

ELECTRICAL SYSTEM

SECTION **EL**

CONTENTS

HOW TO READ DIAGRAMS	EL- 2
STANDARDIZED RELAY	EL- 3
POWER SUPPLY ROUTING	EL- 4
BATTERY	EL- 6
STARTING SYSTEM	EL- 9
STARTING SYSTEM – Starter –	EL- 10
CHARGING SYSTEM	EL- 15
CHARGING SYSTEM – Alternator –	EL- 17
COMBINATION SWITCH	EL- 23
INSTRUMENT SWITCH	EL- 25
HEADLAMP	EL- 26
EXTERIOR LAMP,	EL- 34
INTERIOR LAMP	EL- 38
METER AND GAUGES – Digital Type Combination Meter	EL- 41
METER AND GAUGES – Digital Type Combination Gauge	EL- 57
METER AND GAUGES – Needle Type Combination Meter	EL- 65
METER AND GAUGES – Needle Type Combination Gauge	EL- 68
WARNING LAMPS AND CHIME	EL- 71
VOICE WARNING SYSTEM	EL- 76
TIME CONTROL SYSTEM	EL- 81
WIPER AND WASHER	EL- 89
HORN, CIGARETTE LIGHTER, CLOCK	EL- 92
REAR WINDOW DEFOGGER	EL- 93
AUDIO AND POWER ANTENNA	EL- 95
AUTOMATIC SPEED CONTROL DEVICE (A.S.C.D.)	EL- 97
LOCATION OF ELECTRICAL UNITS	EL-104
HARNESS LAYOUT	EL-107



HOW TO READ DIAGRAMS

POWER SUPPLY ROUTING

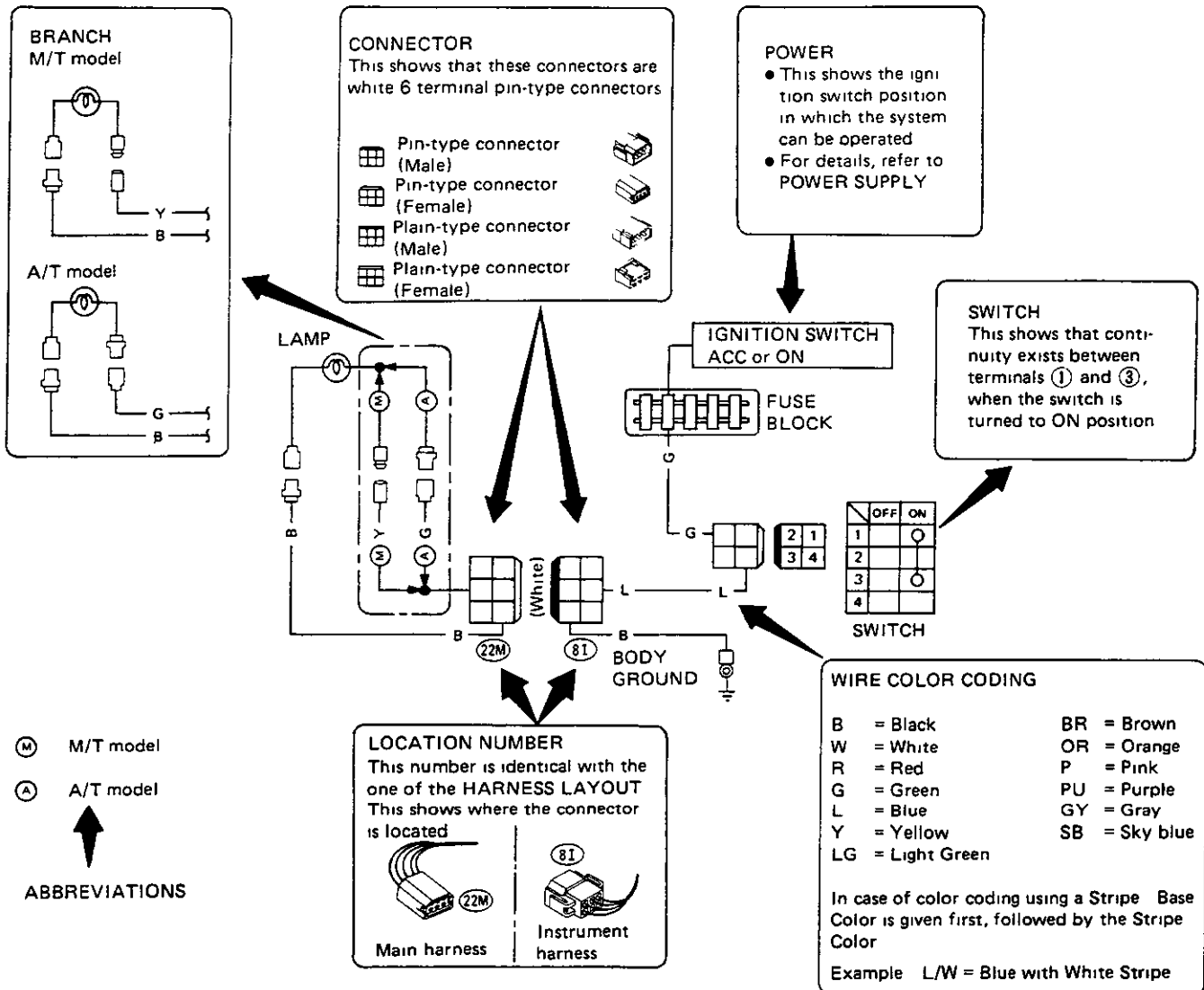
This diagram is helpful in identifying specific problems in the power supply portion of the electrical circuits. For example, let's say a vehicle has an inoperative rear window defogger. A quick check proves that meter and gauges in the vehicle are operative. The power supply diagram shows that there cannot be a problem between the battery, ignition relay, ignition switch or fuse since the power supply circuit for the rear window defogger

is common with the meter and gauges. Therefore, the cause of this specific problem must lie past the fuse, such as in the wiring, rear window defogger, or ground.

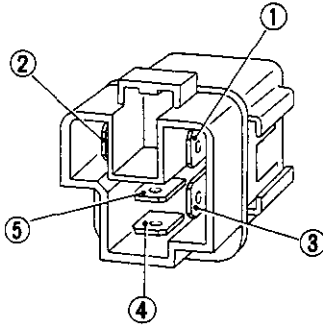
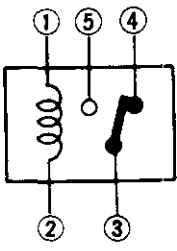
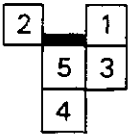
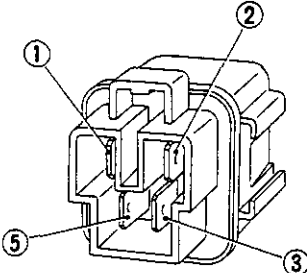
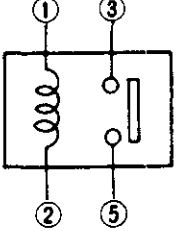
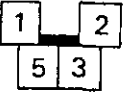
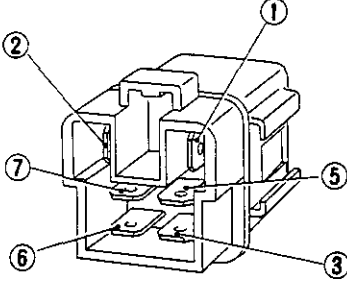
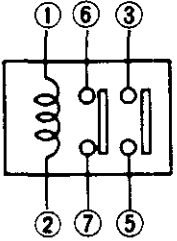
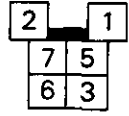
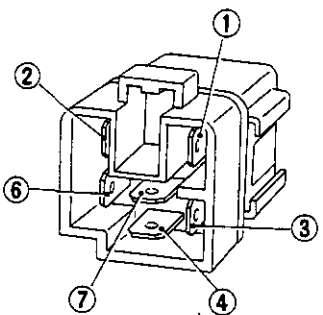
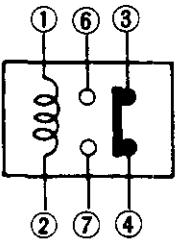
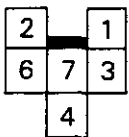
WIRING DIAGRAM

This diagram identifies types and number of connectors, electrical terminal positions in the connector, color coding of wires, and connector codes. Refer to the following example.

Example



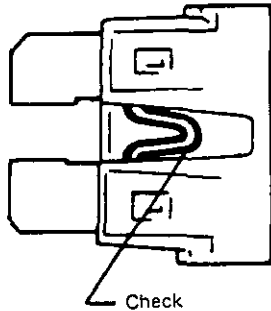
STANDARDIZED RELAY

Type	Outer view	Circuit	Symbols	Case color
1T				BLACK
1M				BLUE
2M				BROWN
1M 1B				GRAY

SEL639D

POWER SUPPLY ROUTING

Fuse

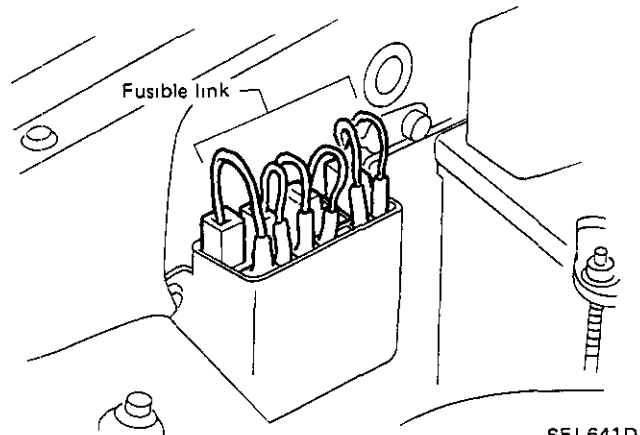


SEL276

- 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.

BATTERY

CAUTION:

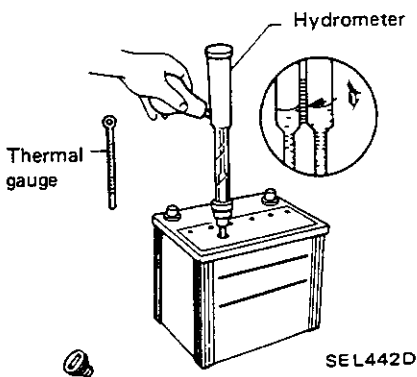
- If it becomes necessary to start the engine with a booster battery and jumper cables, use a 12-volt booster battery
- After connecting battery cables, ensure that they are tightly clamped to battery terminals for good contact
- Never add distilled water through the hole used to check specific gravity.

Check

CHECKING SPECIFIC GRAVITY

- 1 Read hydrometer and thermal gauge indications as eye level.

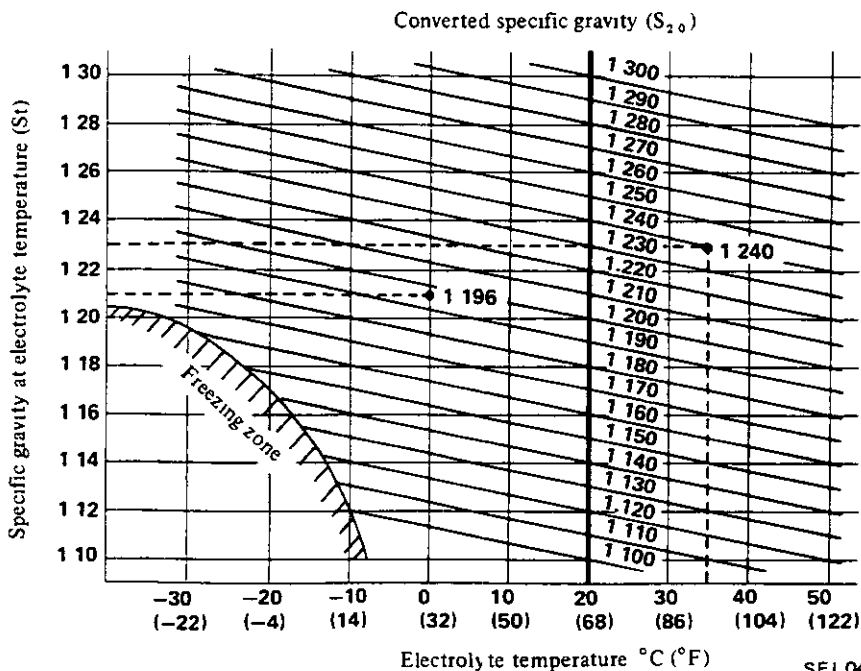
Read top level with scale.



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.



BATTERY

Check (Cont'd)

- 3 Determine charging condition of battery
- If specific gravity converted at 20°C (68°F) is smaller than values shown below, battery should be recharged

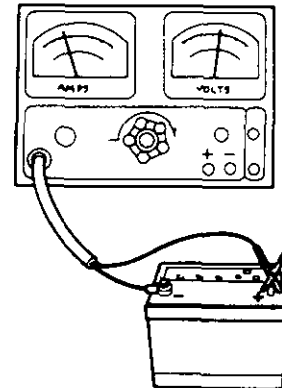
Full charging specific gravity at 20°C (68°F)	Converted specific gravity at 20°C (68°F)
1.26	1.20
1.28	1.22

BELOW

Recharging necessary

Test

BATTERY CAPACITY TEST



SEL697B

- 1 With battery connected to tester as shown, turn load knob until a draw of 3 times the battery rating is shown (Example Battery rating 60AH Turn load to 180A draw)
- 2 Hold this draw for 15 seconds, then look at voltage If voltage remains at 9.6 volts or above, THE BATTERY IS GOOD If voltage drops below 9.6 volts, then proceed to next test

THREE-MINUTE CHARGE TEST

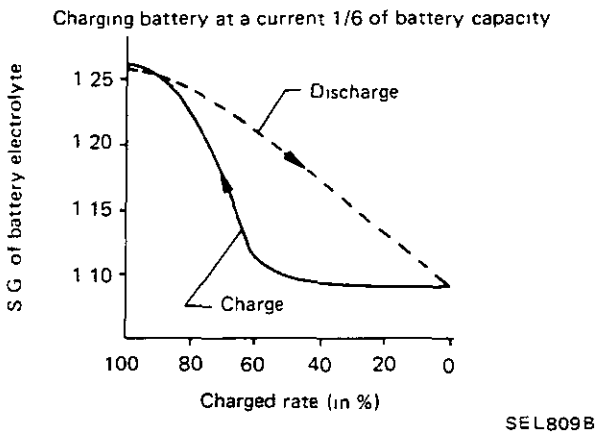
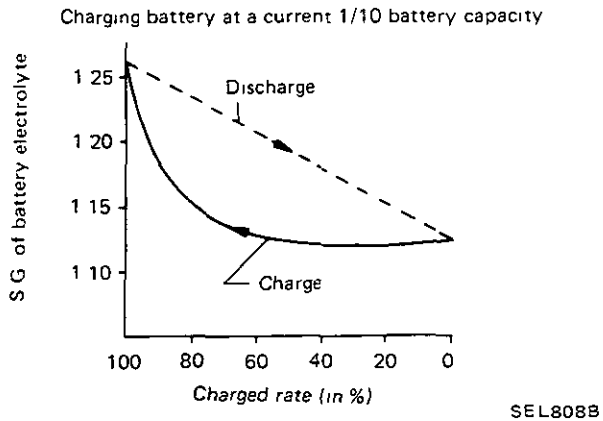
- 1 Connect battery charger
- 2 Turn charger to a fast rate not over 40A
- 3 After three minutes, check voltmeter reading If it is over 16.5 volts battery should be replaced

BATTERY

Charging

CHARGING RATE AND SPECIFIC GRAVITY OF BATTERY ELECTROLYTE

The relationship between the charged condition of the battery and the specific gravity of battery electrolyte differs, as shown in figures below, when the battery is discharging and when it is being charged



As can be seen from these figures, the battery has the following features

- The specific gravity of battery electrolyte increases very slowly while the battery is being charged
- The smaller the charging current, the slower the specific gravity of the electrolyte increases

WARNING:

- Keep battery away from open flame while it is being charged
- When connecting charger, connect leads first, then turn on charger. Do not turn on charger first, as this may cause a spark.
- Do not allow electrolyte temperature to go over 45°C (113°F).

CHARGING CURRENT AND TIME REQUIRED FOR CHARGING

Charge the battery at 1/10 the current of battery capacity

Charging current	Time required
1/10 of battery capacity	Approx 8 - 10 hours
1/6 of battery capacity (But not more than 10-ampere)	Approx 4 - 5 hours

CAUTION:

Do not use more than 10-ampere current flow to charge the battery quickly, as this will shorten the battery's service life.

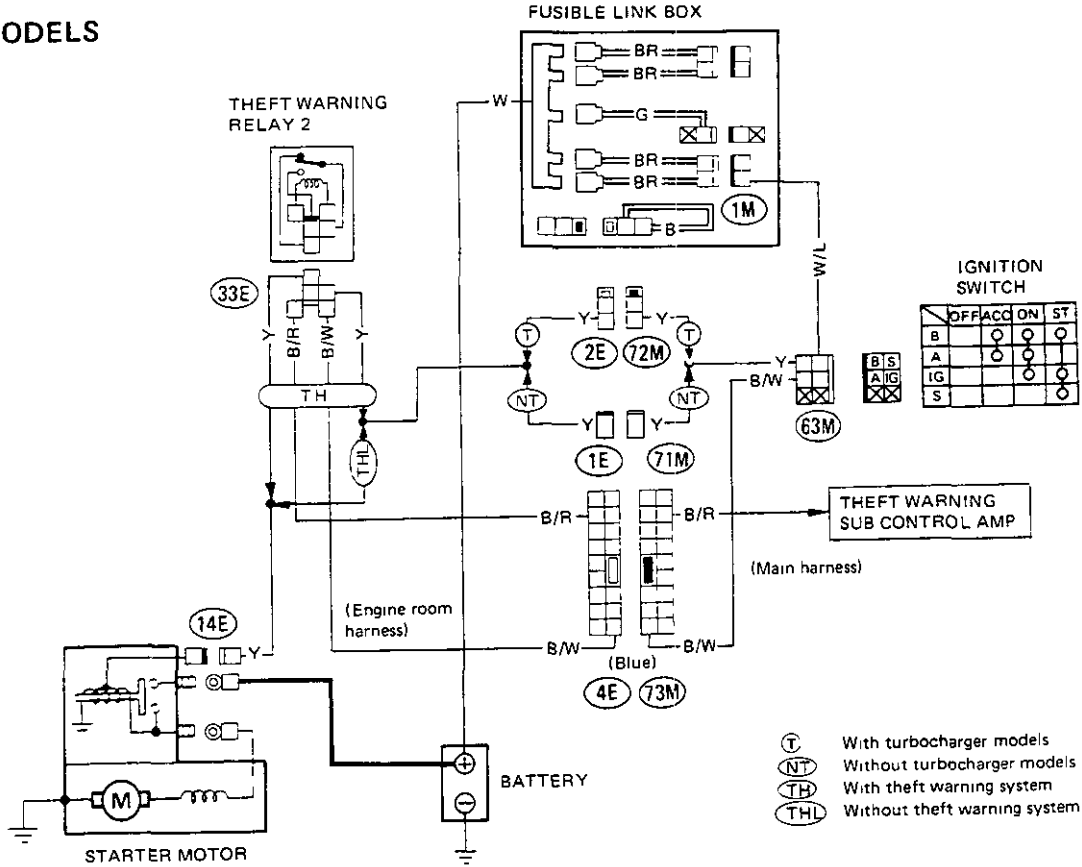
Service Data and Specifications

Applied model	U S A	Canada
Type	55D23R-MF	N702-MF
	Maintenance-free	
Capacity	V-AH 12-60	12-70
Full charging specific gravity at 20°C (68°F)	1.26	1.28

STARTING SYSTEM

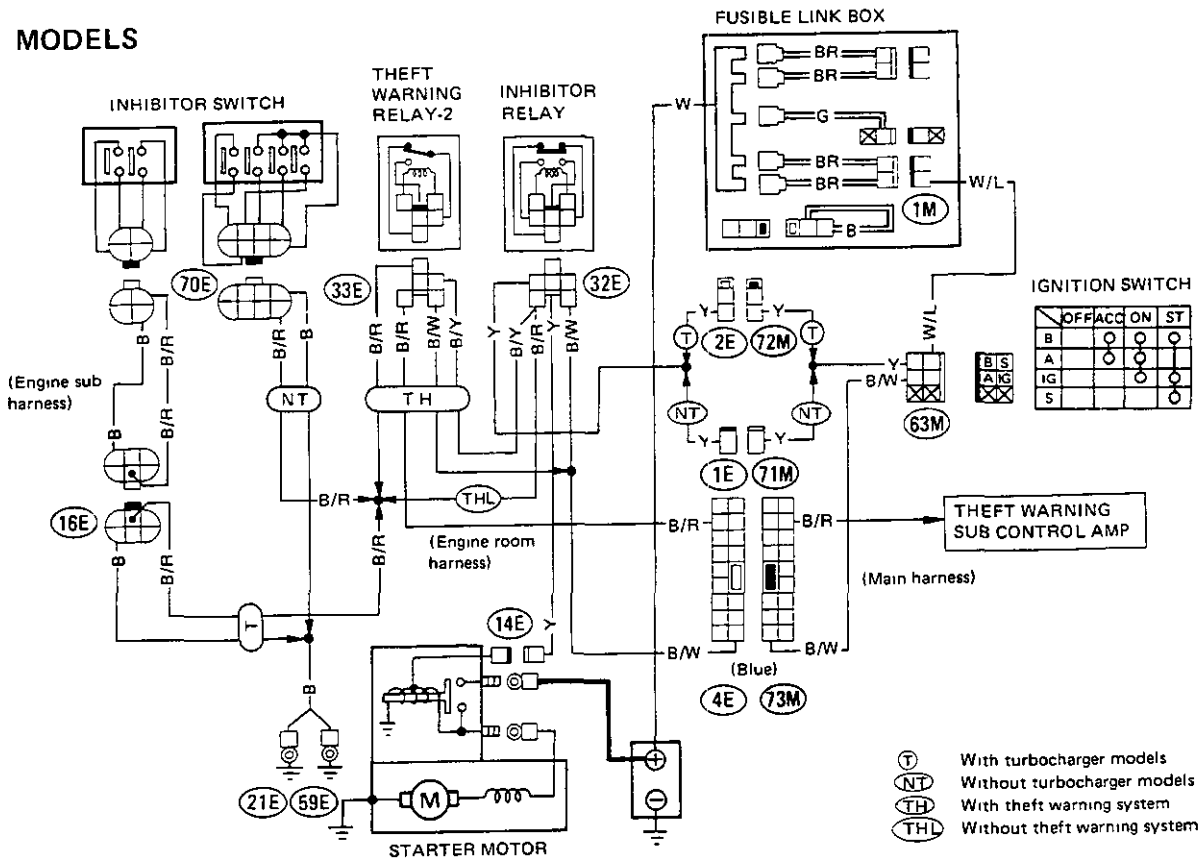
Wiring Diagram

M/T MODELS



SEL621D

A/T MODELS



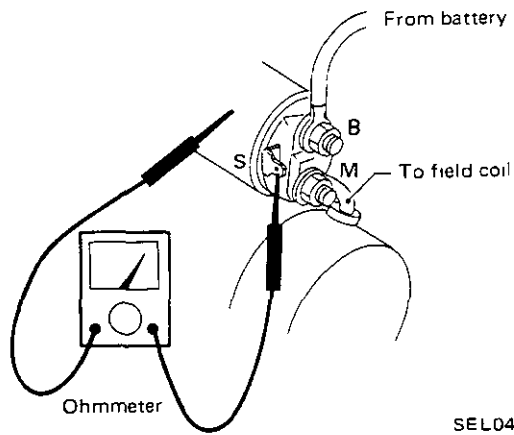
SEL622D

STARTING SYSTEM —Starter—

Magnetic Switch Check

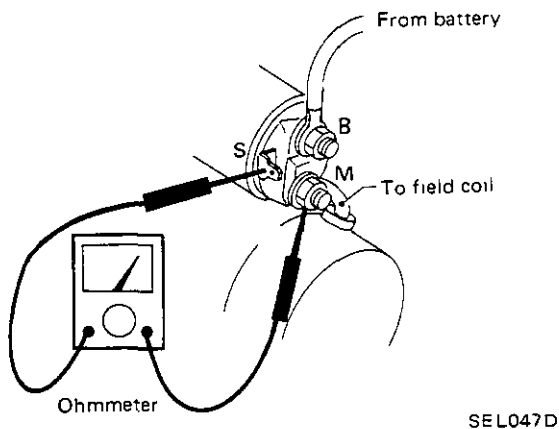
- 1 Continuity test (between "S" terminal and switch body)

- No continuity Replace



- 2 Continuity test (between "S" terminal and "M" terminal)

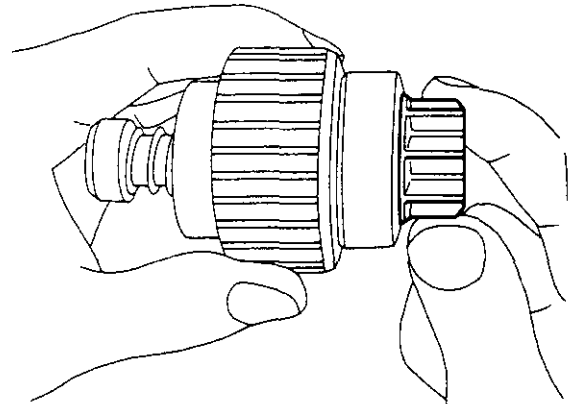
- No continuity Replace



Pinion/Clutch Check

- 1 Check clutch

Check pinion to see that it locks properly when turned in "drive" direction and rotates smoothly when turned in reverse



- Pinion does not lock in either direction or unusual resistance is evident Replace
- 2 Inspect pinion teeth.
 - Replace pinion if teeth are worn or damaged (Also check condition of ring gear teeth)
 - 3 Inspect clutch gear teeth
 - Replace clutch gear if teeth are worn or damaged (Also check condition of armature shaft gear teeth)

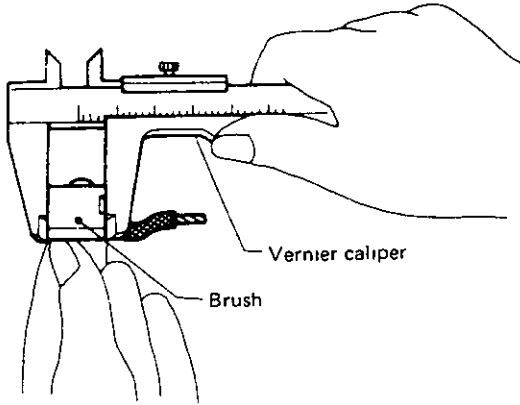
STARTING SYSTEM —Starter—

Brush Check

BRUSH

Check wear of brush

Wear limit length: 11 mm (0.43 in)

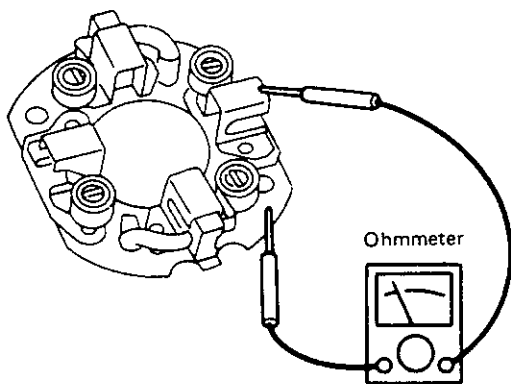


SEL626B

- Excessive wear Replace

BRUSH HOLDER

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

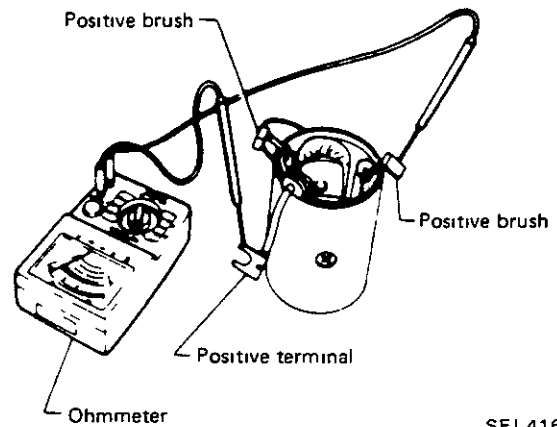


SEL568B

- 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

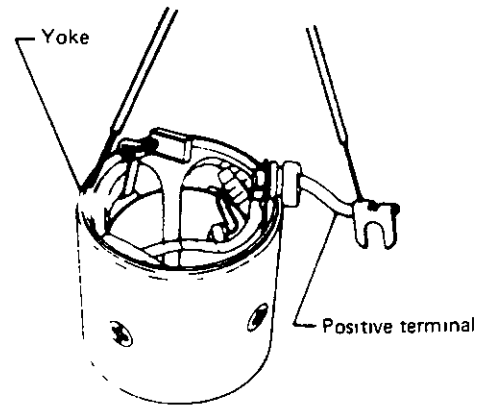
Field Coil Check

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



SEL416A

- No continuity Replace field coil
- 2 Insulation test (between field coil positive terminal and yoke)



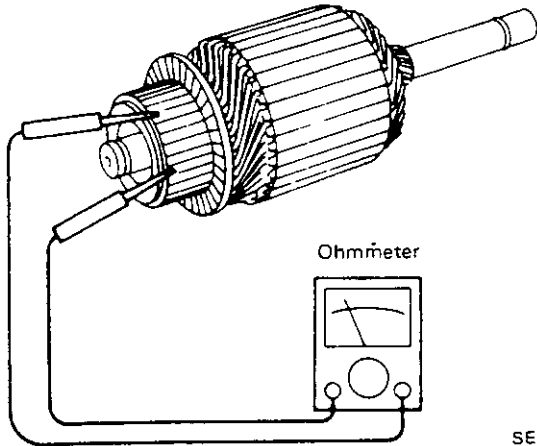
SEL417A

- Continuity exists Replace field coil

STARTING SYSTEM —Starter—

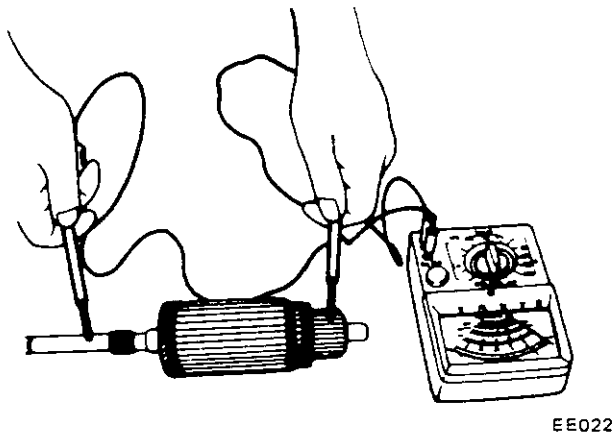
Armature Check

- 1 Continuity test (between two segments side by side)



- No continuity Replace

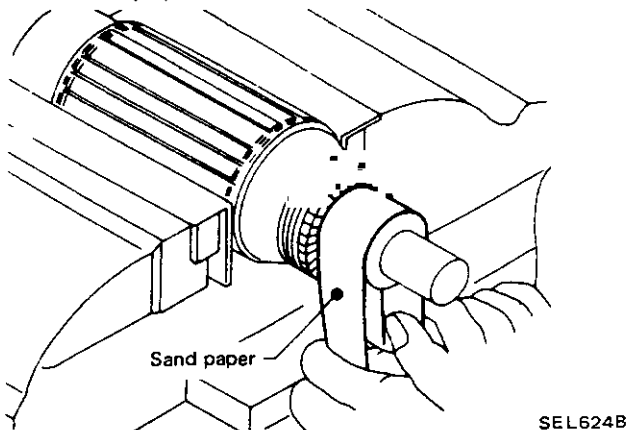
- 2 Insulation test (between each commutator bar and shaft)



- Continuity exists Replace

- 3 Check commutator surface

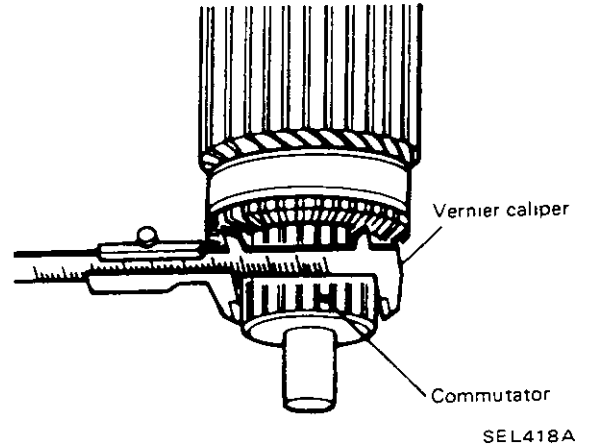
- Rough . Sand lightly with No 500 - 600 sandpaper



- 4 Check diameter of commutator

**Commutator minimum diameter
29 mm (1 14 in)**

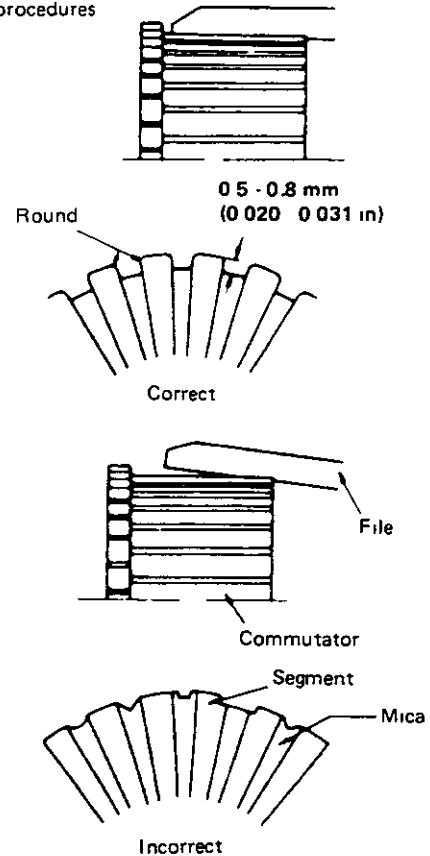
- Less than specified value Replace



- 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)

Undercut procedures



STARTING SYSTEM —Starter—

Reassembly

Carefully observe the following instructions

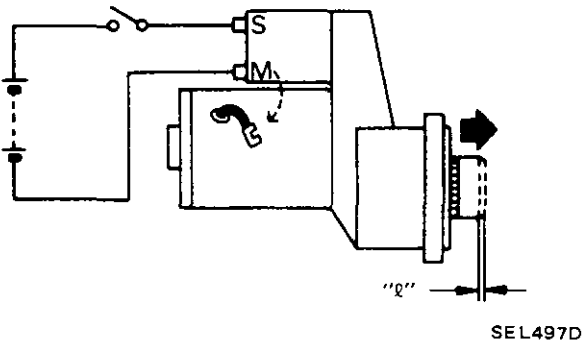
a. Apply grease to:

- Rear cover metal
- Gear case metal
- Frictional surface of pinion
- Moving portion of shift lever
- Plunger of magnetic switch

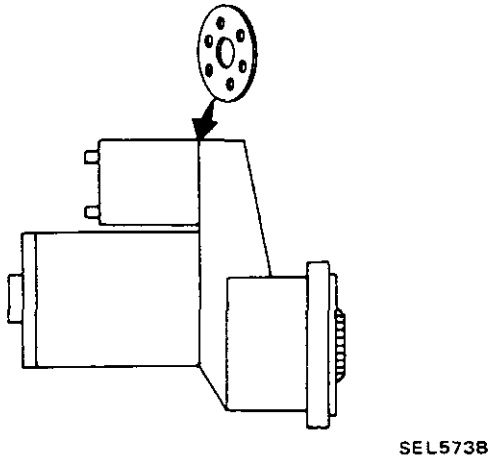
With pinion driven out by magnetic switch, push pinion back to remove slack and measure difference "ℓ" between the front edge of the pinion and the pinion stopper.

Difference "ℓ":

0.3 - 1.5 mm (0.012 - 0.059 in)



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

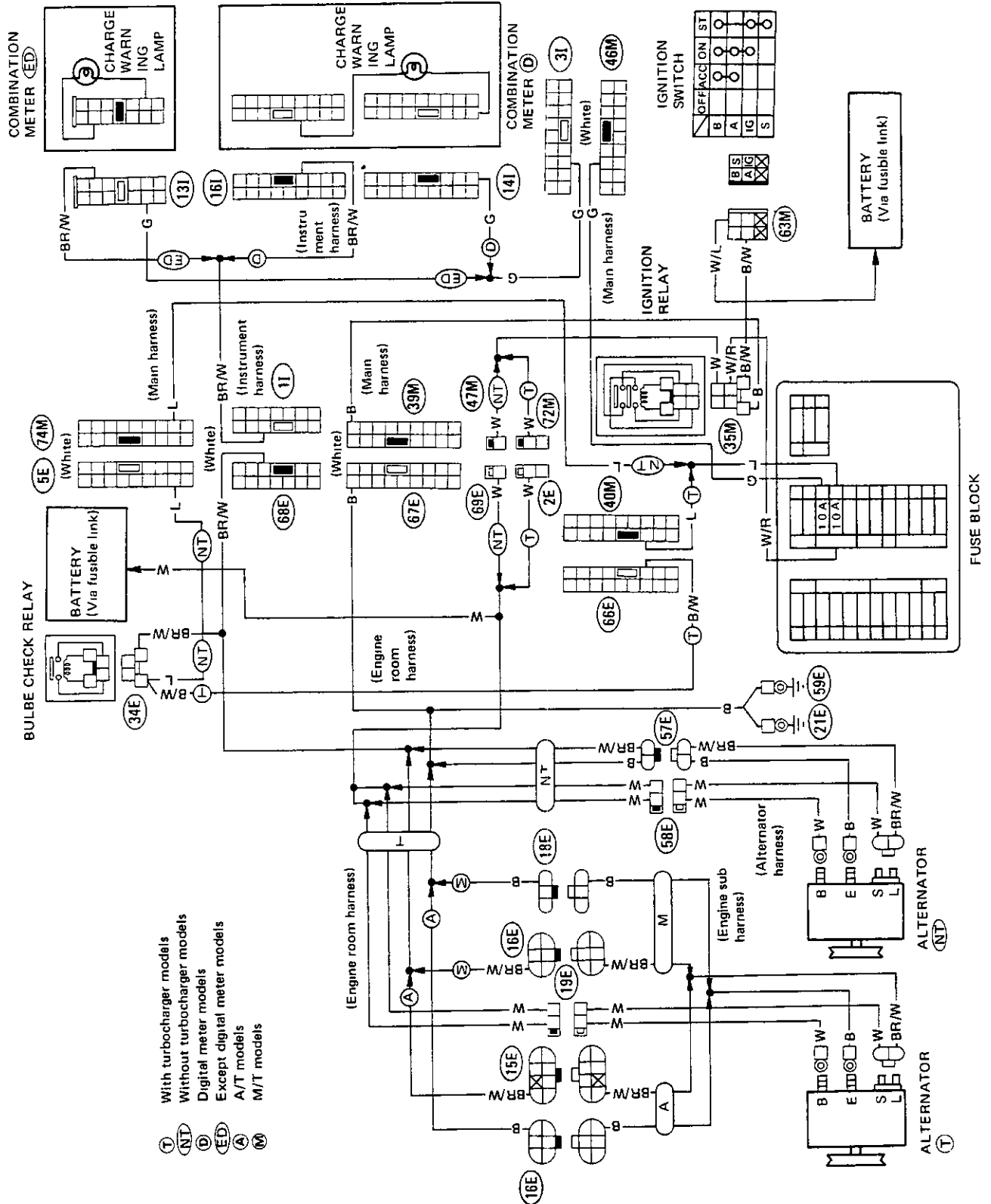


Service Data and Specification

Applied model		A11
Type		S114-374B
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 1/4)
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)

CHARGING SYSTEM

Wiring Diagram



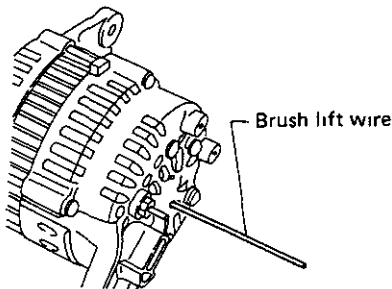
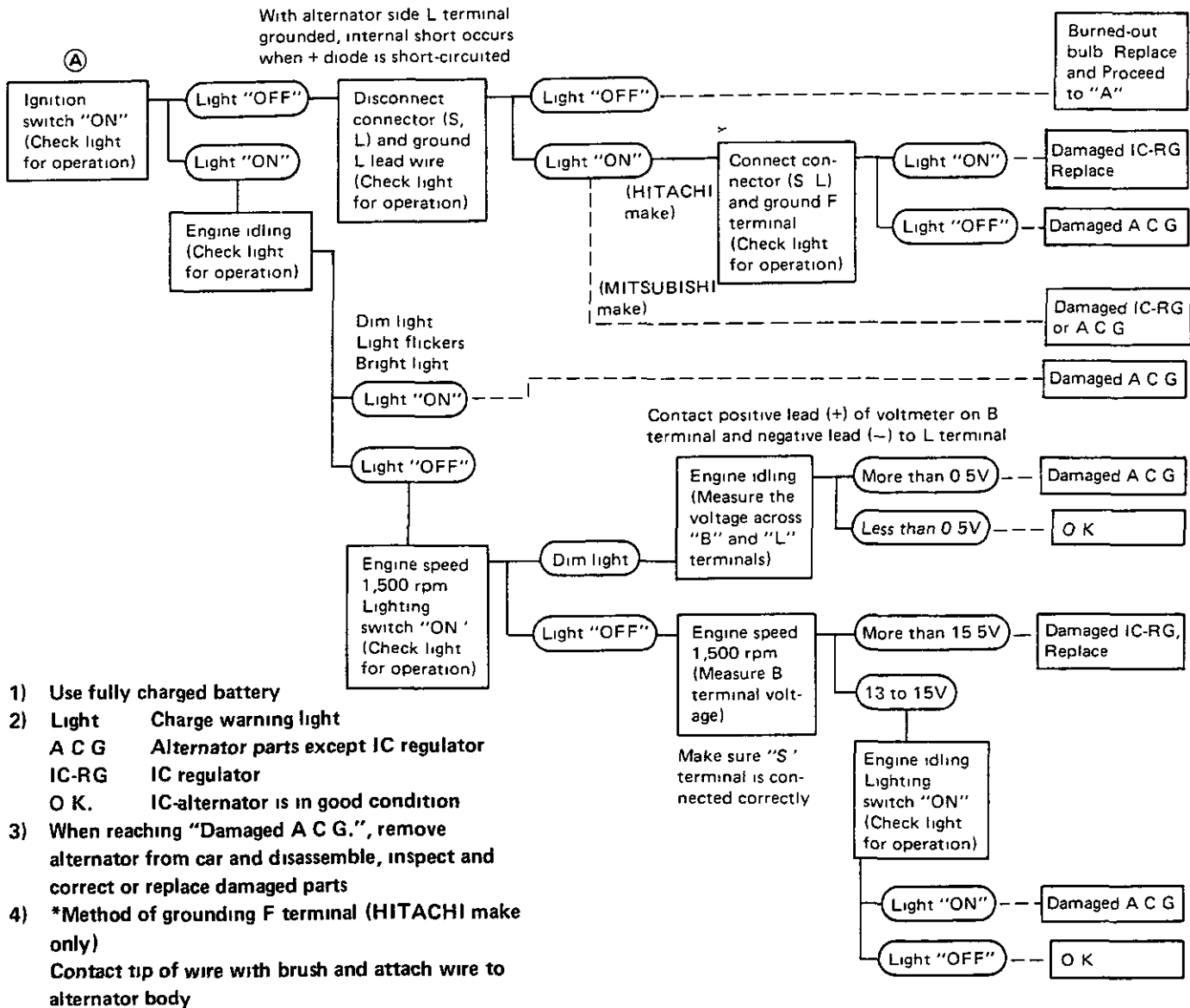
SEL624D

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.

WITH IC REGULATOR

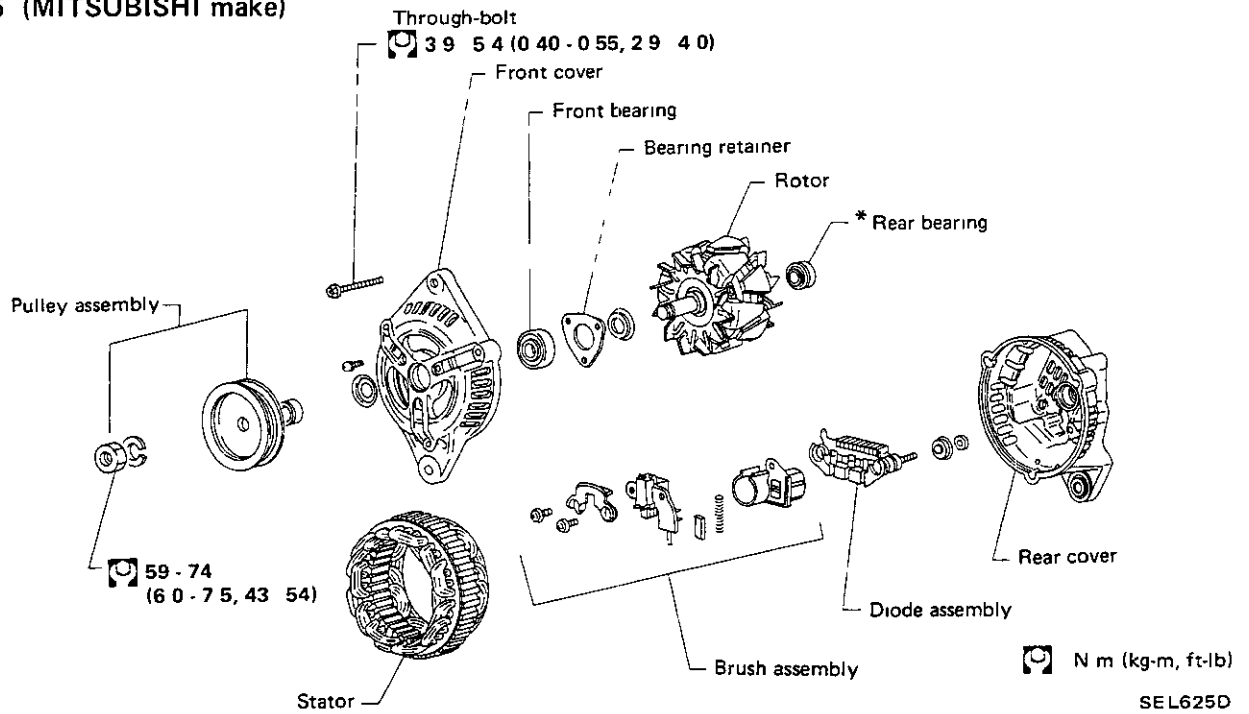


SEL766D

CHARGING SYSTEM —Alternator—

Construction

A2T48195 (MITSUBISHI make)

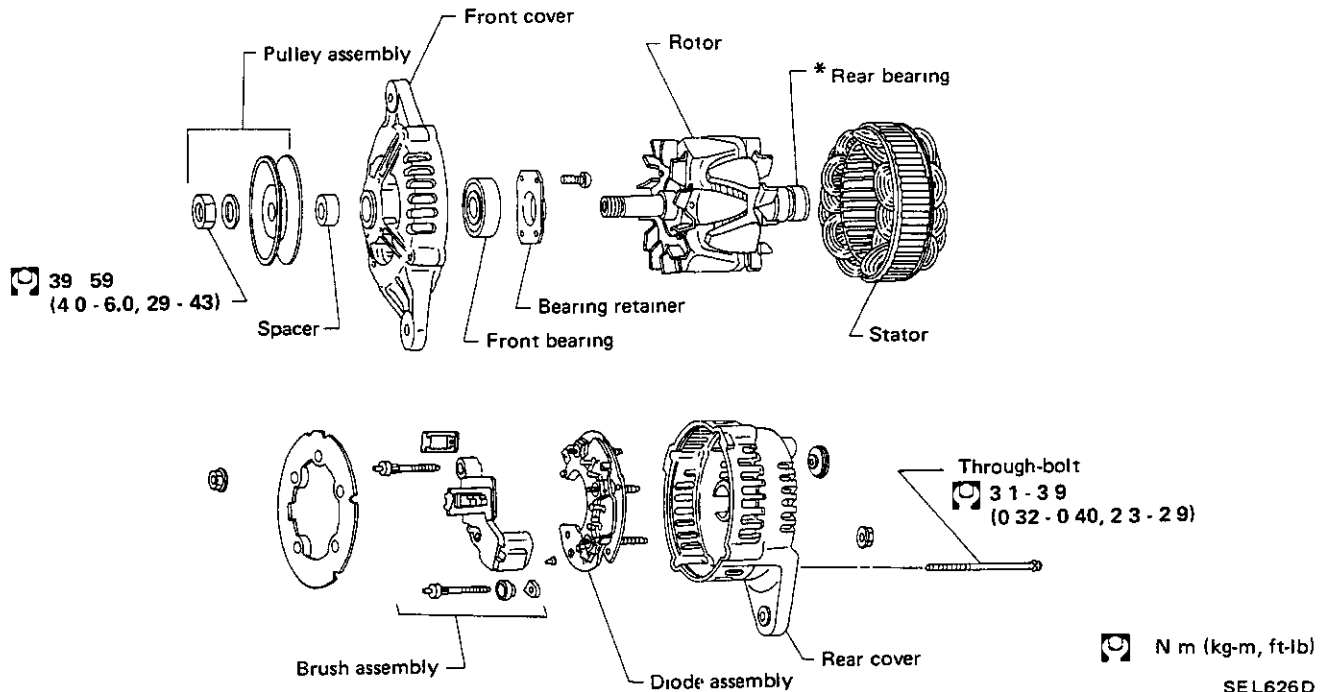


*Rear bearing

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.

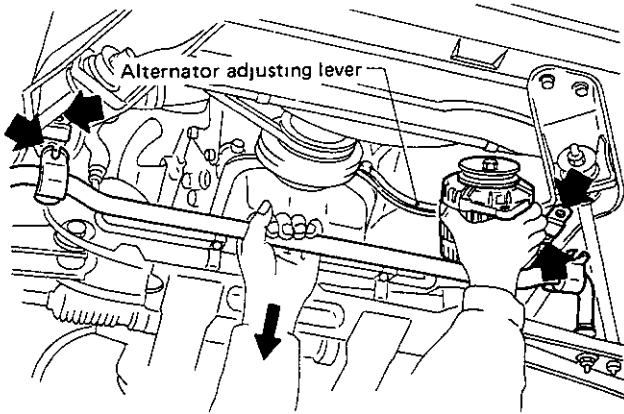
LR170-701B (HITACHI make)



CHARGING SYSTEM —Alternator—

Removal

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

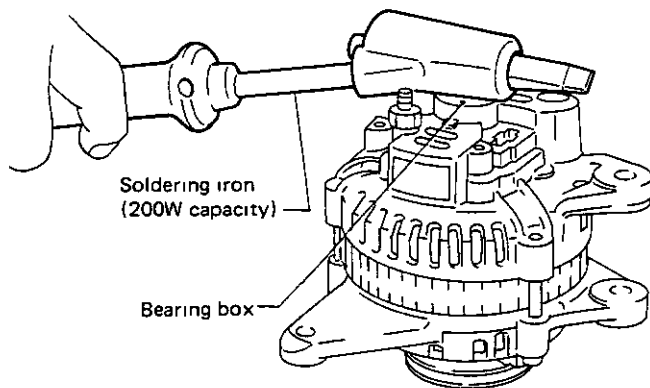


SEL627D

Disassembly

CAUTION.

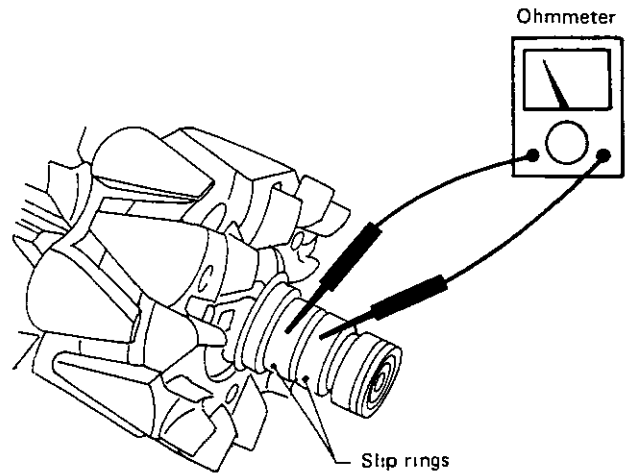
Rear cover may be hard to remove because a ring is used to lock outer race of rear bearing. To facilitate removal of rear cover, heat just bearing box section with a 200-watt soldering iron. Do not use a heat gun, as it can damage diode assembly.



