

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 FAN | LC SECTION |
| ECCS, IGNITION SYSTEM, QUICK-GLOW SYSTEM | EC SECTION |
| ANTI-LOCK BRAKE SYSTEM | BR SECTION |
| SRS "AIR BAG" | RS SECTION |
| HEATER AND AIR CONDITIONER | HA SECTION |

EL

IDX

PRECAUTIONS

Supplemental Restraint System (SRS) “AIR BAG” (4WD models)

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, 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” (2WD models)

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

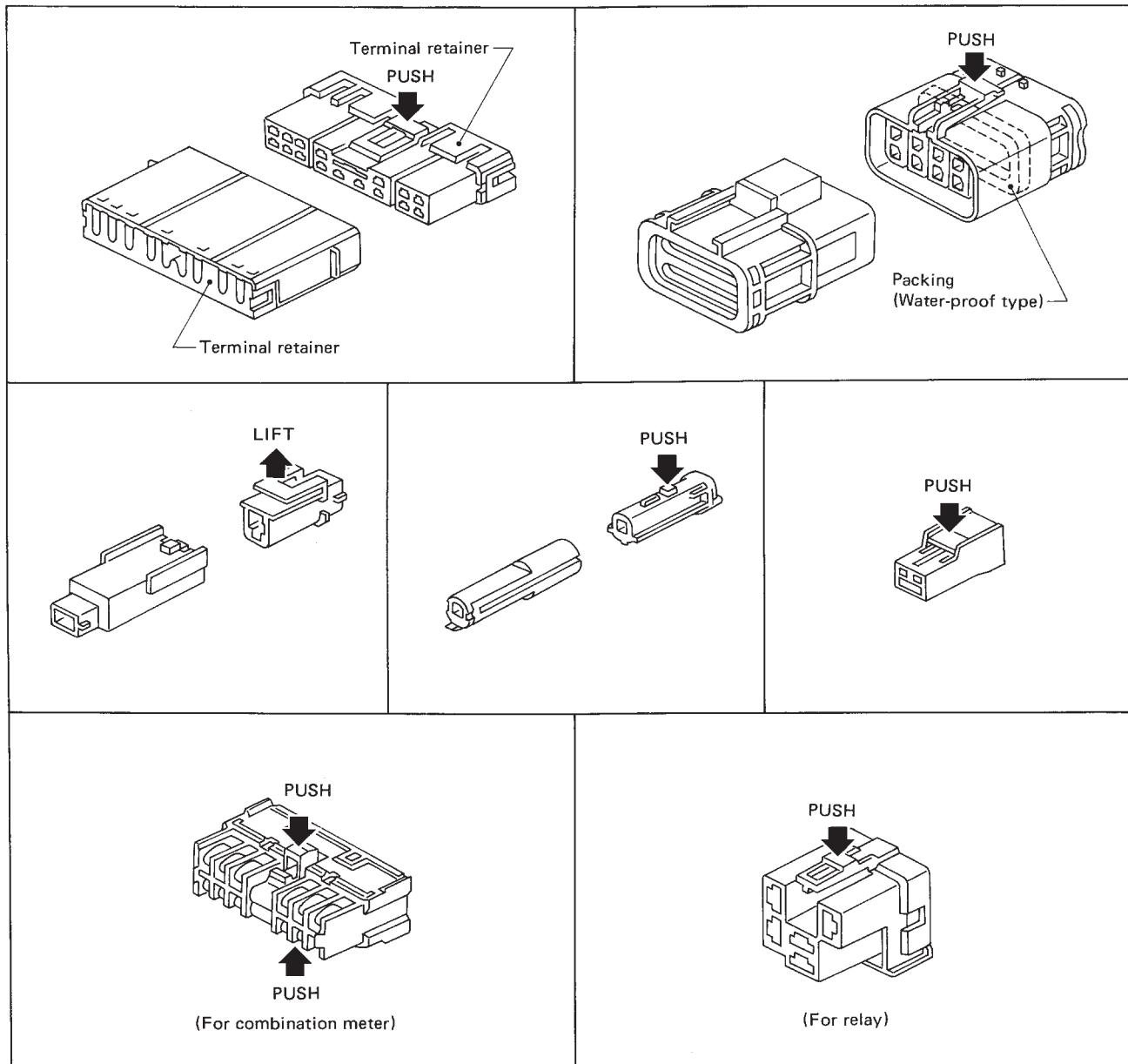
HARNESS CONNECTOR

- 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]



