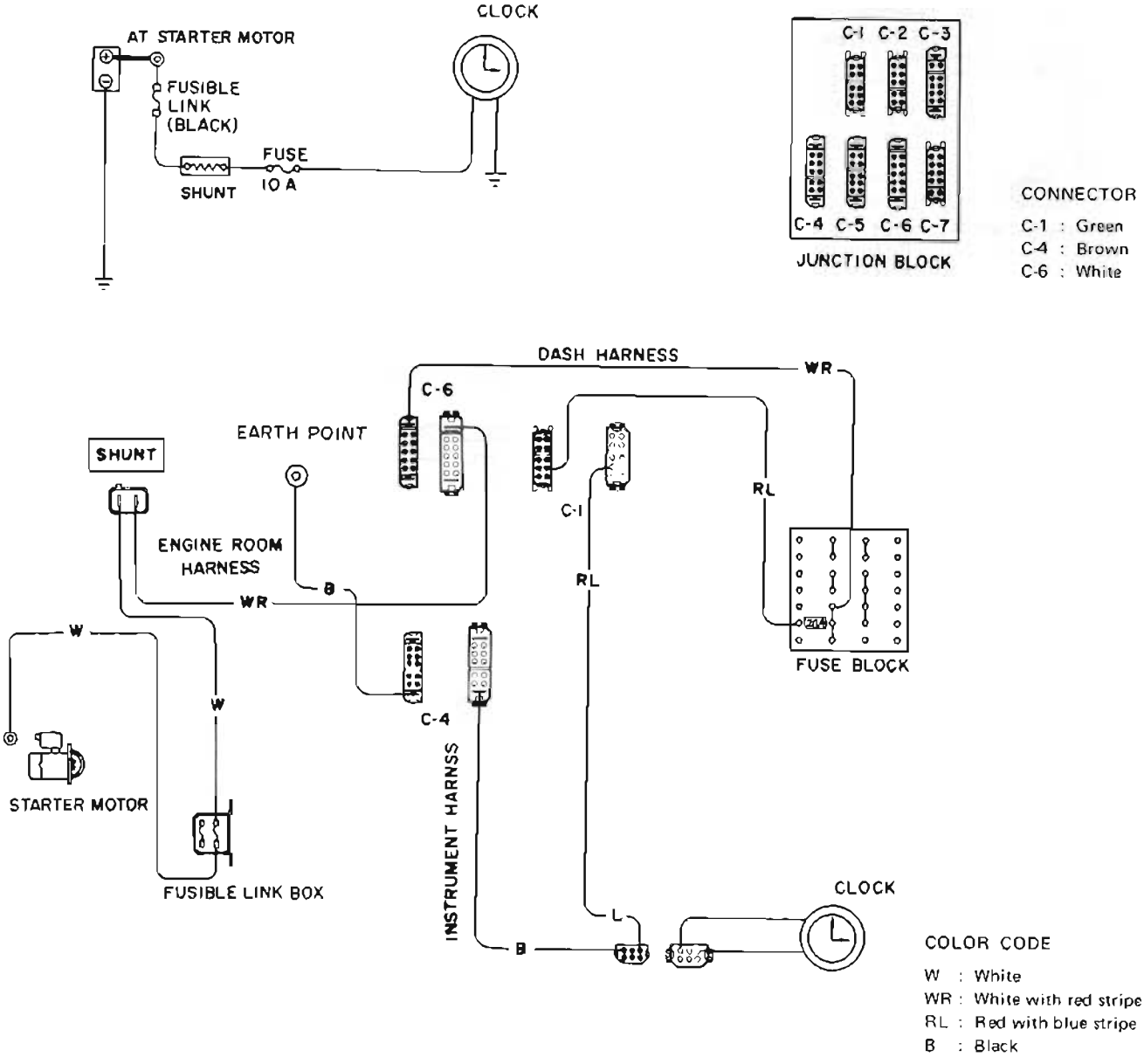
Assemble in reverse sequence of removal.

Bulb wattage:

Clock illumination bulb . . 3.4W

INSPECTION

Test continuity and operation of each unit with ohmmeter or test lamp. Refer to Figure BE-116 for wiring diagram of clock.



BE153A

Fig. BE-116 Circuit diagram for clock

ELECTRIC REAR WINDOW DEFOGGER

DESCRIPTION

The electric rear window defogger system consists of defogger switch, defogger relay, defogger warning lamp and filament in the rear window glass.

The filament is attached inside rear window. Heat from filament keeps rear window free of fog and frost.

Defogger relay is located on relay bracket.

Defogger switch and relay is installed on console box.

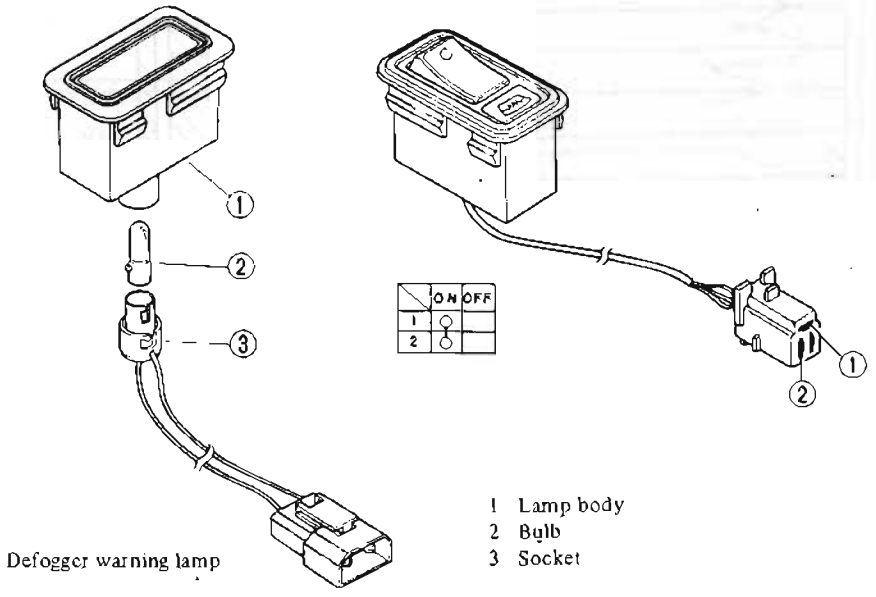


Fig. BE-117 Defogger switch and warning lamp

REMOVAL AND INSTALLATION

Defogger switch, warning lamp

Defogger switch is held against console box by spring pressure.

1. Disconnect battery ground cable.
2. Remove console box referring to Section BF.
3. From behind console box, grasp nail of switch body and push it out of console box.
4. Disconnect lead wires at a connector.
5. Installation is in the reverse sequence of removal.

Note: In installing, switch body can be installed on console box only by pressing it in.

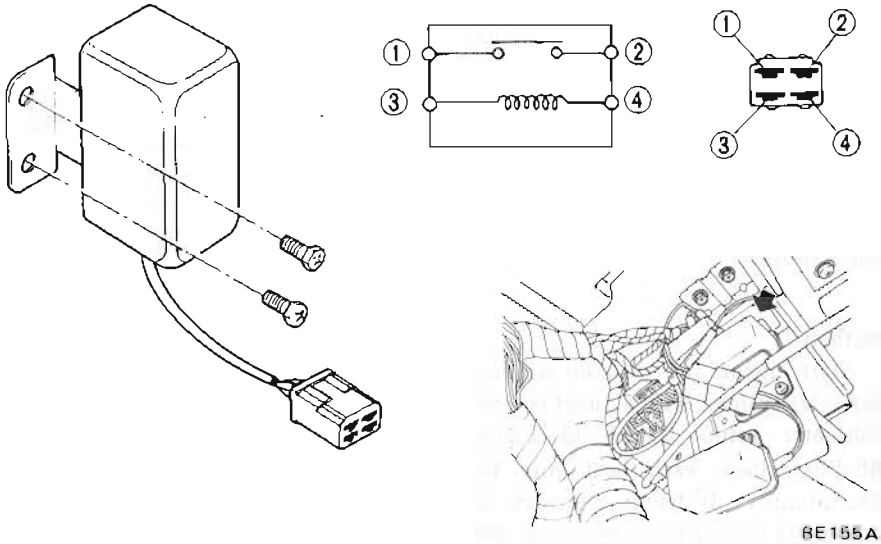


Fig. BE-118 Defogger relay

Defogger relay

Defogger relay is located on relay bracket.

1. Remove battery ground cable.
2. Disconnect lead wires for defogger relay at a connector.
3. Remove two screws retaining relay to relay bracket.

Relay can then be taken out easily.

4. Installation is in the reverse sequence of removal.

WARNING LAMP BULB REPLACEMENT

1. Remove console box referring to Section BF.
2. Push socket with bulb behind warning lamp body and twist it counterclockwise.

Socket with bulb can then be taken out.

3. Remove bulb from socket.
4. Install new bulb. Assembly is in the reverse sequence of removal.

Bulb wattage:

Rear window defogger warning lamp 3.4W

INSPECTION

Defogger switch

Test continuity of switch by using test lamp or ohmmeter. Test must be carried out with switch at both ON and OFF. Refer to Figure BE-117 continuity diagram of defogger switch.

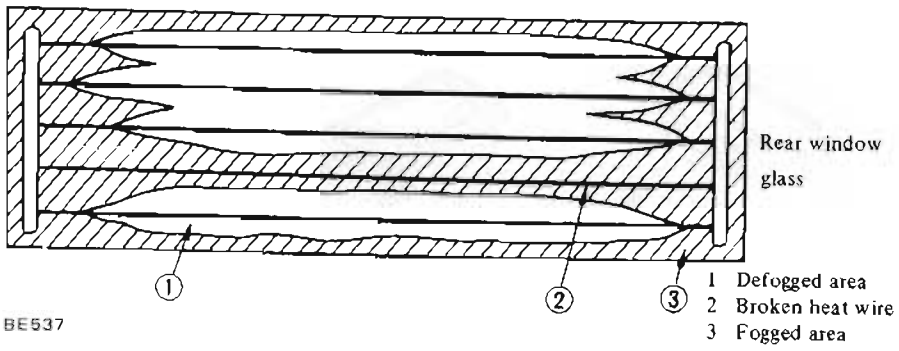


Fig. BE-119 Broken filament

Defogger relay

Test continuity of relay with ohmmeter or test lamp. Refer to Figure BE-118 for defogger relay. In testing relay, there must be continuity between ③–④. When 12V direct current is applied to ③–④, there must be continuity between ①–②.

Rear window filaments

Rear window defogger filament 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 specific filament is not defogged, that line is broken.

Method 2:

Start engine and turn on window defroster system. With a direct-current voltmeter setup shown in Figure BE-120, 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.

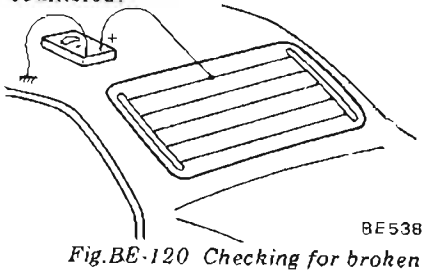


Fig.BE-120 Checking for broken filament with d—c voltmeter

Method 3:

With an ohmmeter setup shown in Figure BE-121, place one lead at one end of a heat wire and other in middle section of that wire. If meter registers, on a specific grind line, a value twice as much as on any other line, that line is broken.

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

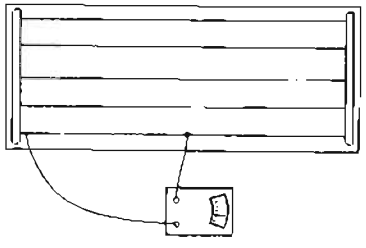


Fig. BE-121 Checking for broken filament with ohmmeter

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 Figure BE-122. Deposit conductive silver composition on break with drawing pen. Slightly overlap existing heat wire on both sides [5 mm (0.197 in) preferably] of the break.

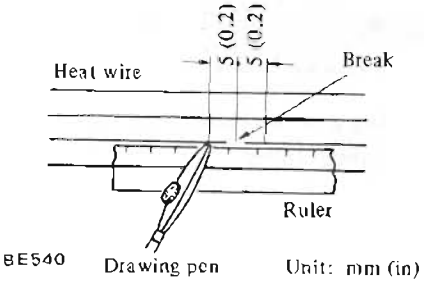


Fig. BE-122 Locating ruler in position

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.

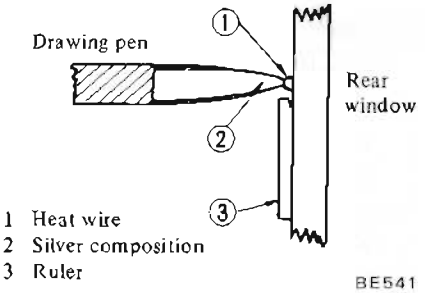


Fig. BE-123 Depositing silver composition in place

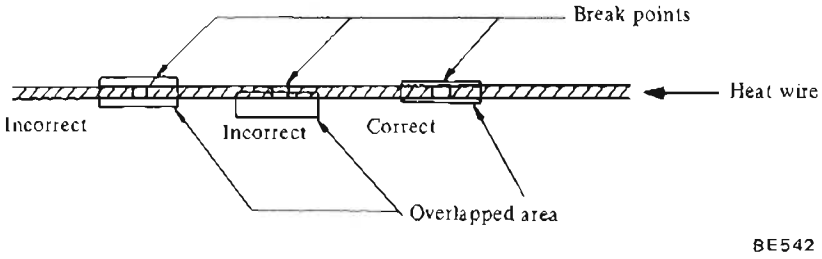


Fig. BE-124 Incorrect and correct deposition of silver composition

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 (1.18 in) should be kept between repaired area and hot air outlet. If a heat gun is not available, leave the repaired area unattended for 24 hours.

Instruction after repair

Wiper repaired area clean with a soft, clean cloth.

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

Rear window defogger

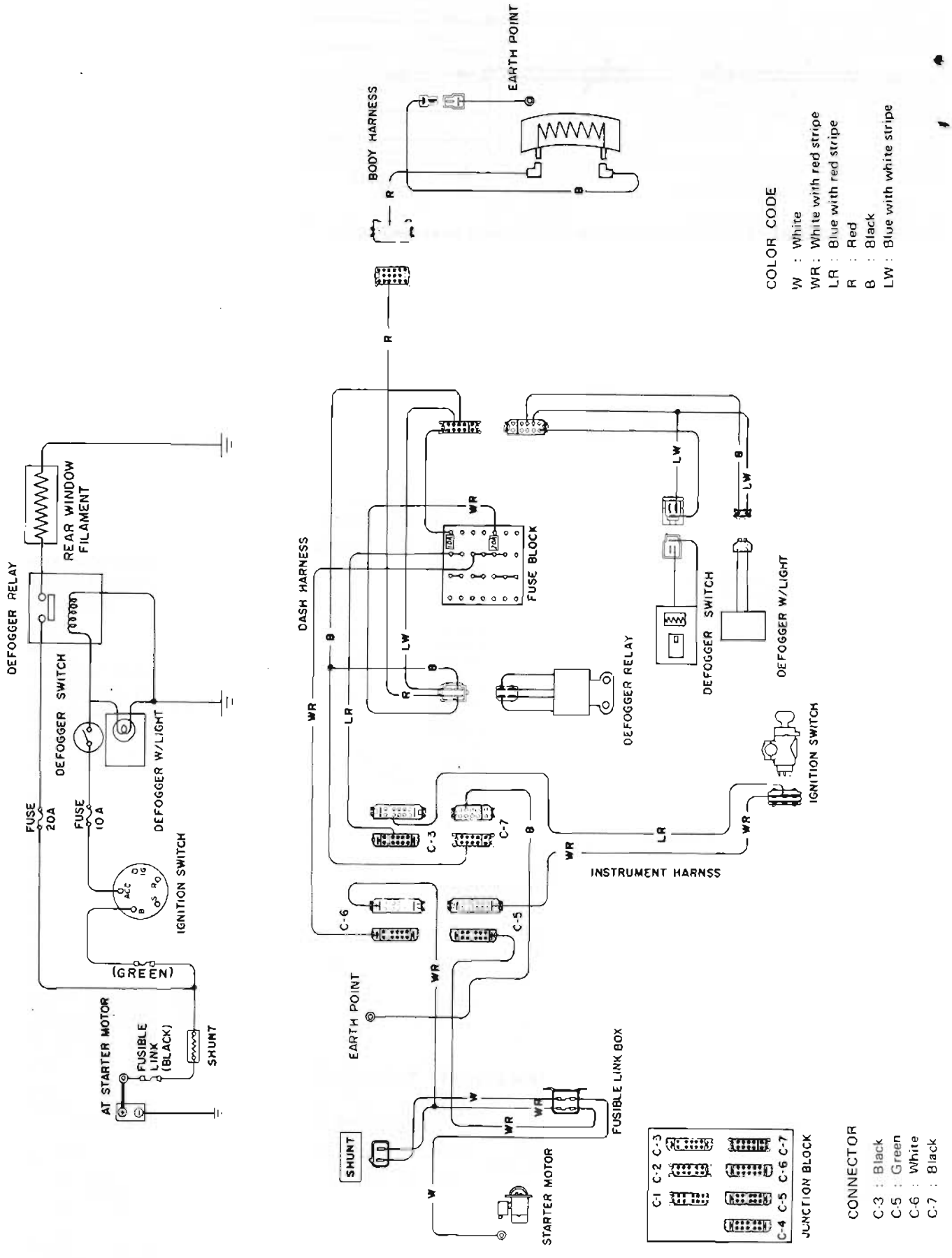


Fig. BE-125 Circuit diagram for rear window defogger

RADIO

DESCRIPTION

The radio system consists of antenna, speaker, radio receiver and antenna switch.

Antenna is connected to radio receiver with feeder cable. Speaker is connected to radio receiver with pair of speaker harnesses. Radio receiver is installed on console box.

Speaker is installed behind L.H. side body rear trim.

Antenna trimmer adjustment is required for best radio performance.

A fuse is added on harness midway from ignition switch.

Antenna switch is installed on radio receiver.

1 Knob
2 Escutcheon
3 Radio receiver
4 Antenna switch
5 Fuse
6 Antenna feeder cable

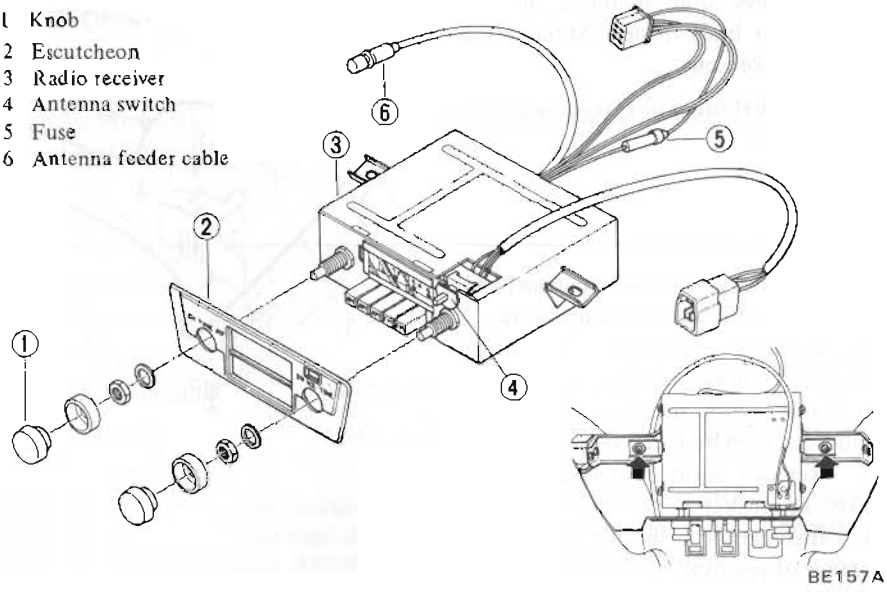


Fig. BE-126 Removing radio receiver

REMOVAL AND INSTALLATION

Radio receiver

1. Remove console box referring to Section BF.
2. Disconnect lead wires for radio and antenna switch at two connectors. Feeder cable is also removed.
3. Pull out dials on radio receiver and remove two nuts retaining escutcheon to radio receiver.
4. Remove two screws retaining radio receiver to console box. Radio receiver can then be taken out.
5. Installation is in the reverse sequence of removal.

