ELECTRICAL SYSTEM

SECTION EL

FIND

When you read wiring diagrams
- Read GI section, "HOW TO READ WIRING DIAGRAMS".

CONTENTS

WIRING DIAGRAM REFERENCE CHART

E C C S	EF & EC SECTION	POWER WINDOW, DOOR LOCK AND MIRROR	BF SECTION
LOCK-UP CONTROL SYSTEM	AT SECTION	HEATER AND AIR CONDITIONER	HA SECTION
ADJUSTABLE SHOCK ABSORBER	FA SECTION		

EL

HARNESS CONNECTOR

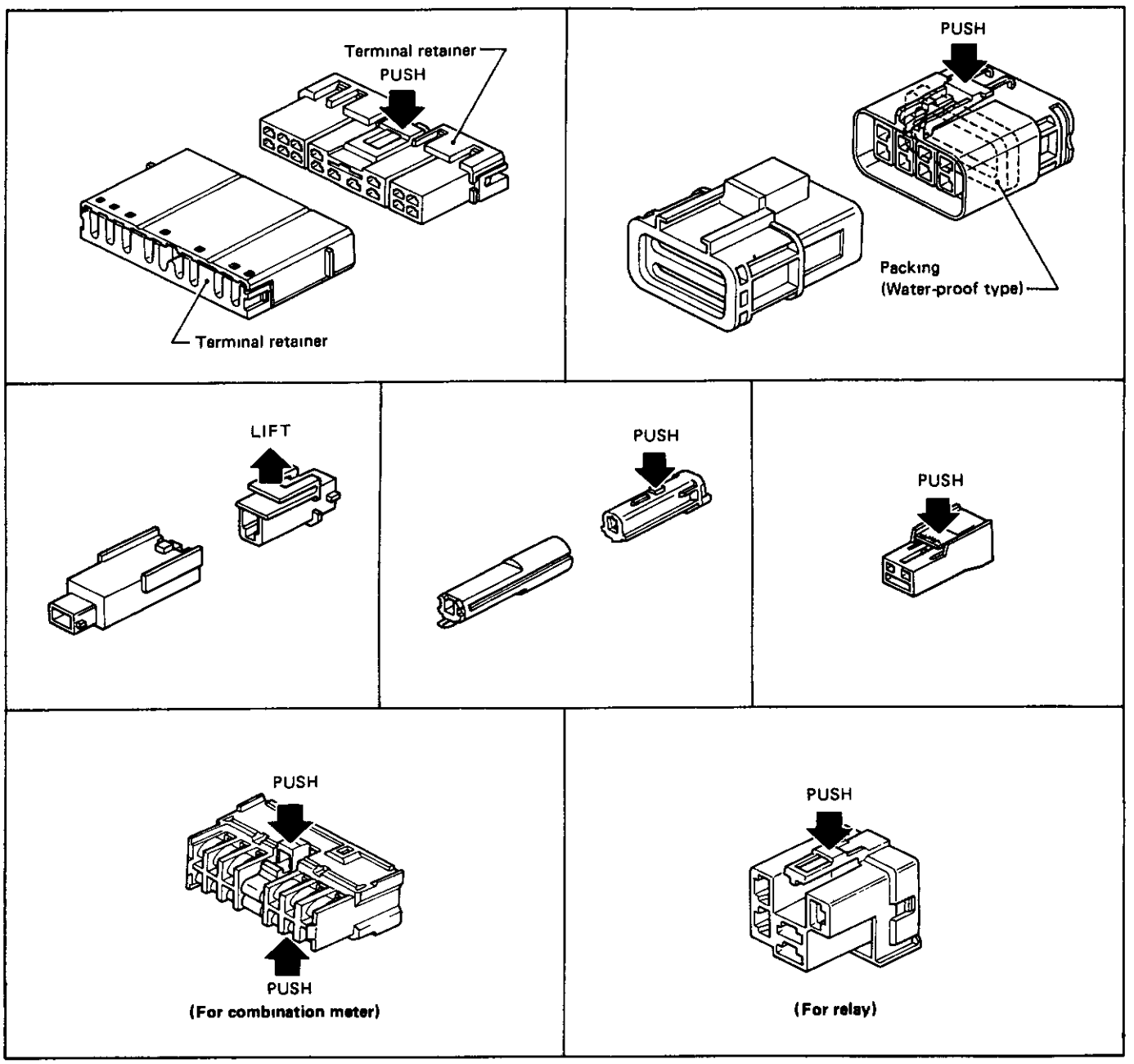
Description

HARNESS CONNECTOR

- All harness connectors are designed so that they do not become loose or disconnected accidentally.
- The connector can be disconnected by pushing or lifting the locking section.

CAUTION:
Do not pull the harness when disconnecting the connector.

[Example]

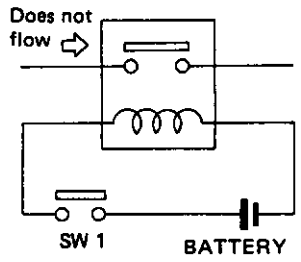
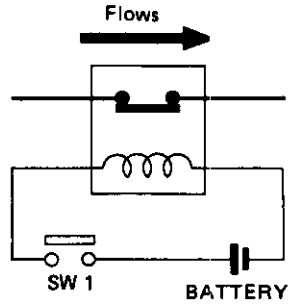
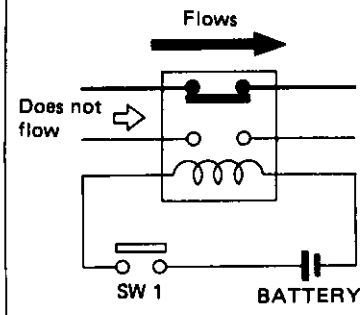
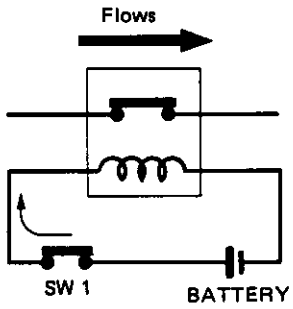
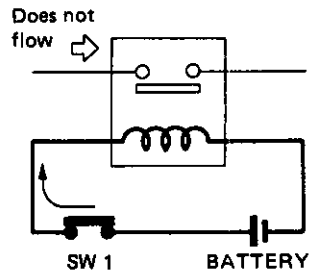
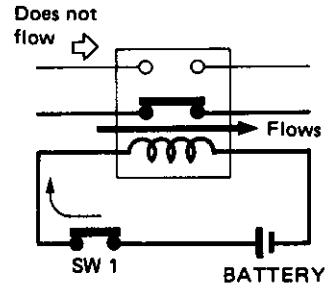


SEL769D

STANDARDIZED RELAY

Normal Open, Normal Closed and Mixed Type Relays

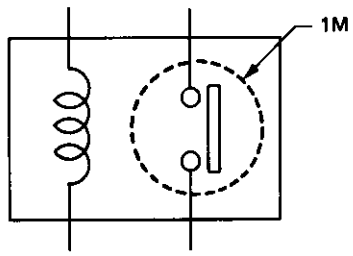
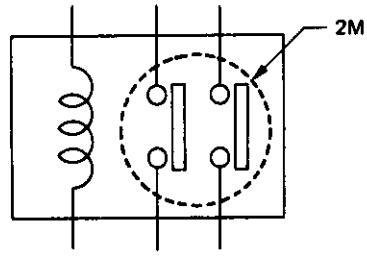
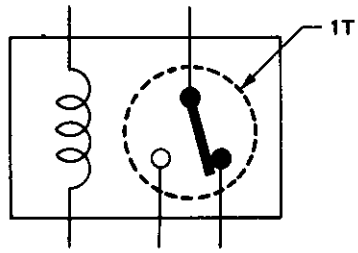
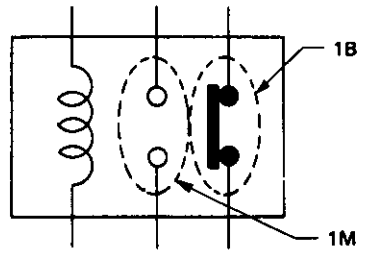
Relays can mainly be divided into three types normal open, normal closed and mixed type relays

	NORMAL OPEN RELAY	NORMAL CLOSED RELAY	MIXED TYPE RELAY
SW 1 "OFF"			
SW 1 "ON"			

SEL881H

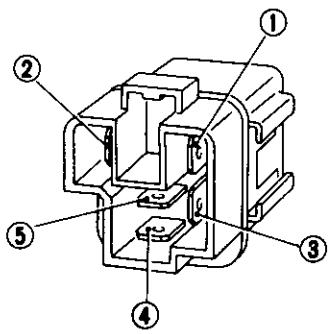
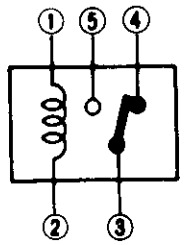
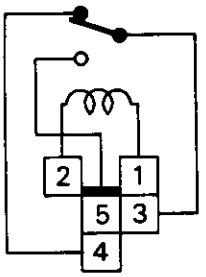
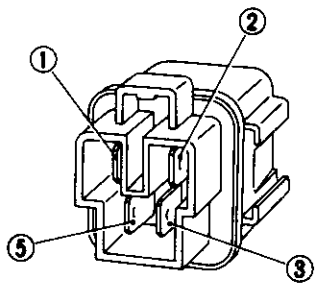
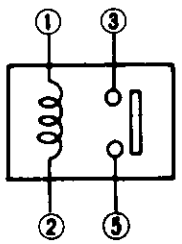
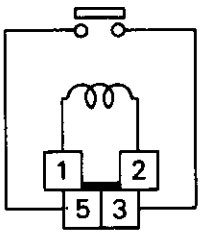
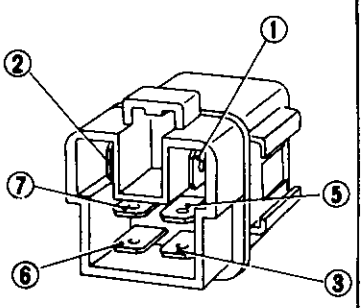
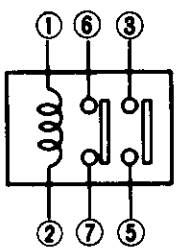
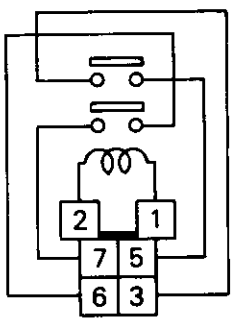
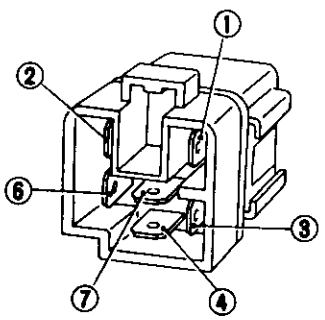
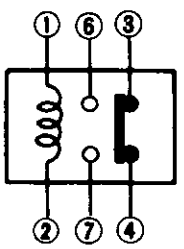
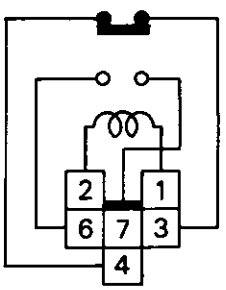
Type of Standardized Relays

1M	1 Make	2M	2 Make
1T	1 Transfer	1M 1B	1 Make 1 Break

1M	2M
	
1T	**1M 1B**
	

SEL882H

STANDARDIZED RELAY

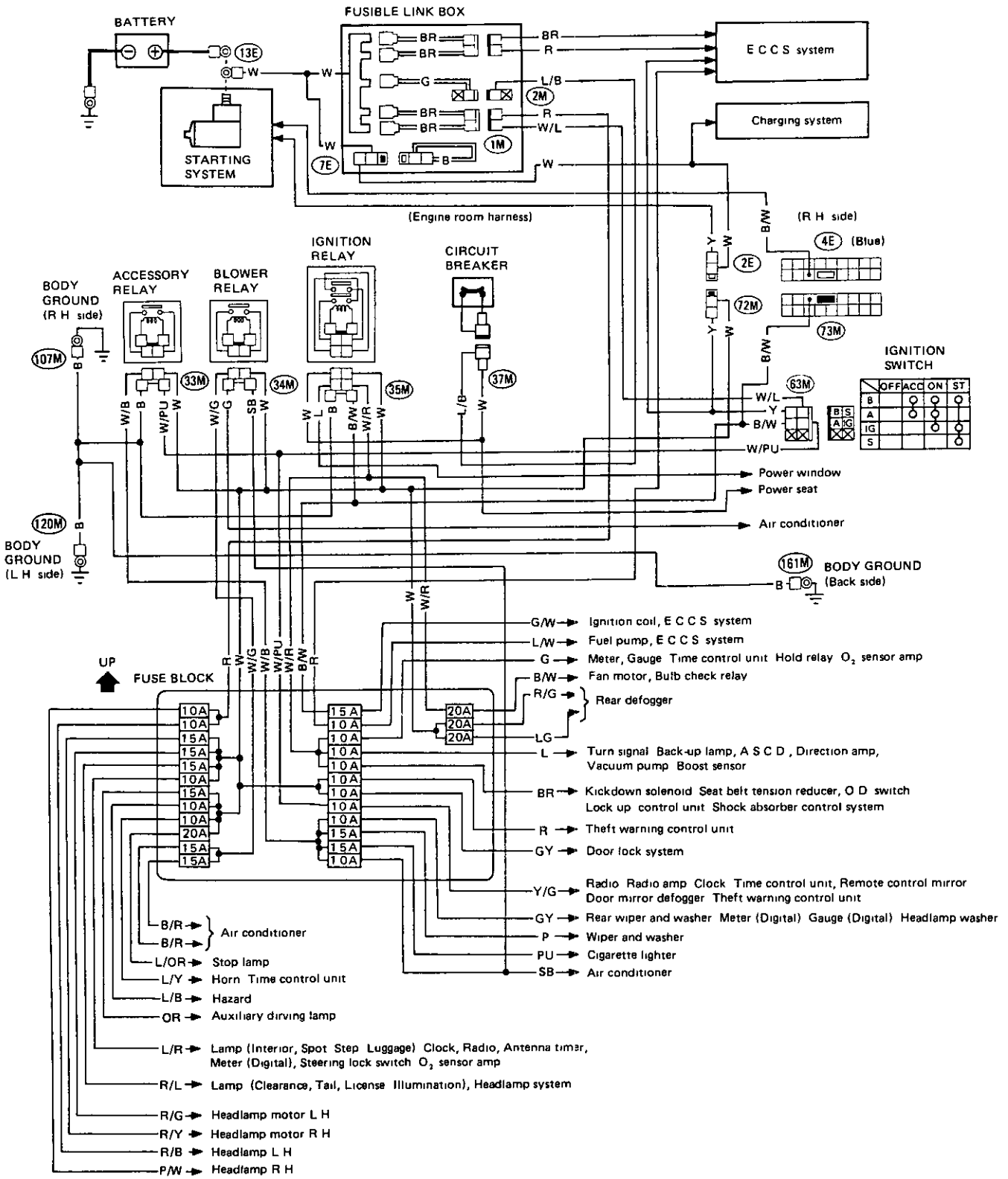
Type	Outer view	Circuit	Connector symbol and connection	Case color
1T				BLACK
1M				BLUE
2M				BROWN
1M 1B				GRAY

SEL883H

POWER SUPPLY ROUTING

Wiring Diagram

TURBO MODELS

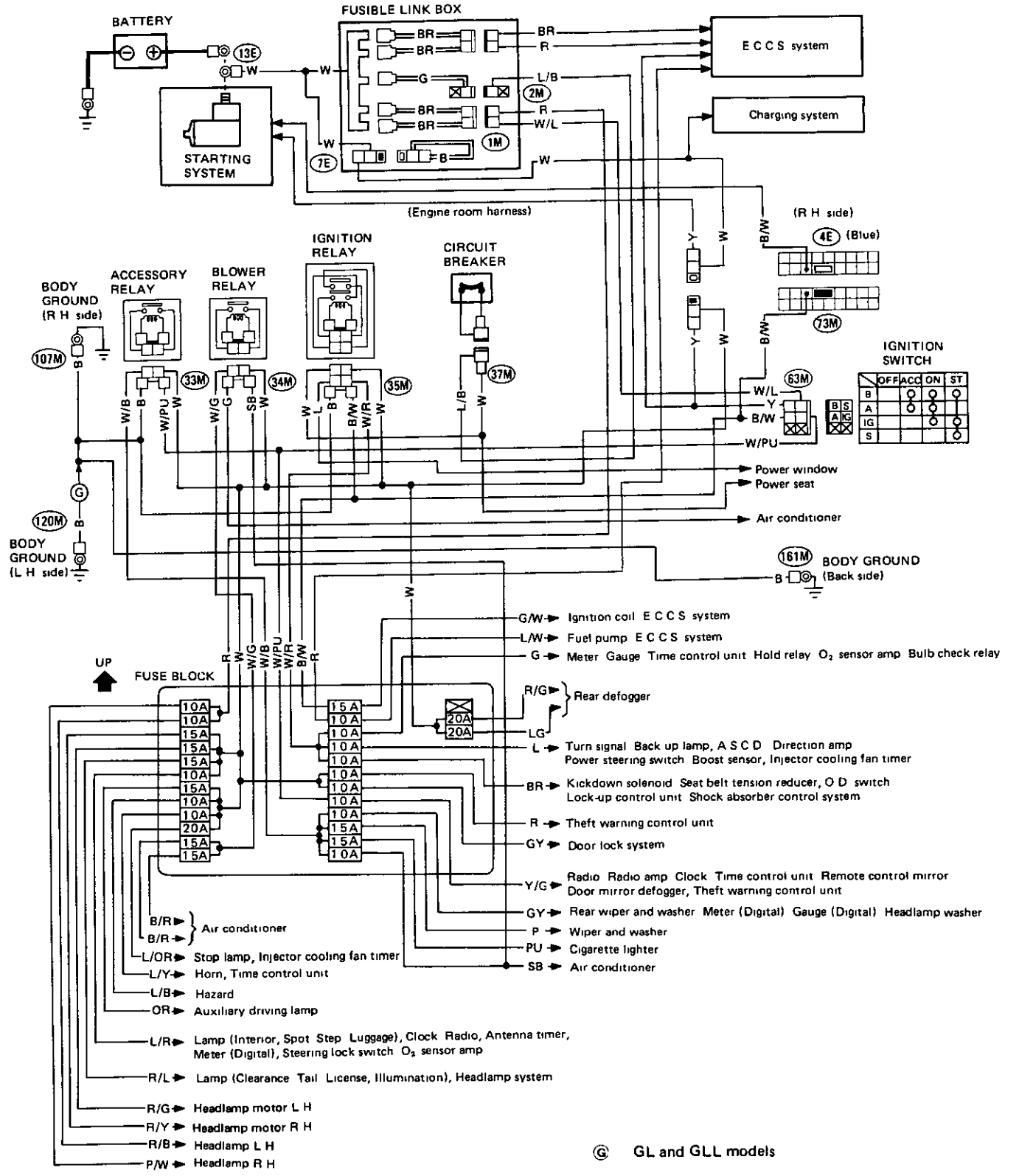


SEL078J

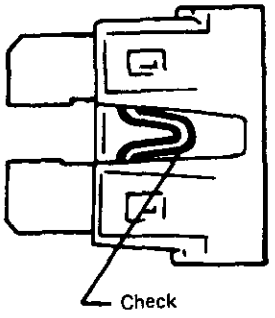
POWER SUPPLY ROUTING

Wiring Diagram (Cont'd)

NON-TURBO MODELS



Fuse

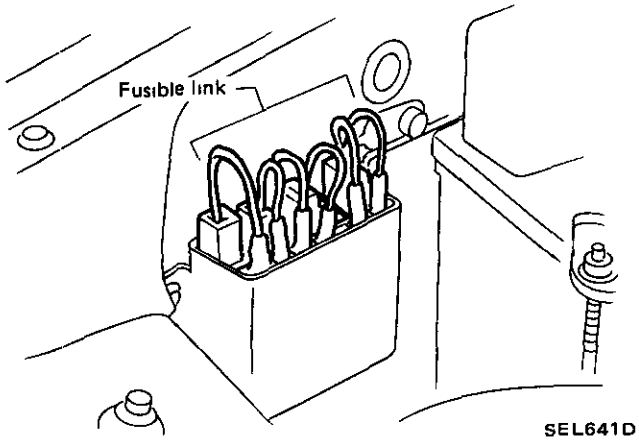


SEL276

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 Do not install fuse in oblique direction, always insert it into fuse holder properly.
d. Remove fuse for clock if vehicle is not used for a long period of time.

Fusible Link

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



SEL641D

CAUTION.

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

Note

CAUTION:

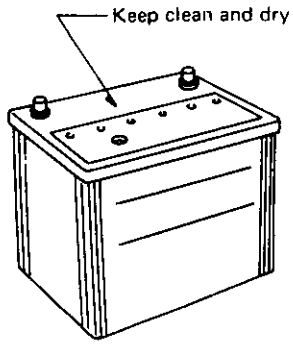
a. If it becomes necessary to start the engine with a booster battery and jumper cables, use a 12-volt booster battery.
b. After connecting battery cables, ensure that they are tightly clamped to battery terminals for good contact
c Never add distilled water through the hole used to check specific gravity

How to Handle Battery

METHODS OF PREVENTING OVER-DISCHARGE

The following precautions must be taken to prevent over-discharging a battery

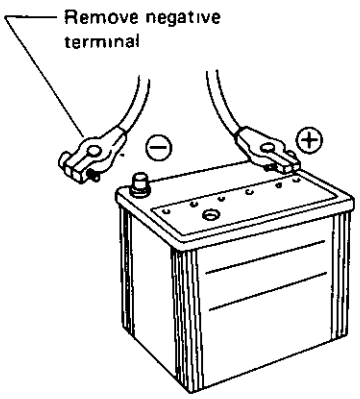
- The battery surface (particularly its top) should always be kept clean and dry



SEL711E

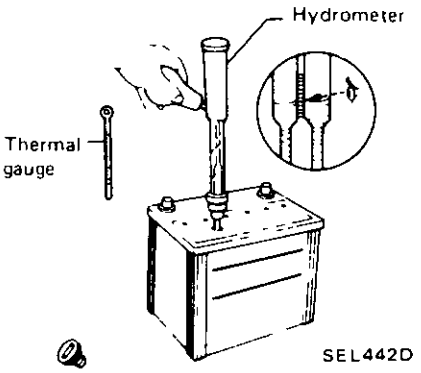
If the top surface of a battery is wet with electrolyte or water, leakage current will cause the battery to discharge Always keep the battery clean and dry

- When the vehicle is not going to be used over a long period of time, disconnect the negative battery terminal (If the vehicle has an extended storage switch, turn it off)



SEL712E

- Check the charge condition of the battery



SEL442D

Periodically check the specific gravity of the electrolyte Keep a close check on charge condition to prevent over-discharge

CHECKING ELECTROLYTE LEVEL

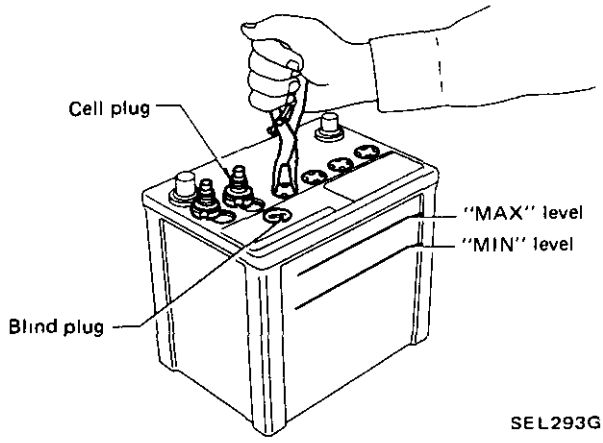
WARNING

Do not allow battery fluid to come in contact with skin, eyes, fabrics, or painted surfaces. After touching a battery, do not touch or rub your eyes until you have thoroughly washed your hands. If the acid contacts the eyes, skin or clothing, immediately flush with water for 15 minutes and seek medical attention

Normally the battery does not require additional water However, when the battery is used under severe conditions, adding distilled water may be necessary during the battery life
To maintain serviceability, a perforated line has been added to the battery caution label.

How to Handle Battery (Cont'd)

- Remove the cell plug using a suitable tool
- Add distilled water up to the MAX level

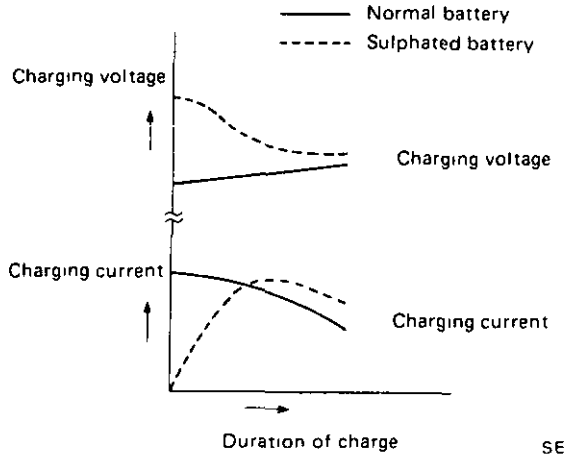


SEL293G

SULPHATION

When a battery has been left unattended for a long period of time and has a specific gravity of less than 1 100, it will be completely discharged, resulting in sulphation on the cell plates

Compared with a battery discharged under normal conditions, the current flow in a "sulphated" battery is not as smooth although its voltage is high during the initial stage of charging, as shown in the following figure



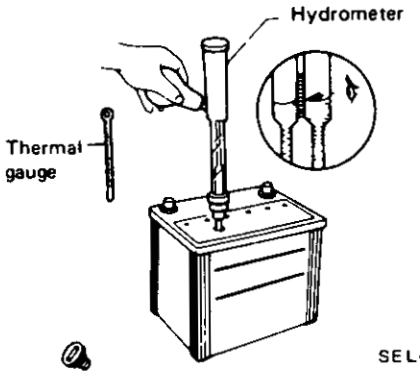
SEL709E

Specific Gravity Check

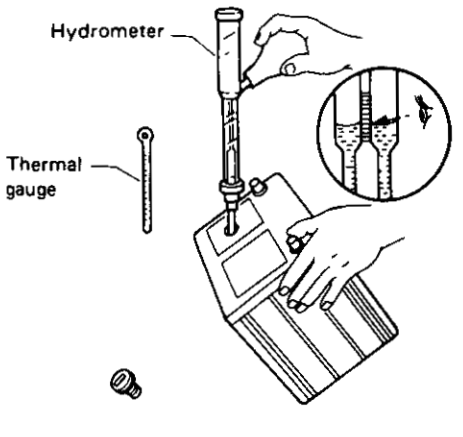
SPECIFIC GRAVITY CHECK

1 Read hydrometer and thermal gauge indications at eye level

Read top level with scale.



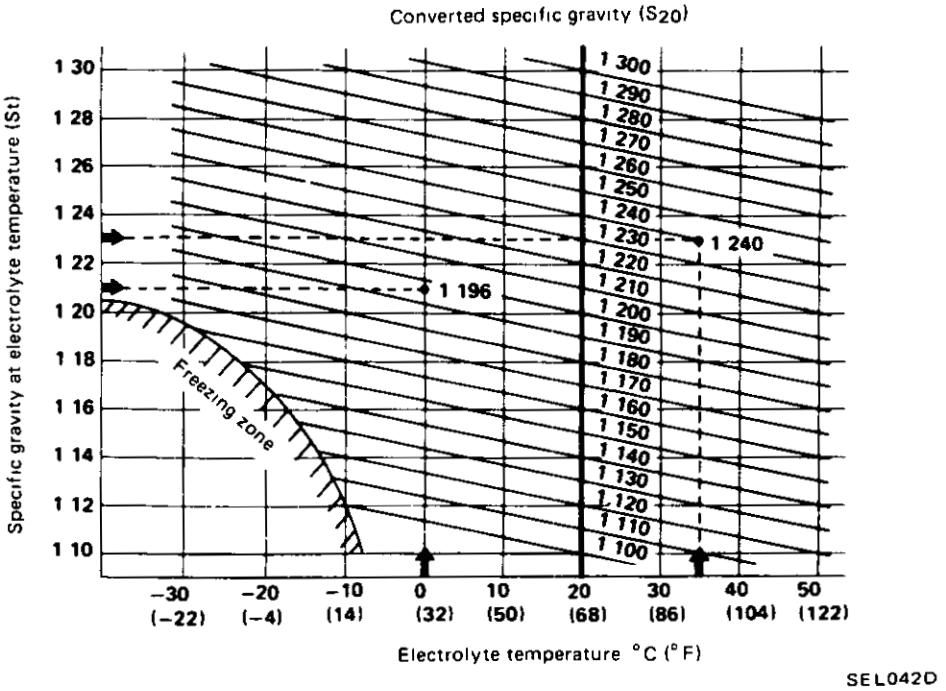
- When electrolyte level is too low, tilt battery case to raise it for easy measurement



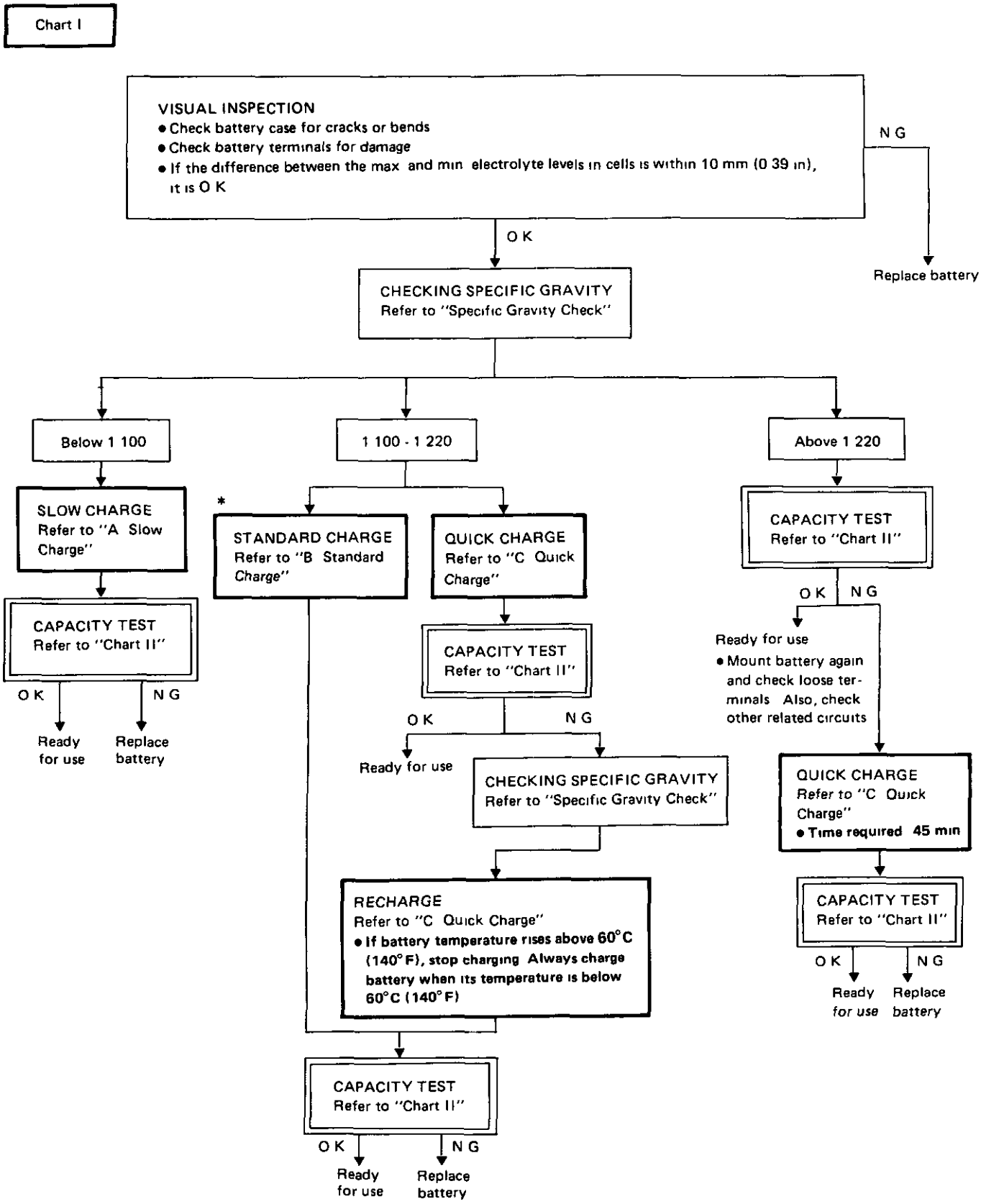
2 Convert into specific gravity at 20°C (68°F)

Example

- When electrolyte temperature is 35°C (95°F) and specific gravity of electrolyte is 1 230, converted specific gravity at 20°C (68°F) is 1 240
- When electrolyte temperature is 0°C (32°F) and specific gravity of electrolyte is 1 210, converted specific gravity at 20°C (68°F) is 1 196



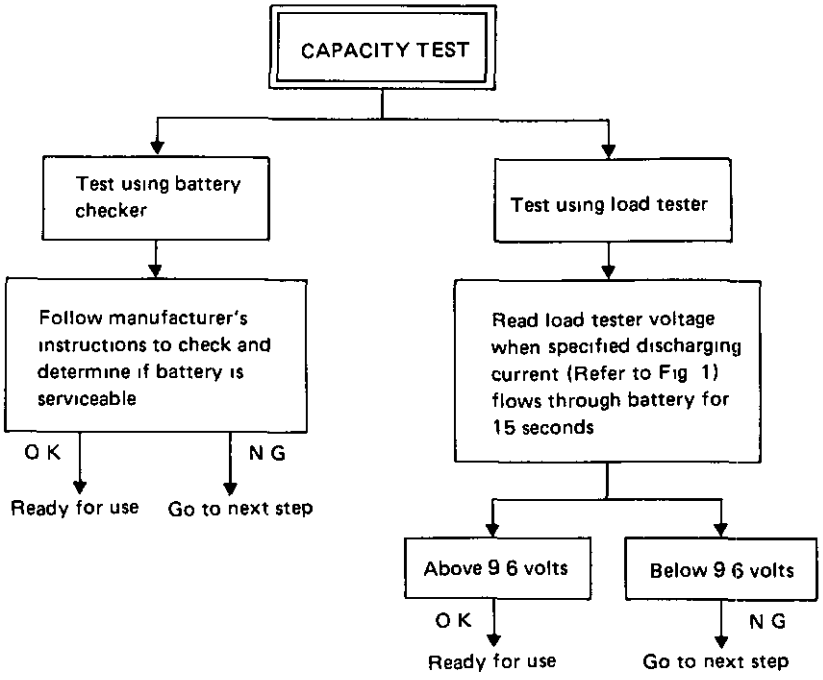
M.F. Battery Test and Charging Chart



• "STANDARD CHARGE" is recommended in case that the vehicle is in storage after charging

M.F. Battery Test and Charging Chart (Cont'd)

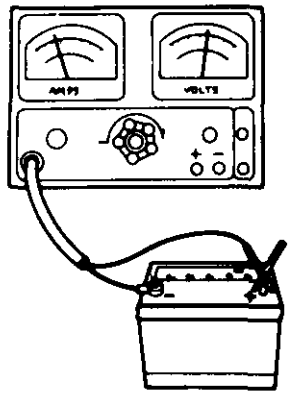
Chart II



- Check battery type and determine the specified current using the following table

Fig 1 DISCHARGING CURRENT (Load tester)

Type	Current (A)
28B19R(L)-MF	90
34B19R(L)-MF	99
46B24R(L) MF	135
55B24R(L)-MF	135
50D23R(L)-MF	150
55D23R(L)-MF	180
65D26R(L)-MF	195
80D26R(L) MF	195
75D31R(L)-MF	210
95D31R(L)-MF	240



SEL697B

M.F. Battery Test and Charging Chart (Cont'd)

A SLOW CHARGE

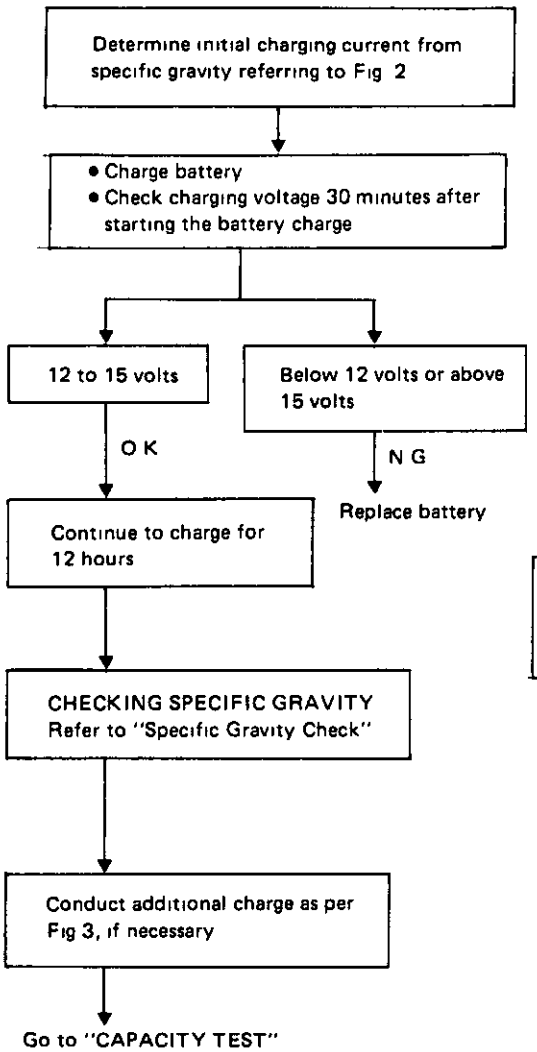
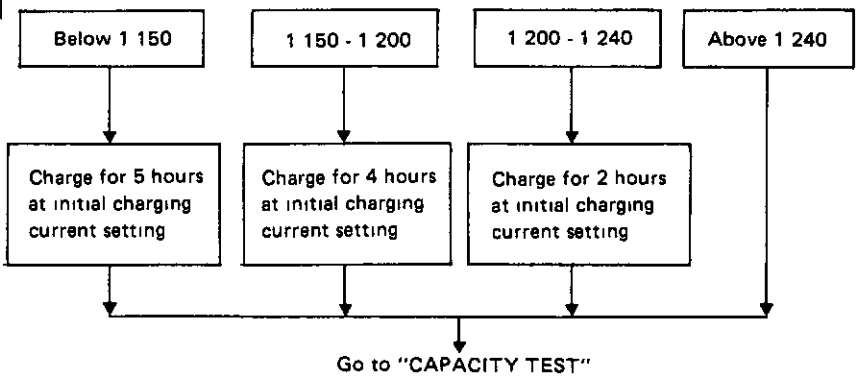


Fig 2 INITIAL CHARGING CURRENT SETTING (Slow charge)

BATTERY TYPE / CONVERTED SPECIFIC GRAVITY	28B19R(L)-MF 34B19R(L)-MF	46B24R(L)-MF 55B24R(L)-MF	50D23R(L)-MF 55D23R(L)-MF	65D26R(L)-MF 80D26R(L)-MF	75D31R(L)-MF	95D31R(L)-MF
Below 1.100	4.0 (A)	5.0 (A)	7.0 (A)	8.0 (A)	9.0 (A)	10.0 (A)

- Check battery type and determine the specified current using the table shown above
- After starting charging, adjustment of charging current is not necessary

Fig 3 ADDITIONAL CHARGE (Slow charge)



CAUTION:

a. Set charging current to value specified in Fig. 2. If charger is not capable of producing specified current value, set its charging current as close to that value as possible.
b. Keep battery away from open flame while it is being charged.
c. When connecting charger, connect leads first, then turn on charger. Do not turn on charger first, as this may cause a spark.
d. If battery temperature rises above 60°C (140°F), stop charging. Always charge battery when its temperature is below 60°C (140°F).

M.F. Battery Test and Charging Chart (Cont'd)

B STANDARD CHARGE

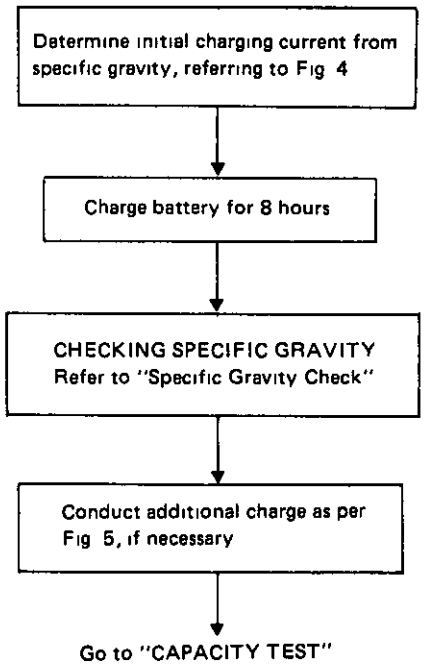
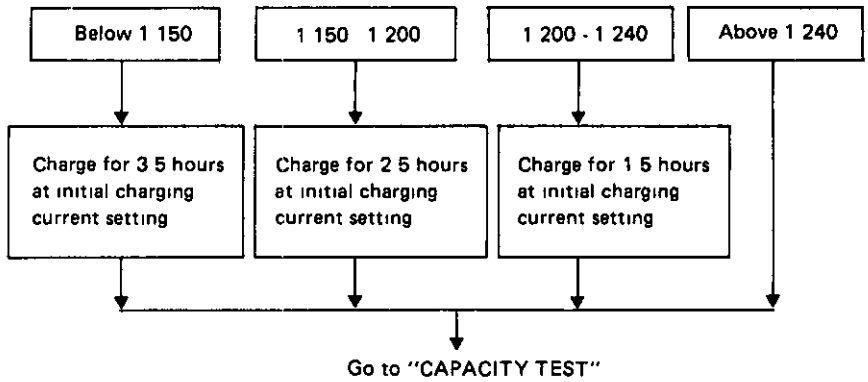


Fig 4 INITIAL CHARGING CURRENT SETTING (Standard charge)

BATTERY TYPE / CONVERTED SPECIFIC GRAVITY	28B19R(L)-MF 34B19R(L)-MF	46B24R(L)-MF 55B24R(L)-MF	50D23R(L)-MF 55D23R(L)-MF	65D26R(L)-MF 80D26R(L)-MF	75D31R(L)-MF	95D31R(L)-MF
1 100 1 130	4 0 (A)	5 0 (A)	6 0 (A)	7 0 (A)	8 0 (A)	9 0 (A)
1 130 1 160	3 0 (A)	4 0 (A)	5 0 (A)	6 0 (A)	7 0 (A)	8 0 (A)
1 160 1 190	2 0 (A)	3 0 (A)	4 0 (A)	5 0 (A)	6 0 (A)	7 0 (A)
1 190 1 220	2 0 (A)	2 0 (A)	3 0 (A)	4 0 (A)	5 0 (A)	5 0 (A)

- Check battery type and determine the specified current using the table shown above
- After starting charging, adjustment of charging current is not necessary

Fig 5 ADDITIONAL CHARGE (Standard charge)



CAUTION:

a. Do not use standard charge method on a battery whose specific gravity is less than 1.100.
b. Set charging current to value specified in Fig. 4. If charger is not capable of producing specified current value, set its charging current as close to that value as possible.
c. Keep battery away from open flame while it is being charged.
d. When connecting charger, connect leads first, then turn on charger. Do not turn on charger first, as this may cause a spark.
e. If battery temperature rises above 60°C (140°F), stop charging. Always charge battery when its temperature is below 60°C (140°F).

M.F. Battery Test and Charging Chart (Cont'd)

C QUICK CHARGE

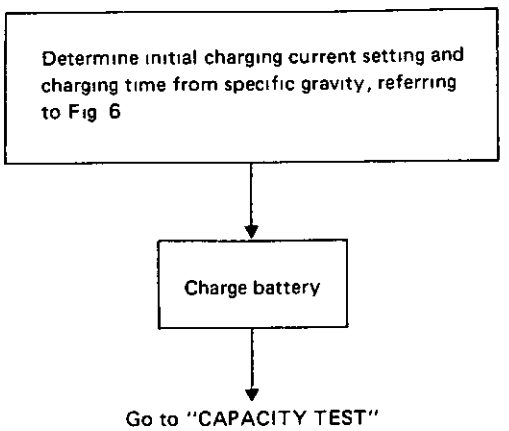


Fig 6 INITIAL CHARGING CURRENT SETTING AND CHARGING TIME (Quick charge)

CONVERTED SPECIFIC GRAVITY \ CURRENT [A] / BATTERY TYPE	28B19R(L)-MF 34B19R(L)-MF	46B24R(L)-MF 55B24R(L) MF 50D23R(L)-MF	55D23R(L)-MF 65D26R(L)-MF 80D26R(L)-MF	75D31R(L)-MF 95D31R(L)-MF
	10 (A)	15 (A)	20 (A)	30 (A)
1 100 1 130	2 5 hours			
1 130 1 160	2 0 hours			
1 160 1 190	1 5 hours			
1 190 - 1 220	1 0 hours			
Above 1 220	0 75 hours (45 min)			

- Check battery type and determine the specified current using the table shown above
- After starting charging, adjustment of charging current is not necessary

CAUTION·

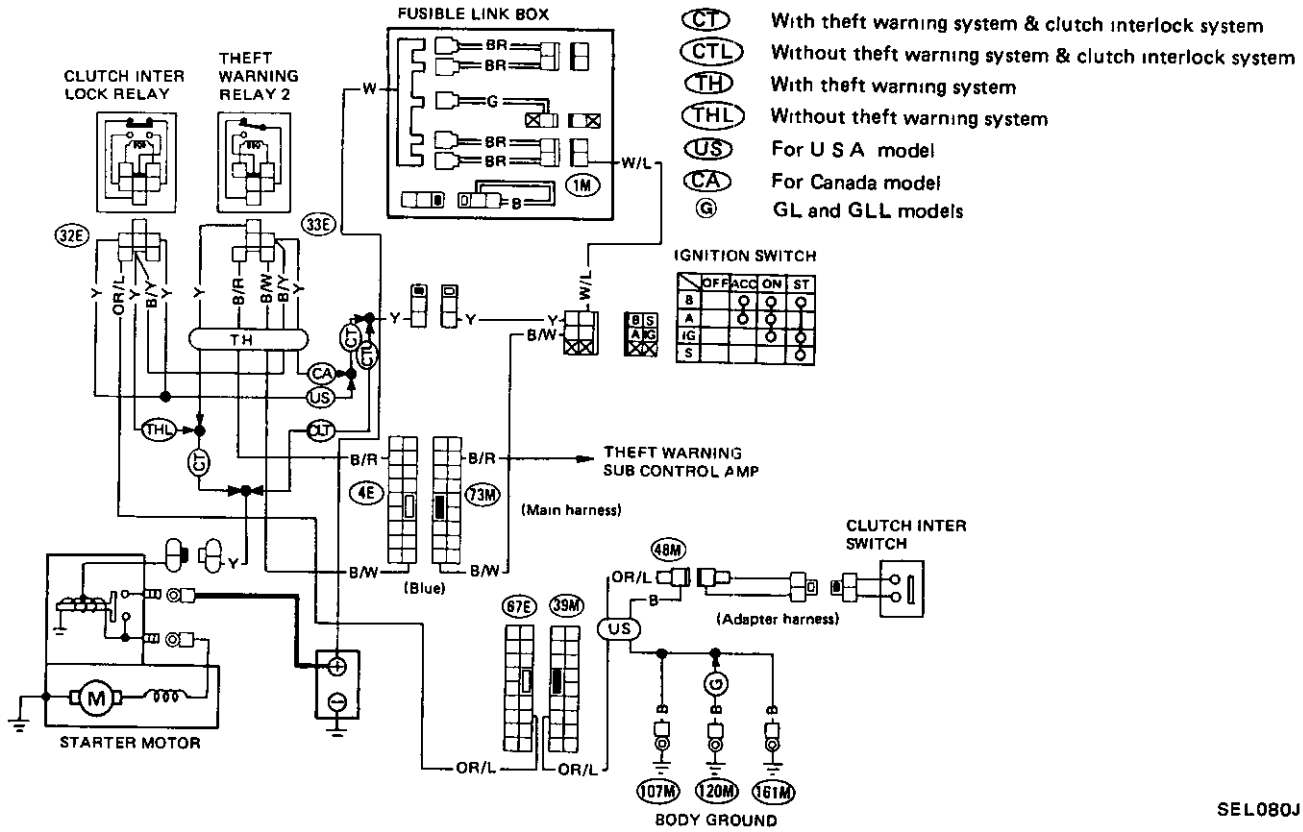
a. Do not use quick charge method on a battery whose specific gravity is less than 1.100.
b. Set initial charging current to value specified in Fig 6. If charger is not capable of producing specified current value, set its charging current as close to that value as possible.
c. Keep battery away from open flame while it is being charged.
d. When connecting charger, connect leads first, then turn on charger. Do not turn on charger first, as this may cause a spark.
e. Be careful of a rise in battery temperature because a large current flow is required during quick-charge operation.
   If battery temperature rises above 60°C (140°F), stop charging. Always charge battery when its temperature is below 60°C (140°F)
f. Do not exceed the charging time specified in Fig. 6, because charging battery over the charging time can cause deterioration of the battery

Service Data and Specifications (S.D.S.)

Applied model		U S A	U S A option and Canada
Type		55D23R-MF	75D31R-MF
		Maintenance-free	
Capacity	V-AH	12-60	12-70

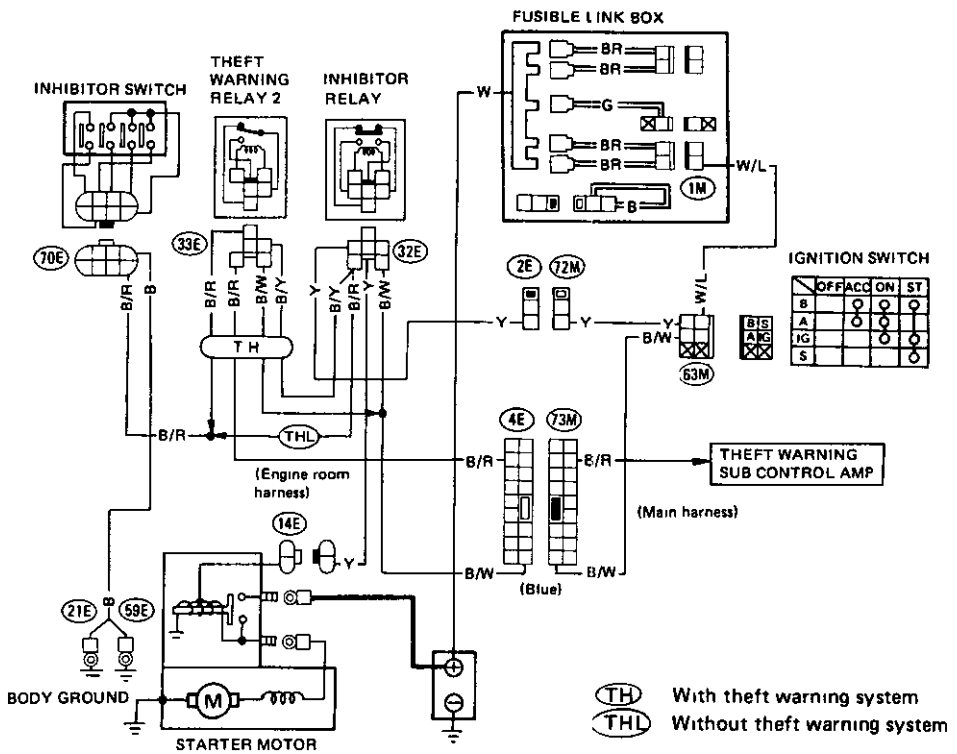
Wiring Diagram

M/T MODEL



SEL080J

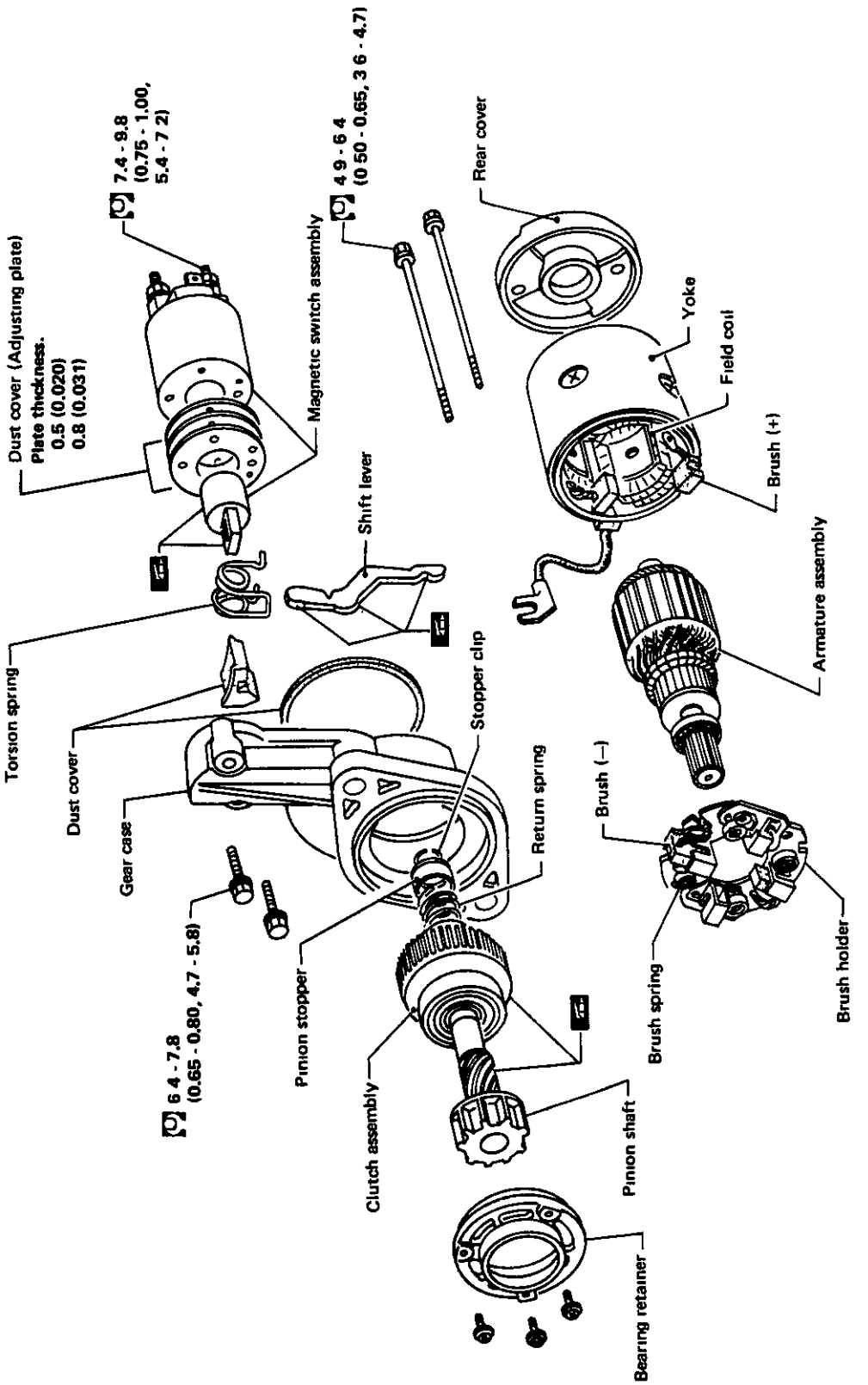
A/T MODEL



SEL081J

Construction

S114-457

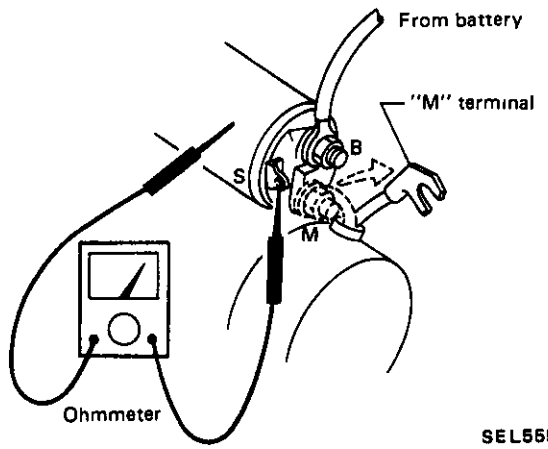


SEL623D

Magnetic Switch Check

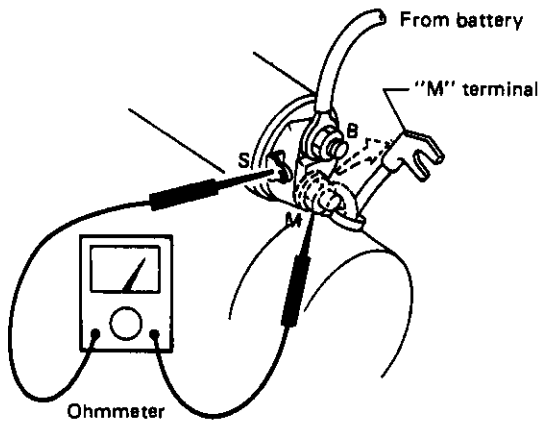
- Before starting to check, disconnect battery ground cable.
- Disconnect "M" terminal of starter motor.

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



SEL555E

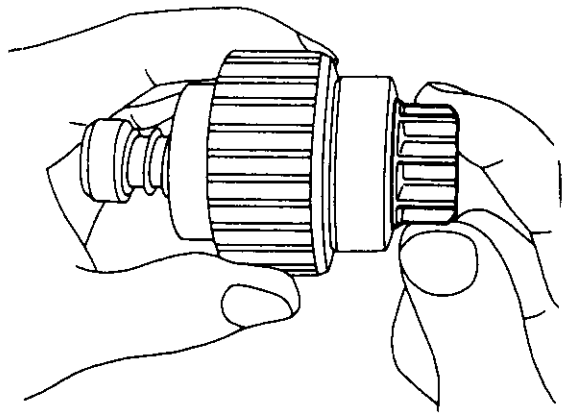
2. Continuity test (between "S" terminal and "M" terminal)
- No continuity ... Replace.



SEL556E

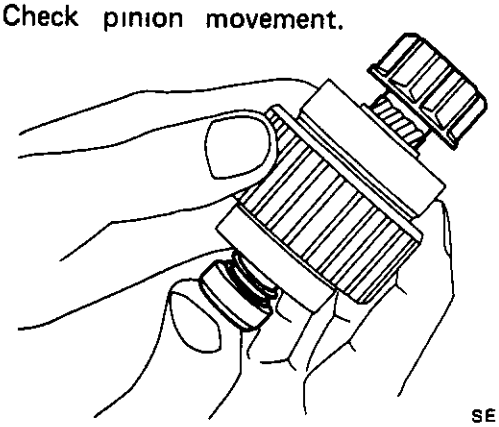
Pinion/Clutch Check

1 Check to see if clutch assembly locks in one direction and rotates smoothly in the opposite direction.
- If it does not lock (or locks) in either direction or unusual resistance is evident ... Replace.



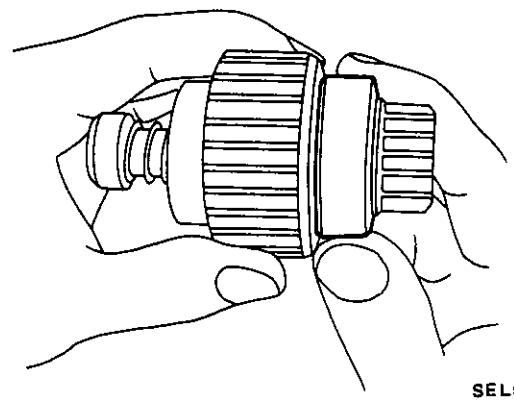
SEL569B

2. Check pinion movement.



SEL570B

3. Check ball bearing.
Spin outer race of ball bearing to ensure that it turns smoothly without binding.



SEL571B

- Abnormal resistance .... Replace.

Brush Check

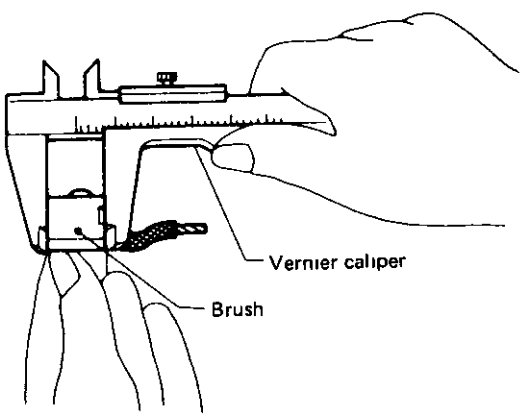
4 Inspection pinion teeth
- Replace pinion if teeth are worn or damaged. (Also check condition of ring gear teeth)

5 Inspect reduction gear teeth
- Replace reduction gear if teeth are worn or damaged (Also check condition of armature shaft gear teeth)

BRUSH

Check wear of brush

Wear limit length: 11 mm (0.43 in)

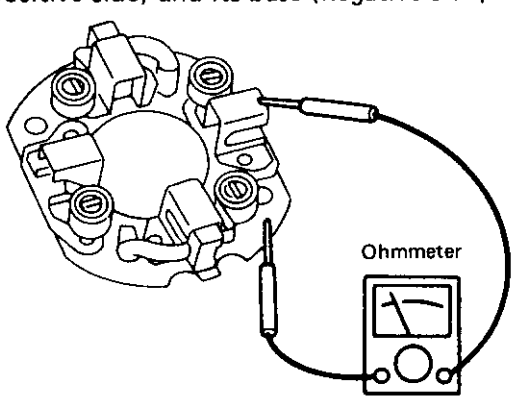


SEL626B

- Excessive wear Replace

BRUSH HOLDER

1 Perform insulation test between brush holder (positive side) and its base (negative side)



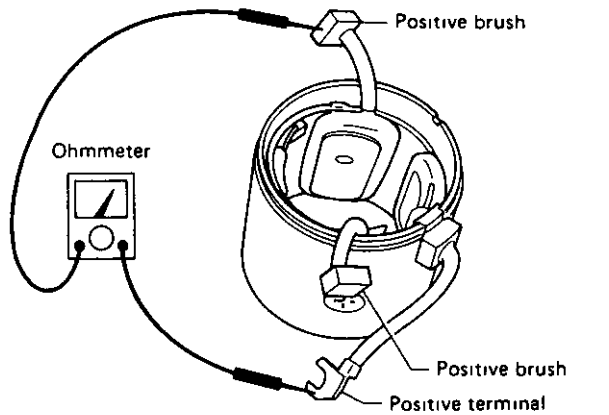
SEL568B

- Continuity exists Replace

2 Check brush holder to see if it moves smoothly
- If brush holder is bent, replace it, if sliding surface is dirty, clean

Field Coil Check

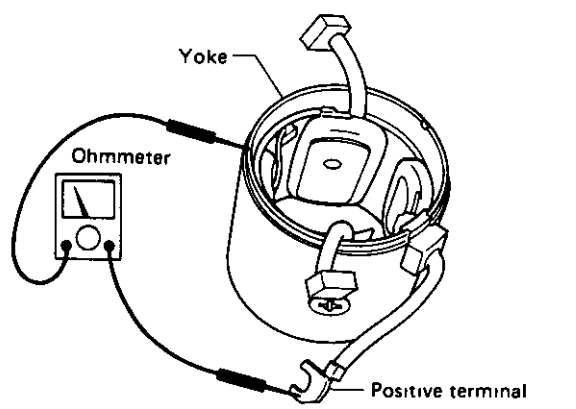
1 Continuity test (between field coil positive terminal and positive brushes)



SEL102E

- No continuity . Replace field coil

2 Insulation test (between field coil positive terminal and yoke)

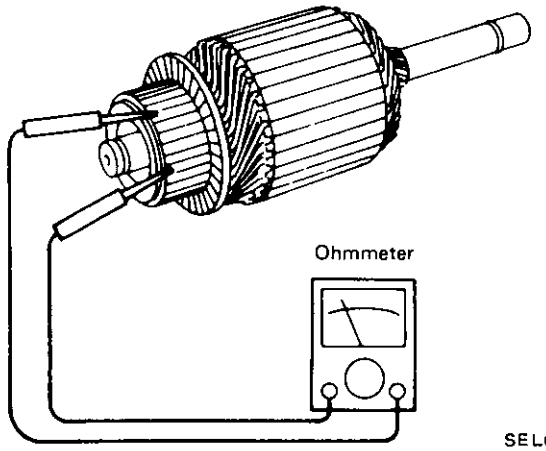


SEL103E

- Continuity exists ... Replace field coil

Armature Check

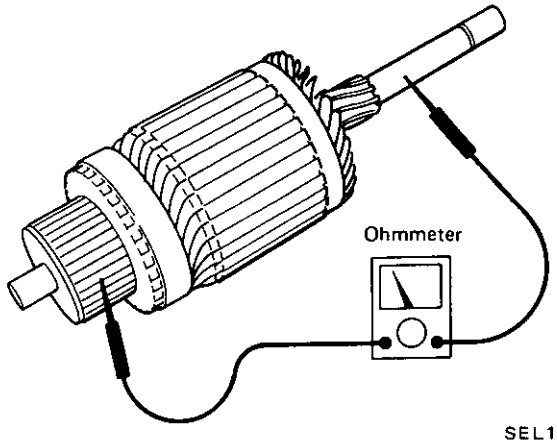
1 Continuity test (between two segments side by side)



SEL625B

- No continuity Replace.

2 Insulation test (between each commutator bar and shaft)

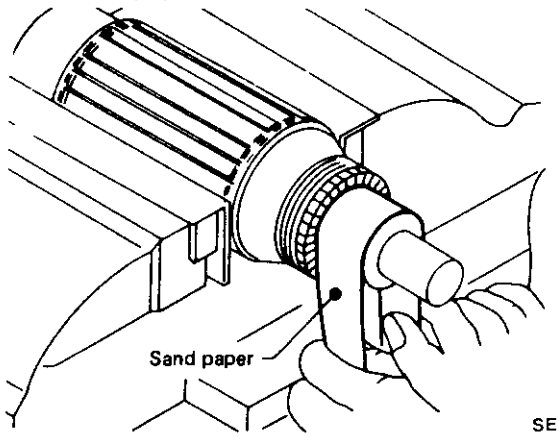


SEL104E

- Continuity exists . Replace

3 Check commutator surface

- Rough Sand lightly with No 500 - 600 sandpaper

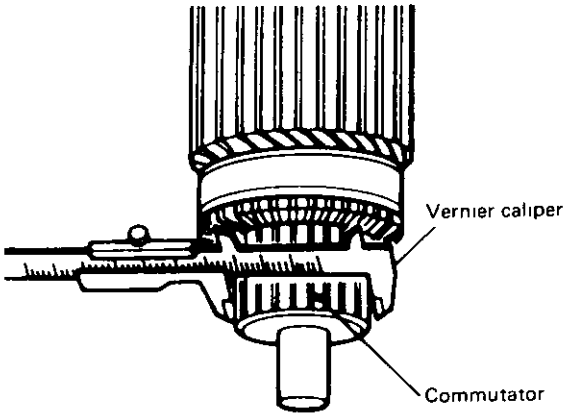


SEL624B

4 Check diameter of commutator

Commutator minimum diameter
29 mm (1.14 in)

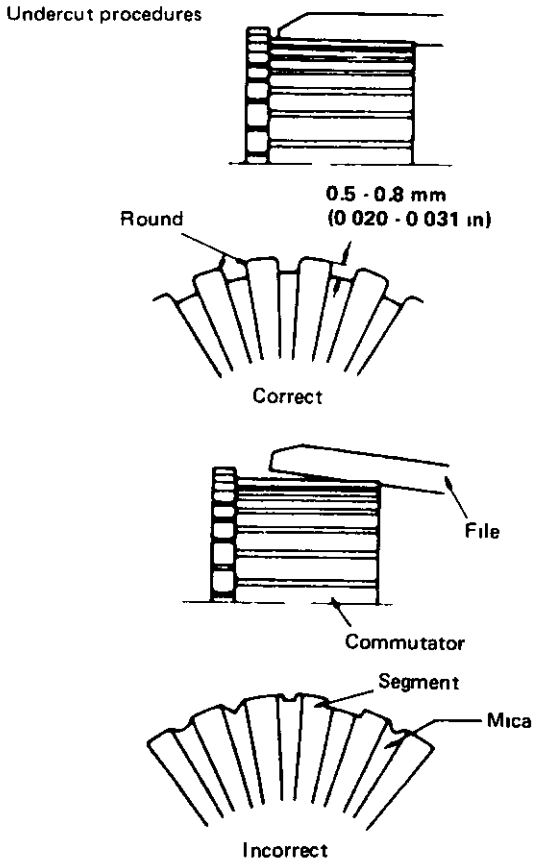
- Less than specified value Replace



SEL418A

5 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)



EE021

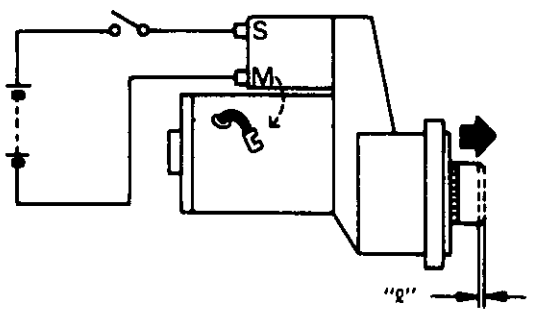
Assembly

Carefully observe the following instructions.

a. **Apply grease to:**
- Rear cover metal
- Gear case metal
- Frictional surface of pinion
- Moving portion of shift lever
- Plunger of magnetic switch

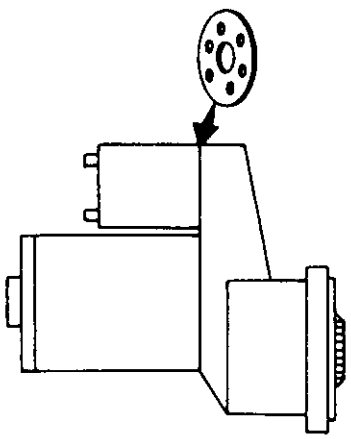
Compare difference "ℓ" in height of pinion when it is pushed out with magnetic switch energized and when it is pulled out by hand unitil it touches stopper

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



SEL497D

- Not in the specified value ... Adjust by dust cover (Adjusting plate).



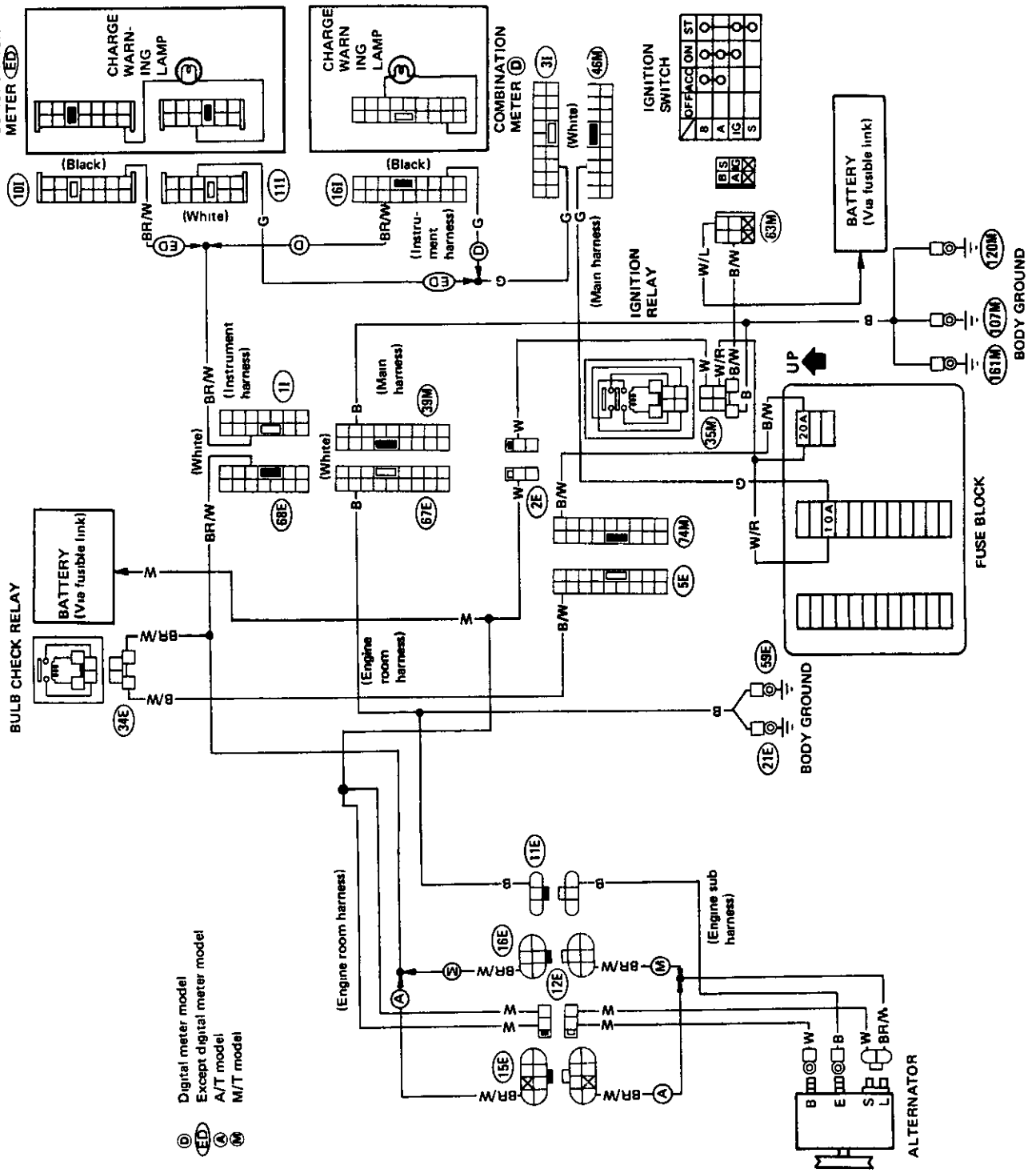
SEL573B

Service Data and Specifications (S.D.S.)

Applied model		All
Type		S114-457
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 assembly	mm (in)	0 3 - 1 5 (0 012 0 059)

Wiring Diagram

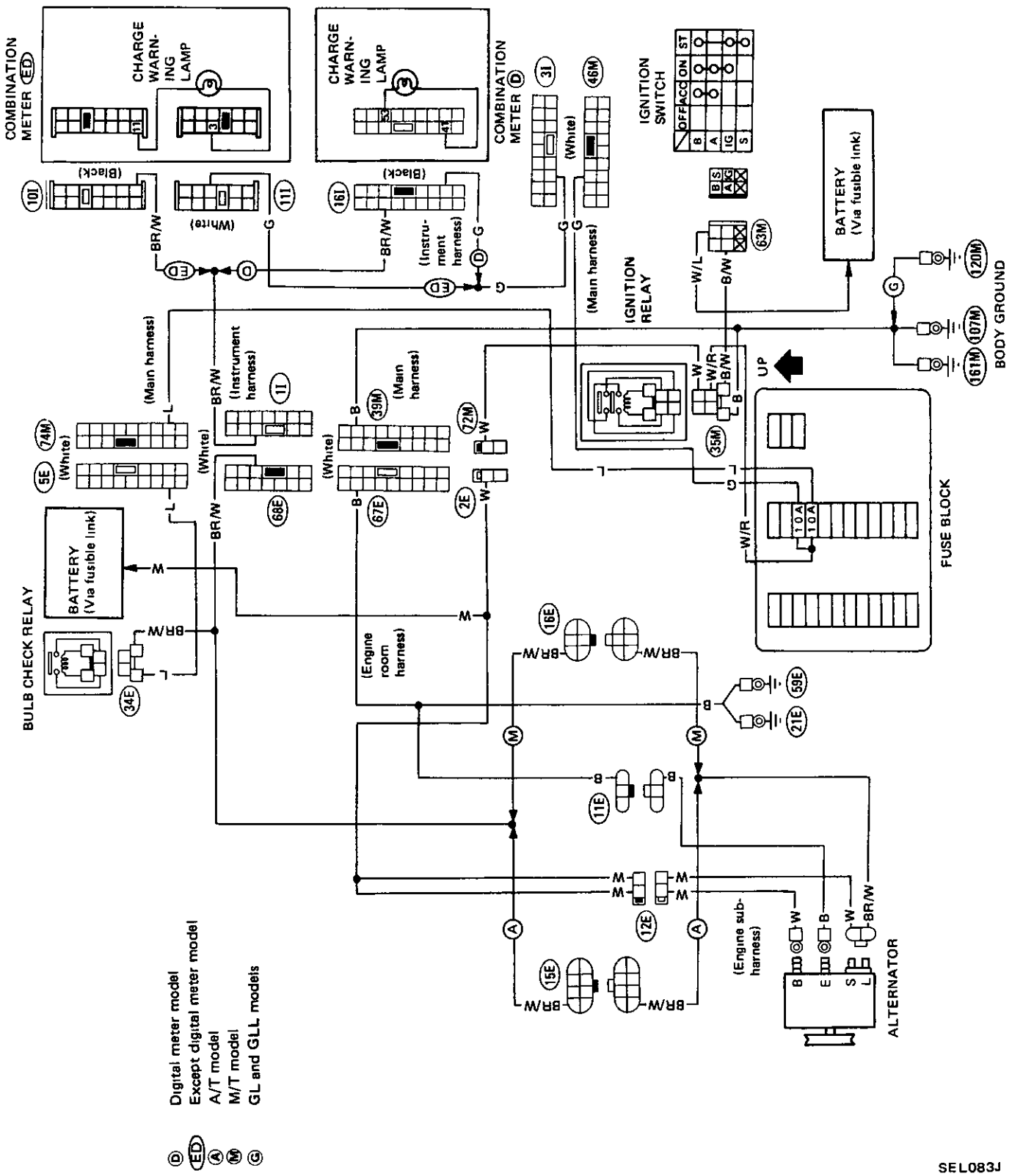
TURBO MODEL



SEL082J

Wiring Diagram (Cont'd)

NON-TURBO MODEL



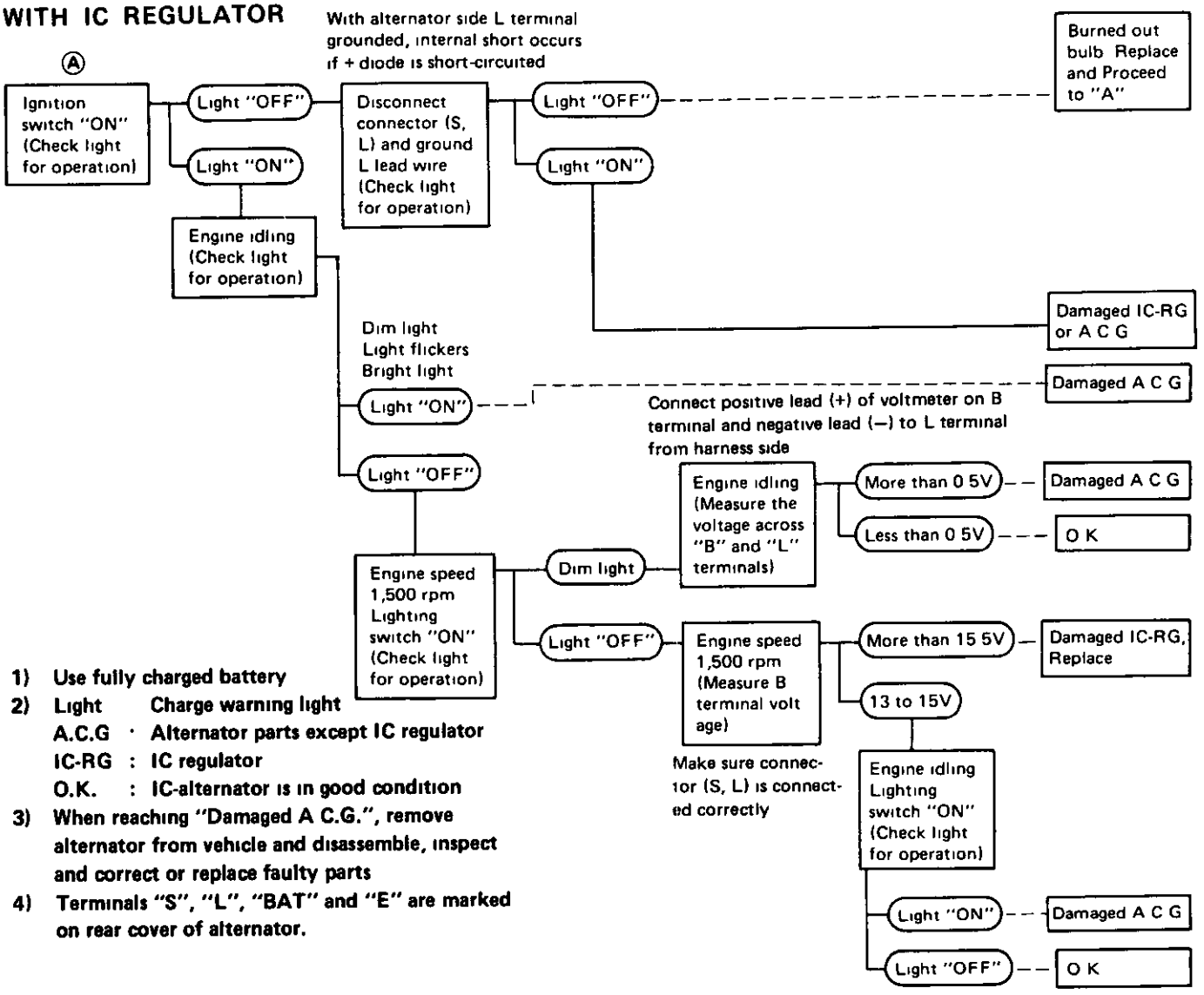
CHARGING SYSTEM

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

Before starting trouble-shooting, inspect the fusible link.

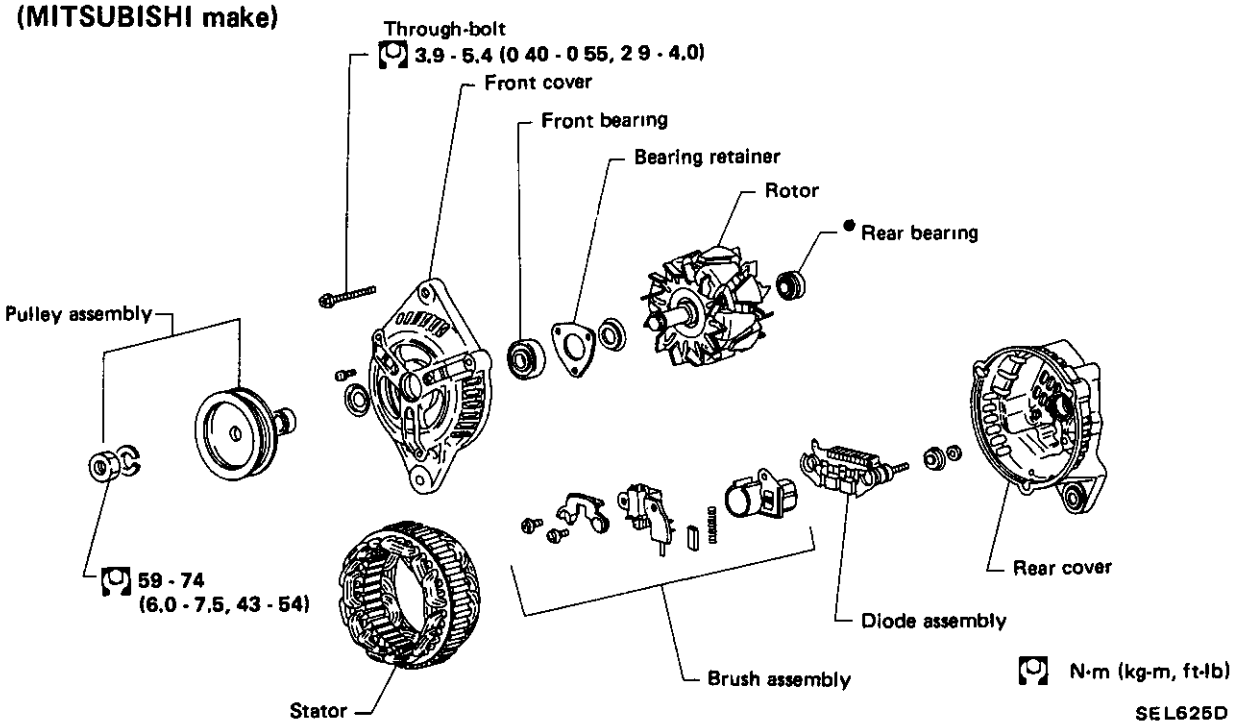
WITH IC REGULATOR



1) **Use fully charged battery**
2) **Light Charge warning light**
   A.C.G · Alternator parts except IC regulator
   IC-RG : IC regulator
   O.K. : IC-alternator is in good condition
3) **When reaching "Damaged A C.G.", remove alternator from vehicle and disassemble, inspect and correct or replace faulty parts**
4) **Terminals "S", "L", "BAT" and "E" are marked on rear cover of alternator.**

Construction

A2T48195 (MITSUBISHI make)



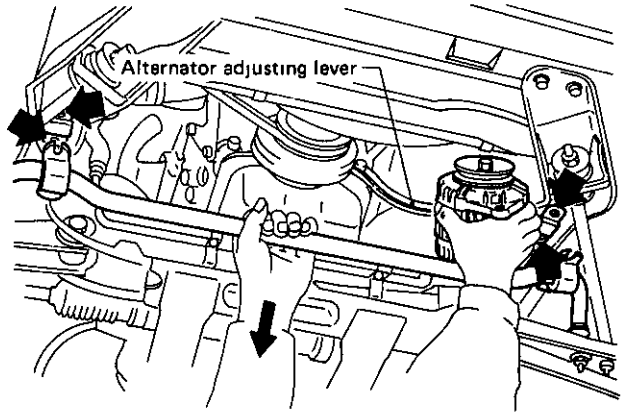
*Rear bearing

CAUTION:

Rear cover may be hard to remove because a ring is used to lock outer race of rear bearing. Be careful not to lose this ring during removal.

Removal

- Remove bolts from alternator
- Remove bolts for front stabilizer.
- Manually move stabilizer down and remove alternator.



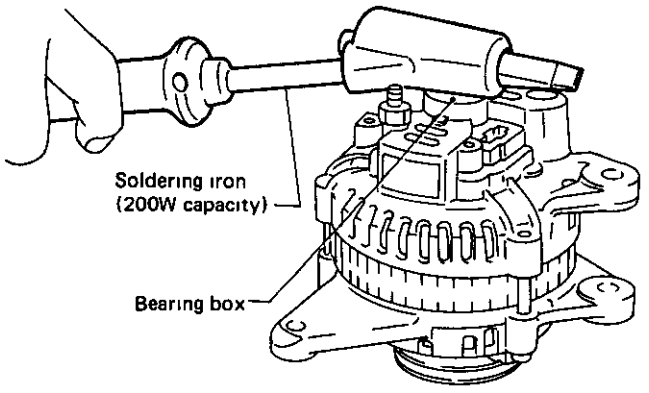
SEL627D

Disassembly

CAUTION:

Rear cover may be hard to remove because a ring is used to lock outer race of rear bearing. To facilitate removal of rear cover, heat only the bearing box section with a 200-watt soldering iron.

