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BODY ELECTRICAL WIRING

CAUTION: Before starting to work, be sure to turn ignition switch "OFF" and then disconnect battery ground cable.

DESCRIPTION

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

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

In addition to fuses, a fusible link

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

CABLE COLORS

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

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

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

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

INSPECTION

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

1. Each electrical component part or cable is securely fastened to its connector or terminal.

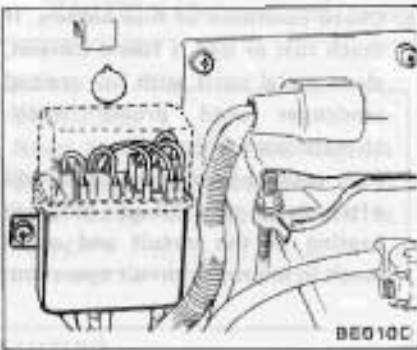
2. Each connection is firmly in place and free from rust and dirt.
3. No cable covering shows any evidence of cracks, deterioration or other damage.
4. Each terminal is at a safe distance away from any adjacent metal parts.
5. Each cable is fastened to its proper connector or terminal.
6. Each grounding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

a. Before starting to inspect and repair any part of electrical system or other parts which may lead to a short circuit, be sure to turn ignition switch "OFF" and then disconnect cables at battery terminals as follows:

Disconnect cable at negative (-) terminal, and then disconnect cable at positive (+) terminal.

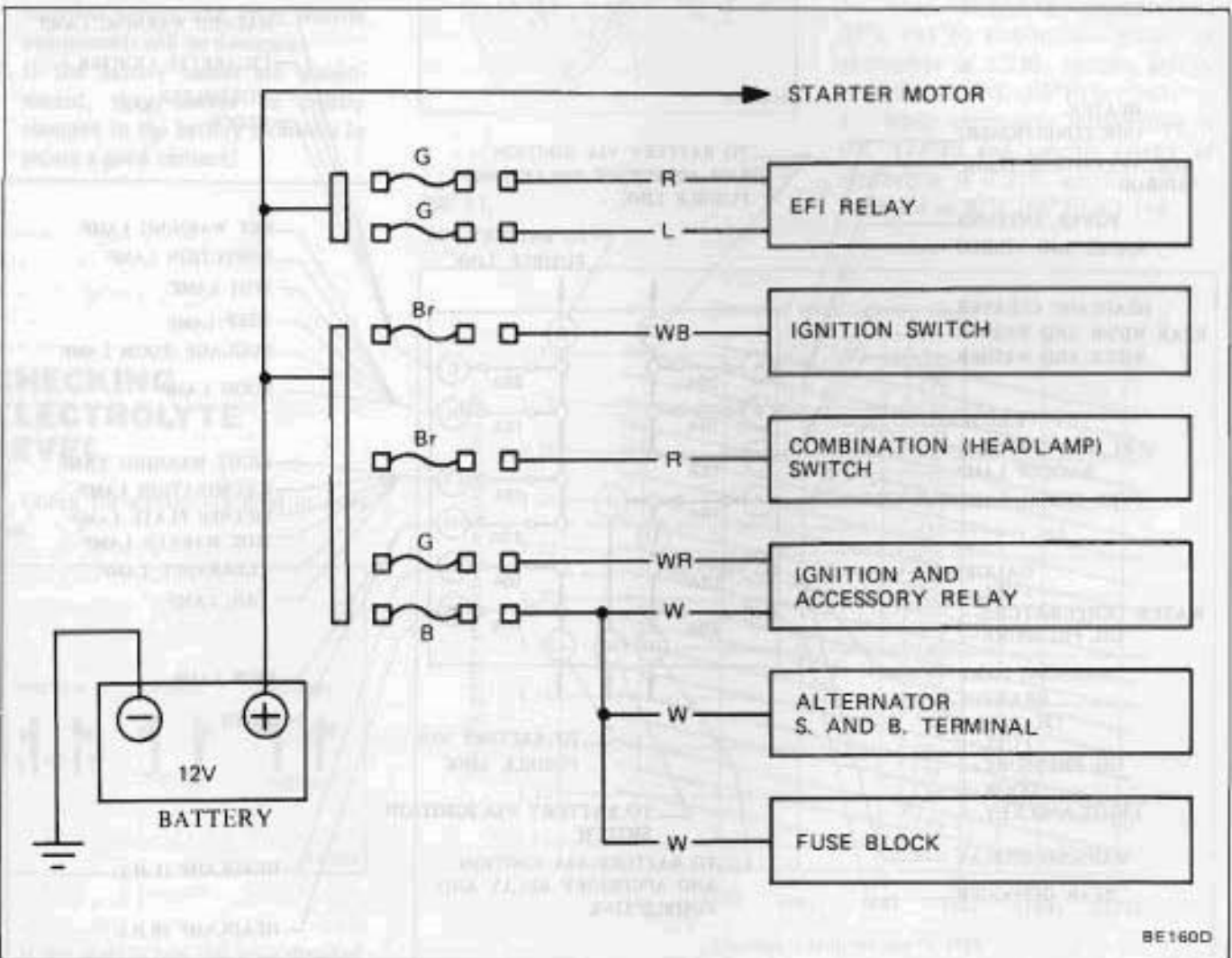
Before connecting cables to battery terminal, be sure to clean terminals with a rag. Fasten cable at positive (+) terminal, and then ground cable at negative (-) terminal. Apply grease to top of these terminals to prevent rust from developing on them.

- b. Never use a screwdriver or service tool to conduct a continuity test. Use test leads.
- c. Never ground an open circuit or circuits under no load. Use a test lamp (12V-3W) or circuit tester as a load.

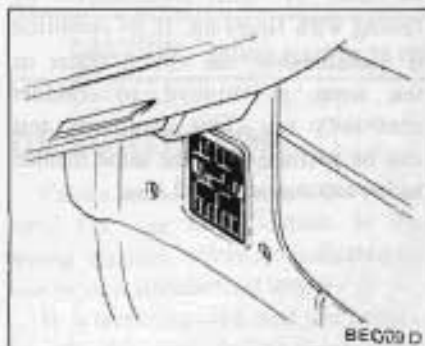
FUSIBLE LINK**CAUTION:**

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

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

FUSIBLE LINK SUPPLY ROUTING

FUSE



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

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

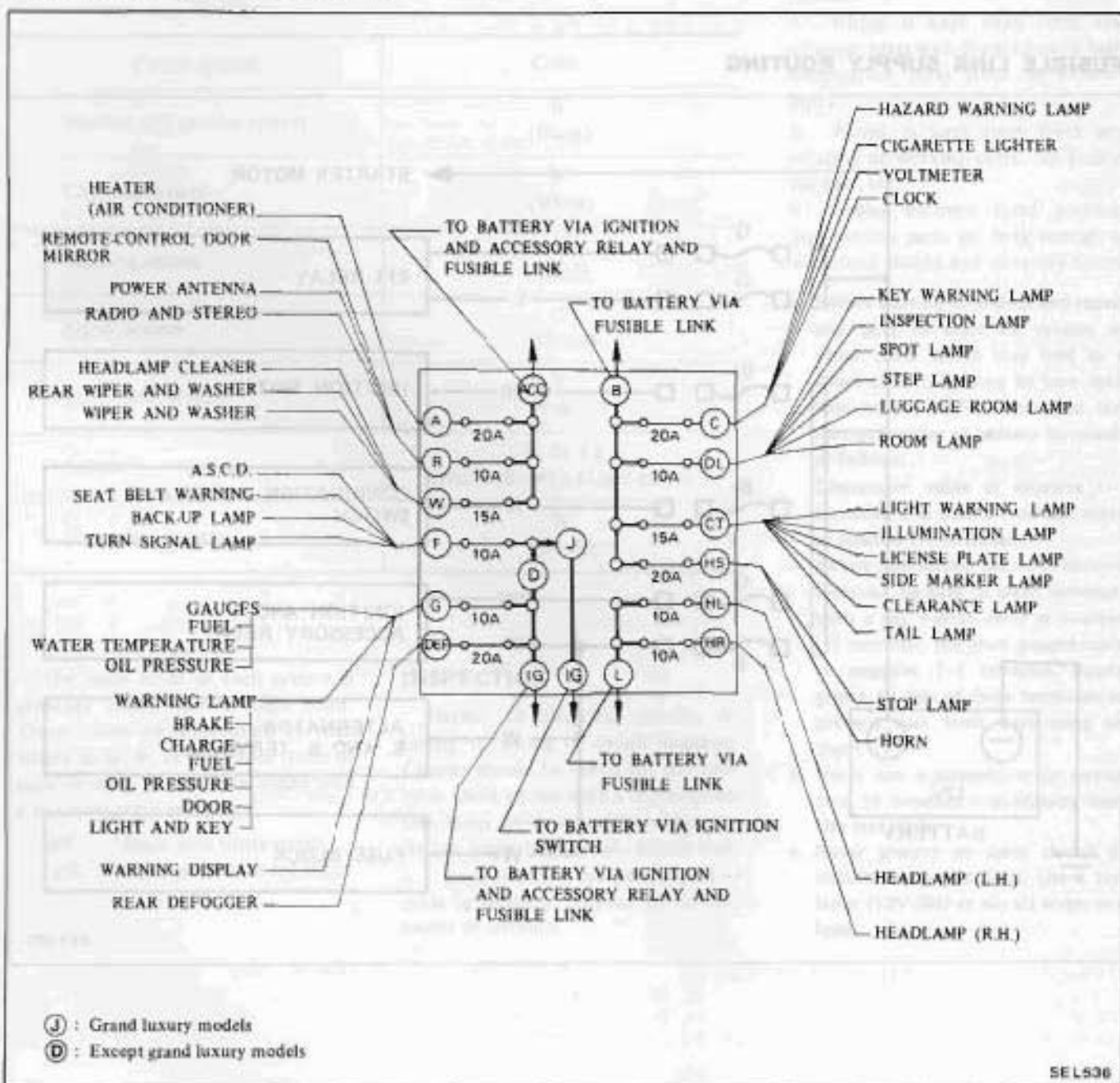
a. If fuse is blown, be sure to eliminate cause of problem before installing new fuse.

b. Use fuse of specified rating. Never use fuse of more than specified rating.

c. Check condition of fuse holders. If much rust or dirt is found thereon, clean metal parts with fine-grained sandpaper until proper metal-to-metal contact is made.

Poor contact in any fuse holder will often lead to voltage drop or heating in the circuit and could result in improper circuit operation.

FUSE BLOCK CIRCUIT ROUTING



BATTERY

CAUTION: Before starting to work, be sure to turn ignition switch "OFF" and then disconnect battery ground cable.

WARNING:

Never touch positive and negative terminals at the same time with bare hands. This could result in injury.

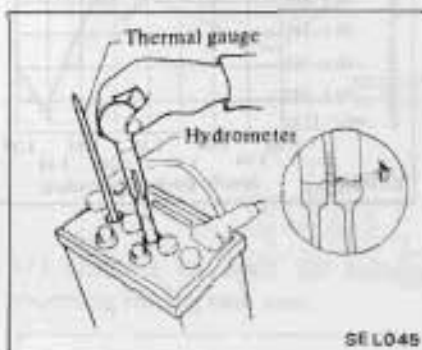
CAUTION:

- If it becomes necessary to start the engine with a booster battery and jumper cables, the booster battery voltage must not exceed 12 volts, or the control unit of the fuel injection system and other electric components will be damaged.
- If the battery cables are disconnected, they should be tightly clamped to the battery terminals to secure a good contact.

CHECKING SPECIFIC GRAVITY

- Read hydrometer and thermal gauge indications at eye level.

Read top level with scale.



SEL045

- Correct specific gravity at 20°C (68°F).

$$S_{20} = S_t + 0.0007 (t - 20)$$

Where,

S_t : Specific gravity of electrolyte at $t^{\circ}\text{C}$

S_{20} : Specific gravity of electrolyte corrected at 20°C (68°F)

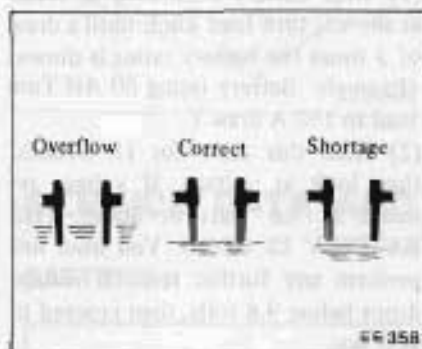
t : Electrolyte temperature

Examples:

- When electrolyte temperature is 35°C (95°F) and specific gravity of electrolyte is 1.230, specific gravity corrected at 20°C (68°F) is 1.243.
- When electrolyte temperature is 0°C (32°F) and specific gravity of electrolyte is 1.210, specific gravity corrected at 20°C (68°F) is 1.196.

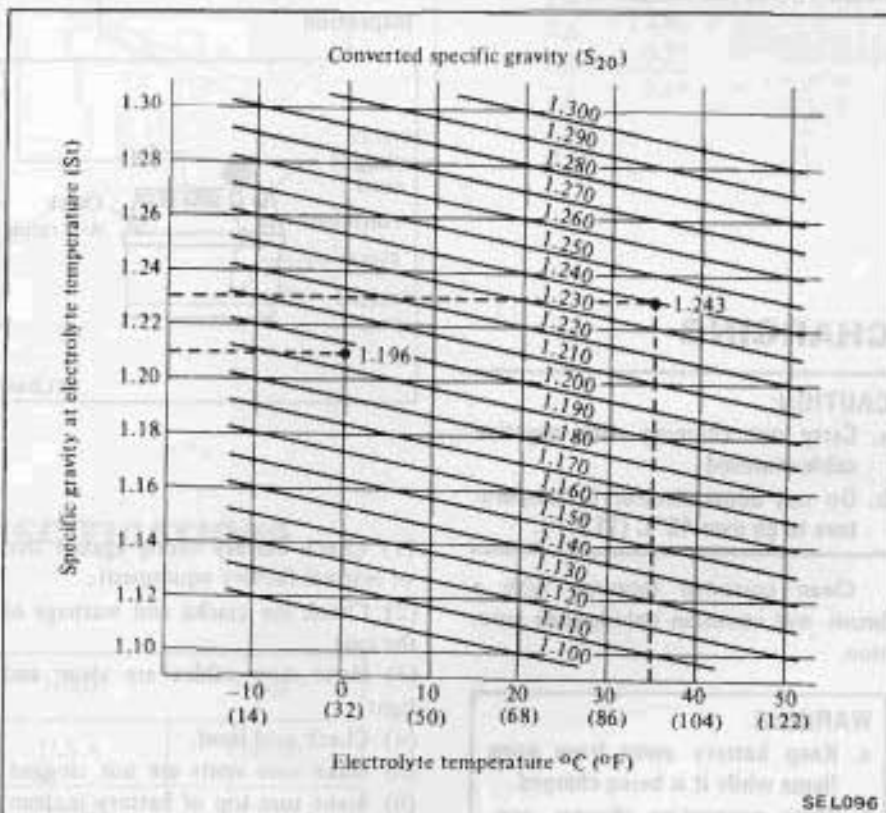
CHECKING ELECTROLYTE LEVEL

Check for electrolyte level in each cell.



66 35B

If the level is low, fill with distilled water.

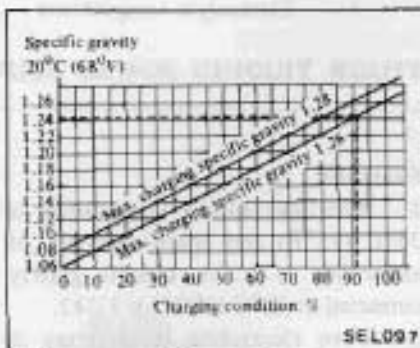


3. Determine charging state of battery.

Examples:

Charging state of battery whose max. charging specific gravity is 1.26, and whose specific gravity corrected at 20°C (68°F) is 1.243, is 92%.

For battery whose max. charging specific gravity is 1.28, charging state is 82% at a corrected specific gravity of 20°C (68°F).



4. Recharge battery if its rate drops below 70% of full charge.

CHARGING

CAUTION:

- Carry out charging with negative cable removed.
- Do not allow electrolyte temperature to go over 45°C (113°F).

Clean corroded terminal with a brush and common baking-soda solution.

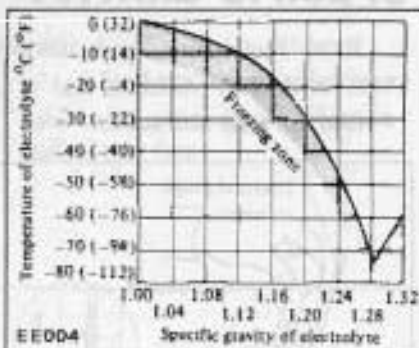
WARNING:

- Keep battery away from open flame while it is being charged.
- When connecting charger, connect leads first, then turn on charger. Do not turn on charger first, as this may cause a spark.

BATTERY FREEZING

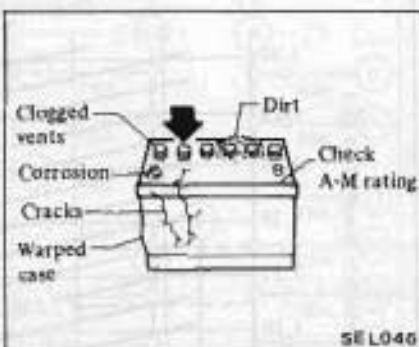
CAUTION:

Use extreme caution to avoid freezing battery.



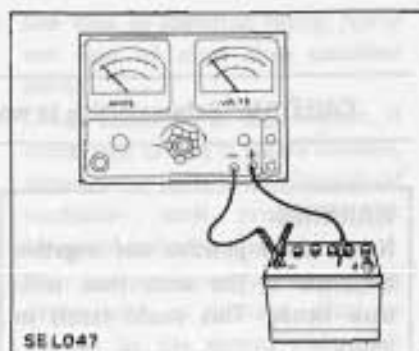
BATTERY TESTING

1. PRELIMINARY CHECKS: Visual Inspection



- Check battery rating against that of original factory equipment.
- Check for cracks and warpage of the case.
- Make sure cables are clean and tight.
- Check acid level.
- Make sure vents are not clogged.
- Make sure top of battery is clean.

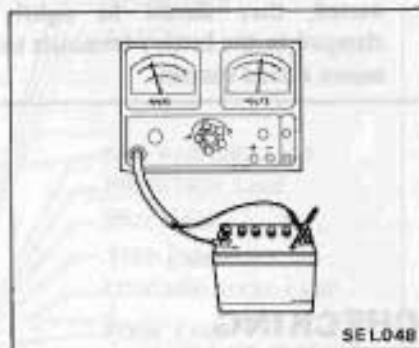
2. BATTERY LEAKAGE TEST: Check to make sure battery is not discharging across top, between two posts.



- Set voltmeter to low range.
- Touch negative lead of voltmeter to negative battery post.
- Touch positive lead of voltmeter to top of battery, and move it around.

If reading goes over 0.5 volts, then clean off top of battery and retest.

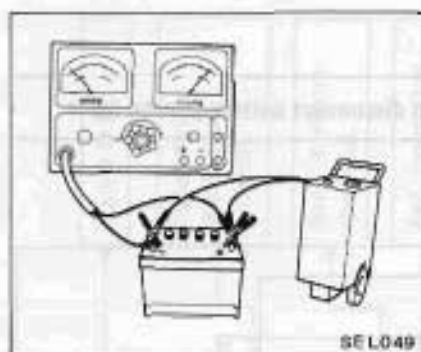
3. BATTERY CAPACITY TEST



- With battery connected to tester as shown, turn load knob until a draw of 3 times the battery rating is shown. (Example: Battery rating 60 AH Turn load to 180 A draw.)
- Hold this draw for 15 seconds, then look at voltage. If voltage remains at 9.6 volts or above, THE BATTERY IS GOOD. You need not perform any further tests. If voltage drops below 9.6 volts, then proceed to next test.

4. THREE MINUTE CHARGE TEST: To be performed only if battery has failed Capacity Test in step number 3.

- Connect a good quality battery. Remove cell caps.
- Turn charger to a fast charge rate, not over 40 A.



(3) After three minutes, check voltmeter reading. If it is over 15.5 volts (16.5 for Maintenance Free Batteries), battery should be replaced. If it is below 15.5 volts, then proceed to step number 5.

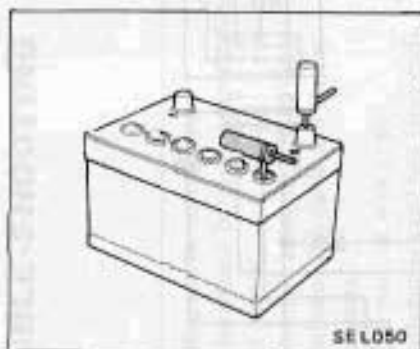
5. CELL TEST UNDER CHARGE: Connect tester and battery charger as in step number 4. Set to fast charge rate (35 - 40 A).

(1) Turn to low range voltmeter.

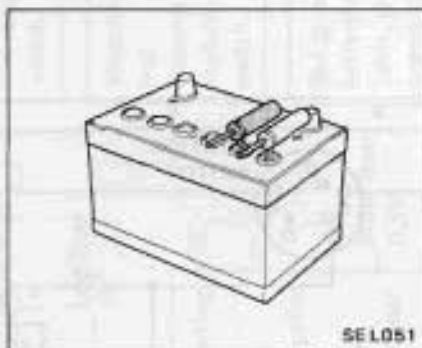
(2) Attach special cell probes to voltmeter leads.

(3) Touch positive probe to battery positive (+) terminal.

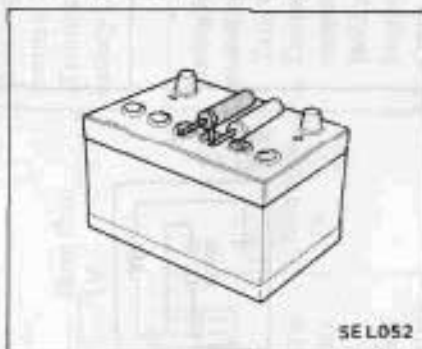
(4) Stick black probe in battery cell nearest the battery positive post. **WRITE DOWN** voltmeter reading.



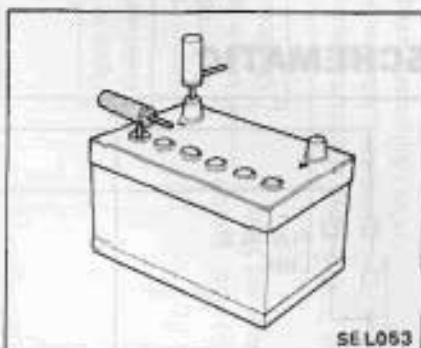
(5) Now put positive probe in cell nearest the positive post. Put negative probe in next cell down. Record reading.



(6) Continue on down the battery, recording reading each time.



(7) When you get to point where positive probe is in last cell of battery, touch negative probe to negative post. Record this reading.



(8) You should now have seven readings. Now add the first reading to the last; this will give you six readings. They should all be within 0.2 (two-tenths) volt of each other. If one cell varies more than this amount from any other, then battery is bad and must be replaced.

$$\begin{array}{r}
 2.4^* \\
 2.6 \\
 2.6 \quad 2.4 \\
 2.6 \quad \underline{0.2} \\
 2.6 = 2.6^* \\
 2.6 \\
 0.2^*
 \end{array}$$

SERVICE DATA AND SPECIFICATIONS

BATTERY

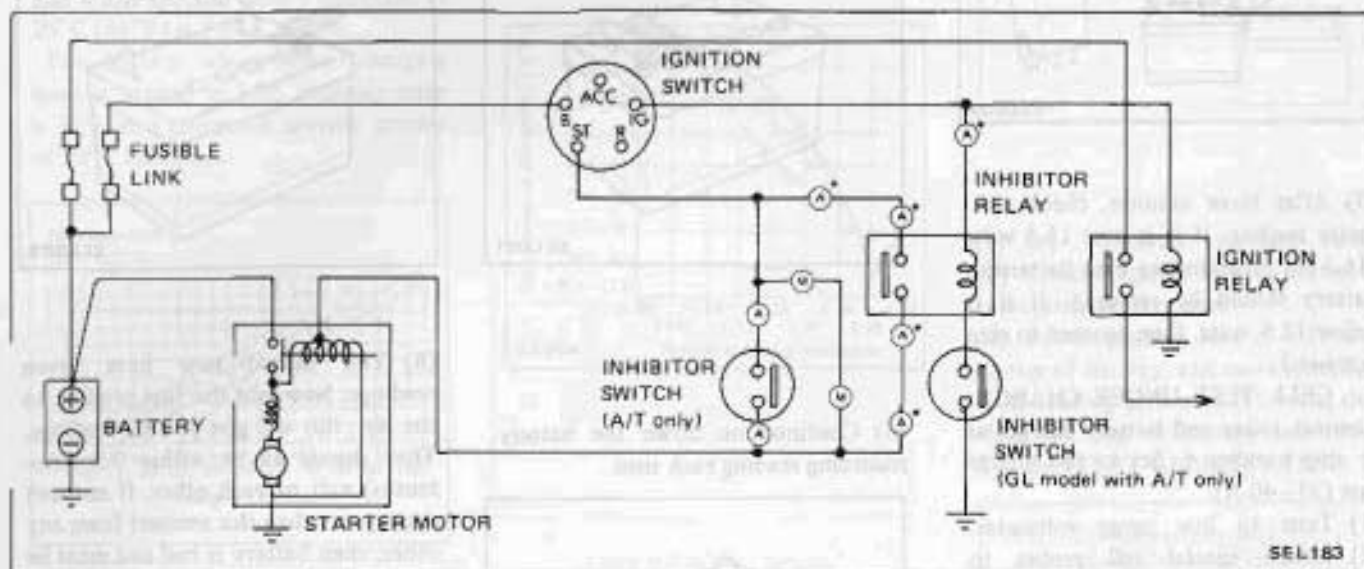
	N50Z	N70Z*
Destination	U.S.A.	Canada
Capacity V-AH	12-60	12-70
Full charging specific gravity at 20°C (68°F)	1.26	1.28

*: Option for U.S.A.

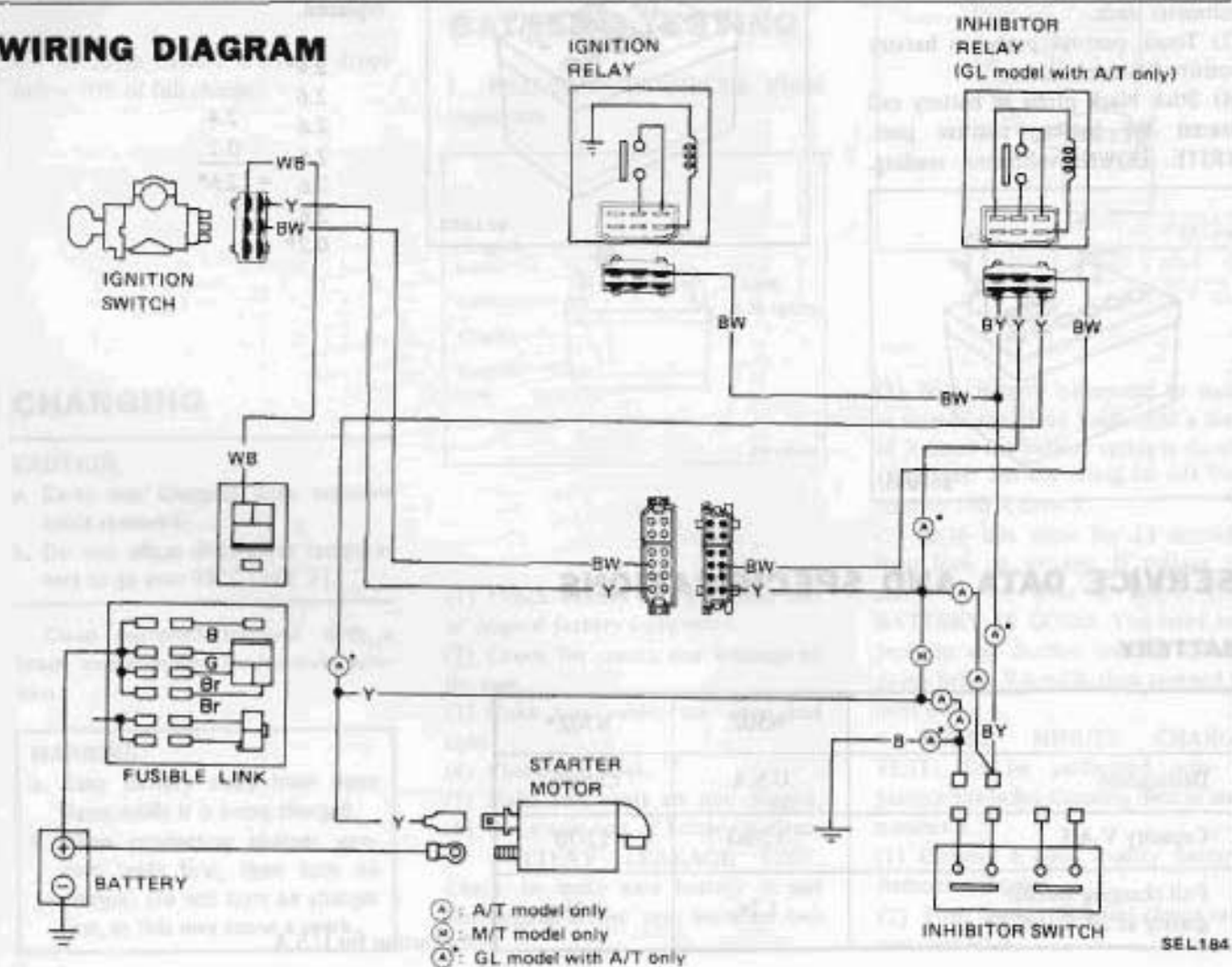
STARTING SYSTEM

CAUTION: Before starting to work, be sure to turn ignition switch "OFF" and then disconnect battery ground cable.

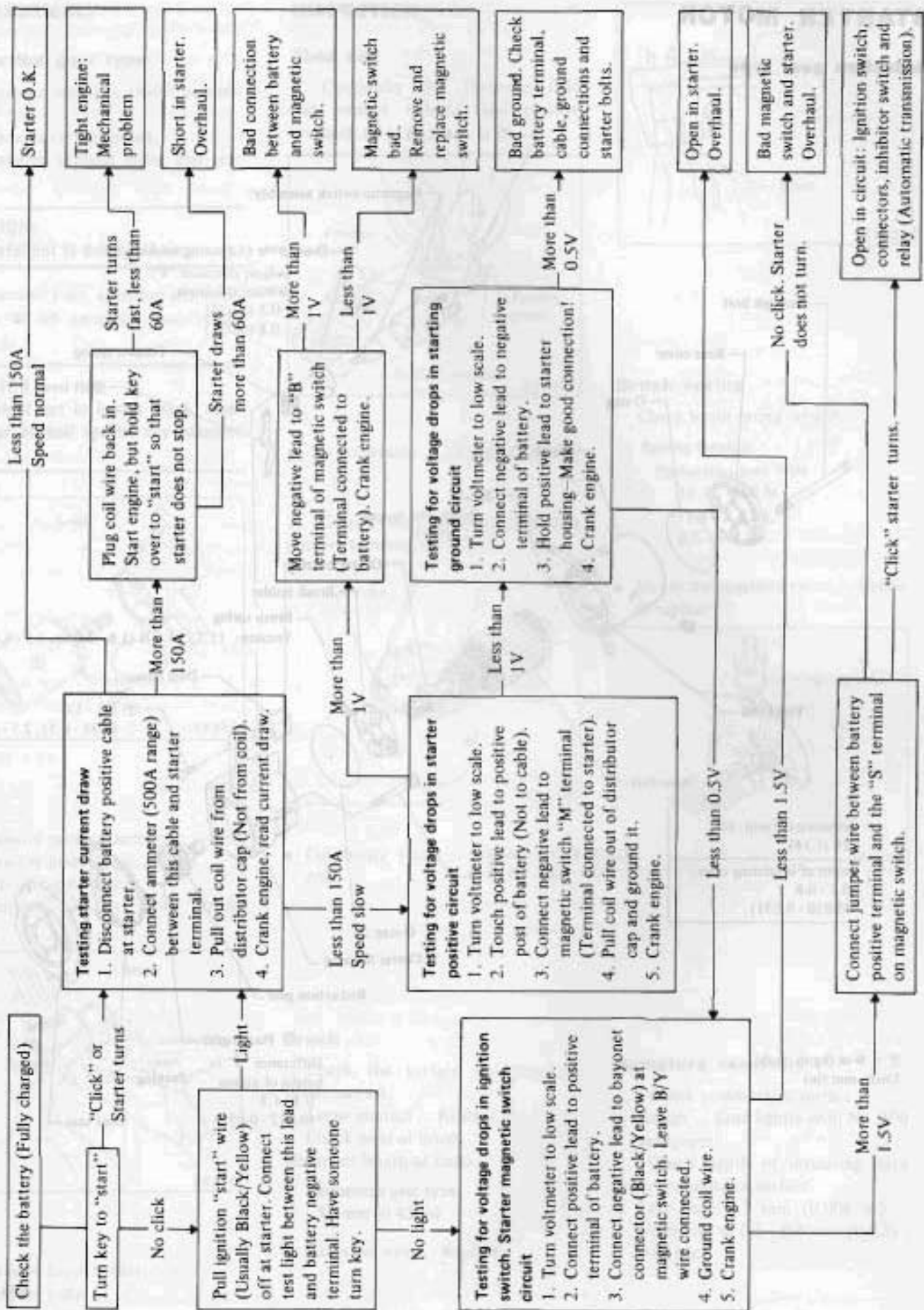
SCHEMATIC



WIRING DIAGRAM

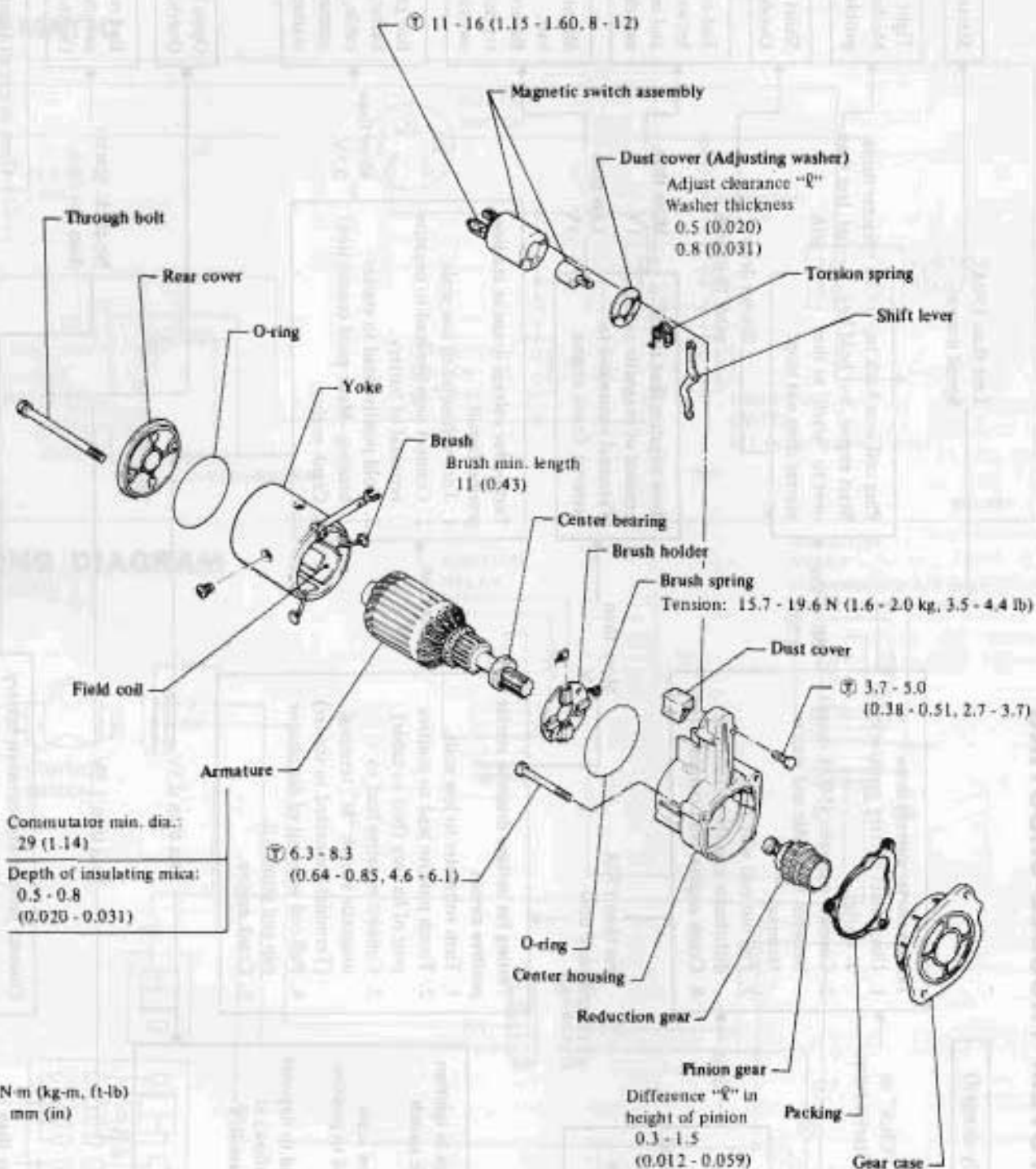


STARTING SYSTEM TROUBLE-SHOOTING



STARTER MOTOR

Reduction gear type



① : N·m (kg·m, ft·lb)
Unit: mm (in)

DISASSEMBLY**Reduction gear type**

1. Remove magnetic switch assembly.
2. Remove torsion spring.
3. Remove through bolts and rear cover.

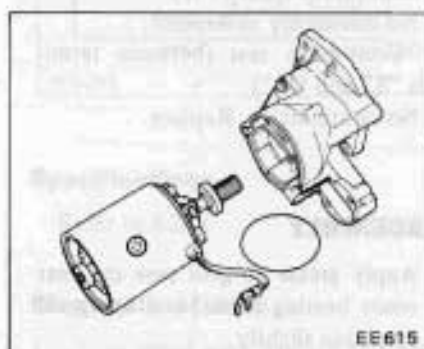
CAUTION:

Be careful not to damage O-ring.

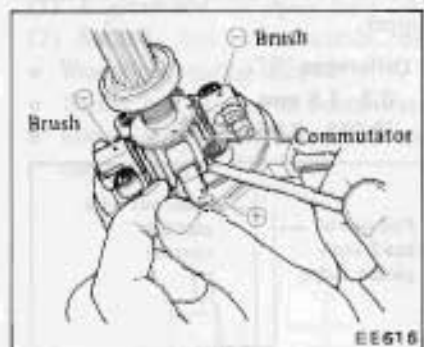
4. Remove yoke, armature and brush holder as an assembly from center housing.

CAUTION:

Be careful not to knock brush, commutator or coil against any adjacent part.



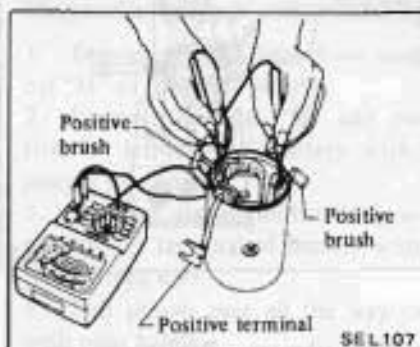
5. Remove center housing.
6. Remove pinion gear.
7. Lift up brush springs.
8. Remove brushes from brush holder.



9. Remove brush holder.
10. Remove yoke.

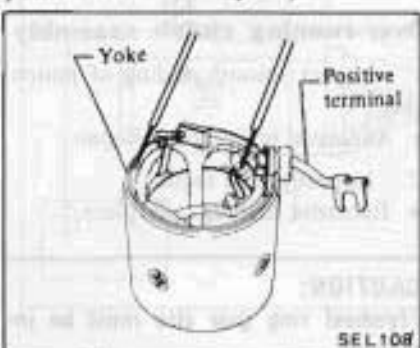
INSPECTION**Field coil**

1. Continuity test (between field coil positive terminal and positive brushes).



- No continuity ... Replace field coil.

2. Ground test. (between field coil positive terminal and yoke).



- Continuity exists ... Replace field coil.

Brush

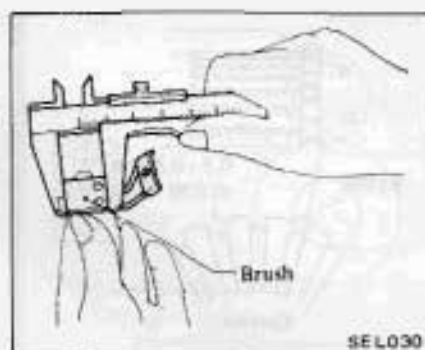
Check the surface condition of brush contact.

- Loose contact ... Replace.
- Check wear of brush.

Minimum length of brush:

Reduction gear type:
11 mm (0.43 in)

- Excessive wear ... Replace.

**Brush spring**

Check brush spring tension.

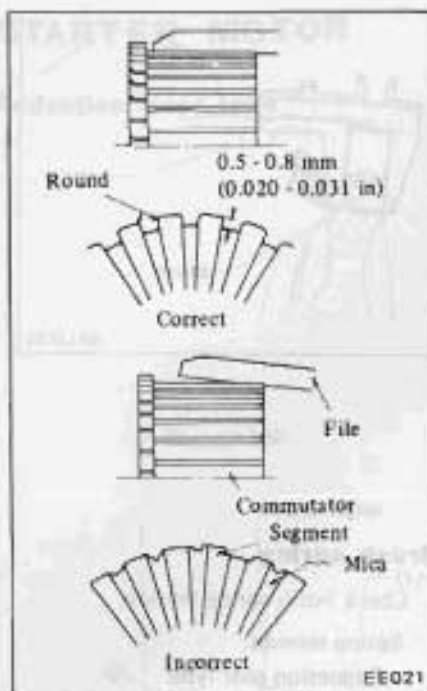
Spring tension:

Reduction gear type
15.7 - 19.6 N
(1.6 - 2.0 kg,
3.5 - 4.4 lb)

- Not in the specified value. ... Repair or replace.

**Armature assembly**

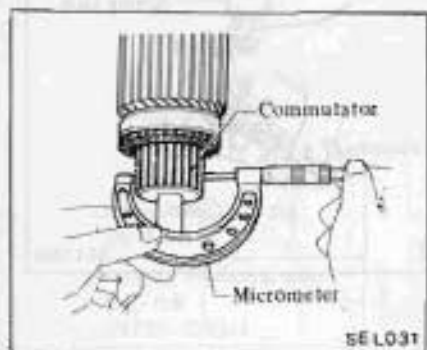
1. Check commutator surface.
 - Rough ... Sand lightly with No. 500 sandpaper.
2. Check depth of insulating mica from commutator surface.
 - Less than 0.2 mm (0.008 in) ... Undercut to 0.5 - 0.8 mm (0.020 - 0.031 in)



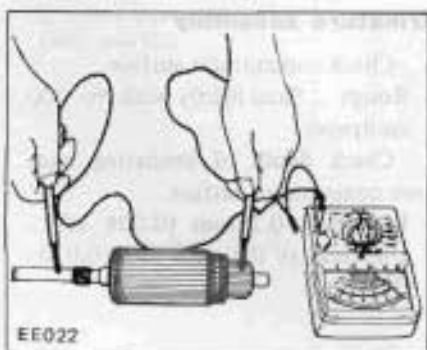
3. Check diameter of commutator. Commutator minimum diameter:

Reduction gear type:
29 mm (1.14 in)

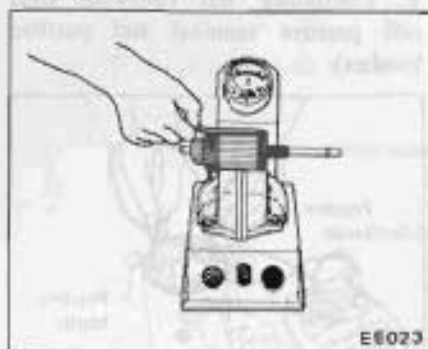
- Less than specified value ... Replace.



4. Ground test (between each commutator bar and shaft).



- Continuity exists ... Replace.
5. Short test with armature tester (growler) and a piece of iron over armature core.



- Plate vibrates ... Replace.
6. Continuity test (between two segments side by side).
- No continuity ... Replace.

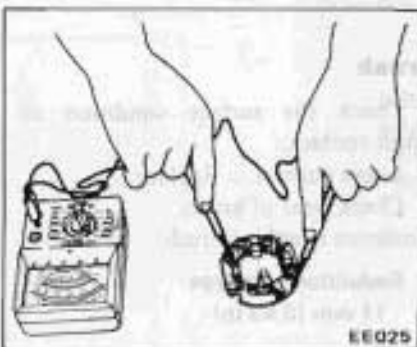
Over-running clutch assembly

1. Inspect smooth sliding of pinion gear.
 - Abnormal resistance ... Repair.
2. Inspect pinion teeth.
 - Excessive rubbing ... Replace.

CAUTION:
Flywheel ring gear also must be inspected.

Brush holder

Ground test (between negative side of brush holder and another positive side).



- Continuity exists ... Replace.

Pinion case bearing metal (Non-reduction gear type)

Check clearance between bearing metal and armature shaft.

Bearing metal to armature shaft clearance:

Less than 0.2 mm (0.008 in)

- More than specified value ... Replace.

Ball bearing (Reduction gear type)

Holding outer race with finger, rotate bearing.

- Any play or bind ... Replace.

Magnetic switch assembly

1. Continuity test (between "S" terminal and switch body).
 - No continuity ... Replace.
2. Continuity test (between terminals "S" and "M").
 - No continuity ... Replace.

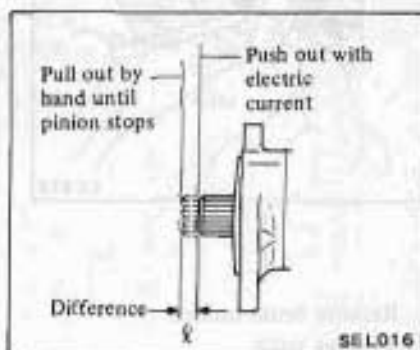
ASSEMBLY

- Apply grease to gear case and rear cover bearing metal, and apply oil to pinion slightly.

(Reduction gear type)

Compare difference "ℓ" in height of pinion when it is pushed out with magnetic switch energized and when it is pulled out by hand until it touches stopper.

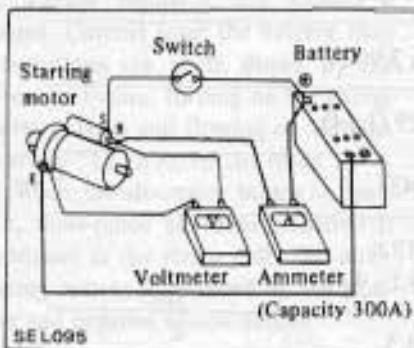
Difference "ℓ":
0.3 - 1.5 mm
(0.012 - 0.059 in)



- Not in the specified value ... Adjust by adjusting washer(s).

Adjusting washer thickness:

- 0.5 mm (0.020 in)
- 0.8 mm (0.031 in)

TESTING**Performance test****No-load test****Specifications**

Refer to S.D.S.

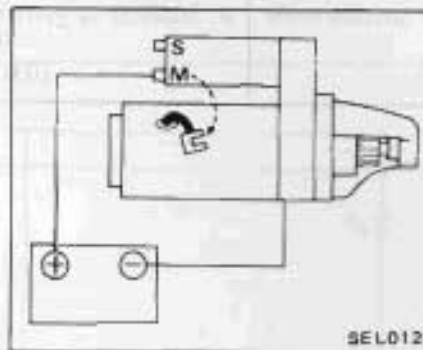
Diagnosis of test

1. Low speed with no-load and high current draw.
 - (1) Tight, dirty or worn bearings.
 - (2) Bent armature shaft or loosened field probe.
 - (3) Shorted armature coil.
 - (4) A grounded armature of field coil.
2. Failure to operate with high current draw.
 - (1) A grounded or open field coil.
 - (2) Burned out commutator bar.
 - Weak brush spring tension
 - Thrust out of mica in commutator
 - Loose contact between brush and commutator.

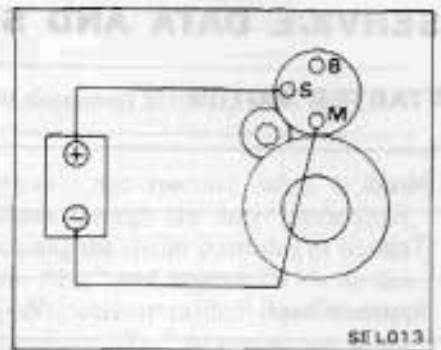
3. Low current draw and low no-load speed.
 - (1) Loose connections.
 - (2) Dirty commutator.
 - (3) Burned out commutator bar.

Magnetic switch returnability

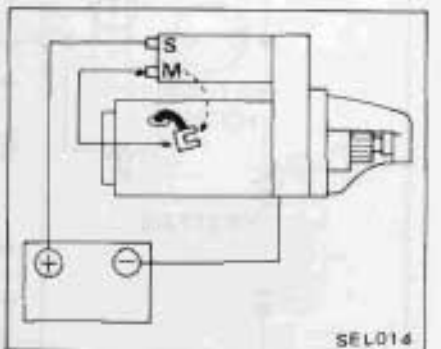
1. Disconnect lead wire from terminal "M" of magnetic switch.
2. Connect terminal "M" and positive \oplus terminal of battery with a jumper lead wire.
3. Connect starter motor body and negative \ominus terminal of battery with a jumper lead wire.
4. Pull pinion gear all the way out with your hands.
5. Release your hands from pinion gear.
6. If pinion gear returns to its original position, magnetic switch is properly functioning.

**Series coil**

1. Connect terminal "M" of magnetic switch and negative \ominus terminal of battery with a jumper lead wire.
2. Connect terminal "S" of magnetic switch and positive \oplus terminal of battery with a jumper wire.
3. With these connections having been made, if plunger is pulled in by force, series coil is properly functioning.

**Shunt coil**

1. Disconnect lead wire which connects terminal "M" of magnetic switch and starting motor terminal, and connect a jumper wire in its place.
2. Connect terminal "S" of magnetic switch and positive \oplus terminal of battery with a jumper wire.
3. Connect negative \ominus terminal of battery and starting motor body with a jumper wire. Plunger should be pulled in by force.
4. Disconnect jumper wire from terminal "M".
5. If plunger continues to be pulled in with jumper wire disconnected from terminal "M", shunt coil is properly functioning.



