# 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".**

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**WIRING DIAGRAM REFERENCE CHART**


**COOLING SYSTEM** ..... **LC SECTION**
**ECCS (Ignition system)** ..... **EC SECTION**
**AUTOMATIC TRANSAXLE CONTROL SYSTEM** ..... **AT SECTION**
**ANTI-LOCK BRAKE SYSTEM** ..... **BR SECTION**
**SRS "AIR BAG"** ..... **RS SECTION**
**HEATER AND AIR CONDITIONER** ..... **HA SECTION**

## Supplemental Restraint System (SRS) "AIR BAG" (Dual Air Bag System)

The Supplemental Restraint System "Air Bag", used along with a seat belt, helps 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 bag modules (located in the center of the steering wheel and on the instrument panel on the passenger side), a diagnosis sensor unit, warning lamp, wiring harness and spiral cable. Information necessary to service the system safely is included in the **RS section** of this Service Manual.

**WARNING:**

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses are covered with yellow insulation either just before the harness connectors or for the complete harness, for easy identification.**

## Supplemental Restraint System (SRS) "AIR BAG" (Single Air Bag System)

The Supplemental Restraint System "Air Bag", used along with a seat belt, helps to reduce the risk or severity of injury to the driver in a frontal collision. The Supplemental Restraint System consists of an air bag module (located in the center of the steering wheel), a diagnosis sensor unit, warning lamp and spiral cable. Information necessary to service the system safely is included in the **RS section** of this Service Manual.

**WARNING:**

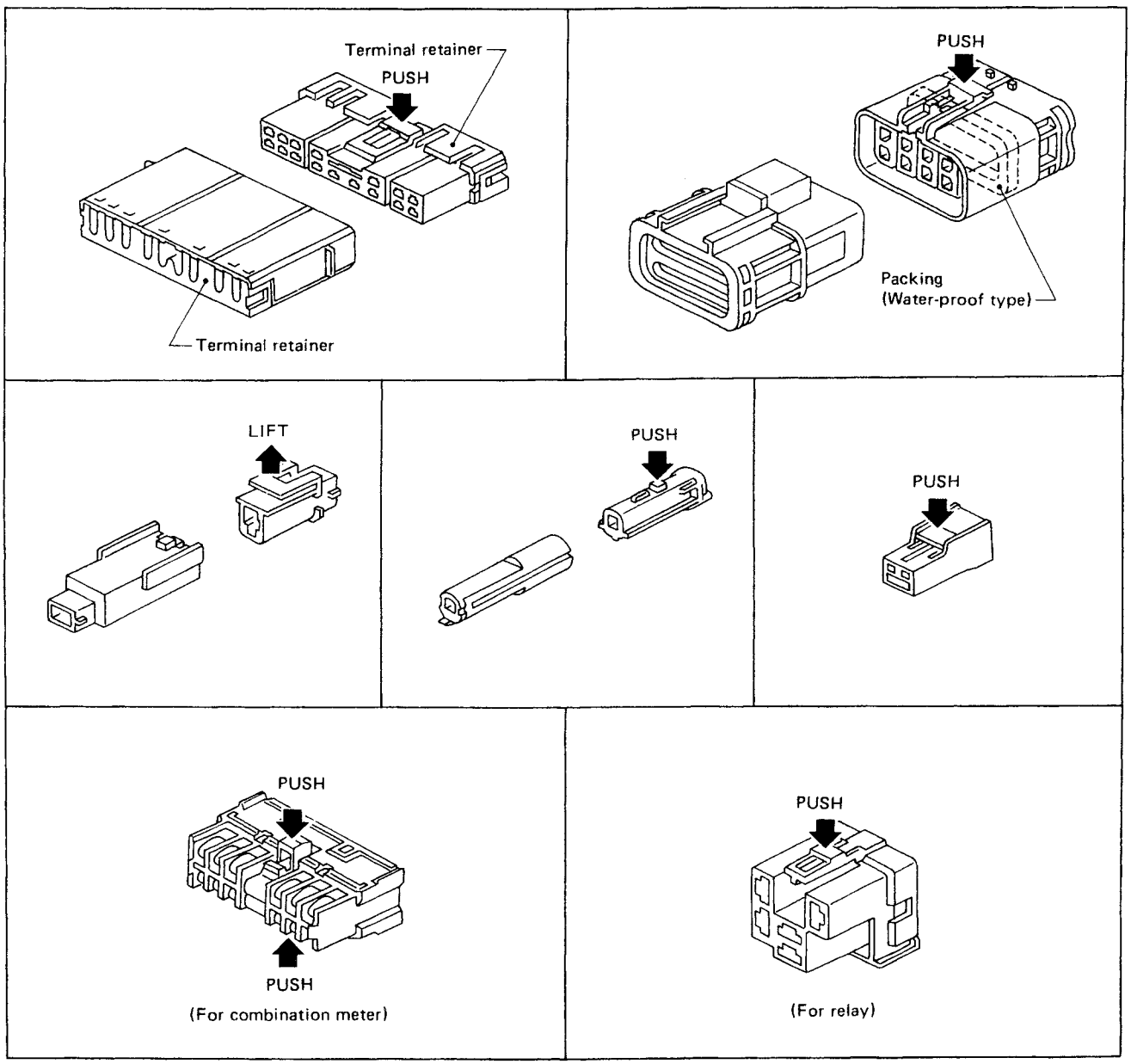
- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system.**
- **Do not use electrical test equipment on any circuit related to the SRS.**

## 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]



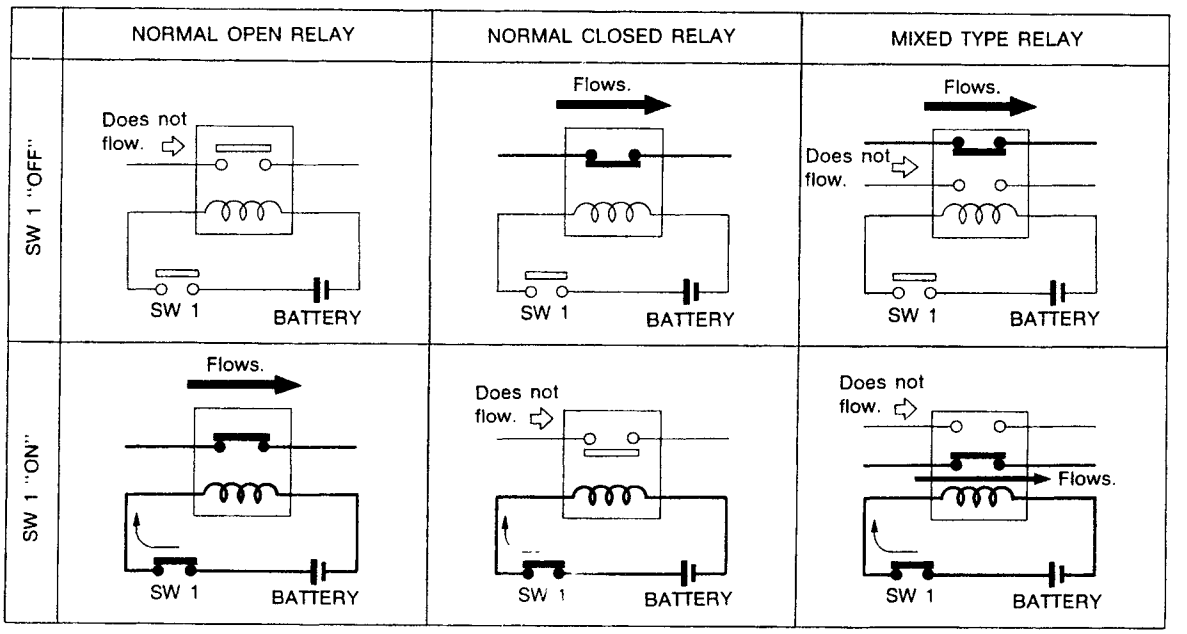

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EL

## Description

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

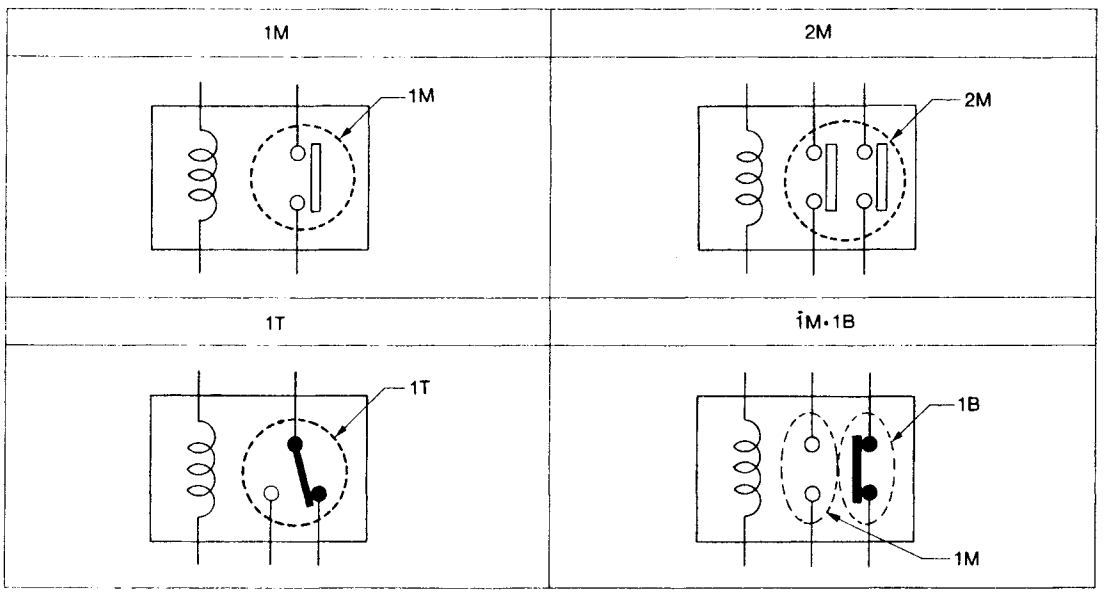
Relays can mainly be divided into three types: normal open, normal closed and mixed type relays.




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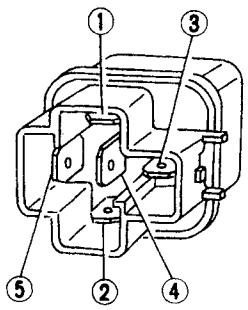
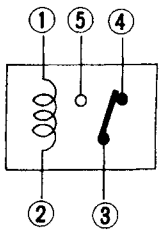
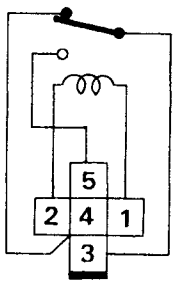
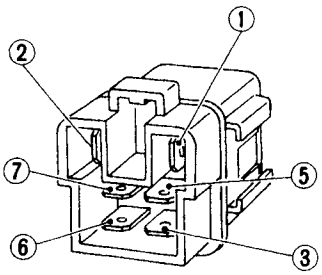
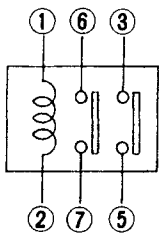
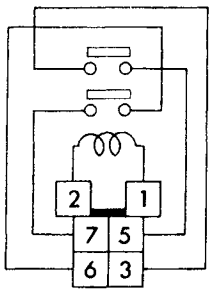
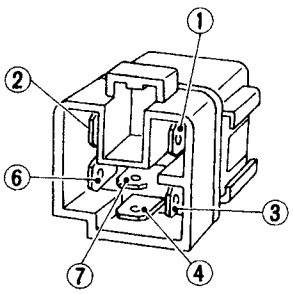
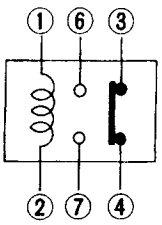
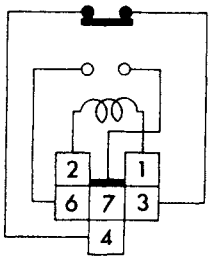
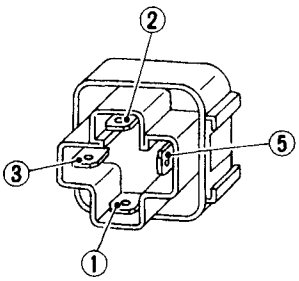
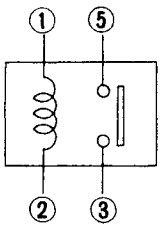
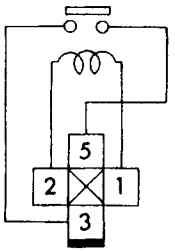
### TYPE OF STANDARDIZED RELAYS

| | | | |
|---|---|---|---|
| 1M | ..... 1 Make | 2M | ..... 2 Make |
| 1T | ..... 1 Transfer | 1M·1B | ..... 1 Make 1 Break |




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## Description (Cont'd)

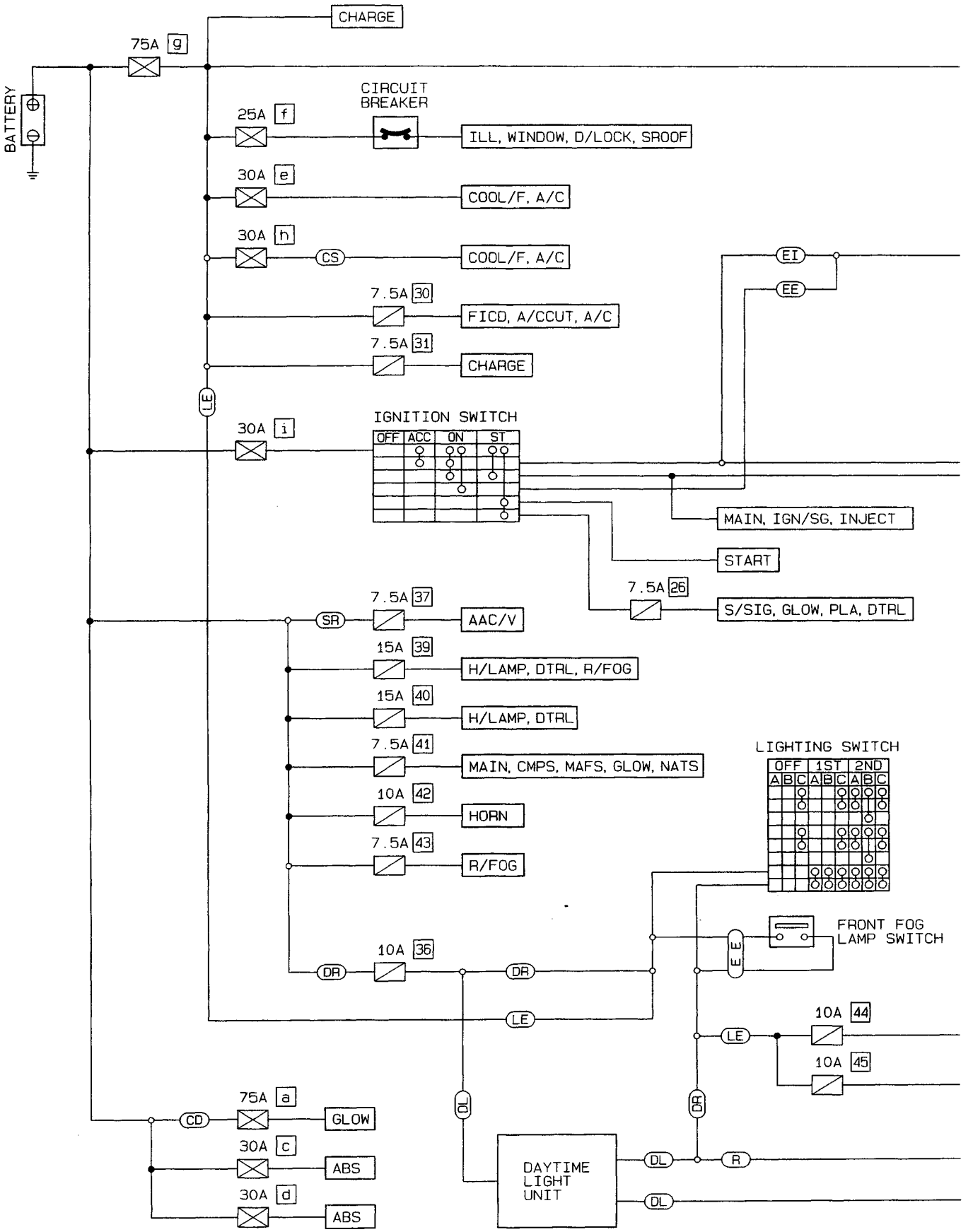
| Type | Outer view | Circuit | Connector symbol and connection | Case color |
|---|---|---|---|---|
| 1T |  |  |  | BLACK |
| 2M |  |  |  | BROWN |
| 1M•1B |  |  |  | GRAY |
| 1M |  |  |  | BLUE |

The arrangement of terminal numbers on the actual relays may differ from those shown above.

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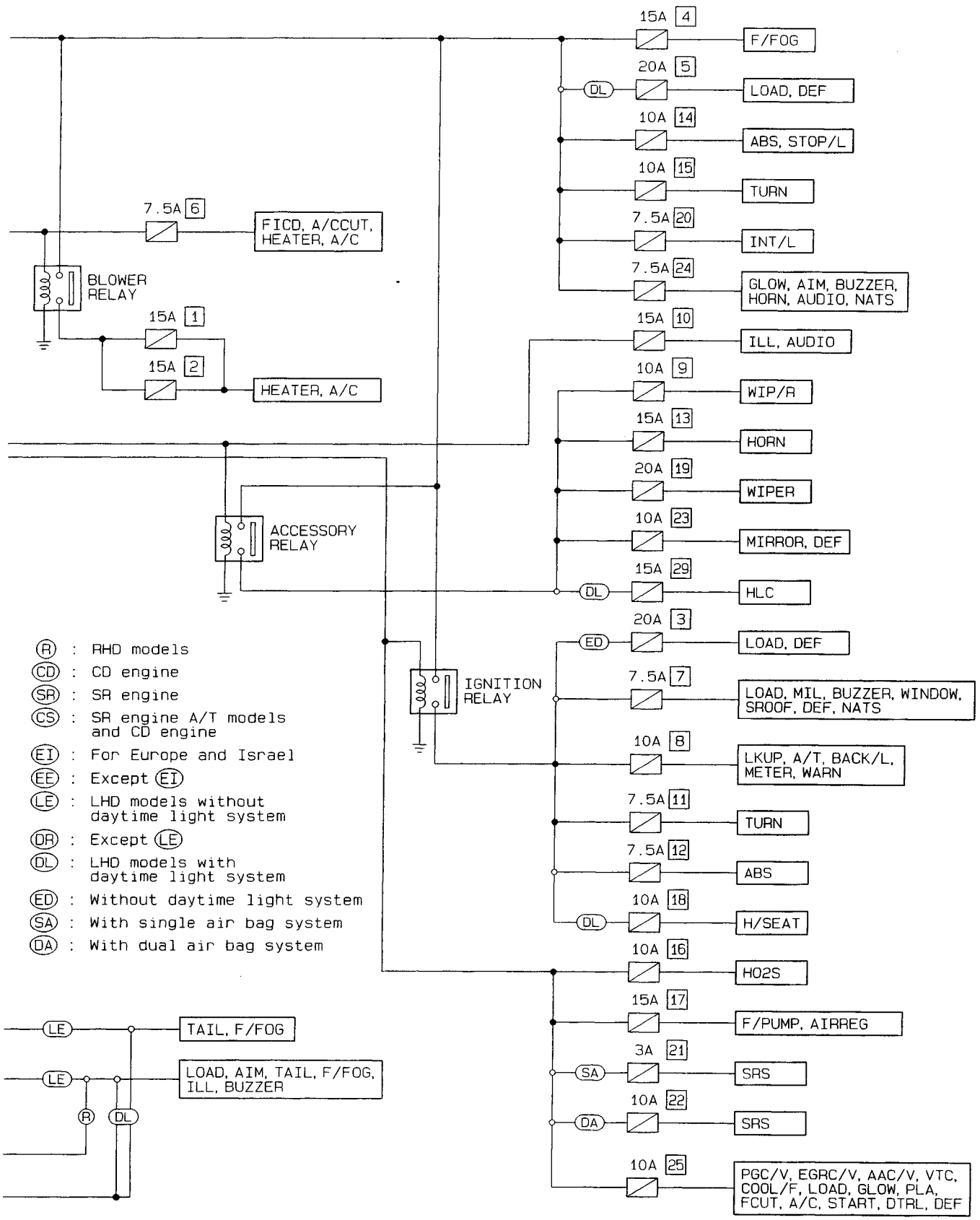
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## Schematic




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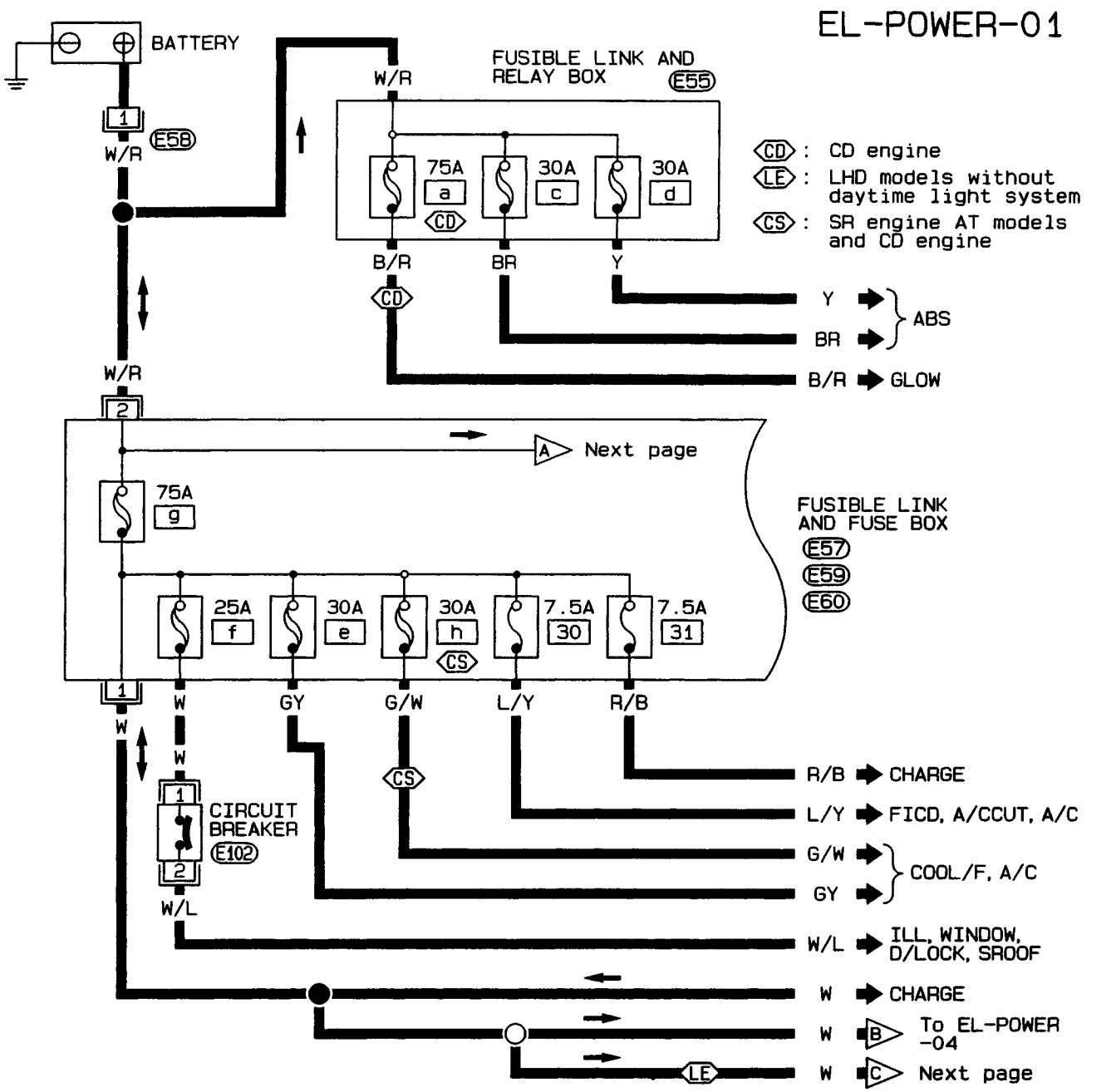
## Schematic (Cont'd)

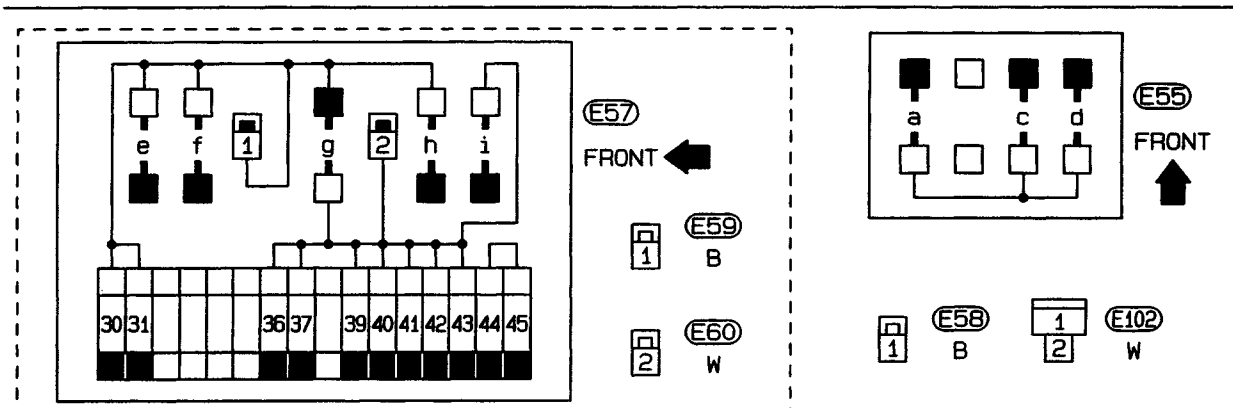



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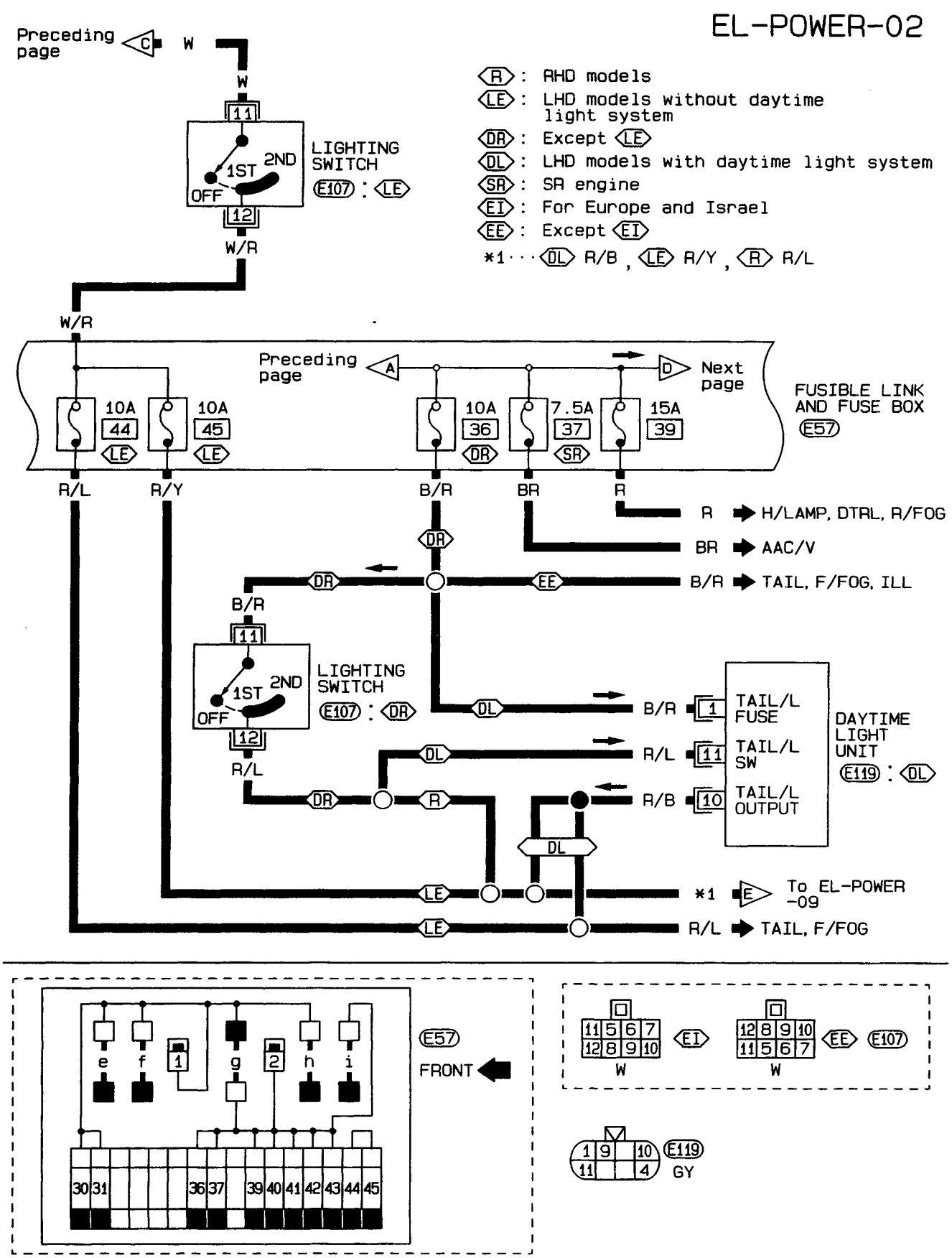
## Wiring Diagram — POWER —




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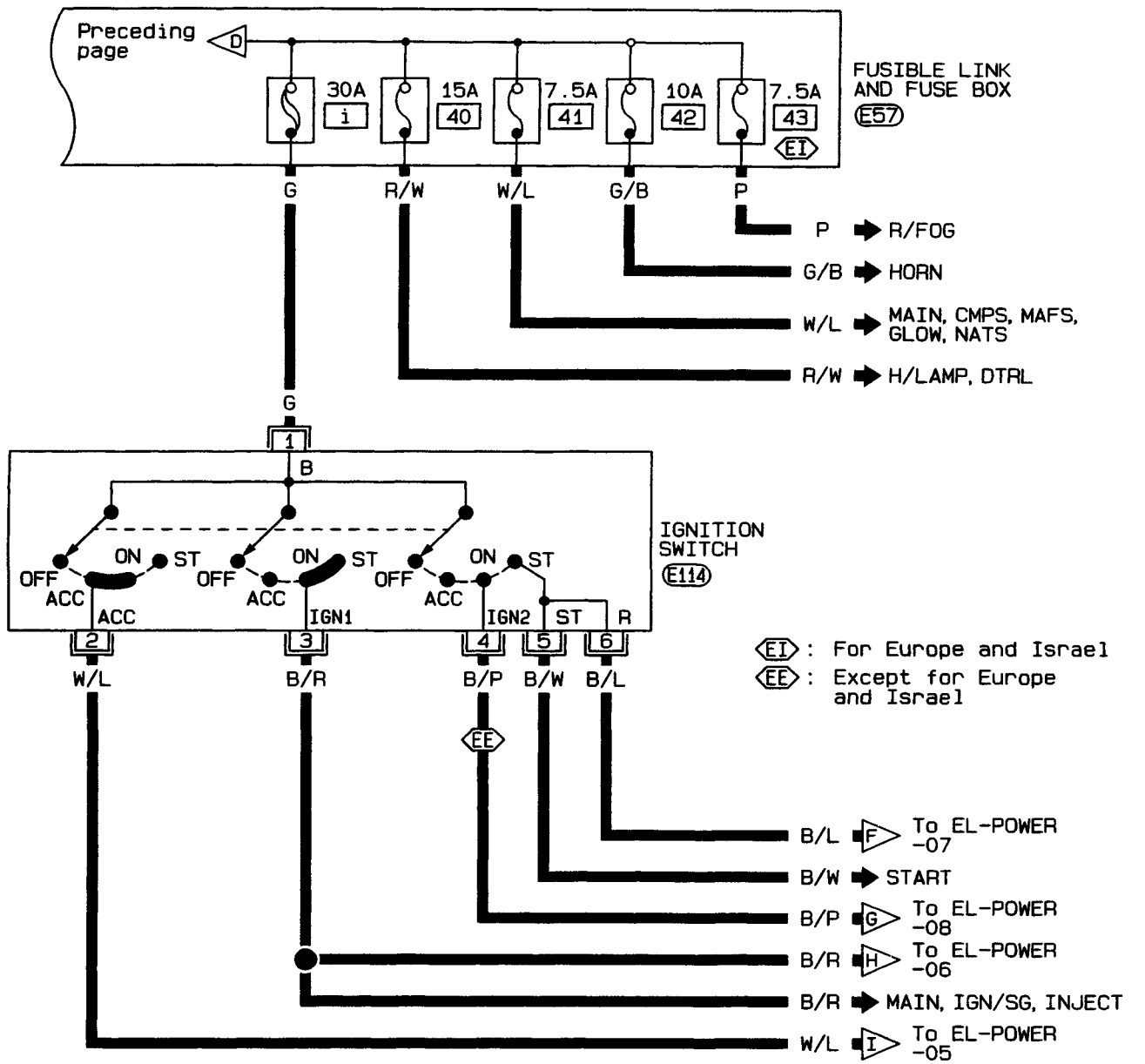
## Wiring Diagram — POWER — (Cont'd)

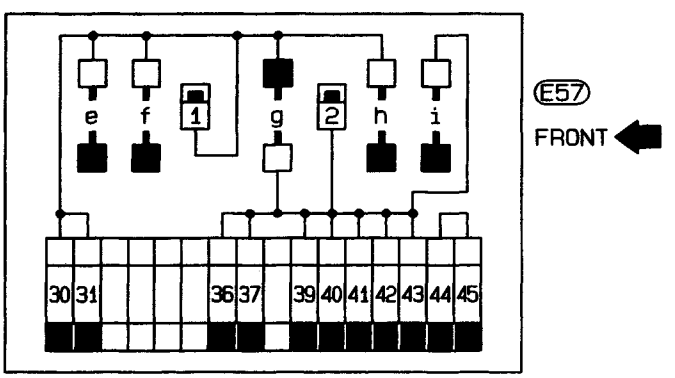


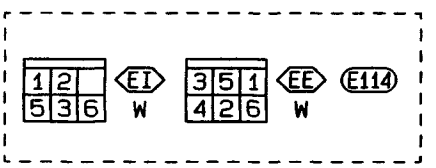

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## Wiring Diagram — POWER — (Cont'd)

EL-POWER-03



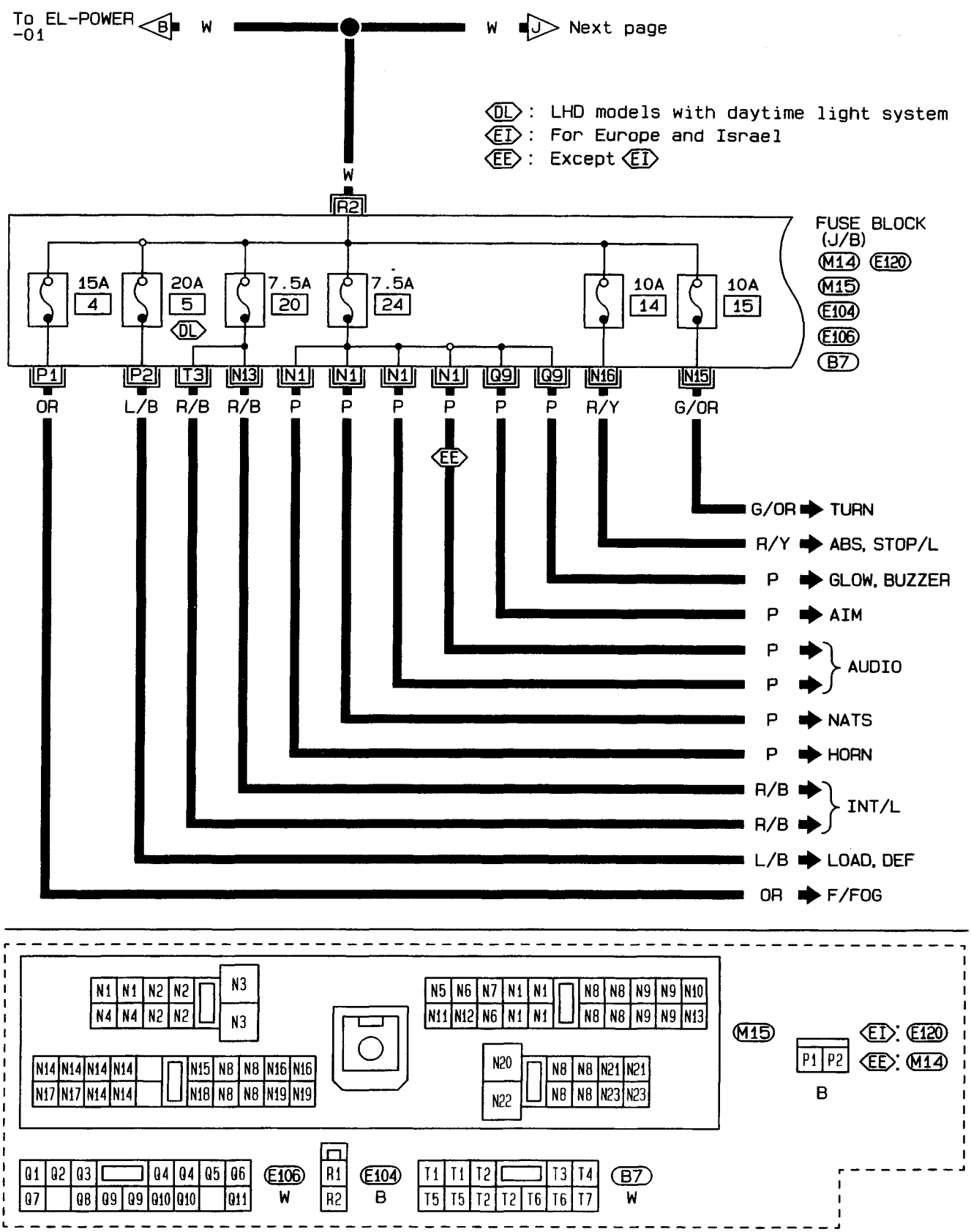




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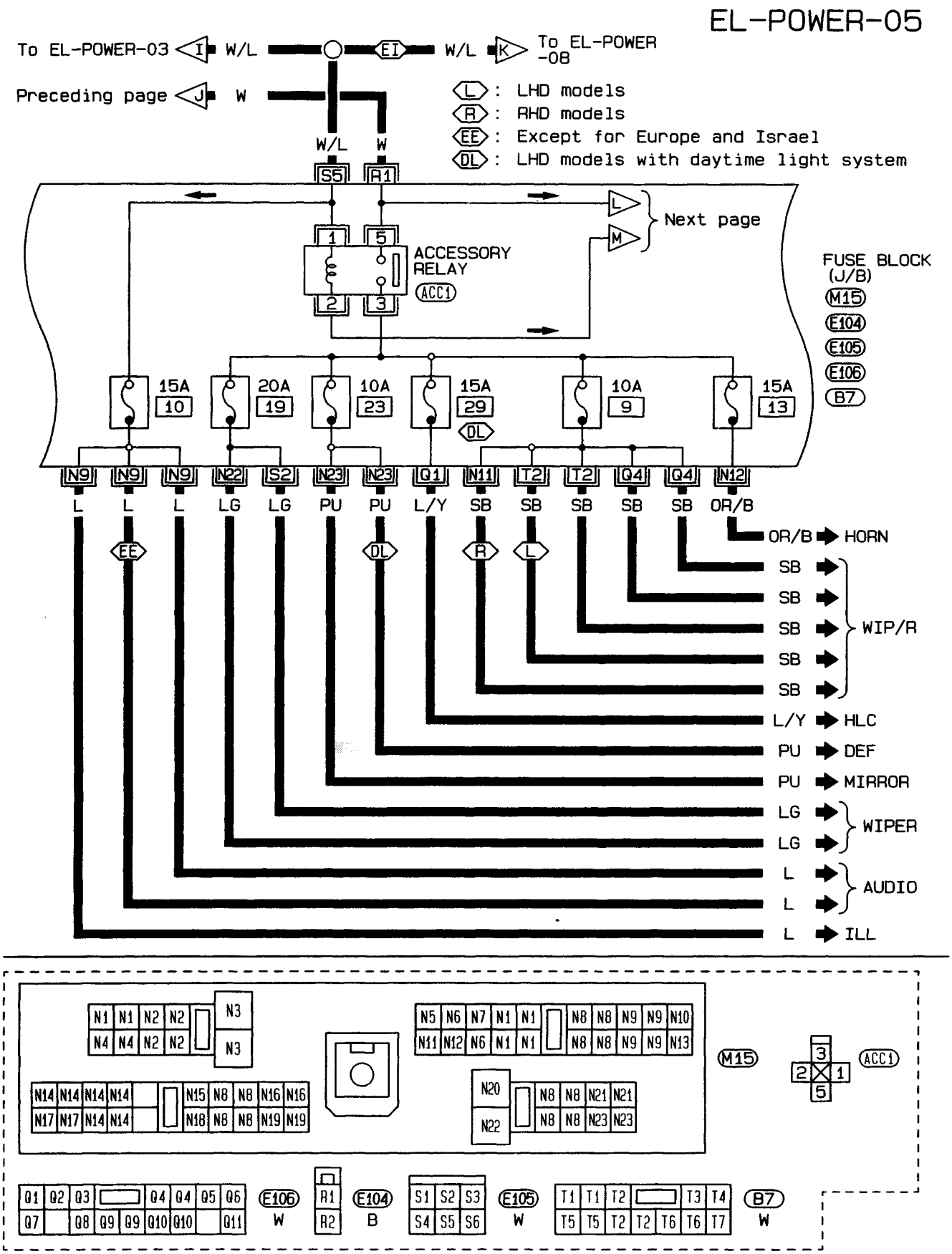
## Wiring Diagram — POWER — (Cont'd)

EL-POWER-04




HEL005

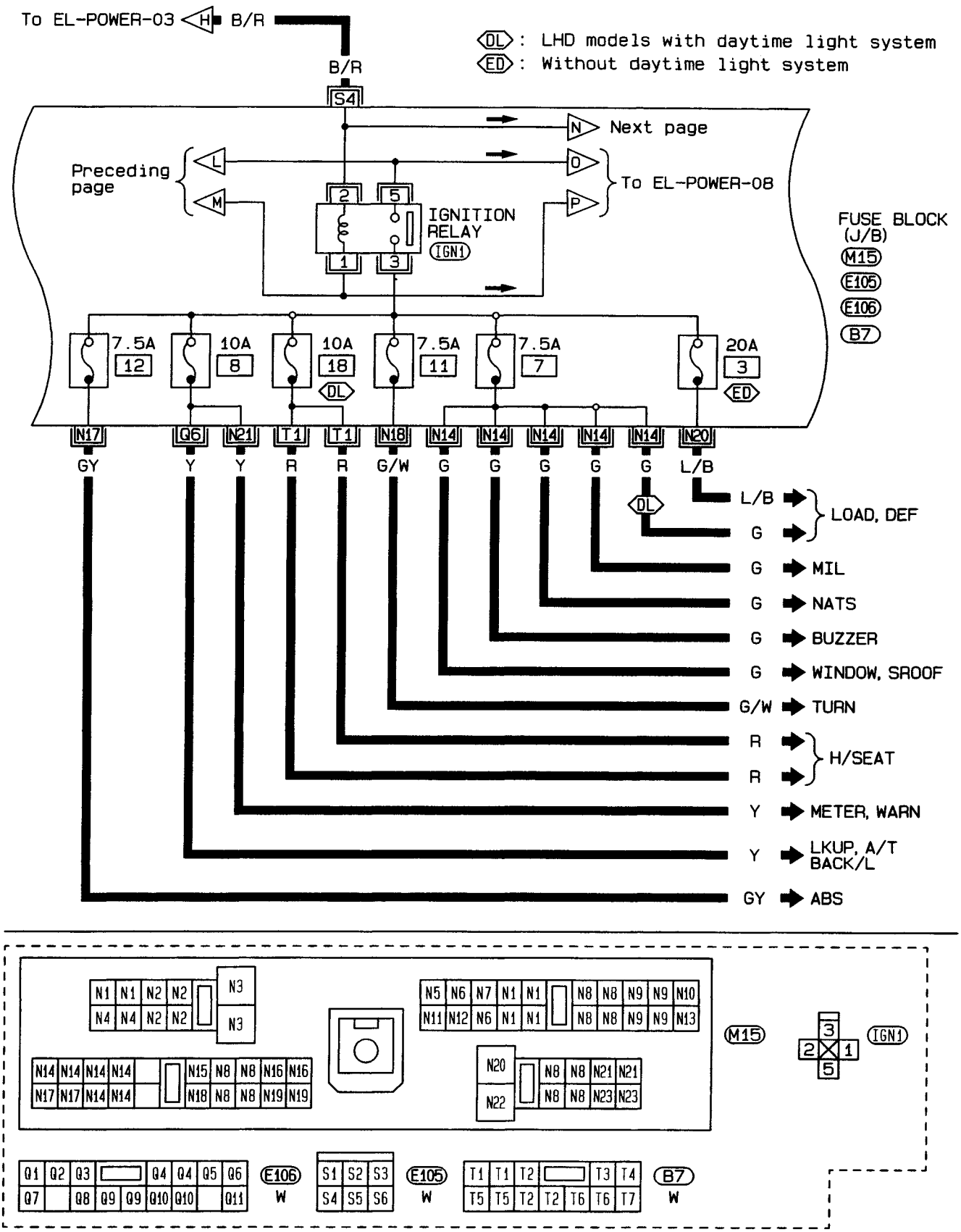
## Wiring Diagram — POWER — (Cont'd)




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## Wiring Diagram — POWER — (Cont'd)

EL-POWER-06



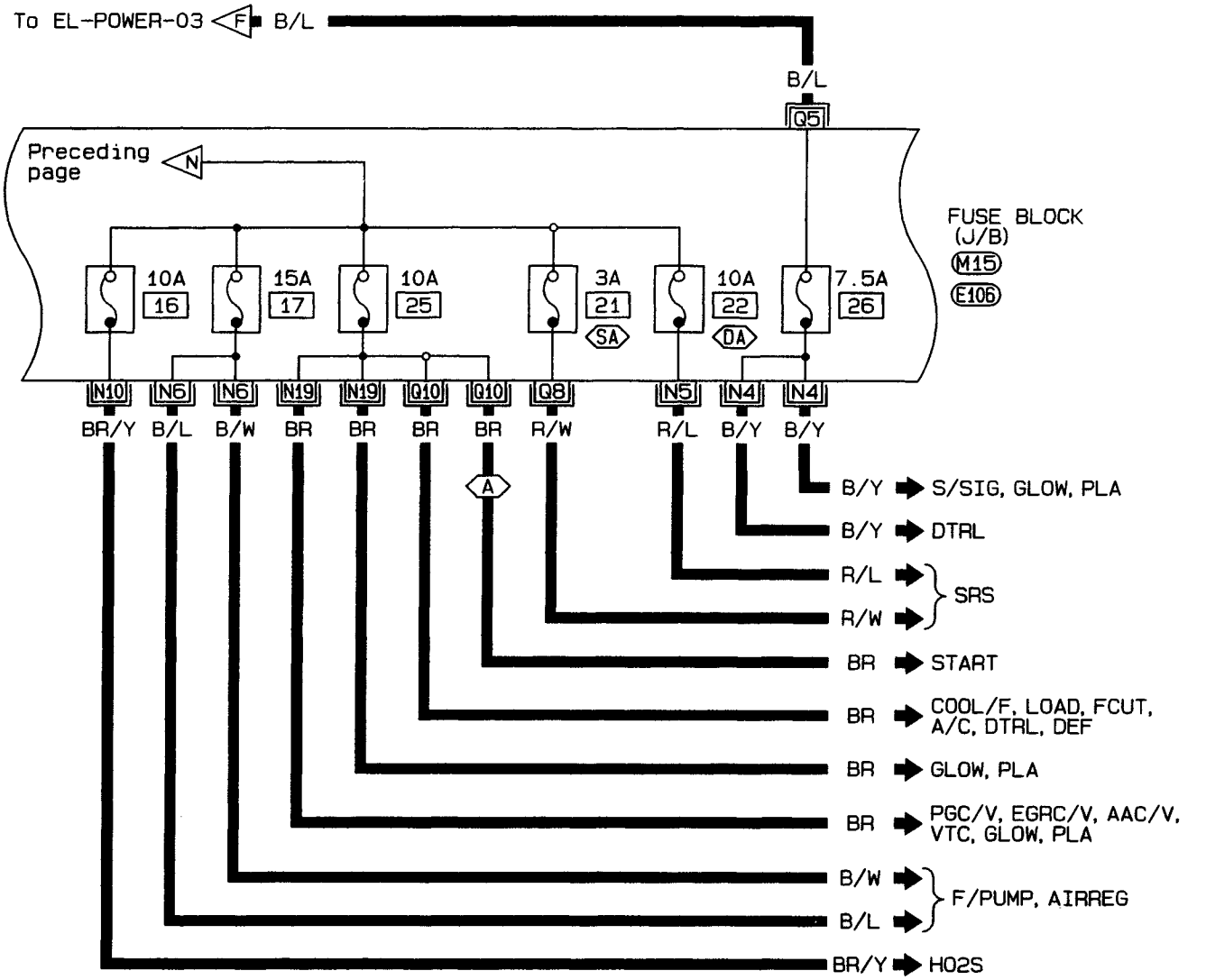

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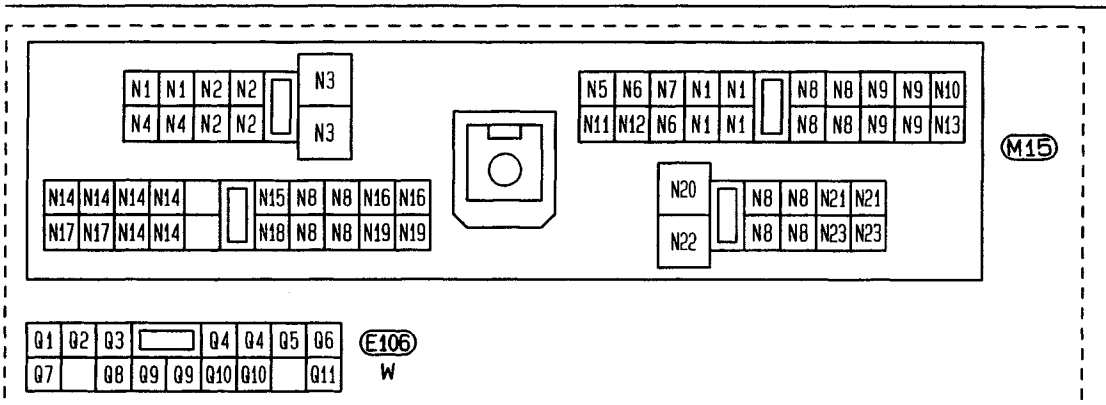
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## Wiring Diagram — POWER — (Cont'd)

EL-POWER-07

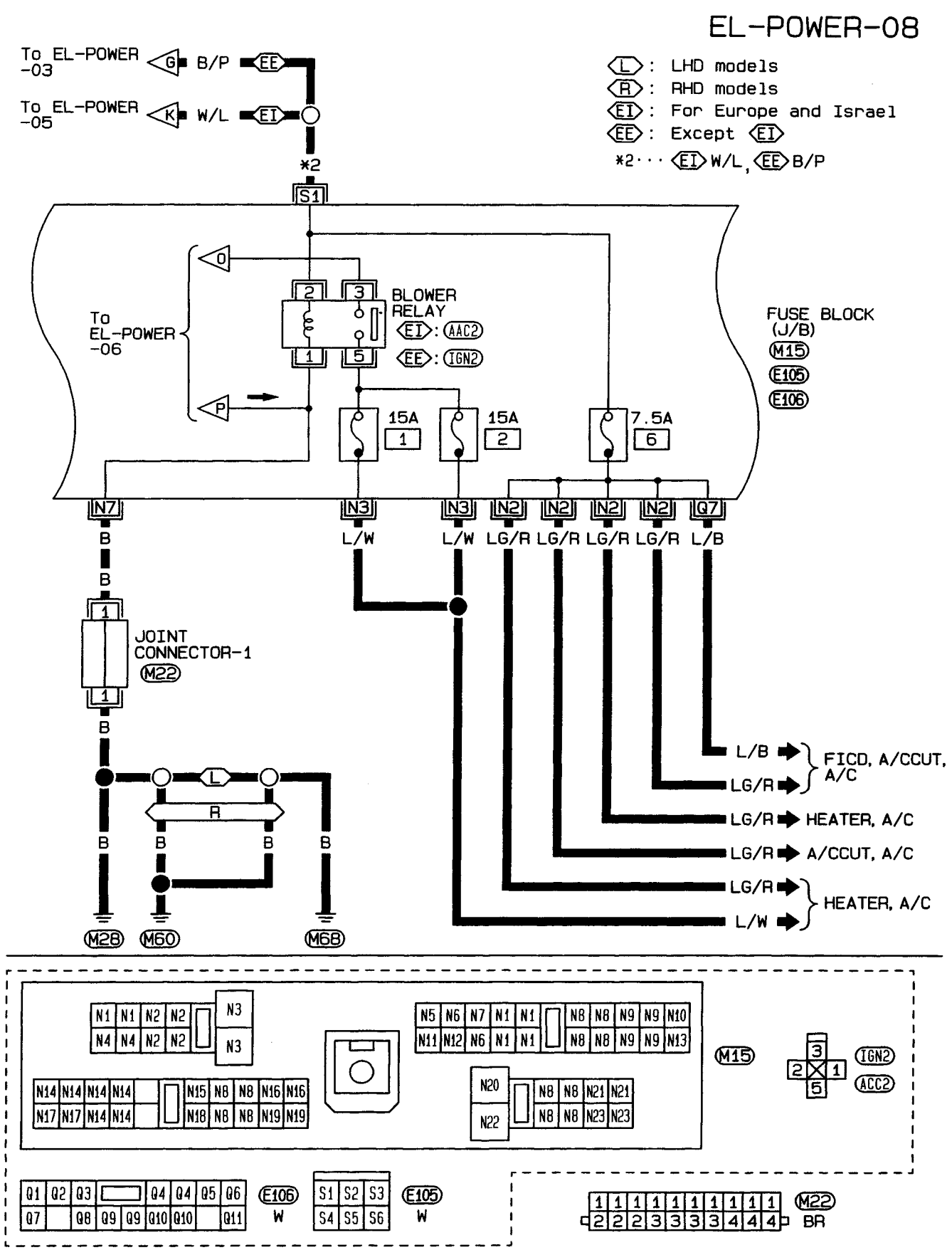
Ⓐ : A/T models
ⓈⒶ : With single air bag system
ⒹⒶ : With dual air bag system




HEL008

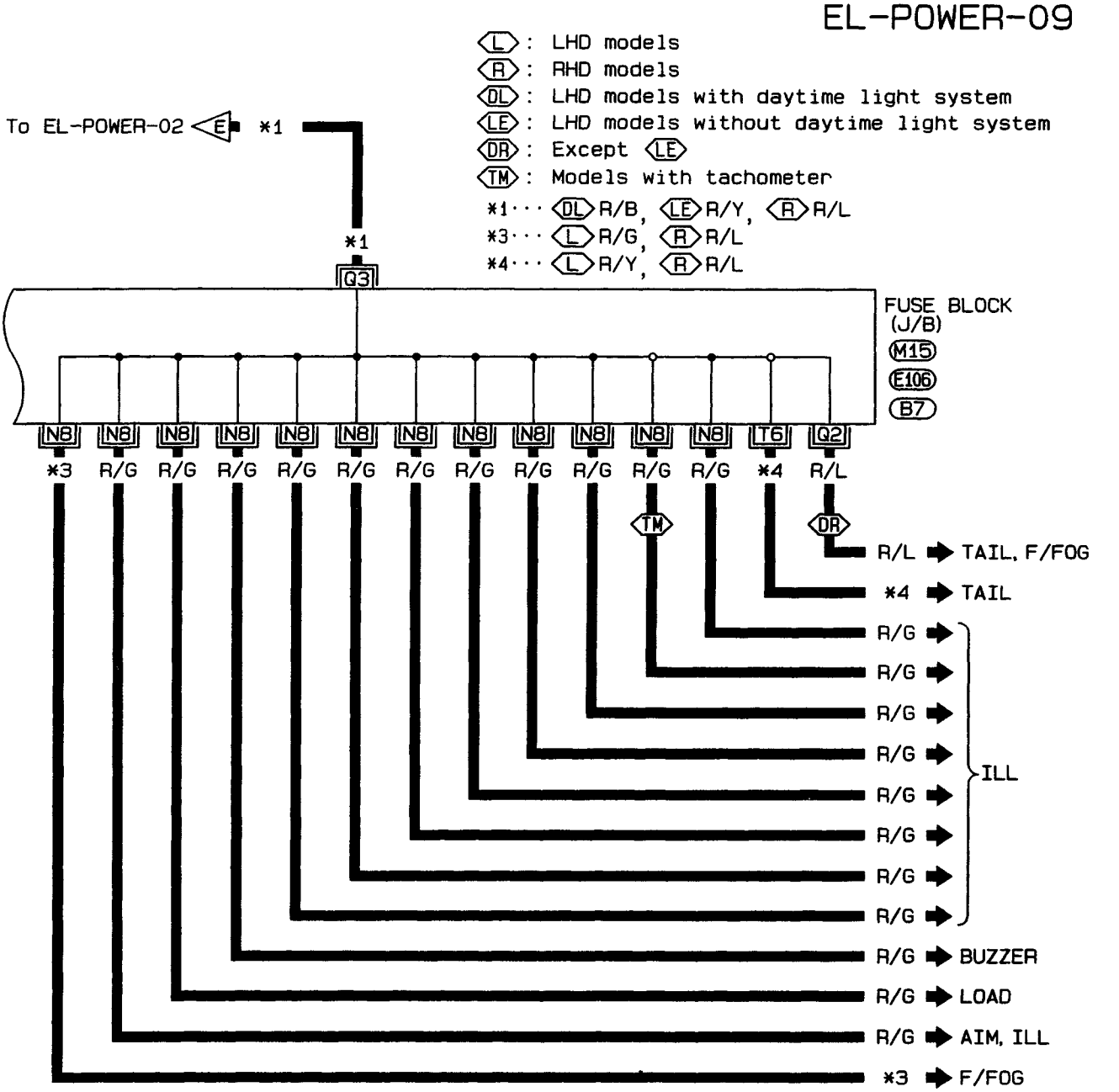
## Wiring Diagram — POWER — (Cont'd)

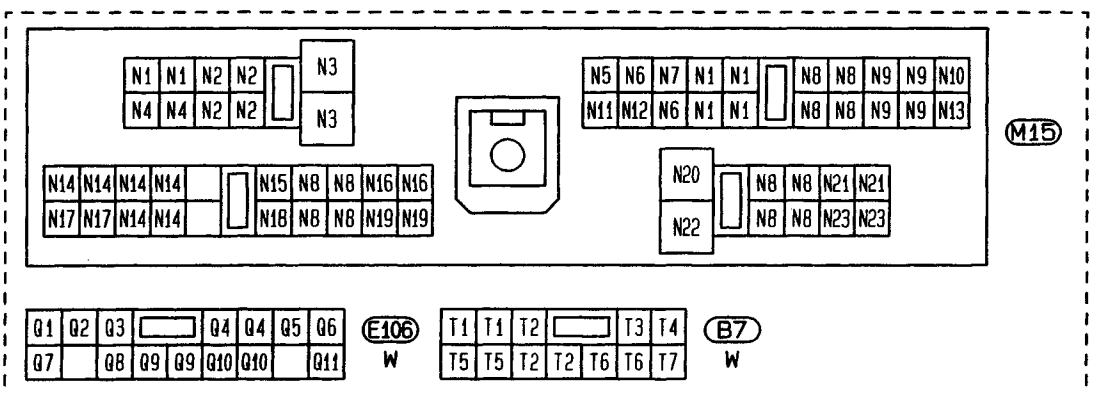



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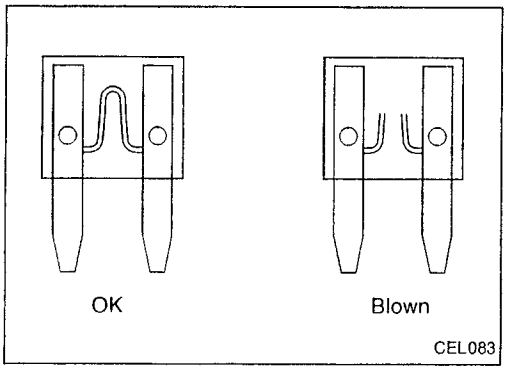
## Wiring Diagram — POWER — (Cont'd)

EL-POWER-09



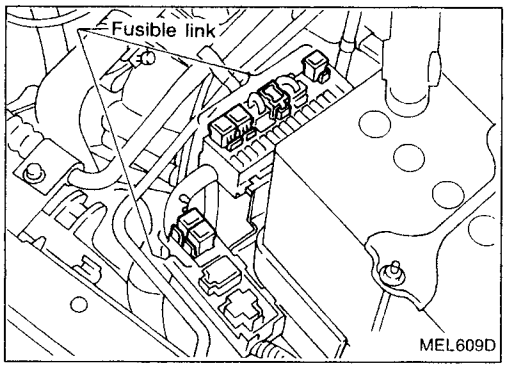




HEL010




## Fuse

- If fuse is blown, be sure to eliminate cause of problem before installing new fuse.
- Use fuse of specified rating. Never use fuse of more than specified rating.
- Do not partially install fuse; always insert it into fuse holder properly.
- Remove fuse for clock if vehicle is not used for a long period of time.

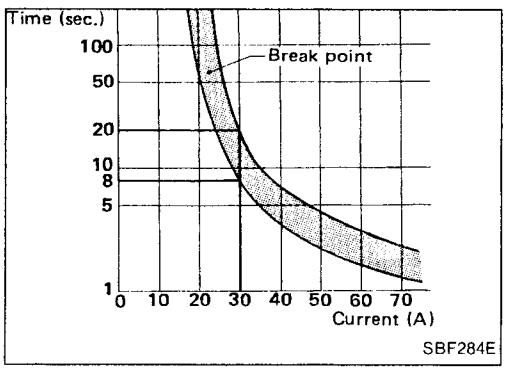



## Fusible Link

A melted fusible link can be detected by visual inspection. If its condition is questionable, use circuit tester or test lamp.

**CAUTION:**

- **If fusible link should melt, it is possible that critical circuit (power supply or large current carrying circuit) is shorted. In such a case, carefully check and eliminate cause of problem.**
- **Never wrap outside of fusible link with vinyl tape. Important: Never let fusible link touch any other wiring harness or vinyl or rubber parts.**




## Circuit Breaker

For example, when current is 30A, the circuit is broken within 8 to 20 seconds.

Circuit breakers are used in the following systems.

- Power window
- Power door lock
- Electric sun roof

EL

| GROUND | CONNECT TO | CONN. NO. | CELL CORD |
|---|---|---|---|
| E37/E51 | AIR BAG DIAGNOSIS SENSOR UNIT (Single air bag system) | E108 | RS-SRS |
| | BRAKE FLUID LEVEL SWITCH | E2 | EL-WARN |
| | CLEARANCE LAMP LH | E50 | EL-TAIL/L |
| | CLEARANCE LAMP RH | E33 | EL-TAIL/L |
| | COOLING FAN MOTOR-1 (1-mode type) | E45 | EC-COOL/F HA-A/C |
| | COOLING FAN MOTOR-1 (2-mode type—GA engine for Europe) | E66 | EC-COOL/F HA-A/C |
| | COOLING FAN MOTOR-1 (2-mode type—except GA engine for Europe) | E46 | EC-COOL/F HA-A/C |
| | COOLING FAN MOTOR-2 (1-mode type) | E39 | EC-COOL/F HA-A/C |
| | COOLING FAN MOTOR-2 (2-mode type—GA engine for Europe) | E67 | EC-COOL/F HA-A/C |
| | COOLING FAN MOTOR-2 (2-mode type—except GA engine for Europe) | E40 | EC-COOL/F HA-A/C |
| | COOLING FAN RELAY-1 | E12 | EC-COOL/F HA-A/C |
| | COOLING FAN RELAY-2 | E17 | EC-COOL/F HA-A/C |
| | COOLING FAN RELAY-3 | E18 | EC-COOL/F HA-A/C |
| | DAYTIME LIGHT UNIT | E119 | EL-DTRL |
| | FRONT FOG LAMP LH | E52 | EL-F/FOG |
| | FRONT FOG LAMP RH | E36 | EL-F/FOG |
| | FRONT TURN SIGNAL LAMP LH | E53 | EC-TURN |
| | FRONT TURN SIGNAL LAMP RH | E32 | EC-TURN |
| | FRONT WIPER AND WASHER SWITCH | E113 | EL-WIPER |
| | FUEL FILTER SWITCH | E5 | EL-WARN |
| | HEADLAMP AIMING MOTOR UNIT LH | E48 | EL-AIM |
| | HEADLAMP AIMING MOTOR UNIT RH | E35 | EL-AIM |
| | HEADLAMP LH | E49 | EL-H/LAMP EL-DTRL |
| | HEADLAMP RH | E34 | EL-H/LAMP EL-DTRL |
| | HEADLAMP WIPER MOTOR LH | E44 | EL-HLC |
| | HEADLAMP WIPER MOTOR RH | E41 | EL-HLC |
| | IACV-FICD SOLENOID VALVE (LHD models with CD20 engine) | E65 | EC-A/CCUT HA-A/C |
| | INHIBITOR SWITCH | E222 | EC-PNP/SW AT-A/T EL-START |
| | NEUTRAL POSITION SWITCH | E220 | EC-PNP/SW |
| | POWER STEERING OIL PRESSURE SWITCH (RHD models with gasoline engine) | E3 | EC-PST/SW |
| | REAR FOG LAMP RELAY | E20 | EL-R/FOG |
| | REAR WIPER AND WASHER SWITCH | E112 | EL-WIP/R |
| | REAR WIPER RELAY | E15 | EL-WIP/R |
| | SIDE TURN SIGNAL LAMP (Driver side) | E1 | EL-TURN |
| | WASHER FLUID LEVEL SWITCH | E30 | EL-WARN |

| GROUND | CONNECT TO | CONN. NO. | CELL CORD |
|---|---|---|---|
| M27 | COMBINATION METER (TACHOMETER) | M31 | EL-METER |
| | COMBINATION METER (AIR BAG WARNING LAMP) | M*1 | RS-SRS EL-WARN |
| | COMBINATION METER (CLOCK ILLUMINATION) (For Europe and Israel) | M*1 | EL-ILL EL-HORN |
| | COMBINATION METER (FUEL GAUGE) | M*1 | EL-METER |
| | COMBINATION METER (HIGH BEAM INDICATOR) | M*1 | EL-H/LAMP EL-DTRL |
| | COMBINATION METER (SPEEDOMETER) | M*1 | EC-VSS EC-COOL/F EL-METER |
| | COMBINATION METER (TURN) | M*2 | EL-TURN |
| | COMBINATION METER (WATER TEMP. GAUGE) | M*1 | EL-METER |
| M28/M68 (LHD models) M28/M60/M68 (RHD models) | A/T CONTROL DEVICE (OD CONTROL SWITCH) | M42 | AT-A/T |
| | A/T CONTROL DEVICE (A/T INDICATOR ILLUMINATION) | M42 | EL-ILL |
| | ACCESSORY RELAY (In fuse block) | M15 | EL-POWER |
| | ASHTRAY ILLUMINATION | M44 | EL-ILL |
| | BLOWER RELAY (In fuse block) | M15 | EL-POWER |
| | CIGARETTE LIGHTER SOCKET | M43 | EL-HORN |
| | COMBINATION FLASHER UNIT | M20 | EL-TURN |
| | COMBINATION METER (METER ILLUMINATION) (For Europe and Israel) | M30 M32 | EL-ILL |
| | DATA LINK CONNECTOR FOR CONSULT | M13 | EC-MIL BR-ABS RS-SRS |
| | DOOR LOCK TIMER (Type-1) | M34 | EL-D/LOCK |
| | DOOR LOCK TIMER (Type-2) | M35 | EL-D/LOCK |
| | DOOR MIRROR REMOTE CONTROL SWITCH | M9 | EL-MIRROR |
| | ECM (ENGINE CONTROL MODULE) | M39 | EC-GLOW |
| | FAN SWITCH | M45 | EC-A/CCUT EC-LOAD HA-A/C |
| | FAN SWITCH ILLUMINATION | M48 | HA-A/C EL-ILL |
| | FRONT FOG LAMP SWITCH | M10 | EL-F/FOG EL-ILL |
| | FRONT WIPER AMPLIFIER | M74 | EL-WIPER |
| | FRONT WIPER MOTOR (With ABS, dual air bag or rear power window) | M83 | EL-WIPER |
| | GLOVE BOX LAMP SWITCH | M66 | EL-ILL |
| | HAZARD SWITCH | M54 | EL-TURN EL-ILL |
| | HEADLAMP AIMING SWITCH | M11 | EL-AIM |
| | HEADLAMP WIPER AND WASHER SWITCH | M56 | EL-ILL EL-HLC |
| | IGNITION RELAY (In fuse block) | M15 | EL-POWER |
| | ILLUMINATION CONTROL SWITCH | M21 | EL-ILL |
| | MIRROR DEFOGGER RELAY | M17 | EL-DEF |
| | NATS IMMU | M36 | EL-NATS |

*1: M30 (With tachometer), M32 (Without tachometer)
*2: M30 (Without tachometer), M31 (With tachometer)

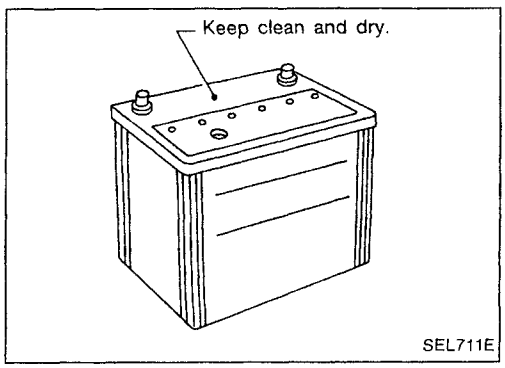
| GROUND | CONNECT TO | CONN. NO. | CELL CORD |
|---|---|---|---|
| M28/M68 (LHD models) M28/M60/M68 (RHD models) | POWER STEERING OIL PRESSURE SWITCH (LHD models without ABS, dual air bag and rear power window) | M82 | EC-PST/SW |
| | POWER WINDOW RELAY | M16 | EL-ILL EL-WINDOW |
| | REAR FOG LAMP SWITCH | M55 | EL-R/FOG EL-ILL EL-BUZZER |
| | REAR WINDOW DEFOGGER SWITCH | M53 | EL-ILL EL-DEF |
| | REAR WINDOW DEFOGGER TIMER | M37 | EL-DEF |
| | REAR WIPER AMPLIFIER (RHD models) | M21 | EL-WIP/R |
| | RECIRCULATION SWITCH | M46 | HA-A/C |
| | SIDE TURN SIGNAL LAMP (Passenger side) (GA engine without ABS, dual air bag and rear power window) | M81 | EL-TURN |
| | SUN ROOF RELAY | M16 | EL-SROOF |
| | WARNING BUZZER UNIT (For Australia) | M38 | EL-BUZZER |
| | FRONT WIPER MOTOR (With ABS, dual air bag or rear power window) | B105 | EL-WIPER |
| | REAR WIPER AMPLIFIER (LHD models) | B8 | EL-WIP/R |
| | IACV-FICD SOLENOID VALVE (RHD models with CD engine) | B102 | EC-A/CCUT HA-A/C |
| | POWER STEERING OIL PRESSURE SWITCH (LHD models with ABS, dual air bag or rear power window) | B102 | EC-PST/SW |
| | SIDE TURN SIGNAL LAMP (Passenger side) (Except GA engine without ABS, dual air bag and rear power window) | B108 | EL-TURN |
| | AIR BAG DIAGNOSIS SENSOR UNIT (Dual air bag system) | Z1 | RS-SRS |
| | SPOT LAMP | R2 | EL-INT/L |
| | DOOR LOCK ACTUATOR (Driver side) | D8 | EL-D/LOCK |
| | DOOR LOCK ACTUATOR (Passenger side) | D38 | EL-D/LOCK |
| | DOOR MIRROR DEFOGGER (Driver side) | D4 | EL-DEF |
| | DOOR MIRROR DEFOGGER (Passenger side) | D34 | EL-DEF |
| | LOCK KNOB SWITCH | D9 | EL-D/LOCK |
| | POWER WINDOW MAIN SWITCH (Without rear power window) | D6 | EL-WINDOW |
| | POWER WINDOW MAIN SWITCH (With rear power window) | D7 | EL-WINDOW EL-D/LOCK |

| GROUND | CONNECT TO | CONN. NO. | CELL CORD |
|---|---|---|---|
| F13/F14 | DISTRIBUTOR (CAMSHAFT POSITION SENSOR) | F24 | EC-CMPS |
| | DISTRIBUTOR (POWER TRANSISTOR) | F24 | EC-IGN/SG |
| | ECM (ECCS CONTROL MODULE) | F1 | EC-MAIN |
| | IACV-FICD SOLENOID VALVE (GA16DE engine except for Europe and Israel) | F9 | EC-FICD HA-A/C |
| | IACV-FICD SOLENOID VALVE (GA engine for Europe and Israel and GA15DE engine) | F11 | EC-FICD HA-A/C |
| | SHIELD WIRE (CAMSHAFT POSITION SENSOR) | F24 | EC-CMPS |
| | SHIELD WIRE (HEATED OXYGEN SENSOR) | F23 | EC-HO2S |
| | SHIELD WIRE (KNOCK SENSOR) (GA engine) | F102 | EC-KS |
| | SHIELD WIRE (MASS AIR FLOW SENSOR) (GA engine for Europe and Israel and GA15DE engine) | F12 | EC-MAFS |
| | SHIELD WIRE (MASS AIR FLOW SENSOR) (GA16DE engine except for Europe and Israel and SR engine) | F27 | EC-MAFS |
| | SHIELD WIRE (OXYGEN SENSOR) | F22 | EC-O2S |
| | SHIELD WIRE (THROTTLE POSITION SENSOR) | F8 | EC-TPS |
| | IACV-AIR REGULATOR | E214 | EC-AIRREG |
| | IACV-FICD SOLENOID VALVE (SR engine) | E212 | EC-FICD HA-A/C |
| | SHIELD WIRE (KNOCK SENSOR) (SR engine) | E215 | EC-KS |
| E205 | ALTERNATOR | E233 | EL-CHARGE EL-WARN |
| B11/B32 (Sedan) B11/B32/D105 (Hatchback) | FRONT DOOR SWITCH (Driver side) | B9 | RS-SRS EL-BUZZER |
| | FUEL PUMP | B17 | EC-F/PUMP |
| | FUEL TANK GAUGE UNIT | B18 | EL-METER EL-WARN |
| | HEATED SEAT LH | B12 | EL-H/SEAT |
| | HEATED SEAT RH | B16 | EL-H/SEAT |
| | HEATED SEAT SWITCH LH | B13 | EL-H/SEAT |
| | HEATED SEAT SWITCH RH | B15 | EL-H/SEAT |
| | REAR COMBINATION LAMP LH (TAIL AND STOP) (Hatchback) | B27 | EL-TAIL/L EL-STOP/L |
| | REAR COMBINATION LAMP LH (TURN SIGNAL) (Hatchback) | B27 | EL-TURN |
| | REAR COMBINATION LAMP RH (TAIL AND STOP) (Hatchback) | B28 | EL-TAIL/L EL-STOP/L |
| | REAR COMBINATION LAMP RH (TURN SIGNAL) (Hatchback) | B28 | EL-TURN |
| | HIGH-MOUNTED STOP LAMP (In rear air spoiler) (Hatchback) | D112 | EL-STOP/L |
| | HIGH-MOUNTED STOP LAMP (On rear window) (Hatchback) | D108 | EL-STOP/L |
| | LICENSE PLATE LAMP LH (Hatchback) | D107 | EL-TAIL/L |
| | LICENSE PLATE LAMP RH (Hatchback) | D109 | EL-TAIL/L |

| GROUND | CONNECT TO | CONN. NO. | CELL CORD |
|---|---|---|---|
| B11/B32 (Sedan) B11/B32/D105 (Hatchback) | LUGGAGE ROOM LAMP SWITCH | D110 | EL-INT/L |
| | REAR COMBINATION LAMP LH (BACK-UP) | D103 | EL-BACK/L |
| | REAR COMBINATION LAMP LH (REAR FOG) (LHD Hatchback models for Europe) | D103 | EL-R/FOG |
| | REAR COMBINATION LAMP LH (TAIL) (Hatchback except for Europe and Australia) | D103 | EL-TAIL/L |
| | REAR COMBINATION LAMP RH (BACK-UP) | D111 | EL-BACK/L |
| | REAR COMBINATION LAMP RH (REAR FOG) (RHD Hatchback models for Europe) | D111 | EL-R/FOG |
| | REAR COMBINATION LAMP RH (TAIL) (Hatchback except for Europe and Australia) | D111 | EL-TAIL/L |
| T10/T11 | HIGH-MOUNTED STOP LAMP (Sedan) | T6 | EL-STOP/L |
| | LICENSE PLATE LAMP LH (Sedan) | T5 | EL-TAIL/L |
| | LICENSE PLATE LAMP RH (Sedan) | T7 | EL-TAIL/L |
| | REAR COMBINATION LAMP LH (BACK-UP) (LHD Sedan models) | T3 | EL-BACK/L |
| | REAR COMBINATION LAMP LH (REAR FOG) (Sedan) | T3 | EL-R/FOG |
| | REAR COMBINATION LAMP LH (TAIL AND STOP) (Sedan) | T2 | EL-TAIL/L EL-STOP/L |
| | REAR COMBINATION LAMP LH (TAIL) (Sedan except for Europe and Australia) | T3 | EL-TAIL/L |
| | REAR COMBINATION LAMP LH (TURN SIGNAL) (Sedan) | T2 | EL-TURN |
| | REAR COMBINATION LAMP RH (BACK-UP) (Sedan) | T8 | EL-BACK/L |
| | REAR COMBINATION LAMP RH (REAR FOG) (RHD Sedan models) | T8 | EL-R/FOG |
| | REAR COMBINATION LAMP RH (TAIL AND STOP) (Sedan) | T9 | EL-TAIL/L EL-STOP/L |
| | REAR COMBINATION LAMP RH (TAIL) (Sedan except for Europe and Australia) | T8 | EL-TAIL/L |
| | REAR COMBINATION LAMP RH (TURN SIGNAL) (Sedan) | T9 | EL-TAIL/L |
| | TRUNK ROOM LAMP SWITCH | T4 | EL-INT/L |
| B110 | SHIELD WIRE (WHEEL SPEED SENSOR FRONT LH) (LHD models) | E4 | BR-ABS |
| | SHIELD WIRE (WHEEL SPEED SENSOR FRONT RH) (RHD models) | E11 | BR-ABS |
| | SHIELD WIRE (WHEEL SPEED SENSOR FRONT LH) (RHD models) | B106 | BR-ABS |
| | SHIELD WIRE (WHEEL SPEED SENSOR FRONT RH) (LHD models) | B107 | BR-ABS |
| B112 | ABS CONTROL UNIT | B111 | BR-ABS |
| | ABS RELAY BOX | B104 | BR-ABS |
| B204 | REAR WINDOW DEFOGGER | B203 | EL-DEF |

**CAUTION:**

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

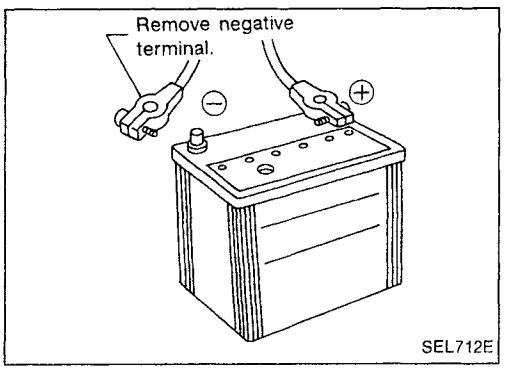



## How to Handle Battery

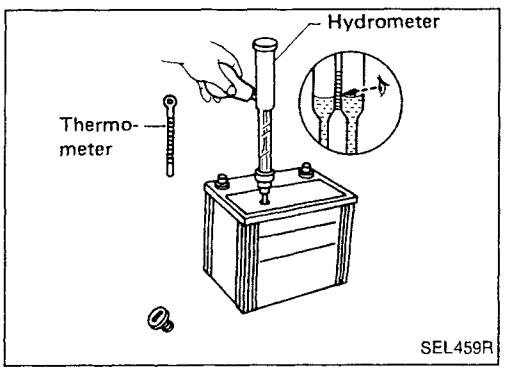
### METHODS OF PREVENTING OVER-DISCHARGE

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.)



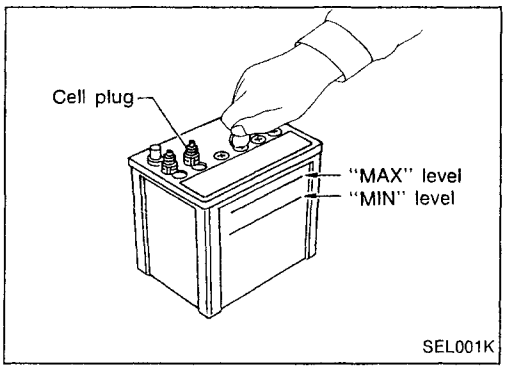

- Check the charge condition of the battery.
  Periodically check the specific gravity of the electrolyte. Keep a close check on charge condition to prevent overdischarge.

### CHECKING ELECTROLYTE LEVEL

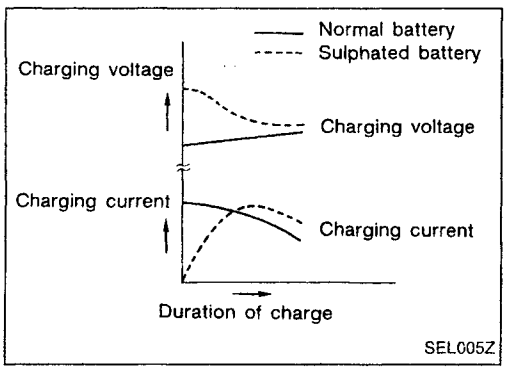
**WARNING:**

**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.**

## How to Handle Battery (Cont'd)

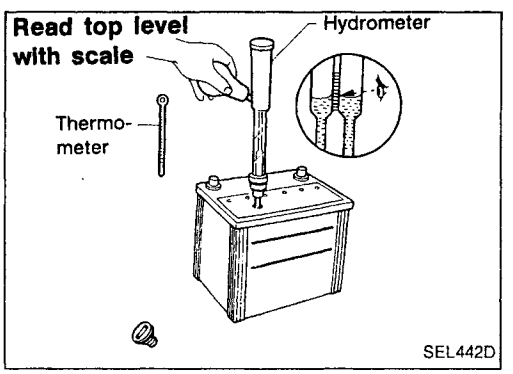



- Remove the cell plug using a suitable tool.
- Add distilled water up to the MAX level.



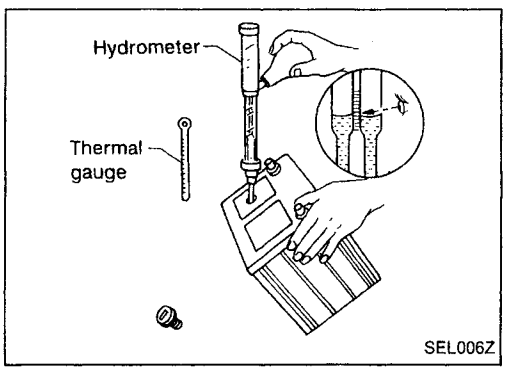

### SULPHATION

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

1. Read hydrometer and thermometer indications at eye level.



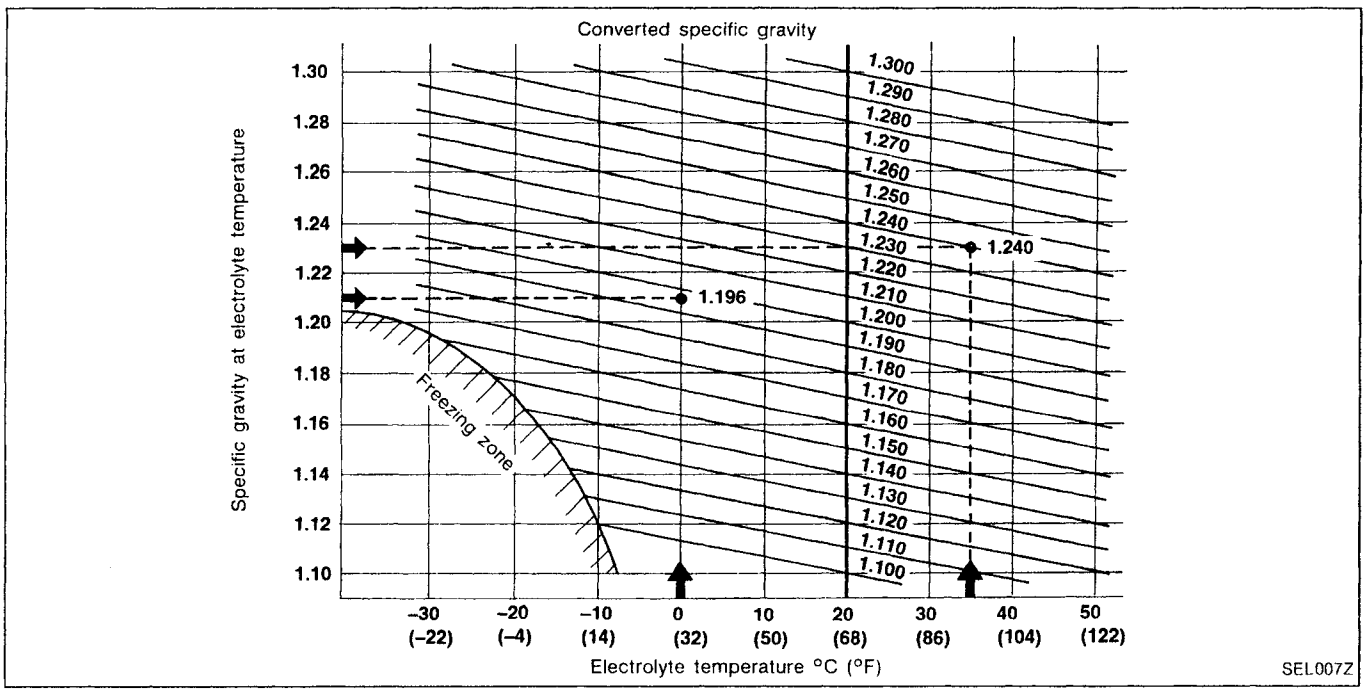

- When electrolyte level is too low, tilt battery case to raise it for easy measurement.

## How to Handle Battery (Cont'd)

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

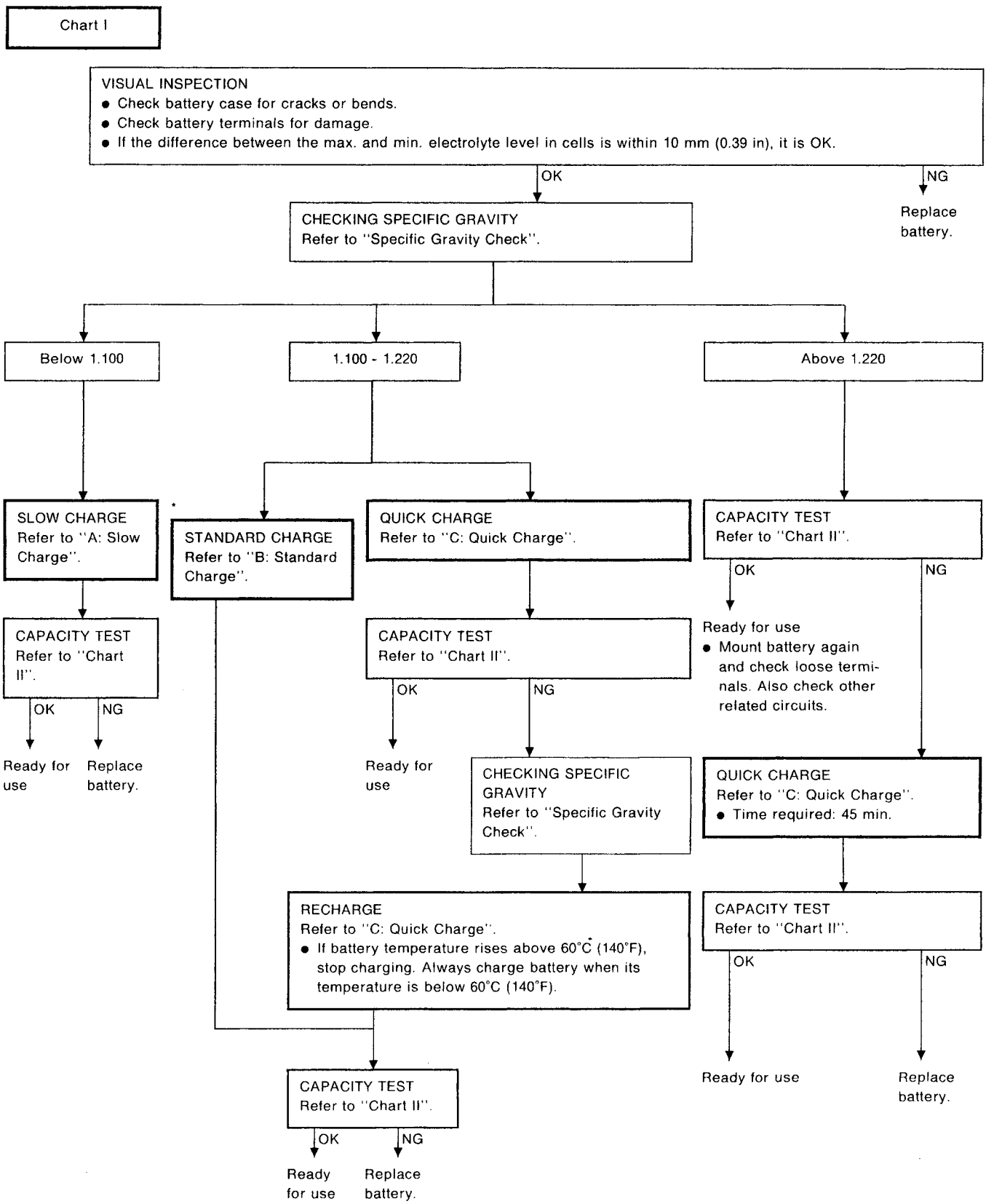
Example:

- When electrolyte temperature is 35°C (95°F) and specific gravity of electrolyte is 1.230, converted specific gravity at 20°C (68°F) is 1.240.
- When electrolyte temperature is 0°C (32°F) and specific gravity of electrolyte is 1.210, converted specific gravity at 20°C (68°F) is 1.196.




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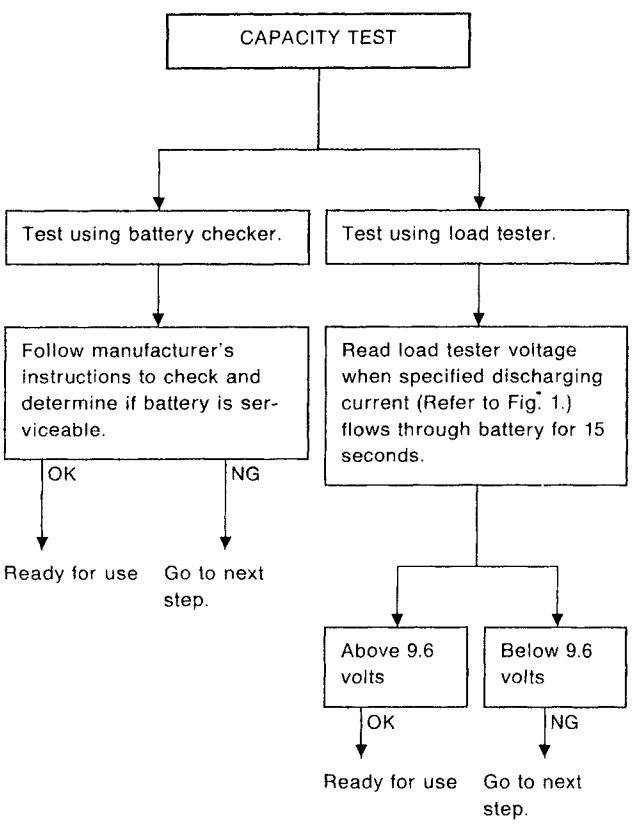
## Battery Test and Charging Chart




*** "STANDARD CHARGE" is recommended if the vehicle is in storage after charging.**

## Battery Test and Charging Chart (Cont'd)

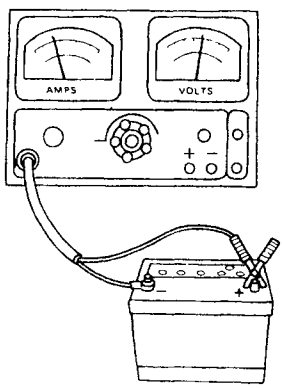
Chart II




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

Fig. 1 DISCHARGING CURRENT (Load Tester)

| Type | Current (A) |
|---|---|
| 28B19R(L) | 90 |
| 34B19R(L) | 99 |
| 46B24R(L) | 135 |
| 55B24R(L) | 135 |
| 50D23R(L) | 150 |
| 55D23R(L) | 180 |
| 65D26R(L) | 195 |
| 80D26R(L) | 195 |
| 75D31R(L) | 210 |
| 95D31R(L) | 240 |
| 115D31R(L) | 240 |
| 95E41R(L) | 300 |
| 130E41R(L) | 330 |




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## Battery Test and Charging Chart (Cont'd)

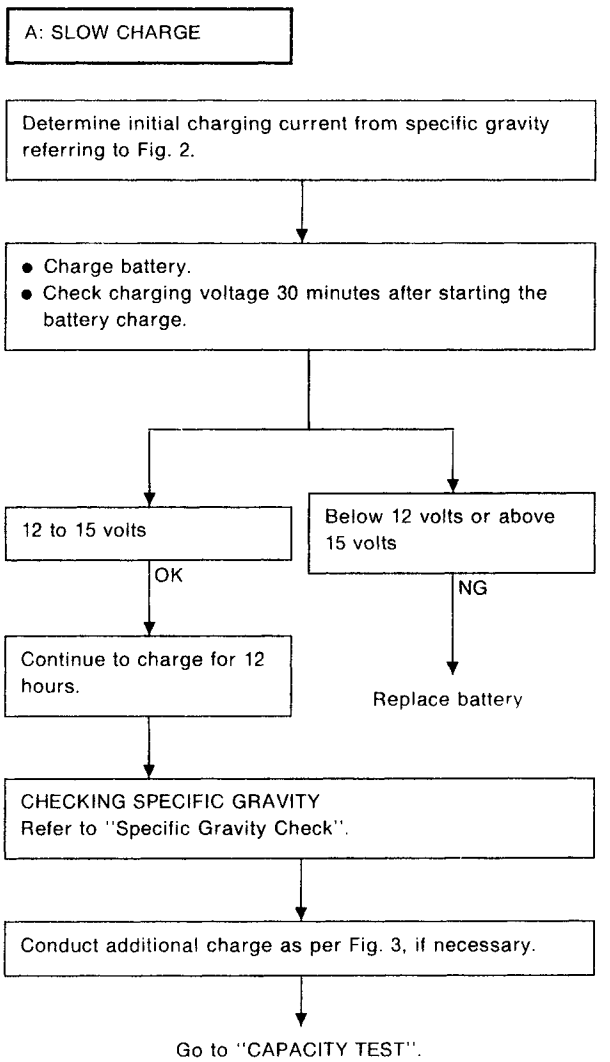
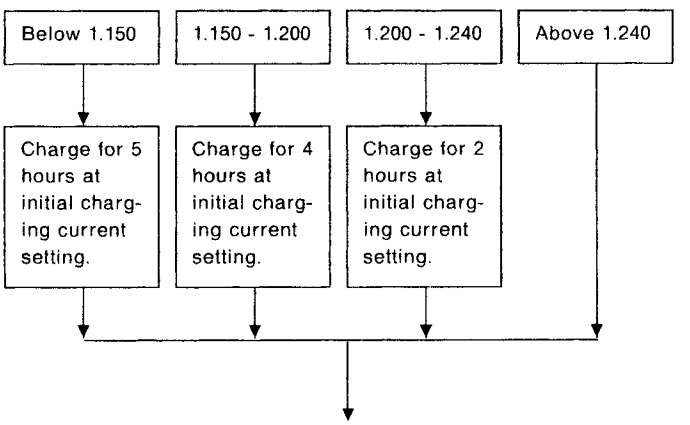



Fig. 2 INITIAL CHARGING CURRENT SETTING (Slow charge)

| CONVERTED SPECIFIC GRAVITY | BATTERY TYPE | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 28B19R(L) | 34B19R(L) | 46B24R(L) | 55B24R(L) | 50D23R(L) | 55D23R(L) | 65D26R(L) | 80D26R(L) | 75D31R(L) | 95D31R(L) | 115D31R(L) | 95E41R(L) | 130E41R(L) |
| Below 1.100 | 4.0 (A) | | 5.0 (A) | | 7.0 (A) | | 8.0 (A) | | 9.0 (A) | 10.0 (A) | | | 14.0 (A) |

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

Fig. 3 ADDITIONAL CHARGE (Slow charge)




**CAUTION:**

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

## Battery Test and Charging Chart (Cont'd)

B: STANDARD CHARGE

Determine initial charging current from specific gravity, referring to Fig. 4.

↓

Charge battery for 8 hours.

↓

CHECKING SPECIFIC GRAVITY
Refer to "Specific Gravity Check".

↓

Conduct additional charge as per Fig. 5, if necessary.

↓

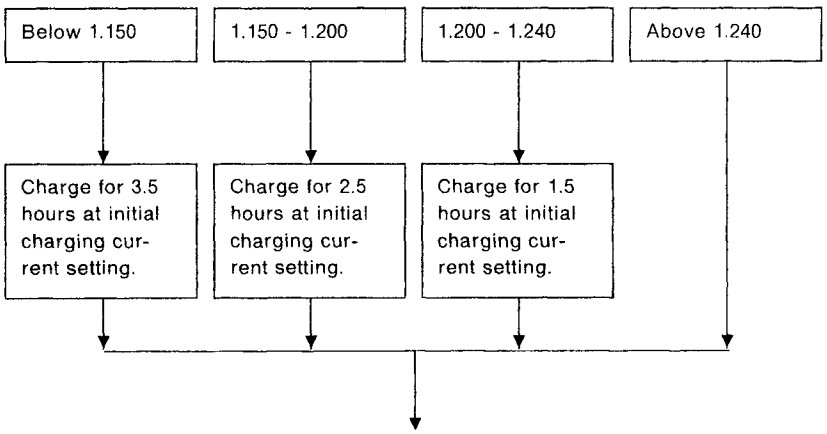
Go to "CAPACITY TEST".

Fig. 4 INITIAL CHARGING CURRENT SETTING
(Standard charge)

| CONVERTED SPECIFIC GRAVITY | BATTERY TYPE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 28B19R(L) | 34B19R(L) | 46B24R(L) | 55B24R(L) | 50D23R(L) | 55D23R(L) | 65D26R(L) | 80D26R(L) | 75D31R(L) | 95D31R(L) | 115D31R(L) | 95E41R(L) | 130E41R(L) |
| 1.100 - 1.130 | 4.0 (A) | | 5.0 (A) | | 6.0 (A) | | 7.0 (A) | | 8.0 (A) | 9.0 (A) | | | 13.0 (A) |
| 1.130 - 1.160 | 3.0 (A) | | 4.0 (A) | | 5.0 (A) | | 6.0 (A) | | 7.0 (A) | 8.0 (A) | | | 11.0 (A) |
| 1.160 - 1.190 | 2.0 (A) | | 3.0 (A) | | 4.0 (A) | | 5.0 (A) | | 6.0 (A) | 7.0 (A) | | | 9.0 (A) |
| 1.190 - 1.220 | 2.0 (A) | | 2.0 (A) | | 3.0 (A) | | 4.0 (A) | | 5.0 (A) | 5.0 (A) | | | 7.0 (A) |

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

Fig. 5 ADDITIONAL CHARGE (Standard charge)




**CAUTION:**

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

EL

## Battery Test and Charging Chart (Cont'd)

C: QUICK CHARGE

Determine initial charging current setting and charging time from specific gravity, referring to Fig. 6.

↓

Charge battery.

↓

Go to "CAPACITY TEST".

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

| BATTERY TYPE | | 28B19R(L) 34B19R(L) | 46B24R(L) 55B24R(L) 50D23R(L) | 55D23R(L) 65D26R(L) 80D26R(L) | 75D31R(L) 95D31R(L) 115D31R(L) 95E41R(L) | 130E41R(L) |
|---|---|---|---|---|---|---|
| CURRENT [A] | | 10 (A) | 15 (A) | 20 (A) | 30 (A) | 40 (A) |
| CONVERTED SPECIFIC GRAVITY | 1.100 - 1.130 | 2.5 hours | | | | |
| | 1.130 - 1.160 | 2.0 hours | | | | |
| | 1.160 - 1.190 | 1.5 hours | | | | |
| | 1.190 - 1.220 | 1.0 hours | | | | |
| | Above 1.220 | 0.75 hours (45 min.) | | | | |

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

**CAUTION:**

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

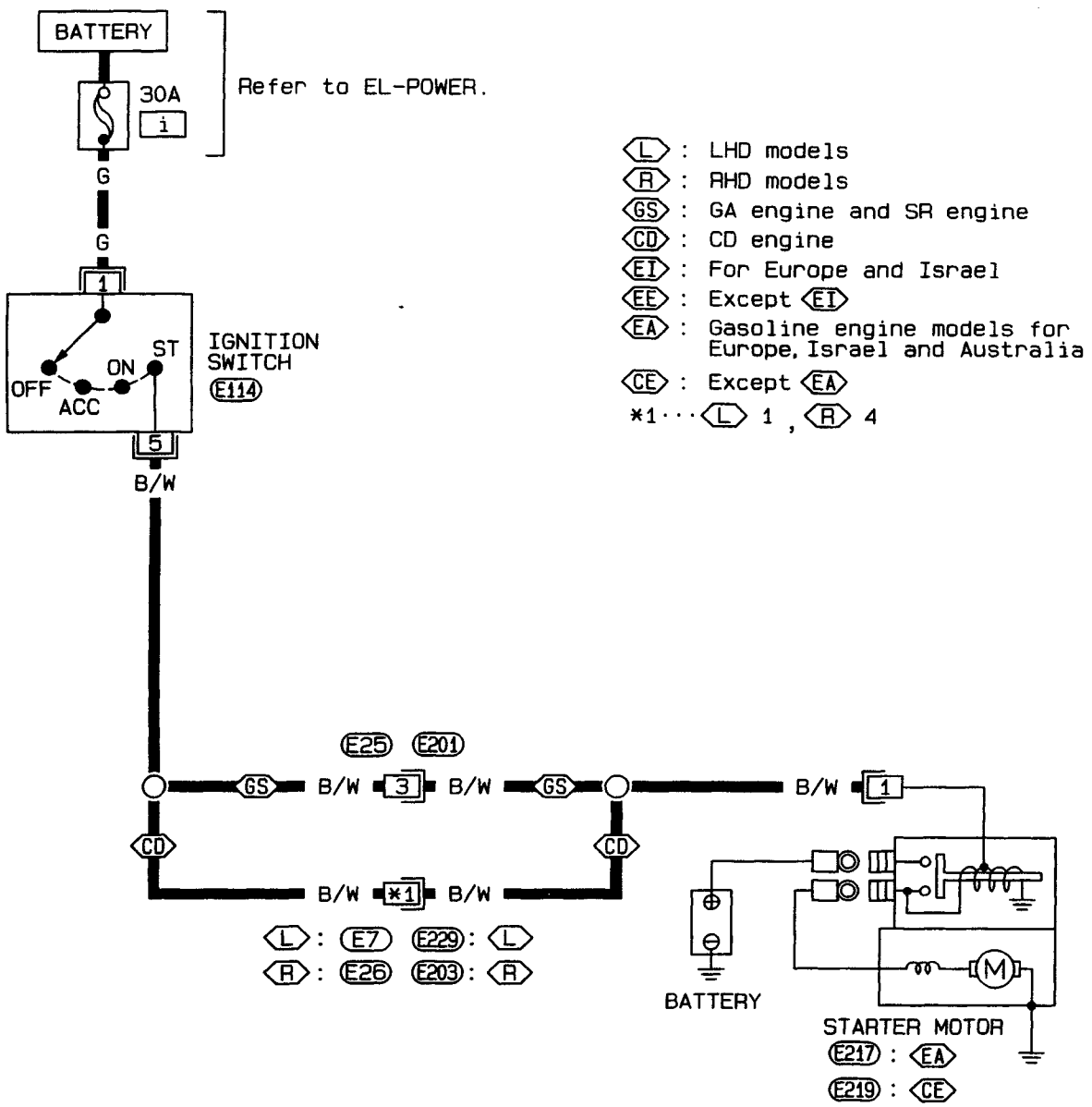
## Service Data and Specifications (SDS)

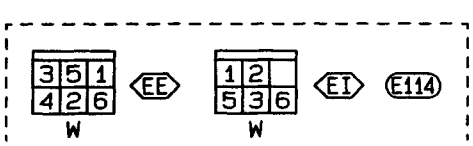
| Applied model | | GA engines | | | CD20 | SR20DE |
|---|---|---|---|---|---|---|
| Type | | 28B19L | 55D23L | 65D26L | 95D31L | 34B19L |
| Capacity | V-AH | 12 - 30 | 12 - 60 | 12 - 65 | 12 - 80 | 12 - 33 |

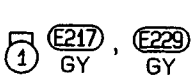
## Wiring Diagram — START —

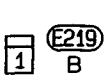
### M/T MODELS

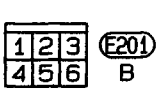
EL-START-01

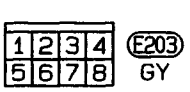


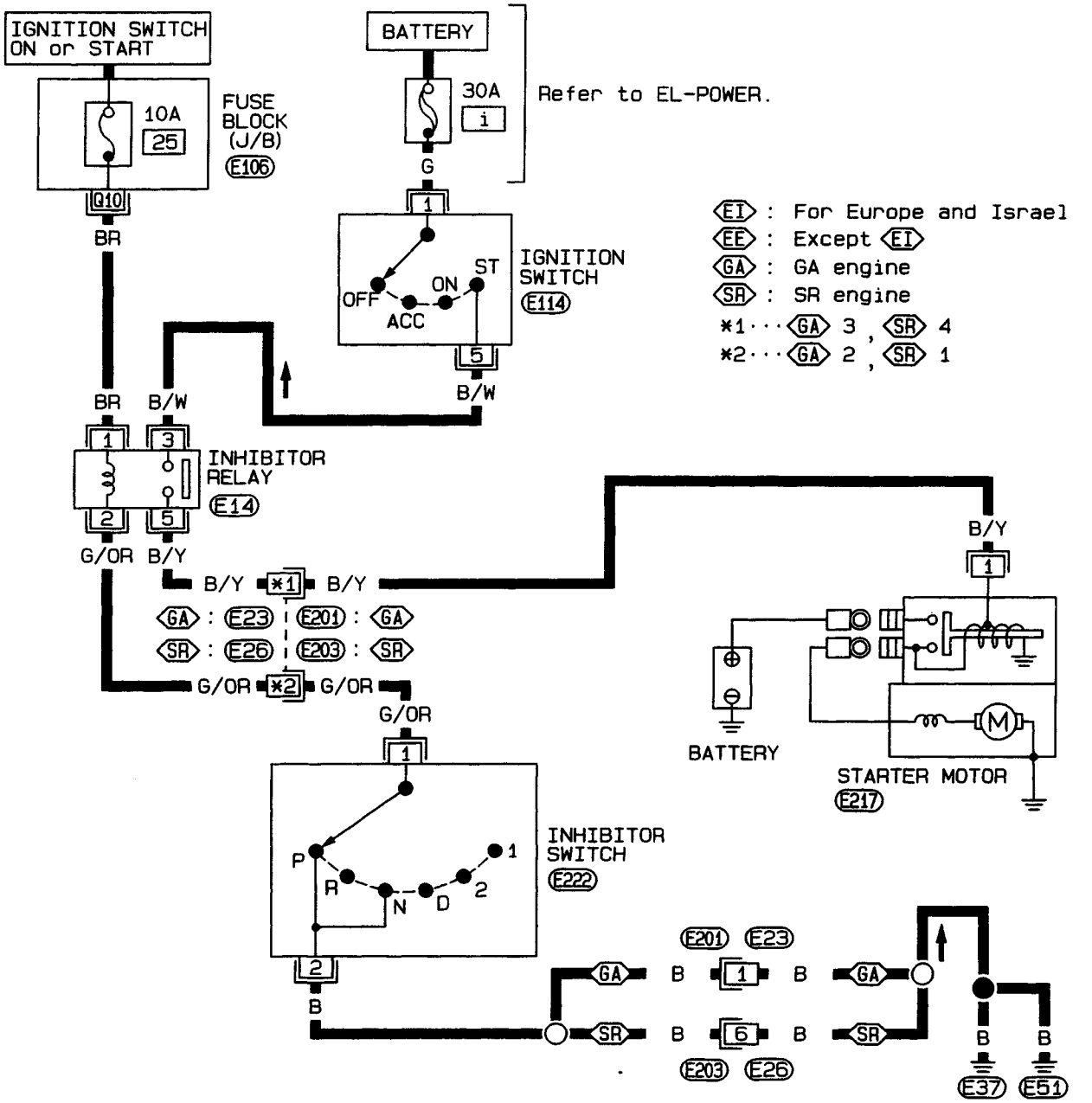

EL

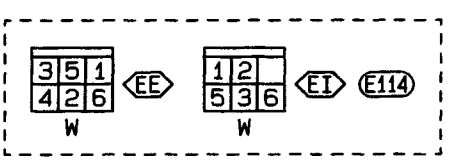
HEL194

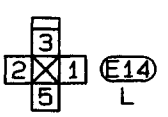
## Wiring Diagram — START — (Cont'd)

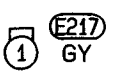
### A/T MODELS

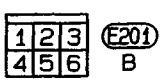
EL-START-02

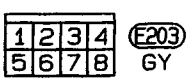


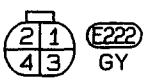



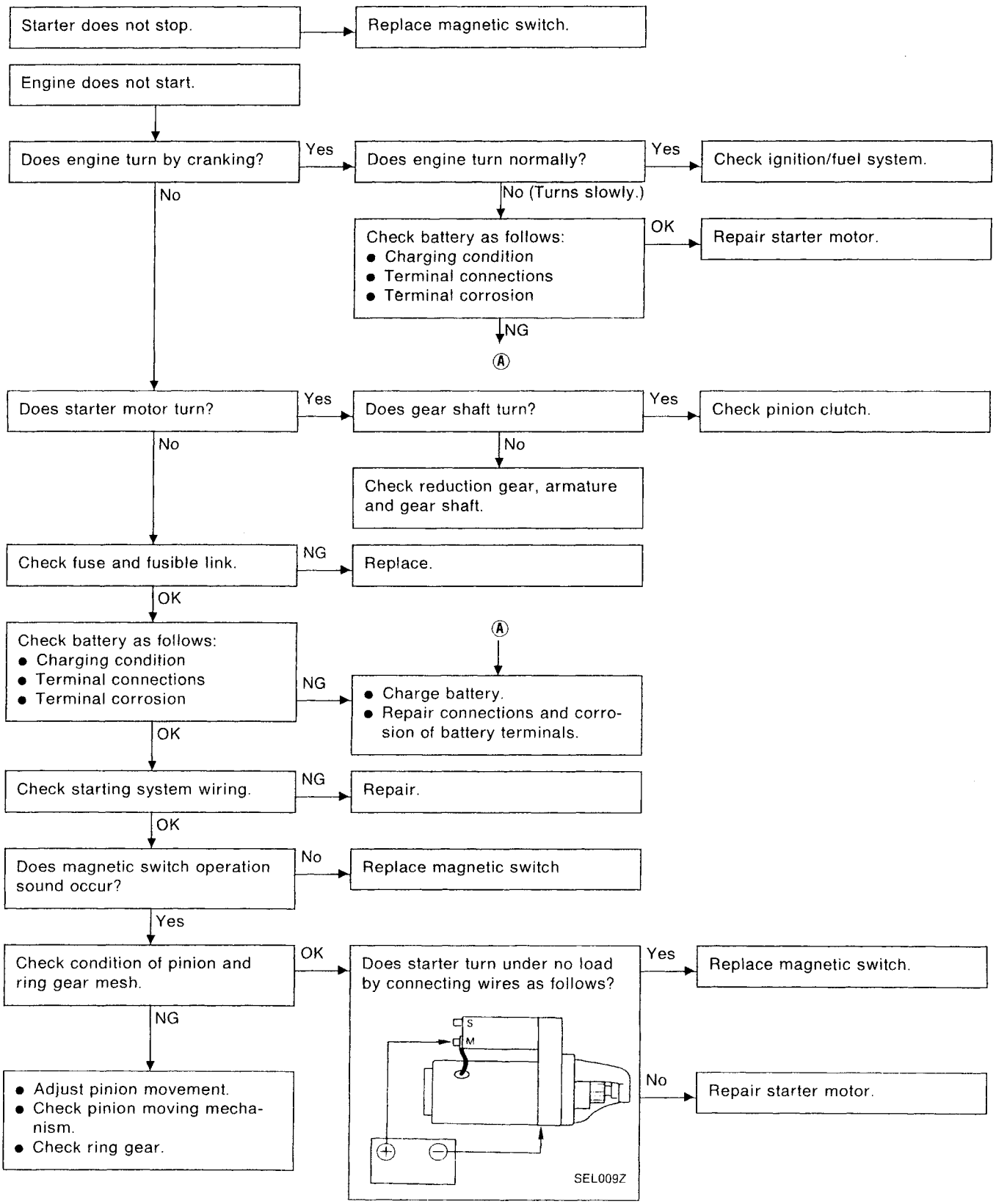

Refer to last page (Foldout page).

E106

HEL195

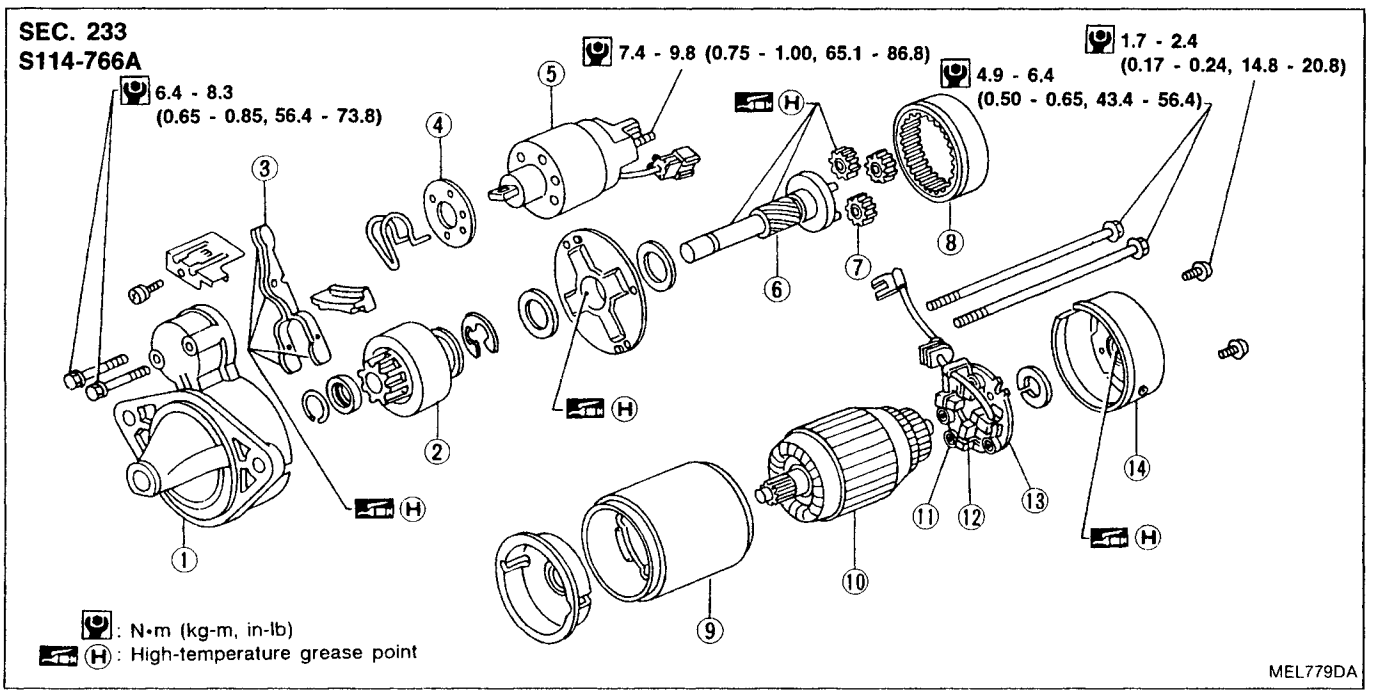
## Trouble Diagnoses

**If any abnormality is found, immediately disconnect battery negative terminal.**

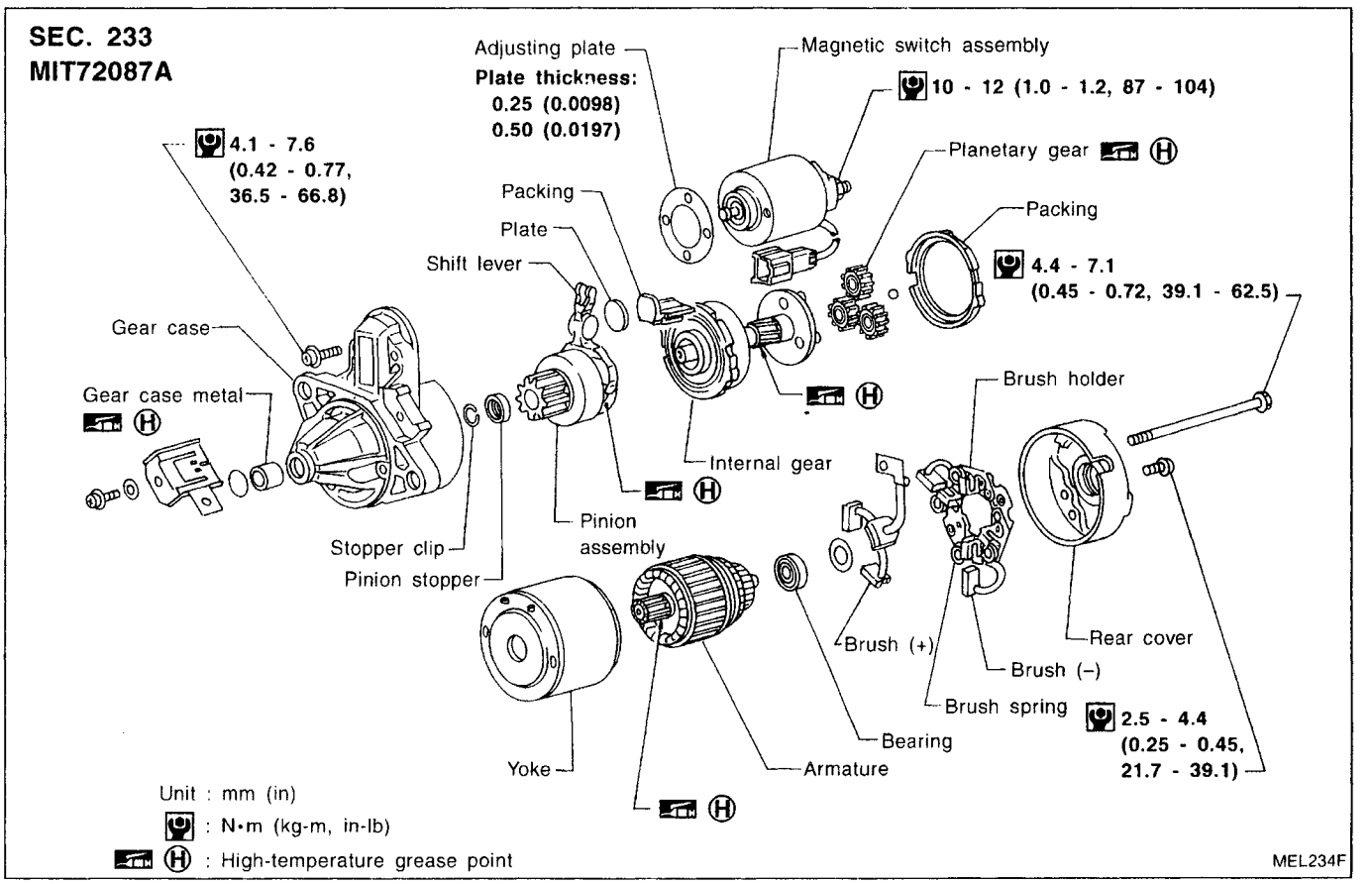



EL

## Construction

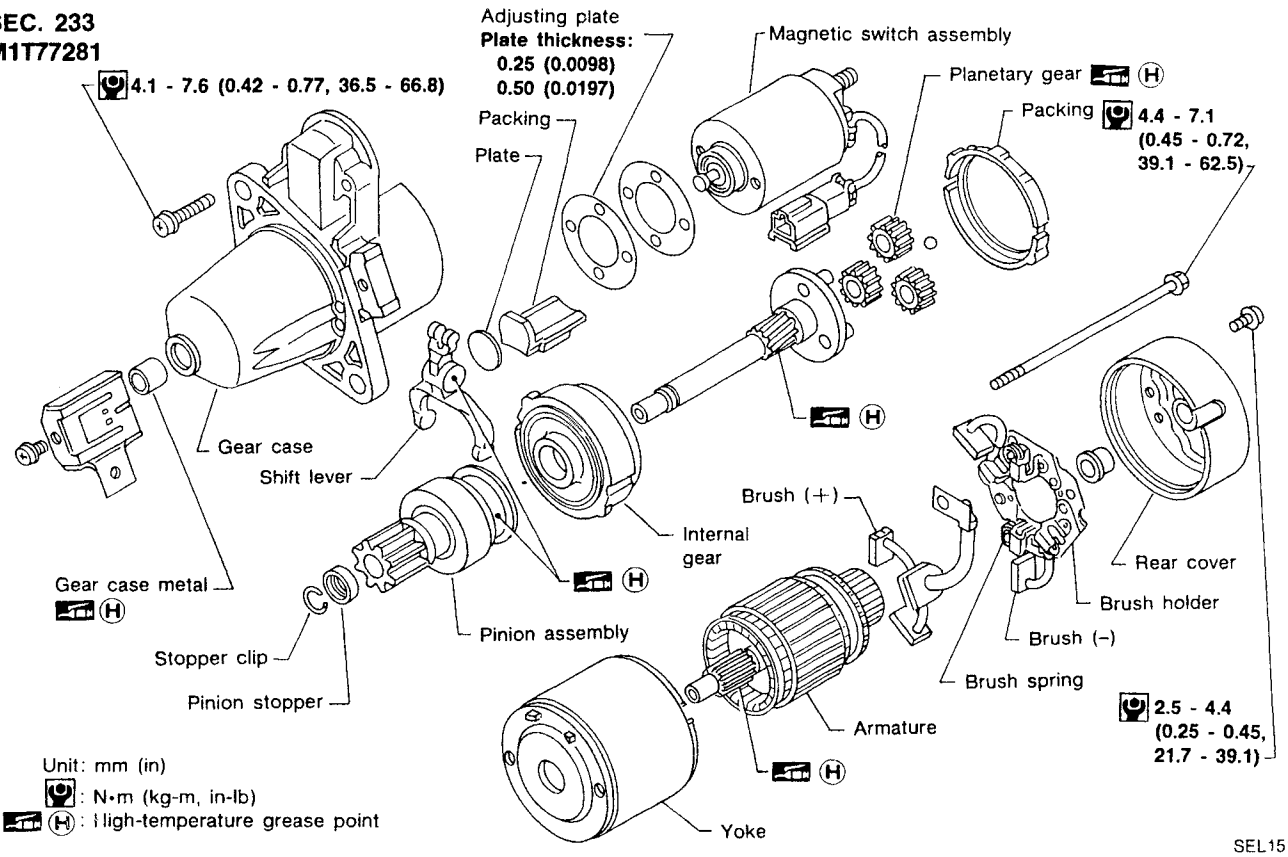



| | | | | | |
|---|---|---|---|---|---|
| ① | Gear case | ⑥ | Pinion shaft | ⑪ | Brush spring |
| ② | Pinion assembly | ⑦ | Planetary gear | ⑫ | Brush (–) |
| ③ | Shift lever | ⑧ | Internal gear | ⑬ | Brush holder |
| ④ | Adjusting plate | ⑨ | Yoke | ⑭ | Rear cover |
| ⑤ | Magnetic switch assembly | ⑩ | Armature | | |

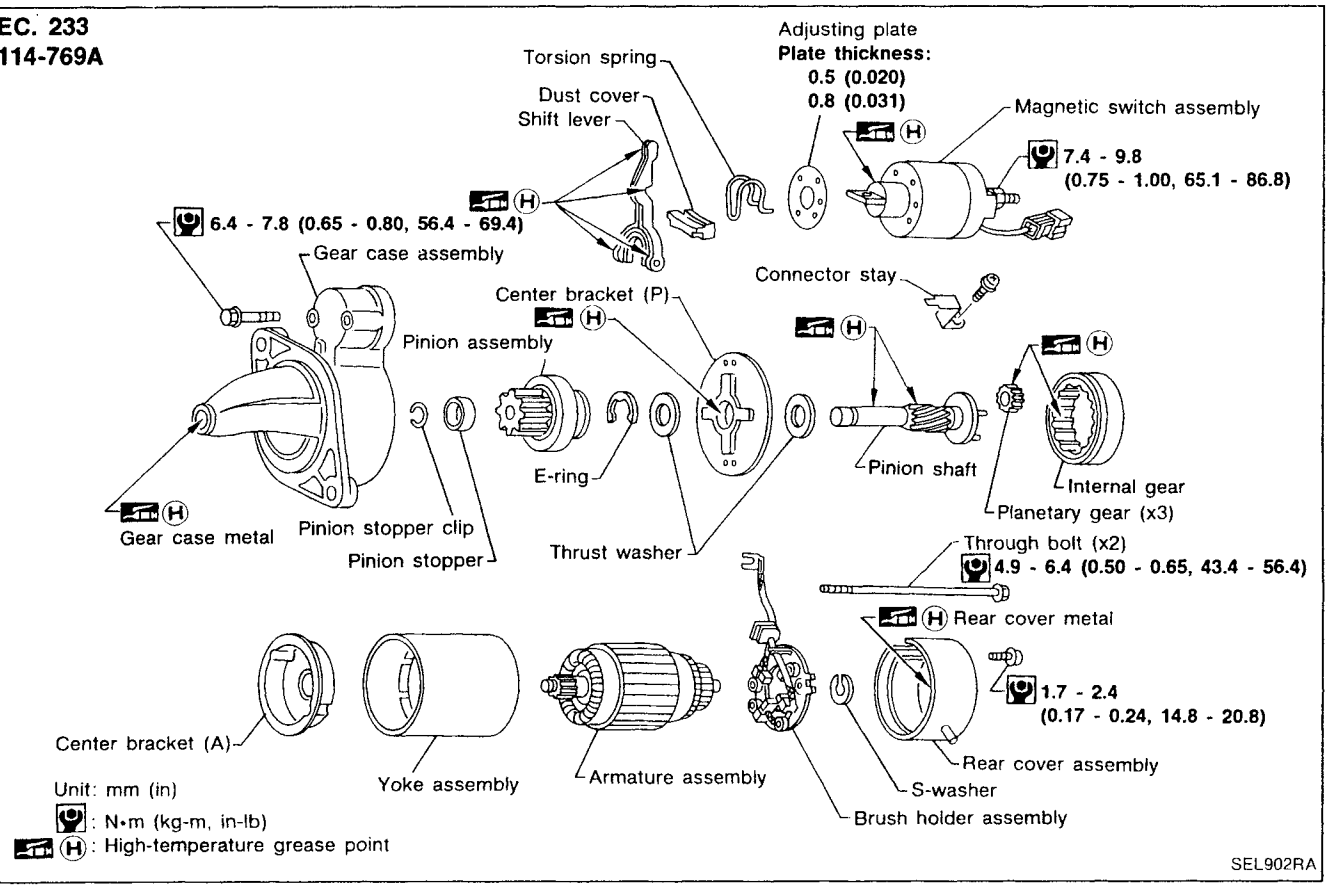


## Construction (Cont'd)

SEC. 233
M1T77281



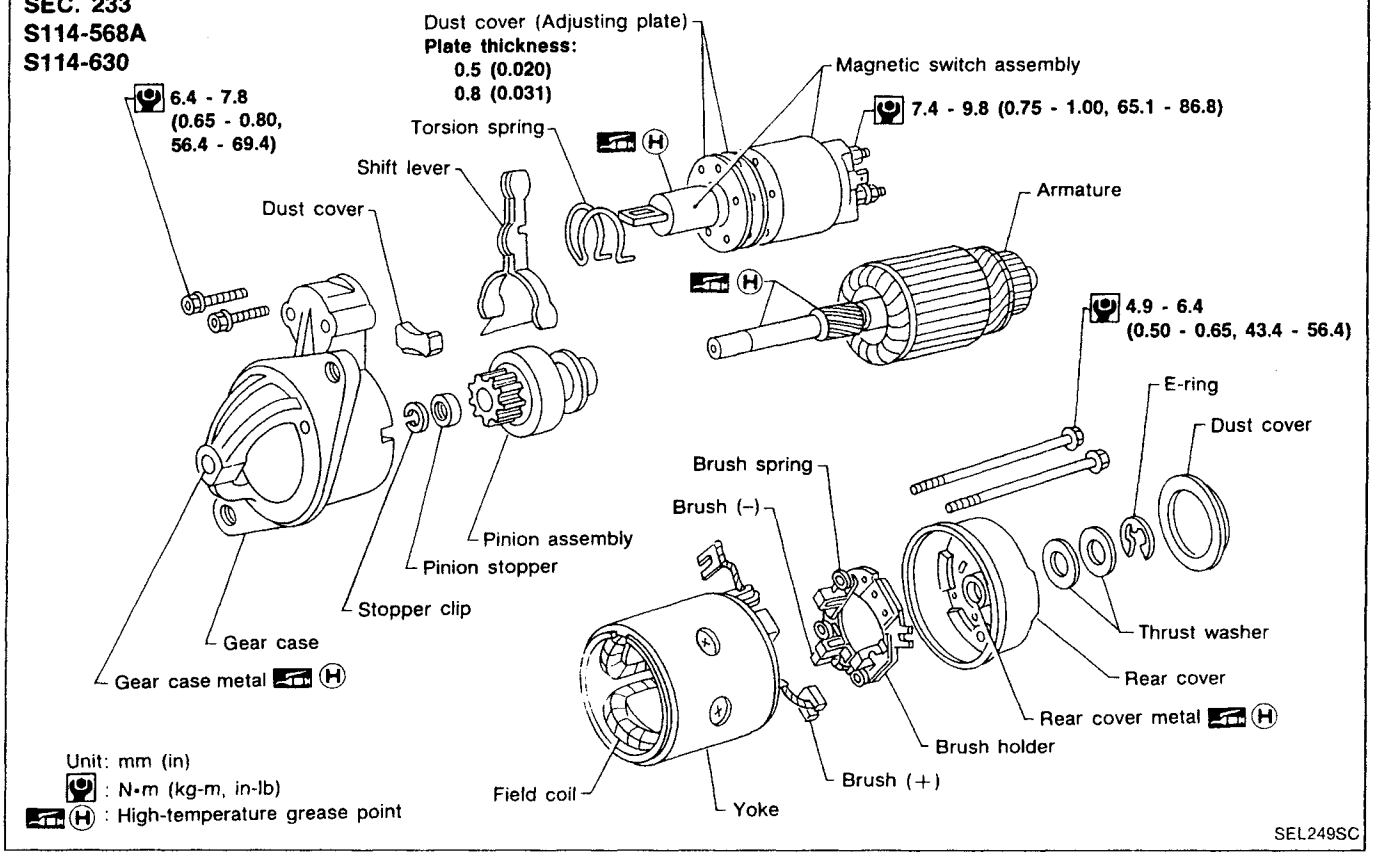

SEC. 233
S114-769A



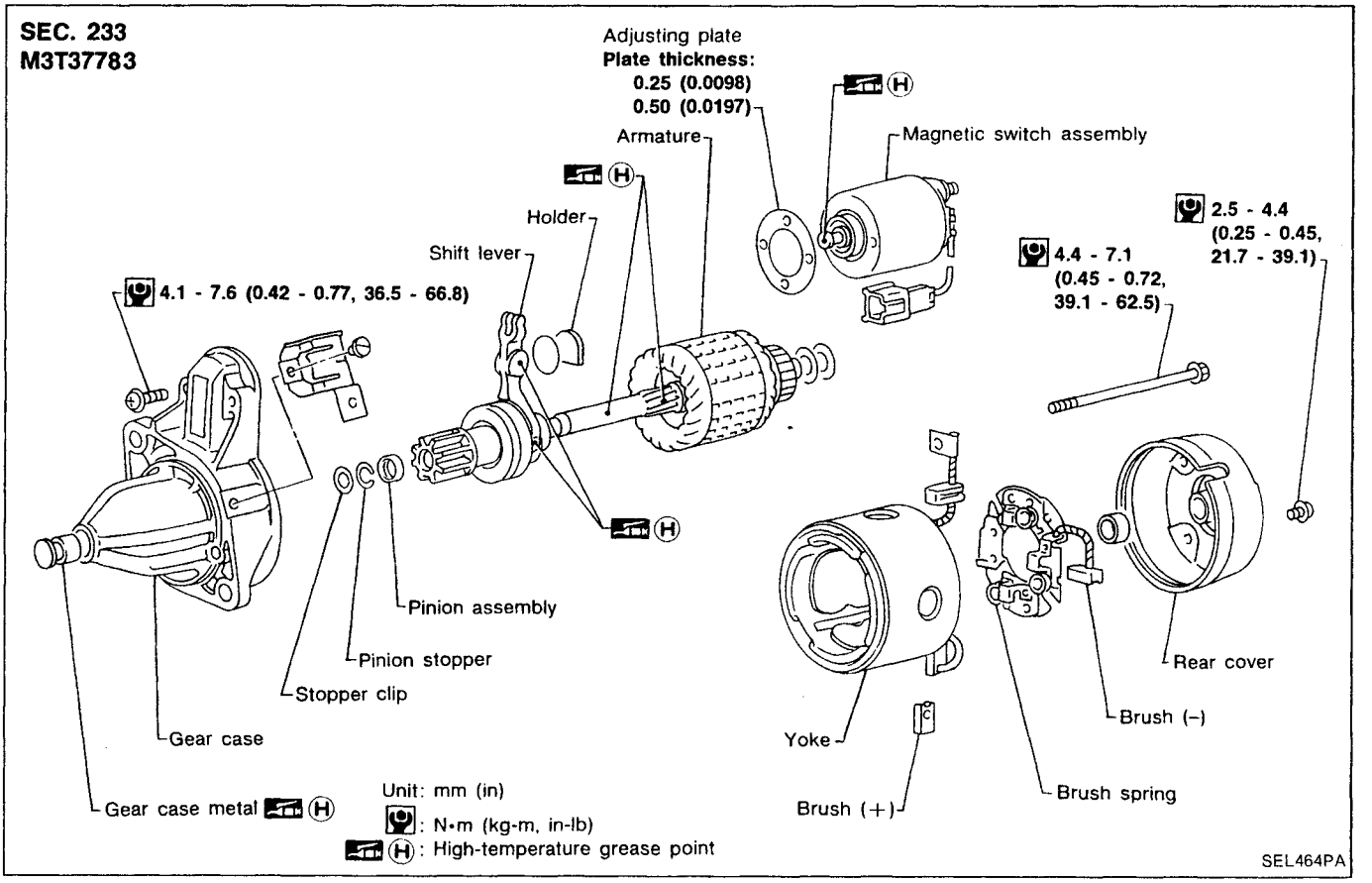

EL

## Construction (Cont'd)

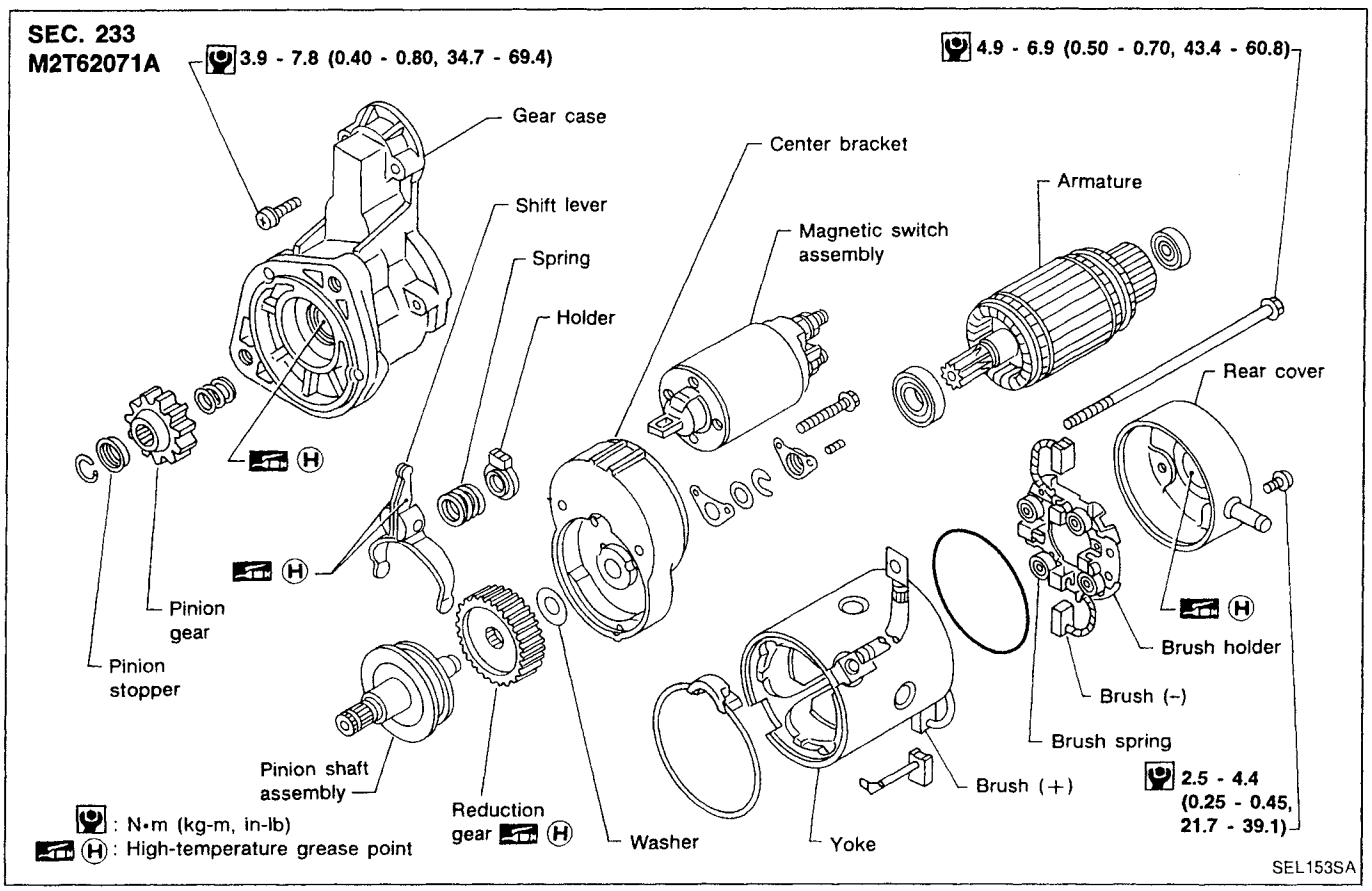
SEC. 233
S114-568A
S114-630




SEC. 233
M3T37783

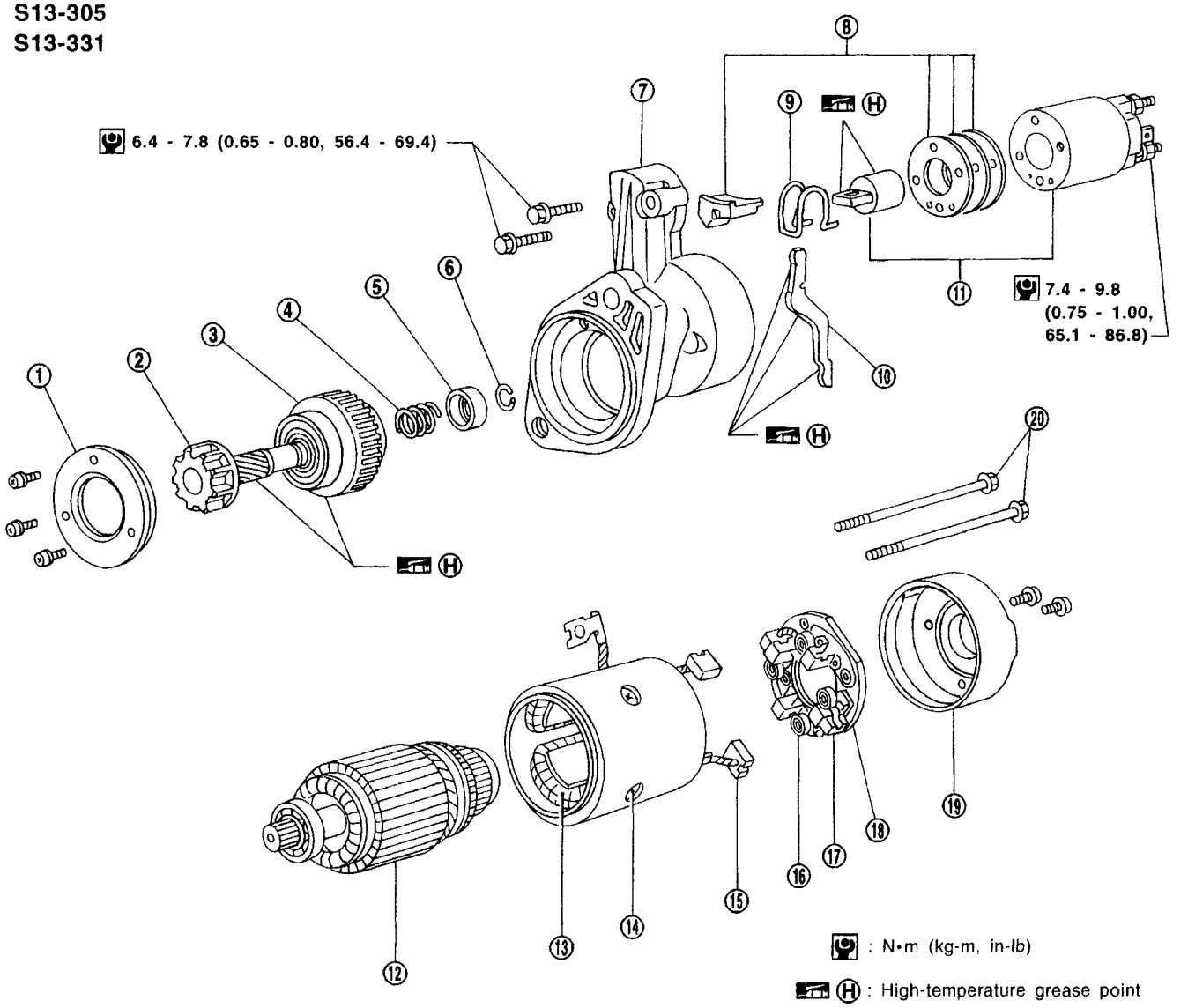


## Construction (Cont'd)



## Construction (Cont'd)

SEC. 233
S13-305
S13-331

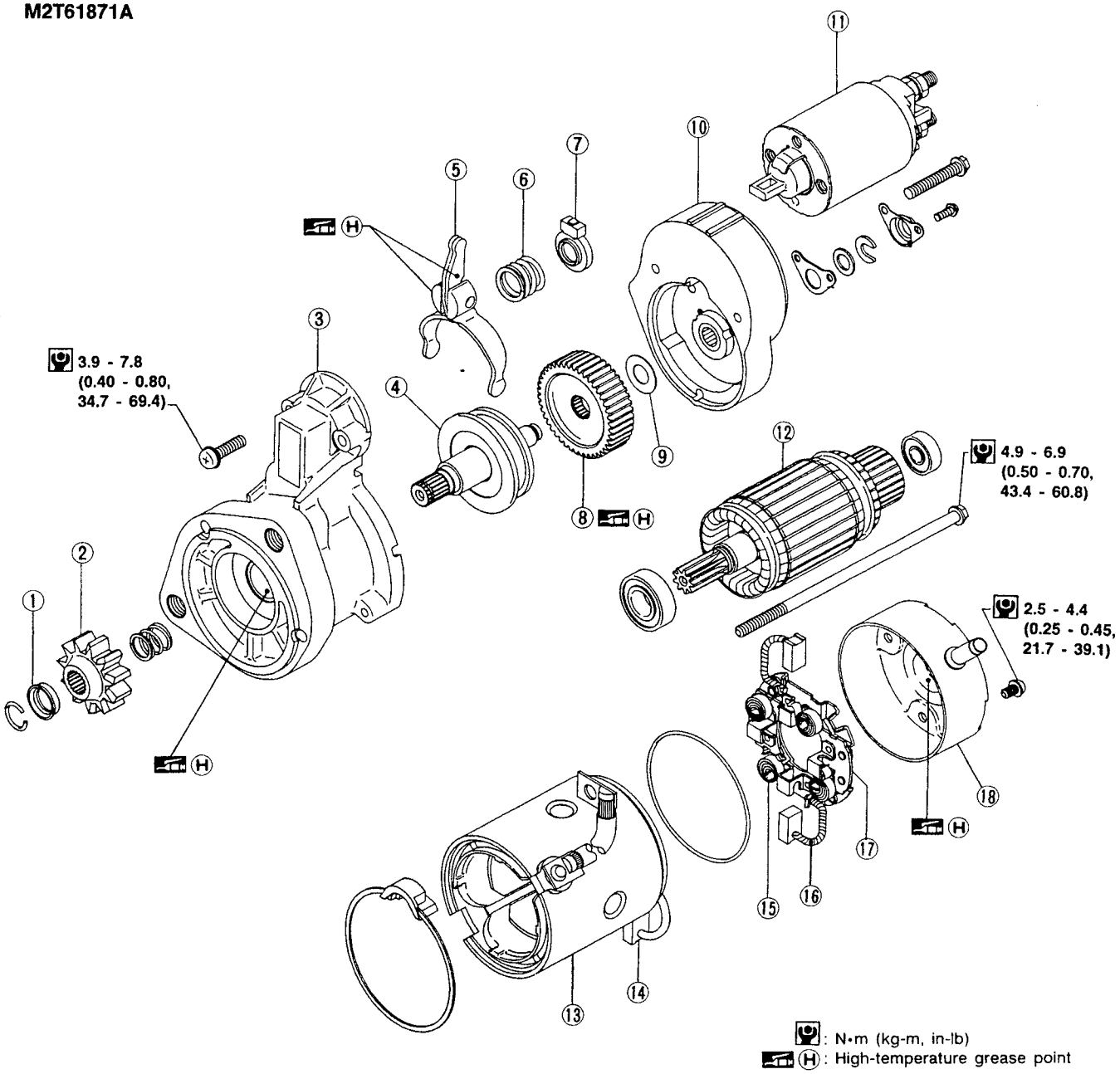



MEL233F

① Bearing retainer
② Pinion shaft
③ Clutch assembly
④ Return spring
⑤ Pinion stopper
⑥ Stopper clip
⑦ Gear case
⑧ Dust cover
⑨ Torsion spring
⑩ Shift lever
⑪ Magnetic switch assembly
⑫ Armature assembly
⑬ Field coil
⑭ Yoke
⑮ Brush (+)
⑯ Brush spring
⑰ Brush (–)
⑱ Brush holder
⑲ Rear cover
⑳ Through-bolt