GI

MA

EM

LC

EC

FE

CL

MT

TF

PD

FA

RA

BR

ST

RS

BT

HA

EL

IDX

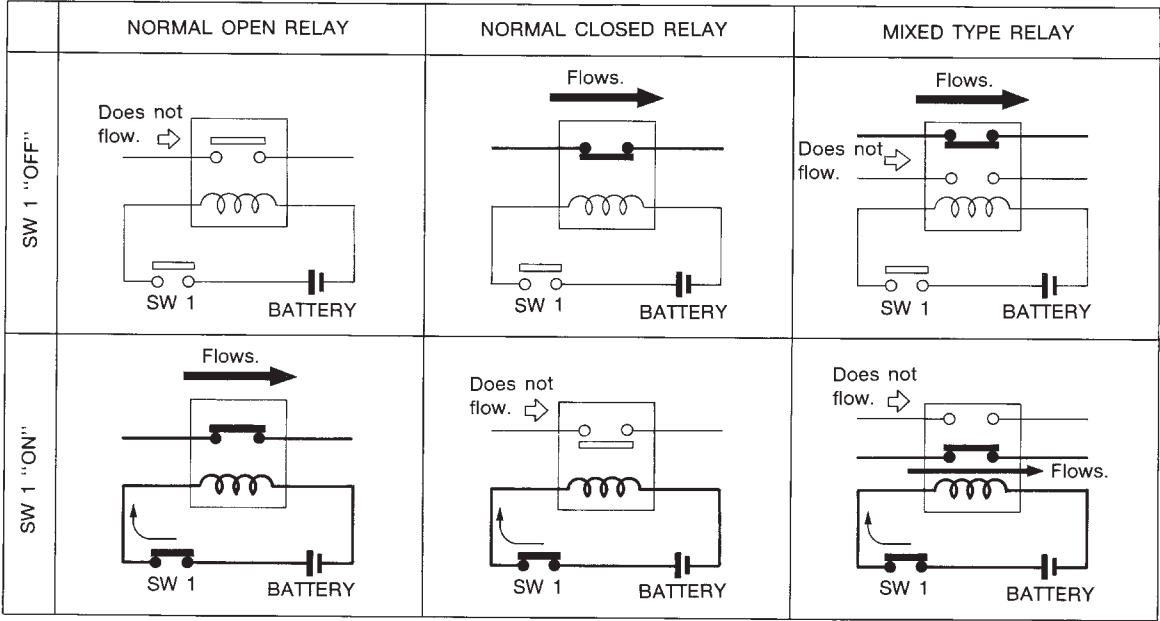
SEL769D

STANDARDIZED RELAY

Description

NORMAL OPEN, NORMAL CLOSED AND MIXED TYPE RELAYS

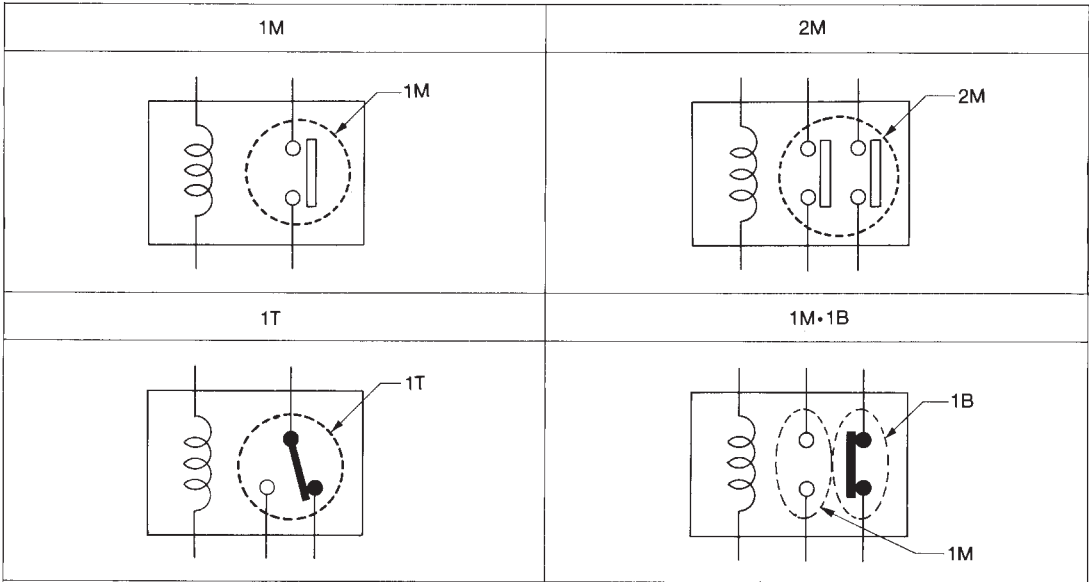
Relays can mainly be divided into three types: normal open, normal closed and mixed type relays.