SERVICE DATA AND SPECIFICATIONS**STARTER MOTOR**

Model		S114-254D	
Type		Reduction gear	
System voltage	V	12	
No load	Terminal voltage	V	11
	Current	A	Less than 100
	Revolution	rpm	More than 3,900
Outer diameter of commutator	mm (in)	More than 29 (1.14)	
Minimum length of brush	mm (in)	11 (0.43)	
Brush spring tension	N (kg, lb)	15.7 - 19.6 (1.6 - 2.0, 3.5 - 4.4)	
Difference "l" in height of pinion	mm (in)	0.3 - 1.5 (0.012 - 0.059)	

**ASSEMBLY**

- * Apply grease to the pinion gear.
- * Apply grease to the brush holder.
- * Apply grease to the brush holder.
- * Apply grease to the brush holder.
- * Apply grease to the brush holder.
- * Apply grease to the brush holder.
- * Apply grease to the brush holder.
- * Apply grease to the brush holder.
- * Apply grease to the brush holder.
- * Apply grease to the brush holder.



CHARGING SYSTEM

CAUTION: Before starting to work, be sure to turn ignition switch "OFF" and then disconnect battery ground cable.

DESCRIPTION

The charging circuit consists of a battery, an alternator incorporating an IC voltage regulator and wiring that connects these parts.

With the ignition switch in ON, the circuit between transistor "Tr₁" of the IC voltage regulator and ground is closed. Current from the battery then flows along the route shown by the arrow in Figure, turning on the charge warning lamp and flowing on through terminal "L" to excite the rotor.

When the alternator begins to operate, three-phase alternating current is produced in the stator coil. This alternating current is rectified by the positive and negative silicon diodes.

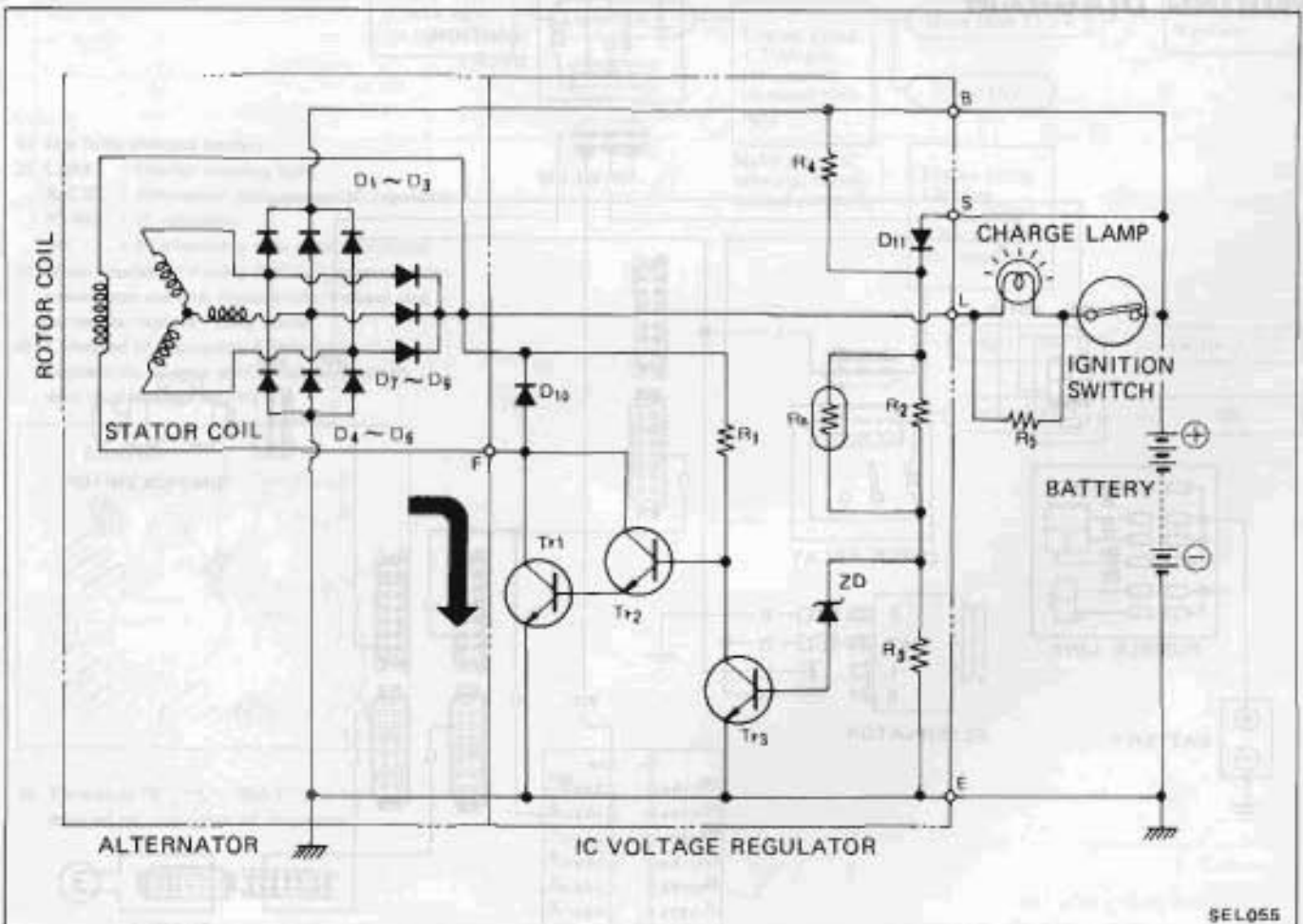
When the voltage at terminal "B" is higher than battery voltage, current produced at the stator flows to re-charge the battery. While the battery is being re-charged, the voltage at terminal "L" is equal to that of terminal "B". At this point, there is no voltage differential on either side of the charge warning lamp, which causes the charge warning lamp to turn off. In other words, current does not flow from the battery to terminal "L". Accordingly, current flow through the rotor is taken over by current produced at the stator. The circuit between terminal "F" and "Tr₁" is then closed:

The IC voltage regulator monitors generating voltage to be applied to the battery at terminal "S". When current

exceeds the specified value, it then flows through the zener diode (ZD), closing the circuit consisting of transistor "Tr₃" and resistor "R1". At this point, current neither flows through transistor "Tr₁" to ground nor to the rotor, thereby reducing the voltage generated at the stator.

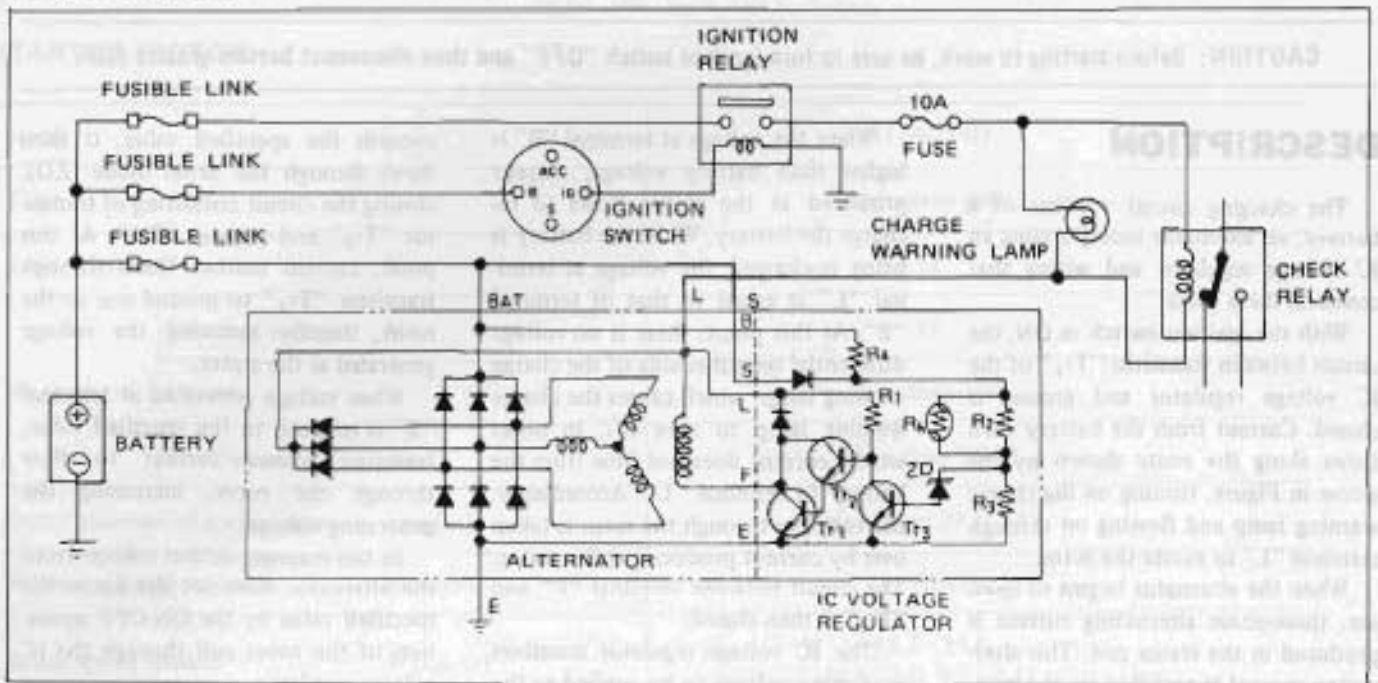
When voltage generated at terminal "S" is reduced to the specified value, transistor allows current to flow through the rotor, increasing the generating voltage.

In this manner, output voltage from the alternator does not rise above the specified value by the ON-OFF operation of the rotor coil through the IC voltage regulator.

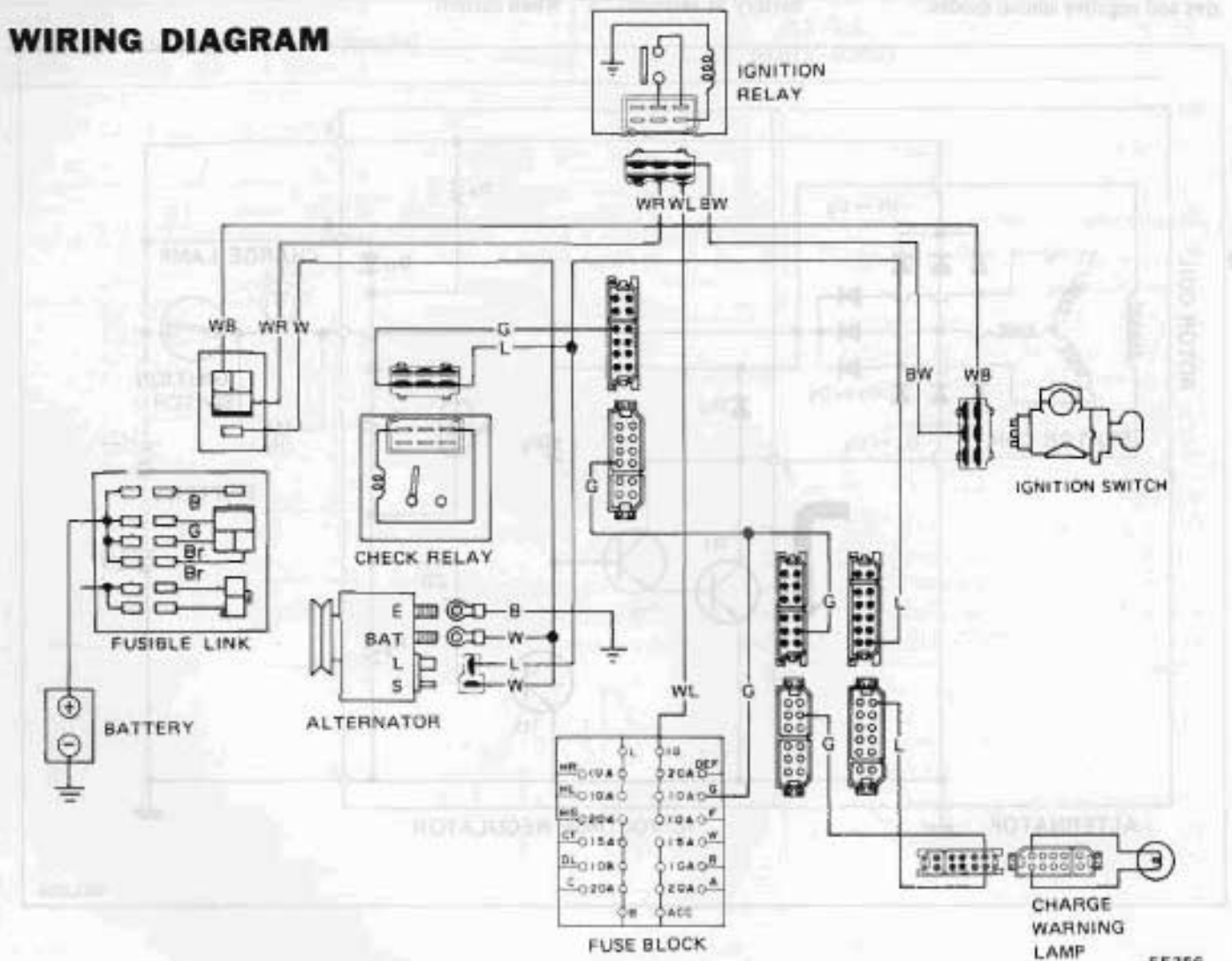


SEL055

SCHEMATIC



WIRING DIAGRAM

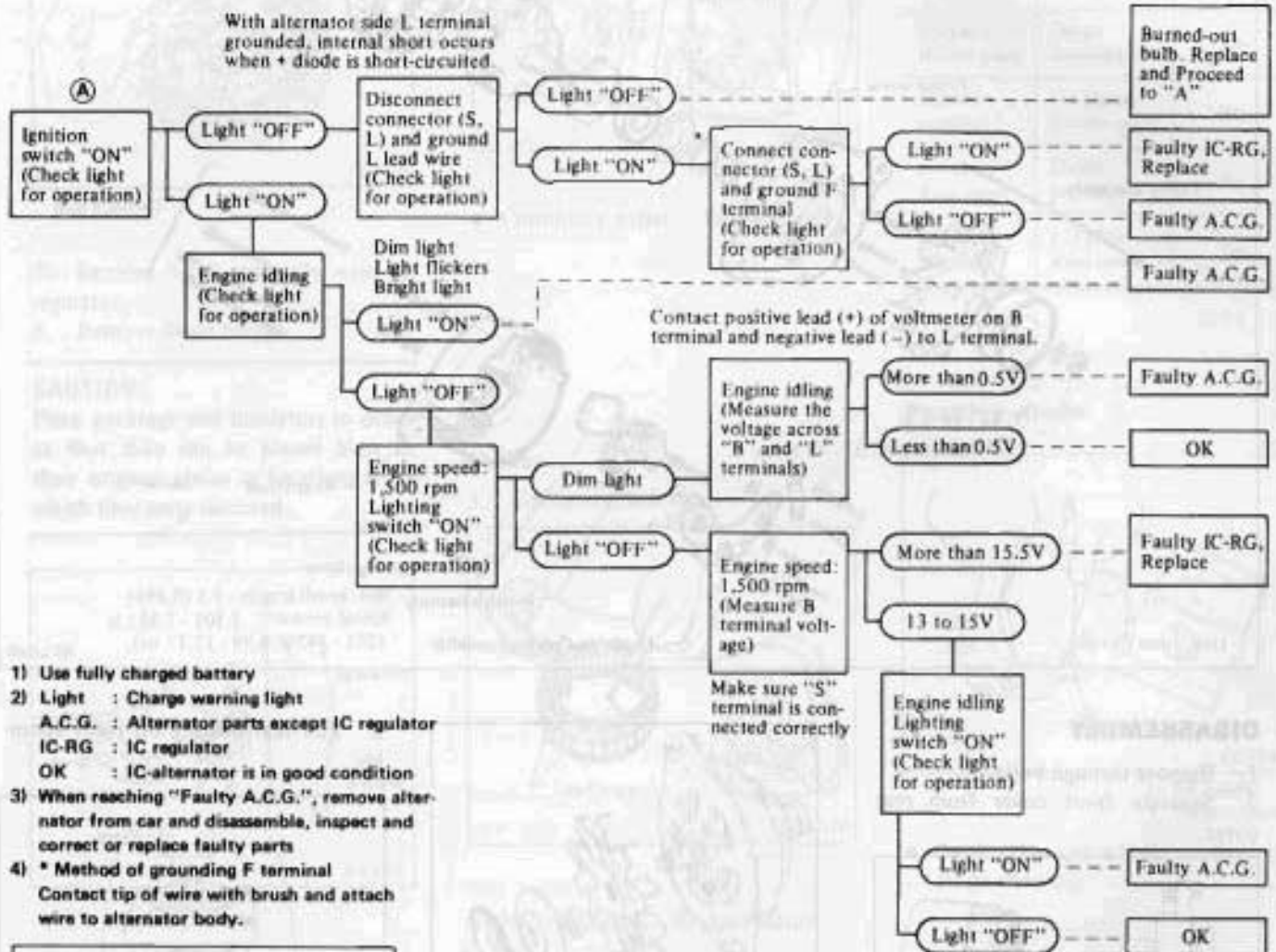


CHARGING SYSTEM TROUBLE-SHOOTING

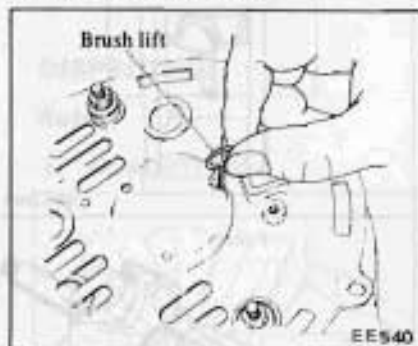
Before conducting an alternator test, make sure that the battery is fully charged.

A 30-Volt voltmeter and suitable test probes are necessary for the test.

The alternator can be checked easily by referring to the Inspection Table.

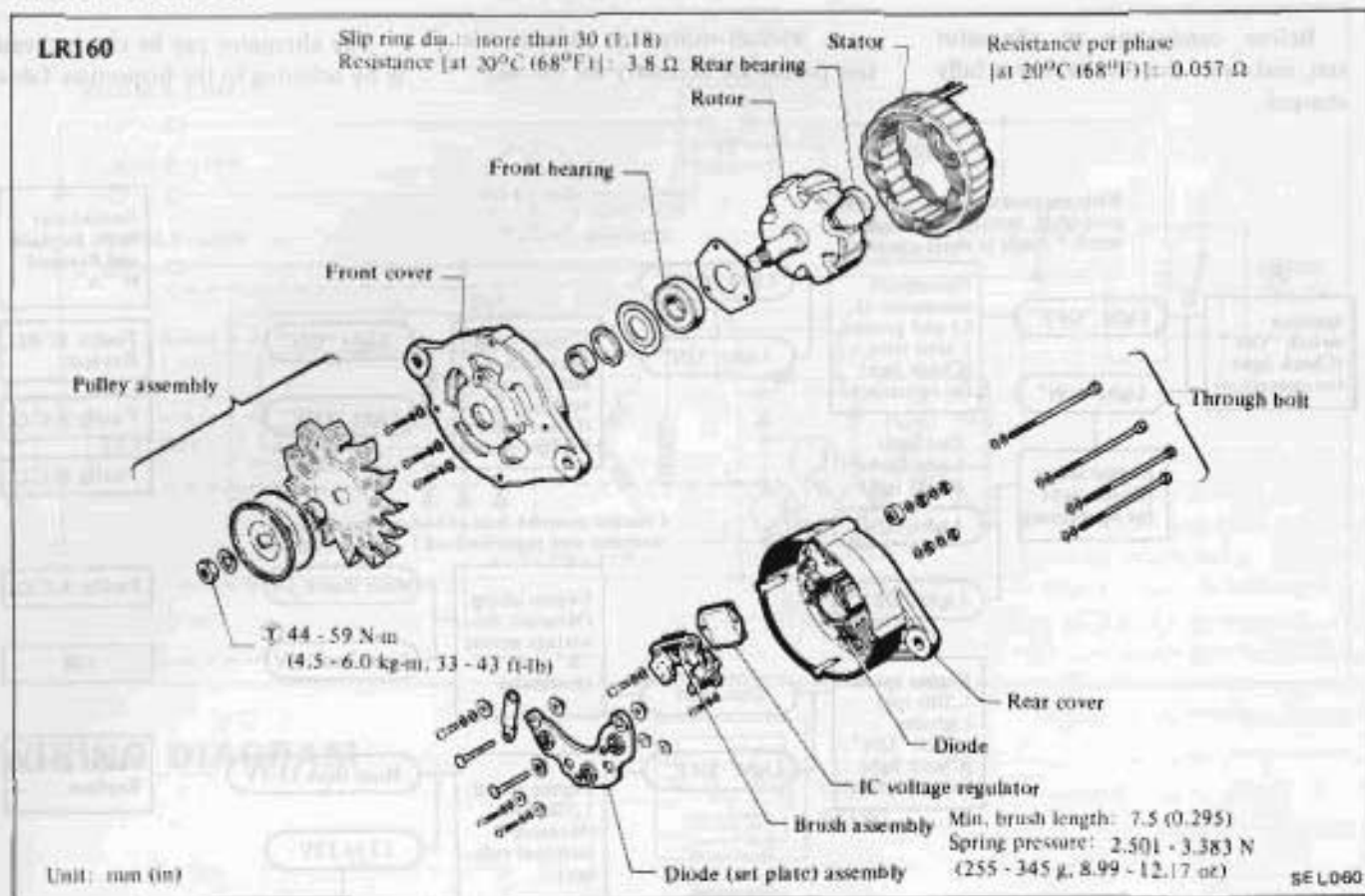


- 1) Use fully charged battery
- 2) Light : Charge warning light
A.C.G. : Alternator parts except IC regulator
IC-RG : IC regulator
OK : IC-alternator is in good condition
- 3) When reaching "Faulty A.C.G.", remove alternator from car and disassemble, inspect and correct or replace faulty parts
- 4) * Method of grounding F terminal
Contact tip of wire with brush and attach wire to alternator body.



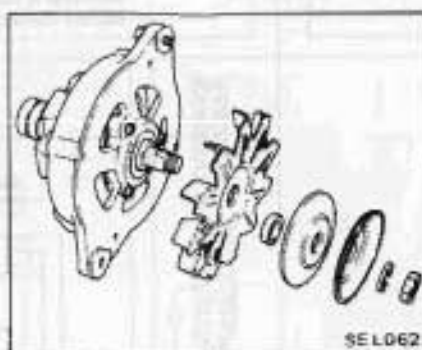
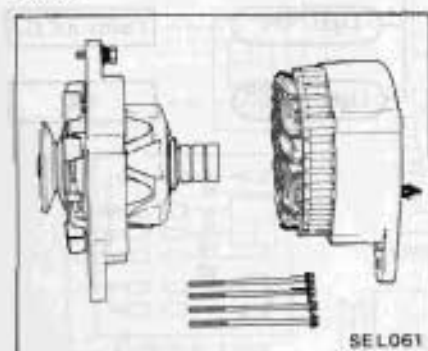
- 5) Terminals "S", "L", "BAT" and "E" are marked on rear cover of alternator.

ALTERNATOR



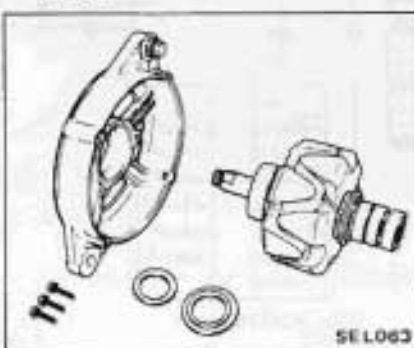
DISASSEMBLY

1. Remove through bolts.
2. Separate front cover from rear cover.

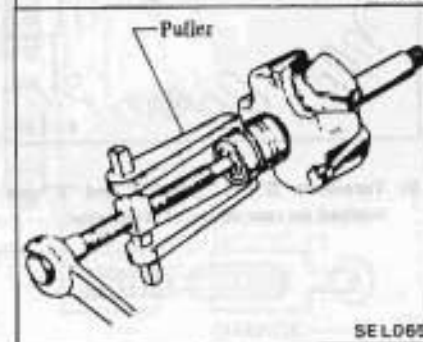
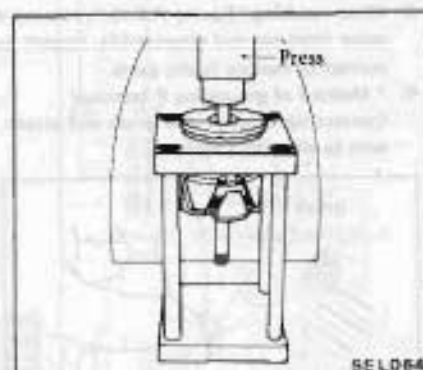


3. Remove pulley and fan.
 - (1) Place rear cover side of rotor in a vice.
 - (2) Remove pulley nut.

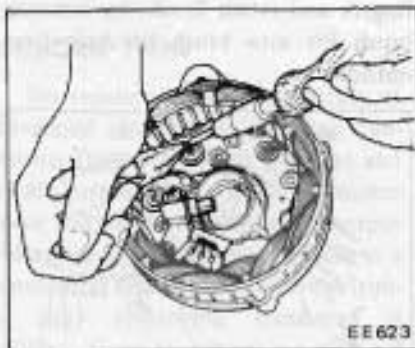
4. Separate rotor front cover.
 - Remove setscrews from bearing retainer.



5. Pull rear bearing off rotor assembly.



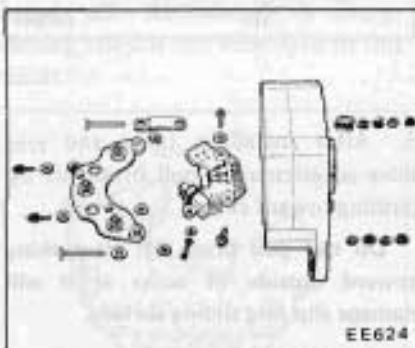
6. Disconnect stator coil lead wires from diode terminals.



7. Remove brush assembly with IC regulator.
8. Remove diode holder.

CAUTION:

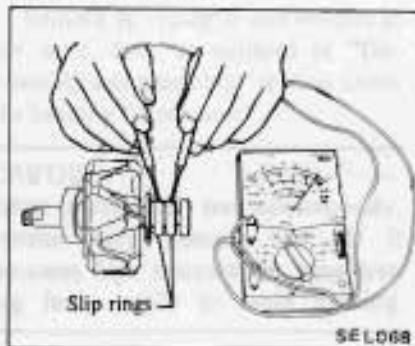
Place packings and insulators in order so that they can be placed back in their original places or locations from which they were removed.



INSPECTION

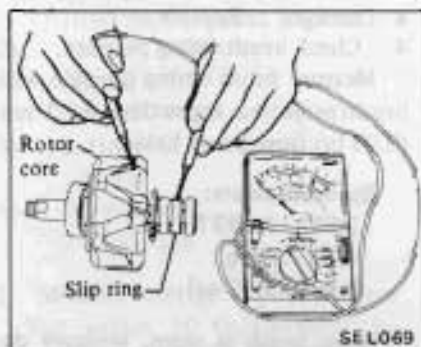
Rotor

1. Continuity test.



• No continuity ... Replace rotor.

2. Ground test



• Continuity exists ... Replace rotor.

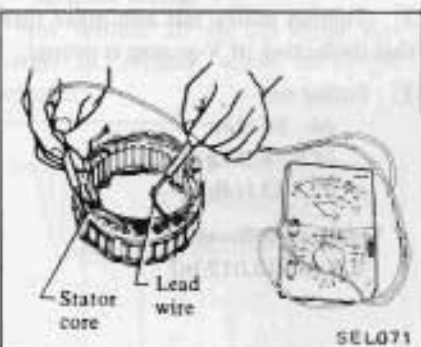
Stator

1. Continuity test



• No continuity ... Replace stator.

2. Ground test



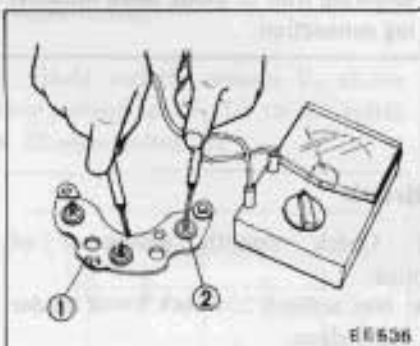
• Continuity exists ... Replace stator.

Diode

Perform a continuity test on diodes in both directions, using an ohmmeter.

Circuit tester terminal		Conduction
Positive	Negative	
(+) plate Holder plate	Diode terminal	Yes
Diode terminal	(+) plate Holder plate	No
(-) plate Rear cover	Diode terminal	No
Diode terminal	(-) plate Rear cover	Yes

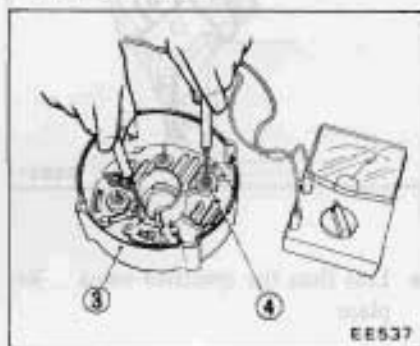
Positive diode



1 SR holder
2 Positive diode

• Conduction test is N.G. ... Replace diode assembly.

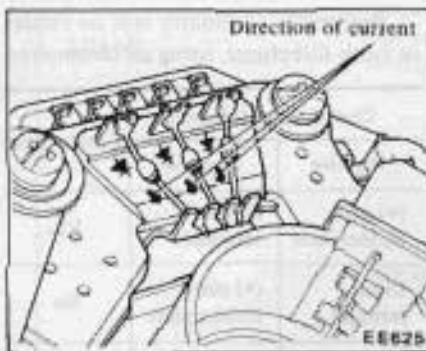
Negative diode



3 Rear cover
4 Negative diode

• Conduction test is N.G. ... Replace diode assembly.

Sub-diode



- Conduction test is N.G. ... Replace sub-diode.

CAUTION:

If it is necessary to remove sub-diode, pinch diode lead wire with a pair of pliers to prevent heat transfer from soldering iron to diode when unsoldering connection.

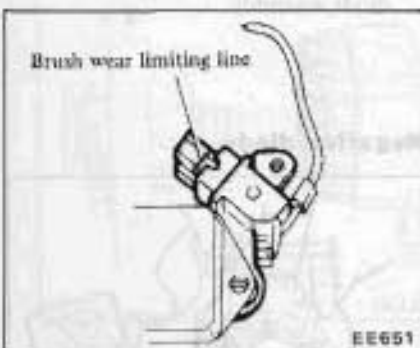
Brush

1. Check smooth movement of brush.

- Not smooth ... Check brush holder and clean.

2. Check brush for wear.

Min. brush length:
7.5 mm (0.295 in)

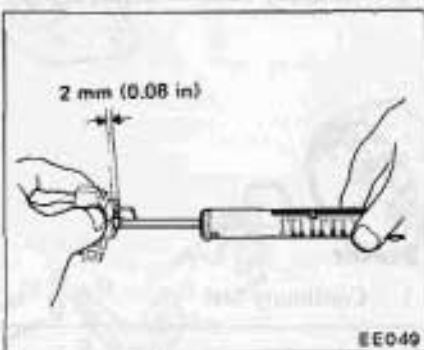


- Less than the specified value ... Replace.

3. Check brush pig tail for damage.
 - Damaged ... Replace.
4. Check brush spring pressure. Measure brush spring pressure with brush projected approximately 2 mm (0.08 in) from brush holder.

Spring pressure:
2.501 - 3.383 N
(255 - 345 g,
8.99 - 12.17 oz)

When brush is worn, pressure decreases approximately 0.196 N (20 g, 0.71 oz) per 1 mm (0.04 in) wear.



- Not in the specified value ... Replace.

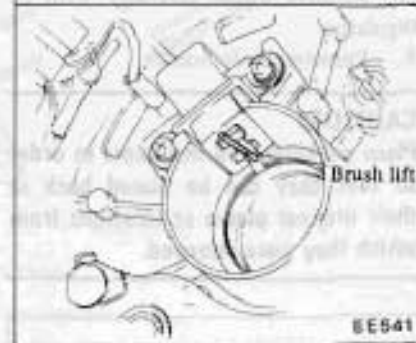
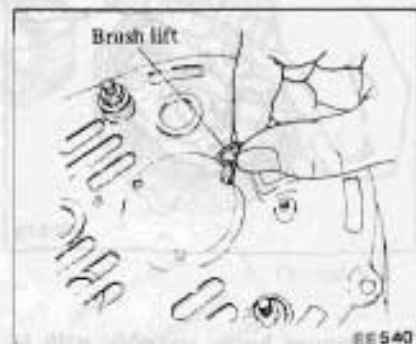
ASSEMBLY

Assemble alternator in the reverse order of disassembly, noting the following:

1. When soldering each stator coil lead wire to diode assembly terminal, carry out the operation as fast as possible.
2. When installing diode "A" terminal, install insulating bushing correctly.
3. Tighten pulley nut and make sure that deflection of V-groove is proper.

- Ⓜ : Pulley nut
44 - 59 N·m
(4.5 - 6.0 kg·m,
33 - 43 ft·lb)
- V-groove deflection:
0.3 mm (0.012 in)

4. Before installing front and rear sides of alternator, push brush up with fingers and retain brush, by inserting brush lift into brush lift hole from outside.



5. After installing front and rear sides of alternator, pull brush lift by pushing toward center.

Do not pull brush lift by pushing toward outside of cover as it will damage slip ring sliding surface.

6. Tighten through bolts.

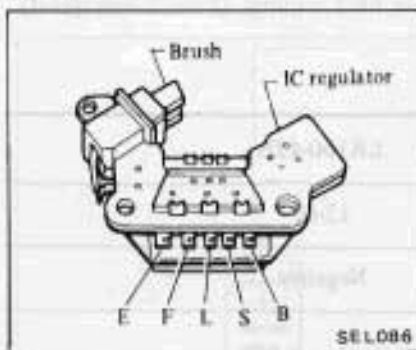
- Ⓜ : Through bolts
3.4 - 3.9 N·m
(0.35 - 0.40 kg·m,
2.5 - 2.9 ft·lb)



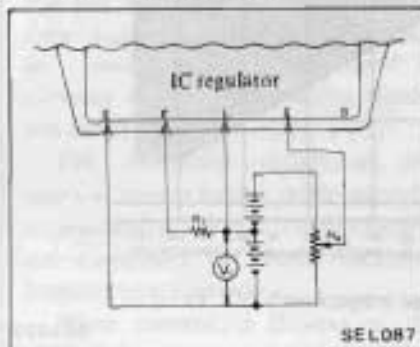
IC VOLTAGE REGULATOR

DESCRIPTION

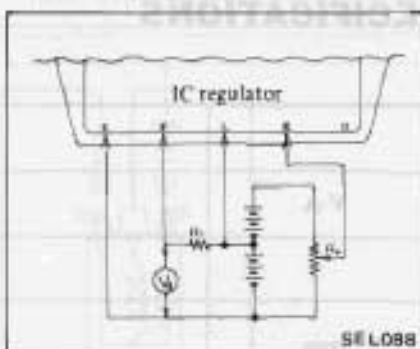
The regulator consists essentially of integrated circuits incorporating transistors. These transistors interrupt and admit current flow to the alternator rotor coil, thus maintaining its output voltage at a constant value. Unlike in a mechanical type regulator, an electronic relay employing transistors is utilized. These transistors are enclosed in a very compact, sealed case. The electronic relay is soldered to the brush assembly inside the alternator. Should any problem with the relay arise, it should be replaced together with the brush assembly. On the charge warning lamp circuit, a diode is attached to the stator coil to monitor generating voltage at the stator so that when the monitored voltage and charging voltage are equal during re-charging, the charge warning lamp is turned off. Accordingly, a charge warning relay is not employed in this circuit.



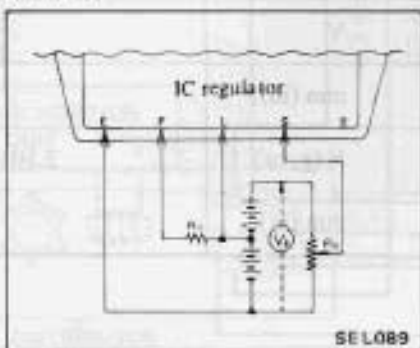
- 1) Resistor (R_1),
10 ohms, 20 watts $\times 1$
 - 2) Variable resistor (R_v), 0 to 300 ohms, 20 watts $\times 1$
 - 3) Batteries (1 and 2),
12 volts $\times 2$
 - 4) DC voltmeter,
0 to 30 volts $\times 1$
2. Measure voltage V_1 at battery.
Not within 10 to 13 volts: Re-charge or replace battery.



3. Measure voltage V_2 .
Below 2.0 volts: Regulator is functioning properly.



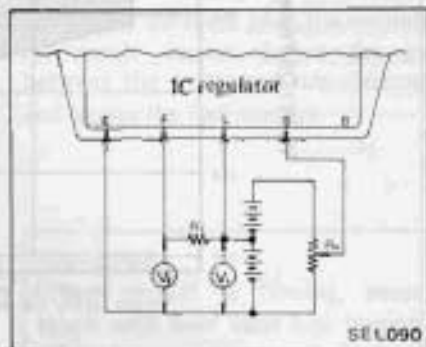
4. Measure voltage V_3 .
Not within 20 to 26 volts: Re-charge or replace either or both batteries.



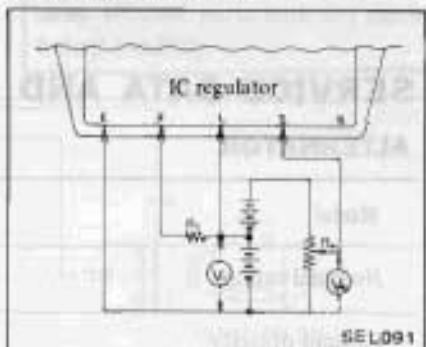
5. Gradually decrease resistance of variable resistor R_v from 300 ohms, and measure voltage V_2 between terminals E and F.

Voltage V_2 should increase at a certain point to as high as voltage V_1 (10 to 13 volts).

- If there is such a variation: Regulator is functioning properly.
- No variation: Regulator is out of order.



6. Hold variable resistor R_v at the same voltage as V_1 (10 to 13 volts).
• Measure voltage V_4 .



- Voltage V_4 is within specified range indicated in Figure.

INSPECTION

Remove IC regulator and brushes at the same time, as outlined in "Disassembly and Assembly" section under the heading "Alternator".

CAUTION:

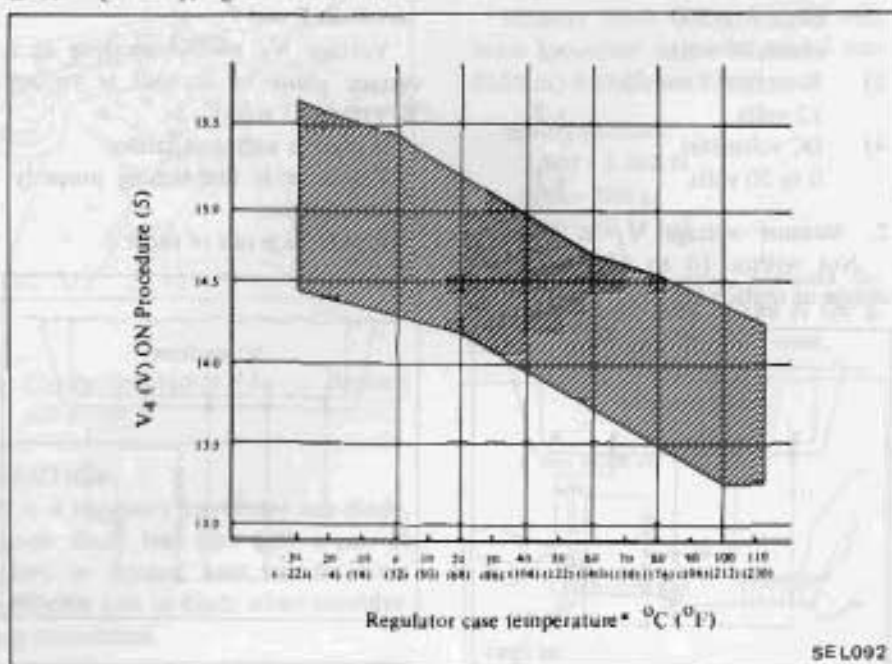
When performing test continuously, resistor may generate heat. If it becomes high temperature, stop testing for a while to avoid burning.

1. The following test equipment and accessories are required.

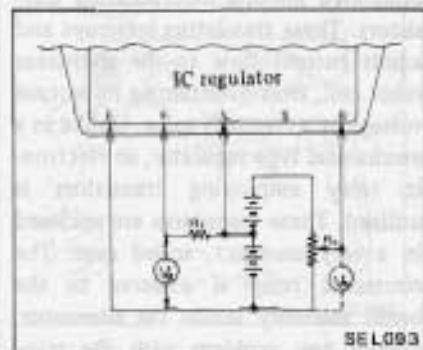
Example:

When temperature of regulator case is 40°C (104°F), regulator is normal if

voltage V_A is within range of 14 to 15 volts.



7. Reconnect wiring as shown in Figure, and repeat steps 5 and 6. If voltage V_A is 0.5 to 2.0 volts higher than that in step (6), regulator is functioning properly. If it is not, replace.



SERVICE DATA AND SPECIFICATIONS

ALTERNATOR

Model		LR160-42B
Nominal rating	V-A	12-60
Ground polarity		Negative
Minimum revolution under no-load (When 14 volts is applied)	rpm	Less than 1,000
Hot output current	A/rpm	More than 50/2,500 More than 60/5,000
Pulley ratio		2.09
Regulated output voltage	V	14.4 - 15.0
Minimum length of brush	mm (in)	More than 7.0 (0.276)
Brush spring pressure	N (g, oz)	2.501 - 3.383 (255 - 345, 8.99 - 12.17)
Slip ring outer diameter	mm (in)	More than 30 (1.18)

IGNITION SYSTEM

CHECKING PROCEDURE

CAUTION: Before starting to work, be sure to turn ignition switch "OFF" and then disconnect battery ground cable.

DESCRIPTION

The ignition system has a dual function. First, it must produce a high voltage spark to ignite the fuel mixture in the engine. And second, it must deliver or "distribute" this spark to the appropriate cylinder at precisely the right moment.

To perform these functions, the ignition system is composed of two circuits: a primary circuit, which carries a low voltage of 9 to 16 volts, and a secondary circuit, which carries a higher voltage of approximately 10 to 20 thousand volts.

As illustrated in the diagram below, the primary circuit current flows from the battery, through a fusible link, ignition switch and several hundred loops of wire in the coil known as the primary windings. From the primary windings current flows through the IC (Integrated Circuit) Ignition Unit and

to ground.

The IC Ignition Unit is an electronic switching device which opens and closes the primary circuit based on pulses it receives from a pick-up coil and a rotating reluctor. These components, the IC Ignition Unit, pick-up coil and reluctor, actually perform the same purpose as the breaker points and condenser that were used in previous ignition systems but require less maintenance.

The secondary circuit of the ignition system begins at the secondary windings in the coil. These windings are composed of several thousand loops of very fine wire.

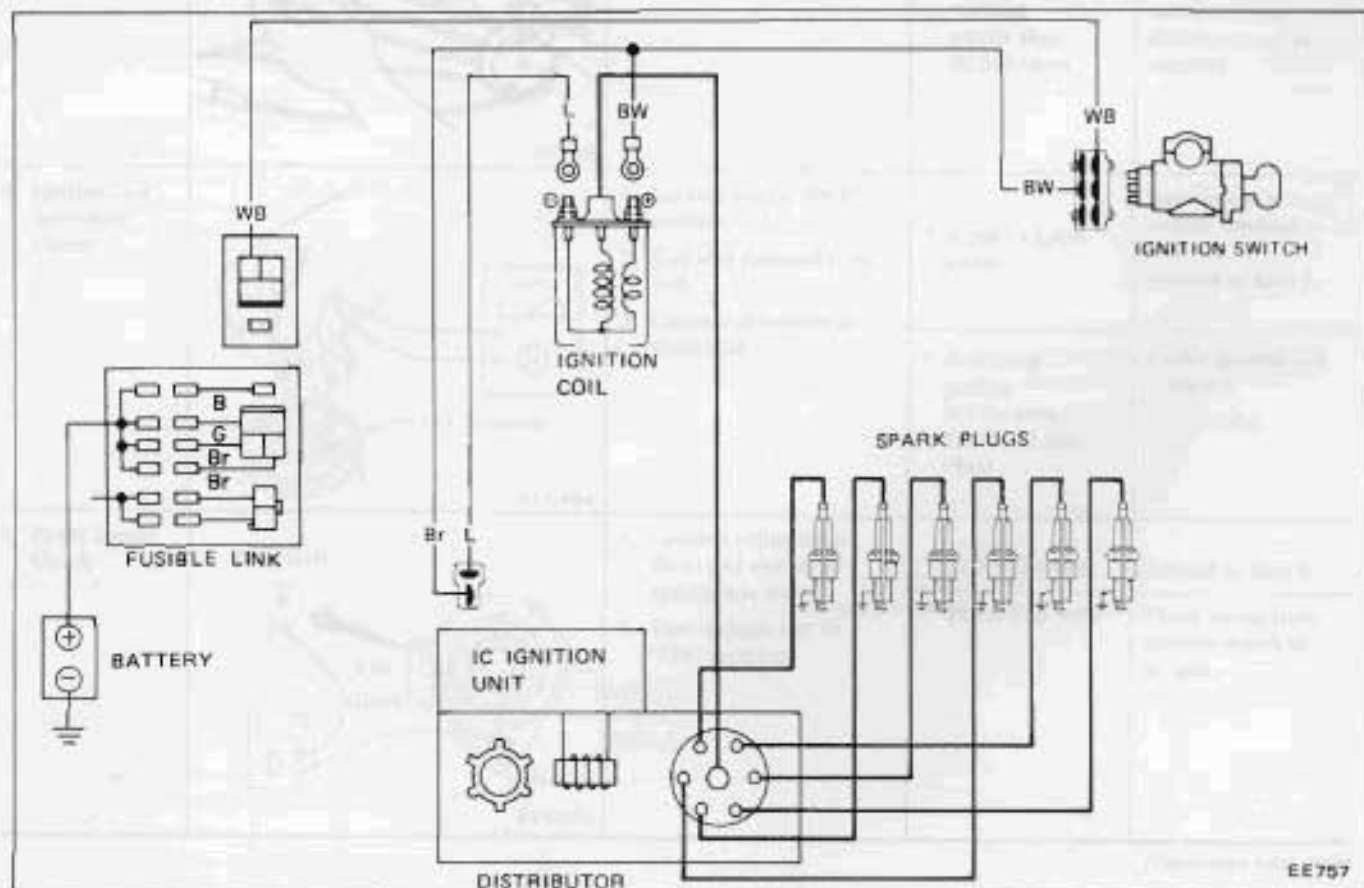
When current is flowing in the primary circuit a magnetic "field" is produced in the primary windings of the coil. When the current flow is stopped, such as when the IC Ignition Unit opens the circuit, the magnetic field collapses and induces a high

voltage in the secondary windings.

The secondary circuit current then flows through a high tension cable (coil wire) to the distributor cap, where the rotor distributes it to the appropriate spark plug cable. Upon arriving at the spark plug, the secondary circuit current jumps the gap between the center and side electrode and ignites the fuel mixture.

WARNING:

When current is flowing, never touch with bare hand high tension cables or any other parts with high voltage. If parts are moist, touching them could cause an electric shock, even if they are insulated. Always wear dry, well-insulated gloves or wrap affected parts with dry cloth before handling.



EE757

CHECKING PROCEDURE

"No-start" condition

Sparking performance check

1. Turn ignition switch to "OFF" position.
2. Disconnect EFI fusible link connector.

CAUTION:

Before disconnecting EFI fusible link connector, ensure that ignition switch is in "OFF" position.

3. Disconnect cold start valve harness connector.
4. Disconnect high tension cable from distributor.
5. Keeping high tension cable end 4 to 5 mm (0.16 to 0.20 in) away from engine block, rotate starter motor and check whether sparks occur across the clearance.

◀ JUDGMENT ▶

- Sparks occur.
IC ignition system O.K.

In this case, IC ignition system and component parts need not be checked beyond this.

- No spark occurs on sparks are intermittent

IC ignition system N.G.
Proceed with tests below.

Manual testing of IC ignition system using a voltmeter

IC Ignition System is best checked using J-26350 Transistor Ignition Analyzer. However, if an analyzer is not available, a volt-ohm-milliammeter (V.O.M.) may be used to diagnose transistor ignition malfunctions. While this method requires more time, it can nevertheless provide accurate results. Follow the steps in the sequence

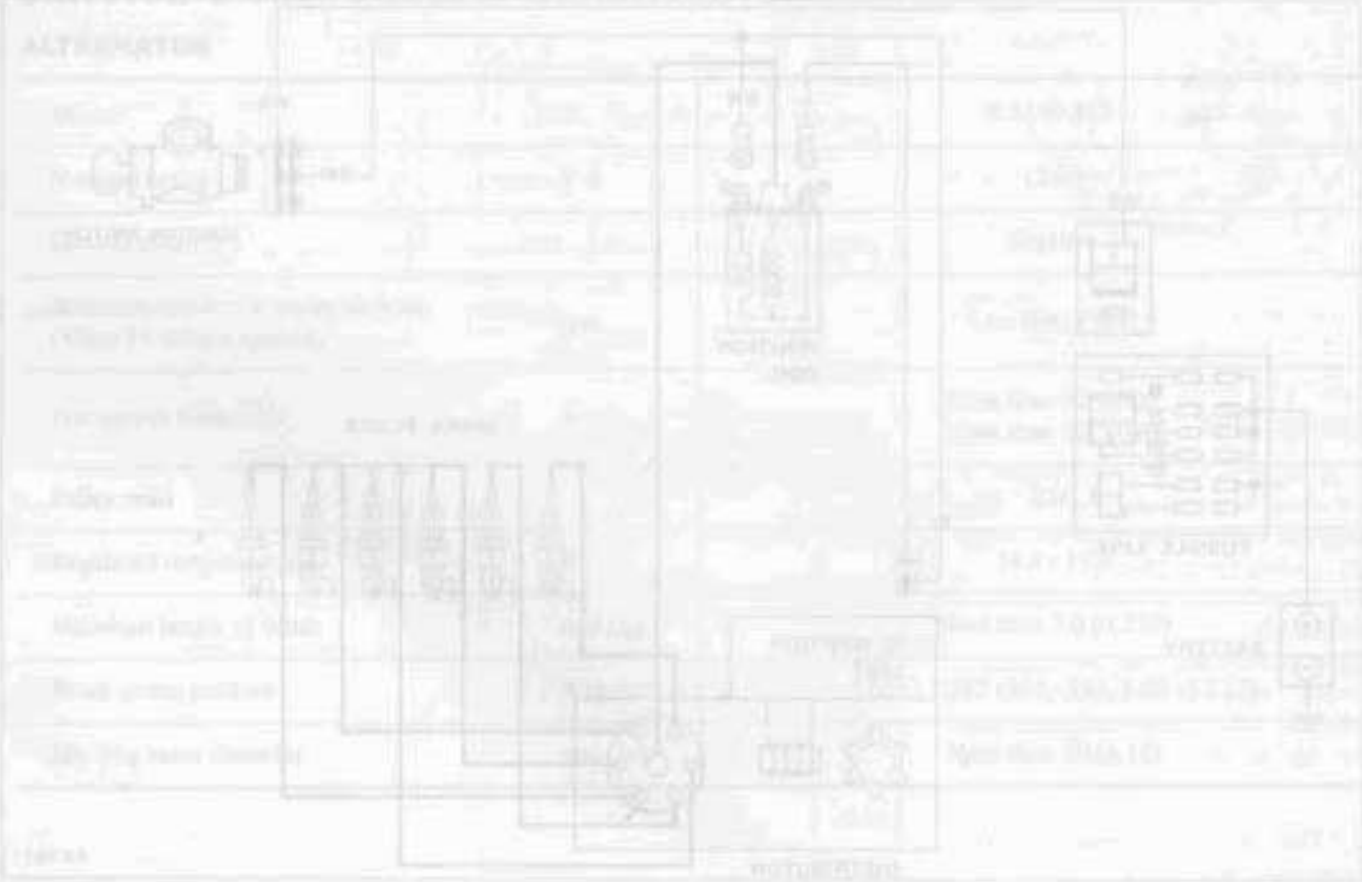
indicated. If a fault is found, correct the problem before continuing. If all tests indicate "OK" replace the IC Ignition Unit. **DO NOT REPLACE THE UNIT UNTIL ALL TESTS HAVE BEEN COMPLETED AND INDICATE "OK".**

1. When performing the following tests, use a multimeter which can measure accurately in the following ranges; 0 to 20V, D.C.; 0 to 1,000Ω; 0 to 10V A.C.; 0 to 50,000Ω.