## Construction (Cont'd)

SEC. 233
M2T61871A



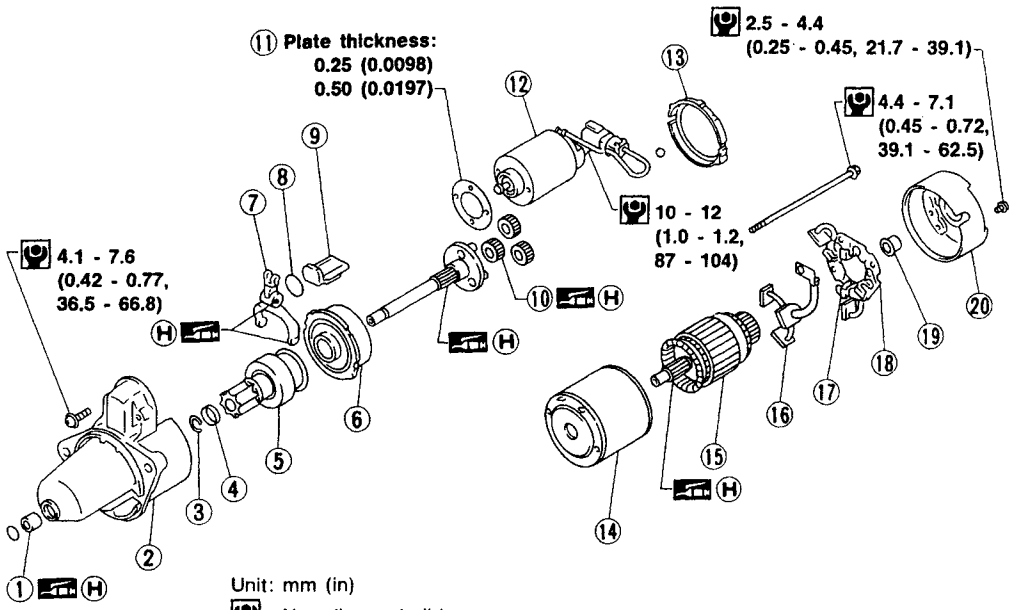

SEL554PA

① Pinion stopper
② Pinion assembly
③ Gear case
④ Pinion shaft assembly
⑤ Shift lever
⑥ Spring
⑦ Holder
⑧ Reduction gear
⑨ Washer
⑩ Center bracket
⑪ Magnetic switch assembly
⑫ Armature
⑬ Yoke
⑭ Brush (+)
⑮ Brush spring
⑯ Brush (–)
⑰ Brush holder
⑱ Rear cover

EL

## Construction (Cont'd)

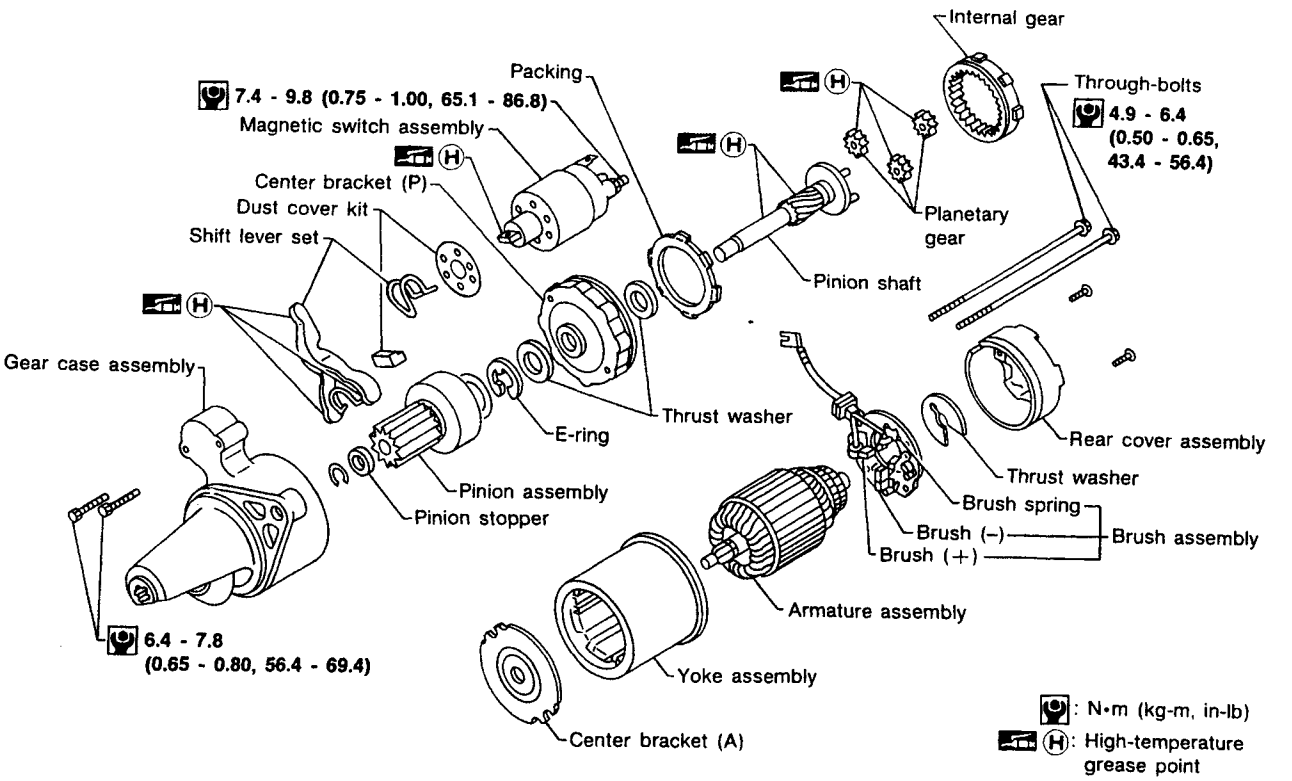
SEC. 233
M1T72985A




SEL663QA

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

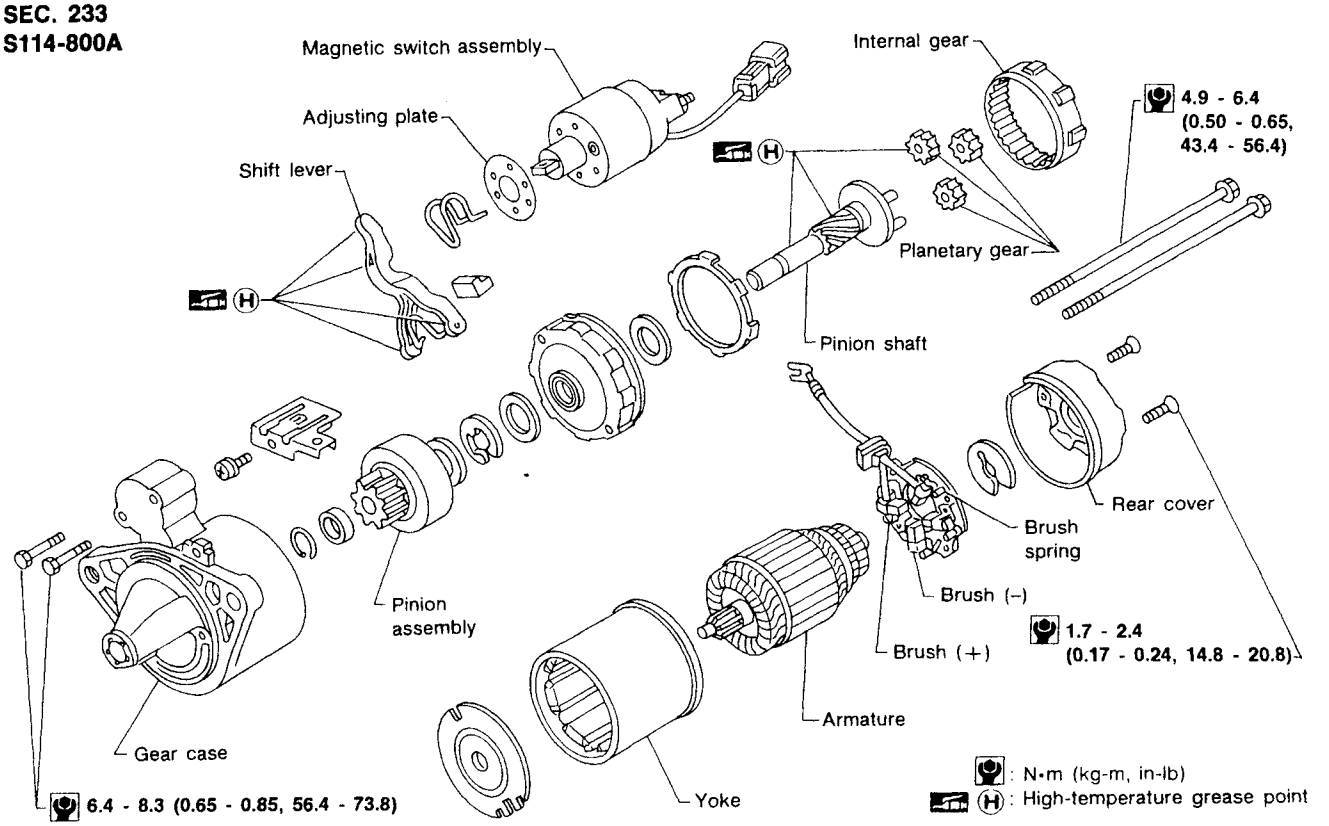
SEC. 233
S114-806




MEL675EA

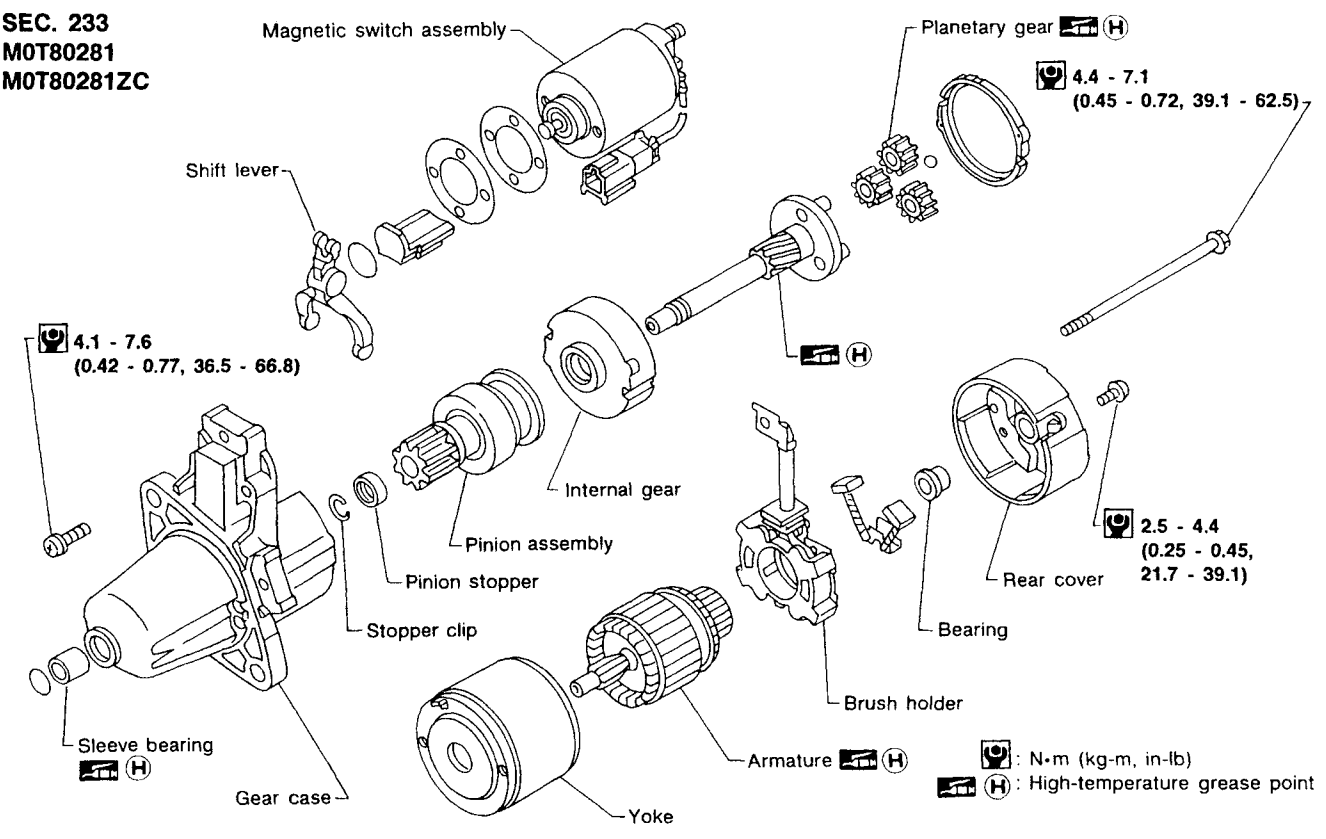
## Construction (Cont'd)

**SEC. 233**
**S114-800A**




SEL027UA

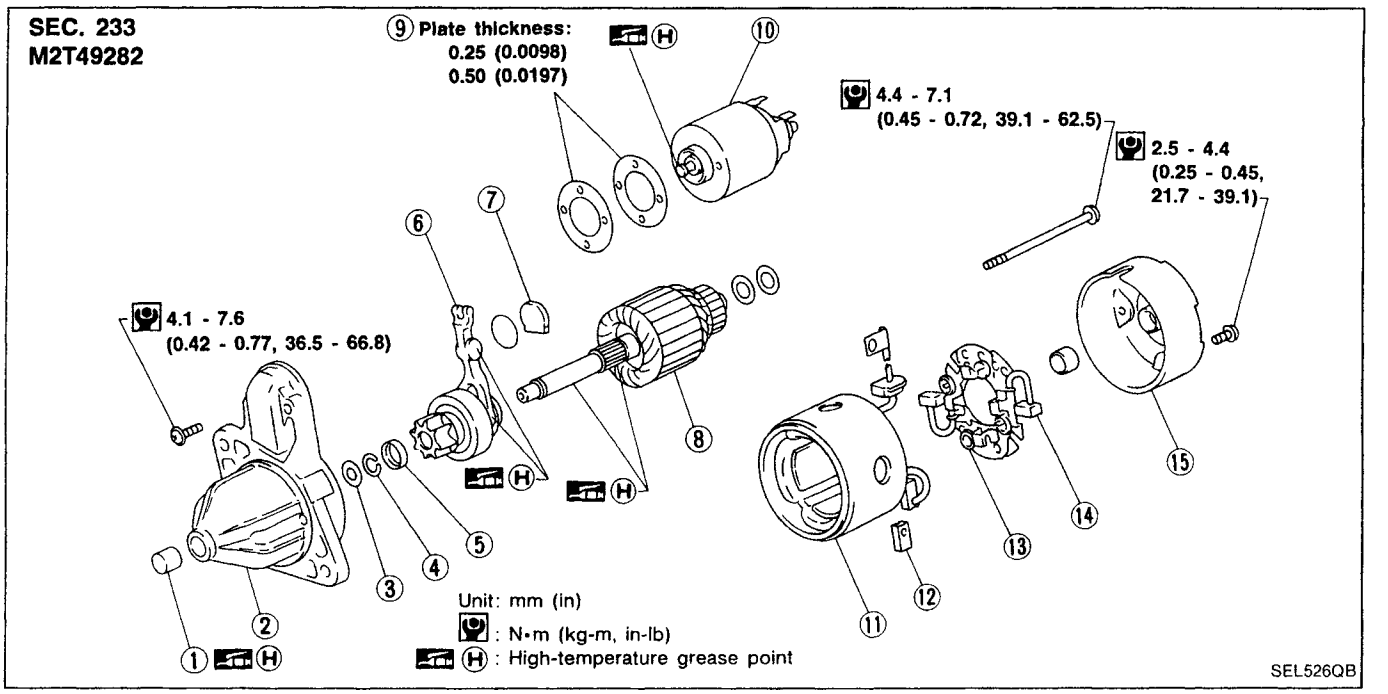
**SEC. 233**
**M0T80281**
**M0T80281ZC**



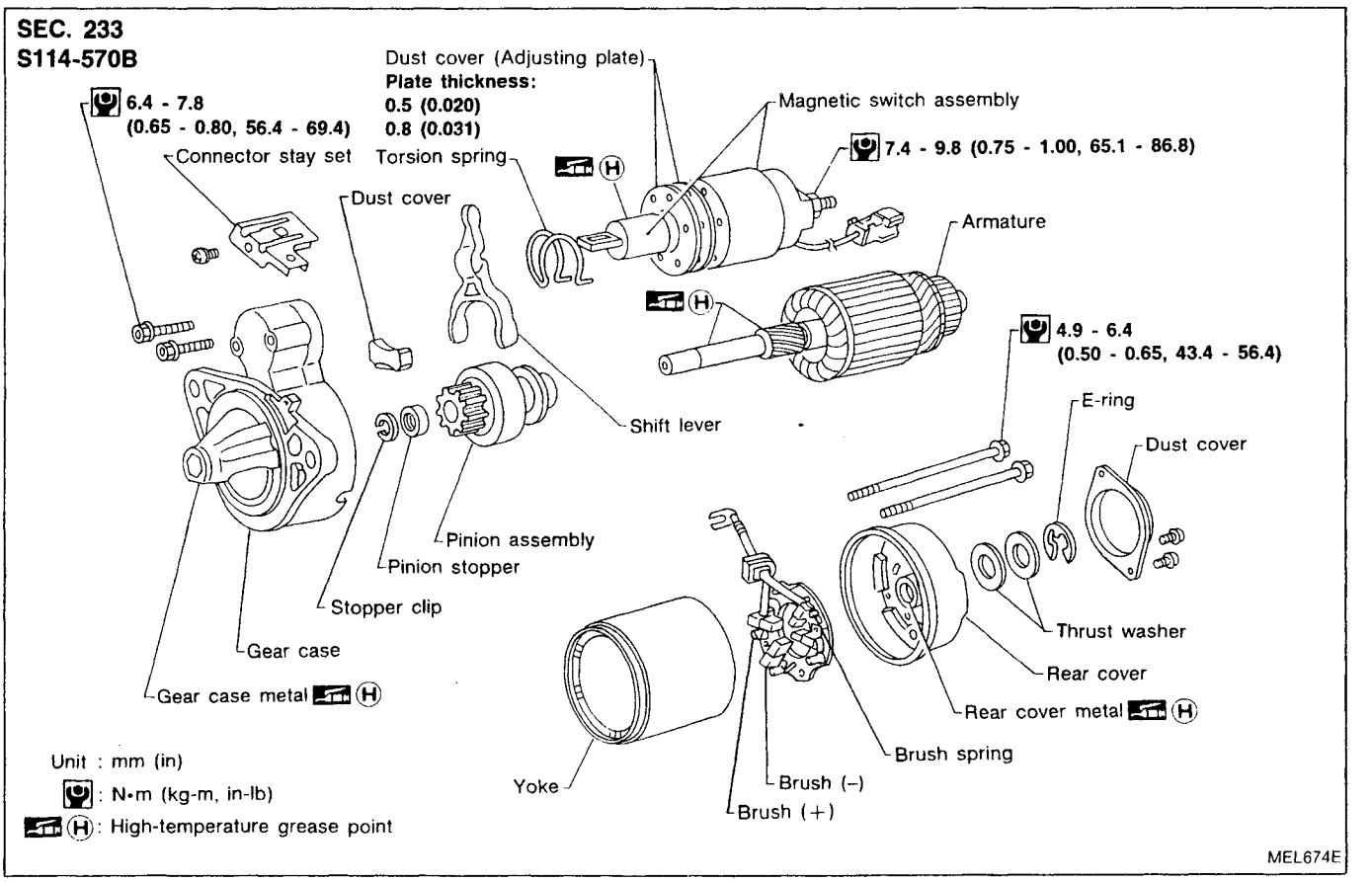

SEL026UA

EL

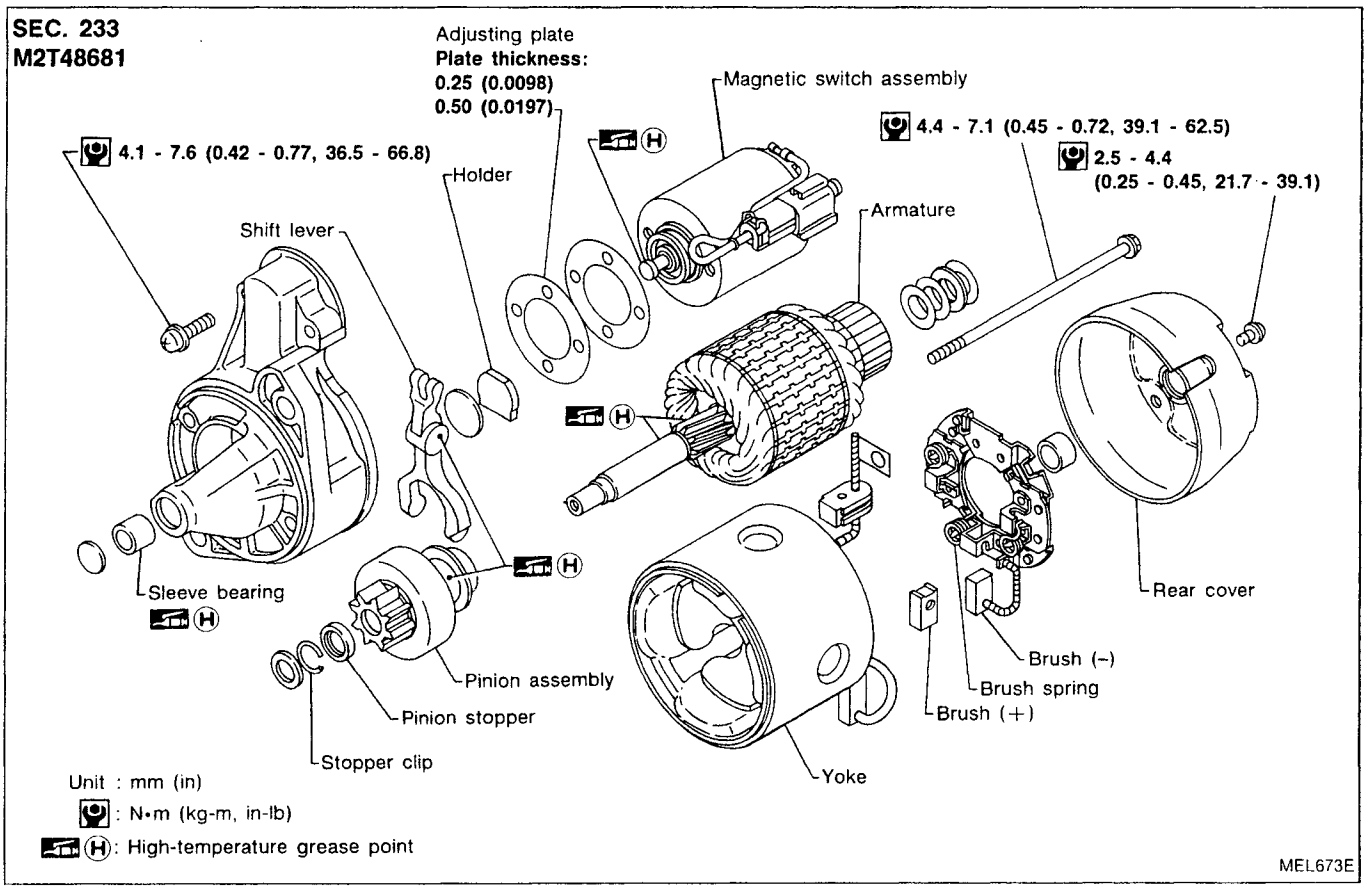
## Construction (Cont'd)

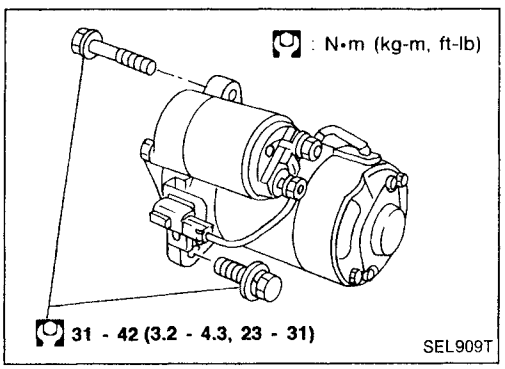



| | | | | | |
|---|---|---|---|---|---|
| ① | Gear case metal | ⑥ | Shift lever | ⑪ | Yoke |
| ② | Gear case | ⑦ | Holder | ⑫ | Brush (+) |
| ③ | Stopper clip | ⑧ | Armature | ⑬ | Brush spring |
| ④ | Pinion stopper | ⑨ | Adjusting plate | ⑭ | Brush (–) |
| ⑤ | Pinion assembly | ⑩ | Magnetic switch assembly | ⑮ | Rear cover |



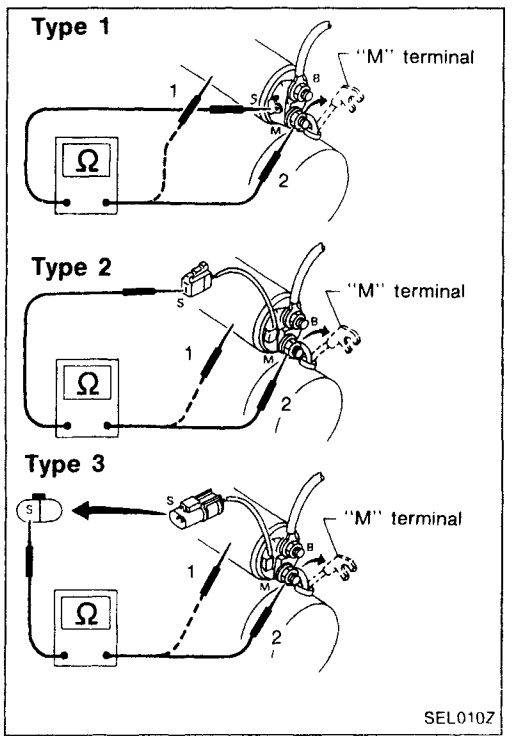
## Construction (Cont'd)




## Removal and Installation

EL




## Magnetic Switch Check

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

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

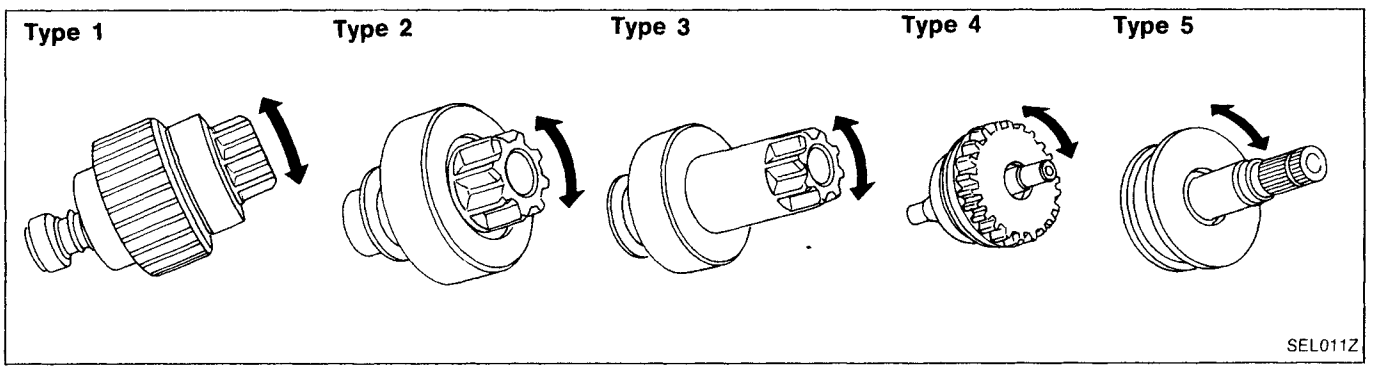
2. Continuity test (between "S" terminal and "M" terminal).
- No continuity ... Replace.

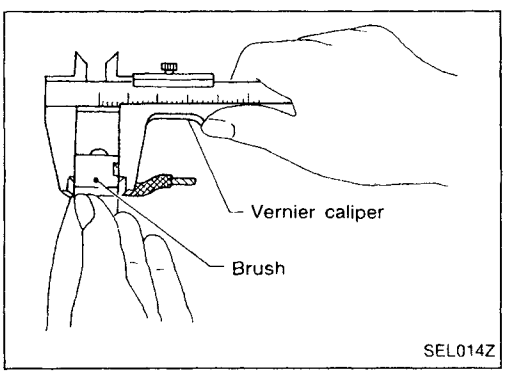
## Pinion/Clutch Check

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.




## Brush Check

### BRUSH

Check wear of brush.

**Wear limit length:**

**Refer to SDS (EL-50).**

- Excessive wear ... Replace.

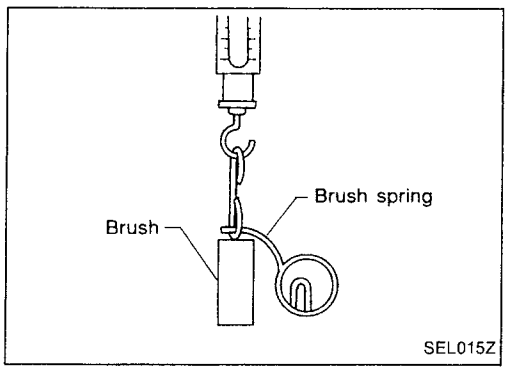
## Brush Check (Cont'd)

### BRUSH SPRING PRESSURE

Check brush spring pressure with brush spring detached from brush.

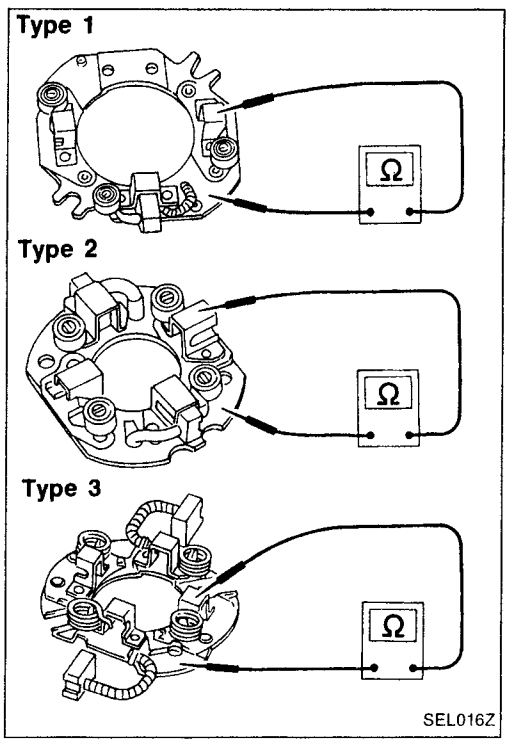
**Spring pressure (with new brush):**
**Refer to SDS (EL-50).**

- Not within the specified values ... Replace.




### BRUSH HOLDER

1. Perform insulation test between brush holder (positive side) and its base (negative side).
- Continuity exists. ... Replace.
2. Check brush to see if it moves smoothly.
- If brush holder is bent, replace it; if sliding surface is dirty, clean.



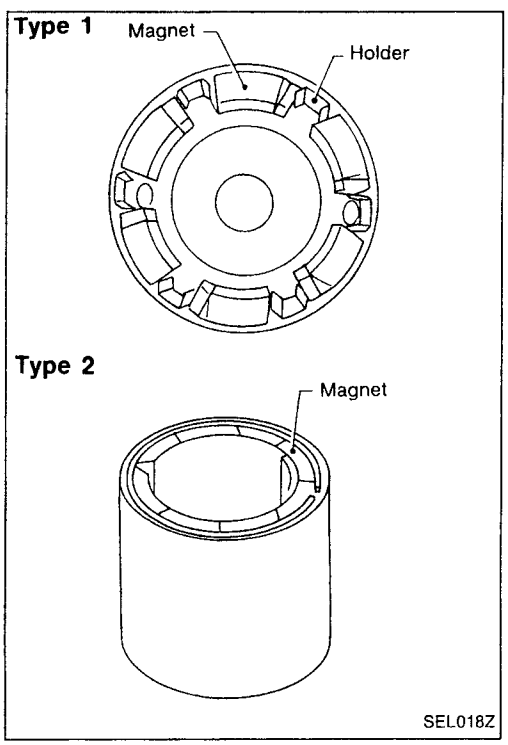

## Yoke Check

Magnet is secured to yoke by bonding agent. Check magnet to see that it is secured to yoke and for any cracks. Replace malfunctioning parts as an assembly.

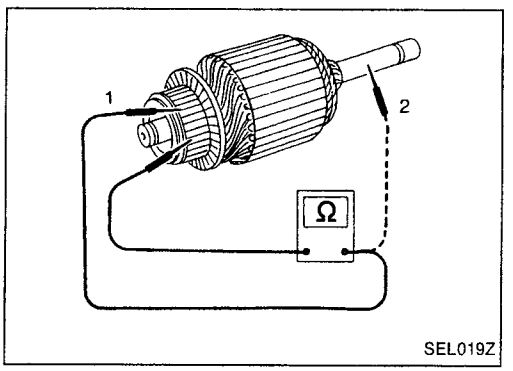
Holder may move slightly as it is only inserted and not bonded.

**CAUTION:**

**Do not clamp yoke in a vice or strike it with a hammer.**

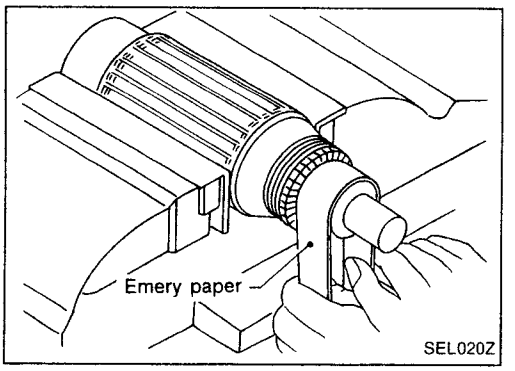



EL

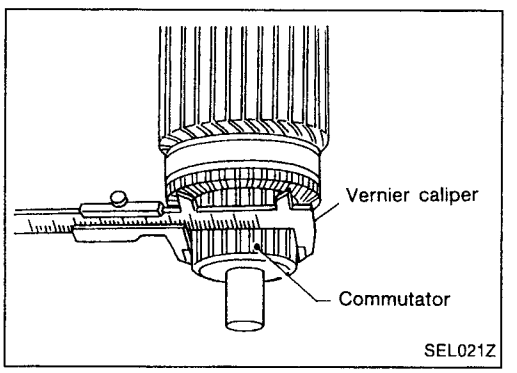



## Armature Check

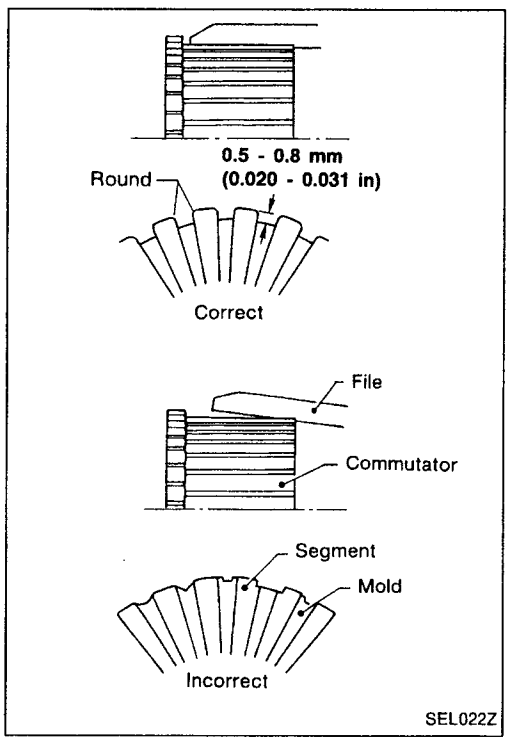
1. Continuity test (between two segments side by side).
- No continuity ... Replace.
2. Insulation test (between each commutator bar and shaft).
- Continuity exists. ... Replace.




3. Check commutator surface.
- Rough ... Sand lightly with No. 500 - 600 emery paper.



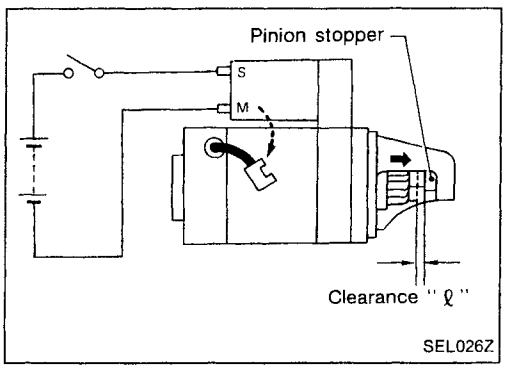

4. Check diameter of commutator.
   **Commutator minimum diameter:**
   **Refer to SDS (EL-50).**
- Less than specified value ... Replace.




5. Check depth of insulating mold from commutator surface.
- Less than 0.2 mm (0.008 in) ... Undercut to 0.5 to 0.8 mm (0.020 to 0.031 in)

## Assembly

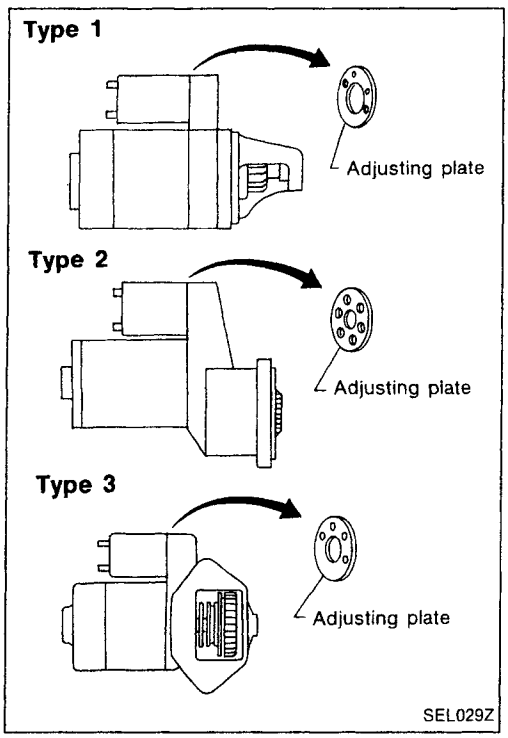
Apply high-temperature grease to lubricate the bearing, gears and frictional surface when assembling the starter.
Carefully observe the following instructions.




### PINION PROTRUSION LENGTH ADJUSTMENT

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

**Clearance "ℓ":**
**Refer to SDS (EL-50).**




- Not in the specified value ... Adjust by adjusting plate.

EL

## Service Data and Specifications (SDS)

### STARTER

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Type | S114-766A | M1T72087A | M1T77281 | S114-769A | S114-630 | M3T37783 | M2T62071A | S13-305 | S13-331 | M2T61871A |
| | HITACHI | MITSUBISHI | | HITACHI | | MITSUBISHI | | HITACHI | | MITSUBISHI |
| | Reduction | | | | Non-reduction | | Reduction | | | |
| Applied model | Europe | | | | | | | | | |
| | GA engines | | | | | | CD20 | | | |
| | A/T | | M/T | | | | | | | |
| System voltage V | 12 | | | | | | | | | |
| No-load Terminal voltage V | 11.0 | | | | 11.5 | | 11.0 | | | |
| Current A | Less than 85 | 50 - 75 | | Less than 85 | Less than 60 | | Less than 105 | Less than 140 | | Less than 110 |
| Revolution rpm | More than 2,950 | 3,000 - 4,000 | | More than 2,950 | More than 7,000 | More than 6,500 | More than 4,030 | More than 3,900 | | More than 4,100 |
| Minimum diameter of commutator mm (in) | 28.0 (1,102) | 28.8 (1.134) | | 28.0 (1,102) | 39.0 (1.535) | 31.4 (1.236) | | 35.5 (1.398) | | 31.4 (1.236) |
| Minimum length of brush mm (in) | 10.5 (0.413) | 12.0 (0.472) | | 10.5 (0.413) | 11.0 (0.433) | 11.5 (0.453) | | 11.0 (0.433) | | 11.5 (0.453) |
| Brush spring tension N (kg, lb) | 16.2 (1.65, 3.64) | 13.7 - 25.5 (1.4 - 2.6, 3.1 - 5.7) | | 14.7 - 17.7 (1.5 - 1.8, 3.3 - 4.0) | 17.7 - 21.6 (1.8 - 2.2, 4.0 - 4.9) | 13.7 - 25.5 (1.4 - 2.6, 3.1 - 5.7) | | 28.4 - 34.3 (2.90 - 3.50, 6.38 - 7.71) | | 13.7 - 25.5 (1.4 - 2.6, 3.1 - 5.7) |
| Clearance between bearing metal and armature shaft mm (in) | Less than 0.2 (0.008) | — | Less than 0.2 (0.008) | — | Less than 0.2 (0.008) | — | | | | |
| Clearance "ℓ" between pinion front edge and pinion stopper mm (in) | 0.3 - 2.5 (0.012 - 0.098) | 0.5 - 2.0 (0.020 - 0.079) | | 0.3 - 2.5 (0.012 - 0.098) | | 0.5 - 2.0 (0.020 - 0.079) | — | 0.3 - 2.0 (0.012 - 0.079) | 0.3 - 0.8 (0.012 - 0.031) | — |
| Movement "ℓ" in height of pinion assembly mm (in) | — | | | | | | 0.5 - 2.0 (0.020 - 0.079) | — | — | 0.3 - 1.5 (0.012 - 0.059) |

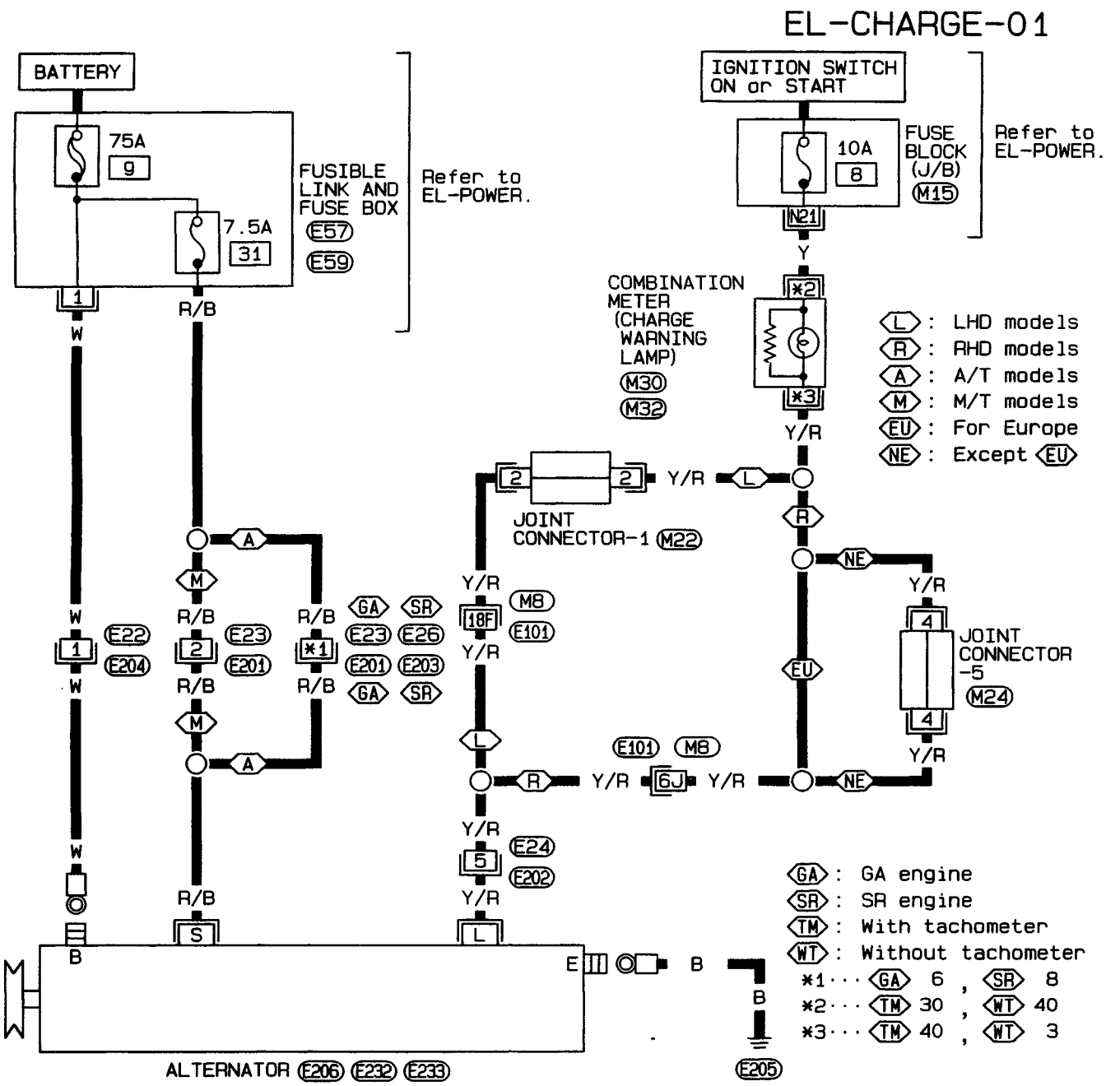
## Service Data and Specifications (SDS) (Cont'd)

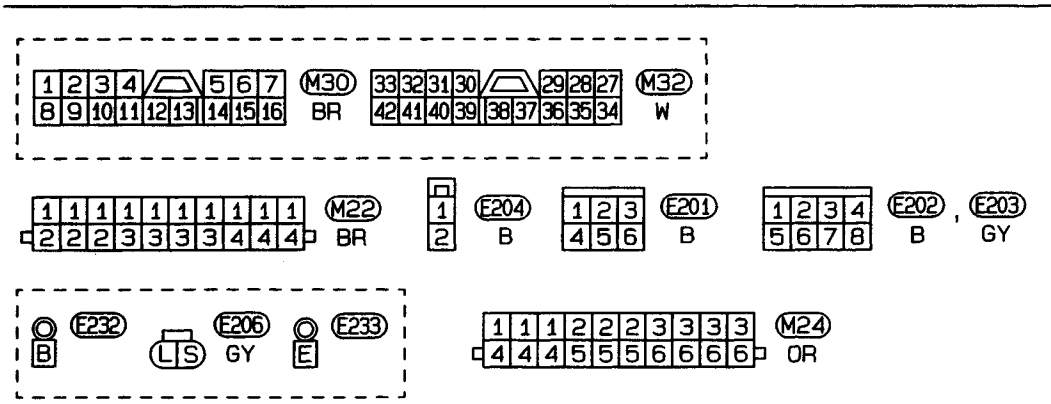
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Type | M1T72985A | S114-806 | S114-800A | M0T80281ZC | M0T80281 | M2T49282 | S114-568A | S114-570B | M2T48681 |
| | MITSUBISHI | HITACHI | | MITSUBISHI | | | HITACHI | | MITSUBISHI |
| | Reduction | | | Non-reduction | | | | | |
| Applied model | Australia | | | | | RHD Except Europe and Australia | | | |
| | SR20DE | GA engines | | | | | | | |
| | | A/T | | M/T | | | | A/T | |
| System voltage V | 12 | | | | | | | | |
| No-load | | | | | | | | | |
| Terminal voltage V | 11.0 | | | | | 11.5 | | | |
| Current A | 50 - 75 | Less than 90 | | | | Less than 53 | Less than 60 | | Less than 53 |
| Revolution rpm | 3,000 - 4,000 | More than 2,700 | More than 2,750 | | | More than 6,000 | | | |
| Minimum diameter of commutator mm (in) | 28.8 (1.134) | 28.0 (1.102) | | 28.8 (1.134) | | 31.4 (1.236) | 28.0 (1.102) | | 31.4 (1.236) |
| Minimum length of brush mm (in) | 12.0 (0.472) | 10.5 (0.413) | | 7.0 (0.276) | | 11.5 (0.453) | 9.0 (0.354) | | 11.5 (0.453) |
| Brush spring tension N (kg, lb) | 13.7 - 25.5 (1.4 - 2.6, 3.1 - 5.7) | 12.7 - 17.7 (1.3 - 1.8, 2.9 - 4.0) | | 11.77 - 23.53 (1.2 - 2.4, 2.6 - 5.3) | | 13.7 - 25.5 (1.4 - 2.6, 3.1 - 5.7) | 9.8 - 13.7 (1.0 - 1.4, 2.2 - 3.1) | | 13.7 - 25.5 (1.4 - 2.6, 3.1 - 5.7) |
| Clearance between bearing metal and armature shaft mm (in) | Less than 0.2 (0.008) | | | | | | | | |
| Clearance "l" between pinion front edge and pinion stopper mm (in) | 0.5 - 2.0 (0.020 - 0.079) | 0.3 - 2.5 (0.012 - 0.098) | | 0.5 - 2.0 (0.020 - 0.079) | | | 0.3 - 2.5 (0.012 - 0.098) | | 0.5 - 2.0 (0.020 - 0.079) |
| Movement "l" in height of pinion assembly mm (in) | — | | | | | | | | |

EL

## Wiring Diagram — CHARGE —

### GASOLINE ENGINE MODELS



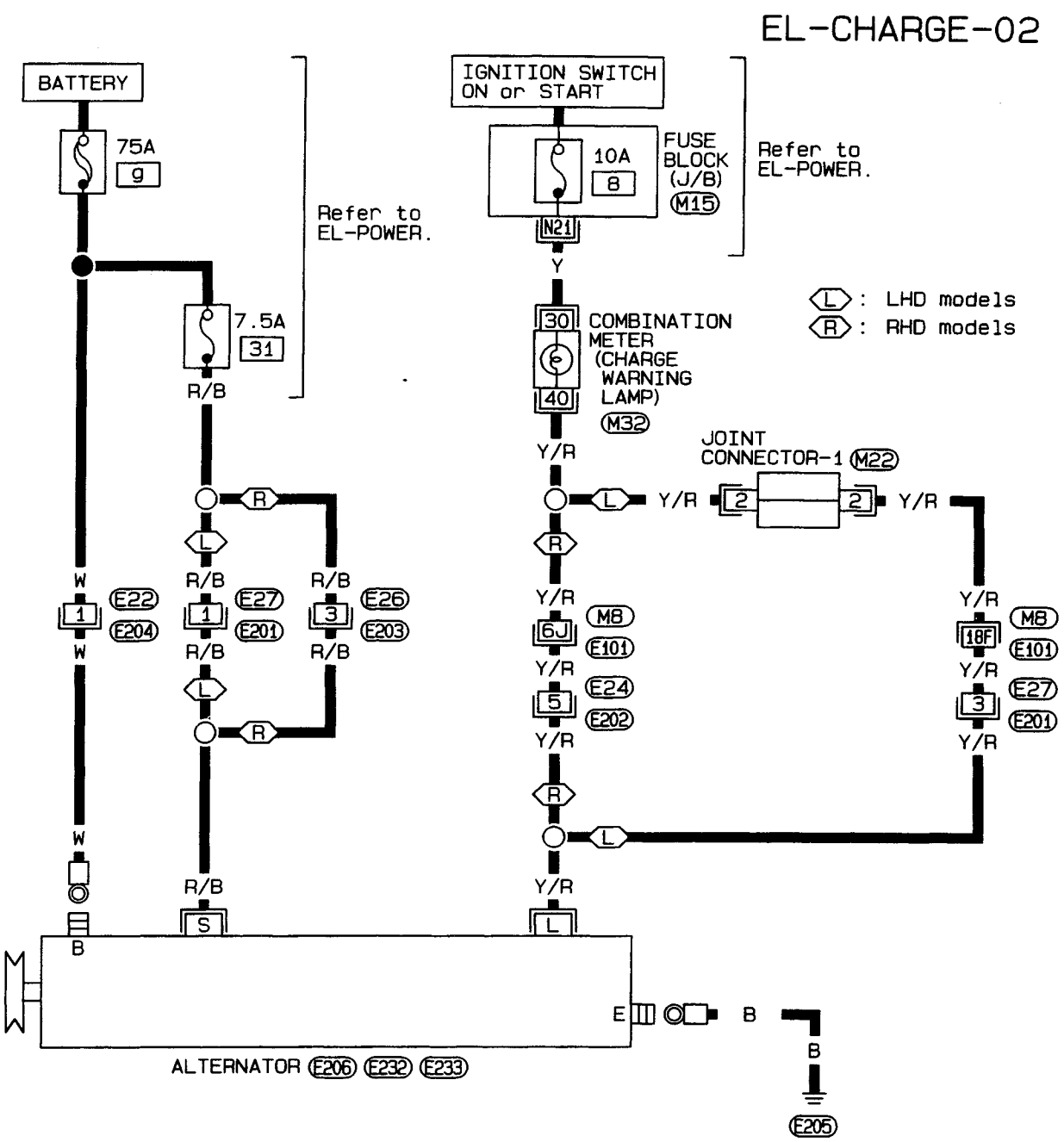



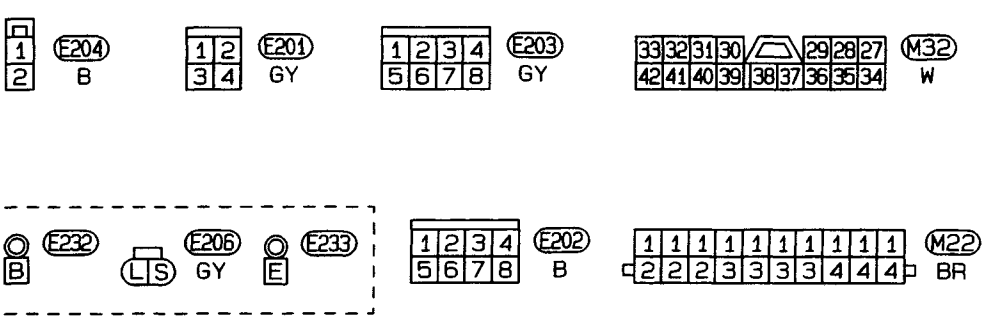

Refer to last page (Foldout page).
M8 , E101
M15
E57 , E59

HEL196

## Wiring Diagram — CHARGE — (Cont'd)

### DIESEL ENGINE MODELS




Refer to last page (Foldout page).
M8, E101
M15

EL

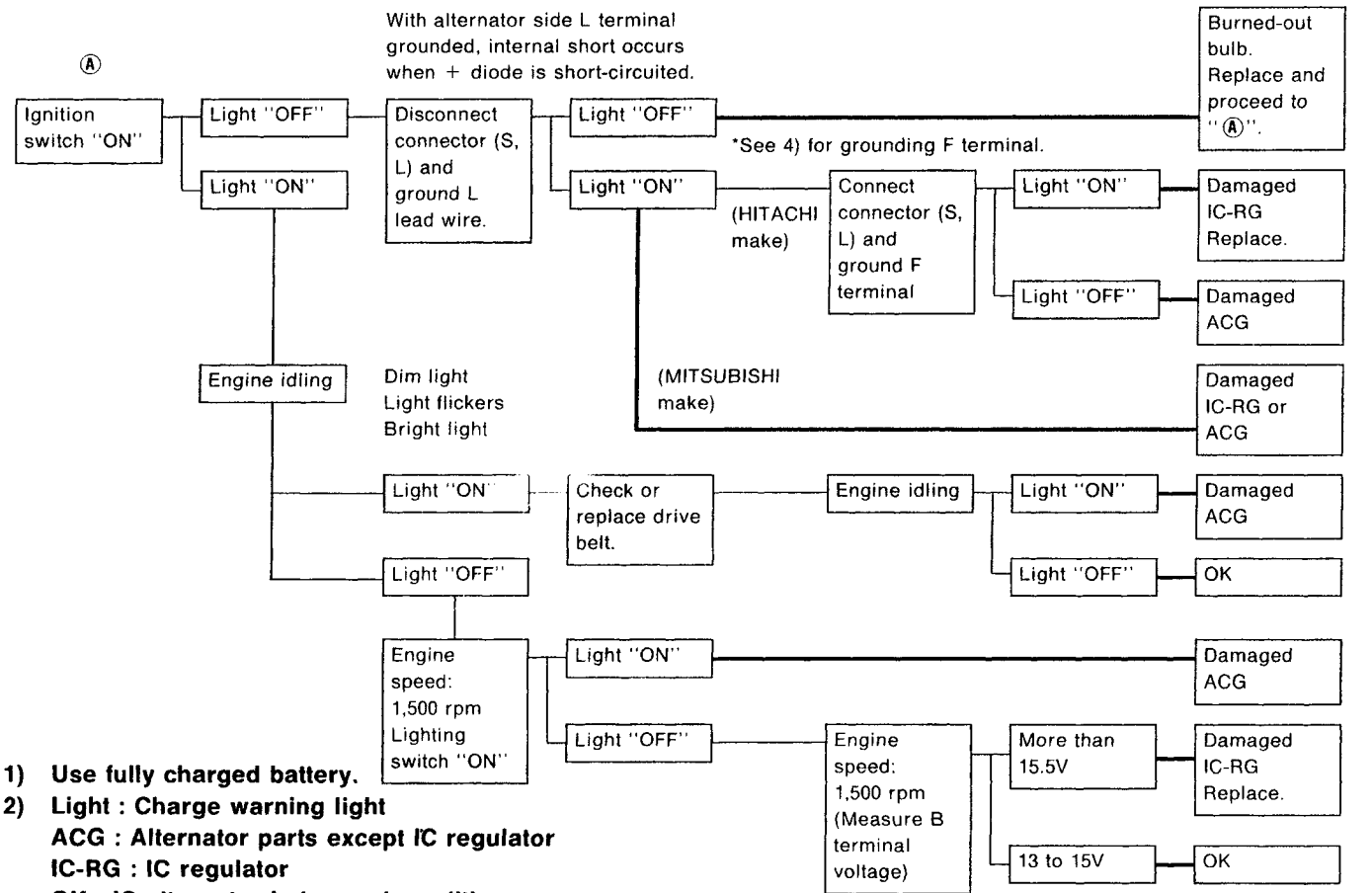
HEL197

## 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, inspect the fusible link.**

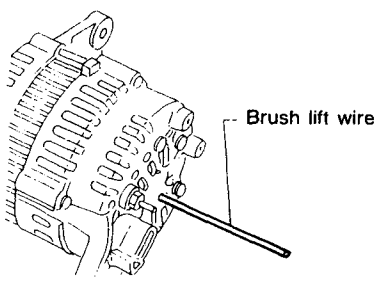
### WITH IC REGULATOR




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**

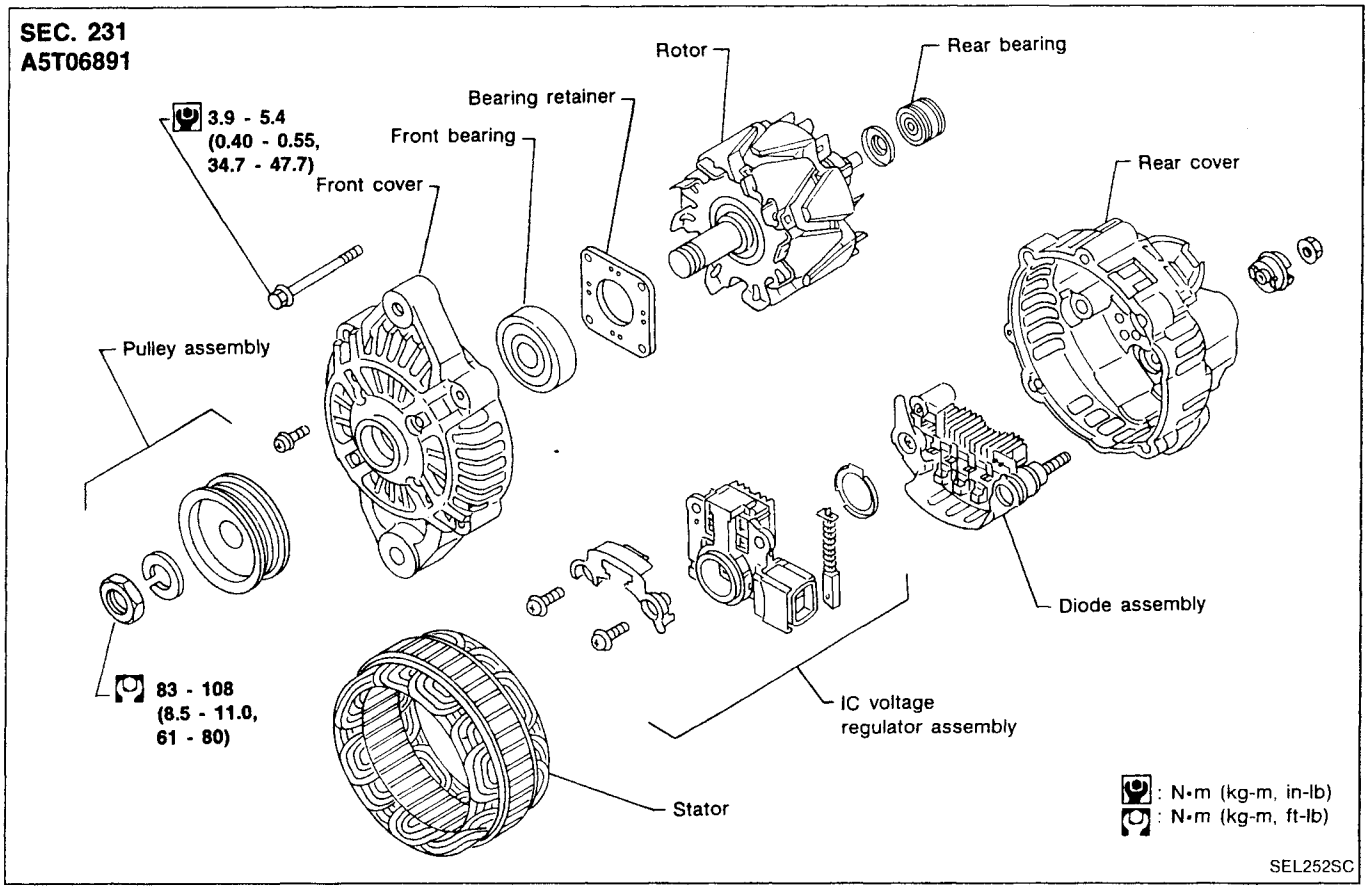
**Contact tip of wire with brush and attach wire to alternator body.**

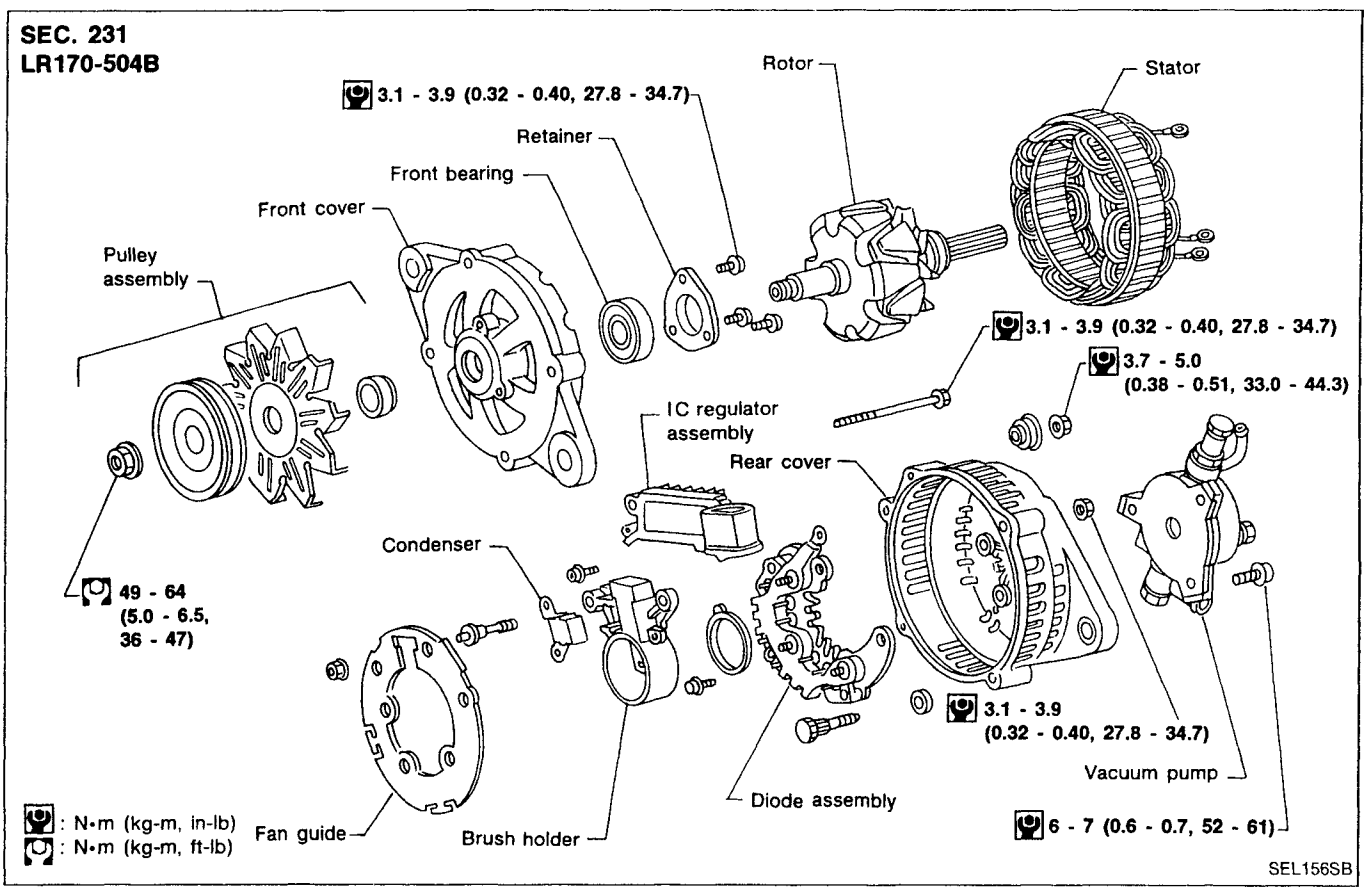



SEL030Z

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

## Construction

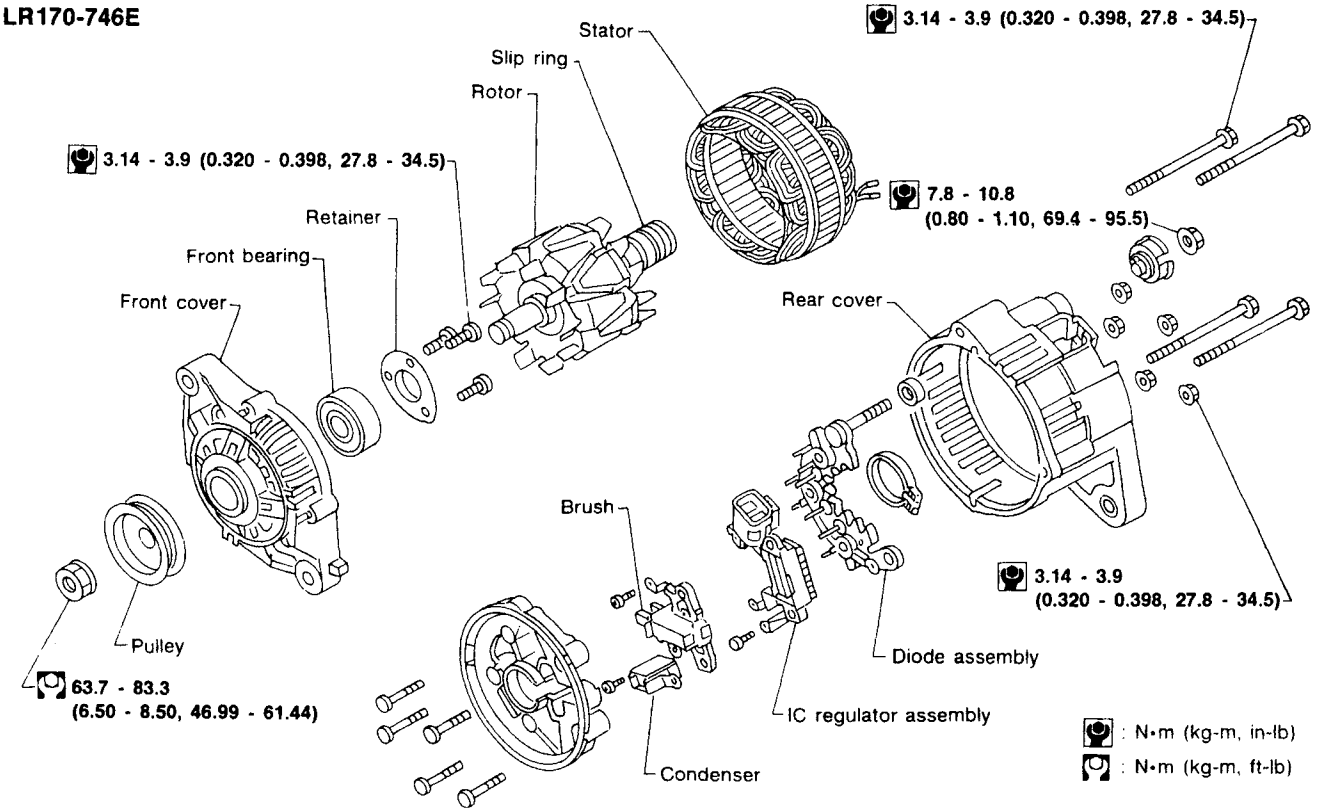



EL

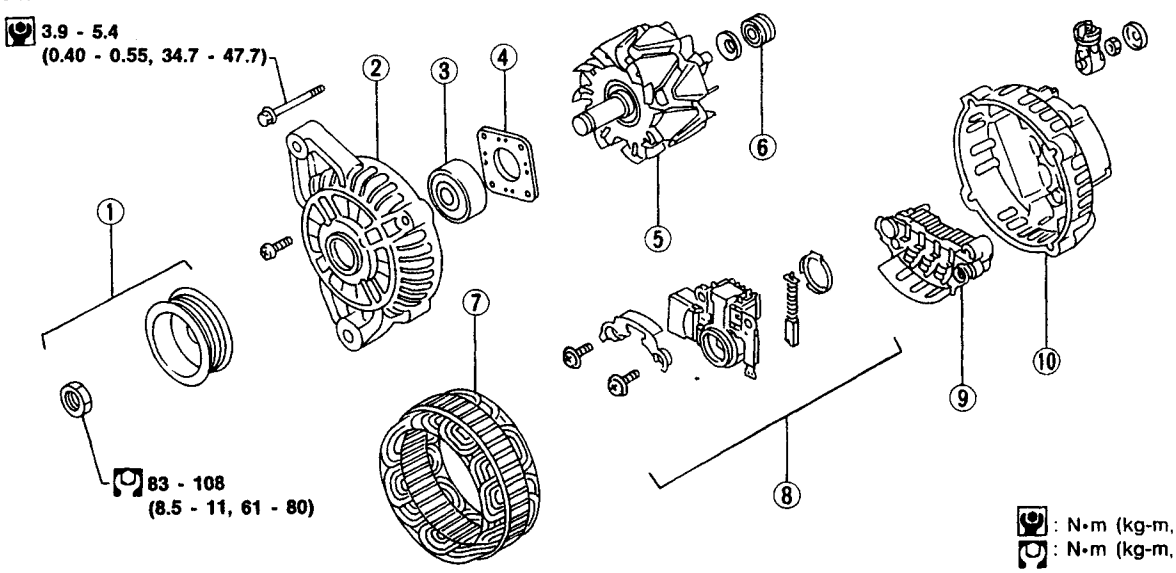
## Construction (Cont'd)

SEC. 231
LR170-746E



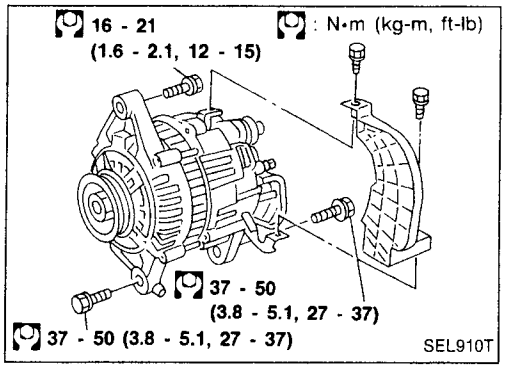

SEL025UB

SEC. 231
A2T82491A

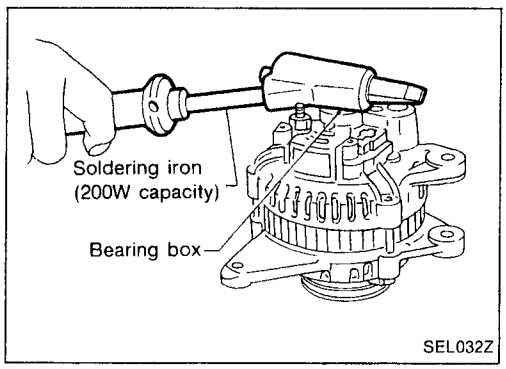



MEL782DB

① Pulley assembly
② Front cover
③ Front bearing
④ Bearing retainer
⑤ Rotor
⑥ Rear bearing
⑦ Stator
⑧ IC voltage regulator assembly
⑨ Diode assembly
⑩ Rear cover




## Removal and Installation




## Disassembly

### REAR COVER REMOVAL

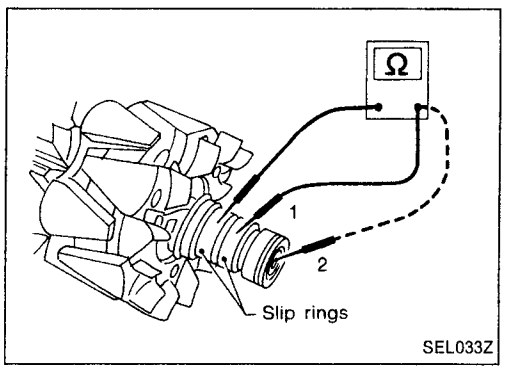
**CAUTION:**

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

### REAR BEARING

**CAUTION:**

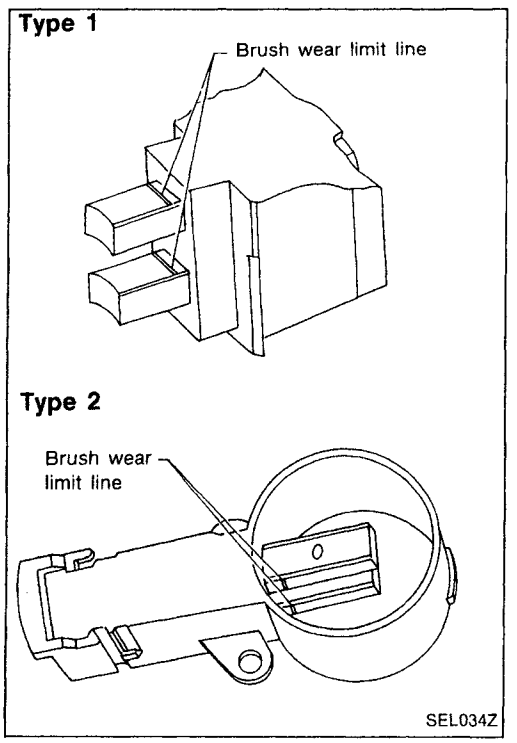
- **Do not reuse rear bearing after removal. Replace with a new one.**
- **Do not lubricate rear bearing outer race.**




## Rotor Check

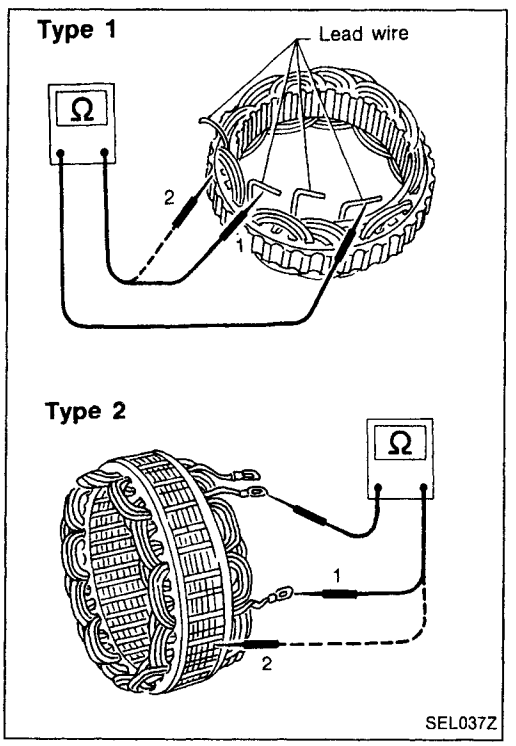
1. Resistance test
   **Resistance: Refer to SDS (EL-61).**
   - Not within the specified values ... Replace rotor.
2. Insulator test
   - Continuity exists ... Replace rotor.
3. Check slip ring for wear.
   **Slip ring minimum outer diameter:**
   **Refer to SDS (EL-61).**
   - Not within the specified values ... Replace rotor.

EL




## Brush Check

1. Check smooth movement of brush.
   - Not smooth ... Check brush holder and clean.
2. Check brush for wear.
   - Replace brush if it is worn down to the limit line.




## Stator Check

1. Continuity test
   - No continuity ... Replace stator.
2. Ground test
   - Continuity exists ... Replace stator.

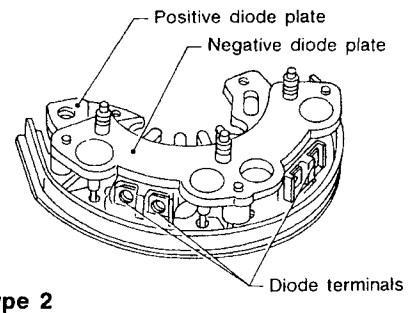
## Diode Check

### MAIN DIODES

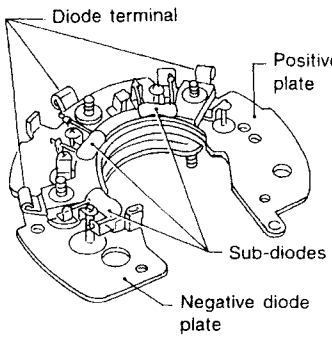
- Use an ohmmeter to check condition of diodes as indicated in chart below.
- If any of the test results is not satisfactory, replace diode assembly.

| | Ohmmeter probes | | Judgement |
|---|---|---|---|
| | Positive ⊕ | Negative ⊖ | |
| Diodes check (Positive side) | Positive diode plate | Diode terminals | Diode conducts in only one direction. |
| | Diode terminals | Positive diode plate | |
| Diodes check (Negative side) | Negative diode plate | Diode terminals | Diode conducts in only one direction. |
| | Diode terminals | Negative diode plate | |

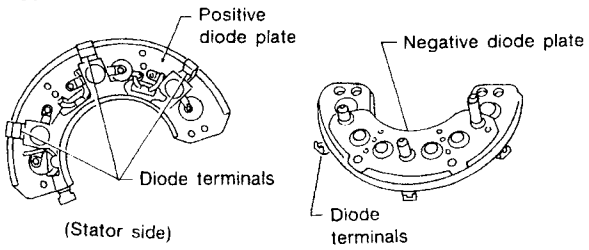
**Type 1**



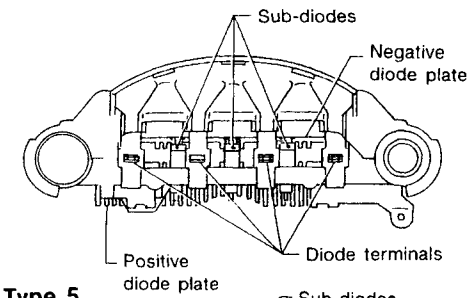

**Type 2**



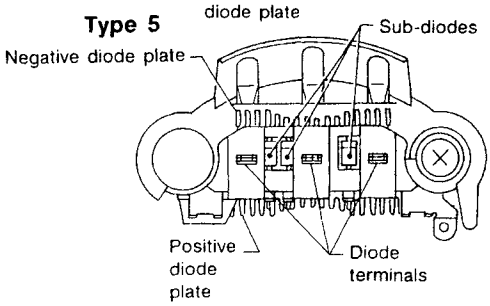

**Type 3**



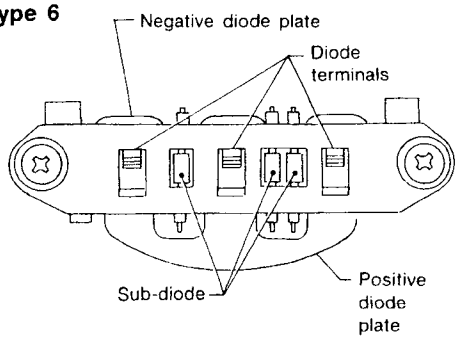

**Type 4**




**Type 5**

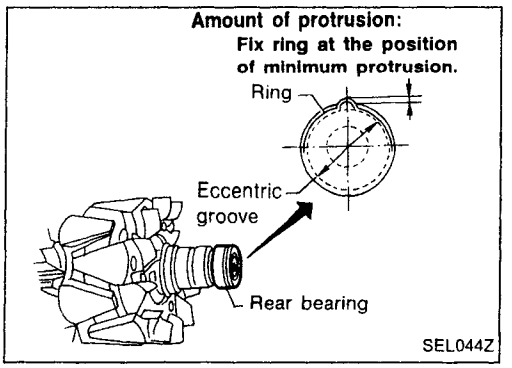


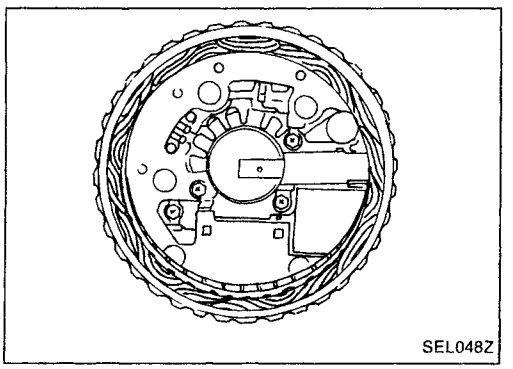

**Type 6**

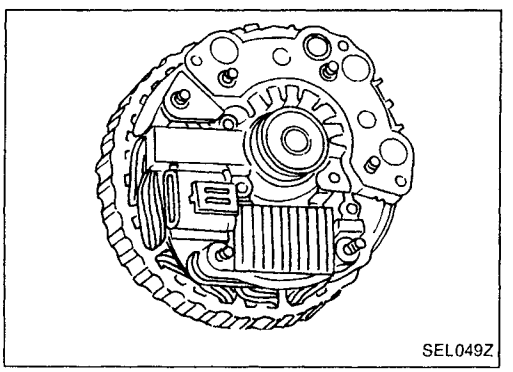



SEL039Z

EL




## Assembly

### RING FITTING IN REAR BEARING

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

**CAUTION:**

**Do not reuse rear bearing after removal.**

### REAR COVER INSTALLATION

(1) Fit brush assembly, diode assembly, regulator assembly and stator.

(2) Push brushes up with fingers and install them to rotor.

**Take care not to damage slip ring sliding surface.**

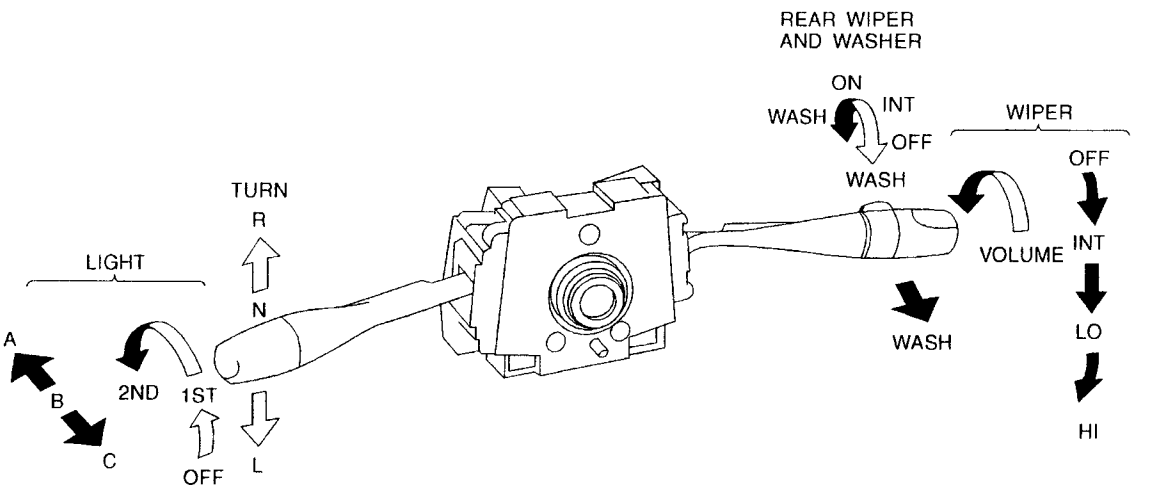
## Service Data and Specifications (SDS)

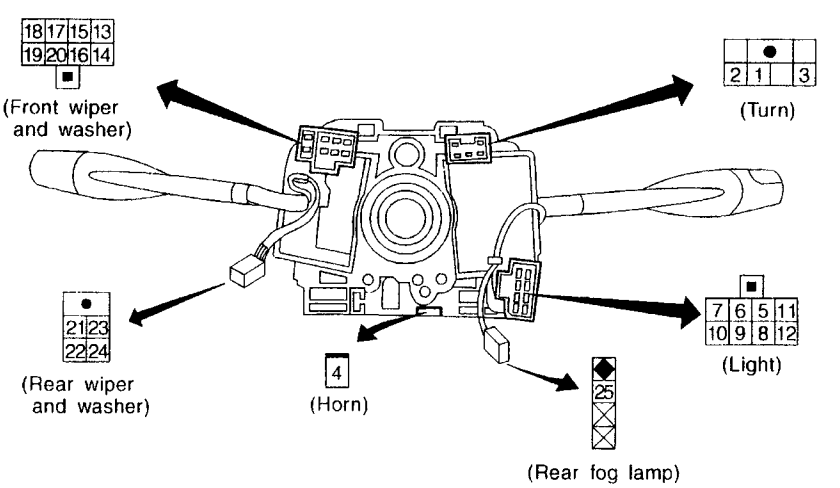
### ALTERNATOR

| Type | A5T06891 | LR170-746E | LR170-504B | A2T82491A |
|---|---|---|---|---|
| | MITSUBISHI | HITACHI | | MITSUBISHI |
| Applied model | GA engines | | CD20 | SR20DE |
| Nominal rating V-A | 12-70 | | | 12-80 |
| Ground polarity | Negative | | | |
| Minimum revolutions under no-load (when 13.5V is applied) rpm | Less than 1,300 | Less than 1,000 | | Less than 1,300 |
| Hot output current (When 13.5V is applied) A/rpm | More than 21/1,300<br>More than 50/2,500 | More than 22/1,300<br>More than 50/2,500<br>More than 67/5,000 | More than 27/1,300<br>More than 56/2,500<br>More than 66/5,000 | 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 (0.197) | 6.0 (0.236) | | 5.0 (0.197) |
| Brush spring pressure N (g, oz) | 4.609 - 5.786 (470 - 590, 16.58 - 20.81) | 1.0 - 3.43 (102 - 350, 3.60 - 12.34) | 0.92 - 3.28 (94 - 334, 3.32 - 11.78) | 4.609 - 5.786 (470 - 590, 16.58 - 20.81) |
| Slip ring minimum diameter mm (in) | 22.1 (0.870) | 26.0 (1.024) | 31.6 (1.244) | 22.1 (0.870) |
| Rotor coil resistance at 20°C (68°F) Ω | 2.5 - 2.9 | 2.58 | 4.8 | 2.4 - 2.9 |

## Combination Switch/Check

### FOR EUROPE AND ISRAEL




LIGHTING SWITCH

| | OFF | | | 1ST | | | 2ND | | |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | A | B | C | A | B | C |
| 5 | | | ○ | | | ○ | ○ | ○ | ○ |
| 6 | | | ○ | | | ○ | ○ | | ○ |
| 7 | | | | | | | | ○ | |
| 8 | | ○ | | | ○ | ○ | ○ | | ○ |
| 9 | | ○ | | | ○ | ○ | | ○ | |
| 10 | | | | | | | | ○ | |
| 11 | | | | ○ | ○ | ○ | ○ | ○ | ○ |
| 12 | | | | ○ | ○ | ○ | ○ | ○ | ○ |
| 25 | | | | | | | ○ | ○ | ○ |

FRONT WIPER AND WASHER SWITCH

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

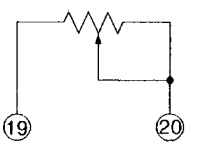
TURN SIGNAL SWITCH

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

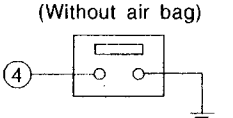
REAR WIPER AND WASHER SWITCH

| | WASH | OFF | INT | ON | WASH |
|---|---|---|---|---|---|
| 21 | | | ○ | | |
| 22 | | | | ○ | ○ |
| 23 | ○ | | | | ○ |
| 24 | ○ | | ○ | ○ | ○ |

INTERMITTENT WIPER VOLUME



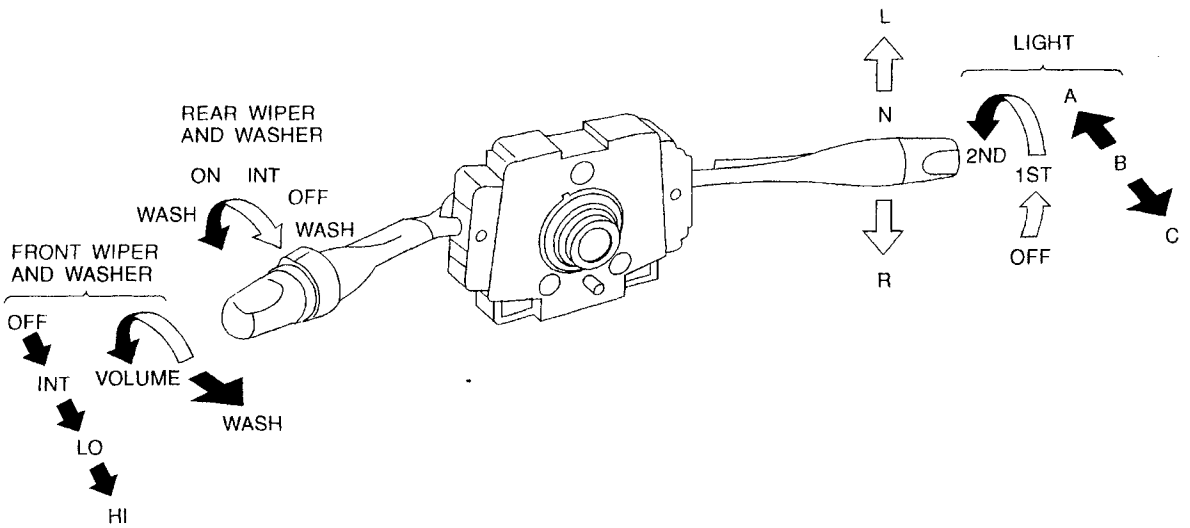

HORN SWITCH (Without air bag)

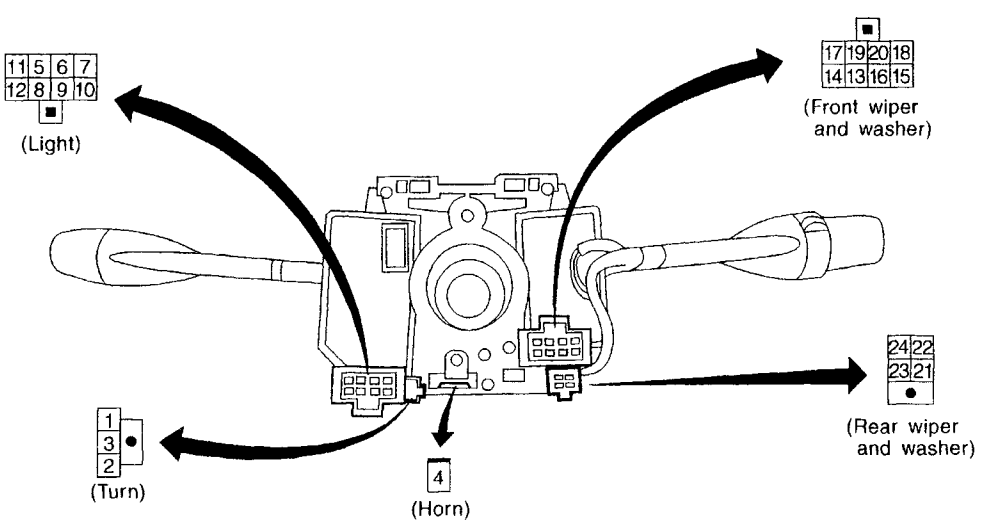



HEL011

## Combination Switch/Check (Cont'd)

### EXCEPT FOR EUROPE AND ISRAEL




LIGHTING SWITCH

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

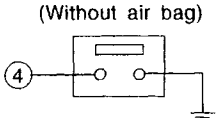
FRONT WIPER AND WASHER SWITCH

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

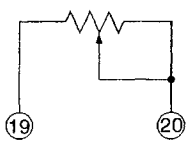
REAR WIPER AND WASHER SWITCH

| | WASH | OFF | INT | ON | WASH |
|---|---|---|---|---|---|
| 21 | | | ○ | | |
| 22 | | | | ○ | ○ |
| 23 | ○ | | | | ○ |
| 24 | ○ | | ○ | ○ | ○ |

HORN SWITCH
(Without air bag)




INTERMITTENT
WIPER VOLUME

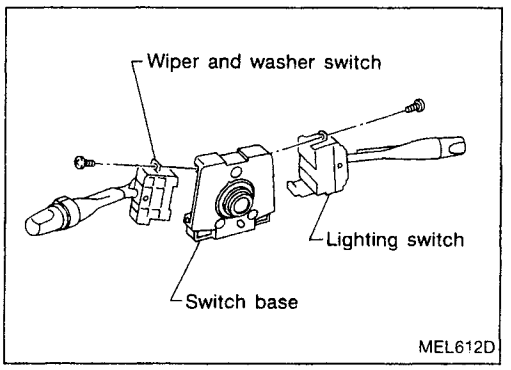



TURN SIGNAL
SWITCH

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

EL

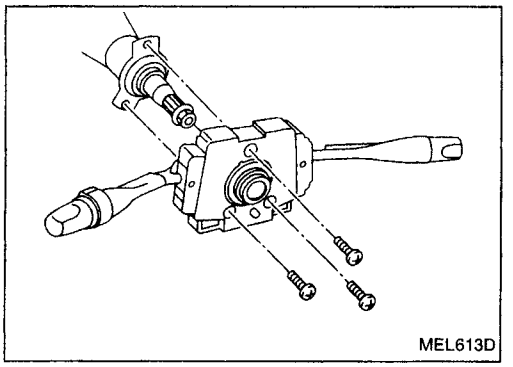
HEL012




## Replacement

**For removing/installing air bag module and spiral cable, refer to RS section.**

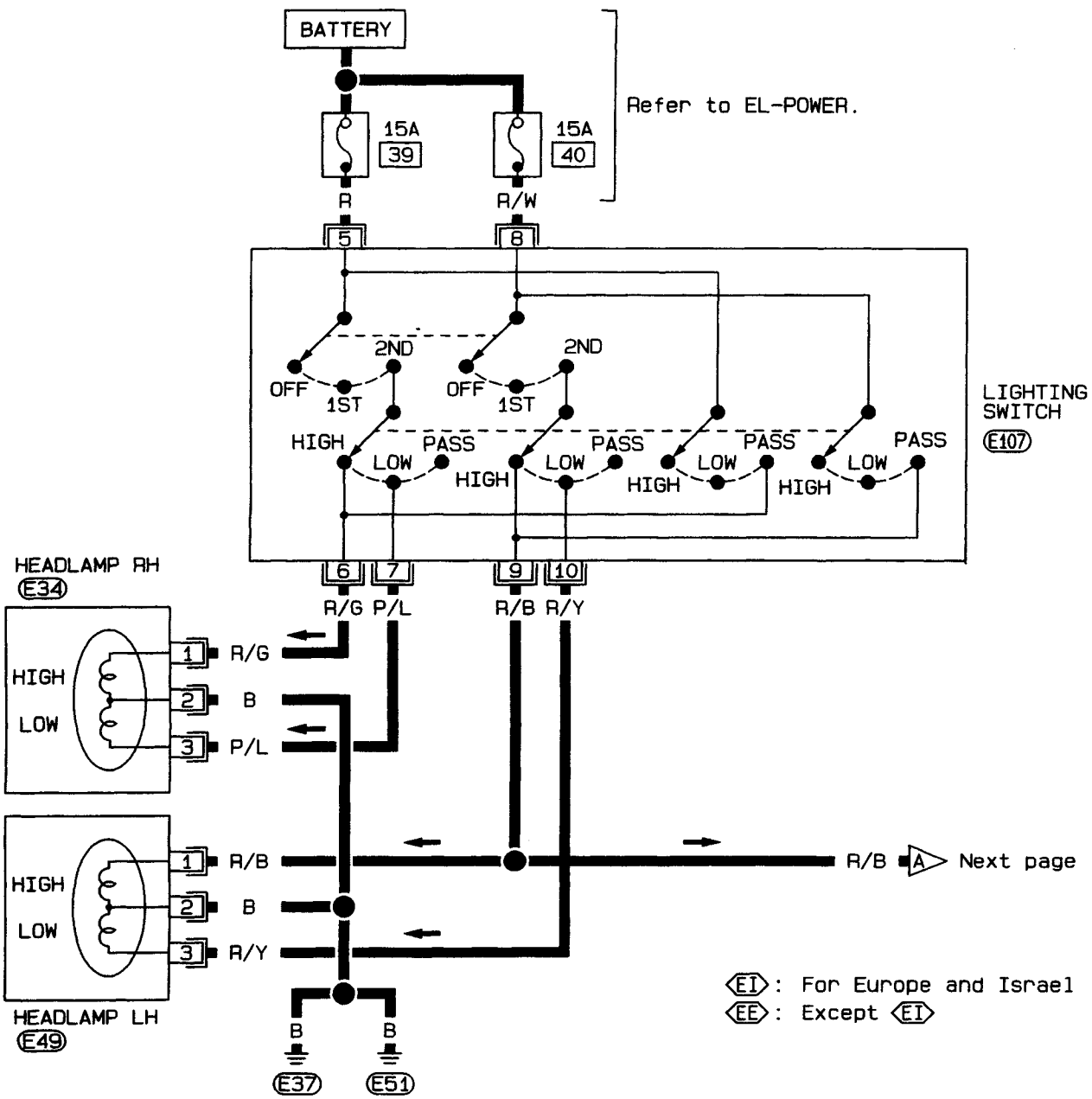
- Each switch can be replaced without removing combination switch base.

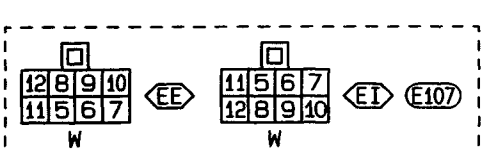


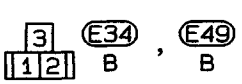

- To remove combination switch base, remove base attaching screw.

## Wiring Diagram — H/LAMP —

EL-H/LAMP-01



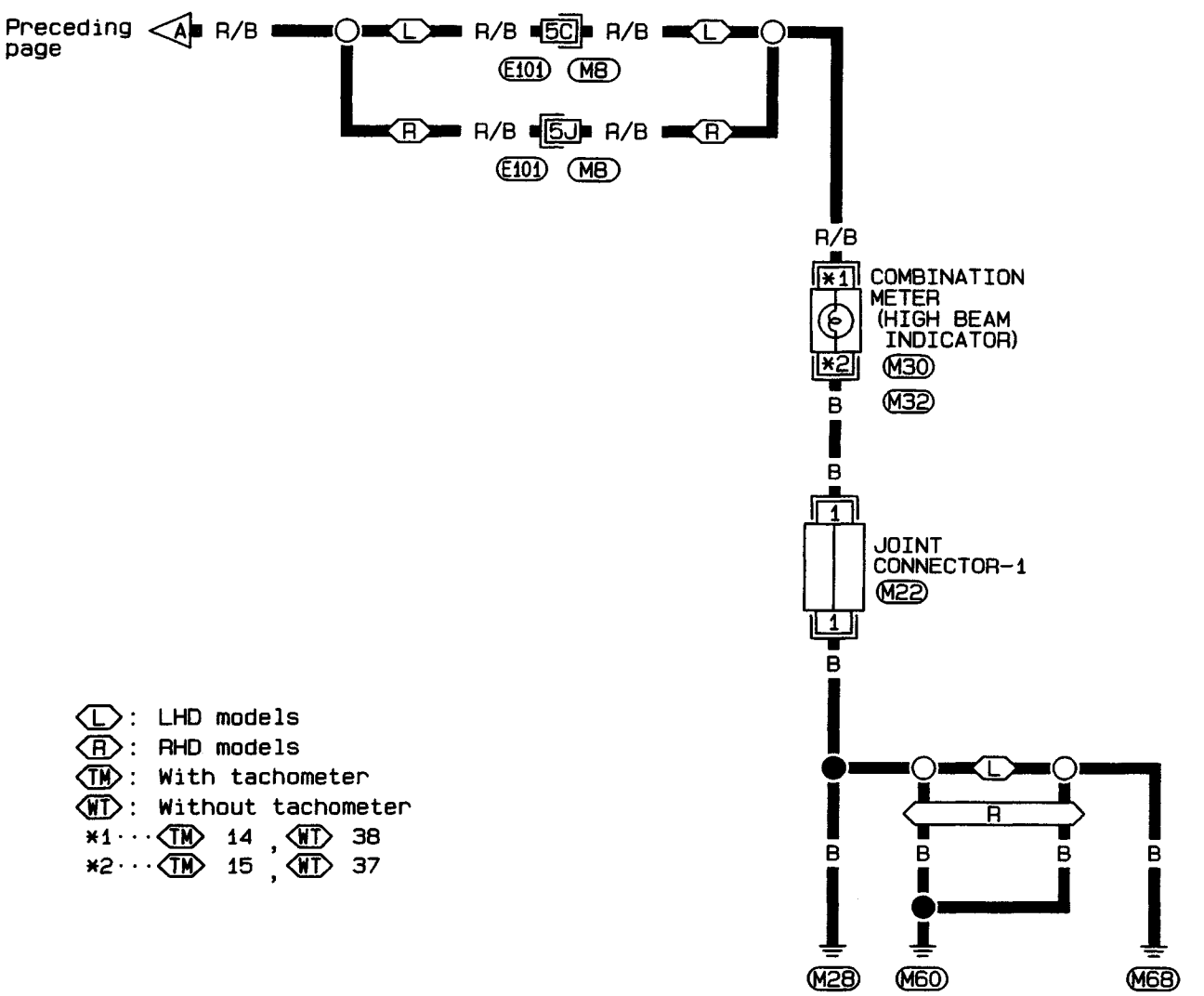



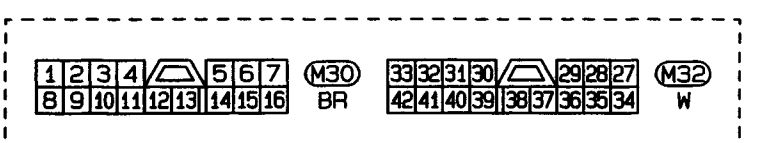

EL

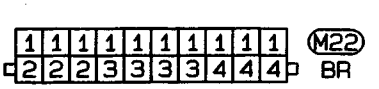
HEL013

## Wiring Diagram — H/LAMP — (Cont'd)

EL-H/LAMP-02




Refer to last page (Foldout page).

M8 , E101

HEL014

## Trouble Diagnoses

| Symptom | Possible cause | Repair order |
|---|---|---|
| LH headlamps do not operate. | 1. Bulb<br>2. LH headlamp ground<br>3. 15A fuse<br><br>4. Lighting switch | 1. Check bulb.<br>2. Check LH headlamp ground. (Terminal ②)<br>3. Check 15A fuse (No. 40, located in fusible link and fuse box).<br>4. Check lighting switch. |
| RH headlamps do not operate. | 1. Bulb<br>2. RH headlamp ground<br>3. 15A fuse<br><br>4. Lighting switch | 1. Check bulb.<br>2. Check RH headlamp ground. (Terminal ②)<br>3. Check 15A fuse (No. 39, located in fusible link and fuse box).<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><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><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><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><br>3. Lighting switch | 1. Check bulb.<br>2. Check P/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. High beam indicator ground<br><br>3. Open in high beam circuit | 1. Check bulb in combination meter.<br>2. Check combination meter ground. [Terminal ⑮ (with tachometer) or ㊲ (without tachometer)]<br>3. Check R/B wire between lighting switch and combination meter for an open circuit. |

## Operation (Daytime light system)

The headlamps' low beam and clearance, license, tail and illumination lamps automatically turn on after starting the engine with lighting switch in "OFF" position.
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 | ○ | X | X | ○ | ○ | X | ○ | X | X | ○ | X | X | ○ | ○ | X | ○ |
| | Low beam | X | X | X | X | X | X | X | ○ | X | ○ | ○ | ○ | X | X | X | X | ○ | X |
| Clearance and tail lamp | | X | X | X | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| License and instrument illumination lamp | | X | X | X | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

○: Lamp "ON"
X: Lamp "OFF"
□ : Added functions

## System Description

The headlamp system on vehicles for North Europe contains a daytime light unit. The unit activates the following whenever the engine is running with the lighting switch in the OFF position:

- Low beam headlamps
- Clearance, license, tail and illumination lamps

Power is supplied at all times

- through 15A fuse (No. 40 , located in the fusible link and fuse box)
- to daytime light unit terminal ② and
- to lighting switch terminal ⑧.

Power is also supplied at all times

- through 15A fuse (No. 39 , located in the fusible link and fuse box)
- to daytime light unit terminal ③ and
- to lighting switch terminal ⑤.

Power is also supplied at all times

- through 10A fuse (No. 36 , located in the fusible link and fuse box)
- to daytime light unit terminal ① and
- to lighting switch terminal ⑪.

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

- through 10A fuse (No. 25 , located in the fuse block)
- to daytime light unit terminal ⑦.

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

- through 7.5A fuse (No. 26 , located in the fuse block)
- to daytime light unit terminal ⑥.

Ground is supplied to daytime light unit terminal ⑨ through body grounds E37 and E51.

### HEADLAMP OPERATION (Daytime light cancel operation)

Power is supplied at all times

- through 10A fuse (No. 36 , located in the fuse and fusible link box)
- to lighting switch terminal ⑪.

When the lighting switch is turned to the 1st or 2nd position

- through lighting switch terminal ⑫,
- to daytime light unit terminal ⑪.

Then daytime light will be canceled. And the lighting system operation will be the same as no daytime light system.

### DAYTIME LIGHT OPERATION

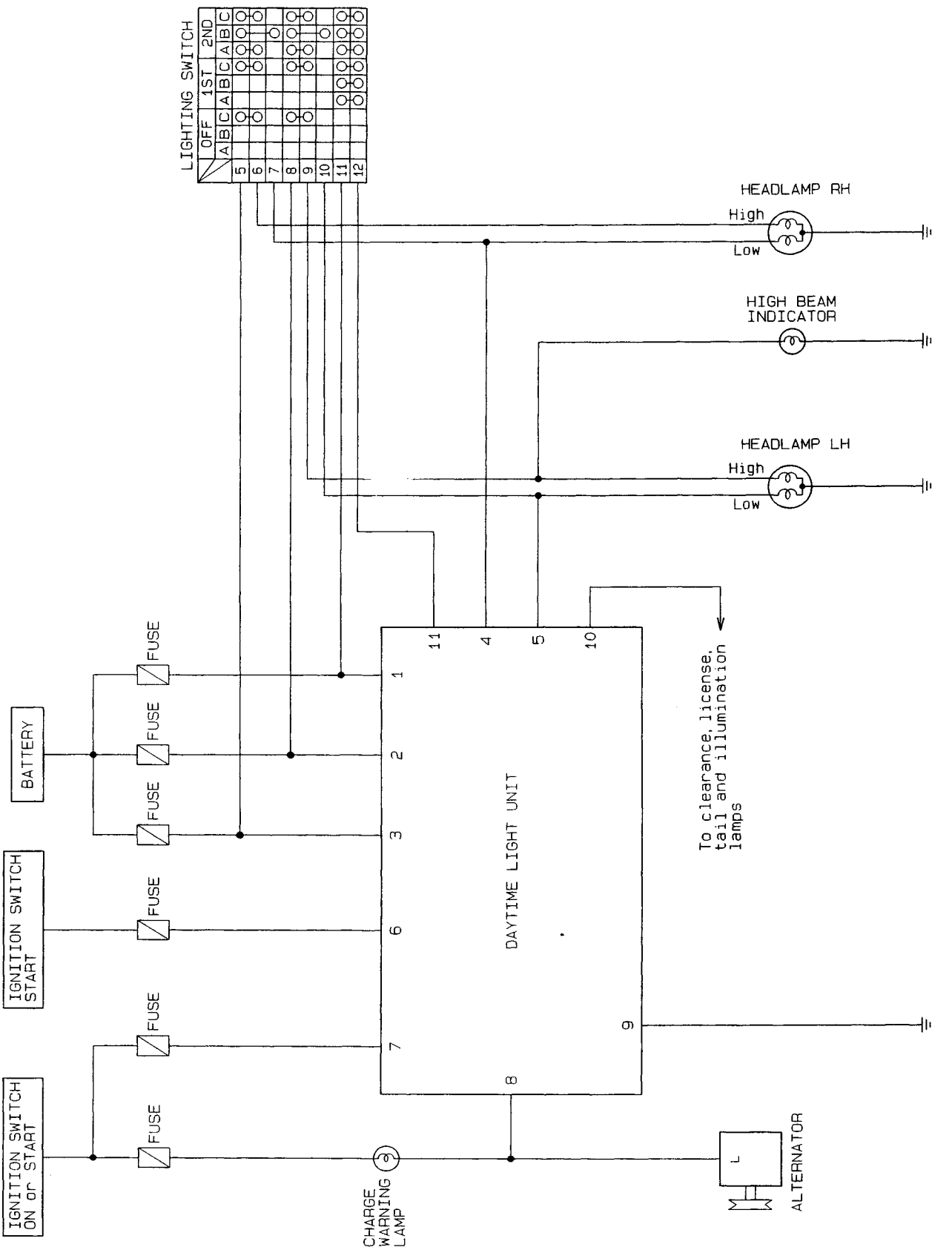
With the engine running and the lighting switch in the OFF position, power is supplied

- from alternator terminal Ⓛ
- to daytime light unit terminal ⑧
- to daytime light unit terminal ②
- through daytime light unit terminal ⑤
- to terminal ③ of LH headlamp
- to daytime light unit terminal ③
- through daytime light unit terminal ④
- to terminal ③ of RH headlamp
- to daytime light unit terminal ①
- through daytime light unit terminal ⑩
- to tail lamp and illumination.

Ground is supplied to terminal ② of each headlamp through body grounds E37 and E51.
Ground is also supplied to terminal ⑨ of daytime light unit through body grounds E37 and E51.

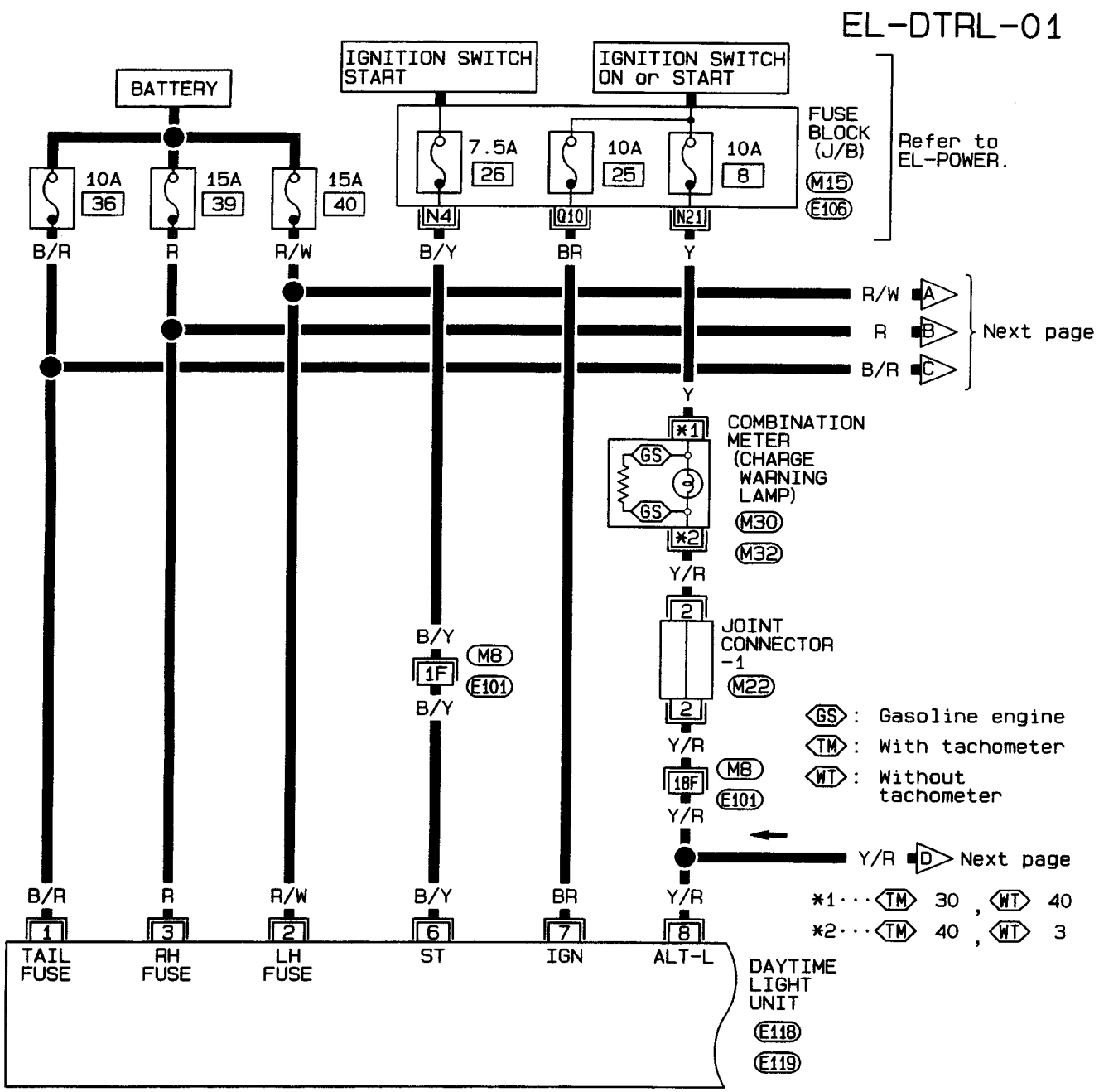
EL

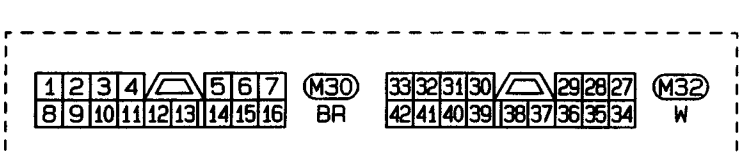
## Schematic

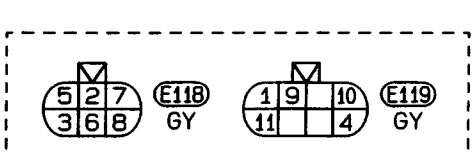


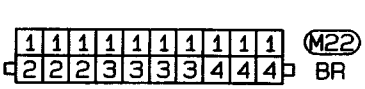

HEL015

## Wiring Diagram — DTRL —




Refer to last page (Foldout page).

M8 , E101

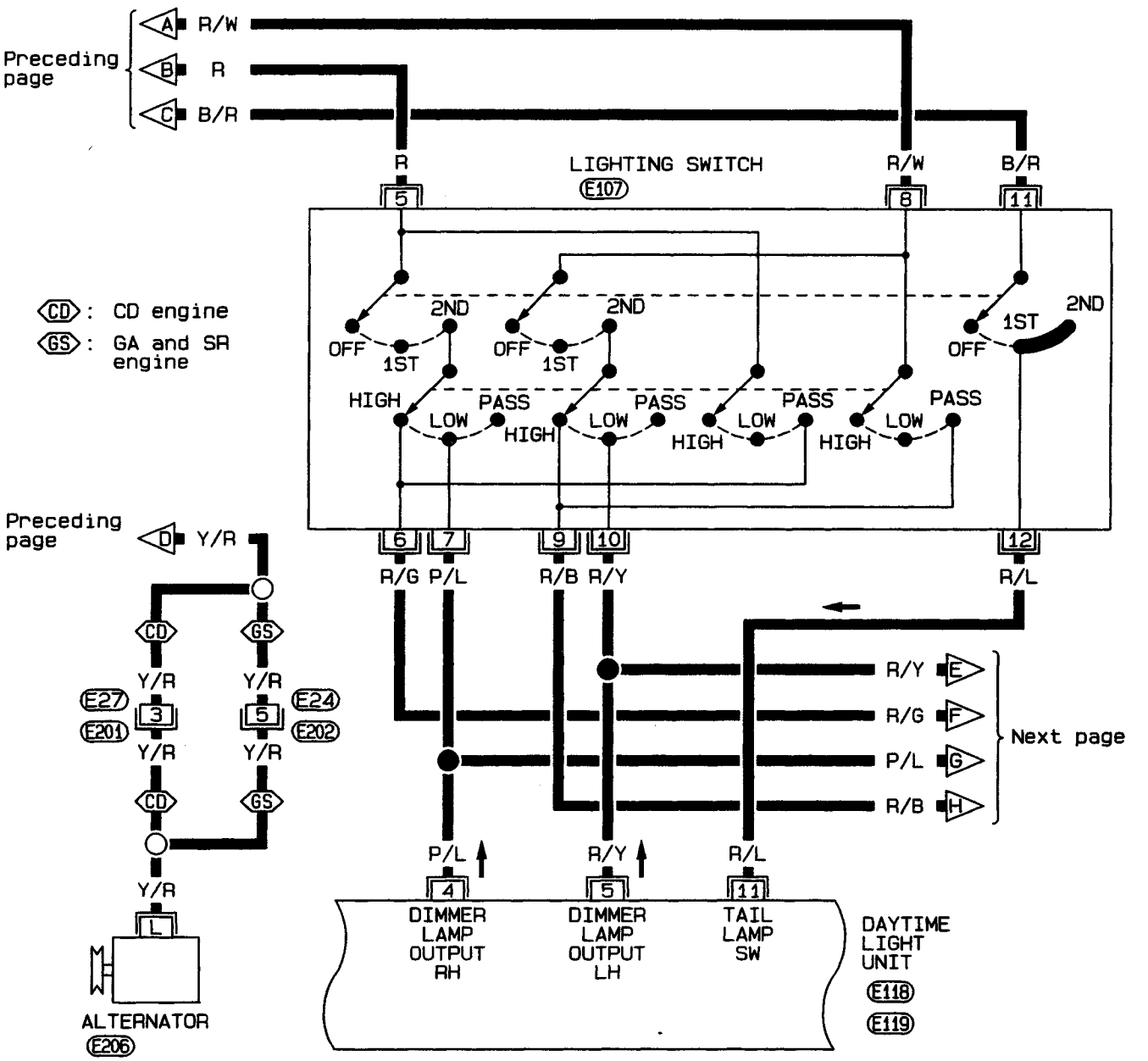
M15 , E106

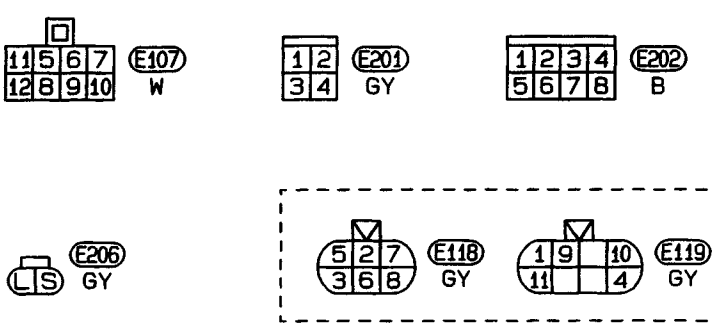
EL

HEL016

## Wiring Diagram — DTRL — (Cont'd)

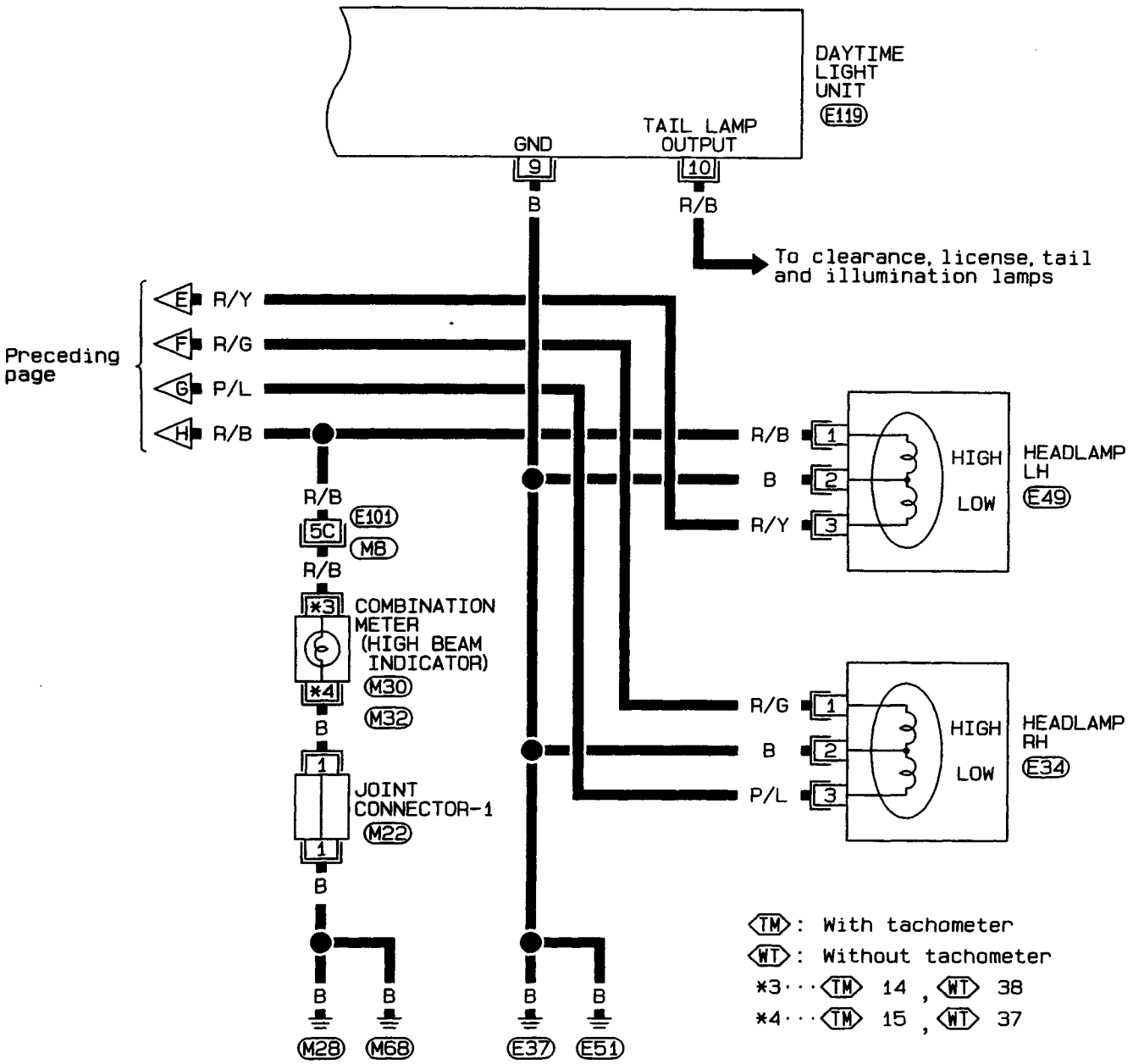
EL-DTRL-02

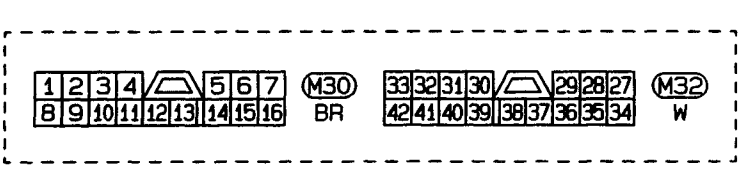


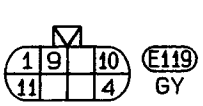



## Wiring Diagram — DTRL — (Cont'd)

EL-DTRL-03

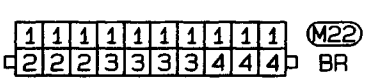









Refer to last page (Foldout page).

M8 , E101

EL

HEL018

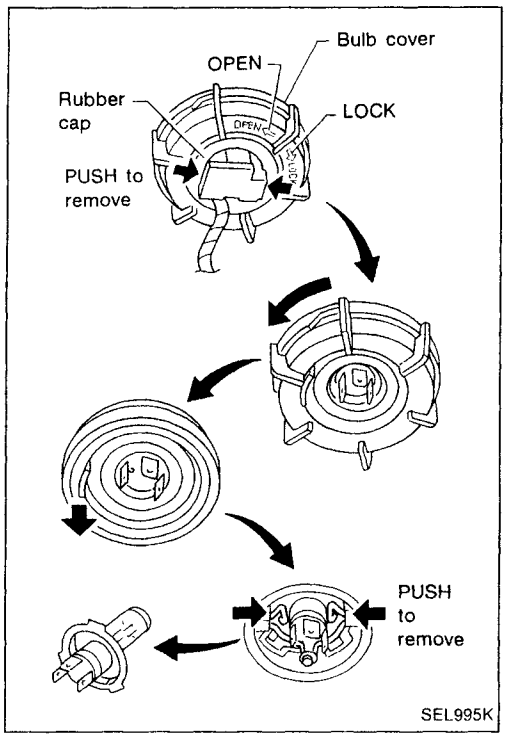
## Trouble Diagnoses (Daytime Light)

### DAYTIME LIGHT CONTROL UNIT INSPECTION TABLE

**(Input/output operation signal)**

| Terminal No. | Connections | INPUT (I)/ OUTPUT (O) | Operated condition | | Voltage (V) (Approximate values) |
|---|---|---|---|---|---|
| 1 | Power source for illumination & tail lamp | — | — | | 12 |
| 2 | Power source for headlamp LH | — | — | | 12 |
| 3 | Power source for headlamp RH | — | — | | 12 |
| 4 | Headlamp RH | O | ON (daytime light operating*) | | 12 |
| | | | OFF | | 0 |
| 5 | Headlamp LH | O | ON (daytime light operating*) | | 12 |
| | | | OFF | | 0 |
| 6 | Start signal | I | Ignition switch | START | 12 |
| | | | | ON, ACC or OFF | 0 |
| 7 | Power source | — | Ignition switch | ON or START | 12 |
| | | | | ACC or OFF | 0 |
| 8 | Alternator "L" terminal | I | Engine | Running | 12 |
| | | | | Stopped | 0 |
| 9 | Ground | — | — | | — |
| 10 | Illumination & tail lamp | O | ON (daytime light operating*) | | 12 |
| | | | OFF | | 0 |
| 11 | Lighting switch | I | 1ST·2ND position | | 12 |
| | | | OFF | | 0 |

*: Daytime light operating: Lighting switch in "OFF" position with engine running.




## 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. Disconnect the harness connector from the back side of the bulb.
3. Turn the bulb retaining ring counterclockwise until it is free from the headlamp reflector, and then remove it.
4. Pull off the rubber cap.
5. Remove the headlamp bulb carefully. Do not shake or rotate the bulb when removing it.
6. 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.**

**Bulb Specifications**

| Item | Wattage (W) |
|---|---|
| Semi-sealed beam | |
| High/Low | 60/55 |

## Aiming Adjustment

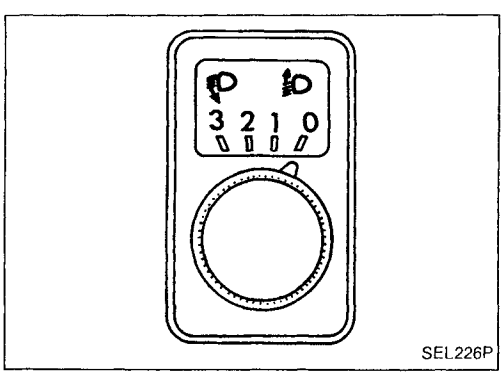
When performing headlamp aiming adjustment, use an aiming machine, aiming wall screen or headlamp tester. Aimers should be in good repair, calibrated and operated in accordance with respective operation manuals.

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

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

**CAUTION:**

- **Keep all tires inflated to correct pressures.**
- **Place vehicle and tester on one and same flat surface.**
- **See that vehicle is unloaded (except for full levels of coolant, engine oil and fuel, and spare tire, jack and tools). Have the driver or equivalent weight placed in driver's seat.**

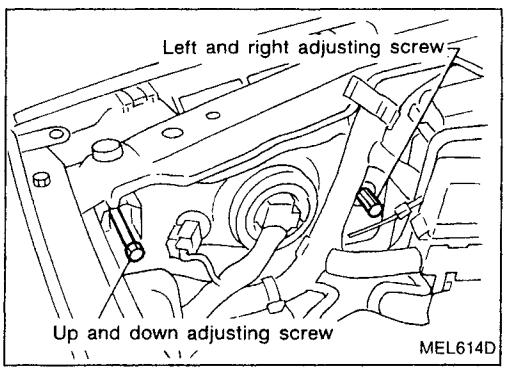



**CAUTION:**

**Be sure aiming switch is set to "0" when performing aiming adjustment on vehicles equipped with headlamp aiming control.**

EL

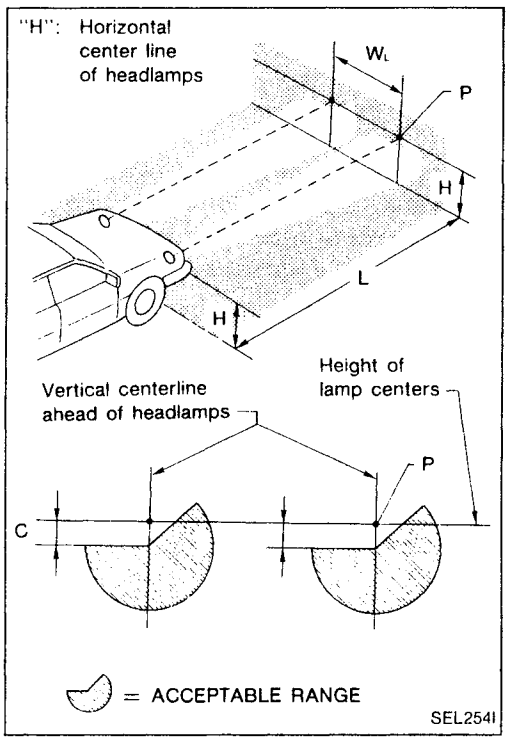
## Aiming Adjustment (Cont'd)




### 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.**



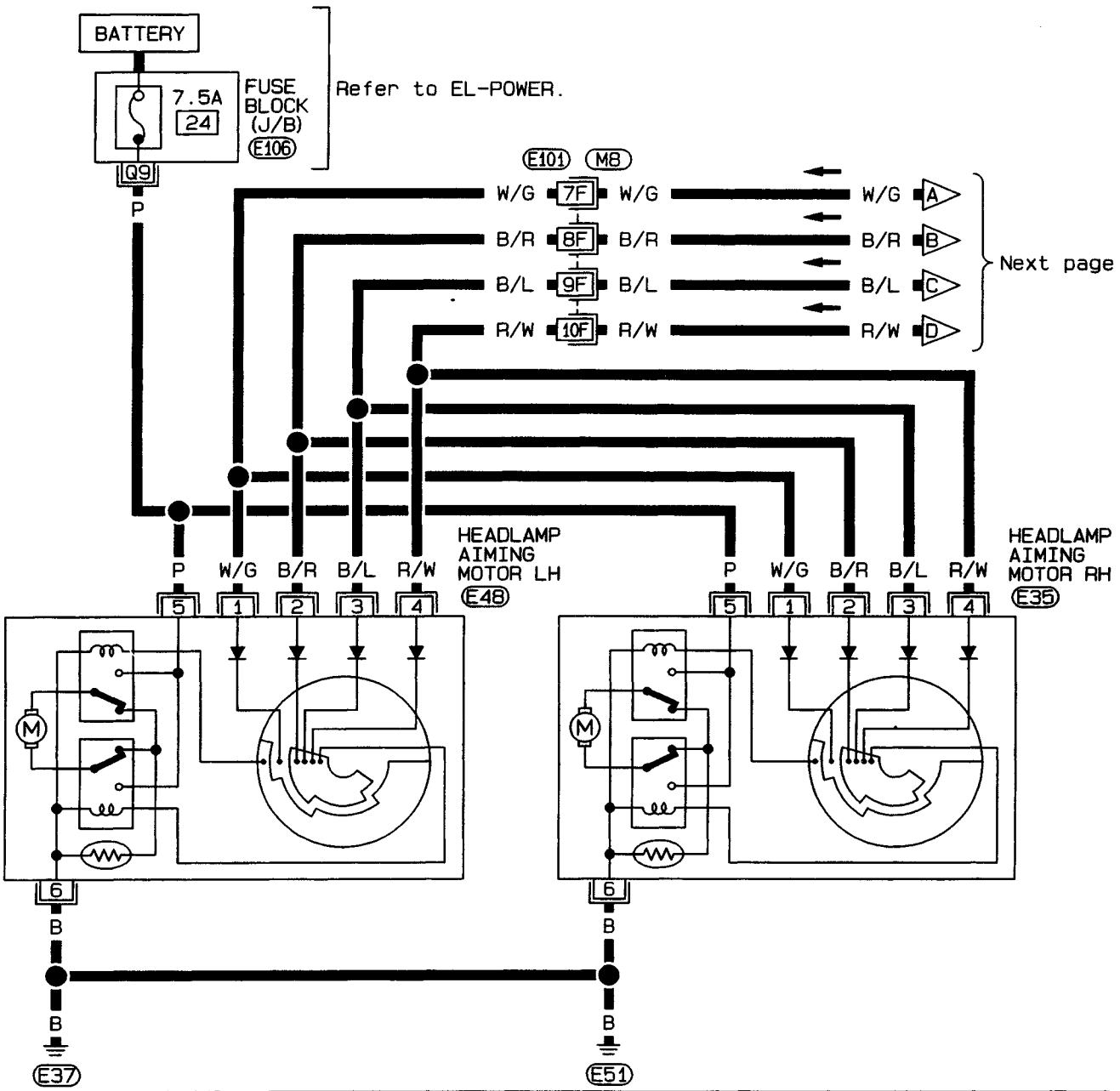

- **Adjust headlamps so that main axis of light is parallel to center line of body and is aligned with point P shown in illustration.**
- **Figure to the left shows headlamp aiming pattern for driving on right side of road; for driving on left side of road, aiming pattern is reversed.**
- **Dotted lines in illustration show center of headlamp.**

**"H": Horizontal center line of headlamps**
**"$W_L$": Distance between each headlamp center**
**"L": 5,000 mm (196.85 in)**
**"C": 65 mm (2.56 in)**

## Wiring Diagram — AIM —

### LHD MODELS

EL-AIM-01




1 2 3 4 5 6 E35 GY , E48 GY

Refer to last page (Foldout page).

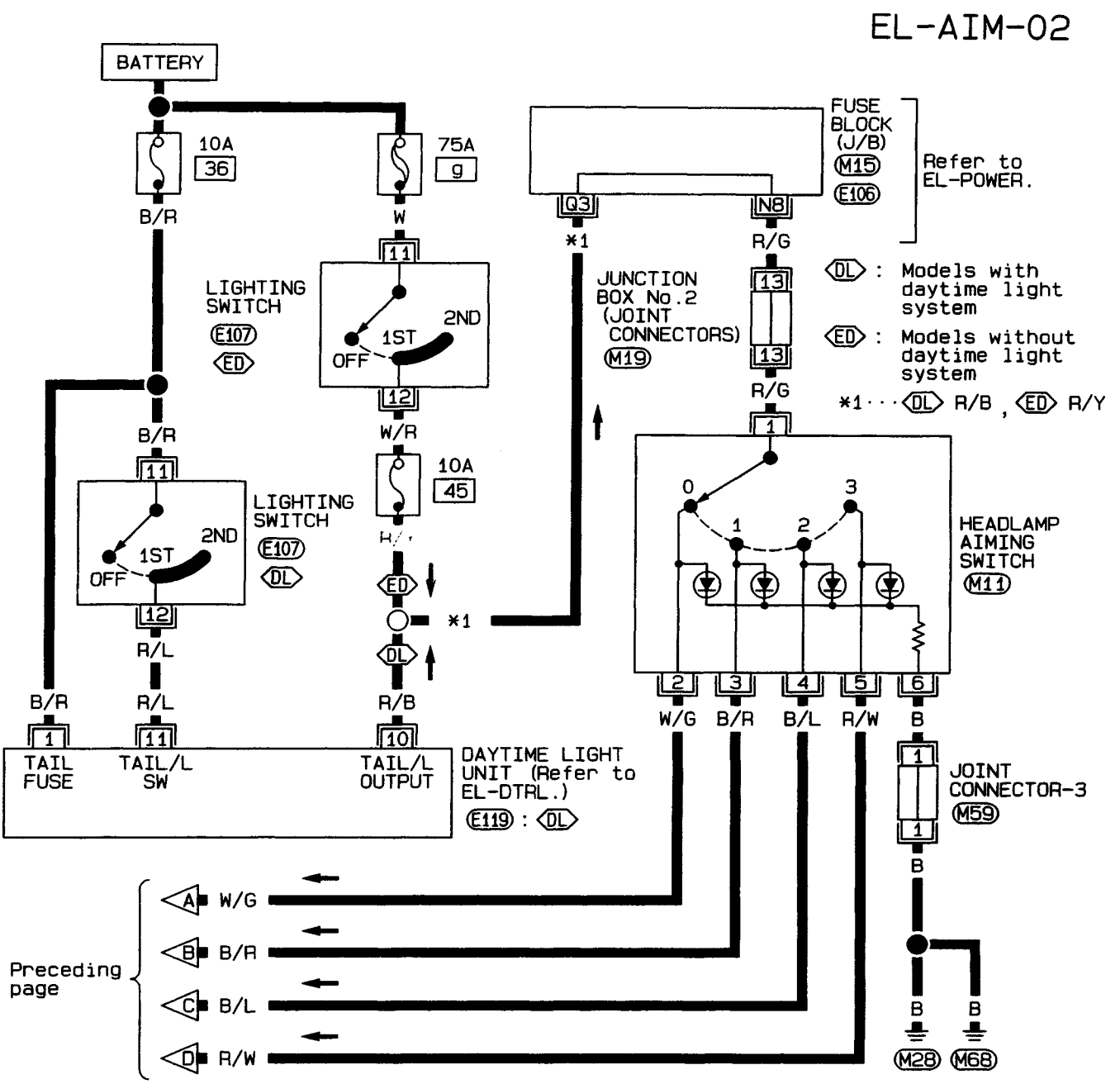
M8 , E101

E106

EL

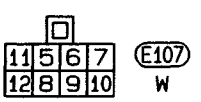
HEL019

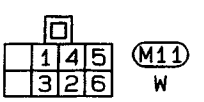
## Wiring Diagram — AIM — (Cont'd)

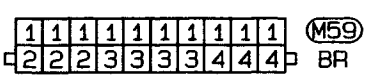









Refer to last page (Foldout page).

M15 , E106

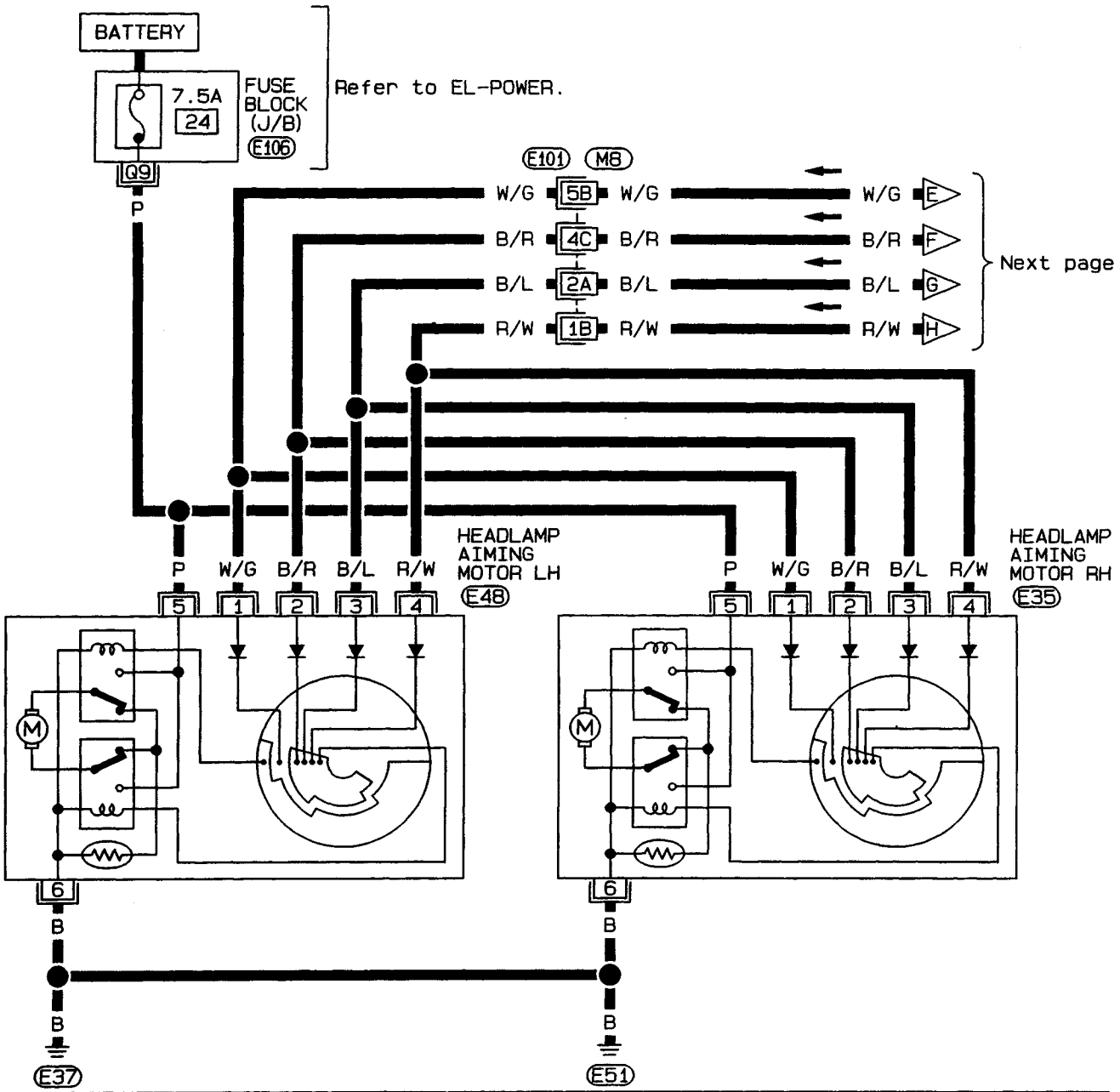
M19

HEL020

## Wiring Diagram — AIM — (Cont'd)

**RHD MODELS**

EL-AIM-03







Refer to last page (Foldout page).

M8 , E101

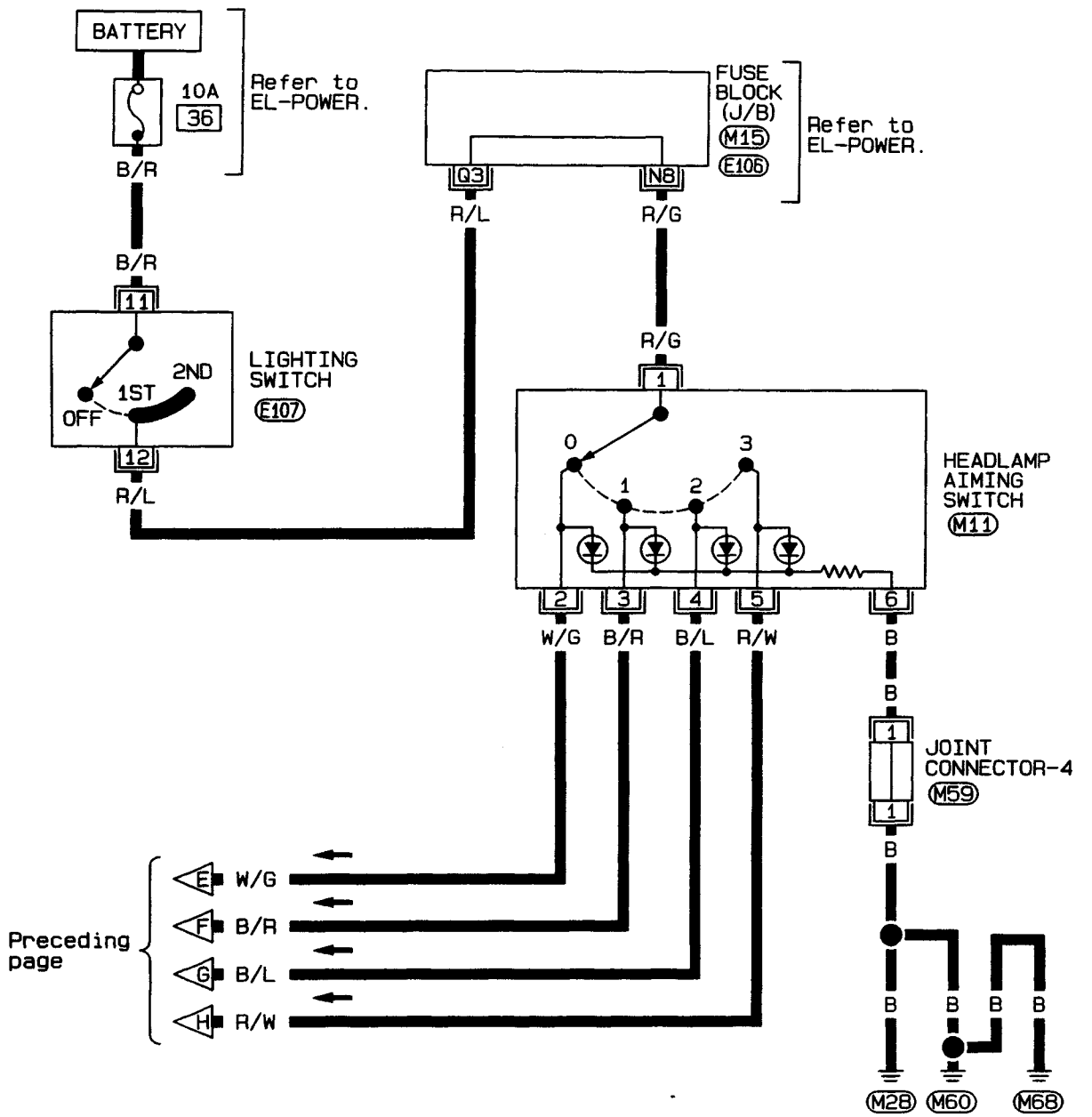
E106

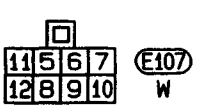
EL

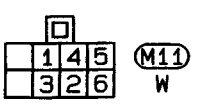
HEL021

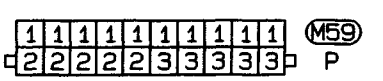
## Wiring Diagram — AIM — (Cont'd)

EL-AIM-04



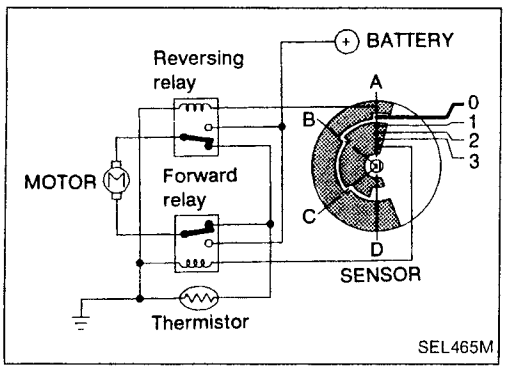



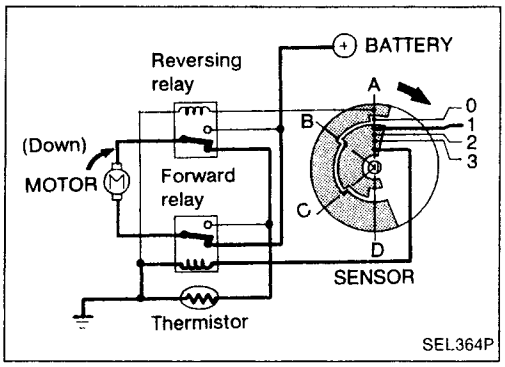



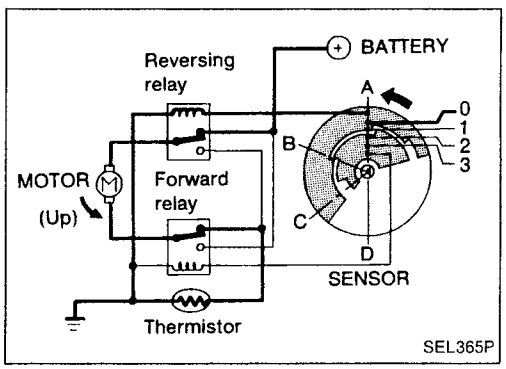

Refer to last page (Foldout page).

