# ELECTRICAL SYSTEM

# SECTION EL

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

**When you perform trouble diagnoses, read GI section, "HOW TO FOLLOW FLOW CHART IN TROUBLE DIAGNOSES" and "HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT".**

## CONTENTS

# CONTENTS (Cont'd.)



**WIRING DIAGRAM REFERENCE CHART**

## Supplemental Restraint System "AIR BAG" and "SEAT BELT PRE-TENSIONER"

The Supplemental Restraint System "Air Bag" and "Seat Belt Pre-tensioner" help to reduce the risk or severity of injury to the driver and front passenger in a frontal collision. The Supplemental Restraint System consists of air bags (located in the center of the steering wheel and on the instrument panel on the passenger side), seat belt pre-tensioners, sensors, a diagnosis unit, warning lamp, wiring harness and spiral cable. Information necessary to service the system safely is included in the **BF section** of this Service Manual.

**WARNING:**

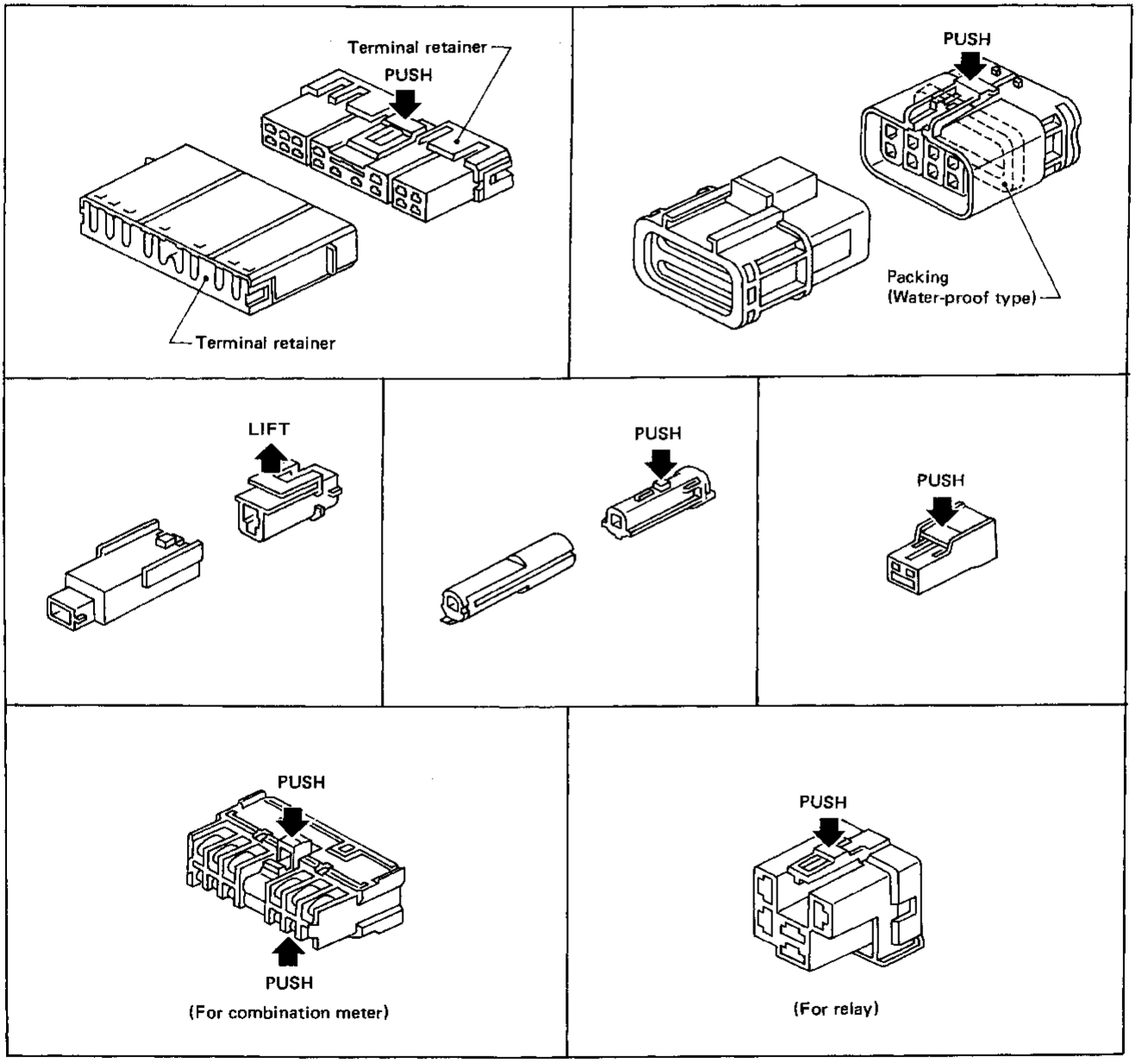
- **To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal collision, all maintenance must be performed by an authorized INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system.**
- **All SRS air bag electrical wiring harnesses and connectors are covered with yellow outer insulation. Do not use electrical test equipment on any circuit related to the SRS SYSTEM.**

## Description

### HARNESS CONNECTOR

- All harness connectors have been modified to prevent accidental looseness or disconnection.
- The connector can be disconnected by pushing or lifting the locking section.

**CAUTION:**
**Do not pull the harness when disconnecting the connector.**
[Example]

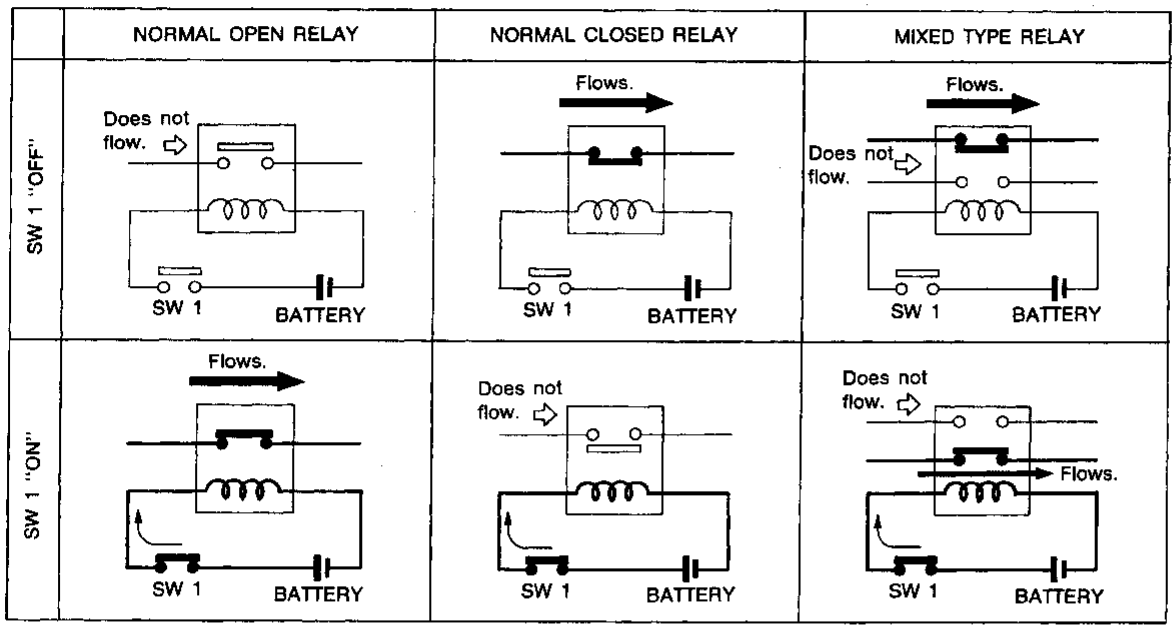



SEL769D

## Description

### NORMAL OPEN, NORMAL CLOSED AND MIXED TYPE RELAYS

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

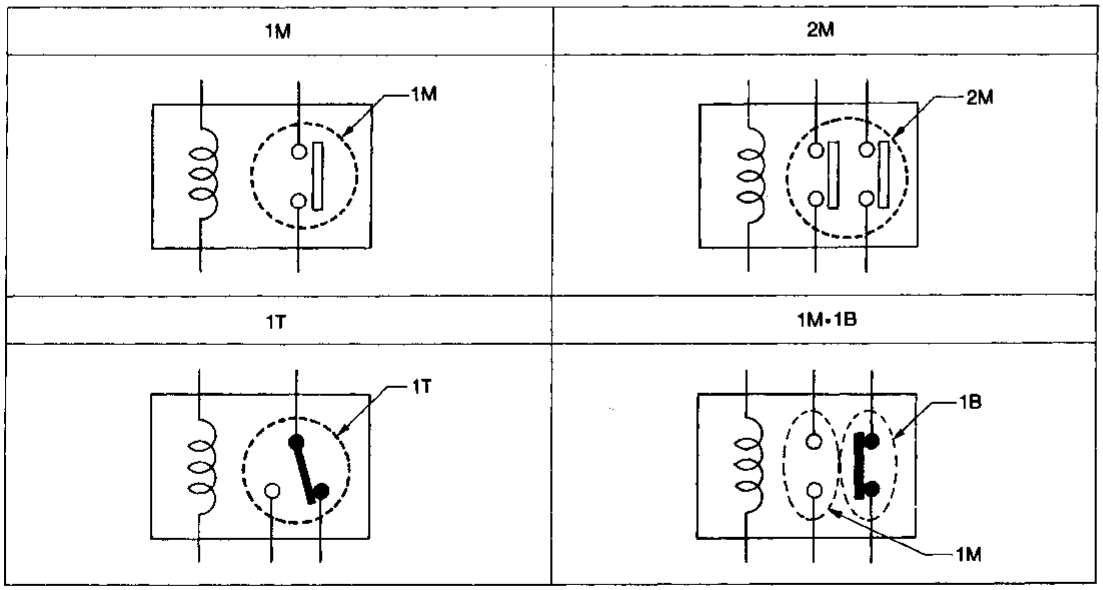



SEL881H

### TYPE OF STANDARDIZED RELAYS

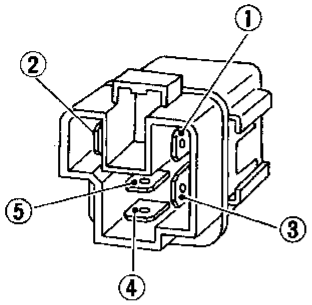
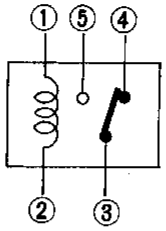
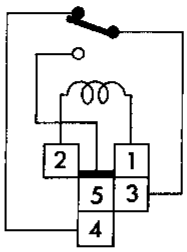
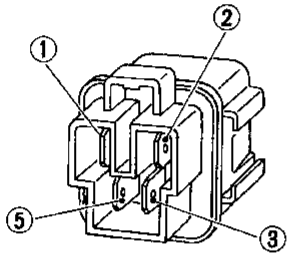
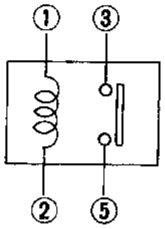
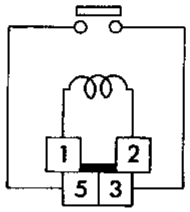
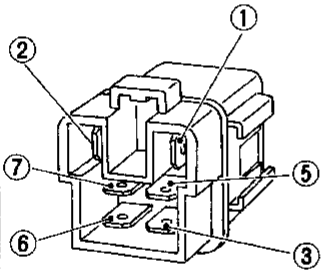
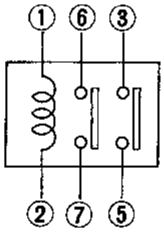
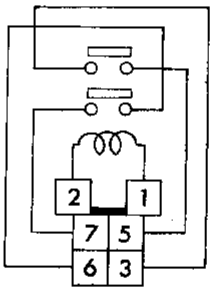
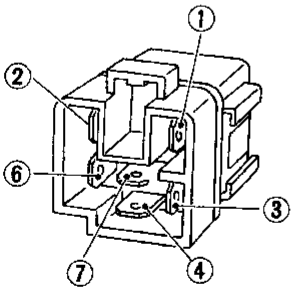
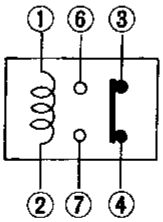
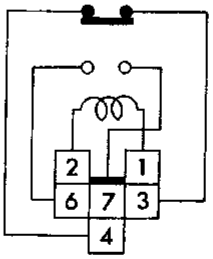
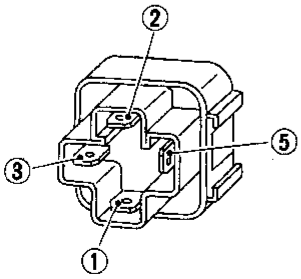
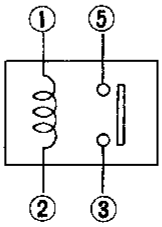
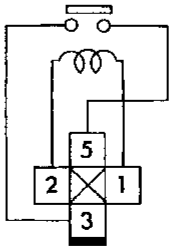
1M ..... 1 Make  2M ..... 2 Make

1T ..... 1 Transfer  1M·1B ..... 1 Make 1 Break



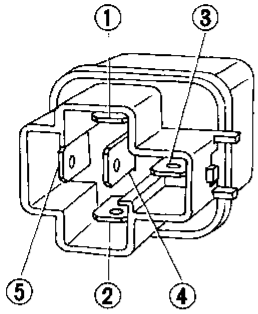
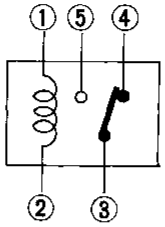
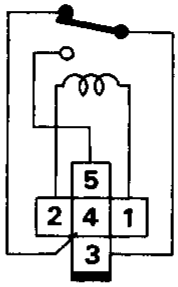

SEL882H

## Description (Cont'd)

| Type | Outer view | Circuit | Connector symbol and connection | Case color |
|---|---|---|---|---|
| 1T |  |  |  | BLACK |
| 1M |  |  |  | BLUE or GREEN |
| 2M |  |  |  | BROWN |
| 1M•1B |  |  |  | GRAY |
| 1M |  |  |  | BLUE |

SEL871S

## Description (Cont'd)

| Type | Outer view | Circuit | Connector symbol and connection | Case color |
|---|---|---|---|---|
| 1T |  |  |  | BLACK |



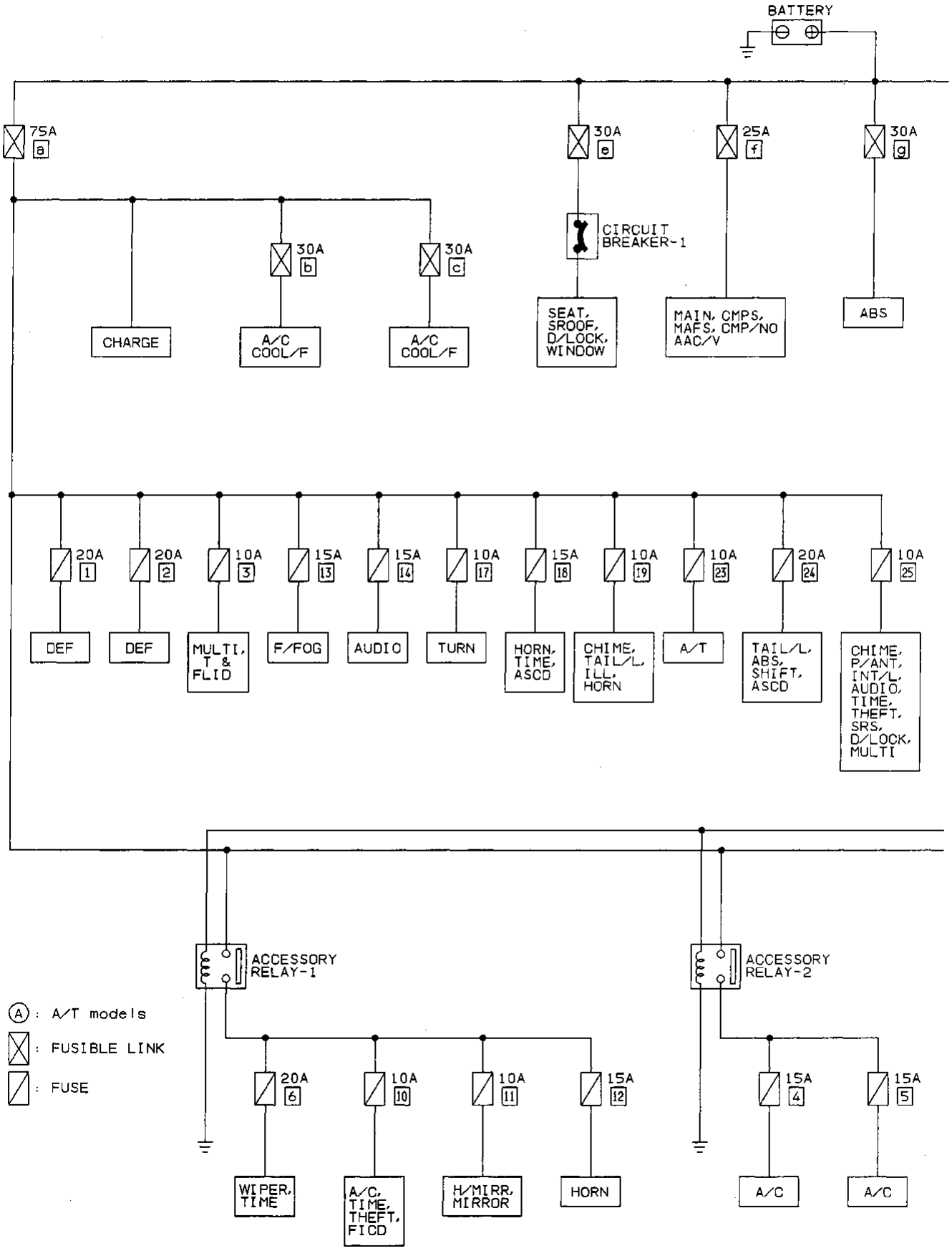




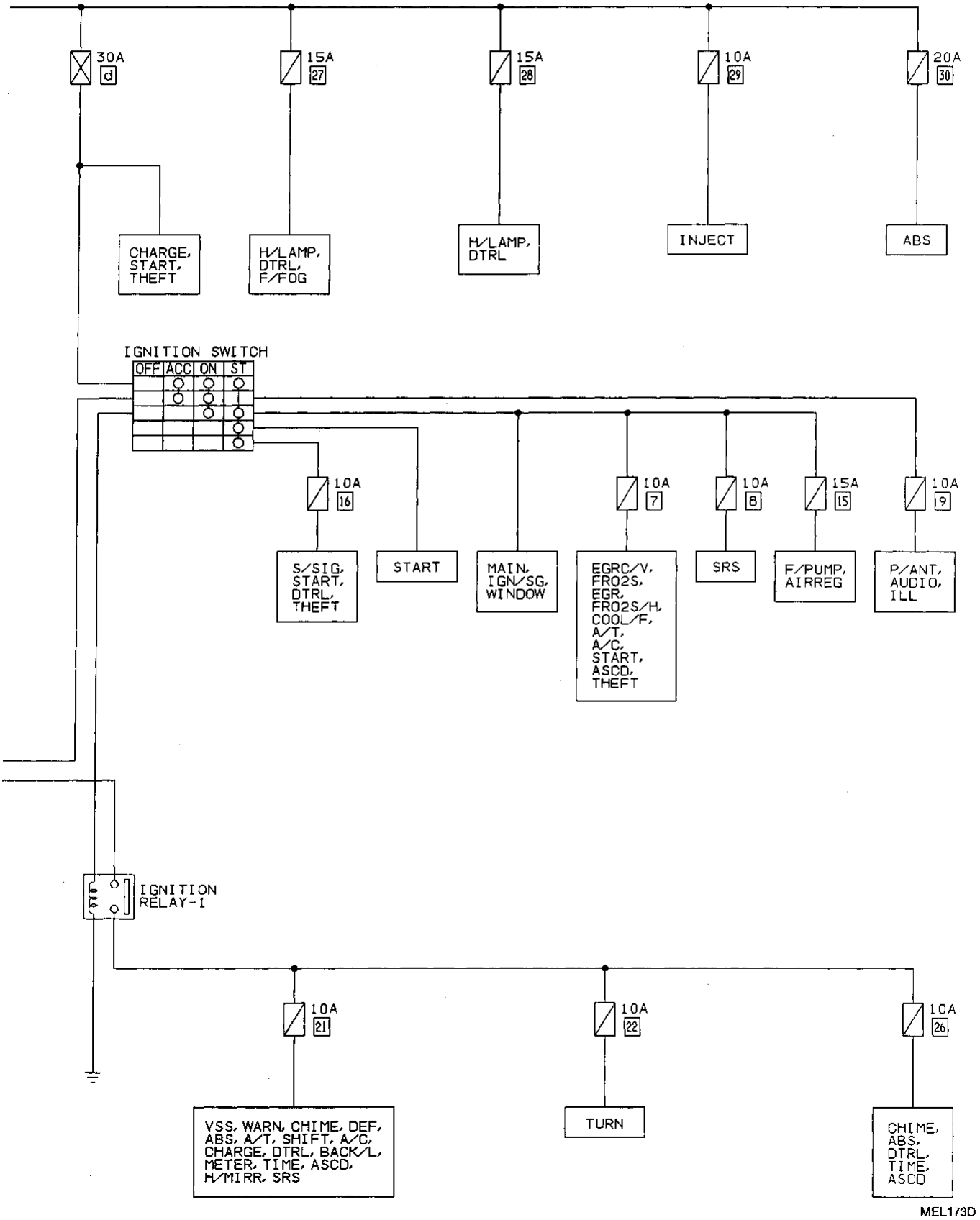


MEL202B

## Schematic

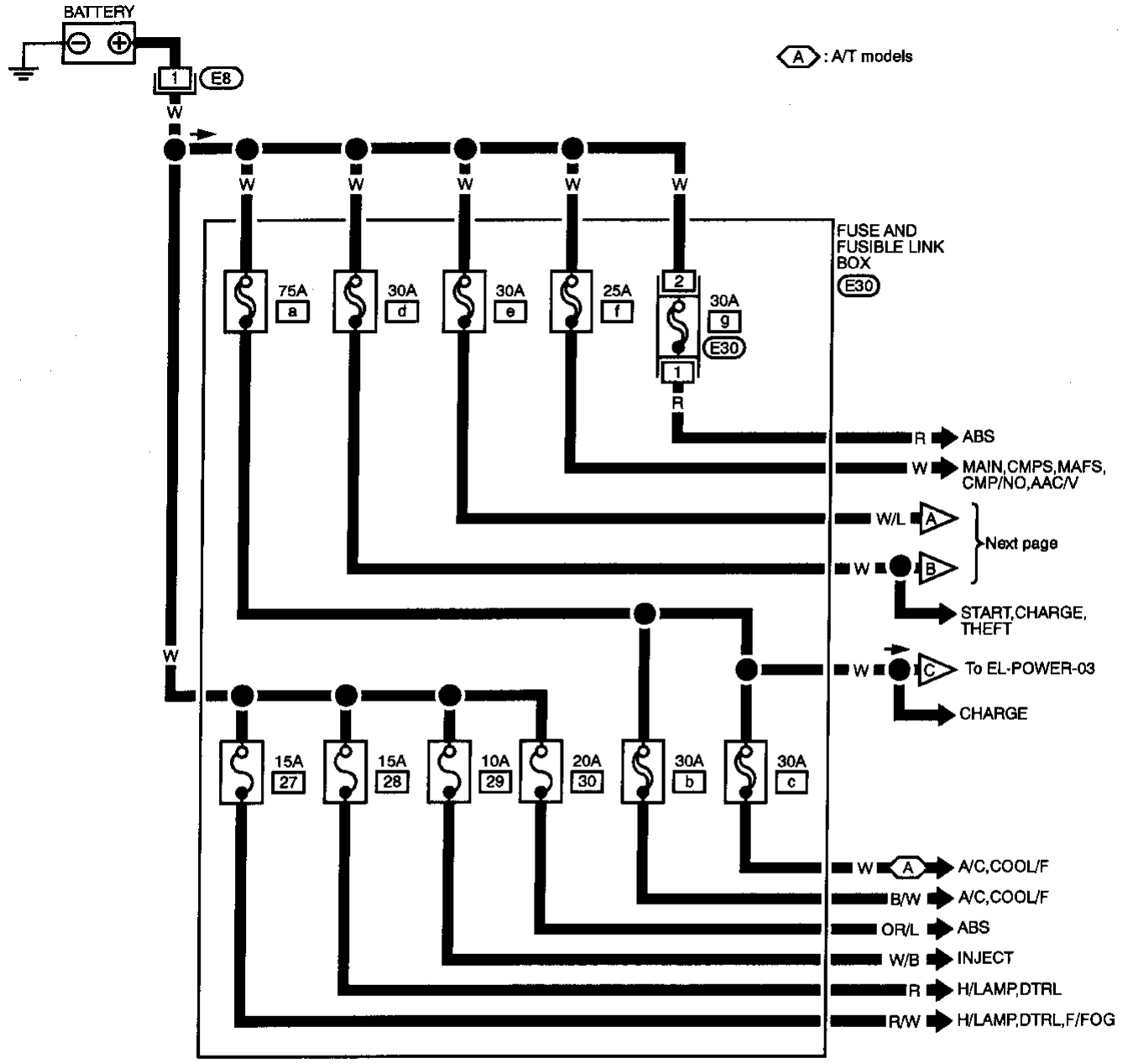

BATTERY
75A a
30A e
25A f
30A g
CIRCUIT BREAKER-1
30A b
30A c
CHARGE
A/C COOL/F
A/C COOL/F
SEAT, SROOF, D/LOCK, WINDOW
MAIN, CMPS, MAFS, CMP/NO AAC/V
ABS
20A 1
20A 2
10A 3
15A 13
15A 14
10A 17
15A 18
10A 19
10A 23
20A 24
10A 25
DEF
DEF
MULTI, T & FLID
F/FOG
AUDIO
TURN
HORN, TIME, ASCD
CHIME, TAIL/L, ILL, HORN
A/T
TAIL/L, ABS, SHIFT, ASCD
CHIME, P/ANT, INT/L, AUDIO, TIME, THEFT, SRS, D/LOCK, MULTI
ACCESSORY RELAY-1
ACCESSORY RELAY-2
Ⓐ : A/T models
: FUSIBLE LINK
: FUSE
20A 6
10A 10
10A 11
15A 12
15A 4
15A 5
WIPER, TIME
A/C, TIME, THEFT, FICD
H/MIRR, MIRROR
HORN
A/C
A/C

## Schematic (Cont'd)

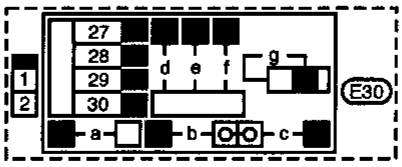


## Wiring Diagram — POWER —

EL-POWER-01



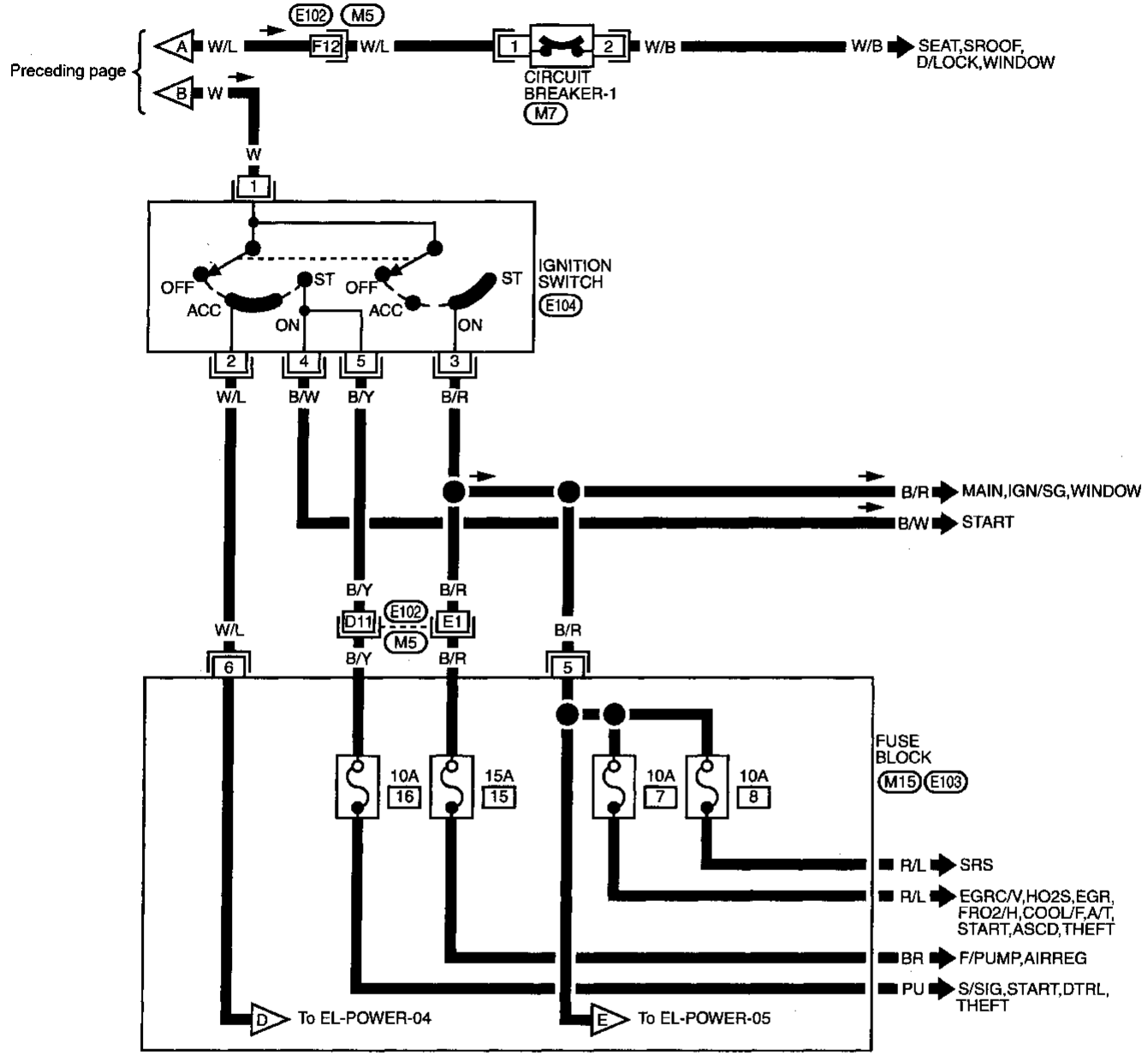




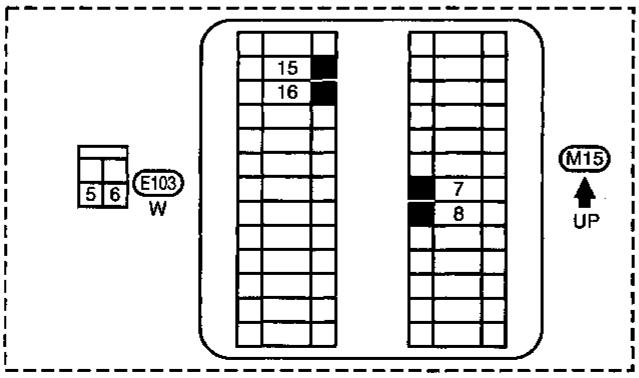

MEL168D

## Wiring Diagram — POWER — (Cont'd)

EL-POWER-02





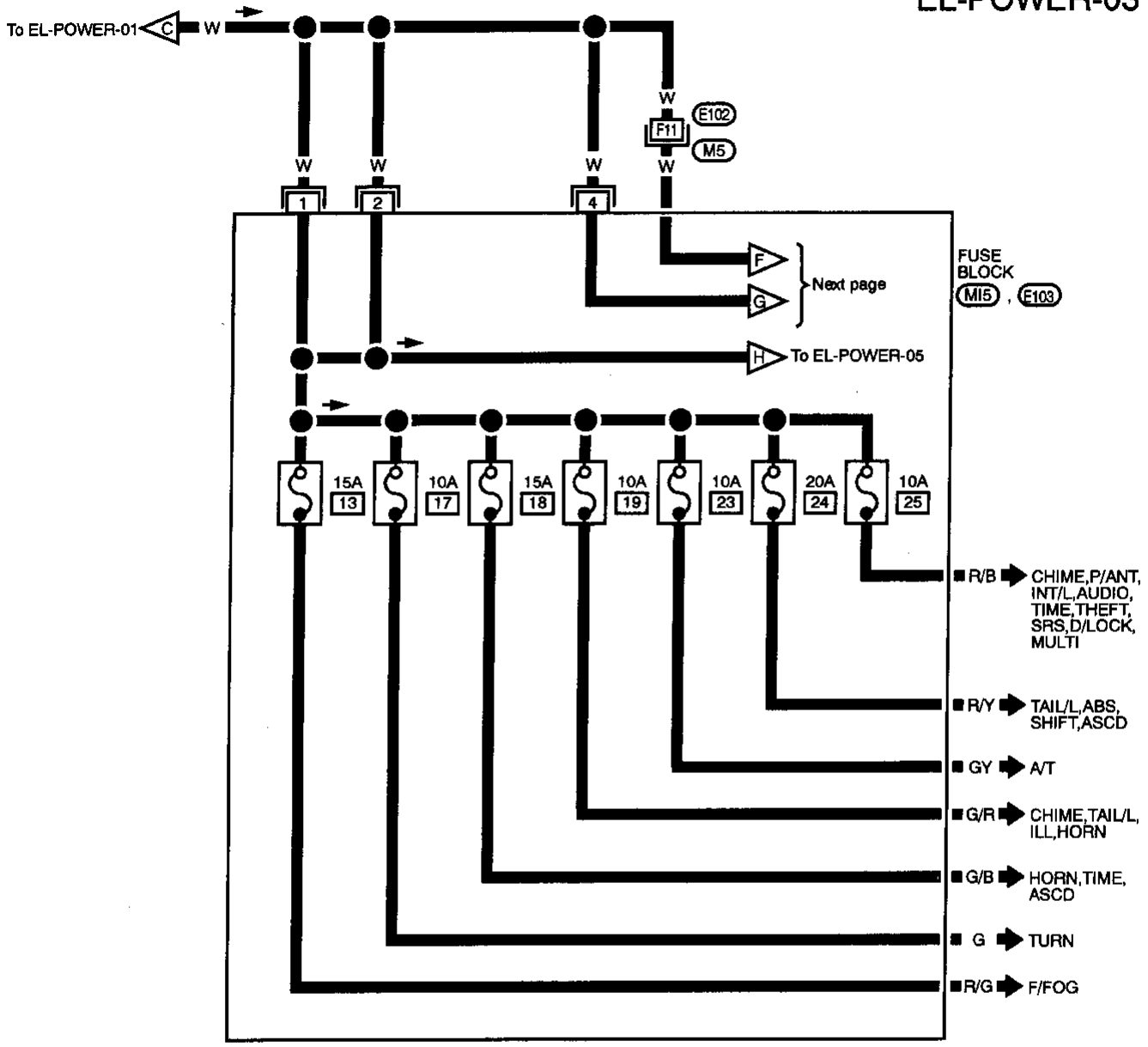


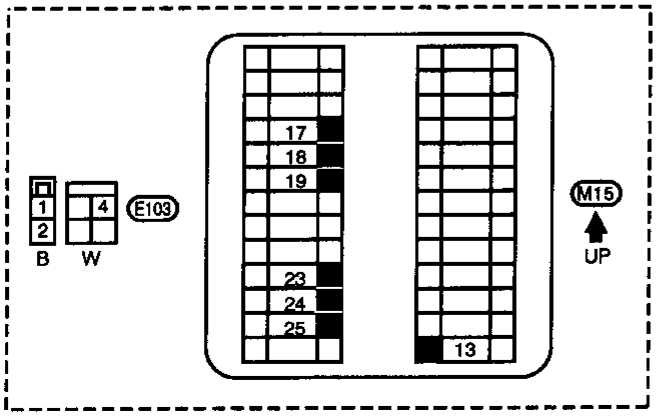

Refer to last page (Foldout page).
M5 , E102

MEL169D

## Wiring Diagram — POWER — (Cont'd)

EL-POWER-03

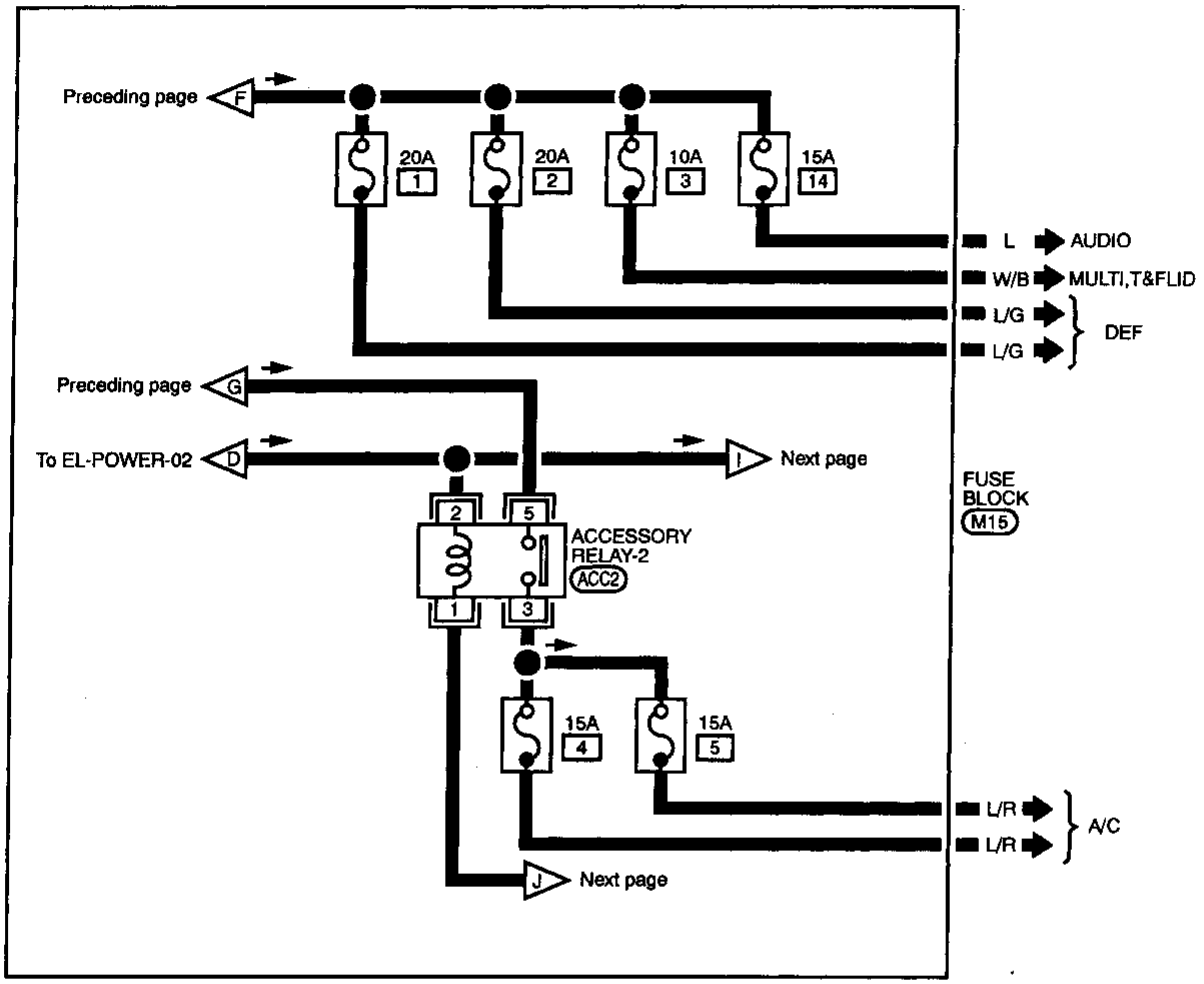


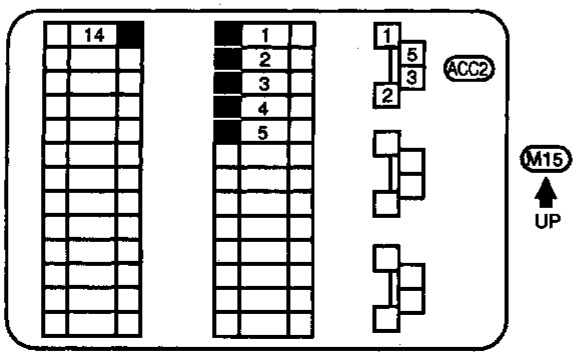




Refer to last page (Foldout page).
M5 , E102

MEL170D

EL-POWER-04

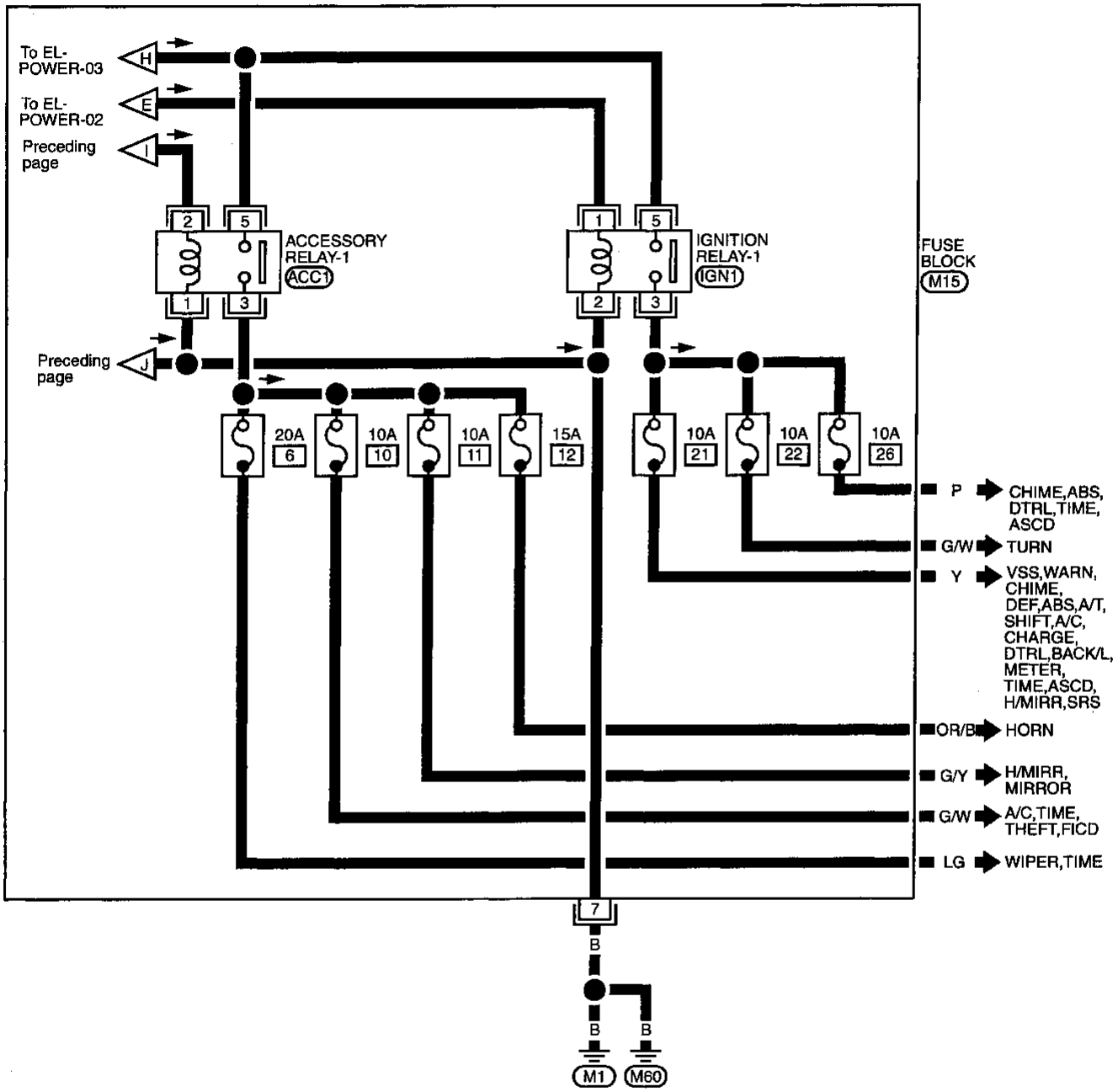


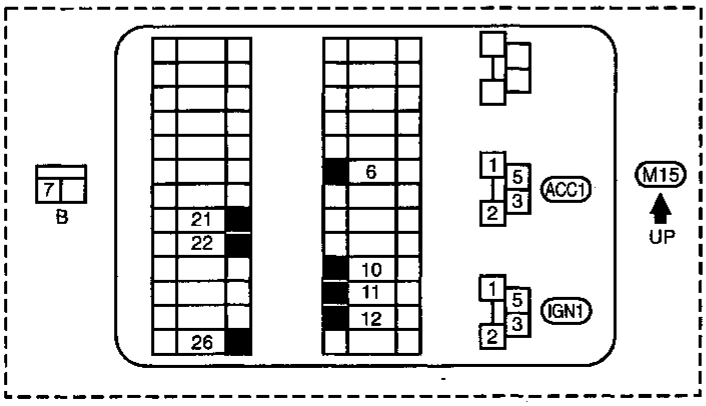




MEL171D

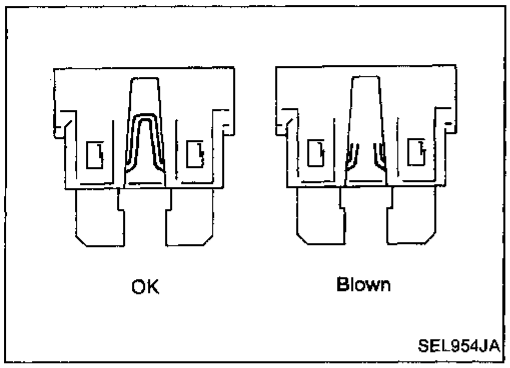
## Wiring Diagram — POWER — (Cont'd)

EL-POWER-05



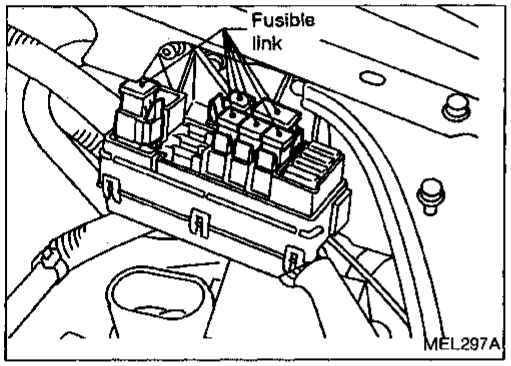




MEL172D




## Fuse

a. If fuse is blown, be sure to eliminate cause of problem before installing new fuse.
b. Use fuse of specified rating. Never use fuse of more than specified rating.
c. Do not partially install fuse; 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 by visual inspection. If its condition is questionable, use circuit tester or test lamp.

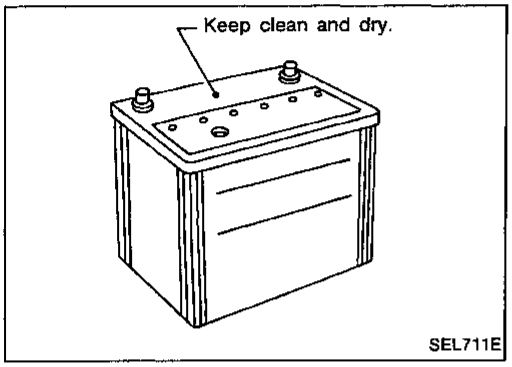
**CAUTION:**

**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 outside of fusible link with vinyl tape. Important: Never let fusible link touch any other wiring harness, vinyl or rubber parts.**

**CAUTION:**

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

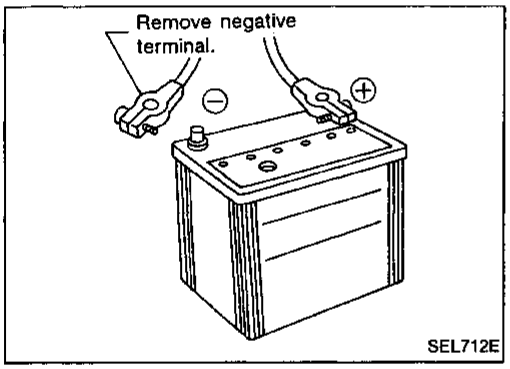



## How to Handle Battery

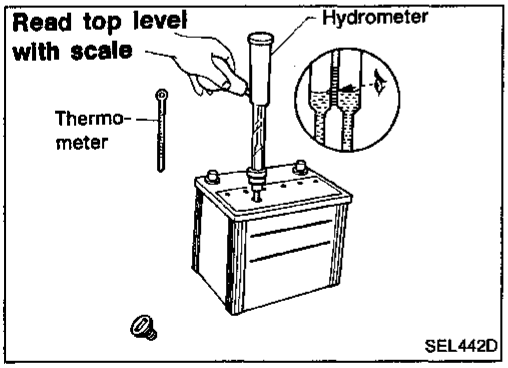
### METHODS OF PREVENTING OVER-DISCHARGE

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

- The battery surface (particularly its top) should always be kept clean and dry.
- The terminal connections should be clean and tight.
- At every routine maintenance, check the electrolyte level.




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



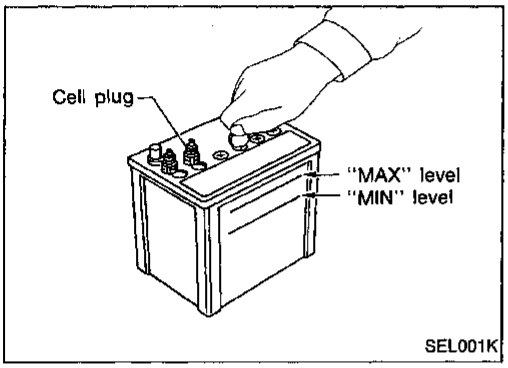

- Check the charge condition of the battery.
  Periodically check the specific gravity of the electrolyte. Keep a close check on charge condition to prevent over-discharge.

## How to Handle Battery (Cont'd)

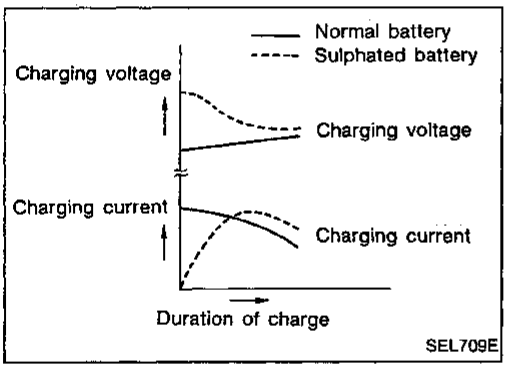
### CHECKING ELECTROLYTE LEVEL

**WARNING:**

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




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

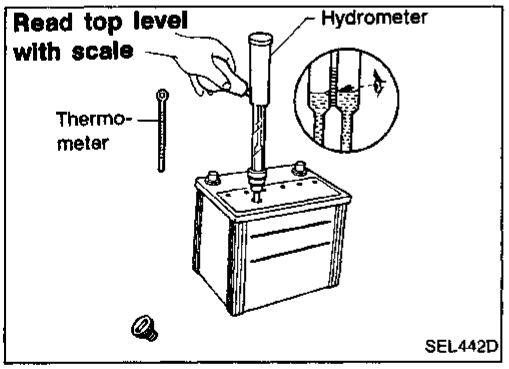



### SULPHATION

A battery will be completely discharged if it is left unattended for a long time and the specific gravity becomes less than 1.100. This may result in sulphation on the cell plates.

To find if a discharged battery has been sulphated, pay attention to its voltage and current when charging it.

As shown in the figure at left, if the battery has been "sulphated", less current and higher voltage may be observed in the initial stage of charging.




### SPECIFIC GRAVITY CHECK

Read hydrometer and thermometer indications at eye level.

## How to Handle Battery (Cont'd)

- Use the chart below to correct your hydrometer reading according to electrolyte temperature.

**Hydrometer temperature correction**

| Battery electrolyte temperature °C (°F) | Add to specific gravity reading |
|---|---|
| 71 (160) | 0.032 |
| 66 (150) | 0.028 |
| 60 (140) | 0.024 |
| 54 (129) | 0.020 |
| 49 (120) | 0.016 |
| 43 (110) | 0.012 |
| 38 (100) | 0.008 |
| 32 (90) | 0.004 |
| 27 (80) | 0 |
| 21 (70) | –0.004 |
| 16 (60) | –0.008 |
| 10 (50) | –0.012 |
| 4 (39) | –0.016 |
| –1 (30) | –0.020 |
| –7 (20) | –0.024 |
| –12 (10) | –0.028 |
| –18 (0) | –0.032 |

| Corrected specific gravity | Approximate charge condition |
|---|---|
| 1.260 - 1.280 | Fully charged |
| 1.230 - 1.250 | 3/4 charged |
| 1.200 - 1.220 | 1/2 charged |
| 1.170 - 1.190 | 1/4 charged |
| 1.140 - 1.160 | Almost discharged |
| 1.110 - 1.130 | Completely discharged |

### CHARGING THE BATTERY

**CAUTION:**

**a. Do not "quick charge" a fully discharged battery.**

**b. Keep the battery away from open flame while it is being charged.**

**c. When connecting the charger, connect the leads first, then turn on the charger. Do not turn on the charger first, as this may cause a spark.**

**d. If battery electrolyte temperature rises above 60°C (140°F), stop charging. Always charge battery at a temperature below 60°C (140°F).**

**Charging rates:**

| Amps | Time |
|---|---|
| 50 | 1 hour |
| 25 | 2 hours |
| 10 | 5 hours |
| 5 | 10 hours |

## How to Handle Battery (Cont'd)

**Do not charge at more than 50 ampere rate.**

**NOTE: The ammeter reading on your battery charger will automatically decrease as the battery charges. This indicates that the voltage of the battery is increasing normally as the state of charge improves. The charging amps indicated above refer to initial charge rate.**

- **If, after charging, the specific gravity of any two cells varies more than 0.050, the battery should be replaced.**

## Service Data and Specifications (SDS)

| | | |
|---|---|---|
| Type | | 80D26L |
| Capacity | V-AH | 12-65 |
| Cold cranking current (For reference) | A | 582 |

## System Description

### A/T models

Power is supplied at all times
- to ignition switch terminal ①
- through 30A fusible link (letter [d], located in the fuse and fusible link box).

With the ignition switch in the ON or START position, power is supplied
- through 10A fuse (No. [7], located in the fuse block)
- to theft warning relay-2 terminal ① and ③.

With the ignition switch in the START position, power is supplied
- from ignition switch terminal ④
- to inhibitor relay terminal ⑦.

If the theft warning system is triggered, terminal ② of the theft warning relay-2 is grounded and power to the inhibitor switch is interrupted.

When theft warning system is not operating, power is supplied
- through theft warning relay-2 terminal ④
- to inhibitor relay terminal ①.

When the selector lever in the P or N position, ground is supplied to inhibitor relay terminal ② through the inhibitor switch and body grounds (E10) and (E33).

The inhibitor relay is energized and power is supplied
- from terminal ⑥ of the inhibitor relay
- to terminal ① of the starter motor windings.

The starter motor plunger closes and provides a closed circuit between the battery and the starter motor. The starter motor is grounded to the engine block. With power and ground supplied, cranking occurs and the engine starts.

### M/T models for USA

Power is supplied at all times
- to ignition switch terminal ①
- through 30A fusible link (letter [d], located in the fuse and fusible link box).

With the ignition switch in the START position, power is supplied
- through terminal ④ of the ignition switch
- to clutch interlock relay terminal ⑤.

With the ignition switch in the START position, power is supplied
- through 10A fuse (No. [16], located in the fuse block)
- to theft warning relay-2 terminal ③.

With the ignition switch in the ON or START position, power is supplied
- through 10A fuse (No. [7], located in the fuse block)
- to theft warning relay-2 terminal ①.

If the theft warning system is triggered, terminal ② of the theft warning relay-2 is grounded and power to the clutch interlock relay is interrupted.

When theft warning system is not operating, power is supplied
- through theft warning relay-2 terminal ④
- to clutch interlock relay terminal ①.

Ground is supplied to clutch interlock relay terminal ②, when the clutch pedal is depressed, through the clutch interlock switch and body grounds (M1) and (M60).

The clutch interlock relay is energized and power is supplied
- from terminal ③ of the clutch interlock relay
- to terminal ① of the starter motor windings.

The starter motor plunger closes and provides a closed circuit between the battery and the starter motor. The starter motor is grounded to the engine block. With power and ground supplied, cranking occurs and the engine starts.

## System Description (Cont'd)

### M/T models for Canada

Power is supplied at all times
- to ignition switch terminal ①
- through 30A fusible link (letter [d], located in the fuse and fusible link box).

With the ignition switch in the START position, power is supplied
- through terminal ④ of the ignition switch
- to theft warning relay-2 terminal ③.

With the ignition switch in the ON or START position, power is supplied
- through 10A fuse (No. [7], located into fuse block)
- to theft warning relay-2 terminal ①.

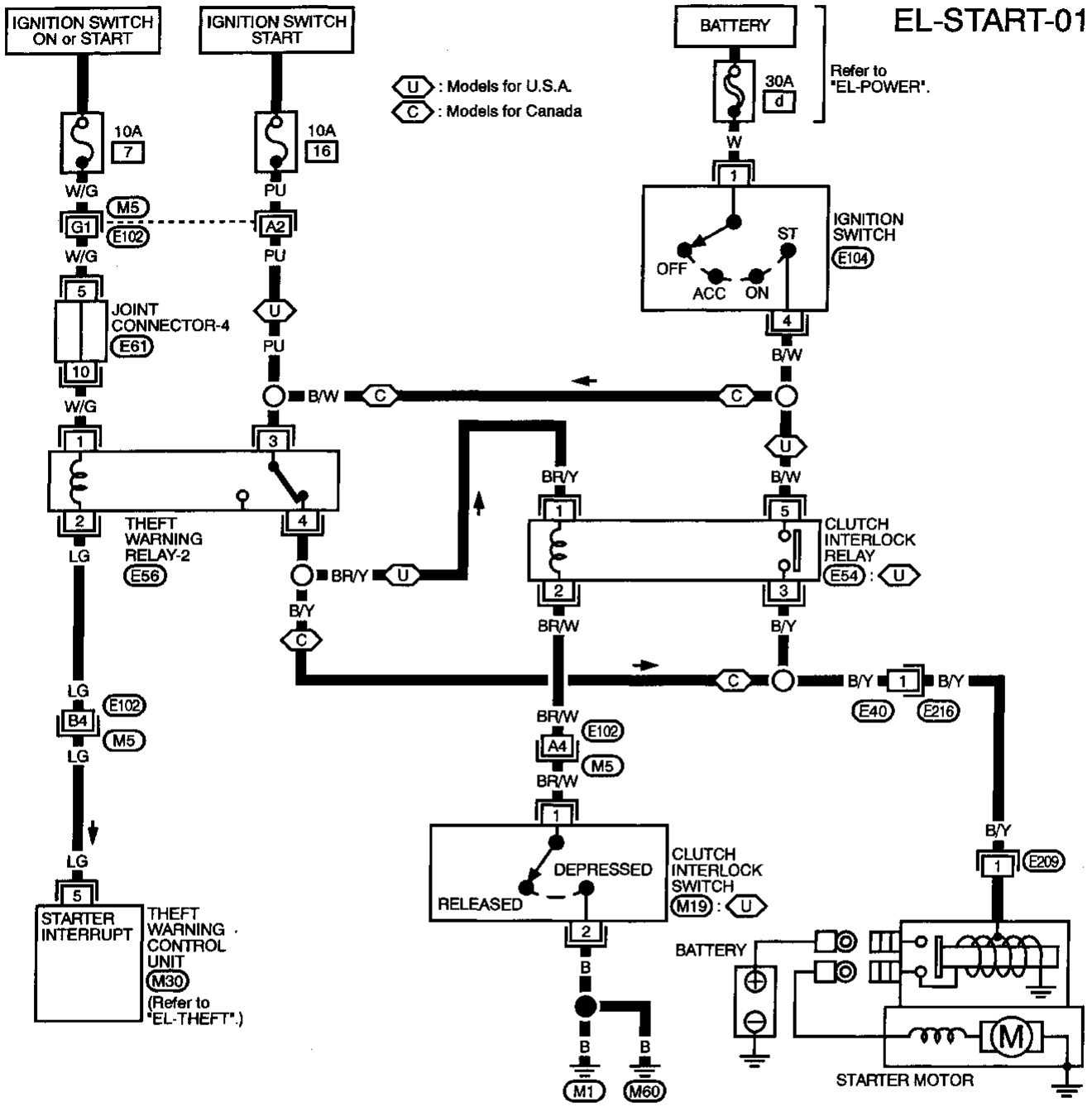
If the theft warning system is triggered, terminal ② of the theft warning relay-2 is grounded and power to the starter is interrupted.

When theft warning system is not operating, power is supplied
- through theft warning relay-2 terminal ④
- to terminal ① of the starter motor.

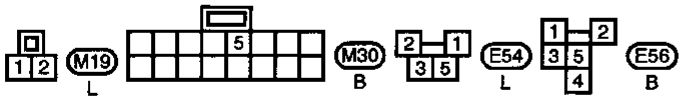
The starter motor plunger closes and provides a closed circuit between the battery and the starter motor. The starter motor is grounded to the engine block. With power and ground supplied, cranking occurs and the engine starts.

## Wiring Diagram — START —

### M/T models




Refer to last page (Foldout page).
M5, E102

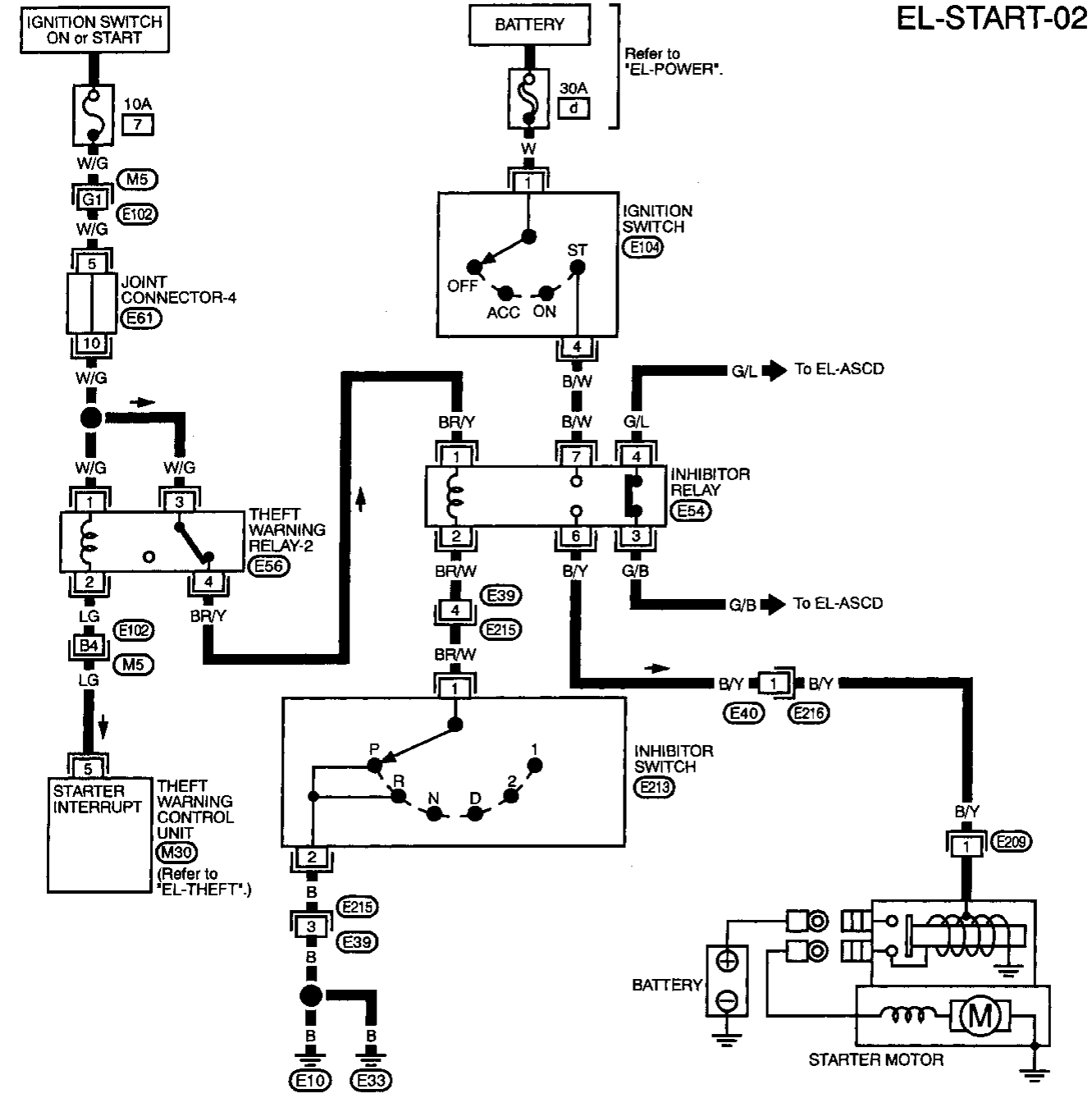




MEL100D

## Wiring Diagram — START — (Cont'd)

### A/T models

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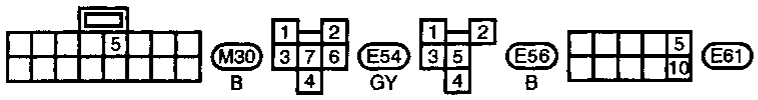
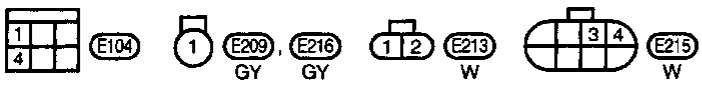
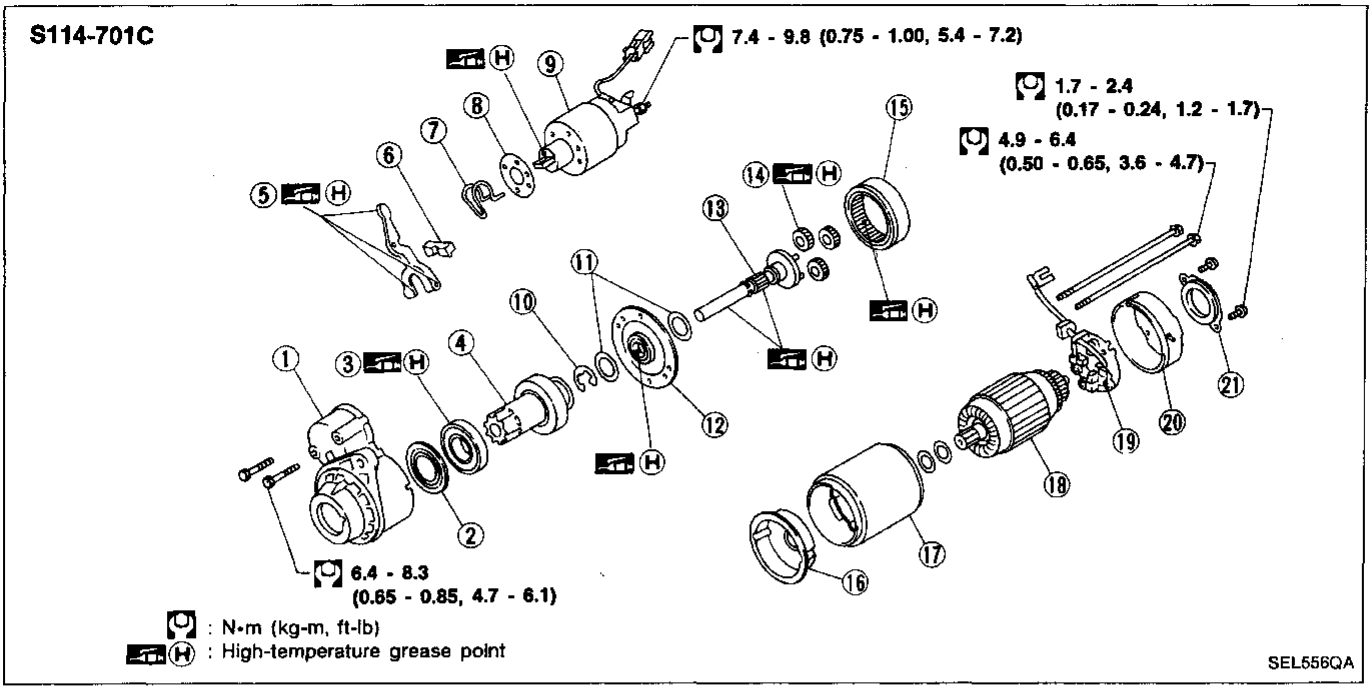
M5, E102



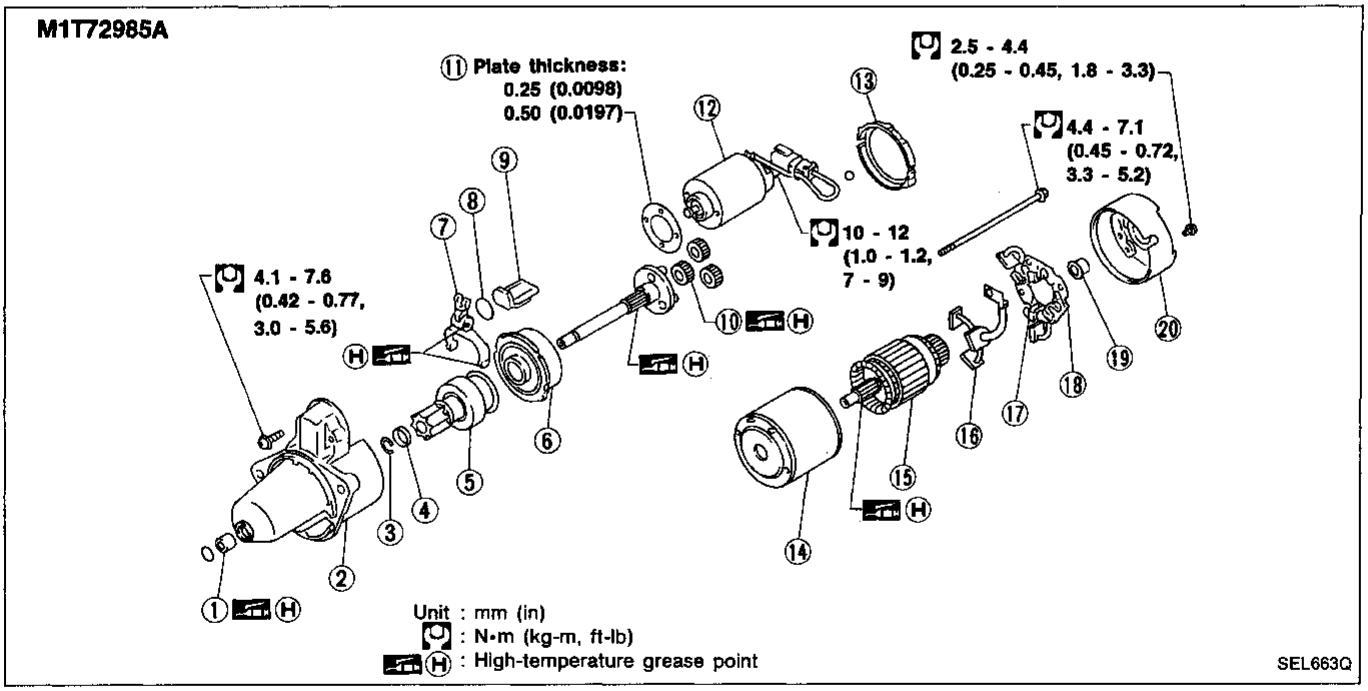




MEL099D

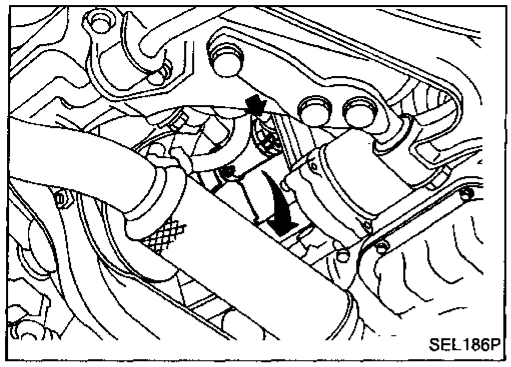
## Construction




① Gear case
② Bearing cover
③ Ball bearing
④ Pinion assembly
⑤ Shift lever
⑥ Dust cover
⑦ Torsion spring
⑧ Adjusting plate
⑨ Magnetic switch assembly
⑩ E-ring
⑪ Thrust washer
⑫ Center bracket
⑬ Pinion shaft
⑭ Planetary gear
⑮ Internal gear
⑯ Center bracket
⑰ Yoke assembly
⑱ Armature
⑲ Brush holder assembly
⑳ Rear cover
㉑ Dust cover




① Sleeve bearing
② Gear case
③ Stopper clip
④ Pinion stopper
⑤ Pinion assembly
⑥ Internal gear
⑦ Shift lever
⑧ Plate
⑨ Packing
⑩ Planetary gear
⑪ Adjusting plate
⑫ Magnetic switch assembly
⑬ Packing
⑭ Yoke
⑮ Armature
⑯ Bush (+)
⑰ Brush spring
⑱ Brush holder
⑲ Bearing
⑳ Rear cover




## Removal and Installation

### REMOVAL

1. Remove battery negative cable from battery.
2. Remove intake air duct.
3. Remove starter motor mounting bolts.
4. Remove battery cable from starter motor.
5. Disconnect harness connector from starter motor harness.
6. Remove starter motor from under vehicle.

### INSTALLATION

Installation procedure is basically the reverse order of removal.

## Pinion/Clutch Check

1. Inspect pinion teeth.
- Replace pinion if teeth are worn or damaged. (Also check condition of ring gear teeth.)
2. Inspect reduction gear teeth.
- Replace reduction gear if teeth are worn or damaged. (Also check condition of armature shaft gear teeth.)
3. Check to see if pinion locks in one direction and rotates smoothly in the opposite direction.
- If it locks or rotates in both directions, or unusual resistance is evident, replace.

## Service Data and Specifications (SDS)

### STARTER

| Type | | S114-701C | M1T72985A |
|---|---|---|---|
| | | HITACHI | MITSUBISHI |
| | | Reduction gear | |
| System voltage | V | 12 | |
| No-load | | | |
| Terminal voltage | V | 11.0 | |
| Current | A | Less than 90 | 50 - 75 |
| Revolution | rpm | More than 2,950 | 3,000 - 4,000 |
| Minimum diameter of commutator | mm (in) | 32.0 (1.260) | 28.8 (1.134) |
| Minimum length of brush | mm (in) | 11.0 (0.433) | 12.0 (0.472) |
| Brush spring tension | N (kg, lb) | 17.6 - 21.6 (1.80 - 2.20, 3.96 - 4.86) | 13.7 - 25.5 (1.4 - 2.6, 3.1 - 5.7) |
| Movement "ℓ" in height of pinion assembly | mm (in) | — | — |
| Clearance of bearing metal and armature shaft | mm (in) | 0.03 - 0.3 (0.0012 - 0.0118) | Less than 0.2 (0.008) |
| Clearance "ℓ" between pinion front edge and pinion stopper | mm (in) | 0.05 - 1.5 (0.0020 - 0.0591) | 0.5 - 2.0 (0.020 - 0.079) |

## System Description

The alternator provides DC voltage to operate the vehicle's electrical system and to keep the battery charged. The voltage output is controlled by the IC regulator.
Power is supplied at all times to alternator terminal Ⓢ through:

- 30A fusible link (letter [d], located in the fuse and fusible link box).