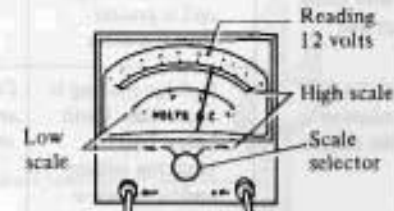
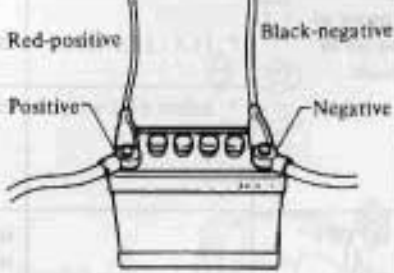
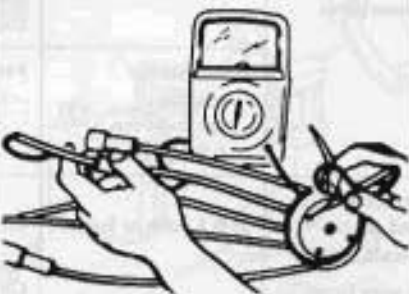
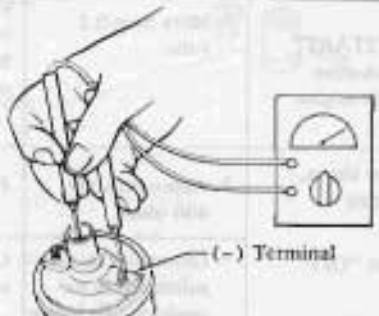
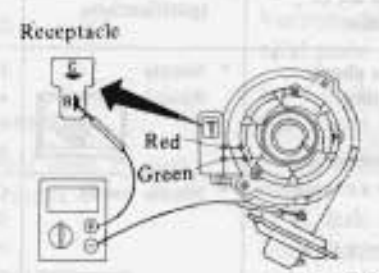
2. If possible, start the vehicles and let it run for 5 to 15 minutes with the hood closed. This will bring all components to normal operating temperature, and will make it easier to diagnose intermittent problems.

3. It is not necessary to disconnect the harness connectors when performing the tests which follow. Simply insert the meter probes into the back of appropriate connector cavity.

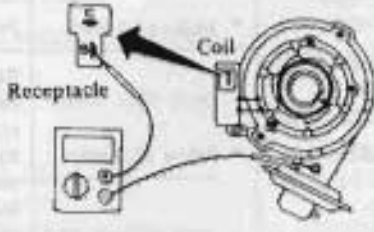
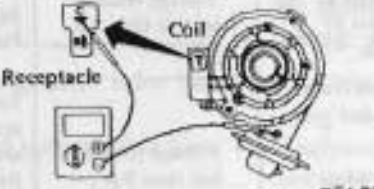
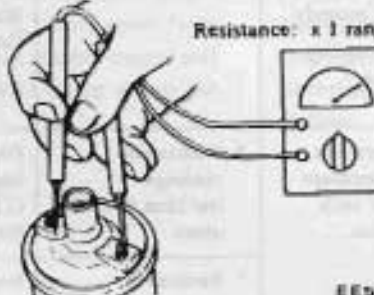
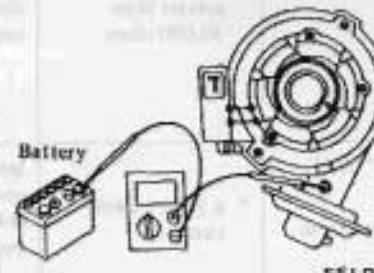
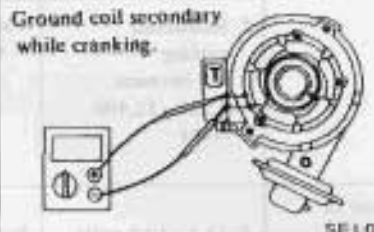
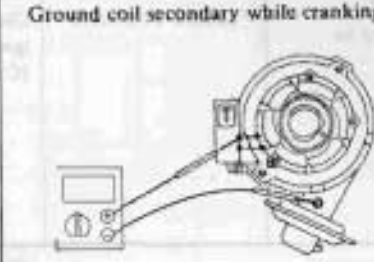


SERVICE DATA AND SPECIFICATIONS



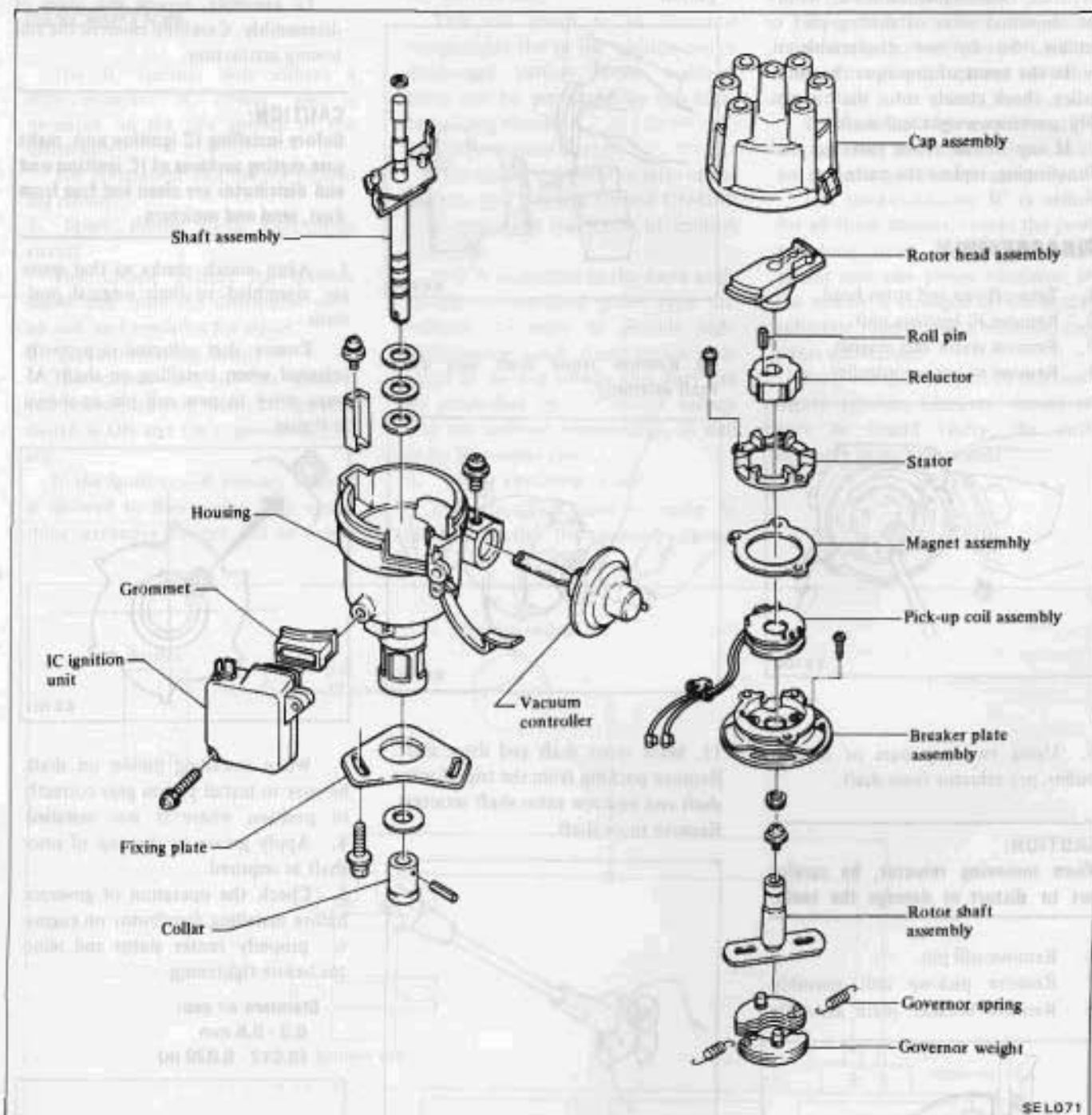
IC IGNITION SYSTEM TROUBLE-SHOOTING

TEST	TEST METHOD	CONDITIONS	RESULT	ACTION
1. Battery Voltage (no load)		<ol style="list-style-type: none"> 1. Ignition key in "OFF" position. 2. Connect voltmeter as illustrated and set to appropriate scale. 3. Read and record battery voltage reading. Battery voltage	<ul style="list-style-type: none"> * 11.5 - 12.5 volts 	Proceed to Step 2.
2. Battery Cranking Voltage		<ol style="list-style-type: none"> 1. Connect voltmeter as illustrated and set to appropriate scale. 2. Remove coil wire from distributor cap and ground it. 3. Read voltmeter while cranking engine for approximately 15 seconds. 4. Record voltage reading. Battery cranking voltage	<ul style="list-style-type: none"> * Voltage reading greater than 9.6 volts * Voltage reading less than 9.6 volts 	Battery O.K. Proceed to Step 3. Battery, charging system or starting system – Faulty. Refer to applicable sections in Service Manual to correct the situation.
3. Secondary Wiring		<ol style="list-style-type: none"> 1. Connect ohmmeter as illustrated and measure the resistance of each high tension cable. 	<ul style="list-style-type: none"> * Resistance readings less than 30,000 ohms * Resistance readings greater than 30,000 ohms 	Distributor cap and high tension cables – O.K. Proceed to Step 4. Replace high tension cable(s) and/or distributor cap as required.
4. Ignition Coil Secondary Circuit		<ol style="list-style-type: none"> 1. Ignition key in "OFF" position. 2. Coil wire removed from coil. 3. Connect ohmmeter as illustrated. 	<ul style="list-style-type: none"> * 8,200 - 12,400 ohms * Resistance reading not between 8,200 - 12,400 ohms 	Ignition coil secondary windings – O.K. Proceed to Step 5. Faulty ignition coil – replace
5. Power Supply Circuit		<ol style="list-style-type: none"> 1. Connect voltmeter as illustrated and set to appropriate scale. 2. Turn ignition key to "ON" position. 	<ul style="list-style-type: none"> * 11.5 - 12.5 volts * Below 11.5 volts 	Proceed to Step 6. Check wiring from ignition switch to IC unit.

(Continued next page)

TEST	TEST METHOD	CONDITIONS	RESULT	ACTION
6. Power Supply Circuit (Cranking)	Ground coil output wire while performing test. 	1. Connect voltmeter as illustrated and set to appropriate scale. 2. Pull out coil wire from distributor cap and ground it. 3. Turn key to "START" position and observe voltmeter while engine is cranking.	* Voltage reading is less than 1 volt below battery cranking voltage and is greater than 8.6 volts.	Proceed to Step 7.
			* Voltage reading is more than 1 volt below battery cranking voltage and/or is below 8.6 volts.	Check ignition switch and wiring from switch to IC unit.
7. Ignition Primary Circuit		1. Connect voltmeter as illustrated and set to appropriate scale. 2. Ignition key in "ON" position.	* 11.5 - 12.5 volts	Proceed to Step 9.
			* Below 11.5 volts	Proceed to Step 8.
8. Ignition Coil Primary Circuit	Resistance: x 1 range 	1. Ignition key in "OFF" position. 2. Coil wire removed from coil. 3. Connect ohmmeter as illustrated.	* 0.84 - 1.02 ohms	Ignition coil primary winding O.K. Check ignition switch and wiring from ignition switch to coil and IC unit.
			* Resistance reading not between 0.84 - 1.02 ohms.	Faulty ignition coil - replace.
9. I.C. Unit Ground Circuit		1. Connect voltmeter as illustrated and set to appropriate scale. 2. Pull out coil wire from distributor cap and ground it. 3. Turn key to "START" position and observe voltmeter while engine is cranking.	* 0.5 volts or less * More than 0.5 volts	Proceed to Step 10. Check distributor ground, wiring from chassis ground to battery including battery cable connections.
10. Pick-up Coil Resistance	Ground coil secondary while cranking. 	1. Engine is at, or above, normal operating temperature. 2. Ignition key in "OFF" position. 3. Connect ohmmeter as illustrated and set to appropriate scale.	* Approximately 400 ohms	Proceed to Step 11.
			* Ohmmeter reading substantially exceeds or falls below the 400 ohms specifications.	Check pick-up coil and wiring to it.
11. Pick-up Coil Output	Ground coil secondary while cranking. 	1. Engine is at or above normal operating temperature. 2. Connect voltmeter and set to the low a.c. volt scale (0 - 5). 3. Turn key to "START" position and observe the needle movement while the engine is cranking.	* Needle Waves 	If "No Spark" condition still exists - replace IC ignition unit.
			* Needle steady 	Check physical condition of pick-up coil and reluctor. Check wiring and connections between pick-up coil and IC ignition unit.

(Continued next page)

DISTRIBUTOR (IC type)**CHECKING AND ADJUSTMENT****Cap and rotor head**

Check cap and rotor head for dust, carbon deposits and cracks.

Advance mechanisms**Specifications**

Refer to S.D.S.

Vacuum advance mechanism mechanical parts

1. Check vacuum inlet for signs of leakages at its connection.
2. Check vacuum diaphragm for air leak.

If leak is found, replace vacuum controller assembly.

3. Inspect breaker plate for smooth moving.

If plate does not move smoothly, this condition could be due to sticky

steel balls or pivot. Apply grease to steel balls or, if necessary, replace breaker plate as an assembly.

Centrifugal advance mechanical parts

When cause of engine malfunction is traced to centrifugal advance mechanical parts, use distributor tester to check its characteristics.

SEL071

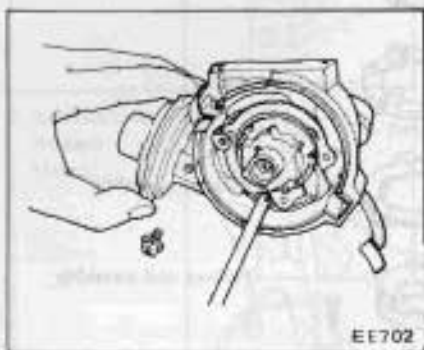
If nothing is wrong with its characteristics, conceivable causes are faulty or abnormal wear of driving part or others. So do not disassemble it.

In the event of improper characteristics, check closely rotor shaft assembly, governor weight and shaft.

If any of the above parts are malfunctioning, replace the parts.

DISASSEMBLY

1. Take off cap and rotor head.
2. Remove IC ignition unit.
3. Remove stator and magnet.
4. Remove vacuum controller.

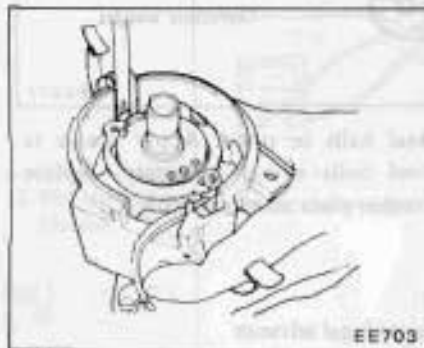


5. Using two pry bars or suitable puller, pry reluctor from shaft.

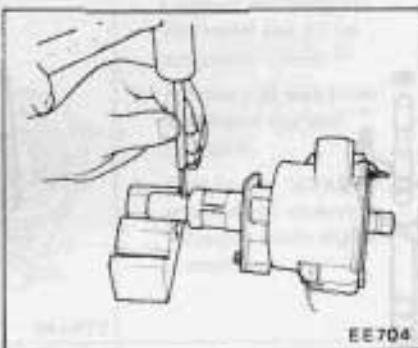
CAUTION:

When removing reluctor, be careful not to distort or damage the teeth.

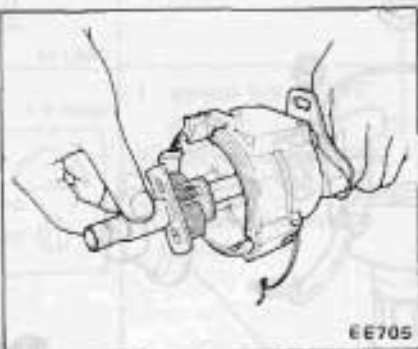
6. Remove roll pin.
7. Remove pick-up coil assembly.
8. Remove breaker plate assembly.



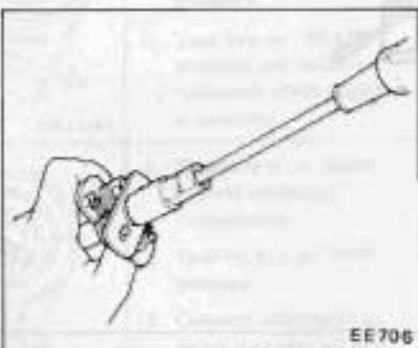
9. Punch knock pin out and remove pinion.



10. Remove rotor shaft and drive shaft assembly.



11. Mark rotor shaft and drive shaft. Remove packing from the top of rotor shaft and unscrew rotor shaft setscrew. Remove rotor shaft.



12. Mark one of the governor springs and its bracket. Also mark one of the governor weights and its pivot pins.

13. Carefully unhook and remove governor springs.

14. Remove governor weights. Apply grease to governor weights, after disassembling.

ASSEMBLY

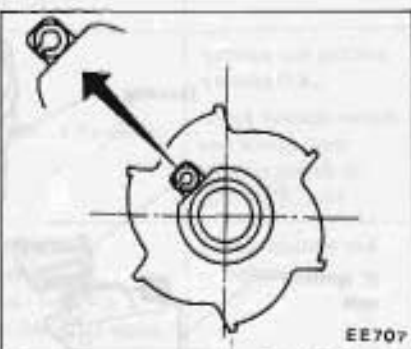
To assemble, reverse the order of disassembly. Carefully observe the following instruction.

CAUTION:

Before installing IC ignition unit, make sure mating surfaces of IC ignition unit and distributor are clean and free from dust, sand and moisture.

1. Align match marks so that parts are assembled to their original positions.

2. Ensure that reluctor is properly oriented when installing on shaft. Always drive in new roll pin as shown in Figure.



3. When installing pinion on shaft, be sure to install pinion gear correctly to position where it was installed.

4. Apply grease to the top of rotor shaft as required.

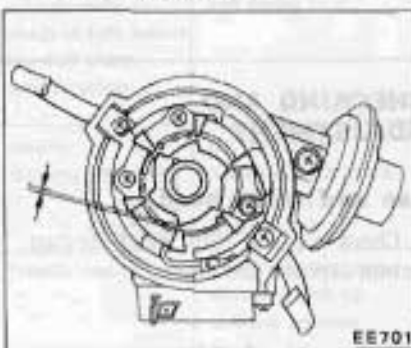
5. Check the operation of governor before installing distributor on engine.

6. properly center stator and reluctor before tightening.

Standard air gap:

0.3 - 0.5 mm

(0.012 - 0.020 in)



7. Adjust ignition timing after distributor is installed on engine.

IC IGNITION UNIT

DESCRIPTION

The IC ignition unit utilizes a semi-conductor IC device, and is mounted on the side surface of the distributor.

The IC ignition unit has the following circuits:

1. Spark timing signal monitoring circuit

This circuit detects the ignition signal sent from the distributor pick-up coil, and amplifies the signal.

2. Lock-preventing circuit

This circuit cuts off the ignition coil primary current when the ignition switch is ON and the engine is stationary.

If the ignition coil primary current is allowed to flow under such conditions, excessive current will be drawn

because of low internal resistance of the ignition coil.

This can result in an abnormal temperature rise in the ignition coil or discharged battery. These malfunctions can be prevented by this lock-preventing circuit.

3. Duty control circuit

This circuit controls the ratio of the ignition coil primary current ON-OFF time periods in one cycle of ignition operation.

This is equivalent to the dwell angle of the conventional point type distributor. In order to provide high-performance spark firing over a wide range of driving speeds, this duty can be controlled by the source voltage and the ambient temperature, as well as by the engine rpm.

4. Power switching circuit

This circuit is used to make or break directly the primary circuit

current of the ignition coil.

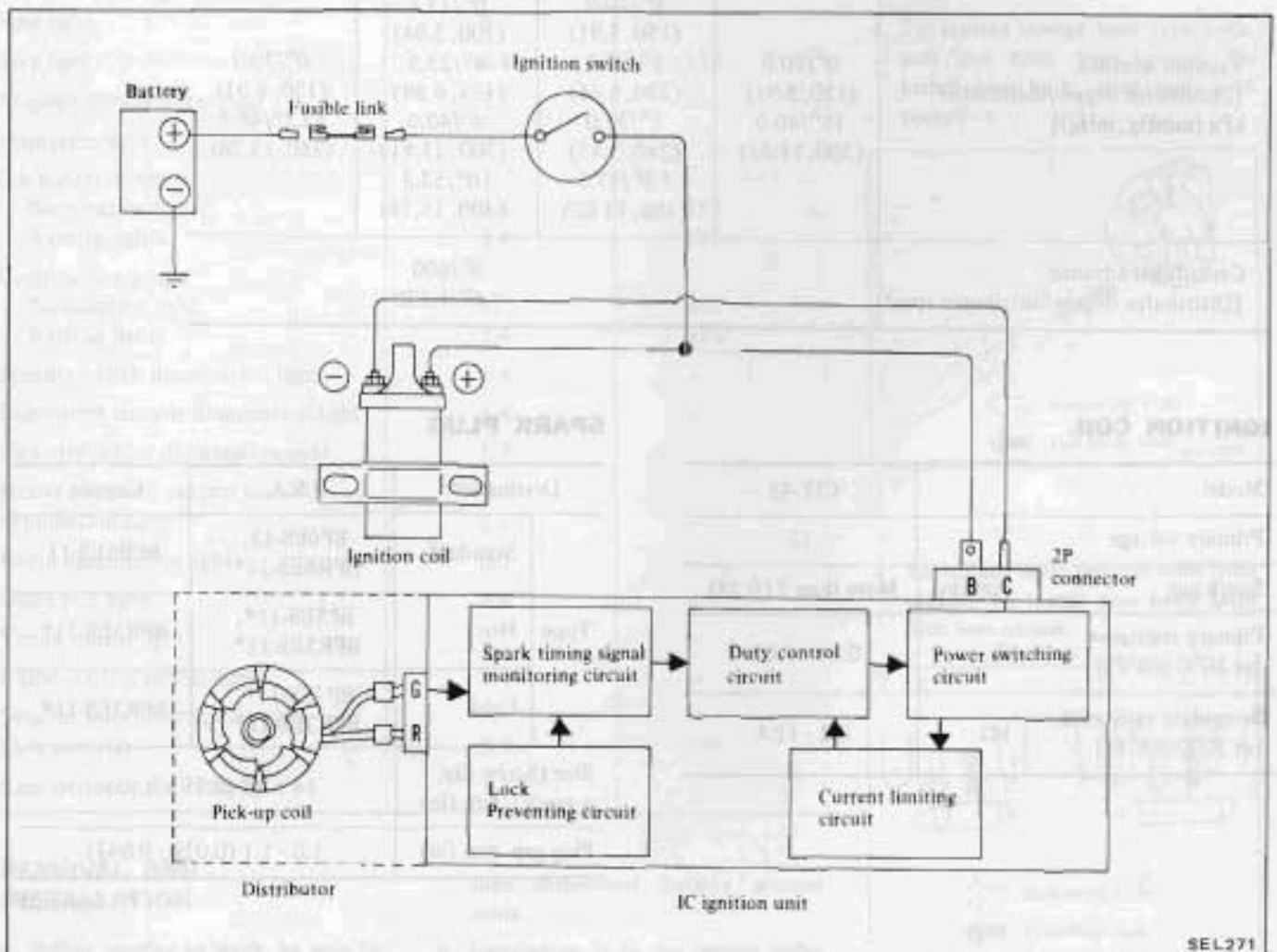
5. Current limiting circuit

This circuit controls the current value so that excessive current will not flow through the power switching circuit.

To ensure efficient operation of the IC ignition unit, these five circuits are manufactured in one assembly.

The semi-conductor IC is utilized for all these circuits, except the power switching circuit. The power switching circuit uses one power transistor, and the circuit is arranged on the ceramic substrate together with resistors, capacitors and diodes.

Each component part of this unit is highly reliable, however, should any part be found faulty, the entire assembly must be replaced.



SEL271

SERVICE DATA AND SPECIFICATIONS**DISTRIBUTOR**

Model	D6K8-22	D6K9-09	D6K9-14	D6K9-02
Destination	California models	Non-California models for U.S.A.		Canada models
Transmission	A/T, M/T	A/T	M/T	A/T, M/T
Firing order	1-5-3-6-2-4			
Rotating direction	Counterclockwise			
Air gap mm (in)	0.3 - 0.5 (0.012 - 0.020)			
Cap insulation resistance MΩ	More than 50			
Rotor head insulation resistance MΩ	More than 50			
Cap carbon point length mm (in)	12 (0.47)			
Vacuum advance [Distributor degree/distributor kPa (mmHg, inHg)]	0°/20.0 (150, 5.91) 15°/40.0 (300, 11.81)	0°/20.0 (150, 5.91) 5°/29.3 (220, 8.66) 5°/32.0 (240, 9.45) 7.5°/37.3 (280, 11.02)	0°/13.3 (100, 3.94) 4°/23.3 (175, 6.89) 4°/40.0 (300, 11.81) 10°/53.3 (400, 15.75)	0°/20.0 (150, 5.91) 12.5°/46.7 (350, 13.78)
Centrifugal advance [Distributor degree/distributor rpm]	0°/600 8.5°/1,250			

IGNITION COIL

Model	CIT-43	
Primary voltage V	12	
Spark gap mm (in)	More than 7 (0.28)	
Primary resistance [at 20°C (68°F)] Ω	0.84 - 1.02	
Secondary resistance [at 20°C (68°F)] kΩ	8.2 - 12.4	

SPARK PLUG

Destination		U.S.A.	Canada
Type	Standard	BP6ES-11, BPR6ES-11*	BPR6ES-11
	Hot	BP5ES-11*, BPR5ES-11*	BPR5ES-11*
	Cold	BP7ES-11*, BPR7ES-11*	BPR7ES-11*
Size (Screw dia. x reach) mm (in)		14 x 19 (0.55 x 0.75)	
Plug gap mm (in)		1.0 - 1.1 (0.039 - 0.043)	

*: Optional

ELECTRICAL UNIT OF LIGHTING SYSTEM

CAUTION: Before starting to work, be sure to turn ignition switch "OFF" and then disconnect battery ground cable.

BULBS**SPECIFICATIONS**

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

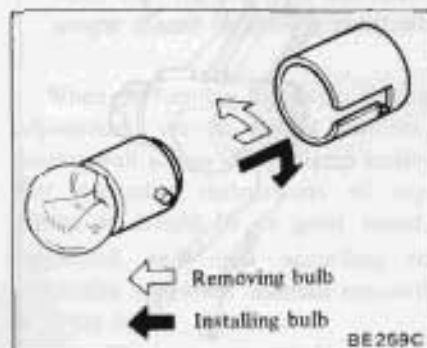
**REMOVAL AND
INSTALLATION**

a. Before starting to work, be sure to turn ignition switch "OFF" and

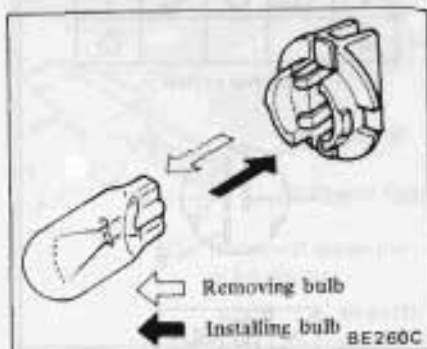
then disconnect battery ground cable.

b. Installation is in the reverse order of removal.

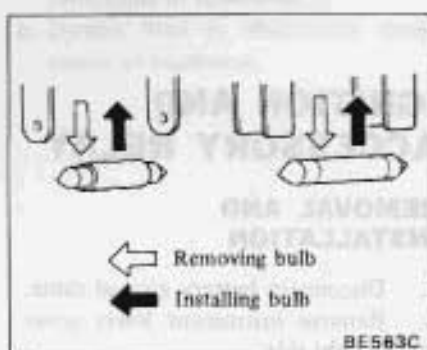
c. To replace bulb, push in on bulb, turn it counterclockwise and remove it from socket. Install new bulb in the reverse order of removal.



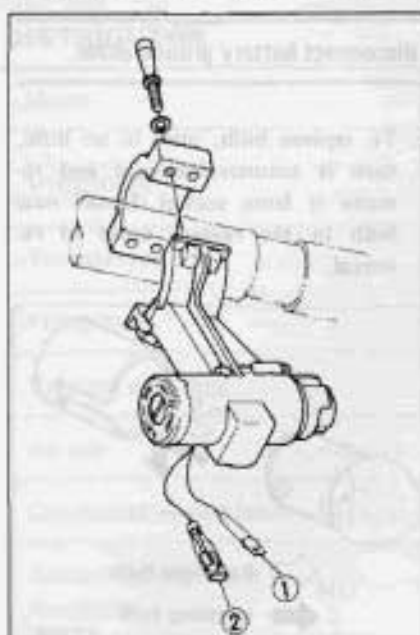
d. To replace wedge base type bulb, pull out bulb from socket. To install new bulb, push bulb into socket.



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

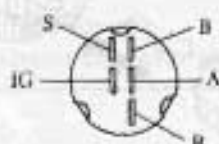


IGNITION SWITCH



	OFF	ACC	ON	START
B		○	○	○
IG		○	○	○
S		○	○	○
A		○	○	○
R				○

Ignition switch



	key IN	OUT
1	○	
2	○	

Steering lock switch

0E786D

IGNITION AND ACCESSORY RELAY

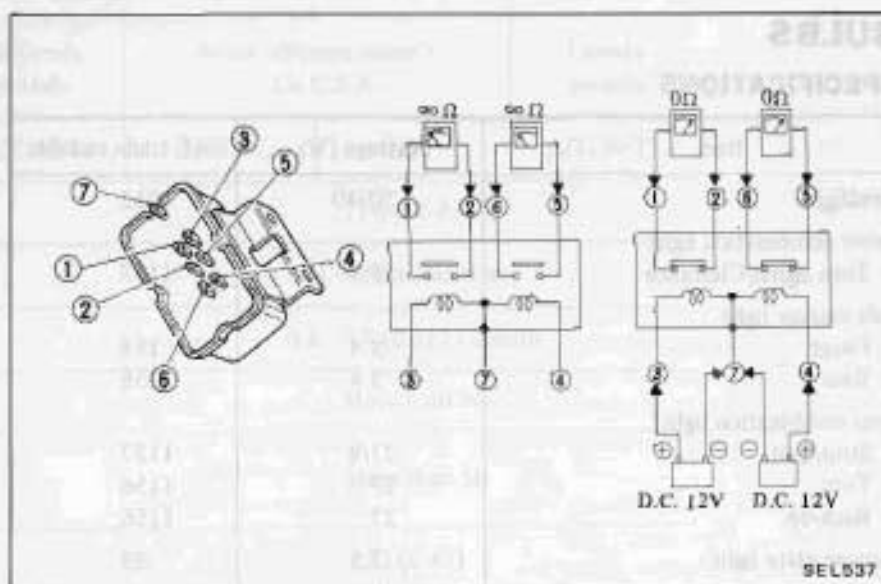
REMOVAL AND INSTALLATION

1. Disconnect battery ground cable.
2. Remove instrument lower cover on the right side.

3. Disconnect harness connector.
4. Remove relay on dash side.

5. Install relay in the reverse order of removal.

INSPECTION



SEL537

COMBINATION SWITCH

REMOVAL AND INSTALLATION

1. Disconnect battery ground cable.
2. Remove horn pad.
3. Remove steering wheel.
4. Remove steering column cover.

5. Disconnect combination switch wires at connector.

6. Loosen retaining screw and remove combination switch assembly.
7. Install combination switch in the

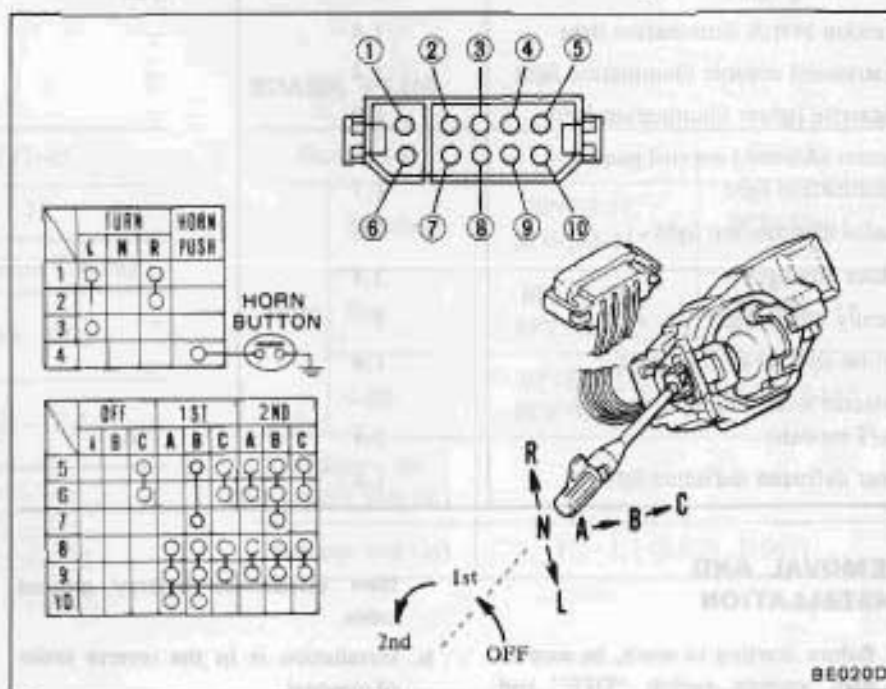
INSPECTION

Test continuity through switch with a test lamp or ohmmeter.

IGNITION AND ACCESSORY RELAY

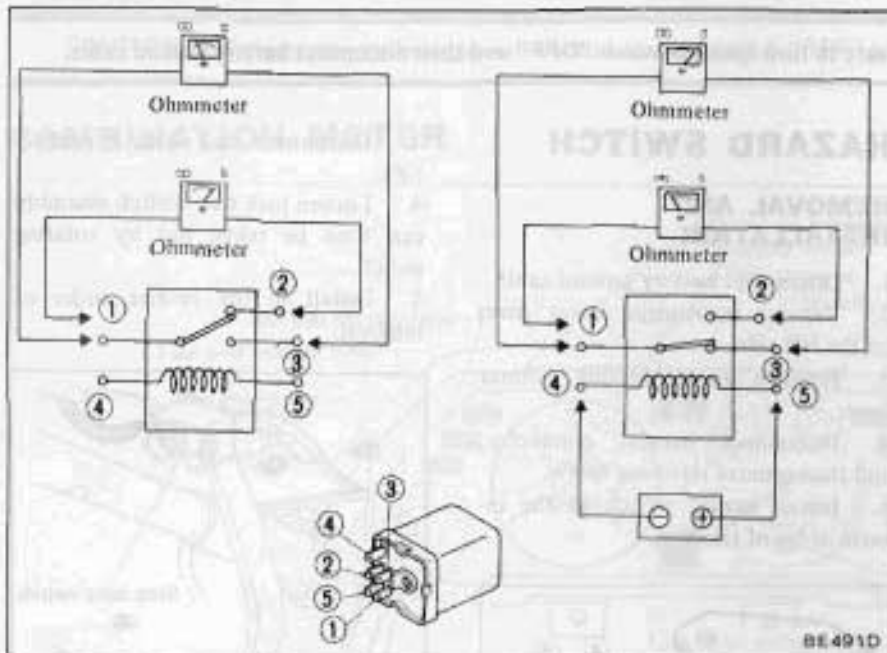
REMOVAL AND INSTALLATION

1. Disconnect battery ground cable.
2. Remove instrument lower cover on the right side.



BE020D

LIGHTING RELAY



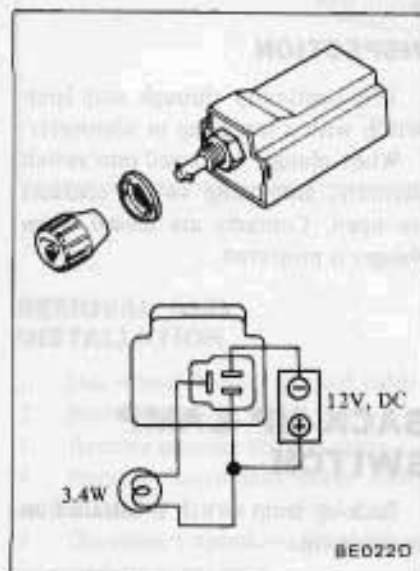
Before making headlamp aiming adjustment, observe the following instructions.

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

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

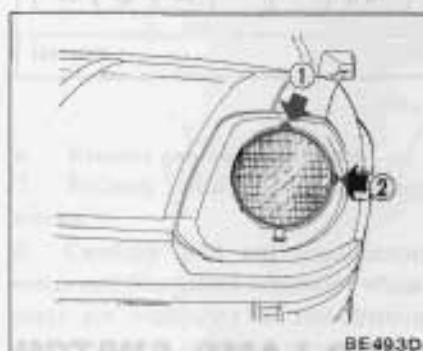
If any aimer is not available, aiming adjustment can be done as follows: Turn headlamp low beam on.

ILLUMINATION CONTROL RHEOSTAT

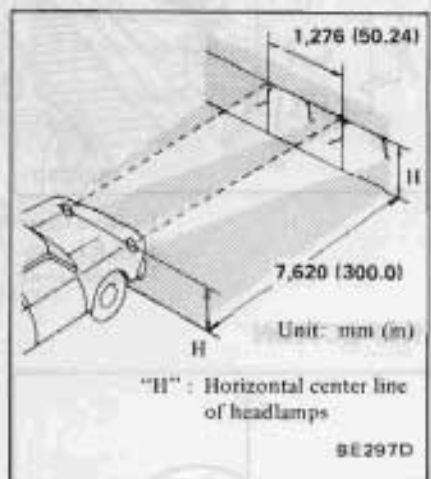


AIMING ADJUSTMENT

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



- Vertical adjustment
- Horizontal adjustment



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



ELECTRICAL UNIT OF SIGNAL SYSTEM

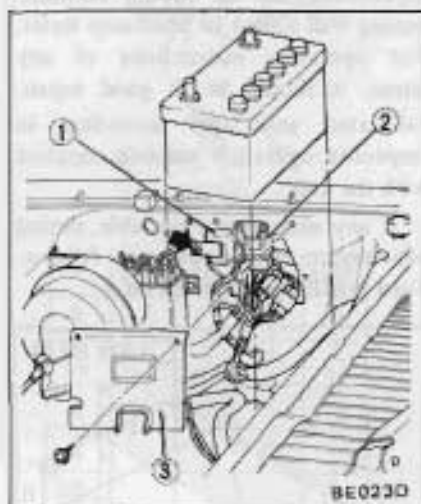
CAUTION: Before starting to work, be sure to turn ignition switch "OFF" and then disconnect battery ground cable.

TURN SIGNAL SWITCH

Refer to Combination Switch.

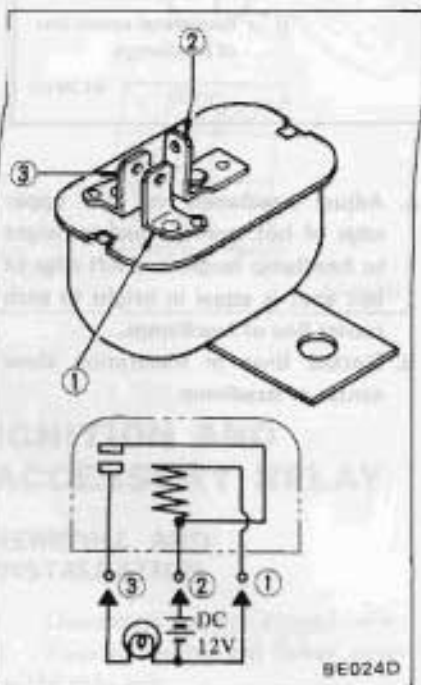
HORN RELAY

REMOVAL AND INSTALLATION



- 1 Horn relay
- 2 E.F.I. relay
- 3 Relay cover

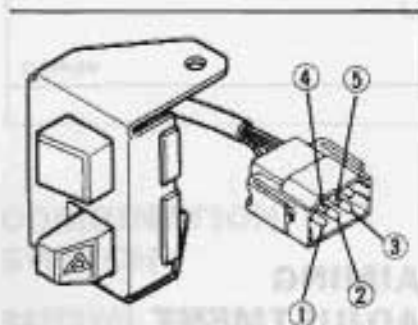
INSPECTION



HAZARD SWITCH

REMOVAL AND INSTALLATION

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



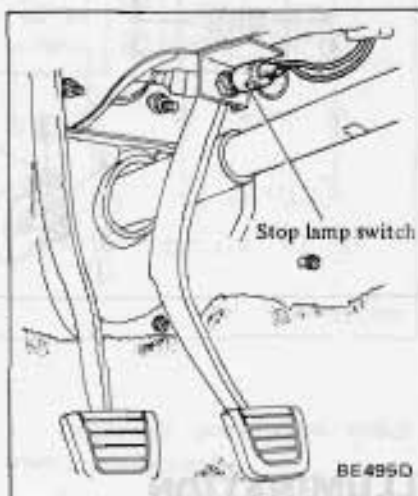
	1	2	3	4	5
OFF	○	○			
ON			○	○	○

STOP LAMP SWITCH

REMOVAL AND INSTALLATION

1. Disconnect battery ground cable.
2. Remove instrument lower cover and assist floor nozzle.

3. Disconnect lead wires at connectors.
4. Loosen lock nut. Switch assembly can then be taken out by rotating switch.
5. Install in the reverse order of removal.



INSPECTION

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

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

BACK-UP LAMP SWITCH

Back-up lamp switch is installed on transmission.

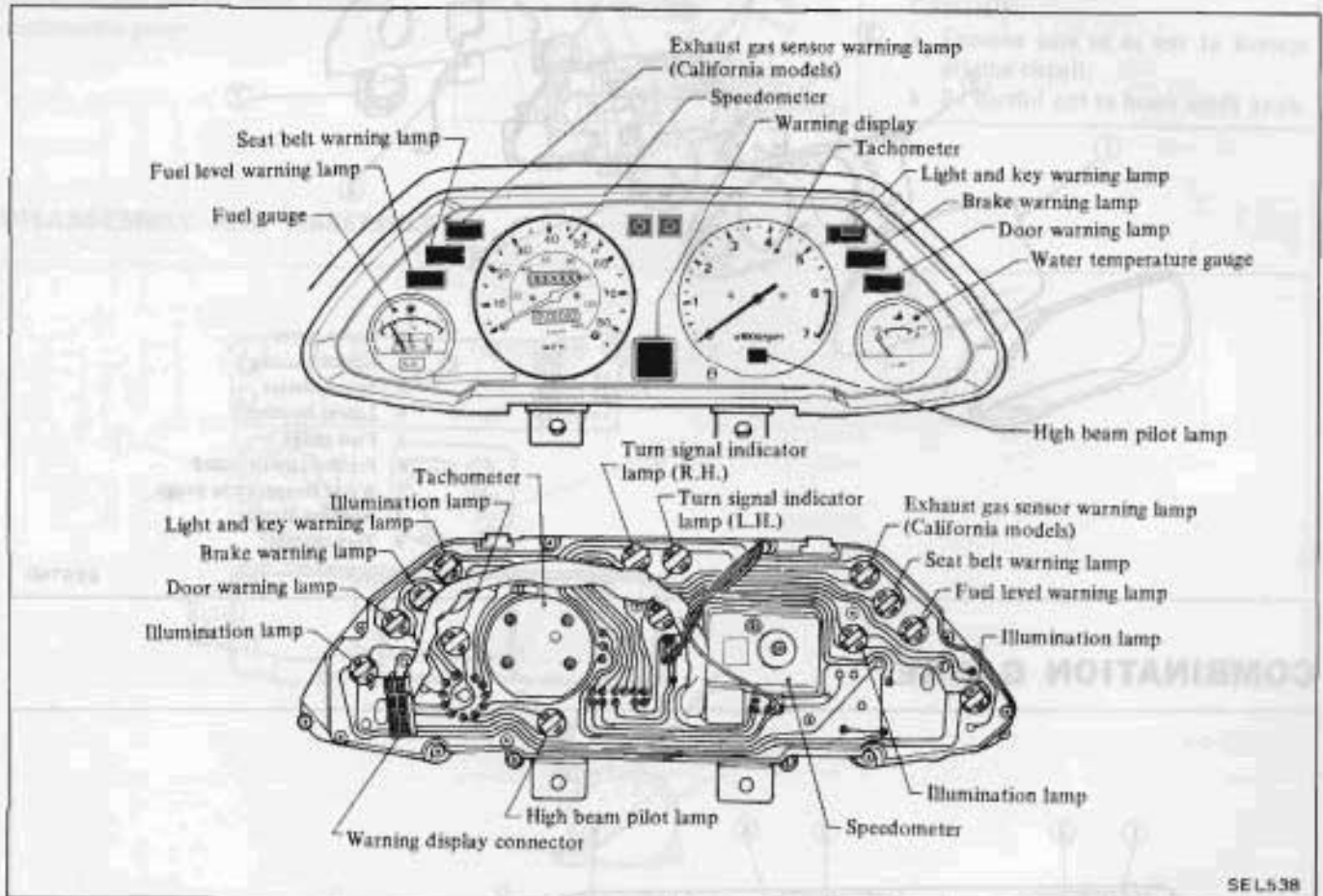
INSPECTION

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

METERS AND GAUGES

CAUTION: Before starting to work, be sure to turn ignition switch "OFF" and then disconnect battery ground cable.

COMBINATION METER



SEL538

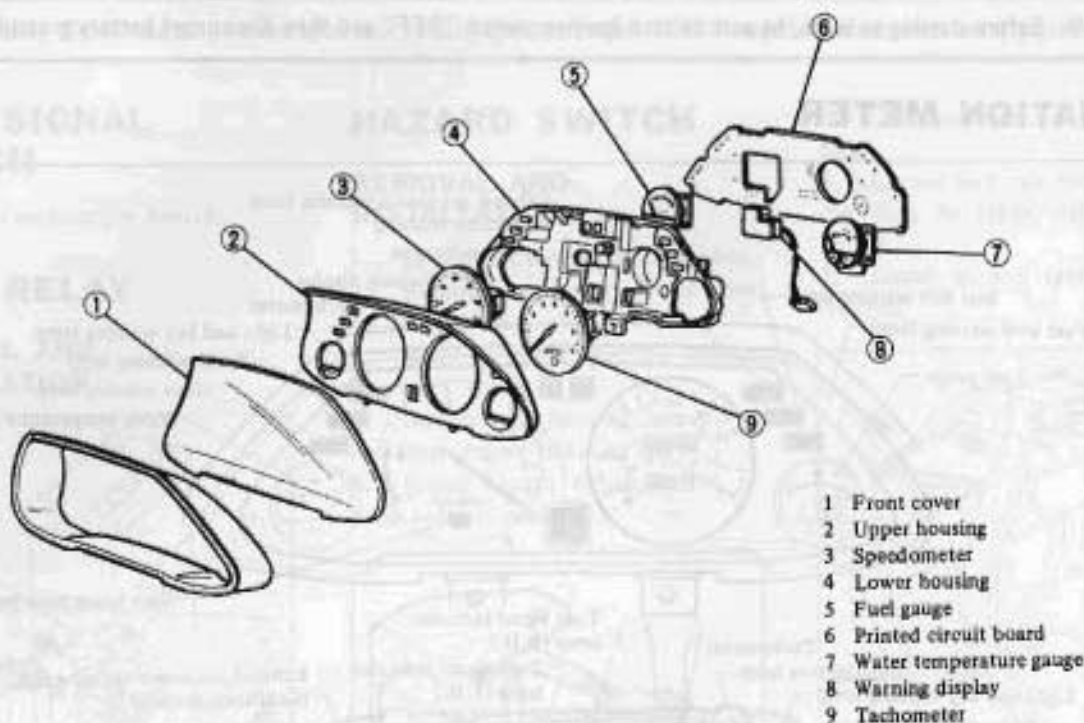
REMOVAL AND INSTALLATION

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



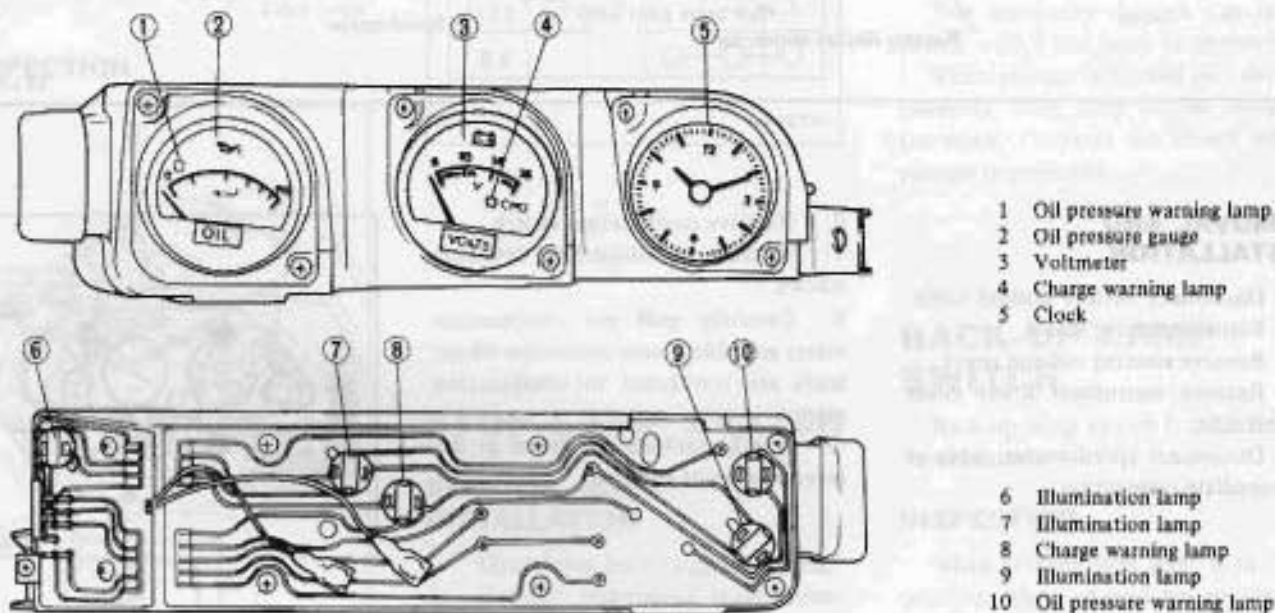
BE 496D

DISASSEMBLY AND ASSEMBLY



8E576D

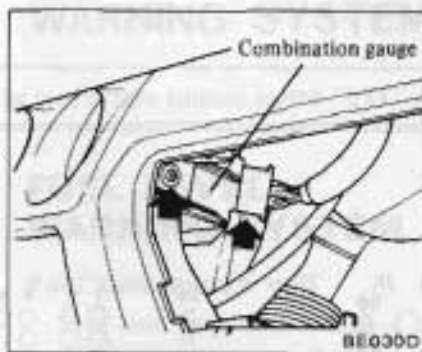
COMBINATION GAUGE



5E1540

REMOVAL AND INSTALLATION

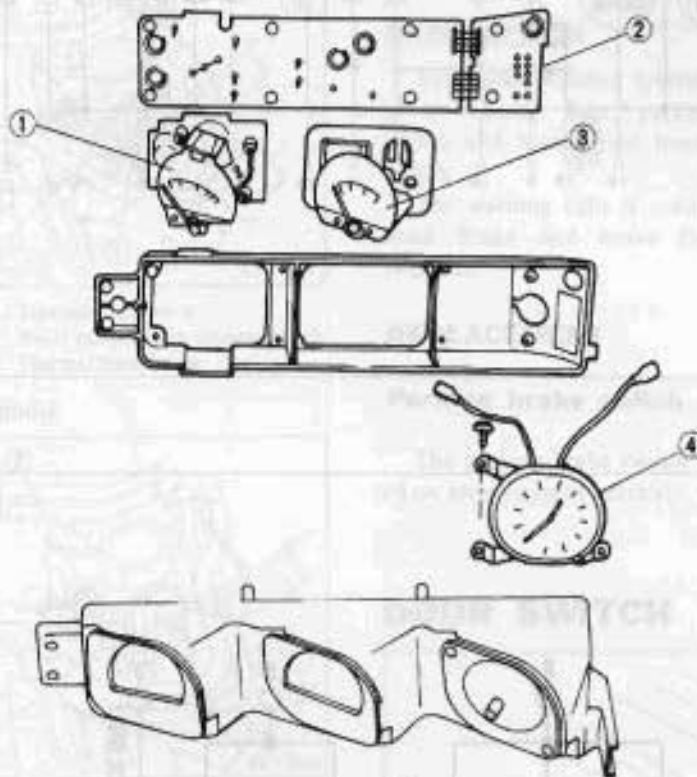
1. Disconnect battery ground cable.
2. Remove glove box. Refer to Glove Box (Section BF) for removal.
3. Disconnect instrument harness connector and remove screw retaining combination gauge.