SEL881H

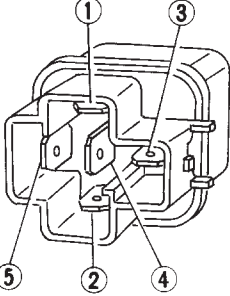
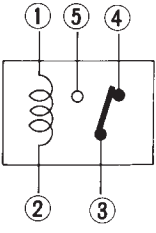
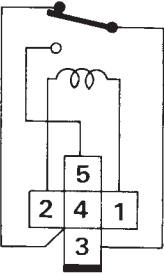
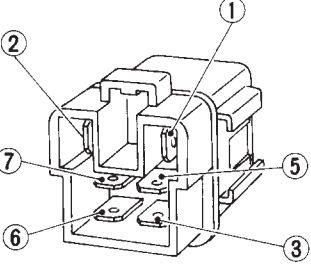
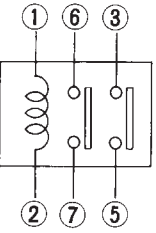
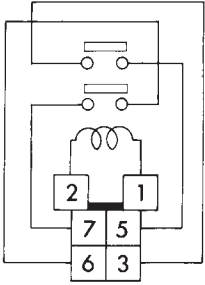
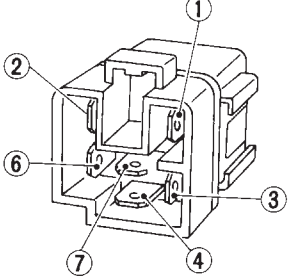
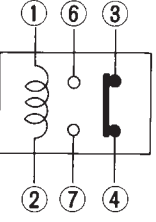
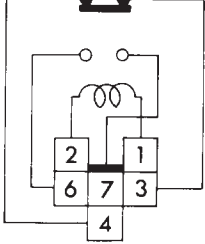
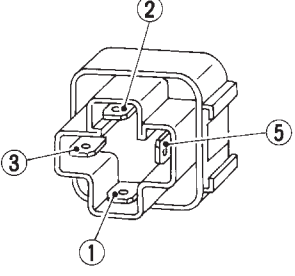
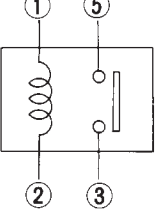
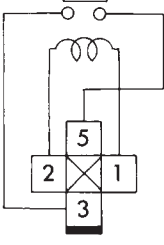
TYPE OF STANDARDIZED RELAYS

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



SEL882H

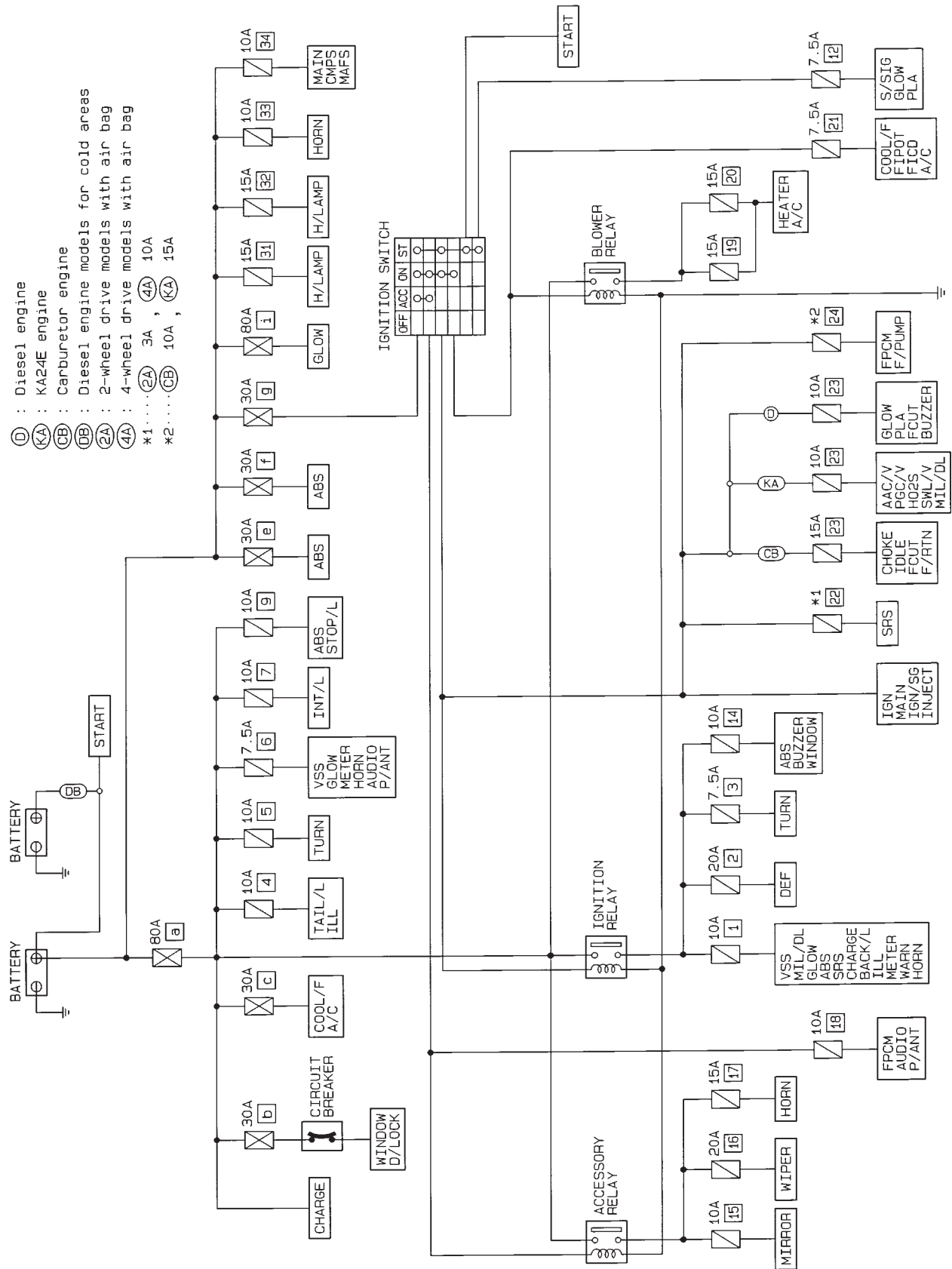
STANDARDIZED RELAY
Description (Cont'd)