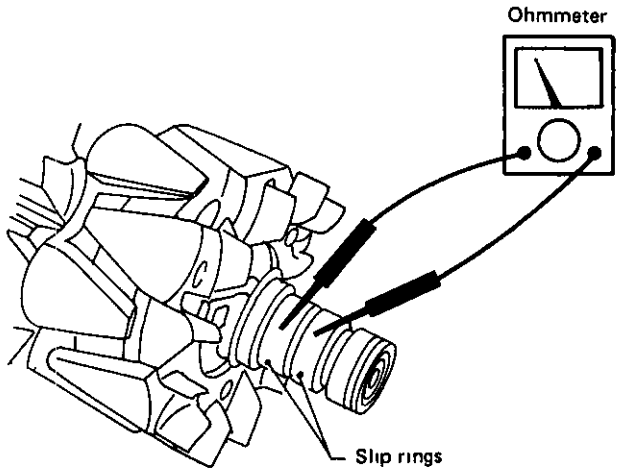
Do not use a heat gun, as it can damage diode assembly.



SEL628D

Rotor Slip Ring Check

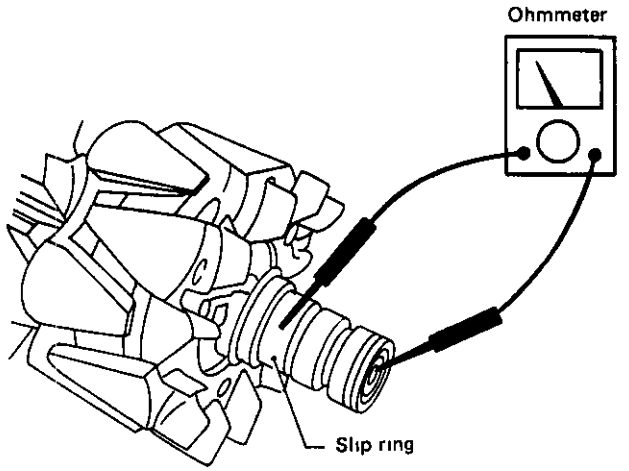
1. Continuity test



SEL629D

- No continuity ... Replace rotor.

2 Insulator test



SEL630D

- Continuity exists ... Replace rotor.

3. Check slip ring for wear

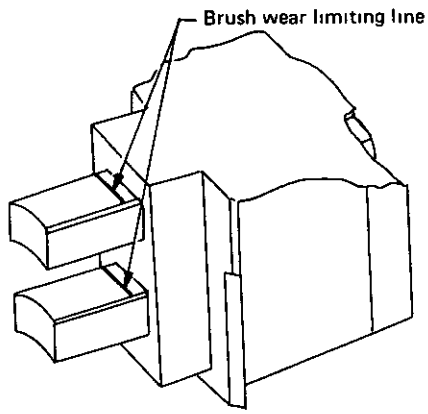
Slip ring minimum outer diameter:

21.6 mm (0.850 in) [HITACHI make]

22.4 mm (0.882 in) [MITSUBISHI make]

Brush Check

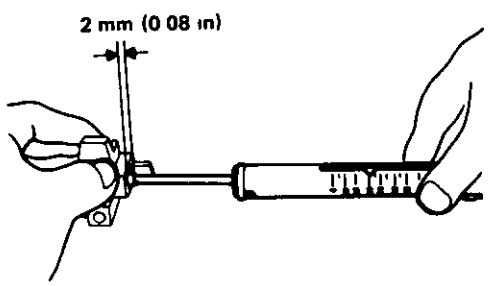
1. Check for smooth movement of brush
   - Not smooth ... Check brush holder and clean.
2. Check brush for wear.



SEL631D

   - Replace brush if it is worn down to the limit line
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:
   1.471 - 3.531 N (150 - 360 g, 5.29 - 12.70 oz) [HITACHI make]
   3.040 - 4.217 N (310 - 430 g, 10.93 - 15.17 oz) [MITSUBISHI make]



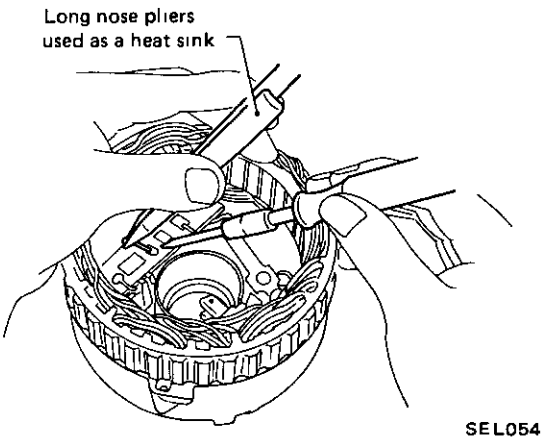
EE049

- Not in the specified value .. Replace

Stator Check

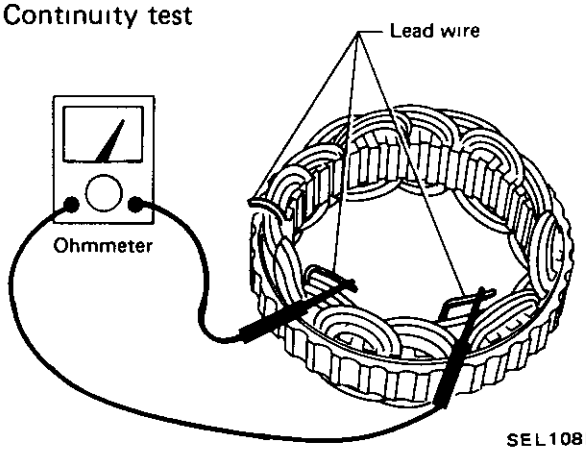
To test the stator or diode, you must separate them by unsoldering the connecting wires.

CAUTION
Used only as much heat as required to melt solder. Diodes will be damged if excessive heat is applied.



SEL054D

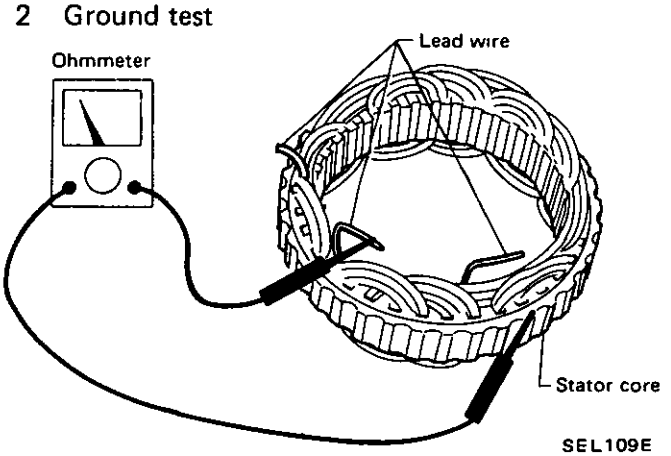
1 Continuity test



SEL108E

- No continuity Replace stator

2 Ground test



SEL109E

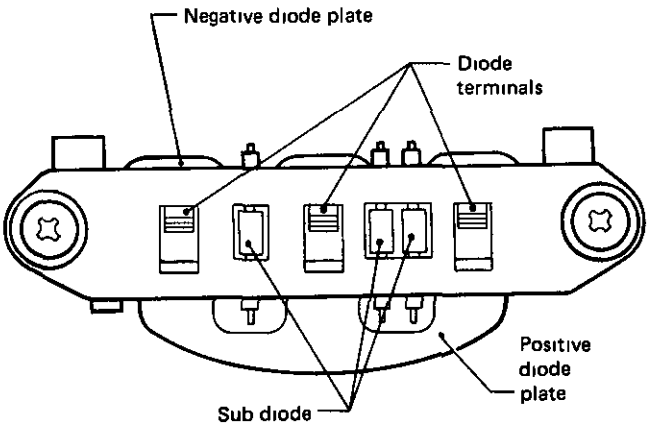
- Continuity exists . . Replace stator

Diode Check

DIODE

- Use an ohmmeter to check condition of diodes as indicated in chart below
- If any of the test results is not satisfactory, replace diode assembly

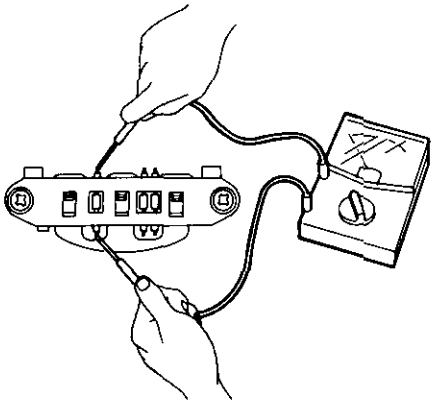
	Ohmmeter probes		Continuity
	Positive ⊕	Negative ⊖	
Diodes check (Positive side)	Positive diode plate	Diode terminals	Yes
	Diode terminals	Positive diode plate	No
Diodes check (Negative side)	Negative diode plate	Diode terminals	No
	Diode terminals	Negative diode plate	Yes



SEL767D

Sub-diode

- Attach ohmmeters' probe to each end of diode and check for continuity.



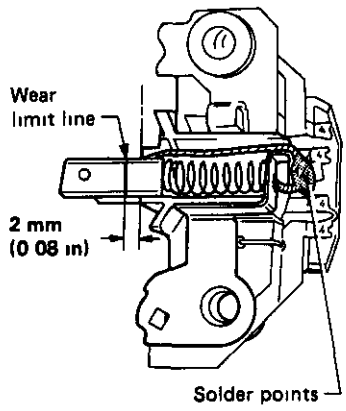
SEL910A

- Continuity is N.G. . . Replace diode assembly

Assembly

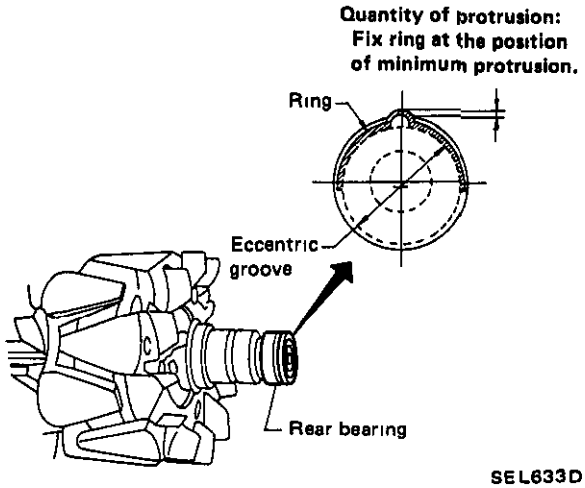
Carefully observe the following instructions.

1. When soldering each stator coil lead wire to diode assembly terminal, perform the operation as fast as possible.
2. When soldering brush lead wire, observe the following.
   - Position brush so that its wear limit line protrudes 2 mm (0.08 in) beyond end face of brush holder.



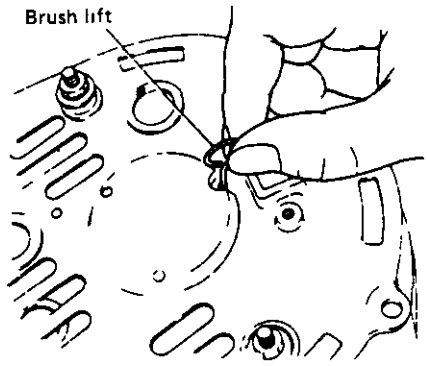
SEL632D

3. Fit ring into groove in rear bearing so that it is as close to the adjacent area as possible.

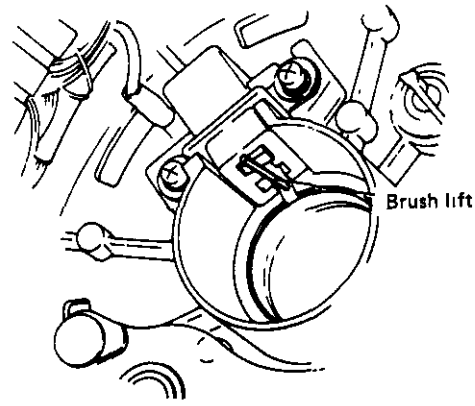


SEL633D

4. Before installing front cover with pulley and rotor to rear cover, push brush up with fingers and retain brush by inserting brush lift into brush lift hole from outside.
   After installing, remove wire for brush lift.



EE540



EE541

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

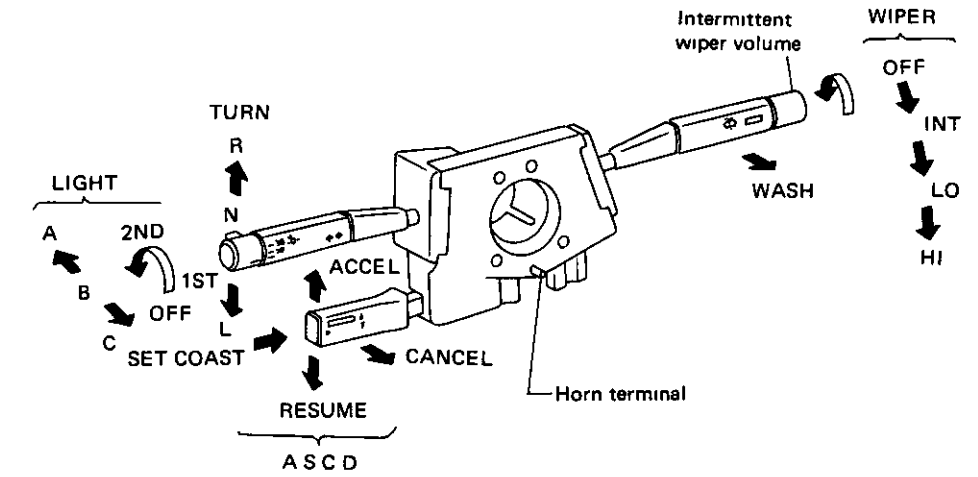
Do not pull brush lift by pushing toward outside of cover as it will damage slip ring sliding surface.

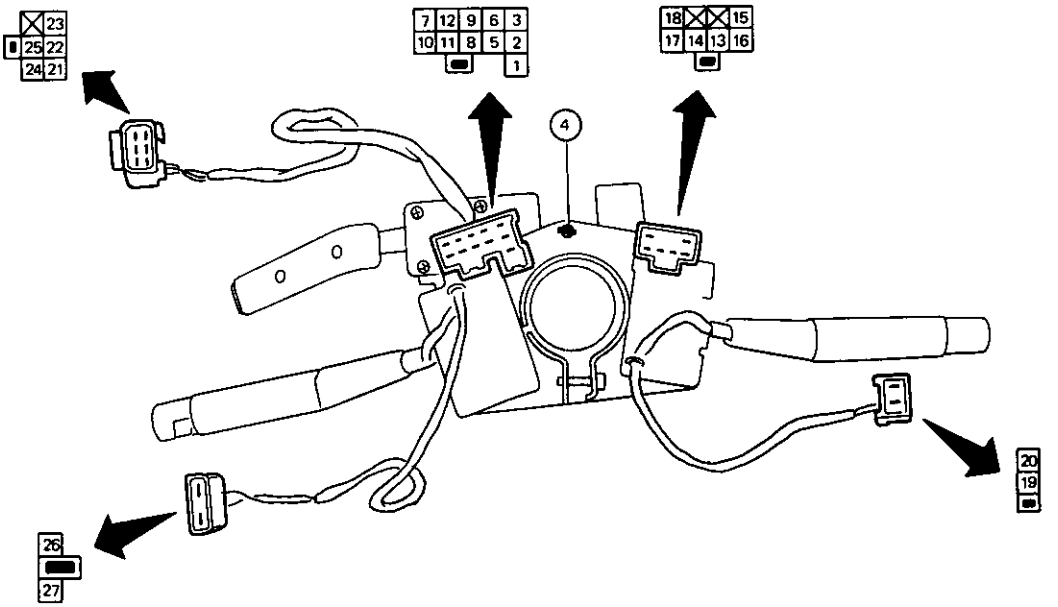
Service Data and Specifications (S.D.S.)

Type	A2T48195
Applied model	All
Nominal rating V-A	12-70
Ground polarity	Negative
Minimum revolution under no-load (when 14 volts is applied) rpm	Less than 1,100
Hot output current A/rpm	More than 21/1,300 More than 50/2,500
Regulated output voltage V	14.1 - 14.7
Minimum length of brush mm (in)	More than 8 (0.31)
Brush spring pressure N (g, oz)	3.040 - 4.217 (310 - 430, 10.93 - 15.17)
Slip ring outer diameter mm (in)	More than 22.4 (0.882)

COMBINATION SWITCH

Check





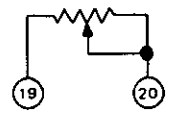
LIGHTING SWITCH

	OFF			1ST			2ND		
	A	B	C	A	B	C	A	B	C
5			○			○	○	○	○
6			○			○	○		
7								○	
8			○			○	○	○	○
9			○			○	○		
10								○	
11				○	○	○	○	○	○
12				○	○	○	○	○	○
26							○	○	○
27							○	○	○

WIPER SWITCH

	OFF	INT	LO	HI	WASH
13	○	○			
14	○	○	○		
15		○	○	○	
16				○	
17		○	○	○	○
18					○

INTERMITTENT WIPER VOLUME



HORN SWITCH

A S C D SWITCH

	CANSEL	RESUME	ACCEL	SET COAST
21	○	○	○	○
22				○
23		○		
24			○	
25	○			

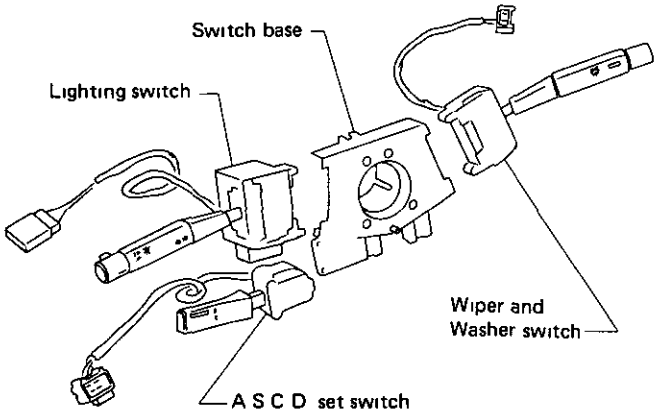
	R	N	L
1	○		○
2	○		
3			○

TURN SIGNAL SWITCH

SEL642D

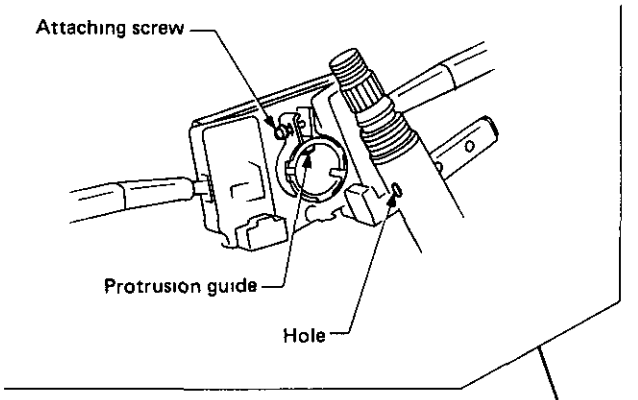
Replacement

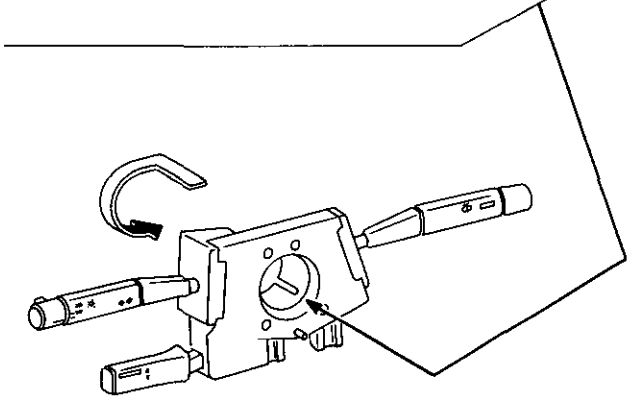
Lighting switch wiper & washer switch and A.S.C.D switch can be replaced without removing combination switch base



SEL643D

To remove combination switch base, remove base attaching screw and turn after pushing on it.



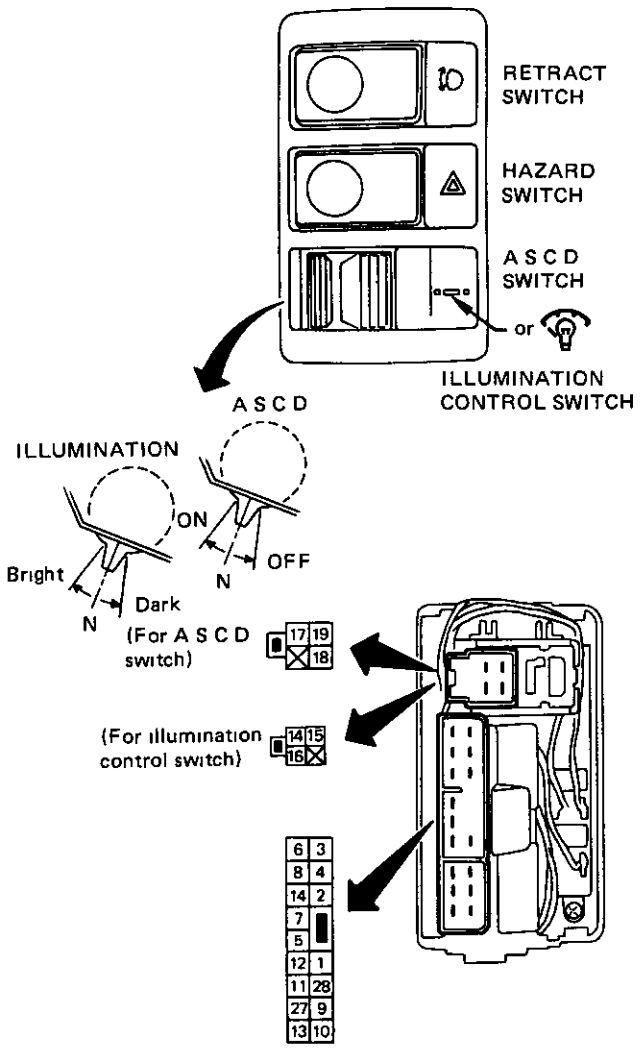


SEL644D

INSTRUMENT SWITCH

Check

INSTRUMENT SWITCH L.H.



RETRACT SWITCH

	UP	DOWN
9	○	
10	○	○
11		○
12	○	○
27		○
28	○	
13	○	
	(E) ← Indicator	
14	○	

HAZARD SWITCH

	OFF	ON
2	○	○
1	○	
7		○
3		○
4		○
5		○

A S C D MAIN SWITCH

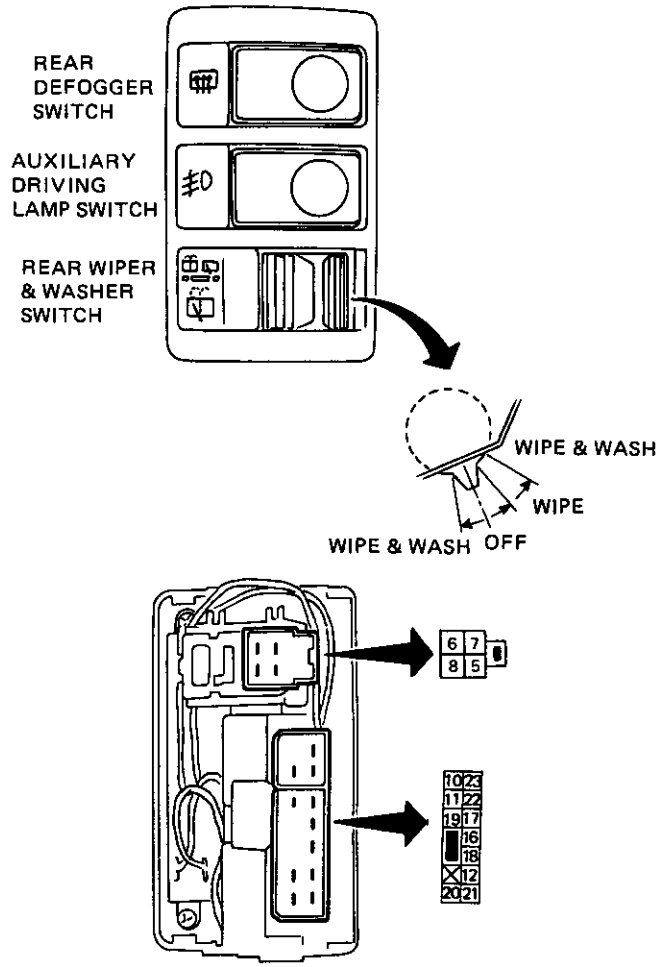
	OFF	N	ON
17		○	○
18		○	○
19			○

ILLUMINATION CONTROL SWITCH

	BRIGHT	DARK
15	○	
16		○
14	○	○

6 — (O) — 8
Illumination

INSTRUMENT SWITCH R.H.



REAR DEFOGGER SWITCH

	OFF	TIME	N
18		○	
19		○	
20		○	○
21		○	○
22			○
			(E) ← Indicator
23			○

REAR WIPER & WASHER SWITCH

	WIPE WASH	OFF	WIPE	WIPE WASH
5	○	○	○	○
6		○		
7	○		○	○
8	○		○	○

AUXILIARY DRIVING LAMP SWITCH

	OFF	ON
10		○
11	○	○
	(E)	(E)
12	○	○

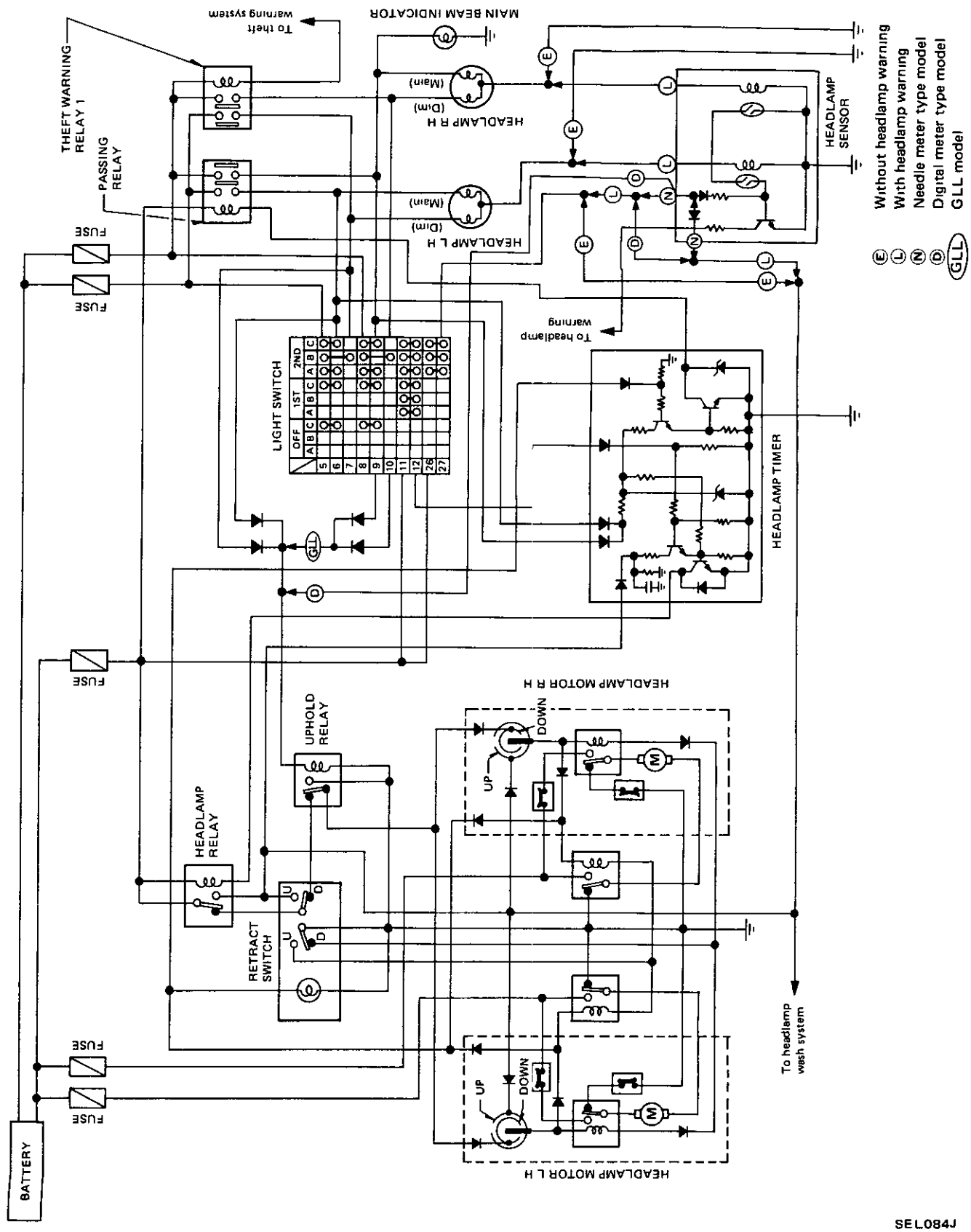
Indicator

17 — (O) — 16
Illumination

SEL497F

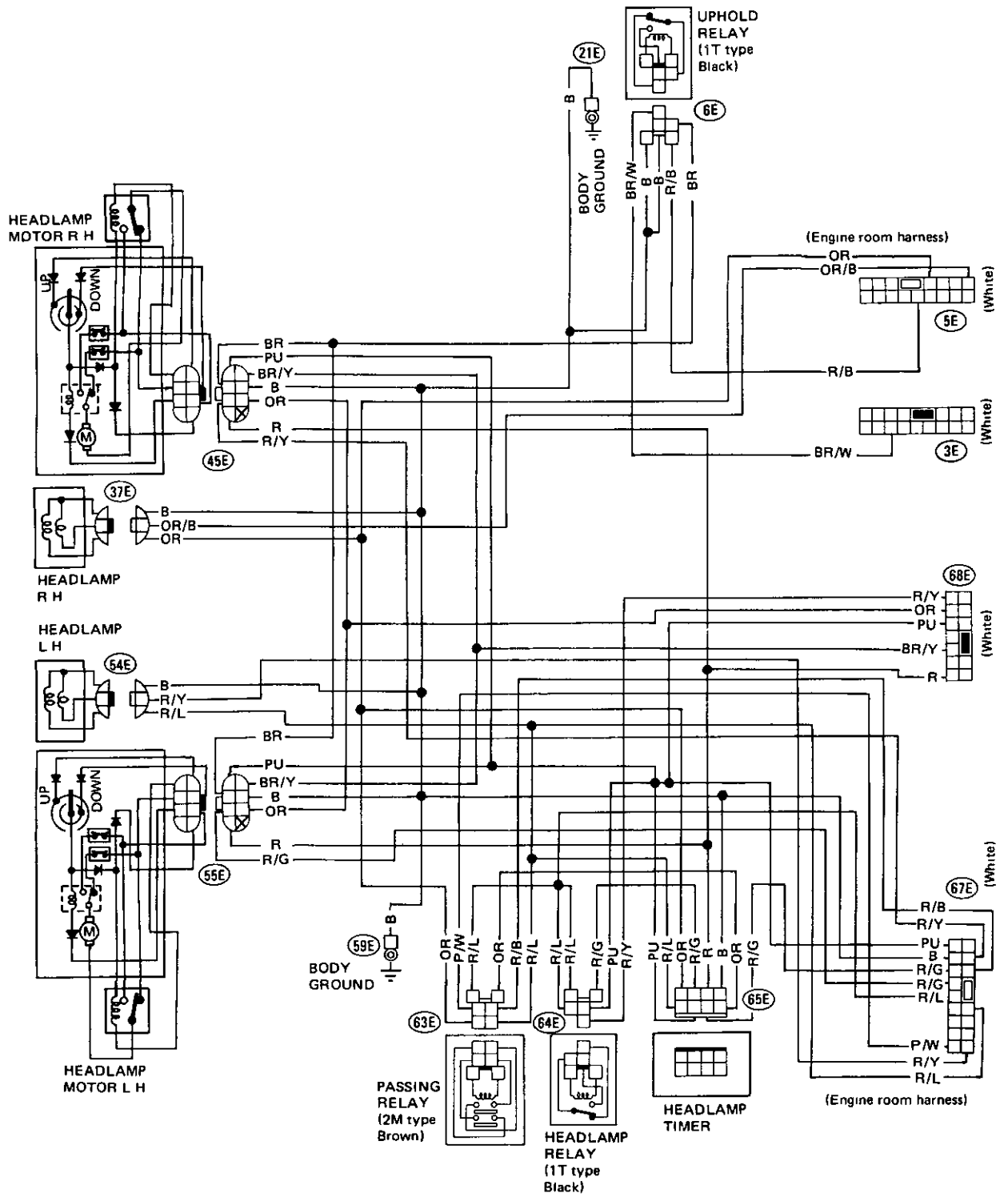
- For removal, refer to "INSTRUMENT" in BF section

Schematic

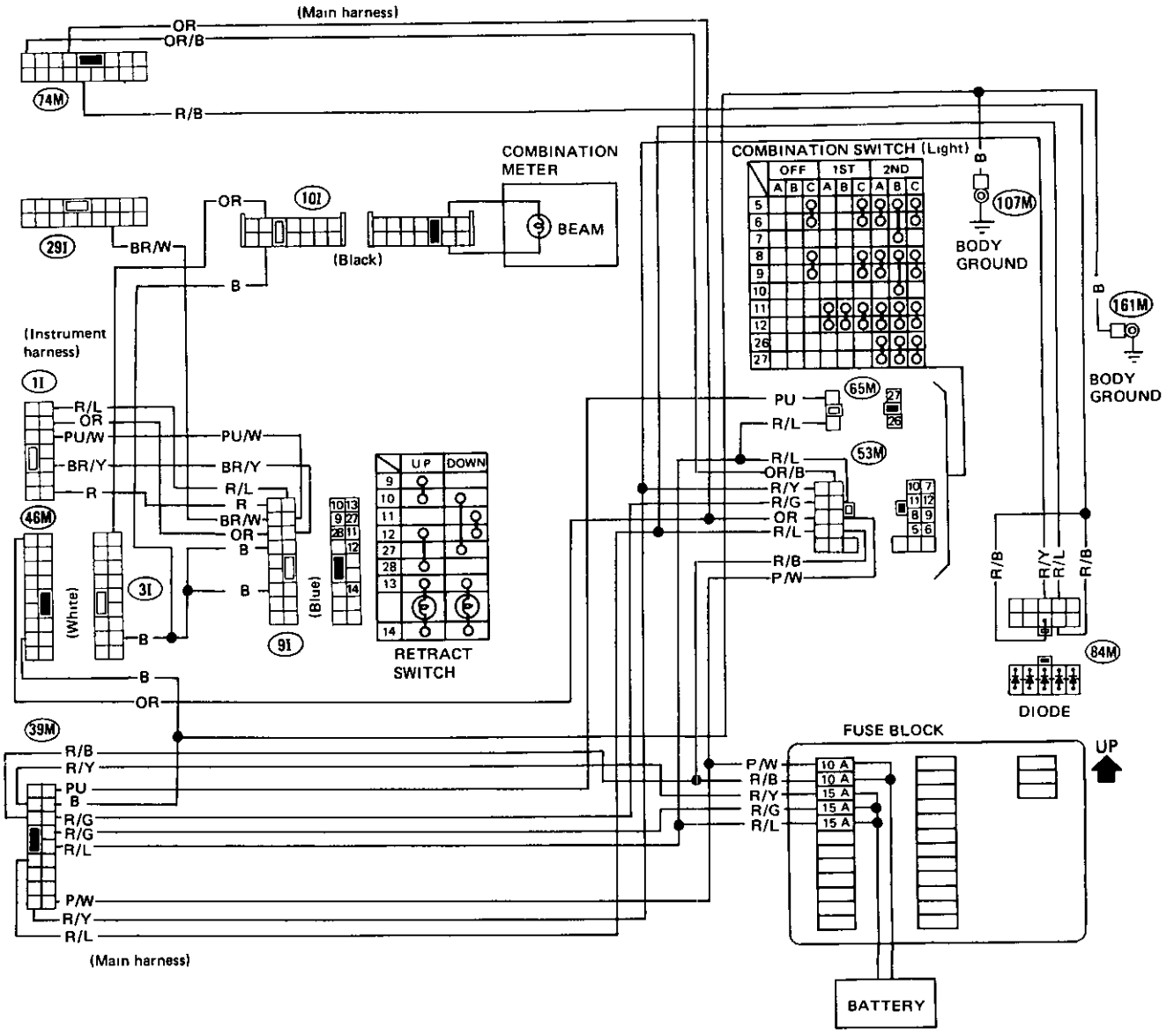

To theft warning system
MAIN BEAM INDICATOR
THEFT WARNING RELAY 1
PASSING RELAY
HEADLAMP R H
HEADLAMP L H
(Main)
(Dim)
HEADLAMP SENSOR
Without headlamp warning
With headlamp warning
Needle meter type model
Digital meter type model
GLL model
FUSE
LIGHT SWITCH
OFF
1ST
2ND
To headlamp warning
HEADLAMP TIMER
UPHOLD RELAY
HEADLAMP RELAY
RETRACT SWITCH
HEADLAMP MOTOR R H
HEADLAMP MOTOR L H
UP
DOWN
To headlamp wash system
BATTERY
SEL084J

Wiring Diagram

WITHOUT HEADLAMP SENSOR



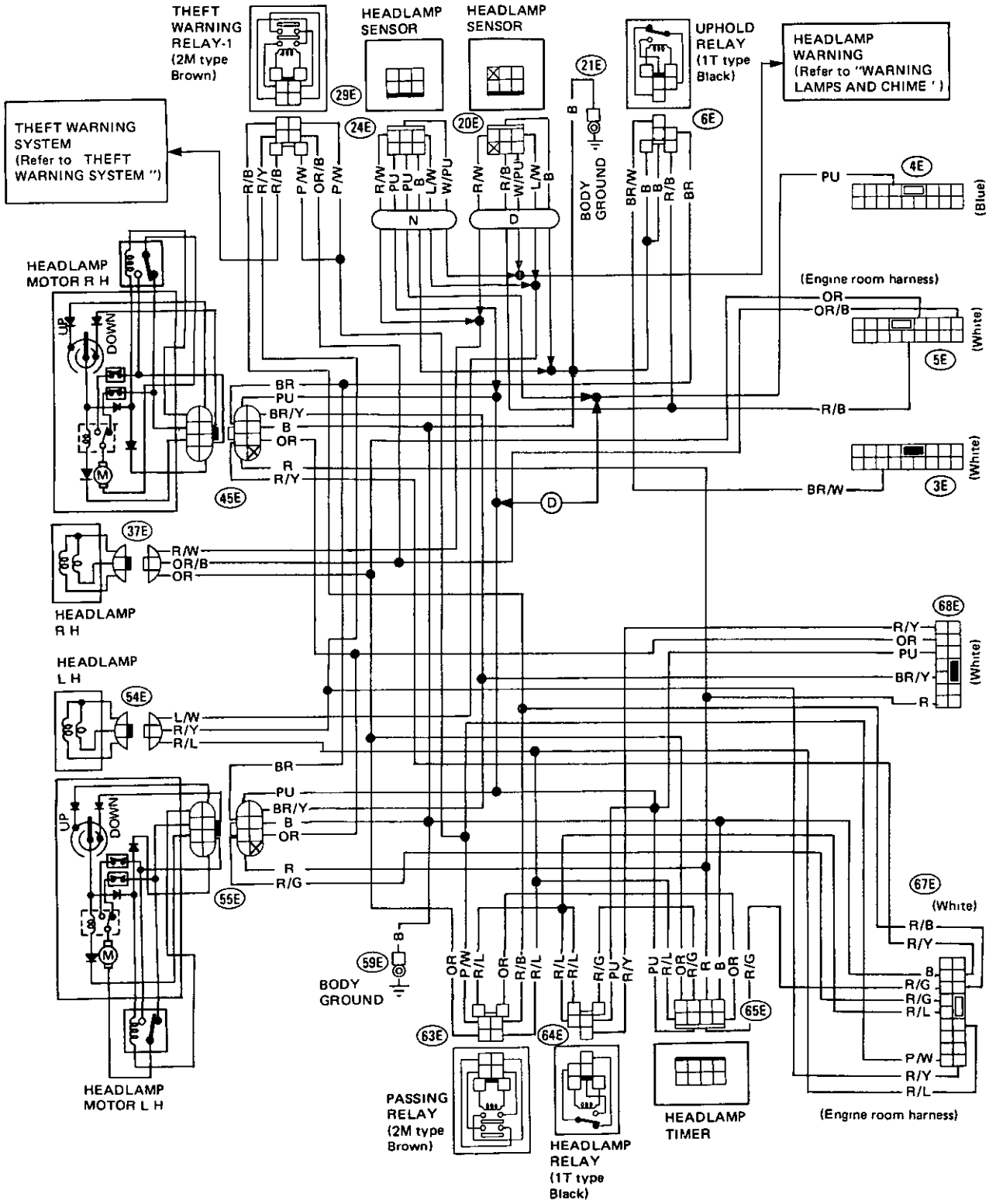
Wiring Diagram (Cont'd)



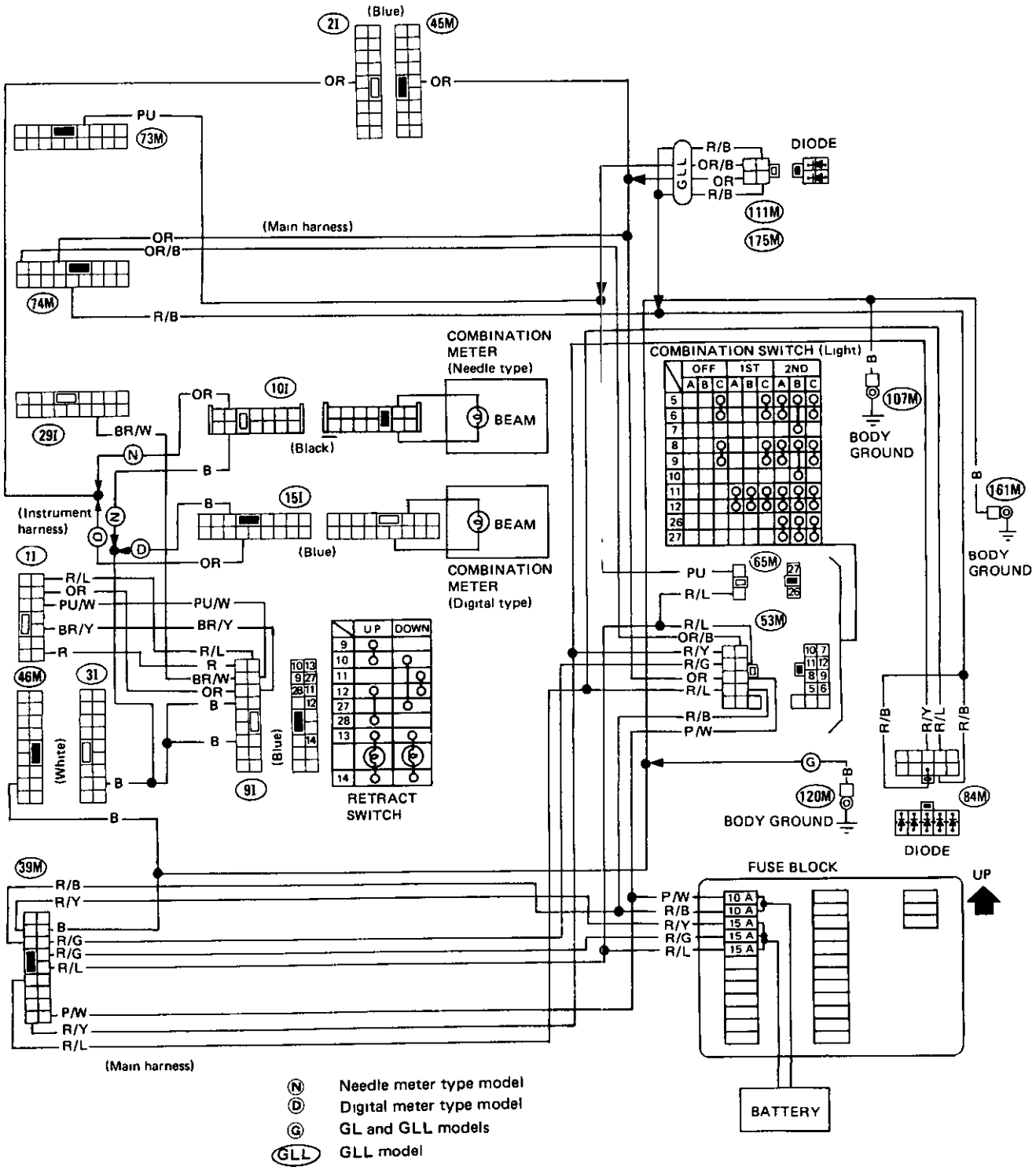
SEL085J

Wiring Diagram (Cont'd)

WITH HEADLAMP SENSOR



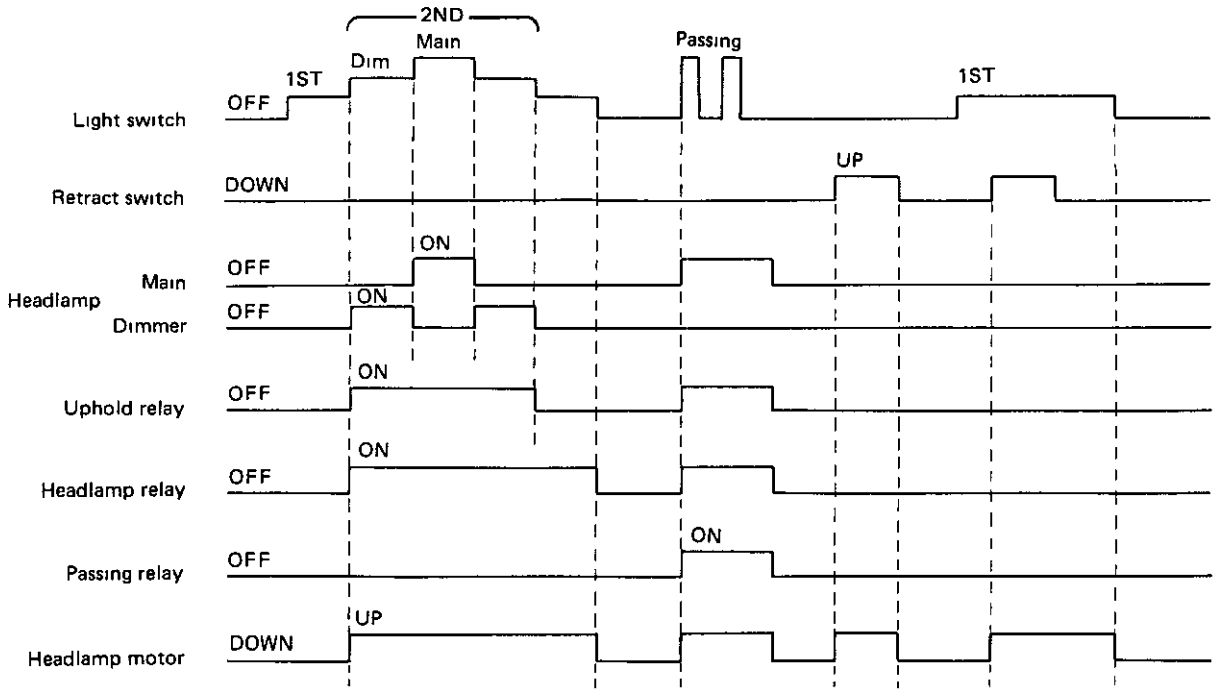
Wiring Diagram (Cont'd)



SEL086J

Operation

- The following chart depicts the operational modes of relays and headlamp motors in relation to the positions of the lighting switch and retract switch.



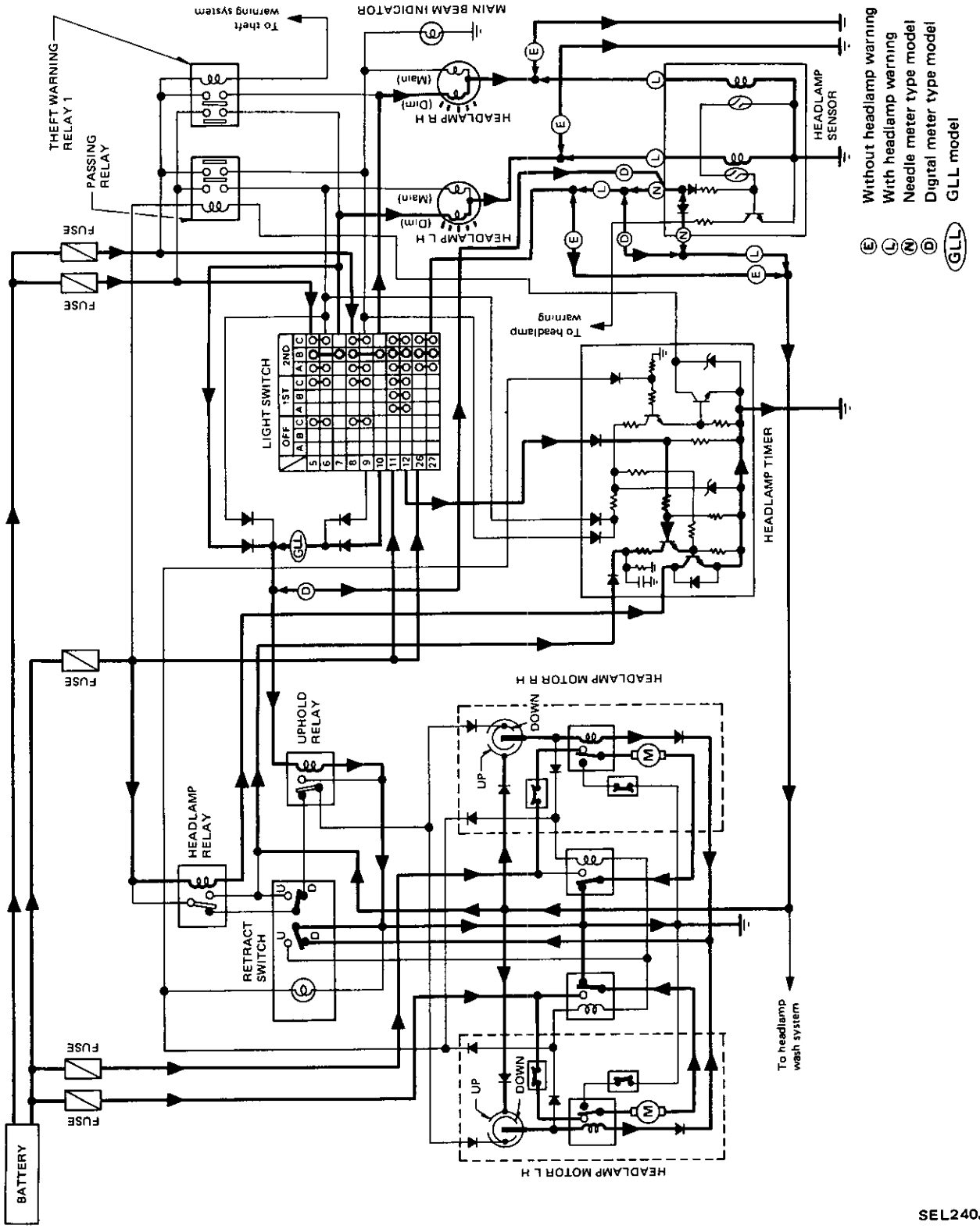
SEL743D

Description

CIRCUIT OPERATION

[A] When lighting switch is switched from "1ST" → "2ND"

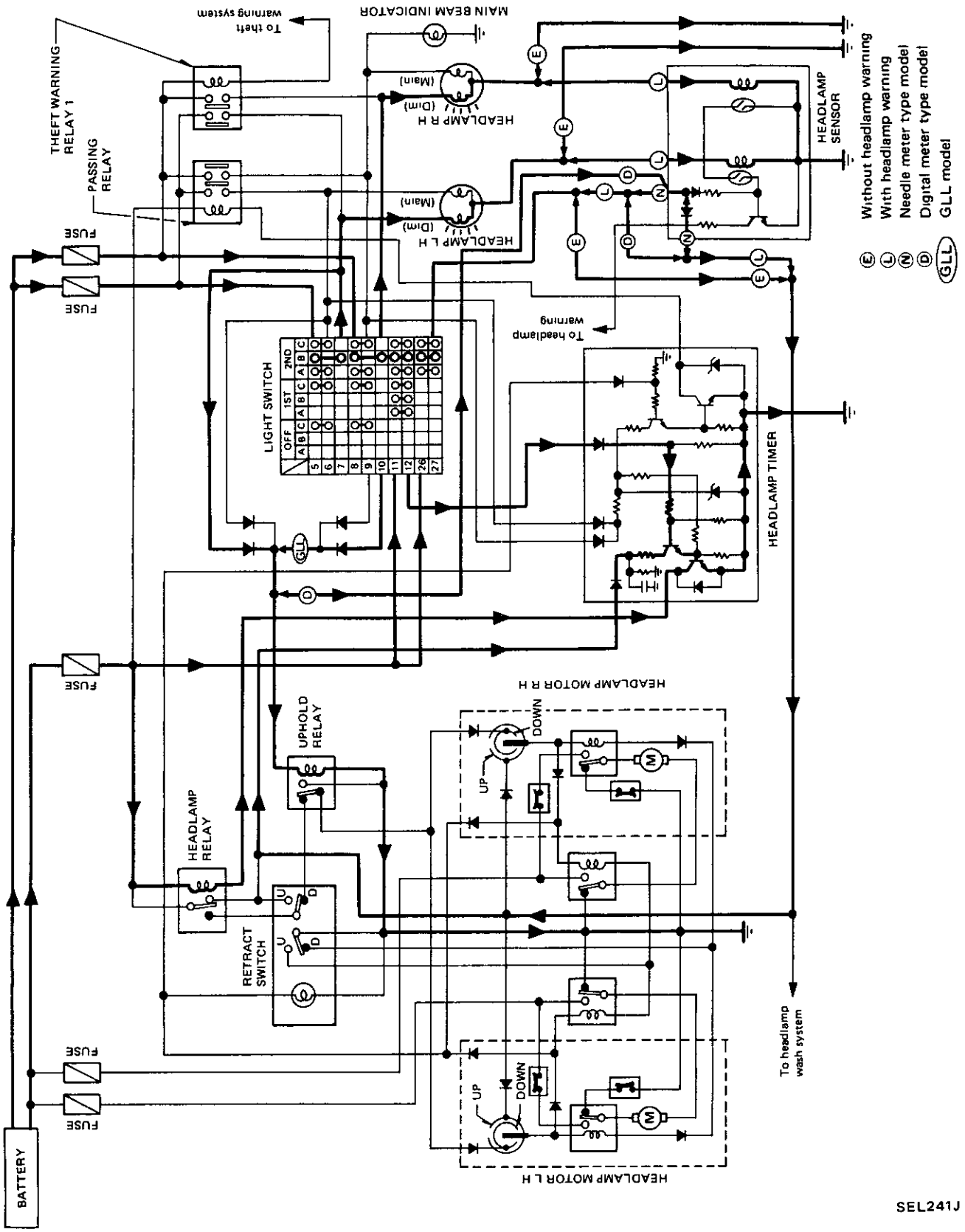
A-1· While operating the headlamp motor to open position



SEL240J

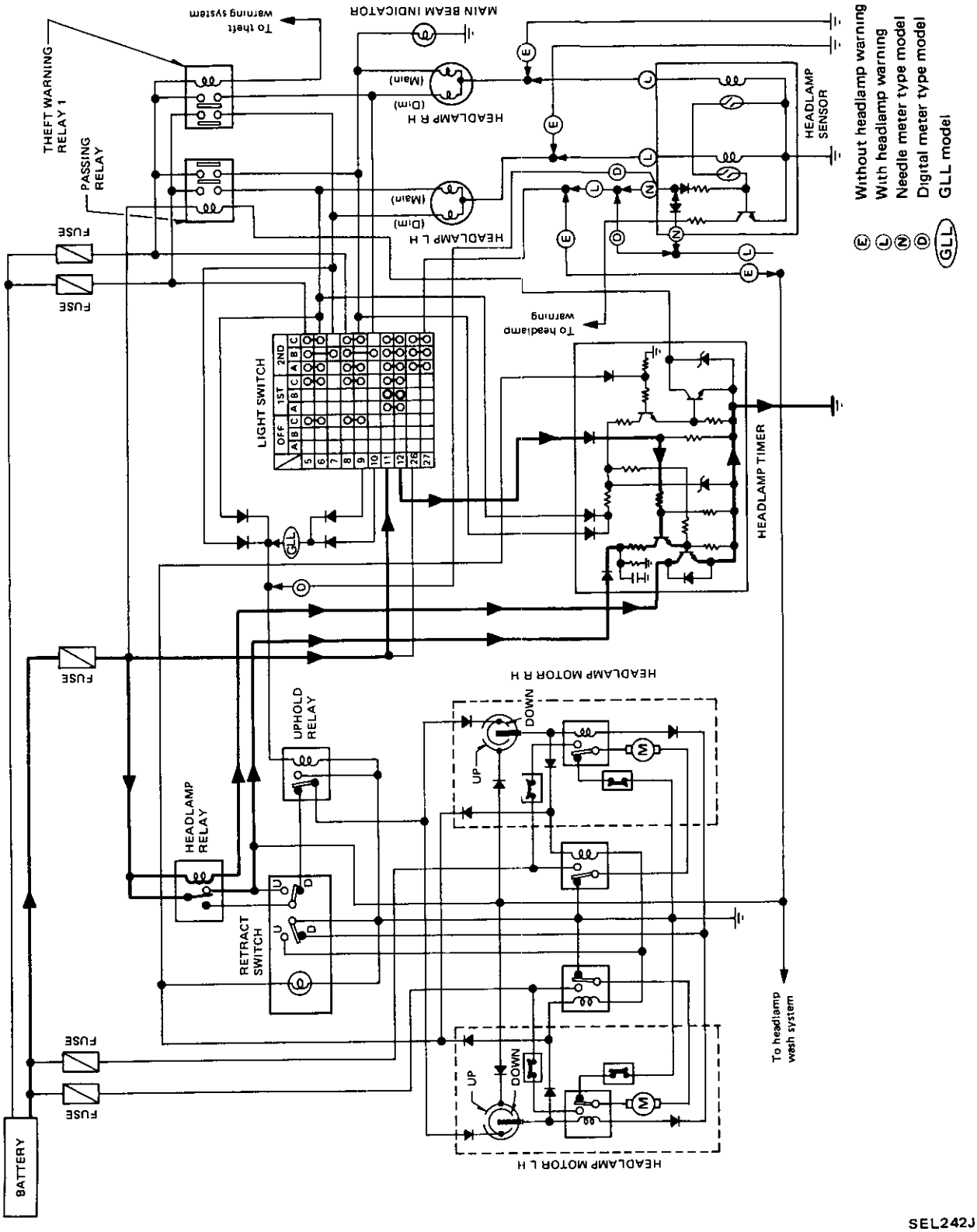
Description (Cont'd)

A-2: After the headlamp motor reaches fully open position



Description (Cont'd)

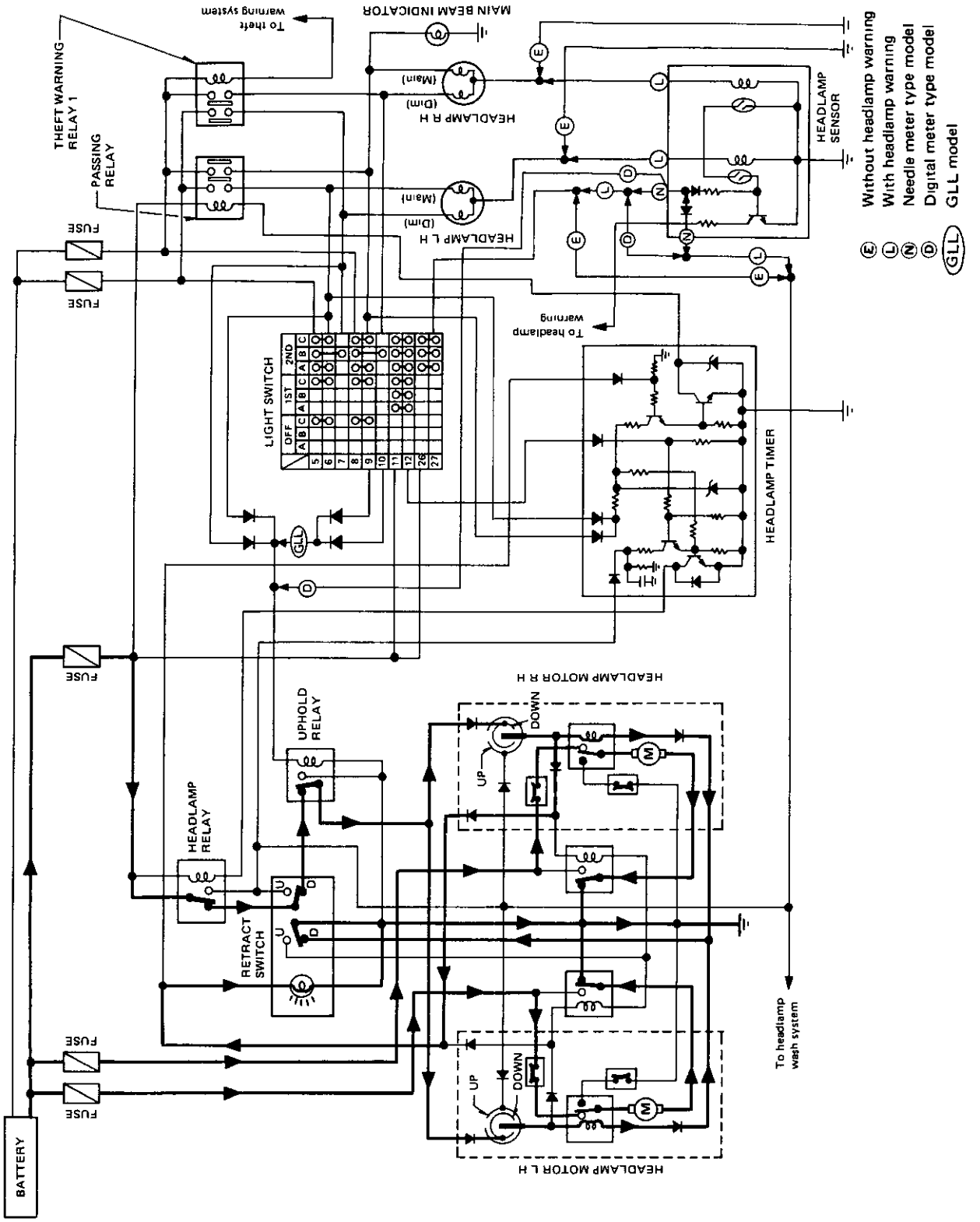
[B] When lighting switch is switched from "2ND" → "1ST"
(Headlamp goes out and keeps up by headlamp timer and headlamp relay.)



SEL242J

Description (Cont'd)

[C] When lighting switch is switched from "1ST" → "OFF"
(While operating the headlamp motor to closed position)

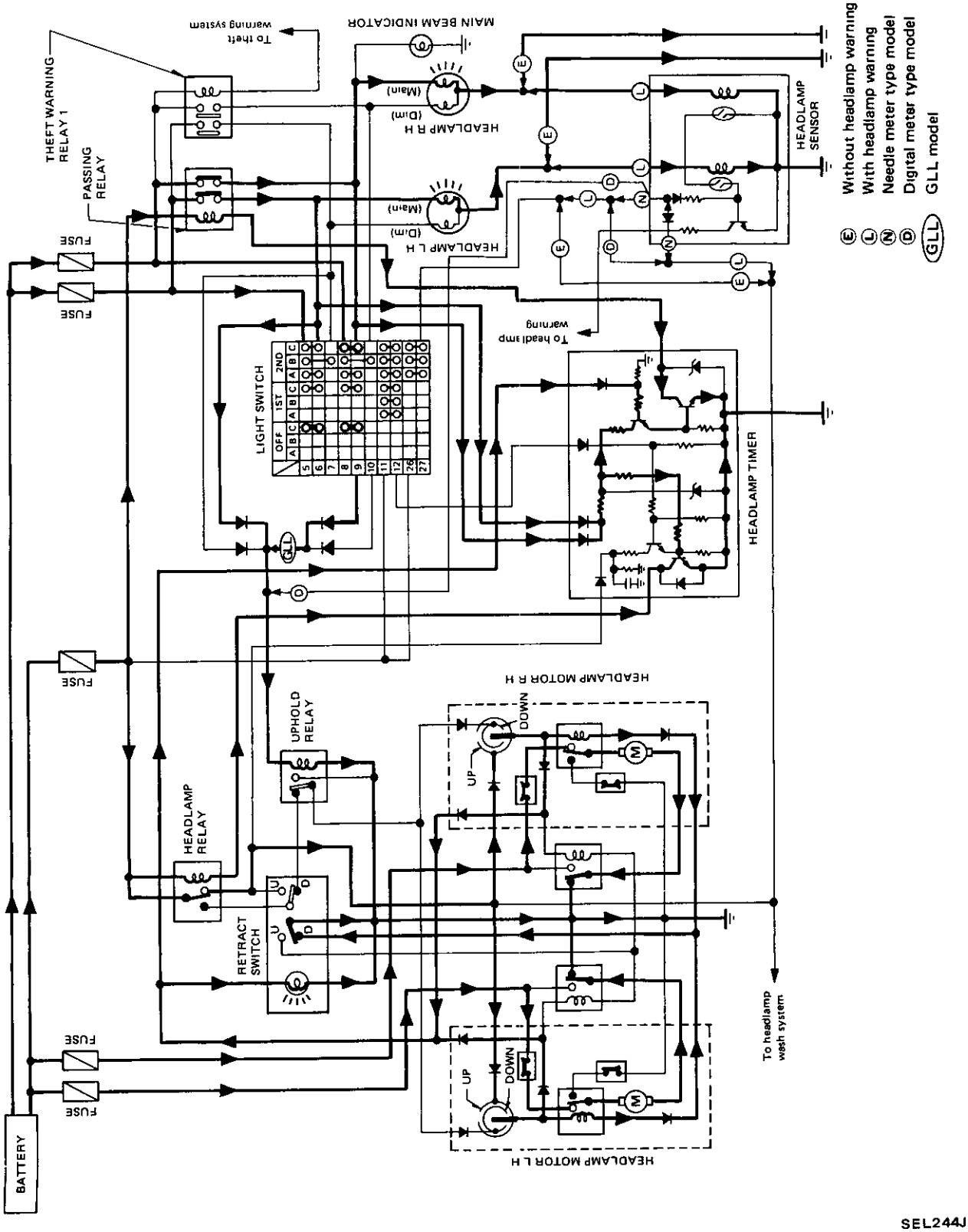


SEL243J

Description (Cont'd)

[D]

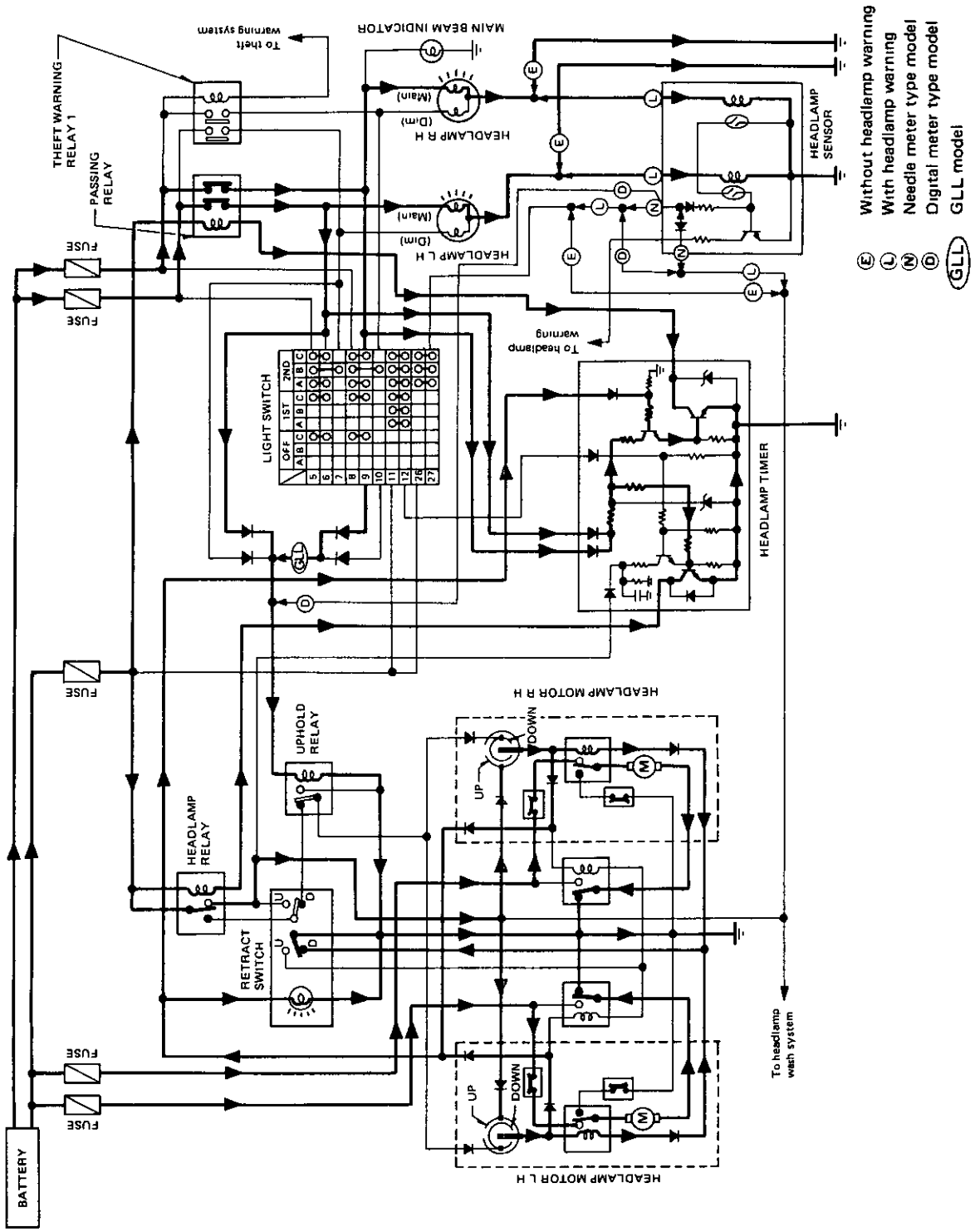
D-1: When lighting switch is switched to "PASSING"



SEL244J

Description (Cont'd)

D-2: After releasing lighting switch from "PASSING"
(While operating the headlamp motor to open position)

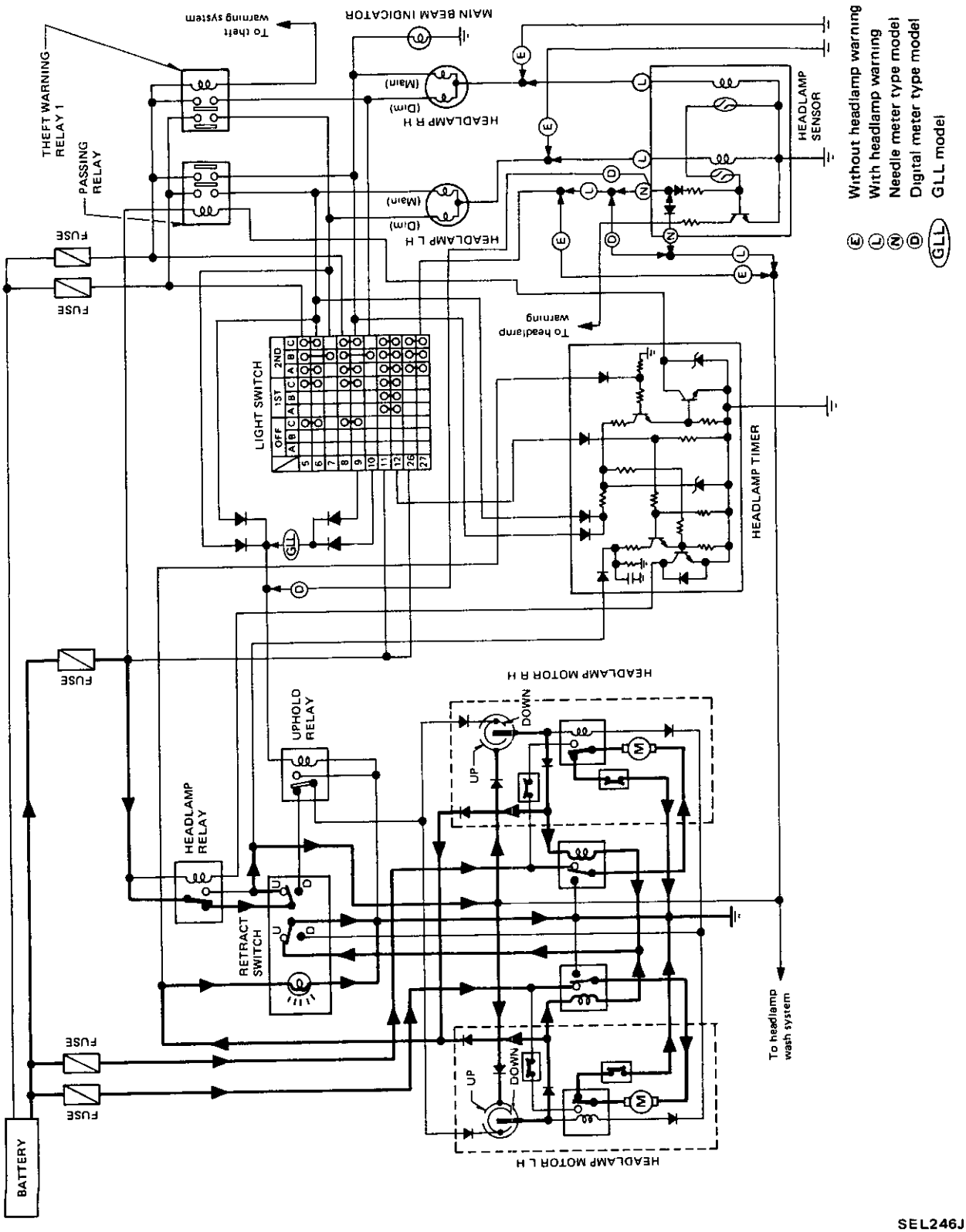


SEL245J

Closing operation is the same as [C] when lighting switch is switched from "1ST" → "OFF"

Description (Cont'd)

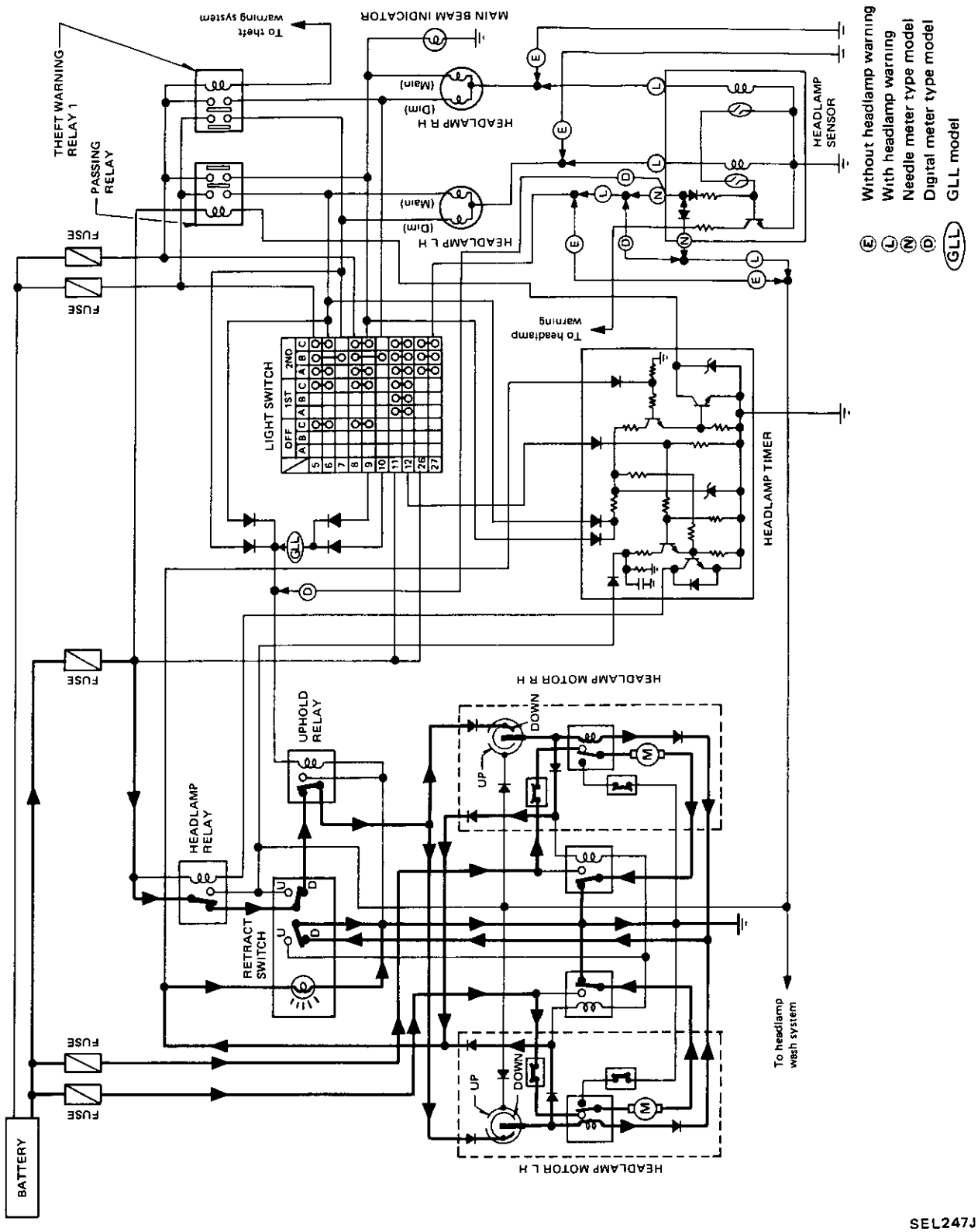
[E] When retractor switch is turned ON
(While operating the headlamp motor to open position)



SEL246J

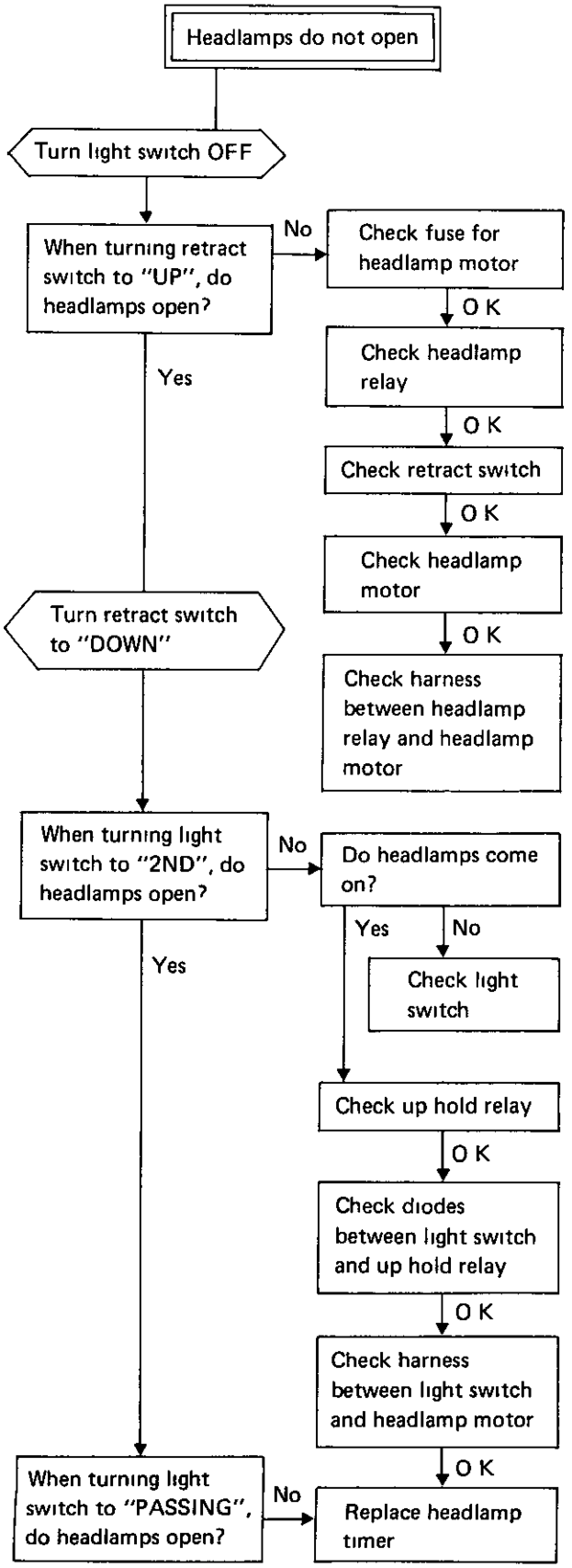
Description (Cont'd)

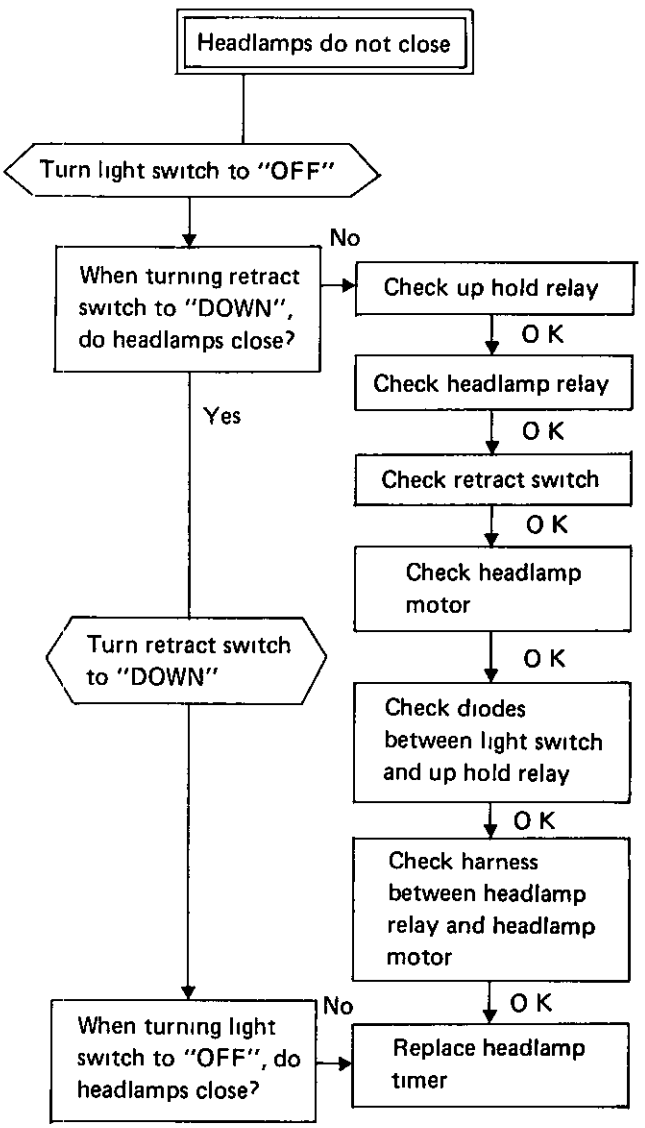
[F] When retractor switch is turned OFF
(While operating the headlamp motor to closed position)



SEL247J

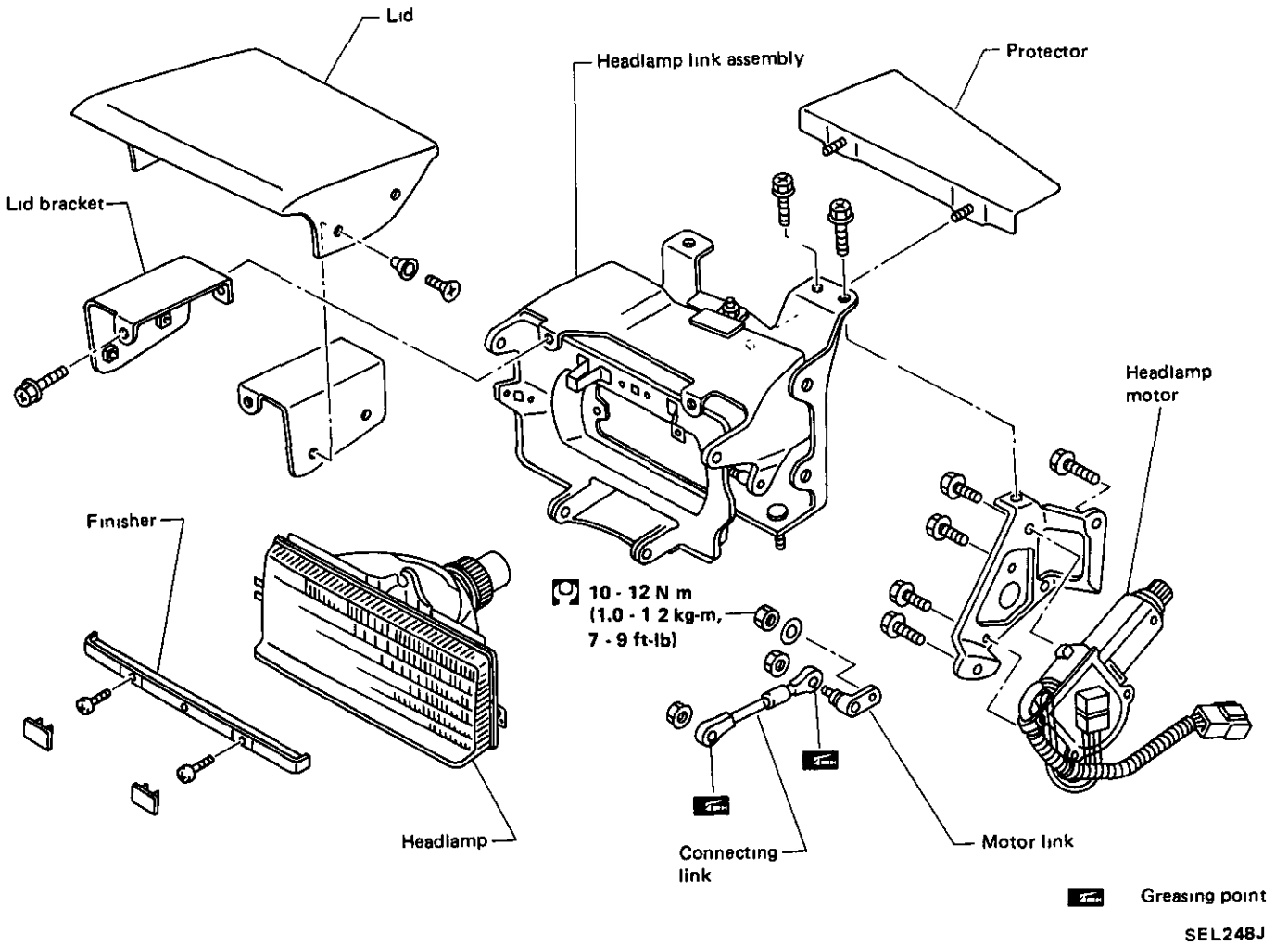
Trouble-shooting





HEADLAMP

Removal

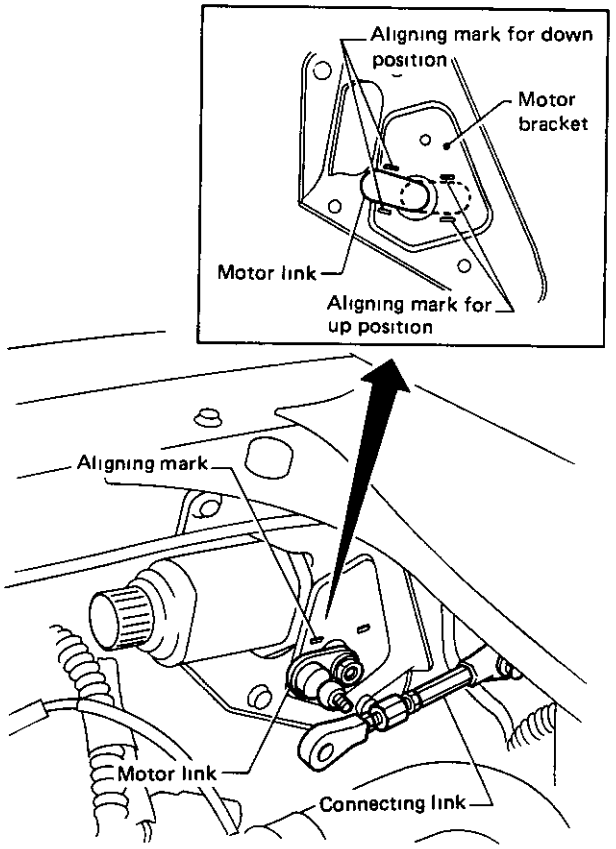


Installation

1 Set the headlamp motor to "DOWN" position
- Connect harness to headlamp motor and set retract switch to "DOWN". Headlamp motor can now be set to "DOWN" with retract switch.