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

CAUTION:

- a. Exercise care so as not to damage printed circuit.
- b. Be careful not to break clock knob.

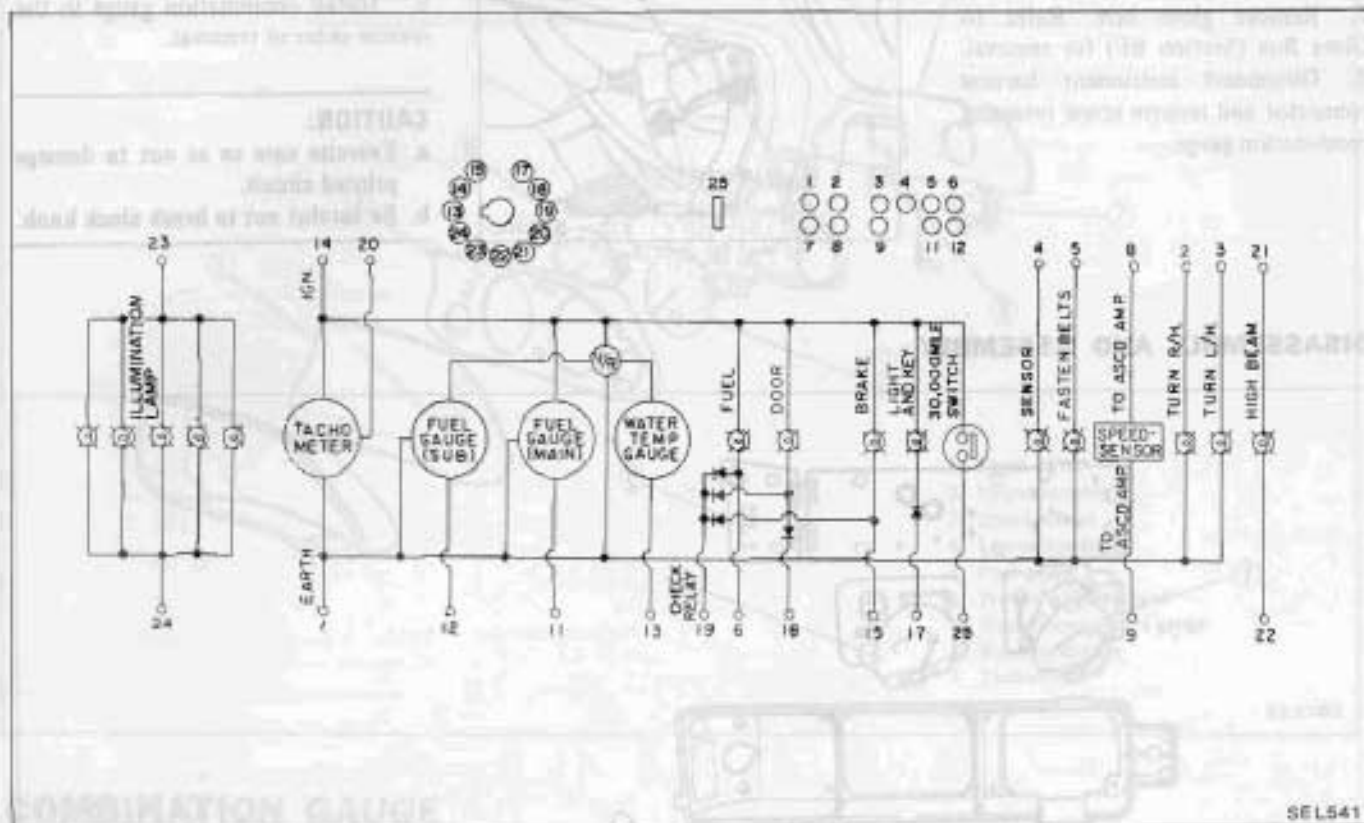
DISASSEMBLY AND ASSEMBLY

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

BE031D

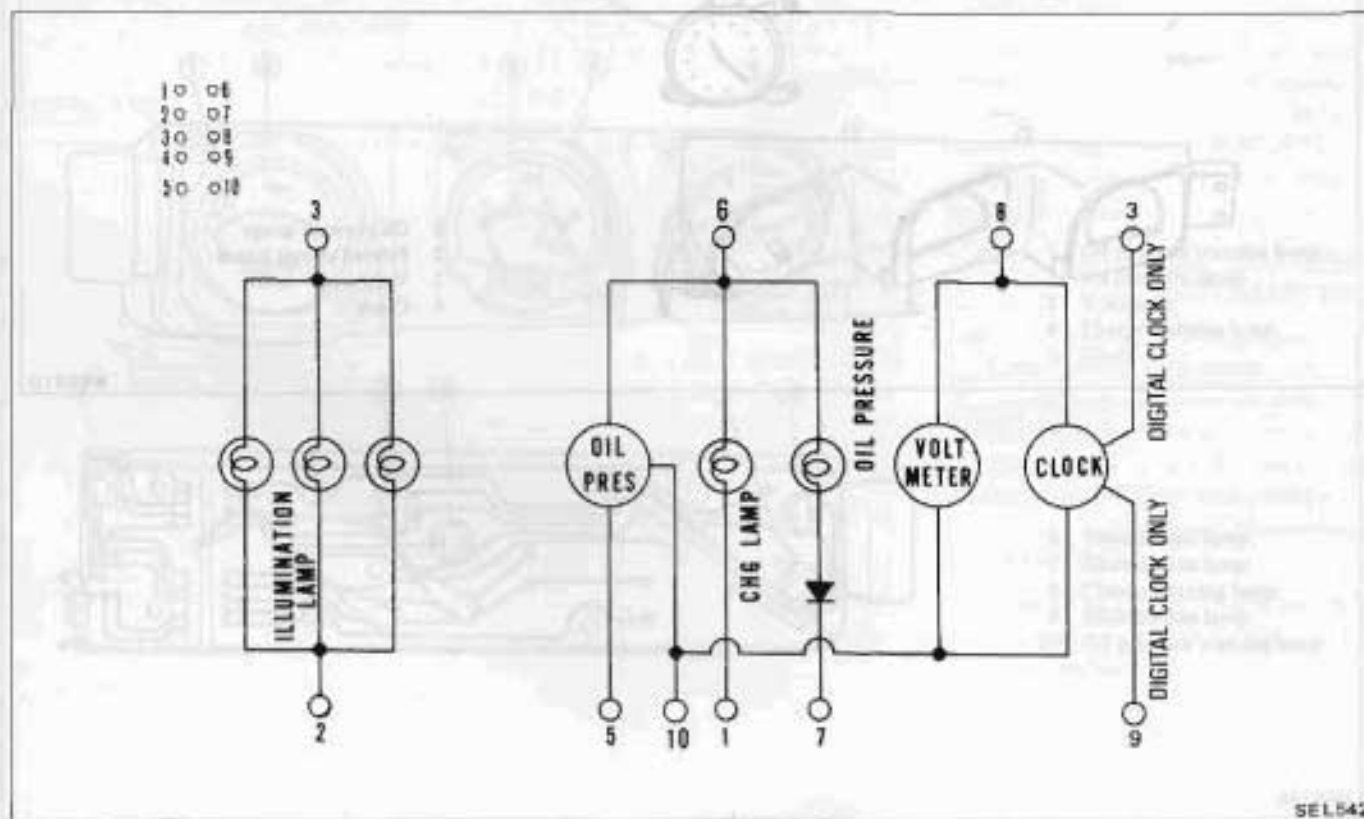
SCHEMATIC

COMBINATION METER



SEL541

COMBINATION GAUGE



SEL542

WARNING SYSTEM

CAUTION: Before starting to work, be sure to turn ignition switch "OFF" and then disconnect battery ground cable.

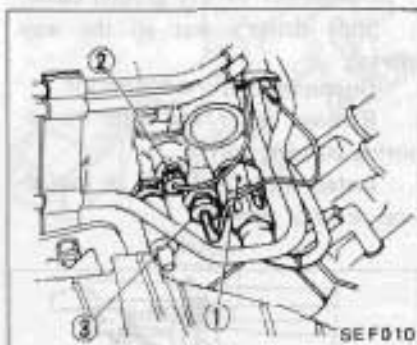
WATER TEMPERATURE INDICATOR SYSTEM

REPLACEMENT

Gauge

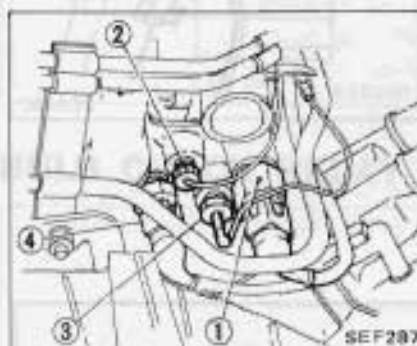
Refer to Combination Gauge.

U.S.A. model



- 1 Thermostime switch
- 2 Water temperature sensing switch
- 3 Thermal transmitter

Canada model



- 1 Thermostime switch
- 2 Water temperature sensing switch
- 3 Thermal transmitter
- 4 Water temperature sensor

Thermal transmitter

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

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

FUEL LEVEL WARNING SYSTEM

Fuel tank gauge unit

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

BRAKE WARNING SYSTEM

DESCRIPTION

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

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

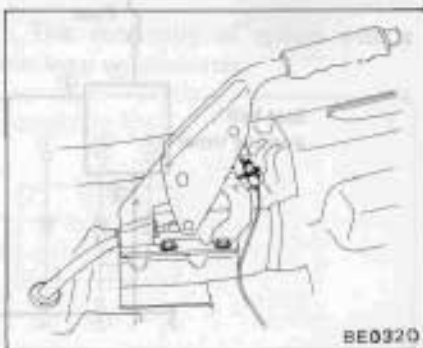
REPLACEMENT

Parking brake switch

The parking brake switch is mounted on lever support bracket,

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

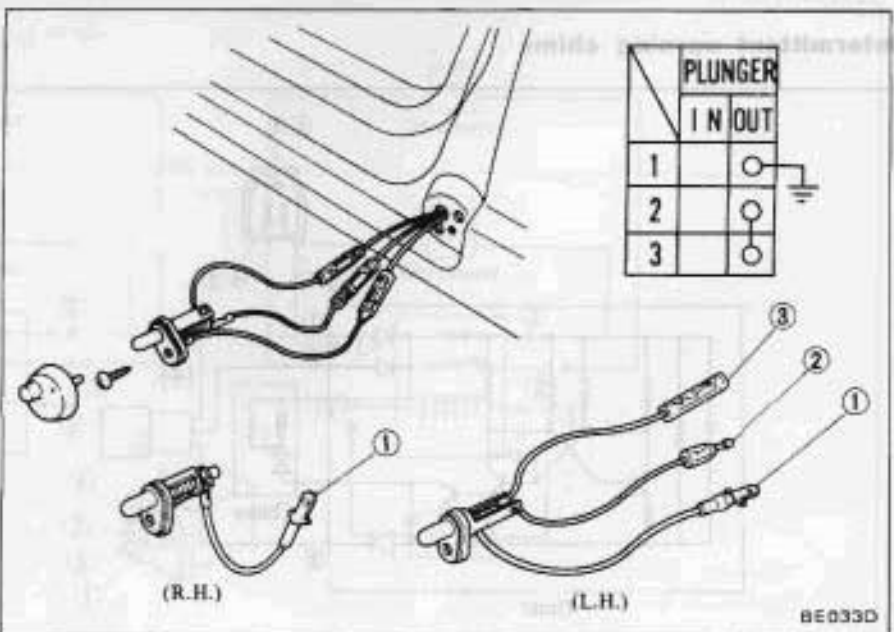
When plunger is pressed into switch assembly, parking brake switch contacts are open. Contacts are closed when plunger is projected.



Brake fluid level switch

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

DOOR SWITCH



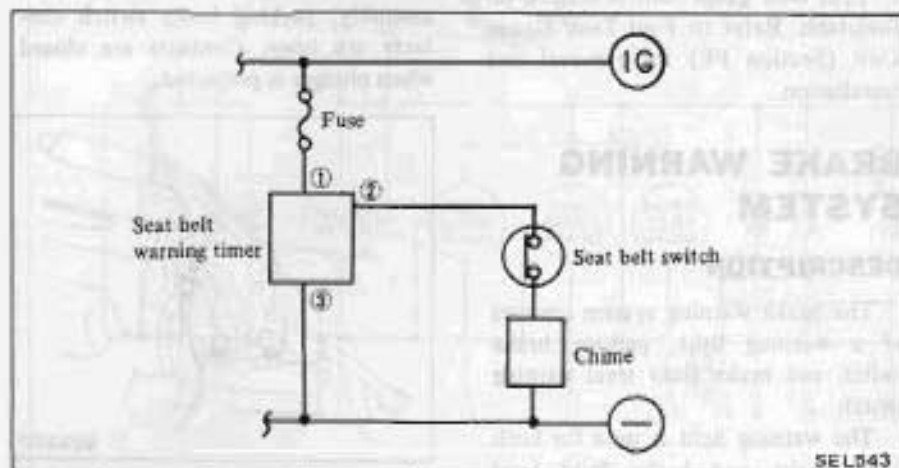
SEAT BELT WARNING SYSTEM

DESCRIPTION

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

driver to buckle his seat belt.

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



REMOVAL AND INSTALLATION

Intermittent warning chime

1. Disconnect battery ground cable.
2. Remove instrument lower cover and assist floor nozzle on the left side.

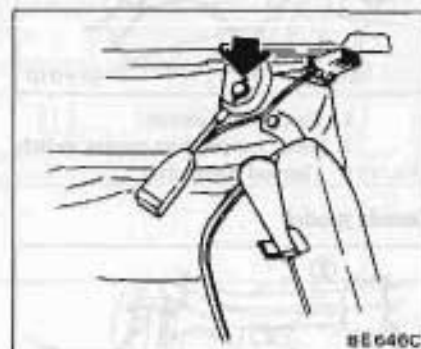
3. Disconnect chime wire connector.
4. Remove screws retaining chime assembly and then take out chime assembly.
5. Installation is in the reverse order of removal.

Seat belt warning timer

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

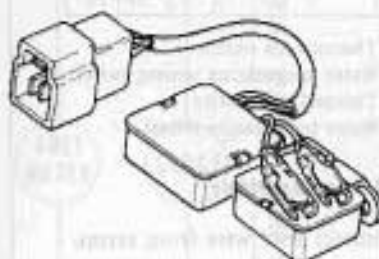
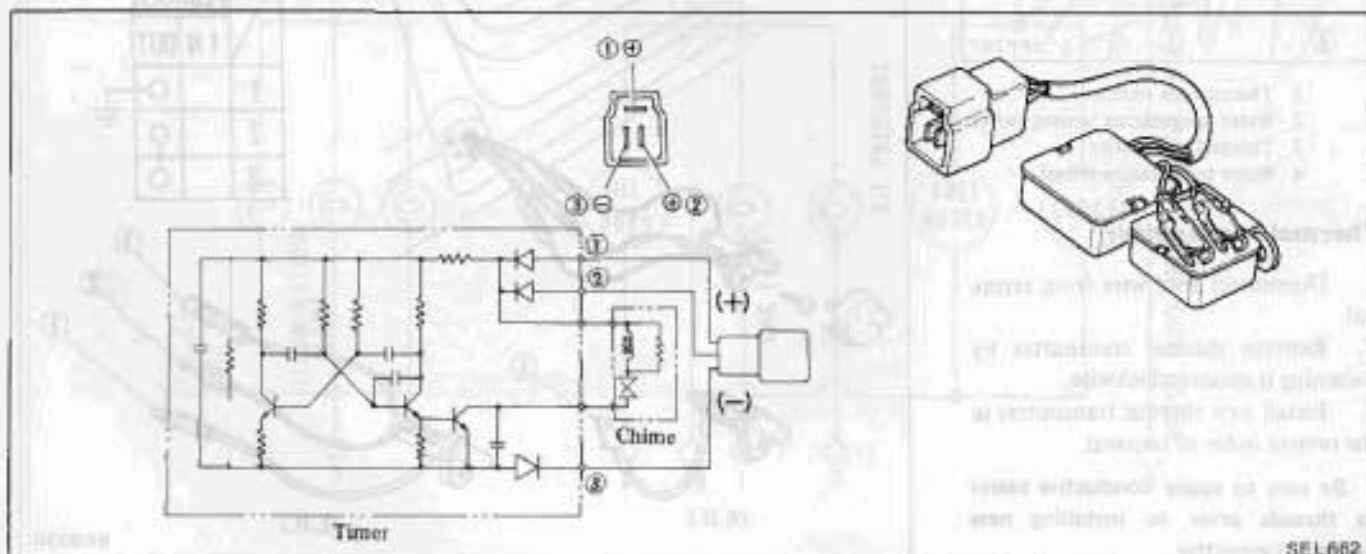
Seat belt switch

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



INSPECTION

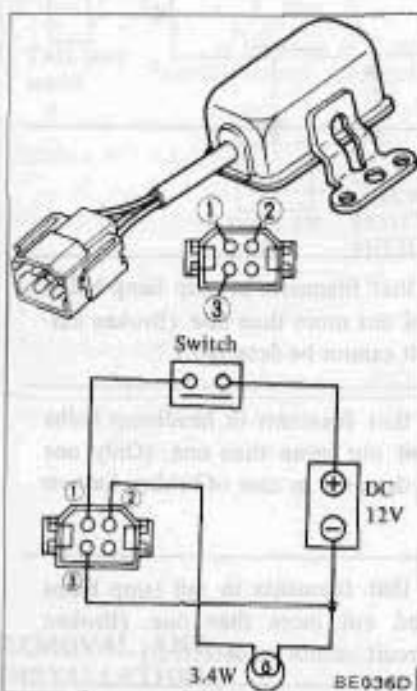
Intermittent warning chime



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

Make sure that (–) negative terminal of power circuit is always connected to (3) terminal.

Seat belt warning timer



Seat belt switch

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

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

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

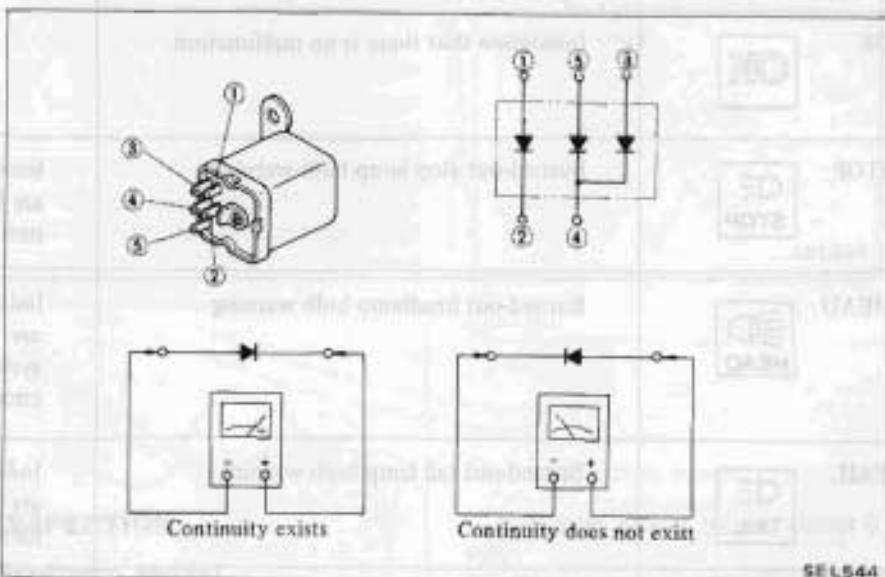
DIODE BOX

REMOVAL AND INSTALLATION

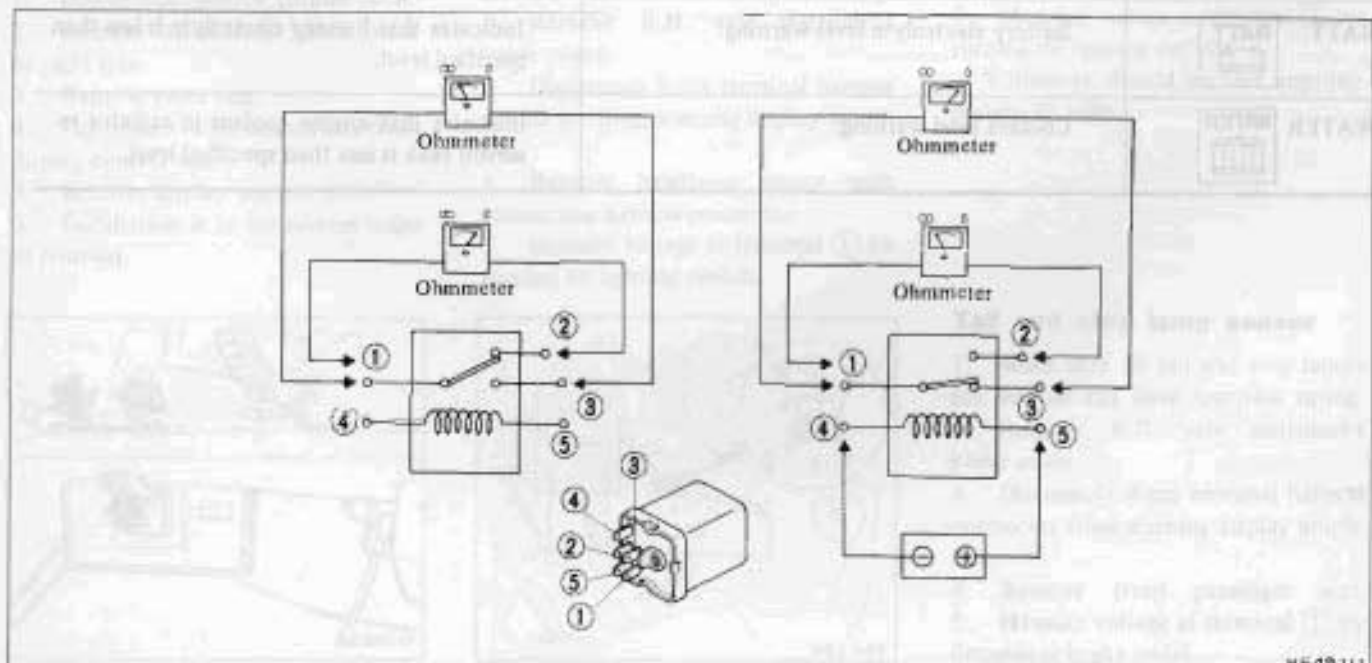
1. Disconnect battery ground cable.

INSPECTION

Test continuity of system with a test lamp or ohmmeter.



BULB CHECK RELAY













WARNING DISPLAY**DESCRIPTION**

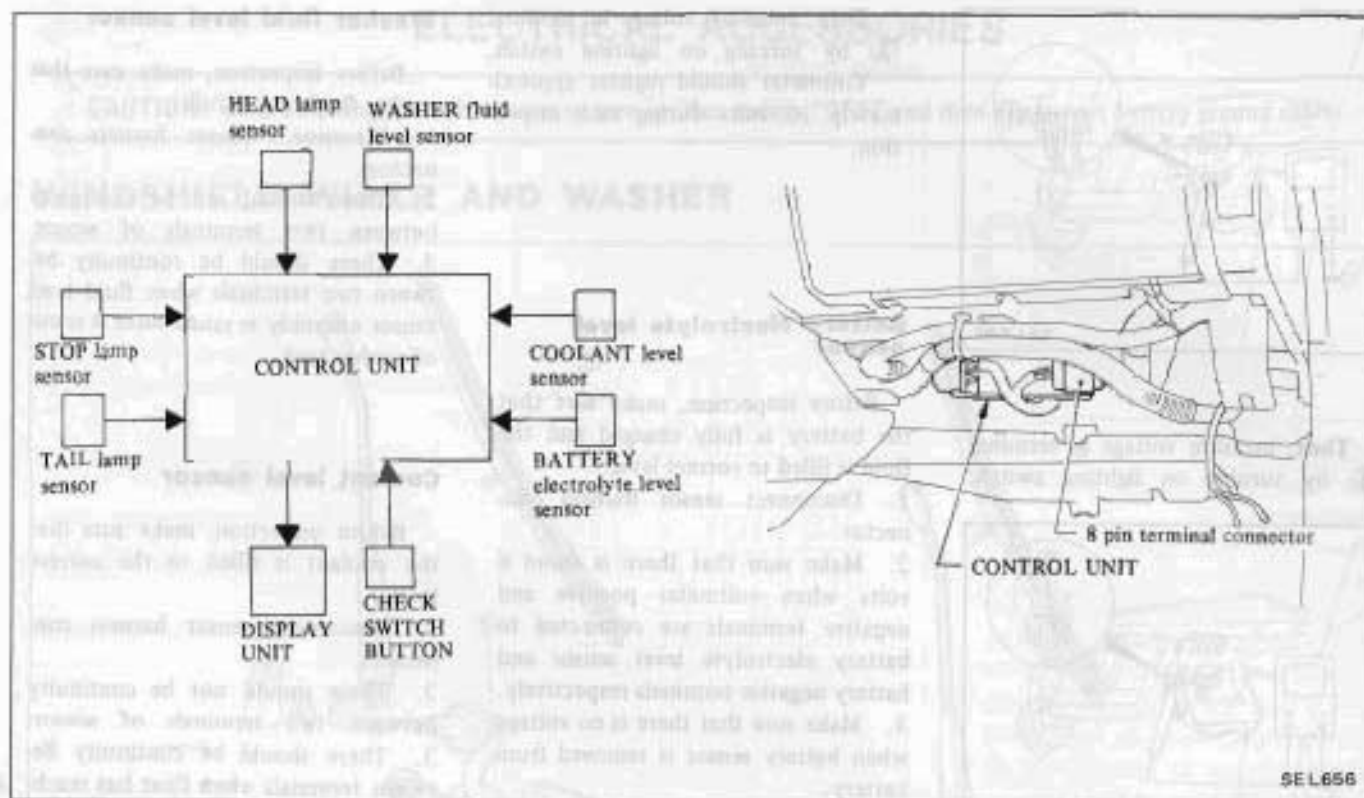
The warning display system consists of a warning indicator, a check switch,

a warning display control amplifier, and sensors which are arranged at each part of the car.

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

Warning

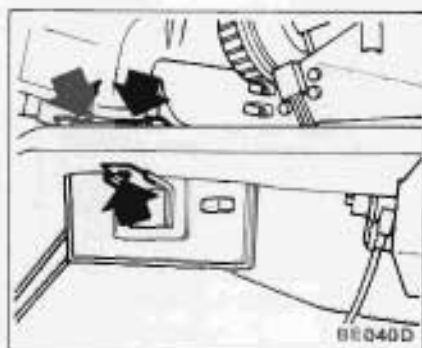
Indication	Item	Warning
Red all over the surface 	Indication that there is a malfunction.	
OK 	Indication that there is no malfunction.	
STOP 	Burned-out stop lamp bulb warning.	Indicates that filaments in stop lamp bulbs are burned out more than one. (Broken harness circuit cannot be detected.)
HEAD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



REMOVAL AND INSTALLATION

Display control unit

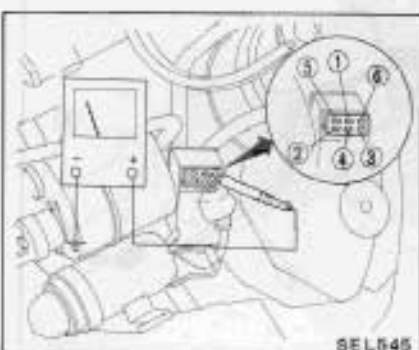
1. Disconnect battery ground cable.
2. Remove instrument lower cover on right side.
3. Remove glove box.
4. Disconnect wire connectors from display control unit.
5. Remove display control unit.
6. Installation is in the reverse order of removal.



INSPECTION

Headlamp sensor

1. Make sure all headlamp bulbs are normal and have specified rating.
2. Remove R.H. side instrument lower cover.
3. Disconnect 8-pin terminal harness connector from warning display amplifier.
4. Remove headlamp sensor with connecting harness connector.
5. Measure voltage at terminal ① by turning on lighting switch.



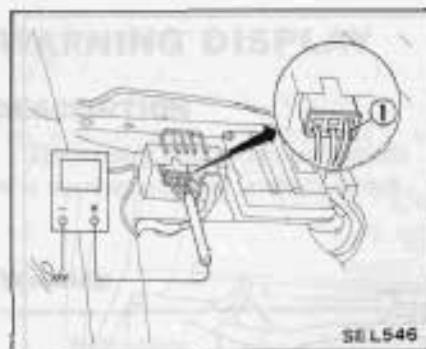
Voltmeter should register almost 0 volt.

6. Disconnect one of headlamp connectors or remove one of headlamp circuit fuses.
7. Measure voltage at terminal ① by turning on lighting switch.

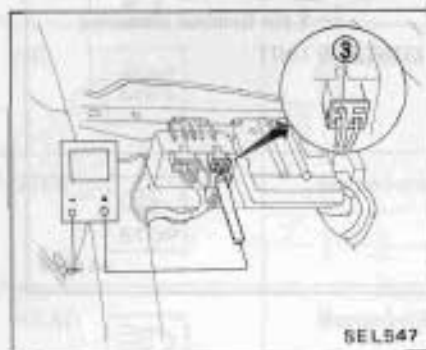
Voltmeter should register approximately 12 volts.

Tail and stop lamp sensor

1. Make sure all tail and stop lamps are normal and have specified rating.
2. Remove R.H. side instrument lower cover.
3. Disconnect 8-pin terminal harness connector from warning display amplifier.
4. Remove front passenger seat.
5. Measure voltage at terminal ① by depressing brake pedal.



Then, measure voltage at terminal ③ by turning on lighting switch.



Voltmeter should register almost 0 volt during each inspection.

6. Disconnect one of stop/tail lamp bulbs.

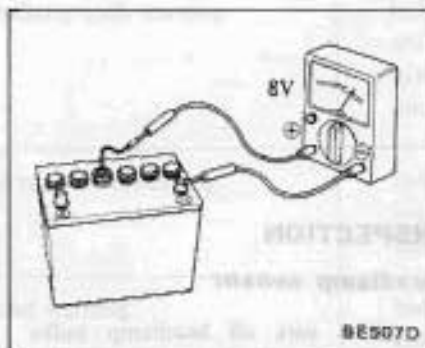
Measure voltage at terminal ① by depressing brake pedal.

Then, measure voltage at terminal ③ by turning on lighting switch. Voltmeter should register approximately 10 volts during each inspection.

Battery electrolyte level sensor

Before inspection, make sure that the battery is fully charged and the fluid is filled to correct level.

1. Disconnect sensor harness connector.
2. Make sure that there is about 8 volts when voltmeter positive and negative terminals are connected to battery electrolyte level sensor and battery negative terminals respectively.
3. Make sure that there is no voltage when battery sensor is removed from battery.



Washer fluid level sensor

Before inspection, make sure that washer fluid tank is full.

1. Disconnect sensor harness connectors.
2. There should not be continuity between two terminals of sensor.
3. There should be continuity between two terminals when fluid level sensor assembly is raised until it is out of washer tank.

Coolant level sensor

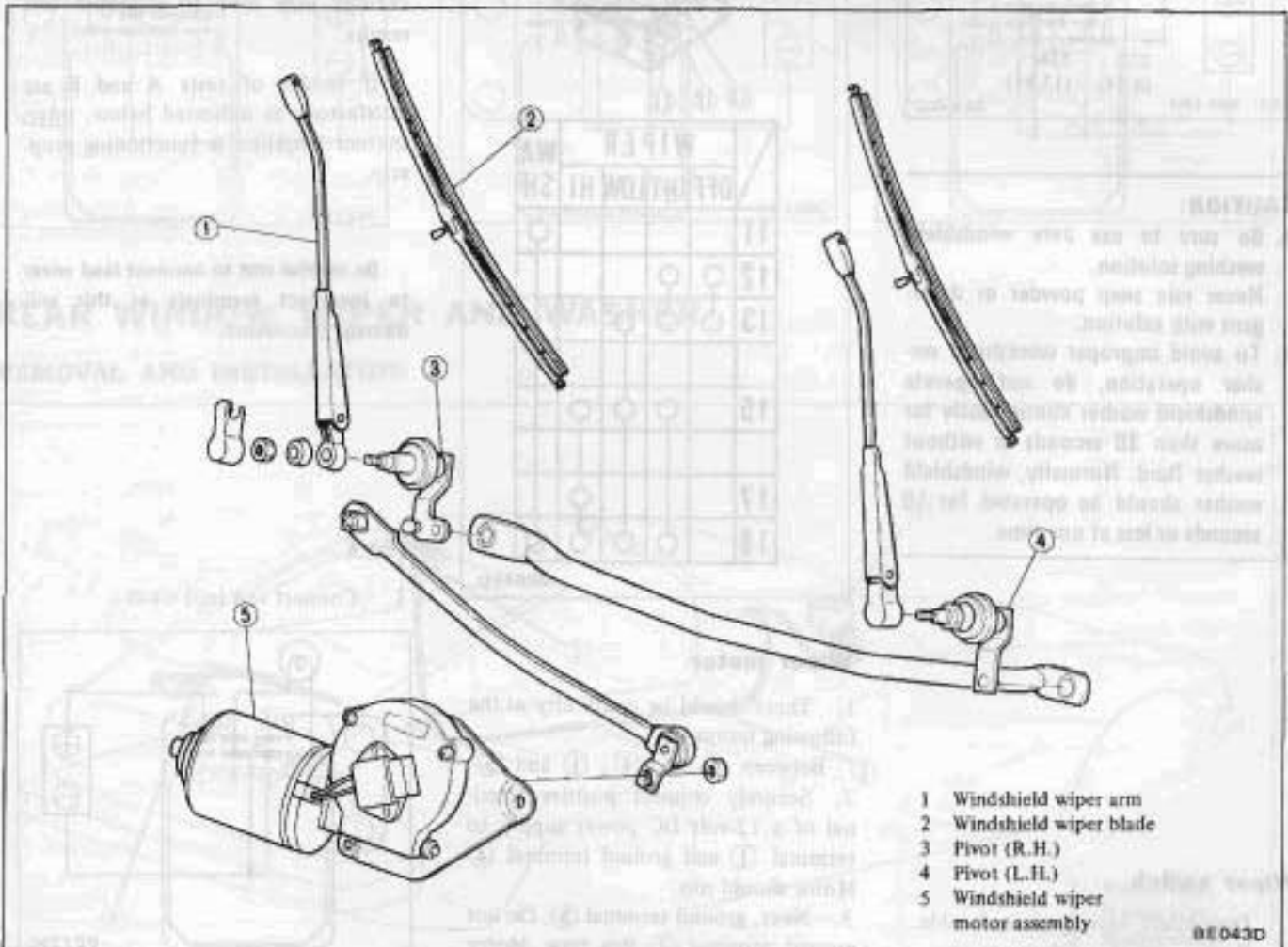
Before inspection, make sure that the coolant is filled to the correct level.

1. Disconnect sensor harness connectors.
2. There should not be continuity between two terminals of sensor.
3. There should be continuity between terminals when float has reached below low level by gradually lowering float with a suitable tool.

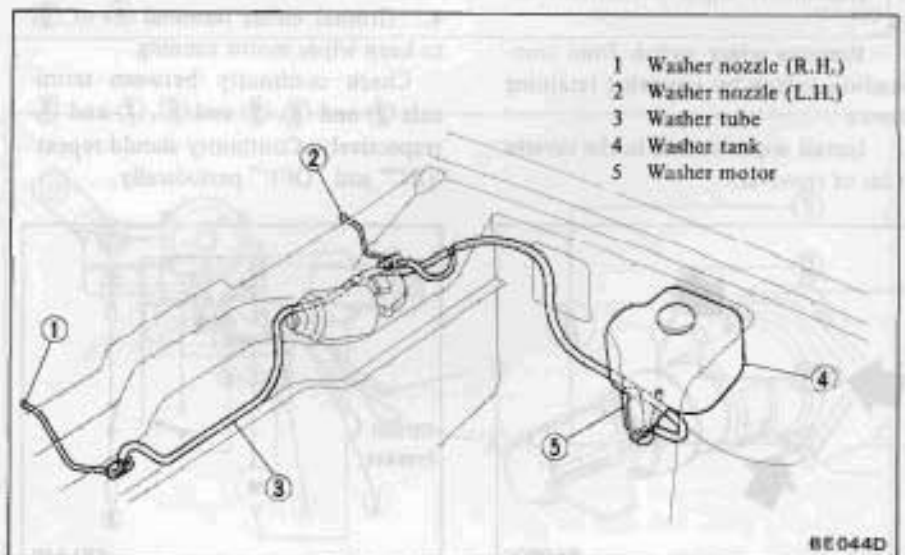
ELECTRICAL ACCESSORIES

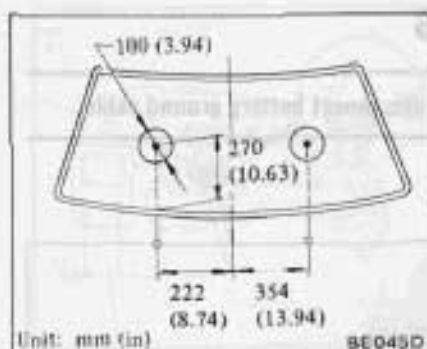
CAUTION: Before starting to work, be sure to turn ignition switch "OFF" and then disconnect battery ground cable.

WINDSHIELD WIPER AND WASHER



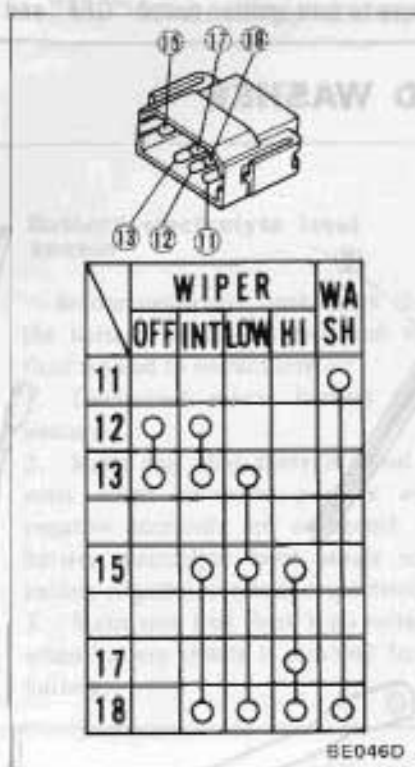
CAUTION:
 Be careful not to bend linkage during removal.





INSPECTION

Wiper switch



CAUTION:

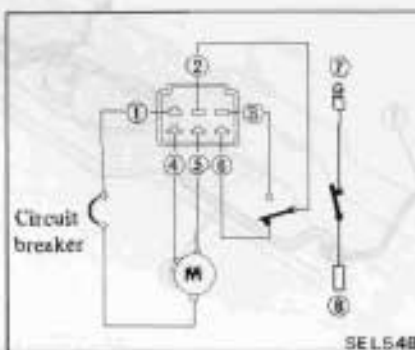
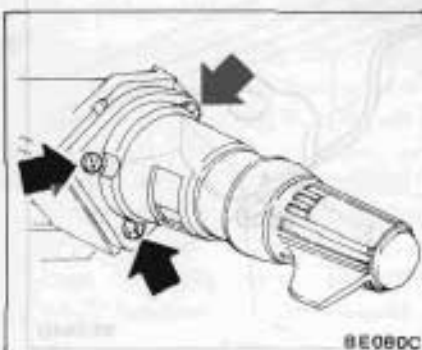
- Be sure to use only windshield washing solution. Never mix soap powder or detergent with solution.
- To avoid improper windshield washer operation, do not operate windshield washer continuously for more than 30 seconds or without washer fluid. Normally, windshield washer should be operated for 10 seconds or less at one time.

Wiper motor

- There should be continuity at the following terminals:
Between ① and ④, ① and ⑤.
 - Securely connect positive terminal of a 12-volt DC power supply to terminal ① and ground terminal ④. Motor should run.
 - Next, ground terminal ⑤. Do not ground terminal ④ this time. Motor should run.
 - Ground either terminal ④ or ⑤ to keep wiper motor running.
- Check continuity between terminals ② and ③, ② and ⑥, ⑦ and ⑧ respectively. Continuity should repeat "ON" and "OFF" periodically.

Wiper switch

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



Intermittent amplifier

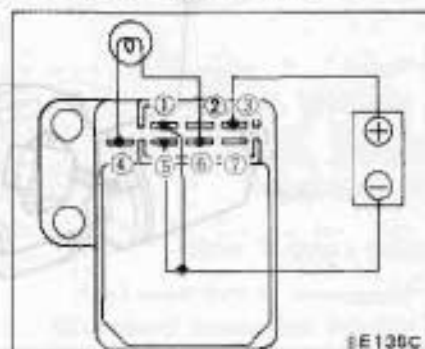
To check intermittent amplifier for proper operation, fabricate adapters shown below, and utilize the following procedures in the order listed. Failure to observe the order of these test procedures may lead to improper test results.

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

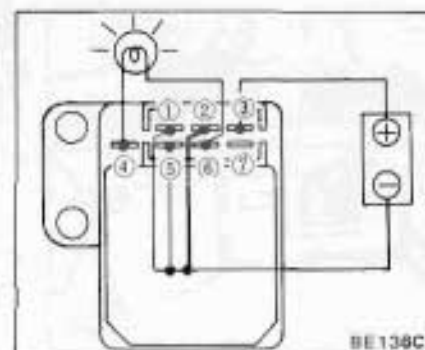
Be careful not to connect lead wires to incorrect terminals as this will damage transistors.

Test A

- Connect test lead wires.

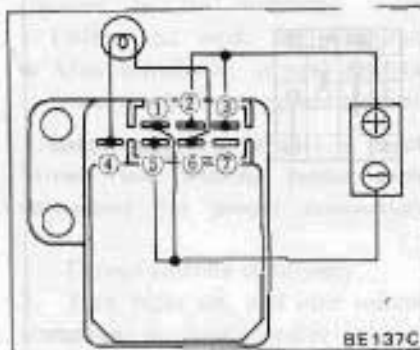


- Make sure that test lamp comes on in 0.5 second when negative lead wire is connected to terminal ②.

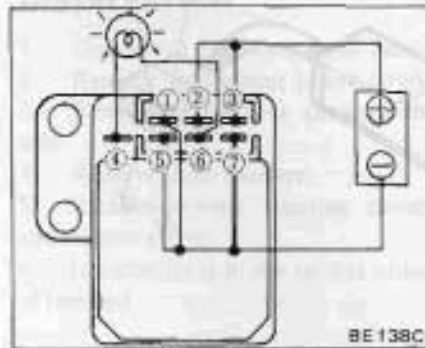


Test B

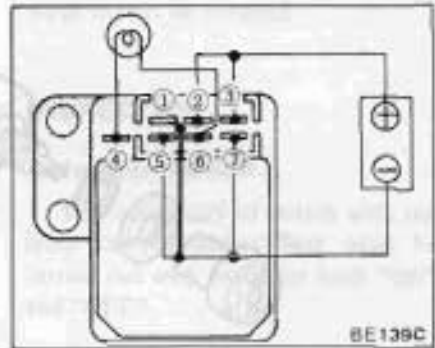
1. Connect test lead wires.



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

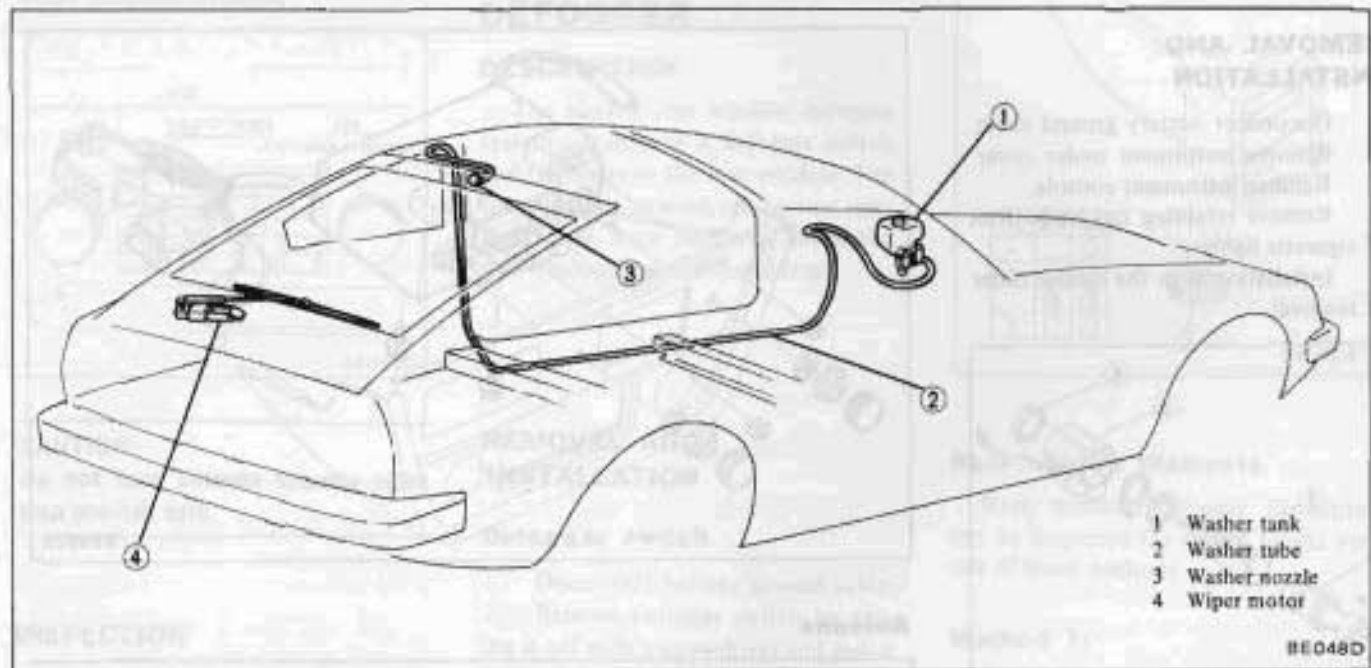


3. Disconnect lead wire from terminal 1. Test lamp should go out and comes on in seven seconds.



REAR WINDOW WIPER AND WASHER

REMOVAL AND INSTALLATION



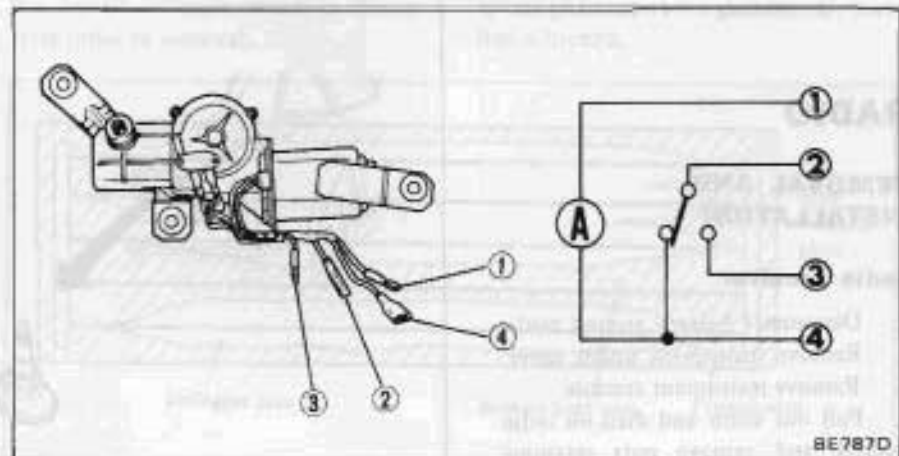
INSPECTION

Wiper motor

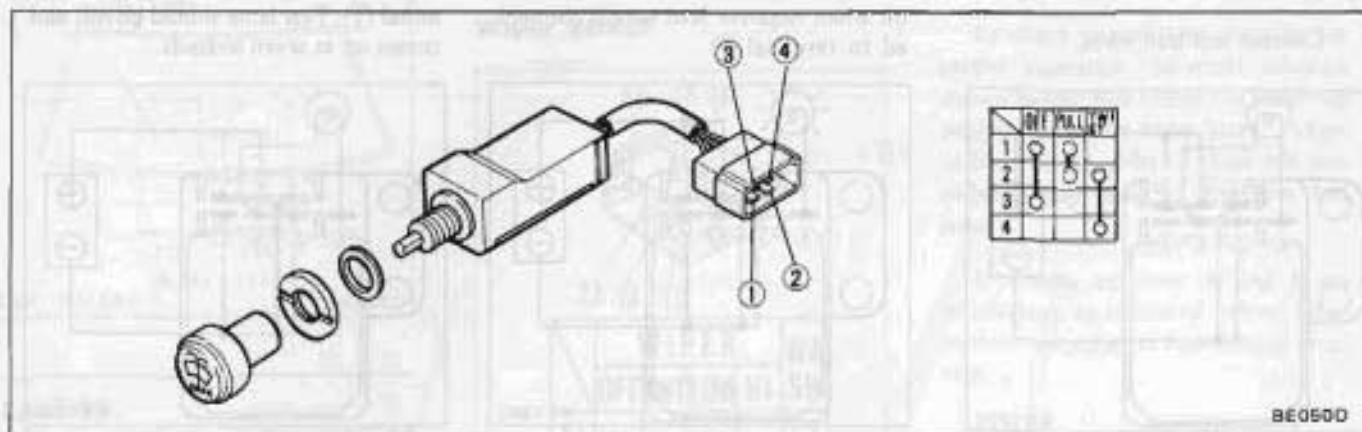
Inspect wiper motor as follows:

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

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



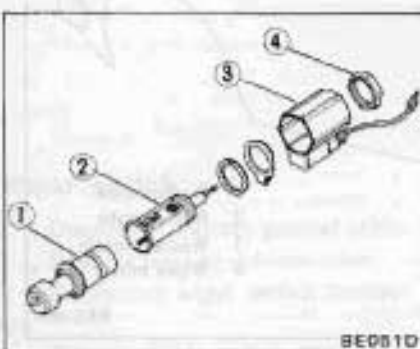
Rear wiper and washer switch



CIGARETTE LIGHTER

REMOVAL AND INSTALLATION

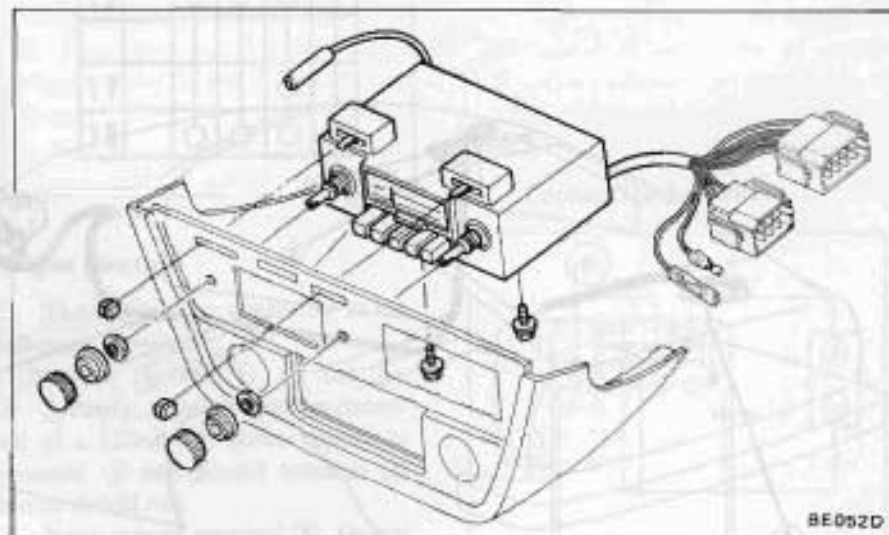
1. Disconnect battery ground cable.
2. Remove instrument under cover.
3. Remove instrument console.
4. Remove retaining nut at bottom of cigarette lighter.
5. Installation is in the reverse order of removal.