| 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.

GI
MA
EM
LC
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TF
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FA
RA
BR
ST
RS
BT
HA
EL
IDX

EL-6



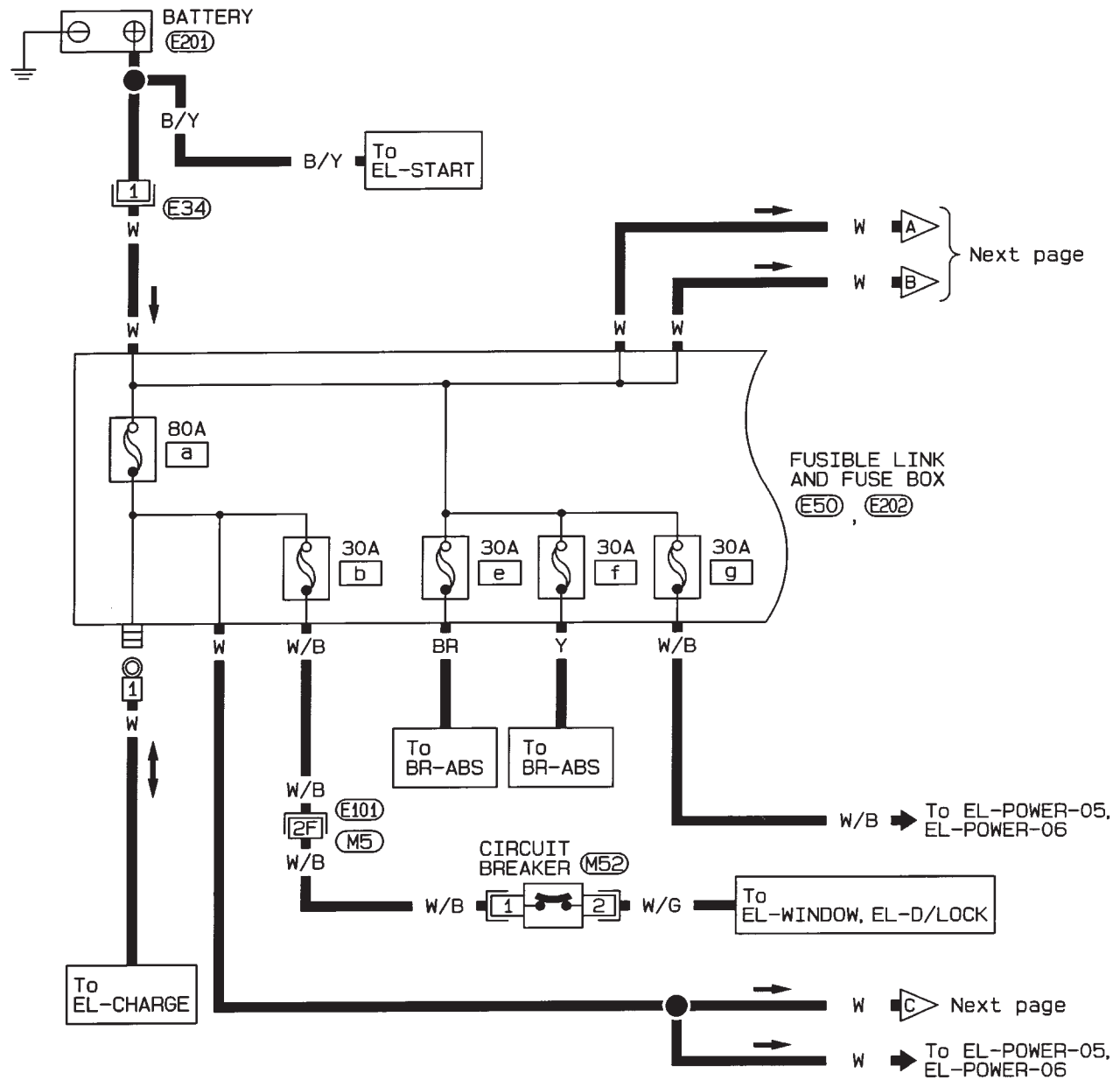
POWER SUPPLY ROUTING

Wiring Diagram — POWER —

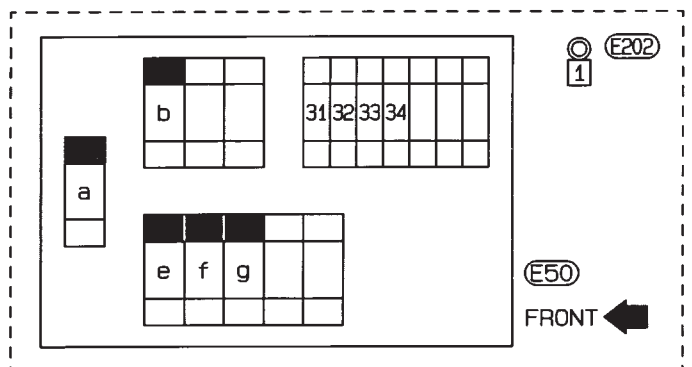
BATTERY POWER SUPPLY — IGNITION SWITCH IN ANY POSITION

Gasoline engine

EL-POWER-01