2 Install the headlamp link assembly and headlamp motor in the body.

3. Install the connecting link
- When installing the link to the motor, make sure the motor link is installed as shown below.

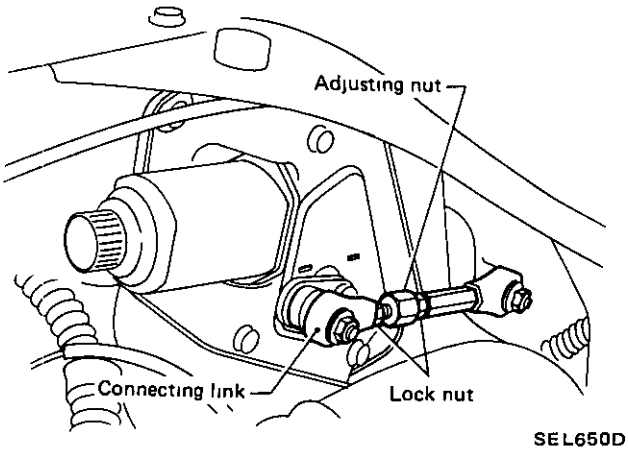


SEL649D

Adjustment

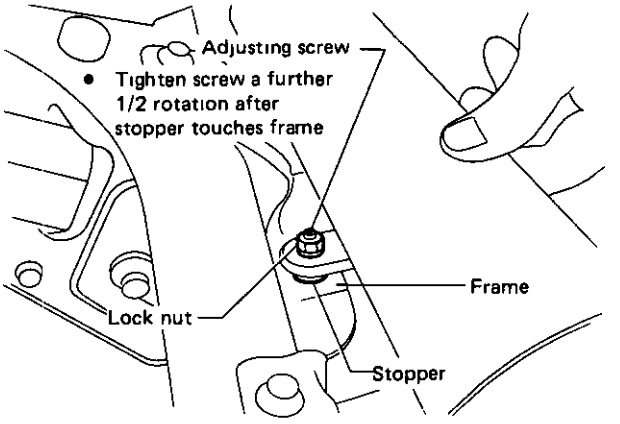
- After installing connecting link, always adjust it as follows·

1) Set the headlamp to "DOWN" position
2) Adjust connecting link so that the lid is properly aligned with hood and fender.



SEL650D

3) Set the headlamp to "UP" position.
4) Adjust stopper screw.



SEL651D

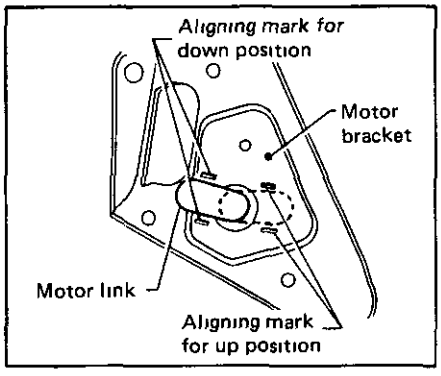
Headlamp Motor Check

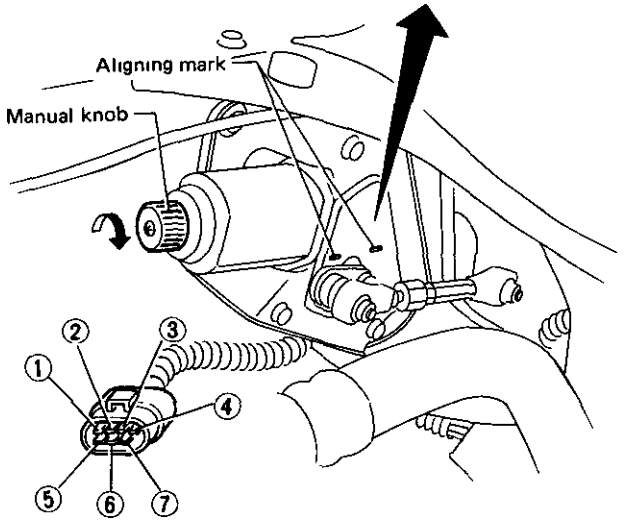
- Use an ohmmeter to check for continuity in headlamp motor circuit while rotating motor with manual knob

CAUTION:

Prior to performing continuity test, disconnect ground cable from battery.

Headlamp	Ohmmeter probe		Continuity
	(+)	(−)	
DOWN	⑤	①	Yes
	①	⑤	No
	⑦	①	Yes
	①	⑦	No
UP	⑤	②	Yes
	②	⑤	No
	⑦	②	Yes
	②	⑦	No





SEL652D

Aiming Adjustment

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 aimer is not available, aiming adjustment can be done as follows

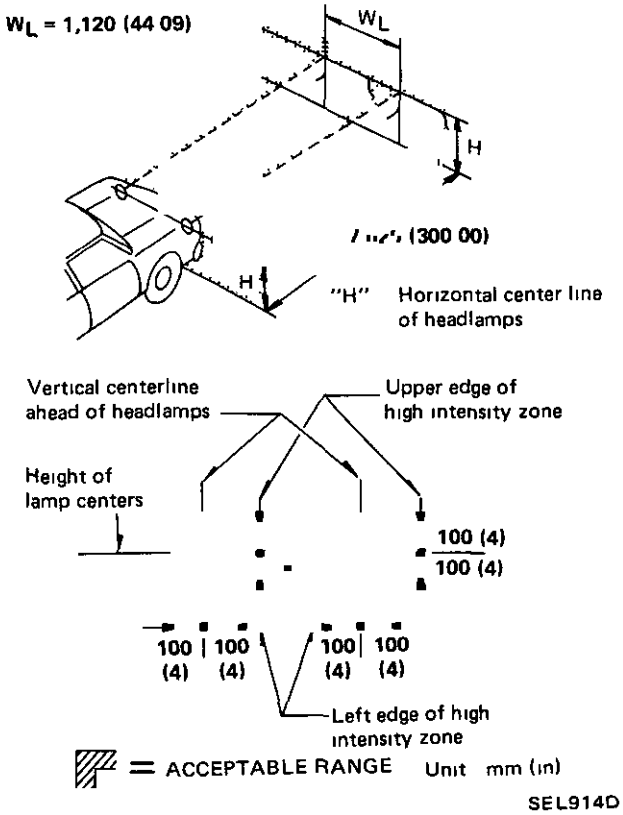
For details, refer to the regulations in your own country

CAUTION:

a. **Keep all tires inflated to correct pressures**

b **Place vehicle and tester on the same flat surface.**

c. **Ensure that there is no load in vehicle (coolant, engine oil filled up to correct level and full fuel tank) other than the driver (or equivalent weight placed in driver's position).**



SEL914D

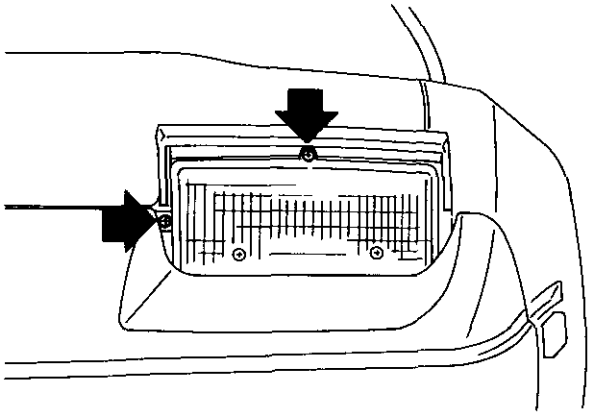
- **Adjust headlamps so that upper edge and left edge of high intensity zone are within the acceptable range as shown in the figure above.**
- **Dotted lines in illustration show center of headlamp**

Aiming Adjustment (Cont'd)

LOW BEAM

1 Turn headlamp low beam on
2 Use adjusting screws to perform aiming adjustment

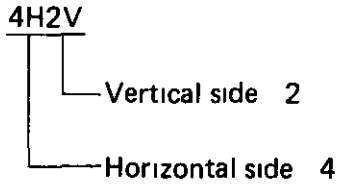
- **Before adjusting headlamps, remove covers.**
- **First tighten the adjust screw all the way and then make adjustment by loosening the screw.**

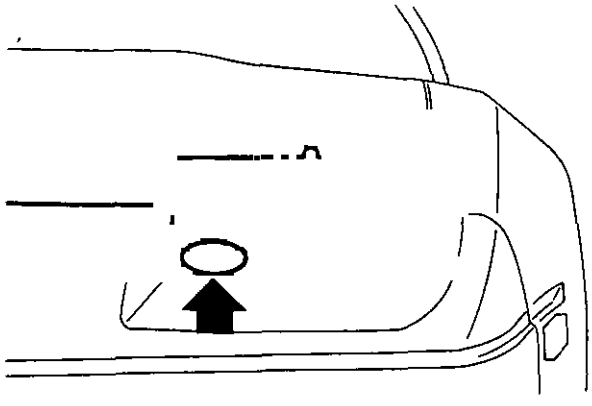


SEL138J

When using a mechanical aimer, adjust it to the data stamped on the headlamps

Example.





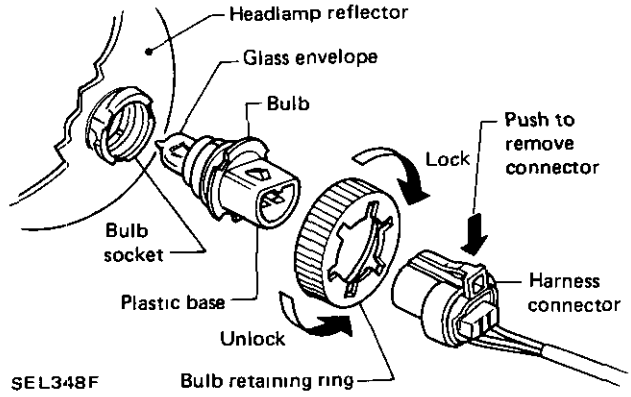
SEL139J

Bulb Replacement

The headlamp is a semi-sealed beam type which uses a replaceable halogen bulb A bulb can be replaced from the engine compartment side without removing the headlamp body

- **Grasp only its plastic base when handling the bulb Never touch the glass envelope**

1 Disconnect the battery cable
2 Turn the bulb retaining ring counterclockwise until it is free from the headlight reflector, and then remove it
3. Disconnect the harness connector from the rear end of the bulb
4 Remove the headlamp bulb carefully Do not shake or rotate the bulb when removing it



SEL348F

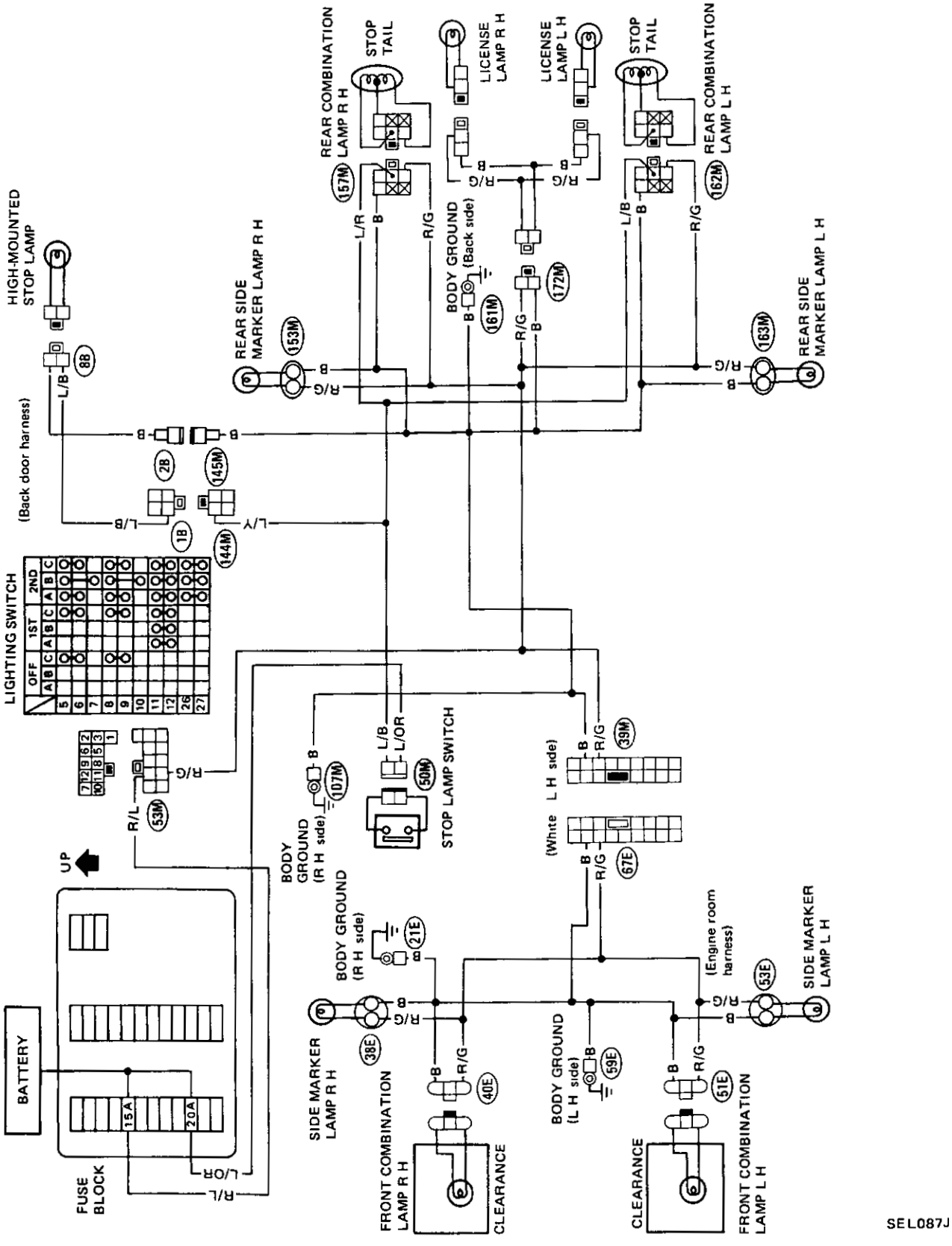
5 Installation is in the reverse order of removal

CAUTION:

- **Do not leave the bulb out of the headlamp reflector for a long period of time as dust, moisture, smoke, etc. may enter the headlamp body and affect the performance of the headlamp. Thus, the headlamp bulb should not be removed from the headlamp reflector until just before a replacement bulb is to be installed.**

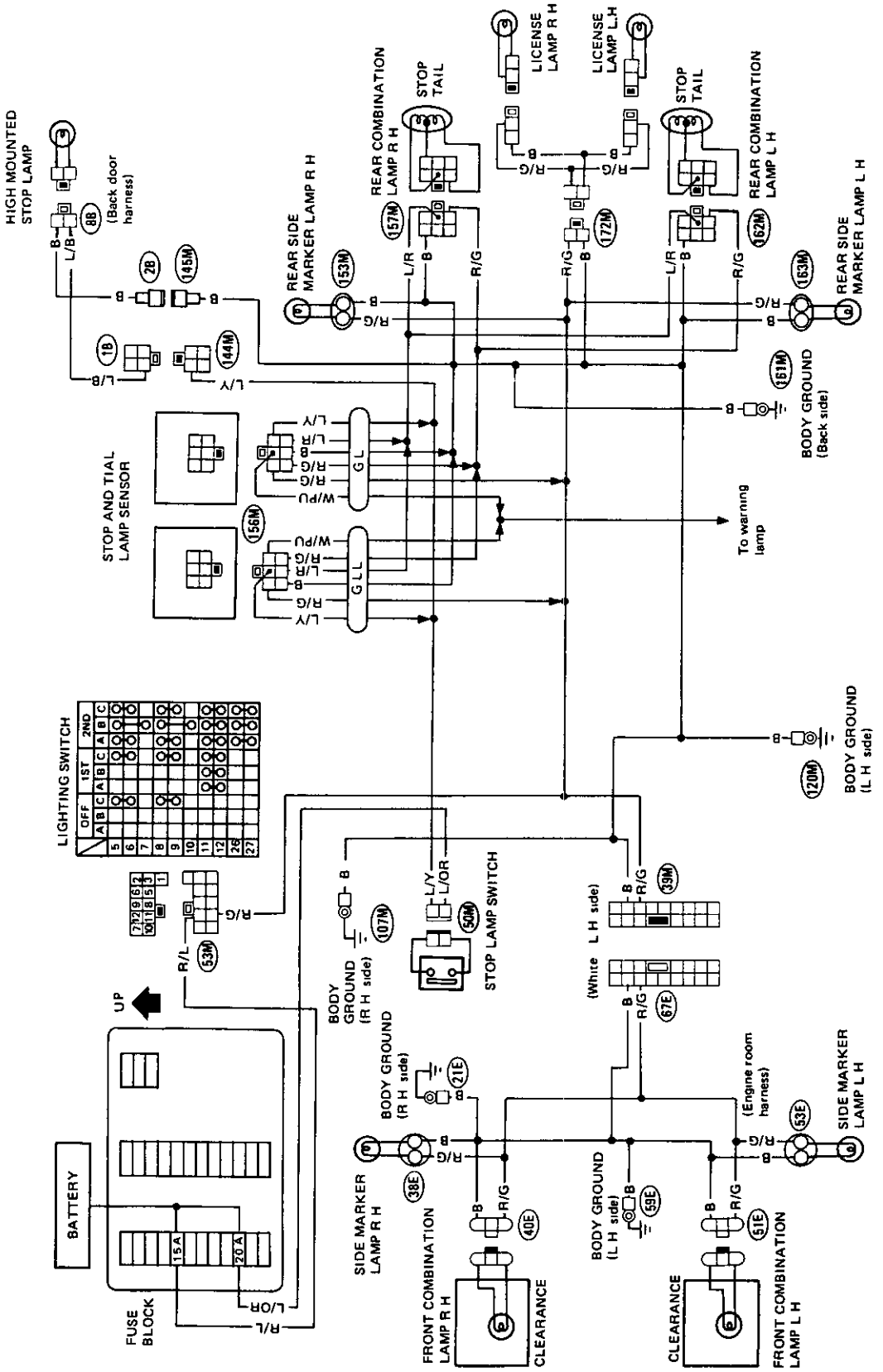
Clearance, License, Tail and Stop Lamps/Wiring Diagram

WITHOUT STOP & TAIL LAMP SENSOR



Clearance, License, Tail and Stop Lamps/Wiring Diagram (Cont'd)

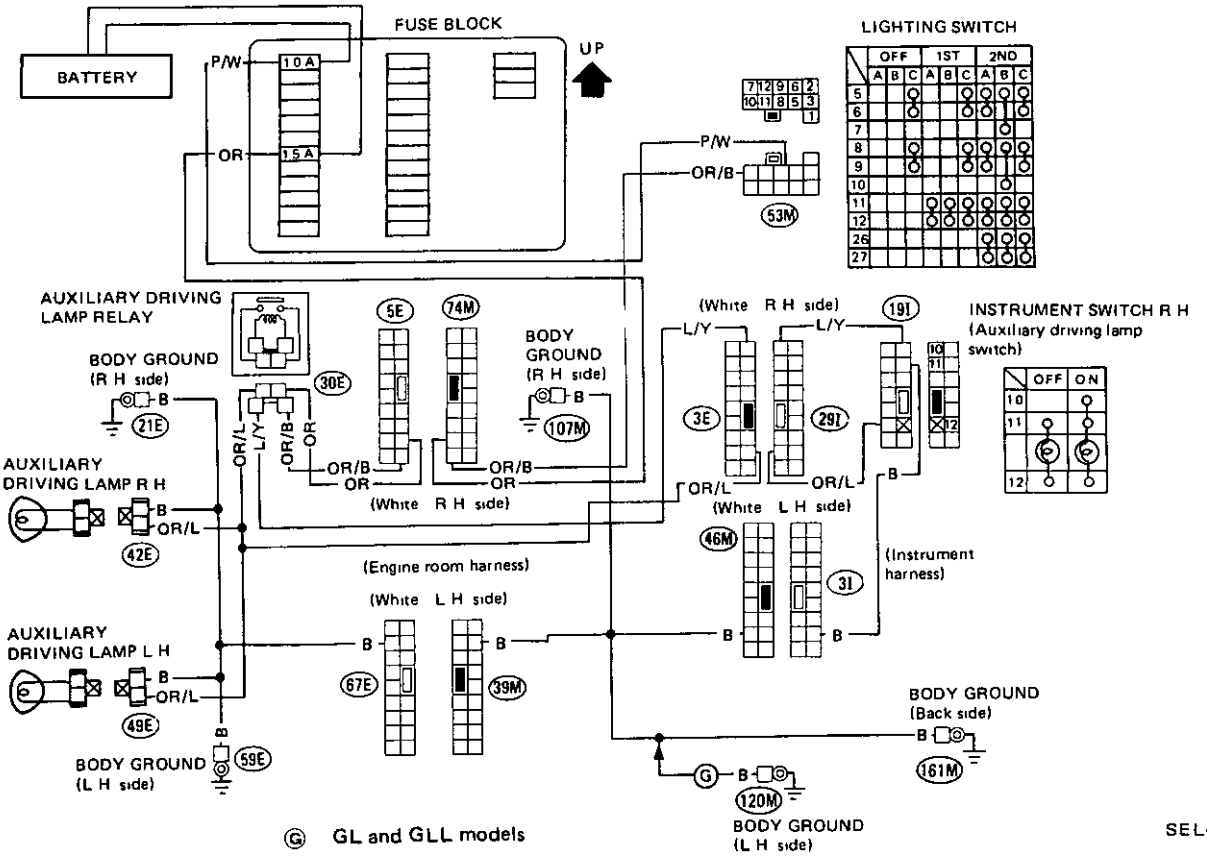
WITH STOP & TAIL LAMP SENSOR



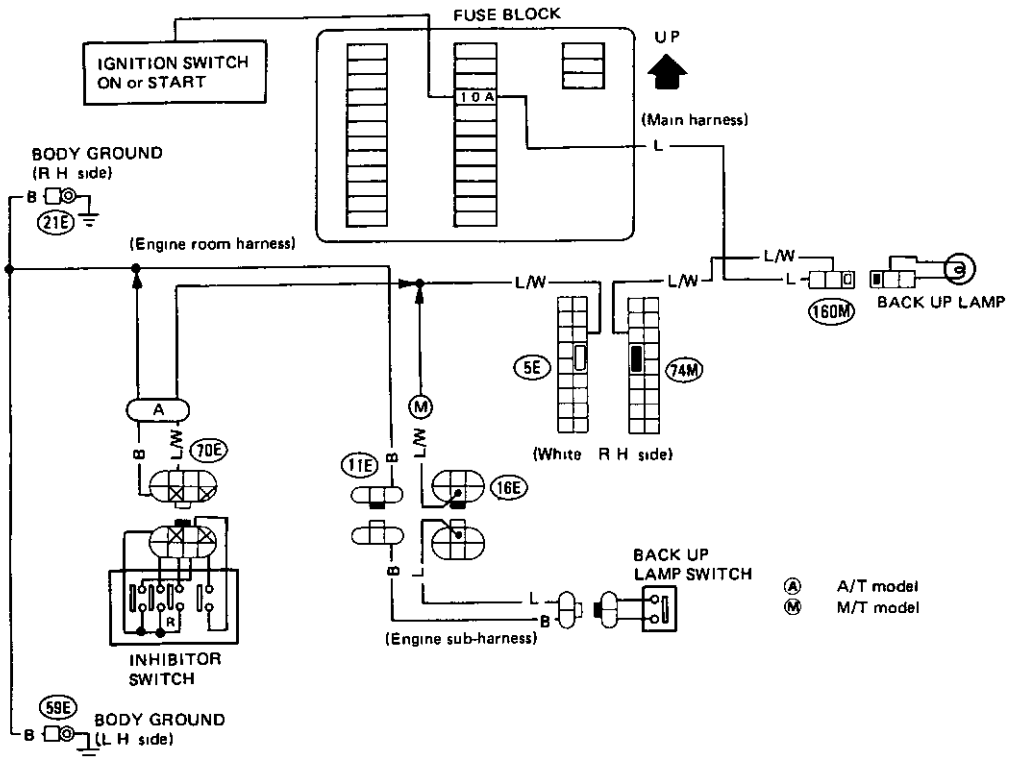
SEL088J

EXTERIOR LAMP

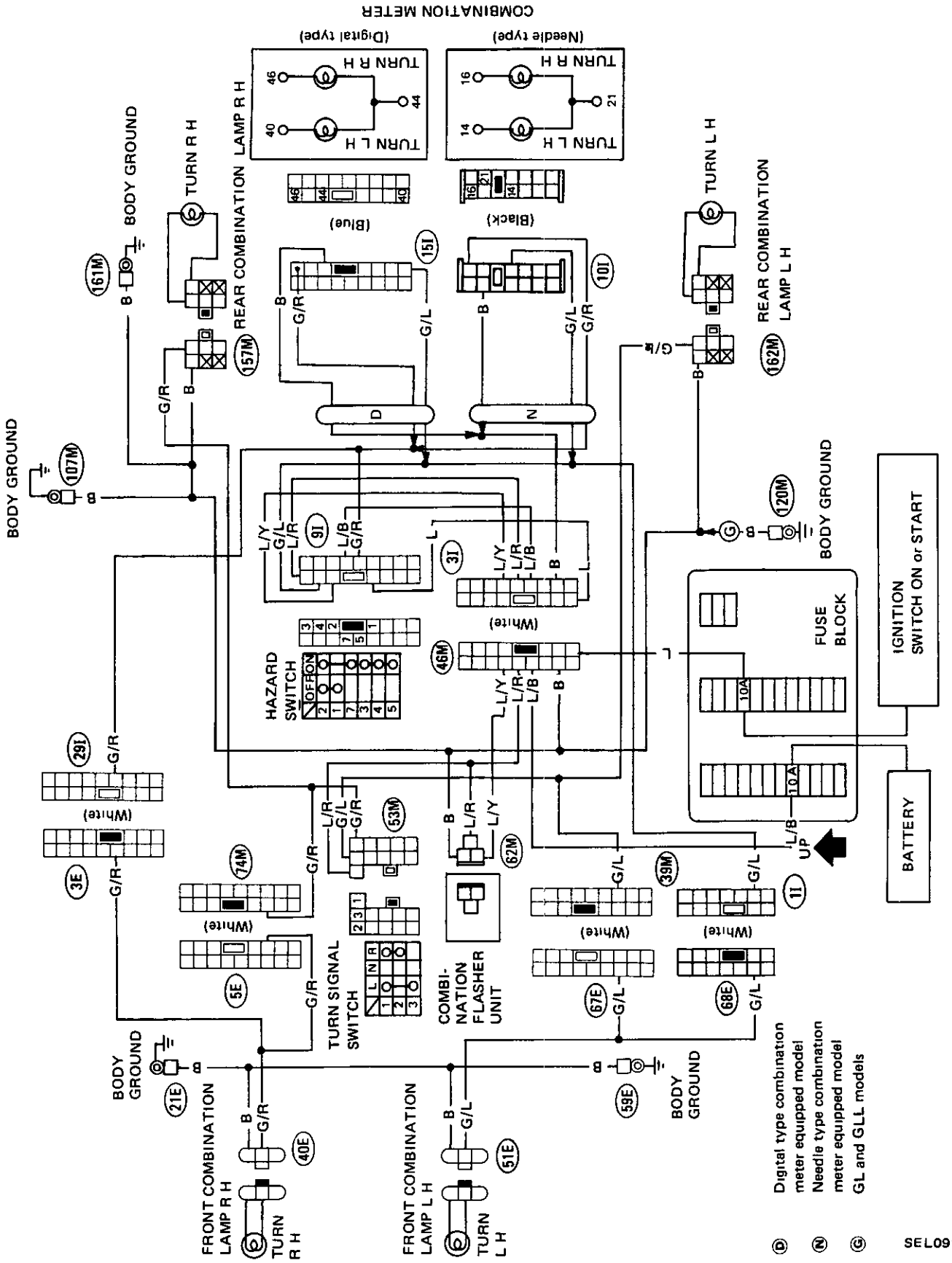
Auxiliary Driving Lamp/Wiring Diagram



Back-up Lamp/Wiring Diagram



Turn Signal and Hazard Warning Lamps/Wiring Diagram



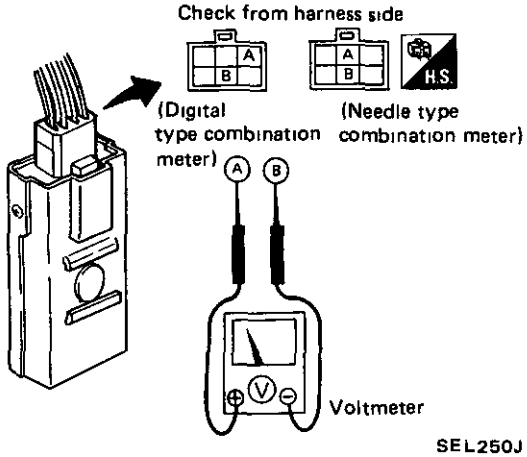
EXTERIOR LAMP

Stop and Tail Lamp Sensor Check

- **Before checking, ensure that bulbs meet specifications.**

STOP LAMP

Start engine
Stop lamp switch on (Depress brake pedal)

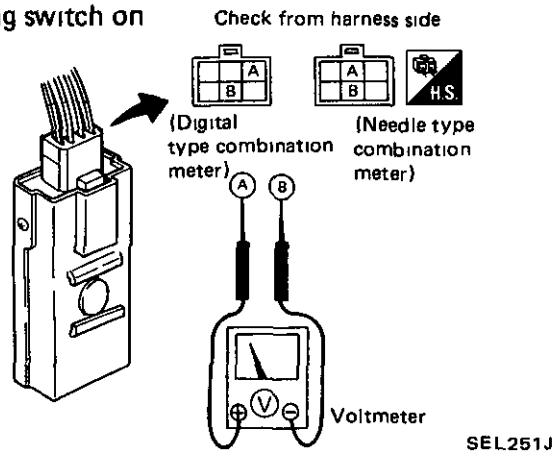


SEL250J

All stop lamps in good order:
Approx. 5V (Digital type combination meter)
Approx. 12V (Needle type combination meter)
At least one of stop lamps is moved:
Less than 3V (Digital type combination meter)
Approx. 1V (Needle type combination meter)

TAIL LAMP

Start engine.
Lighting switch on



SEL251J

All tail lamps in good order:
Approx. 5V (Digital type combination meter)
Approx. 12V (Needle type combination meter)
At least one of tail lamps is moved:
Less than 3V (Digital type combination meter)
Approx. 1V (Needle type combination meter)

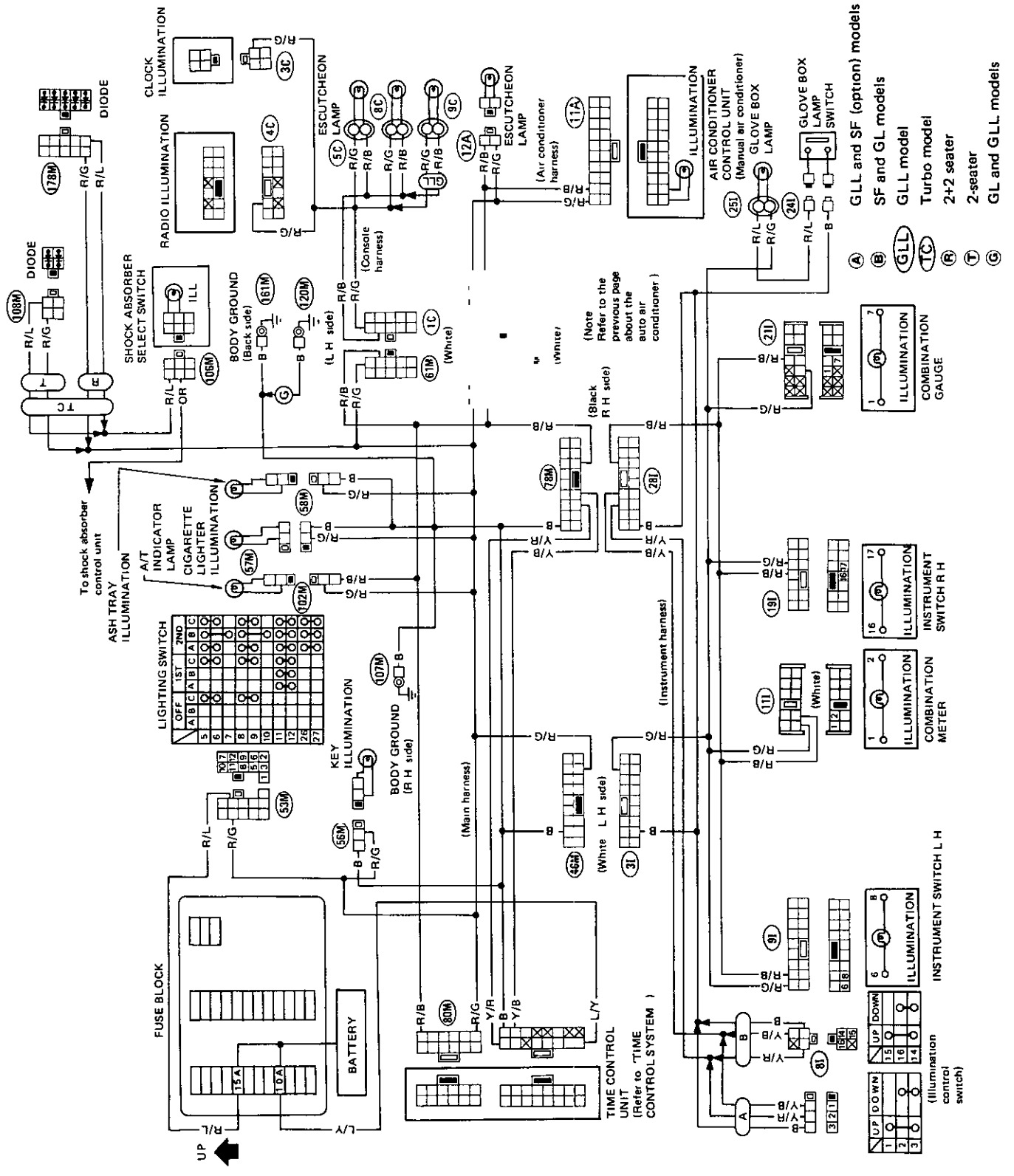
Bulb Specifications

Item	Wattage (W)	Bulb No
Headlamp	65/45	9004
Auxiliary driving lamp	55	–
Front combination lamp	27/8	1157
Front side marker lamp	3 4	158
Rear side marker lamp	3 4	158
Rear combination lamp		
Turn signal	27	1073
Stop/Tail	27/8	1157
Back-up	27	1073
License plate lamp	3 8	–
High-mounted stop lamp	7 3*	–
Interior lamp	10	–
Spot lamp	8	–
Rear (luggage) compartment lamp	3 4	–
Door step lamp	5	–
Leg room lamp	2	–

* Light emission diode

Illumination/Wiring Diagram

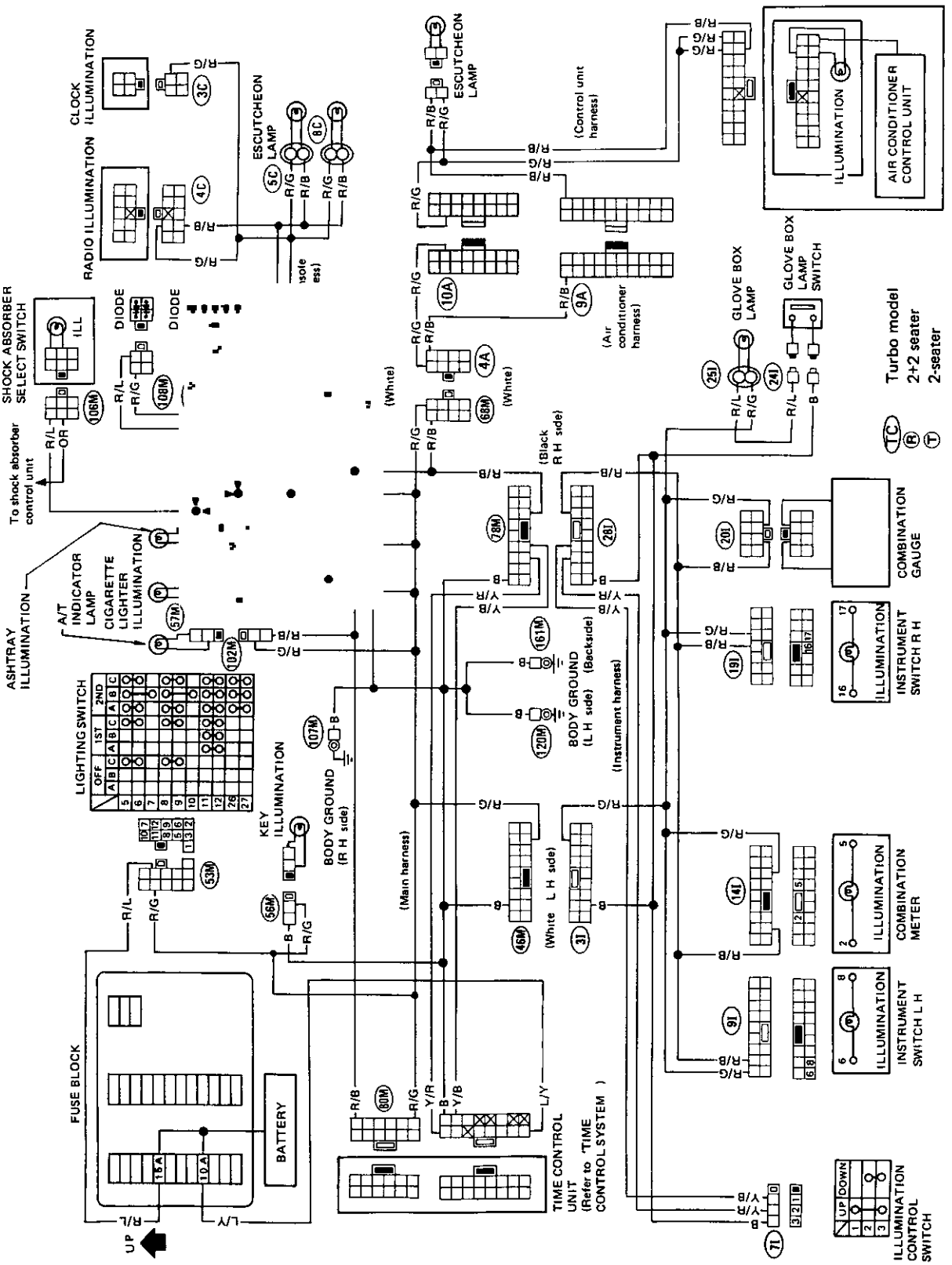
NEEDLE TYPE COMBINATION METER EQUIPPED MODEL



SEL092J

Illumination/Wiring Diagram (Cont'd)

DIGITAL TYPE COMBINATION METER EQUIPPED MODEL (GLL)

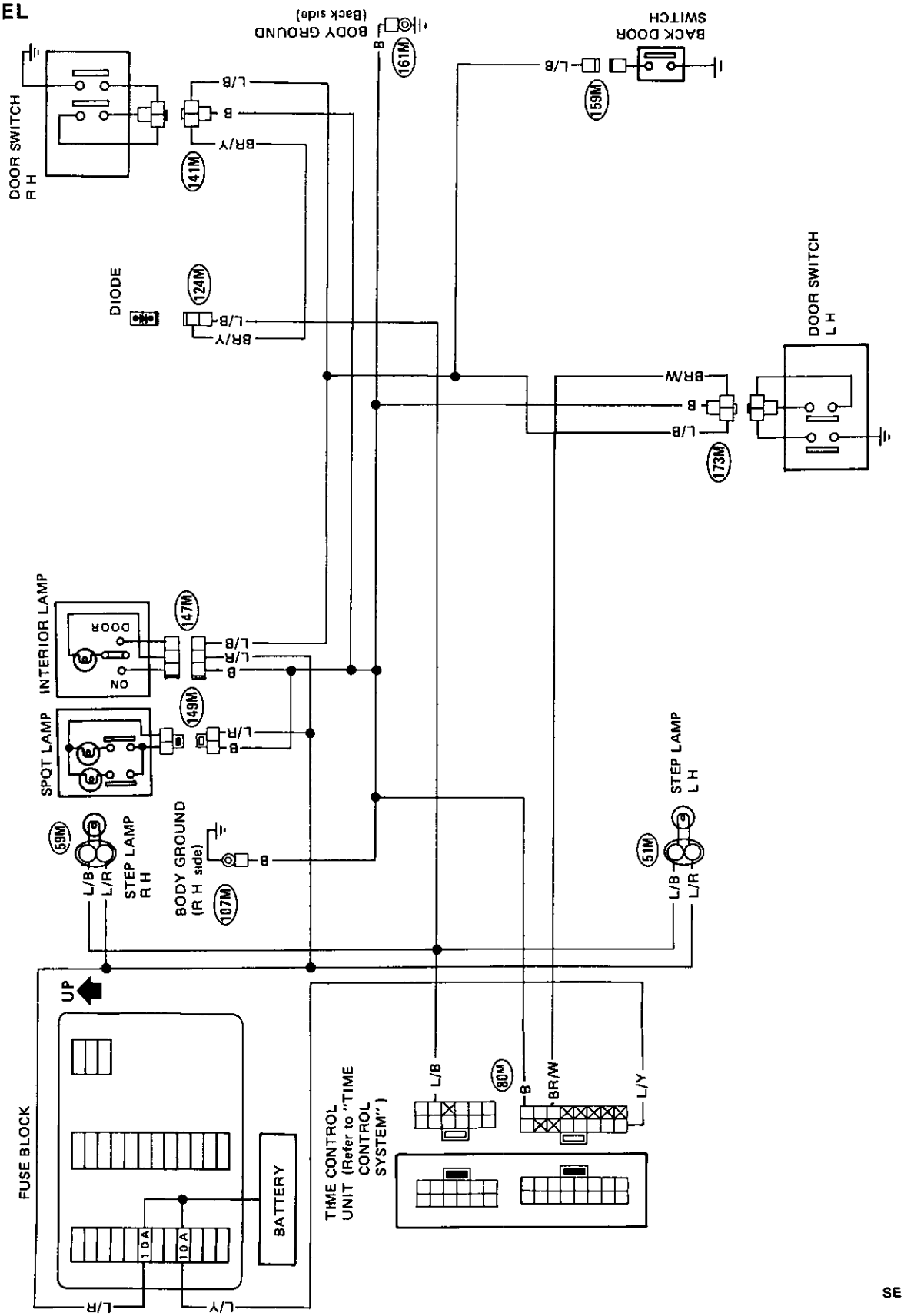


SEL093J

INTERIOR LAMP

Interior, Luggage and Step Lamps/Wiring Diagram

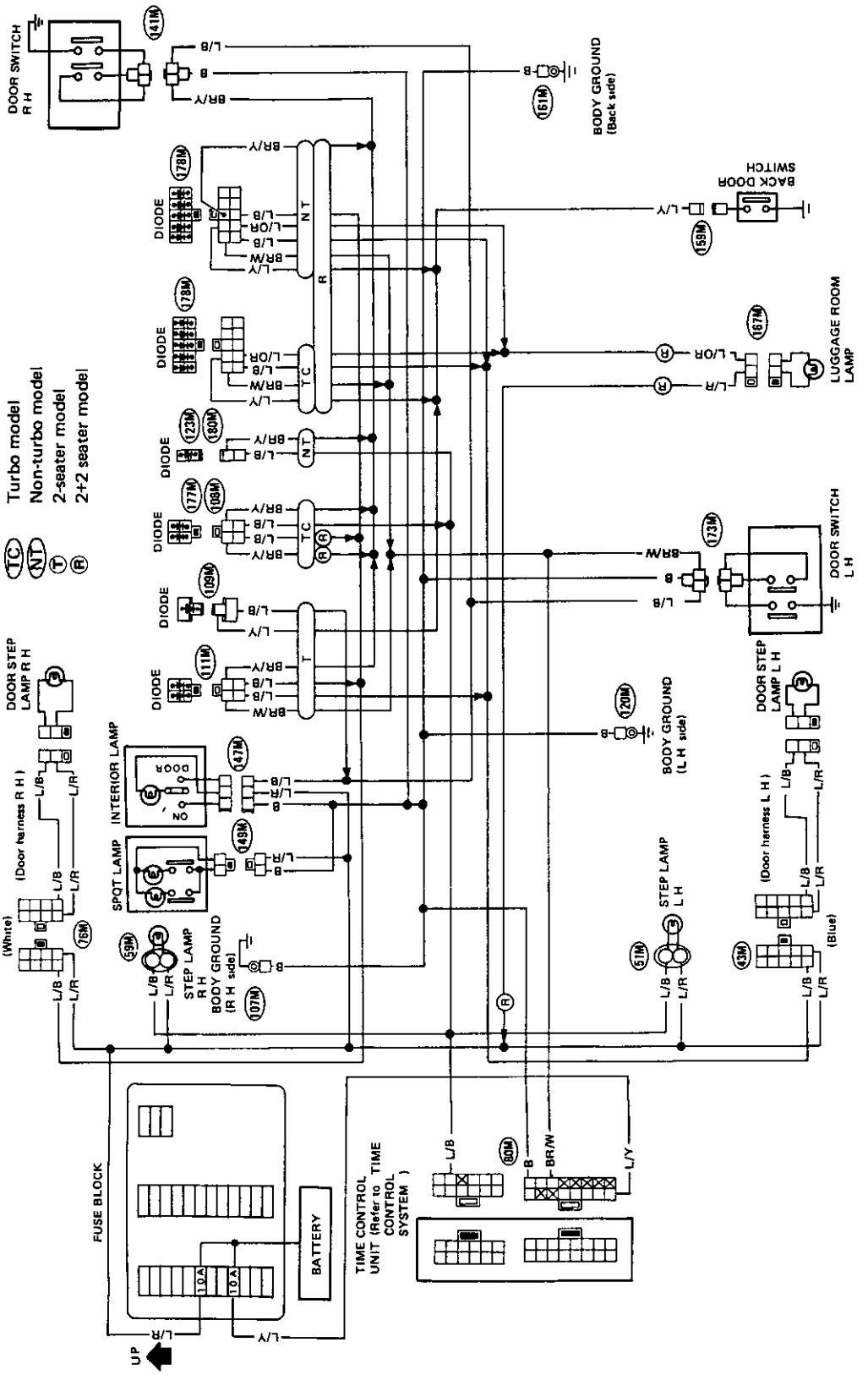
SF MODEL



SEL094J

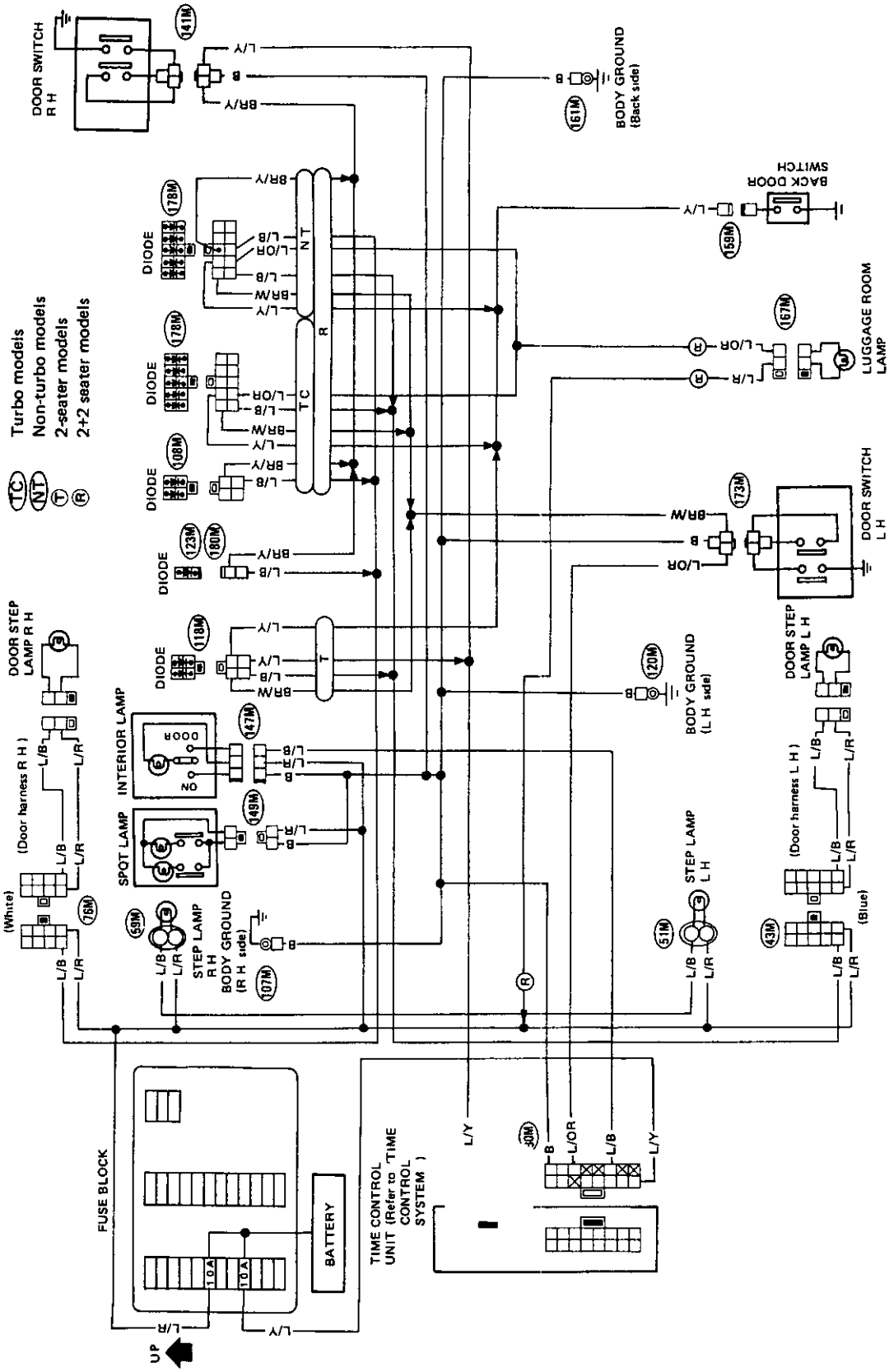
Interior, Luggage and Step Lamps/Wiring Diagram (Cont'd)

GL MODEL



Interior, Luggage and Step Lamps/Wiring Diagram (Cont'd)

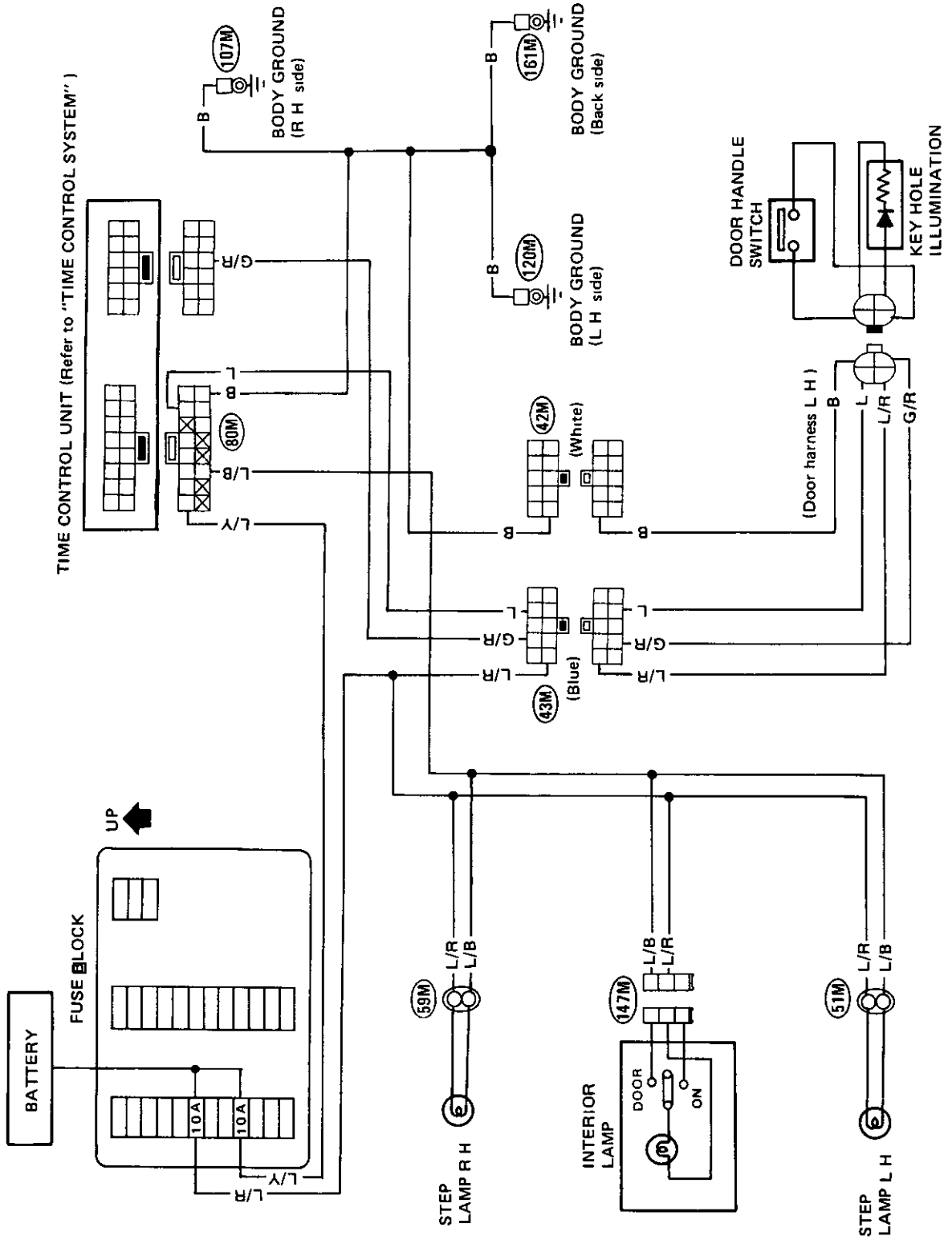
GLL MODEL



SEL096J

INTERIOR LAMP

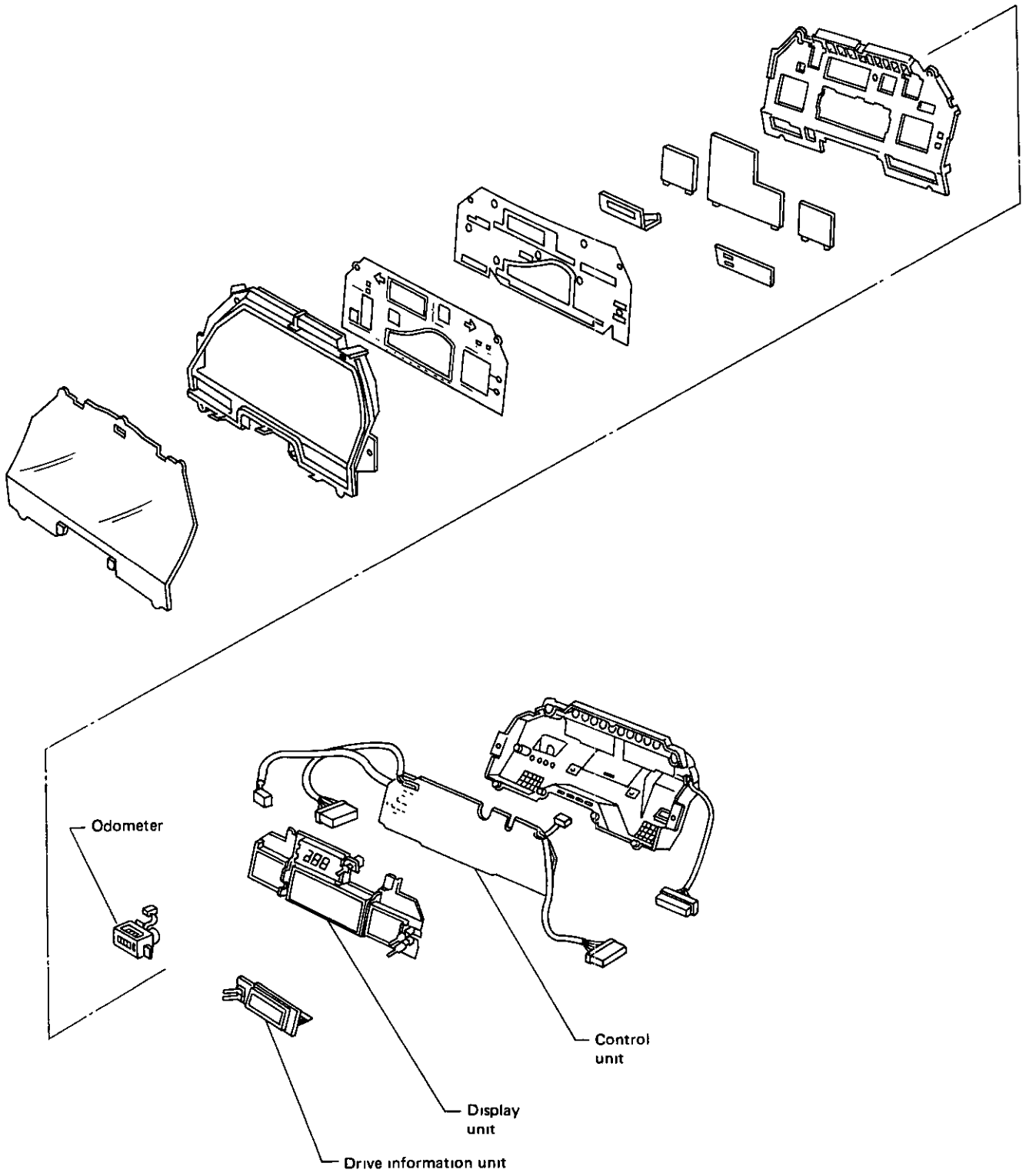
Illuminated Entry System and Door Key Illumination/Wiring Diagram



SEL097J

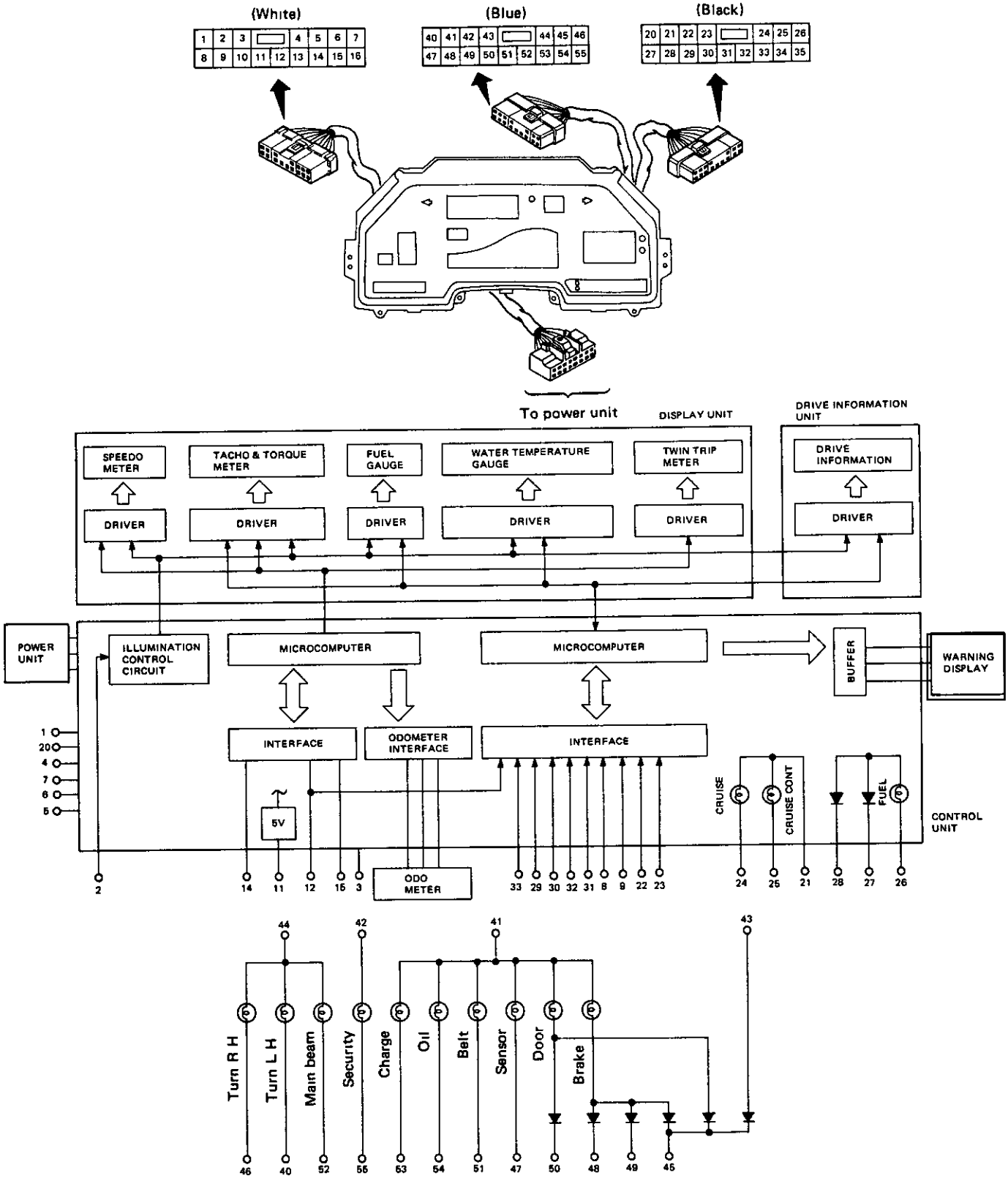
Combination Meter

CAUTION:
Electrical terminal should not be touched with bare hands.



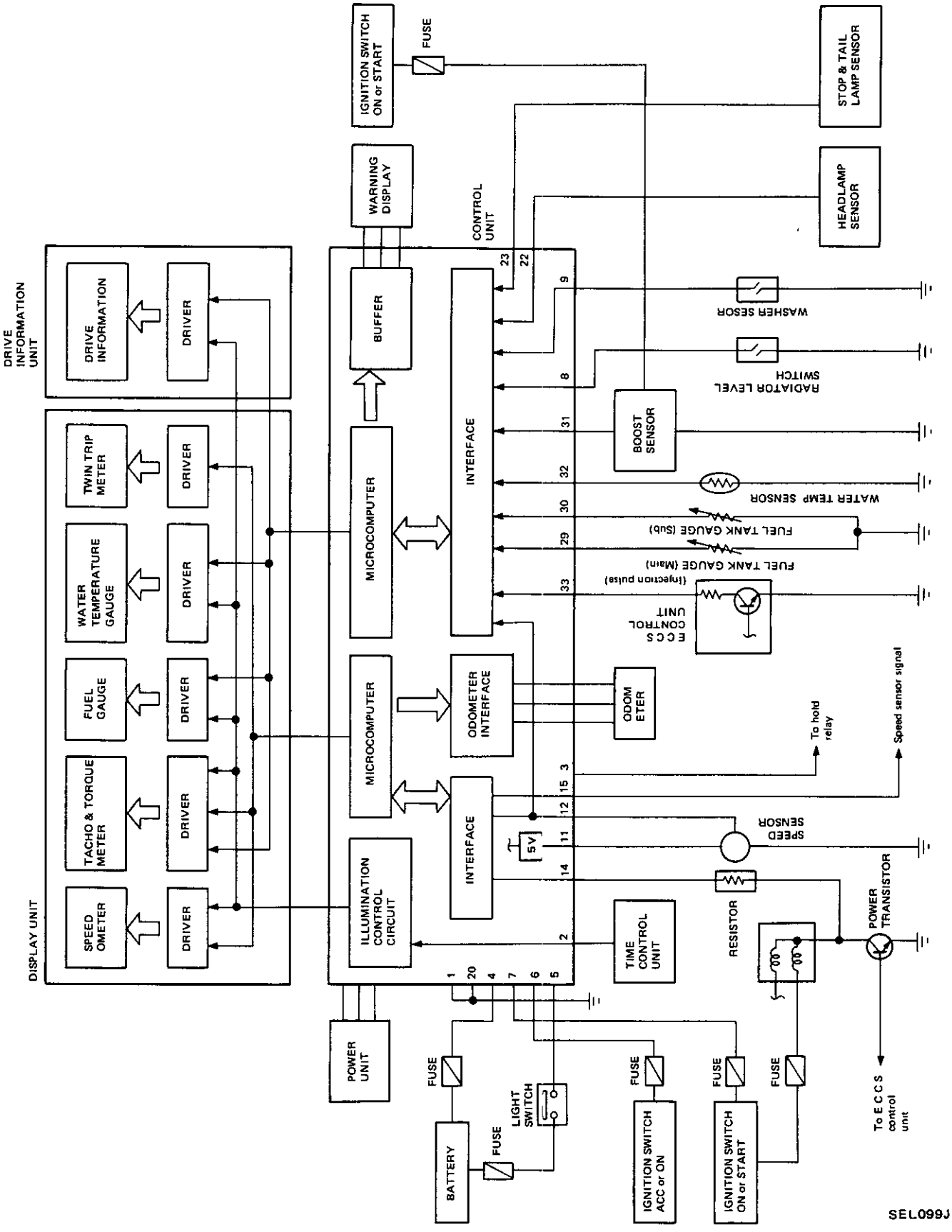
SEL140J

Combination Meter (Cont'd)

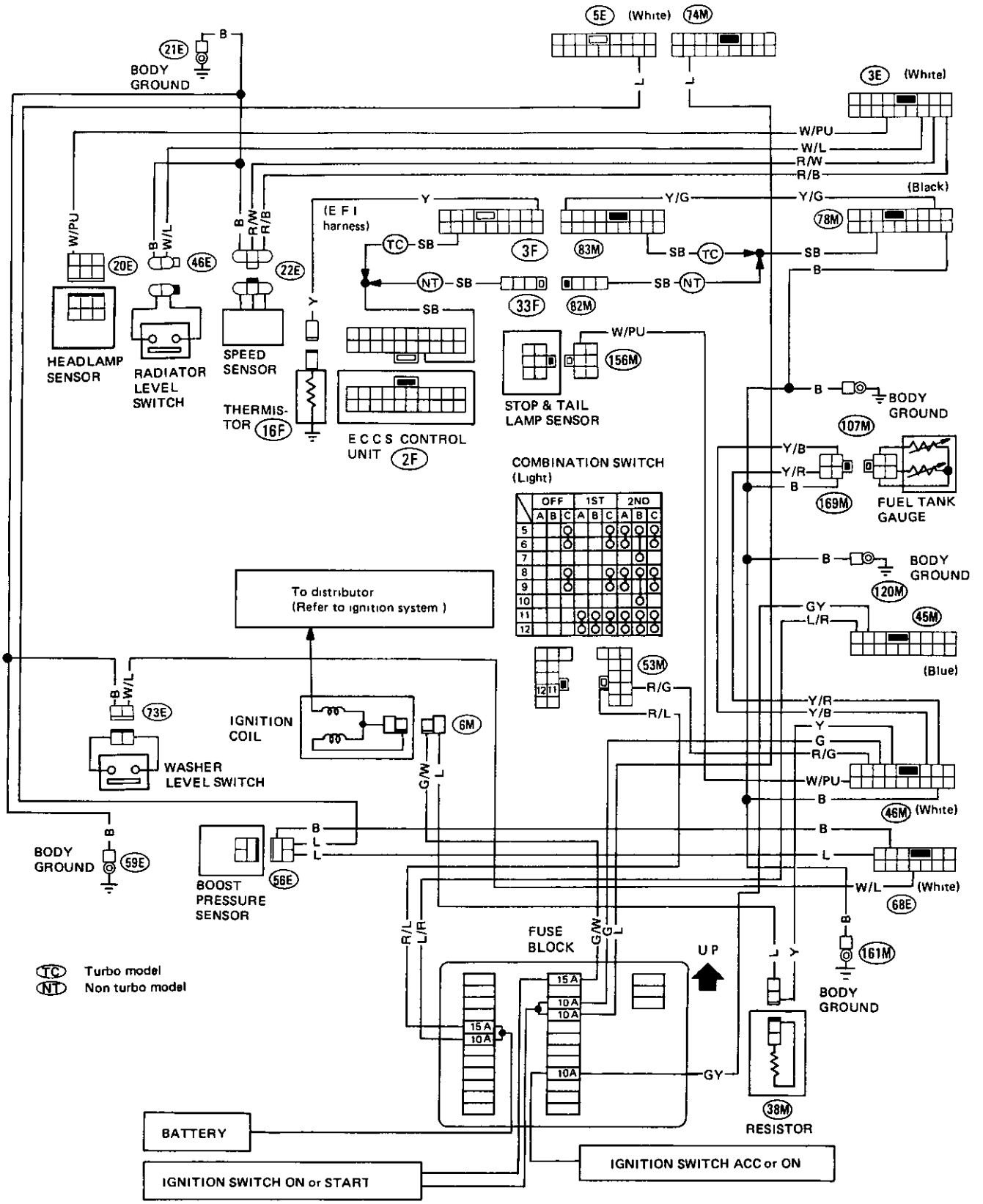


SEL141J

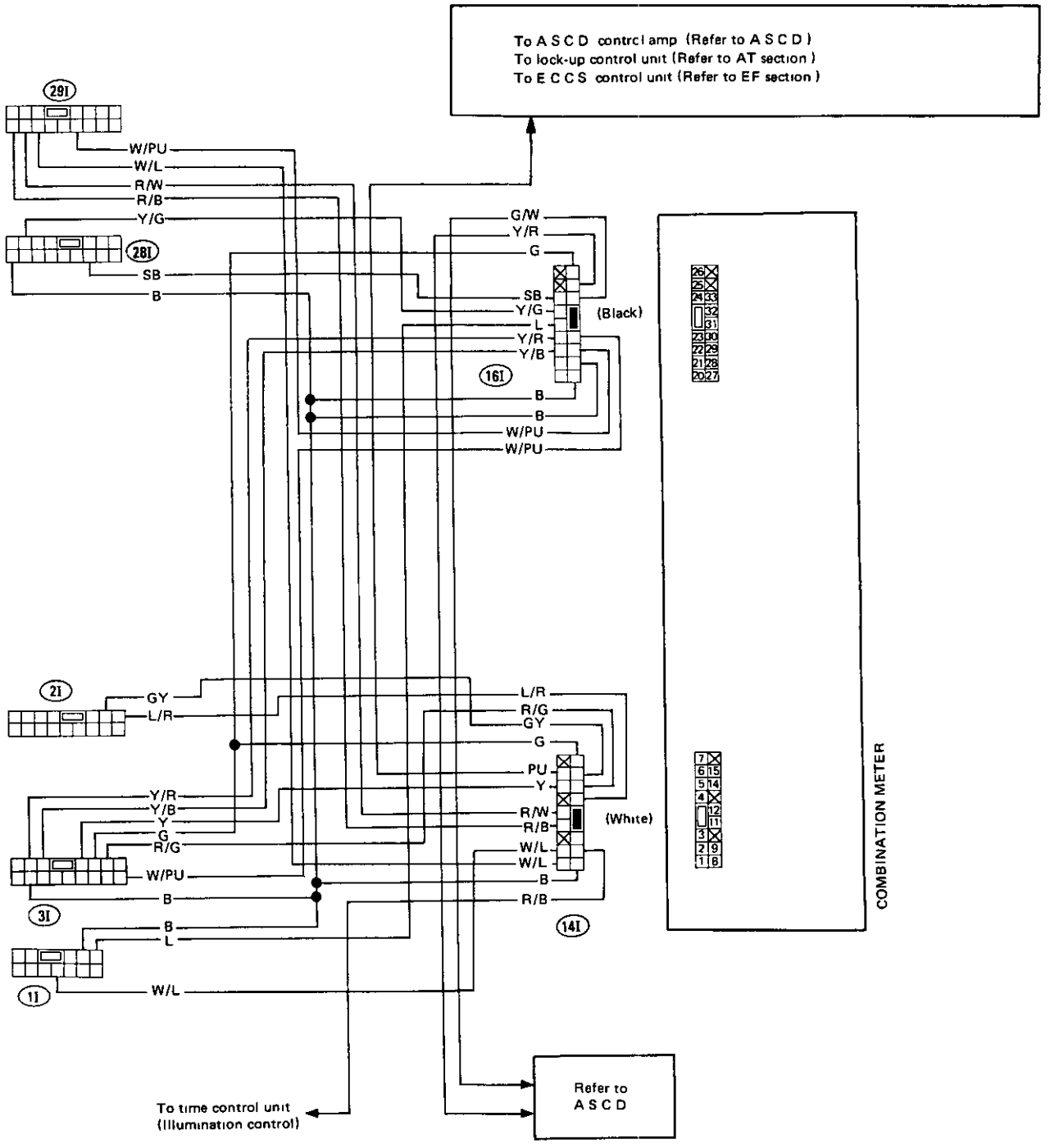
Schematic


IGNITION SWITCH ON or START
FUSE
STOP & TAIL LAMP SENSOR
WARNING DISPLAY
HEADLAMP SENSOR
CONTROL UNIT
DRIVE INFORMATION UNIT
DRIVE INFORMATION
DRIVER
BUFFER
INTERFACE
WASHER SENSOR
RADIATOR LEVEL SWITCH
BOOST SENSOR
TWIN TRIP METER
MICROCOMPUTER
WATER TEMP SENSOR
WATER TEMPERATURE GAUGE
FUEL TANK GAUGE (Sub)
FUEL TANK GAUGE (Main)
(Injection pulse)
E C C S CONTROL UNIT
FUEL GAUGE
ODOMETER INTERFACE
ODOMETER
To hold relay
Speed sensor signal
TACHO & TORQUE METER
SPEED SENSOR
5V
ILLUMINATION CONTROL CIRCUIT
TIME CONTROL UNIT
RESISTOR
POWER TRANSISTOR
SPEEDOMETER
DISPLAY UNIT
POWER UNIT
LIGHT SWITCH
BATTERY
IGNITION SWITCH ACC or ON
IGNITION SWITCH ON or START
To E C C S control unit
SEL099J

Wiring Diagram



Wiring Diagram (Cont'd)



SEL100J

Self-check

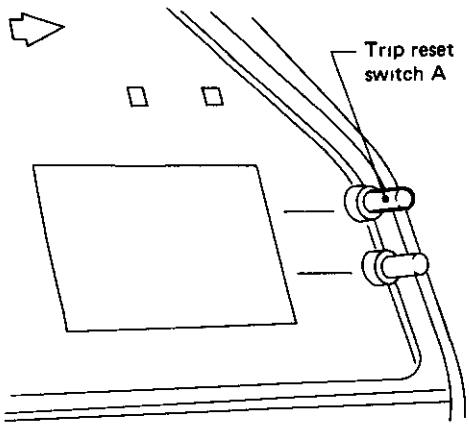
Digital type combination meter consists of three units: a control unit, power unit, and display unit In order to judge if there is a defect in the meter and which unit is malfunctioning, trouble-shooting should be performed by using the following two types of self-check functions built into the meter

For details, refer to "Trouble-shooting".

DISPLAY CHECK

This is used to check for an open circuit in each segment of the display and a short circuit between segments.

(1) While pushing trip reset switch A, turn ignition switch from "OFF" to "ON". Trip reset switch A should remain pushed in until self-check operation starts.
(2) Meter starts to automatically perform self-check. Segments for meters and gauges should illuminate one after another.
(3) If any particular segment remains off, combination meter itself is faulty



SEL143J

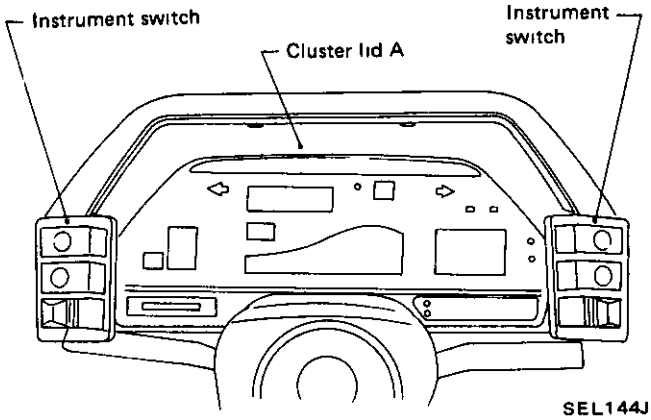
A display check will be cancelled and the normal display restarted in the following cases:

- **If the vehicle has operated during the display check.**
- **If a series of display check items have been completed.**

PRE-PROGRAMED SIGNAL CHECK

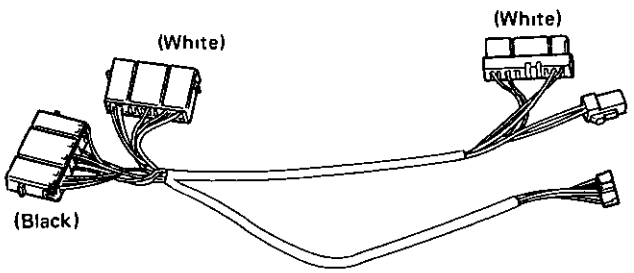
This is used to check for a defect in the meter

(1) Remove power unit.
(2) Remove nuts which secure instrument switches
(3) Remove instrument switches.
(4) Remove cluster lid A.

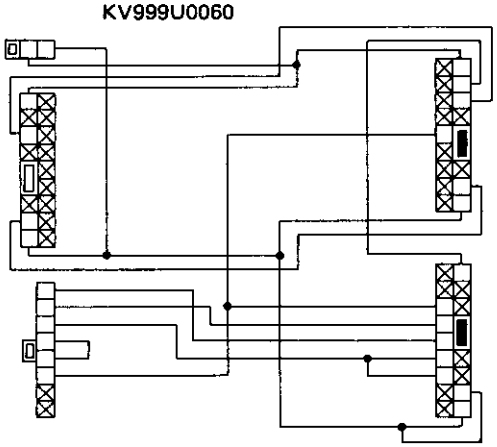


SEL144J

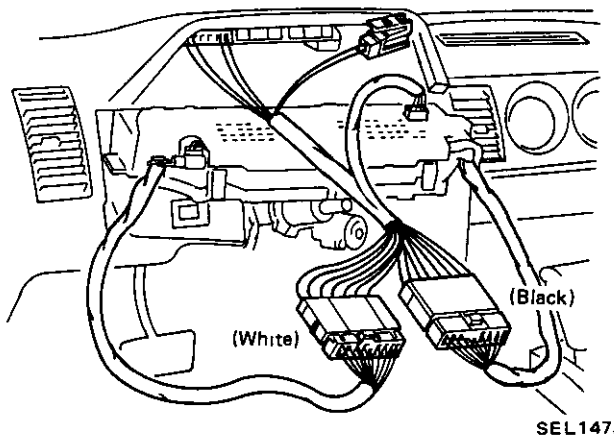
(5) Remove combination meter.
(6) Disconnect connectors from instrument harness
(7) Connect a self-checking tool (Diagnostic sub-harness) to meter.



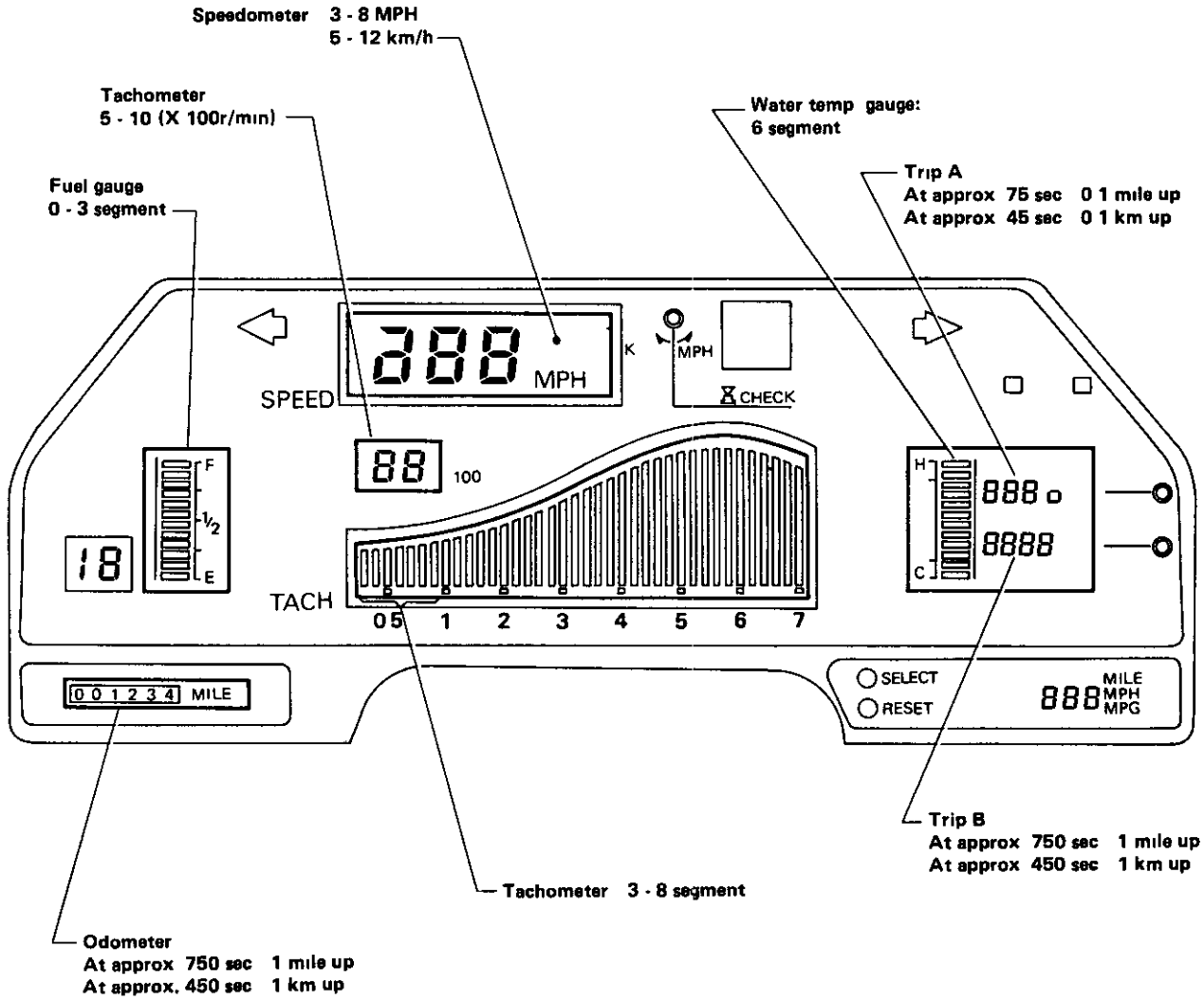
Diagnostic sub-harness (Tool) KV999U0060
SEL145J


SEL146J

Self-check (Cont'd)



(8) Turn the ignition switch to "ON".
(9) If a display such as the following figure appears on meter, the results of the pre-programed signal check are satisfactory.



METER AND GAUGES — Digital Type Combination Meter

Trouble-shooting —Quick Reference Table—

The following Quick Reference Table lists various combination meter troubles and self-checks and voltage or resistance checks to be made.
For trouble-shooting procedures, refer to the pertinent flow charts on the pages that follow this Table

Reference flow chart number		Trouble condition	Check item			
			Self-check		Volt/ohm check	
			Display unit check	Pre-programmed signal check	Meter side	Vehicle harness side
Speedometer	1	Always indicates zero ("0")		○	○	○
	2	Indication error is noted		○		○
	3	Indicated value changes irregularly		○		○
	4	All segments become illuminated	○			
	5	All segments fail to illuminate	○			
	6	Sometimes indicates zero ("0")		○		○
Tacho & torque meter	7	Tachometer does not operate	○	○	○	○
	8	Torque meter does not operate	○	○		○
Gauges	9	Water temp gauge does not function	○	○		○
	10	Fuel gauge does not function	○	○		○
	11	Fuel gauge does not reach "Full"	○	○		○
Drive information	12	"DIST TO EMPTY" does not operate	○	○		○
	13	"AVE SPEED" does not operate	○	○		
	14	"AVE MPG" does not operate	○	○		○
Others	15	Trip meter does not function	○			
	16	Odometer does not function.		○	○	
	17	Warning display does not operate	○	○		○
	18	Segments do not operate normally	○			

Trouble-shooting Flow Chart

1 Speedometer always indicates zero ("0")

Make pre-programmed signal check (Refer to "Self-Check")

- O K → Go to "Speed Sensor Signal Check" to check meter power source output
  - O K → ● Speed sensor is broken ● Damaged speed sensor circuit
  - N G → Replace control unit
- N G → Replace control unit

2 Speedometer indication error is noted

Make pre-programmed signal check (Refer to "Self-Check".)