SEL628D

Rotor Slip Ring Check

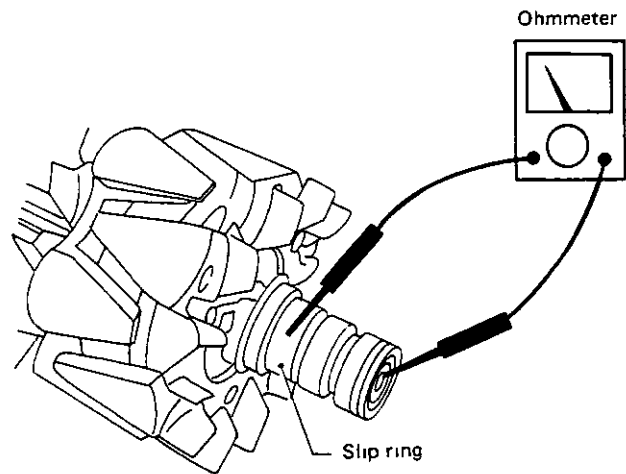
1. Continuity test



SEL629D

- No continuity Replace rotor

2. Insulator test



SEL630D

- Continuity exists. Replace rotor.

3. Check slip ring for wear.

Slip ring minimum outer diameter*

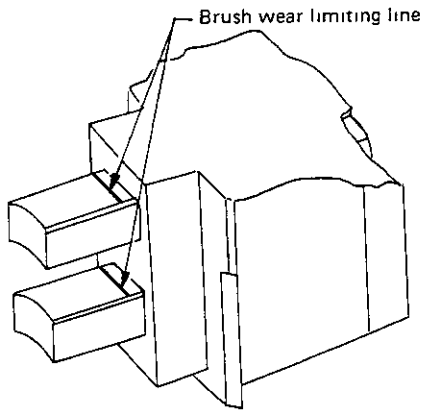
21.6 mm (0.850 in) [HITACHI make]

22.4 mm (0.882 in) [MITSUBISHI make]

CHARGING SYSTEM —Alternator—

Brush Check

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

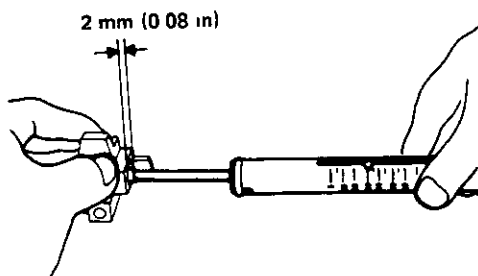


SEL631D

- 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

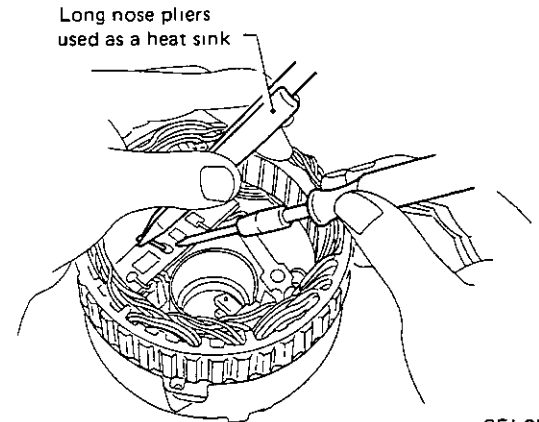
- Not in the specified value Replace

Stator Check

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

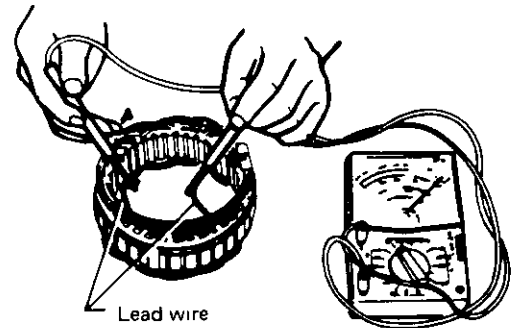
CAUTION.

Used only as much heat as required to melt solder.
Diodes will be damaged by excessive heat.



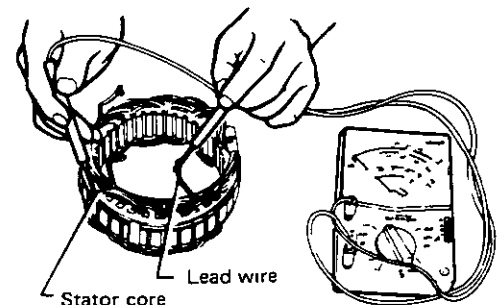
SEL054D

- 1 Continuity test



SEL070

- No continuity Replace stator
- 2 Ground test



SEL071

- Continuity exists Replace stator

CHARGING SYSTEM —Alternator—

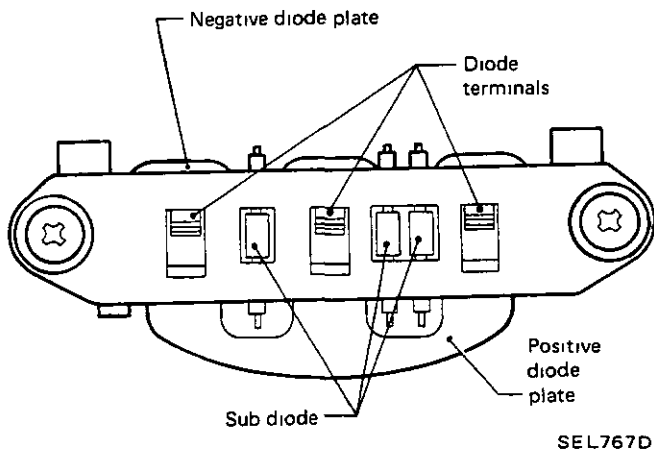
Diode Check

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

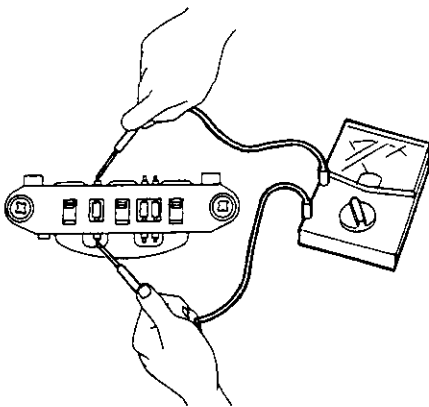
	Ohmmeter probes		Continuity
	Positive ⊕	Negative ⊖	
Diodes check (Positive side)	Positive diode plate	Diode terminals	Yes
	Diode terminals	Positive diode plate	No
Diodes check (Negative side)	Negative diode plate	Diode terminals	No
	Diode terminals	Negative diode plate	Yes

[MITSUBISHI make]



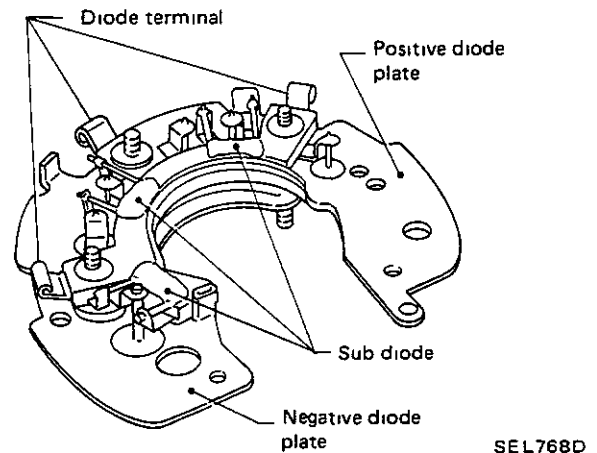
Sub-diode

- Attach ohmmeter's probe to each end of diode to check for continuity.



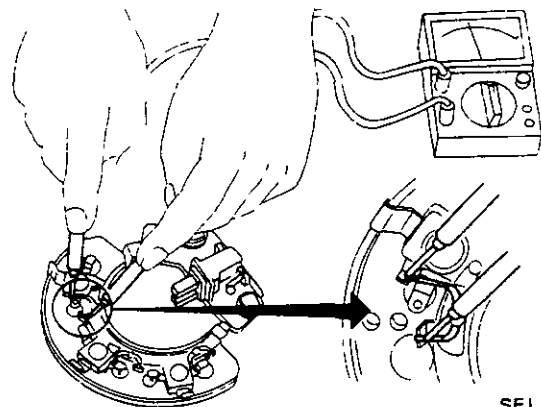
- Continuity is N.G. ... Replace diode assembly.

[HITACHI make]



Sub-diode

- Attach ohmmeter's probe to each end of diode to check for continuity.



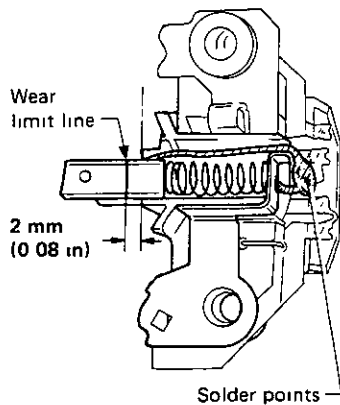
- Continuity is N.G. . Replace diode assembly

CHARGING SYSTEM —Alternator—

Reassembly

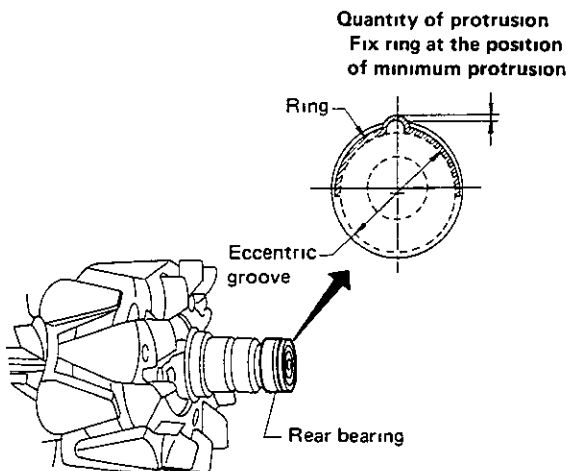
Carefully observe the following instructions

- 1 When soldering each stator coil lead wire to diode assembly terminal, carry out 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



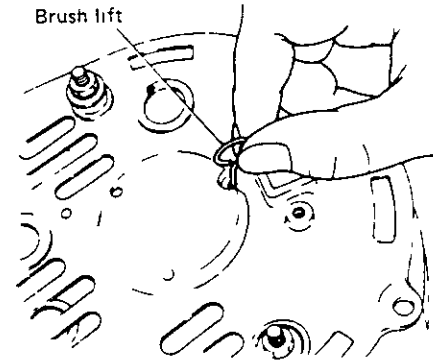
SEL632D

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

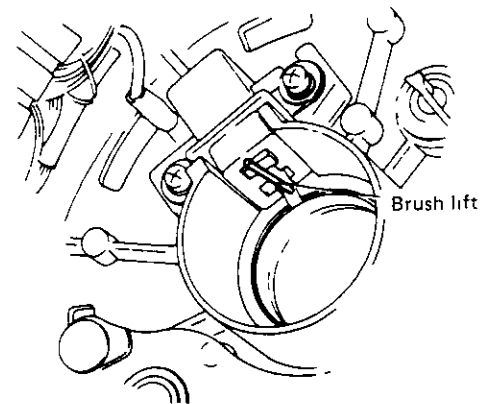


SEL633D

- 4 Before installing front cover with pulley and rotor with 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 sides of alternator, pull brush lift by pushing toward center. Do not pull brush lift by pushing toward outside of cover as it will damage slip ring sliding surface.

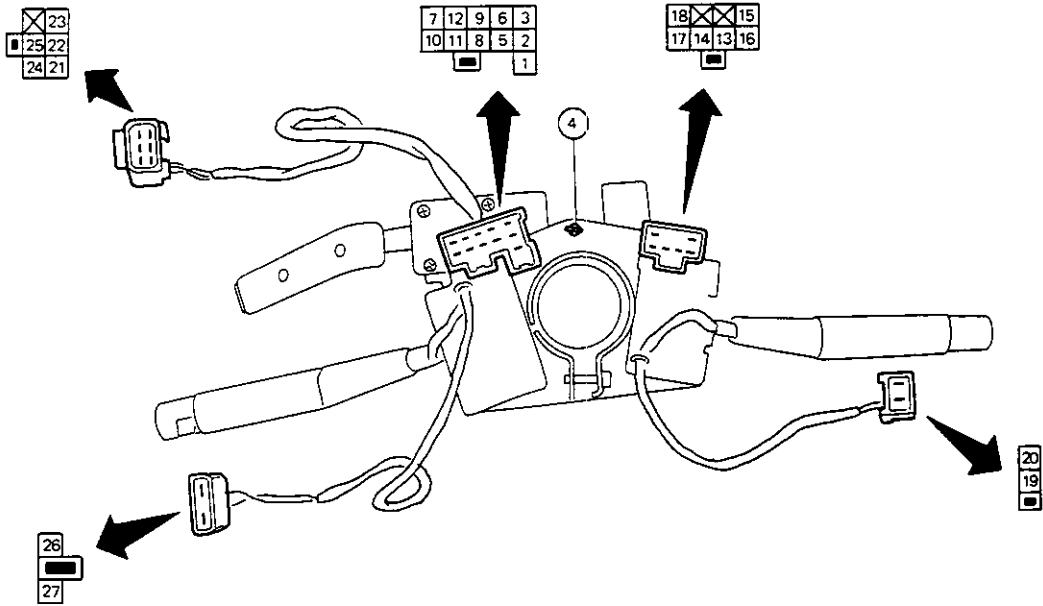
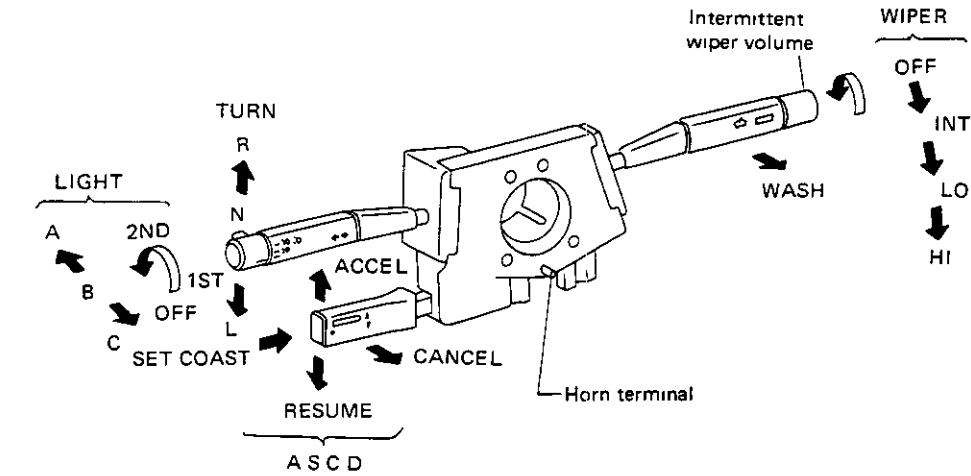
CHARGING SYSTEM —Alternator—

Service Data and Specification

Type	LR170-701B	A2T48195
Applied model	Without turbo charger models	With turbocharger models
Nominal rating V-A	12-70	
Ground polarity	Negative	
Minimum revolution under no-load (when 14 volts is applied) rpm	Less than 1,000	Less than 1,100
Hot output current A/rpm	More than 21/1,300 More than 50/2,500 More than 70/5,000	More than 21/1,300 More than 50/2,500
Regulated output voltage V	14.4 - 15.0	14.1 - 14.7
Minimum length of brush mm (in)	More than 5.5 (0.217)	More than 8 (0.31)
Brush spring pressure N (g, oz)	1,471 - 3,531 (150 - 360, 5.29 - 12.70)	3,040 - 4,217 (310 - 430, 10.93 - 15.17)
Slip ring outer diameter mm (in)	More than 21.6 (0.850)	More than 22.4 (0.882)

COMBINATION SWITCH

Check

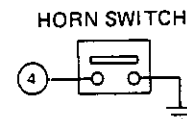
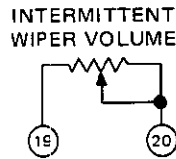


LIGHTING SWITCH

	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					



A S C D SWITCH

	CANSEL	RESUME	ACCEL	SET COAST
21				
22				
23				
24				
25				

TURN SIGNAL SWITCH

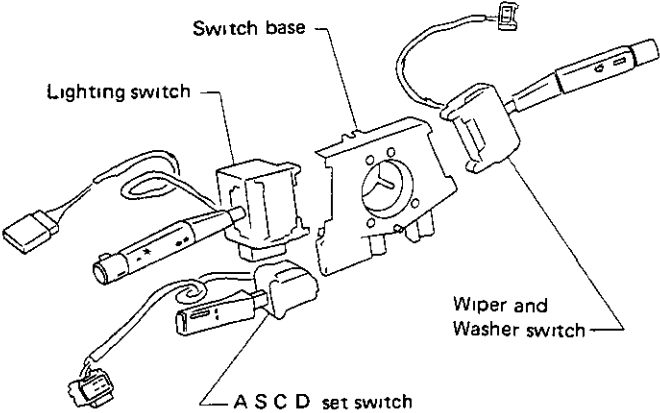
	R	N	L
1			
2			
3			

SEL642D

COMBINATION SWITCH

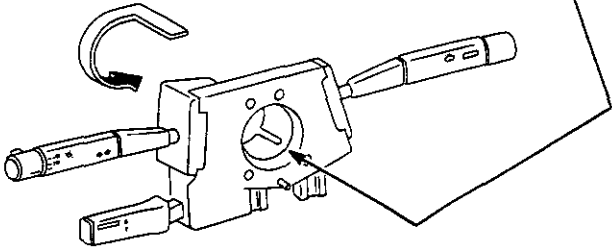
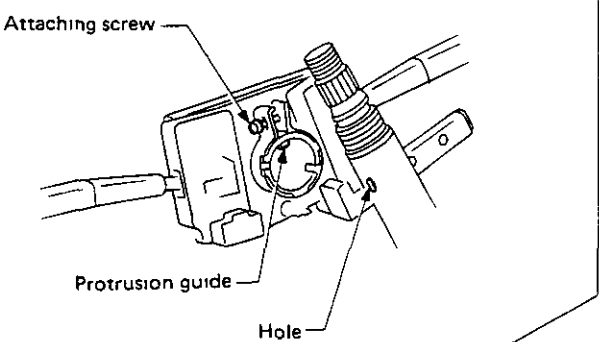
Replacement

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

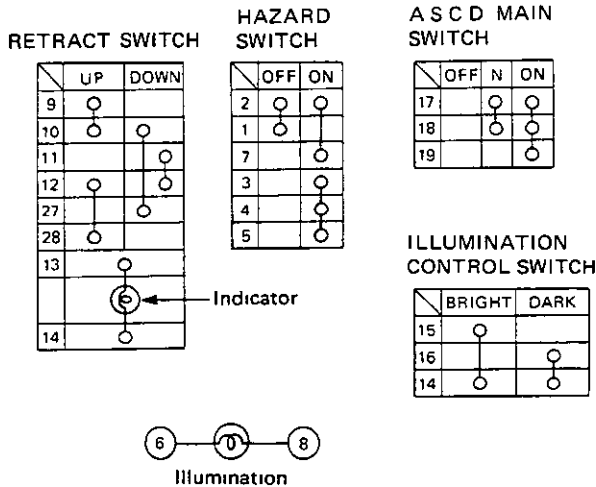
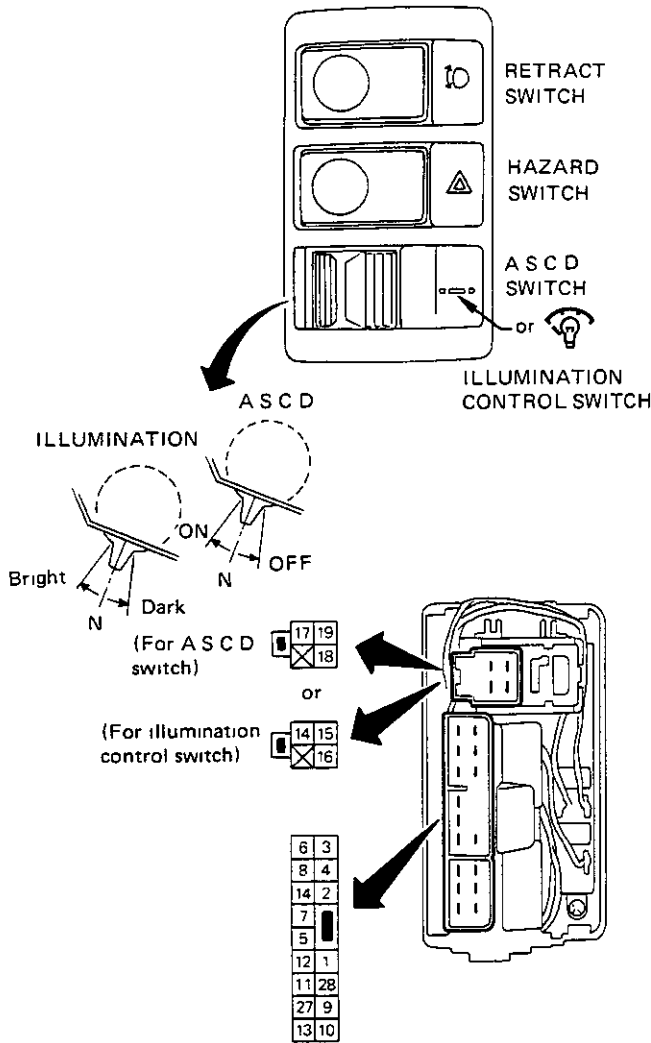


SEL644D

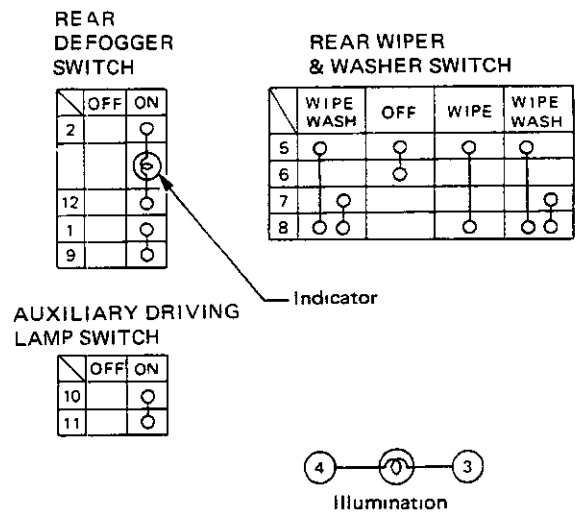
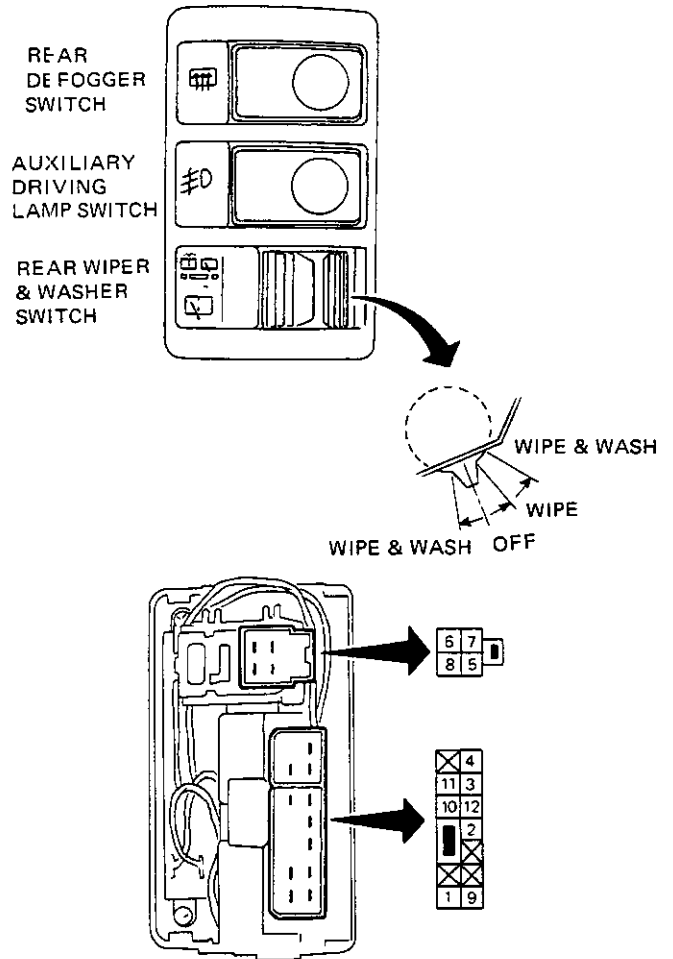
INSTRUMENT SWITCH

Check

INSTRUMENT SWITCH L.H.



INSTRUMENT SWITCH R.H.



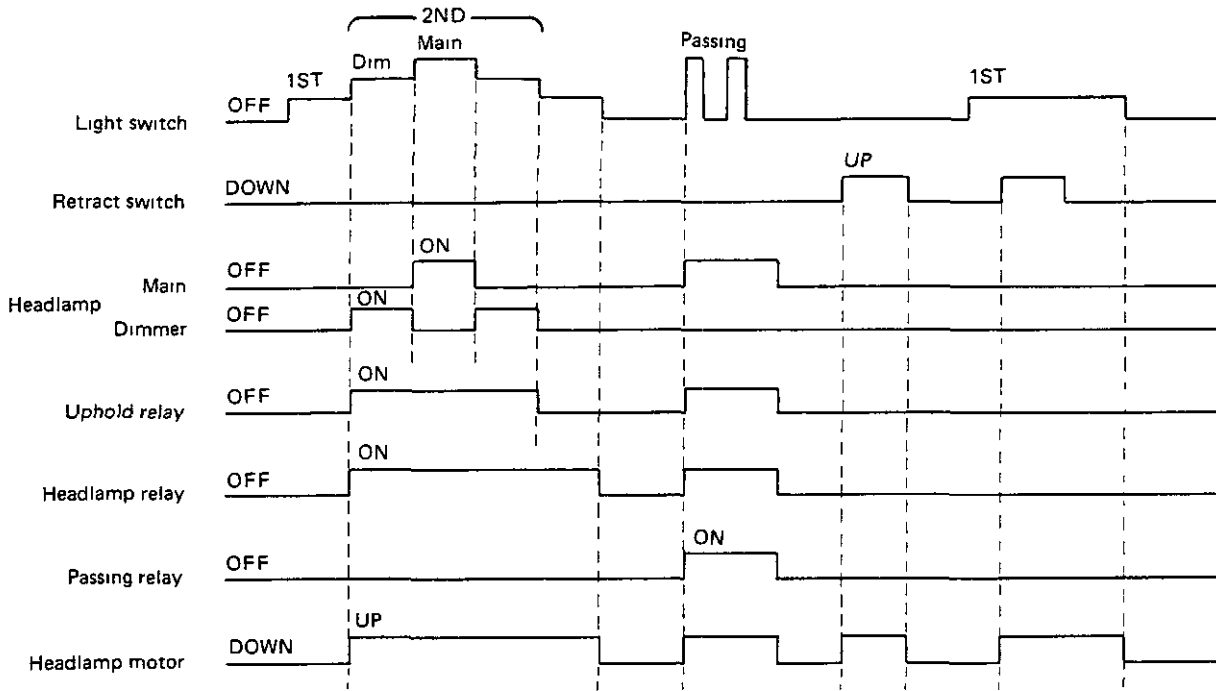
- For removal, refer to "INSTRUMENT" in BF section

SEL645D

HEADLAMP

Operation

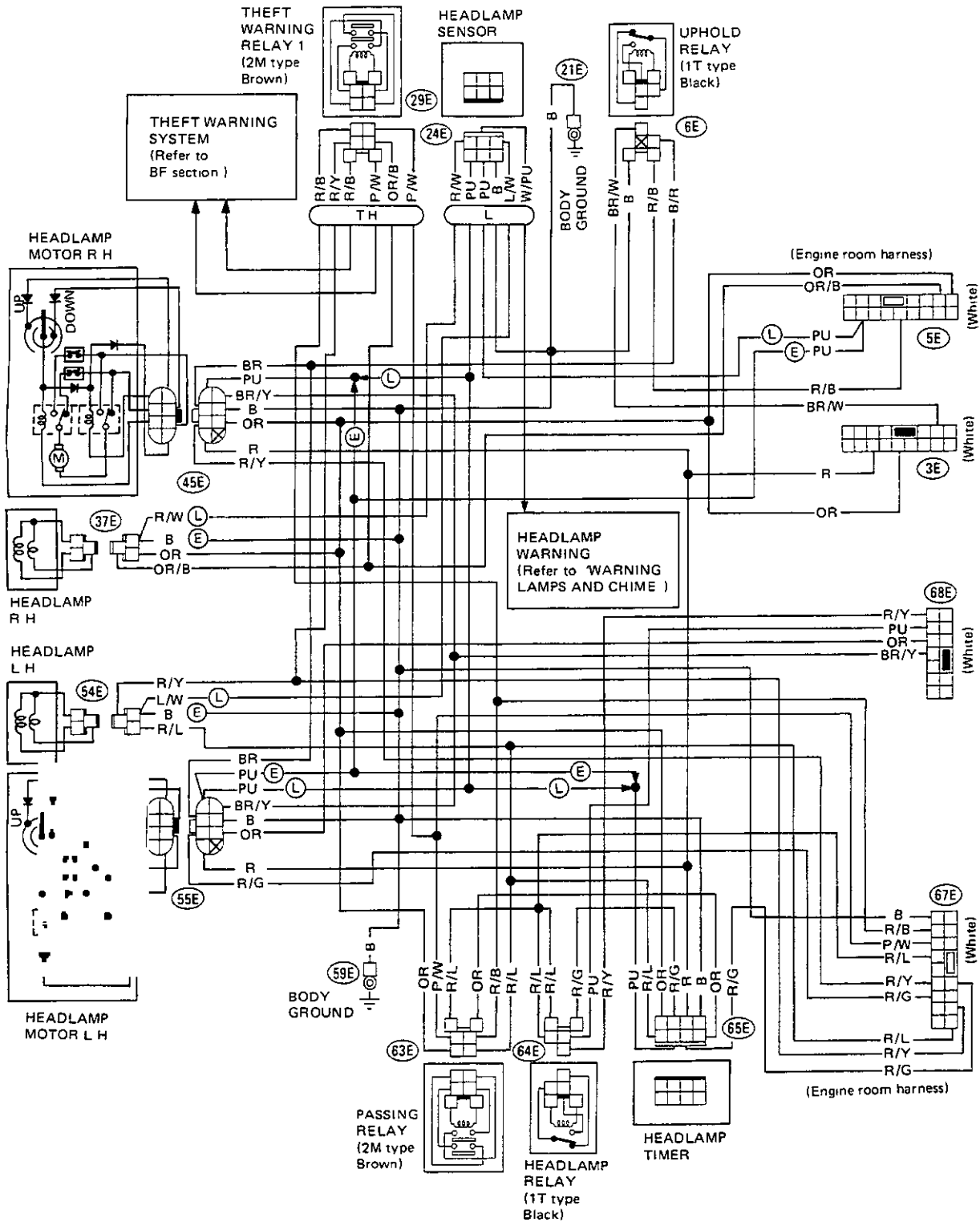
- The following chart depicts the operational modes of relays and headlamp motors in relation to the positions of the headlamp and retract switches



SEL743D

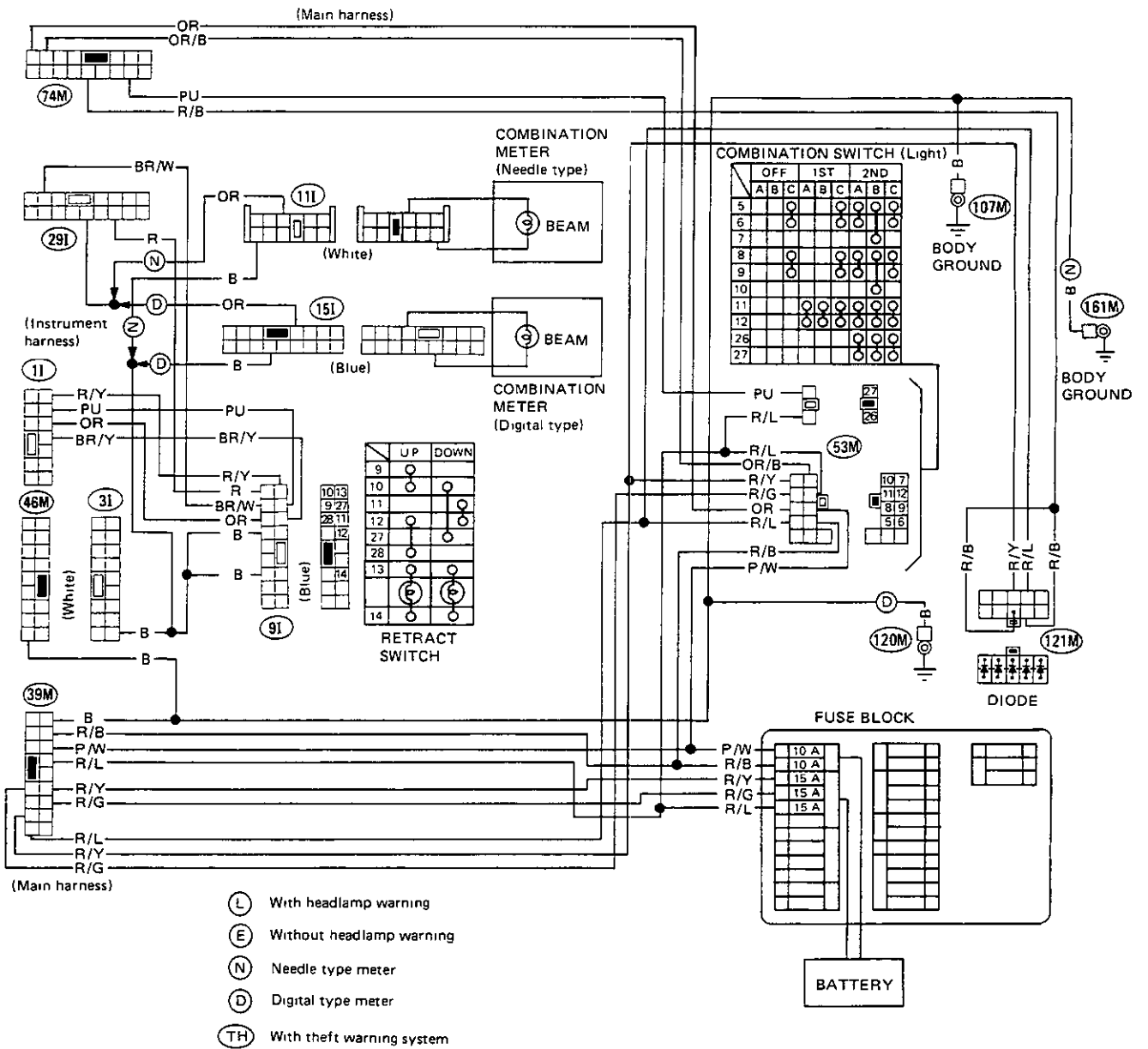
HEADLAMP

Wiring Diagram



HEADLAMP

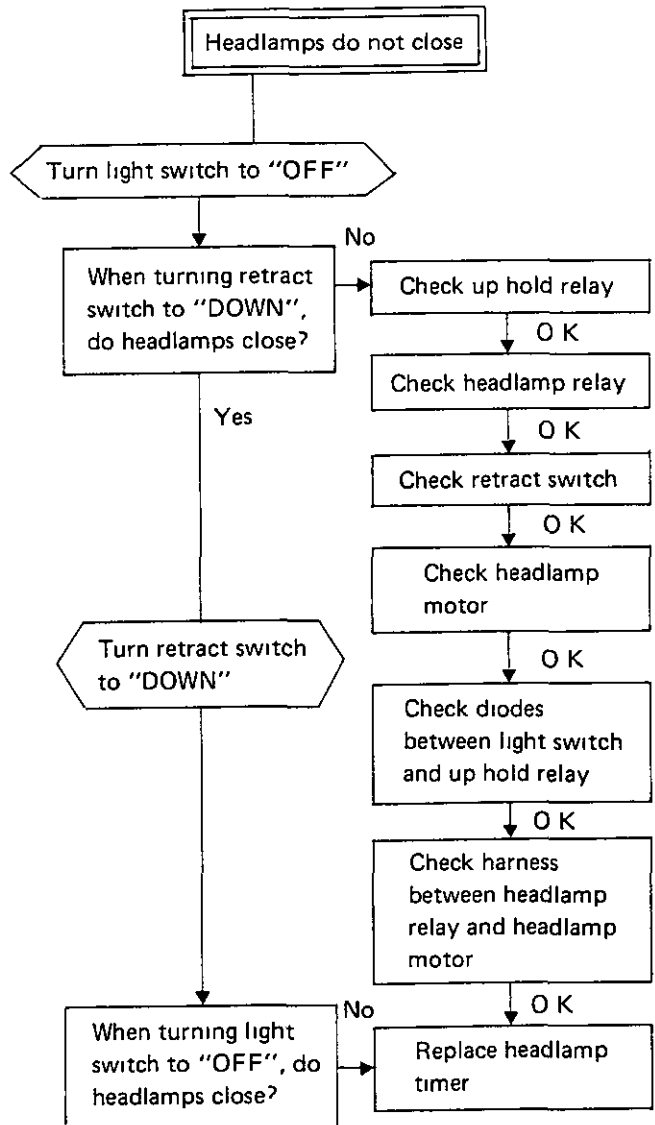
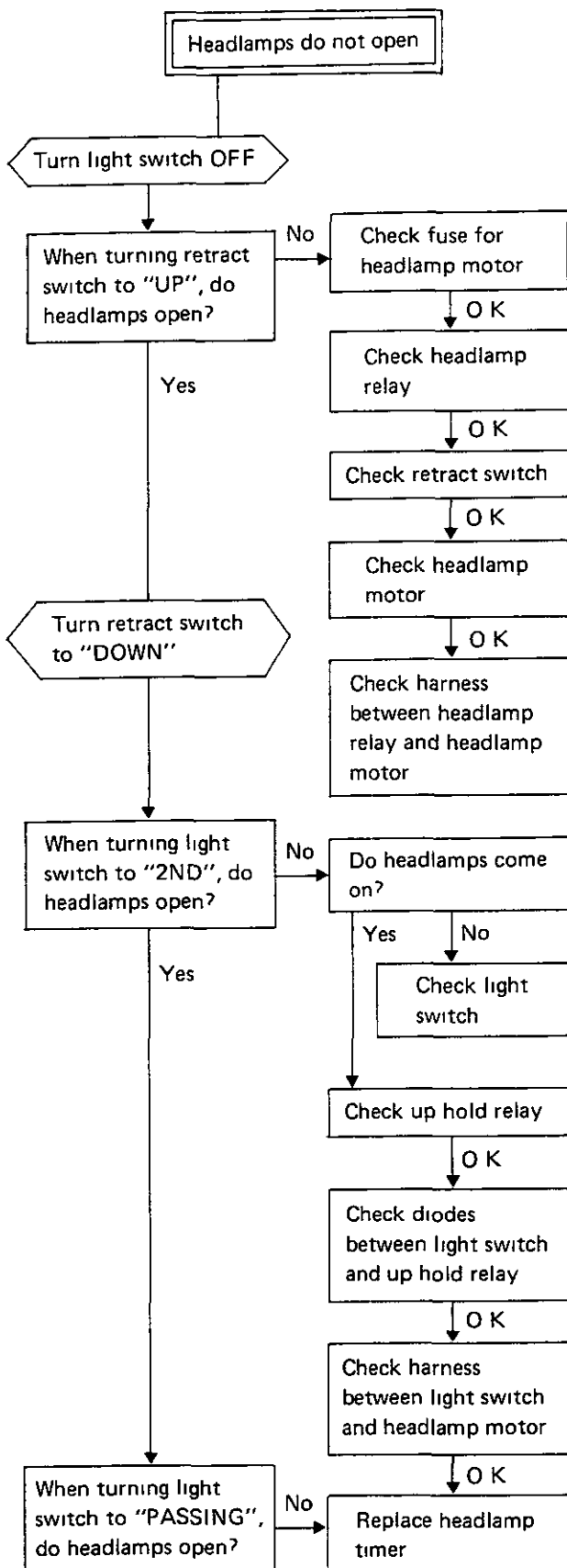
Wiring Diagram (Cont'd)



SEL647D

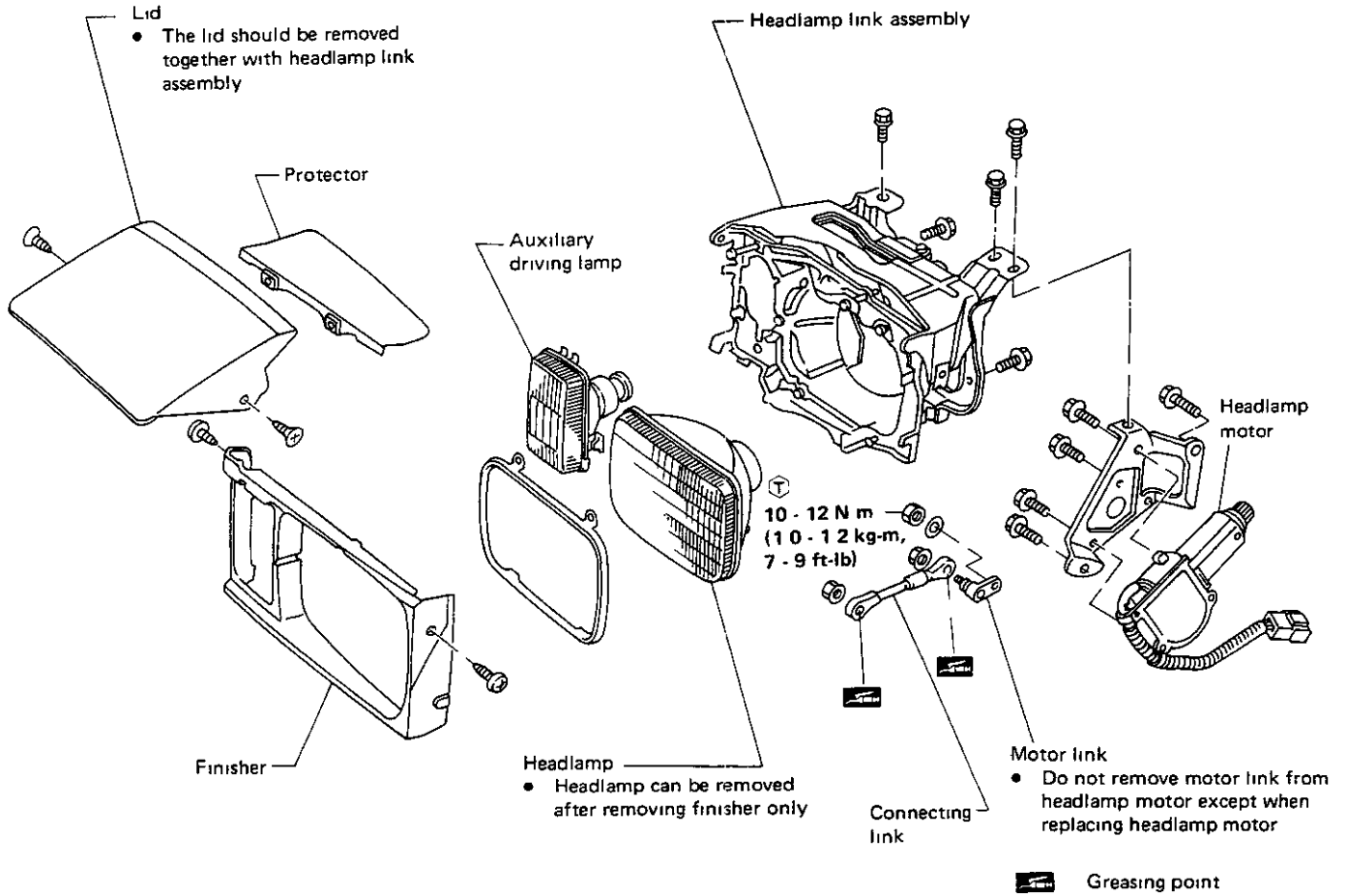
HEADLAMP

Trouble-shooting



HEADLAMP

Removal

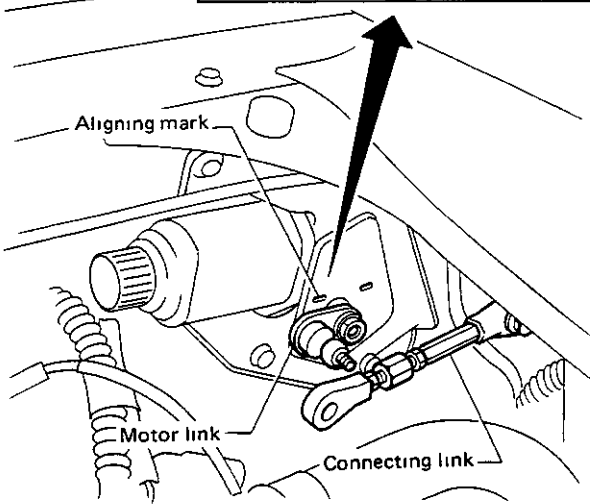
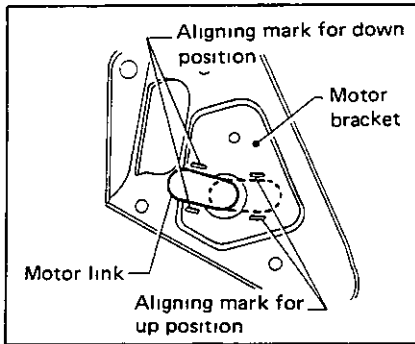


SEL648D

HEADLAMP

Installation

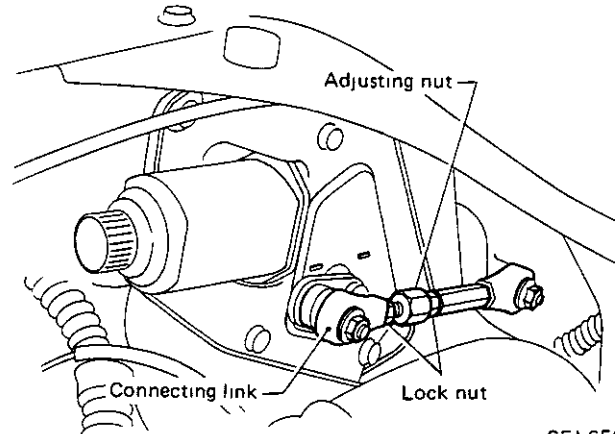
- 1 Set the headlamp motor to "DOWN" position
 - Connect harness to headlamp motor and set retract switch to "DOWN" Headlamp motor can now be set to "DOWN" with retract switch
- 2 Install the headlamp link assembly and headlamp motor in the body
- 3 Install the connecting link
 - When installing the link to the motor, make sure the motor link is installed as shown below



SEL649D

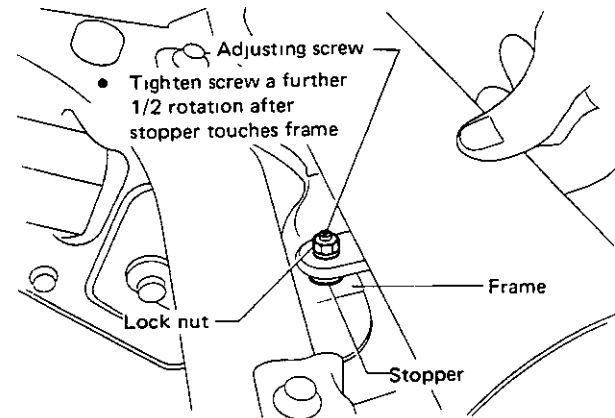
Adjustment

- 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

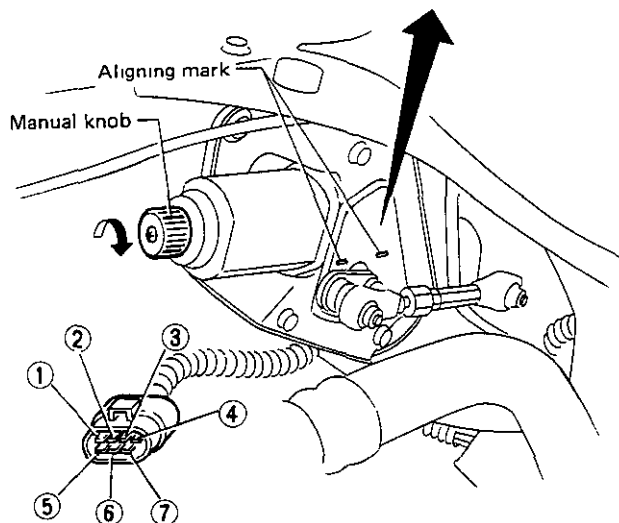
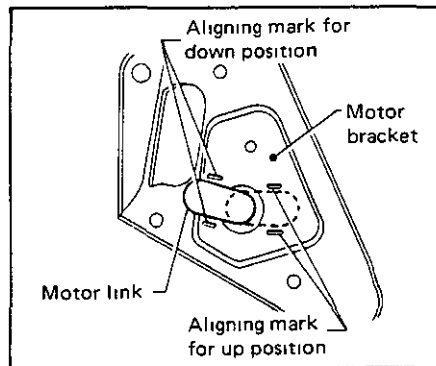
Headlamp Motor Check

- 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.

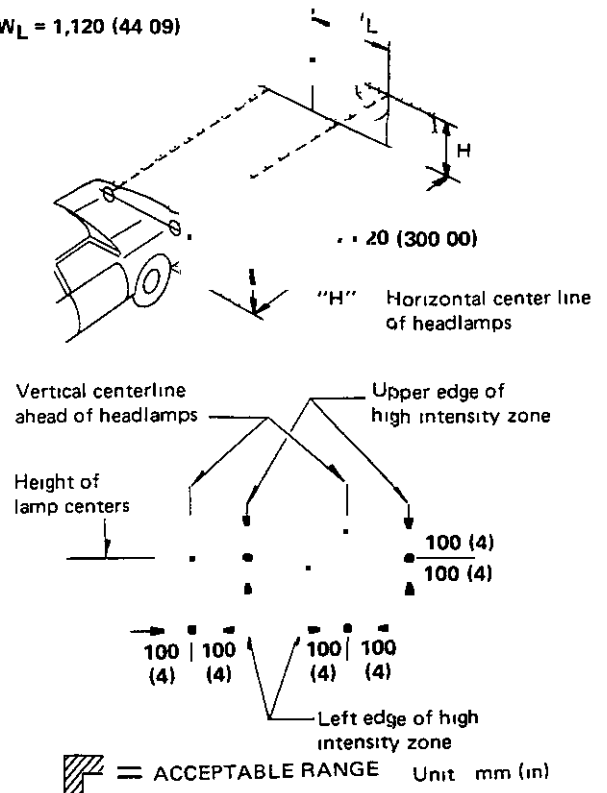
If any aimer is not available, aiming adjustment can be done as follows.

For details, refer to the regulations in your own country.

CAUTION:

- Keep all tires inflated to correct pressures.
- Place vehicle and tester on one and same flat surface.
- See 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).