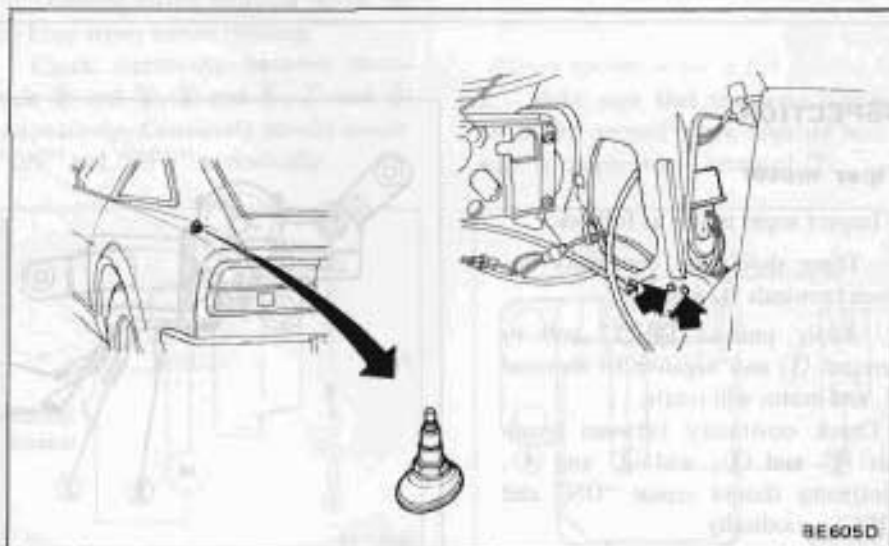
- 1 Lighter
- 2 Housing
- 3 Housing cover
- 4 Retaining nut

escutcheon to radio receiver.
5. Loosen screws retaining radio receiver. Radio receiver can then be

taken out.
6. Installation is in the reverse order of removal.



Antenna



RADIO

REMOVAL AND INSTALLATION

Radio receiver

1. Disconnect battery ground cable.
2. Remove instrument under cover.
3. Remove instrument console.
4. Pull out knob and dials on radio receiver and remove nuts retaining

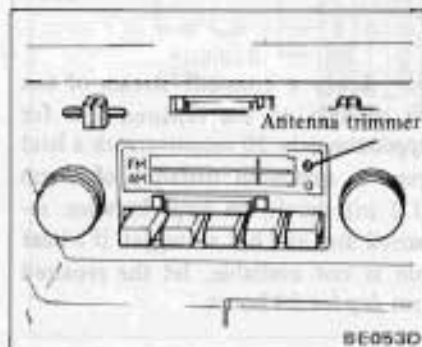
ADJUSTING ANTENNA TRIMMER

The antenna trimmer should be adjusted in the following cases:

- Fading and weak AM reception.
- After installation of new antenna, feeder cable or radio receiver.

Before adjusting, be sure to check harness and antenna feeder cable connectors for proper connection.

1. Extend antenna completely.
2. Turn radio on, and turn volume control to increase speaker volume.
3. Tune in the weakest station (barely audible) on dial at the range around 14 (1,400 kHz).
4. Turn antenna trimmer to left or right slowly, and set it in the position where reception strongest.

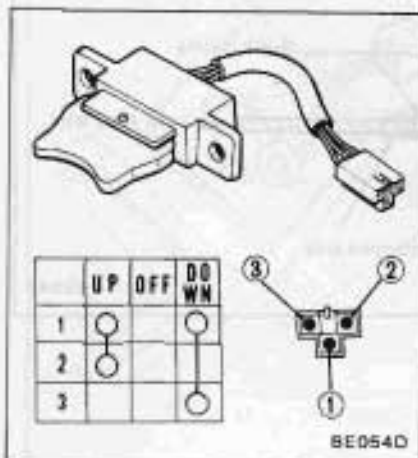


CAUTION:

Do not turn antenna trimmer more than one-half turn.

INSPECTION

Power antenna switch



STEREO

REMOVAL AND INSTALLATION

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

REAR WINDOW DEFOGGER

DESCRIPTION

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

REMOVAL AND INSTALLATION

Defogger switch

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

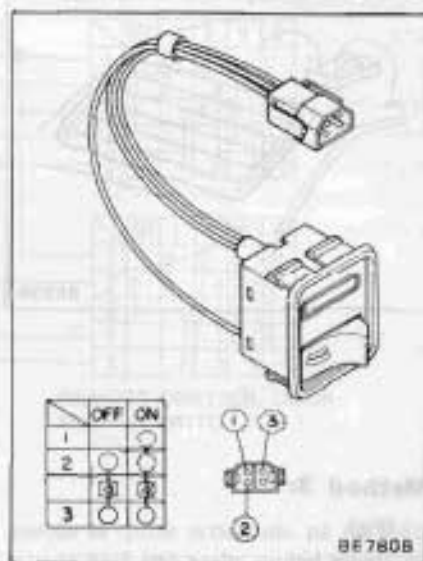
Rear window filaments

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

INSPECTION

Defogger switch

Test continuity of switch with test lamp or ohmmeter. Test must be carried out with switch at both "ON" and "OFF".

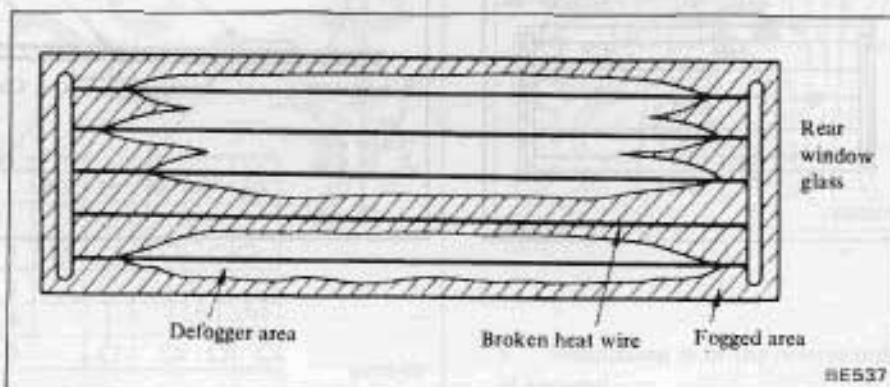


Rear window filaments

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

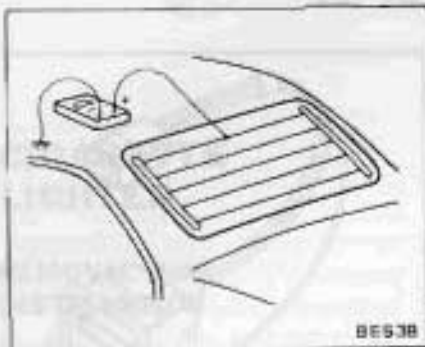
Method 1:

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



Method 2:

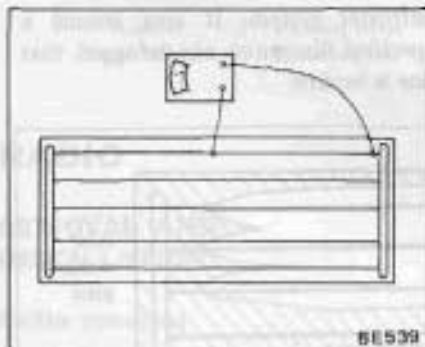
Start engine and turn on window defroster system. With a direct-current voltmeter setup as shown in figure below, check each heat wire for discontinuity. If meter indicates 12 volts or 0 on a specific wire, that line is broken. (Normal indication: 6 volts) a break in that line can then be detected by moving positive lead of meter along line until an abrupt variation in meter indication is encountered.



Method 3:

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

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



FILAMENT MAINTENANCE

Repair equipment

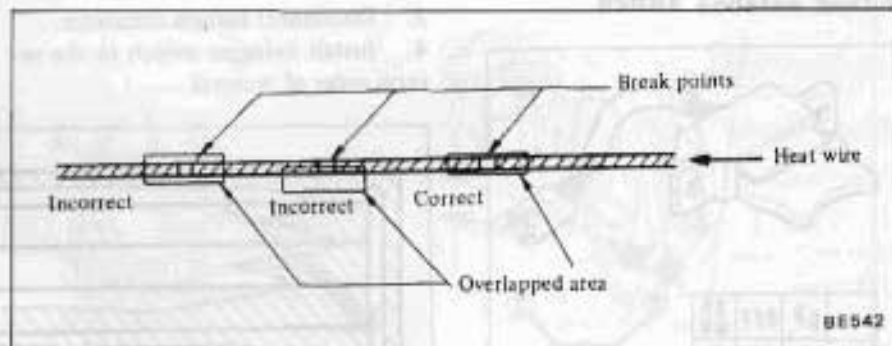
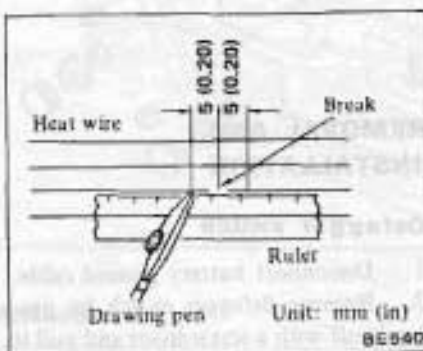
1. Conductive silver composition (Dupont No. 4817)
2. Ruler, 30 cm (12 in) long
3. Drawing pen
4. Heat gun
5. Alcohol
6. Cloth

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.

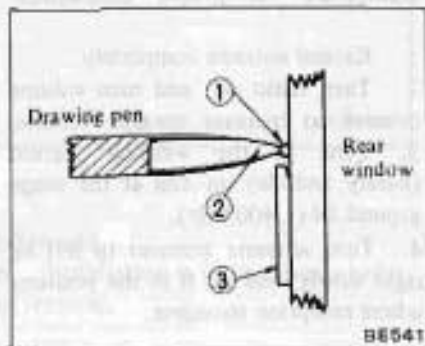
Shake silver composition container before use.

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



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.

Do not touch repaired area while test is being conducted.



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

After repair

Wipe repaired area clean with a soft, clean cloth.

Do not use a cleaning solvent containing much soapy water.

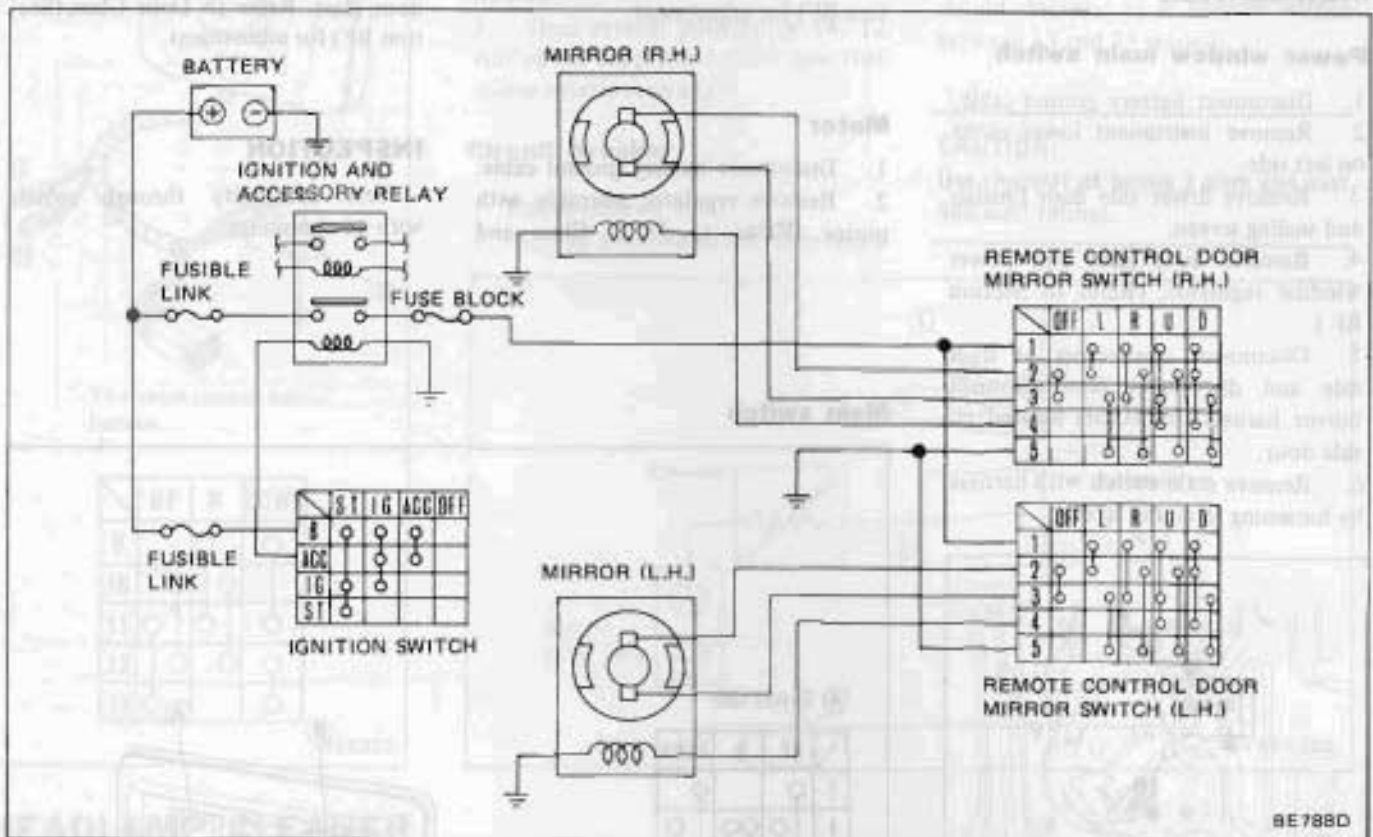
REMOTE-CONTROL DOOR MIRROR

DESCRIPTION

The remote-control door mirror

consists of a door mirror assembly and a control switch. The door mirror is

mounted on the door. The control switch is installed on the console box.



REMOVAL AND INSTALLATION

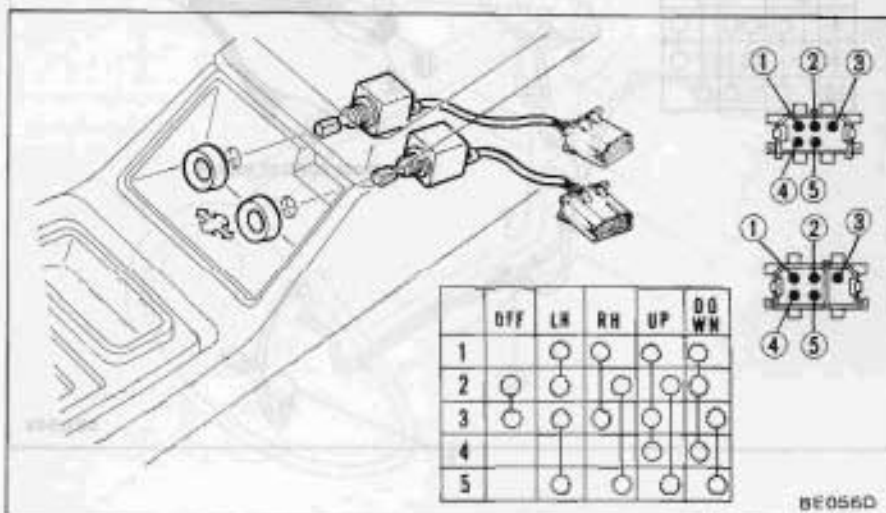
Control switch

1. Disconnect battery ground cable.
2. Loosen screws retaining console box, and disconnect wire connectors.

3. Remove ring nuts retaining switch of console box.
4. Switch body can be taken out from behind console box.
5. Installation is in the reverse order of removal.

Door mirror assembly

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



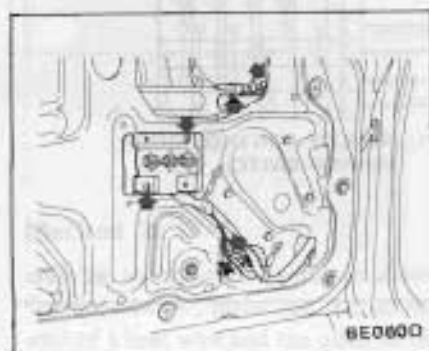
5. Installation is in the reverse order of removal.

POWER WINDOW SYSTEM

REMOVAL AND INSTALLATION

Power window main switch

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



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

Sub-switch

1. Disconnect battery ground cable.
2. Remove instrument lower cover on right side.
3. Remove passenger side door finisher and sealing screen.
4. Remove door glass and power window regulator.
5. Remove glove box.
6. Disconnect connectors at dash side and disconnect remote-control mirror harness connectors located inside door.

7. Remove sub-switch with harness by loosening retaining screws.
8. Installation is in the reverse order of removal. After installation, adjust door glass. Refer to Door Glass (Section BF) for adjustment.

Motor

1. Disconnect battery ground cable.
2. Remove regulator assembly with motor. Refer to Door Glass and

- Regulator (Section BF) for removal and installation.
3. Separate motor from regulator.
4. Installation is in the reverse order of removal. After installation, adjust door glass. Refer to Door Glass (Section BF) for adjustment.

INSPECTION

- Test continuity through switch with an ohmmeter.

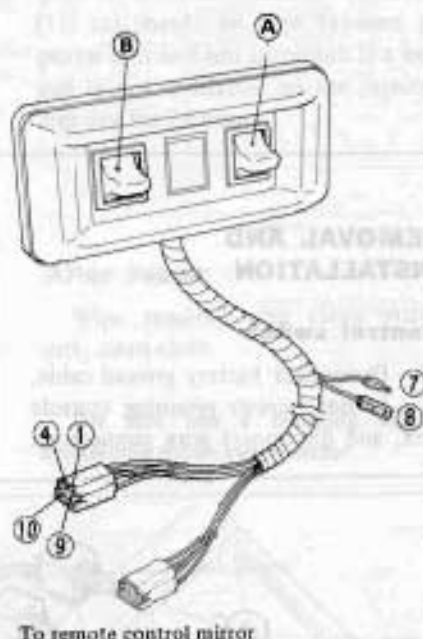
Main switch

(A) Driver side

	UP	N	DOWN
1	○		○
4	○	○	○
7	○	○	○
8	○	○	○

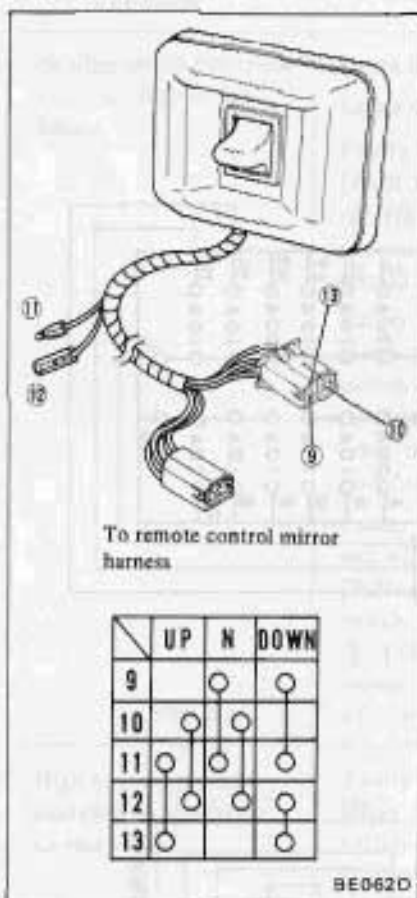
(B) Assist side

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



To remote control mirror

SEL549

Sub-switch**Power window motor**

Test as follows:

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

Circuit breaker

Test as follows:

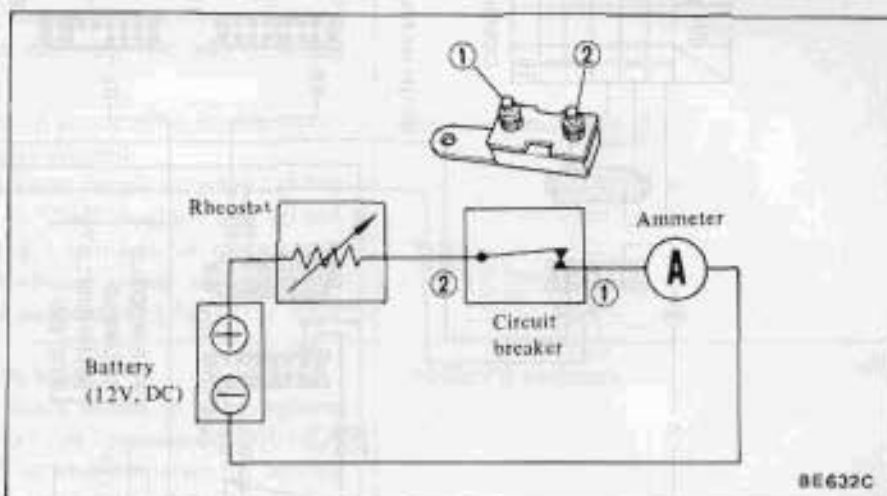
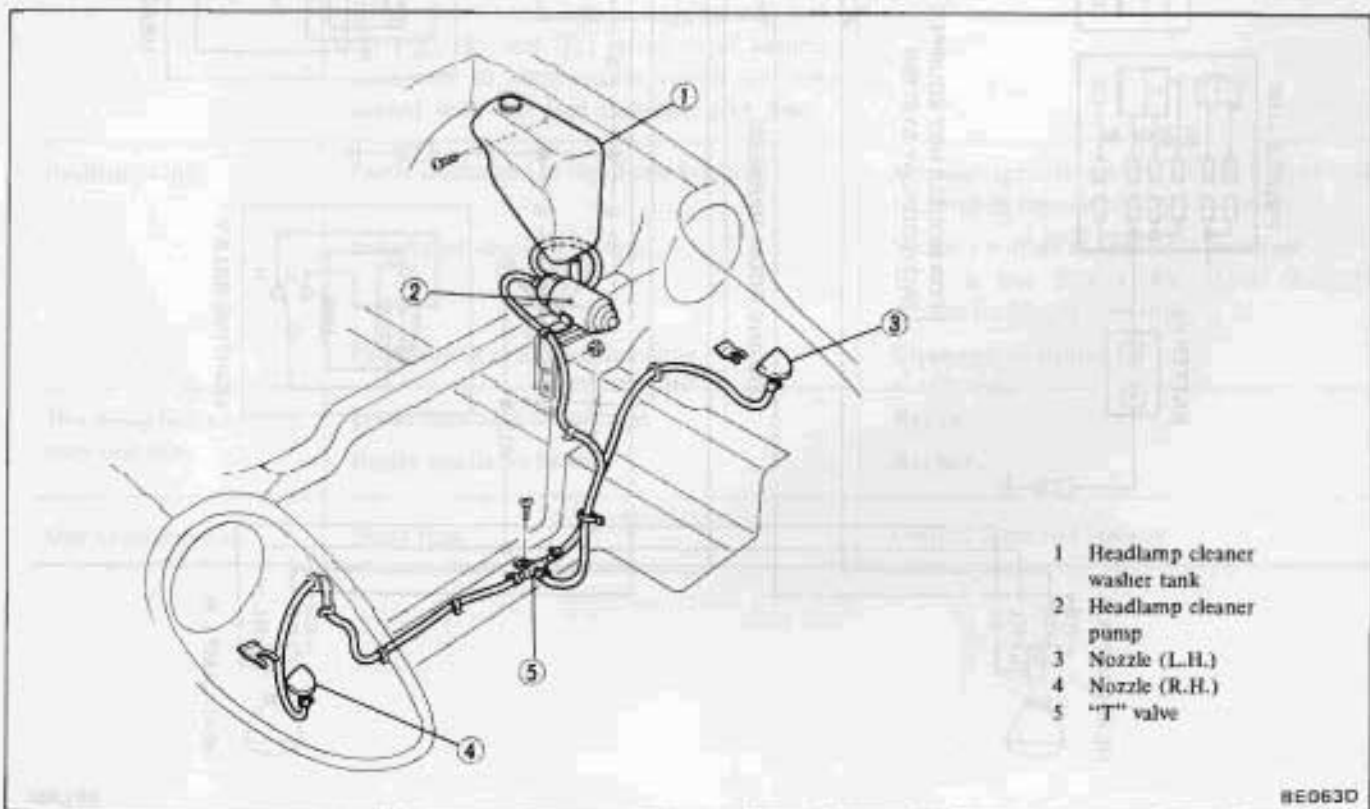
1. Set up a circuit as shown in figure

to the right.

2. Gradually decrease rheostat resistance until ammeter indicates 30 amperes.
3. At this point connector reading should decrease to 0 ampere within between 13 and 35 seconds.

CAUTION:

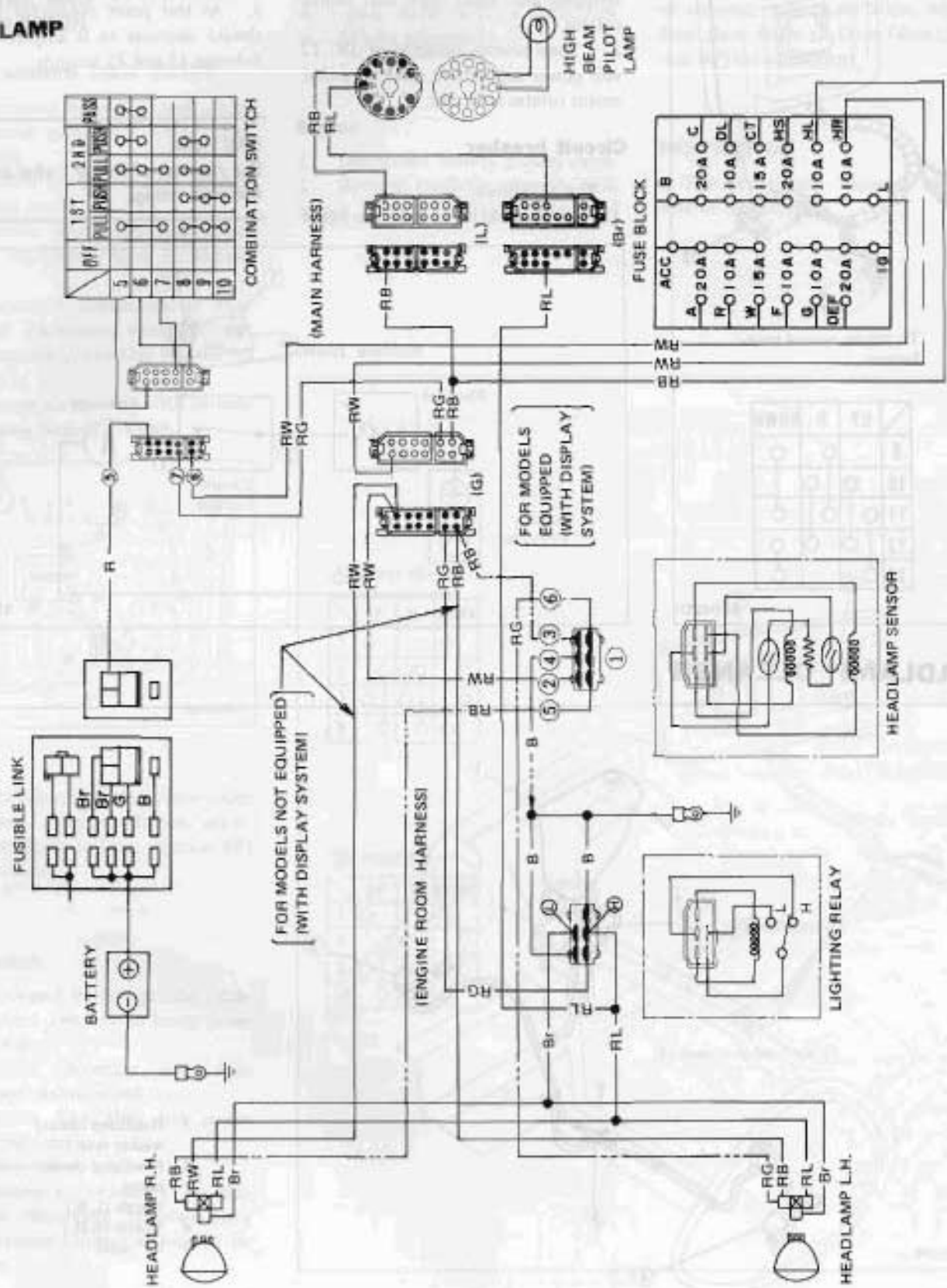
Use rheostat of below 1 ohm and over 400 watt ratings.

**HEADLAMP CLEANER**

CIRCUIT DIAGRAMS AND TROUBLE DIAGNOSES

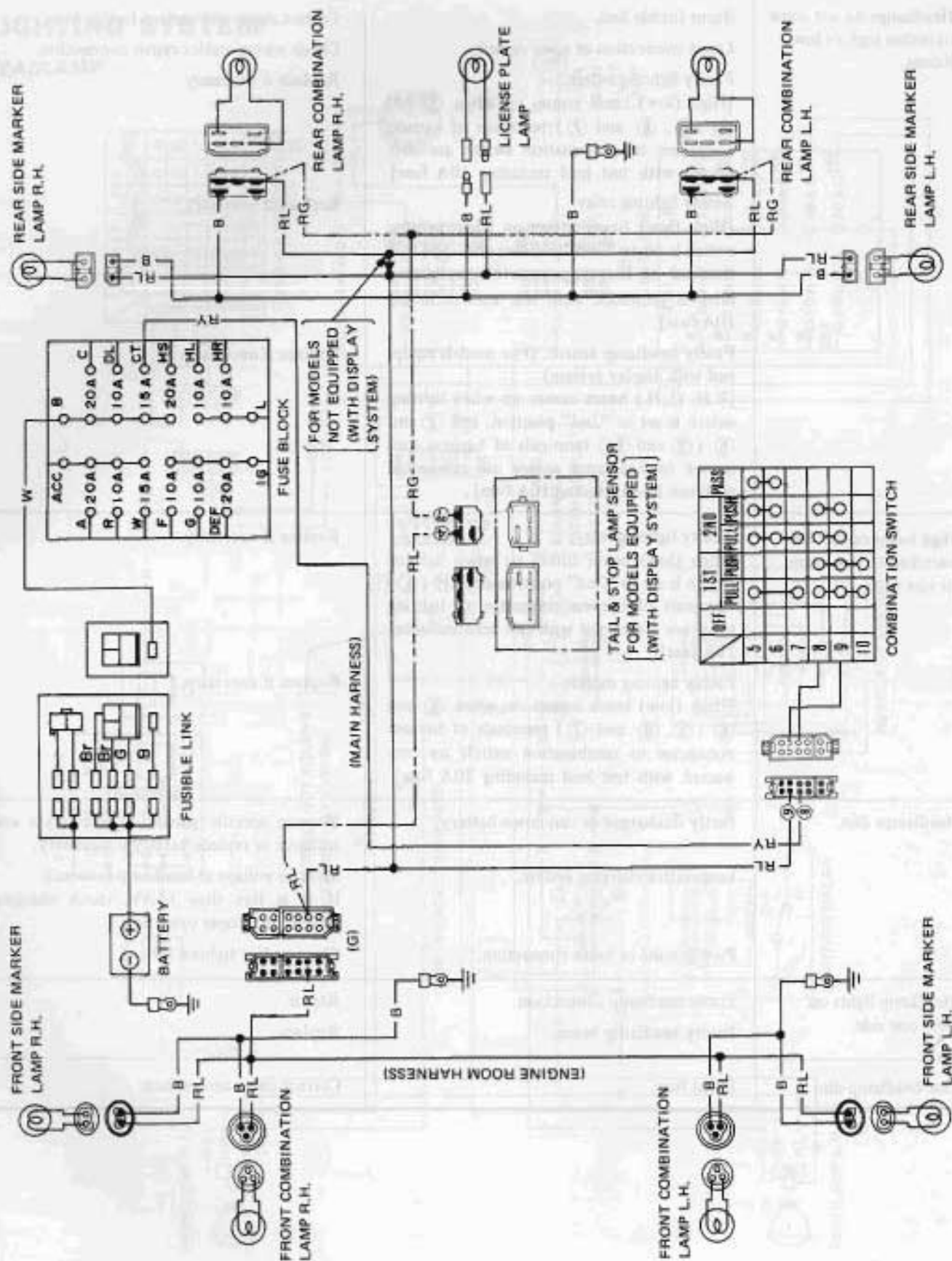
LIGHTING SYSTEM

HEADLAMP



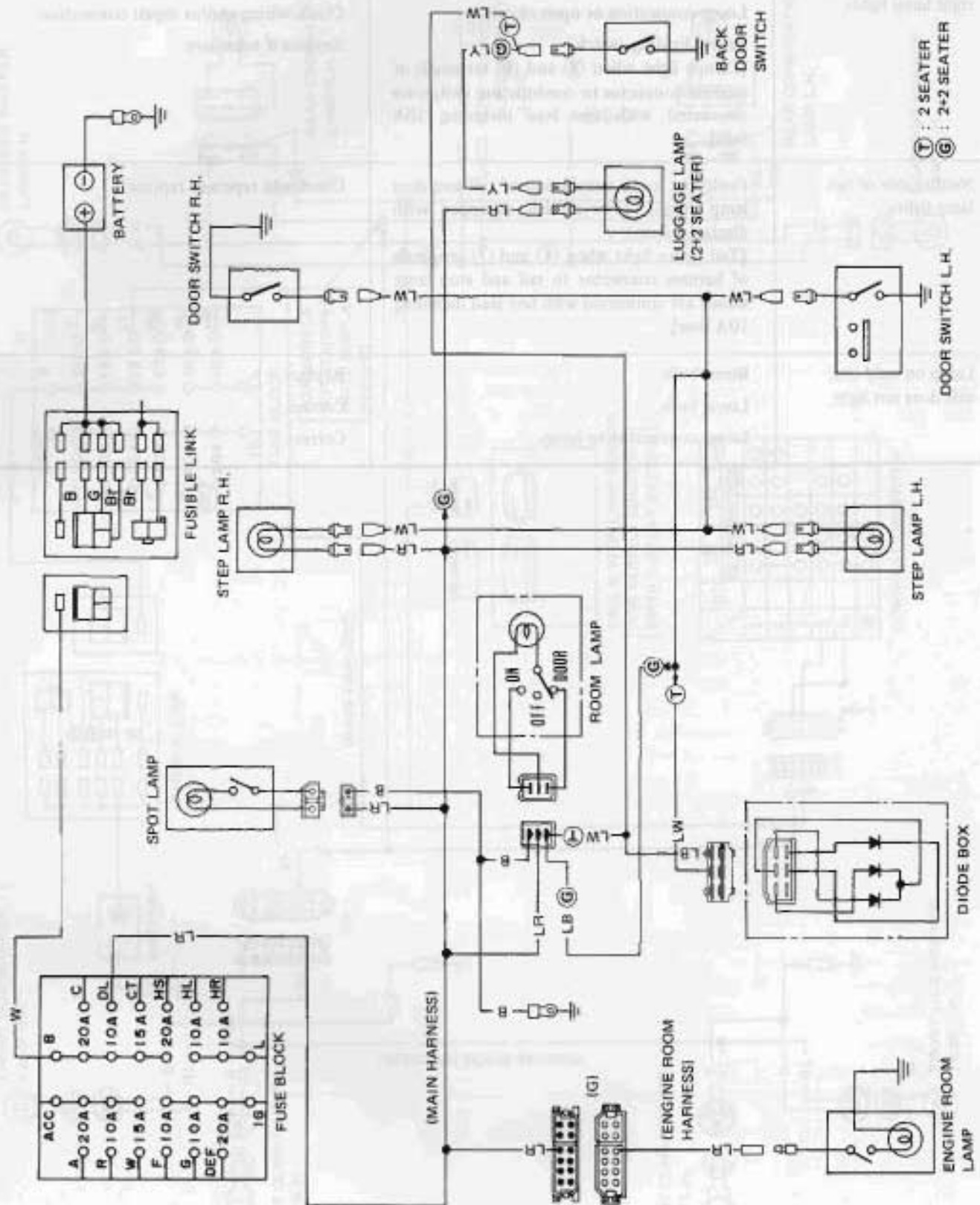
Condition	Probable cause	Corrective action
Headlamps do not come on either high or low beams.	Burnt fusible link. Loose connection or open circuit. Faulty lighting switch. [High (low) beam comes on when ③ and ⑥ (⑤, ⑥ and ⑦) terminals of harness connector to combination switch are connected with test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

TAIL, CLEARANCE, SIDE MARKER AND LICENSE PLATE LAMP

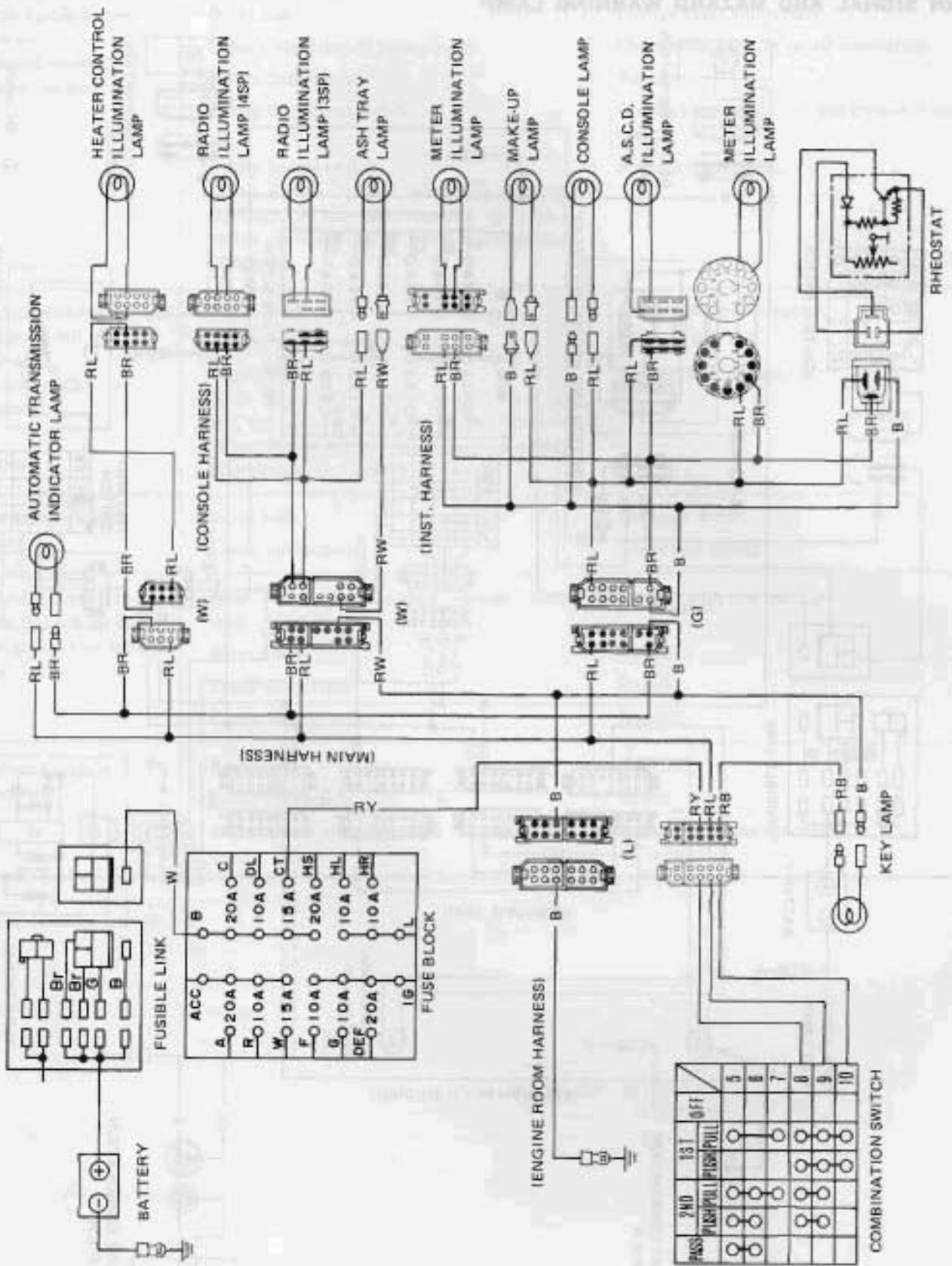


Condition	Probable cause	Corrective action
Neither left nor right lamp lights.	Burnt fuse. Loose connection or open circuit. Faulty lighting switch. [Lamps light when ⑧ and ⑨ terminals of harness connector to combination switch are connected with test lead including 10A fuse].	Correct cause and replace. Check wiring and/or repair connection. Replace if necessary.
Neither side of tail lamp lights.	Faulty or loose connection of tail and stop lamp sensor. (For models equipped with display system) [Tail lamps light when ④ and ⑦ terminals of harness connector to tail and stop lamp sensor are connected with test lead including 10A fuse].	Check and repair or replace.
Lamp on only one side does not light.	Burnt bulb. Loose bulb. Loose connection to lamp.	Replace. Correct. Correct.