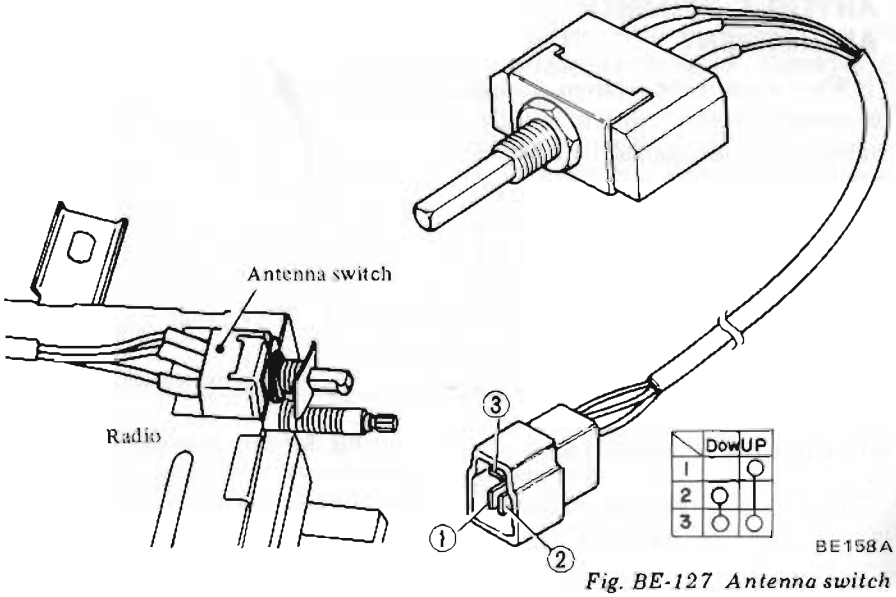


Fig. BE-127 Antenna switch

Antenna switch

1. Remove console box and escutcheon as previously described.
2. Remove antenna switch retaining screw and switch can then be taken out from radio receiver.
3. Installation is in the reverse sequence of removal.

Antenna

1. Remove antenna upper retaining nut and remove retainer from outside of rear fender.
2. Remove side body rear panel and disconnect lead wires at connectors.

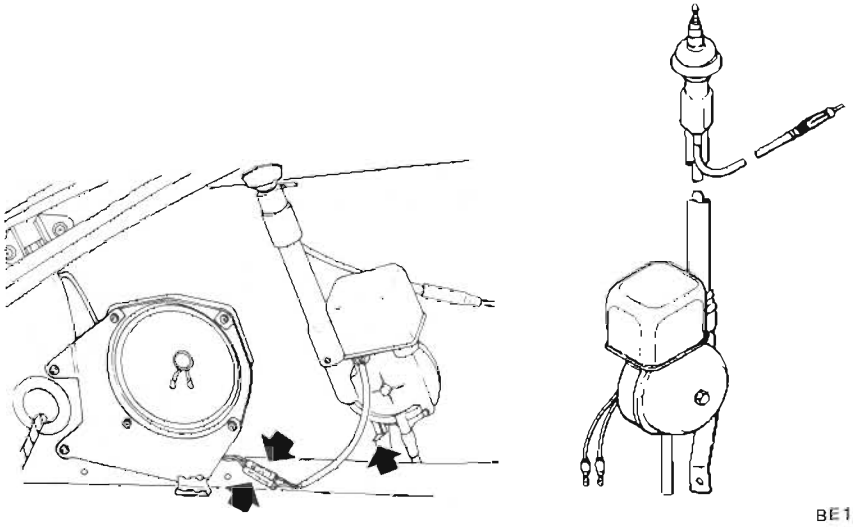


Fig. BE-128 Antenna

3. Remove bolt retaining antenna bracket to body panel. Antenna can then be taken out.

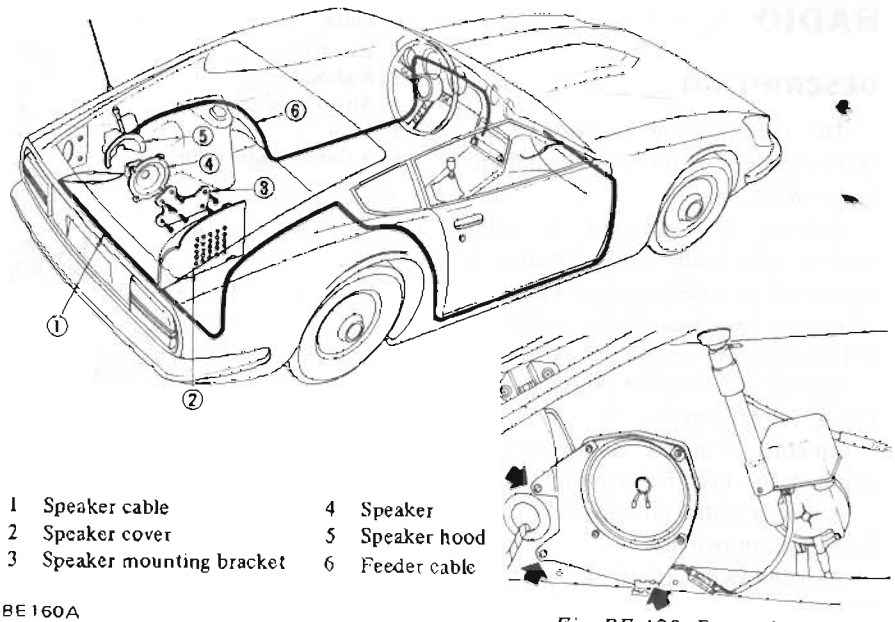
4. Installation is in reverse sequence of removal.

Speaker

1. Remove side body rear panel and disconnect lead wires at connectors.
2. Remove speaker mounting bracket retaining screws.

Bracket with speaker and speaker hood can then be taken out.

3. Remove hood from bracket and take out speaker.
4. Installation is in the reverse sequence of removal.



1 Speaker cable
2 Speaker cover
3 Speaker mounting bracket
4 Speaker
5 Speaker hood
6 Feeder cable

BE160A

Fig. BE-129 Removing speaker

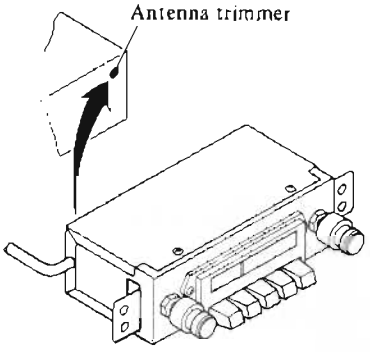
ANTENNA TRIMMER ADJUSTMENT

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

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

Note: Noise may be generated but disregard it.

3. Turn antenna trimmer to left and right slowly with screwdriver and set it where receiving sensitivity is best.



CLARION-make radio

BE572

Fig. BE-130 Trimmer adjust screw

INSPECTION

If radio does not work, test continuity through the system with ohmmeter or test lamp. When testing, refer to Figure BE-127 for continuity diagram of antenna switch and Figure BE-131 for wiring diagram of radio system.

If noise is generated, refer to Noise Prevention Chart.

TROUBLE DIAGNOSES AND CORRECTIONS

Noise prevention chart

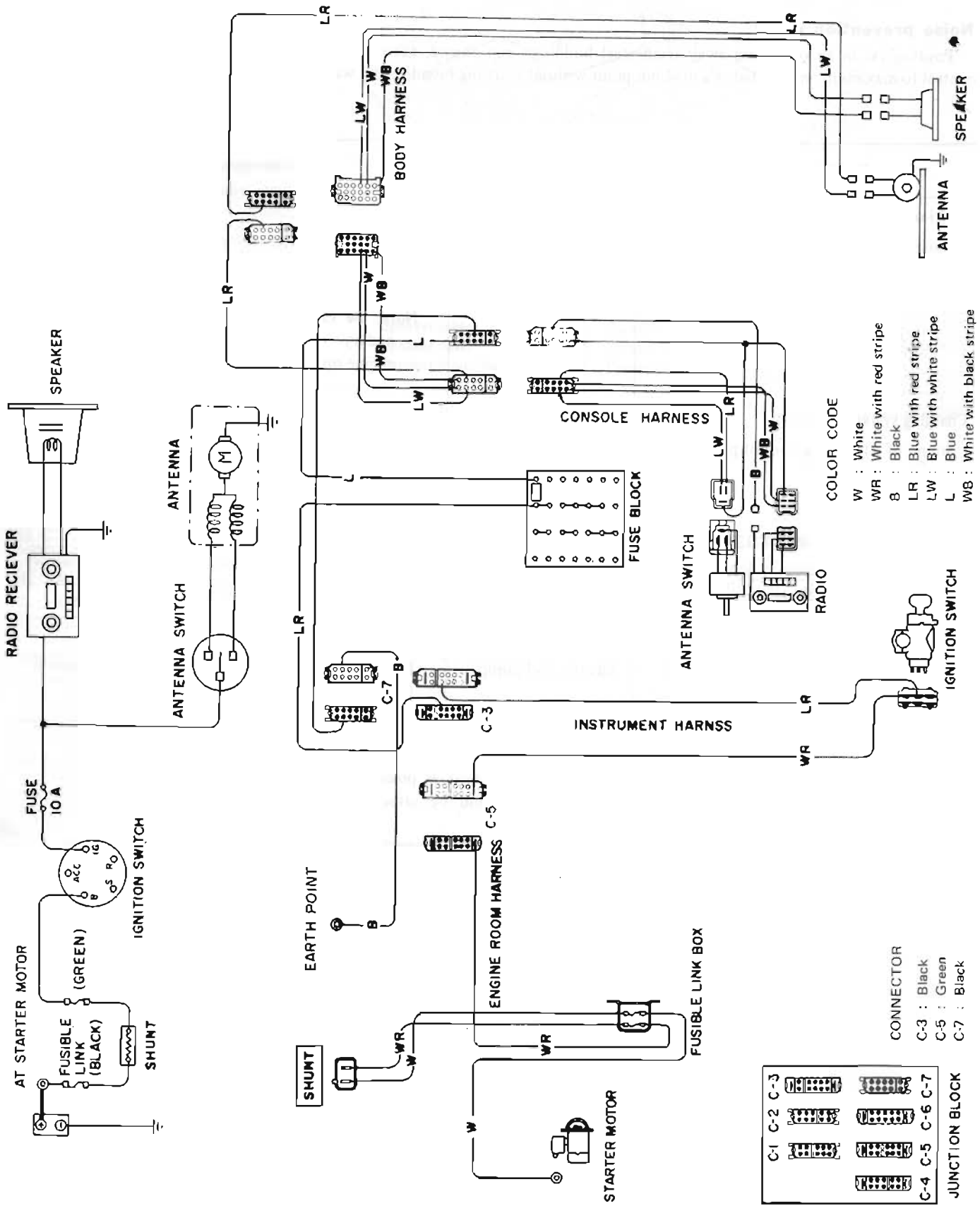
Position car in an open area away from steel buildings, run engine, extend antenna to its maximum length, set volume control to maximum and set dial at a medium point without catching broadcasting wave.

Condition	Probable cause	Corrective action
Ignition system Noise occurs when engine is operated.	High tension cable Ignition coil.	Install new high tension cable. Install a 0.5μF capacitor to primary side + terminal of ignition coil. Note: Be careful not to install capacitor to secondary or primary breaker side, otherwise engine operation becomes improper.
Charging system. Sound of alternating current present.	Alternator.	Install a 0.5μF capacitor to charging terminal A. Note: Do not use a larger capacitor. If capacitor is installed to terminal F, alternator coil will be damaged.
When accelerator pedal is depressed or released, noise occurs.	Regulator.	Install a 0.5μF capacitor to "IGN" terminal of voltage regulator.
Fuel system When ignition switch is set to "ON", noise occurs.	Electric fuel pump.	Install a 0.5μF capacitor to power lead connector plug of electric fuel pump.

Notes:

a. Be sure to locate capacitor as close to noise source as possible and connect in parallel.
b. Cut lead wire as short as possible.
c. Ground wire should be attached securely to body.
d. Make installation and connections securely.
e. Carefully identify "+", "–", "IN" or "OUT" marks.

Radio system



BE161A

Fig. BE-131 Circuit diagram for radio and antenna

THEFT PROTECTION SYSTEM

DESCRIPTION

This system consists of ignition switch, door switch and buzzer and is designed to prevent driver from leaving car without taking key. When L.H. door is opened with ignition key still in ignition switch, buzzer sounds.

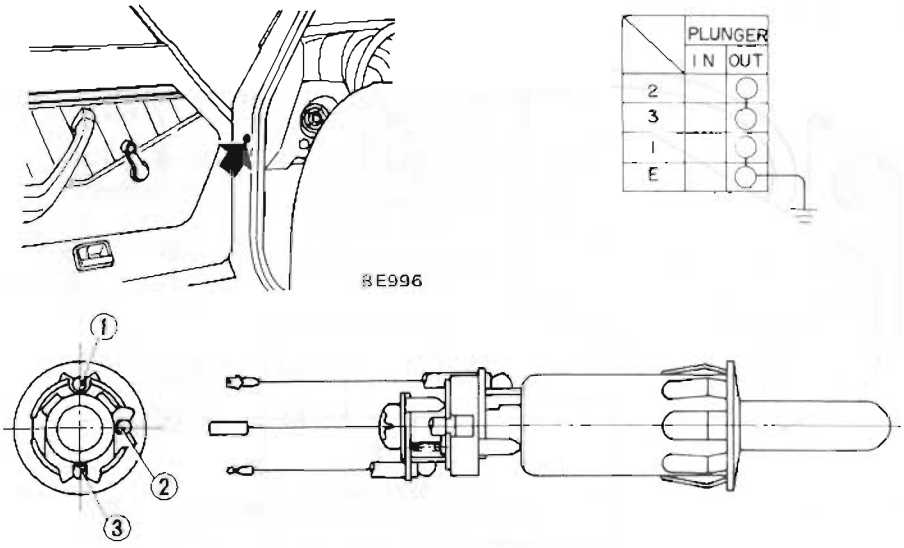


Fig. BE-132 Door switch

REMOVAL AND INSTALLATION

Door switch

Door switch is located on L.H. front door pillar.

1. Withdraw switch and wire assembly from front pillar.
2. Disconnect lead wire at connectors, switch can then be taken out.
3. Installation is in the reverse sequence of removal.

Ignition switch

To make switch tamper-proof, self-shear type screws are used. Their heads are sheared off when installed so that the steering lock system cannot be easily removed.

When required, replace the steering lock in accordance with the following instructions.

Break self-shear type screws with a drill or other proper tool, then remove the steering lock from the steering lock clamp.

When installing a new steering lock, be sure to tighten new self-shear type screws until their heads shear off.

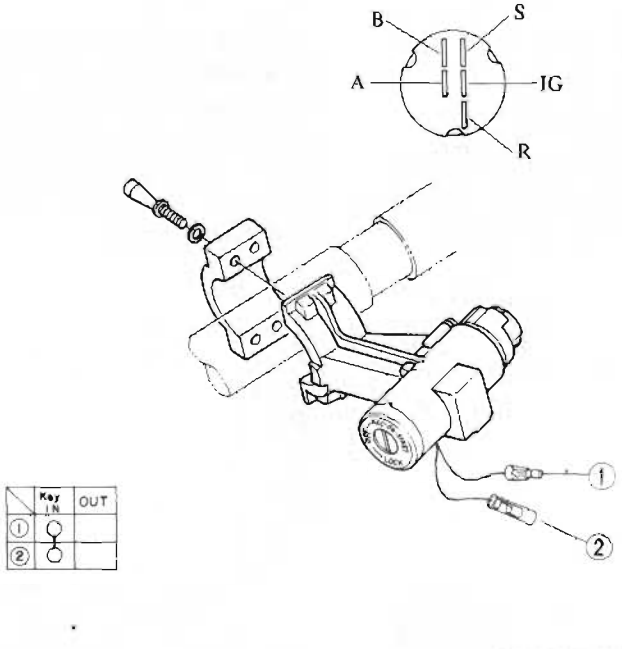
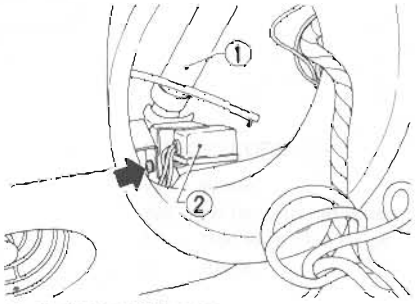


Fig. BE-133 Ignition switch

Warning buzzer

The warning buzzer is installed behind speedometer on bracket from instrument panel.

1. Disconnect battery ground cable.
2. Remove speedometer as described in page BE-38 for Meter and Gauge Replacement.
3. Disconnect buzzer lead wires at a connector.
4. Remove screw retaining buzzer assembly to bracket through the hole in which speedometer is installed.
5. Buzzer assembly can then be taken out.
6. Installation is in the reverse sequence of removal.



1 Instrument harness
2 Warning buzzer

Fig. BE-134 Removing buzzer

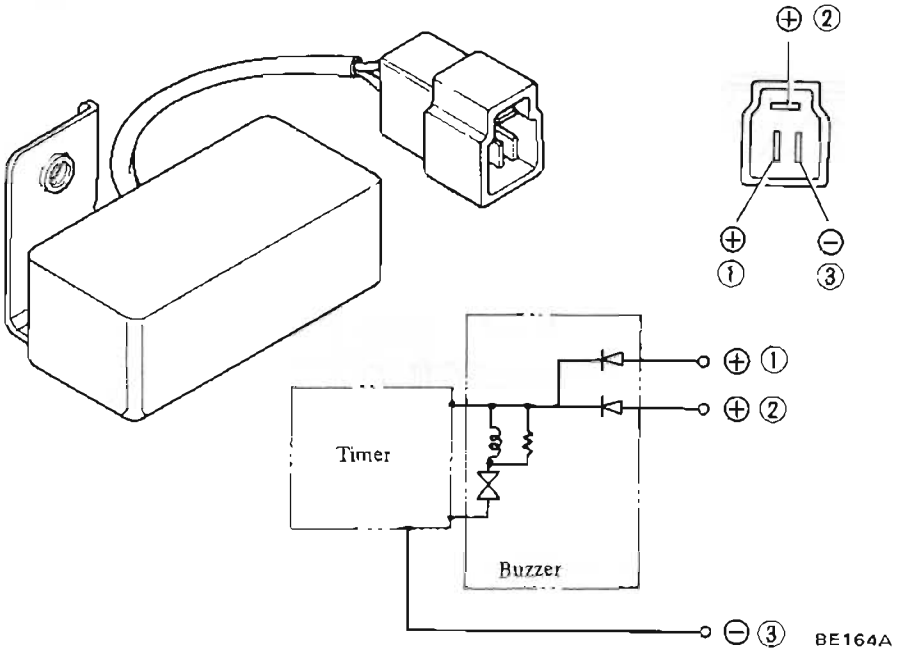


Fig. BE-135 Buzzer

INSPECTION

Door switch

There are three lead wires from door switch. Two are for warning buzzer and other is for room lamp.

Inspect continuity through door switch with test lamp or ohmmeter. When plunger is pressed into switch assembly, door switch contacts are opened. Contacts are closed when plunger is projected. See Figure BE-132 door switch.

Warning 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. See Figure BE-135 warning buzzer.

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

Ignition switch

Test continuity between two harnesses ① – ② indicated in Figure BE-133. There must be continuity when key is inserted into switch. On the other hand, continuity must be broken, when key is removed from ignition switch.

Circuit

Test continuity through the circuit with ohmmeter or test lamp. The whole circuit is described below in detail.

Theft protection system

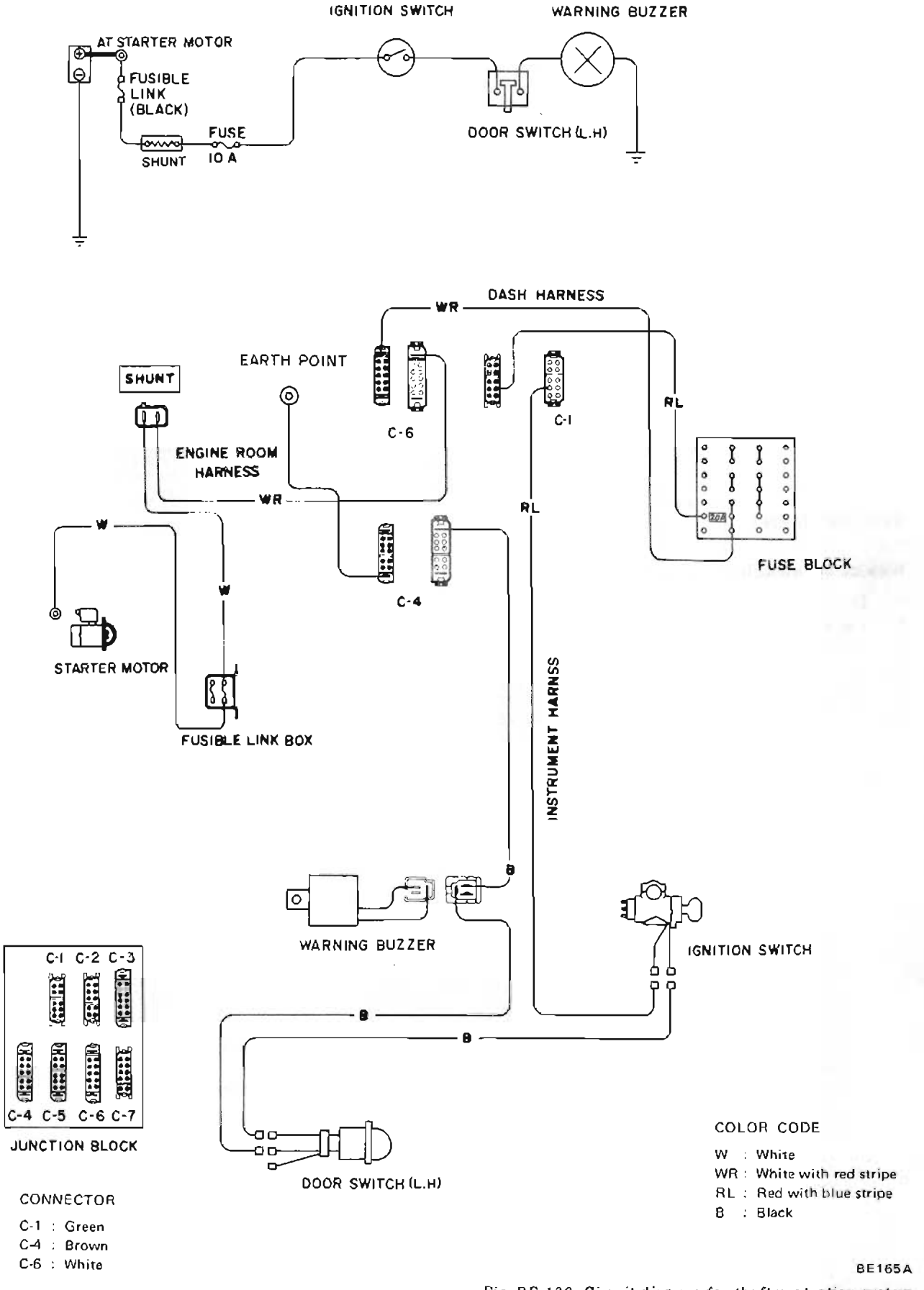


Fig. BE-136 Circuit diagram for theft protection system

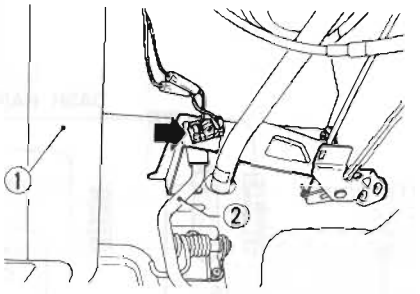
KICKDOWN SYSTEM (For automatic transmission model)

DESCRIPTION

The kickdown system consists of kickdown switch and kickdown solenoid. Kickdown switch is located on the accelerator pedal. Kickdown solenoid is located on right side of automatic transmission. They are connected to each other. For details on automatic transmission, refer to Section Automatic Transmission.