M15 , E106

HEL022




## Description

### CIRCUIT OPERATION

### [Example]

#### Aiming switch "0"

- When the aiming switch is set to "0", the motor will not start. This is because the power terminals are positioned at the nonconductive section of the sensor's rotary unit.

#### Aiming switch "0" → "1"

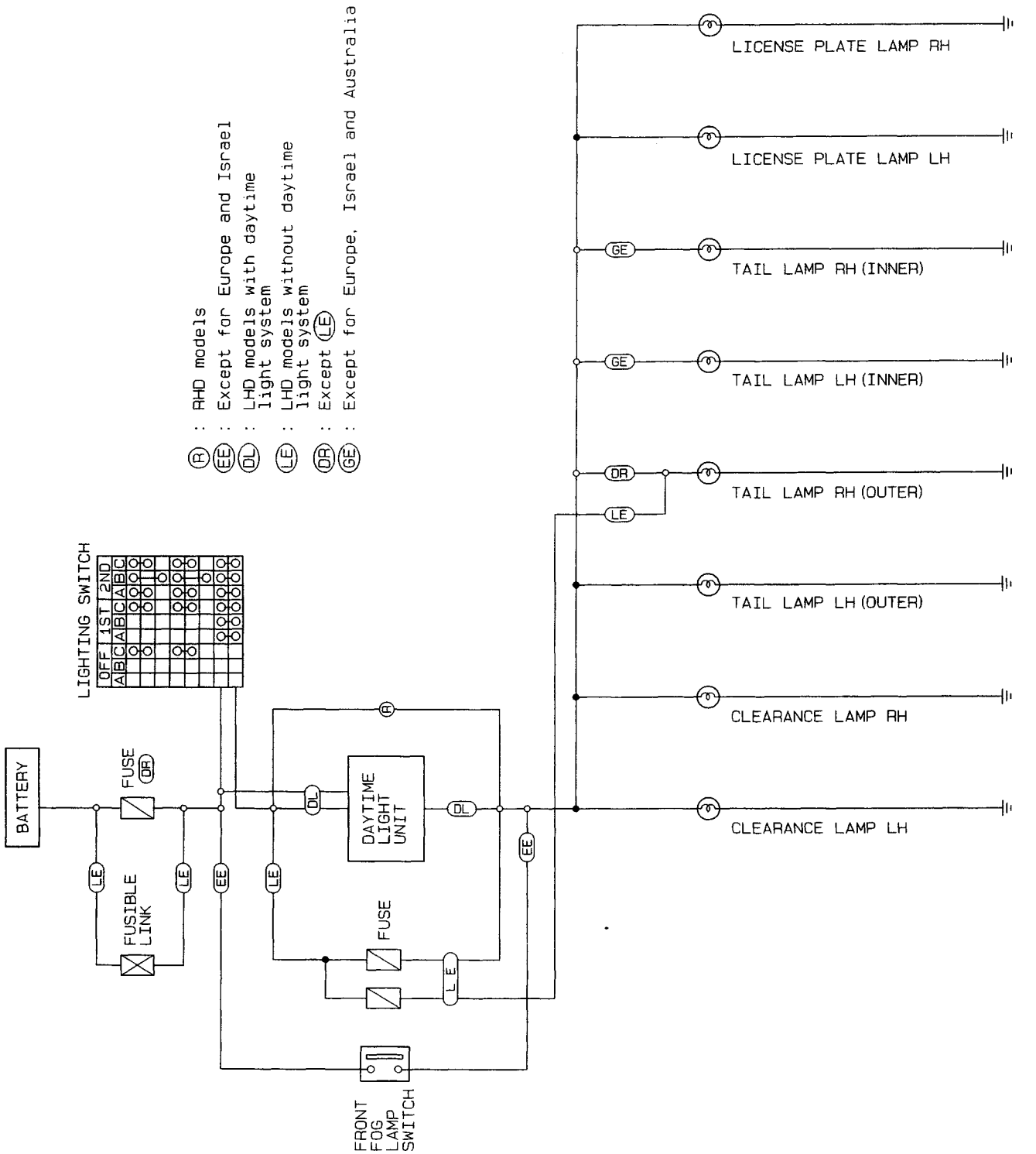
- When the aiming switch is moved from "0" to "1", the sensor's conductive section activates the relay. Power is supplied through the relay to the motor. The headlamps will then move in the "DOWN" direction.
- The motor continues to rotate while the rotary unit of the sensor moves from point A to point B.
- The power terminals will then be positioned at the nonconductive section, disconnecting the power to the motor. The motor will then stop.

#### Aiming switch "1" → "0"

- When the aiming switch is moved from "1" to "0", the sensor's conductive section activates the relay. Power is supplied through the relay to the motor. The motor will rotate to move the headlamps in the "UP" direction.
- When the rotary unit of the sensor moves from point B to point A, the motor will stop.

EL

## Clearance, License and Tail Lamps/Schematic

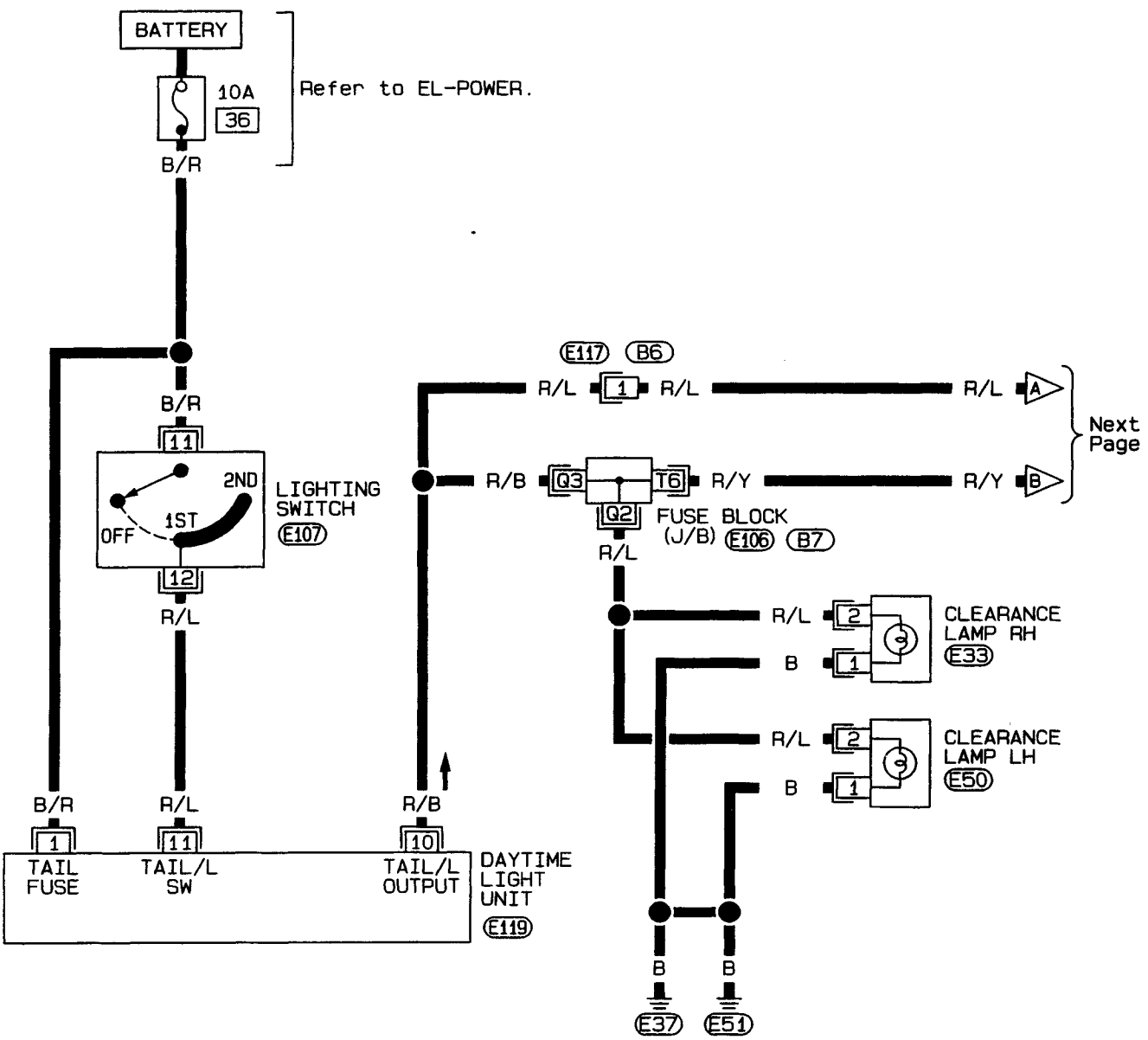


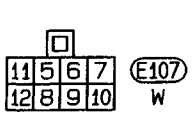

HEL032

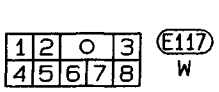
## Clearance, License and Tail Lamps/Wiring Diagram — TAIL/L —

### LHD MODELS WITH DAYTIME LIGHT SYSTEM

EL-TAIL/L-01

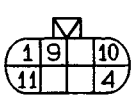









Refer to last page (Foldout page).

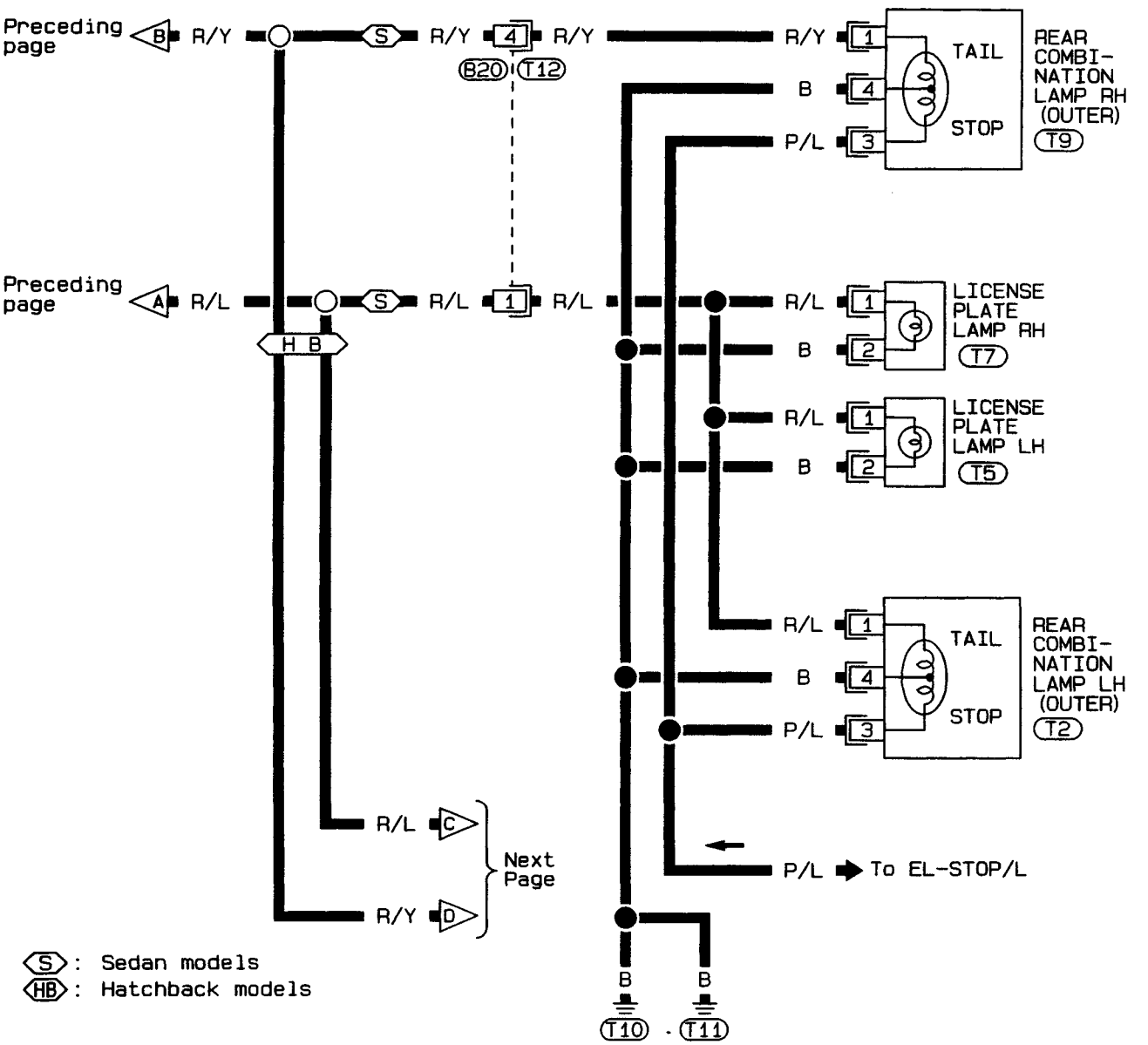
E106, B7

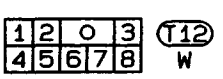
HEL023

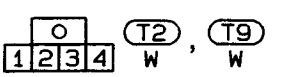
EL

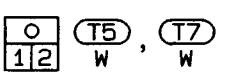
## Clearance, License and Tail Lamps/Wiring Diagram — TAIL/L — (Cont'd)

EL-TAIL/L-02



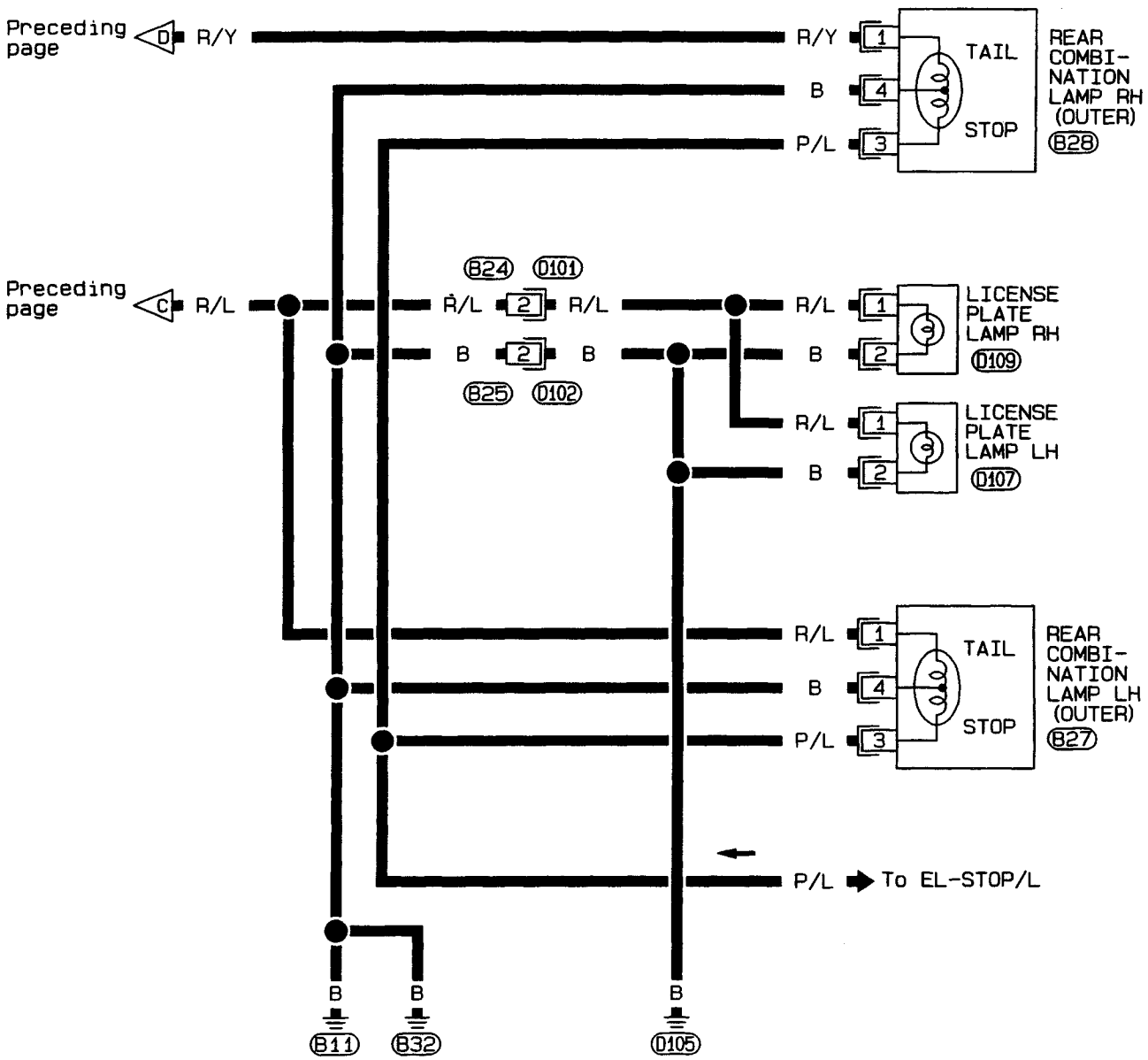



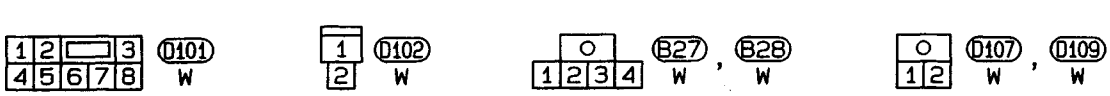




HEL024

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

EL-TAIL/L-03



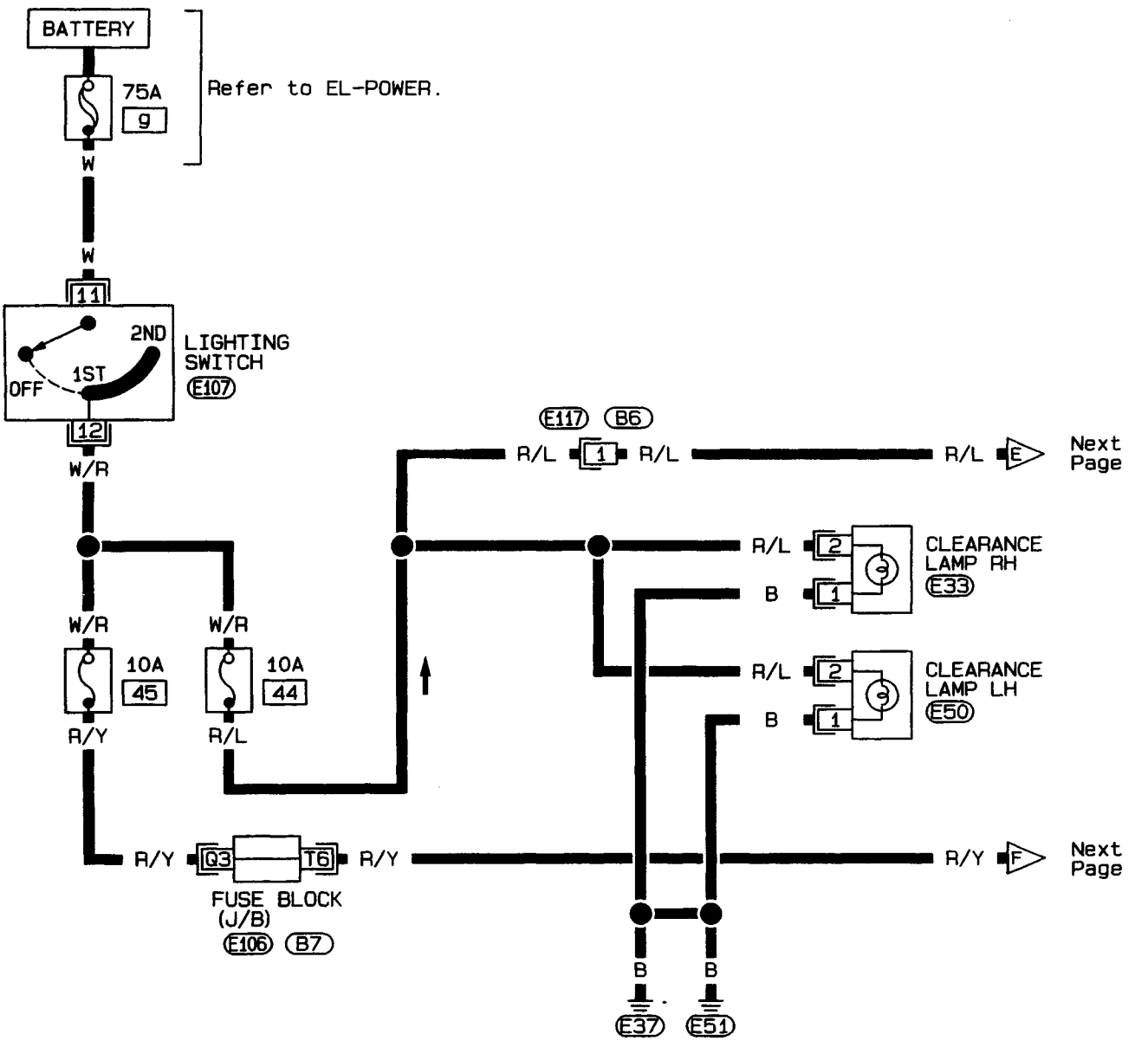

EL

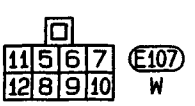
HEL025

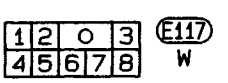
## Clearance, License and Tail Lamps/Wiring Diagram — TAIL/L — (Cont'd)

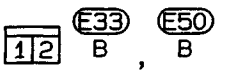
### LHD MODELS WITHOUT DAYTIME LIGHT SYSTEM

EL-TAIL/L-04



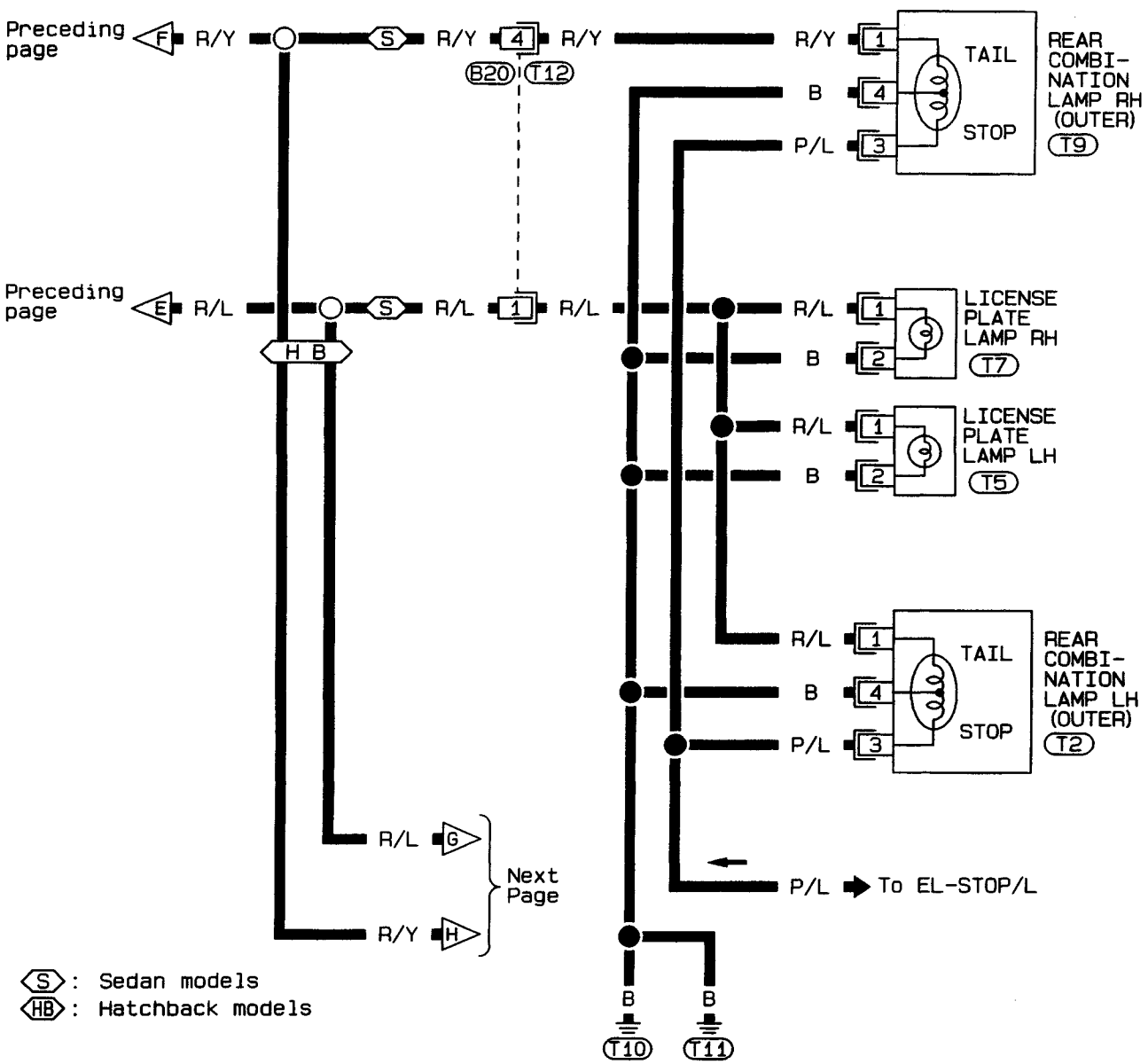

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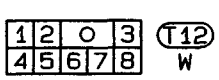
E106, B7

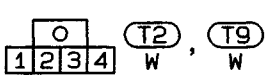
HEL026

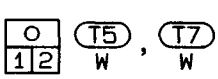
## Clearance, License and Tail Lamps/Wiring Diagram — TAIL/L — (Cont'd)

EL-TAIL/L-05



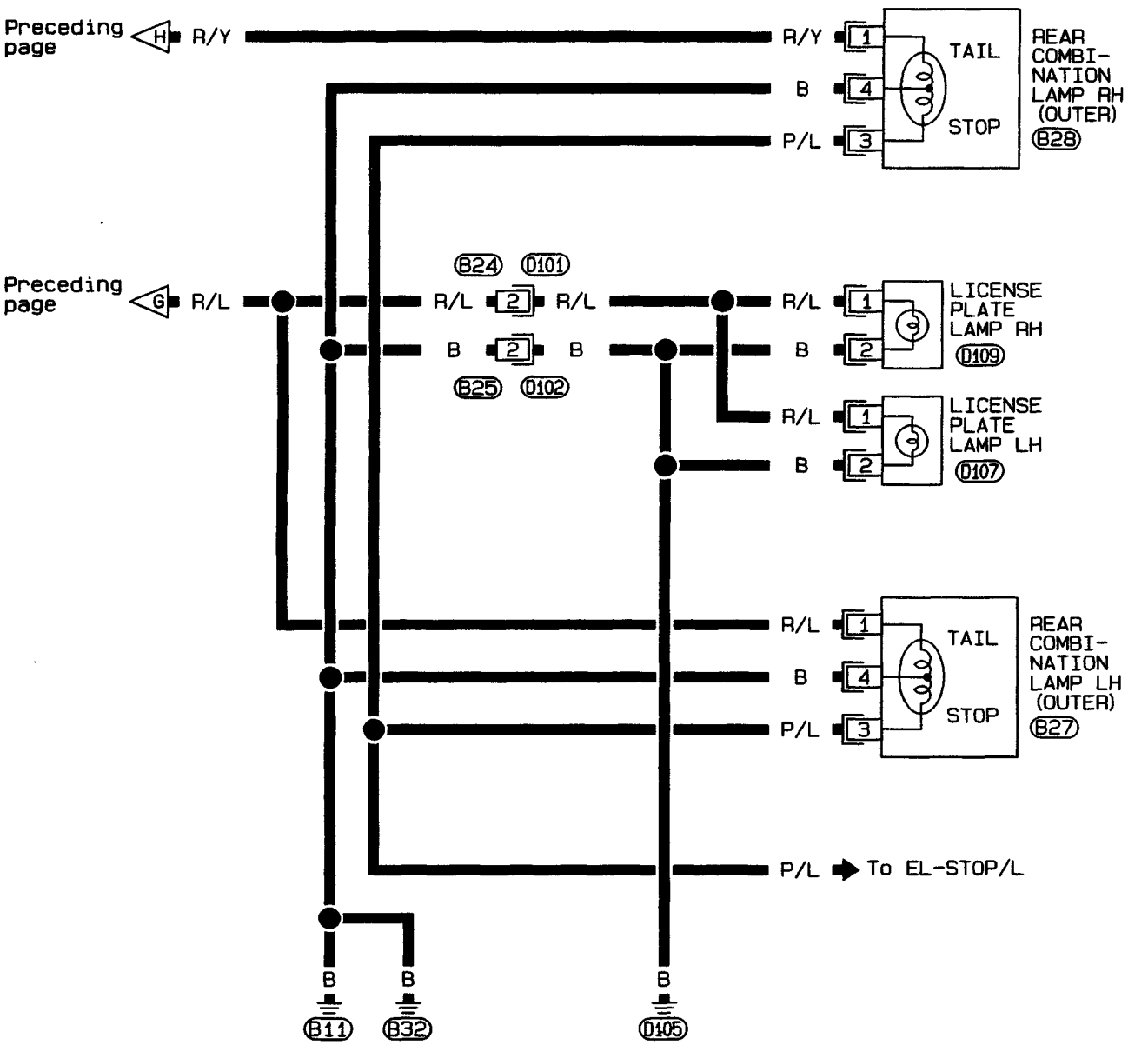



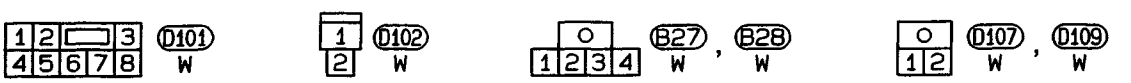

EL

HEL027

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

EL-TAIL/L-06



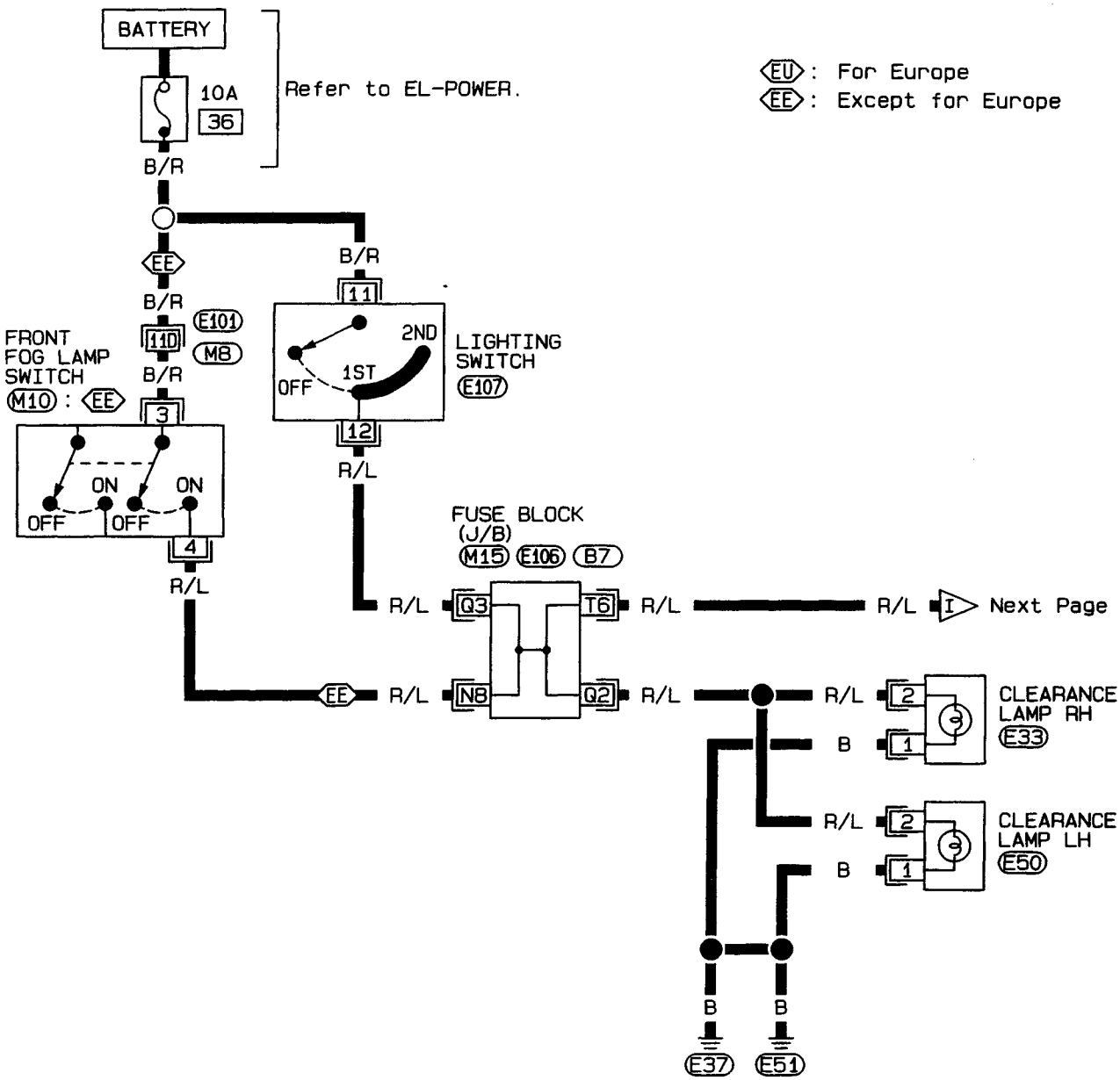



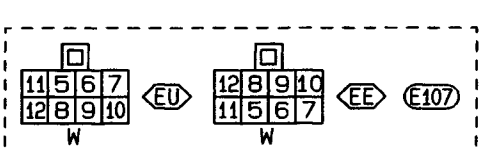

HEL028

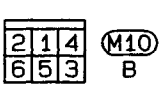
## Clearance, License and Tail Lamps/Wiring Diagram — TAIL/L — (Cont'd)

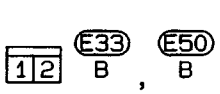
### RHD MODELS

EL-TAIL/L-07




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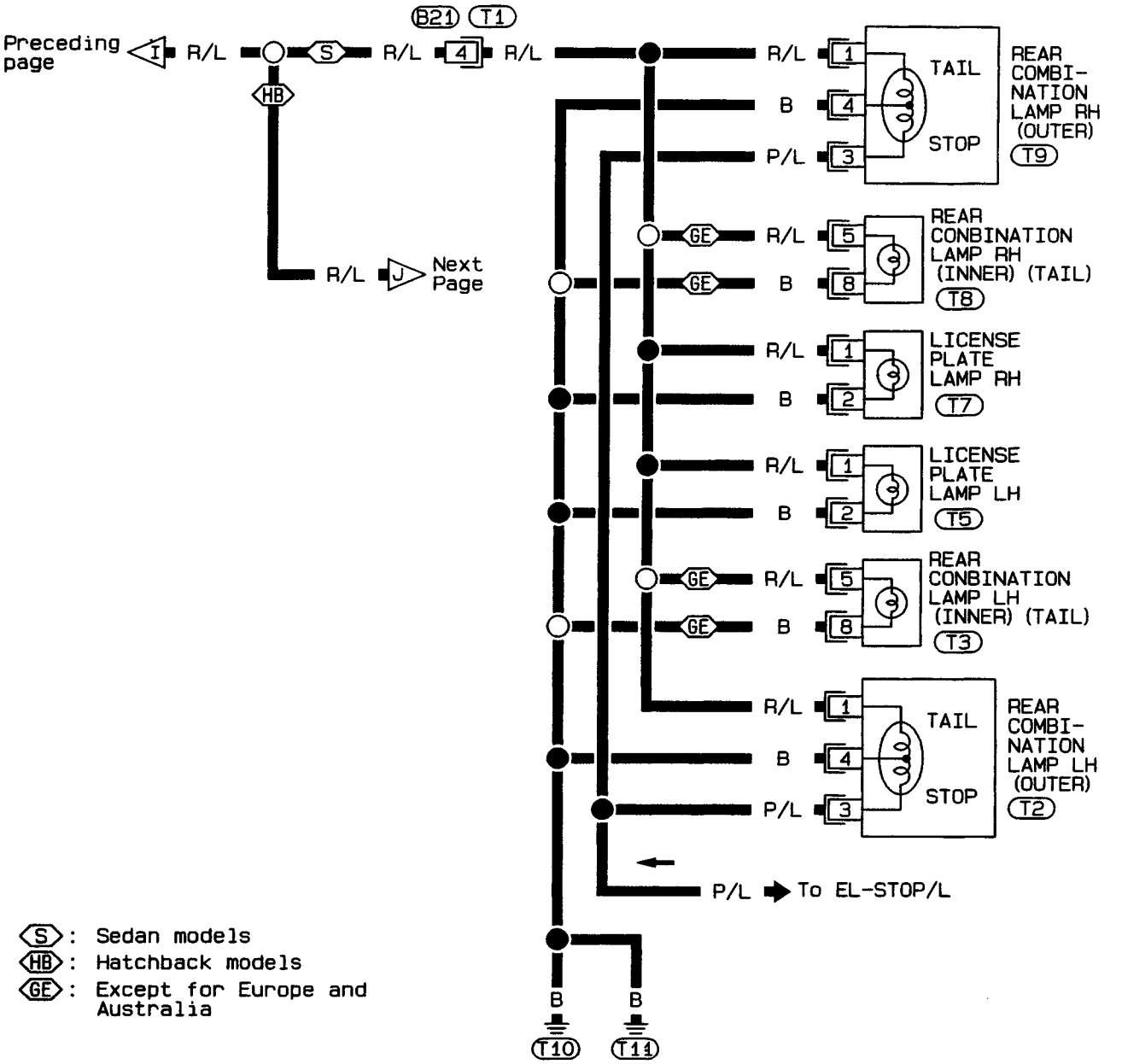
M8, E101
M15, E106, B7

EL

HEL029

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

EL-TAIL/L-08



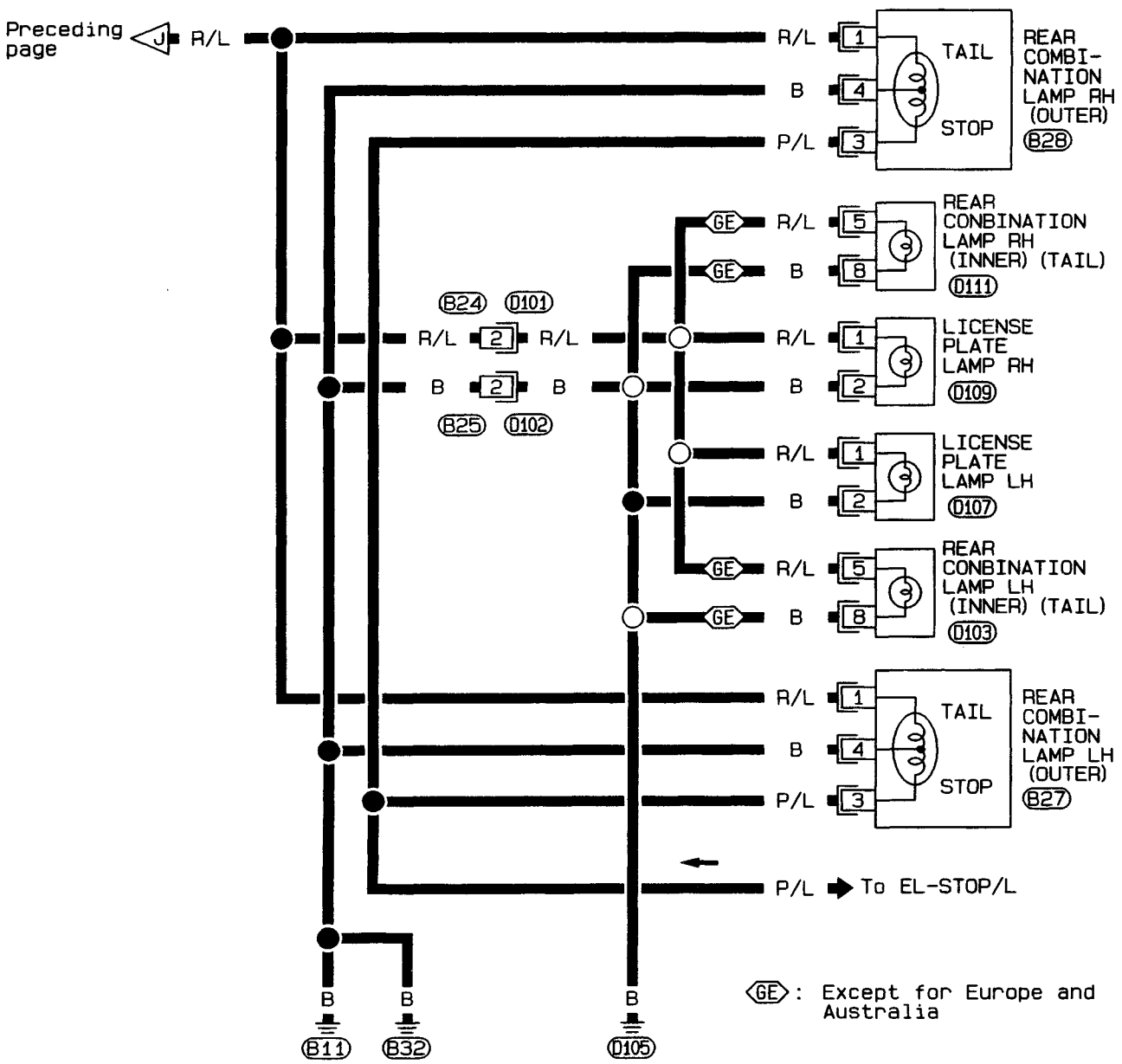


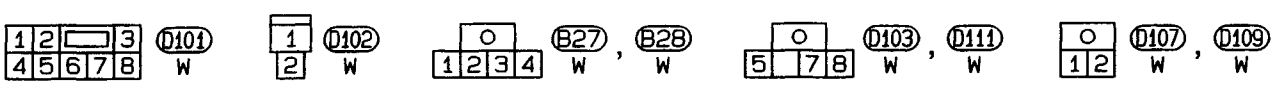


HEL030

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

EL-TAIL/L-09



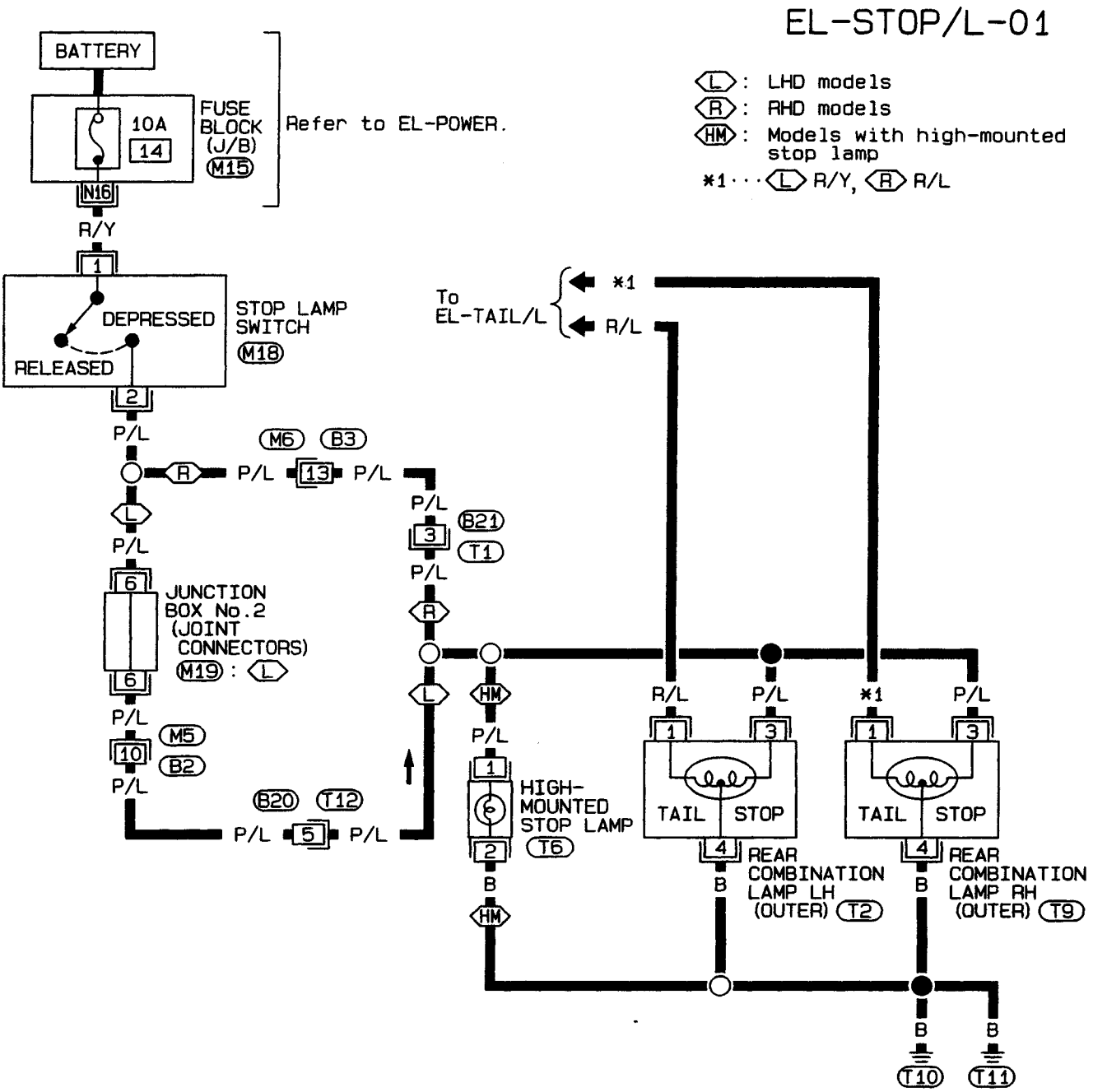



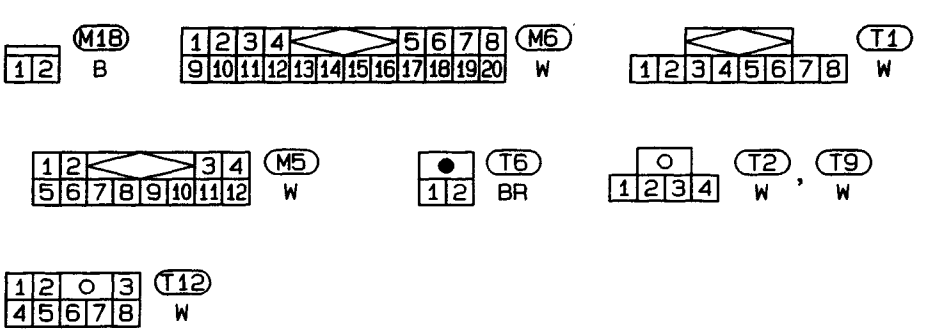

EL

HEL031

## Stop Lamp/Wiring Diagram — STOP/L —

### SEDAN MODELS



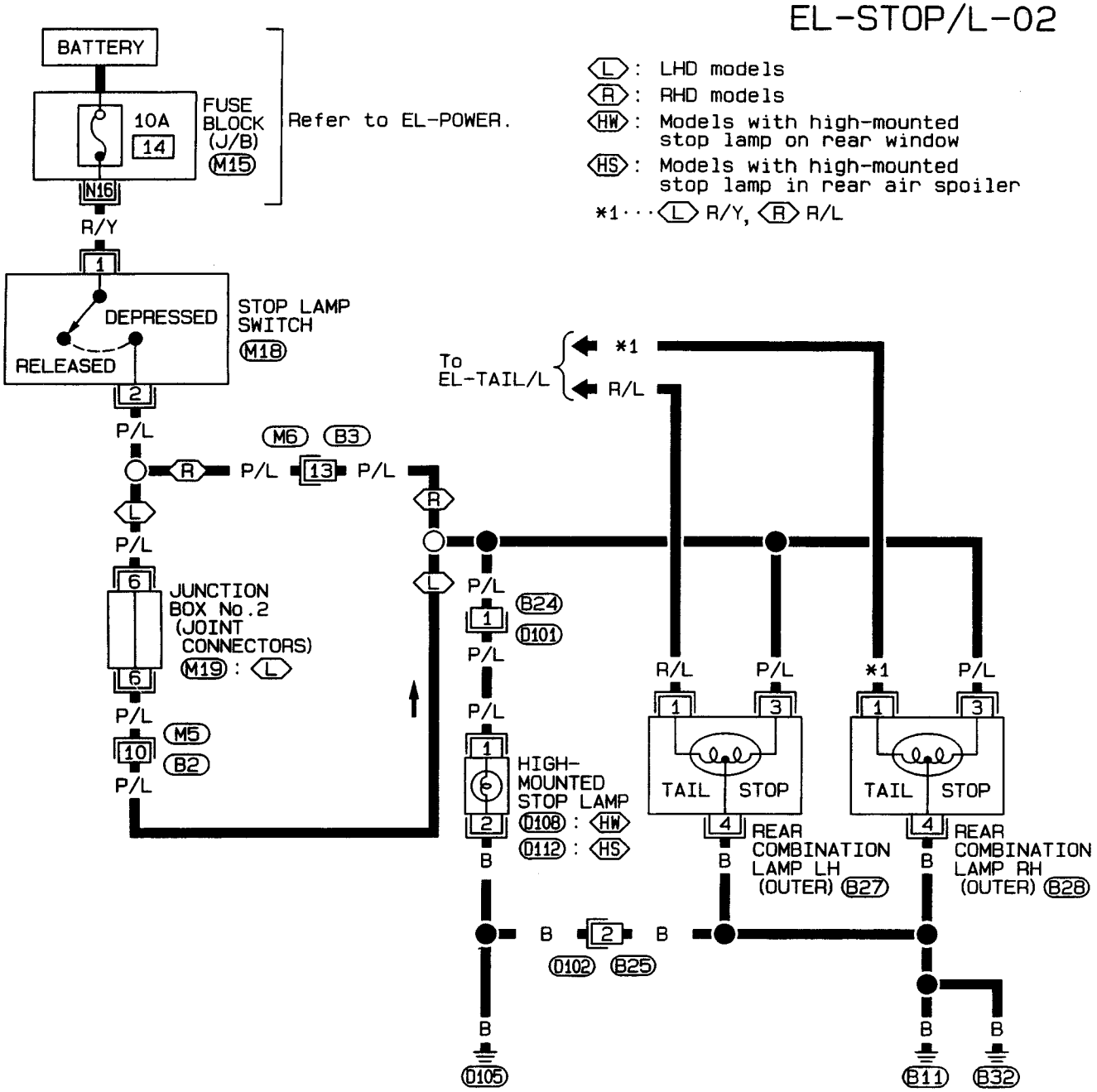

Refer to last page (Foldout page).
M15
M19

HEL033

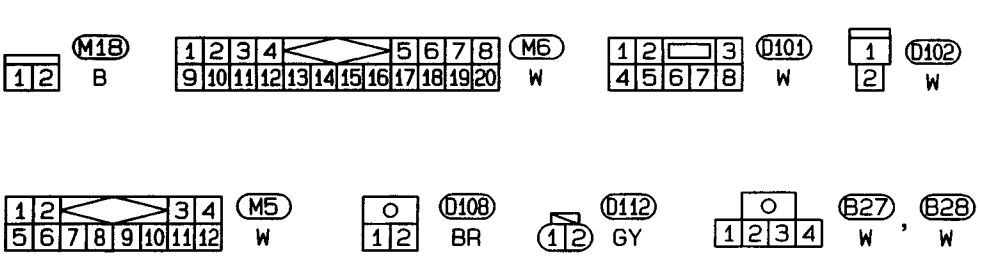
## Stop Lamp/Wiring Diagram — STOP/L — (Cont'd)

### HATCHBACK MODELS

EL-STOP/L-02




: LHD models
: RHD models
: Models with high-mounted stop lamp on rear window
: Models with high-mounted stop lamp in rear air spoiler
*1 ··· L R/Y, R R/L




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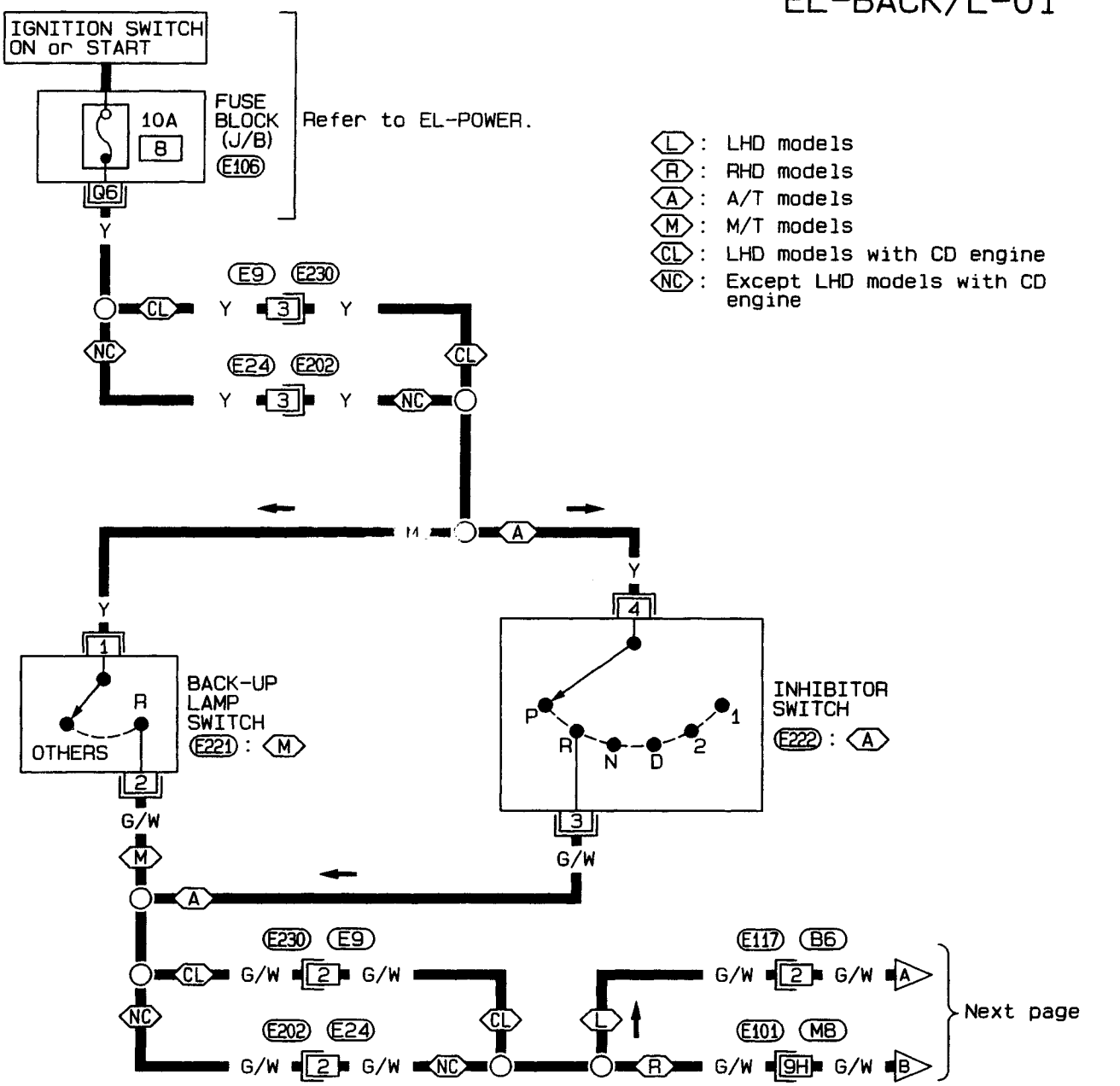
M15
M19

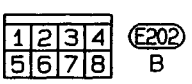
EL

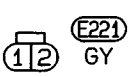
HEL034

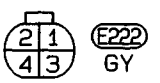
## Back-up Lamp/Wiring Diagram — BACK/L —

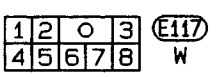
EL-BACK/L-01

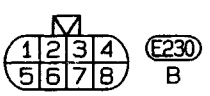


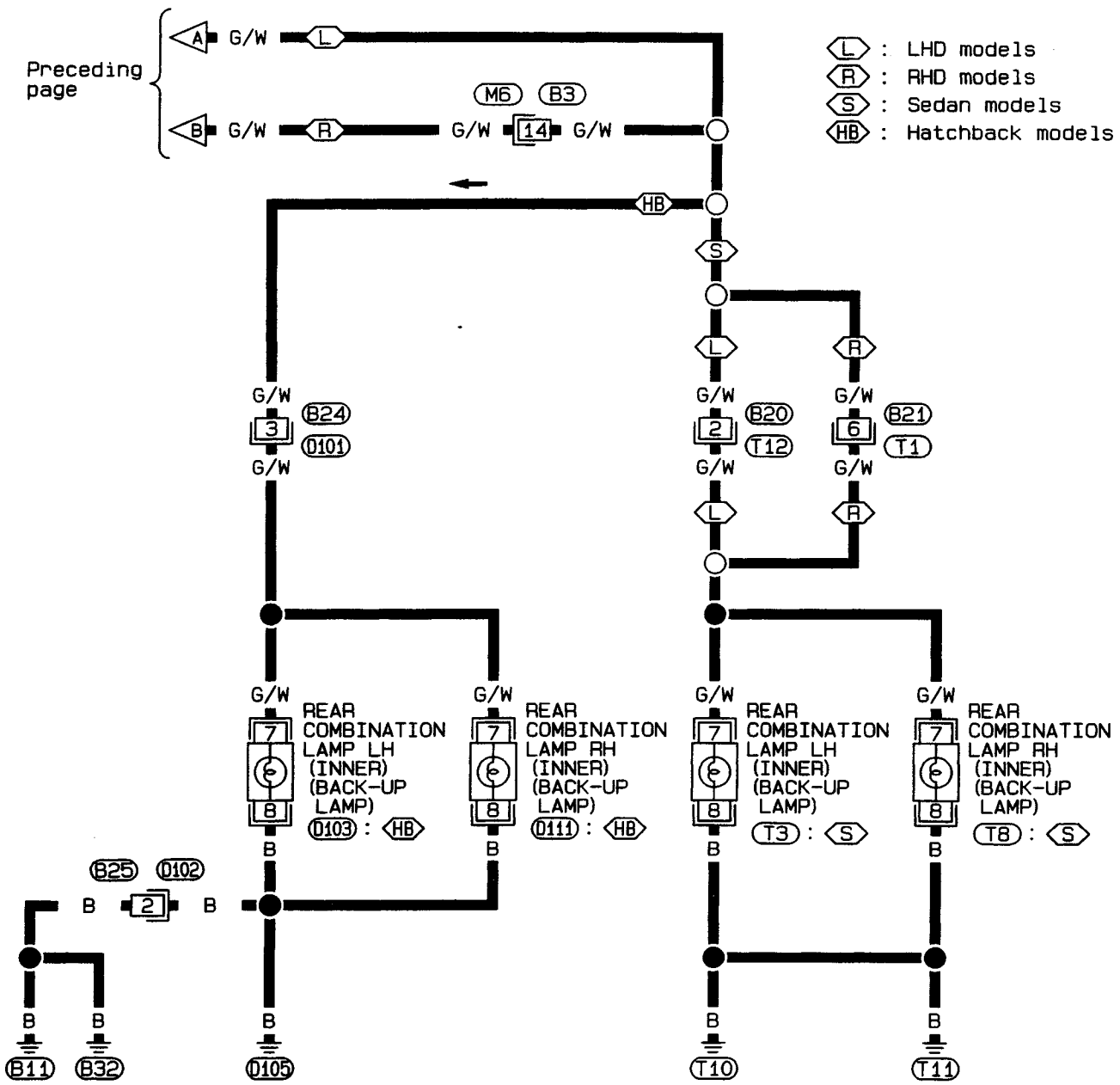

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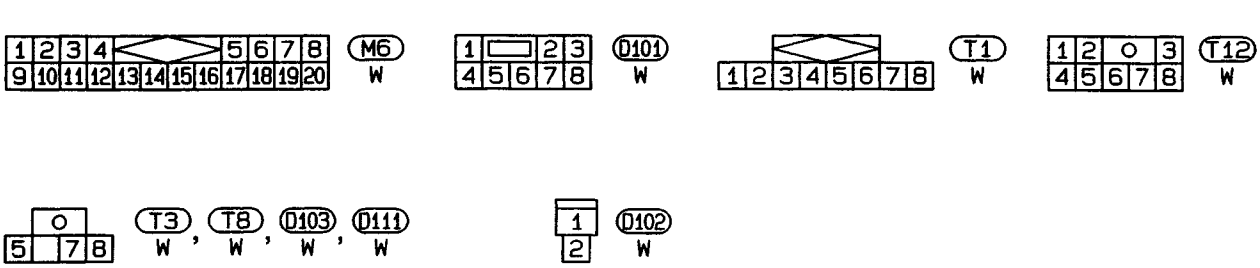
M8 , E101

E106

## Back-up Lamp/Wiring Diagram — BACK/L — (Cont'd)

EL-BACK/L-02



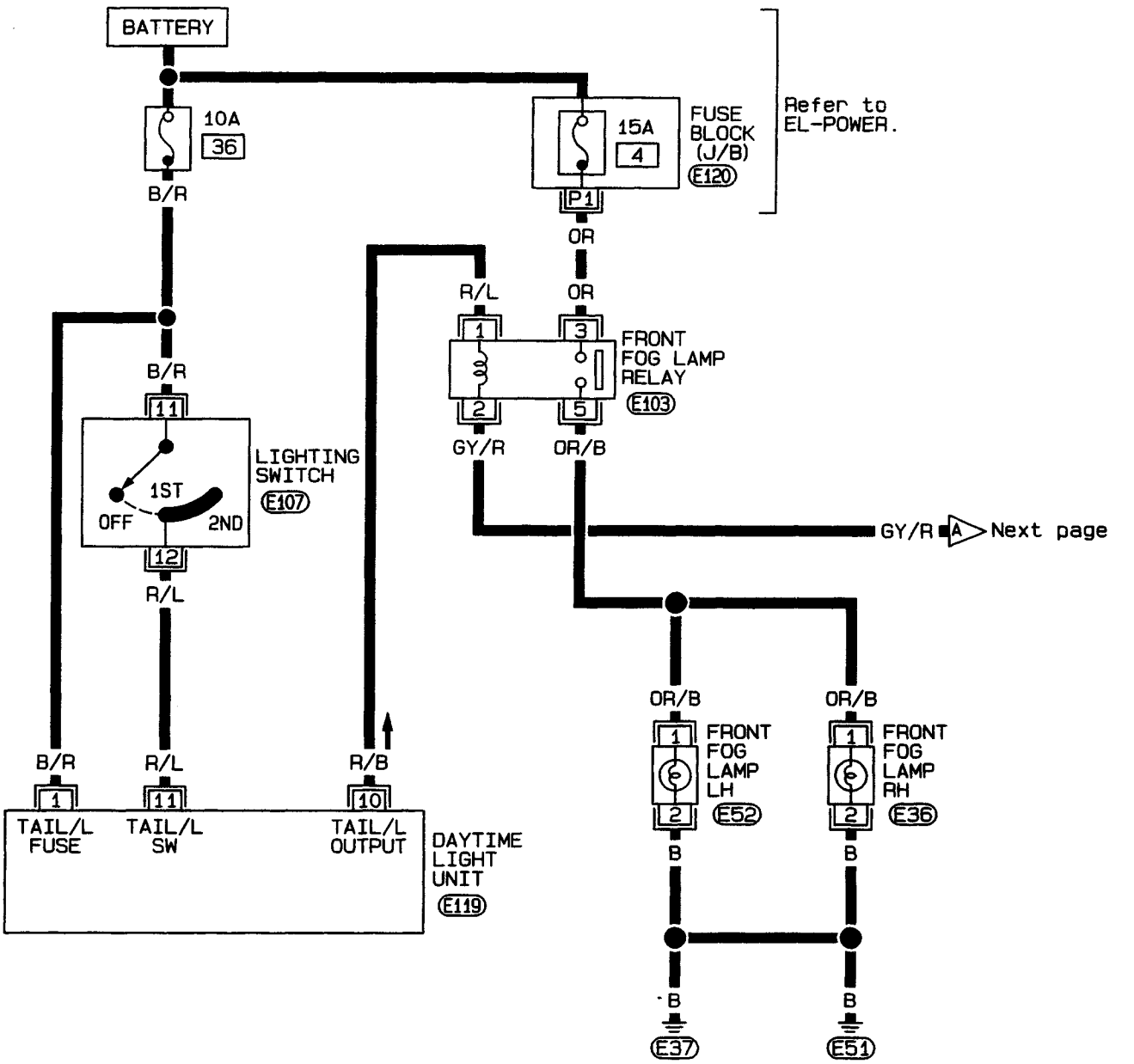



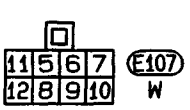

EL

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

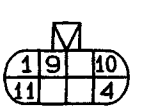
### LHD MODELS WITH DAYTIME LIGHT SYSTEM

EL-F/FOG-01



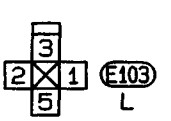
E107 W



E119 GY



E36, E52 GY GY



E103 L

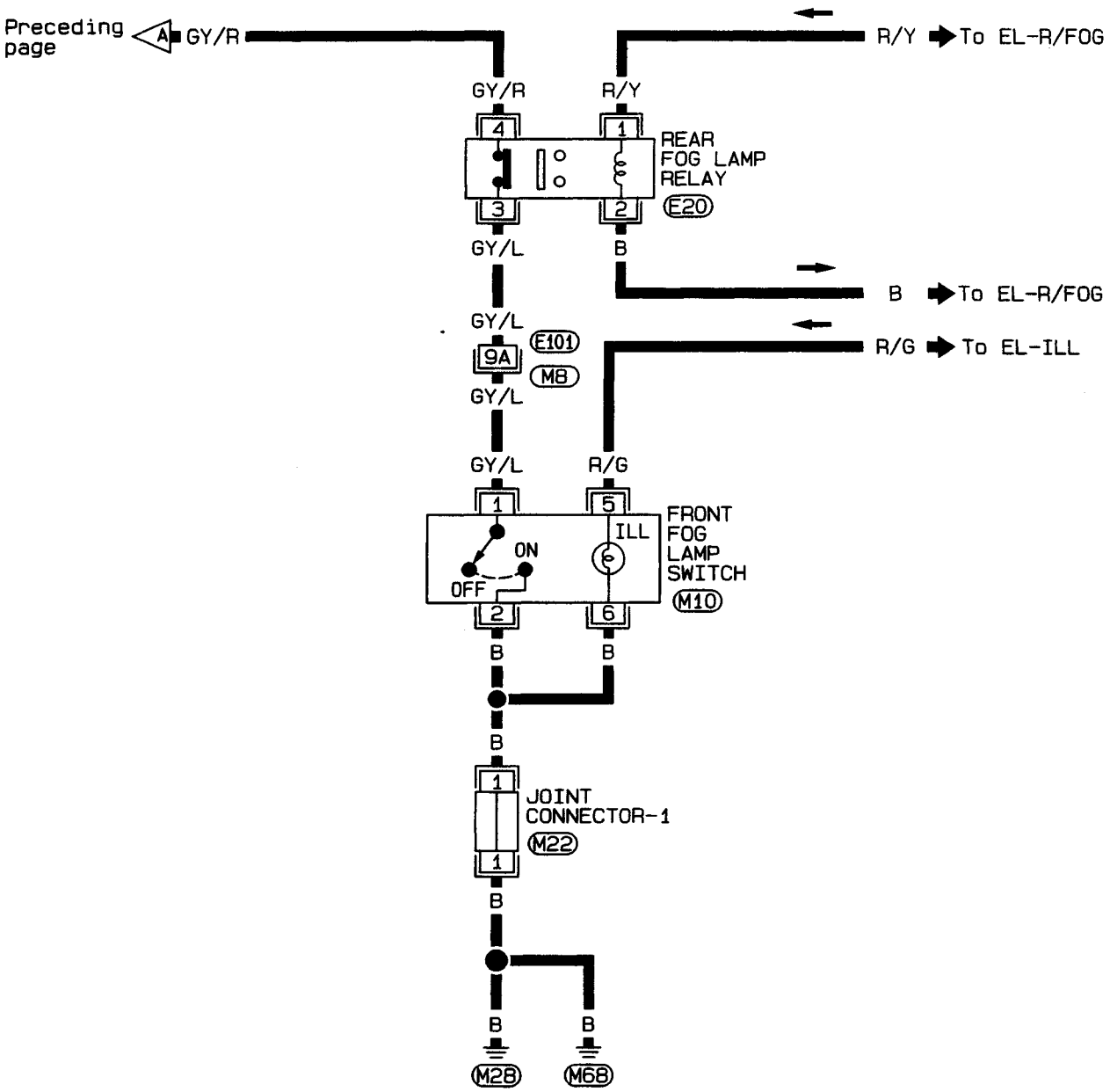
Refer to last page (Foldout page).

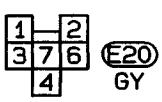
E120

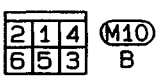
HEL037

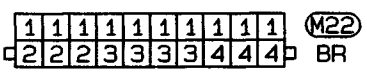
## Front Fog Lamp/Wiring Diagram — F/FOG — (Cont'd)

EL-F/FOG-02




Refer to last page (Foldout page).

M8, E101

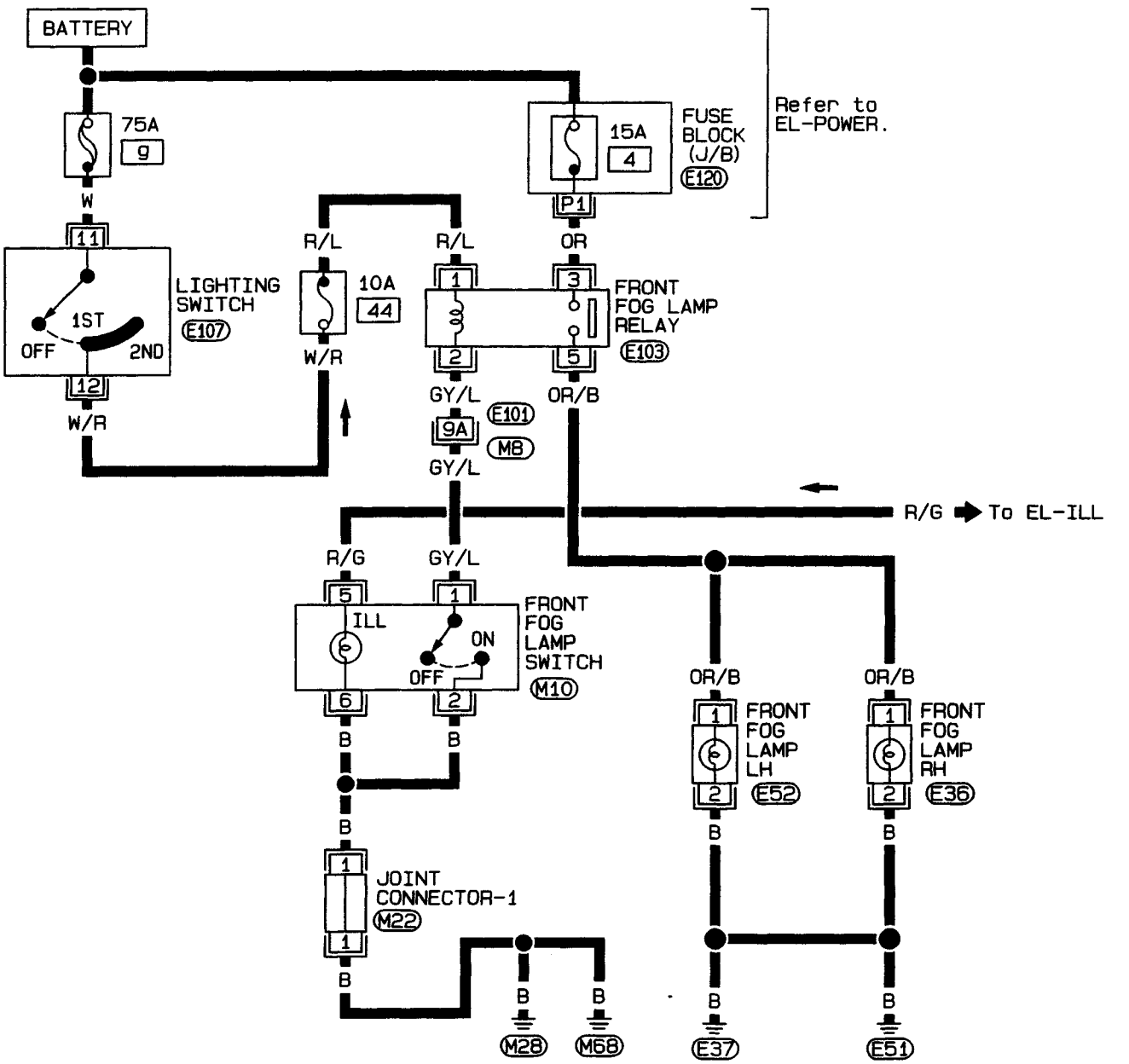
EL

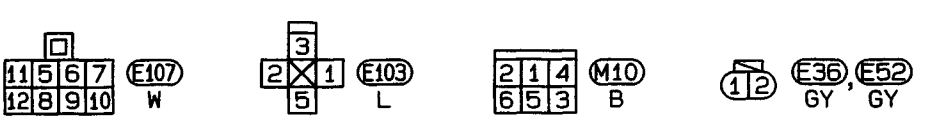
HEL038

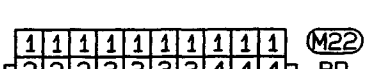
## Front Fog Lamp/Wiring Diagram — F/FOG — (Cont'd)

### LHD MODELS WITHOUT DAYTIME LIGHT SYSTEM

EL-F/FOG-03




Refer to last page (Foldout page).

M8, E101

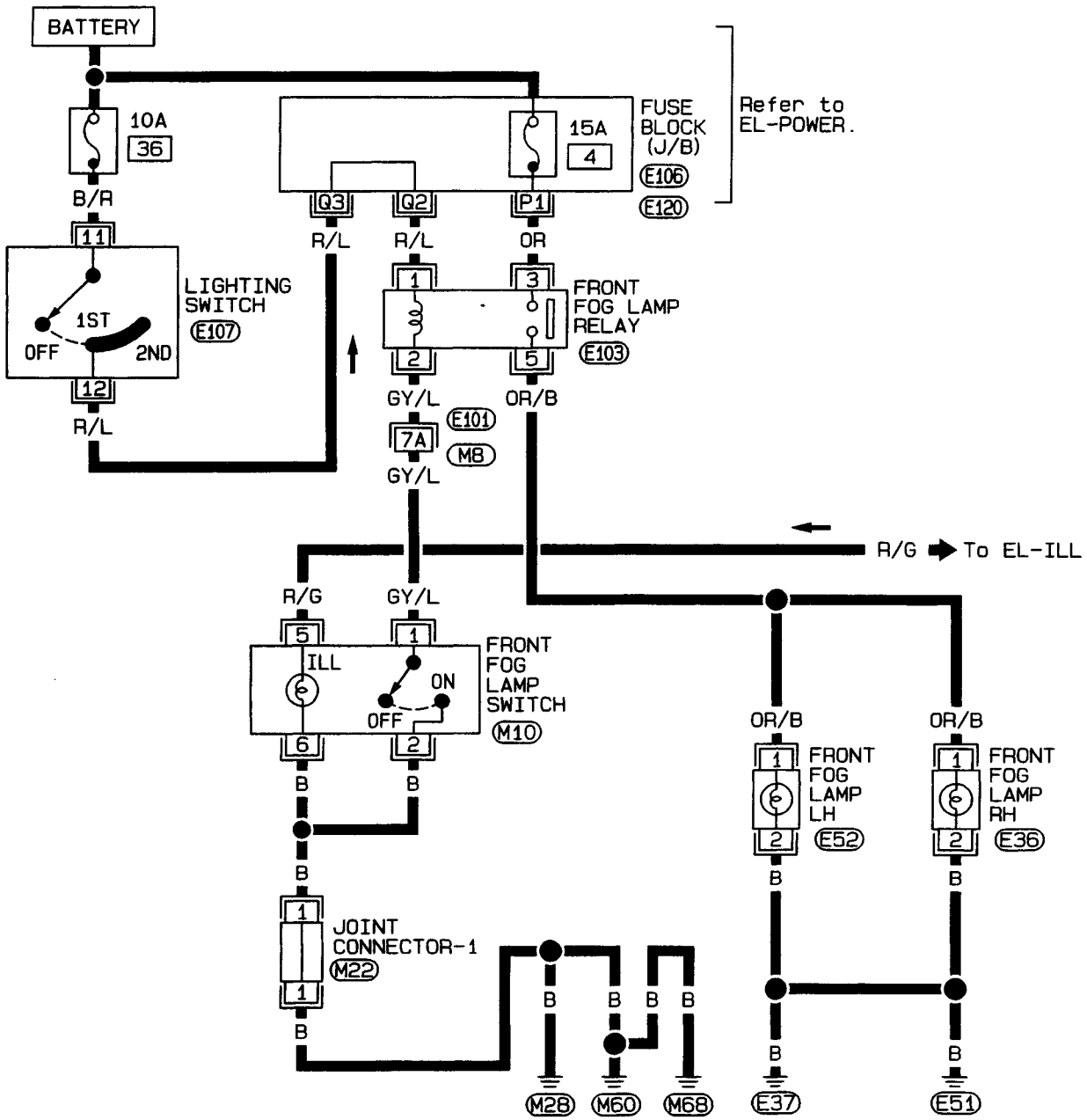
E120

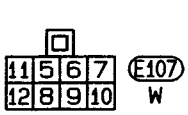
HEL039

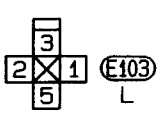
## Front Fog Lamp/Wiring Diagram — F/FOG — (Cont'd)

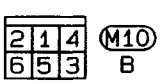
### RHD MODELS FOR EUROPE

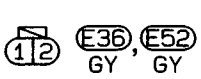
EL-F/FOG-04

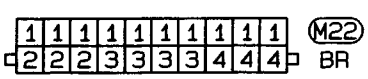



Refer to last page (Foldout page).

M8, E101

E106, E120

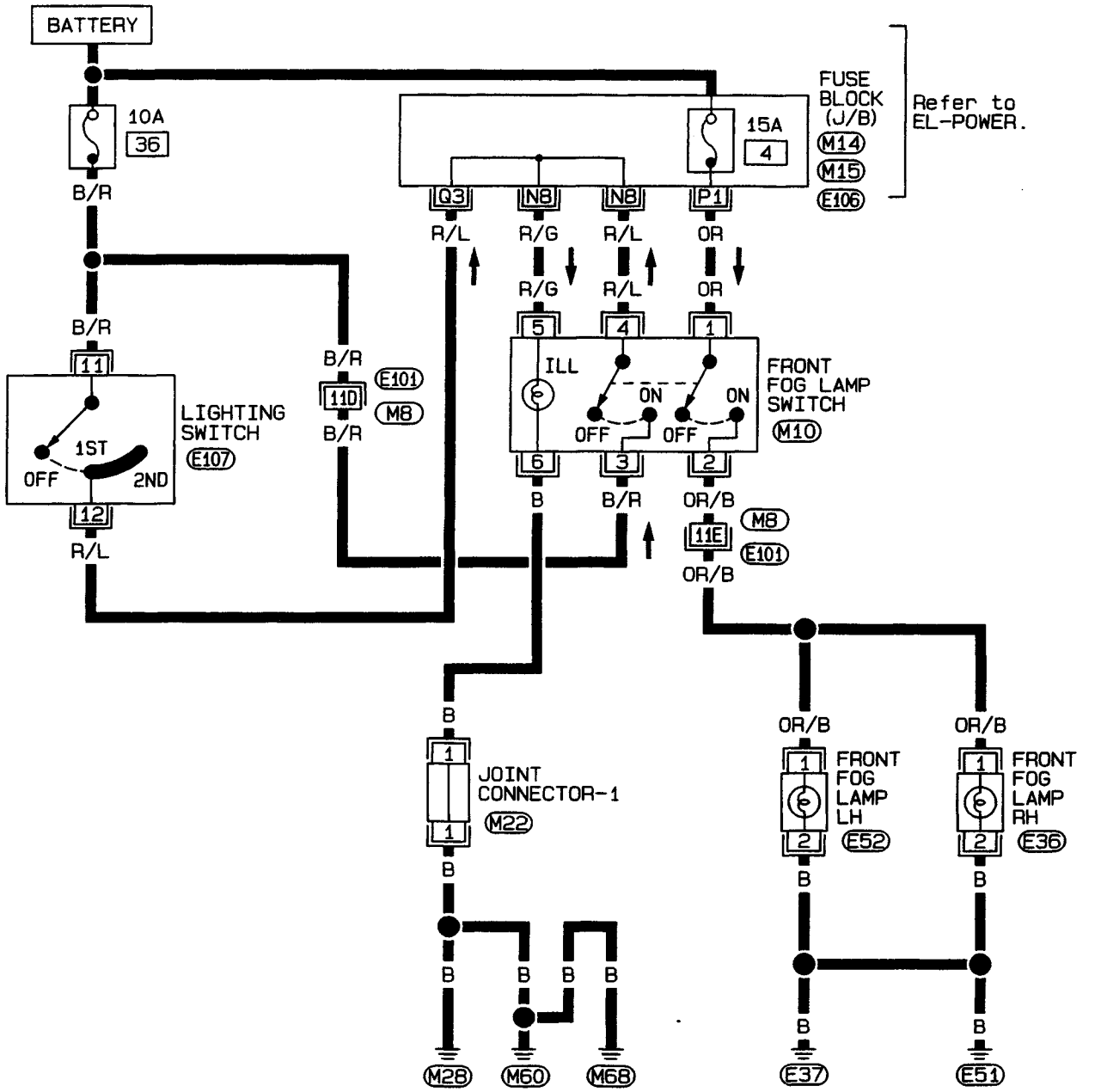
EL

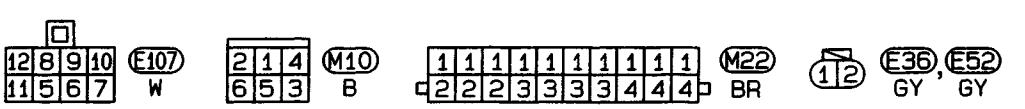
HEL040

## Front Fog Lamp/Wiring Diagram — F/FOG — (Cont'd)

### RHD MODELS EXCEPT FOR EUROPE

EL-F/FOG-05



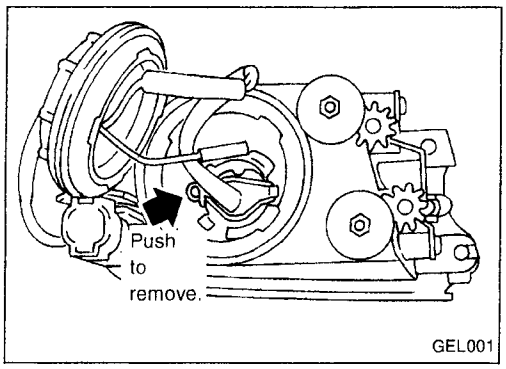




Refer to last page (Foldout page).

M8, E101

M14, M15, E106

HEL041




## Front Fog Lamp Bulb Replacement

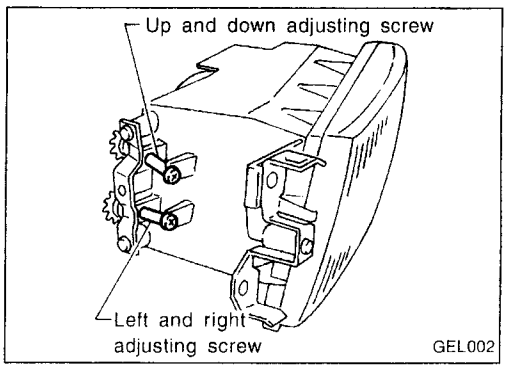
The front fog lamp is a semi-sealed beam type which uses a replaceable halogen bulb.

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

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

**CAUTION:**

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




## Front Fog Lamp Aiming Adjustment

Before performing aiming adjustment, make sure of the following.

a. Keep all tires inflated to correct pressure.
b. Place vehicle on level ground.
c. See that vehicle is unloaded (except for full levels of coolant, engine oil and fuel, and spare tire, jack, and tools). Have the driver or equivalent weight placed in driver's seat.

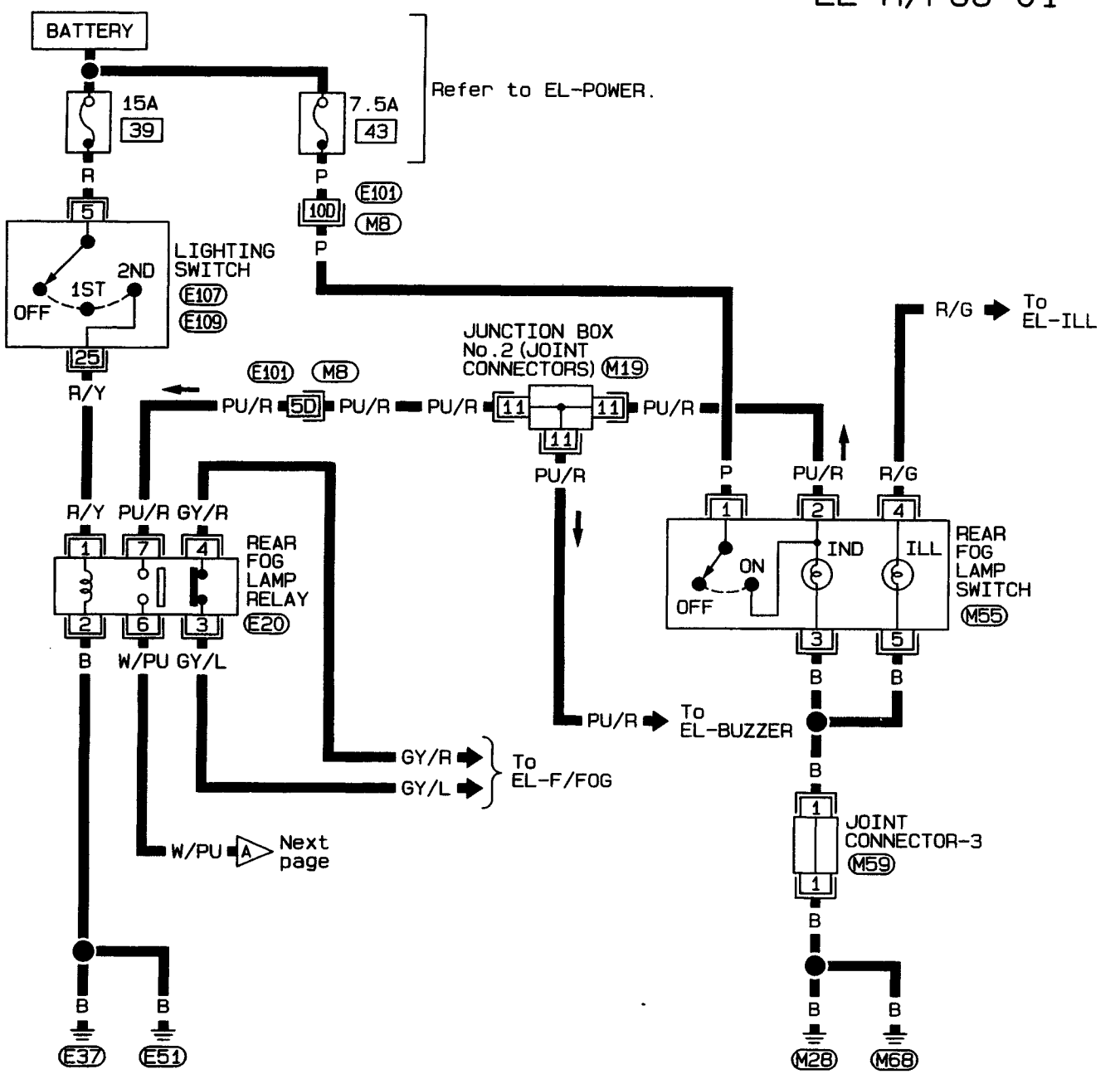
Adjust aiming by turning the adjusting screw.

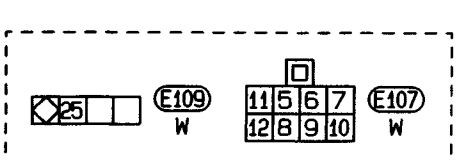
EL

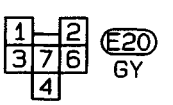
## Rear Fog Lamp/Wiring Diagram — R/FOG —

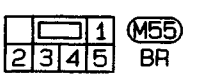
### WITH DAYTIME LIGHT SYSTEM

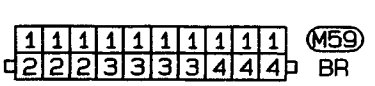
EL-R/FOG-01




Refer to last page (Foldout page).

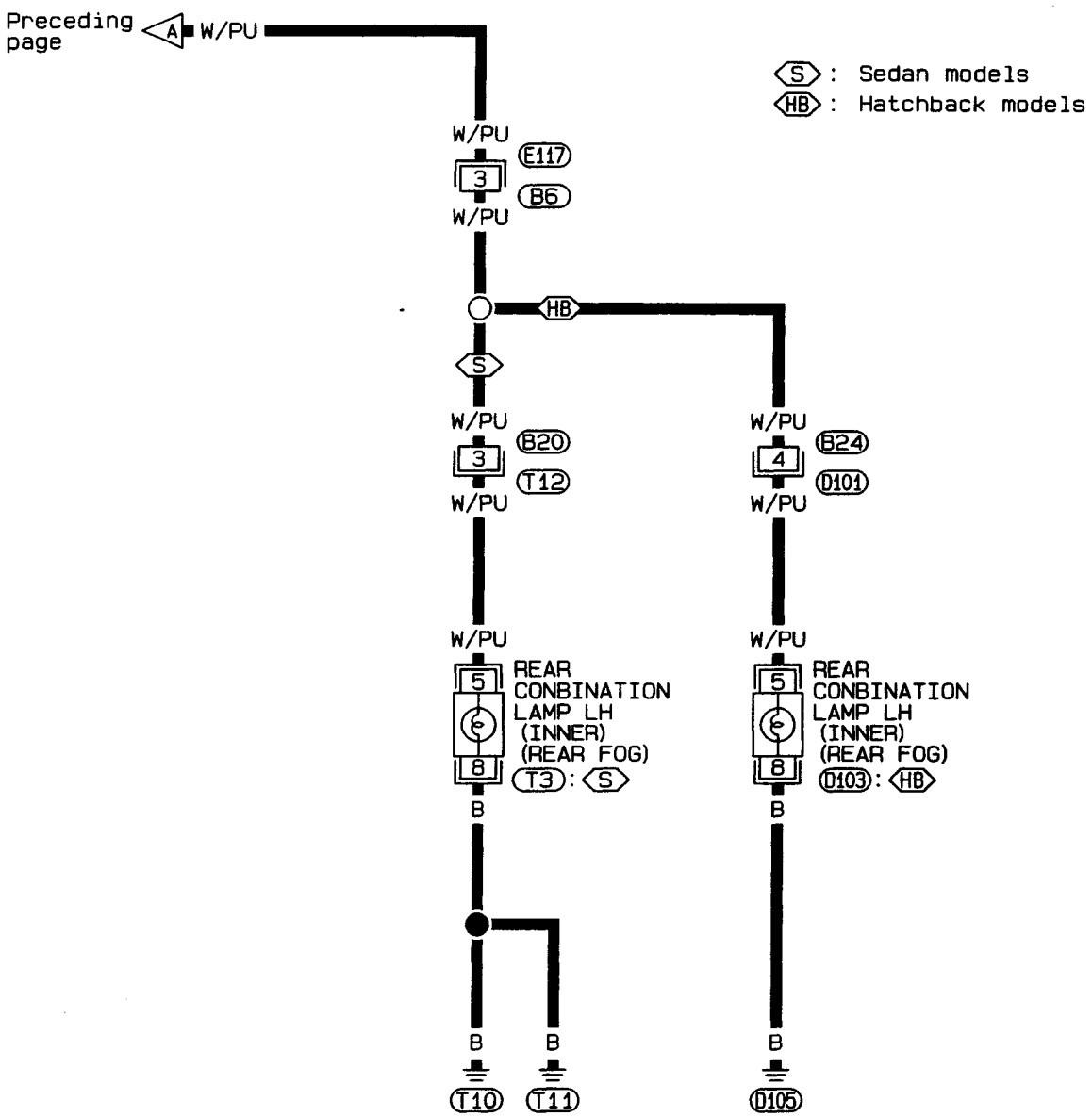
M8, E101

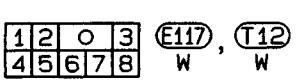
M19

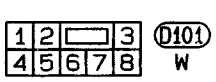
HEL042

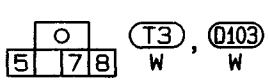
## Rear Fog Lamp/Wiring Diagram — R/FOG — (Cont'd)

EL-R/FOG-02



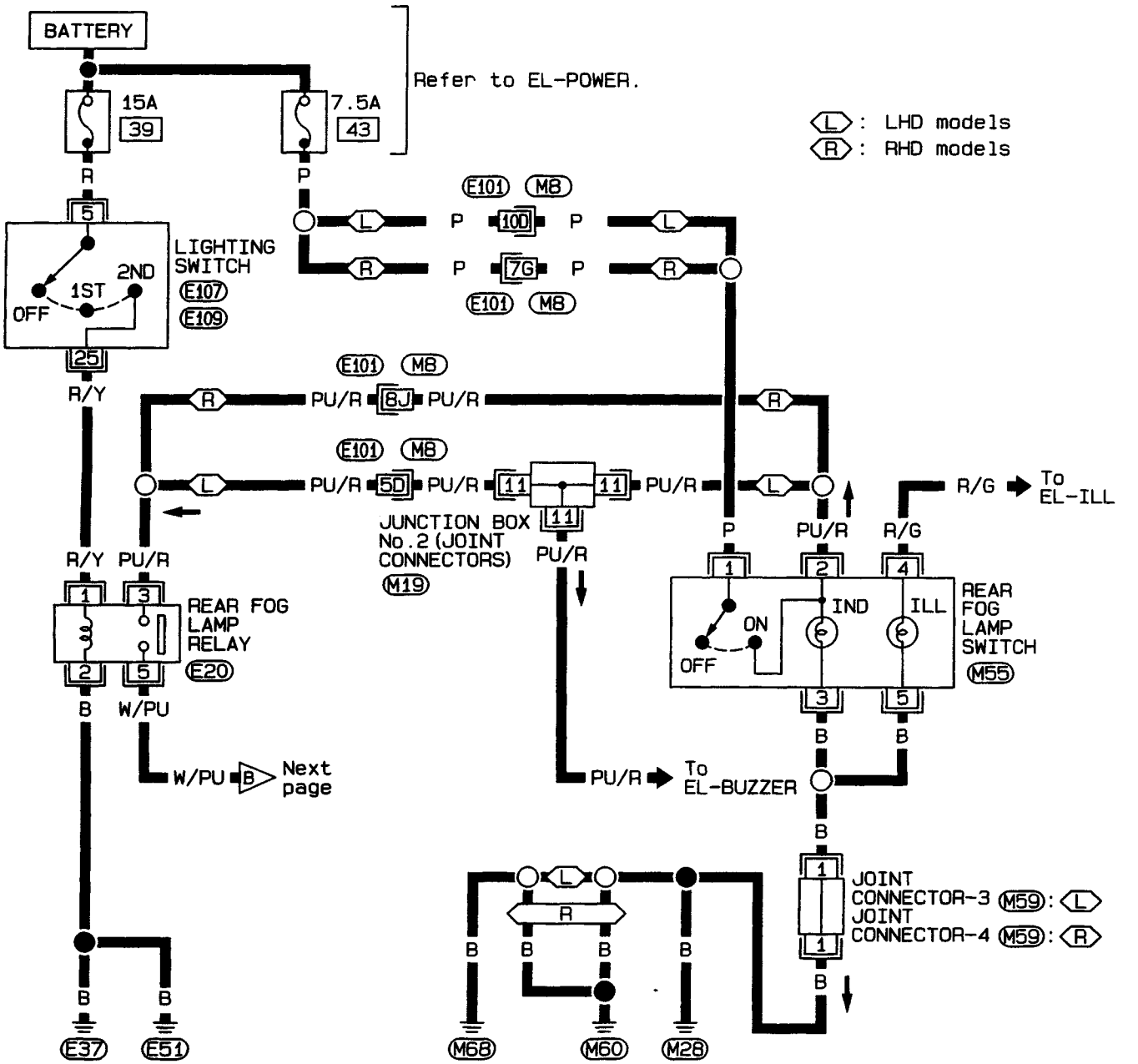

EL

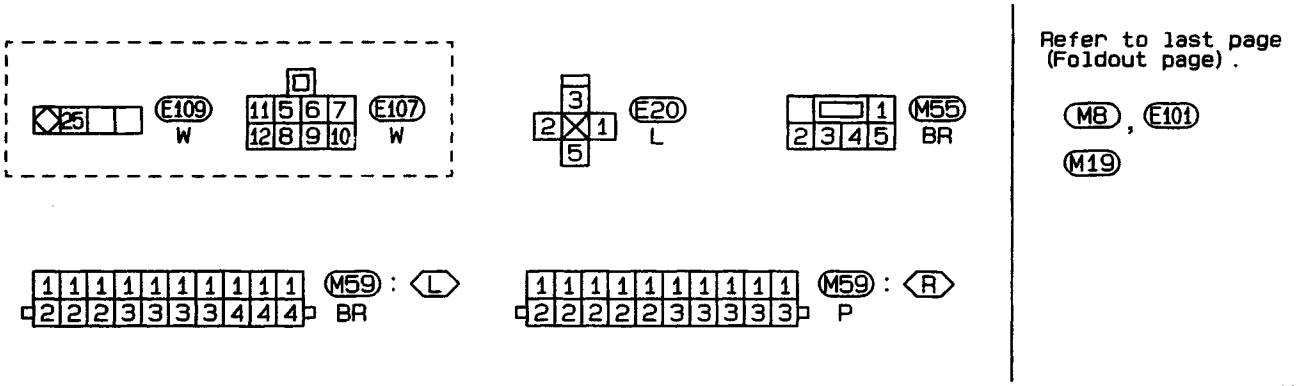
HEL043

## Rear Fog Lamp/Wiring Diagram — R/FOG — (Cont'd)

### WITHOUT DAYTIME LIGHT SYSTEM

EL-R/FOG-03




Refer to last page (Foldout page).

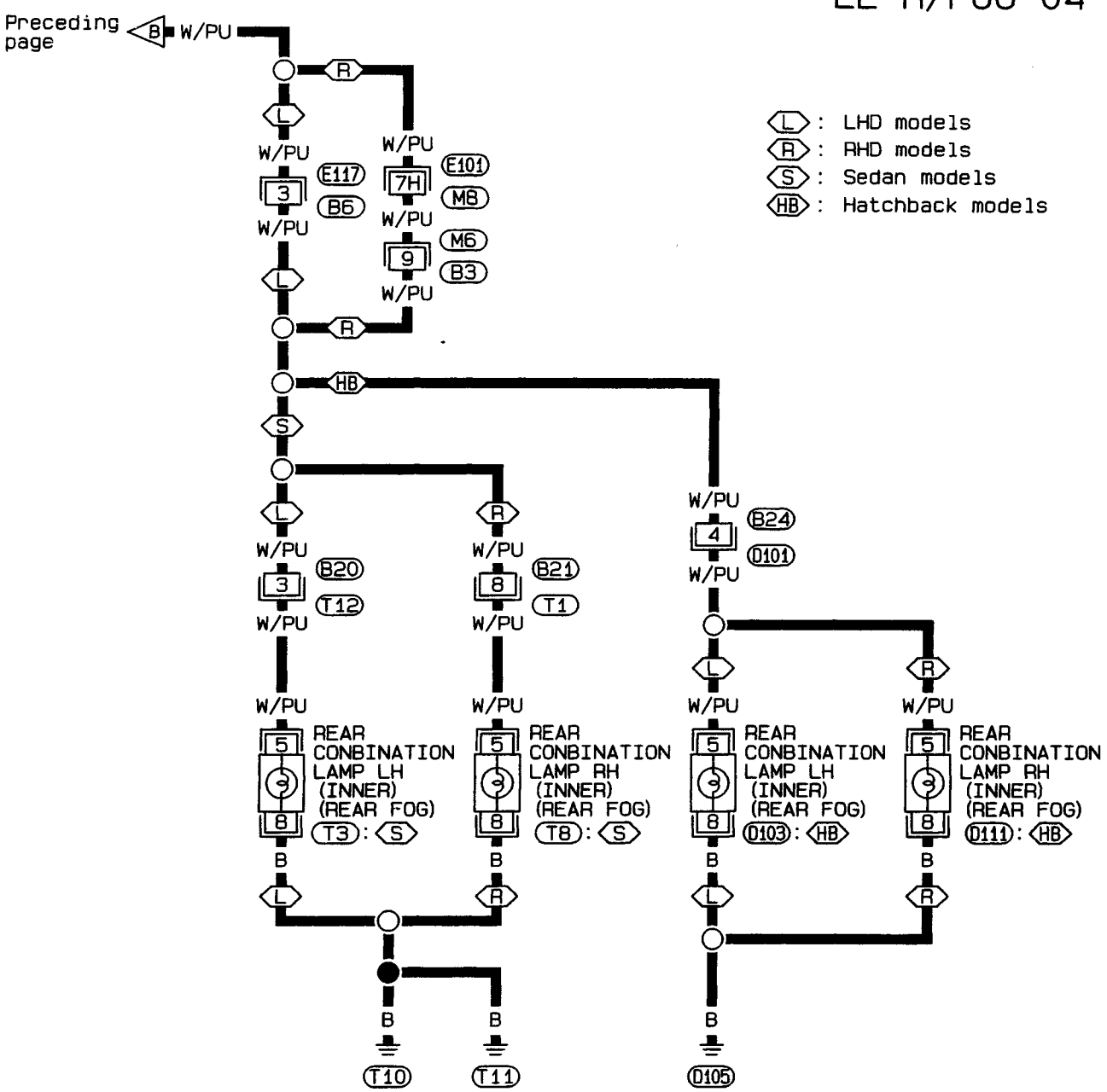
M8, E101

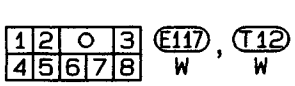
M19

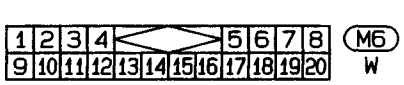
HEL044

## Rear Fog Lamp/Wiring Diagram — R/FOG — (Cont'd)

EL-R/FOG-04

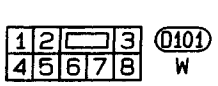


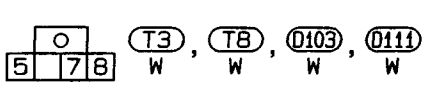









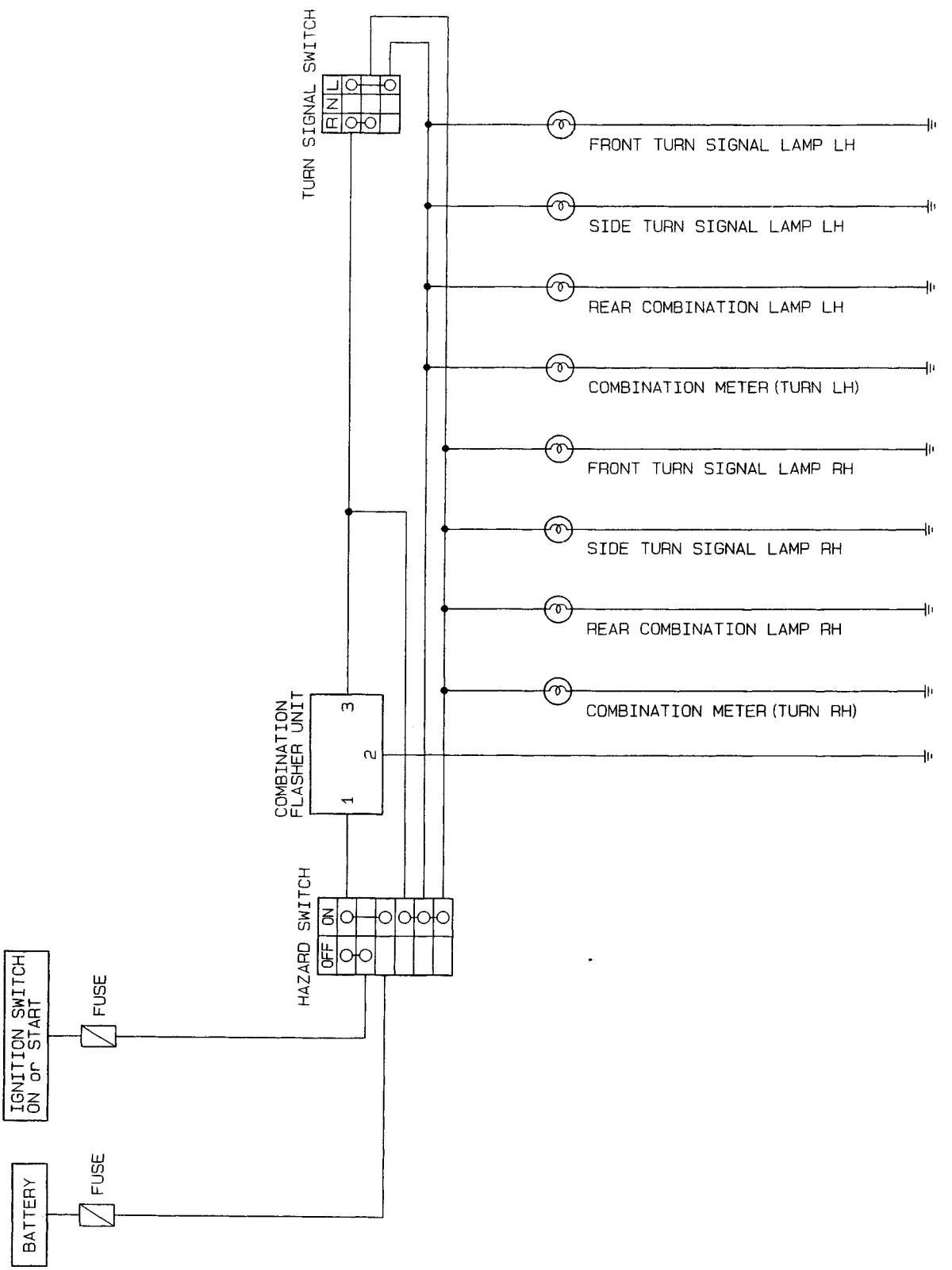

Refer to last page (Foldout page).

M8, E101



HEL045

## Turn Signal and Hazard Warning Lamps/ Schematic

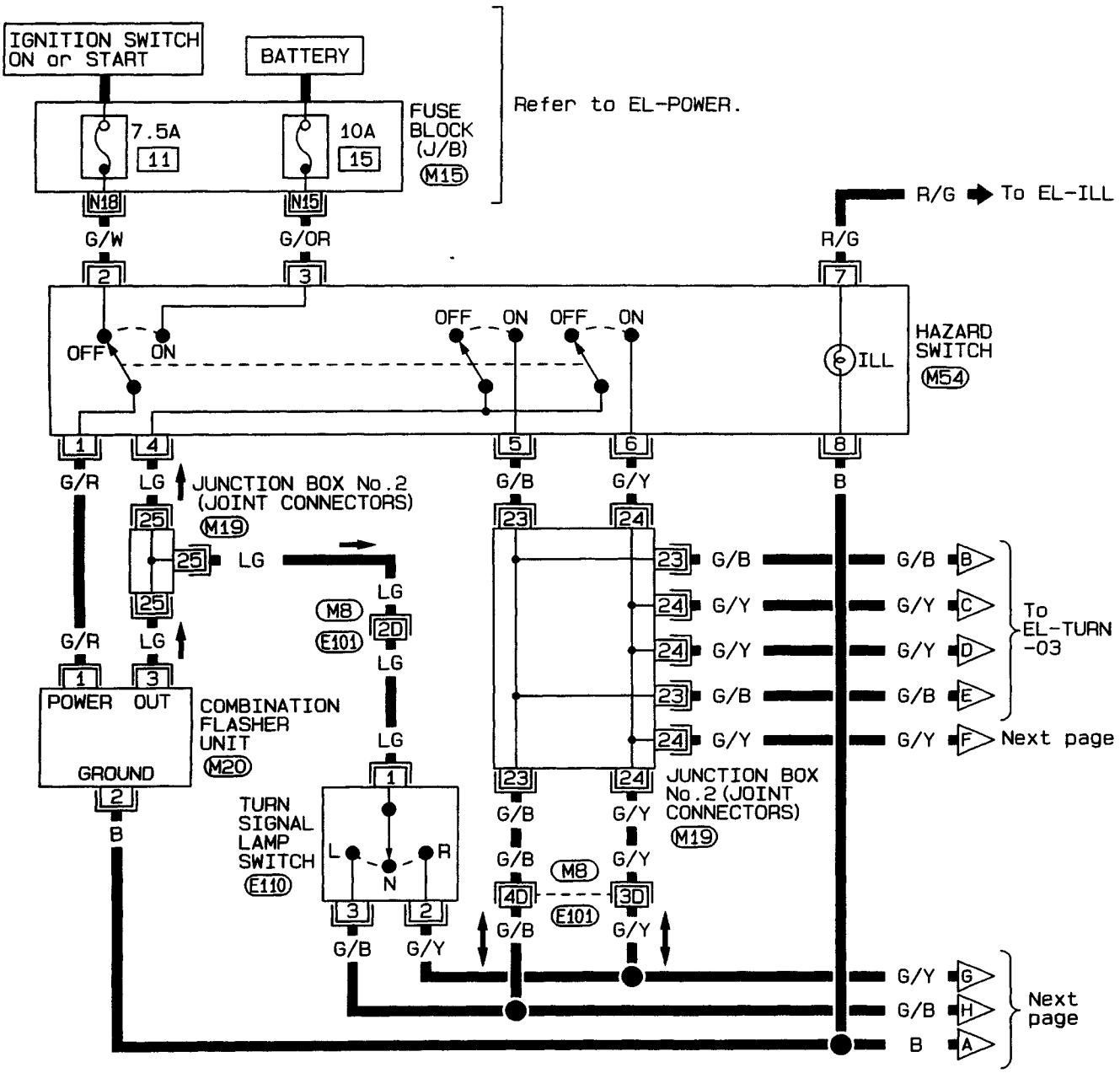



HEL052

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

### LHD MODELS

EL-TURN-01




M54 W

M20 B

E110 W

Refer to last page (Foldout page).

M8, E101

M15

M19

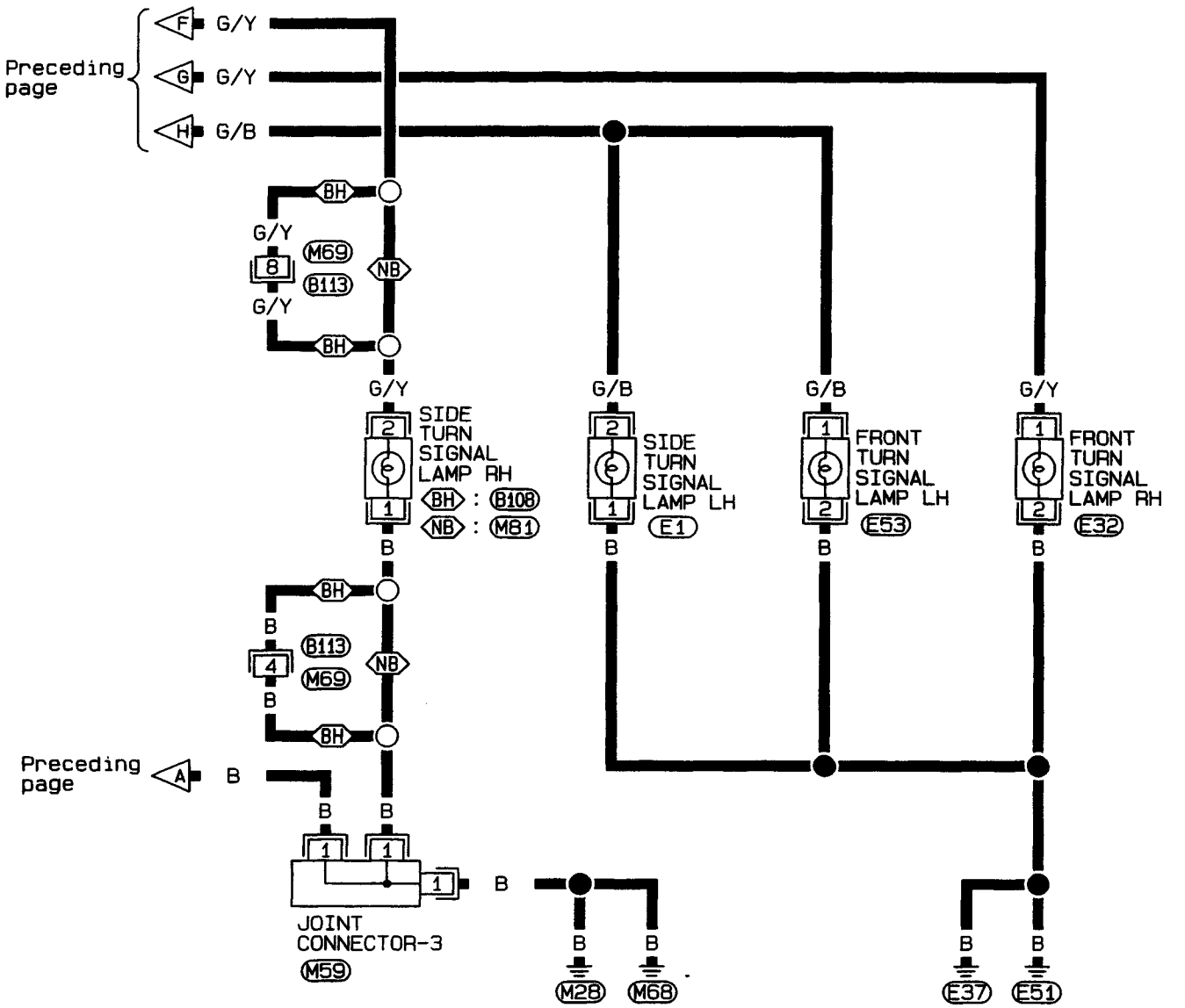
HEL046

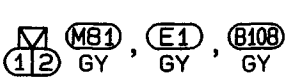
EL

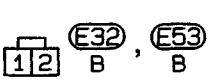
## Turn Signal and Hazard Warning Lamps/Wiring Diagram — TURN — (Cont'd)

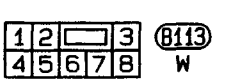
EL-TURN-02

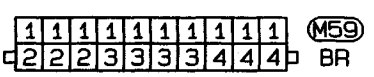
NB : GA engine without dual air bag system and ABS
BH : Except NB



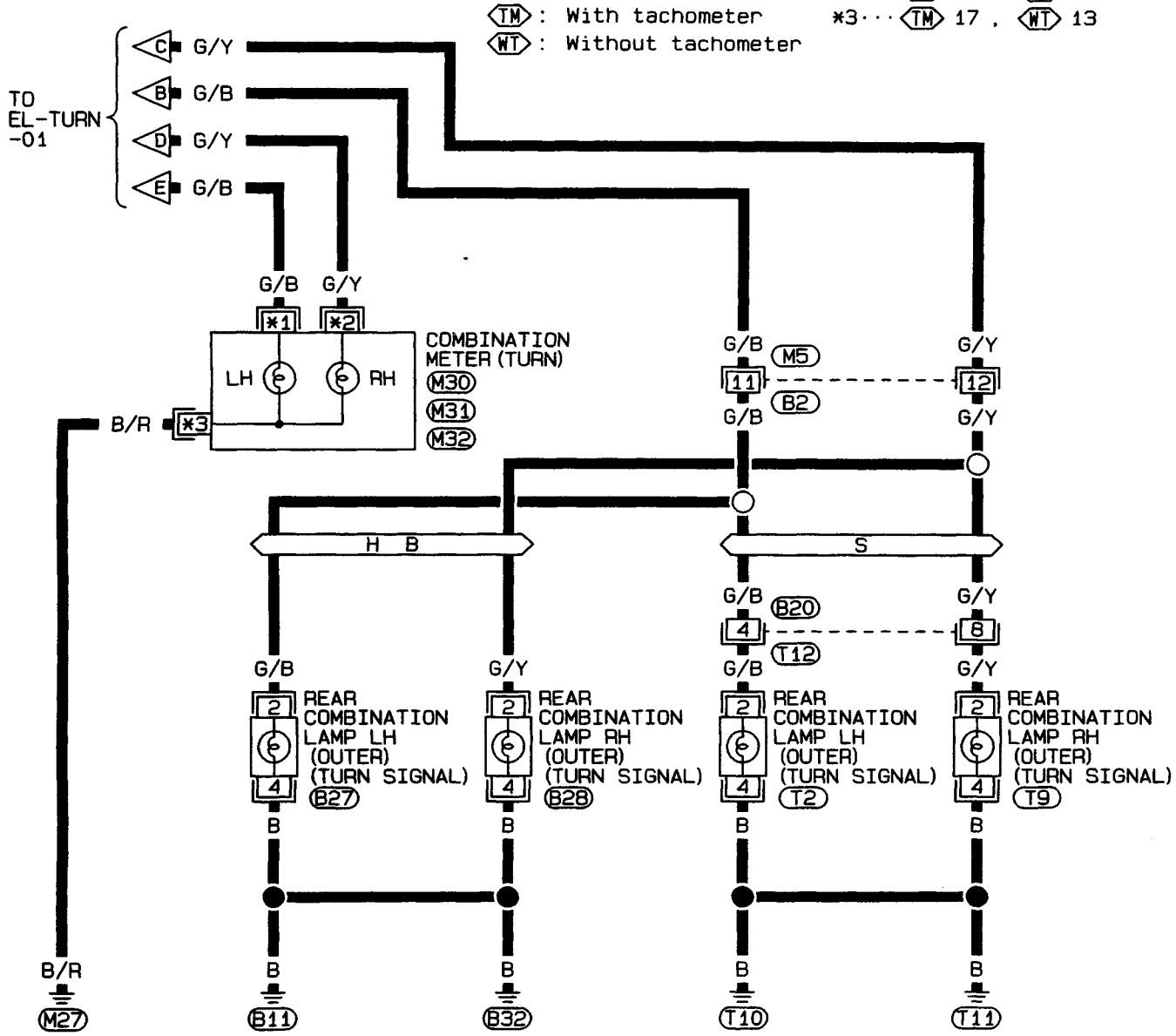

HEL047

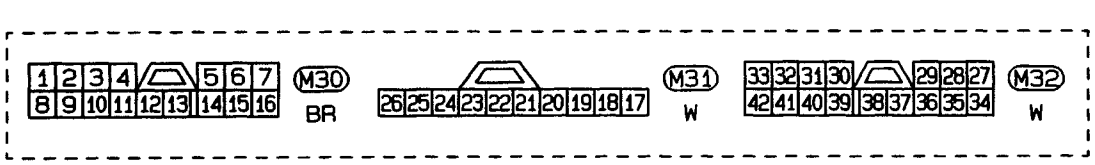
## Turn Signal and Hazard Warning Lamps/Wiring Diagram — TURN — (Cont'd)

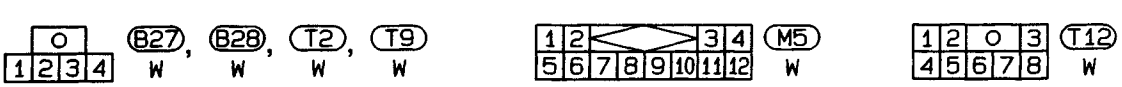
EL-TURN-03

Ⓢ : Sedan models
Ⓗⓑ : Hatchback models
Ⓣⓜ : With tachometer
ⓌⓉ : Without tachometer

*1 ··· Ⓣⓜ 37 , ⓌⓉ 14
*2 ··· Ⓣⓜ 36 , ⓌⓉ 12
*3 ··· Ⓣⓜ 17 , ⓌⓉ 13



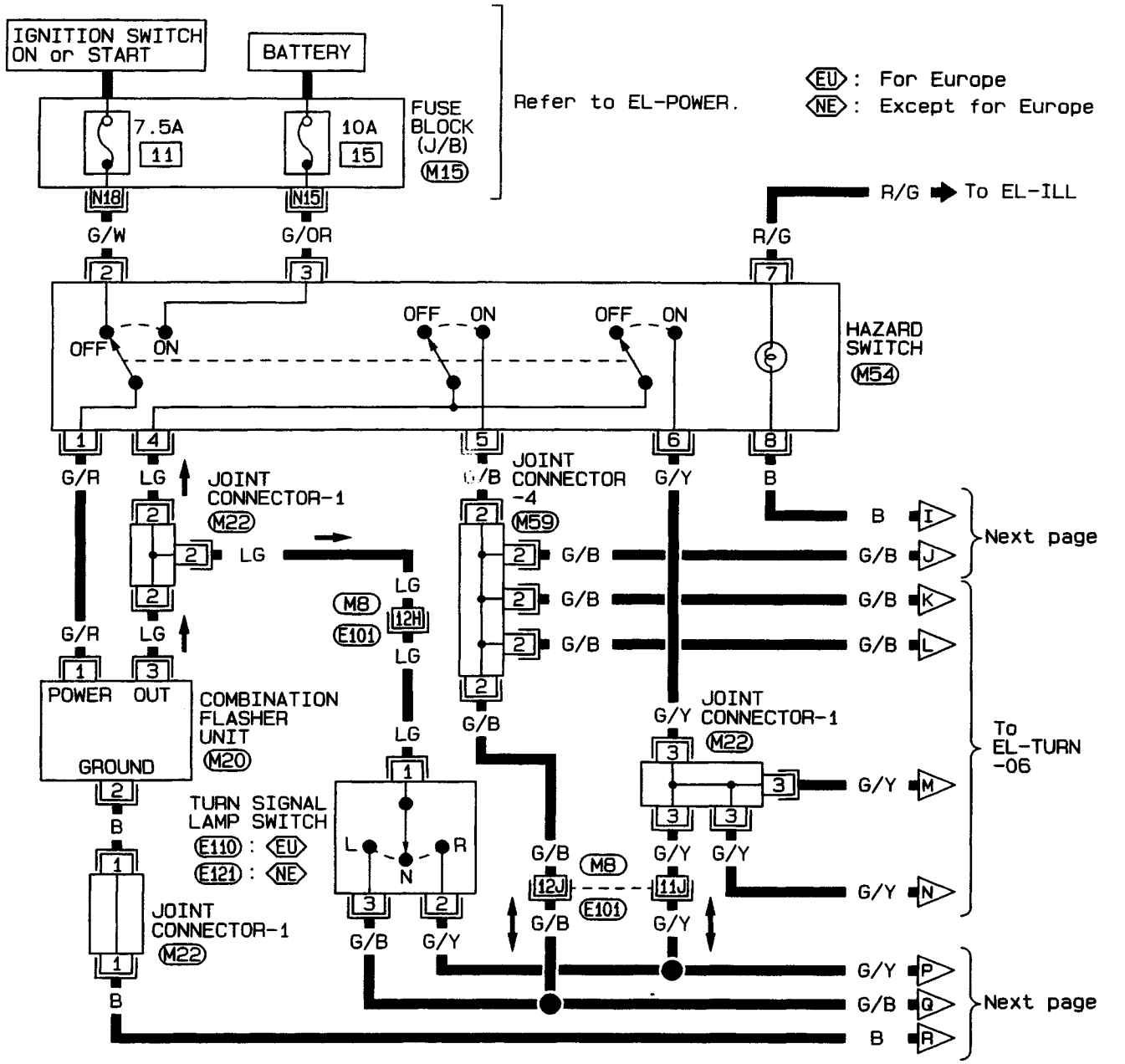



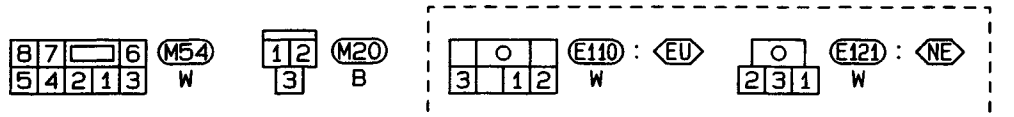

HEL048

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

### RHD MODELS

EL-TURN-04







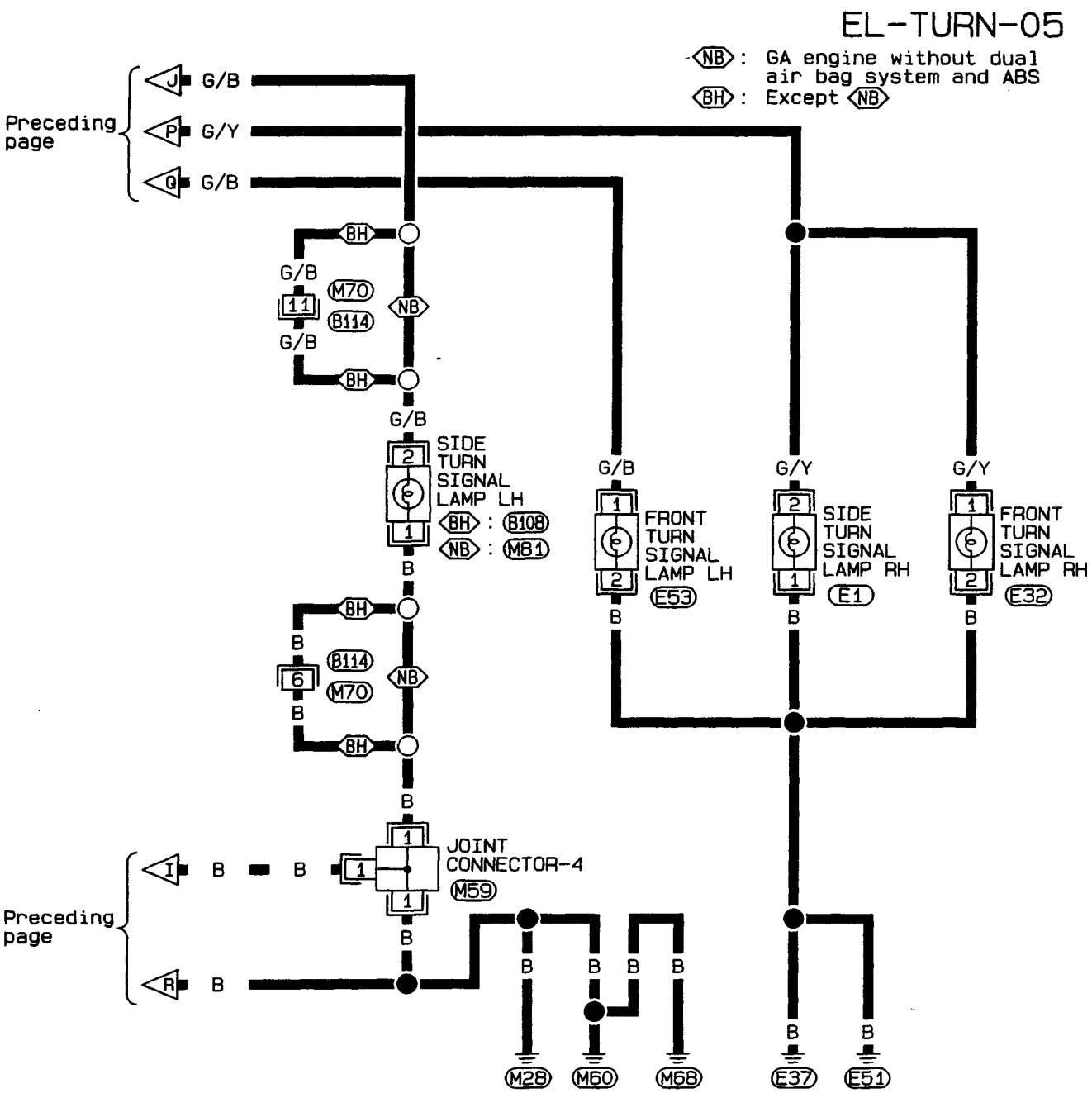
Refer to last page (Foldout page).

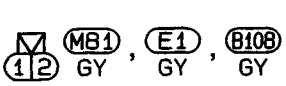
M8, E101

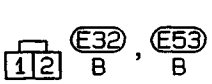
M15

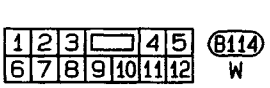
HEL049

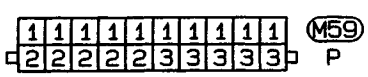
## Turn Signal and Hazard Warning Lamps/Wiring Diagram — TURN — (Cont'd)




EL

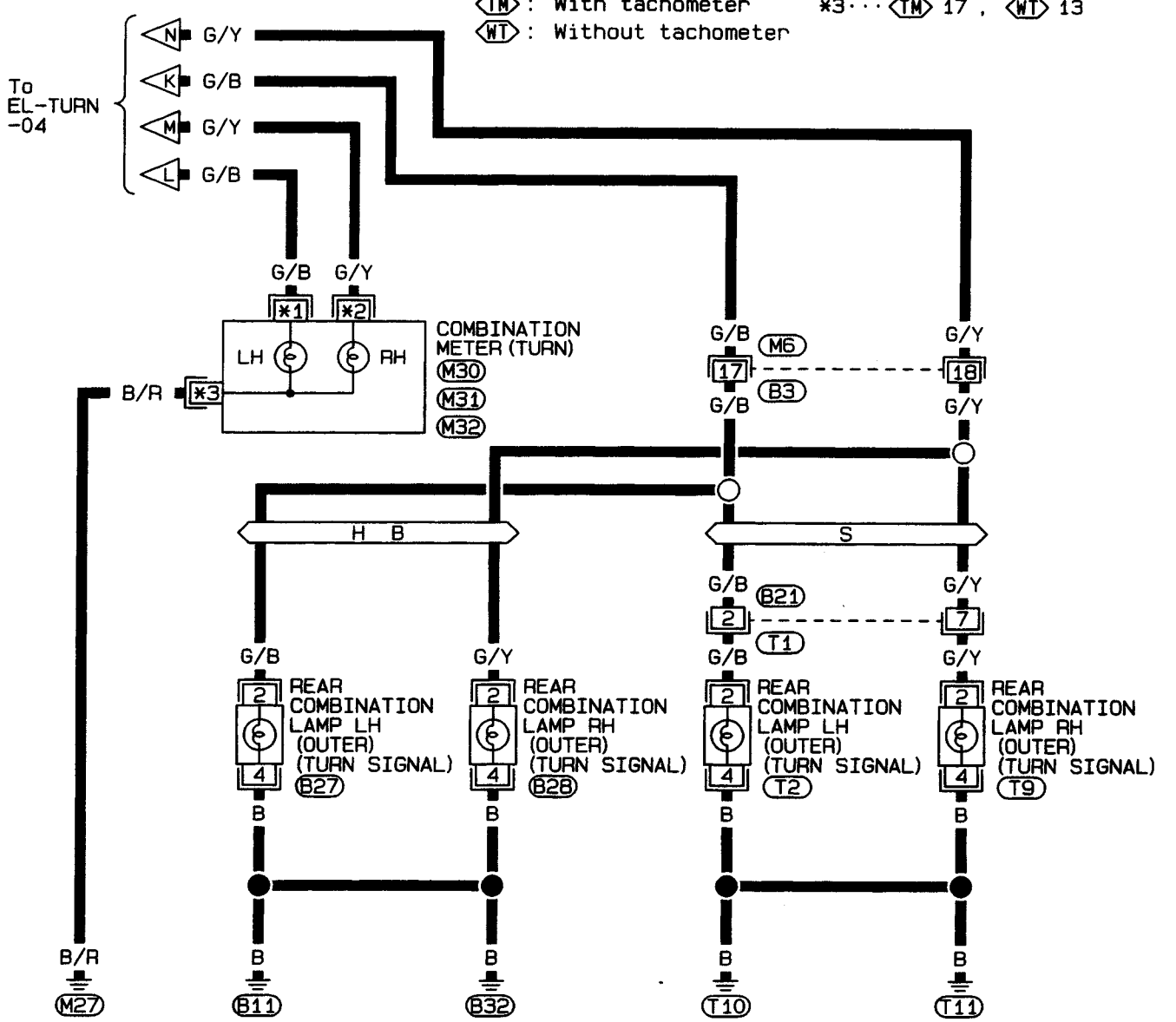
HEL050

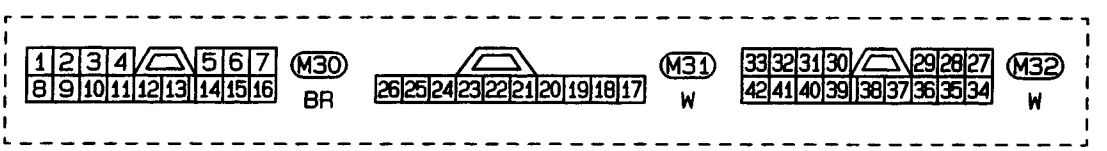
## Turn Signal and Hazard Warning Lamps/Wiring Diagram — TURN — (Cont'd)

EL-TURN-06

Ⓢ : Sedan models
Ⓗⓑ : Hatchback models
Ⓣⓜ : With tachometer
Ⓦⓣ : Without tachometer

*1 ··· Ⓣⓜ 37 , Ⓦⓣ 14
*2 ··· Ⓣⓜ 36 , Ⓦⓣ 12
*3 ··· Ⓣⓜ 17 , Ⓦⓣ 13



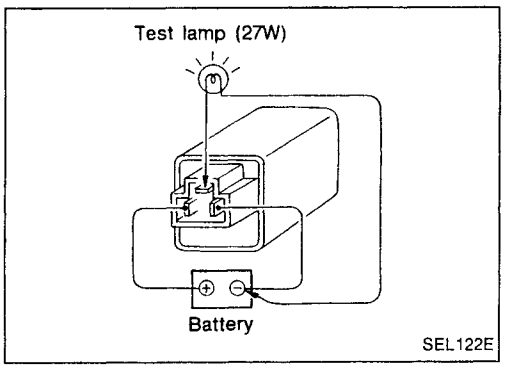




HEL051

## 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. 7.5A fuse<br>2. Hazard switch<br>3. Turn signal switch<br>4. Open in turn signal switch circuit | 1. Check 7.5A fuse (No. 11, 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 harness between combination flasher unit terminal ③ and turn signal switch terminal ① 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. 15, located in fuse block). Verify battery positive voltage is present at terminal ③ of hazard switch.<br>2. Check hazard switch.<br>3. Check harness between combination flasher unit terminal ③ and hazard switch terminal ④ for open circuit. |
| Individual turn signal lamp or turn indicators do not operate. | 1. Bulb<br>2. Grounds | 1. Check bulb.<br>2. Check ground circuit for the bulb. |




## Combination Flasher Unit Check

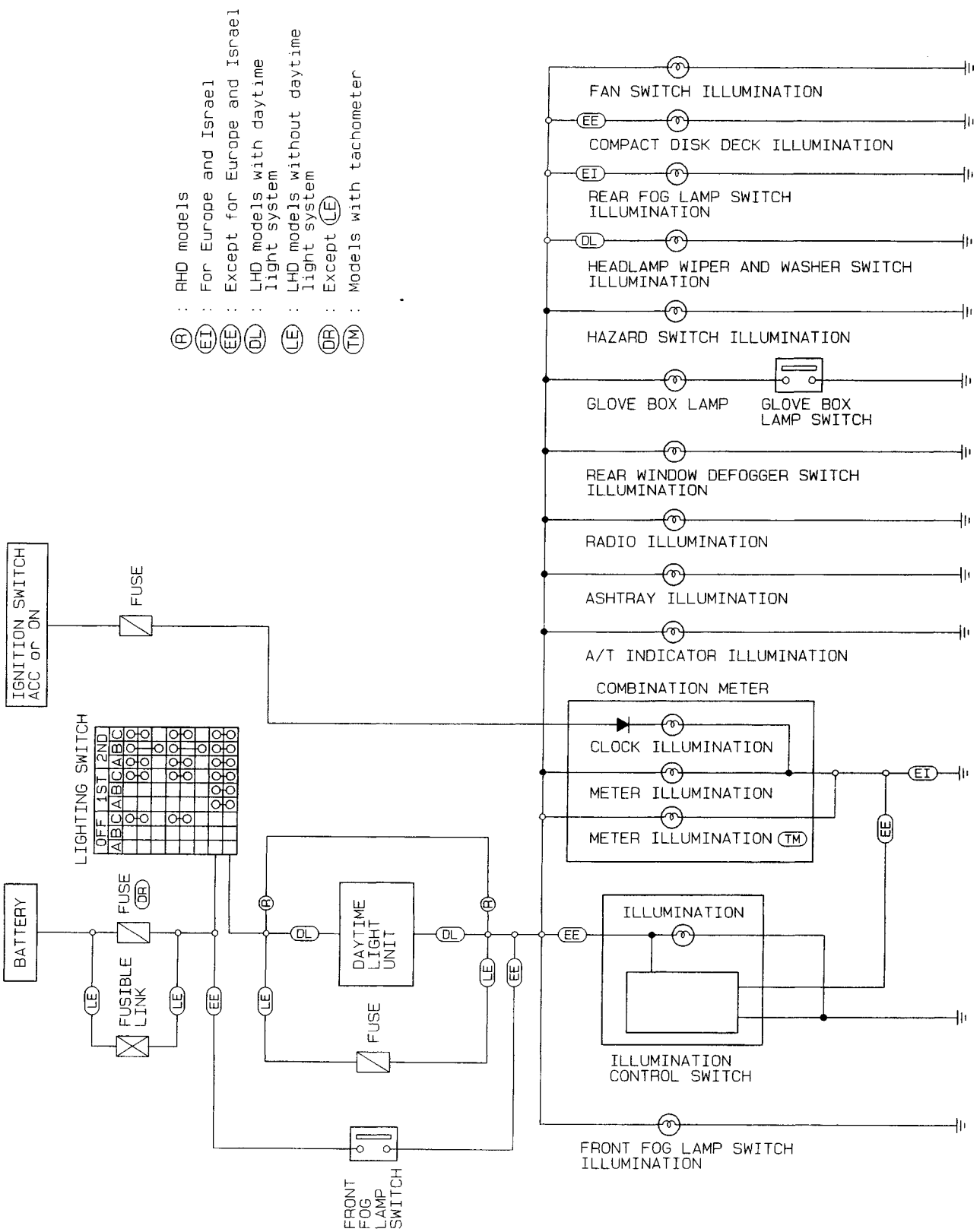
- Before checking, ensure that bulbs meet specifications.
- Connect a battery and test lamp to the combination flasher unit, as shown. Combination flasher unit is properly functioning if it blinks when power is supplied to the circuit.

EL

## Bulb Specifications

| | Wattage (W) |
|---|---|
| Front turn signal lamp | 21 |
| Clearance lamp | 5 |
| Front fog lamp | 55 |
| Side turn signal lamp | 5 |
| Rear combination lamp | |
| Turn signal | 21 |
| Stop/Tail | 21/5 |
| Tail | 5 |
| Back-up | 21 |
| Rear fog | 21 |
| License plate lamp | 5 |
| High-mounted stop lamp | |
| Bulb type (Sedan) | 5 (x6) |
| Bulb type (Hatchback) | 21 |
| LED type | 4.6 |

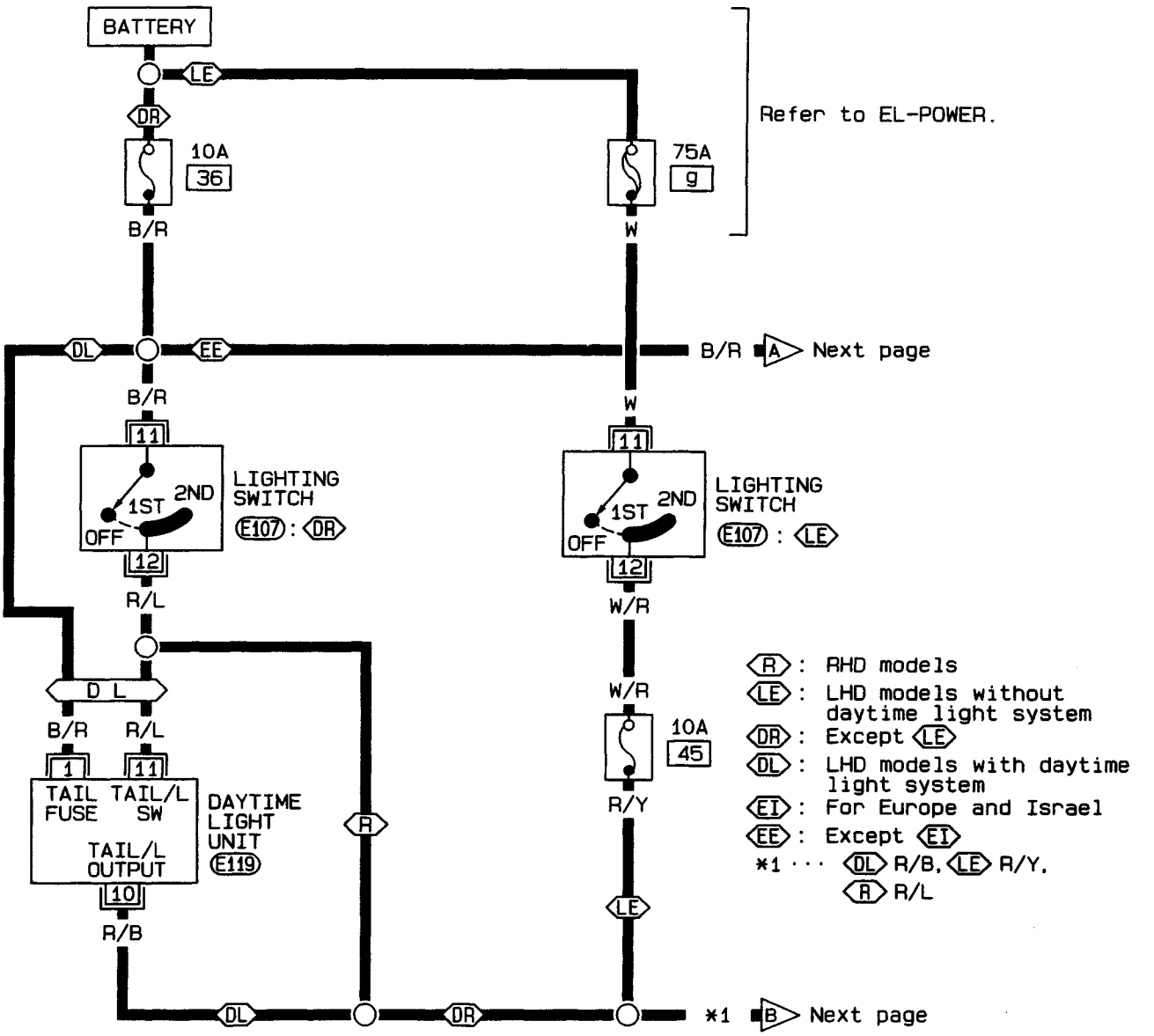
## Illumination/Schematic

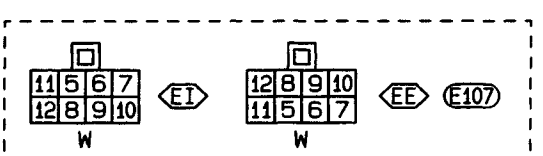


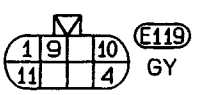

HEL060

## Illumination/Wiring Diagram — ILL —

EL-ILL-01

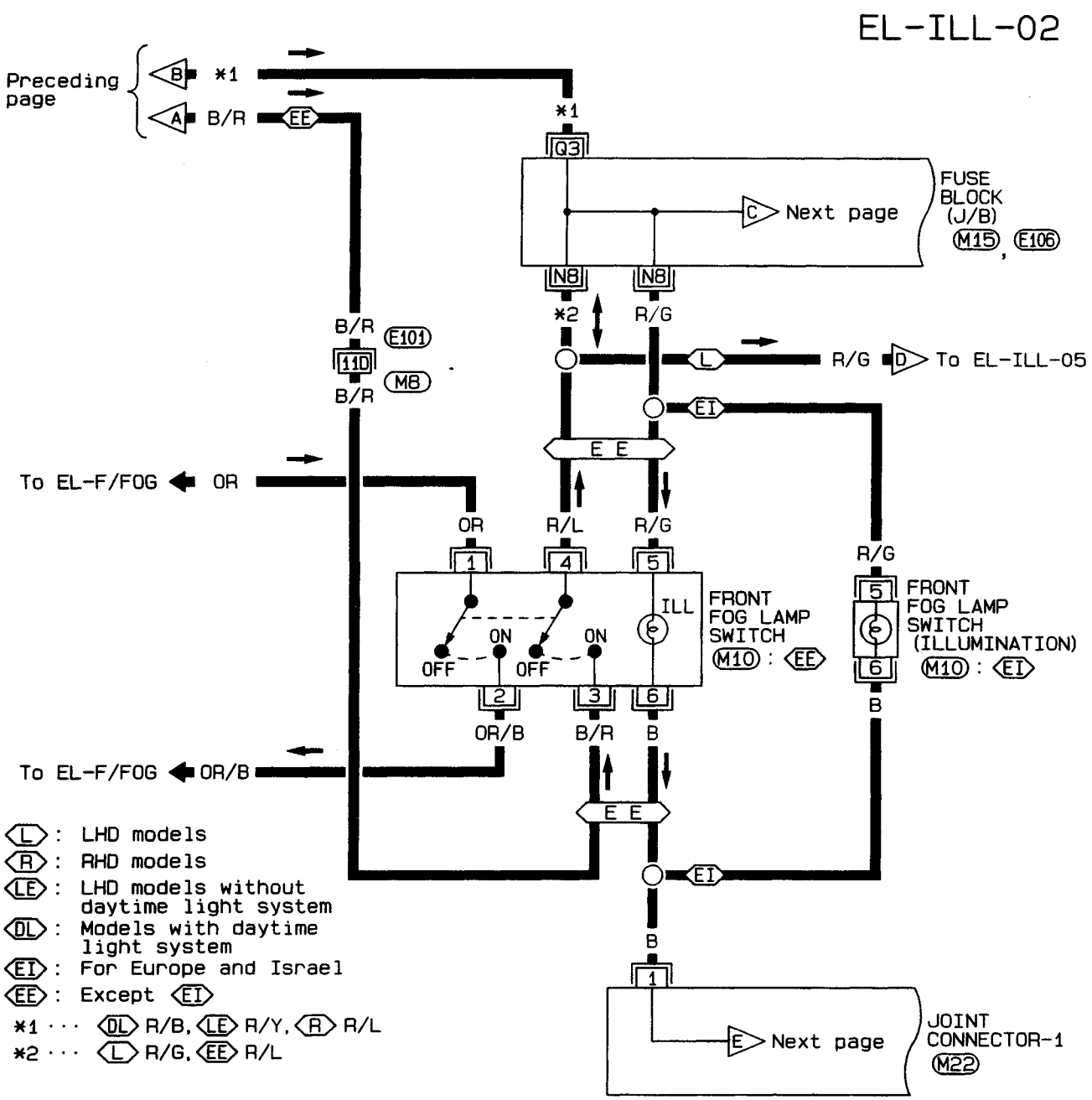


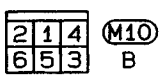



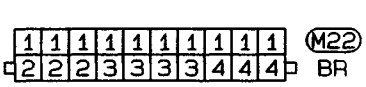




HEL053

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




Refer to last page (Foldout page).