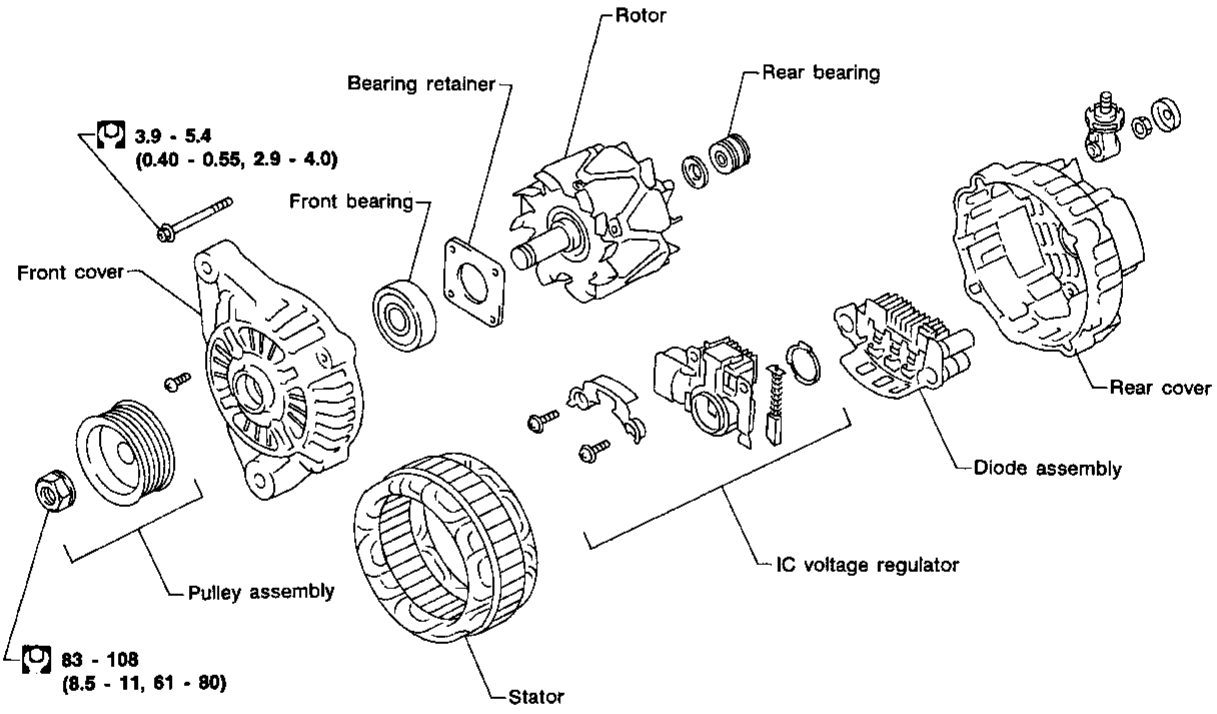
Voltage output through alternator terminal Ⓑ, to charge the battery and operate the vehicle's electrical system, is controlled by the amount of voltage detected by the IC regulator at terminal Ⓢ. The charging circuit is protected by the 75A fusible link.
Terminal Ⓔ of the alternator supplies ground through body ground (A6).
With the ignition switch in the ON or START position, power is supplied

- through 10A fuse (No. [21], located in the fuse block)
- to combination meter terminal ⑰ for the charge warning lamp.

Ground is supplied to terminal ㉞ of the combination meter through terminal Ⓛ of the alternator. With power and ground supplied, the charge warning lamp will illuminate. When the alternator is providing sufficient voltage with the engine running, the ground is opened and the charge warning lamp will go off.
If the charge warning lamp illuminates with the engine running, a malfunction is indicated.

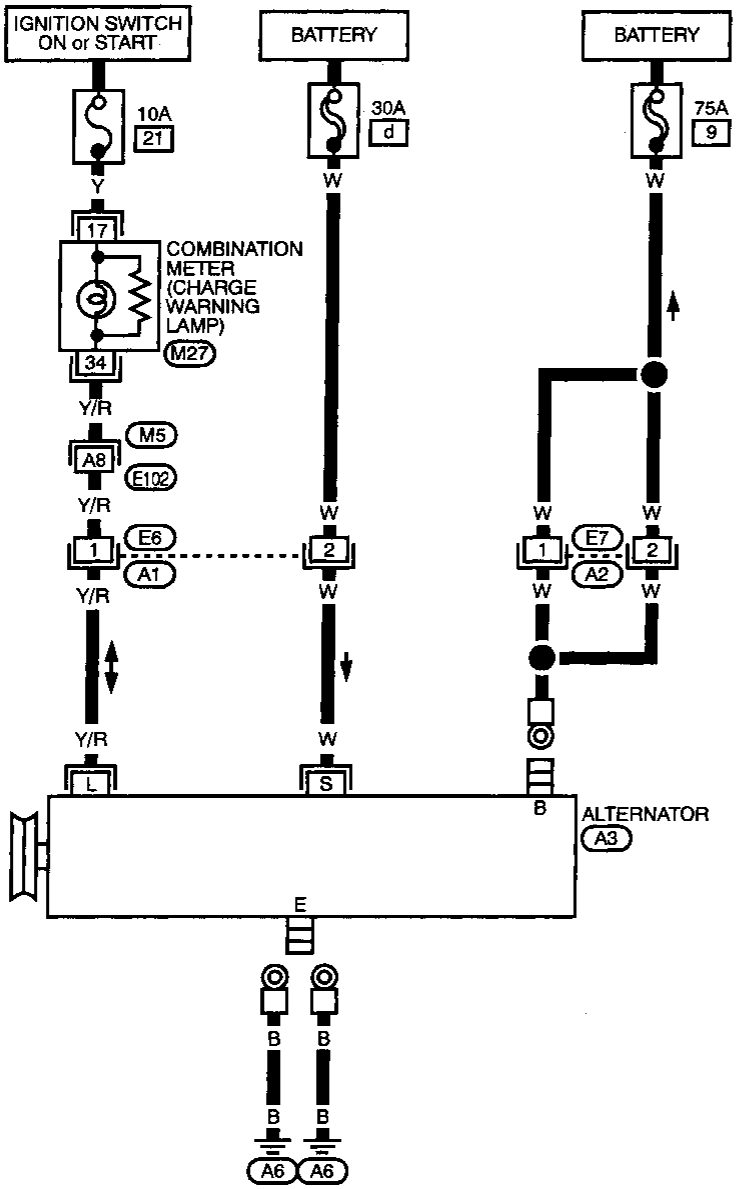
## Construction

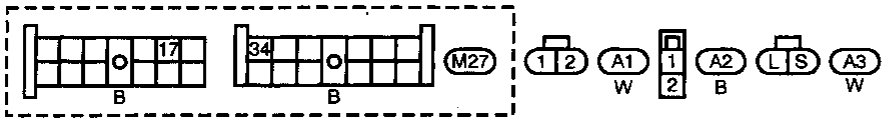
A2T82491



## Wiring Diagram — CHARGE —

EL-CHARGE-01




Refer to last page (Foldout page).
M5 , E102

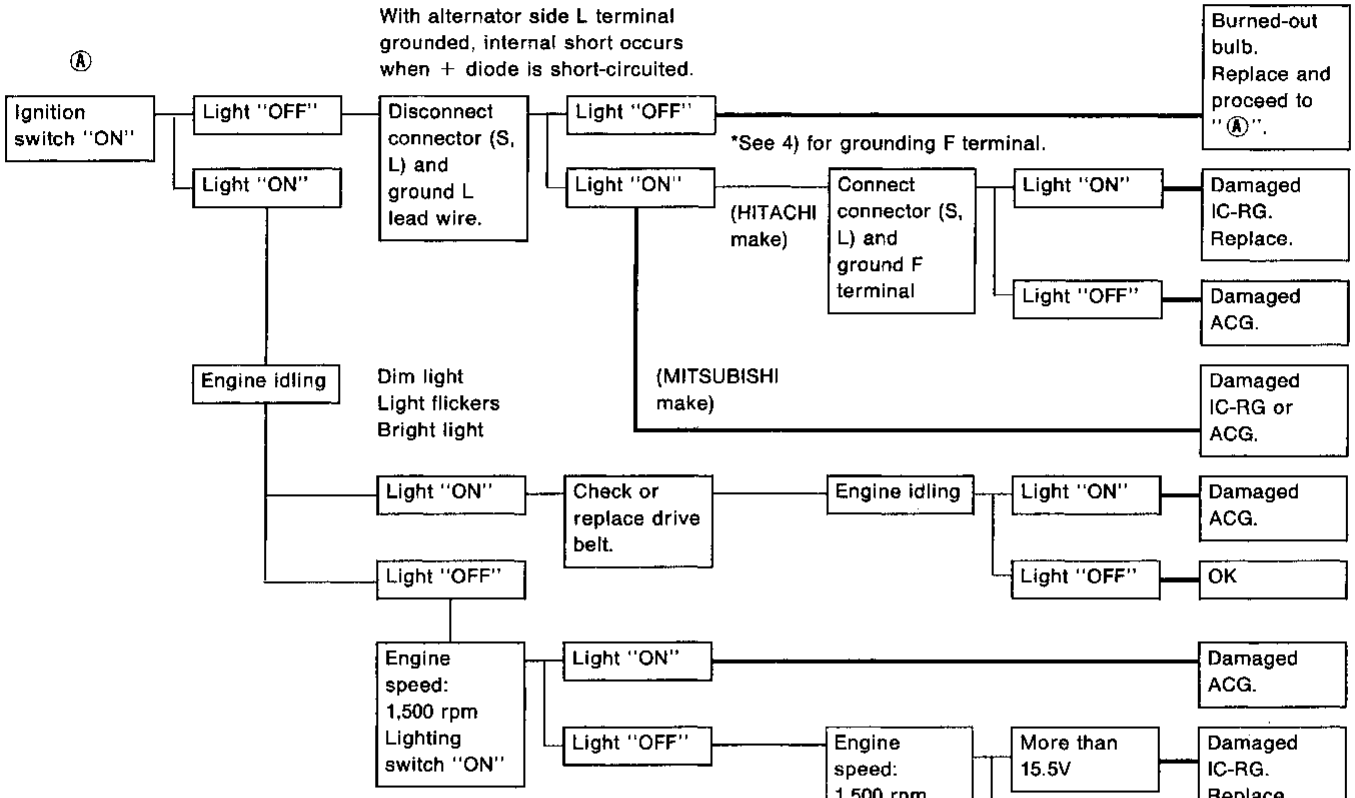
MEL101D

## Trouble Diagnoses

Before conducting an alternator test, make sure that the battery is fully charged. A 30-volt voltmeter and suitable test probes are necessary for the test. The alternator can be checked easily by referring to the Inspection Table.

**Before starting trouble diagnoses, inspect the fusible link.**

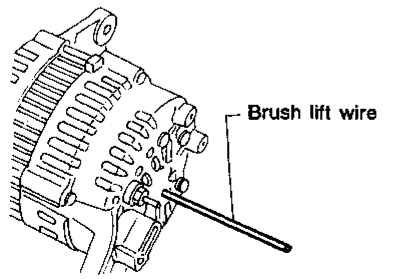
### WITH IC REGULATOR




1) **Use fully charged battery.**
2) **Light : Charge warning light**
   **ACG : Alternator parts except IC regulator**
   **IC-RG : IC regulator**
   **OK : IC-alternator is in good condition.**
3) **When reaching "Damaged ACG", remove alternator from vehicle and disassembly, inspect and correct or replace faulty parts.**
4) ***Method of grounding F terminal (HITACHI make only)**

**Gasoline engine model**

**Contact tip of wire with brush and attach wire to alternator body.**




SEL030Z

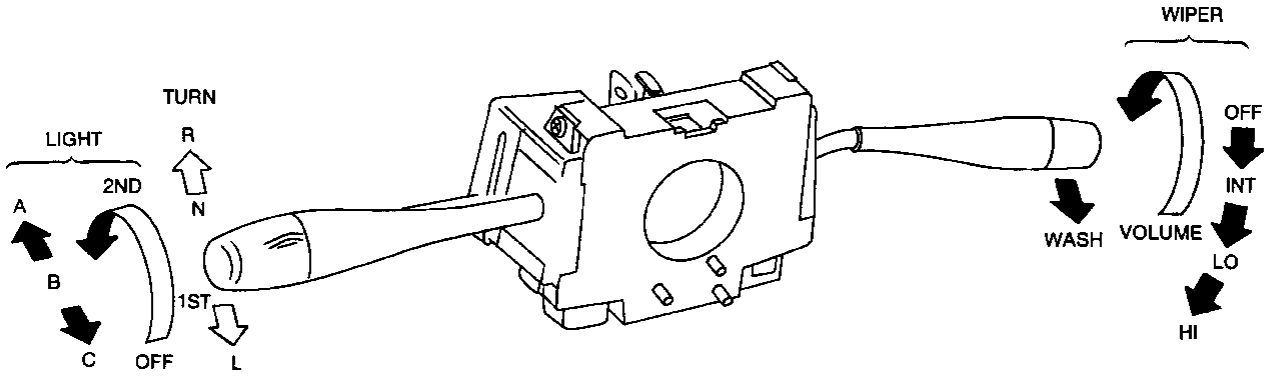
5) **Terminals "S", "L", "B" and "E" are marked on rear cover of alternator.**

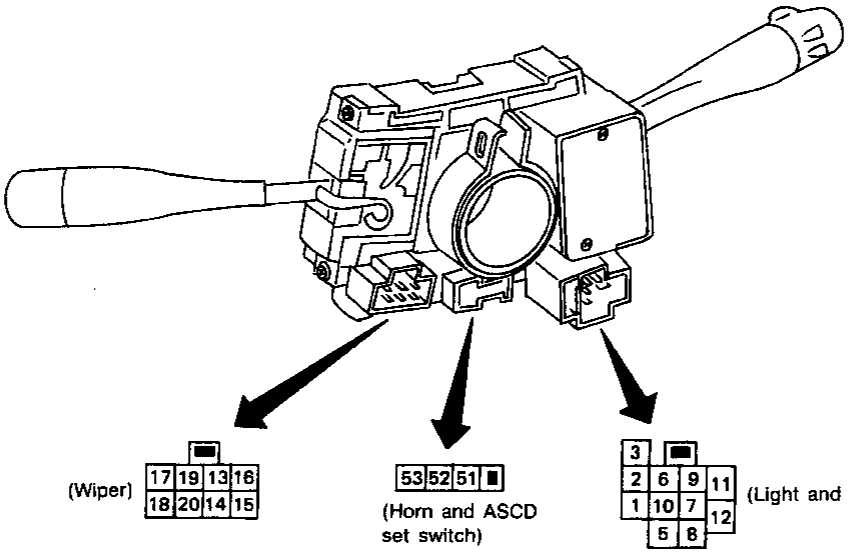
## Service Data and Specifications (SDS)

### ALTERNATOR

| | | |
|---|---|---|
| Type | | A2T82491<br>MITSUBISHI |
| Nominal rating | V-A | 12-80 |
| Ground polarity | | Negative |
| Minimum revolution under no-load (When 13.5 volts is applied) | rpm | Less than 1,300 |
| Hot output current | A/rpm | More than 22/1,300<br>More than 65/2,500 |
| Regulated output voltage | V | 14.1 - 14.7 |
| Minimum length of brush | mm (in) | 5 (0.20) |
| Brush spring pressure | N (g, oz) | 4.609 - 5.786 (470 - 590, 16.58 - 20.81) |
| Slip ring minimum outer diameter | mm (in) | More than 22.1 (0.870) |
| Field coil resistance [at 20°C (68°F)] | Ω | 2.4 - 2.9 |

## Combination Switch/Check



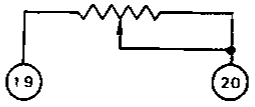

LIGHTING SWITCH

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

WIPER SWITCH

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

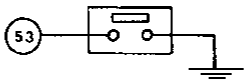
INTERMITTENT WIPER VOLUME



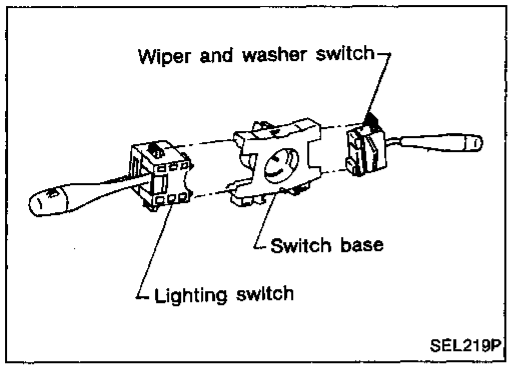

TURN SIGNAL SWITCH

| | R | N | L |
|---|---|---|---|
| 1 | ○ | | ○ |
| 2 | ○ | | |
| 3 | | | ○ |

HORN SWITCH

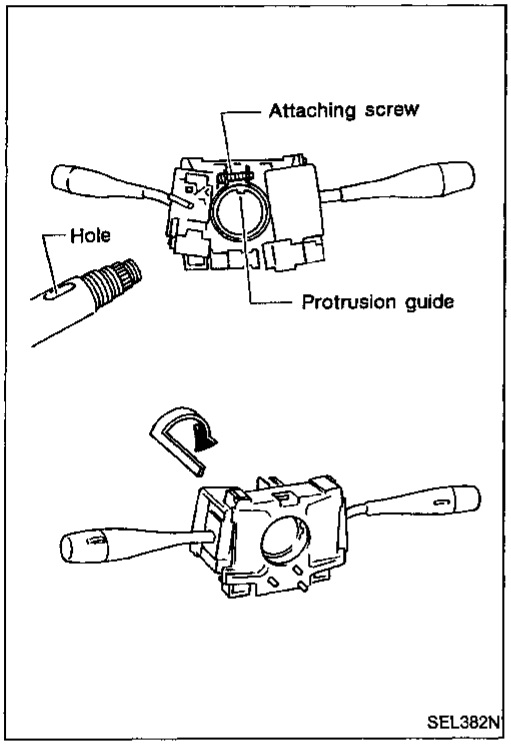



SEL615NA




## Replacement

- Each switch can be replaced without removing combination switch base.




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

## System Description

The headlamps are controlled by the lighting switch which is built into the combination switch.
Power is supplied at all times

- to lighting switch terminal ⑤
- through 15A fuse (No. 27 , located in the fuse and fusible link box), and
- to lighting switch terminal ⑧
- through 15A fuse (No. 28 , located in the fuse and fusible link box).

### Low beam operation

When the lighting switch is turned to the 2ND and LOW ("B") position, power is supplied

- from lighting switch terminal ⑩
- to terminal ② of the LH headlamp, and
- from lighting switch terminal ⑦
- to terminal ② of the RH headlamp.

Terminal ③ of each headlamp supplies ground through body grounds (E10) and (E33).
With power and ground supplied, the headlamp(s) will illuminate.

### High beam operation/flash-to-pass operation

When the lighting switch is placed in the 2ND and HIGH ("A") position or PASS ("C") position, power is supplied

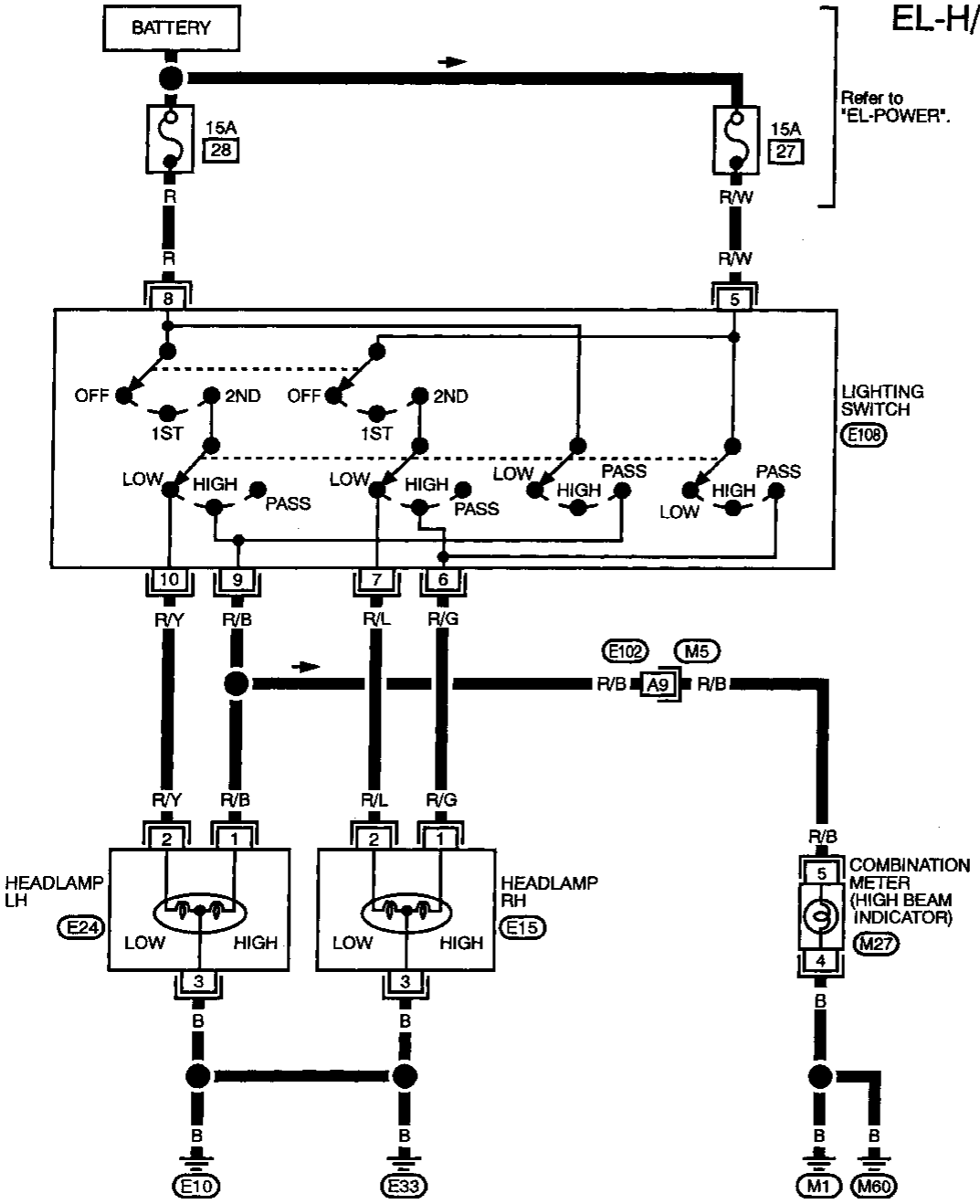
- from lighting switch terminal ⑥
- to terminal ① of the RH headlamp, and
- from lighting switch terminal ⑨
- to terminal ① of the LH headlamp, and
- to combination meter terminal ⑤ for the high beam indicator.

Ground is supplied to terminal ④ of the combination meter through body grounds (M1) and (M60).
Terminal ③ of each headlamp supplies ground through body grounds (E10) and (E33).
With power and ground supplied, the high beams and the HI BEAM indicator illuminate.

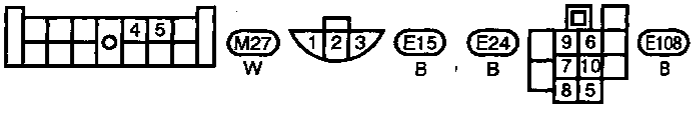
#### Theft warning system

The theft warning system will flash the high beams if the system is triggered. Refer to "THEFT WARNING SYSTEM" (EL-138).

## Wiring Diagram — H/LAMP —




Refer to last page (Foldout page).
M5 , E102




MEL174D

## System Description

The headlamp system for Canada vehicles contains a daytime light control unit that activates the high beam headlamps at approximately half illumination whenever the engine is running. If the parking brake is applied before the engine is started, the daytime lights will not be illuminated. The daytime lights will illuminate once the parking brake is released. Thereafter, the daytime lights will continue to operate when the parking brake is applied.

Power is supplied at all times
- through 15A fuse (No. 27 , located in the fuse and fusible link box)
- to daytime light control unit terminal ③ and
- to lighting switch terminal ⑤.

Power is also supplied at all times
- through 15A fuse (No. 28 , located in the fuse and fusible link box)
- to daytime light control unit terminal ④,
- to lighting switch terminal ⑧.

With the ignition switch in the ON or START position, power is supplied
- through 10A fuse (No. 26 , located in the fuse block)
- to daytime light control unit terminal ⑤.

Ground is supplied to daytime light control unit terminal ⑩ through body grounds (M1) and (M60).

### HEADLAMP OPERATION

**Low beam operation**

When the lighting switch is moved to the 2ND and LOW ("B") position, power is supplied
- from lighting switch terminal ⑦
- to RH headlamp terminal ③ and
- to daytime light control unit terminal ②.

Ground is supplied to RH headlamp terminal ② through body grounds (E10) and (E33).

Also, when the lighting switch is moved to the 2ND and LOW ("B") position, power is supplied
- from lighting switch terminal ⑩
- to LH headlamp terminal ③.

Ground is supplied
- to LH headlamp terminal ②
- from daytime light control unit terminal ⑧
- through daytime light control unit terminal ⑩
- through body grounds (M1) and (M60).

With power and ground supplied, the low beam headlamps illuminate.

**High beam operation/flash-to-pass operation**

When the lighting switch is moved to the 2ND and HIGH ("A") position or PASS ("C") position, power is supplied
- from lighting switch terminal ⑥
- to RH headlamp terminal ①.

When the lighting switch is moved to the 2ND and HIGH ("A") position or PASS ("C") position, power is supplied
- from lighting switch terminal ⑨
- to combination meter terminal ⑤ for the high beam indicator and
- to daytime light control unit terminal ⑥
- through daytime light control unit terminal ⑦
- to LH headlamp terminal ①.

Ground is supplied in the same manner as low beam operation.

Ground is supplied to terminal ④ of the combination meter through body ground (M1) and (M60).

With power and ground supplied, the high beam headlamps and high beam indicator illuminate.

### DAYTIME LIGHT OPERATION

With the engine running and the lighting switch in the OFF position, power is supplied
- to daytime light control module terminal ④,
- through daytime light control module terminal ⑦
- to LH headlamp terminal ①,
- through LH headlamp terminal ②

## System Description (Cont'd)

- to daytime light control module terminal ⑧ and
- through daytime light control module terminal ⑨
- to RH headlamp terminal ①.

Ground is supplied to RH headlamp terminal ② through body grounds (E10) and (E33).
Because the high beam headlamps are now wired in series, they operate at half illumination.

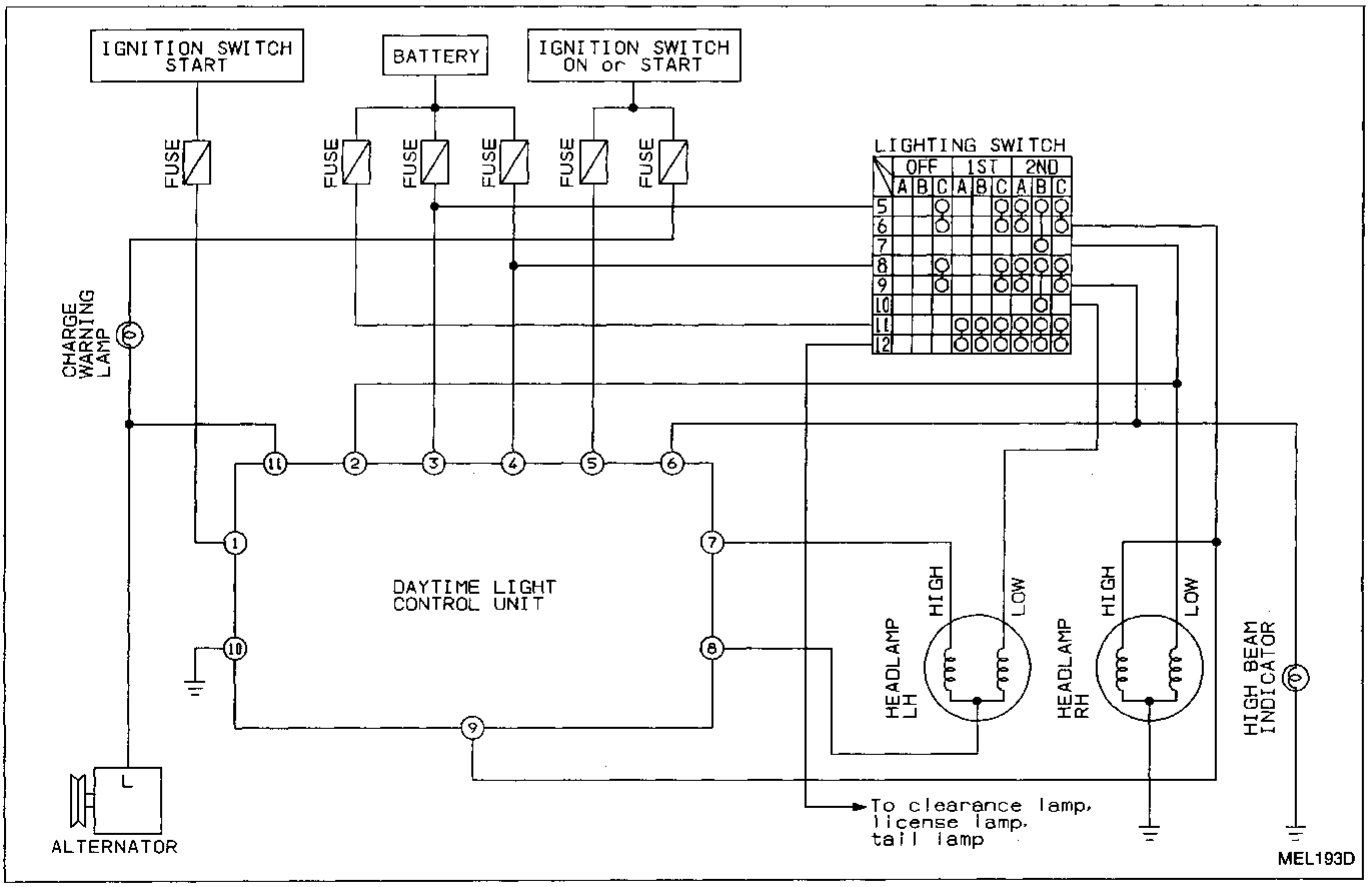
## Operation

After starting the engine with the lighting switch in the "OFF" or "1ST" position, the headlamp high beam automatically turns on. Lighting switch operations other than the above are the same as conventional light systems.

| Engine | | With engine stopped | | | | | | | | | With engine running | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lighting switch | | OFF | | | 1ST | | | 2ND | | | OFF | | | 1ST | | | 2ND | | |
| | | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| Headlamp | High beam | X | X | O | X | X | O | O | X | O | △ | △ | O | △ | △ | O | O | X | O |
| | Low beam | X | X | X | X | X | X | X | O | X | X | X | X | X | X | X | X | O | X |
| Clearance and tail lamp | | X | X | X | O | O | O | O | O | O | X | X | X | O | O | O | O | O | O |
| License and instrument illumination lamp | | X | X | X | O | O | O | O | O | O | X | X | X | O | O | O | O | O | O |

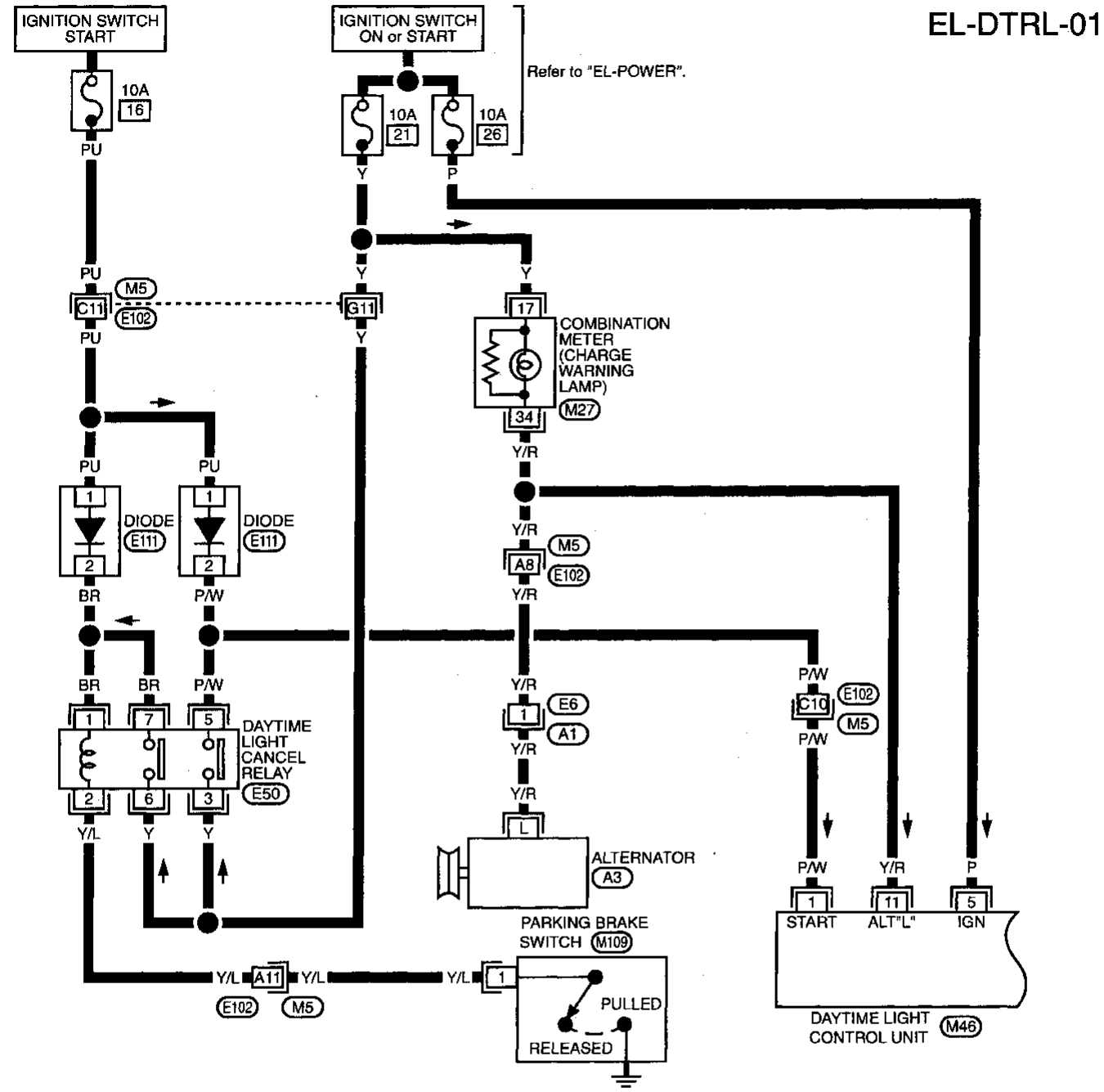
O : Lamp "ON"
X : Lamp "OFF"
△ : Lamp dims.

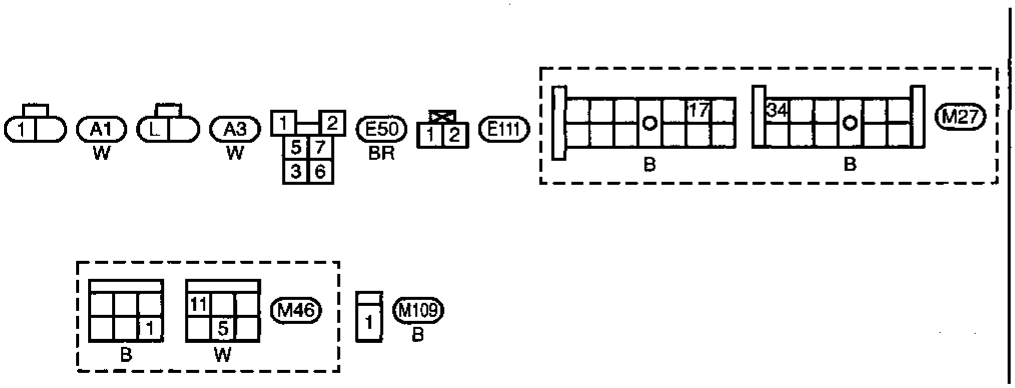
## Schematic



## Wiring Diagram — DTRL —

EL-DTRL-01

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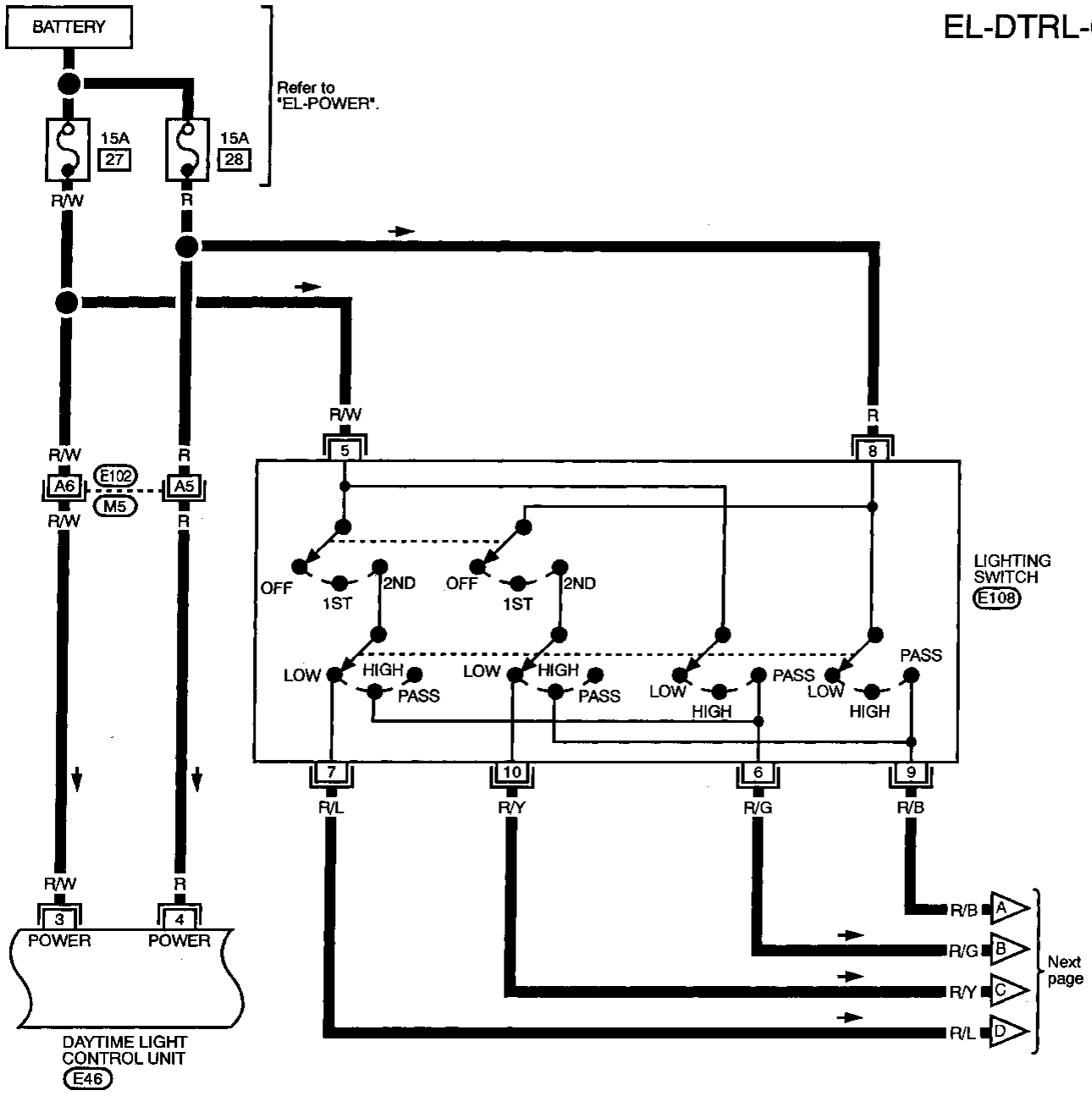
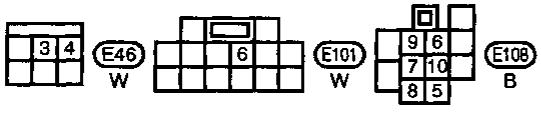
M5 , E102

MEL102D

## Wiring Diagram — DTRL — (Cont'd)

EL-DTRL-02



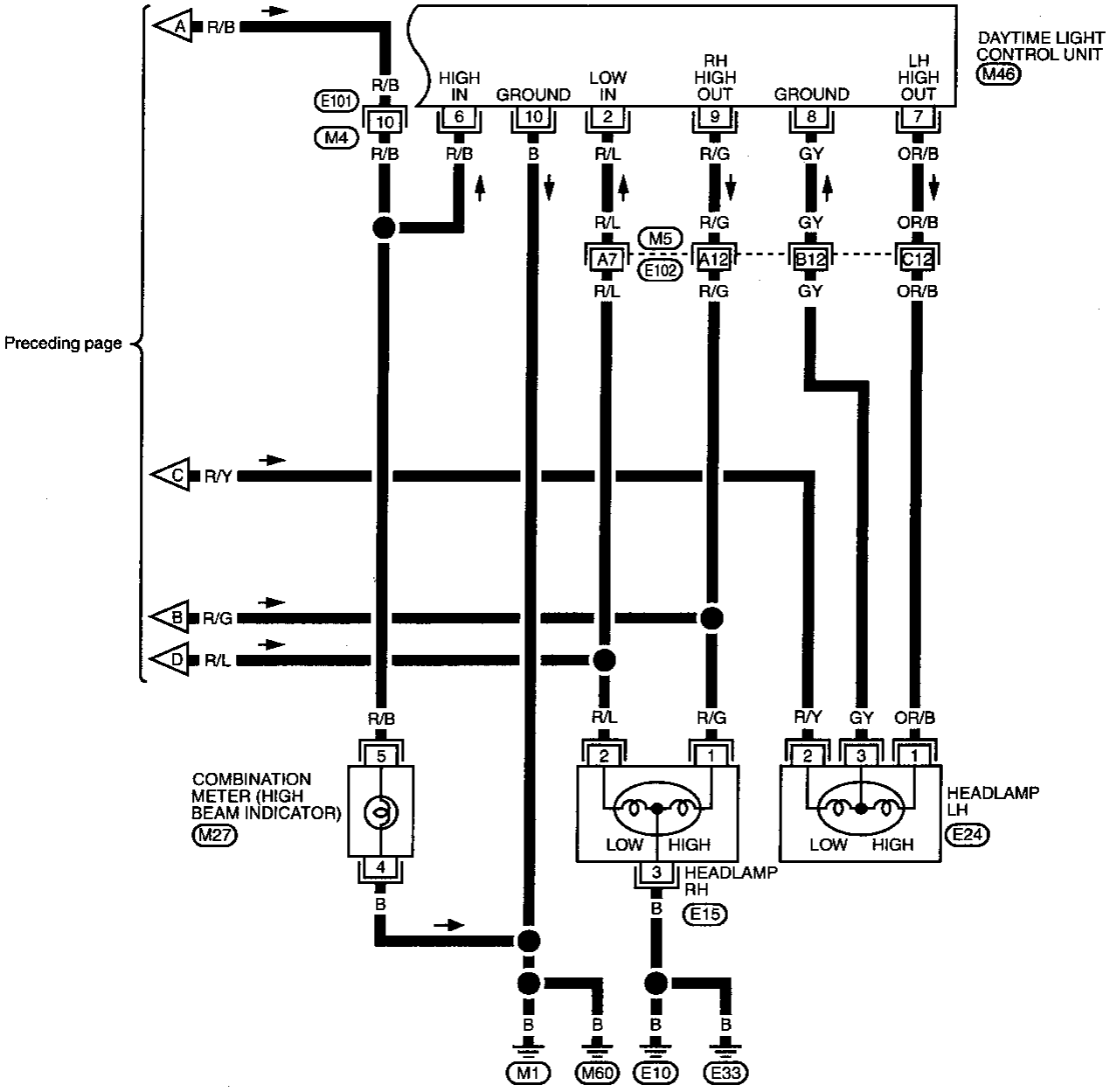




Refer to last page (Foldout page).
M5, E102

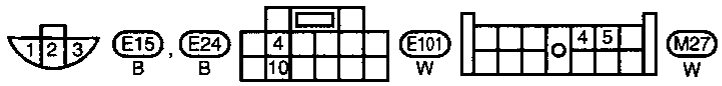
MEL103D

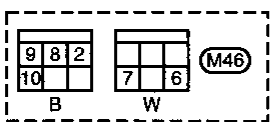
## Wiring Diagram — DTRL — (Cont'd)

EL-DTRL-03




Refer to last page (Foldout page).
M5 , E102




MEL104D

## Trouble Diagnoses (For USA)

| Symptom | Possible cause | Repair order |
|---|---|---|
| LH headlamps do not operate. | 1. Bulb<br>2. Grounds (E10) and (E15)<br>3. 15A fuse<br>4. Lighting switch | 1. Check bulb.<br>2. Check grounds (E10) and (E15).<br>3. Check 15A fuse (No. 28 , located in fusible link and fuse box). Verify battery positive voltage is present at terminal ⑧ of lighting switch.<br>4. Check lighting switch. |
| RH headlamps do not operate. | 1. Bulb<br>2. Grounds (E10) and (E15)<br>3. 15A fuse<br>4. Lighting switch | 1. Check bulb.<br>2. Check grounds (E10) and (E15).<br>3. Check 15A fuse (No. 27 , located in fusible link and fuse box). Verify battery positive voltage is present at terminal ⑤ of lighting switch.<br>4. Check lighting switch. |
| LH high beam does not operate, but LH low beam operates. | 1. Bulb<br>2. Open in LH high beam circuit<br>3. Lighting switch | 1. Check bulb.<br>2. Check R/B wire between lighting switch and LH headlamp for an open circuit.<br>3. Check lighting switch. |
| LH low beam does not operate, but LH high beam operates. | 1. Bulb<br>2. Open in LH low beam circuit<br>3. Lighting switch | 1. Check bulb.<br>2. Check R/Y wire between lighting switch and LH headlamp for an open circuit.<br>3. Check lighting switch. |
| RH high beam does not operate, but RH low beam operates. | 1. Bulb.<br>2. Open in RH high beam circuit<br>3. Lighting switch. | 1. Check bulb.<br>2. Check R/G wire between lighting switch and RH headlamp for an open circuit.<br>3. Check lighting switch. |
| RH low beam does not operate, but RH high beam operates. | 1. Bulb<br>2. Open in RH low beam circuit<br>3. Lighting switch | 1. Check bulb.<br>2. Check R/L wire between lighting switch and RH headlamp for an open circuit.<br>3. Check lighting switch. |
| High beam indicator does not work. | 1. Bulb<br>2. Grounds (M1) and (M60)<br>3. Open in high beam circuit | 1. Check bulb in combination meter.<br>2. Check grounds (M1) and (M60).<br>3. Check R/B wire between joint connector-5 and combination meter for an open circuit. |

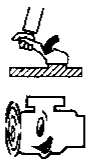
## Trouble Diagnoses (For Canada)

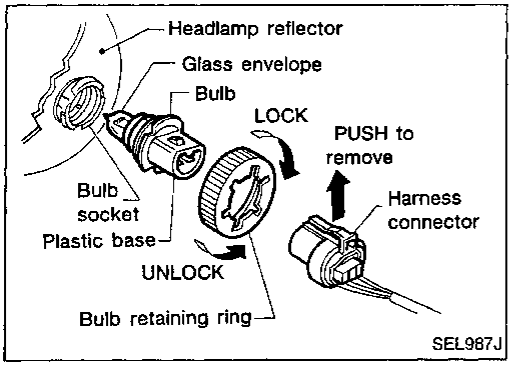
### DAYTIME LIGHT CONTROL UNIT INSPECTION TABLE

(Data are reference values.)

| Terminal No. | Item | Condition | | Judgement standard |
|---|---|---|---|---|
| 1 | Start/parking brake signal |  | When turning ignition switch to "ST". | Battery positive voltage |
| | |  | When turning ignition switch to "ON" from "ST" with parking brake set. | Battery positive voltage |
| | |  | When releasing parking brake with engine running.<br>**CAUTION: Block wheels and ensure selector lever is in N or P position.** | 1V or less |
| | |  | When turning ignition switch to "OFF". | 1V or less |
| 2 | Lighting switch (Lo beam) | | When turning lighting switch to "HEAD" (2nd position). | Battery positive voltage |
| 3 | Power source |  | When turning ignition switch to "ON". | Battery positive voltage |
| | |  | When turning ignition switch to "OFF". | Battery positive voltage |
| 4 | Power source |  | When turning ignition switch to "ON". | Battery positive voltage |
| | |  | When turning ignition switch to "OFF". | Battery positive voltage |
| 5 | Power source |  | When turning ignition switch to "ON". | Battery positive voltage |
| | |  | When turning ignition switch to "ST". | Battery positive voltage |
| | |  | When turning ignition switch to "OFF". | 1V or less |
| 6 | Lighting switch (Hi beam) | | When turning lighting switch to "HI BEAM". | Battery positive voltage |
| | | | When turning lighting switch to "FLASH TO PASS". | Battery positive voltage |
| 7 | LH hi beam | | When turning lighting switch to "Hi BEAM". | Battery positive voltage |
| | |  | When releasing parking brake with engine running and turning lighting switch to "OFF" (daytime light operation).<br>**CAUTION: Block wheels and ensure selector lever is in N or P position.** | Battery positive voltage |

## Trouble Diagnoses (For Canada) (Cont'd)

| Terminal No. | Item | Condition | | Judgement standard |
|---|---|---|---|---|
| 8 | LH headlamp control (ground) | | When lighting switch is turned to "HEAD". | 1V or less |
| | |  | When releasing parking brake with engine running and turning lighting switch to "OFF" (daytime light operation). **CAUTION: Block wheels and ensure selector lever is in N or P position.** | Approx. half battery voltage |
| 9 | RH hi beam | | When turning lighting switch to "HI BEAM". | Battery positive voltage |
| | |  | When releasing parking brake with engine running and turning lighting switch to "OFF" (daytime light operation). **CAUTION: Block wheels and ensure selector lever is in N or P position.** | Approx. half battery voltage |
| 10 | Ground | | — | — |
| 11 | Alternator |  | When turning ignition switch to "ON". | 1V or less |
| | |  | When engine is running. | Battery positive voltage |
| | |  | When turning ignition switch to "OFF". | 1V or less |
| 12 | — | | — | — |




## Bulb Replacement

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

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

1. Disconnect the battery cable.
2. Turn the bulb retaining ring counterclockwise until it is free from the headlamp reflector, and then remove it.
3. Disconnect the harness connector from the back side of the bulb.
4. Remove the headlamp bulb carefully. Do not shake or rotate the bulb when removing it.
5. Install in the reverse order of removal.

**CAUTION:**

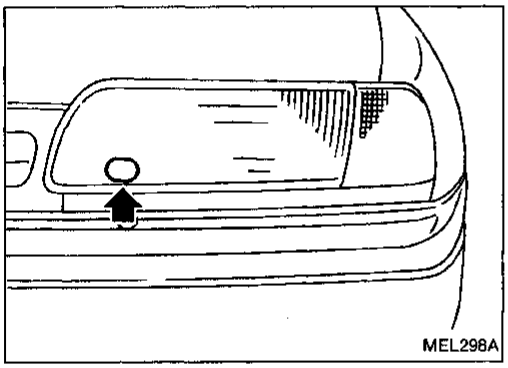
- **Do not leave headlamp reflector without bulb for a long period of time. Dust, moisture, smoke, etc. entering headlamp body may affect the performance of the headlamp. Remove headlamp bulb from the headlamp reflector just before a replacement bulb is installed.**

## Aiming Adjustment

When performing headlamp aiming adjustment, use an aiming machine, aiming wall screen or headlamp tester. Aimers should be in good repair, calibrated and operated in accordance with respective operation manuals.
If any aimer is not available, aiming adjustment can be done as follows:

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

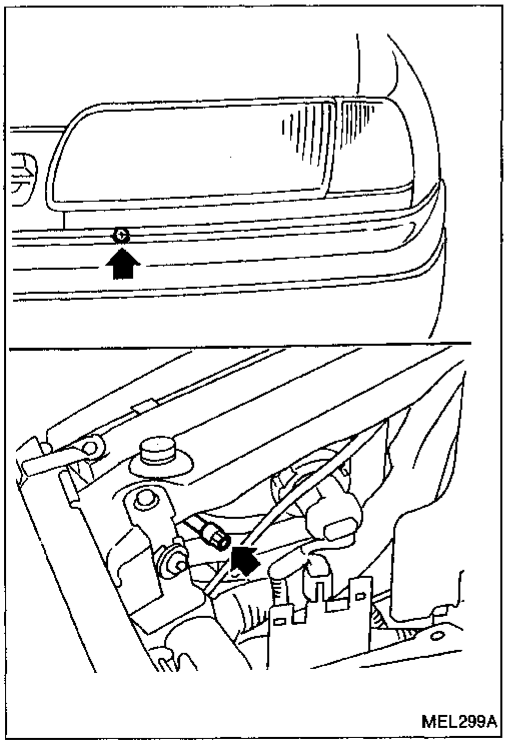
a. **Keep all tires inflated to correct pressures.**
b. **Place vehicle and tester on one and same flat surface.**
c. **See that there is no-load in vehicle (coolant, engine oil filled up to correct level and full fuel tank) other than the driver (or equivalent weight placed in driver's position).**




### AIMER ADJUSTMENT MARK

When using a mechanical aimer, adjust adapter legs to the data marked on the headlamps.
Example:

4H 2V
- 2V: Vertical side: 2
- 4H: Horizontal side: 4

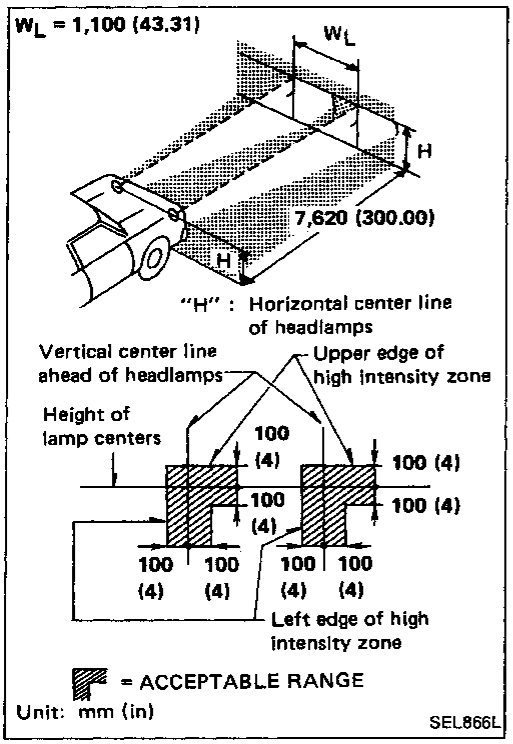



### LOW BEAM

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

- **First tighten the adjusting screw all the way and then make adjustment by loosening the screw.**

## Aiming Adjustment (Cont'd)

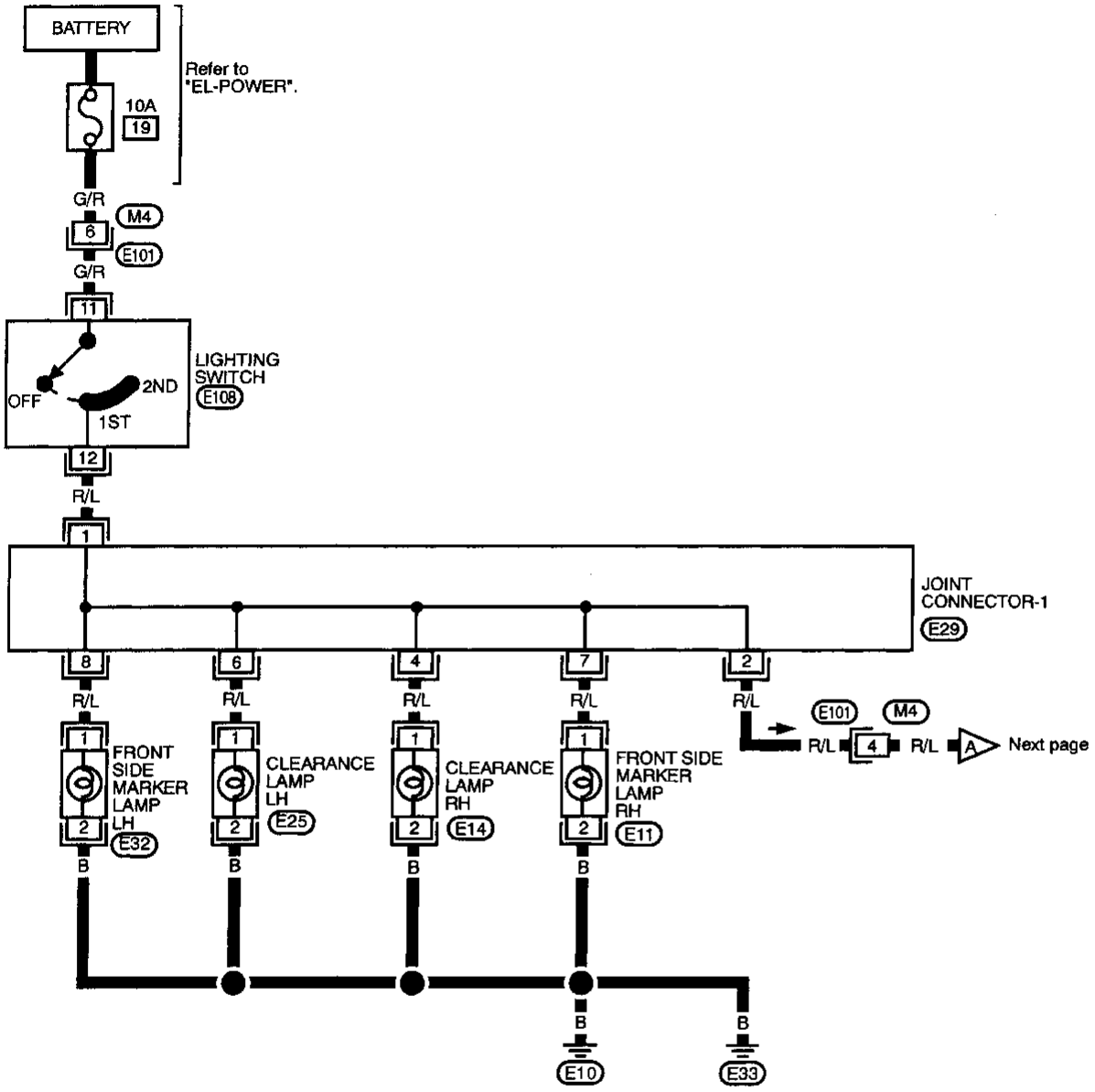


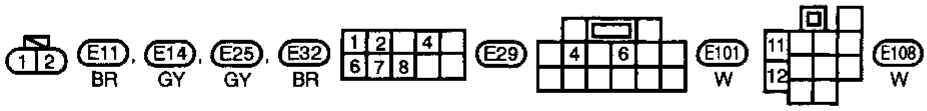

- **Upper edge and left edge of high intensity zone should be within the range shown at left. Adjust headlamps accordingly.**
- **Dotted lines in illustration show center of headlamp.**

"H": Horizontal center line of headlamps
"$W_L$": Distance between each headlamp center

## Clearance, License, Tail and Stop Lamps/Wiring Diagram — TAIL/L —

EL-TAIL/L-01



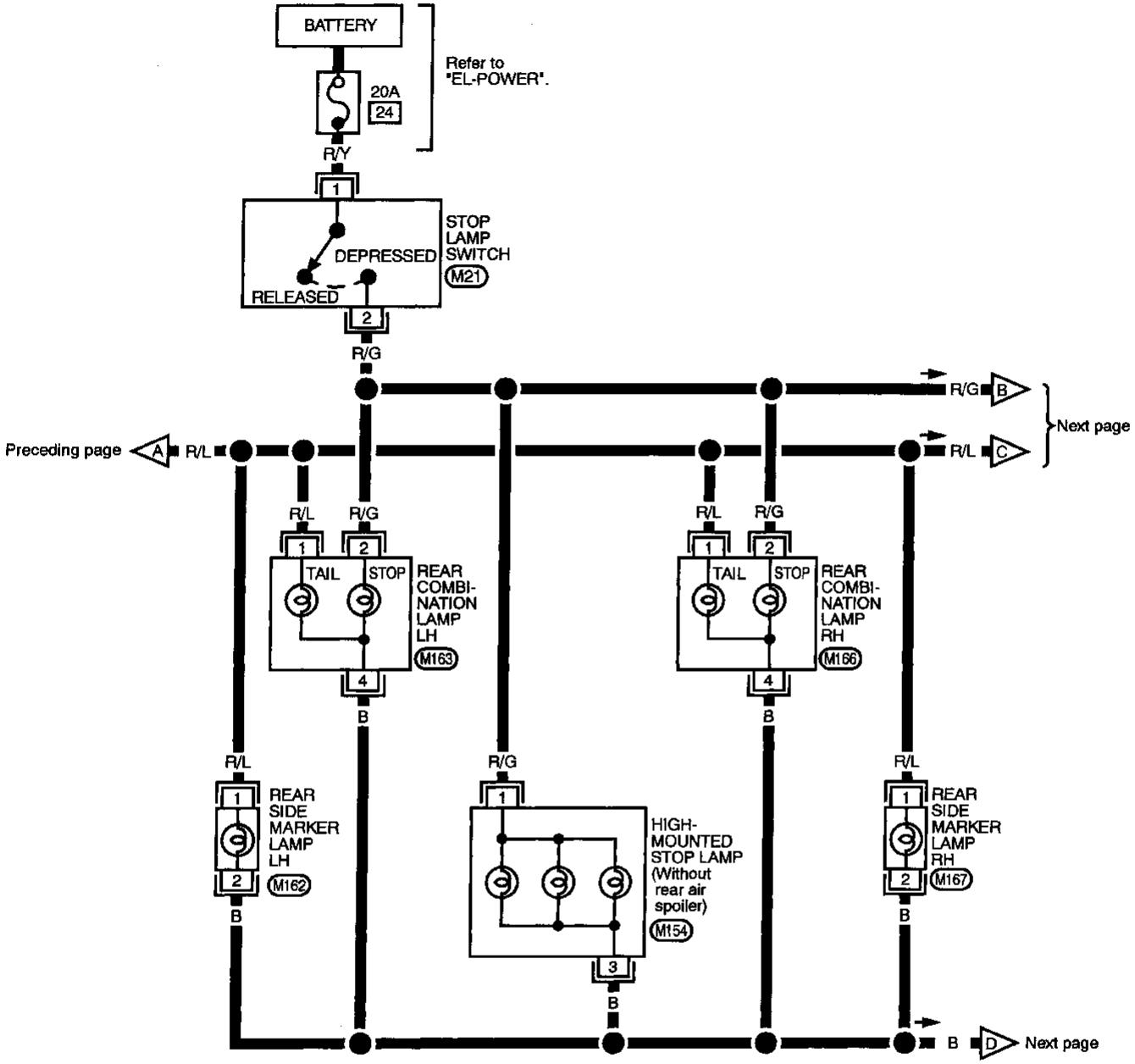




Refer to last page (Foldout page).
E29

MEL175D

## Clearance, License, Tail and Stop Lamps/Wiring Diagram — TAIL/L — (Cont'd)

EL-TAIL/L-02

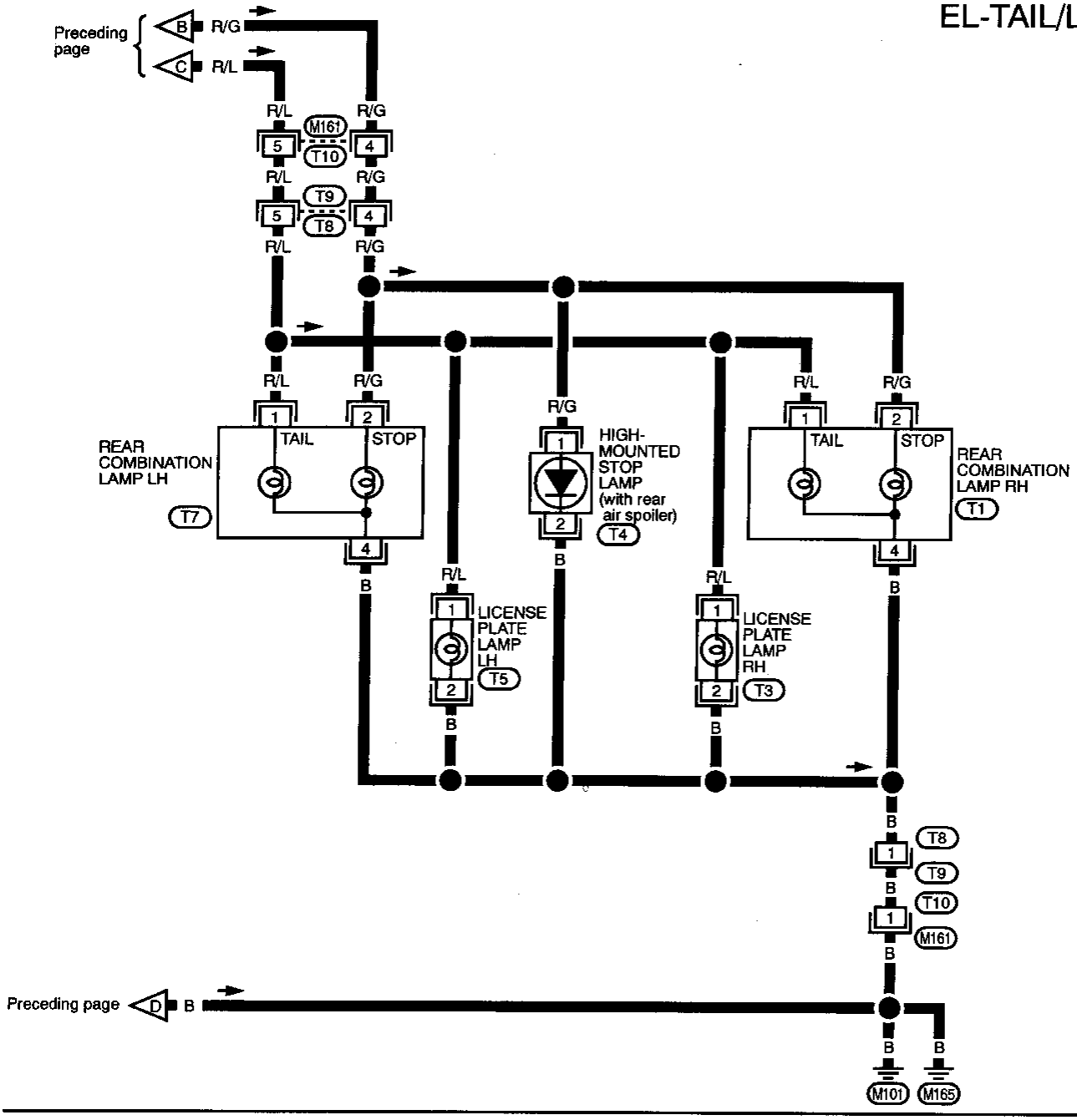


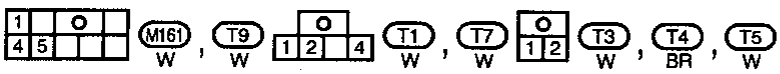

M21 B
M154 W
M162 W, M167 W
M163 W, M166 W

MEL176D

## Clearance, License, Tail and Stop Lamps/Wiring Diagram — TAIL/L — (Cont'd)

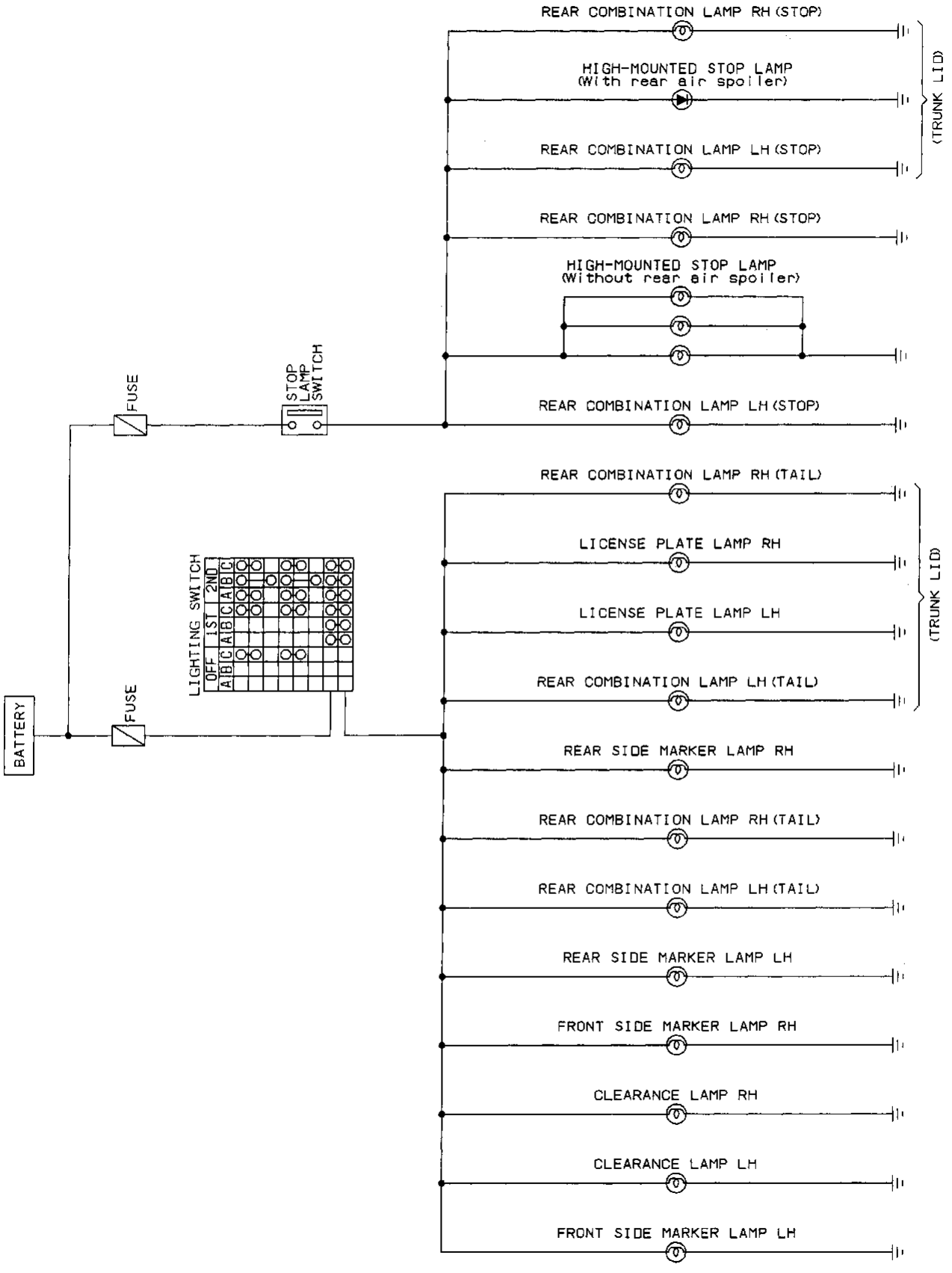
EL-TAIL/L-03




MEL177D

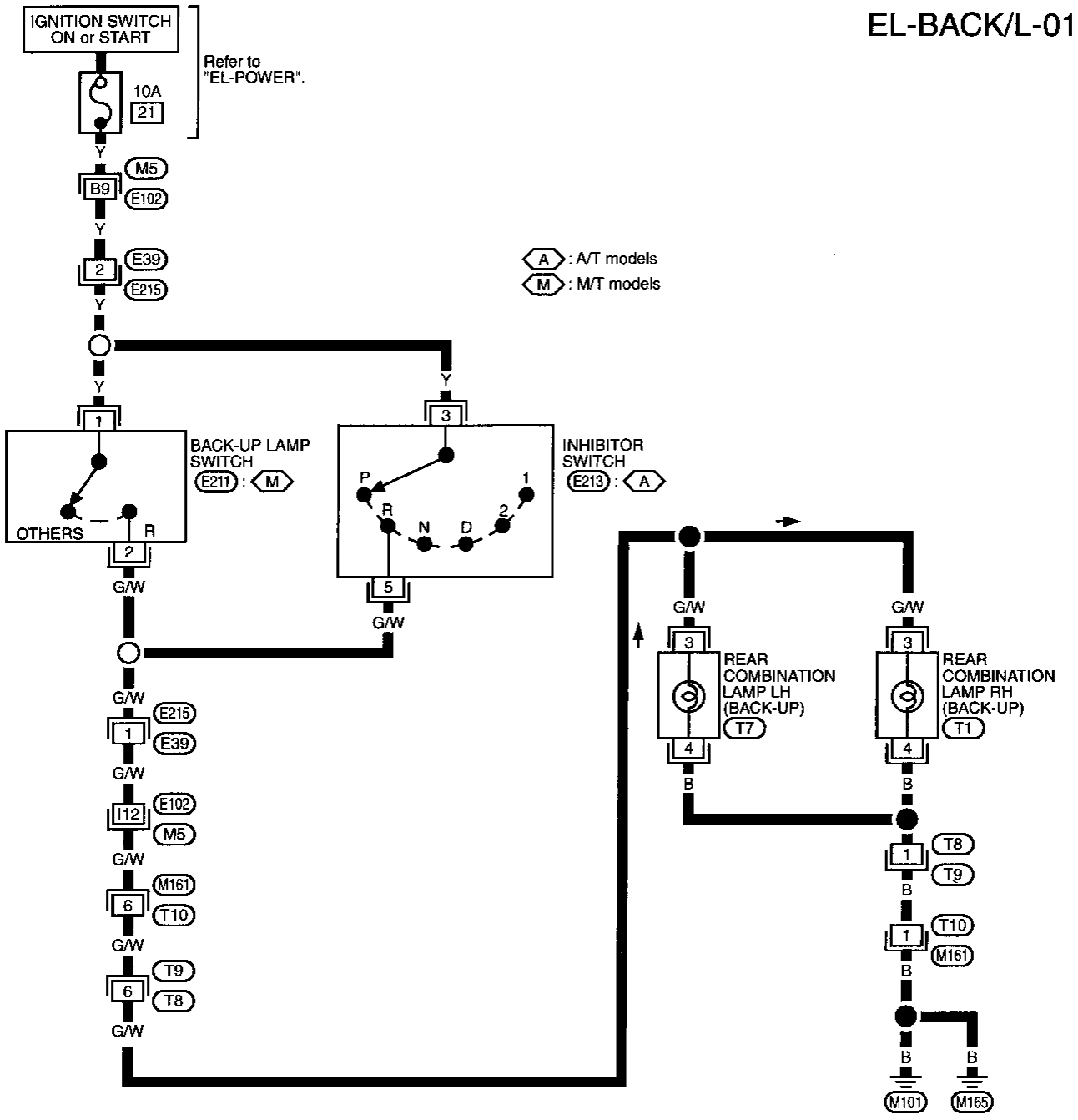
## Clearance, License, Tail and Stop Lamps/ Schematic

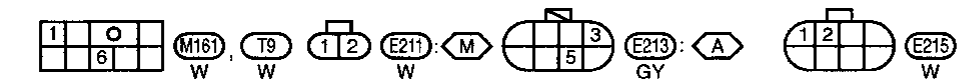


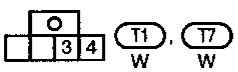

MEL178D

## Back-up Lamp/Wiring Diagram — BACK/L —

EL-BACK/L-01




Refer to last page (Foldout page).
M5, E102

MEL105D

## Front Fog Lamp/System Description

Power is supplied at all times to fog lamp relay terminal ③ through:
- 15A fuse (No. 13 , located in the fuse block).