BE776



1 Steering column
2 Accelerator pedal rod BE116A

Fig. BE-137 Kickdown switch

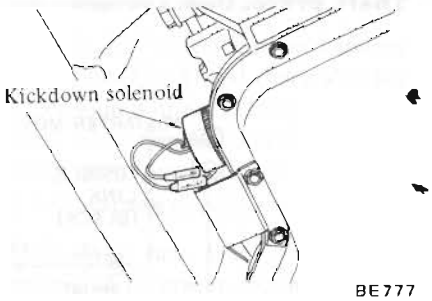
REPLACEMENT

Kickdown switch

1. Disconnect pair of lead wires.
2. Loosen lock nut on switch body.
3. Remove kickdown switch by rotating switch body.
4. Install in reverse sequence of removal.

Kickdown solenoid

Refer to Section AT for Removal of Kickdown Solenoid.



BE777

Fig. BE-138 Kickdown solenoid

INSPECTION

Kickdown switch

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

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

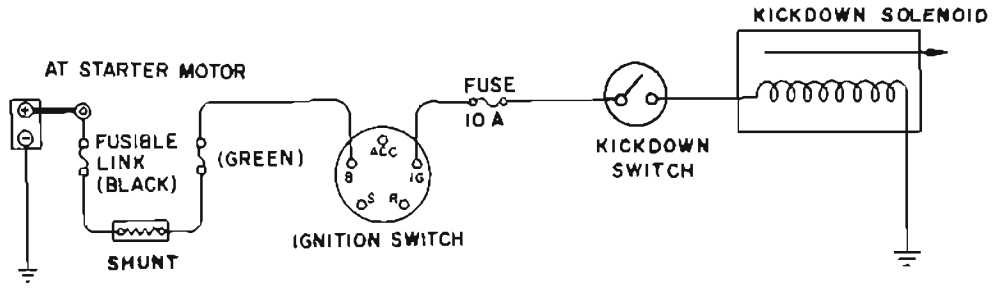
Kickdown solenoid

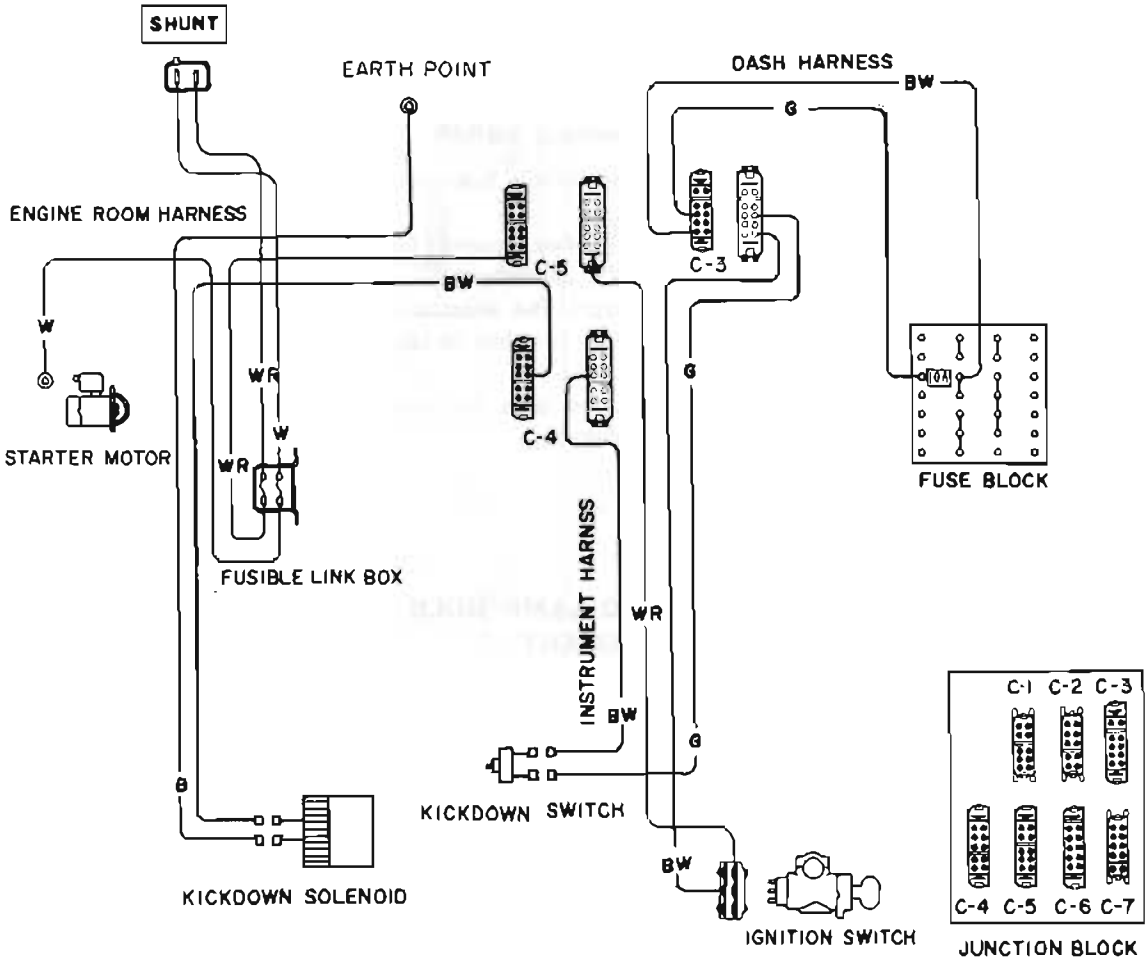
Refer to Section AT for Inspection of Kickdown Solenoid.

Wiring

Referring to following circuit diagram, test continuity with ohmmeter or test lamp.

Kickdown system





COLOR CODE

W : White
B : Black
G : Green
WR : White with red stripe
BW : Black with white stripe

CONNECTOR

C-3 : Black
C-4 : Brown
C-5 : Green

BE167A

Fig. BE-139 Circuit diagram for kickdown system

CHOKE WARNING SYSTEM

DESCRIPTION

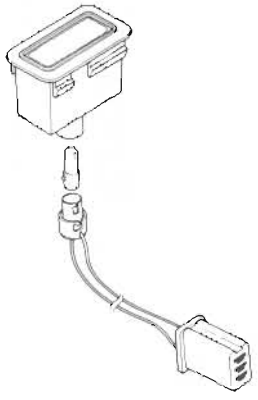
The choke warning system consists of choke warning lamp and choke warning switch. When choke is applied, the warning lamp goes on. The switch is installed beside choke lever. Warning lamp is installed on console box.

REMOVAL AND INSTALLATION

Choke warning lamp

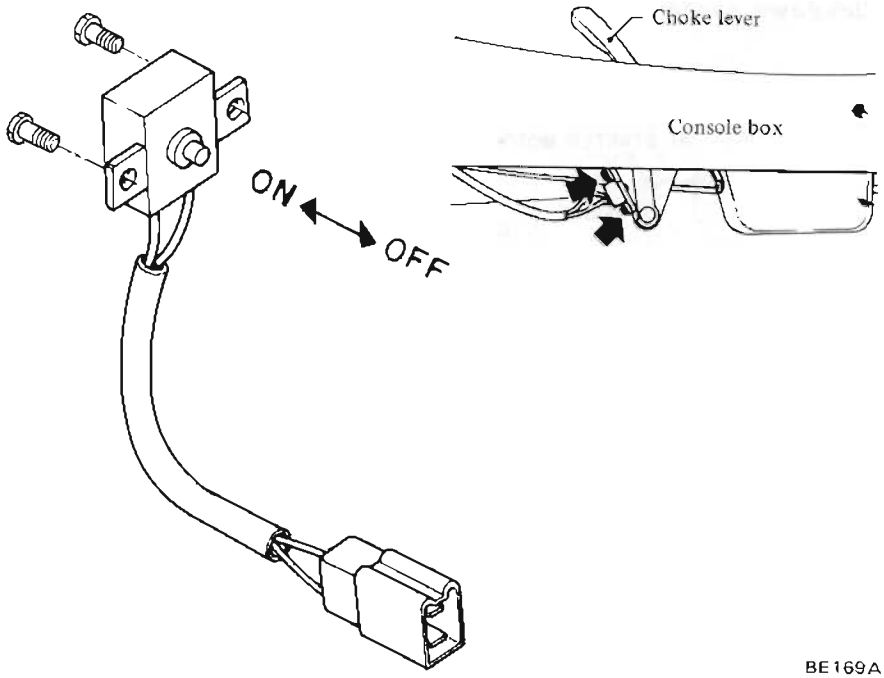
1. Disconnect battery ground cable.
2. Remove console box referring to Section BF.
3. Grasp switch body nail behind console box and push it out.
4. Disconnect lead wires at a connector.
5. Installation is in the reverse sequence of removal.

Note: Switch body can be installed on console box only by pressing it in.



BE168A

Fig. BE-140 Choke warning lamp



BE169A

Fig. BE-141 Choke warning switch

Choke warning switch

1. Remove console box referring to Section BF.
2. Remove two screws fastening switch body to choke lever.
3. Disconnect lead wires at a connector. Switch can then be taken out easily.
4. Installation is in the reverse sequence of removal.

WARNING LAMP BULB REPLACEMENT

1. Remove console box referring to Section BF.
2. Push socket with bulb from behind switch body and twist counterclockwise.

Socket with bulb can then be taken out.

3. Remove bulb from socket.
4. Installation is in the reverse sequence of removal.

Bulb wattage:

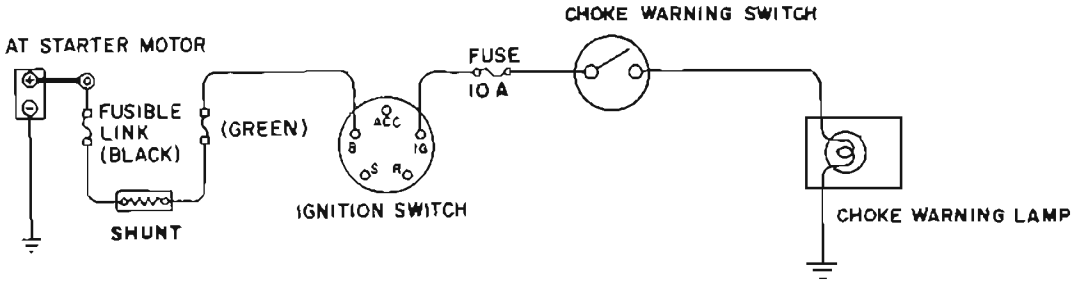
Choke warning lamp 3.4W

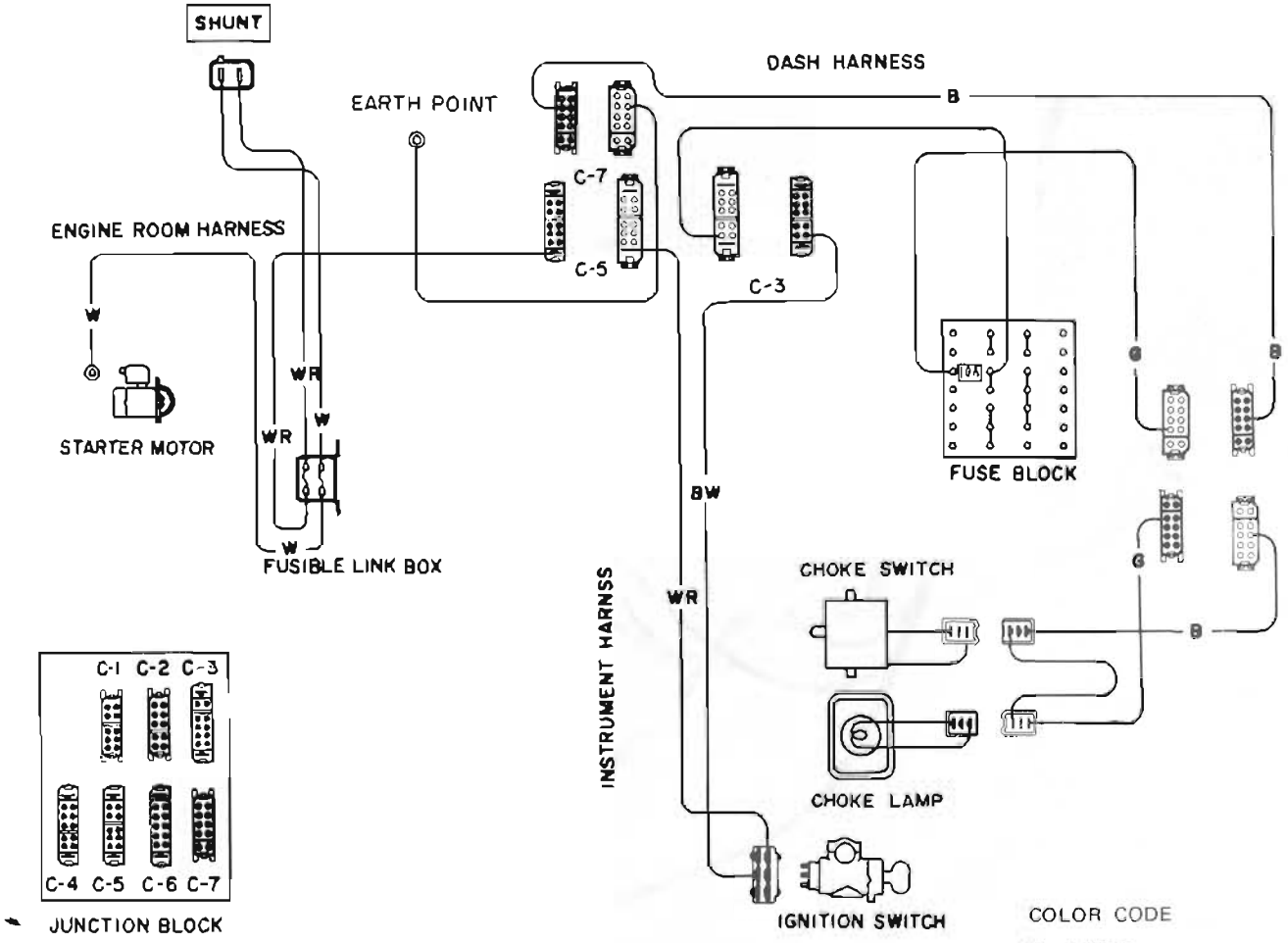
INSPECTION

Test continuity of each switch and wiring system with ohmmeter or test lamp.

When testing choke warning switch, there must be continuity when plunger on body is projected.