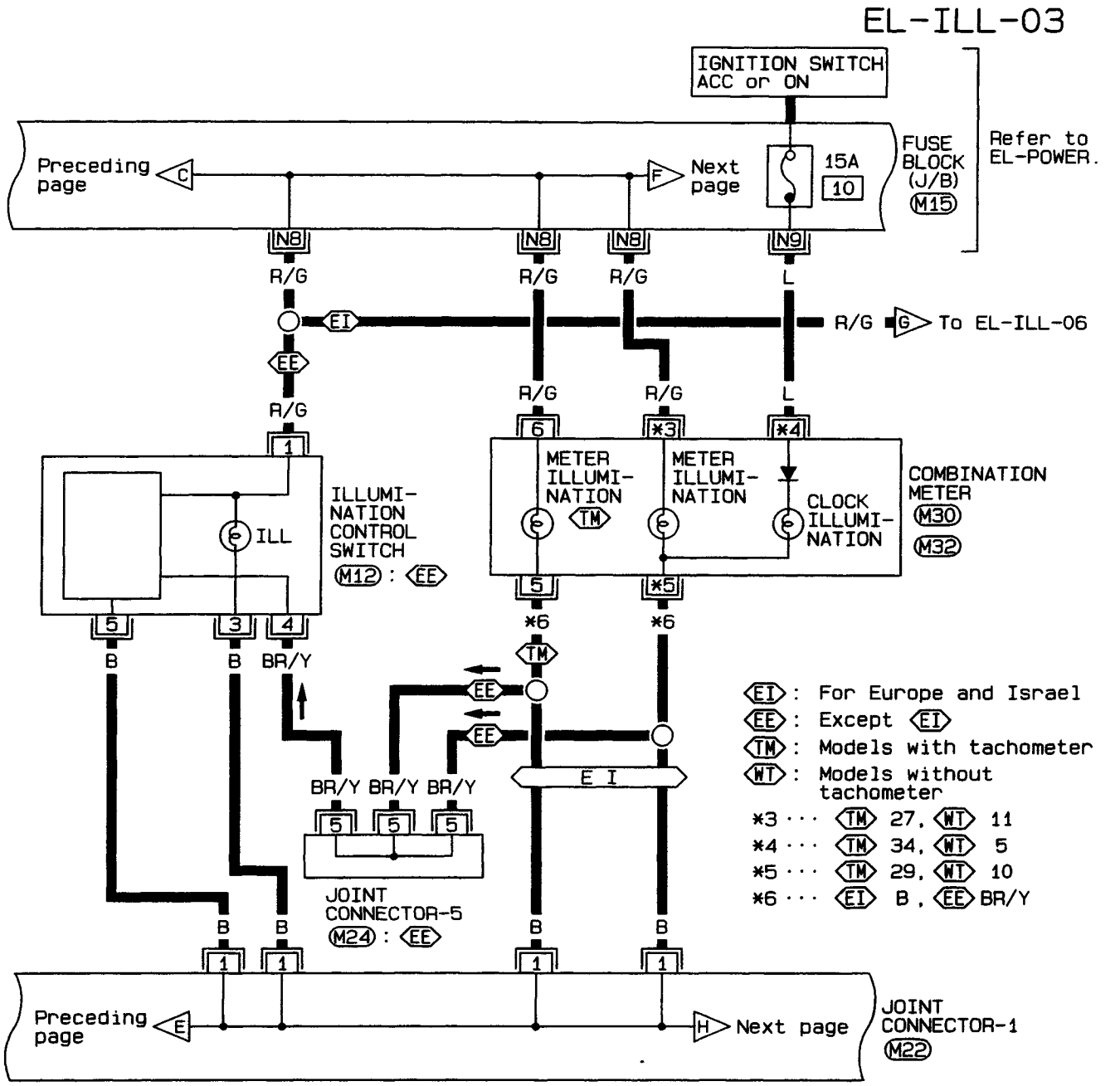
M8, E101

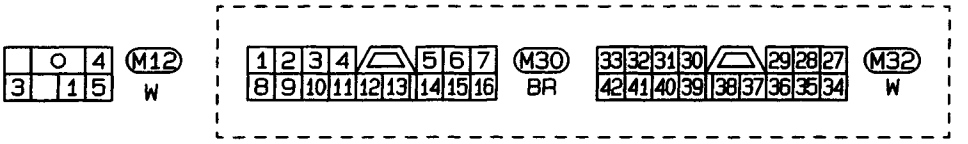
M15, E106

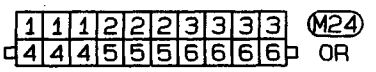
EL

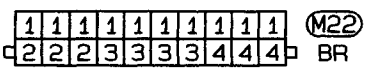
HEL054

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



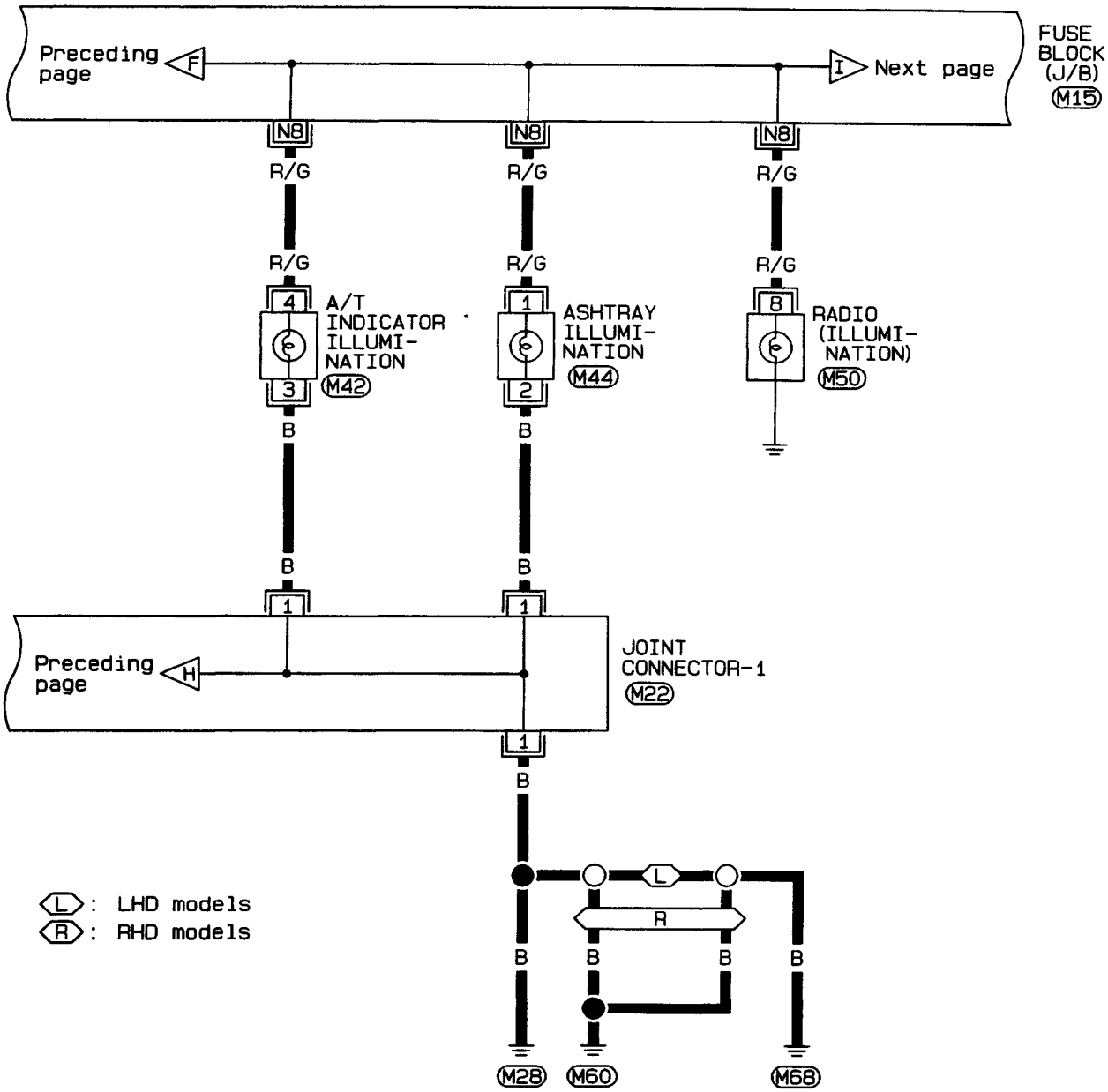



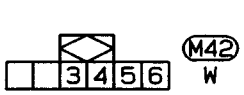

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M15

HEL055

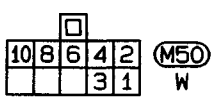
EL-ILL-04

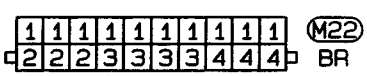









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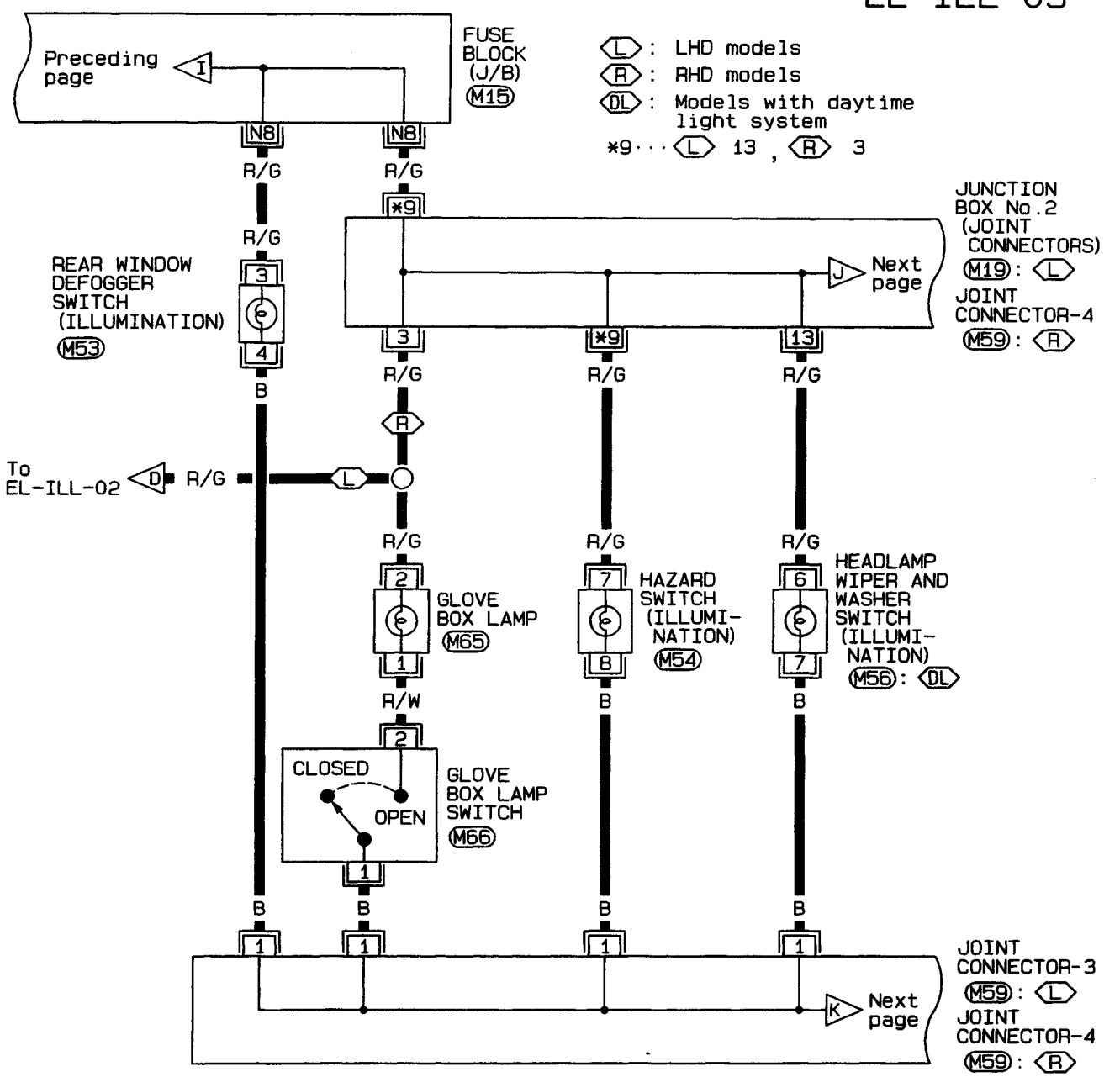
M15

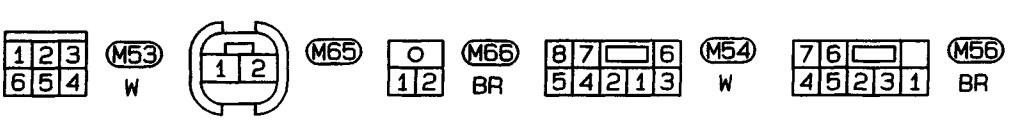
EL

HEL056

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

EL-ILL-05







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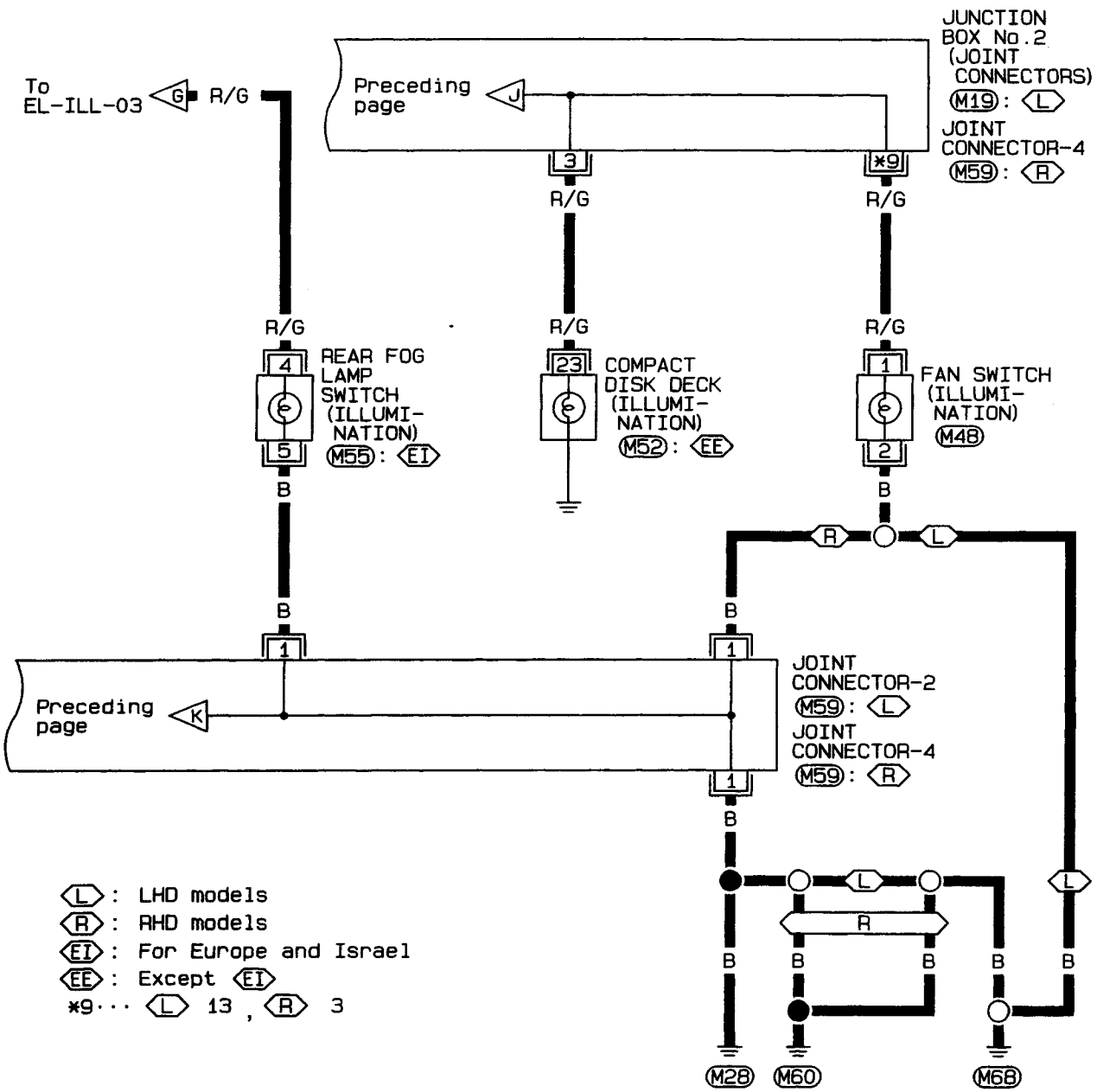
M15

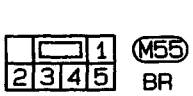
M19

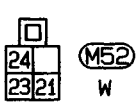
HEL057

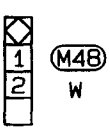
## Illumination/Wiring Diagram — ILL — (Cont'd)

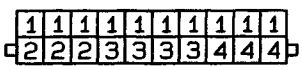
EL-ILL-06

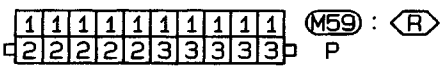



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M19

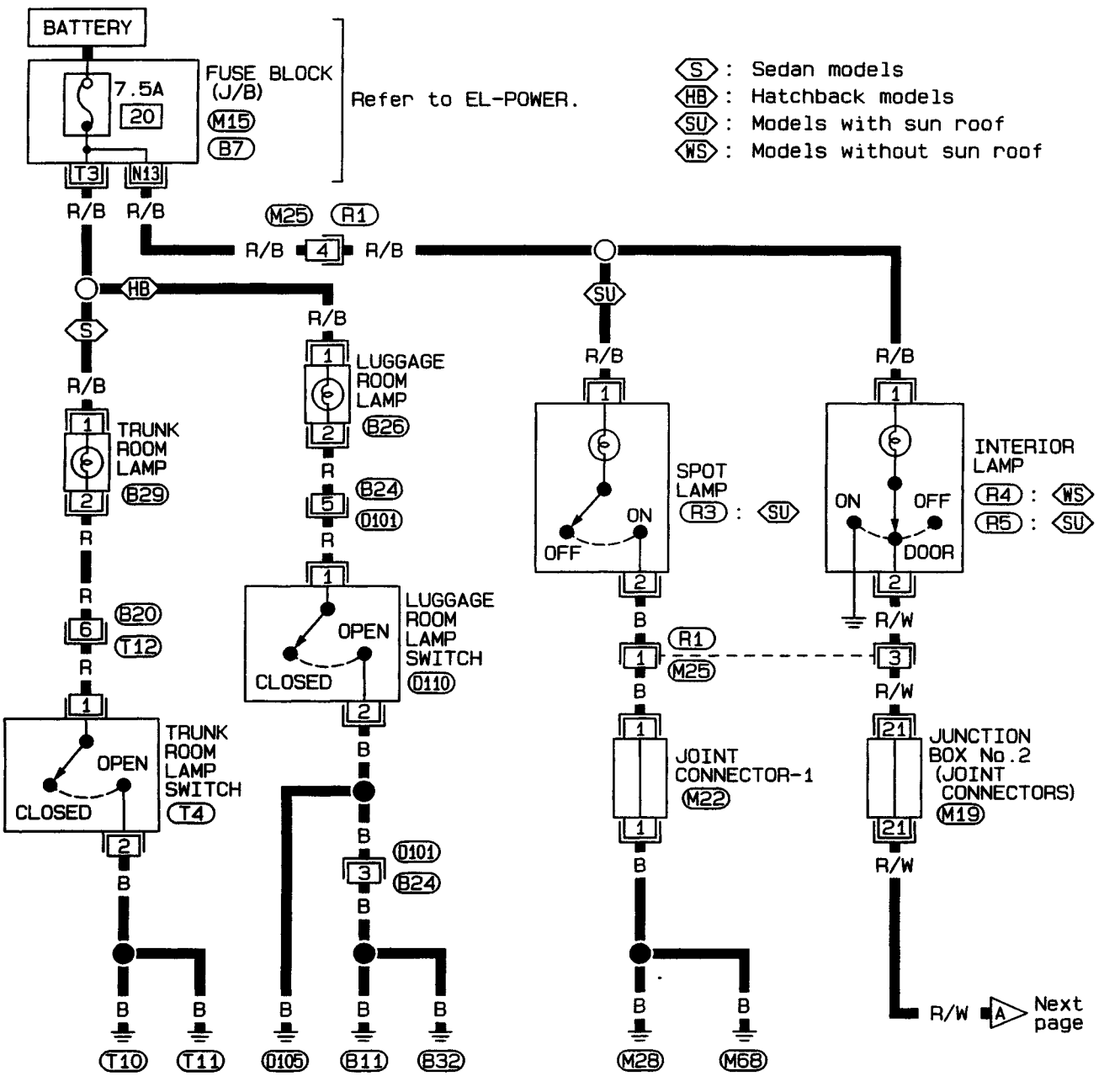
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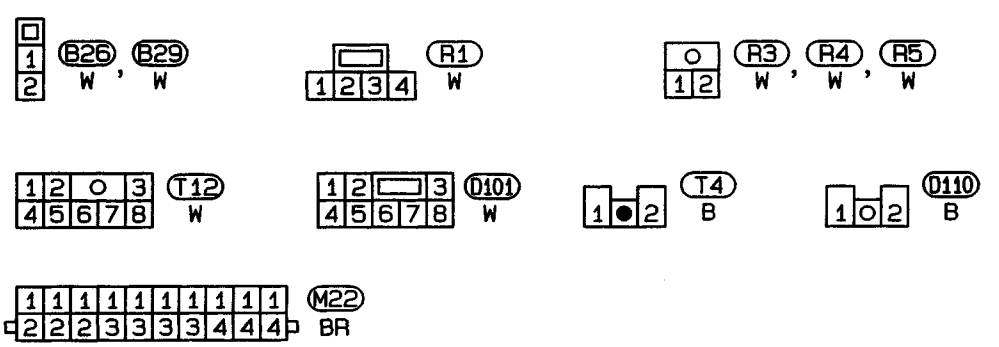
HEL058

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

### LHD MODELS

EL-INT/L-01



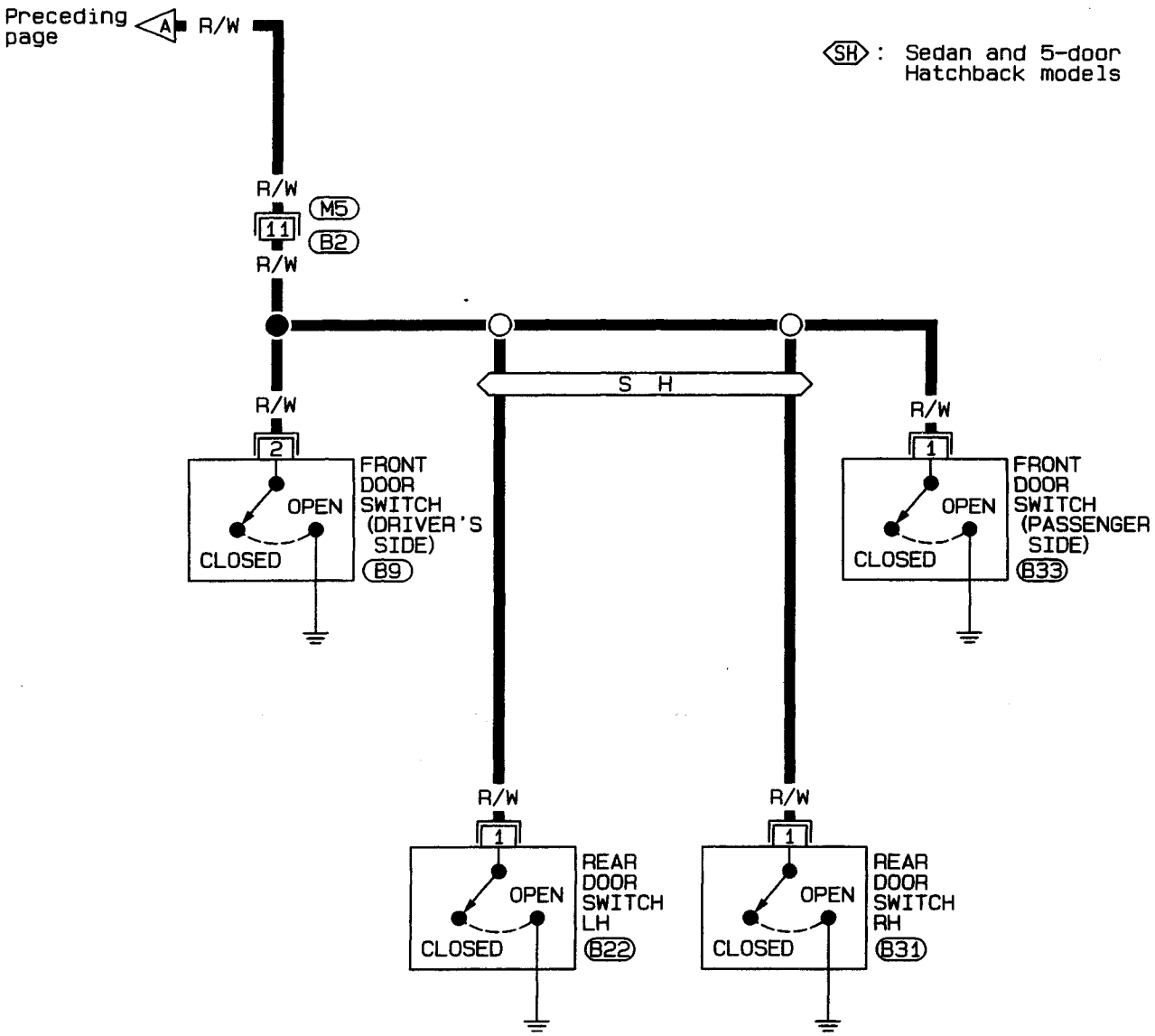

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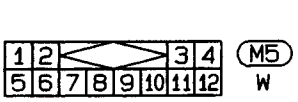
M15, B7
M19

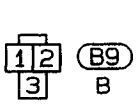
HEL061

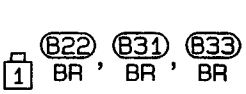
## Interior, Spot, Trunk Room and Luggage Room Lamps/Wiring Diagram — INT/L — (Cont'd)

EL-INT/L-02



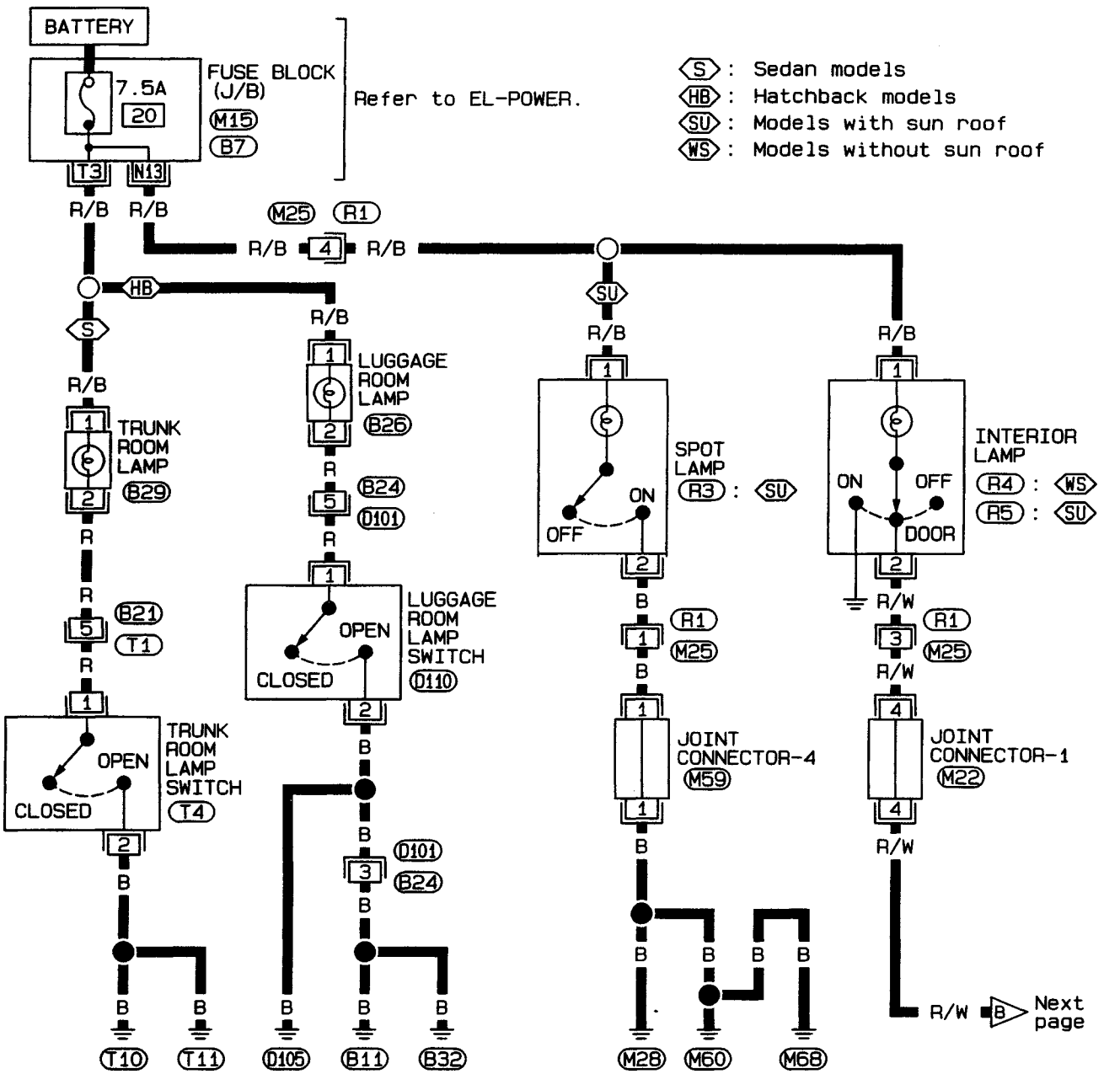

EL

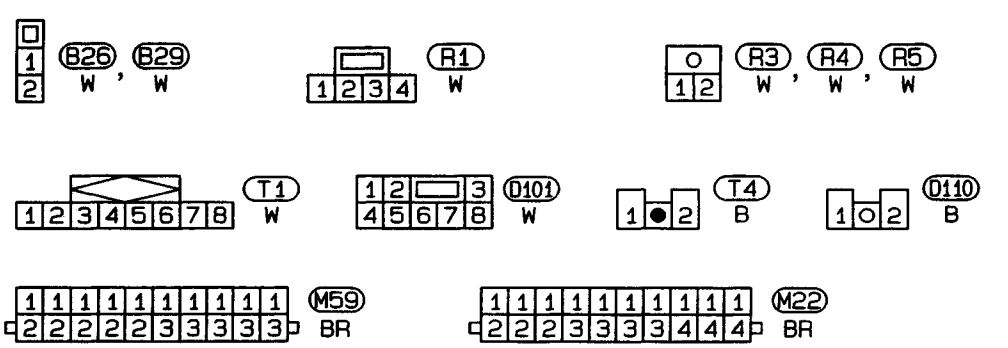
HEL062

## Interior, Spot, Trunk Room and Luggage Room Lamps/Wiring Diagram — INT/L — (Cont'd)

### RHD MODELS

EL-INT/L-03



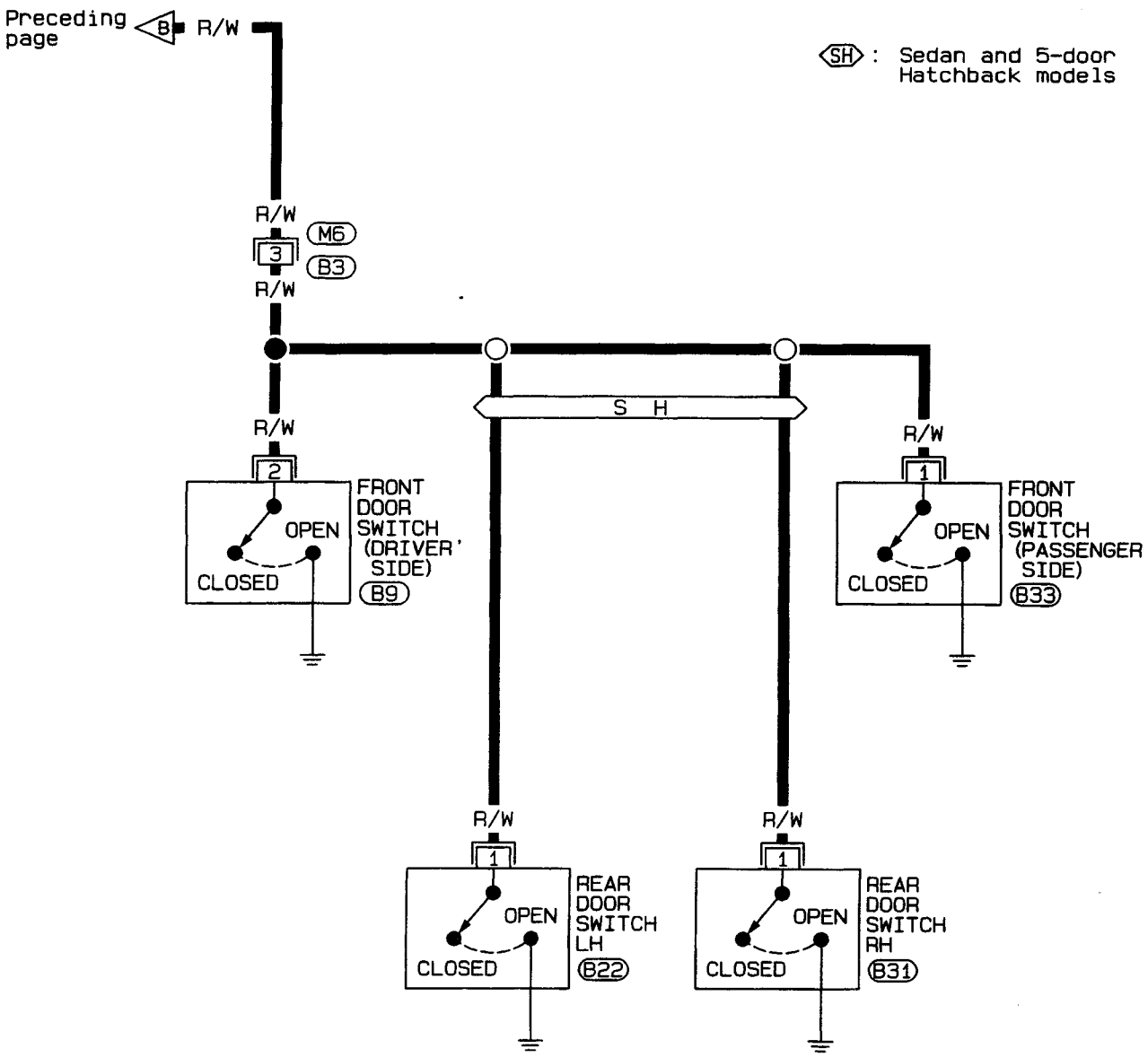

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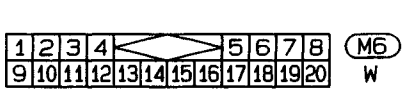
M15, B7

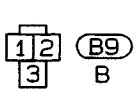
HEL063

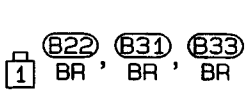
## Interior, Spot, Trunk Room and Luggage Room Lamps/Wiring Diagram — INT/L — (Cont'd)

EL-INT/L-04




EL

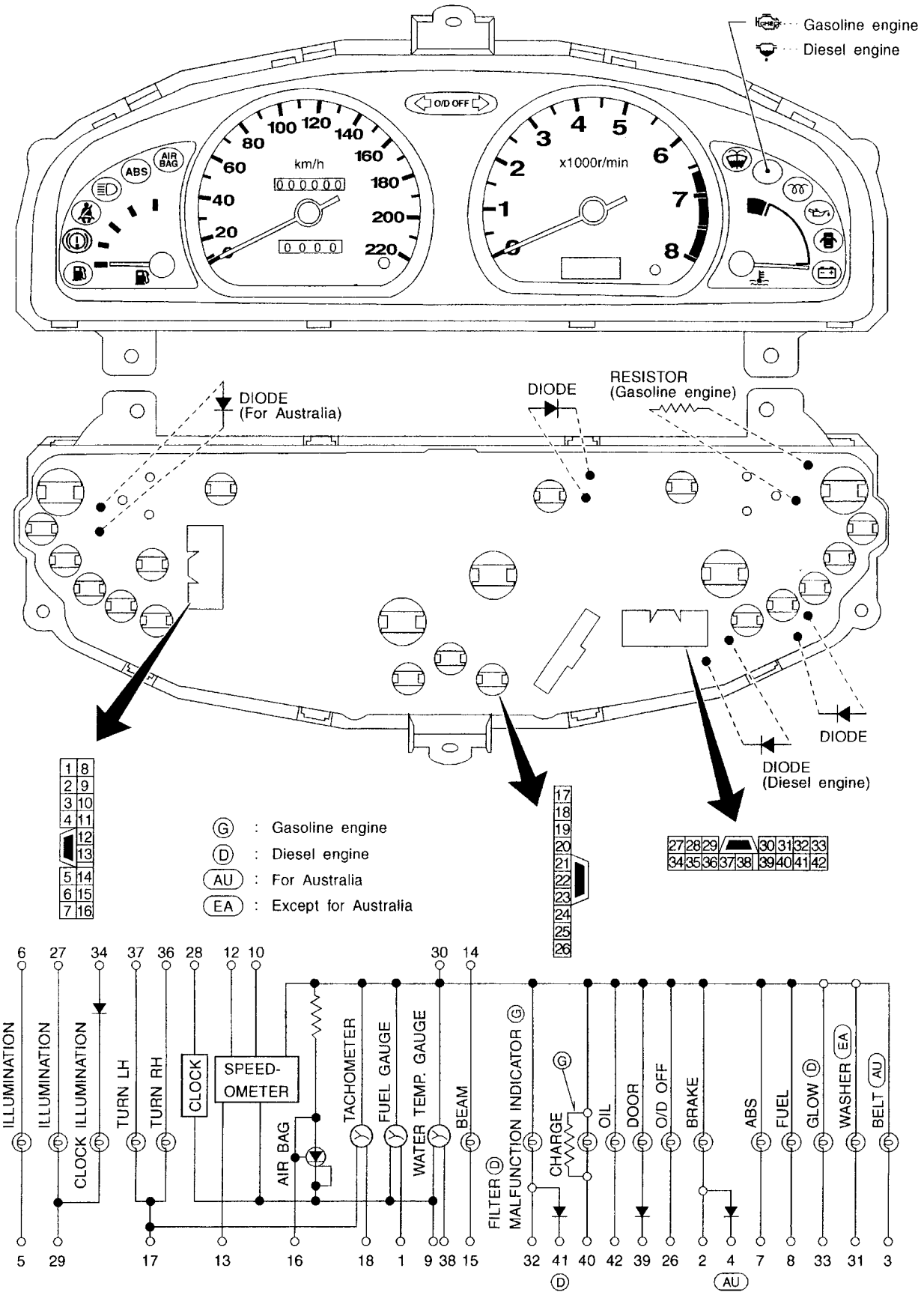
HEL064

## Bulb Specifications

| | Wattage (W) |
|---|---|
| Interior lamp | 10 |
| Spot lamp | 10 |
| Turn room lamp | 3.4 |
| Luggage room lamp | 3.4 |

## Combination Meter

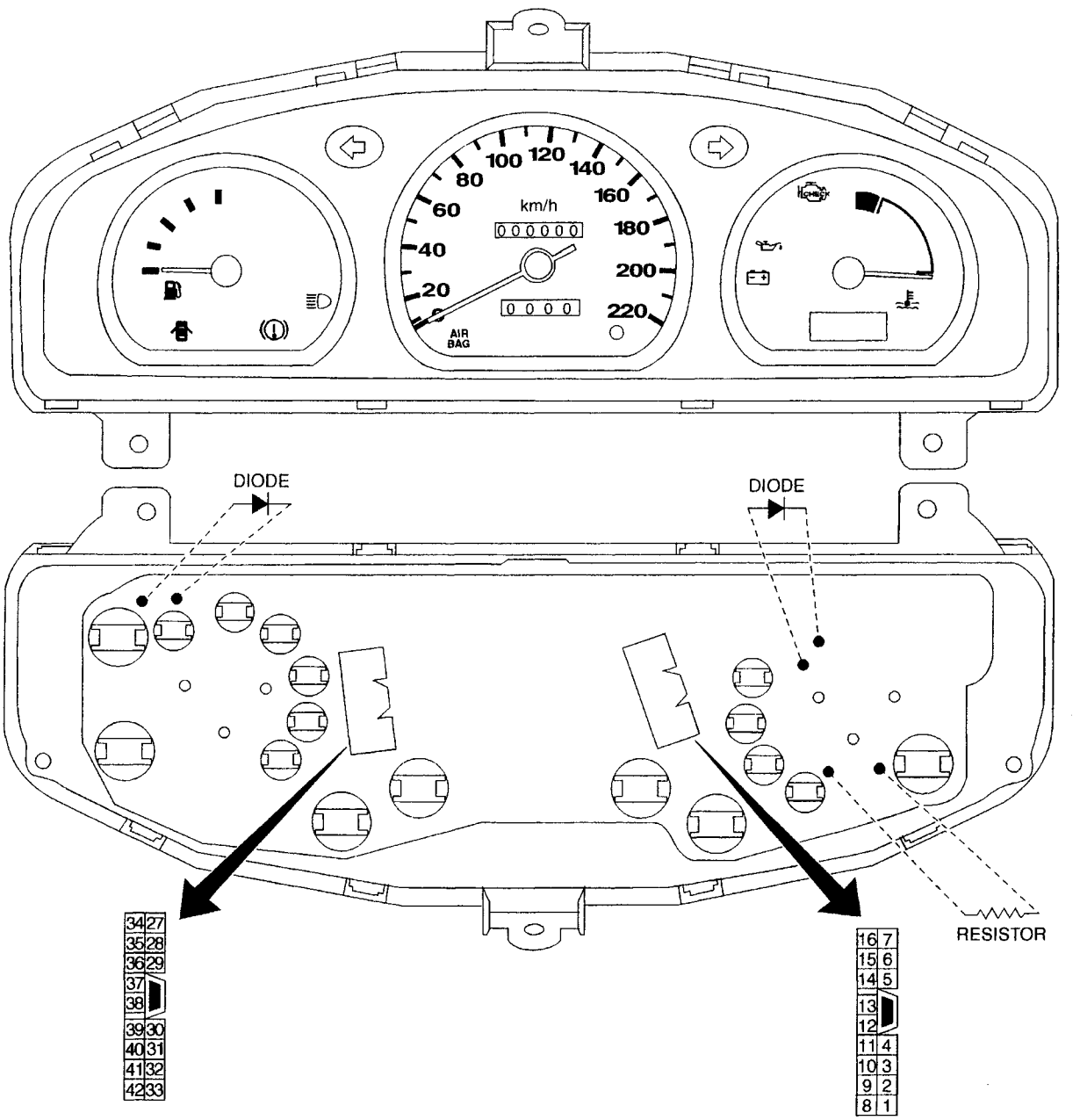
### WITH TACHOMETER

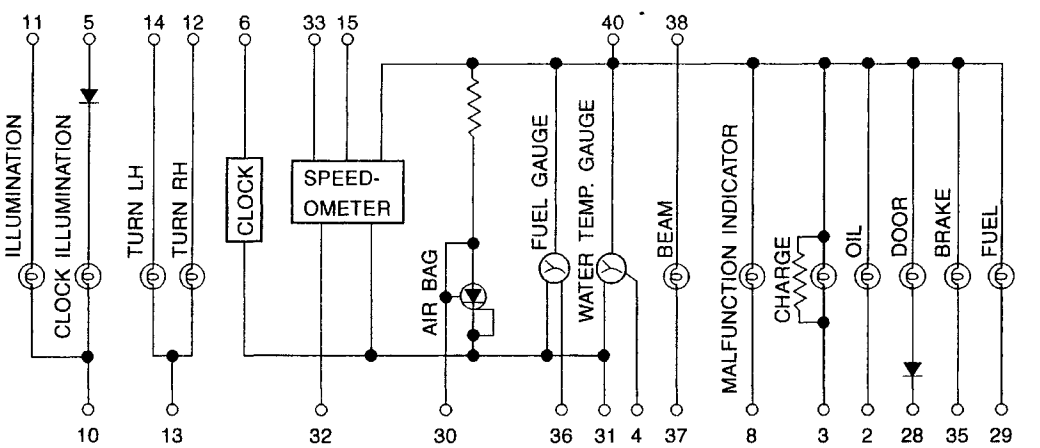



HEL065

## Combination Meter (Cont'd)

### WITHOUT TACHOMETER



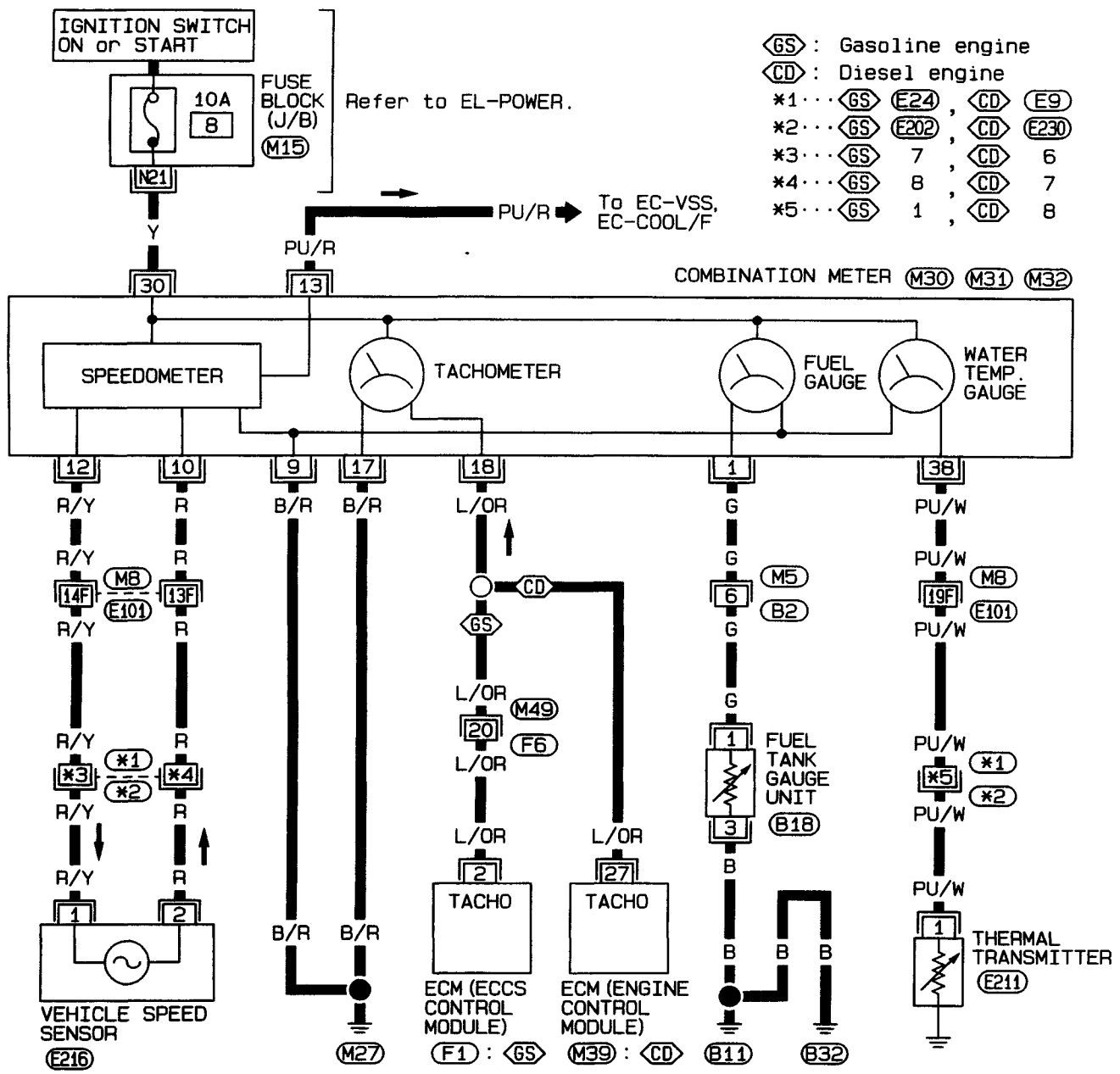



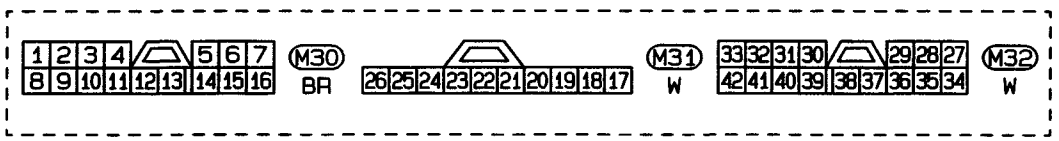

HEL066

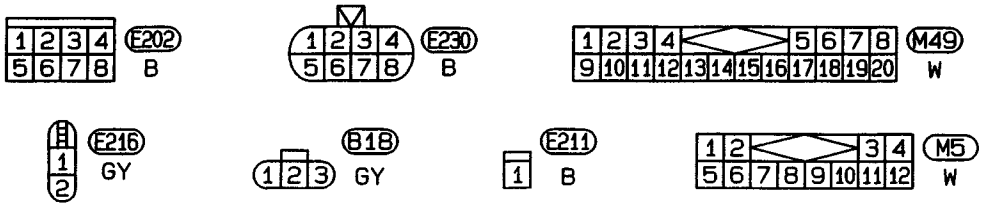
## Speedometer, Tachometer, Temp. and Fuel Gauges/Wiring Diagram — METER —

### LHD MODELS WITH TACHOMETER

EL-METER-01




Refer to last page (Foldout page).

M8 , E101

M15

F1

M39

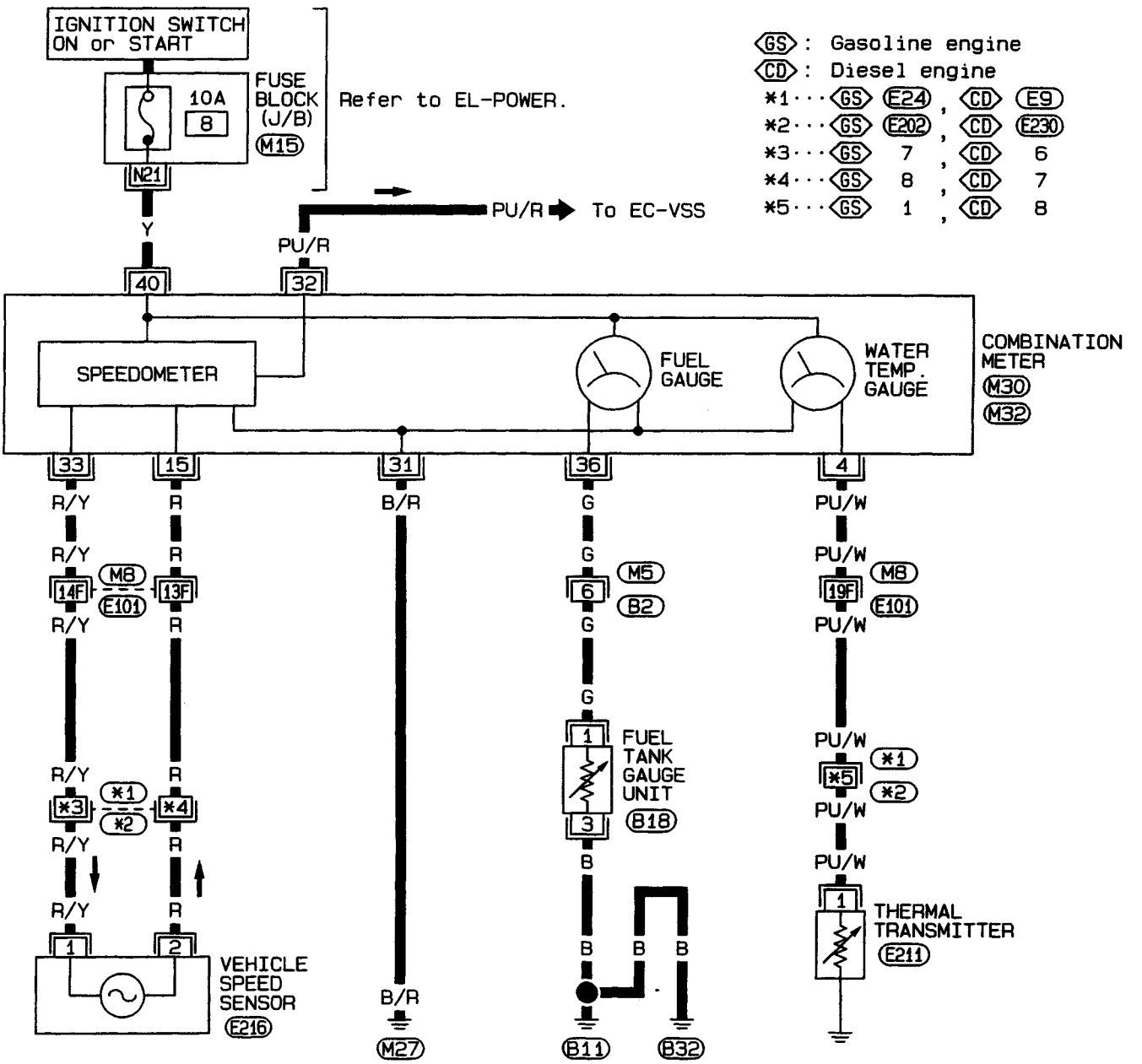
HEL067

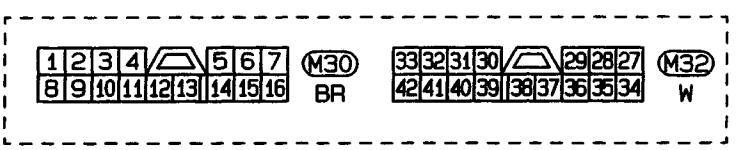
EL

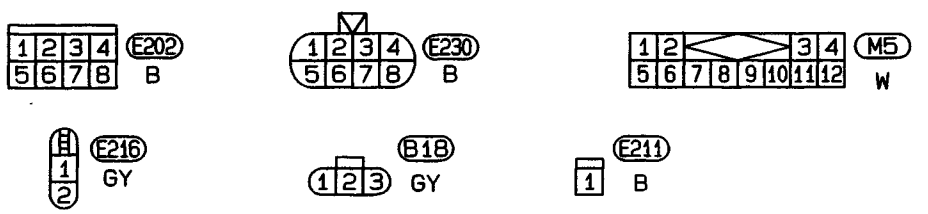
## Speedometer, Tachometer, Temp. and Fuel Gauges/Wiring Diagram — METER — (Cont'd)

### LHD MODELS WITHOUT TACHOMETER

EL-METER-02




Refer to last page (Foldout page).

M8 , E101

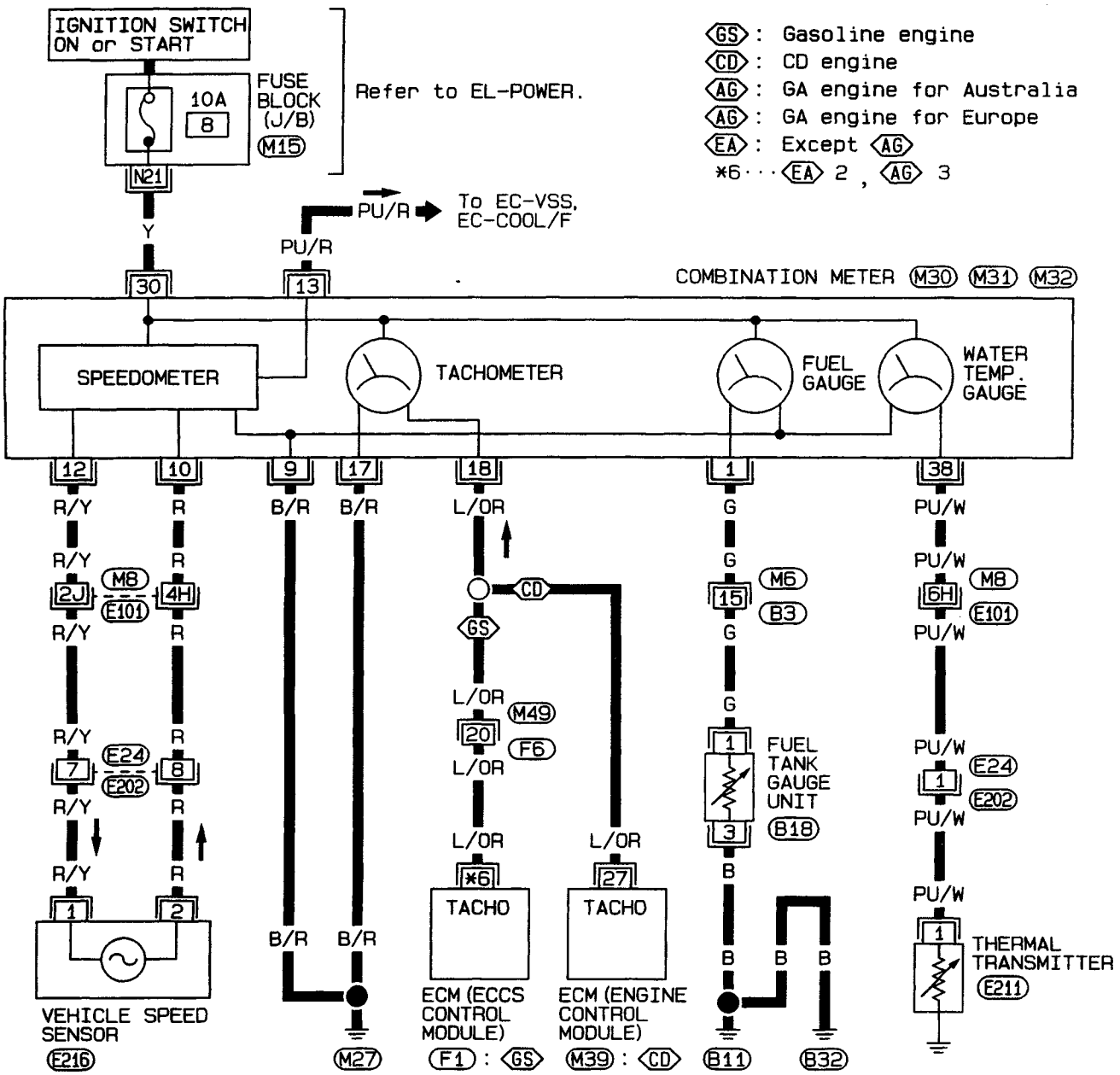
M15

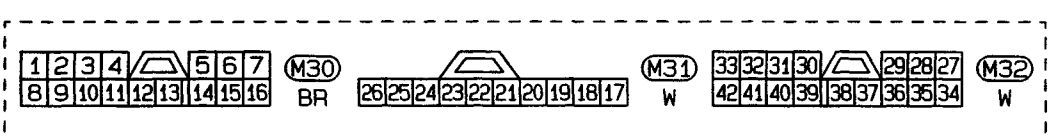
HEL068

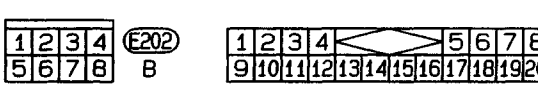
## Speedometer, Tachometer, Temp. and Fuel Gauges/Wiring Diagram — METER — (Cont'd)

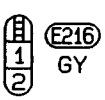
### RHD MODELS WITH TACHOMETER

EL-METER-03




Refer to last page (Foldout page).

M8 , E101

M15

F1

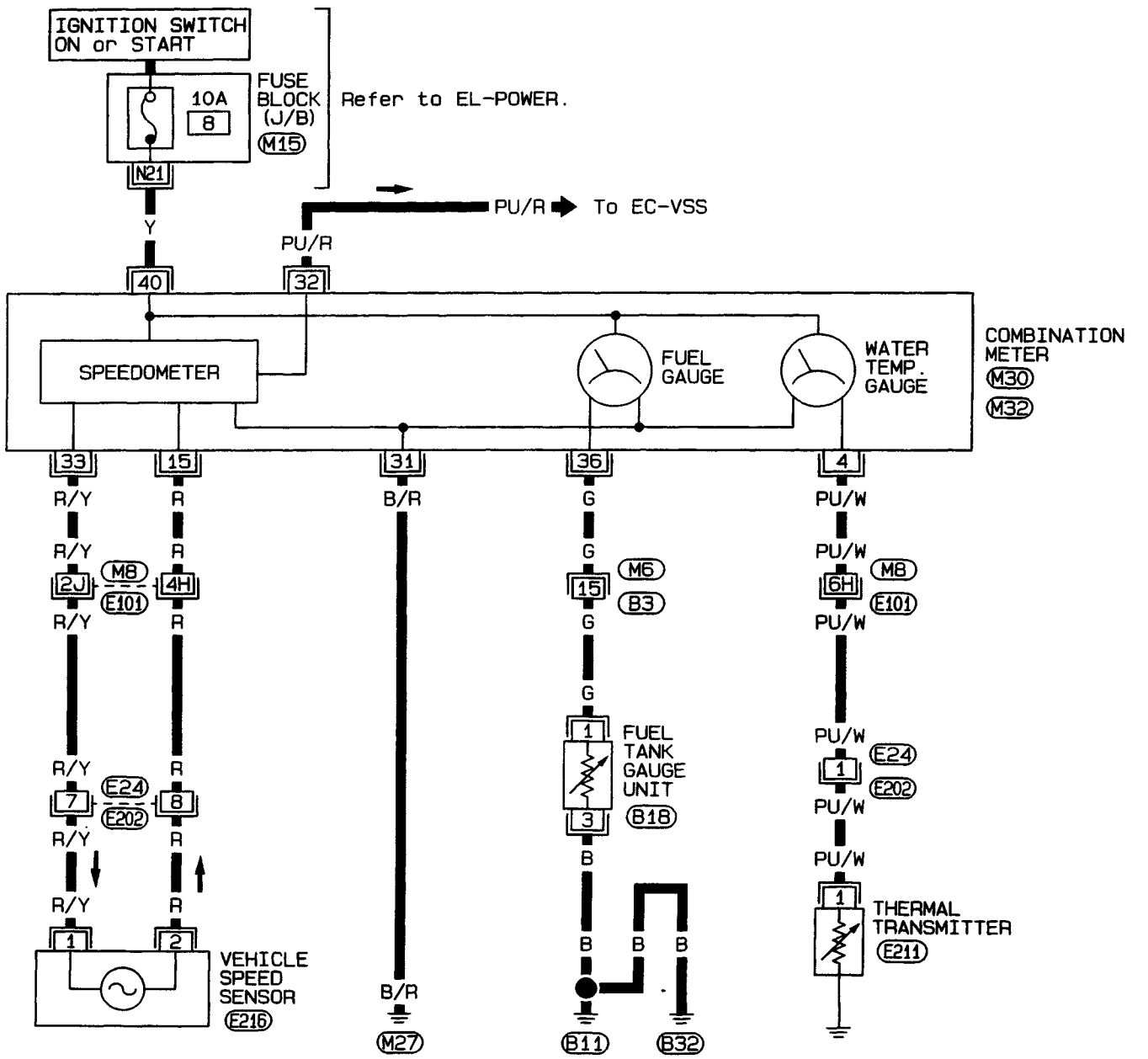
M39

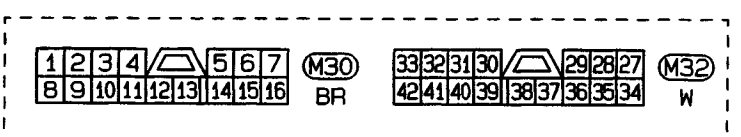
HEL069

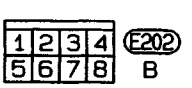
## Speedometer, Tachometer, Temp. and Fuel Gauges/Wiring Diagram — METER — (Cont'd)

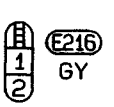
### RHD MODELS WITHOUT TACHOMETER

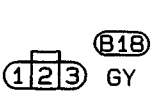
EL-METER-04

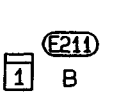


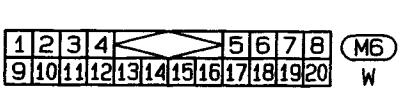



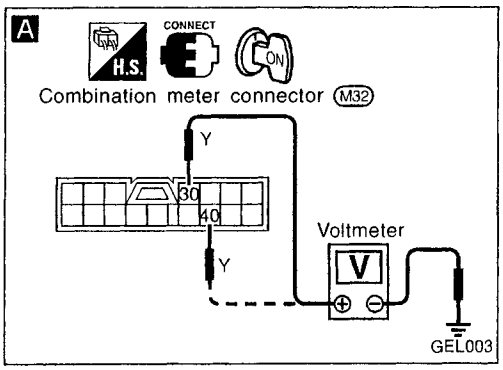

Refer to last page (Foldout page).

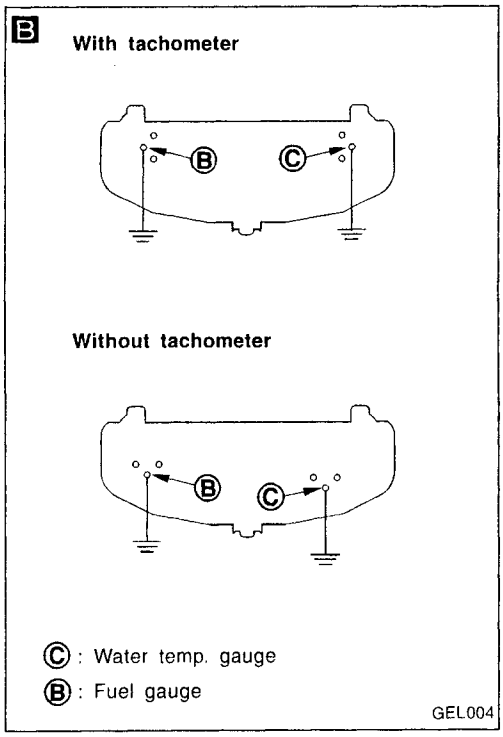
M8 , E101

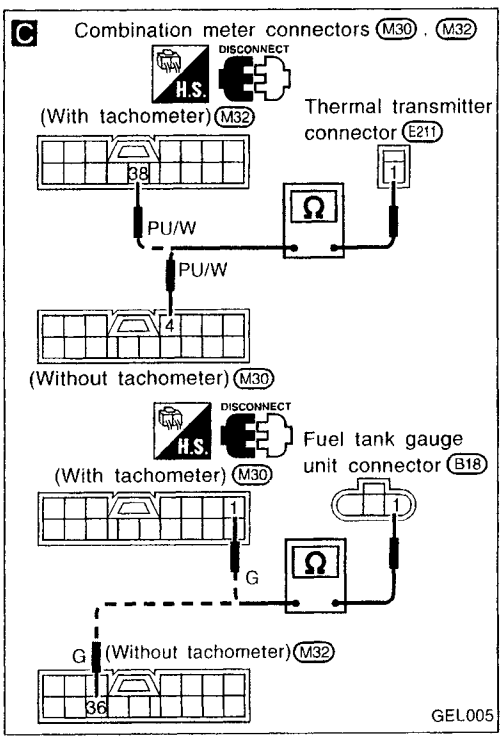
M15

HEL070

## Inspection/Fuel Gauge and Water Temperature Gauge




INSPECTION START

**A**

CHECK POWER SOURCE.
1) Turn ignition switch "ON".
2) Check voltage between terminal ㉚ (with tachometer) or ㊵ (without tachometer) and ground.
**Battery voltage should exist.**

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

OK ↓

**B**

CHECK GAUGE OPERATION.
1) Turn ignition switch "ON".
2) Connect terminals Ⓑ (Fuel), Ⓒ (Temp.) 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 ↓

**C**

CHECK HARNESS CONTINUITY between terminals as follows.
**Continuity should exist.**

NG → Repair or replace.

| | Terminals | | |
|---|---|---|---|
| | Combination meter connector | Thermal transmitter connector | Fuel tank gauge unit connector |
| With tachometer | ㊳ | ① | |
| | ① | | ① |
| Without tachometer | ④ | ① | |
| | ㊱ | | ① |

OK ↓

CHECK COMPONENT.
Check gauge units and harness.
**Refer to "Fuel Tank Gauge Unit Check" (EL-137) or "Thermal Transmitter Check" (EL-137).**

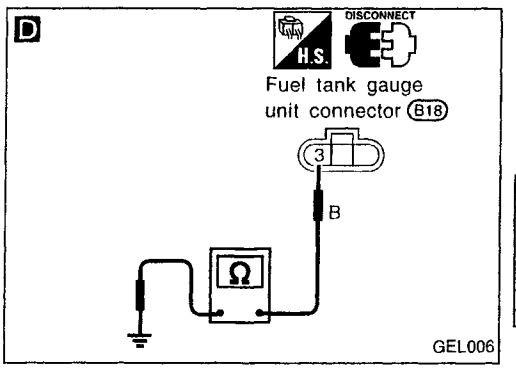
NG → Repair or replace.
**Refer to FE section. (Fuel gauge)**

OK ↓

(Go to Ⓐ on next page)

EL

## Inspection/Fuel Gauge and Water Temperature Gauge (Cont'd)




Ⓐ

D

Check harness continuity between fuel tank gauge unit harness terminal ③ and body ground.
**Continuity should exist.**

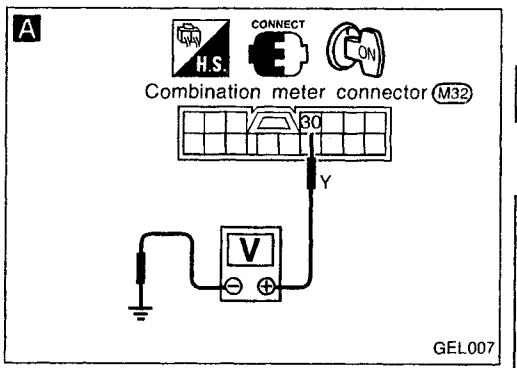
NG → Repair harness or connector.

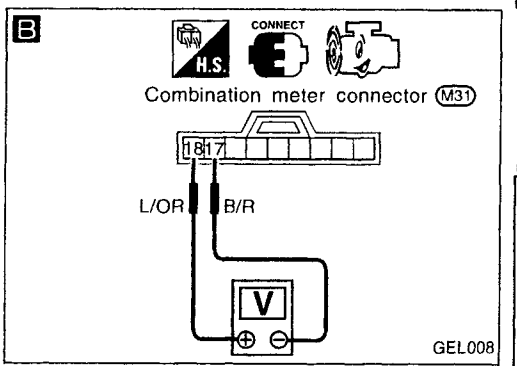
OK

Reinstall any part removed.

INSPECTION END

## Inspection/Tachometer




INSPECTION START

A

CHECK POWER SOURCE.
1) Turn ignition switch "ON".
2) Check voltage between terminal ㉚ and ground.
**Battery voltage should exist.**

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

OK

B

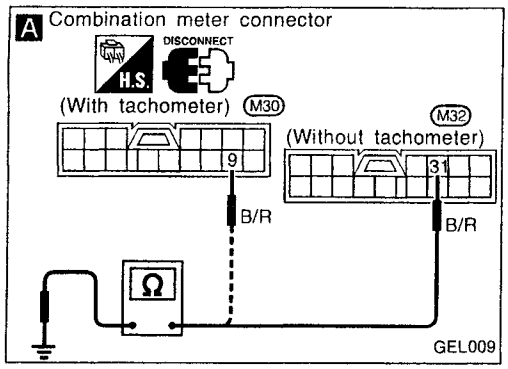
CHECK ECM OUTPUT.
1) Start engine.
2) Check voltage between terminals ⑱ and ⑰ at idle and 2,000 rpm.
**Higher rpm = Higher voltage**
**Lower rpm = Lower voltage**
**Voltage should change with rpm.**

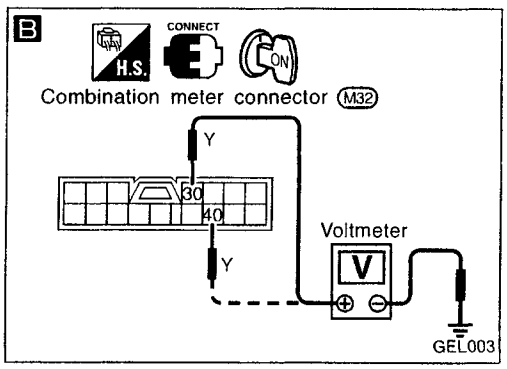
NG → Check harness and connector between ECM and combination meter, or check ground.

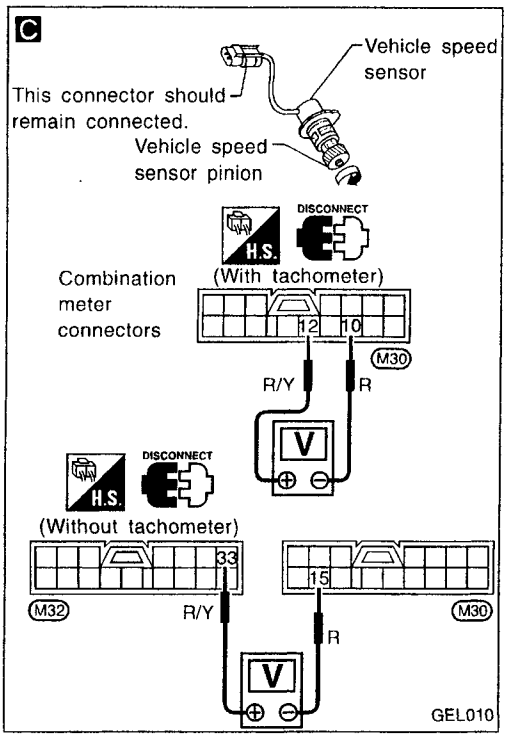
OK

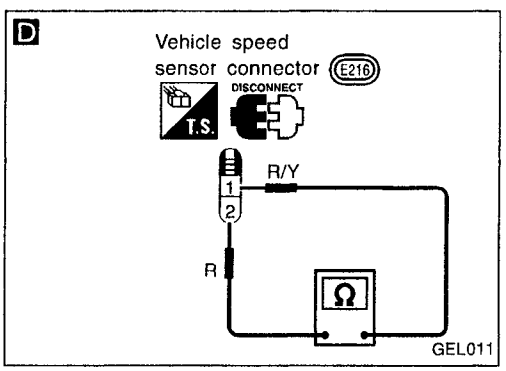
Replace tachometer.

INSPECTION END




## Inspection/Speedometer and Vehicle Speed Sensor

**SYMPTOM: Speedometer stays at 0 km/h (0 MPH).**

INSPECTION START

**A**

CHECK GROUND CIRCUIT OF SPEEDOMETER.
Check continuity between terminal ⑨ (with tachometer) or ㉛ (without tachometer) and body ground.
**Continuity should exist.**

NG → Repair harness or connector.

OK

**B**

CHECK SPEEDOMETER CIRCUIT.
1) Turn ignition switch "ON".
2) Check voltage between terminal ㉚ (with tachometer) or ㊵ (without tachometer) and body ground.
**Battery voltage should exist.**

NG → Repair harness or connector.

OK

**C**

CHECK VEHICLE SPEED SENSOR OUTPUT.
1) Remove vehicle speed sensor from transaxle.
2) Check voltage between terminals ⑫ and ⑩ (with tachometer) or ㉝ and ⑮ (without tachometer) while quickly turning speed sensor pinion.
**Voltage: Approx. 0.5V**

OK → Replace speedometer.

NG

**D**

CHECK VEHICLE SPEED SENSOR.
Check resistance between terminals ① and ②.
**Resistance: Approx. 250Ω.**

NG → Replace vehicle speed sensor.

OK

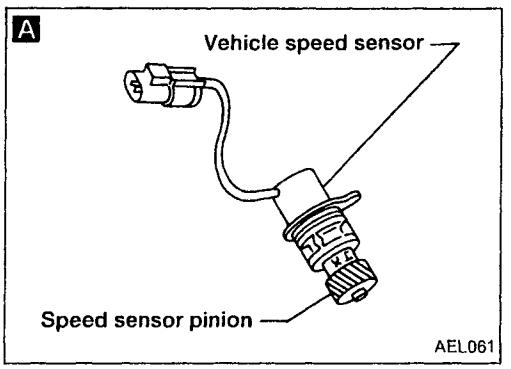
Repair harness or connector between speedometer and vehicle speed sensor.

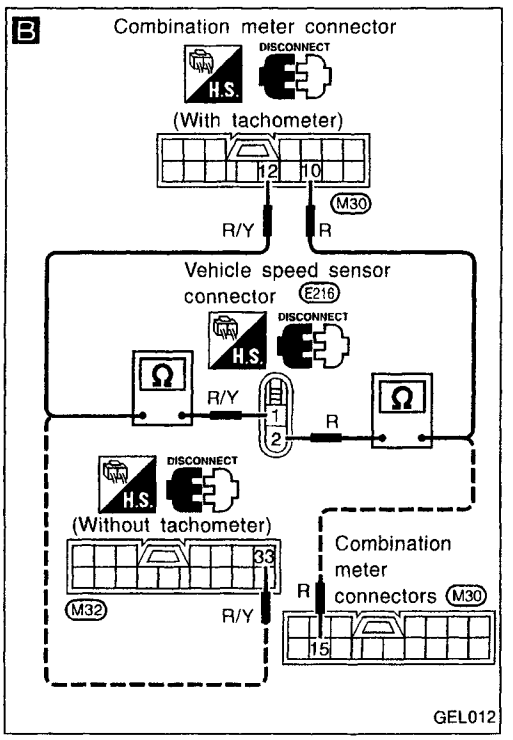
INSPECTION END

EL

## Inspection/Speedometer and Vehicle Speed Sensor (Cont'd)

**SYMPTOM: Speedometer indication flutters.**




INSPECTION START

Is vehicle speed sensor installed properly? Check looseness and so on.
- NG → Install vehicle speed sensor properly.
- OK ↓

A

Do you feel resistance when turning vehicle speed sensor pinion?
- No → Replace vehicle speed sensor.
- Yes ↓

B

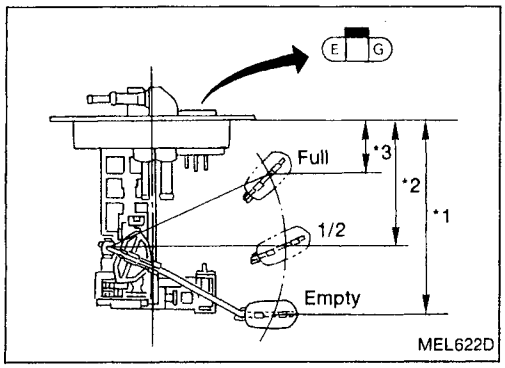
Check continuity between speedometer terminals and vehicle speed sensor terminals.
- NG → Repair harness and connector.

**Continuity should exist.**

| Combination meter terminal | | Vehicle speed sensor terminal |
|---|---|---|
| With tachometer | ⑫ | ① |
| | ⑩ | ② |
| Without tachometer | ㉝ | ① |
| | ⑮ | ② |

OK ↓

Replace speedometer.



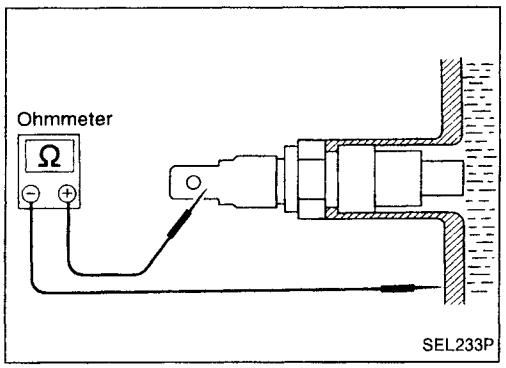

## Fuel Tank Gauge Unit Check

- For removal, refer to FE section ("FUEL SYSTEM").

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

| Ohmmeter (+) | Ohmmeter (−) | Float position mm (in) | | | Resistance value (Ω) |
|---|---|---|---|---|---|
| G | E | *3 | Full | 36 (1.42) | Approx. 4 - 6 |
| | | *2 | 1/2 | 86 (3.39) | 27 - 35 |
| | | *1 | Empty | 131 (5.16) | 78 - 85 |

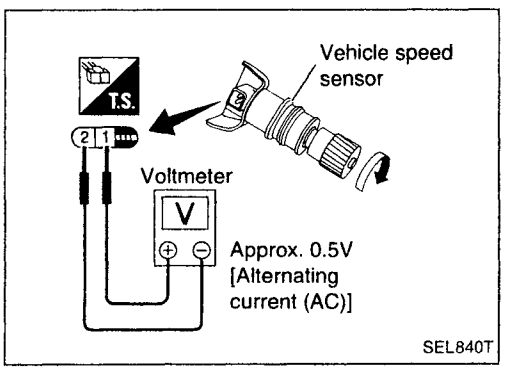
*1 and *3: When float rod is in contact with stopper.




## Thermal Transmitter Check

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

| Water temperature | Resistance |
|---|---|
| 60°C (140°F) | Approx. 70 - 90Ω |
| 100°C (212°F) | Approx. 21 - 24Ω |

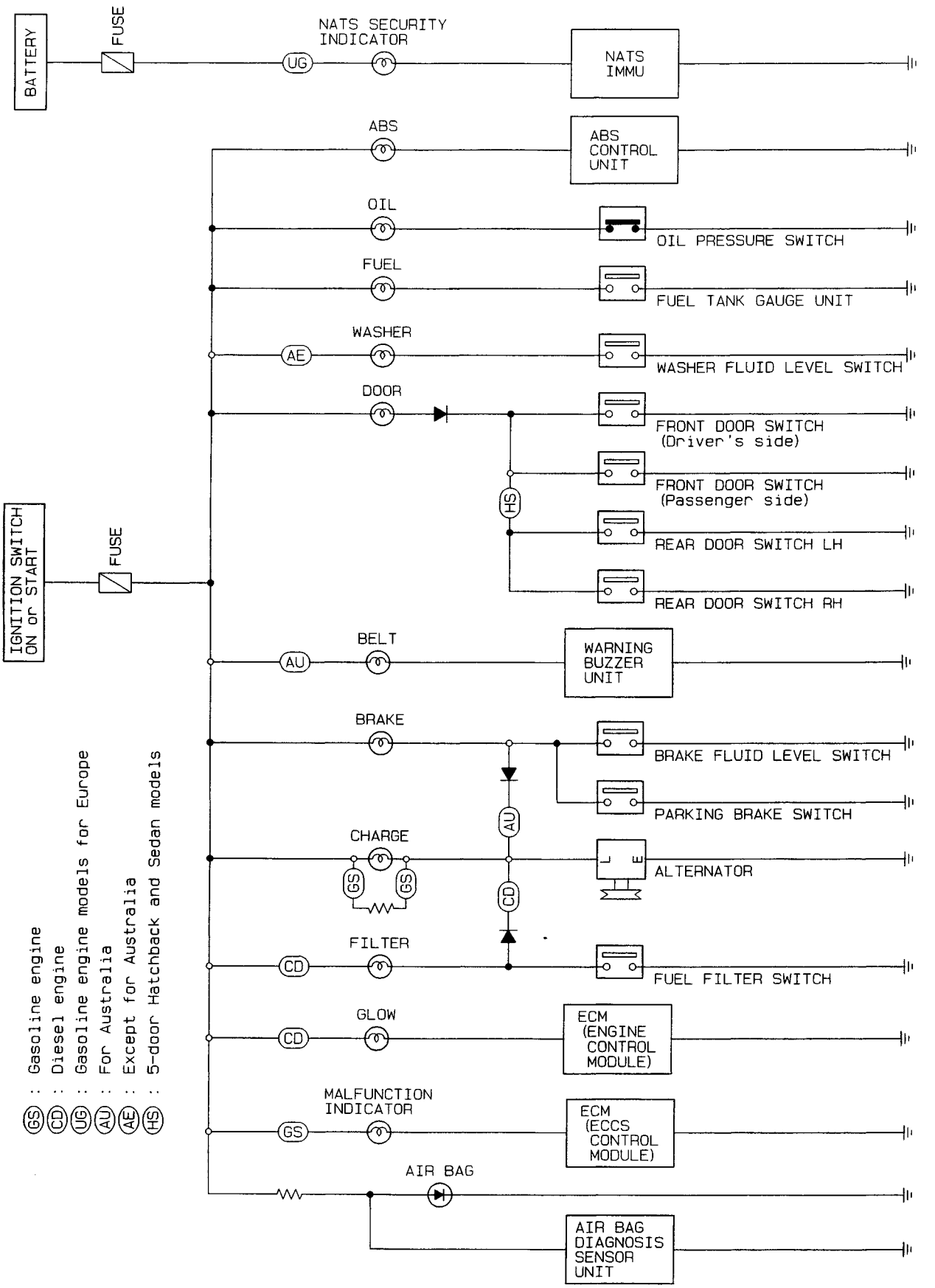



## Vehicle Speed Sensor Signal Check

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

EL

## Warning Lamps/Schematic

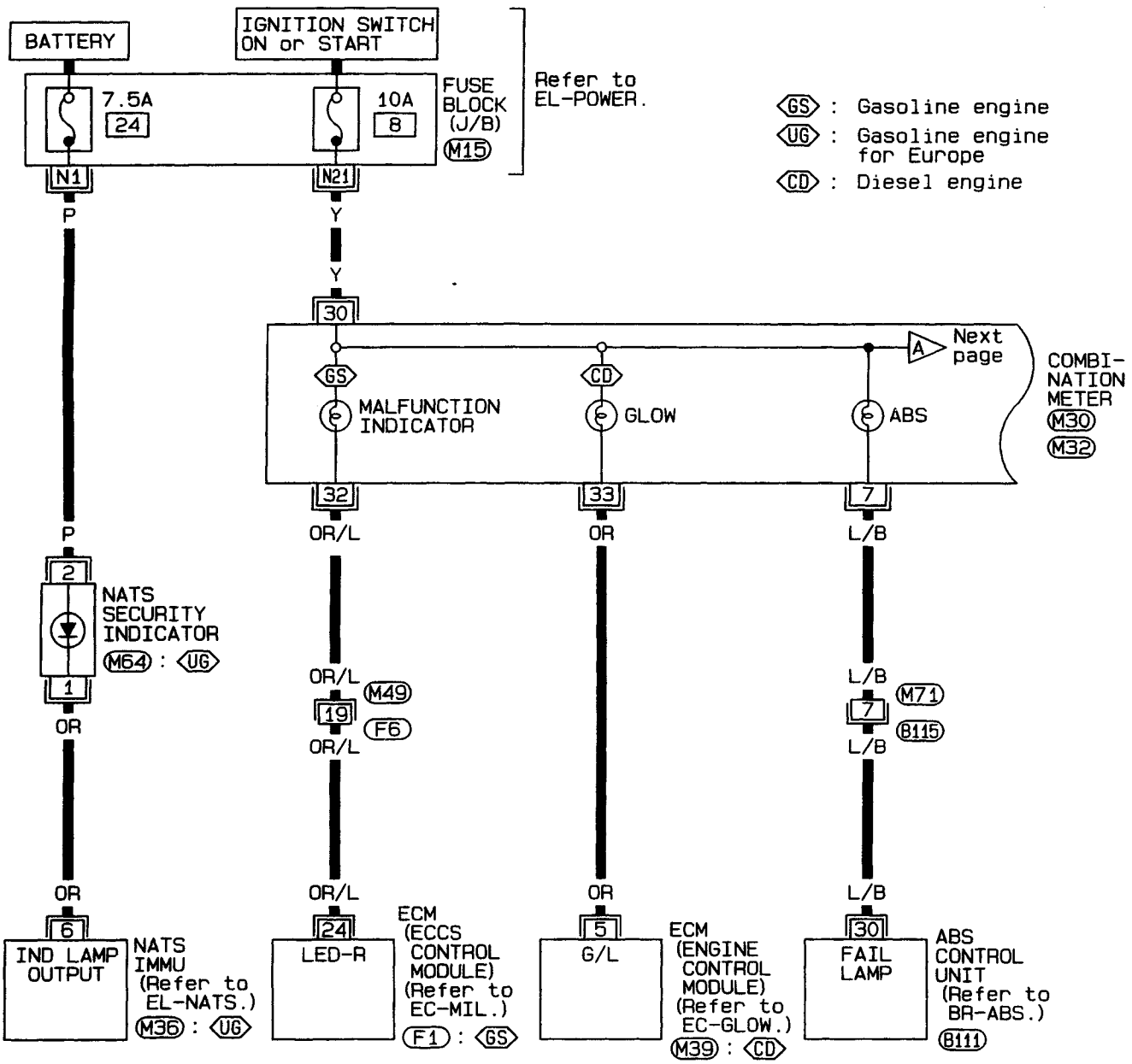


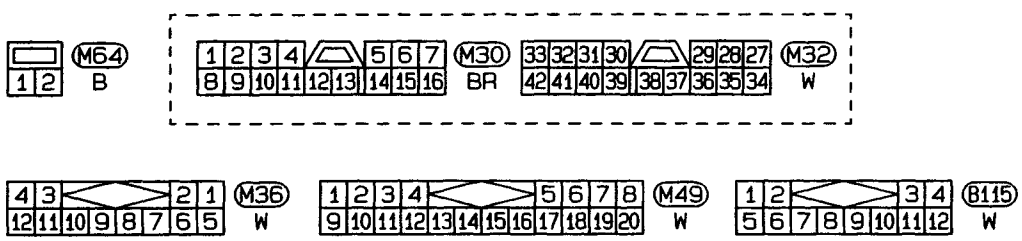

HEL082

## Warning Lamps/Wiring Diagram — WARN —

### LHD MODELS WITH TACHOMETER

EL-WARN-01




Refer to last page (Foldout page).

M15

F1

M39

B111

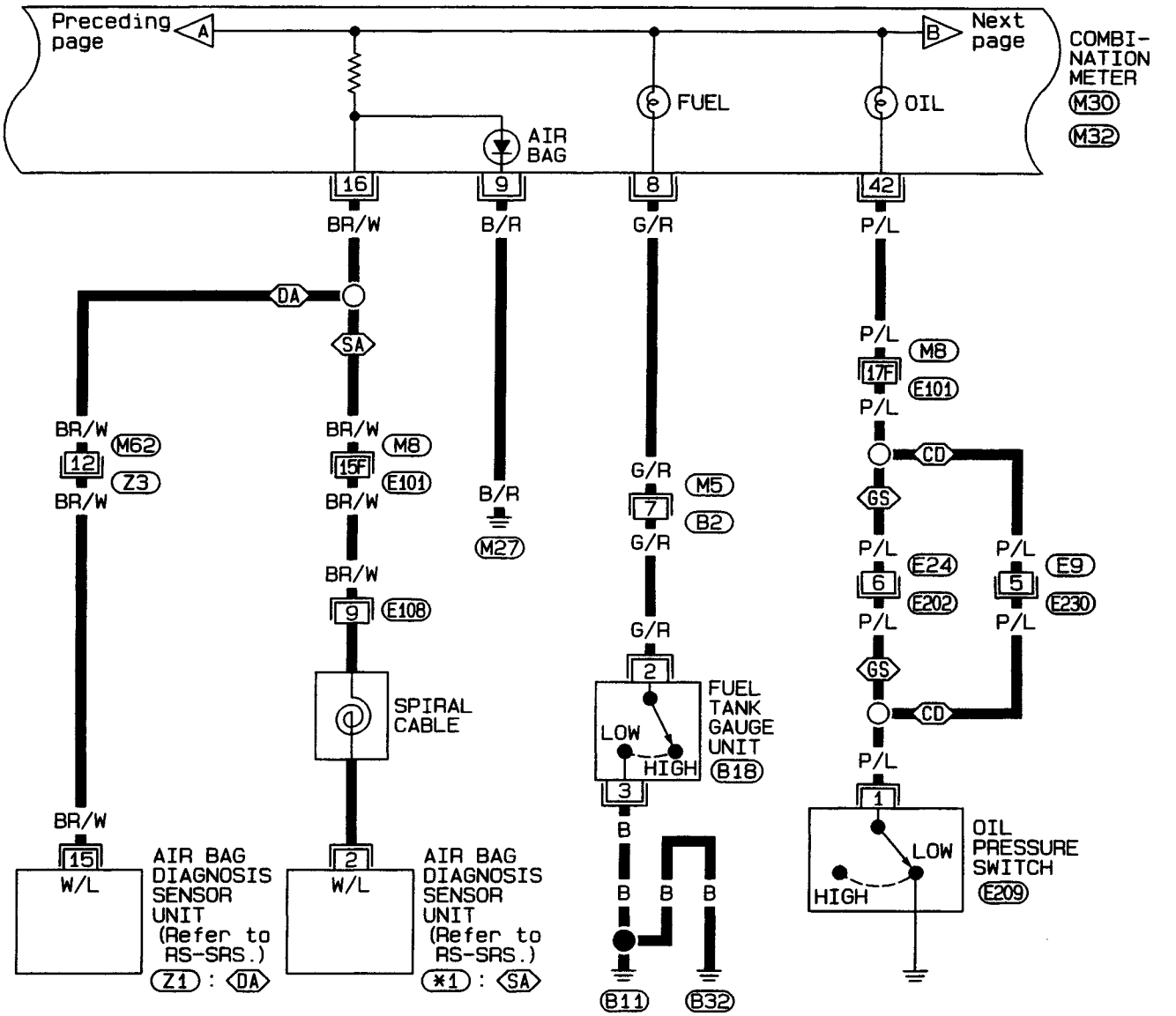
EL

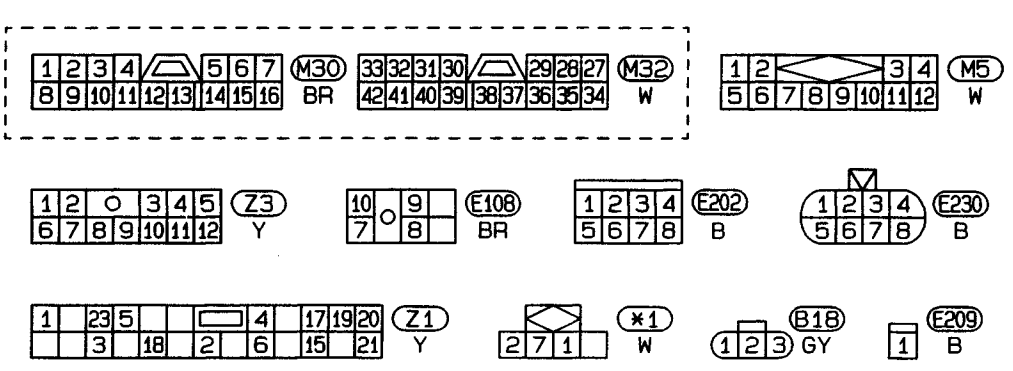
HEL071

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

EL-WARN-02

GS : Gasoline engine
CD : Diesel engine
DA : Models with dual air bag system
SA : Models with single air bag system



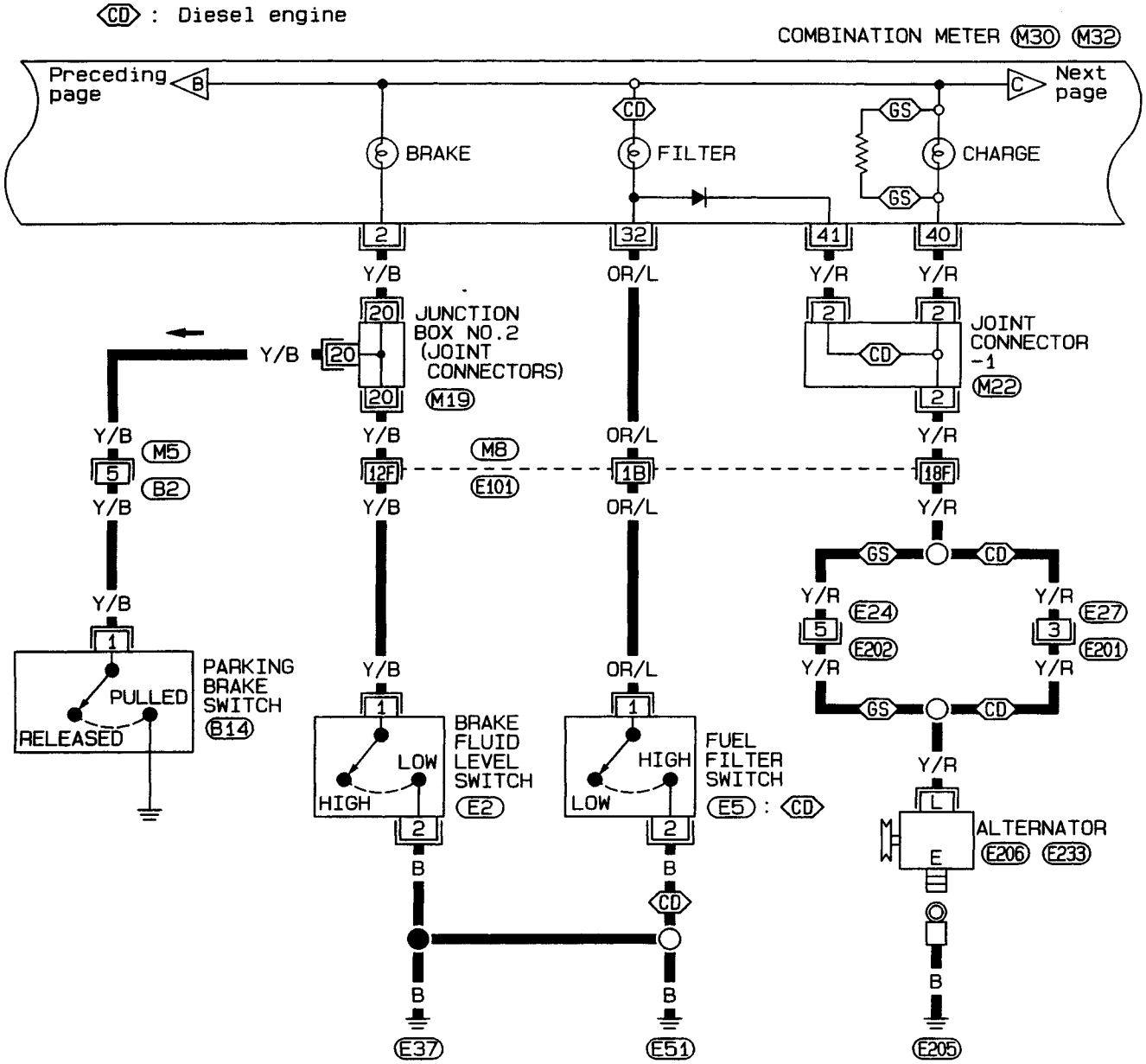

Refer to last page (Foldout page).
M8 , E101

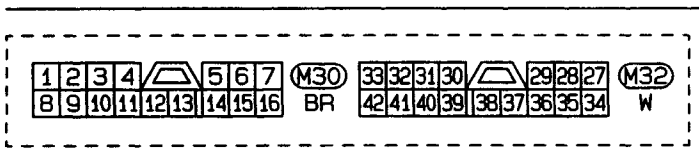
HEL072

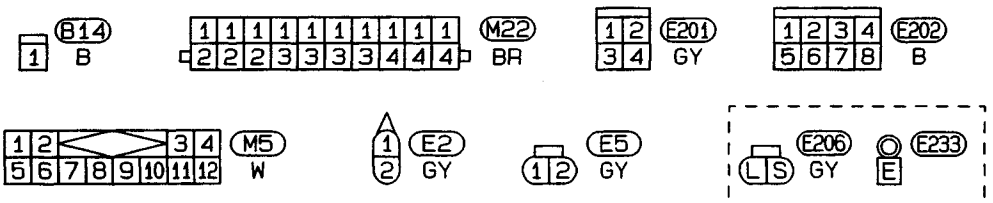
## Warning Lamps/Wiring Diagram — WARN — (Cont'd)

EL-WARN-03

GS : Gasoline engine
CD : Diesel engine




Refer to last page (Foldout page).

M8 , E101

M19

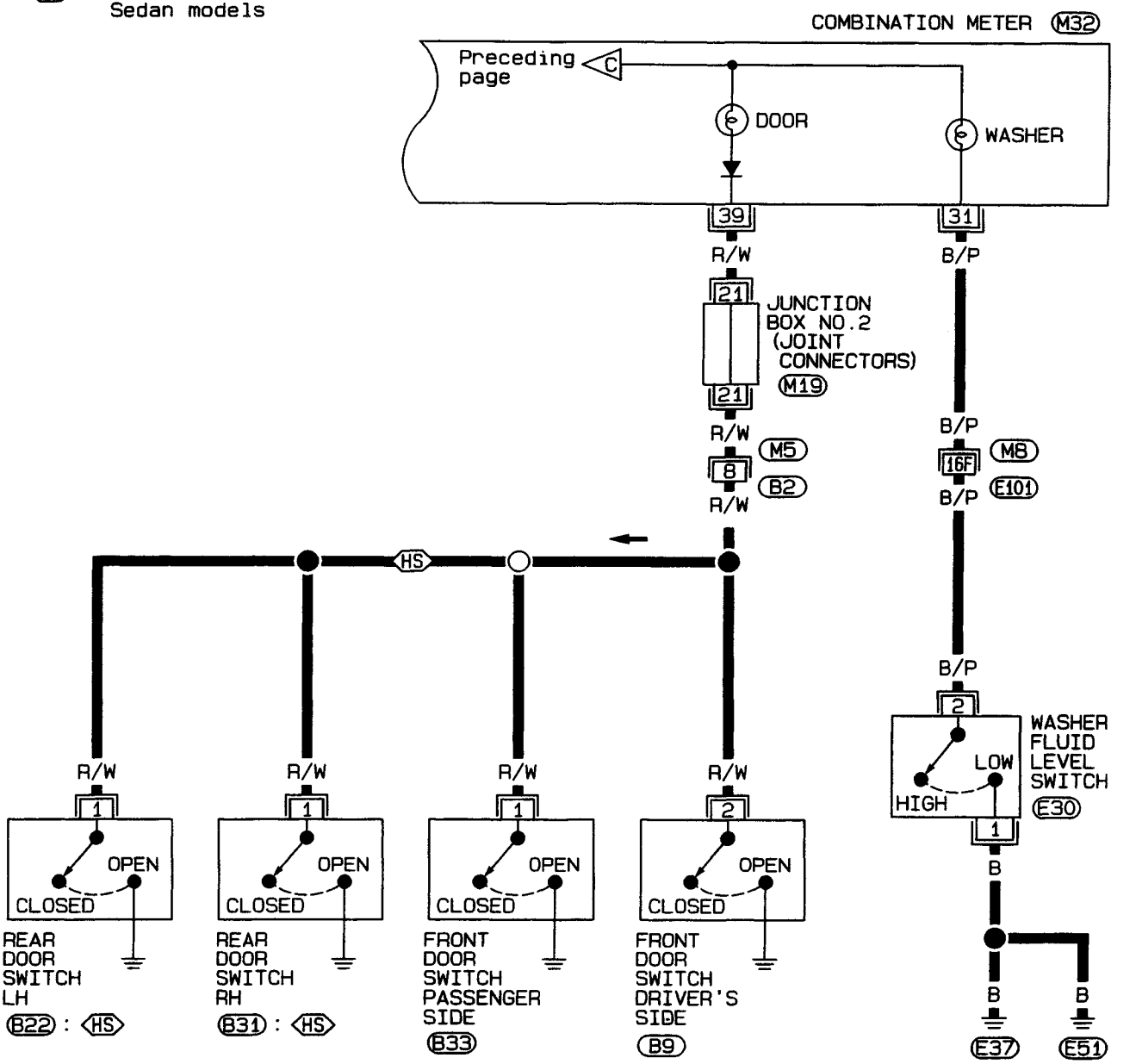
EL

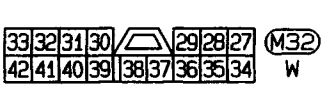
HEL073

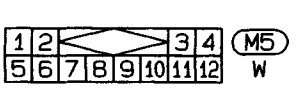
## Warning Lamps/Wiring Diagram — WARN — (Cont'd)

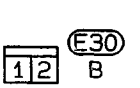
EL-WARN-04

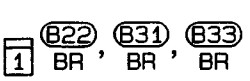
HS : 5-door Hatchback and Sedan models

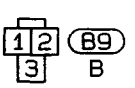


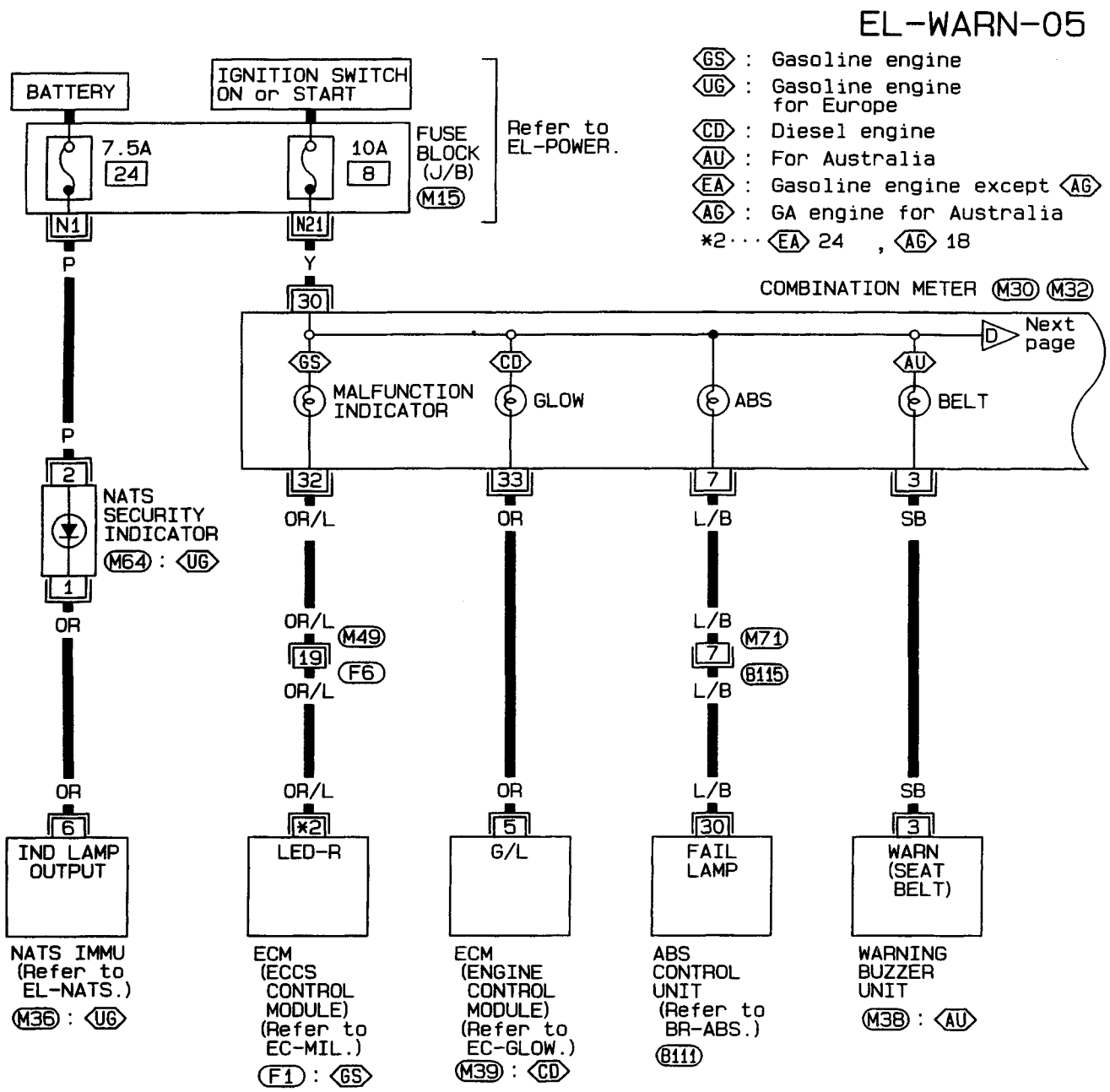

Refer to last page (Foldout page).

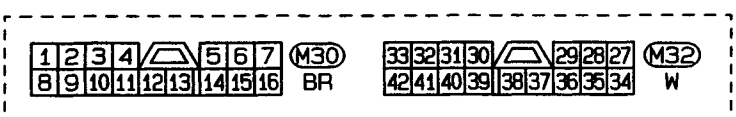
M8, E101

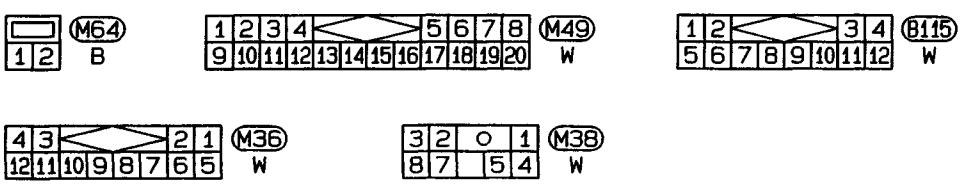
M19

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

### RHD MODELS WITH TACHOMETER




Refer to last page (Foldout page).

M15

F1

M39

B111

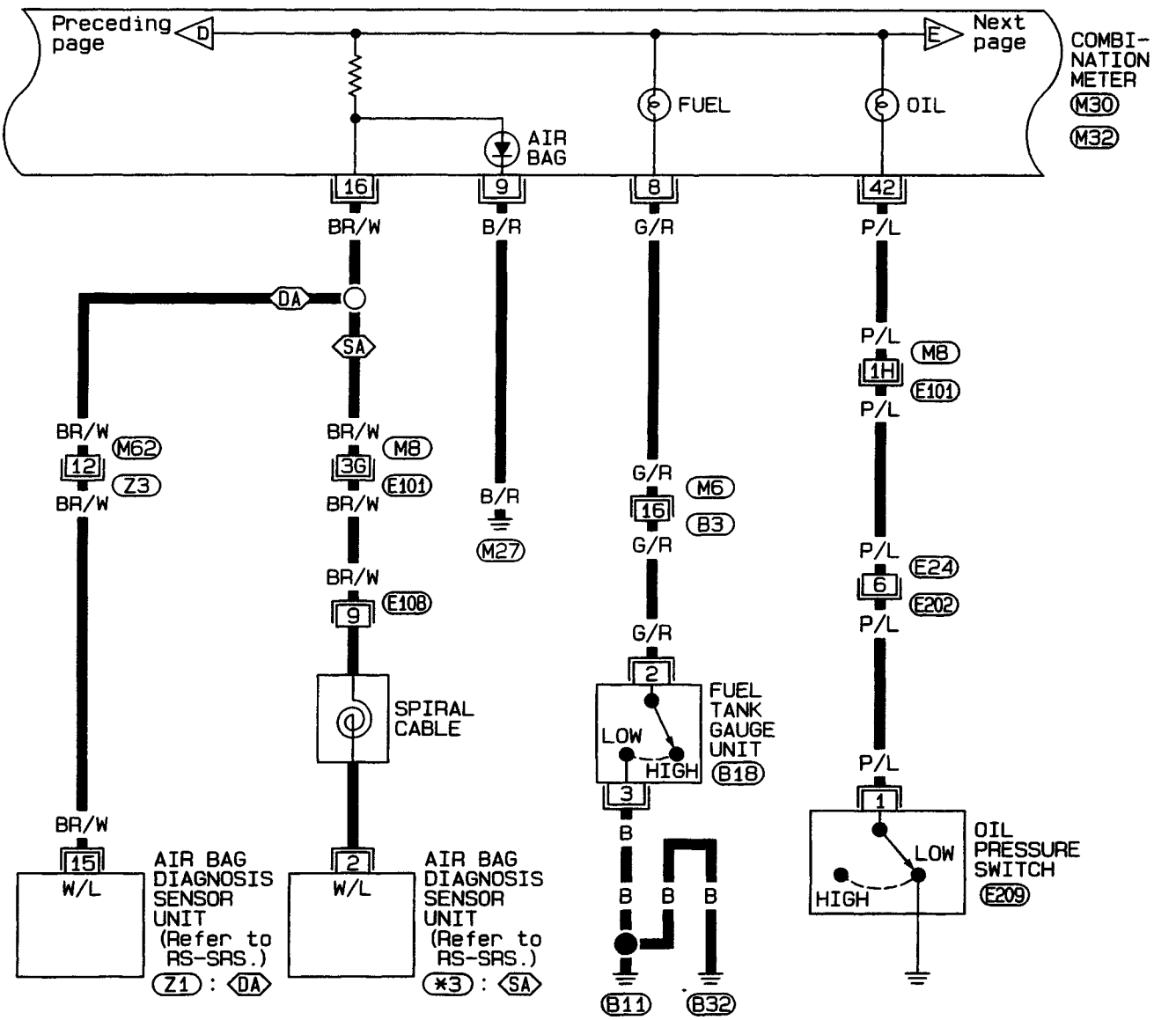
EL

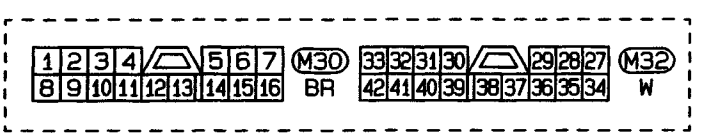
HEL075

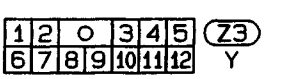
## Warning Lamps/Wiring Diagram — WARN — (Cont'd)

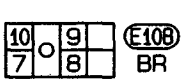
EL-WARN-06

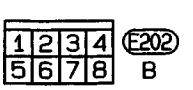
DA : Models with dual air bag system
SA : Models with single air bag system

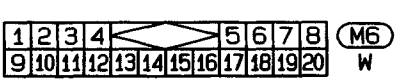


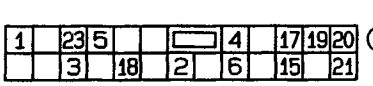



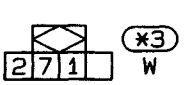



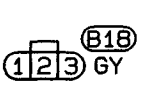



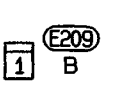



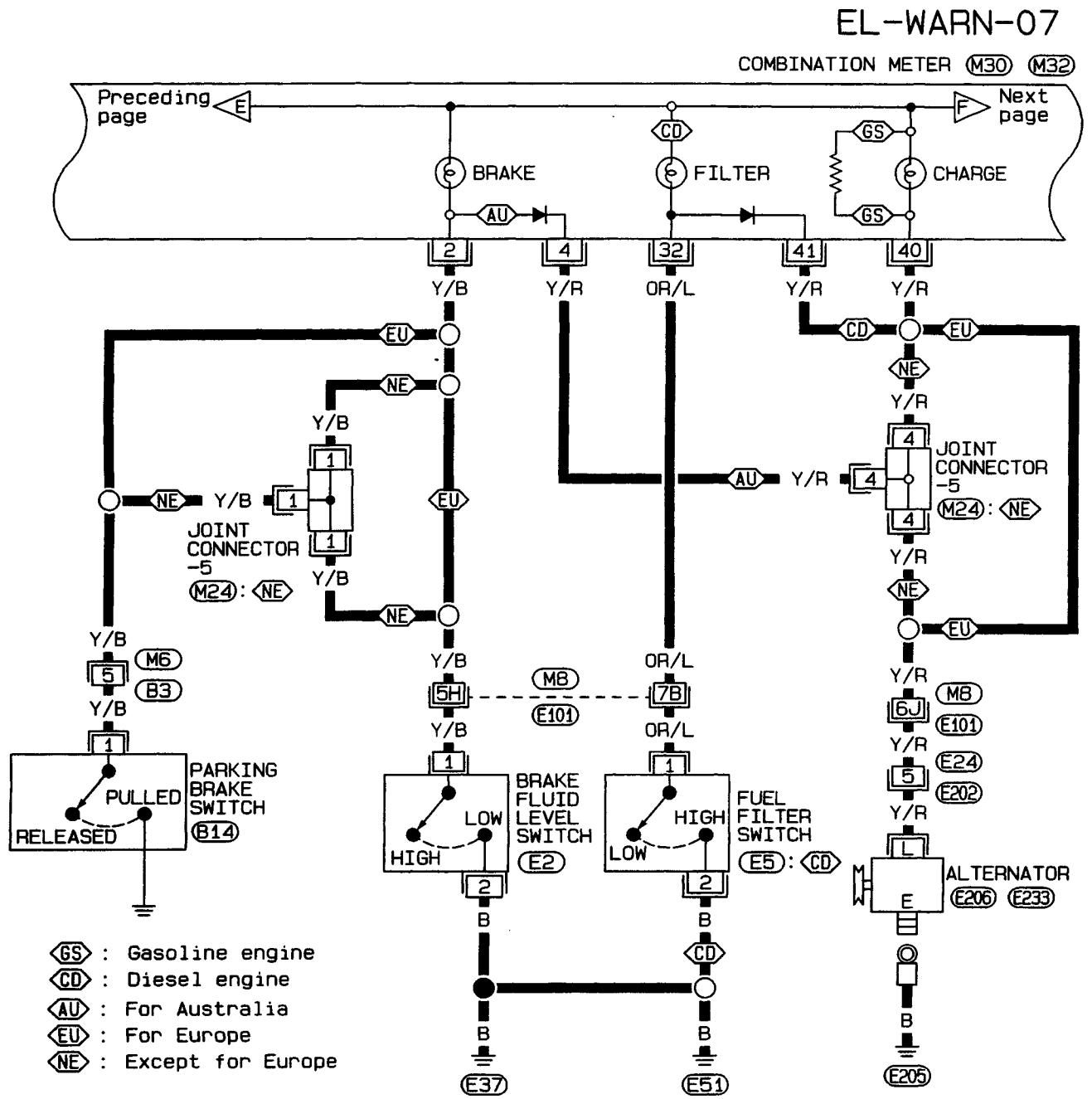



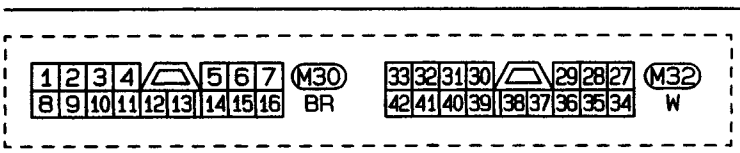

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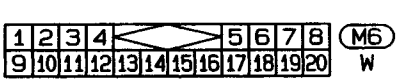
M8 , E101

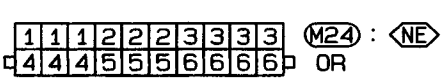
HEL076

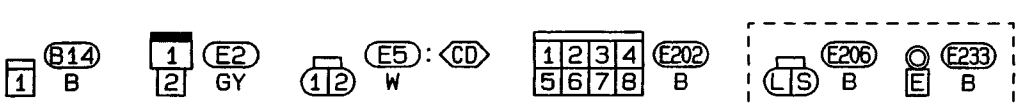
## Warning Lamps/Wiring Diagram — WARN — (Cont'd)




Refer to last page (Foldout page).

M8 , E101

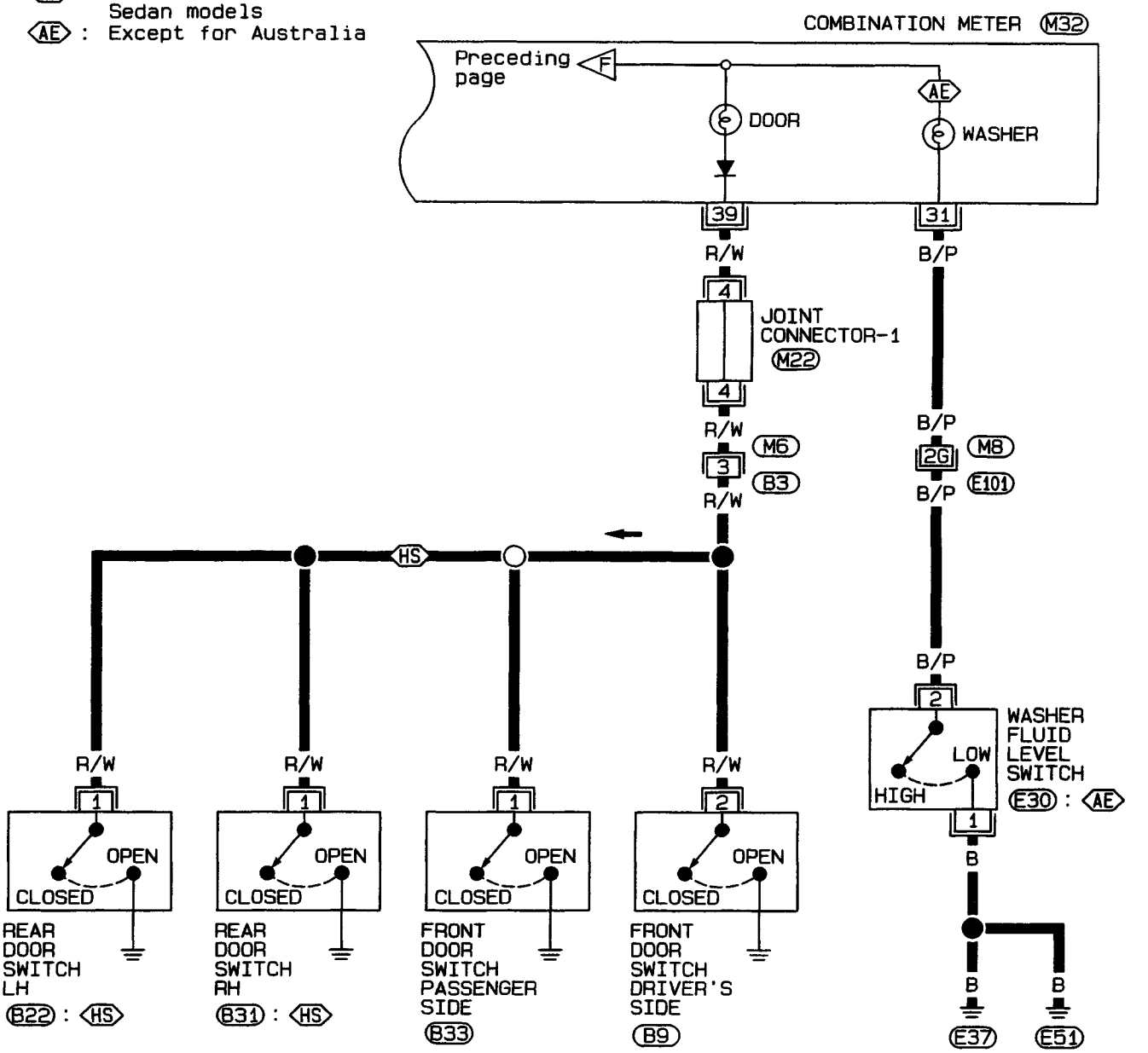
EL

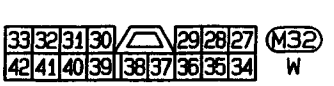
HEL077

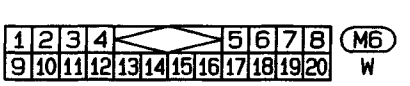
## Warning Lamps/Wiring Diagram — WARN — (Cont'd)

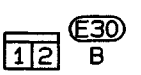
EL-WARN-08

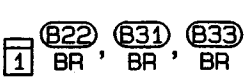
HS : 5-door Hatchback and Sedan models
AE : Except for Australia

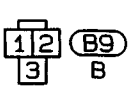


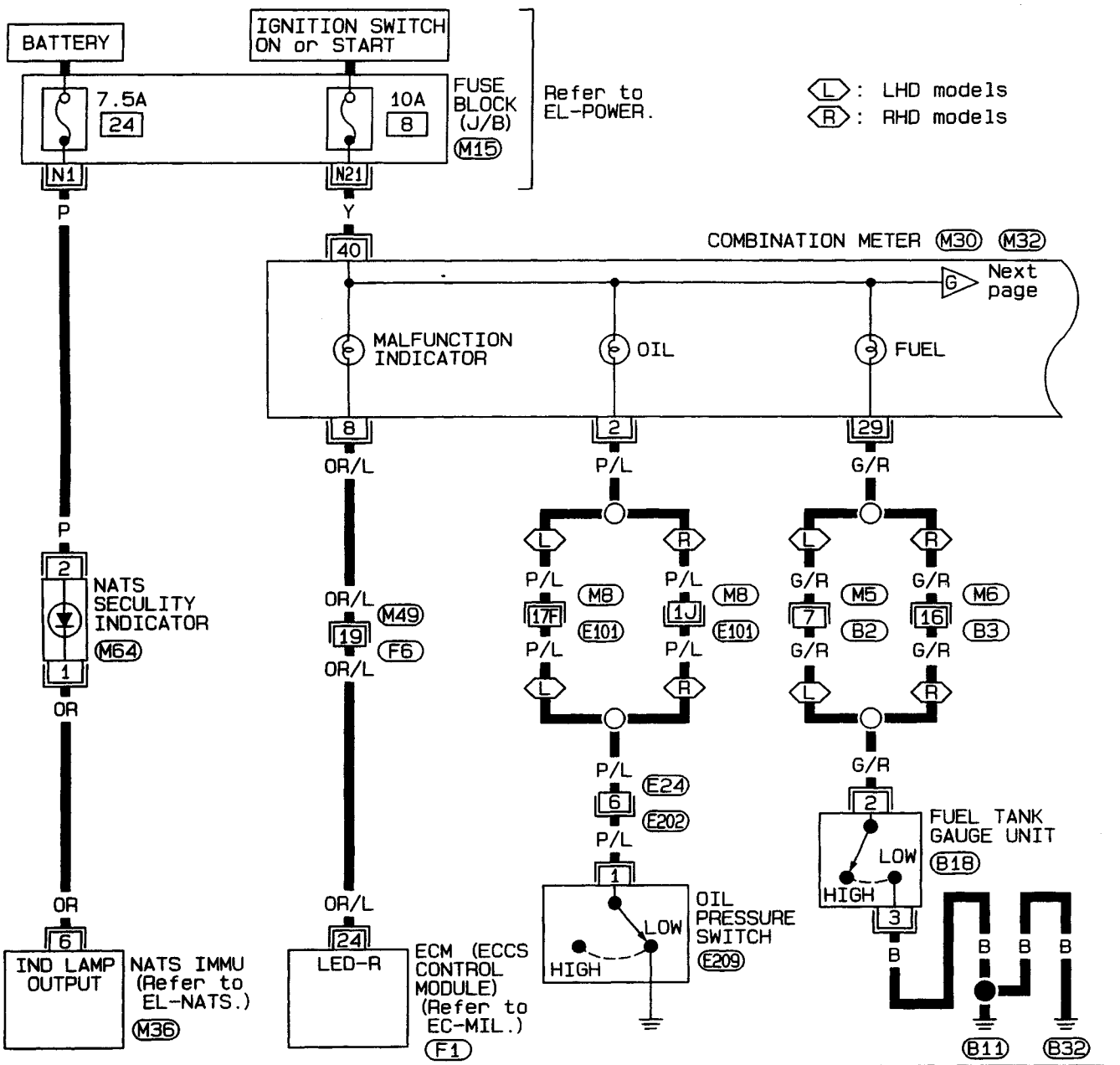

Refer to last page (Foldout page).
M8 , E101

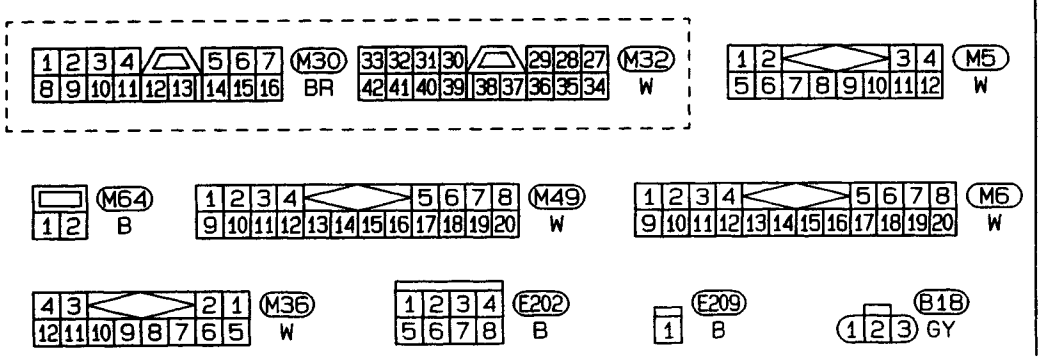
HEL078

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

### WITHOUT TACHOMETER

EL-WARN-09




Refer to last page (Foldout page).

M8 , E101

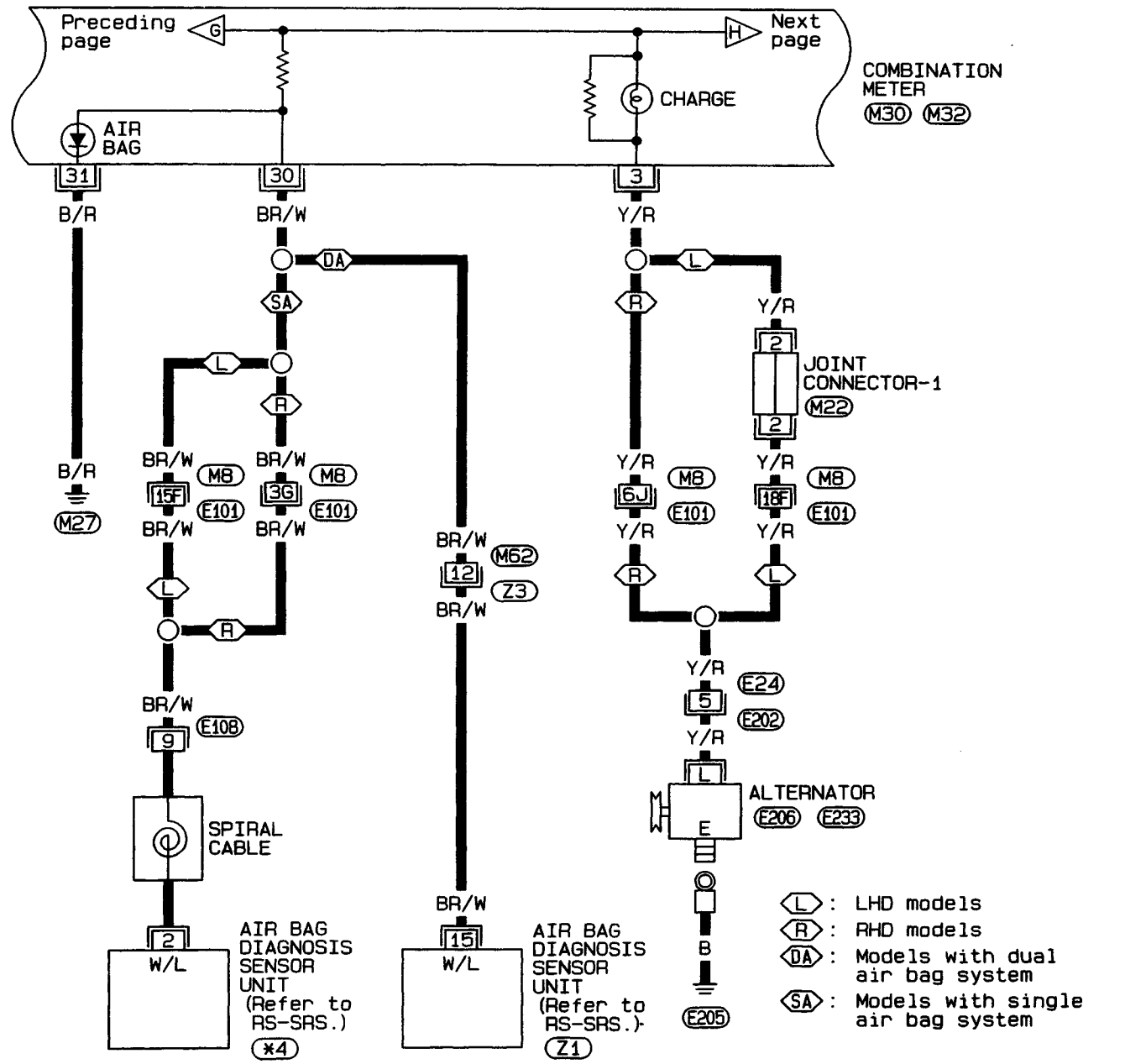
F1

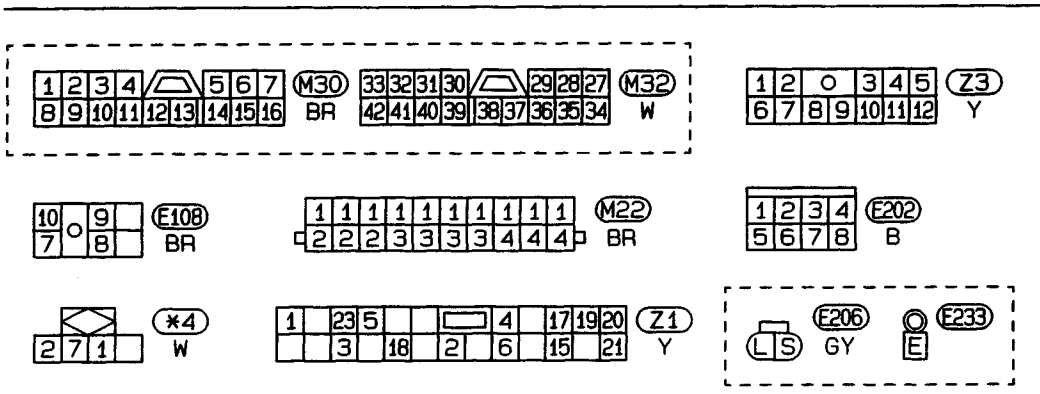
EL

HEL079

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

EL-WARN-10



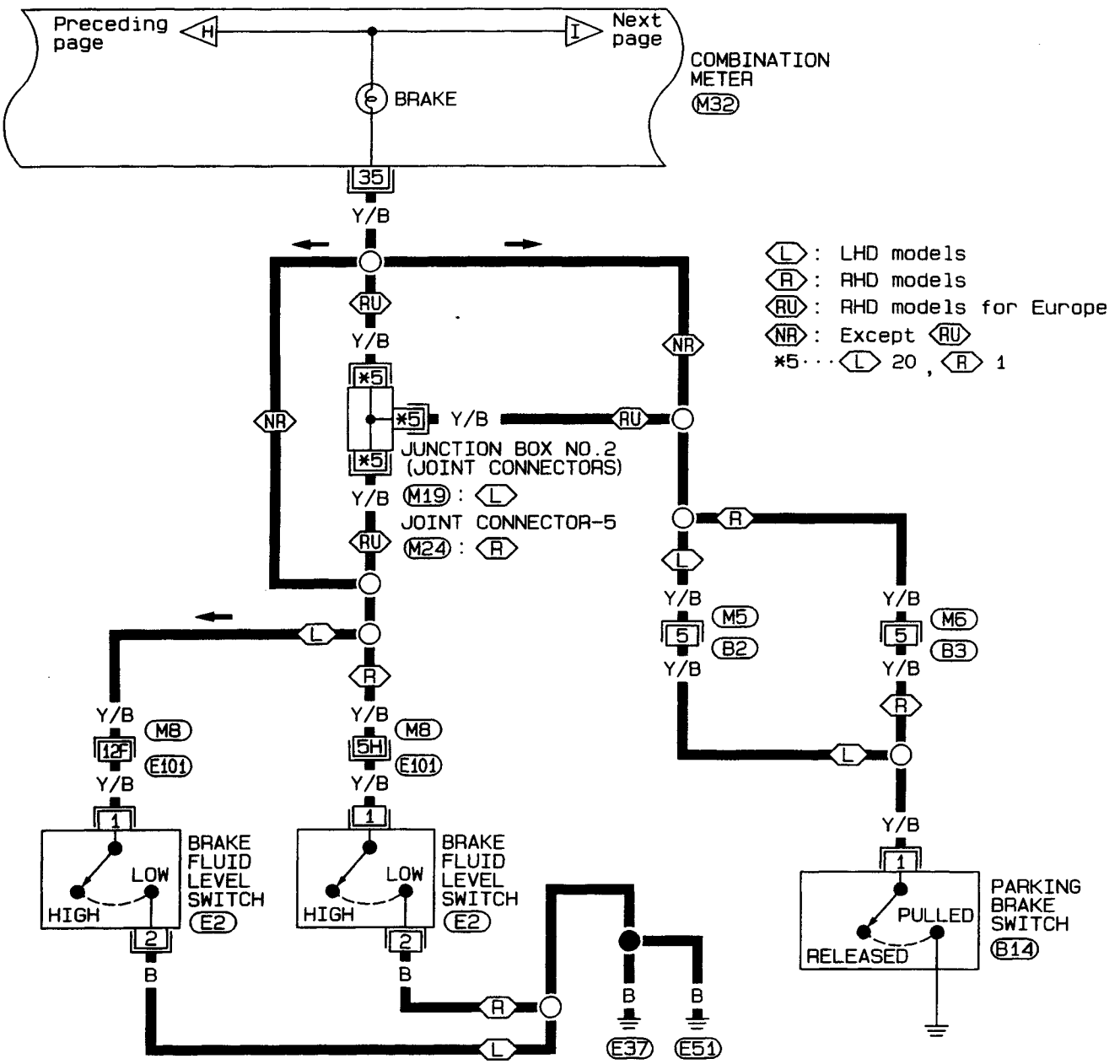

Refer to last page (Foldout page).

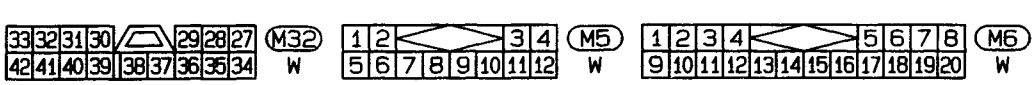
M8 , E101

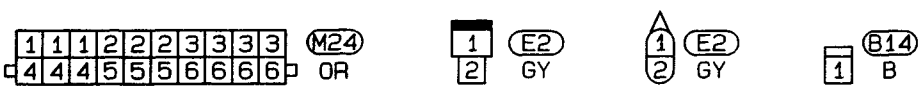
HEL080

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

EL-WARN-11




Refer to last page (Foldout page).

M8 , E101

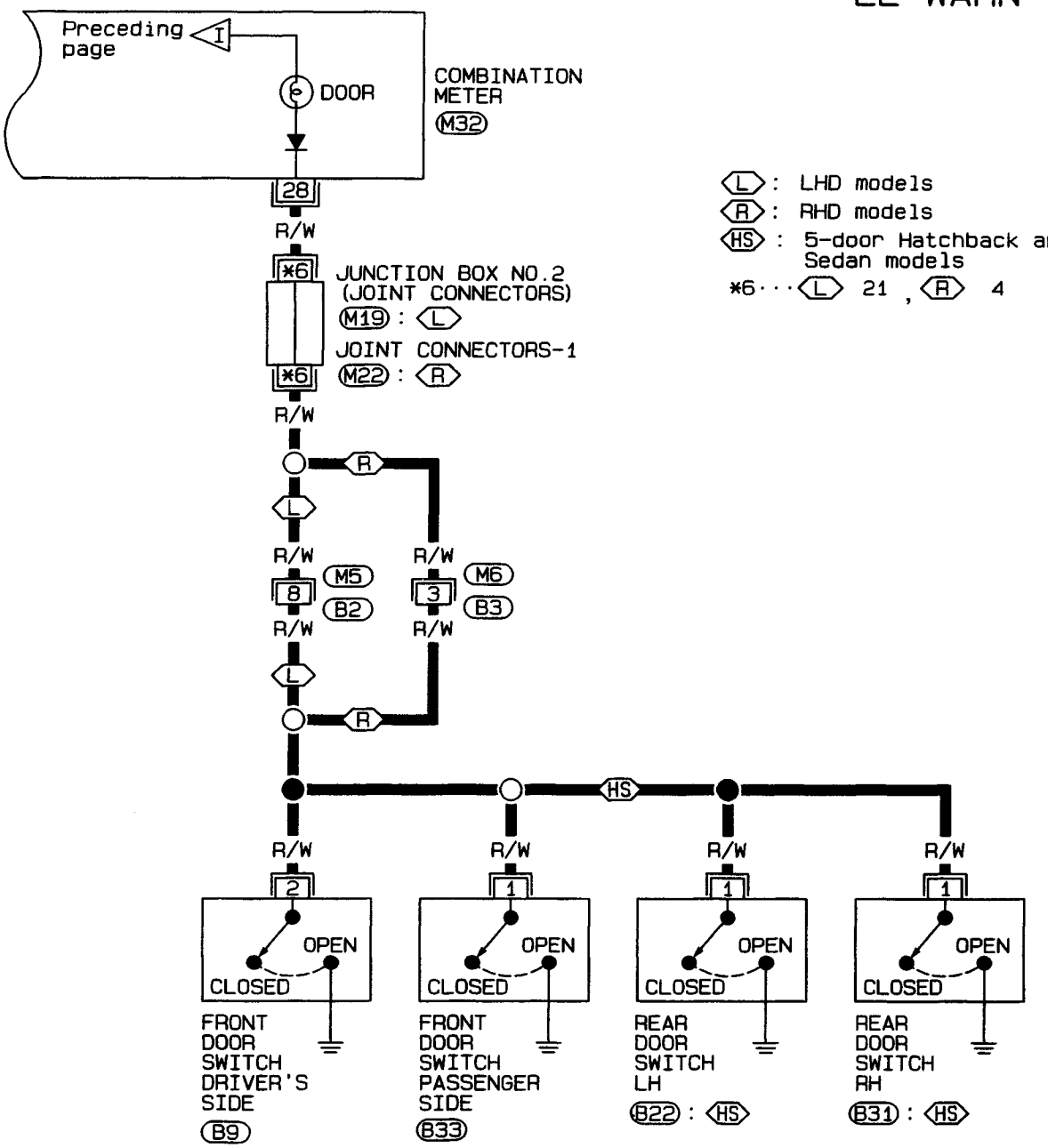
M19

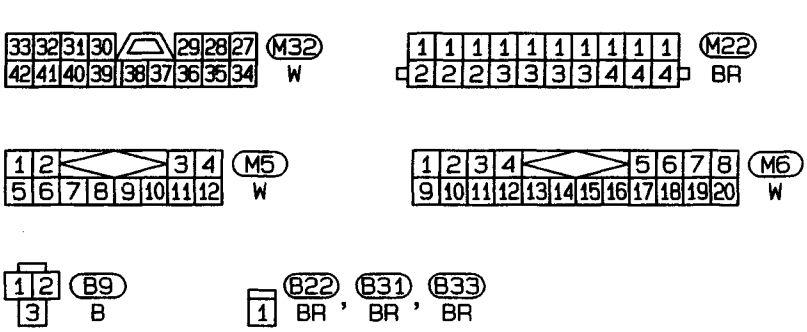
EL

HEL081

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

EL-WARN-12

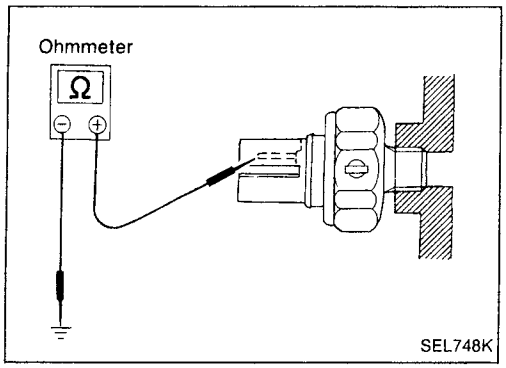



Refer to last page (Foldout page).

M19

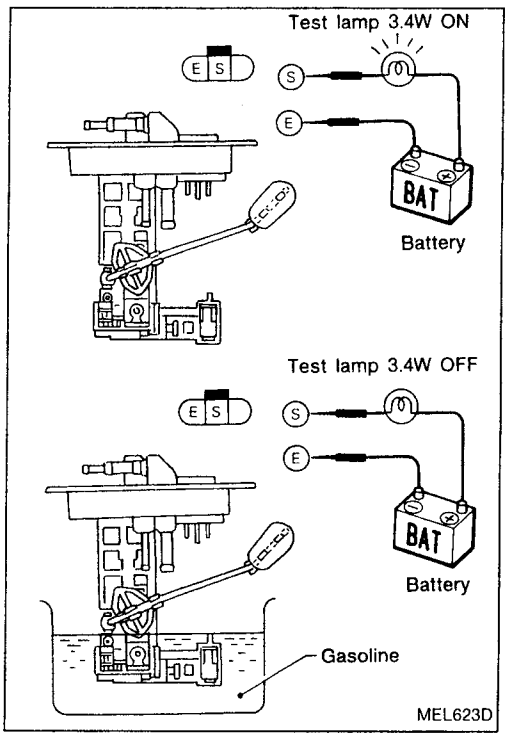
HEL198




## Oil Pressure Switch Check

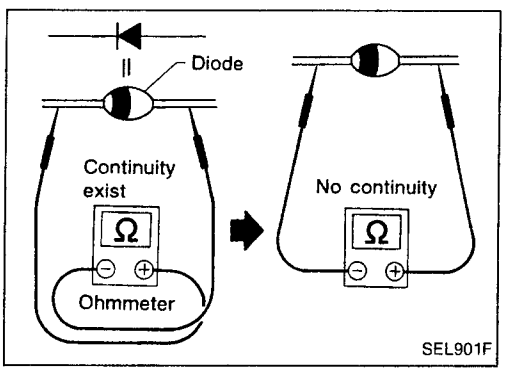
| | Oil pressure kPa (bar, kg/cm$^2$, psi) | Continuity |
|---|---|---|
| Engine start | More than 10 - 20 (0.10 - 0.20, 0.1 - 0.2, 1.4 - 2.8) | NO |
| Engine stop | Less than 10 - 20 (0.10 - 0.20, 0.1 - 0.2, 1.4 - 2.8) | YES |

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




## Fuel Warning Lamp Sensor Check

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




## 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-127).**

## Warning Buzzer Unit

- Seat belt warning lamp is controlled by the warning buzzer unit.