$W_L = 1,120 (44\ 09)$

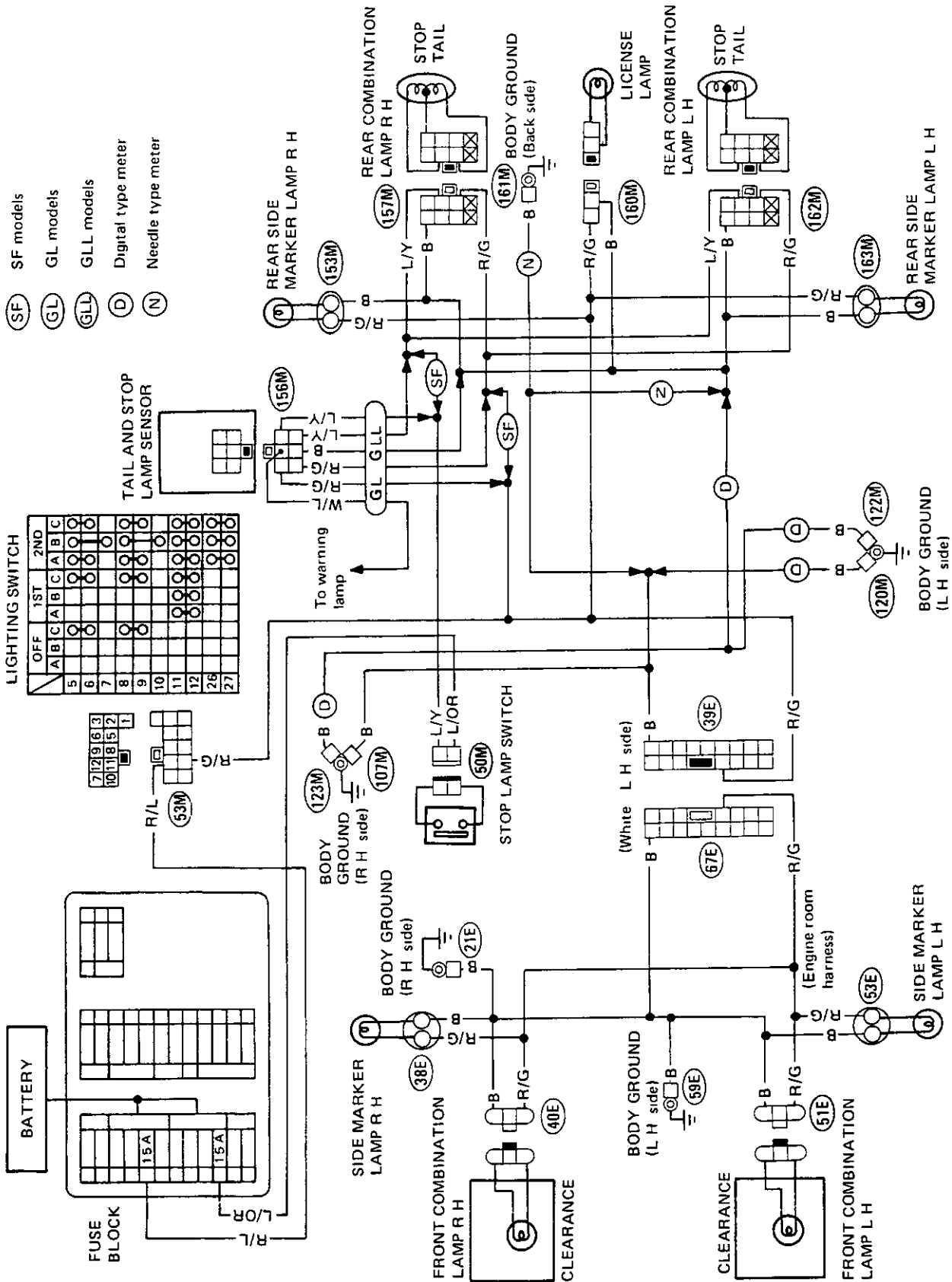


SEL914D

- 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.

EXTERIOR LAMP

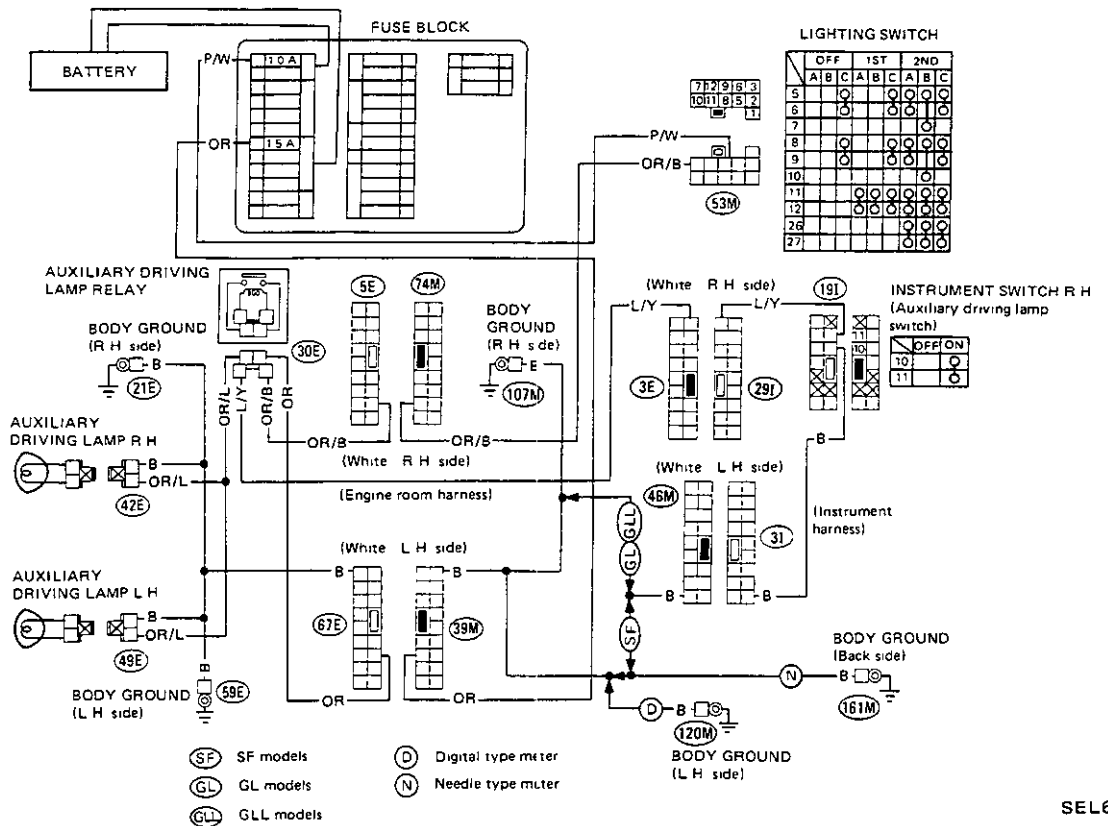
Clearance, License, Tail and Stop Lamps/Wiring Diagram



SEL653D

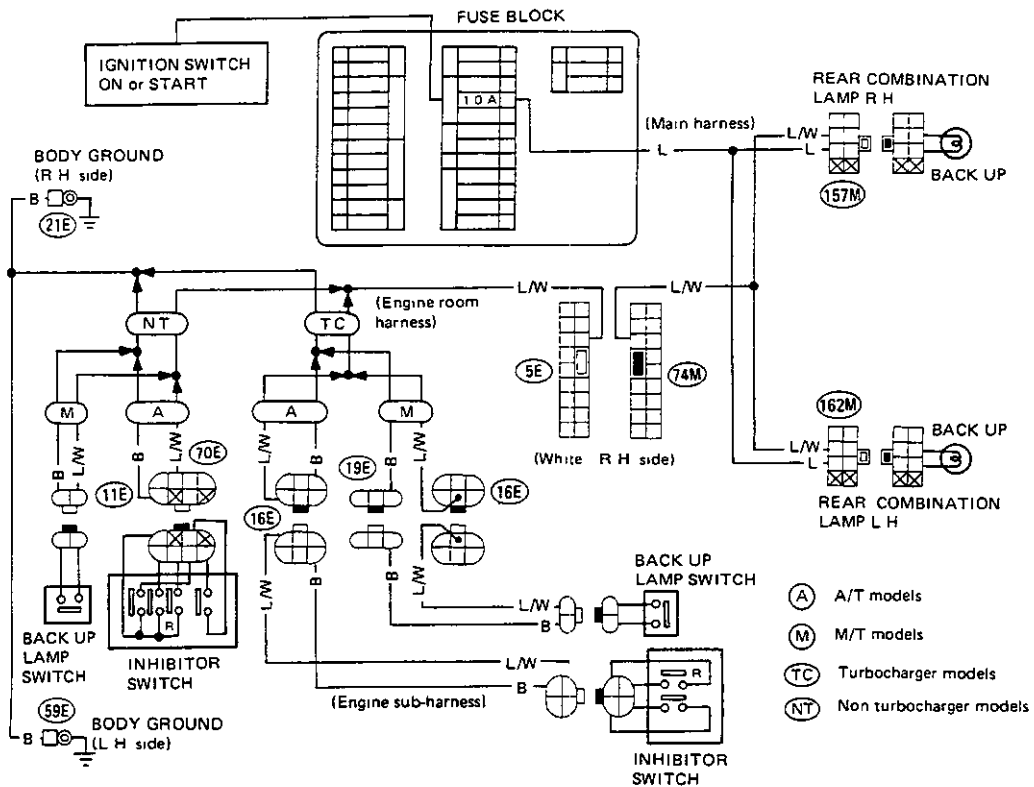
EXTERIOR LAMP

Auxiliary Driving Lamp/Wiring Diagram



SEL654D

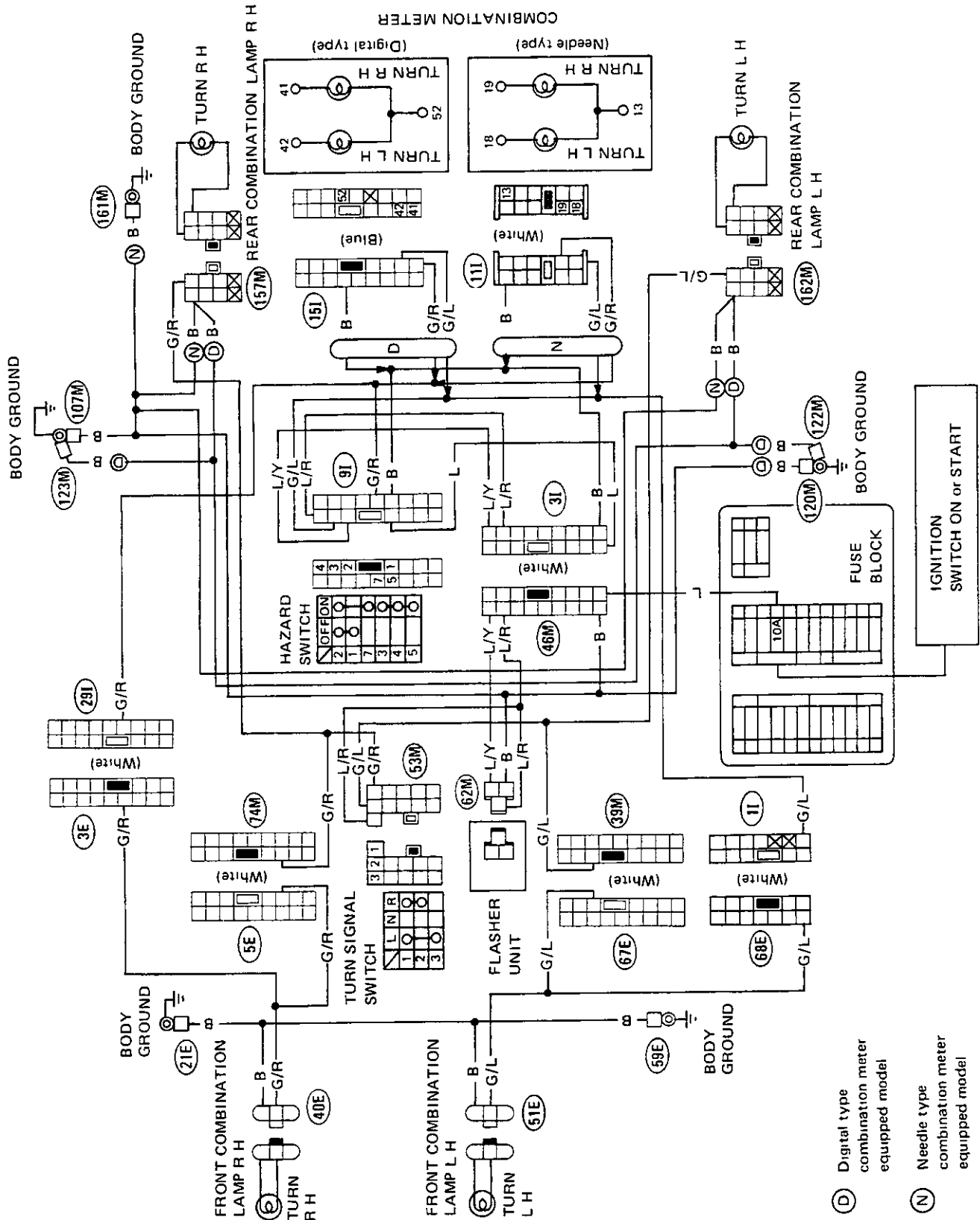
Back-up Lamp/Wiring Diagram



SEL655D

EXTERIOR LAMP

Turn Signal and Hazard Warning Lamps/Wiring Diagram



SEL656D

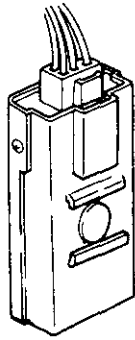
EXTERIOR LAMP

_ Stop and Tail Lamp Sensor Check

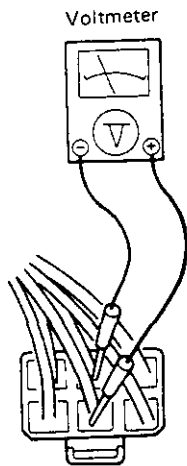
- Before checking, ensure that bulbs meet specifications

STOP LAMP

Stop lamp switch on



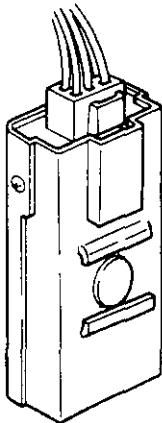
Stop lamp in good order
Approx. 12 volts
Stop lamp removed
Approx. 2 volts



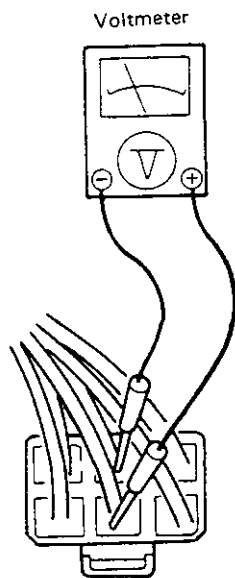
SEL170B

TAIL LAMP

Lighting switch on



Tail lamp in good order
Approx. 12 volts
Tail lamp removed
Approx. 2 volts



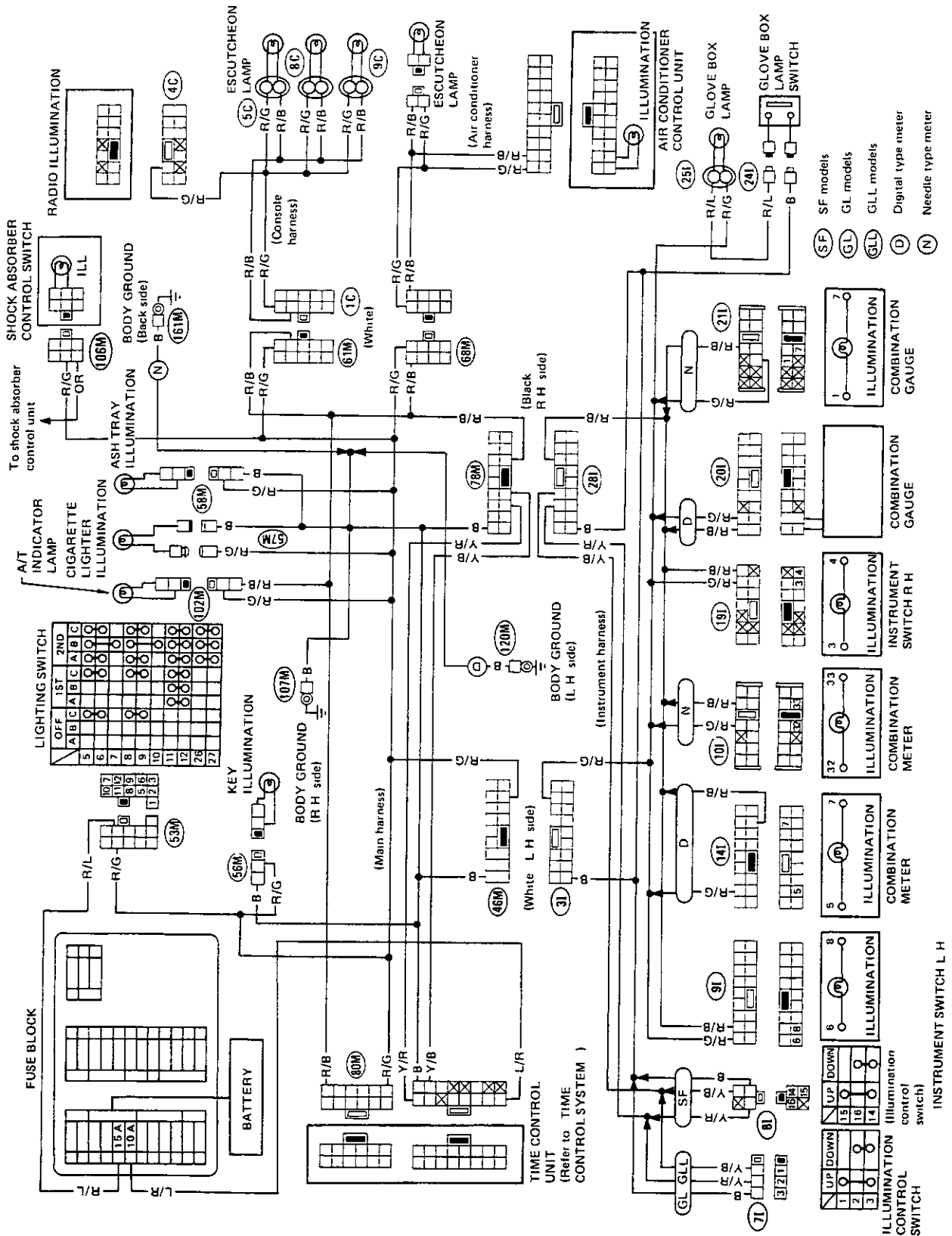
SEL171B

Bulb Specifications

Item	Wattage (W)	SAE trade number
Headlamp	65, 35	H6054
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	27/8	1157
Stop/Tail	27/8	1157
Back-up	27	1073
License plate lamp	4 0	—
Interior lamp	10	—
Spot lamp	8	—
Rear (luggage) compartment lamp	3 4	—
Door step lamp	5	—
Leg room lamp	2	—

INTERIOR LAMP

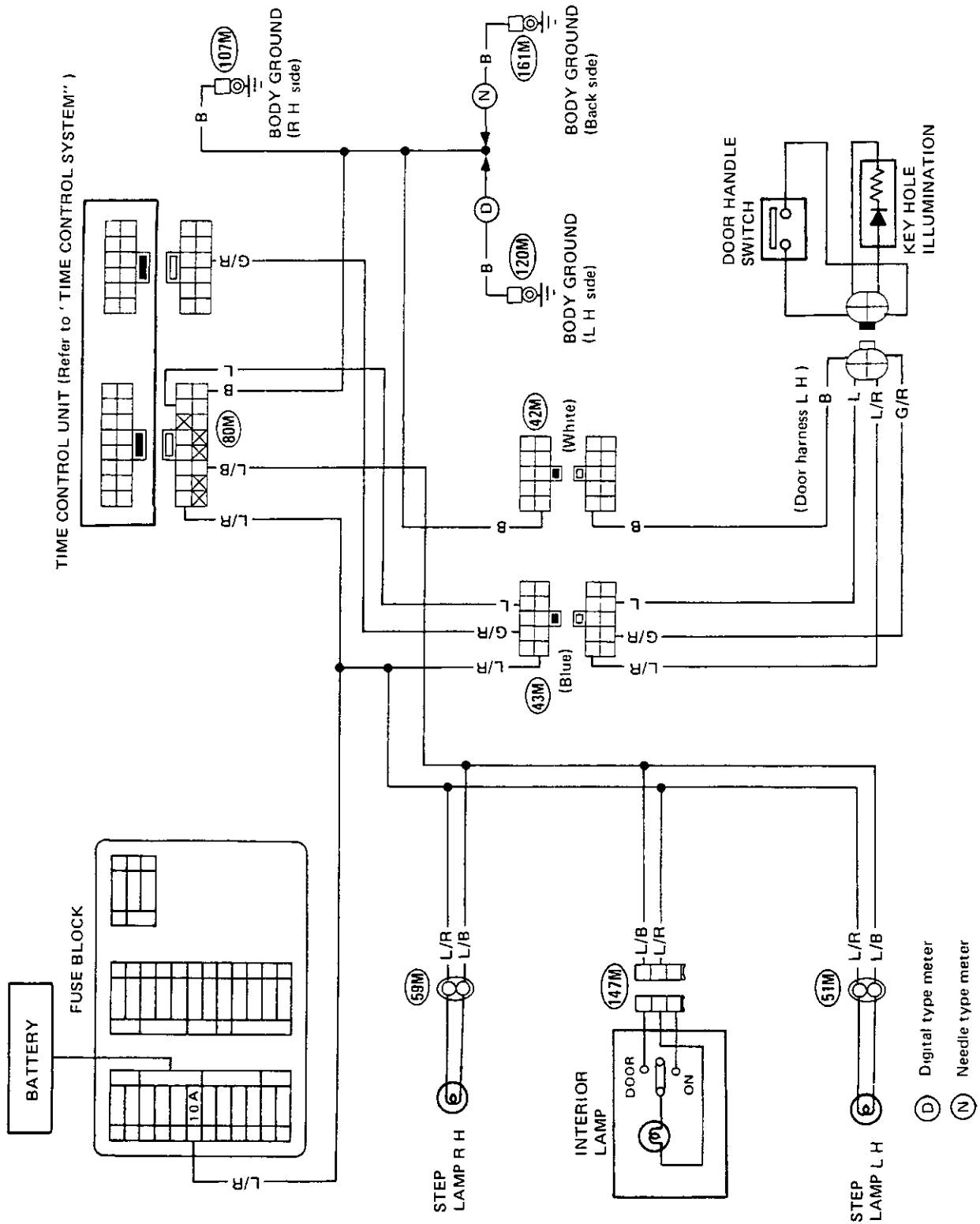
Illumination/Wiring Diagram



SEL657D

INTERIOR LAMP

Illuminated Entry System and Door Key Illumination/Wiring Diagram



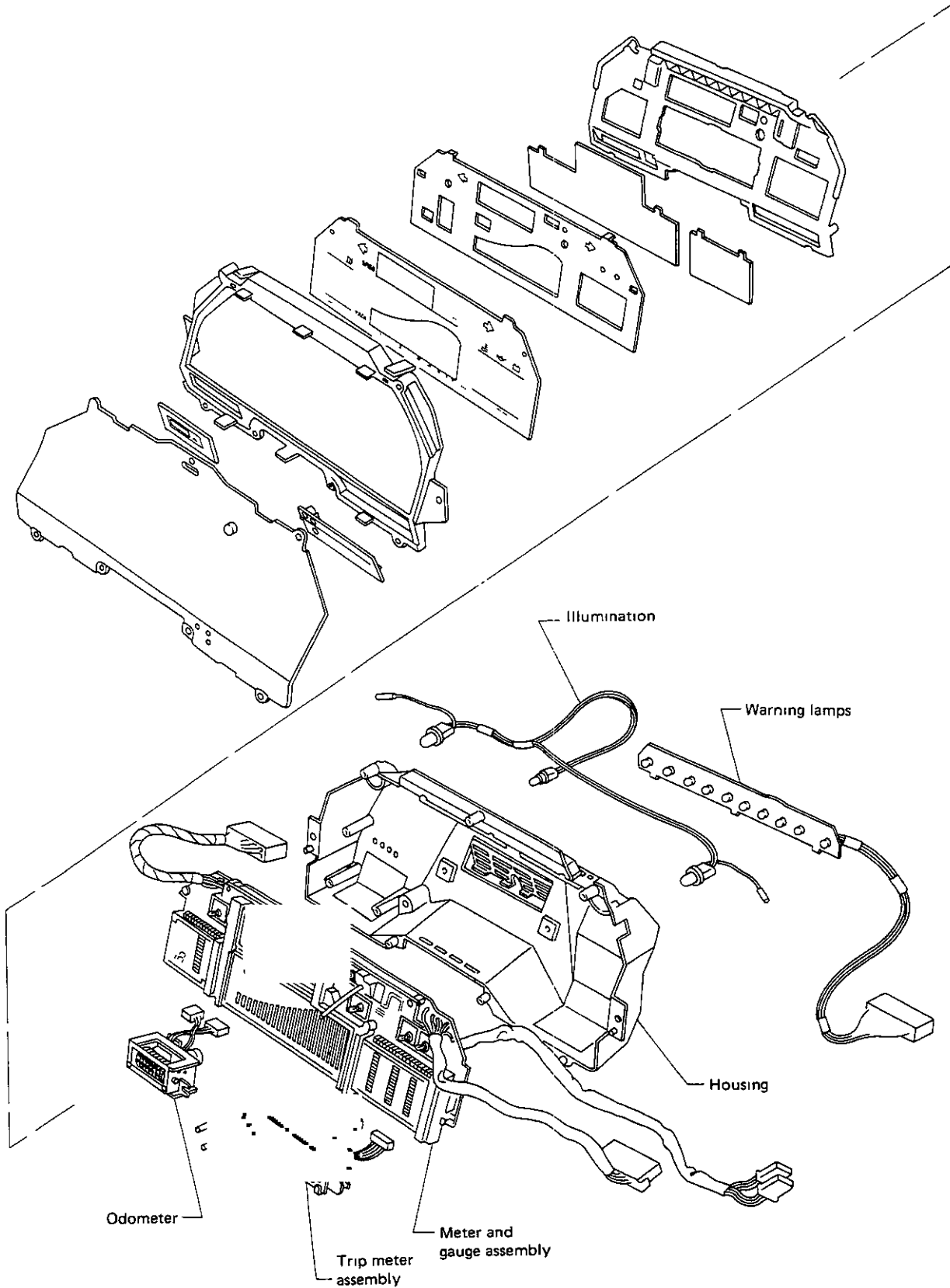
SEL659D

METER AND GAUGES — Digital Type Combination Meter

Combination Meter

CAUTION:

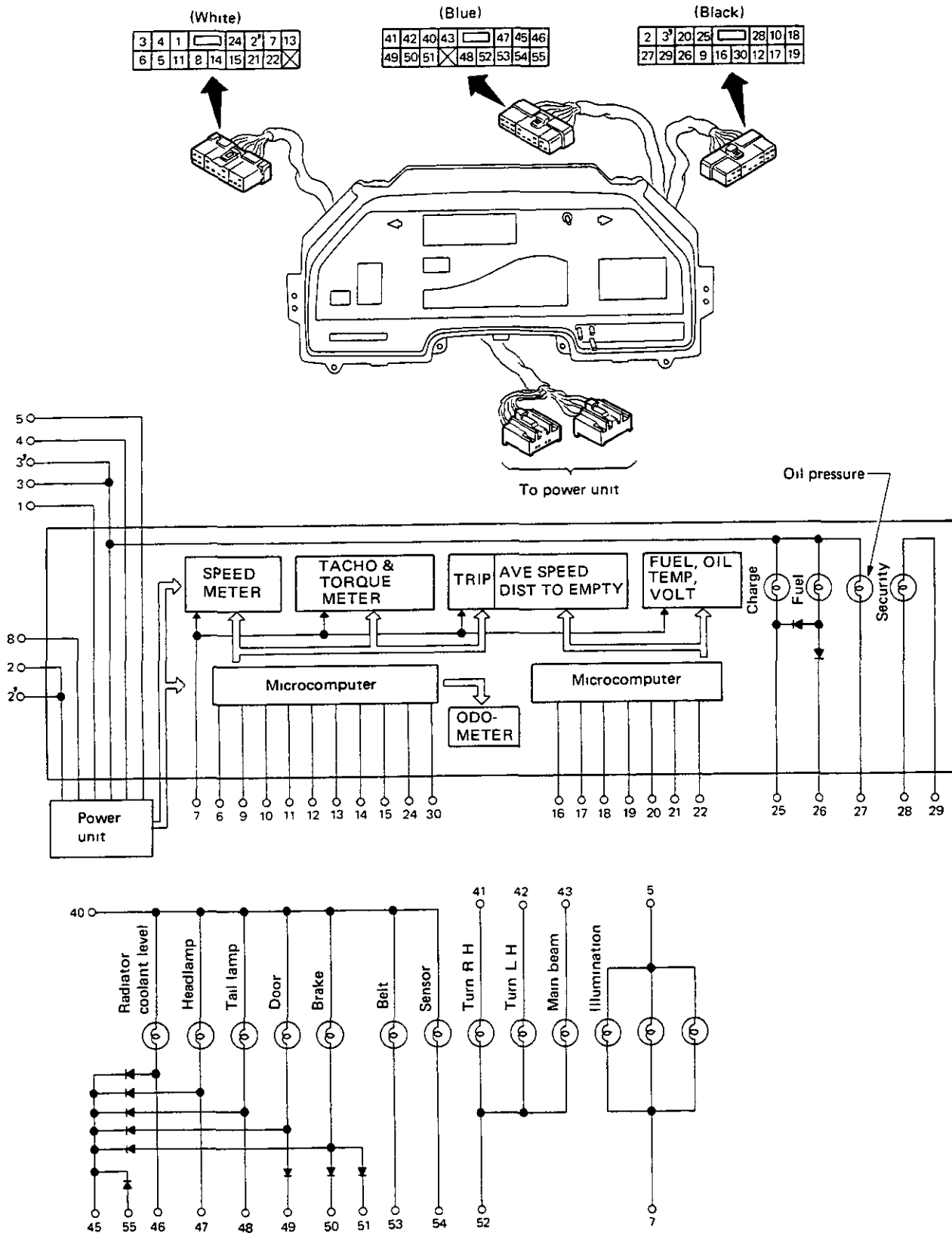
No electrical terminal should be touched with bare hands.



SEL660D

METER AND GAUGES — Digital Type Combination Meter

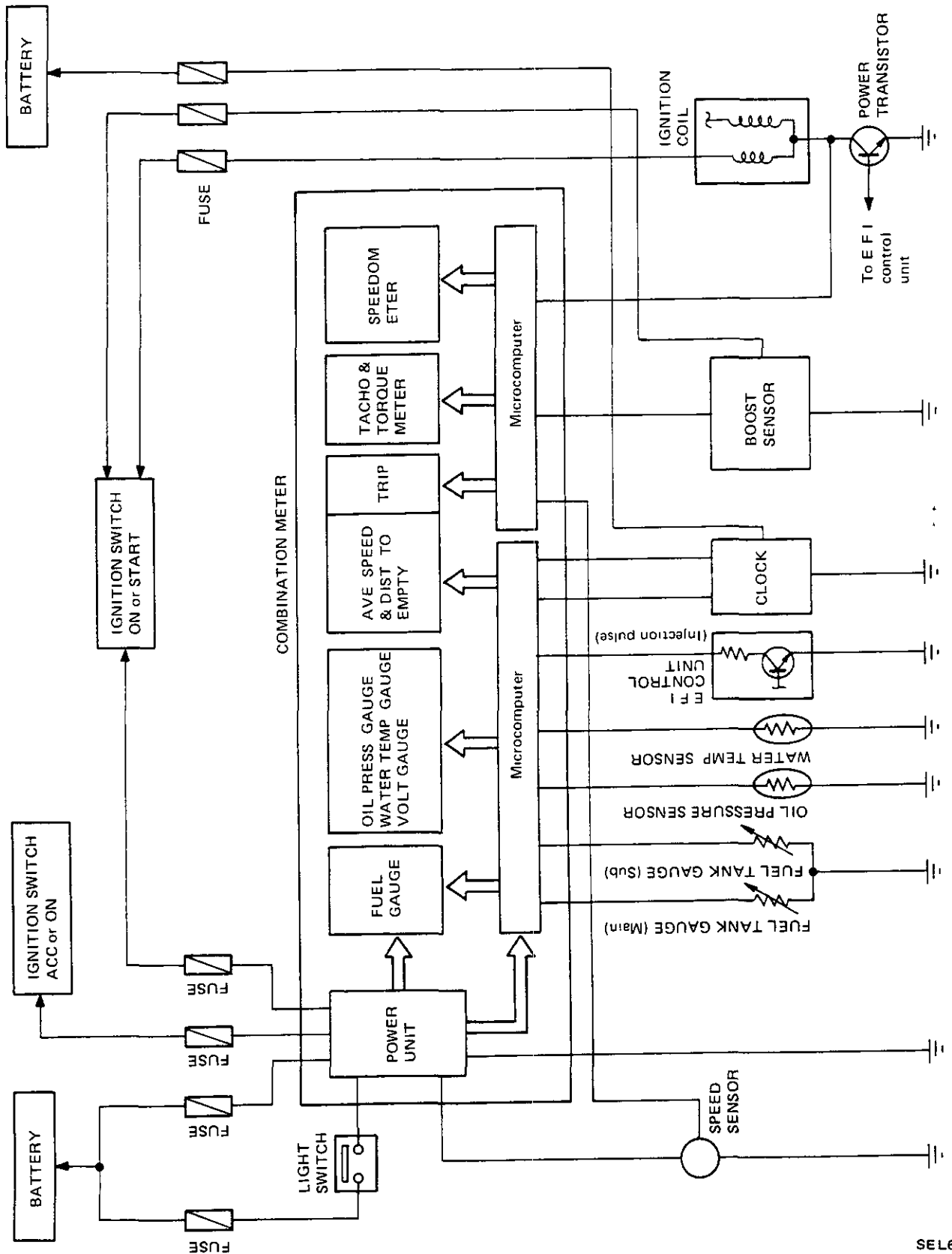
Combination Meter (Cont'd)



SEL661D

METER AND GAUGES — Digital Type Combination Meter

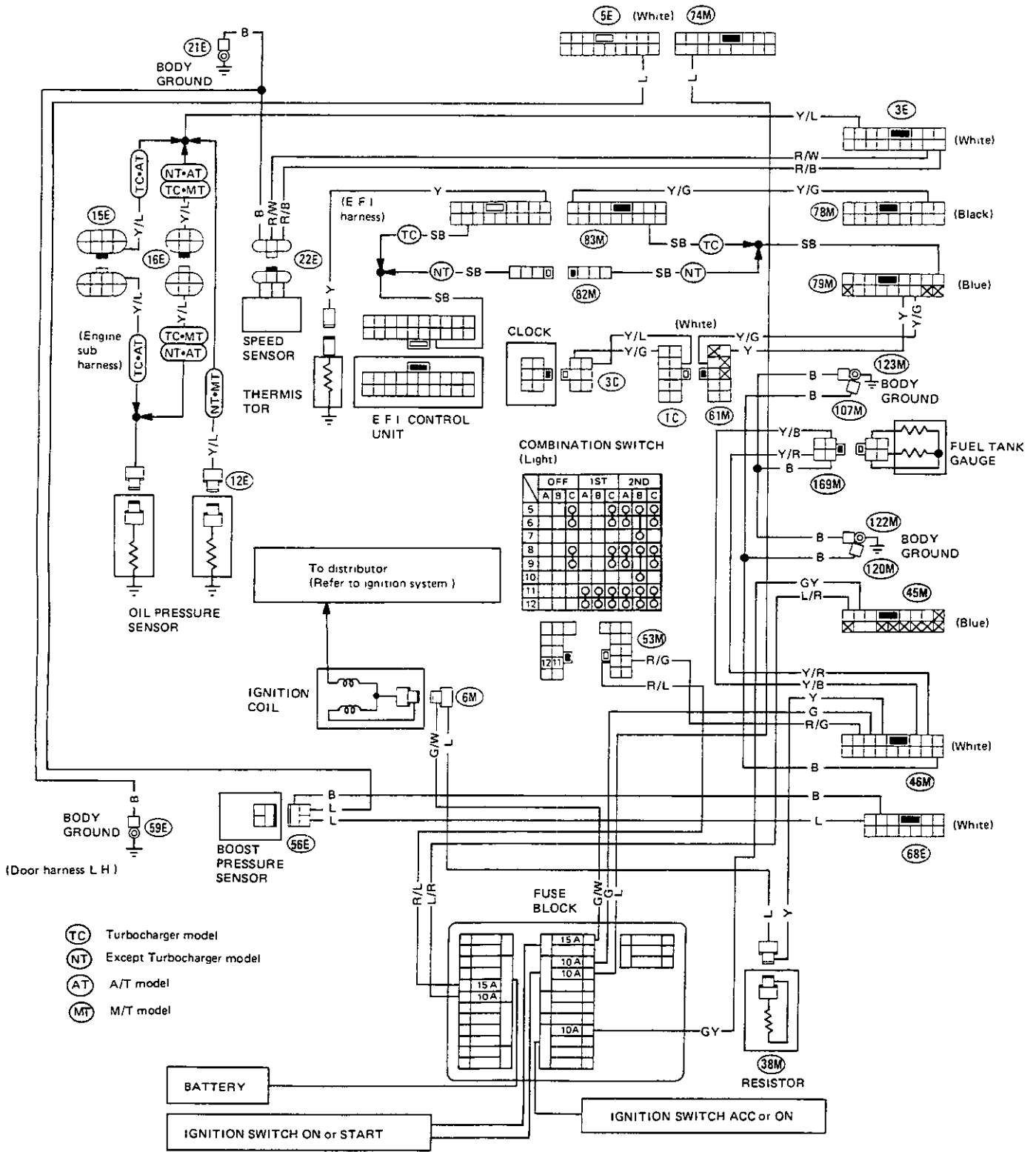
Schematic



SEL662D

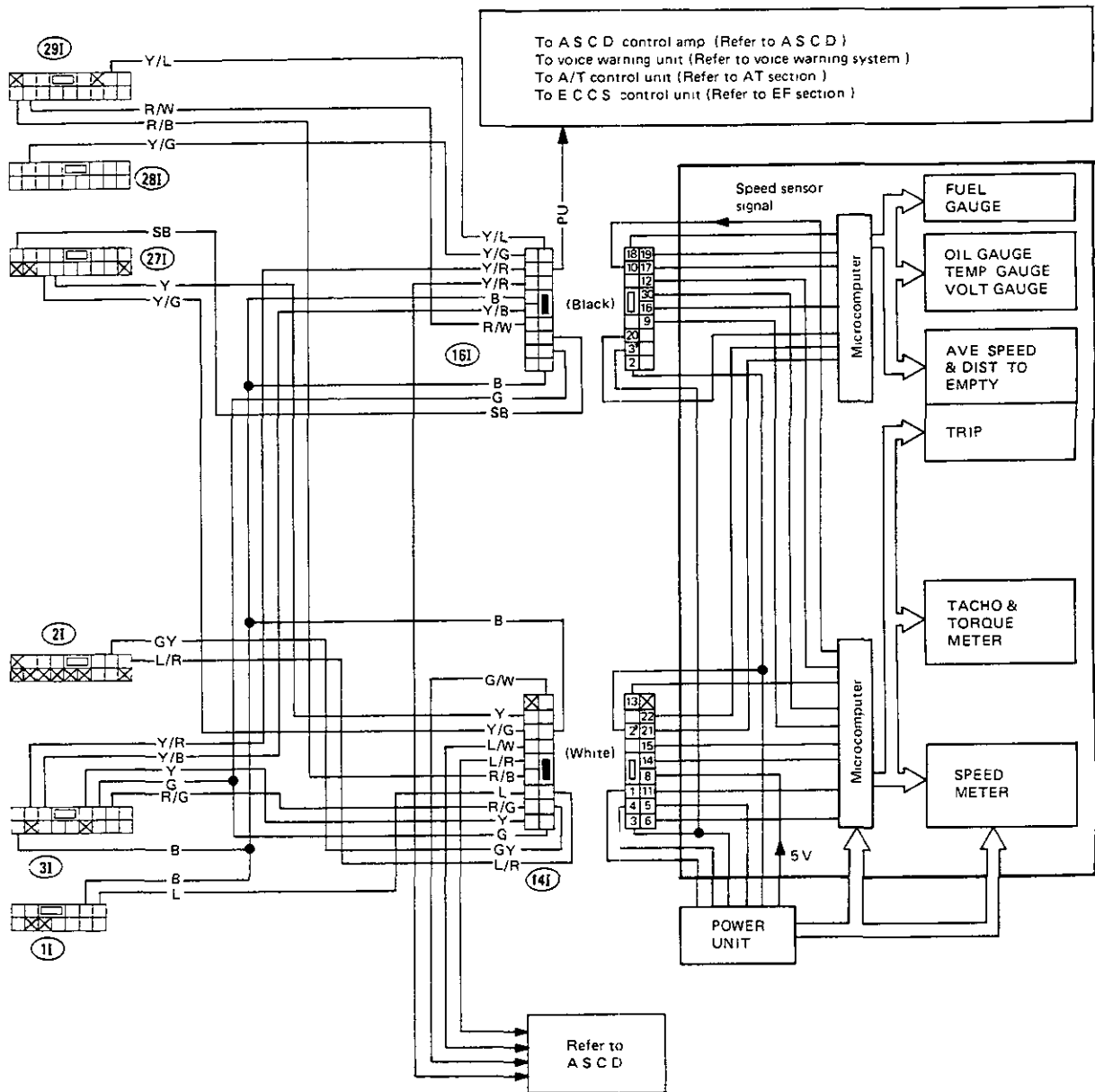
METER AND GAUGES — Digital Type Combination Meter

Wiring Diagram



METER AND GAUGES — Digital Type Combination Meter

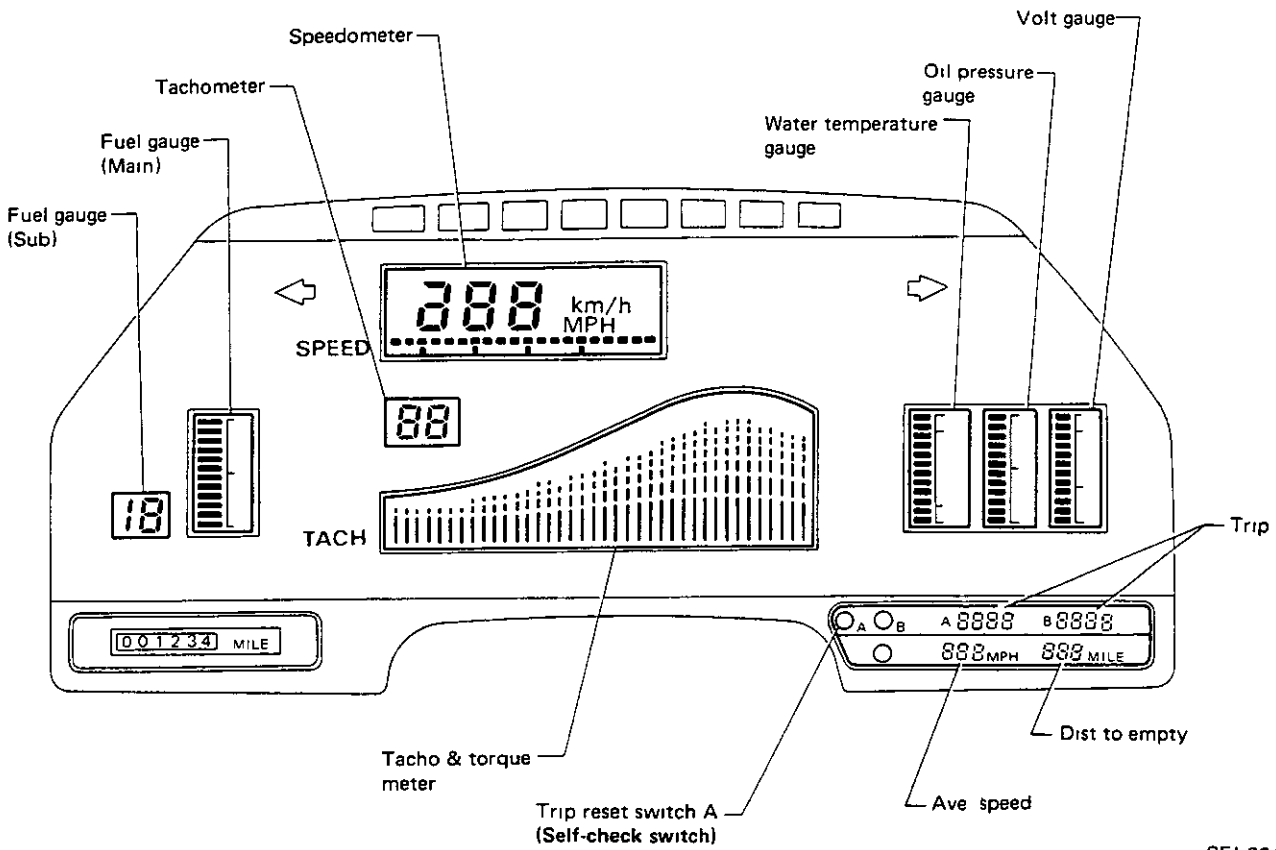
Wiring Diagram (Cont'd)



SEL663D

METER AND GAUGES — Digital Type Combination Meter

Display Check



SEL664D

METER AND GAUGES — Digital Type Combination Meter

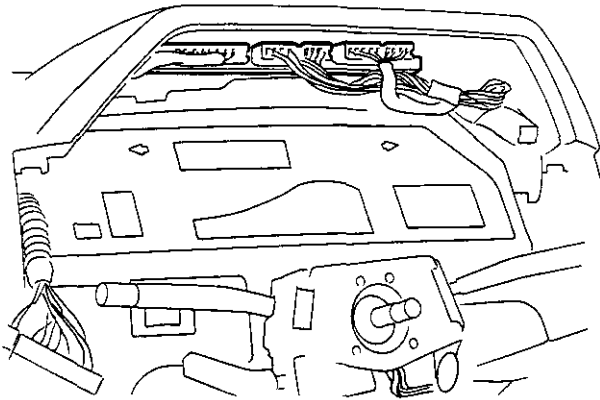
Display Check (Cont'd)

- Digital combination meter is provided with a self-check function to determine whether or not meter itself is malfunctioning.

Test procedure

- (1) While pushing trip reset switch A, switch ignition switch from "OFF" to "ON" Trip reset switch A should remain pushed in until self-check operation start
- (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.