With the lighting switch in the 2ND and LOW ("B") position, power is supplied
- through 15A fuse (No. 27 , located in the fuse and fusible link box)
- to lighting switch terminal ⑤ and
- through terminal ⑦ of the lighting switch
- to fog lamp switch terminal ①.

**Fog lamp operation**

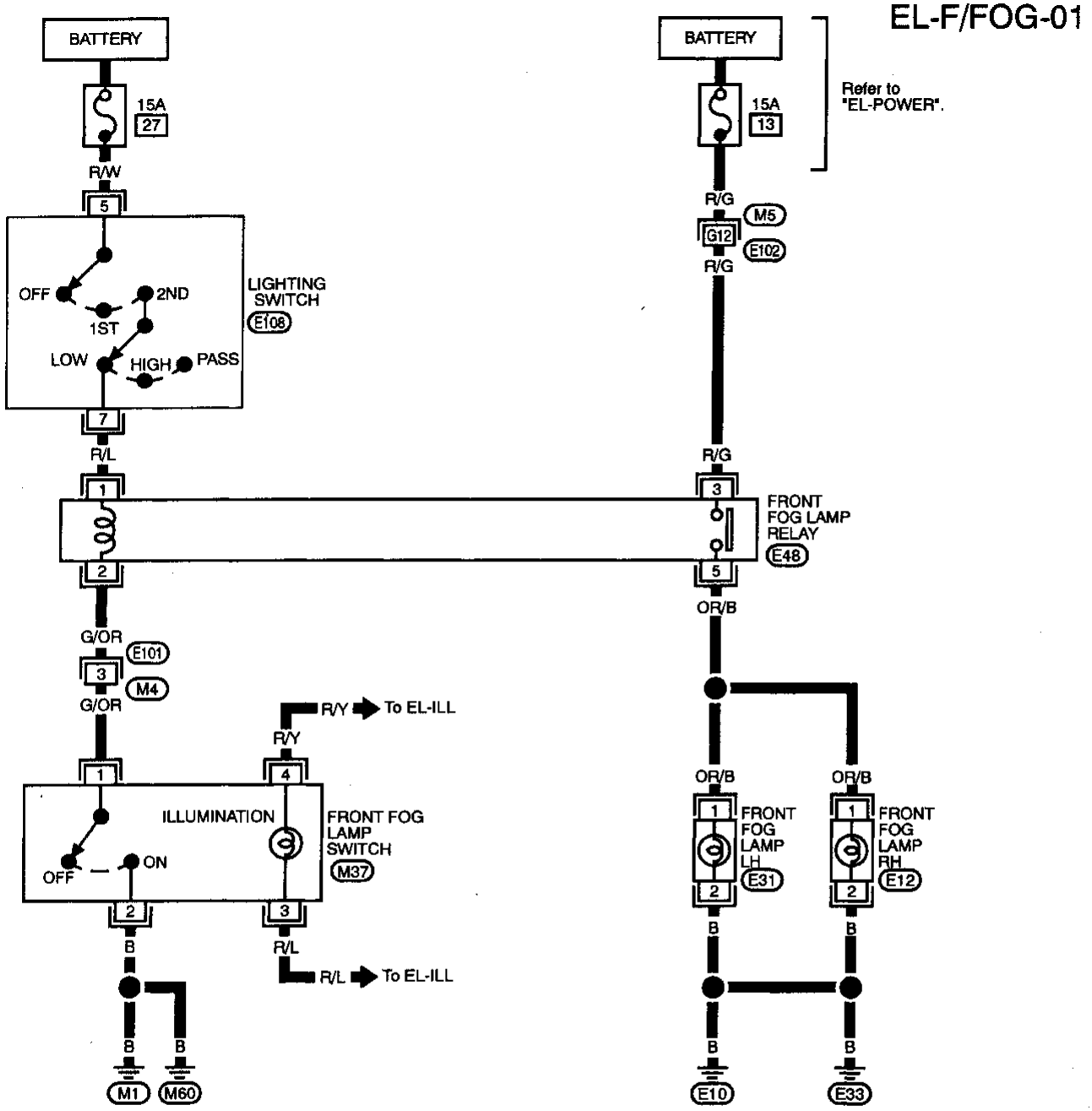
The lighting switch must be in the 2ND and LOW ("B") position for fog lamp operation.
With the fog lamp switch in the ON position:
- ground is supplied to fog lamp relay terminal ② through the fog lamp switch and body grounds (M1) and (M60).

The fog lamp relay is energized and power is supplied
- from fog lamp relay terminal ⑤
- to terminal ① of each fog lamp.

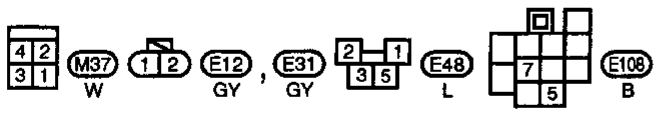
Ground is supplied to terminal ② of each fog lamp through body grounds (E10) and (E33).
With power and ground supplied, the fog lamps illuminate.

## Front Fog Lamp/Wiring Diagram — F/FOG —

EL-F/FOG-01




Refer to last page (Foldout page).
M5 , E102




MEL179D

## Turn Signal and Hazard Warning Lamps/System Description

### TURN SIGNAL OPERATION

With the hazard switch in the OFF position and the ignition switch in the ON or START position, power is supplied

- through 10A fuse (No. 22 , located in the fuse block)
- to hazard switch terminal ②
- through terminal ① of the hazard switch
- to combination flasher unit terminal ①
- through terminal ③ of the combination flasher unit
- to turn signal switch terminal ①.

Ground is supplied to combination flasher unit terminal ② through body grounds (M1) and (M60).

**LH turn**

When the turn signal switch is moved to the LH position, power is supplied from turn signal switch terminal ③ to

- front turn signal lamp LH terminal ①
- rear combination lamp LH terminal ③
- combination meter terminal ⑥, and

Ground is supplied to the front turn signal lamp LH terminal ② through body grounds (E10) and (E33).
Ground is supplied to the rear combination lamp LH terminal ④ through body grounds (M101) and (M165).
Ground is supplied to combination meter terminal ⑲ through body grounds (M1) and (M60).
With power and ground supplied, the flasher unit controls the flashing of the LH turn signal lamps.

**RH turn**

When the turn signal switch is moved to the RH position, power is supplied from turn signal switch terminal ② to

- front turn signal lamp RH terminal ①
- rear combination lamp RH terminal ③
- combination meter terminal ㉜, and

Ground is supplied to the front turn signal lamp RH terminal ② through body grounds (E10) and (E33).
Ground is supplied to the rear combination lamp RH terminal ④ through body ground (M101) and (M165).
Ground is supplied to combination meter terminal ⑲ through body grounds (M1) and (M60).
With power and ground supplied, the flasher unit controls the flashing of the RH turn signal lamps.

### HAZARD LAMP OPERATION

Power is supplied at all times to hazard switch terminal ③ through:

- 10A fuse (No. 17 , located in the fuse block).

With the hazard switch in the ON position, power is supplied

- through terminal ① of the hazard switch
- to combination flasher unit terminal ①
- through terminal ③ of the combination flasher unit
- to hazard switch terminal ④.

Ground is supplied to combination flasher unit terminal ② through body grounds (M1) and (M60).
Power is supplied through terminal ⑤ of the hazard switch to

- front turn signal lamp LH terminal ①
- rear combination lamp LH terminal ③
- combination meter terminal ⑥.

Power is supplied through terminal ⑥ of the hazard switch to

- front turn signal lamp RH terminal ①
- rear combination lamp RH terminal ③
- combination meter terminal ㉜, and

Ground is supplied to terminal ② of the front turn signal lamps through body grounds (E10) and (E33).
Ground is supplied to terminal ④ of the rear combination lamps through body grounds (M101) and (M165).
Ground is supplied to combination meter terminal ㉗ through body grounds (M1) and (M60).
With power and ground supplied, the flasher unit controls the flashing of the hazard warning lamps.

## Turn Signal and Hazard Warning Lamps/System Description (Cont'd)

### WITH MULTI-REMOTE CONTROL SYSTEM

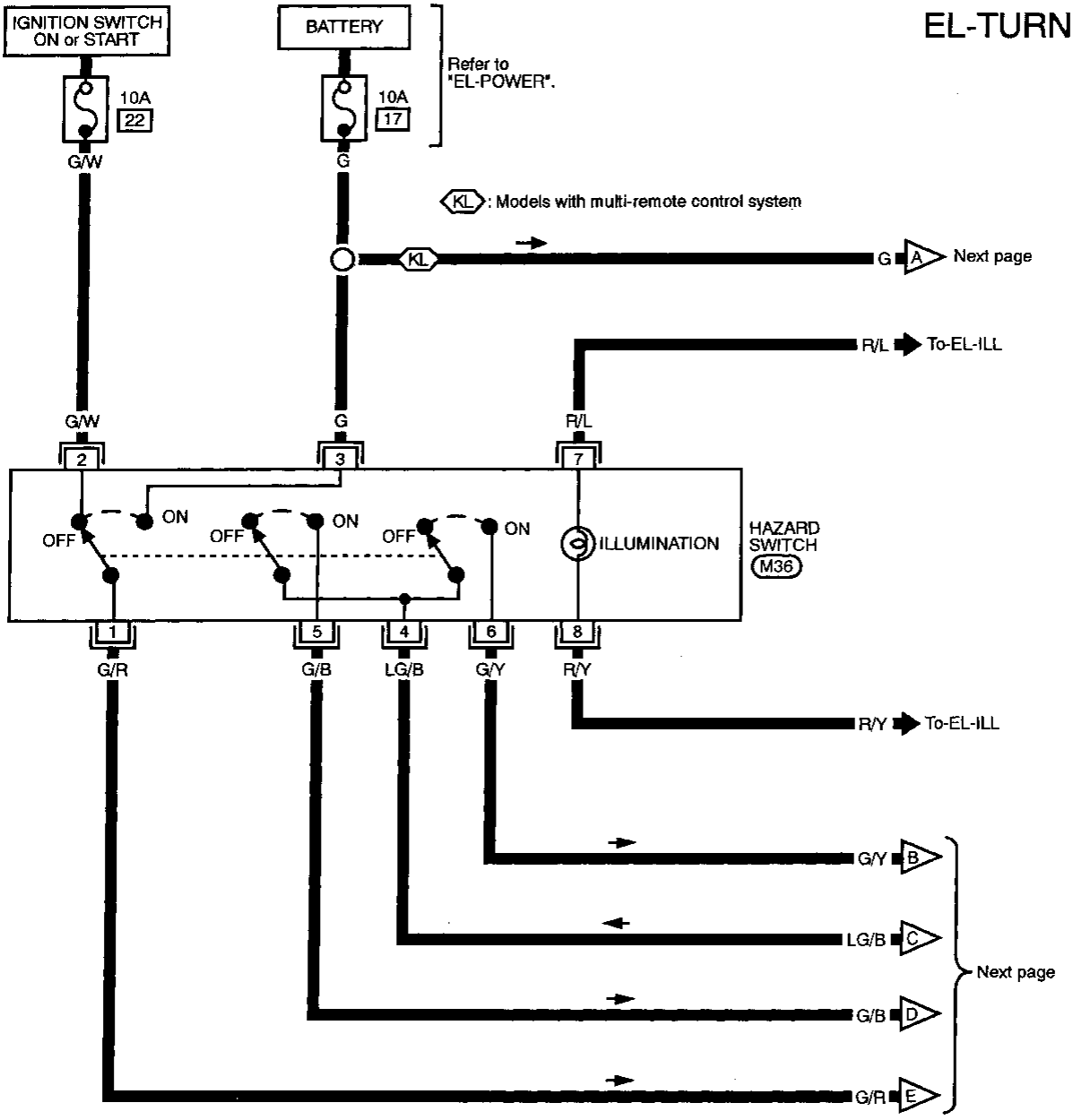
Power is supplied at all times
- through 10A fuse (No. 17 located in the fuse block)
- to multi-remote control relay terminal ①, ⑥ and ③.

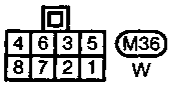
Ground is supplied to multi-remote control relay terminal ②, when the multi-remote control system is triggered through the multi-remote control unit.
(Refer to "MULTI-REMOTE CONTROL SYSTEM" in BF section.)
The multi-remote control relay is energized.
Power is supplied through terminal ⑦ of the multi-remote control relay
- to front turn signal lamp RH terminal ①,
- to rear combination lamp RH terminal ③ and
- to combination meter terminal ㉜

Power is supplied through terminal ⑤ of the multi-remote control relay
- to front turn signal lamp LH terminal ①,
- to rear combination lamp LH terminal ③ and
- to combination meter terminal ⑥.

With power and ground supplied, the multi-remote control unit controls the flashing of the hazard warning lamps.

## Turn Signal and Hazard Warning Lamps/ Wiring Diagram — TURN —

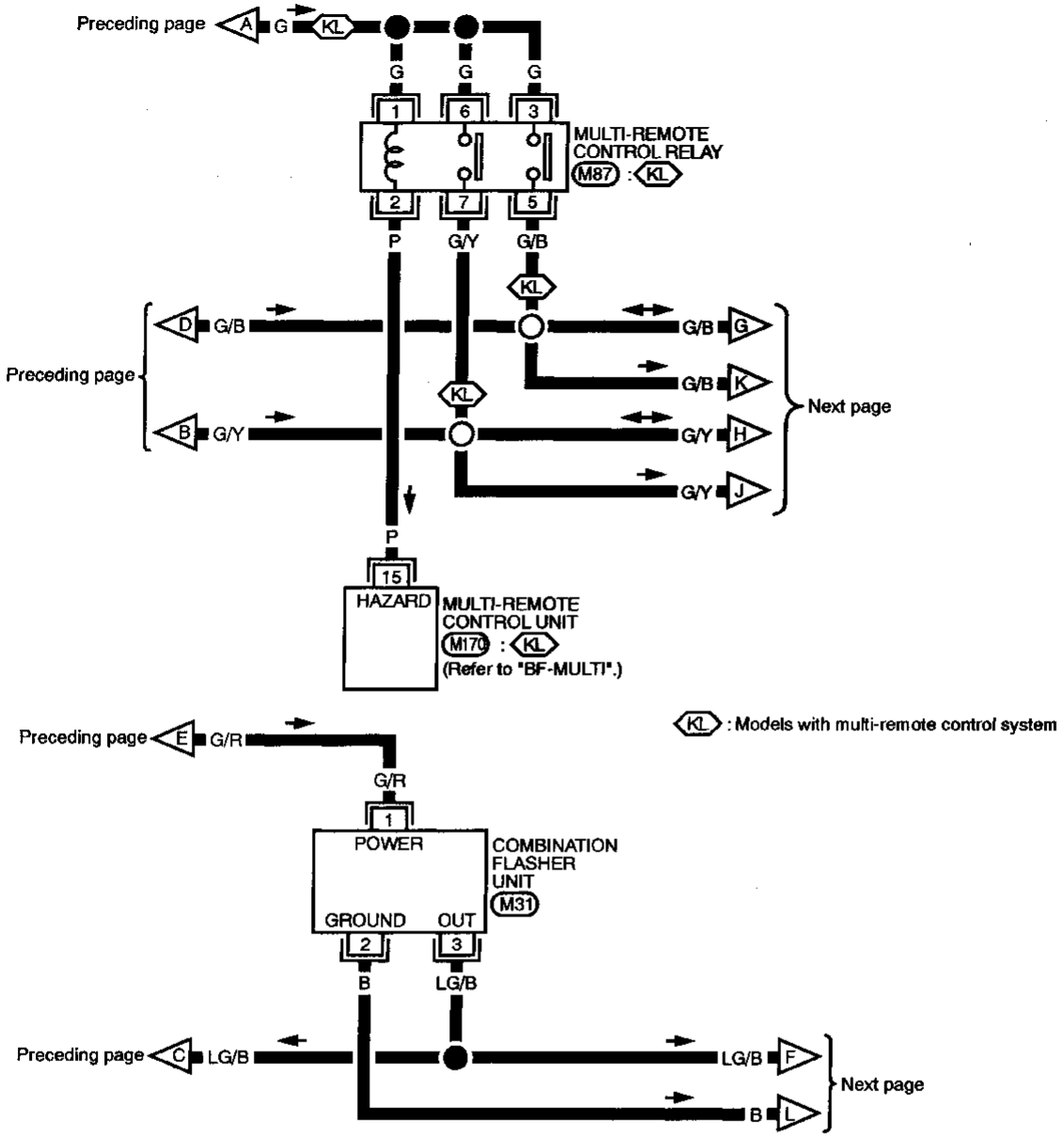



MEL106D

## Turn Signal and Hazard Warning Lamps/ Wiring Diagram — TURN — (Cont'd)

EL-TURN-02

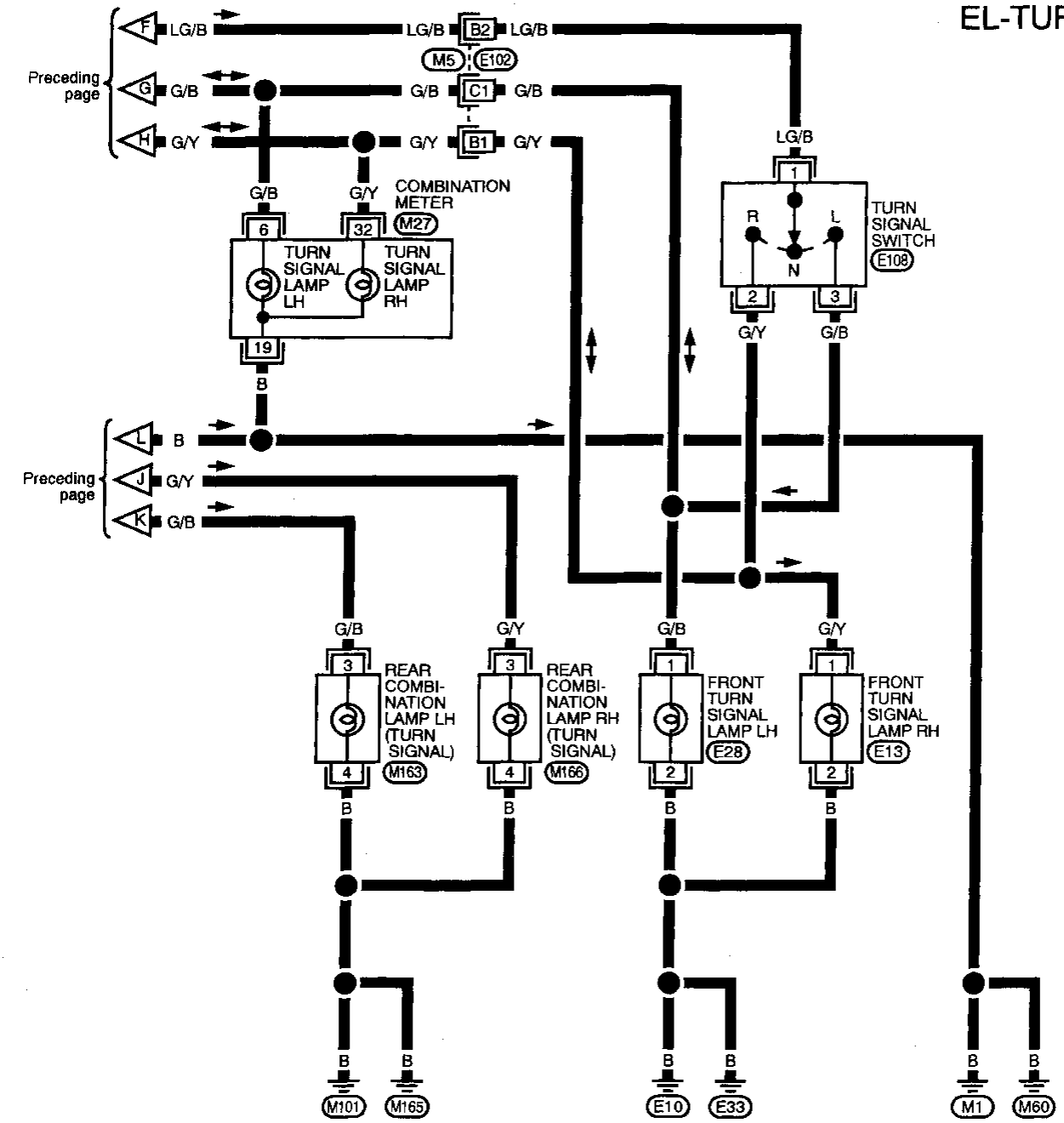


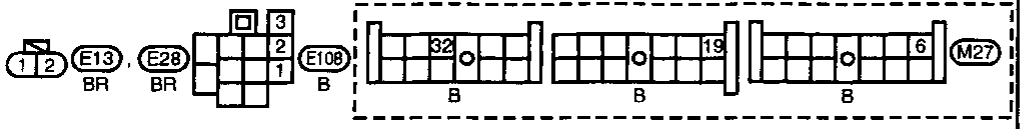


MEL107D

## Turn Signal and Hazard Warning Lamps/ Wiring Diagram — TURN — (Cont'd)

EL-TURN-03



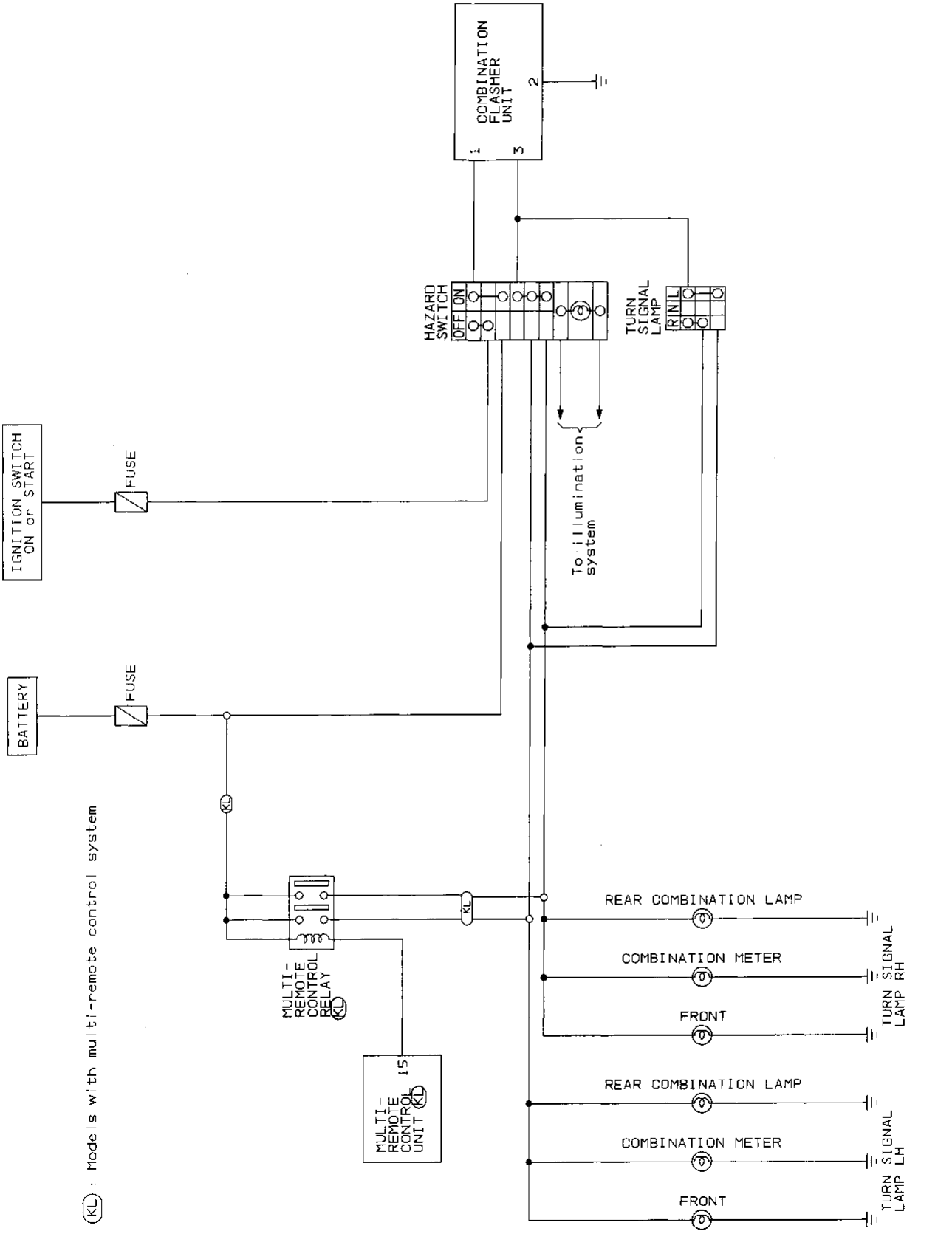





Refer to last page (Foldout page).
M5, E102

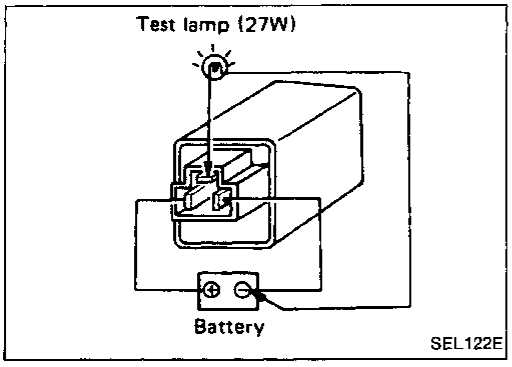
MEL108D

## Turn Signal and Hazard Warning Lamps/ Schematic



## Turn Signal and Hazard Warning Lamps/Trouble Diagnoses

| Symptom | Possible cause | Repair order |
|---|---|---|
| Turn signal and hazard warning lamps do not operate. | 1. Hazard switch<br>2. Combination flasher unit<br>3. Open in combination flasher unit circuit | 1. Check hazard switch.<br>2. Refer to combination flasher unit check.<br>3. Check wiring to combination flasher unit for open circuit. |
| Turn signal lamps do not operate but hazard warning lamps operate. | 1. 10A fuse<br>2. Hazard switch<br>3. Turn signal switch<br>4. Open in turn signal switch circuit | 1. Check 10A fuse (No. 22 , located in fuse block). Turn ignition switch ON and verify battery positive voltage is present at terminal ② of hazard switch.<br>2. Check hazard switch.<br>3. Check turn signal switch.<br>4. Check LG/B wire between combination flasher unit and turn signal switch for open circuit. |
| Hazard warning lamps do not operate but turn signal lamps operate. | 1. 10A fuse<br>2. Hazard switch<br>3. Open in hazard switch circuit | 1. Check 10A fuse (No. 17 , located in fuse block). Verify battery positive voltage is present at terminal ③ of hazard switch.<br>2. Check hazard switch.<br>3. Check LG/B wire between combination flasher unit and hazard switch for open circuit. |
| Front turn signal lamp LH or RH does not operate. | 1. Bulb<br>2. Grounds (E10) and (E33) | 1. Check bulb.<br>2. Check grounds (E10) and (E33). |
| Rear turn signal lamp LH or RH does not operate. | 1. Bulb<br>2. Grounds (M101) and (M165) | 1. Check bulb.<br>2. Check grounds (M101) and (M165). |
| LH and RH turn indicators do not operate. | 1. Ground | 1. Check grounds (M1) and (M60). |
| LH or RH turn indicator does not operate. | 1. Bulb | 1. Check bulb in combination meter. |




## Combination Flasher Unit Check

- Before checking, ensure that bulbs meet specifications.
- Connect a battery and test lamp to the combination flasher unit, as shown. Combination flasher unit is properly functioning if it blinks when power is supplied to the circuit.

## Bulb Specifications

| | Wattage (12 volt) |
|---|---|
| Headlamp (Semi-sealed beam) | |
| High/Low | 65/45 |
| Front turn signal lamp | 27 |
| Front clearance lamp | 3.8 |
| Front side marker lamp | 3.8 |
| Front fog lamp | 55 |
| Rear combination lamp | |
| Turn signal | 27 |
| Stop/Tail | 27/8 |
| Back-up | 27 |
| Rear side marker lamp | 3.8 |
| License plate lamp | 5 |
| High-mounted stop lamp | 12 |
| Interior lamp | 10 |
| Spot lamp | 10 |
| Trunk room lamp | 3.4 |

## Illumination/System Description

Power is supplied at all times
- through 15A fuse (No. 23 , located in the fuse block)
- to lighting switch terminal ⑪.

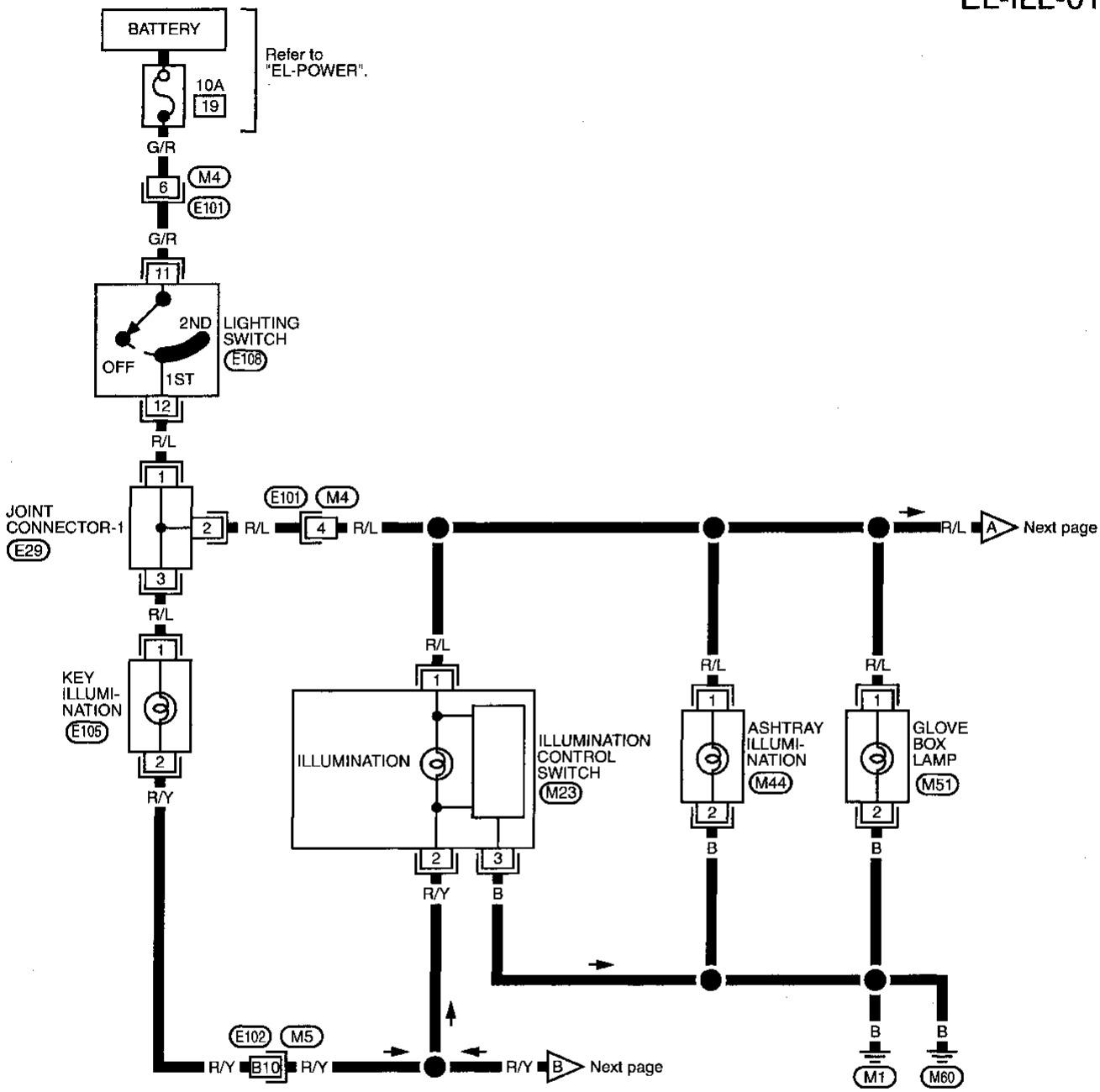
The lighting switch must be in the 1ST or 2ND position for illumination.
The illumination control switch is a thumbwheel that controls the amount of current to the illumination system. As the amount of current increases, the illumination becomes brighter.
The ashtray illumination and the glove box lamp are not controlled by the illumination control switch. The intensity of these lamps does not change.
The following chart shows the power and ground connector terminals for the components included in the illumination system.

| Component | Connector No. | Power terminal | Ground terminal |
|---|---|---|---|
| Radio | M38 | ⑧ | ⑦ |
| Door lock and unlock switch | M130 | ⑥ | ⑦ |
| Key illumination | E105 | ① | ② |
| Push control unit | M40 | ⑮ | ⑯ |
| Front fog lamp switch | M37 | ③ | ④ |
| A/T indicator | M115 | ③ | ④ |
| Hazard switch | M36 | ⑦ | ⑧ |
| Power window main switch LH | M110 | ⑥ | ⑦ |
| Power window main switch RH | M129 | ⑦ | ⑧ |
| Front power window sub-switch LH | D4 | ⑤ | ⑥ |
| Front power window sub-switch RH | D30 | ⑥ | ⑦ |
| Cigarette lighter | M43 | ③ | ④ |
| Ashtray | M44 | ① | ② |
| Combination meter | M27 | ㉓ | ⑳ |
| Clock | M27 | ㉒ | ⑳ |
| ASCD main switch | M25 | ⑤ | ⑥ |
| Rear window defogger switch | M34 | ⑤ | ⑥ |
| Glove box lamp | M51 | ① | ② |
| Illumination control switch | M23 | ① | ② |

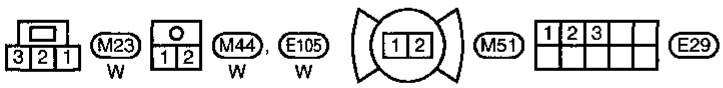
With the exception of the glove box lamp and the ashtray illumination, the ground for all of the components are controlled through terminals ② and ③ of the illumination control switch and body grounds M1 and M60.
The glove box lamp terminal ② and ashtray illumination terminal ② are grounded directly through body grounds M1 and M60.

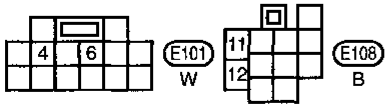
## Illumination/Wiring Diagram — ILL —

EL-ILL-01




Refer to last page (Foldout page).
M5, E102

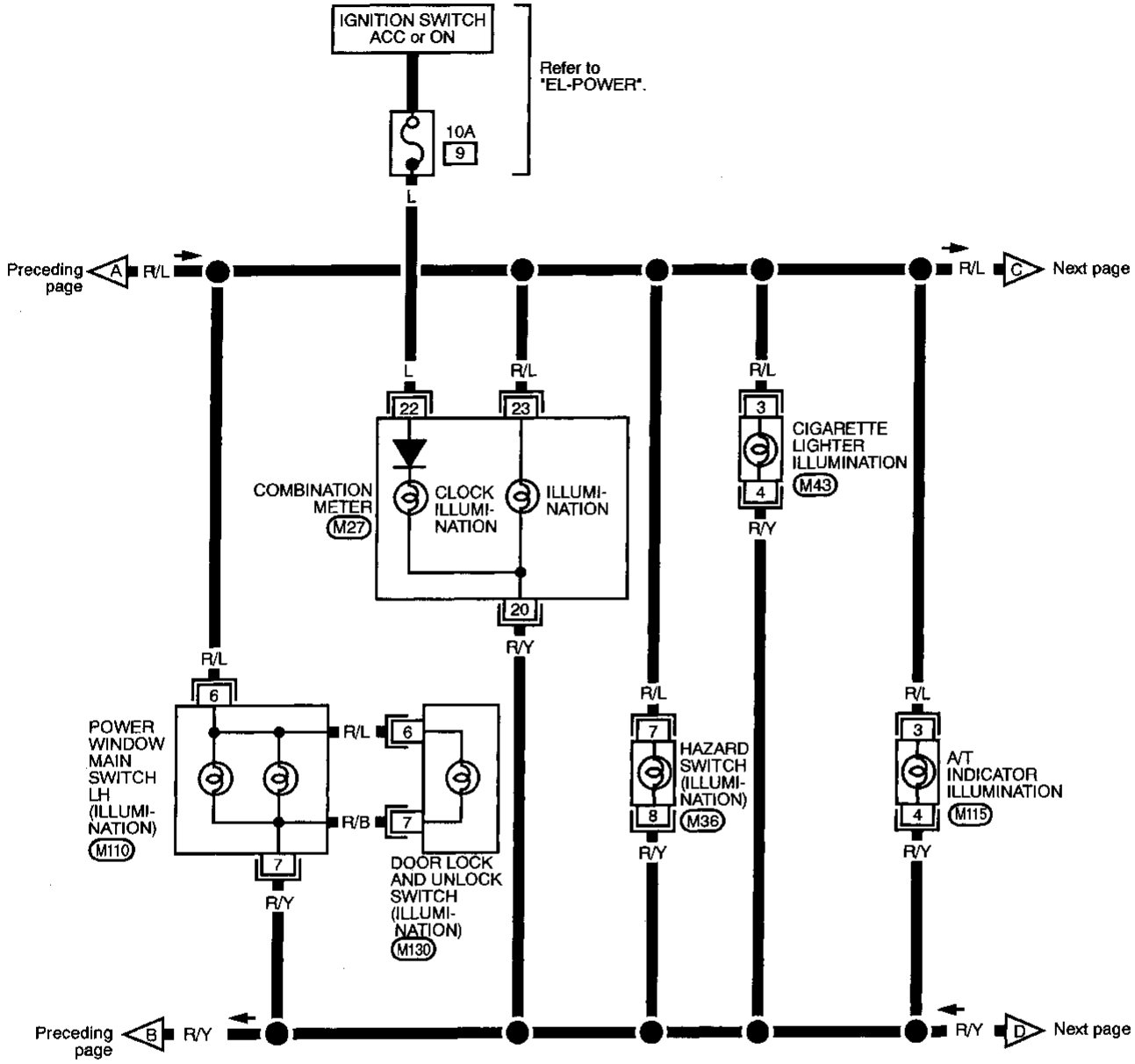


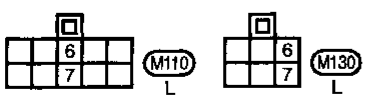

MEL180D

## Illumination/Wiring Diagram — ILL — (Cont'd)

EL-ILL-02



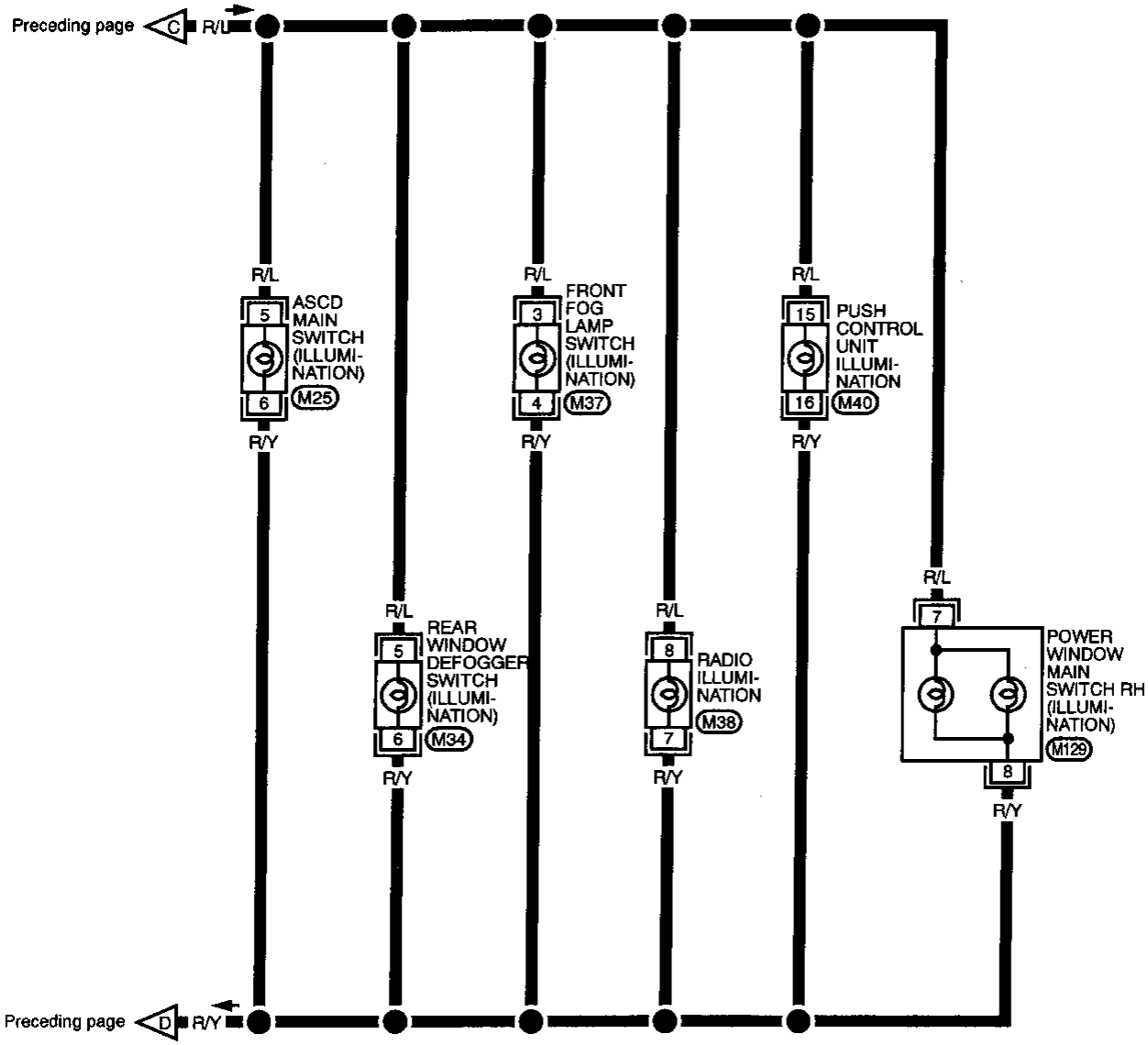


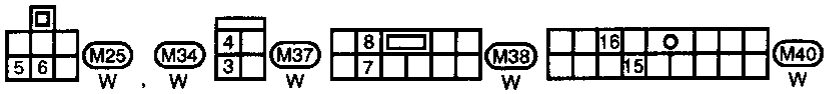


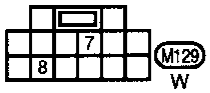

MEL181D

## Illumination/Wiring Diagram — ILL — (Cont'd)

EL-ILL-03

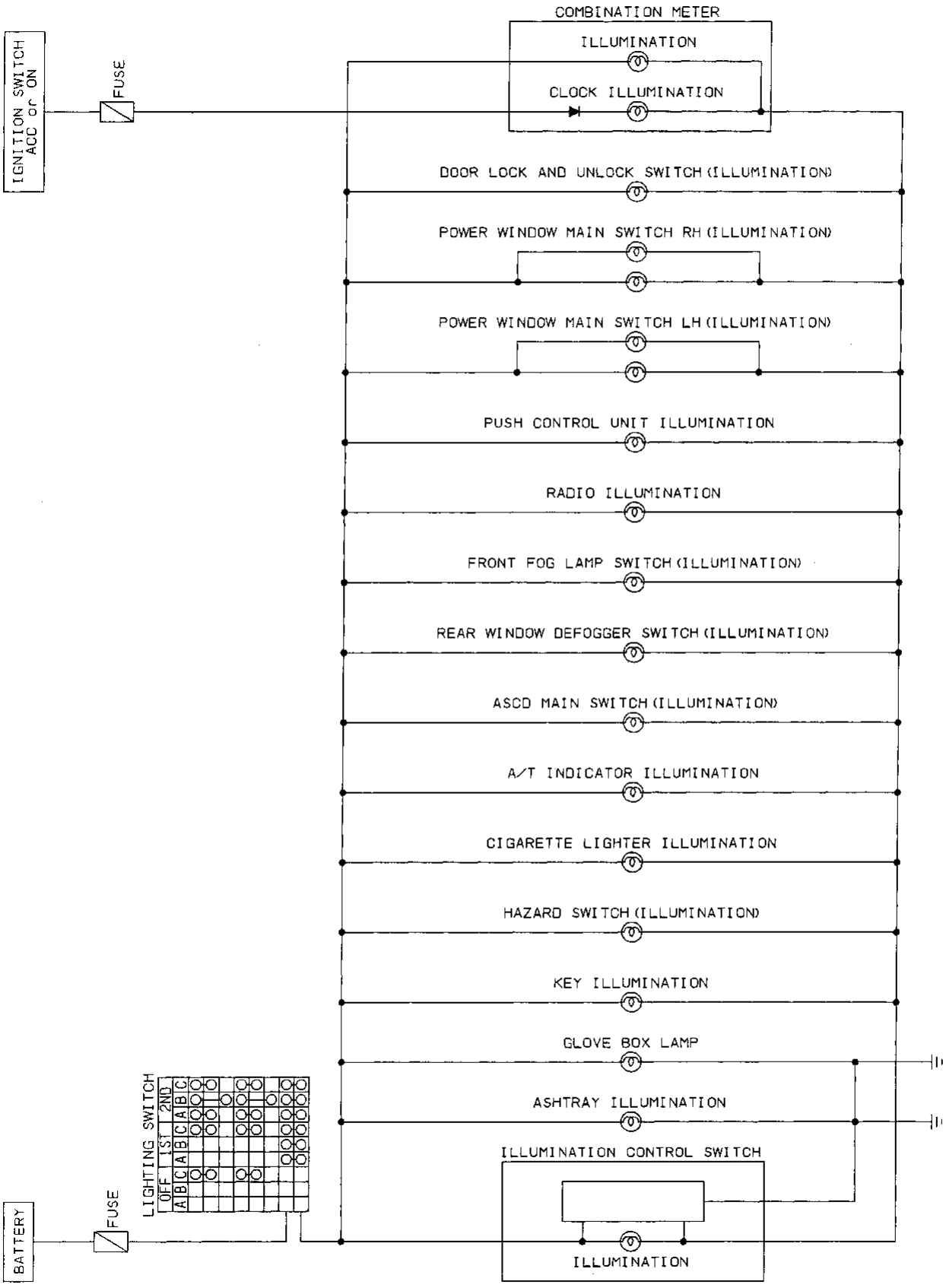



MEL182D

## Illumination/Schematic




MEL184D

## Interior, Spot and Trunk Room Lamps/System Description

Power is supplied at all times
- through 10A fuse (No. 25 located in the fuse block)
- to interior lamp terminal ①,
- to spot lamp terminal ①,
- to trunk room lamp terminal ①,
- to vanity mirror illumination LH terminal ① and
- to vanity mirror illumination RH terminal ①.

### INTERIOR LAMP

#### Switch operation

With interior lamp switch is ON, ground is supplied to turn interior lamp on.
When a door switch is set to OPEN with interior lamp switch in DOOR, ground is supplied
- to interior lamp terminal ②
- through diode terminal ①
- to diode terminal ②
- through front door switch LH terminal ②,
- through front door switch RH terminal ②,
- through rear door switch LH terminal ① or
- through rear door switch RH terminal ①.

#### Interior lamp timer operation by time control system

With front door switch LH set to CLOSED, ground is supplied
- to time control unit terminal ⑱
- through front door switch LH terminal ①
- to front door switch LH terminal ③
- through body grounds M101 and M165.

With interior lamp switch in DOOR and front door switch LH set to CLOSED, time control unit receives position signals. Ground is then supplied
- to interior lamp terminal ②
- through time control unit terminal ⑳.

Time control unit is grounded at terminal ⑳ to control interior lamp operation.

#### Interior lamp control by multi-remote control system

Multi-remote control system receives a signal to turn interior lamp on with interior lamp switch set to DOOR. Ground is then supplied
- to interior lamp terminal ②
- through multi-remote control unit terminal ⑰.

Multi-remote control unit is grounded at terminal ⑰ to turn interior lamp on.

### SPOT LAMP AND VANITY MIRROR LAMP

With a switch ON, power is supplied
- to spot lamp,
- to vanity mirror lamp LH and
- to vanity mirror lamp RH.

Ground is supplied
- to spot lamp terminal ②,
- to vanity mirror lamp LH terminal ② and
- to vanity mirror lamp RH terminal ②
- through body grounds M1 and M60.

With power and ground supplied, the lamp turns on.

## Interior, Spot and Trunk Room Lamps/System Description (Cont'd)

### TRUNK ROOM LAMP

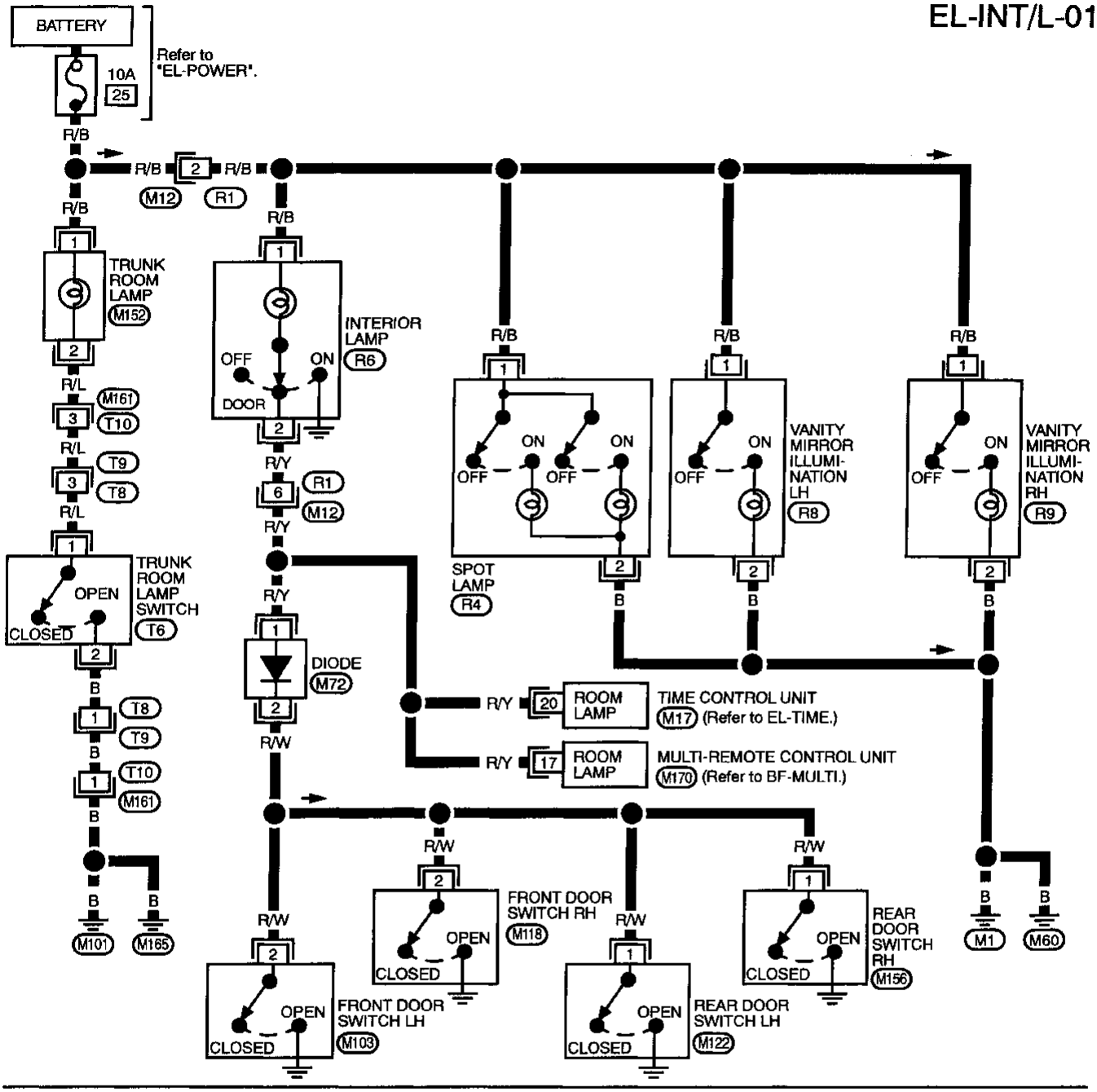
When trunk room lamp switch is in OPEN position, ground is supplied

- to trunk room lamp terminal ②
- through trunk room lamp switch terminal ①
- to trunk room lamp switch terminal ②
- through body grounds (M101) and (M165).

With power and ground supplied, trunk room lamp turns on.

## Interior, Spot and Trunk Room Lamps/Wiring Diagram — INT/L —

EL-INT/L-01




Refer to last page (Foldout page).
M5, E102

M12 W, M72, M103 B, M118 B, M122 BR, M156 BR, M161 W, T9 W

R4 W, R6 W, R8, R9, T6 B

MEL185D

## System Description

With the ignition switch in the ON or START position, power is supplied
- through 10A fuse (No. 21 , located in the fuse block)
- to combination meter terminal ⑰.

Ground is supplied
- to combination meter terminal ⑫ and
- terminal ⑲
- through body grounds (M1) and (M60).

The water temperature gauge indicates the engine coolant temperature. The reading on the gauge is based on the resistance of the thermal transmitter.
As the temperature of the coolant increases, the resistance of the thermal transmitter decreases. A variable ground is supplied to terminal ㉔ of the combination meter for the water temperature gauge. The needle on the gauge moves from "C" to "H".

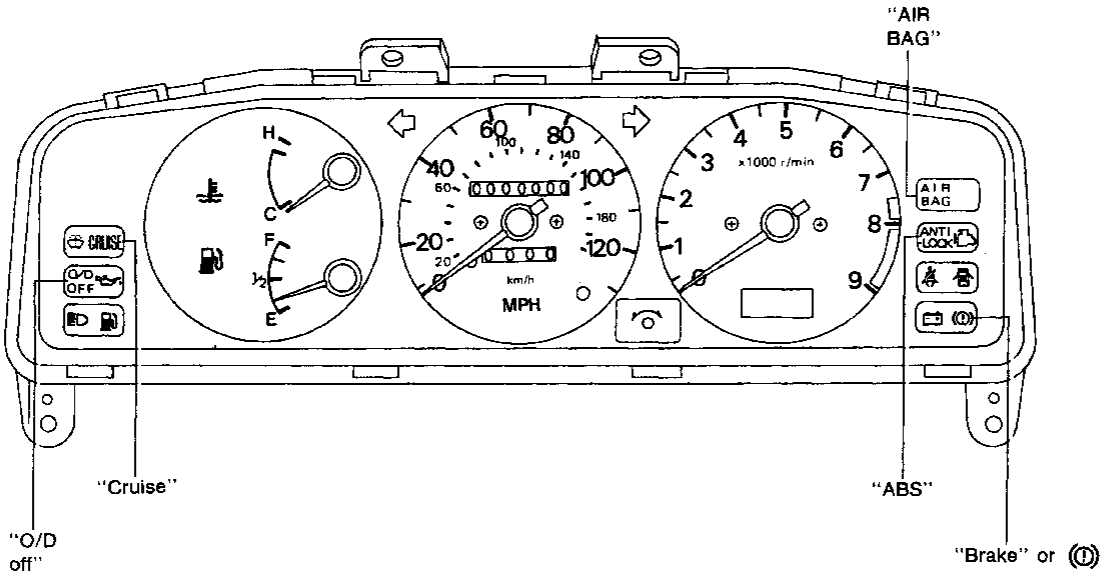
The tachometer indicates engine speed in revolutions per minute (rpm).
The tachometer is regulated by a signal
- from terminal ③ of the ECM (ECCS control module)
- to combination meter terminal ㉑ for the tachometer.

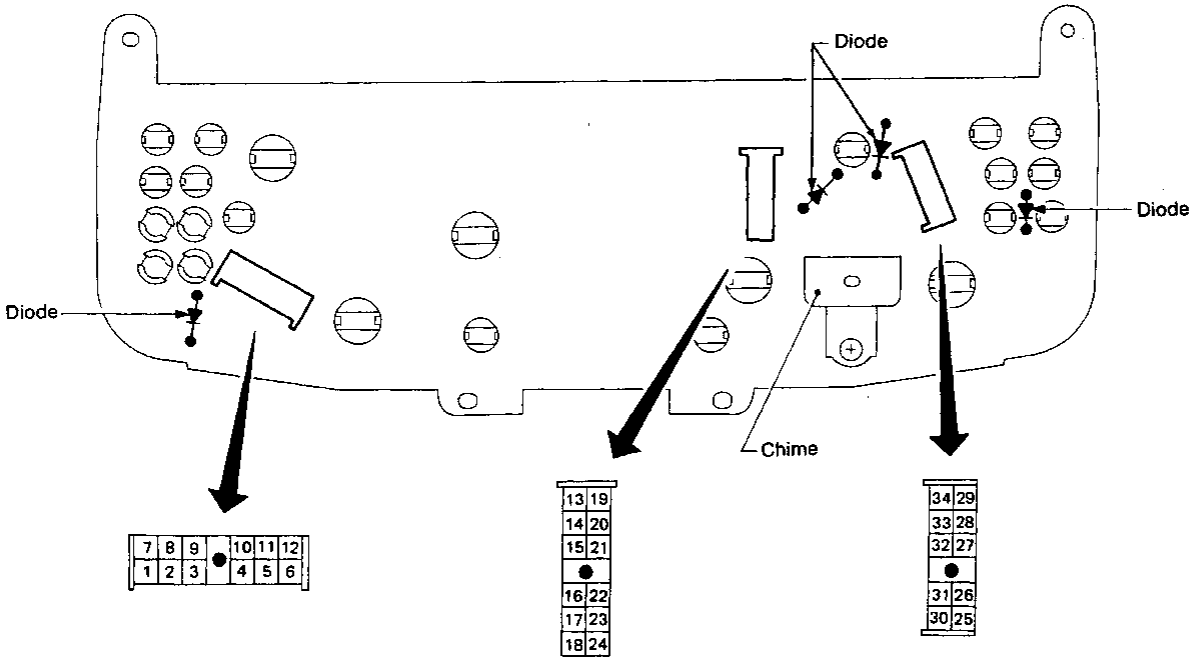
The fuel gauge indicates the approximate fuel level in the fuel tank.
The fuel gauge is regulated by a variable ground signal supplied
- to combination meter terminal ⑱ for the fuel gauge
- from terminal ① of the fuel tank gauge unit
- through terminal ③ of the fuel tank gauge unit and
- through body grounds (M101) and (M165).

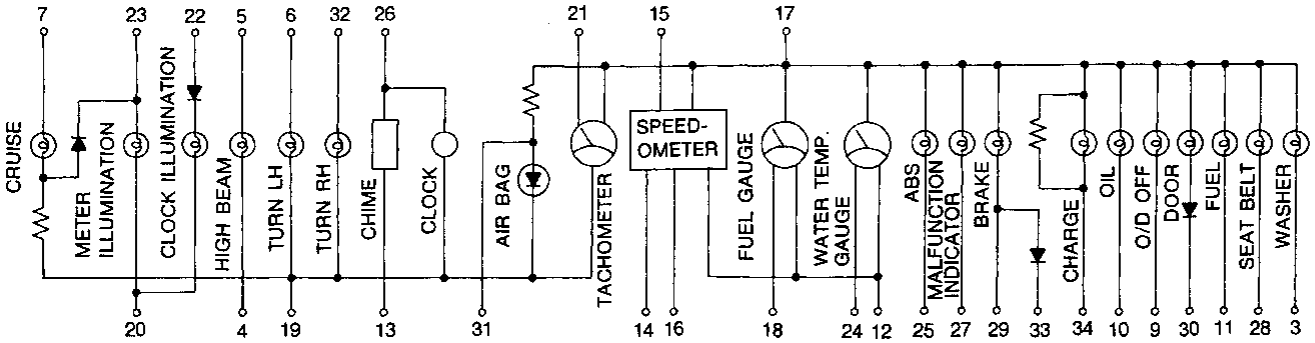
The vehicle speed sensor provides a voltage signal to the combination meter for the speedometer.
The voltage is supplied
- to combination meter terminals ⑭ and ⑯ for the speedometer
- from terminals ① and ② of the vehicle speed sensor.

The speedometer converts the voltage into the vehicle speed displayed.

## Combination Meter



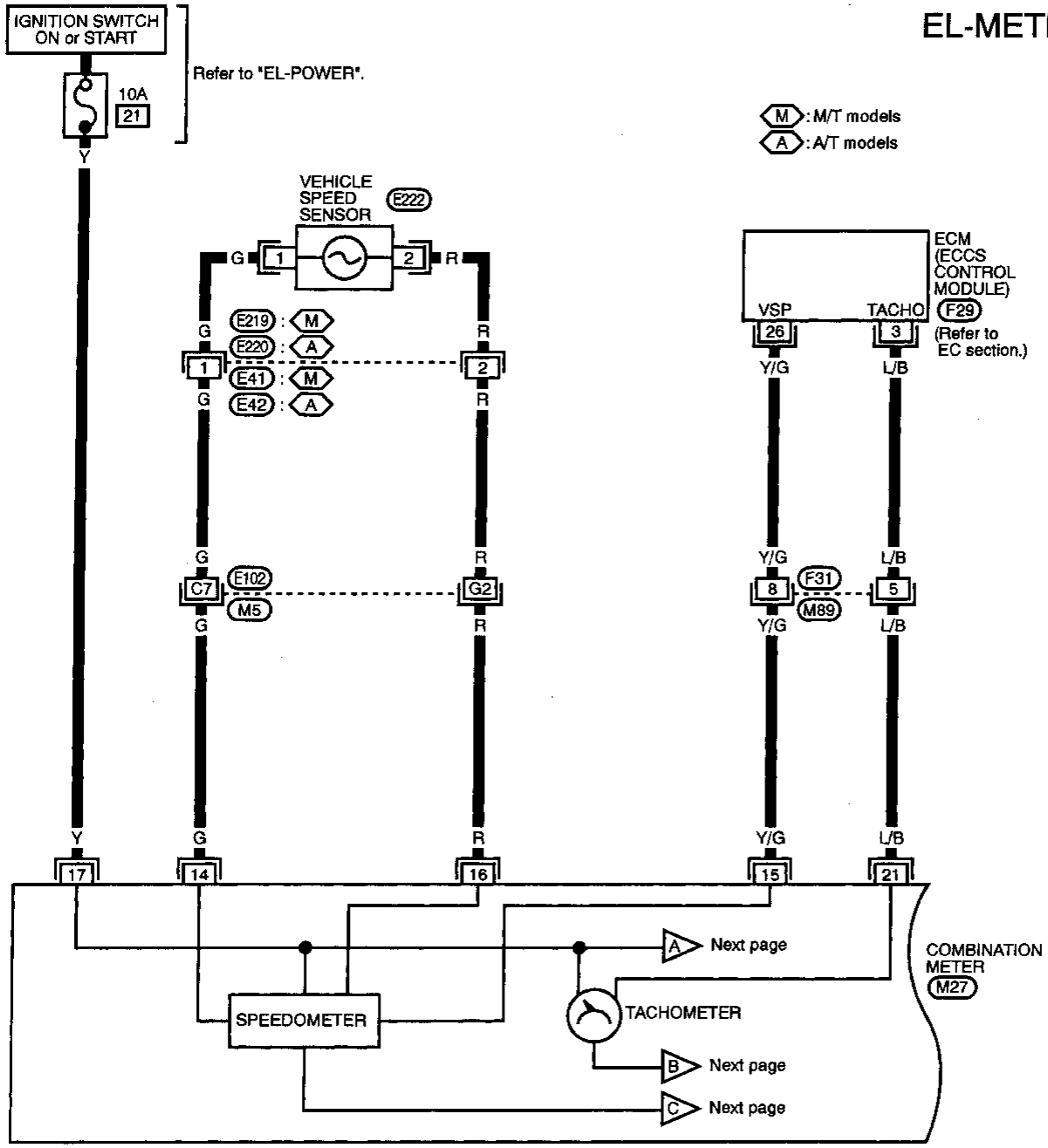



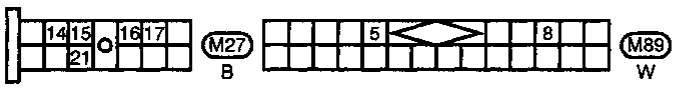

MEL194D

## Speedometer, Tachometer, Temp., Oil and Fuel Gauges/Wiring Diagram — METER —

EL-METER-01





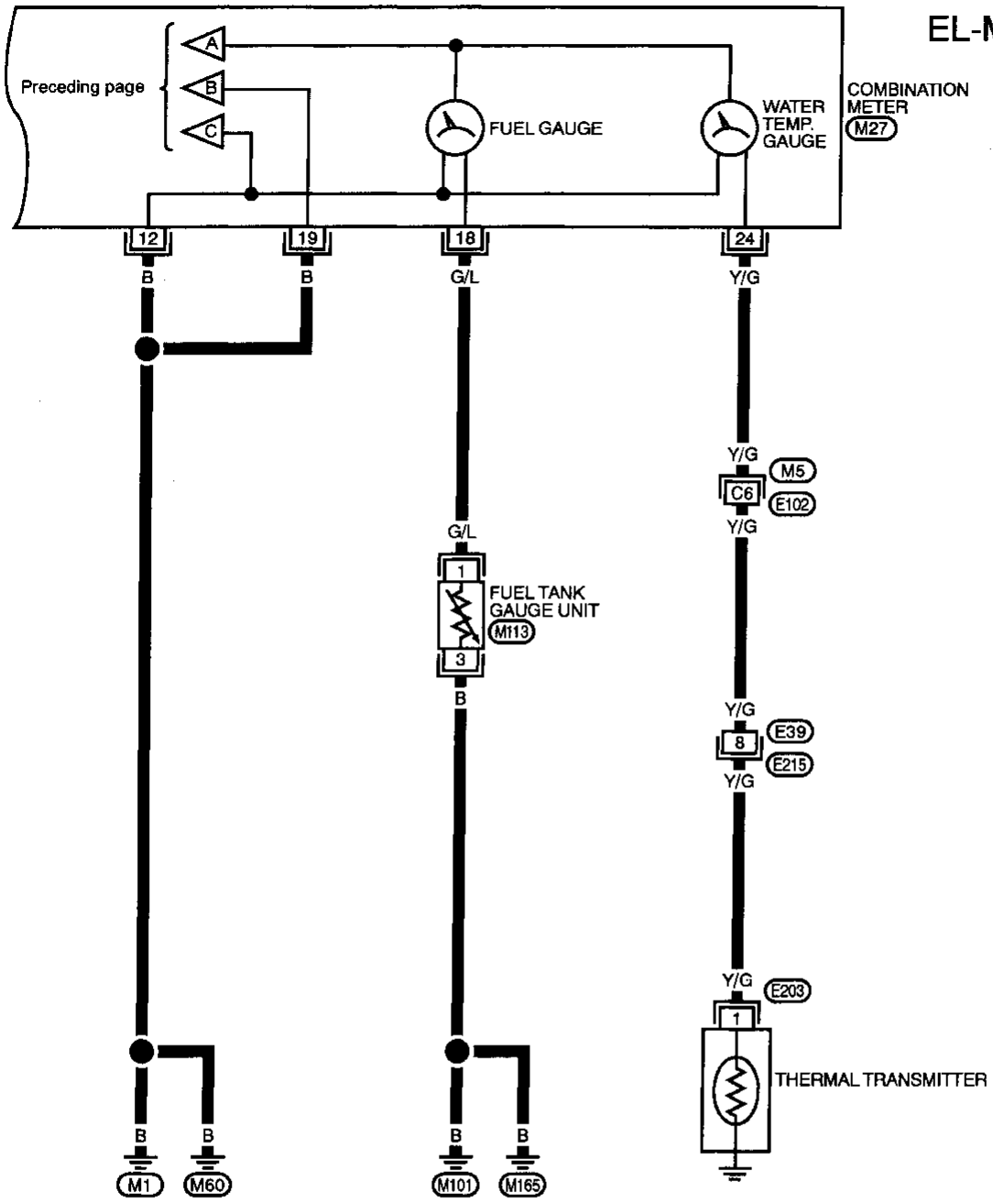


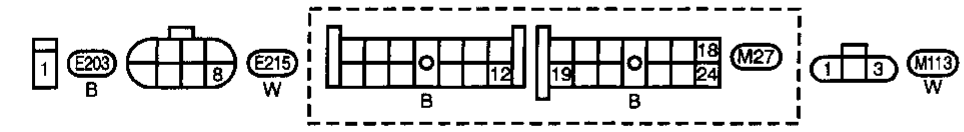

Refer to last page (Foldout page).
M5, E102
F29

MEL109D

## Speedometer, Tachometer, Temp., Oil and Fuel Gauges/Wiring Diagram — METER — (Cont'd)

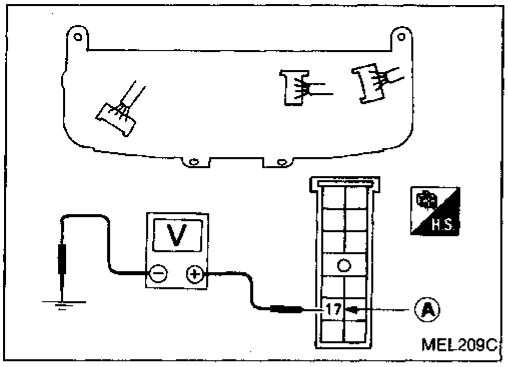
EL-METER-02

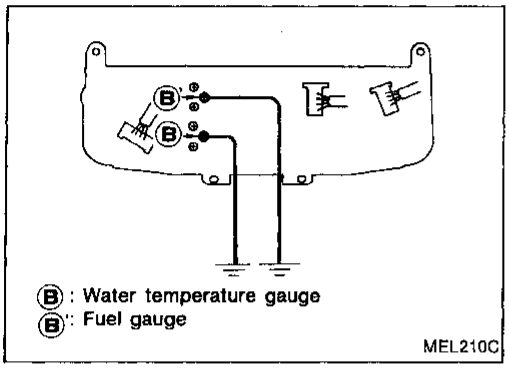


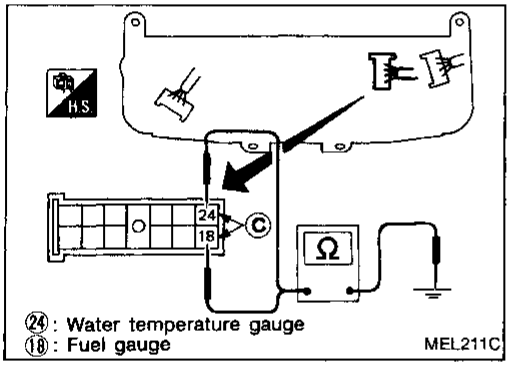




Refer to last page (Foldout page).
M5, E102

MEL110D




## Inspection/Fuel Gauge, Water Temperature Gauge and Oil Pressure Gauge

INSPECTION START

CHECK POWER SOURCE.
1) Turn ignition switch "ON".
2) Check voltage between terminal Ⓐ and ground.
**Battery voltage should exist.**

NG → Check the following items.
1) Harness continuity between battery terminal and combination meter
2) Ignition relay-1
3) Fusible link and fuse
4) Ignition switch

OK ↓

CHECK GAUGE OPERATION.
1) Turn ignition switch "ON".
2) Connect terminals Ⓑ (Temp), Ⓑ' (Fuel) and ground with wire for **less than 10 seconds.**
3) Check operation of gauge.
**Gauge should move smoothly to full scale.**

NG → Repair or replace gauge.

OK ↓

Check harness continuity between component and combination meter Ⓒ.

NG → Repair or replace.

OK ↓

CHECK COMPONENT.
Check gauge units and harness.
**Refer to "Fuel Tank Gauge Unit Check" (EL-72) and "Thermal Transmitter check" (EL-72).**

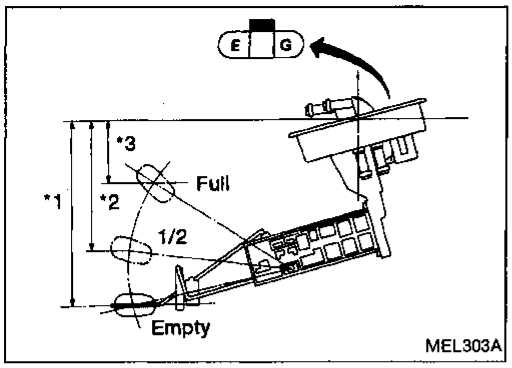
NG → Repair or replace.
**Refer to FE section. (Fuel tank gauge unit)**

OK ↓

Reinstall any part removed.

↓

INSPECTION END

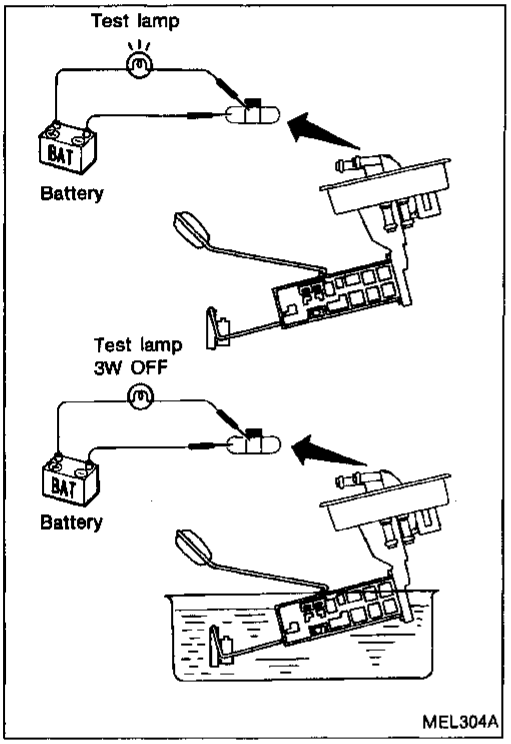



## Fuel Tank Gauge Unit Check

- For removal, refer to FE section.