ROOM, LUGGAGE ROOM, STEP, SPOT AND INSPECTION LAMP

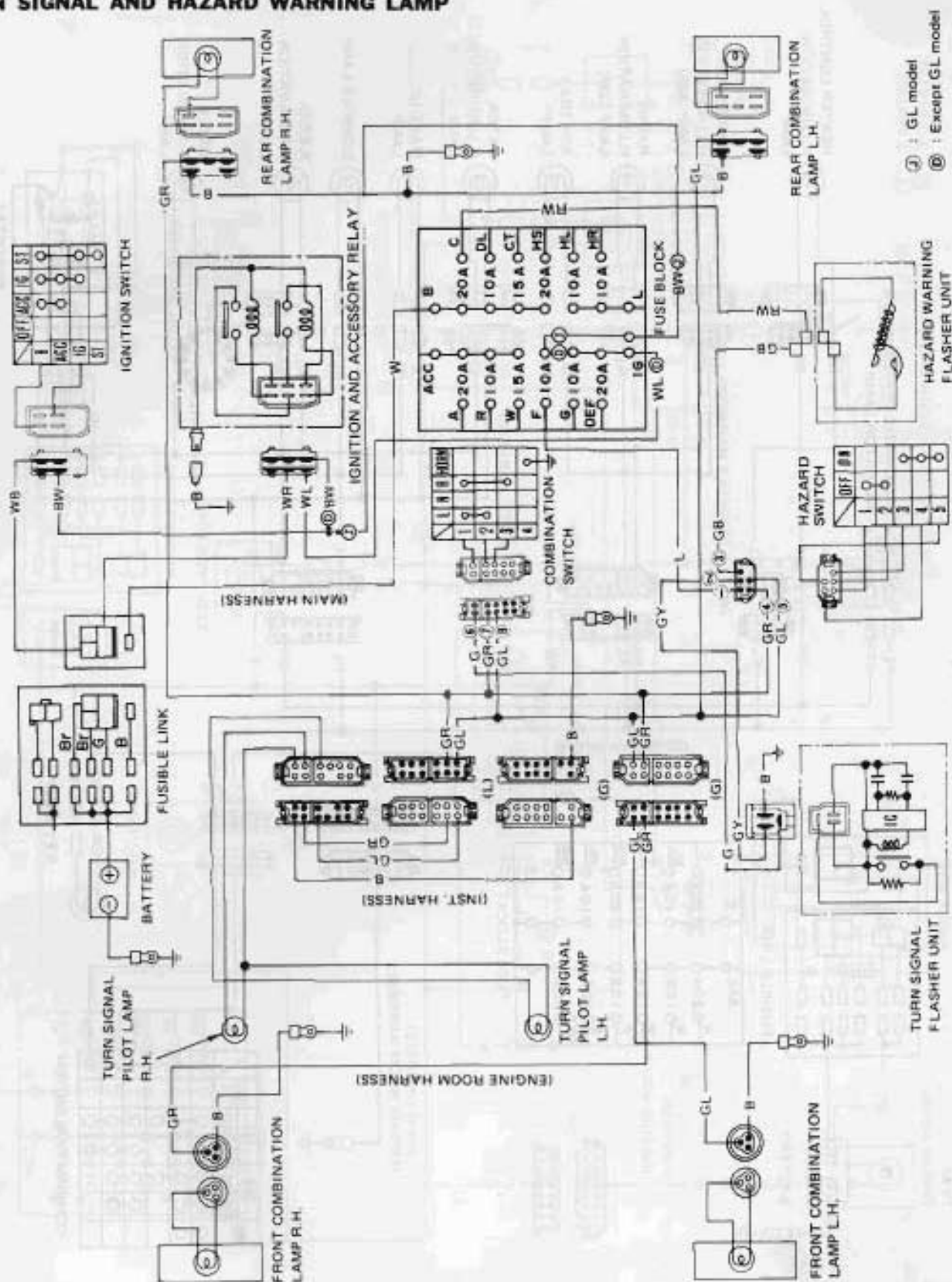


ILLUMINATION LAMP



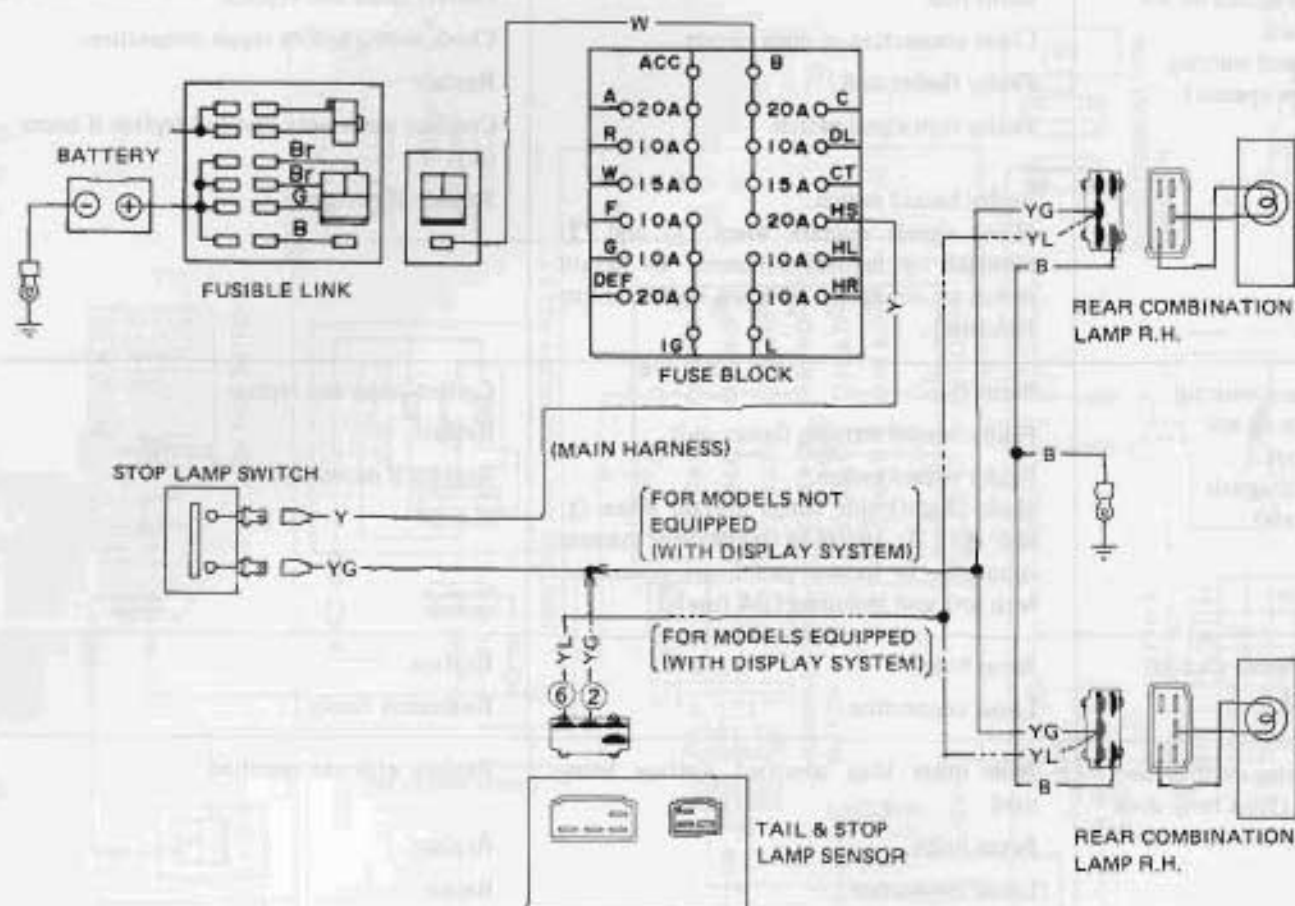
SIGNAL SYSTEM

TURN SIGNAL AND HAZARD WARNING LAMP



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

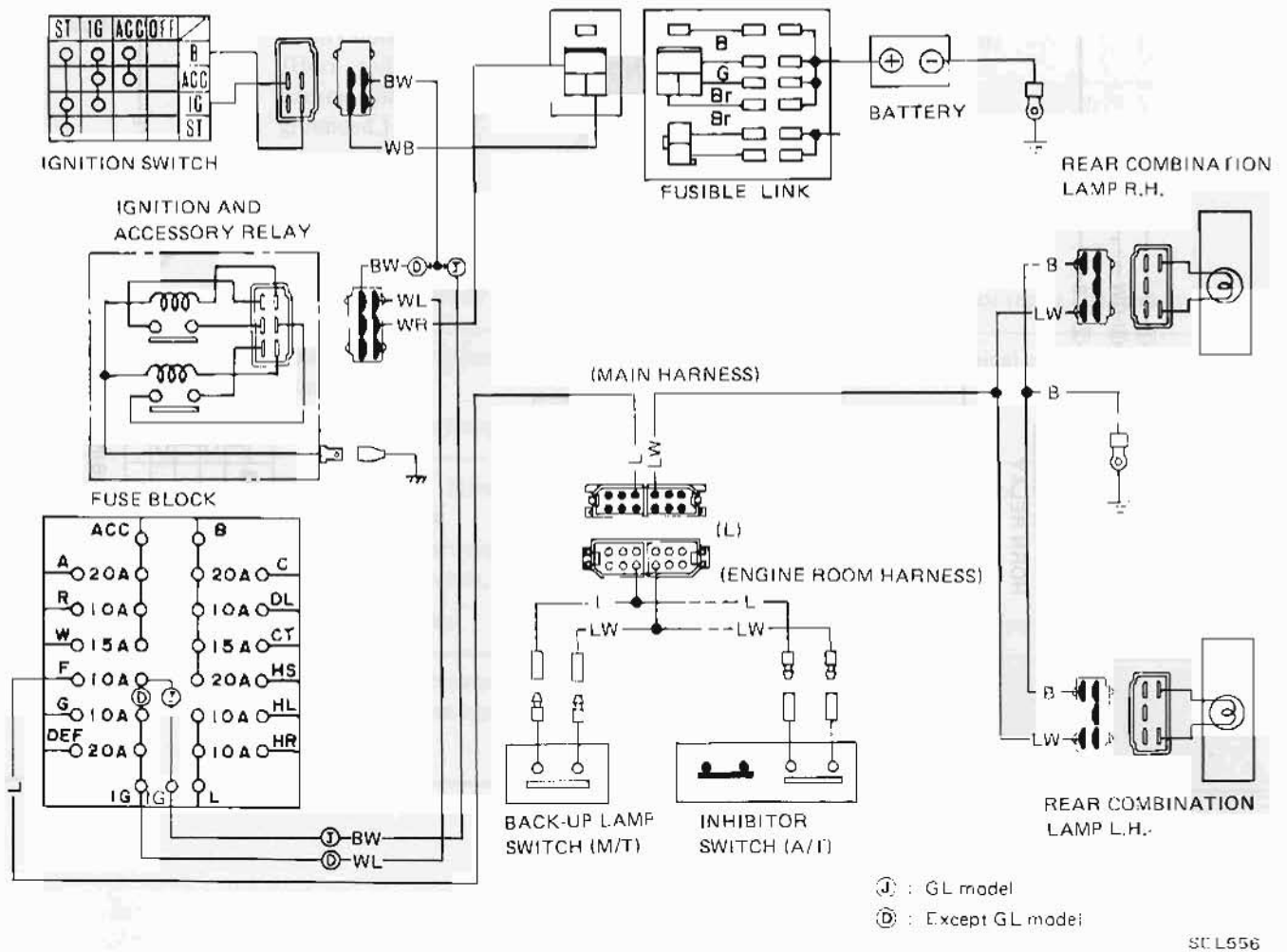
STOP LAMP



SEL355

Condition	Probable cause	Corrective action
Neither left nor right lamp lights.	Burnt fuse. Faulty stop switch. Faulty tail and stop lamp sensor (For models equipped with display system) [Stop lamps light when ② and ⑥ terminals of main harness connector to tail and stop lamp sensor are connected with test lead including 10A fuse]. Loose connection or open circuit.	Correct cause and replace. Conduct continuity test and replace if necessary. Replace if necessary. Check wiring and/or repair connection.
Lamp on only one side lights.	Burnt bulb. Loose bulb. Loose connection or open circuit.	Replace. Repair lamp socket. Check wiring and/or repair connection.

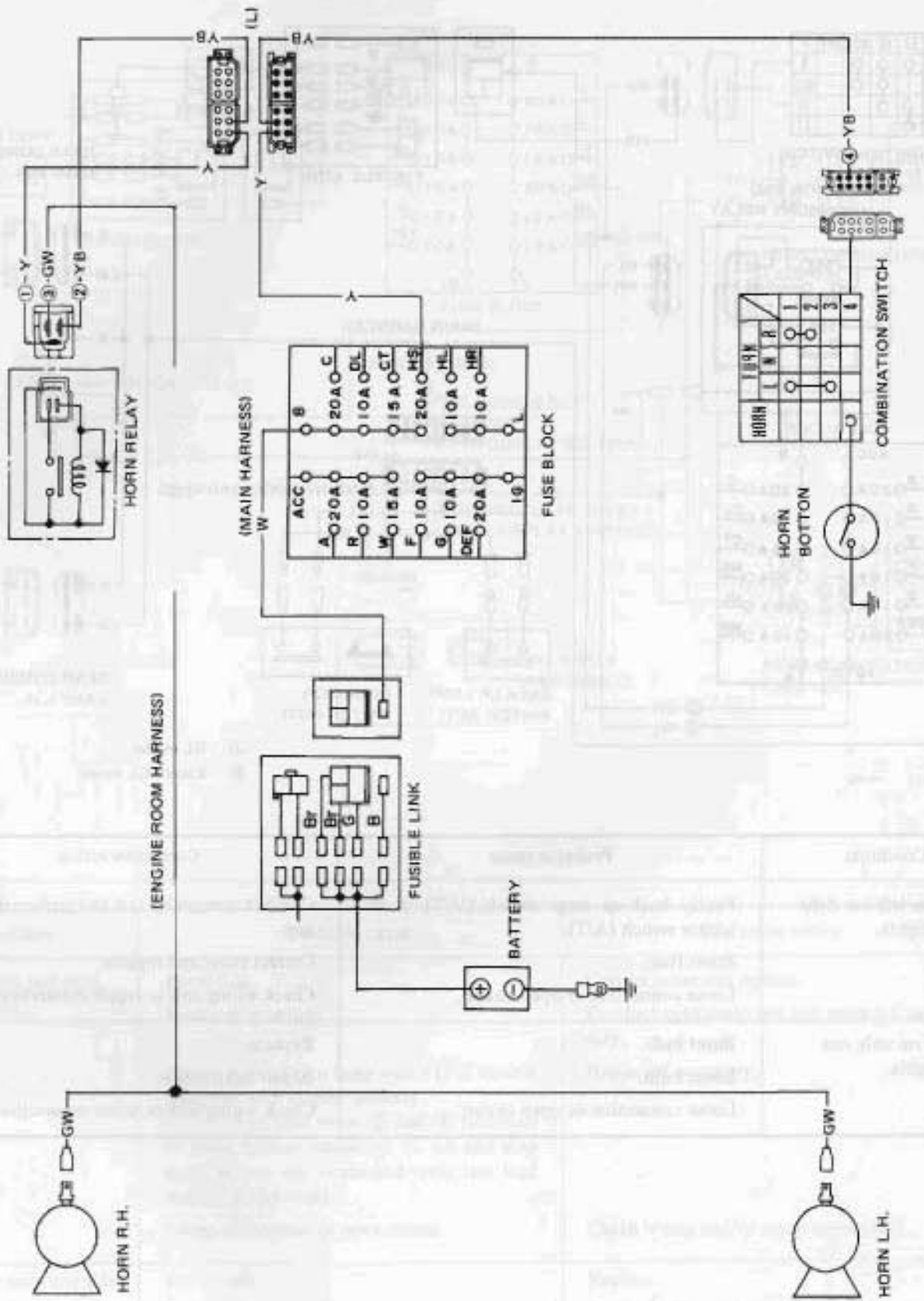
BACK-UP LAMP



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

HORN

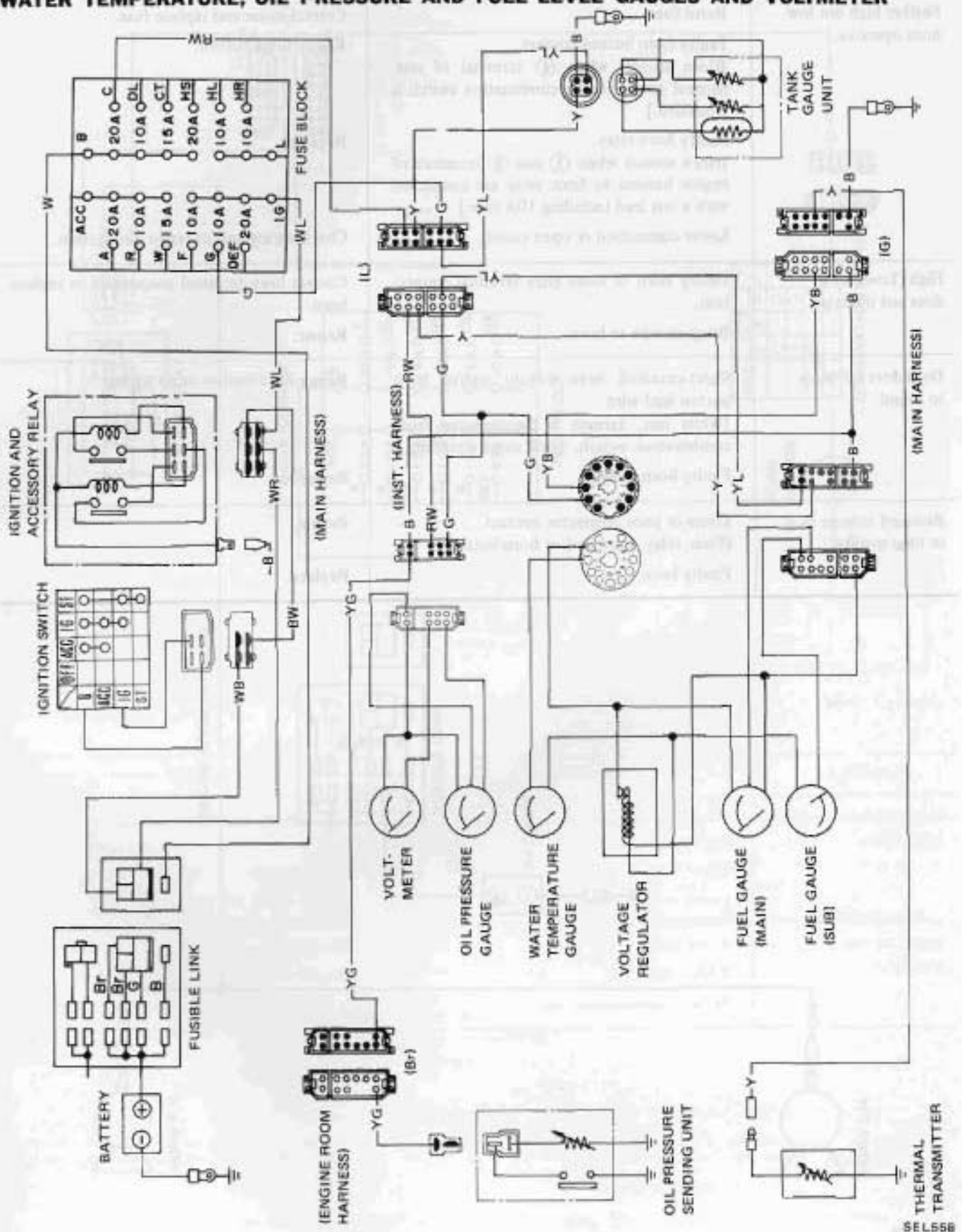
BACK-UP LABEL



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

METERS AND GAUGES

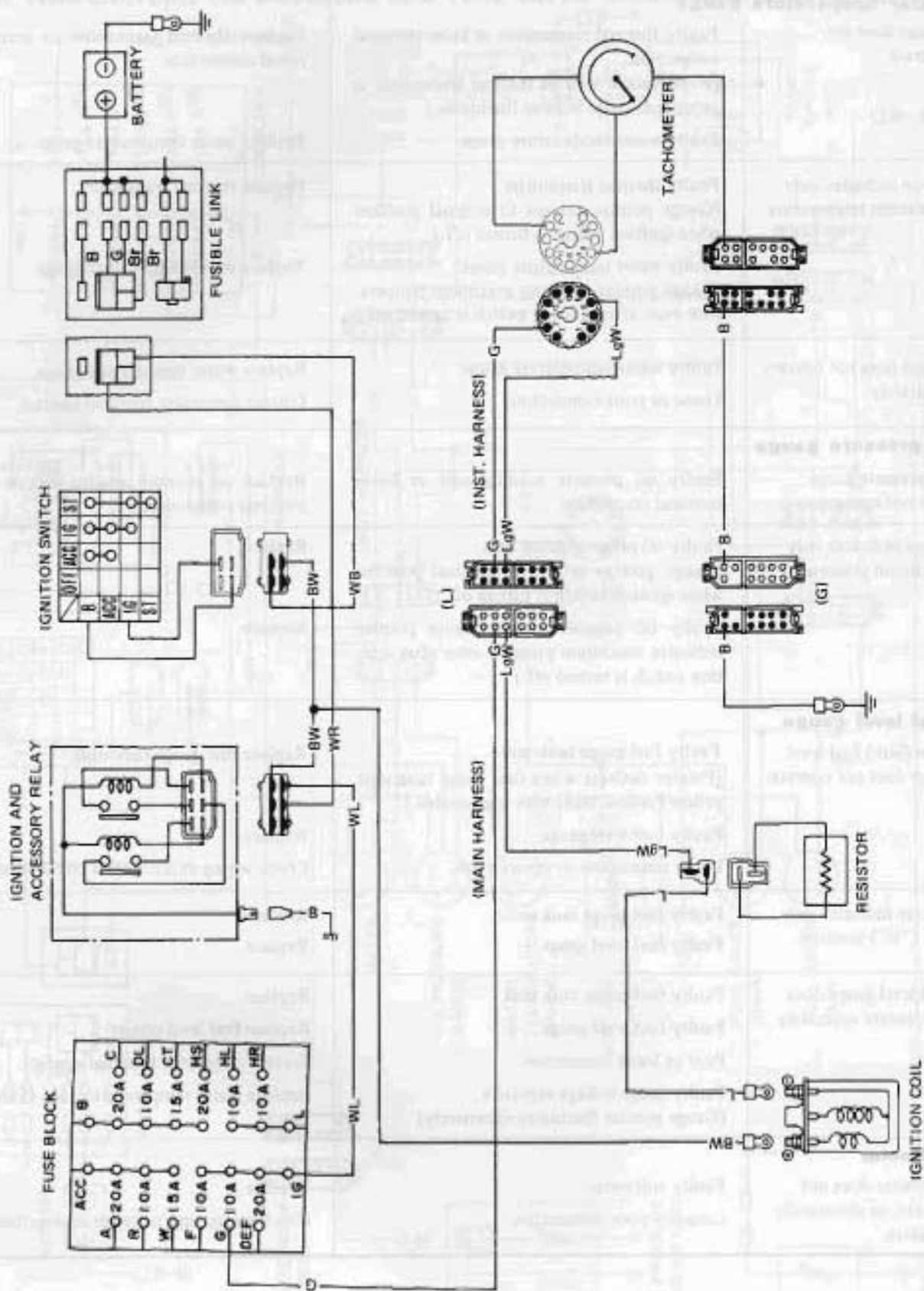
WATER TEMPERATURE, OIL PRESSURE AND FUEL LEVEL GAUGES AND VOLTMETER



SE THERMAL TRANSMITTER SEL556

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

TACHOMETER



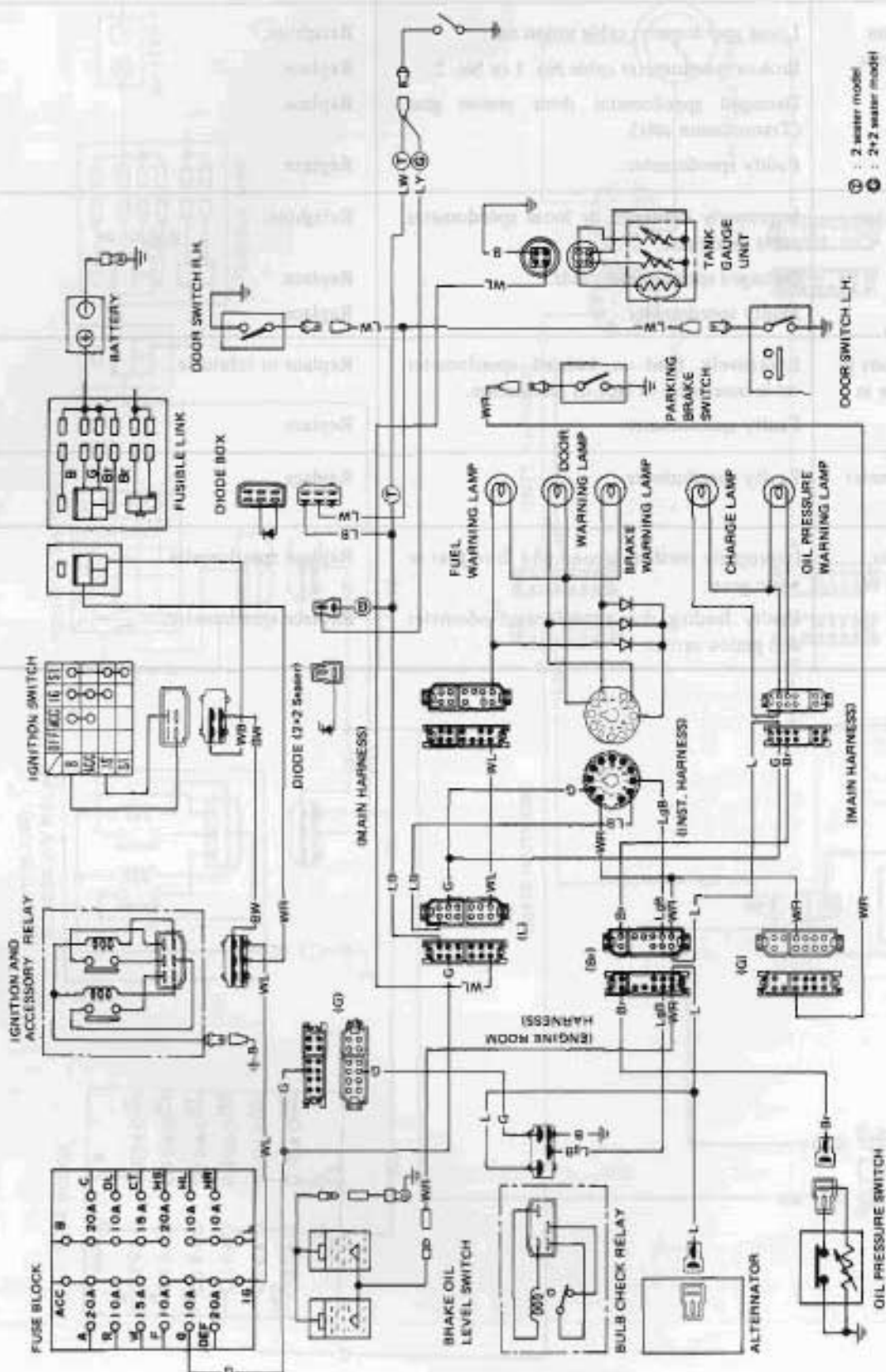
SPEEDOMETER

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

WARNING SYSTEM

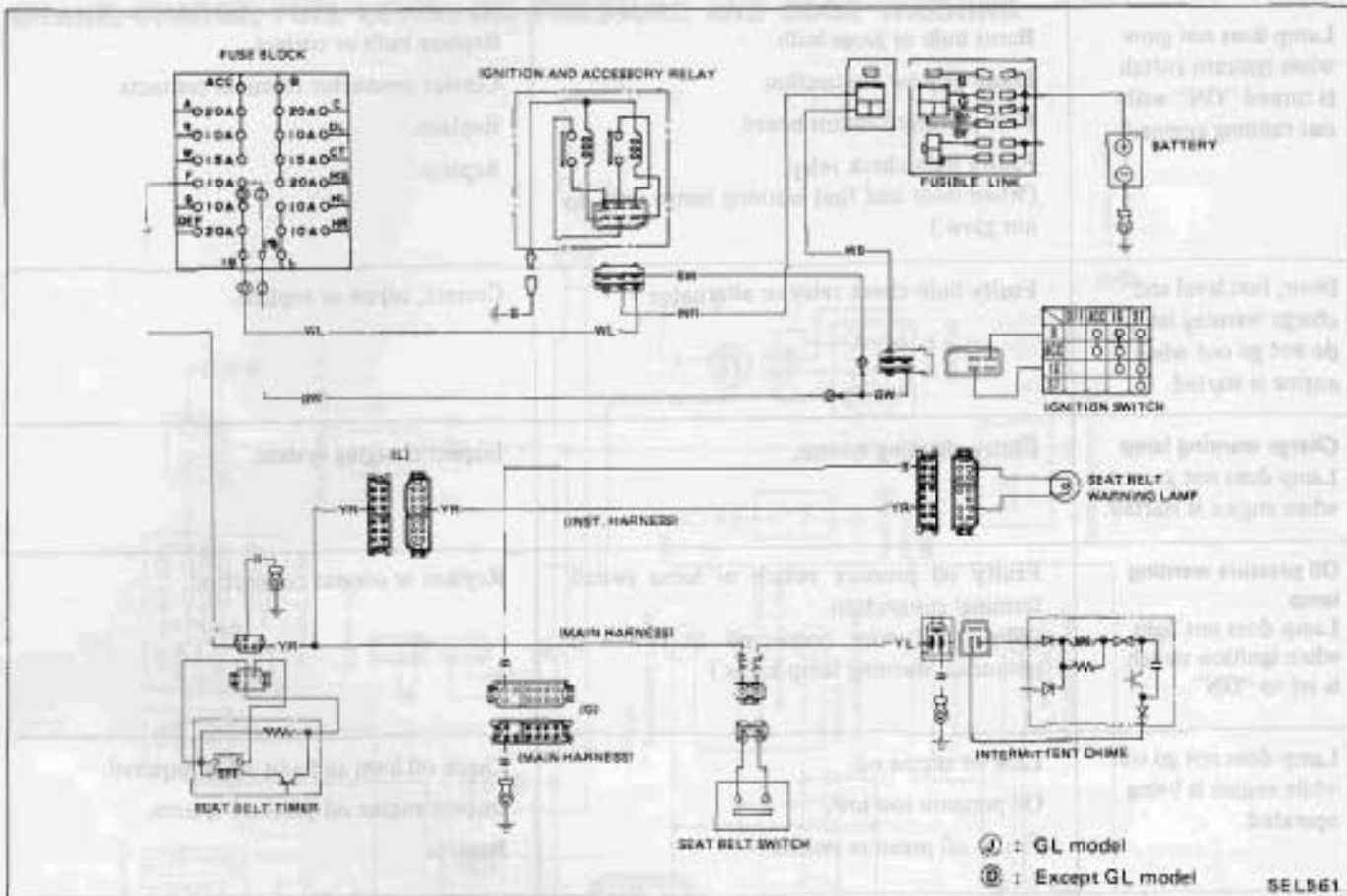
BRAKE, CHARGE, FUEL LEVEL, OIL PRESSURE AND DOOR WARNING

SPEDOMETER



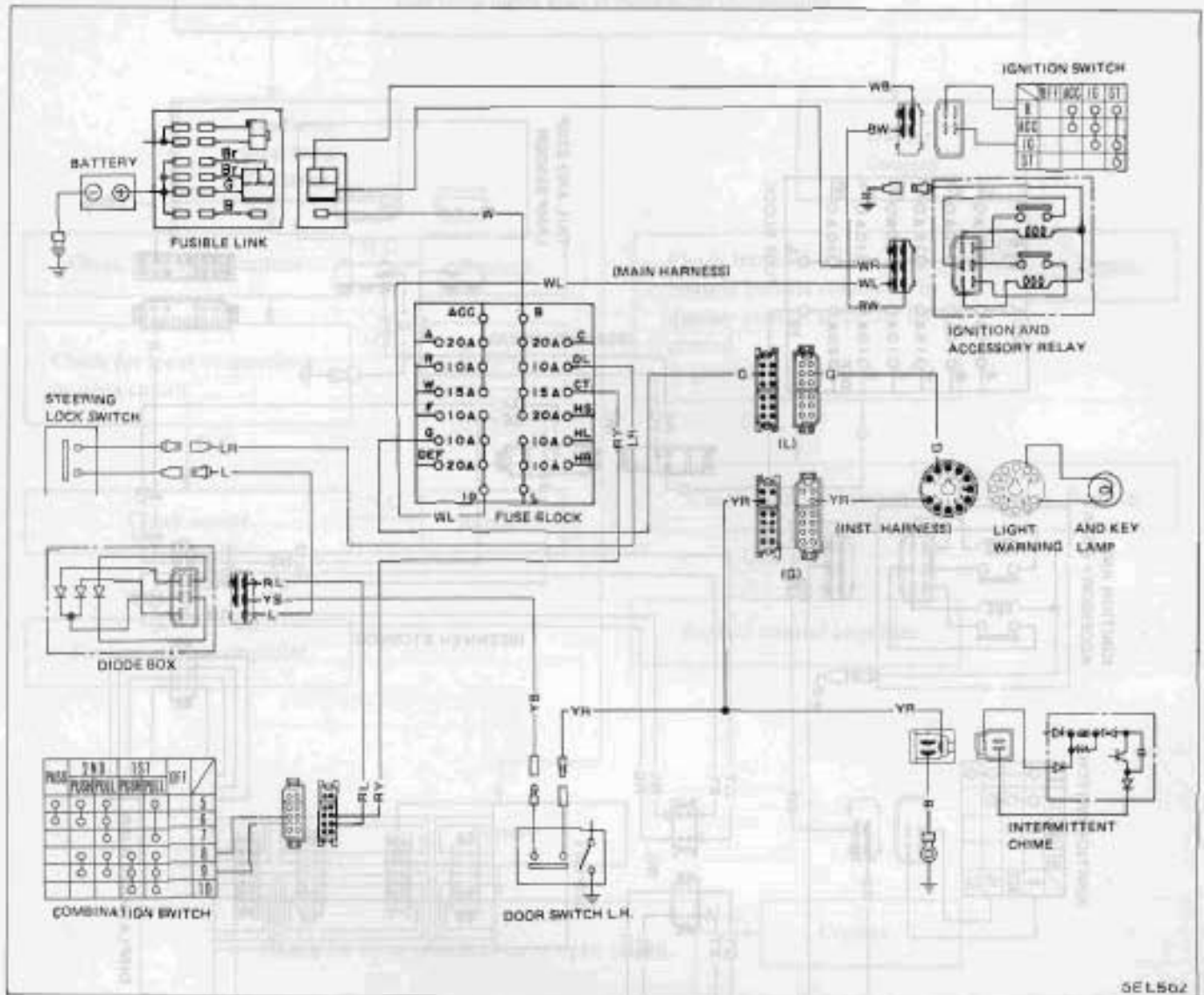
Condition	Probable cause	Corrective action
Lamp does not glow when ignition switch is turned "ON" without running engine.	Burnt bulb or loose bulb. Loose or poor connection. Faulty printed circuit board. Faulty bulb check relay. (When door and fuel warning lamps only do not glow.)	Replace bulb or correct. Correct connector terminal contacts. Replace. Replace.
Door, fuel level and charge warning lamp do not go out when engine is started.	Faulty bulb check relay or alternator.	Correct, adjust or replace.
Charge warning lamp Lamp does not go out when engine is started.	Faulty charging system.	Inspect charging system.
Oil pressure warning lamp Lamp does not light when ignition switch is set to "ON".	Faulty oil pressure switch or loose switch terminal connection. (When lead wire connected to switch is grounded, warning lamp lights.)	Replace or correct connection.
Lamp does not go out while engine is being operated.	Lack of engine oil. Oil pressure too low. Faulty oil pressure switch.	Check oil level and add oil as required. Inspect engine oil pressure system. Replace.
Brake warning lamp Lamp does not go out.	Faulty hand brake switch (When hand brake lever is released). Faulty brake fluid level switch (When brake fluid level is normal).	Replace. Replace.
Door warning lamp Lamp does not glow with door opened and engine running.	Faulty door switch.	Replace.
Fuel warning lamp Lamp does not glow when fuel is almost empty [below about 13.5 liters (3 3/4 US gal, 3 Imp gal)].	Faulty fuel tank gauge unit.	Replace.
Lamp does not go out with about specified volume of fuel.	Faulty fuel tank gauge unit.	Replace.

SEAT BELT WARNING



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

LIGHT AND KEY WARNING

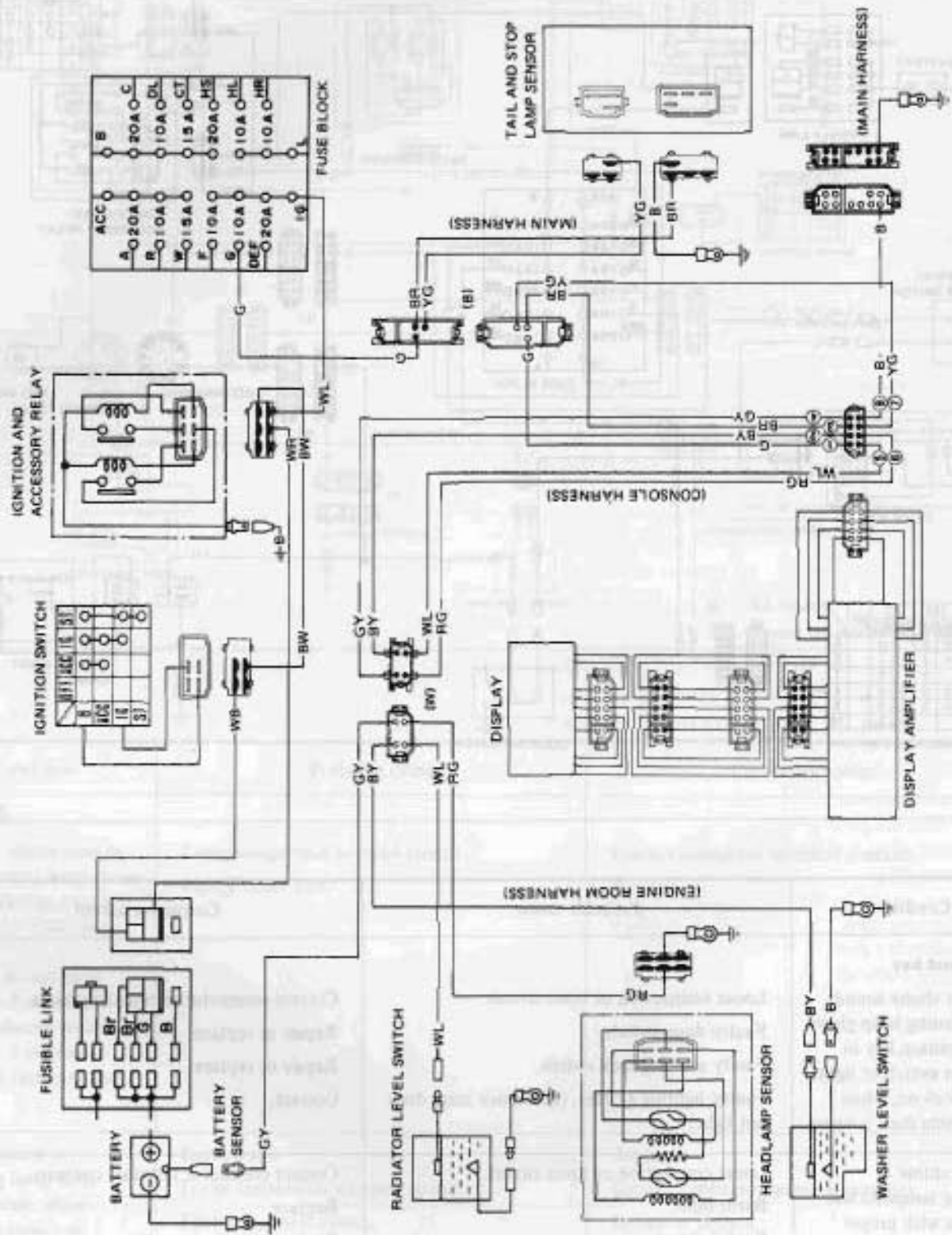


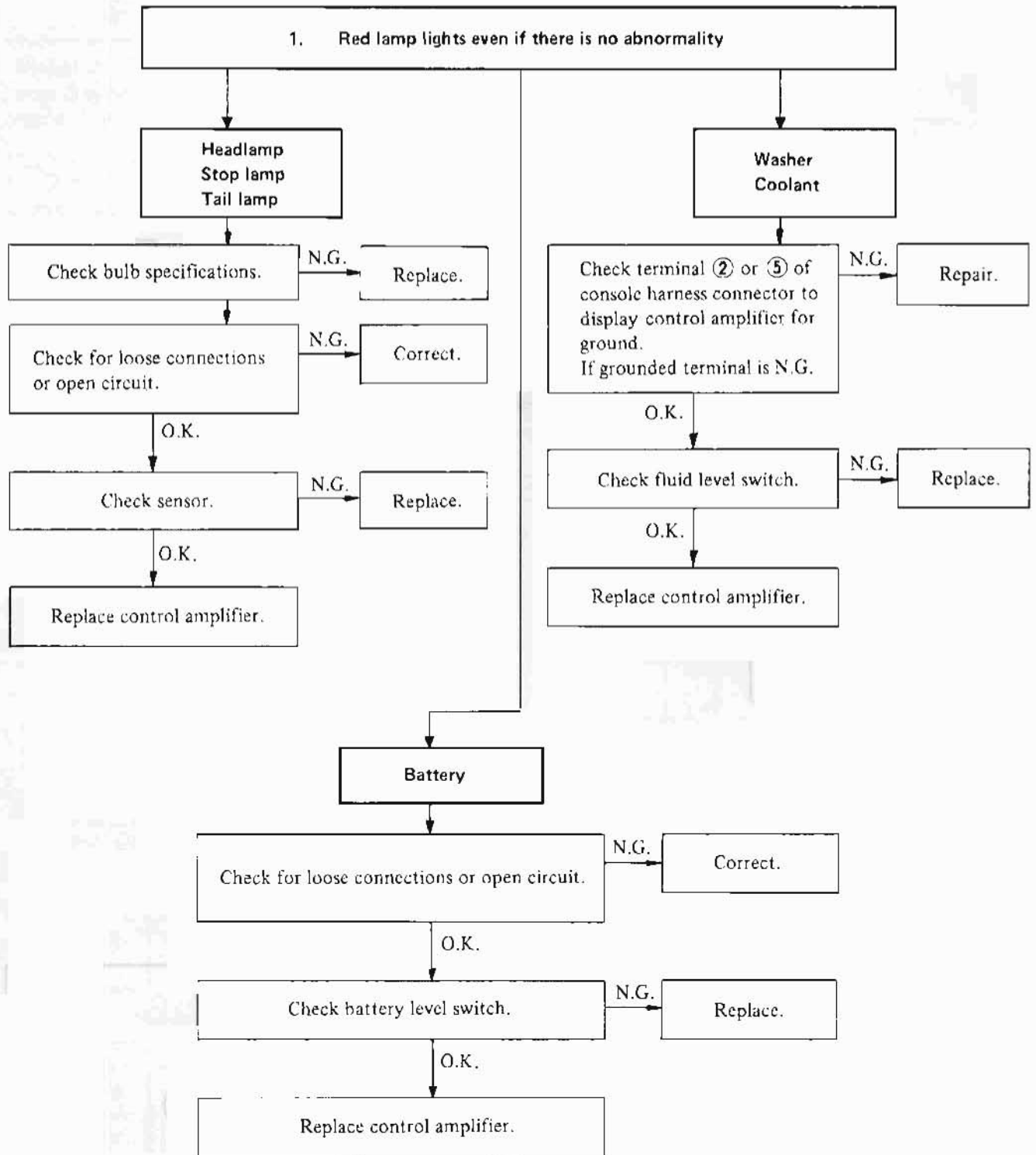
SEL502

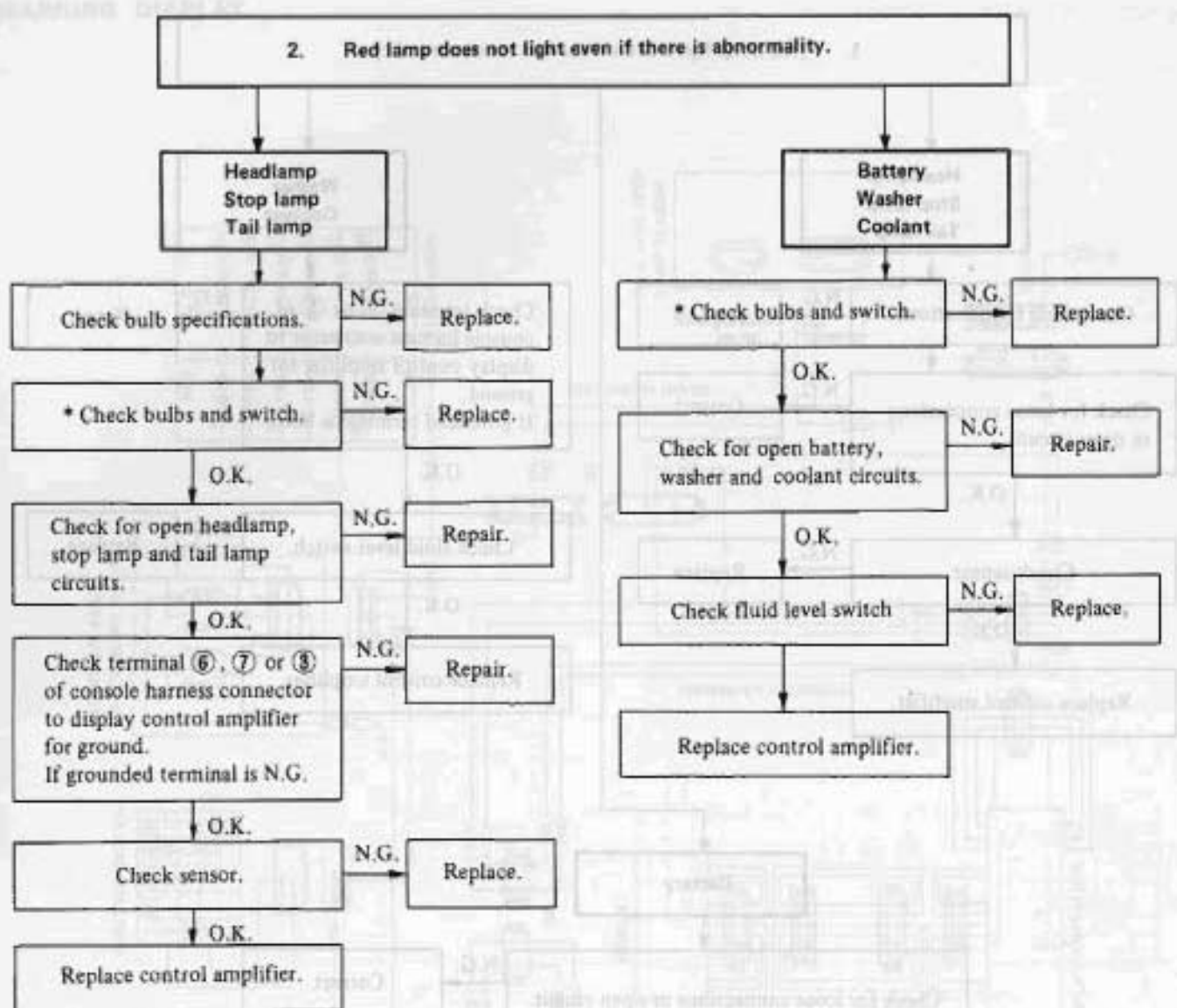
Condition	Probable cause	Corrective action
Light and key Neither chime sounds nor warning lamp glows with ignition key in ignition switch or lighting switch on, when driver side door is open.	Loose connection or open circuit. Faulty door switch. Faulty steering lock switch. Faulty lighting system. (Clearance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

WARNING DISPLAY

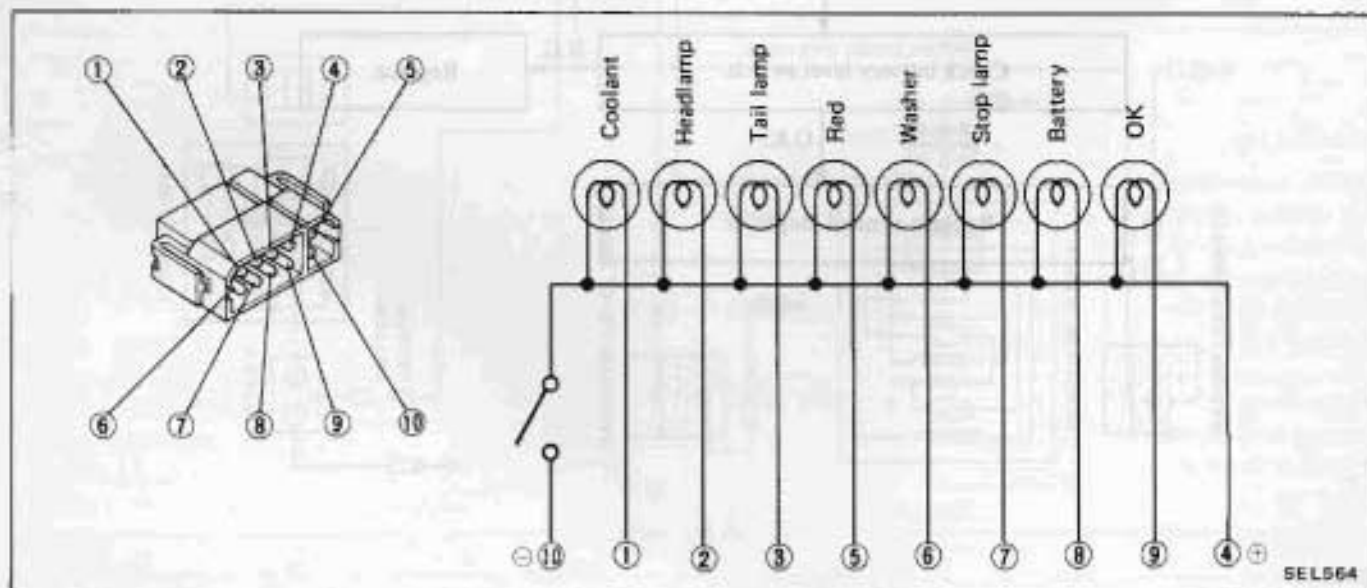
RIGHT AND KEY WARNING







* Method of checking bulbs and switch



SEL564

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

Fuse

N.G.

Replace.

O.K.

Check for loose connections
or open circuit.

N.G.

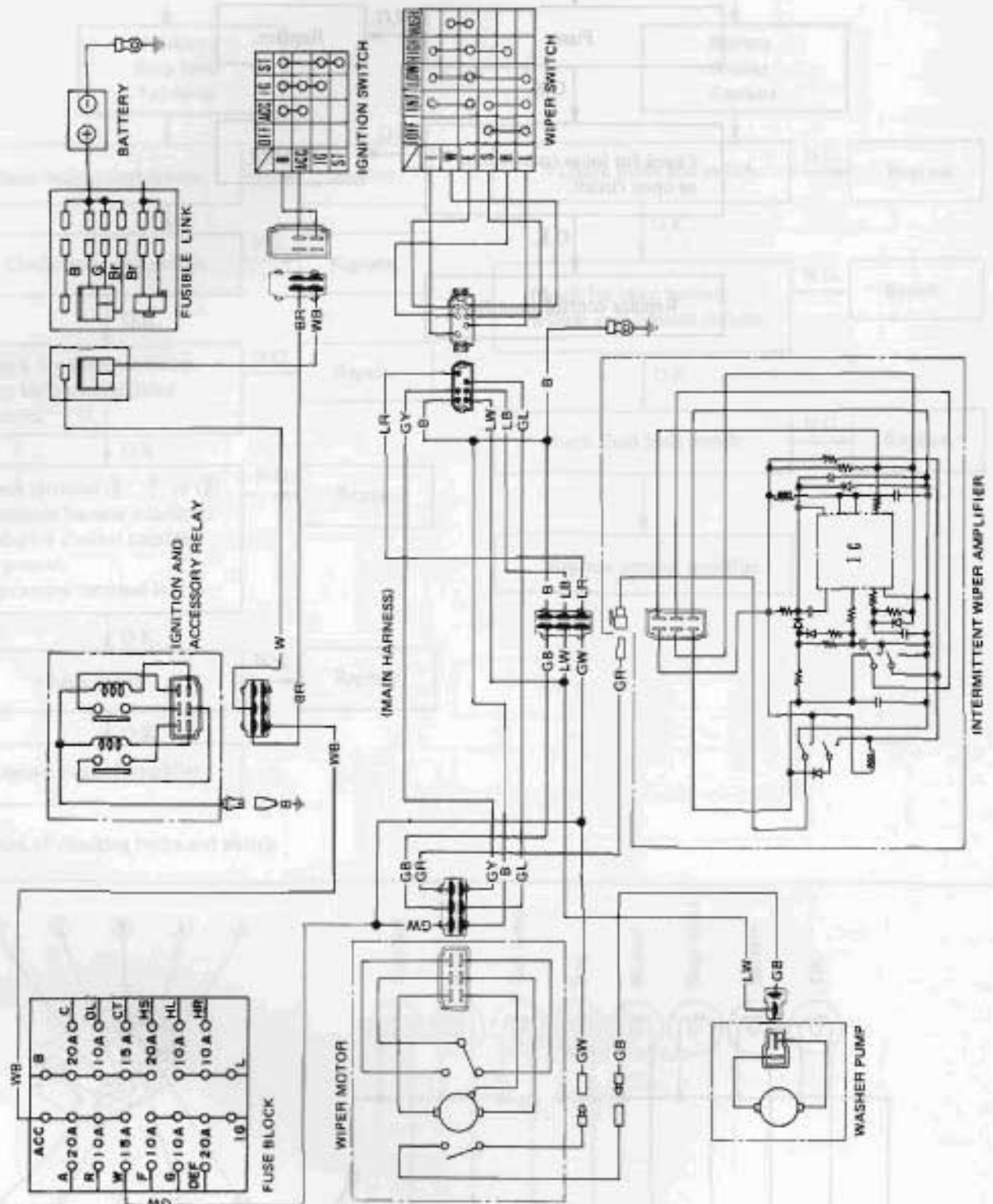
Repair.

O.K.

Replace control amplifier.