1 M52 W 1 E34 B



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M5, E101

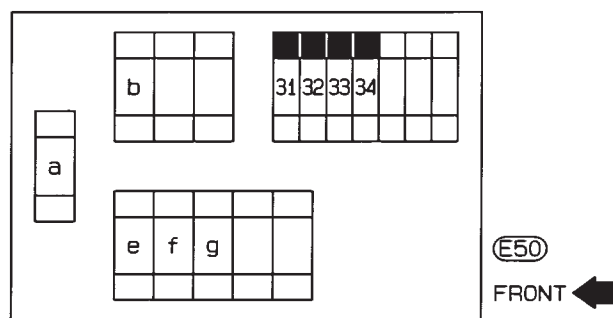
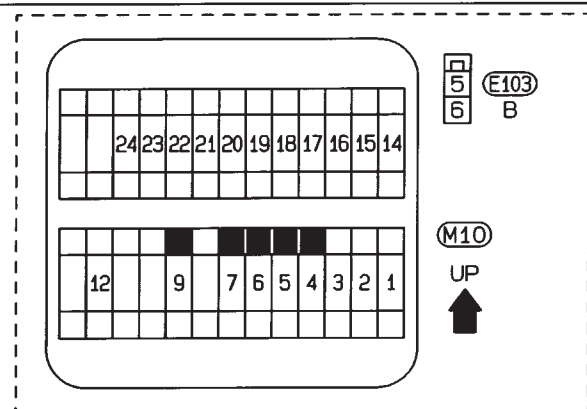
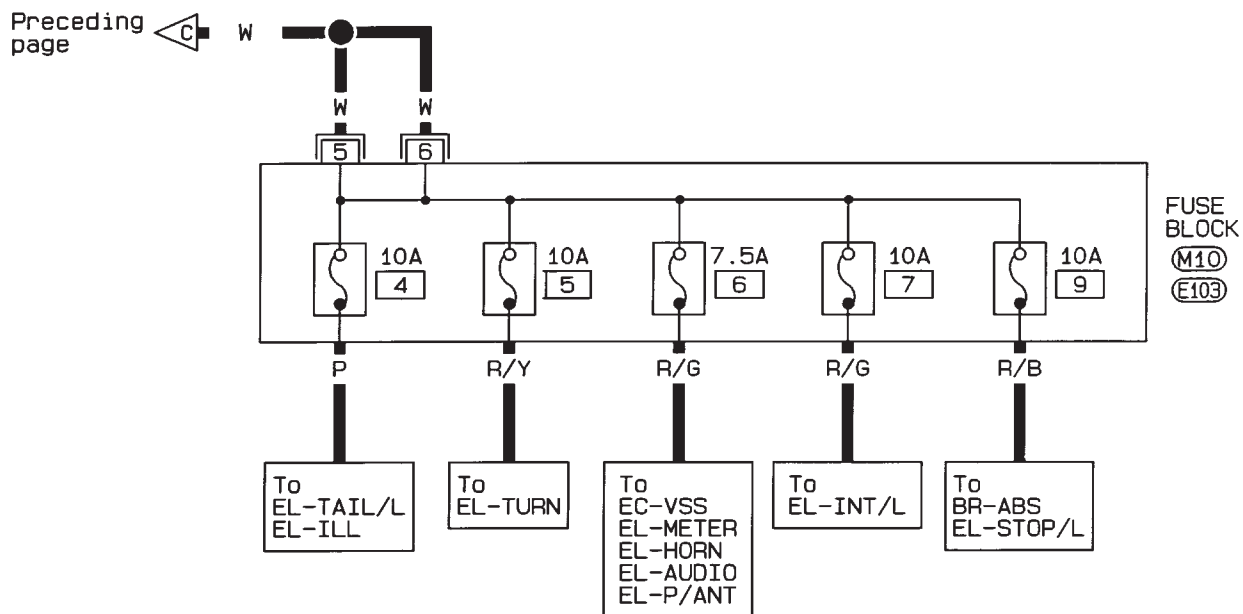
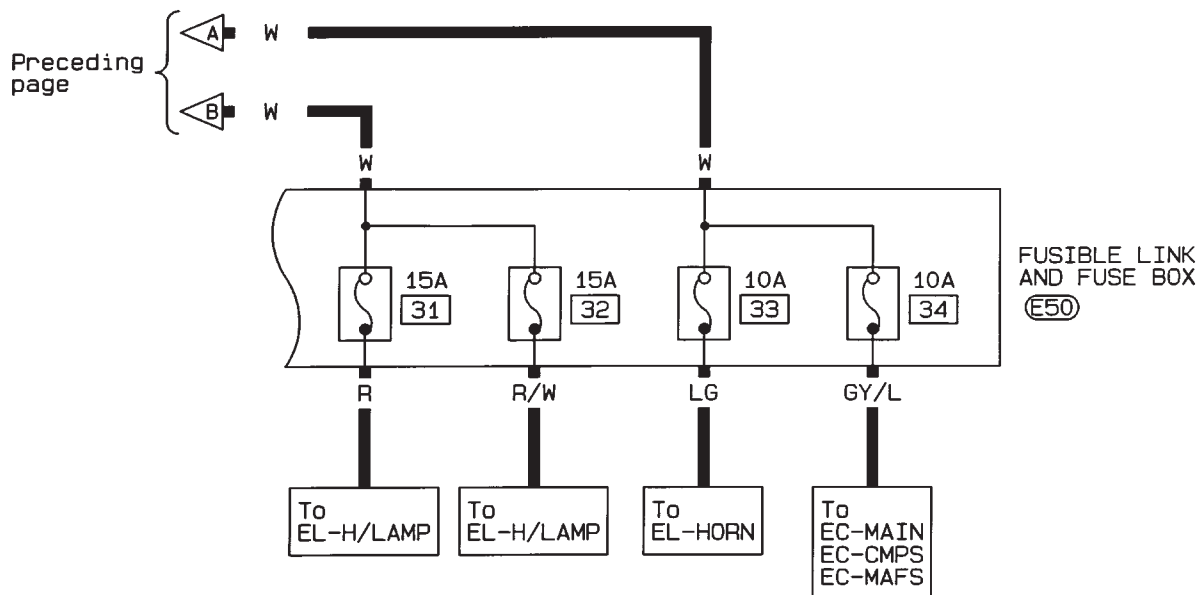
GI
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LC
EC
FE
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MT
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POWER SUPPLY ROUTING