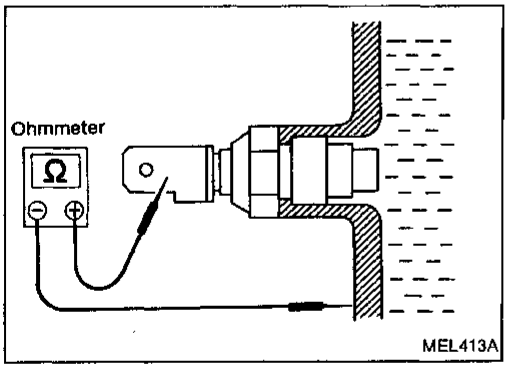
Check the resistance between terminals (G) and (E).

| Ohmmeter | | Float position mm (in) | | | Resistance value (Ω) |
|---|---|---|---|---|---|
| (+) | (−) | | | | |
| G | E | *3 | Full | 49 (1.93) | Approx. 4 - 6 |
| | | *2 | 1/2 | 106 (4.17) | 27 - 34 |
| | | *1 | Empty | 161 (6.34) | 73 - 85 |




## Fuel Warning Lamp Sensor Check

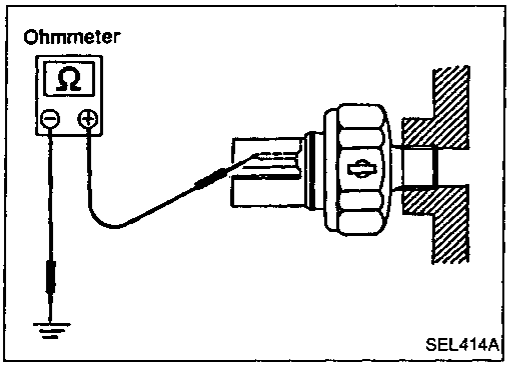
- It will take a short time for the bulb to light.




## Thermal Transmitter Check

Check the resistance between the terminals of thermal transmitter and body ground.

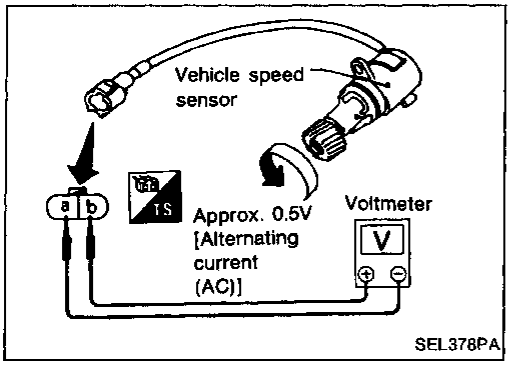
| Water temperature | Resistance |
|---|---|
| 65°C (149°F) | Approx. 60 - 75Ω |
| 91°C (196°F) | Approx. 21 - 24Ω |




## Oil Pressure Switch Check

Check the continuity between the terminals of oil pressure switch and body ground.

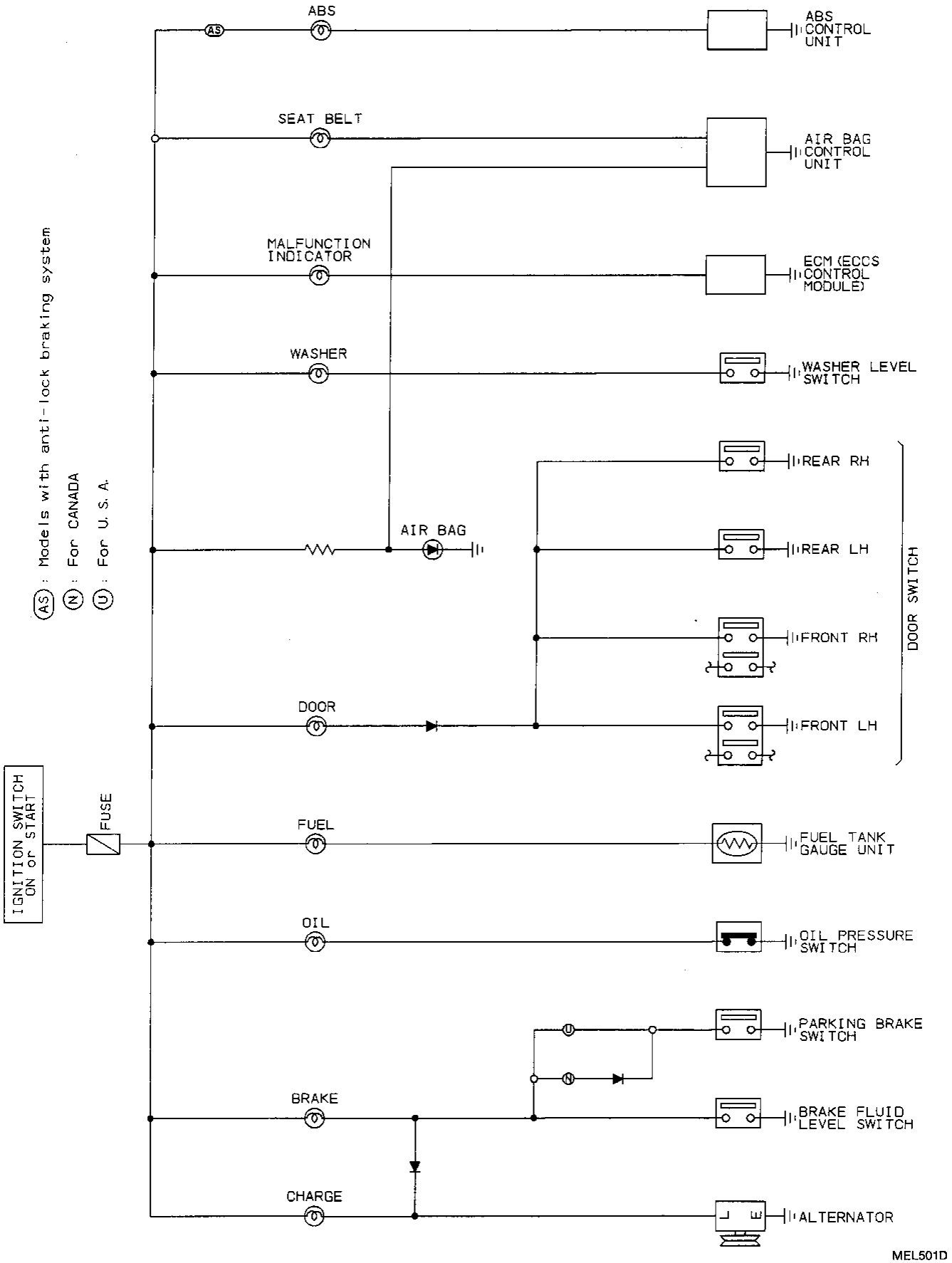
| | Oil pressure kPa (kg/cm$^2$, psi) | Continuity |
|---|---|---|
| Engine start | More than 10 - 20 (0.1 - 0.2, 1 - 3) | NO |
| Engine stop | Less than 10 - 20 (0.1 - 0.2, 1 - 3) | YES |




## Vehicle Speed Sensor Signal Check

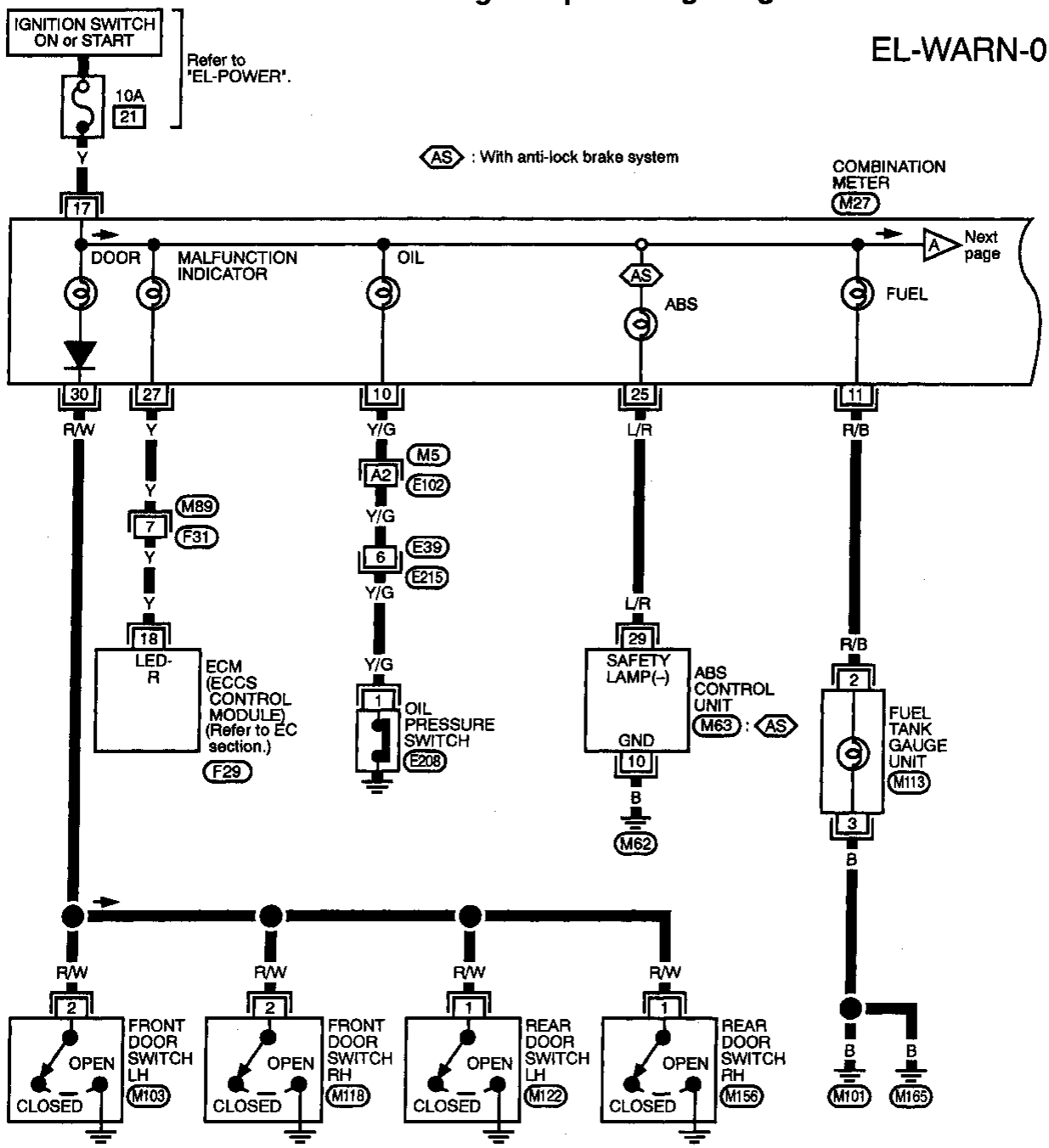
1. Remove vehicle speed sensor from transaxle.
2. Turn vehicle speed sensor pinion quickly and measure voltage across ⓐ and ⓑ.

## Warning Lamps/Schematic

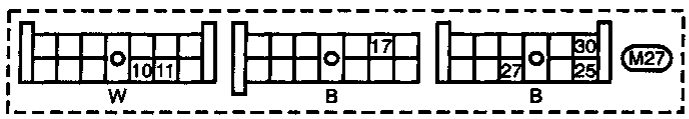


## Warning Lamps/Wiring Diagram — WARN —

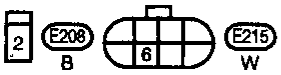
EL-WARN-01




Refer to last page (Foldout page).
M5, E102
M63
F29



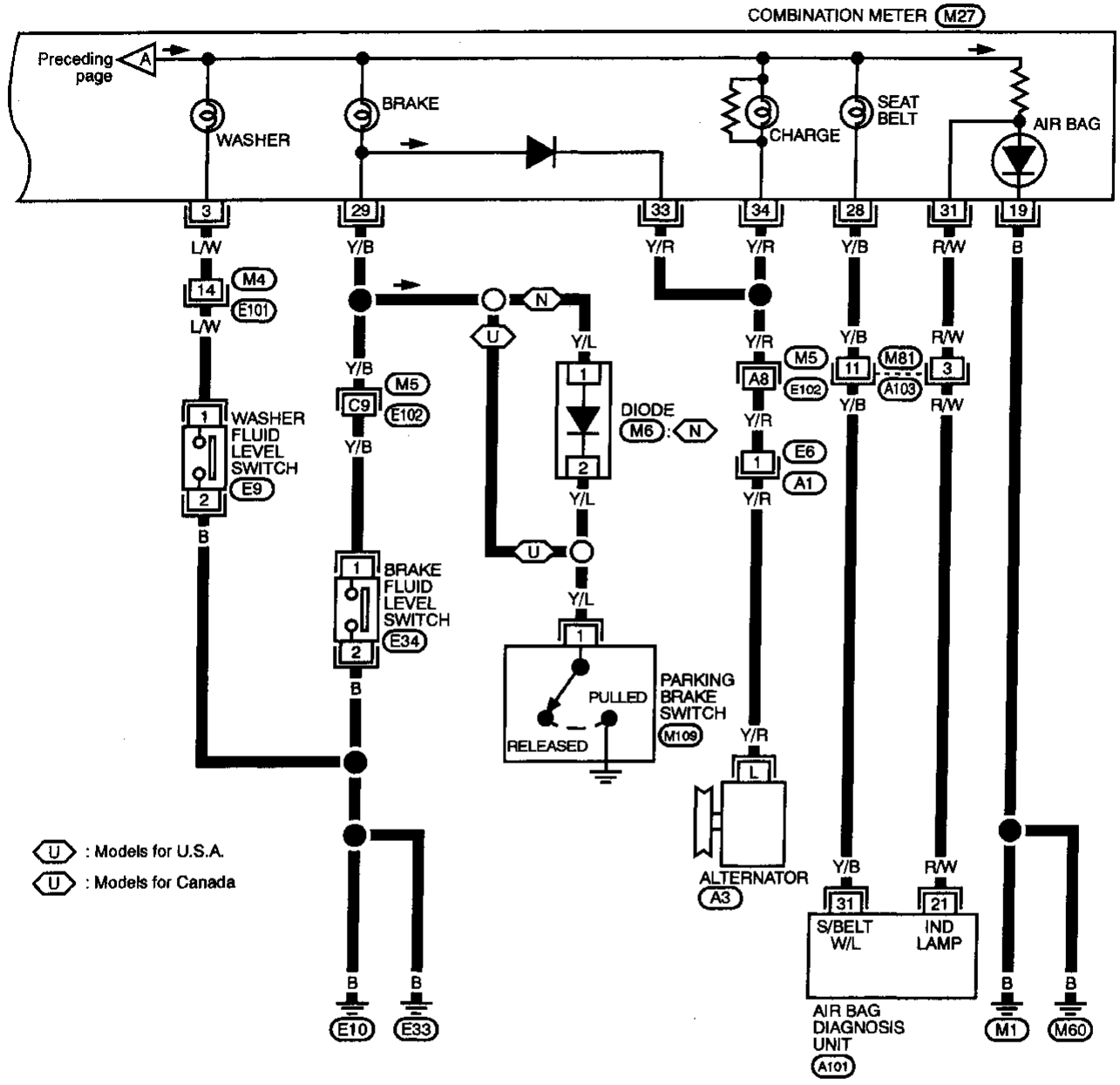


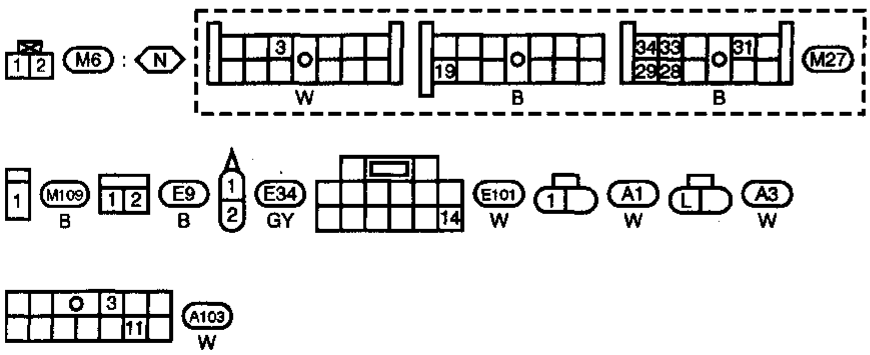



MEL186D

## Warning Lamps/Wiring Diagram — WARN — (Cont'd)

EL-WARN-02




Refer to last page (Foldout page).
M5, E102
A101

MEL187D

## Warning Chime/System Description

The warning chime is a part of the combination meter and is controlled by the Time Control System.
Power is supplied at all times
- through 10A fuse (No. 25 , located in the fuse block)
- to time control unit terminal ⑨, and
- key switch terminal ①.

Power is supplied at all times
- through 10A fuse (No. 19 , located in the fuse block)
- to lighting switch terminal ①, and
- combination meter terminal ㉖.

With the ignition switch in the ON or START position, power is supplied
- through 10A fuse (No. 26 located in the fuse block)
- to time control unit terminal ⑤.

With the ignition switch in the ON or START position, power is supplied
- through 10A fuse (No. 21 located in the fuse block)
- to seat belt relay terminal ①.

Ground is supplied to time control unit terminal ⑮ through body grounds (M1) and (M60).
When a signal, or combination of signals, is received by the time control unit, ground is supplied
- through time control unit terminal ⑲ and
- through seat belt relay terminal ③
- to combination meter terminal ⑬.

With power and ground supplied, the warning chime will sound.

**Ignition key warning chime**

With the key in the ignition switch in the OFF position, and the driver's door open, the warning chime will sound. A battery positive voltage is supplied
- from key switch terminal ②
- to time control unit terminal ⑩.

Ground is supplied
- from front door switch LH terminal ①
- to time control unit terminal ⑱.

Front door switch LH terminal ③ is grounded through body grounds (M101) and (M165).

**Light warning chime**

With the ignition switch in the OFF position, the driver's door open, and the lighting switch in the 1ST or 2ND position, the warning chime will sound. A battery positive voltage is supplied
- from lighting switch terminal ⑫
- to time control unit terminal ⑥ and
- from key switch terminal ②
- to time control unit terminal ⑩

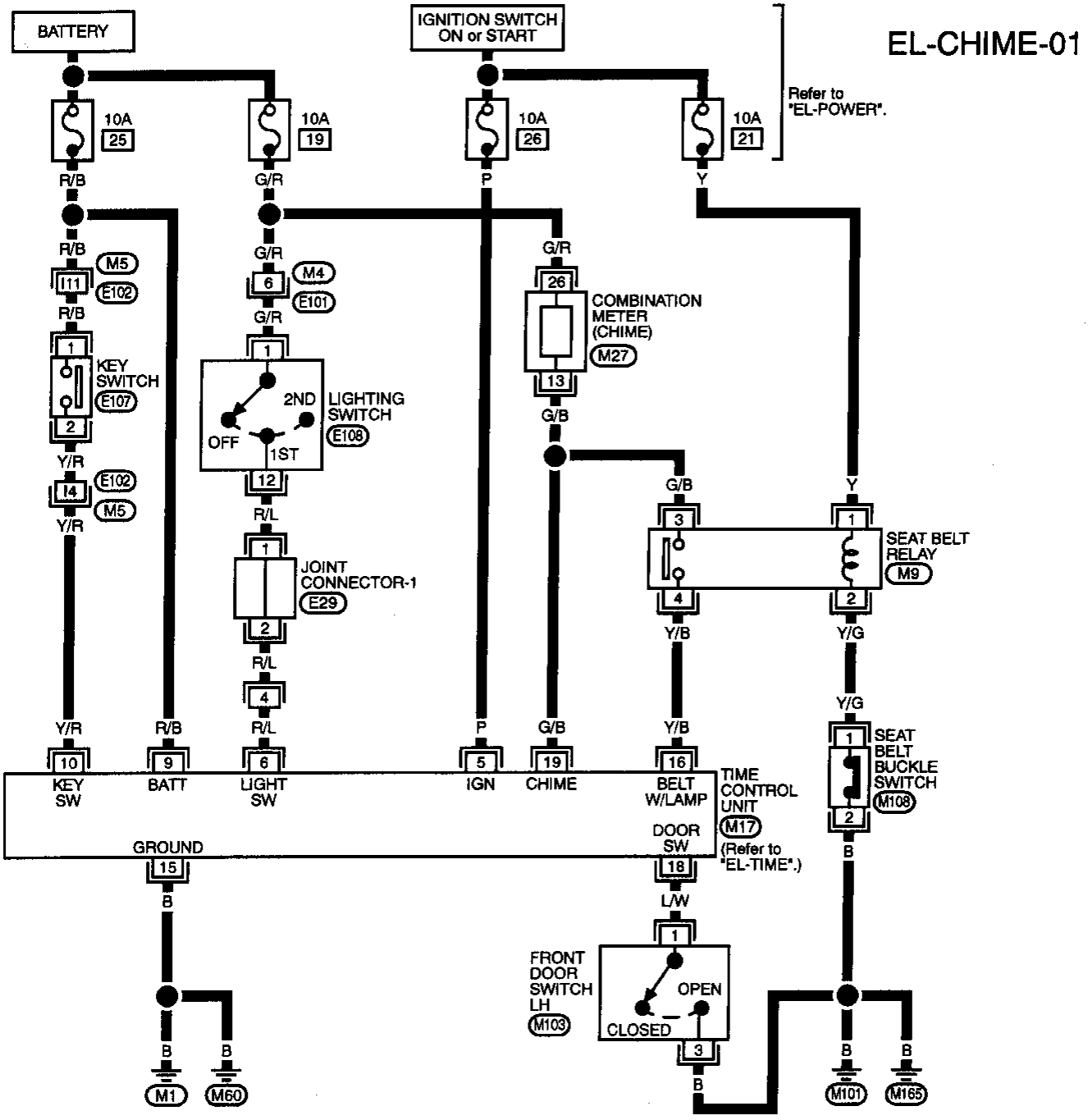
Ground is supplied
- from front door switch LH terminal ①
- to time control unit terminal ⑱.

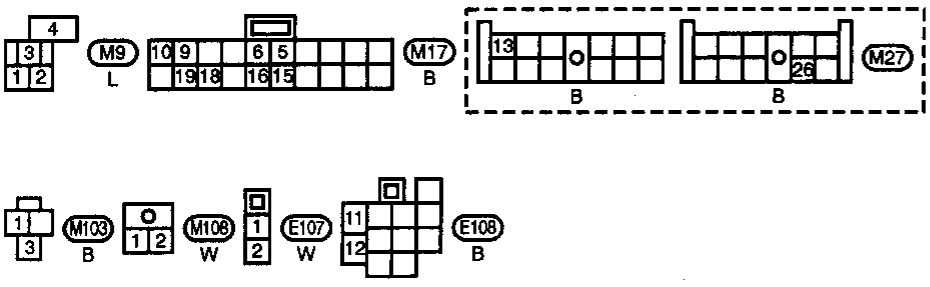
**Seat belt warning chime**

This warning chime sounds for approximately 7 seconds
- when ignition switch is turned from OFF to ON and seat belt is unfastened (seat belt switch ON).

The warning chime sounds until seat belt buckle switch is turned OFF (seat belt tongue is inserted into buckle).
Ground is supplied to seat belt relay terminal ② when the seat belt is unfastened through the seat belt buckle switch and body grounds (M101) and (M165).
The seat belt relay is energized and ground is supplied
- through time control unit terminal ⑯
- to seat belt relay terminal ④

## Warning Chime/Wiring Diagram — CHIME —



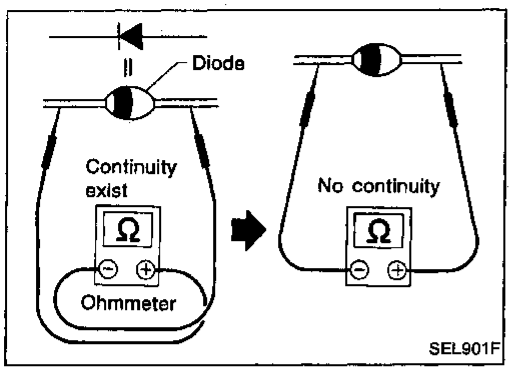







Refer to last page (Foldout page).
M5, E102
E29

MEL188D



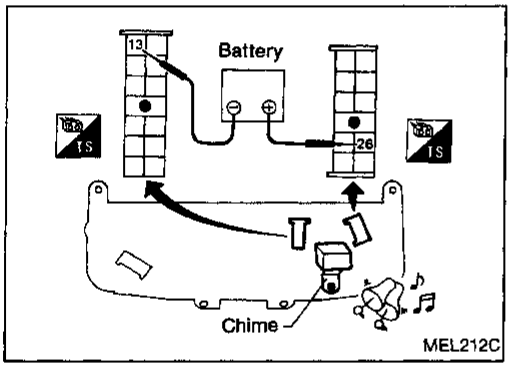

## Diode Check

- Check continuity using an ohmmeter.
- Diode is functioning properly if test results are as shown in the figure at left.

**NOTE: Specification may vary depending on the type of tester. Before performing this inspection, be sure to refer to the instruction manual for the tester to be used.**

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

**Refer to "Combination Meter" (EL-68).**




## Warning Chime Check

## System Description

Power is supplied at all times
- to time control unit terminal ⑨
- through 10A fuse (No. 25 , located in the fuse block).

With the ignition switch in the ACC or ON position, power is supplied
- to time control unit terminal ②
- through 10A fuse (No. 10 , located in the fuse block).

With the ignition switch in the ON or START position, power is supplied
- to time control unit terminal ⑤
- through 10A fuse (No. 26 , located in the fuse block).

Terminal ⑮ of the time control unit is grounded through body grounds (M1) and (M60).
The time control system controls operation of the
- rear window and door mirror defogger,
- warning chime
- front wiper and washer and
- interior lamp.

**Rear Window and Door Mirror Defogger**

The time control unit will operate the rear window and door mirror defogger for 15 minutes as long as the rear window defogger switch is in the ON position. For detailed description, refer to "REAR WINDOW DEFOGGER" (EL-103).

**Warning Chime**

The time control system will operate the warning chime located on the combination meter under the following conditions:
- key in ignition, ignition switch in OFF position, and driver's door open.
- ignition switch in the OFF position, driver's door open, and lighting switch in the 1ST or 2ND position.
- ignition switch turned from the OFF position to the ON position, and the seat belt unfastened.

For detailed description, refer to "WARNING LAMPS AND CHIME" (EL-74).

**Front Wiper and Washer**

The time control system controls operation of the intermittent feature for the front wiper. It also controls wiper motor for the washer operation.
For detailed description, refer to "FRONT WIPER AND WASHER" (EL-97).

**Interior lamp**

Time control unit starts to dim interior lamp and turns it off within approximately 10 seconds when
- interior lamp switch is set to DOOR and front door switch LH to CLOSED.

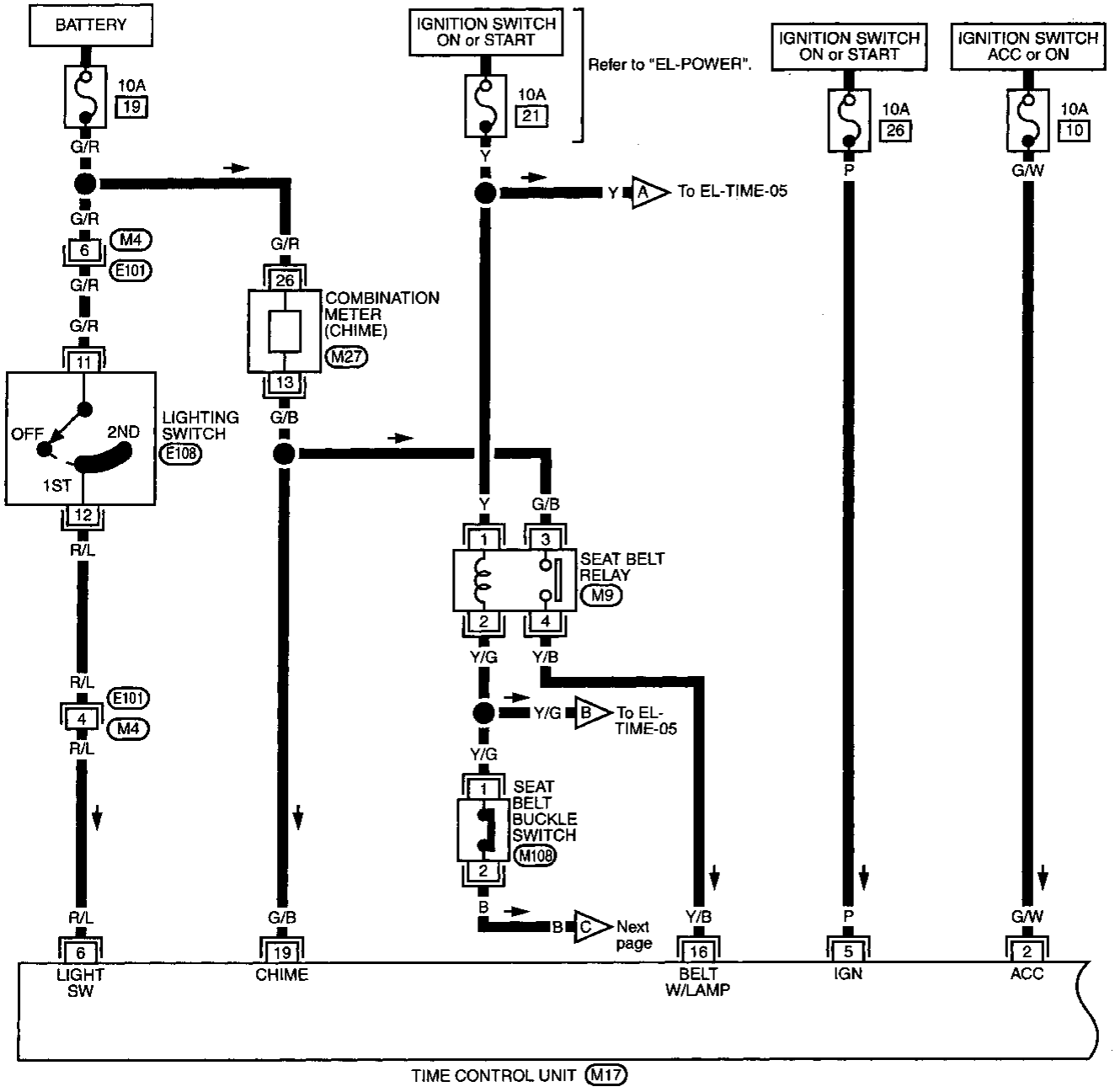
### FUNCTION

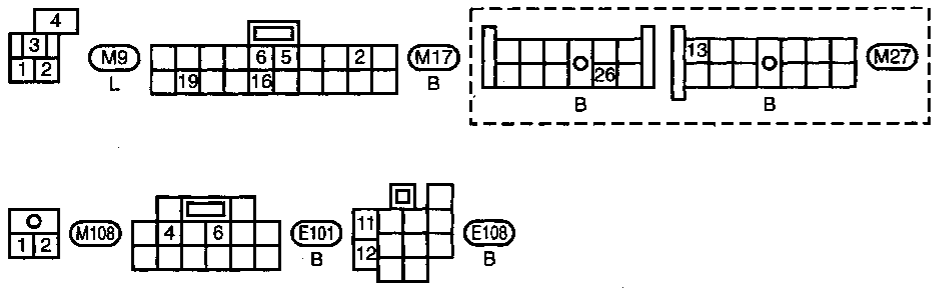
- Time control unit has the following functions.

| Item | Details of control |
|---|---|
| Intermittent wiper control | Regulates intermittent time from approximately 1 to 20 seconds depending on the intermittent wiper volume setting. |
| Washer and wiper combination control | Wiper is operated in conjunction with washer switch. |
| Light warning chime timer | When driver's door is opened with light switch ON and ignition switch OFF, warning chime sounds. |
| Ignition key warning chime timer | When driver's door is opened with ignition switch OFF, warning chime sounds. |
| Seat belt warning chime timer | Sounds warning chime if ignition switch is turned "ON" when seat belt switch is "ON" (seat belt is unfastened). Warning chime sounds for about 7 seconds. |
| Rear defogger timer | Rear defogger operates for about 15 minutes when defogger switch is ON. |
| Interior lamp timer | Fades out interior lamp when driver's side door is opened and closed. |

## Wiring Diagram — TIME —

EL-TIME-01



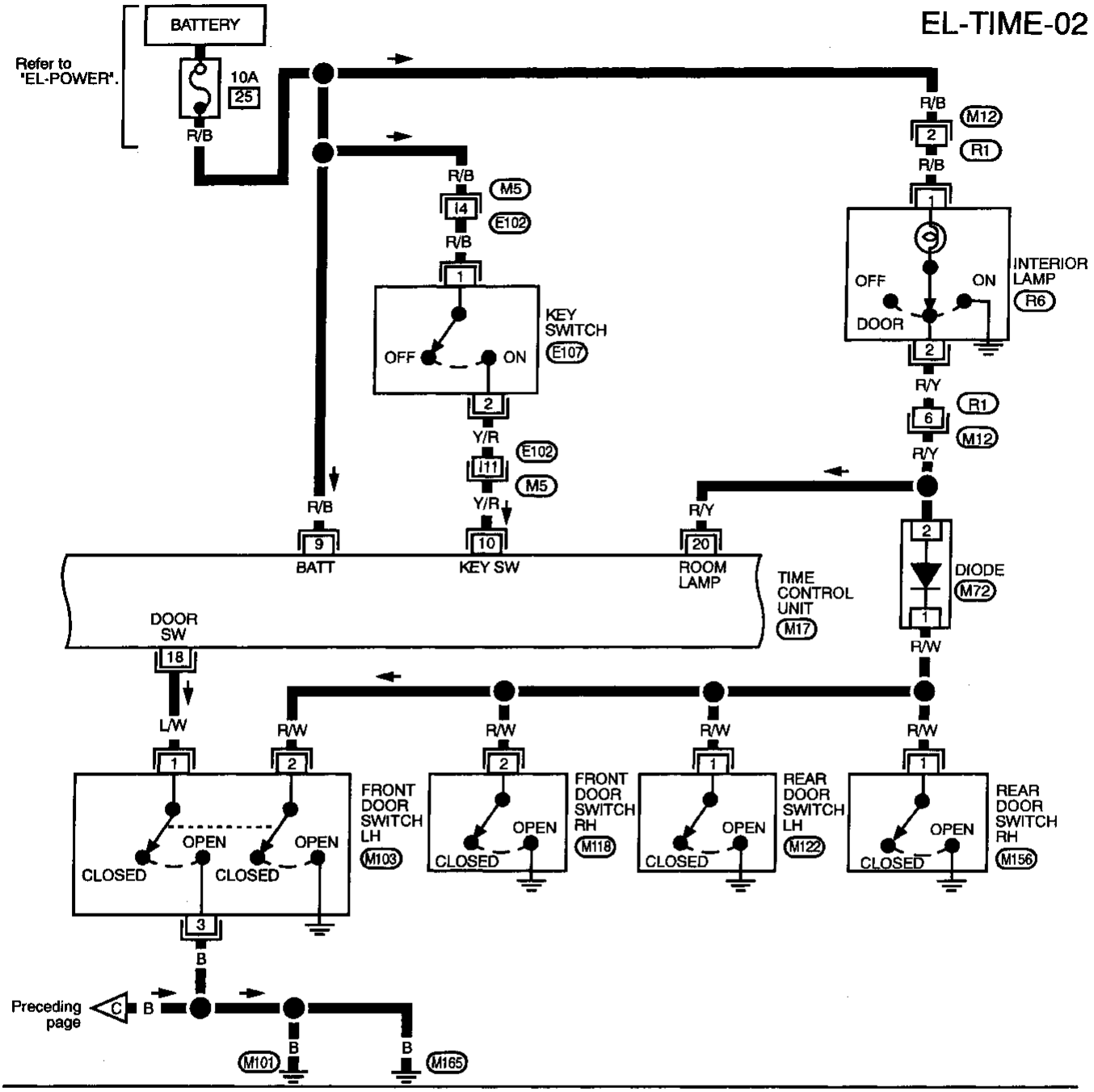





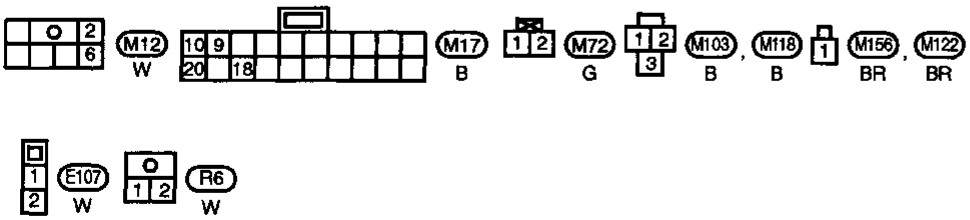


MEL111D

## Wiring Diagram — TIME — (Cont'd)



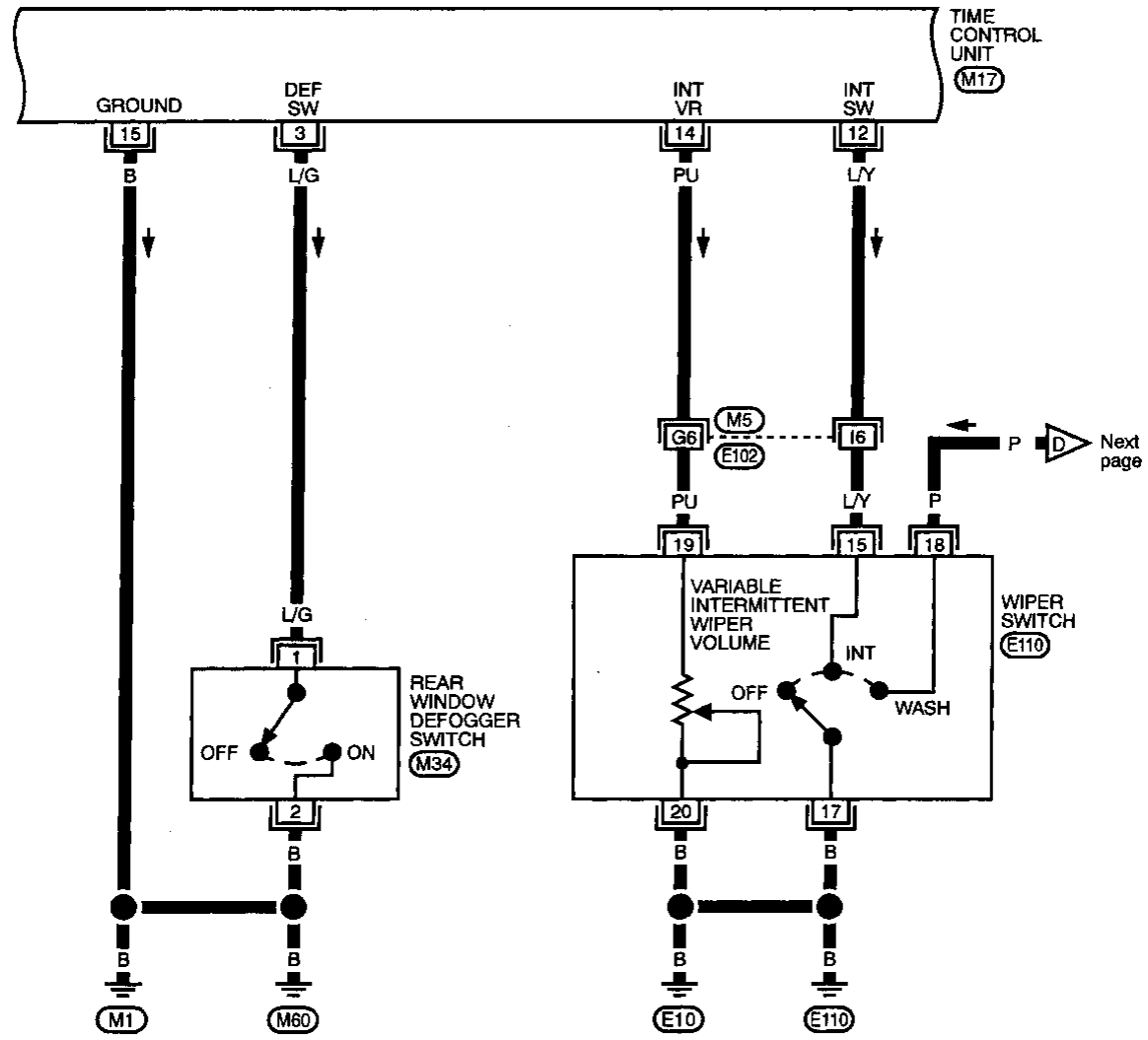

Refer to last page (Foldout page).
M5, E102

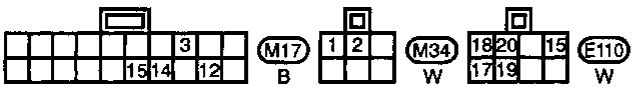



MEL112D

## Wiring Diagram — TIME — (Cont'd)

EL-TIME-03



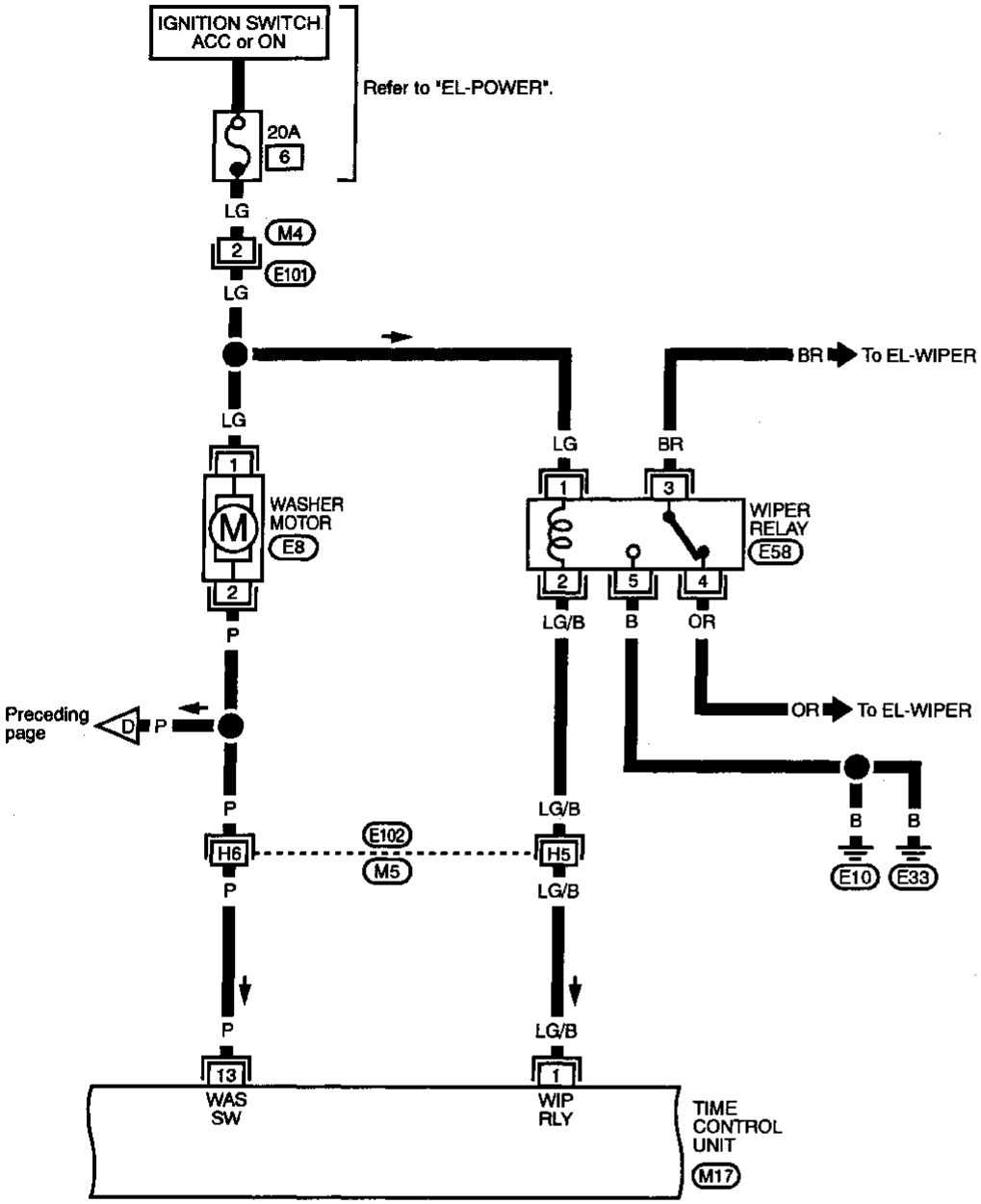



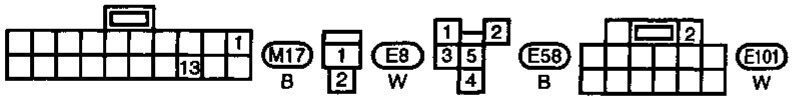

Refer to last page (Foldout page).
M5, E102

MEL113D

## Wiring Diagram — TIME — (Cont'd)

EL-TIME-04



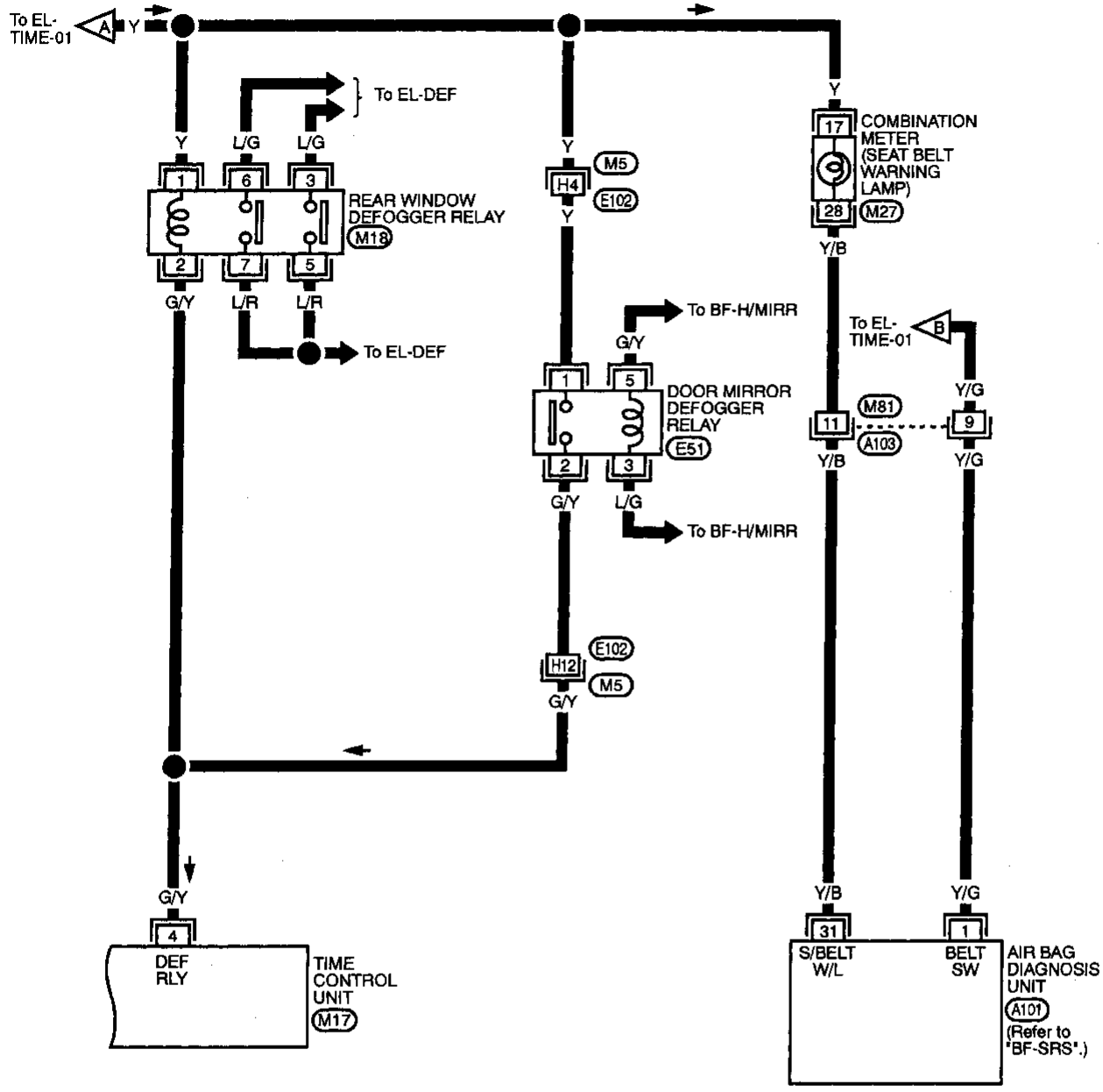




Refer to last page (Foldout page).
M5, E102

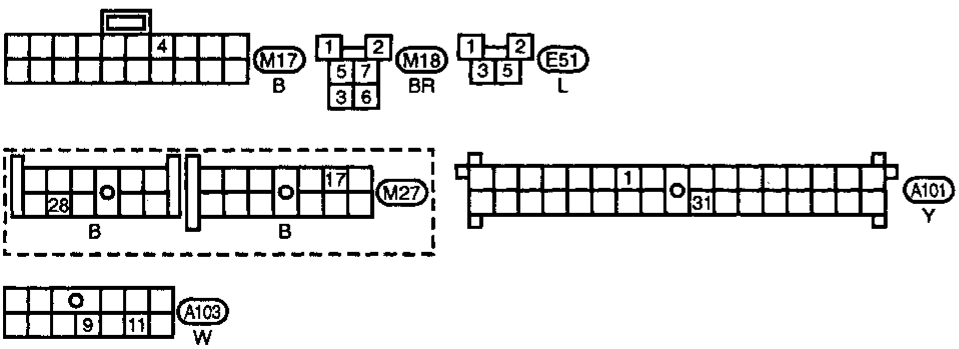
MEL114D

## Wiring Diagram — TIME — (Cont'd)

EL-TIME-05




Refer to last page (Foldout page).
M5 , E102




MEL115D

# Trouble Diagnoses

## SYMPTOM CHART

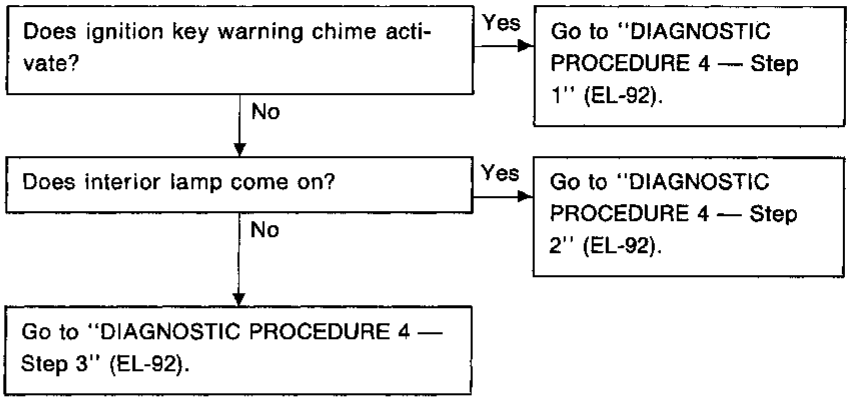
| PROCEDURE | | Preliminary Check | | | Main Power Supply and Ground Circuit Check | Diagnostic Procedure | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REFERENCE PAGE | | EL-87 | EL-87 | EL-87 | EL-88 | EL-90 | EL-91 | EL-91 | EL-92 | EL-93 | EL-94 | EL-95 | EL-96 |
| SYMPTOM | | Procedure 1 | Procedure 2 | Procedure 3 | Main power supply and Ground circuit | Diagnostic Procedure 1 | Diagnostic Procedure 2 | Diagnostic Procedure 3 | Diagnostic Procedure 4 | Diagnostic Procedure 5 | Diagnostic Procedure 6 | Diagnostic Procedure 7 | Diagnostic Procedure 8 |
| Wiper & washer | Intermittent wiper does not operate. | | | | ○ | ○ | | | | | | | |
| | Intermittent time of wiper cannot be adjusted. | | | | | | ○ | | | | | | |
| | Wiper and washer activate individually but not in combination. | | | | | | | ○ | | | | | |
| Warning | Light warning chime does not activate. | ○ | | | ○ | | | | ○ | | | | |
| | Ignition key warning chime does not activate. | | ○ | | ○ | | | | | ○ | | | |
| | Seat belt warning chime does not activate. | | | ○ | ○ | | | | | | ○ | | |
| Rear defogger | Rear defogger does not activate, or go off after activating. | | | | ○ | | | | | | | ○ | |
| Illumination | Interior lamp does not fade out after driver's door is closed. | | | | ○ | | | | | | | | ○ |

## Trouble Diagnoses (Cont'd)

### PRELIMINARY CHECK

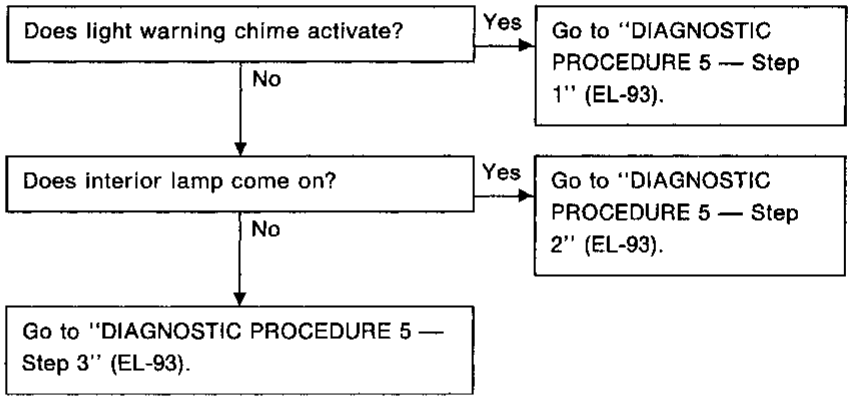
#### Preliminary check 1

- **Light warning chime does not activate.**



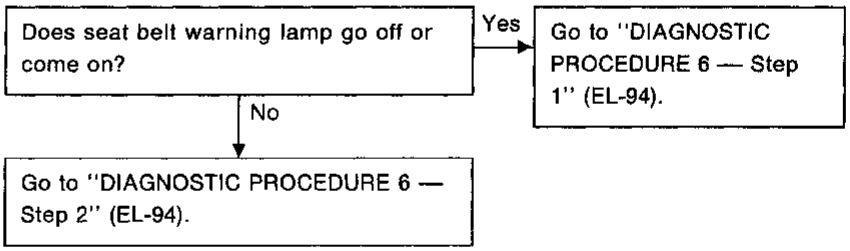

#### Preliminary check 2

- **Ignition key warning chime does not activate.**



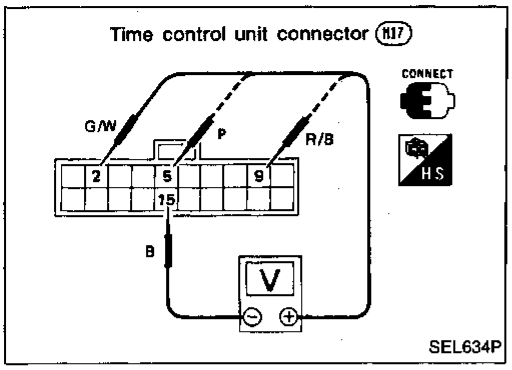

#### Preliminary check 3

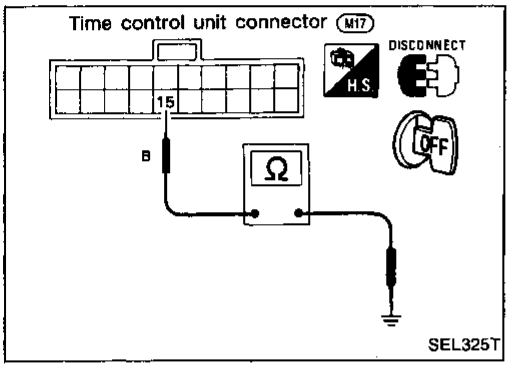
- **Seat belt warning chime does not activate.**



## Trouble Diagnoses (Cont'd)

### MAIN POWER SUPPLY AND GROUND CIRCUIT CHECK




### Main power supply

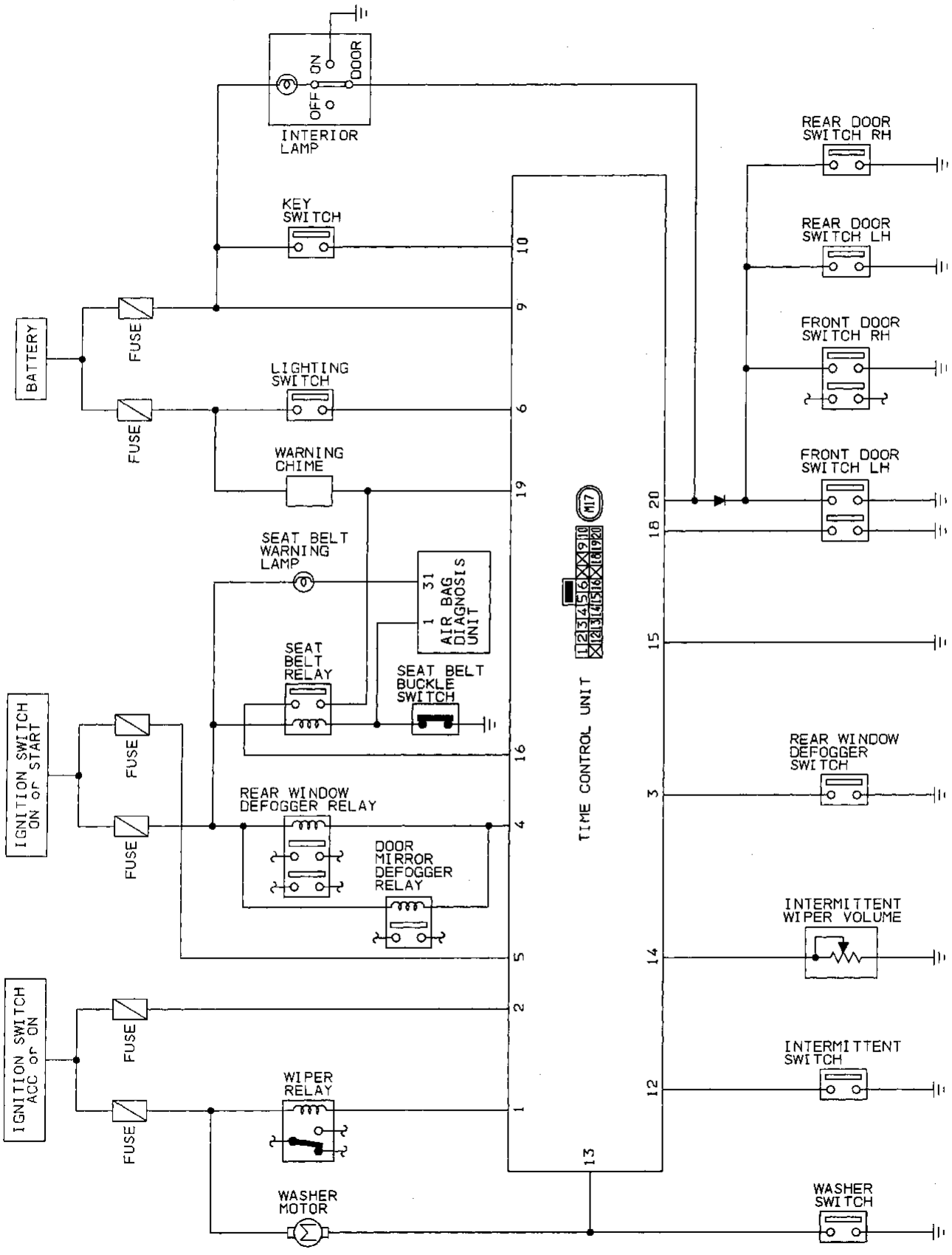
| Terminals | Battery voltage existence condition | | |
|---|---|---|---|
| | Ignition switch position | | |
| | OFF | ACC | ON |
| ⑨ - ⑮ | Yes | Yes | Yes |
| ⑤ - ⑮ | No | No | Yes |
| ② - ⑮ | No | Yes | Yes |

### Ground circuit

| Terminals | Continuity |
|---|---|
| ⑮ - Ground | Yes |

## Trouble Diagnoses (Cont'd)

### CIRCUIT DIAGRAM FOR QUICK PINPOINT CHECK




MEL131D

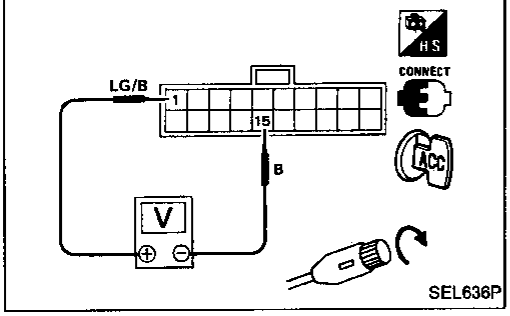
## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 1

**SYMPTOM: Intermittent wiper does not operate.**

A

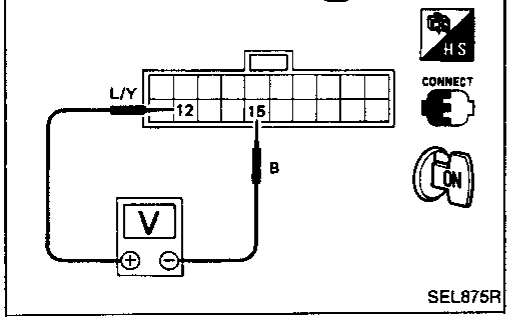
Time control unit connector (M17)




SEL636P

B

Time control unit connector (M17)




SEL875R

A

WIPER RELAY OUTPUT SIGNAL CHECK

1) Turn ignition switch to "ACC".
2) Turn wiper switch to "INT" or "OFF".
3) Measure voltage between control unit harness terminals ① and ⑮.

| Condition of wiper switch | Voltage [V] |
|---|---|
| OFF | Approx. 12 |
| INT | Pointer swings from 0 to 12 every 3 to 23 seconds. |

OK → Check wiper relay. Refer to "WIPER AND WASHER" (EL-97).

OK → Check wiper relay circuit.

NG → Replace wiper relay.

NG ↓

B

INTERMITTENT SWITCH INPUT SIGNAL CHECK

Measure voltage between control unit harness terminals ⑫ and ⑮.

| Condition of wiper switch | Voltage [V] |
|---|---|
| OFF | Approx. 12 |
| INT | 0 |

NG → Check wiper switch. Check harness continuity between TCU and wiper switch.

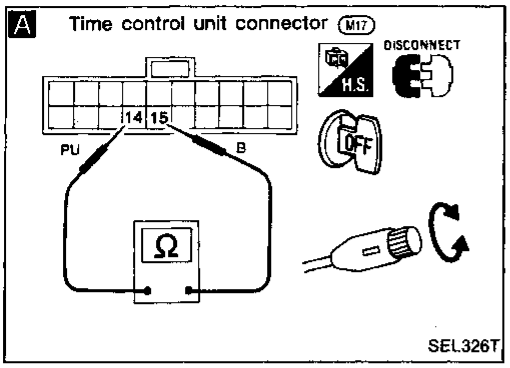
OK ↓

Replace control unit.

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 2

**SYMPTOM: Intermittent time of wiper cannot be adjusted.**




A

INTERMITTENT WIPER VOLUME INPUT SIGNAL CHECK
Measure resistance between control unit harness terminals ⑭ and ⑮ while turning intermittent wiper volume.

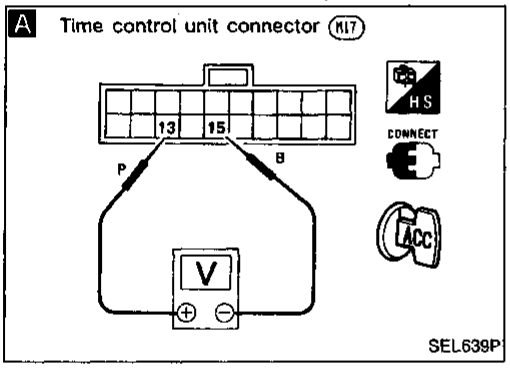
| Position of wiper knob | Resistance [Ω] |
|---|---|
| S | 0 |
| L | Approx. 1 k |

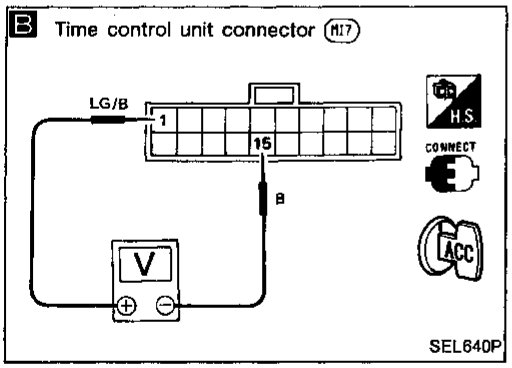
OK → Replace control unit.

NG → Check intermittent wiper volume. Check harness continuity between TCU and wiper switch.

### DIAGNOSTIC PROCEDURE 3

**SYMPTOM: Wiper and washer activate individually but not in combination.**




A

WASHER SWITCH INPUT SIGNAL CHECK
1) Turn ignition switch to "ACC".
2) Measure voltage between control unit harness terminals ⑬ and ⑮.

| Condition of washer switch | Voltage [V] |
|---|---|
| OFF | Approx. 12 |
| ON | 0 |

NG → Check harness continuity between TCU and washer switch.

OK

B

WIPER RELAY OUTPUT SIGNAL CHECK
Measure voltage between control unit harness terminals ① and ⑮ after operating washer switch.
**0V for approx. 3 seconds after washer has operated.**

NG → Replace control unit.

OK → Replace wiper relay.

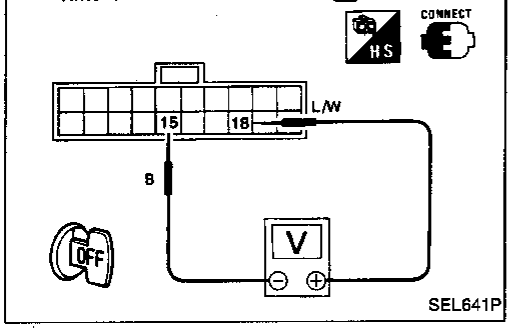
## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 4

**SYMPTOM: Light warning chime does not activate.**

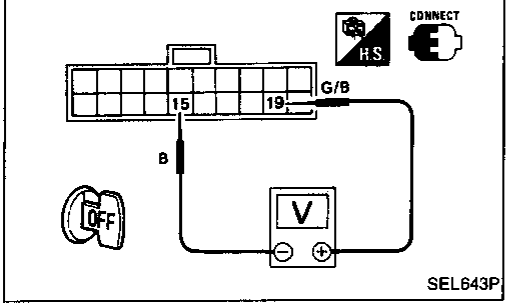
- Perform "PRELIMINARY CHECK — Procedure 1" before referring to the following flow chart.

A Time control unit connector (M17)



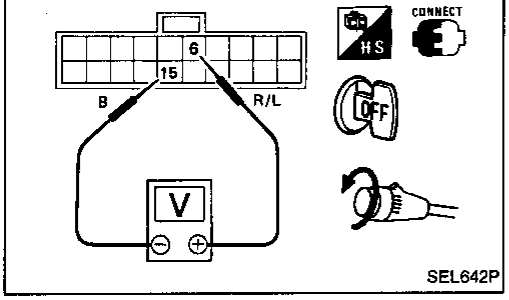

SEL641P

B Time control unit connector (M17)




SEL643P

C Time control unit connector (M17)




SEL642P

A

Step 3

DOOR SWITCH INPUT SIGNAL CHECK
Measure voltage between control unit harness terminals ⑱ and ⑮.

| Condition of driver's door | Voltage [V] |
|---|---|
| Closed | Approx. 12 |
| Open | 0 |

NG → Check door switch. Check harness continuity between TCU and door switch.

OK ↓

B

Step 2

CHIME OUTPUT SIGNAL CHECK
Measure voltage between control unit harness terminals ⑲ and ⑮.

| Condition | Voltage [V] |
|---|---|
| Light switch ON | Approx. 12 |
| Light switch OFF | 0 |

OK → Check chime. Check harness continuity between TCU and chime.

NG ↓

C

Step 1

LIGHT SWITCH INPUT SIGNAL CHECK
Measure voltage between control unit harness terminals ⑥ and ⑮.

| Condition of driver's door | Voltage [V] |
|---|---|
| Closed | Approx. 12 |
| Open | Pointer deflects intermittently. |

NG → Check light switch. Check harness continuity between TCU and light switch.

OK ↓

Replace control unit.

## Trouble Diagnoses (Cont'd)

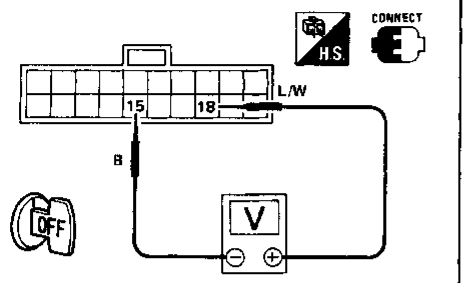
### DIAGNOSTIC PROCEDURE 5

**SYMPTOM: Ignition key warning chime does not activate.**

- Perform "PRELIMINARY CHECK — Procedure 2" before referring to the following flow chart.

A

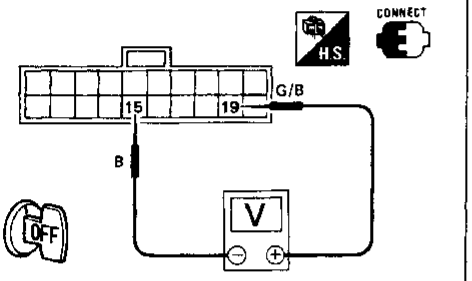
Time control unit connector (M17)




SEL644P

B

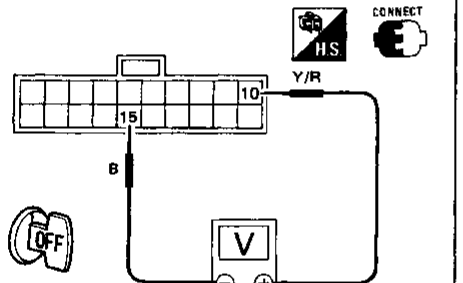
Time control unit connector (M17)




SEL646P

C

Time control unit connector (M17)




SEL645P

A

Step 3

DOOR SWITCH INPUT SIGNAL CHECK
Measure voltage between control unit harness terminals ⑱ and ⑮.

| Condition of driver's door | Voltage [V] |
|---|---|
| Closed | Approx. 12 |
| Open | 0 |

NG → Check door switch. Check harness continuity between TCU and door switch.

OK ↓

B

Step 2

CHIME OUTPUT SIGNAL CHECK
Measure voltage between control unit harness terminals ⑲ and ⑮.

| Condition of driver's door | Voltage [V] |
|---|---|
| Closed | Approx. 12 |
| Open | Pointer deflects intermittently |

OK → Check chime. Check harness continuity between TCU and chime.

NG ↓

C

Step 1

IGNITION KEY SWITCH INPUT SIGNAL CHECK
Measure voltage between control unit harness terminals ⑩ and ⑮.

| Condition | Voltage [V] |
|---|---|
| Key inserted | Approx. 12 |
| Key pulled | 0 |

NG → Check ignition key switch. Check harness continuity between TCU and ignition key switch.

OK ↓

Replace control unit.

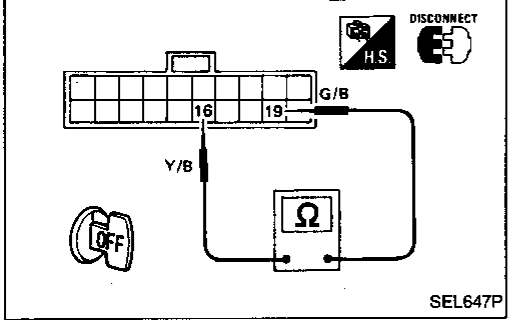
## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 6

**SYMPTOM: Seat belt warning chime does not activate.**

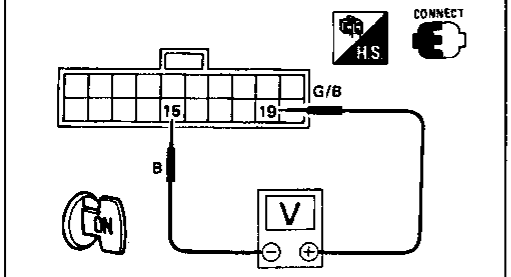
- Perform "PRELIMINARY CHECK — Procedure 3" before referring to the following flow chart.

A Time control unit connector (M17)




SEL647P

B Time control unit connector (M17)




SEL648P

A

Step 2

SEAT BELT SWITCH INPUT SIGNAL CHECK

Check continuity between control unit harness terminals ⑯ and ⑲.

| Condition | Continuity |
|---|---|
| Unfastened | Yes |
| Fastened | No |

NG → Check seat belt switch. Check harness continuity between TCU and seat belt switch.

OK ↓

B

Step 1

CHIME OUTPUT SIGNAL CHECK

1) Connect TCU harness connector.
2) Turn ignition switch "ON".
3) Measure voltage between control unit harness terminals ⑲ and ⑮.

| Condition of seat belt | Voltage [V] |
|---|---|
| Unfastened | Pointer deflects intermittently |
| Fastened | Approx. 12 |

OK → Check chime. Check harness continuity between TCU and chime.

NG ↓

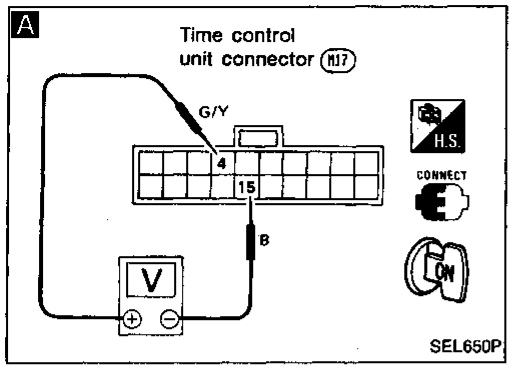
Replace control unit.

## Trouble Diagnoses (Cont'd)

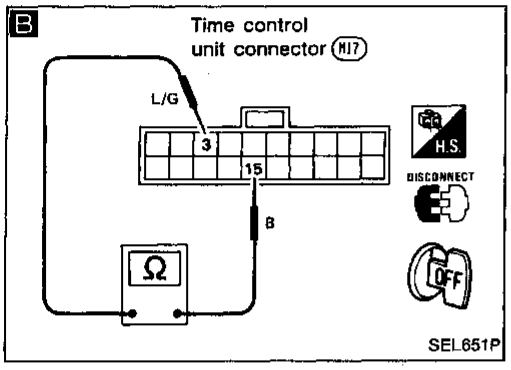
### DIAGNOSTIC PROCEDURE 7

**SYMPTOM: Rear defogger does not activate, or does not go off after activating.**

A




B




A

REAR WINDOW DEFOGGER OUTPUT SIGNAL CHECK

Measure voltage between control unit harness terminals ④ and ⑮.

| Condition of defogger switch | Voltage [V] |
|---|---|
| OFF | Approx. 12 |
| ON | 0 |

OK → Check rear window defogger relay. Check rear window defogger circuit.