- O K → Replace speed sensor
- N G → Replace control unit

3 Speedometer indicated value changes irregularly

To see if display changes, lightly tap on control unit and display unit with screwdriver while making pre-programmed signal check

- O K → ● Speed sensor is broken ● Damaged speed sensor circuit
- N G → Replace control unit

4 Speedometer all segments become illuminated

Make display unit check (Refer to "Self-Check")

- O K → Replace display unit
- N G → Replace control unit

Trouble-shooting Flow Chart (Cont'd)

5 Speedometer all segments fail to illuminate

Go to "Power Unit Check" to check power unit output voltage for speedometer

O K → Make display unit check (Refer to "Self-Check")

N G → Replace power unit

Make display unit check (Refer to "Self-Check")

O K → *Replace control unit*

N G → *Replace display unit*

6 Speedometer sometimes indicates zero ("0")

While making pre-programmed signal check, lightly tap on control unit and display unit with screwdriver to see if display changes

O K → • Speed sensor is broken. • Damaged speed sensor circuit

N G → Replace control unit

7 Tachometer does not operate

Make pre-programmed signal check (Refer to "Self-Check")

O K → Check tachometer input signal circuit.

O K → *Replace control unit*

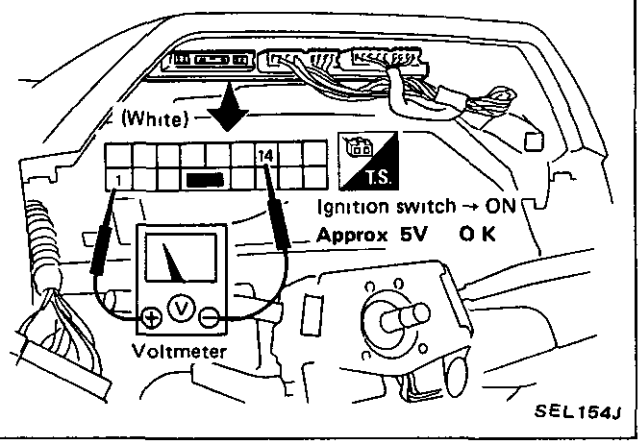
N G → • Malfunctioning ignition circuit

N G → Make display unit check (Refer to "Self-Check")

O K → *Replace control unit*

N G → *Replace display unit*

1. Turn ignition switch to "ON"
2. Connect voltmeter between ① and ⑭.



Trouble-shooting Flow Chart (Cont'd)

8	Torque meter does not operate

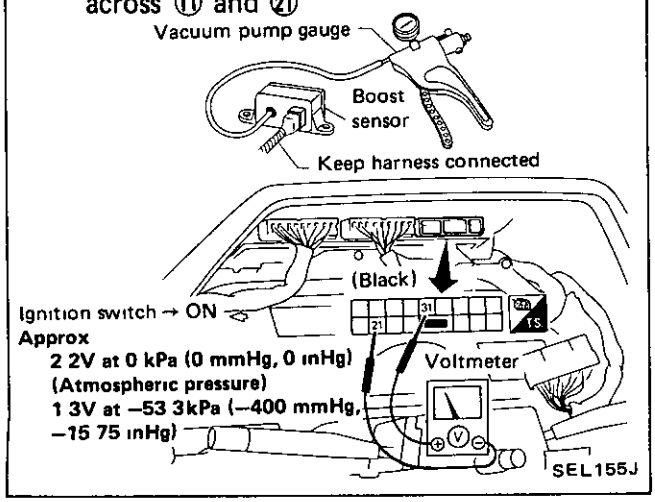
Make pre-programmed signal check (Refer to "Self-Check")
- OK → Check boost sensor circuit
- NG → Make display unit check (Refer to "Self-Check")

Check boost sensor circuit
- OK → Replace control unit
- NG → Go to "Boost Sensor Check"

Go to "Boost Sensor Check"
- OK → • Damaged boost sensor circuit
- NG → Replace boost sensor

Make display unit check (Refer to "Self-Check")
- OK → Replace control unit
- NG → Replace display unit

1. Disconnect meter harness connector (Black)
2. Connect vacuum pump gauge to boost sensor vacuum hose
3. Turn the ignition switch to "ON"
4. Apply vacuum pressure to boost sensor by vacuum pump gauge and measure voltage across ⑪ and ㉑



9	Water temp gauge does not function

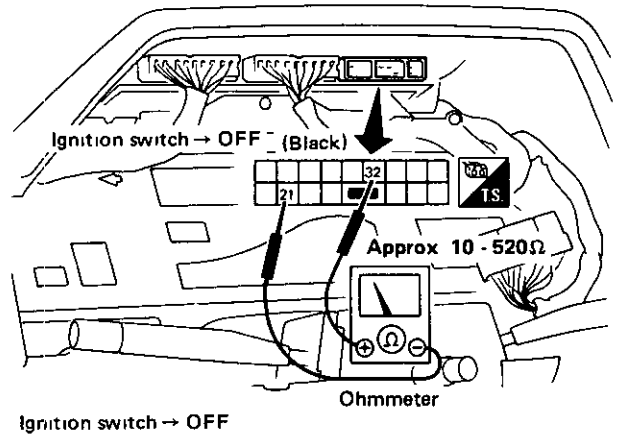
Make pre-programmed signal check (Refer to "Self-Check")
- OK → Check water temp sensor (thermistor) circuit
- NG → Make display unit check (Refer to "Self-Check")

Check water temp sensor (thermistor) circuit
- OK → Replace control unit
- NG → Go to "Thermistor Check"

Go to "Thermistor Check"
- OK → • Damaged boost sensor circuit
- NG → Replace thermistor

Make display unit check (Refer to "Self-Check")
- OK → Replace control unit
- NG → Replace display unit

1 Disconnect meter harness connector (Black)
2 Turn ignition switch to "OFF".
3 Measure resistance between ㉜ and ㉑



Ignition switch → OFF

Engine coolant temperature	Resistance
60°C or less	70Ω or more
60°C or more	Approx 10 - 70Ω

Trouble-shooting Flow Chart (Cont'd)

10	Fuel gauge does not function

Make pre-programmed signal check (Refer to "Self-Check")

O K → Check fuel tank gauge circuit

N G → Make display unit check (Refer to "Self-Check")

Check fuel tank gauge circuit

O K → Replace control unit

N G → Go to "Fuel Tank Gauge unit Check"

Go to "Fuel Tank Gauge unit Check"

O K → • Damaged fuel tank gauge unit circuit

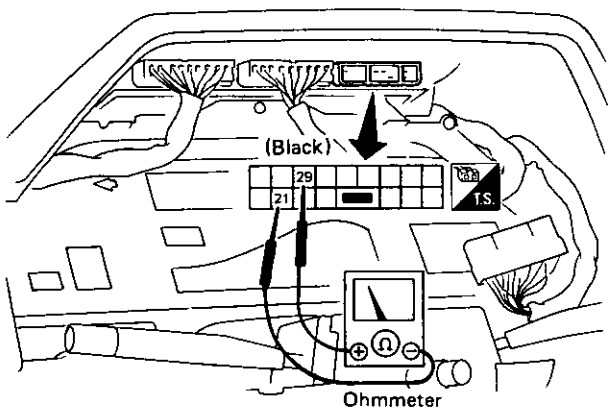
N G → Replace fuel tank gauge unit

Make display unit check (Refer to "Self-Check")

Replace control unit

Replace display unit

1 Disconnect meter harness connector (Black)
2. Turn ignition switch to "OFF".
3 Measure resistance between ㉙ and ㉑



SEL157J

11	Fuel gauge does not reach "Full"

Make pre-programmed signal check (Refer to "Self-Check")

O K → Check fuel tank gauge circuit

N G → Make display unit check (Refer to "Self-Check")

Check fuel tank gauge circuit

O K → Replace control unit

N G → Go to "Fuel Tank Gauge Unit Check"

Go to "Fuel Tank Gauge Unit Check"

O K → • Damaged fuel tank gauge unit circuit

N G → Replace fuel tank gauge unit

Make display unit check (Refer to "Self-Check"

Replace control unit

Replace display unit

Trouble-shooting Flow Chart (Cont'd)

12 "DIST TO EMPTY" does not operate

- Is speedometer normal?
  - NO → Go to "Trouble-shooting 1-6"
  - YES →
- Is fuel gauge normal?
  - NO → Go to "Trouble-shooting 10-11"
  - YES →
- Make pre-programmed signal check (Refer to "Self-Check")
  - N.G. → Make display unit check (Refer to "Self-Check")
  - O K →
- Check injection pulse circuit
  - N G → Replace control unit
  - O K → ● Malfunctioning E C C.S control unit ● Damaged injection pulse circuit
- Make display unit check (Refer to "Self-Check")
  - O K → Replace control unit
  - N G → Replace drive information unit

13 "AVE SPEED" does not operate

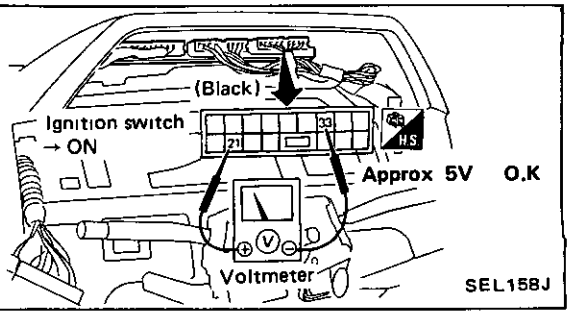
- Make display unit check (Refer to "Self-Check")
  - O K → Replace control unit
  - N G → Replace drive information unit

14 "AVE MPG" does not operate

- Is speedometer normal?
  - NO → Go to "Trouble-shooting 1-6"
  - YES →
- Make pre-programmed signal check (Refer to "Self-Check")
  - O K →
  - N G → Make display unit check (Refer to "Self-Check")
- Check injection pulse circuit
  - N G → Replace control unit
  - O K → ● Malfunctioning E C C S control unit ● Damaged injection pulse circuit
- Make display unit check (Refer to "Self-Check")
  - O K → Replace control unit
  - N G → Replace drive information unit.

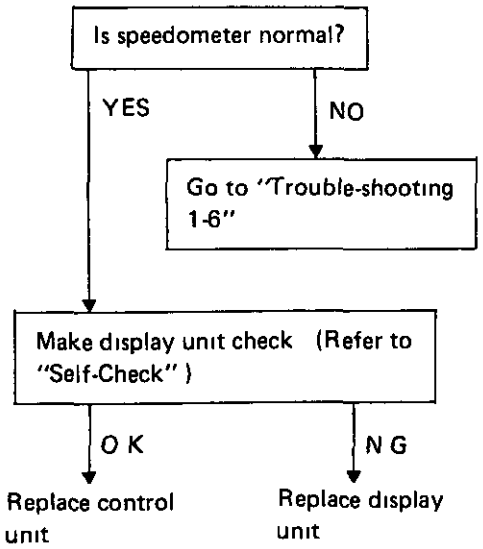
FUEL INJECTION PULSE CIRCUIT CHECK

1. Turn ignition switch to "ON"
2. Connect voltmeter between ㉝ and ㉑

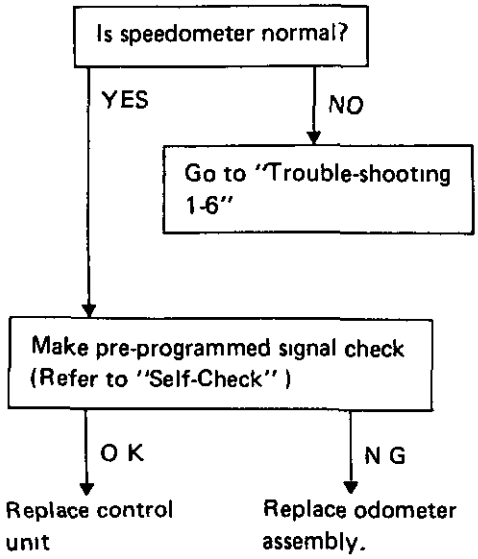


Trouble-shooting Flow Chart (Cont'd)

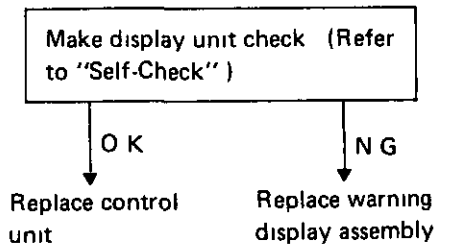
15 Trip meter does not function.



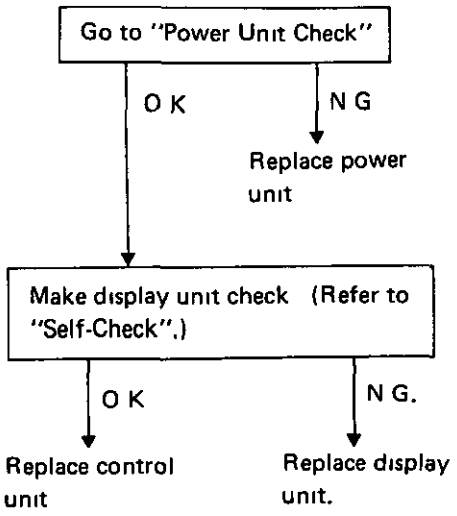
16 Odometer does not function



17 Warning display does not operate

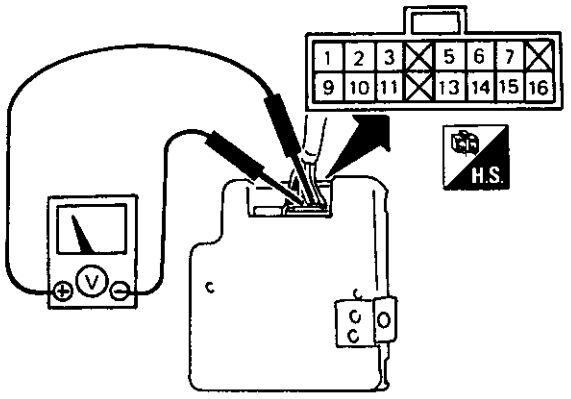


18 Segments do not operate normally



Power Unit Check

- Remove power unit with harness connected.
- Perform voltage and continuity tests Refer to chart below



SEL159J

- Turn ignition switch to "ON"

Voltmeter terminal		Voltage [V]	Remarks
⊕	⊖		
②	⑨	Approx 12	Check when no display appears
③		Approx 0	
⑤		Approx 22	
⑥		Approx 26	
⑨	⑦	Approx 23	
	⑬	Approx. 14	For speedometer, fuel, information, tachometer
	⑭		
	⑮	Approx 19	For temp , trip
	⑯		

- Turn ignition switch to "OFF".

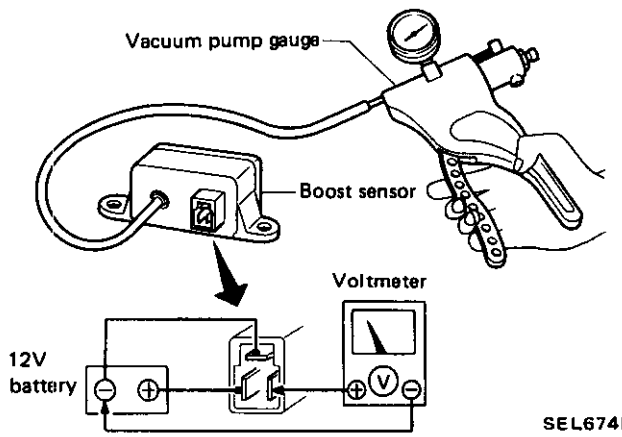
Ohmmeter		Continuity	Remarks
(+)	(−)		
⑨	Body ground	Yes	Check when no display appears

If specified voltage or continuity is not produced, replace power unit

Boost Sensor Check

1. Connect vacuum pump gauge to boost sensor vacuum hose.
2. Disconnect harness connector from boost sensor and connect battery and voltmeter as shown
3 Apply vacuum pressure to boost sensor by vacuum pump gauge and measure voltages

Approx. 2.2V at 0 kPa (0 mmHg, 0 inHg) (Atmospheric pressure)
Approx. 1.3V at −53.3 kPa (−400 mmHg, −15.75 inHg)



SEL674D

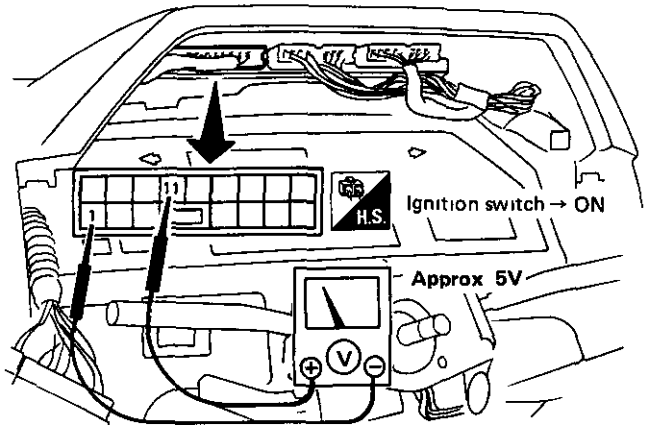
Speed Sensor Signal Check

SPEED SENSOR OUTPUT CHECK

When speedometer is functioning properly, this test is not necessary. Go to "Meter Output check".

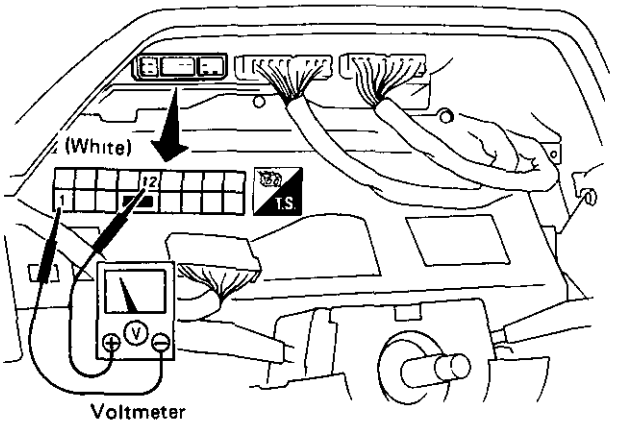
1 Remove cluster lid A
2. Connect a voltmeter between ⑪ and ① on combination meter side Combination meter harness connector should remain connected to instrument harness.
3 Turn ignition switch from "OFF" to "ON" Voltmeter should indicate approximately 5 volts when switch is "ON"

If voltmeter indicates no voltage, go to "Power Unit Check".



SEL160J

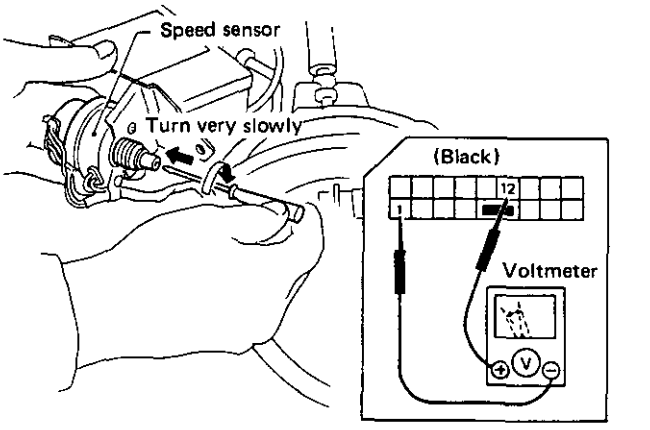
4. Turn ignition switch to "OFF".
5 Disconnect speedometer cable from speed sensor and remove speed sensor with harness connected.
6 Disconnect combination meter harness from instrument harness as shown below, and connect a voltmeter across ⑫ and ① .



SEL161J

7. Turn ignition switch "OFF" → "ON"
8. Slowly turn speed sensor rotor shaft with a suitable screwdriver to make sure voltmeter pointer deflects

Do not turn rotor shaft quickly as voltmeter deflects 24 times per revolution of rotor shaft.



SEL162J

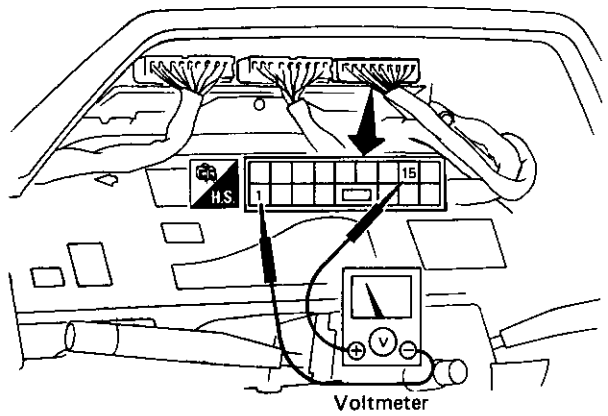
If voltmeter pointer does not deflect, replace speed sensor.

Speed Sensor Signal Check (Cont'd)

METER OUTPUT CHECK

- **Combination meter emits speed sensor signal to control E.C.C.S. control unit, A S.C.D. control unit, voice warning unit and A/T control unit**

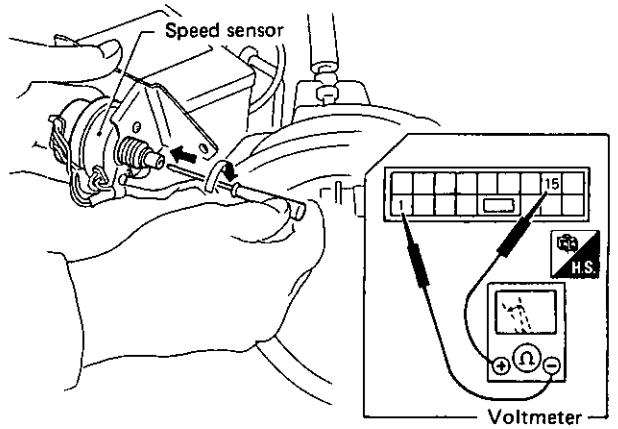
1. Disconnect speedometer cable from speed sensor and remove speed sensor with harness connected
2. Remove cluster lid A.
3. Connect a voltmeter between ⑮ and ① from meter harness side.



SEL163J

4. Turn ignition switch "OFF" → "ON"
5. Slowly turn speed sensor rotor shaft with a suitable screwdriver to make sure ohmmeter pointer deflects.

Ohmmeter pointer should deflect twice for each rotation or rotor shaft



SEL164J

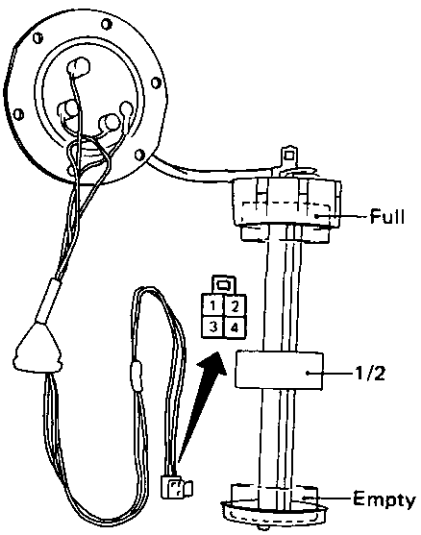
If ohmmeter pointer does not deflect, go to "Speed Sensor Output Check". (Refer to back page)

Fuel Tank Gauge Check

- For removal, refer to FE section

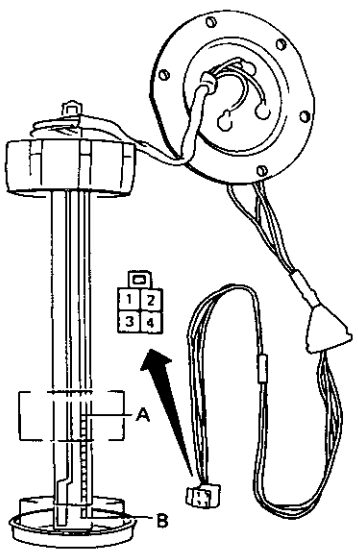
Ohmmeter terminal (+)	Ohmmeter terminal (−)	Float position	Resistance value
②	①	Full	Approx 10 - 20Ω
		Empty	Approx 480 - 520Ω
		1/2	Approx 100 - 110Ω
③	①	A	Approx 4Ω or below
		B	Approx 870 - 930Ω
④	①	B	0Ω

Main gauge



SEL675D

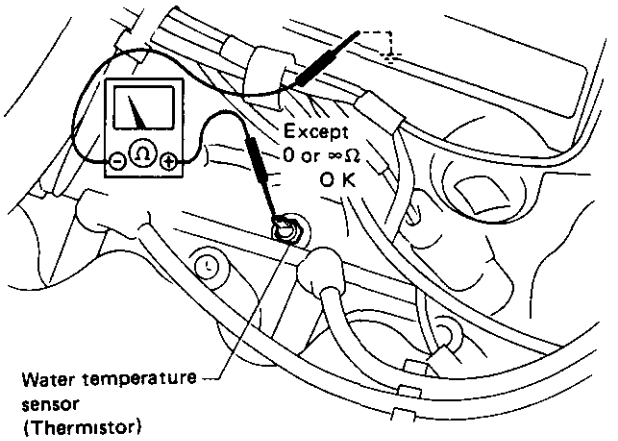
Sub gauge



SEL676D

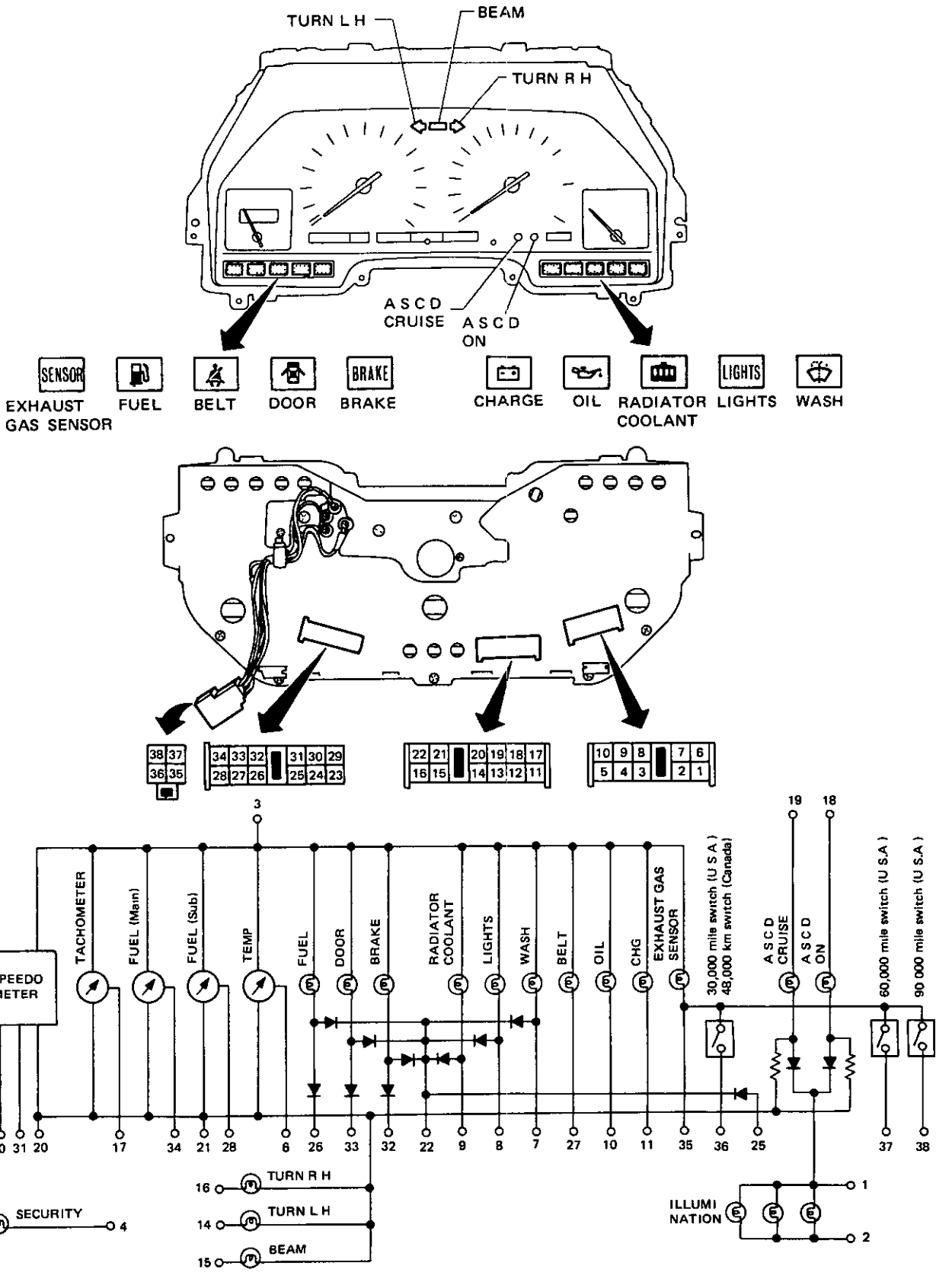
Water Temp Sensor Check

Cylinder head R H side



SEL677D

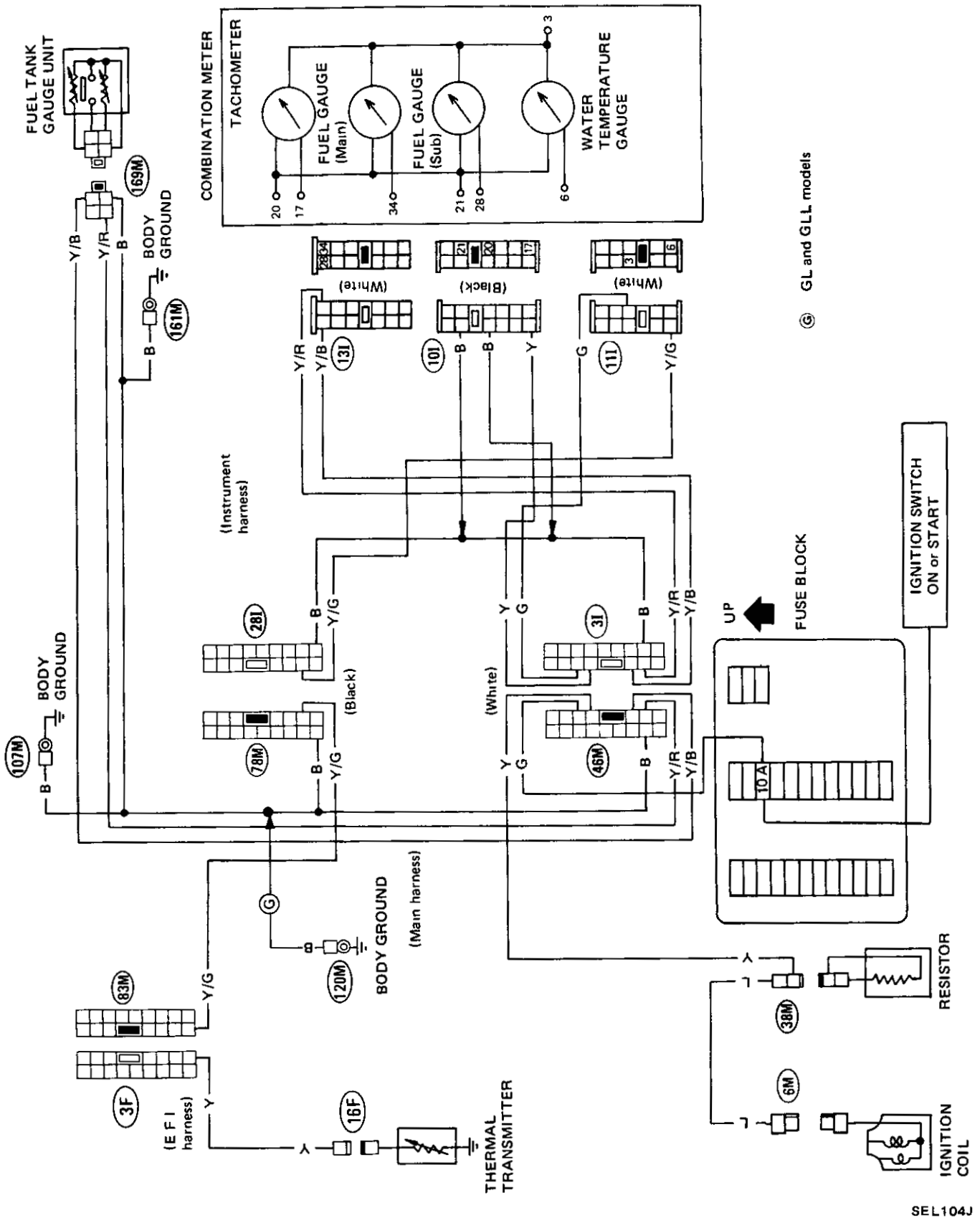
Combination Meter



SEL103J

METER AND GAUGES —Needle Type Combination Meter

Tachometer, Fuel and Water Temperature Gauges/Wiring Diagram

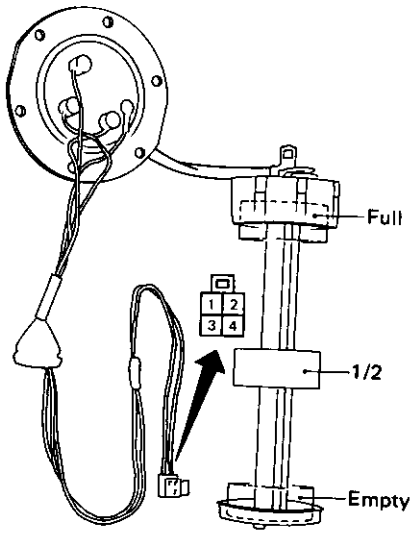


Fuel Tank Gauge Check

- For removal, refer to FE section

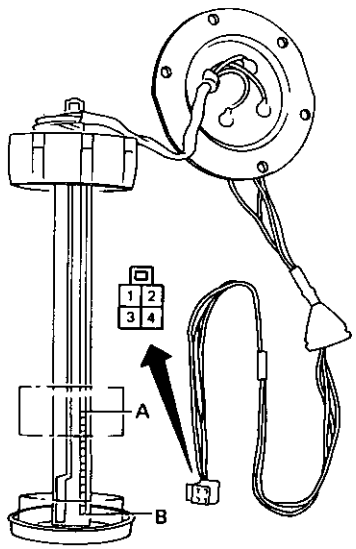
Ohmmeter terminal (+)	Ohmmeter terminal (−)	Float position	Resistance value
②	①	Full	Approx 6Ω
		Empty	Approx 80Ω
		1/2	Approx 30 - 35Ω
③	①	A	More than 60Ω
		B	Less than 6Ω

Main gauge



SEL675D

Sub gauge

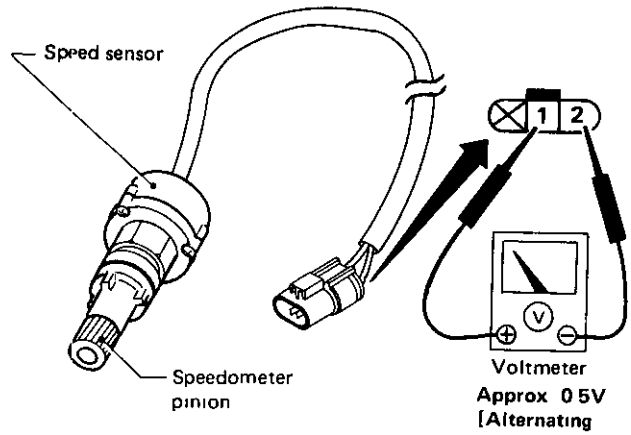


SEL676D

Speed Sensor Signal Check

1 Remove speed sensor from transmission Location Refer to "Location of Electrical units"

2 Turn speedometer pinion quickly and measure voltage across ① and ②

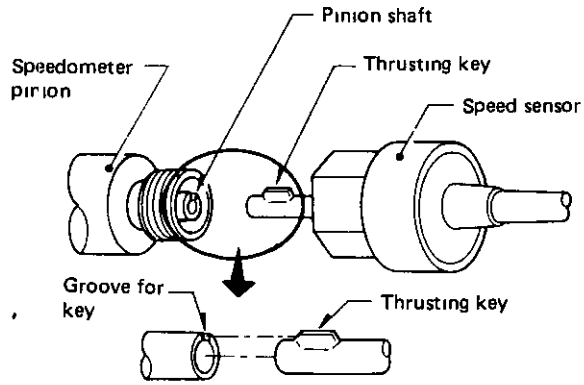


SEL869E

Speed Sensor Installation

When you install the speed sensor, be careful of the following

1. Connect pinion shaft and thrusting key as shown below

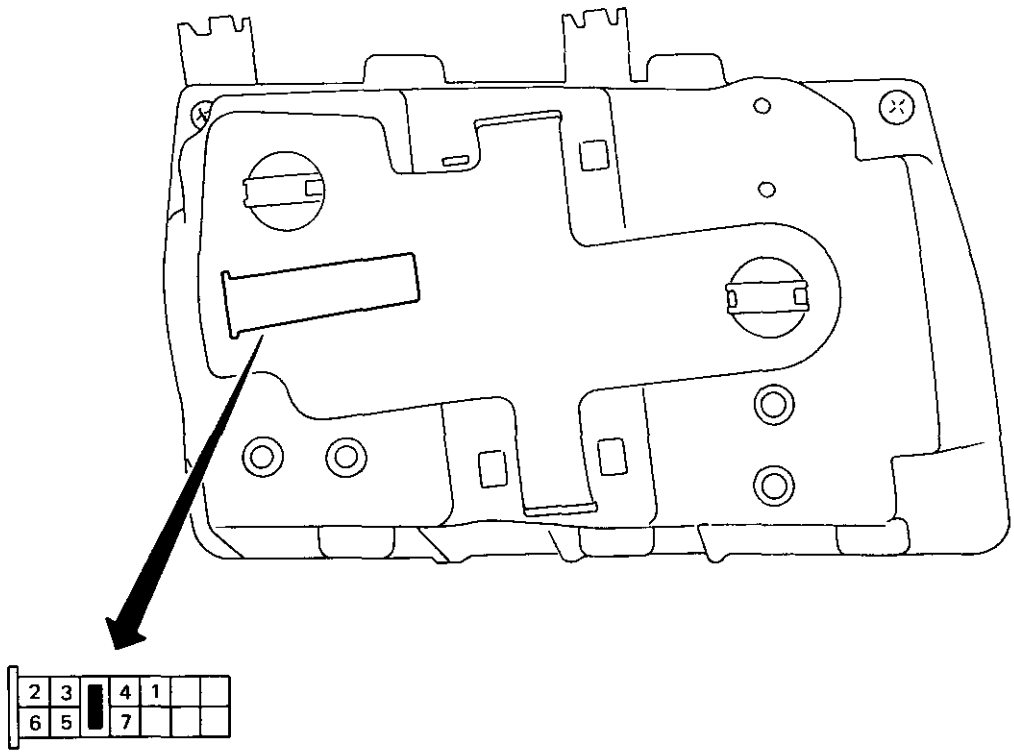


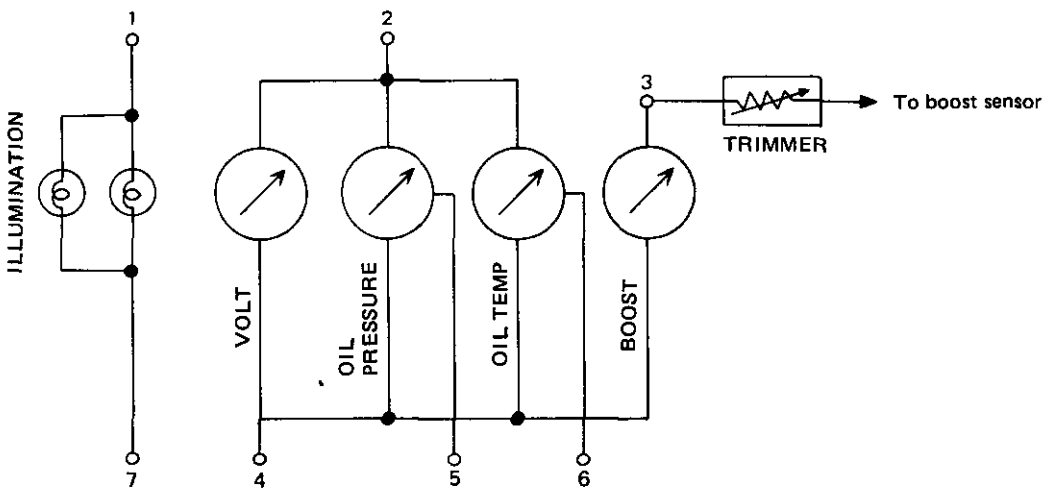
Insert thrusting key into groove for key

2 Install speed sensor to speedometer pinion by hand, and then tighten speed sensor nut to the specified torque

Tightening torque of speed sensor nut:
29 - 49 N·m
(3.0 - 5.0 kg-m, 22 - 36 ft-lb)

Combination Gauge

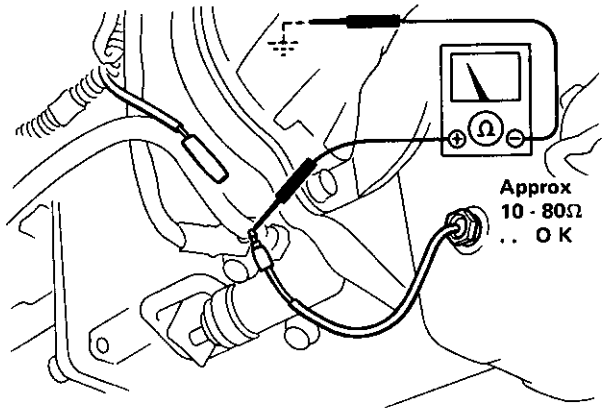




SEL693D

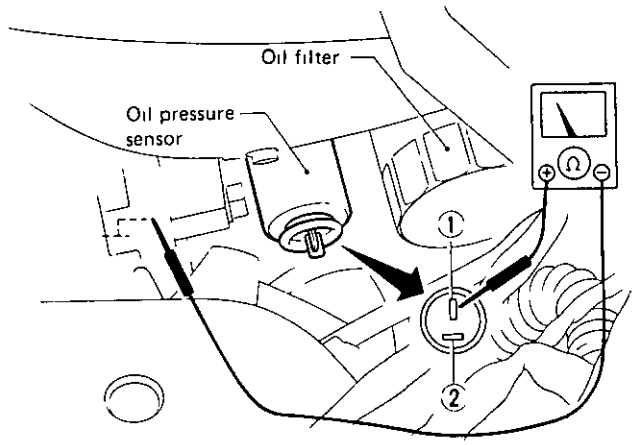
Oil Temp. Sensor Check

1. Warm up engine.
2. Stop engine and turn ignition switch OFF
3. Check resistance of oil temp. sensor



SEL695D

Oil Pressure Sensor Check

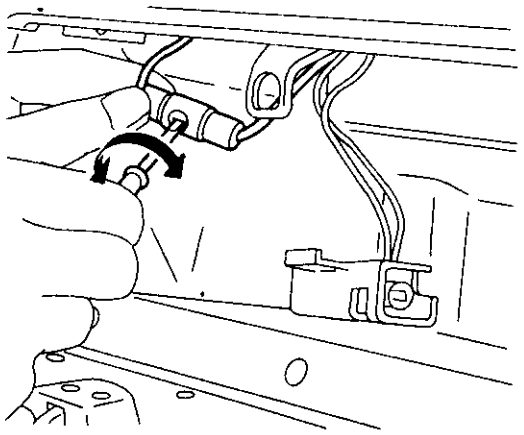


SEL678D

Ohmmeter terminal		With engine stopped	With engine running (idling)
(+)	(–)		
①	Engine ground	0Ω	∞
②		More than 74Ω	Less than 60Ω

Boost Gauge Trimmer Adjustment

- When boost gauge does not give proper reading, adjust 0 kPa (0 mmHg, 0 inHg) point with the trimmer located on interior upper wall of glove box.
- Use a screwdriver to adjust trimmer

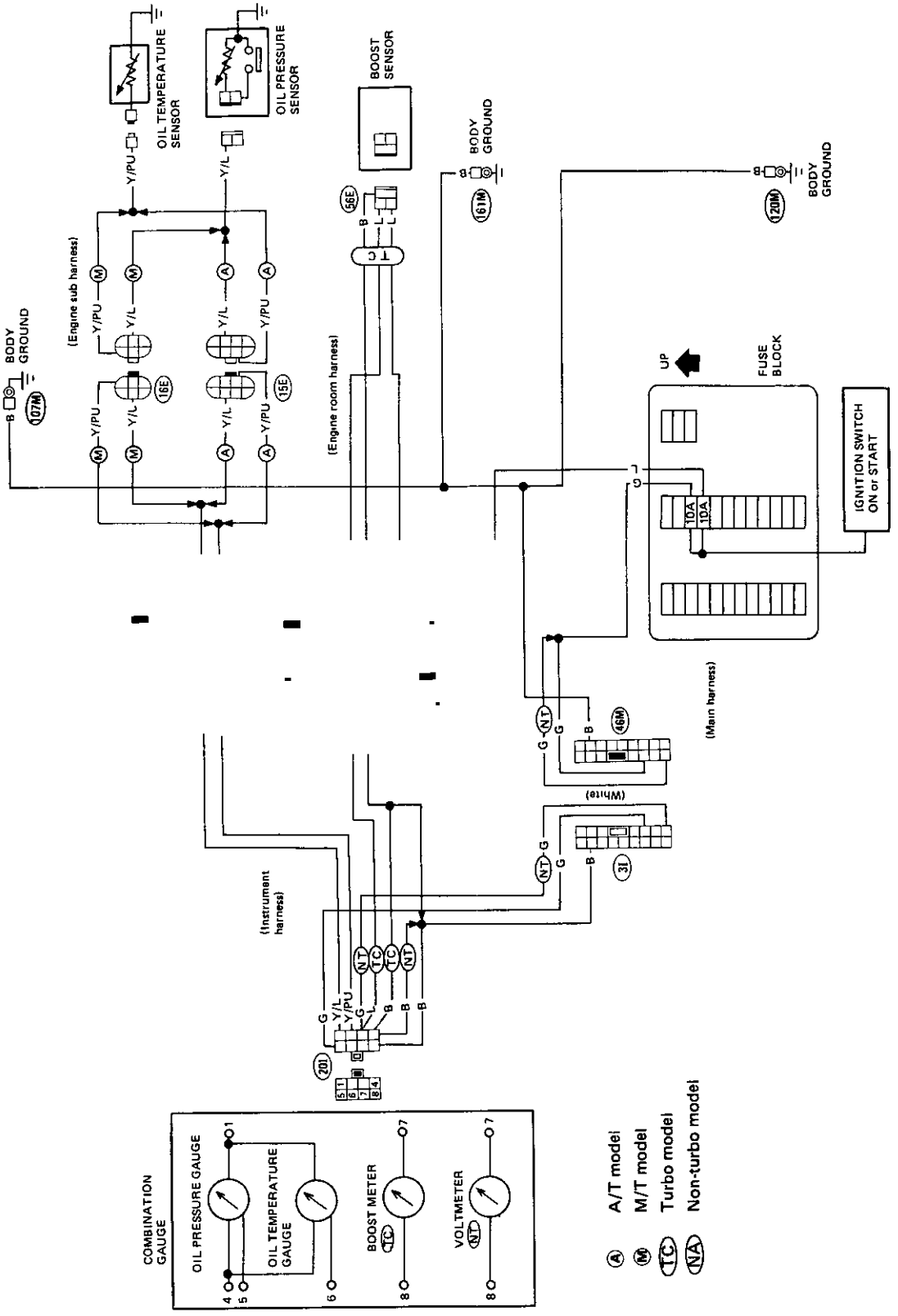


SEL273B

- For checking boost sensor, refer to page EL-79.

Oil Temp, Oil Pressure, Boost and Volt Gauges/Wiring Diagram

DIGITAL METER TYPE MODEL

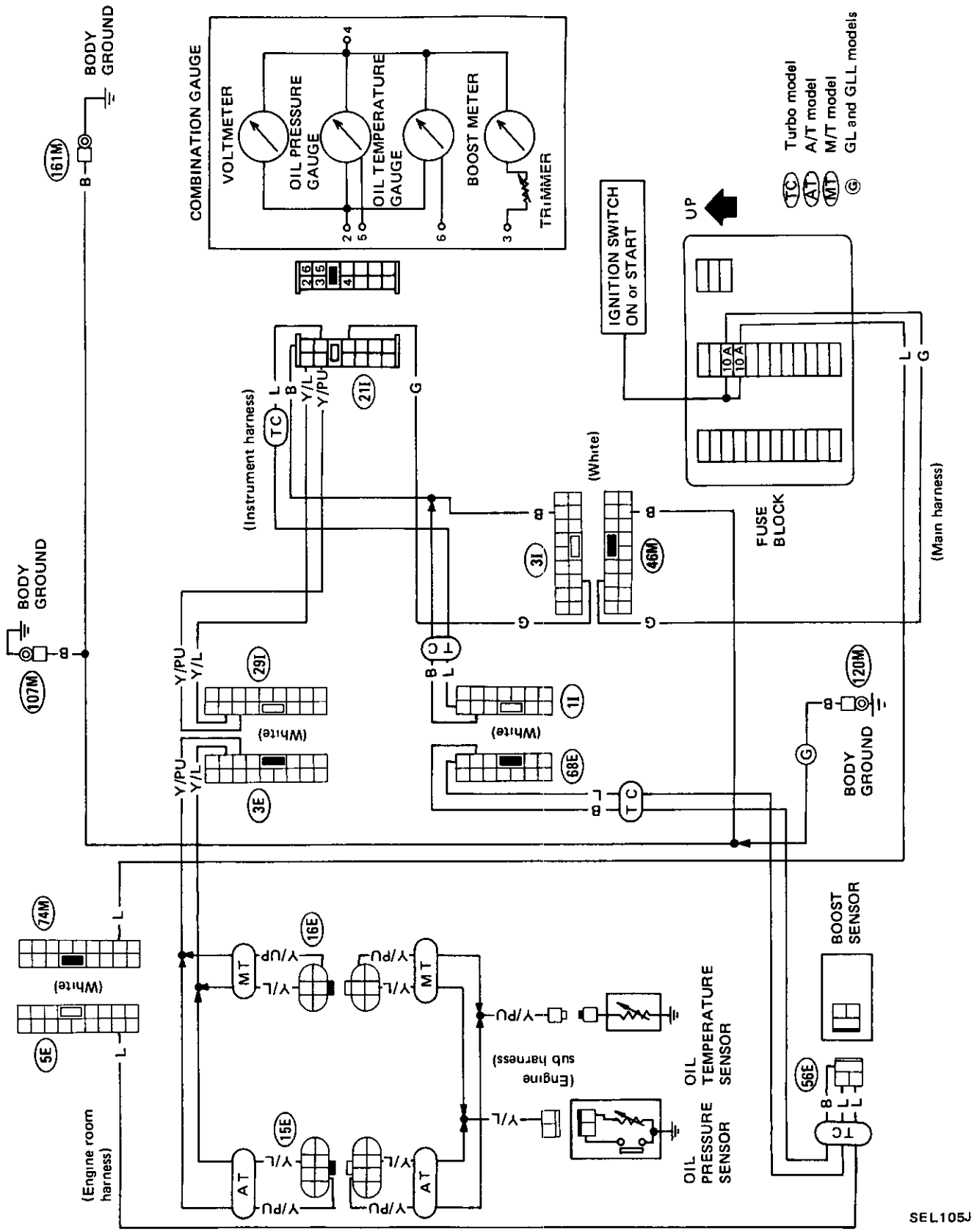


SEL102J

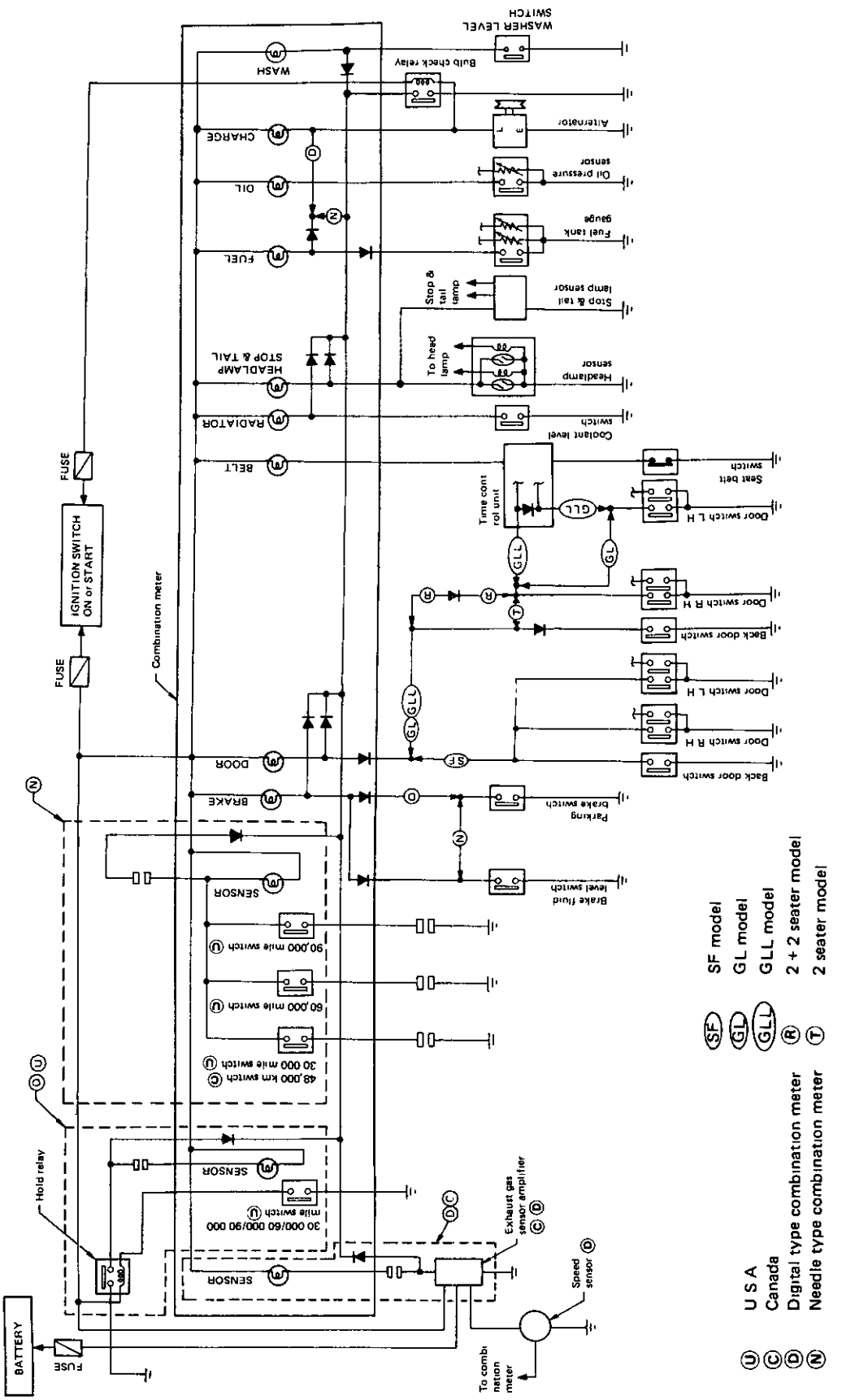
METER AND GAUGES —Needle Type Combination Gauge

Oil Temp, Oil Pressure, Boost and Volt Gauges/Wiring Diagram (Cont'd)

NEEDLE METER TYPE MODEL

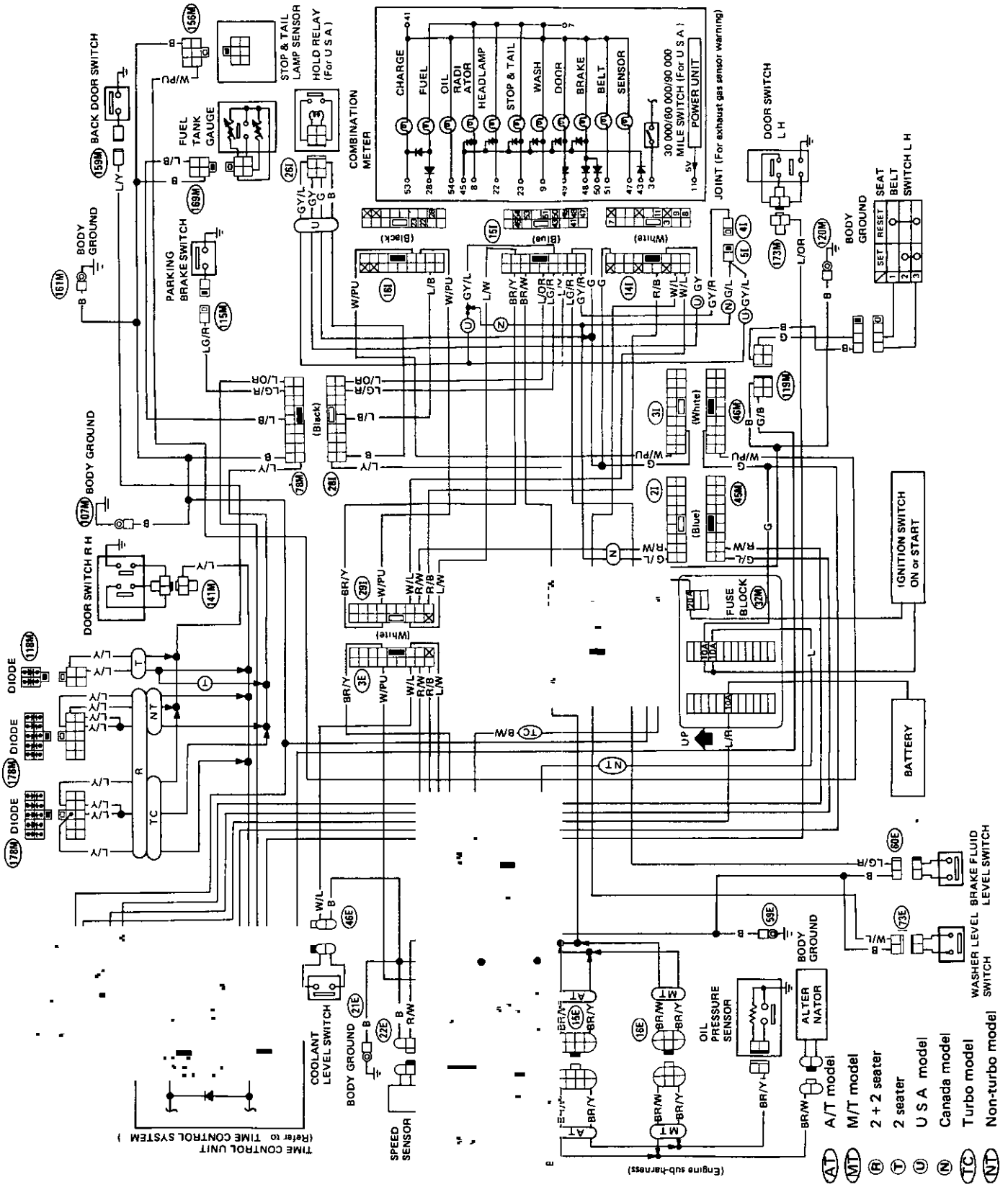


Schematic


WASHER LEVEL SWITCH
WASH
Bulb check relay
Alternator
CHARGE
Oil pressure sensor
OIL
Fuel tank gauge
FUEL
Stop & tail lamp sensor
To head lamp
Headlamp sensor
HEADLAMP STOP & TAIL
RADIATOR
Coolant level switch
BELT
Seat belt switch
Time control unit
Door switch L H
Door switch R H
Back door switch
DOOR
BRAKE
Parking brake switch
Brake fluid level switch
SENSOR
90,000 mile switch
60,000 mile switch
30,000 mile switch
48,000 km switch
30,000/60,000/90,000 mile switch
Hold relay
Exhaust gas sensor amplifier
Speed sensor
To combination meter
FUSE
IGNITION SWITCH ON or START
Combination meter
BATTERY
SF model
GL model
GLL model
2 + 2 seater model
2 seater model
U S A
Canada
Digital type combination meter
Needle type combination meter
SEL106J

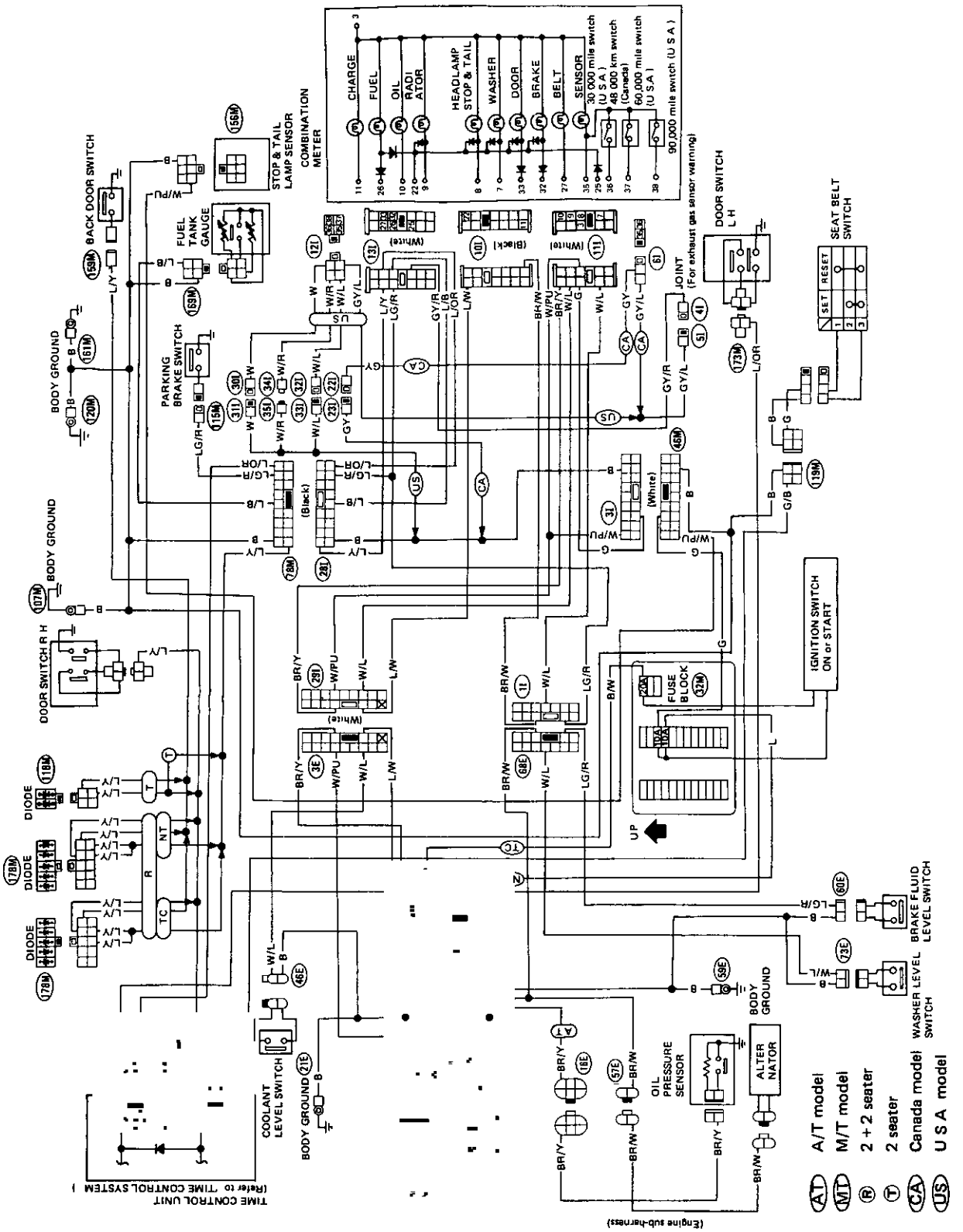
WARNING LAMPS AND CHIME

— Warning Lamps/Wiring Diagram— For Digital Type Combination Meter—



Warning Lamps/Wiring Diagram —For Needle Type Combination Meter—

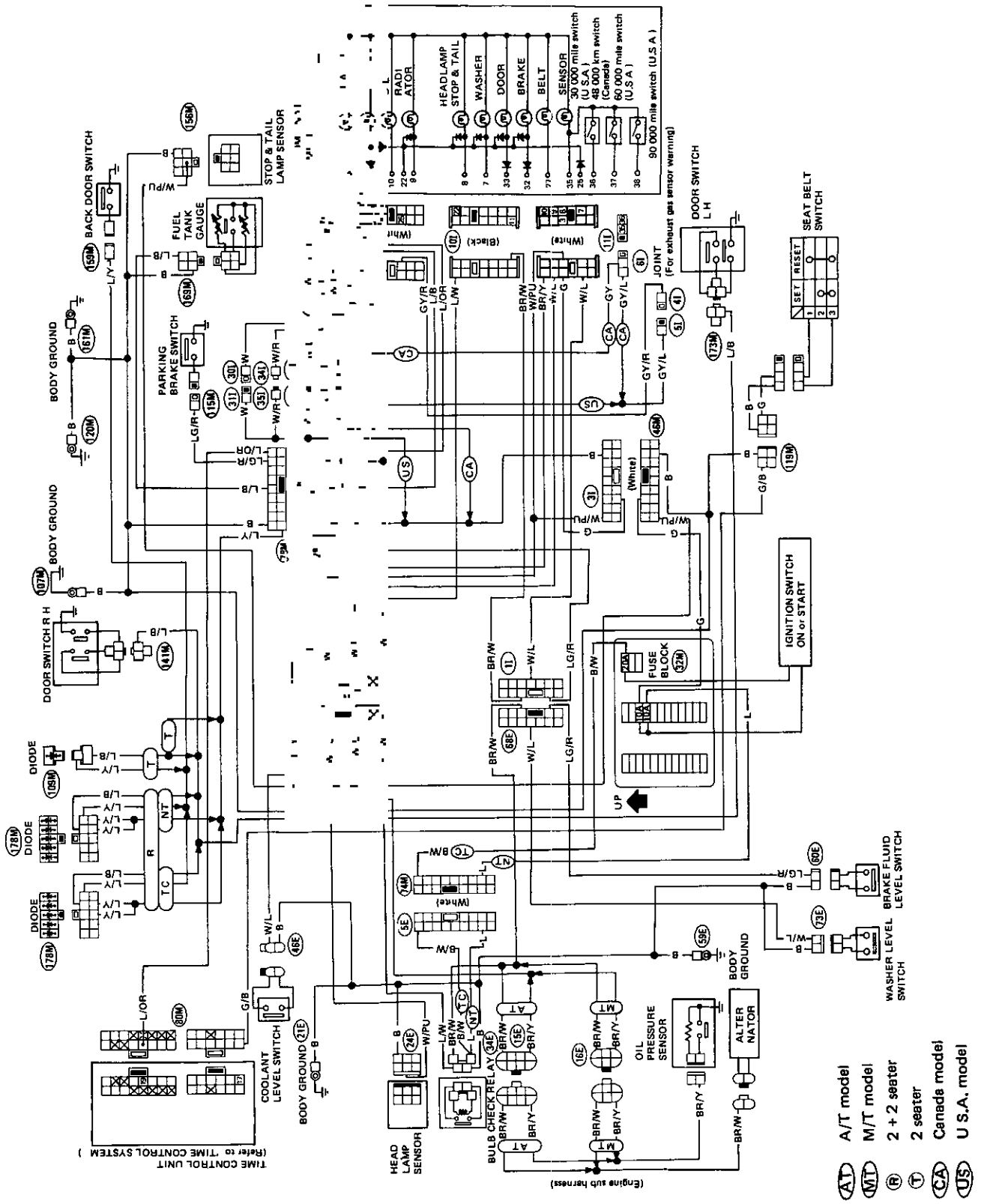
GLL MODEL



SEL109J

Warning Lamps/Wiring Diagram
—For Needle Type Combination Meter (Cont'd)—

GL MODEL

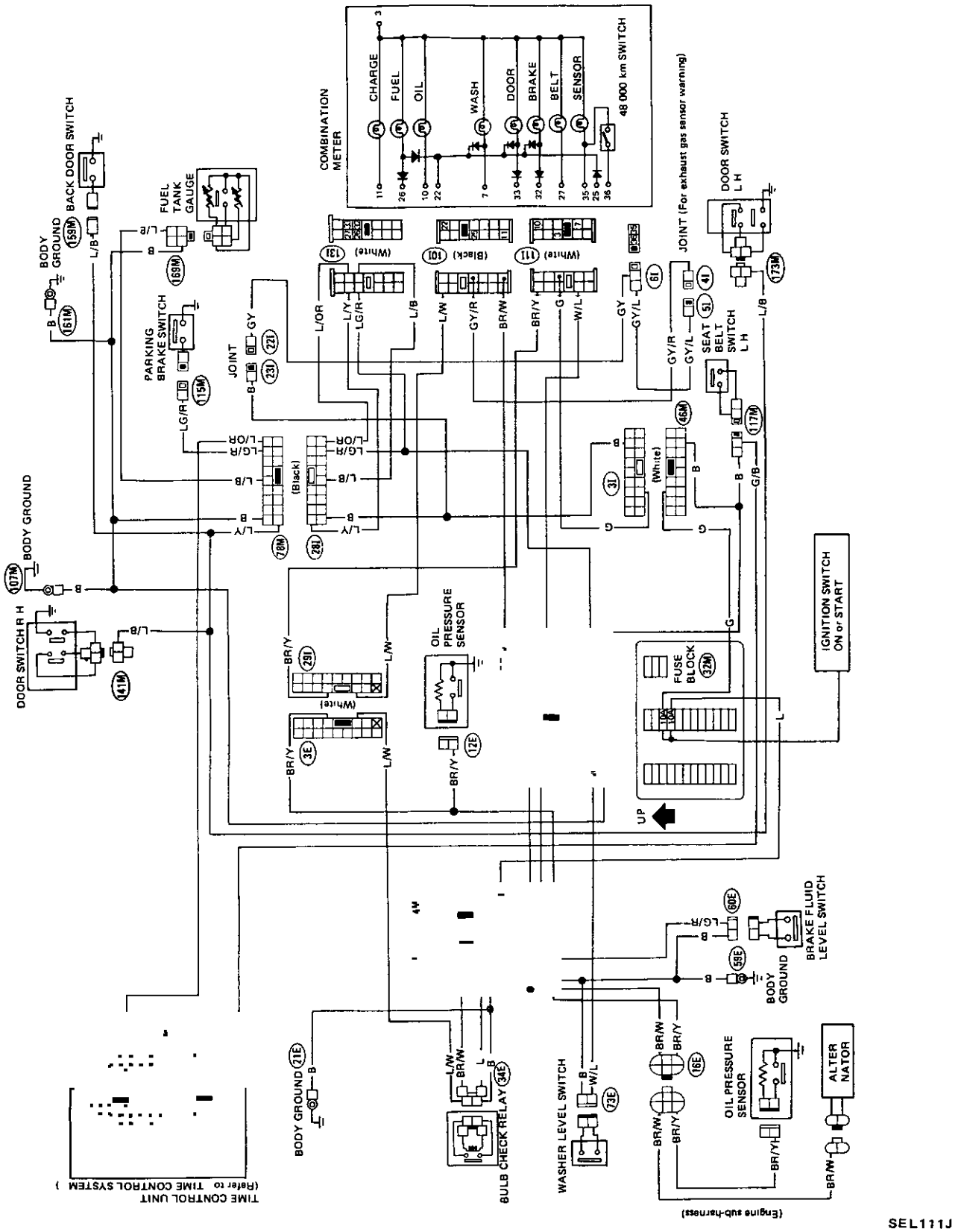


SEL110J

Warning Lamps/Wiring Diagram

— For Needle Type Combination Meter (Cont'd) —

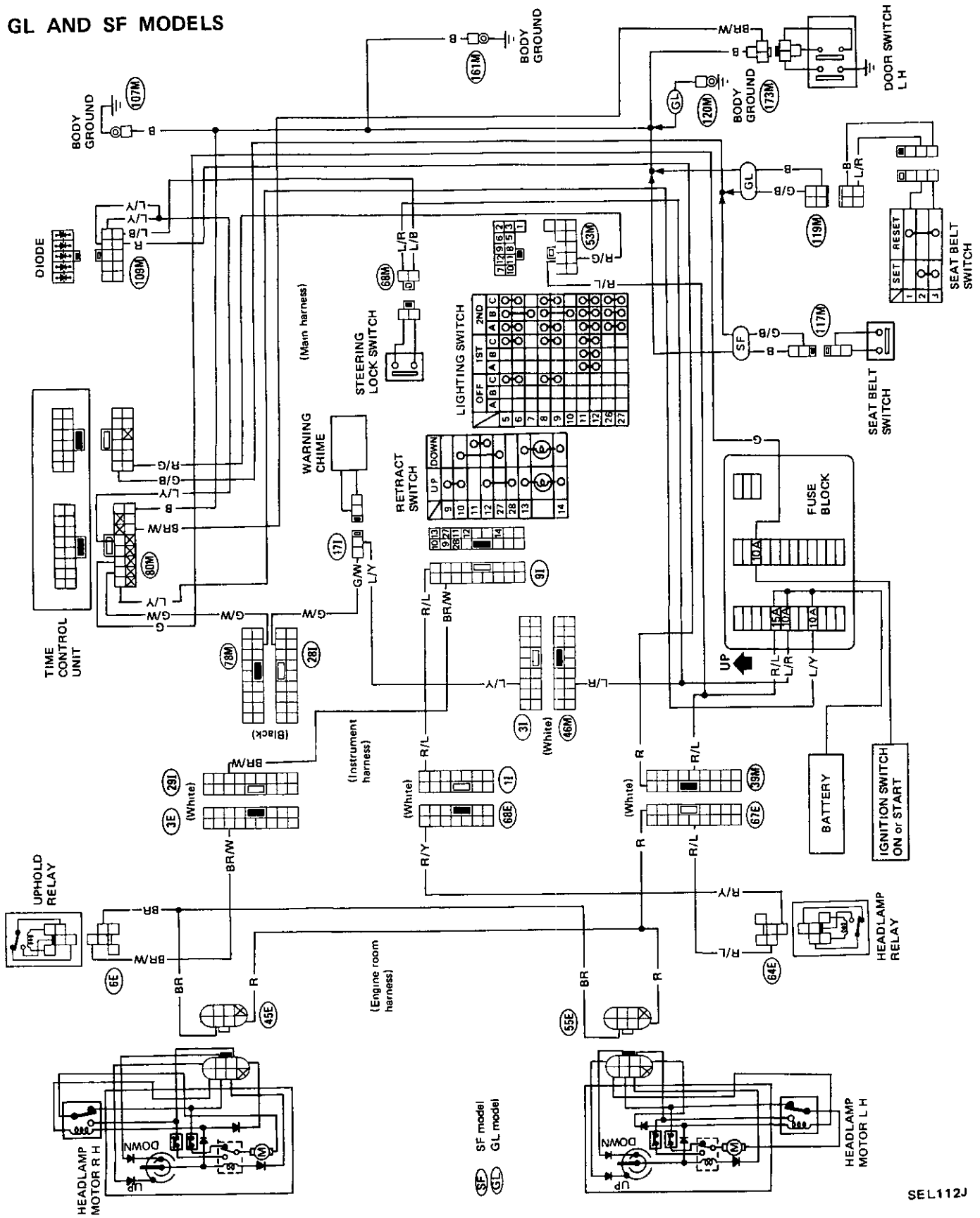
SF MODEL



SEL111J

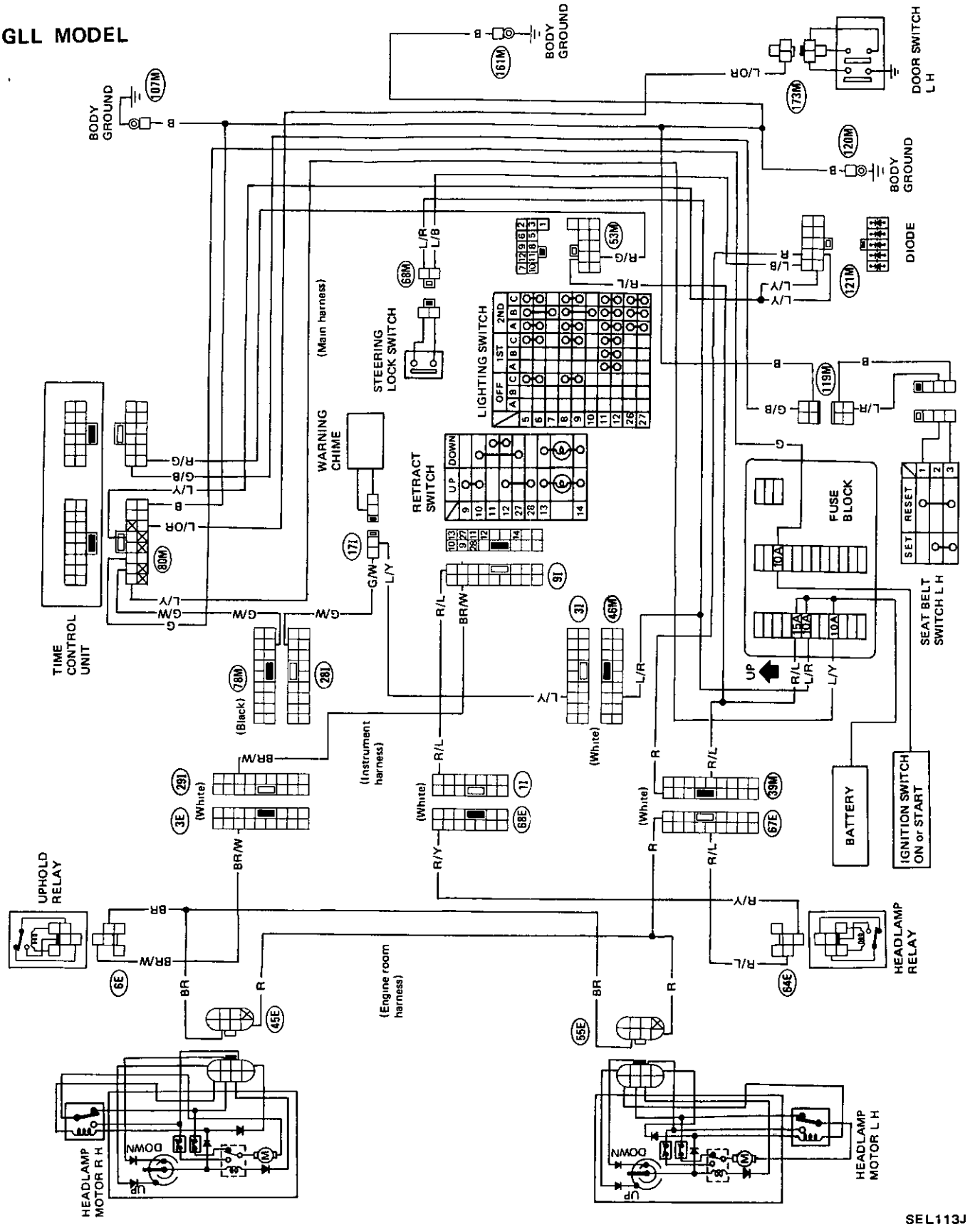
Warning Chime/Wiring Diagram

GL AND SF MODELS



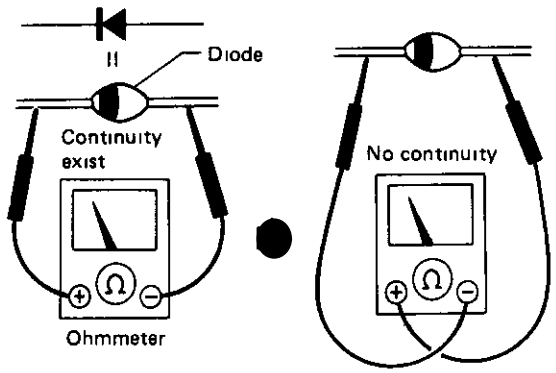
Warning Chime/Wiring Diagram (Cont'd)

GLL MODEL



Diode Check

- Check continuity using an ohmmeter
- Diode is functioning properly if test results are as shown below.



SEL700D

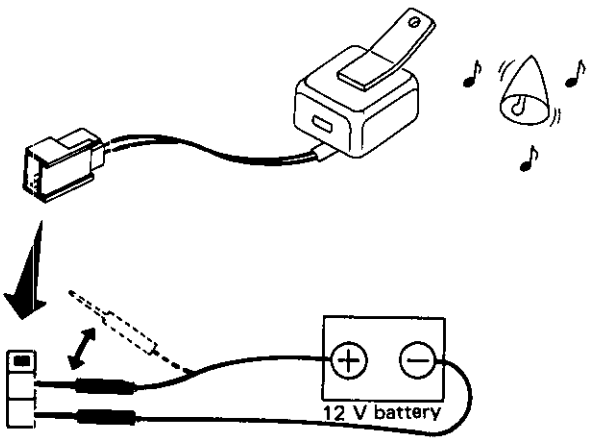
DIGITAL TYPE COMBINATION METER

- Diodes for warning lamps are located on the panel where warning bulbs are fitted.

NEEDLE TYPE COMBINATION METER

- Diodes for warning lamps are built into the combination meter printed circuit

Warning Chime Check



SEL875D

TIME CONTROL SYSTEM

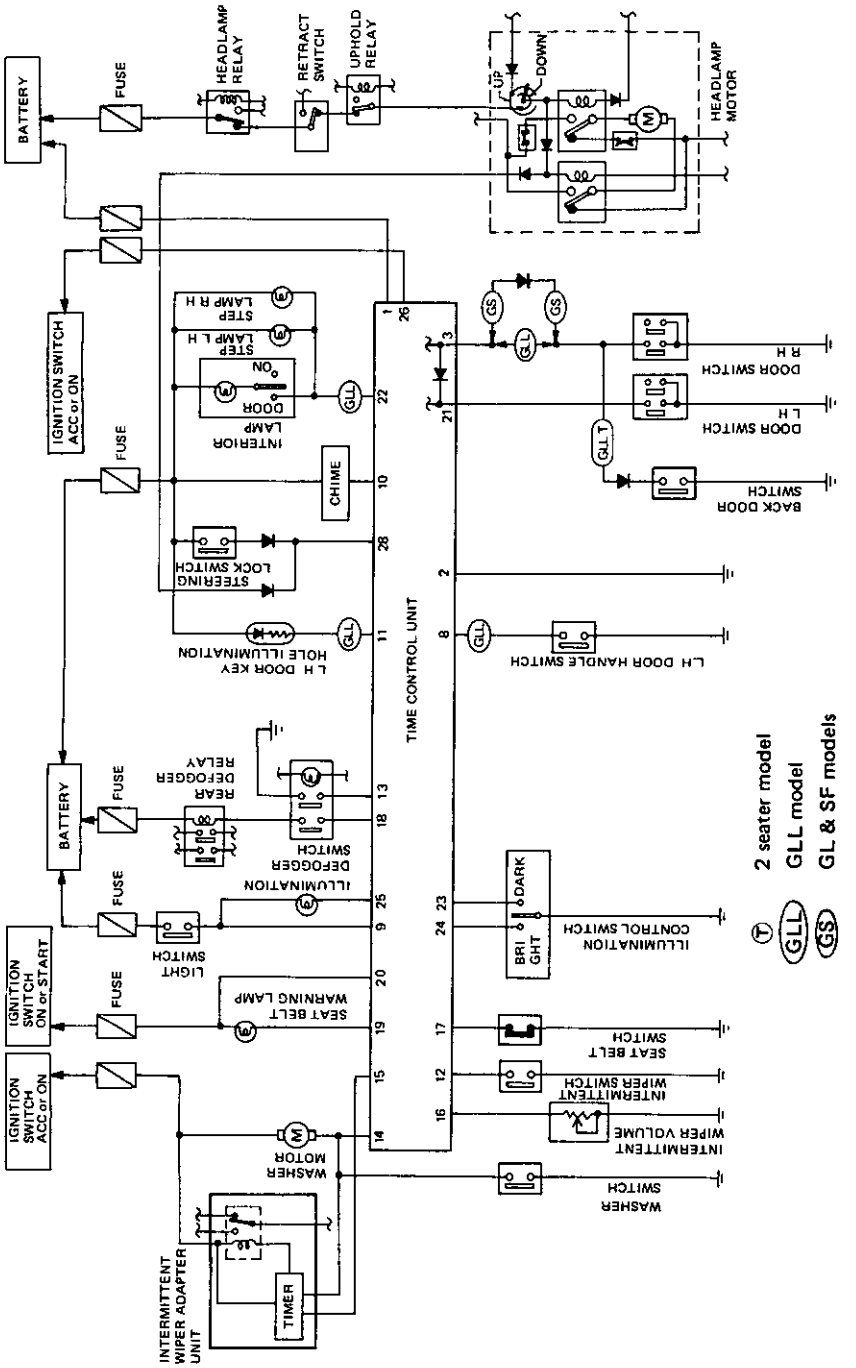
Schematic

CAUTION.

Never touch the terminals of time control unit with bare hands.

- Time control unit has the following functions.