**Refer to "Warning Buzzer" (EL-152).**

EL

## Warning Buzzer/System Description

The warning buzzer is controlled by the warning buzzer unit.
Power is supplied at all times
(RHD models except for Europe)
- through 7.5A fuse (No. 24 , located in the fuse block)
- to key switch terminal ①.

Power is supplied at all times
(LHD models without daytime light system)
- through 75A fusible link (letter g , located in the fusible link and fuse box).
- to lighting switch terminal ⑪.

(LHD models with daytime light system and RHD models)
- through 10A fuse (No. 36 , located in the fuse block)
- to lighting switch terminal ⑪.

Power is supplied at all times
(Except for Australia)
- through 7.5A fuse (No. 43 , located in the fusible link and fuse box)
- to rear fog lamp switch terminal ①.

With the ignition switch in the ON or START position, power is supplied
- through 7.5A fuse (No. 7 , located in the fuse block)
- to warning buzzer unit terminal ⑪ (LHD models except for Australia) or ① (For Australia).

When driver's door is opened, ground is supplied
- through body grounds (B11) and (B32)
- to driver's side door switch terminal ③
- through driver's side door switch terminal ①
- to warning buzzer unit terminal ④ (Except for Australia) or ⑦ (For Australia).

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

**Ignition key warning buzzer (RHD models except for Europe)**

With the key in the ignition switch in the OFF position, and the driver's door open, the warning buzzer will sound. A battery positive voltage is supplied
- from key switch terminal ②
- to warning buzzer unit terminal ⑨ (Except for Australia) or ⑤ (For Australia).

Ground is supplied
- from driver side door switch terminal ①
- to warning buzzer unit terminal ④ (Except for Australia) or ⑦ (For Australia).

Driver side door switch terminal ③ is grounded through body grounds (B11) and (B32).

**Light warning buzzer**

With ignition switch OFF, driver's door open, and lighting switch in 1ST or 2ND position, warning buzzer will sound. A battery positive voltage is supplied
(LHD models without daytime light system)
- from lighting switch terminal ⑫
- through 10A fuse (No. 45 , located in the fusible link and fuse box)
- to warning buzzer unit terminal ⑩.

(LHD models with daytime light system)
- from lighting switch terminal ⑫
- to daytime light unit terminal ⑪
- through daytime light unit terminal ⑩
- to warning buzzer unit terminal ⑩

(RHD models)
- from lighting switch terminal ⑫
- to warning buzzer unit terminal ⑩ (Except for Australia) or ④ (For Australia).

Ground is supplied
- from driver side door switch terminal ①
- to warning buzzer unit terminal ④ (Except for Australia) or ⑦ (For Australia).

Driver side door switch terminal ③ is grounded through body grounds (B11) and (B32).

**Rear fog lamp switch warning buzzer (For Europe models)**

With ignition switch OFF, driver's door open, and rear fog lamp switch ON, warning buzzer will sound. A battery positive voltage is supplied

## Warning Buzzer/System Description (Cont'd)

- from rear fog lamp switch terminal ②
- to warning buzzer unit terminal ⑨.

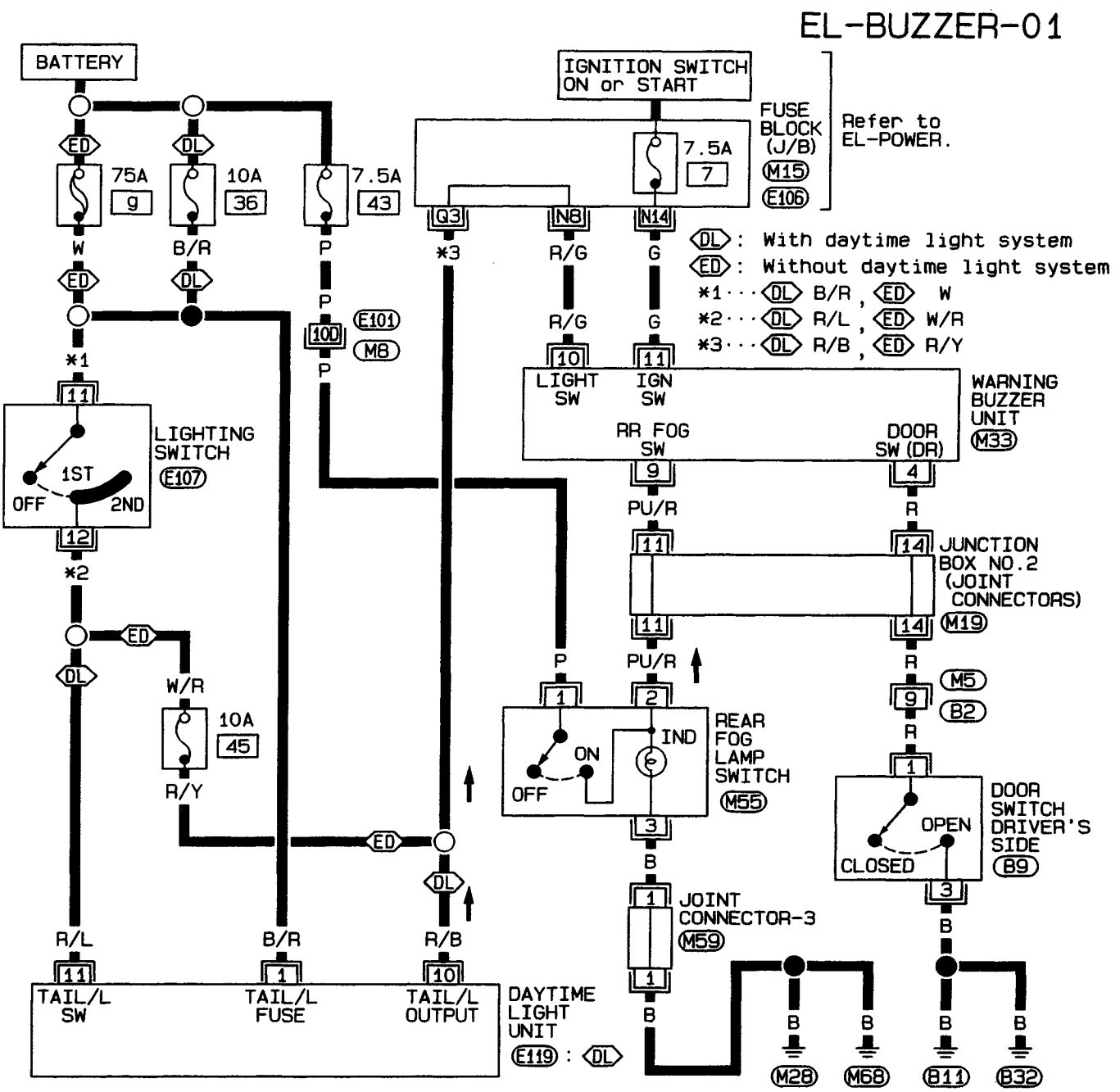
Ground is supplied

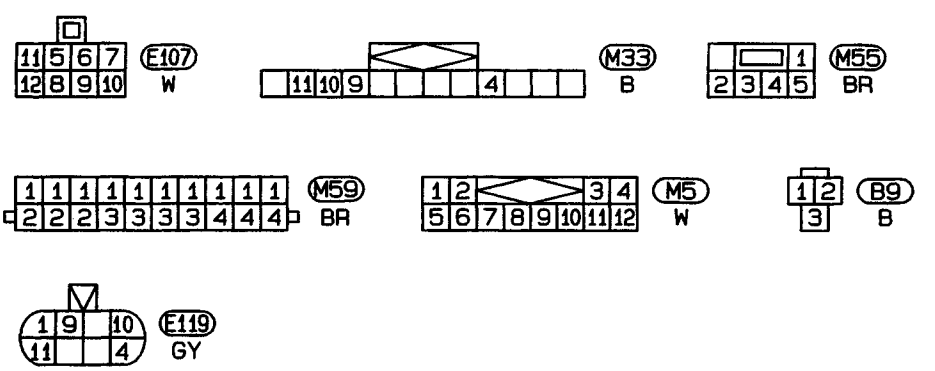
- from driver side door switch terminal ①
- to warning buzzer unit terminal ④.

Driver side door switch terminal ③ is grounded through body grounds (B11) and (B32).

## Warning Buzzer/Wiring Diagram — BUZZER —

### LHD MODELS



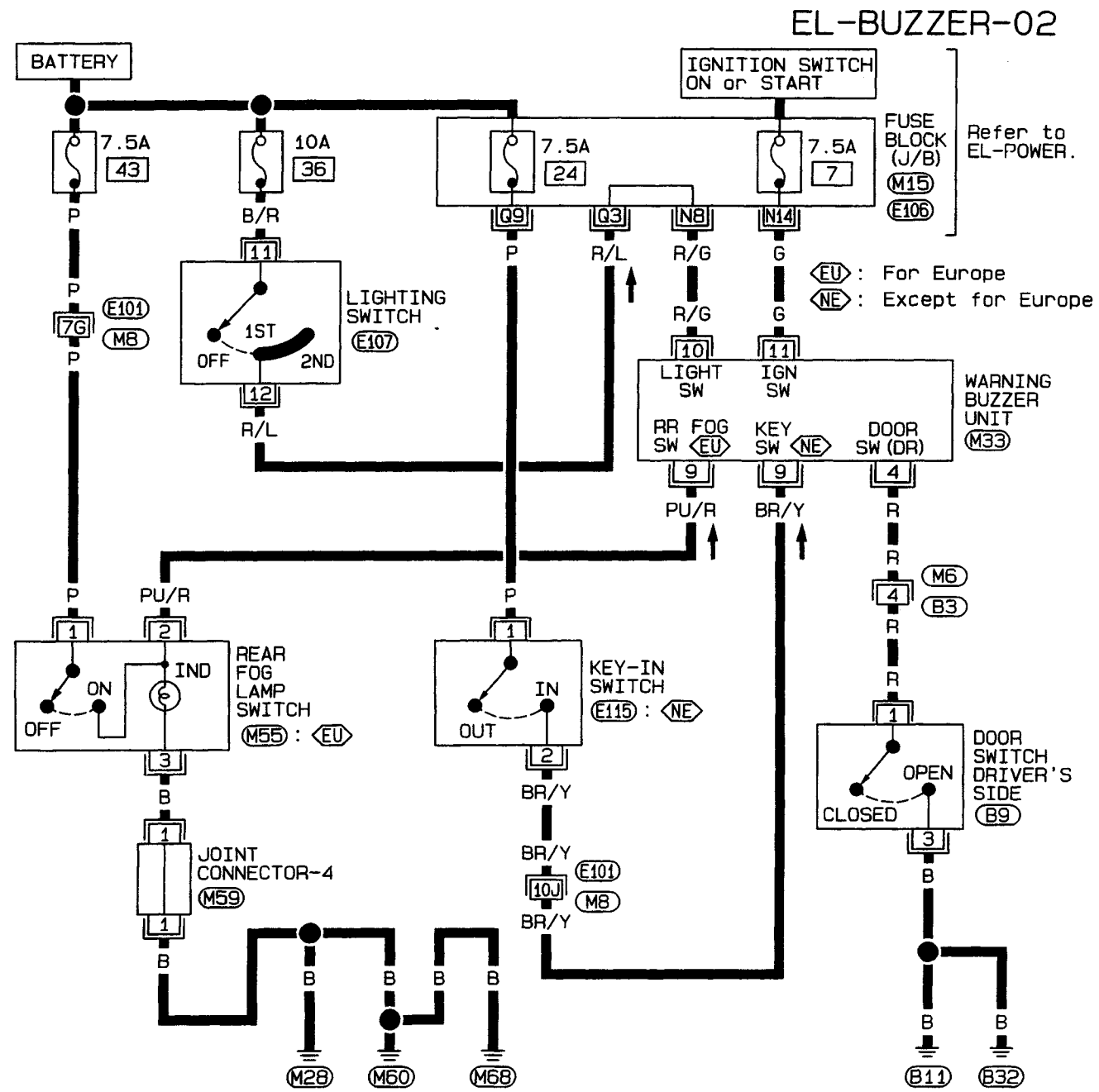



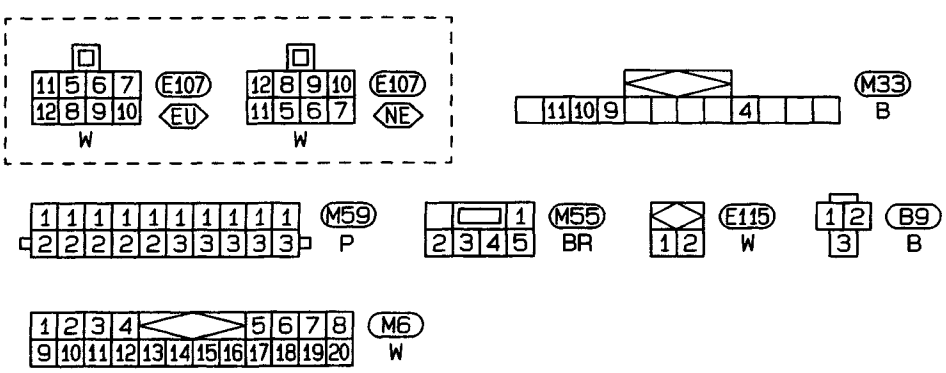

Refer to last page (Foldout page).
M8 , E101
M15 , E106
M19

HEL083

## Warning Buzzer/Wiring Diagram — BUZZER — (Cont'd)

### RHD MODELS EXCEPT FOR AUSTRALIA



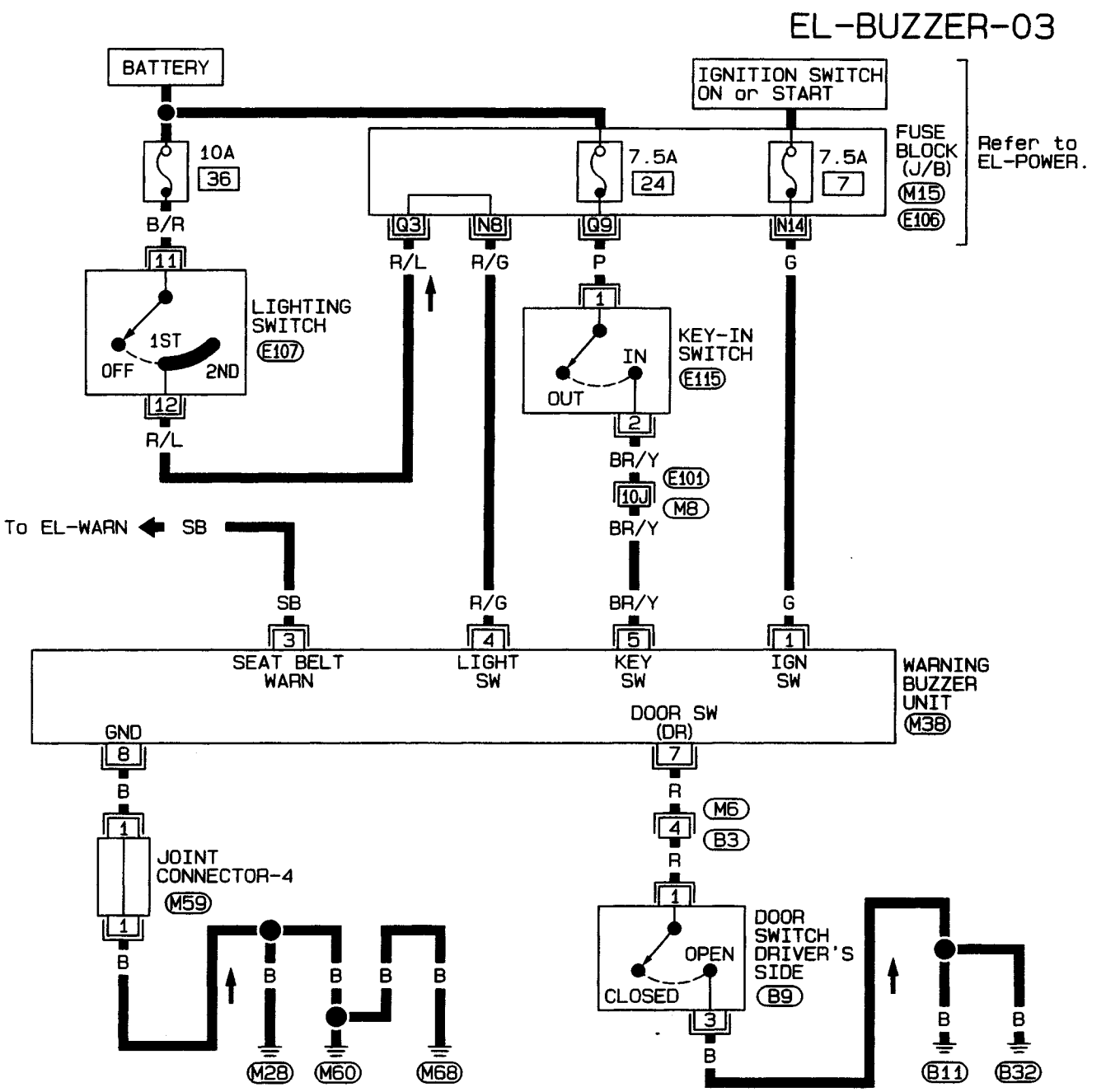

Refer to last page (Foldout page).
M8, E101
M15, E106

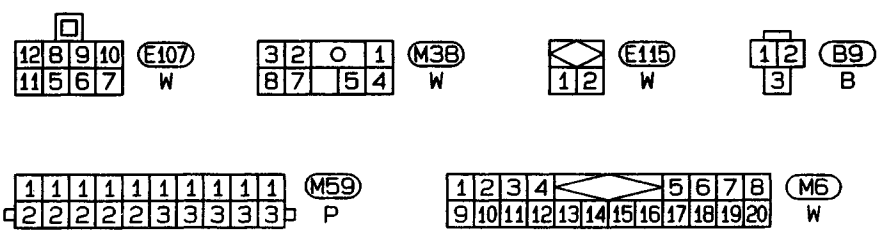
EL

HEL084

## Warning Buzzer/Wiring Diagram — BUZZER — (Cont'd)

**FOR AUSTRALIA**



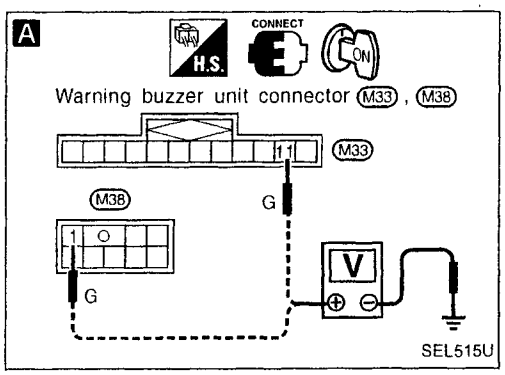




Refer to last page (Foldout page).

M8, E101

M15, E106

HEL085




## Components Inspection — Warning Buzzer

### IGNITION POWER SUPPLY CHECK

A

IGNITION POWER SUPPLY CHECK
1) Turn ignition switch to "ON".
2) Measure voltage between warning buzzer unit connector and body ground.

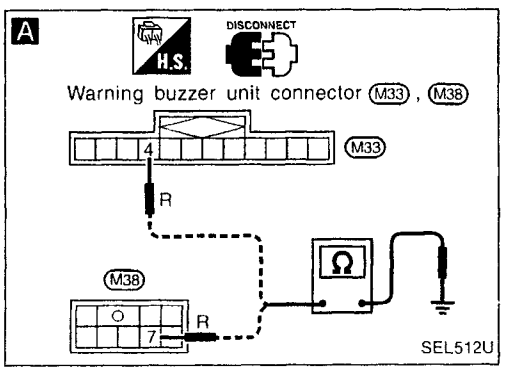
| Destination | Connector No. | Terminal No. |
|---|---|---|
| For Australia | M38 | ① |
| Except for Australia | M33 | ⑪ |

**Battery voltage should exist.**

NG → Check the following.
1) 7.5A fuse (No. 7, located in fuse block [J/B])
2) Harness

OK ↓

Ignition power supply is OK.




### DRIVER'S DOOR SWITCH CHECK

A

DOOR SWITCH INPUT SIGNAL CHECK
Check continuity between warning buzzer unit connector and body ground.

| Destination | Connector No. | Terminal No. | Door switch condition and continuity | |
|---|---|---|---|---|
| | | | Open | Close |
| For Australia | M38 | ⑦ | Yes | No |
| Except for Australia | M33 | ④ | | |

NG → Check the following.
1) Driver's door switch
2) Driver's door switch ground circuit
3) Harness (continuity and ground short)

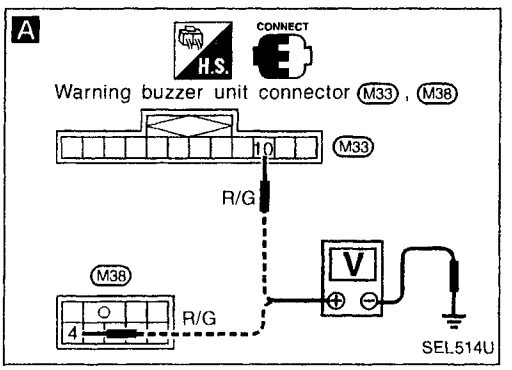
OK ↓

Driver's door switch is OK.

EL

## Components Inspection — Warning Buzzer (Cont'd)

### LIGHTING SWITCH CHECK




A

LIGHTING SWITCH INPUT SIGNAL CHECK
Measure voltage between warning buzzer unit connector and body ground.

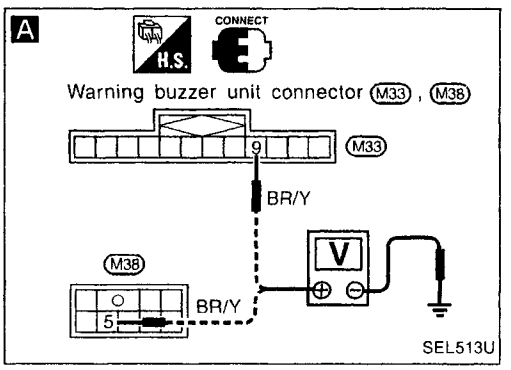
| Destination | Connector No. | Terminal No. | Lighting switch condition and voltage [V] | |
|---|---|---|---|---|
| | | | 1st or 2nd | OFF |
| For Australia | M38 | ④ | Approx. 12 | 0 |
| Except for Australia | M33 | ⑩ | | |

NG → Check the following.
1) 10A fuse (No. 36 ), and 75A fuse (No. 9 )
2) Lighting switch
3) Harness

OK ↓

Lighting switch is OK.

### IGNITION KEY-IN SWITCH SIGNAL CHECK — RHD models except for Europe




A

KEY-IN SWITCH INPUT SIGNAL CHECK
Measure voltage between warning buzzer unit connector and body ground.

| Destination | Connector No. | Terminal No. | Ignition key condition and voltage [V] | |
|---|---|---|---|---|
| | | | Inserted | Removed |
| For Australia | M38 | ⑤ | Approx. 12 | 0 |
| RHD models except for Australia | M33 | ⑨ | | |

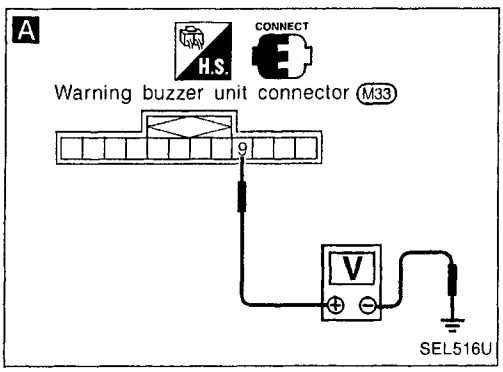
NG → Check the following.
1) 7.5A fuse (No. 24 , located in fuse block [J/B])
2) Ignition key switch
3) Harness

OK ↓

Ignition key switch is OK.

## Components Inspection — Warning Buzzer (Cont'd)

### REAR FOG LAMP SWITCH CHECK — For Europe models




A

REAR FOG LAMP SWITCH INPUT SIGNAL CHECK
Measure voltage between warning buzzer unit connector terminal ⑨ and body ground.

| Condition | Voltage [V] |
|---|---|
| Rear fog lamp switch ON | Approx. 12 |
| Rear fog lamp switch OFF | 0 |

NG → Check the following.
1) 7.5A fuse (No. 43 )
2) Rear fog lamp switch
3) Harness

OK ↓

Rear fog lamp switch is OK.

EL

## 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. 19 , located in the fuse block)
- to wiper motor terminal ⑥.

#### Low and high speed wiper operation

Ground is supplied to wiper switch terminal ⑰ through body grounds E37 and E51.
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 ①.

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

#### Auto stop operation

With wiper switch turned OFF, wiper motor will continue to operate until wiper arms reach windshield base.
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 amplifier terminal ②
- through terminal ⑦ of the wiper amplifier
- to wiper motor terminal ⑤
- through terminal ④ of the wiper motor, and
- through body grounds M28, M60 and M68.

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

#### Intermittent operation

##### With variable intermittent

The wiper motor operates the wiper arms at a set interval of approximately 2 to 20 seconds. This feature is controlled by the wiper amplifier.
When the wiper switch is placed in the INT position, ground is supplied

- to wiper amplifier terminal ①
- from wiper switch terminal ⑮
- through body grounds E37 and E51.
- to wiper motor terminal ②
- through the wiper switch terminal ⑭
- to wiper switch terminal ⑬
- through wiper amplifier terminal ②
- to wiper amplifier terminal ③
- through body grounds M28, M60 and M68.

The desired interval time is input

- to wiper amplifier terminal ⑧
- from wiper switch terminal ⑲.

The wiper motor operates at low speed at the desired time interval.

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

**Without variable intermittent**

The wiper motor operates the wiper arms at an interval of approximately 7 seconds. This feature is controlled by the wiper amplifier.

When the wiper switch is placed in the INT position, ground is supplied

- to wiper amplifier terminal ①
- from wiper switch terminal ⑮
- through body grounds (E37) and (E51)
- to wiper motor terminal ②
- through the wiper switch terminal ⑭
- to wiper switch terminal ⑬
- through wiper amplifier terminal ②
- to wiper amplifier terminal ③
- through body grounds (M28), (M60) and (M68).

### WASHER OPERATION

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

- through 20A fuse (No. 19 , located in the fuse block)
- to washer motor terminal ①.

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

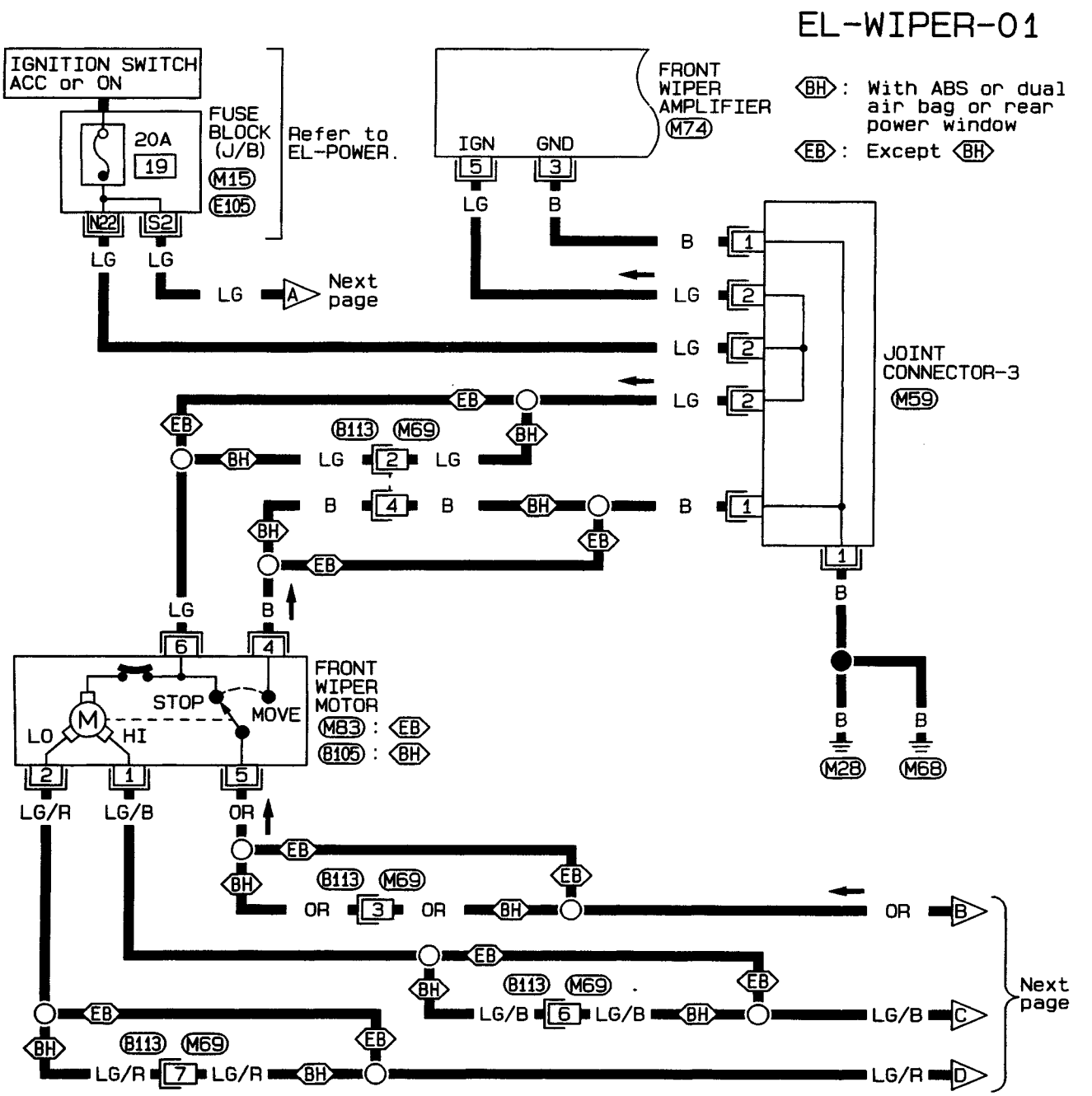
- to washer motor terminal ②, and
- to wiper amplifier terminal ⑥
- from terminal ⑱ of the wiper switch
- through terminal ⑰ of the wiper switch, and
- through body grounds (E37) and (E51).

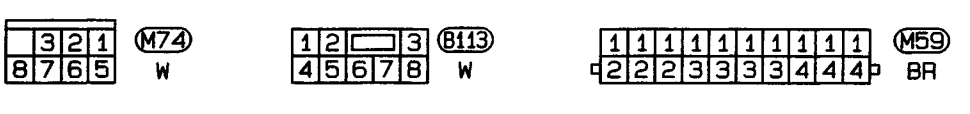
With power and ground supplied, the washer motor operates.

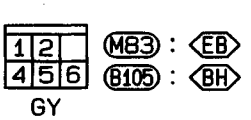
When the lever is pulled to the WASH position for one second or more, the wiper motor operates at low speed for approximately 3 seconds to clean windshield. This feature is controlled by the wiper amplifier in the same manner as the intermittent operation.

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

### LHD MODELS



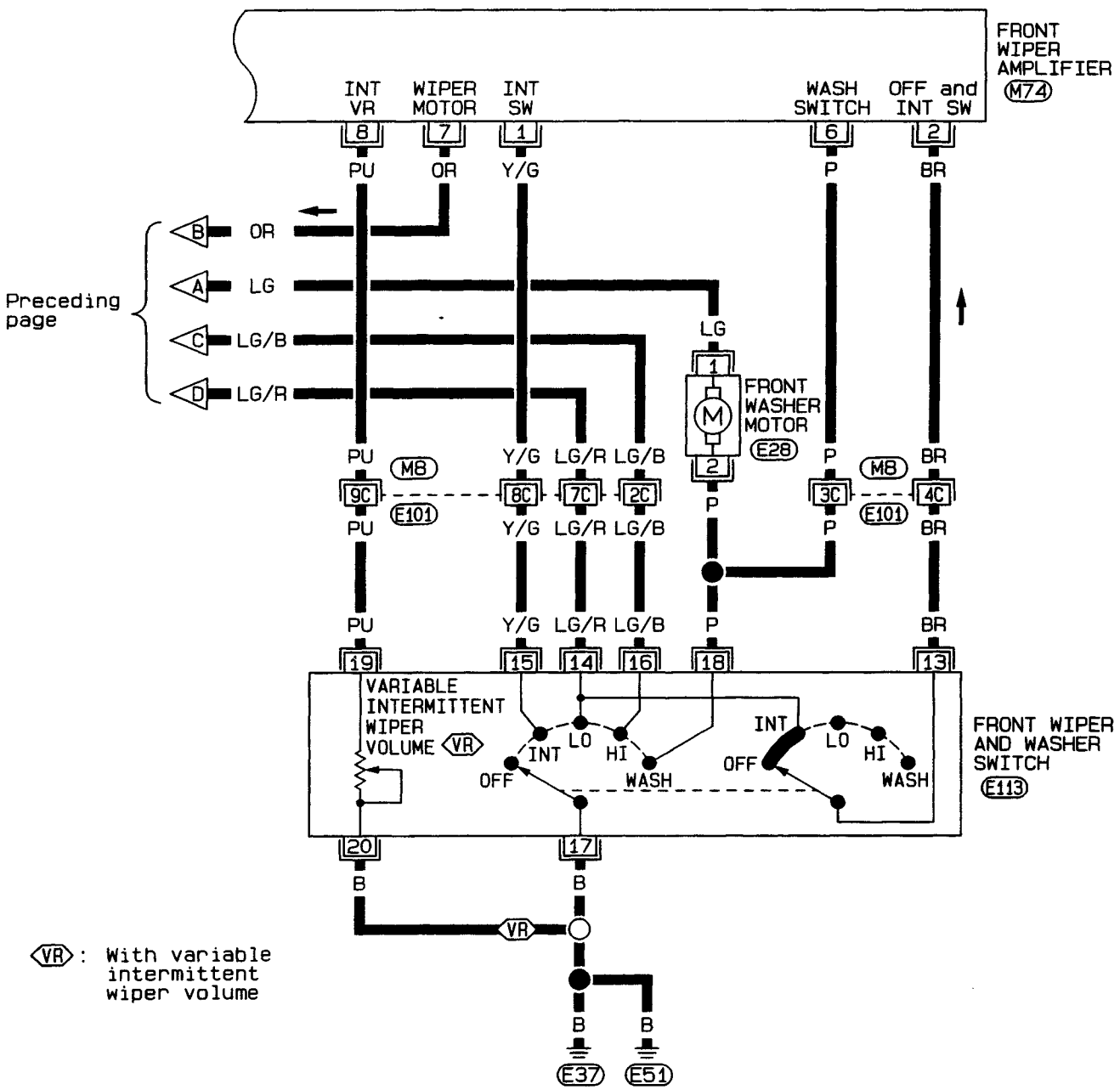

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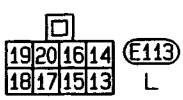
M15 , E105

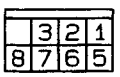
HEL086

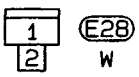
## Front Wiper and Washer/Wiring Diagram — WIPER — (Cont'd)

EL-WIPER-02




Refer to last page (Foldout page).

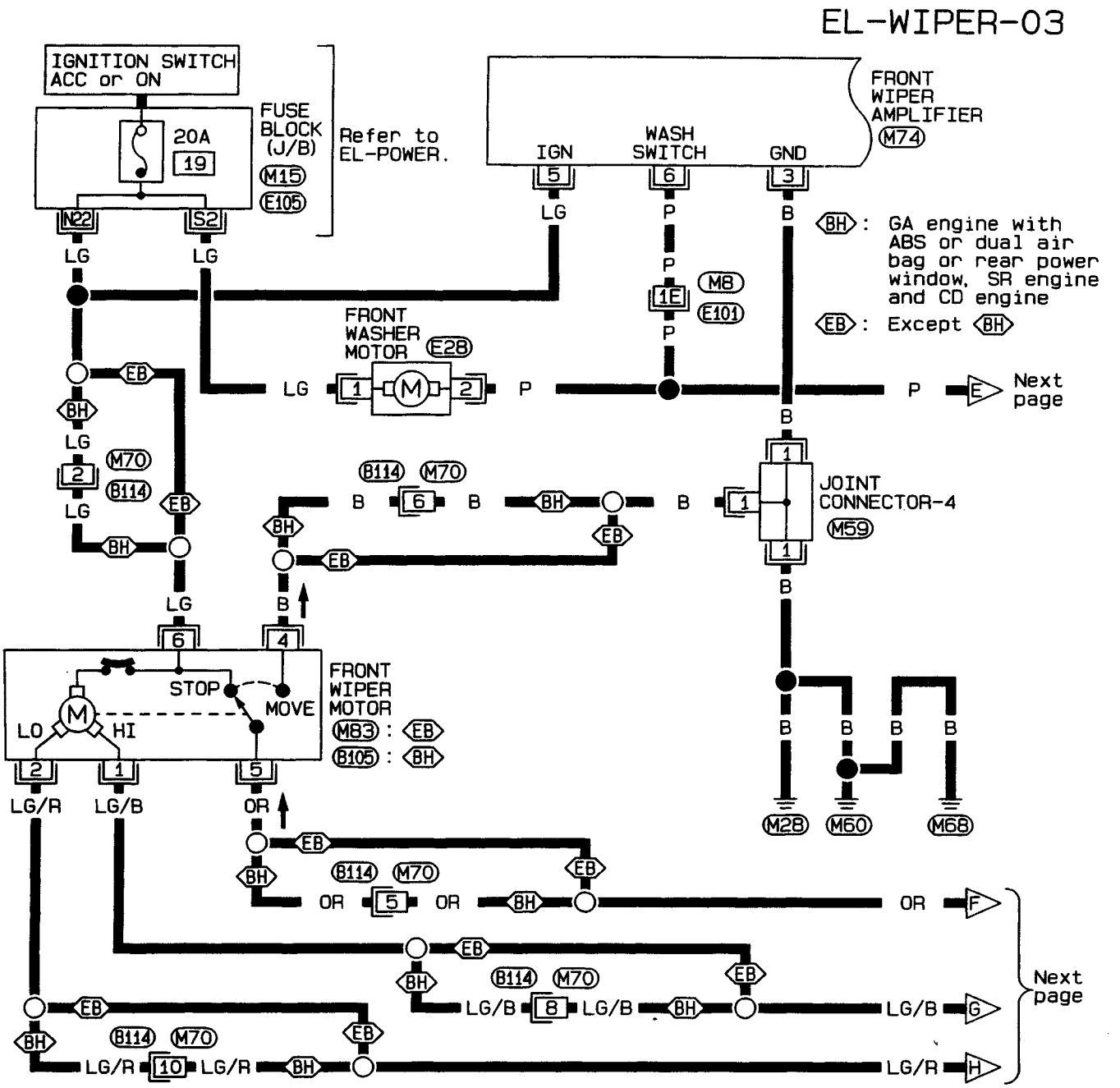
M8, E101

EL

HEL087

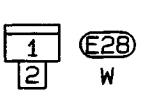
## Front Wiper and Washer/Wiring Diagram — WIPER — (Cont'd)

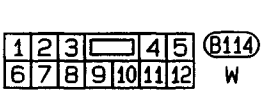
**RHD MODELS**

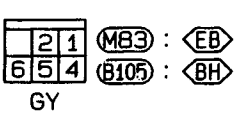


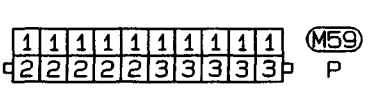


M74 W


E28 W


B114 W





M59 P

Refer to last page (Foldout page).

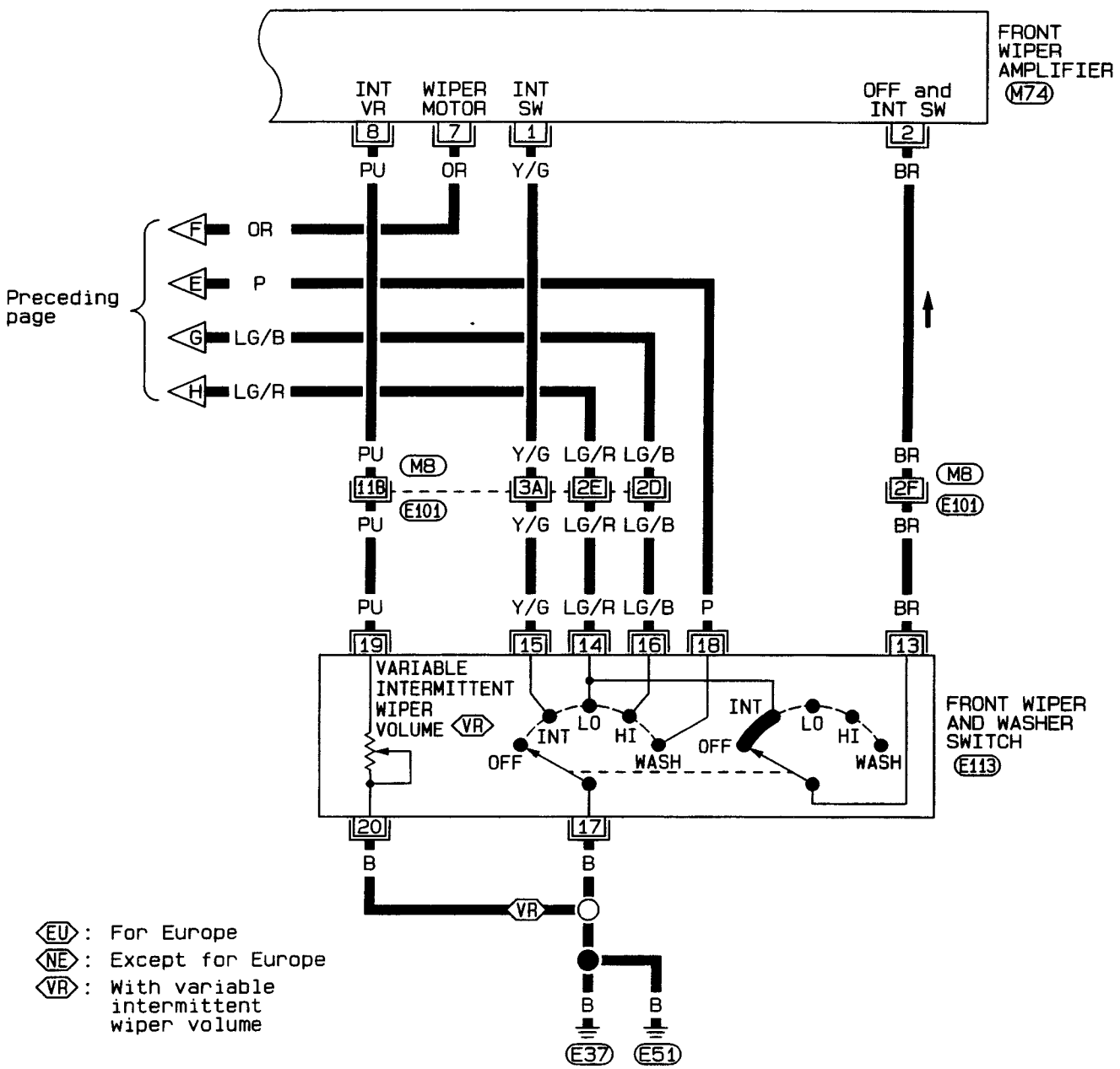
M8 , E101

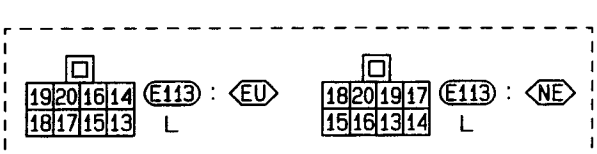
M15 , E105

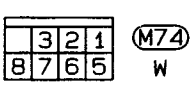
HEL088

## Front Wiper and Washer/Wiring Diagram — WIPER — (Cont'd)

EL-WIPER-04



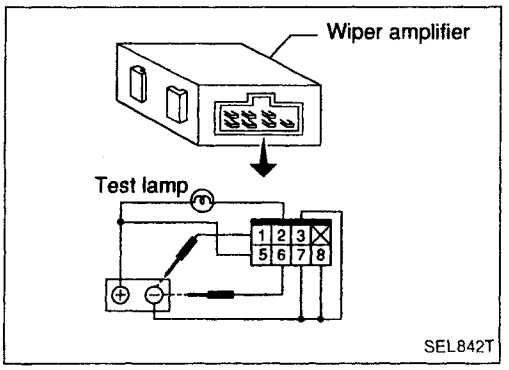




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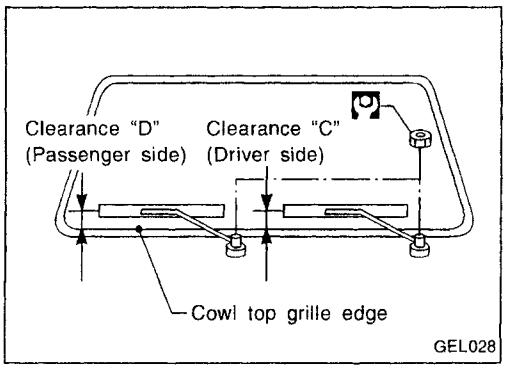
M8 , E101

HEL089




## Front Wiper Amplifier Check

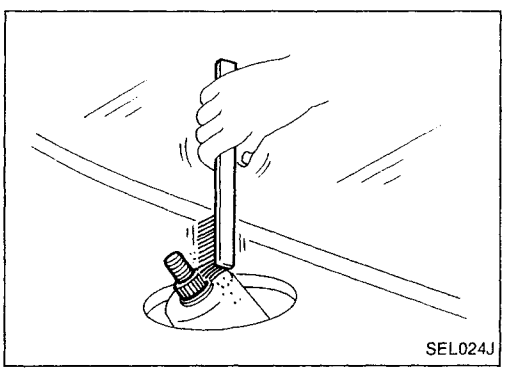
1. Connect as shown in the figure at left.
2. If test lamp comes on when connected to terminal ① or ⑥ and battery ground, wiper amplifier is normal.




## Front Wiper Installation and Adjustment

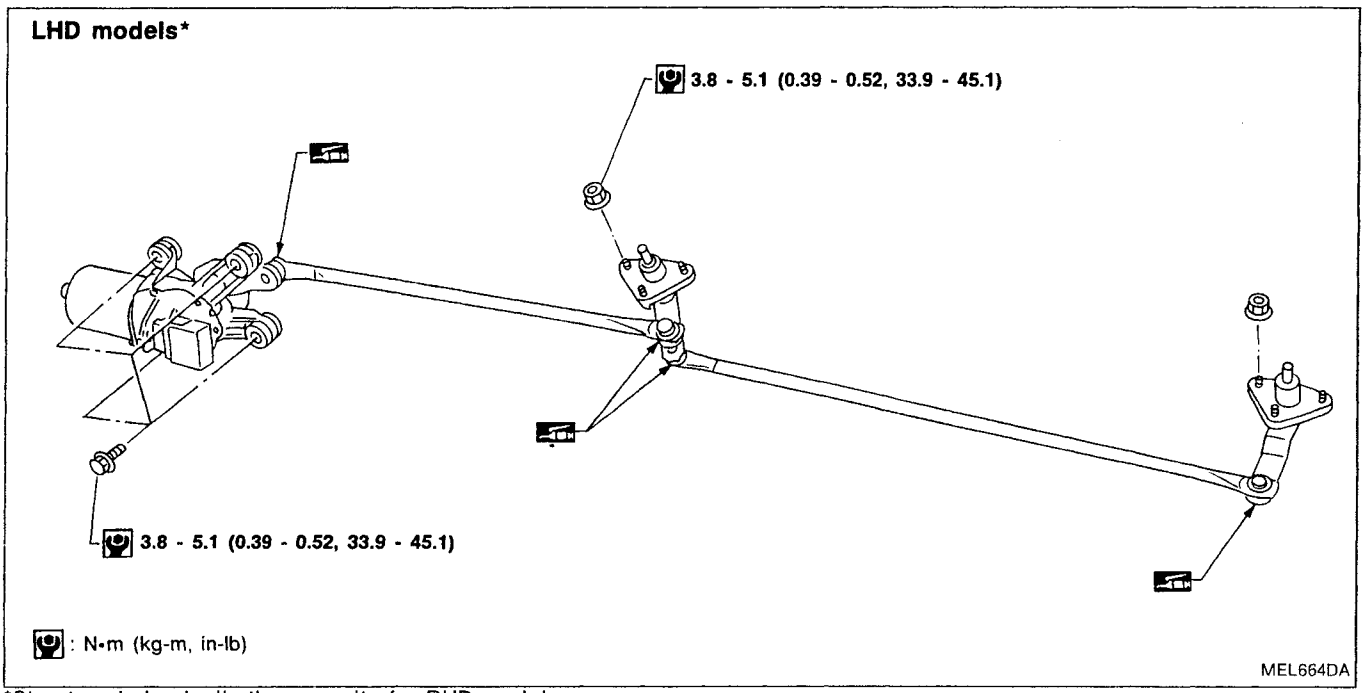
1. Prior to wiper arm installation, turn on wiper switch to operate wiper motor and then turn it "OFF" (Auto Stop).
2. Lift the blade up and then set it down onto glass surface. Set the blade center to clearance "C" & "D" immediately before tightening nut.
3. Eject washer fluid. Turn on wiper switch to operate wiper motor and then turn it "OFF".
4. Ensure that wiper blades stop within clearance "C" & "D".
   **Clearance "C": 23 - 38 mm (0.91 - 1.50 in)**
   **Clearance "D": 27 - 42 mm (1.06 - 1.65 in)**

- Tighten windshield wiper arm nuts to specified torque.
  **: 21 - 26 N·m (2.1 - 2.7 kg-m, 15 - 20 ft-lb)**




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

## Front Wiper Linkage




*Structure is basically the opposite for RHD models.

### REMOVAL

1. Remove 4 bolts that secure wiper motor.
2. Detach wiper motor from wiper linkage at ball joint.
3. Remove wiper linkage.

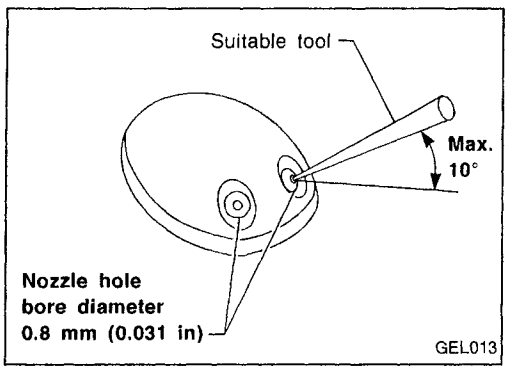
**Be careful not to break ball joint rubber boot.**

### INSTALLATION

- Grease ball joint portion before installation.

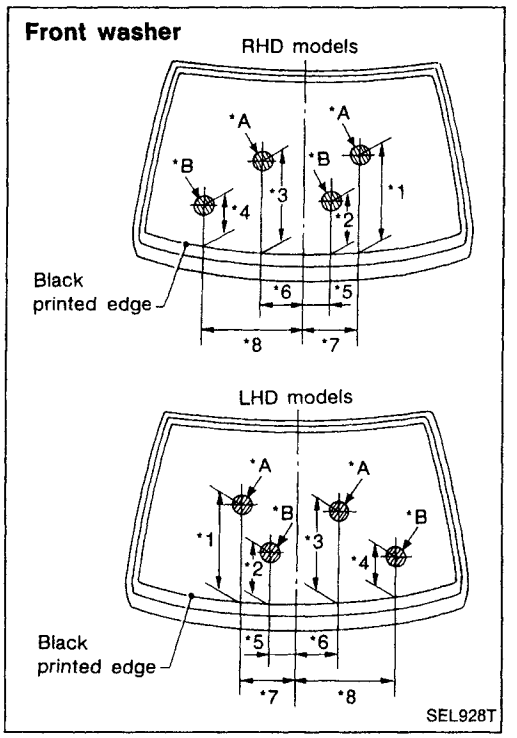
1. Installation is the reverse order of removal.

EL




## Front Washer Nozzle Adjustment

- Adjust washer nozzle with suitable tool as shown in the figure at left.
  **Adjustable range: ±10° (In any direction)**

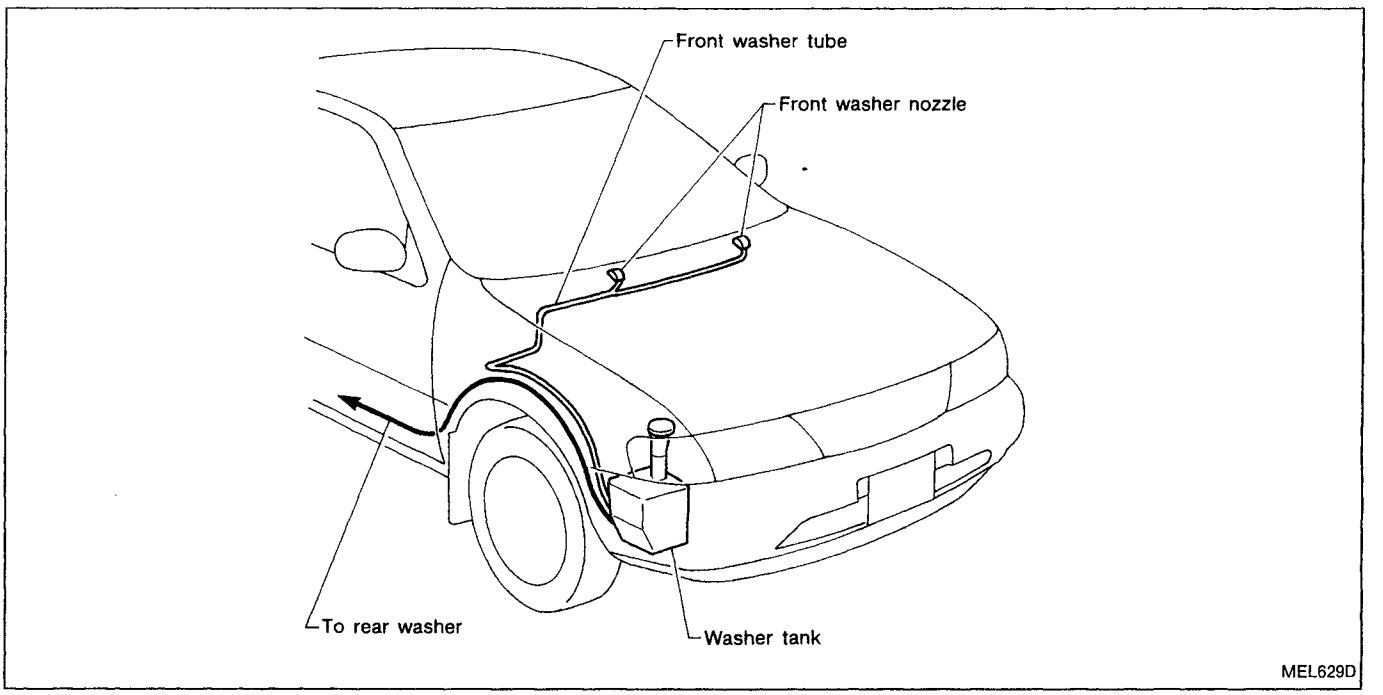



Unit: mm (in)

| | | | |
|---|---|---|---|
| *1 | 310 (12.20) | *5 | 160 (6.30) |
| *2 | 265 (10.43) | *6 | 170 (6.69) |
| *3 | 365 (14.37) | *7 | 345 (13.58) |
| *4 | 175 (6.89) | *8 | 410 (16.14) |

*A: The diameters of these circles are less than 140 mm (5.51 in).
*B: The diameters of these circles are less than 80 mm (3.15 in).

## Front Washer Tube Layout



## Rear Wiper and Washer/System Description

### WIPER OPERATION

The rear wiper switch is controlled by a ring built into the combination switch.
There are two wiper switch positions:

- ON (LO speed)
- INT (Intermittent)

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

- through 10A fuse (No. 9, located in the fuse block)
- to rear wiper motor terminal ④, and
- to rear wiper relay terminal ①.

#### Low speed wiper operation

Ground is supplied to rear wiper switch terminal ㉔ through body grounds (E37) and (E51).
When the rear wiper is placed in the ON position, ground is supplied

- through rear wiper switch terminal ㉒
- to rear wiper relay terminal ②.

The rear wiper relay is energized and ground is supplied

- to rear wiper motor terminal ①
- through rear wiper relay terminal ③
- to rear wiper relay terminal ⑤
- through body grounds (E37) and (E51).

#### Auto stop operation

With the rear wiper switch turned OFF, rear wiper motor will continue to operate until wiper arm reaches rear window base.
When wiper arm is not located at base of rear window with rear wiper switch OFF, rear wiper relay is not energized and ground is supplied

- to rear wiper motor terminal ①
- through rear wiper relay terminal ③
- to rear wiper relay terminal ④
- through rear wiper motor terminal ③, in order to continue rear wiper motor operation at low speed.

Ground is also supplied

- to rear wiper motor terminal ②
- through body grounds (B11), (B32) and (D105).

When wiper arm reaches base of rear window, rear wiper motor terminals ① and ④ are connected instead of terminals ① and ③. Rear wiper motor will then stop wiper arm at the PARK position.

#### Intermittent operation

The rear wiper motor operates the wiper arm one time at low speed at an interval of approximately 7 seconds. This feature is controlled by rear wiper amplifier.
With the ignition switch in the ACC or ON position, power is supplied

- through 10A fuse (No. 9, located in the fuse block)
- to rear wiper relay terminal ①.

When the rear wiper switch is placed in the INT position, ground is supplied

- to rear wiper amplifier terminal ②
- from rear wiper switch terminal ㉑
- through body grounds (E37) and (E51).

Ground is also supplied

- to rear wiper relay terminal ②
- through rear wiper amplifier terminal ⑥
- to rear wiper amplifier terminal ⑤
- through body grounds (M28), (M60) and (M68).

Then the rear wiper relay is energized and ground is supplied

- to rear wiper motor terminal ①
- through rear wiper relay terminal ③
- to rear wiper relay terminal ⑤

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

- through body grounds (E37) and (E51).

With power and ground supplied, the rear wiper motor operates intermittently.

### WASHER OPERATION

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

- through 10A fuse (No. [9], located in the fuse block)
- to rear washer motor terminal ①.

When the ring is turned WASH position, ground is supplied

- to rear washer motor terminal ②, and
- to rear wiper amplifier terminal ①
- from terminal ㉓ of rear wiper switch
- through terminal ㉔ of rear wiper switch, and
- through body grounds (E37) and (E51).

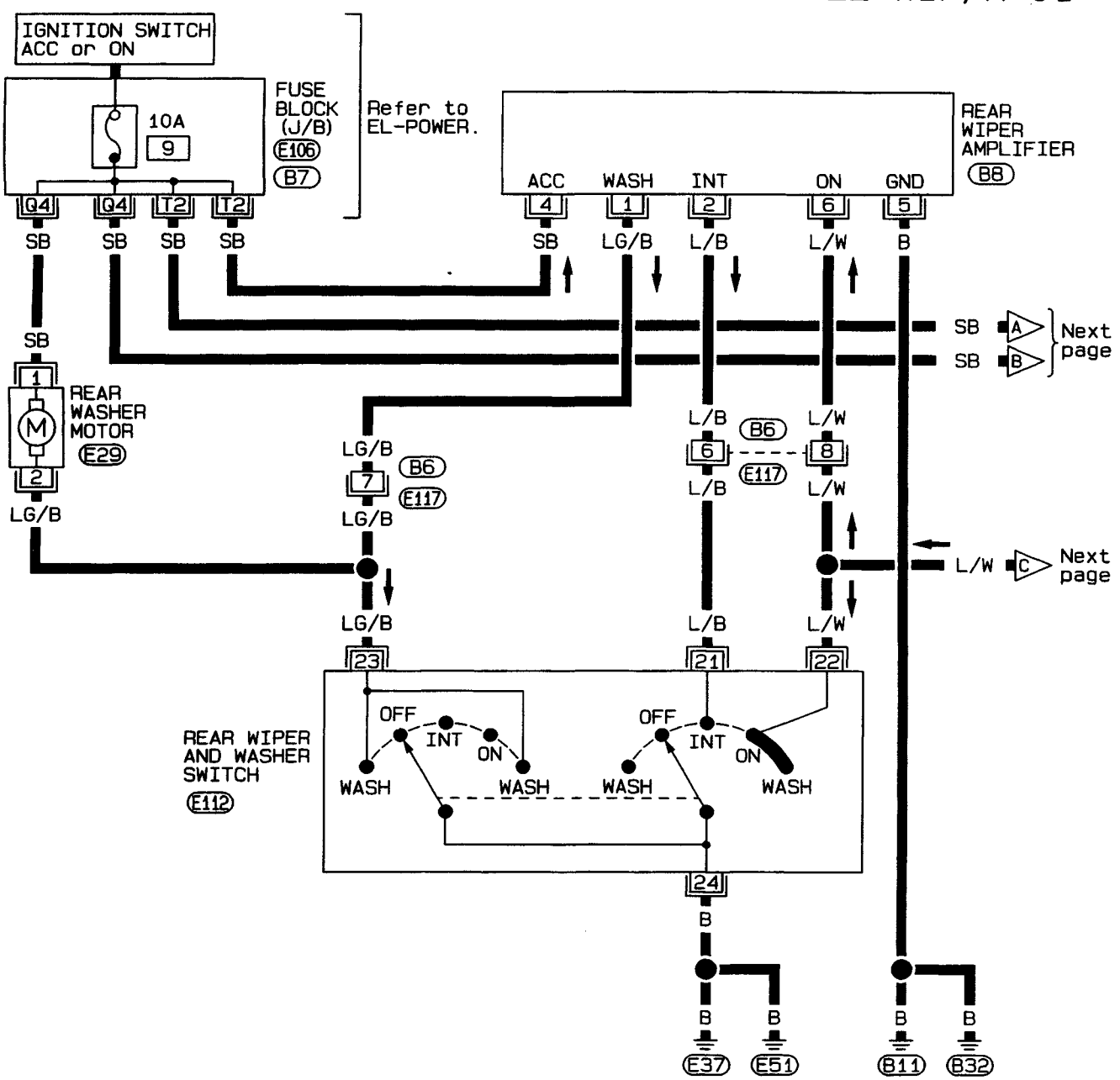
With power and ground is supplied, the rear washer motor operates.

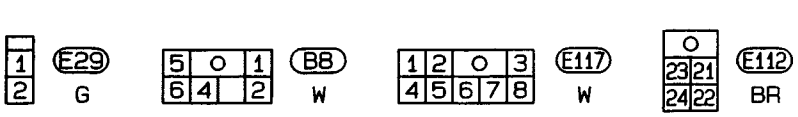
The rear wiper motor operates when the ring is turned to WASH position for one second or more and for approximately 3 seconds after the ring is released. This feature is controlled by the rear wiper amplifier in the same manner as the intermittent operation.

## Rear Wiper and Washer/Wiring Diagram — WIP/R —

### LHD MODELS

EL-WIP/R-01




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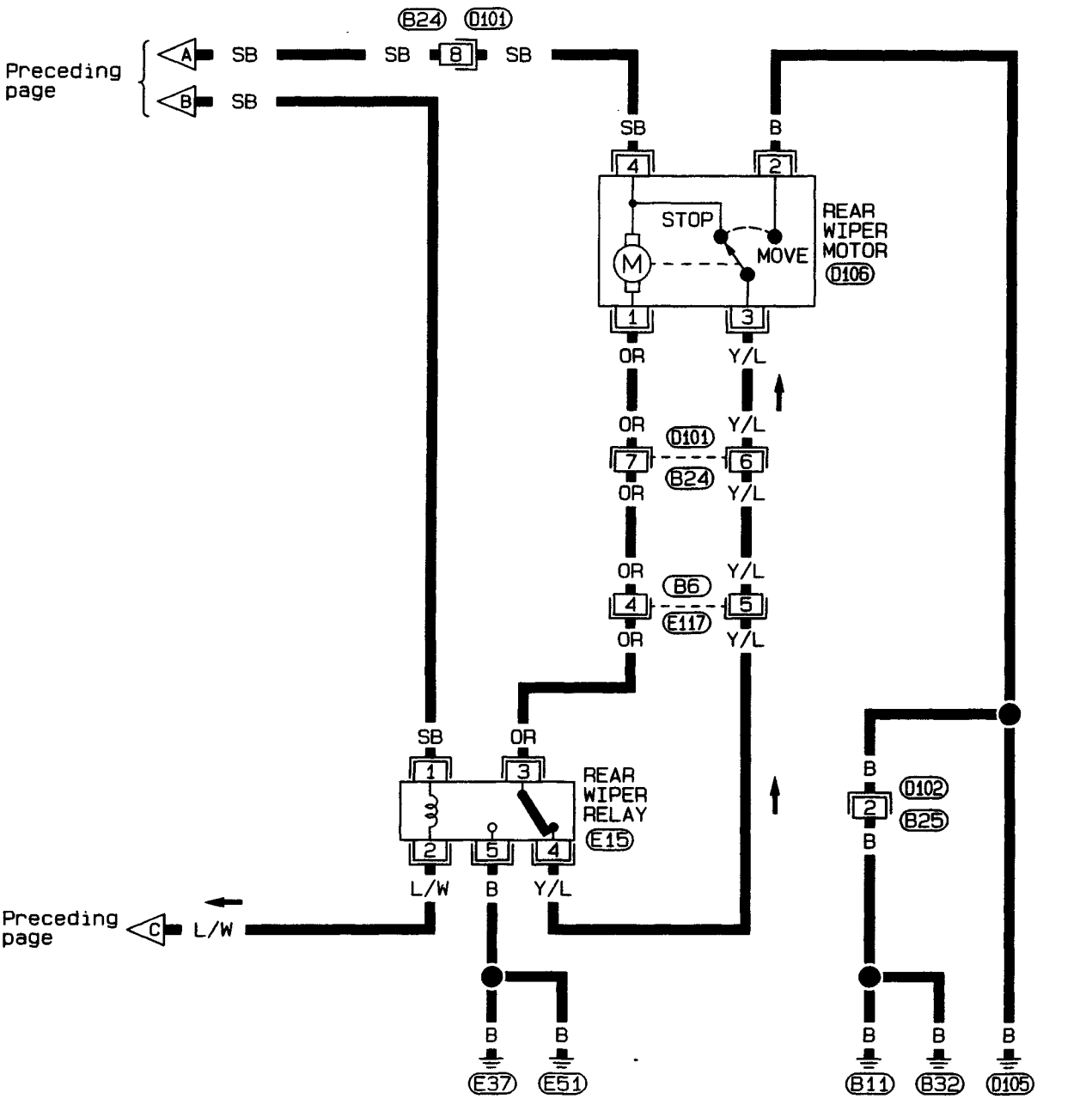
E106, B7

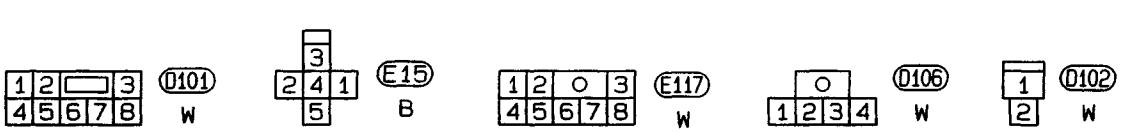
HEL090

EL

## Rear Wiper and Washer/Wiring Diagram — WIP/R — (Cont'd)

EL-WIP/R-02



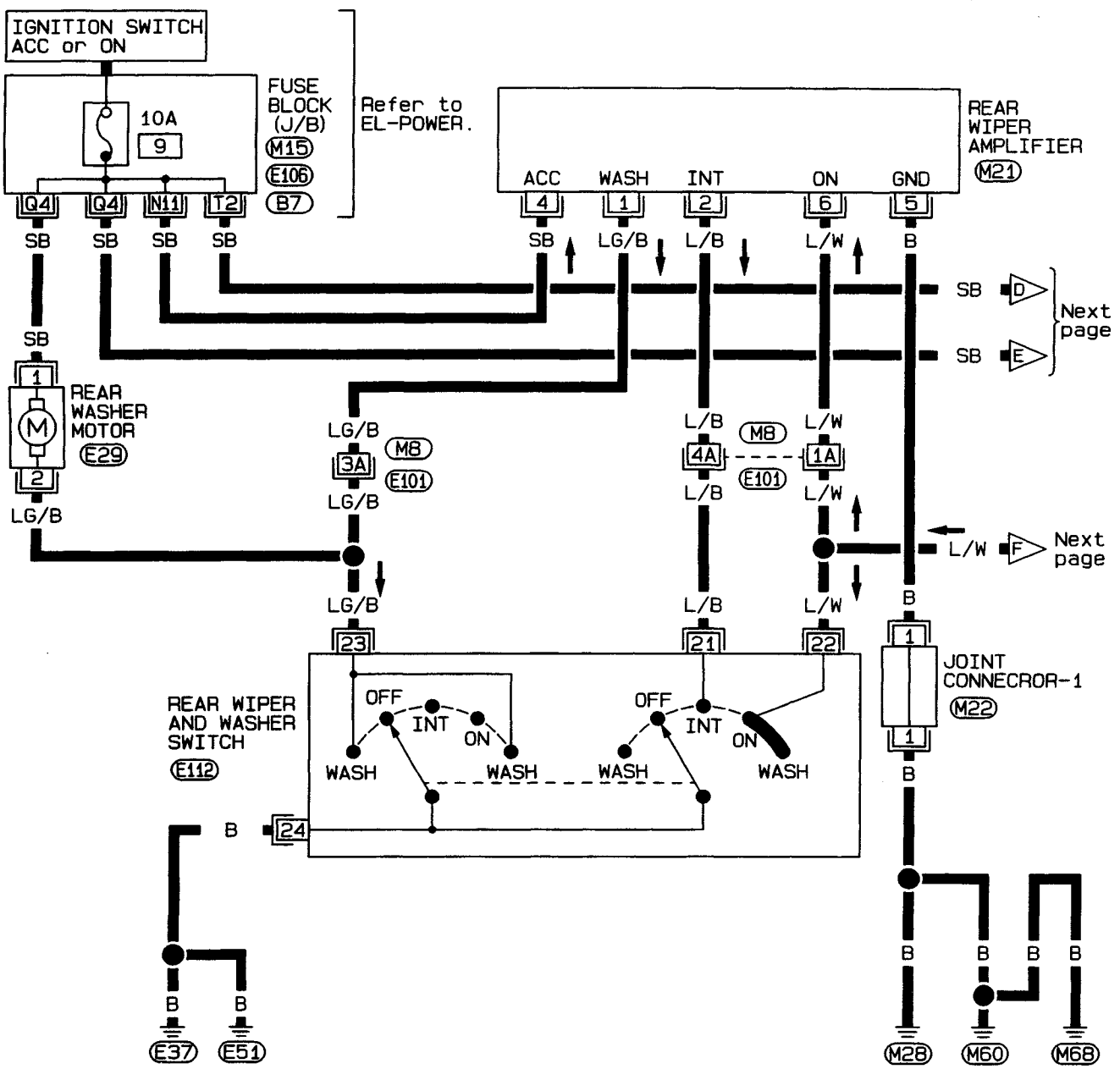




HEL091

## Rear Wiper and Washer/Wiring Diagram — WIP/R — (Cont'd)

### RHD MODELS

EL-WIP/R-03




E29 G

M21 W

E112 BR

M22 BR

Refer to last page (Foldout page).

M8, E101

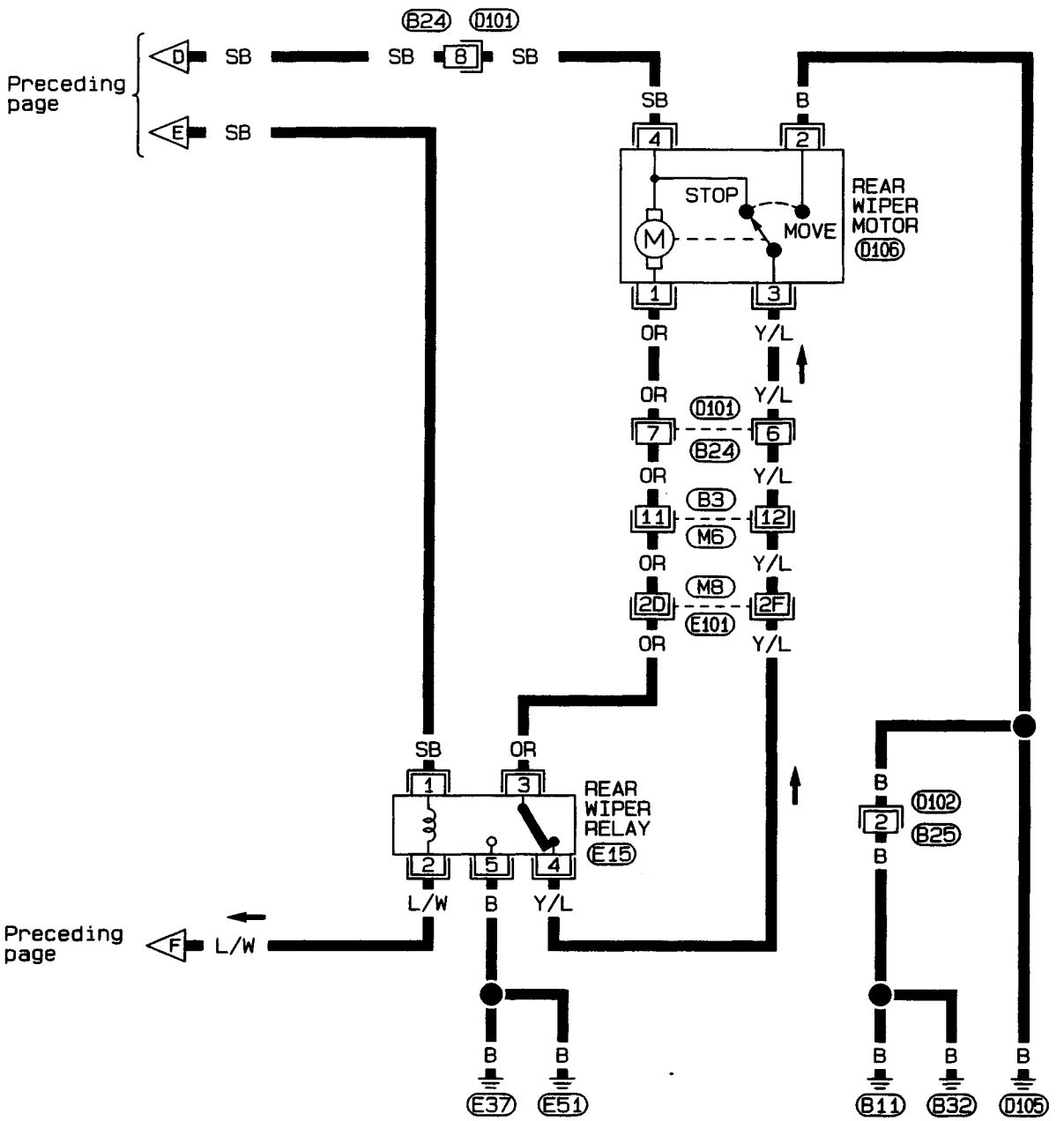
M15, E106, B7

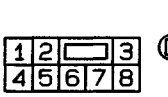
EL

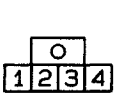
HEL092

## Rear Wiper and Washer/Wiring Diagram — WIP/R — (Cont'd)

EL-WIP/R-04

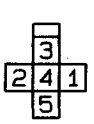




D101 W


D106 W


M6 W

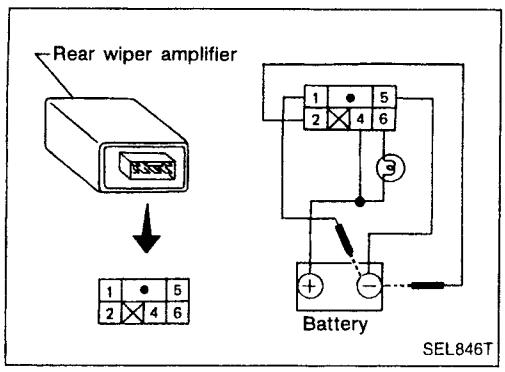

D102 W


E15 B

Refer to last page (Foldout page).

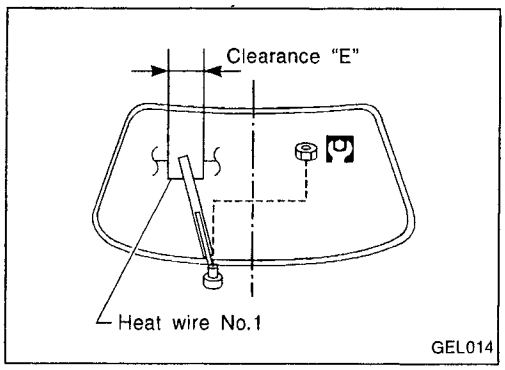
M8, E101

HEL093




## Rear Wiper Amplifier Check

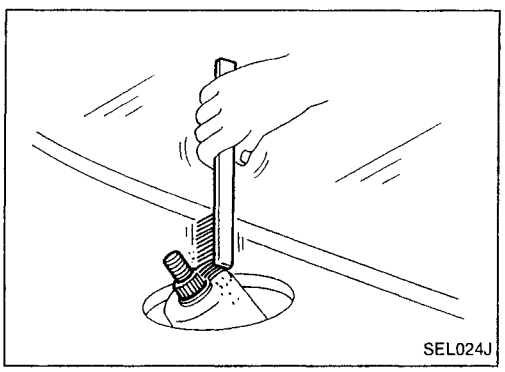
1. Connect as shown in the figure at left.
2. If test lamp illuminates when connected to terminal ① or ② and battery ground, wiper amplifier is normal.



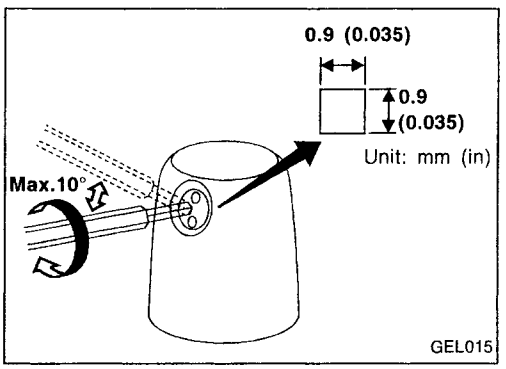

## Rear Wiper Installation and Adjustment

1. Prior to wiper arm installation, 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 "E" 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 "E".
   **Clearance "E": 20 mm (0.79 in)**

- Tighten windshield wiper arm nuts to specified torque.
  **: 13 - 18 N·m (1.3 - 1.8 kg-m, 9 - 13 ft-lb)**




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

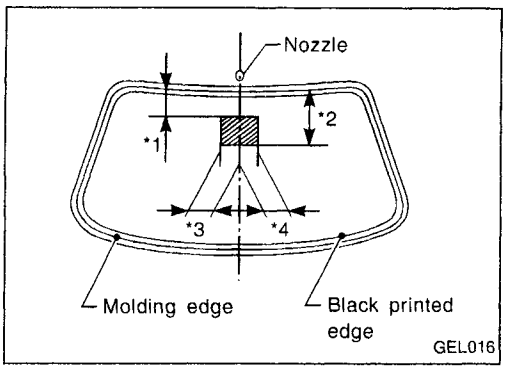



## Rear Washer Nozzle Adjustment

- Adjust washer nozzle with suitable tool as shown in the figure at left.
  **Adjustable range: ±10° (In any direction)**

EL

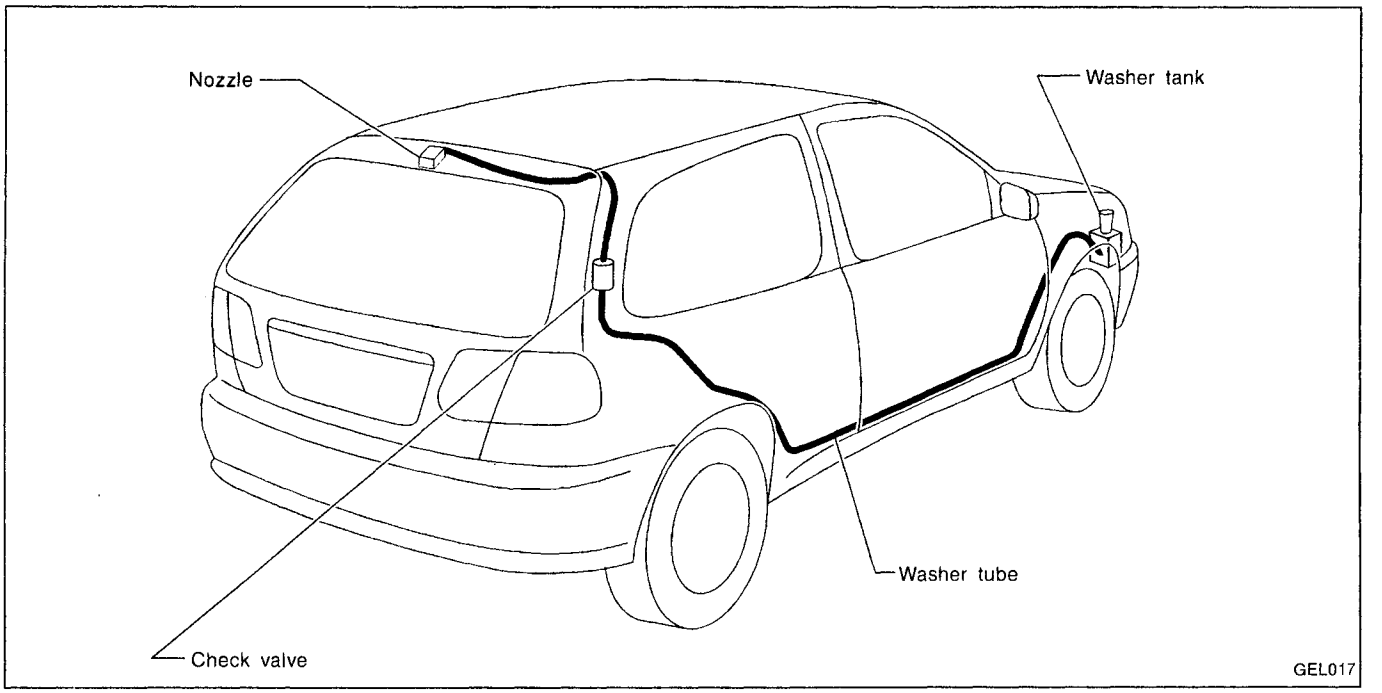
## Rear Washer Nozzle Adjustment (Cont'd)

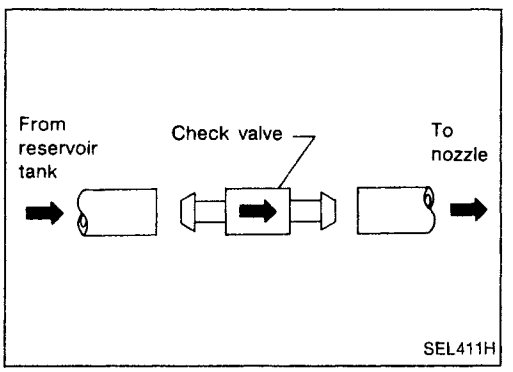



Unit: mm (in)

| | | | |
|---|---|---|---|
| *1 | 40 (1.57) | *3 | 35 (1.38) |
| *2 | 95 (3.74) | *4 | 35 (1.38) |

## Rear Washer Tube Layout



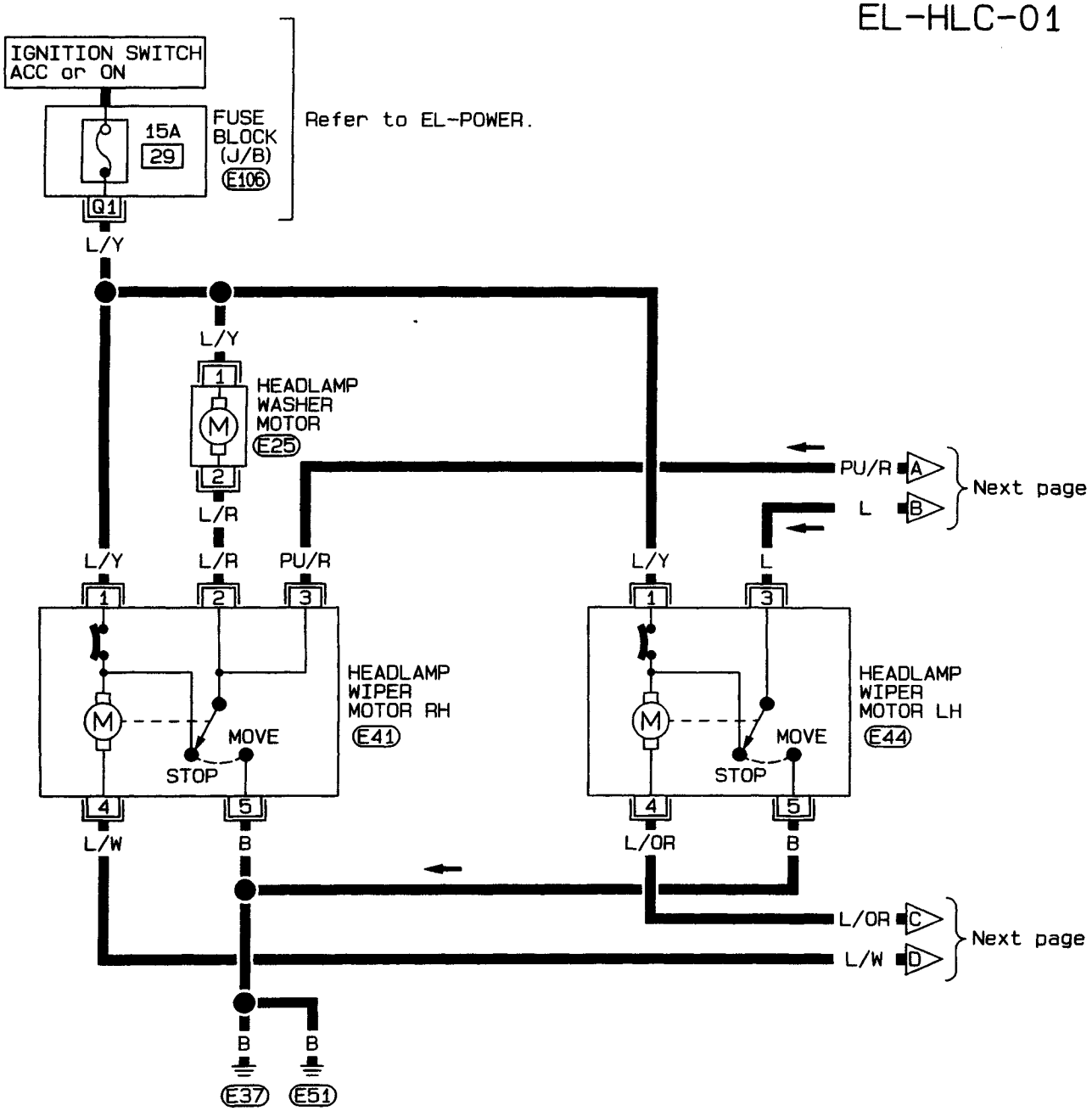




## Check Valve (for rear washer)

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

## Headlamp Wiper and Washer/Wiring Diagram — HLC —

EL-HLC-01




E41, E44 GY, GY

E25 W

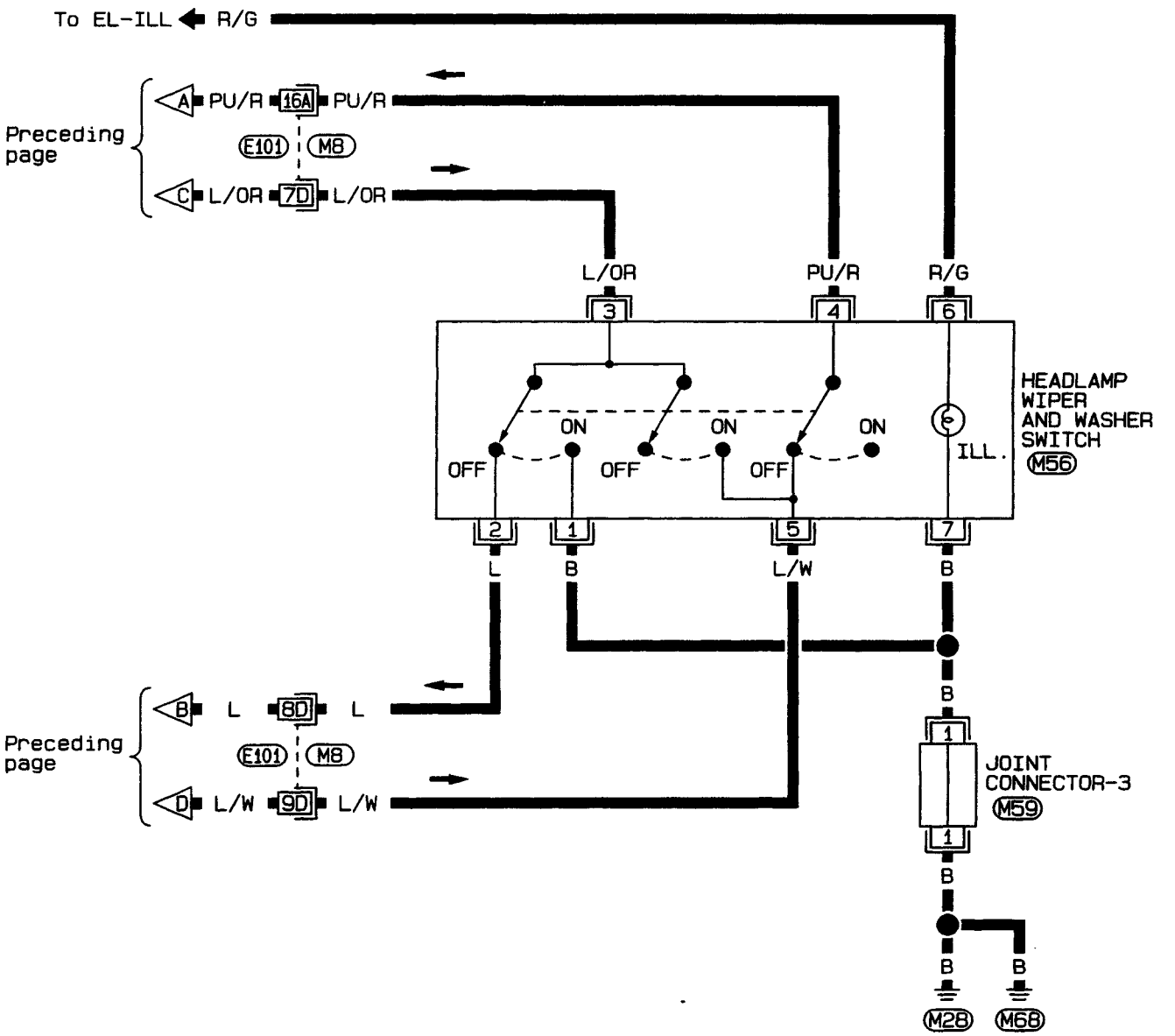
Refer to last page (Foldout page).

E106

HEL094

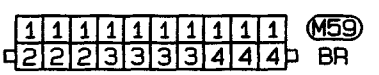
## Headlamp Wiper and Washer/Wiring Diagram — HLC — (Cont'd)

EL-HLC-02





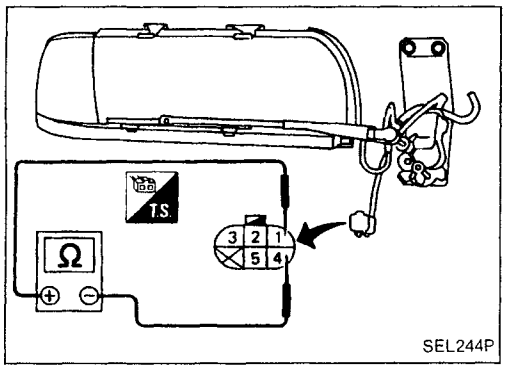





Refer to last page (Foldout page).

M8, E101

HEL095

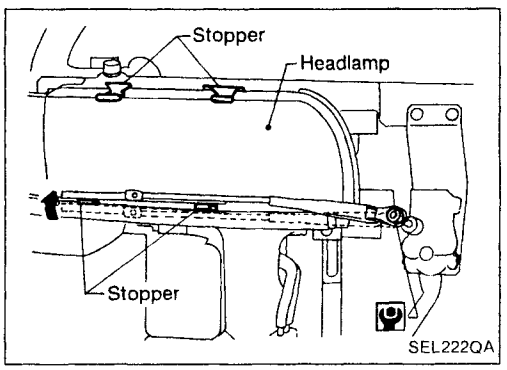



## Headlamp Wiper Motor Check

**When wiper motor is locked, a protective circuit built into wiper motor activates to stop wiper motor. If wiper motor will not restart even after cause of problems has been eliminated, turn ignition switch OFF and leave it off for approx. 1 to 3 minutes.**

1. Turn headlamp wiper switch OFF.
2. Connect ohmmeter and check continuity.

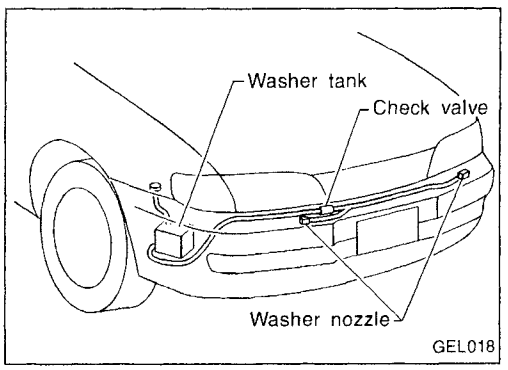
| Headlamp wiper motor | Ohmmeter probe | | Continuity |
|---|---|---|---|
| | (+) | (−) | |
| Stop position | ① | ④ | Yes |
| | ① | ② | Yes |
| | ① | ③ | Yes |
| - | ③ | ⑤ | No |



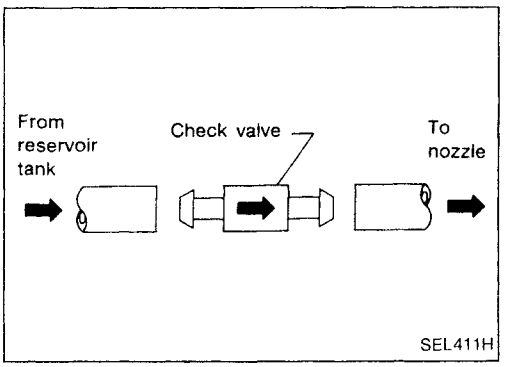

## Headlamp Wiper Installation

Tighten nut to secure wiper arm with wiper blade held below lower stopper.
After installing wiper arm, position wiper blade on stopper upper surface.

- Tighten headlamp wiper arm nut to the specified torque.
  **: 2.3 - 3.0 N·m (0.23 - 0.31 kg-m, 20.0 - 26.9 in-lb)**




## Headlamp Washer Tube Layout




## Check Valve (For headlamp washer)

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

EL

## System Description

Power is supplied at all times
- from 25A fusible link (Letter [f], located in the fusible link and fuse box)
- to circuit breaker terminal ①
- through circuit breaker terminal ②
- to power window relay terminal ③.

With ignition switch in ON or START position, power is supplied
- through 7.5A fuse (No.[7] located in the fuse block)
- to power window relay terminal ①.

Ground is supplied to power window relay terminal ②
- through body grounds (M28), (M60) and (M68).

The power window relay is energized and power is supplied
- through power window relay terminal ⑤
- to power window main switch terminals ① and ②,
- to passenger side power window sub-switch terminals ⑤ and ⑥,
- to rear power window sub-switch LH terminal ⑥,
- to rear power window sub-switch RH terminal ⑥.

### MANUAL OPERATION

#### Driver's door

Ground is supplied
- to front power window main switch terminals ③ and ④
- through body grounds (M28), (M60) and (M68).

WINDOW UP

When a driver side switch in the power window main switch is pressed in the up position, power is supplied
- to driver side power window regulator terminal ②
- through power window main switch terminal ⑨.

Ground is supplied
- to driver side power window regulator terminal ①
- through power window main switch terminal ⑧.

Then, the motor raises the window until the switch is released.

WINDOW DOWN

When a driver side switch in the power window main switch is pressed in the down position, power is supplied
- to driver side power window regulator terminal ①
- through power window main switch terminal ⑧.

Ground is supplied
- to driver side power window regulator terminal ②
- through power window main switch terminal ⑨.

Then, the motor lowers the window until the switch is released.

#### Except driver's door

Ground is supplied
- to power window main switch terminal ③
- through body grounds (M28), (M60) and (M68).

PASSENGER'S DOOR

**NOTE:**

**Figures in parentheses ( ) refer to terminal Nos. arranged in order when the UP or DOWN section of power window switch is pressed.**

Operation by main switch

Power is supplied
- through power window main switch (⑤, ⑥)
- to passenger side power window sub-switch (④, ③).

## System Description (Cont'd)

The subsequent operations are the same as those outlined under "Operation by sub-switches".
Operation by sub-switches
Power is supplied
- through passenger side power window sub-switch (②, ①)
- to passenger side power window regulator (②, ①).

Ground is supplied
- to passenger side power window regulator (①, ②)
- through passenger side power window sub-switch (①, ②)
- to passenger side power window sub-switch (③, ④)
- through power window main switch (⑥, ⑤).

Then, the motor raises or lowers the window until the switch is released.
REAR DOOR LH

**NOTE:**

**Figures in parentheses ( ) refer to terminal Nos. arranged in order when the UP or DOWN section of power window switch is pressed.**

Operation by main switch
Power is supplied
- through power window main switch (⑮, ⑯)
- to rear power window sub-switch LH (④, ③).

The subsequent operations are the same as those outlined under "Operation by sub-switches".
Operation by sub-switches
Power is supplied
- through rear power window sub-switch LH (②, ①)
- to rear power window regulator LH (②, ①).

Ground is supplied
- to rear power window regulator LH (①, ②)
- through rear power window sub-switch LH (①, ②)
- to rear power window sub-switch LH (③, ④)
- through power window main switch LH (⑯, ⑮).

Then, the motor raises or lowers the window until the switch is released.
REAR DOOR RH

**NOTE:**

**Figures in parentheses ( ) refer to terminal Nos. arranged in order when the UP or DOWN section of power window switch is pressed.**

Operation by main switch
Power is supplied
- through power window main switch (⑩, ⑪)
- to rear power window sub-switch RH (④, ③).

The subsequent operations are the same as those outlined under "Operation by sub-switches".
Operation by sub-switches
Power is supplied
- through rear power window sub-switch RH (②, ①)
- to rear power window regulator RH (②, ①).

Ground is supplied
- to rear power window regulator RH (①, ②)
- through rear power window sub-switch RH (①, ②)
- to rear power window sub-switch RH (③, ④)
- through power window main switch (⑪, ⑩)

Then, the motor raises or lowers the window until the switch is released.

### AUTO OPERATION

The power window AUTO feature enables the driver to open or close the driver's window without holding the window switch in the respective position.
When the AUTO switch in the main switch is pressed and released, the driver's window will travel to the fully open or closed position.

## System Description (Cont'd)

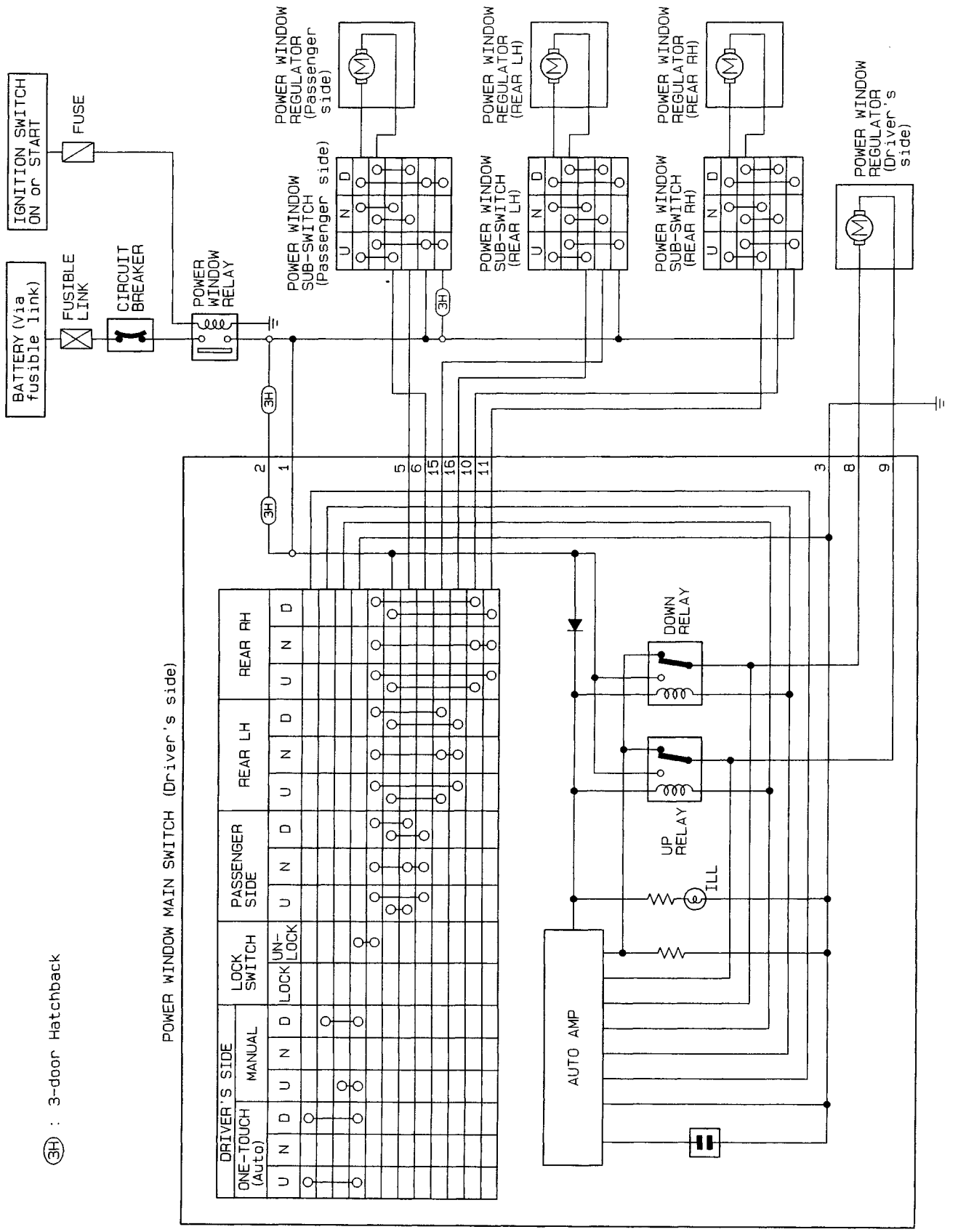
### POWER WINDOW LOCK

The power window lock is designed to lock-out window operation to all windows except the driver's door window.

When the lock switch is pressed to lock position, ground of the passenger side switch, rear RH switch and rear LH switch in the power window main switch is disconnected. This prevents the power window motors from operating.

## Schematic

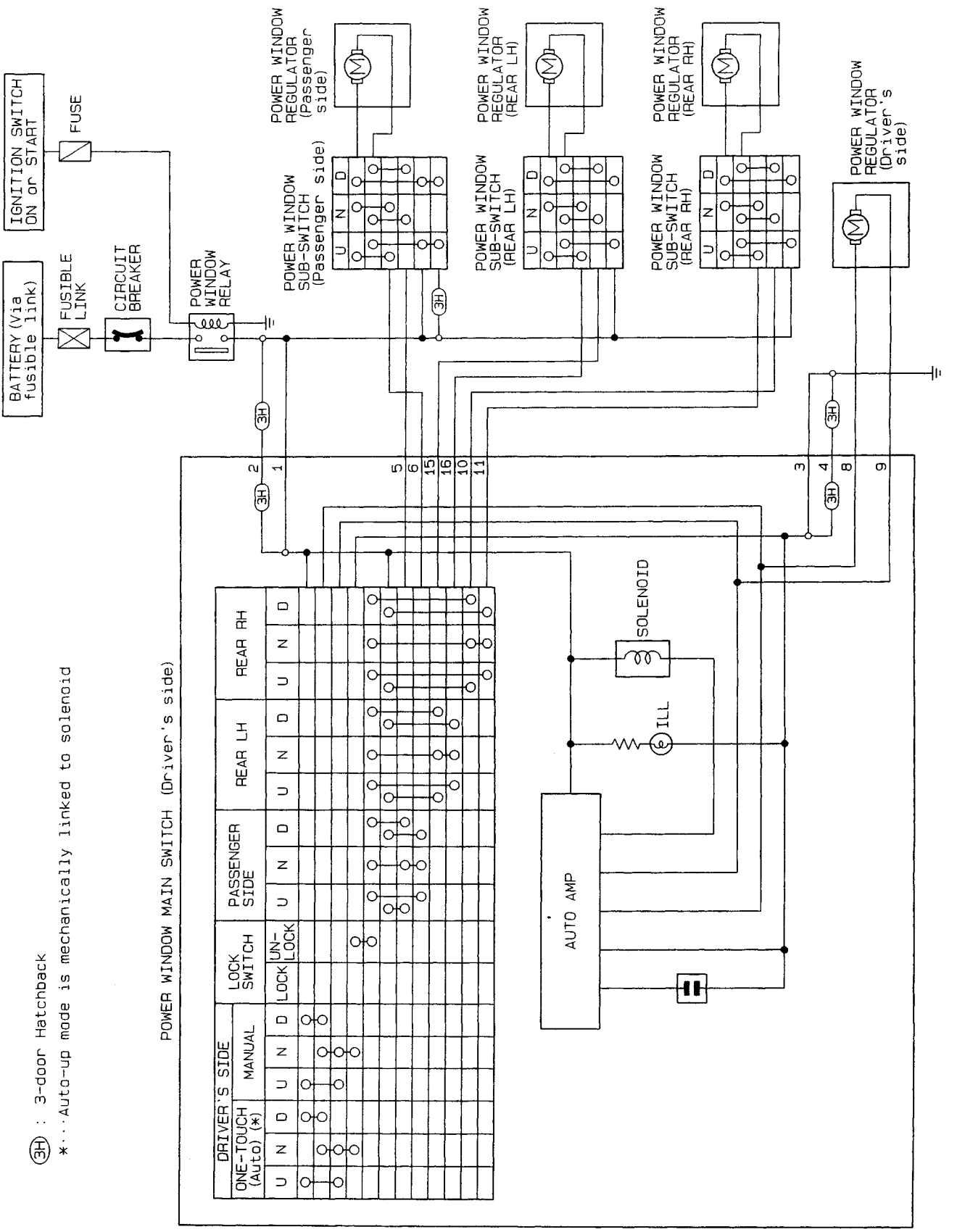
### LHD MODELS AND RHD MODELS EXCEPT FOR EUROPE AND AUSTRALIA




HEL097

## Schematic (Cont'd)

### RHD MODELS FOR EUROPE AND AUSTRALIA

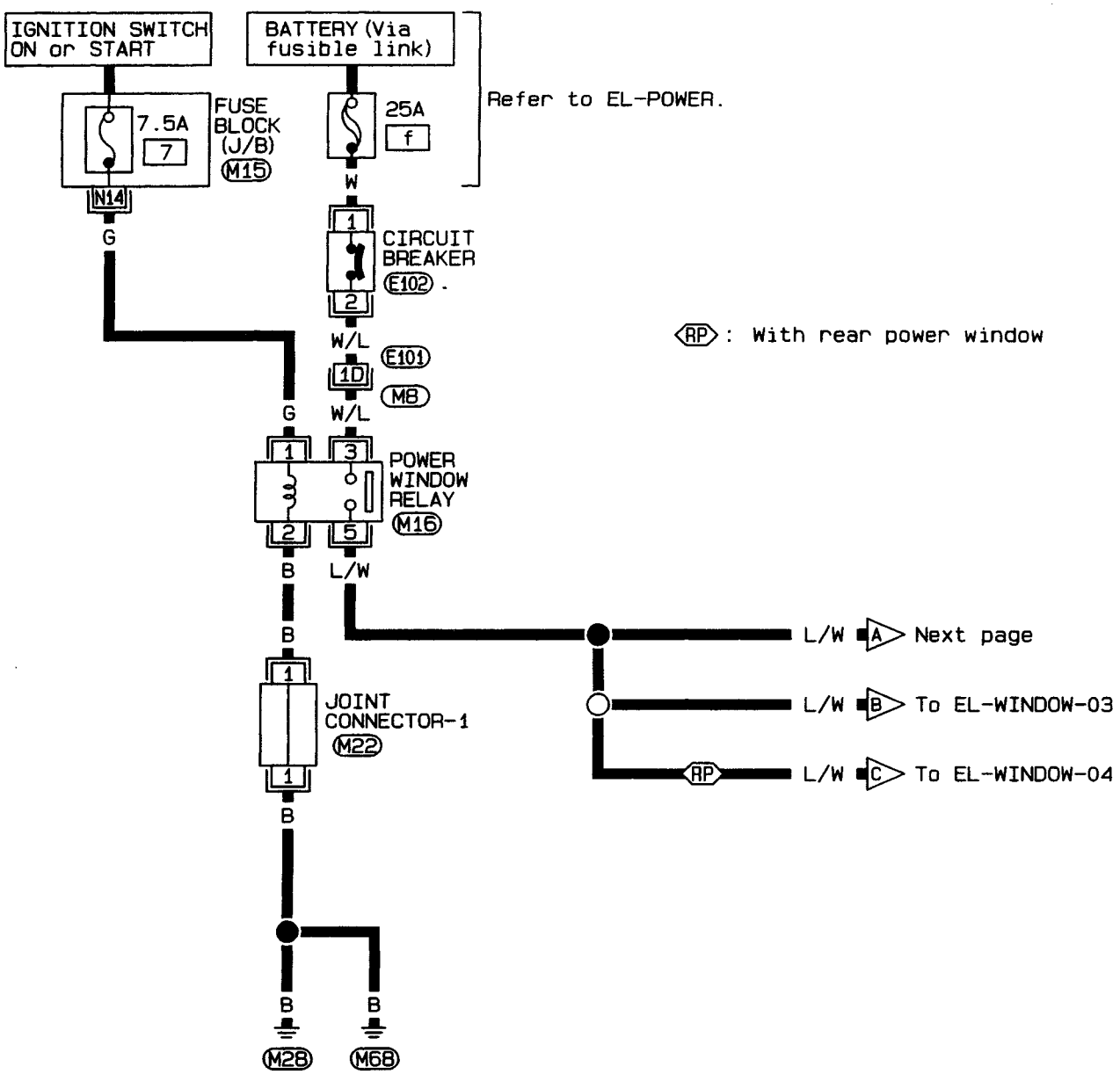


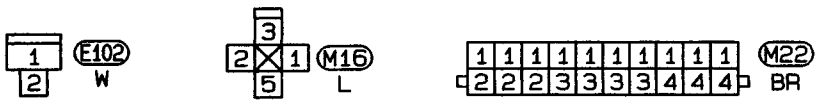

HEL098

## Wiring Diagram — WINDOW —

### LHD MODELS

EL-WINDOW-01



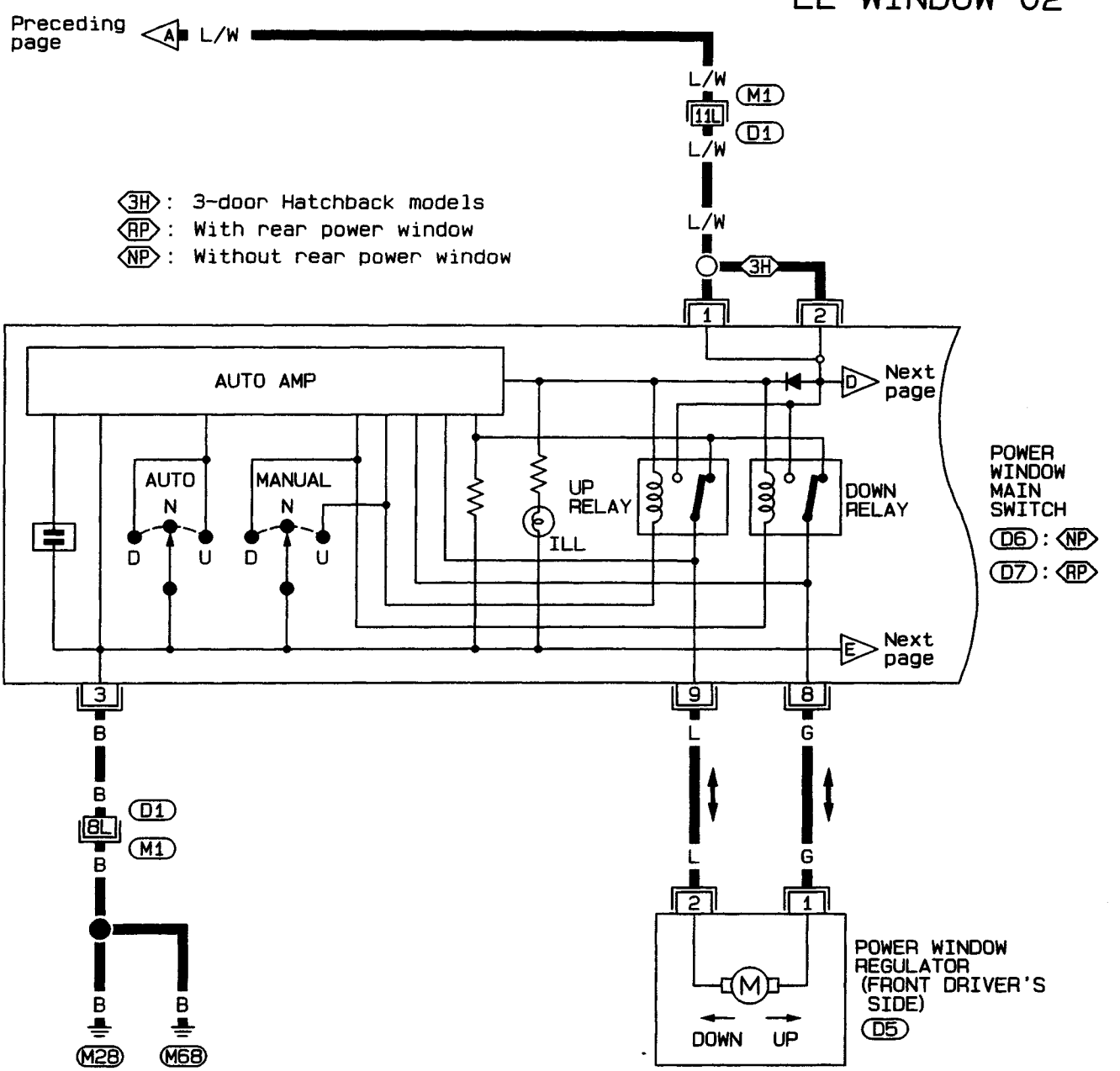

Refer to last page (Foldout page).
M8, E101
M15

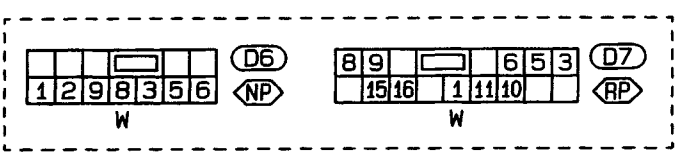
EL

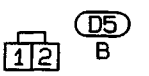
HEL099

## Wiring Diagram — WINDOW — (Cont'd)

EL-WINDOW-02




Refer to last page (Foldout page).

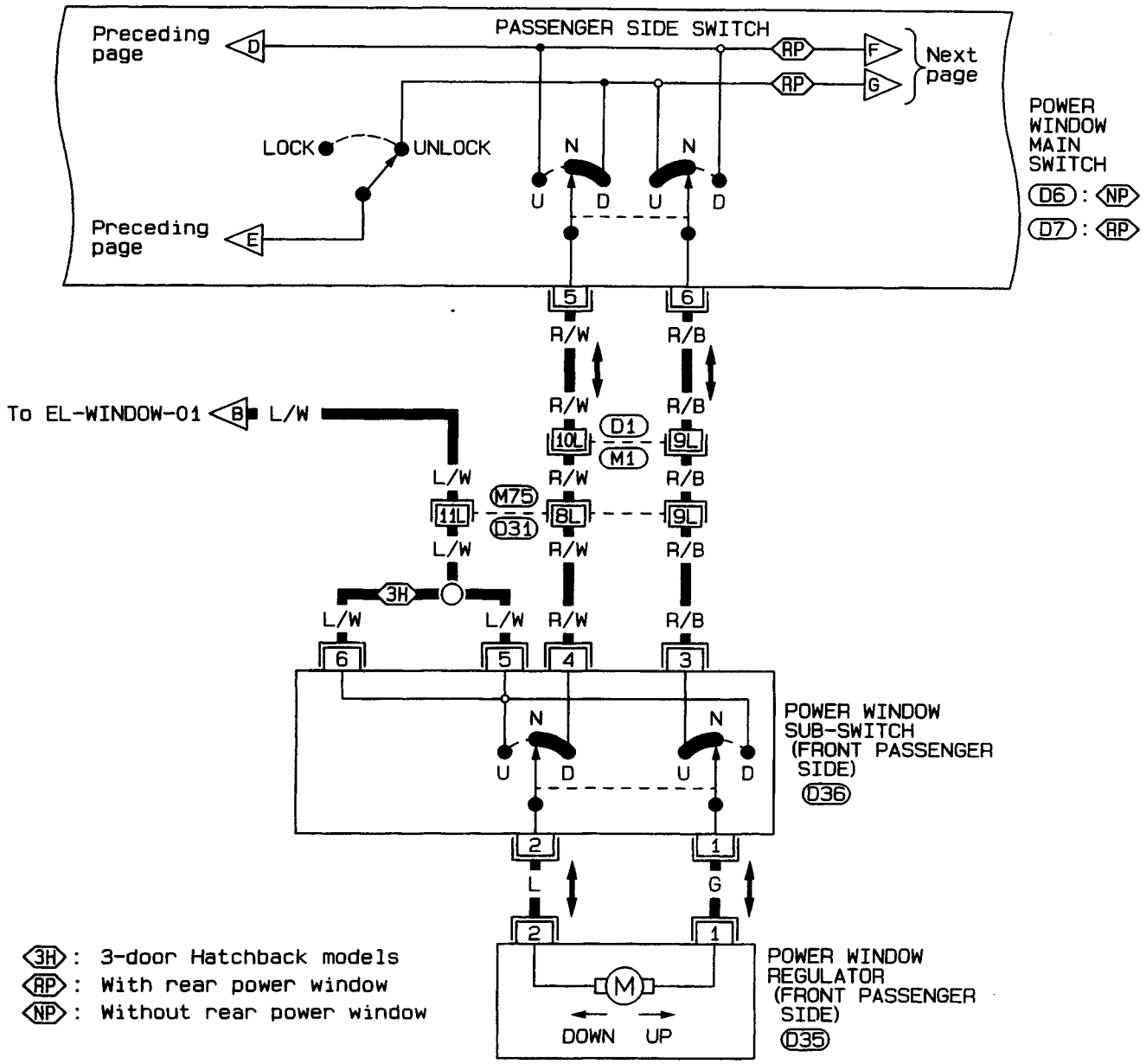
M1, D1

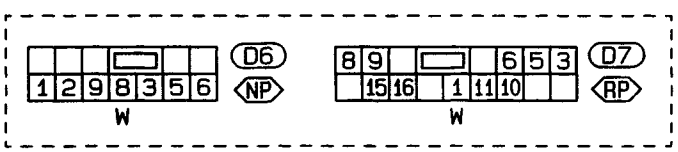
CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.

HEL100

## Wiring Diagram — WINDOW — (Cont'd)

EL-WINDOW-03







CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.

Refer to last page (Foldout page).

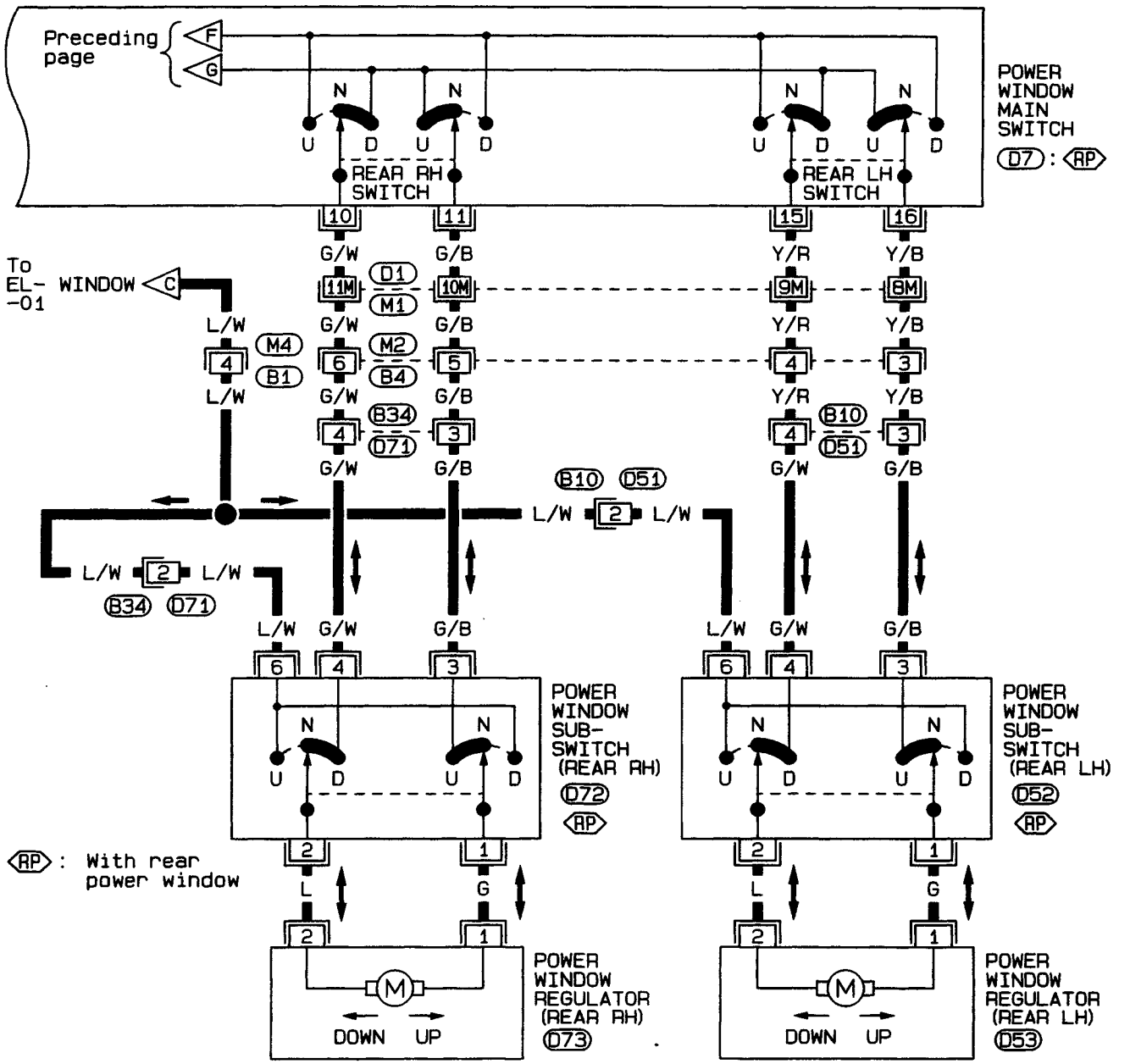
M1, D1

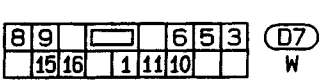
M75, D31

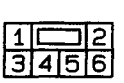
EL

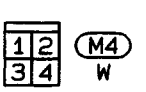
## Wiring Diagram — WINDOW — (Cont'd)

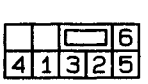
EL-WINDOW-04





D7
W


M2 , B10 , B34
W W W


M4
W


D52 , D72
W W


D53 , D73
B B

Refer to last page (Foldout page).

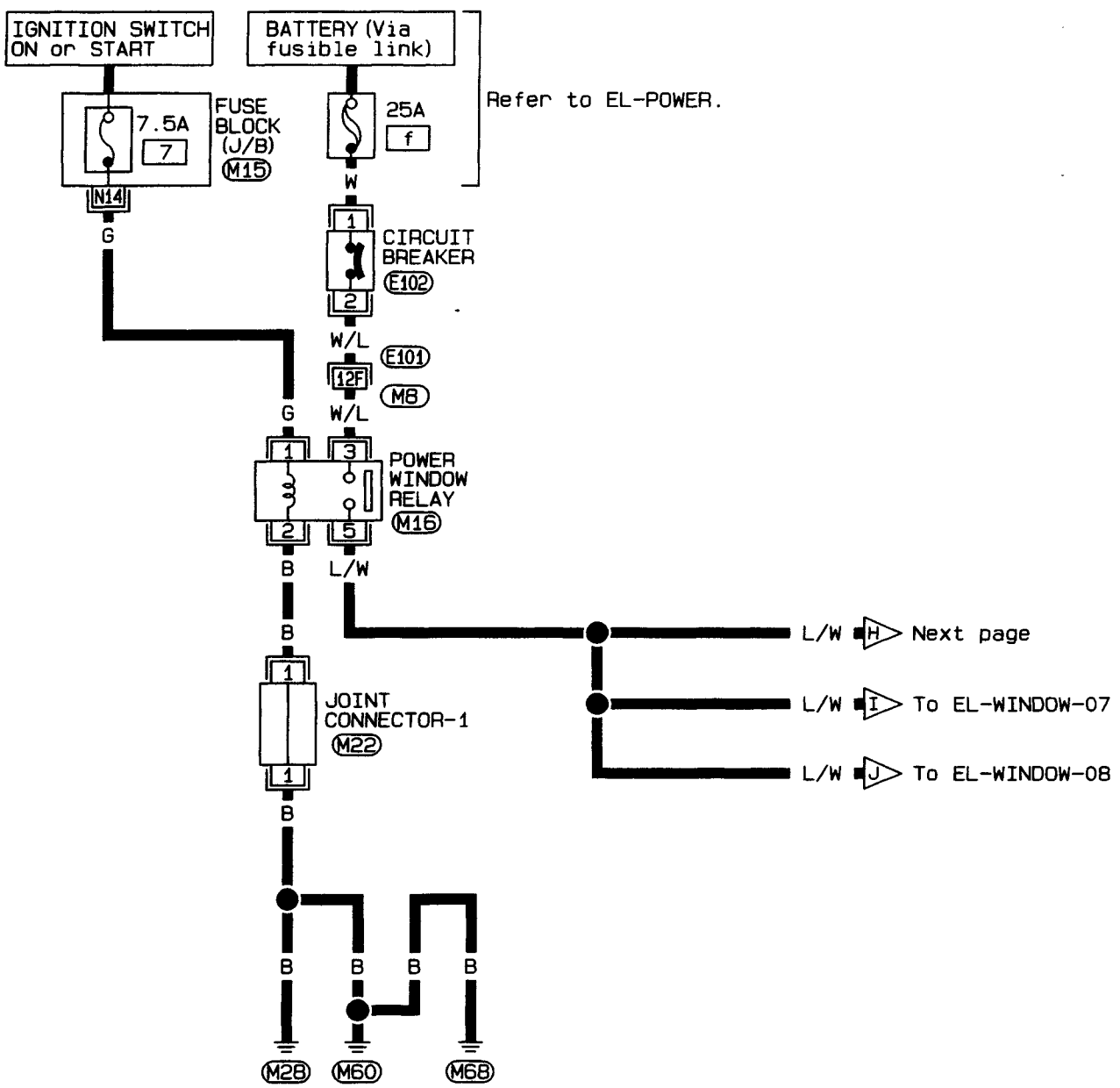
M1 , D1

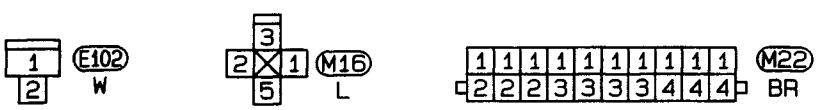
HEL102

## Wiring Diagram — WINDOW — (Cont'd)

### RHD MODELS EXCEPT FOR EUROPE AND AUSTRALIA

EL-WINDOW-05



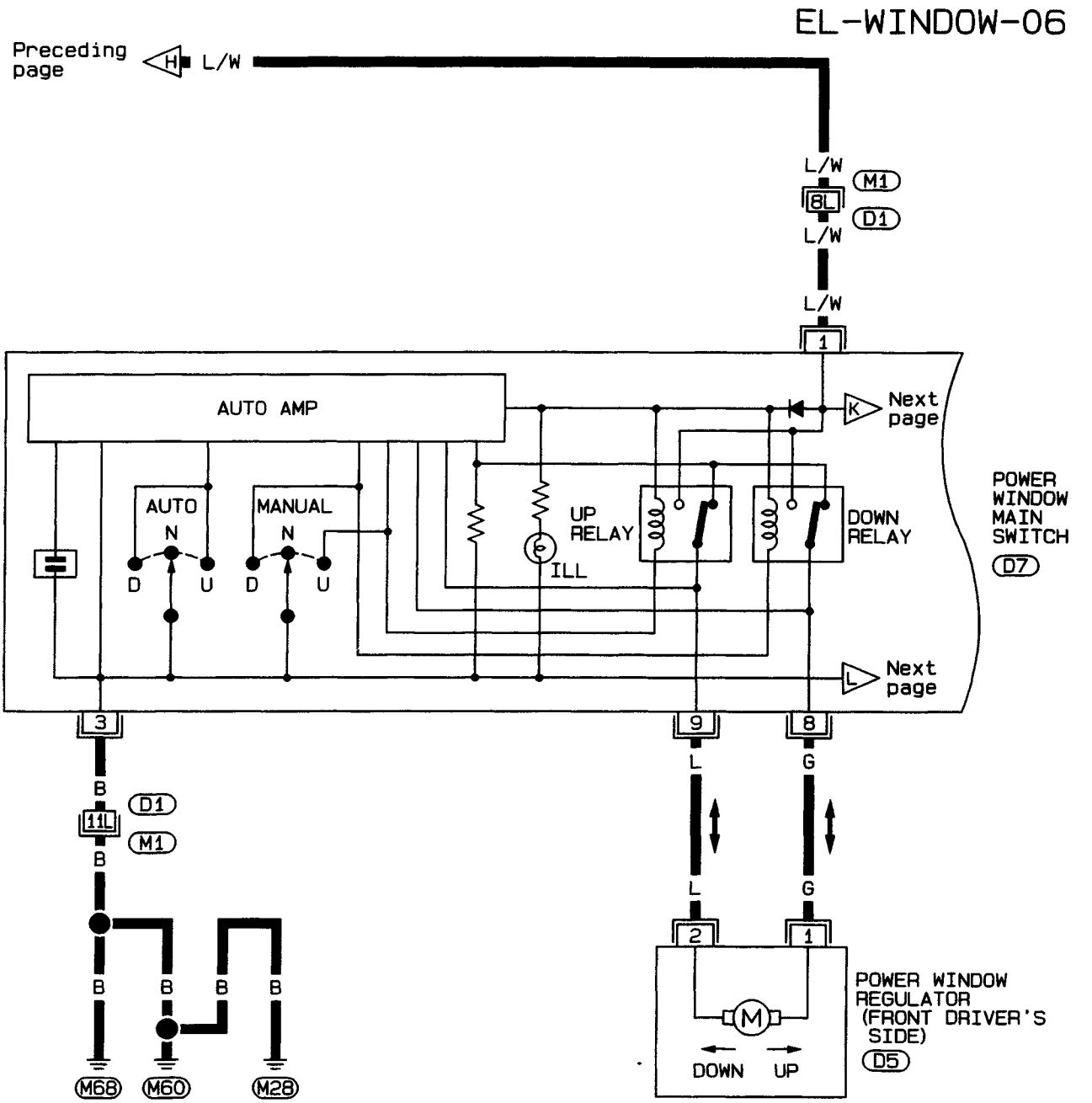

Refer to last page (Foldout page).

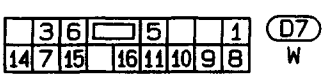
M8, E101
M15

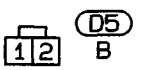
EL

HEL103

## Wiring Diagram — WINDOW — (Cont'd)



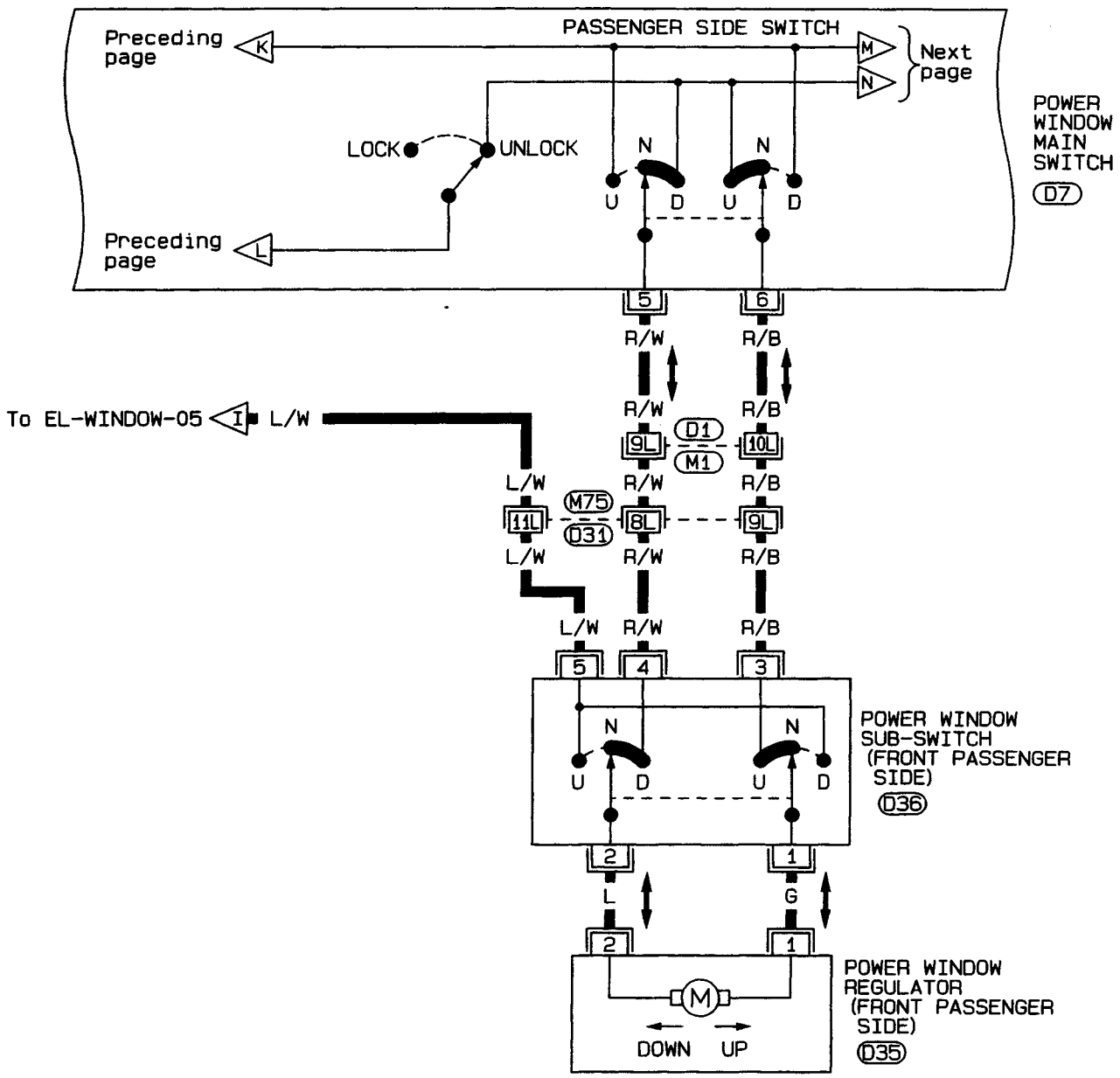

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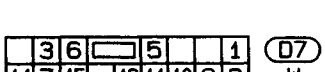
M1, D1

HEL104

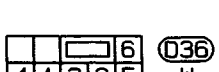
## Wiring Diagram — WINDOW — (Cont'd)

EL-WINDOW-07




D7
W




D36
W




D35
B

Refer to last page (Foldout page).

M1, D1

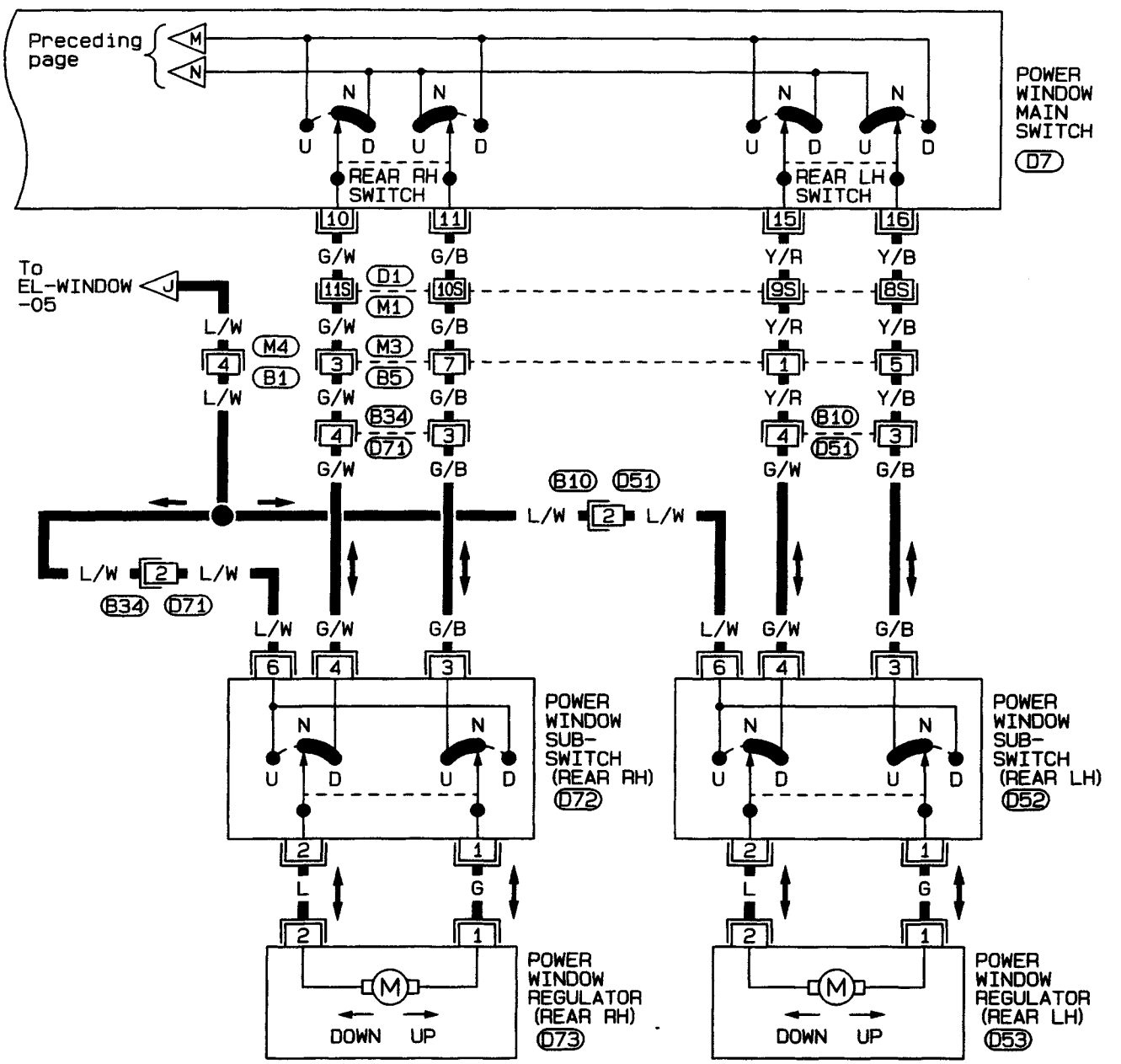
M75, D31

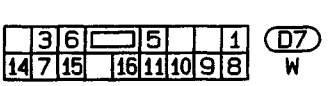
EL

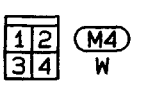
HEL105

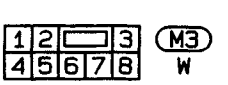
## Wiring Diagram — WINDOW — (Cont'd)

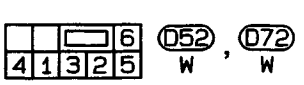
EL-WINDOW-08

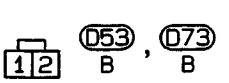


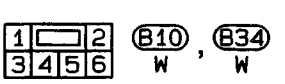




Refer to last page (Foldout page).

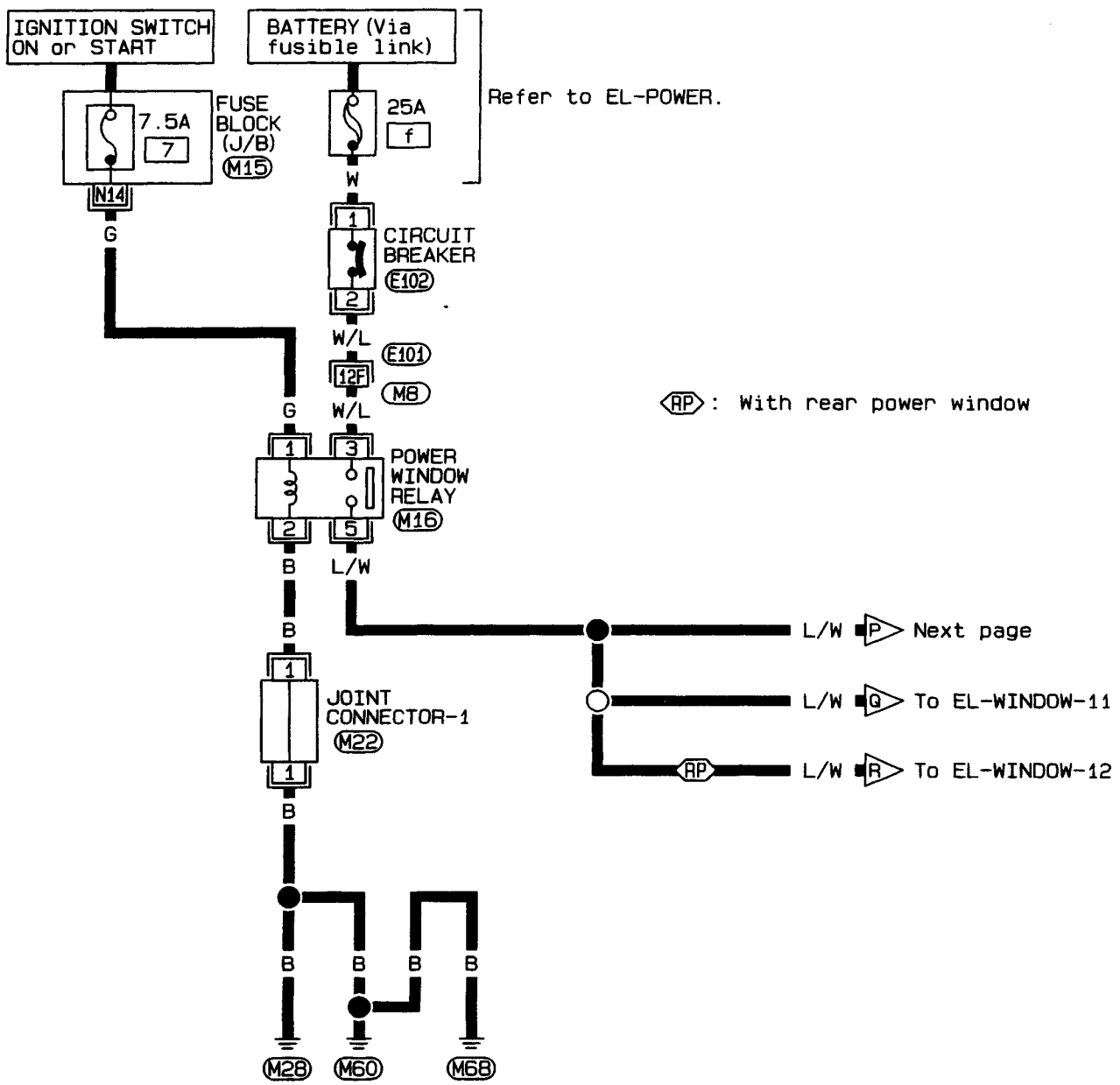
M1, D1

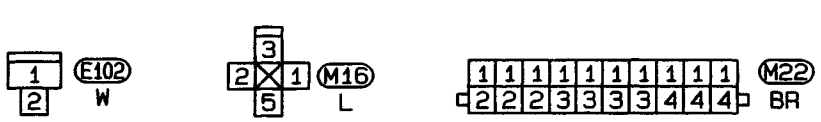
HEL106

## Wiring Diagram — WINDOW — (Cont'd)

### RHD MODELS FOR EUROPE AND AUSTRALIA

EL-WINDOW-09



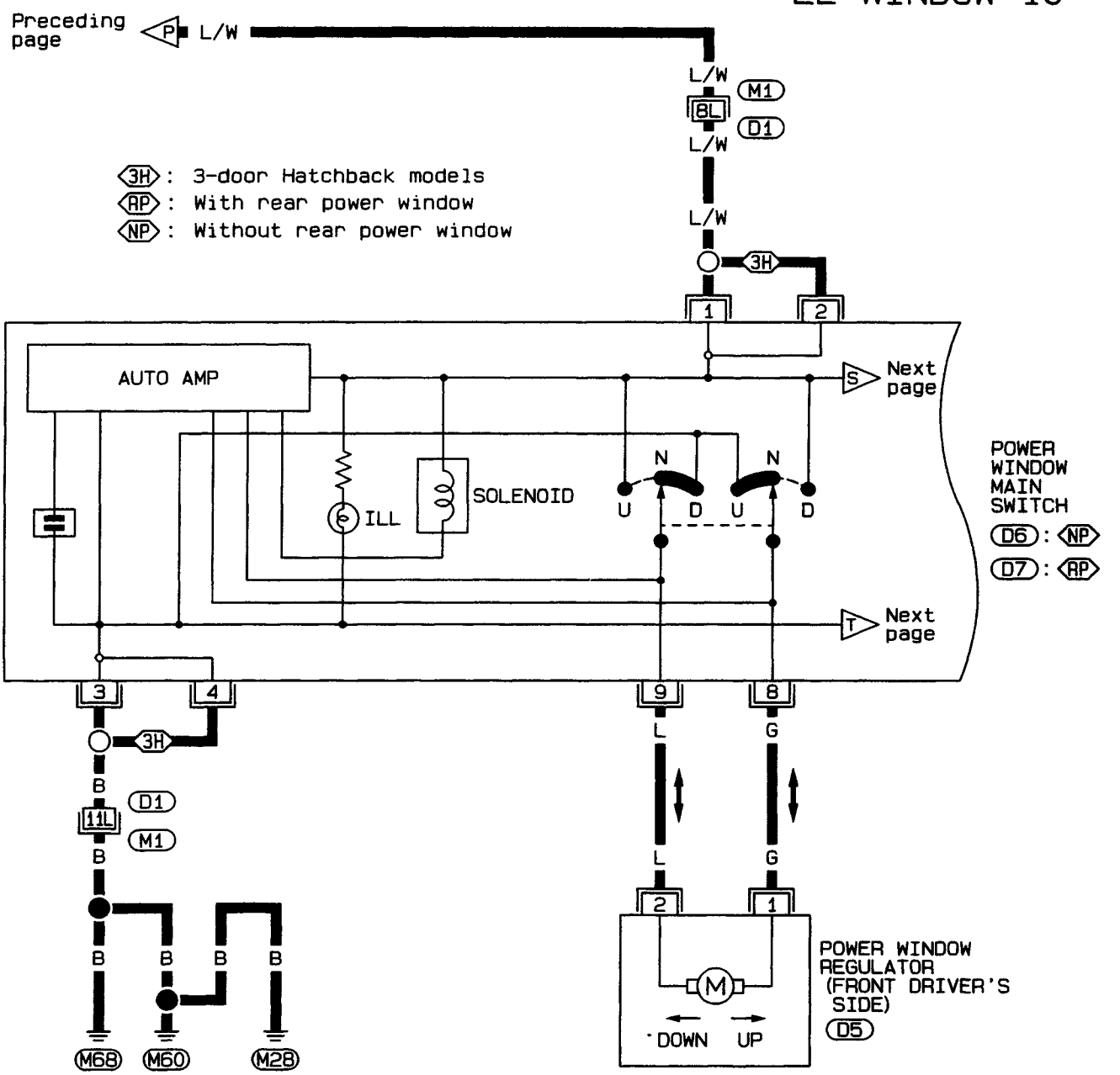

Refer to last page (Foldout page).
M8, E101
M15

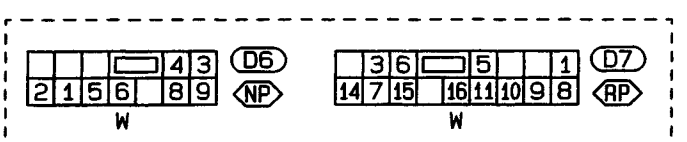
EL

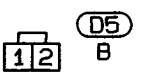
HEL107

## Wiring Diagram — WINDOW — (Cont'd)

EL-WINDOW-10




Refer to last page (Foldout page).