NG ↓

B

REAR WINDOW DEFOGGER SWITCH INPUT SIGNAL CHECK

1) Disconnect TCU harness connector.
2) Check continuity between control unit harness terminals ③ and ⑮.

| Condition of defogger switch | Continuity |
|---|---|
| OFF | No |
| ON | Yes |

NG → Check rear window defogger switch. Check harness continuity between TCU and rear window defogger switch.

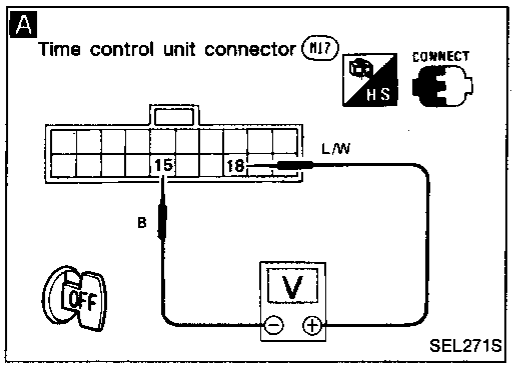
OK ↓

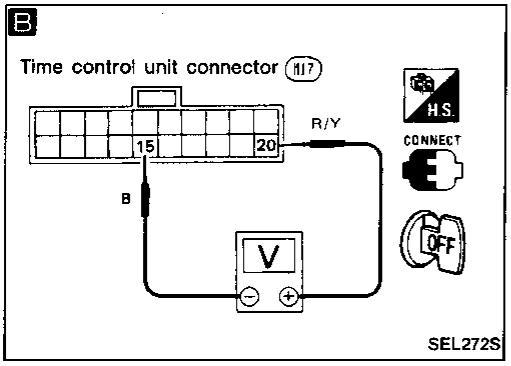
Replace control unit.

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 8

**SYMPTOM: Interior lamp does not fade out after driver's door is closed.**




A

DOOR SWITCH INPUT SIGNAL CHECK
Measure voltage between control unit harness terminals ⑱ and ⑮.

| Condition of driver's door | Voltage [V] |
|---|---|
| Closed | Approx. 12 |
| Open | 0 |

NG → Check door switch. Check harness continuity between TCU and door switch.

OK ↓

B

INTERIOR LAMP SIGNAL CHECK
Measure voltage between control unit harness terminals ⑳ and ⑮.

| Condition of driver's door | Voltage [V] |
|---|---|
| Closed | 0 → Approx. 12 |
| Open | 0 |

OK → Check interior lamp and harness between TCU and interior lamp.

NG → Replace TCU.

## Front Wiper and Washer/System Description

### WIPER OPERATION

The wiper switch is controlled by a lever built into the combination switch.
There are three wiper switch positions:

- LO speed
- HI speed
- INT (Intermittent)

With the ignition switch in the ACC or ON position, power is supplied

- through 20A fuse (No. 6 , located in the fuse block)
- to wiper motor terminal ④ and
- to wiper relay terminal ①.

**Low and high speed wiper operation**

Ground is supplied to wiper switch terminal ⑰ through body grounds (E10) and (E33).
When the wiper switch is placed in the LO position, ground is supplied

- through terminal ⑭ of the wiper switch
- to wiper motor terminal ②.

With power and ground supplied, the wiper motor operates at low speed.
When the wiper switch is placed in the HI position, ground is supplied

- through terminal ⑯ of the wiper switch
- to wiper motor terminal ③.

With power and ground supplied, the wiper motor operates at high speed.

**Auto stop operation**

When the wiper switch is placed in the OFF position, the wiper motor will continue to operate until the wiper arms reach the base of the windshield.
When wiper arms are not located at base of windshield with wiper switch OFF, ground is provided

- from terminal ⑭ of the wiper switch
- to wiper motor terminal ②, in order to continue wiper motor operation at low speed.

Ground is also supplied

- through terminal ⑬ of the wiper switch
- to wiper relay terminal ③
- through terminal ④ of the wiper relay
- to wiper motor terminal ⑤
- through terminal ⑥ of the wiper motor, and
- through body grounds (M1) and (M60).

When wiper arms reach base of windshield, wiper motor terminals ⑤ and ④ are connected instead of terminals ⑤ and ⑥. Wiper motor will then stop wiper arms at the PARK position.

**Intermittent operation**

The wiper motor operates the wiper arms one time at low speed at a set interval of approximately 1 to 20 seconds. This feature is controlled by the time control unit.
When the wiper switch is placed in the INT position, ground is supplied

- to time control unit terminal ⑫
- from wiper switch terminal ⑮
- through body grounds (E10) and (E33).

The desired interval time is input

- to time control unit terminal ⑭
- from wiper switch terminal ⑲.

Based on these two inputs, an intermittent ground is supplied

- to wiper relay terminal ②
- from time control unit terminal ①.

With power and ground supplied, the wiper relay is activated.
When activated, an intermittent ground is supplied

- to wiper motor terminal ②
- through the wiper switch terminal ⑭
- to wiper switch terminal ⑬

## Front Wiper and Washer/System Description (Cont'd)

- through wiper relay terminal ③
- to wiper relay terminal ⑤
- through body grounds E10 and E33.

Wiper motor operates at desired low speeds with time control unit terminal ① grounded.

### WASHER OPERATION

With the ignition switch in the ACC or ON position, power is supplied

- through 20A fuse (No. 6 , located in the fuse block)
- to washer motor terminal ①.

When the lever is pulled to the WASH position, ground is supplied

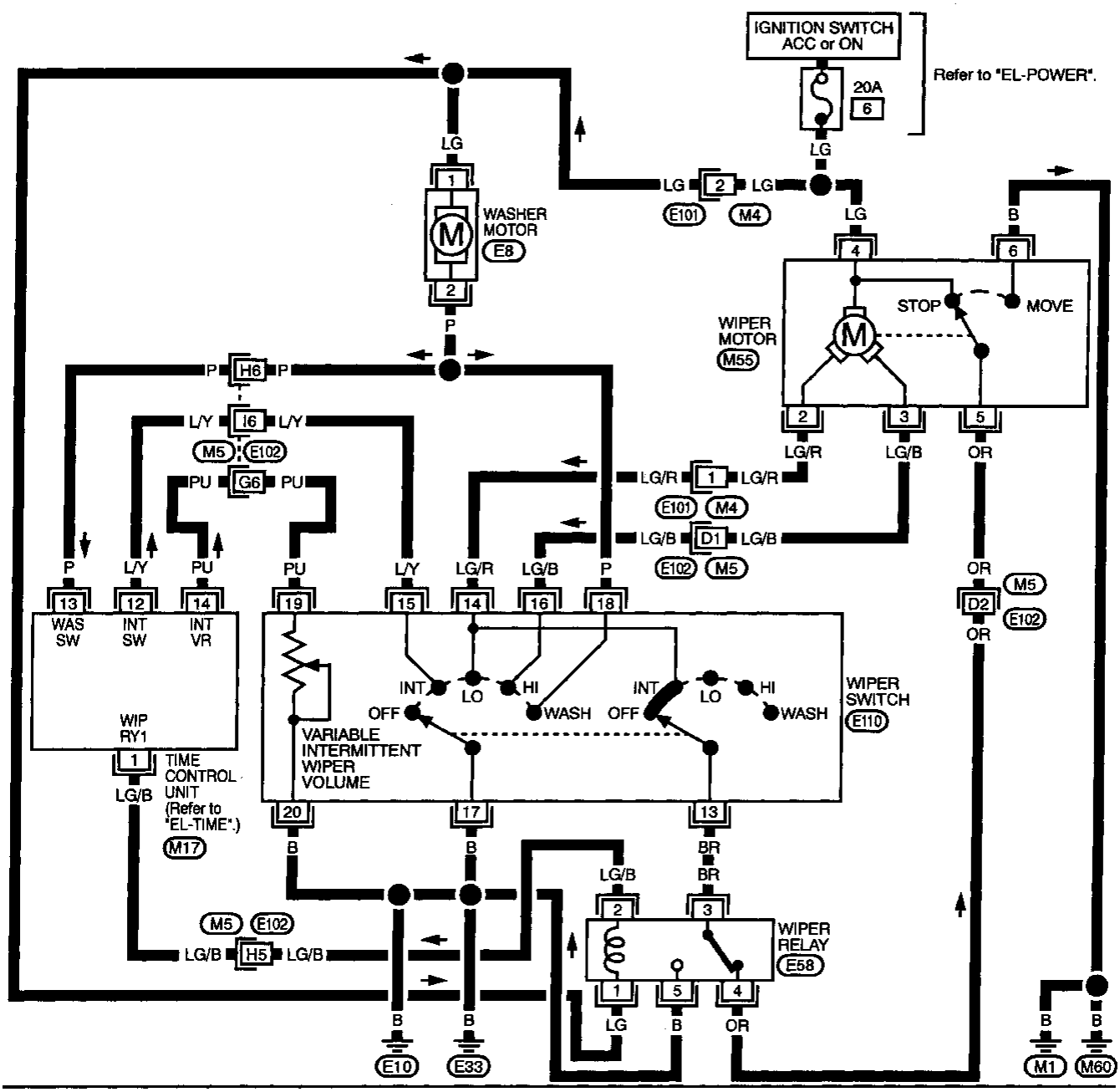
- to washer motor terminal ②, and
- to time control unit terminal ⑬
- from terminal ⑱ of the wiper switch
- through terminal ⑰ of the wiper switch, and
- through body grounds E10 and E33.

With power and ground supplied, the washer motor operates.

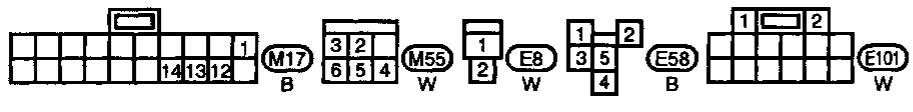
Wiper motor will then operate at low speed for approximately 3 seconds to clean windshield. This feature is controlled by the time control unit in the same manner as the intermittent operation.

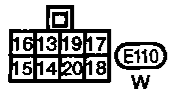
## Front Wiper and Washer/Wiring Diagram
## — WIPER —

EL-WIPER-01




Refer to last page (Foldout page).
M5 , E102



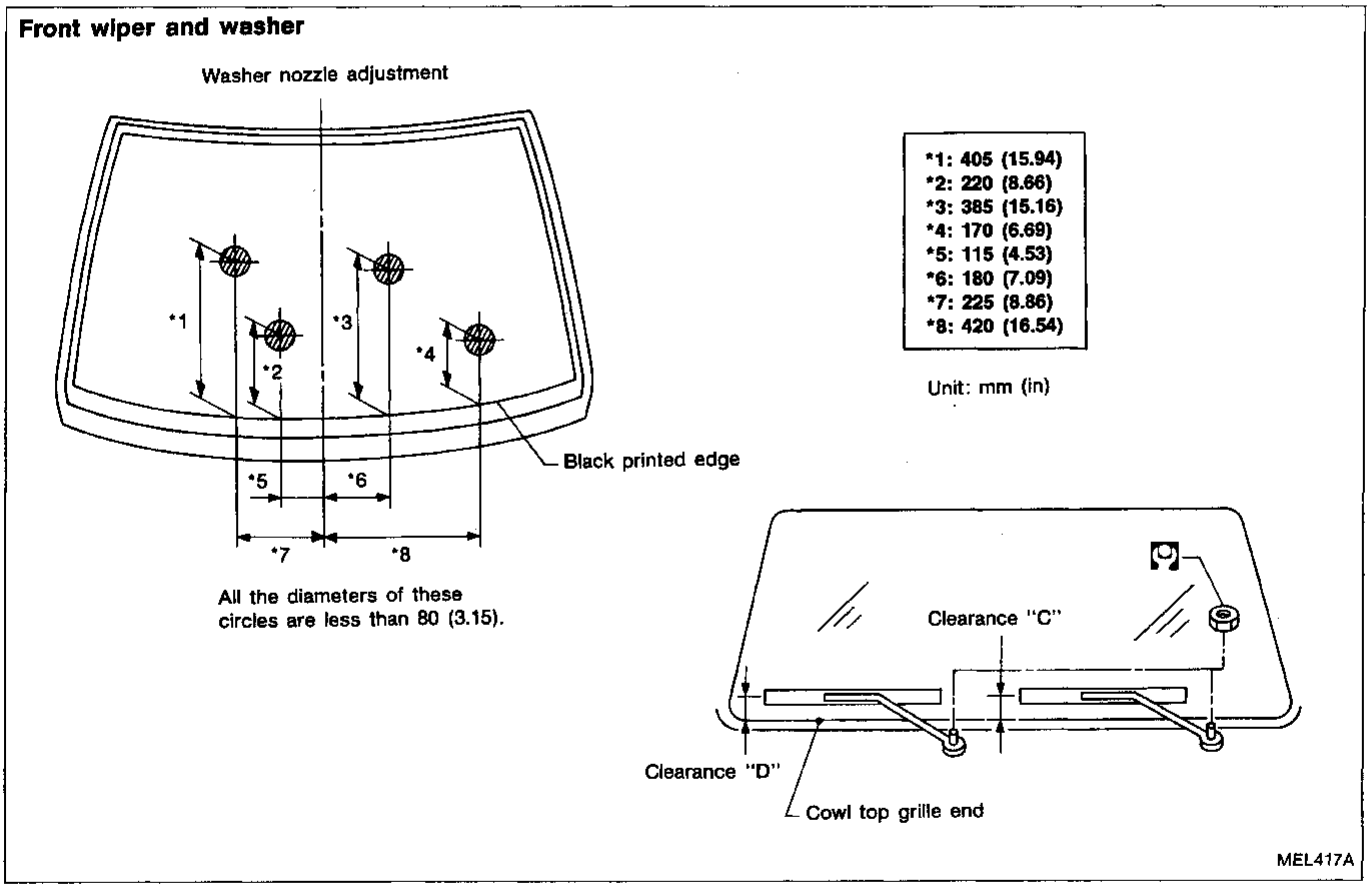

MEL189D

## Installation

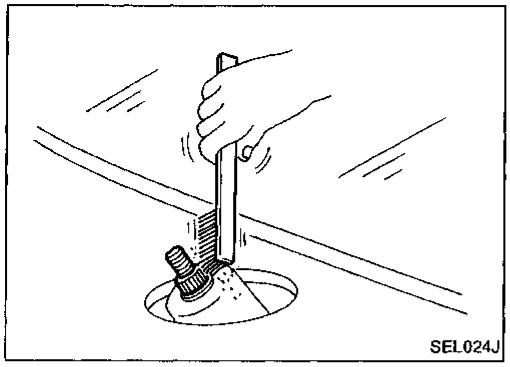
1. Turn on wiper switch to operate wiper motor and then turn it "OFF" (Auto Stop).
2. Lift the blade up and then set it down onto glass surface. Set the blade center to clearance "C" or "D" immediately before tightening nut.
3. Eject washer fluid. Turn on wiper switch to operate wiper motor and then turn it "OFF".
4. Ensure that wiper blades stop within clearance "C" or "D".
   **Clearance "C": 18.5 - 33.5 mm (0.728 - 1.319 in)**
   **Clearance "D": 19.5 - 34.5 mm (0.768 - 1.358 in)**

- Tighten windshield wiper arm nuts to specified torque.
  **Front wiper:**
  **17 - 23 N·m (1.7 - 2.3 kg-m, 12 - 17 ft-lb)**

**Front wiper and washer**

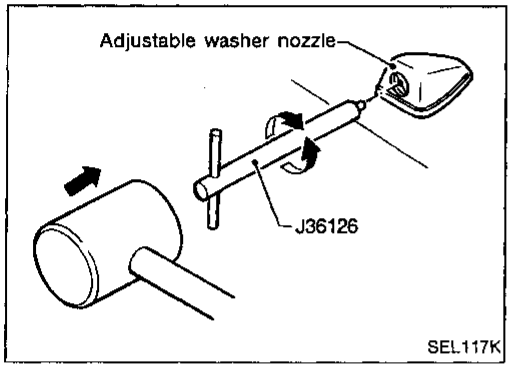


## Installation (Cont'd)




- **Before reinstalling wiper arm, clean up the pivot area as illustrated. This will reduce possibility of wiper arm looseness.**

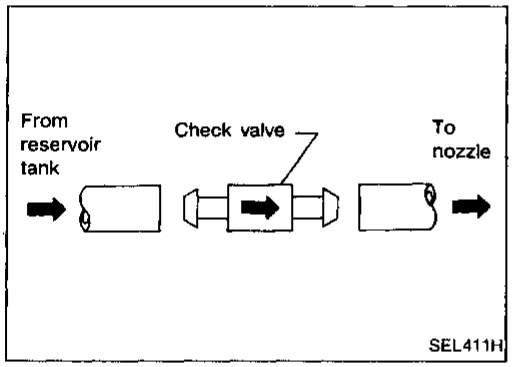





### Washer Nozzle Adjustment

- Adjust washer nozzle with adjusting tool (Tool number: J36126) as shown in the figure at left.

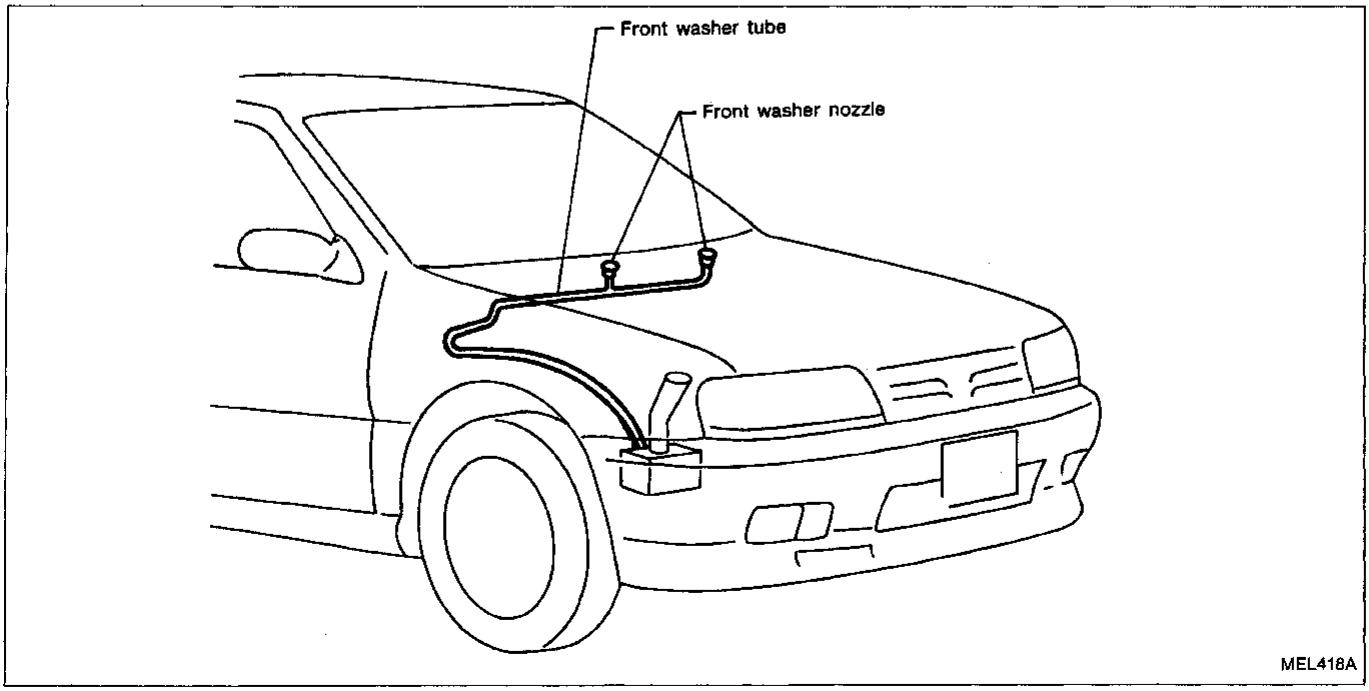
**Before attempting to turn the nozzle, gently tap the end of the tool to free the nozzle. This will prevent "rounding out" the small female square in the center of the nozzle.**




### Check Valve

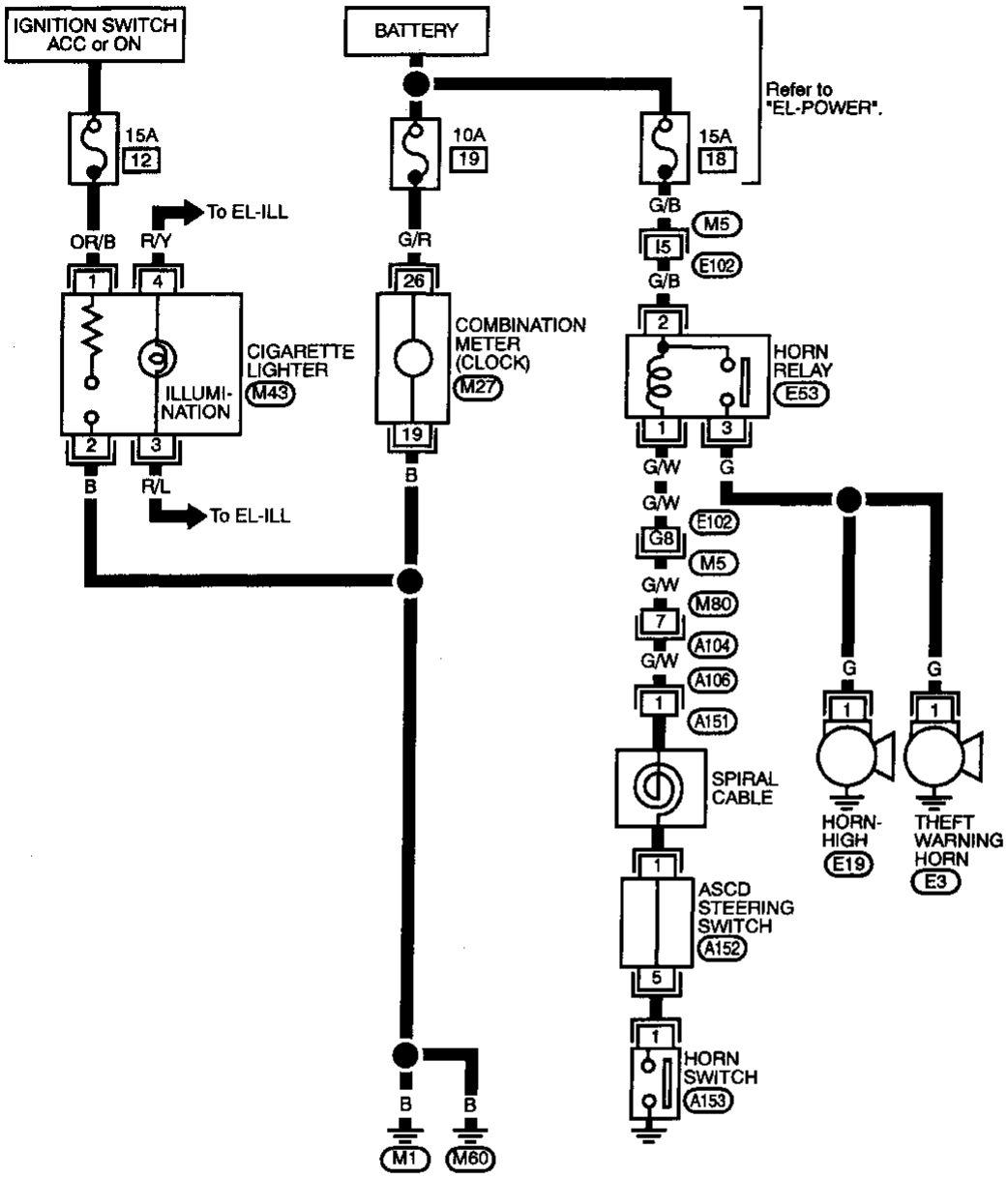
- A check valve is provided in the washer fluid line. Be careful not to connect check valve to washer tube in the wrong direction.

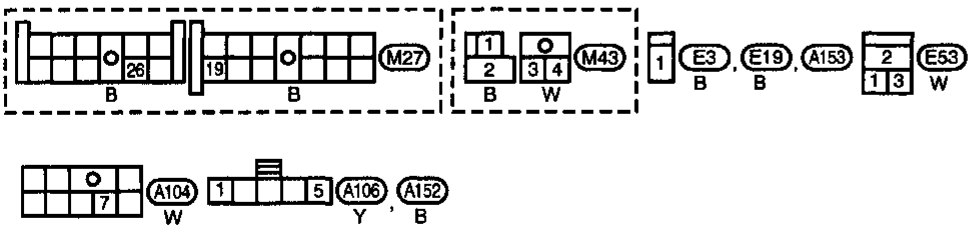
### Washer Tube Layout



## Wiring Diagram — HORN —

EL-HORN-01




Refer to last page (Foldout page).
M5 , E102
E60

MEL190D

## System Description

The rear window defogger system is controlled by the time control unit. The rear window defogger operates only for approximately 15 minutes.

Power is supplied at all times

- to rear window defogger relay terminal ③
- through 20A fuse (No. 1 , located in the fuse block) and
- to rear window defogger relay terminal ⑥
- through 20A fuse (No. 2 , located in the fuse block).

With the ignition switch in the ON or START position, power is supplied

- to the rear window defogger relay terminal ①.

Ground is supplied to terminal ② of the rear window defogger switch through body grounds (M1) and (M60).

When the rear window defogger switch is activated, ground is supplied

- through terminal ① of the rear window defogger switch
- to time control unit terminal ③.

Terminal ④ of the time control unit then supplies ground to the rear window defogger relay terminal ②.

With power and ground supplied, the rear window defogger relay is energized.

Power is supplied

- through terminals ⑤ and ⑦ of the rear window defogger relay
- to condenser terminal ①
- through terminal ② of the condenser
- to the rear window defogger.

The rear window defogger has an independent ground.

With power and ground supplied, the rear window defogger filaments heat and defog the rear window.

When the system is activated, the rear window defogger indicator on the rear window defogger switch illuminates.

Power is supplied

- to terminal ③ of the combination meter
- from terminal ⑤ and ⑦ of the rear window defogger relay.

Terminal ㉗ of the combination meter is grounded through body grounds (M1) and (M60).

### With door mirror defogger models

Door mirror defogger is connected parallel to rear window defogger.

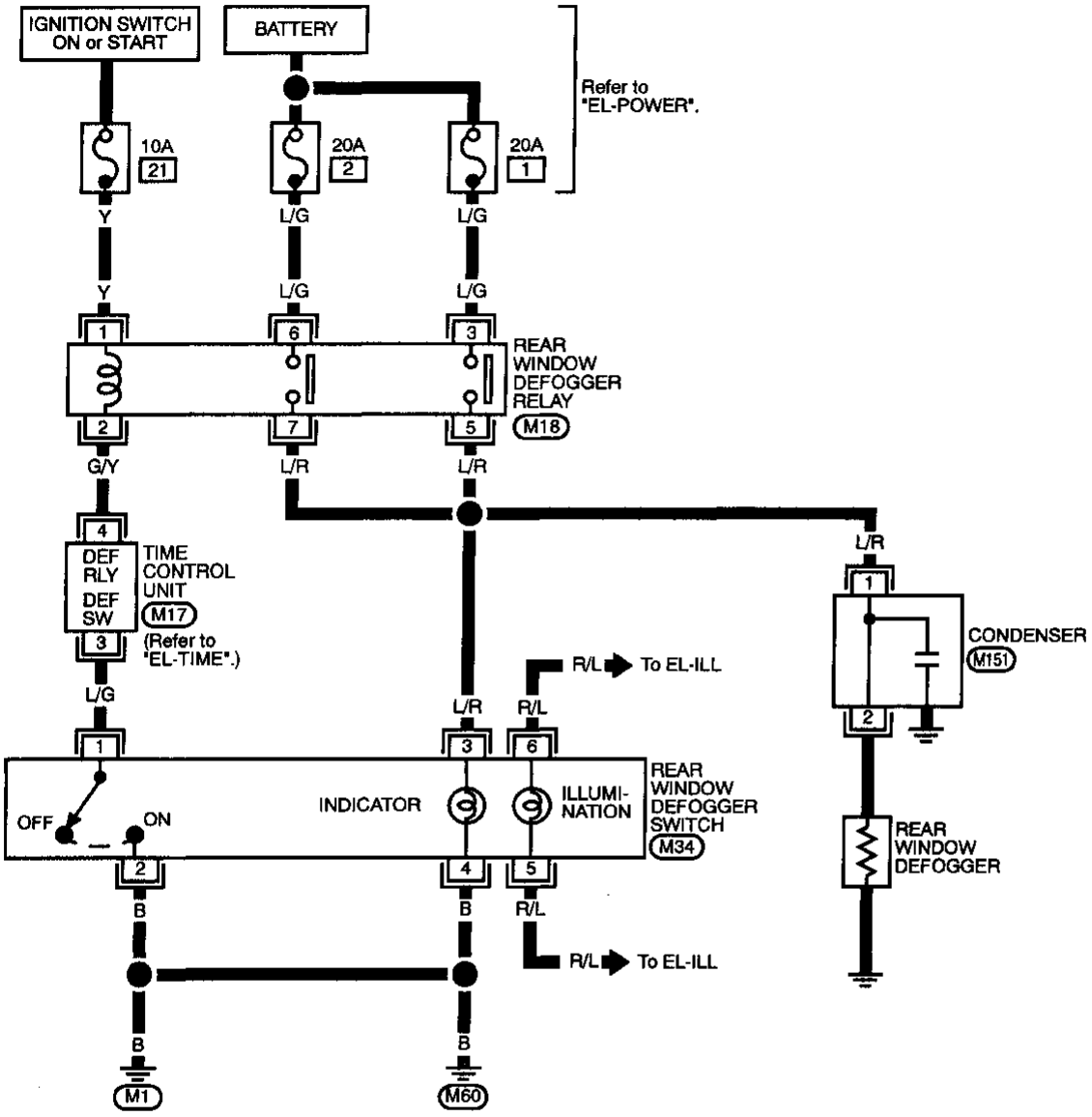
With rear window defogger switch ON, time control unit activates rear window defogger relay. Ground is supplied

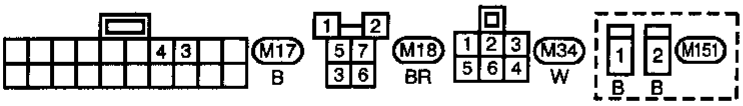
- to door mirror defogger relay terminal ②
- through time control unit terminal ④.

Then door mirror defogger relay is energized power is supplied to door mirror defogger. Refer to "Door Mirror" in BF section.

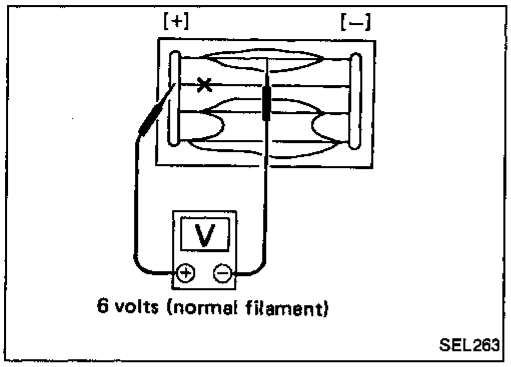
## Wiring Diagram — DEF —

EL-DEF-01



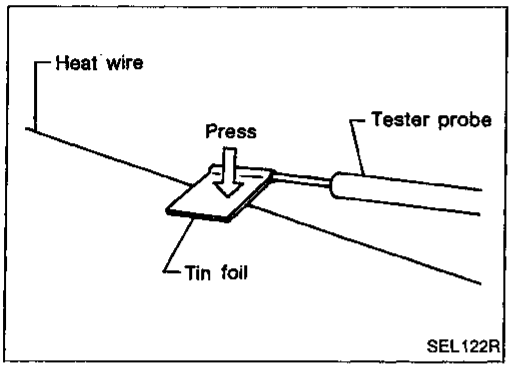




MEL191D

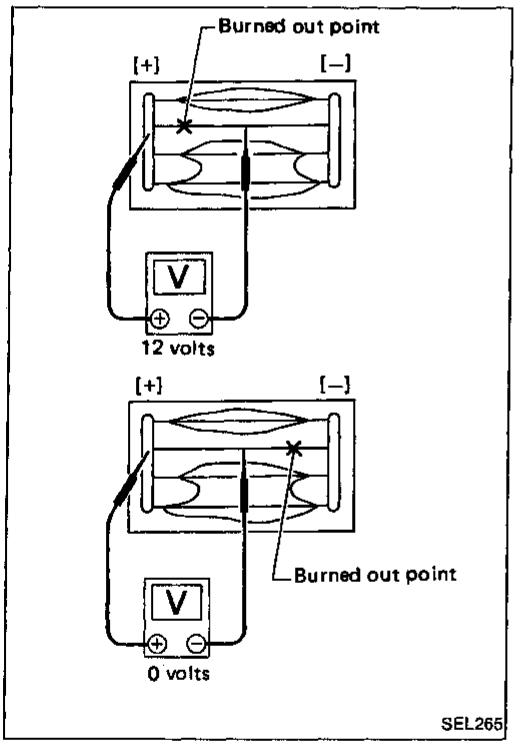



## Filament Check

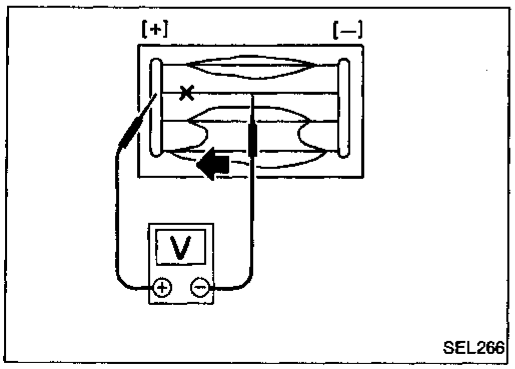
1. Attach probe circuit tester (in volt range) to middle portion of each filament.




- **When measuring voltage, wrap tin foil around the top of the negative probe. Then press the foil against the wire with your finger.**




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

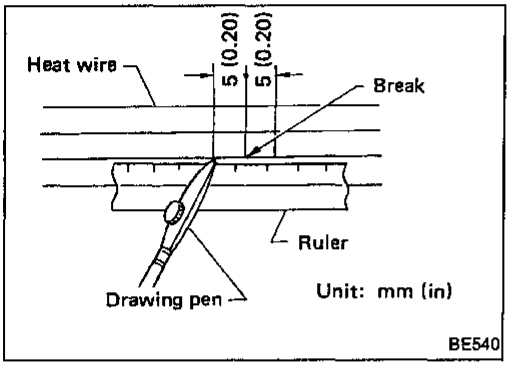



3. To locate a burned out point, move probe to left and right along filament. Tester needle will swing abruptly when probe passes the point.

## Filament Repair

### REPAIR EQUIPMENT

1. Conductive silver composition (Dupont No. 4817 or equivalent)
2. Ruler 30 cm (11.8 in) long
3. Drawing pen
4. Heat gun
5. Alcohol
6. Cloth

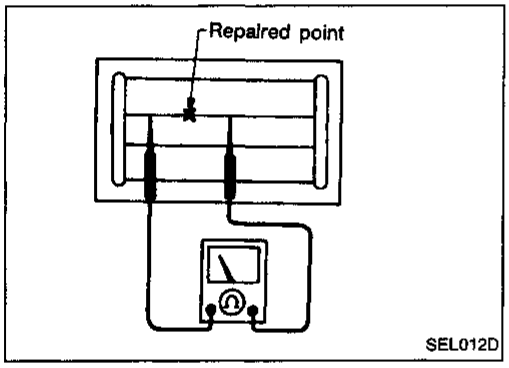



### REPAIRING PROCEDURE

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

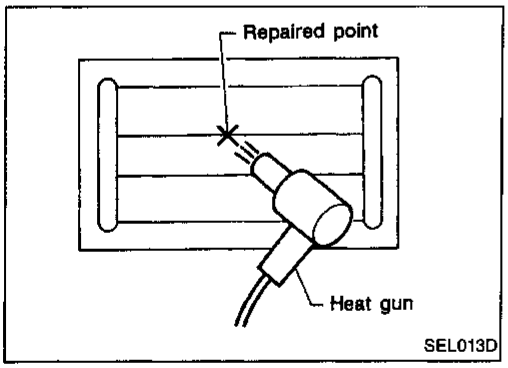
**Shake silver composition container before use.**

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




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

**Do not touch repaired area while test is being conducted.**




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

## Audio/System Description

Refer to Owner's Manual for audio system operating instructions.

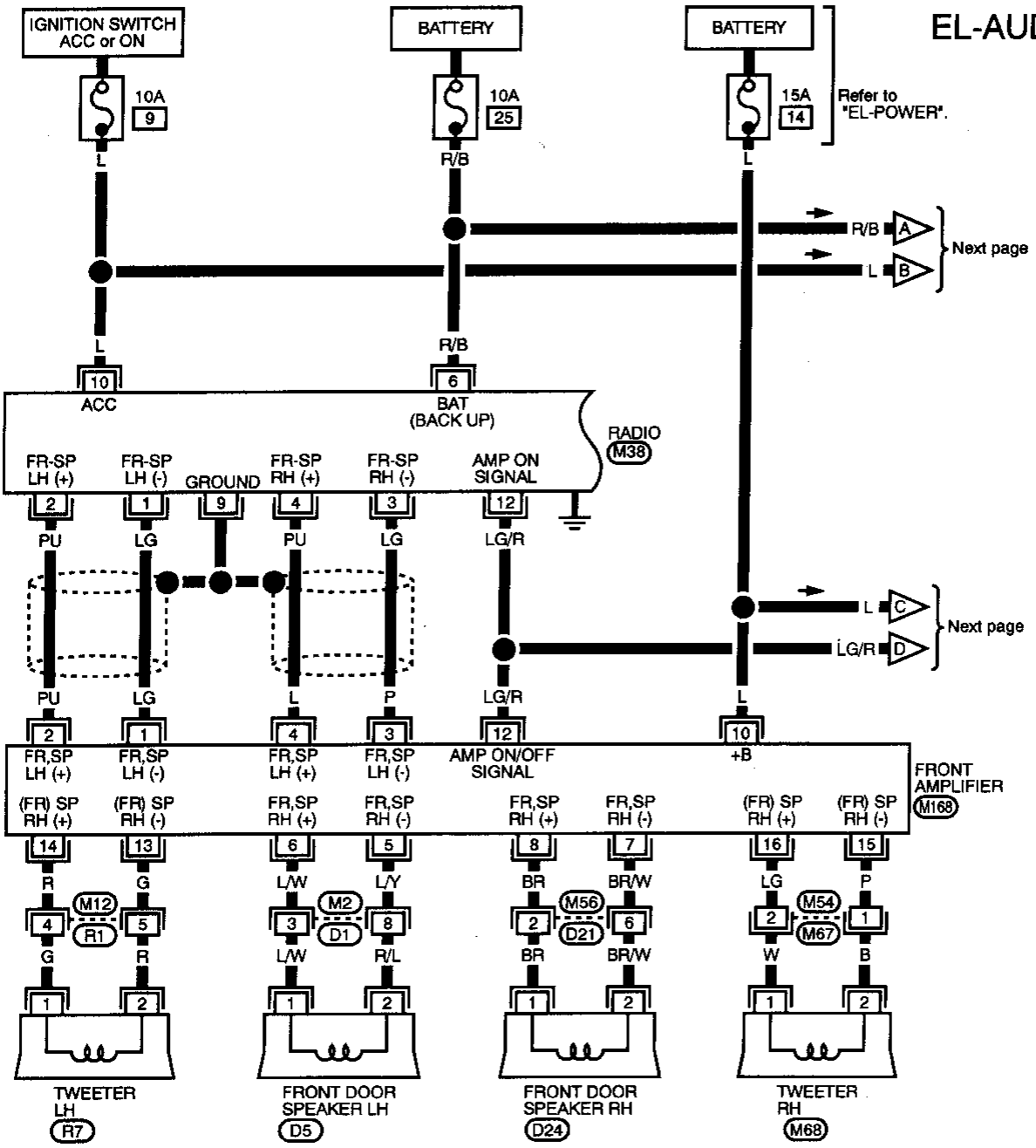
Power is supplied at all times
- through 10A fuse (No. 25 , located in the fuse block)
- to radio terminal ⑥
- through 15A fuse (No. 14 , located in the fuse block)
- to front amp. terminal ⑩ and
- to rear amp. terminal ⑩ .

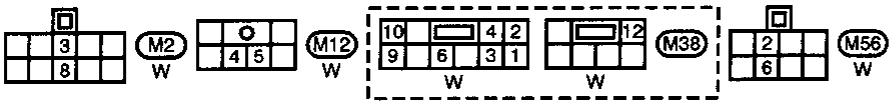
With the ignition switch in the ACC or ON position, power is supplied
- through 10A fuse (No. 9 , located in the fuse block)
- to radio terminal ⑩ .

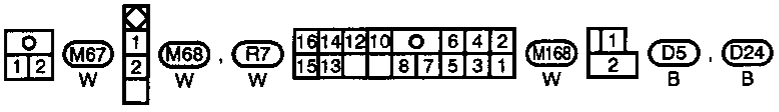
Ground is supplied through the case of the radio.
When the radio POWER button is pressed, audio signals are supplied
- through radio terminals ①, ②, ③, ④, ⑫, ⑬, ⑭, ⑮ and ⑯
- to terminals ①, ②, ③, ④ and ⑫ of the rear amp. and terminals ①, ②, ③, ④ and ⑫ of the front amp.
- to tweeters and the front and rear speakers through terminals ⑤, ⑥, ⑦, ⑧, ⑬, ⑭, ⑮ and ⑯ of the front amp. and terminals ⑤, ⑥, ⑦ and ⑧ of the rear amp.

## Audio/Wiring Diagram — AUDIO —

EL-AUDIO-01

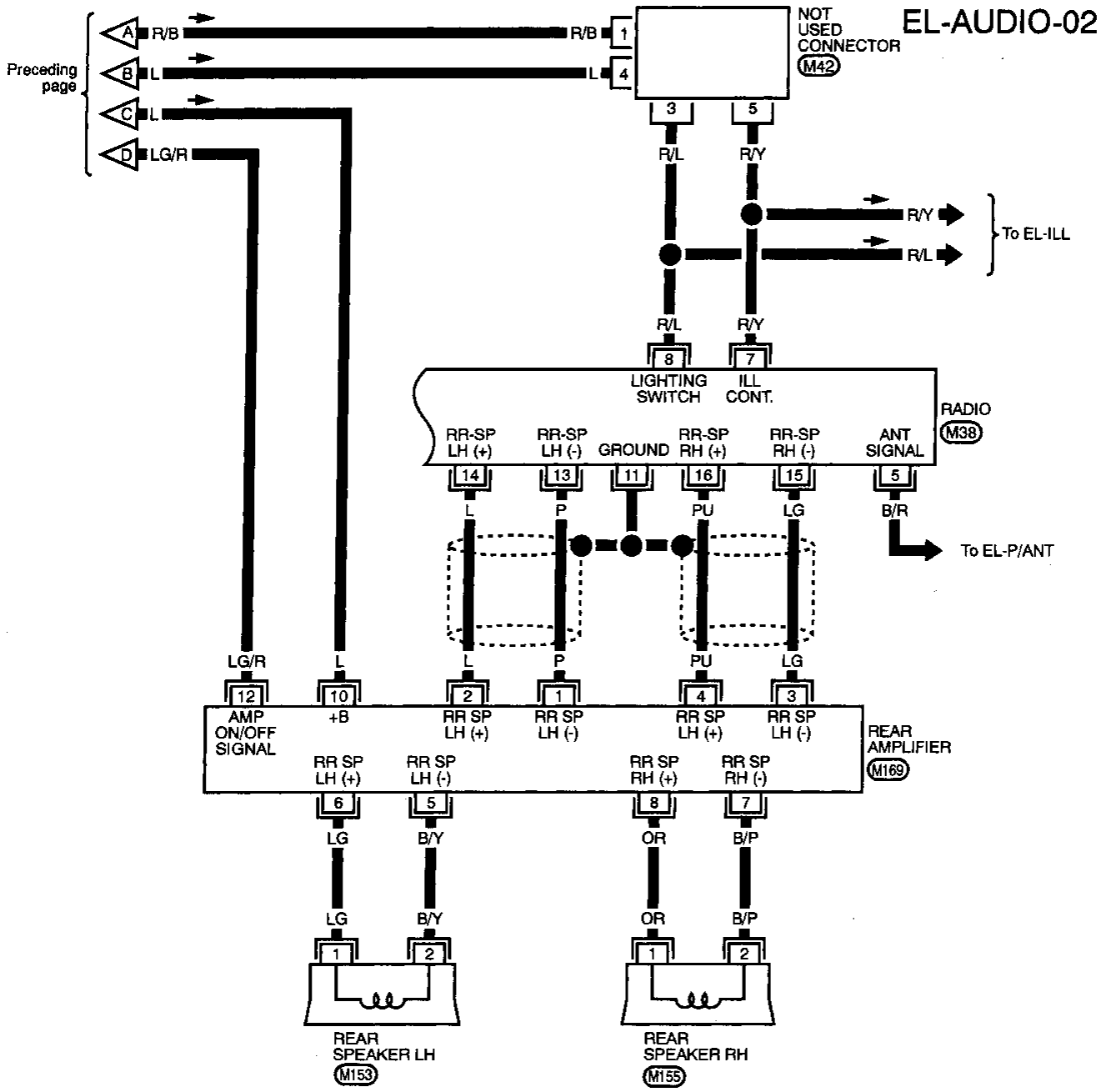


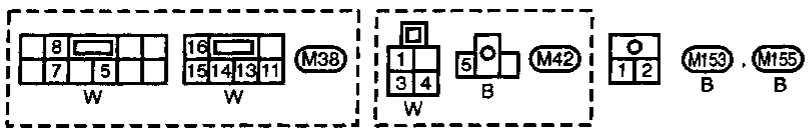



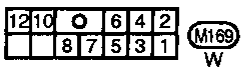




MEL116D

## Audio/Wiring Diagram — AUDIO — (Cont'd)




MEL117D

## Power Antenna/System Description

Power is supplied at all times
- through 10A fuse (No. 25 , located in the fuse block)
- to power antenna terminal ①.

With the ignition switch in the ACC or ON position, power is supplied
- through 10A fuse (No. 9 , located in the fuse block)
- to radio terminal ⑩.

Ground is supplied to the power antenna timer terminal ⑤ through body ground M101 and M165.
When the radio is turned ON, battery positive voltage is supplied
- through radio terminal ⑤
- to power antenna terminal ②.

Power is supplied
- to power antenna motor terminal ⑥
- through power antenna timer terminal ⑥.

Ground is supplied
- to power antenna motor terminal ⑦
- through power antenna timer terminal ⑦.

The antenna raises and is held in the extended position.
When the radio is turned to the OFF position, battery positive voltage is interrupted
- from radio terminal ⑤
- to power antenna terminal ②.

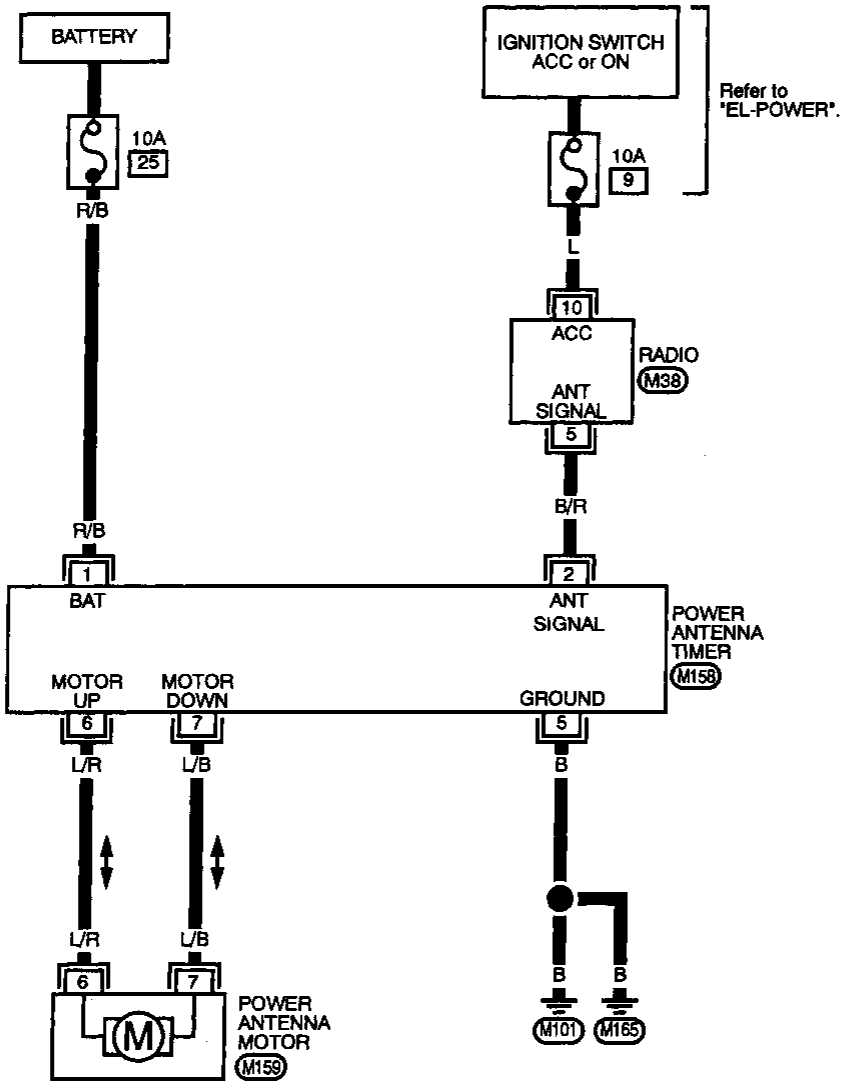
Power is supplied
- to power antenna motor terminal ⑦
- through power antenna timer terminal ⑦.

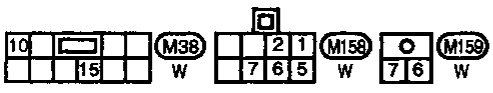
Ground is supplied
- to power antenna motor terminal ⑥
- through power antenna timer terminal ⑥.

The antenna retracts.

## Power Antenna/Wiring Diagram — P/ANT —

EL-P/ANT-01




MEL192D

## Trouble Diagnoses

| Symptom | Possible causes | Repair order |
|---|---|---|
| Radio inoperative (no digital display and no sound from speakers). | 1. 10A fuse<br>2. Poor radio case ground<br>3. Radio | 1. Check 10A fuse (No. 9 , located in fuse block). Turn ignition switch ON and verify battery positive voltage is present at terminal ⑩ of radio.<br>2. Check radio case ground.<br>3. Remove radio for repair. |
| Radio controls are operational, but no sound is heard from any speaker. | 1. 15A fuse<br>2. Radio output<br>3. Radio | 1. Check 15A fuse (No. 14 , located in fuse block). Verify that battery positive voltage is present at terminal ⑩ of front and rear speaker amps.<br>2. Check radio output voltages.<br>3. Remove radio for repair. |
| Radio presets are lost when ignition switch is turned OFF. | 1. 10A fuse<br>2. Radio | 1. Check 10A fuse (No. 25 , located in fuse block) and verify battery positive voltage is present at terminal ⑥ of radio.<br>2. Remove radio for repair. |
| Rear speakers are inoperative. | 1. Rear speaker amp. 15A fuse<br>2. Poor rear amp. case ground<br>3. Rear speaker amp.<br>4. Rear speaker amp. circuit<br>5. Radio | 1. Check 15A fuse on amp.<br>2. Check rear amp. case ground.<br>3. Check rear speaker amp. voltages.<br>4. Check wires for open or short between radio, rear speaker amp. and rear speakers.<br>5. Remove radio for repair. |
| Front speakers are inoperative. | 1. Front speaker amp. 10A fuse<br>2. Poor front amp. case ground<br>3. Front speaker amp.<br>4. Front speaker amp. circuit<br>5. Radio | 1. Check 10A fuse on amp.<br>2. Check front amp. case ground.<br>3. Check front speaker amp. voltages.<br>4. Check wires for open or short between radio, front speaker amp. and front speakers.<br>5. Remove radio for repair. |
| Individual speaker is noisy or inoperative. | 1. Speaker<br>2. Radio/amp. output<br>3. Speaker circuit<br>4. Radio | 1. Check speaker.<br>2. Check radio/amp. output voltages.<br>3. Check wires for open or short between radio/amp. and speaker.<br>4. Remove radio for repair. |
| AM stations are weak or noisy (FM stations OK). | 1. Antenna<br>2. Poor radio ground<br>3. Radio | 1. Check antenna.<br>2. Check radio ground.<br>3. Remove radio for repair. |
| FM stations are weak or noisy (AM stations OK). | 1. Window antenna<br>2. Radio | 1. Check window antenna.<br>2. Remove radio for repair. |
| Radio generates noise in AM and FM modes with engine running. | 1. Poor radio ground<br>2. Loose or missing ground bonding straps<br>3. Ignition condenser or rear window defogger noise suppressor condenser<br>4. Alternator<br>5. Ignition coil or secondary wiring<br>6. Radio | 1. Check radio ground.<br>2. Check ground bonding straps.<br>3. Replace ignition condenser or rear window defogger noise suppressor condenser.<br>4. Check alternator.<br>5. Check ignition coil and secondary wiring.<br>6. Remove radio for repair. |
| Radio generates noise in AM and FM modes with accessories on (switch pops and motor noise). | 1. Poor radio ground<br>2. Antenna<br>3. Accessory ground<br>4. Faulty accessory | 1. Check radio ground.<br>2. Check antenna.<br>3. Check accessory ground.<br>4. Replace accessory. |
| Power antenna does not operate. | 1. 10A fuse<br>2. 10A fuse<br>3. Radio signal<br>4. Grounds (M101) and (M165)<br>5. Power antenna motor<br>6. Open in power antenna motor circuit | 1. Check 10A fuse (No. 25 , located in fuse block). Verify that battery positive voltage is present at terminal ① of power antenna timer.<br>2. Check 10A fuse (No. 9 , located in fuse block). Turn ignition switch ON and verify that battery positive voltage is present at terminal ⑩ of radio.<br>3. Turn ignition switch and radio ON. Verify that battery positive voltage is present at terminal ② of power antenna timer.<br>4. Check grounds (M101) and (M165).<br>5. Check power antenna motor.<br>6. Check L/R and L/B wires between power antenna timer and power antenna motor. |

## Trouble Diagnoses (Cont'd)

### SPEAKER INSPECTION

1. Disconnect speaker harness connector.
2. Measure the resistance between speaker terminals ① and ②.
- The resistance should be 2-4 Ω.
3. Using jumper wires, momentarily connect a 9V battery between speaker terminals ① and ②.
- A momentary hum or pop should be heard.

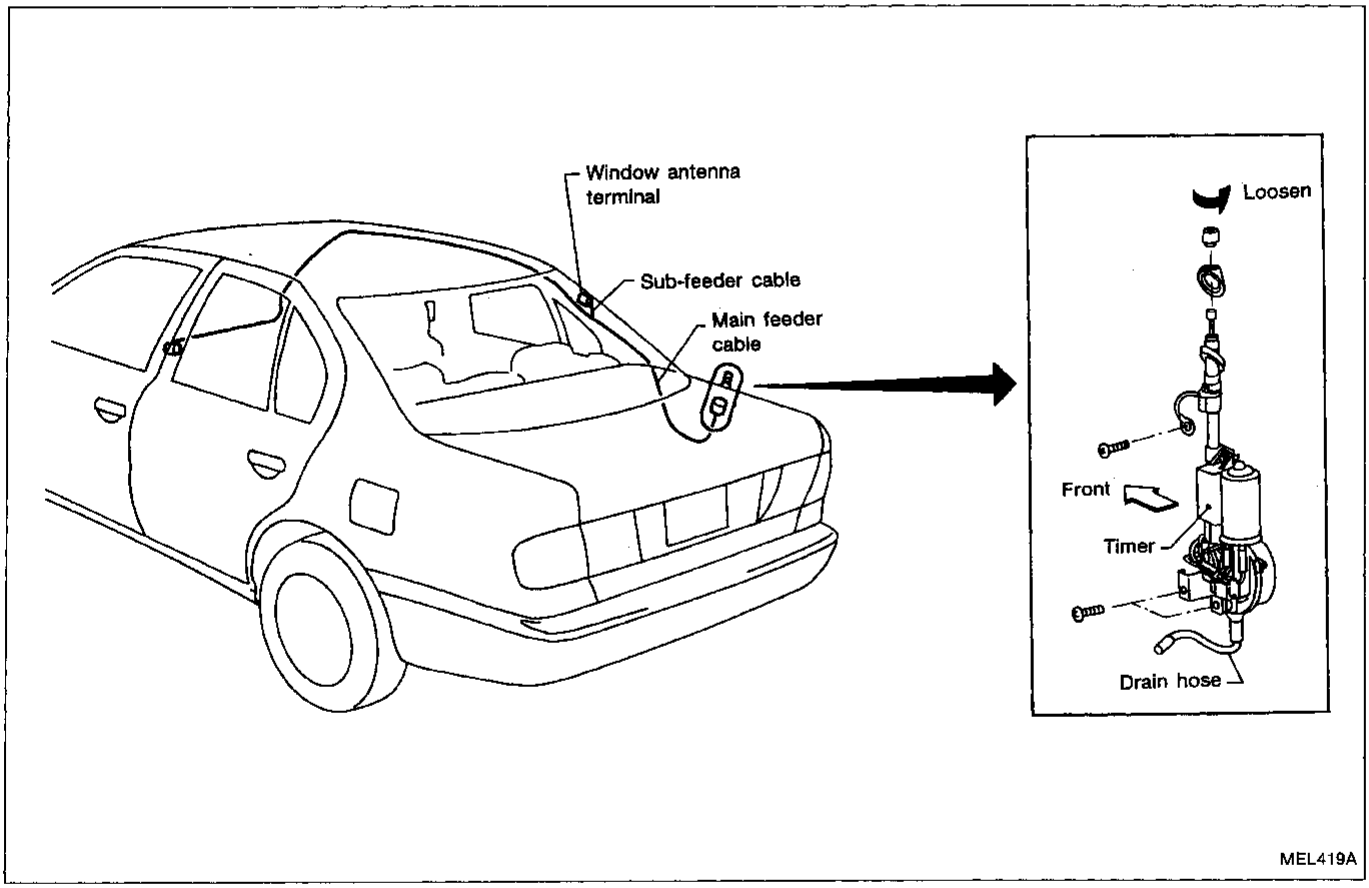
### ANTENNA INSPECTION

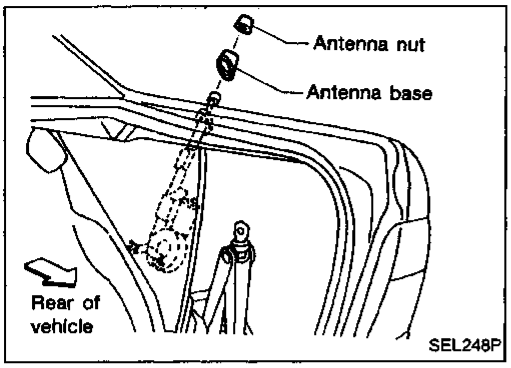
1. Using a jumper wire, clip an auxiliary ground between antenna and body.
- If reception improves, check antenna ground (at body surface).
- If reception does not improve, check main feeder cable for short circuit or open circuit.

### RADIO AND AMP INSPECTION

All voltage inspections are made with:
- Ignition switch ON or ACC
- Radio ON
- Radio and amps. connected (If radio or amp. is removed for inspection, supply a ground to the case using a jumper wire.)

### Location of Antenna

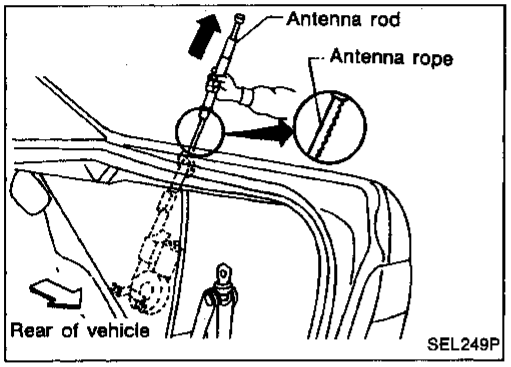




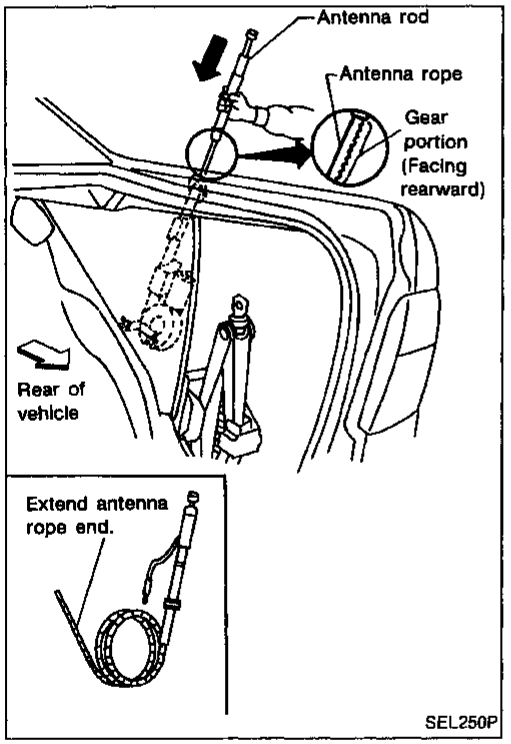

## Antenna Rod Replacement

### REMOVAL

1. Remove antenna nut and antenna base.

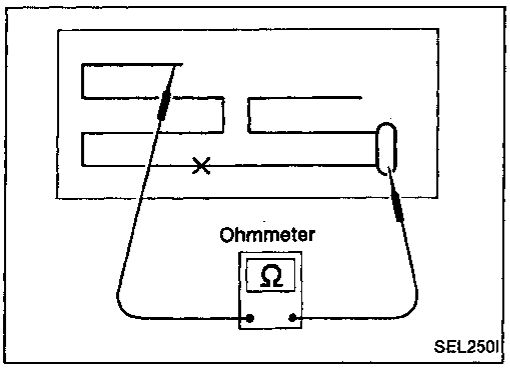



2. Withdraw antenna rod while raising it by operating antenna motor.




### INSTALLATION

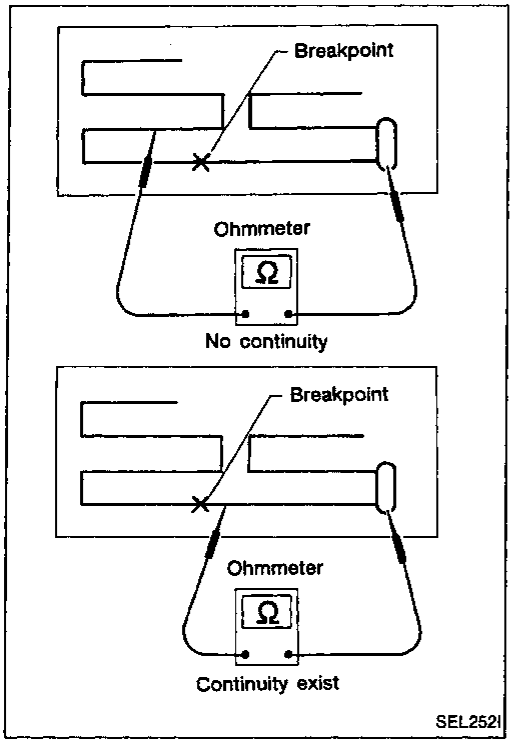
1. Lower antenna rod by operating antenna motor.
2. Insert gear section of antenna rope into place with it facing toward antenna motor.
3. As soon as antenna rope is wound on antenna motor, stop antenna motor. Insert antenna rod lower end into antenna motor pipe.
4. Retract antenna rod completely by operating antenna motor.
5. Install antenna nut and base.



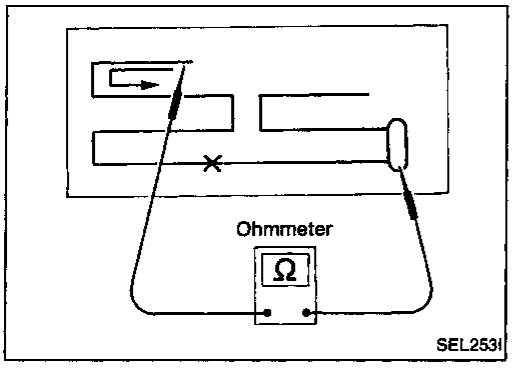

## Window Antenna Repair

### ELEMENT CHECK

1. Attach probe circuit tester (in ohm range) to antenna terminal on each side.




2. If an element is broken, no continuity will exist.




3. To locate broken point, move probe to left and right along element. Tester needle will swing abruptly when probe passes the point.

### ELEMENT REPAIR

Refer to REAR WINDOW DEFOGGER "Filament Repair" (EL-106).

## System Description

Refer to Owner's Manual for ASCD operating instructions.
When the ignition switch is in the ON or START position, power is supplied
- through 10A fuse (No. 26 , located in the fuse block)
- to ASCD main switch terminal ① and
- to ASCD hold relay terminal ⑤.

When ASCD main switch is in the ON position, power is supplied
- from terminal ② of the ASCD main switch
- to ASCD control unit terminal ④ and
- from terminal ③ of the ASCD main switch
- to ASCD hold relay terminal ②.

Ground is supplied
- to ASCD hold relay terminal ①
- through body grounds (E10) and (E33).

With power and ground supplied, the ASCD hold relay is activated, and power is supplied
- from terminal ③ of the ASCD hold relay
- to ASCD control unit terminal ④ and
- to ASCD clutch switch terminal ① (M/T models) or
- to inhibitor relay terminal ④ (A/T models).

Power remains supplied to ASCD control unit terminal ④ when the ASCD main switch is released to the N (neutral) position.
Ground is supplied
- to ASCD control unit terminal ③
- through body grounds (M1) and (M60).

**Inputs**

At this point, the system is ready to activate or deactivate, based on inputs from the following:
- speedometer in the combination meter
- stop lamp switch
- ASCD steering switch
- inhibitor relay (A/T models)
- ASCD clutch switch (M/T models)
- ASCD cancel switch.

A vehicle speed input is supplied
- to ASCD control unit terminal ⑦
- from terminal ⑮ of the combination meter.

Power is supplied at all times
- to stop lamp switch terminal ①
- through 20A fuse (No. 24 , located in the fuse block).

When the brake pedal is depressed, power is supplied
- from terminal ② of the stop lamp switch
- to ASCD control unit terminal ⑪.

Power is supplied at all times
- through 10A fuse (No. 18 , located in the fusible link and fuse box)
- to horn relay terminal ②
- through terminal ① of the horn relay
- to ASCD steering switch terminal ①.

When the SET/COAST switch is depressed, power is supplied
- from terminal ② of the ASCD steering switch
- to ASCD control unit terminal ②.

When the RESUME/ACCEL switch is depressed, power is supplied
- from terminal ③ of the ASCD steering switch
- to ASCD control unit terminal ①.

When the CANCEL switch is depressed, power is supplied
- to ASCD control unit terminals ① and ②.

When the system is activated, power is supplied
- to ASCD control unit terminal ⑤.

Power is interrupted when

- the shift lever is placed in P or N (A/T models)
- the clutch pedal is depressed (M/T models) or
- the brake pedal is depressed.

**Outputs**

The ASCD actuator controls the throttle drum via the ASCD wire based on inputs from the ASCD control unit. The ASCD actuator consists of a vacuum motor, an air valve, and a release valve.

Power is supplied
- from terminal ⑧ of the ASCD control unit
- to ASCD actuator terminal ①.

Ground is supplied to the vacuum motor
- from terminal ⑨ of the ASCD control unit
- to ASCD actuator terminal ④.

Ground is supplied to the air valve
- from terminal ⑩ of the ASCD control unit
- to ASCD actuator terminal ②.

Ground is supplied to the release valve
- from terminal ⑭ of the ASCD control unit
- to ASCD actuator terminal ③.

When the system is activated, power is supplied
- from terminal ⑬ of the ASCD control unit
- to combination meter terminal ⑦ and
- to A/T control unit terminal ㊲ (A/T models).

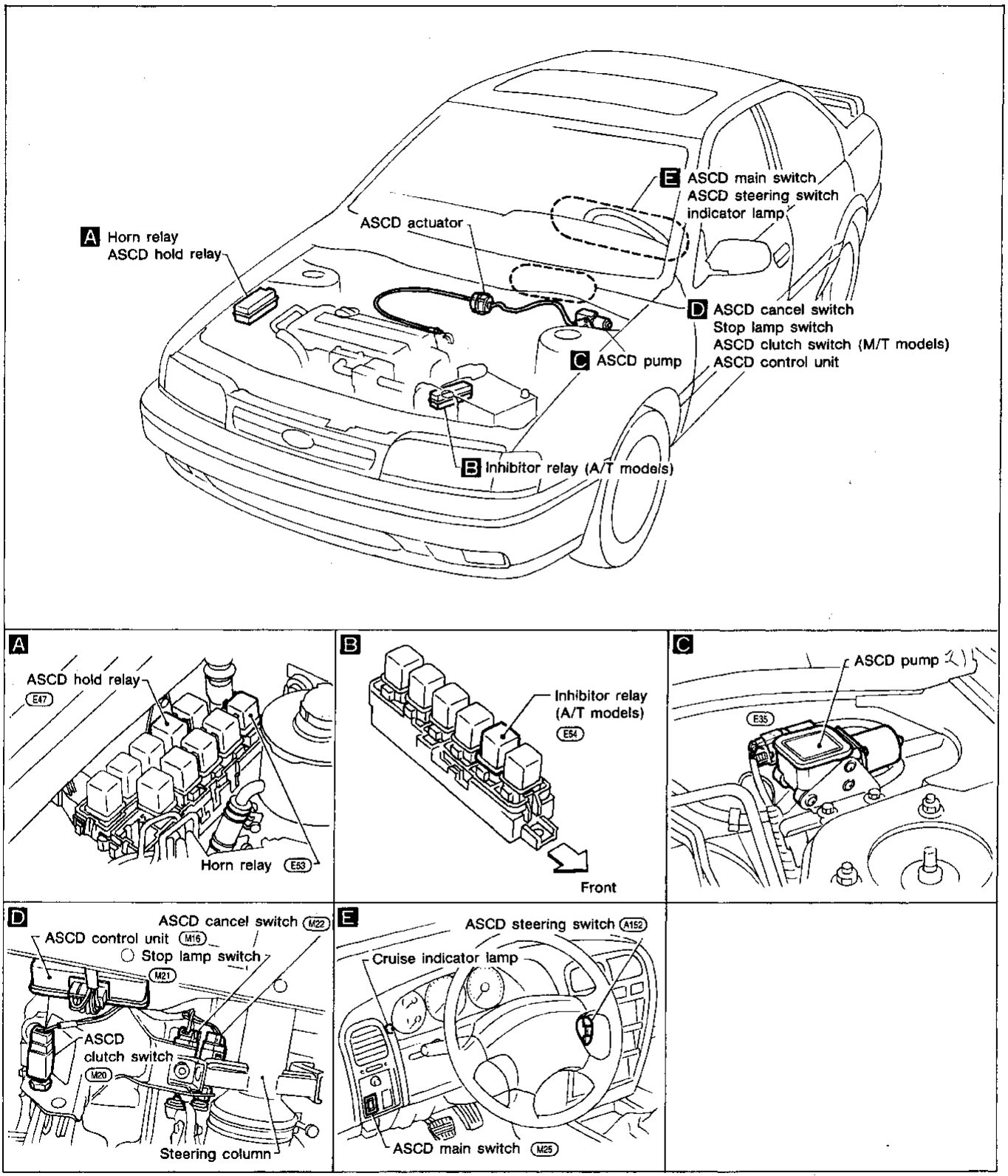
Ground is supplied
- to combination meter terminal ⑲
- through body grounds (M1) and (M60).

With power and ground supplied, the CRUISE indicator lamp illuminates.

When the RESUME/ACCEL switch is depressed on A/T models, a signal is sent
- from terminal ⑫ of the ASCD control unit
- to A/T control unit terminal ㊵.

When this occurs, the A/T control unit cancels overdrive.