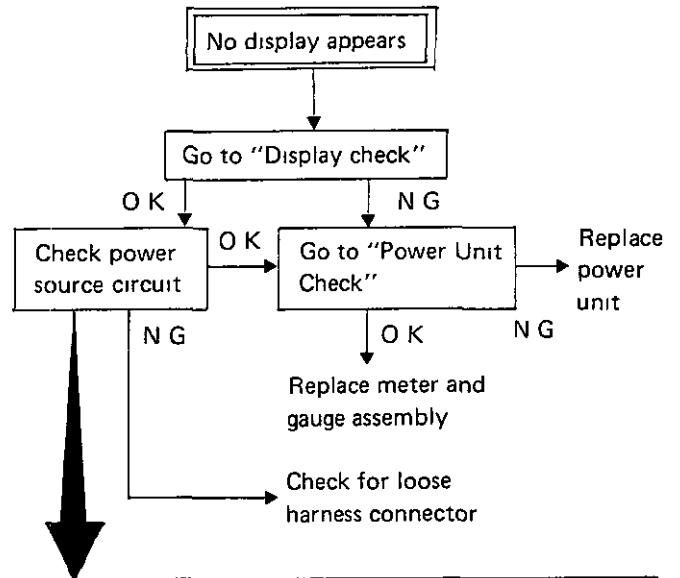
Preparation for Trouble-shooting



SEL665D

- Remove nut which holds instrument switch
- Remove instrument switch
- Remove cluster lid A

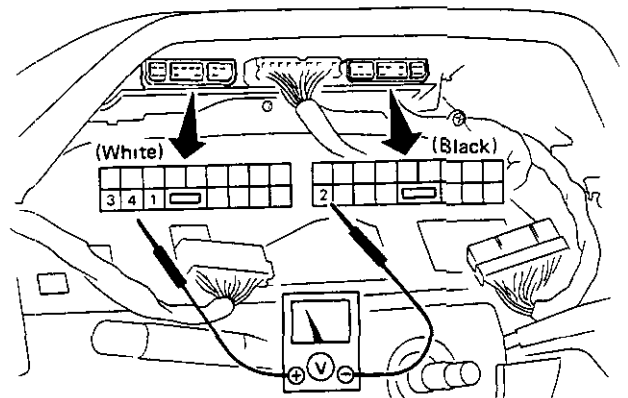
Trouble-shooting



Voltmeter terminals		Ignition switch position		
(+)	(-)	OFF	ACC	ON
①	②	Approx 12V	12V	12V
③	②	0V	0V	Approx 12V
④	②	0V	Approx 12V	Approx 12V

Ohmmeter terminals		Ignition switch OFF
(+)	(-)	
②	Body ground	Continuity exists

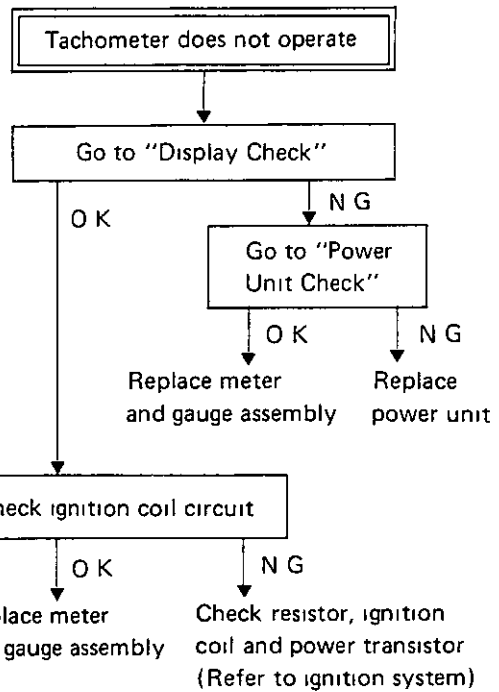
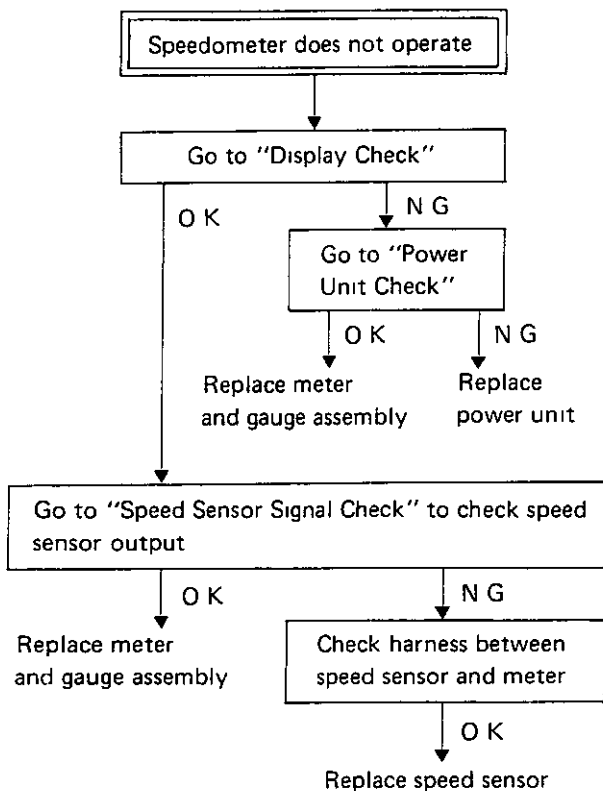
- Disconnect meter harness connector as shown below



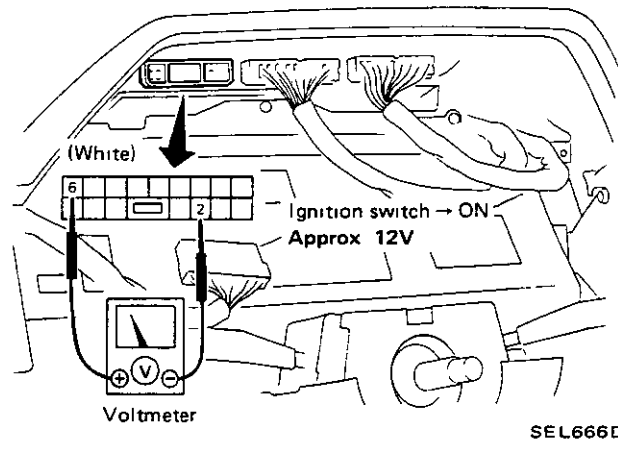
SEL744D

METER AND GAUGES — Digital Type Combination Meter

Trouble-shooting (Cont'd)

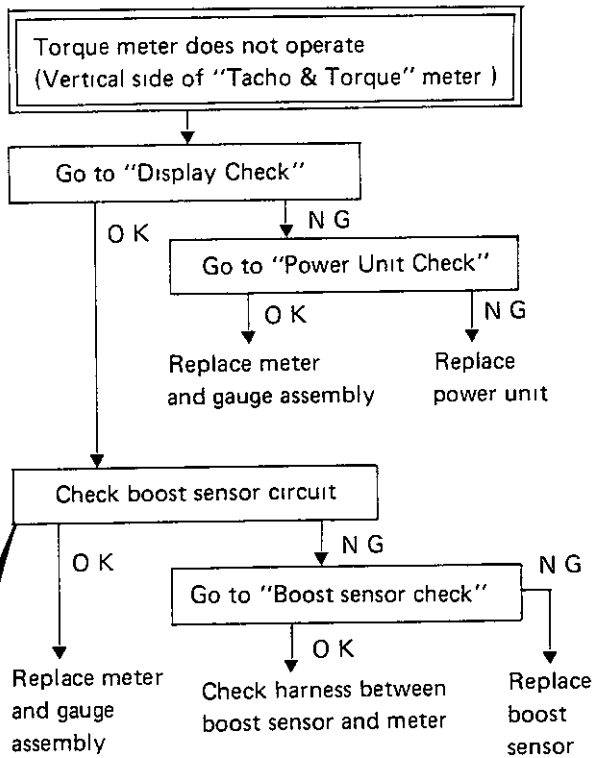


- 1 Disconnect meter harness connector (white)
- 2 Turn ignition switch to "ON".
- 3 Check terminal voltage between ⑥ and ②

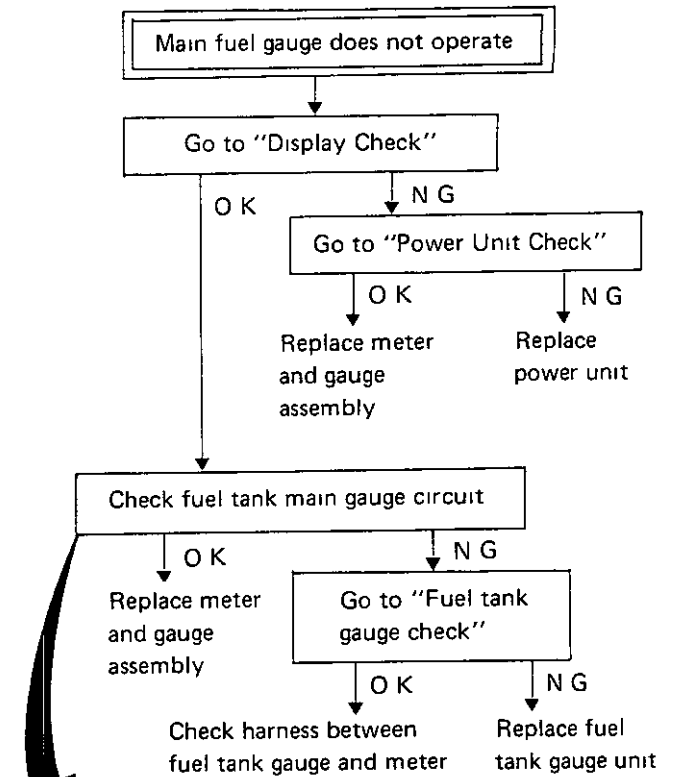
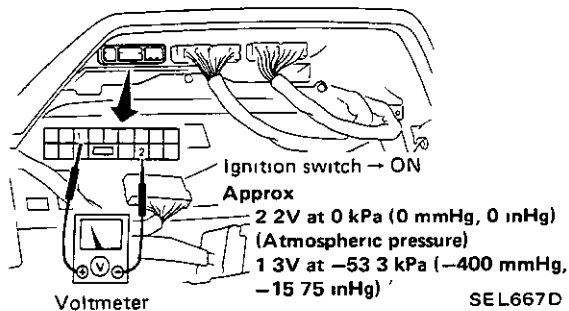
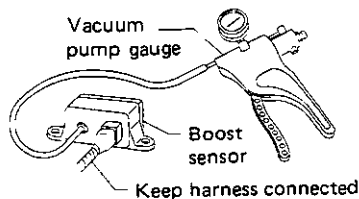


METER AND GAUGES — Digital Type Combination Meter

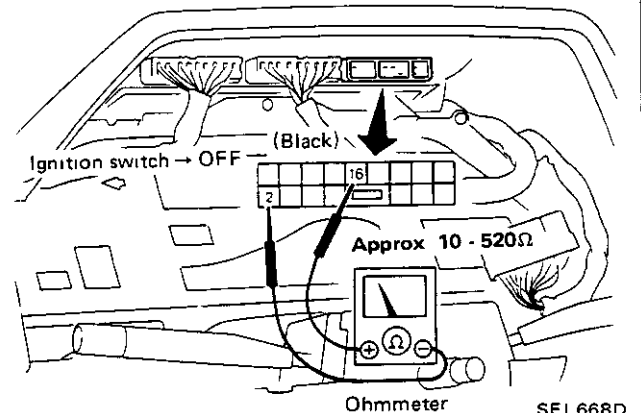
Trouble-shooting (Cont'd)



- 1 Disconnect meter harness connector (white)
- 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 ① and ②

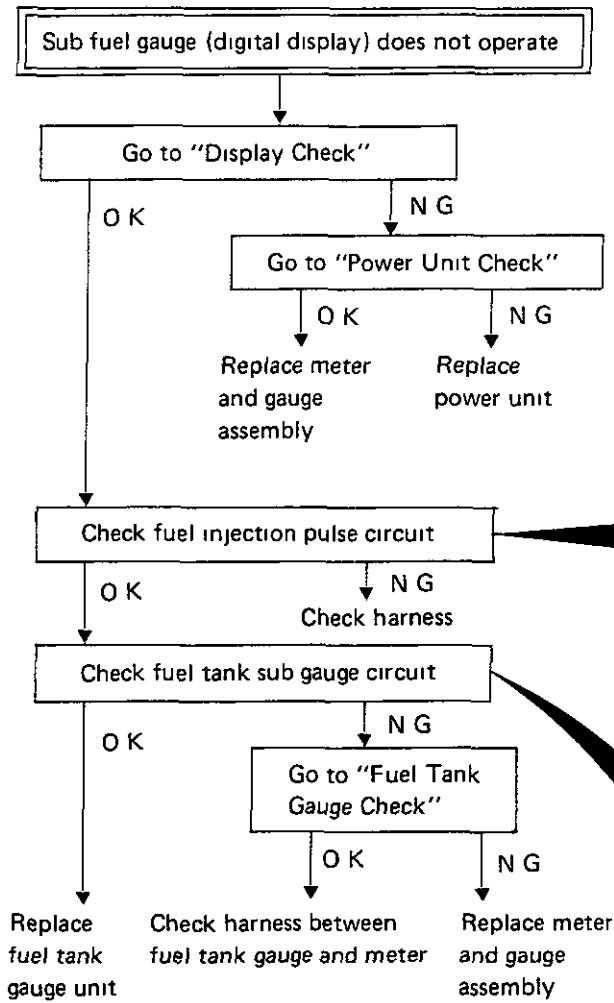


- 1 Disconnect meter harness connector (black)
- 2 Turn ignition switch to "OFF"
- 3 Measure resistance between ① and ②



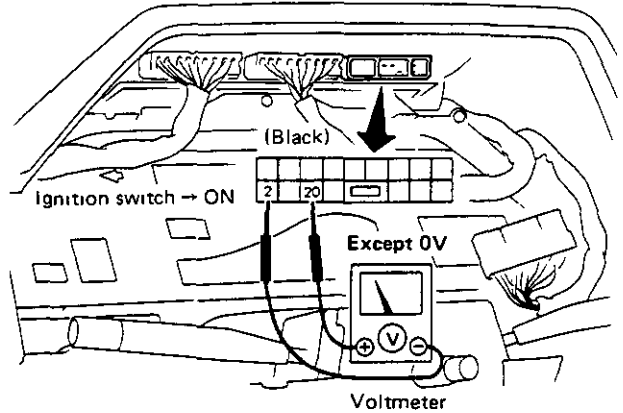
METER AND GAUGES — Digital Type Combination Meter

Trouble-shooting (Cont'd)



FUEL INJECTION PULSE CIRCUIT CHECK

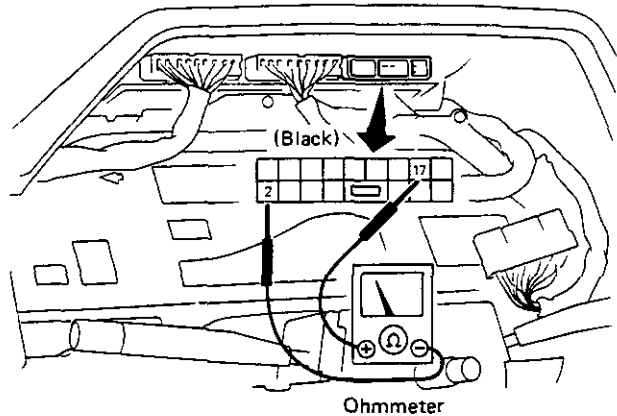
- 1 Disconnect meter harness connector (black)
- 2 Turn ignition switch to "ON"
- 3 Check for voltage across ⑳ and ㉔.



SEL669D

FUEL TANK SUB GAUGE CIRCUIT CHECK

- 1 Turn ignition switch to "OFF"
- 2 Measure resistance between ⑰ and ㉔.



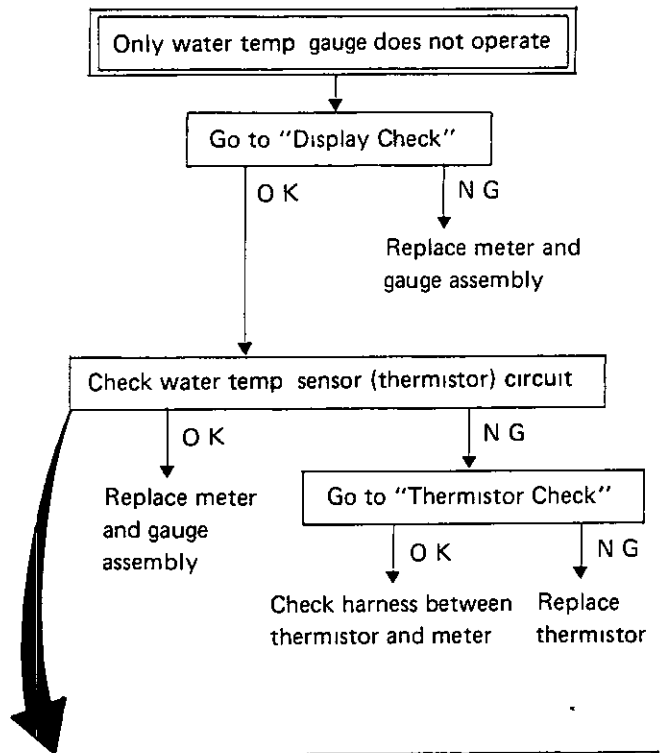
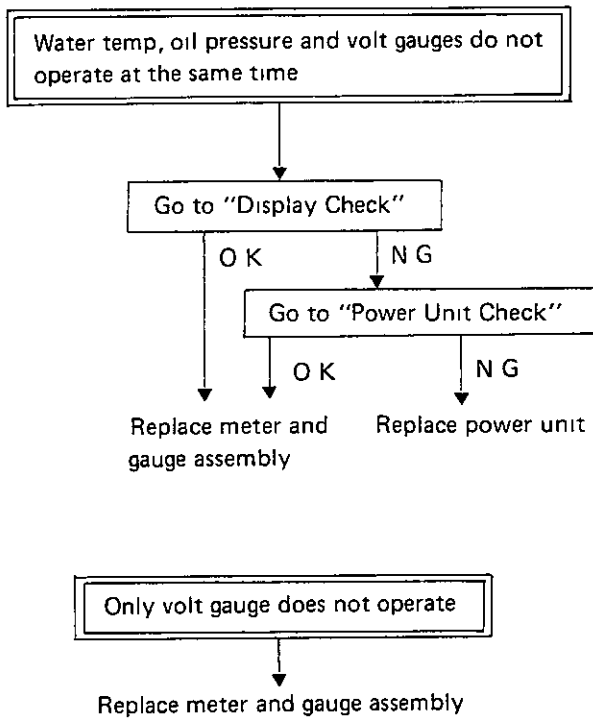
Ignition switch → OFF

Fuel residue	Resistance
Less than 4ℓ	∞
5 - 20ℓ	Approx 4 - 930Ω
More than 20ℓ	Less than 4Ω

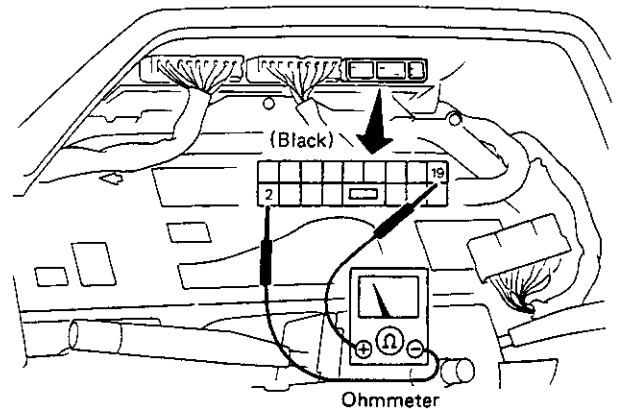
SEL670D

METER AND GAUGES — Digital Type Combination Meter

Trouble-shooting (Cont'd)



- 1 Disconnect meter harness connector (black)
- 2 Turn ignition switch to "OFF"
- 3 Measure resistance between ① and ②



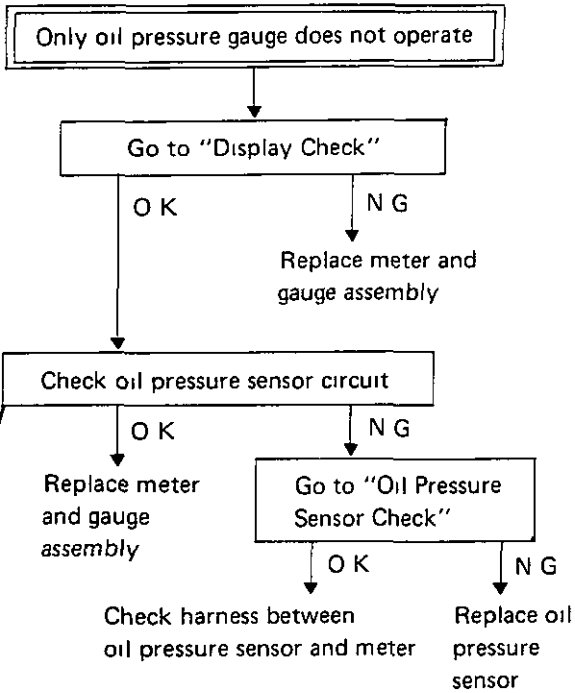
Ignition switch → OFF

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

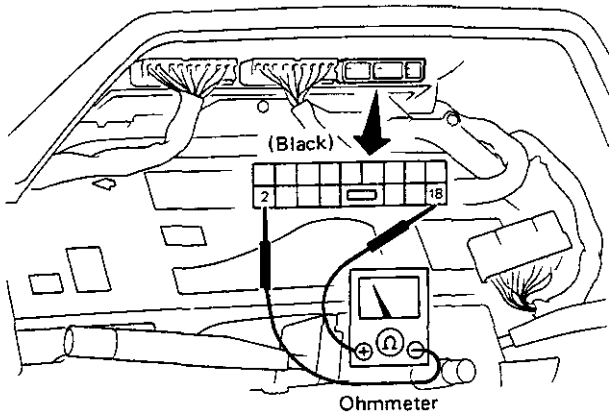
SEL671D

METER AND GAUGES — Digital Type Combination Meter

Trouble-shooting (Cont'd)

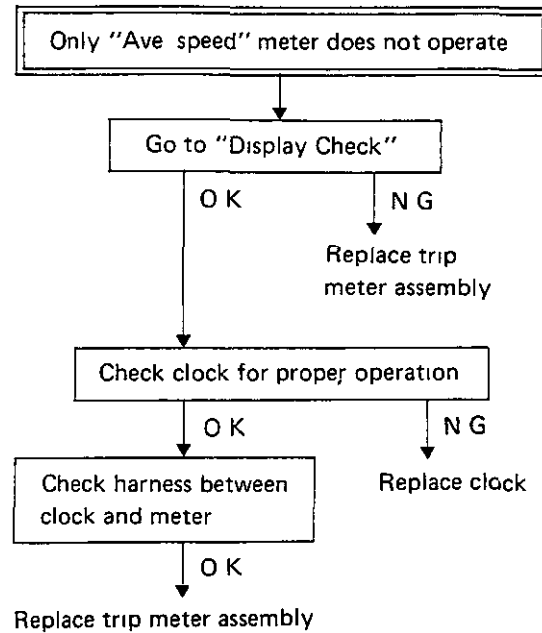
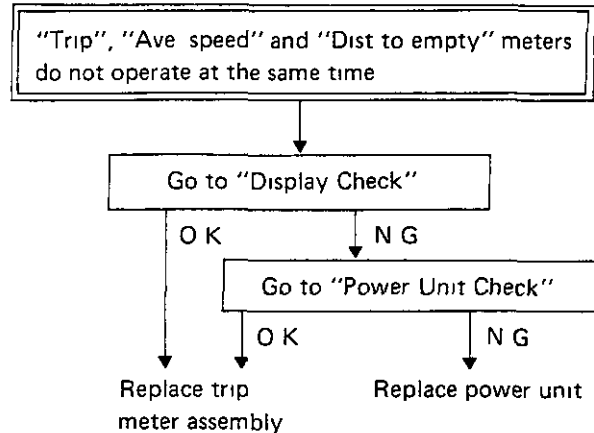


- 1 Disconnect meter harness connector (black)
- 2 Measure resistance between ⑮ and ② when engine stopping and running



Engine	Resistance
Stop	Approx 75Ω or more
Idling	Approx 60Ω or less

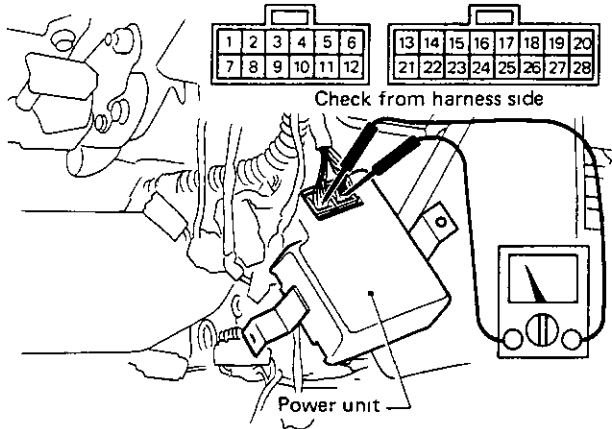
SEL672D



METER AND GAUGES — Digital Type Combination Meter

Power Unit Check

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



SEL673D

- Turn ignition switch to "ON"

Voltmeter terminal		Voltage [V]	Remarks
(+)	(-)		
①	⑦	Approx 12	Check when no display appears
②		Approx 5	
④		Approx 16	
⑧		Approx 5	
⑦	③	Approx 22	For speedometer For tachometer For Temp, Oil, Volt gauge For Fuel gauge For "Trip", "Ave speed" & "Dist to empty" meter
	⑨	Approx 28.5	
	⑪	More than 6	
	⑰		
	⑳		
	㉓		
㉕			
	⑳		

- Turn ignition switch to "OFF"

Ohmmeter		Continuity	Remarks
(+)	(-)		
⑦	Body ground	Yes	Check when no display appears

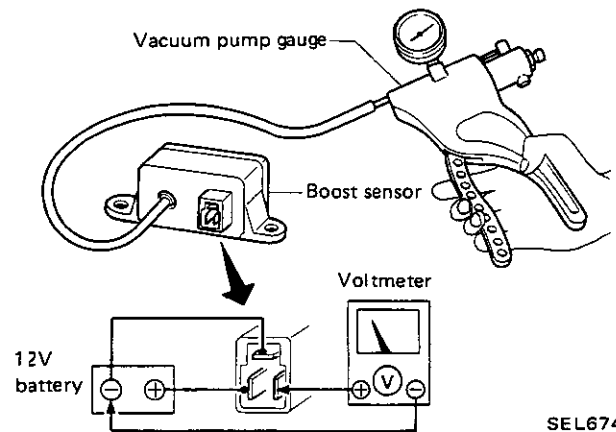
If specified voltage or continuity is not produced, replace power unit.

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

METER AND GAUGES — Digital Type Combination Meter

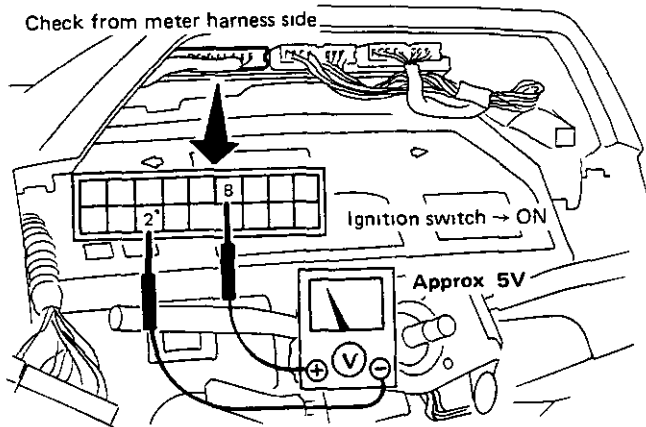
Speed Sensor Signal Check

SPEED SENSOR OUTPUT CHECK

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

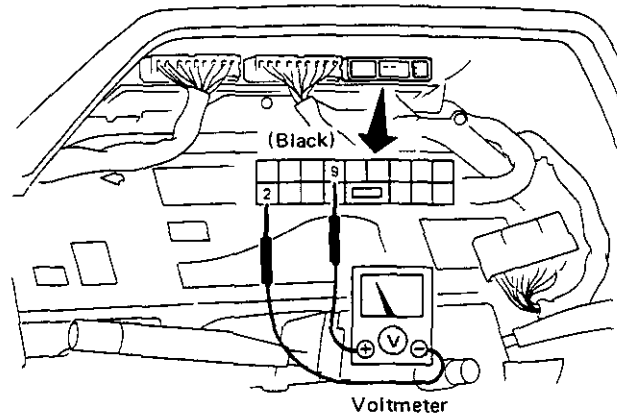
- 1 Remove cluster lid A
- 2 Connect a voltmeter between ⑧ and ② on combination meter side. Combination meter harness connector should remain connected to instrument harness
- 3 Switch ignition switch from "OFF" to "ON" Voltmeter should indicate approximately 5 volts when switch is "ON"

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



SEL745D

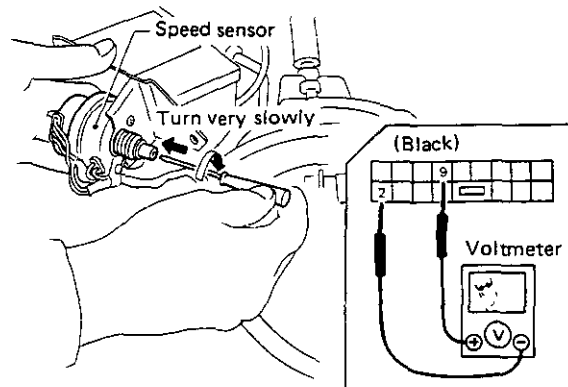
- 4 Turn ignition switch to "OFF"
- 5 Disconnect speedometer cable from speed sensor and remove speed sensor with harness connected.
6. Disconnect combination meter harness from instrument harness as shown below, and connect a voltmeter across ⑨ and ②



SEL746D

- 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



SEL747D

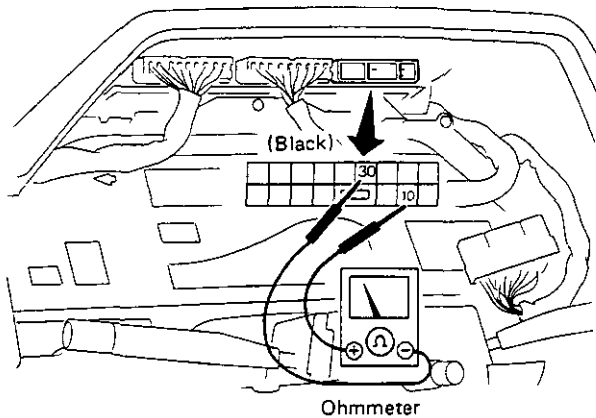
If voltmeter pointer does not deflect, replace speed sensor.

METER AND GAUGES — Digital Type Combination Meter

Speed Sensor Signal Check (Cont'd)

METER OUTPUT CHECK

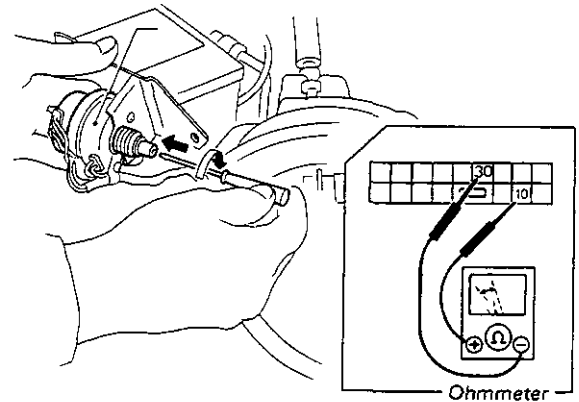
- Combination meter emits speed sensor signal to control E.C.C.S. control unit, A.S.C.D. control unit, voice warning unit and A/T control unit.
- 1 Disconnect speedometer cable from speed sensor and remove speed sensor with harness connected
 - 2 Remove cluster lid A.
 - 3 Disconnect combination meter harness from instrument harness as shown, and connect an ohmmeter between ⑩ and ③①



SEL748D

- 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 deflects twice for each rotation of rotor shaft



SEL749D

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

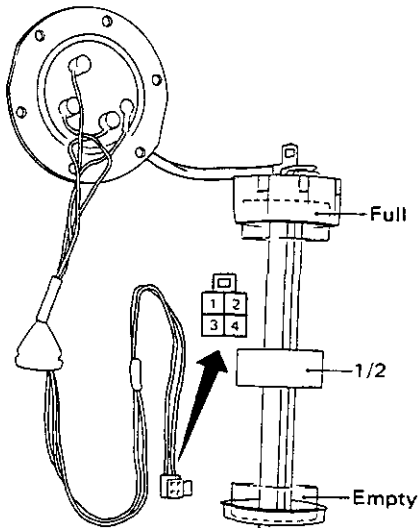
METER AND GAUGES — Digital Type Combination Meter

Fuel Tank Gauge Check

- For removal, refer to FE section

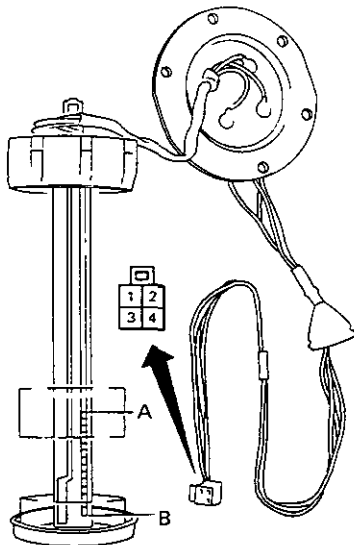
Ohmmeter terminal		Float position	Resistance value
(+)	(-)		
②	①	Full	Approx 10 - 20Ω
		Empty	Approx 480 - 520Ω
		1/2	Approx 100 - 110Ω
③	①	A	Approx 4Ω or below
		B	Approx 870 - 930Ω
④	①	B	0Ω

Main gauge



SEL675D

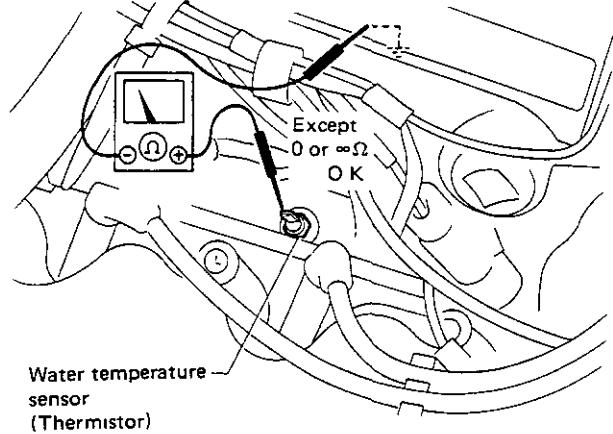
Sub gauge



SEL676D

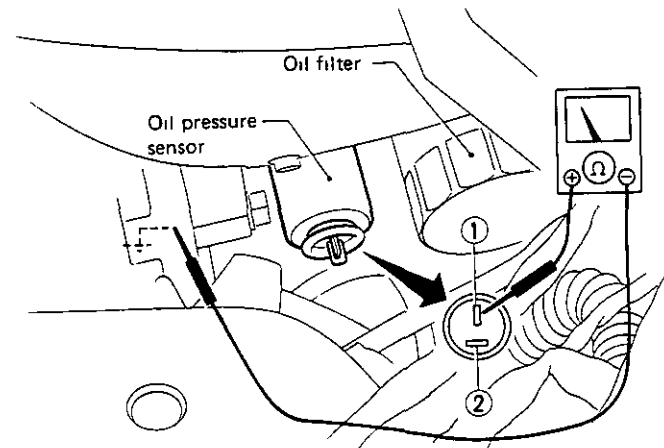
Water Temp Sensor Check

Cylinder head R H side



SEL677D

Oil Pressure Sensor Check



SEL678D

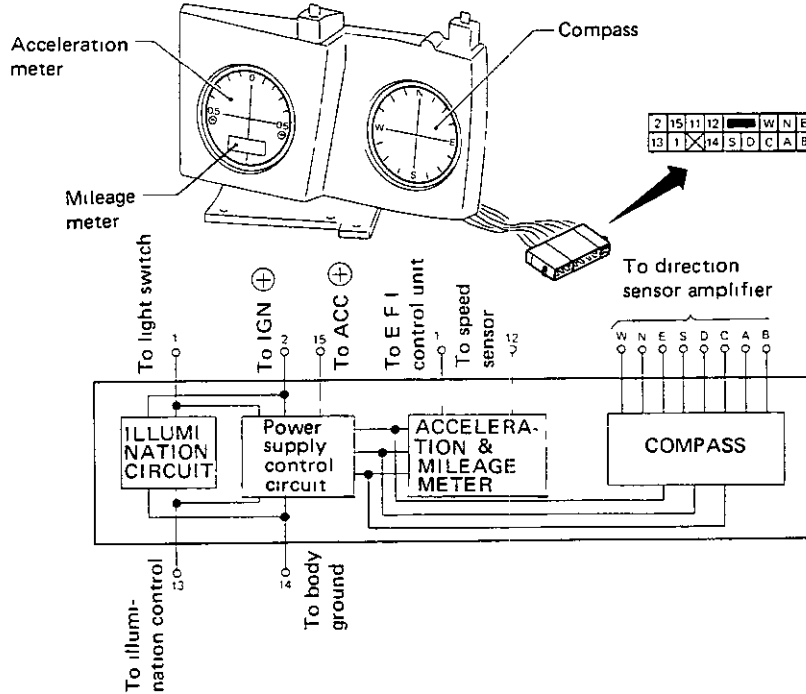
Ohmmeter terminal		With engine stopped	With engine running (idling)
(+)	(-)		
①	Engine ground	0Ω	∞
②	Engine ground	More than 74Ω	Less than 60Ω

METER AND GAUGES — Digital Type Combination Gauge

Combination Gauge

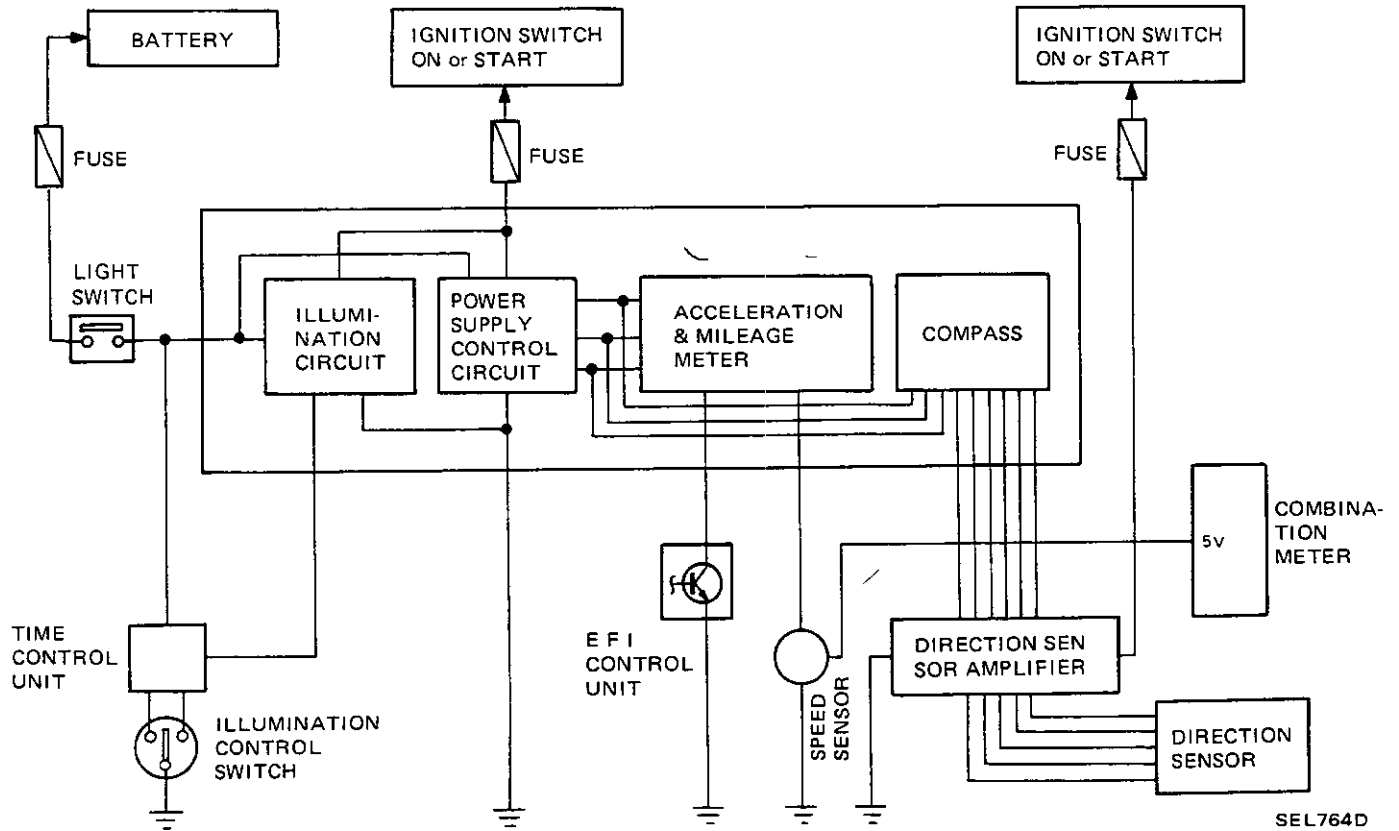
CAUTION:

- Never touch the combination gauge terminal with bare hands
- Digital type combination gauge should not be disassembled



SEL679D

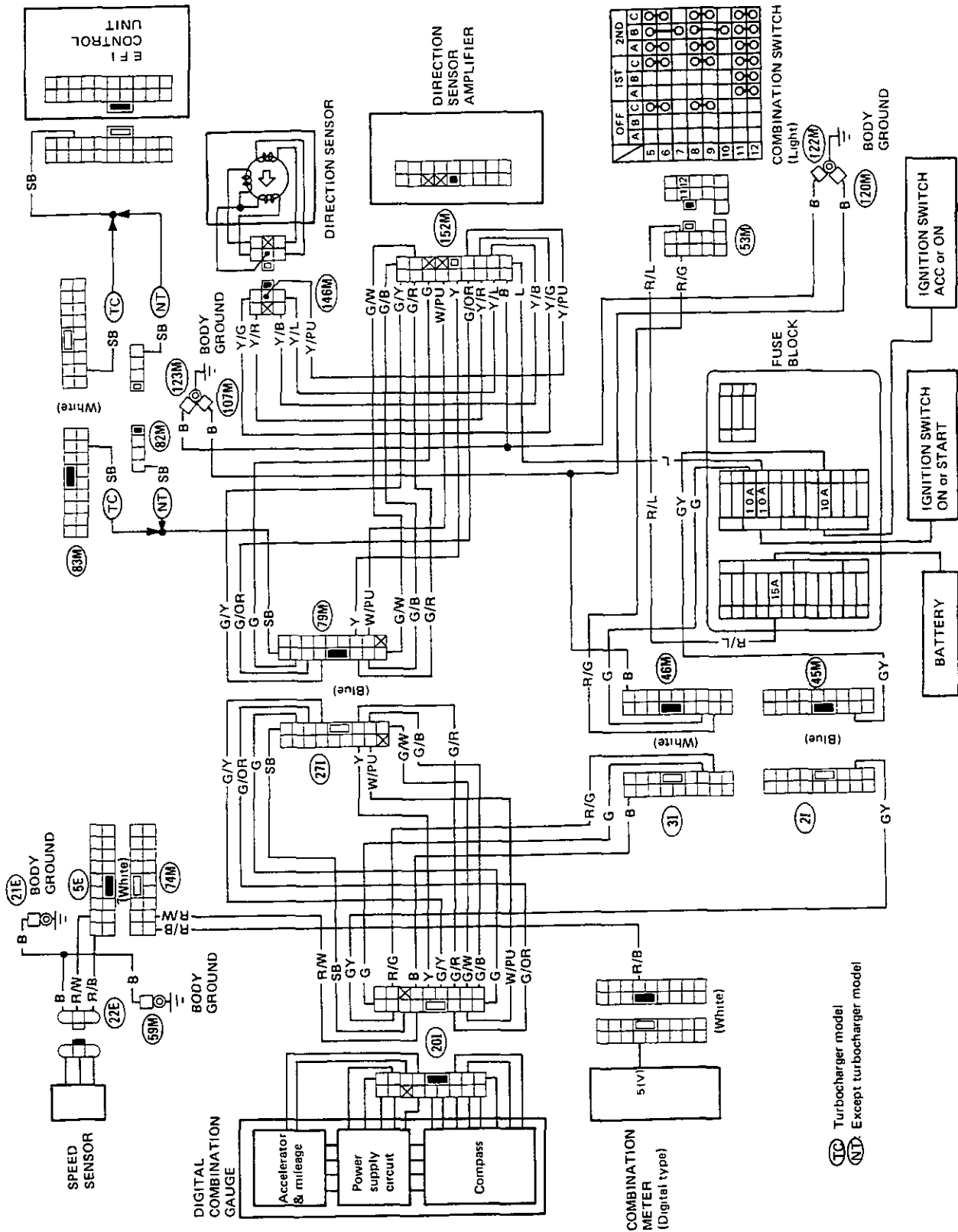
Schematic



SEL764D

METER AND GAUGES — Digital Type Combination Gauge

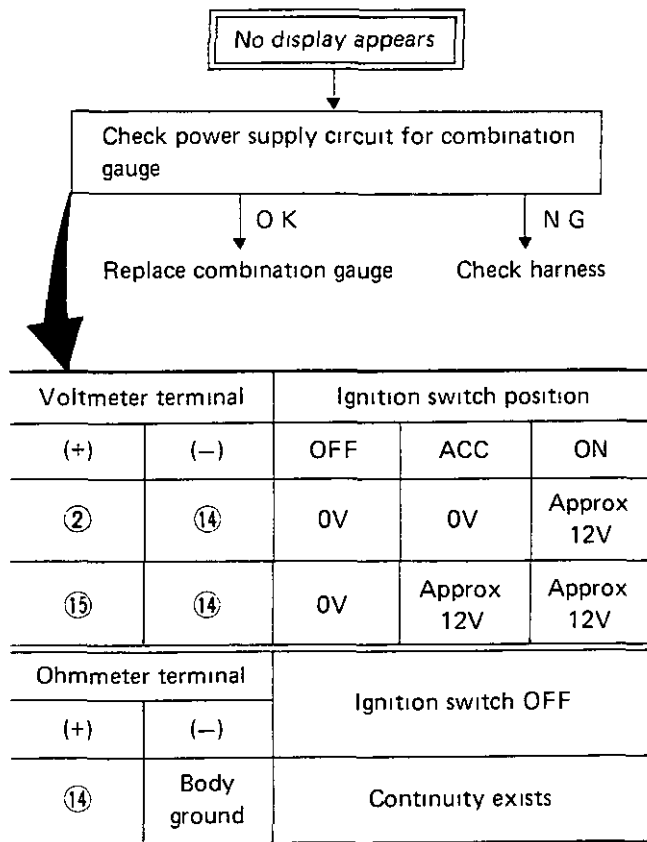
Wiring Diagram



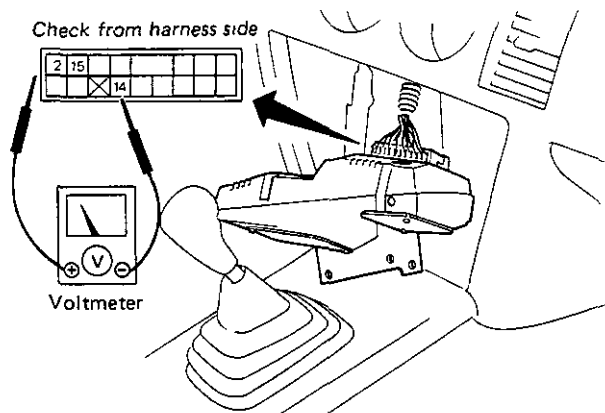
(TC) Turbocharger model
(NT) Except turbocharger model

METER AND GAUGES — Digital Type Combination Gauge

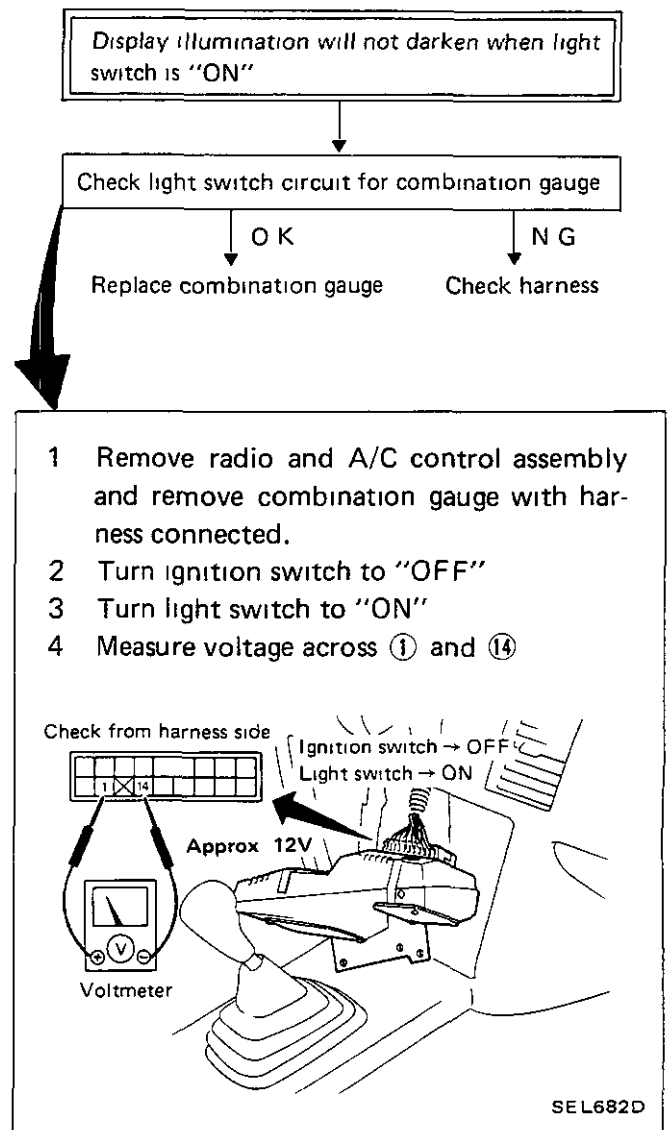
Trouble-shooting



- Remove radio and A/C control assembly from center console and remove combination gauge with harness connected



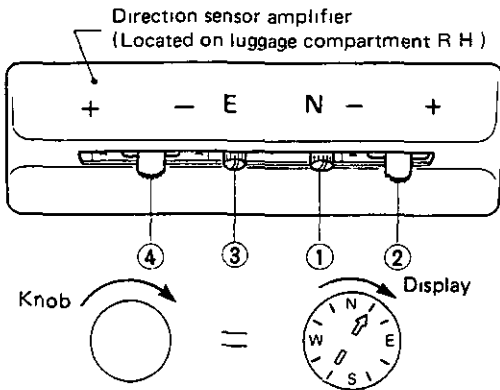
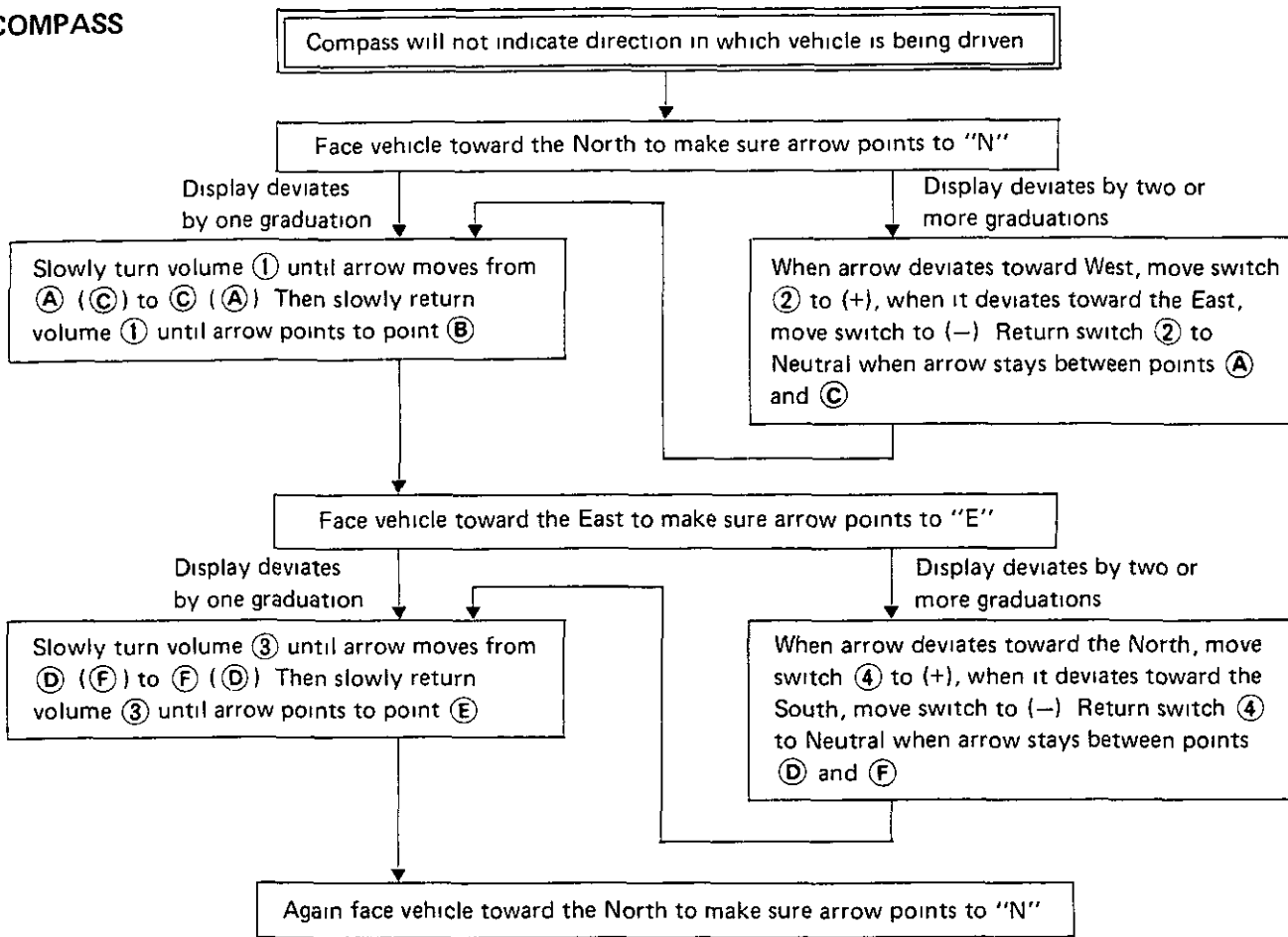
SEL681D



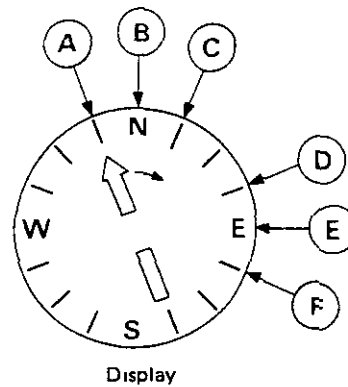
METER AND GAUGES —Digital Type Combination Gauge

Trouble-shooting (Cont'd)

COMPASS



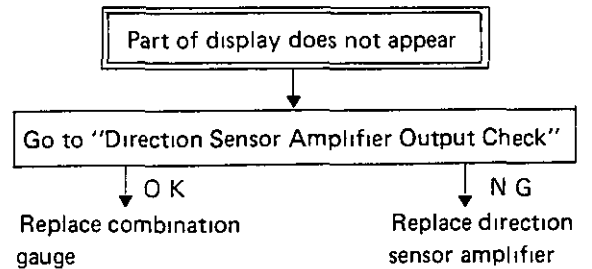
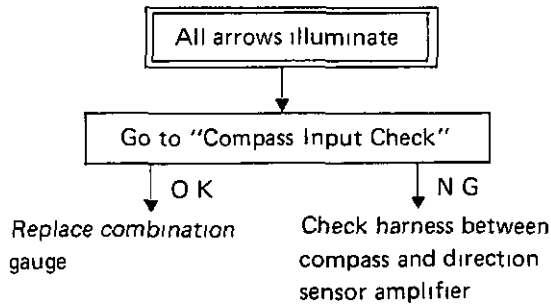
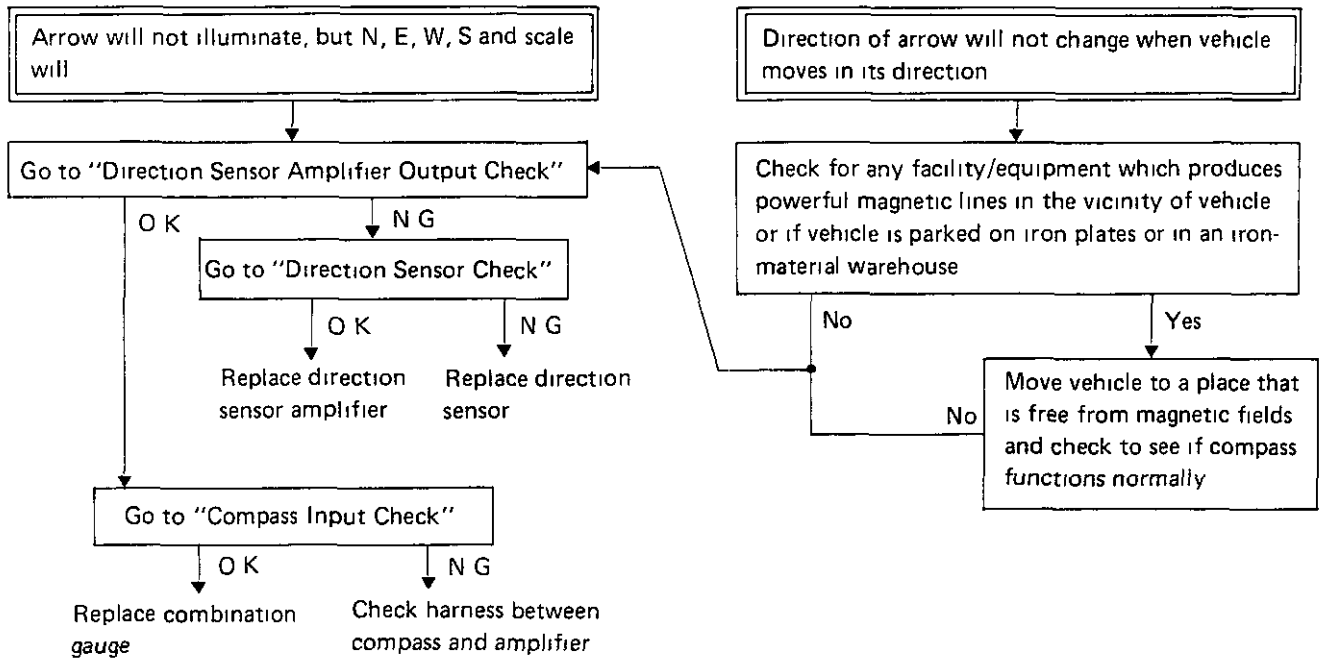
SEL683D