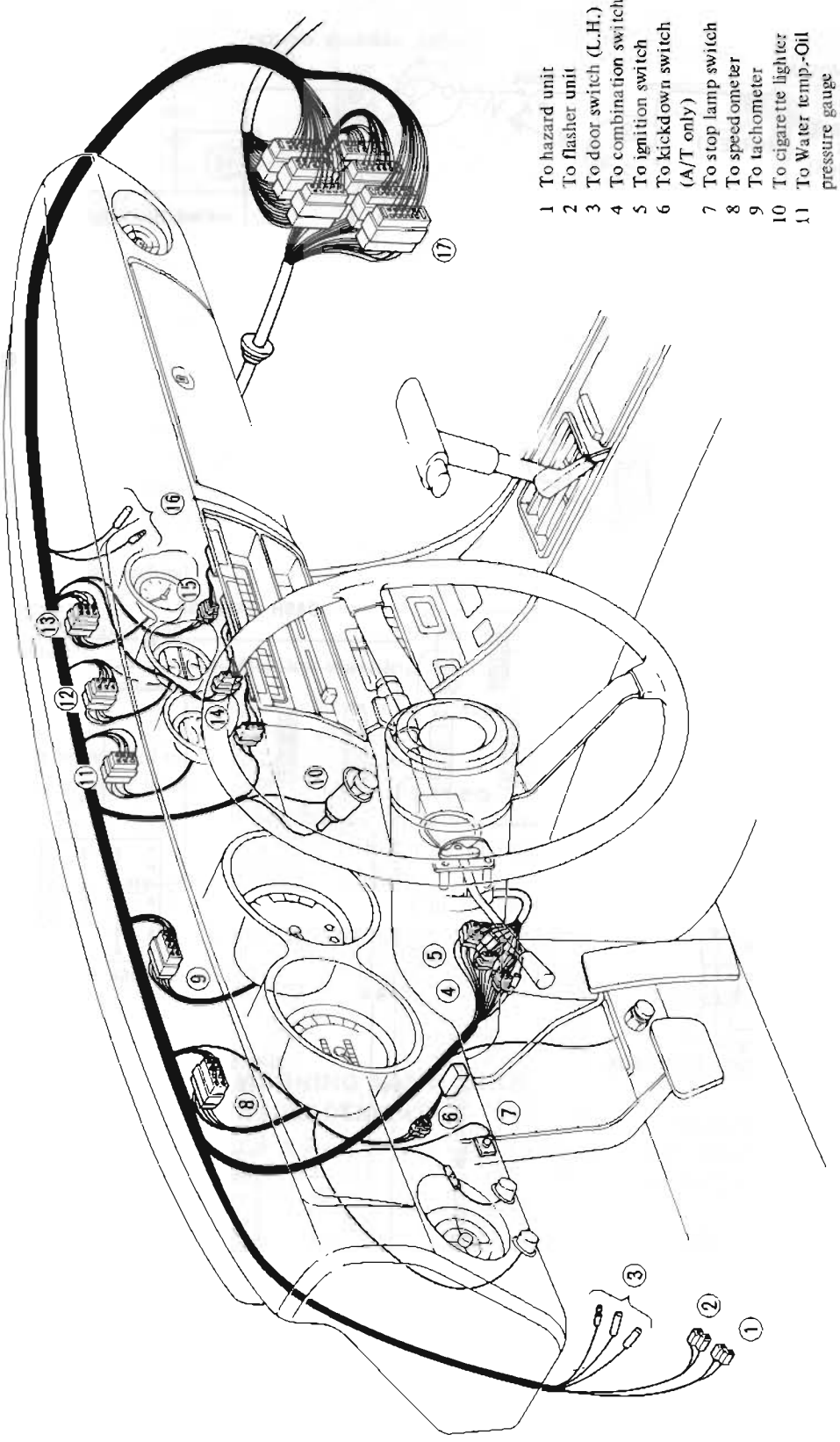
Choke warning system





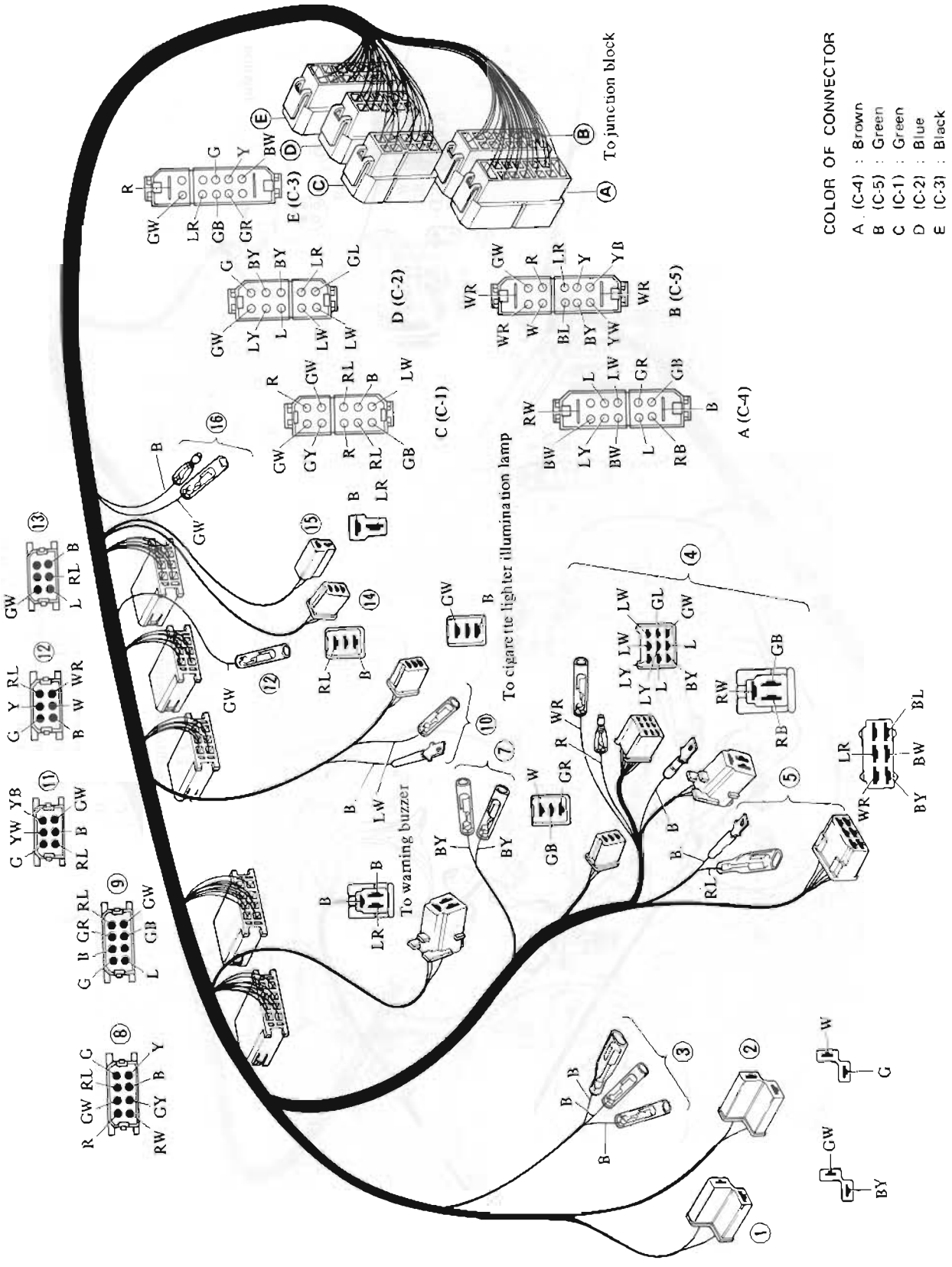
BE170A

Fig. BE-142 Circuit diagram for choke warning system



BE171A

Fig. BE-143 Wiring harness — Instrument


COLOR OF CONNECTOR
A (C-4) : Brown
B (C-5) : Green
C (C-1) : Green
D (C-2) : Blue
E (C-3) : Black
To junction block
To cigarette lighter illumination lamp
To warning buzzer
A (C-4)
B (C-5)
C (C-1)
D (C-2)
E (C-3)

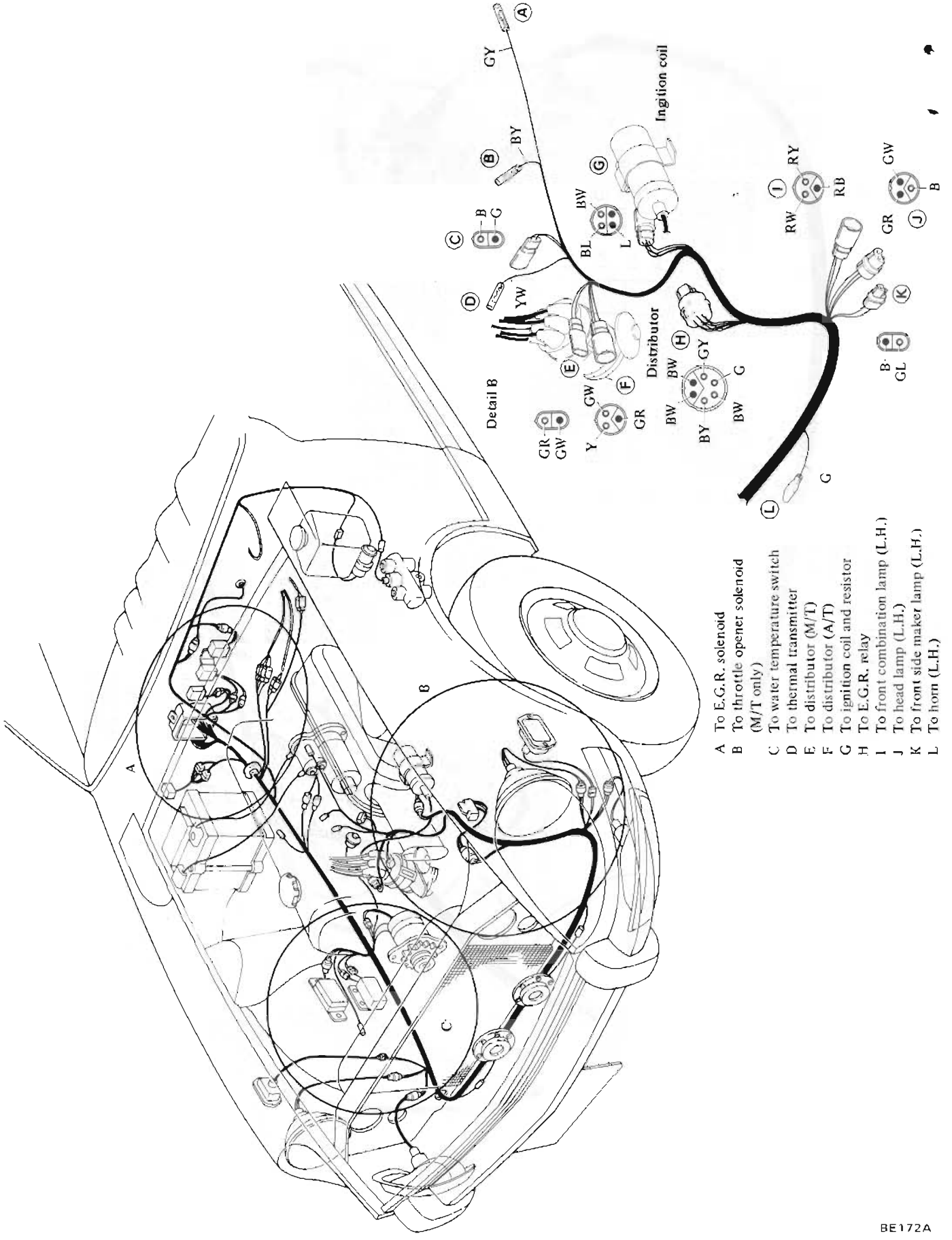
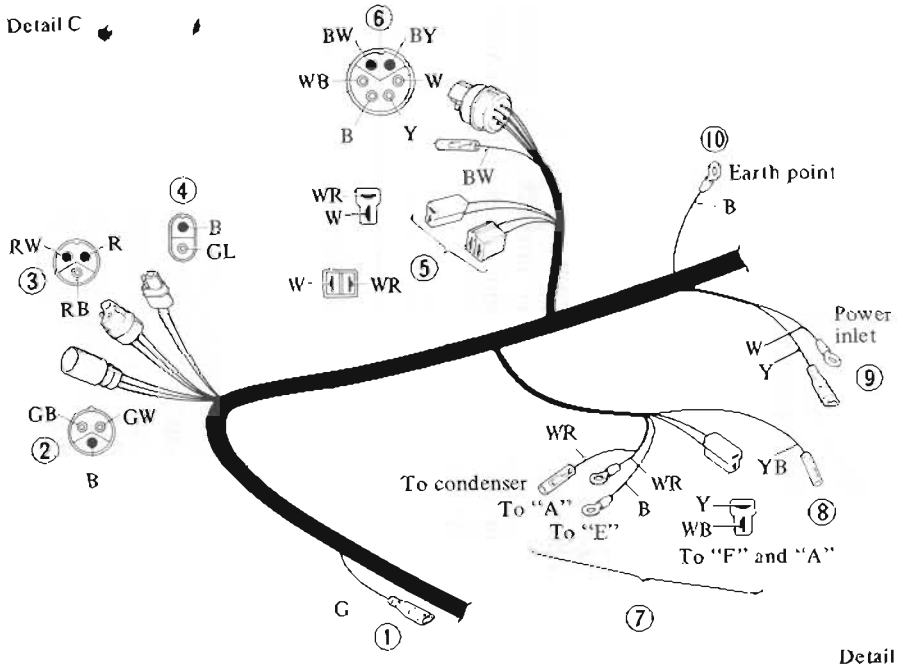
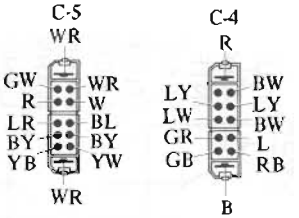


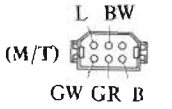
Fig. BE-144 Wiring harness — Engine room



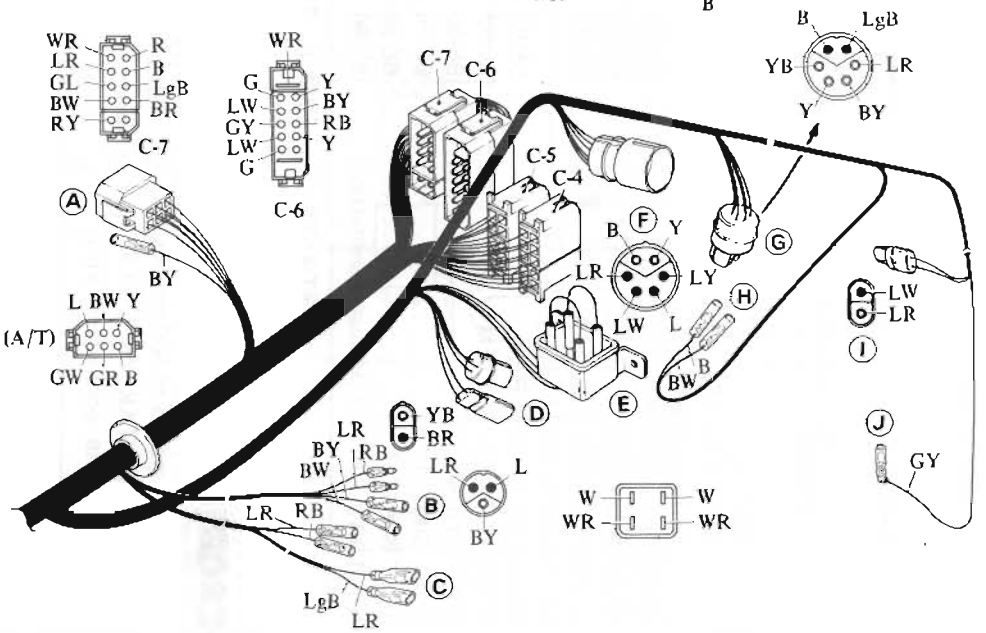
1 To horn (R.H.)
2 To front combination lamp (R.H.)
3 To headlamp (R.H.)
4 To front side marker lamp (R.H.)
5 To shunt
6 To voltage regulator and condenser
7 To alternator and condenser
8 To oil pressure switch
9 To stopper motor
10 To earth point



Detail A



To and from junction block
C-4 : Brown
C-5 : Green
C-6 : White
C-7 : Black



A To transistor ignitor
B To inhibitor switch (A/T)
C To neutral switch and reverse lamp switch (M/T)
D To interlock relay
E To fusible link box
F To wiper motor
G To seat belt warning relay (A/T)
H To kickdown solenoid
I To washer motor
J To brake check switch

STARTER INTERLOCK SYSTEM (Except for Canada)

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DESCRIPTION

The starting system of S30 models is provided with STARTER INTERLOCK DEVICE in accordance with MVSS 208.

The engine can be started and the warning buzzer and light will not activate only when every front seat occupant observes the following requirements for starting the engine.

REQUIREMENTS FOR STARTING THE ENGINE

1. Engine starts when every occupant observes the following.
(1) Seat belt is fastened after occupant is seated.
(2) When none of the seats are occupied.

2. If the engine stops, the starter interlock device will allow restarting of the engine under any of the following conditions.
(1) The ignition key remains turned to the "ON" position.
(2) The driver remains seated.
(3) It is within 3 minutes after turning the ignition key to the "OFF" or "ACC" position.

3. In an emergency, the engine can be started by observing the following procedure.
(1) Turn the ignition key to the "ON" position.
(2) Push the switch button inside the engine compartment.
(3) Turn the ignition key to the "START" position.

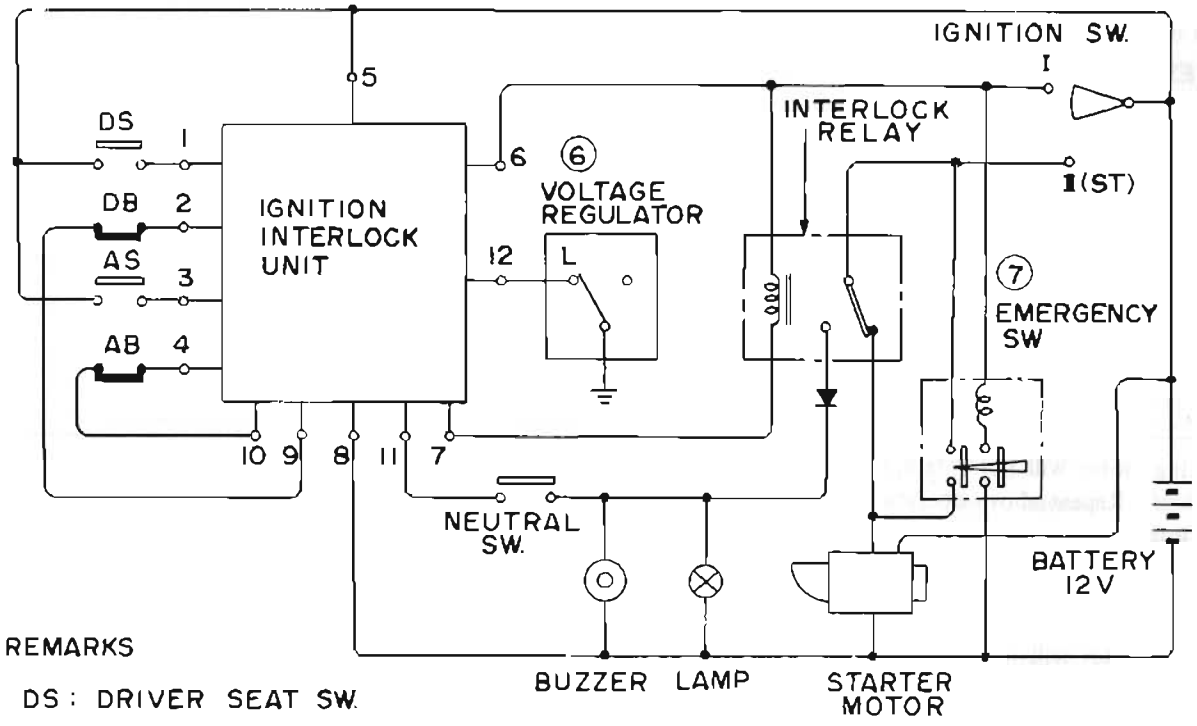
WARNING BUZZER AND LIGHT

They activate under any of the following conditions.

1. An occupant has not fastened his seat belt, the gear shift lever is in any driving position, and the ignition key is in the "ON" position.
2. Starter interlock relay operates with the ignition key in the "START" position.

Case	Driver's seat position		Right outboard	
	Seat switch	Belt switch	Seat switch	Belt switch
1	ON-1	ON-2	ON-1	ON-2
2	ON-1	ON-2	OFF	OFF or ON-1
3	OFF	OFF or ON-1	ON-1	ON-2
4	OFF	OFF or ON-1	OFF	OFF or ON-1

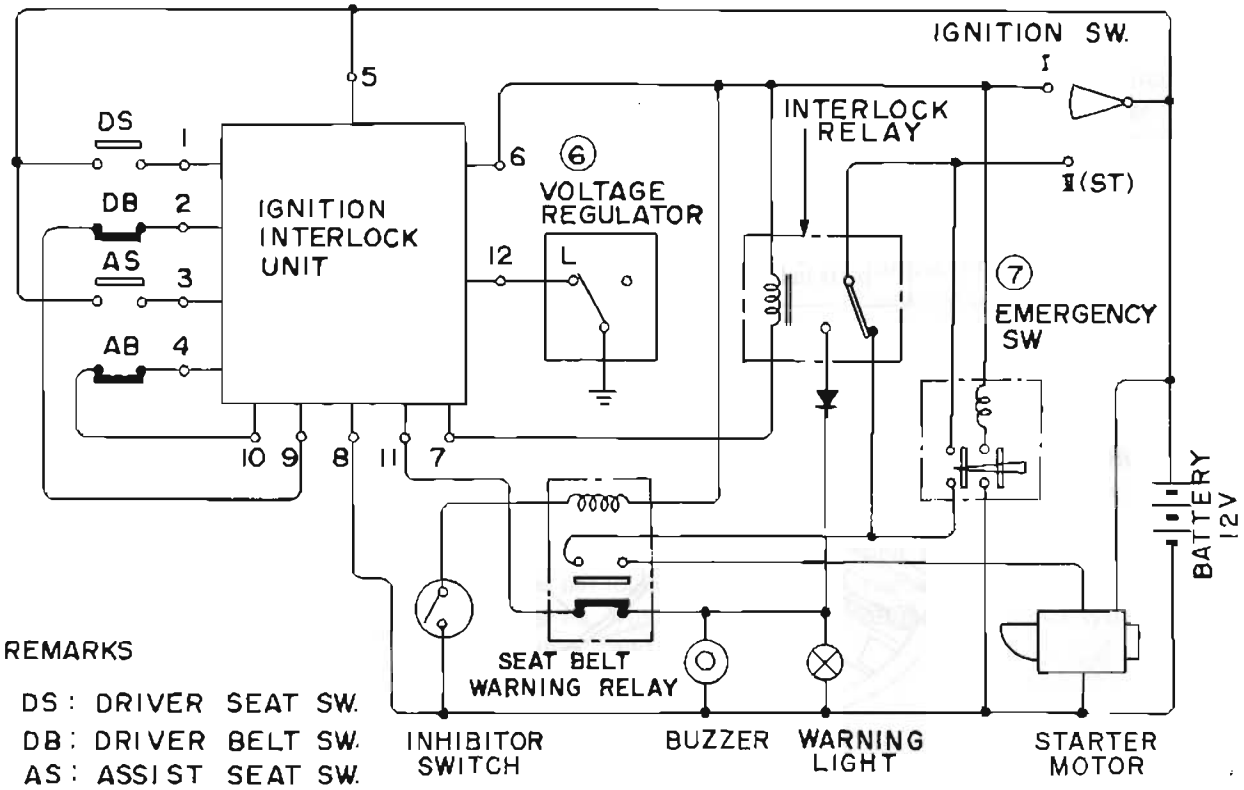
Note: "–1" and "–2" in the switch columns indicate the sequence of switch activation.



REMARKS

DS : DRIVER SEAT SW.
DB : DRIVER BELT SW.
AS : ASSIST SEAT SW.
AB : ASSIST BELT SW.

CIRCUIT



REMARKS

DS : DRIVER SEAT SW.
DB : DRIVER BELT SW.
AS : ASSIST SEAT SW.
AB : ASSIST BELT SW.

CIRCUIT

BE173A

Fig. BE-145 Circuit diagram for whole system

TROUBLE DIAGNOSES OF SYSTEM

SYSTEM CHECK ON CAR

STEP 1.

A harness checker should always be used when anything goes wrong with this system.
Do not attempt to disassemble or adjust the interlock unit. Trouble shooting should begin by checking whether or not the conditions alleged by the customer recur.

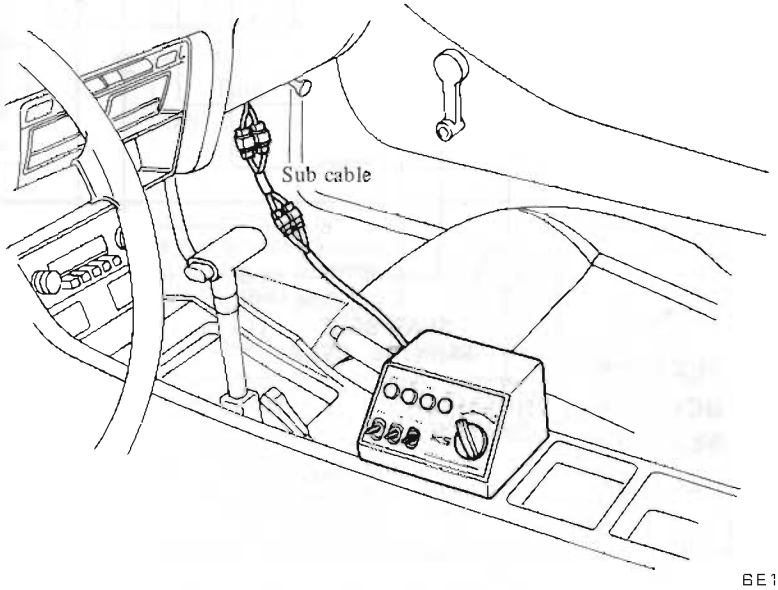
- Starting motor will not rotate, therefore engine will not start. Repeat above operations after connecting new interlock unit with connectors.
  - Starting motor will not rotate, therefore engine will not start.
    System problem other than interlock unit. Proceed to STEP 2 or 3.
  - Engine starts properly.
    Interlock unit problem.
    Replace interlock unit.
- Engine starts properly.
  The system is in good condition.