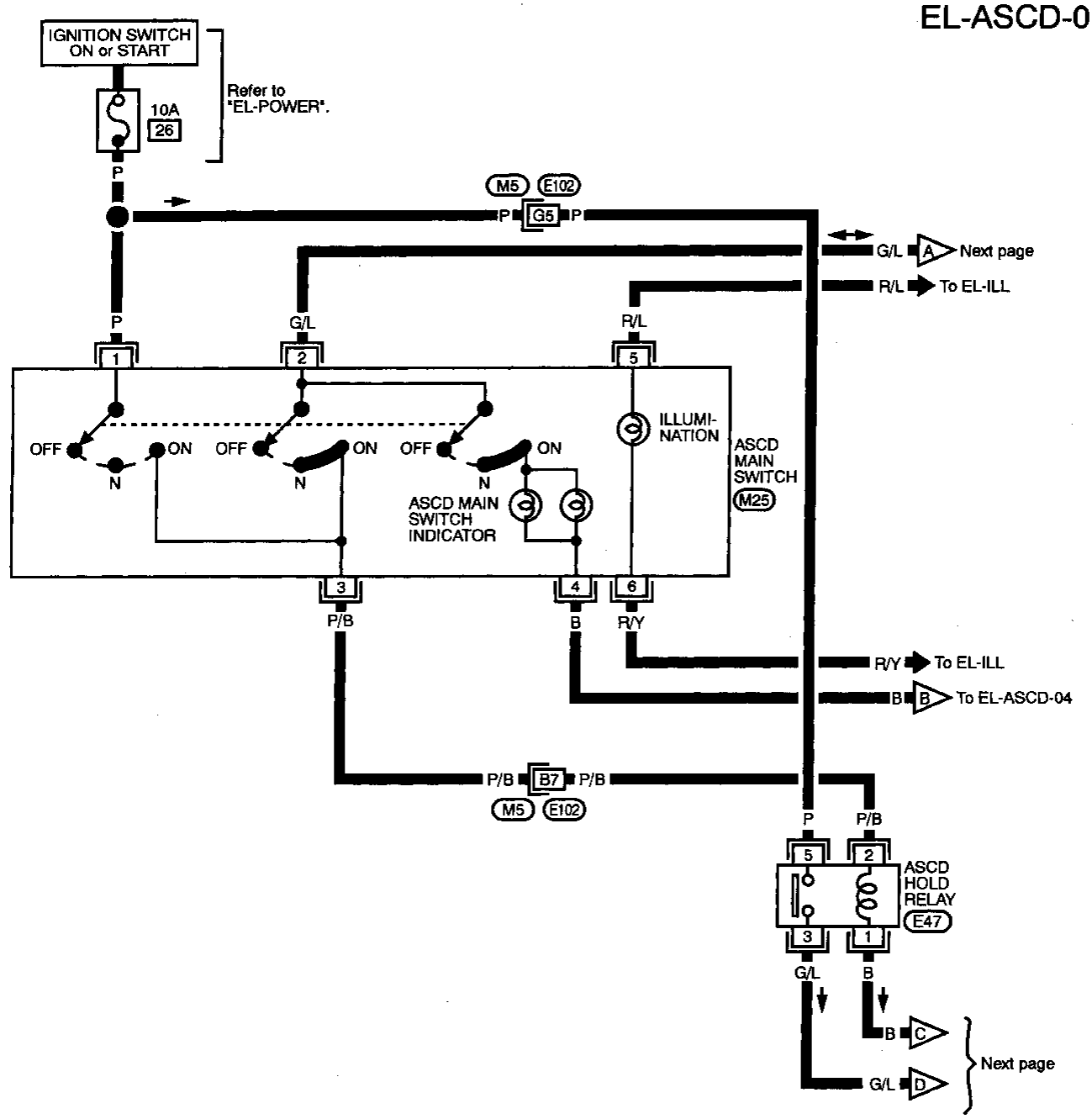
## Component Parts and Harness Connector Location



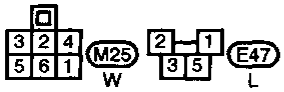

SEL273SA

## Wiring Diagram — ASCD —

EL-ASCD-01

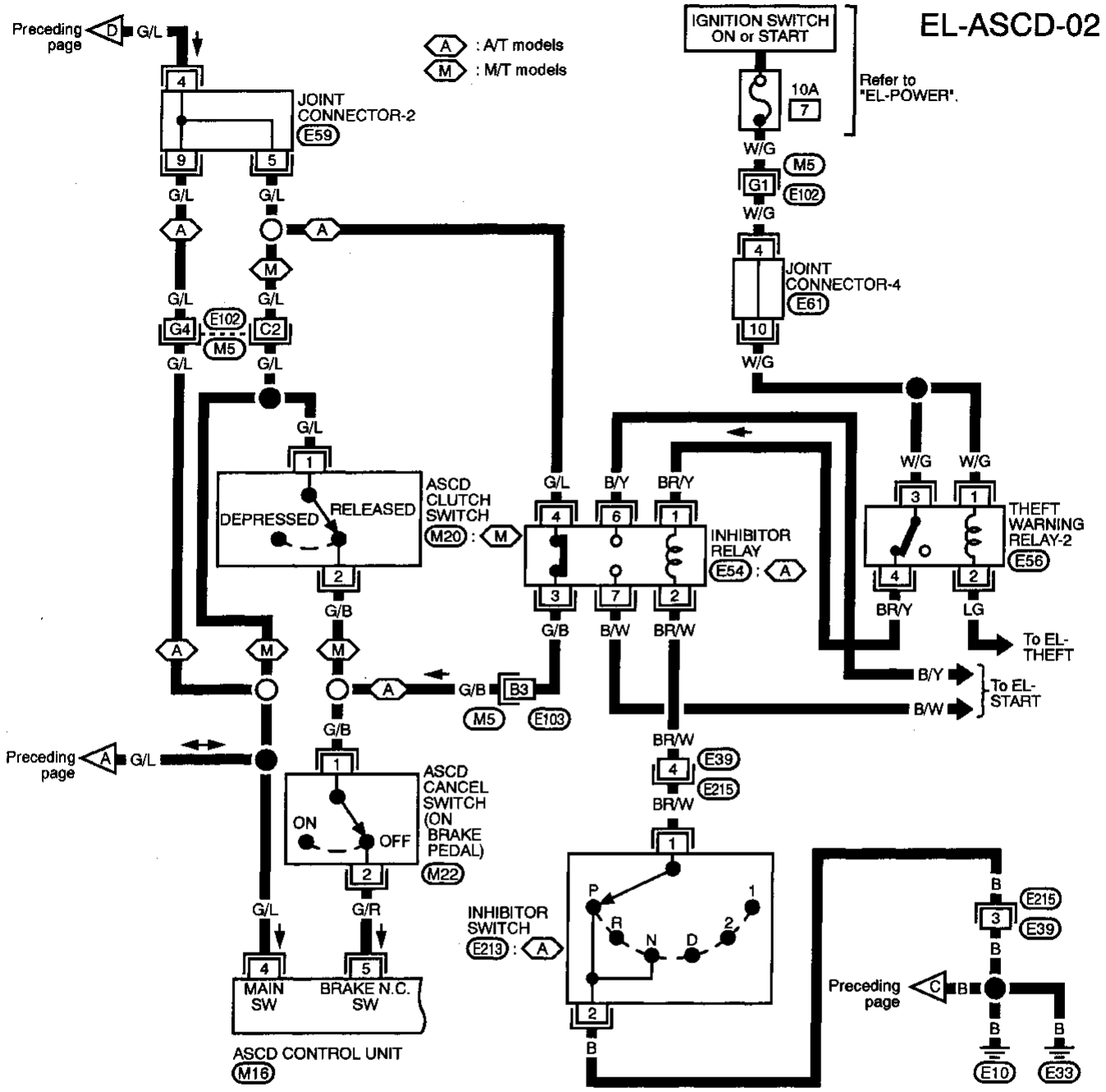


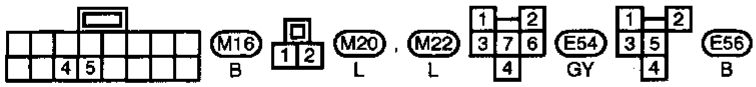

Refer to last page (Foldout page).
M5 , E102




MEL118D

## Wiring Diagram — ASCD — (Cont'd)



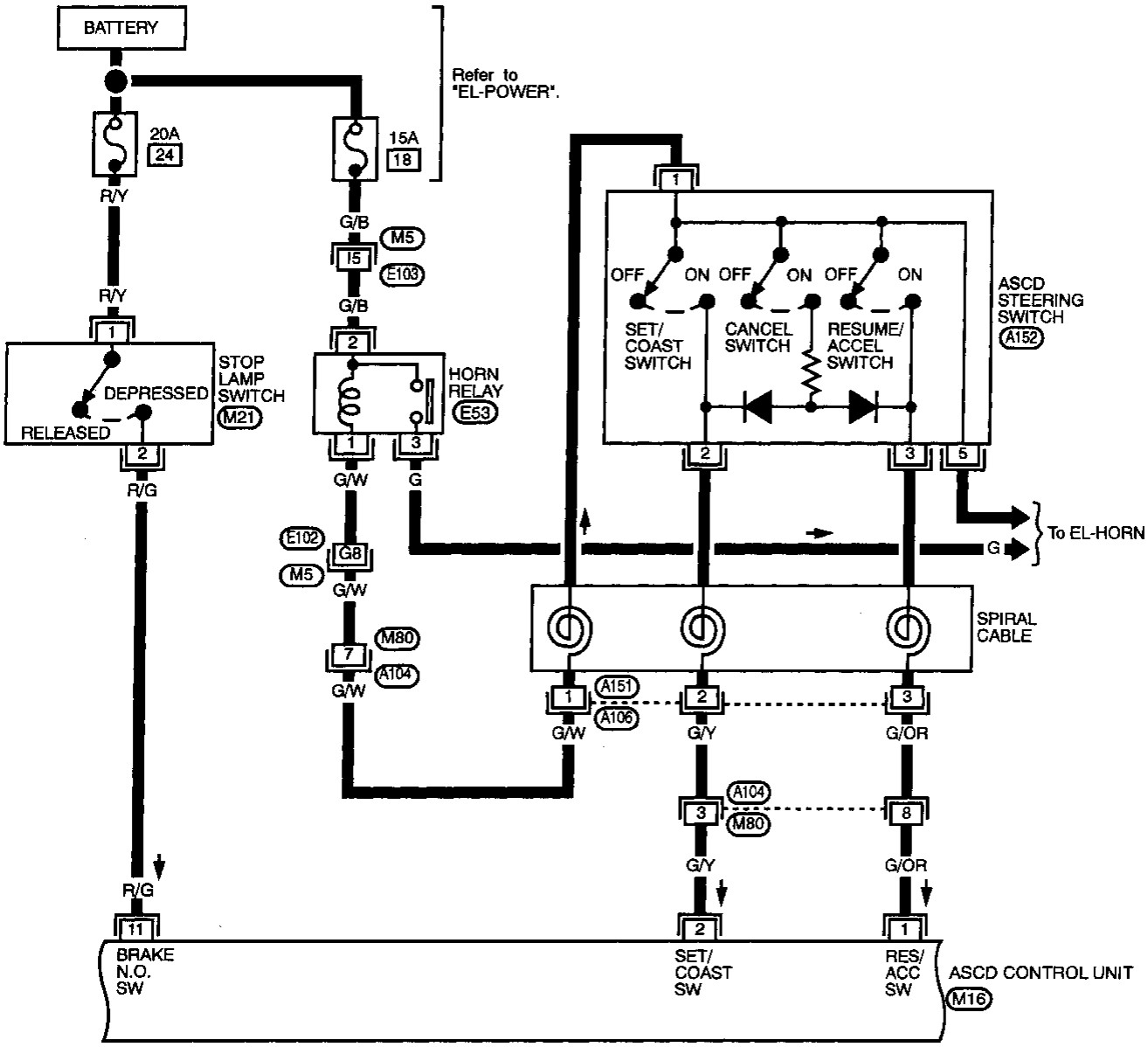


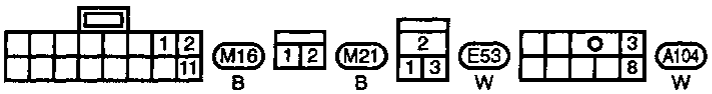
Refer to last page (Foldout page).
M5, E102
E59
E61

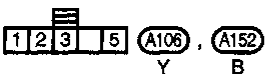
MEL119D

## Wiring Diagram — ASCD — (Cont'd)

EL-ASCD-03

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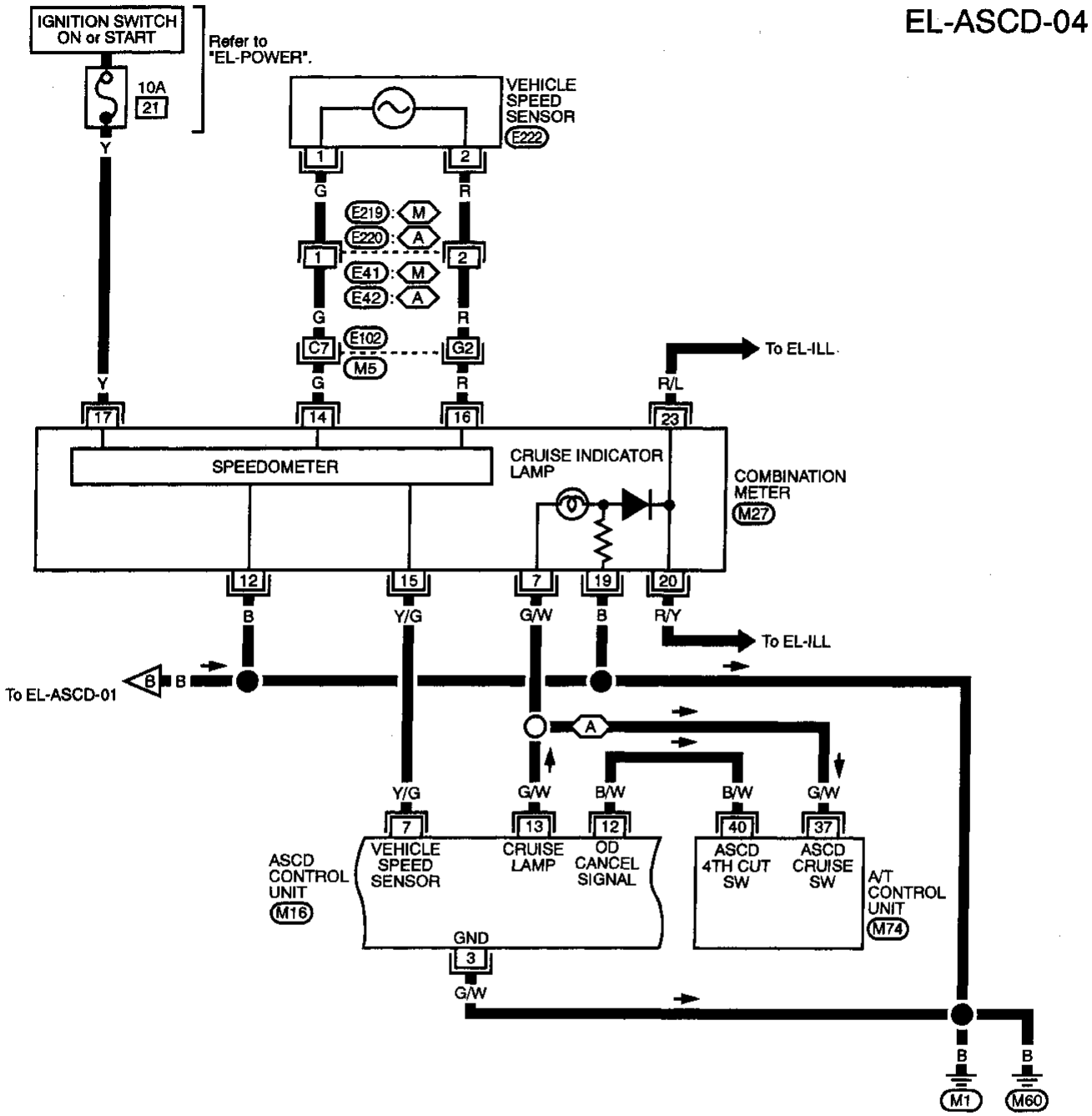
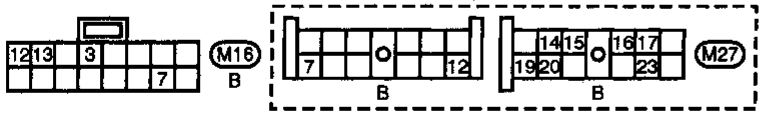
M5 , E102

MEL120D

## Wiring Diagram — ASCD — (Cont'd)

EL-ASCD-04



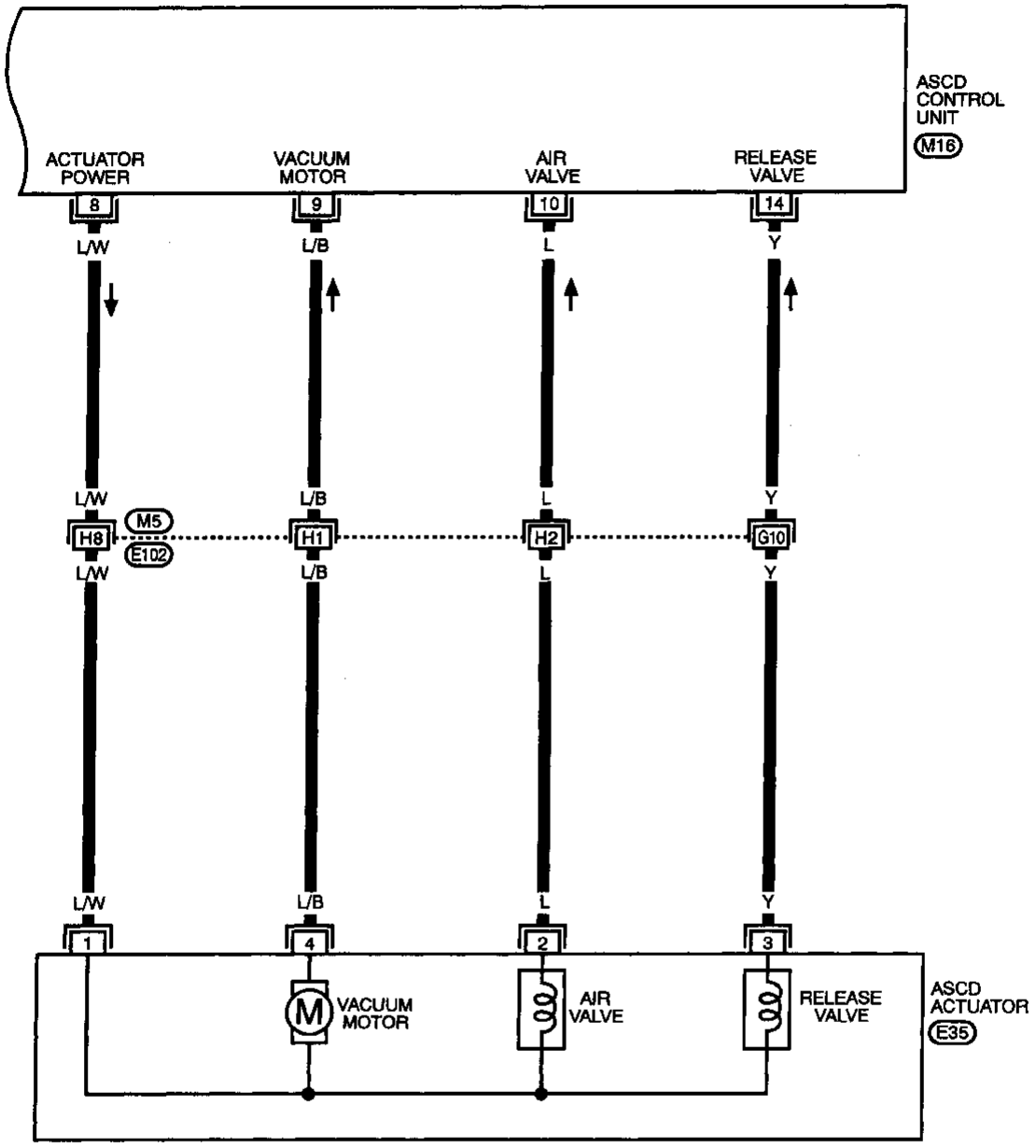


Refer to last page (Foldout page).
M5 , E102
M74

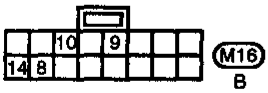
MEL121D

## Wiring Diagram — ASCD — (Cont'd)

EL-ASCD-05




Refer to last page (Foldout page).
M5 , E102





MEL122D

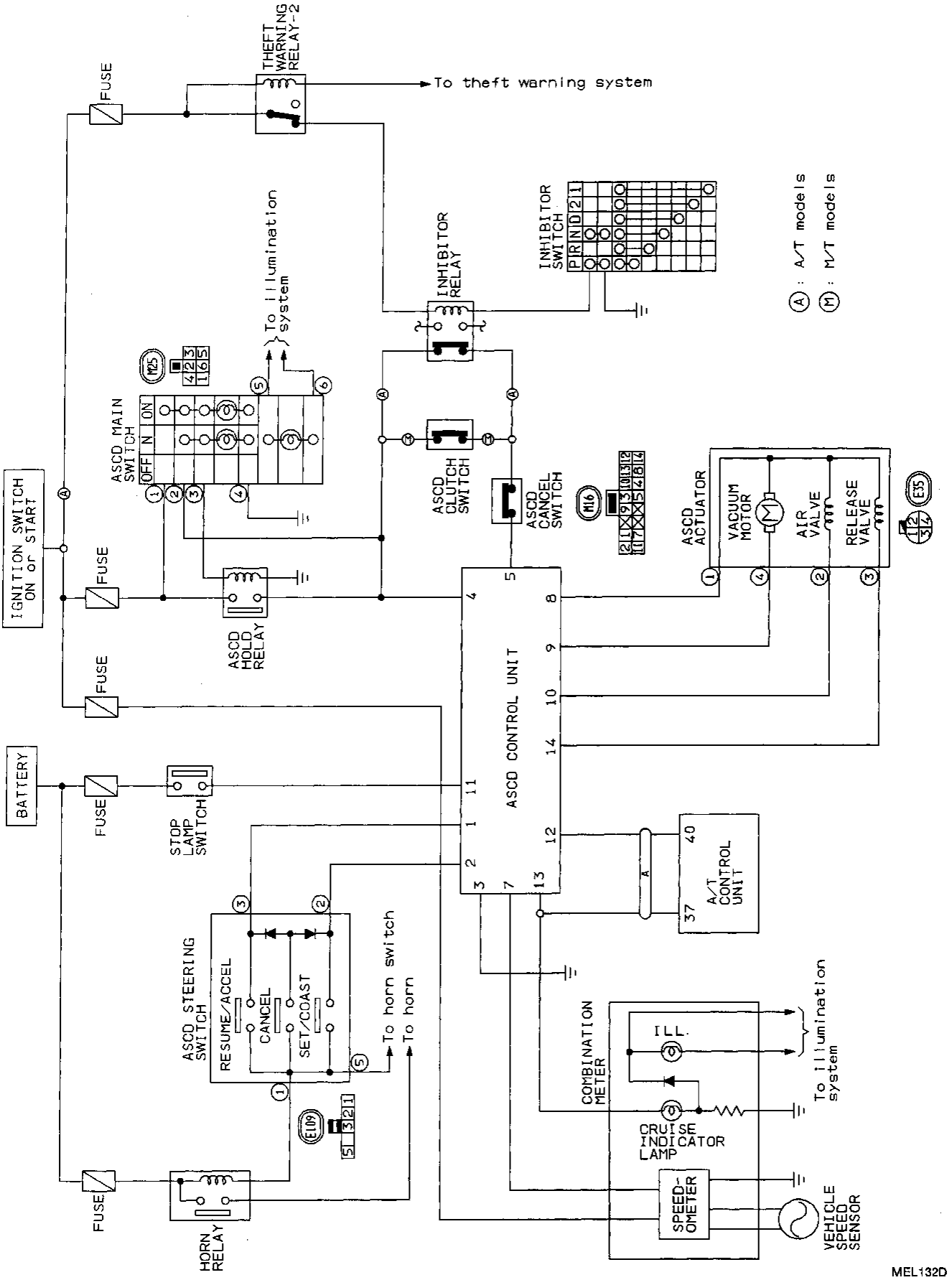
## Trouble Diagnoses

### SYMPTOM CHART

| PROCEDURE | Diagnostic Procedure | | | | | | | | Electrical Components Inspection | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REFERENCE PAGE | EL-126 | EL-128 | EL-128 | EL-129 | EL-130 | EL-131 | EL-132 | EL-133 | EL-134 | EL-135 | EL-135 | EL-136 | EL-136 | EL-136 | EL-136 | EL-136 |
| SYMPTOM | Diagnostic Procedure 1 | Diagnostic Procedure 2 | Diagnostic Procedure 3 | Diagnostic Procedure 4 | Diagnostic Procedure 5 | Diagnostic Procedure 6 | Diagnostic Procedure 7 | Diagnostic Procedure 8 | ASCD wire adjustment | ASCD actuator/ASCD pump | ASCD main switch | ASCD steering switch | ASCD cancel switch and stop lamp switch | ASCD clutch switch (For M/T models) | Inhibitor switch (For A/T models) | Vehicle speed sensor |
| ASCD control unit cannot be set properly. | ○ | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Engine hunts. | | ○ | | | | | | | ○ | ○ | | | | | | |
| Large difference between set speed and actual vehicle speed. | | | ○ | | | | | | ○ | ○ | | | | | | |
| Deceleration is greatest immediately after ASCD has been set. | | | | ○ | | | | | ○ | ○ | | | | | | |
| ACCEL switch will not operate. | ○ | | | | ○ | | | | | | | ○ | | | | |
| RESUME switch will not operate. | ○ | | | | | ○ | | | | | | ○ | ○ | ○ | | |
| Set speed cannot be cancelled. | | | | | | | ○ | | ○ | ○ | | | ○ | ○ | | |
| "CRUISE" indicator lamp blinks. | | | | | | | | ○ | | ○ | | ○ | ○ | | | |

## Trouble Diagnoses (Cont'd)

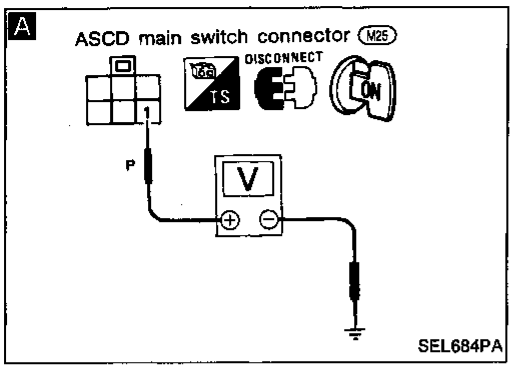
### CIRCUIT DIAGRAM FOR QUICK PINPOINT CHECK

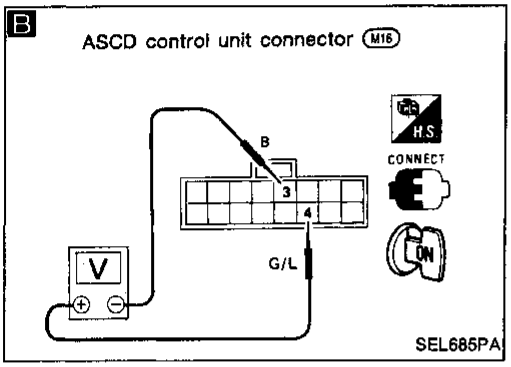


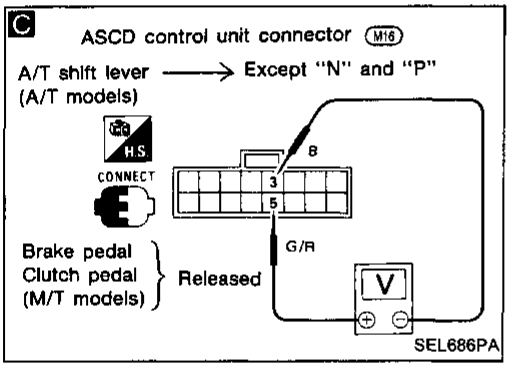
## Trouble Diagnoses (Cont'd)

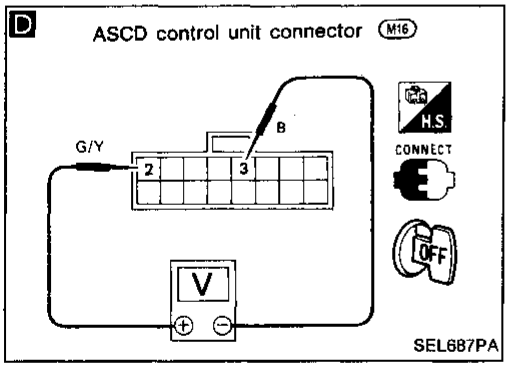
### DIAGNOSTIC PROCEDURE 1

**SYMPTOM: ASCD control cannot be set.**




Turn ASCD main switch "OFF" and "ON" to make sure indicator illuminates.

NG → A

OK ↓

A

CHECK POWER SUPPLY FOR ASCD MAIN SWITCH.
1. Disconnect main switch harness connector.
2. Do approx. 12 volts exist between main switch harness terminal ① and body ground?

No → Check fuse and harness.

Yes → CHECK ASCD MAIN SWITCH.
Refer to "Electrical Components Inspection" (EL-135).
CHECK ASCD HOLD RELAY.

B

CHECK POWER SUPPLY CIRCUIT FOR ASCD CONTROL UNIT.
1. Turn ASCD main switch "ON".
2. Check voltage between control unit harness terminals ④ and ③.
**Battery voltage should exist.**

NG → Check continuity between control unit harness terminal ④ and ASCD hold relay.

OK ↓

C

CHECK CUT-OFF CIRCUIT FOR ASCD CONTROL UNIT.
Check voltage between control unit harness terminals ⑤ and ③.
**Battery voltage should exist.**

NG → CHECK ASCD CANCEL SWITCH, ASCD CLUTCH SWITCH (M/T models) AND INHIBITOR SWITCH (A/T models).
Refer to "Electrical Components Inspection" (EL-136).
CHECK INHIBITOR RELAY (A/T models) AND THEFT WARNING RELAY.

OK ↓

D

CHECK SET/COAST SWITCH CIRCUIT FOR ASCD CONTROL UNIT.
1. Push and hold SET/COAST button on ASCD steering switch.
2. Check voltage between control unit harness terminals ② and ③.
**Battery voltage should exist.**

NG → Does horn work?

No → Check fuse and horn relay.

Yes → CHECK ASCD STEERING SWITCH.
Refer to "Electrical Components Inspection" (EL-136).

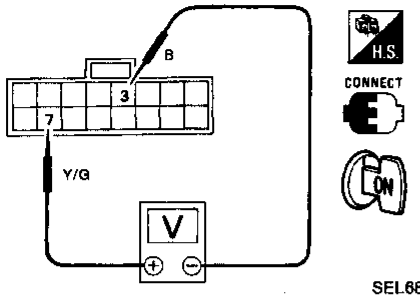
OK ↓

Ⓐ
(Next page)

## Trouble Diagnoses (Cont'd)

E

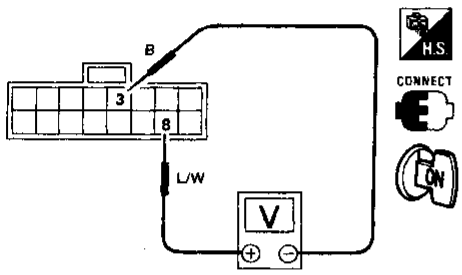
ASCD control unit connector M16



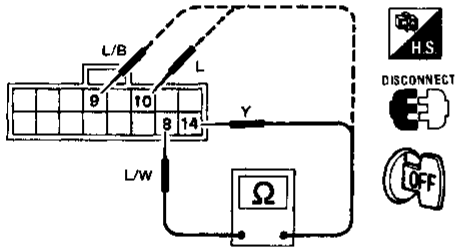

SEL688PA

F

ASCD control unit connector M15




ASCD control unit connector M16




SEL690PA

Ⓐ

E

CHECK VEHICLE SPEED SENSOR CIRCUIT.
1. Apply wheel chocks and jack up front of vehicle.
2. Connect voltmeter between control unit harness terminals ⑦ and ③.
3. Slowly turn front wheel.
4. Check deflection of voltmeter pointer.

NG → CHECK VEHICLE SPEED SENSOR. Refer to "Electrical Components Inspection".

OK ↓

CHECK ASCD ACTUATOR/ASCD PUMP. Refer to "Electrical Components Inspection" (EL-135).

NG → Replace ASCD actuator/ASCD pump.

OK ↓

F

CHECK ASCD ACTUATOR/ASCD PUMP CIRCUIT.
1. Check voltage between control unit harness terminals ⑧ and ③. **Voltage is 0V.**
2. Disconnect ASCD control unit connector.
3. Measure resistance between control unit harness terminals ⑧ and ⑨, ⑩, ⑭.

NG → Repair short or open circuit in ASCD actuator/ASCD pump harness.

| Terminals | | Resistance [Ω] |
|---|---|---|
| ⑧ | ⑨ | Approx. 8 - 45 |
| | ⑩ | Approx. 65 |
| | ⑭ | Approx. 65 |

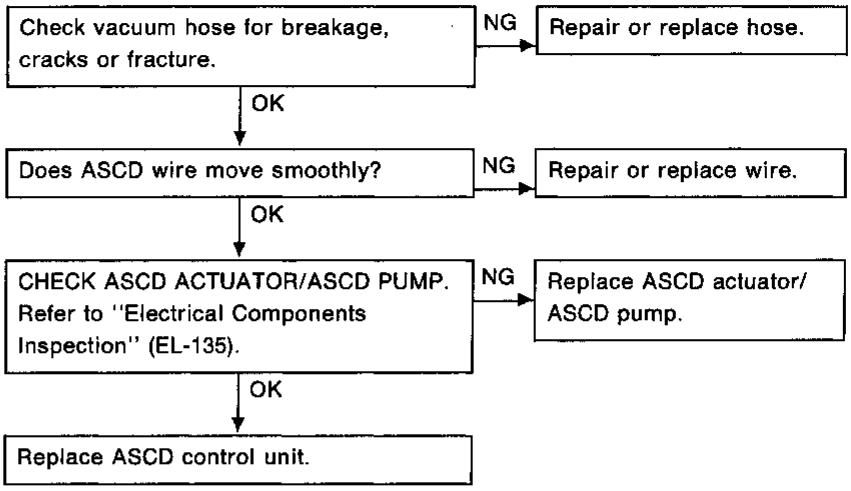
OK ↓

Replace ASCD control unit.

## Trouble Diagnoses (Cont'd)

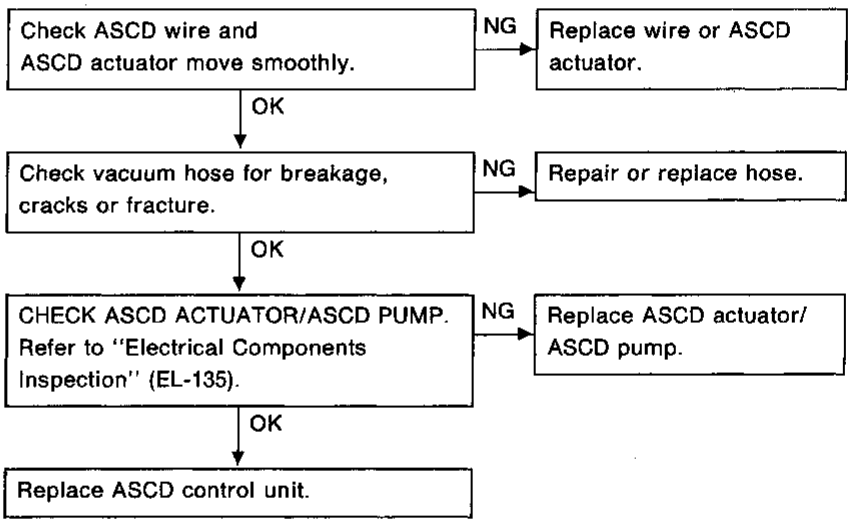
### DIAGNOSTIC PROCEDURE 2

**SYMPTOM: Engine hunts.**




### DIAGNOSTIC PROCEDURE 3

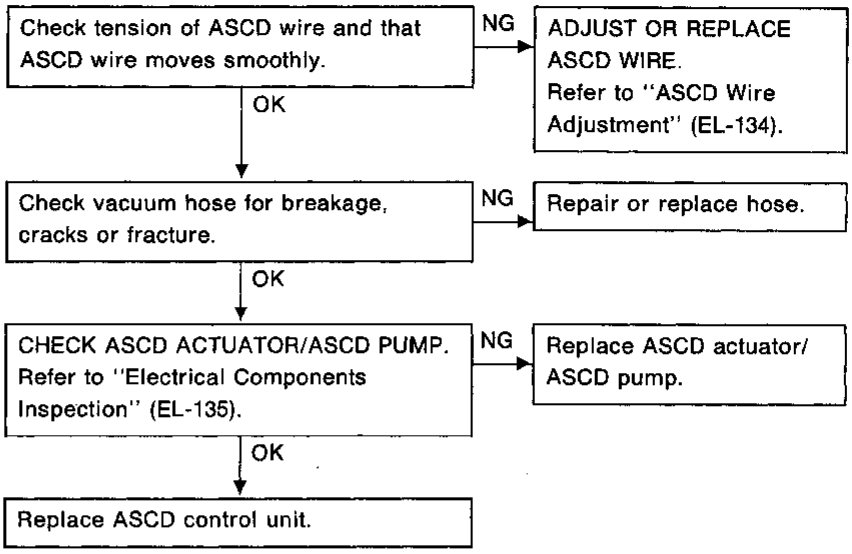
**SYMPTOM: Large difference between set vehicle speed and actual speed.**



## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 4

**SYMPTOM: Deceleration is greatest immediately after ASCD has been set.**

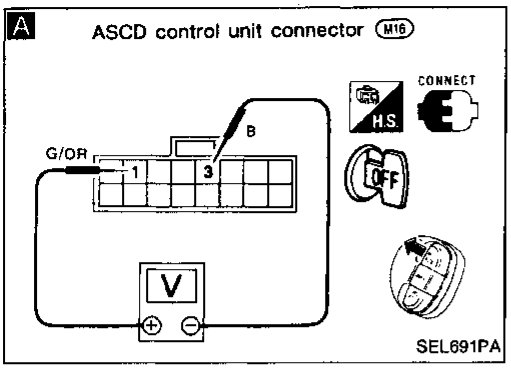


## Trouble Diagnoses (Cont'd)

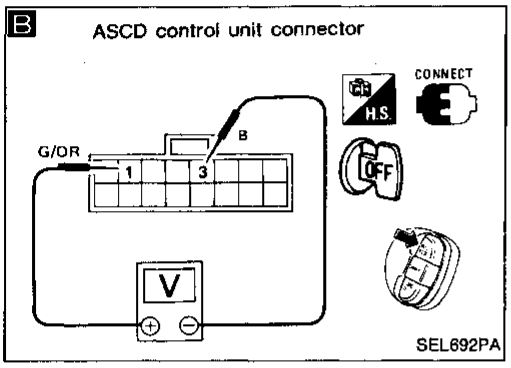
### DIAGNOSTIC PROCEDURE 5

**SYMPTOM: ACCEL switch will not operate.**

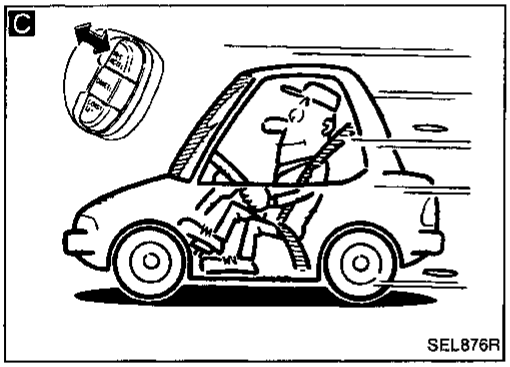
A




B




C




Check constant-speed function for operating using SET/COAST switch.
- NG → Go to "DIAGNOSTIC PROCEDURE 1" (EL-126).
- OK ↓

A

Check voltage between control unit harness terminals ① and ③ after pressing and holding RESUME/ACCEL switch.
**Battery voltage should exist.**
- NG → CHECK ASCD STEERING SWITCH. Refer to "Electrical Components Inspection" (EL-136).
- OK ↓

B

Check voltage between control unit harness terminals ① and ③ after releasing RESUME/ACCEL switch.
**Voltage is 0V.**
- NG → CHECK ASCD STEERING SWITCH. Refer to "Electrical Components Inspection" (EL-136).
- OK ↓

C

Does vehicle accelerate when RESUME/ACCEL switch is pressed?
- No → Replace control unit.
- Yes ↓

C

Does vehicle maintain the new (faster) speed when RESUME/ACCEL switch is released?
- No → Replace control unit.
- Yes ↓

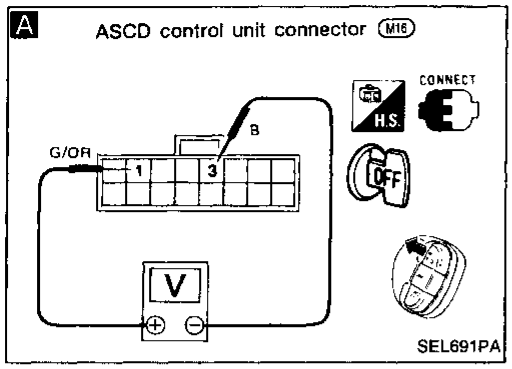
System is OK.

## Trouble Diagnoses (Cont'd)

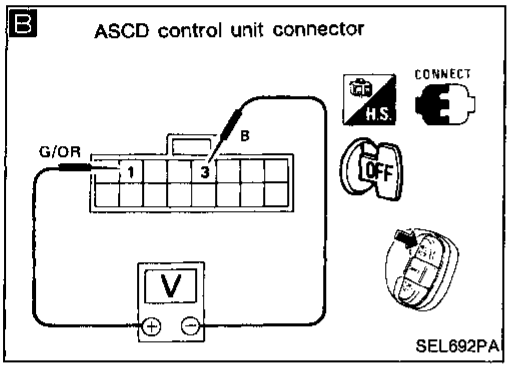
### DIAGNOSTIC PROCEDURE 6

**SYMPTOM: RESUME switch will not operate.**

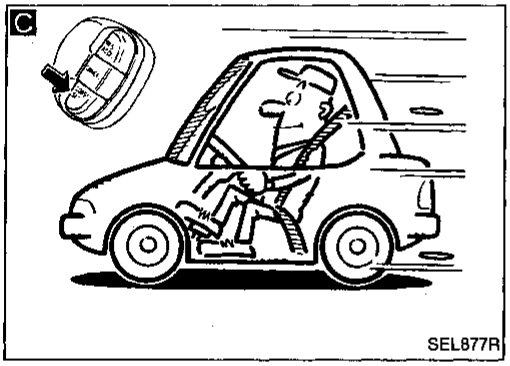
A



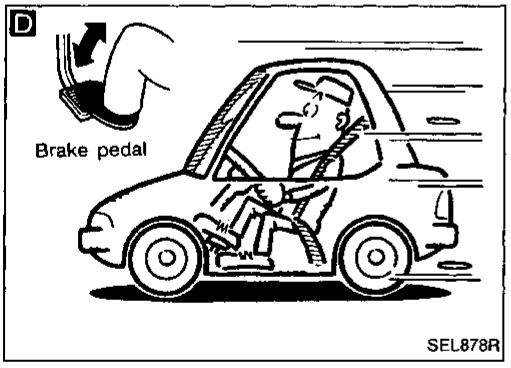

B



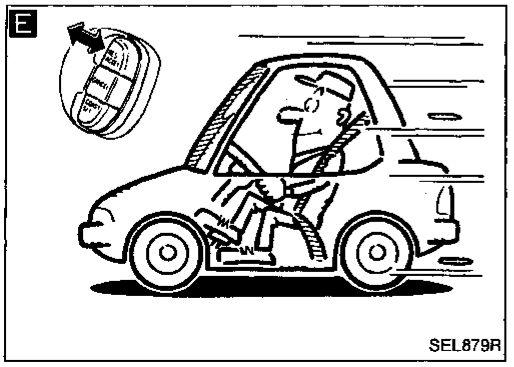

C




D




E




Check constant-speed function for operation using SET/COAST switch.
- NG → Go to "DIAGNOSTIC PROCEDURE 1" (EL-126).
- OK ↓

A

Check voltage between control unit harness terminals ① and ③ after pressing and holding RESUME/ACCEL switch.
**Battery voltage should exist.**
- NG → CHECK ASCD STEERING SWITCH. Refer to "Electrical Components Inspection" (EL-136).
- OK ↓

B

Check voltage between control unit harness terminals ① and ③ after releasing RESUME/ACCEL switch.
**Voltage is 0V.**
- NG → CHECK ASCD STEERING SWITCH. Refer to "Electrical Components Inspection" (EL-136).
- OK ↓

C

Set vehicle speed at 80 km/h (50 MPH) by pressing SET/COAST switch.
- OK ↓

D

While cruising at set speed, depress and release brake pedal.
- OK ↓

Does speed control disengage and "CRUISE" lamp turn off?
- No → CHECK STOP LAMP SWITCH, ASCD CANCEL SWITCH AND ASCD CLUTCH SWITCH (M/T models). Refer to "Electrical Components Inspection" (EL-136).
- Yes ↓

E

Above 48 km/h (30 MPH), press and release RESUME/ACCEL switch.
- OK ↓

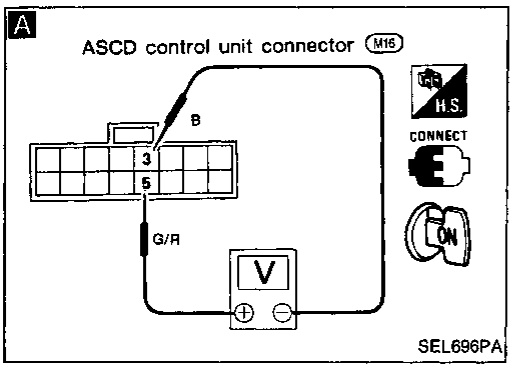
Does vehicle return to previously set speed [80 km/h (50 MPH)]?
- No → Replace control unit.
- Yes ↓

System is OK.

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 7

**SYMPTOM: Set speed cannot be cancelled.**



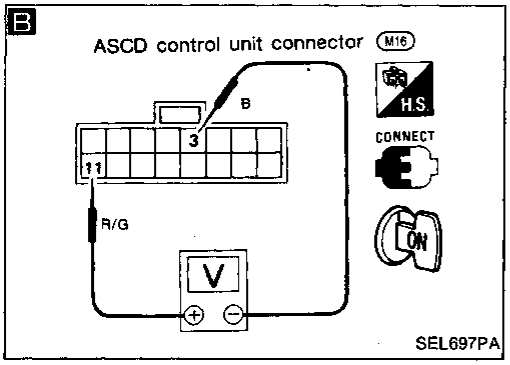

A

CHECK ASCD CANCEL, CLUTCH, INHIBITOR SWITCH CIRCUIT.
1. Turn ASCD main switch "ON".
2. Check voltage between control unit harness terminals ⑤ and ③.

| Conditions | | | Voltage [V] |
|---|---|---|---|
| M/T | ASCD cancel switch | De-pressed | 0 |
| | | Released | Approx. 12 |
| | ASCD clutch switch | De-pressed | 0 |
| | | Released | Approx. 12 |
| A/T | A/T shift lever position is at any position except N or P. | | Approx. 12 |
| | A/T shift lever position is at N or P. | | 0 |

NG → CHECK ASCD CANCEL, CLUTCH, and INHIBITOR SWITCH.
Refer to "Electrical Components Inspection" (EL-136).

OK ↓




B

CHECK STOP LAMP SWITCH CIRCUIT.
Check voltage between control unit harness terminals ⑪ and ③.

| Condition | | Voltage [V] |
|---|---|---|
| Stop lamp switch | Depressed | Approx. 12 |
| | Released | 0 |

NG → CHECK STOP LAMP SWITCH.
Refer to "Electrical Components Inspection" (EL-136).

OK ↓

Check ASCD wire moves smoothly.

NG → Replace ASCD wire.

OK ↓

CHECK ASCD ACTUATOR/ASCD PUMP.
Refer to "Electrical Components Inspection" (EL-135).

NG → Replace ASCD actuator/ASCD pump.

OK ↓

Replace ASCD control unit.

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 8

**SYMPTOM: "CRUISE" indicator lamp blinks.**

Does indicator lamp blink when ASCD main switch is turned to "ON" again?

Yes → Does indicator lamp blink when brake pedal is depressed slowly?

- Yes → Adjust installation of stop lamp switch and ASCD cancel switch. Refer to BR section.
- No → CHECK ASCD STEERING SWITCH. Refer to "Electrical Components Inspection" (EL-136).
  - NG → Replace ASCD steering switch.
  - OK → Replace control unit.

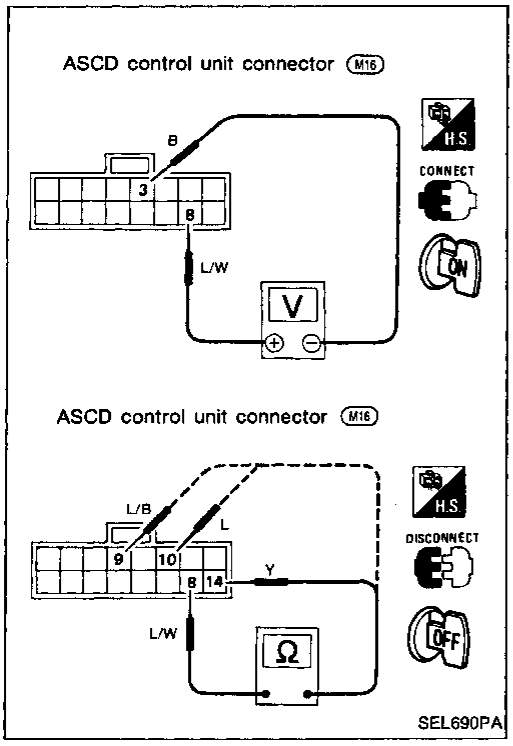
No → CHECK ASCD ACTUATOR/ASCD PUMP. Refer to "Electrical Components Inspection" (EL-135).

- NG → Replace ASCD actuator/ASCD pump.
- OK → CHECK ASCD ACTUATOR/ASCD PUMP CIRCUIT.
  1. Check voltage between control unit harness terminals ⑧ and ③. **Voltage is 0V.**
  2. Disconnect ASCD control unit connector.
  3. Measure resistance between control unit harness terminals ⑧ and ⑨, ⑩, ⑭.

  - NG → Repair short or open circuit in ASCD actuator/ASCD pump harness.

| Terminals | | Resistance [Ω] |
|---|---|---|
| ⑧ | ⑨ | Approx. 8 - 45 |
| | ⑩ | Approx. 65 |
| | ⑭ | Approx. 65 |

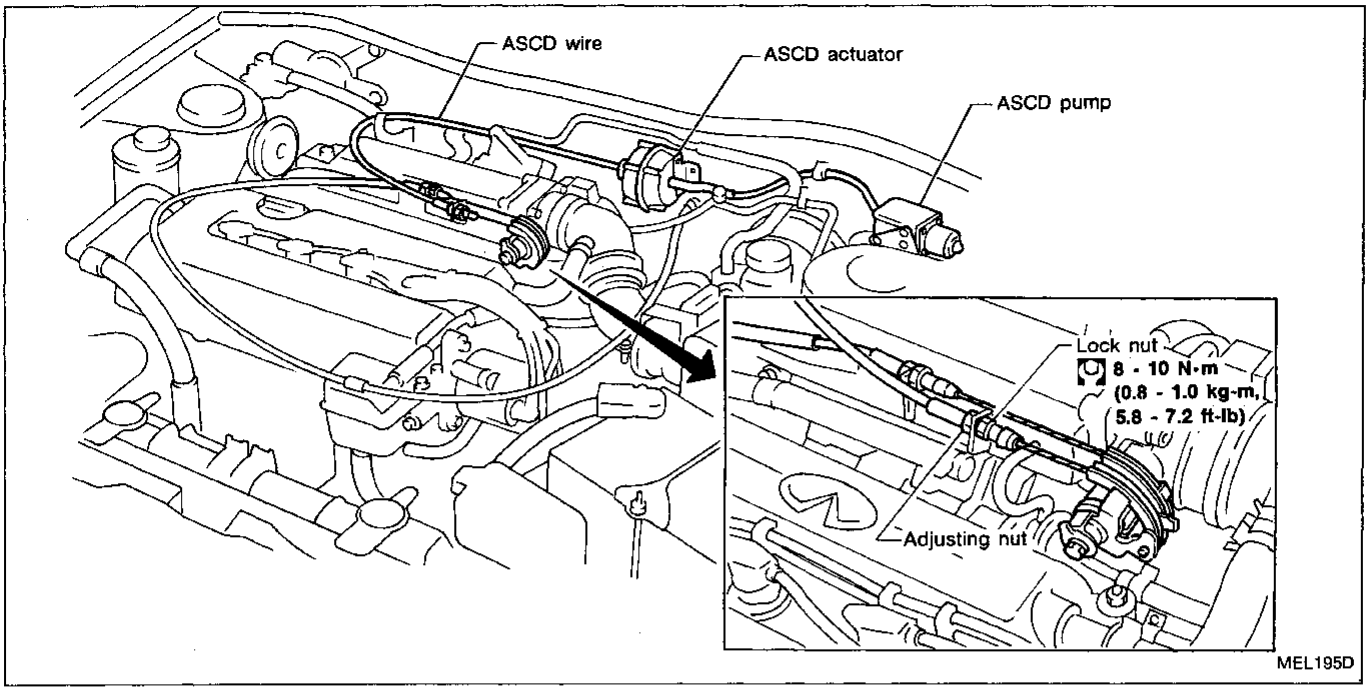
OK → Replace ASCD control unit.




GI MA EM LC EC FE CL MT AT FA RA BR ST BF HA EL IDX

## Trouble Diagnoses (Cont'd)

### ASCD WIRE ADJUSTMENT




**CAUTION:**

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

Adjust the tension of ASCD wire in the following manner.

(1) Loosen lock nut and adjusting nut.
(2) Make sure that accelerator wire is properly adjusted. (Refer to FE section, "ACCELERATOR CONTROL SYSTEM".)
(3) Tighten adjusting nut until throttle drum just starts to move.
(4) Loosen adjusting nut again 1/2 to 1 turn.
(5) Tighten lock nut.

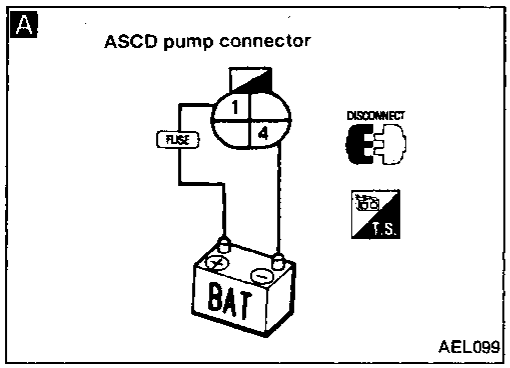
## Trouble Diagnoses (Cont'd)

### ELECTRICAL COMPONENTS INSPECTION

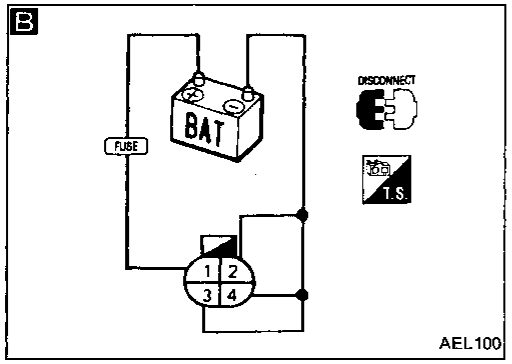
#### ASCD actuator/ASCD pump

1. Disconnect ASCD actuator/ASCD pump connector.
2. Check ASCD actuator/ASCD pump operations as shown.

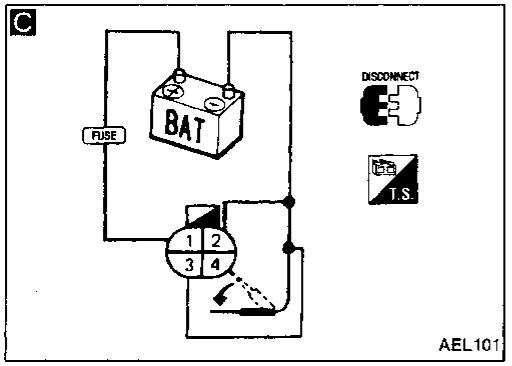
A



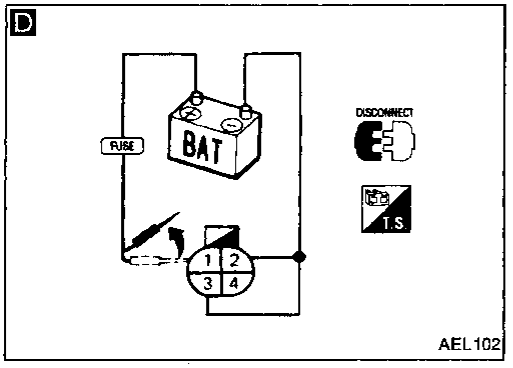

B




C




D




A

Does motor start when 12V DC is applied across ① and ④?
- No → Replace ASCD pump.
- Yes ↓

B

Is ASCD wire pulled when 12V DC is applied across ①, ②, ③ and ④?
- No → Disconnect vacuum hose from ASCD actuator and check for presence of vacuum pressure at ASCD pump.
  - NG → Replace ASCD actuator.
  - OK → C
- Yes ↓

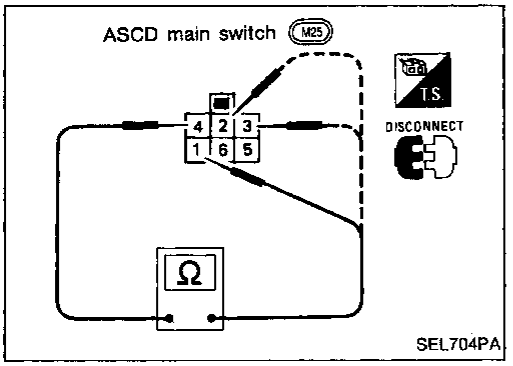
C

Does ASCD wire return to original position 50 to 60 seconds after disconnecting lead from ④?
- Yes → Replace ASCD pump.
- No ↓

D

Disconnect lead from ①. Does ASCD wire return immediately?
- No → Replace ASCD pump.
- Yes ↓

ASCD actuator/ASCD pump are OK.

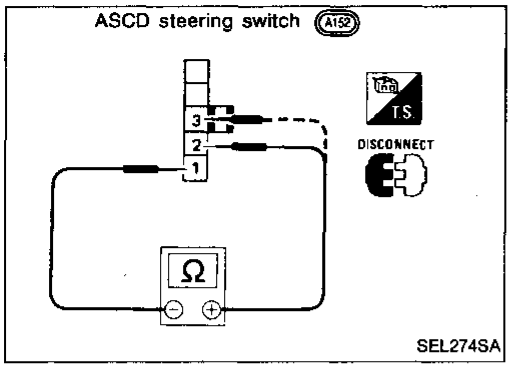



#### ASCD main switch

Check continuity between terminals by pushing switch to each position.

| Switch position | Terminals | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| ON | ○ | ○ | ○ | ○ | | |
| N | | ○ | ○ | ○ | ILL. ○ | ○ |
| OFF | | | | | | |

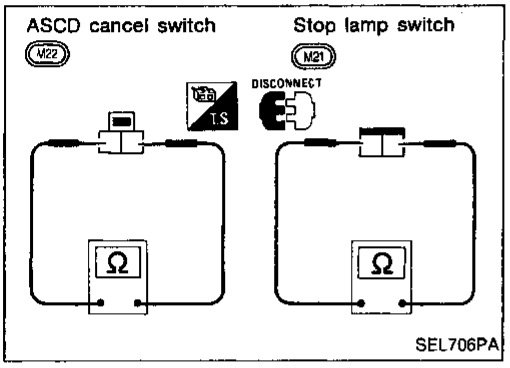
## Trouble Diagnoses (Cont'd)




### ASCD steering switch

Check continuity between terminals by pushing each button.

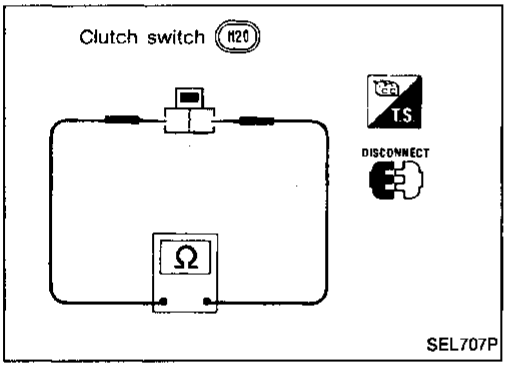
| Button | Terminal | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| SET/COAST | ○ | ○ | |
| RESUME/ACCEL | ○ | | ○ |
| CANCEL | ○ | ▶\|○ | |
| | ○ | ▶\| | ○ |




### ASCD cancel switch and stop lamp switch

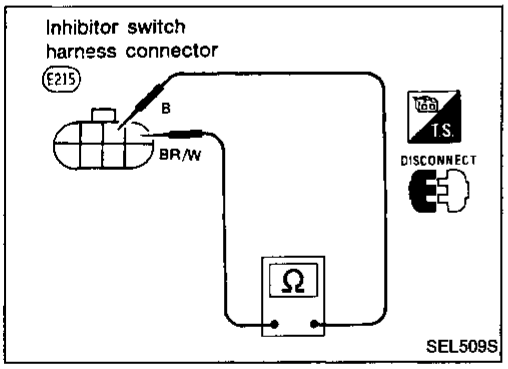
| Condition | Continuity | |
|---|---|---|
| | ASCD cancel switch | Stop lamp switch |
| When brake pedal is depressed | No | Yes |
| When brake pedal is released | Yes | No |

**Check each switch after adjusting brake pedal — refer to BR section.**



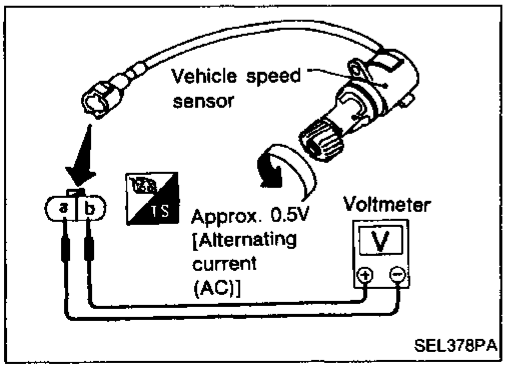

### Clutch switch (For M/T models)

| Condition | Continuity |
|---|---|
| When clutch pedal is depressed | No |
| When clutch pedal is released | Yes |




### Inhibitor switch (For A/T models)

| Condition | Continuity |
|---|---|
| When shift lever position is "N" or "P" | Yes |
| When shift lever position is any position except "N" or "P" | No |




### Vehicle speed sensor

1. Remove vehicle speed sensor from transaxle.
2. Turn vehicle speed sensor pinion quickly and measure voltage across ⓐ and ⓑ.

## System Description

Refer to Owner's Manual for theft warning system operating instructions.
Power is supplied at all times
- through 30A fusible link (letter [d] , located in the fusible link and fuse box)
- to ignition switch terminal ①.

With the ignition switch in the START position, power is supplied
- from terminal ④ of the ignition switch
- to clutch interlock relay terminal ② (M/T models for U.S.A.) or ⬅
- to theft warning relay-2 terminal ③ (M/T models for Canada) or ⬅
- to inhibitor relay terminal ⑦ (A/T models).

With the ignition switch in the START position, power is supplied
- through 10A fuse (No. [16] , located in the fuse block)
- to theft warning relay-2 terminal ③ (M/T models for U.S.A.).

With the ignition switch in the ON or START position, power is supplied
- through 10A fuse (No. [7] , located in the fuse block)
- to theft warning relay-2 terminal ① and
- to theft warning relay-2 terminal ③ (A/T models).

Power is supplied at all times
- through 10A fuse (No. [25] , located in the fuse block)
- to theft warning control unit terminal ① and
- to security indicator lamp terminal ①.

With the ignition switch in the ACC or ON position, power is supplied
- through 10A fuse (No. [10] , located in the fuse block)
- to theft warning control unit terminal ③.

Ground is supplied
- to theft warning control unit terminal ⑯
- through body grounds (M1) and (M60).

### THEFT WARNING SYSTEM ACTIVATION (Without key or remote controller used to lock front doors)

The operation of the theft warning system is controlled by the doors, hood and trunk lid.
To activate the theft warning system, the key must be removed from the ignition switch and the theft warning control unit must receive signals indicating the doors, hood and trunk are closed and the doors are locked.
When a door is open, theft warning control unit terminal ⑤ receives a ground signal from each door switch.
When a door is unlocked, theft warning control unit terminal ⑨ receives a ground signal
- from terminal ② of the door lock actuator (door unlock sensor)
- through body grounds (M1) and (M60) for the front doors and
- through body grounds (M101) and (M165) for the rear doors.

When the hood is open, theft warning control unit terminal ⑮ receives a ground signal
- from terminal ① of the hood switch
- through body grounds (E10) and (E33).

When the trunk lid is open, theft warning control unit terminal ⑭ receives a ground signal
- from terminal ① of the trunk room lamp switch
- through body grounds (M101) and (M165).

If none of the described conditions exist, the theft warning system will activate automatically.

### THEFT WARNING SYSTEM ACTIVATION (With key used to lock doors)

If the rear doors are locked and the key is used to lock either front door, theft warning control unit terminal ⑦ receives a ground signal
- from terminal ① of the front door key cylinder switch LH or terminal ② of the front door key cylinder switch RH
- through body grounds (M1) and (M60).

If this signal is received by the theft warning control unit, the theft warning system will activate automatically.

## System Description (Cont'd)

### THEFT WARNING SYSTEM ACTIVATION (With remote controller used to lock doors)

The remote controller used to lock all doors, theft warning control unit terminal ⑦ receives a ground signal

- from terminal ⑯ of the multi-remote control unit.

If this signal is received by the theft warning control unit, the theft warning system will activate automatically.

Once the theft warning system has been activated, theft warning control unit terminal ② supplies ground to terminal ㊴ of the security indicator lamp.

The security indicator lamp will illuminate for approximately 30 seconds and then go out.

### THEFT WARNING SYSTEM OPERATION

The theft warning system is triggered by

- opening a door or the trunk lid without using the key
- opening the hood
- tampering with the key cylinder in the door or trunk lid.

Once the theft warning system has been activated, if the theft warning control unit receives a ground signal at terminal ⑤, terminal ⑭ or terminal ⑮ (as described under THEFT WARNING SYSTEM ACTIVATION), the theft warning system will be triggered. Also, when one of the following signals is received at the theft warning control unit, the system will be triggered. The headlamps flash and the horn sounds intermittently, and the starting system is interrupted.

When a door key cylinder switch has been tampered with, theft warning control unit terminal ⑥ receives a ground signal

- from terminal ③ of the front door key cylinder switch LH or RH
- through body grounds (M1) and (M60).

When the trunk lid key cylinder switch has been tampered with, theft warning control unit terminal ⑥ receives a ground signal

- from terminal ② of the trunk lid key cylinder switch
- through body grounds (M101) and (M165).

If the theft warning system is triggered, ground is supplied

- from terminal ④ of the theft warning control unit
- to theft warning relay-2 terminal ②.

With power and ground supplied, power to the clutch interlock relay (M/T models for U.S.A.) or inhibitor relay (A/T models) or starter motor (M/T models for Canada) is interrupted. The starter motor will not crank and the engine will not start.

Power is supplied at all times

- through 15A fuse (No. 18 , located in fusible link and fuse box)
- to theft warning horn relay terminals ① and ③,
- to theft warning relay-1 terminal ① and
- to horn relay terminal ②.

Power is supplied at all times

- through 15A fuse (No. 27 , located in fusible link and fuse box)
- to theft warning relay-1 terminal ⑥.

Power is supplied at all times

- through 15A fuse (No. 28 , located in the fusible link and fuse box)
- to theft warning relay-1 terminal ③.

When the theft warning system is triggered, ground is supplied intermittently

- from terminal ⑫ of the theft warning control unit
- to theft warning horn relay terminal ② and
- to theft warning relay-1 terminal ②, and
- from theft warning horn relay terminal ⑥
- to horn relay terminal ①. ⬅

The headlamps flash and the horn sounds intermittently.

The alarm automatically turns off after 2 or 3 minutes but will reactivate if the vehicle is tampered with again.

## System Description (Cont'd)

### THEFT WARNING SYSTEM DEACTIVATION

To deactivate the theft warning system, a door or the trunk lid must be unlocked with the key or remote controller.

When the key is used to unlock a door, theft warning control unit terminal ⑪ receives a ground signal from terminal ② of the front door key cylinder switch LH or terminal ① of the front door key cylinder switch RH.

When the key is used to unlock the trunk lid, theft warning control unit terminal ⑩ receives a ground signal from terminal ① of the trunk lid key cylinder switch.

When the remote controller is used to unlock the doors or trunk lid, theft warning control unit terminal ⑪ receives a ground signal from terminal ⑳ of the multi-remote control unit.

When the theft warning control unit receives either one of these signals, the theft warning system is deactivated.

### PANIC ALARM OPERATION

Multi-remote control system may operate the theft warning system (horn and headlamps) as required.

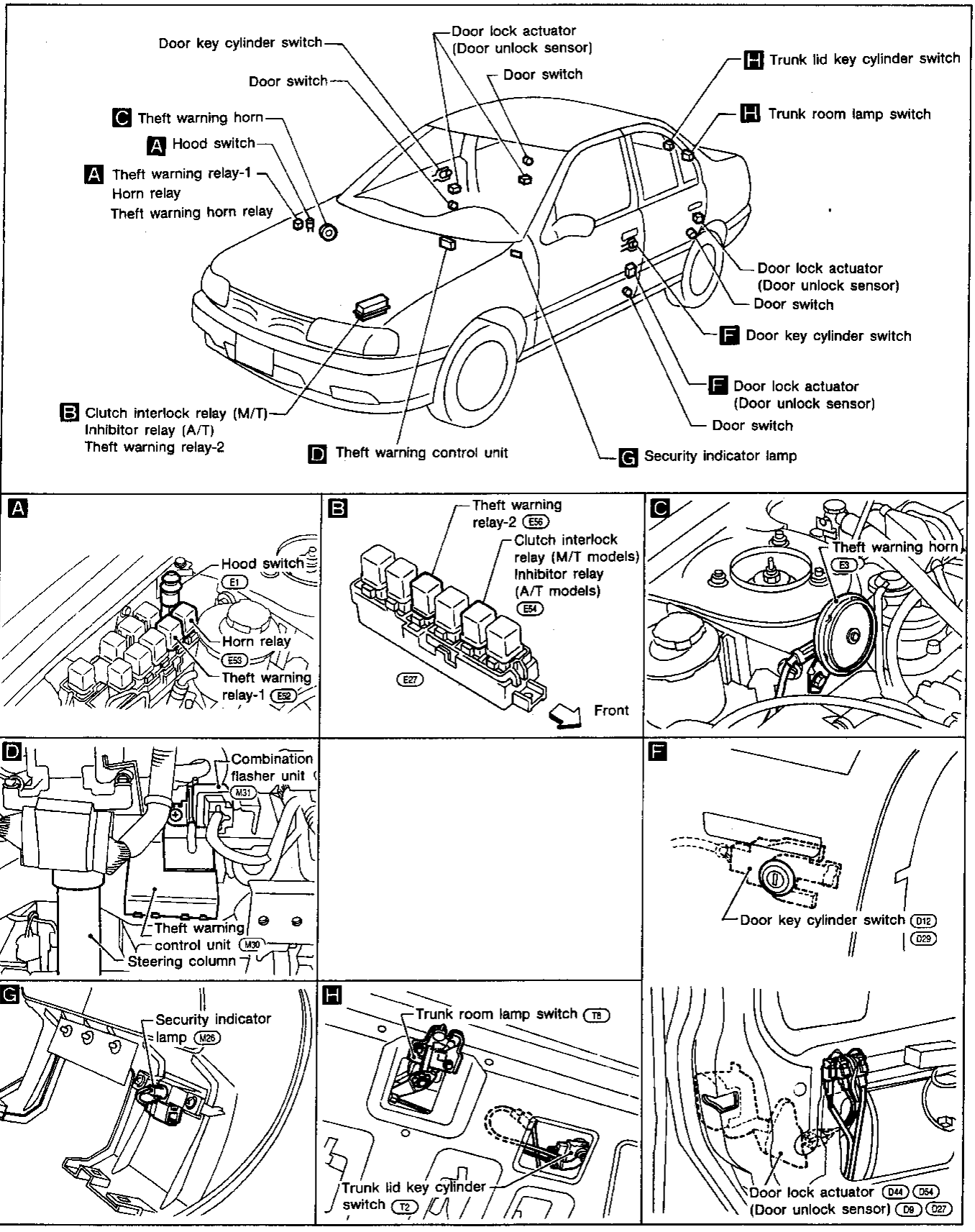
When the multi-remote control system is triggered, ground is supplied intermittently ⬅

- from multi-remote control unit terminal ⑱
- to theft warning horn relay terminal ② and
- to theft warning relay-1 terminal ②, and
- from theft warning horn relay terminal ⑥
- to horn relay terminal ①. ⬅

The headlamps flash and the horn sounds intermittently.

Alarm automatically turns off after 30 seconds or when multi-remote controller receives a certain signal.