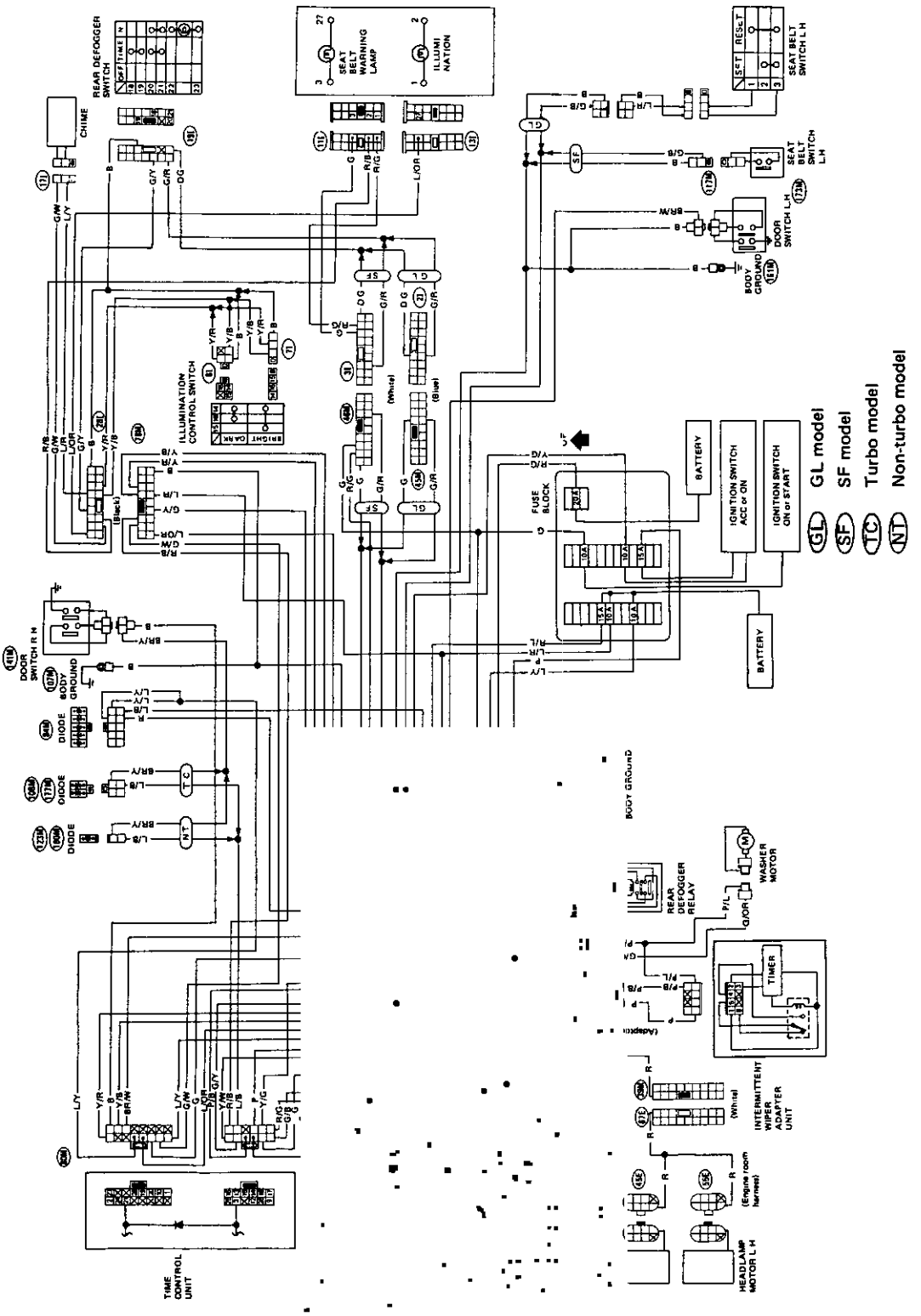
1) Intermittent wiper control timer
2) Interior lamp timer
3) Door key hole illumination timer
4) Illumination control timer
5) Light warning timer
6) Key warning timer
7) Seat belt warning timer
8) Rear defogger timer



SEL114J

Wiring Diagram

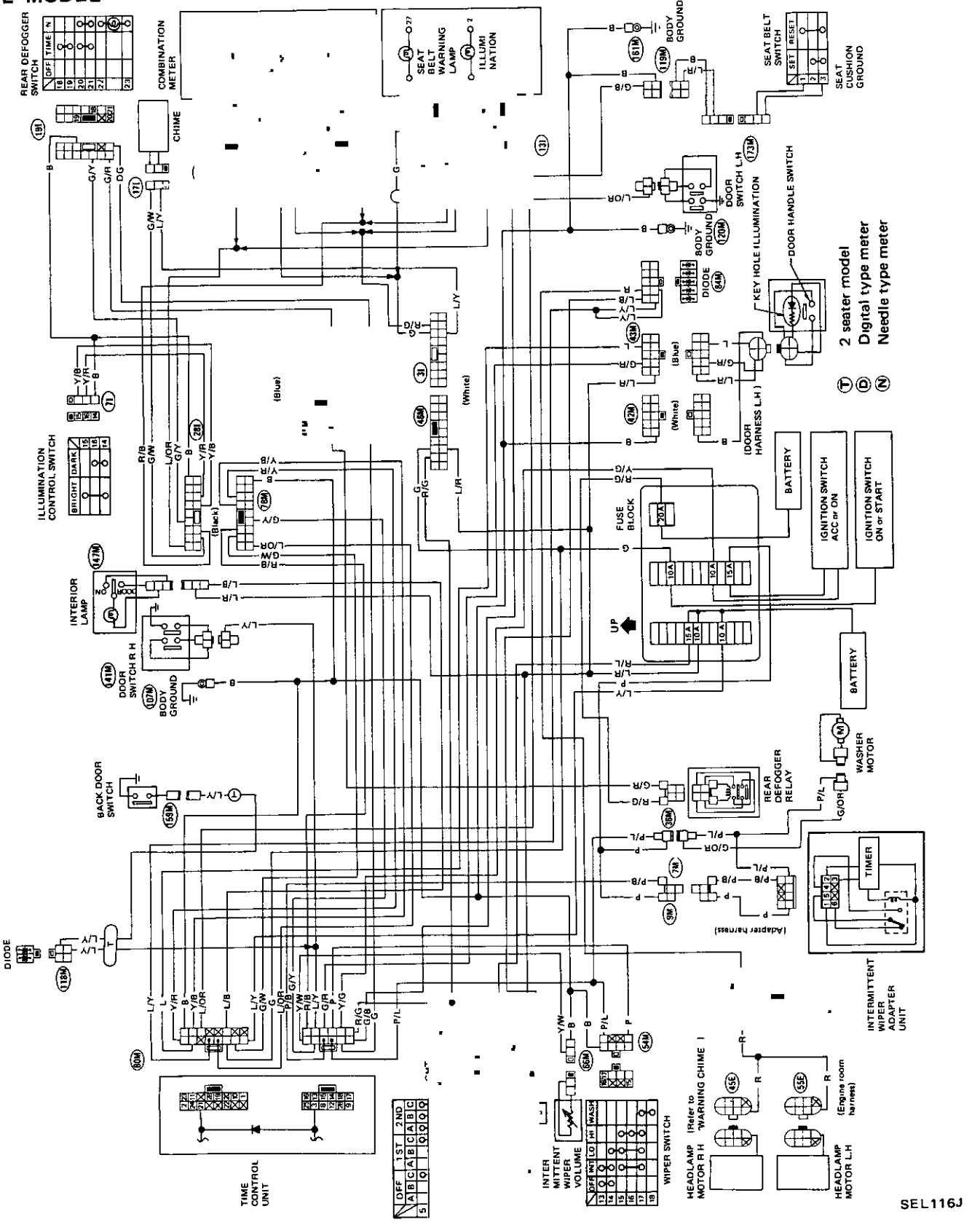
GL AND SF MODELS



SEL115J

Wiring Diagram (Cont'd)

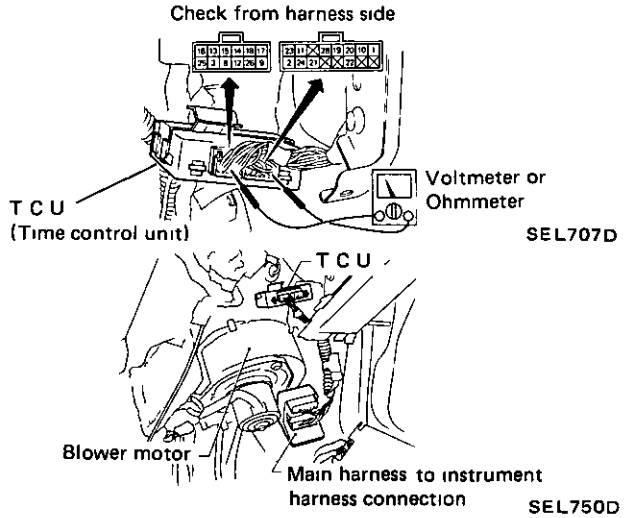
GLL MODEL



TIME CONTROL SYSTEM

Preparation for Trouble-shooting

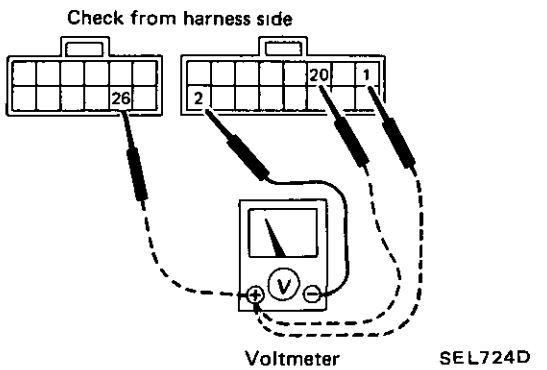
1. Remove R H dash side cover and remove blower motor
2 Remove time control unit with harness connected.
3 Connect main harness to instrument harness (if disconnected)



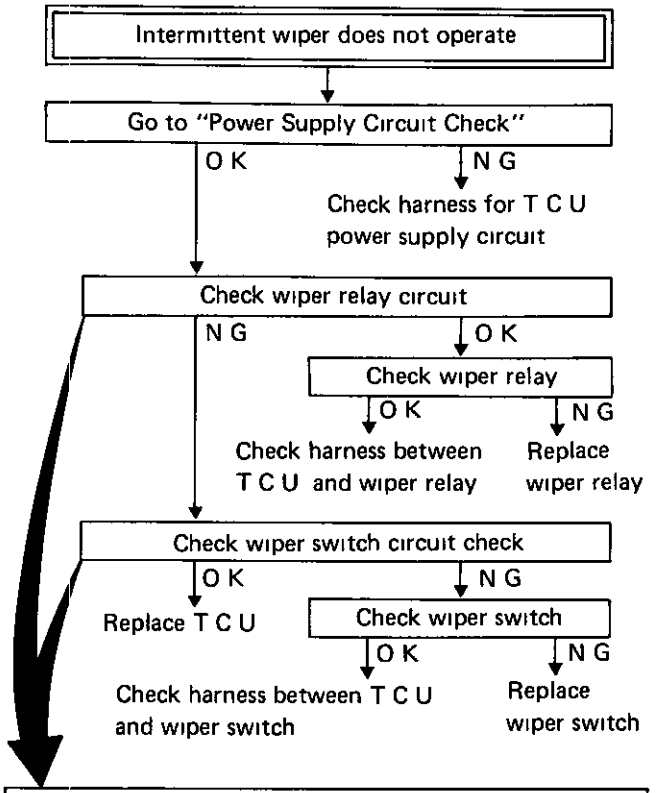
Power Supply Circuit Check

Voltmeter terminals		Ignition switch position		
(+)	(−)	OFF	ACC	ON
①	②	Approx 12V	Approx 12V	Approx 12V
⑳	②	0V	0V	Approx 12V
㉖	②	0V	Approx 12V	Approx 12V

Ohmmeter terminals		Continuity
(+)	(−)	
②	Body ground	Yes

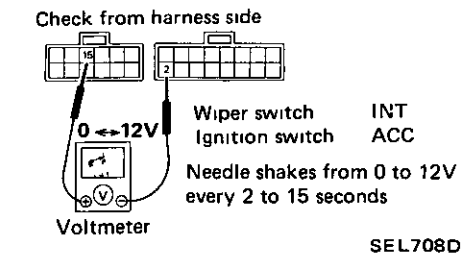


Trouble-shooting



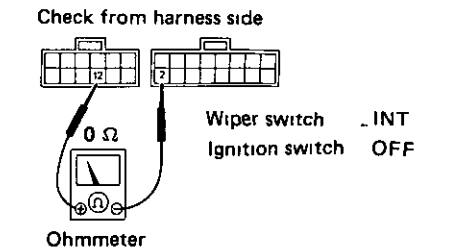
WIPER RELAY CIRCUIT CHECK

1 Turn wiper switch to "INT"
2 Turn ignition switch to "ACC".
3. Measure voltage across ⑮ and ②



WIPER SWITCH CIRCUIT CHECK

1 Turn wiper switch to "INT"
2 Turn ignition switch to "OFF"
3. Check continuity between ⑫ and ②.



Trouble-shooting (Cont'd)

Intermittent time of wiper cannot be adjusted

Check intermittent wiper volume circuit

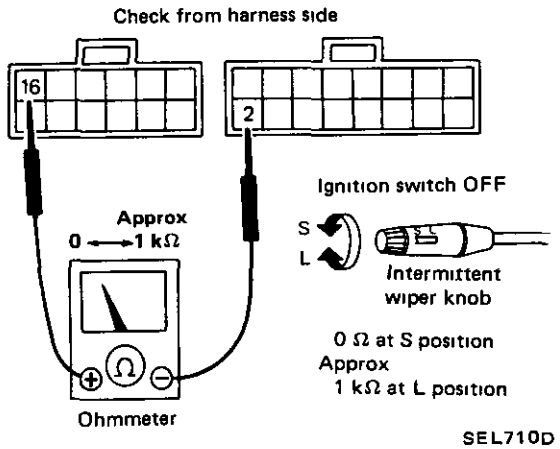
O K → Replace T C U.

N G → Check intermittent wiper volume

O K → Check harness between T C U and intermittent wiper volume

N G → Replace wiper switch

1. Turn ignition switch to "OFF".
2. Measure resistance between ⑯ and ② while turning intermittent wiper volume



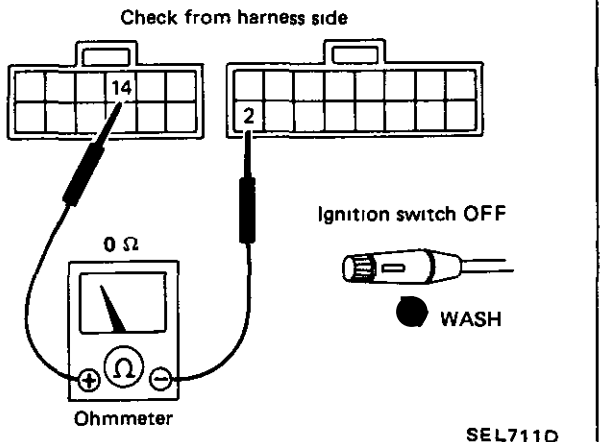
Wiper and washer activate individually but not in combination

Check washer switch circuit

O K → Replace T C U

N G → Check harness between T C U and washer switch

1. Turn ignition switch to "OFF"
2. Turn washer switch to "ON".
3. Check continuity between ⑭ and ② .



Trouble-shooting (Cont'd)

Interior lamp and step lamps do not fade out after driver's door is closed

Check if door warning lamp goes off after all doors are closed

O K

N G

Check door switch

Go to "Power Supply Circuit Check"

O K

N G

Check harness for T C U power supply circuit

Check interior lamp circuit

N G

Replace T C U

O K

Check harness between T C U and interior lamp

Illuminated entry system will not operate (Interior lamp will not illuminate when outside door handle on driver's side is pulled)

Check if interior lamp fades out after all doors are closed

O K

N G

Go to "Interior lamp circuit check"

N G

O K

Check harness between T C U and interior lamp

Check door handle switch circuit check

O K

N G

Check door handle switch

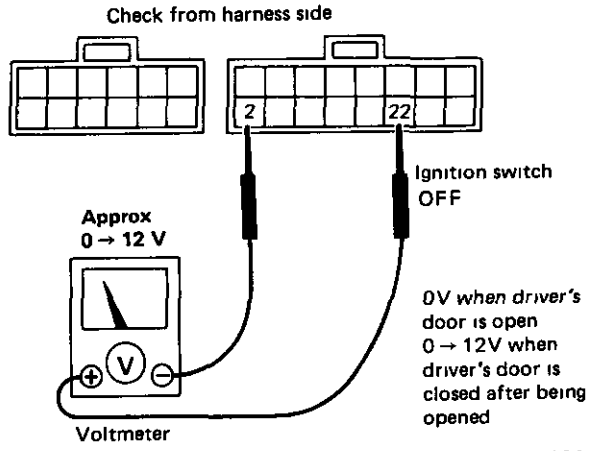
O K

Replace T C U

Check harness between T C U and door handle switch

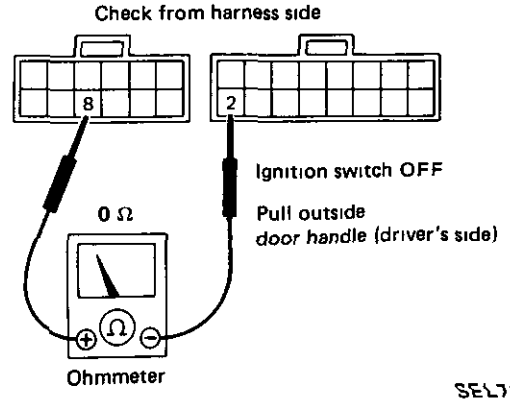
INTERIOR LAMP CIRCUIT CHECK

1. Turn ignition switch to "OFF"
2. Measure voltage across ㉒ and ② .



DOOR HANDLE SWITCH CIRCUIT CHECK

1 Turn ignition switch to "OFF".
2. Pull outside door handle (driver's side).
3. Check continuity between ⑧ and ②



Trouble-shooting (Cont'd)

Door key hole illumination does not come on even if driver's side door handle is pulled

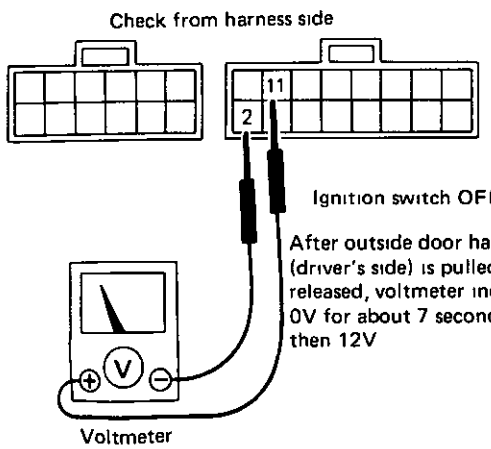
→ Go to "Power Supply Circuit Check"

- N G → Check key hole illumination circuit
- O K → Check harness for T C U power supply circuit

Check key hole illumination circuit

- N G → Go to "Door handle switch circuit check" (Refer to back page)
  - O K → Replace T C U
  - N G → Check harness between T C U and door handle switch
- O K → Check key hole illumination and diode
  - O K → Check harness between T C U and key hole illumination

1. Turn ignition switch to "OFF"
2. Pull outside door handle (driver's side)
3. Measure voltage across ⑪ and ②.



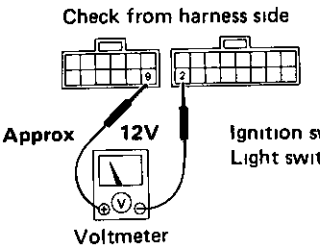
SEL714D

Illumination control system does not actuate

→ Check light switch circuit

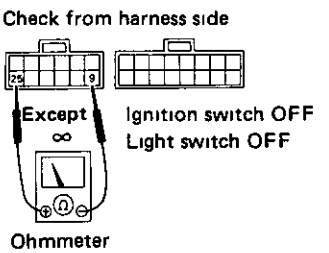
- O K → Check illumination circuit
  - O K → Check illumination control circuit
    - O K → Replace T C U
    - N G → Check illumination control switch
  - N G → Check for loose harness connector
- N G → Check harness between T C U and light switch

LIGHT SWITCH CIRCUIT CHECK



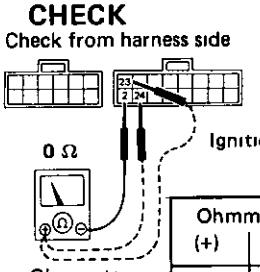
SEL715D

ILLUMINATION CIRCUIT CHECK



SEL716D

ILLUMINATION CONTROL CIRCUIT CHECK



Ohmmeter (+)	Ohmmeter (−)	Illumination control switch: DARK	Illumination control switch: BRIGHT
㉓	②	0 Ω	Except 0 Ω
㉔	②	Except 0 Ω	0 Ω

SEL717D

Trouble-shooting (Cont'd)

Light warning chime does not activate

Check if other warning chimes function

O K → Go to "Light switch circuit check" (Refer to back page)

O K → Replace T C U

N G → Check harness between T C U and light switch

N G → Check harness between T C U and light switch

Key warning chime does not activate

Check if other warning chimes function.

O K → Check steering lock switch circuit

O K → Replace T C U

N G → Check steering lock switch

N G → Check harness between T C U and light switch

Seat belt warning chime does not activate

Check if other warning chimes function

O K → Check seat belt switch circuit

O K → Replace T C U

N G → Check seat belt switch, and harness between T C U and seat belt switch

N G → Check harness between T C U and light switch

Go to "Power Supply Circuit Check"

O K → Check T C U output for chime circuit

N G → Check harness for T C U power supply circuit

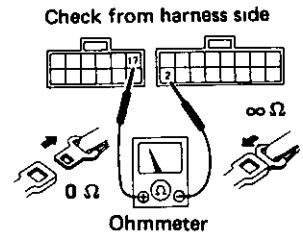
Check T C U output for chime circuit

O K → Check chime, and harness between T C U and chime

N G → Check harness between T C U and chime

SEAT BELT SWITCH CIRCUIT CHECK

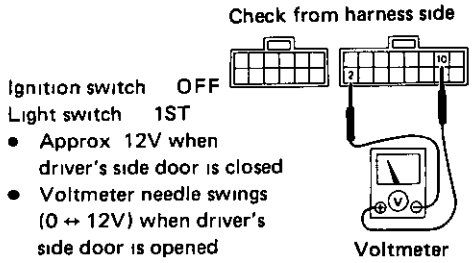
1. Turn ignition switch to "OFF".
2. Unfasten driver's seat belt.
3. Check for continuity between ⑰ and ②.
4. Fasten driver's seat belt.
5. Check to determine if continuity does not exist between ⑰ and ②.



SEL721D

T.C.U. OUTPUT FOR CHIME CIRCUIT CHECK

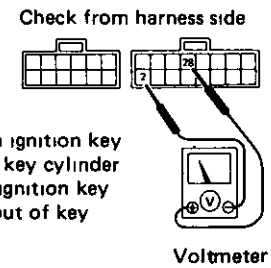
1. Turn ignition switch to "OFF"
2. Measure voltage across ⑩ and ② when driver's door is opened and closed.



SEL718D

STEERING LOCK SWITCH CIRCUIT CHECK

1. Turn ignition switch to "OFF".
2. Check voltage between ㉘ and ②.



SEL719D

Trouble-shooting (Cont'd)

Seat belt warning lamp does not go off nor come on

Go to "Power Supply Circuit Check"

O K → Check belt warning circuit

N G → Check harness for T C U power supply circuit

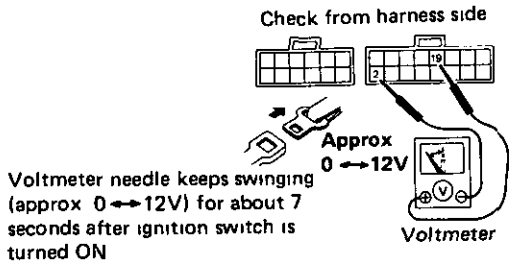
Check belt warning circuit

N G → Replace T C U

O K → Check warning lamp

BELT WARNING CIRCUIT CHECK

1. Unfasten seat belt
2. Measure voltage across ⑲ and ② when ignition switch is "ON".



Rear defogger does not activate, or does not go off automatically

Go to "Power Supply Circuit Check".

O K → Check rear defogger circuit

N G → Check harness for T C U power supply circuit

Check rear defogger circuit

N G → Replace T C U

O K → Check rear defogger relay, and harness between T C U and rear defogger relay

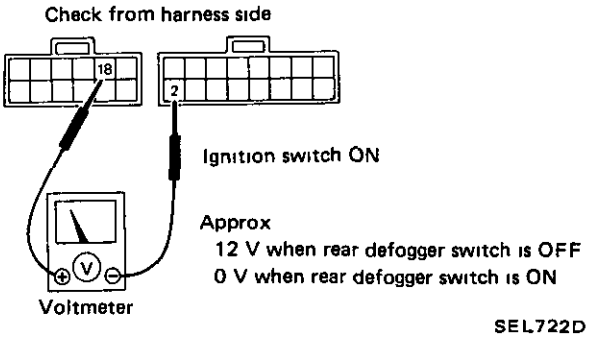
Check defogger switch circuit

O K → Check defogger switch, and harness between T C U and defogger switch

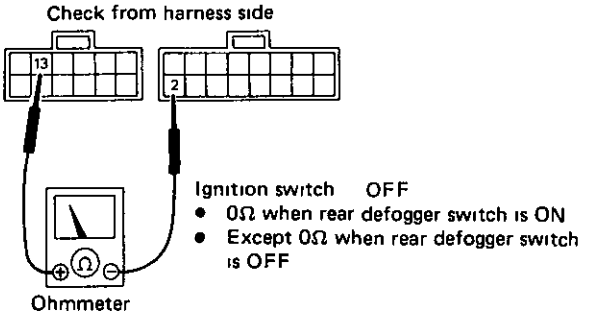
N G

REAR DEFOGGER CIRCUIT CHECK

1. Turn ignition switch to "ON"
2. Measure voltage across ⑱ and ② while operating rear defogger switch.

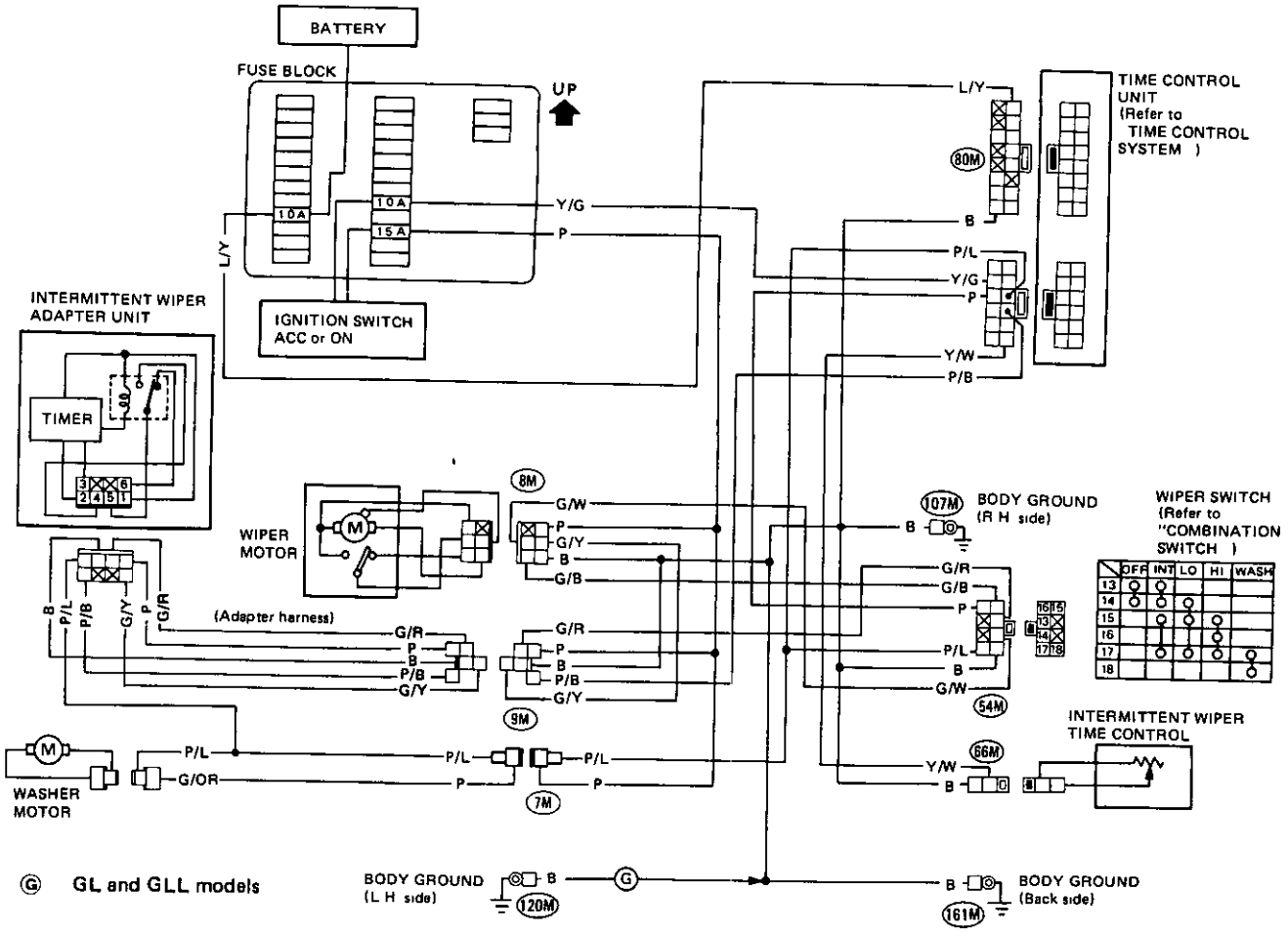


DEFOGGER SWITCH CIRCUIT CHECK



WIPER AND WASHER

Windshield Wiper and Washer/Wiring Diagram



SEL117J

Windshield Wiper and Washer/Installation

WIPER ARM

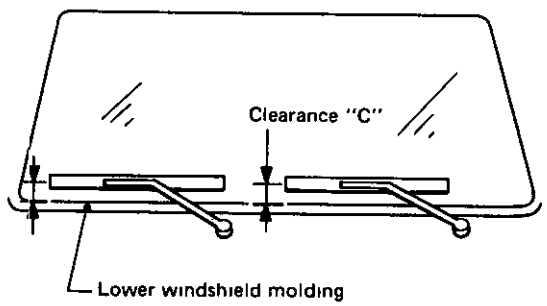
1 Prior to wiper arm installation, set wiper switch to "LOW" to operate wiper motor and then turn it "OFF" (Auto Stop).
2 Adjust wiper blades within clearance "C"
3 Tighten windshield wiper arm nuts to specified torque.

13 - 18 N·m (1.3 - 1.8 kg-m, 9 - 13 ft-lb)

4 Eject washer fluid. Set wiper switch to "LOW" to operate wiper motor and then turn it "OFF"

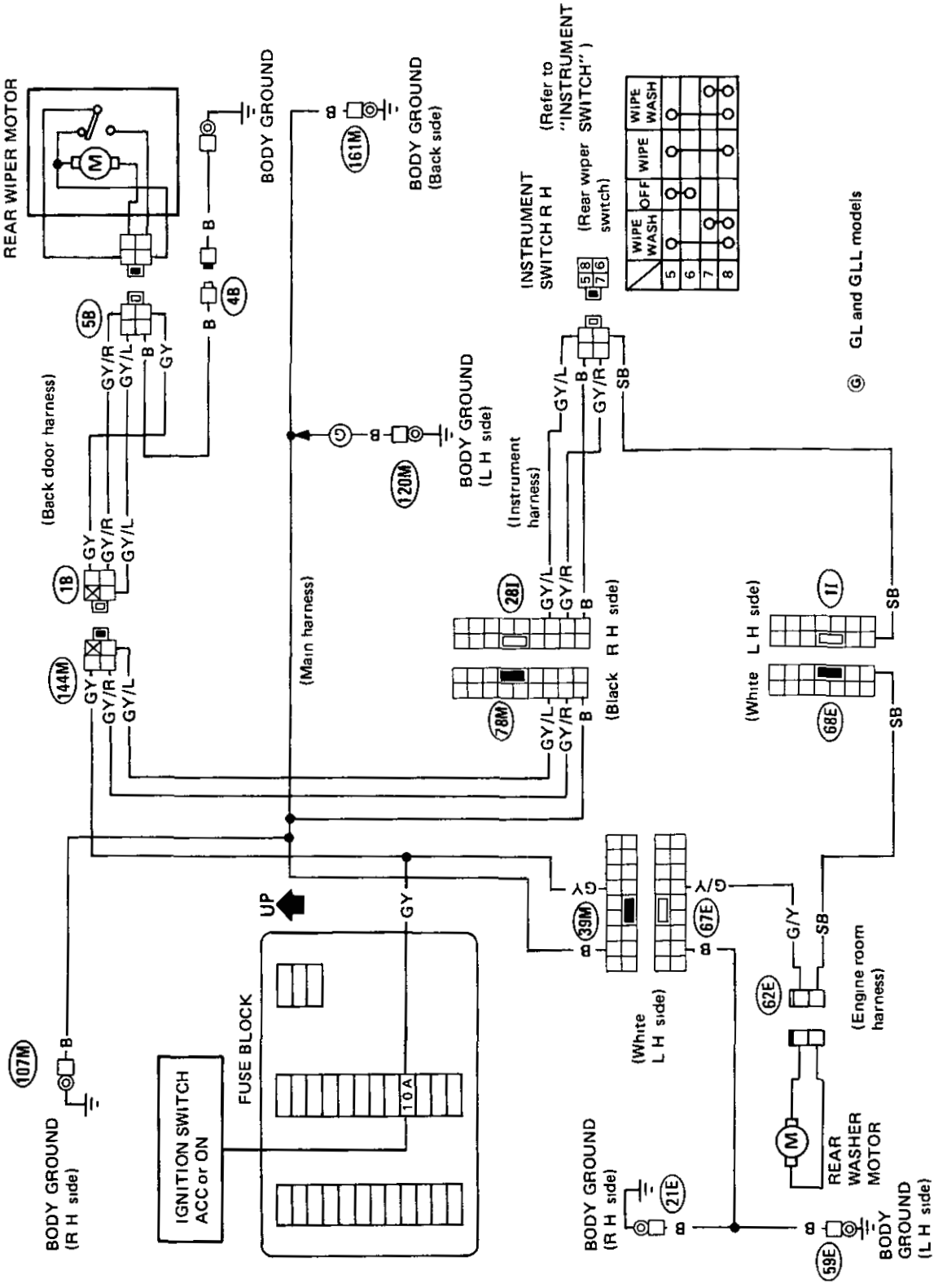
5 Ensure that wiper blades stop within clearance "C".

Clearance "C": 15 - 25 mm (0.59 - 0.98 in)



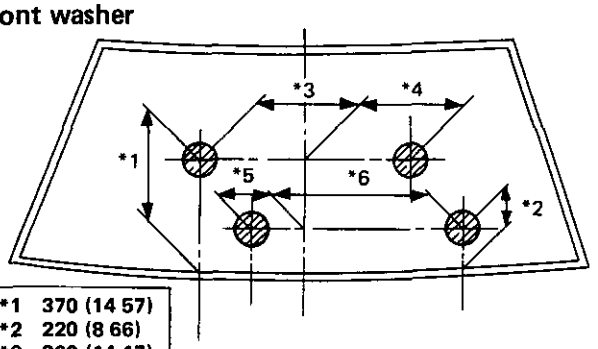
SEL355E

Rear Wiper and Washer/Wiring Diagram



Washer Nozzle Adjustment

Front washer

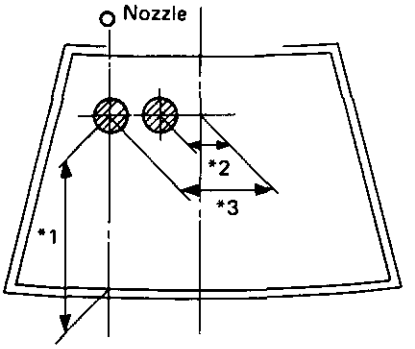


*1	370 (14 57)
*2	220 (8 66)
*3	360 (14 17)
*4	240 (9 45)
*5	140 (5 51)
*6	430 (16 93)

Unit mm (in)

SEL152J

Rear washer



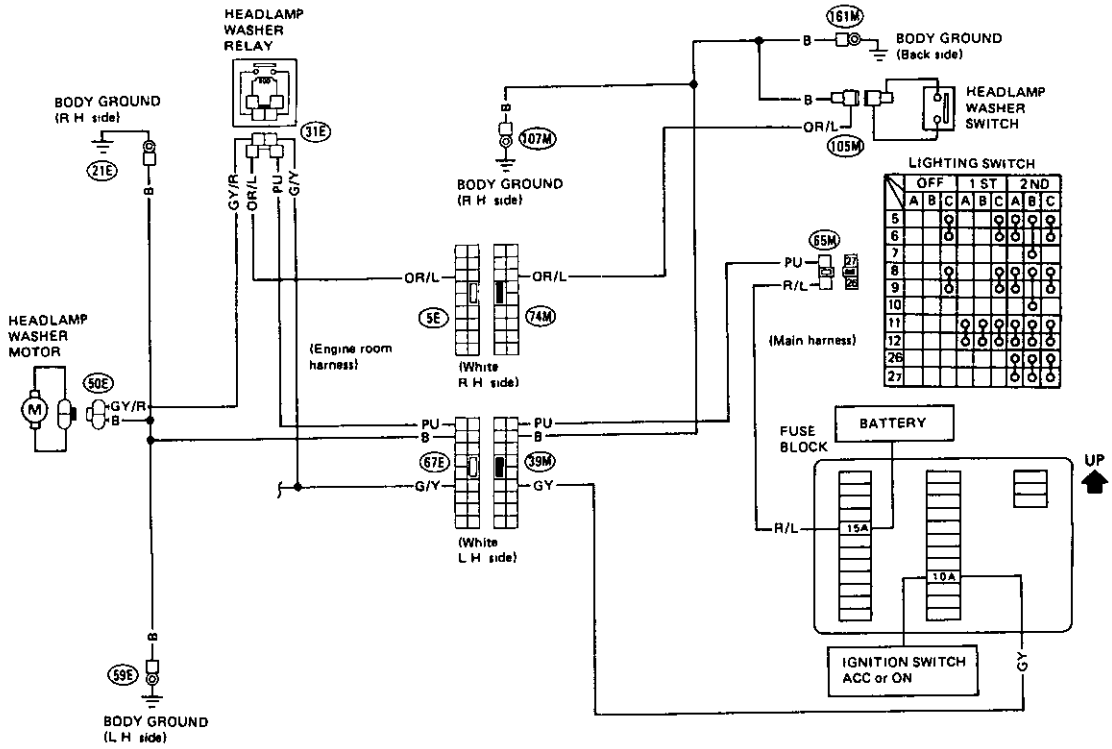
*1	600 (23 62)
*2	122 (4 80)
*3	240 (9 45)

Unit mm (in)

SEL153J

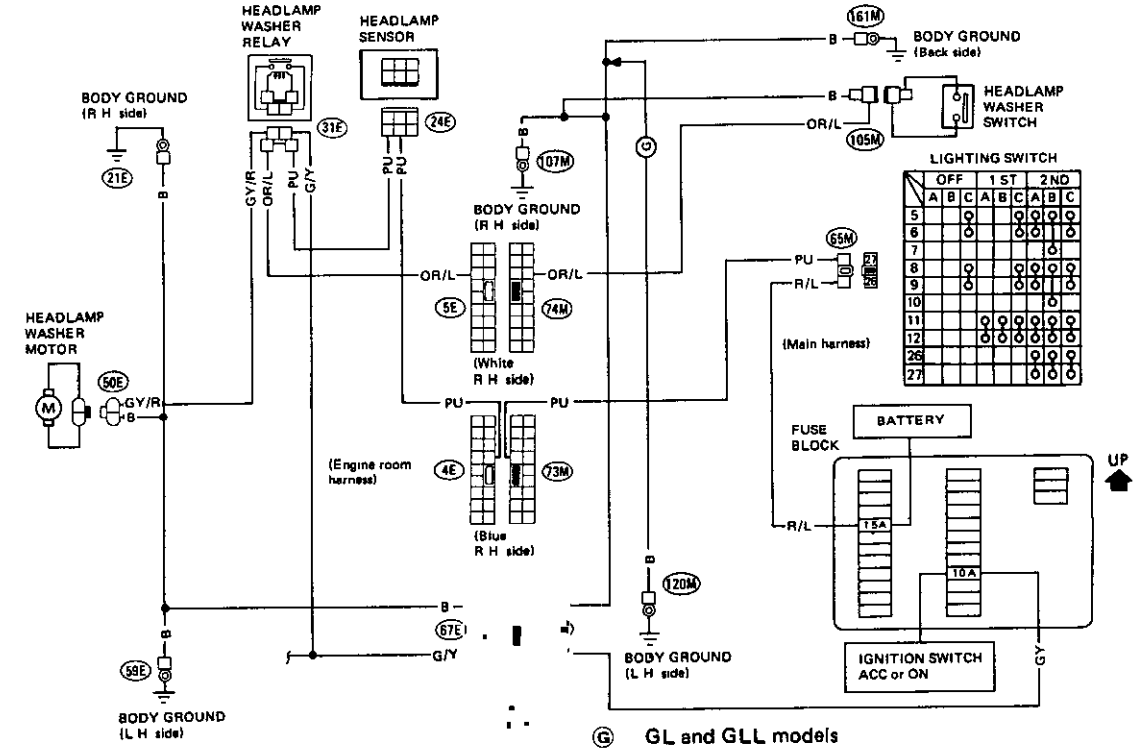
Headlamp Washer/Wiring Diagram

WITHOUT HEADLAMP SENSOR



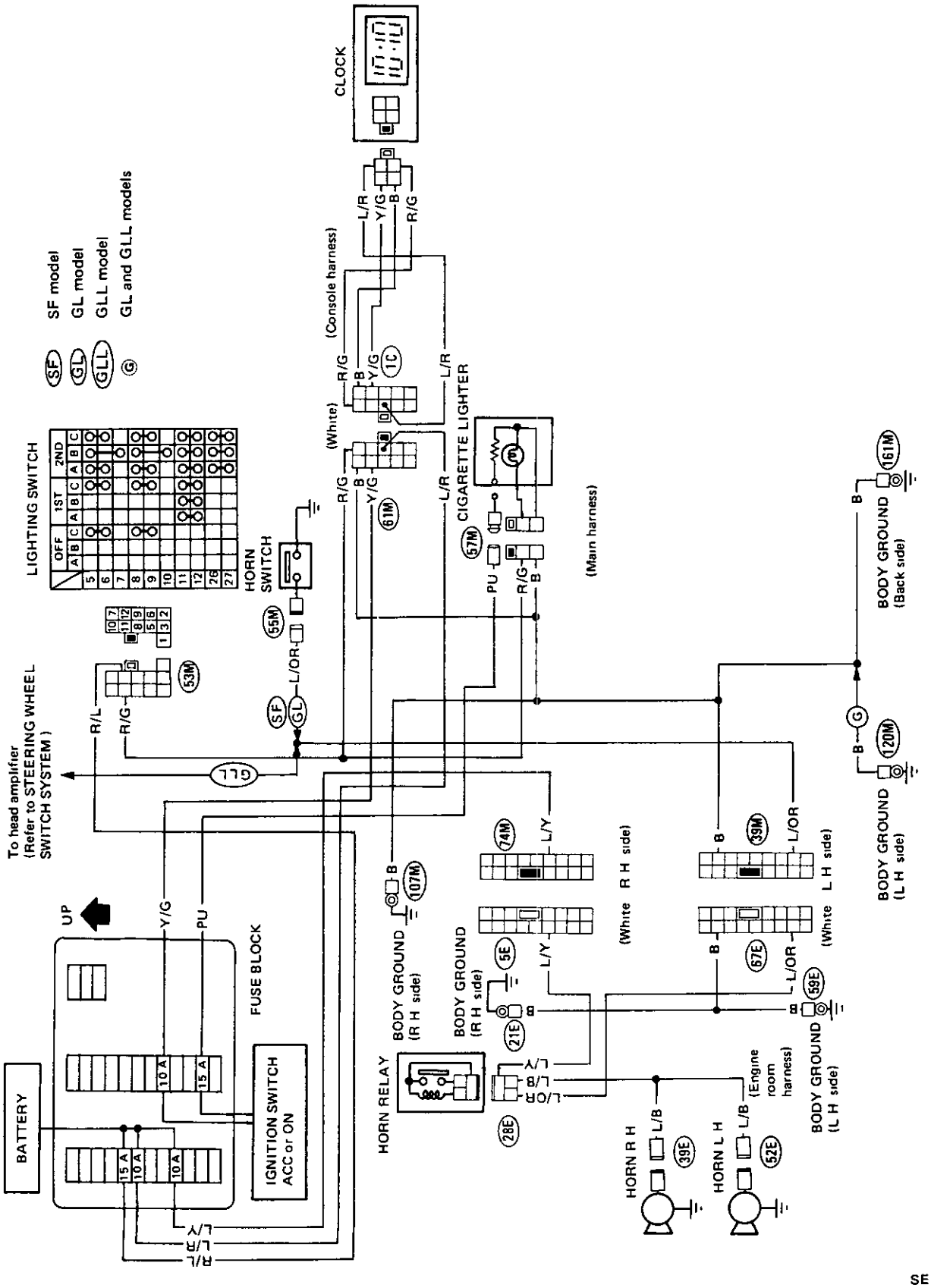
SEL119J

WITH HEADLAMP SENSOR



SEL120J

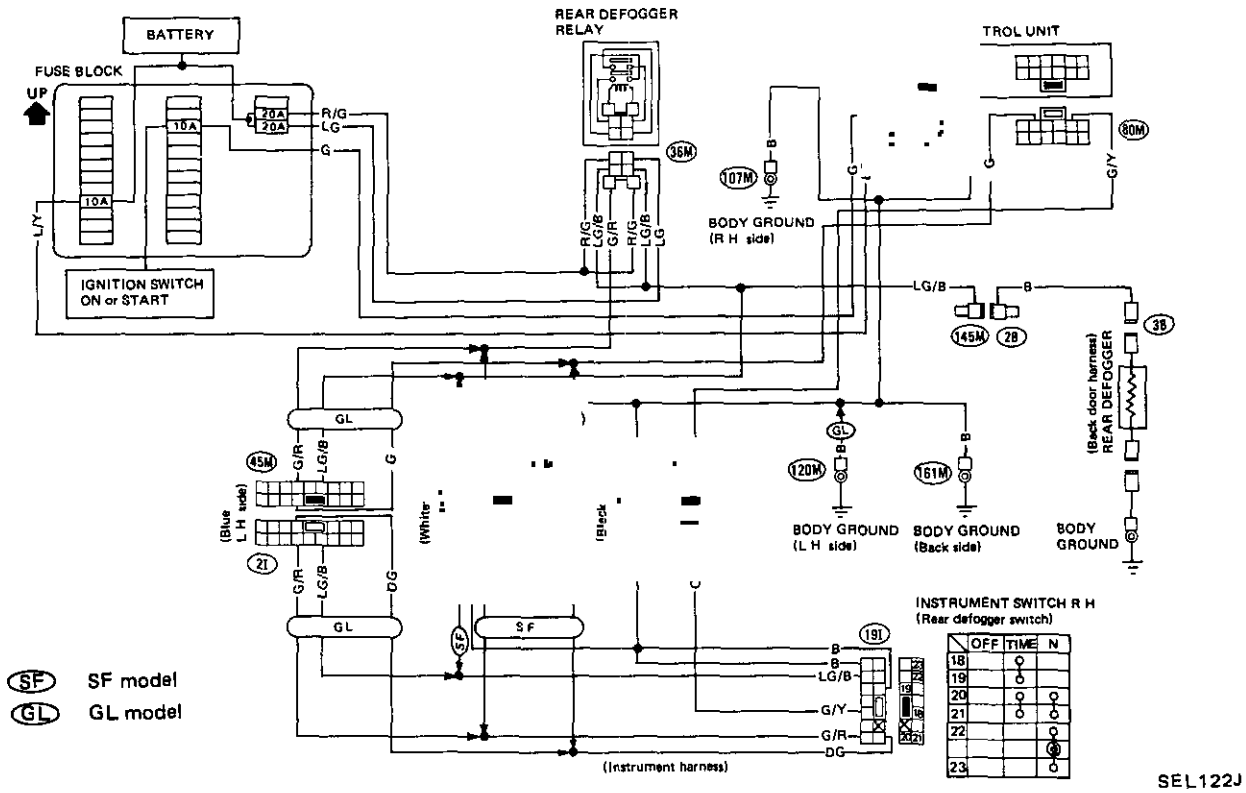
Wiring Diagram



REAR WINDOW DEFOGGER

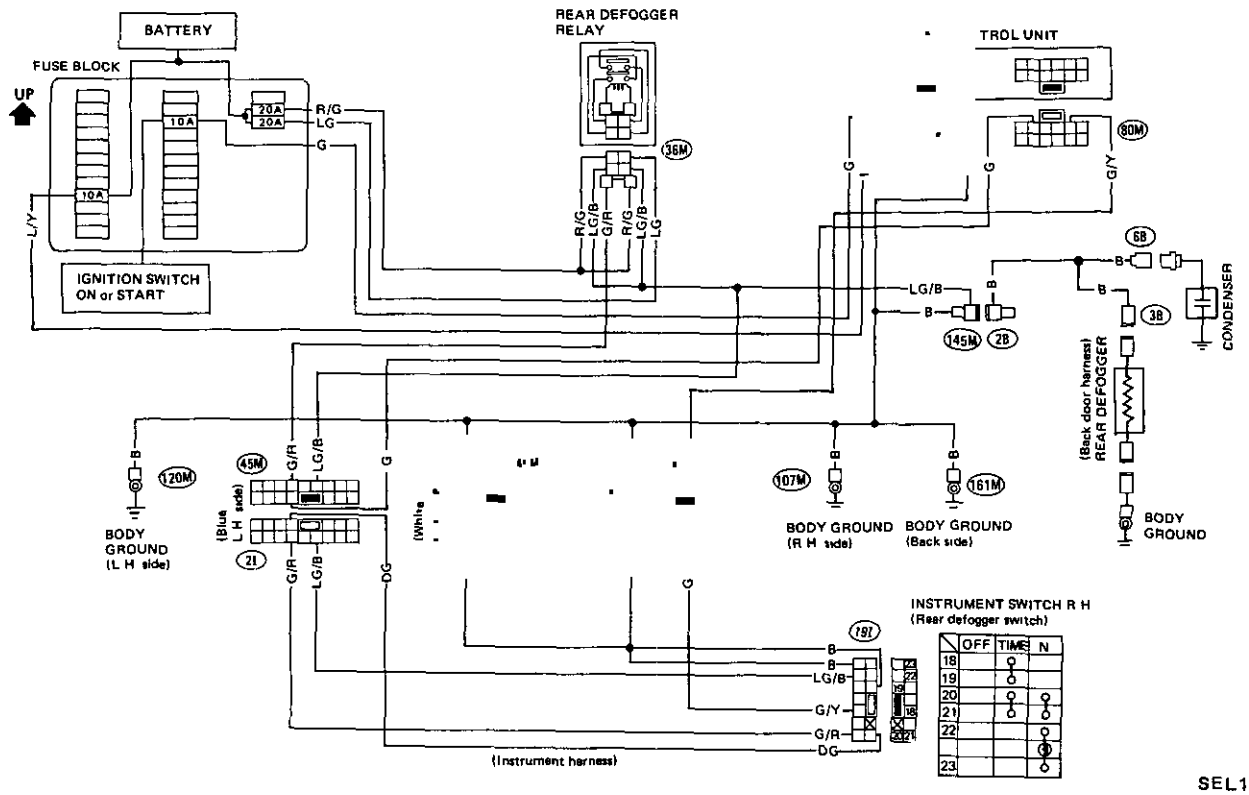
Wiring Diagram

SF AND GL MODELS



SEL122J

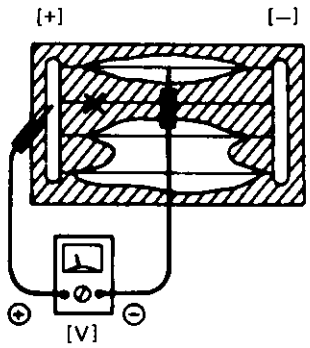
GLL MODEL



SEL123J

Filament Check

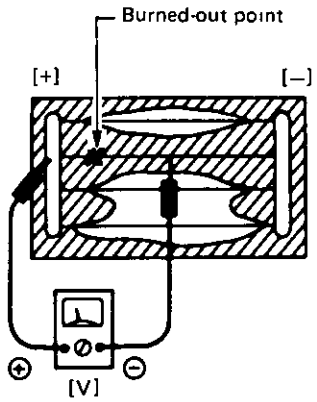
1 Attach probe circuit tester (in volt range) to middle portion of each filament



6 volts (normal filament)

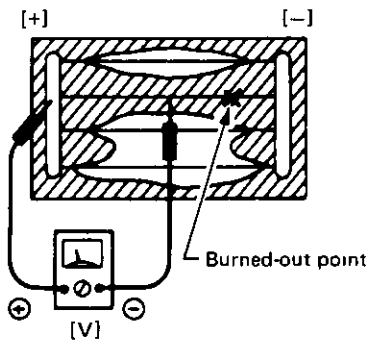
SEL263

2. If a filament is burned out, circuit tester registers 0 or 12 volts.



12 volts

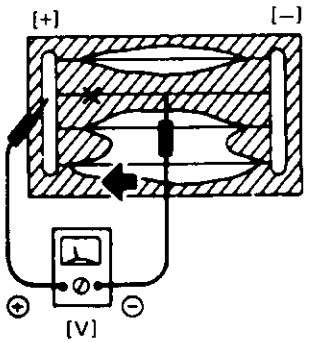
SEL264



0 volts

SEL265

3 To locate burned out point, move probe to left and right along filament to determine point where tester needle swings abruptly.



SEL266

Filament Repair

REPAIR EQUIPMENT

1 Conductive silver composition (Dupont No 4817 or equivalent)
2 Ruler, 30 cm (11 8 in) long
3 Drawing pen
4 Heat gun
5 Alcohol
6. Cloth

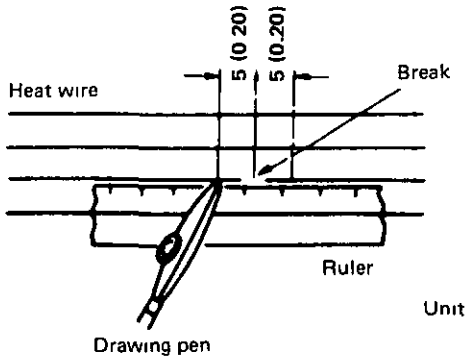
REPAIRING PROCEDURE

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.

Filament Repair (Cont'd)

3 Place ruler on glass along broken line 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

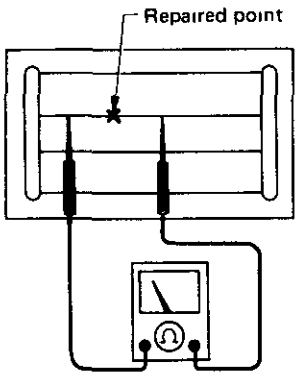


Unit mm (in)

BE540

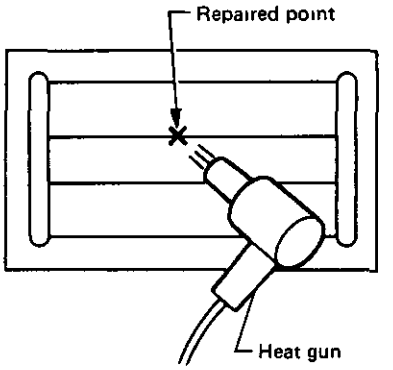
4 After repair has been completed, check repaired wire for continuity. This check should be conducted 10 minutes after silver composition is deposited

Do not touch repaired area while test is being conducted.



SEL012D

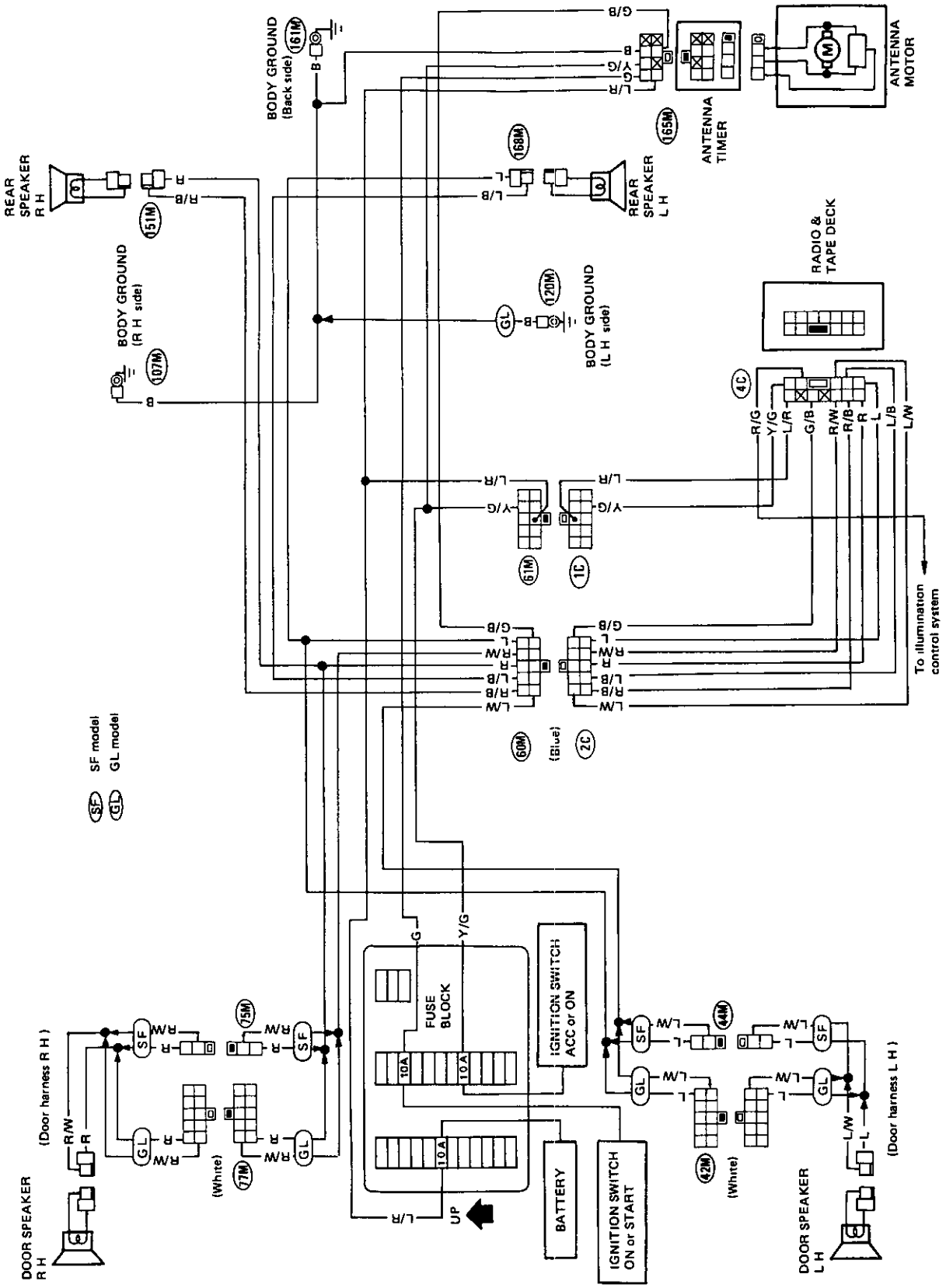
5. Apply a constant stream of hot air directly to the repaired area for approximately 20 minutes with a heat gun. A minimum distance of 3 cm (1 2 in) should be kept between repaired area and hot air outlet. If a heat gun is not available, let the repaired area dry for 24 hours



SEL013D

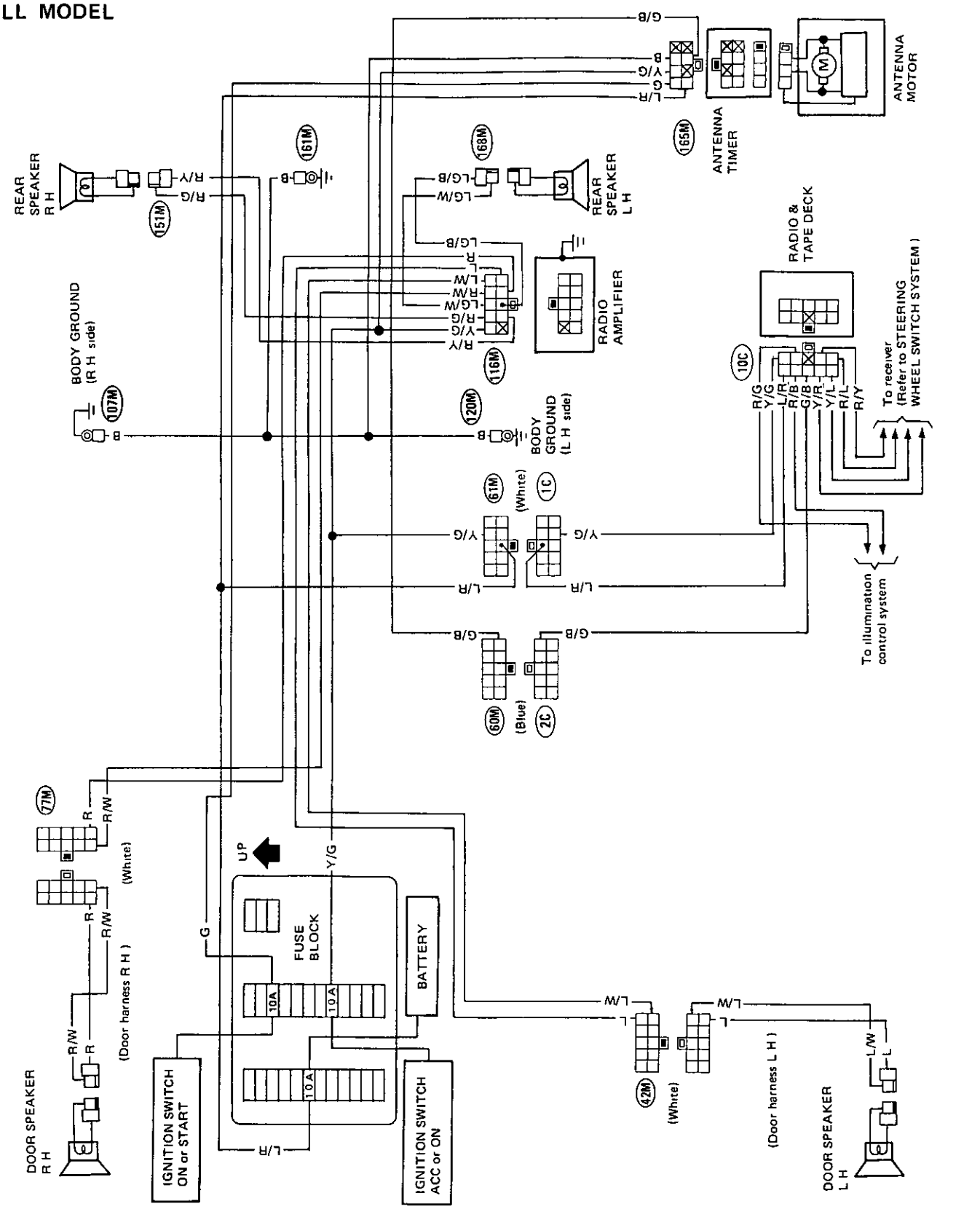
Wiring Diagram

SF AND GL MODELS

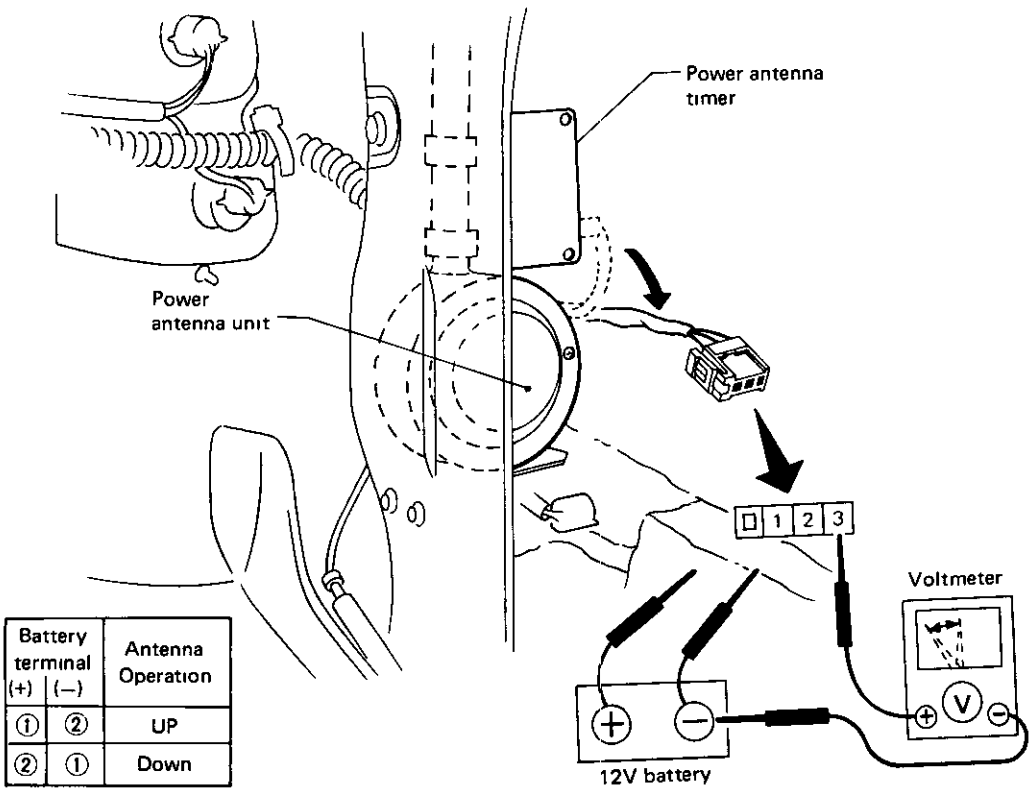


Wiring Diagram (Cont'd)

GLL MODEL



Power Antenna Motor Check



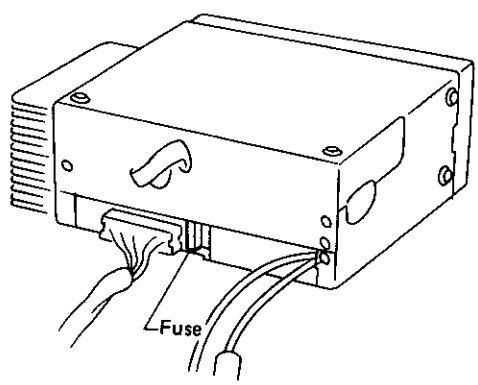
Battery terminal (+)	Battery terminal (−)	Antenna Operation
①	②	UP
②	①	Down

SEL732D

1 Disconnect, at connector, harness between power antenna unit and antenna timer.
2. Apply 12-volt battery voltage across ① and ② to make sure antenna rod extends and retracts
3 Connect a voltmeter across terminal ③ and ground terminal of battery.
4 Check to determine if voltmeter varies between 0 and 12 volts (approx) in relation to movement of antenna rod when 12-volt battery voltage is applied across ① and ②

- **If above test results are not satisfactory, replace antenna motor.**

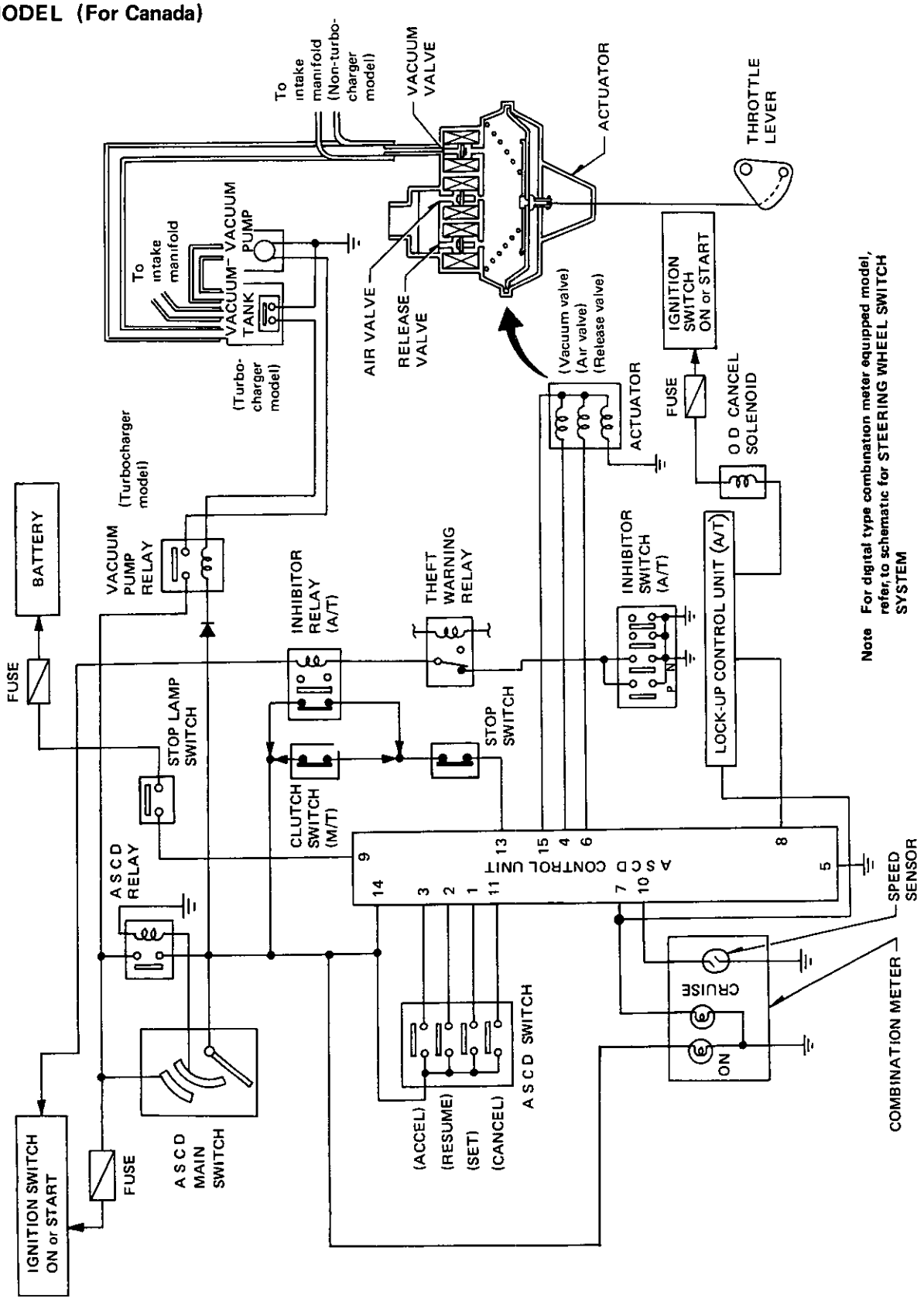
Radio Fuse Check



SEL733D

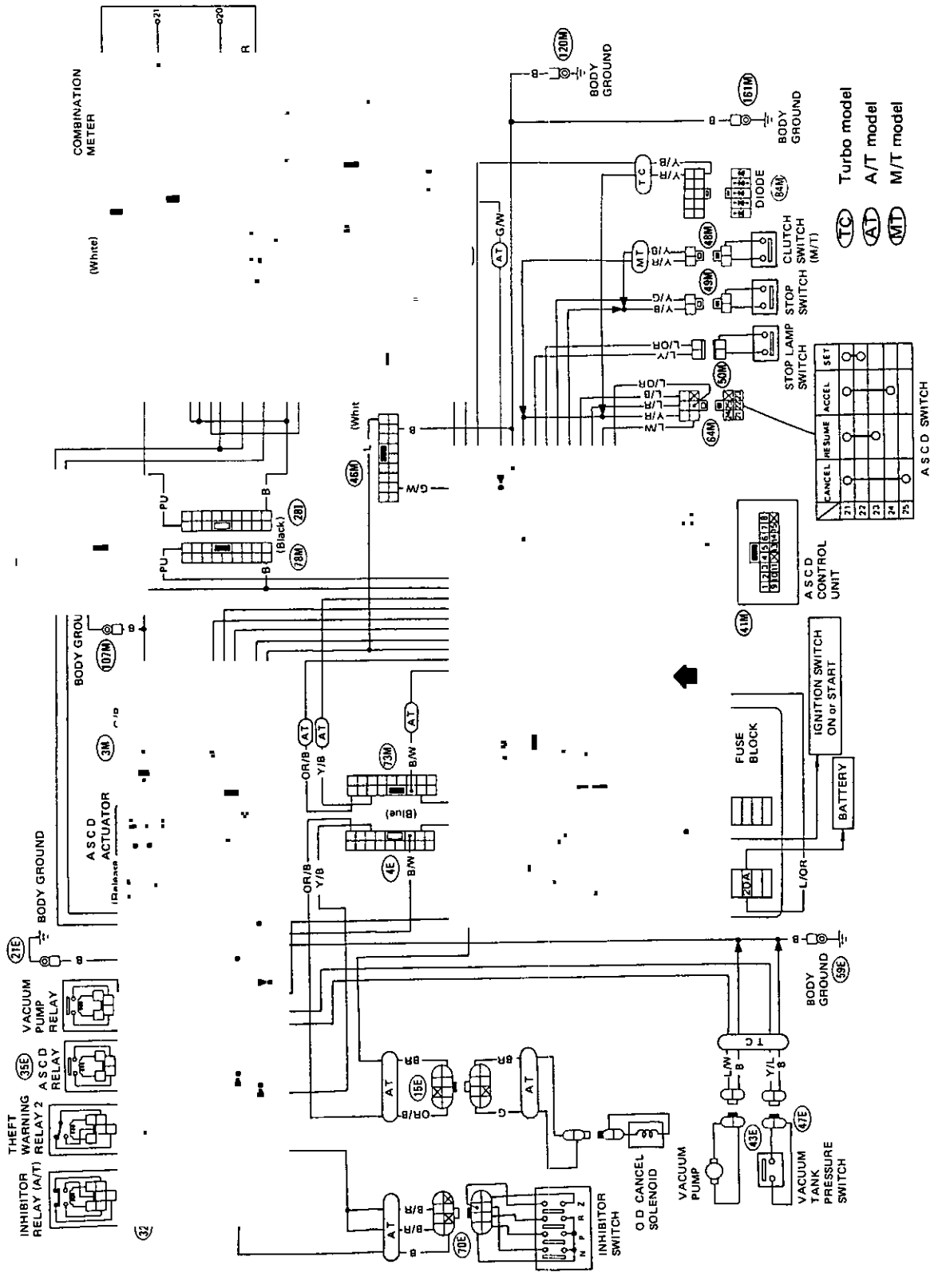
Schematic

GL MODEL (For Canada)



Wiring Diagram

GL MODEL (For Canada)



SEL239J

Wiring Diagram (Cont'd)

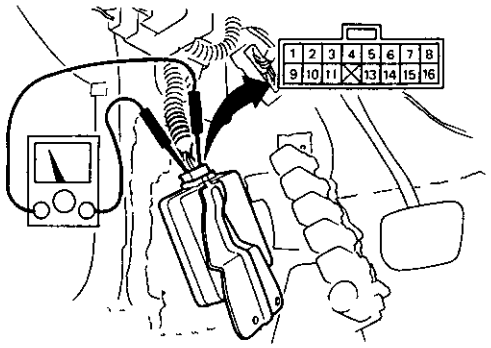
GLL MODEL

Refer to wiring diagram for STEERING WHEEL SWITCH SYSTEM

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

Preparation for Trouble-shooting

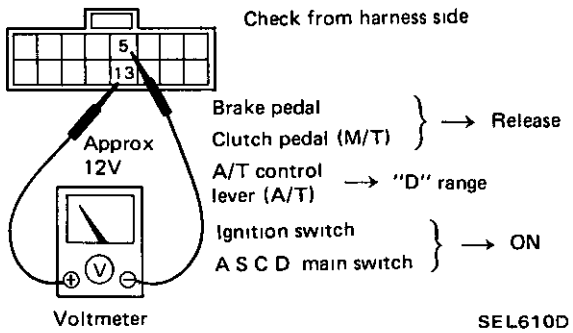
- Remove A.S C D. control unit with harness connected



SEL520F

POWER SUPPLY CIRCUIT CHECK

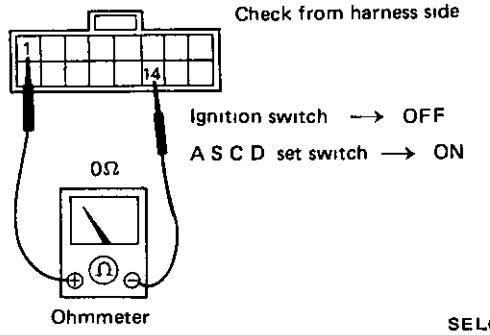
1 Release brake and clutch pedals.
2. Turn ignition switch to "ON".
3. Turn A S C.D main switch to "ON".
4 Check voltage between ⑬ and ⑤



SEL610D

SET SWITCH CIRCUIT CHECK

1. Turn ignition switch to "OFF"
2 Push A S.C D. set switch.
3. Check continuity between ① and ⑭



SEL611D

Trouble-shooting

A S C D control unit cannot be set properly

↓

Turn A S C D main switch "OFF" and then "ON" to make sure indicator (located above combination meter) illuminates

↓ Yes

Check for loose vacuum hose

↓ O K

Check power supply circuit for A S C D control unit

↓ O K

Check set switch circuit for A S C D control unit

↓ O K

Go to "A S C D Actuator Check"

↓ O K

(Next page)

Yes → No: Check A S C D main switch and A S C D relay

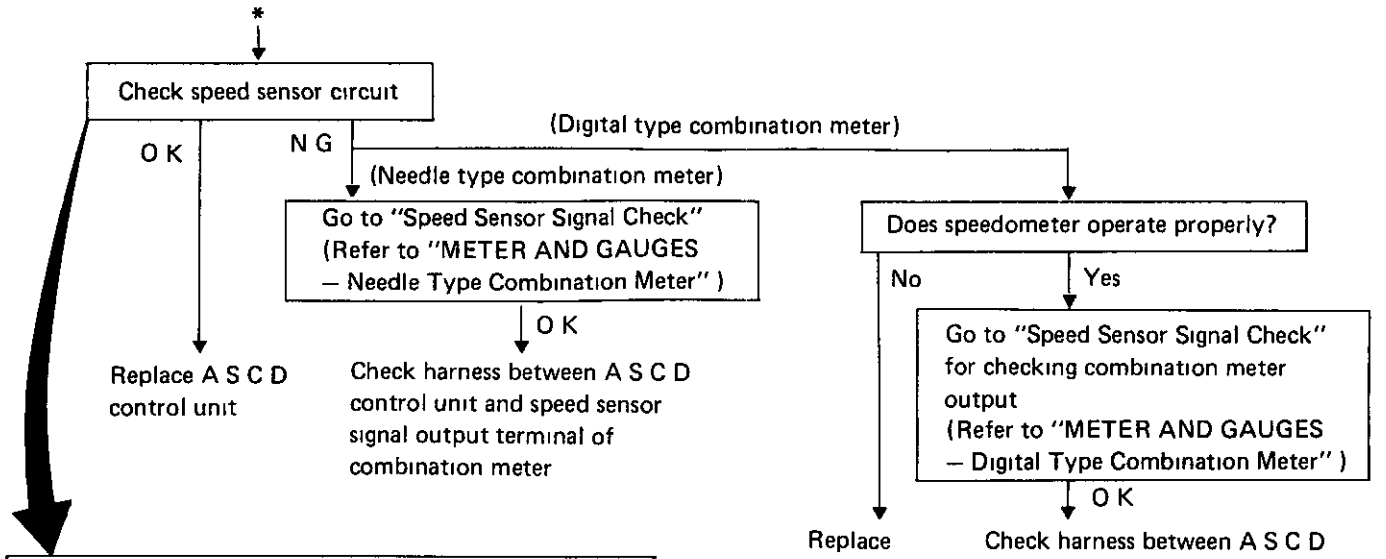
Check power supply circuit for A S C D control unit → N G: Check stop switch, clutch switch (M/T model), inhibitor relay and inhibitor switch (A/T model)

Check stop switch, clutch switch (M/T model), inhibitor relay and inhibitor switch (A/T model) → O K: Check harness between A S C D power supply circuit

Check set switch circuit for A S C D control unit → N G: Check set switch, and harness between control unit and set switch

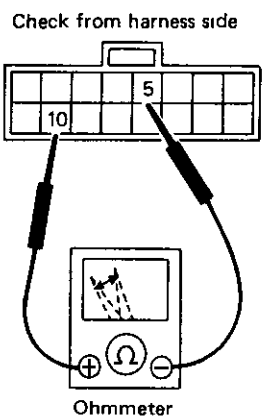
Go to "A S C D Actuator Check" → N G: Replace actuator

Trouble-shooting (Cont'd)



1. Turn ignition switch to "OFF".
2. Disconnect speedometer cable from transmission.
3. Connect an ohmmeter between ⑩ and ⑤
4. Turn ignition switch to "ON"
5. Slowly turn speedometer cable pinion by hand to make sure ohmmeter pointer deflects

- **Ohmmeter pointer should deflect twice per rotation of pinion.**



Trouble-shooting (Cont'd)

Resume switch will not operate

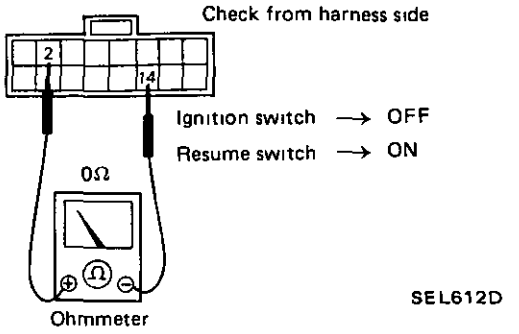
Check resume switch circuit

O K → Replace A S C D control unit

N G → Check resume switch

RESUME SWITCH CIRCUIT CHECK

1. Turn ignition switch to "OFF".
2. Turn resume switch to "ON"
3. Check continuity between ② and ⑭.



Accelerate switch will not operate

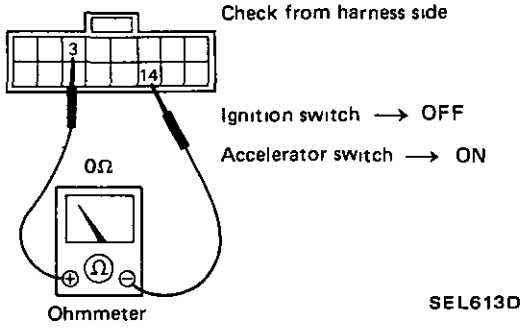
Check accelerate switch circuit

O K → Replace A S C D control unit

N G → Check accelerate switch

ACCELERATE SWITCH CIRCUIT CHECK

1. Turn ignition switch to "OFF"
2. Turn accelerate switch to "ON"
3. Check continuity between ③ and ⑭.



Engine hunts

Check vacuum hose for breakage, cracks or fracture

O K → Does A S C D wire move smoothly?

N G → Repair or replace hose

Does A S C D wire move smoothly?

O K → Go to "Actuator Check"

N G → Repair or replace wire

Go to "Actuator Check"

O K → Replace A S C D control unit

N G → Replace actuator

Large difference between set vehicle speed and actual speed.

Check A S C D wire and actuator move smoothly

O K → Check vacuum hose for breakage, cracks or fracture

N G → Replace wire or actuator

Check vacuum hose for breakage, cracks or fracture

O K → Go to "Actuator Check"

N G → Repair or replace hose

Go to "Actuator Check"

O K → Replace A S C D control unit

N G → Replace actuator

Trouble-shooting (Cont'd)

A/T model only
- When A S C D is set while vehicle is operating in "O D " range, O D will be cancelled and shifting to O D cannot be made thereafter
- While vehicle is being driven using A S.C.D in "O D " range, O D will not be cancelled even if actual car speed is 6 km/h (4 MPH) lower than set speed (Set speed cannot be maintained)

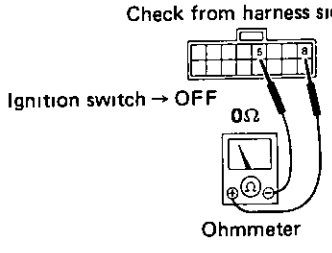
Check O D cancel circuit for A S C D control unit

OK → Replace A S C D control unit

NG →
- **Electronic-controlled A/T** Check harness between lock-up control unit and A S C D control unit
- **Conventional A/T** Check harness between O D cancel solenoid, O D cancel switch and A S C D control unit

ELECTRONIC-CONTROLLED A/T EQUIPPED MODEL (E4N71B)

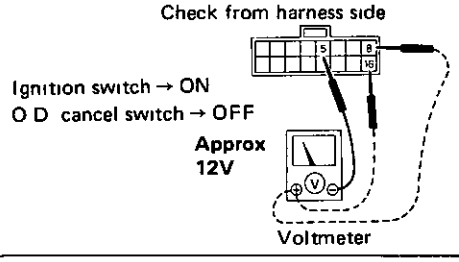
- Turn ignition switch to "OFF"
- Check continuity between ⑧ and ⑤



SEL737D

CONVENTIONAL A/T EQUIPPED MODEL (4N71B)

- Turn ignition switch to "ON"
- Turn O D cancel switch to "OFF".
- Check voltage ⑧ - ⑤ and ⑯ - ⑤.

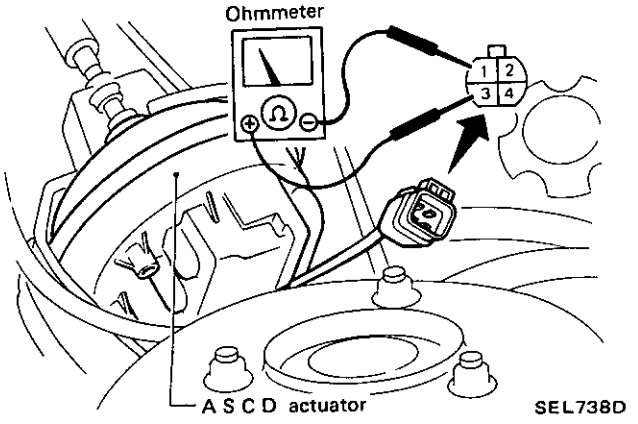


SEL741D

A.S.C.D. Actuator Check

1 Check continuity between terminal ① and terminals ②, ③ and ④

Continuity exist ... O.K.

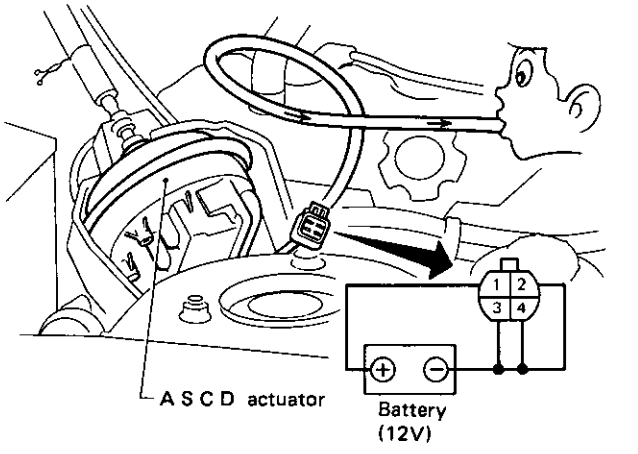


SEL738D

CAUTION:
Do not attempt to remove valves from actuator.