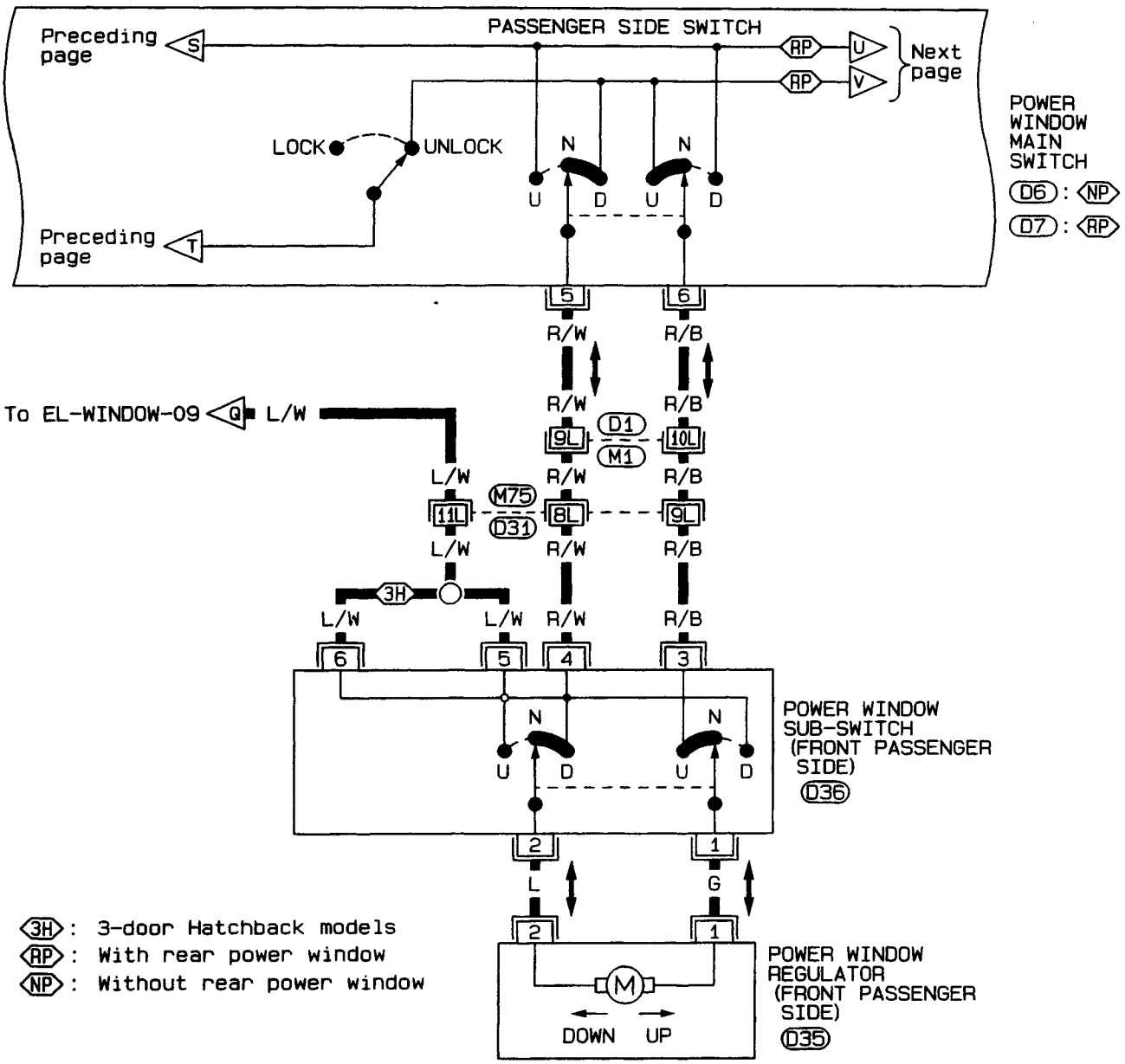
M1, D1

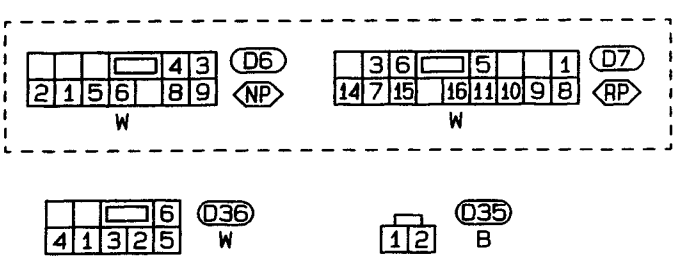
CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.

HEL108

## Wiring Diagram — WINDOW — (Cont'd)

EL-WINDOW-11







CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.

Refer to last page (Foldout page).

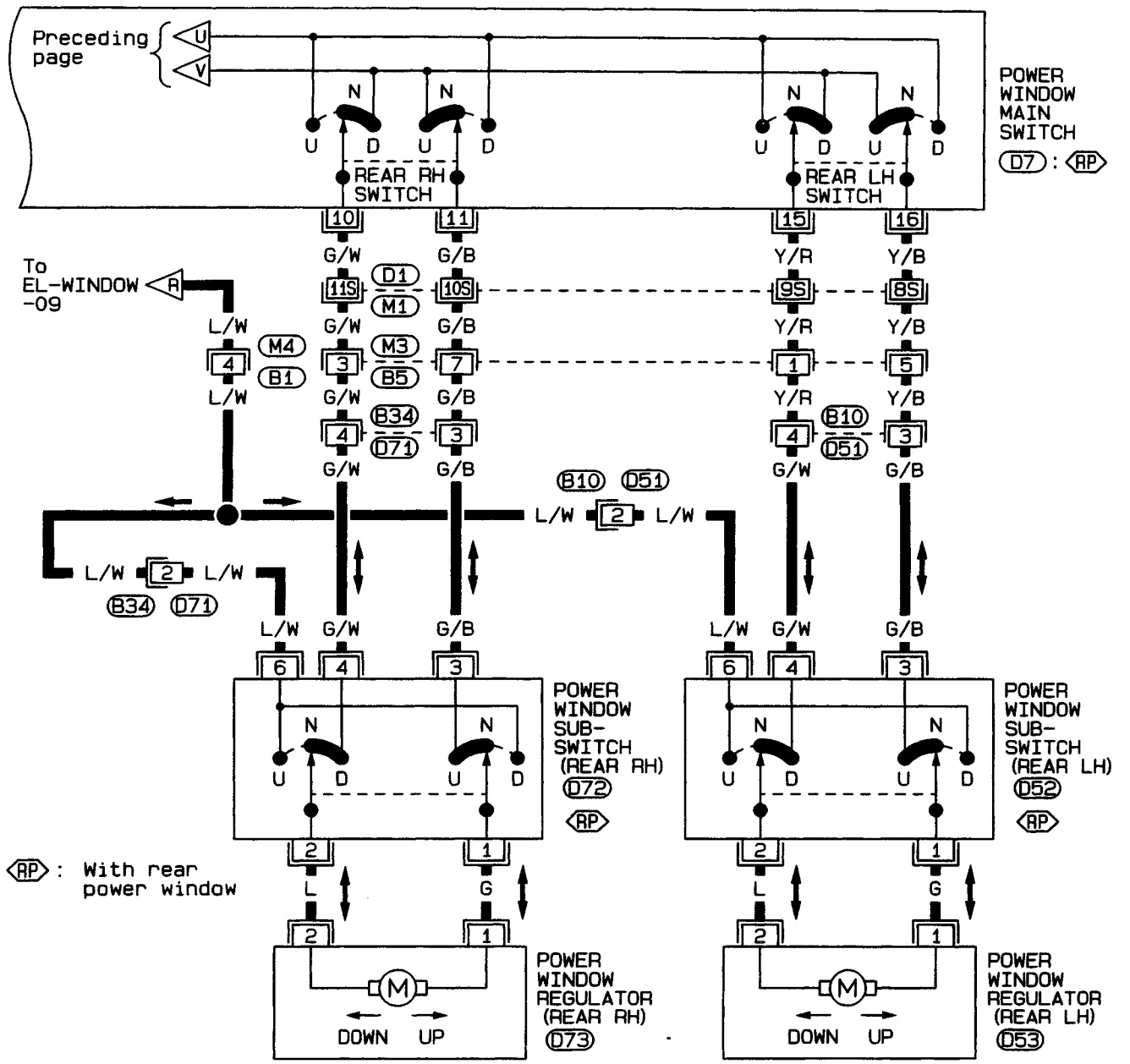
M1, D1

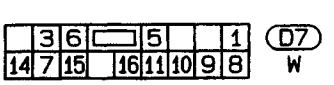
M75, D31

EL

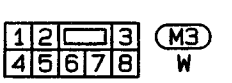
## Wiring Diagram — WINDOW — (Cont'd)

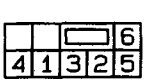
EL-WINDOW-12



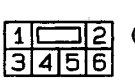


D7 W


M4 W


M3 W


D52 , D72 W W


D53 , D73 B B


B10 , B34 W W

Refer to last page (Foldout page).

M1 , D1

## Trouble Diagnoses

<table>
<tr><th>Symptom</th><th>Possible cause</th><th>Repair order</th></tr>
<tr><td>None of the power windows can be operated using any switch.</td><td>1. 7.5A fuse, 25A fusible link and (E102) circuit breaker<br>2. Grounds (M28), (M60) and (M68)<br>3. Power window relay<br>4. Open/short in power window main switch circuit</td><td>1. Check 7.5A fuse (No. 7, located in fuse block [J/B]), 25A fusible link (letter f, located in fuse and fusible link box) and (E102) circuit breaker. Turn ignition switch "ON" and verify battery positive voltage is present at terminals ① and ② of power window main switch, and other switches as follows.
<table>
<tr><th>Models<br>Location of sub-switch</th><th>Terminals<br>LHD models</th><th>RHD models except for Europe and Australia</th><th>RHD models for Europe and Australia</th></tr>
<tr><td>Passenger 3H*</td><td>⑤ and ⑥</td><td>—</td><td>⑤ and ⑥</td></tr>
<tr><td>Other</td><td>⑤</td><td>⑤</td><td>⑤</td></tr>
<tr><td>Rear RH</td><td>⑥</td><td>⑥</td><td>⑥</td></tr>
<tr><td>Rear LH</td><td>⑥</td><td>⑥</td><td>⑥</td></tr>
</table>
2. Check grounds (M28), (M60) and (M68).<br>3. Check power window relay.<br>4. Check L/W wire between power window relay and power window main switch for open/short circuit.</td></tr>
<tr><td>Driver's side power window cannot be operated but other windows can be operated.</td><td>1. Driver's side power window regulator circuit<br>2. Driver's side power window regulator</td><td>1. Check driver's side power window regulator circuit<br>2. Check driver's side power window regulator</td></tr>
<tr><td>One or more passenger power windows cannot be operated.</td><td>1. Power window switches (front sub-switch, rear sub-switch RH, rear sub-switch LH)<br>2. Power window regulators (front sub-switch, rear sub-switch RH, rear sub-switch LH)<br>3. Power window main switch<br>4. Power window circuit</td><td>1. Check power window switches (front sub-switch, rear sub-switch RH, rear sub-switch LH)<br>2. Check power window regulators (front sub-switch, rear sub-switch RH, rear sub-switch LH)<br>3. Check power window main switch<br>4-1. Check harnesses between power window main switch and power window sub-switches for open/short circuit.<br>4-2. Check harnesses between power window sub-switches and power window regulators for open/short circuit.</td></tr>
<tr><td>One or more passenger power windows cannot be operated using power window main switch but can be operated by power window sub-switches.</td><td>1. Power window main switch</td><td>1. Check power window main switch.</td></tr>
<tr><td>Driver's side power window auto function cannot be operated using power window main switch.</td><td>1. Power window main switch</td><td>1. Check power window main switch.</td></tr>
</table>

*3-door Hatchback models

EL

## System Description

NISSAN model N15 has two types of power door lock system:
- Type 1: For Europe and Australia
- Type 2: Except for Europe and Australia

Power is supplied at all times
- through 25A fusible link (letter [f], located in the fusible link and fuse box)
- to circuit breaker terminal ①
- through circuit breaker terminal ②
- to door lock timer terminal ⑪ (Type-1) or ③ (Type-2).

Ground is supplied to door lock timer terminal ⑯ (Type-1) or ① (Type-2) through body grounds (M28), (M60) and (M68).

### POWER DOOR LOCK OPERATION

When one of the following input signals is supplied:
- driver side door is locked/unlocked using key or lock knob,
- passenger side door is locked/unlocked using key or lock knob (Only for type-1);
- door lock & unlock switch in the power window main switch is locked/unlocked (Only for RHD models type-2)

Door lock timer locks/unlocks driver side door (Only for type-1) and other doors.

**Input (Type-1)**

**Unlock signal**

When the driver side door is unlocked using key or lock knob, ground is supplied
- to door lock timer terminal ④
- through driver side door lock actuator (door unlock sensor) terminal ④
- to driver side door lock actuator (door unlock sensor) terminal ②
- through body grounds (M28), (M60) and (M68).

When the passenger side door is unlocked using key or lock knob, ground is supplied
- to door lock timer terminal ⑤
- through passenger side door lock actuator (door unlock sensor) terminal ④
- to passenger side door lock actuator (door unlock sensor) terminal ②
- through body grounds (M28), (M60) and (M68).

**Lock signal**

The door lock timer terminal ④ or ⑤ receives lock signal when the unlock signal is shut off.

**Input (Type-2)**

When the lock knob switch is in UNLOCKED position, ground is supplied
- to door lock timer terminal ⑥
- through lock knob switch terminal ②
- to lock knob switch terminal ①
- through body grounds (M28), (M60) and (M68).

The door lock timer terminal ⑥ receives lock signal when the unlock signal is shut off.

**Input (Only for RHD models type-2)**

When the door lock & unlock switch in the power window main switch is in LOCKED position, ground is supplied
- to door lock timer terminal ⑤
- through door lock & unlock switch in the power window main switch terminal ⑭
- to door lock & unlock switch in the power window main switch terminal ③
- through body grounds (M28), (M60) and (M68).

When the door lock & unlock switch in the power window main switch is in UNLOCKED position, ground is supplied
- to door lock timer terminal ⑧
- through door lock & unlock switch in the power window main switch terminal ⑦
- to door lock & unlock switch in the power window main switch terminal ③
- through body grounds (M28), (M60) and (M68).

## System Description (Cont'd)

**Output (Type-1)**

**Unlock signal**

Ground is supplied
- to each door lock actuator terminal ③
- through door lock timer terminal ⑮.

Power is supplied
- to each door lock actuator terminal ①
- through door lock timer terminal ⑭.

Then, the door is unlocked.

**Lock signal**

Ground is supplied
- to each door lock actuator terminal ①
- through door lock timer terminal ⑭.

Power is supplied
- to each door lock actuator terminal ③.
- through door lock timer terminal ⑮.

Then, the door is locked.

**Output (Type-2)**

**Unlock signal**

Ground is supplied
- to each door lock actuator terminal ①
- through door lock timer terminal ②.

Power is supplied
- to each door lock actuator terminal ③
- through door lock timer terminal ④.

Then, the door is unlocked.

**Lock signal**

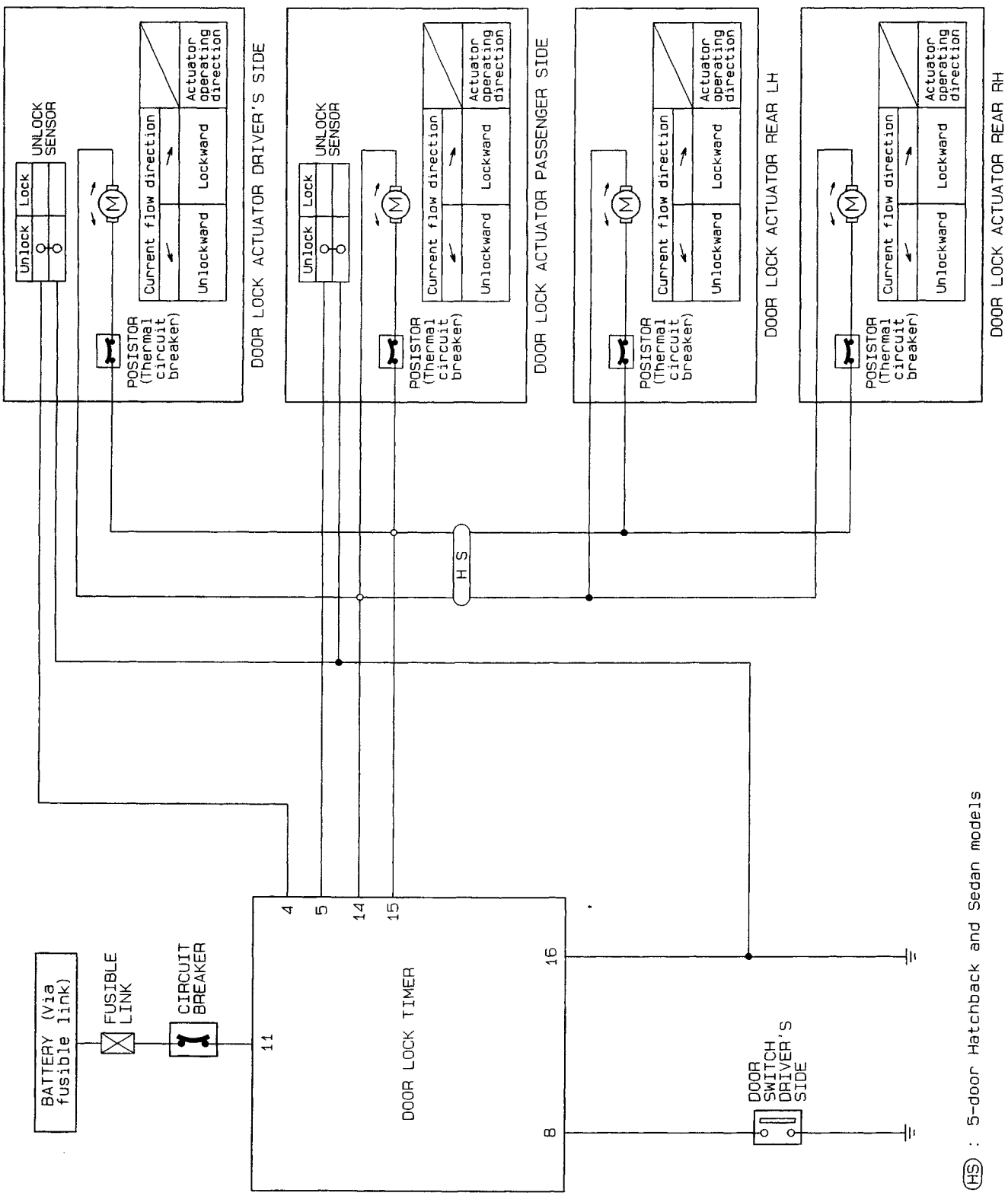
Ground is supplied
- to each door lock actuator terminal ③
- through door lock timer terminal ④.

Power is supplied
- to each door lock actuator terminal ①
- through door lock timer terminal ②.

Then, the door is locked.

## Schematic

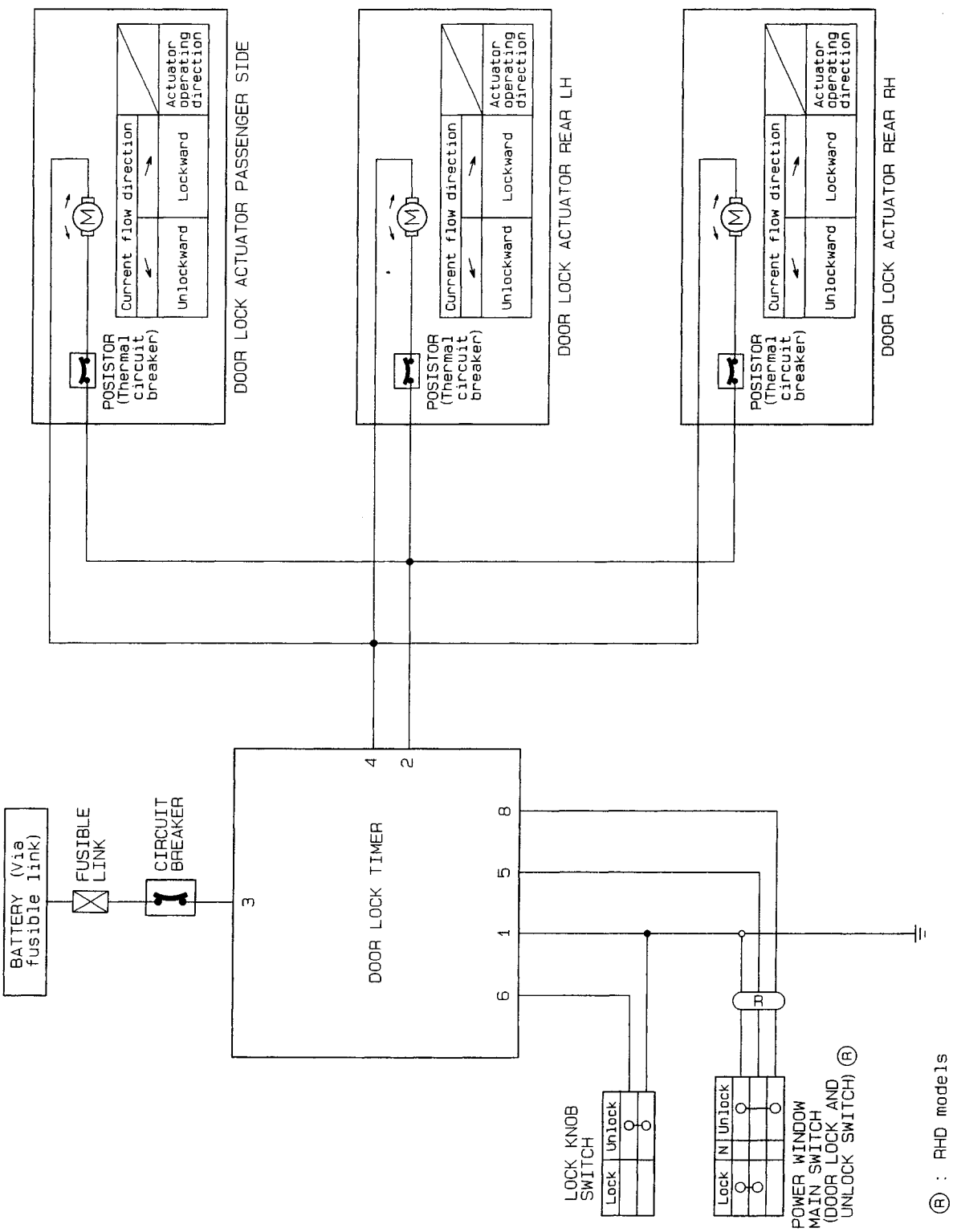
### TYPE-1 (For Europe and Australia)




HEL114

## Schematic (Cont'd)

### TYPE-2 (Except for Europe and Australia)

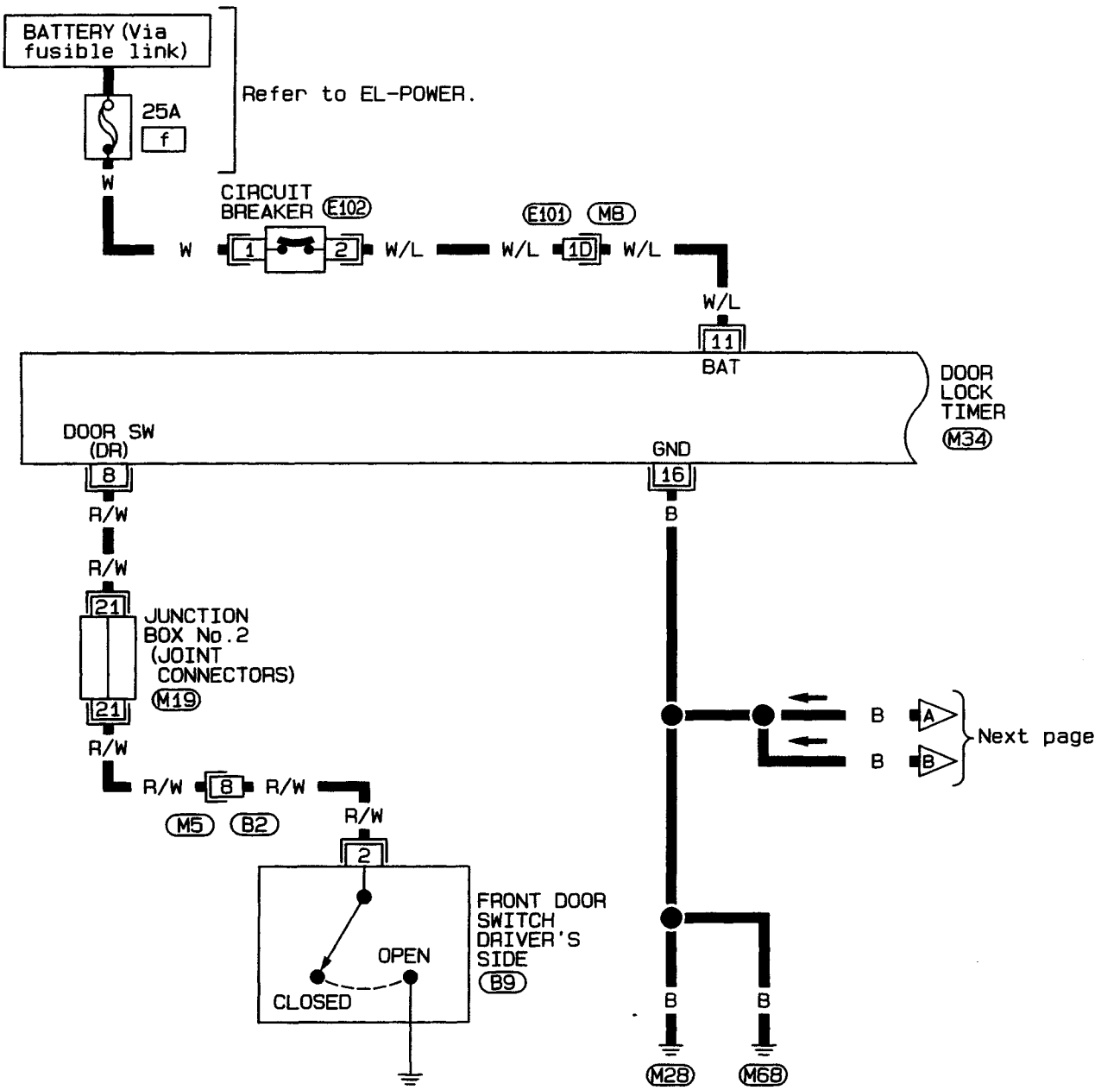



HEL115

## Wiring Diagram — D/LOCK —

**TYPE-1 (LHD models for Europe)**

EL-D/LOCK-01







Refer to last page (Foldout page).

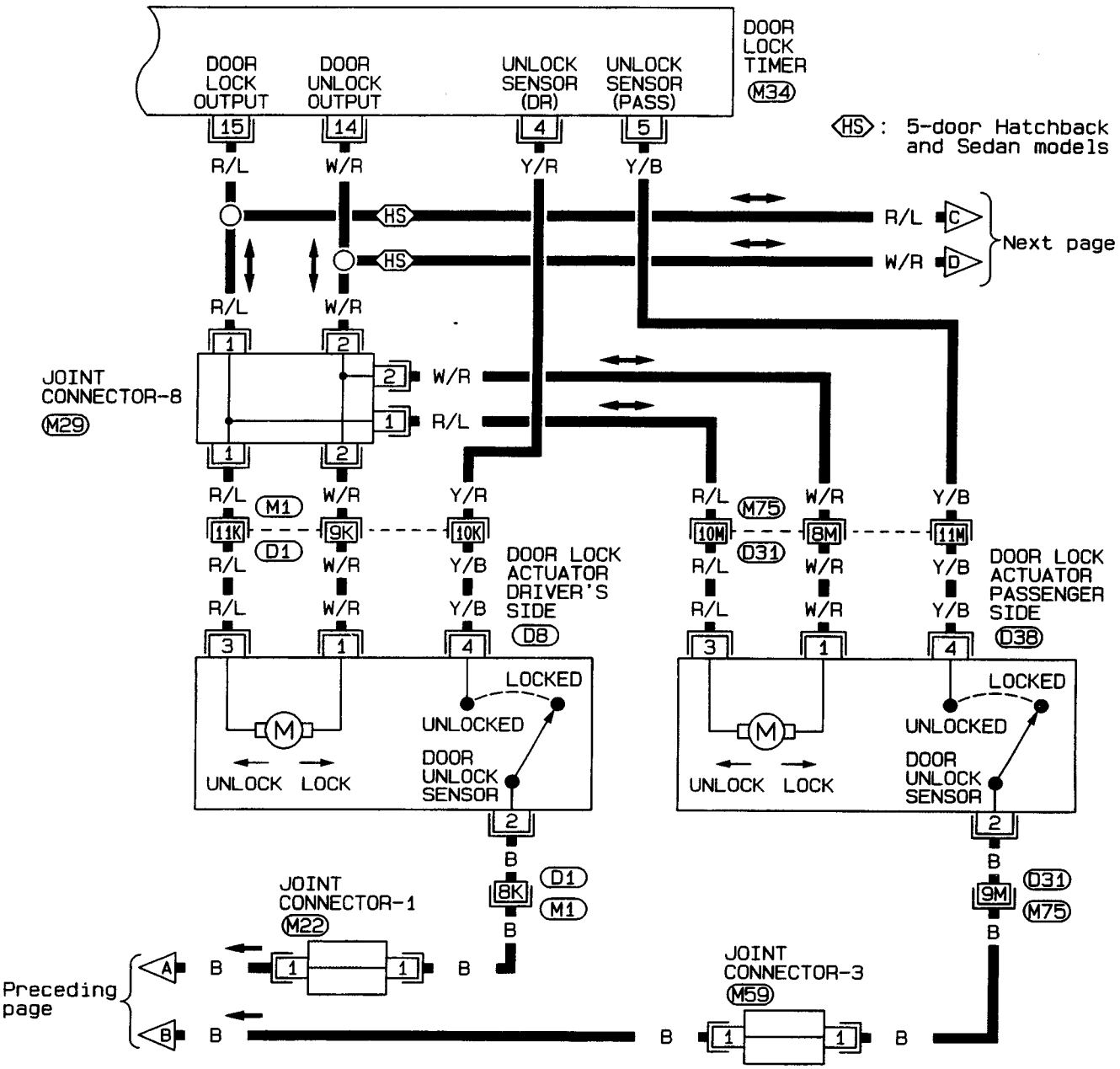
M8, E101

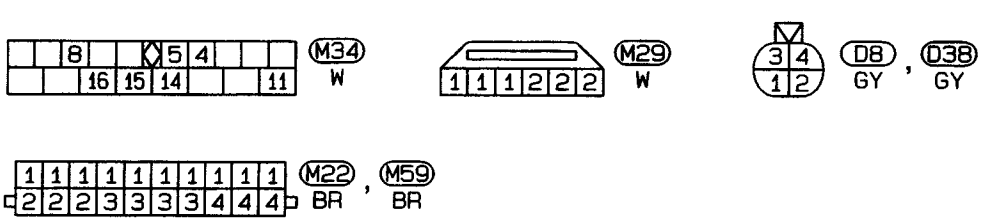
M19

HEL116

## Wiring Diagram — D/LOCK — (Cont'd)

EL-D/LOCK-02




CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.

Refer to last page (Foldout page).

M1 , D1

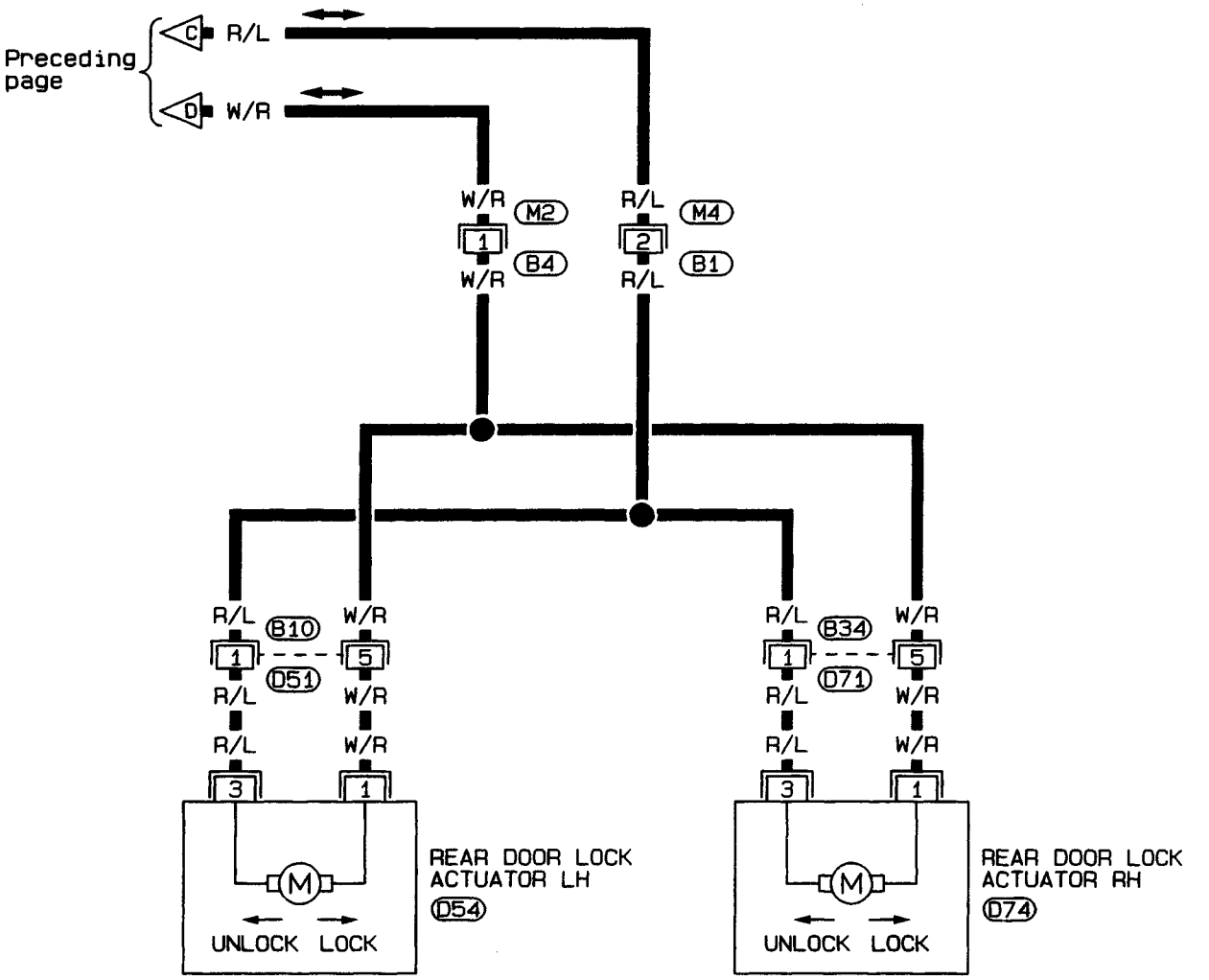
M75 , D31

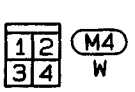
EL

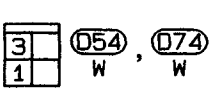
HEL117

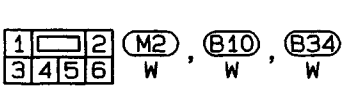
## Wiring Diagram — D/LOCK — (Cont'd)

EL-D/LOCK-03



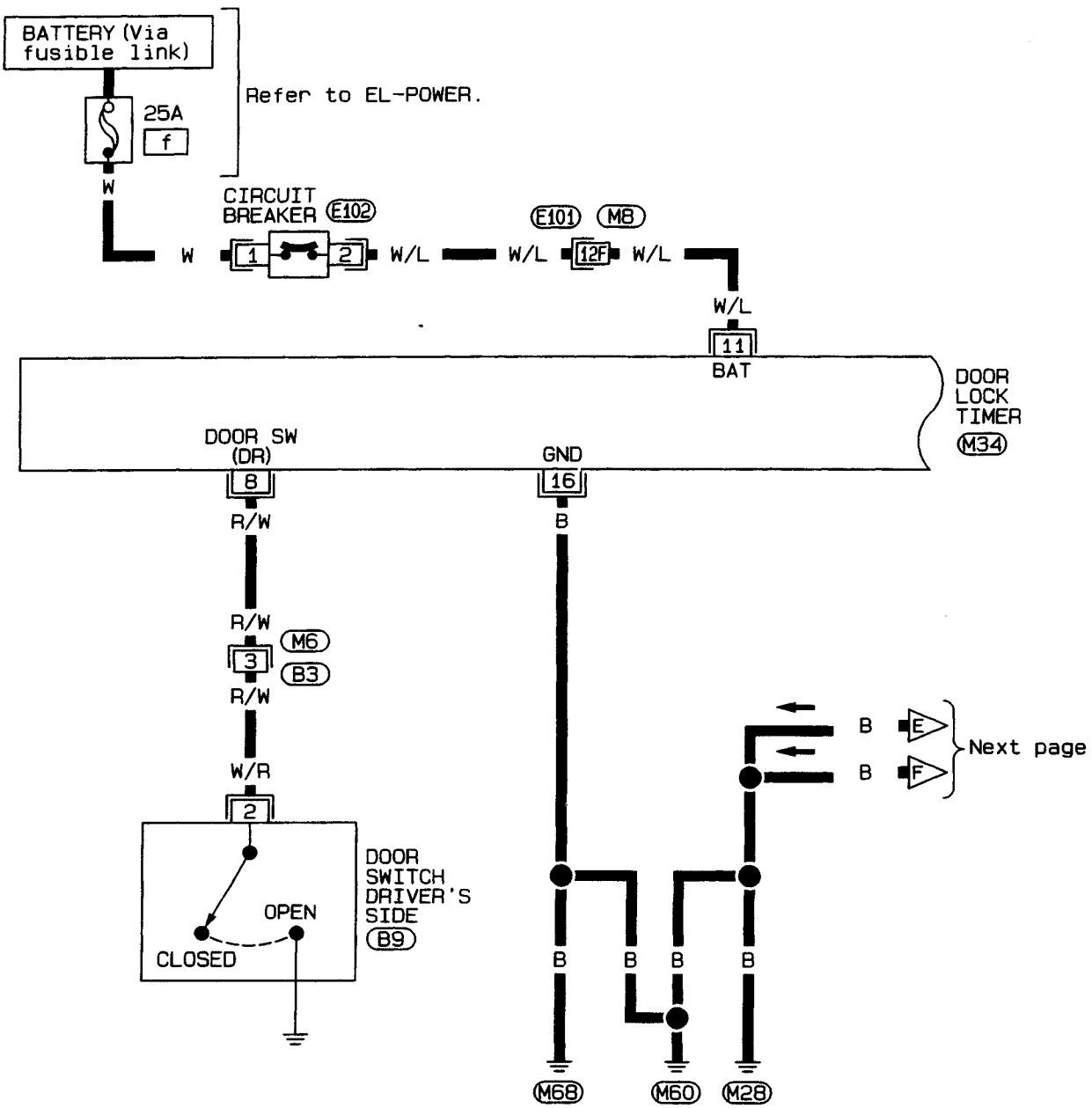



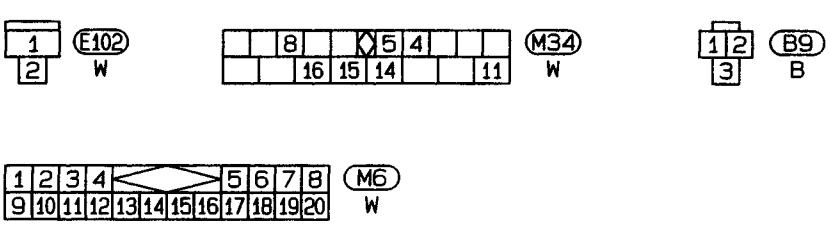

HEL118

## Wiring Diagram — D/LOCK — (Cont'd)

**TYPE-1 (RHD models for Europe and Australia)**

EL-D/LOCK-04




Refer to last page (Foldout page).

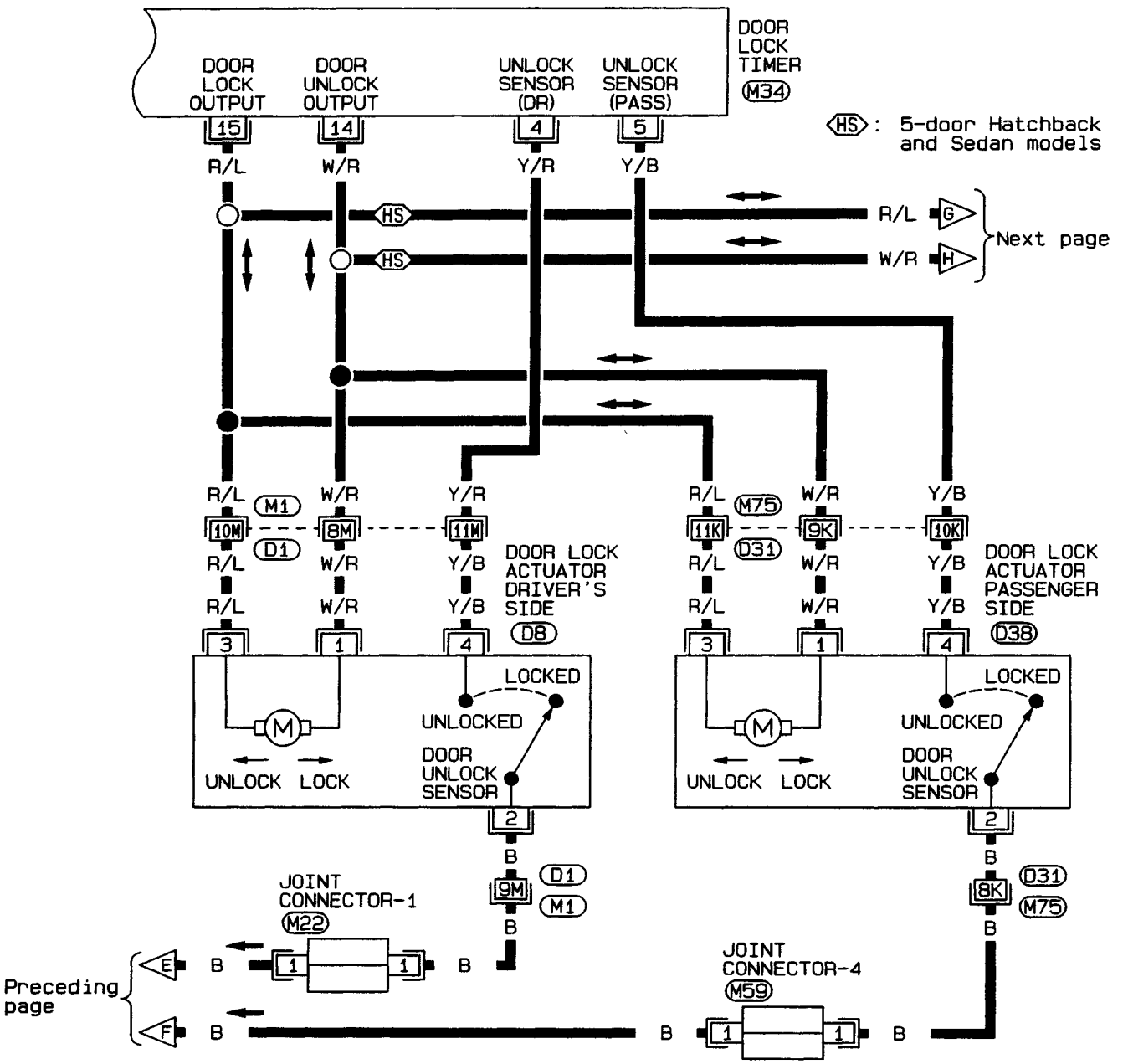
M8, E101

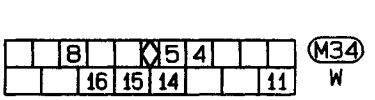
EL

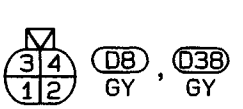
HEL119

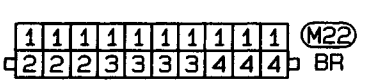
## Wiring Diagram — D/LOCK — (Cont'd)

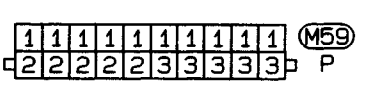
EL-D/LOCK-05




CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.

Refer to last page (Foldout page).

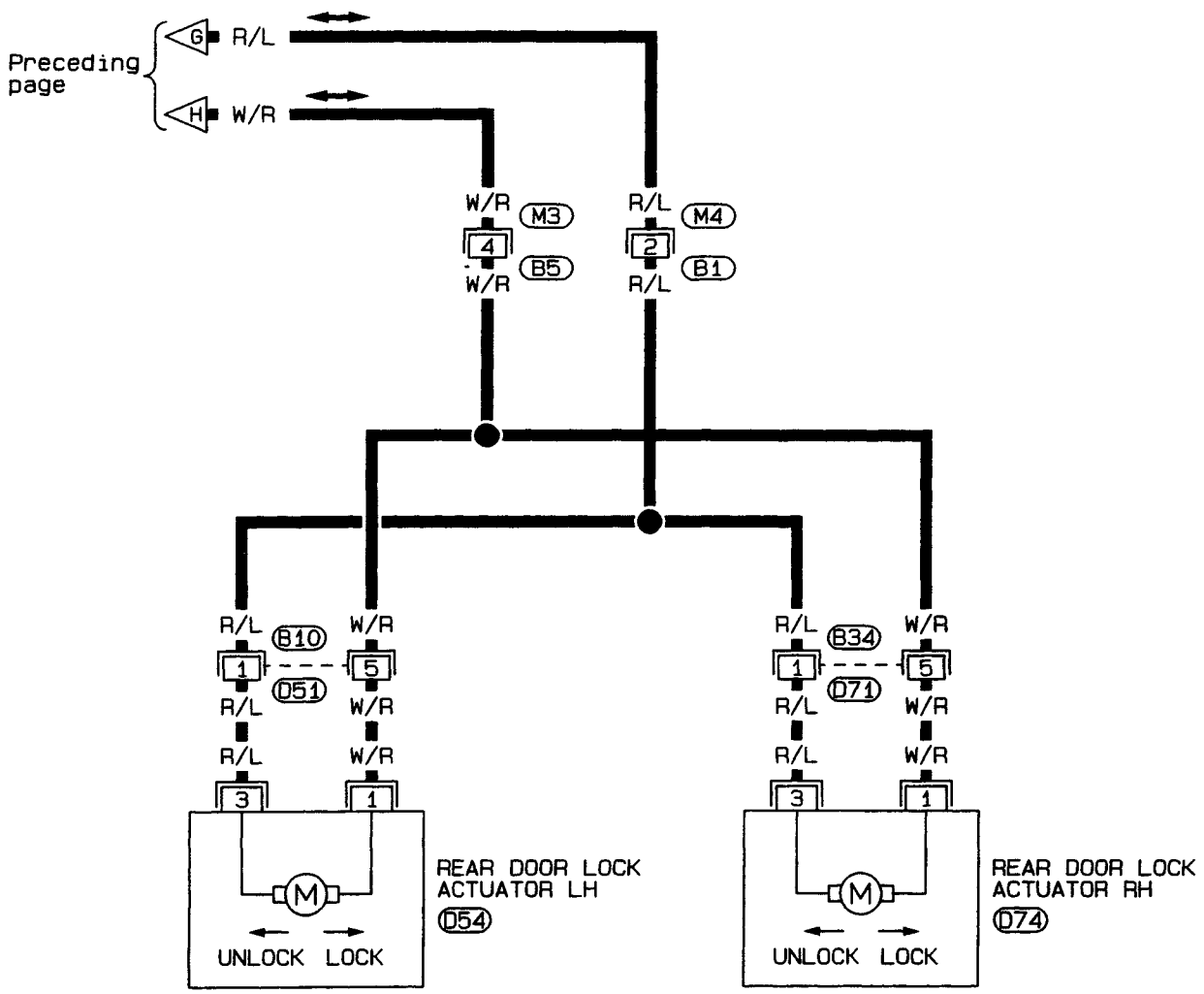
M1, D1

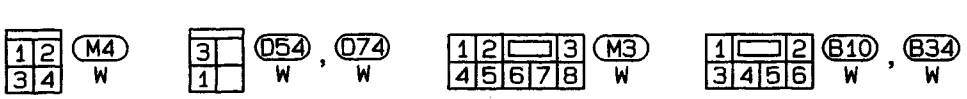
M75, D31

HEL120

## Wiring Diagram — D/LOCK — (Cont'd)

EL-D/LOCK-06



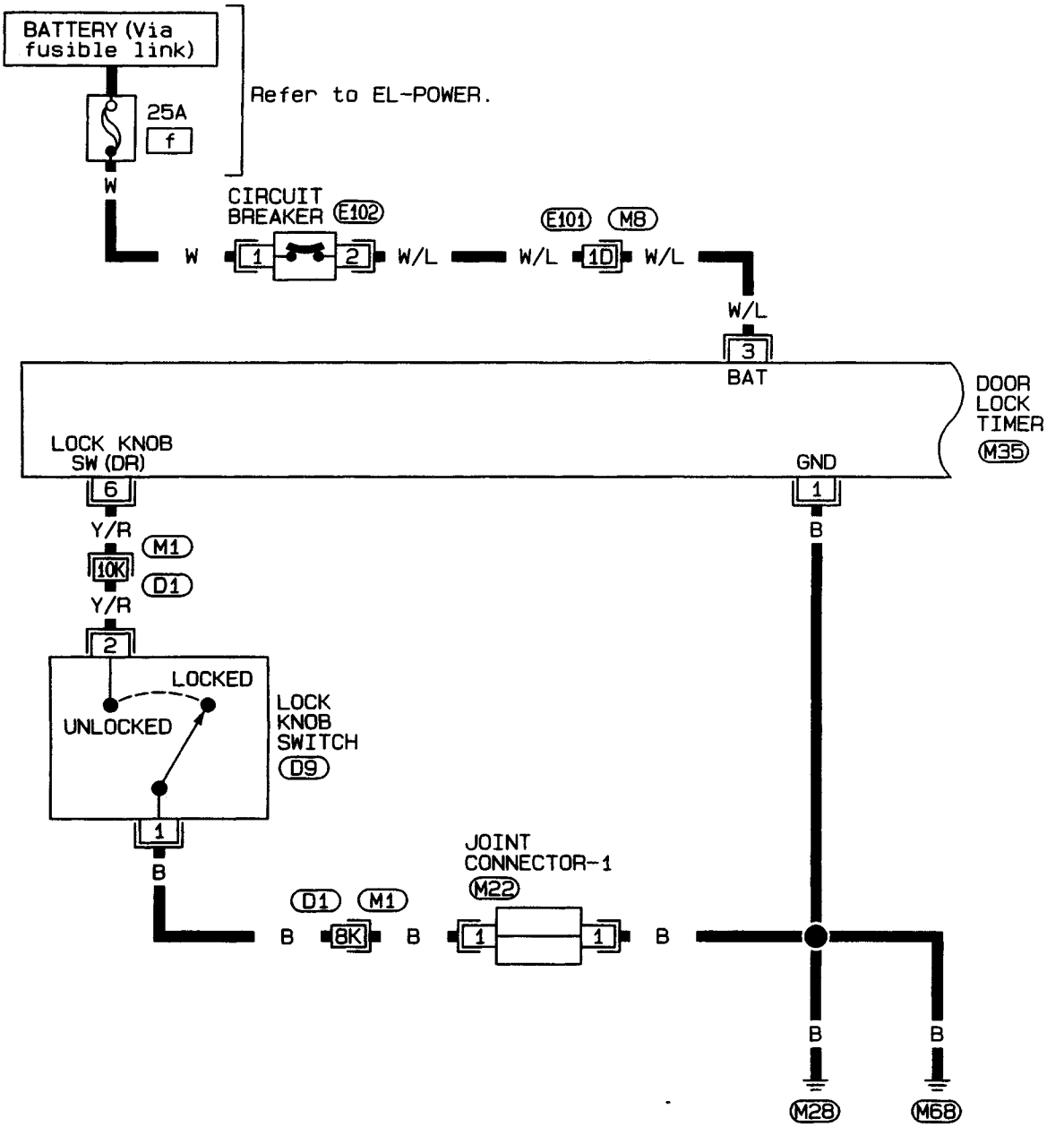

EL

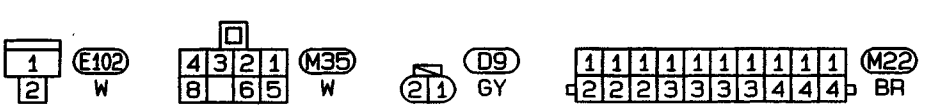
HEL121

## Wiring Diagram — D/LOCK — (Cont'd)

**TYPE-2 (LHD models except for Europe)**

EL-D/LOCK-07



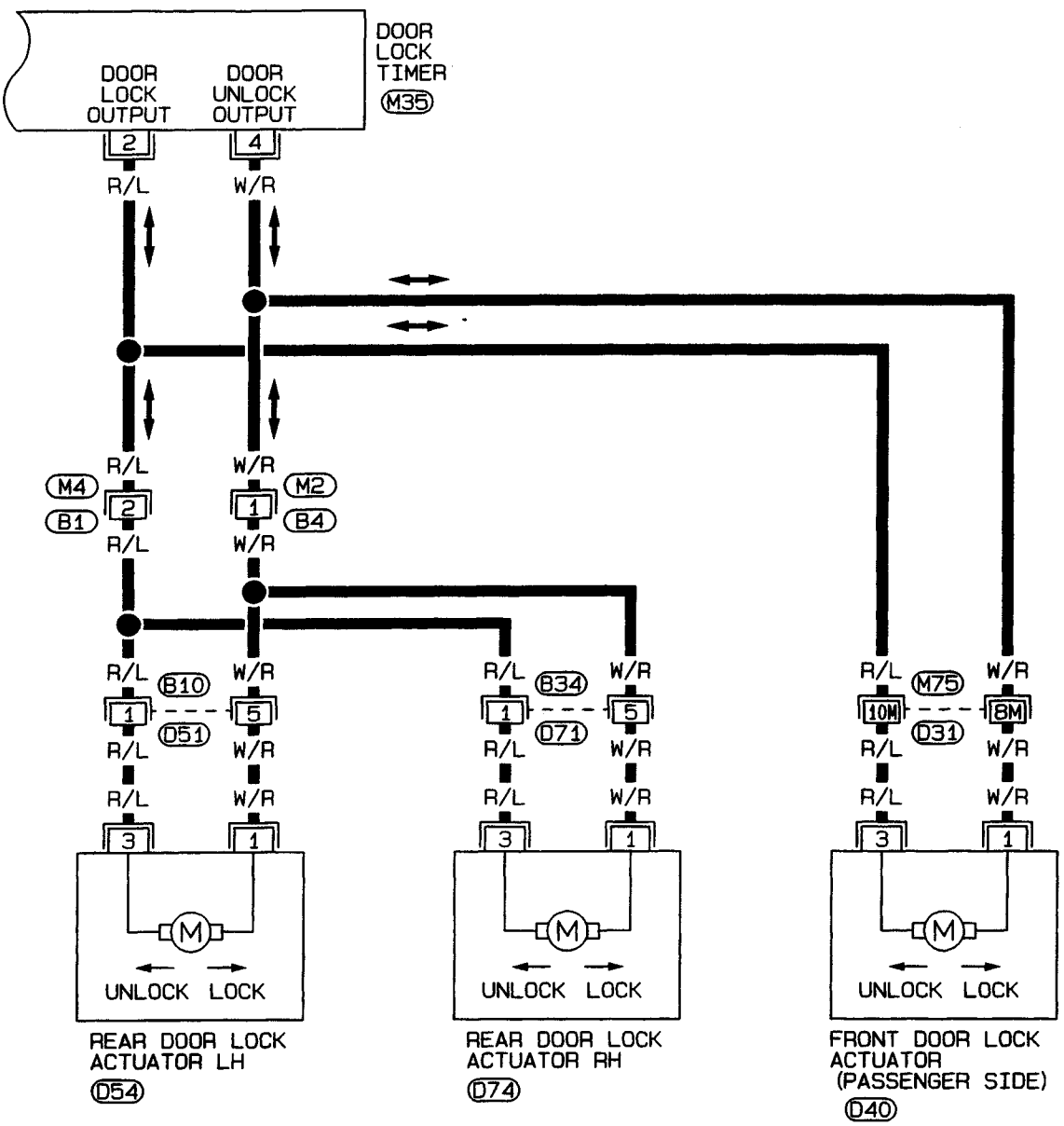

Refer to last page (Foldout page).

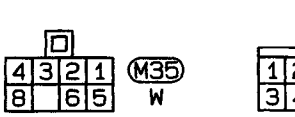
M8, E101
M1, D1

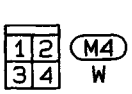
HEL122

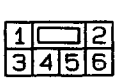
## Wiring Diagram — D/LOCK — (Cont'd)

EL-D/LOCK-08





M35 W


M4 W


M2 W, B10 W, B34 W


D40 W, D54 W, D74 W

Refer to last page (Foldout page).

M75, D31

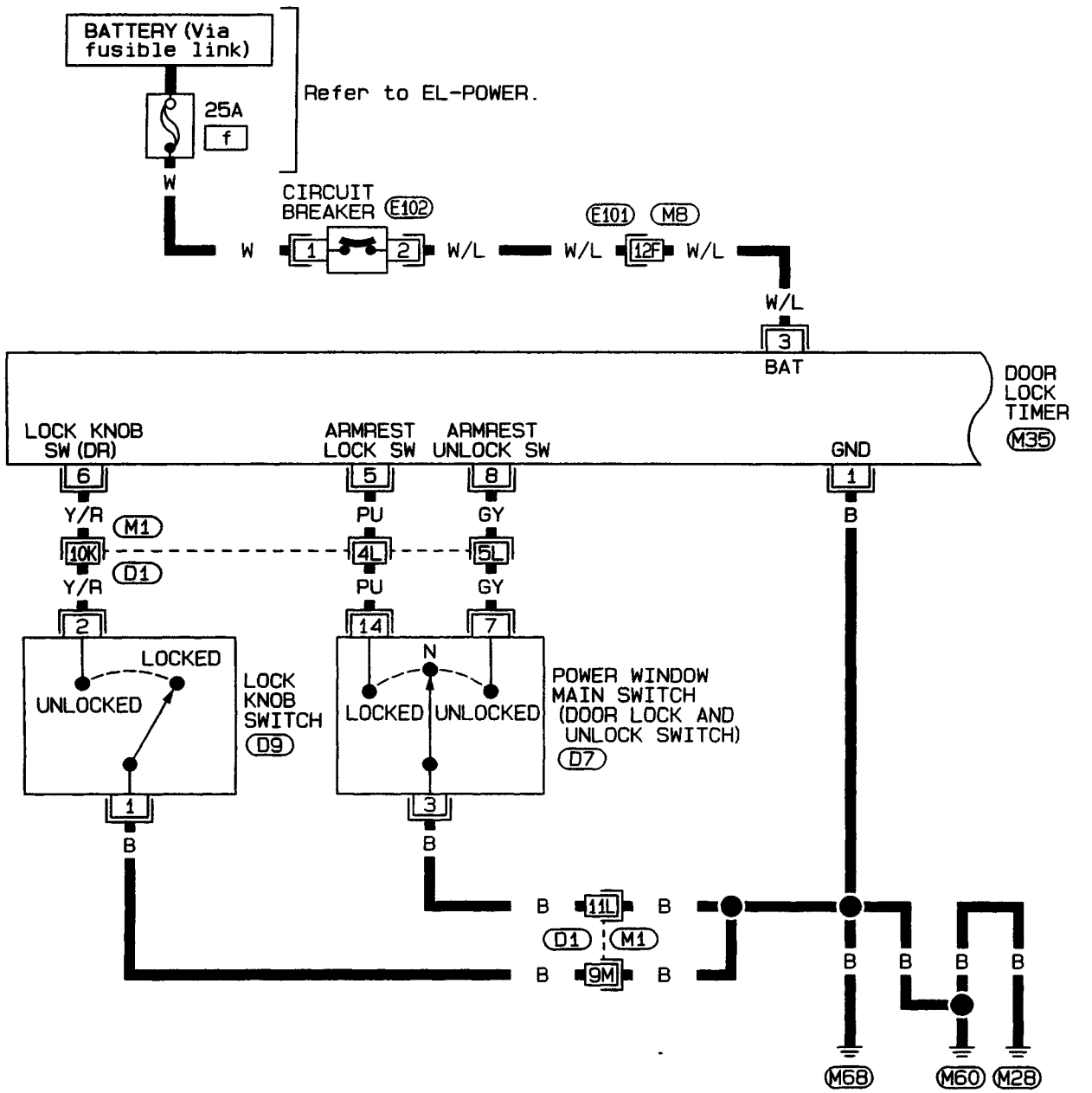
EL

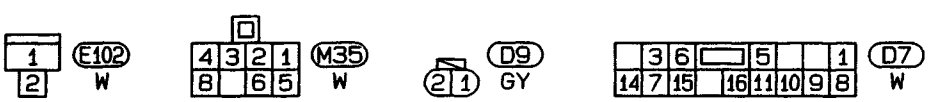
HEL123

## Wiring Diagram — D/LOCK — (Cont'd)

**TYPE-2 (RHD models except for Europe and Australia)**

EL-D/LOCK-09



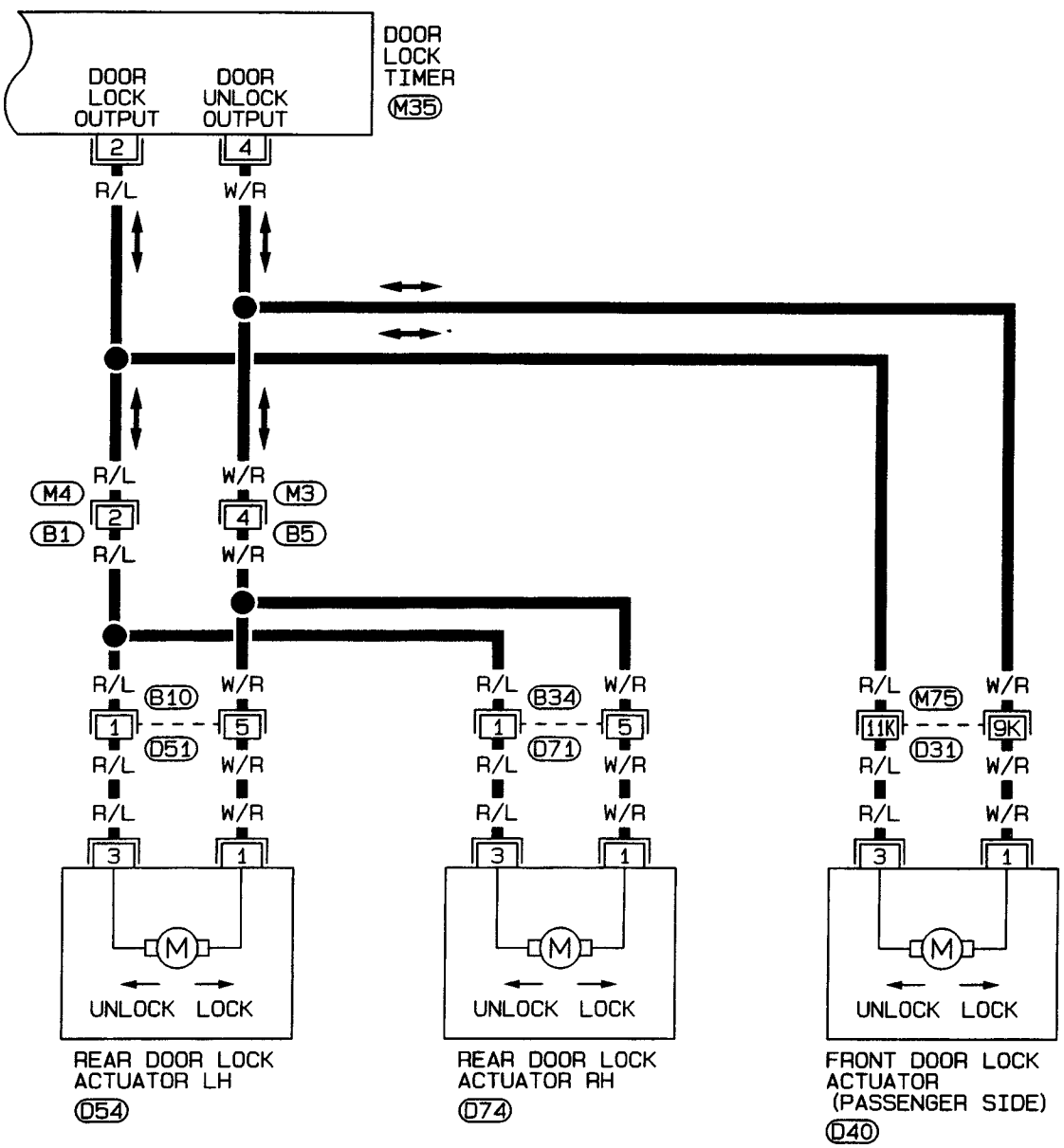

Refer to last page (Foldout page).

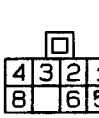
M8, E101
M1, D1

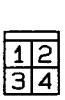
HEL124

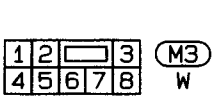
## Wiring Diagram — D/LOCK — (Cont'd)

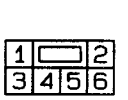
EL-D/LOCK-10





M35 W


M4 W


M3 W


B10 , B34 W W


D40 , D54 , D74 W W W

Refer to last page (Foldout page).

M75 , D31

EL

HEL125

## Trouble Diagnoses — Type 1 (For Europe and Australia)

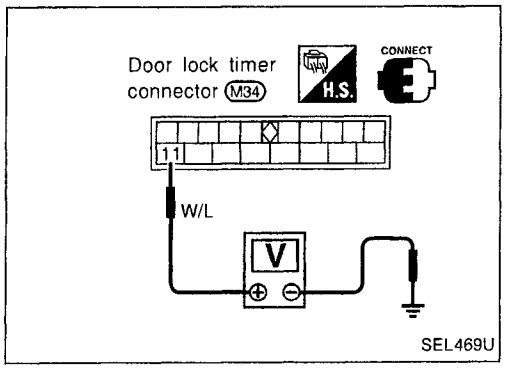
### SYMPTOM CHART

| PROCEDURE | | Diagnostic Procedure | |
|---|---|---|---|
| REFERENCE PAGE | EL-213 | EL-214 | EL-215 |
| SYMPTOM | Power supply and ground circuit check | Procedure 1 (Unlock sensor check) | Procedure 2 (Door lock actuator check) |
| Power door lock does not operate with driver's side lock knob switch and driver door key cylinder. | ① | | ② |
| Power door lock does not operate with door lock and unlock switch on power window main switch. | ① | ② | ③ |
| Specific door lock actuator does not operate. | | | ① |

Perform Diagnostic Procedures in numerical order shown in the symptom chart. Carry out functional tests whenever each step is finished. If the trouble remains after performing all Diagnostic Procedures, replace the door lock timer.

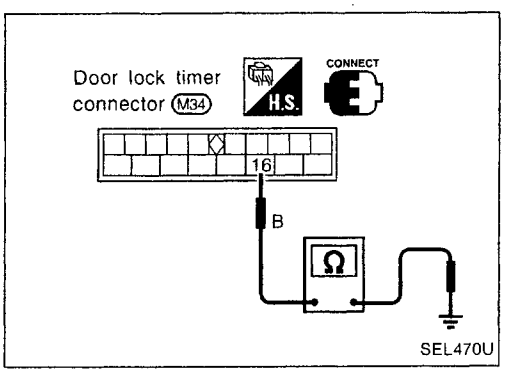
## Trouble Diagnoses — Type 1 (For Europe and Australia) (Cont'd)

### POWER SUPPLY AND GROUND CIRCUIT CHECK




#### Power supply check

| Terminals | Ignition switch operation | | | |
|---|---|---|---|---|
| | OFF | ACC | ON | START |
| ⑪ - Ground | Battery voltage | | | |




#### Ground circuit check

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

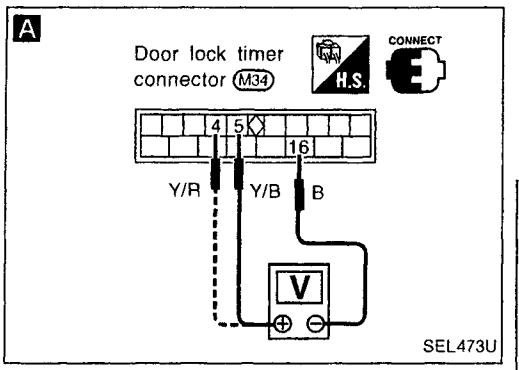
EL

## Trouble Diagnoses — Type 1 (For Europe and Australia) (Cont'd)

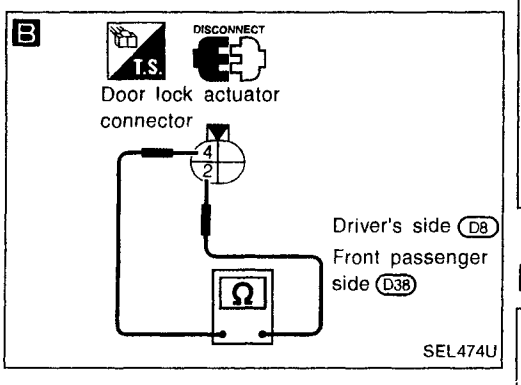
### PROCEDURE 1

### (Unlock sensor check)

A




B




A

UNLOCK SENSOR SIGNAL CHECK
Measure voltage between door lock timer harness terminals ④ and ⑯, ⑤ and ⑯.

| Terminals | | Condition of unlock sensor and voltage [V] | |
|---|---|---|---|
| ⊕ | ⊖ | Lock | Unlock |
| ④ | ⑯ | 0 | Approx. 12 |
| ⑤ | ⑯ | | |

OK → Unlock sensor signal is OK.

NG ↓

B

UNLOCK SENSOR CHECK
Check continuity between door lock actuator connector terminals ④ and ②.

| Terminals | Condition of door lock actuator | Continuity |
|---|---|---|
| ④ and ② | Lock | Yes |
| | Unlock | Yes |

NG → Replace door lock actuator.

OK ↓

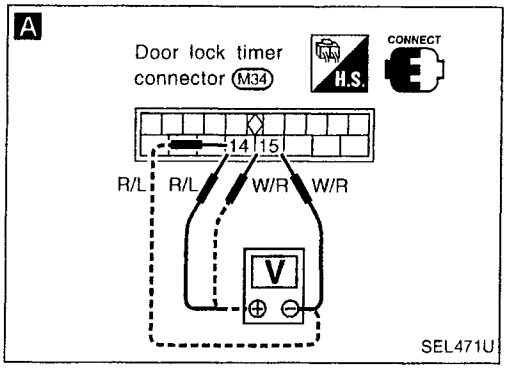
Check the following.
1) Harness between door lock timer and door lock actuator for open/short circuit
2) Door lock actuator ground circuit

## Trouble Diagnoses — Type 1 (For Europe and Australia) (Cont'd)

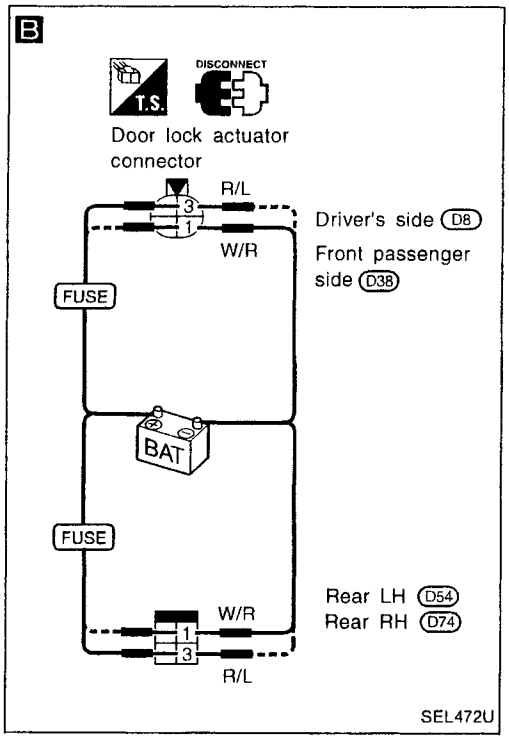
### PROCEDURE 2

### (Door lock actuator check)

A




B




A

DOOR LOCK ACTUATOR OUTPUT SIGNAL CHECK

Measure voltage between door lock timer harness terminals ⑭ and ⑮.

| Terminals ⊕ | Terminals ⊖ | Condition of door lock & unlock switch | Voltage [V] |
|---|---|---|---|
| ⑭ | ⑮ | Neutral → Unlock | 0 → 12 → 0 (Approx. 1.0 sec.) |
| ⑮ | ⑭ | Neutral → Lock | 0 → 12 → 0 (Approx. 1.0 sec.) |

* The voltage values are approximate.

NG → Replace door lock timer.

OK ↓

B

DOOR LOCK ACTUATOR CHECK

Apply 12V direct current to terminals and check operation.

| Door lock actuator operation | Terminals ⊕ | Terminals ⊖ |
|---|---|---|
| Lock | ③ | ① |
| Unlock | ① | ③ |

NG → Replace door lock actuator.

OK ↓

Check harness between door lock timer and door lock actuator for open/short circuit.

EL

## Trouble Diagnoses — Type 2 (Except for Europe and Australia)

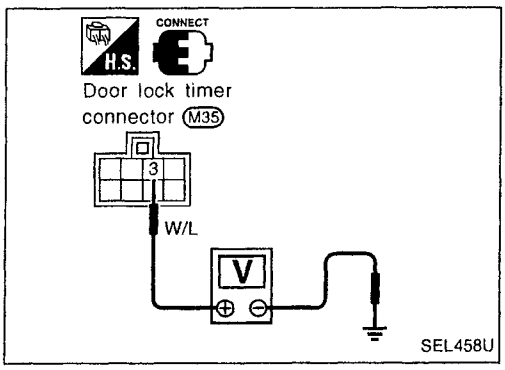
### SYMPTOM CHART

| PROCEDURE | | Diagnostic Procedure | | |
|---|---|---|---|---|
| REFERENCE PAGE | EL-217 | EL-217 | EL-218 | EL-219 |
| SYMPTOM | Power supply and ground circuit check | Procedure 1 (Lock knob switch check) | Procedure 2 (Door lock & unlock switch check) | Procedure 3 (Door lock actuator check) |
| Power door lock does not operate with driver's side lock knob switch and driver door key cylinder. | ① | ② | | ③ |
| Power door lock does not operate with door lock and unlock switch on power window main switch. | ① | | ② | ③ |
| Specific door lock actuator does not operate. | | | | ① |

Perform Diagnostic Procedures in numerical order shown in the symptom chart. Carry out functional tests whenever each step is finished. If the trouble remains after performing all Diagnostic Procedures, replace the door lock timer.

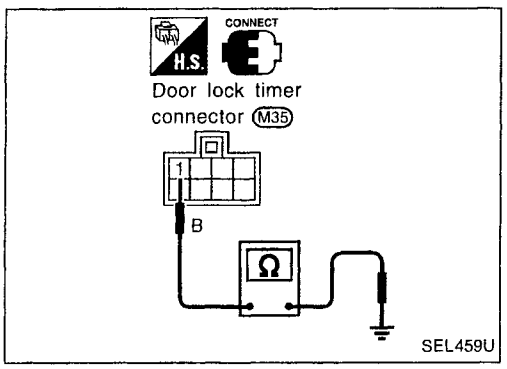
## Trouble Diagnoses — Type 2 (Except for Europe and Australia) (Cont'd)

### POWER SUPPLY AND GROUND CIRCUIT CHECK



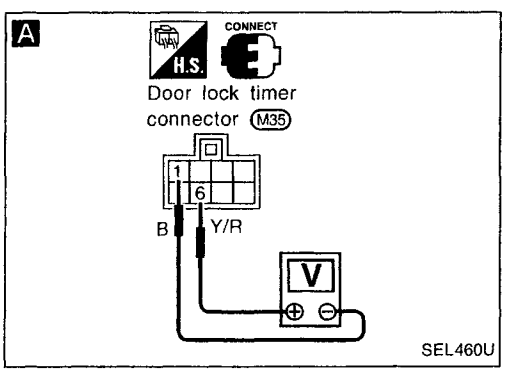

#### Power supply check

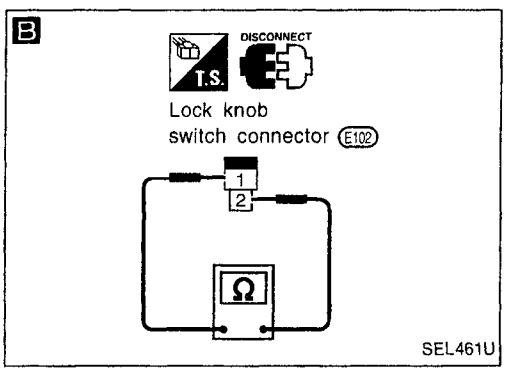
| Terminals | Ignition switch operation | | | |
|---|---|---|---|---|
| | OFF | ACC | ON | START |
| ③ - Ground | Battery voltage | | | |




#### Ground circuit check

| Terminals | Continuity |
|---|---|
| ① - Ground | Yes |




### PROCEDURE 1

### (Lock knob switch check)

A

LOCK KNOB SWITCH SIGNAL CHECK
Measure voltage between door lock timer harness terminals ⑥ and ①.

| Condition of lock knob switch | Voltage [V] |
|---|---|
| Lock | Approx. 12 |
| Unlock | 0 |

OK → Lock knob switch is OK.

NG ↓

B

LOCK KNOB SWITCH CHECK
Check continuity between lock knob switch terminals ① and ②.

| Condition of lock knob switch | Continuity |
|---|---|
| Lock | No |
| Unlock | Yes |

NG → Replace lock knob switch.

OK ↓

Check the following.
1) Harness between door lock timer and lock knob switch for open/short circuit
2) Lock knob switch ground circuit

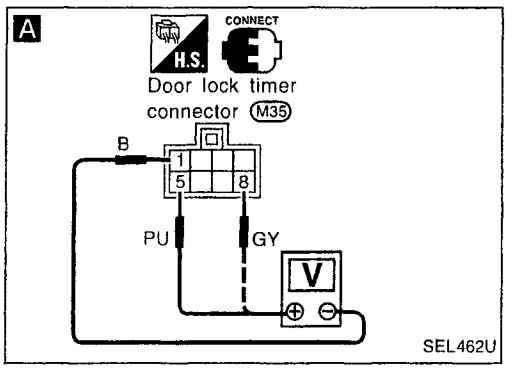
EL

## Trouble Diagnoses — Type 2 (Except for Europe and Australia) (Cont'd)

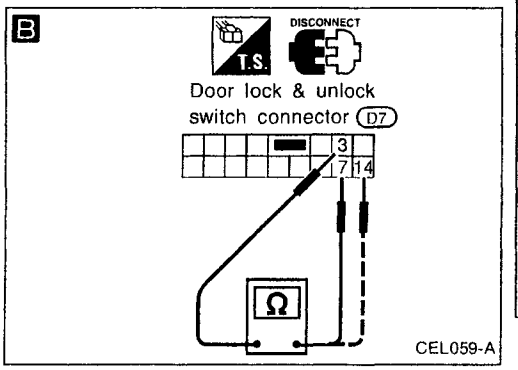
### PROCEDURE 2

### (Door lock & unlock switch check)

A




B




A

DOOR LOCK & UNLOCK SWITCH SIGNAL CHECK

Measure voltage between door lock timer harness terminals ⑤ and ①, ⑧ and ①.

| Terminals | | Condition of door lock & unlock switch | Voltage [V] |
|---|---|---|---|
| ⊕ | ⊖ | | |
| ⑤ | ① | Lock | Approx. 12 |
| ⑧ | ① | Unlock | Approx. 12 |

OK → Door lock & unlock switch is OK.

NG ↓

B

DOOR LOCK & UNLOCK SWITCH CHECK

Check continuity between door lock & unlock switch terminals ⑦ and ③, ⑭ and ③.

| Terminals | Condition of door lock & unlock switch | Continuity |
|---|---|---|
| ⑦ and ③ | Lock | Yes |
| ⑭ and ③ | Unlock | Yes |

NG → Replace door lock & unlock switch.

OK ↓

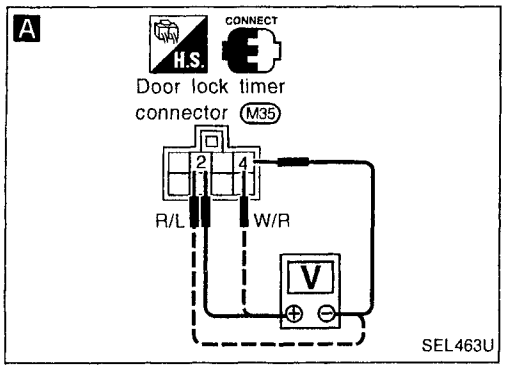
Check the following.
1) Harness between door lock timer and door lock & unlock switch for open/short circuit
2) Door lock & unlock switch ground circuit

## Trouble Diagnoses — Type 2 (Except for Europe and Australia) (Cont'd)

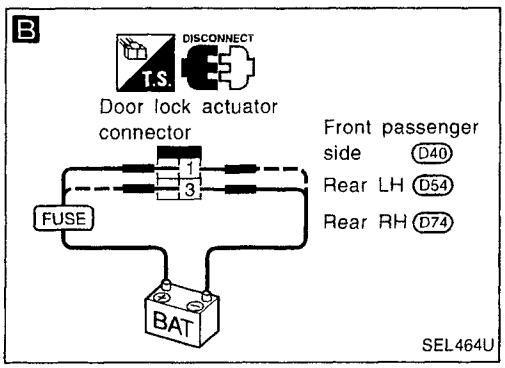
### PROCEDURE 3

### (Door lock actuator check)

A




B




A

DOOR LOCK ACTUATOR OUTPUT SIGNAL CHECK

Measure voltage between door lock timer harness terminals ② and ④.

| Terminals | | Condition of door lock & unlock switch | Voltage [V] |
|---|---|---|---|
| ⊕ | ⊖ | | |
| ② | ④ | Neutral → Lock | 0 → 12 → 0 (Approx. 1.0 sec.) |
| ④ | ② | Neutral → Unlock | 0 → 12 → 0 (Approx. 1.0 sec.) |

* The voltage values are approximate.

NG → Replace door lock timer.

OK ↓

B

DOOR LOCK ACTUATOR CHECK

Apply 12V direct current to terminals and check operation.

| Door lock actuator operation | Terminals | |
|---|---|---|
| | ⊕ | ⊖ |
| Lock | ① | ③ |
| Unlock | ③ | ① |

NG → Replace door lock actuator.

OK ↓

Check harness between door lock timer and door lock actuator for open/short circuit.

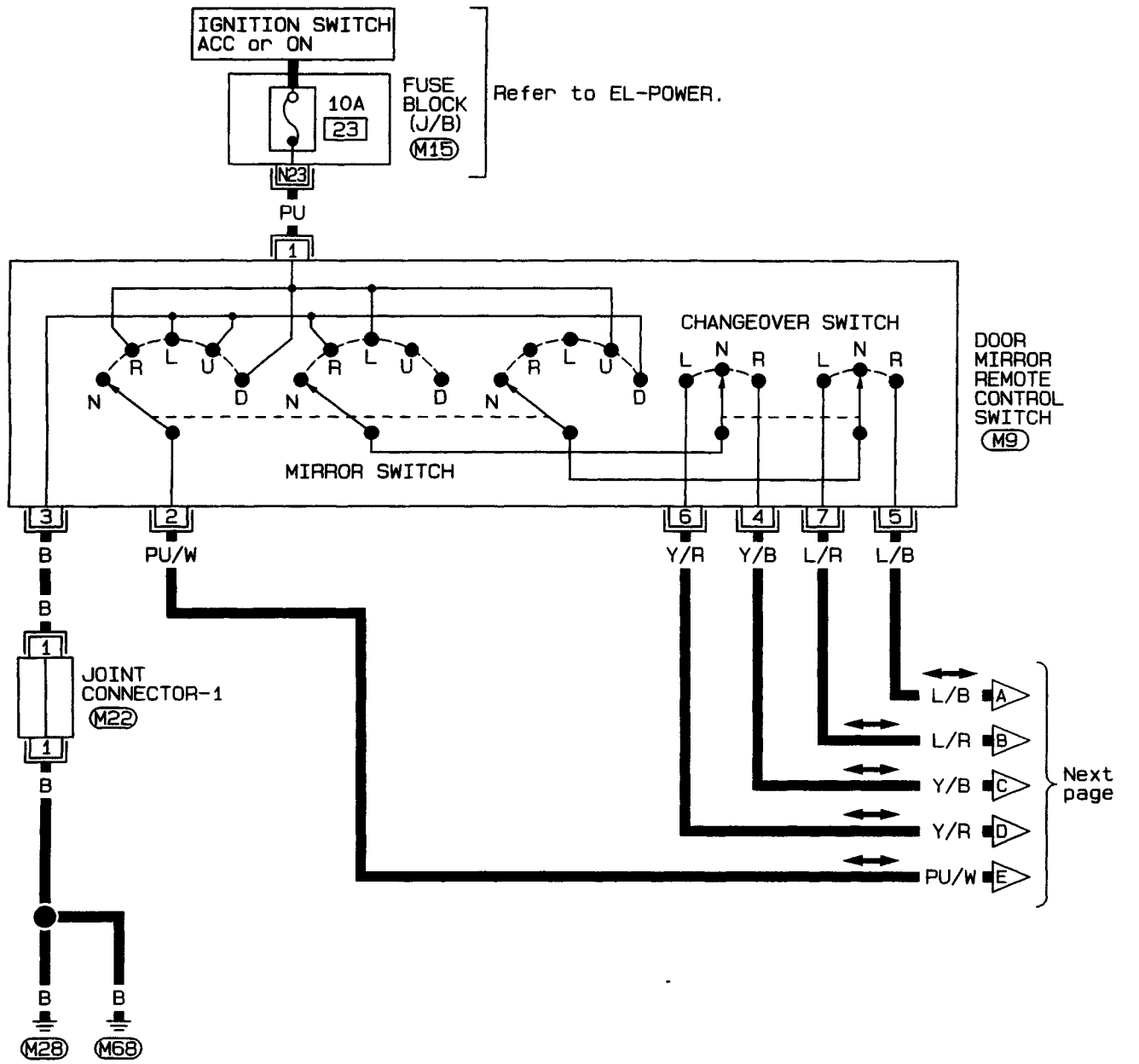
EL

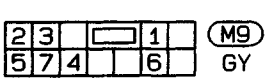
★ For removal of door mirror, refer to "DOOR MIRROR" in BT section.

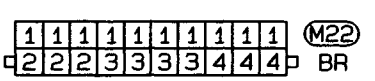
## Wiring Diagram — MIRROR —

### LHD MODELS

EL-MIRROR-01



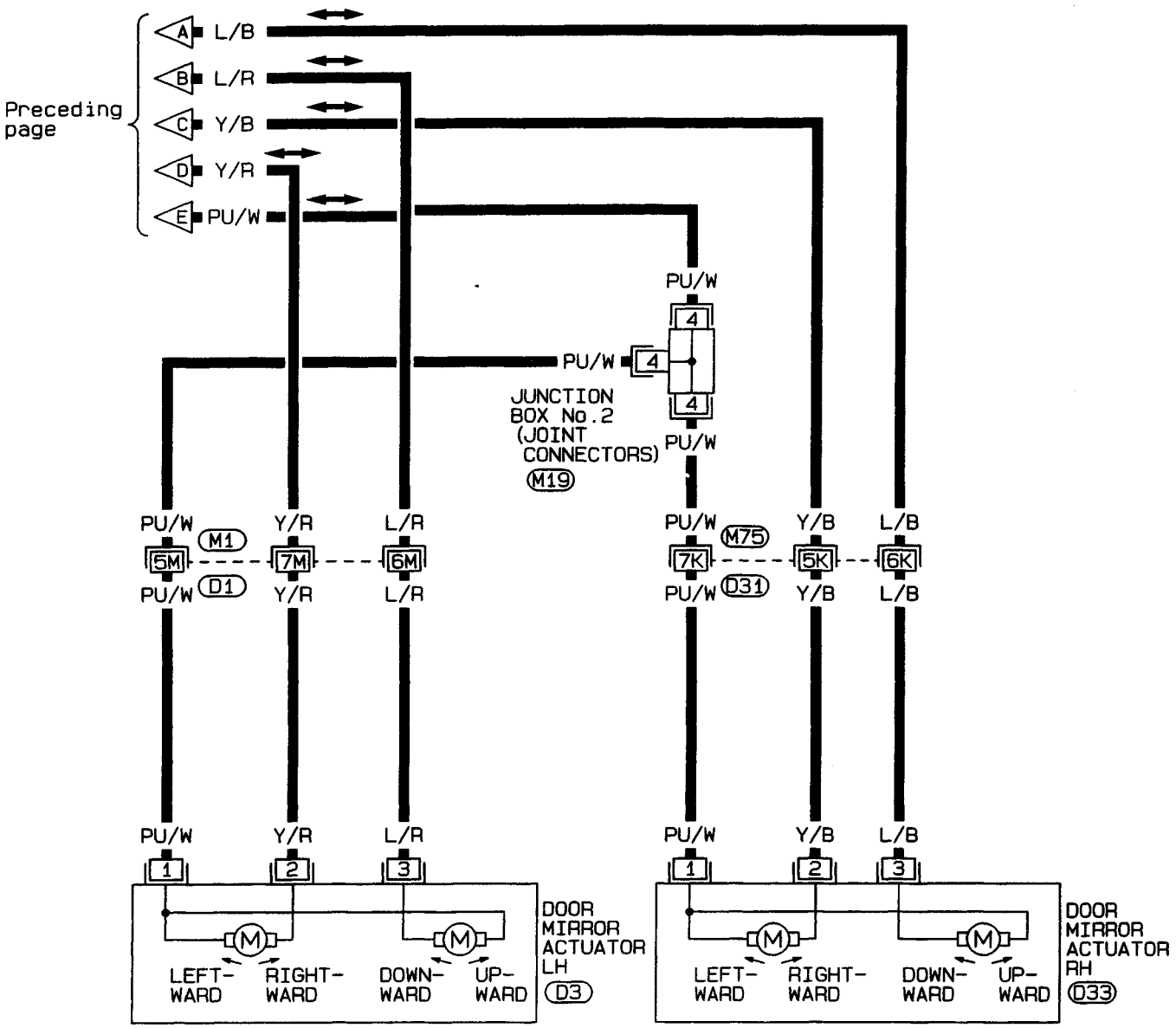

Refer to last page
(Foldout page).

M15

HEL126

## Wiring Diagram — MIRROR — (Cont'd)

EL-MIRROR-02




1 2 3 D3 BR, D33 BR

Refer to last page (Foldout page).

M1, D1
M75, D31
M19

CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.

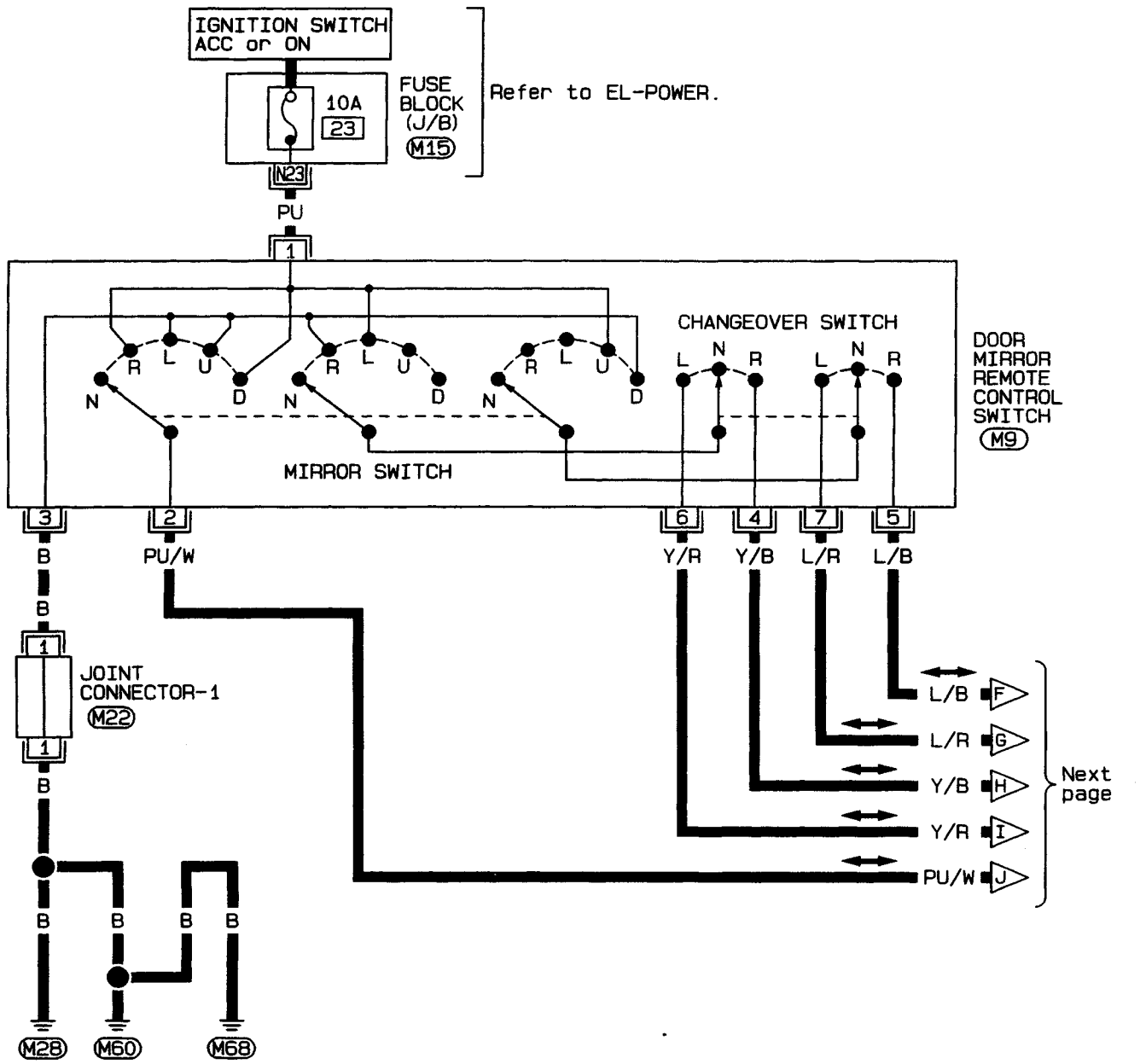
HEL127

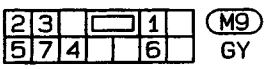
EL

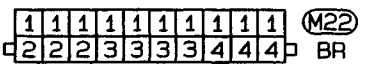
## Wiring Diagram — MIRROR — (Cont'd)

**RHD MODELS**

EL-MIRROR-03



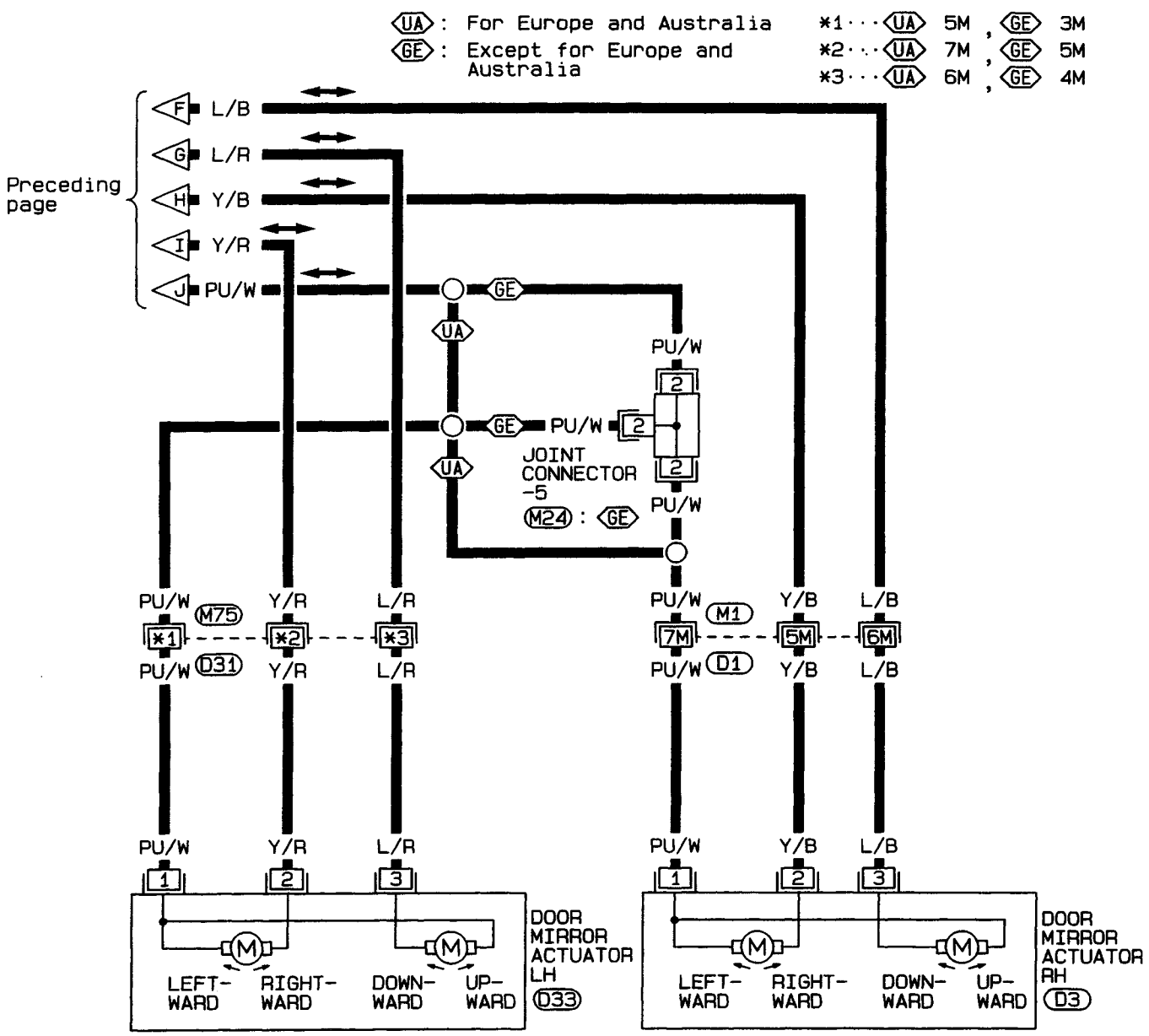

Refer to last page (Foldout page).

M15

HEL128

## Wiring Diagram — MIRROR — (Cont'd)

EL-MIRROR-04




D3 , D33 BR , BR

M24 OR

Refer to last page (Foldout page).

M1 , D1

M75 , D31

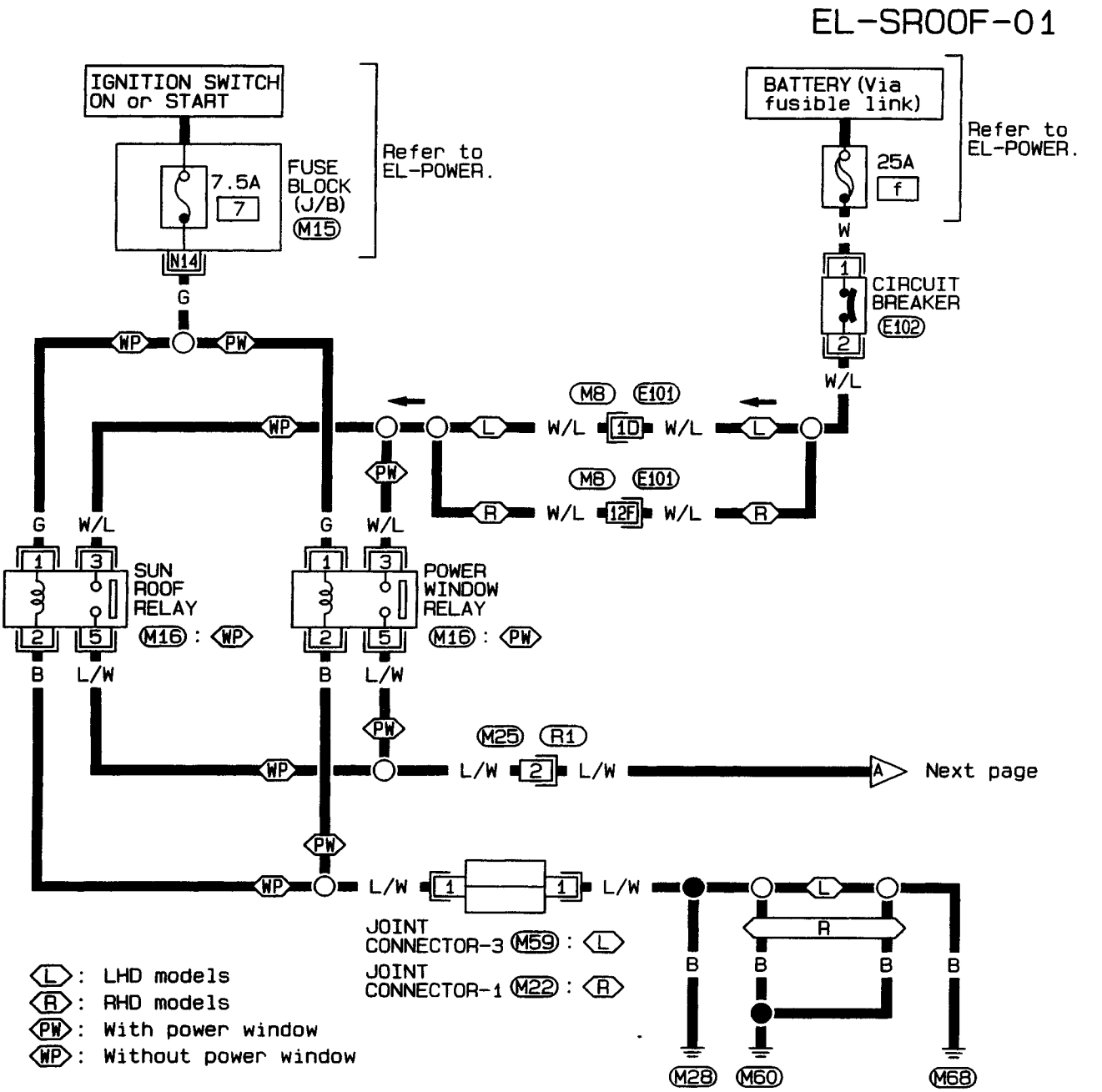
CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.

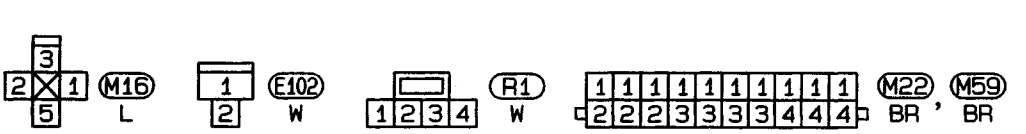
HEL129

★ For removal and adjustment of sun roof, refer to "SUN ROOF" in BT section.

## Wiring Diagram — SROOF —

EL-SROOF-01




Refer to last page (Foldout page).

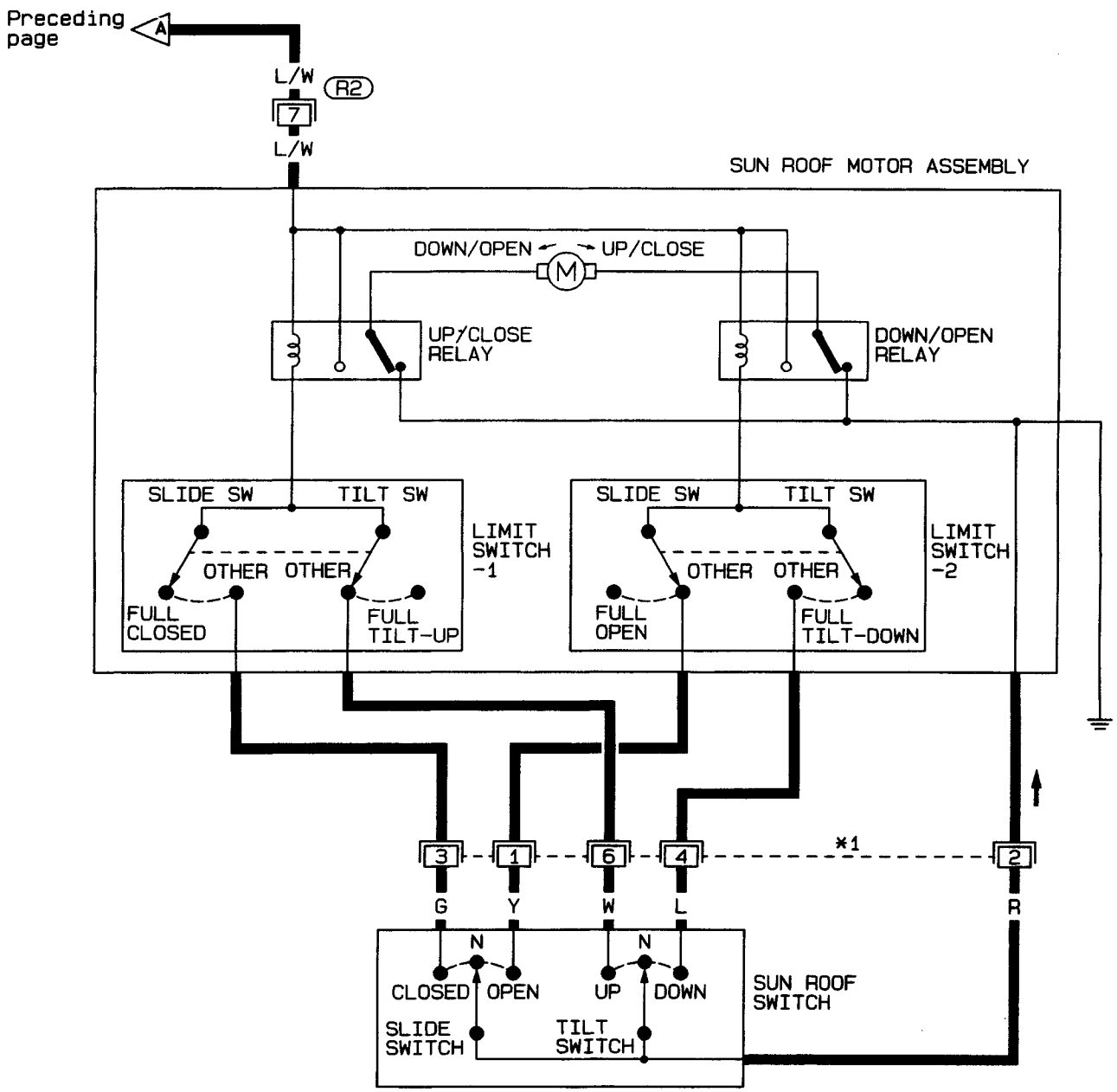
M8 , E101

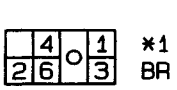
M15

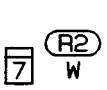
HEL130

## Wiring Diagram — SROOF — (Cont'd)

EL-SROOF-02



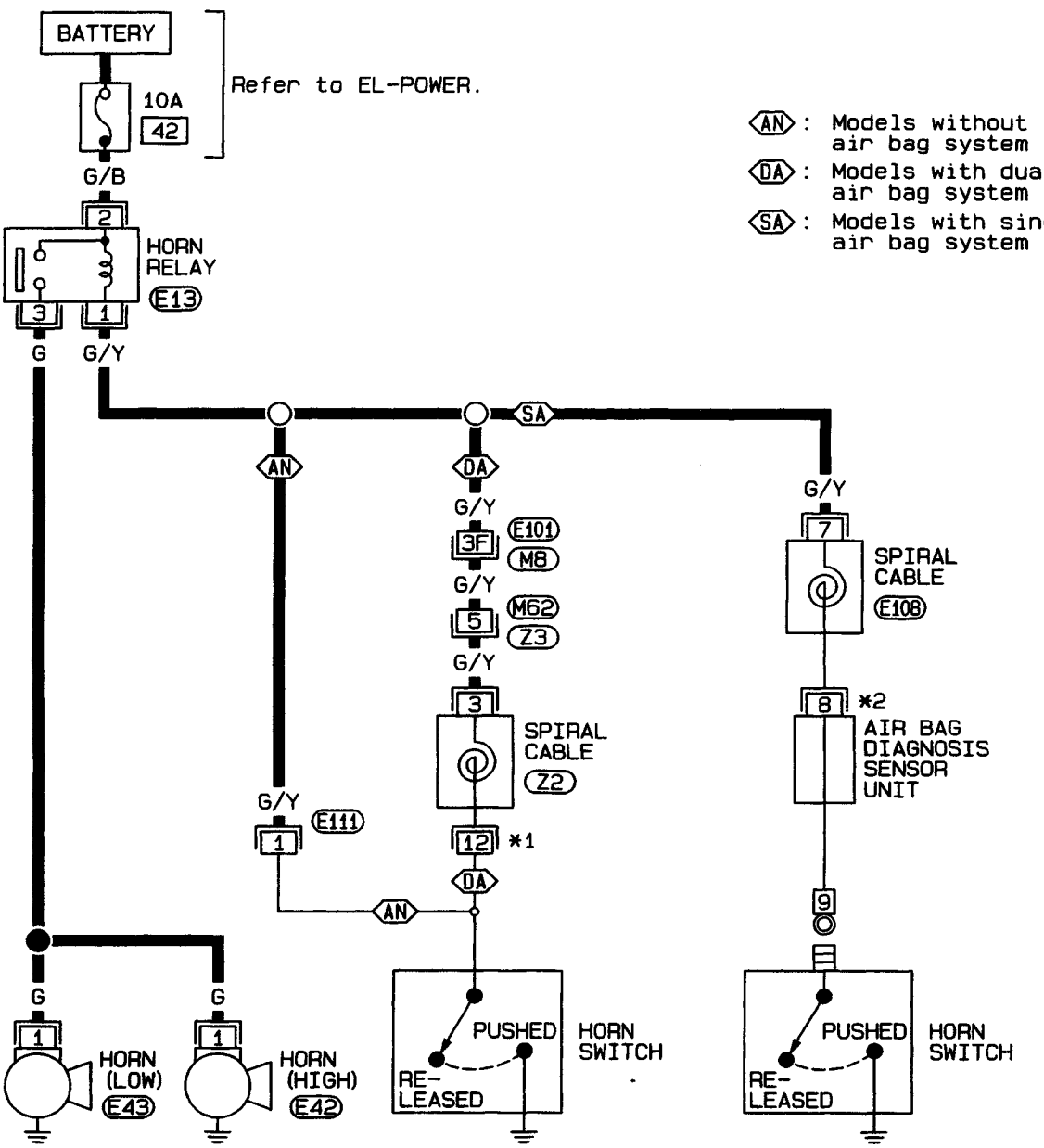

EL

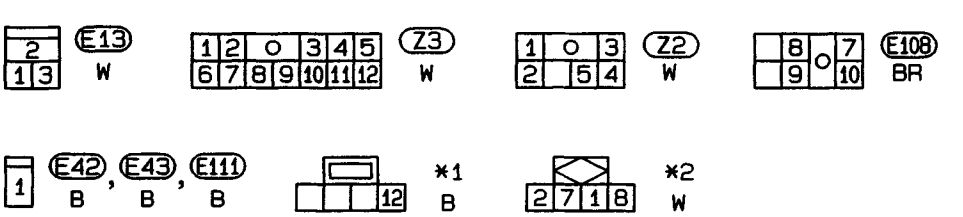
HEL131

## Wiring Diagram — HORN —

### LHD MODELS

EL-HORN-01



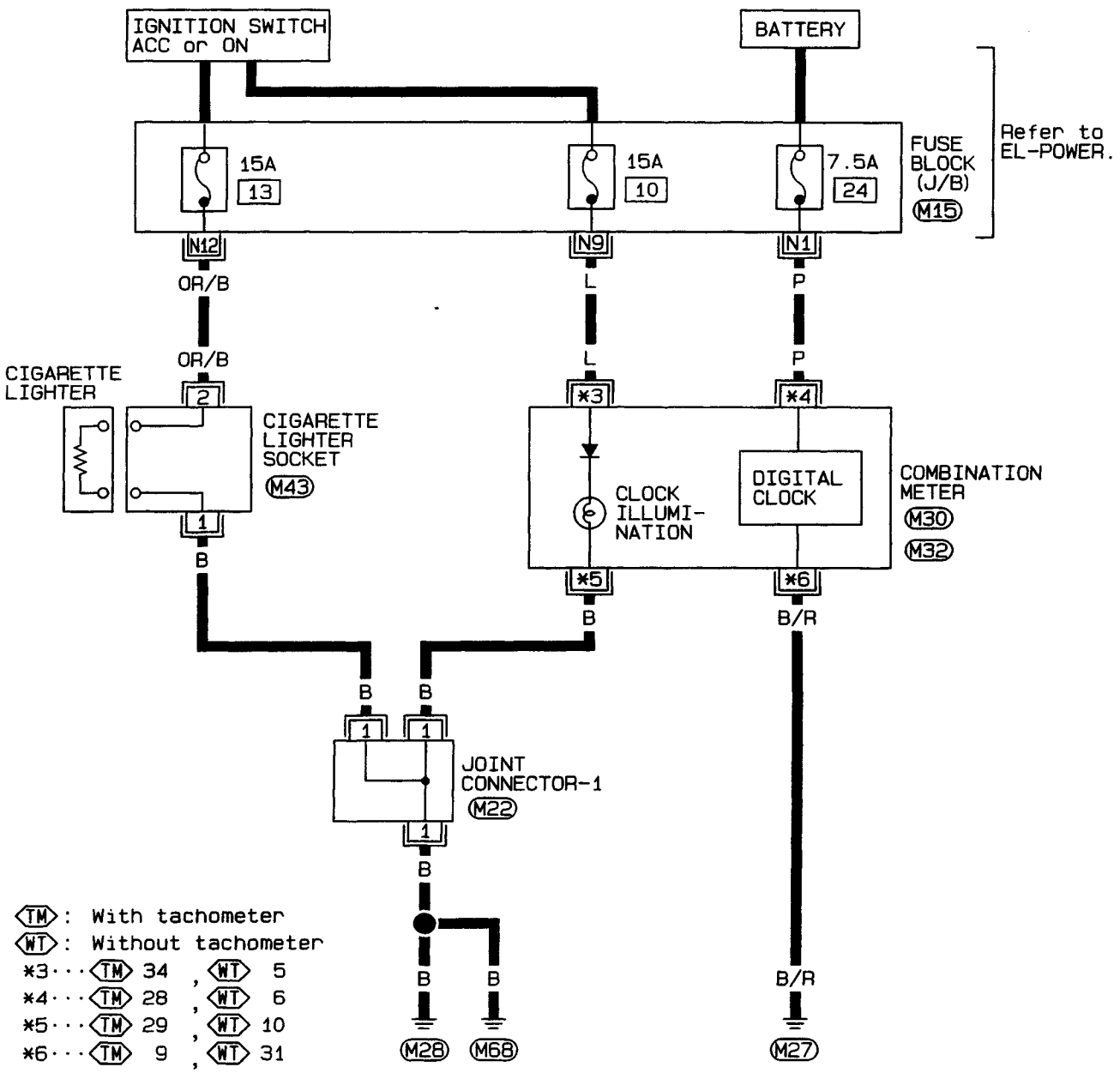

Refer to last page (Foldout page).

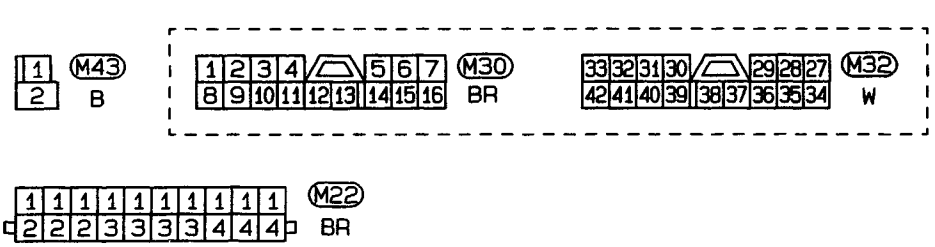
M8, E101

HEL132

## Wiring Diagram — HORN — (Cont'd)

EL-HORN-02




Refer to last page (Foldout page).
M15

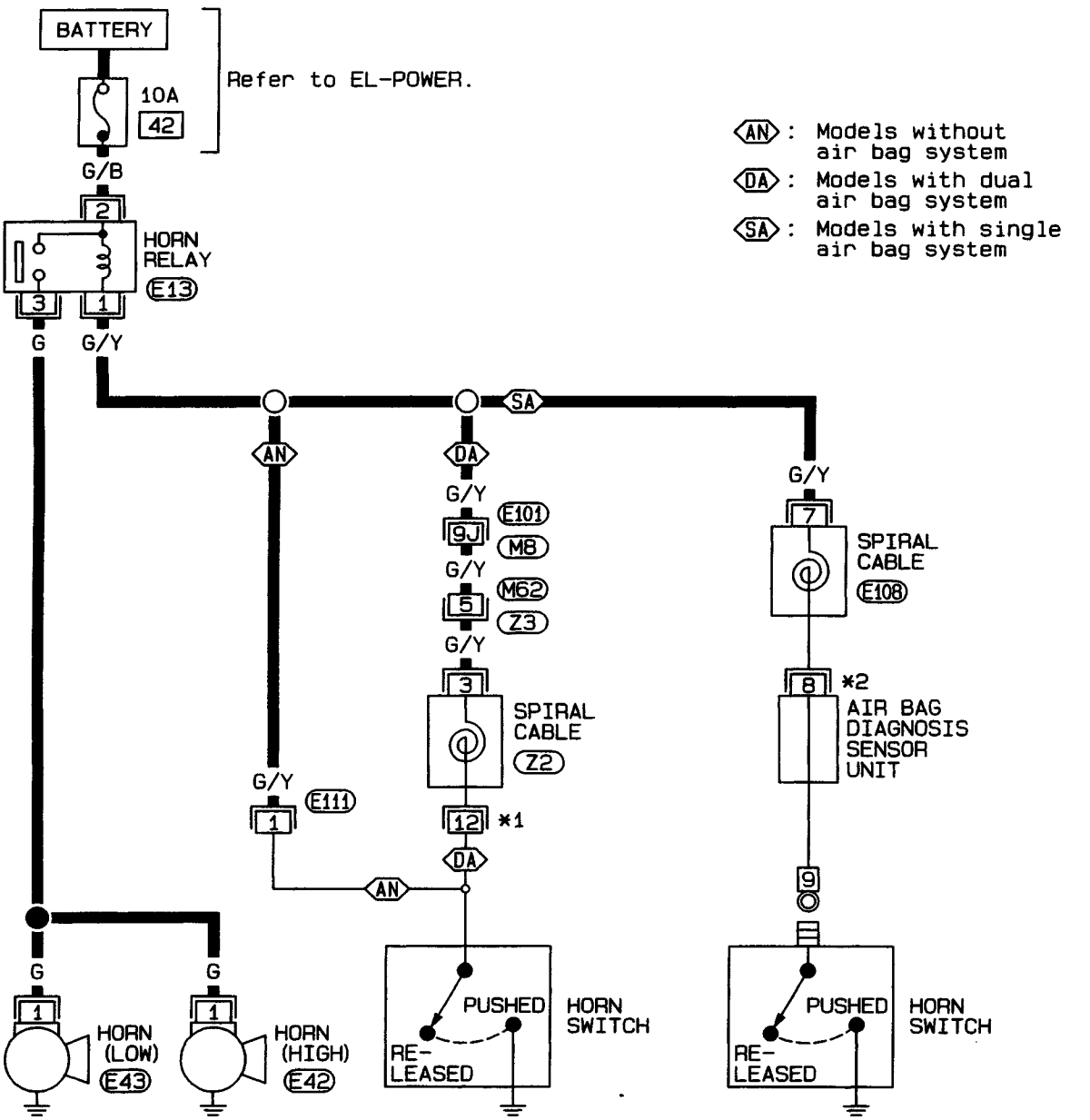
EL

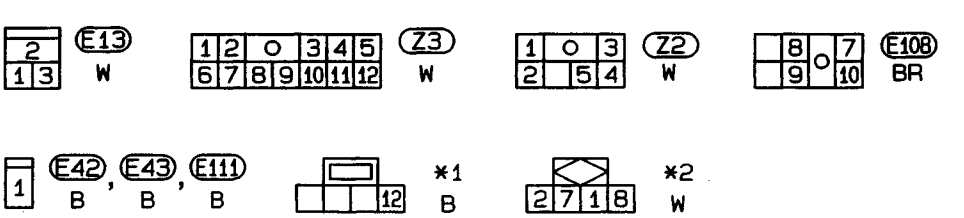
HEL133

## Wiring Diagram — HORN — (Cont'd)

### RHD MODELS

EL-HORN-03



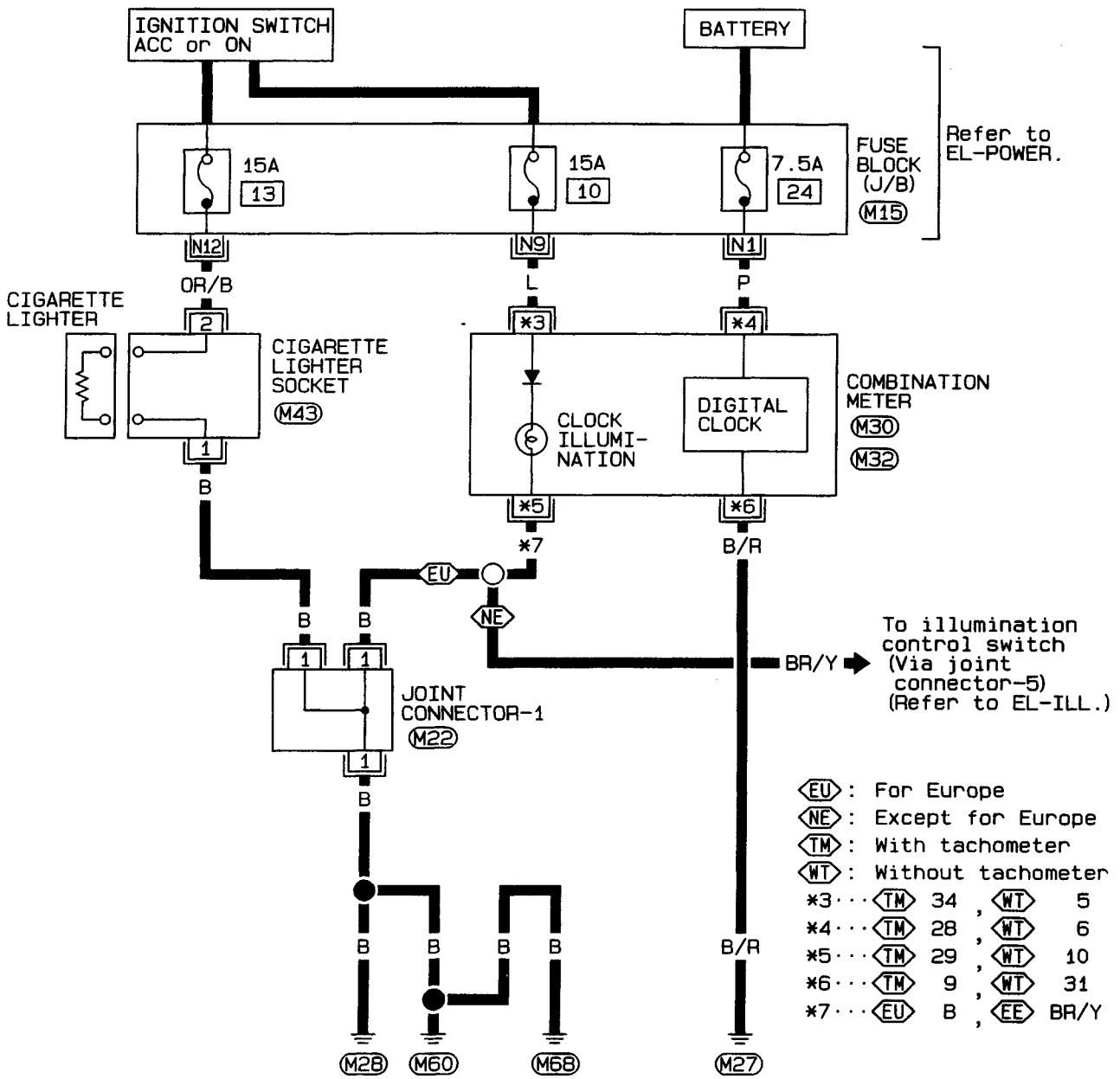

Refer to last page (Foldout page).

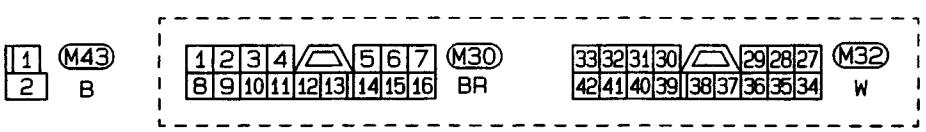
M8, E101

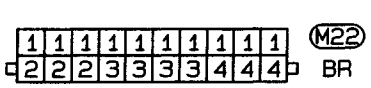
HEL134

## Wiring Diagram — HORN — (Cont'd)

EL-HORN-04




Refer to last page (Foldout page).

M15

EL

HEL135

## System Description (For models with daytime light system)

**For models without daytime light system, refer to wiring diagrams, EL-233 and 234.**

The rear window and door mirror defogger system is controlled by the rear window defogger timer.
Power is supplied at all times
- to rear window defogger relay terminal ③
- through 20A fuse (No. 5, located in the fuse block).

With the ignition switch in the ACC or ON position, power is supplied
- to mirror defogger relay terminal ③
- through 10A fuse (No. 23, located in the fuse block).

With the ignition switch in the ON or START position, power is supplied
- to rear window defogger relay terminal ①
- through 10A fuse (No. 25, located in the fuse block)
- to rear window defogger timer terminal ①
- through 7.5A fuse (No. 7, located in the fuse block).

Ground is supplied
- to rear window defogger switch terminal ② and
- to rear window defogger timer terminal ④
- through body grounds (M28) and (M68).

### Operation

The ignition switch must be in the ON or START position for defogger operation.
With the rear window defogger switch in the ON position and for approximately 12 - 16 minutes after the rear window defogger switch has turned to OFF from ON, ground is supplied
- through terminal ① of the rear window defogger switch
- to rear window defogger timer terminal ③.

Terminal ② of the rear window defogger timer then supplies ground to rear window defogger relay terminal ②.
With power and ground supplied, rear window defogger relay is energized.
For rear window defogger system, power is supplied
- through terminal ⑤ of the rear window defogger relay
- to condenser terminal ①
- through terminal ② of the condenser
- to the rear window defogger terminal ①.

For mirror defogger system, power is supplied
- through terminal ⑤ of the rear window defogger relay
- to mirror defogger relay terminal ①.

Ground is supplied
- through body grounds (M28) and (M68)
- to mirror defogger relay terminal ②.

With power and ground supplied, mirror defogger relay is energized.
- through mirror defogger relay terminal ⑤
- to each door mirror defogger terminal ②.

Ground is supplied
- to rear window defogger terminal ②
- through body ground (B204), and
- to each door mirror defogger terminal ①
- through body grounds (M28) and (M68).

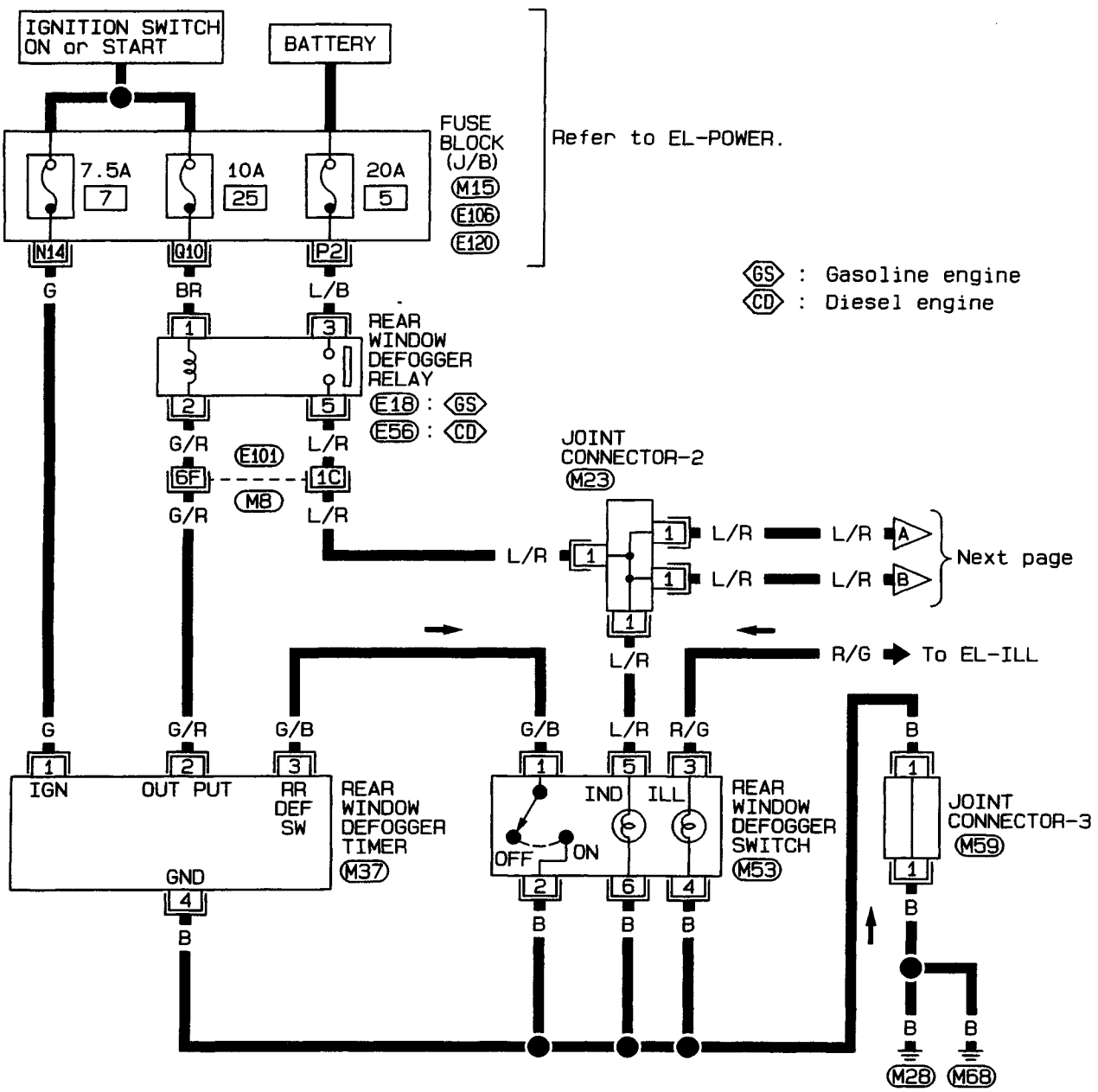
With power and ground supplied, each defogger filament heats and defogs the rear window and door mirror.
When the system is activated, the rear window defogger indicator illuminates in the rear window defogger switch.
Power is supplied
- to terminal ⑤ of the rear window defogger switch
- from terminal ⑤ of the rear window defogger relay.

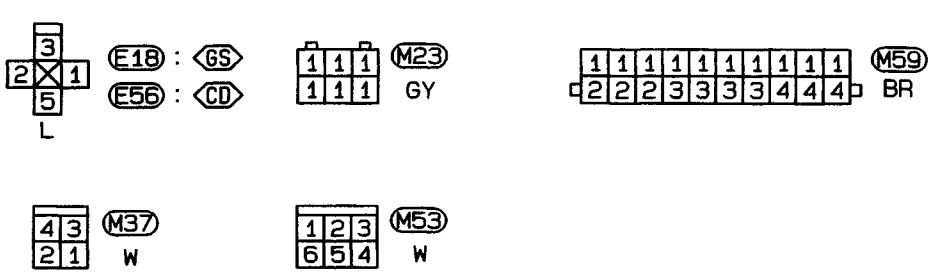
Terminal ⑥ of the rear window defogger switch is grounded through body grounds (M28) and (M68).

## Wiring Diagram — DEF —

### LHD MODELS WITH DAYTIME LIGHT SYSTEM

EL-DEF-01



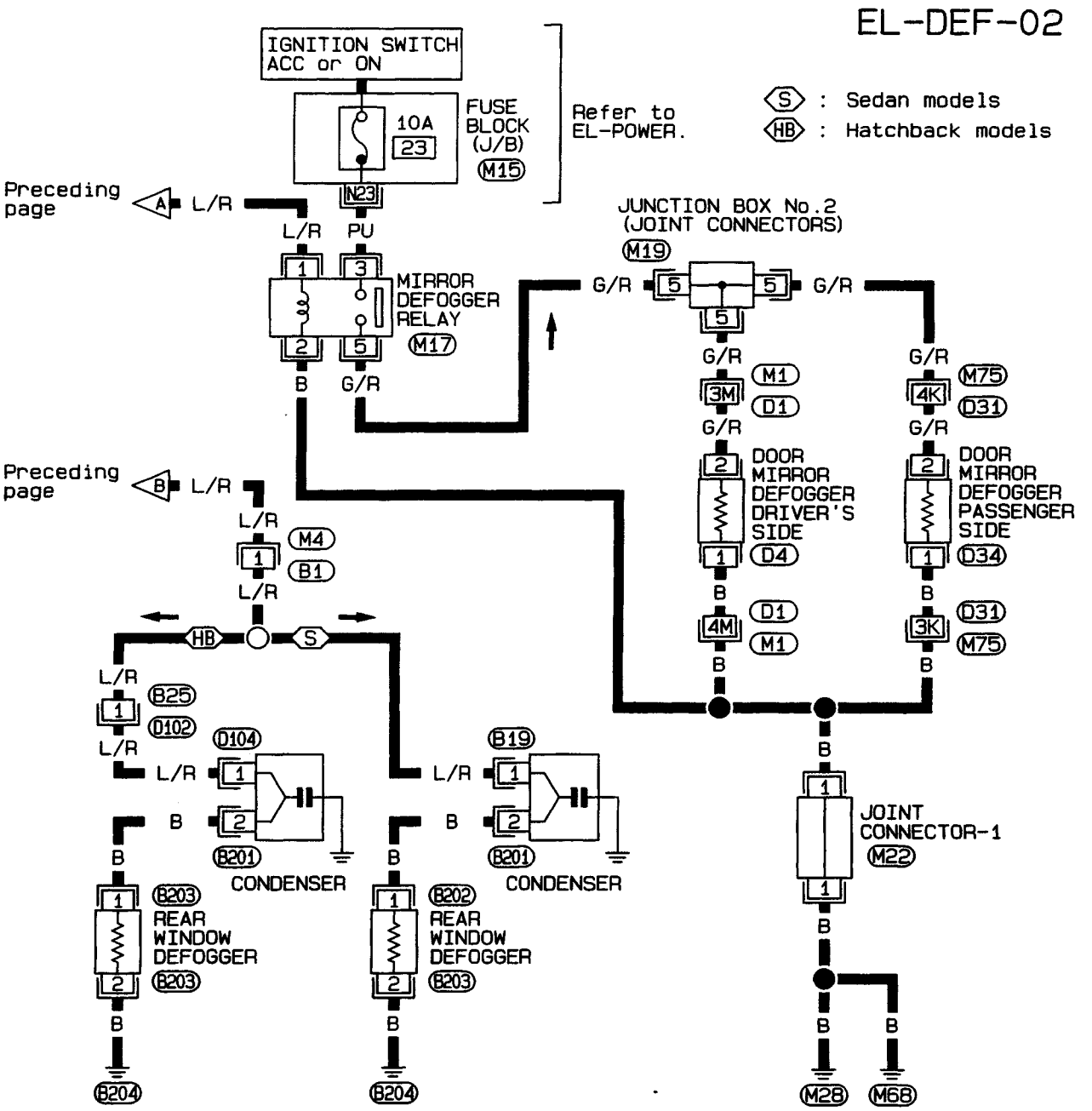

Refer to last page (Foldout page).

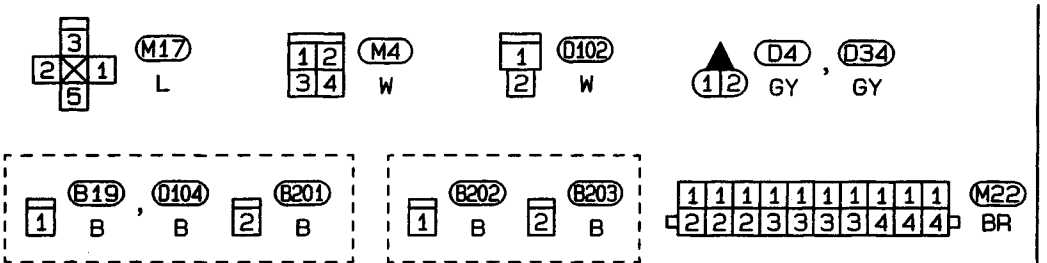
M8, E101
M15, E106, E120

EL

HEL136

## Wiring Diagram — DEF — (Cont'd)




Refer to last page (Foldout page).

M1 , D1
M75 , D31
M15
M19

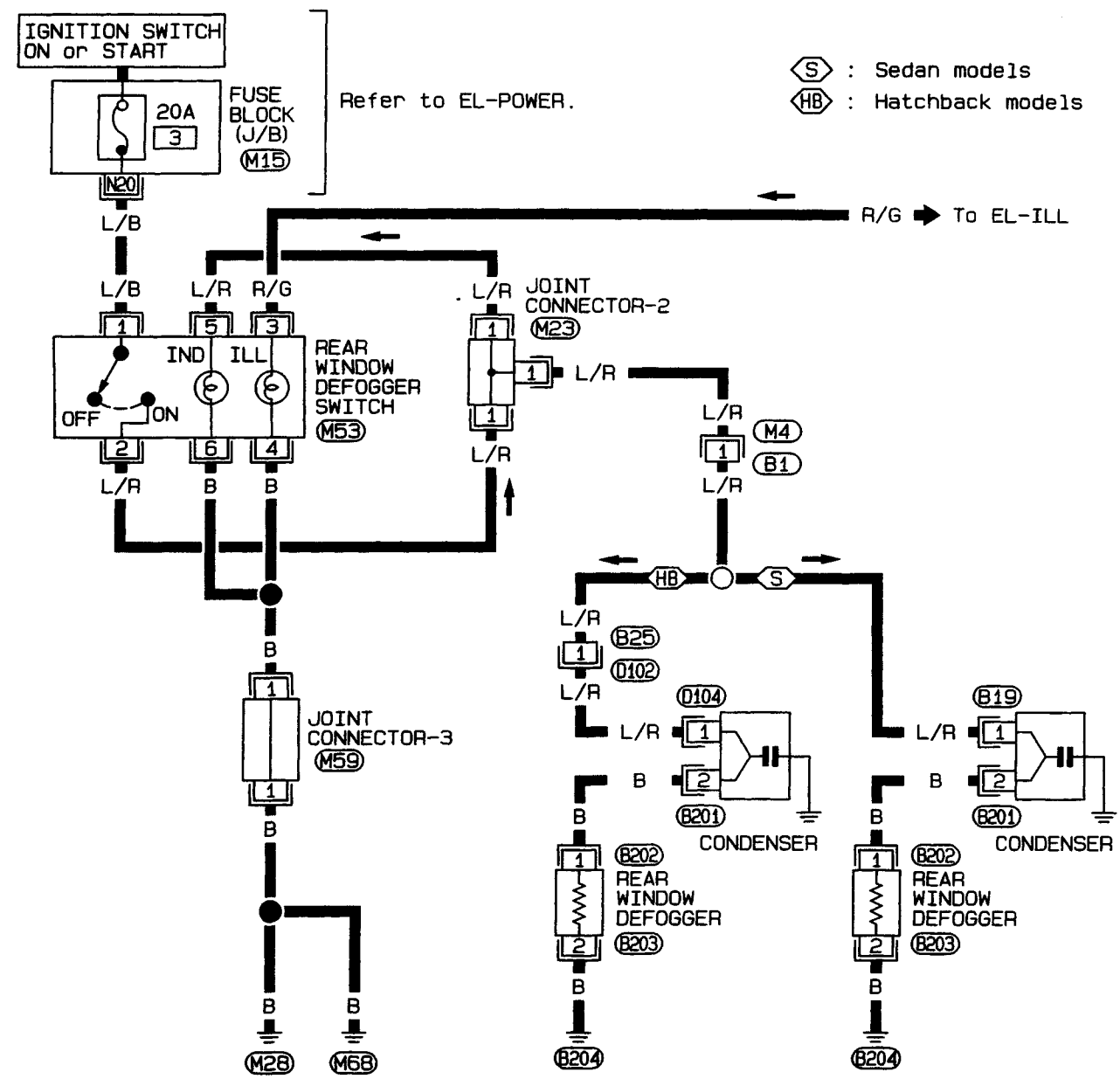
CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.

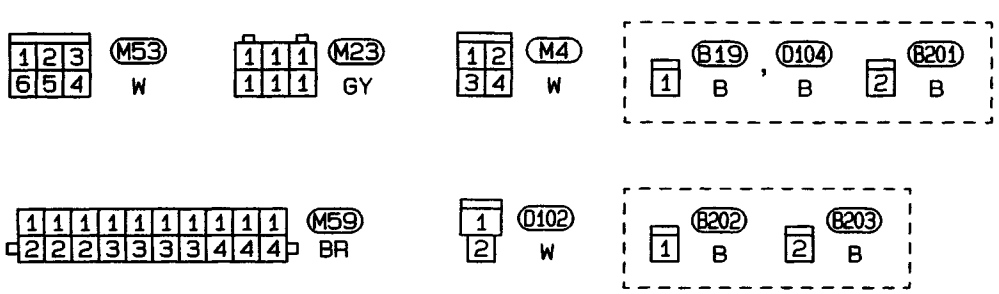
HEL137

## Wiring Diagram — DEF — (Cont'd)

### LHD MODELS WITHOUT DAYTIME LIGHT SYSTEM

EL-DEF-03




Refer to last page (Foldout page).

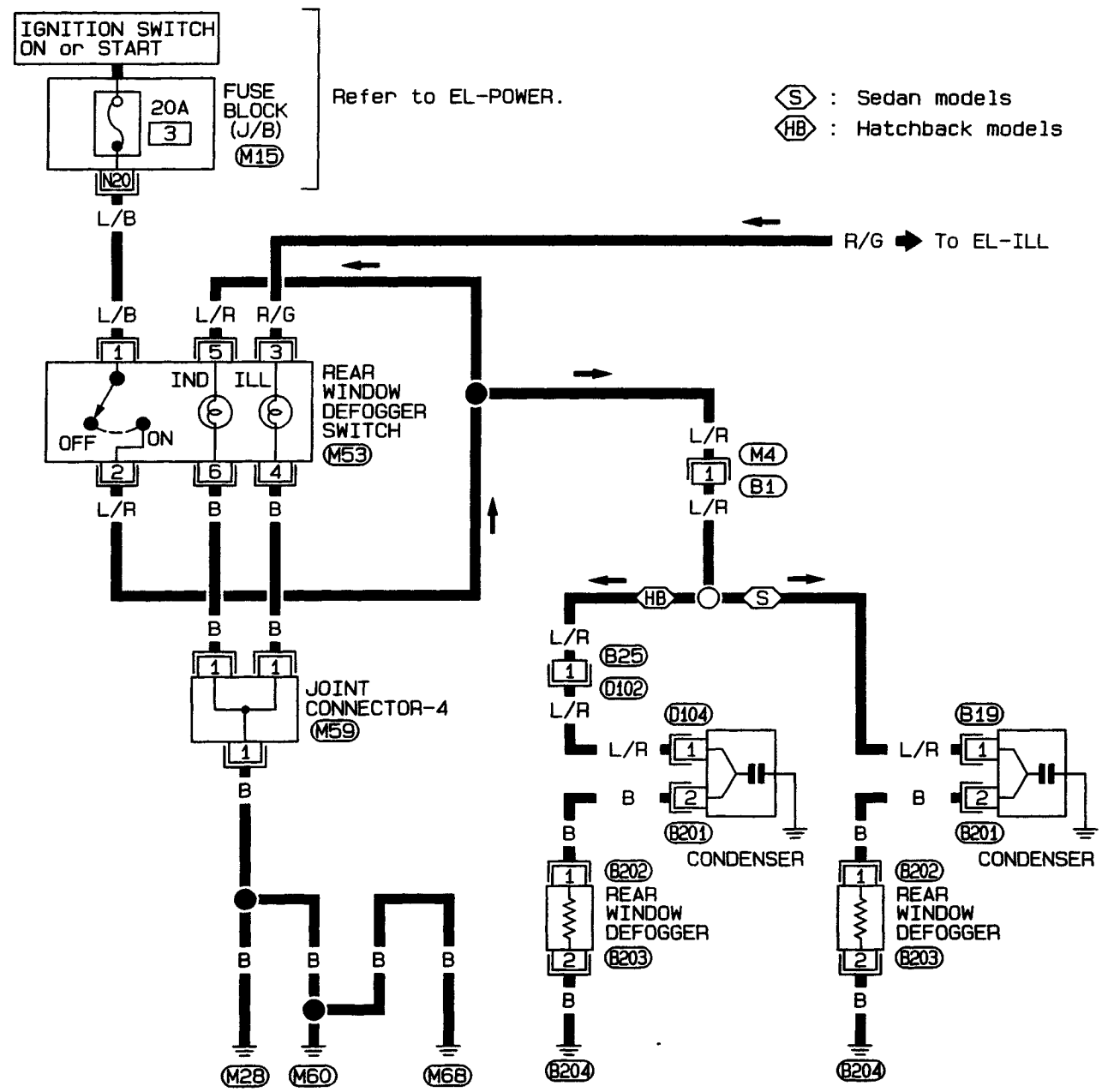
M15

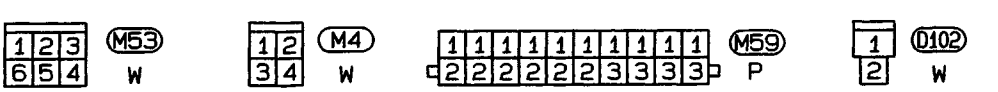
EL

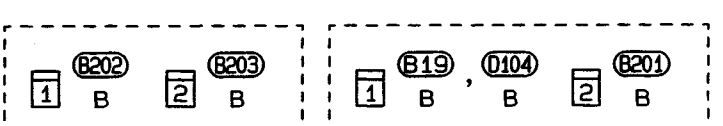
## Wiring Diagram — DEF — (Cont'd)

### RHD MODELS

EL-DEF-04

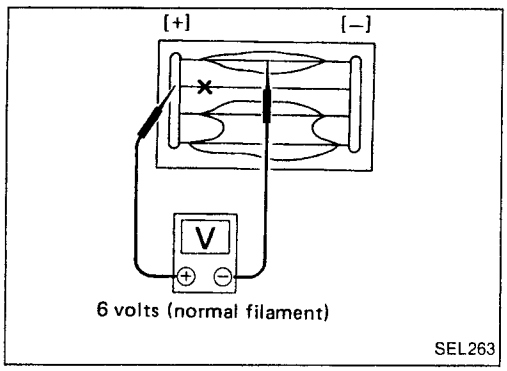


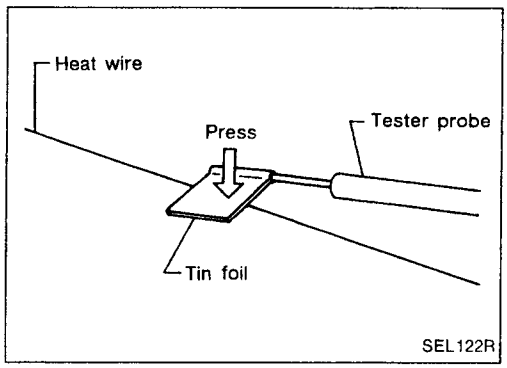

Refer to last page (Foldout page).