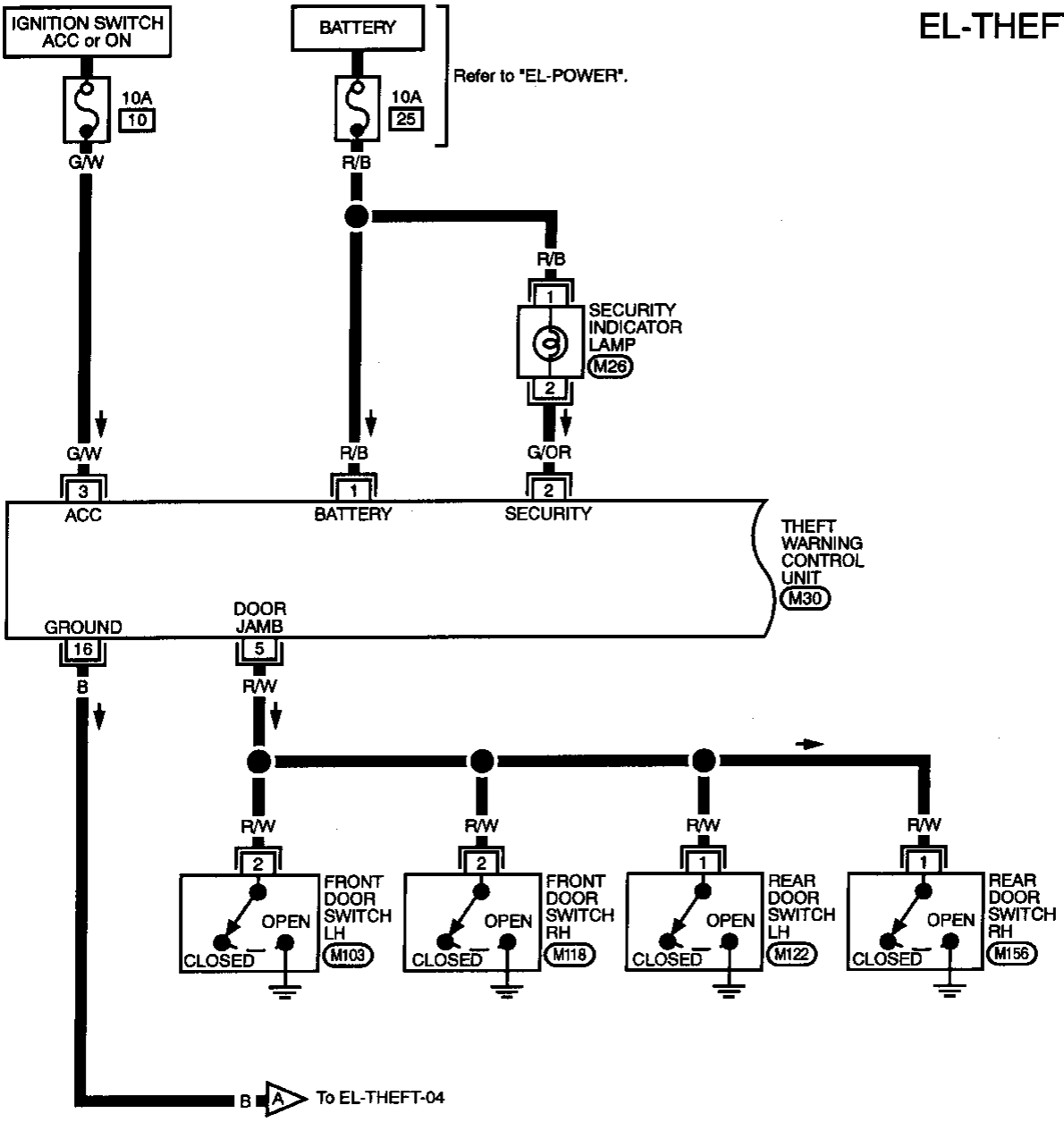
## Component Parts and Harness Connector Location

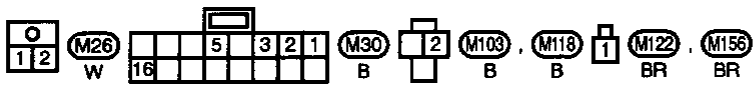



MEL196D

## Wiring Diagram — THEFT —

EL-THEFT-01

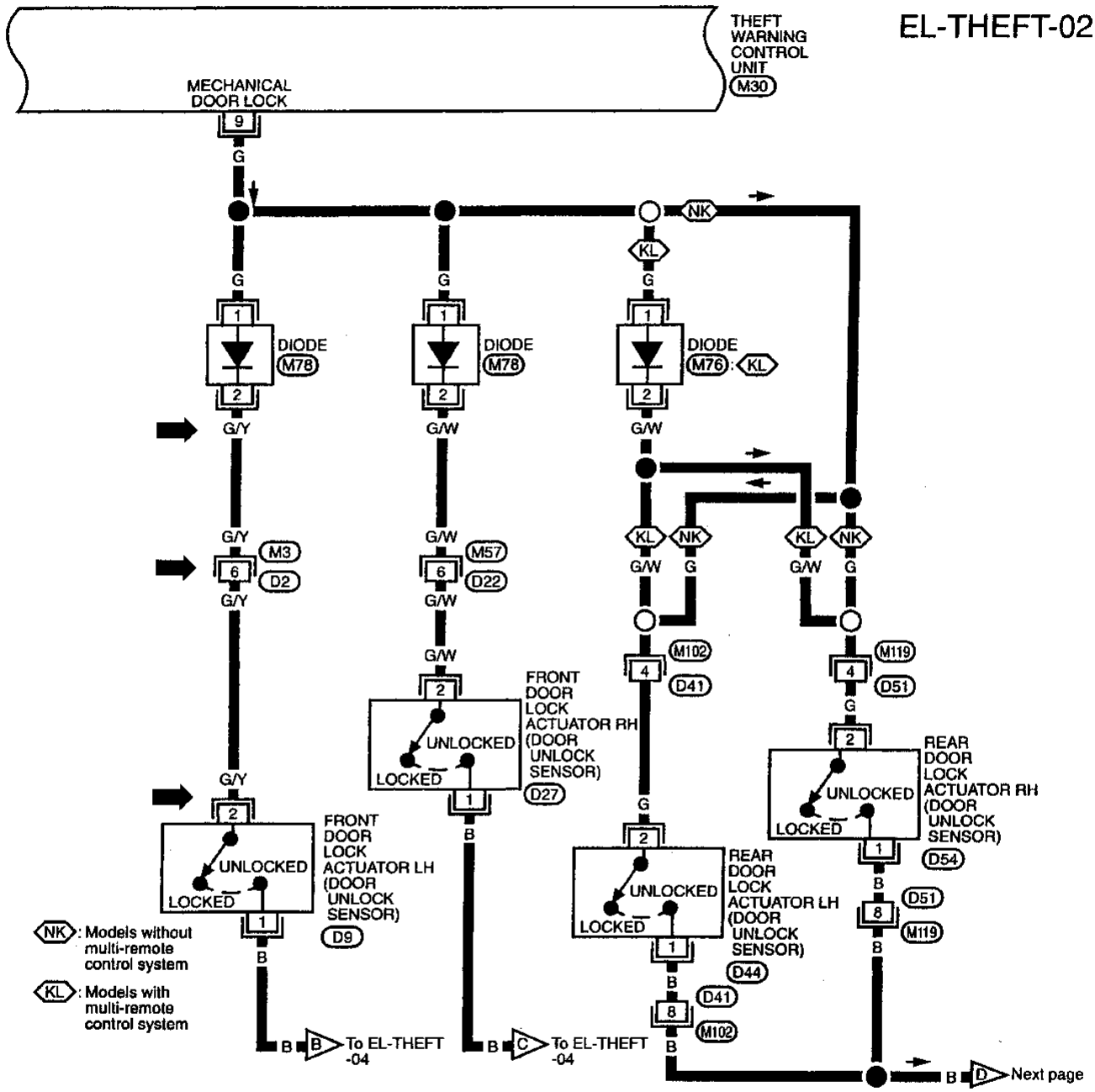


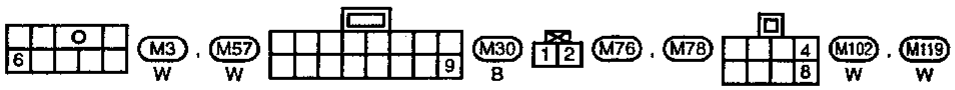




MEL123D

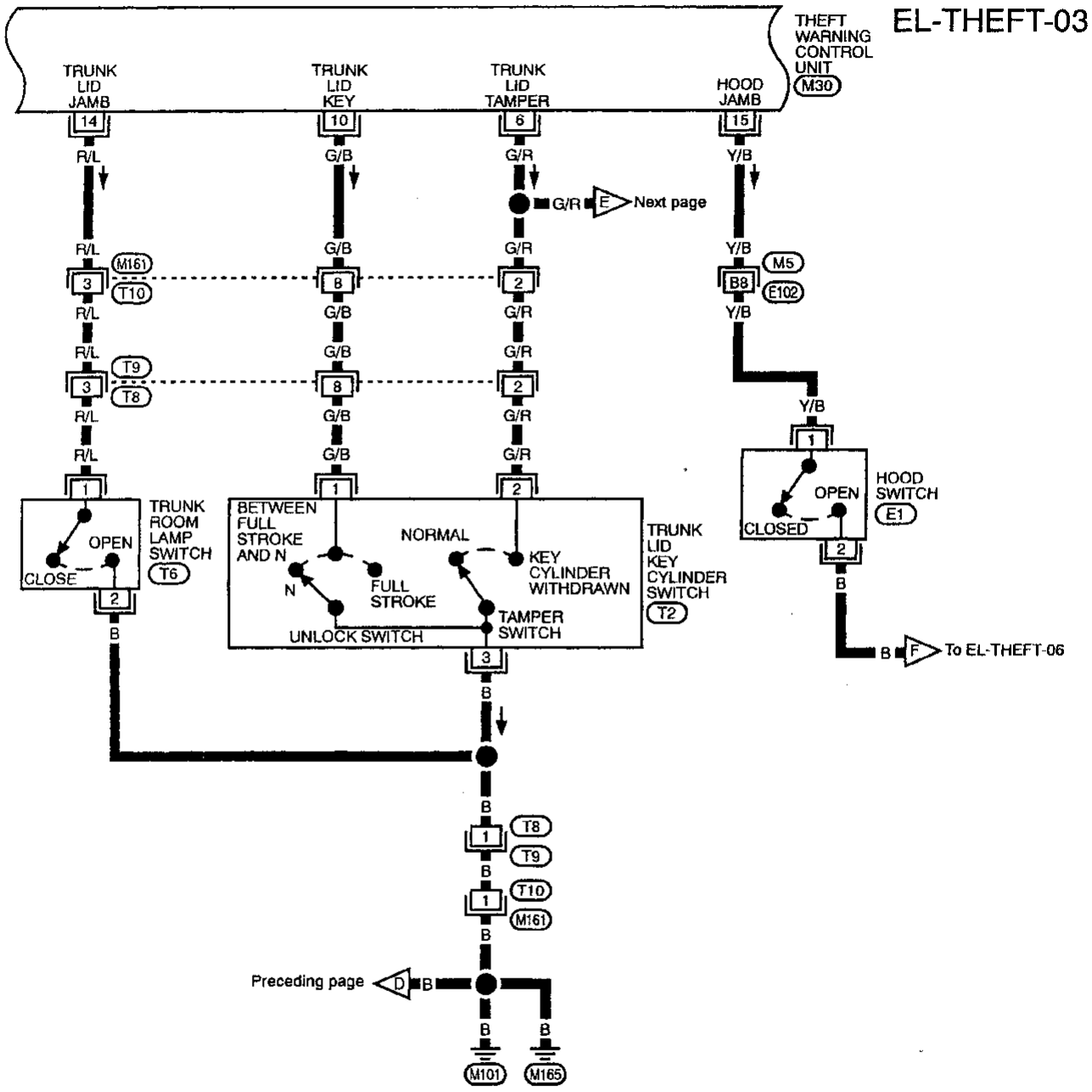
## Wiring Diagram — THEFT — (Cont'd)

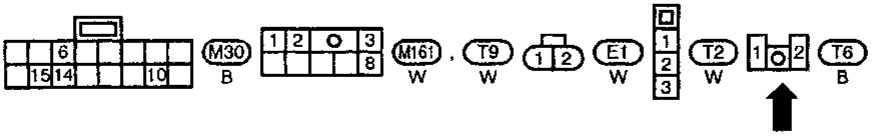
EL-THEFT-02




## Wiring Diagram — THEFT — (Cont'd)



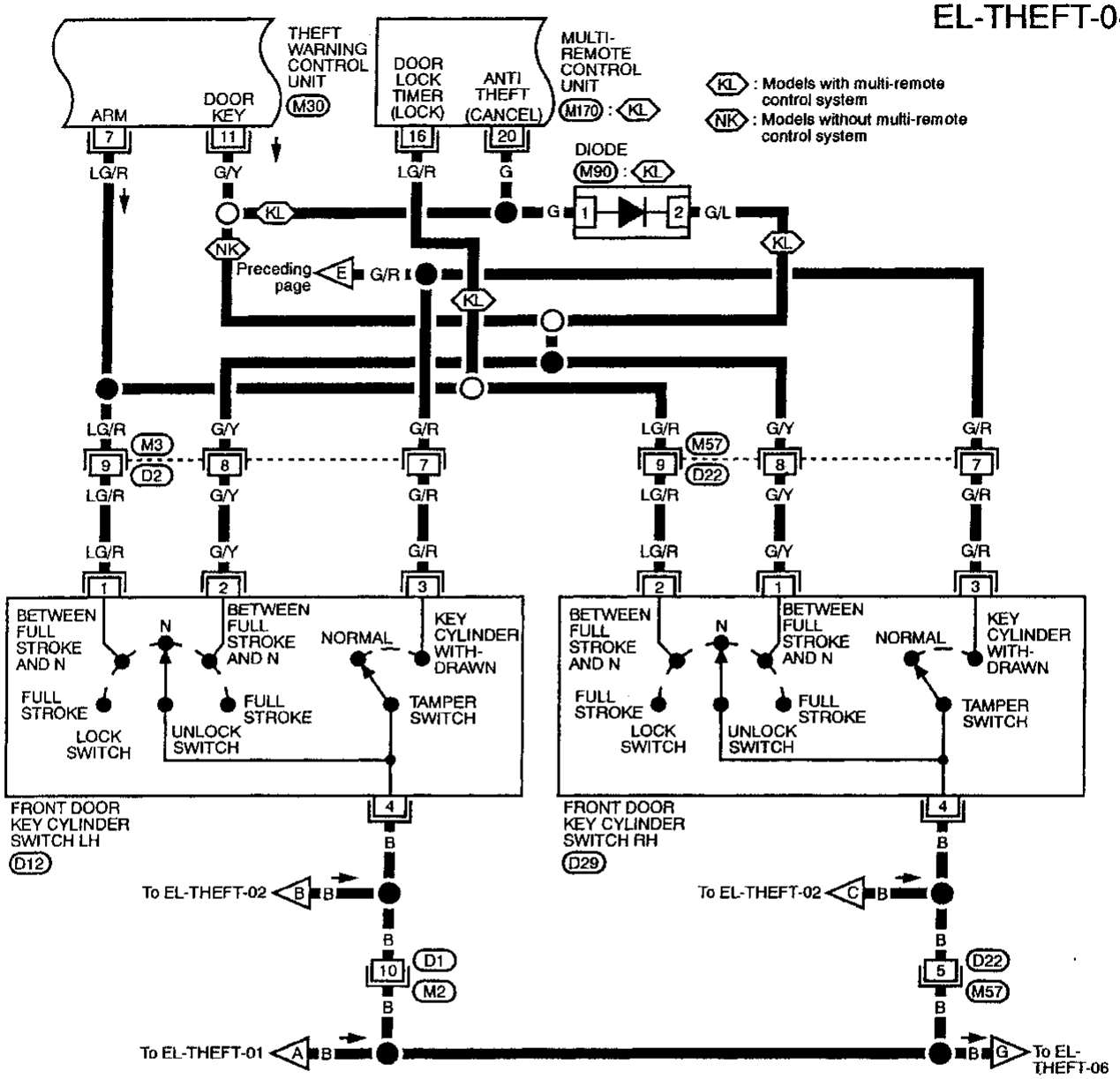



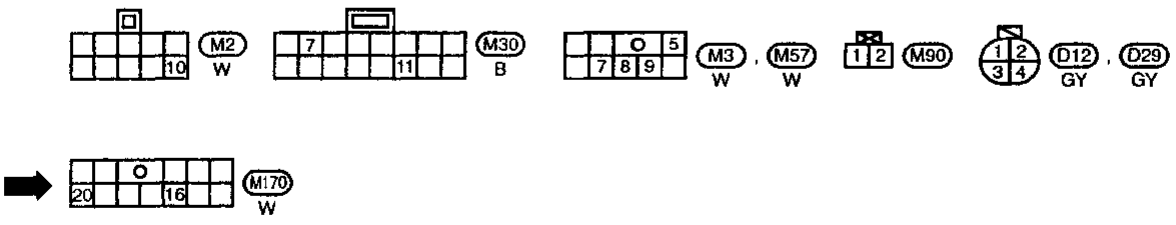

Refer to last page (Foldout page).
M5, E102

SEL947T

## Wiring Diagram — THEFT — (Cont'd)

EL-THEFT-04

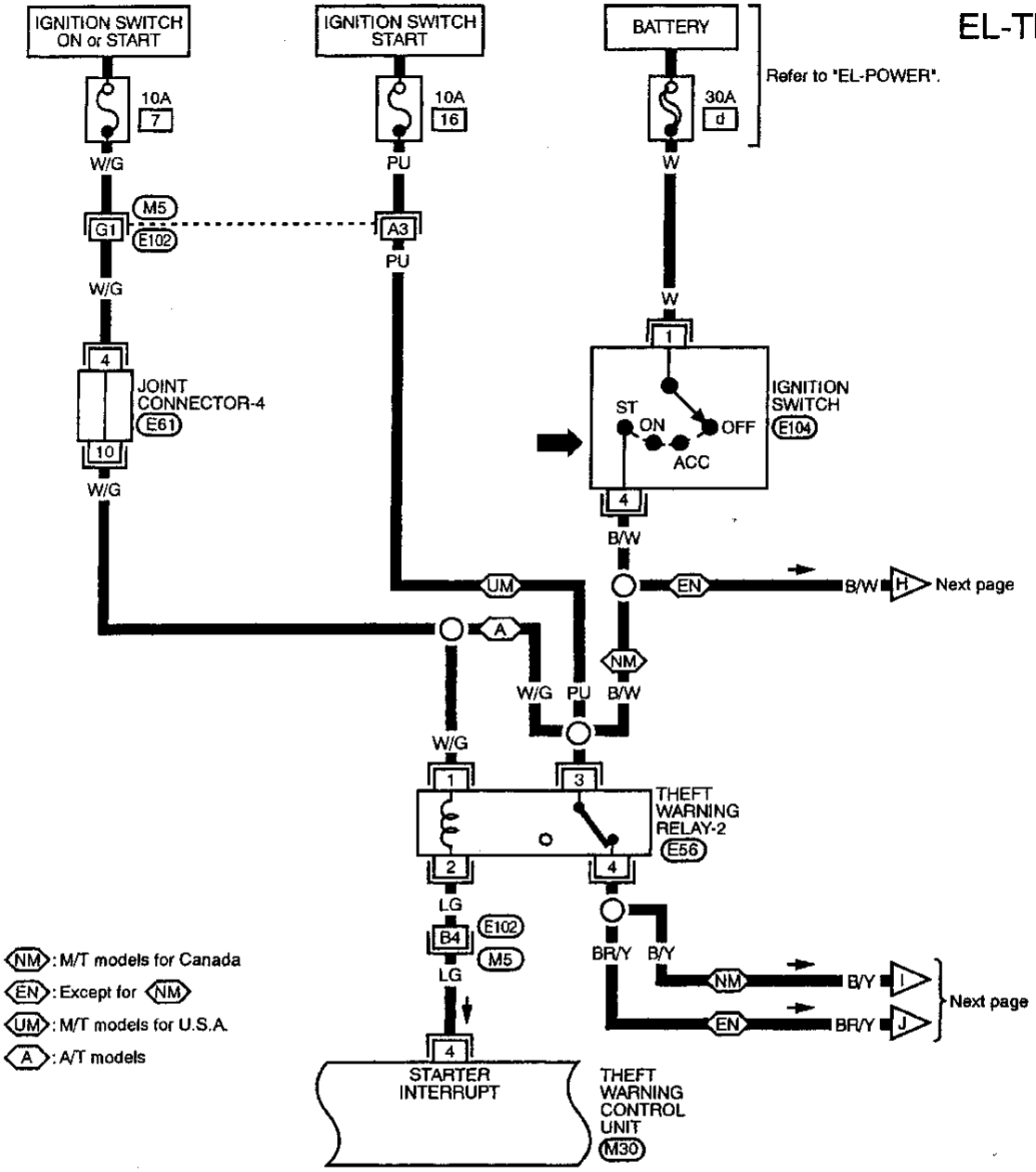


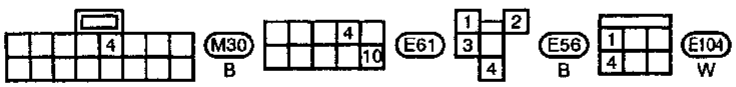




SEL948T

## Wiring Diagram — THEFT — (Cont'd)

EL-THEFT-05

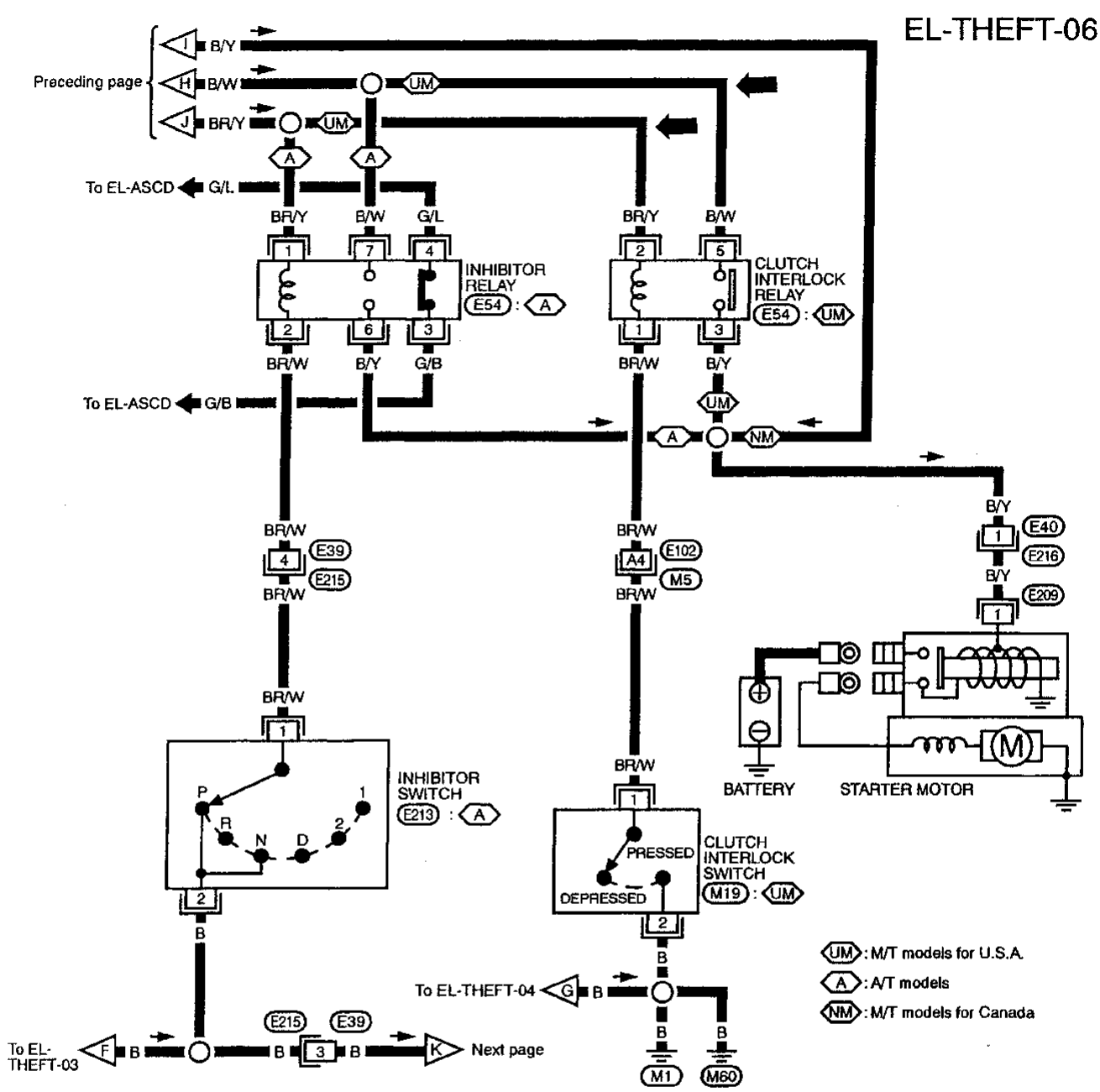


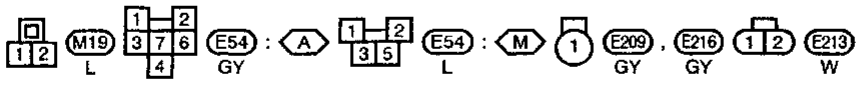

Refer to last page (Foldout page).
(M5), (E102)
(E61)

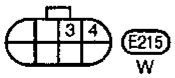
SEL949T

## Wiring Diagram — THEFT — (Cont'd)



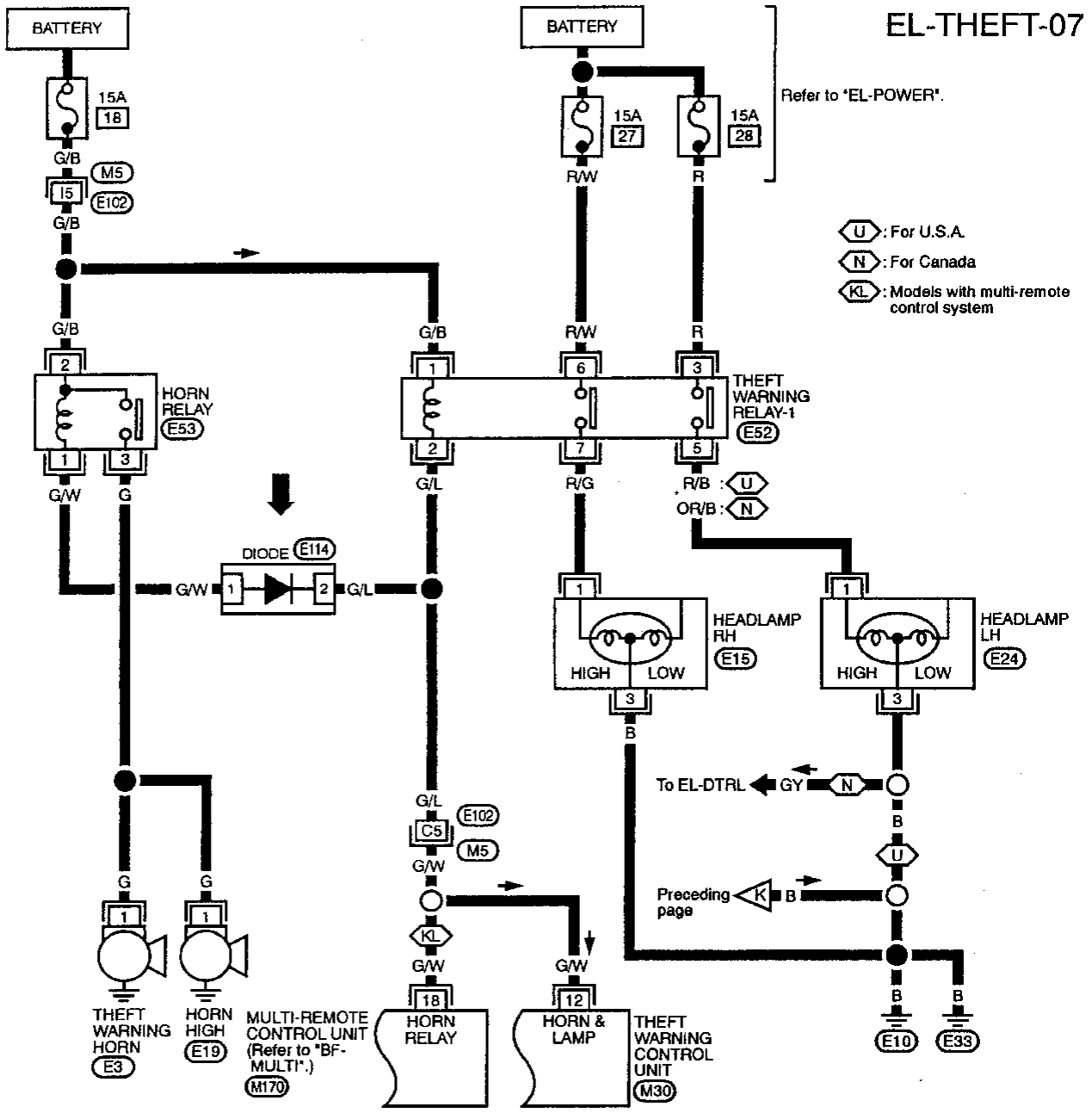

Refer to last page (Foldout page).
M5, E102



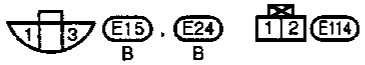




SEL950T

## Wiring Diagram — THEFT — (Cont'd)




Refer to last page (Foldout page).
M5, E102
E60

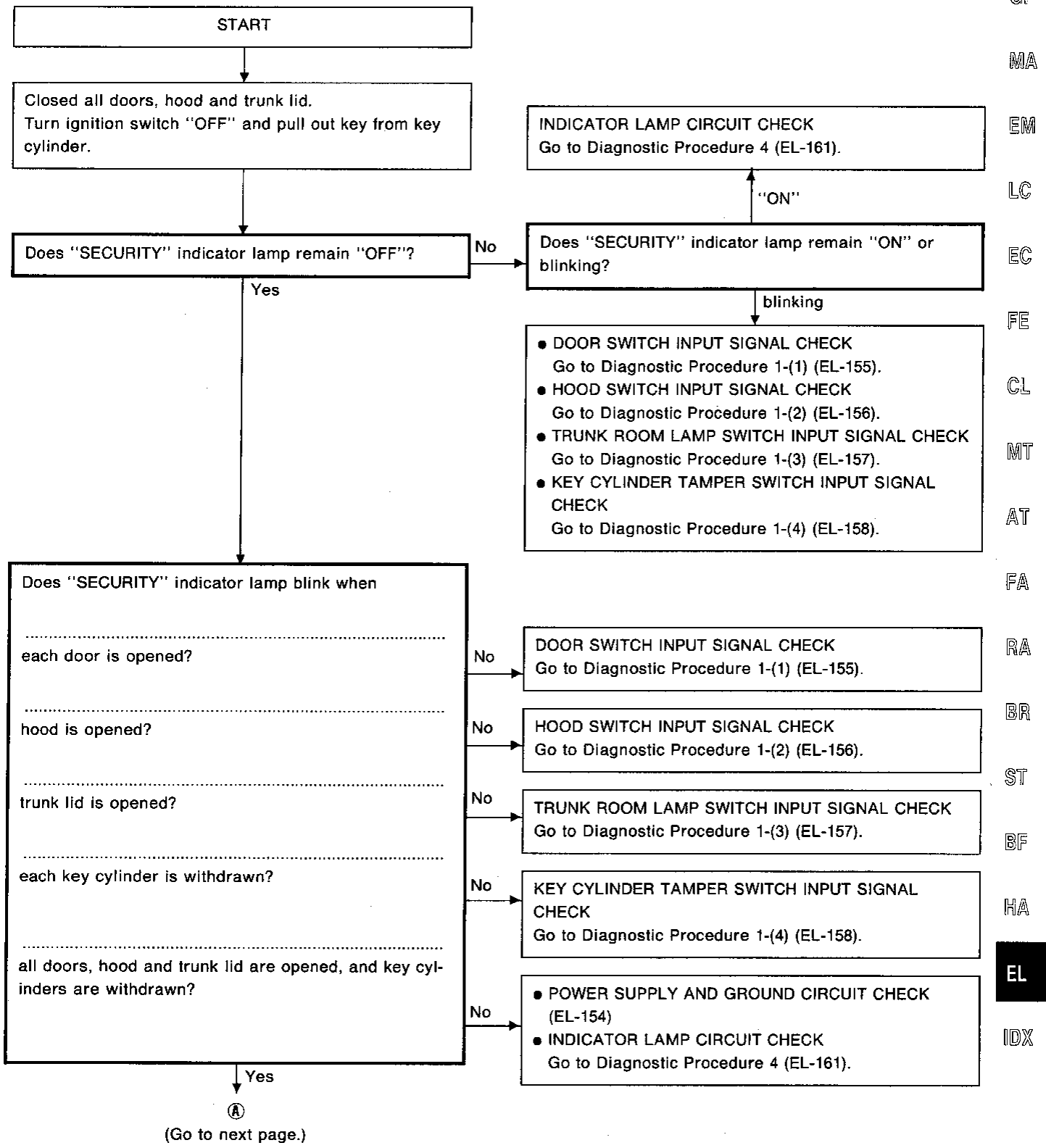




SEL951T

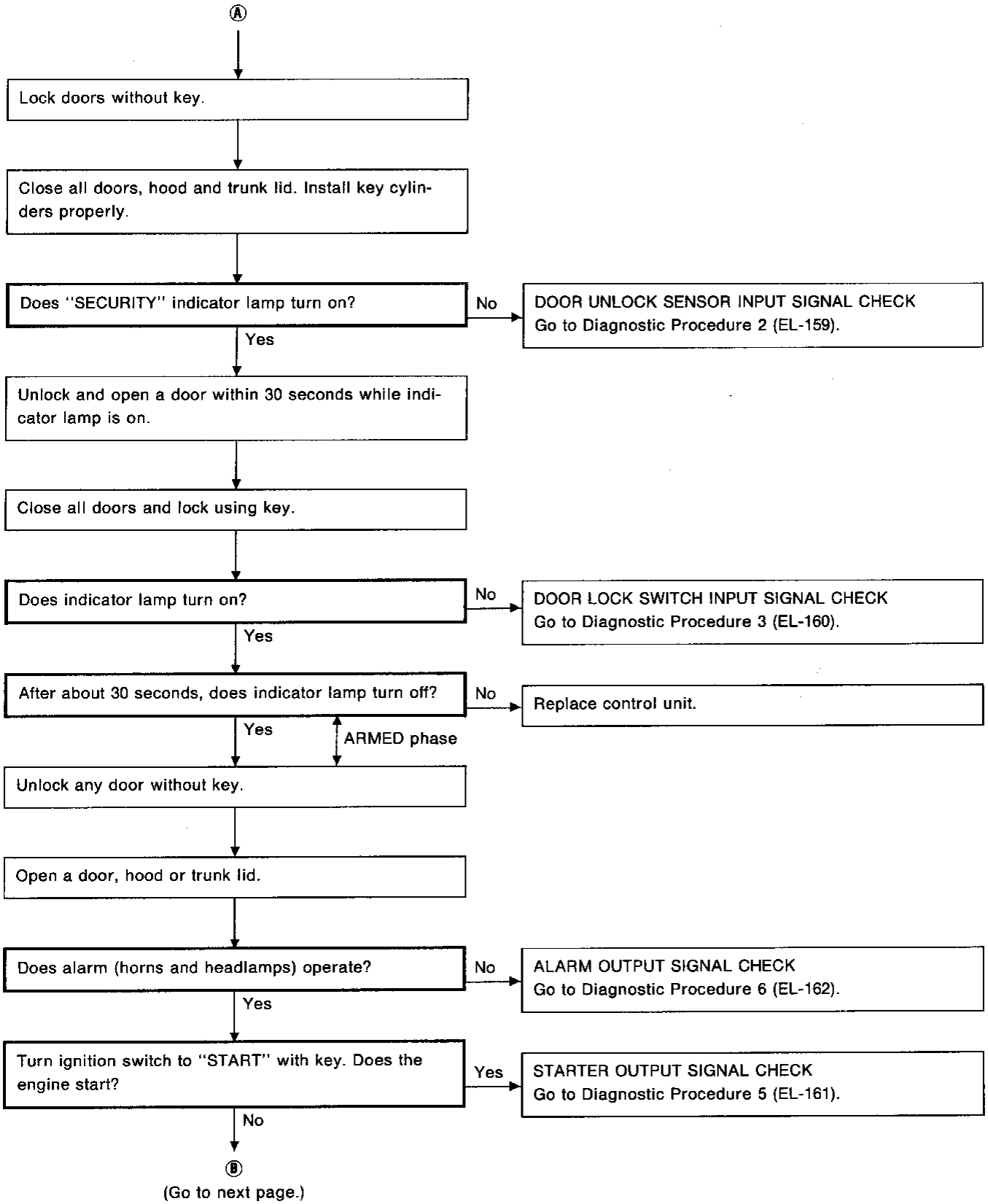
## Trouble Diagnoses

### SYSTEM OPERATION CHECK

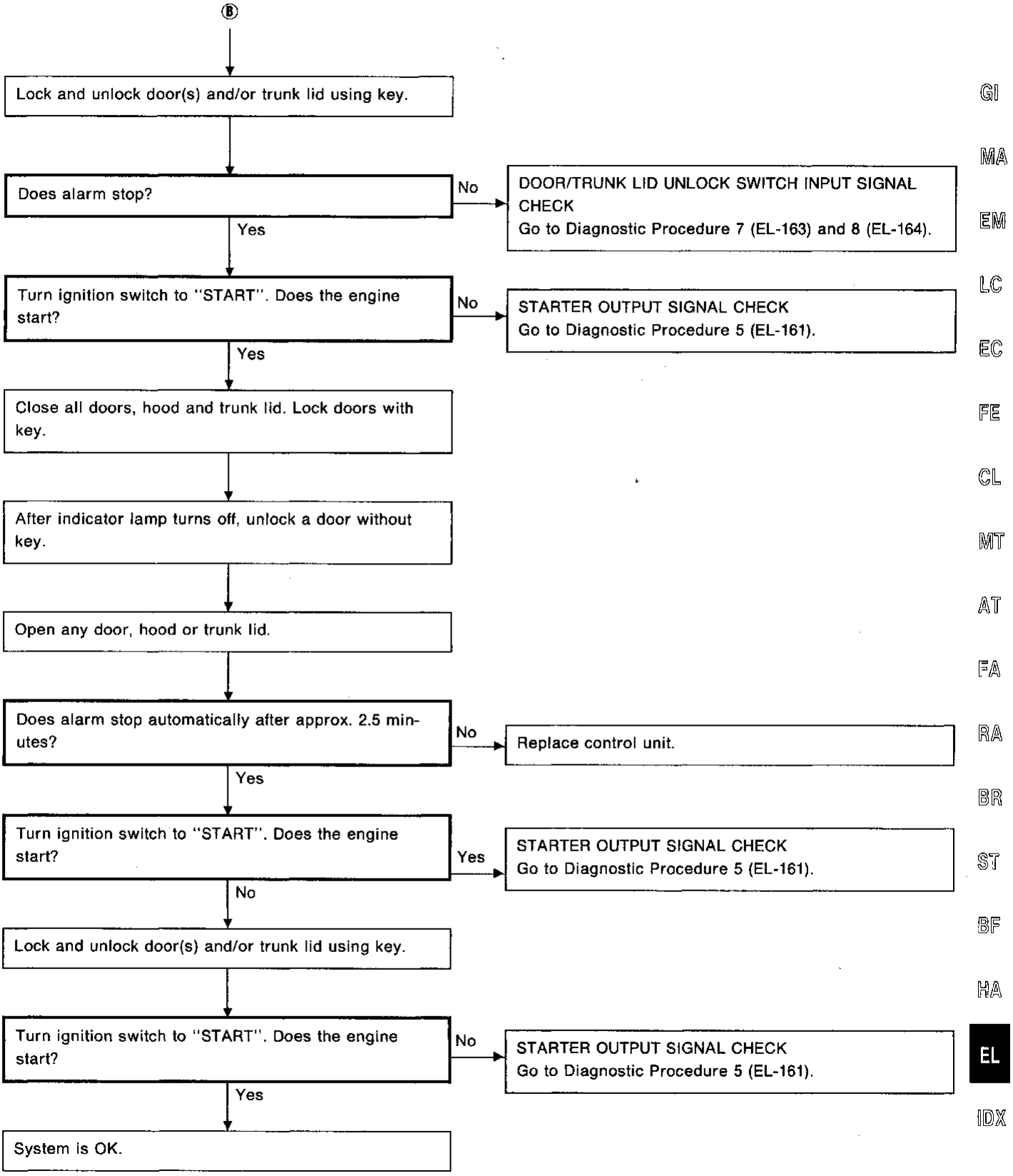
If ignition switch is turned to "ACC" at a step between START and ARMED or in the ARMED phase shown in this flow chart, the system operation is canceled.



## Trouble Diagnoses (Cont'd)

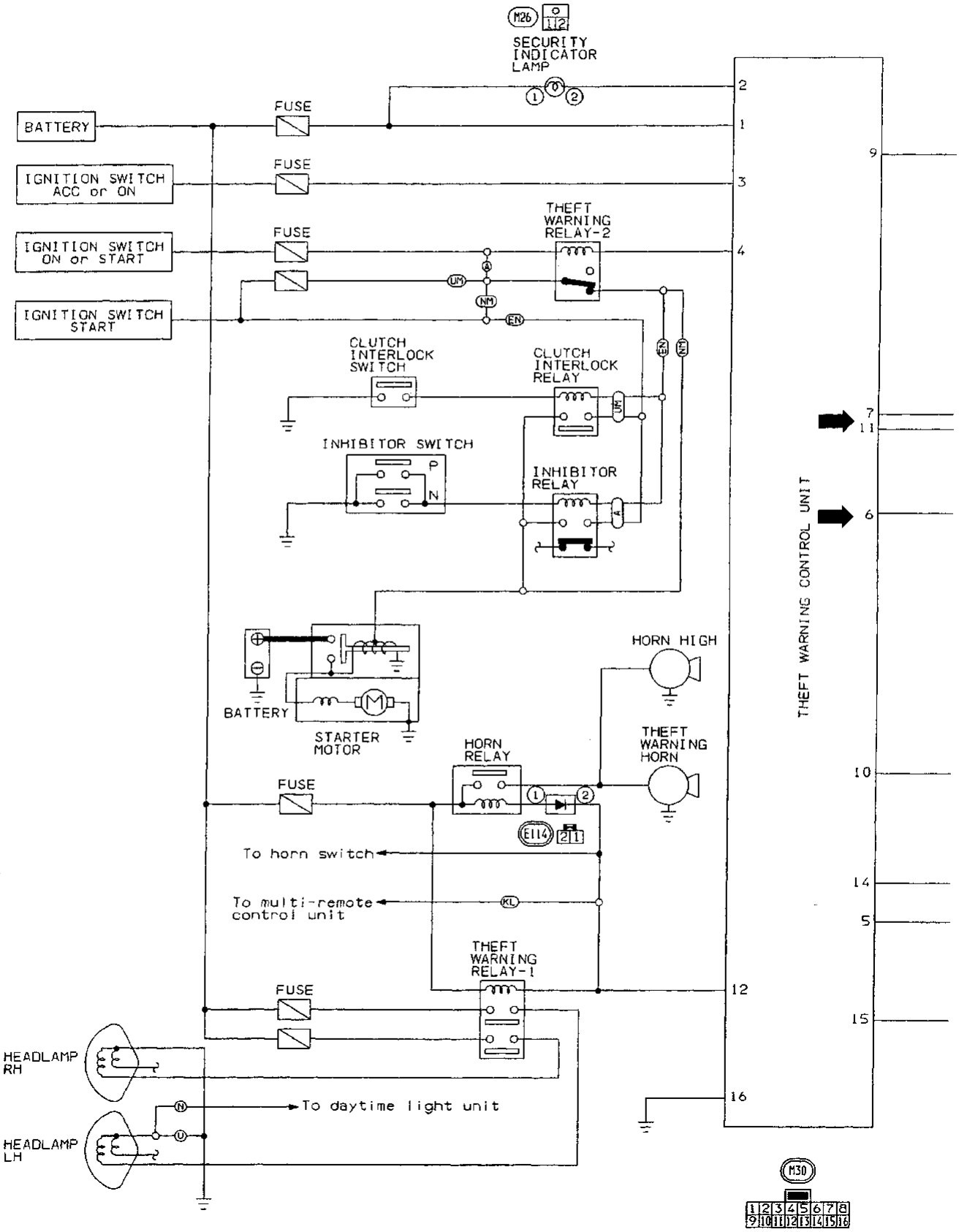


## Trouble Diagnoses (Cont'd)

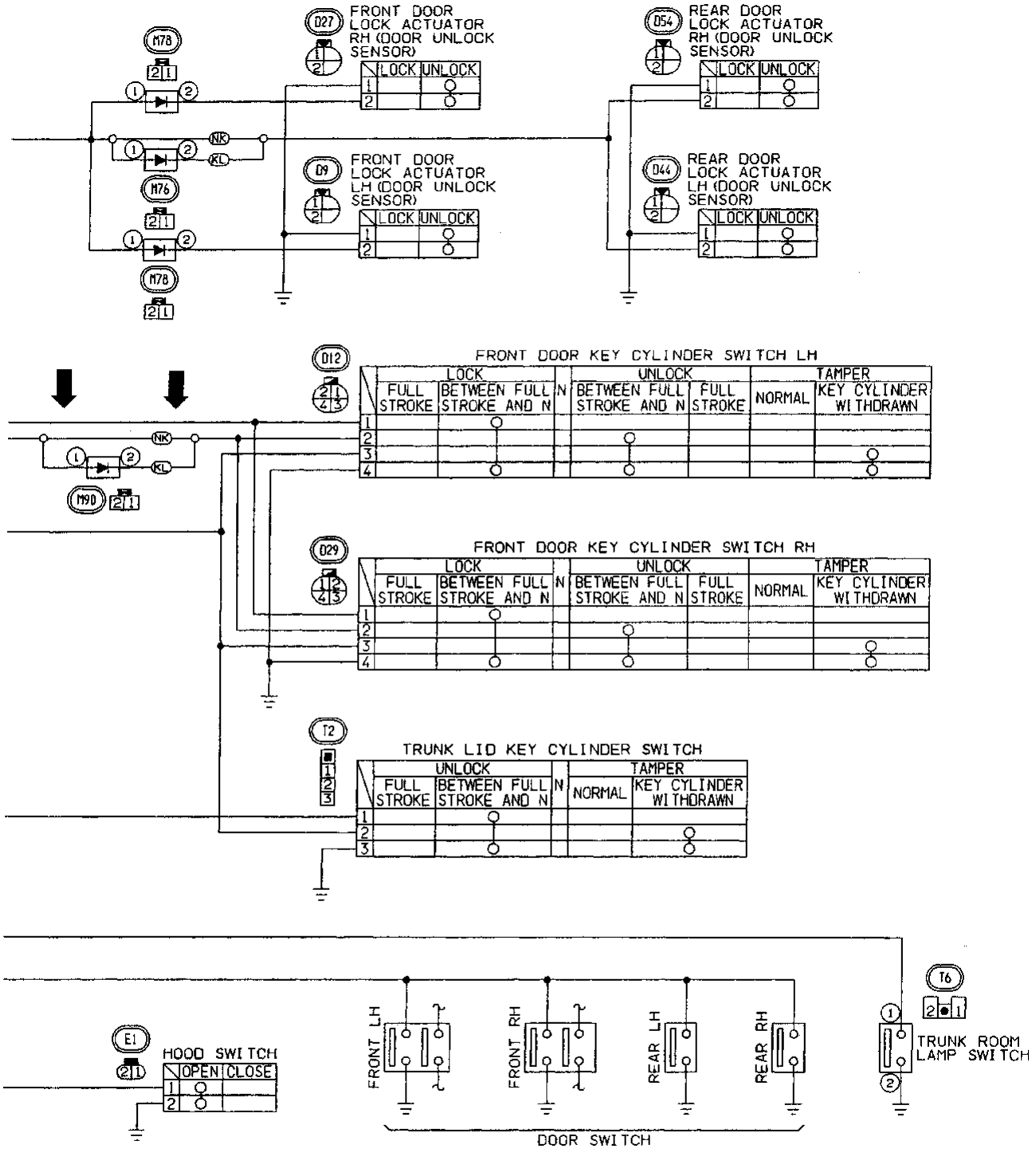


## Trouble Diagnoses

### CIRCUIT DIAGRAM FOR QUICK PINPOINT CHECK




| SMA95-535 | '95 G20 | Dec 1993 (04) | SM4E-0P10U0 |
|---|---|---|---|
| ➡ Arrow Indicates Amended Information | | | |

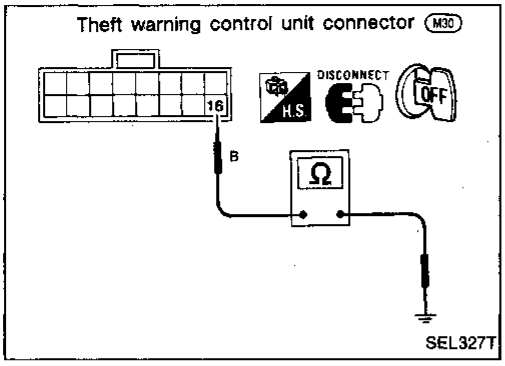



Ⓐ : A/T models
Ⓤ : For U. S. A.
Ⓝ : For Canada
(EN) : Except for (NM)
(UM) : M/T models for U. S. A.
(NM) : M/T models for Canada
(KL) : Models with multi-remote control system
(NK) : Models without multi-remote control system

SEL945T

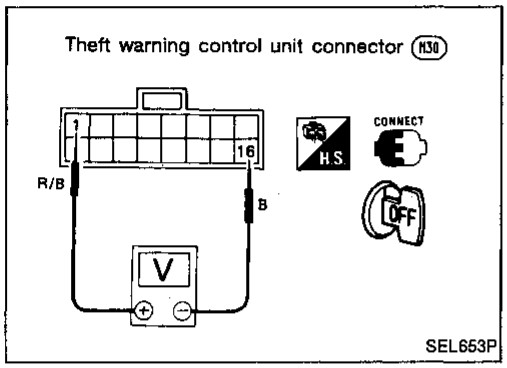
## Trouble Diagnoses (Cont'd)

### POWER SUPPLY AND GROUND CIRCUIT CHECK



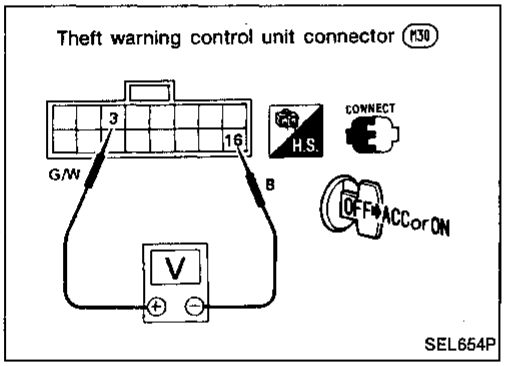

#### Ground circuit check

| Terminals | Continuity |
|---|---|
| ⑯ - Ground | Yes |




#### Main power supply circuit check

| Terminals | Ignition switch position | | |
|---|---|---|---|
| | OFF | ACC | ON |
| ① - ⑯ | Battery voltage | Battery voltage | Battery voltage |




#### Power supply circuit check for system cancel

| Terminals | Ignition switch position | | |
|---|---|---|---|
| | OFF | ACC | ON |
| ③ - ⑯ | 0V | Battery voltage | Battery voltage |

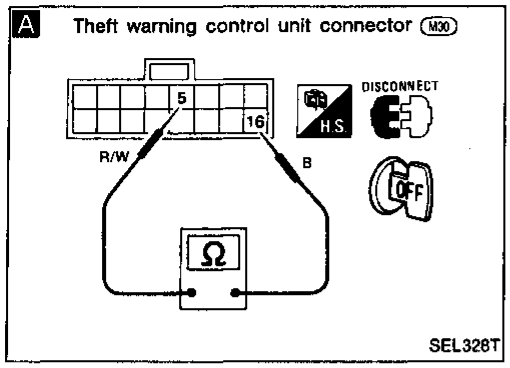
## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 1

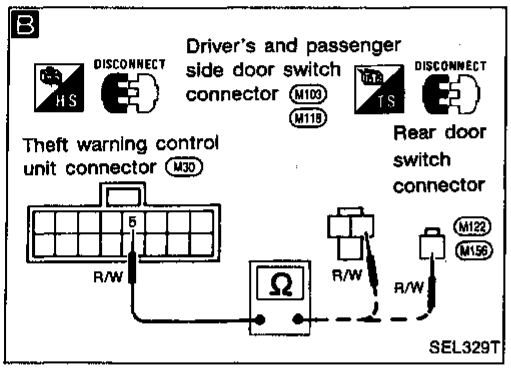
**SYMPTOM:**
- **Indicator lamp does not blink.**
- **Indicator lamp remains blinking.**

### Diagnostic procedure 1-(1)

A




B




A

DOOR SWITCH INPUT SIGNAL CHECK
Check continuity between control unit harness terminals ⑤ and ⑯.

| Condition | Continuity |
|---|---|
| All doors are closed | No |
| At least one door is open | Yes |

OK → Go to Diagnostic Procedure 4 (EL-161).

NG

DOOR SWITCH CHECK
Refer to "Electrical Components Inspection" (EL-165).

NG → Replace door switch.

OK

B

DOOR SWITCH CIRCUIT CHECK
Check harness continuity between control unit harness terminal ⑤ and door switch harness terminal.
**Continuity should exist.**

NG → Repair harness or connectors.

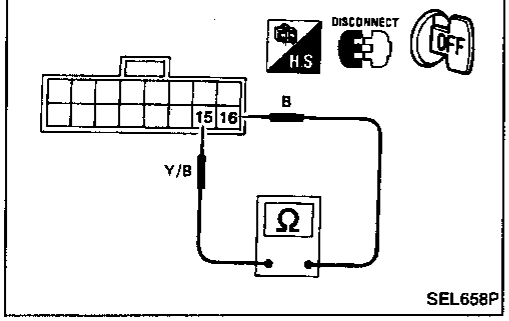
OK

CHECK THE CONNECTIONS AT EACH CONNECTOR.

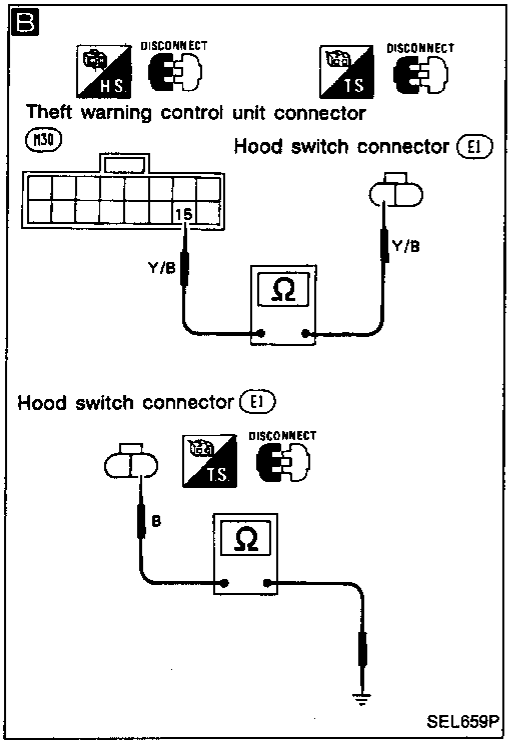
## Trouble Diagnoses (Cont'd)

### Diagnostic procedure 1-(2)

A Theft warning control unit connector (M30)




B




A

HOOD SWITCH INPUT SIGNAL CHECK
Check continuity between control unit harness terminals (15) and (16).

| Condition | Continuity |
|---|---|
| Hood is open | Yes |
| Hood is closed | No |

OK → Go to Diagnostic Procedure 4 (EL-161).

NG

Check hood switch and hood fitting condition.

NG → Adjust installation of hood switch or hood.

OK

HOOD SWITCH CHECK
Refer to "Electrical Components Inspection" (EL-165).

NG → Replace hood switch.

OK

B

HOOD SWITCH CIRCUIT CHECK
- Check harness continuity between control unit harness terminal (15) and hood switch harness terminal.
- Check harness continuity between hood switch terminal and body ground.

**Continuity should exist.**

NG → Repair harness or connectors.

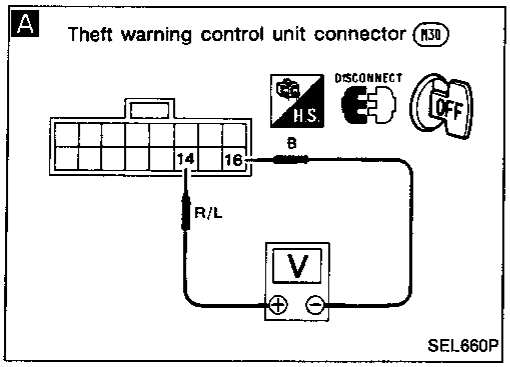
OK

CHECK THE CONNECTIONS AT EACH CONNECTOR.

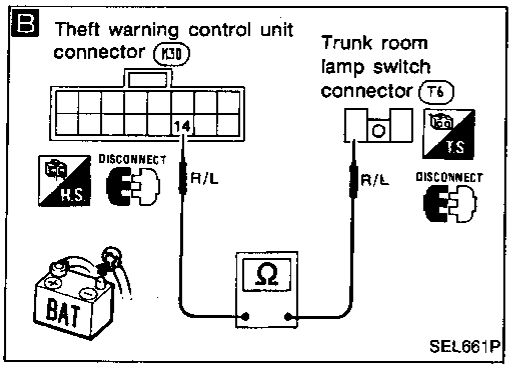
## Trouble Diagnoses (Cont'd)

### Diagnostic procedure 1-(3)

A




B




A

TRUNK ROOM LAMP SWITCH INPUT SIGNAL CHECK
Check voltage between control unit harness terminals ⑭ and ⑯.

| Condition | Voltage |
|---|---|
| Trunk lid is open | Approx. 0V |
| Trunk lid is closed | Approx. 12V |

OK → Go to Diagnostic Procedure 4 (EL-161).

NG

Does trunk room lamp come on?

Yes → B

No

TRUNK ROOM LAMP SWITCH CHECK
Refer to "Electrical Components Inspection" (EL-165).

OK → B

NG → Replace trunk room lamp switch.

B

TRUNK ROOM LAMP SWITCH CIRCUIT CHECK
Check harness continuity between control unit harness terminal ⑭ and trunk room lamp harness terminal.

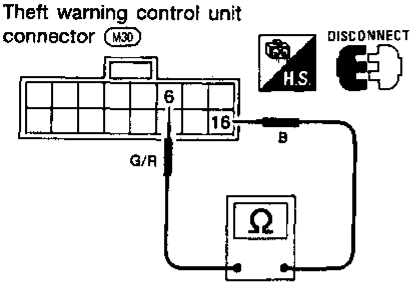
OK → CHECK THE CONNECTIONS AT EACH CONNECTOR.

## Trouble Diagnoses (Cont'd)

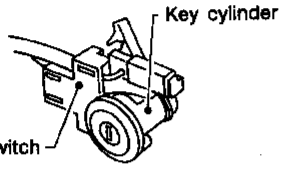
### Diagnostic procedure 1-(4)

A

Theft warning control unit connector (M30)

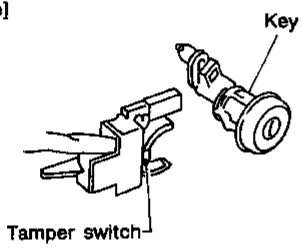



[Example]




No continuity ... OK

[Example]

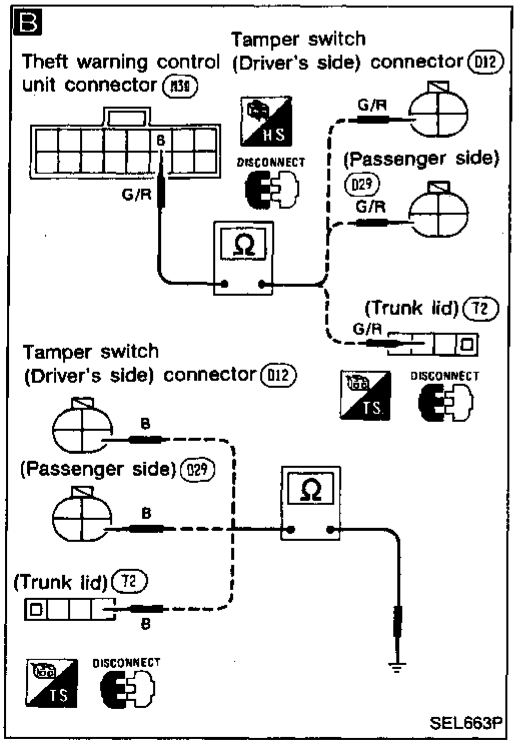



Read switch turns on when key cylinder is removed.

Continuity exists ... OK

SEL662PB

B




SEL663P

A

KEY CYLINDER TAMPER SWITCH INPUT SIGNAL CHECK

Check continuity between control unit harness terminals ⑥ and ⑯.

| Condition | Continuity |
|---|---|
| Tamper switch is | |
| Normal | No |
| Removed | Yes |

OK → Go to Diagnostic Procedure 4 (EL-161).

NG

KEY CYLINDER TAMPER SWITCH CHECK

Refer to "Electrical Components Inspection" (EL-166).

NG → Replace key cylinder tamper switch.

OK

B

KEY CYLINDER TAMPER SWITCH CIRCUIT CHECK

- Check harness continuity between control unit harness terminal ⑥ and tamper switch harness terminal.
- Check harness continuity between tamper switch terminal and body ground.

**Continuity should exist.**

NG → Repair harness and connectors.

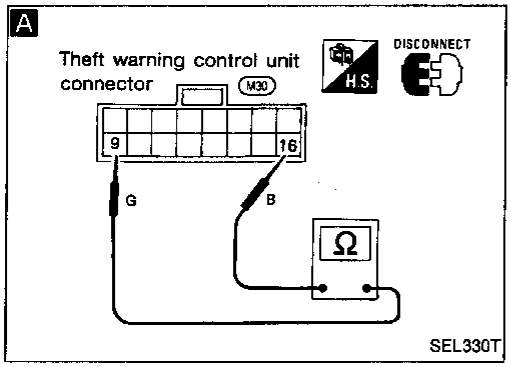
OK

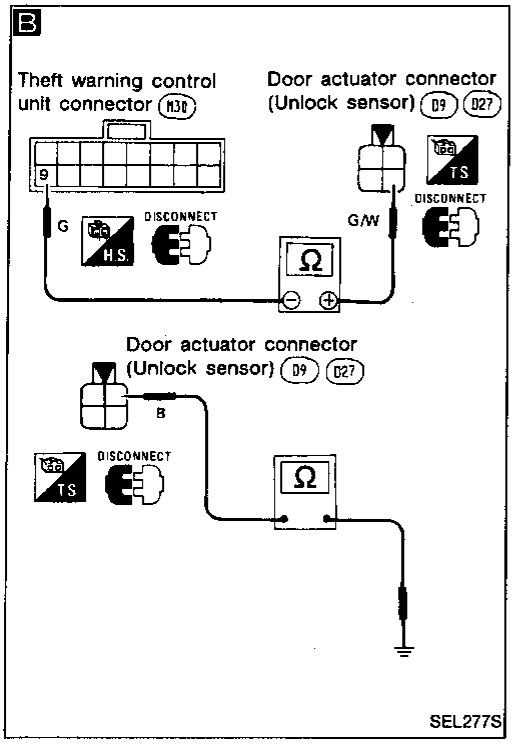
CHECK THE CONNECTIONS AT EACH CONNECTOR.

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 2

**SYMPTOM: Indicator lamp does not come on.**




A

DOOR UNLOCK SENSOR INPUT SIGNAL CHECK
Check continuity between control unit harness terminals ⑨ and ⑯.

| Condition | Continuity |
|---|---|
| Locked | No |
| Unlocked | Yes |

OK → Go to Diagnostic Procedure 3 (EL-160).
OK → Replace control unit.

NG

DOOR UNLOCK SENSOR CHECK
Refer to "Electrical Components Inspection" (EL-166).

NG → Replace door lock actuator.

OK

B

DOOR UNLOCK SENSOR CIRCUIT CHECK
- Check harness continuity between control unit harness terminal ⑨ and door actuator terminal.
- Check harness continuity between door actuator terminal and body ground.

**Continuity should exist.**

NG → Repair harness or connectors.

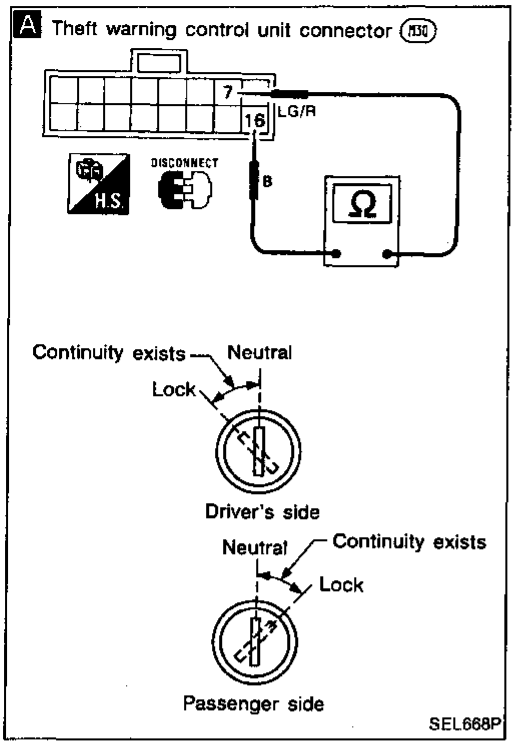
OK

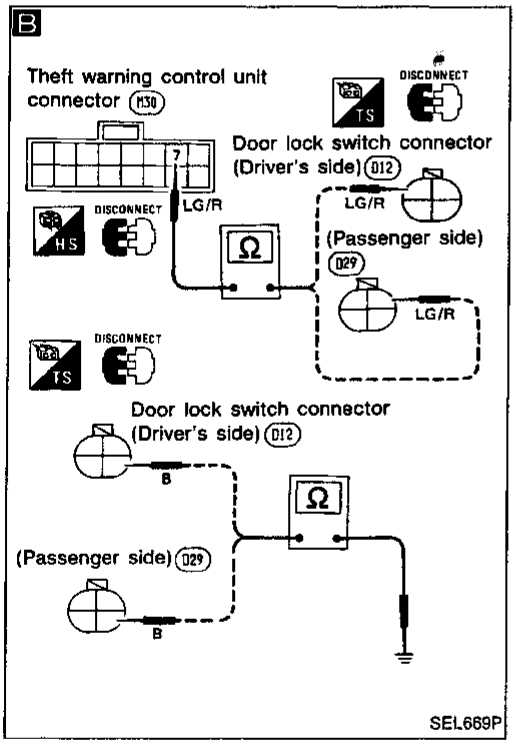
CHECK THE CONNECTIONS AT EACH CONNECTOR.

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 3

**SYMPTOM: Indicator lamp does not come on.**




A

DOOR LOCK SWITCH INPUT SIGNAL CHECK (LOCK SIGNAL)
Check continuity between control unit harness terminals ⑦ and ⑯.

| Key position | Continuity |
|---|---|
| Neutral/Lock | No |
| Between neutral and lock | Yes |

OK → Go to Diagnostic Procedure 2 (EL-159).
OK → Replace control unit.

NG

DOOR LOCK SWITCH CHECK
Refer to "Electrical Components Inspection" (EL-166).

NG → Replace key cylinder switch.

OK

B

DOOR LOCK SWITCH CIRCUIT CHECK
- Check harness continuity between control unit harness terminal ⑦ and door lock switch terminal.
- Check harness continuity between door lock switch terminal and body ground.

**Continuity should exist.**

NG → Repair harness or connectors.

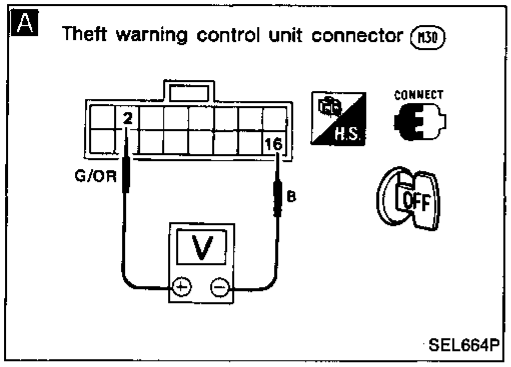
OK

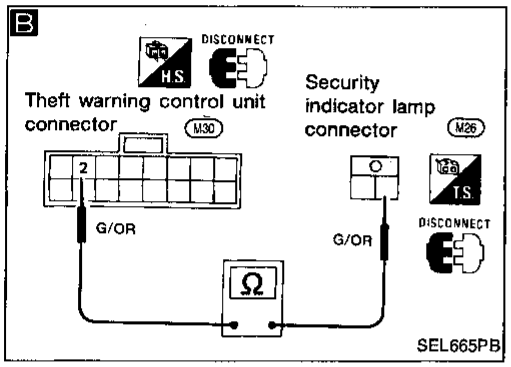
CHECK THE CONNECTIONS AT EACH CONNECTOR.

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 4

**SYMPTOM: Indicator lamp does not blink.**




A

INDICATOR LAMP OUTPUT SIGNAL CHECK
Check voltage between control unit harness terminals ② and ⑯.
**Pointer of voltmeter should deflect intermittently.**

NG → Replace control unit.

OK ↓

CHECK INDICATOR LAMP.

NG → Replace indicator lamp.

OK ↓

B

INDICATOR LAMP CIRCUIT CHECK
Check harness continuity between control unit harness terminal ② and indicator lamp harness terminal.
**Continuity should exist.**

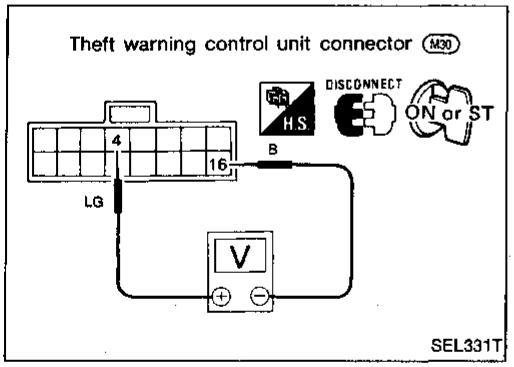
NG → Repair harness or connectors.

OK ↓

CHECK THE CONNECTIONS AT EACH CONNECTOR.

### DIAGNOSTIC PROCEDURE 5

**SYMPTOM: STARTER MOTOR can be operated. (Starter killed phase)**




Approx. 12V

STARTER MOTOR KILL OUTPUT SIGNAL CHECK
Turn ignition switch to "ON" or "START" position. Check voltage between control unit harness terminals ④ and ⑯.

→ Replace control unit.

Approx. 0 volt ↓

Check theft warning relay-2.

NG → Replace theft warning relay-2.

OK ↓

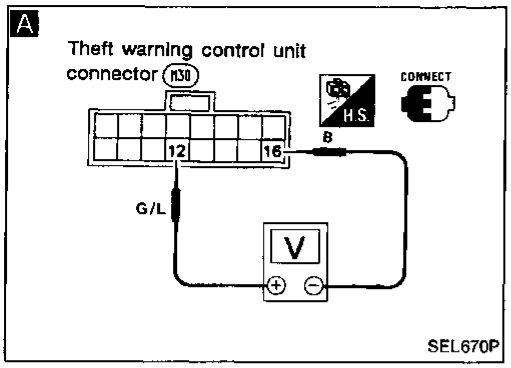
Repair harness between control unit and theft warning relay-2.

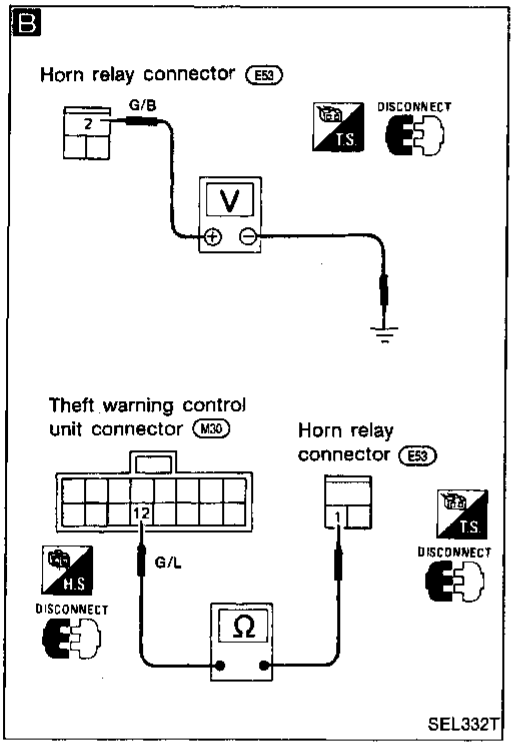
GI MA EM LC EC FE CL MT AT FA RA BR ST BF HA EL IDX

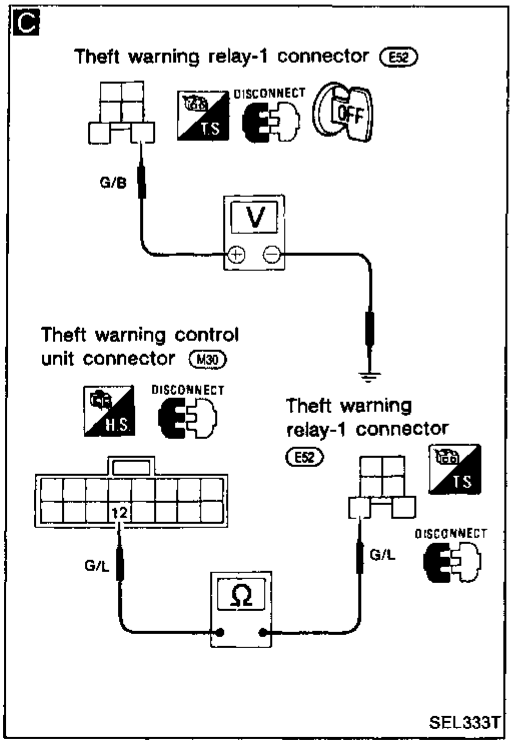
## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 6

**SYMPTOM: Alarm does not operate.**




A

ALARM SIGNAL OUTPUT CHECK
Check voltage between control unit harness terminals ⑫ and ⑯.

| Condition | Voltmeter |
|---|---|
| Except alarm phase | 12V |
| Alarm phase | Pointer deflects intermittently |

NG → Replace control unit.

OK ↓

Check horn relay. NG → Replace relay.

OK ↓

B

THEFT WARNING HORN CIRCUIT CHECK
Check if voltage across horn relay harness terminal ② and body is 12V.
Check continuity between horn relay terminal ① and control unit harness terminal ⑫.
**Continuity should exist.**

NG → Repair harness and connectors.

OK ↓

Check theft warning relay-1. NG → Replace theft warning relay-1.

OK ↓

C

THEFT WARNING HEADLAMP CIRCUIT CHECK
Check if voltage across theft warning relay-1 harness terminal and body is 12V.
Check continuity between theft warning relay-1 terminal and control unit harness terminal ⑫.

NG → Repair harness and connectors.

OK ↓

Does headlamp come on when turning lighting switch "ON"? No → Check headlamp system. Refer to "HEADLAMP" (EL-32).

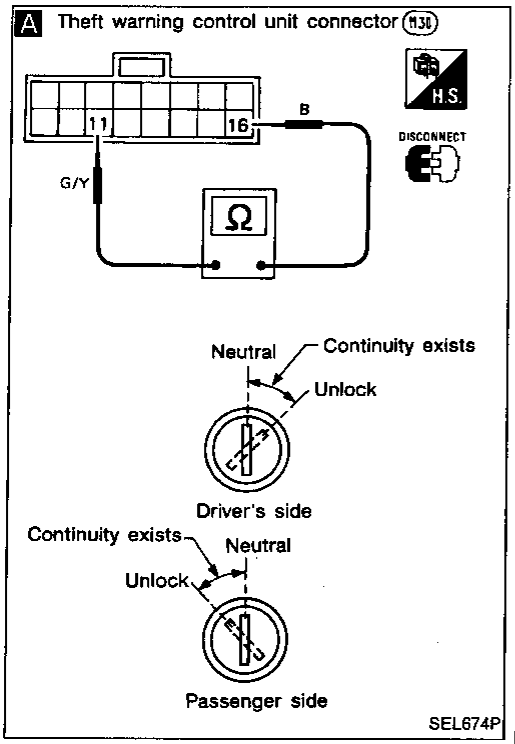
Yes ↓

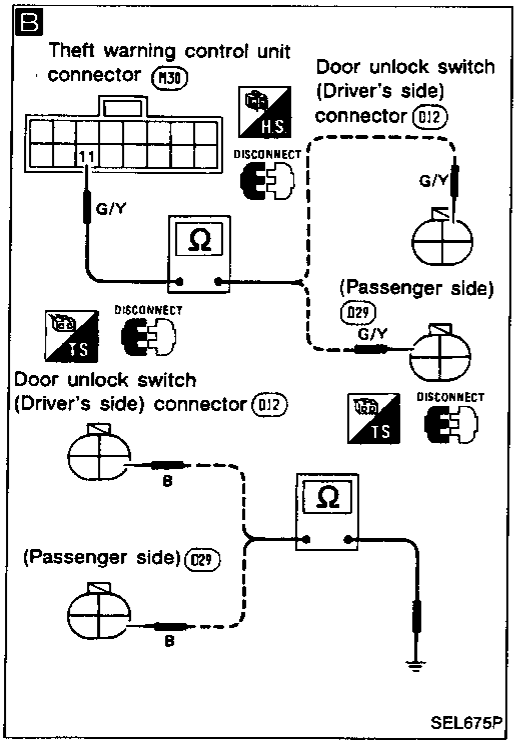
Repair harness and connectors between lamp relay and headlamp.

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 7

**SYMPTOM: Alarm does not stop even if stop signal is given.**




A

DOOR UNLOCK SWITCH INPUT SIGNAL CHECK (UNLOCK SIGNAL)
Check continuity between control unit harness terminals ⑪ and ⑯.

| Key position | Continuity |
|---|---|
| Neutral/Unlock | No |
| Between neutral and unlock | Yes |

OK → Replace control unit.

NG ↓

DOOR UNLOCK SWITCH CHECK
Refer to "Electrical Components Inspection" (EL-166).

NG → Replace key cylinder switch.

OK ↓

B

DOOR UNLOCK SWITCH CIRCUIT CHECK
- Check harness continuity between control unit harness terminal ⑪ and door unlock switch terminal.
- Check harness continuity between door unlock switch terminal and body ground.

**Continuity should exist.**

NG → Repair harness or connectors.