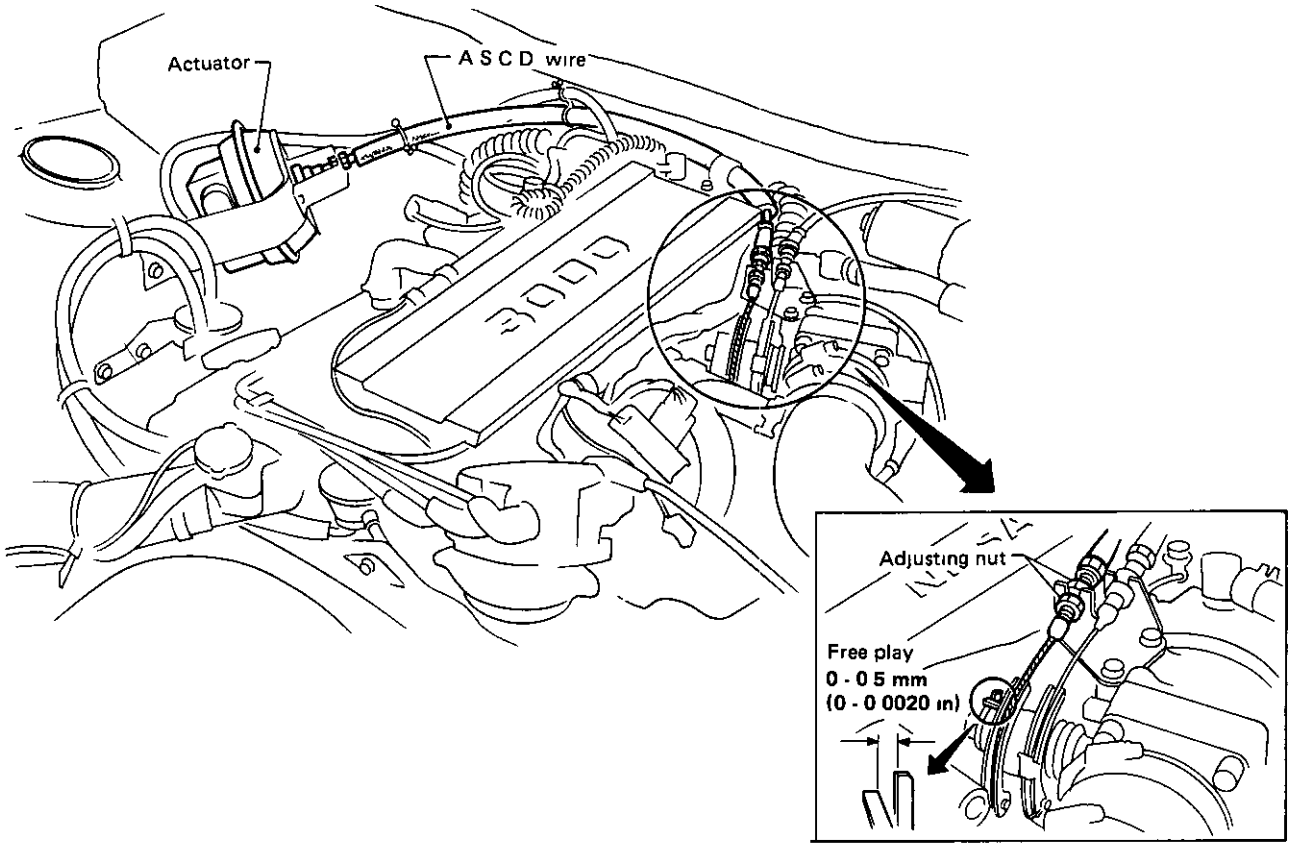
2 Connect battery (approx 12V) to harness connector of actuator as shown below, and apply vacuum to actuator.
If diaphragm moves smoothly, actuator is O.K

CAUTION.
When checking actuator by applying vacuum, do not apply engine vacuum directly as it is too strong to check actuator properly.



SEL739D

A.S.C.D. Wire Adjustment



SEL740D

CAUTION:

- **Be careful not to twist wire when removing it.**
- **Be careful not to pinch vacuum hose when installing actuator.**
- **Do not tighten wire excessively during adjustment.**

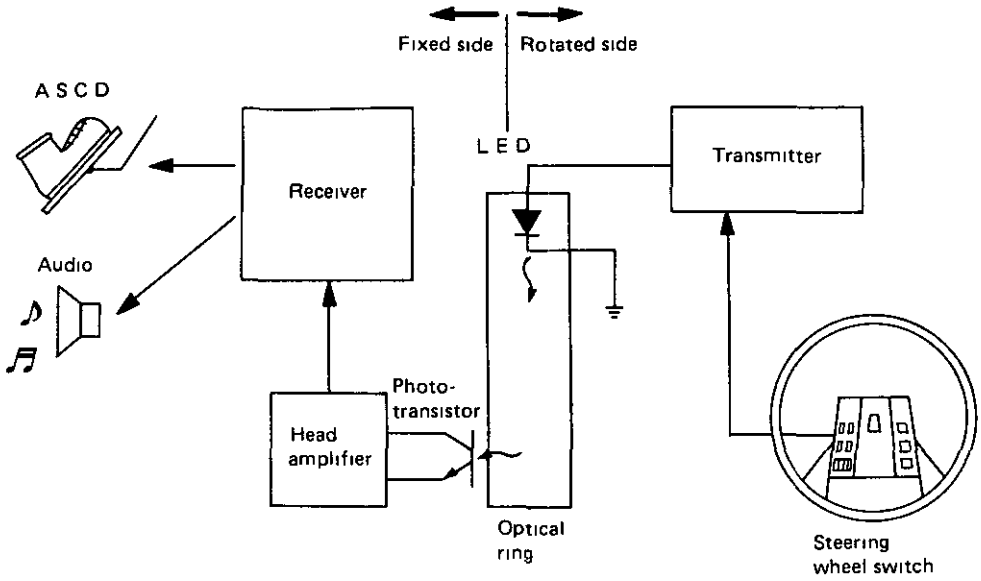
Without depressing the accelerator pedal, adjust wire tension with adjusting nut

Wire free play (at throttle lever):
0 - 0.5 mm (0 - 0.020 in)

- For A.S.C D. stop switch and clutch switch adjustment, refer to BR and CL sections.
- For vacuum pump and tank check, refer to HA section.

STEERING WHEEL SWITCH SYSTEM

Description



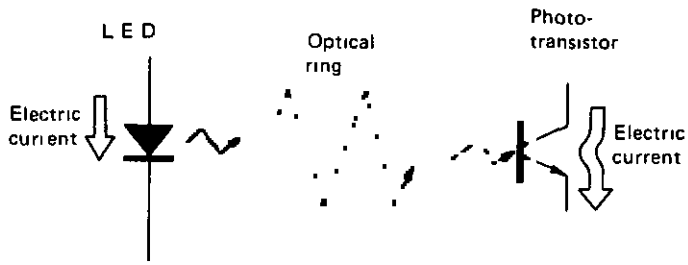
SEL647E

The steering wheel switch system transmits the on-off signal of the switch on the steering wheel to the receiver optically and operates A.S.C.D and audio

HOW TO TRANSMIT SWITCH SIGNAL OPTICALLY

(1) The on-off signal of the switch on the steering wheel is converted into an L E D. on-off signal by the transmitter
(2) This L E D signal (optical signal) is transmitted to the photo-transistor through the optical ring
(3) The optical signal is re-converted into electrical signal by the photo-transistor and transmitted to the receiver. Receiver controls A S C D and radio.

By the three steps mentioned above, the on-off signal of the switch on the steering wheel is optically transmitted.



SEL648E

L.E.D. (Light Emitting Diode):

A diode which emits light when voltage is applied.

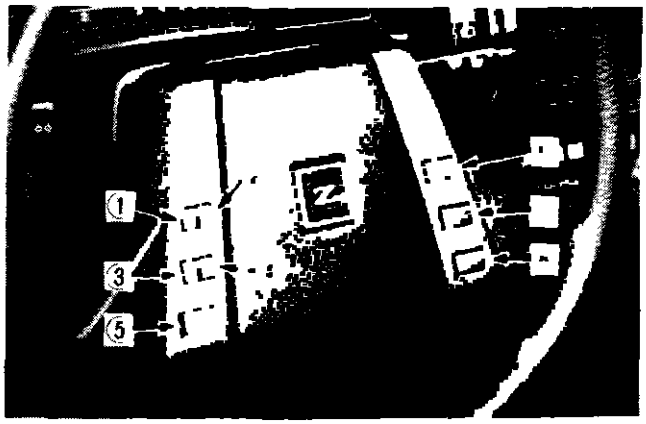
Photo-transistor:

A transistor which allows current to flow when light is applied

STEERING WHEEL SWITCH SYSTEM

Description (Cont'd)

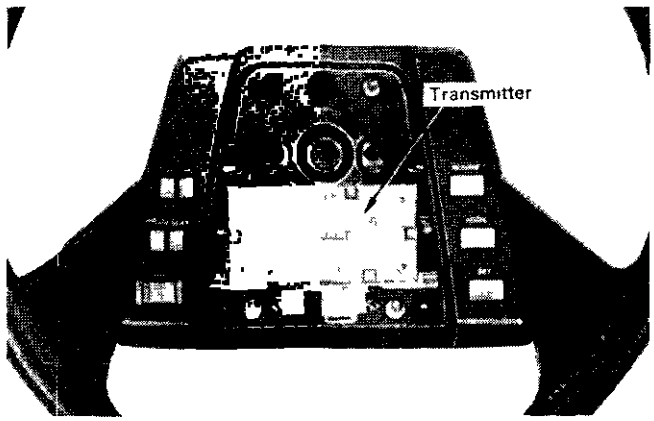
STEERING WHEEL SWITCH



- If two or more audio switches or A S C D switches are pressed simultaneously, all the pressed switches will be cancelled
- If one switch is pressed while pressing another, the second one pressed will be cancelled

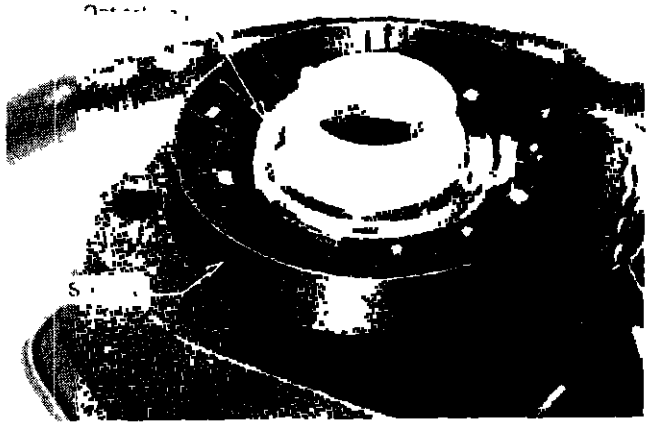
	Switch		Function
For Audio	①	SW	Power ON/OFF
	②	PLAY	Tape deck play
	③	AM/FM	AM/FM band selection
	④	SCAN	SCAN tuning (for radio) Auto program search (for tape deck)
	⑤	VOL	Volume
For A S C D	⑥	RESUME	Deceleration and resuming
	⑦	ACCEL	Acceleration
	⑧	SET	Cruising speed setting

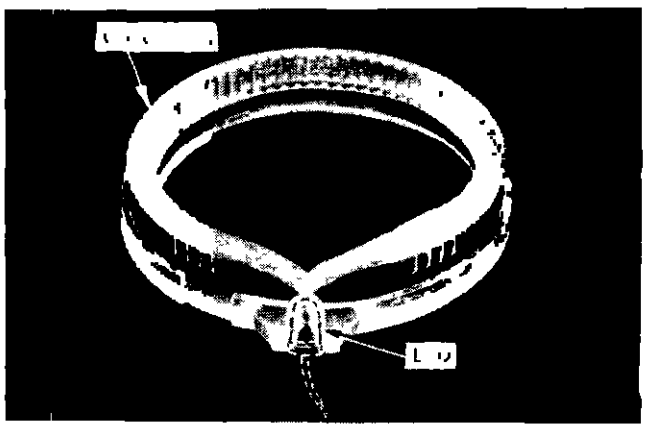
TRANSMITTER



The transmitter is a device which converts the signal from the steering wheel switch into intermittent current in order to flash the L E D

OPTICAL RING



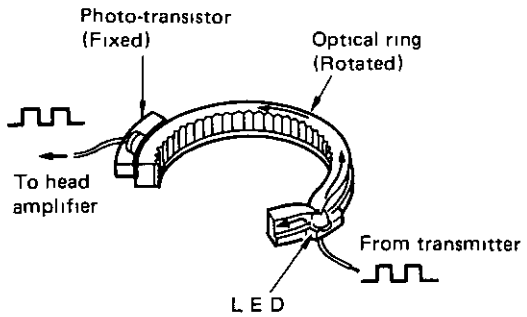


Description (Cont'd)

- The steering wheel switch system uses an acrylic optical ring, and this optical ring functions in the same way as optical fiber
  The optical ring is built in the slip ring

The slip ring must not be disassembled.

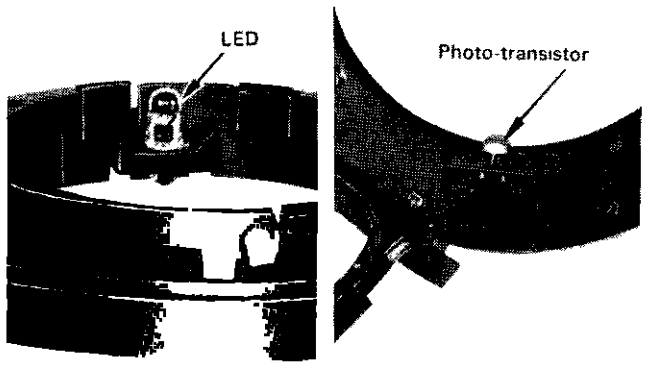
Light transmission path:



SEL649E

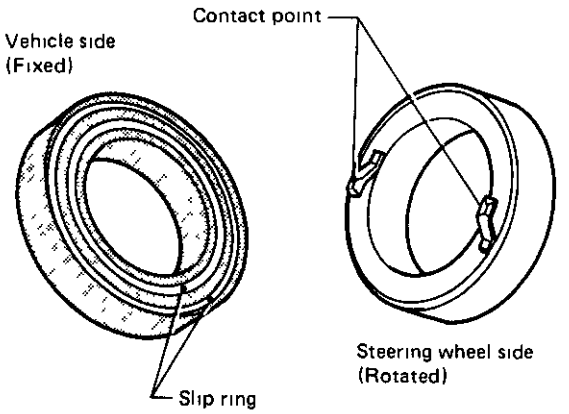
- As the L E D embedded in the optical ring lights, its light moves forward while repeating reflection on the side wall of the ring It eventually will reach the photo-transistor placed on the outer periphery of the ring

L.E.D. and photo-transistor:



- The L E.D. and optical ring are mounted on the steering wheel side of the slip ring and rotate with the steering wheel
- The photo-transistor is mounted on the vehicle side of the slip ring and it does not rotate

SLIP RING

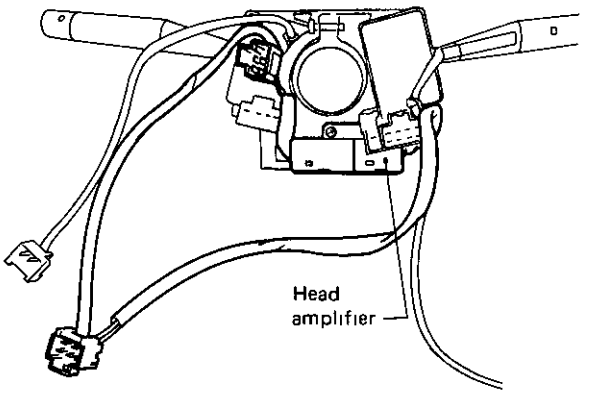


SEL650E

- Power for the transmitter is fed from the vehicle side through the slip ring.
- The horn switch circuit is connected to the vehicle side through the slip ring.

The slip ring must not be disassembled.

HEAD AMPLIFIER



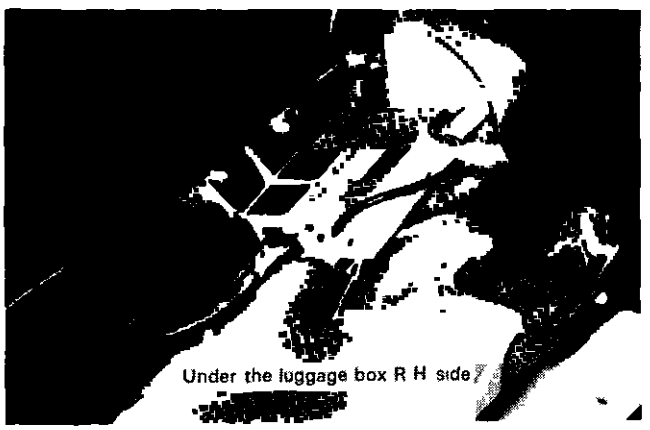
SEL651E

The photo-transistor allows a minimal amount of current to flow as it receives light The head amplifier amplifies this current and sends it to the receiver

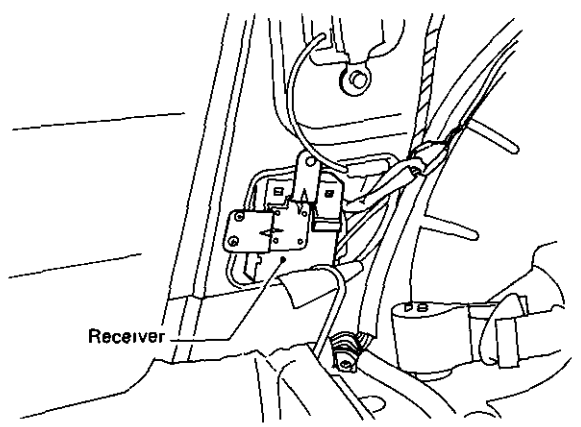
Description (Cont'd)

RECEIVER

2 seater model

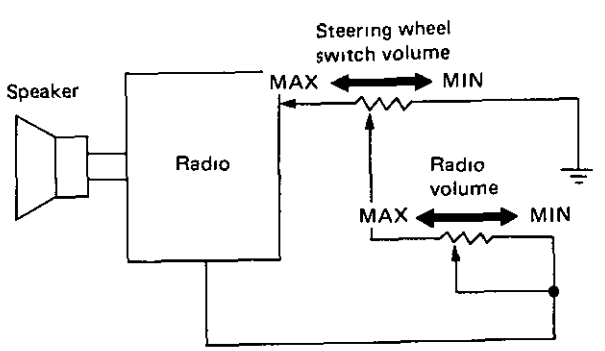


2+2 seater model



The receiver activates the radio or A S C D. drive circuit corresponding to the steering wheel switch signal sent from the head amplifier

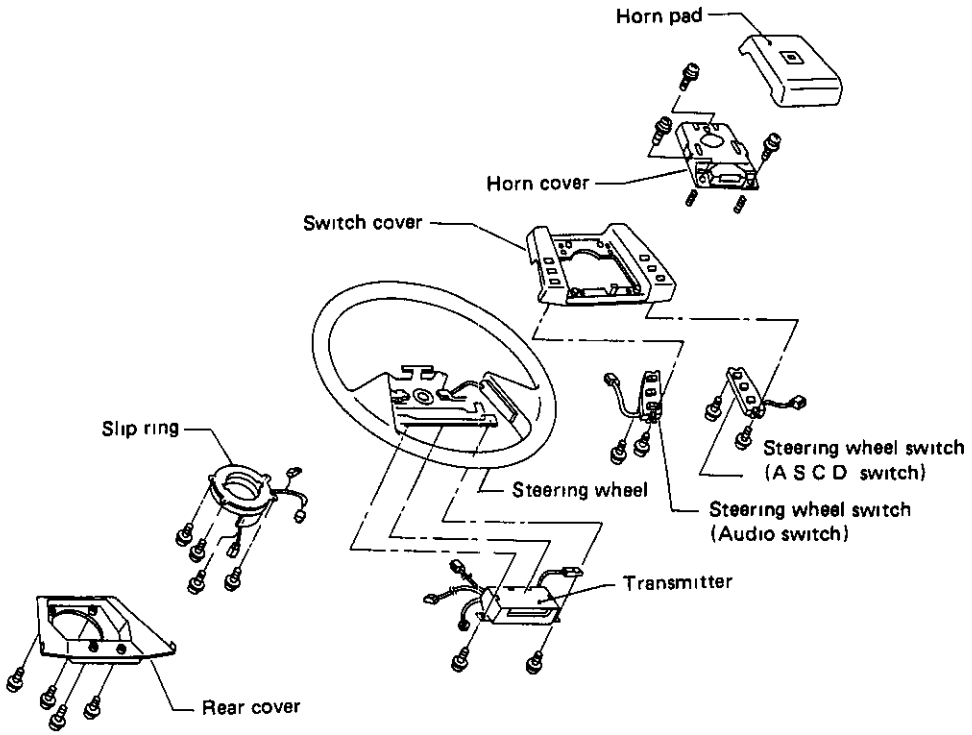
AUDIO VOLUME CONTROL



- The volume control on the steering wheel switch is connected in series with the volume control on the radio
- When the volume control on the radio is set to a minimum, no sound will be heard from the loudspeaker even if the steering wheel switch volume control is adjusted
- Sound level from the loudspeaker will be at the maximum when the steering wheel switch volume control is set to the maximum with the volume control on the radio also set to the maximum

STEERING WHEEL SWITCH SYSTEM

Steering Wheel Switch Removal and Installation



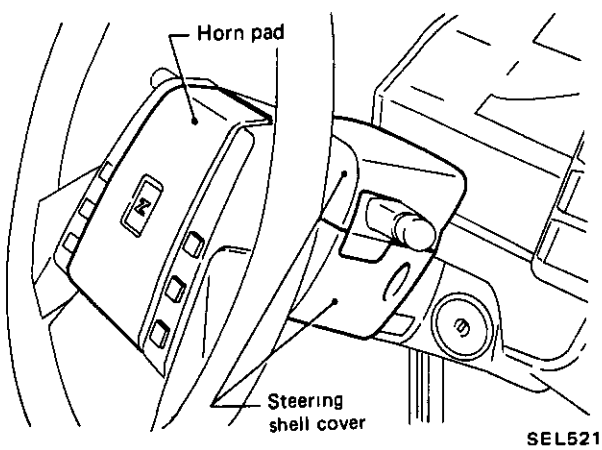
SEL653E

STEERING WHEEL REMOVAL AND INSTALLATION

To prevent the steering wheel switch from being damaged, be sure to observe the following procedure:

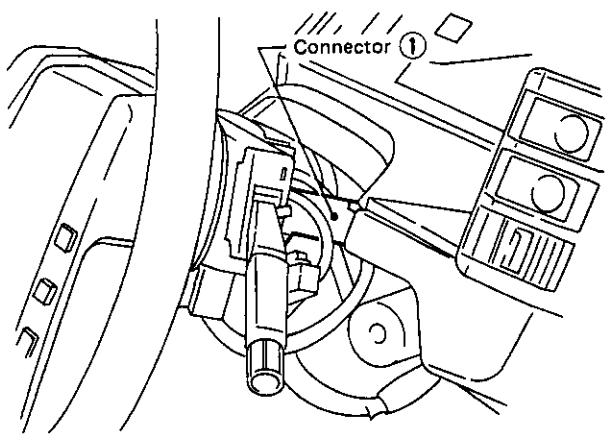
- When removing the steering wheel.

1. Remove the horn pad and both sections of the steering shell cover.



SEL521F

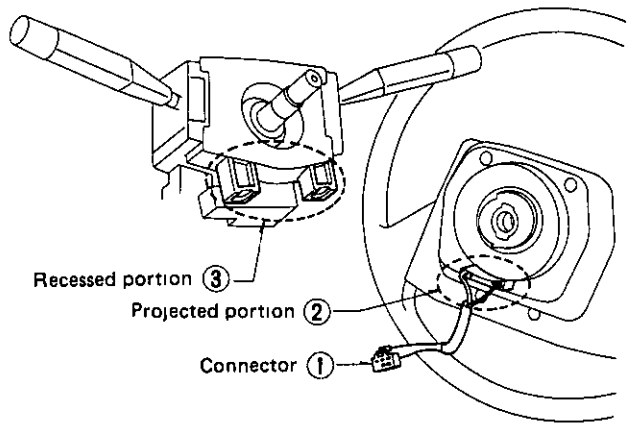
2. Disconnect the connector ① first and then loosen the steering nut and remove steering wheel.



SEL522F

Steering Wheel Switch Removal and Installation (Cont'd)

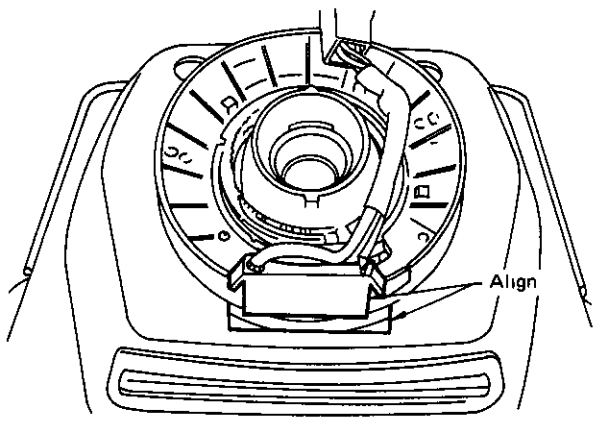
- When installing the steering wheel:
  First determine the slip ring position so that the projected portion ② of the slip ring will fit in the recessed portion ③ of the combination switch. Then install the steering wheel.



SEL523F

STEERING WHEEL REAR COVER REMOVAL

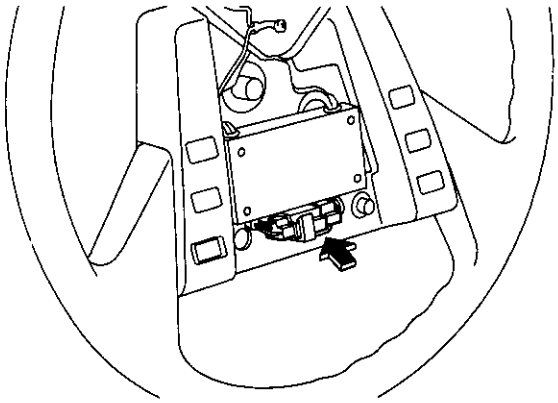
- Remove the rear cover with the projected portion of the slip ring fitted into the cutout portion of the rear cover.



SEL655E

SLIP RING REMOVAL

- Remove the connector joining the slip ring and transmitter after removing the transmitter mounting screws Then remove the transmitter.

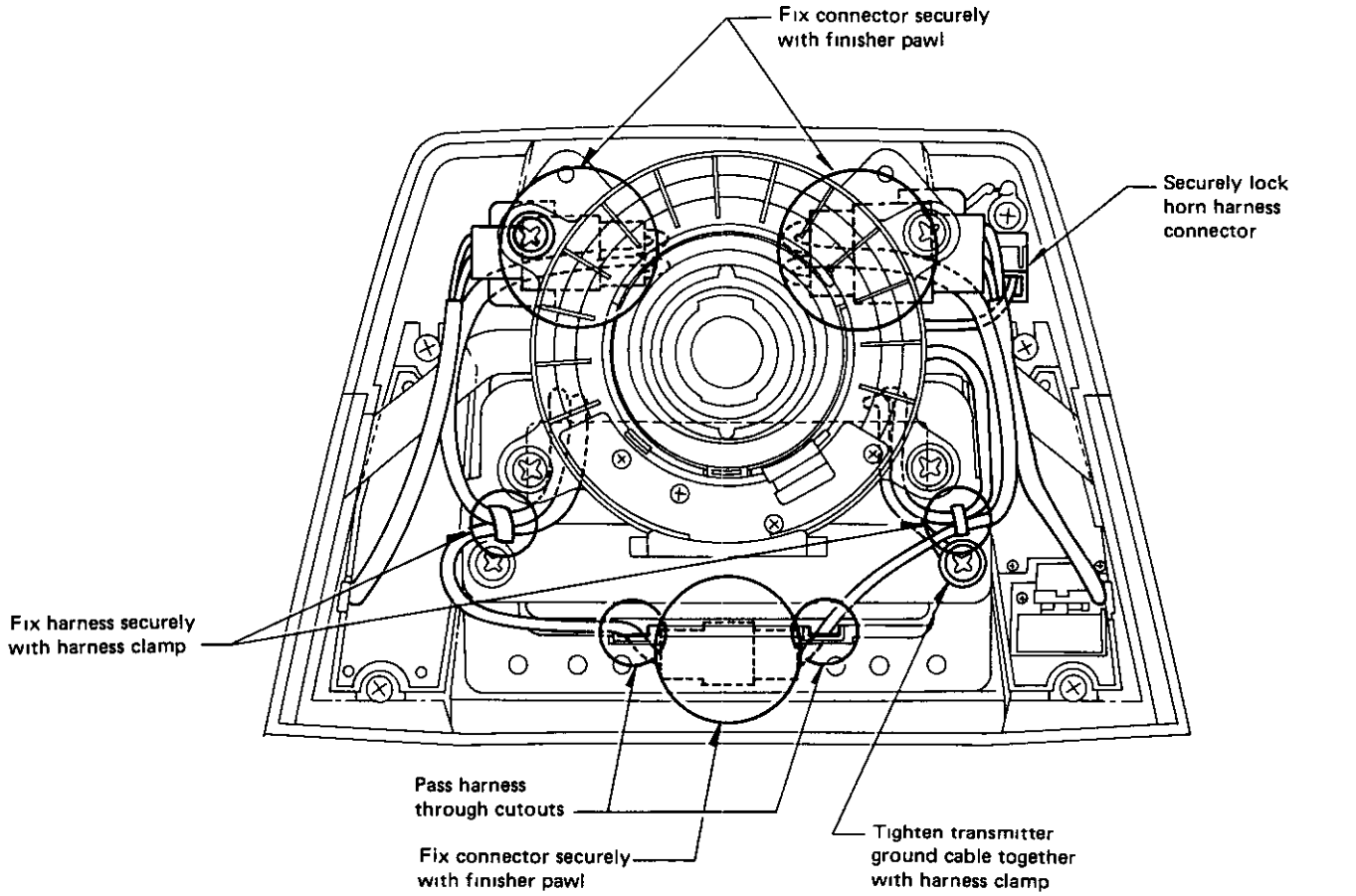


SEL656E

Steering Wheel Switch Removal and Installation (Cont'd)

TRANSMITTER AND SLIP RING INSTALLATION

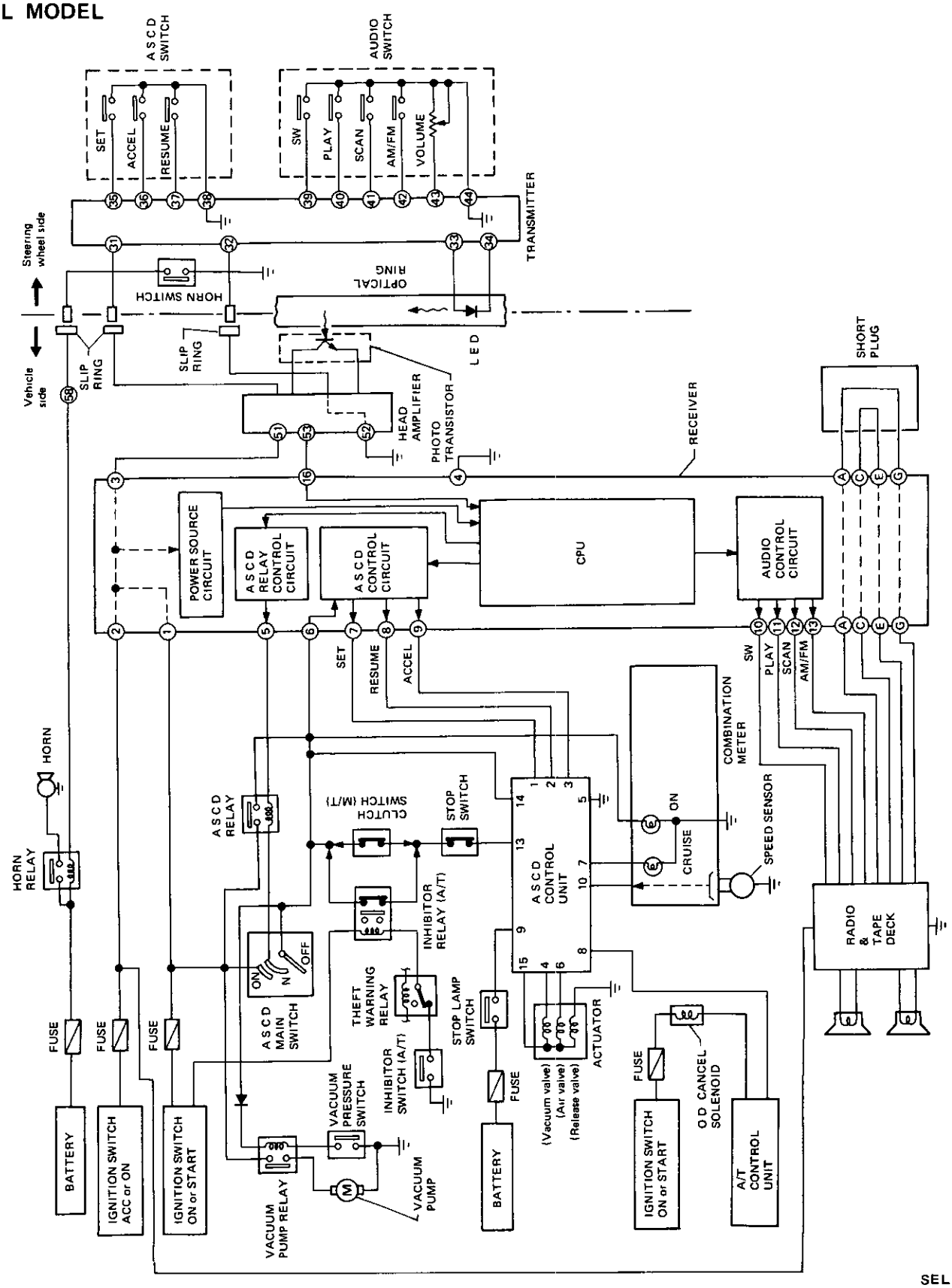
- When installing the transmitter and slip ring, arrange and secure the harnesses and connectors as shown in the following figure



STEERING WHEEL SWITCH SYSTEM

Schematic

GLL MODEL

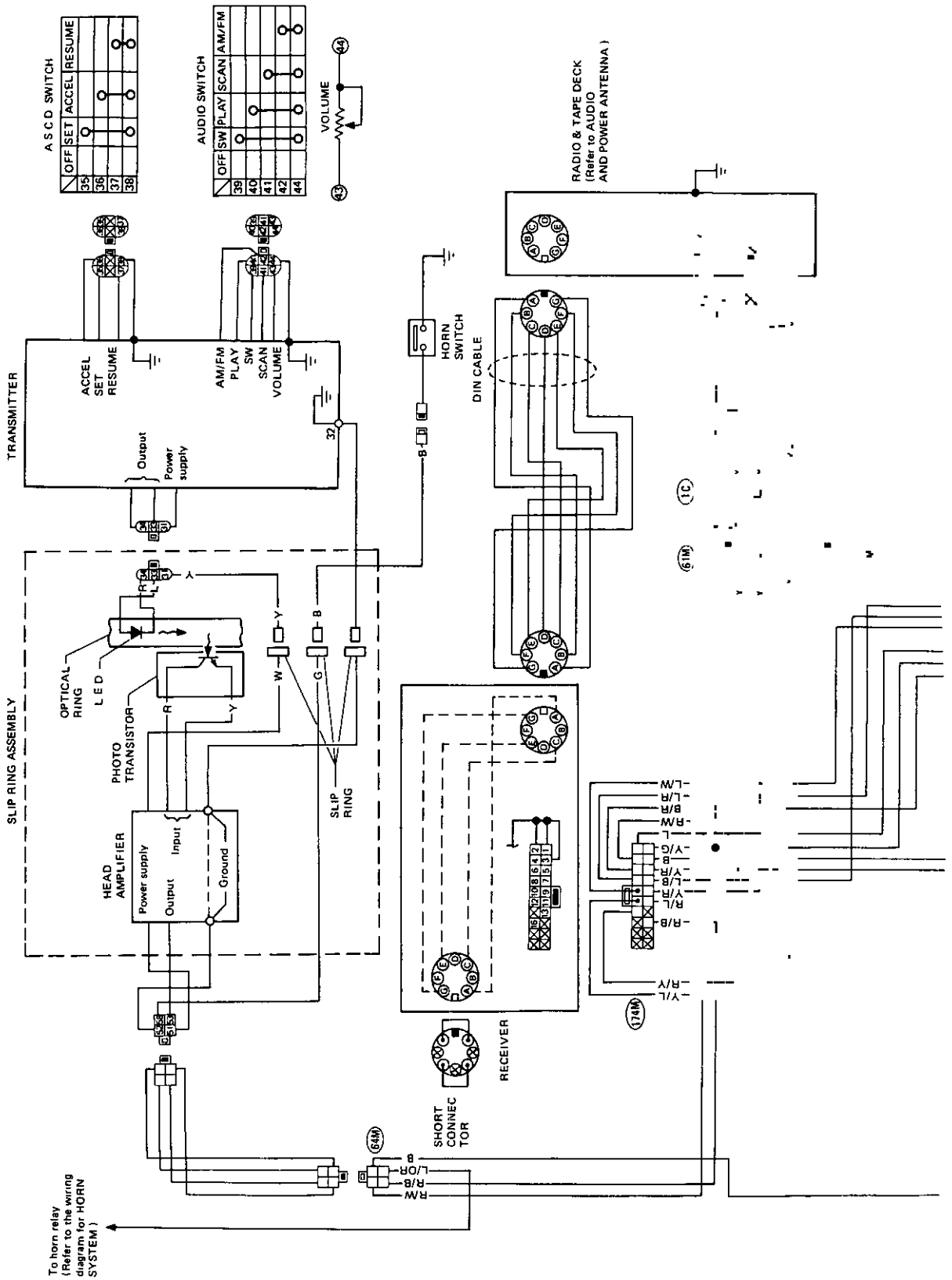


SEL126J

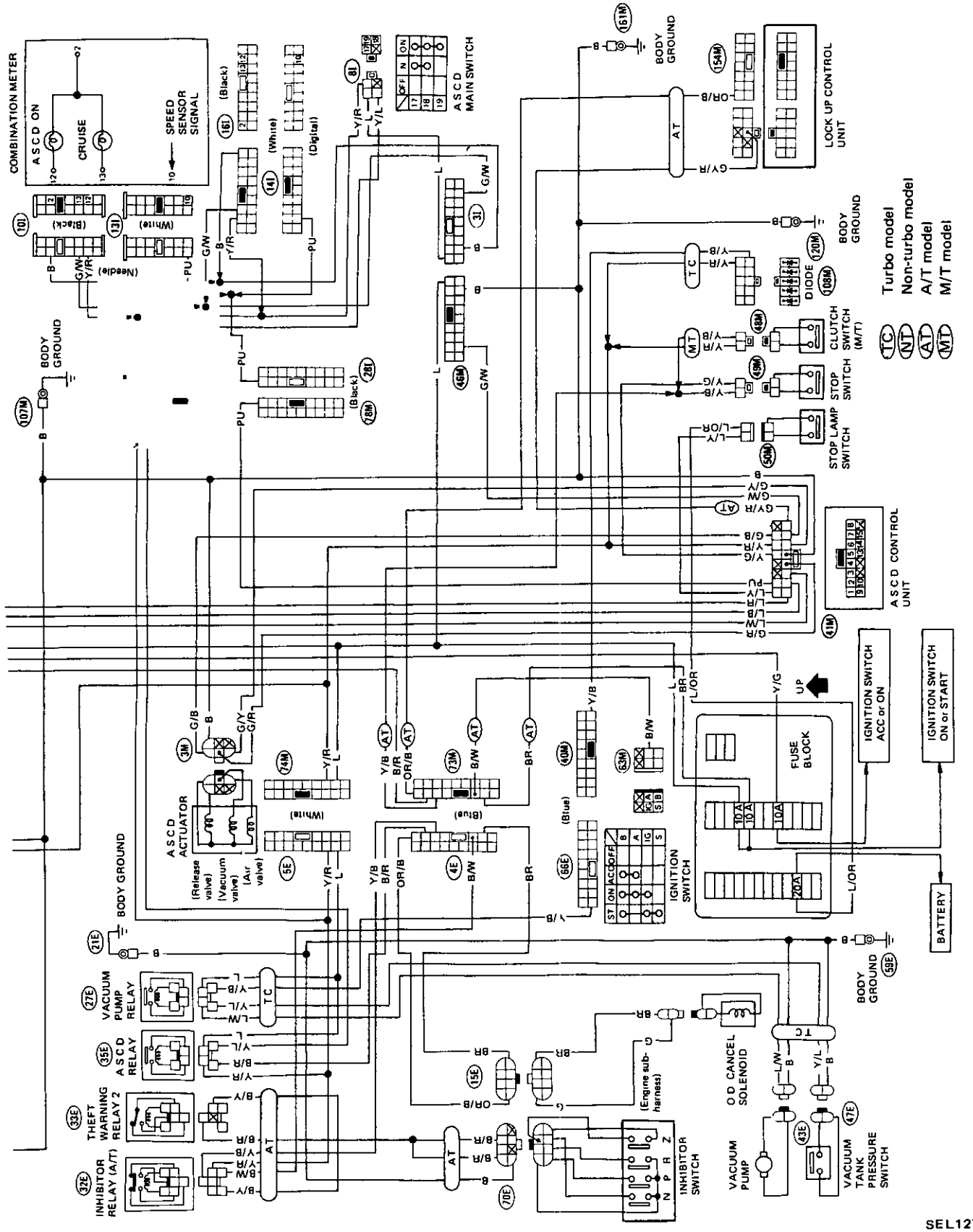
STEERING WHEEL SWITCH SYSTEM

Wiring Diagram

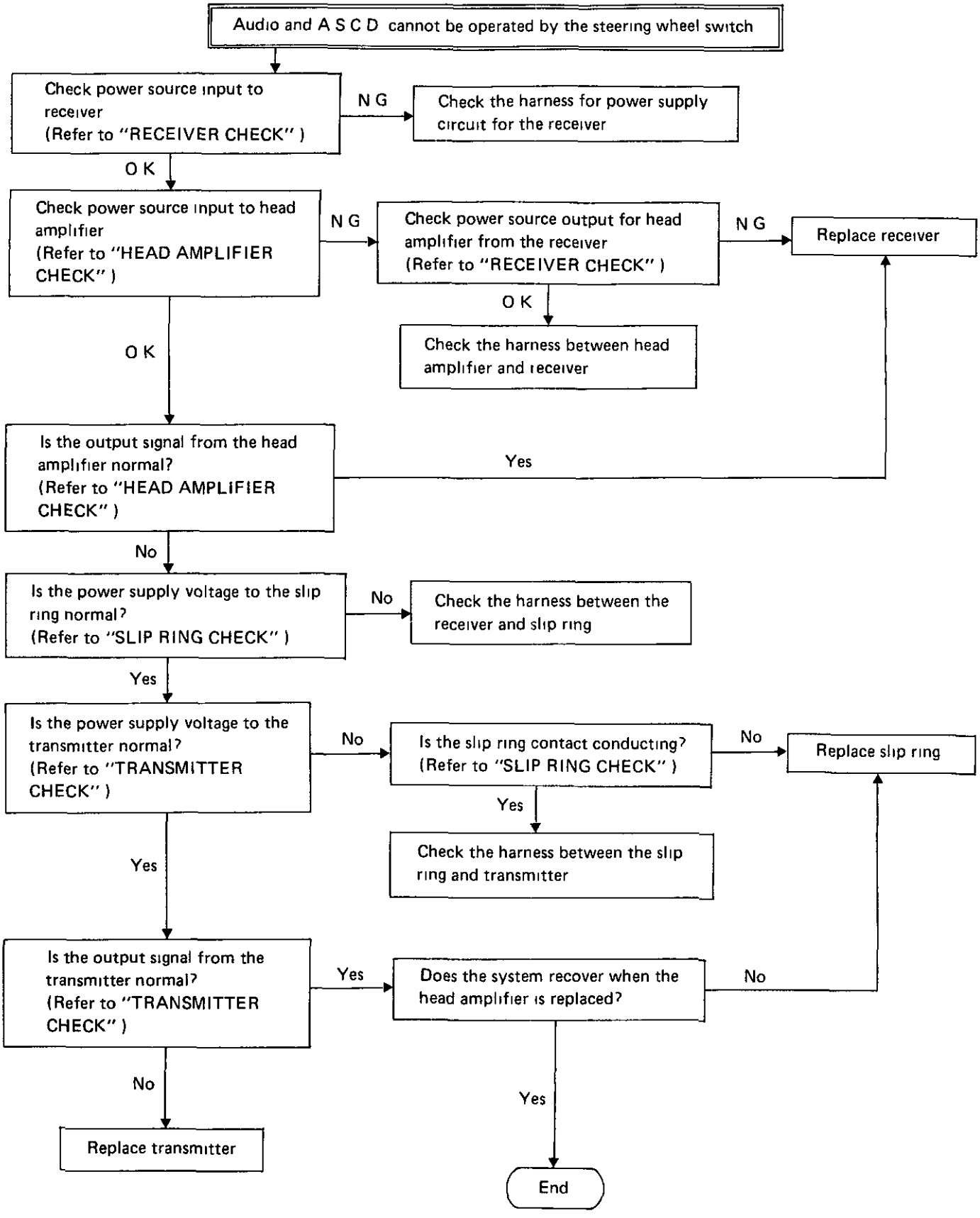
GLL MODEL



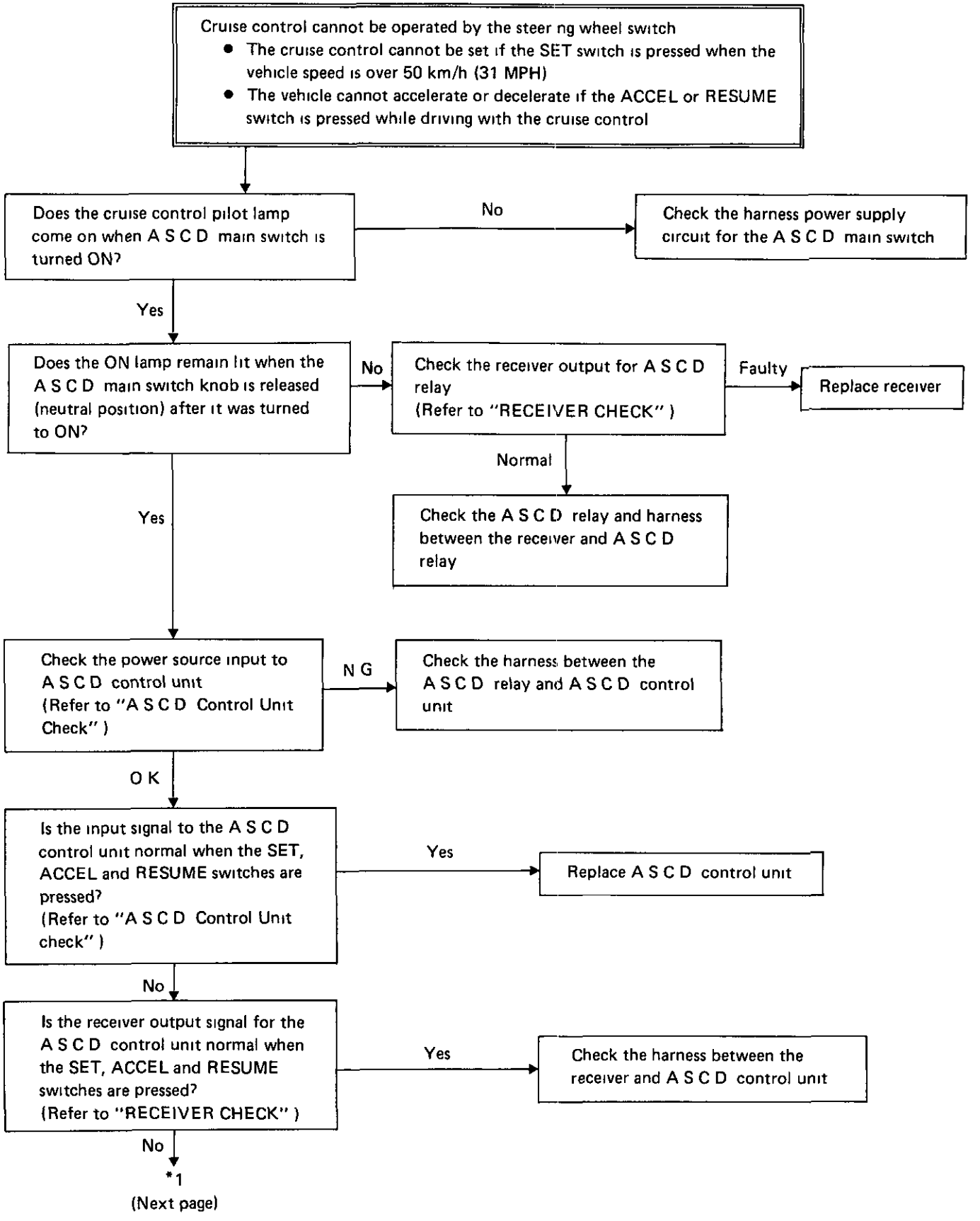
Wiring Diagram (Cont'd)



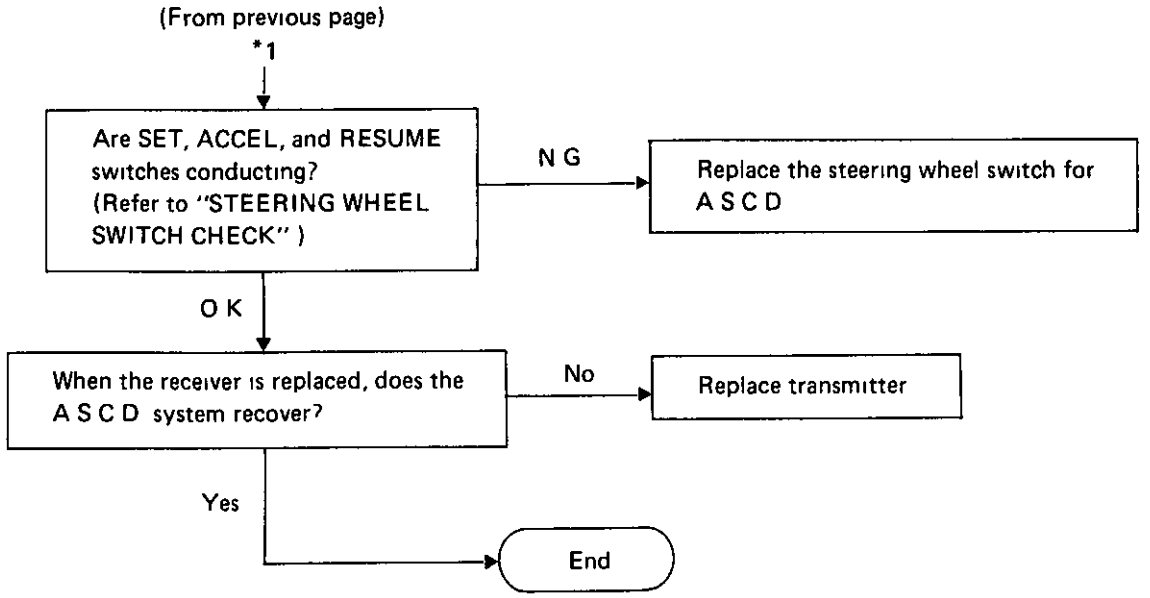
Trouble-shooting



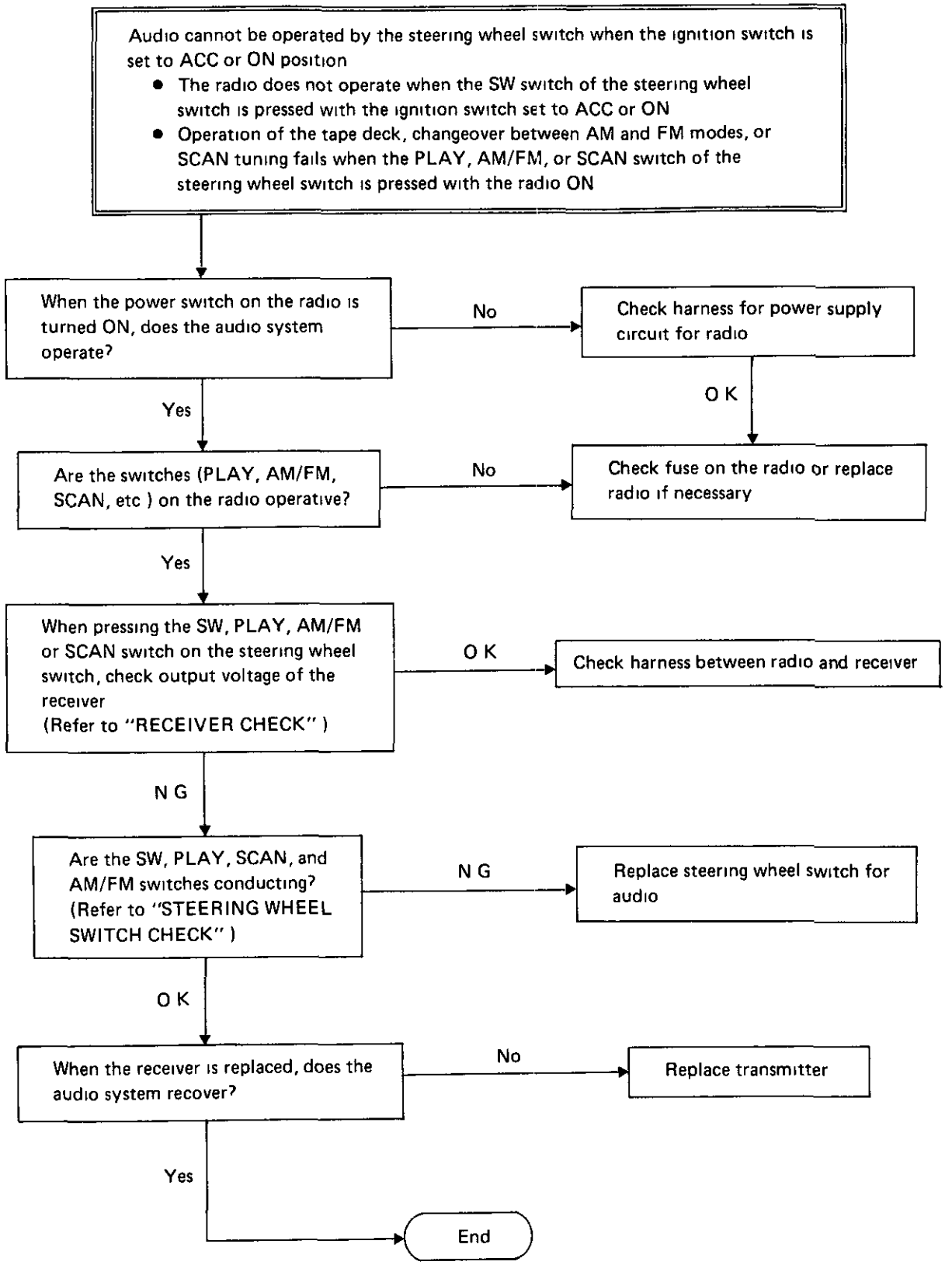
Trouble-shooting (Cont'd)



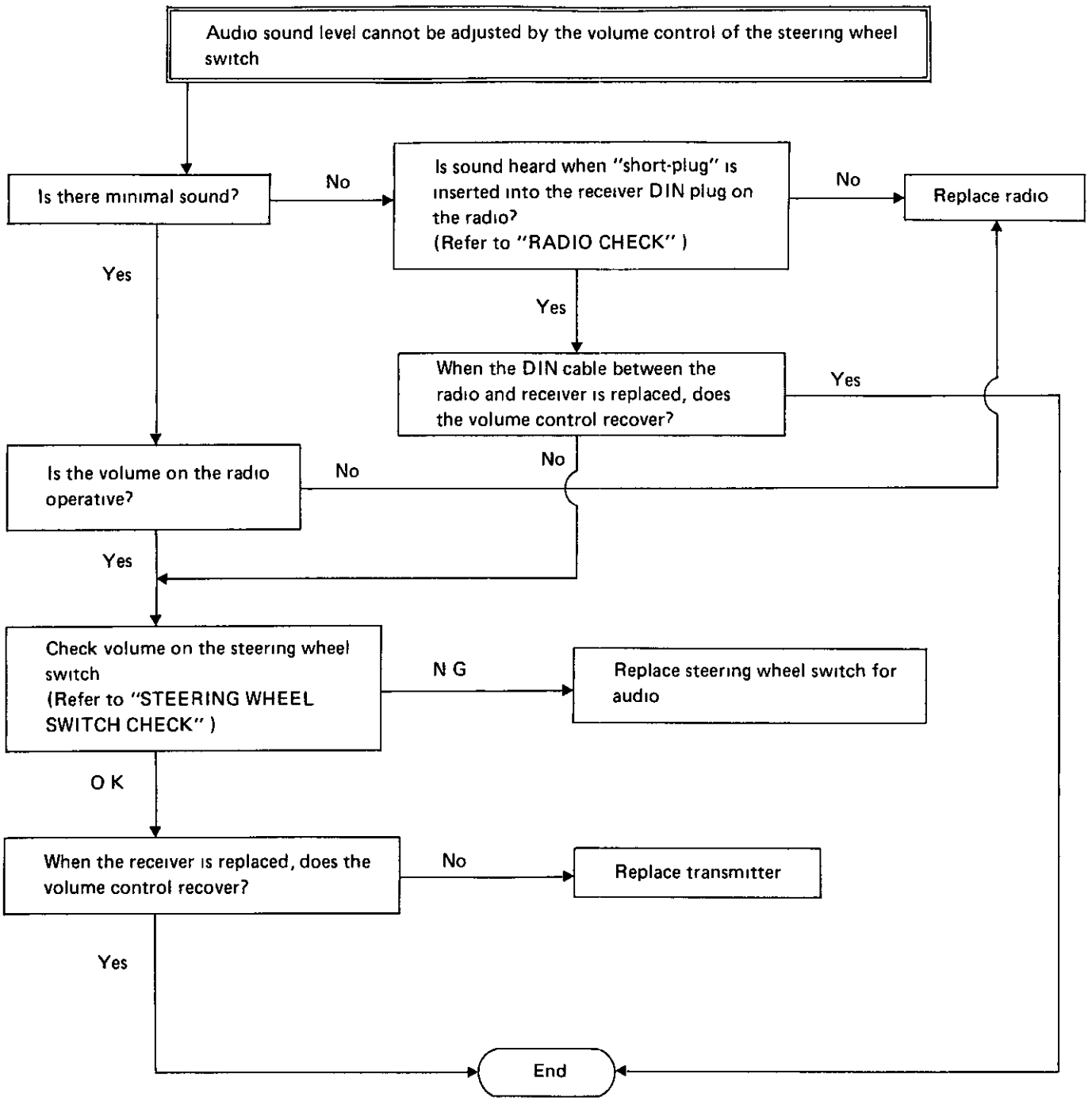
Trouble-shooting (Cont'd)



Trouble-shooting (Cont'd)



Trouble-shooting (Cont'd)



STEERING WHEEL SWITCH SYSTEM

Trouble-shooting (Cont'd)

Radio volume decrease when the steering is turned rapidly under extremely low temperature conditions

This results from a poor ground connection inside the steering column bearing To correct the incident, apply low temperature grease to the steering column bearing as follows.

TROUBLE-SHOOTING PROCEDURE

1 Disconnect the battery ground cable
2 Remove the horn pad, horn cover, and both sections of the steering shell cover
3 Disconnect the steering switch transmitter harness connector from the rear of the combination switch.
4 Remove the steering wheel, using the tool and procedure described in the ST section.
5 Apply the low temperature grease to the steering column shaft bearing as follows.

1) Place the turn signal switch in neutral position to prevent grease from getting on the turn signal cancel cam.
2) Carefully apply approximately 1 mℓ (0 03 US fl oz, 0.04 Imp fl oz) of grease to the steering column bearing

To facilitate application of the grease, a cone of paper or vinyl film is suggested.

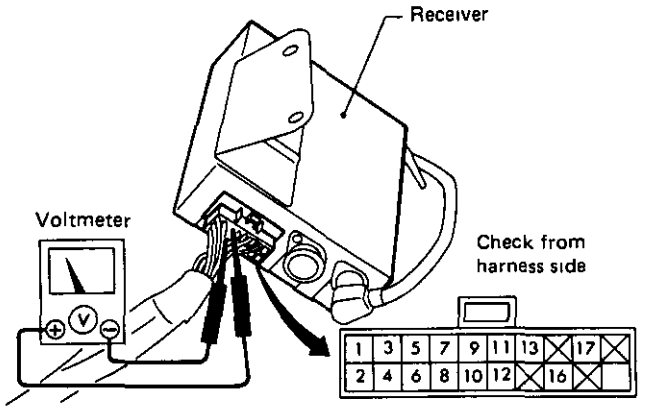
3) Temporarily install the steering wheel Insure that the projected portion of the slip ring fits in the recessed portion of the combination switch Turn the steering wheel fully to the left and right a couple of times, taking care to prevent damage to the projected portion of the slip ring
4) Remove the steering wheel
5) Repeat steps b, c, and d
6) Make sure that grease is applied to the entire bearing

6 Install the steering wheel on the shaft in a straight ahead position Be sure that the projected portion of the slip ring fits in the recessed portion of the combination switch
7. Connect steering switch transmitter harness connector to combination switch
8. Install horn cover, horn pad and both sections of the combination switch housing
9 Connect battery ground cable

STEERING WHEEL SWITCH SYSTEM

Receiver Check

1 Remove luggage box.
2. Remove receiver with harness connected.
3 Turn ignition switch to ON.
4. *Check voltage between terminals referring to* the chart below

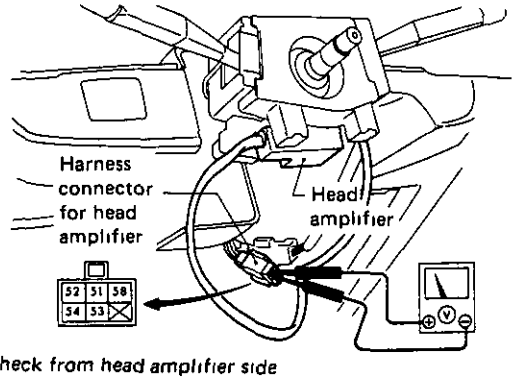


SEL660E

Check item		Voltmeter terminal (+)	Voltmeter terminal (−)	Switch condition		Specified voltage [V]
Power source input	IG	①	④	–		Approx 12
	ACC	②	④			
Power source output for head amplifier and slip ring		③	④	–		Approx 12
Output for A S C D relay		⑤	④	A S C D main switch	ON	0
					OFF	Approx 5
Output for A S C D control unit		⑦	④	SET switch ON		Approx 12
		⑧	④	RESUME switch ON		Approx 12
		⑨	④	ACCEL switch ON		Approx 12
Output for audio system (Check voltage while operating the SW, PLAY, SCAN or FM/AM on the steering wheel switch)		⑩	④	SW switch	ON	0
					OFF	Approx 5
		⑪	④	PLAY switch	ON	0
					OFF	Approx 5
		⑫	④	SCAN switch	ON	0
					OFF	Approx 5
		⑬	④	AM/FM switch	ON	0
					OFF	Approx 5

Head Amplifier Check

1 Remove steering column cover.
2 Turn ignition switch to ON.
3. Check voltage between terminals at harness connector for head amplifier referring to chart below.
(Leave the harness connector for head amplifier to be connected)



Check from head amplifier side

SEL661E

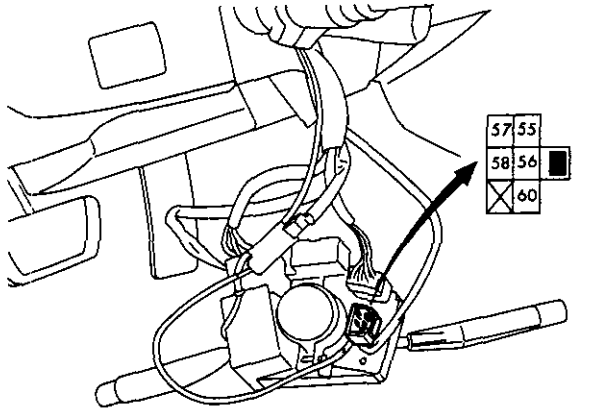
Check item	Voltmeter terminals		Specified voltage [V]
	(+)	(−)	
Power supply input	⑤①	⑤②	Approx 12
Output for receiver	⑤③	⑤④	Approx 2 - 4

Slip Ring Check

POWER SUPPLY VOLTAGE CHECK

1. Remove steering column cover.
2. Disconnect harness connector for slip ring at the back of combination switch
3 Remove steering wheel
4. Remove combination switch with harness connected.
5 Check voltage between terminals ⑤⑦ and ⑥⓪ when the ignition switch is turned to ON.

Specified voltage: Approx. 12V

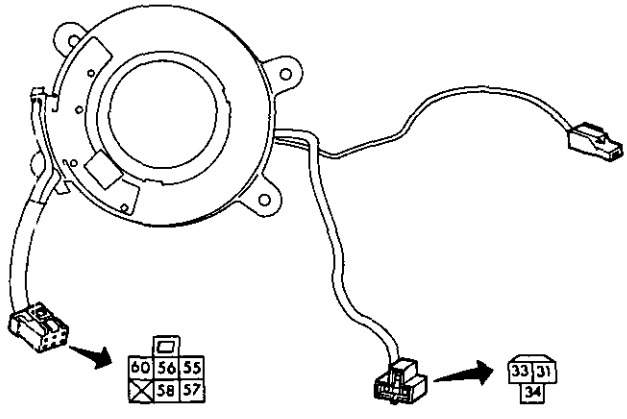


SEL662E

CONTINUITY CHECK

1. Remove slip ring from steering wheel
2. Check continuity between terminals ⑤⑦ and ③①.

Continuity exists .. O.K.



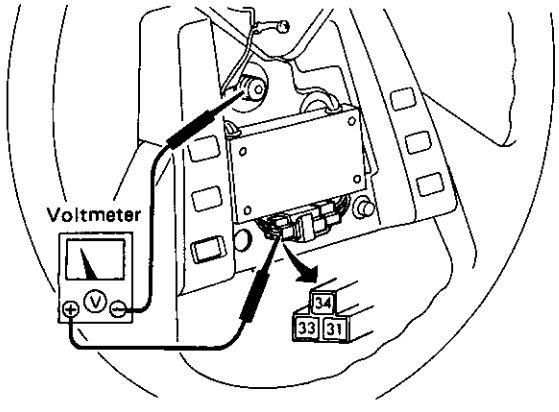
SEL663E

Transmitter Check

POWER SUPPLY VOLTAGE CHECK

1 Connect the harness connector for slip ring at the back of combination switch
2 Install steering wheel on the column shaft.
3. Connect the voltmeter probe to
   (+) terminal . ㉛
   (−) terminal . Steering column shaft
4 Check voltage when the ignition switch is turned to ON.

Specified voltage· Approx. 12V

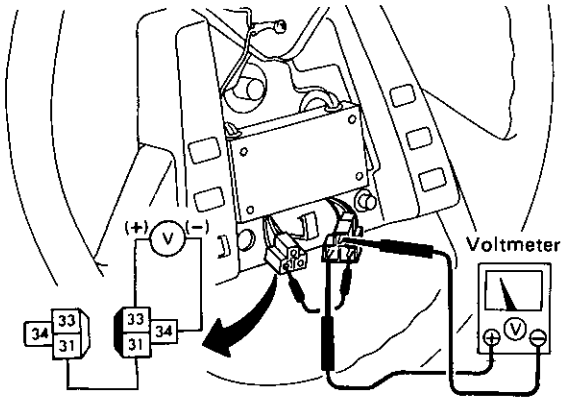


SEL664E

OUTPUT SIGNAL CHECK

1 Disconnect harness connector between transmitter and slip ring
2. Connect terminals ㉛ and ㉛ with a suitable wire
3. Check voltage between terminals ㉝ and ㉞ when the ignition switch is turned to ON

Specified voltage: Approx. 2 - 4V



SEL665E

Steering Wheel Switch Check

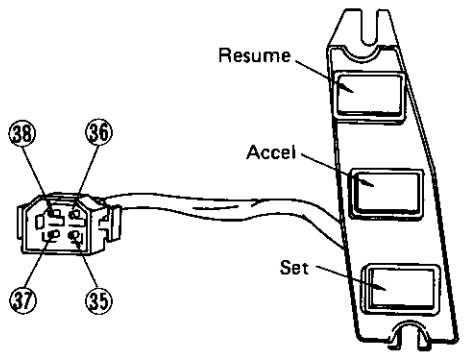
1. Disconnect harness connector for slip ring at the back of combination switch
2 Remove steering wheel
3 Remove steering wheel rear cover
4 Disconnect harness connector between steering wheel switch and transmitter
5 Remove steering wheel switches

A S.C.D. SWITCH CHECK

- Check continuity while pressing each switch

  Below 300Ω . O.K.

	OFF	SET	ACCEL	RESUME
㉟		○		
㊱			○	
㊲				○
㊳		○	○	○



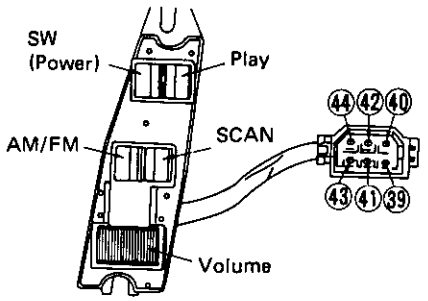
SEL666E

AUDIO SWITCH CHECK

- Check continuity while pressing each switch

  Below 300Ω ... O.K.

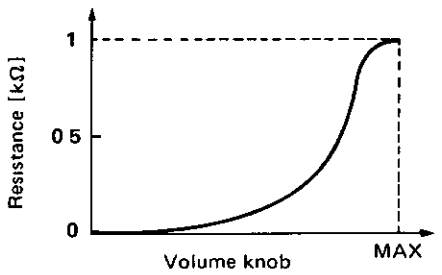
	OFF	SW (Power)	PLAY	SCAN	AM/FM
㊴		○			
㊵			○		
㊶				○	
㊷					○
㊹		○	○	○	○

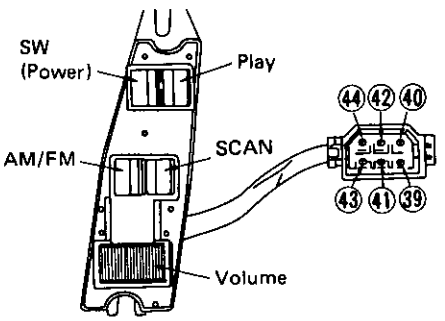


SEL667E

VOLUME CHECK

- Measure resistance between terminals ㊸ and ㊹ while operating the volume



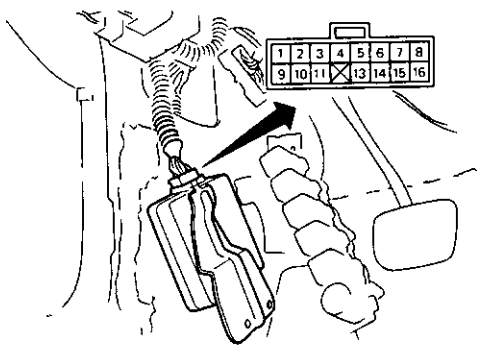


SEL668E

STEERING WHEEL SWITCH SYSTEM

A.S.C.D. Control Unit Check

1 Remove A S C D control unit with harness connected.
2 Check terminal voltage referring to chart below.



SEL736D

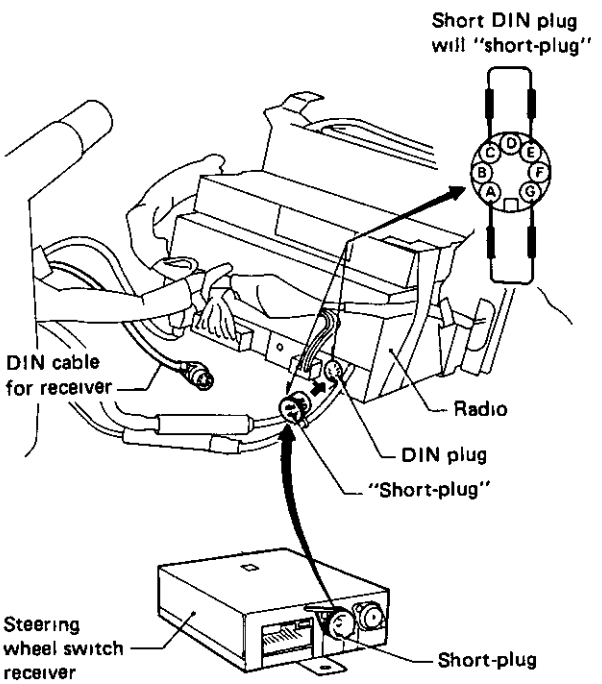
Check item	Voltmeter terminals (+)	Voltmeter terminals (−)	Switch condition		Specified voltage [V]
Power source input	⑭	⑤	A S C D main switch	ON	Approx 12
Input signal	①	⑤	SET switch	ON	Approx 12
	②	⑤	RESUME switch	ON	Approx 12
	③	⑤	ACCEL switch	ON	Approx 12

Radio Check

1 Remove radio with harness connected
2 Disconnect DIN cable for steering wheel switch receiver from radio.
3. Remove luggage box
4. Remove "short-plug" from steering wheel switch receiver
5. Connect the "short-plug" to radio
6 Check the sound when the radio is turned on

The radio is normal if there is sound.

7 After finishing this check, be sure to re-install the "short-plug" on the steering wheel switch receiver.



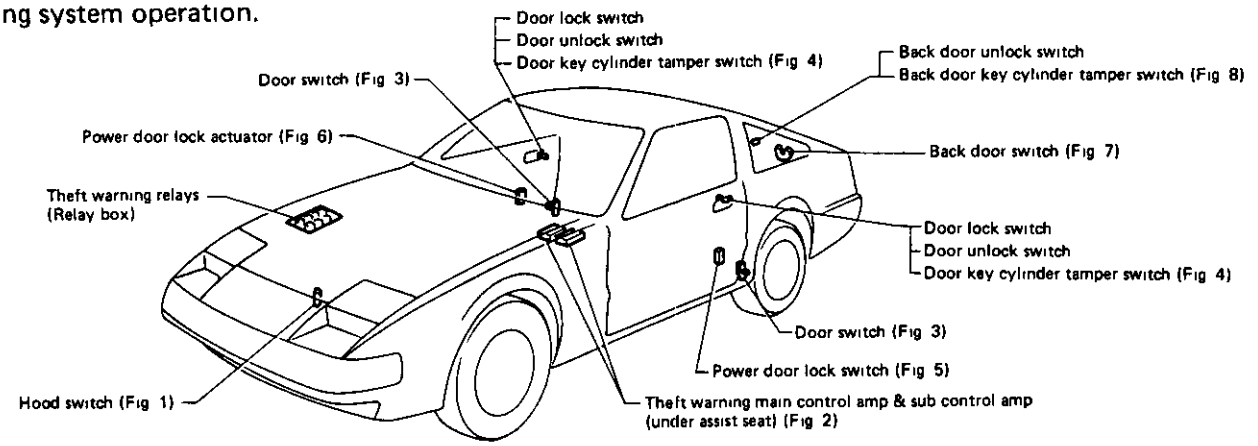
SEL669E

Note

THEFT WARNING SYSTEM

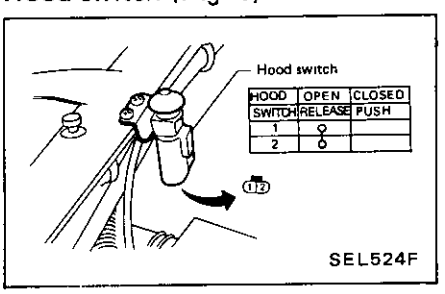
Location of Electrical Units

- When adjusting hood, front door, back door or removing & installing them or switches, check theft warning system operation.