STEP 2.

Inspection with the harness checker.

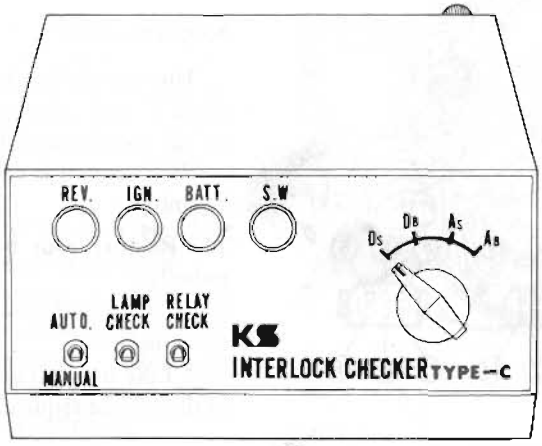
1. Disconnect interlock unit at connectors.
2. Connect the checker with connectors as shown below.

Identify which check light is off and check interlock relay operation.
Replace interlock relay if inoperative and replace the parts indicated by each check light which remains off.



BE174A

Fig. BE-146 Connecting the checker with dash harness connectors



8E202A

Fig. BE-147 Harness checker

OPERATION INSTRUCTIONS FOR HARNESS CHECKER

The harness checker is designed to check the function of all system components except the interlock unit.

1. Items to be checked.

1.1 Driver's seat switch with harness (Ds)
1.2 Driver's belt switch with harness (Db)
1.3 Assistant's seat switch with harness (As)
1.4 Assistant's belt switch with harness (Ab)
1.5 Ignition switch with harness (IGN)
1.6 Interlock relay with harness (INTERLOCK RELAY)
1.7 Seat belt warning light and buzzer (including neutral switch)
1.8 Engine revolution sensor with harness (REV)
1.9 Battery with harness (BAT)

2 Operation of checker

The checker should function as described below, if the system components other than the interlock unit are in normal condition.

Before connecting the checker to the main harness, place the AUTOMATIC-MANUAL selector switch as required.

Items 1.1 through 1.4

The indication lamp is turned on, when the inspector puts on the sensor switch with the change-over switch set in the position of a corresponding sensor switch.

Item 1.5

The indication lamp lights, if the ignition key is put in the "ON" position.

Item 1.6

The starter runs, if the interlock relay switch is pushed up and the ignition switch set in the "START" position. With the interlock relay switch pushed down and the ignition switch in the "START" position, the starter will not turn and the warning buzzer and light will be actuated.

Item 1.7

o Manual transmission
Place the AUTOMATIC-MANUAL selector switch in the "MANUAL" position.
When the shift lever is in the "NEUTRAL" position, the warning buzzer does not sound and the light does not go on. With the shift lever in other than "NEUTRAL" position, the buzzer sounds and the light goes on.

o Automatic transmission
Place the AUTOMATIC-MANUAL selector switch in the "AUTOMATIC" position.
When the ignition switch is in the "ON" position and the AUTOMATIC-MANUAL selector switch is in the "P" position, the warning buzzer does not sound and the light does not go on. With the selector switch in other than the "P" position, the buzzer sounds and the light goes on.

Item 1.8

The indication lamp will be put on immediately after the engine starts.

Item 1.9

The indication lamp lights when the checker is connected to the connectors of the main harness.

Note: The harness checker is equipped with a lamp check switch that permits the simultaneous checking of all the indication lamps. Before checking, push this switch to make sure that all the indication lamps are on.

COMPONENTS OF SYSTEM

Starting interlock system consists of interlock unit seat switch, belt switch, neutral switch, interlock relay, ignition switch, voltage regulator, warning buzzer and warning lamp. They are connected to each other through engine room harness, instrument harness, dash harness and body harness. First of all check for broken units and test their operation.

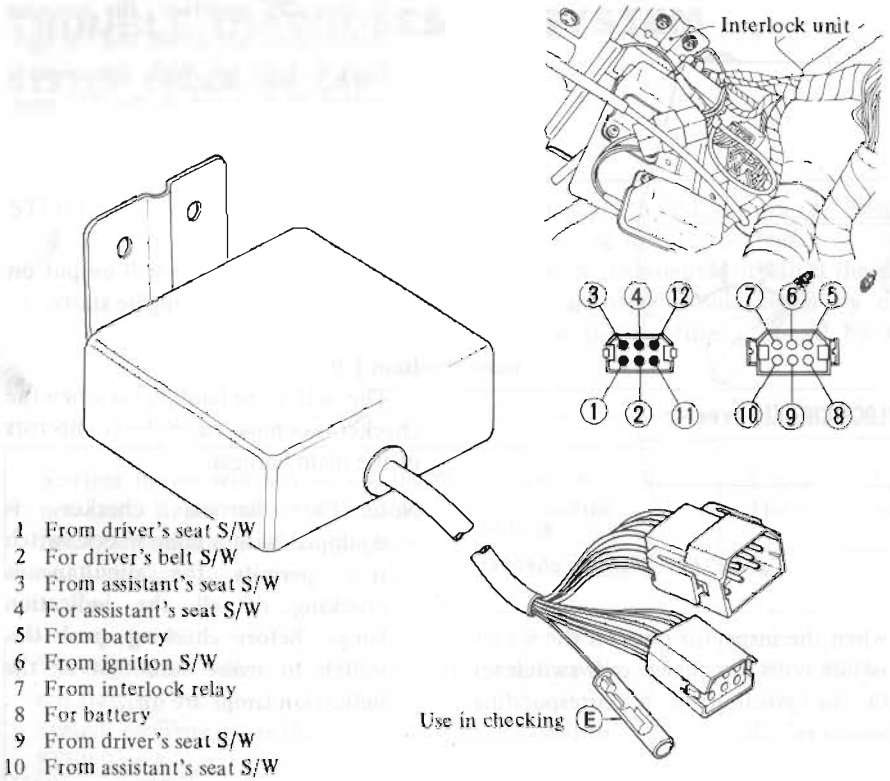
If the units operate correctly, test continuity of wiring harness and also tighten any loose connection.

An engine compartment switch is also added, this switch completes bypass circuit for engine starter motor. Push button on switch, keeping ignition switc in IG (ON) position. The engine will start despite the condition of starting interlock system.

INTERLOCK UNIT

Replacement

The interlock unit is located behind relay bracket and is connected to dash harness.



BE175A

Fig. BE-148 Interlock unit

1. Disconnect interlock relay lead wires at connectors.

Note: There are eight big connectors and three small connectors. They are for intermittent wiper amplifier, horn relay, defogger relay, air-con relay, interlock unit, electric pump cut relay #1 and #2.

2. Remove three screws retaining relay bracket to dash side panel and take out relay bracket with relays.
3. Remove two screws retaining interlock unit to dash side panel. Unit can then be taken out easily.
4. Installation is in the reverse sequence of removal.

BELT SWITCH

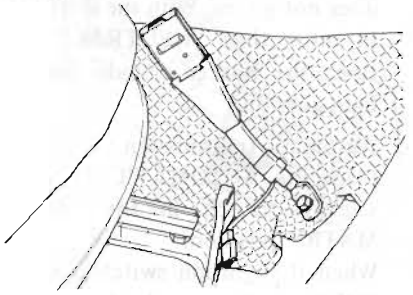
Replacement

The belt switch is an integral part of seat belt fastener so switch and seat belt fastener must be replaced as an assembly.

1. Slide the seat forward at its full stroke.
2. Remove seat belt fastener securing bolt.
3. Disconnect lead wire for belt switch at connector.
4. Seat belt fastener can then be taken out.
5. Installation is in the reverse sequence of removal.

Inspection

Test continuity between two lead wires from seat belt switch with ohmmeter or test lamp. When the seat belt is fastened, there must not be continuity between lead wires. Conversely, there must be continuity when released.



BE176A

Fig. BE-149 Seat belt switch

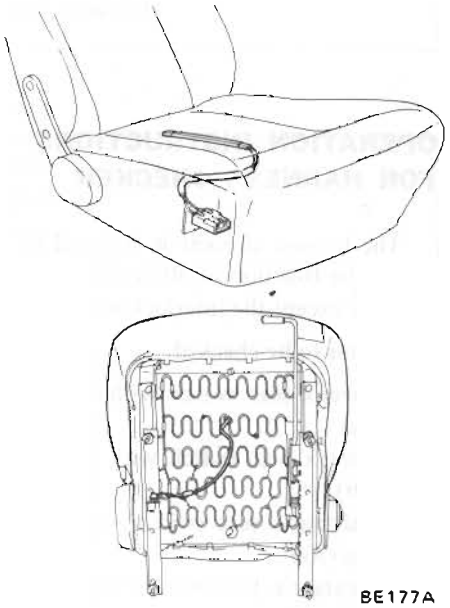
SEAT SWITCH

Replacement

The seat switch is located in both driver's and passenger's seats. This switch is an integral part of seat.

Replacement is carried out as a seat assembly.

1. Remove four bolts securing seat to body.
2. Lifting seat, disconnect lead wires at connector.
3. Take out seat and install new seat in the reverse sequence of removal.



BE177A

Fig. BE-150 Seat switch

Inspection

Test continuity with ohmmeter or test lamp. When upper face of seat is pressed, there must be continuity between two lead wires. Conversely, there must not be continuity between two lead wires when released.

NEUTRAL SWITCH (Manual transmission)

Replacement

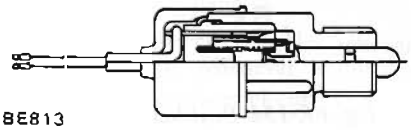
The neutral switch is located on rear extension of transmission and is connected to the lead wires colored green with black stripe and green with white stripe.

1. Disconnect lead wires at connectors.
2. Unscrew neutral switch from transmission rear extension.
3. Installation is in the reverse sequence of removal.

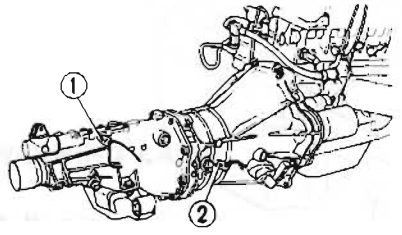
Inspection

Test continuity between two lead wires with ohmmeter or test lamp.

When the plunger is projected, there must be continuity between the lead wires. Conversely, when the plunger is pressed into switch body, there must not be continuity.



BE813



1 Neutral switch
2 Back-up switch

BE178A

Fig. BE-151 Neutral switch

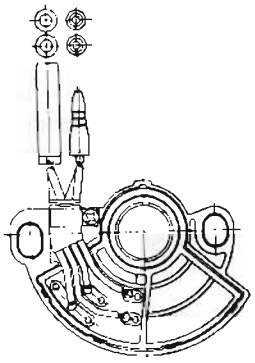
NEUTRAL SWITCH (Automatic transmission)

Inhibitor switch is located on right side of automatic transmission. Removal and installation is described in Section AT (Automatic transmission).

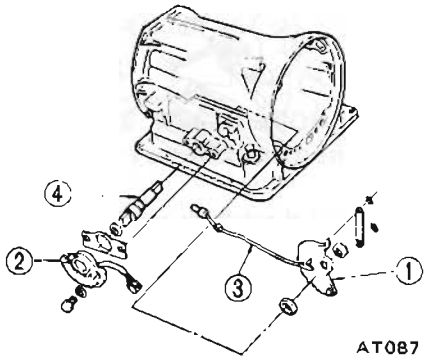
Inspection

Neutral switch is an integral part of inhibitor switch. The harness for neutral switch is a pair of BY (Blue with Yellow stripe).

When the transmission lever is set in the N position, there must be continuity within BY harness.



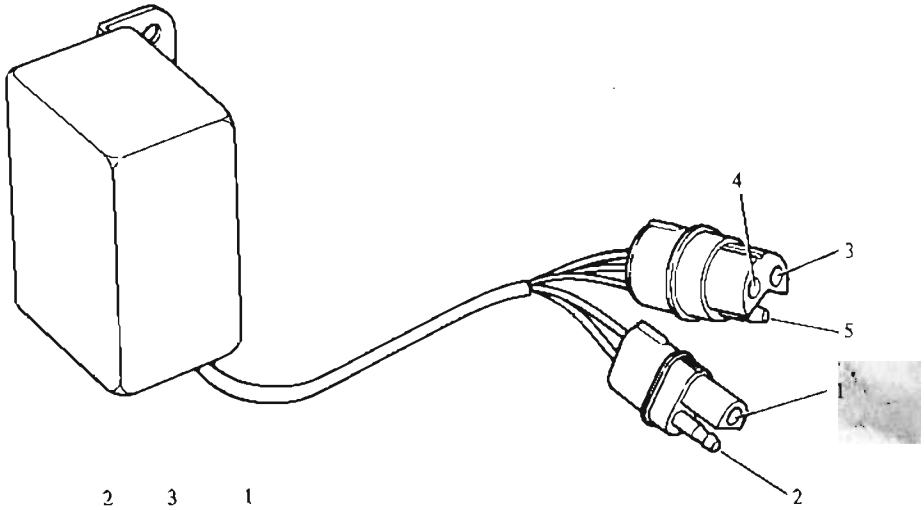
BE814

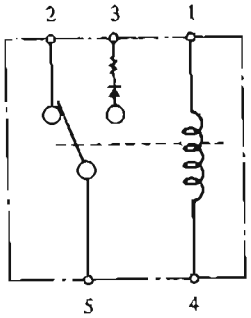


AT087

1 Manual plate
2 Inhibitor switch
3 Parking rod
4 Manual shaft

Fig. BE-152 Inhibitor switch (A/T)





INTERLOCK RELAY

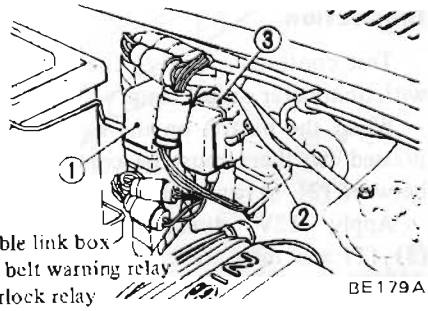
Interlock relay is located on engine room side dash panel. This relay is attached to panel with two screws.

Replacement

1. Open hood.
2. Disconnect lead wires at a connector.
3. Remove two screws retaining interlock relay and seat belt warning relay (A/T model only). Relay can then be taken out.
4. Installation is in the reverse sequence of removal.

Inspection

Test continuity through relay with ohmmeter or test lamp. Continuity should exist only between ① – ④ and ② – ⑤. When 12V direct current is applied to ① – ④, there must be continuity between ③ – ⑤ instead of ② – ⑤. In checking continuity between ③ – ⑤, positive terminal must be connected to ⑤.



1 Fusible link box
2 Seat belt warning relay
3 Interlock relay

BE179A

Fig. BE-153 Interlock relay

SEAT BELT WARNING RELAY (Automatic transmission models only)

The seat belt warning relay is located on engine room side dash panel. This relay is retained by the two screws which retain interlock relay.

1. Open hood.
2. Disconnect lead wires at connector.
3. Remove two screws retaining relay on dash panel. Relay can then be taken out easily.
4. Installation is in the reverse sequence of removal.

Inspection

Test continuity through relay with ohmmeter or test lamp. Under normal conditions, there must be continuity between (5)–(6) and (2)–(4). Conversely when 12V direct current is applied to (5)–(6), there must be continuity between (1)–(3) rather than between (2)–(4).

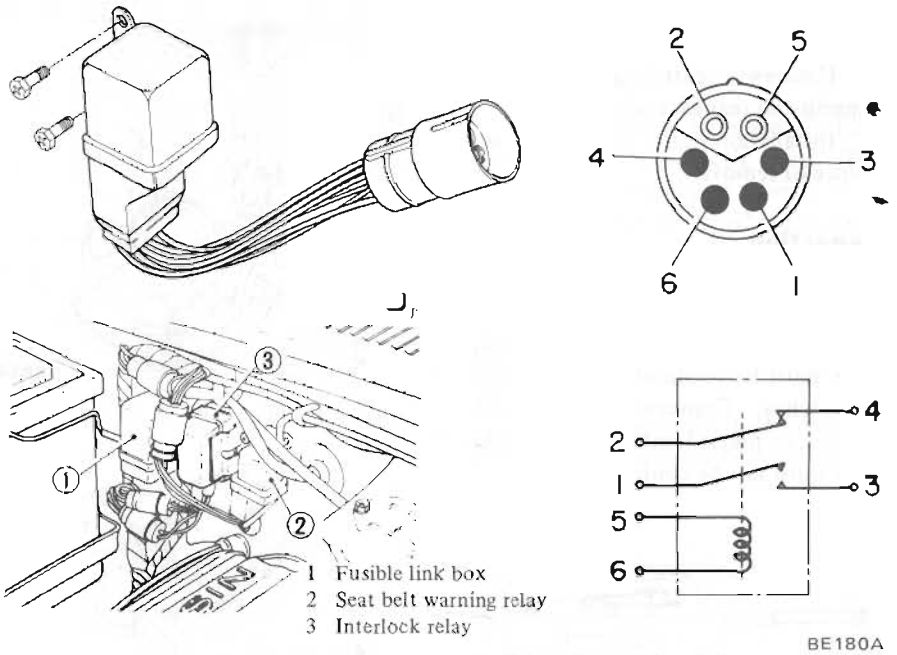


Fig. BE-154 Seat belt warning relay

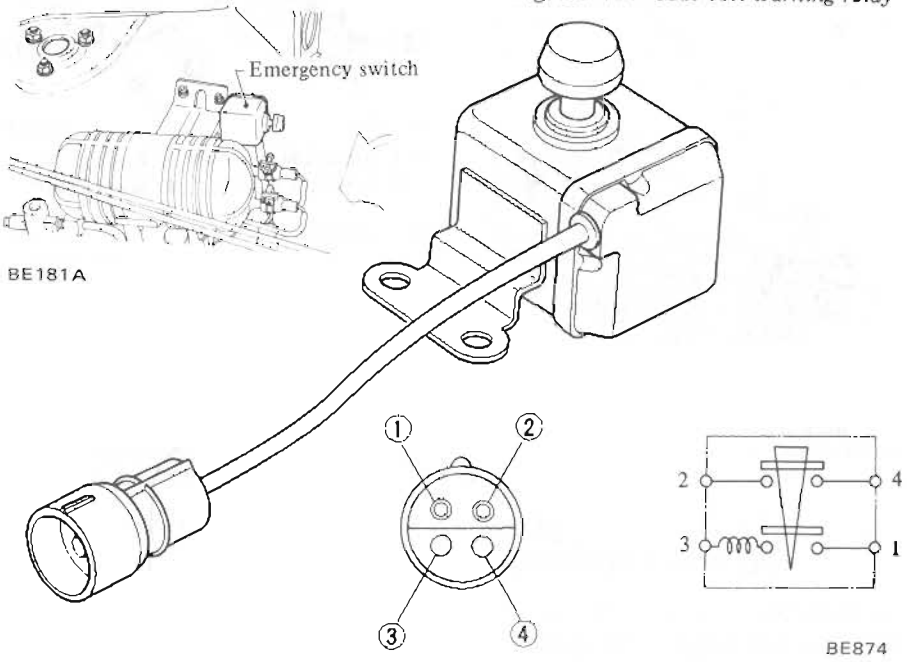


Fig. BE-155 Emergency switch

EMERGENCY SWITCH

Replacement

This switch is installed on right side of engine room. On models equipped with air conditioner, the switch is located on the vacuum tank retainer.

1. Disconnect lead wires connector.
2. Remove retaining screws and take out switch.
3. Installation is in the reverse sequence of removal.

Inspection

Test continuity through the switch with ohmmeter or test lamp.

When the button on the switch is pressed in, there must be continuity between (2)–(4) and (3)–(1).

Apply 12V direct current to (3)–(1) and then press the button in; there must be continuity between (2)–(4) even if the button is released.

WARNING BUZZER

The warning buzzer is installed behind speedometer on bracket from instrument panel.

1. Disconnect battery ground cable.
2. Remove speedometer as described in page BE-38 for Meter and Gauge Replacement.
3. Disconnect lead wires for buzzer at a connector through the hole in which speedometer is installed.
4. Remove screw retaining buzzer assembly to bracket through the hole in which speedometer is installed.