Wiring Diagram — POWER — (Cont'd)

Gasoline engine

EL-POWER-02



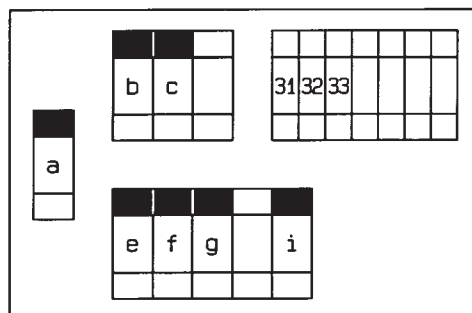
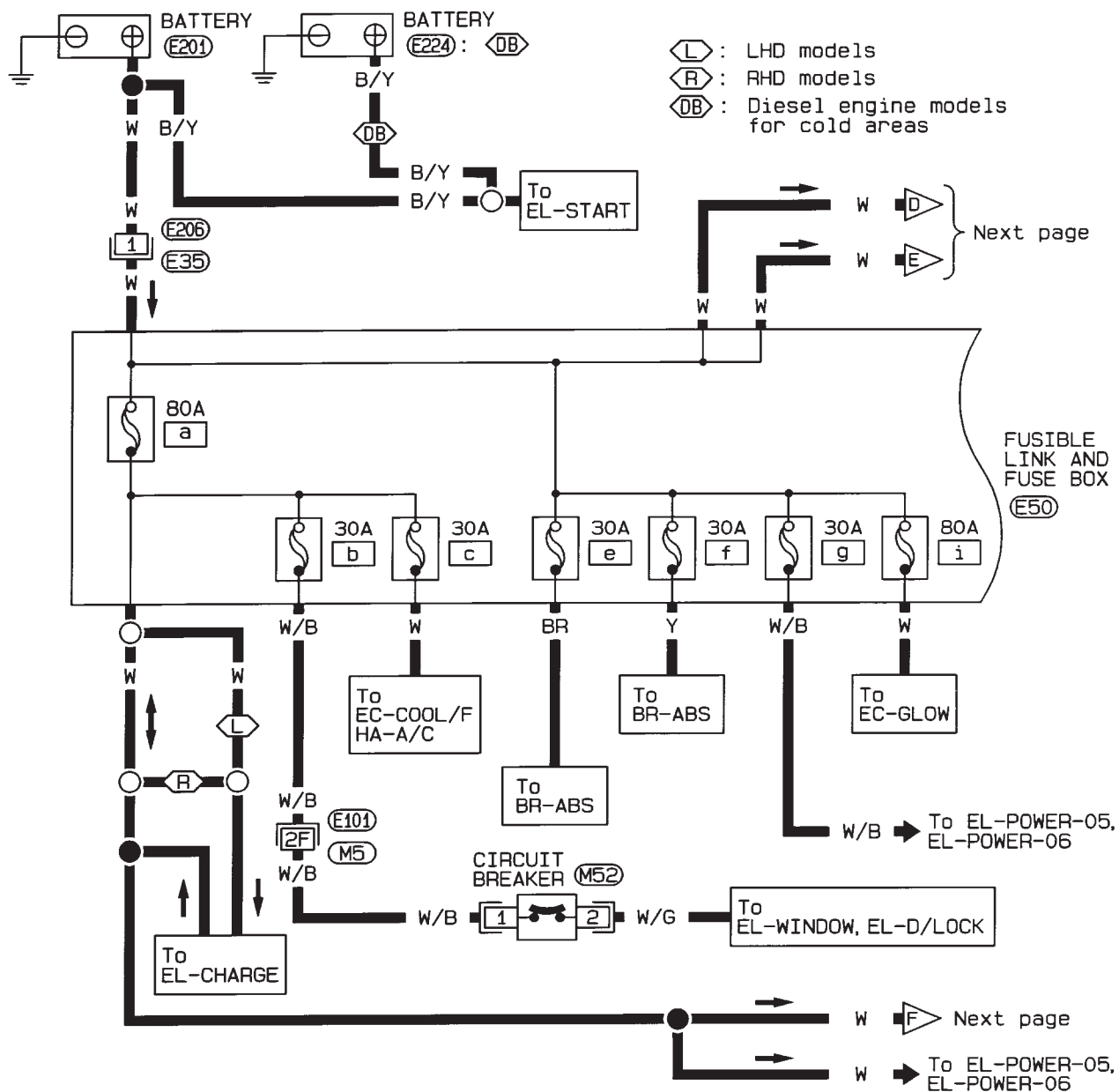
Wiring Diagram — POWER — (Cont'd)