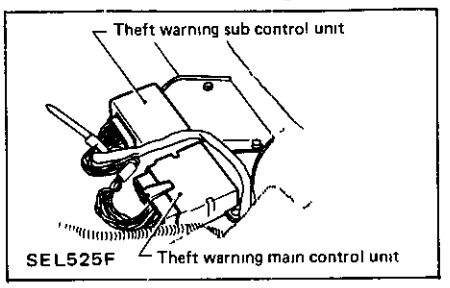


Operation of Switches and Sensors

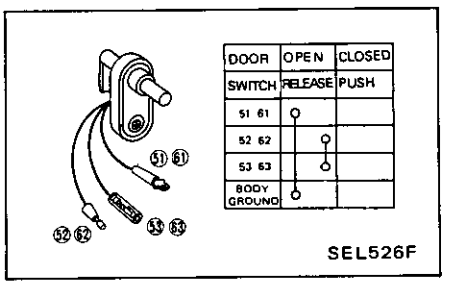
Hood switch (Fig 1)



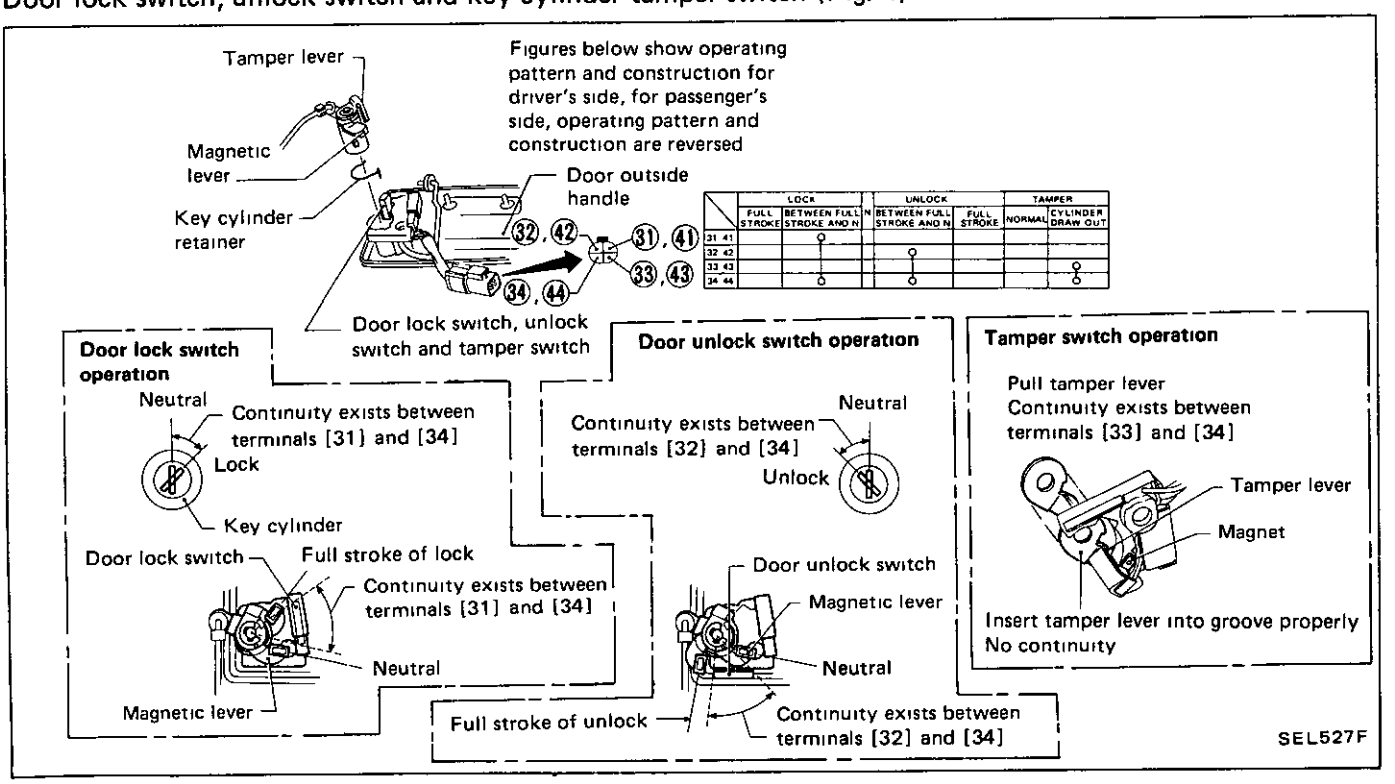
Theft warning main control unit & sub control unit (Fig 2)



Door switch (Fig 3)

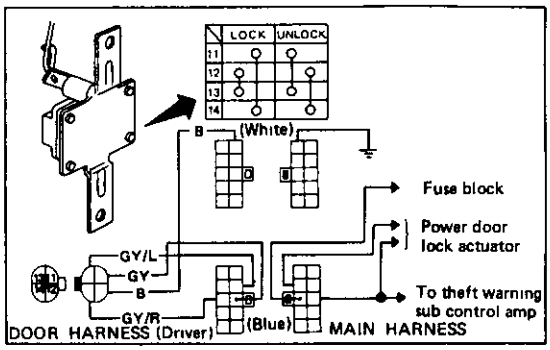


Door lock switch, unlock switch and key cylinder tamper switch (Fig. 4)

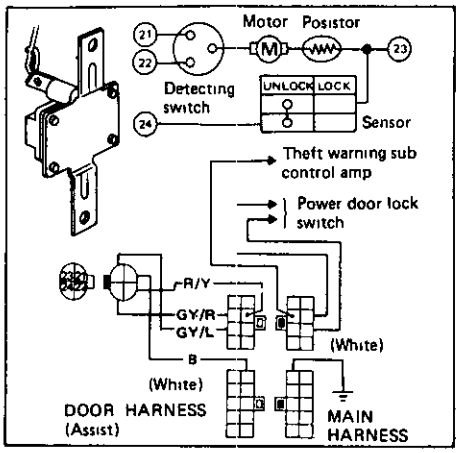


Operation of Switches and Sensors (Cont'd)

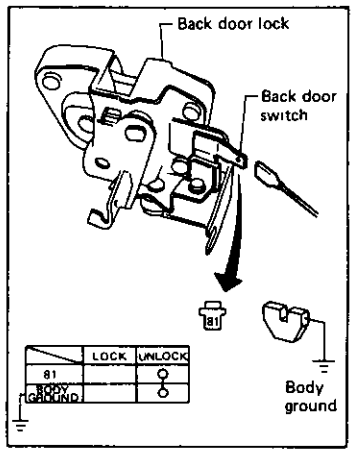
Power door lock switch (Fig 5)



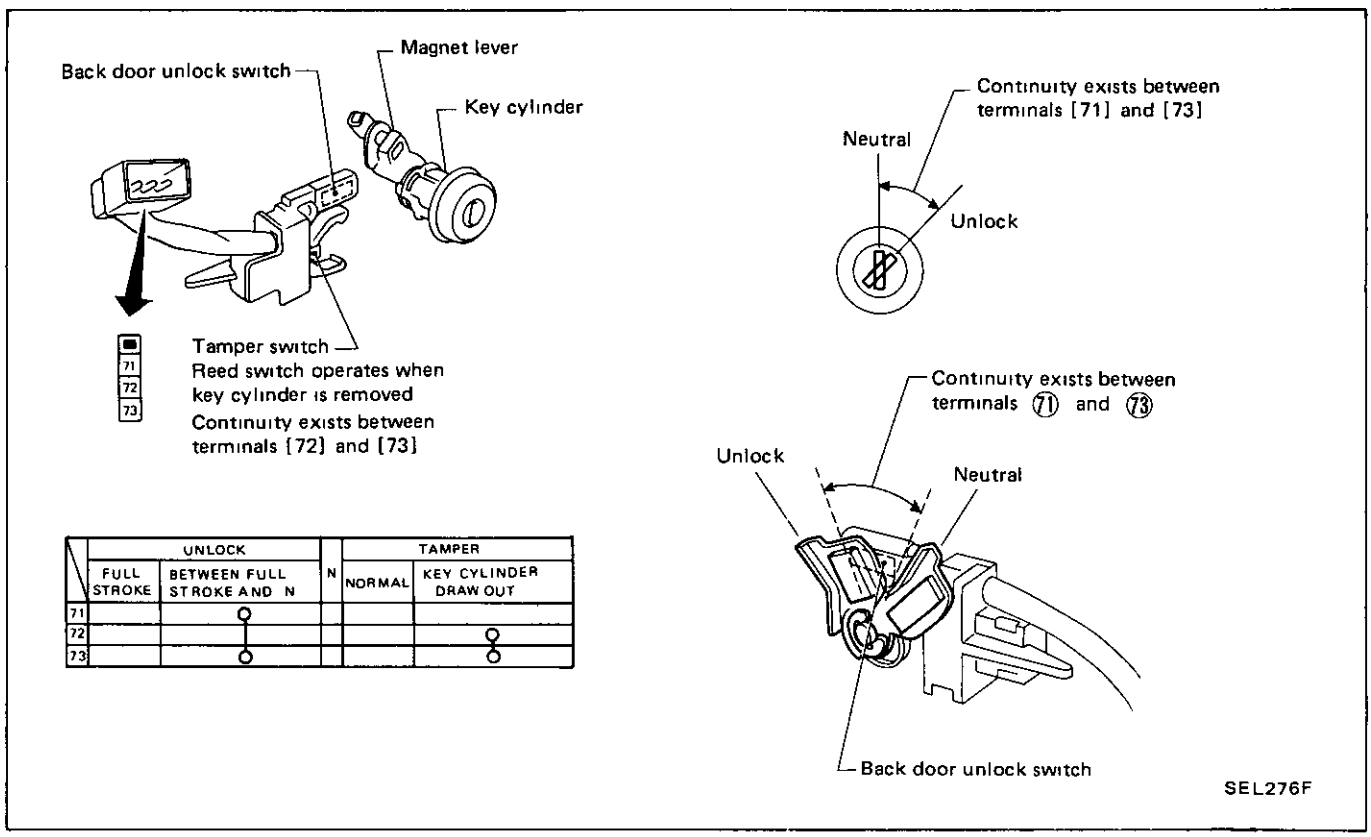
Power door lock actuator (Fig 6)



Back door switch (Fig. 7)



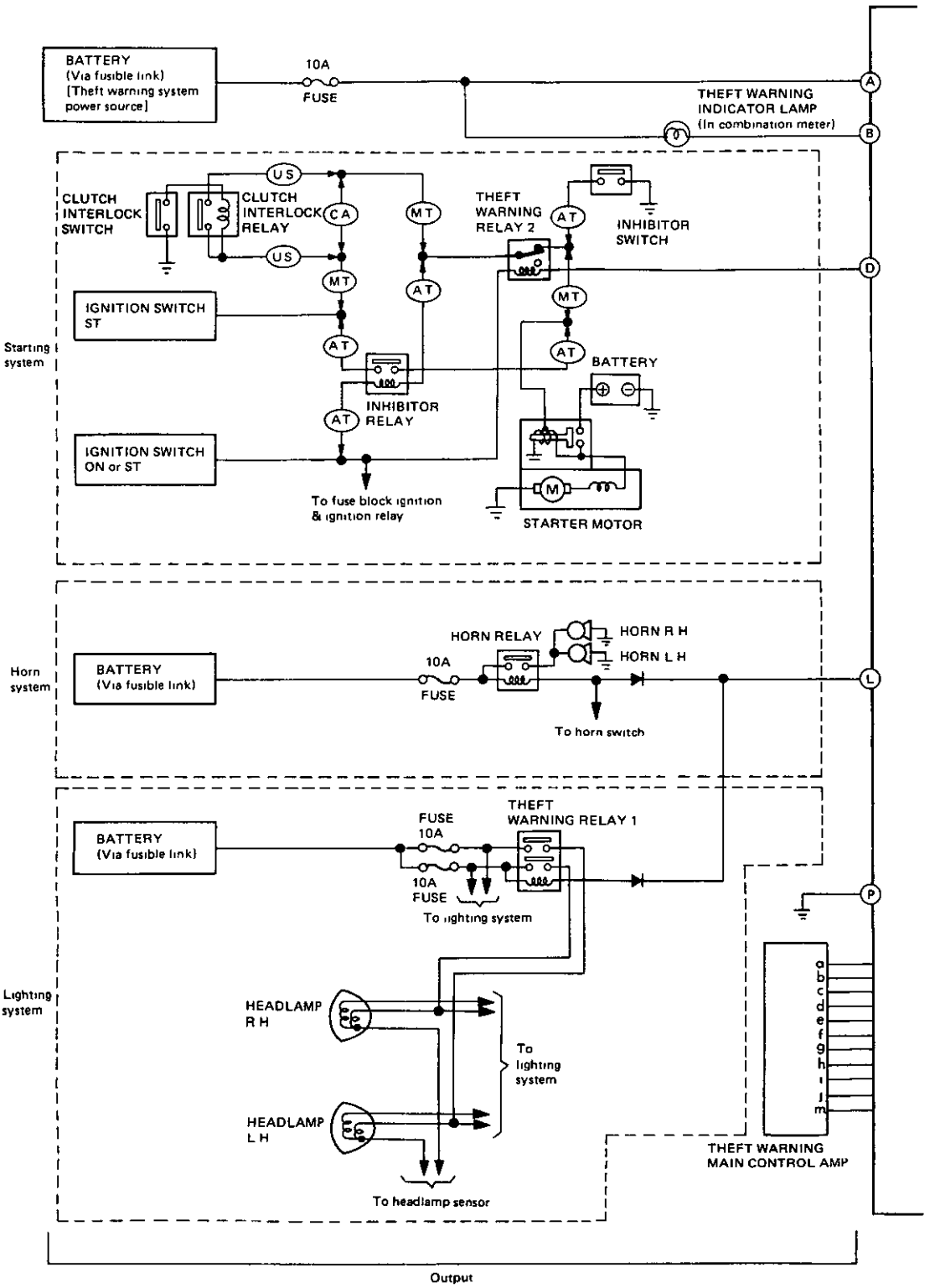
Back door unlock & key cylinder tamper switch (Fig 8)



	UNLOCK		N	TAMPER	
	FULL STROKE	BETWEEN FULL STROKE AND N		NORMAL	KEY CYLINDER DRAW OUT
71		○			
72					○
73		○			○

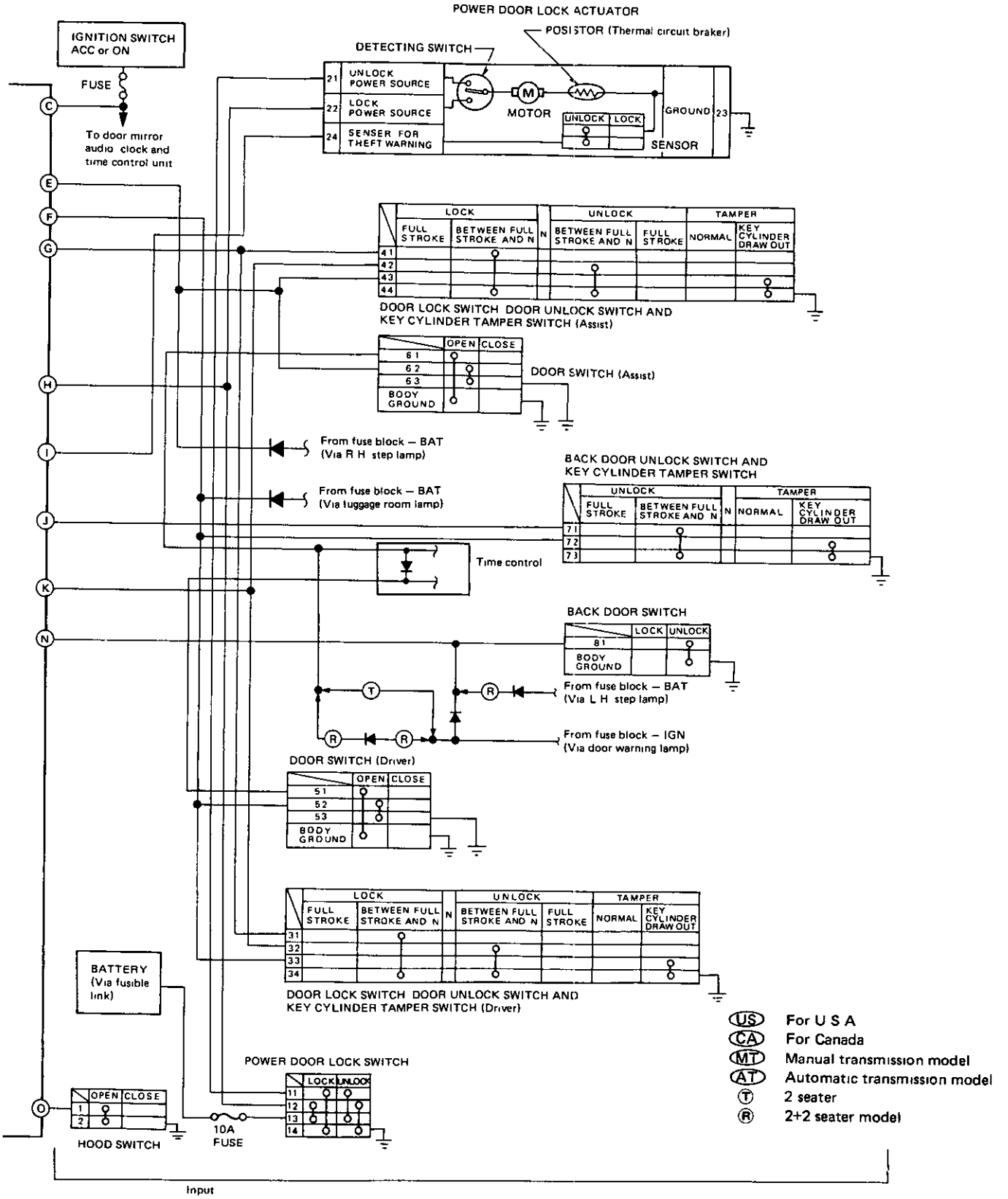
THEFT WARNING SYSTEM

Schematic



THEFT WARNING SYSTEM

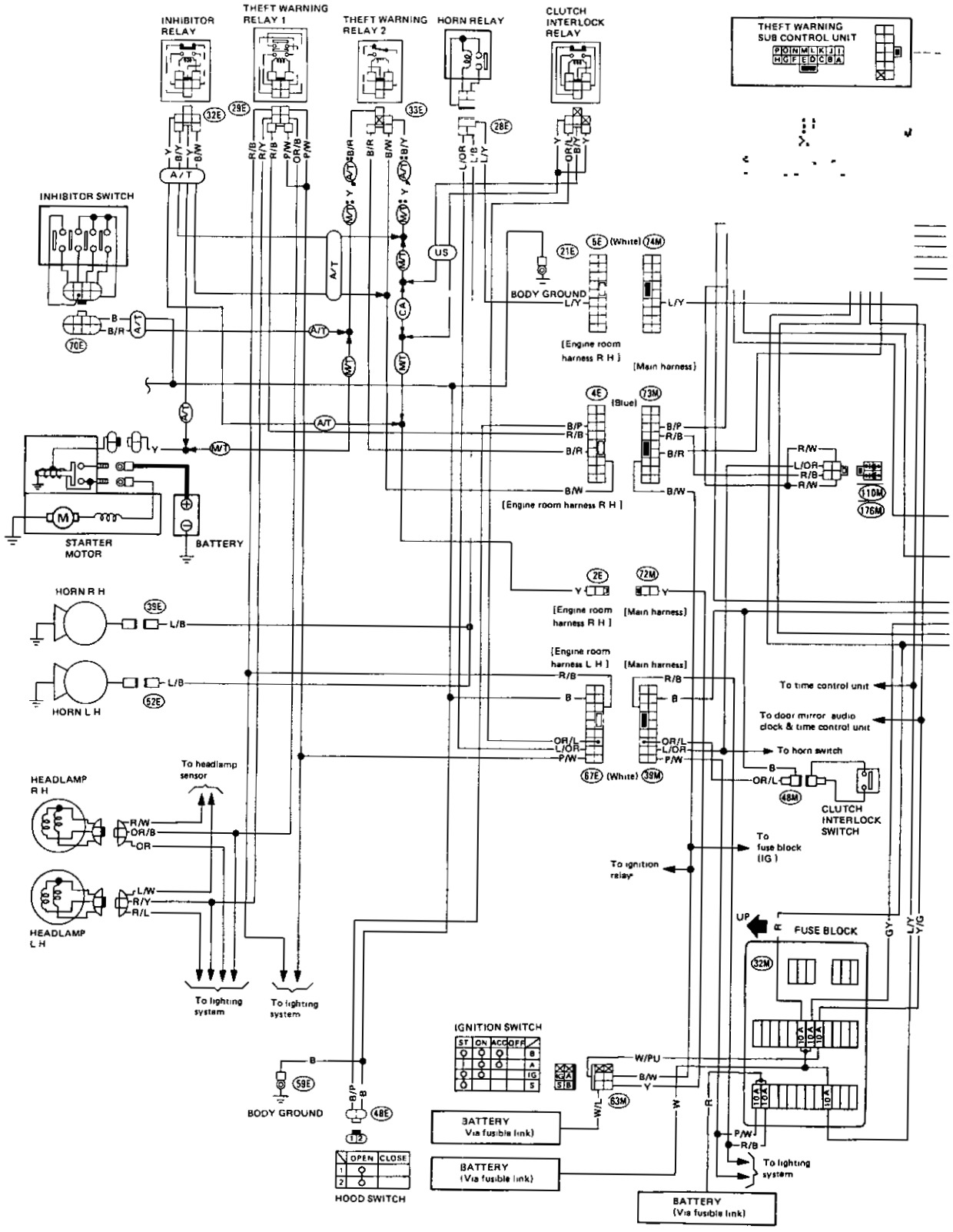
Schematic (Cont'd)



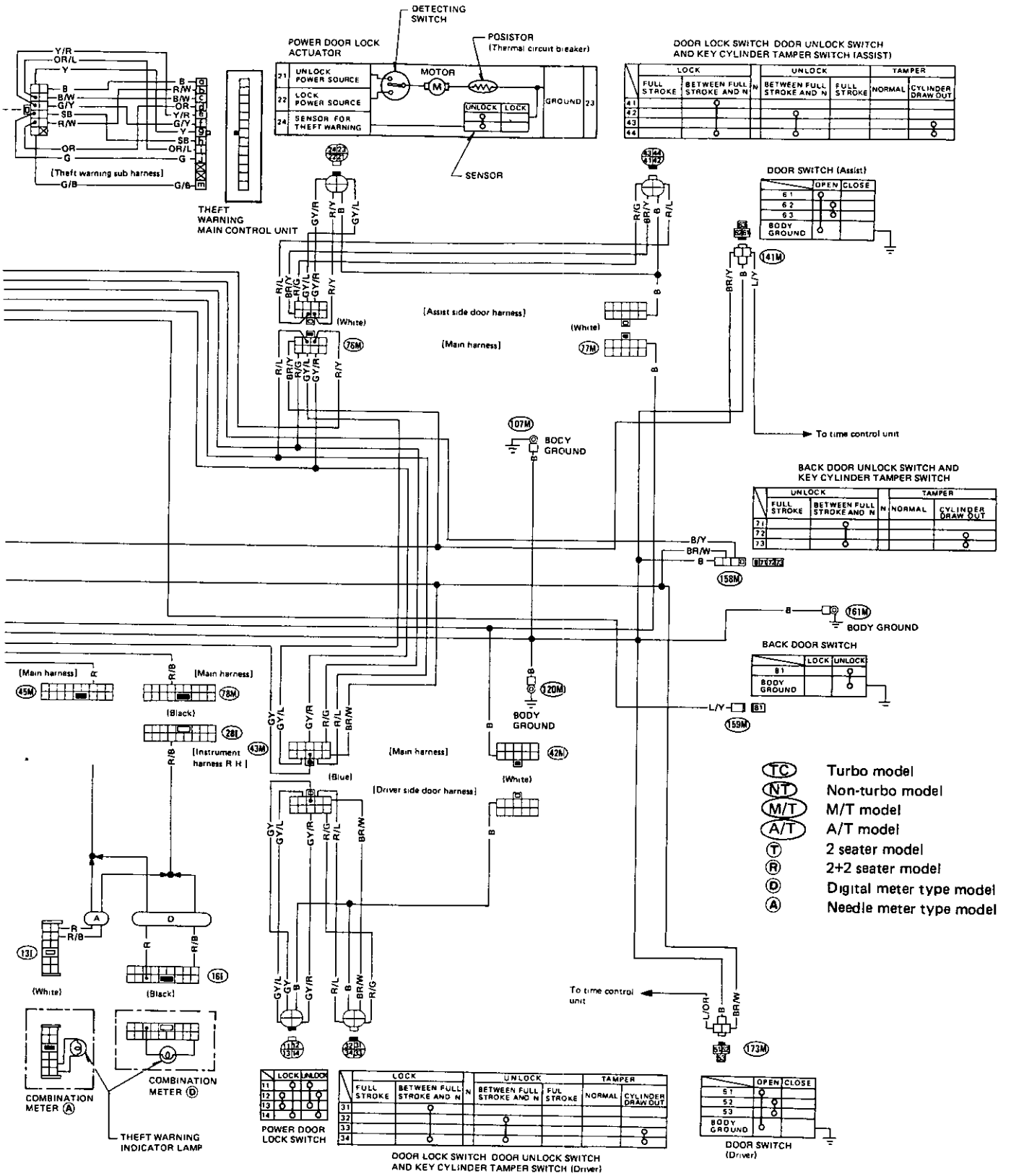
SEL128J

THEFT WARNING SYSTEM

Wiring Diagram



Wiring Diagram (Cont'd)



SEL129J

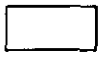
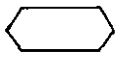
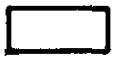
THEFT WARNING SYSTEM

Trouble-shooting

- During trouble-shooting, if "checks Ⓐ – Ⓟ, ⓩ" are indicated, be sure to refer to "checks Ⓐ – Ⓟ, ⓩ" in the "Terminal check" (Refer to pages EL-170 - EL-172)
- During trouble-shooting, if the cause of trouble is found to be due to "Faulty sub-control unit, Faulty main control unit or Faulty adapter harness", be sure to refer to "Control Unit Inspection".

Contents

No	INCIDENT The theft warning system responds in one of these ways		Refer to **TROUBLE-SHOOTING PROCEDURE**
1	Indicator lamp	does not blink (Remains out)	IND ①
2		remains blinking	IND ②
3		does not come on (1)	IND ③
4		does not come on (2)	IND ④
5		remains lit	IND ⑤
6		does not go out (Comes on)	IND ⑥
7		does not go out (Remains lit)	IND ⑦
8	Armed	is set even if ignition switch is in ACC or ON position	ARM ①
9		is set even if at least one of doors is unlocked	ARM ②
10		is set even if at least one of doors is open	ARM ③
11		is not set (Armed phase)	ARM ④
12	Alarm	is given without any cause	ALR ①
13		does not operate (Alarm phase)	ALR ②
14		does not stop (Alarm continues for outer 4 minutes)	ALR ③
15		does not stop even if stop signal is given	ALR ④
16		stops too soon	ALR ⑤
17		continues (Alarm is not intermittent)	ALR ⑥
18	Starter motor	cannot operate (Except alarm phase)	ST ①
19		can operate (Starter killed phase)	ST ②

- Symbol  Action  Judgment  Probable cause

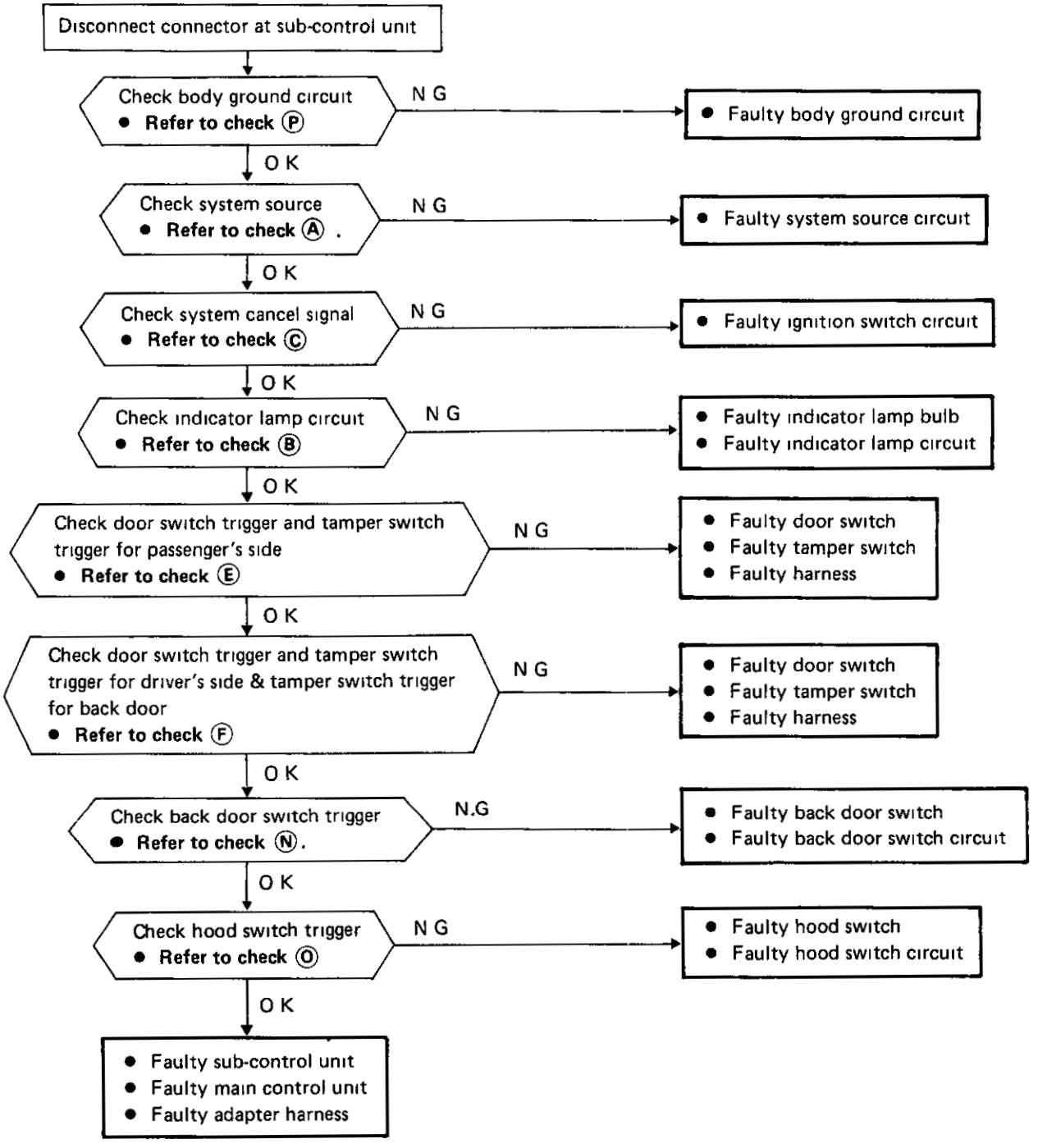
- "Armed phase" means that approx 30 seconds have passed (Indicator lamp goes out) since locking and closing all doors.
- "Alarm phase" means that the horn sounds and the headlamps blink intermittently
- "Starter killed phase" means that the starter does not work until one door is unlocked with the key after the alarm has sounded.

Trouble-shooting (Cont'd)

CUSTOMER COMPLAINT

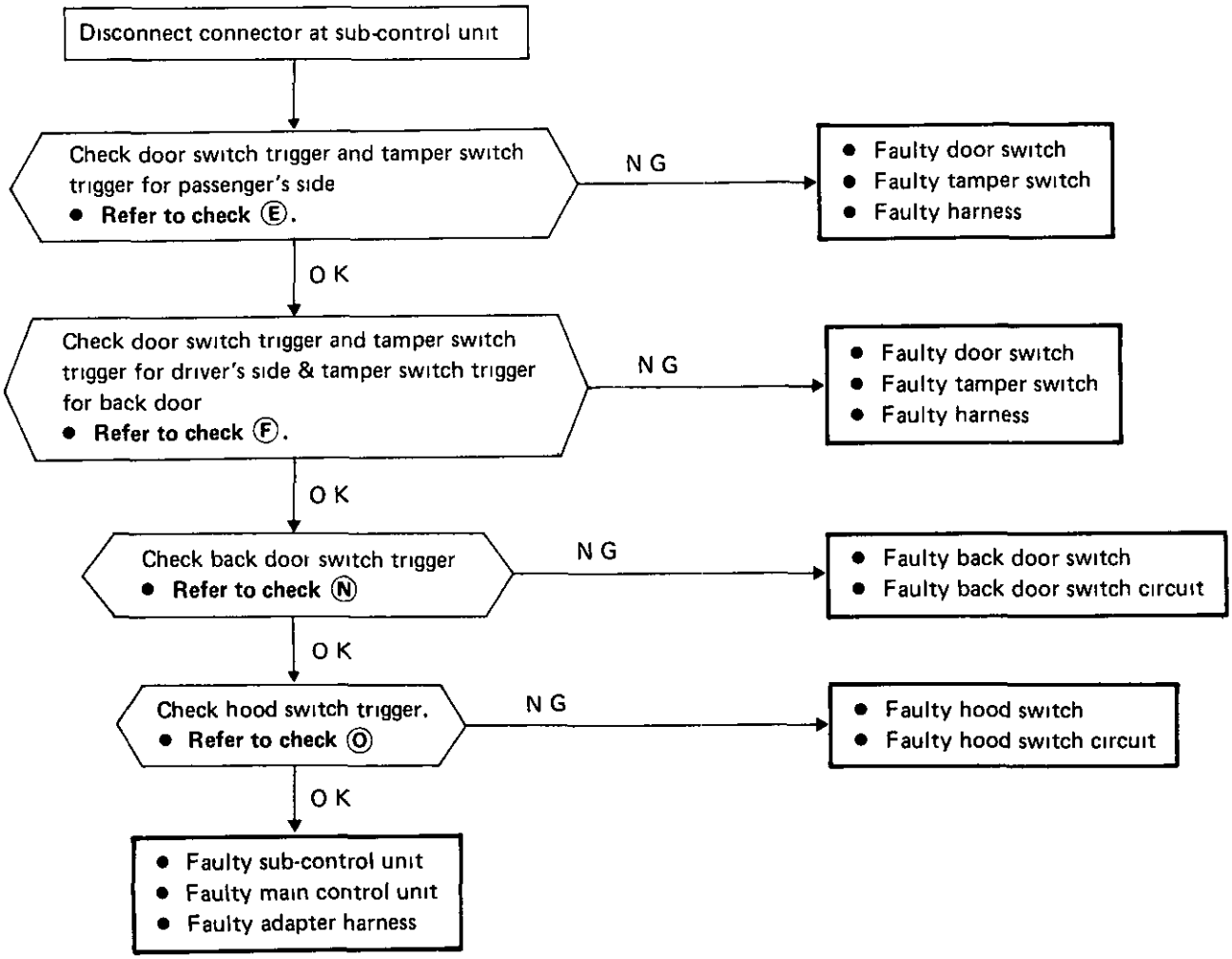
1 Indicator lamp does not blink (Remains out)
- Ignition switch OFF
- At least one of the doors, hood, or back door is open

TROUBLE-SHOOTING PROCEDURE IND ①



2 Indicator lamp remains blinking
- Ignition switch OFF
- Doors, hood and back door are closed.

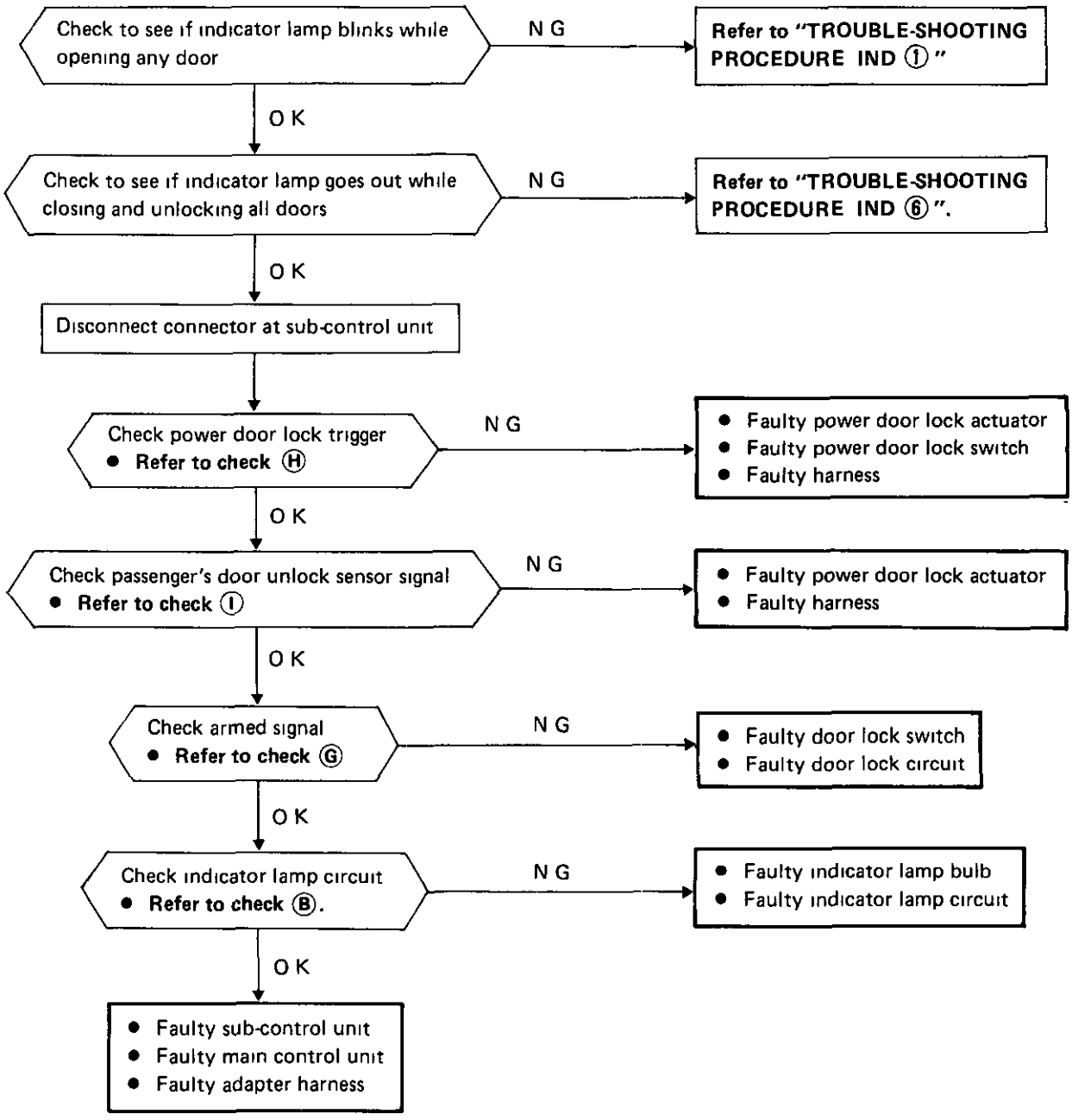
TROUBLE-SHOOTING PROCEDURE IND ②



3 Indicator lamp does not come on (1)

- Ignition switch OFF
- Doors, hood and back door are closed.
- After closing all doors, doors are locked with key

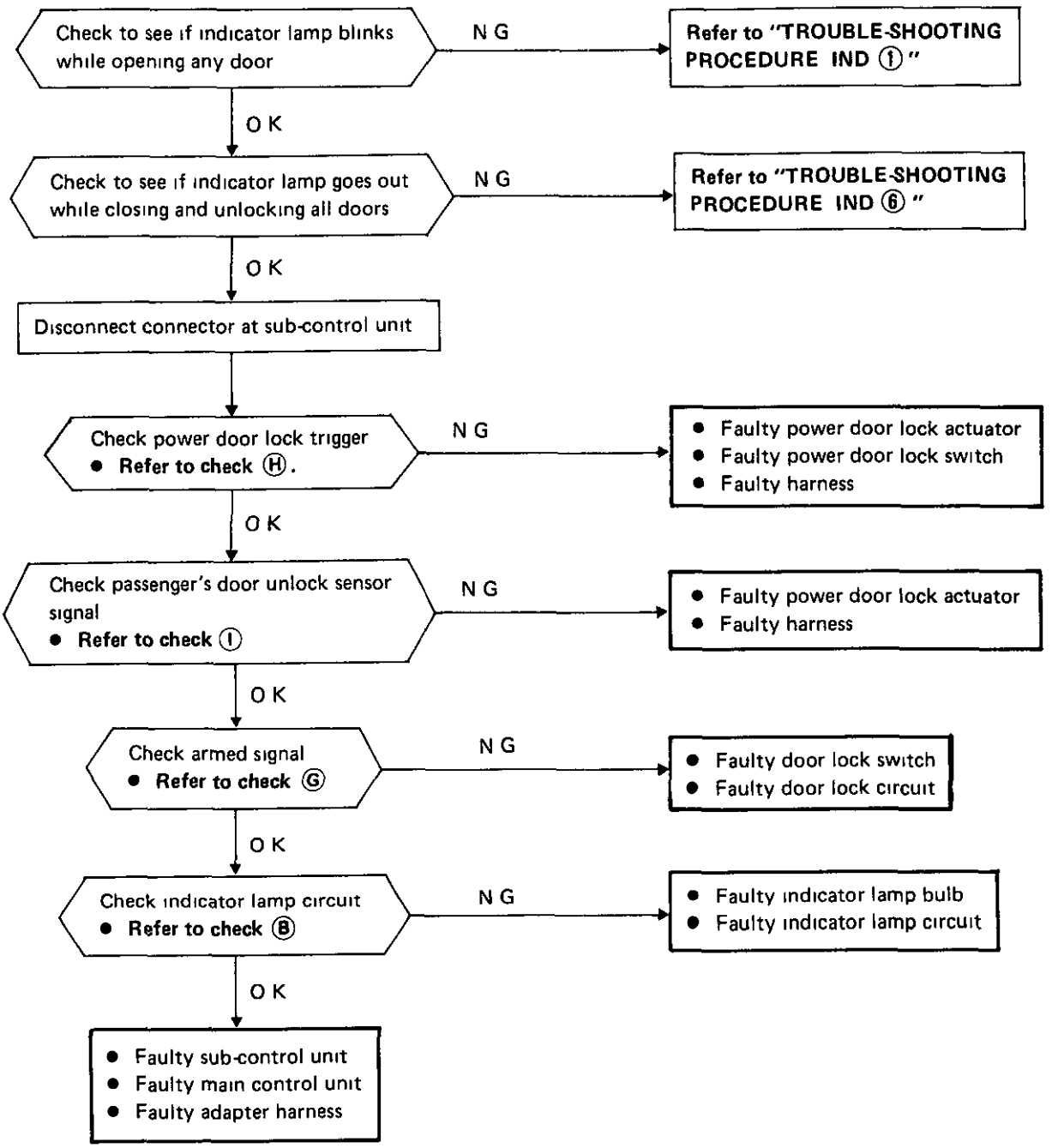
TROUBLE-SHOOTING PROCEDURE IND ③



Trouble-shooting (Cont'd)

4. Indicator lamp does not come on (2)
   - Ignition switch OFF
   - After closing hood and back door, lock and close all doors without key. Or after locking and closing all doors, close hood and back door.

TROUBLE-SHOOTING PROCEDURE IND ④

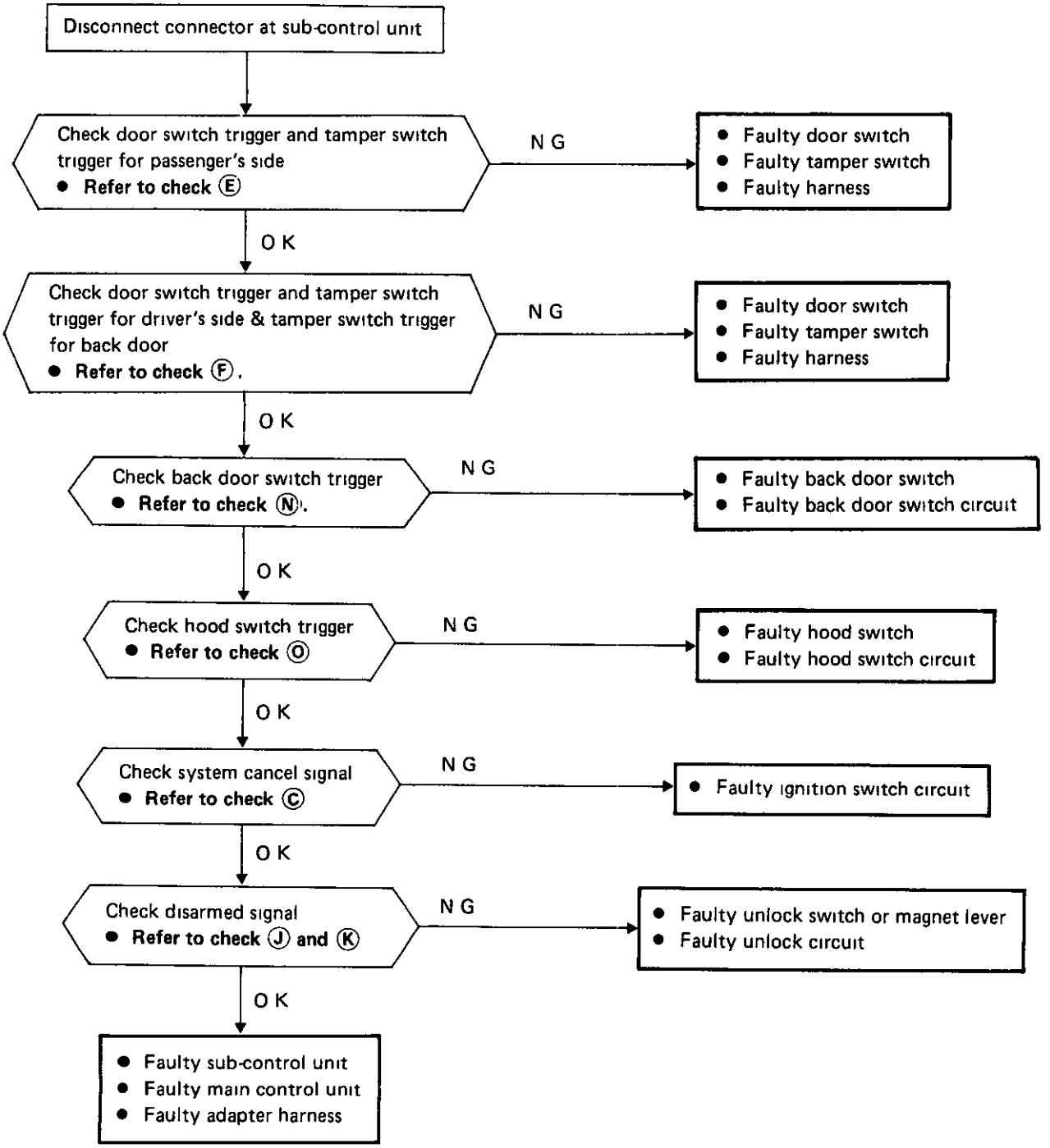


Trouble-shooting (Cont'd)

5 Indicator lamp remains lit.
- Ignition switch OFF
- At least one of the door is open or unlocked.

or
- Reset the armed phase

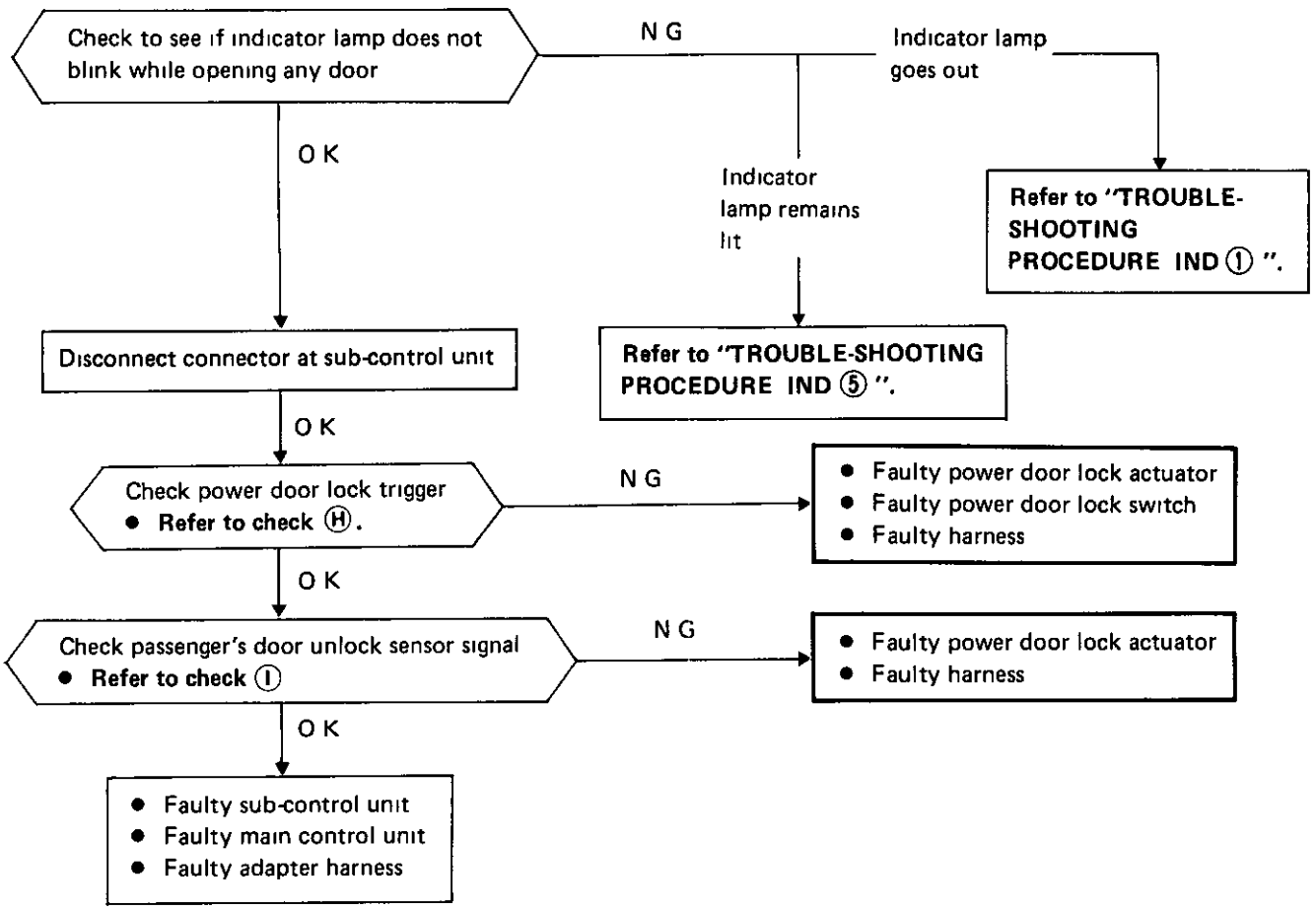
TROUBLE-SHOOTING PROCEDURE IND ⑤



Trouble-shooting (Cont'd)

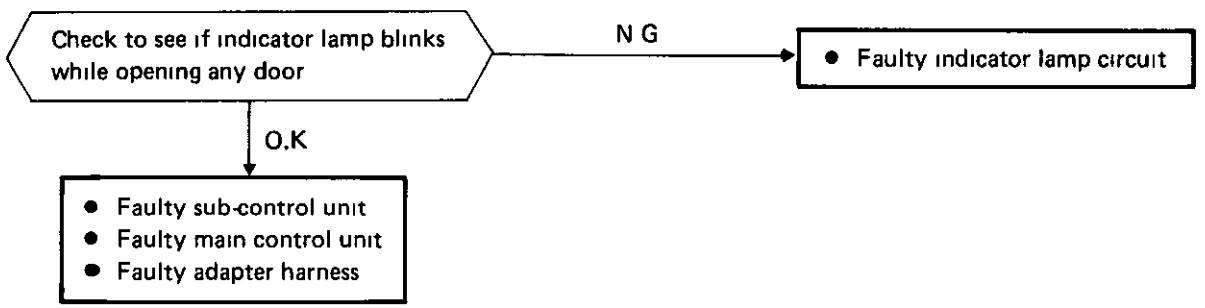
6 Indicator lamp does not go out (Comes on)
- Ignition switch OFF
- Doors close and at least one of the doors unlocks

TROUBLE-SHOOTING PROCEDURE IND ⑥



7 Indicator lamp does not go out (Remains lit)
- Ignition switch OFF
- More than 30 seconds have passed after closing and locking all doors

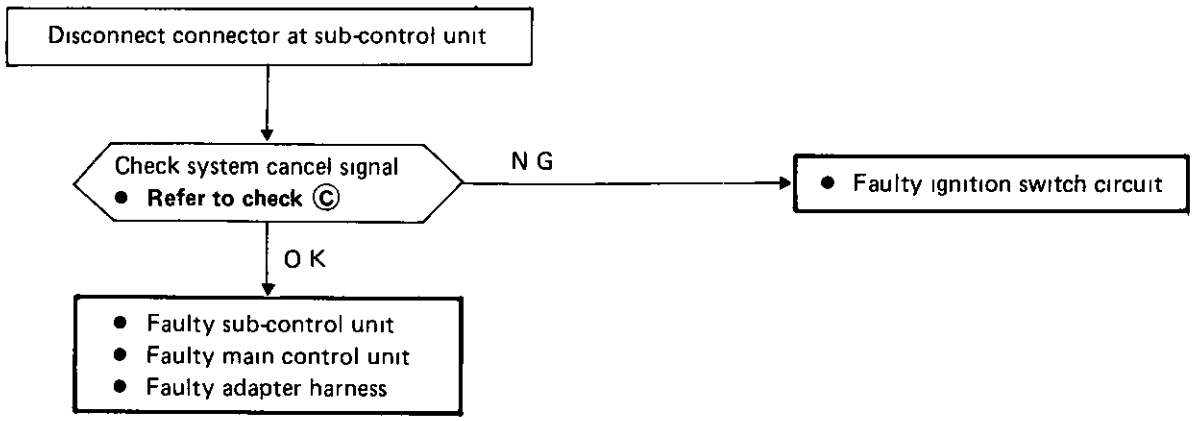
TROUBLE-SHOOTING PROCEDURE IND ⑦



Trouble-shooting (Cont'd)

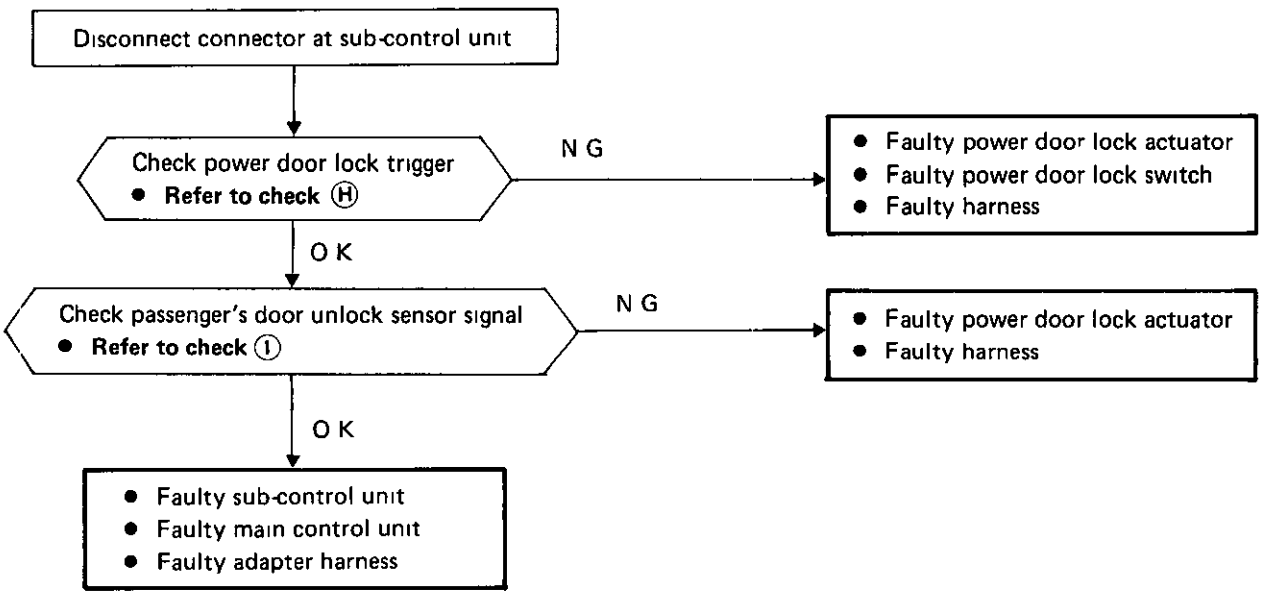
8 Armed is set, even if ignition switch is in ACC or ON position

TROUBLE-SHOOTING PROCEDURE ARM ①



9 Armed is set, even if at least one of the doors is unlocked

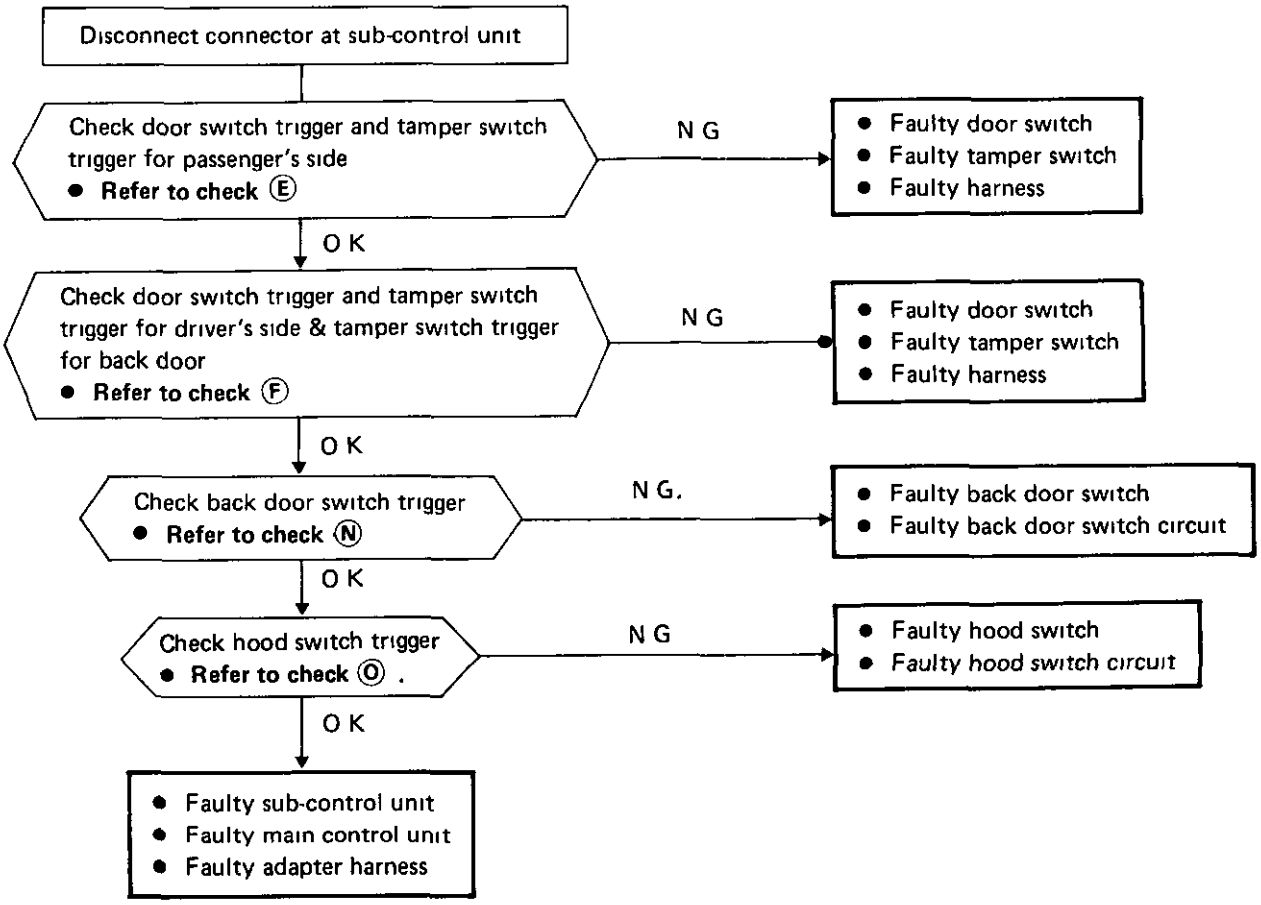
TROUBLE-SHOOTING PROCEDURE ARM ②



Trouble-shooting (Cont'd)

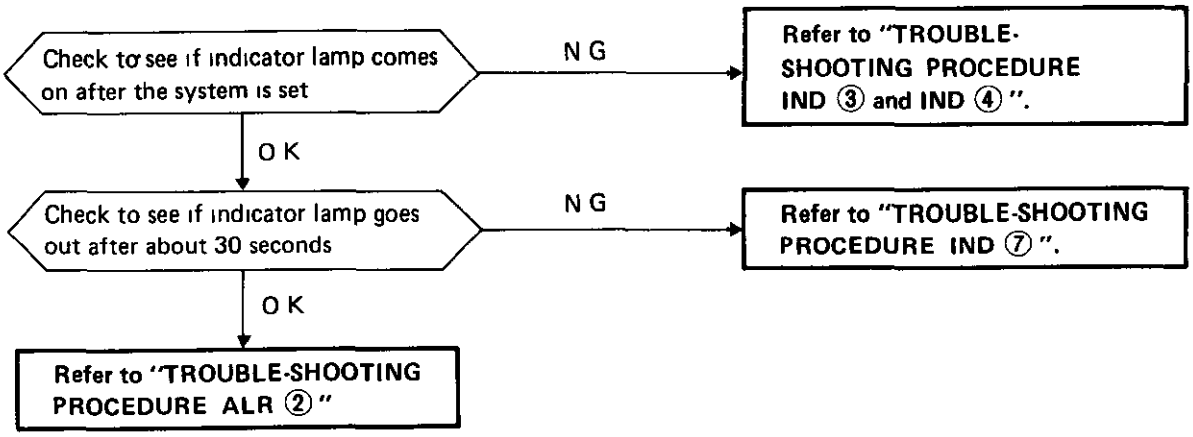
10 Armed is set, even if at least one of the doors is open

TROUBLE-SHOOTING PROCEDURE ARM ③



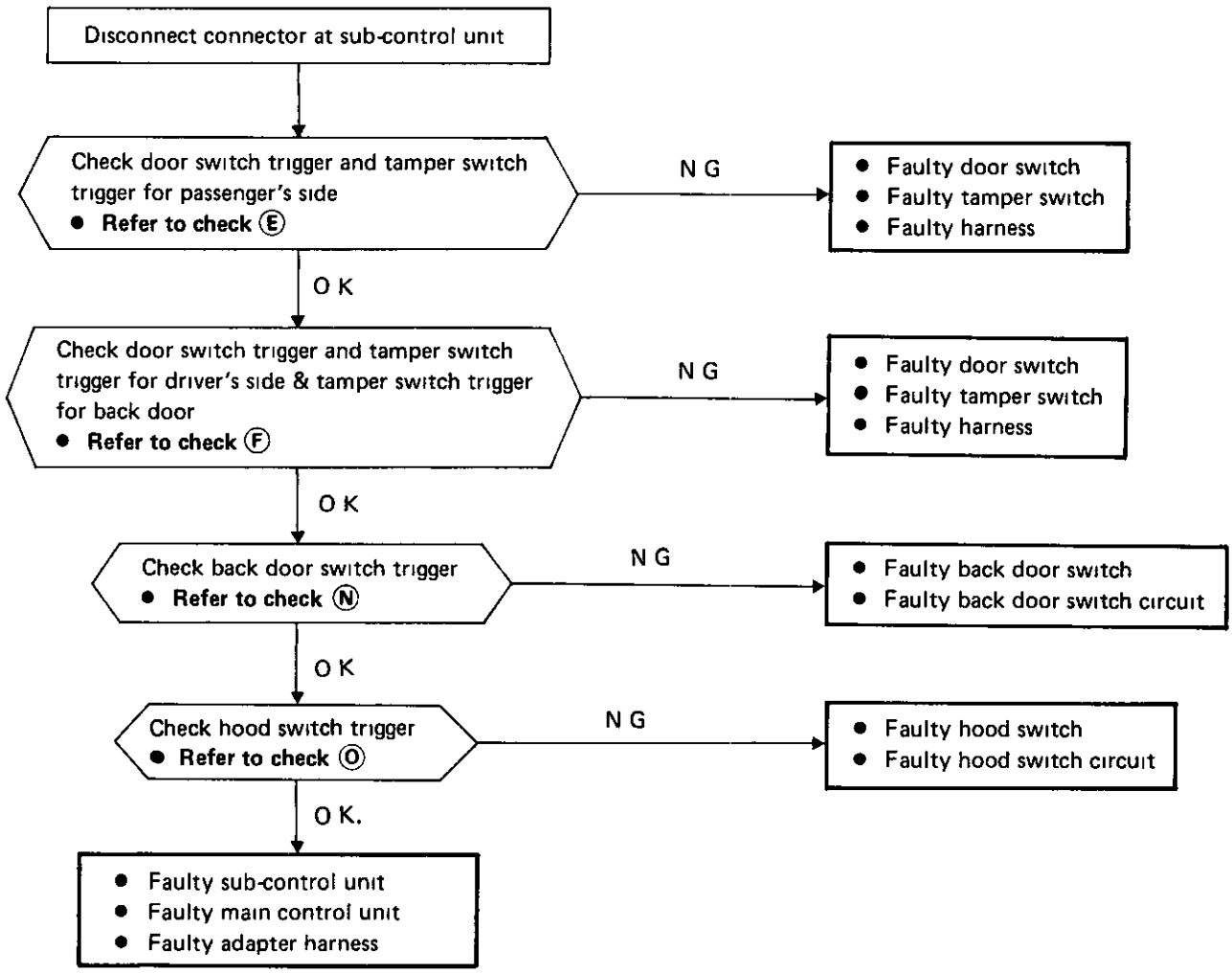
11 Armed is not set, even if ignition switch is in OFF position and all doors are closed and locked

TROUBLE-SHOOTING PROCEDURE ARM ④



12 Alarm is given without any cause
- Ignition switch OFF
- Doors locked and closed

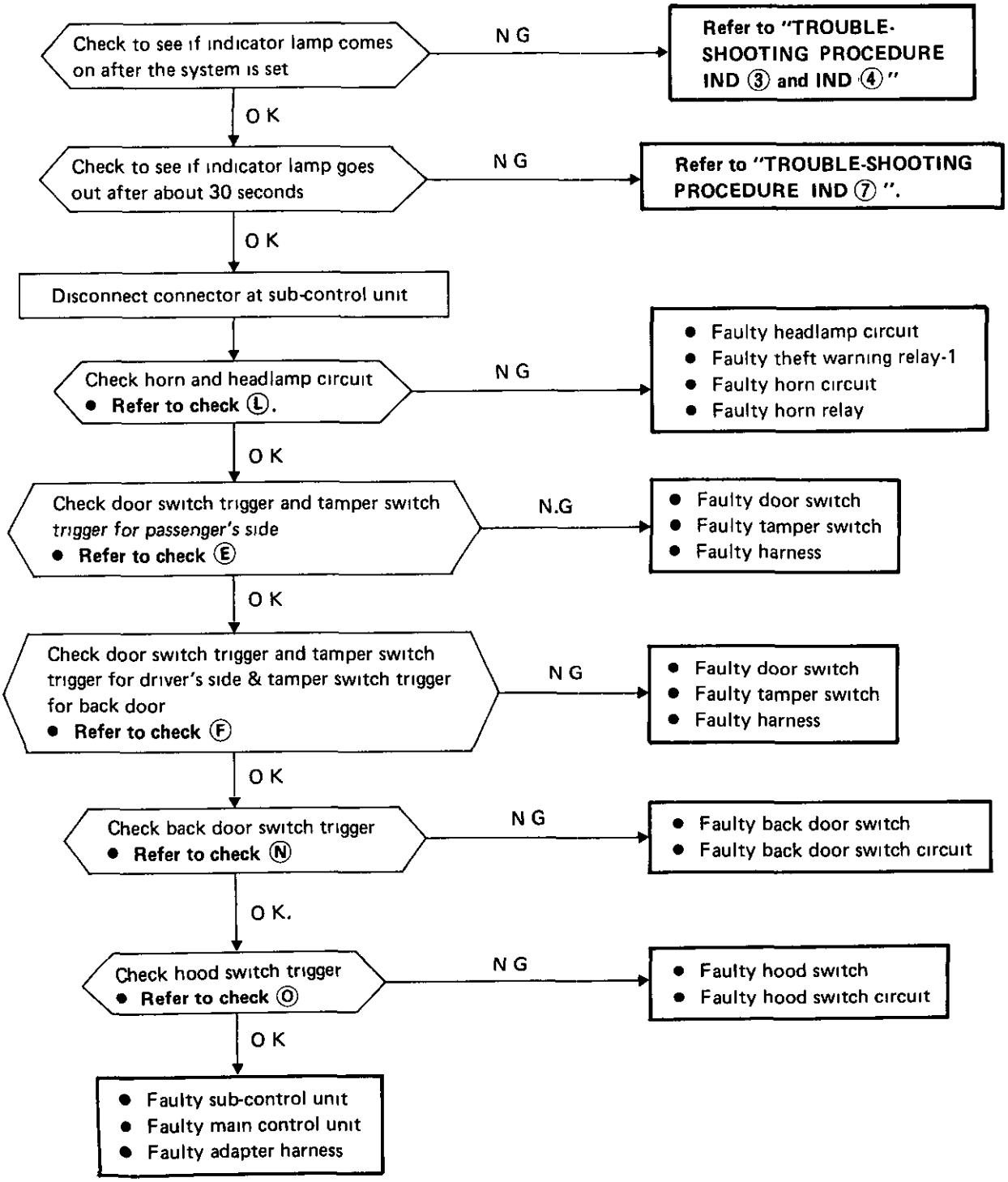
TROUBLE-SHOOTING PROCEDURE ALR ①



Trouble-shooting (Cont'd)

13 Alarm does not operate, even if any door is opened without key or any key cylinder is drawn out

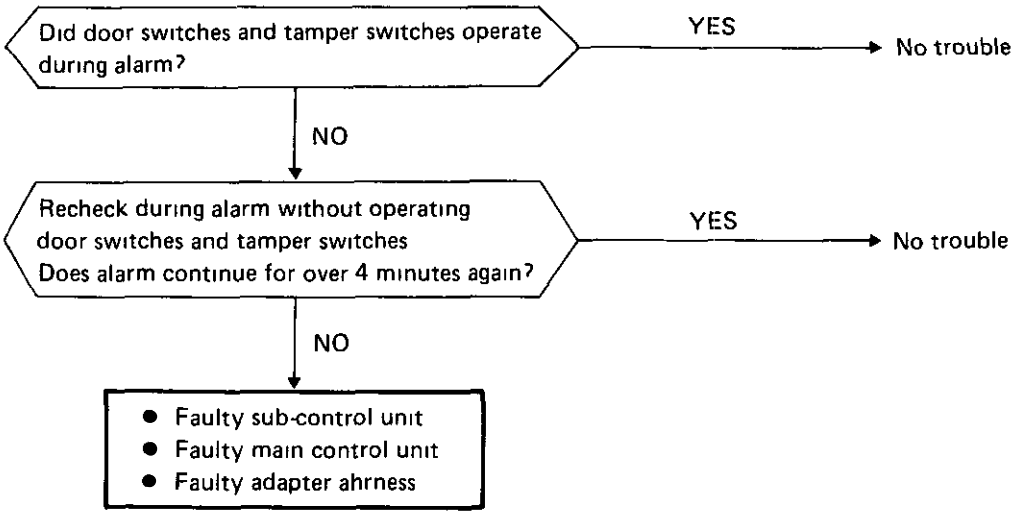
TROUBLE-SHOOTING PROCEDURE ALR ②



Trouble-shooting (Cont'd)

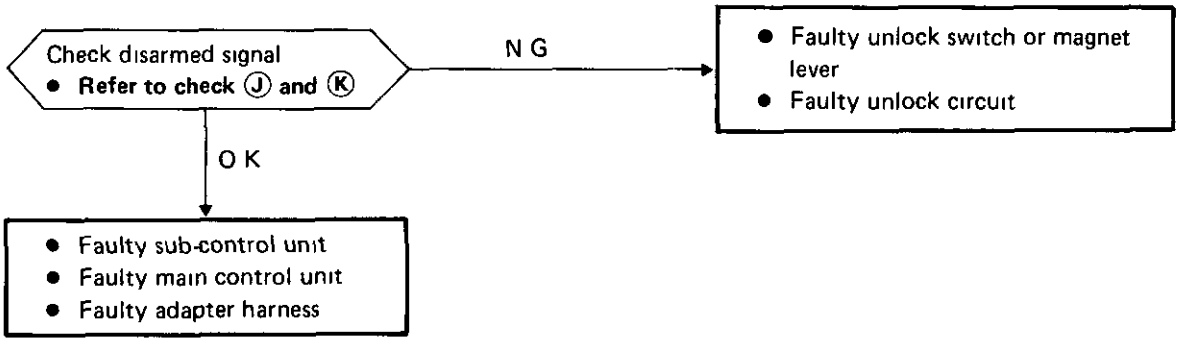
14 Alarm does not stop (Alarm continues for over 4 minutes)
- Ignition switch OFF
- Alarm phase

TROUBLE-SHOOTING PROCEDURE ALR ③



15. Alarm does not stop, even if any door or back door is unlocked with key or code number of keyless entry system is put in

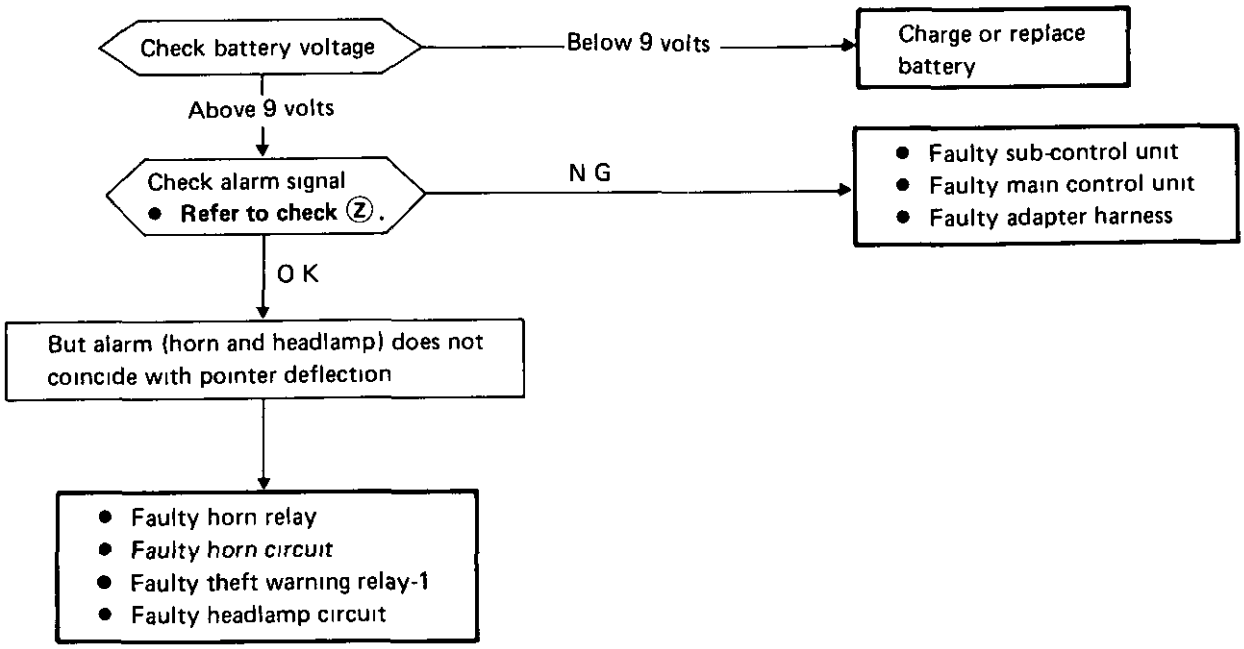
TROUBLE-SHOOTING PROCEDURE ALR ④



Trouble-shooting (Cont'd)

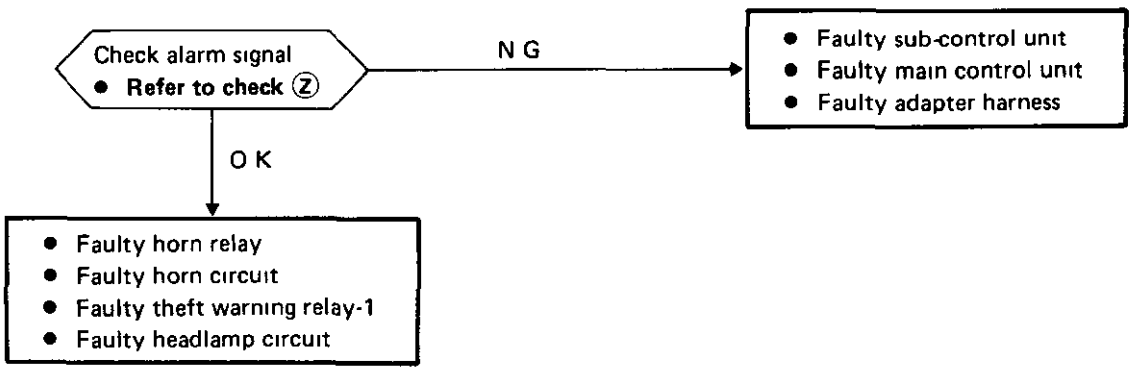
16 Alarm stops too soon (Alarm does not continue for 2 to 4 minutes)
- Ignition switch OFF
- Alarm phase

TROUBLE-SHOOTING PROCEDURE ALR ⑤



17 Alrm continues (Alarm is not intermittent)
- Ignition switch OFF
- Alarm phase

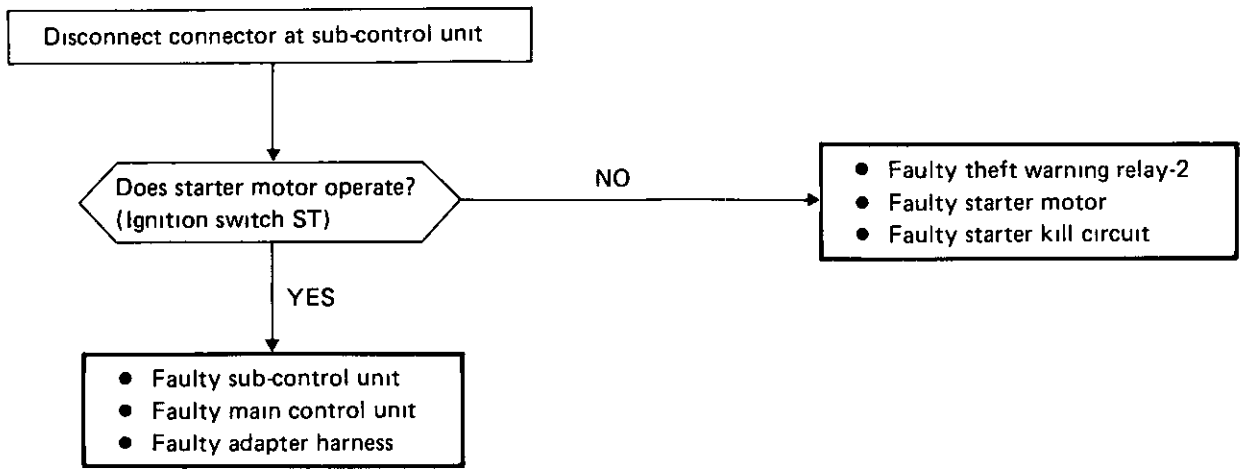
TROUBLE-SHOOTING PROCEDURE ALR ⑥



18 Starter motor does not operate (Except alarm phase)

- Ignition switch ST

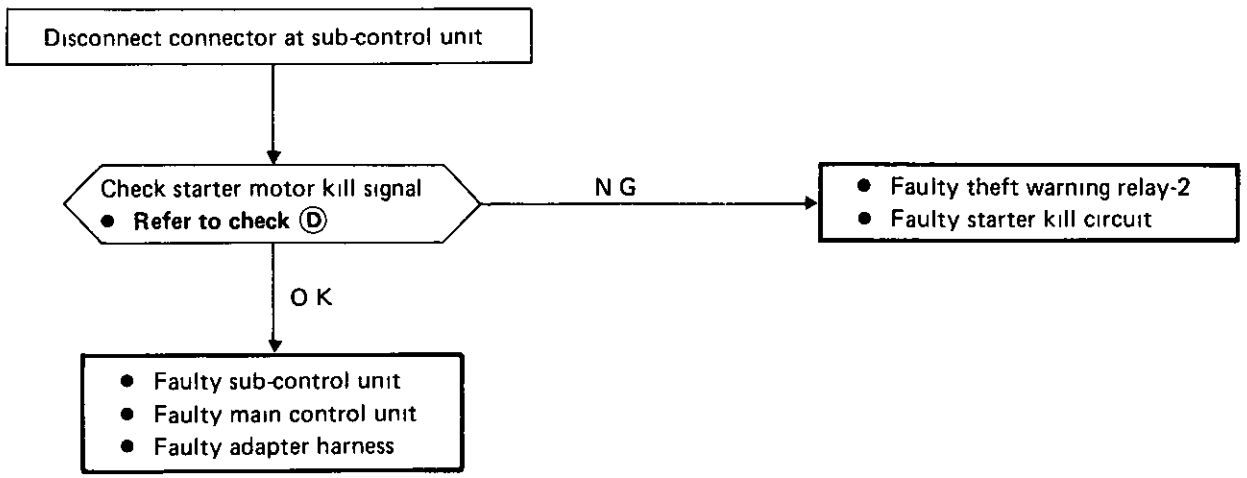
TROUBLE-SHOOTING PROCEDURE ST ①



19 Starter motor operates (Starter killed phase)

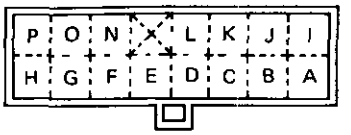
- Ignition switch ST

TROUBLE-SHOOTING PROCEDURE ST ②



THEFT WARNING SYSTEM

Terminal Check



Terminal arrangement of connector for theft warning sub-control unit (View from harness side)

Check table of connector terminals for sub-control unit (Disconnect connector at sub-control unit)

Terminal	Function	From	Normal operation	If N G , check
A	System source	Fuse box	Battery voltage should come between [A] and body ground	10A fuse, Harness
B	Security lamp operating control	Fuse box (Through security lamp)	Ground [B], security lamp should come on	10A fuse, Harness, Bulb of security lamp
C	System cancel signal	Fuse box	Battery voltage should come between [C] and body ground when key is in A cc or ON	10A fuse, Harness
D	Starter kill	Fuse box (Through theft warning relay-2)	Ground [D] starter should not operate	Theft warning relay-2, Harness, Inhibitor relay (A/T), Inhibitor switch (A/T)
E	Door switch trigger and tamper switch trigger for passenger's side	Passenger's door switch and tamper switch	Battery voltage should come between [E] and body ground when passenger's door is closed Zero voltage between [E] and body ground when passenger's door is open Battery voltage between [E] and body ground when passenger's tamper switch is installed to key cylinder when passenger's door is closed	Door switch, Tamper switch, Harness
F	Door switch trigger and tamper switch trigger of driver's side Tamper switch trigger of back door	Driver's door switch and tamper switch Back door tamper switch	Battery voltage should come between [F] and body ground when driver's door is closed Zero voltage between [F] and body ground when driver's door is open Battery voltage should come between [F] and body ground when driver's and back door tamper switches are installed to key cylinders (when driver's door is closed)	Door switch, Tamper switch, Harness
G	Arm signal	Door lock switches	Continuity exists between [G] and body ground when key stops between neutral and full stroke of lock	Door lock switch, Harness

Terminal Check (Cont'd)

Terminal	Function	From	Normal operation	If N G , check
H	Power door lock trigger	Power door lock switch	Battery voltage should come between [H] and body ground when driver's door is locked Zero voltage between [H] and body ground when driver's door is unlocked	Power door lock actuator, Power door lock switch
I	Passenger's door unlock sensor signal	Power door lock actuator	Continuity exists between [I] and body ground when passenger's door is unlocked No continuity between [I] and body ground when passenger's door is locked	Power door lock actuator
J	Disarm signal Back door	Back door unlock switch	Continuity exists between [J] and body ground when key stops between neutral and full stroke of unlock	Unlock switch, Harness
K	Disarm signal (Driver's and passenger's doors)	Door unlock switches	Continuity exists between [K] and body ground when key stops between neutral and full stroke of unlock	Unlock switch, Harness
L	Alarm signal	Fuse box (Through horn relay) Fuse box (Through theft warning relay-1)	Ground [L], horn should sound and headlamp should come on	Horn relay, Theft warning relay-1, 15A, 10A fuse, Harness
N	Back door switch trigger	Back door switch	Battery voltage should come between [N] and body ground when back door is closed Zero voltage between [N] and body ground when back door is open	Back door switch, Harness
O	Hood switch trigger	Hood switch	No continuity between [O] and body ground when hood is closed Continuity exists between [O] and body ground when hood is open	Hood switch, Harness
P	System ground	Body ground	Continuity exists between [P] and body ground	Body ground terminal, Harness

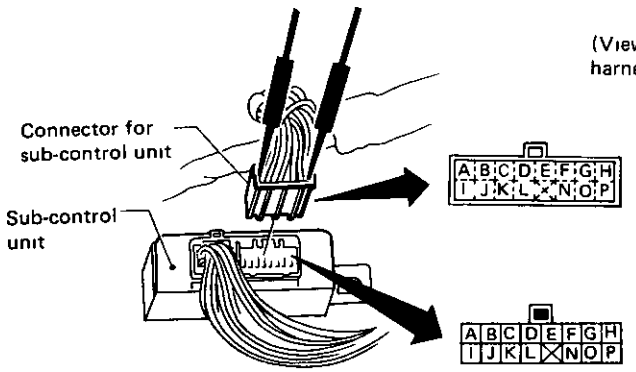
Connect connector to sub-control unit

Terminal	Function	From	Normal operation	If N G , check
L (Check Ⓩ)	Alarm signal	Fuse box (Through horn relay) Fuse box (Through theft warning relay-1)	Pointer deflection should come intermittently under alarm phase	Sub-control unit, Main control unit, Adapter harness

Terminal Check (Cont'd)

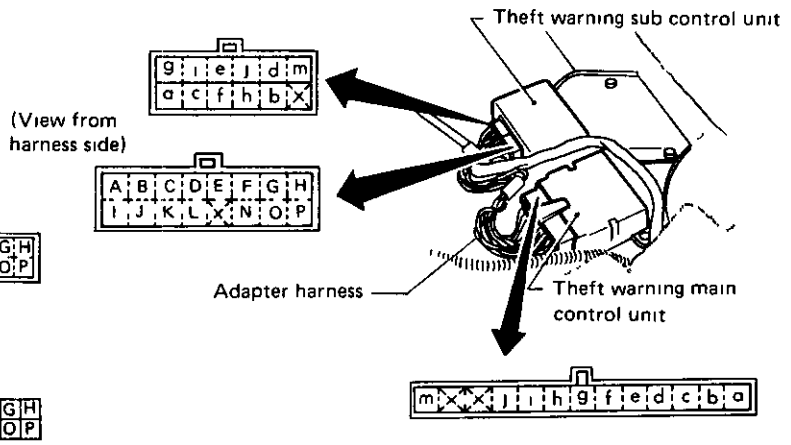
Preparation for check

- Disconnect body harness connector at sub-control unit (Except check Ⓩ)



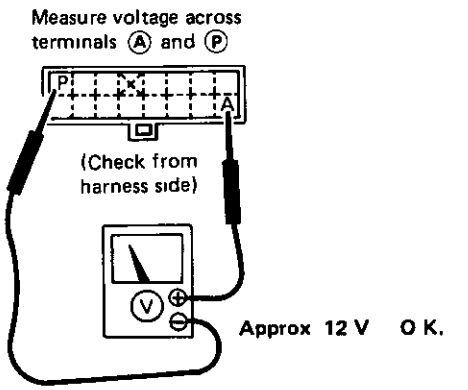
SEL530F

Terminal arrangement for check (View from harness side)



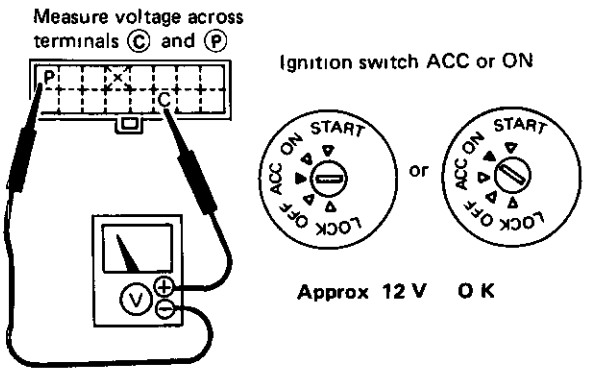
SEL531F

CHECK Ⓐ System source check



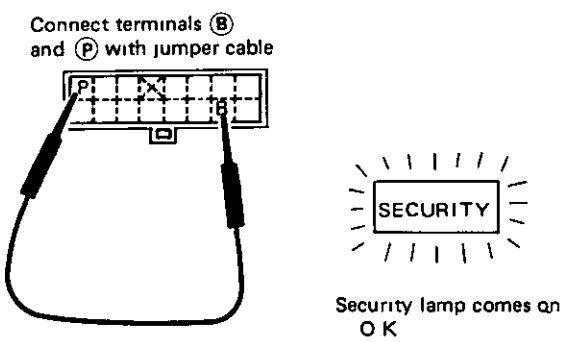
SEL535F

CHECK Ⓒ System cancel signal check



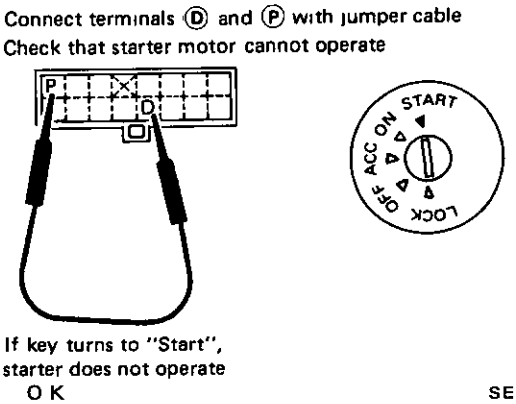
SEL537F

CHECK Ⓑ ... Security lamp circuit check



SEL536F

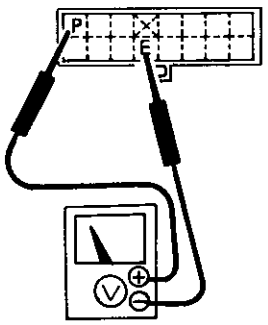
CHECK Ⓓ ... Starter kill signal check



SEL538F

Terminal Check (Cont'd)

CHECK Ⓔ Door switch trigger and tamper switch trigger for passenger's side

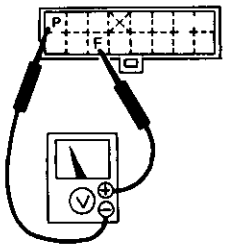


Passenger's door is closed
12V
Passenger's door is open
0V
Passenger's tamper switch is installed to key cylinder with passenger's door closed
12V
Passenger's tamper switch is removed from key cylinder with passenger's door closed
0V

O K

SEL539F

CHECK Ⓕ . Door switch trigger and tamper switch trigger for driver's side & tamper switch trigger for back door

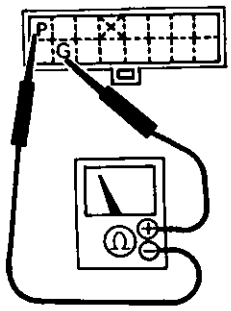


Driver's door is closed
12V
Driver's door is open
0V
Driver's and back door tamper switches are installed to key cylinders with driver's door closed
12V
At least one of driver's and back door tamper switches is removed from key cylinder with driver's door closed
0V

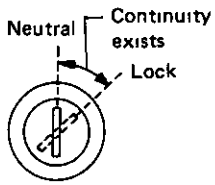
O K

SEL540F

CHECK Ⓖ . Arm signal check



[Example]
Key cylinder for driver's side

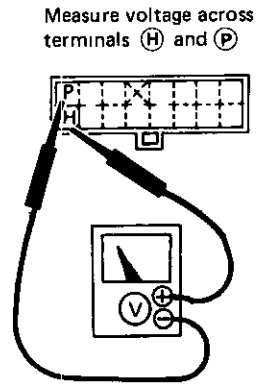


- Stop key between neutral and full stroke of lock

Continuity exists O K

SEL541F

CHECK Ⓗ . Power door lock trigger

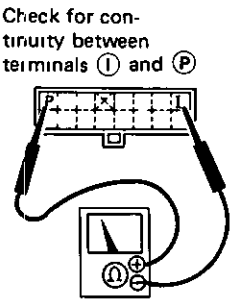


Driver's door is locked
12V
Driver's door is unlocked
0V

O K

SEL542F

CHECK Ⓘ . Passenger's door unlock sensor signal

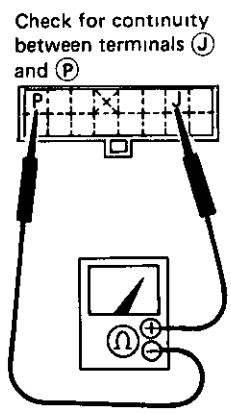


Passenger's door is unlocked
Continuity exists
Passenger's door is lock locked
No continuity

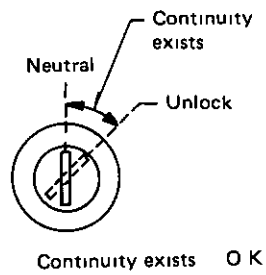
O K

SEL543F

CHECK Ⓙ . Disarm signal of back door unlock switch check



- Stop key between neutral and full stroke of unlock

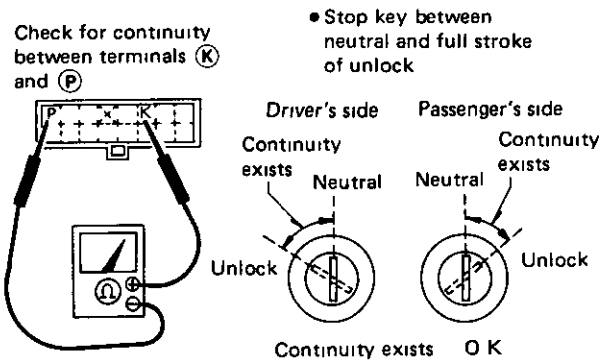


Continuity exists O K

SEL534F

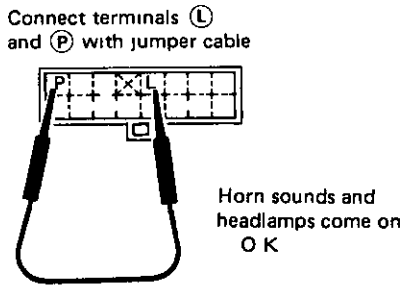
Terminal Check (Cont'd)

CHECK Ⓚ . Disarm signal of door unlock switch check



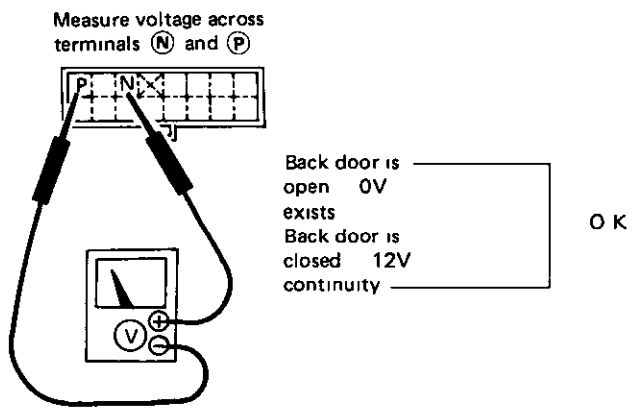
SEL544F

CHECK Ⓛ . Alarm check



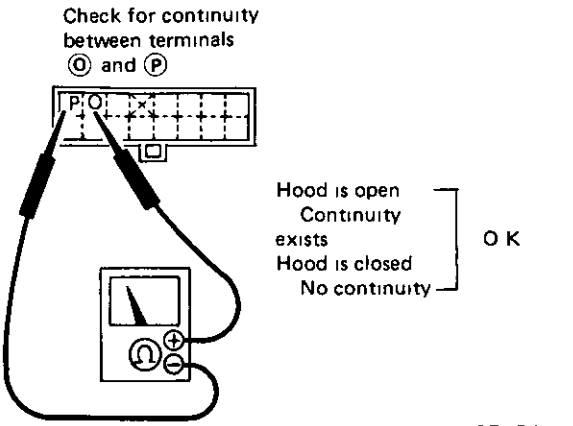
SEL545F

CHECK Ⓝ .. Back door switch trigger check



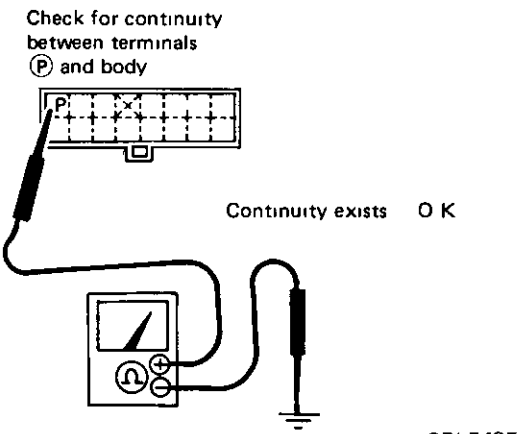
SEL546F

CHECK Ⓞ Hood switch trigger check



SEL547F

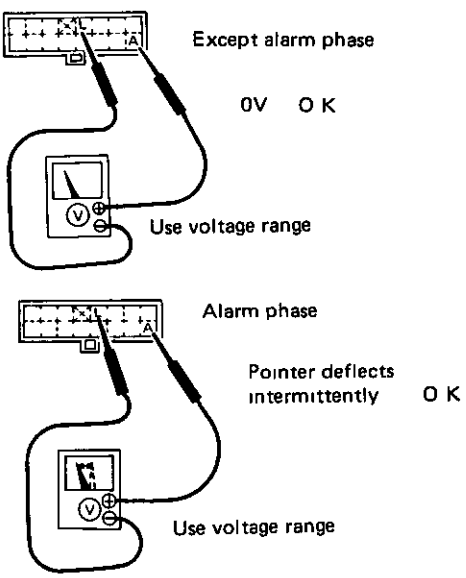
CHECK Ⓟ Body ground circuit check



SEL548F

CHECK Ⓩ ... Alarm signal check

1 Connect connector to theft warning sub-control unit
2 Connect between terminals Ⓐ and Ⓛ



SEL549F

Control Unit Check

CONTROL UNIT INSPECTION

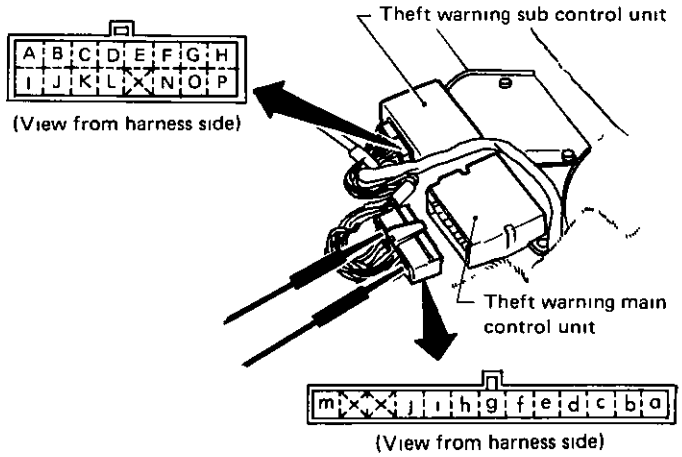
- This inspection is available only when the cause of trouble in "Trouble-shooting" is due to a " faulty sub-control unit" or "faulty main control unit" or "faulty adapter harness"
- This inspection should be carried out with adapter harness disconnected at main control unit When disconnecting adapter harness, first disconnect battery ground cable Be sure to reconnect battery ground cable afterwards