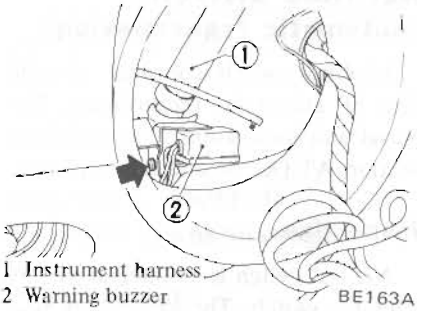
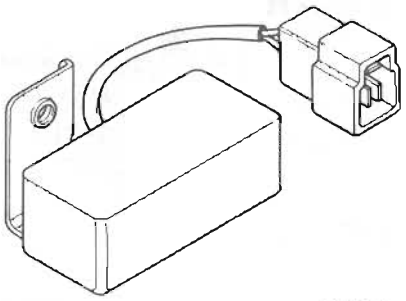


Fig. BE-156 Removing buzzer

5. Buzzer assembly can then be taken out.
6. Installation is in the reverse sequence of removal.



BE164A

Fig. BE-157 Buzzer

Inspection

Apply 12V direct current between (1)–(3) or (2)–(3) and check whether the buzzer makes noise. The buzzer must make noise whenever terminals are connected to power circuit.

Note: When connecting power circuit to buzzer make sure that (–) negative terminal is always connected to (3) terminal.

WARNING LAMP

Bulb replacement

1. Pull out heater control knobs.
2. Remove four screws retaining instrument finisher to instrument panel.
3. Pull instrument finisher forward a little, and disconnect lead wires at two connectors.

Instrument finisher can then be taken out from instrument panel.

Note: Two connectors are for map lamp and seat belt warning lamp.

4. Twist socket behind warning lamp and take out socket with bulb.
5. Installation is in the reverse sequence of removal.

Bulb wattage:

Seat belt warning lamp .. 3.4W

LAMP BODY REPLACEMENT

1. Pull out heater control knobs.
2. Remove four screws fastening instrument finisher to instrument panel.
3. Taking out instrument finisher a little, disconnect two connectors. Instrument finisher can then be taken out from instrument panel.

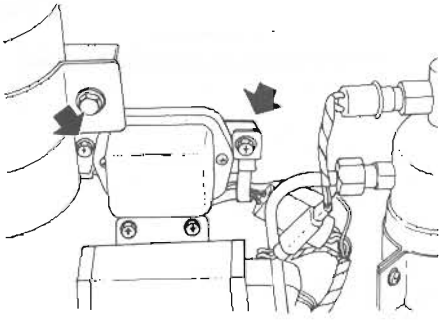
Note: Two connectors are for map lamp and seat belt warning lamp.

4. Remove two screws retaining warning lamp body to instrument finisher. Lamp body can then be taken out.
5. Installation is in the reverse sequence of removal.

VOLTAGE REGULATOR (Engine revolution senser)

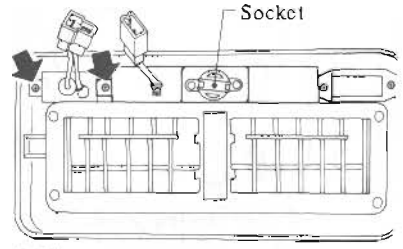
The voltage regulator is located on the right side of engine room above shunt.

1. Disconnect battery ground cable.
2. Disconnect lead wires from voltage regulator at a connector.
3. Remove two screws retaining voltage regulator assembly to body panel. Voltage regulator can then be taken out.
4. Installation is in the reverse sequence of removal.

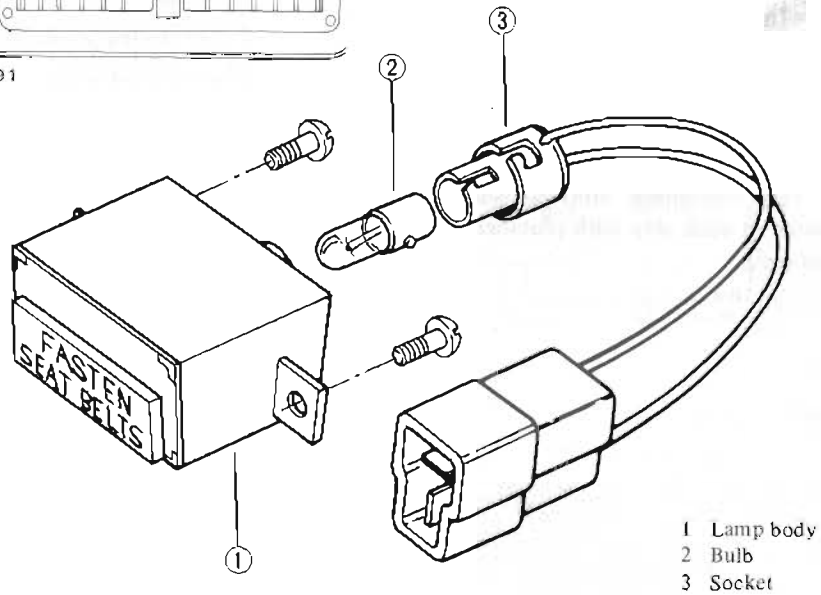


BE185A

Fig. BE-159 Removing voltage regulator



BE991



1 Lamp body
2 Bulb
3 Socket

BE184A

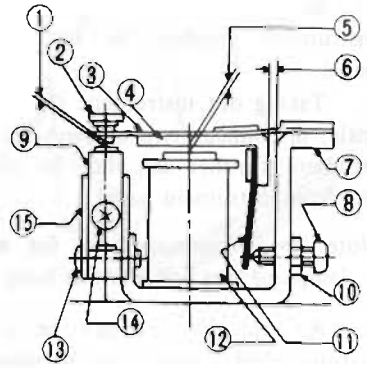
Fig. BE-158 Seat belt warning lamp

Inspection

Remove two screws retaining cover to voltage regulator body and take out cover. Connect voltage regulator lead wires to engine room harness at connector.

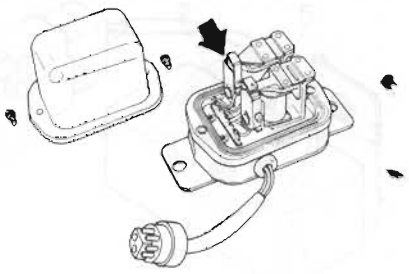
Check the contact point indicated in following figure

- o When engine is stopped
  ⟶ Contact point must be closed.
- o When engine is running
  ⟶ Contact point must be open.



Construction of charge relay

1	Point gap	10	Lock nut
2	Charge relay contact	11	Adjust spring
3	Connecting spring	12	Coil
4	Armature	13	3 mm (0.118 in) dia. screw
5	Core gap		
6	Yoke gap	14	4 mm (0.157 in) dia. screw
7	Yoke		
8	Adjusting screw	15	Contact set
9	Voltage regulator contact		



BE203A

Fig. BE-160 Voltage regulator

IGNITION SWITCH

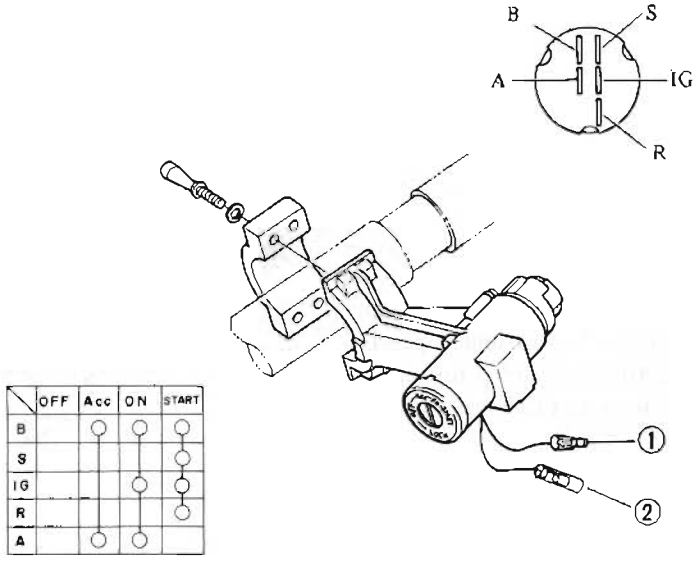
The ignition switch is installed at bottom of steering lock.

Replacement

1. Remove screws retaining shell covers.
2. Remove shell covers and disconnect lead wires at connector.
3. Remove switch retaining screw from bottom of steering lock.
4. Switch assembly can then be taken out.
5. Install in the reverse sequence of removal.

Inspection

Test continuity through ignition switch at each step with ohmmeter or test lamp.

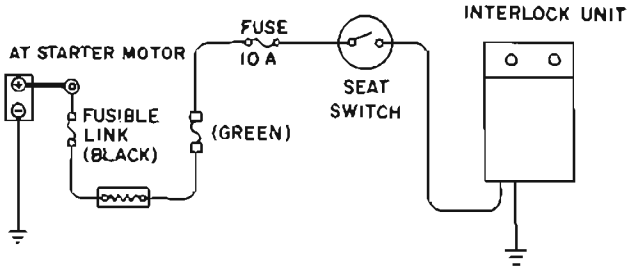


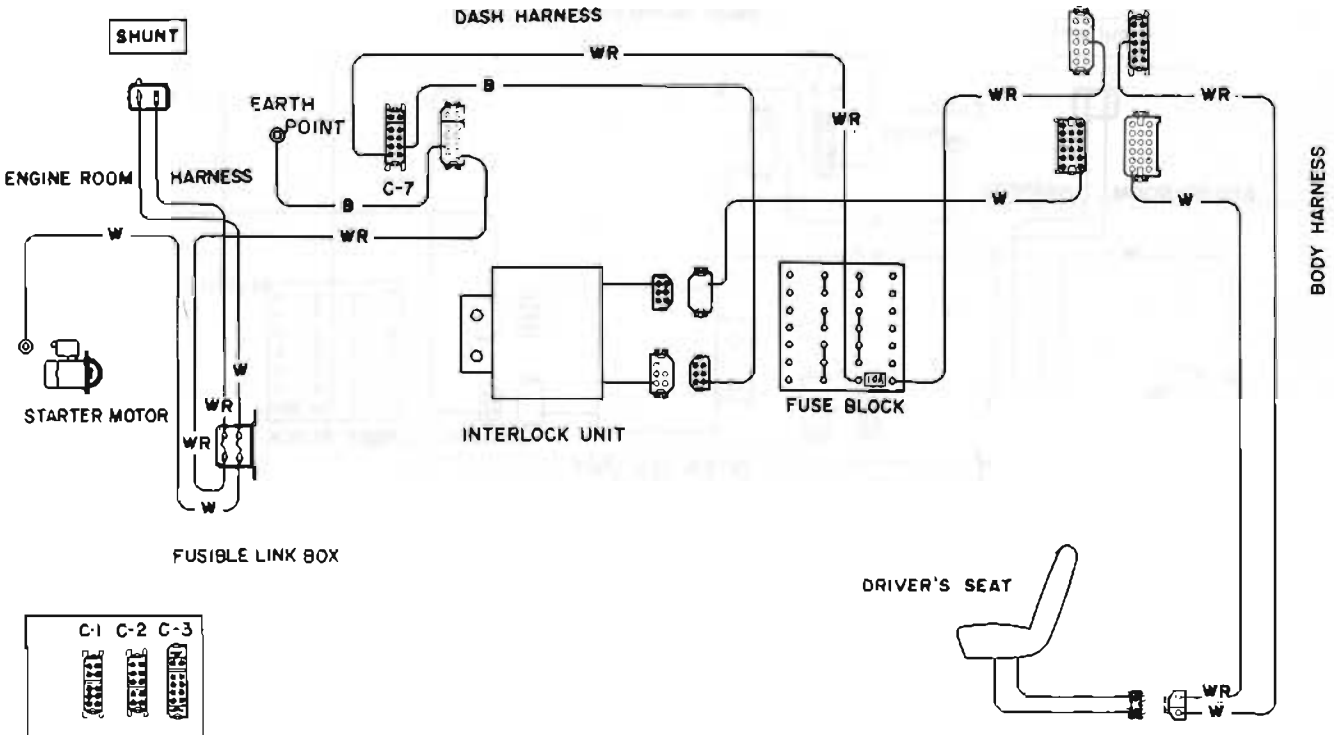
BE999

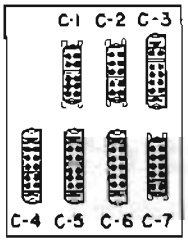
Fig. BE-161 Ignition and starting switch

CIRCUIT DIAGRAM FOR INTERLOCK SYSTEM

Driver's switch







JUNCTION BLOCK

CONNECTOR

C-7 : Black

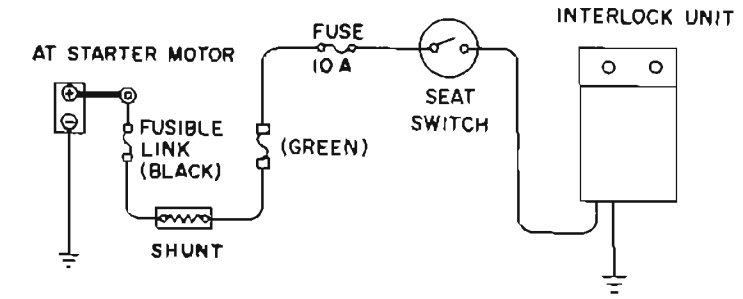
COLOR CODE

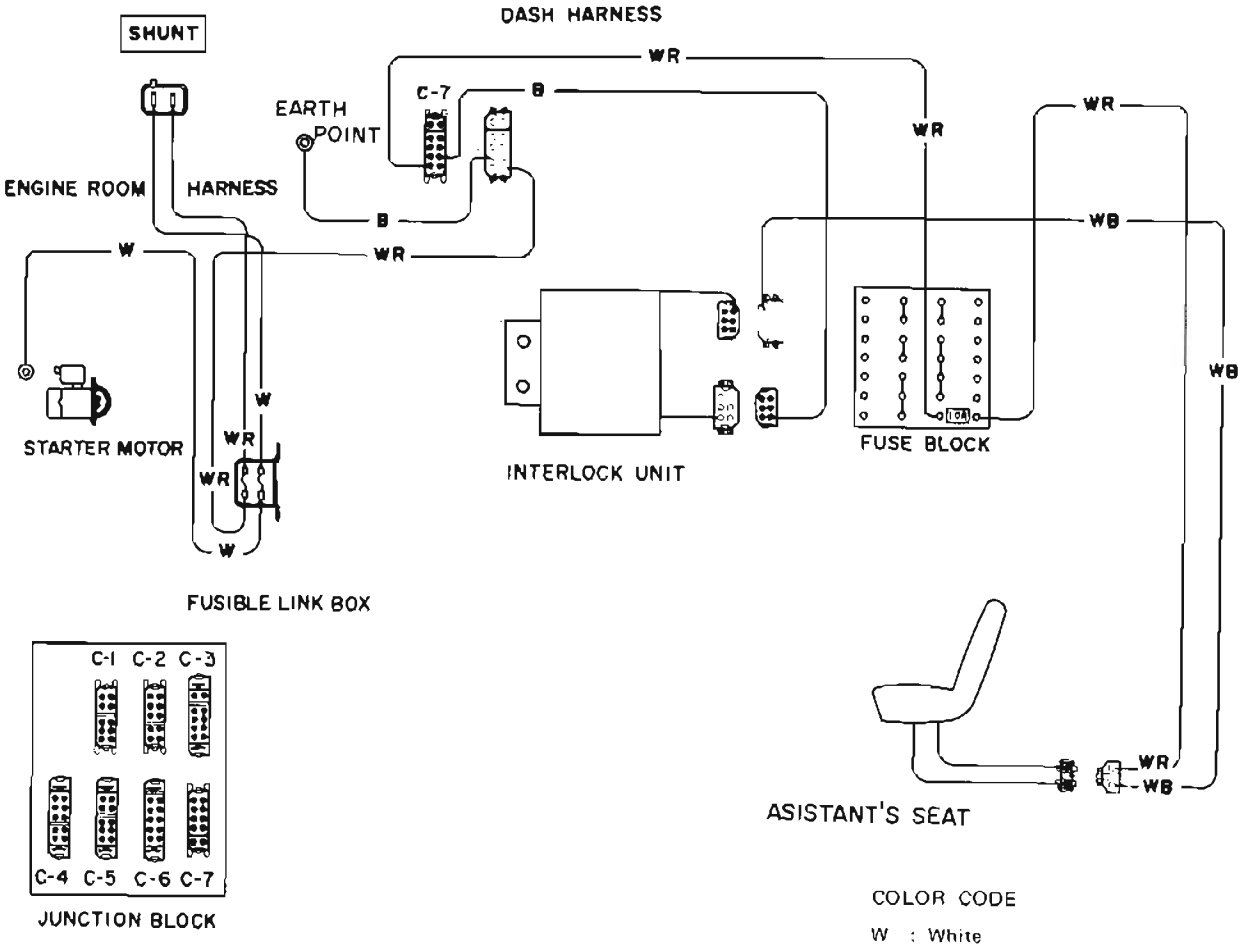
W : White
WR : White with red stripe
B : Black