SEL684D

METER AND GAUGES — Digital Type Combination Gauge

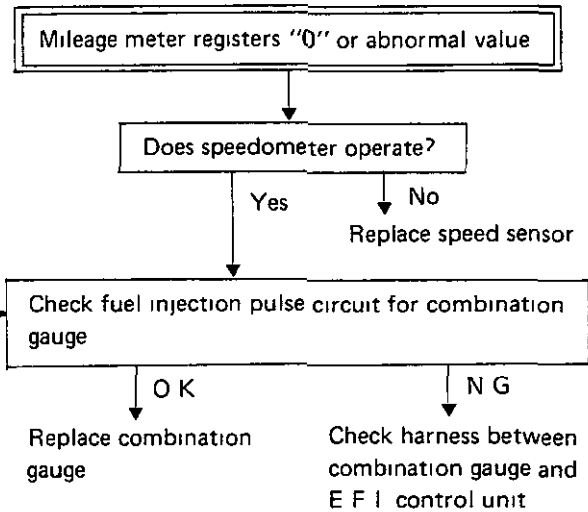
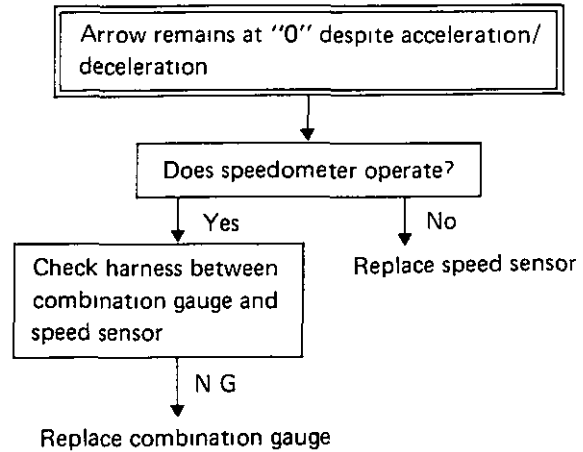
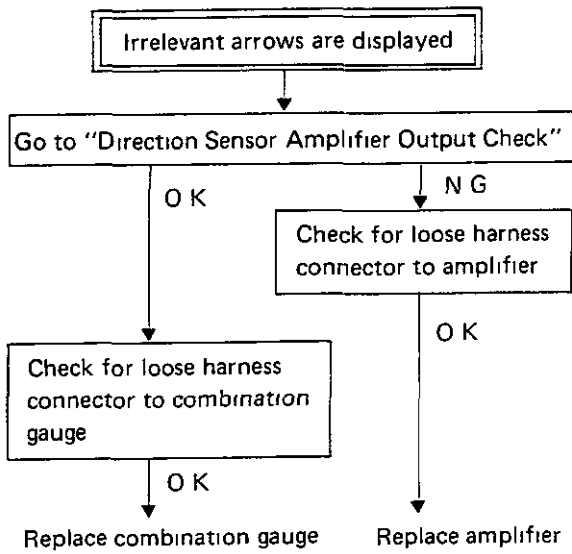
Trouble-shooting (Cont'd)



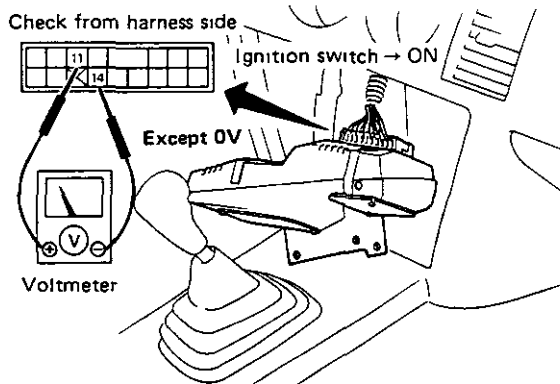
METER AND GAUGES —Digital Type Combination Gauge

Trouble-shooting (Cont'd)

ACCELERATION & MILEAGE METERS



- 1 Remove radio and A/C control assembly from center console Remove combination gauge with harness connected
2. Turn ignition switch to "ON"
- 3 Check to determine if voltage is produced across ⑪ and ⑭

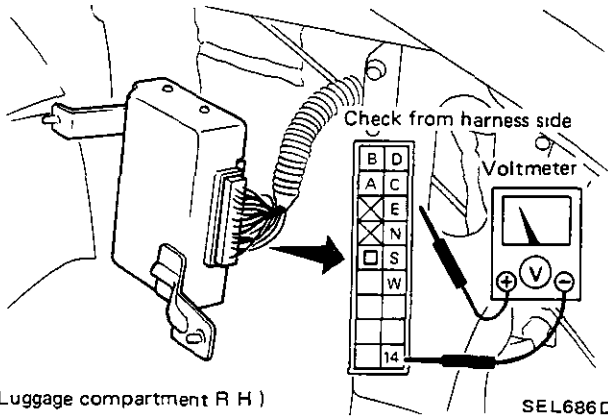


SEL685D

METER AND GAUGES —Digital Type Combination Gauge

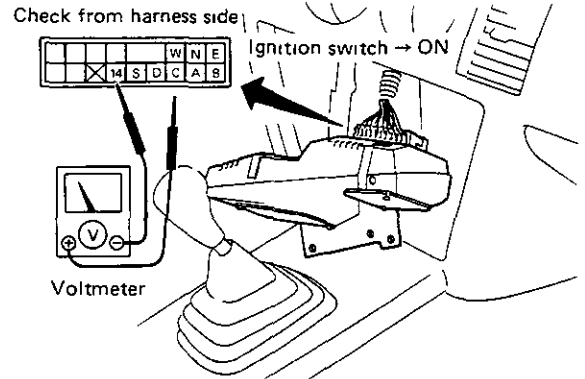
Direction Sensor Amplifier Output Check

- Connect direction sensor amplifier harness (if disconnected)
- Using a directional magnet, determine the direction in which car faces. Check voltage across terminals as indicated in chart below
- Turn ignition switch to "ON"



Compass Input Check

- Remove radio and A/C control assembly from center console and remove combination gauge with harness connected
- Check voltages across terminals as indicated in chart below
- Turn ignition switch ON

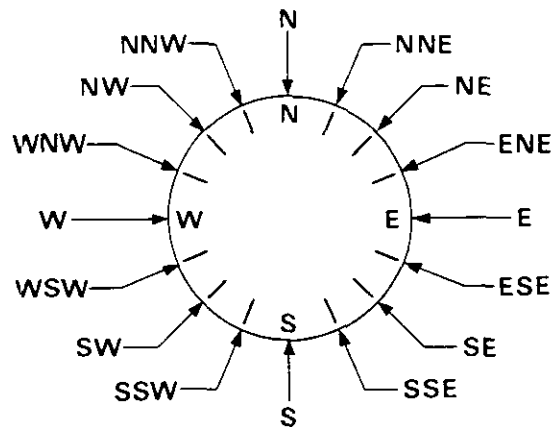


Voltmeter terminal (-)	⑭							
	N	E	S	W	B	A	C	D
NW	1	0	0	0	0	1	1	1
NNW	1	0	0	0	1	0	1	1
N	1	0	0	0	1	1	0	1
NNE	1	0	0	0	1	1	1	0
NE	0	1	0	0	1	1	1	0
ENE	0	1	0	0	1	1	0	1
E	0	1	0	0	1	0	1	1
ESE	0	1	0	0	0	1	1	1
SE	0	0	1	0	0	1	1	1
SSE	0	0	1	0	1	0	1	1
S	0	0	1	0	1	1	0	1
SSW	0	0	1	0	1	1	1	0
SW	0	0	0	1	1	1	1	0
WSW	0	0	0	1	1	1	0	1
W	0	0	0	1	1	0	1	1
WNW	0	0	0	1	0	1	1	1

1 More than 4V
0 Less than 1V

CAUTION:

Before performing voltage measurements, ensure that there is no equipment or facility which would produce powerful magnet lines in the vicinity of vehicle.

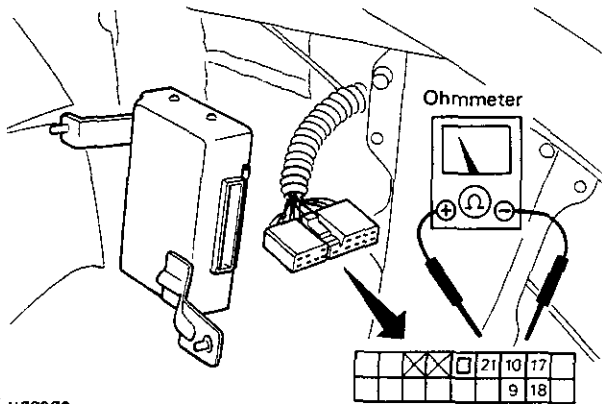


METER AND GAUGES — Digital Type Combination Gauge

Direction Sensor Check

- Disconnect harness connector from direction sensor amplifier
- Measure resistance values between terminals on harness side

Ohmmeter terminal		Resistance
(+)	(-)	
⑨	⑳	Approx 20 - 35Ω
⑩	㉑	Approx 20 - 35Ω
⑰	⑱	Approx 10 - 20Ω

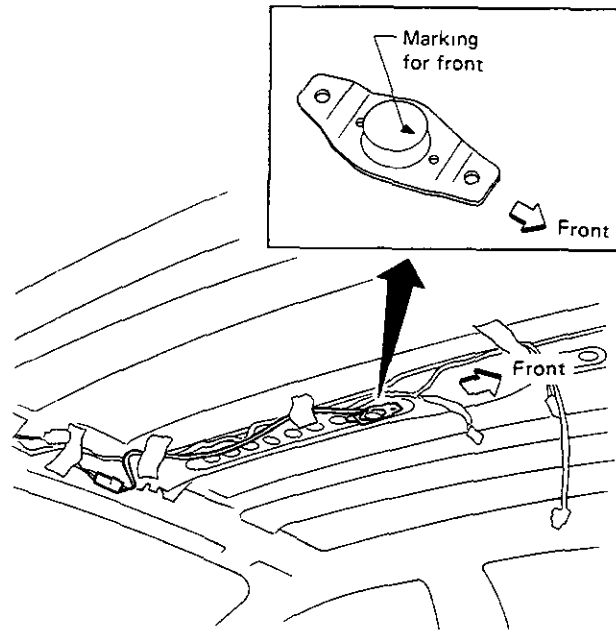


(Luggage compartment R H)

SEL689D

Direction Sensor Installation

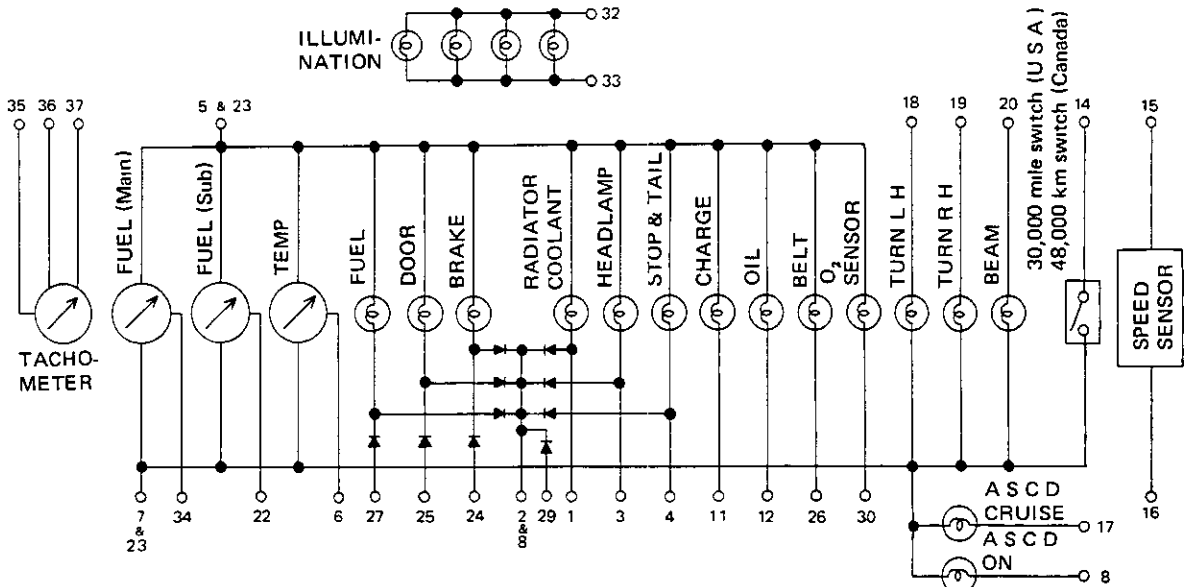
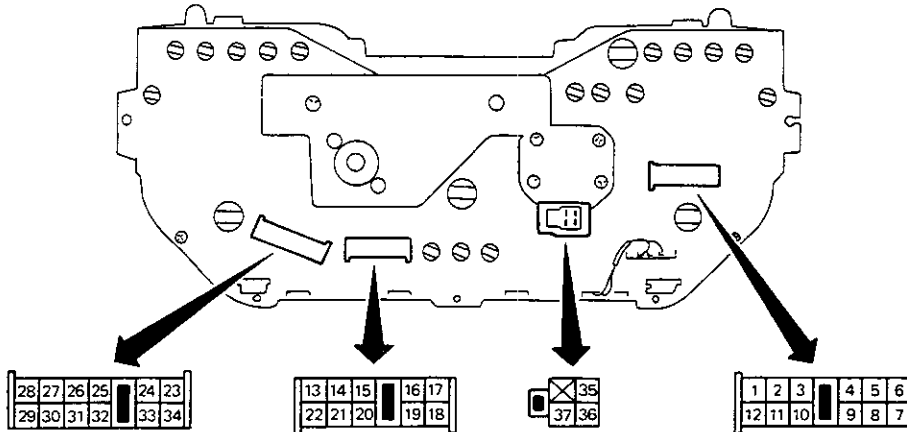
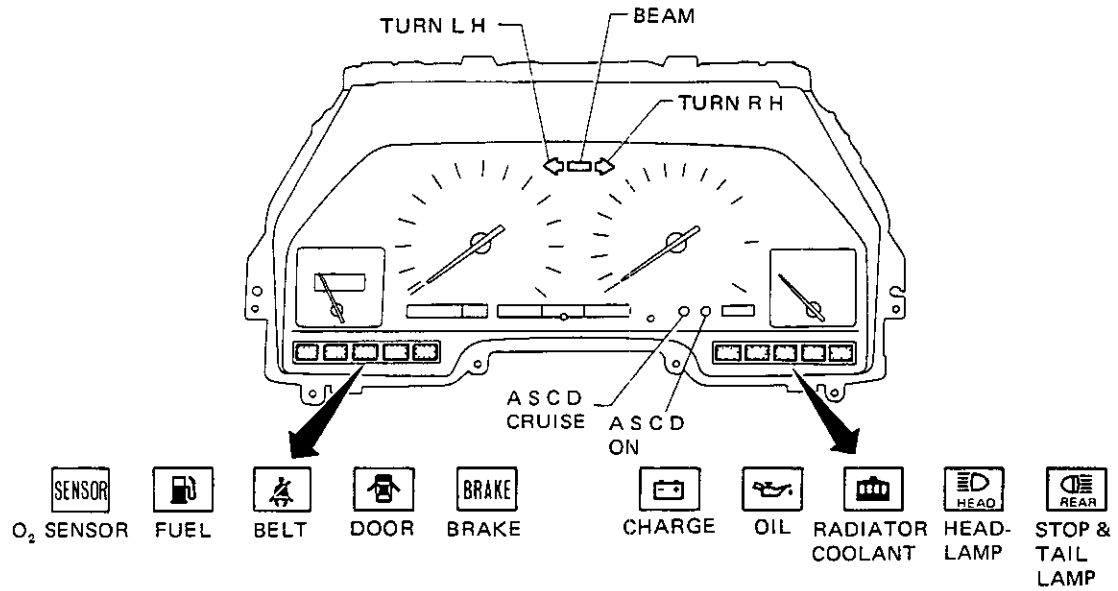
- When installing direction sensor in the vehicle, face it in the direction as shown in figure below



SEL742D

METER AND GAUGES — Needle Type Combination Meter

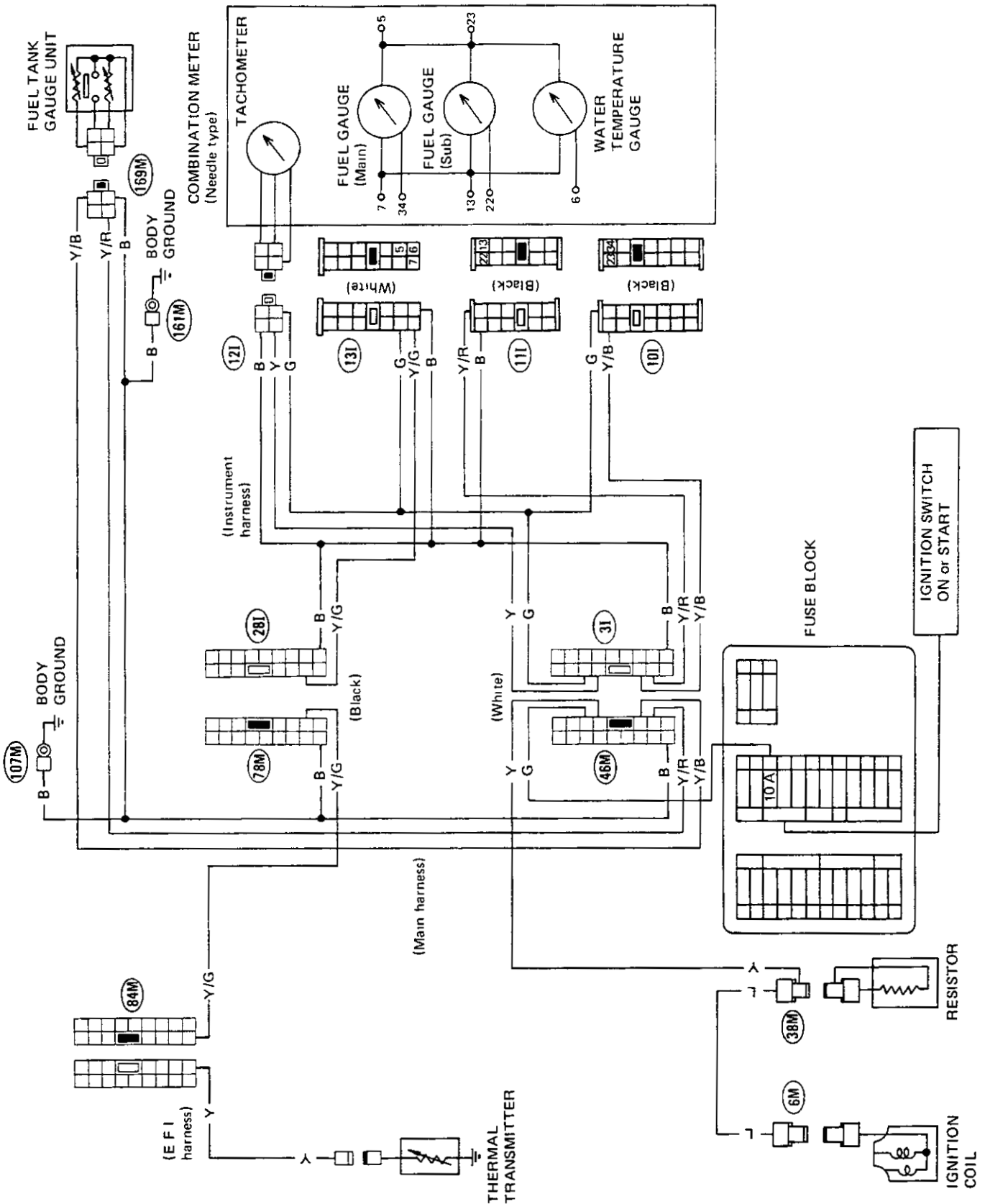
Combination Meter



SEL690D

METER AND GAUGES — Needle Type Combination Meter

Tacho, Fuel and Water Temperature Gauges/Wiring Diagram



SEL691D

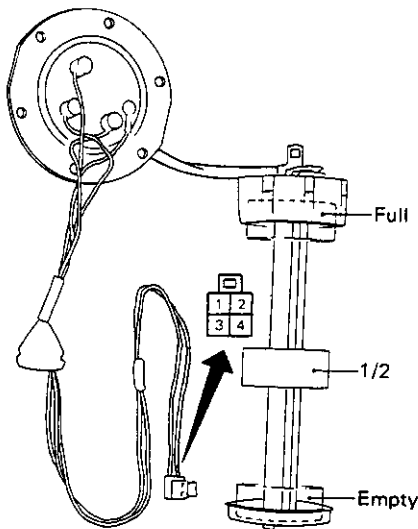
METER AND GAUGES — Needle Type Combination Meter

Fuel Tank Gauge Check

- For removal, refer to FE section

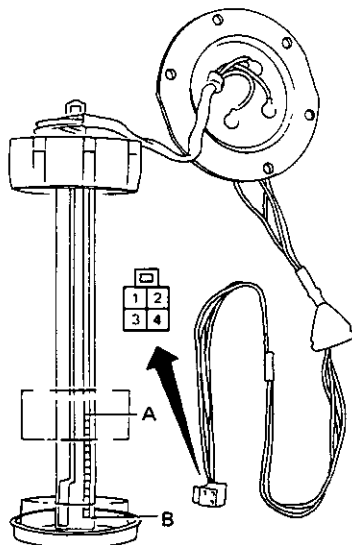
Ohmmeter terminal		Float position	Resistance value
(+)	(-)		
②	①	Full	Approx 6Ω
		Empty	Approx 80Ω
		1/2	Approx 30 - 35Ω
③	①	A	More than 60Ω
		B	Less than 6Ω

Main gauge



SEL675D

Sub gauge

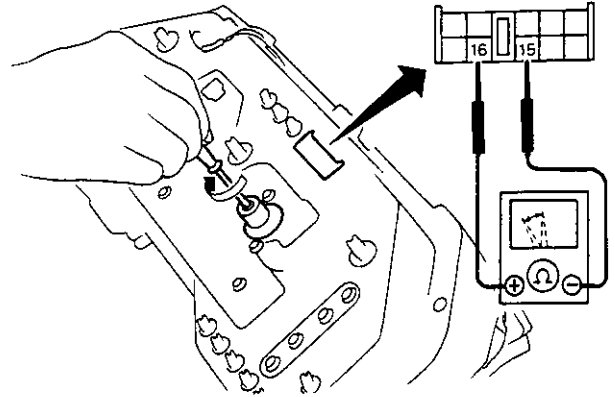


SEL676D

Speed Sensor Signal Check

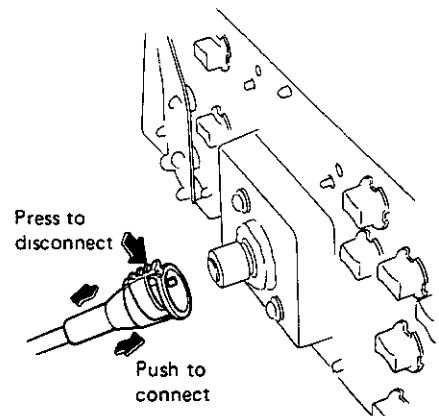
- Speed sensor is built into the speedometer
- Turn speedometer slowly using small screwdriver, and check continuity of speed sensor circuit

Continuity exists two times for each turn . O K.



SEL696D

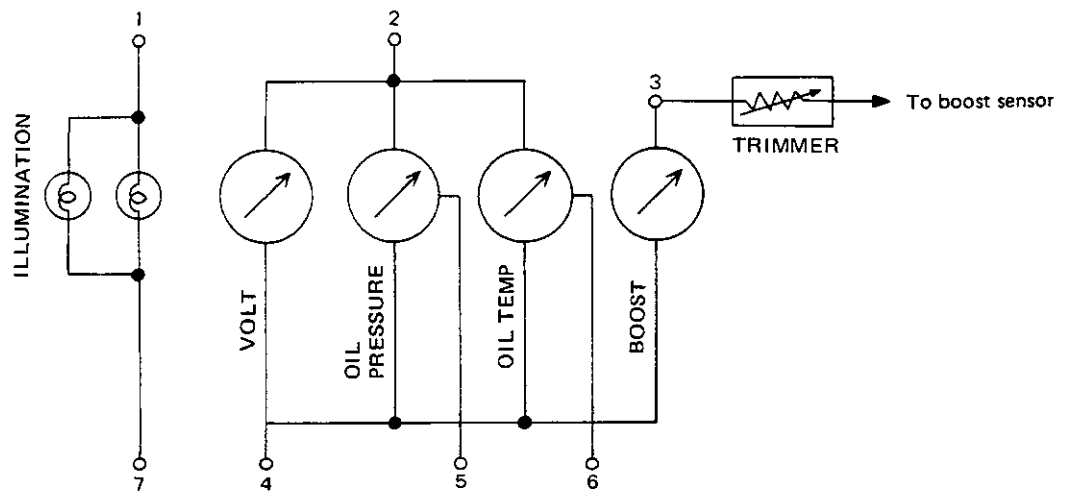
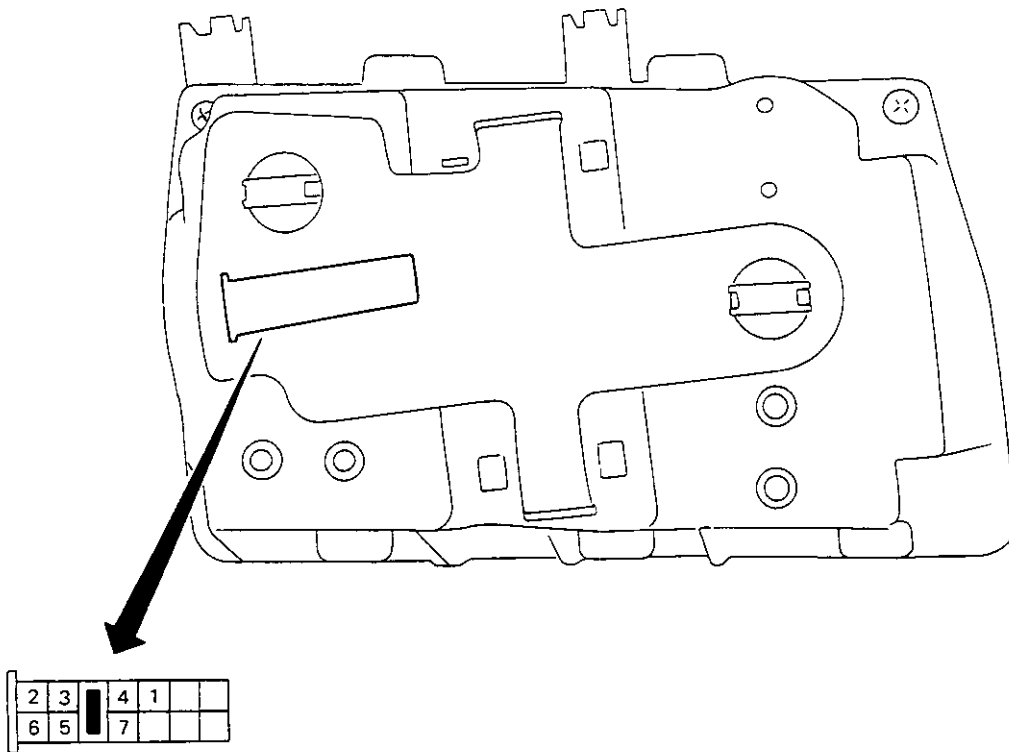
Speedometer Cable Removal



SEL692D

METER AND GAUGES — Needle Type Combination Gauge

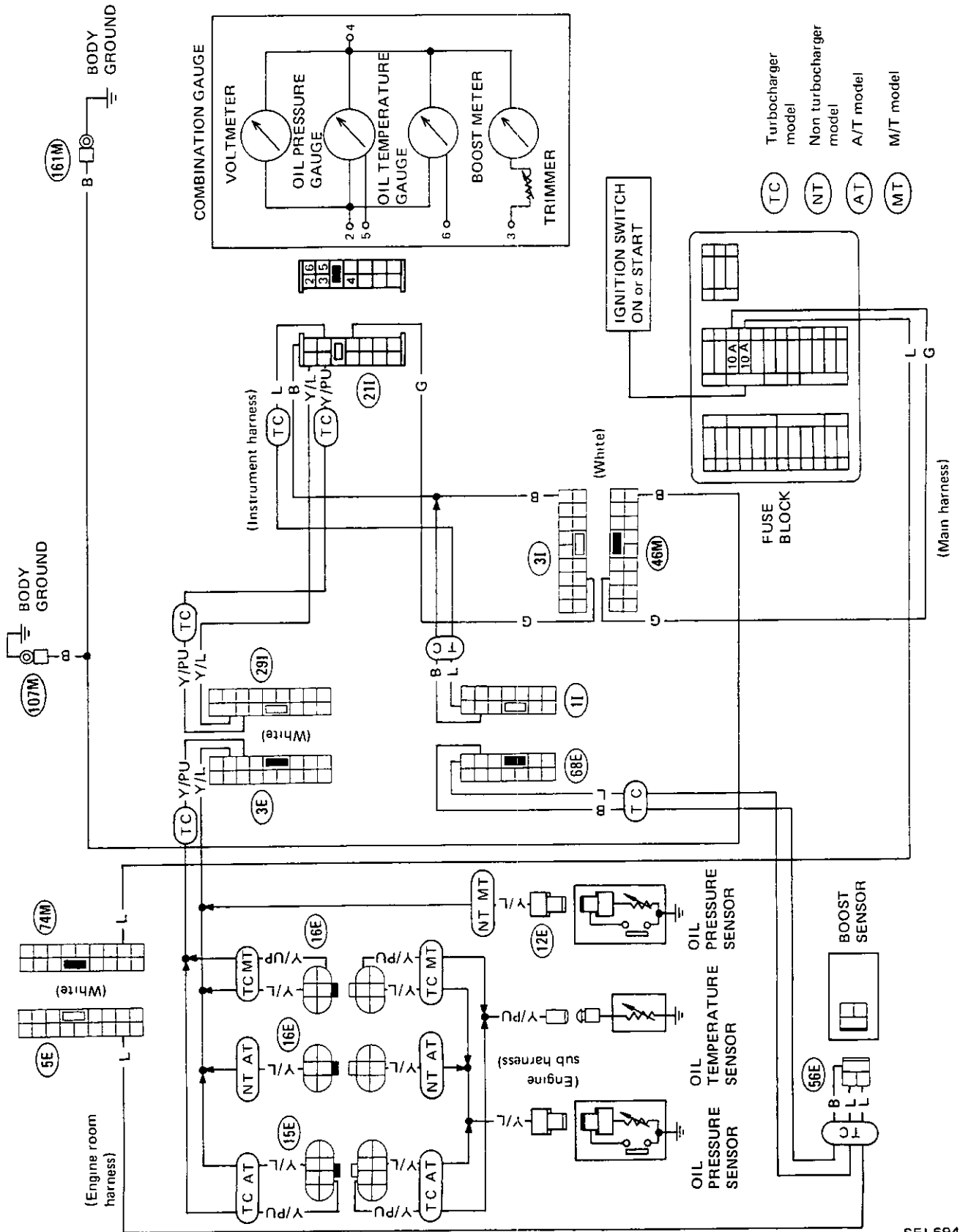
Combination Gauge



SEL693D

METER AND GAUGES — Needle Type Combination Gauge

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

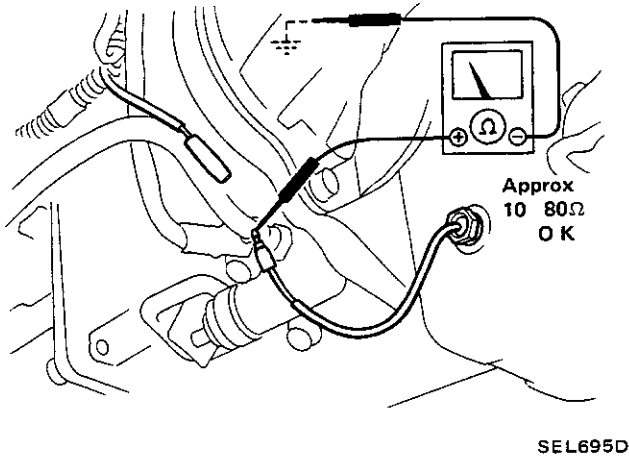


SEL694D

METER AND GAUGES —Needle Type Combination Gauge

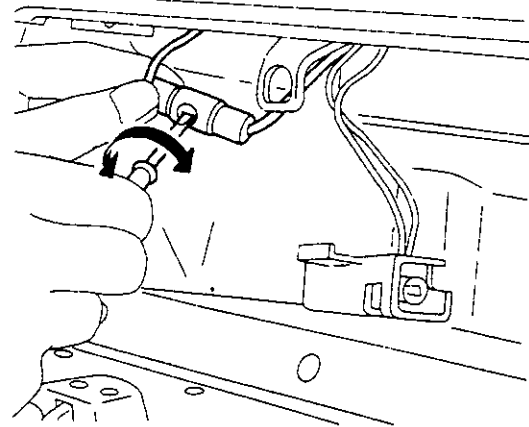
Oil Temp. Sensor Check

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



Boost Gauge Trimmer Adjustment

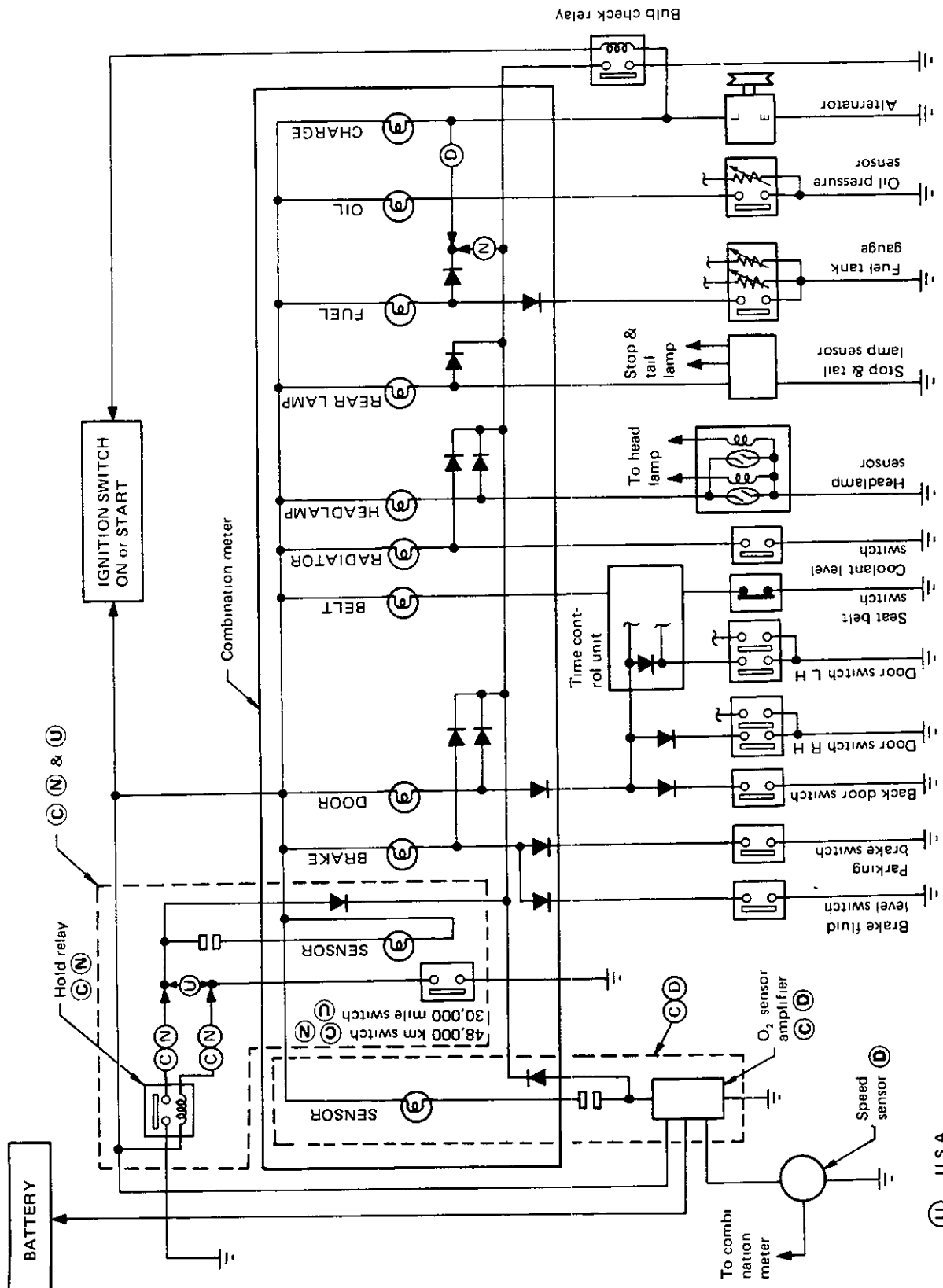
- When boost gauge does not give proper reading, adjust 0 kPa (0 mmHg, 0 inHg) point with the trimmer located on interior upper wall of glove box
- Use a screwdriver to adjust trimmer



- For checking oil pressure sensor and boost sensor, refer to pages EL-53 and 56

WARNING LAMPS AND CHIME

Schematic

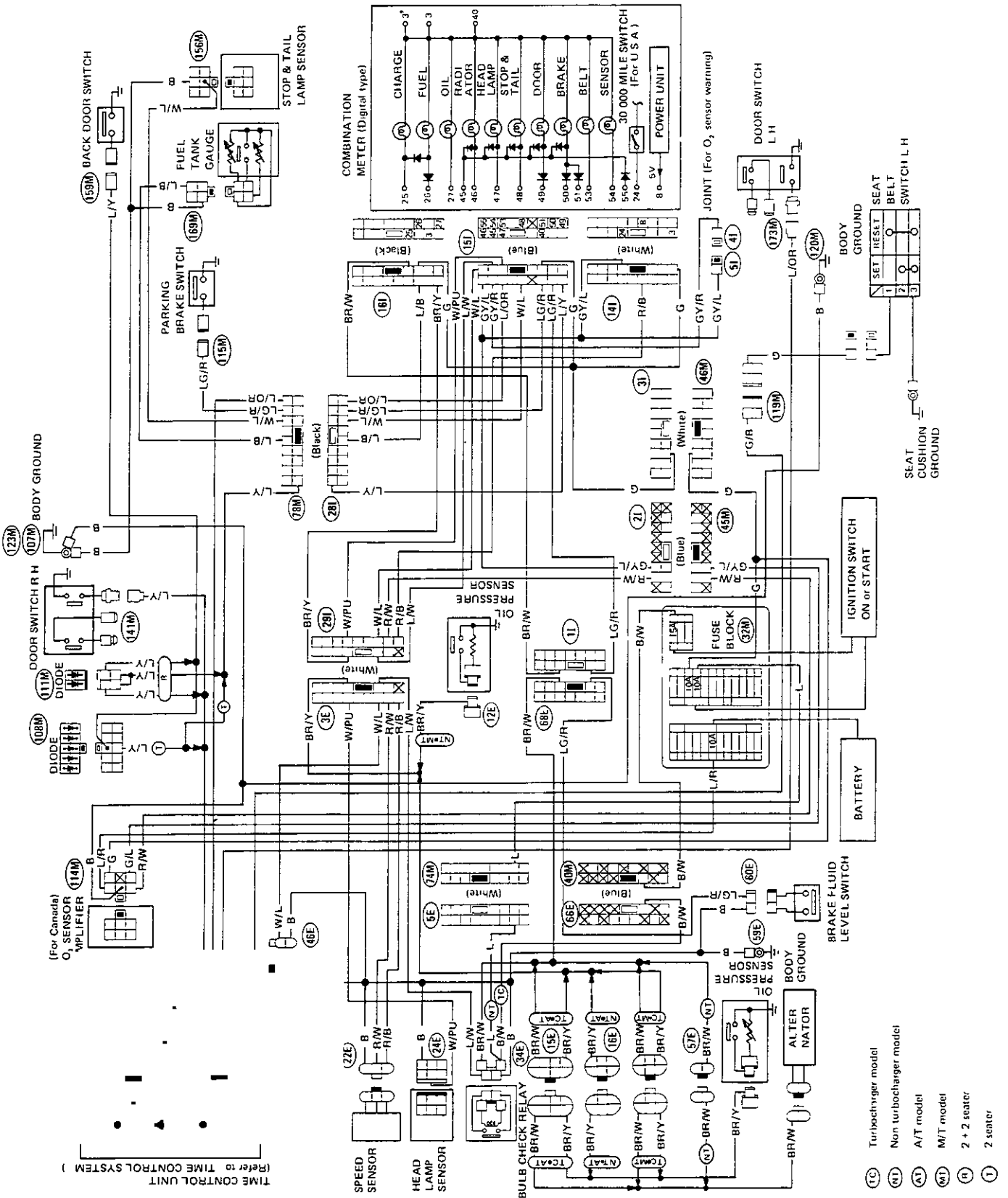


- U U S A
- C Canada
- D Digital type combination meter
- N Needle type combination meter

SEL697D

WARNING LAMPS AND CHIME

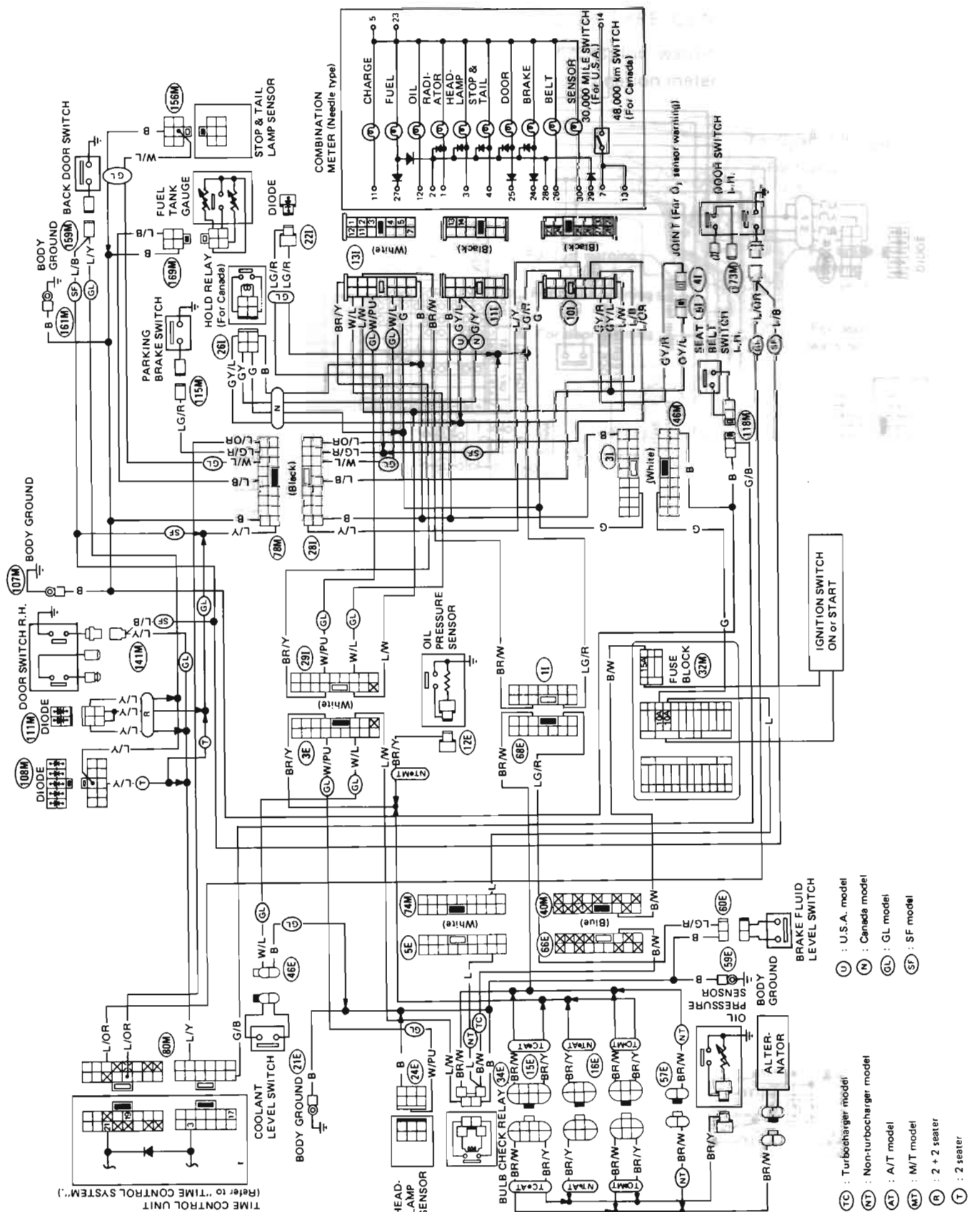
— Warning Lamps/Wiring Diagram— For Digital Type Combination Meter—



SEL698D

WARNING LAMPS AND CHIME

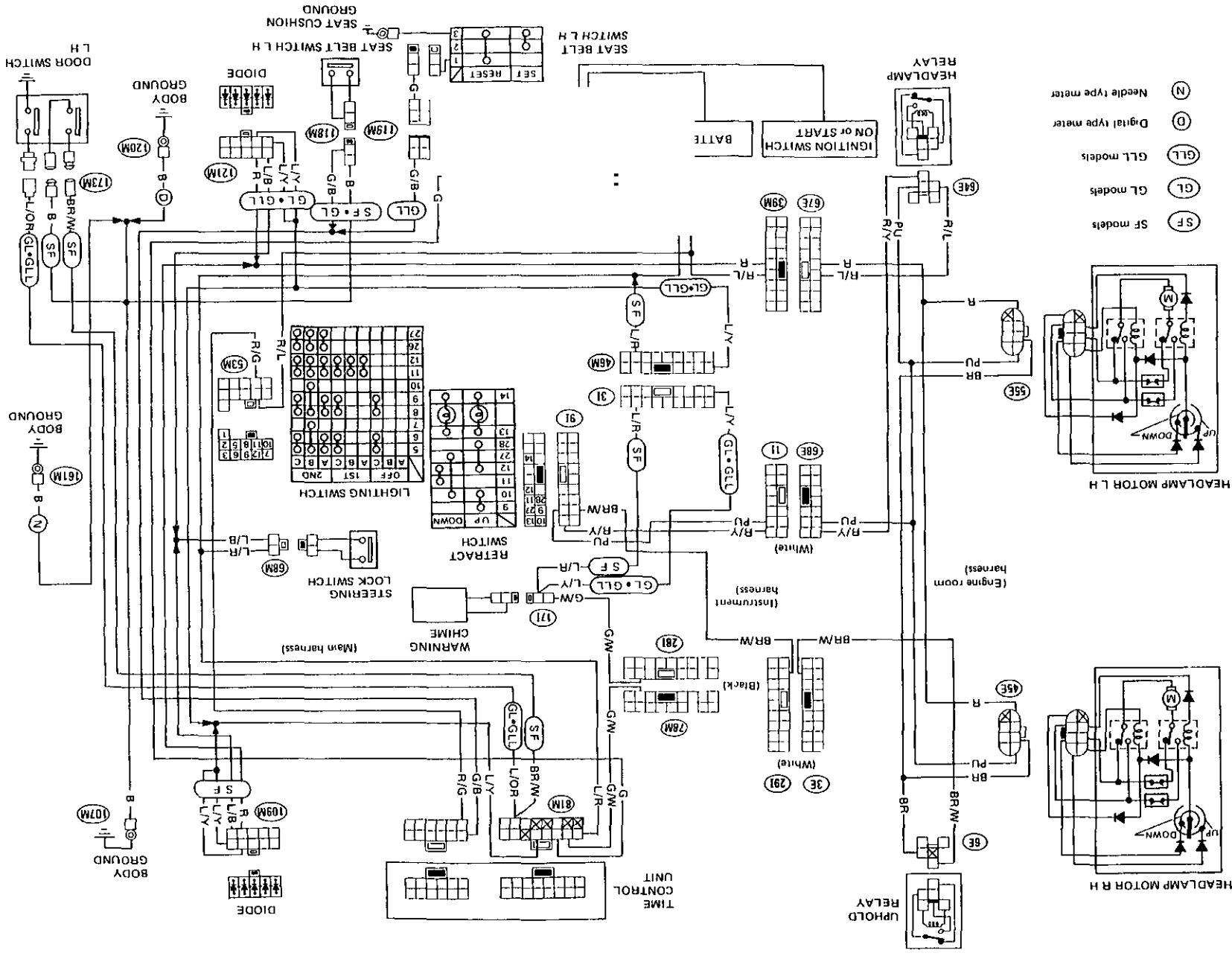
— Warning Lamps/Wiring Diagram — For Needle Type Combination Meter —



SEL699D

WARNING LAMPS AND CHIME

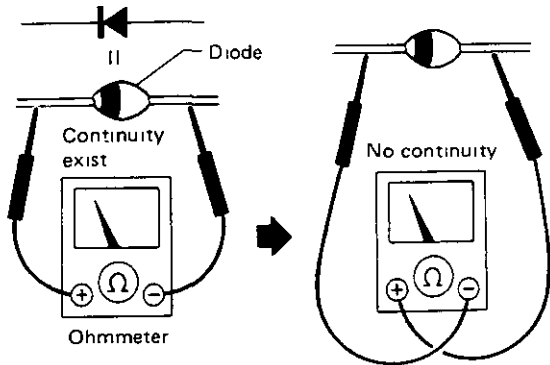
Warning Chime/Wiring Diagram



WARNING LAMPS AND CHIME

Diode Check

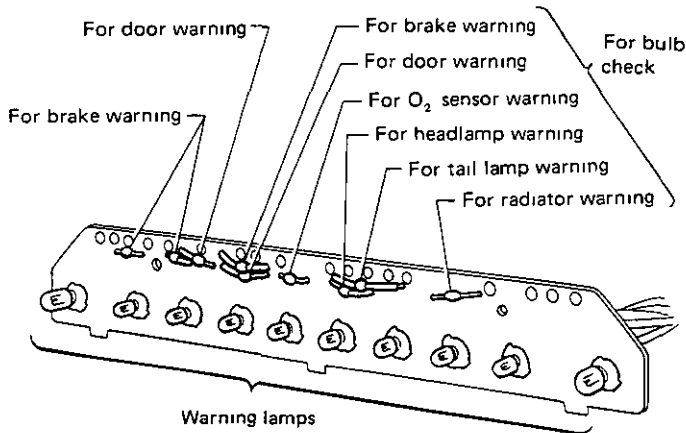
- Check continuity using an ohmmeter
- Diode is functioning properly if test results are as shown below



SEL700D

DIGITAL TYPE COMBINATION METER

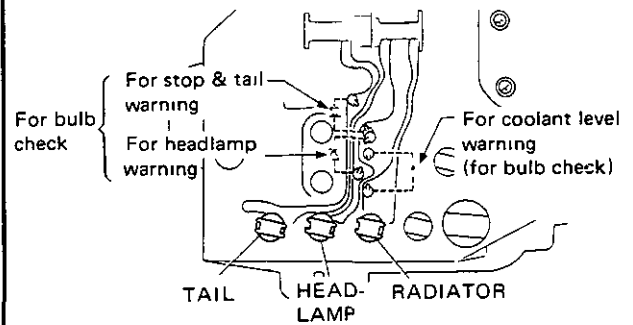
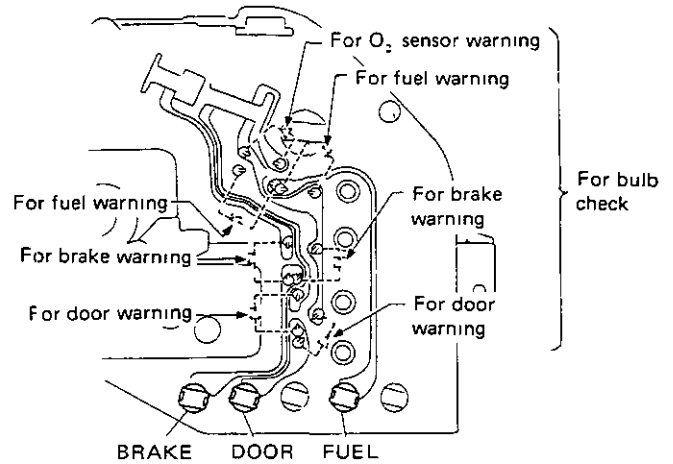
- Diodes for warning lamps are located on the panel where warning bulbs are fitted