BATTERY POWER SUPPLY — IGNITION SWITCH IN ANY POSITION

Diesel engine

Diesel engine

EL-POWER-03



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M5 E101

EL

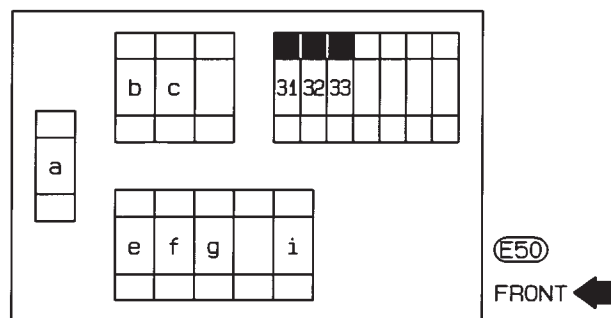
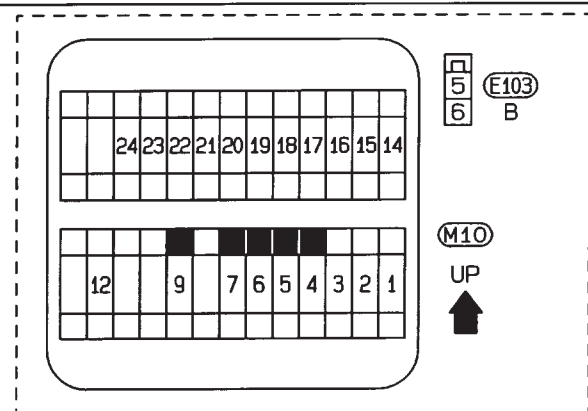