BE186A

Fig. BE-162 Circuit diagram for driver's seat switch

Asistant's seat switch





CONNECTOR

C-7 : Black

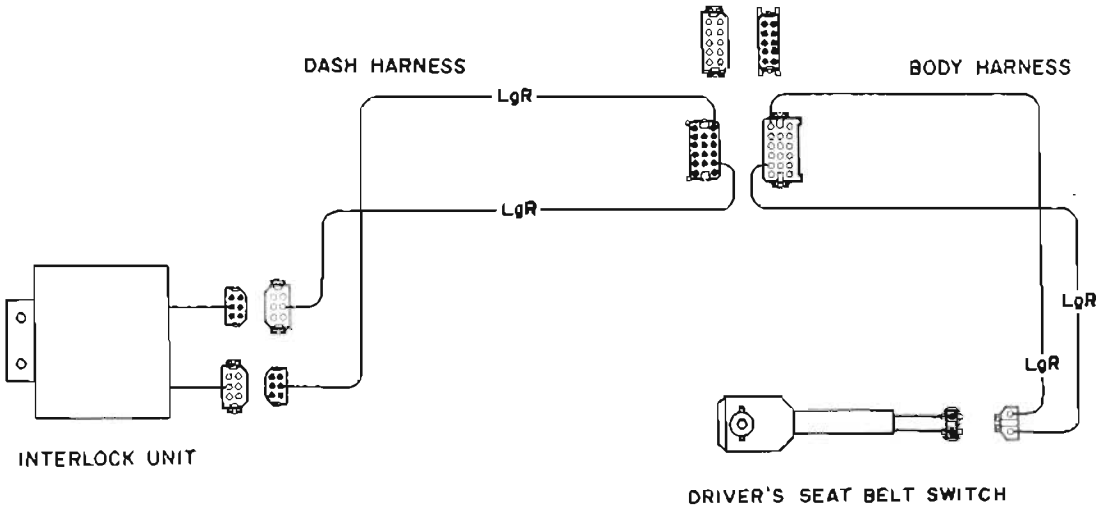
COLOR CODE

W : White
B : Black
WR : White with red stripe
WB : White with black stripe

BE187A

Fig. BE-163 Circuit diagram for assistant's seat switch

Driver's belt switch

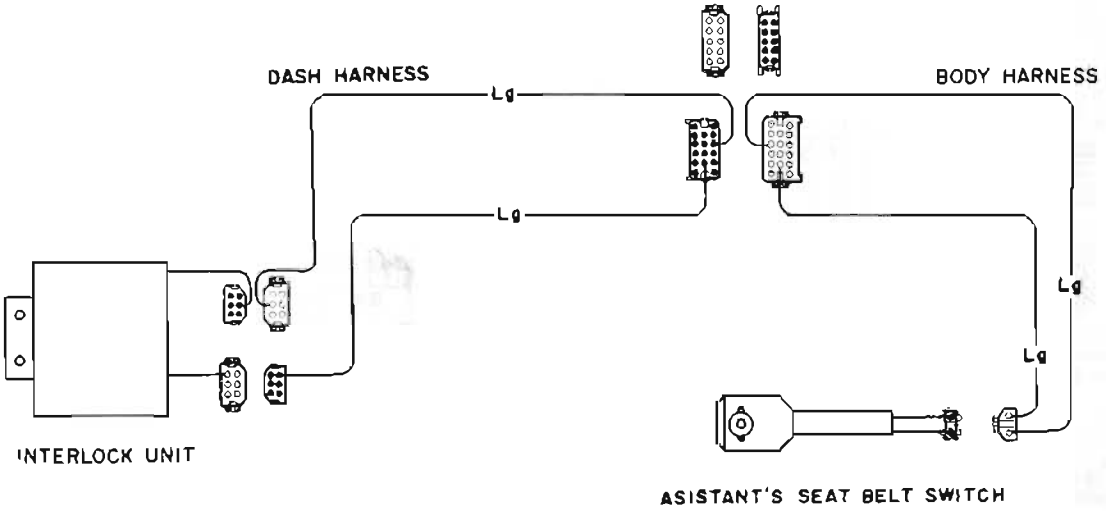


COLOR CODE
LG : Light green

BE188A

Fig. BE-164 Circuit diagram for driver's belt switch

Asistant's belt switch

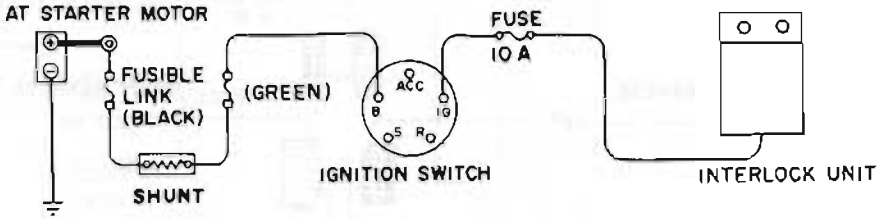


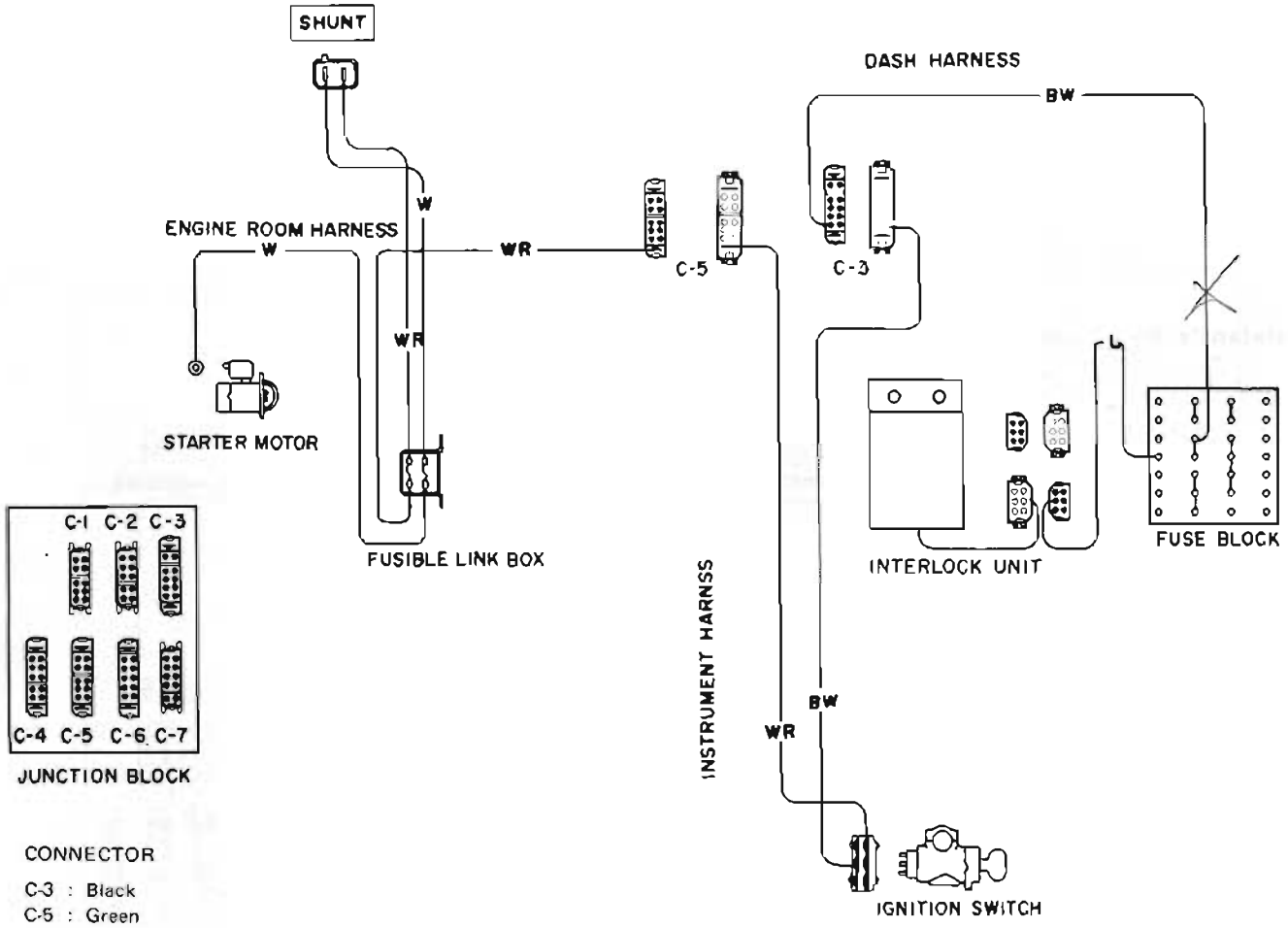
COLOR CODE
LG : Light green

BE189A

Fig. BE-165 Circuit diagram for assistant's belt switch

Ignition switch

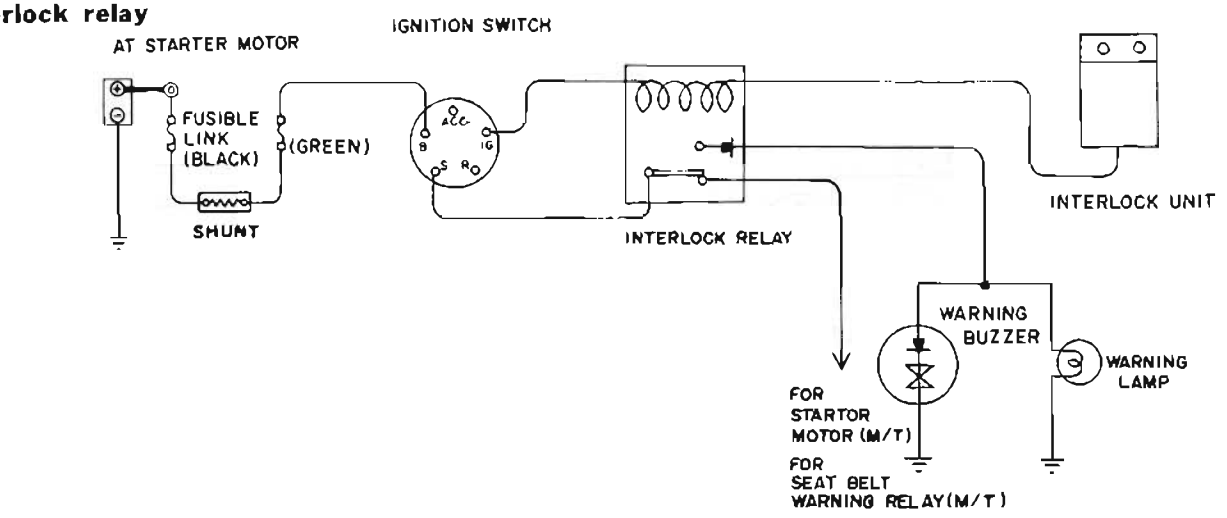


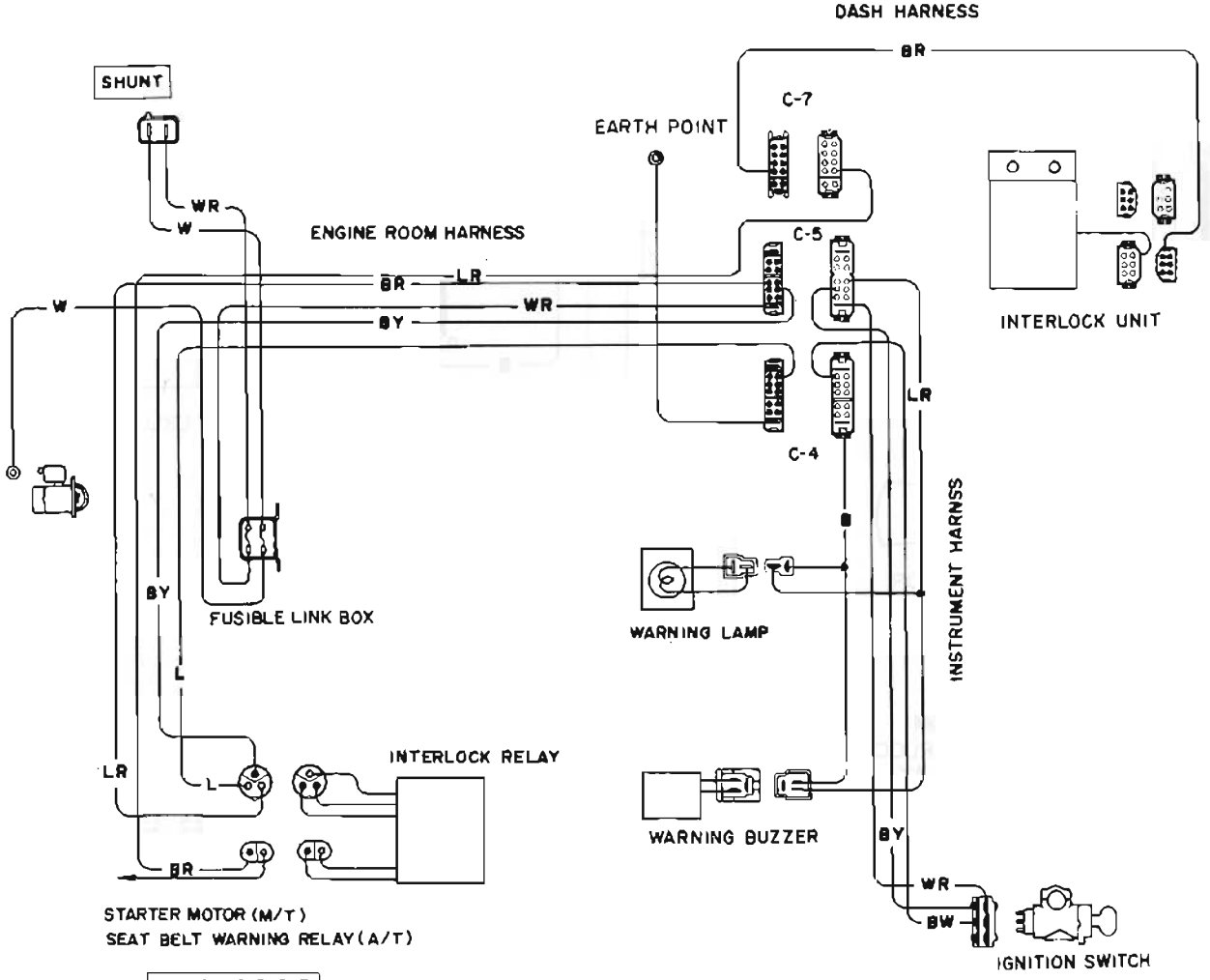


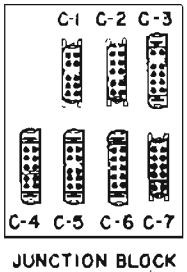
BE190A

Fig. BE-166 Circuit diagram for ignition switch

Interlock relay







JUNCTION BLOCK

CONNECTOR

C-4 : Brown
C-5 : Green
C-7 : Black

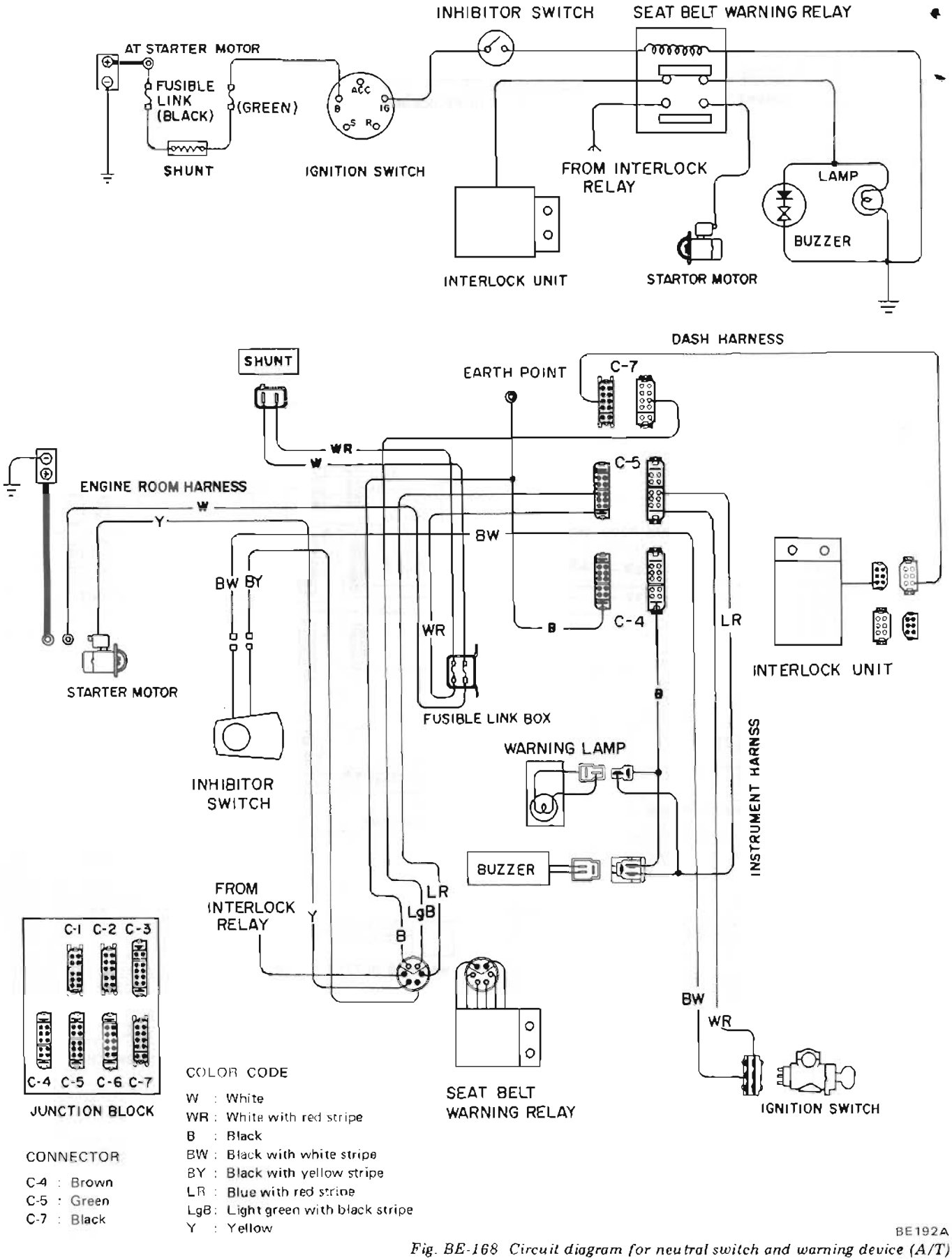
COLOR CODE

L : Blue
WR : White with red stripe
BW : Black with white stripe
BR : Black with red stripe
BY : Black with yellow stripe
LR : Blue with red stripe

BE191A

Fig. BE-167 Circuit diagram for interlock relay

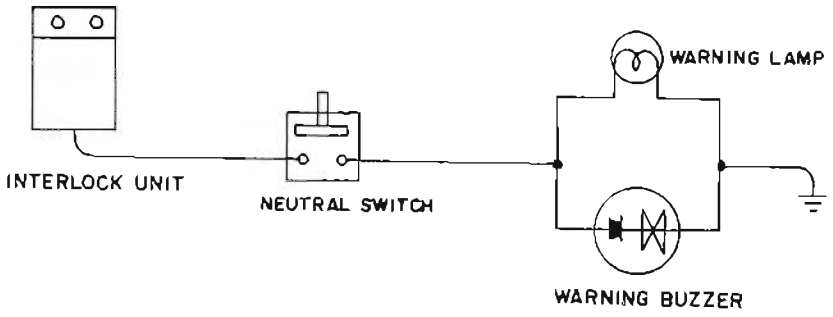
Neutral switch and warning device (A/T)

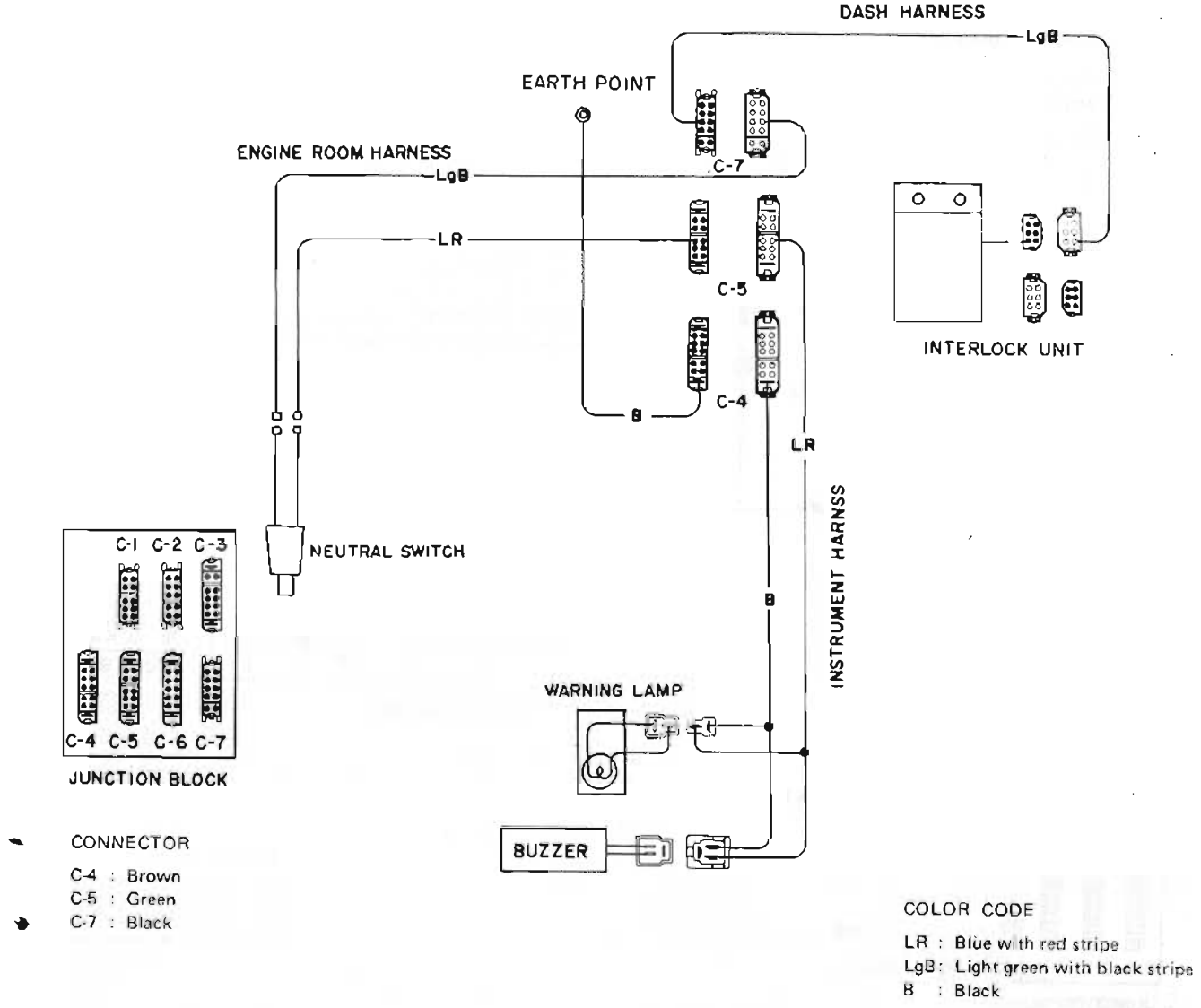


BE192A

Fig. BE-168 Circuit diagram for neutral switch and warning device (A/T)

Neutral switch and warning device (M/T)

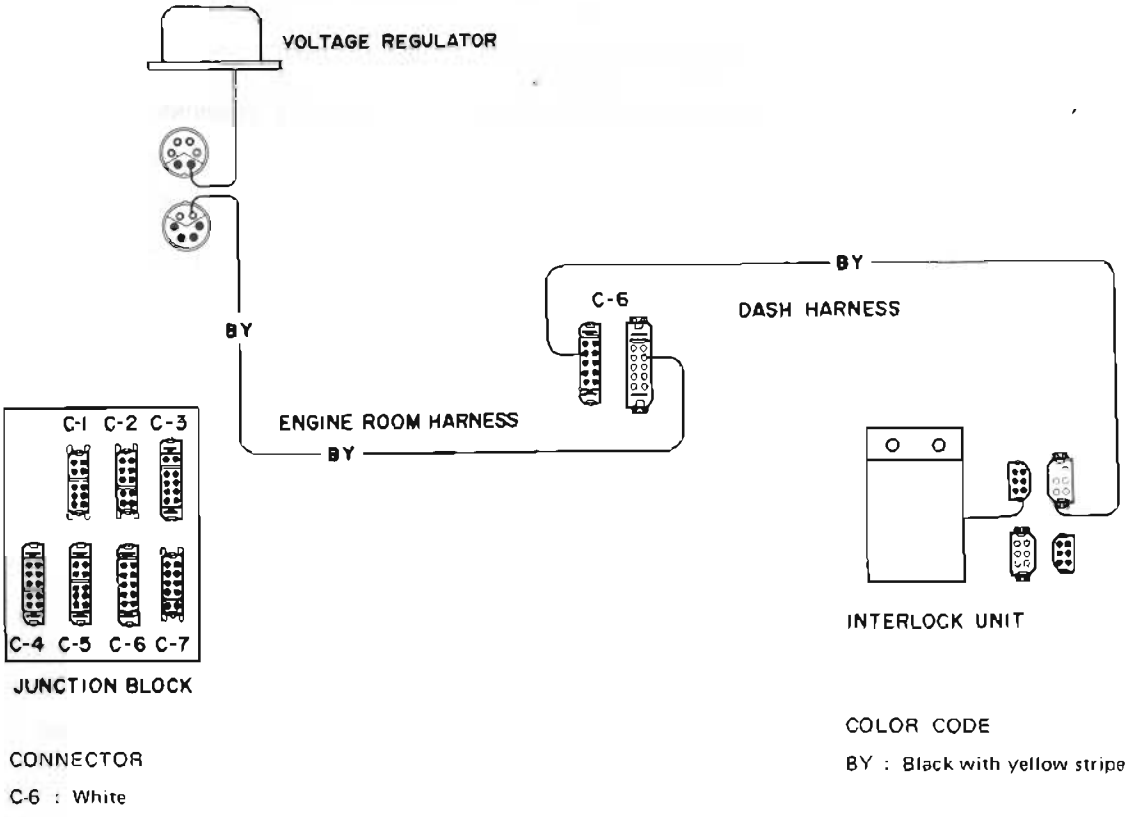




BE193A

Fig. BE-169 Circuit diagram for neutral switch and warning device (M/T)