SEL701D

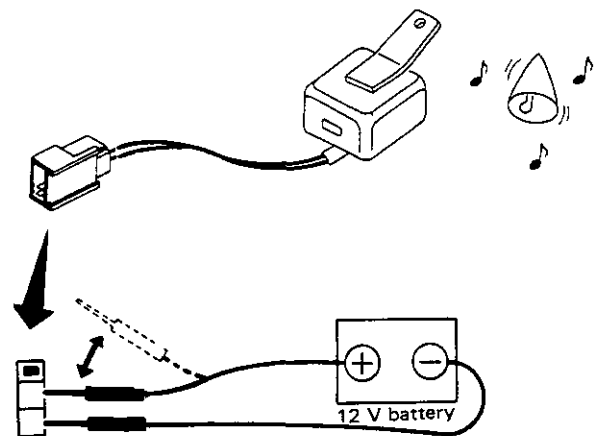
NEEDLE TYPE COMBINATION METER

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



SEL702D

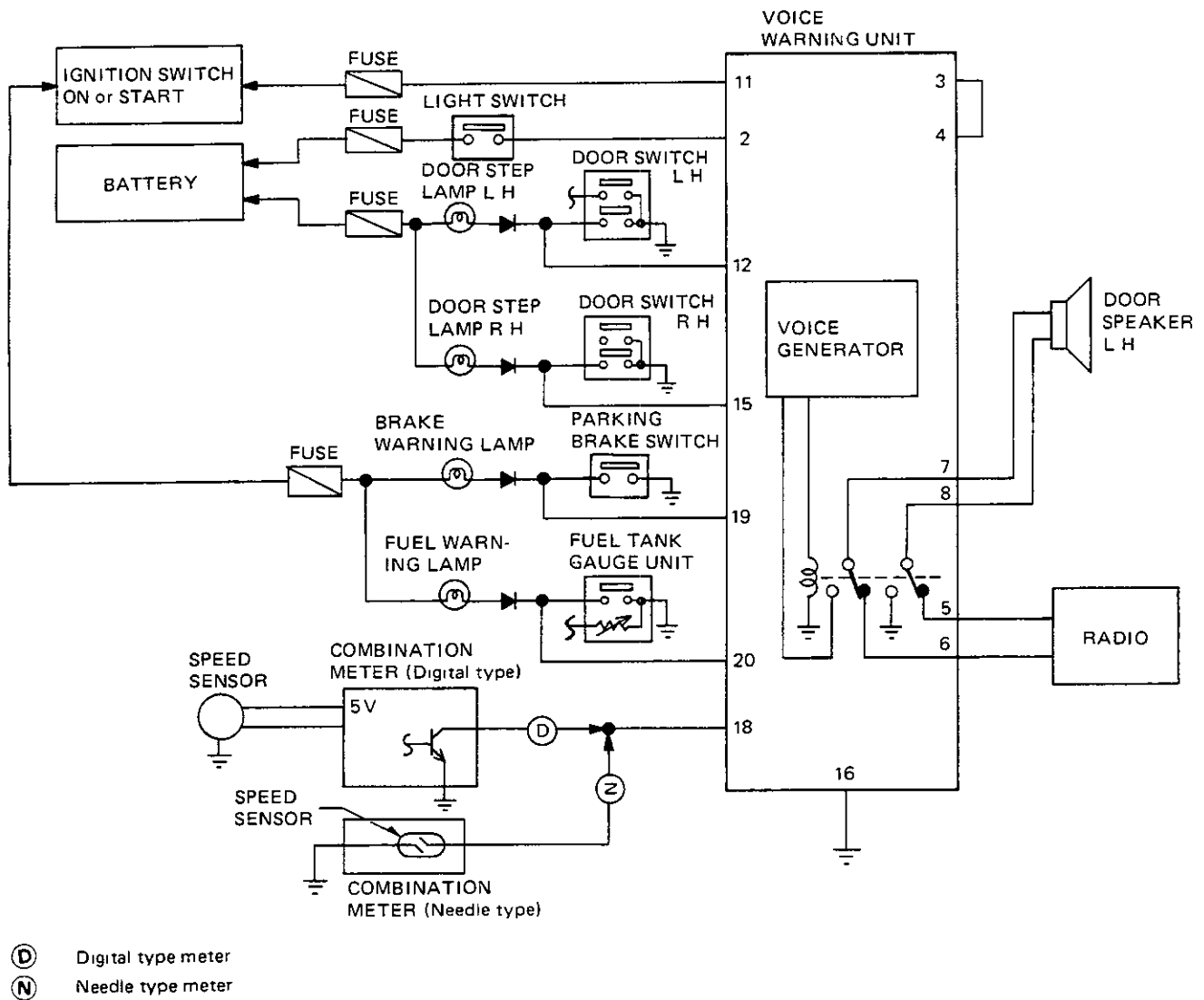
Warning Chime Check



SEL875D

VOICE WARNING SYSTEM

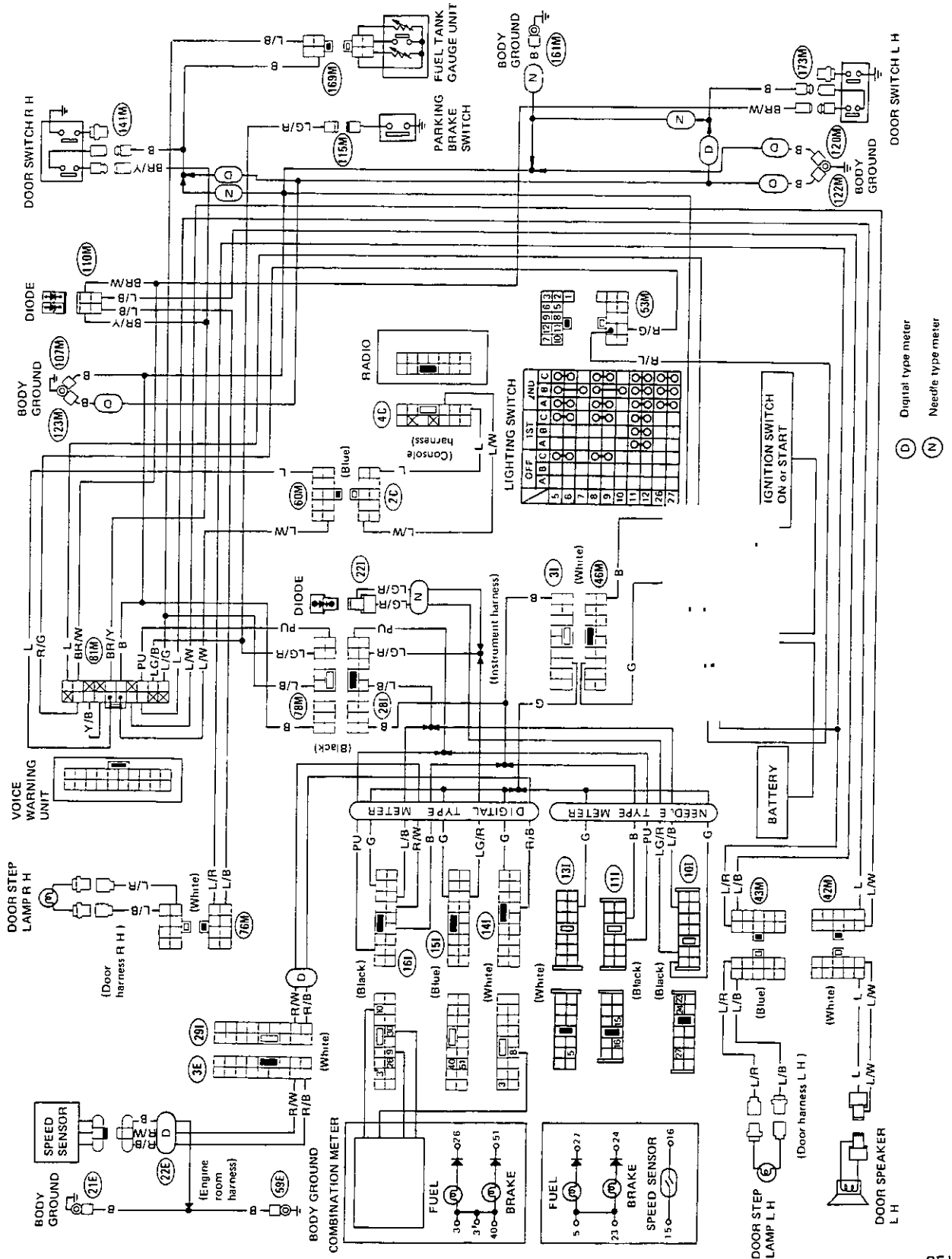
Schematic



SEL703D

VOICE WARNING SYSTEM

Wiring Diagram



SEL704D

VOICE WARNING SYSTEM

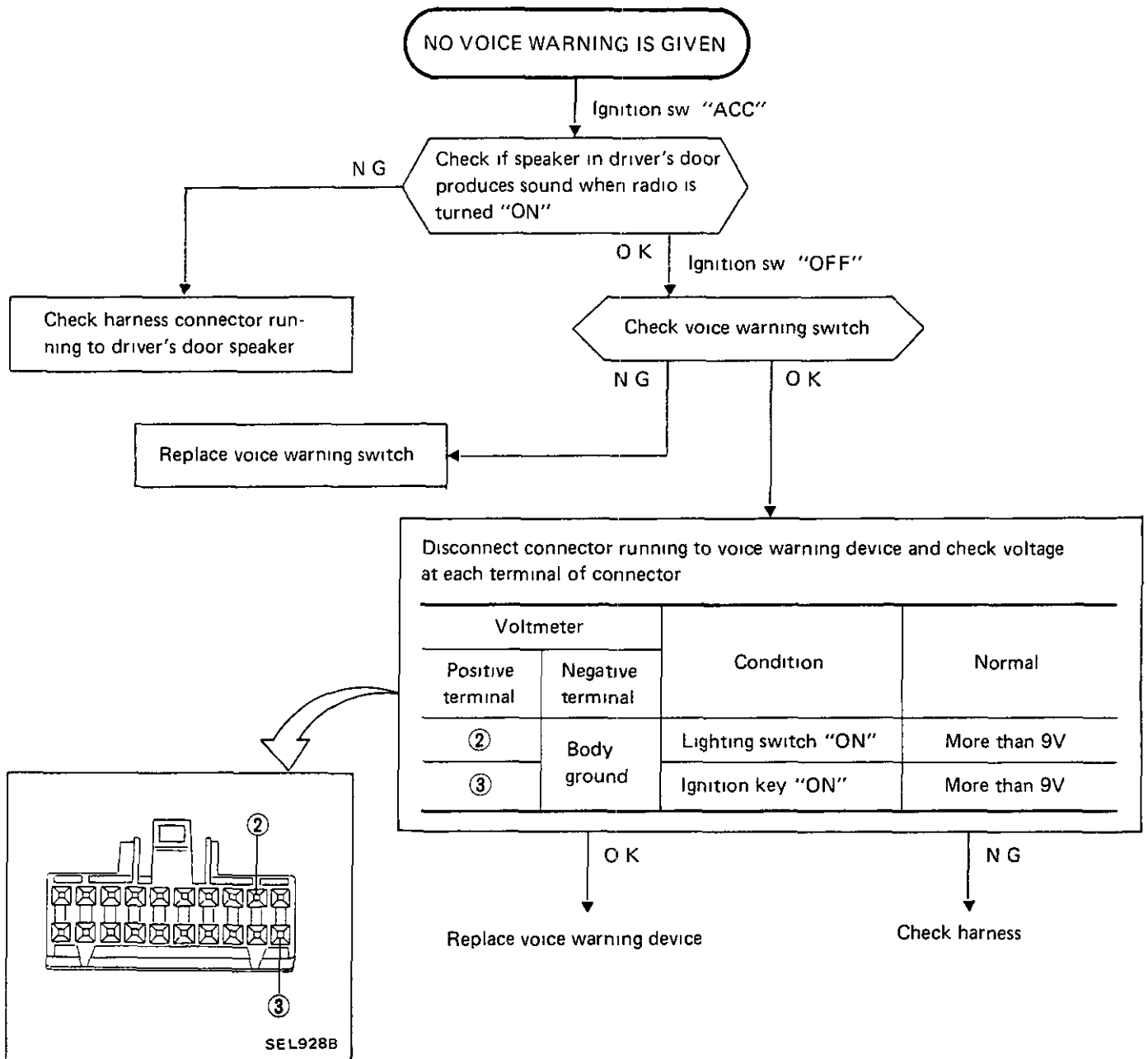
Operational Check

Item	Condition		Voice Warning
Left door	Ignition switch "ON"	Door switch L H is "ON" (Left door is open)	"Left door is open"
Right door		Door switch R H is "ON" (Right door is open)	"Right door is open"
Parking brake		Parking brake switch is "ON"	"Parking brake is ON"
Fuel level		Fuel level less than 10ℓ (2-5/8 US gal, 2-1/4 imp gal)	-
Light	Ignition switch "OFF"	Door switch L H is "ON" (Left door is open)	Lighting switch is "ON" "Lights are ON"

- If the warning is not properly given under the above condition, go to "Trouble-Shooting".

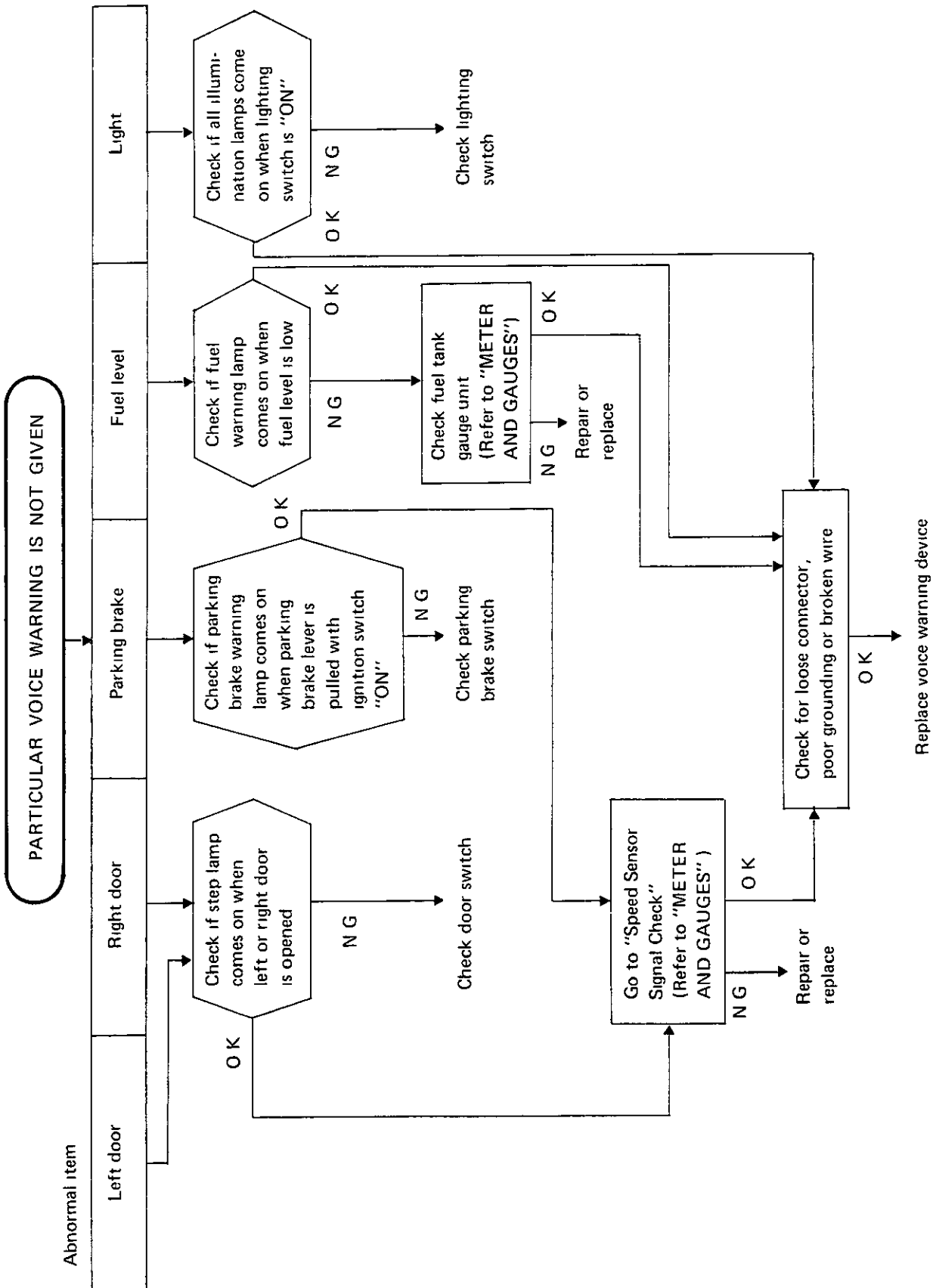
VOICE WARNING SYSTEM

Trouble-shooting



VOICE WARNING SYSTEM

Trouble-shooting (Cont'd)



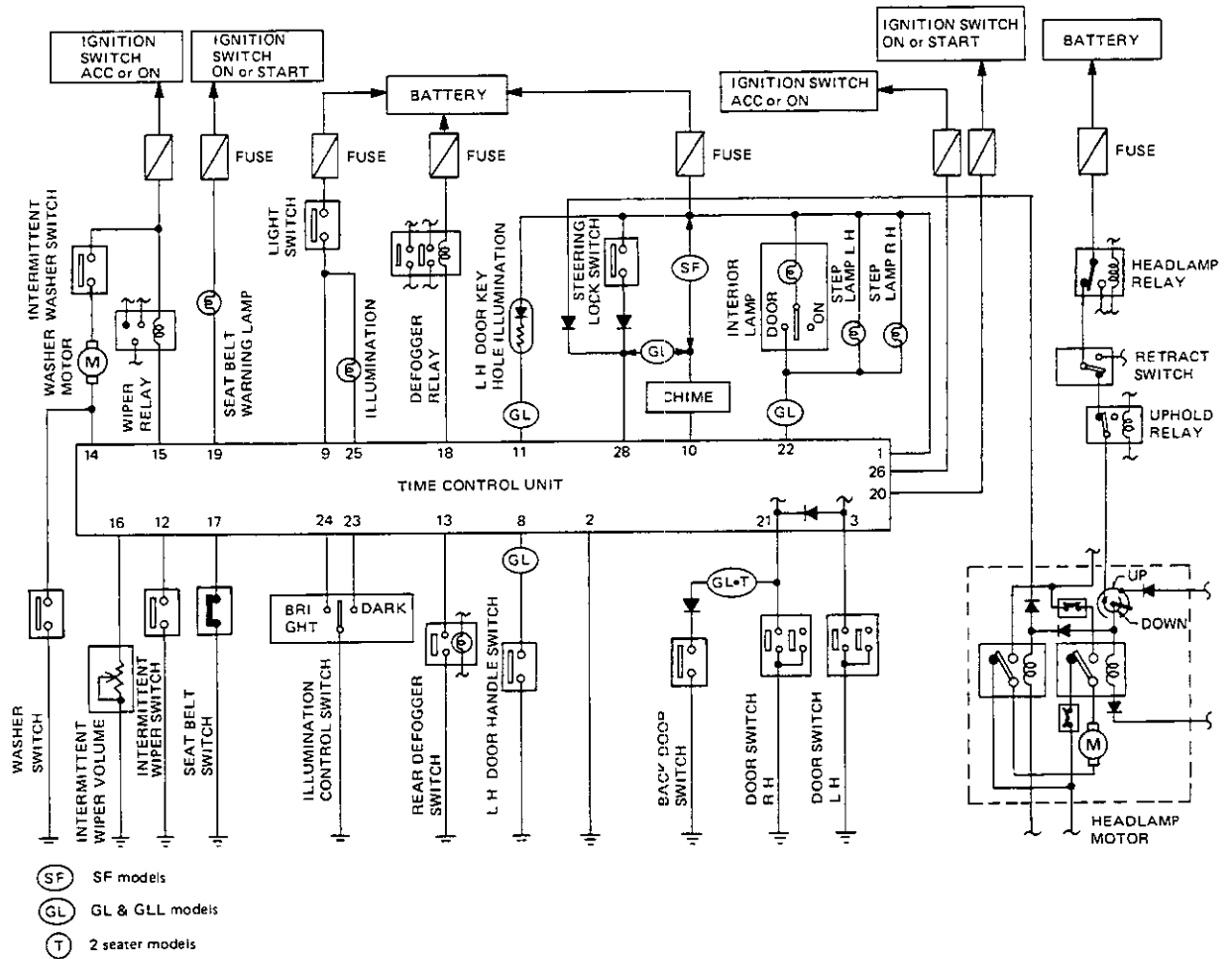
TIME CONTROL SYSTEM

Schematic

CAUTION

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

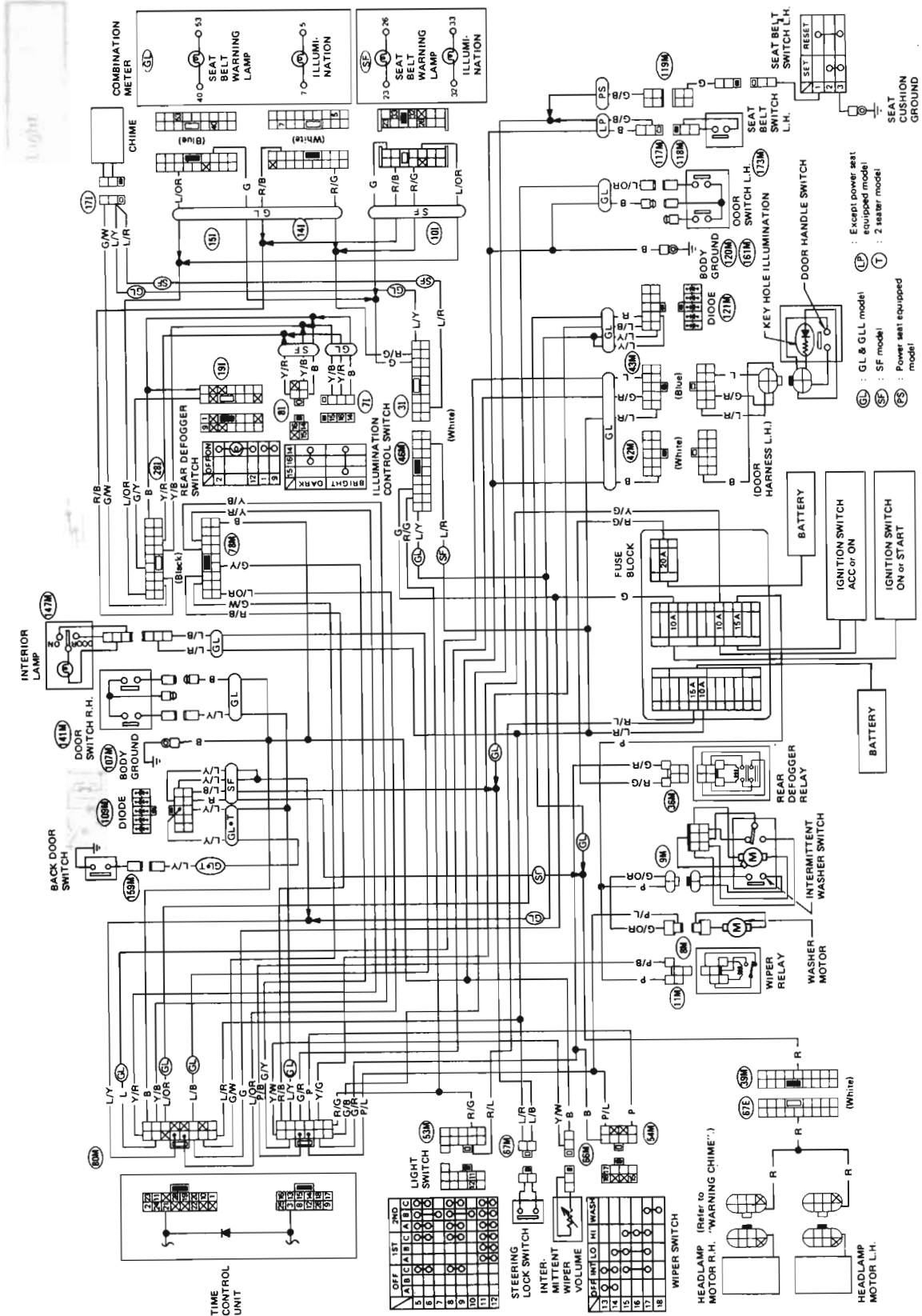
- Time control unit has the following functions
- 1) Intermittent wiper control timer
- 2) Interior lamp timer
- 3) Door key hole illumination timer
- 4) Illumination control timer
- 5) Light warning timer
- 6) Key warning timer
- 7) Seat belt warning timer
- 8) Rear defogger timer



SEL705D

TIME CONTROL SYSTEM

Wiring Diagram

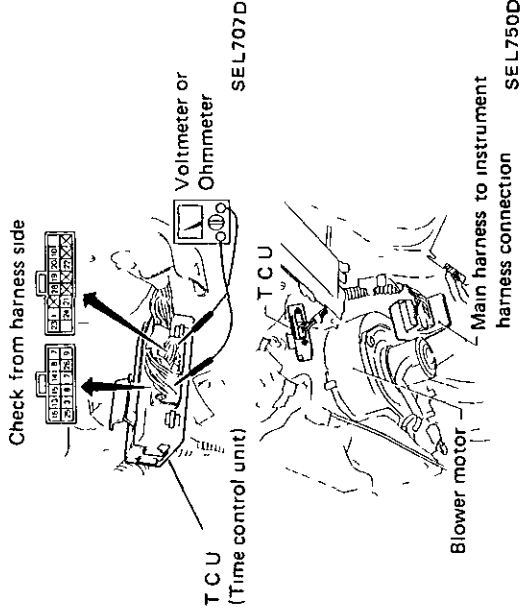


SEL706D

TIME CONTROL SYSTEM

Preparation for Trouble-shooting

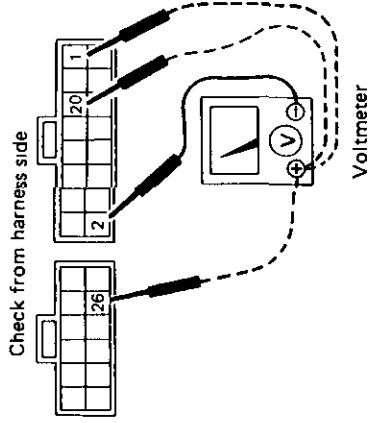
- 1 Remove R H dash side cover and remove blower motor
- 2 Remove time control unit with harness connected
- 3 Connect main harness to instrument harness (if disconnected)



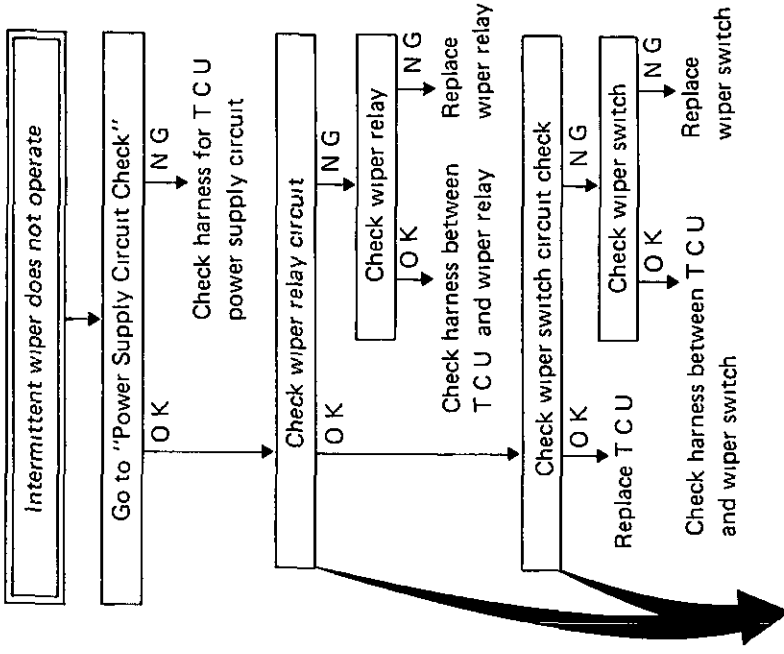
Power Supply Circuit Check

Voltmeter terminals	Ignition switch position	Approx 12V	Approx 12V	0V	Approx 12V
(+)	(-)	OFF	ACC	ON	
①	②	Approx 12V	Approx 12V	0V	Approx 12V
②	②	0V	0V	0V	Approx 12V
③	②	0V	0V	0V	Approx 12V

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

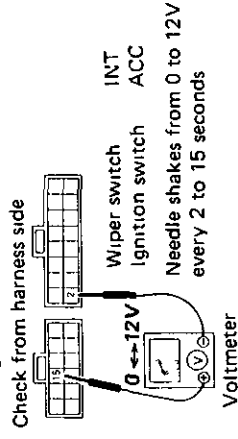


Trouble-shooting



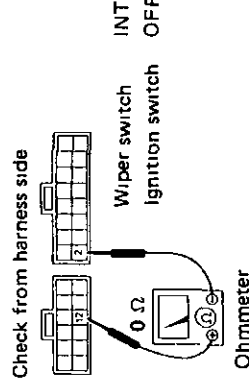
WIPER RELAY CIRCUIT CHECK

- 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



TIME CONTROL SYSTEM

Trouble-shooting (Cont'd)

Intermittent time of wiper cannot be adjusted

Check intermittent wiper volume circuit

OK

Replace T C U

NG

Check intermittent wiper volume

OK

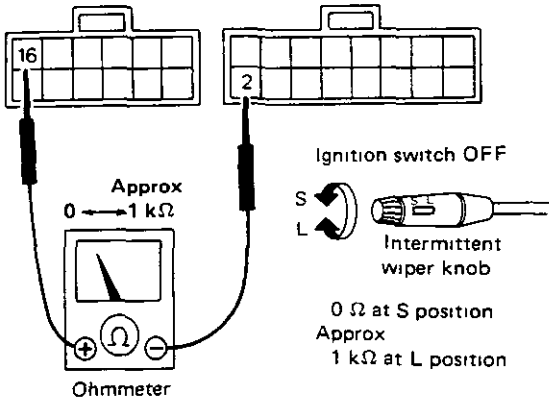
Check harness between T C U and intermittent wiper volume

NG

Replace wiper switch

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

Check from harness side



Wiper and washer activate individually but not in combination

Check washer switch circuit

OK

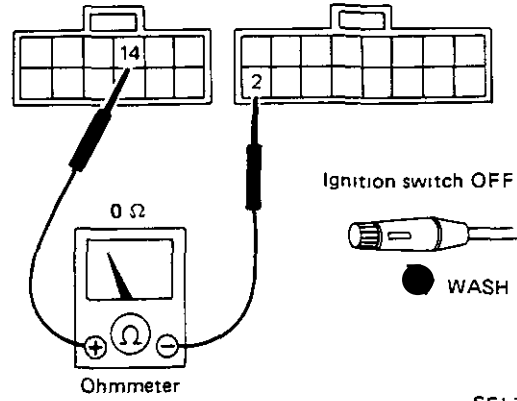
Replace T C U

NG

Check harness between T C U and washer switch

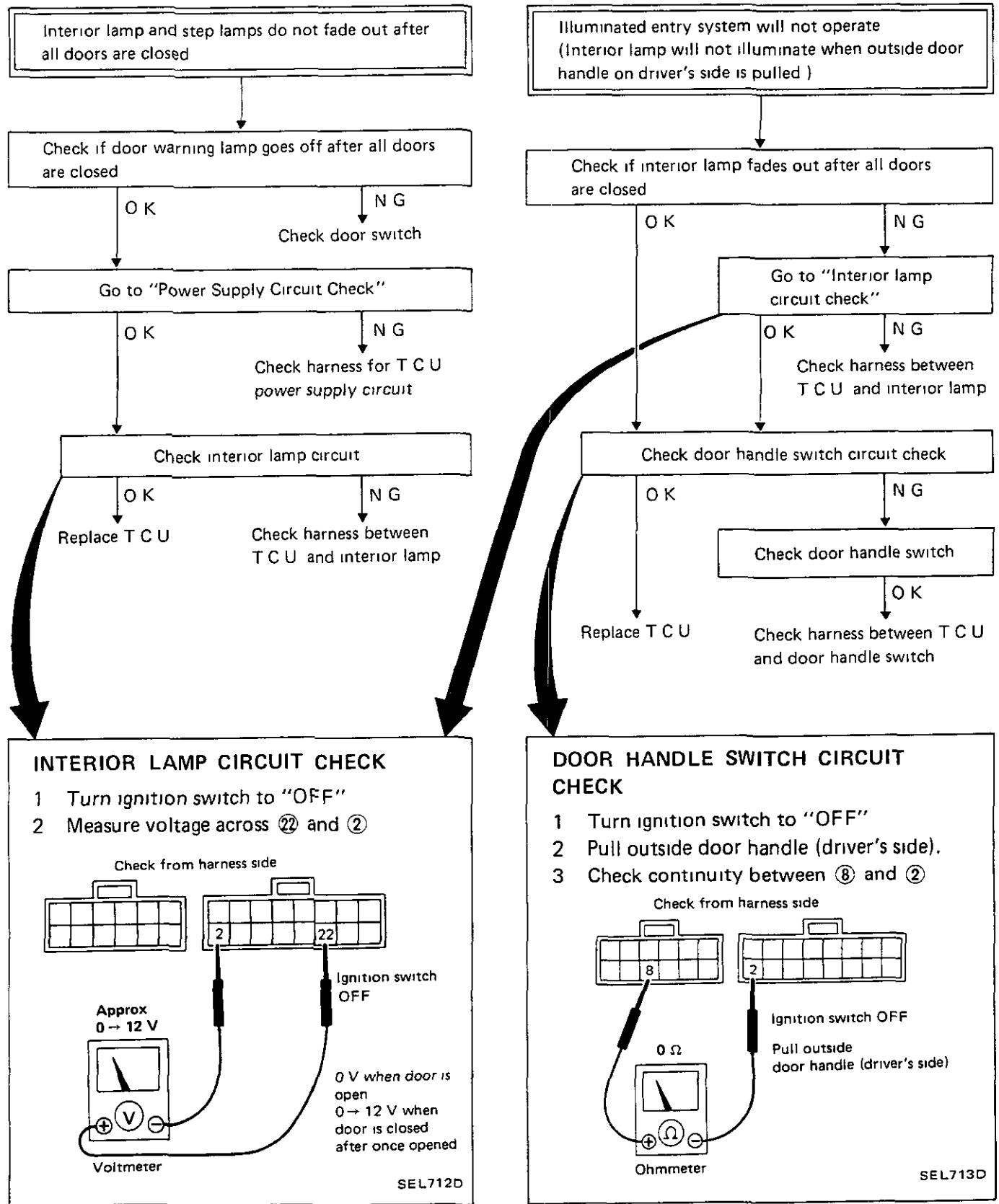
- 1 Turn ignition switch to "OFF".
- 2 Turn washer switch to "ON"
- 3 Check continuity between ①④ and ②

Check from harness side



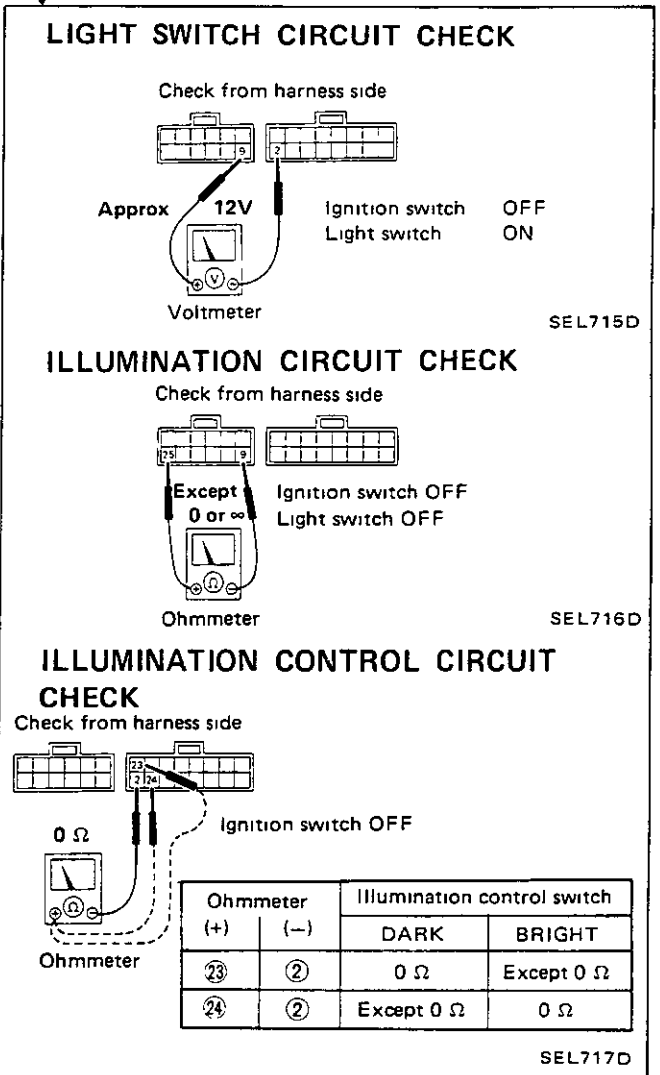
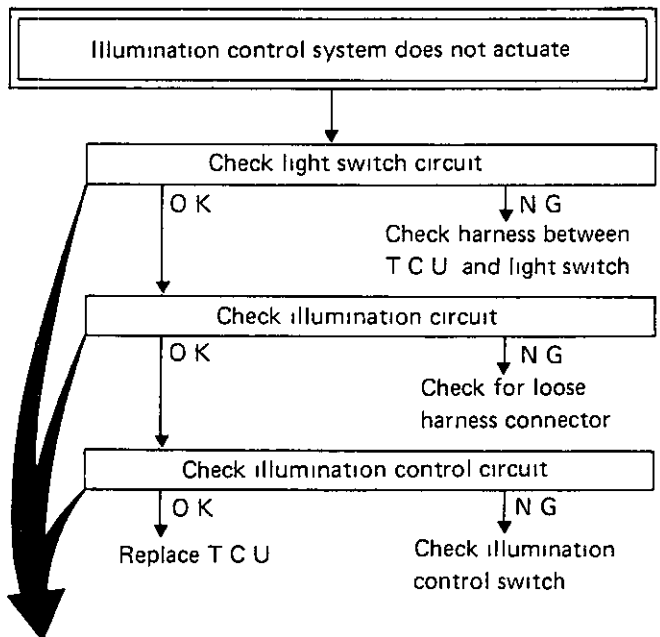
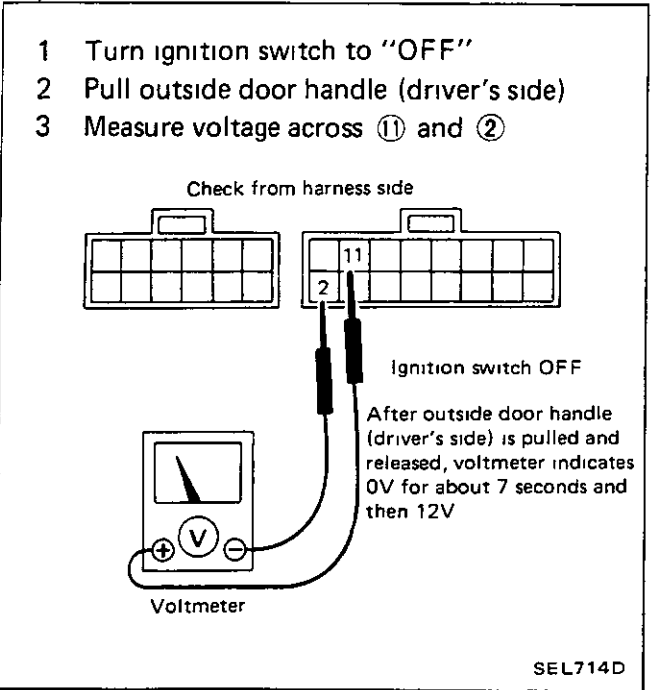
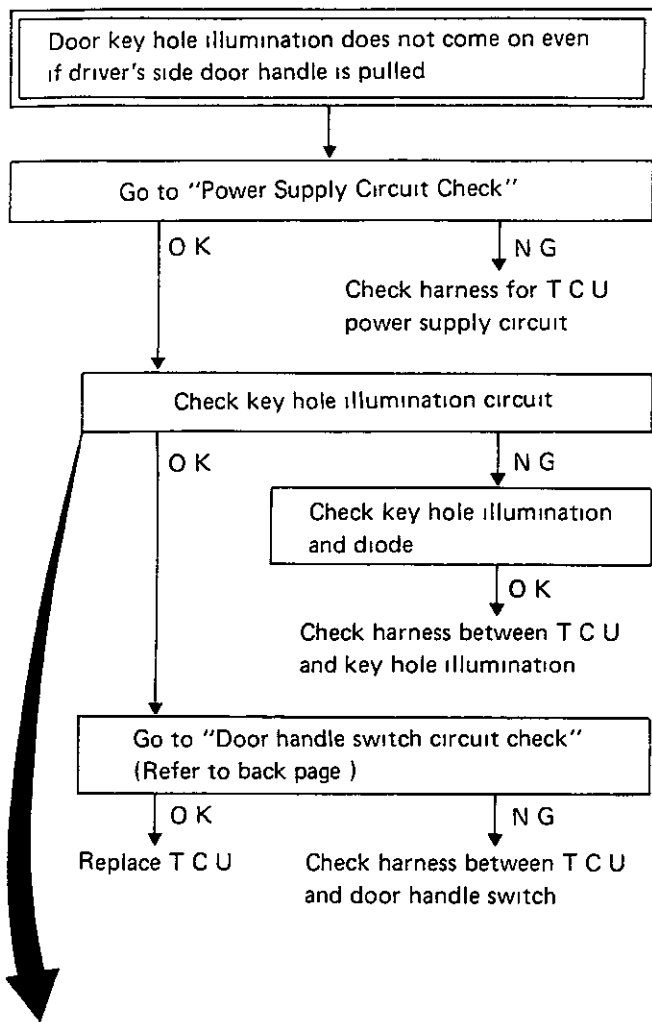
TIME CONTROL SYSTEM

Trouble-shooting (Cont'd)



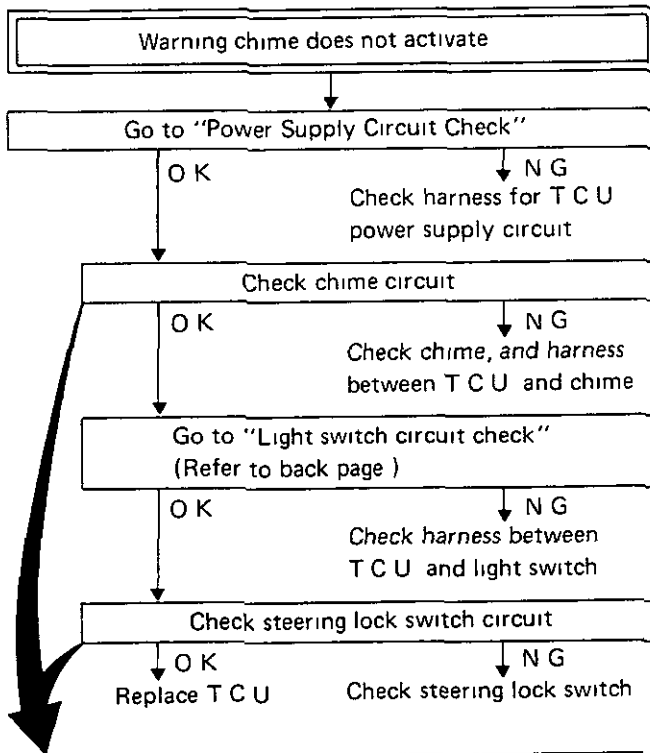
TIME CONTROL SYSTEM

Trouble-shooting (Cont'd)



TIME CONTROL SYSTEM

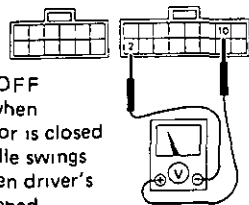
Trouble-shooting (Cont'd)



CHIME CIRCUIT CHECK

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

Check from harness side



Ignition switch OFF

- Approx 12V when driver's side door is closed
- Voltmeter needle swings (0 ↔ 12V) when driver's side door is opened

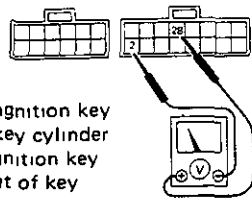
Voltmeter

SEL718D

STEERING LOCK SWITCH CIRCUIT CHECK

- 1 Turn ignition switch to "OFF"
- 2 Check voltage between ⑳ and ②

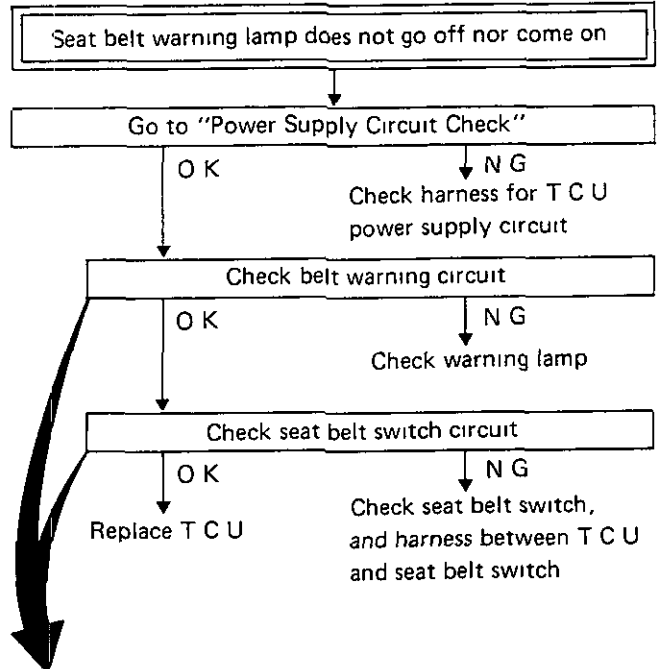
Check from harness side



- 12V when ignition key is set into key cylinder
- 0V when ignition key is pulled out of key cylinder

Voltmeter

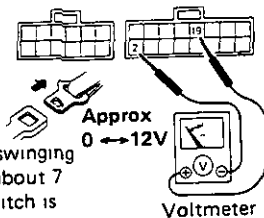
SEL719D



BELT WARNING CIRCUIT CHECK

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

Check from harness side



Voltmeter needle keeps swinging (approx 0 ↔ 12V) for about 7 seconds after ignition switch is turned ON

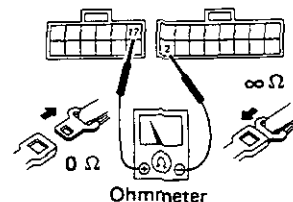
Voltmeter

SEL720D

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

Check from harness side

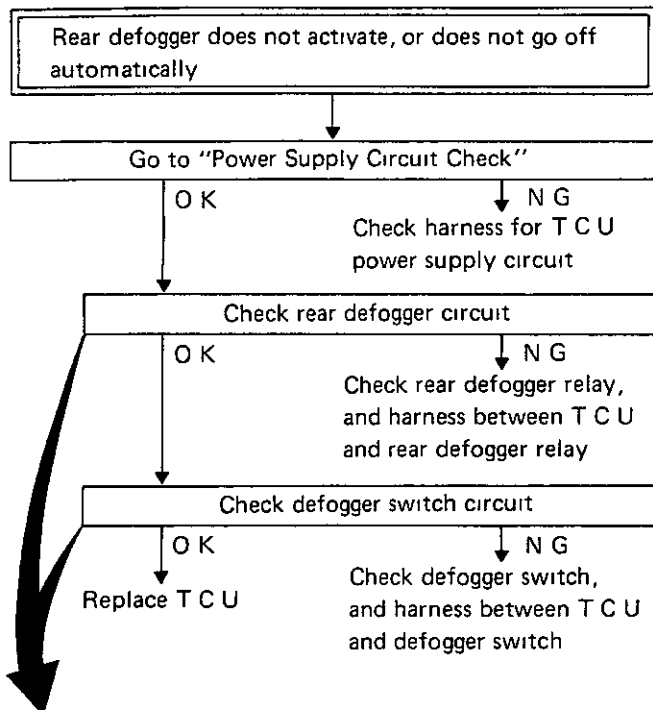


Ohmmeter

SEL721D

TIME CONTROL SYSTEM

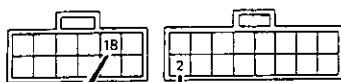
Trouble-shooting (Cont'd)



REAR DEFOGGER CIRCUIT CHECK

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

Check from harness side



Ignition switch ON

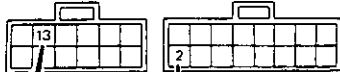
Approx
12 V when rear defogger switch is OFF
0 V when rear defogger switch is ON

Voltmeter

SEL722D

DEFOGGER SWITCH CIRCUIT CHECK

Check from harness side



Ignition switch OFF

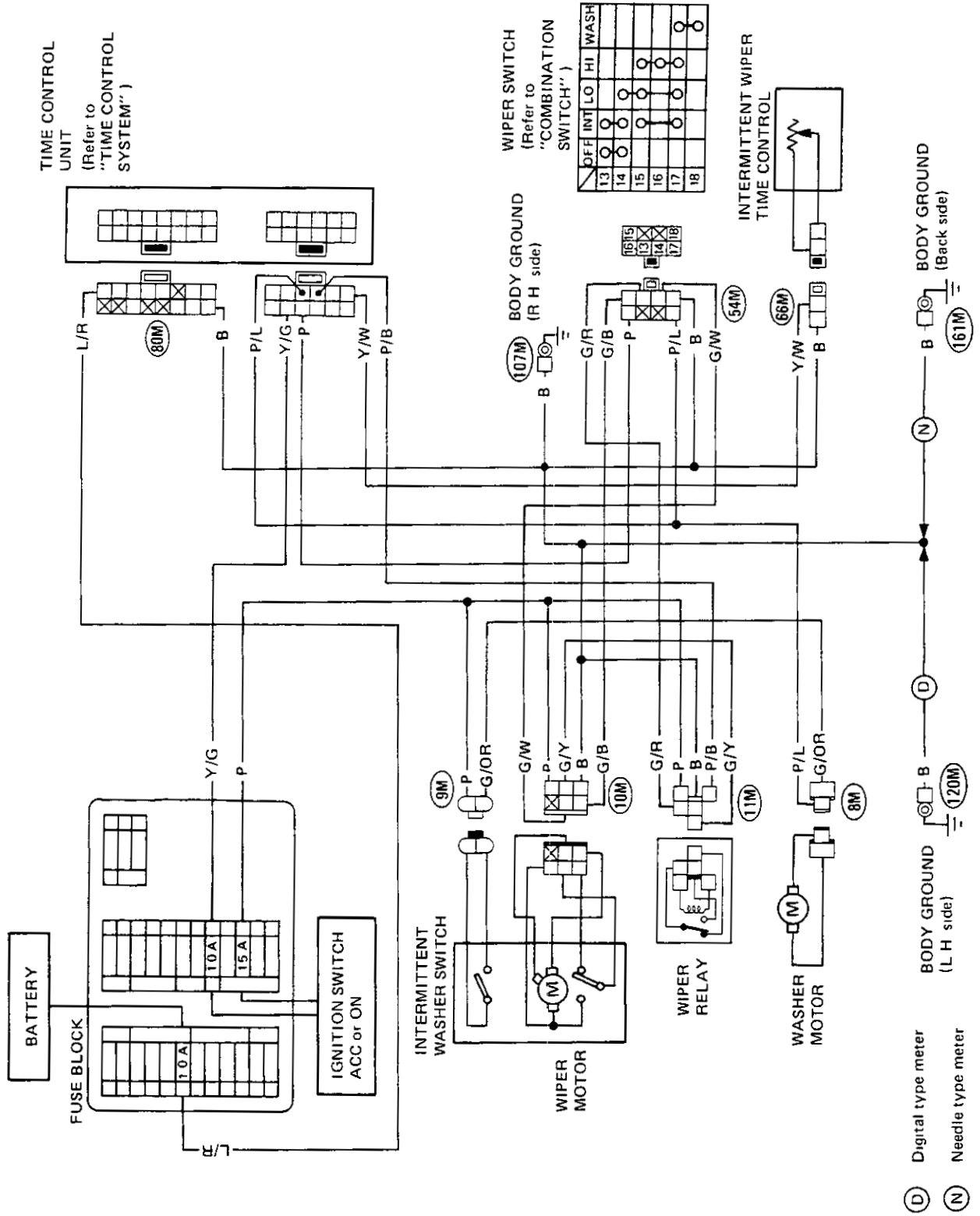
- 0Ω when rear defogger switch is ON
- Except 0Ω when rear defogger switch is OFF