TROUBLE-SHOOTING PROCEDURE

1 (OK) in following checks indicates "Replace main control unit" and (N G) indicates "Replace sub-control unit or "Replace adapter harness"
2. In case of (N.G.), check adapter harness referring to "Adapter harness check"
3 If theft warning does not operate normally even after replacing sub-control unit, replace main control unit

Preparation for check

Disconnect adapter harness at main control unit



SEL532F

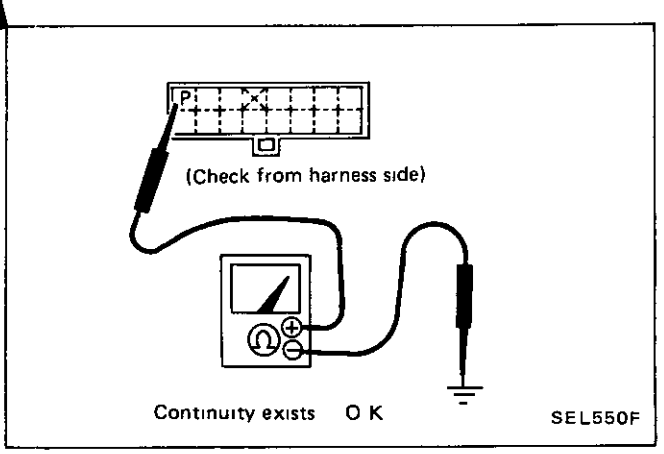
Control Unit Check (Cont'd)

Check ⓐ . Ground circuit check

Check for continuity between terminals sub-control unit ⓟ and body

N G → Faulty ground circuit

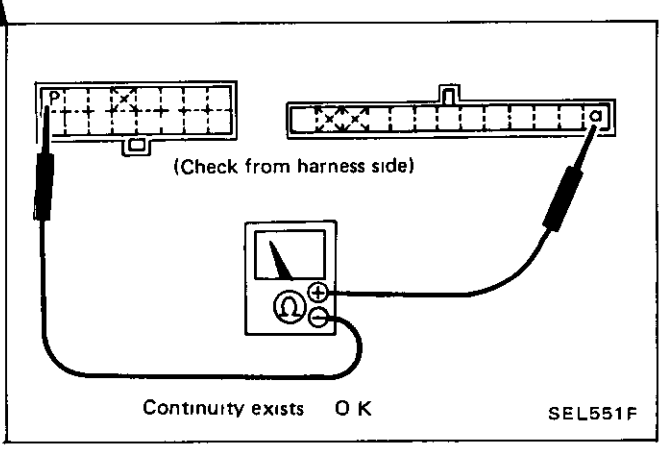
O K



Check for continuity terminals ⓐ and sub-control unit ⓟ

N G → (N G) Replace sub-control unit or adapter harness (Refer to "Adapter harness check")

O K → (O K) Replace main control unit

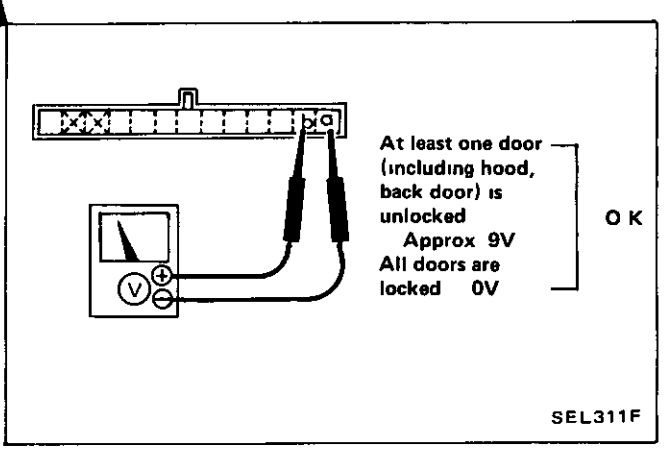


Check ⓑ .. Door unlock signal check

Measure voltage across terminals ⓑ and ⓐ

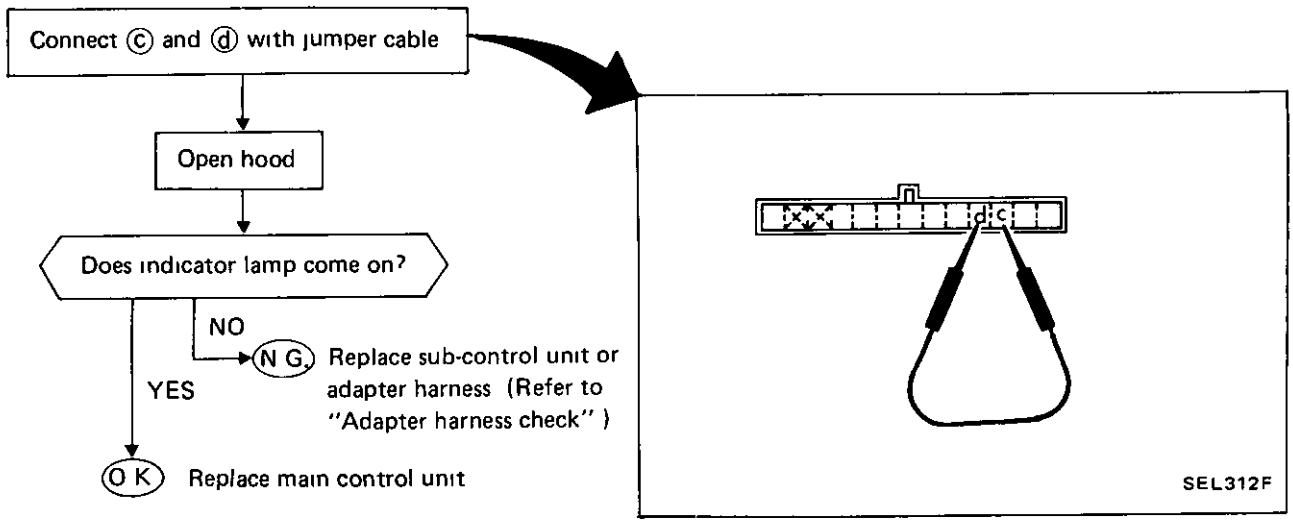
N G → (N G) Replace sub-control unit or adapter harness (Refer to "Adapter harness check")

O K → (O K) Replace main control unit

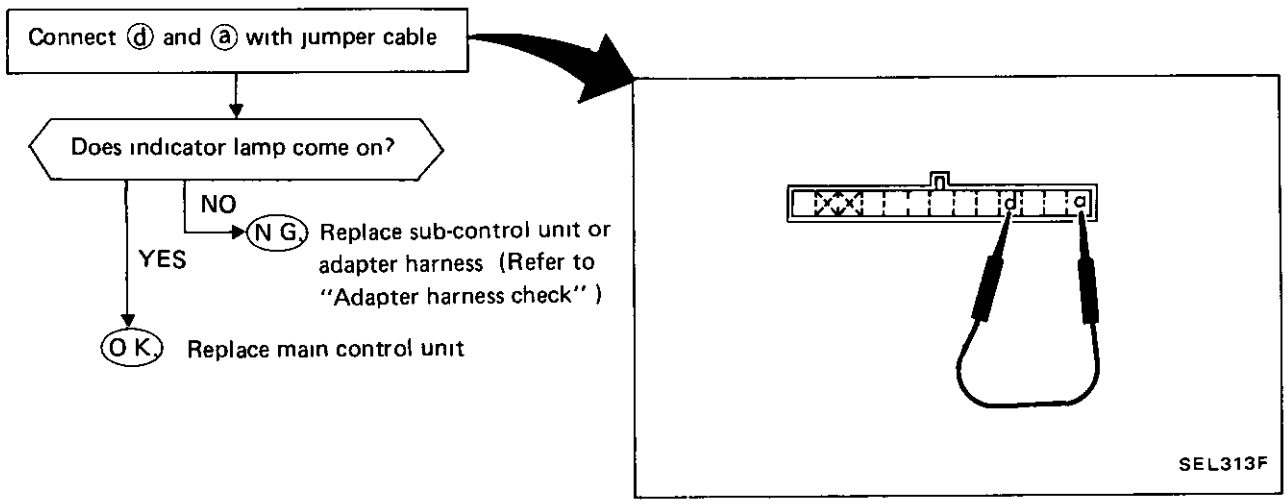


Control Unit Check (Cont'd)

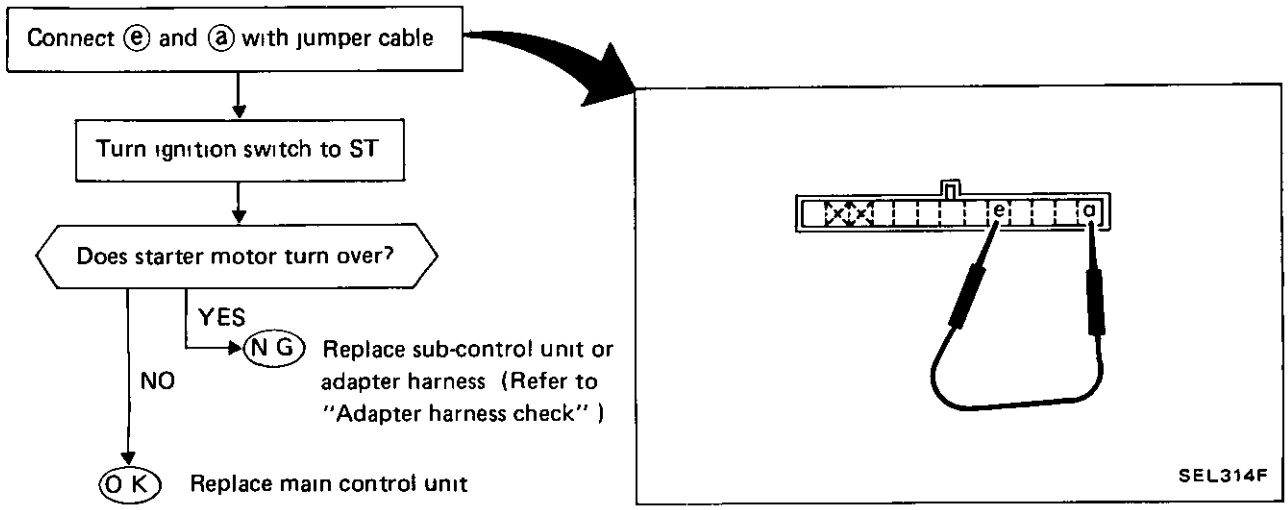
Check ⓒ . Hood signal check



Check ⓓ Indicator lamp circuit check

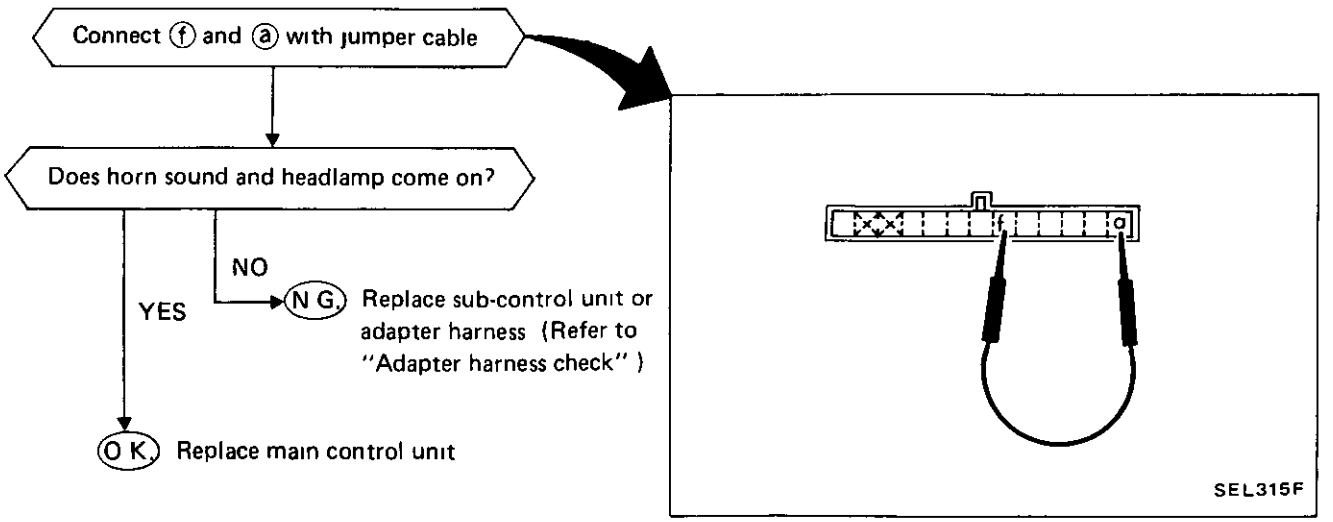


Check ⓔ ... Starter kill singal check

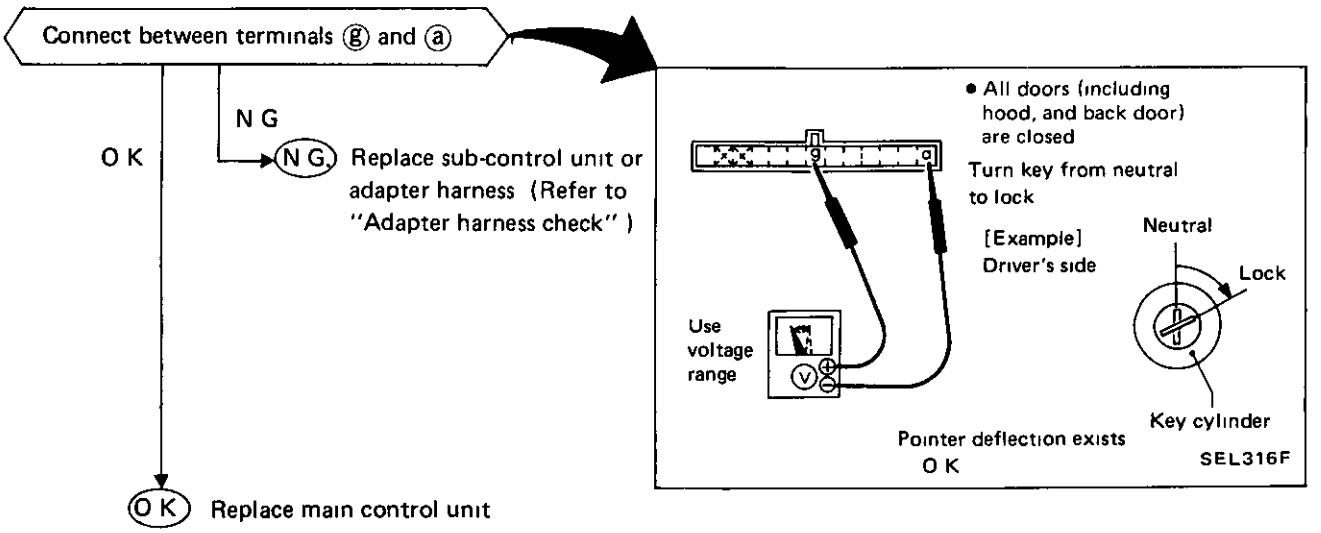


Control Unit Check (Cont'd)

Check ⓕ ... Alarm check



Check ⓖ .. Arm signal check



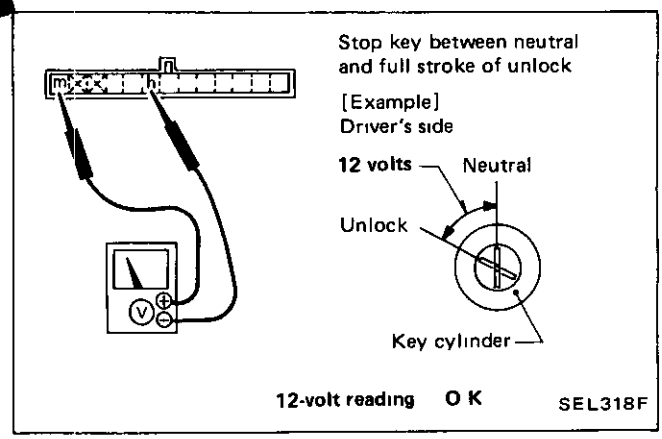
Control Unit Check (Cont'd)

Check ⓗ . Unlock signal check

Measure voltage across terminals ⓗ and ⓜ

O K → Replace main control unit

N G → (N G) Replace sub-control unit or adapter harness (Refer to "Adapter harness check")

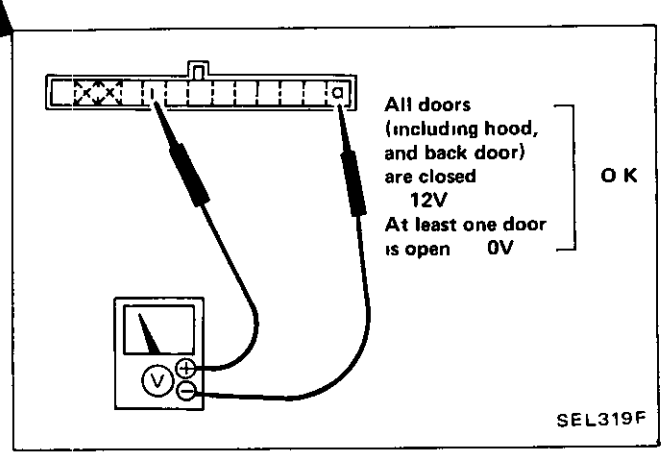


Check ⓘ Door switch signal check

Measure voltage across terminals ⓘ and ⓐ

O K → (O K) Replace main control unit

N G → (N G) Replace sub-control unit or adapter harness (Refer to "Adapter harness check")

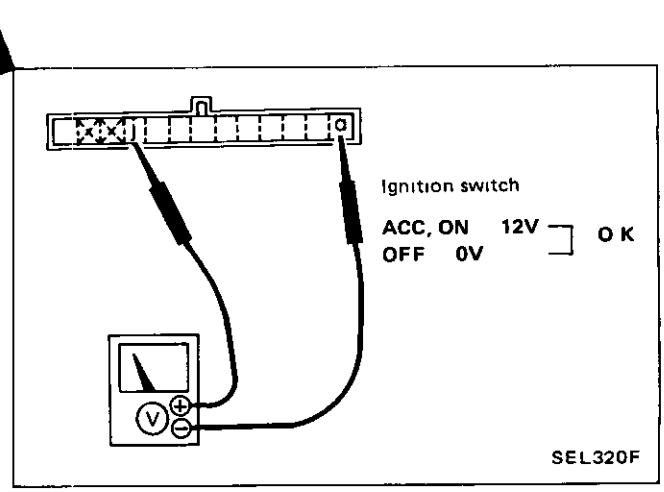


Check ⓙ ... System cancel signal check

Measure voltage across terminals ⓙ and ⓐ

O K → (O K) Replace main control unit

N G → (N G) Replace sub-control unit or adapter harness (Refer to "Adapter harness check")



Control Unit Check (Cont'd)

Check ⓜ . . System source check

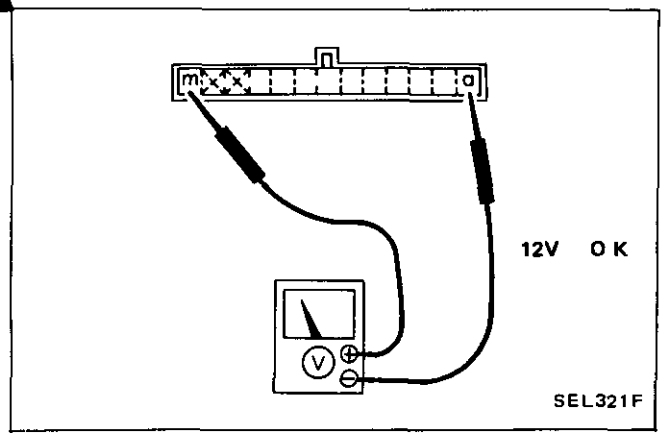
Measure voltage across terminals ⓜ and ⓐ

O K

N G

N G. Replace sub-control unit or adapter harness (Refer to "Adapter harness check")

O K Replace main control unit



Adapter Harness Check

- This inspection is available only when the cause of trouble in "Control Unit Check" is due to a "Replace sub-control unit or adapter harness"

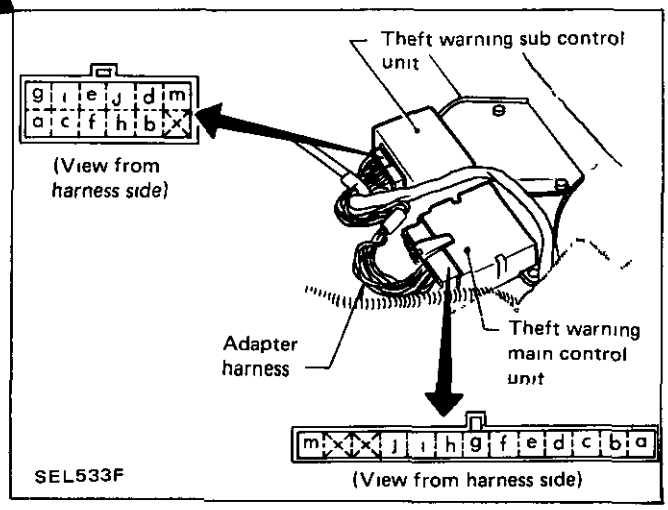
Check for continuity between same letter of sub-control unit and main control unit

O K

N G

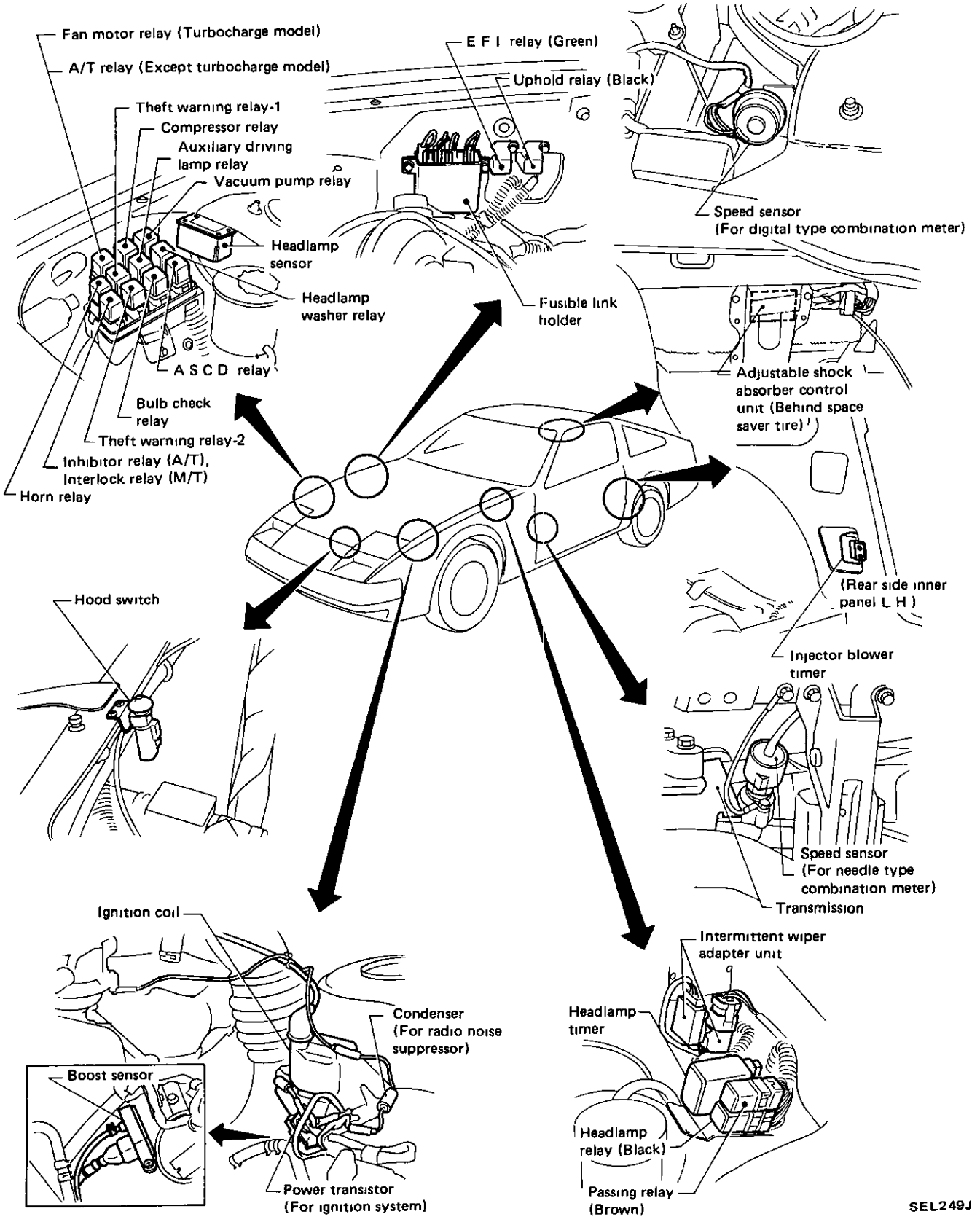
Replace adapter harness

Replace sub-control unit.

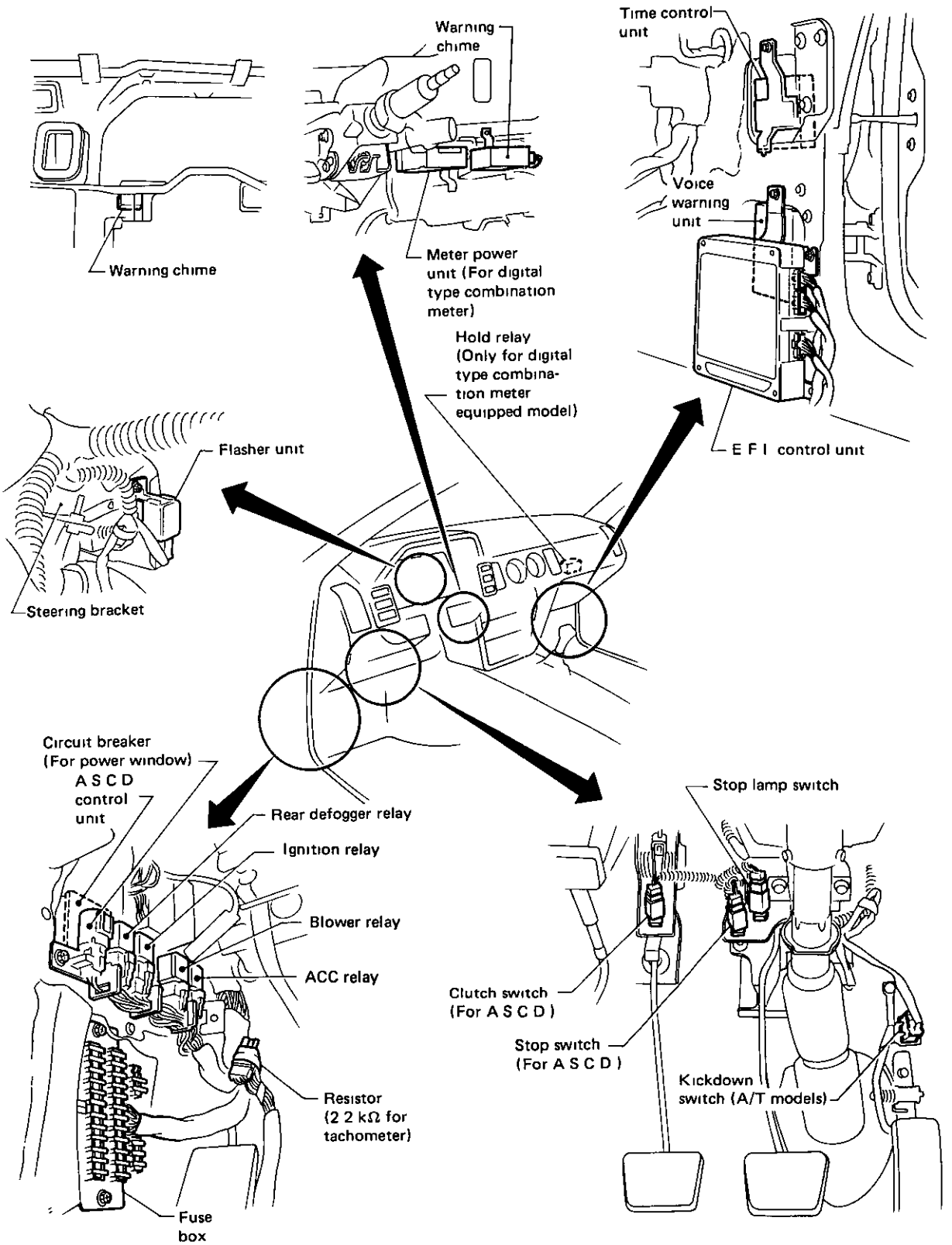


- If theft warning does not operate normally even after replacing adapter harness, replace sub-control unit.
- If theft warning does not operate normally even after replacing sub-control unit, replace adapter harness

LOCATION OF ELECTRICAL UNITS



LOCATION OF ELECTRICAL UNITS

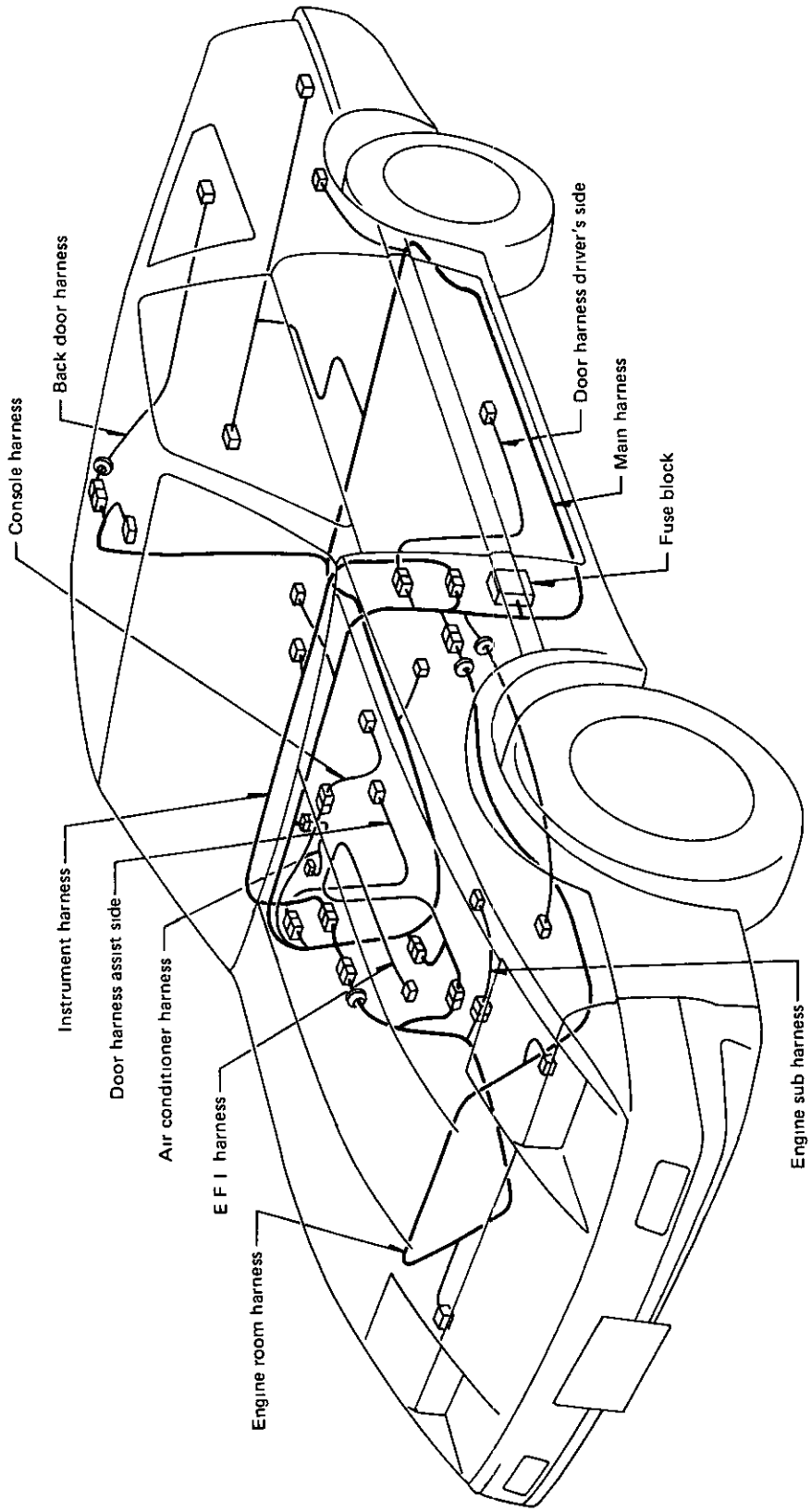


SEL753D

Note

HARNESS LAYOUT

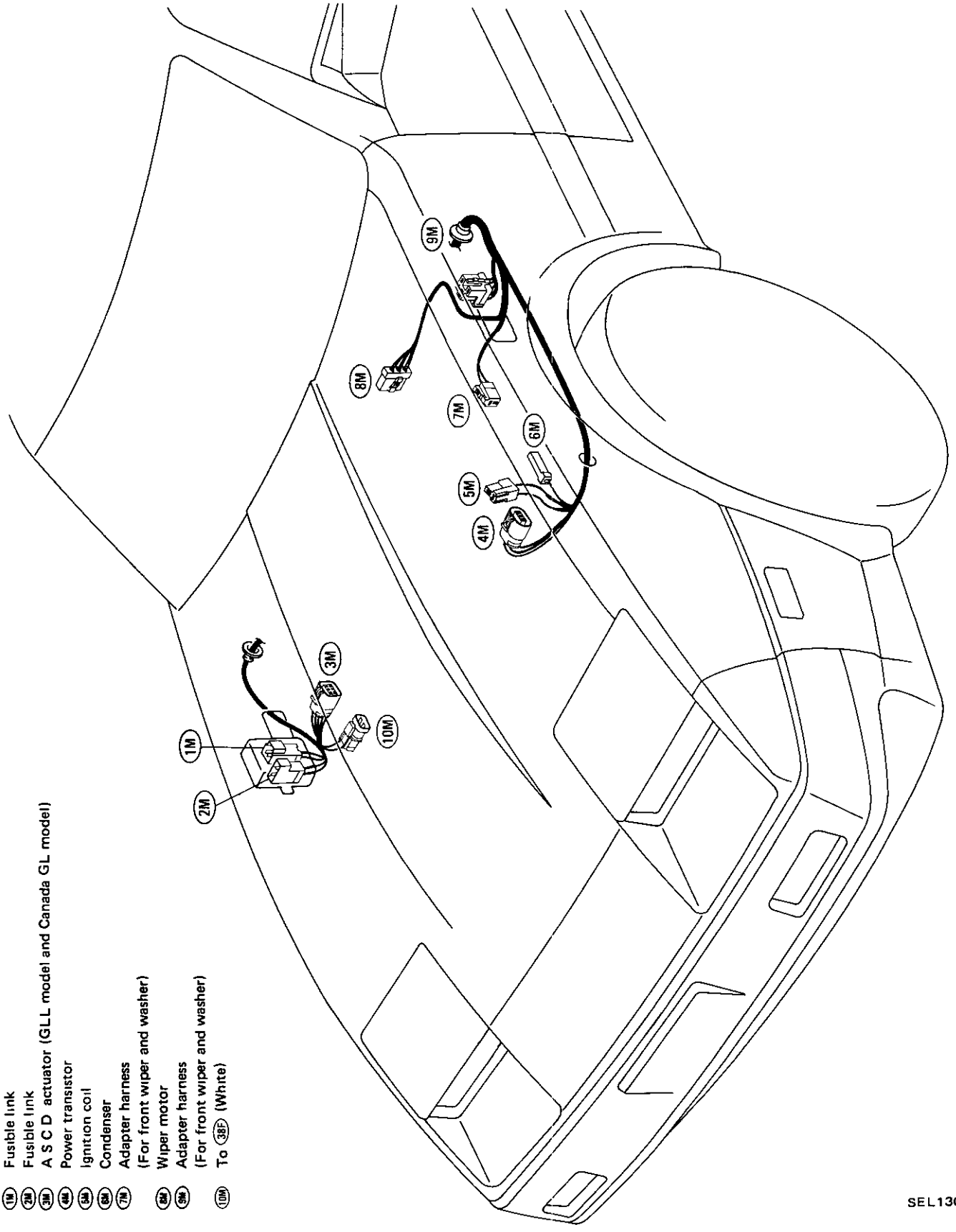
Outline



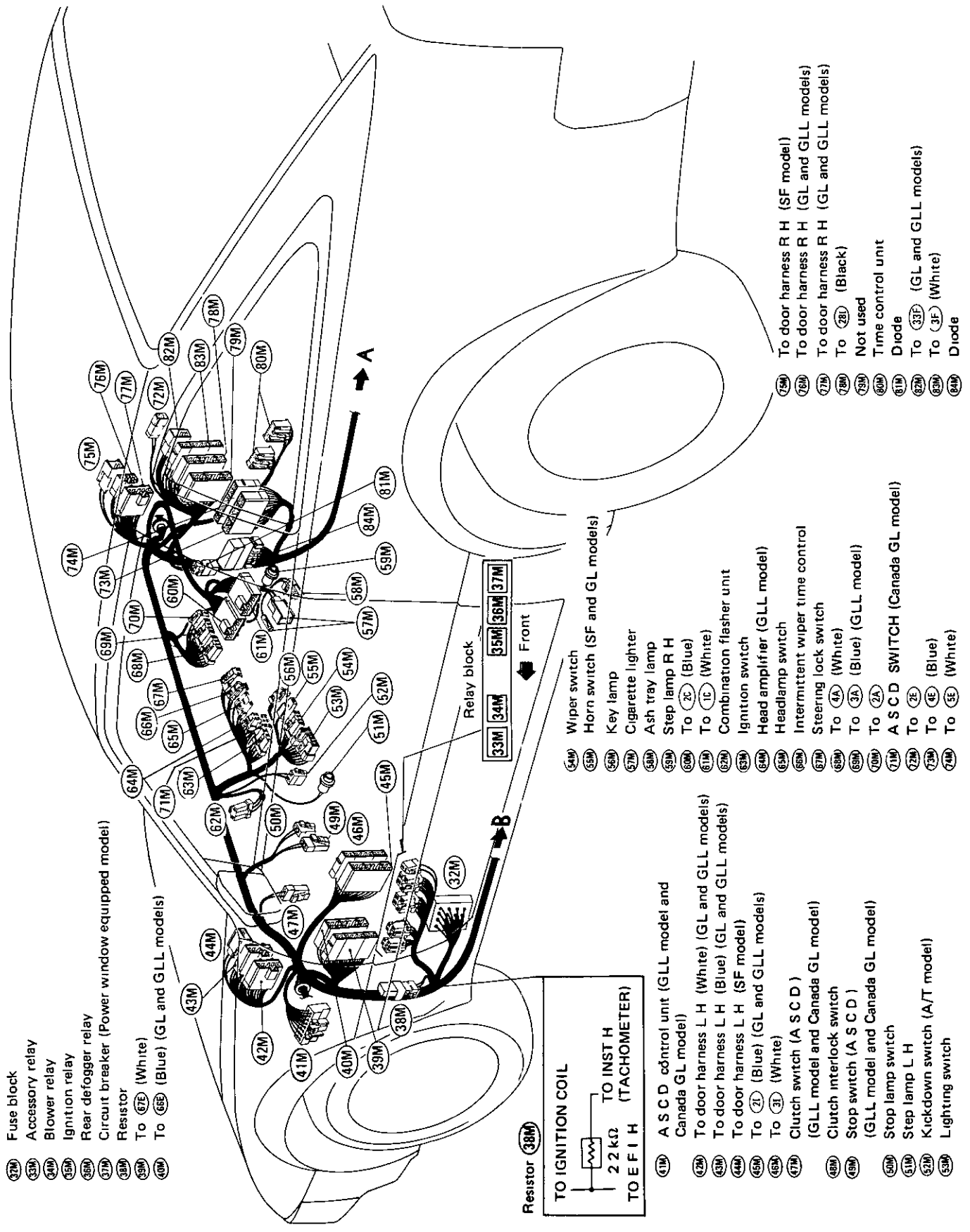
SEL496F

HARNESS LAYOUT

Main Harness



Main Harness (Cont'd)



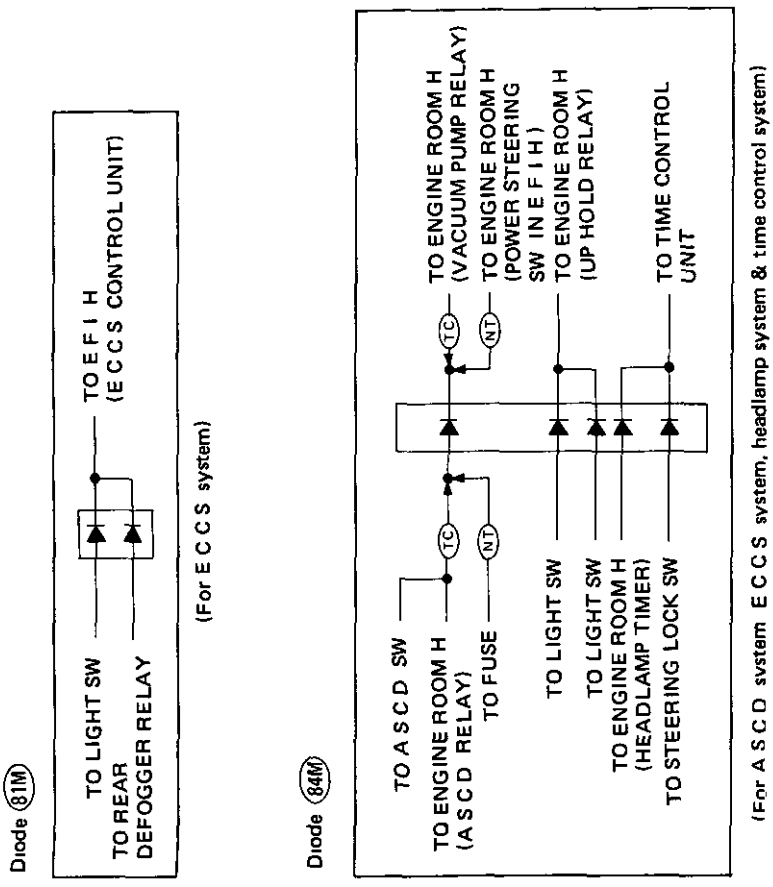
(32M) Fuse block
(33M) Accessory relay
(34M) Blower relay
(35M) Ignition relay
(36M) Rear defogger relay
(37M) Circuit breaker (Power window equipped model)
(38M) Resistor
(39M) To (67E) (White)
(40M) To (68E) (Blue) (GL and GLL models)

(41M) A S C D control unit (GLL model and Canada GL model)
(42M) To door harness L H (White) (GL and GLL models)
(43M) To door harness L H (Blue) (GL and GLL models)
(44M) To door harness L H (SF model)
(45M) To (2I) (Blue) (GL and GLL models)
(46M) To (3I) (White)
(47M) Clutch switch (A S C D) (GLL model and Canada GL model)
(48M) Clutch interlock switch
(49M) Stop switch (A S C D) (GLL model and Canada GL model)
(50M) Stop lamp switch
(51M) Step lamp L H
(52M) Kickdown switch (A/T model)
(53M) Lighting switch

(54M) Wiper switch
(55M) Horn switch (SF and GL models)
(56M) Key lamp
(57M) Cigarette lighter
(58M) Ash tray lamp
(59M) Step lamp R H
(60M) To (2C) (Blue)
(61M) To (1C) (White)
(62M) Combination flasher unit
(63M) Ignition switch
(64M) Head amplifier (GLL model)
(65M) Headlamp switch
(66M) Intermittent wiper time control
(67M) Steering lock switch
(68M) To (4A) (White)
(69M) To (3A) (Blue) (GLL model)
(70M) To (2A)
(71M) A S C D SWITCH (Canada GL model)
(72M) To (2E)
(73M) To (4E) (Blue)
(74M) To (5E) (White)

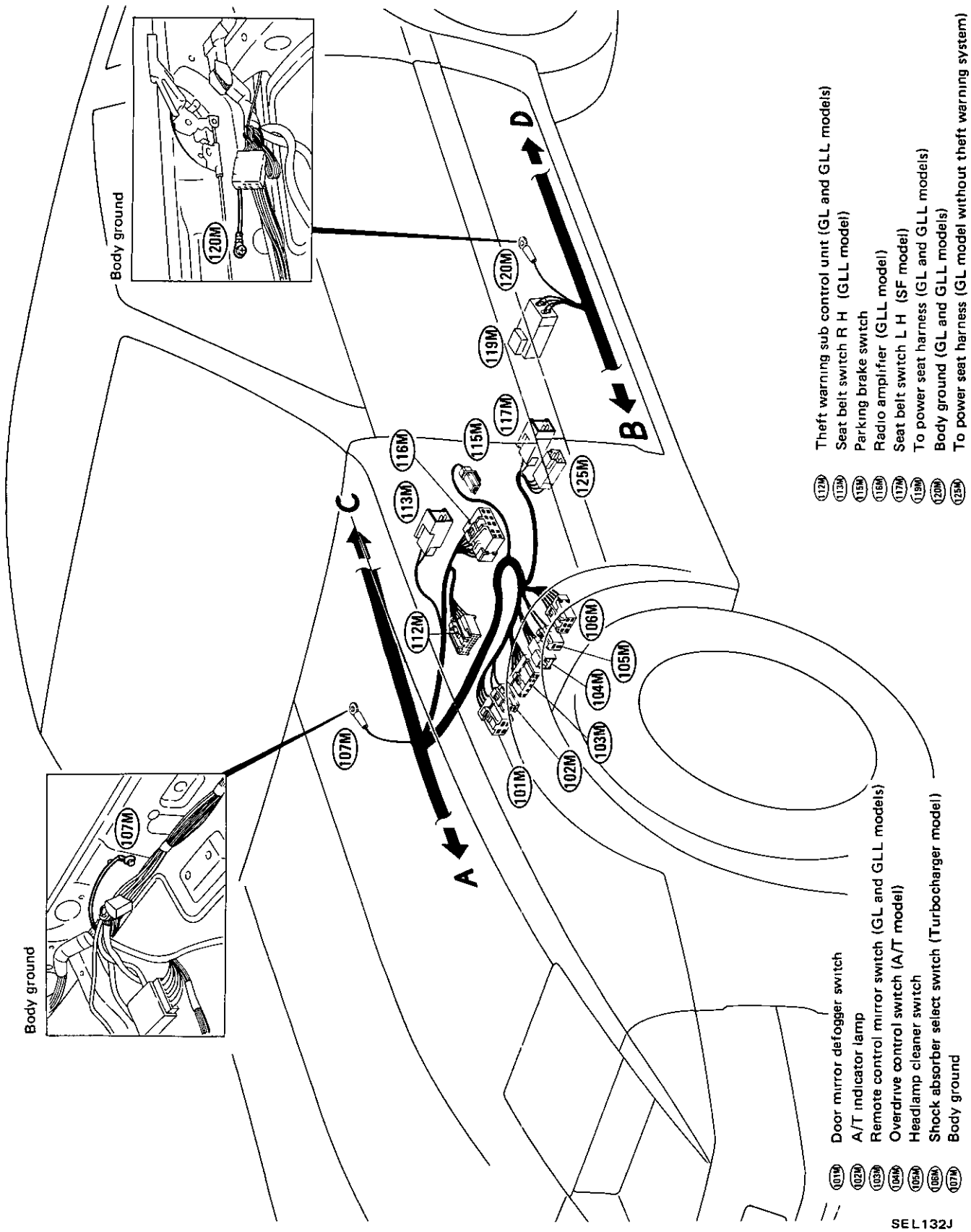
(75M) To door harness R H (SF model)
(76M) To door harness R H (GL and GLL models)
(77M) To door harness R H (GL and GLL models)
(78M) To (28) (Black)
(79M) Not used
(80M) Time control unit
(81M) Diode
(82M) To (33F) (GL and GLL models)
(83M) To (3F) (White)
(84M) Diode

Main Harness (Cont'd)



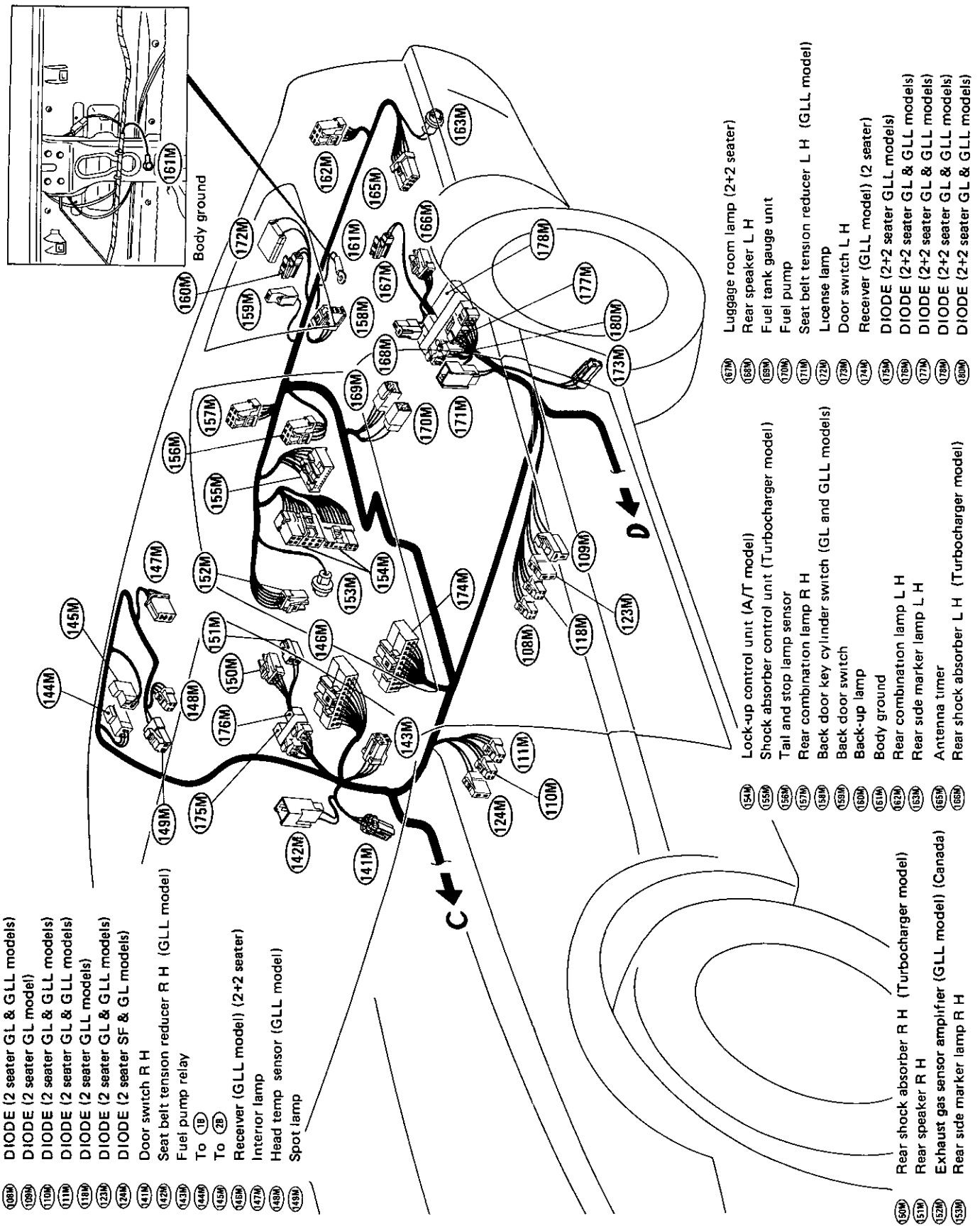
SEL131J

Main Harness (Cont'd)



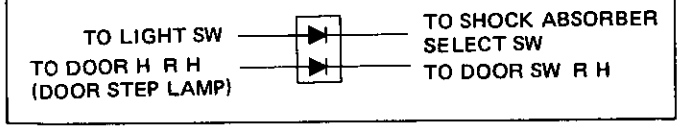
Note:

Main Harness (Cont'd)



Diode (108M)

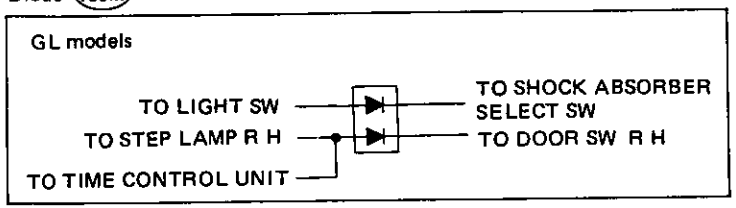
GLL models (Turbo)



(For interior lamp system & illumination control system)

Diode (108M)

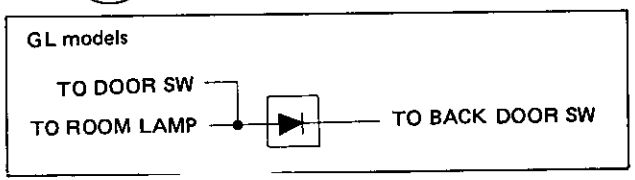
GL models



(For interior lamp system & illumination control system)

Diode (109M)

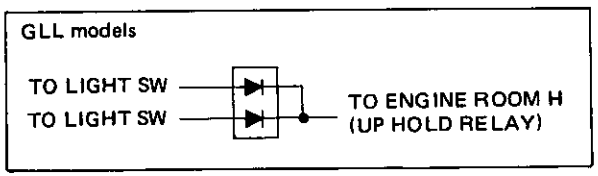
GL models



(For interior lamp system)

Diode (111M)

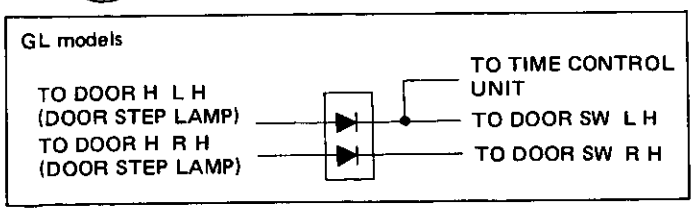
GLL models



(For headlamp system)

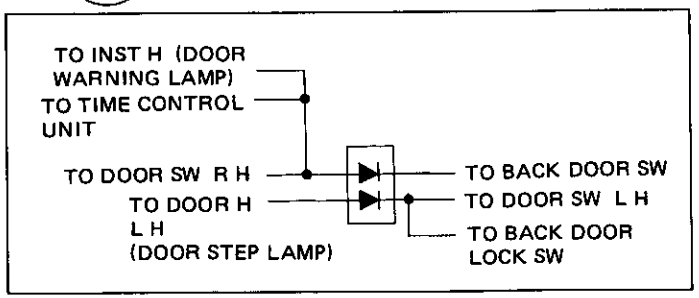
Diode (111M)

GL models



(For interior lamp system)

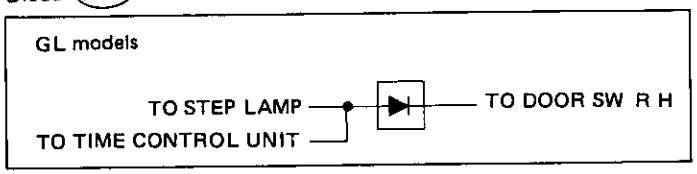
Diode (118M)



(For interior lamp system & time control system)

Diode (123M)

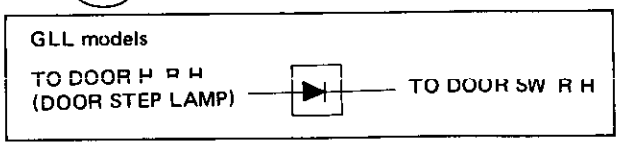
GL models



(For interior lamp system & time control system)

Diode (123M)

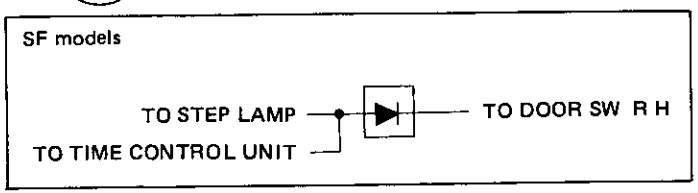
GLL models



(For interior lamp system)

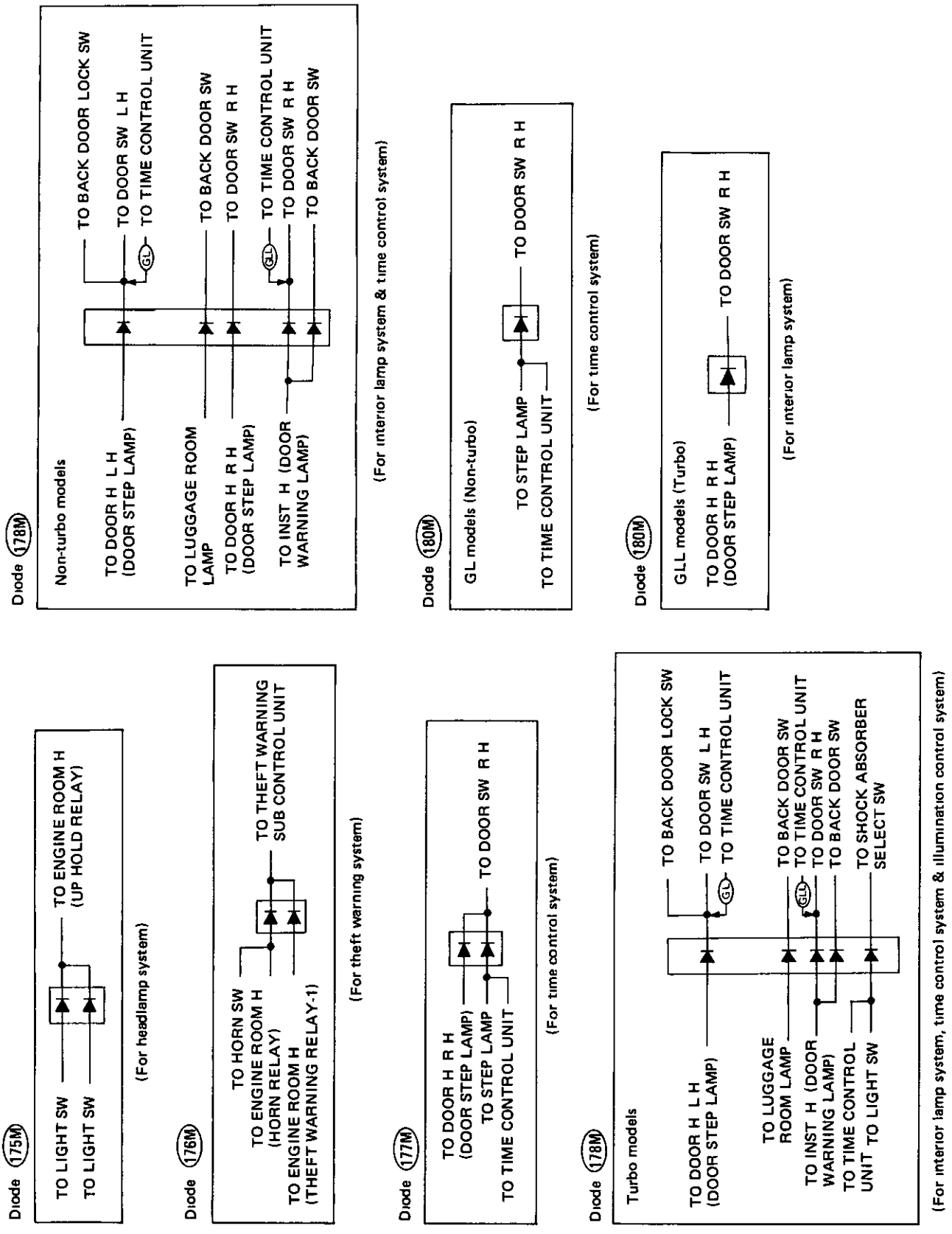
Diode (124M)

SF models



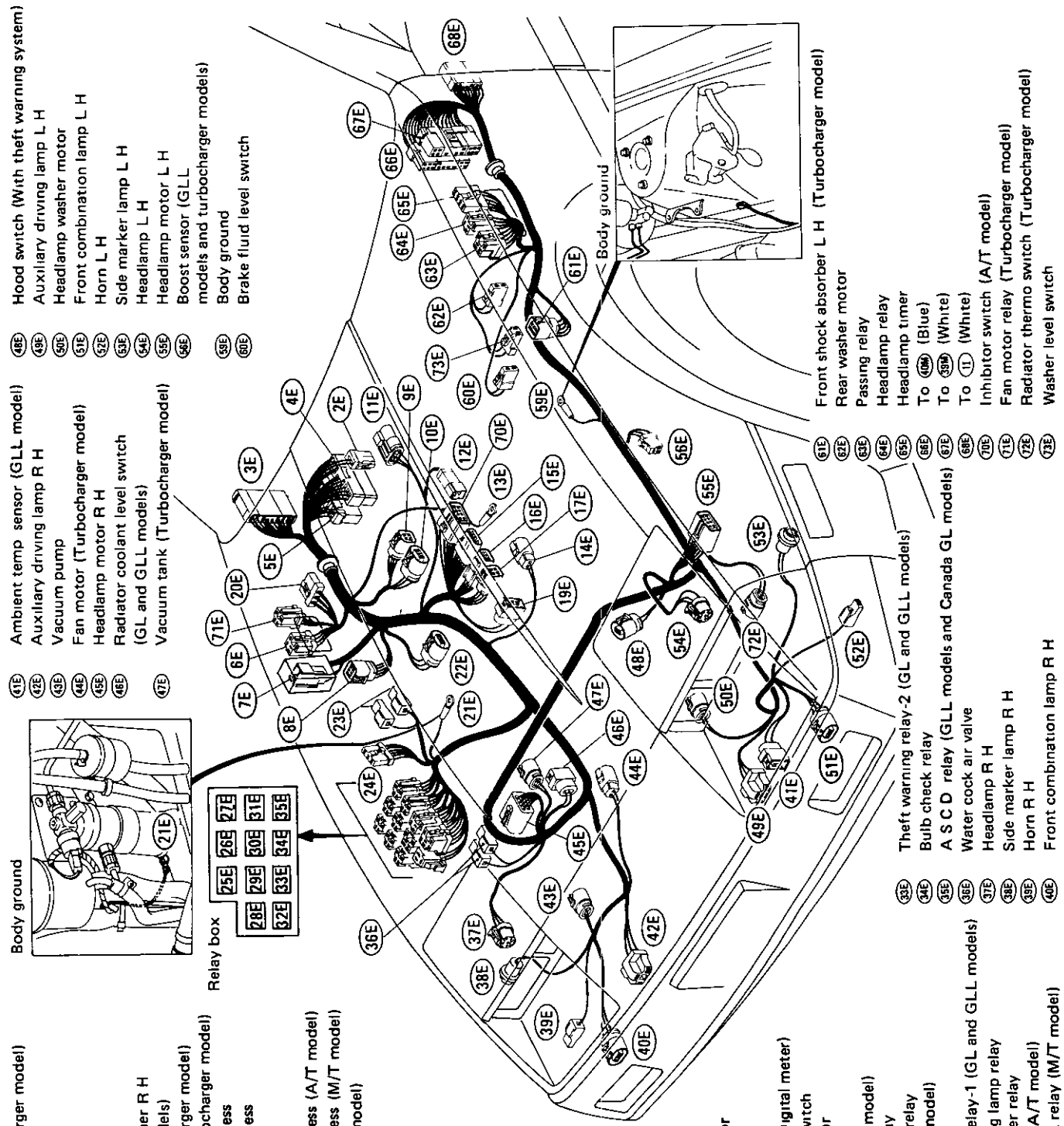
(For time control system)

Main Harness (Cont'd)



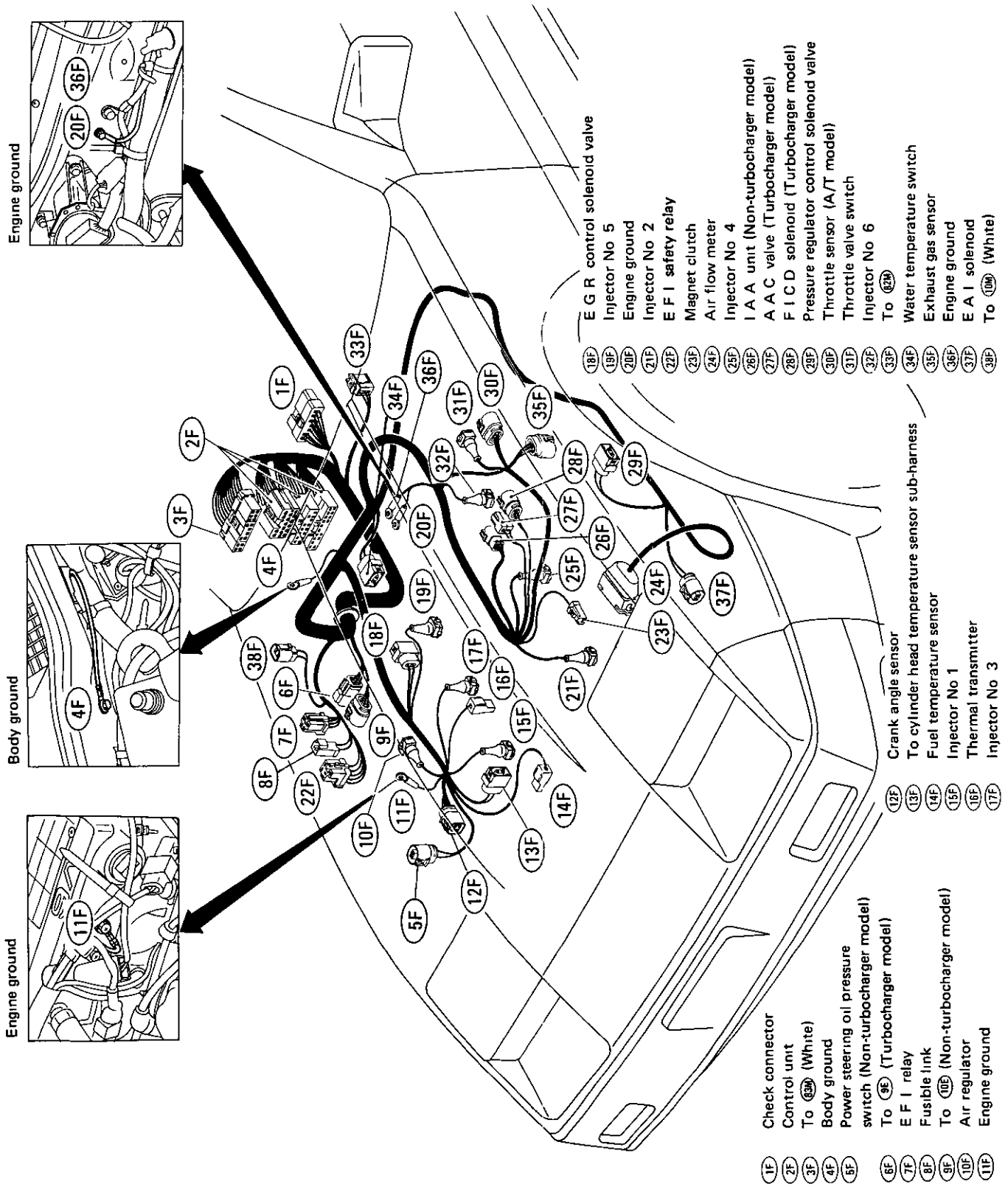
SEL133J

Engine Room Harness



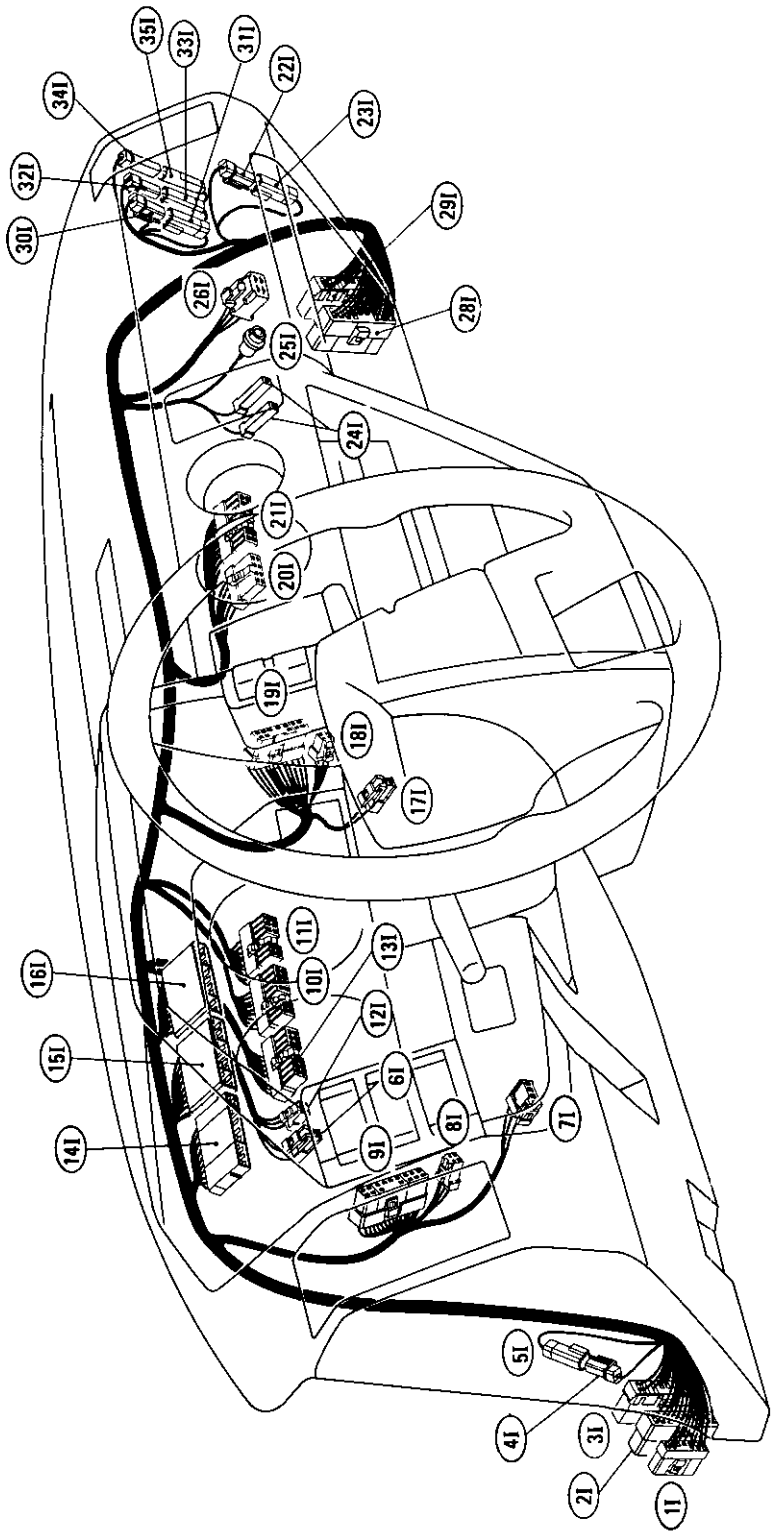
SEL134J

E.F.I. Harness



SEL135J

Instrument Harness

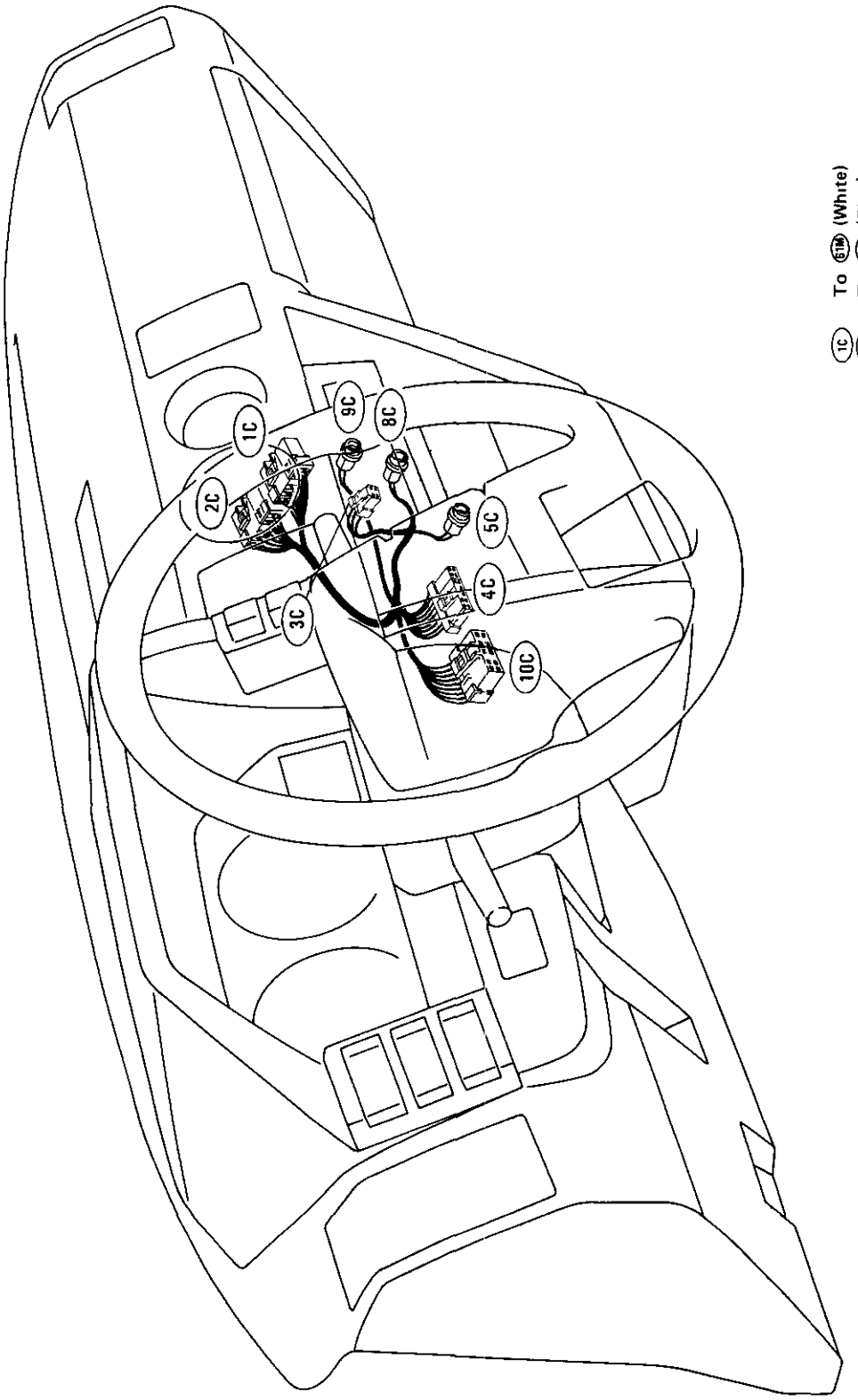


(11) To (68E) (White)
(21) To (43M) (Blue) (GL and GLL models)
(31) To (46M) (White)
(41) Joint } (For Exhaust gas sensor warning lamp)
(51) Joint }
(61) Combination meter (White)
Needle type meter (Canada model)
(71) Illumination control switch
(81) Instrument switch L H
(91) Instrument switch L H
(101) Combination meter (Black) } Needle type meter
(111) Combination meter (White)
(121) Combination meter (White) (U S A model)
(131) Combination meter (White) } Digital type meter
(141) Combination meter (White)
(151) Combination meter (Blue)
(161) Combination meter (Black)

(171) Chime
(181) Instrument switch R H
(191) Instrument switch R H
(201) Combination gauge (Digital type meter model)
(211) Combination gauge (Needle type meter model)
(221) Joint (Needle type meter model)
(231) Joint (Needle type meter model)
(241) Glove box lamp switch
(251) Glove box lamp
(261) Hold relay (For U S A)
(281) To (78M) (Black)
(291) To (3E) (White)
(301) Joint (Needle type meter model)
(311) Joint (Needle type meter model)
(321) Joint (Needle type meter model)
(331) Joint (Needle type meter model)
(341) Joint (Needle type meter model)
(351) Joint (Needle type meter model)

SEL136J

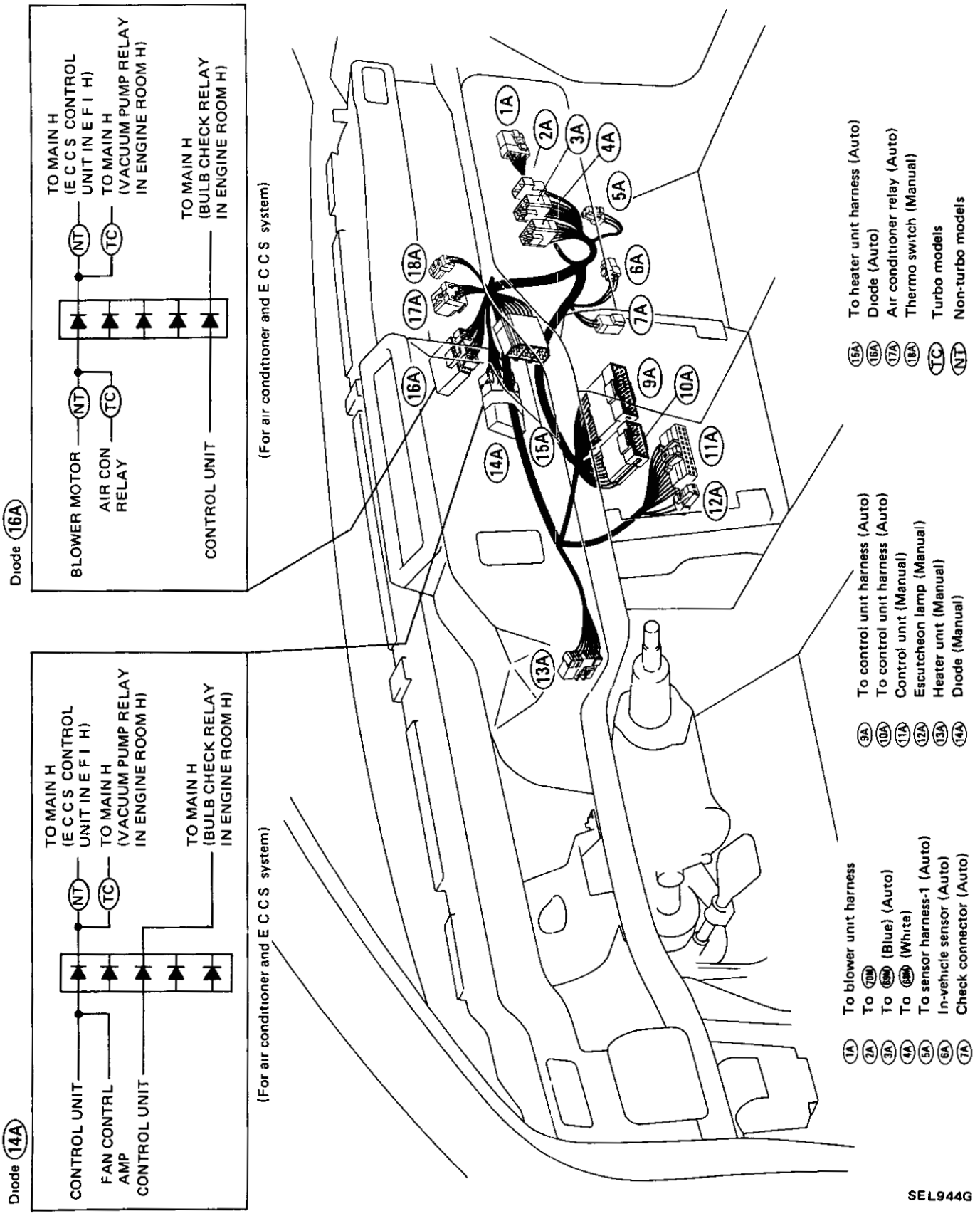
Console Harness



1C To 61M (White)
2C To 60M (Blue)
3C Clock
4C Radio (SF and GL models)
5C Illumination lamp
8C Illumination lamp
9C Illumination lamp (SF and GL models)
10C Radio (GLL model)

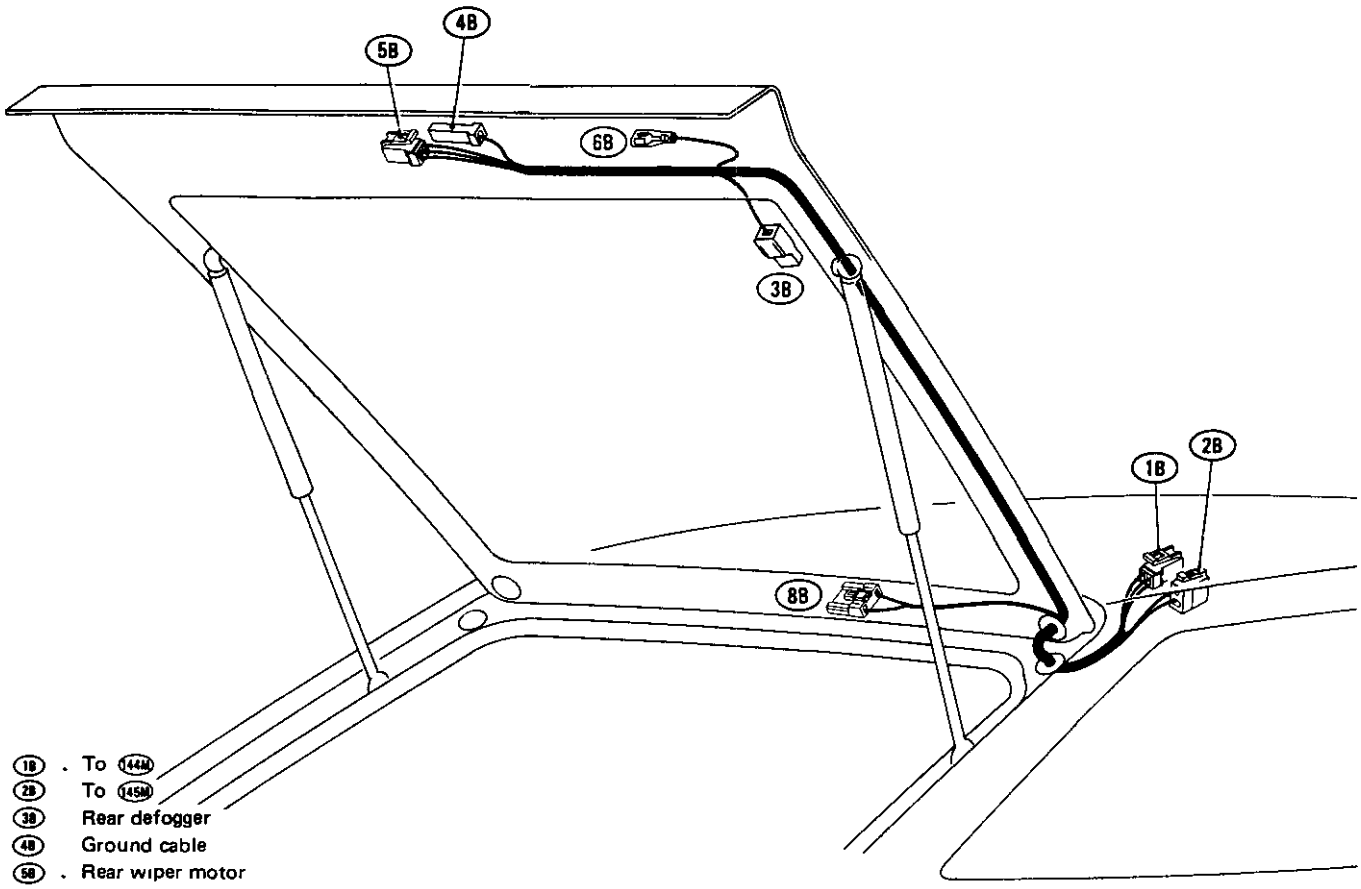
SEL137J

Air Conditioner Harness



HARNESS LAYOUT

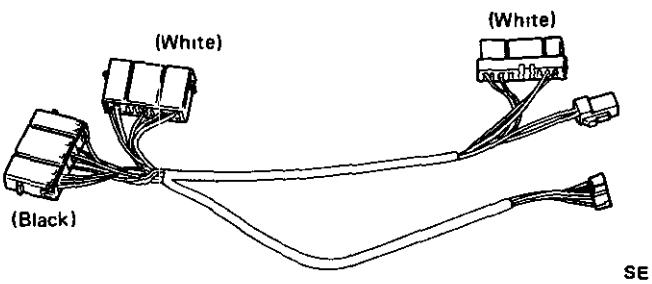
Back Door Harness



1B . To (144M)
2B To (145M)
3B Rear defogger
4B Ground cable
5B . Rear wiper motor
6B Condenser (GLL model)
8B High-mounted stop lamp

SEL138J

SPECIAL SERVICE TOOL

Tool number	Tool name
KV999U0060	Diagnostic sub-harness (For digital type combination meter)  SEL145J

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