ELECTRICAL ACCESSORY SYSTEM

WINDSHIELD WIPER AND WASHER



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

Intermittent windshield wiper

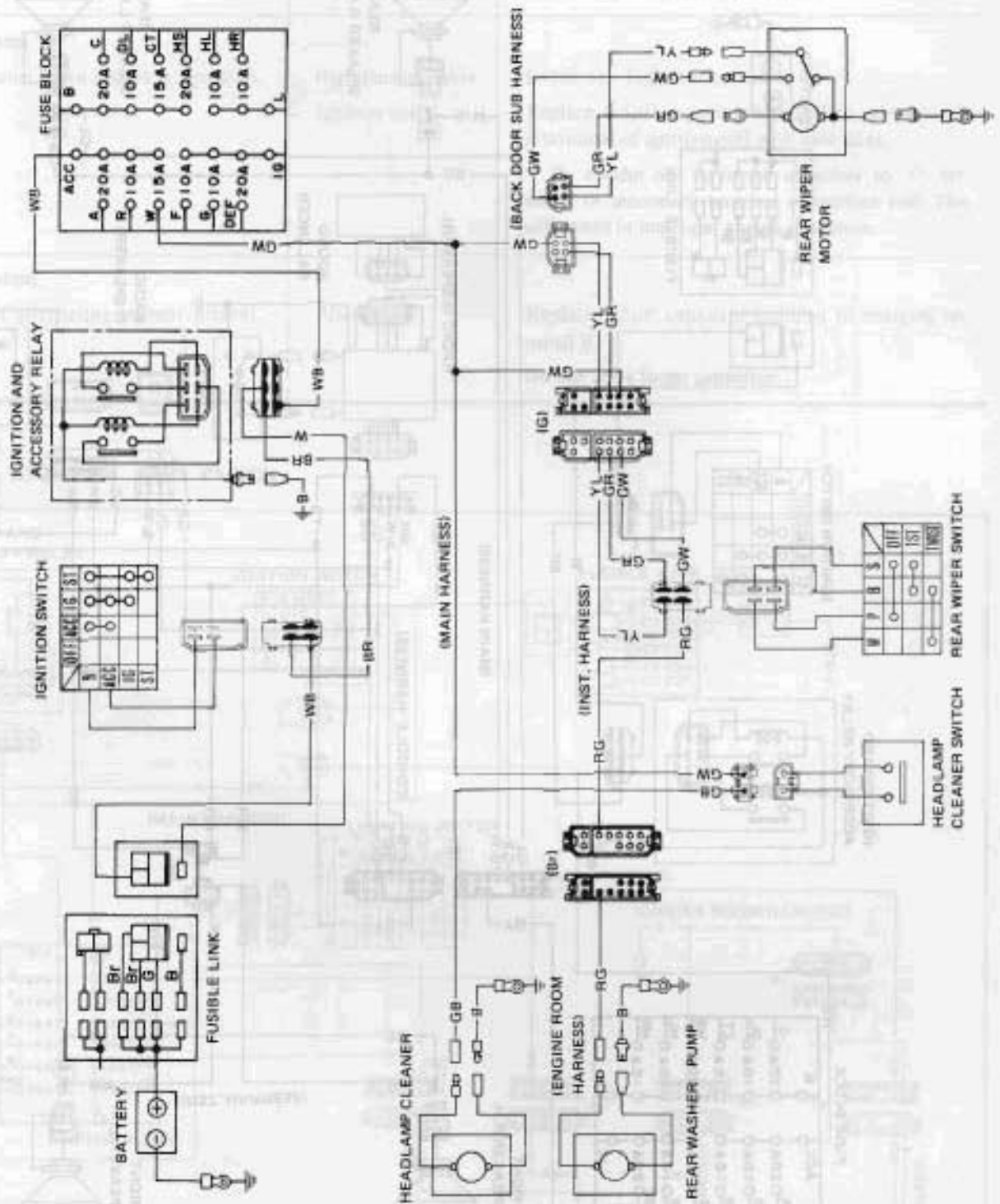
The sign for corrective action

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

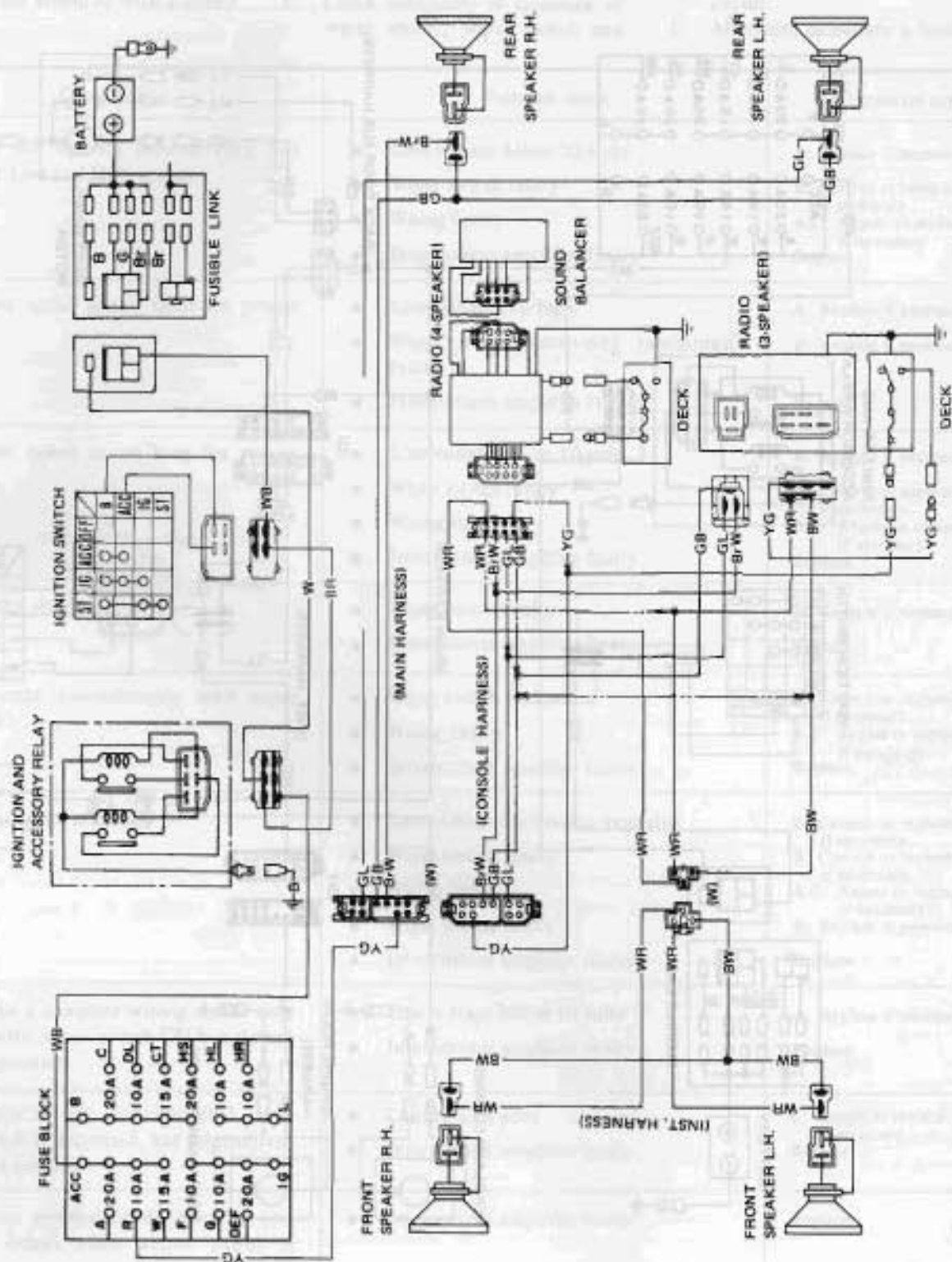
Condition	Probable cause	Corrective action
Wipers do not operate intermittently but operates at Low and High speeds.	<ul style="list-style-type: none"> Line voltage below 10 volts Wiper switch faulty Wiring faulty Intermittent amplifier faulty 	<p>A: Replace if necessary.</p> <p>B: Correct or replace if necessary.</p> <p>A,C: Repair or replace if necessary.</p> <p>Replace.</p>
Intermittent speed is too short for proper wiping.	<ul style="list-style-type: none"> Line voltage too high Wiper motor (auto-stop mechanism) faulty Intermittent amplifier faulty 	<p>A: Replace if necessary.</p> <p>D: Replace if necessary.</p> <p>Replace</p>
Intermittent speed is too long for proper wiping.	<ul style="list-style-type: none"> Line voltage below 10 volts Wiper switch faulty Wiring faulty Intermittent amplifier faulty 	<p>A: Replace if necessary.</p> <p>B: Correct or replace if necessary.</p> <p>A,C: Repair or replace if necessary.</p> <p>Replace.</p>
Wipers do not shut off.	<ul style="list-style-type: none"> Wiper motor faulty Intermittent amplifier faulty 	<p>D: Replace if necessary.</p> <p>Replace.</p>
Wipers operate intermittently with wiper switch OFF.	<ul style="list-style-type: none"> Wiper switch faulty Wiring faulty Intermittent amplifier faulty 	<p>B: Correct or replace if necessary.</p> <p>A,C: Repair or replace if necessary.</p> <p>Replace.</p>
Intermittent speed is erratic.	<ul style="list-style-type: none"> Line voltage fluctuation excessive Wiper switch faulty Wiring faulty Wiper motor faulty Intermittent amplifier faulty 	<p>E: Correct or replace if necessary.</p> <p>B: Correct or replace if necessary.</p> <p>A,C: Repair or replace if necessary.</p> <p>D: Replace if necessary.</p> <p>Replace.</p>
Wipers make a complete wiping stroke only one time with wiper switch ON but do not continue operation.	<ul style="list-style-type: none"> Line voltage below 10 volts Intermittent amplifier faulty 	<p>A: Replace if necessary.</p> <p>Replace.</p>
Wiper motor is not interconnected when washer switch is depressed, but intermittent operation is normal.	<ul style="list-style-type: none"> Connections poor Intermittent amplifier faulty 	<p>C: Repair or replace if necessary.</p> <p>Replace.</p>
Wiper motor simultaneously operates (or does not delay) when washer switch is depressed.	<ul style="list-style-type: none"> Intermittent amplifier faulty 	<p>Replace.</p>
Wipers do not make a complete wiping stroke when washer switch is first turned on and is quickly turned off.	<ul style="list-style-type: none"> Intermittent amplifier faulty 	<p>Replace.</p>

REAR WINDOW WIPER AND WASHER, AND HEADLAMP CLEANER

REAR WINDOW WIPER AND WASHER, AND HEADLAMP CLEANER



RADIO AND STEREO

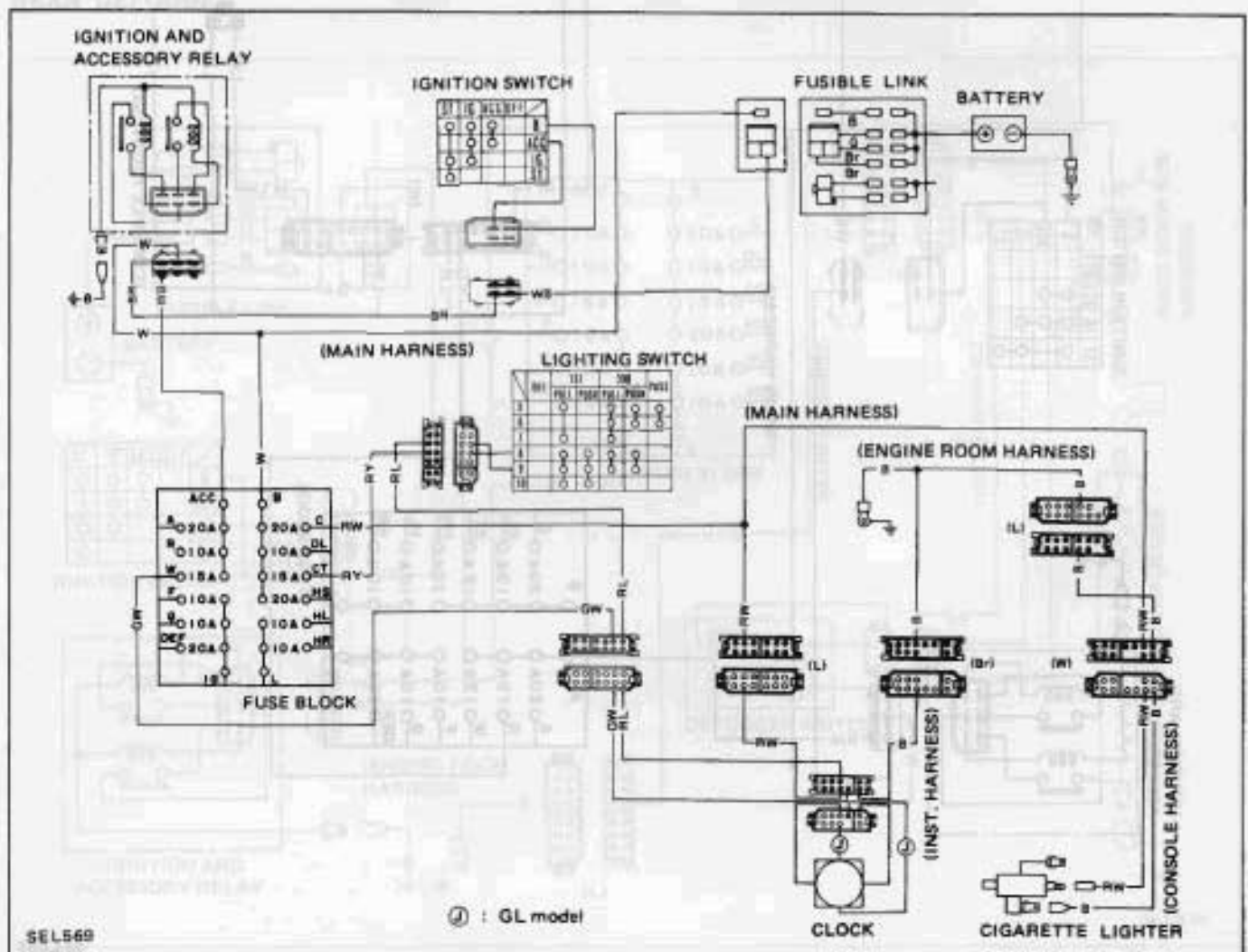


Noise prevention chart

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

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

CIGARETTE LIGHTER AND CLOCK

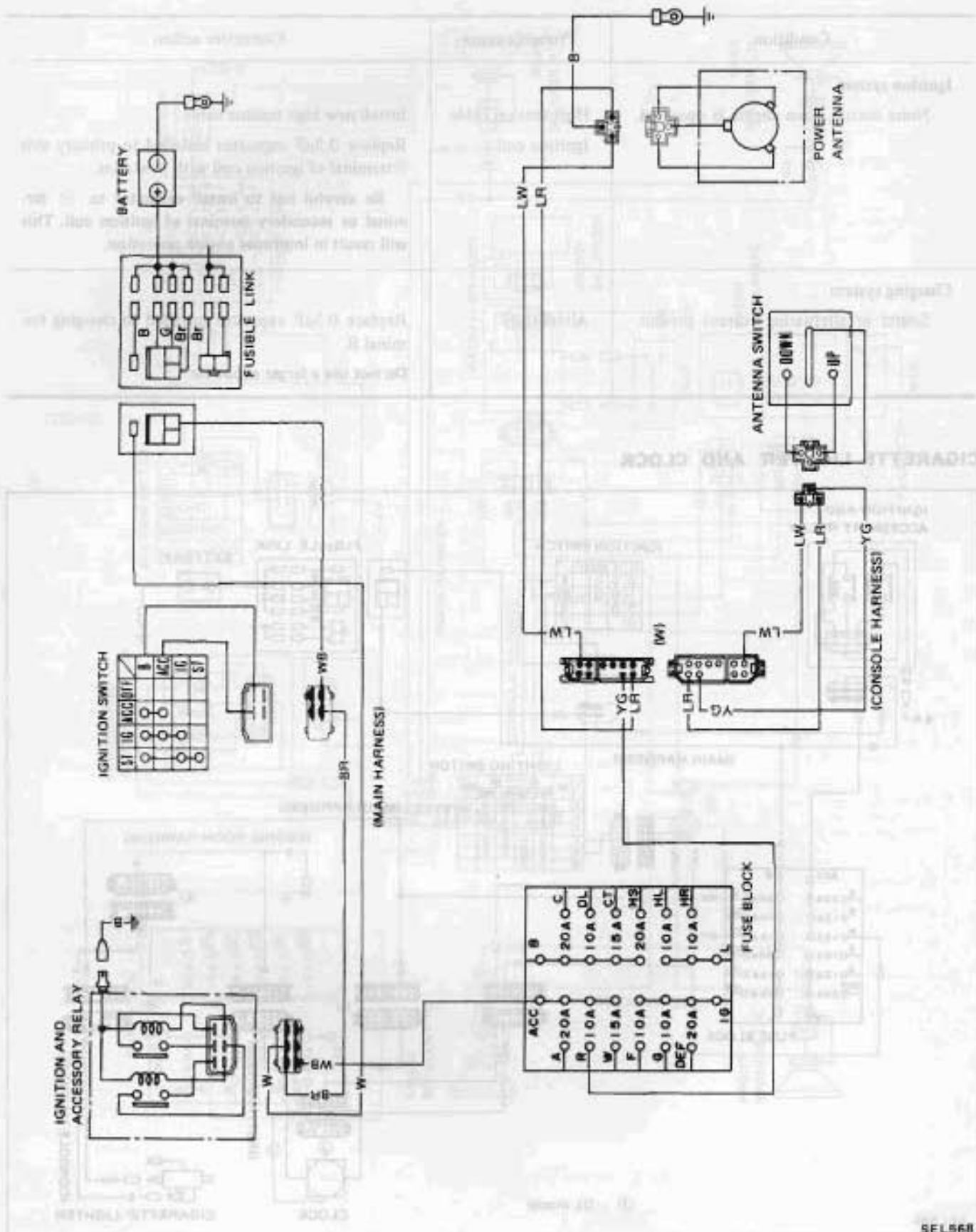


SEL569

POWER ANTENNA

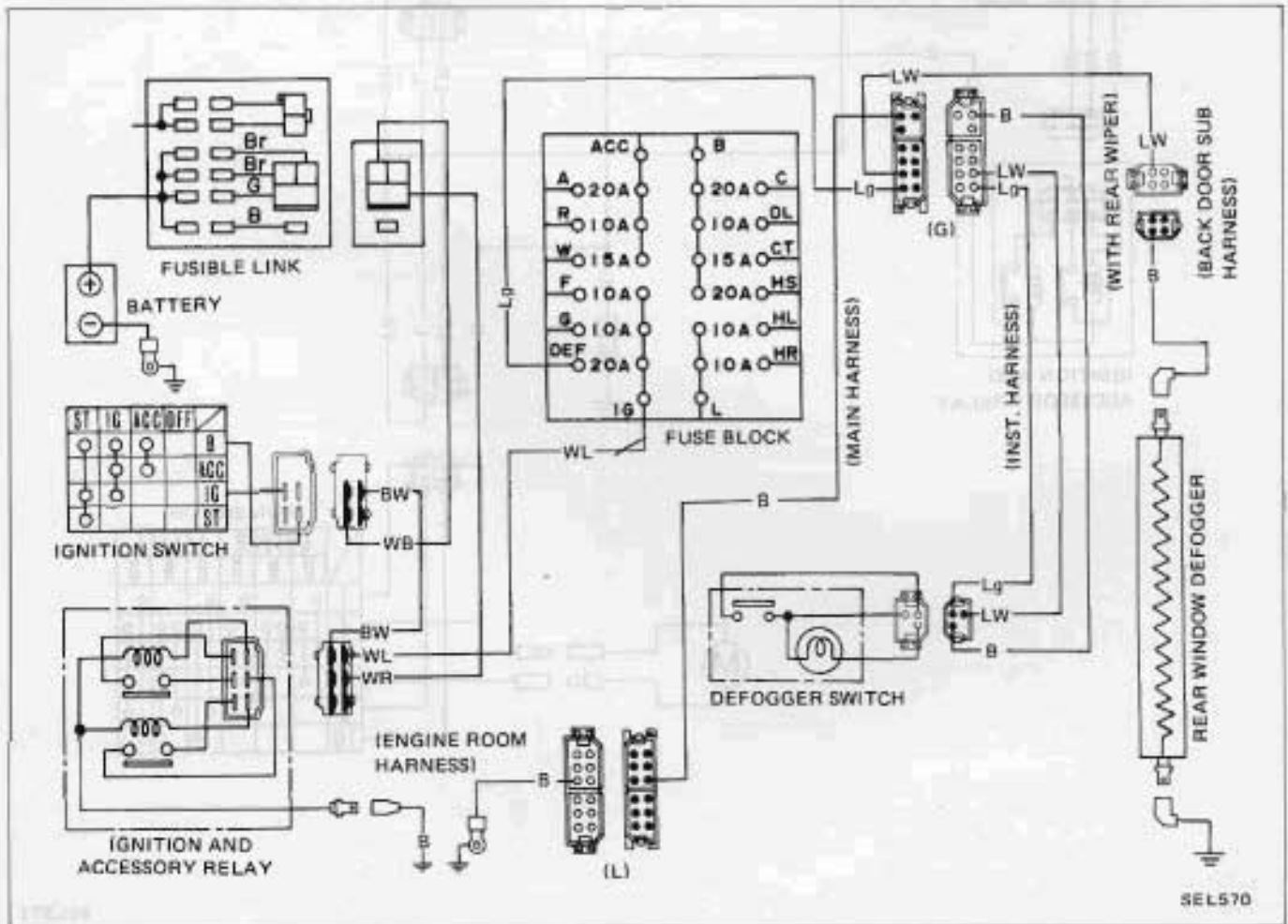
Power antenna system

Power antenna system provides a means for extending the length of the antenna wire to the antenna mast. The antenna wire is connected to the antenna mast and the antenna mast is connected to the antenna mast.



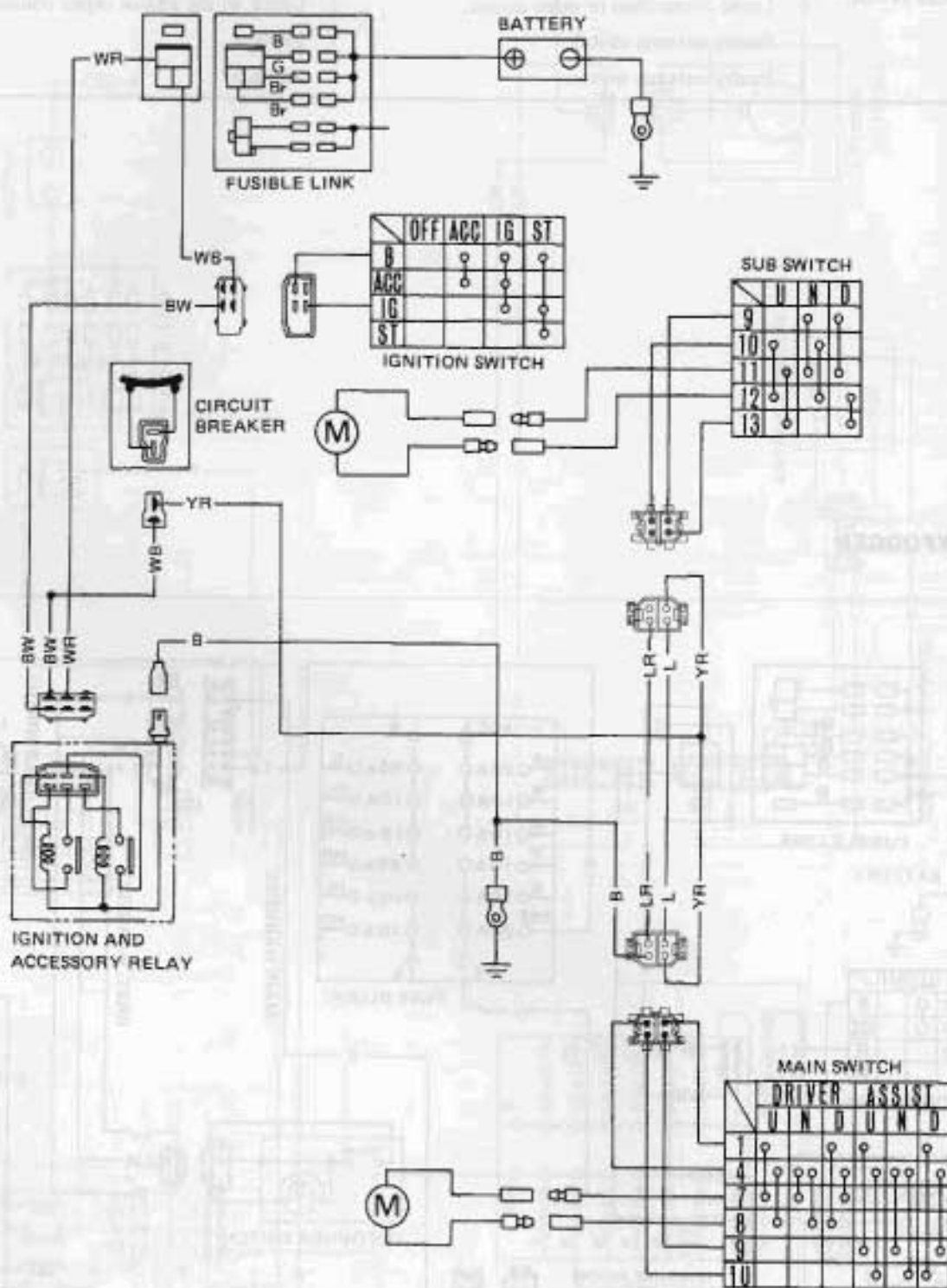
Condition	Probable cause	Corrective action
Antenna does not move up or down with antenna switch.	Burnt fuse. [Radio does not operate.] Loose connection or open circuit. Faulty antenna switch. Faulty antenna motor.	Correct cause and replace. Check wiring and/or repair connection. Replace. Replace.

REAR DEFOGGER

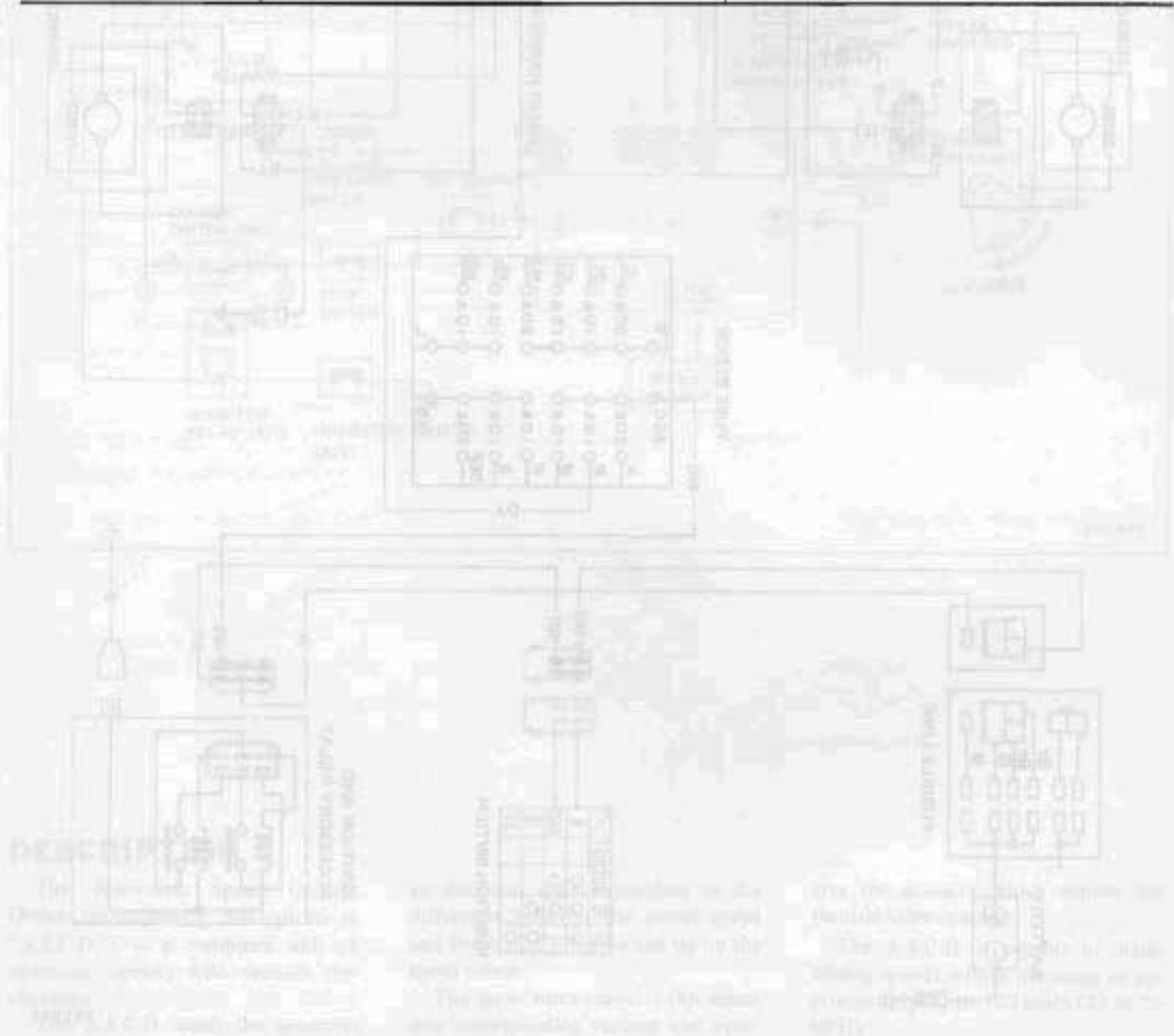


SEL570

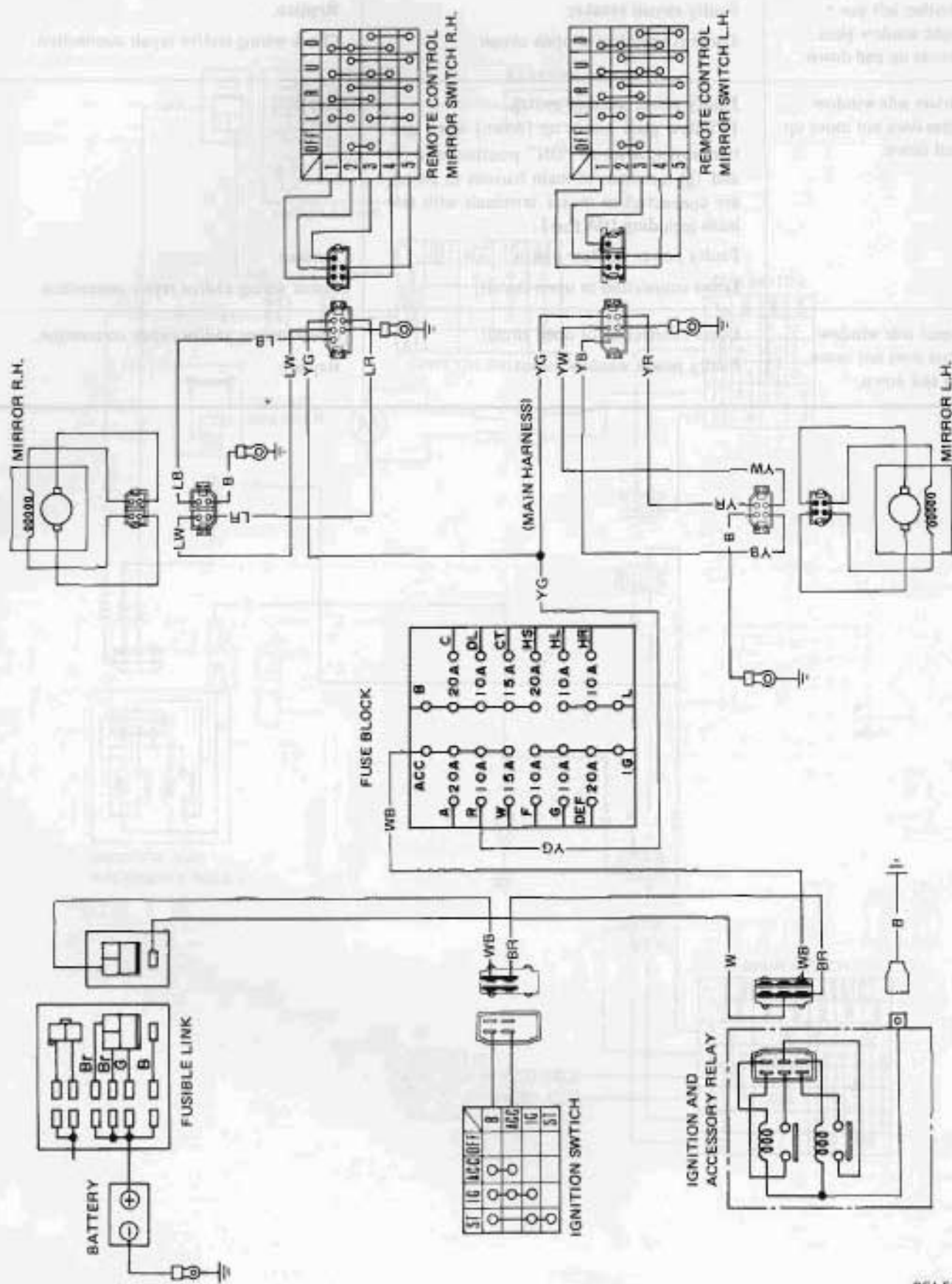
POWER WINDOW



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

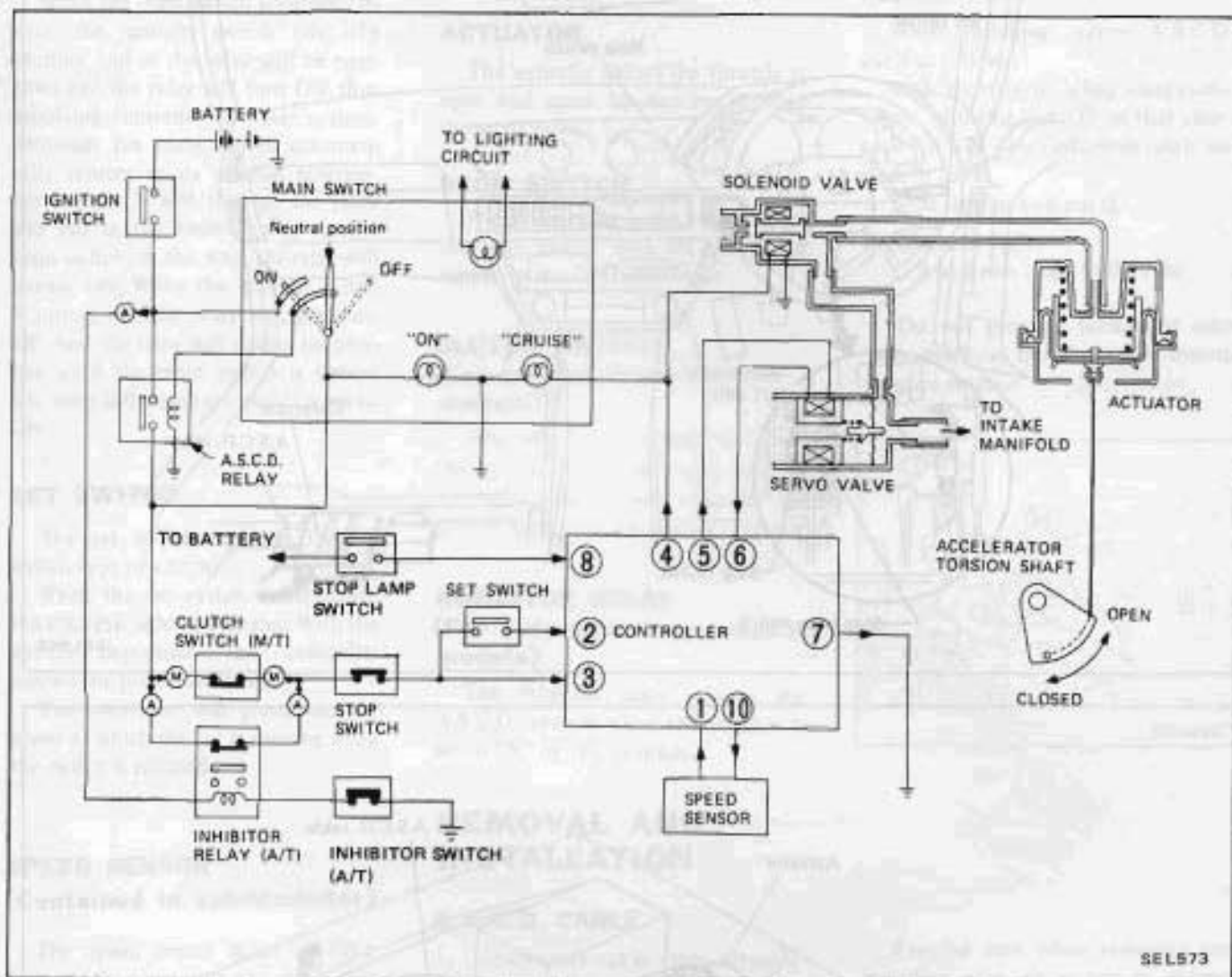


REMOTE-CONTROL DOOR MIRROR



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

CAUTION: Before starting to work, be sure to turn ignition switch "OFF" and then disconnect battery ground cable.



DESCRIPTION

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

The A.S.C.D. controller generates

an electrical signal equivalent to the difference between the preset speed and the actual speed picked up by the speed sensor.

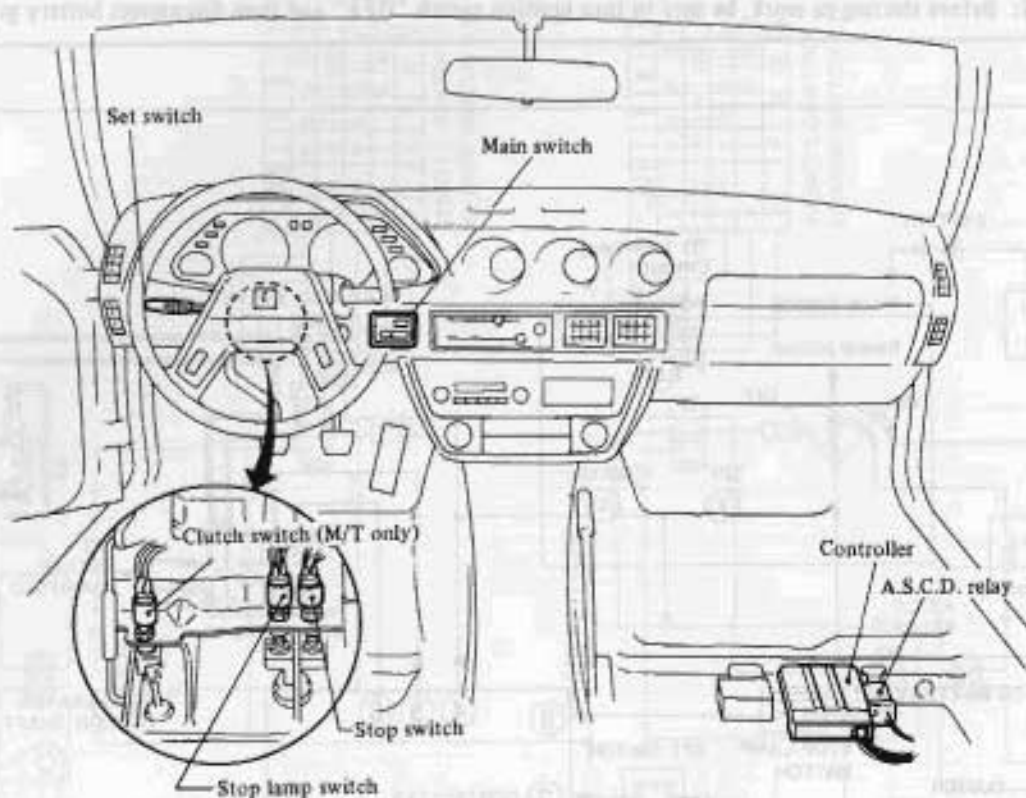
The servo valve converts this signal into corresponding vacuum and oper-

ates the actuator which adjusts the throttle valve opening.

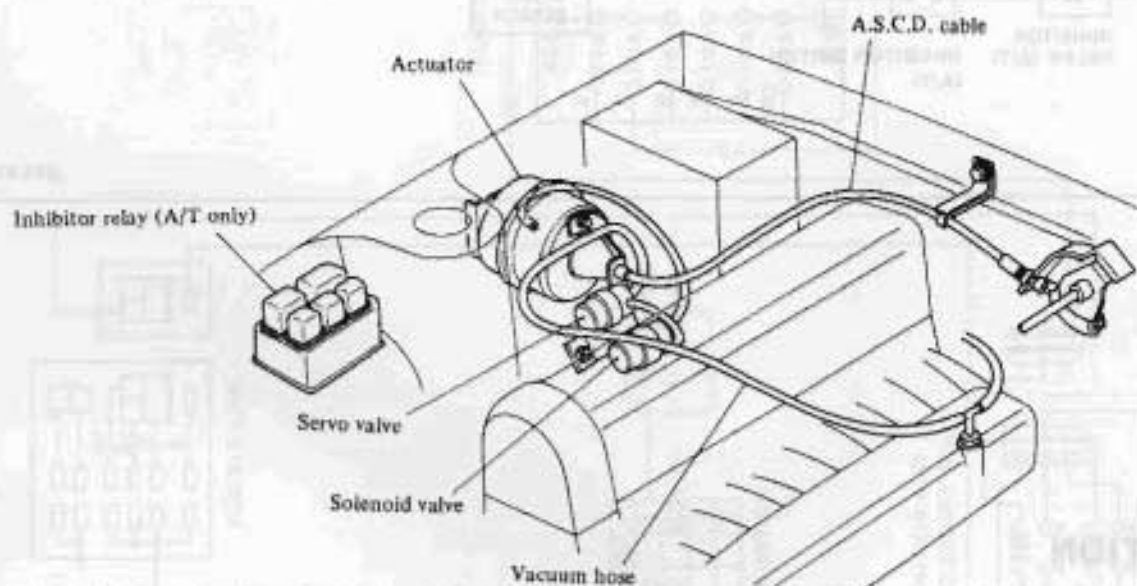
The A.S.C.D. is capable of maintaining speeds within the range of approximately 60 to 120 km/h (37 to 75 MPH).

Automatic Speed Control Device (A.S.C.D.) – ELECTRICAL SYSTEM

Speed sensor is incorporated in speedometer.



SEL663



SEL665

FUNCTION AND OPERATION

MAIN SWITCH

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

SET SWITCH

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

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

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

SPEED SENSOR (Contained in speedometer)

The speed sensor is an ON-OFF type sensor generating two pulses per revolution of the meter cable.

SERVO VALVE (Transducer)

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

Controller

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

SOLENOID VALVE

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

ACTUATOR

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

STOP SWITCH

When the brake pedal is depressed, the stop switch cuts off the power supply to the A.S.C.D. circuit.

CLUTCH SWITCH (For manual transmission models)

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

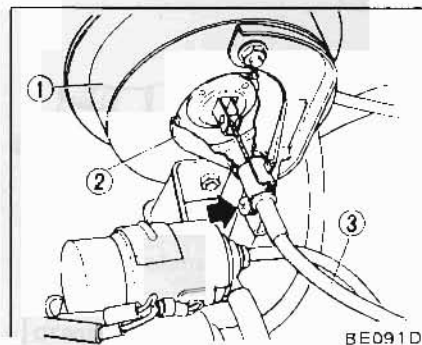
INHIBITOR RELAY (For automatic transmission models)

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

REMOVAL AND INSTALLATION

A. S. C. D. CABLE

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



- | | |
|---------------|---------|
| 1 Actuator | 3 Cable |
| 2 Rubber boot | |

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

Adjustment

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

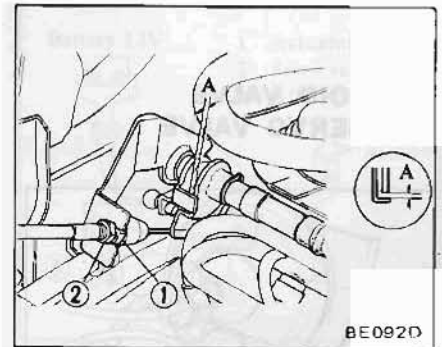
With throttle in idling conditions, adjust adjusting nut (1) so that clearance "A" is specified value with no slack of cable.

Then tighten lock nut (2).

Clearance "A":

2 to 3 mm (0.08 to 0.12 in)

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



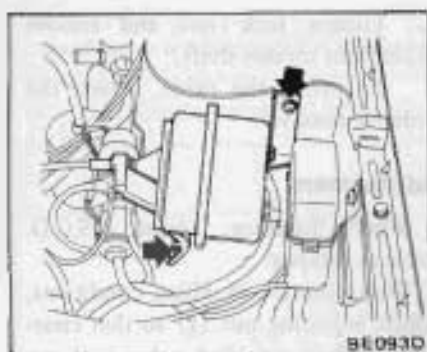
Exercise care when removing and installing wire, so as not to deform wire end.

TORSION SHAFT

Refer to Accelerator Linkage for removal (Section I'E).

ACTUATOR

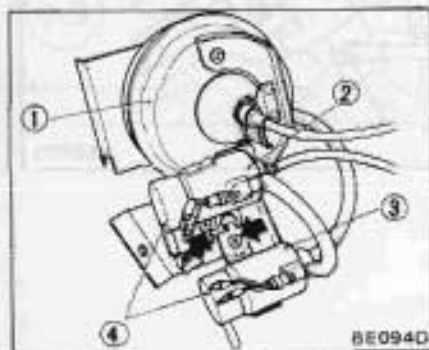
1. Disconnect battery ground cable.
2. Disconnect cable from actuator. Refer to A.S.C.D. cable for removal.
3. Disconnect harness connector of servo valve and solenoid valve, and disconnect vacuum hose connecting intake manifold to servo valve.
4. Remove bolt attaching actuator to body.



Actuator can then be taken out with servo valve and solenoid valve.

5. Disconnect vacuum hose from actuator and remove servo valve and solenoid valve.
6. To install actuator, reverse the order of removal.

SOLENOID VALVE AND SERVO VALVE



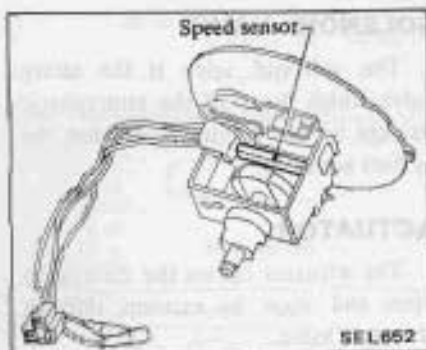
- | | |
|---------------|---------------------|
| 1 Actuator | 3 Solenoid valve |
| 2 Servo valve | 4 Water-tight cover |

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

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

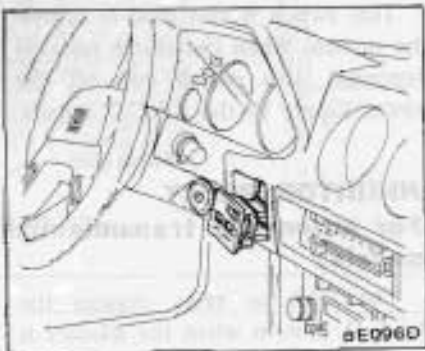
SPEED SENSOR

The speed sensor is built into the speedometer. It can only be removed and installed as an assembly.



MAIN SWITCH

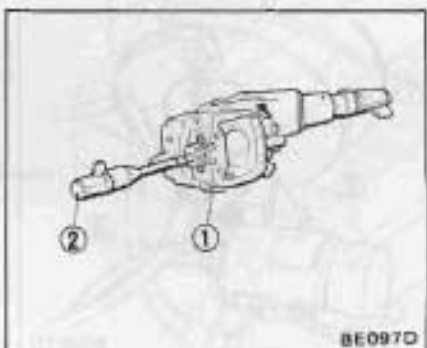
1. Disconnect battery ground cable.
2. Push out main switch from behind instrument panel.
3. Remove harness connector.



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

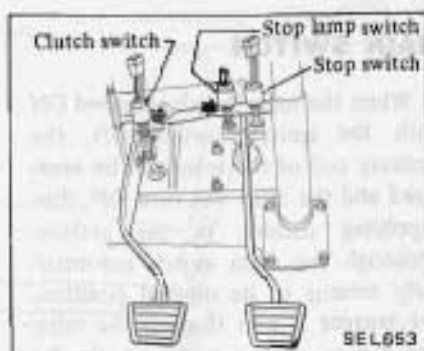
SET SWITCH

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



- 1 Combination switch assembly
- 2 Set switch

STOP LAMP SWITCH AND CLUTCH SWITCH

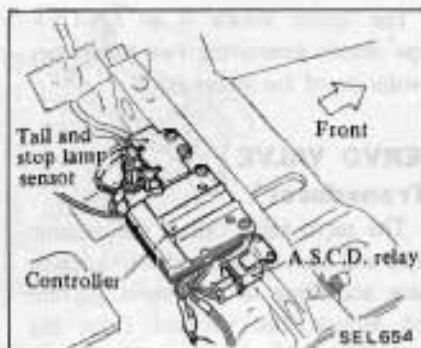


1. Disconnect battery ground cable.
2. Remove instrument panel L.H. lower cover and floor assist nozzle.
3. Loosen lock nut and remove switch.
4. To install switch, reverse the order of removal.

Adjustment

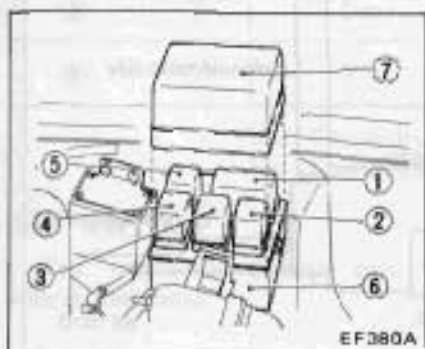
Refer to Brake Pedal or Clutch Pedal for adjustment (Section BR or CL).

CONTROLLER AND A.S.C.D. RELAY



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

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



- 1 Fuel pump relay-2
- 2 Lighting relay
- 3 Bulb check relay
- 4 Air conditioner relay
- 5 Inhibitor relay
- 6 Relay bracket
- 7 Relay bracket cover

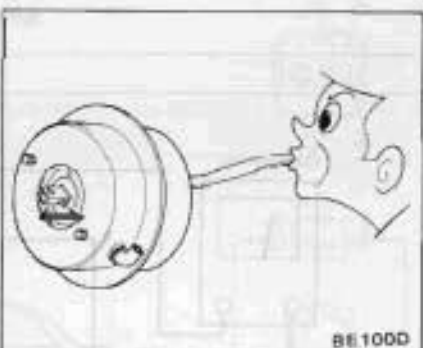
1. Disconnect battery ground cable
2. Remove relay cover.
3. Remove relay from relay fixing board.
4. To install relay, reverse the order of removal.

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

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

ACTUATOR

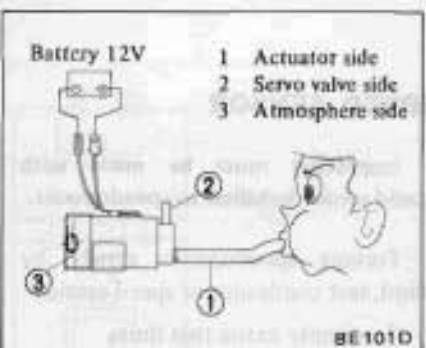
1. Visually check actuator for damage or deformation.
 2. Make sure that actuator moves smoothly without binding when diaphragm is pushed by hand.
 3. Apply vacuum to actuator. If diaphragm moves to full position, it is normal.
- Plug hose with vacuum applied. Make sure that actuator remains in full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



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

SOLENOID VALVE

1. Measure the resistance between terminals.
25 to 30 ohms O.K.
2. Check to be sure that the valve opens or closes by blowing air through port on actuator side.



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

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

COMPONENT PARTS INSPECTION

CAUTION:

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

SERVO VALVE

1. Measure the resistance between terminals.
25 to 30 ohms O.K.
2. Check to be sure that output vacuum of valve is proper.