Ohmmeter

SEL723D

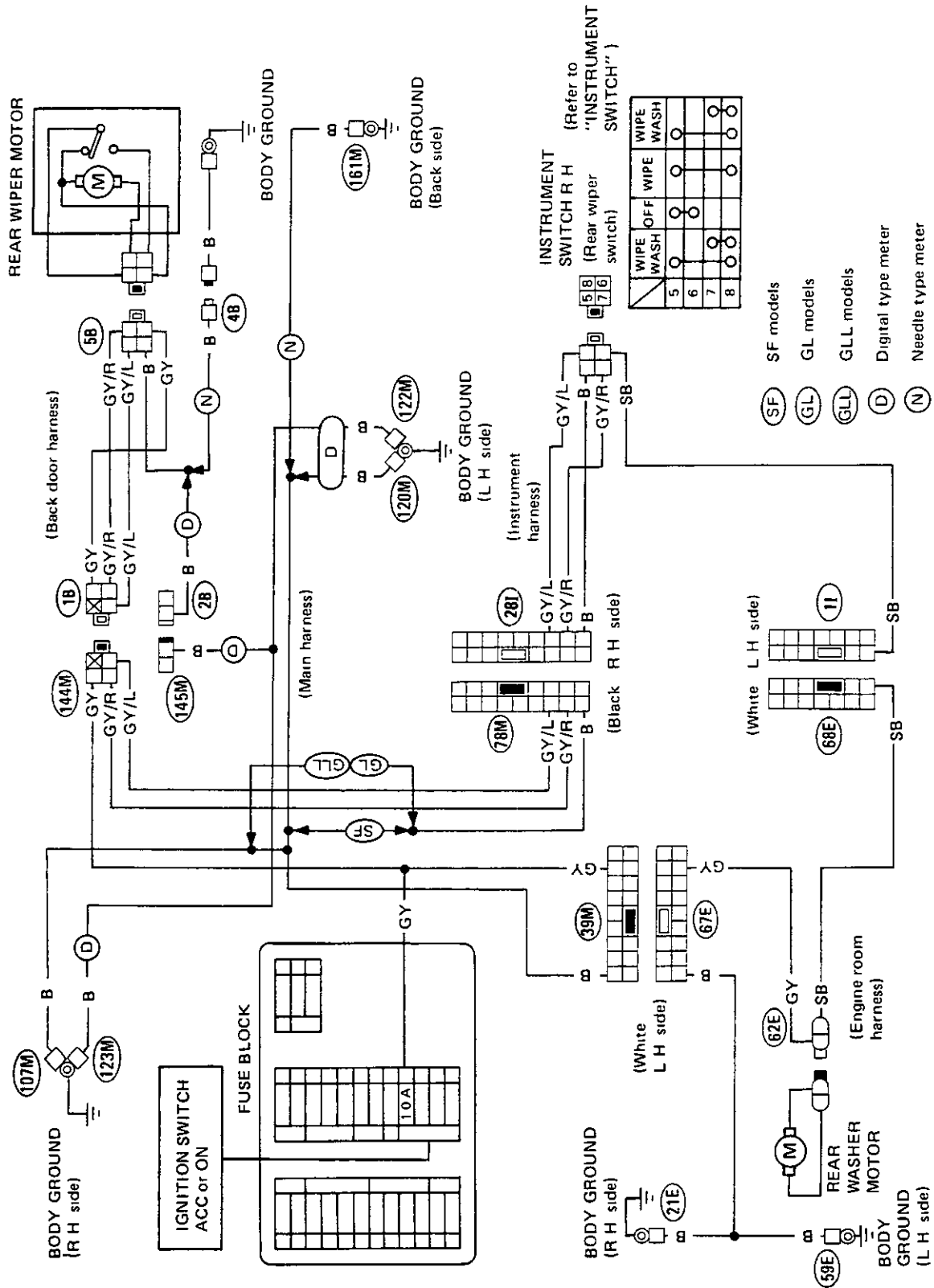
WIPER AND WASHER

Windshield Wiper and Washer/Wiring Diagram



WIPER AND WASHER

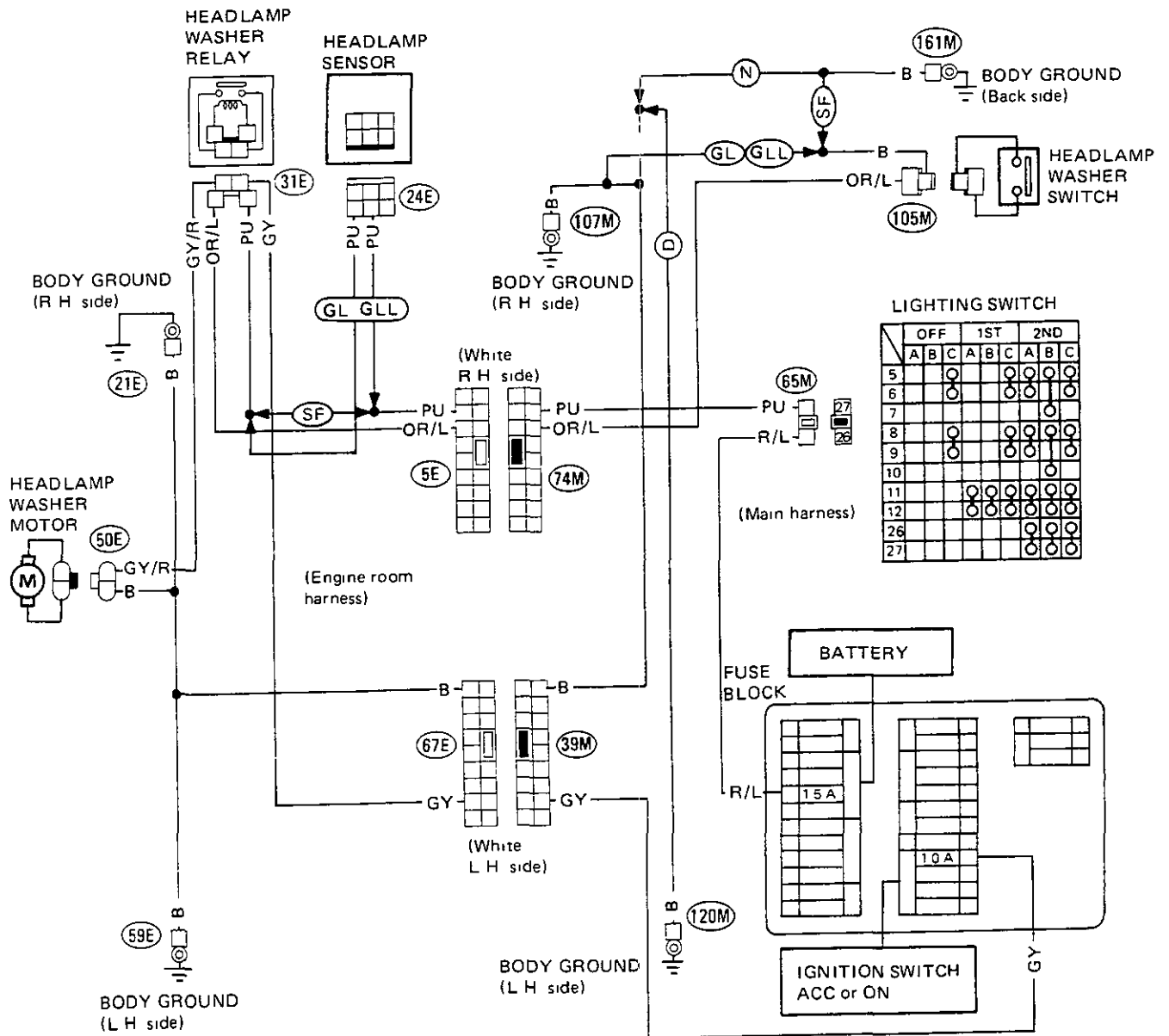
Rear Wiper and Washer/Wiring Diagram



SEL726D

WIPER AND WASHER

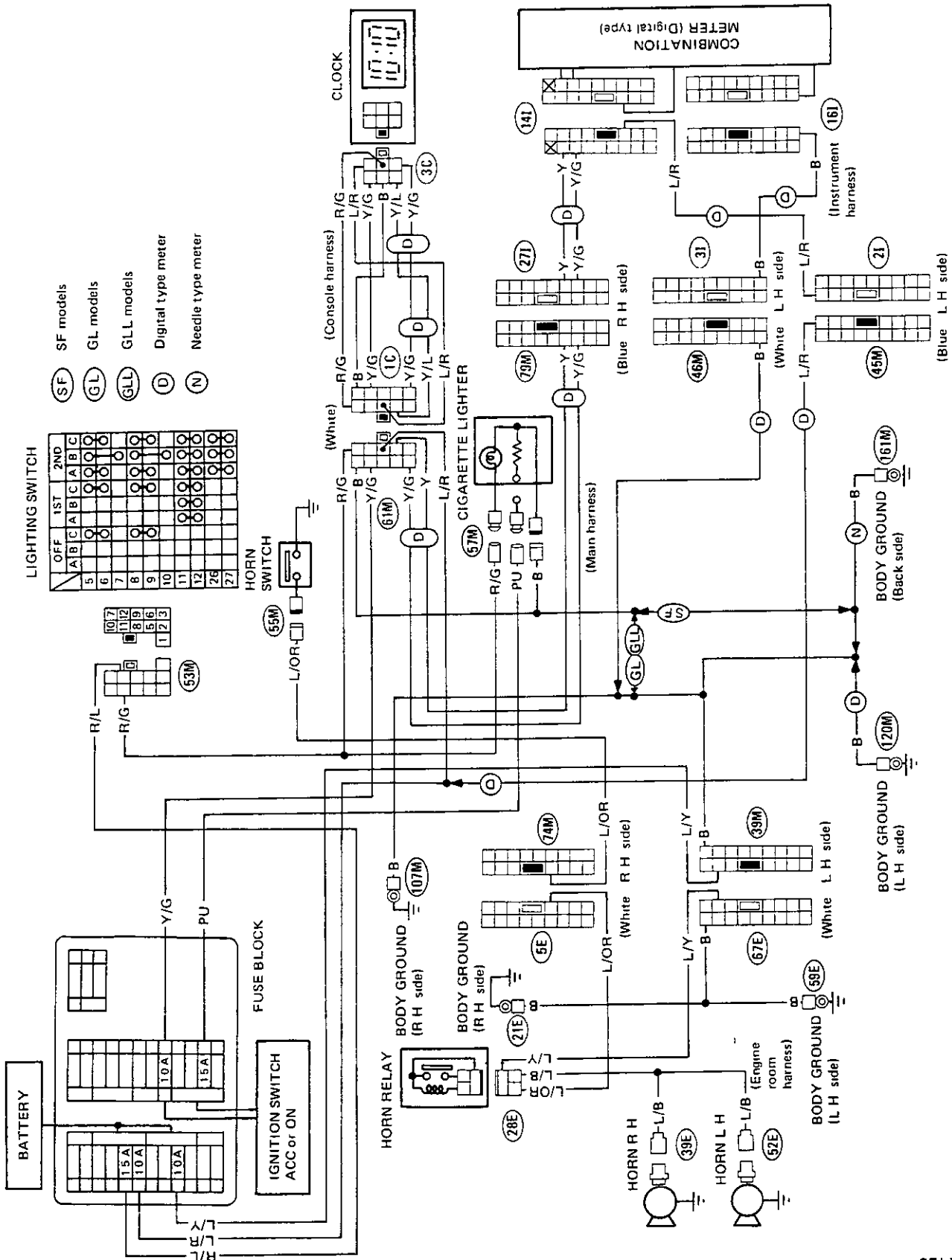
Headlamp Washer/Wiring Diagram



SEL727D

HORN, CIGARETTE LIGHTER, CLOCK

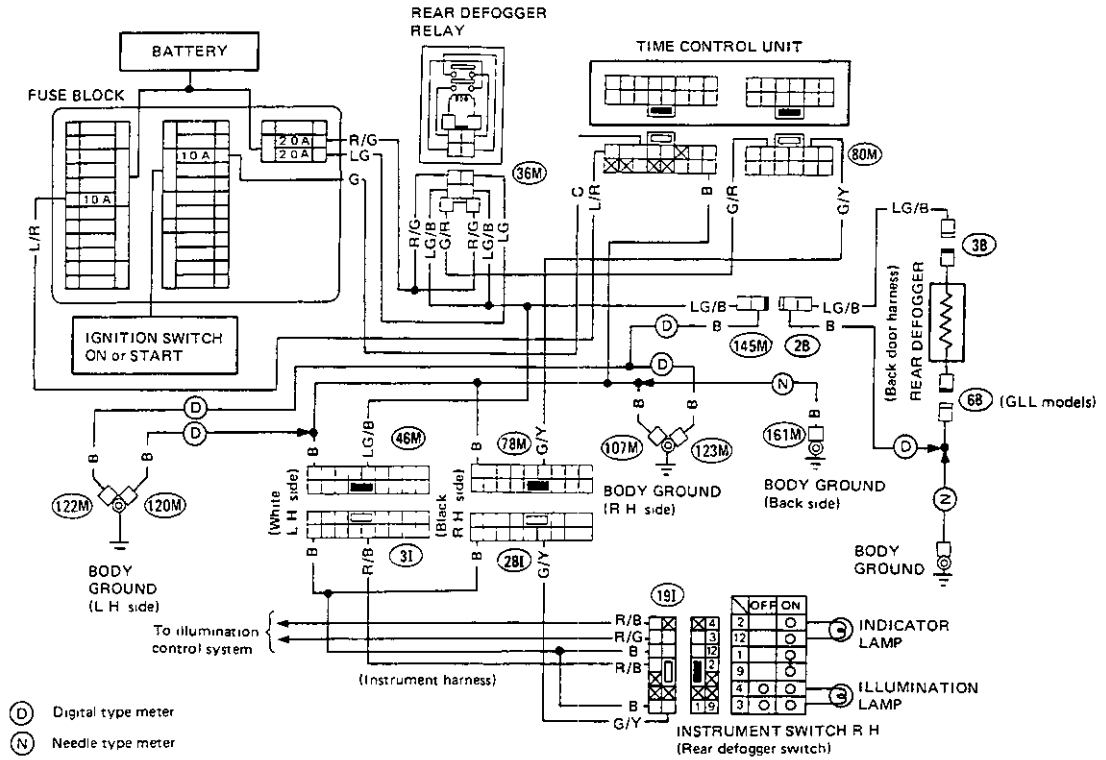
Wiring Diagram



SEL729D

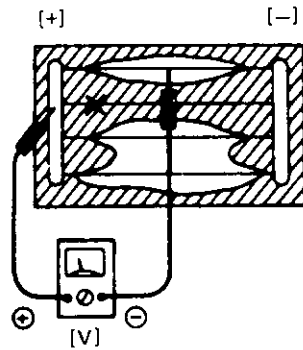
REAR WINDOW DEFOGGER

Wiring Diagram



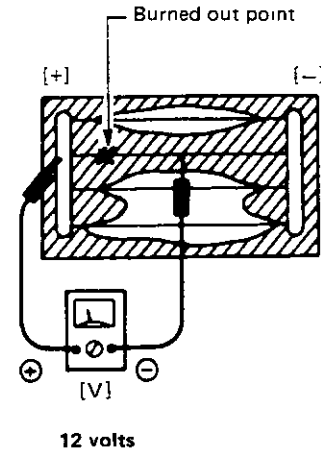
Filament Check

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

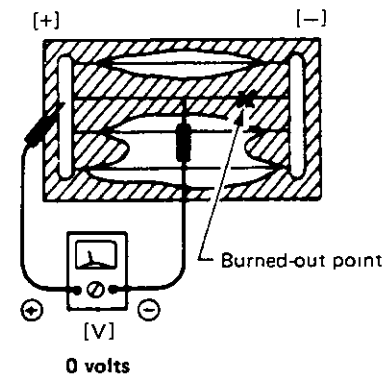


SEL263

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



SEL264

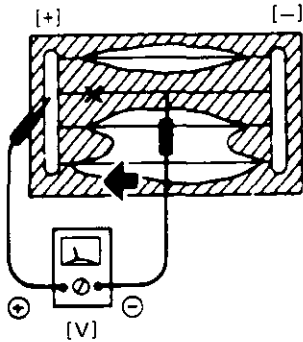


SEL265

REAR WINDOW DEFOGGER

Filament Check (Cont'd)

- 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

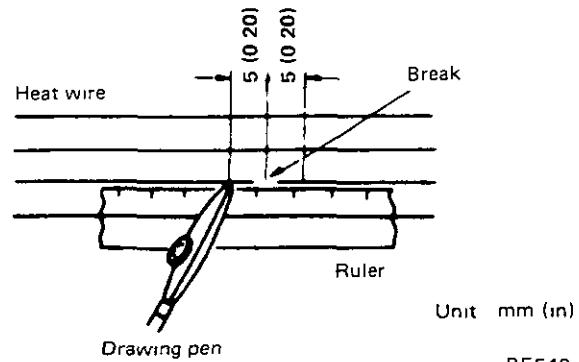
- Conductive silver composition (Dupont No 4817 or equivalent)
- Ruler, 30 cm (11.8 in) long
- Drawing pen
- Heat gun
- Alcohol
- Cloth

REPAIRING PROCEDURE

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

Shake silver composition container before use.

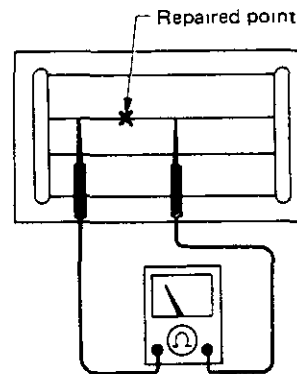
- Place ruler on glass along broken line. Deposit conductive silver composition on break with drawing pen. Slightly overlap existing heat wire on both sides [preferably 5 mm (0.20 in)] of the break.



BE540

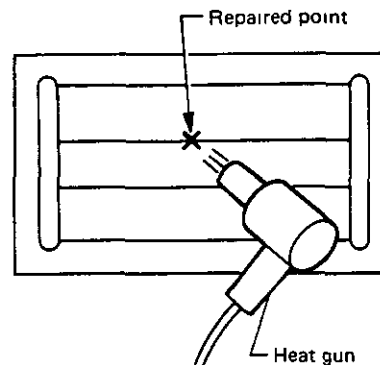
- After repair has been completed, check repaired wire for continuity. This check should be conducted 10 minutes after silver composition is deposited.

Do not touch repaired area while test is being conducted



SEL012D

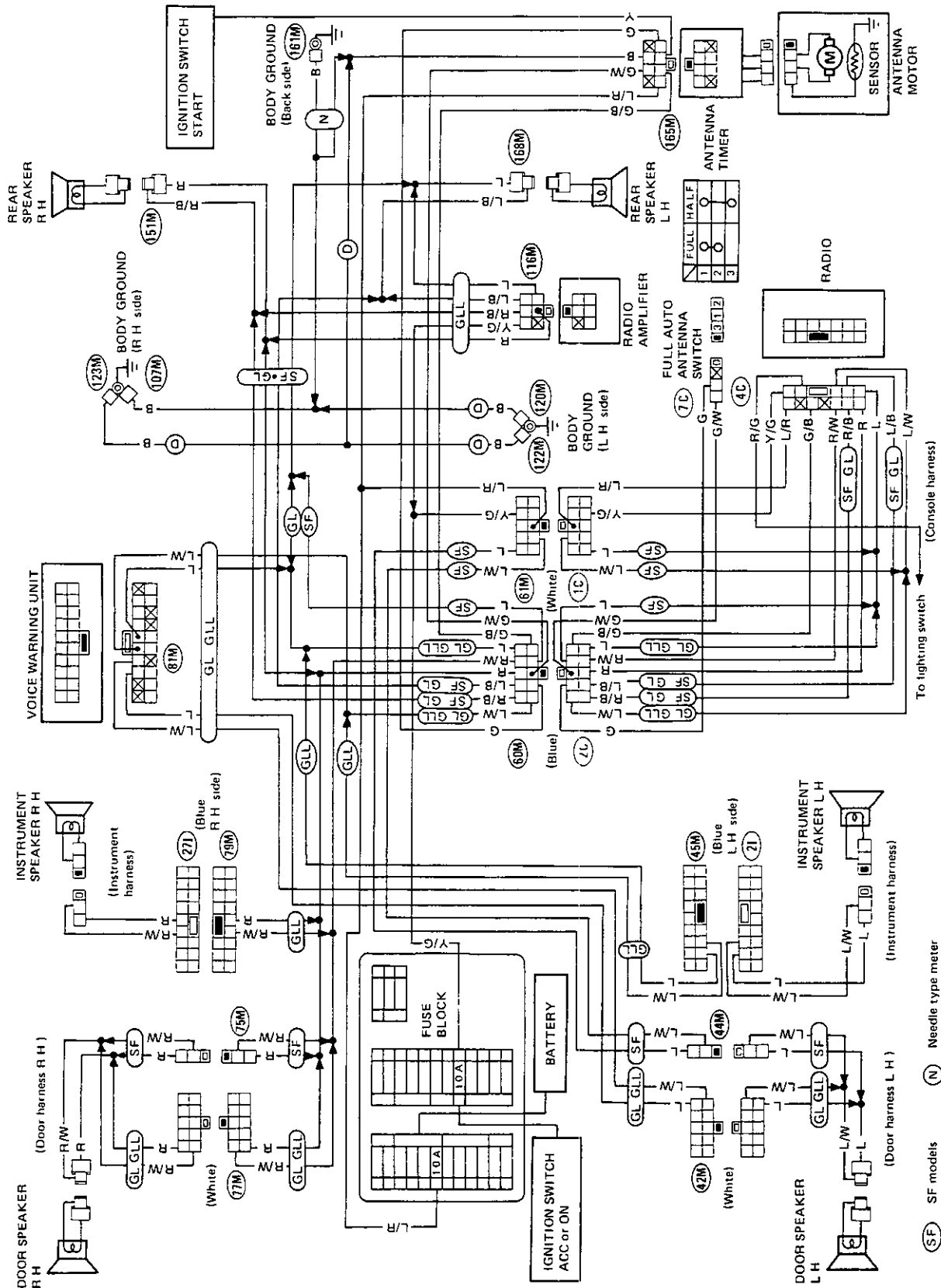
- Apply a constant stream of hot air directly to the repaired area for approximately 20 minutes with a heat gun. A minimum distance of 3 cm (1.2 in) should be kept between repaired area and hot air outlet. If a heat gun is not available, let the repaired area dry for 24 hours.



SEL013D

AUDIO AND POWER ANTENNA

Wiring Diagram

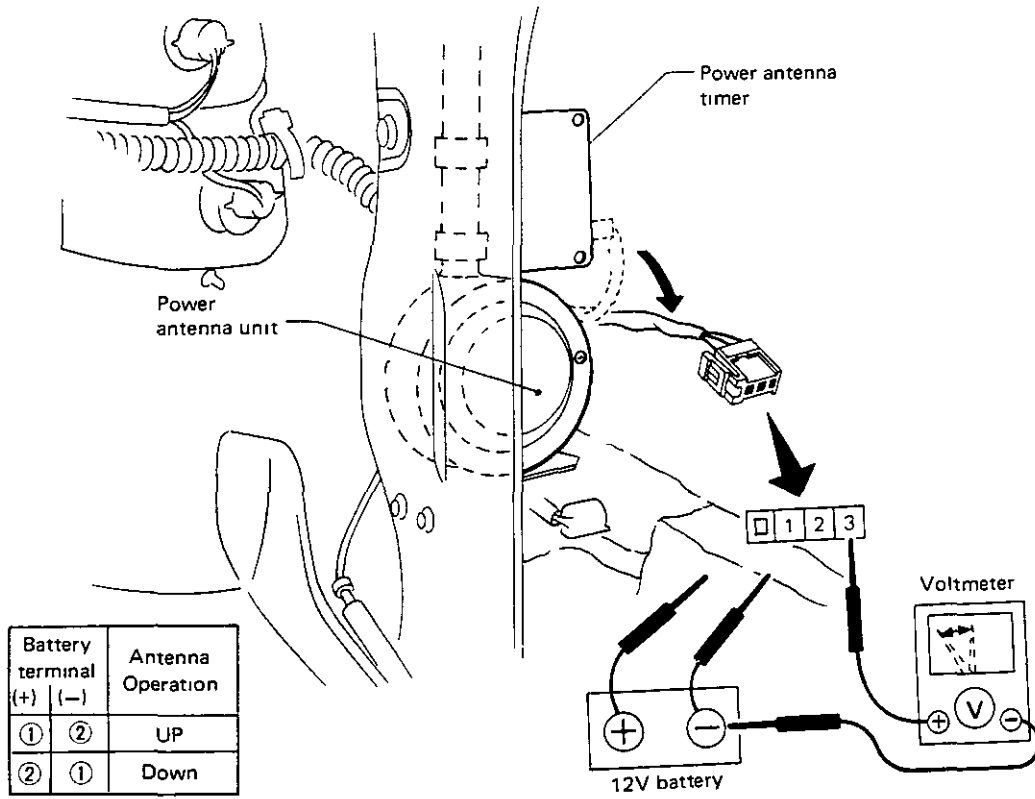


- (SF) SF models
- (GL) GL models
- (GLL) GLL models
- (D) Digital type meter
- (N) Needle type meter

SEL731D

AUDIO AND POWER ANTENNA

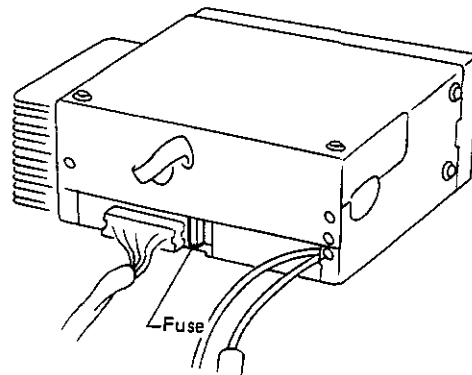
Power Antenna Motor Check



SEL732D

Radio Fuse Check

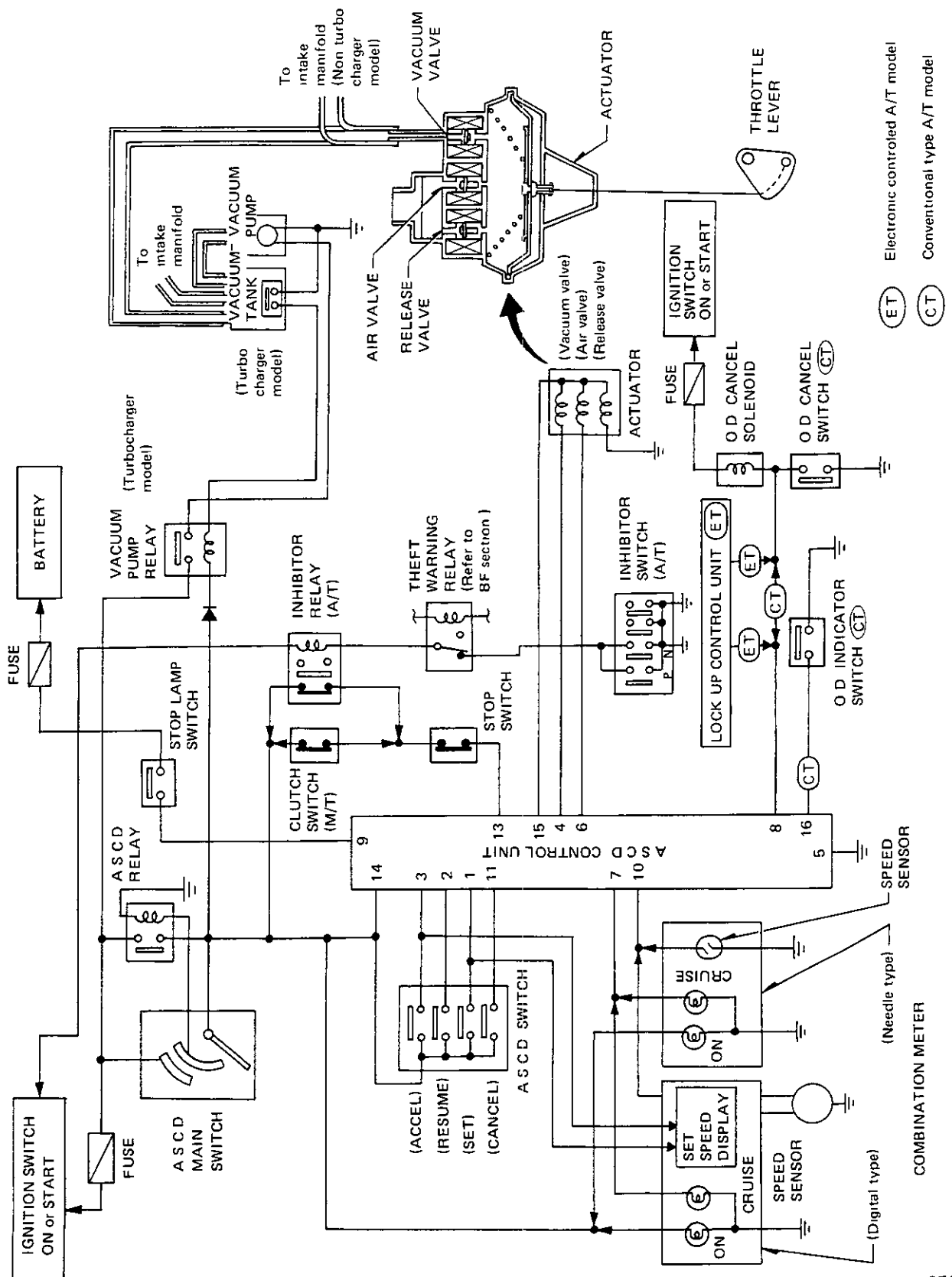
- 1 Disconnect, at connector, harness between power antenna unit and antenna timer.
 - 2 Apply 12-volt battery voltage across ① and ② to make sure antenna rod extends and retracts
 3. Connect a voltmeter across terminal ③ and ground terminal of battery.
 - 4 Check to determine if voltmeter varies between 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.



SEL733D

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

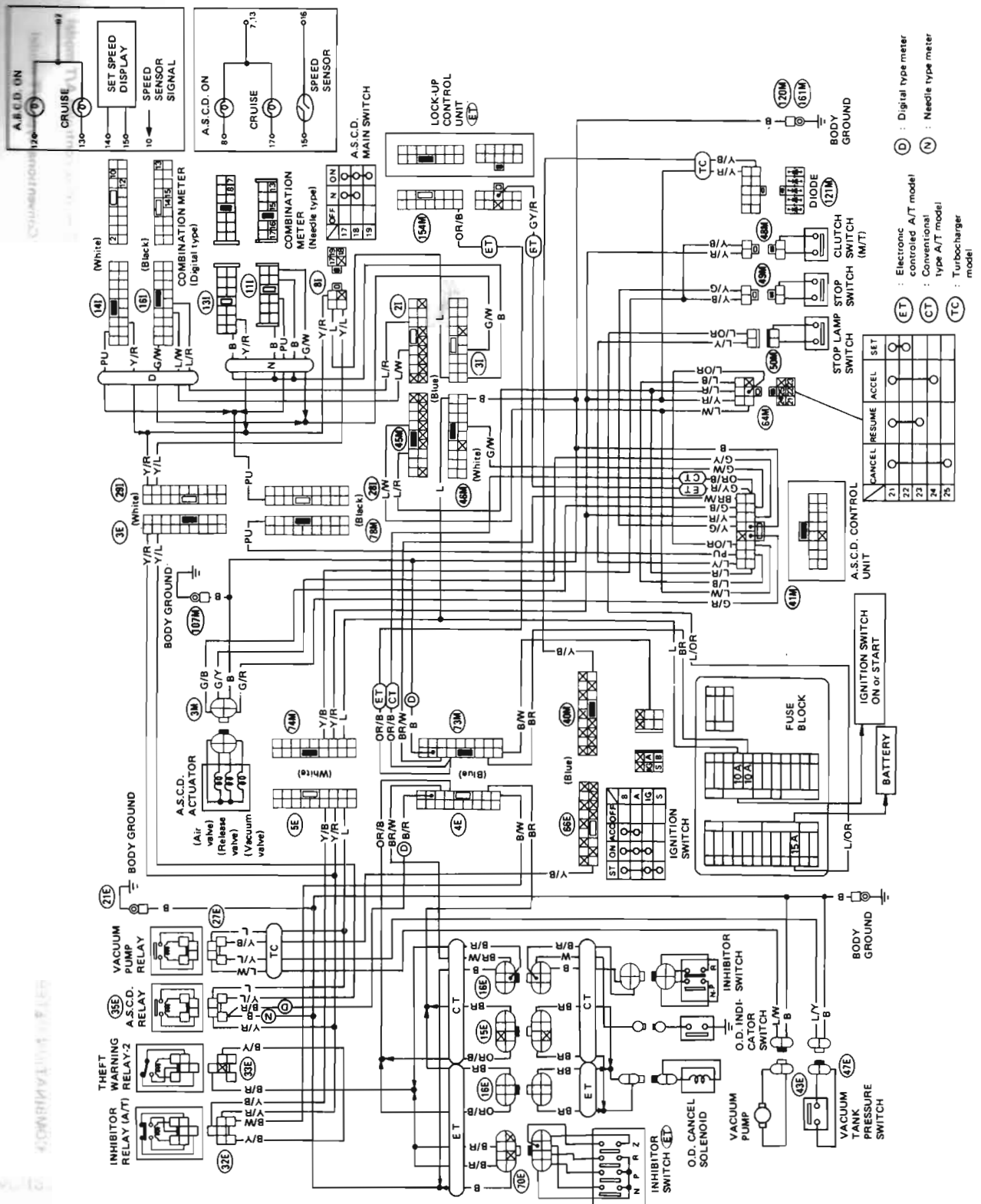
Schematic



SEL734D

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

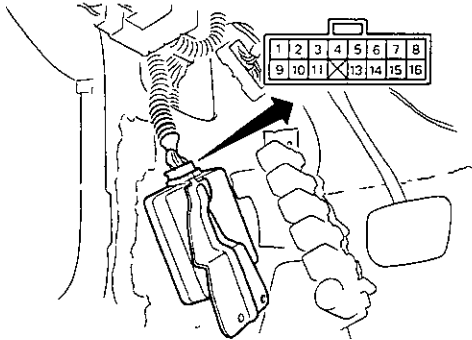
Wiring Diagram



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

— Preparation for Trouble-shooting ————— Trouble-shooting —————

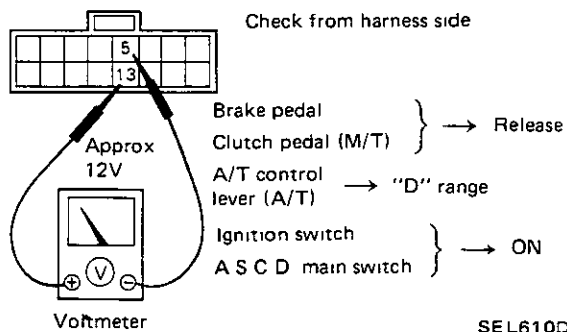
- Remove A S C D control unit with harness connected.



SEL736D

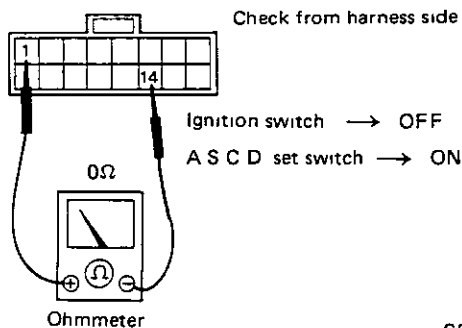
POWER SUPPLY CIRCUIT CHECK

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



SET SWITCH CIRCUIT CHECK

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



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

No

Check for loose vacuum hose

Check A S C D main switch and A S C D relay

O K

Check power supply circuit for A S C D control unit

O K

N G

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

O K

N G

Check set switch, and harness between control unit and set switch

Go to "A S C D Actuator Check"

O K

N G

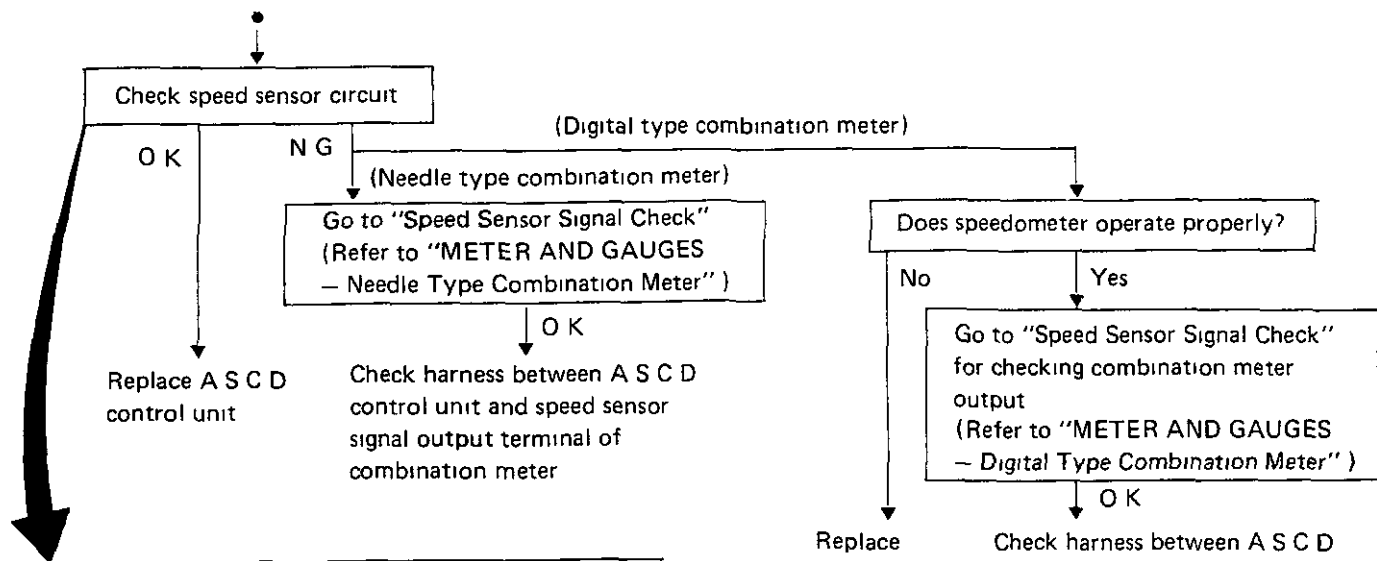
*

Replace actuator

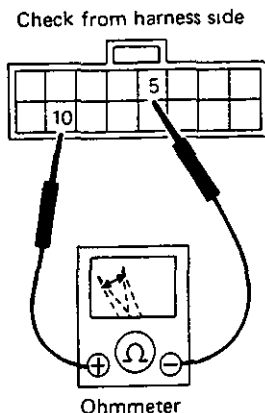
(Next page)

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

Trouble-shooting (Cont'd)



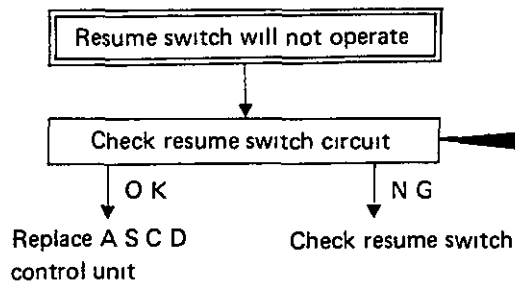
- 1 Turn ignition switch to "OFF"
 - 2 Disconnect speedometer cable from transmission
 - 3 Connect an ohmmeter between ⑩ and ⑤.
 - 4 Slowly turn speedometer cable pinion by hand to make sure ohmmeter pointer deflects
- Ohmmeter pointer deflects twice per rotation of pinion.



SEL763D

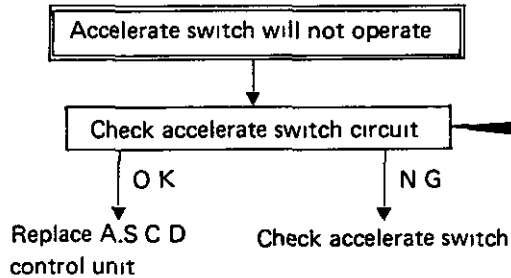
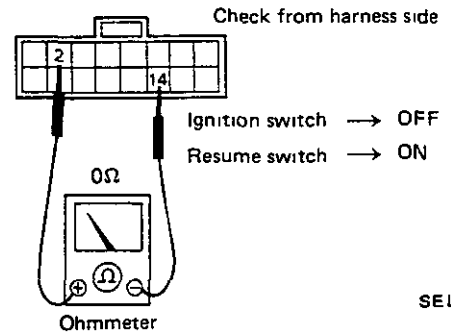
AUTOMATIC SPEED CONTROL DEVICE (A.S.C.D.)

Trouble-shooting (Cont'd)



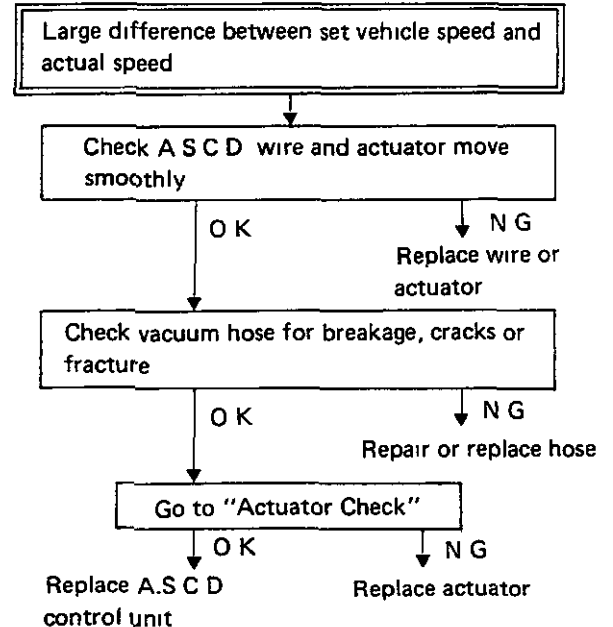
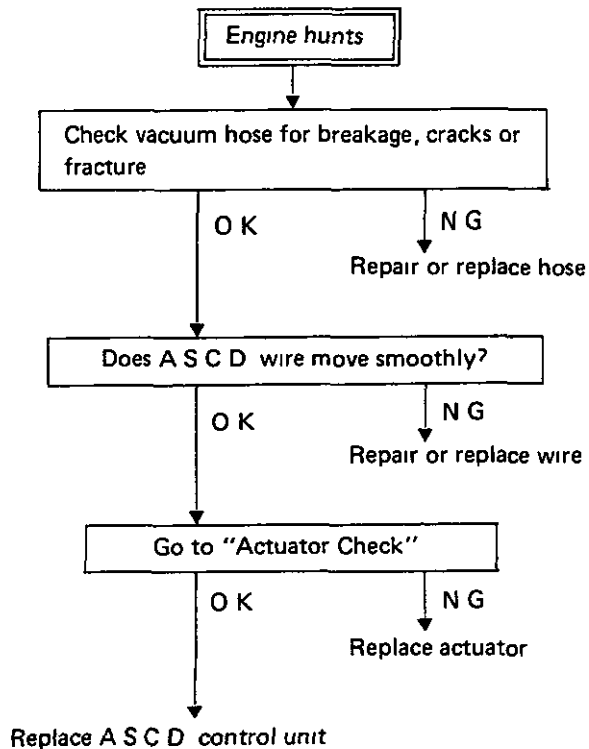
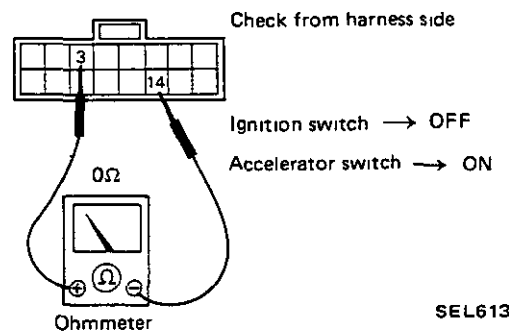
RESUME SWITCH CIRCUIT CHECK

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



ACCELERATE SWITCH CIRCUIT CHECK

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



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

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

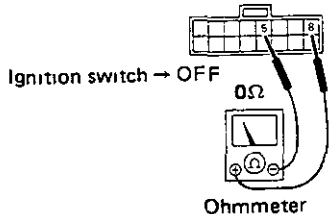
NG

- **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

Check from harness side

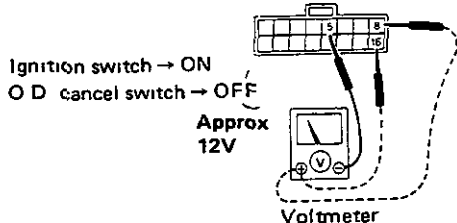


SEL737D

CONVENTIONAL A/T EQUIPPED MODEL (4N71B)

- Turn ignition switch to "ON"
- Turn O D. cancel switch to "OFF".
- Check voltage ⑧ - ⑤ and ⑩ - ⑤

Check from harness side

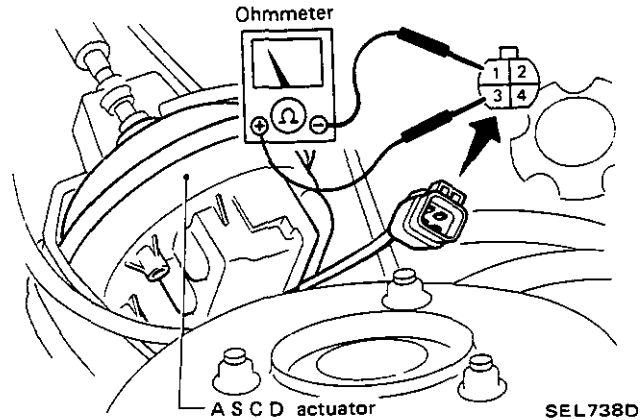


SEL741D

A.S.C.D. Actuator Check

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

Continuity exist ... O.K.



CAUTION:

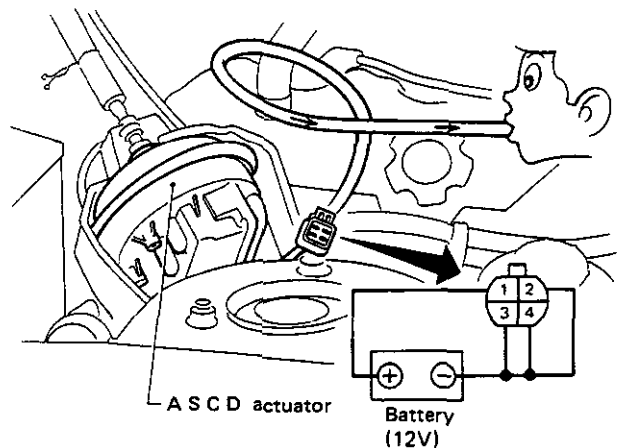
Do not attempt to remove valves from actuator.

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.

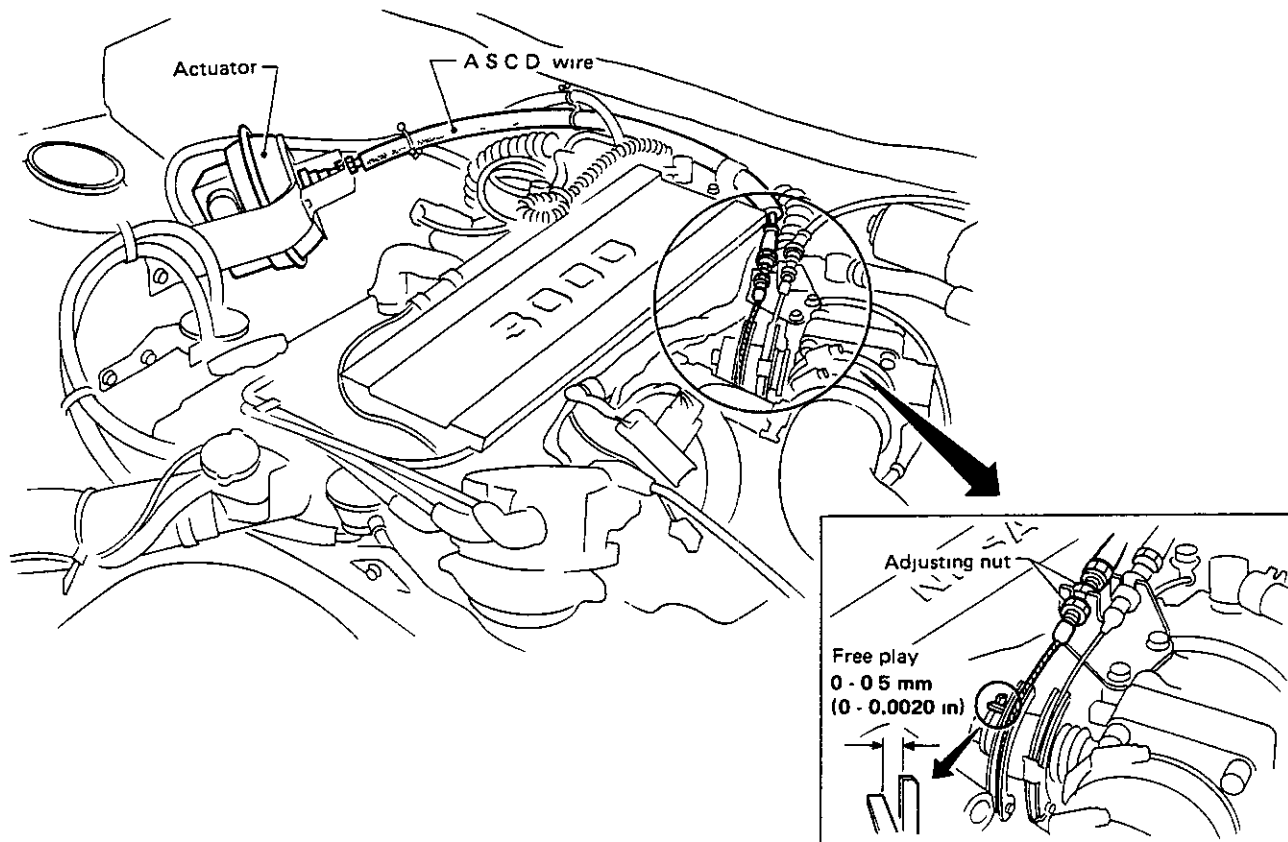
CAUTION:

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



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

A.S.C.D. Wire Adjustment



SEL740D

CAUTION:

- Be careful not to twist wire when removing it.
- Do not tense wire excessively during adjustment.