M15

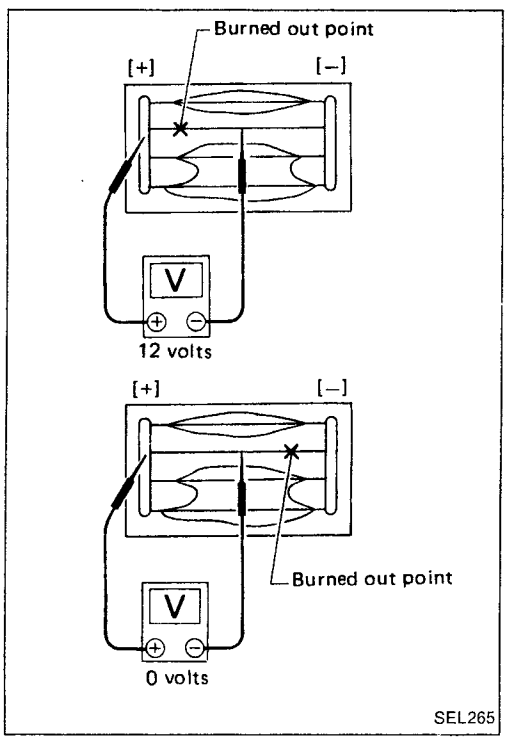



## Filament Check

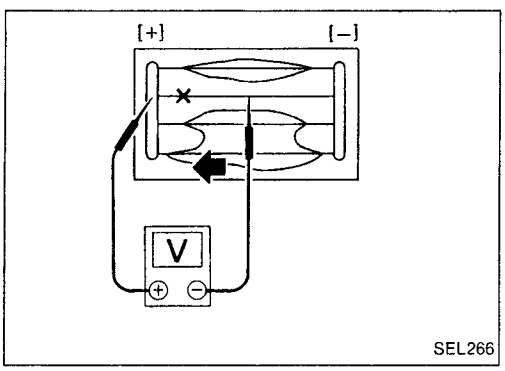
1. Attach probe circuit tester (in volt range) to middle portion of each filament.




- **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.



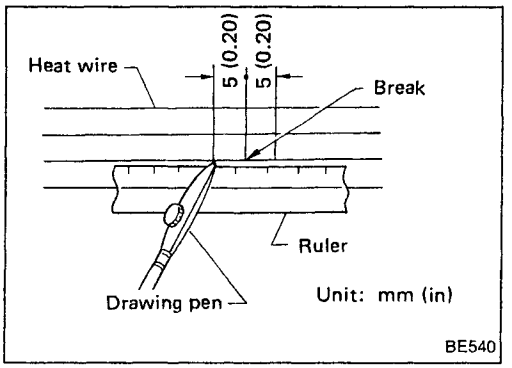

3. To locate burned out point, move probe along filament. Tester needle will swing abruptly when probe passes the point.

EL

## 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



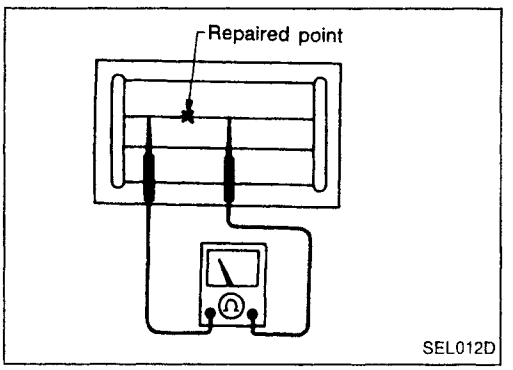

### REPAIRING PROCEDURE

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.

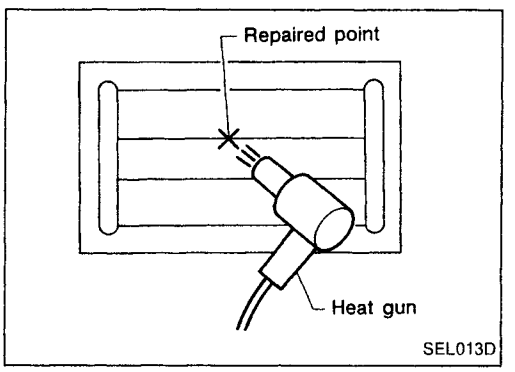
**Shake silver composition container before use.**

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 7.5A fuse (No. 24, located in the fuse block)
- to radio terminal ⑥, and
- to compact disk deck terminal ㉔.

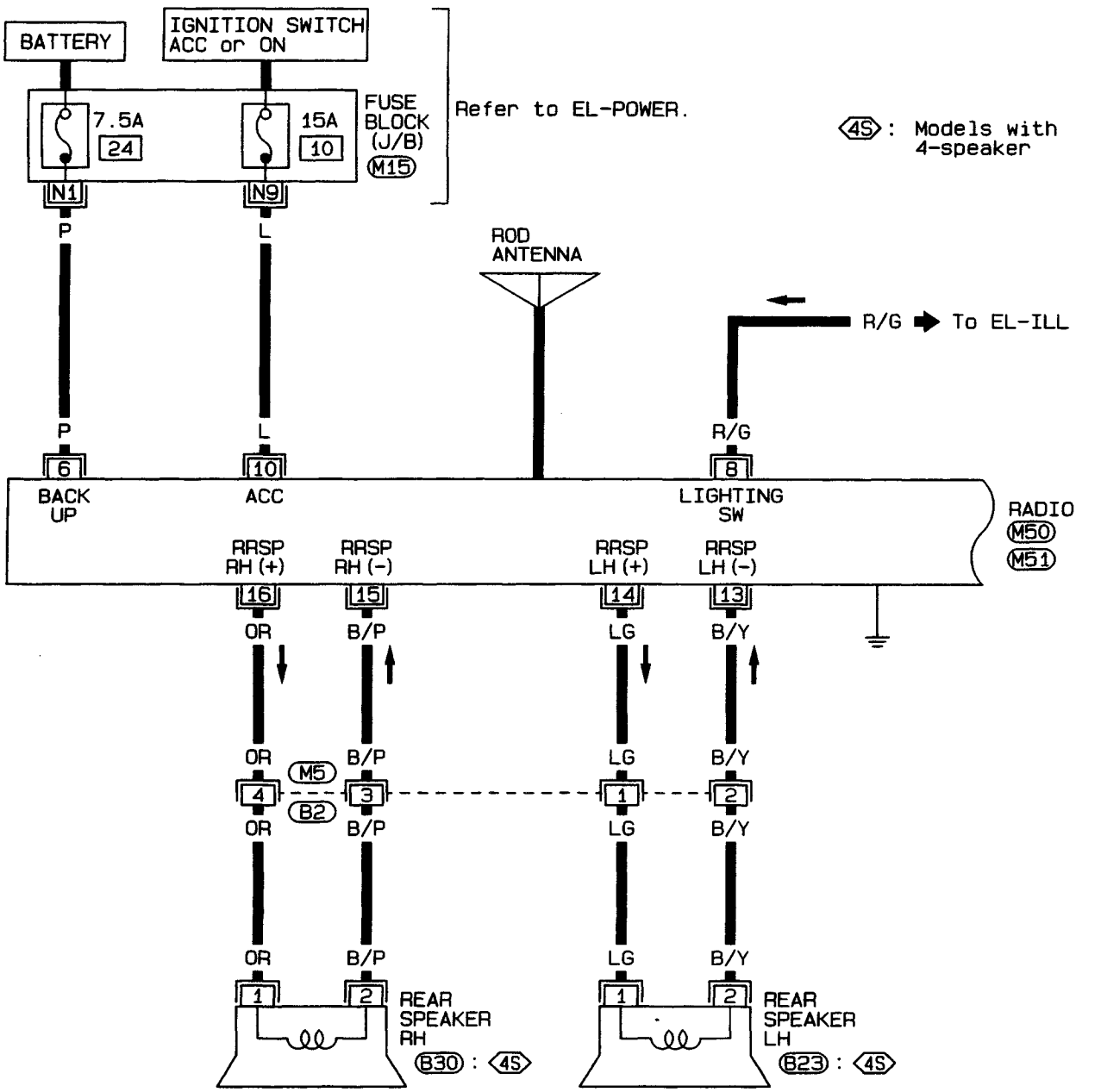
With the ignition switch in the ACC or ON position, power is supplied
- through 15A fuse (No. 10, located in the fuse block)
- to radio terminal ⑩, and
- to compact disk deck terminal ㉑.

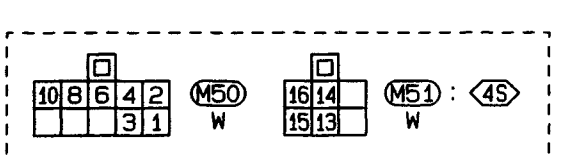
Ground is supplied through the case of the radio.
When the radio power knob is pushed to the ON position, audio signals are supplied
- through radio terminals 1, 2, 3, 4, 13, 14, 15 and 16
- to the door, pillar and rear speakers.

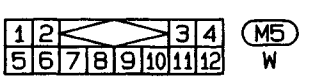
## Wiring Diagram — AUDIO —

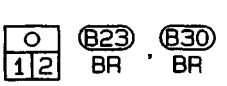
### LHD MODELS

EL-AUDIO-01



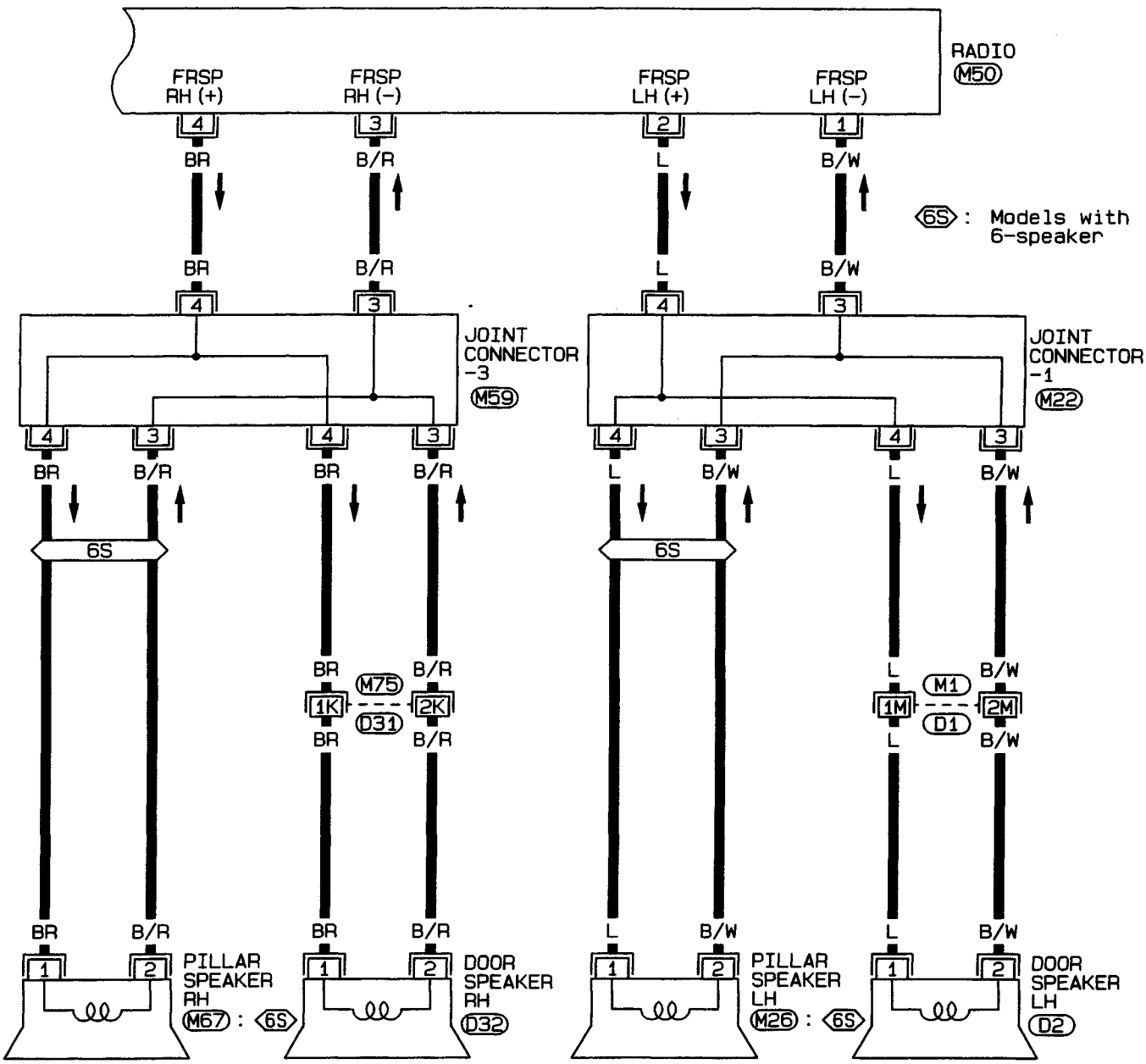

Refer to last page (Foldout page).

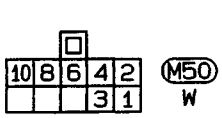
M15

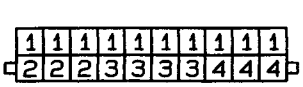
HEL140

## Wiring Diagram — AUDIO — (Cont'd)

EL-AUDIO-02







CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.

Refer to last page (Foldout page).

M1, D1

M75, D31

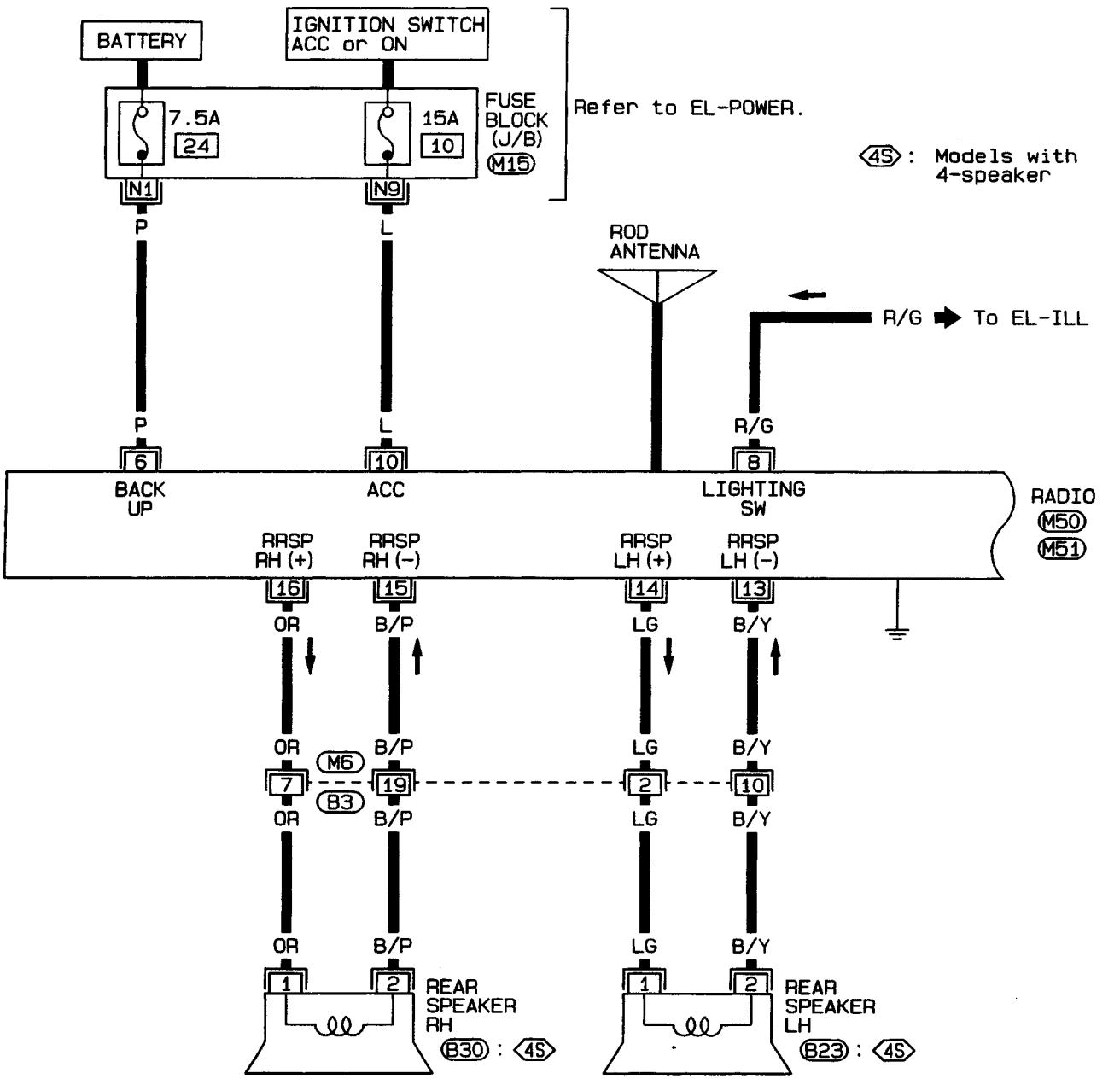
EL

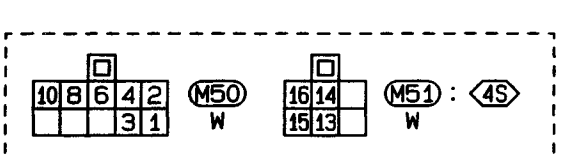
HEL141

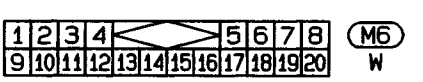
## Wiring Diagram — AUDIO — (Cont'd)

### RHD MODELS FOR EUROPE

EL-AUDIO-03







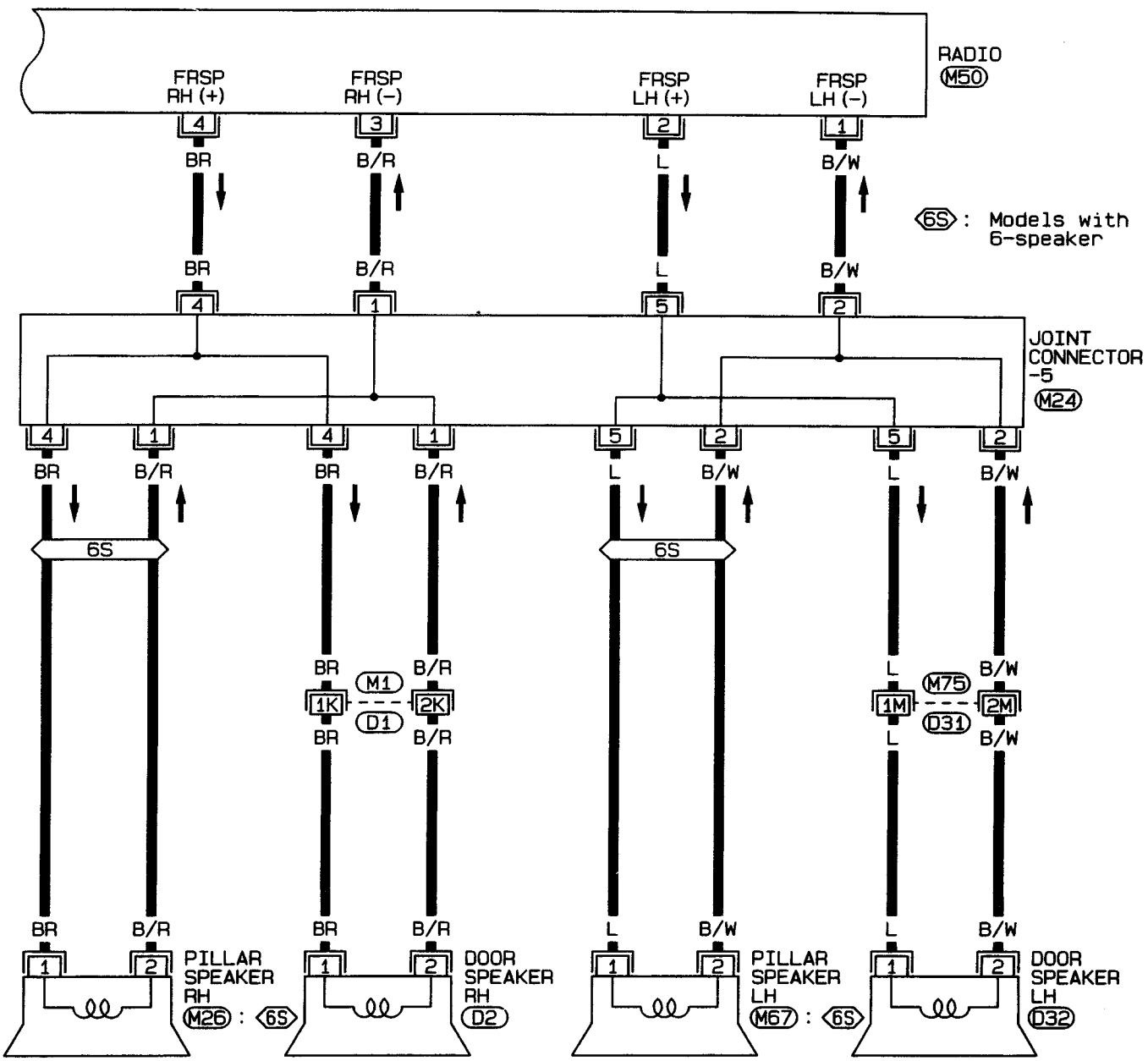
Refer to last page (Foldout page).

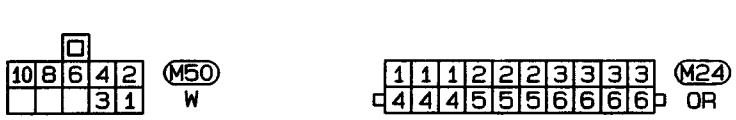
M15

HEL142

## Wiring Diagram — AUDIO — (Cont'd)

EL-AUDIO-04







CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.

Refer to last page (Foldout page).

M1 , D1

M75 , D31

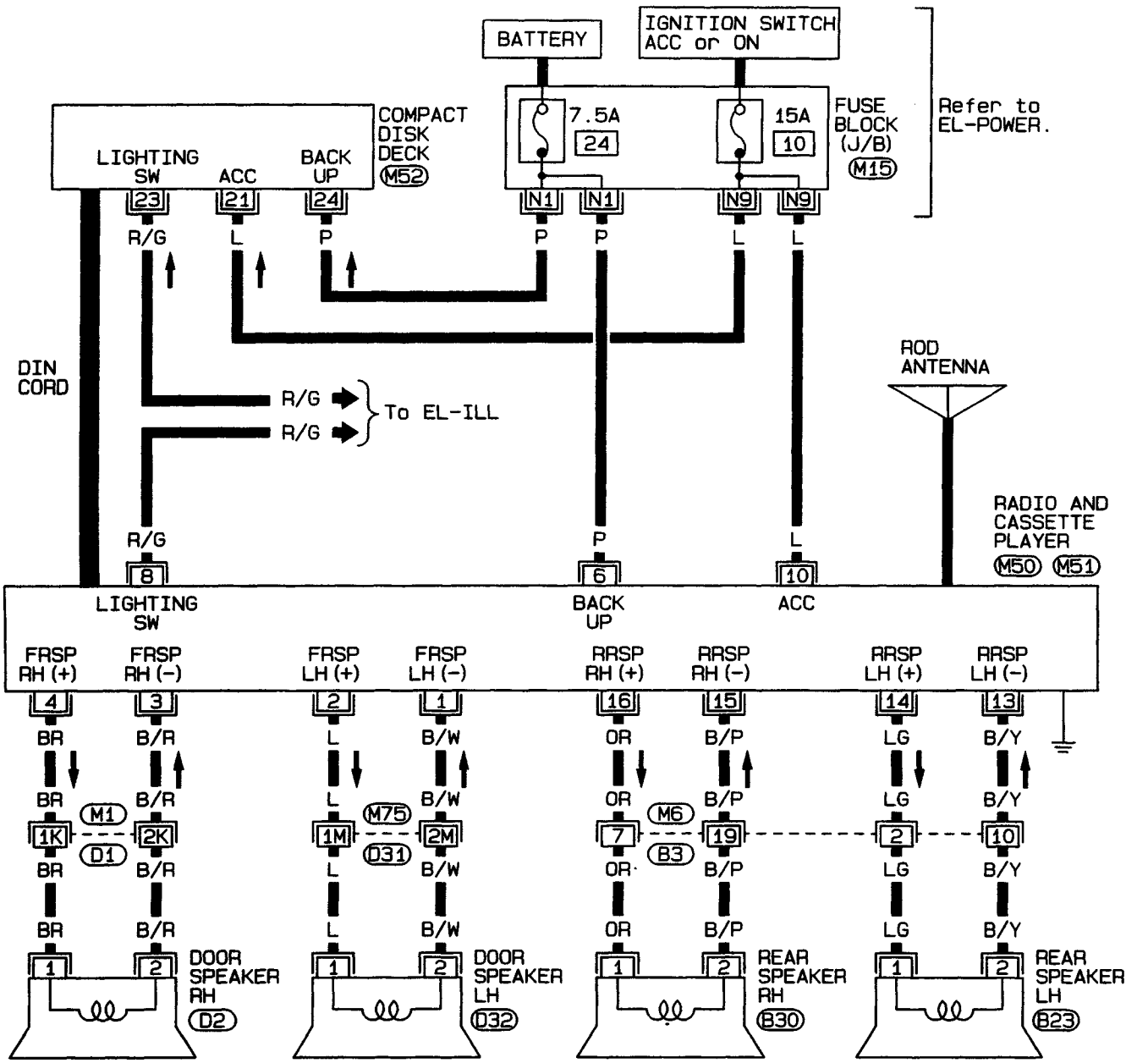
EL

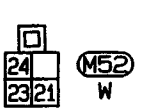
HEL143

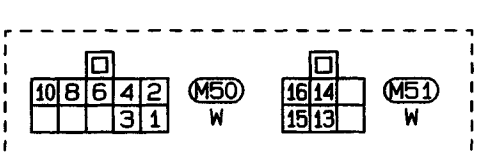
## Wiring Diagram — AUDIO — (Cont'd)

### RHD MODELS EXCEPT FOR EUROPE

EL-AUDIO-05

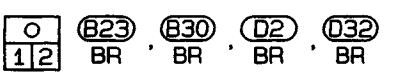




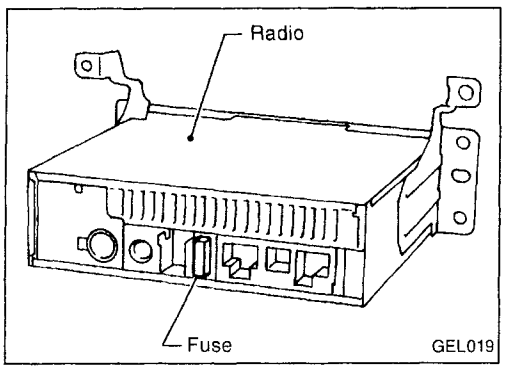





Refer to last page (Foldout page).

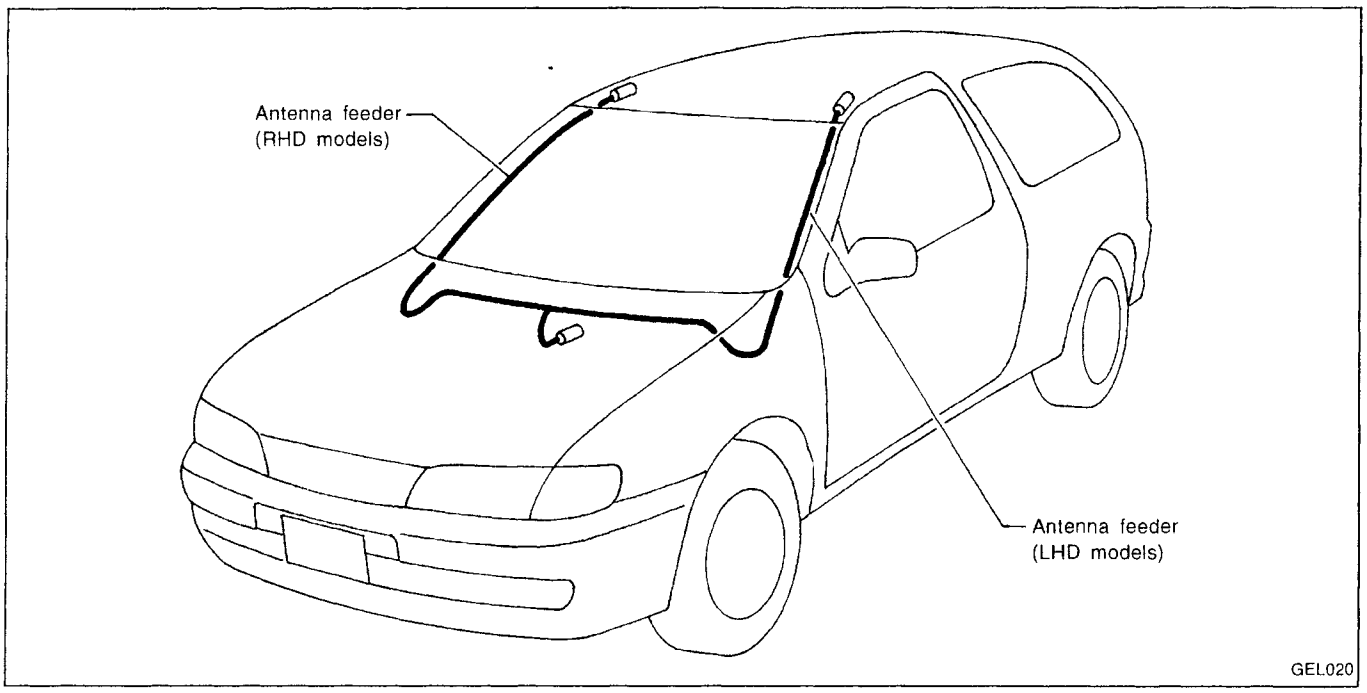
M1, D1
M75, D031
M15

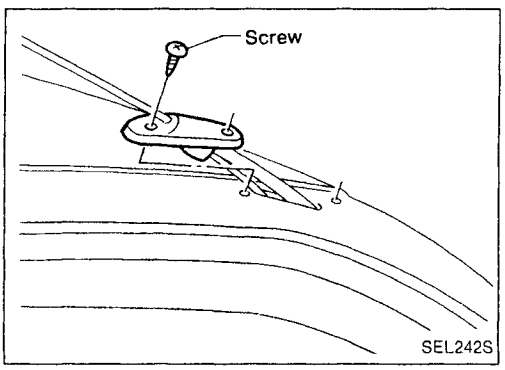
HEL144




## Radio Fuse Check

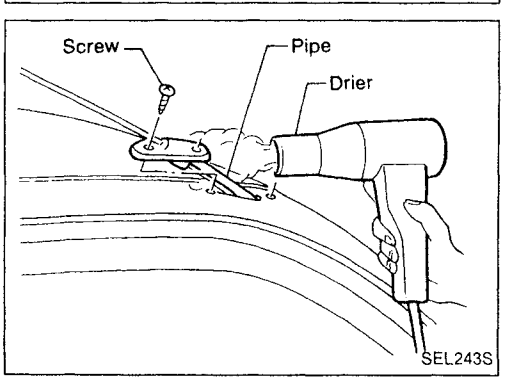
## Location of Antenna



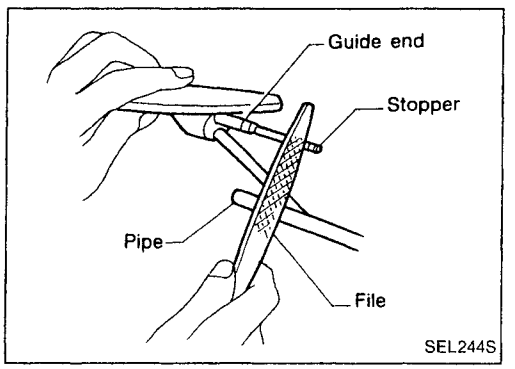

## Antenna Rod Replacement

1. Loosen screws securing antenna base.

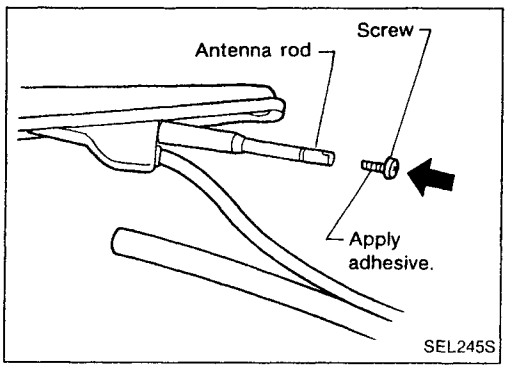



2. Pull out pipe from antenna base.
   Heating the pipe with a drier makes it easier.

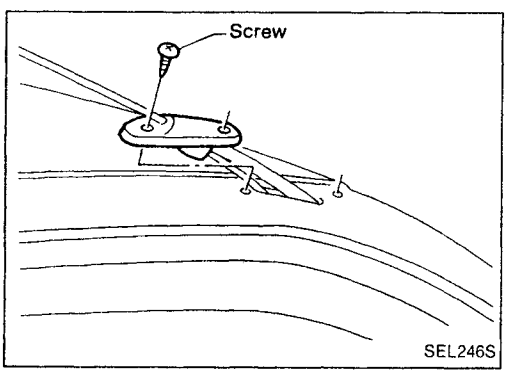
## Antenna Rod Replacement (Cont'd)




3. Cut off stopper at end of antenna rod using a file.
4. Pull out antenna rod from antenna base.




5. Insert new antenna rod to antenna base.
6. Apply adhesive to screw thread and tighten screw.

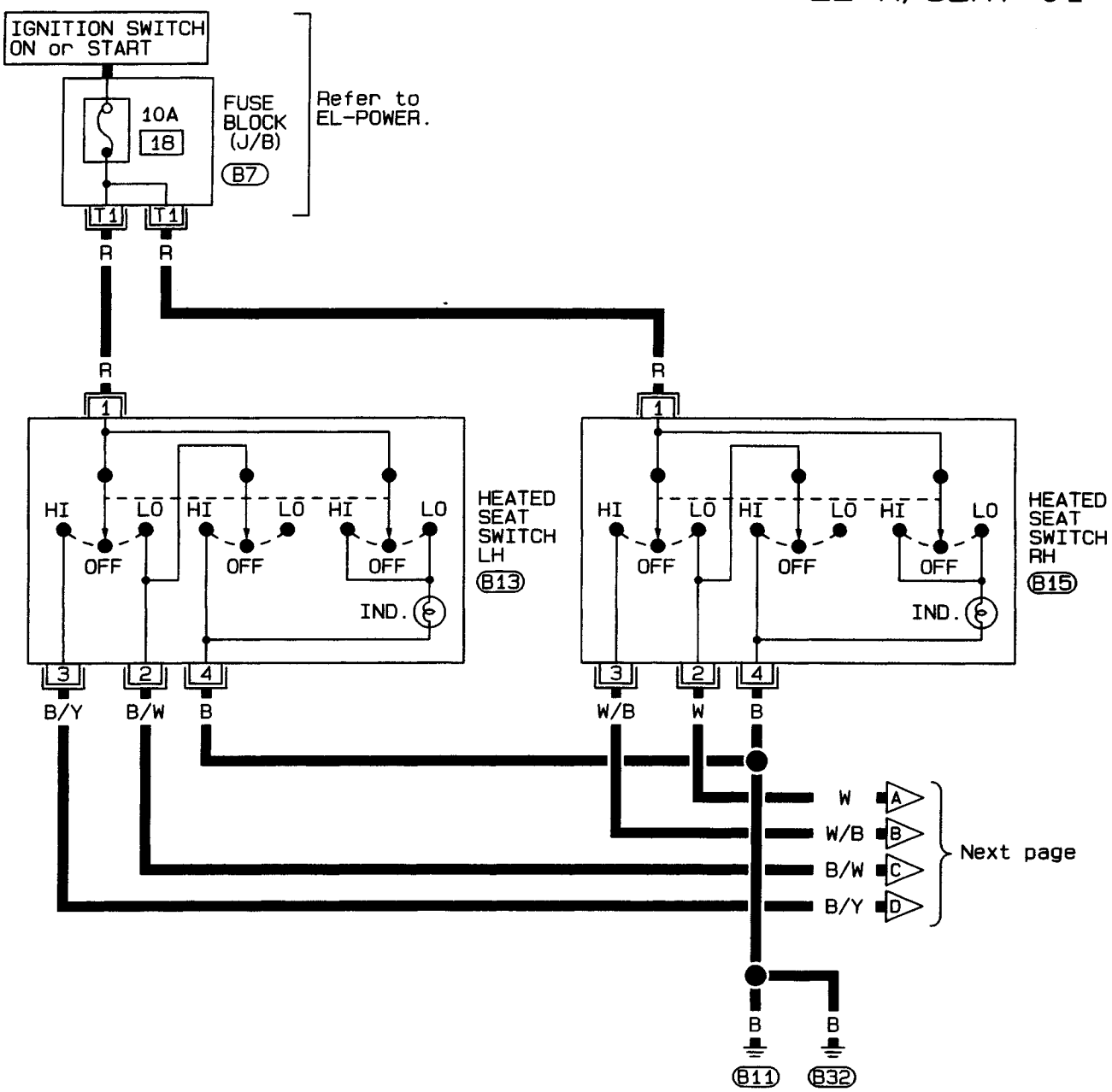


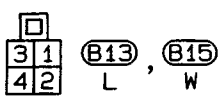

7. Tighten screws to antenna base.

★ For location of heating unit, refer to "SEAT" in BT section.

## Wiring Diagram — H/SEAT —

EL-H/SEAT-01




Refer to last page
(Foldout page).

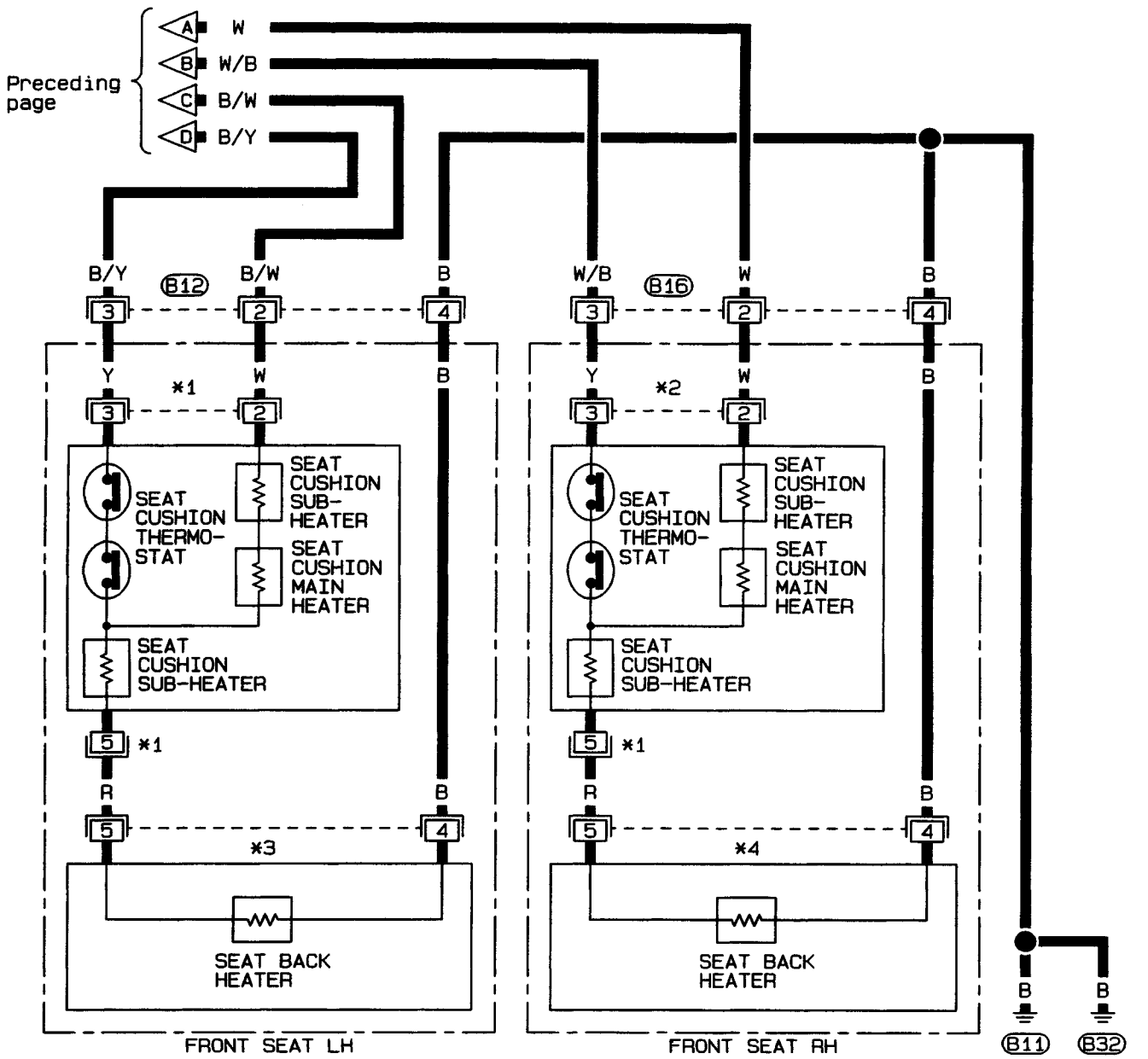
B7

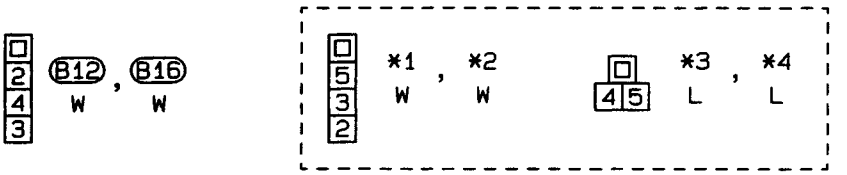
HEL145

EL

## Wiring Diagram — H/SEAT — (Cont'd)

EL-H/SEAT-02




HEL146

## System Description

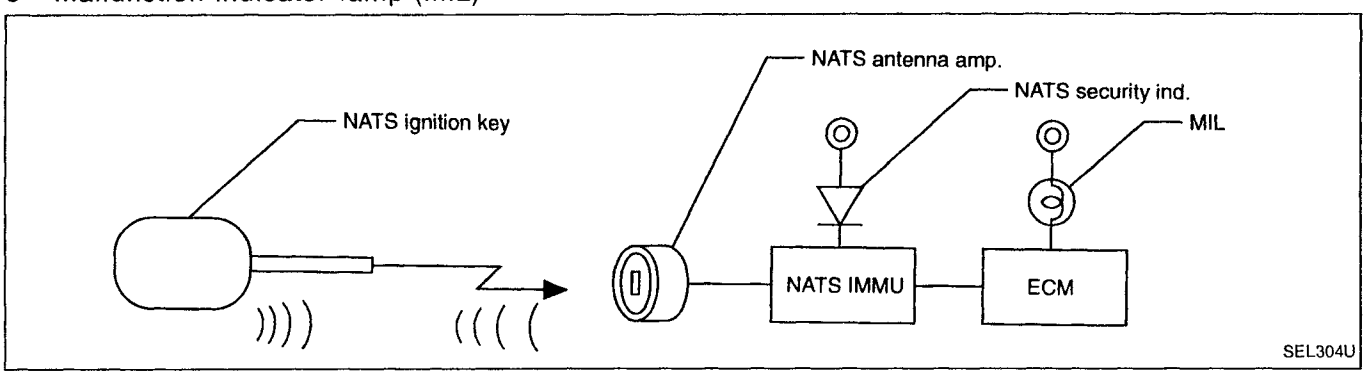
NATS V2.0 for Nissan model N15 has the following immobiliser functions:

- Since only NATS ignition keys, whose ID nos. have been registered into the ECM and IMMU of NATS, allow the engine to run, operation of a stolen vehicle without a NATS registered key is prevented by NATS.
  That is to say, NATS V2.0 will immobilize the engine if someone tries to start it without the registered key of NATS V2.0.
- Both of the originally supplied ignition key IDs have been NATS registered.
  If requested by the vehicle owner, a maximum of four key IDs can be registered into the NATS components.
- The NATS security indicator (NATS security ind.) blinks when the ignition switch is in "OFF" or "ACC" position. Therefore, NATS warns outsiders that the vehicle is equipped with the anti-theft system.
- When NATS detects trouble, the malfunction indicator lamp (MIL) blinks.
- NATS trouble diagnoses, system initialisation and additional registration of other NATS ignition key IDs must be carried out using CONSULT hardware and CONSULT NATS software.
  When NATS initialisation has been completed, the ID of the inserted ignition key is automatically NATS registered. Then, if necessary, additional registration of other NATS ignition key IDs can be carried out.
  Regarding the procedures of NATS initialisation and NATS ignition key ID registration, refer to CONSULT operation manual, NATS V2.0.
- When diagnosing NATS V2.0 using CONSULT, adapter and adapter harness for NATS V1.0 are not necessary, although a direct DDL cable connection between CONSULT and DDL connector is required.
- When servicing a malfunction of the NATS V2.0 (indicated by flashing of Malfunction Indicator Lamp) or registering another NATS ignition key ID no., it may be necessary to re-register original key identification. Therefore, be sure to receive all keys from vehicle owner.

## System Composition

The immobiliser function of the NATS for Nissan model N15 consists of the following:

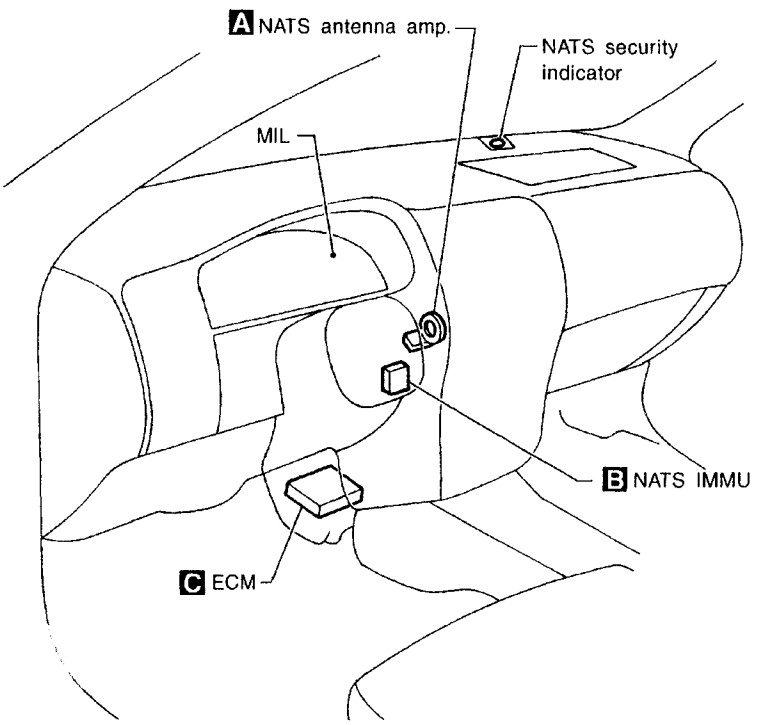
- NATS ignition key
- NATS antenna amp. located in the ignition key cylinder
- NATS immobiliser control unit (NATS IMMU)
- Engine control module (ECM)
- NATS security indicator located under the center cluster (NATS security ind.)
- Malfunction indicator lamp (MIL)



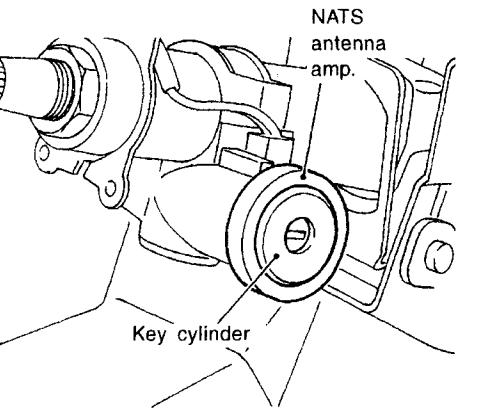

EL

## Component Parts Location

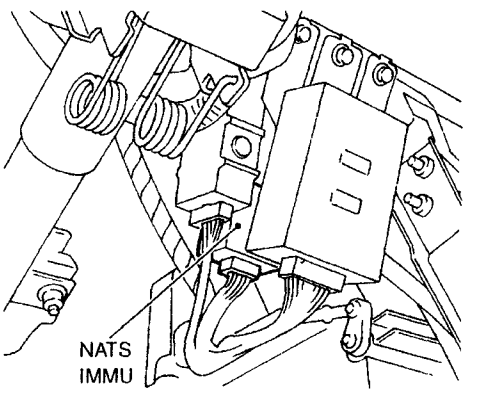
LHD models



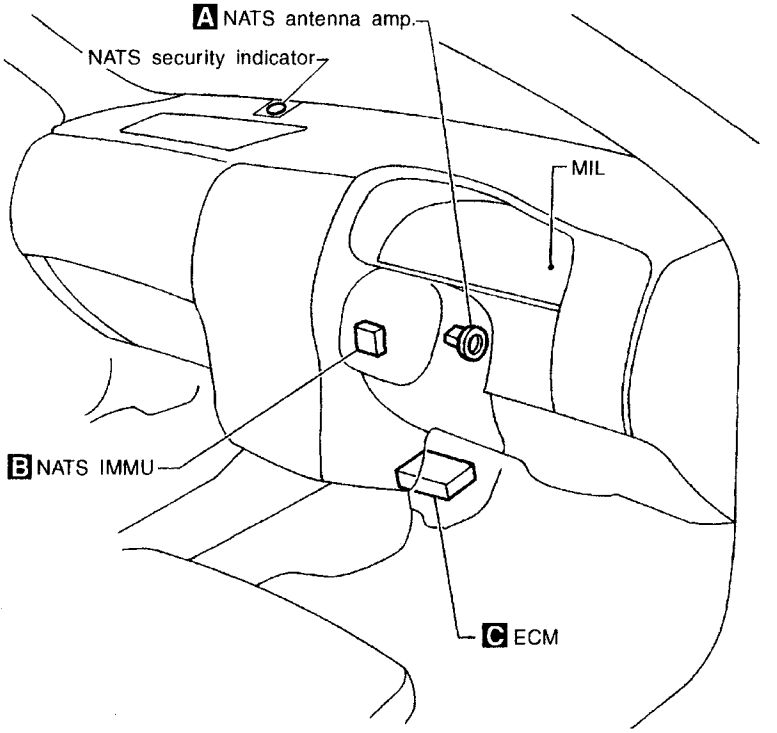

A



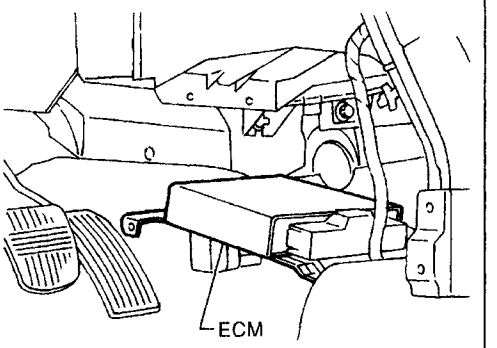

B




RHD models



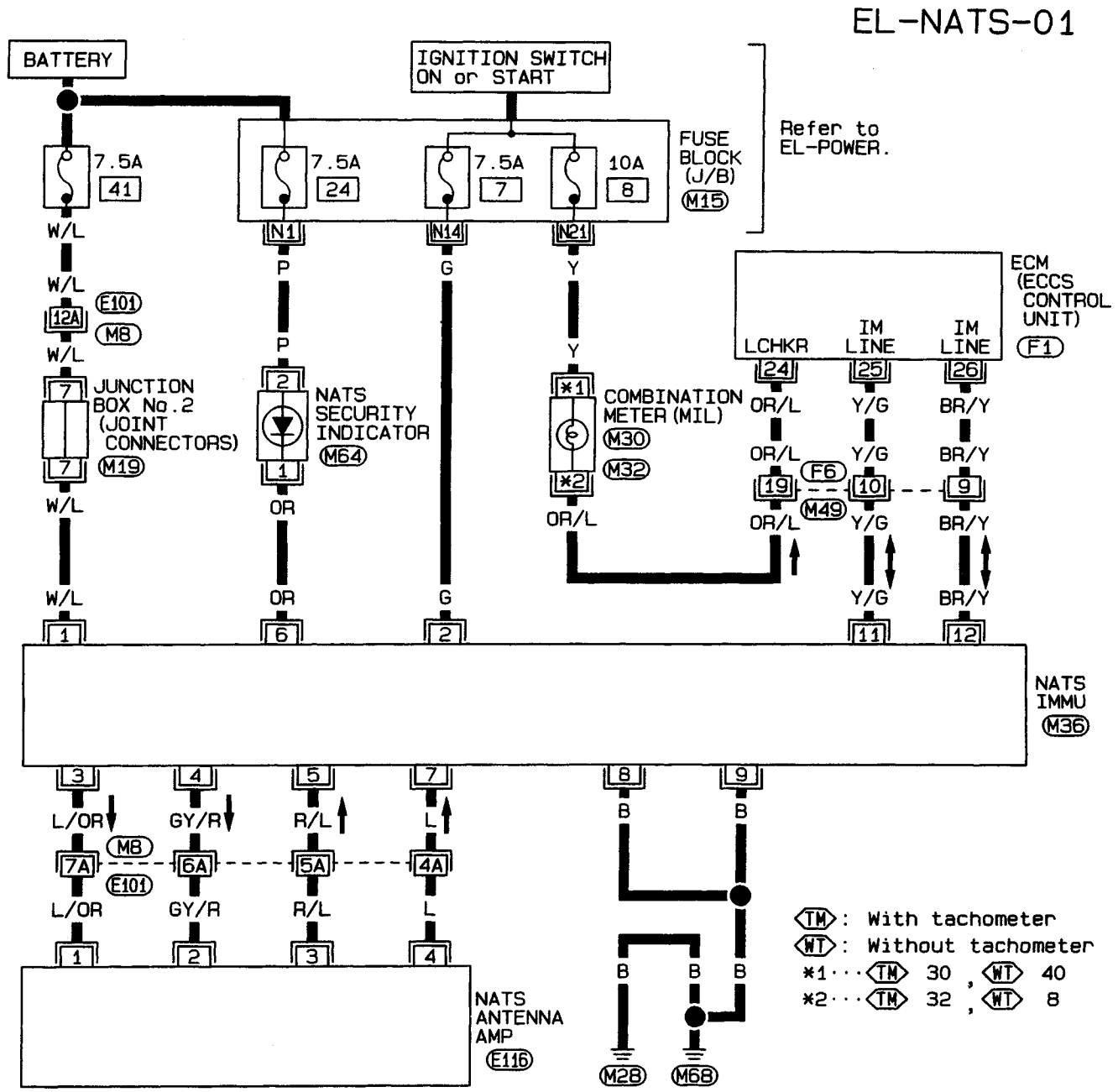

C

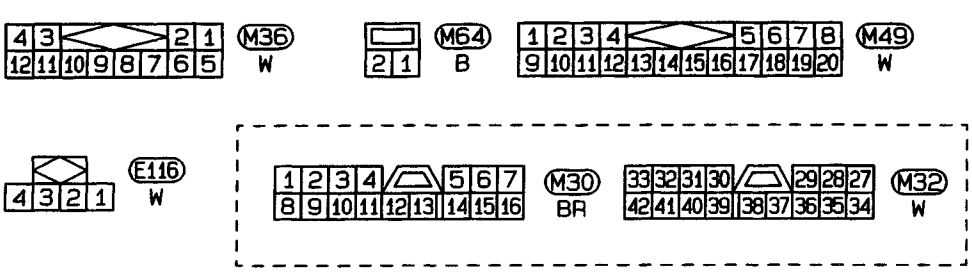



GEL021

## Wiring Diagram — NATS —

### LHD MODELS



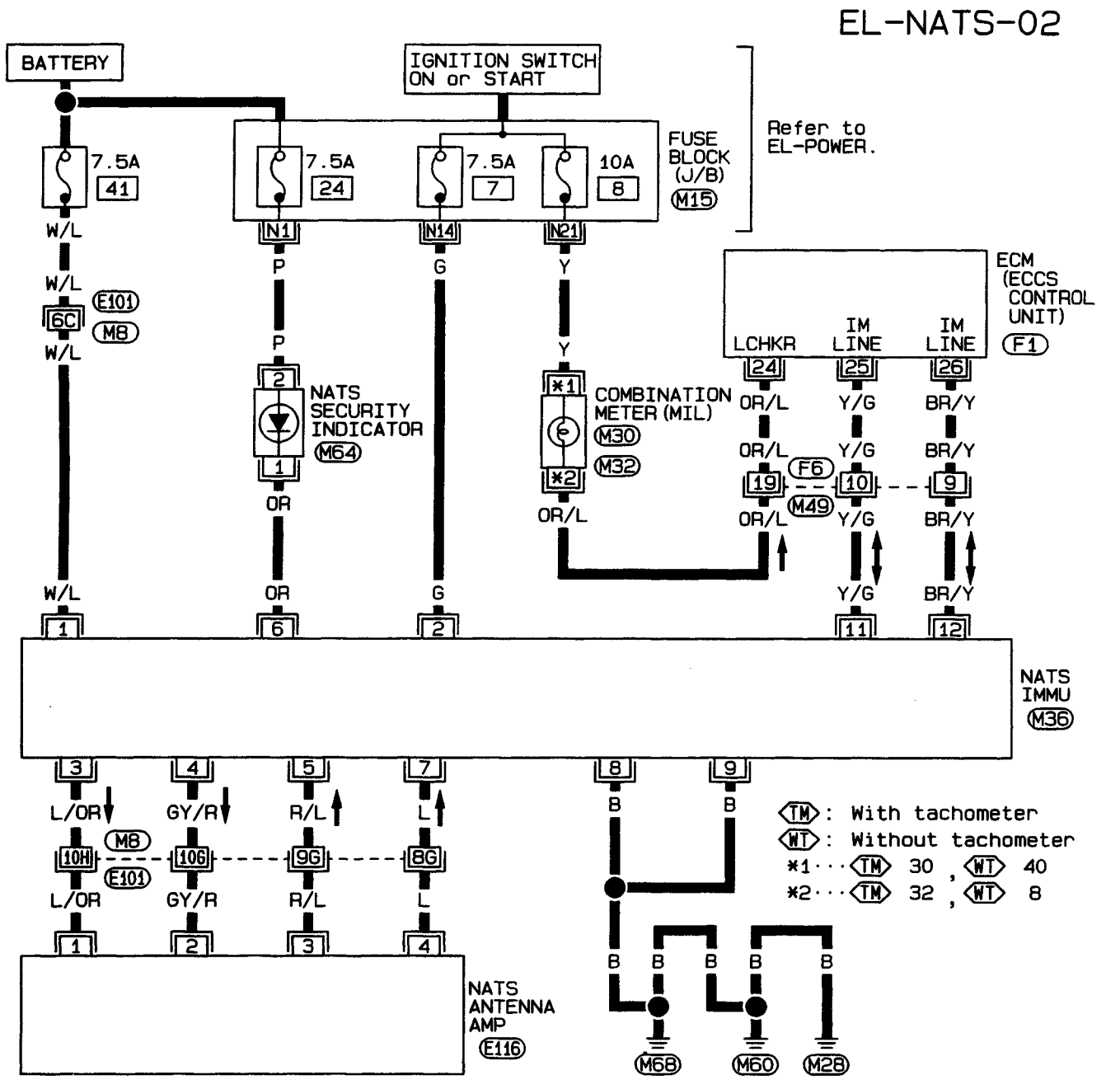

Refer to last page (Foldout page).
M8 , E101
M15
M19
F1

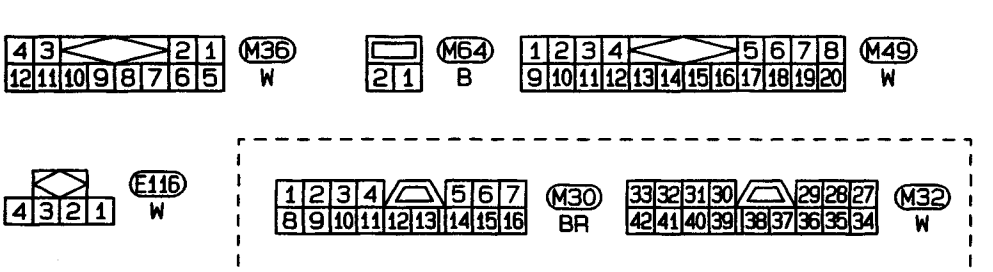
EL

HEL147

## Wiring Diagram — NATS — (Cont'd)

**RHD MODELS**



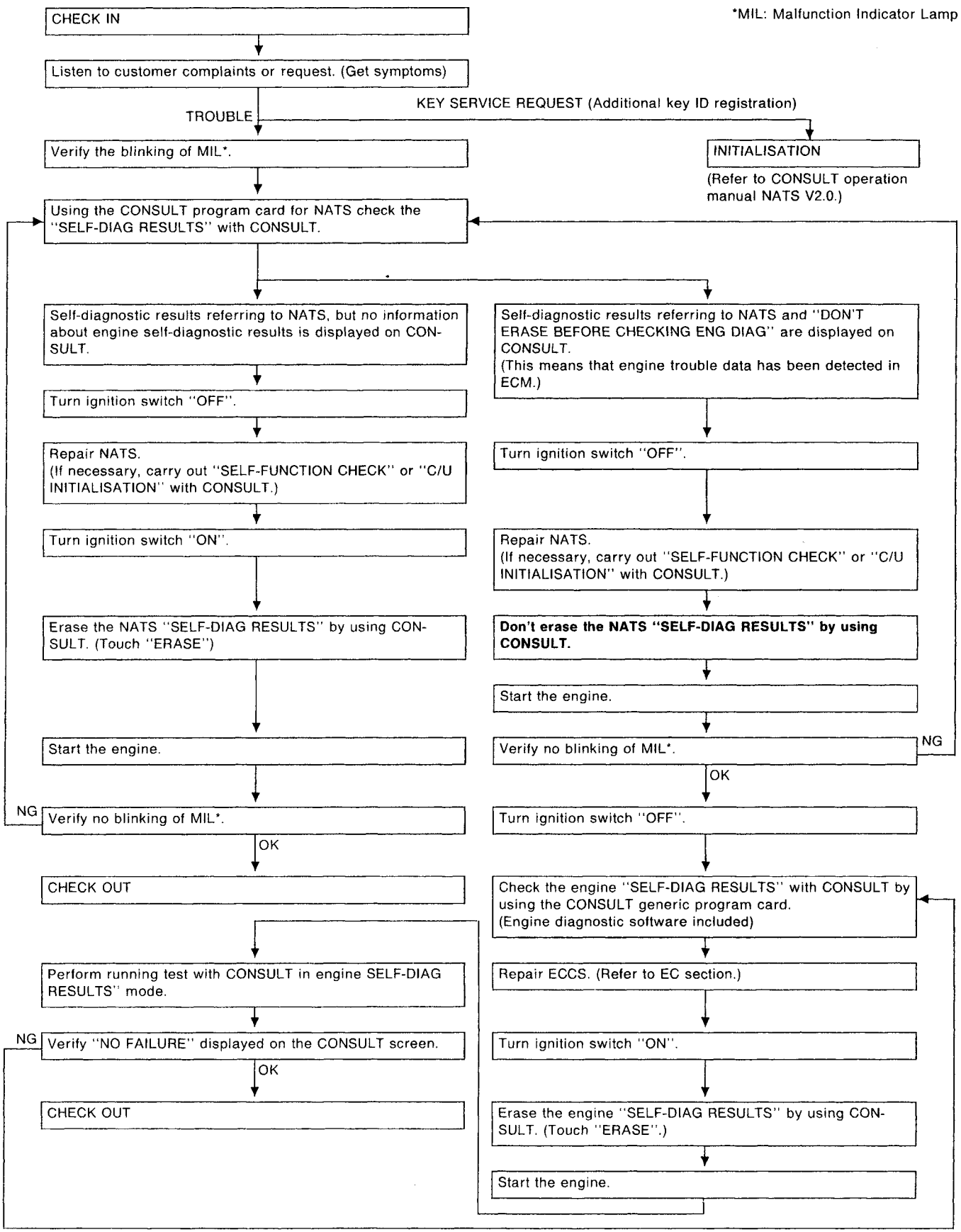




Refer to last page (Foldout page).
M8 , E101
M15
F1

HEL148

# Trouble Diagnoses

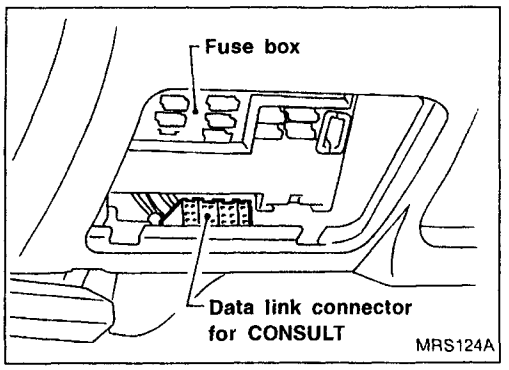
## WORK FLOW



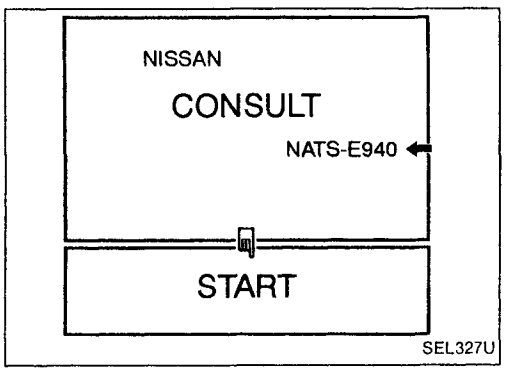

EL

## Trouble Diagnoses (Cont'd)

### CONSULT INSPECTION PROCEDURE



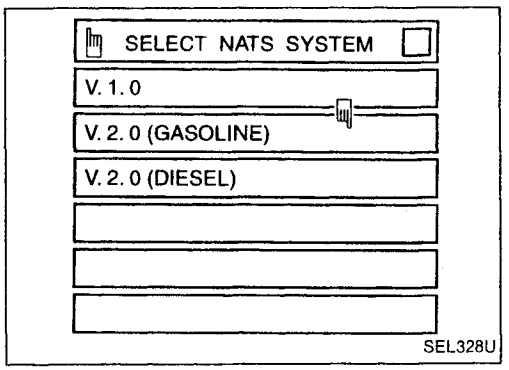

1. Turn off ignition switch.
2. Connect "CONSULT" to Data link connector for CONSULT. (Data link connector for CONSULT is located behind the fuse box cover.)



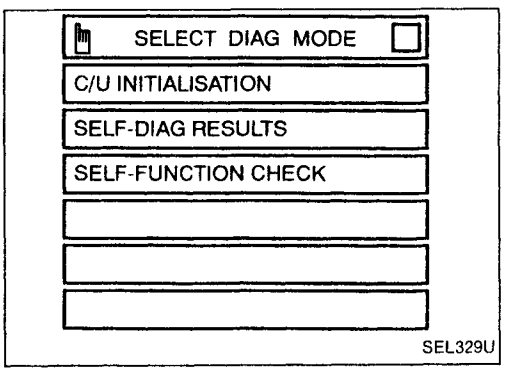

3. Insert NATS program card into CONSULT.

**⬅: Program card**
**NATS-E940**

4. Turn on ignition switch.
5. Touch "START".




6. Touch "V.2.0 (GASOLINE)".

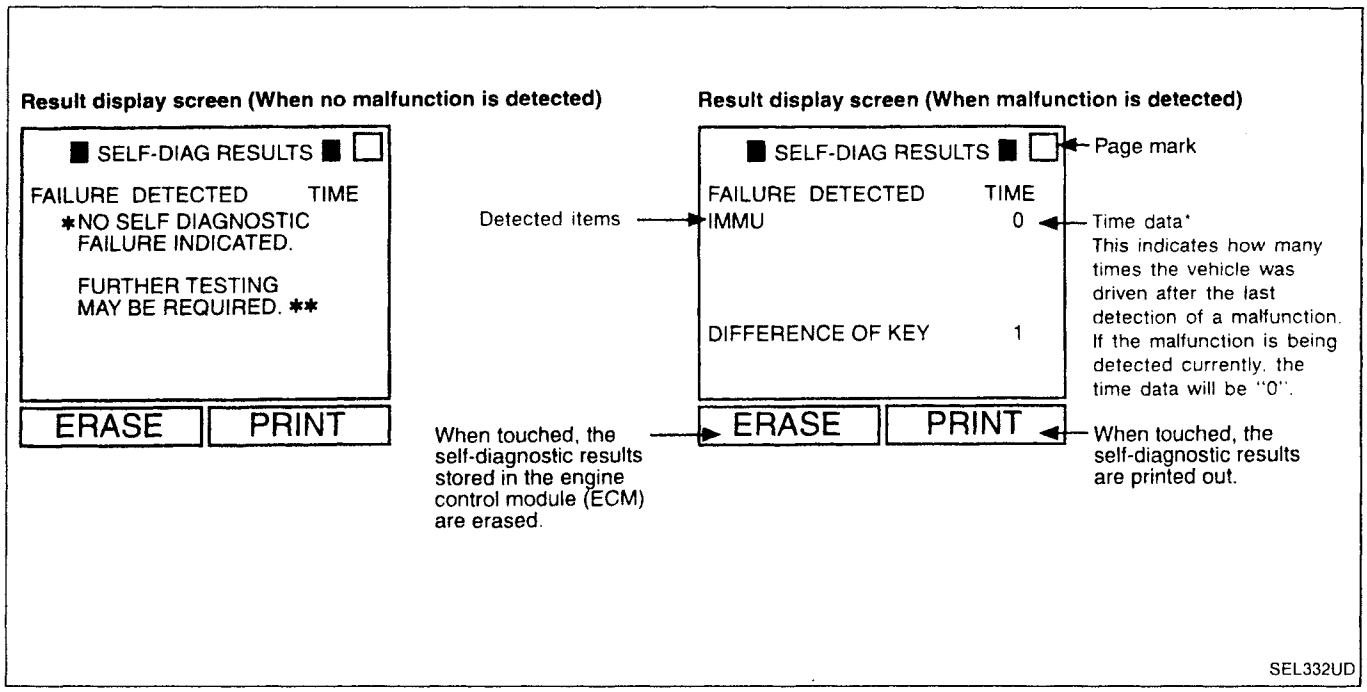



7. Perform each diagnostic test mode according to each service procedure.

**For further information, see the CONSULT Operation Manual, NATS V2.0.**

## Trouble Diagnoses (Cont'd)

### HOW TO READ SELF-DIAGNOSTIC RESULTS




* If trip number is more than 1, MIL does not blink.

EL

## Trouble Diagnoses (Cont'd)

### CONSULT DIAGNOSTIC TEST MODE FUNCTION

| CONSULT DIAGNOSTIC TEST MODE | Description |
|---|---|
| C/U INITIALIZATION | When replacing any of the following three components, C/U initialization is necessary. [NATS ignition key/IMMU/ECM] |
| SELF-FUNCTION CHECK | ECM checks its own NATS communication interface by itself. |
| SELF-DIAGNOSTIC RESULTS | Detected items (screen terms) are as shown in the chart below. |

### SELF-DIAGNOSTIC RESULTS ITEM CHART

| Detected items (Screen terms) | Description | Reference page |
|---|---|---|
| IMMU | ECM received the signal from IMMU that IMMU is malfunctioning. | EL-257 |
| ECM | ECM is malfunctioning. | EL-257 |
| CHAIN OF ECM-IMMU | Communication impossible between ECM and IMMU. | EL-258 |
| DIFFERENCE OF KEY | IMMU can receive the key ID signal but the result of ID verification between key ID and IMMU is NG. | EL-260 |
| CHAIN OF IMMU-KEY | IMMU cannot receive the key ID signal. | EL-261 |
| ID DISCORD, IMM-ECM | The result of ID verification between IMMU and ECM is NG. System initialisation is required. | EL-263 |
| MINGLE NOISE | Noise (interference) mingled into NATS communication lines during communicating. | EL-264 |
| DON'T ERASE BEFORE CHECKING ENG DIAG | Engine trouble data and NATS trouble data have been detected in ECM. | EL-264 |

## SYMPTOM MATRIX CHART 1
## (Self-diagnosis related item)

X: Possibility item, *MIL: Malfunction Indicator Lamp

| SYSTEM (Malfunctioning part or mode) | REFERENCE PART NO. OF ILLUSTRATION ON NEXT PAGE | SYMPTOM | | Displayed "SELF-DIAG RESULTS" on CONSULT screen. | DIAGNOSTIC PROCEDURE (Reference page) |
|---|---|---|---|---|---|
| | | • Blinking of MIL*.<br>• Engine will start. | • Blinking of MIL*.<br>• Hard to start engine. | | |
| IMMU | A | X | | IMMU | PROCEDURE 1 (EL-257) |
| ECM | B | X | | ECM | PROCEDURE 2 (EL-257) |
| Open circuit in battery voltage line of IMMU circuit | C1 | | X | CHAIN OF ECM-IMMU | PROCEDURE 3 (EL-258) |
| Open circuit in ignition line of IMMU circuit | C2 | | X | | |
| Open circuit in ground line of IMMU circuit | C3 | | X | | |
| Open circuit in communication line between IMMU and ECM | C4 | | X | | |
| Short circuit between IMMU and ECM communication line and battery voltage line | C4 | | X | | |
| Short circuit between IMMU and ECM communication line and ground line | C4 | | X | | |
| Open circuit in power source line of ANT/AMP circuit | E3 | | X | | |
| ECM | B | | X | | |
| IMMU | A | | X | | |
| Unregistered key | D | | X | DIFFERENCE OF KEY | PROCEDURE 4 (EL-260) |
| IMMU | A | | X | | |
| Communication line between ANT/AMP and IMMU:<br>Open circuit or short circuit of battery voltage line or short circuit of ground line | E1 | | X | CHAIN OF IMMU-KEY | PROCEDURE 5 (EL-261) |
| | E2 | | X | | |
| Open circuit in power source line of ANT/AMP circuit | E3 | | X | | |
| Open circuit in ground line of ANT/AMP circuit | E4 | | X | | |
| Malfunction of key ID chip | E5 | | X | | |
| IMMU | A | | X | | |
| Antenna amp. | E6 | | X | | |

EL

## Trouble Diagnoses (Cont'd)

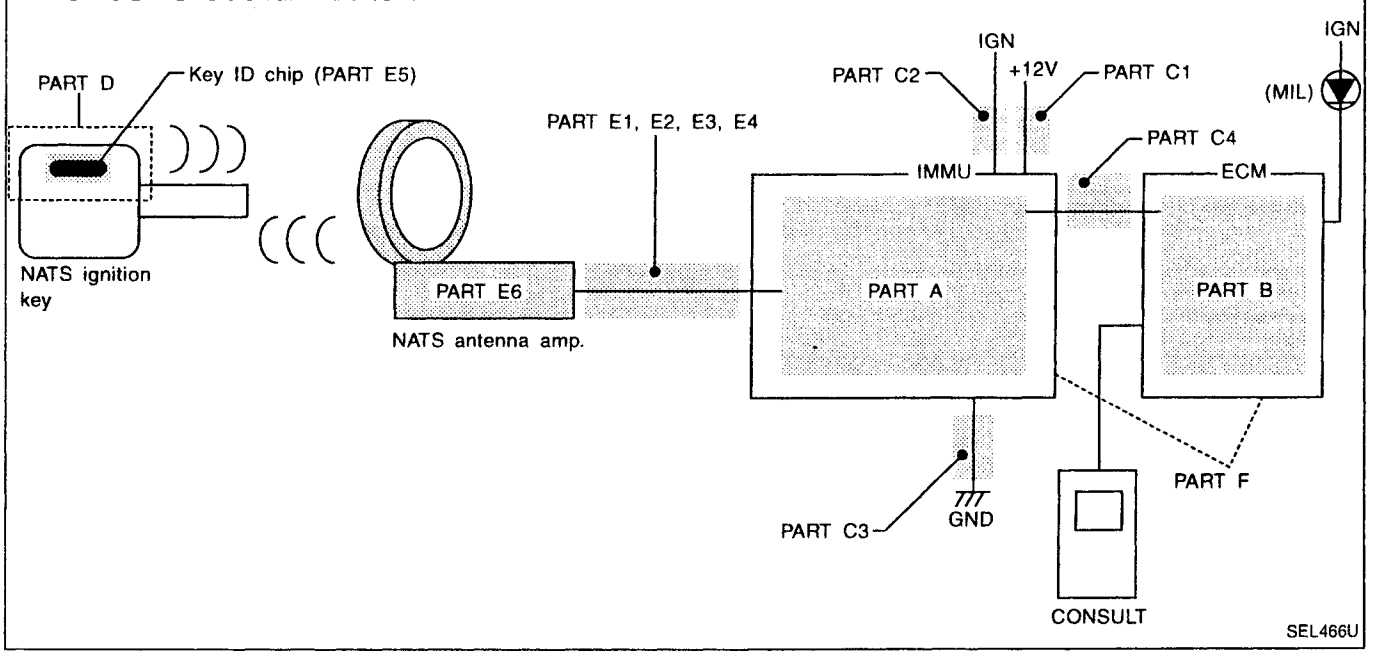
| SYSTEM (Malfunctioning part or mode) | REFERENCE PART NO. OF ILLUSTRATION ON NEXT PAGE | SYMPTOM | | Displayed "SELF-DIAG RESULTS" on CONSULT screen. | DIAGNOSTIC PROCEDURE (Reference page) |
|---|---|---|---|---|---|
| | | • Blinking of MIL*.<br>• Engine will start. | • Blinking of MIL*.<br>• Hard to start engine. | | |
| System initialisation has not yet been completed. | F | | X | ID DISCORD, IMM-ECM | PROCEDURE 6 (EL-263) |
| ECM | F | | X | | |
| Noise interference in communication line | | | X | MINGLE NOISE | PROCEDURE 7 (EL-264) |
| Engine trouble data and NATS trouble data have been detected in ECM | | X | X | DON'T ERASE BEFORE CHECKING ENG DIAG | WORK FLOW (EL-251) |

### SYMPTOM MATRIX CHART 2
### (Non self-diagnosis related item)

X: Possibility item

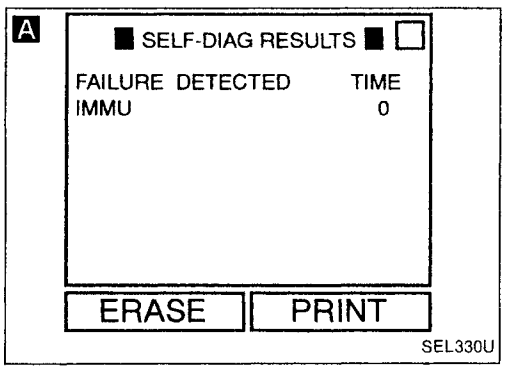
| SYSTEM (Malfunctioning part or mode) | SYMPTOM | DIAGNOSTIC PROCEDURE (Reference page) |
|---|---|---|
| | NATS security ind. does not light up. | |
| NATS security ind. | X | PROCEDURE 8 (EL-264) |
| Open circuit between Fuse and NATS IMMU | | |
| Continuation of initialisation mode | | |
| NATS IMMU | | |

### DIAGNOSTIC SYSTEM DIAGRAM



## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 1




**Self-diagnostic results:**
**"IMMU" displayed on CONSULT screen**

A

Confirm SELF-DIAGNOSTIC RESULTS "IMMU" displayed on CONSULT screen.
Ref. part No.* A.

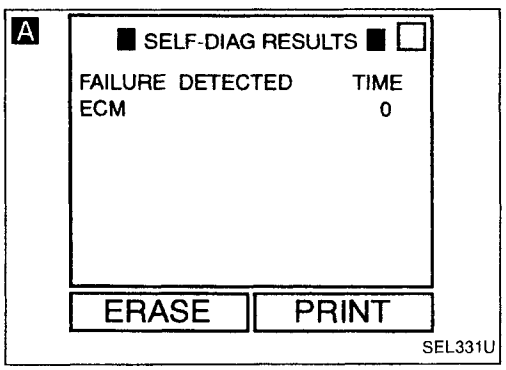
Yes

Replace IMMU.

Perform initialisation with CONSULT.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

* Ref. part No.: reference part No. of Diagnostic System Diagram on EL-255

### DIAGNOSTIC PROCEDURE 2




**Self-diagnostic results:**
**"ECM" displayed on CONSULT screen**

A

Confirm SELF-DIAGNOSTIC RESULTS "ECM" displayed on CONSULT screen.
Ref. part No. B.

Replace ECM.

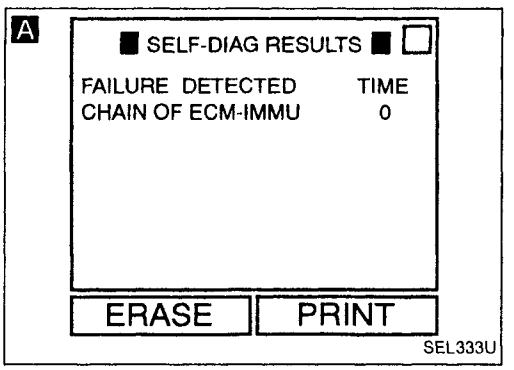
Perform initialisation with CONSULT.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

EL

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 3

**Self-diagnostic results:**
**"CHAIN OF ECM-IMMU" displayed on CONSULT screen**




A

Confirm SELF-DIAGNOSTIC RESULTS "CHAIN OF ECM-IMMU" displayed on CONSULT screen.

OK ↓

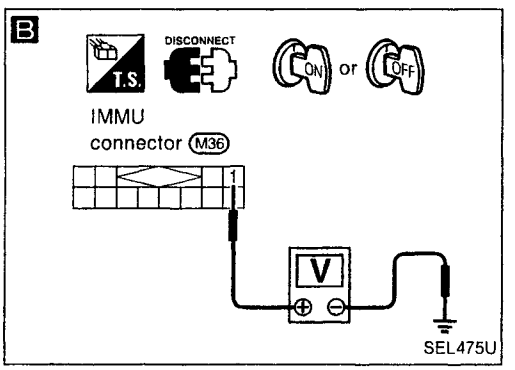
B

Check voltage between terminal ① of IMMU and ground with CONSULT or tester.
**Voltage: Battery voltage**

NG → Check the following:
- 7.5A fuse
- Harness continuity between fuse and IMMU connector (M36)

If NG, repair harness or connector.
**Ref. part No. C1**

OK ↓



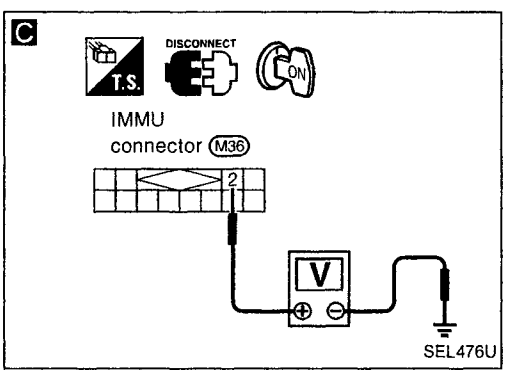

C

Check voltage between terminal ② of IMMU and ground with CONSULT or tester.
**Voltage: Battery voltage**

NG → Check the following:
- 7.5A fuse
- Harness continuity between fuse and IMMU connector (M36), or between ignition switch and fuse.

If NG, repair harness or connectors.
**Ref. part No. C2**

OK ↓

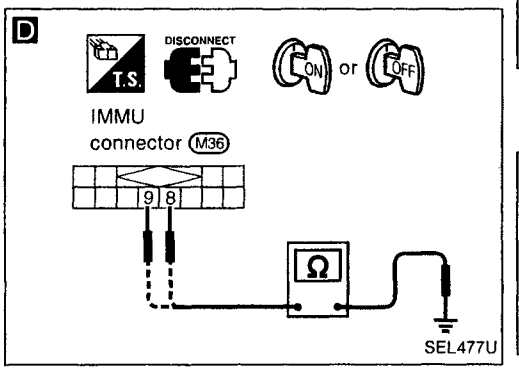



D

Check harness continuity between IMMU terminal ⑧ or ⑨ and ground.
**Continuity should exist.**

NG → Repair harness or check the body ground screws (M28), (M60) and (M68).
**Ref. part No. C3**

OK ↓




E

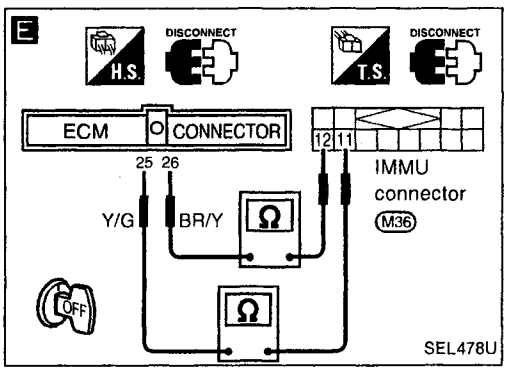
Check harness continuity between the following ECM terminals and IMMU terminals.
ECM ㉕ and IMMU ⑪
ECM ㉖ and IMMU ⑫
**Continuity should exist.**

NG → Check the following.
- Harness connectors (M49), (F6)
- Harness continuity between ECM and IMMU.

If NG, repair harness or connectors.
**Ref. part No. C4**

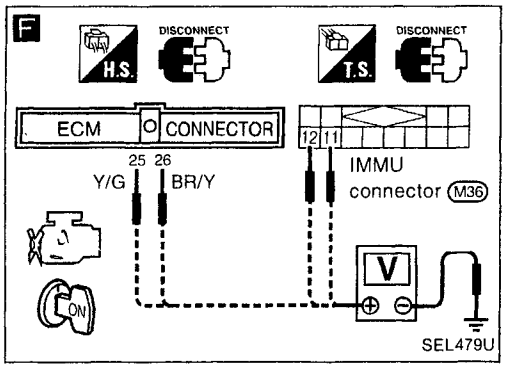
OK ↓

Ⓐ

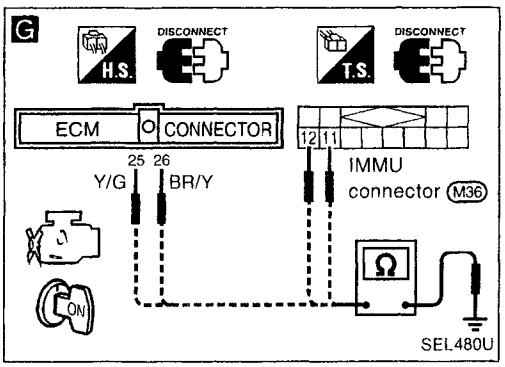


## Trouble Diagnoses (Cont'd)

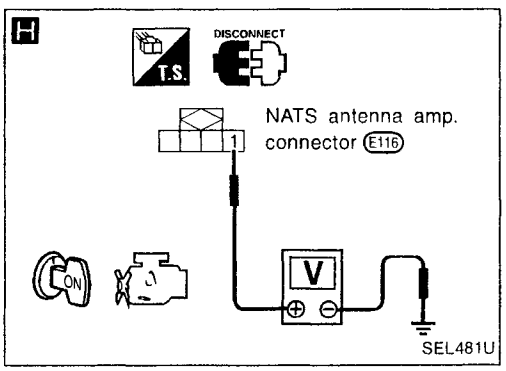
F



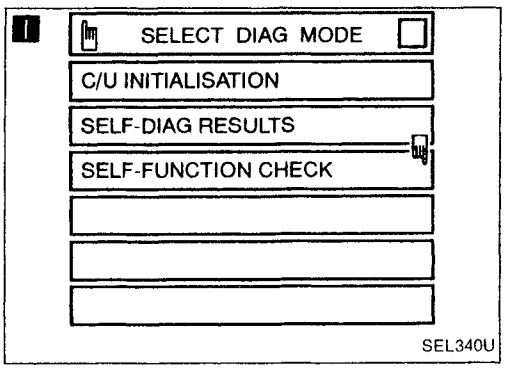

G



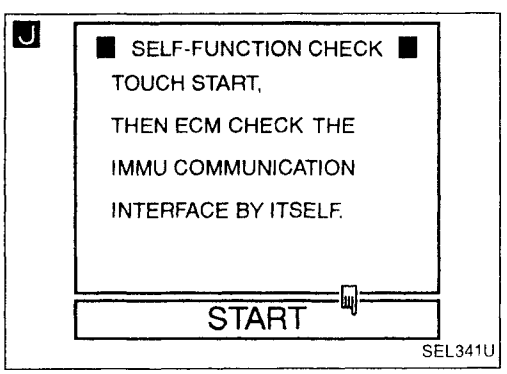

H




I




J




Ⓐ

**F**

CHECK COMMUNICATION LINE CIRCUIT.
1) Disconnect ECM connector and IMMU connector.
2) Check voltage between the following terminals and ground.
ECM ㉕, ECM ㉖, IMMU ⑪ and IMMU ⑫
**Voltage: 0V**

NG → Communication line is short-circuited with battery voltage line or ignition switch ON line. Repair harness or connectors.
**Ref. part No. C4**

OK ↓

**G**

Check continuity between the following terminals and ground.
ECM ㉕, ECM ㉖, IMMU ⑪ and IMMU ⑫
**Continuity should not exist.**

NG → Communication line is short-circuited with ground line. Repair harness or connectors.
**Ref. part No. C4**

OK ↓

**H**

CHECK NATS ANTENNA AMP. CIRCUIT.
1) Disconnect NATS antenna amp. connector.
2) Turn ignition switch "ON".
3) Check voltage between antenna amp. terminal ① and ground.
**Voltage: More than 4.7V**

NG → NATS antenna amp. +5V line is short-circuited with battery voltage line or ground line. Repair harness or connectors.
**Ref. part No. E3**

OK ↓

**I**

SELF-FUNCTION CHECK
1) Connect ECM connector and disconnect IMMU connector.
2) Turn ignition switch "ON".
3) Touch "SELF-FUNCTION CHECK" on CONSULT "SELECT DIAG MODE" screen.

**J**

Touch "START". ECM will then check its communication interface by itself.

NG → **K** (See next page.)
ECM is malfunctioning. Replace ECM.
**Ref. part No. B**

Perform initialisation with CONSULT.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

OK ↓

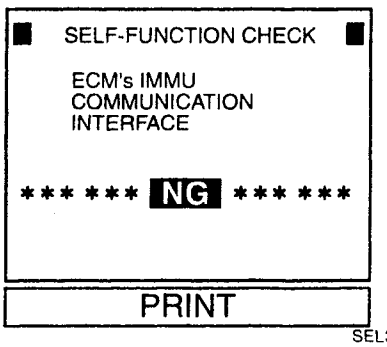
**L** (See next page.)

Ⓑ

EL

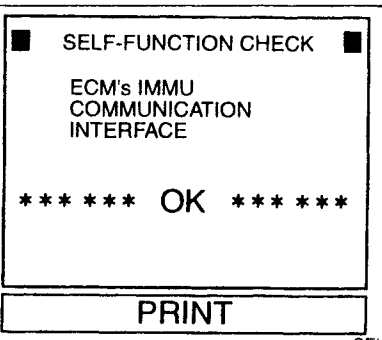
## Trouble Diagnoses (Cont'd)

K



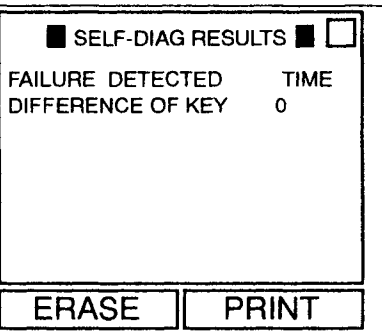

SEL342U

L



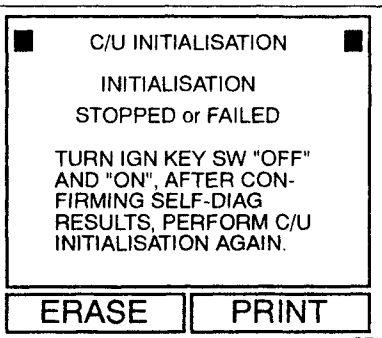

SEL343U

A




SEL344U

B




SEL372U

Ⓑ

IMMU is malfunctioning.
Replace IMMU.
**Ref. part No. A**

Perform initialisation with CONSULT.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

### DIAGNOSTIC PROCEDURE 4

**Self-diagnostic results:**
**"DIFFERENCE OF KEY" displayed on CONSULT screen**

A

Confirm SELF-DIAGNOSTIC RESULTS "DIFFERENCE OF KEY" displayed on CONSULT screen.

OK

Perform initialisation with CONSULT.
Re-register all NATS ignition key IDs.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

Initialisation incompleted or failed with CONSULT → B

IMMU is malfunctioning.
Replace IMMU.
**Ref. part No. A**

Initialisation completed

Start engine.

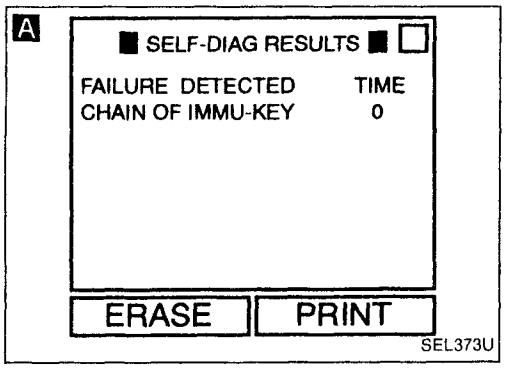
END
(Ignition key ID was unregistered.)
**Ref. part No. D**

Perform initialisation with CONSULT.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 5

**Self-diagnostic results:**
**"CHAIN OF IMMU-KEY" displayed on CONSULT screen**

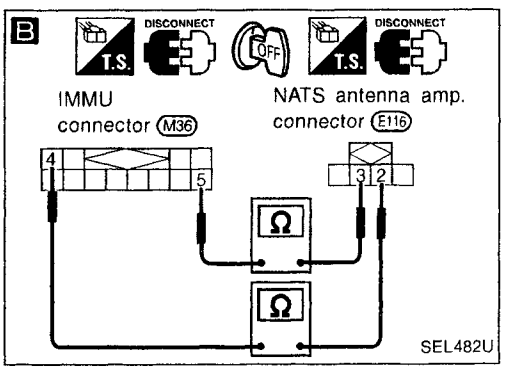



A

Confirm SELF-DIAGNOSTIC RESULTS "CHAIN OF IMMU-KEY" displayed on CONSULT screen.

OK ↓

B




CHECK ANTENNA AMP. CIRCUIT.
1) Disconnect IMMU connector and NATS antenna amp. connector.
2) Check continuity between the following IMMU terminals and NATS antenna amp. terminals.

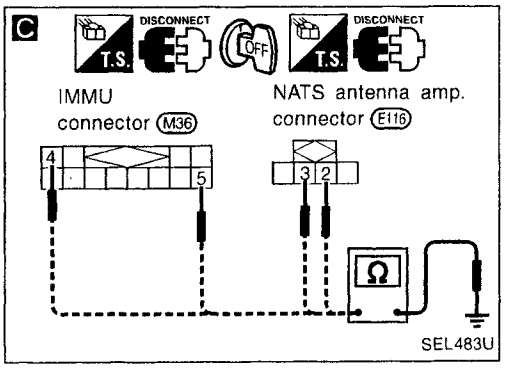
| IMMU terminal | NATS antenna amp. terminal | Ref. part No. |
|---|---|---|
| ⑤ | ③ | E1 |
| ④ | ② | E2 |

**Continuity should exist.**

NG → Check harness and connectors.
If NG, repair harness or connectors.

OK ↓

C




Check continuity between the following terminals and ground.

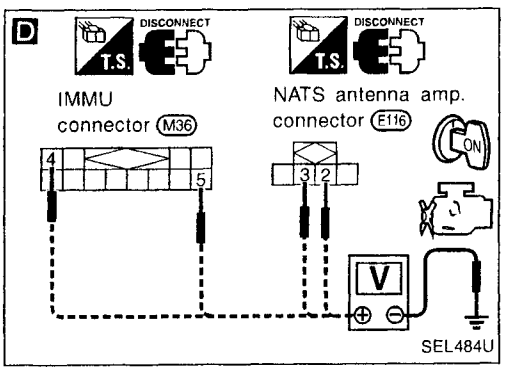
| IMMU terminal | NATS antenna amp. terminal | Ref. part No. |
|---|---|---|
| ⑤ | ③ | E1 |
| ④ | ② | E2 |

**Continuity should not exist.**

NG → Communication line is short-circuited with ground line.
Repair harness or connectors.

OK ↓

D




Check voltage between the following terminals and ground.

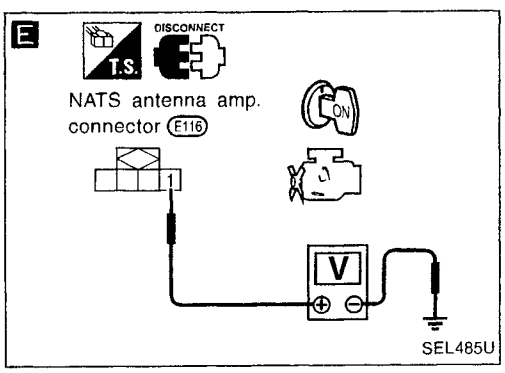
| IMMU terminal | NATS antenna amp. terminal | Ref. part No. |
|---|---|---|
| ⑤ | ③ | E1 |
| ④ | ② | E2 |

**Voltage: 0V**

NG → Communication line is short-circuited with battery voltage line or ignition switch "ON" line.
Repair harness or connectors.

OK ↓

E




CHECK ANTENNA AMP. POWER SOURCE CIRCUIT.
1) Connect IMMU connector.
2) Check voltage between NATS antenna amp. terminal ① and ground.

**Voltage: More than 4.7V**

NG → Power source line is open circuit.
Repair harness or connector.
**Ref. part No. E3**

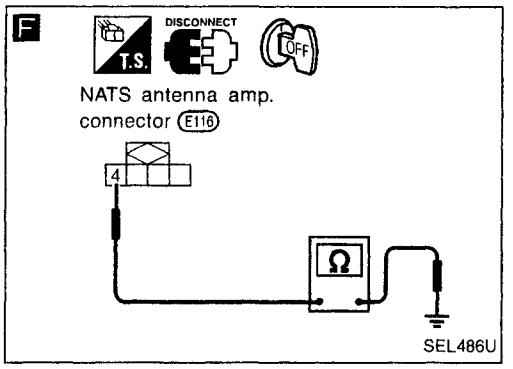
OK ↓

Ⓐ

EL

## Trouble Diagnoses (Cont'd)

F




Ⓐ

F

CHECK ANTENNA AMP. GROUND LINE CIRCUIT.
1) Turn ignition switch "OFF".
2) Check continuity between NATS antenna amp. terminal ④ and ground.
**Continuity should exist.**

NG → NATS antenna amp. ground line is open circuit.
Check harness continuity between IMMU terminal ⑦ and NATS antenna amp. terminal ④.
If NG, repair harness or connectors.
**Ref. part No. E4**

OK ↓

CHECK NATS IGNITION KEY ID CHIP.
1) Connect NATS antenna amp. connector.
2) Pull the ignition key out.
3) Start engine with another registered NATS ignition key.

Start OK → Ignition key ID chip was malfunctioning.
Replace the ignition key.
**Ref. part No. E5**

Start NG ↓

G

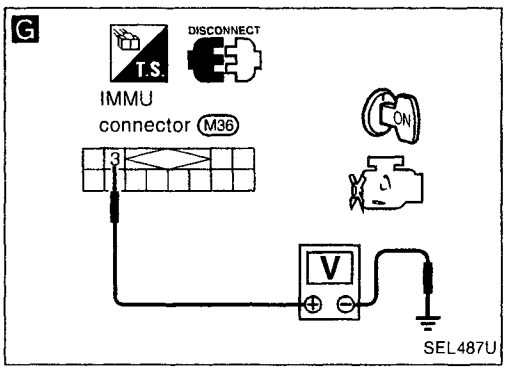
CHECK IMMU OUTPUT VOLTAGE.
1) Turn the ignition switch "ON".
2) Check voltage between IMMU terminal ③ and ground.
**Voltage: More than 4.7V**

NG → Perform initialisation with CONSULT.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

OK ↓

Replace IMMU.
**Ref. part No. A**

G



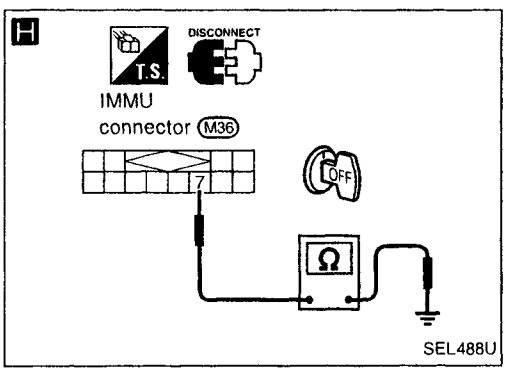

H

CHECK IMMU GROUND CIRCUIT.
1) Turn the ignition switch "OFF".
2) Disconnect IMMU connector.
3) Check continuity between IMMU terminal ⑦ and ground.
**Continuity should exist.**

NG → Replace IMMU.
**Ref. part No. A**

OK ↓

H




I

CHECK IMMU FUNCTION 1.
1) Connect IMMU connector and NATS antenna amp. connector.
2) Check voltage between IMMU terminal ④ and ground.

**Voltage**

| Time (After turning ignition switch "ON".) | Voltage [V] |
|---|---|
| For approx. 0.5 sec. | Approx. 2.3 - 5 |
| After 1 sec. | 0 |

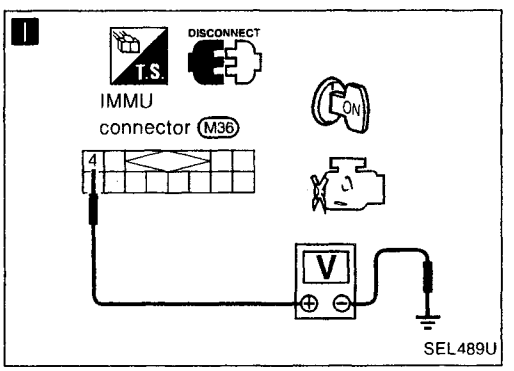
NG → Perform initialisation with CONSULT.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

NG → Replace IMMU.
**Ref. part No. A**

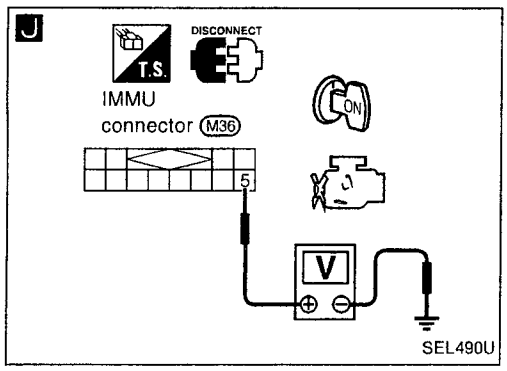
OK ↓

Ⓑ

I



## Trouble Diagnoses (Cont'd)




Ⓑ

J

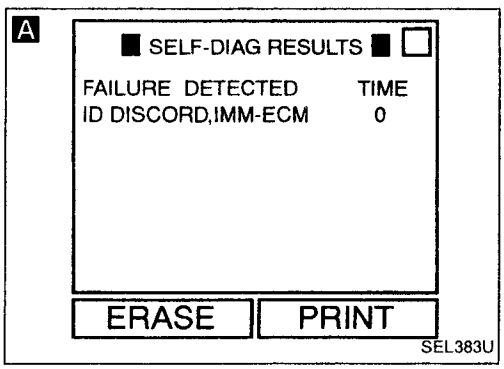
CHECK IMMU FUNCTION 2.
1) Disconnect NATS antenna amp. connector.
2) Turn ignition switch "ON".
3) Check voltage between IMMU terminal ⑤ and ground.
**Voltage:**
**6 sec. after turning ignition switch "ON"**
**Approx. 4.5 - 5V**

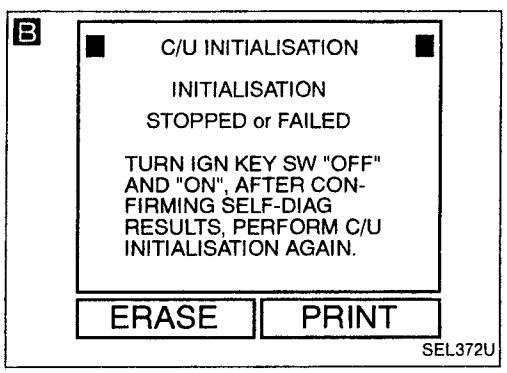
NG → Replace IMMU.
**Ref. part No. A**

Perform initialisation with CONSULT.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

OK ↓

NATS antenna amp. is malfunctioning.
When replacing the amp. hold on to amp. body. Take care not to pull on amp. harness.
**Ref. part No. E6**




### DIAGNOSTIC PROCEDURE 6

**Self-diagnostic results:**
**"ID DISCORD, IMM-ECM" displayed on CONSULT screen**

A

Confirm SELF-DIAGNOSTIC RESULTS "ID DISCORD, IMM-ECM*" displayed on CONSULT screen.

* "ID DISCORD, IMM-ECM": Registered ID of IMMU is in discord with that of ECM.

Perform initialisation with CONSULT.
Re-register all NATS ignition key IDs.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

Initialisation incompleted or failed with CONSULT → B

ECM is malfunctioning.
Replace ECM.
**Ref. part No. F**

Perform initialisation with CONSULT.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

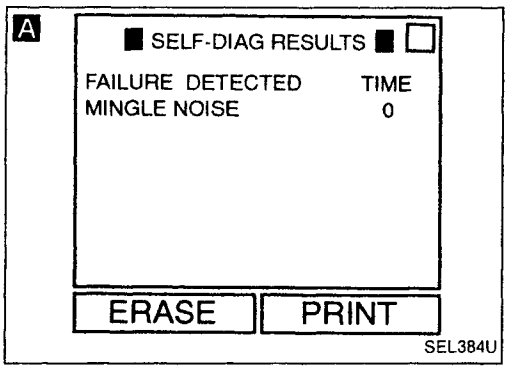
Initialisation completed ↓

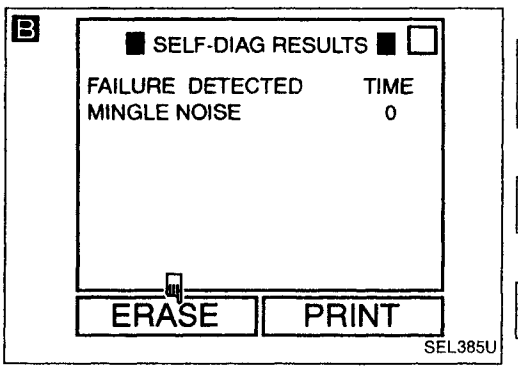
Start engine. ↓

END
**Ref. part No. F**

EL

## Trouble Diagnoses (Cont'd)




### DIAGNOSTIC PROCEDURE 7

**Self-diagnostic results:**
**"MINGLE NOISE" displayed on CONSULT screen**

A

Confirm SELF-DIAGNOSTIC RESULTS "MINGLE NOISE" displayed on CONSULT screen.

↓

Turn off or remove any possible noise sources.

↓

B

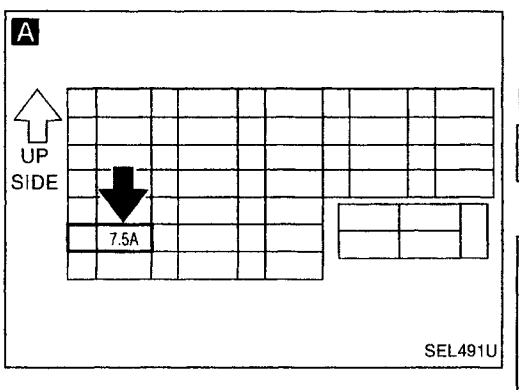
Touch "ERASE" on CONSULT SELF-DIAGNOSTIC RESULTS screen.

↓

Start engine. — NG → (back to A)

↓ OK

END




### DIAGNOSTIC PROCEDURE 8

**"NATS SECURITY IND. DOES NOT LIGHT UP"**

A

Check fuse (7.5A) in the fuse box. — NG → Replace fuse.

↓ OK

NATS INITIALISATION
1) Fix the 7.5A fuse shown left A .
2) Perform initialisation with CONSULT.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

↓

Turn ignition switch "OFF".

↓

Start engine and turn ignition switch "OFF".

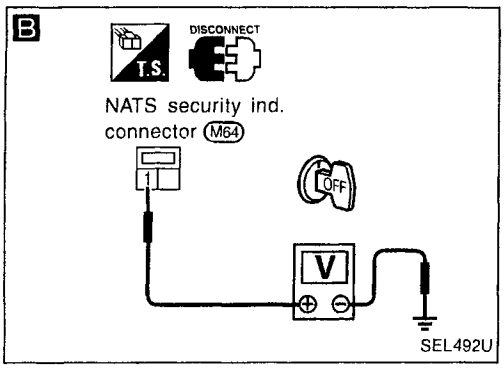
↓

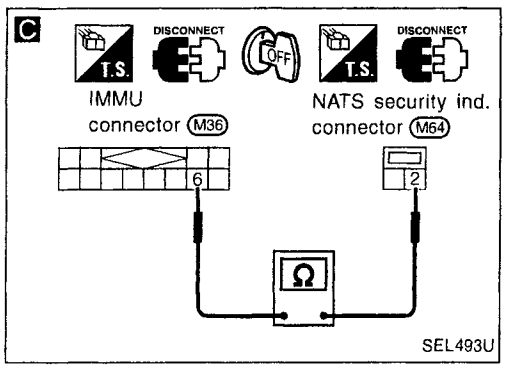
Check NATS security ind. blinking. — OK → END

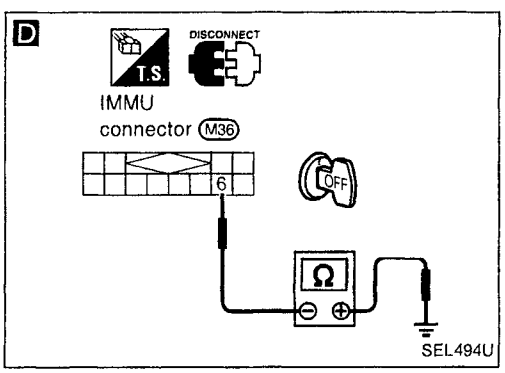
↓ NG

Ⓐ

## Trouble Diagnoses (Cont'd)




Ⓐ

**B**

Check voltage between NATS security ind. connector terminal ① (Located under the instrument panel) and ground.
**Voltage : Battery voltage**

NG → Check harness continuity between fuse and NATS security ind. connector M64.
If NG, repair harness or connector.

OK ↓

**C**

CHECK NATS SECURITY IND. CIRCUIT.
1) Disconnect NATS IMMU connector.
2) Check harness continuity between NATS security ind. connector terminal ② and NATS IMMU connector terminal ⑥.
**Continuity should exist.**

NG → Repair harness.

OK ↓

**D**

CHECK NATS IMMU FUNCTION
1) Connect NATS IMMU connector.
2) Disconnect NATS security ind. connector.
3) Check continuity between NATS IMMU terminal ⑥ and ground.
**Continuity should exist intermittently.**

NG → NATS IMMU is malfunctioning. Replace IMMU.

Perform initialisation with CONSULT.
For the operation of initialisation, refer to "CONSULT operation manual NATS V2.0".

OK ↓

NATS security ind. is malfunctioning.
Pull out NATS security ind. with harness and connector.
Check harness connection

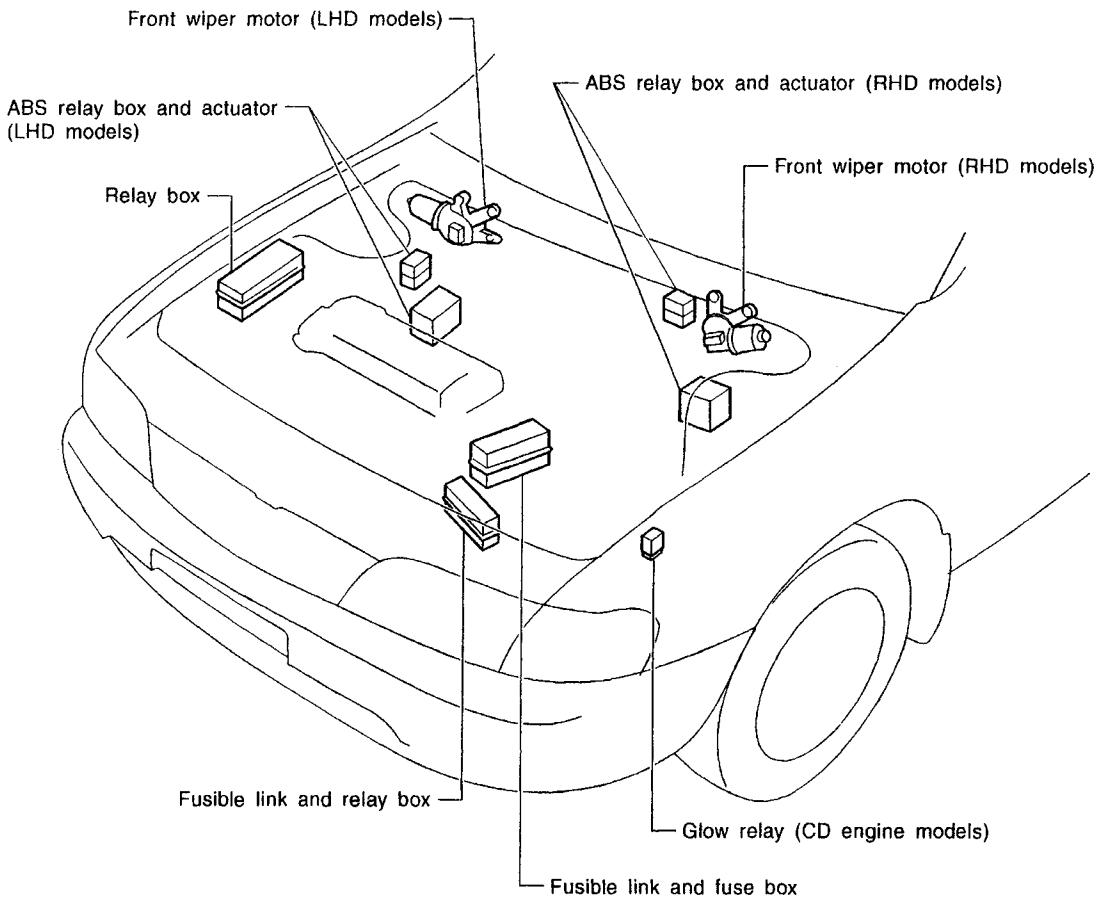
NG → Repair harness.

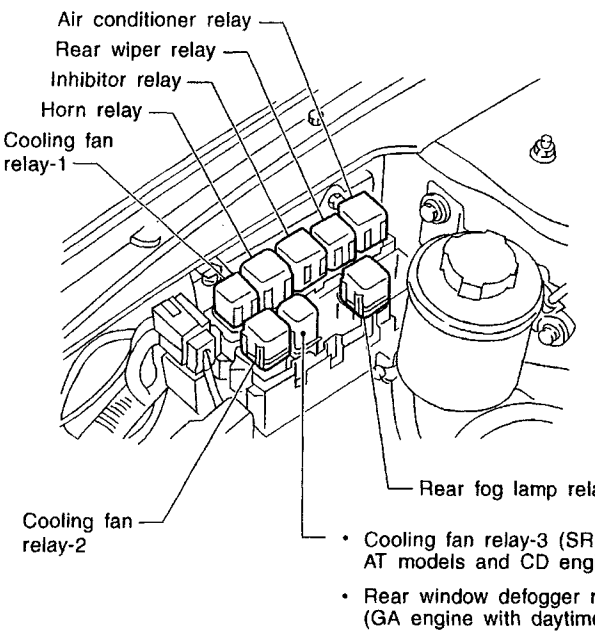
OK ↓

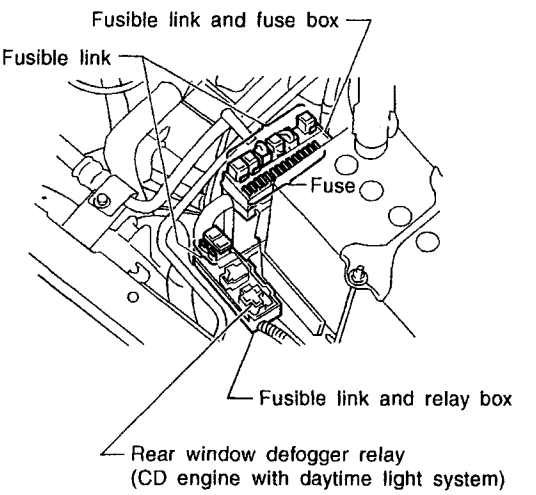
NATS security ind. cell is malfunctioning.
Replace NATS security ind.

EL

## Engine Compartment



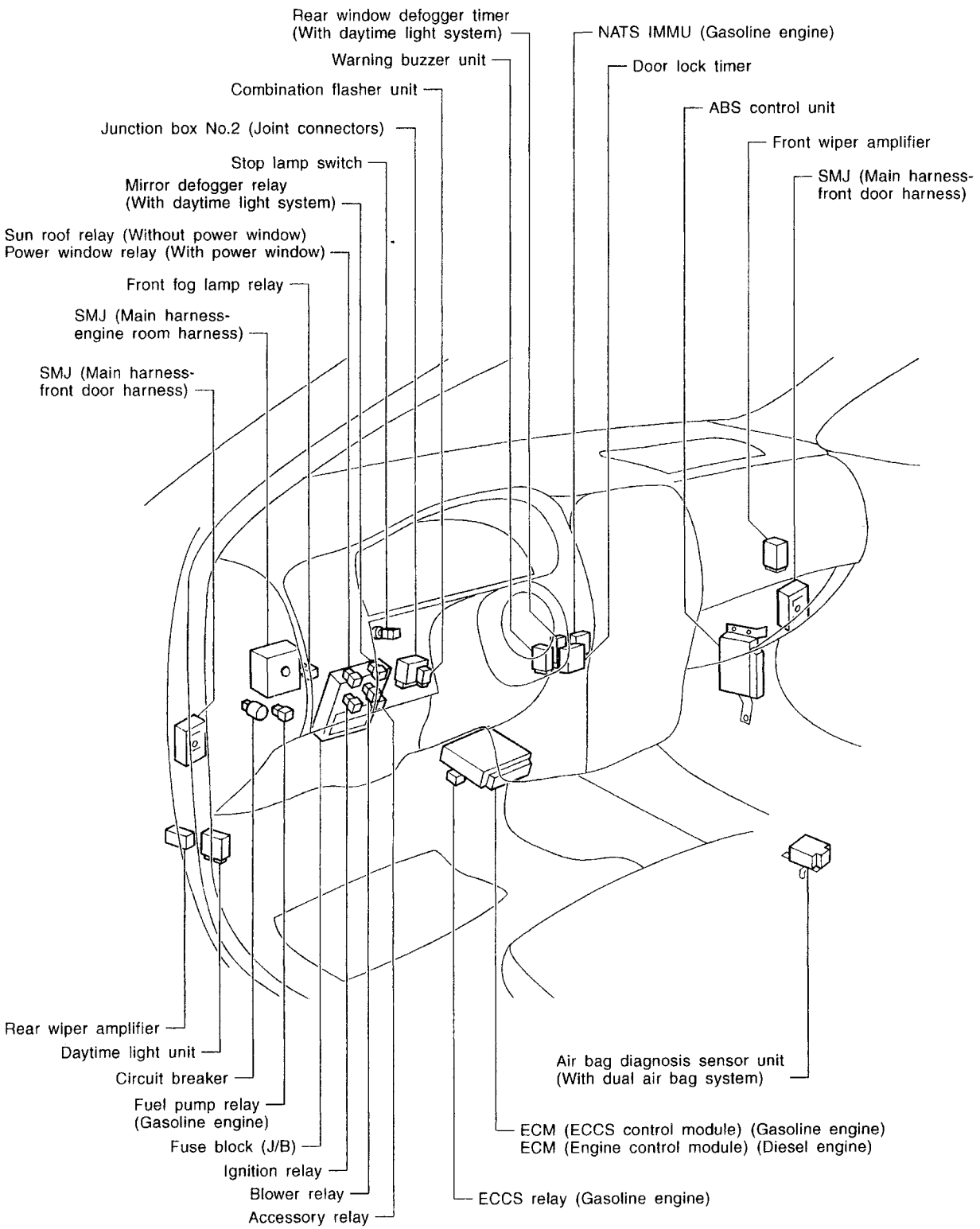




HEL149

## Passenger Compartment

### LHD MODELS

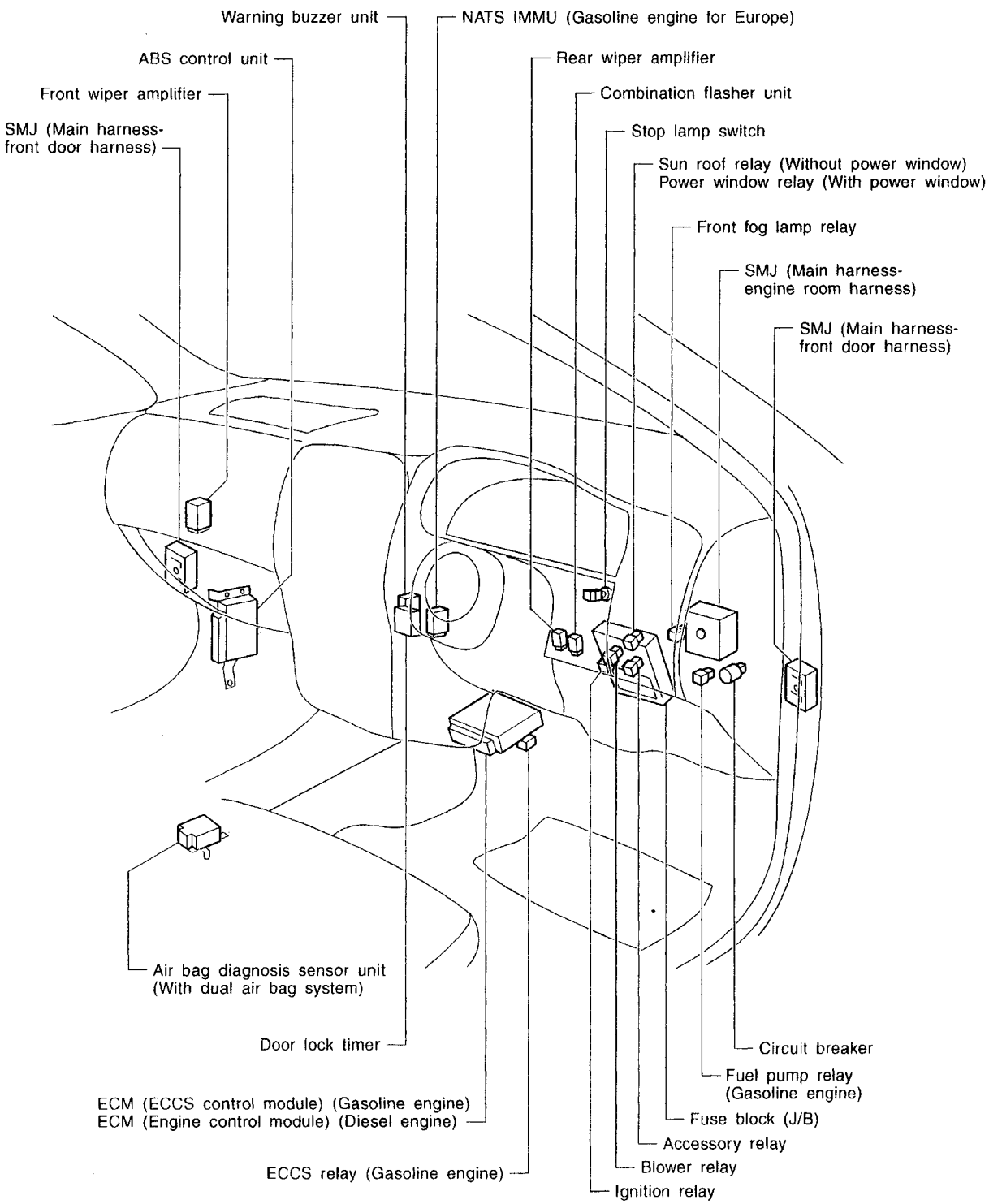



EL

HEL150

## Passenger Compartment (Cont'd)

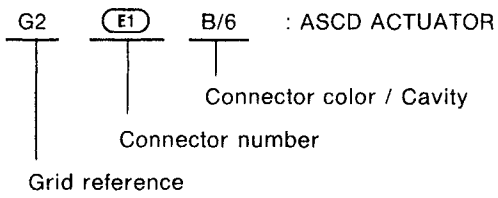
### RHD MODELS




HEL151

## How to Read Harness Layout

Example:




The following Harness Layouts use a map style grid to help locate connectors on the drawings:
- Engine Room Harness (Engine Compartment)
- Main Harness
- Body Harness

**To use the grid reference**

1) Find the desired connector number on the connector list.
2) Find the grid reference.
3) On the drawing, find the crossing of the grid reference letter column and number row.
4) Find the connector number in the crossing zone.
5) Follow the line (if used) to the connector.

**CONNECTOR SYMBOL**

Main symbols of connector (in Harness Layout) are indicated in the below.

| Connector type | Water proof type | | Standard type | |
|---|---|---|---|---|
| | Male | Female | Male | Female |
| • Cavity: Less than 4<br>• Relay connector |  |  |  |  |
| • Cavity: From 5 to 8 |  |  |  |  |
| • Cavity: More than 9 | — | — |  |  |
| • Ground terminal etc. | — | |  | |

**FFC (FLAT FLEXIBLE CIRCUIT)**

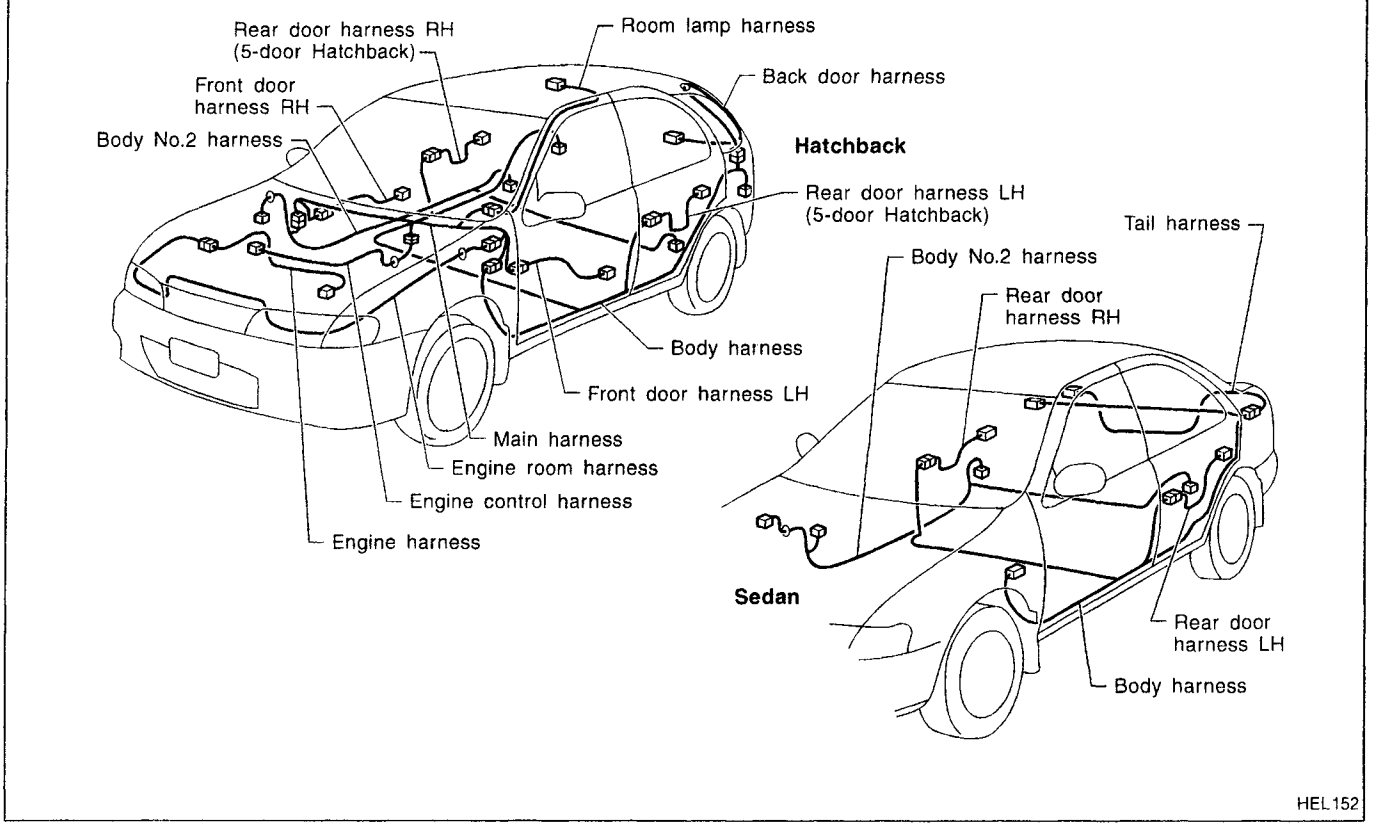
An FFC (Flat Flexible Circuit) has been adopted for door harness of 3-door Hatchback models for Europe.