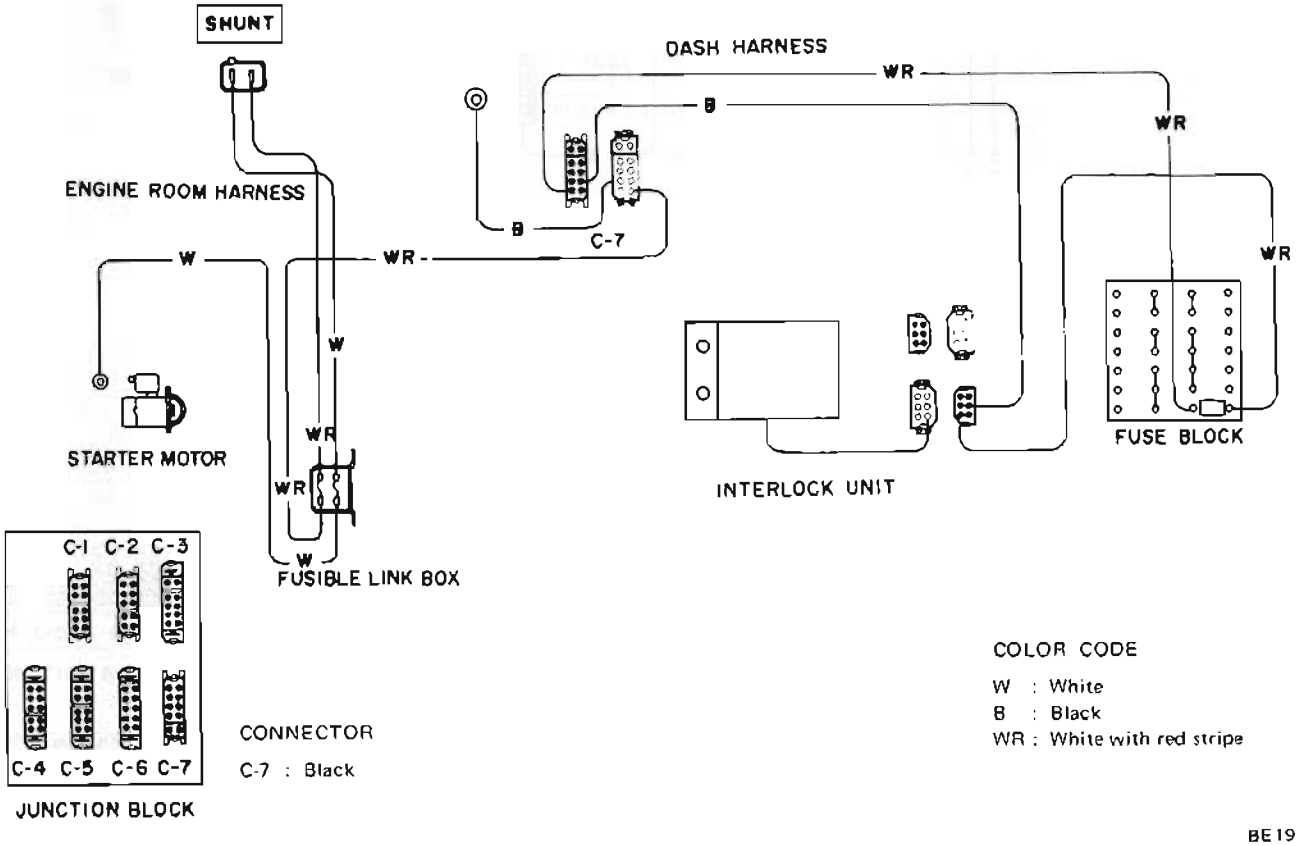
Engine revolution sensor



BE194A

Fig. BE-170 Circuit diagram for engine revolution sensor

Battery (Power inlet)



BE195A

Fig. BE-171 Circuit diagram for battery (power inlet)

Emergency switch (A/T)

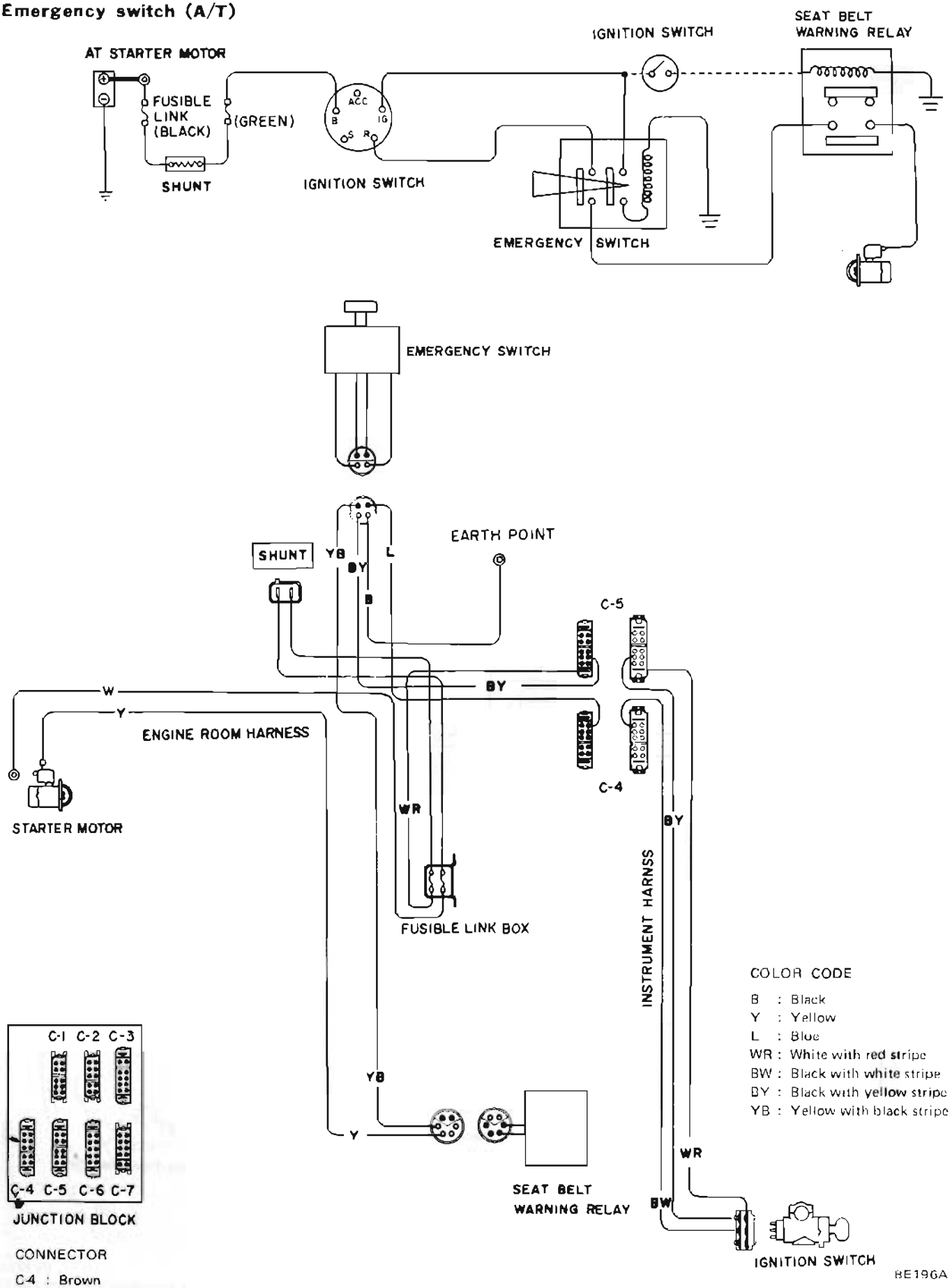
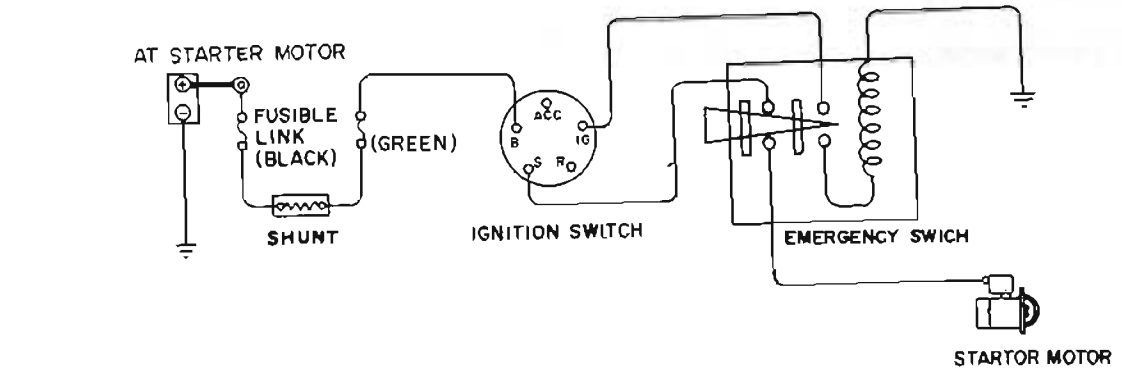
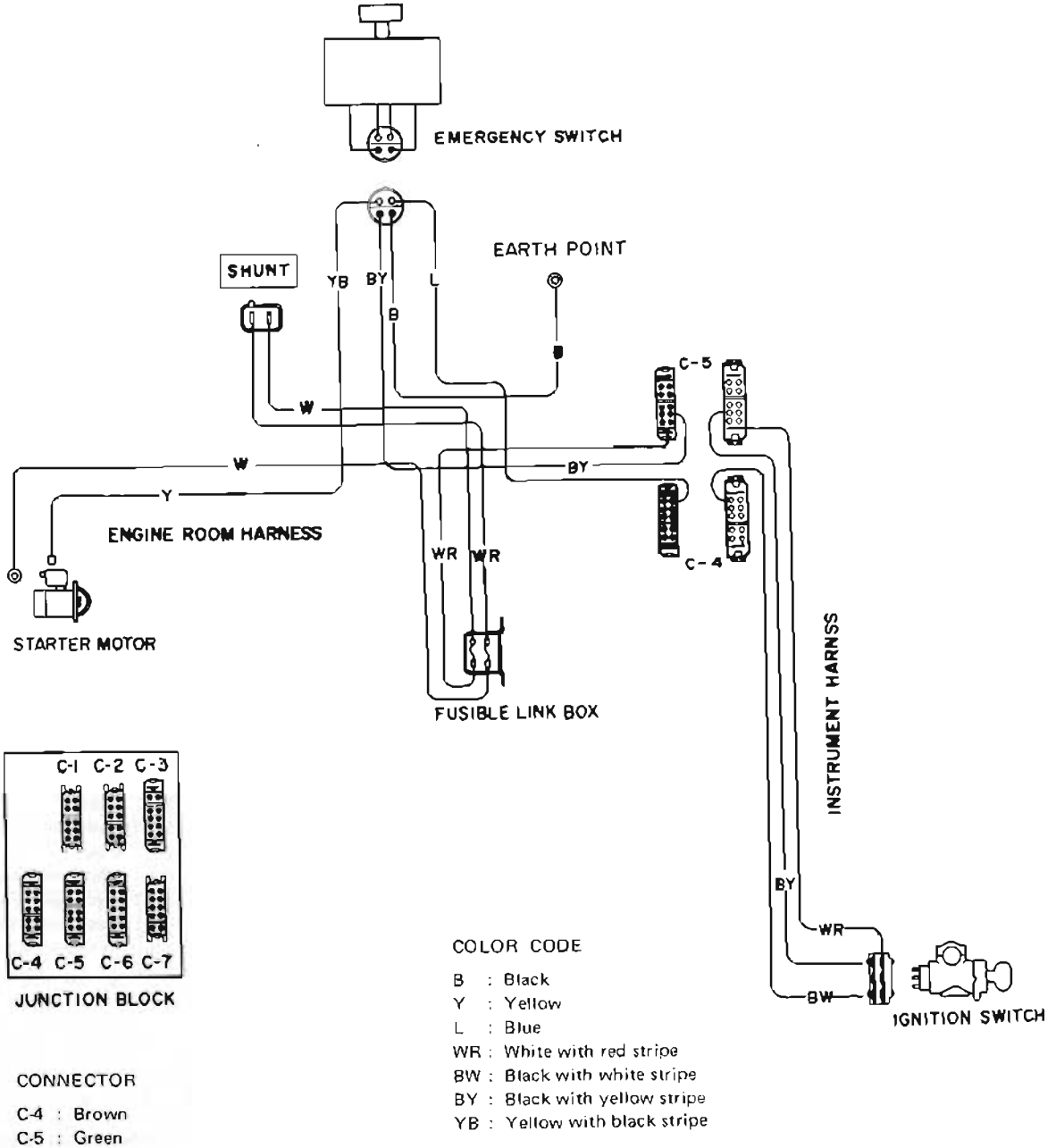


Fig. BE-172 Circuit diagram for emergency switch (A/T)

Emergency switch (M/T)





CONNECTOR

C-4 : Brown
C-5 : Green

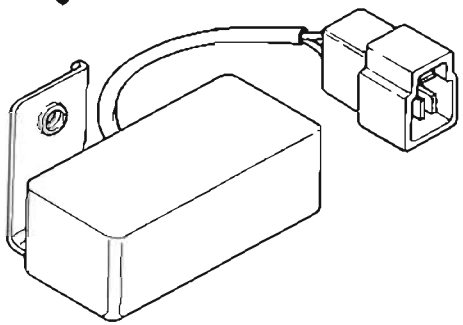
COLOR CODE

B : Black
Y : Yellow
L : Blue
WR : White with red stripe
BW : Black with white stripe
BY : Black with yellow stripe
YB : Yellow with black stripe

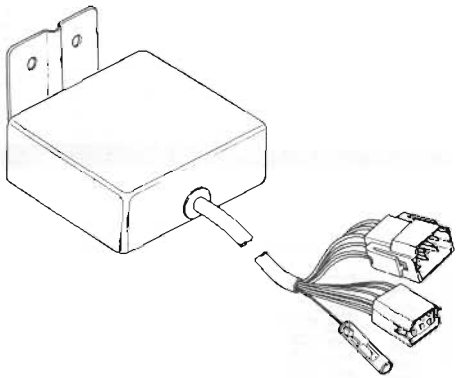
BE197A

Fig. BE-173 Circuit diagram for emergency switch (M/T)

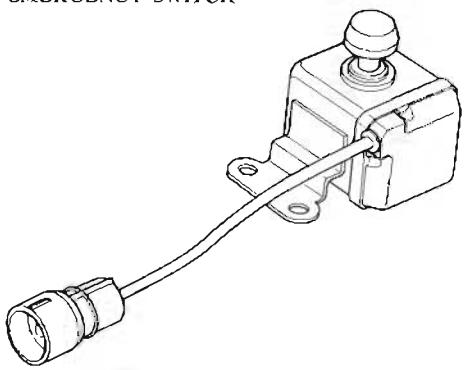
WARNING BUZZER

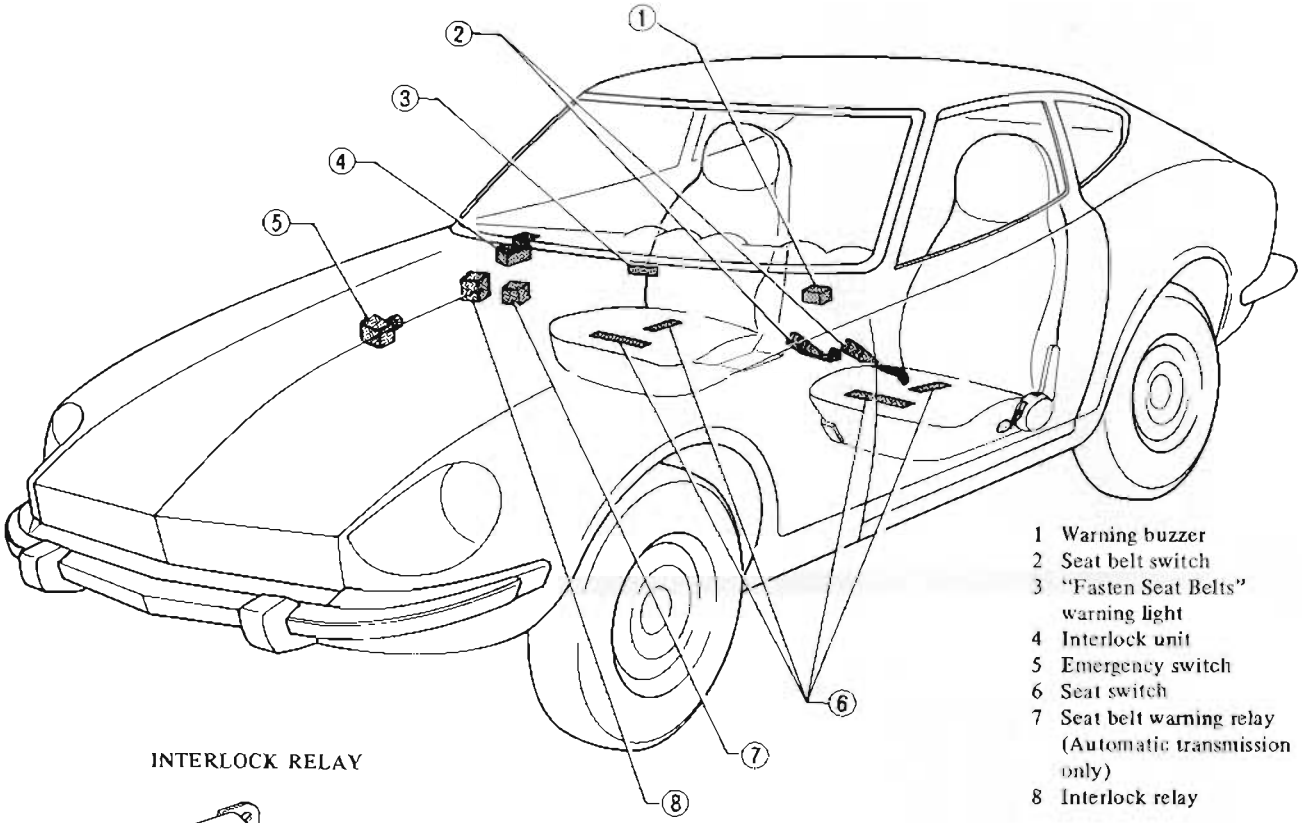


INTERLOCK UNIT



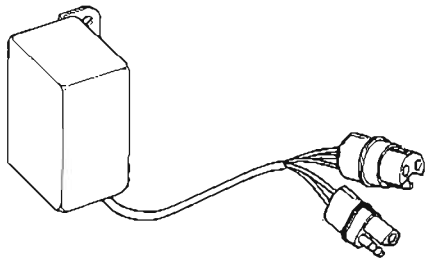
EMERGENCY SWITCH



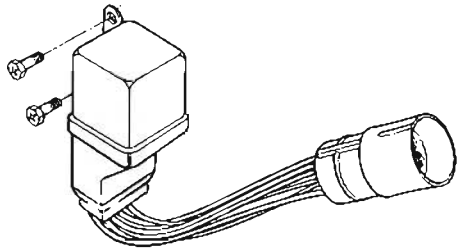


1 Warning buzzer
2 Seat belt switch
3 "Fasten Seat Belts" warning light
4 Interlock unit
5 Emergency switch
6 Seat switch
7 Seat belt warning relay (Automatic transmission only)
8 Interlock relay

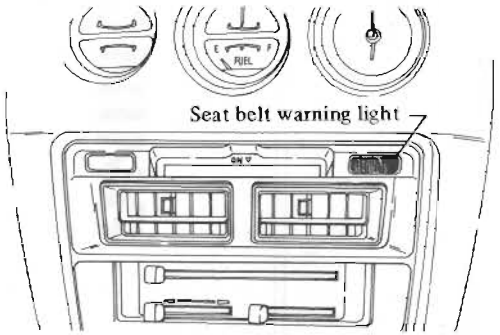
INTERLOCK RELAY



SEAT BELT WARNING RELAY



SEAT BELT WARNING LIGHT



BE198A

Fig. BE-174 Component of interlock