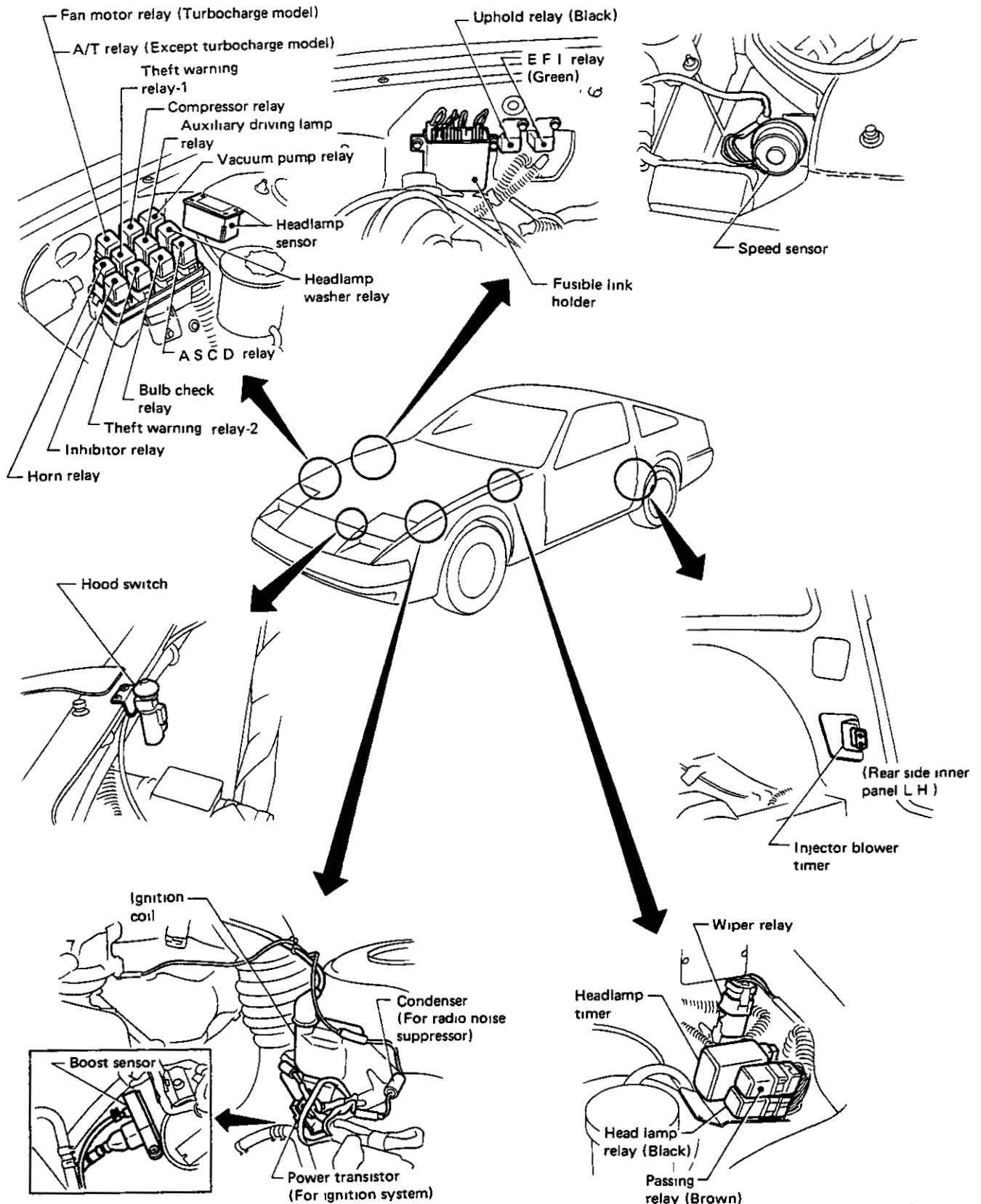
Without depressing the accelerator pedal, adjust wire tension with adjusting nut

Wire free play (at throttle lever):

0 - 0.5 mm (0 - 0.0020 in)

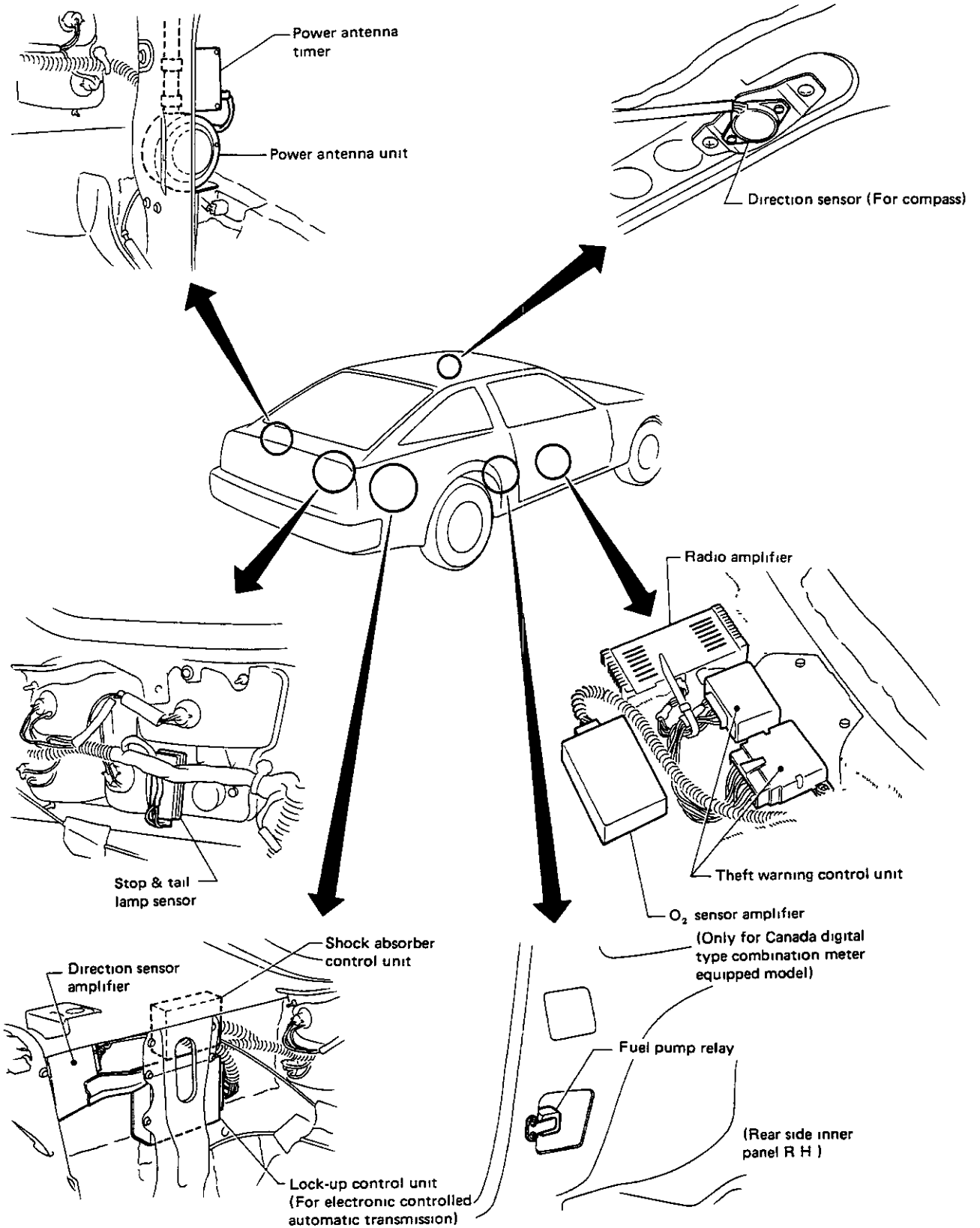
- For A.S.C.D. stop switch and clutch switch adjustment, refer to BR and CL sections.
- For vacuum pump and tank check, refer to HA section.

LOCATION OF ELECTRICAL UNITS



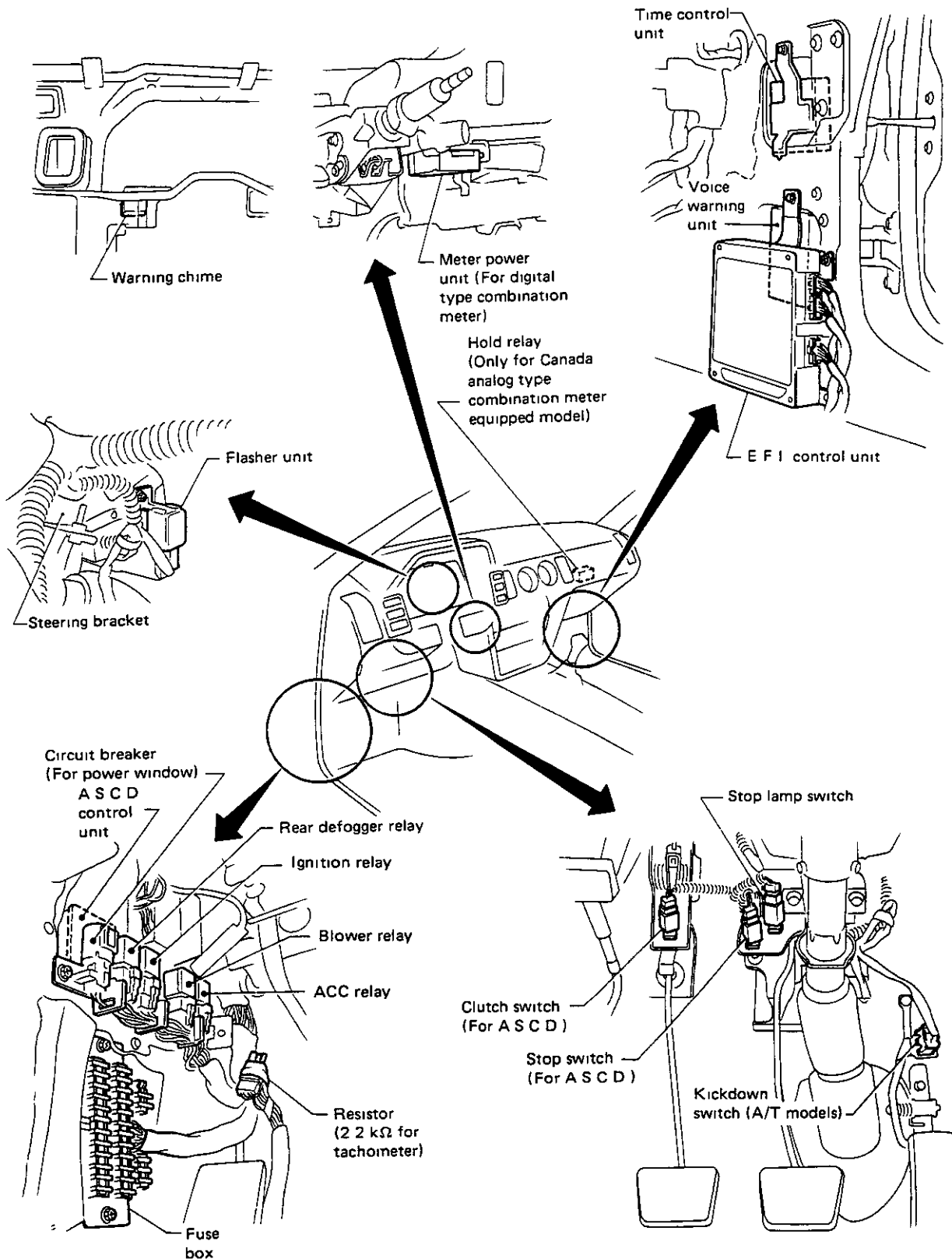
SEL751D

LOCATION OF ELECTRICAL UNITS



SEL752D

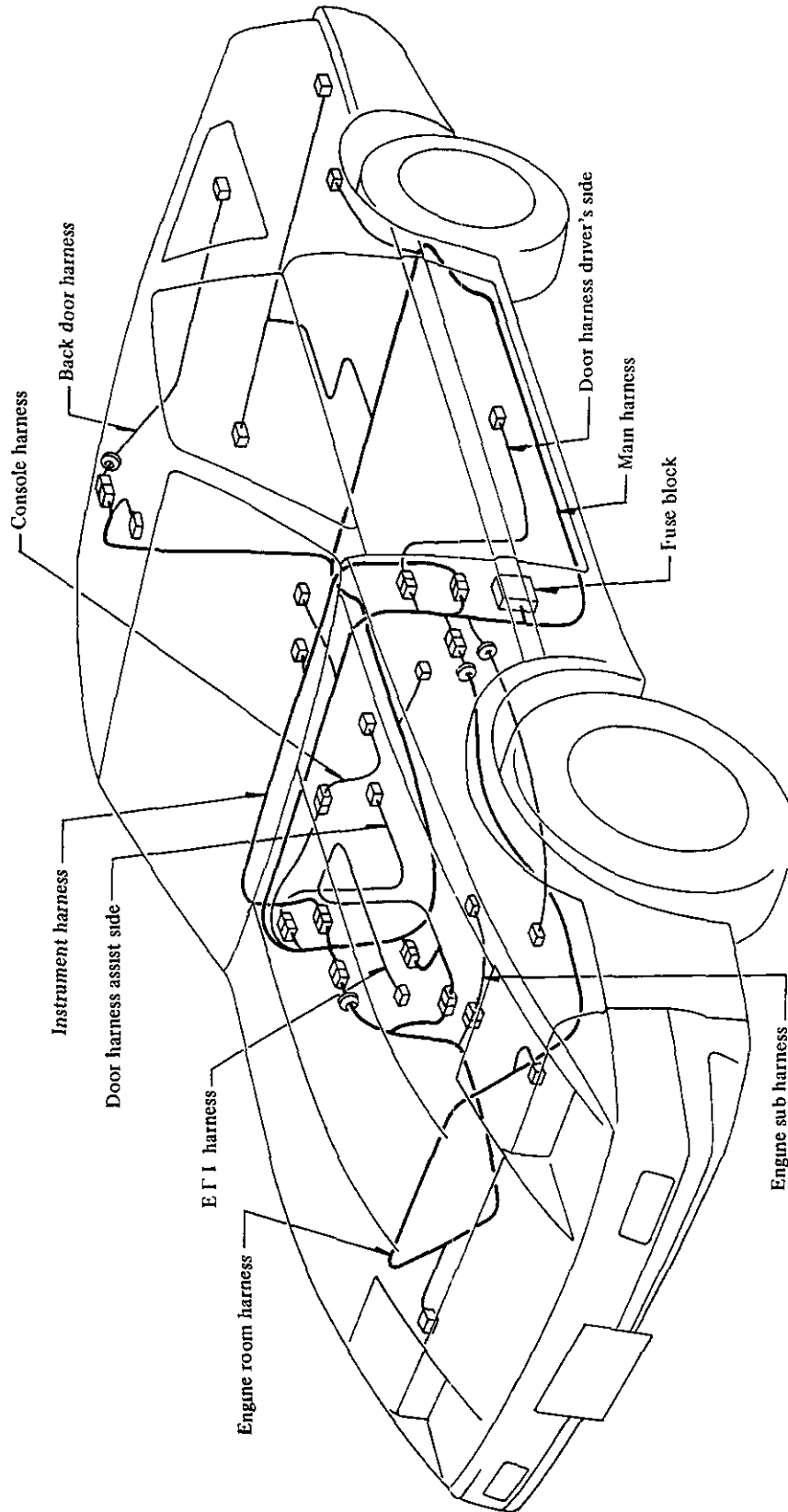
LOCATION OF ELECTRICAL UNITS



SEL753D

HARNES LAYOUT

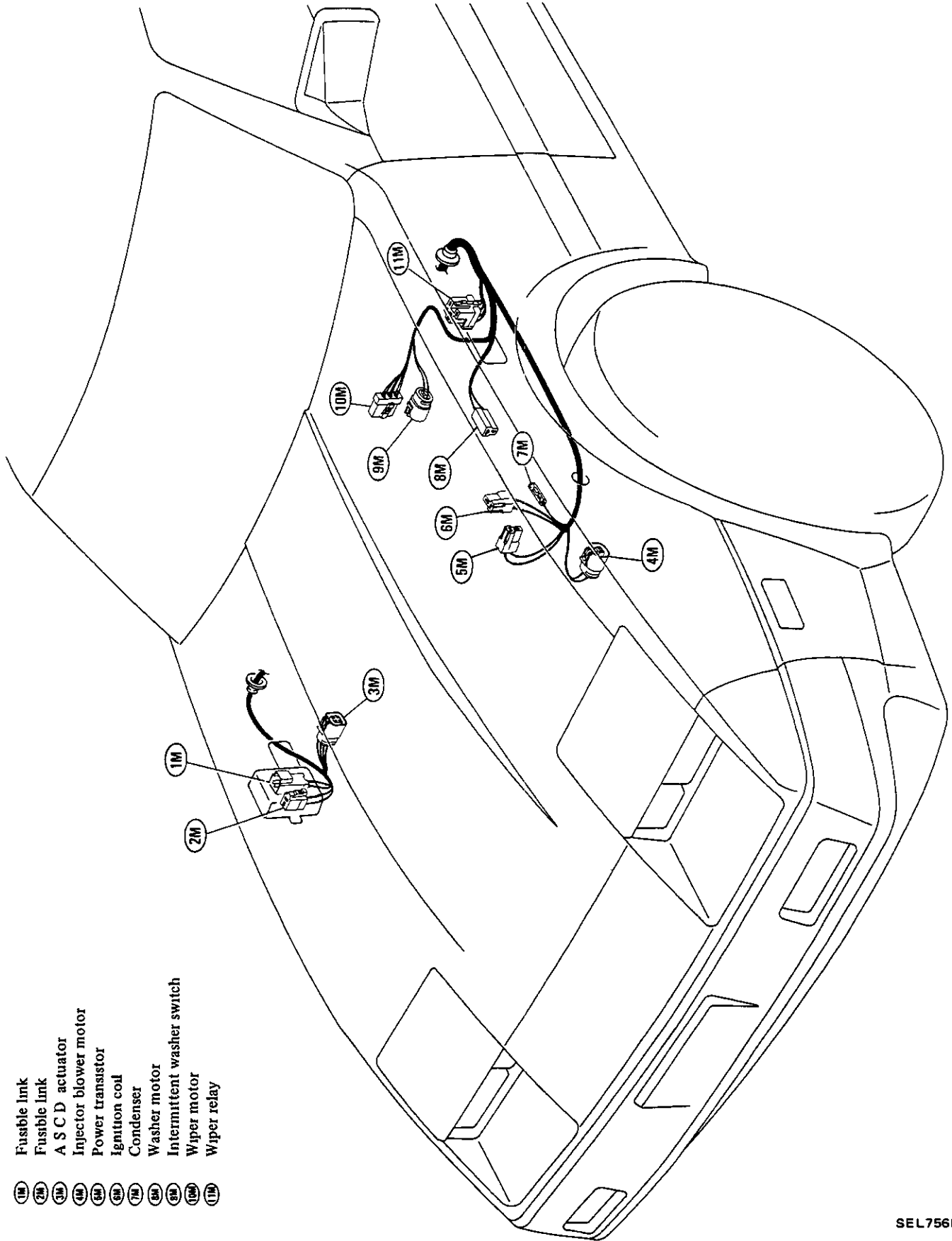
Outline



SEL754D

HARNESS LAYOUT

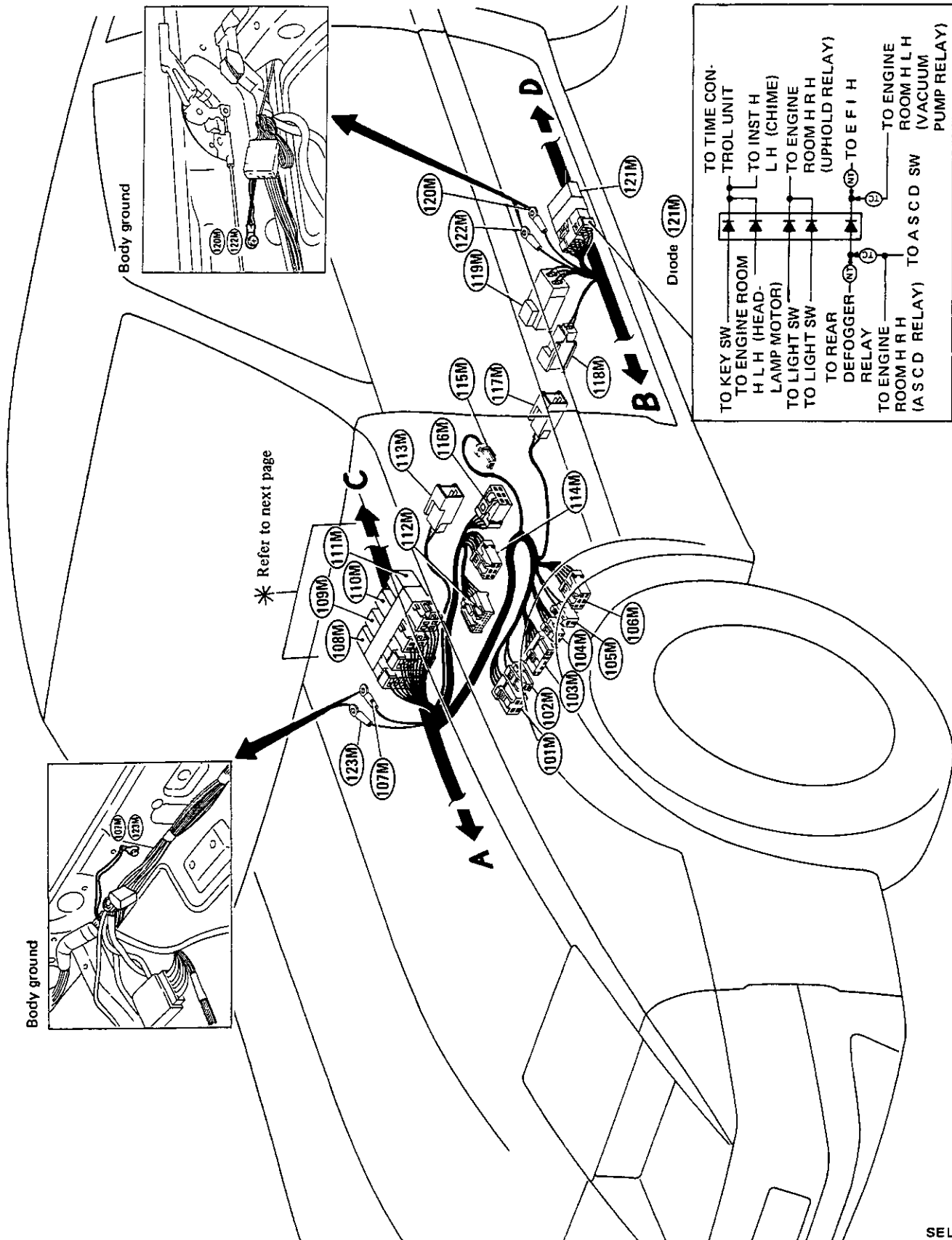
Main Harness



SEL756D

HARNESS LAYOUT

Main Harness (Cont'd)

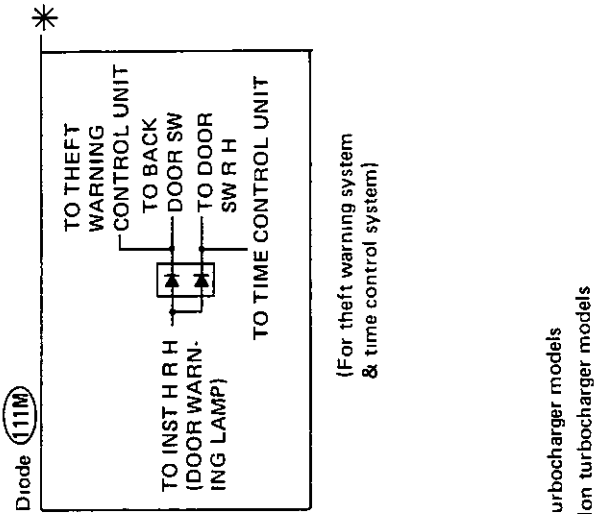
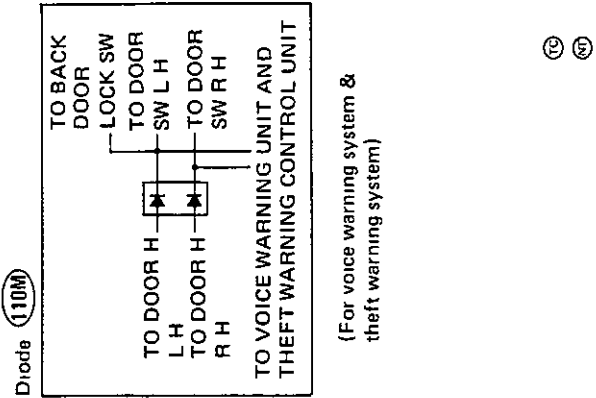
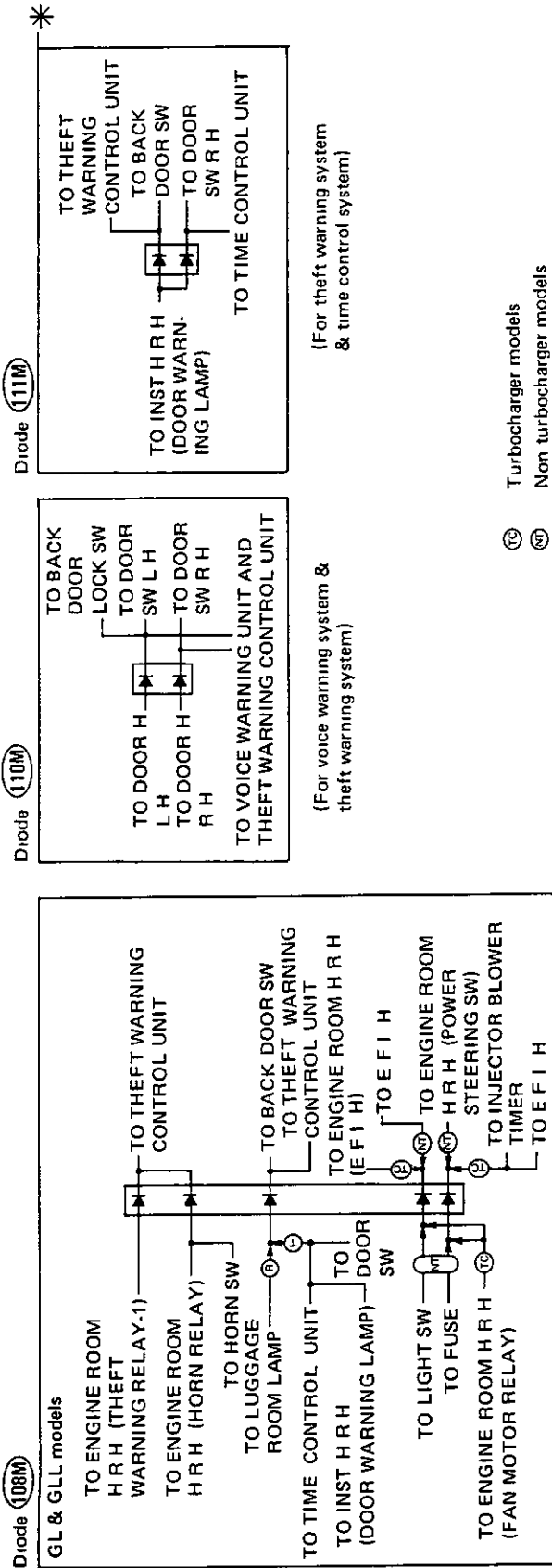


(For time control system, headlamp system, A S C D and E F I system)

SEL758D

HARNES LAYOUT

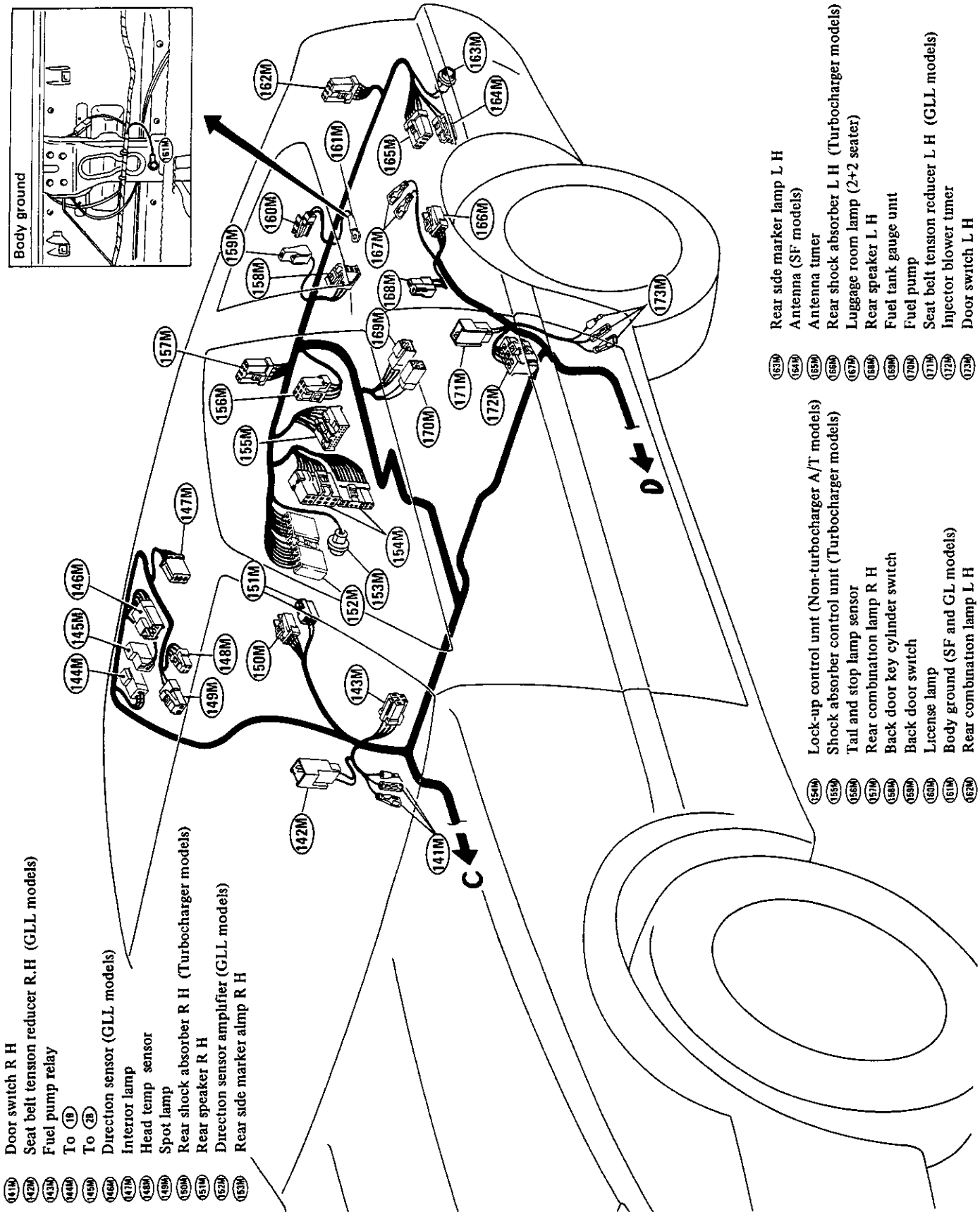
Main Harness (Cont'd)



- (101) Turbocharger models
- (102) Non turbocharger models
- (103) 2+2 seater
- (104) 2 seater
- (105) Door mirror defogger switch
- (106) A/T indicator lamp
- (107) Remote control mirror switch
- (108) O D switch (A/T models)
- (109) Headlamp cleaner switch
- (110) Shock absorber switch (Turbocharger models)
- (111) Body ground
- (112) Diode
- (113) Diode (SF models)
- (114) Diode (GL and GLL models)
- (115) Diode (2+2 seater)
- (116) Theft warning control unit
- (117) Seat belt switch R H (GLL models)
- (118) O₂ sensor control amp (GLL models)
- (119) Parking brake switch
- (120) Radio amplifier (GLL models)
- (121) Seat belt switch L H (SF models)
- (122) Seat belt switch L H (GL models)
- (123) To power seat harness (GLL models)
- (124) Body ground (GLL models)
- (125) Diode (GL and GLL models)
- (126) Body ground (GLL models)
- (127) Body ground (GLL models)
- (128) Body ground (GLL models)

HARNESS LAYOUT

Main Harness (Cont'd)



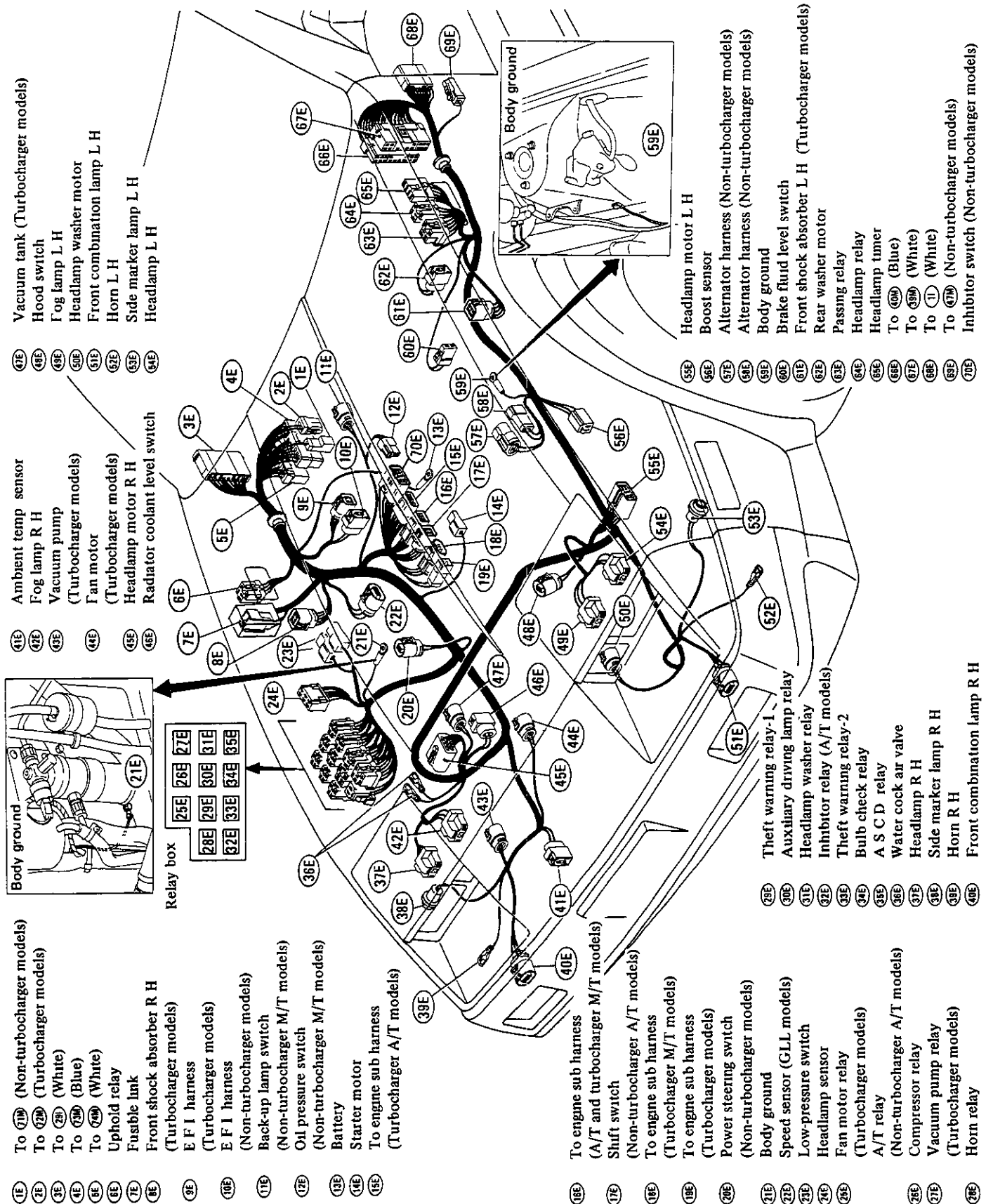
- 141M Door switch R H
- 142M Seat belt tension reducer R.H (GLL models)
- 143M Fuel pump relay
- To 1B
- To 2B
- 144M Direction sensor (GLL models)
- 145M Interior lamp
- 146M Head temp sensor
- 147M Spot lamp
- 148M Rear shock absorber R H (Turbocharger models)
- 149M Rear speaker R H
- 150M Direction sensor amplifier (GLL models)
- 151M Rear side marker lamp R H
- 152M
- 153M
- 154M
- 155M
- 156M
- 157M
- 158M
- 159M
- 160M
- 161M
- 162M
- 163M
- 164M
- 165M
- 166M
- 167M
- 168M
- 169M
- 170M
- 171M
- 172M
- 173M

- 163M Rear side marker lamp L H
- 164M Antenna (SF models)
- 165M Antenna tuner
- 166M Rear shock absorber L H (Turbocharger models)
- 167M Luggage room lamp (2+2 seater)
- 168M Rear speaker L H
- 169M Fuel tank gauge unit
- 170M Fuel pump
- 171M Seat belt tension reducer L H (GLL models)
- 172M Injector blower tuner
- 173M Door switch L H

- 152M Lock-up control unit (Non-turbocharger A/T models)
- 153M Shock absorber control unit (Turbocharger models)
- 154M Tail and stop lamp sensor
- 155M Rear combination lamp R H
- 156M Back door key cylinder switch
- 157M Back door switch
- 158M License lamp
- 159M Body ground (SF and GL models)
- 160M Rear combination lamp L H

HARNES LAYOUT

Engine Room Harness



- 1E To 71M (Non-turbocharger models)
- 2E To 72M (Turbocharger models)
- 3E To 73M (White)
- 4E To 74M (Blue)
- 5E To 75M (White)
- 6E Uphold relay
- 7E Fusible link
- 8E Front shock absorber R H (Turbocharger models)
- 9E E F I harness (Turbocharger models)
- 10E E F I harness (Non-turbocharger models)
- 11E Back-up lamp switch (Non-turbocharger M/T models)
- 12E Oil pressure switch (Non-turbocharger M/T models)
- 13E Battery
- 14E Starter motor
- 15E To engine sub harness (Turbocharger A/T models)

- 16E Ambient temp sensor
- 17E Fog lamp R H
- 18E Vacuum pump (Turbocharger models)
- 19E Fan motor (Turbocharger models)
- 20E Headlamp motor R H
- 21E Radiator coolant level switch
- 22E Vacuum tank (Turbocharger models)
- 23E Hood switch
- 24E Fog lamp L H
- 25E Headlamp washer motor
- 26E Front combination lamp L H
- 27E Horn L H
- 28E Side marker lamp L H
- 29E Headlamp L H

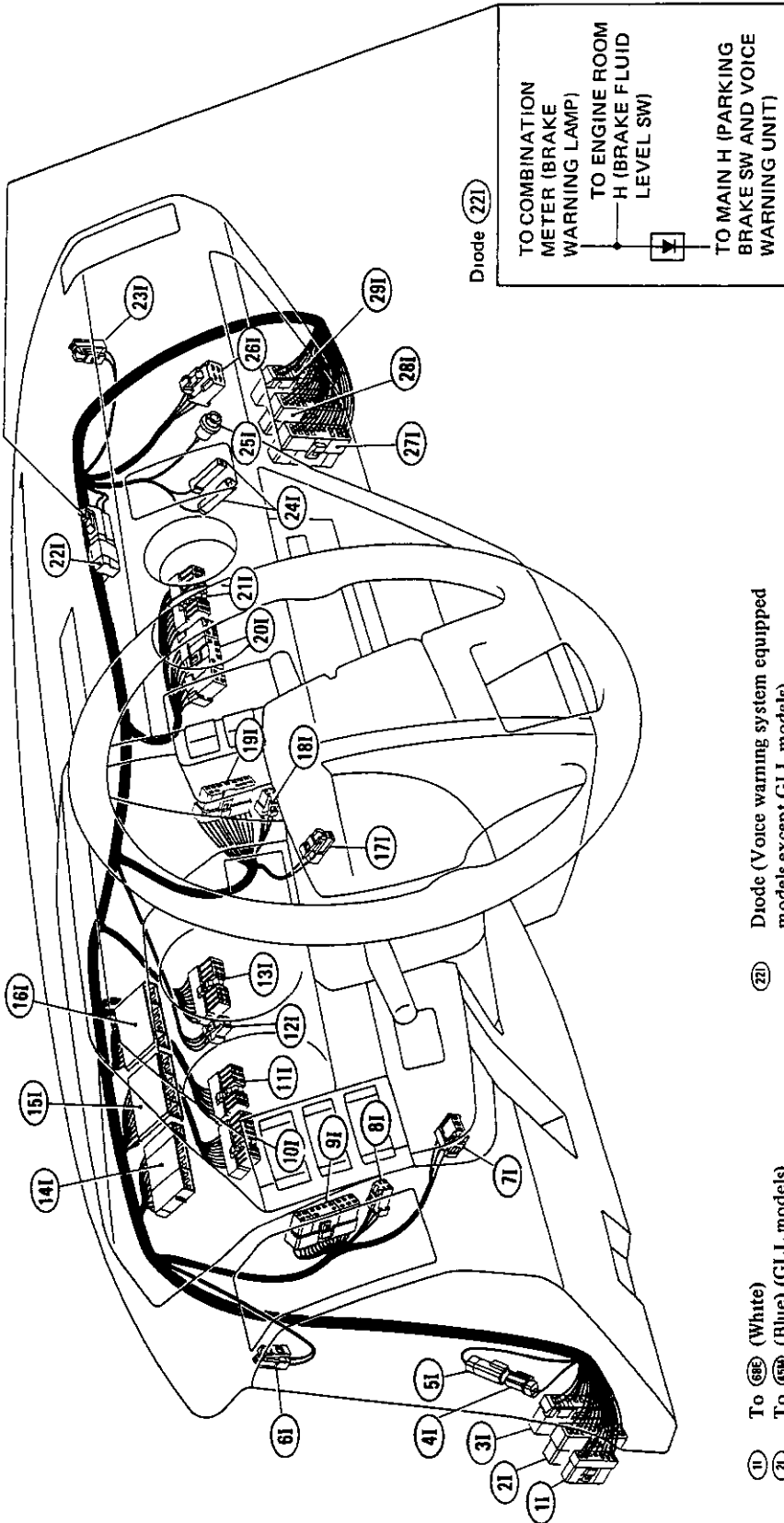
- 30E To engine sub harness (A/T and turbocharger M/T models)
- 31E Shift switch (Non-turbocharger A/T models)
- 32E To engine sub harness (Turbocharger M/T models)
- 33E To engine sub harness (Turbocharger models)
- 34E Power steering switch (Non-turbocharger models)
- 35E Body ground
- 36E Speed sensor (GLL models)
- 37E Low-pressure switch
- 38E Headlamp sensor
- 39E Fan motor relay (Turbocharger models)
- 40E A/T relay (Non-turbocharger A/T models)
- 41E Compressor relay
- 42E Vacuum pump relay (Turbocharger models)
- 43E Horn relay

- 44E Theft warning relay-1
- 45E Auxiliary driving lamp relay
- 46E Headlamp washer relay
- 47E Inhibitor relay (A/T models)
- 48E Theft warning relay-2
- 49E Bulb check relay
- 50E A S C D relay
- 51E Water cock air valve
- 52E Headlamp R H
- 53E Side marker lamp R H
- 54E Horn R H
- 55E Front combination lamp R H

- 56E Headlamp motor L H
- 57E Boost sensor
- 58E Alternator harness (Non-turbocharger models)
- 59E Alternator harness (Non-turbocharger models)
- 60E Body ground
- 61E Brake fluid level switch
- 62E Front shock absorber L H (Turbocharger models)
- 63E Rear washer motor
- 64E Passing relay
- 65E Headlamp relay
- 66E Headlamp timer
- 67E To 40M (Blue)
- 68E To 43M (White)
- 69E To 11 (White)
- 70E To 47M (Non-turbocharger models)
- 71E Inhibitor switch (Non-turbocharger models)

HARNESS LAYOUT

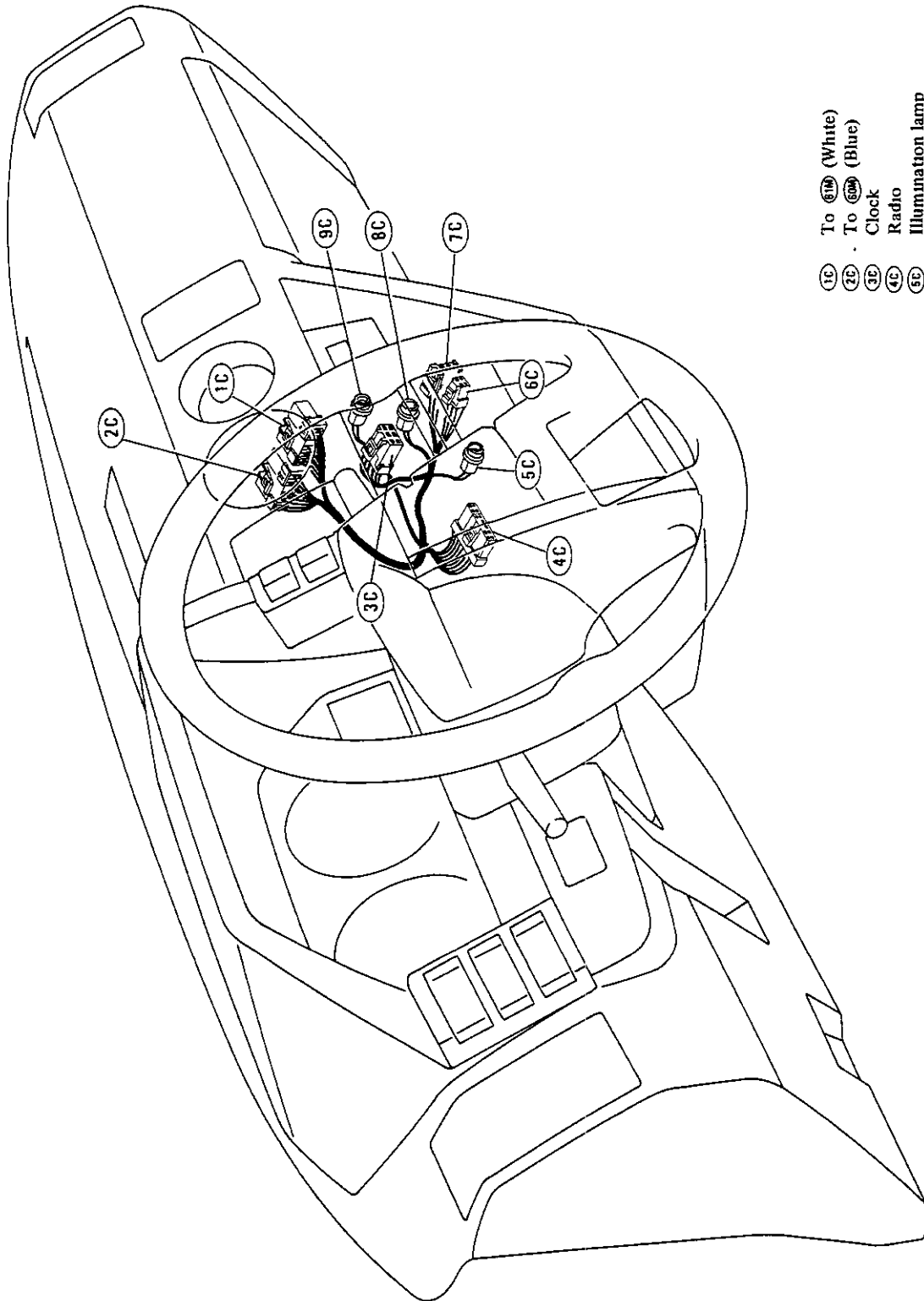
Instrument Harness



- 11 To 66E (White)
 - 21 To 65M (Blue) (GLL models)
 - 31 To 65M (White)
 - 41 Joint } (For O₂ sensor warning lamp)
 - 51 Joint
 - 61 Speaker L H (GLL models)
 - 71 Illumination control switch
 - 81 Instrument switch L H
 - 91 Instrument switch L H
 - 101 Combination meter (Black)
 - 111 Combination meter (White)
 - 121 Combination meter (White)
 - 131 Combination meter (White)
 - 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 (GLL models)
 - 211 Combination gauge (SF and GL models)
 - 221 Diode } (For voice warning system)
 - TO COMBINATION METER (BRAKE WARNING LAMP)
 - TO ENGINE ROOM H (BRAKE FLUID LEVEL SW)
 - TO MAIN H (PARKING BRAKE SW AND VOICE WARNING UNIT)
 - 231
 - 241
 - 251 Diode (Voice warning system equipped models except GLL models)
 - 261 Speaker R H (GLL models)
 - 271 Glove box lamp switch
 - 281 Glove box lamp
 - 291 Hold relay (Canada models)
 - To 65M (Blue) (GLL models)
 - To 65M (Black)
 - To 4E (White)
- Needle type meter
- Digital type meter

HARNESS LAYOUT

Console Harness

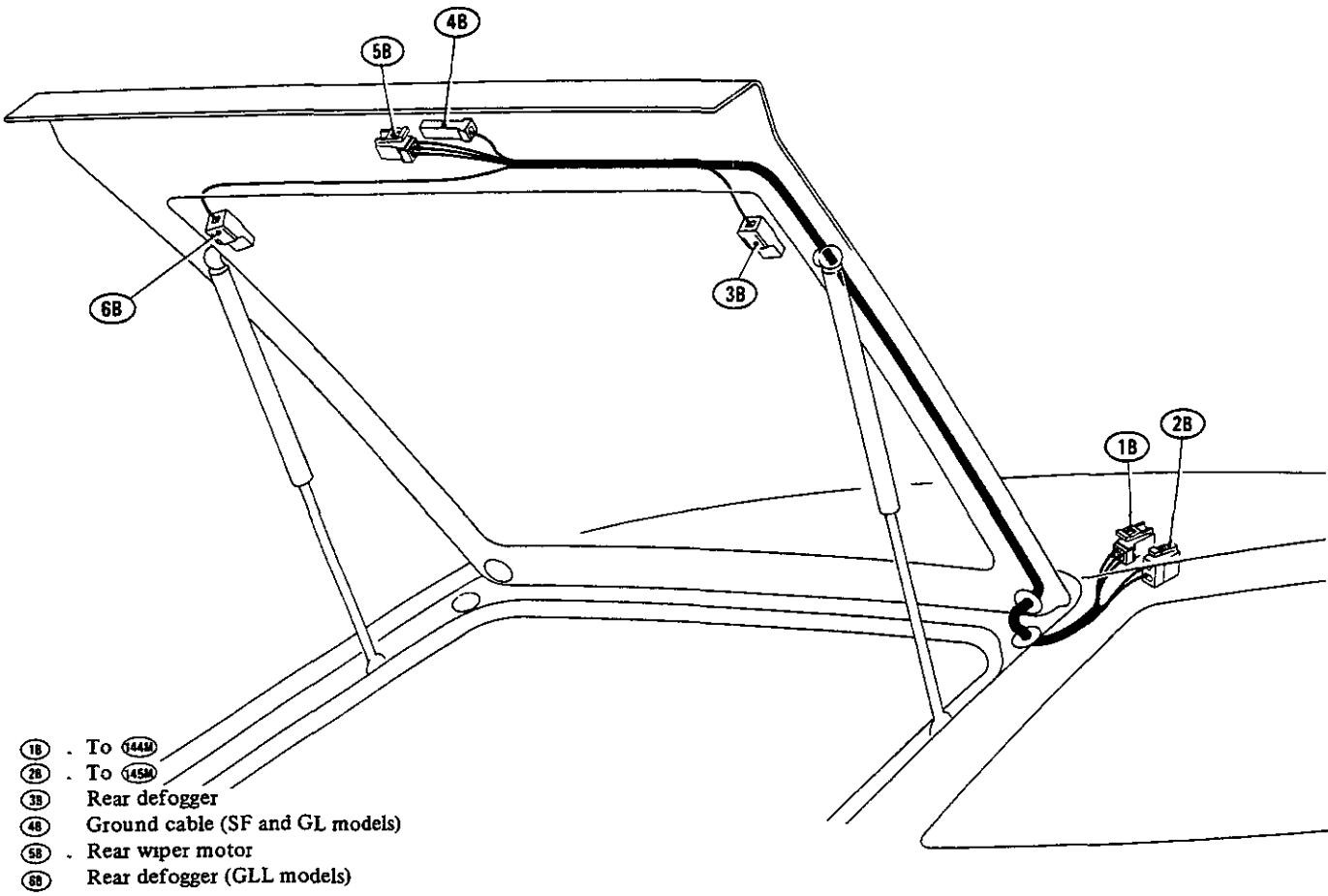


- To ⑥⑩ (White)
 - To ⑥⑩ (Blue)
 - Clock
 - Radio
 - Illumination lamp
 - Antenna switch (SF models)
 - Full auto antenna switch
 - Illumination lamp
 - Illumination lamp
- ①C
②C
③C
④C
⑤C
⑥C
⑦C
⑧C
⑨C

SEL761D

HARNES LAYOUT

Back Door Harness



SEL762D