**CAUTION:**
- **Do not attempt to repair, splice or modify the FFC. If the FFC is damaged, replace with a new one.**
- **Do not force the FFC in the opposite direction to which it is bent.**

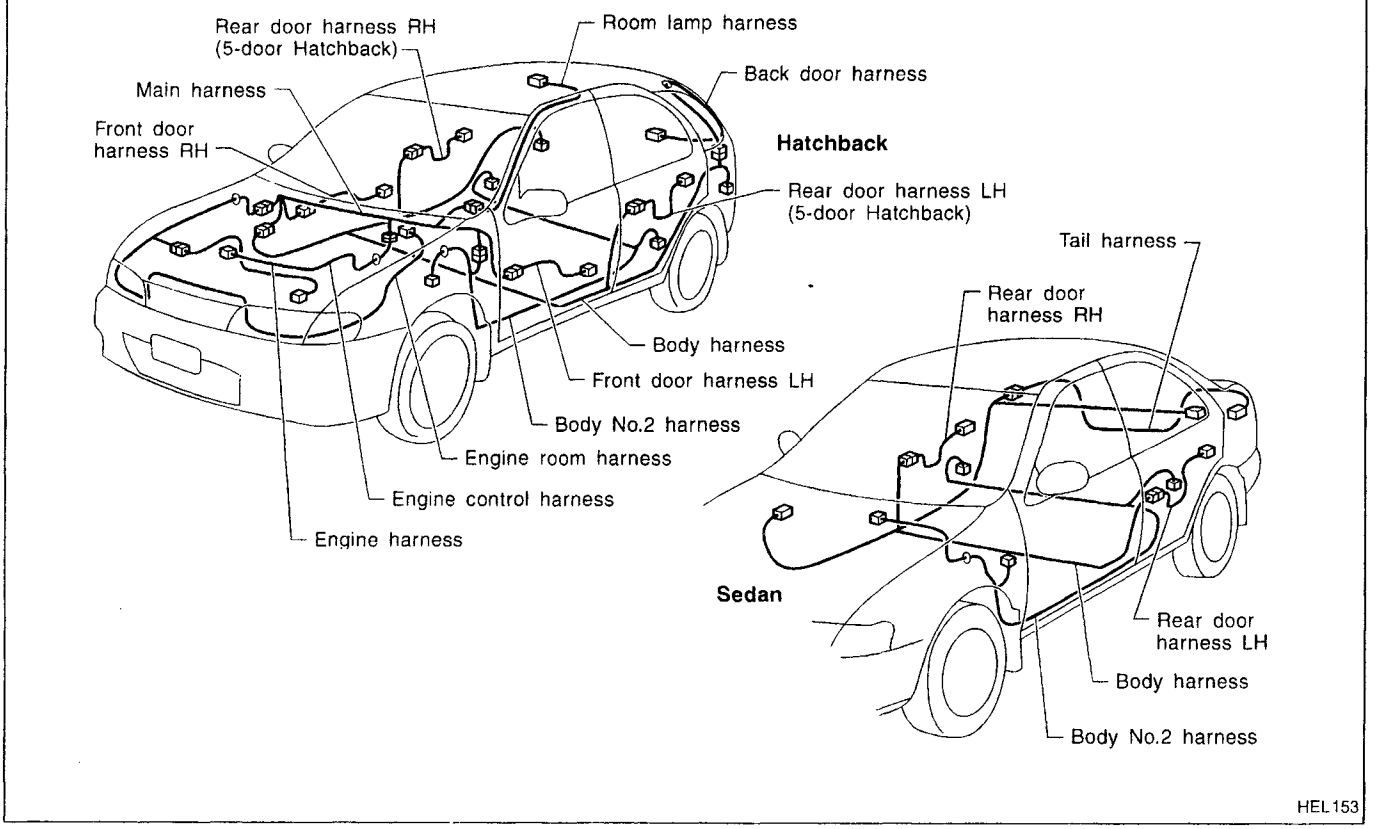
EL

## Outline

### LHD MODELS

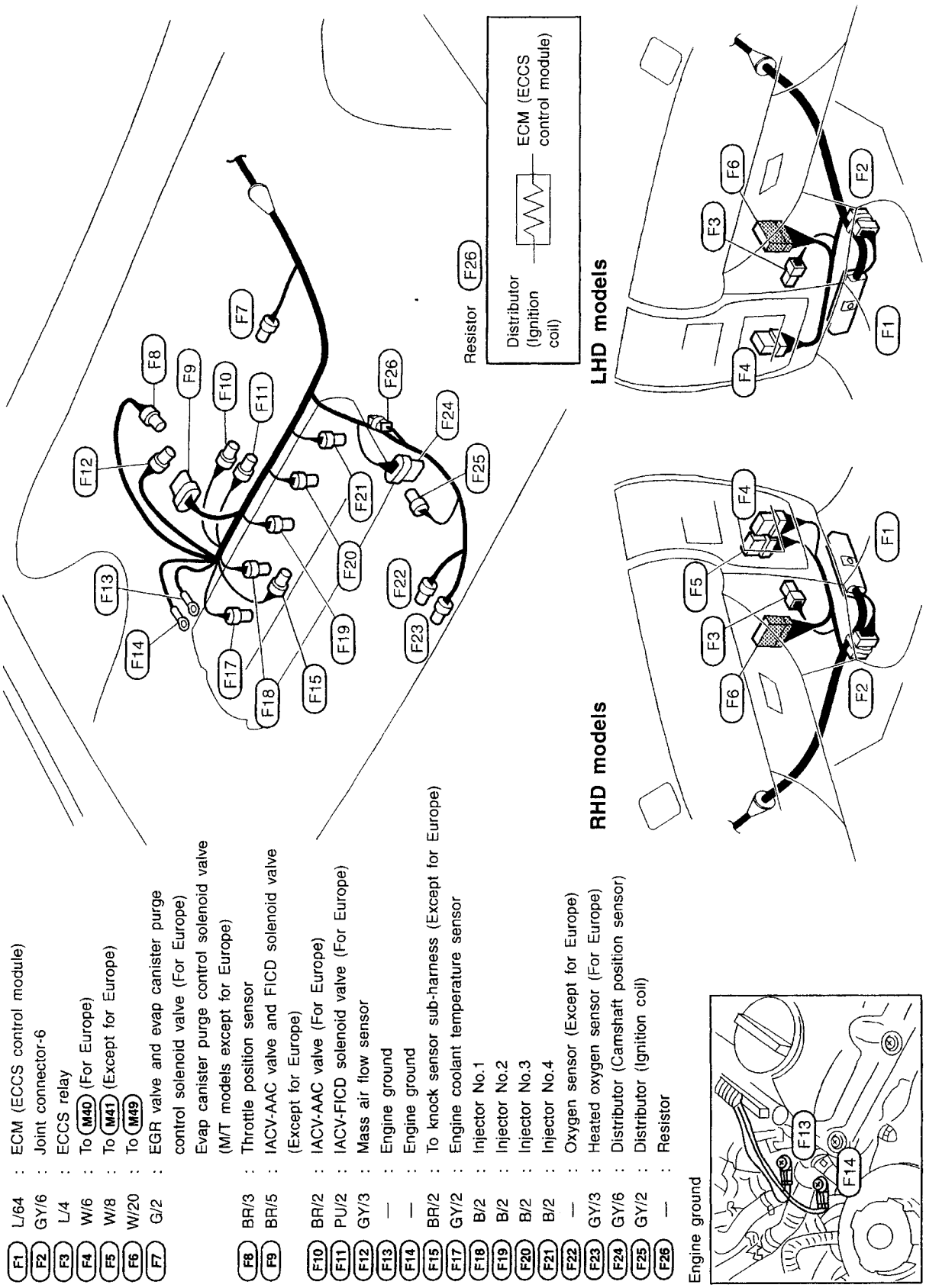



### RHD MODELS



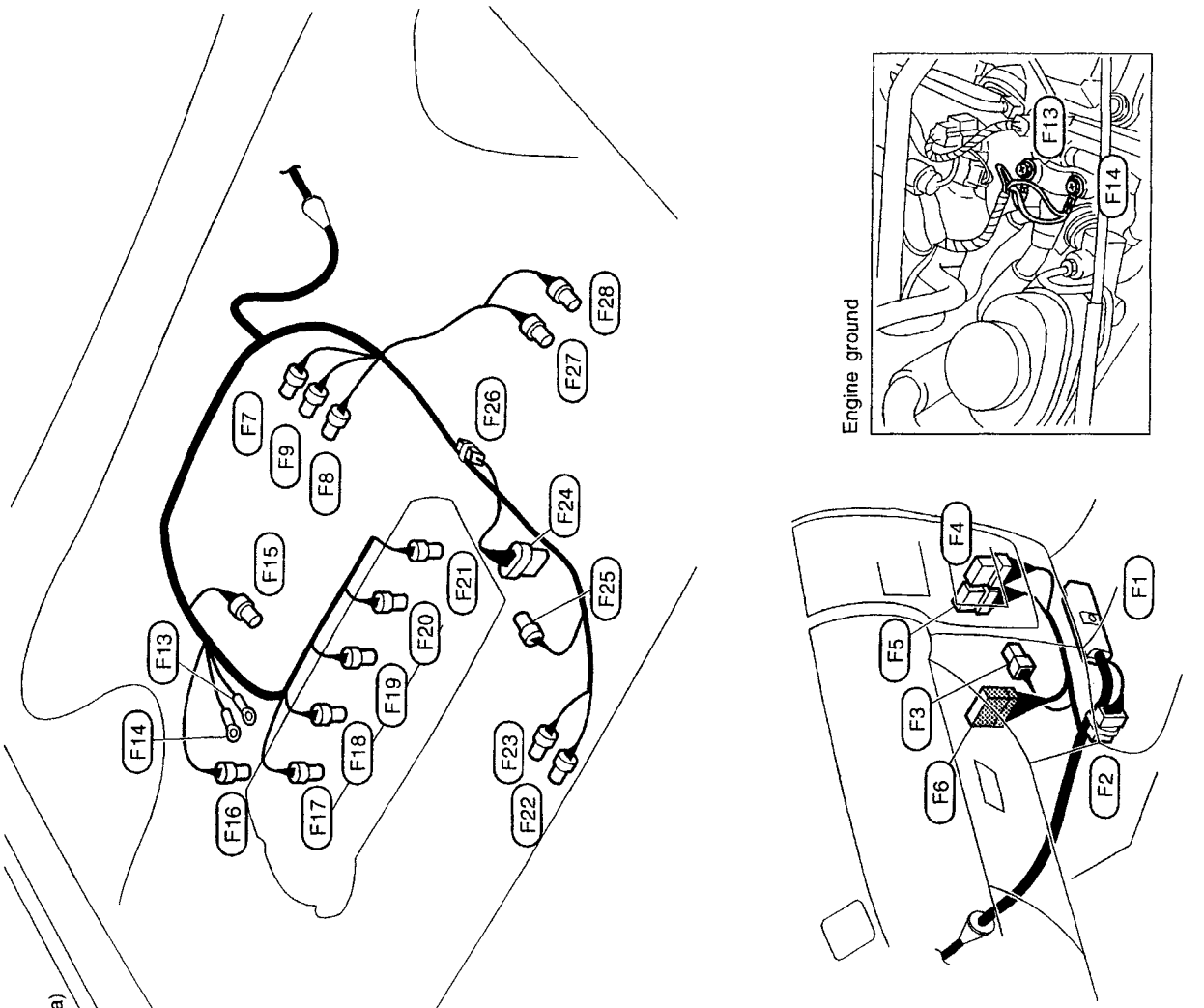
## Engine Control Harness

### GA14DE, 16DE ENGINE FOR EUROPE AND GA15DE ENGINE



## Engine Control Harness (Cont'd)

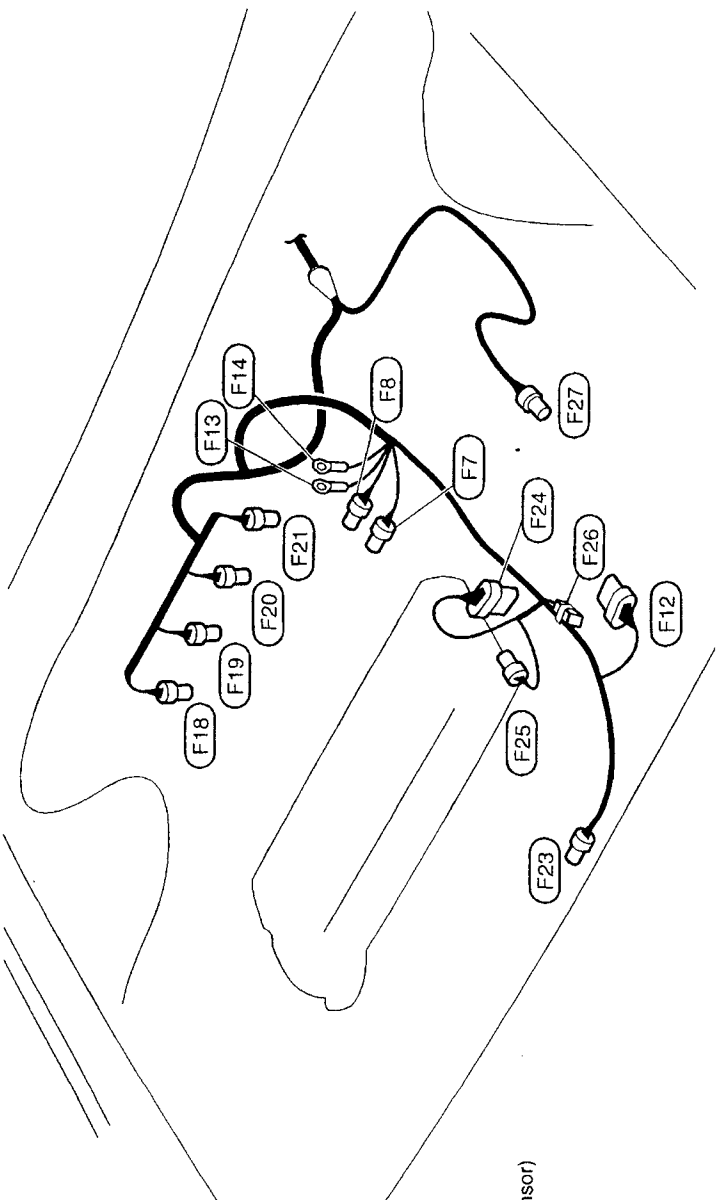
### GA16DE ENGINE EXCEPT FOR EUROPE



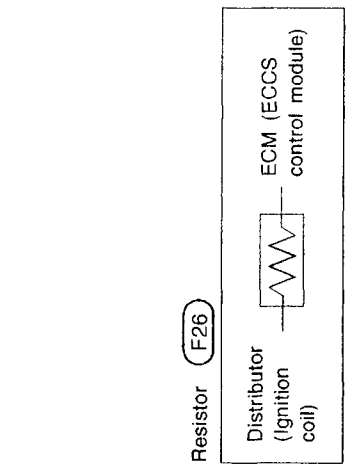

HEL165

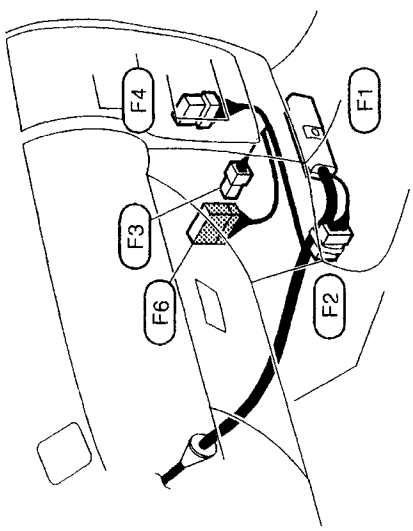
## Engine Control Harness (Cont'd)

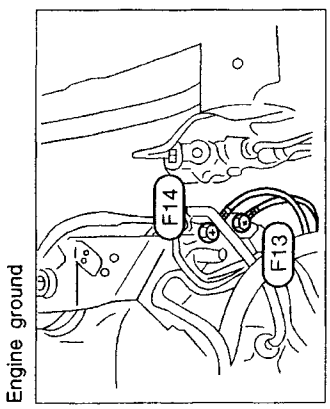
### SR20DE ENGINE




F1 L/64 : ECM (ECCS control module)
F2 GY/6 : Joint connector-6
F3 L/4 : ECCS relay
F4 W/6 : To (M40)
F6 W/20 : To (M49)
F7 B/2 : EGR valve and evap canister purge control solenoid valve
F8 BR/3 : Throttle position sensor
F12 GY/6 : To (E227)
F13 — : Engine ground
F14 — : Engine ground
F18 B/2 : Injector No.1
F19 B/2 : Injector No.2
F20 B/2 : Injector No.3
F21 B/2 : Injector No.4
F23 GY/3 : Heated oxygen sensor
F24 GY/6 : Distributor (Camshaft position sensor)
F25 GY/2 : Distributor (Ignition coil)
F26 — : Resistor
F27 BR/4 : Mass air flow sensor



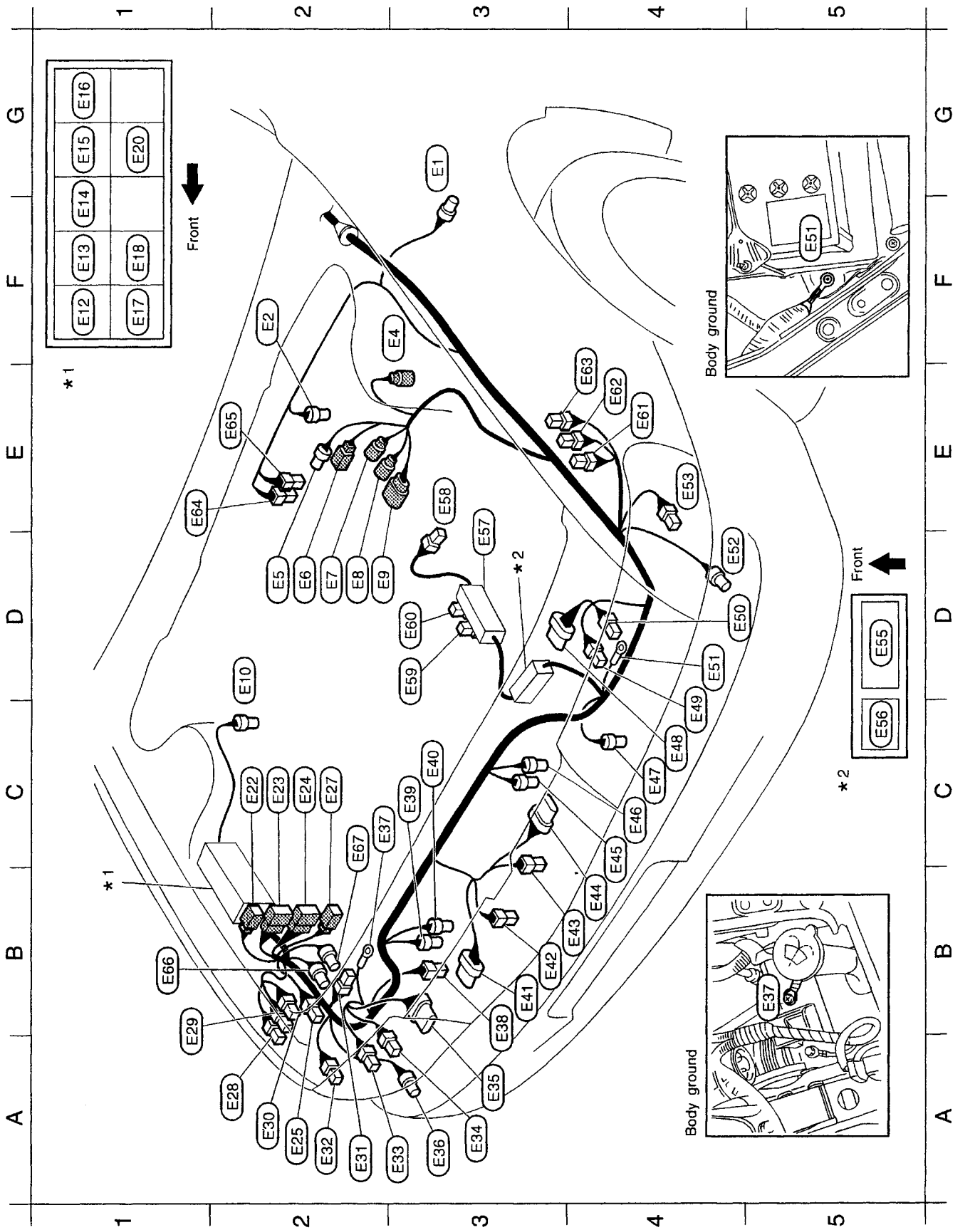




EL

HEL166

## Engine Room Harness

### ENGINE COMPARTMENT — LHD models



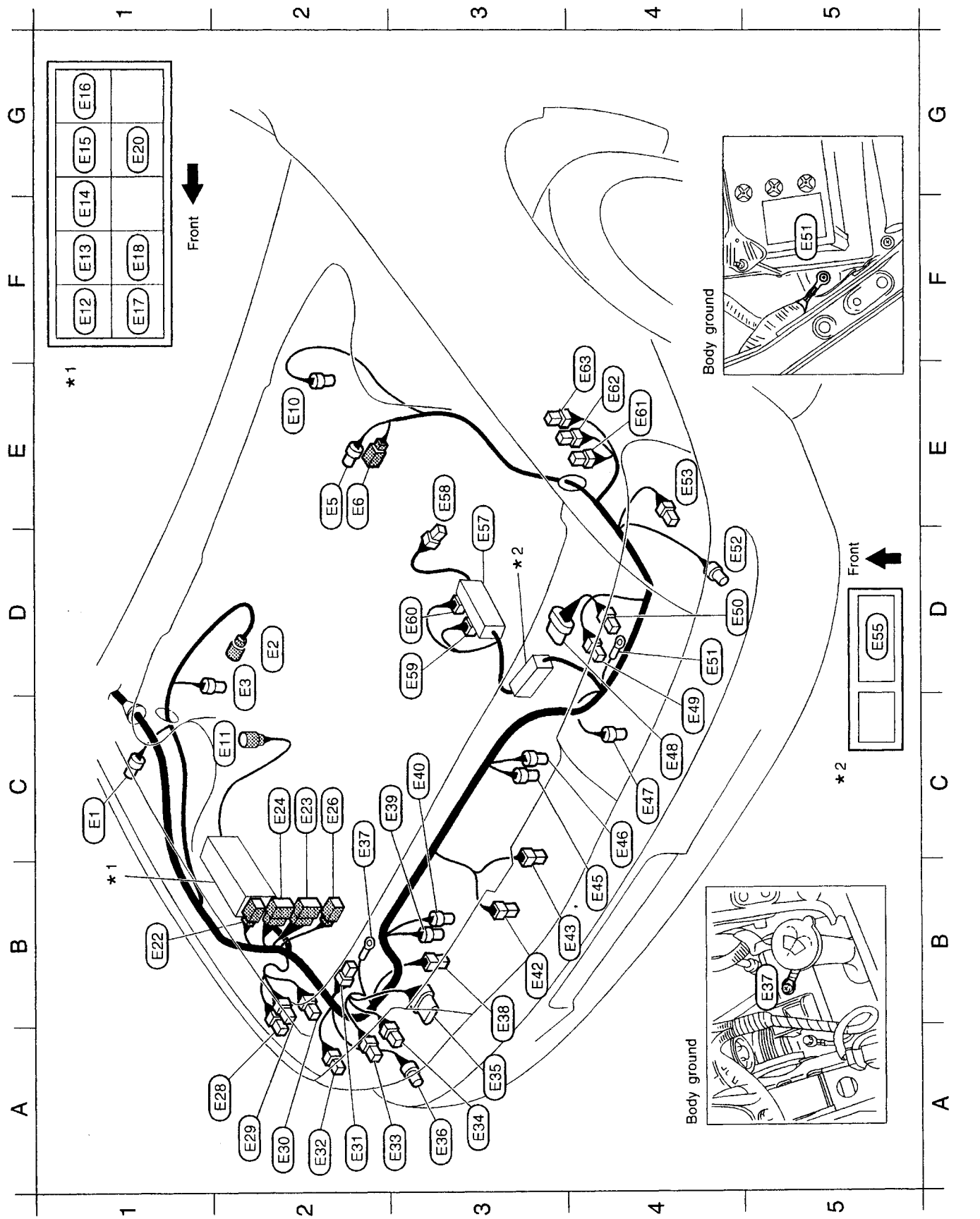

HEL154

G3 (E1) GY/2 : Side turn signal lamp LH
F2 (E2) GY/2 : Brake fluid level switch
F3 (E4) BR/2 : Front wheel speed sensor LH (For ABS)
D2 (E5) GY/2 : Fuel filter sensor (CD engine)
D2 (E6) B/1 : To (E228) (CD engine)
D2 (E7) GY/1 : To (E229) (CD engine)
D2 (E8) GY/4 : To (E231) (CD engine)
D2 (E9) B/8 : To (E230) (CD engine)
D2 (E10) GY/2 : ABS relay box
F1 (E12) L/4 : Cooling fan relay-1 (Gasoline engine)
BR/6 : Cooling fan relay-1 (CD engine)
F1 (E13) W/3 : Horn relay
F1 (E14) L/4 : Inhibitor relay
G1 (E15) B/5 : Rear wiper relay
G1 (E16) L/4 : A/C relay
F1 (E17) BR/6 : Cooling fan relay-2 (GA engine A/T models for Europe without daytime light system and CD engine)
F1 (E18) BR/6 : Cooling fan relay-3 (CD engine)
F1 (E18) L/4 : Rear window defogger relay (GA engine with daytime light system)
G1 (E20) L/4 : Rear fog lamp relay (Without daytime light system)
GY/6 : Rear fog lamp relay (With daytime light system)
C2 (E22) B/2 : To (E204)
C2 (E23) B/6 : To (E201) (Gasoline engine)
C2 (E24) B/8 : To (E202) (Gasoline engine)
A2 (E25) W/2 : Headlamp washer motor (With daytime light system)
C2 (E27) GY/4 : To (E201) (CD engine)
A2 (E28) W/2 : Front washer motor
B1 (E29) G/2 : Rear washer motor
A2 (E30) B/2 : Washer fluid level switch
A2 (E31) GY/2 : To front fog lamp sub-harness
A2 (E32) B/2 : Front turn signal lamp RH
A3 (E33) B/2 : Clearance lamp RH
A3 (E34) B/3 : Headlamp RH
A3 (E35) GY/6 : Headlamp aiming motor unit RH

A3 (E36) GY/2 : Front fog lamp RH (GA engine M/T models)
C2 (E37) — : Body ground
B3 (E38) GY/1 : Brake vacuum switch (CD engine)
C3 (E39) GY/2 : Cooling fan motor-2 (1-mode type)
C3 (E40) GY/4 : Cooling fan motor-2 (2-mode type with CD engine)
B3 (E41) GY/6 : Headlamp wiper motor RH (With daytime light system)
B3 (E42) B/1 : Horn high
B4 (E43) B/1 : Horn low
B4 (E44) GY/6 : Headlamp wiper motor LH (With daytime light system)
C4 (E45) GY/2 : Cooling fan motor-1 (1-mode type)
C4 (E46) GY/4 : Cooling fan motor-1 (2-mode type with CD engine)
C4 (E47) B/2 : Dual-pressure switch
C4 (E48) GY/6 : Headlamp aiming motor unit LH
D4 (E49) B/3 : Headlamp LH
D4 (E50) B/2 : Clearance lamp LH
D4 (E51) — : Body ground
D4 (E52) GY/2 : Front fog lamp LH (GA engine M/T models)
E4 (E53) B/2 : Front turn signal lamp LH
D5 (E55) — : Fusible link
C5 (E56) L/4 : Rear window defogger relay (CD engine with daytime light system)
E3 (E57) — : Fusible link and fuse box
E3 (E58) B/1 : Battery
D3 (E59) B/1 : Fusible link and fuse box
D3 (E60) W/1 : Fusible link and fuse box
E4 (E61) G/2 : Glow relay (CD engine)
E4 (E62) W/1 : Glow relay (CD engine)
E4 (E63) W/1 : Glow relay (CD engine)
E1 (E64) B/1 : IACV-FICD solenoid valve (CD engine)
E2 (E65) B/1 : IACV-FICD solenoid valve (CD engine)
B1 (E66) GY/4 : Cooling fan motor-1 (GA engine A/T models without daytime light system)
C2 (E67) GY/4 : Cooling fan motor-2 (GA engine A/T models without daytime light system)

## Engine Room Harness (Cont'd)

### ENGINE COMPARTMENT — RHD models




HEL156

## Engine Room Harness (Cont'd)

C1 (E1) GY/2 : Side turn signal lamp RH
D2 (E2) GY/2 : Brake fluid level switch
D2 (E3) GY/2 : Power steering oil pressure switch
E2 (E5) GY/2 : Fuel filter sensor (CD engine)
E2 (E6) B/1 : To (E228) (CD engine)
E2 (E10) GY/2 : ABS relay box (For ABS)
C2 (E11) GY/2 : Front wheel speed sensor RH (For ABS)
F1 (E12) L/4 : Cooling fan relay-1
(SR engine M/T models and GA engine)
BR/6 : Cooling fan relay-1
(SR engine A/T models and CD engine)
F1 (E13) W/3 : Horn relay
F1 (E14) L/4 : Inhibitor relay (A/T models)
G1 (E15) B/5 : Rear wiper relay
G1 (E16) L/4 : A/C relay
F1 (E17) BR/6 : Cooling fan relay-2
(A/T models for Australia and CD engine)
F1 (E18) BR/6 : Cooling fan relay-3
(SR engine A/T models and CD engine)
G1 (E20) L/4 : Rear fog lamp relay (For Europe)
B1 (E22) B/2 : To (E204)
C2 (E23) B/6 : To (E201) (SR engine M/T models and GA engine)
C2 (E24) B/8 : To (E202) (Gasoline engine)
C2 (E26) GY/8 : To (E203) (SR engine A/T models and CD engine)
A2 (E28) W/2 : Front washer motor
A2 (E29) G/2 : Rear washer motor
A2 (E30) B/2 : Washer fluid level switch (Except for Australia)
A2 (E31) GY/2 : To front fog lamp sub-harness
A2 (E32) B/2 : Front turn signal lamp RH

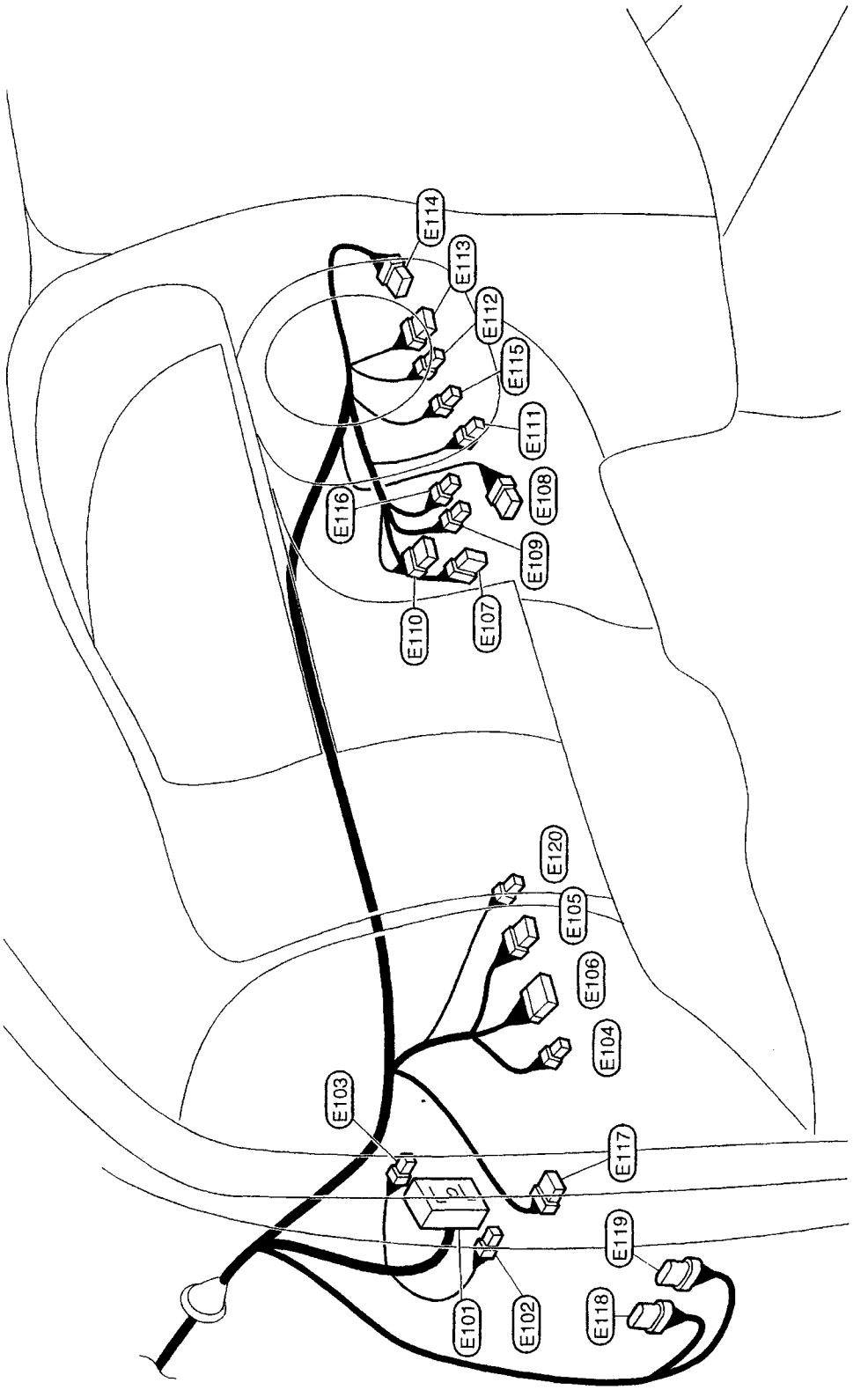
A3 (E33) B/2 : Clearance lamp RH
A3 (E34) B/3 : Headlamp RH
A3 (E35) GY/6 : Headlamp aiming motor unit RH (For Europe)
A3 (E36) GY/2 : Front fog lamp RH
C2 (E37) — : Body ground
B3 (E38) GY/1 : Brake vacuum switch (CD engine)
C3 (E39) GY/2 : Cooling fan motor-2 (1-mode type)
C3 (E40) GY/4 : Cooling fan motor-2 (2-mode type)
B3 (E42) B/1 : Horn high
B4 (E43) B/1 : Horn low (Except for New Zealand, LX and Q grade for Australia)
B4 (E45) GY/2 : Cooling fan motor-1 (1-mode type)
C4 (E46) GY/4 : Cooling fan motor-1 (2-mode type)
C4 (E47) B/2 : Dual-pressure switch
C4 (E48) GY/6 : Headlamp aiming motor unit LH (For Europe)
C4 (E49) B/3 : Headlamp LH
D4 (E50) B/2 : Clearance lamp LH
D4 (E51) — : Body ground
D4 (E52) GY/2 : Front fog lamp LH
E4 (E53) B/2 : Front turn signal lamp LH
D5 (E55) — : Fusible link
E3 (E57) — : Fusible link and fuse box
E3 (E58) B/1 : Battery
D3 (E59) B/1 : Fusible link and fuse box
D3 (E60) W/1 : Fusible link and fuse box
E4 (E61) G/2 : Glow relay (CD engine)
E4 (E62) W/1 : Glow relay (CD engine)
E4 (E63) W/1 : Glow relay (CD engine)

EL

HEL157

## Engine Room Harness (Cont'd)

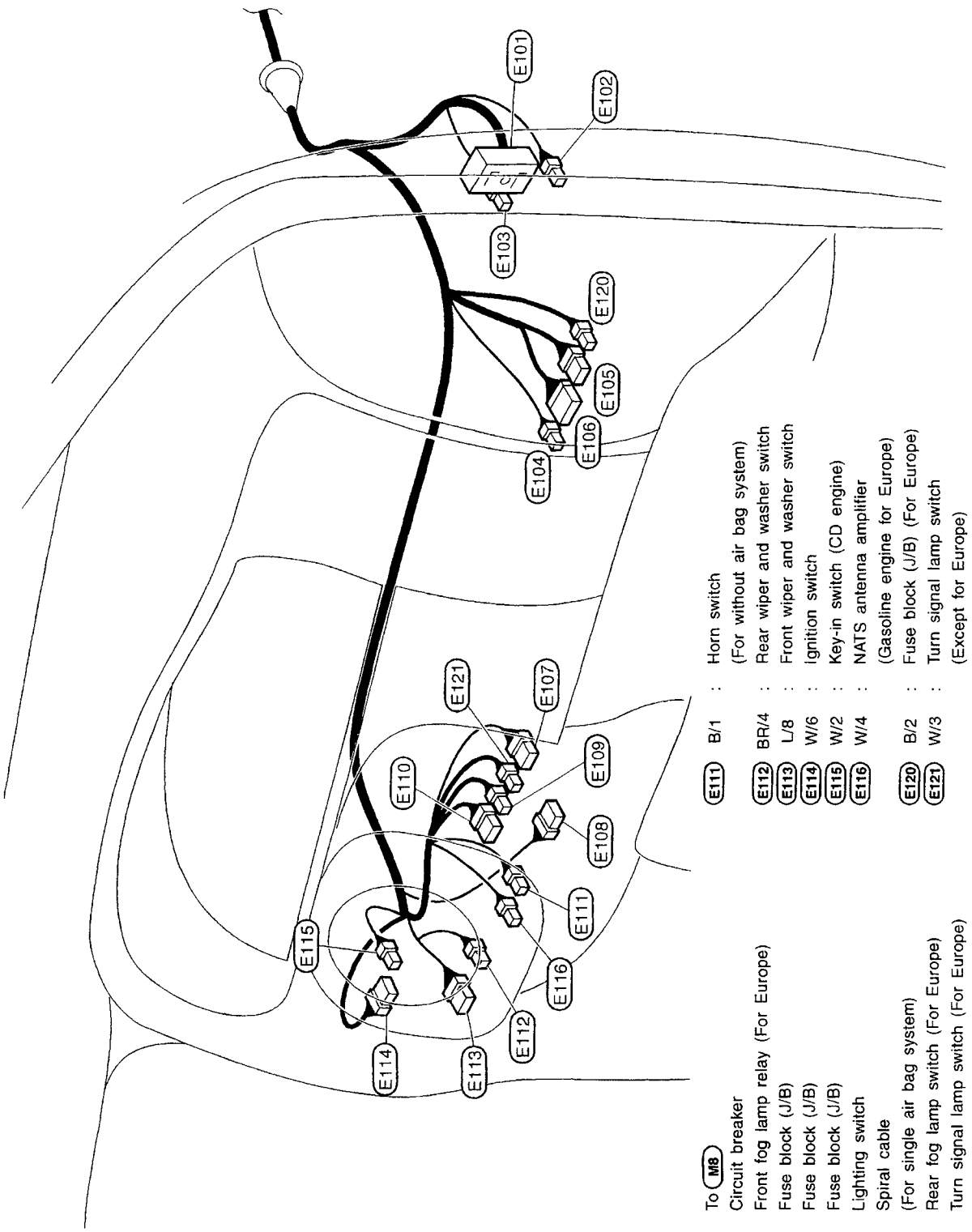
### PASSENGER COMPARTMENT — LHD models




HEL158

## Engine Room Harness (Cont'd)

### PASSENGER COMPARTMENT — RHD models



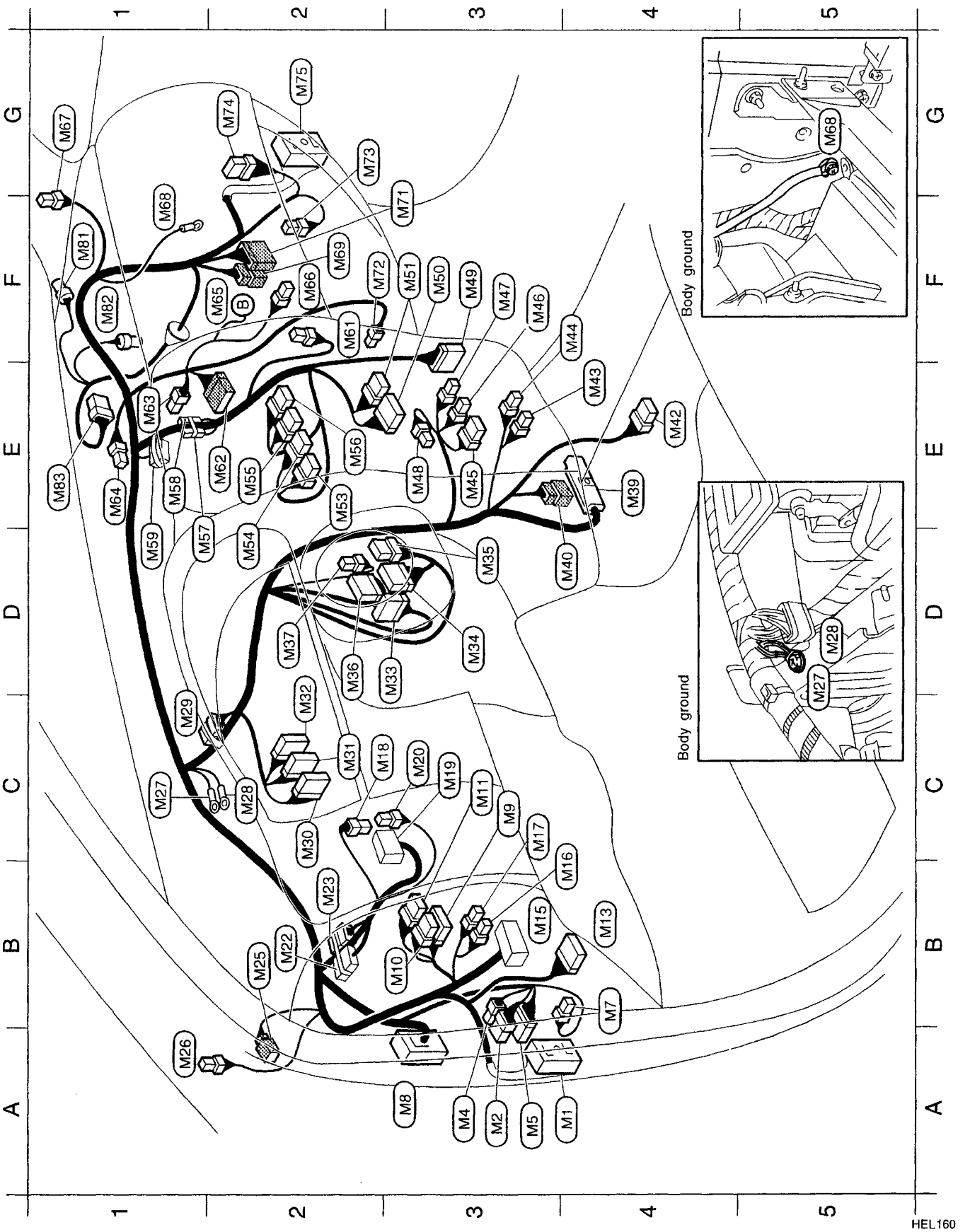

| | | | | | | |
|---|---|---|---|---|---|---|
| E101 | SMJ | : | To M8 | E111 | B/1 | : Horn switch |
| E102 | W/2 | : | Circuit breaker | | | (For without air bag system) |
| E103 | L/4 | : | Front fog lamp relay (For Europe) | E112 | BR/4 | : Rear wiper and washer switch |
| E104 | B/2 | : | Fuse block (J/B) | E113 | L/8 | : Front wiper and washer switch |
| E105 | W/6 | : | Fuse block (J/B) | E114 | W/6 | : Ignition switch |
| E106 | W/16 | : | Fuse block (J/B) | E115 | W/2 | : Key-in switch (CD engine) |
| E107 | W/8 | : | Lighting switch | E116 | W/4 | : NATS antenna amplifier |
| E108 | BR/6 | : | Spiral cable | | | (Gasoline engine for Europe) |
| | | | (For single air bag system) | E120 | B/2 | : Fuse block (J/B) (For Europe) |
| E109 | W/3 | : | Rear fog lamp switch (For Europe) | E121 | W/3 | : Turn signal lamp switch |
| E110 | W/6 | : | Turn signal lamp switch (For Europe) | | | (Except for Europe) |

EL

HEL159

## Main Harness

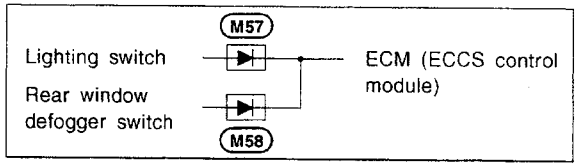
### LHD MODELS




HEL160

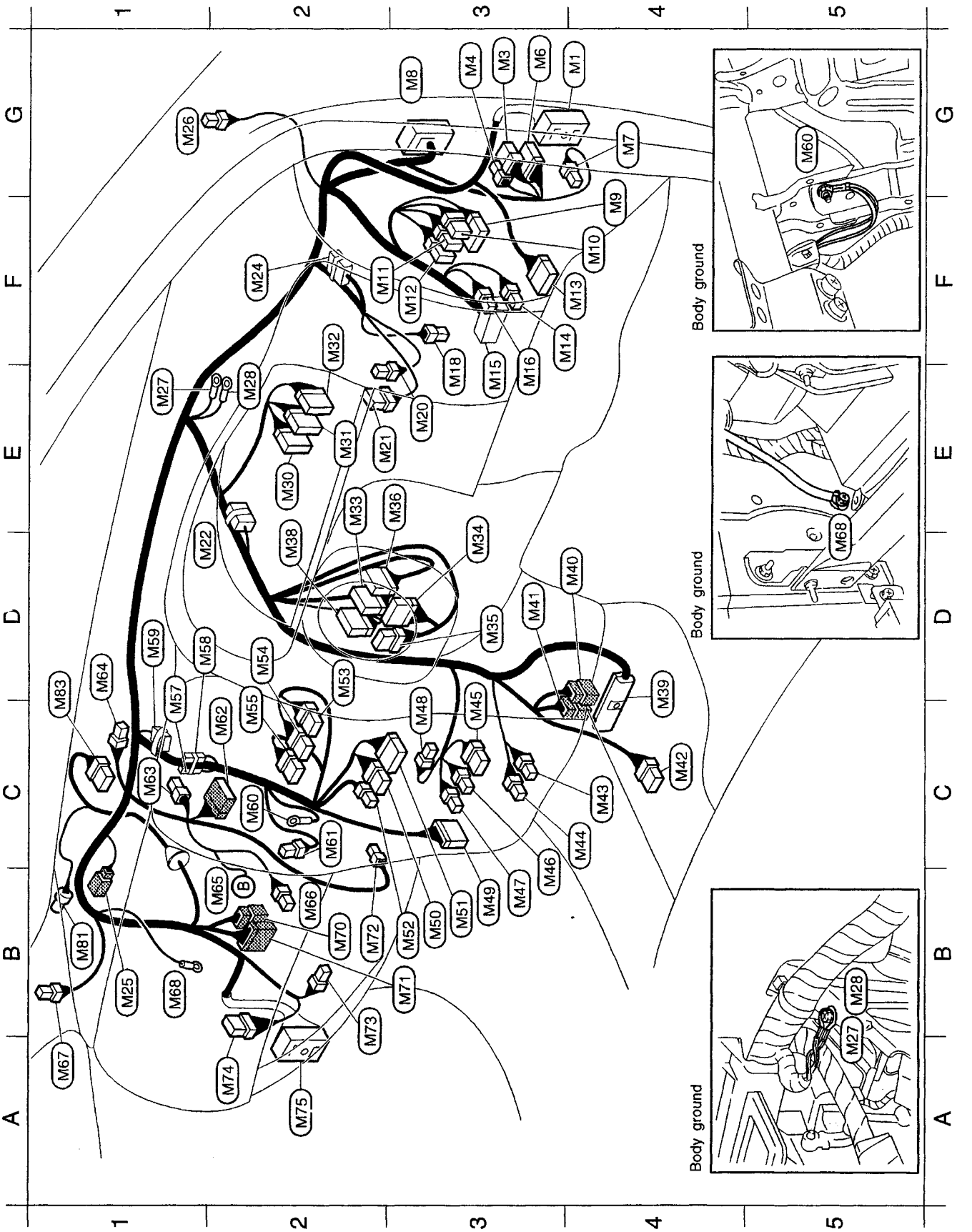
| | | | |
|---|---|---|---|
| A4 | M1 | SMJ | : To D1 |
| A3 | M2 | W/6 | : To B4 (With power door lock) |
| A3 | M4 | W/4 | : To B1 |
| A3 | M5 | W/12 | : To B2 |
| B4 | M7 | L/4 | : Fuel pump relay (Gasoline engine) |
| A3 | M8 | SMJ | : To E101 |
| C3 | M9 | GY/12 | : Door mirror remote control switch |
| B3 | M10 | B/6 | : Front fog lamp switch |
| C3 | M11 | W/8 | : Headlamp aiming switch |
| B4 | M13 | GY/14 | : Data link connector for CONSULT |
| B3 | M15 | — | : Fuse block (J/B) |
| B4 | M16 | L/4 | : Power window relay (With power window)<br>Sun roof relay (Without power window) |
| C3 | M17 | L/4 | : Mirror defogger relay<br>(With daytime light system) |
| C2 | M18 | B/2 | : Stop lamp switch |
| C3 | M19 | — | : Junction box No.2 (Joint connectors) |
| C3 | M20 | B/3 | : Combination flasher unit |
| B2 | M22 | BR/20 | : Joint connector-1 |
| B2 | M23 | GY/6 | : Joint connector-2 |
| B2 | M25 | W/4 | : To R1 |
| A1 | M26 | BR/2 | : Pillar speaker LH (For 6-speaker system) |
| C1 | M27 | — | : Body ground |
| C2 | M28 | — | : Body ground |
| C1 | M29 | W/6 | : Joint connector-8 |
| C2 | M30 | BR/16 | : Combination meter |
| C2 | M31 | W/10 | : Combination meter (With tachometer) |
| C2 | M32 | W/16 | : Combination meter |
| D3 | M33 | B/12 | : Warning buzzer unit |
| D3 | M34 | W/18 | : Door lock timer (For Europe) |
| D3 | M35 | W/8 | : Door lock timer (Except for Europe) |
| D2 | M36 | W/12 | : NATS IMMU (Gasoline engine for Europe) |
| D2 | M37 | W/4 | : Rear window defogger timer<br>(With daytime light system) |
| E4 | M39 | L/48 | : ECM (Engine control module) (Diesel engine) |
| D4 | M40 | W/6 | : To F4 (Gasoline engine) |
| E4 | M42 | W/6 | : Overdrive control switch • A/T illumination |
| E4 | M43 | B/2 | : Cigarette lighter |
| F4 | M44 | W/2 | : Ashtray illumination |
| E3 | M45 | W/6 | : Fan switch |
| F3 | M46 | W/4 | : Recirculation switch |
| F3 | M47 | W/3 | : A/C switch |
| E3 | M48 | W/3 | : Fan switch illumination |
| F3 | M49 | W/20 | : To F6 (Gasoline engine) |
| F3 | M50 | W/10 | : Radio |
| F3 | M51 | W/6 | : Radio (For rear speaker) |
| E2 | M53 | W/6 | : Rear window defogger switch |
| D2 | M54 | W/8 | : Hazard switch |
| E2 | M55 | BR/6 | : Rear fog lamp switch |
| E2 | M56 | BR/8 | : Headlamp wiper and washer switch<br>(With daytime light system) |
| D1 | M57 | — | : Diode-1 (GA engine) |
| E1 | M58 | — | : Diode-2 (GA engine) |
| D1 | M59 | BR/20 | : Joint connector-3 |
| F2 | M61 | W/3 | : Thermo control amplifier |
| E2 | M62 | Y/12 | : To Z3 (For dual air bag system) |
| E1 | M63 | W/4 | : Intake door motor |
| E1 | M64 | B/2 | : NATS security indicator<br>(Gasoline engine for Europe) |
| F2 | M65 | Bulb | : Glove box lamp |
| F2 | M66 | BR/2 | : Glove box lamp switch |
| G1 | M67 | BR/2 | : Pillar speaker RH (For 6-speaker system) |
| F1 | M68 | — | : Body ground |
| F2 | M69 | W/8 | : To B113 |
| F3 | M71 | W/12 | : To B115 |
| F2 | M72 | BR/4 | : Fan resistor |
| G2 | M73 | W/2 | : Blower motor |
| G2 | M74 | W/8 | : Front wiper amplifier |
| G2 | M75 | SMJ | : To D31 |
| F1 | M81 | GY/2 | : Side turn signal lamp RH (Without ABS, dual air bag, daytime light system and rear power window) |
| F1 | M82 | GY/2 | : Power steering oil pressure switch (GA engine without ABS, dual air bag, daytime light system and rear power window) |
| E1 | M83 | GY/6 | : Front wiper motor (Without ABS, dual air bag, daytime light system and rear power window) |

Diode-1 (M57), Diode-2 (M58)



## Main Harness (Cont'd)

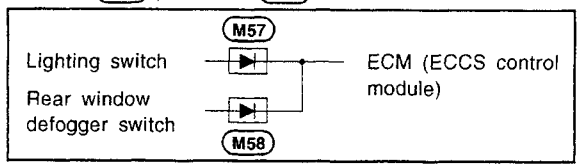
**RHD MODELS**




HEL162

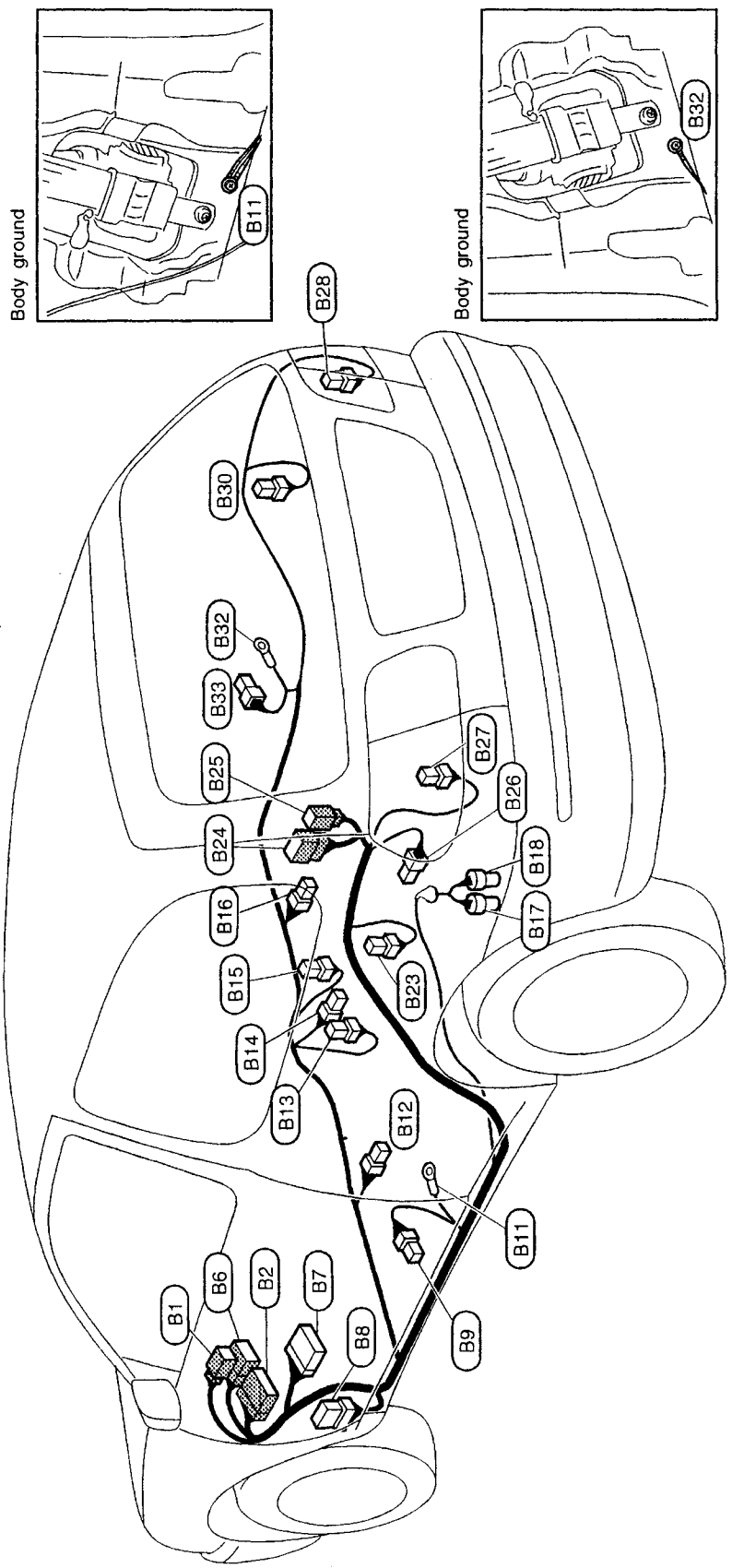
| | | | |
|---|---|---|---|
| G4 | M1 | SMJ | : To D1 |
| G3 | M3 | W/8 | : To B5 (With power door lock) |
| G3 | M4 | W/4 | : To B1 |
| G3 | M6 | W/20 | : To B3 |
| G4 | M7 | L/4 | : Fuel pump relay (Gasoline engine) |
| G3 | M8 | SMJ | : To E101 |
| F4 | M9 | GY/12 | : Door mirror remote control switch |
| F4 | M10 | B/6 | : Front fog lamp switch |
| F2 | M11 | W/8 | : Headlamp aiming switch (For Europe) |
| F3 | M12 | W/6 | : Illumination control switch (Except for Europe) |
| F4 | M13 | GY/14 | : Data link connector for CONSULT |
| F3 | M14 | B/2 | : Fuse block (J/B) (Except for Europe) |
| E3 | M15 | — | : Fuse block (J/B) |
| E3 | M16 | L/4 | : Power window relay (With power window) |
| | | L/4 | : Sun roof relay (Without power window) |
| E3 | M18 | B/2 | : Stop lamp switch |
| E3 | M20 | B/3 | : Combination flasher unit |
| E2 | M21 | W/6 | : Rear wiper amplifier |
| D1 | M22 | BR/20 | : Joint connector-1 |
| F2 | M24 | OR/20 | : Joint connector-5 |
| B1 | M25 | W/4 | : To R1 |
| G1 | M26 | BR/2 | : Pillar speaker RH (For 6-speaker system) |
| E1 | M27 | — | : Body ground |
| E2 | M28 | — | : Body ground |
| E2 | M30 | BR/16 | : Combination meter |
| E2 | M31 | W/10 | : Combination meter (With tachometer) |
| F2 | M32 | W/16 | : Combination meter |
| E2 | M33 | B/12 | : Warning buzzer unit (Except for Australia) |
| D3 | M34 | W/18 | : Door lock timer (For Europe and Australia) |
| D3 | M35 | W/8 | : Door lock timer (Except for Europe and Australia) |
| E3 | M36 | W/12 | : NATS IMMU (Gasoline engine for Europe) |
| D2 | M38 | W/8 | : Warning buzzer unit (For Australia) |
| D4 | M39 | L/48 | : ECM (Engine control module) (Diesel engine) |
| D4 | M40 | W/6 | : To F4 (Gasoline engine for Europe and Australia) |
| D3 | M41 | W/8 | : To F5 (Except for Europe and Australia) |
| C4 | M42 | W/6 | : Overdrive control switch • A/T illumination |
| C4 | M43 | B/2 | : Cigarette lighter |
| C4 | M44 | W/2 | : Ashtray illumination |
| C3 | M45 | W/6 | : Fan switch |
| B3 | M46 | W/4 | : Recirculation switch |
| B3 | M47 | W/3 | : A/C switch |
| C3 | M48 | W/3 | : Fan switch illumination |
| B3 | M49 | W/20 | : To F6 (Gasoline engine) |
| B3 | M50 | W/10 | : Radio |
| B3 | M51 | W/6 | : Radio (For rear speaker) |
| B3 | M52 | W/4 | : Compact disk deck (Except for Europe) |
| D2 | M53 | W/6 | : Rear window defogger switch |
| D2 | M54 | W/8 | : Hazard switch |
| C2 | M55 | BR/6 | : Rear fog lamp switch (For Europe) |
| D1 | M57 | — | : Diode-1 (GA engine except for Australia) |
| D1 | M58 | — | : Diode-2 (GA engine except for Australia) |
| D1 | M59 | P/20 | : Joint connector-4 |
| C2 | M60 | — | : Body ground |
| C2 | M61 | W/3 | : Thermo control amplifier |
| C2 | M62 | Y/12 | : To Z3 (For dual air bag system) |
| C1 | M63 | W/4 | : Intake door motor |
| D1 | M64 | B/2 | : NATS security indicator (Gasoline engine for Europe) |
| B2 | M65 | Bulb | : Glove box lamp |
| B2 | M66 | BR/2 | : Glove box lamp switch |
| A1 | M67 | BR/2 | : Pillar speaker LH (For 6-speaker system) |
| B1 | M68 | — | : Body ground |
| B2 | M70 | W/12 | : To B114 |
| B3 | M71 | W/12 | : To B115 |
| B2 | M72 | BR/4 | : Fan resistor |
| B2 | M73 | W/2 | : Blower motor |
| A2 | M74 | W/8 | : Front wiper amplifier |
| A2 | M75 | SMJ | : To D31 |
| B1 | M81 | GY/2 | : Side turn signal lamp LH (GA engine without ABS, dual air bag and rear power window) |
| D1 | M83 | GY/6 | : Front wiper motor (GA engine without ABS, dual air bag and rear power window) |

Diode-1 (M57), Diode-2 (M58)



## Body Harness

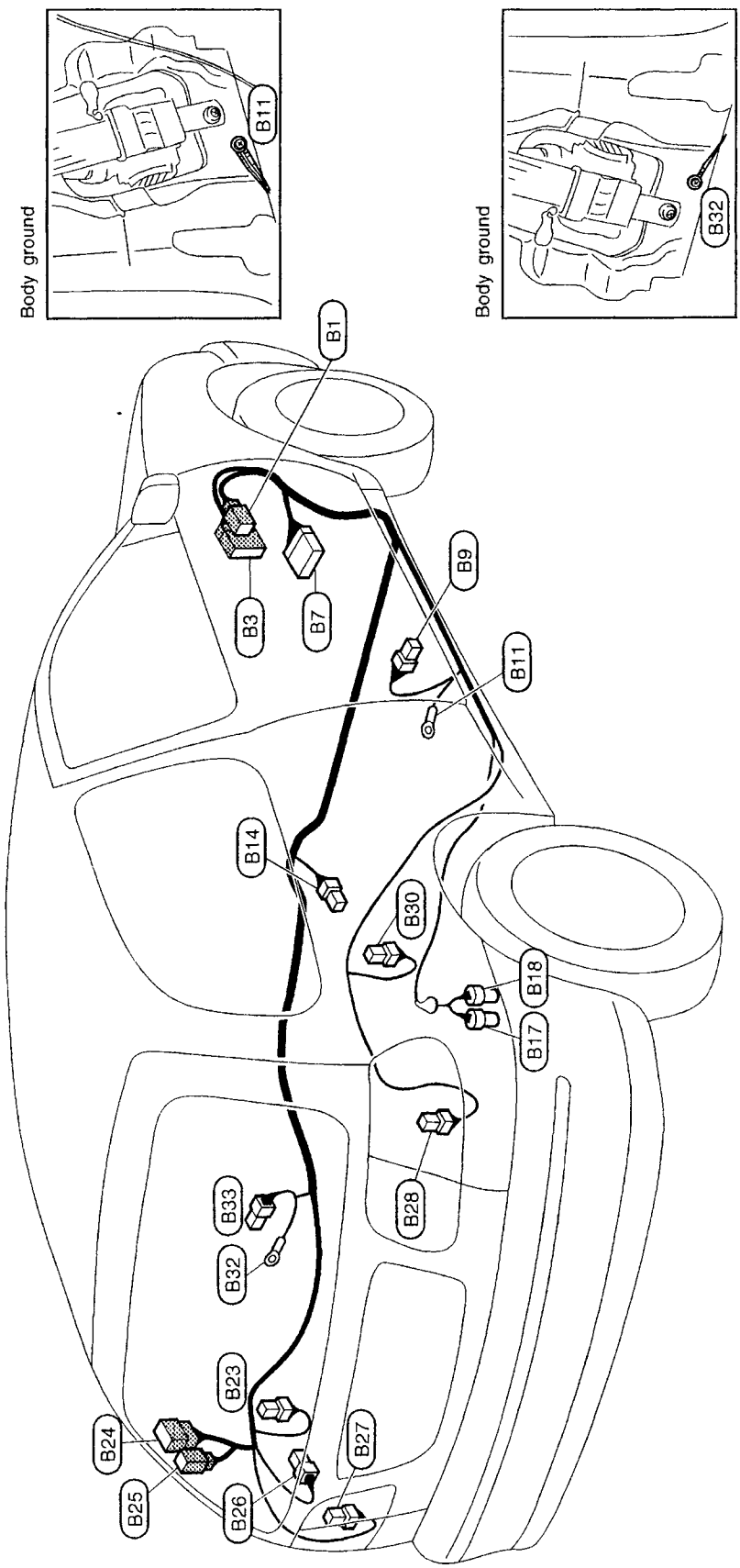
### 3-DOOR HATCHBACK — LHD models




HEL170

## Body Harness (Cont'd)

### 3-DOOR HATCHBACK — RHD models

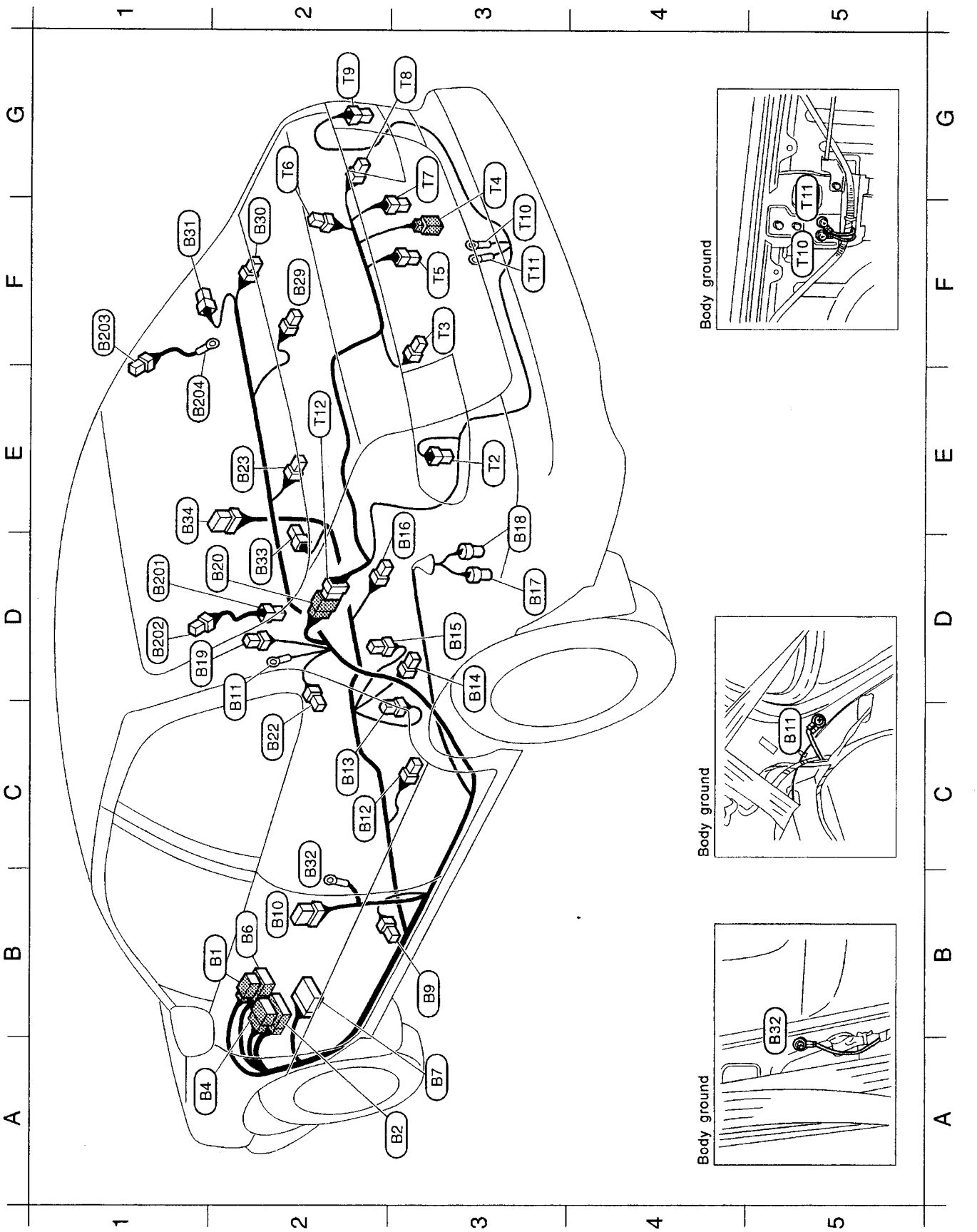



HEL171

EL

## Body Harness (Cont'd)

**SEDAN — LHD models**




HEL172

## Body harness

| | | | |
|---|---|---|---|
| B2 (B1) | W/4 | : | To (M4) |
| A3 (B2) | W/12 | : | To (M5) |
| A1 (B4) | W/6 | : | To (M2) (With power door lock) |
| B2 (B6) | W/8 | : | To (E117) |
| A3 (B7) | W/12 | : | Fuse block (J/B) |
| B3 (B9) | B/3 | : | Front door switch driver's side |
| B2 (B10) | W/6 | : | To (D51) (With power door lock) |
| D2 (B11) | — | : | Body ground |
| C2 (B12) | W/3 | : | Heated seat LH (With daytime light system) |
| C2 (B13) | L/4 | : | Heated seat switch LH (With daytime light system) |
| D3 (B14) | B/1 | : | Parking brake switch |
| D3 (B15) | W/4 | : | Heated seat switch RH (With daytime light system) |
| D3 (B16) | W/3 | : | Heated seat RH (With daytime light system) |
| D3 (B17) | GY/2 | : | To fuel pump sub-harness (Gasoline engine) |
| D3 (B18) | GY/3 | : | Fuel tank gauge unit |
| D2 (B19) | B/1 | : | Condenser (For rear window defogger) |
| D2 (B20) | W/8 | : | To (T12) |
| C2 (B22) | BR/1 | : | Rear door switch LH |
| E2 (B23) | BR/2 | : | Rear speaker LH |
| F2 (B29) | W/2 | : | Trunk room lamp |
| F2 (B30) | BR/2 | : | Rear speaker RH |
| F1 (B31) | BR/1 | : | Rear door switch RH |
| C2 (B32) | — | : | Body ground |
| D2 (B33) | BR/1 | : | Front door switch passenger side |
| E1 (B34) | W/6 | : | To (D71) (With power door lock) |

## Tail harness

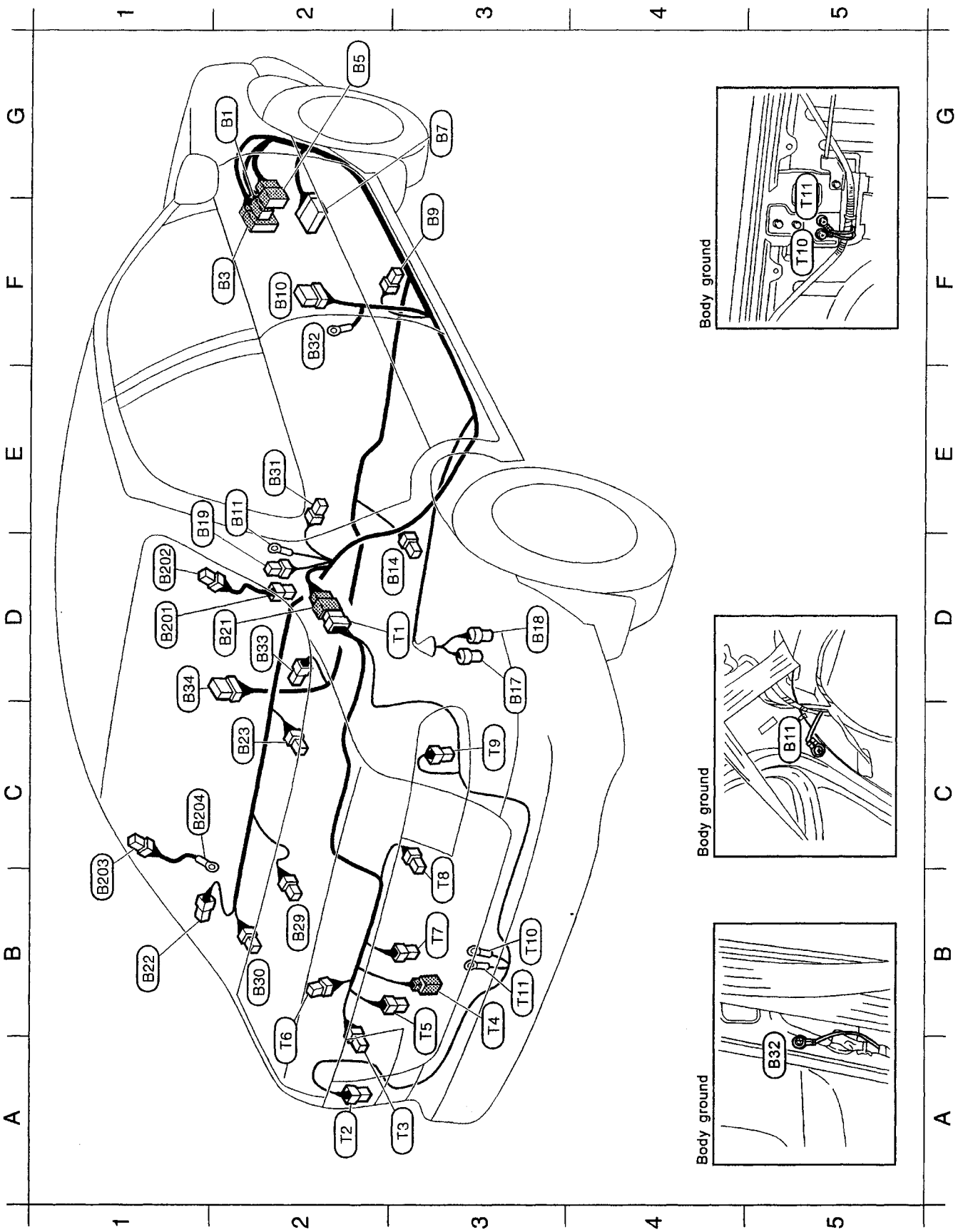
| | | | |
|---|---|---|---|
| E3 (T2) | W/4 | : | Rear combination lamp LH (Outer) |
| F3 (T3) | W/4 | : | Rear combination lamp LH (Inner) |
| G3 (T4) | B/2 | : | Trunk room lamp switch |
| F3 (T5) | W/2 | : | License plate lamp LH |
| G2 (T6) | BR/2 | : | High-mounted stop lamp |
| G3 (T7) | W/2 | : | License plate lamp RH |
| G3 (T8) | W/4 | : | Rear combination lamp RH (Inner) |
| G2 (T9) | W/4 | : | Rear combination lamp RH (Outer) |
| F3 (T10) | — | : | Body ground |
| F3 (T11) | — | : | Body ground |
| E2 (T12) | W/8 | : | To (B20) |

## Sub-harness

| | | | |
|---|---|---|---|
| D1 (B201) | B/1 | : | Condenser |
| D1 (B202) | B/1 | : | Rear window defogger (+) |
| F1 (B203) | B/1 | : | Rear window defogger (−) |
| E1 (B204) | — | : | Body ground |

## Body Harness (Cont'd)

**SEDAN — RHD models**




HEL174

## Body harness

| | | | |
|---|---|---|---|
| G2 | B1 | W/4 | : To M4 |
| F2 | B3 | W/20 | : To M6 |
| G2 | B5 | W/8 | : To M3 (With power door lock) |
| G3 | B7 | W/12 | : Fuse block (J/B) |
| F3 | B9 | B/3 | : Front door switch driver's side |
| F2 | B10 | W/6 | : To D51 (With power door lock) |
| E2 | B11 | — | : Body ground |
| D3 | B14 | B/1 | : Parking brake switch |
| D3 | B17 | GY/2 | : To fuel pump sub-harness (Gasoline engine) |
| D3 | B18 | GY/3 | : Fuel tank gauge unit |
| E1 | B19 | B/1 | : Condenser(For rear window defogger) |
| D2 | B21 | W/8 | : To T1 |
| B1 | B22 | BR/1 | : Rear door switch LH |
| C2 | B23 | BR/2 | : Rear speaker LH |
| B2 | B29 | W/2 | : Trunk room lamp |
| B2 | B30 | BR/2 | : Rear speaker RH |
| E2 | B31 | BR/1 | : Rear door switch RH |
| F2 | B32 | — | : Body ground |
| D2 | B33 | BR/1 | : Front door switch passenger side |
| D1 | B34 | W/6 | : To D71 (With power door lock) |

## Tail harness

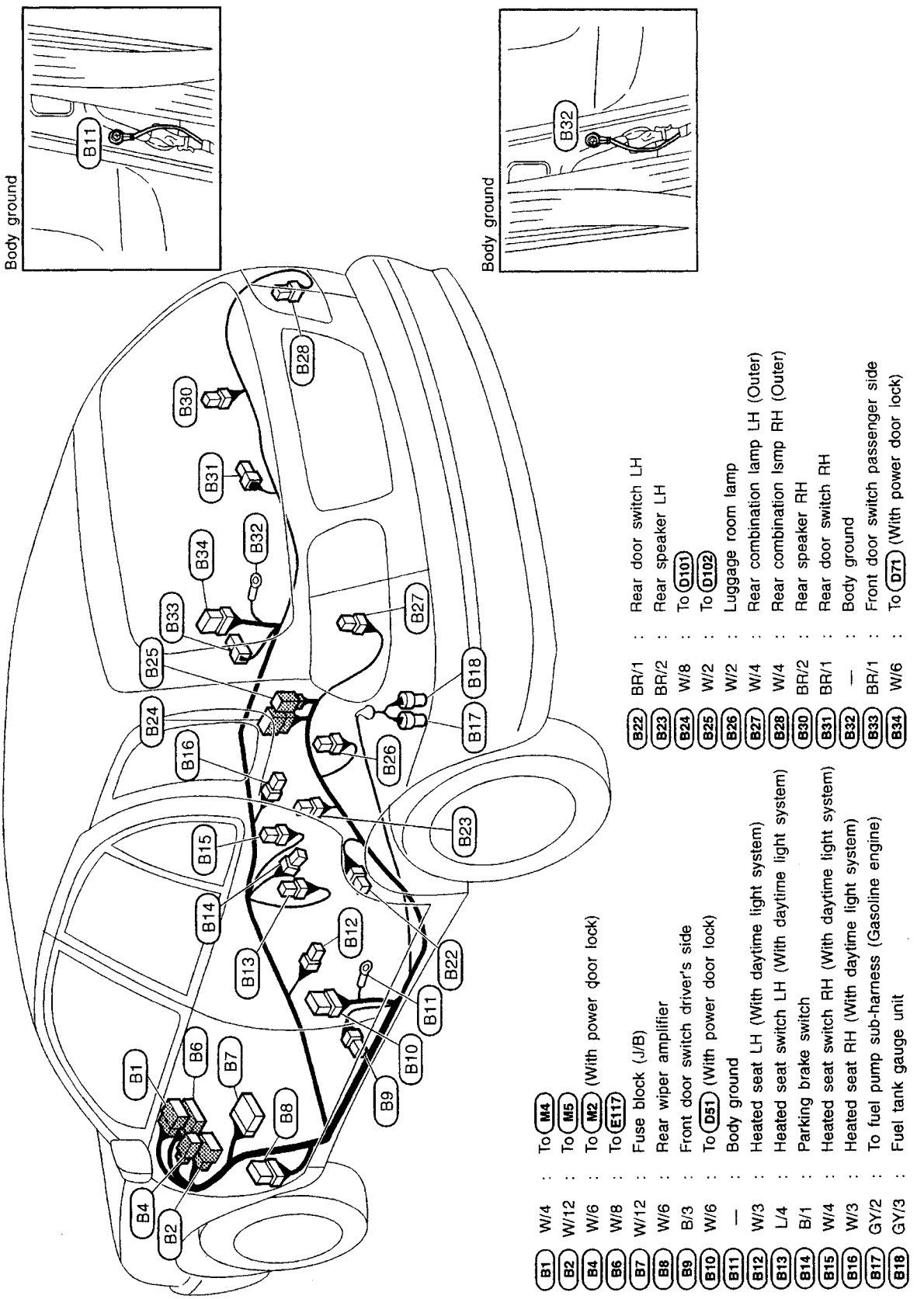
| | | | |
|---|---|---|---|
| D3 | T1 | W/8 | : To B21 |
| A2 | T2 | W/4 | : Rear combination lamp LH (Outer) |
| A3 | T3 | W/4 | : Rear combination lamp LH (Inner) |
| B3 | T4 | B/2 | : Trunk room lamp switch |
| B3 | T5 | W/2 | : License plate lamp LH |
| A2 | T6 | BR/2 | : High-mounted stop lamp |
| B3 | T7 | W/2 | : License plate lamp RH |
| B3 | T8 | W/4 | : Rear combination lamp RH (Inner) |
| C3 | T9 | W/4 | : Rear combination lamp RH (Outer) |
| B3 | T10 | — | : Body ground |
| B3 | T11 | — | : Body ground |

## Sub-harness

| | | | |
|---|---|---|---|
| D1 | B201 | B/1 | : Condenser |
| D1 | B202 | B/1 | : Rear window defogger (+) |
| B1 | B203 | B/1 | : Rear window defogger (–) |
| C1 | B204 | — | : Body ground |

## Body Harness (Cont'd)

### 5-DOOR HATCHBACK — LHD models

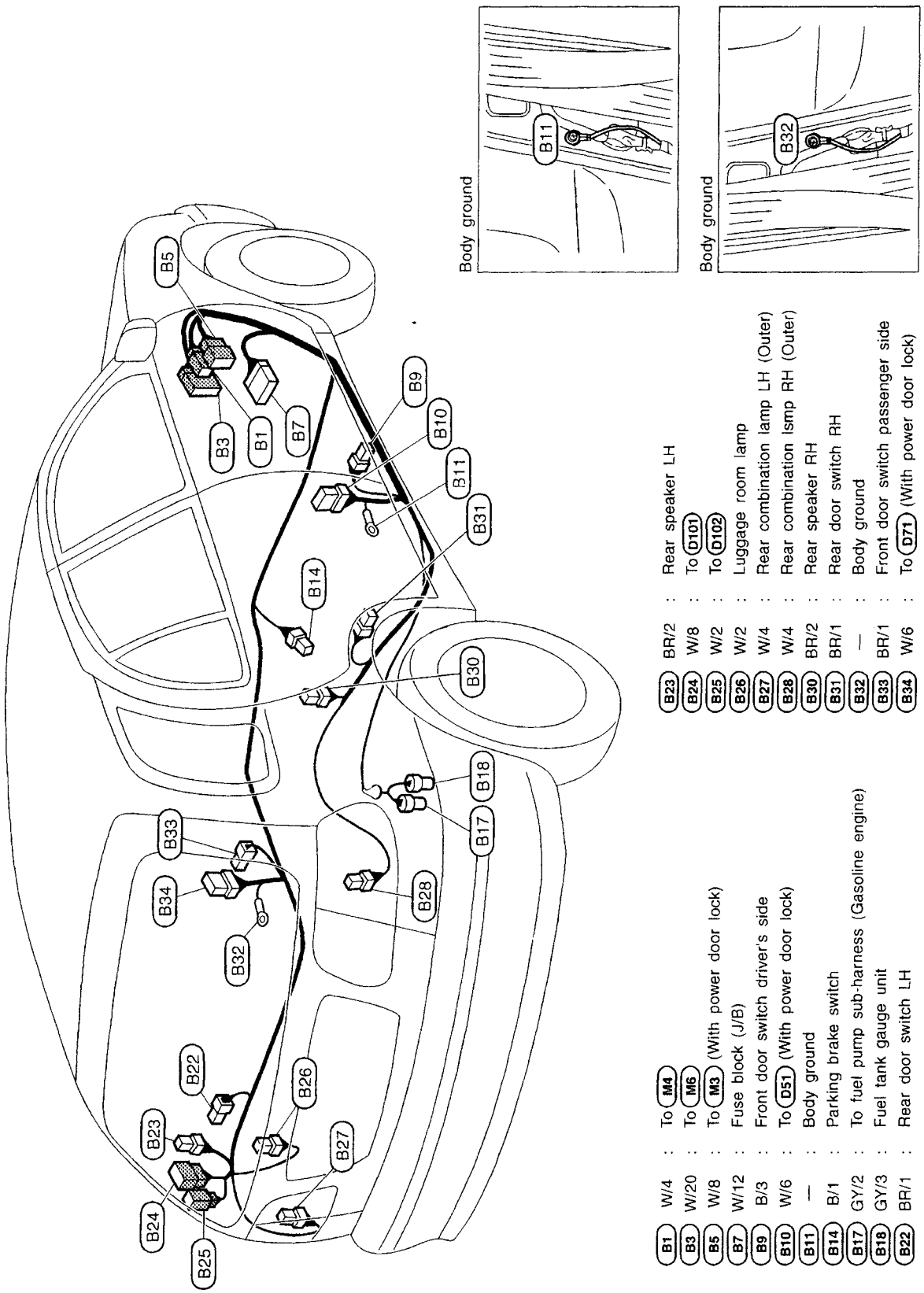



| | | | |
|---|---|---|---|
| B1 | W/4 | : | To M4 |
| B2 | W/12 | : | To M5 |
| B4 | W/6 | : | To M2 (With power door lock) |
| B6 | W/8 | : | To E117 |
| B7 | W/12 | : | Fuse block (J/B) |
| B8 | W/6 | : | Rear wiper amplifier |
| B9 | B/3 | : | Front door switch driver's side |
| B10 | W/6 | : | To D51 (With power door lock) |
| B11 | — | : | Body ground |
| B12 | W/3 | : | Heated seat LH (With daytime light system) |
| B13 | L/4 | : | Heated seat switch LH (With daytime light system) |
| B14 | B/1 | : | Parking brake switch |
| B15 | W/4 | : | Heated seat switch RH (With daytime light system) |
| B16 | W/3 | : | Heated seat RH (With daytime light system) |
| B17 | GY/2 | : | To fuel pump sub-harness (Gasoline engine) |
| B18 | GY/3 | : | Fuel tank gauge unit |
| B22 | BR/1 | : | Rear door switch LH |
| B23 | BR/2 | : | Rear speaker LH |
| B24 | W/8 | : | To D101 |
| B25 | W/2 | : | To D102 |
| B26 | W/2 | : | Luggage room lamp |
| B27 | W/4 | : | Rear combination lamp LH (Outer) |
| B28 | W/4 | : | Rear combination lamp RH (Outer) |
| B30 | BR/2 | : | Rear speaker RH |
| B31 | BR/1 | : | Rear door switch RH |
| B32 | — | : | Body ground |
| B33 | BR/1 | : | Front door switch passenger side |
| B34 | W/6 | : | To D71 (With power door lock) |

HEL176

## Body Harness (Cont'd)

### 5-DOOR HATCHBACK — RHD models




B1 W/4 : To M4
B3 W/20 : To M6
B5 W/8 : To M3 (With power door lock)
B7 W/12 : Fuse block (J/B)
B9 B/3 : Front door switch driver's side
B10 W/6 : To D51 (With power door lock)
B11 — : Body ground
B14 B/1 : Parking brake switch
B17 GY/2 : To fuel pump sub-harness (Gasoline engine)
B18 GY/3 : Fuel tank gauge unit
B22 BR/1 : Rear door switch LH

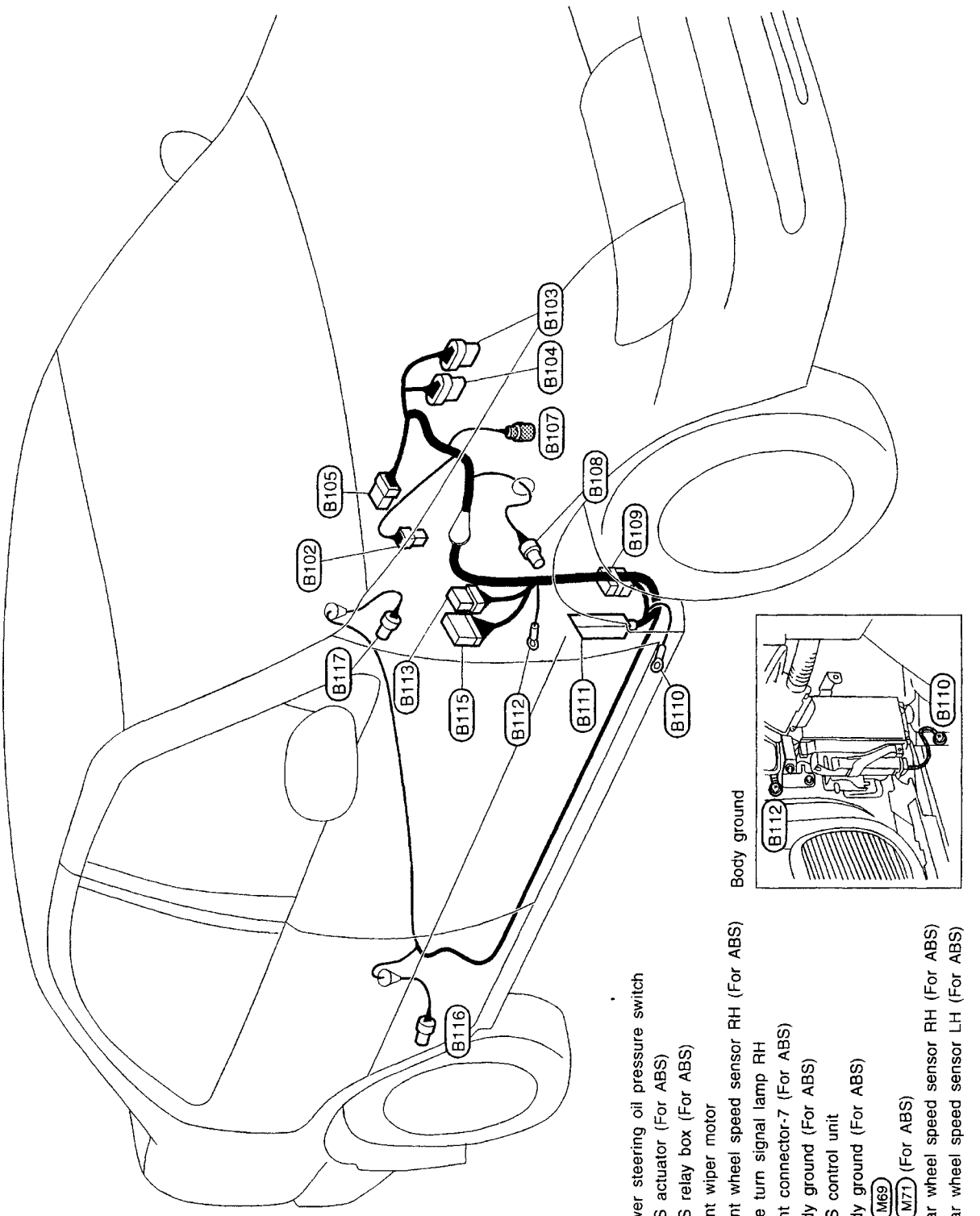
B23 BR/2 : Rear speaker LH
B24 W/8 : To D101
B25 W/2 : To D102
B26 W/2 : Luggage room lamp
B27 W/4 : Rear combination lamp LH (Outer)
B28 W/4 : Rear combination lsmp RH (Outer)
B30 BR/2 : Rear speaker RH
B31 BR/1 : Rear door switch RH
B32 — : Body ground
B33 BR/1 : Front door switch passenger side
B34 W/6 : To D71 (With power door lock)

EL

HEL177

## Body No. 2 Harness

### LHD MODELS

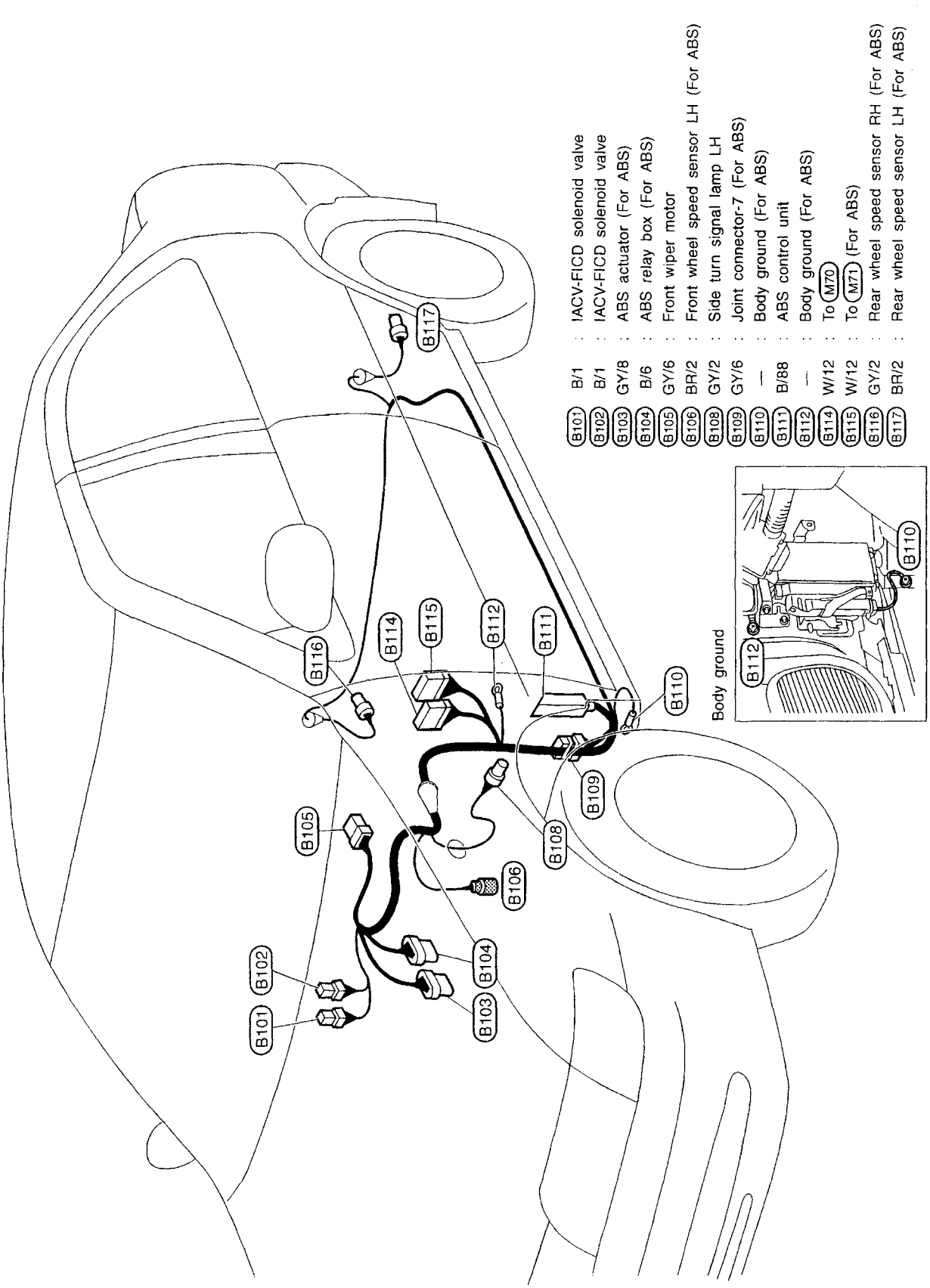



| | | | |
|---|---|---|---|
| B102 | GY/2 | : | Power steering oil pressure switch |
| B103 | GY/8 | : | ABS actuator (For ABS) |
| B104 | B/6 | : | ABS relay box (For ABS) |
| B105 | GY/6 | : | Front wiper motor |
| B107 | GY/2 | : | Front wheel speed sensor RH (For ABS) |
| B108 | GY/2 | : | Side turn signal lamp RH |
| B109 | GY/6 | : | Joint connector-7 (For ABS) |
| B110 | — | : | Body ground (For ABS) |
| B111 | B/88 | : | ABS control unit |
| B112 | — | : | Body ground (For ABS) |
| B113 | W/8 | : | To M69 |
| B115 | W/12 | : | To M71 (For ABS) |
| B116 | GY/2 | : | Rear wheel speed sensor RH (For ABS) |
| B117 | BR/2 | : | Rear wheel speed sensor LH (For ABS) |

HEL178

## Body No. 2 Harness (Cont'd)

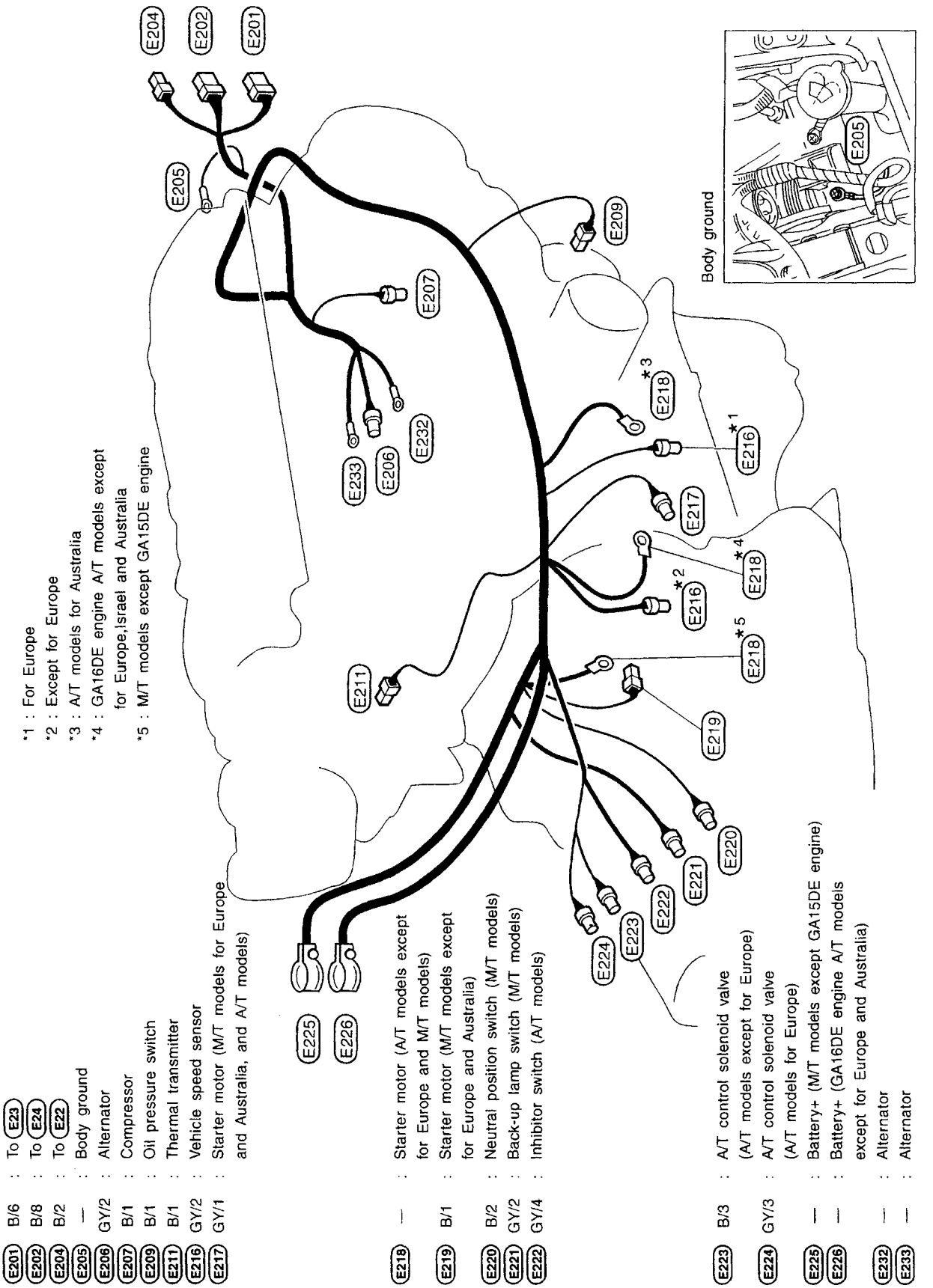
### RHD MODELS




HEL179

## Engine Harness

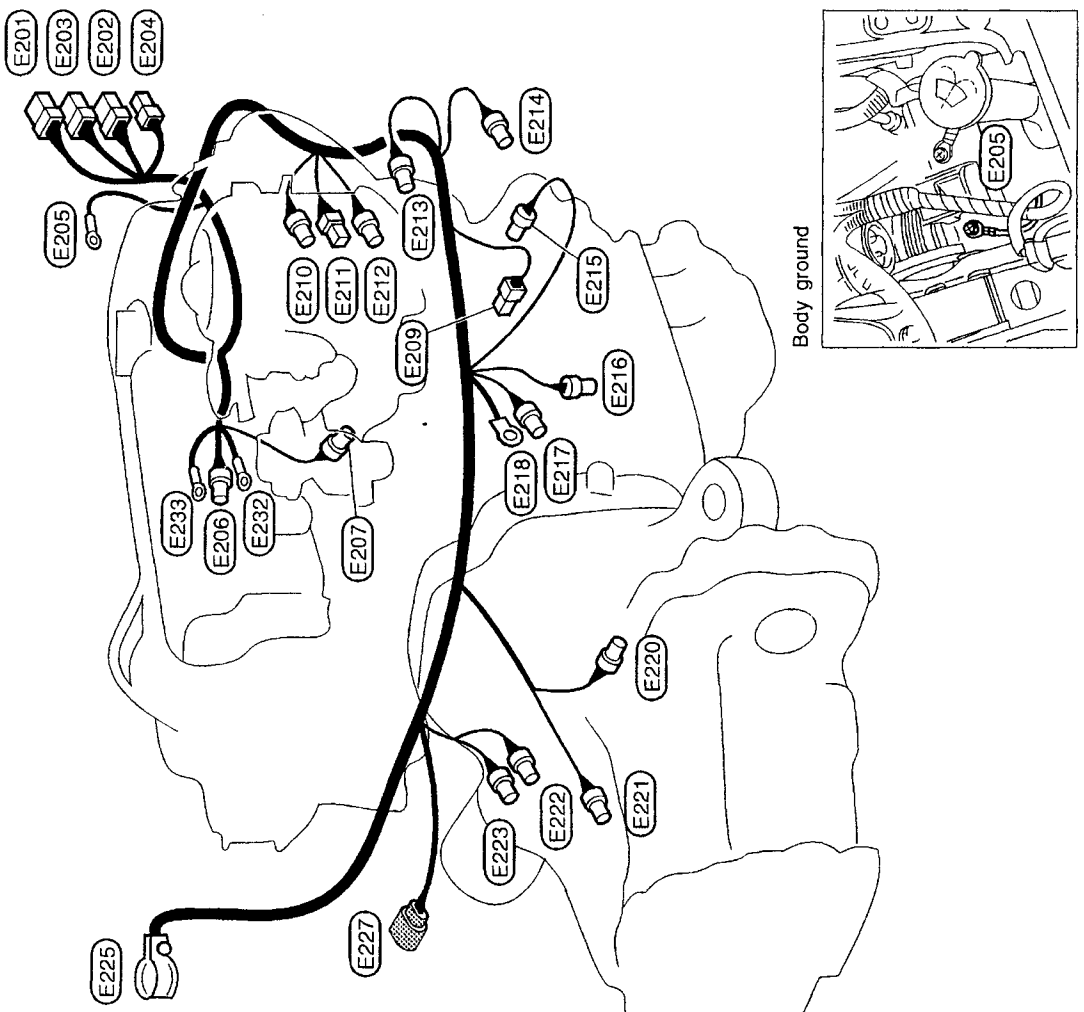
### GA ENGINE




HEL167

## Engine Harness (Cont'd)

### SR ENGINE



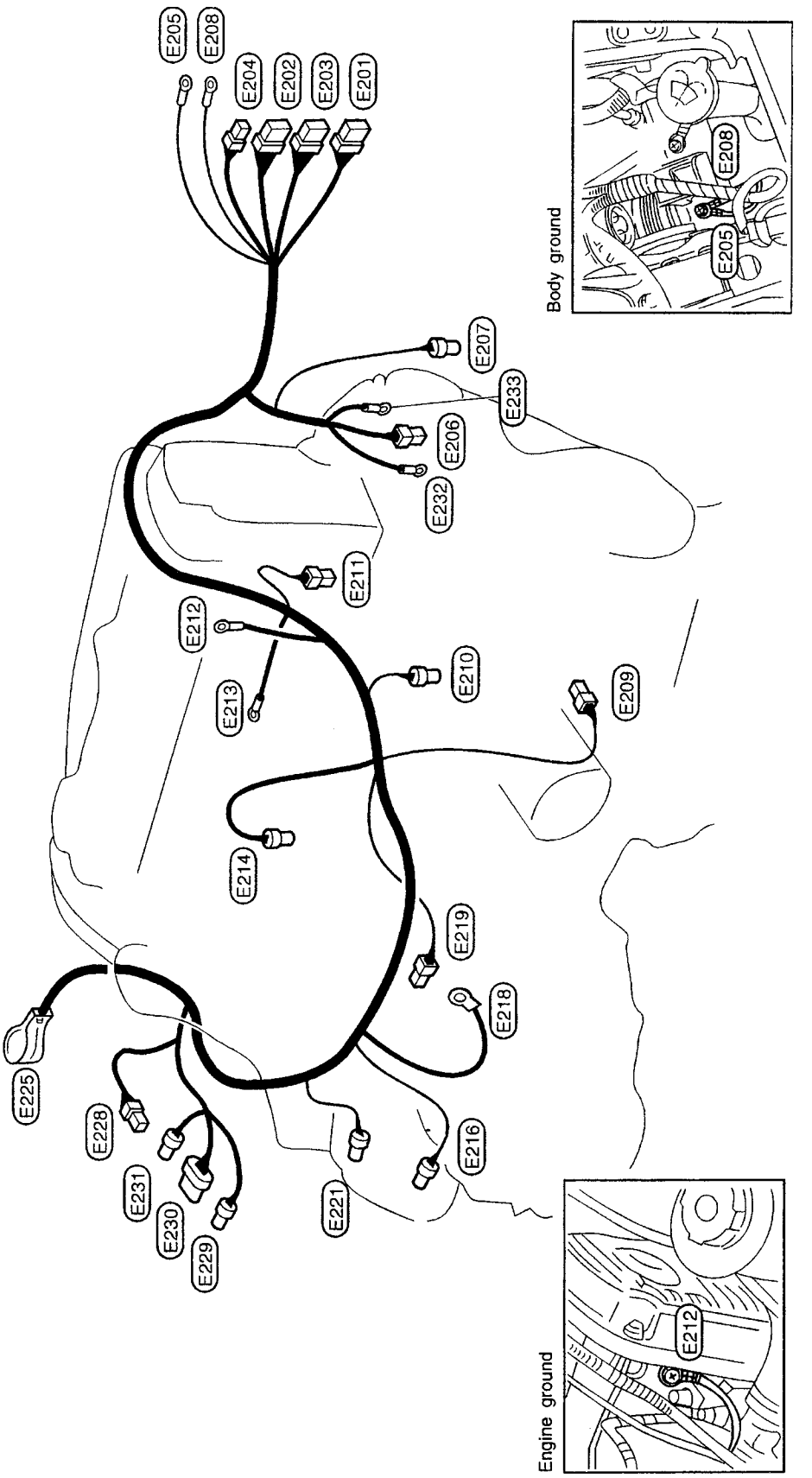

| | | |
|---|---|---|
| E201 | B/6 | : To E23 (M/T models) |
| E202 | B/8 | : To E24 |
| E203 | GY/8 | : To E26 (A/T models) |
| E204 | B/2 | : To E22 |
| E205 | — | : Body ground |
| E206 | GY/2 | : Alternator |
| E207 | B/1 | : Compressor |
| E209 | B/1 | : Oil pressure switch |
| E210 | L/2 | : Engine coolant temperature sensor |
| E211 | B/1 | : Thermal transmitter |
| E212 | GY/2 | : IACV-FICD solenoid valve |
| E213 | BR/2 | : IACV-AAC valve |
| E214 | GY/2 | : IACV-Air regulator |
| E215 | B/2 | : Knock sensor |
| E216 | GY/2 | : Vehicle speed sensor |
| E217 | GY/1 | : Starter motor |
| E218 | — | : Starter motor |
| E220 | B/2 | : Neutral position switch (M/T models) |
| E221 | GY/2 | : Back-up lamp switch (M/T models) |
| E222 | GY/4 | : Inhibitor switch (A/T models) |
| E223 | B/3 | : A/T control solenoid valve (A/T models) |
| E225 | — | : Battery+ |
| E227 | GY/6 | : To F12 |
| E232 | — | : Alternator |
| E233 | — | : Alternator |

EL

HEL168

## Engine Harness (Cont'd)

### CD ENGINE



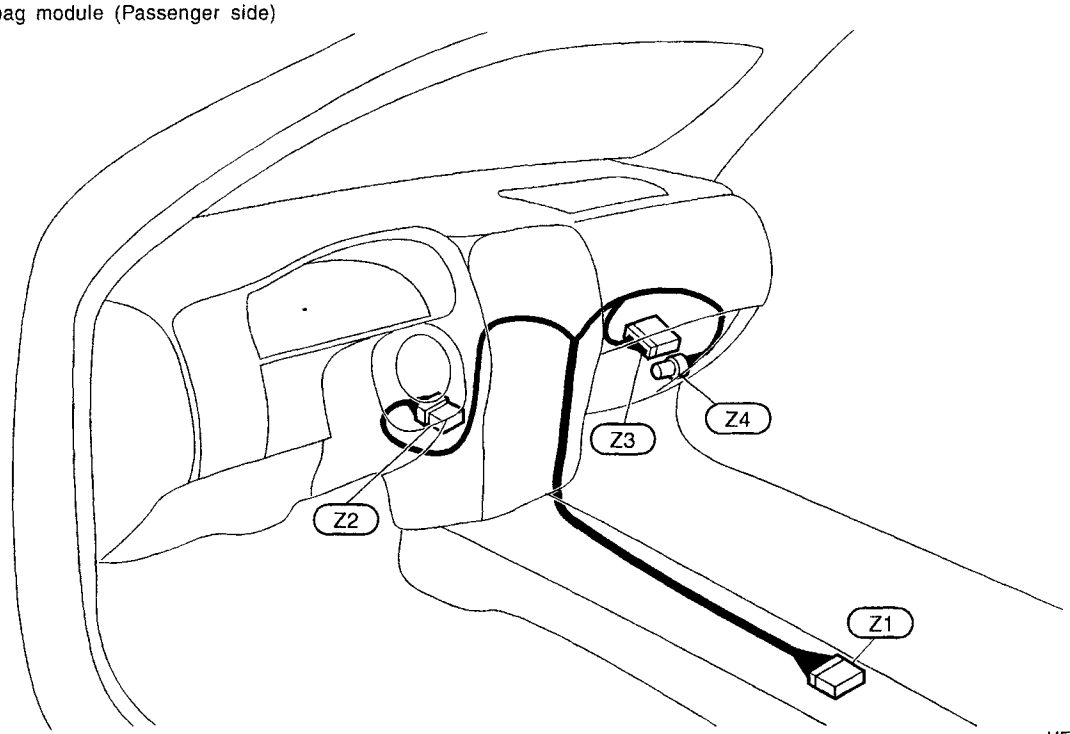

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| E201 | GY/4 | : To E27 (LHD models) | E210 | GY/2 | : Engine coolant temperature sensor | E225 | — | : Battery+ | |
| E202 | B/8 | : To E24 (RHD models) | E211 | B/1 | : Thermal transmitter | E228 | B/1 | : To E6 | |
| E203 | GY/8 | : To E26 (RHD models) | E212 | — | : Engine ground | E229 | GY/1 | : To E7 (LHD models) | |
| E204 | B/2 | : To E22 | E213 | — | : Glow plug | E230 | B/8 | : To E9 (LHD models) | |
| E205 | — | : Body ground | E214 | GY/4 | : Injection pump | E231 | GY/4 | : To E8 (LHD models) | |
| E206 | GY/2 | : Alternator | E216 | GY/2 | : Vehicle speed sensor | E232 | — | : Alternator | |
| E207 | B/1 | : Compressor | E218 | — | : Starter motor | E233 | — | : Alternator | |
| E208 | — | : Body ground | E219 | B/1 | : Starter motor | | | | |
| E209 | B/1 | : Oil pressuer switch | E221 | GY/2 | : Back-up lamp switch | | | | |

HEL169

## Air Bag Harness

### LHD MODELS

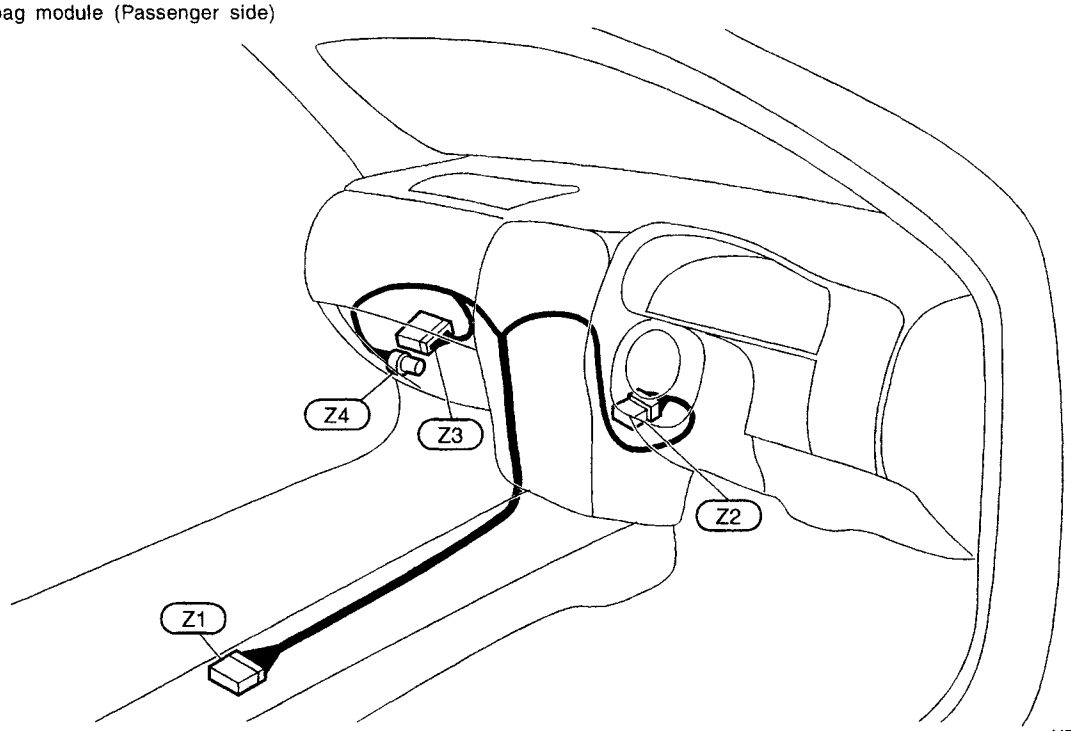
(Z1) Y/24 : Air bag diagnosis sensor unit
(Z2) Y/6 : Spiral cable
(Z3) Y/12 : To (M62)
(Z4) Y/2 : Air bag module (Passenger side)




HEL180

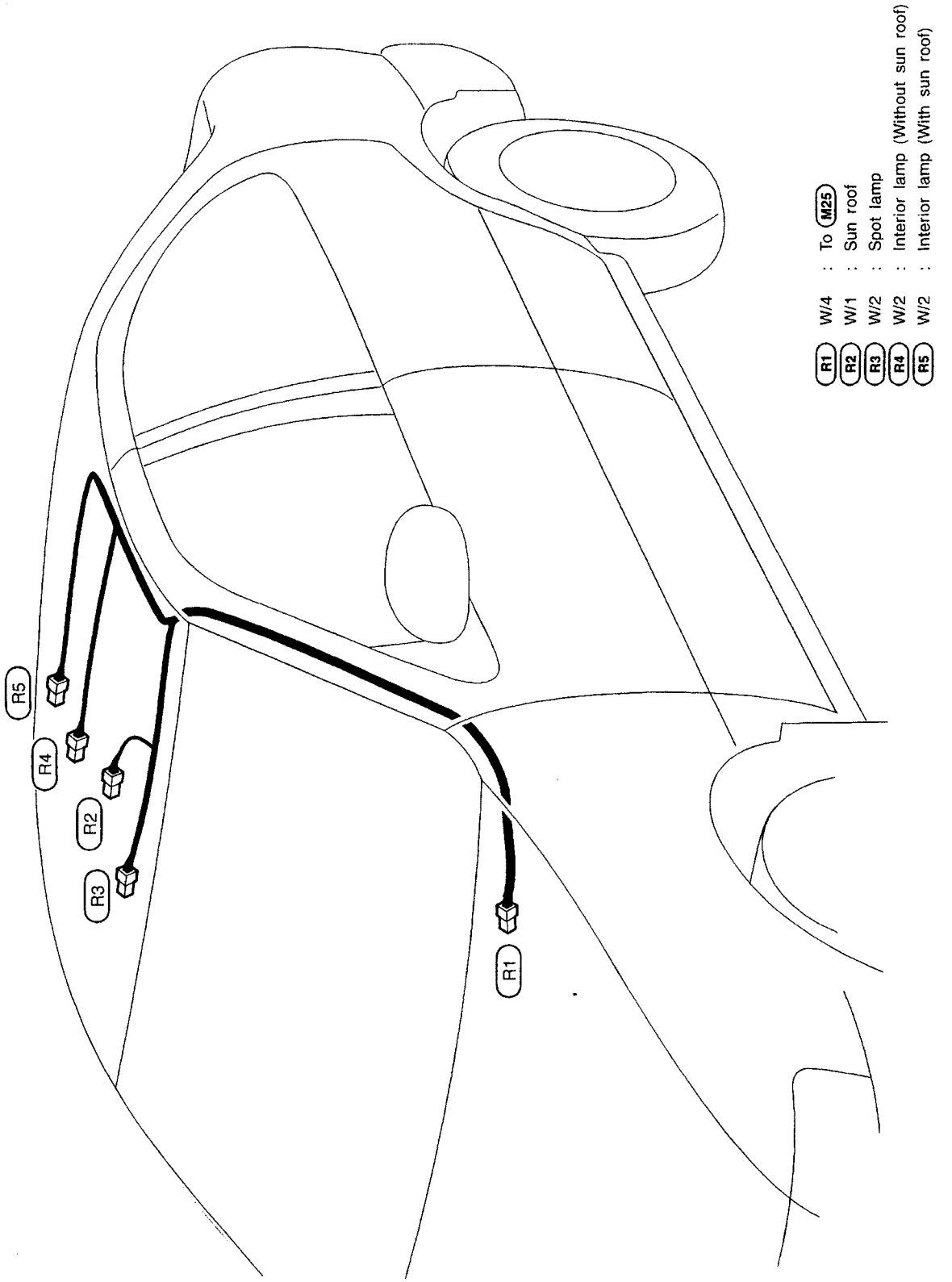
### RHD MODELS

(Z1) Y/24 : Air bag diagnosis sensor unit
(Z2) Y/6 : Spiral cable
(Z3) Y/12 : To (M62)
(Z4) Y/2 : Air bag module (Passenger side)



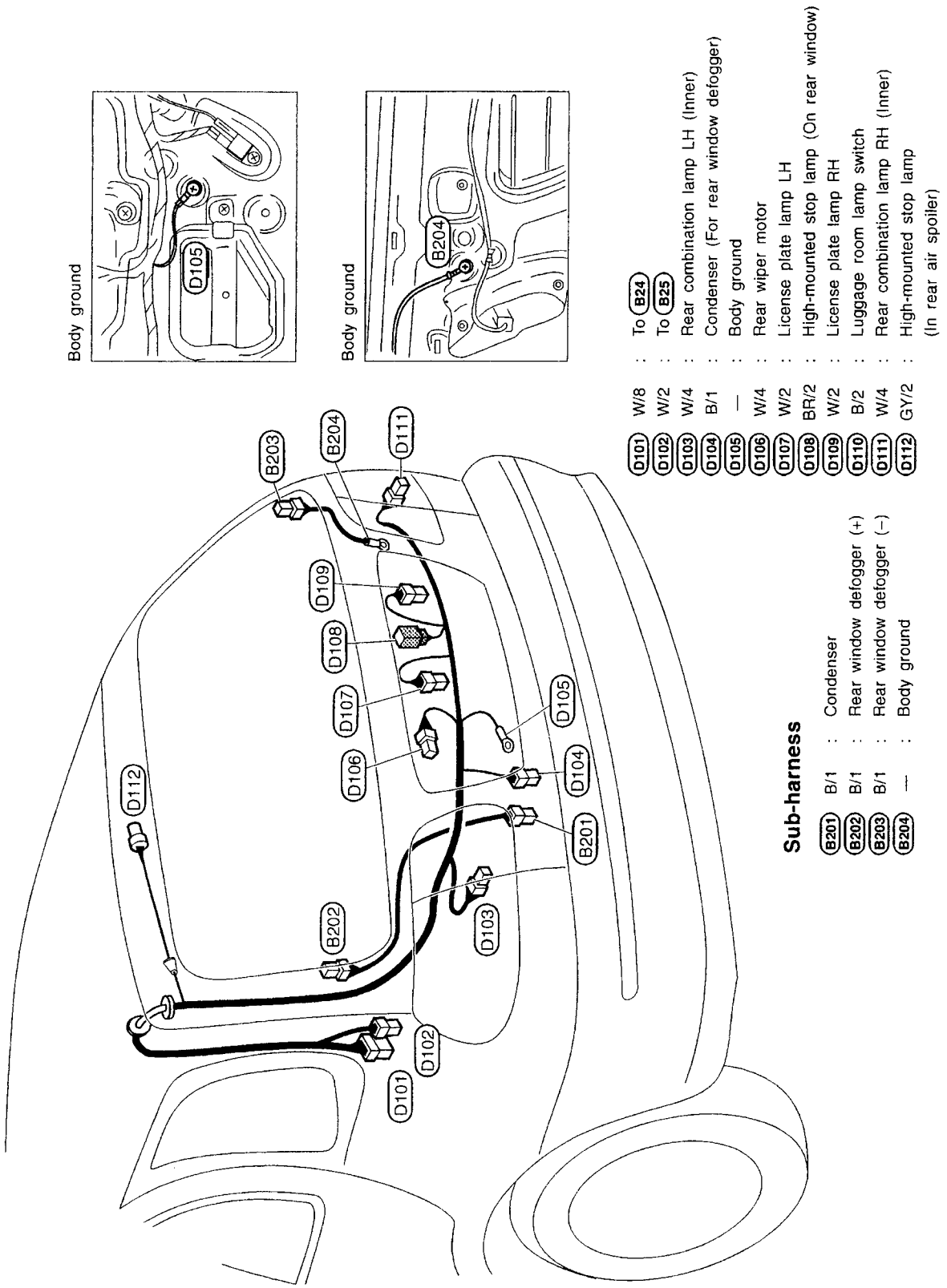

HEL181

## Room Lamp Harness




HEL182

## Back Door Harness



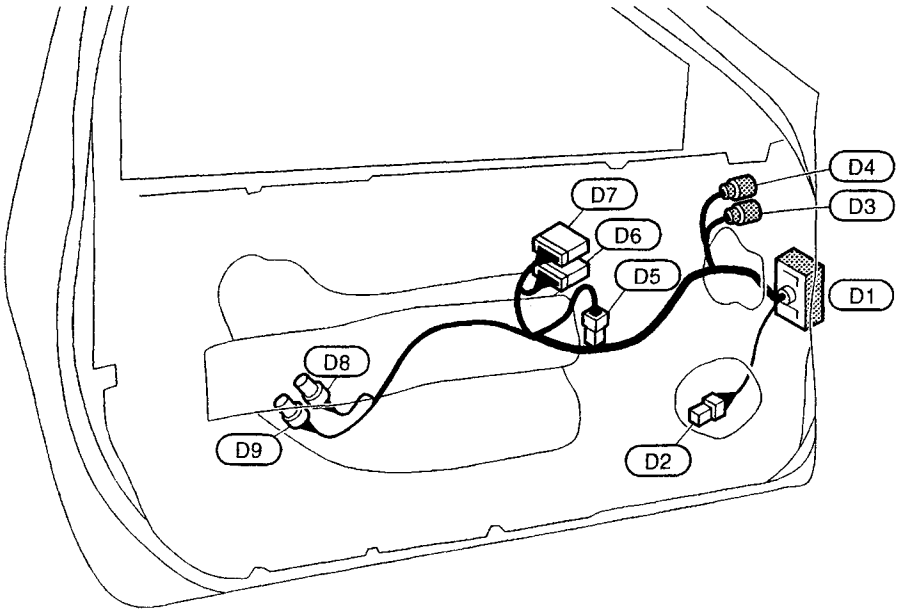

EL

HEL183

## Front Door Harness (LH side)

### LHD MODELS (Standard type)

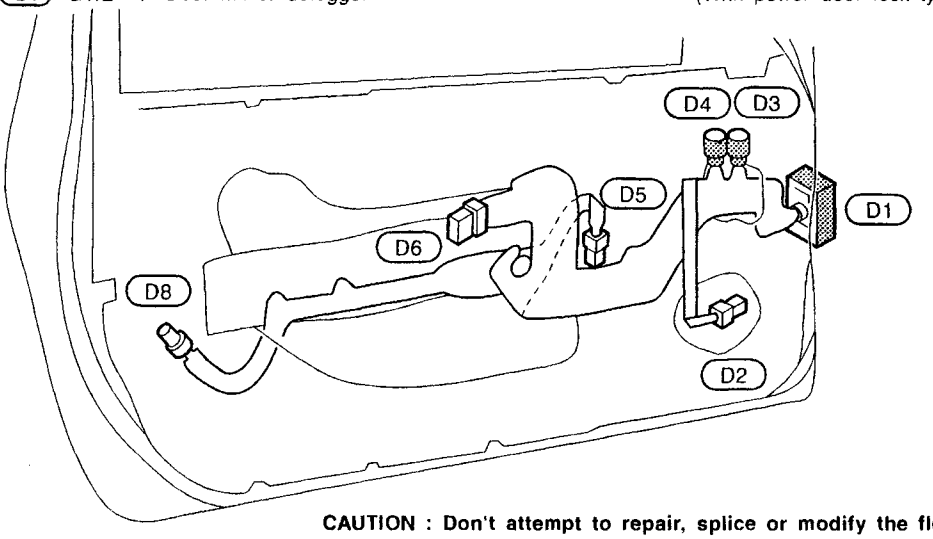
(D1) SMJ : To (M1)
(D2) BR/2 : Door speaker
(D3) BR/3 : Door mirror actuator
(D4) GY/2 : Door mirror defogger
(D5) B/2 : Power window regulator
(D6) W/12 : Power window main switch (With front door power window)
(D7) W/16 : Power window main switch (With front and rear door power window)
(D8) GY/4 : Door lock actuator (With power door lock type-1)
(D9) GY/2 : Lock knob switch (With power door lock type-2)




HEL184

### LHD MODELS (FFC type)

(D1) SMJ : To (M1)
(D2) BR/2 : Door speaker
(D3) BR/3 : Door mirror actuator
(D4) GY/2 : Door mirror defogger
(D5) B/2 : Power window regulator
(D6) W/12 : Power window main switch
(D8) GY/4 : Door lock actuator (With power door lock type-1)



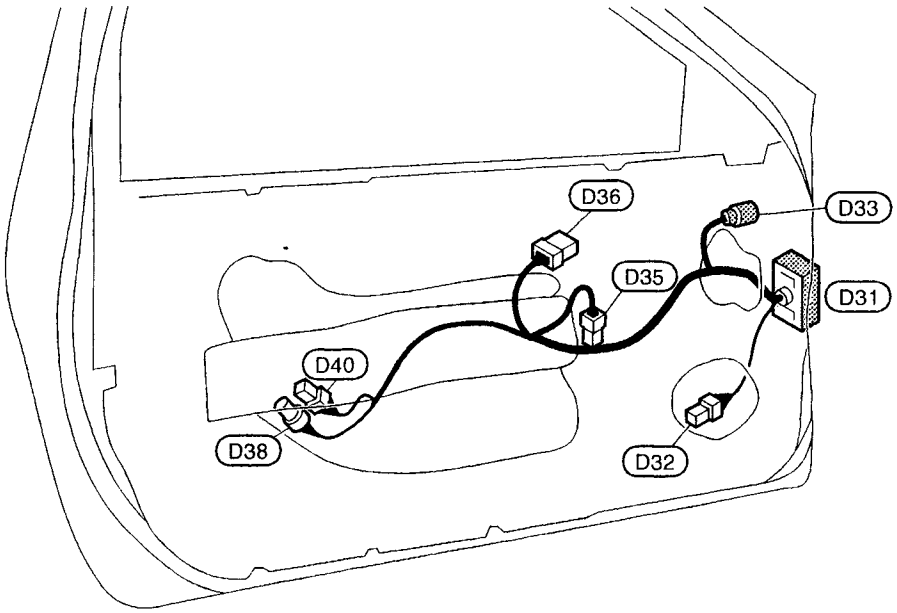

**CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.**

HEL185

## Front Door Harness (LH side) (Cont'd)

### RHD MODELS (Standard type)

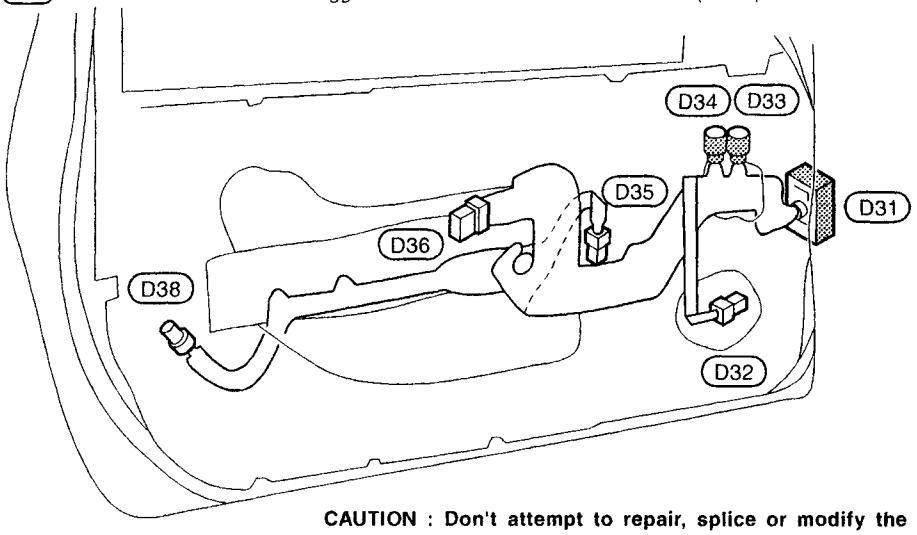
(D31) SMJ : To (M75)
(D32) BR/2 : Door speaker
(D33) BR/3 : Door mirror actuator
(D35) B/2 : Power window regulator
(D36) W/8 : Power window sub-switch
(D38) GY/4 : Door lock actuator (With power door lock type-1)
(D40) W/4 : Door lock actuator (With power door lock type-2)




HEL186

### RHD MODELS (FFC type)

(D31) SMJ : To (M75)
(D32) BR/2 : Door speaker
(D33) BR/3 : Door mirror actuator
(D34) GY/2 : Door mirror defogger
(D35) B/2 : Power window regulator
(D36) W/8 : Power window sub-switch
(D38) GY/4 : Door lock actuator (With power door lock type-1)




**CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.**

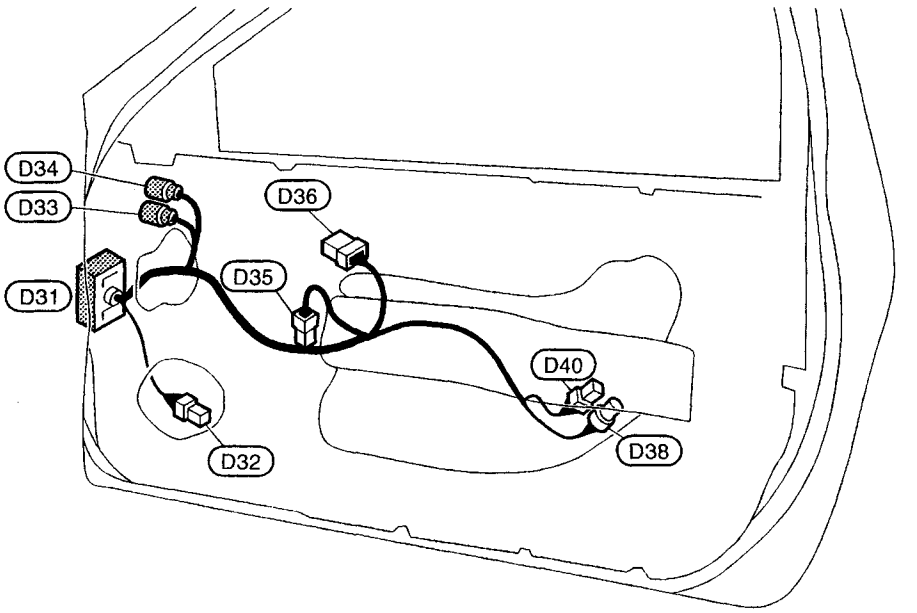
HEL187

EL

## Front Door Harness (RH side)

### LHD MODELS (Standard type)

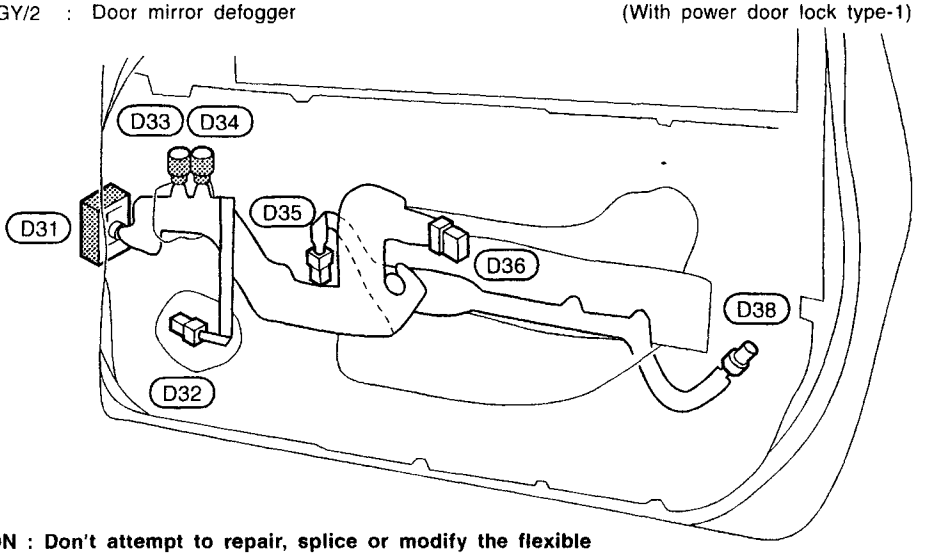
(D31) SMJ : To (M75)
(D32) BR/2 : Door speaker
(D33) BR/3 : Door mirror actuator
(D34) GY/2 : Door mirror defogger
(D35) B/2 : Power window regulator
(D36) W/8 : Power window sub-switch
(D38) GY/4 : Door lock actuator (With power door lock type-1)
(D40) W/4 : Door lock actuator (With power door lock type-2)




HEL188

### LHD MODELS (FFC type)

(D31) SMJ : To (M75)
(D32) BR/2 : Door speaker
(D33) BR/3 : Door mirror actuator
(D34) GY/2 : Door mirror defogger
(D35) B/2 : Power window regulator
(D36) W/8 : Power window sub-switch
(D38) GY/4 : Door lock actuator (With power door lock type-1)



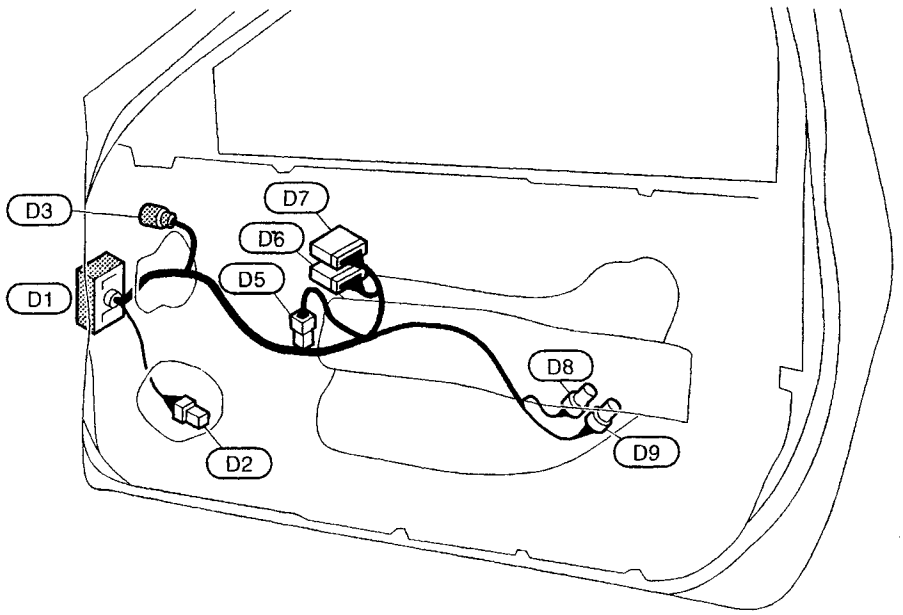

**CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.**

HEL189

## Front Door Harness (RH side) (Cont'd)

### RHD MODELS (Standard type)

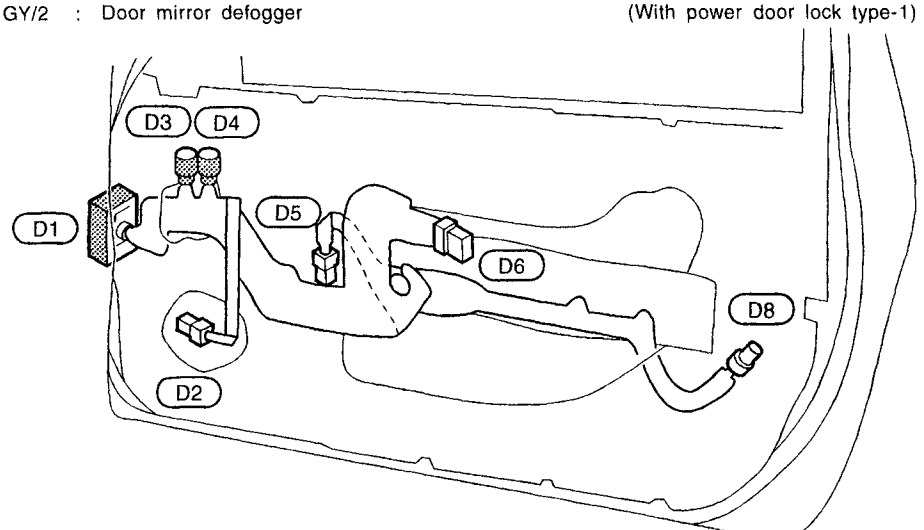
(D1) SMJ : To (M1)
(D2) BR/2 : Door speaker
(D3) BR/3 : Door mirror actuator
(D5) B/2 : Power window regulator
(D6) W/12 : Power window main switch (With front door power window)
(D7) W/16 : Power window main switch (With front and rear door power window)
(D8) GY/4 : Door lock actuator (With power door lock type-1)
(D9) GY/2 : Lock knob switch (With power door lock type-2)




HEL190

### RHD MODELS (FFC type)

(D1) SMJ : To (M1)
(D2) BR/2 : Door speaker
(D3) BR/3 : Door mirror actuator
(D4) GY/2 : Door mirror defogger
(D5) B/2 : Power window regulator
(D6) W/12 : Power window main switch
(D8) GY/4 : Door lock actuator (With power door lock type-1)



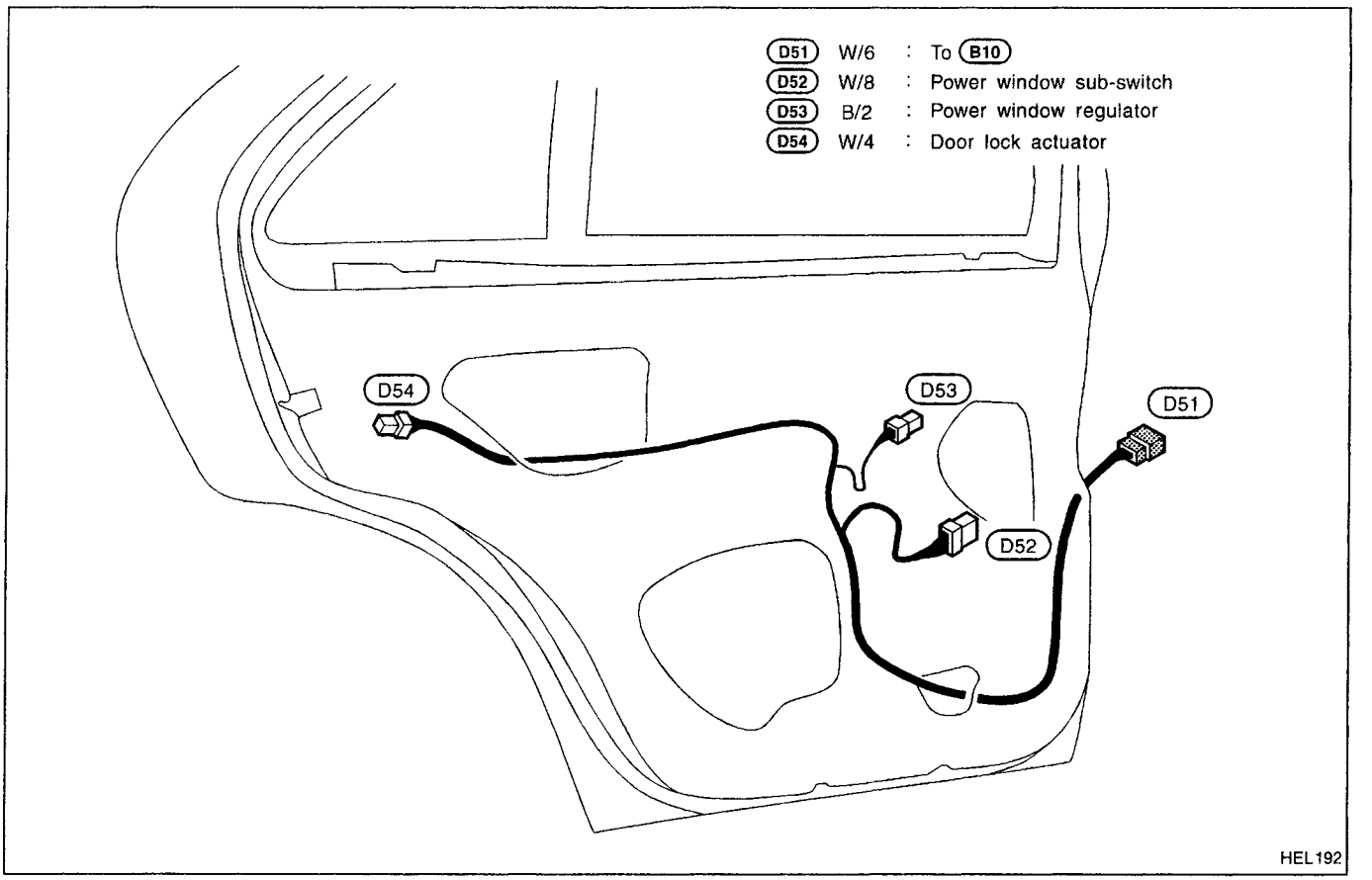

**CAUTION : Don't attempt to repair, splice or modify the flexible flat circuit (FFC). If the FFC is damaged, replace with a new one.**

HEL191

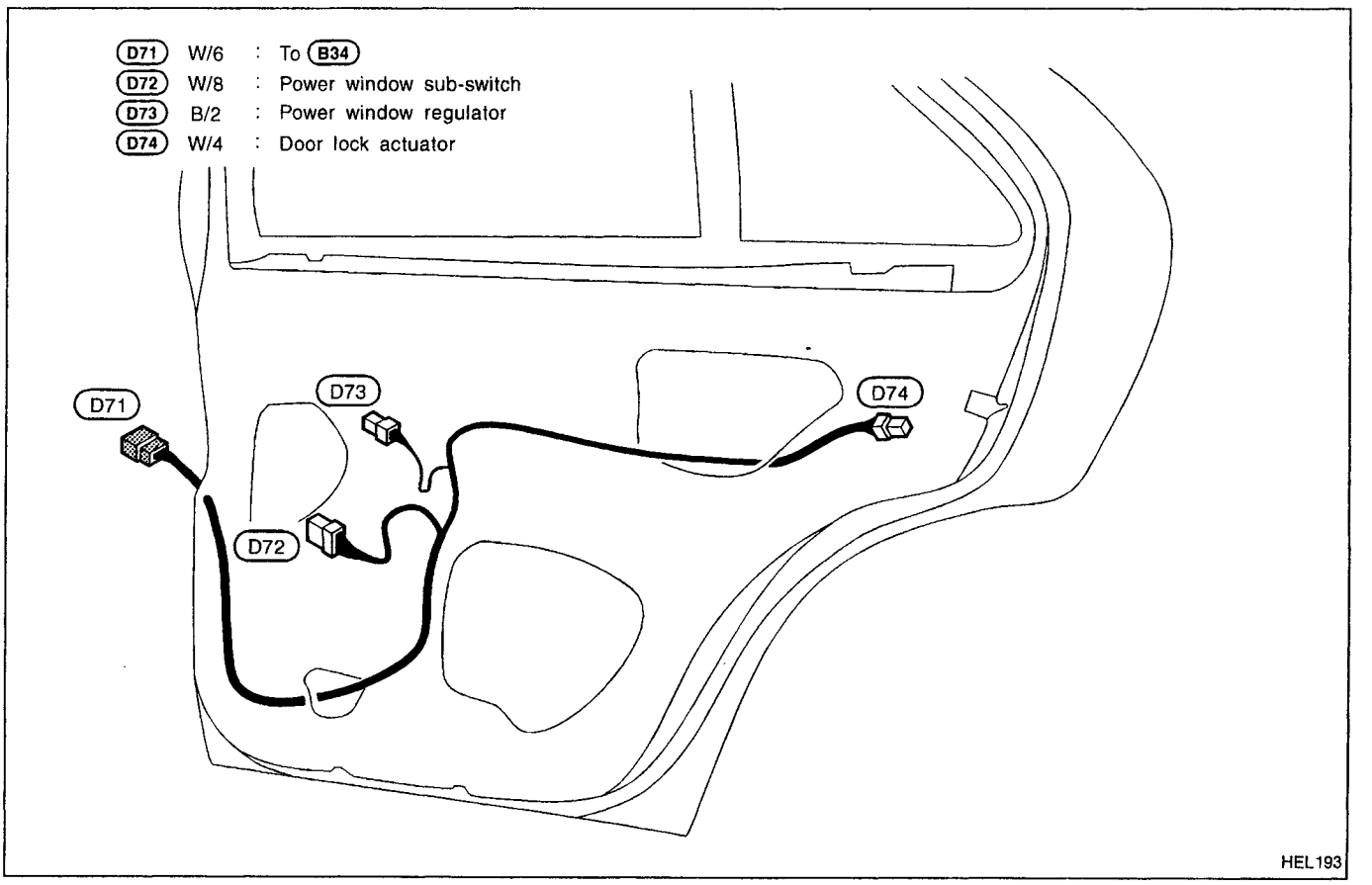
EL

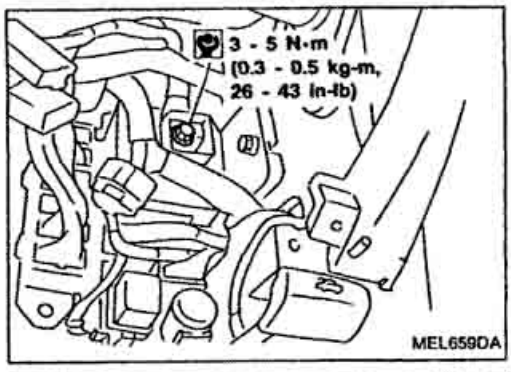
## Rear Door Harness

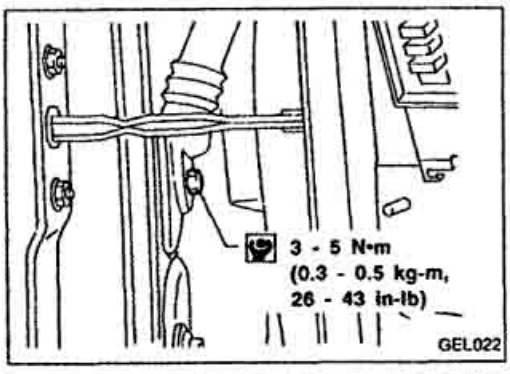
### LH SIDE

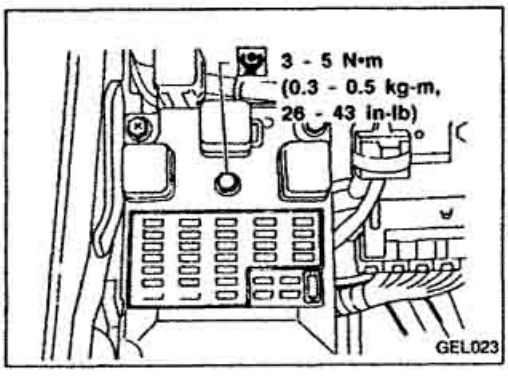



### RH SIDE





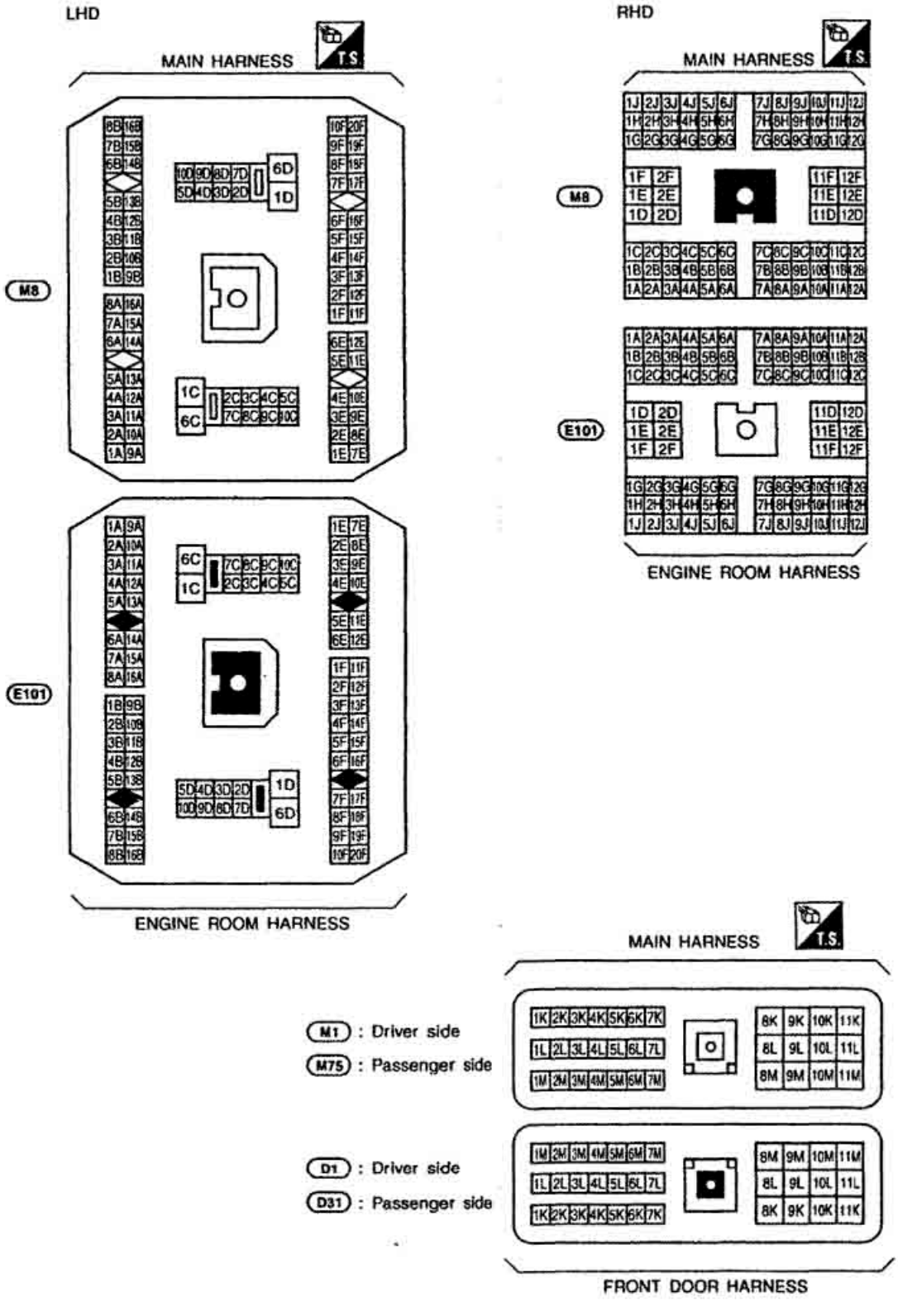

## INSTALLATION

To install SMJ and FUSE BLOCK (J/B), tighten bolts until orange "fulltight" mark appears and then retighten to specified torque as required.

**: 3 - 5 N·m**
**(0.3 - 0.5 kg-m, 26 - 43 in-lb)**

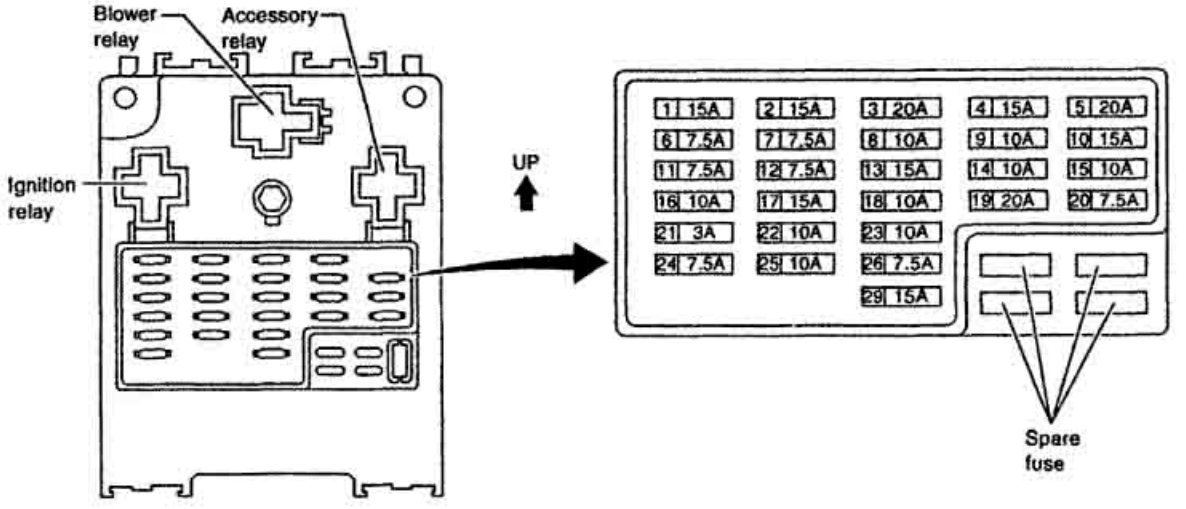
**CAUTION:**
**Do not overtighten bolts, otherwise, they may be damaged.**

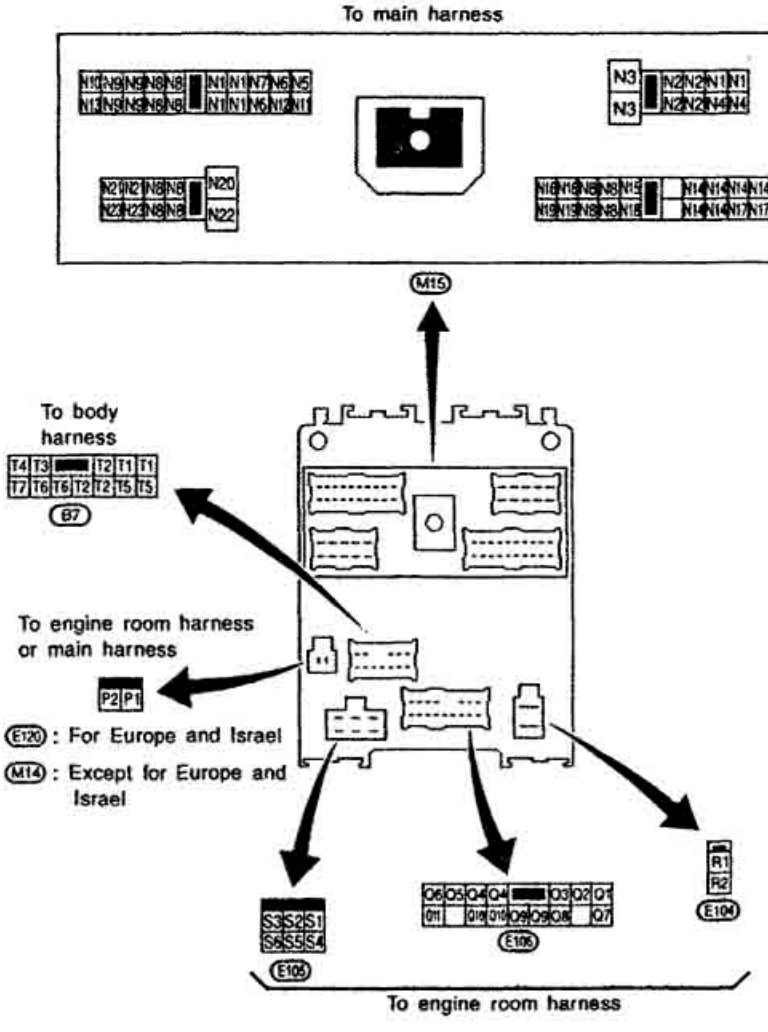
## Terminal Arrangement



# FUSE BLOCK — Junction Box (J/B)

## Terminal Arrangement



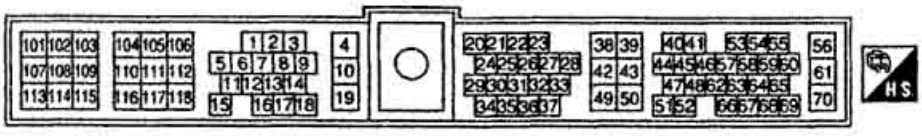

GEL025

## Terminal Arrangement

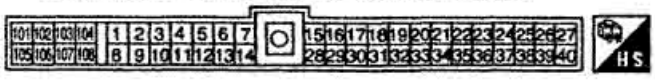
**ECM (ECCS control module) (F1) (GA engine except for Australia and SR engine)**



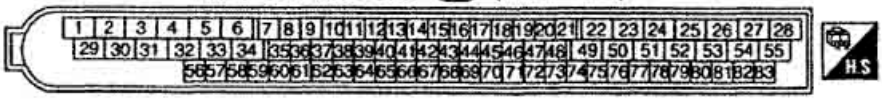
**ECM (ECCS control module) (F1) (GA engine for Australia)**



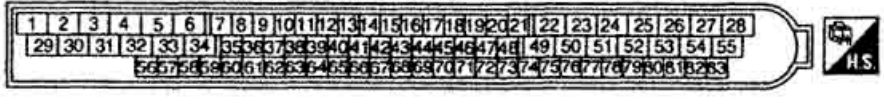
**ECM (Engine control module) (M39) (CD engine)**



**ABS CONTROL UNIT (B111) (LHD models)**



**ABS CONTROL UNIT (B111) (RHD models)**



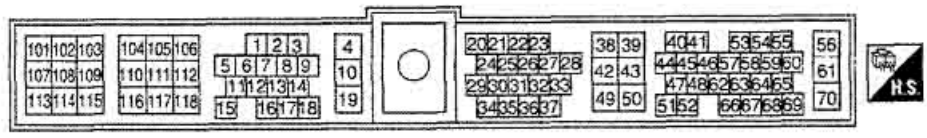
GEL027

## Terminal Arrangement

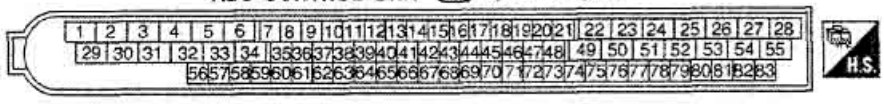
**ECM (ECCS control module)** (F1) (GA engine except for Australia and SR engine)



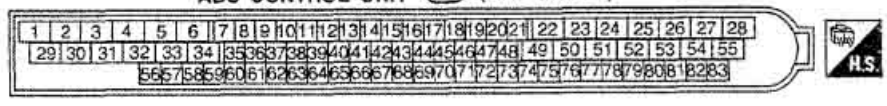

**ECM (ECCS control module)** (F1) (GA engine for Australia)
(M39) (CD engine)




**ABS CONTROL UNIT** (B111) (LHD models)

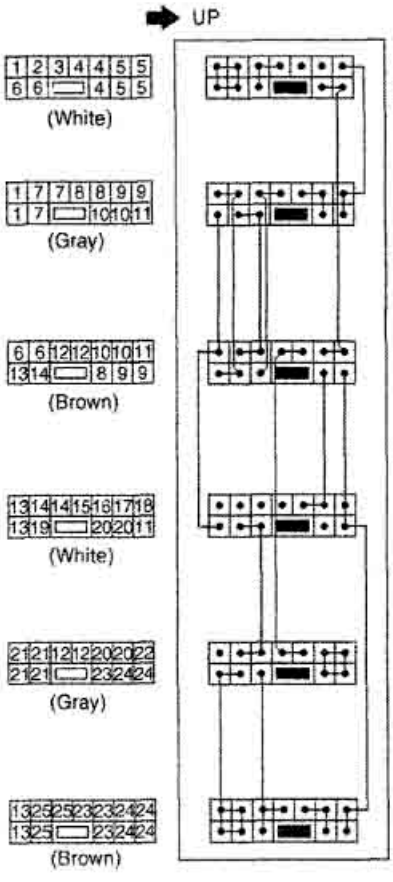



**ABS CONTROL UNIT** (B111) (RHD models)

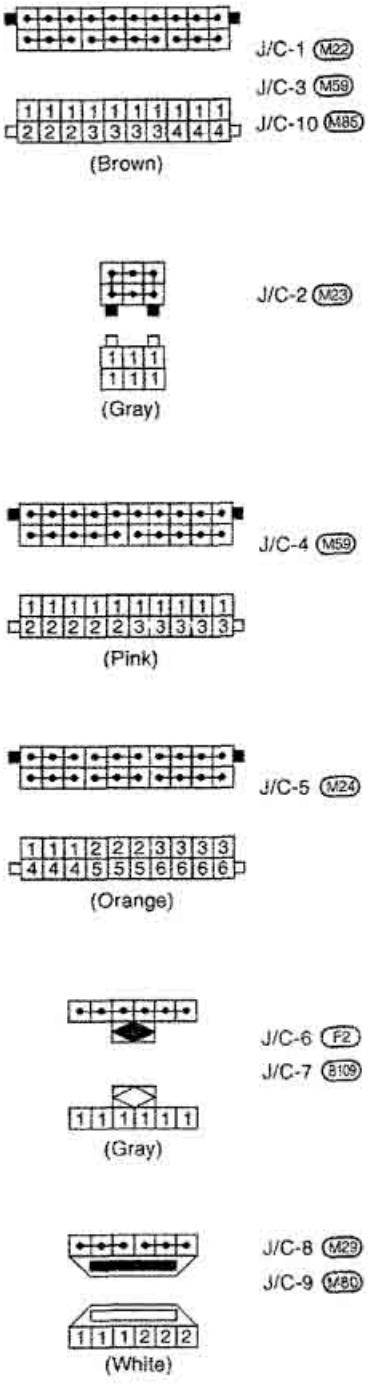


# JOINT CONNECTOR (J/C)

## Terminal Arrangement




JUNCTION BOX No.2
(Joint connectors) (M19)




GEL026-A