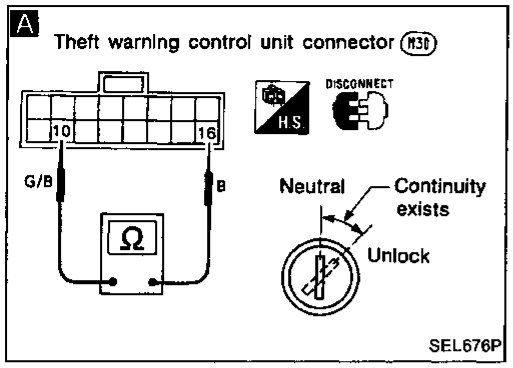
OK ↓

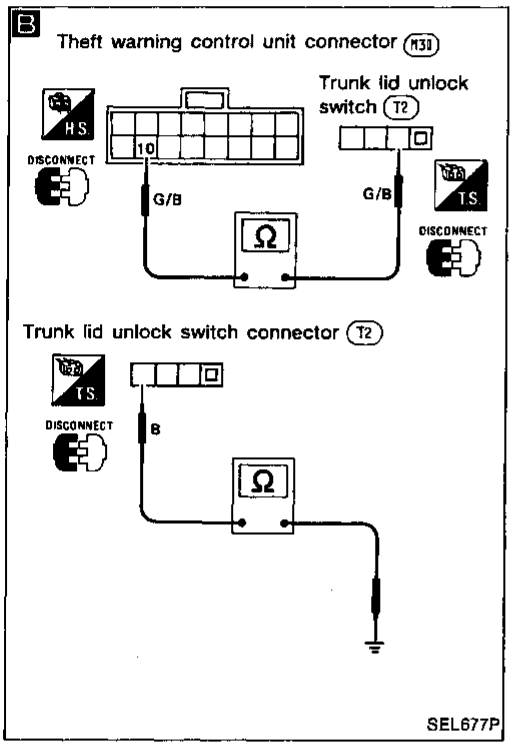
CHECK THE CONNECTIONS AT EACH CONNECTOR.

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 8

**SYMPTOM: Alarm does not stop even if stop signal is given.**




A

TRUNK LID UNLOCK SWITCH INPUT SIGNAL CHECK (UNLOCK SIGNAL)
Check continuity between control unit harness terminals ⑩ and ⑯.

| Key position | Continuity |
|---|---|
| Neutral/Unlock | No |
| Between neutral and unlock | Yes |

OK → Replace control unit.

NG ↓

TRUNK LID UNLOCK SWITCH CHECK
Refer to "Electrical Components Inspection" (EL-166).

NG → Replace key cylinder switch.

OK ↓

B

TRUNK LID UNLOCK SWITCH CIRCUIT CHECK

- Check harness continuity between control unit harness terminal ⑩ and trunk lid unlock switch terminal.
- Check harness continuity between trunk lid unlock switch terminal and body ground.

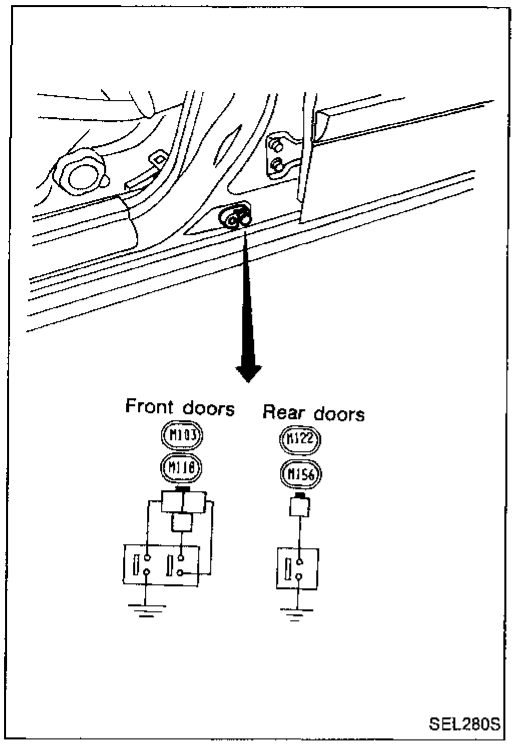
NG → Repair harness or connectors.

OK ↓

CHECK THE CONNECTIONS AT EACH CONNECTOR.

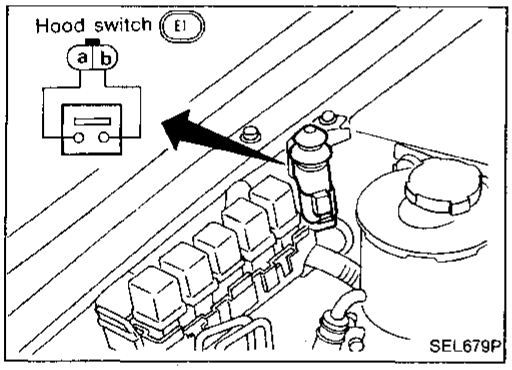
## Trouble Diagnoses (Cont'd)

### ELECTRICAL COMPONENTS INSPECTION




#### Door switches

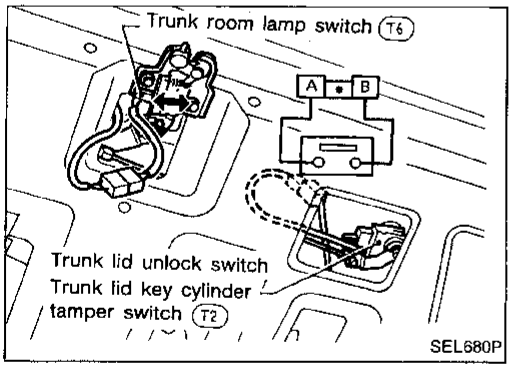
Check continuity between terminal and switch body.




#### Hood switch

Check continuity between terminals when hood switch is pushed and released.

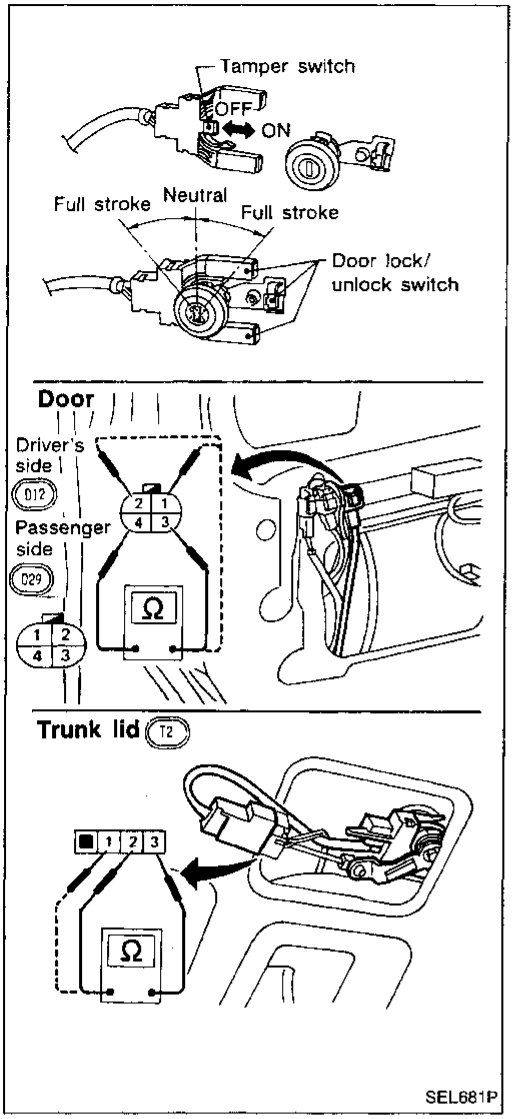
| Terminal | Pushed | Released |
|---|---|---|
| a | | ○ |
| b | | ○ |




#### Trunk room lamp switch

| Terminal | Trunk lid | |
|---|---|---|
| | Closed | Open |
| a | | ○ |
| b | | ○ |

## Trouble Diagnoses (Cont'd)



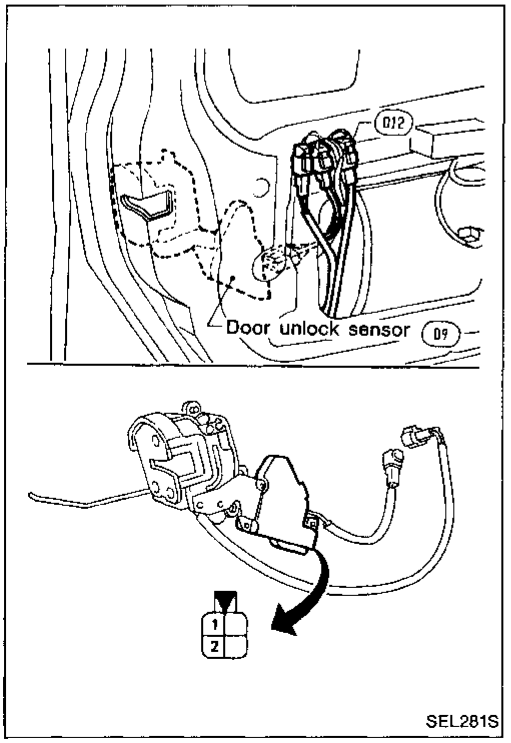

### Key cylinder tamper switch, door lock switch and door unlock switch

- **Door**

| | TAMPER SWITCH | | DOOR LOCK SWITCH | | | DOOR UNLOCK SWITCH | |
|---|---|---|---|---|---|---|---|
| | Key cylinder is installed | Key cylinder is removed | Full stroke | Between full stroke and neutral | Neutral | Between full stroke and neutral | Full stroke |
| 1 | | | | ○ | | | |
| 2 | | | | | | ○ | |
| 3 | | ○ | | | | | |
| 4 | | ○ | | ○ | | ○ | |

- **Trunk lid**

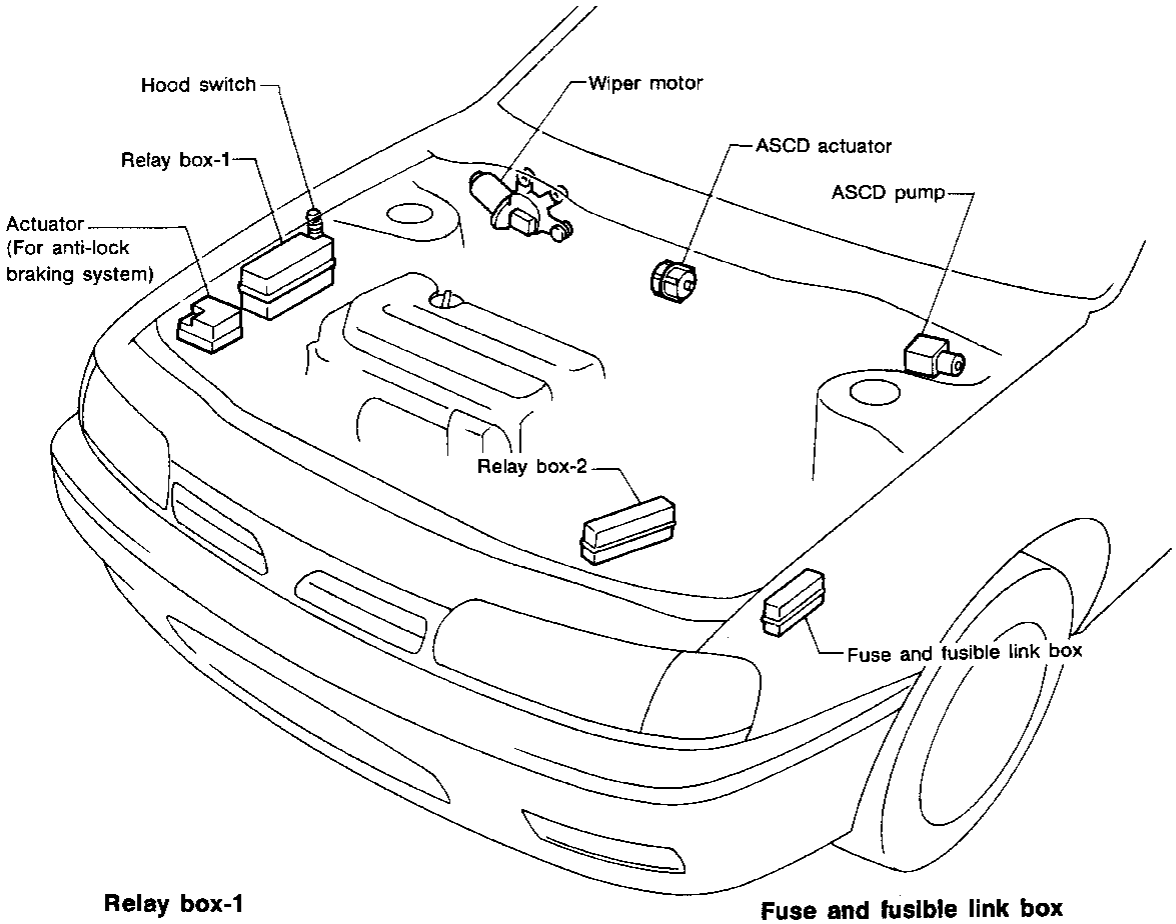
| | TAMPER SWITCH | | Trunk lid unlock switch | | |
|---|---|---|---|---|---|
| | Key cylinder is installed | Key cylinder is removed | Full stroke | Between full stroke and neutral | Neutral |
| 1 | | | | ○ | |
| 2 | | ○ | | | |
| 3 | | ○ | | ○ | |



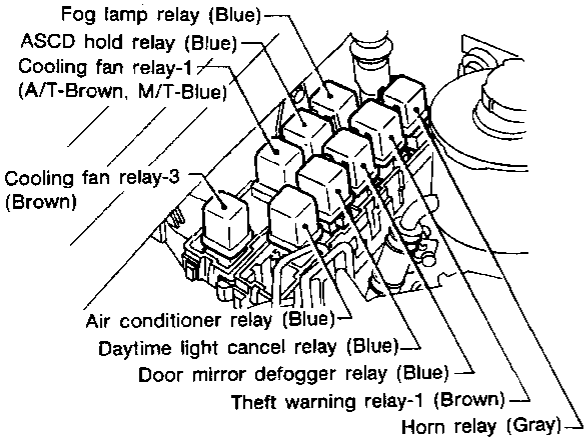

### Door unlock sensor

| | LOCK | UNLOCK |
|---|---|---|
| 1 | | ○ |
| 2 | | ○ |

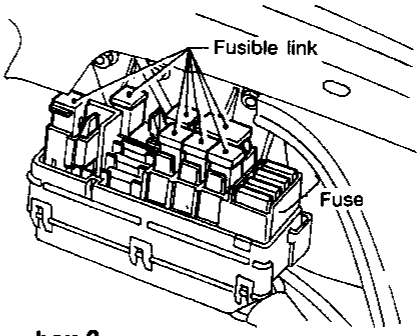
## Engine Compartment



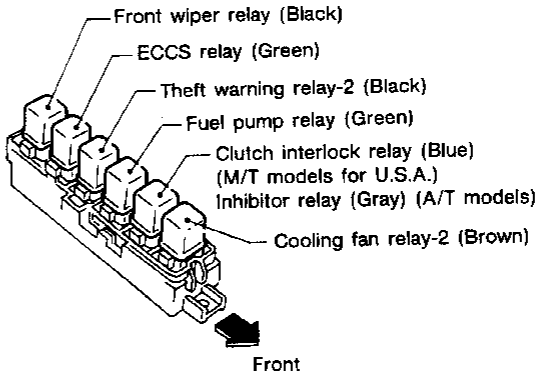

**Relay box-1**




**Fuse and fusible link box**

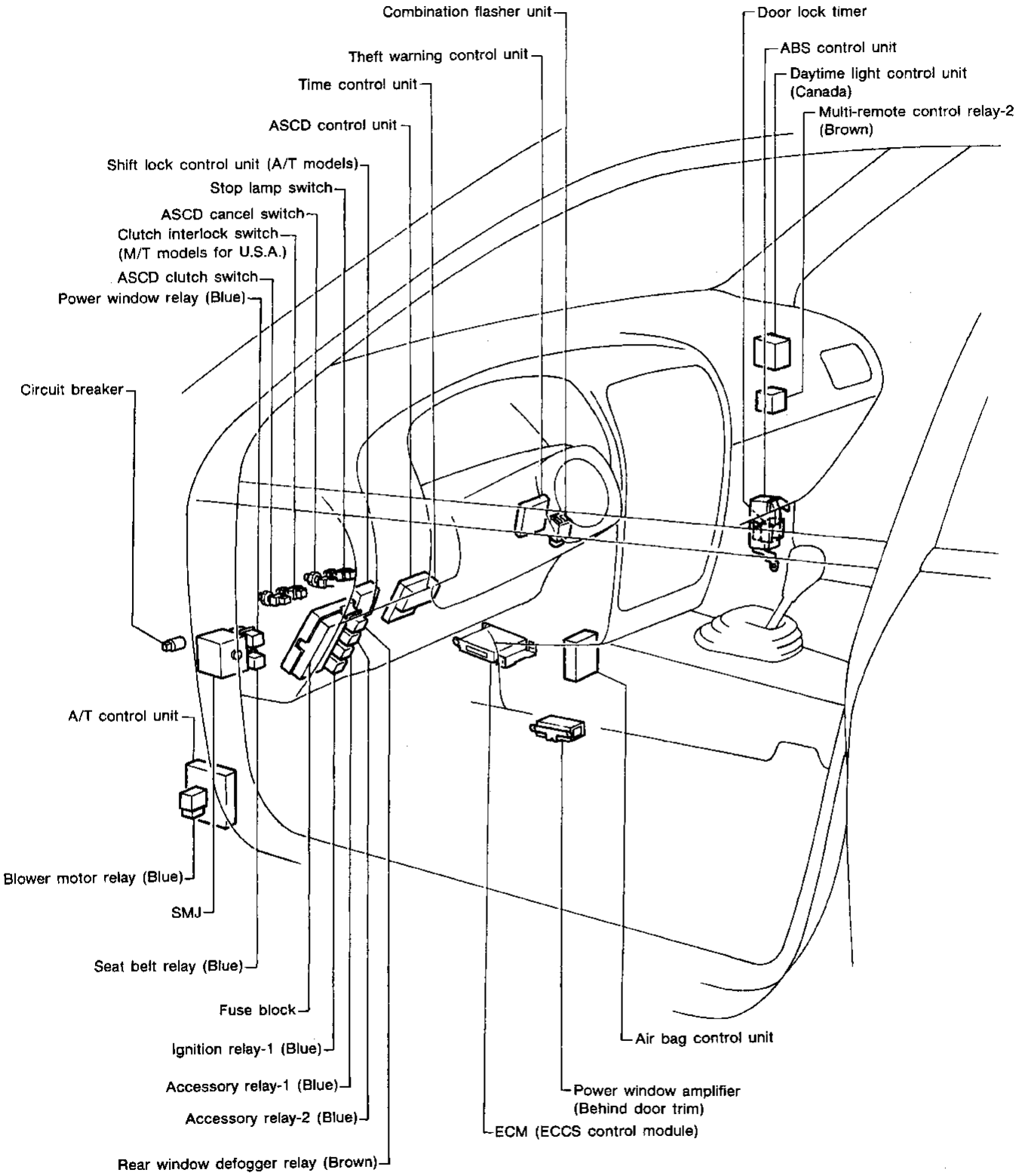



**Relay box-2**



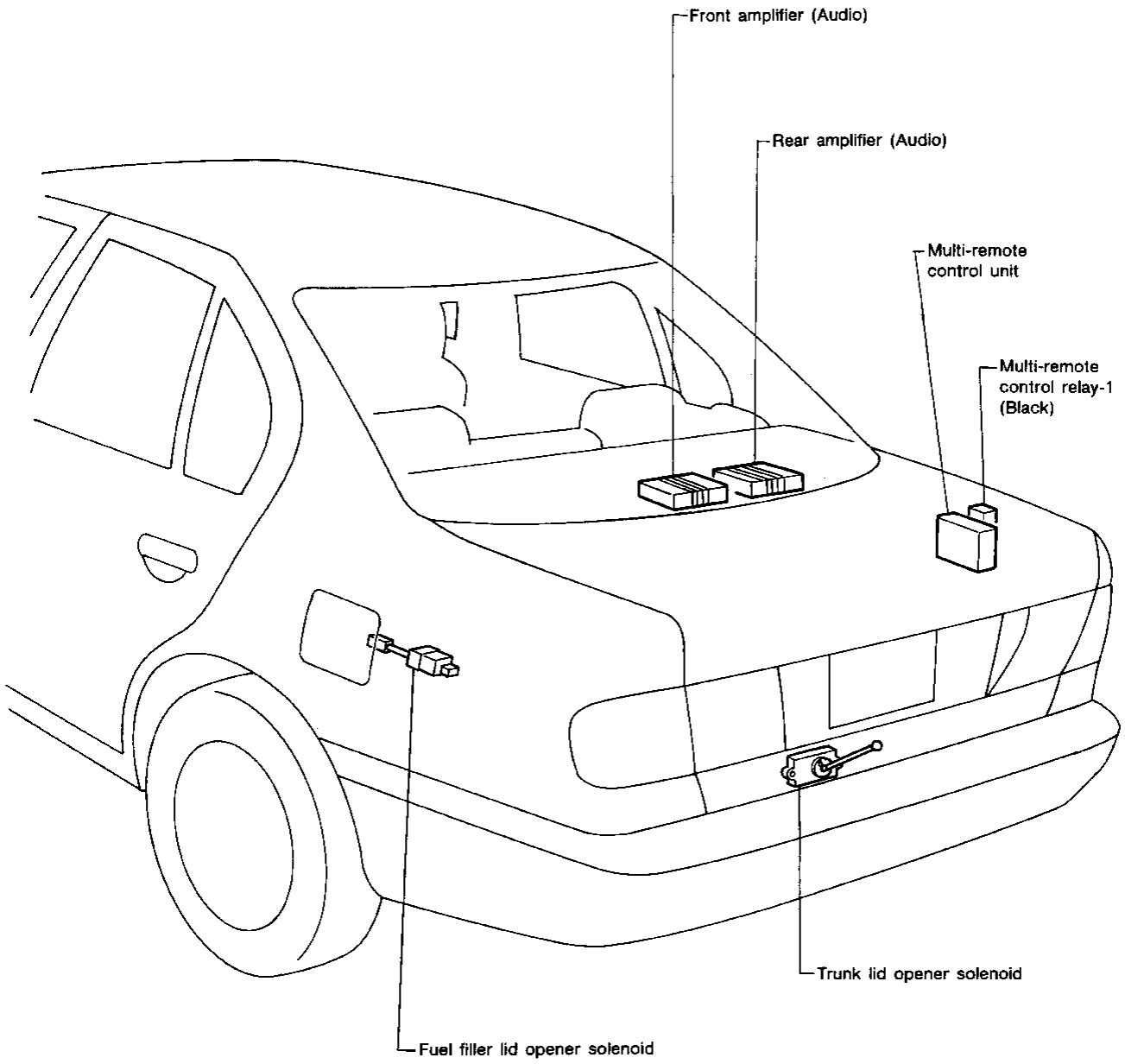

MEL197D

## Passenger Compartment



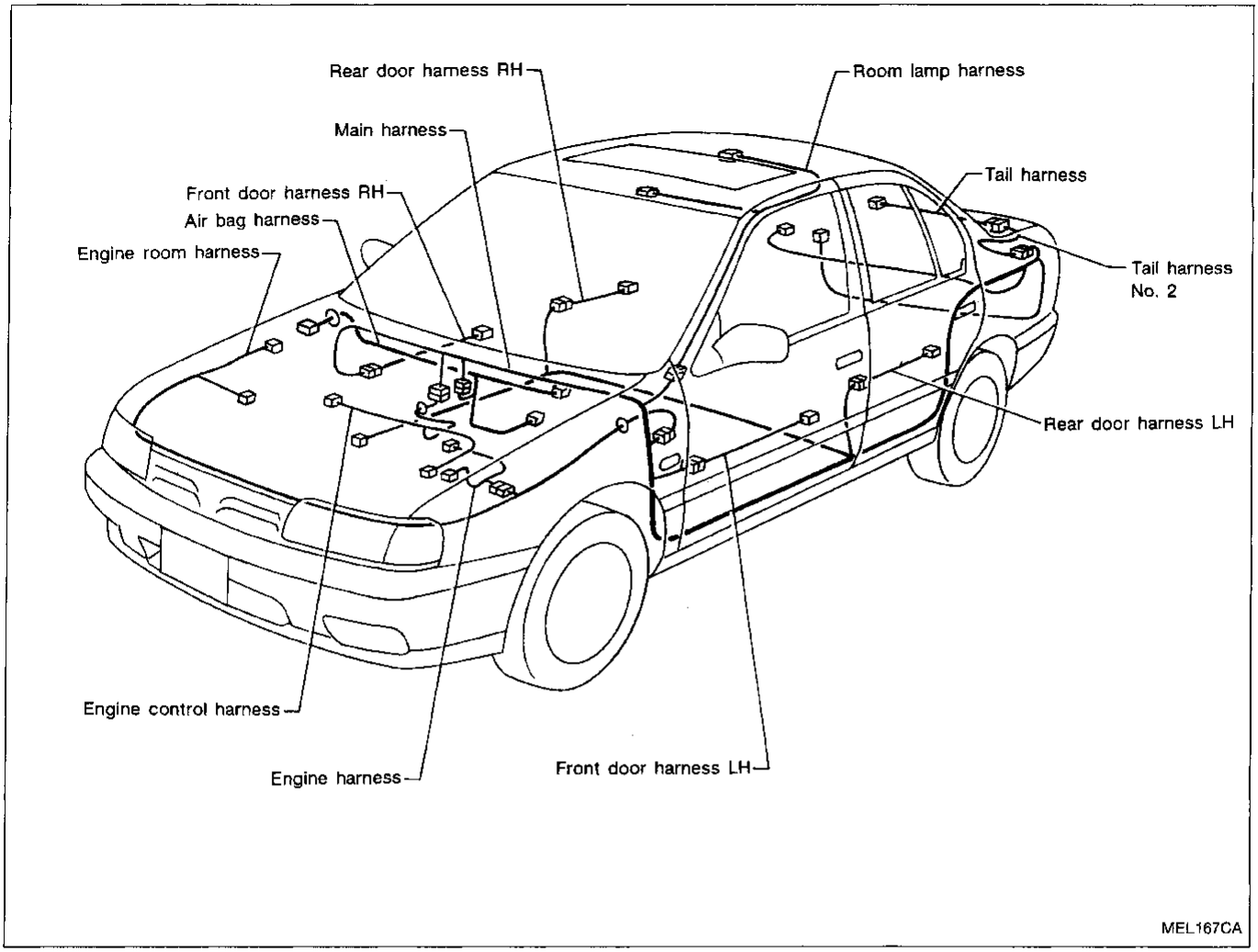

MEL214CA

## Luggage Compartment

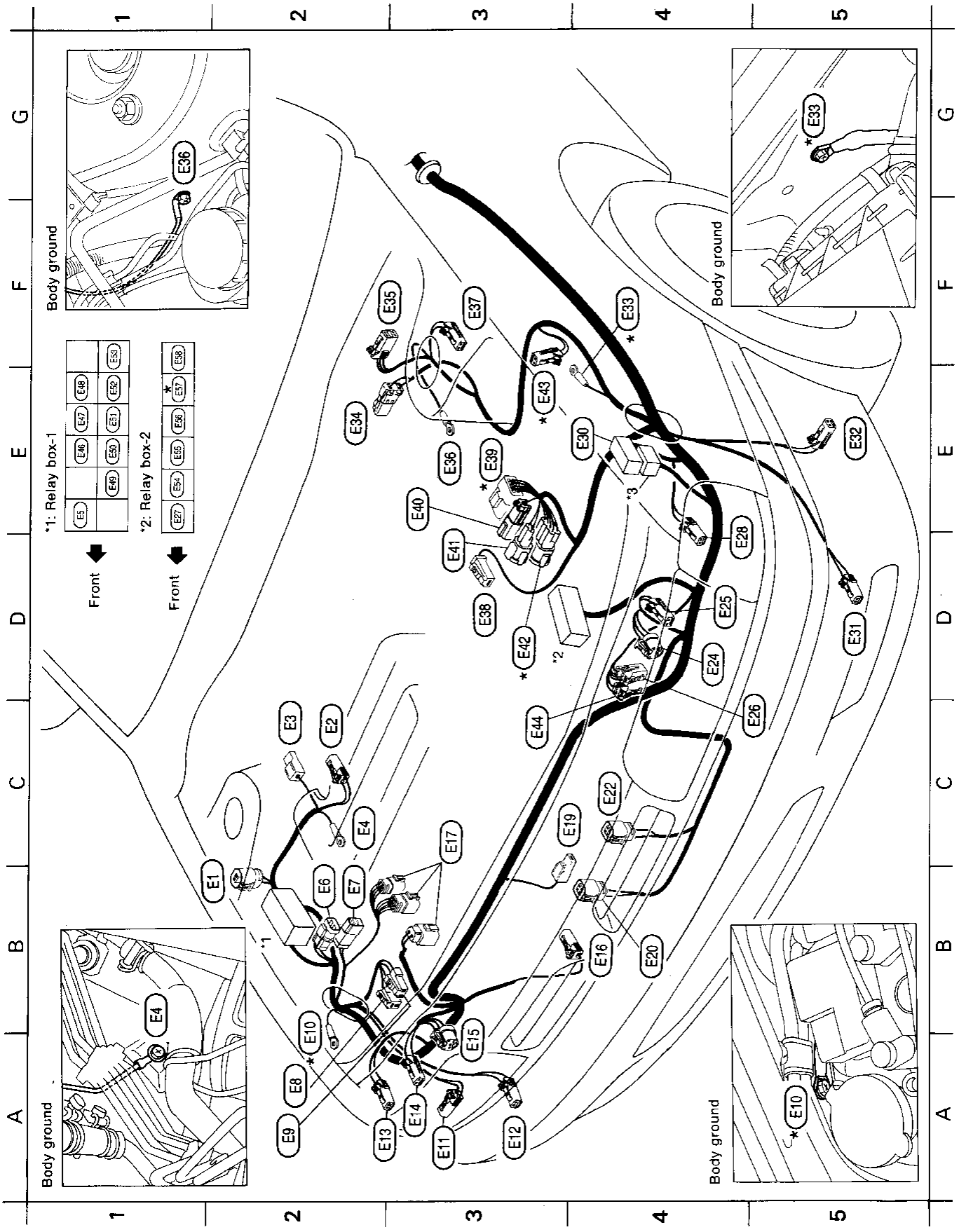



MEL215C

## Outline

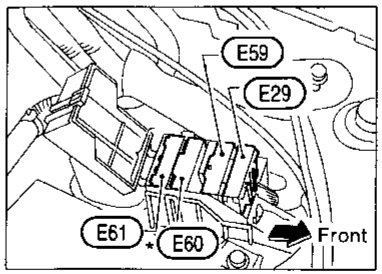

Rear door harness RH
Room lamp harness
Main harness
Tail harness
Front door harness RH
Air bag harness
Engine room harness
Tail harness No. 2
Rear door harness LH
Engine control harness
Engine harness
Front door harness LH
MEL167CA

## Engine Room Harness



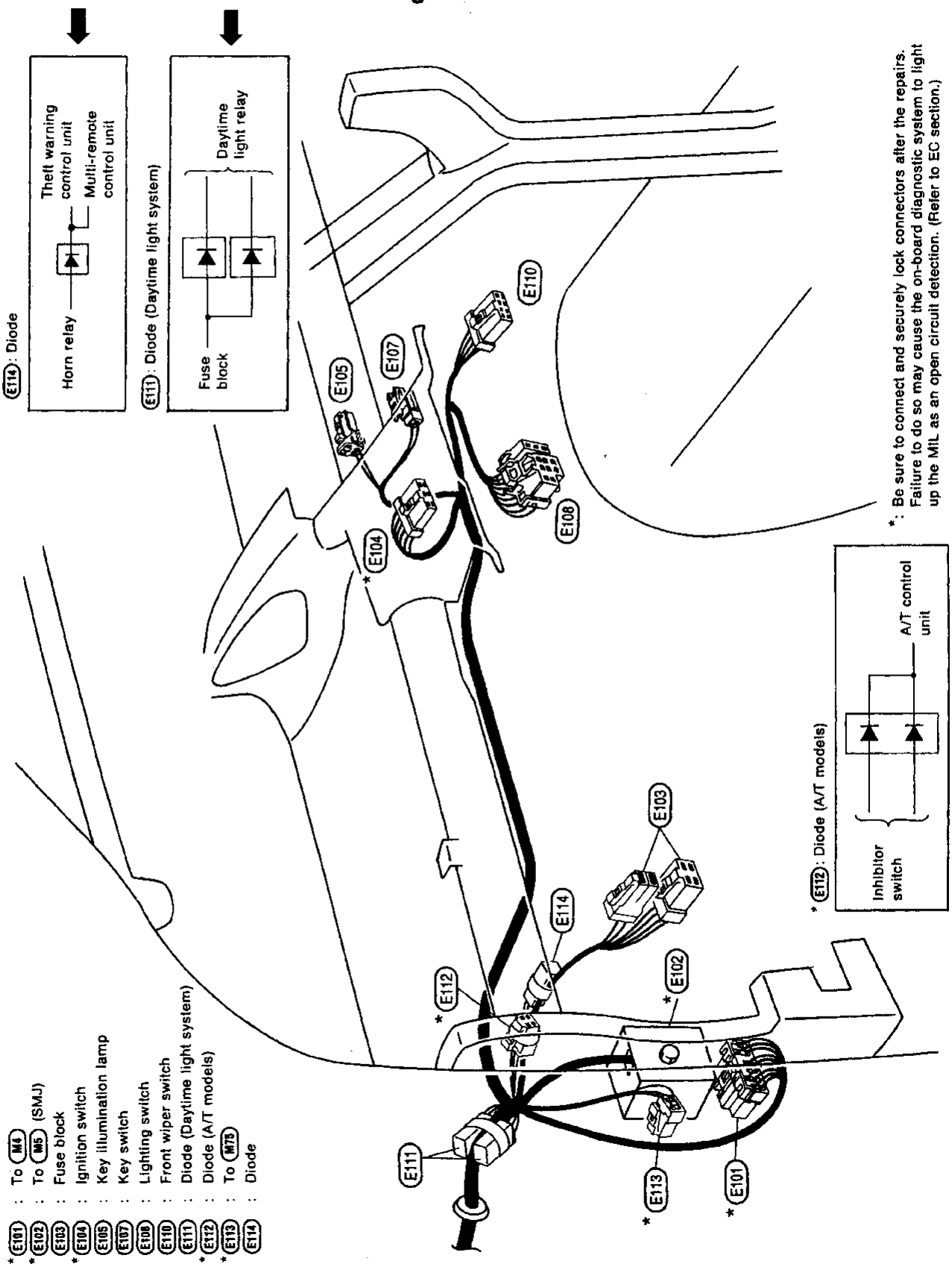
B2 (E1) : Hood switch
C2 (E2) : Front wheel sensor RH (For anti-lock braking system)
C2 (E3) : Theft warning horn
C2 (E4) : Body ground (For anti-lock braking system)
E1 (E5) : Cooling fan relay-3 (A/T models)
B2 (E6) : To (A1)
B2 (E7) : To (A2)
A2 (E8) : Front washer motor
A2 (E9) : Washer fluid level switch
B2 *(E10) : Body ground
A3 (E11) : Front side marker lamp RH
A3 (E12) : Front fog lamp RH
A2 (E13) : Front turn signal lamp RH
A3 (E14) : Clearance lamp RH
A3 (E15) : Headlamp RH
B4 (E16) : Compressor
C3 (E17) : Actuator (For anti-lock brake system)
C3 (E19) : Horn (High)
B4 (E20) : Cooling fan motor-1
C4 (E22) : Cooling fan motor-2
D4 (E24) : Headlamp LH
D4 (E25) : Clearance lamp LH
C5 (E26) : Triple-pressure switch (For U.S.A.)
E1 (E27) : Cooling fan relay-2
D4 (E28) : Front turn signal lamp LH
(E29) : Joint connector-1
E4 (E30) : Fuse and fusible link box
D5 (E31) : Front fog lamp LH
E5 (E32) : Front side marker lamp LH
F4 *(E33) : Body ground
E2 (E34) : Brake fluid level switch
F3 (E35) : ASCD actuator
E3 (E36) : Body ground (For anti-lock brake system)
F3 (E37) : Front wheel sensor LH (For anti-lock brake system)
D3 (E38) : Battery
E3 *(E39) : To (E215)
E3 (E40) : To (E216)
D3 (E41) : To (E219)
D3 *(E42) : To (E220)
E3 *(E43) : Dropping resistor (A/T models)
C3 (E44) : Dual-pressure switch (For Canada)
E1 (E46) : Cooling fan relay-1
E1 (E47) : ASCD hold relay
E1 (E48) : Fog lamp relay
E1 (E49) : Air conditioner relay
E1 (E50) : Daytime light cancel relay
E1 (E51) : Door mirror defogger relay
E1 (E52) : Theft warning relay-1
F1 (E53) : Horn relay
E1 (E54) : Inhibitor relay (A/T models) Clutch inter lock relay (M/T models)
E1 (E55) : Fuel pump relay
E1 (E56) : Theft warning relay-2
E1 *(E57) : ECCS relay
F1 (E58) : Front wiper relay
(E59) : Joint connector-2
*(E60) : Joint connector-3
(E61) : Joint connector-4

*3: Joint connector box



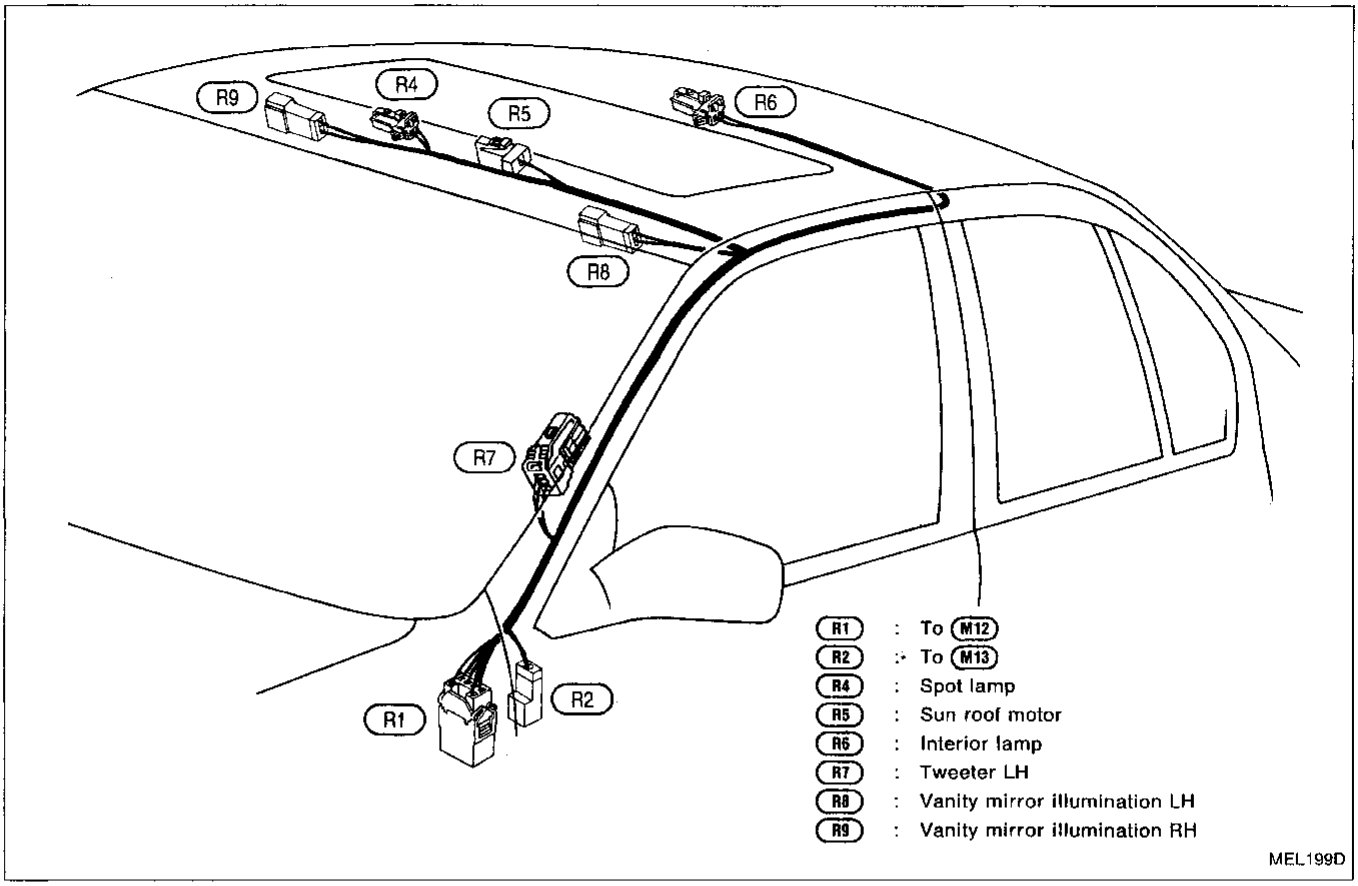

*: Be sure to connect and securely lock connectors after the repairs.
Failure to do so may cause the on-board diagnostic system to light up the MIL as an open circuit detection. (Refer to EC section.)

## Engine Room Harness

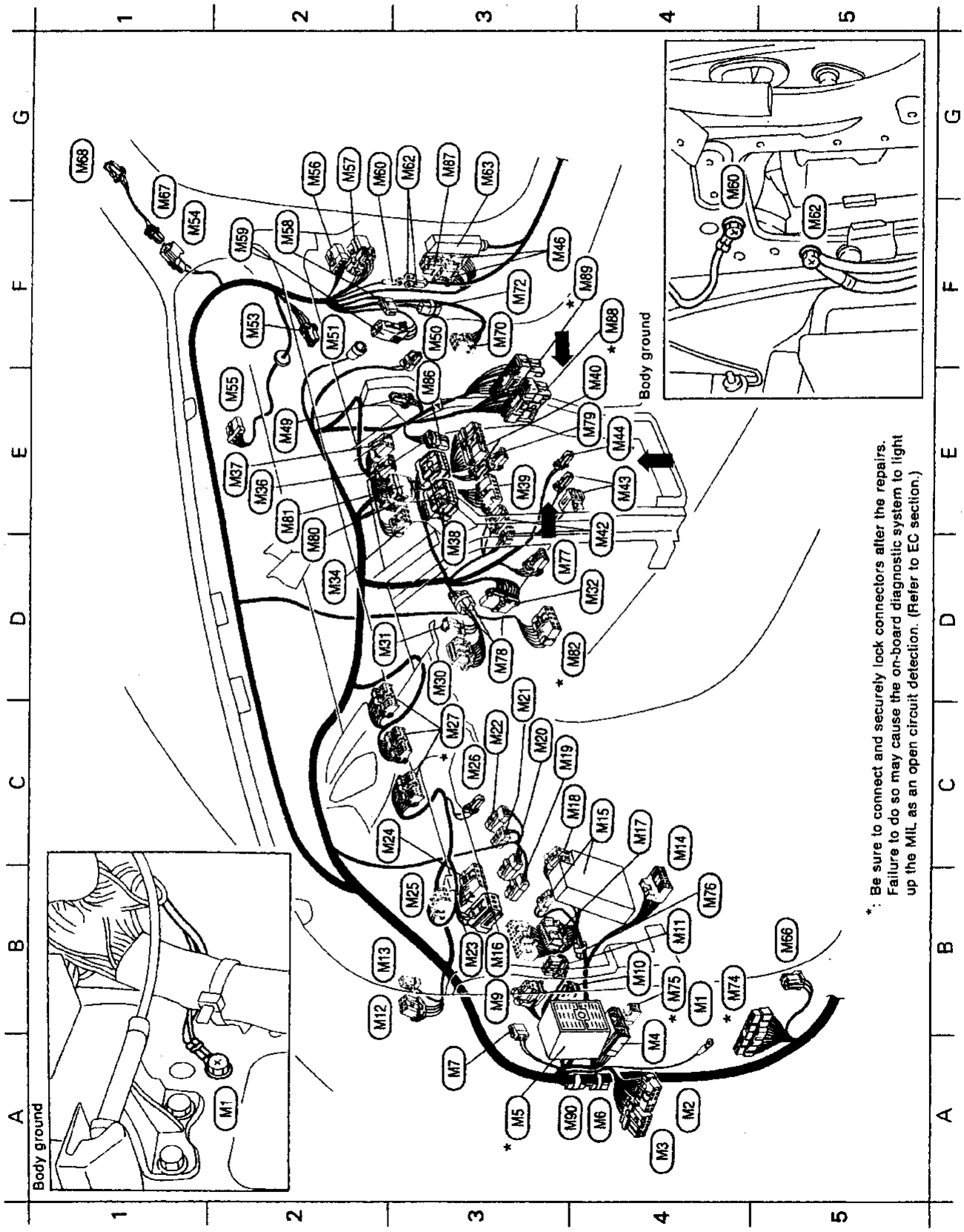



SEL952T

## Room Lamp Harness



## Main Harness



## Main Harness (Cont'd)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A4 | M1 | : Body ground | F2 | M51 | : Glove box lamp | B4 | *M74 | : A/T control unit |
| A4 | M2 | : To D1 | F2 | M53 | : Intake door motor | B4 | *M75 | : To E113 |
| A4 | M3 | : To D2 | F1 | M54 | : To M67 | B4 | M76 | : Diode |
| A4 | M4 | : To E101 | E2 | M55 | : Front wiper motor | D3 | M77 | : Vent mode switch |
| A3 | *M5 | : To E102 (SMJ) | G2 | M56 | : To D21 | D3 | M78 | : Diode |
| A4 | M6 | : Diode | G2 | M57 | : To D22 | E4 | M79 | : Full cold switch |
| A3 | M7 | : Circuit breaker | F2 | M58 | : Blower motor | D2 | M80 | : To A104 |
| B3 | M9 | : Seat belt rela | F2 | M59 | : Resistor | E2 | M81 | : To A103 |
| B4 | M10 | : Power windo | G2 | M60 | : Body ground | D3 | *M82 | : To F28 |
| B4 | M11 | : Shift lock con t (A/T models) | G3 | M62 | : Body ground (For anti-lock brake system) | E3 | M86 | : Maximum cold door motor |
| B2 | M12 | : To R1 | G3 | M63 | : ABS control unit | G3 | M87 | : Multi-remote control relay-2 |
| B2 | M13 | : To R2 | B5 | M66 | : Blower relay | F4 | *M88 | : To F30 |
| C4 | M14 | : Data link connector for CONSULT | G1 | M67 | : To M54 | F4 | *M89 | : To F31 |
| C4 | M15 | : Fuse block | G1 | M68 | : Tweeter RH | A4 | M90 | : Diode |
| B3 | M16 | : ASCD control unit | F3 | M70 | : Door lock timer | | | (Models with multi-remote control system) |
| C4 | M17 | : Time control unit | F3 | M72 | : Diode | | | |
| C3 | M18 | : Rear window defogger relay | | | | | | |
| C3 | M19 | : Clutch interlock switch (For U.S.A. M/T models) | | | | | | |
| C3 | M20 | : ASCD clutch switch (M/T models) | | | | | | |
| C3 | M21 | : Stop lamp switch | | | | | | |
| C3 | M22 | : ASCD cancel switch | | | | | | |
| B3 | M23 | : Illumination control switch | | | | | | |
| C2 | M24 | : Door mirror remote control switch | | | | | | |
| B3 | M25 | : ASCD main switch | | | | | | |
| C3 | M26 | : Theft warning indicator lamp | | | | | | |
| C3 | *M27 | : Combination meter | | | | | | |
| D3 | M30 | : Theft warning control unit | | | | | | |
| D2 | M31 | : Combination flasher unit | | | | | | |
| D4 | M32 | : Mode door motor | | | | | | |
| D2 | M34 | : Rear window defogger switch | | | | | | |
| E2 | M36 | : Hazard switch | | | | | | |
| E2 | M37 | : Fog lamp switch | | | | | | |
| D3 | M38 | : Radio | | | | | | |
| E3 | M39 | : Fan switch | | | | | | |
| E4 | M40 | : Push control unit | | | | | | |
| D4 | M42 | : Not used | | | | | | |
| E4 | M43 | : Cigarette lighter | | | | | | |
| E4 | M44 | : Ashtray illumination | | | | | | |
| F3 | M46 | : Daytime light control unit (For Canada) | | | | | | |
| E2 | M49 | : Thermo control amplifier | | | | | | |
| F3 | M50 | : Trunk lid opener cancel switch | | | | | | |

(M72): Diode

Interior lamp, Time control unit — Door switch

(M6): Diode (For Canada)

Brake warning lamp — Parking brake switch

(M76): Diode (Models with multi-remote control system)

Theft warning control unit — Rear door lock actuator (Door unlock sensor)

(M78): Diode

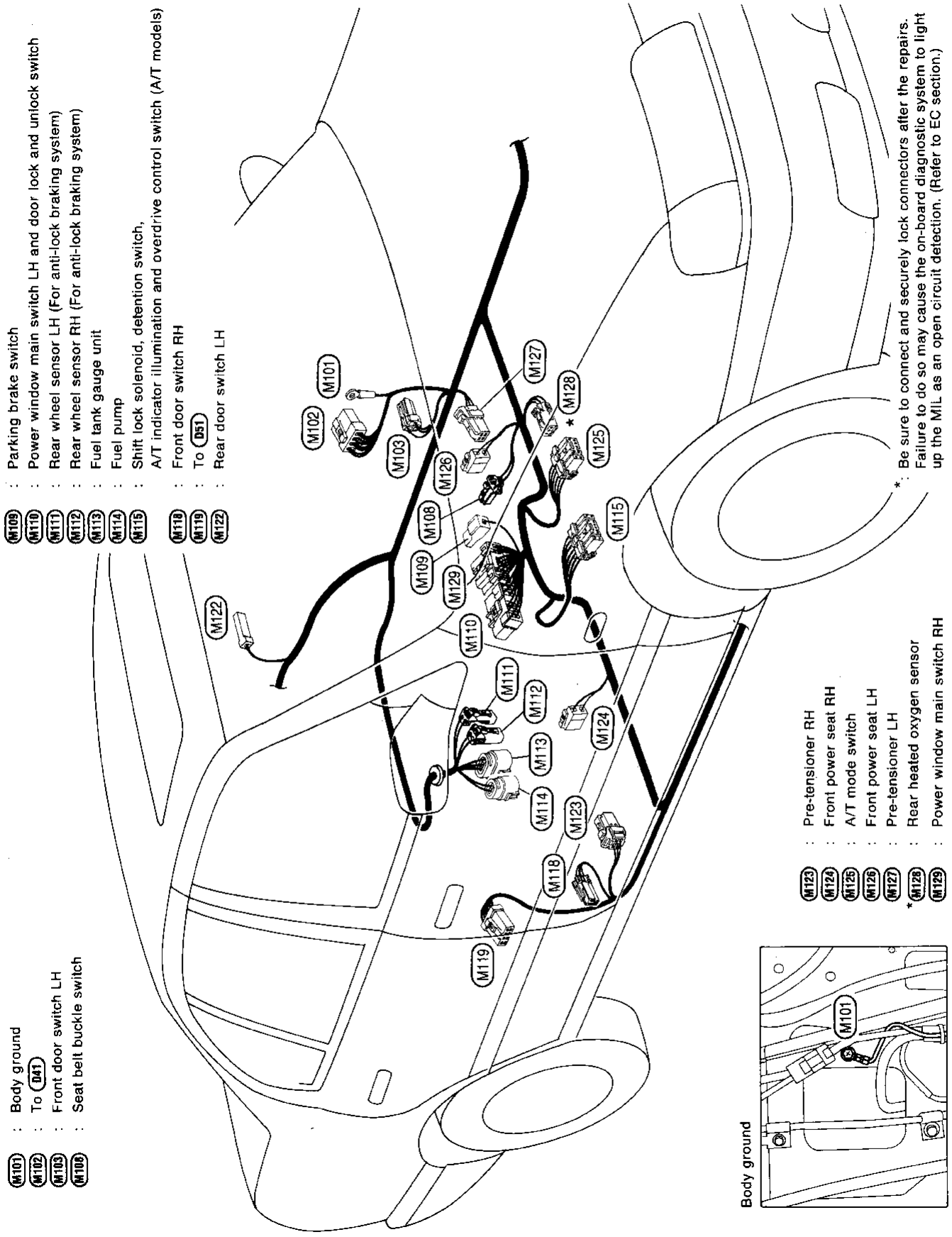
Theft warning control unit — Front door lock actuator LH (Door unlock sensor); Front door lock actuator RH (Door unlock sensor)

(M90): Diode (Models with multi-remote control system)

Theft warning control unit — Front door key cylinder switch (Unlock switch)

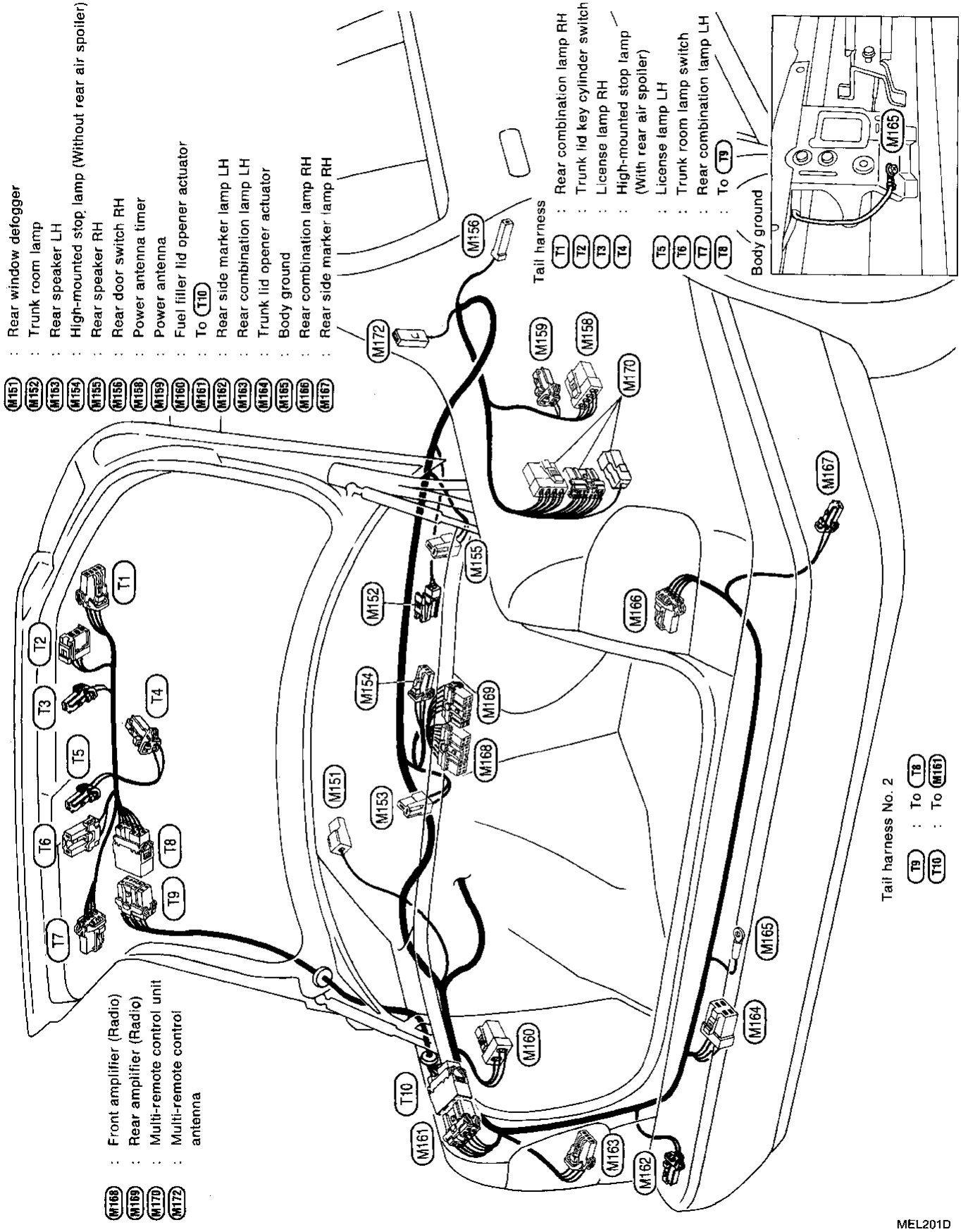
SEL953T

## Main Harness (Cont'd)



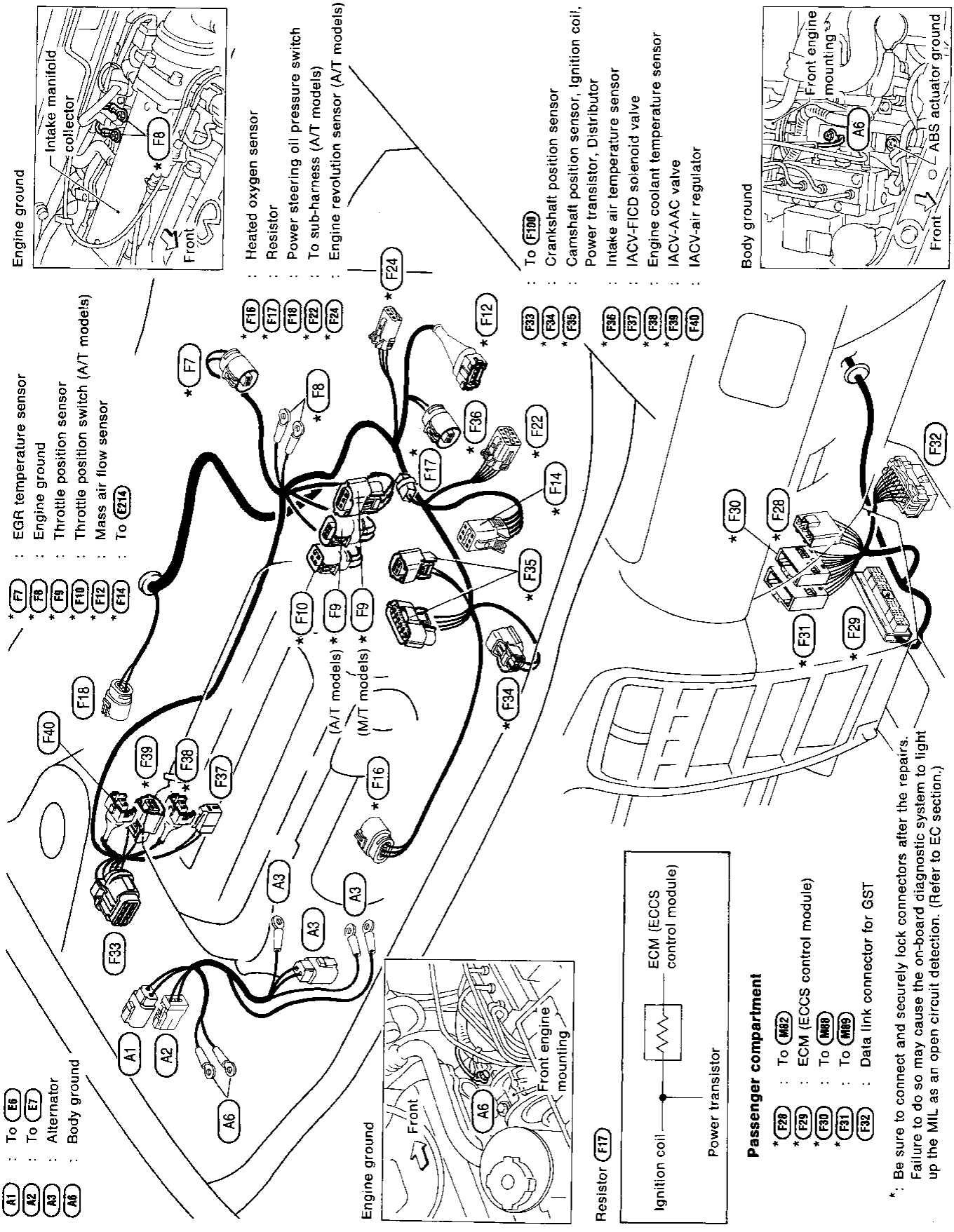

MEL405D

## Main Harness, Tail Harness and Tail Harness No.2



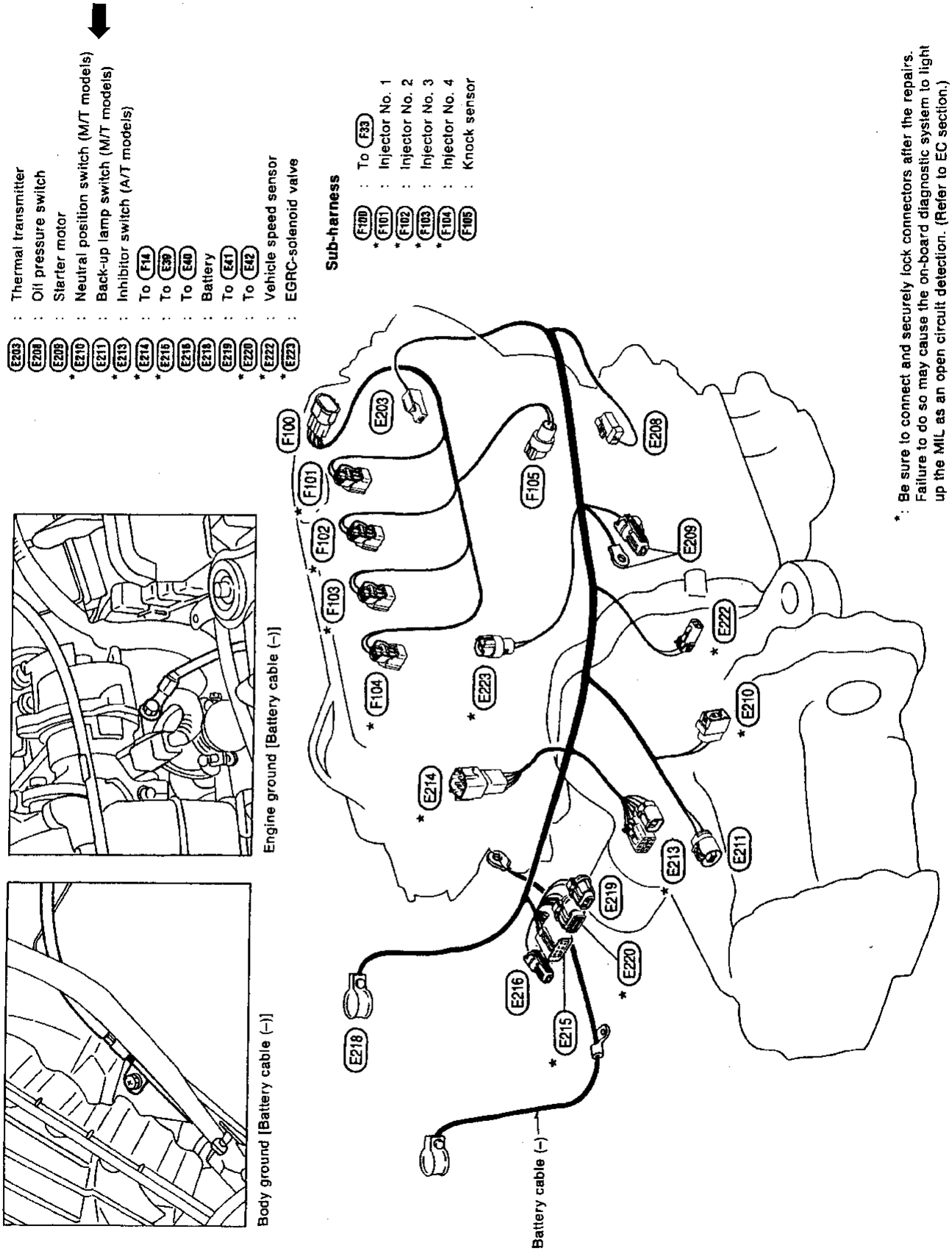

MEL201D

## Engine Control Harness and Alternator Harness



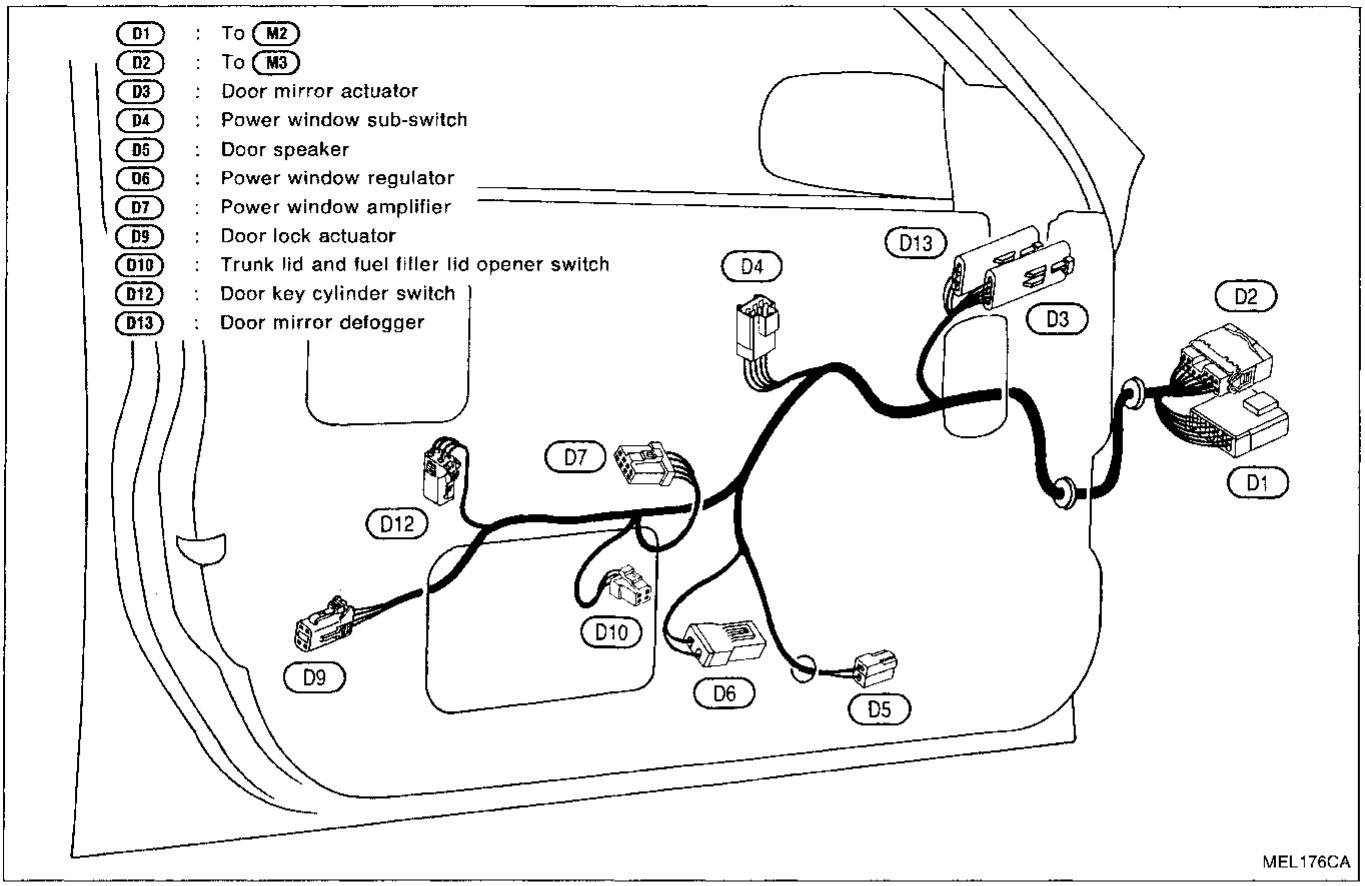

MEL202D

## Engine Harness

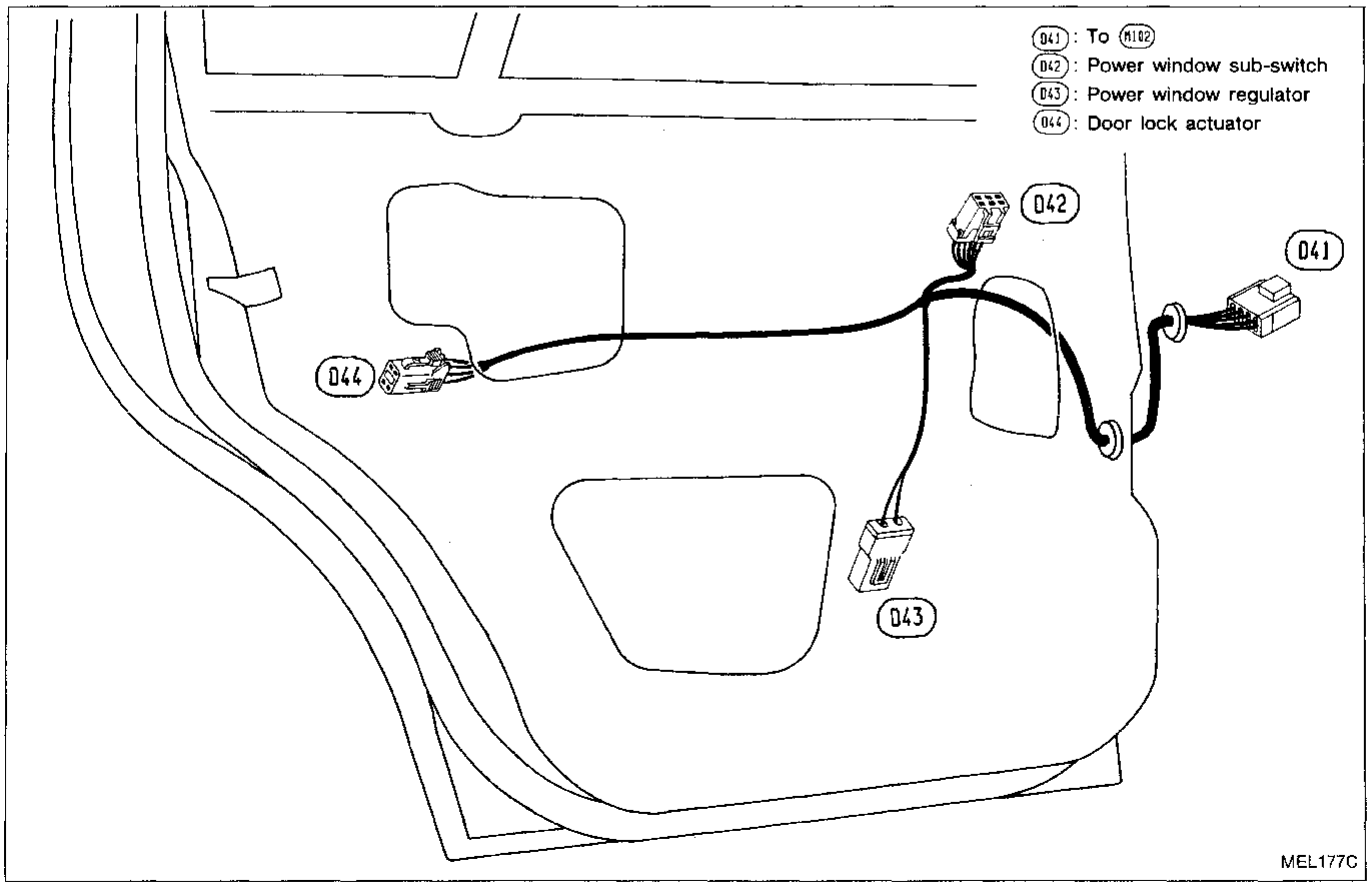


FRONT

## Door Harness (LH side)

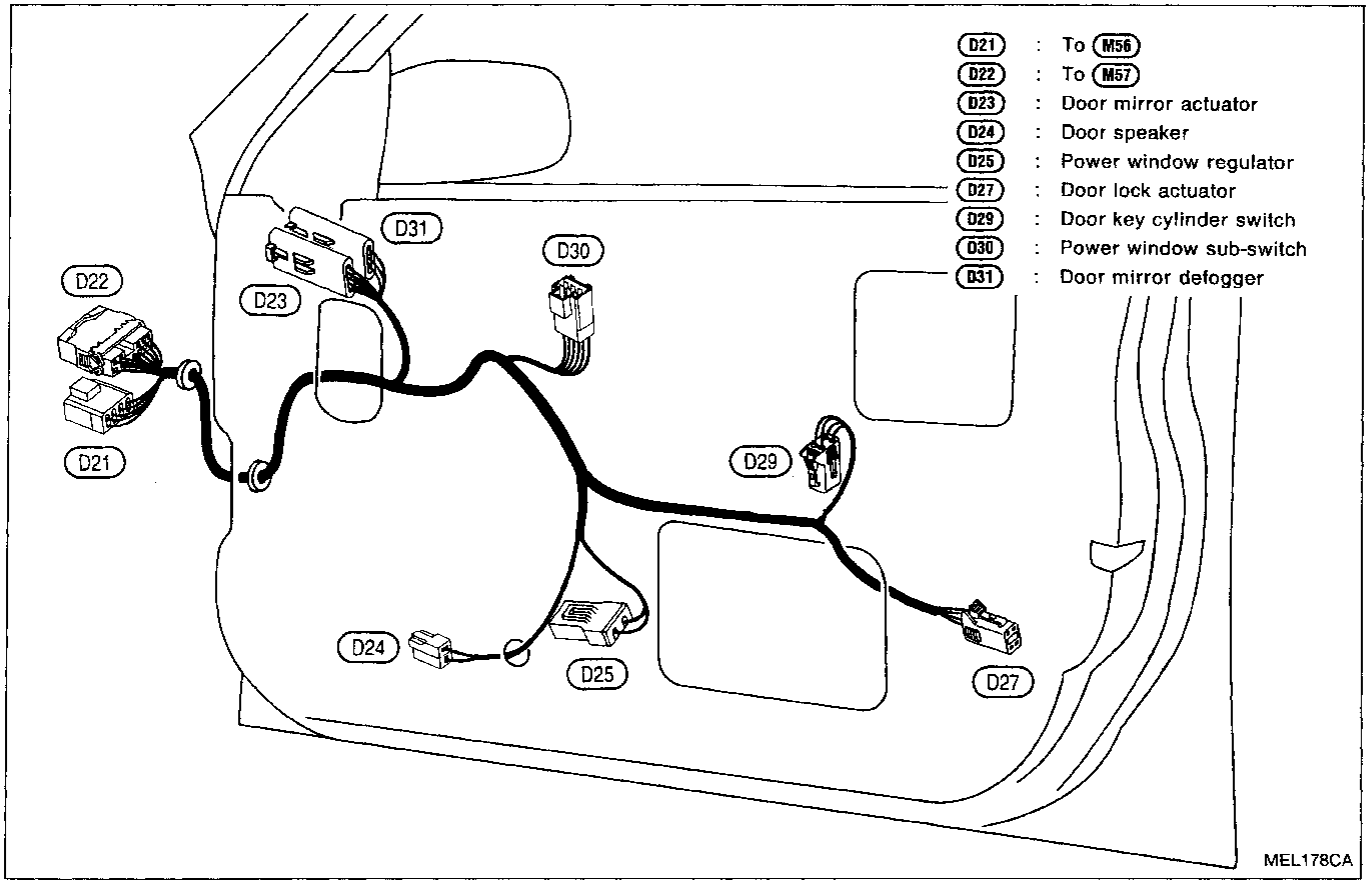



REAR



**FRONT**

## Door Harness (RH side)




**REAR**