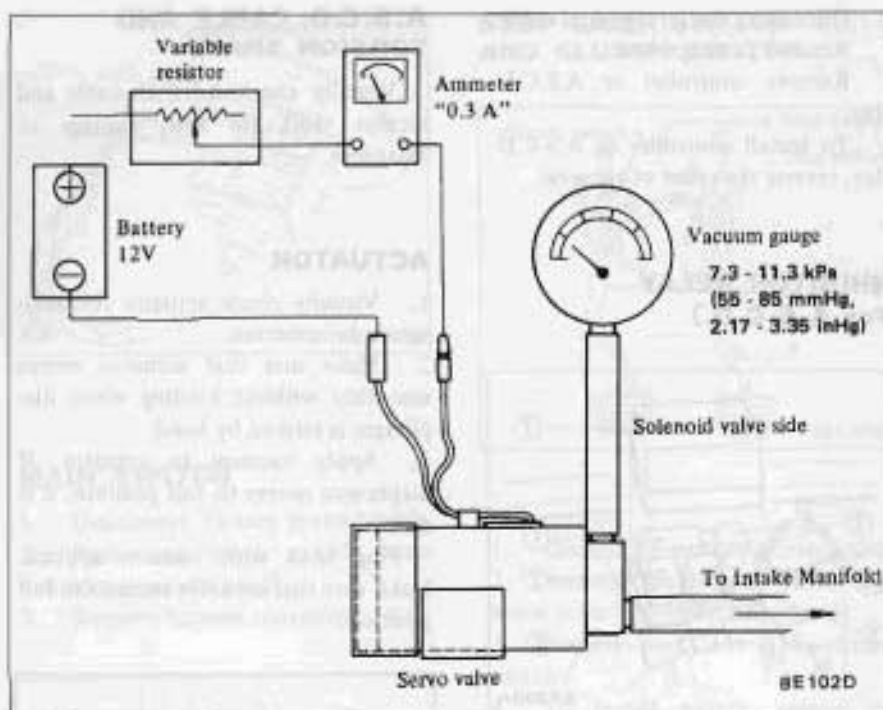
Note: This check should be performed with the valve installed on car.

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

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

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

- (4) Read vacuum gauge.
 7.3 - 11.3 kPa
 (55 - 85 mmHg,
 2.17 - 3.35 inHg) O.K.

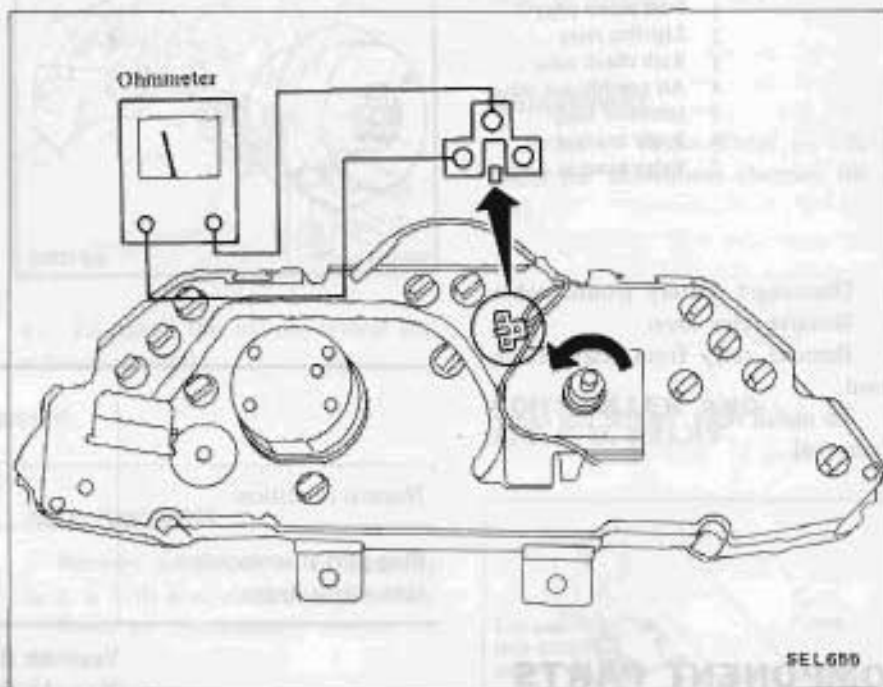


SPEED SENSOR

Inspection must be made with speed sensor installed to speedometer.

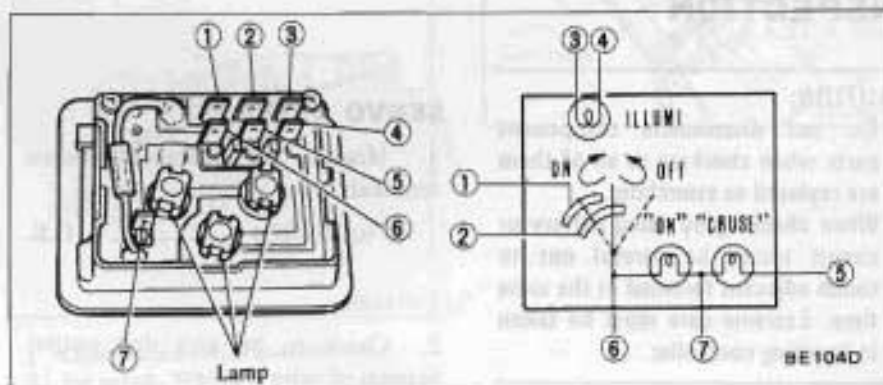
Turning speedometer slowly by hand, test continuity of speed sensor.

Continuity exists two times a turn O.K.



MAIN SWITCH

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

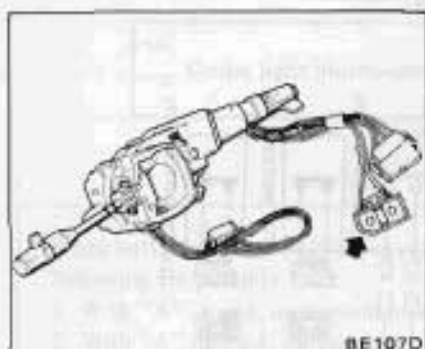


Switch position Check terminal	Normal	ON	OFF
① – ②	No	Yes	No
① – ⑥	No	Yes	No
② – ⑥	Yes	Yes	No
③ – ④	Yes	–	–
⑤ – ⑦	Yes	–	–
⑥ – ⑦	Yes	–	–

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

SET SWITCH

Test continuity through switch with an ohmmeter.

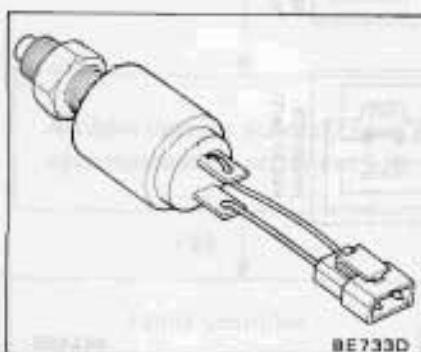


Normal condition	Depress switch
No	Yes

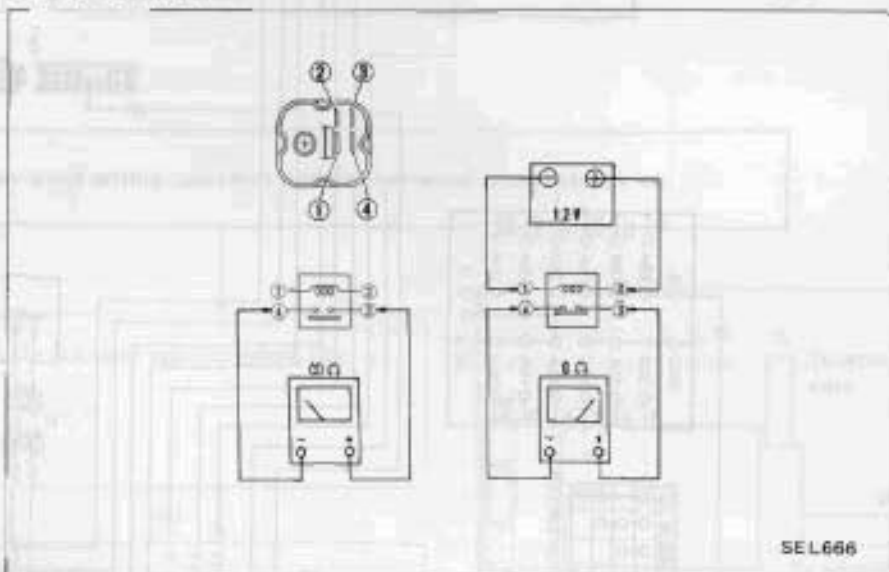
Yes: Continuity should exist.
No: Continuity should not exist.

CLUTCH AND STOP SWITCH

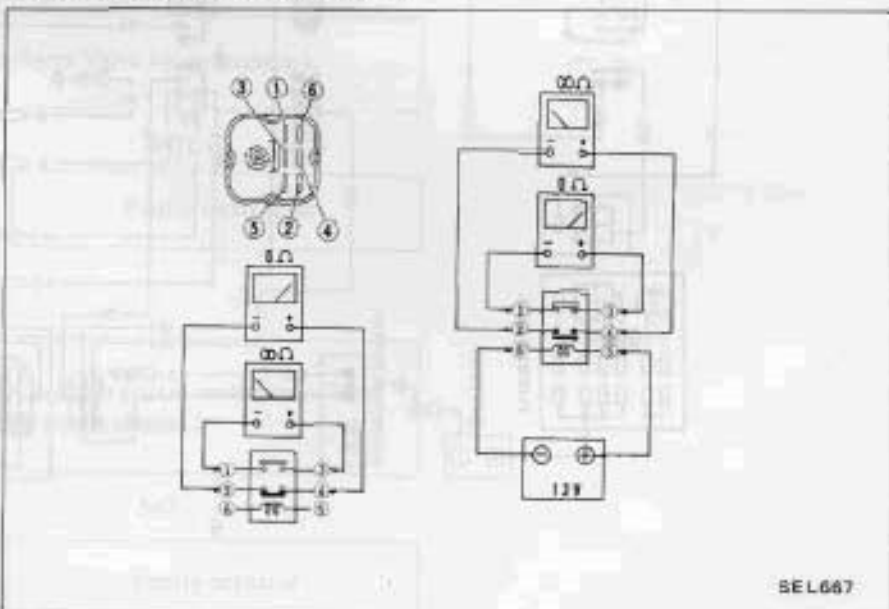
Test continuity through switch with an ohmmeter.



A.S.C.D. relay



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



CONTROLLER

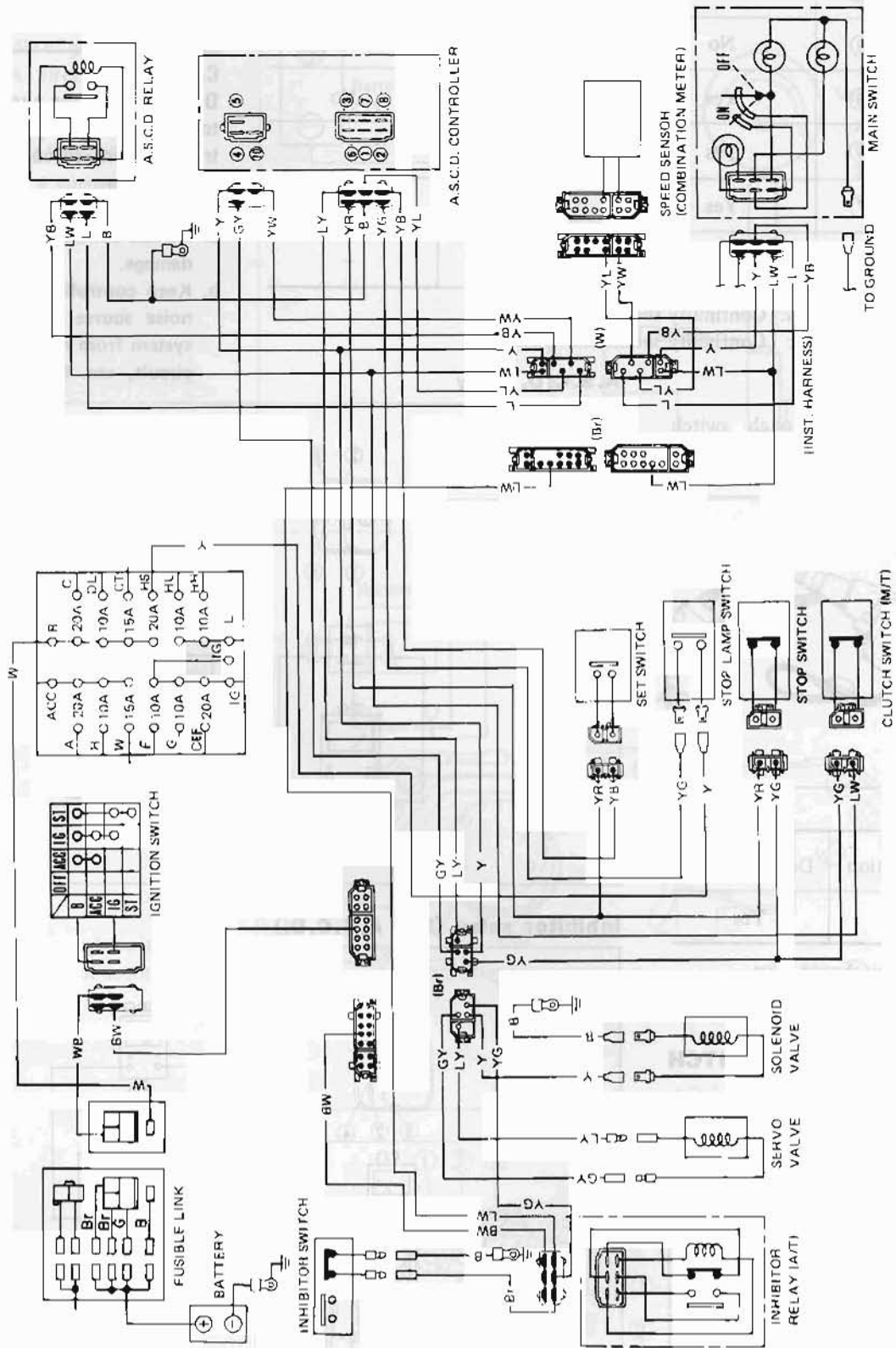
Controller must not be checked as a single part. Check controller for operation as a system, referring to Diagnosis.

CAUTION:

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

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

WIRING DIAGRAM AND TROUBLE DIAGNOSES



TEST CONDITIONS

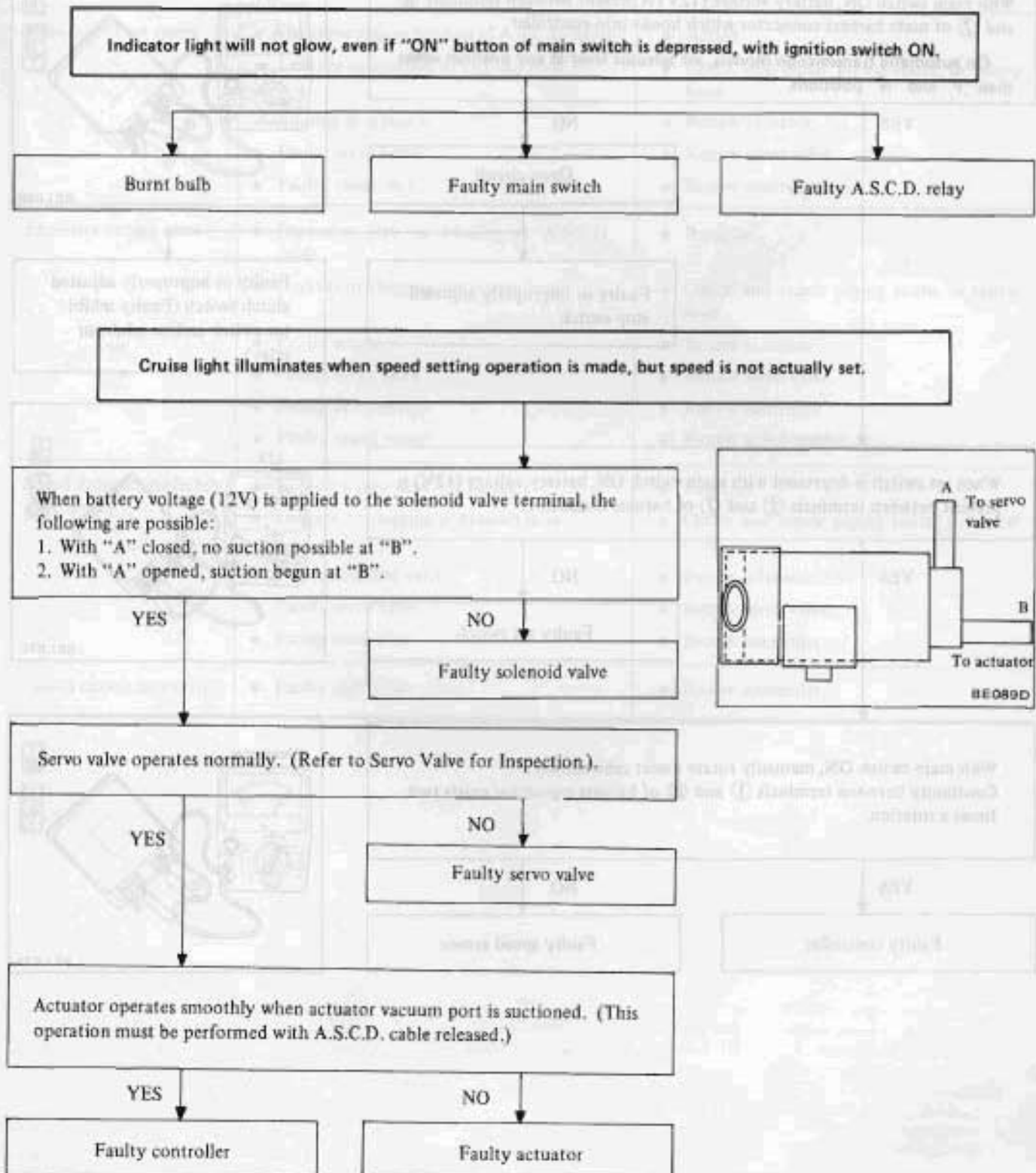
If a malfunction is found, be sure to check the following before performing the system test.

1. Turn signal operates. (Supply circuit is used in common with turn signal.)

2. All wiring harness connectors must be securely connected.
3. A.S.C.D. cable must be securely installed with proper adjustment.
4. Vacuum hoses must be properly attached with no abnormal conditions such as vacuum leakage, sharp bends or kinks.

DIAGNOSIS**WARNING:**

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



Cruise light will not glow, even if set switch is depressed and released at proper car speed between 60 to 120 km/h (37 to 75 MPH), with main switch ON (Speed not set in system).

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

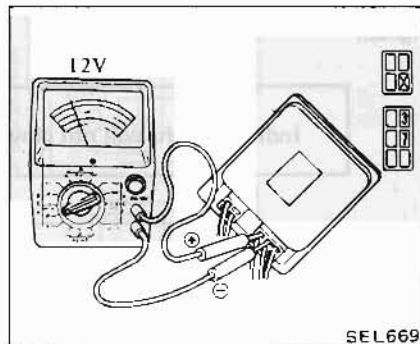
On automatic transmission models, set selector lever at any position other than "P" and "N" positions.

YES

NO

Open circuit

Faulty or improperly adjusted stop switch



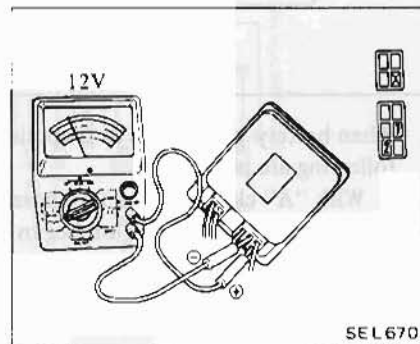
Faulty or improperly adjusted clutch switch (Faulty inhibitor switch and/or inhibitor relay).

When set switch is depressed with main switch ON, battery voltage (12V) is present between terminals ② and ⑦ of harness connector.

YES

NO

Faulty set switch



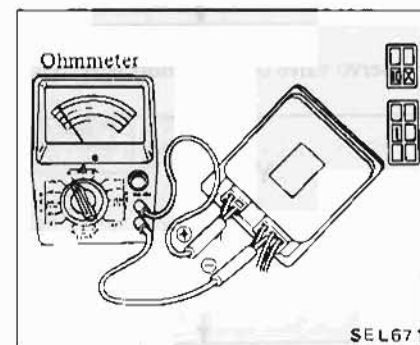
With main switch ON, manually rotate meter cable slowly. Continuity between terminals ① and ⑩ of harness connector exists two times a rotation.

YES

NO

Faulty controller

Faulty speed sensor

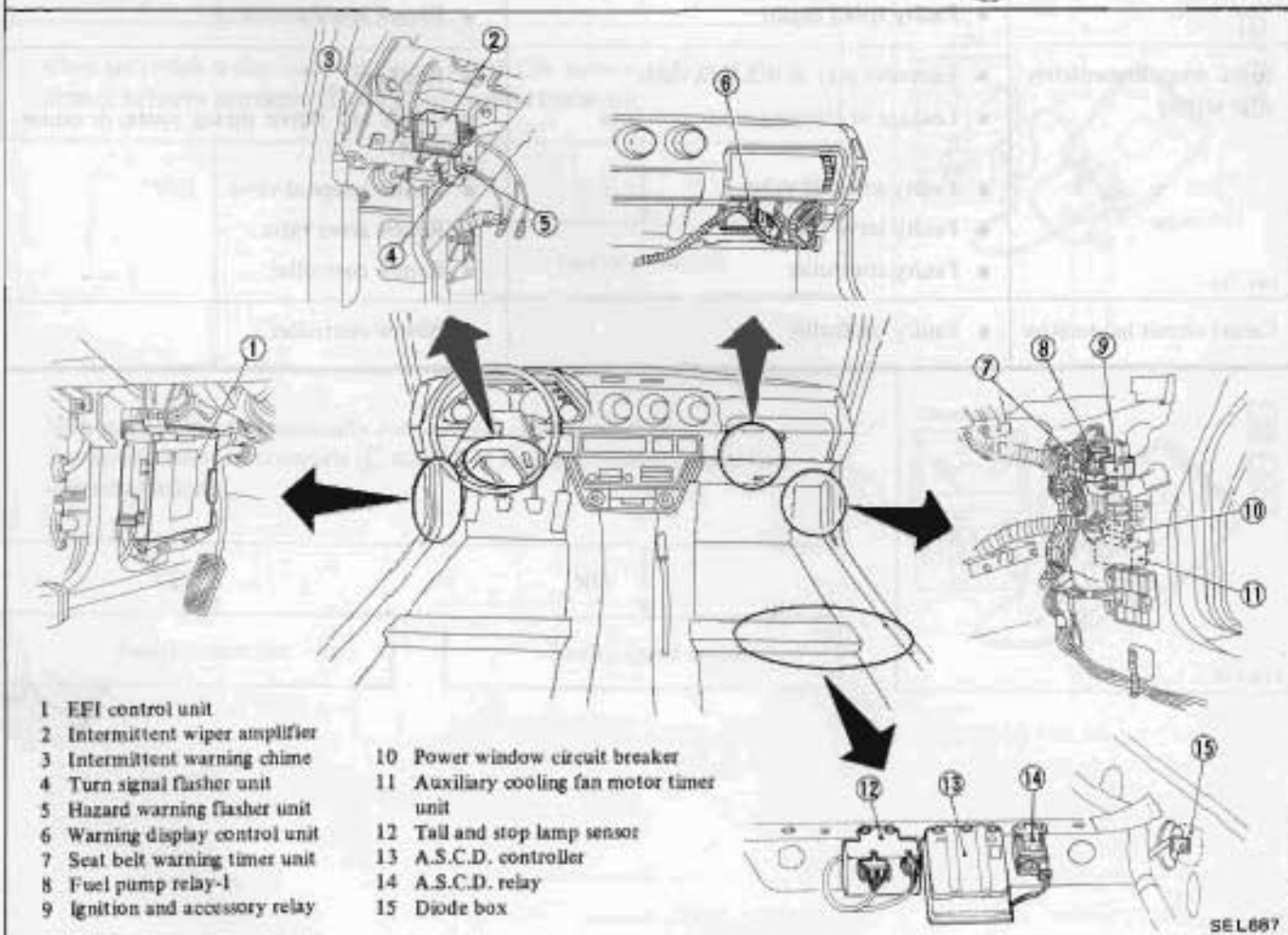
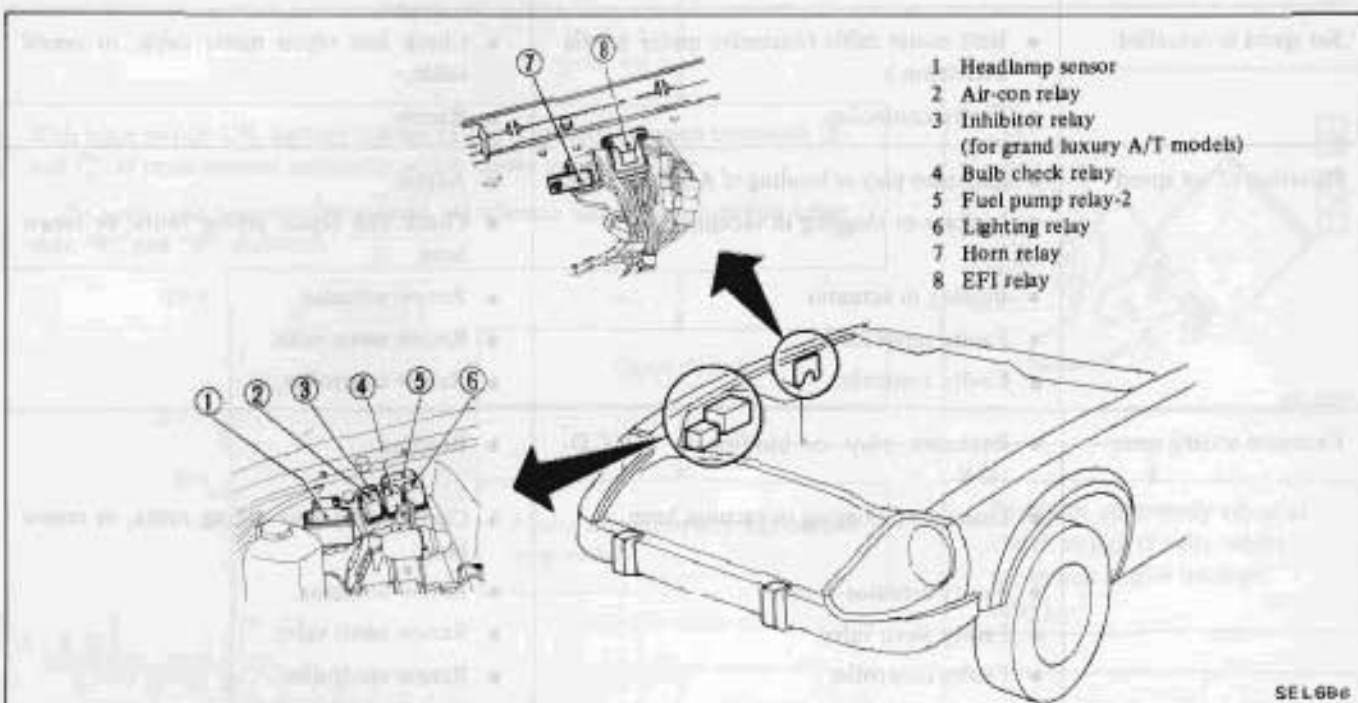


Other malfunctions and faults

Condition	Probable cause	Corrective action
Set speed is cancelled.	<ul style="list-style-type: none"> ● Bent meter cable (excessive meter needle deflection.) ● Faulty controller 	<ul style="list-style-type: none"> ● Check and repair meter cable, or renew cable. ● Renew.
Pulsation of set speed	<ul style="list-style-type: none"> ● Excessive play or binding of A.S.C.D. cable ● Leakage or clogging in vacuum hose ● Binding in actuator ● Faulty servo valve ● Faulty controller 	<ul style="list-style-type: none"> ● Adjust. ● Check and repair piping route, or renew hose. ● Renew actuator. ● Renew servo valve. ● Renew controller.
Excessive setting error	<ul style="list-style-type: none"> ● Excessive play or binding in A.S.C.D. cable ● Leakage or clogging in vacuum hose ● Faulty actuator ● Faulty servo valve ● Faulty controller ● Faulty speed sensor 	<ul style="list-style-type: none"> ● Readjust. ● Check and repair piping route, or renew hose. ● Renew actuator. ● Renew servo valve. ● Renew controller. ● Renew speedometer
Speed drops immediately after setting	<ul style="list-style-type: none"> ● Excessive play in A.S.C.D. cable ● Leakage or clogging in vacuum hose ● Faulty solenoid valve ● Faulty servo valve ● Faulty controller 	<ul style="list-style-type: none"> ● Readjust. ● Check and repair piping route, or renew hose. ● Renew solenoid valve. ● Renew servo valve. ● Renew controller.
Cancel circuit inoperative	<ul style="list-style-type: none"> ● Faulty controller 	<ul style="list-style-type: none"> ● Renew controller.

LOCATION OF ELECTRICAL UNIT

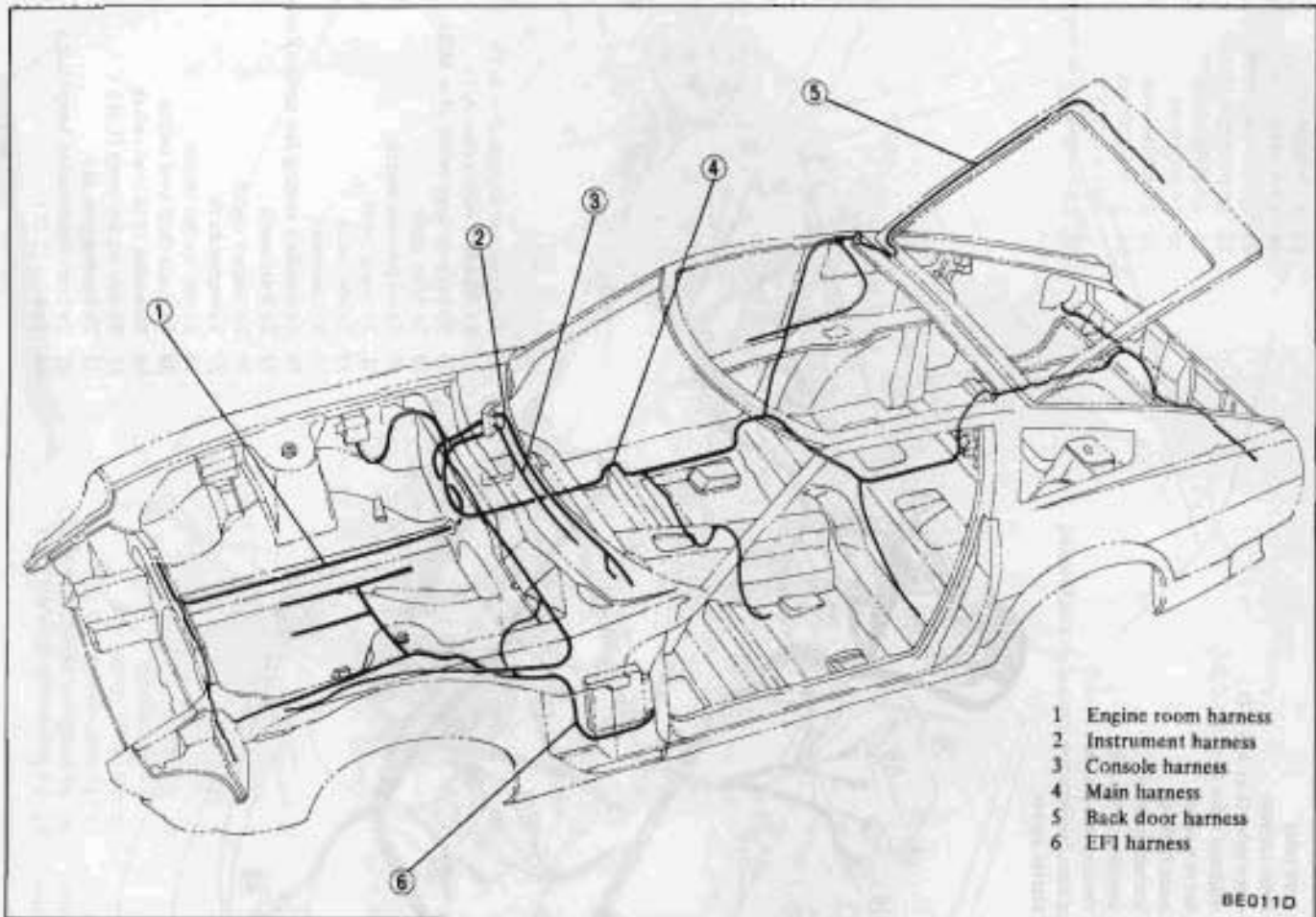
CAUTION: Before starting to work, be sure to turn ignition switch "OFF" and then disconnect battery ground cable.



WIRING

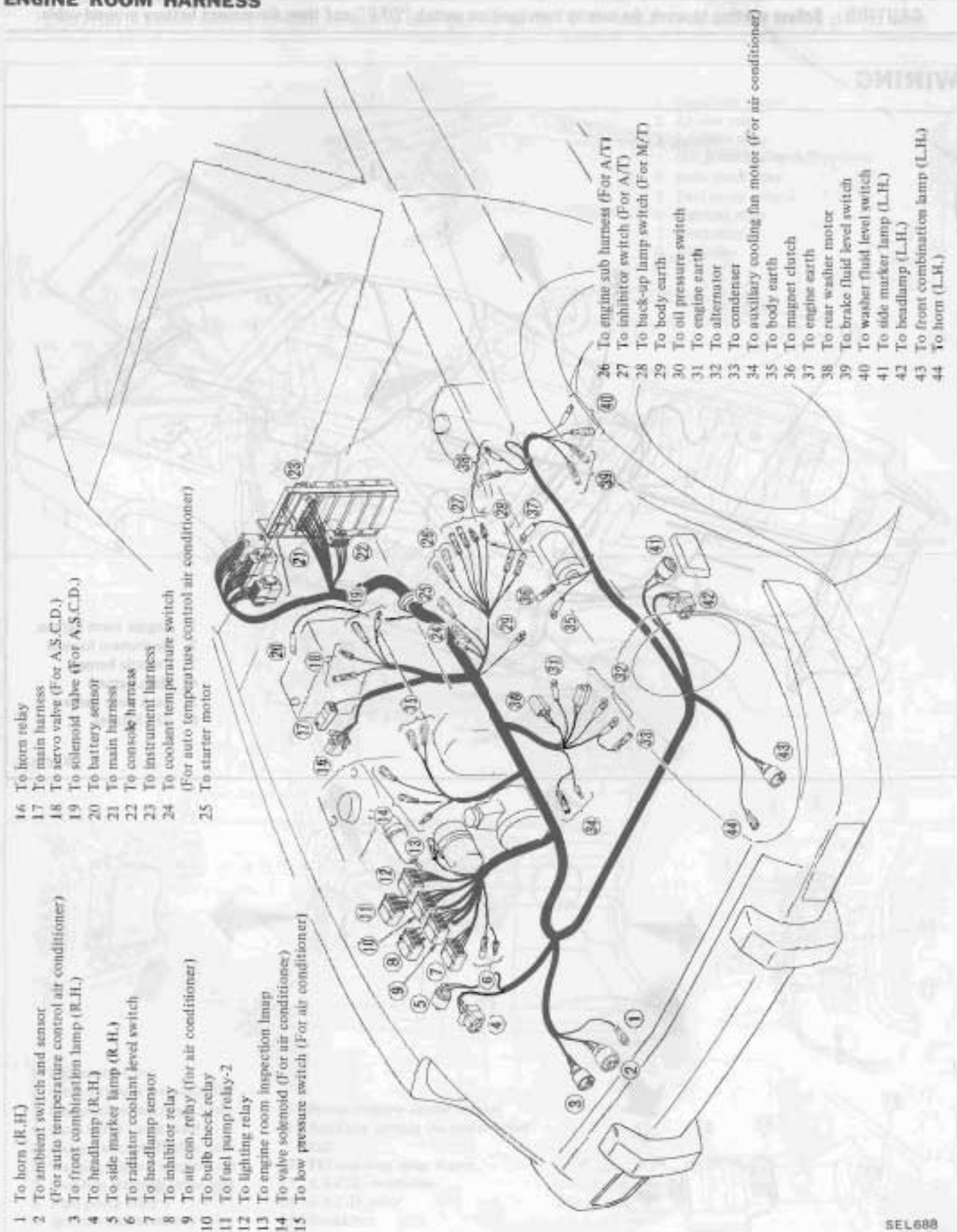
CAUTION: Before starting to work, be sure to turn ignition switch "OFF" and then disconnect battery ground cable.

WIRING



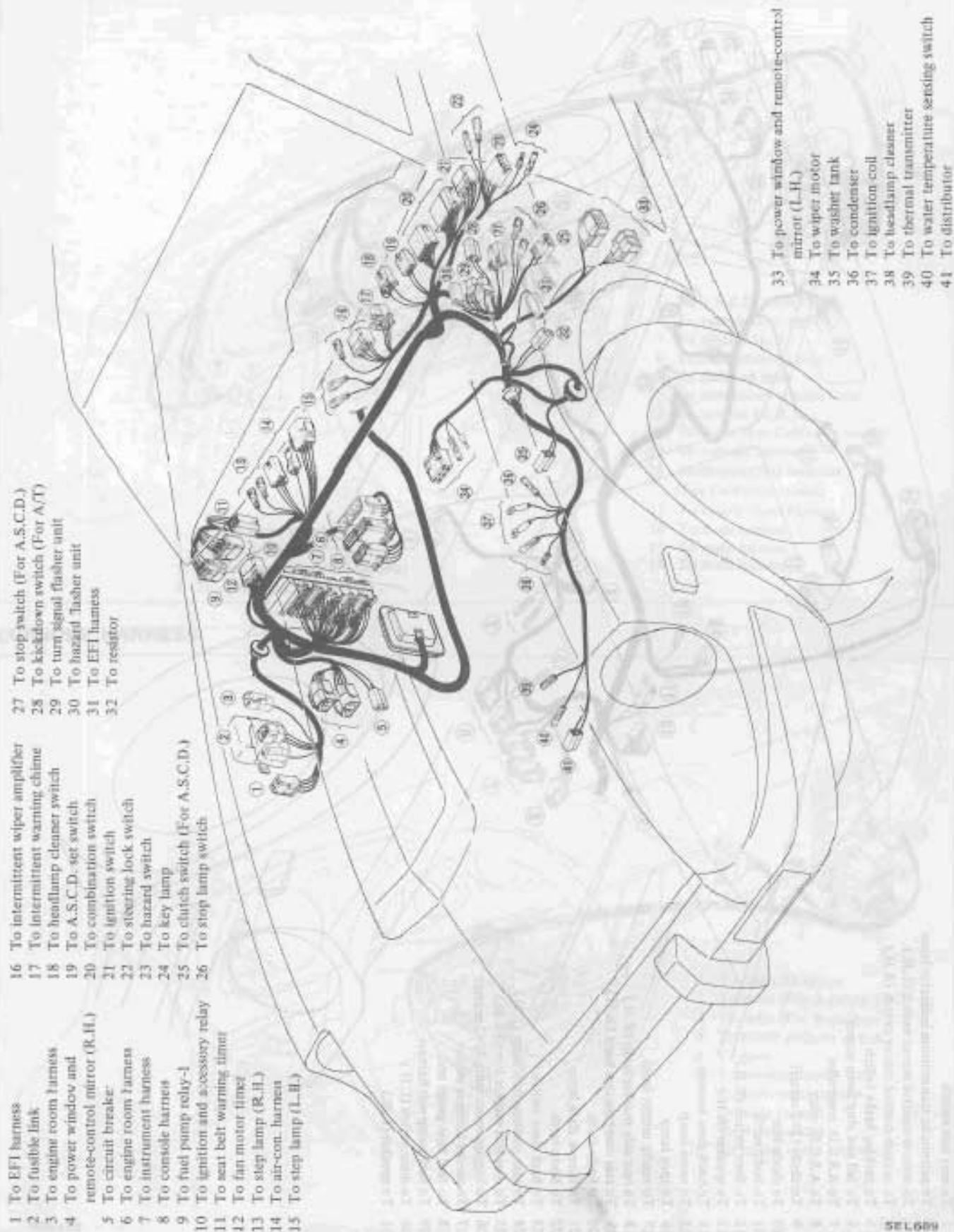
WIRING HARNESS

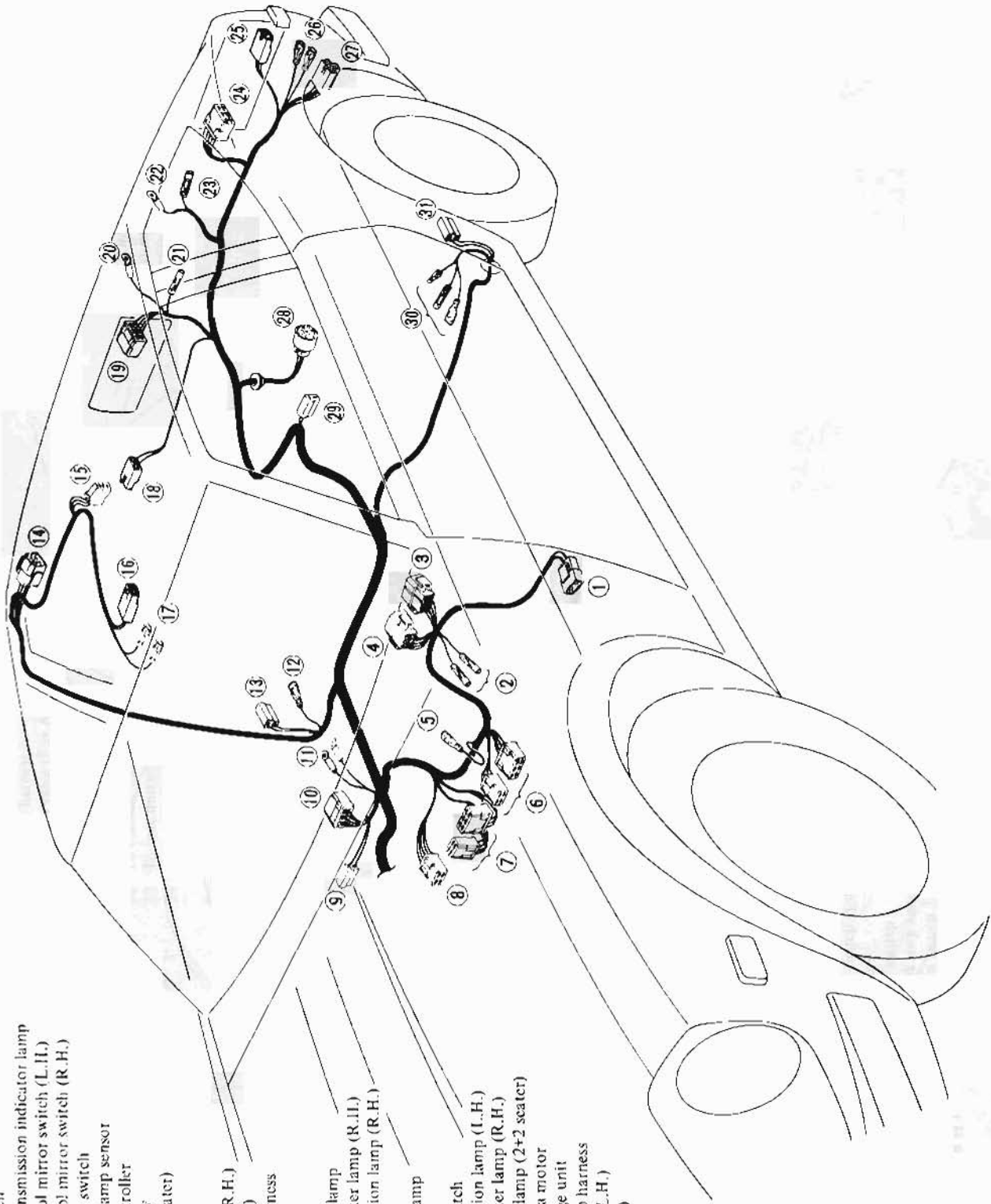
ENGINE ROOM HARNESS



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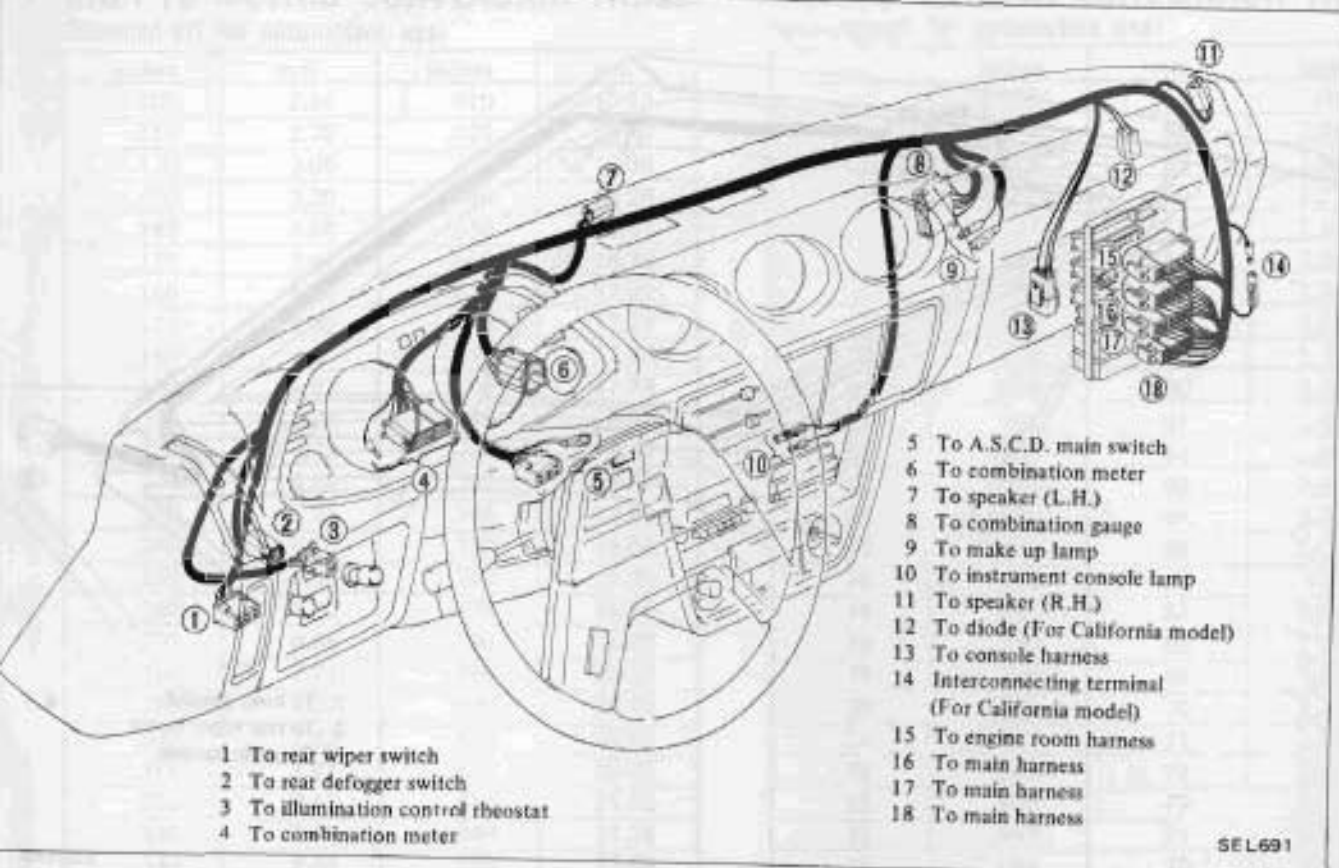
MAIN HARNESS



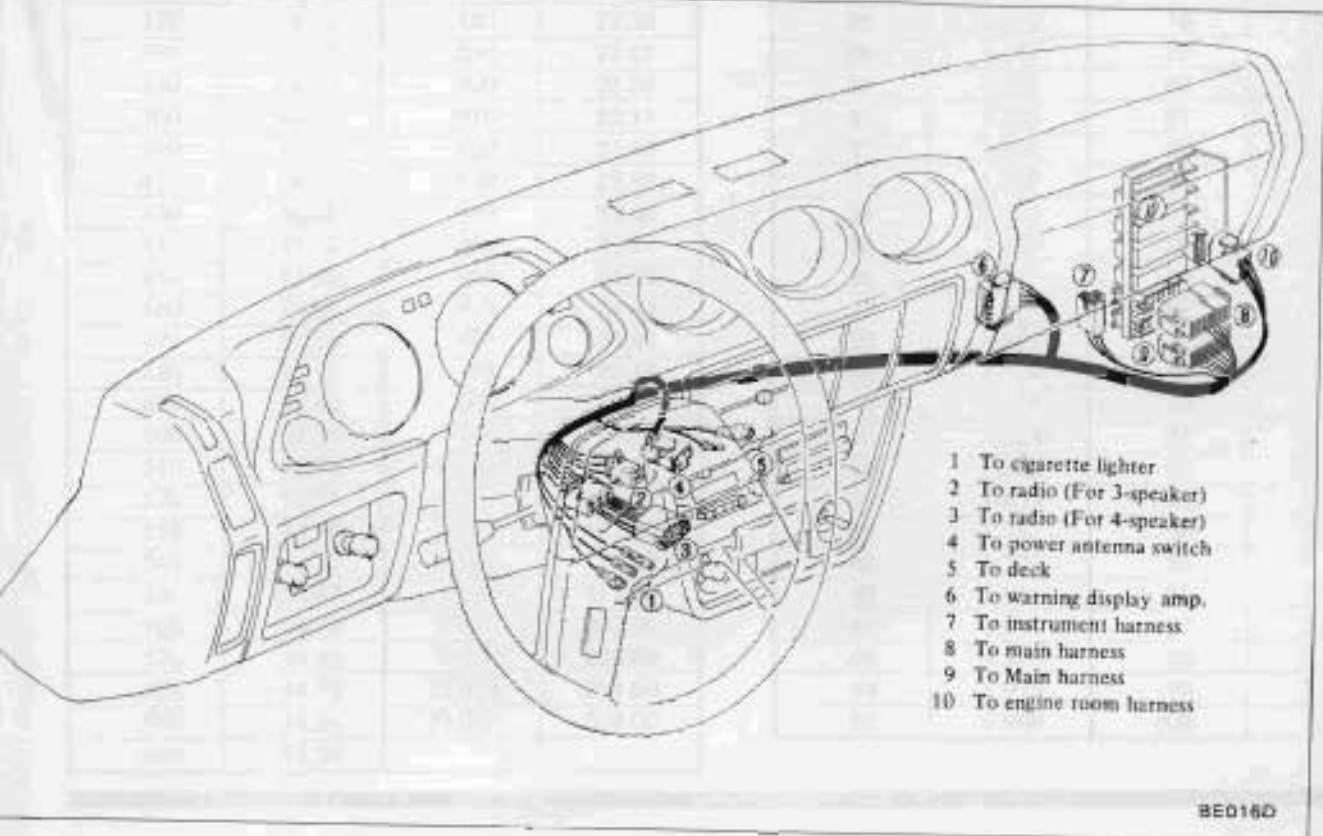


- 1 To seat belt switch
- 2 To automatic transmission indicator lamp
- 3 To remote-control mirror switch (L.H.)
- 4 To remote-control mirror switch (R.H.)
- 5 To parking brake switch
- 6 To tail and stop lamp sensor
- 7 To A.S.C.D. controller
- 8 To A.S.C.D. relay
- 9 To diode (2+2 scater)
- 10 To diode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

INSTRUMENT HARNESS



CONSOLE HARNESS



BACK DOOR HARNESS