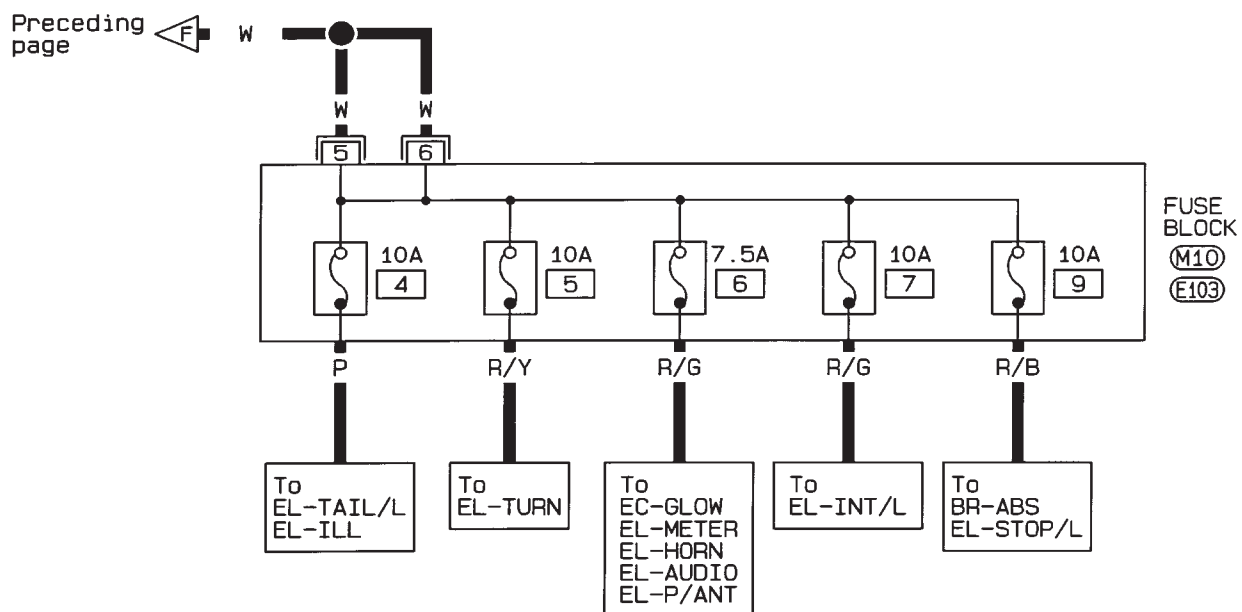
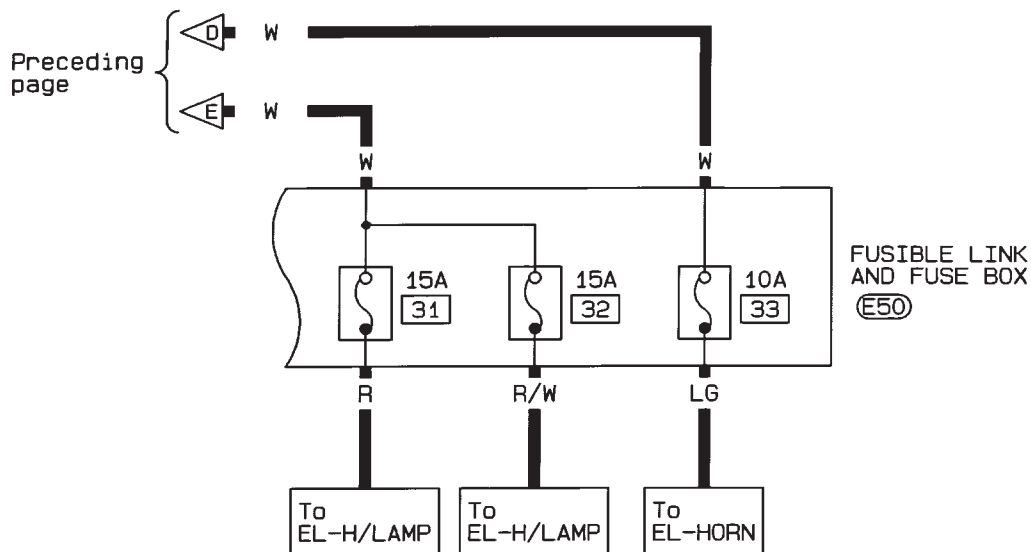
IDX

POWER SUPPLY ROUTING

Wiring Diagram — POWER — (Cont'd)

Diesel engine

EL-POWER-04

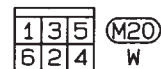
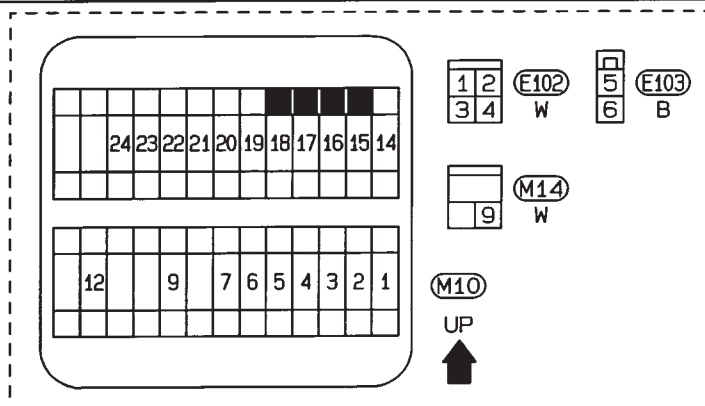
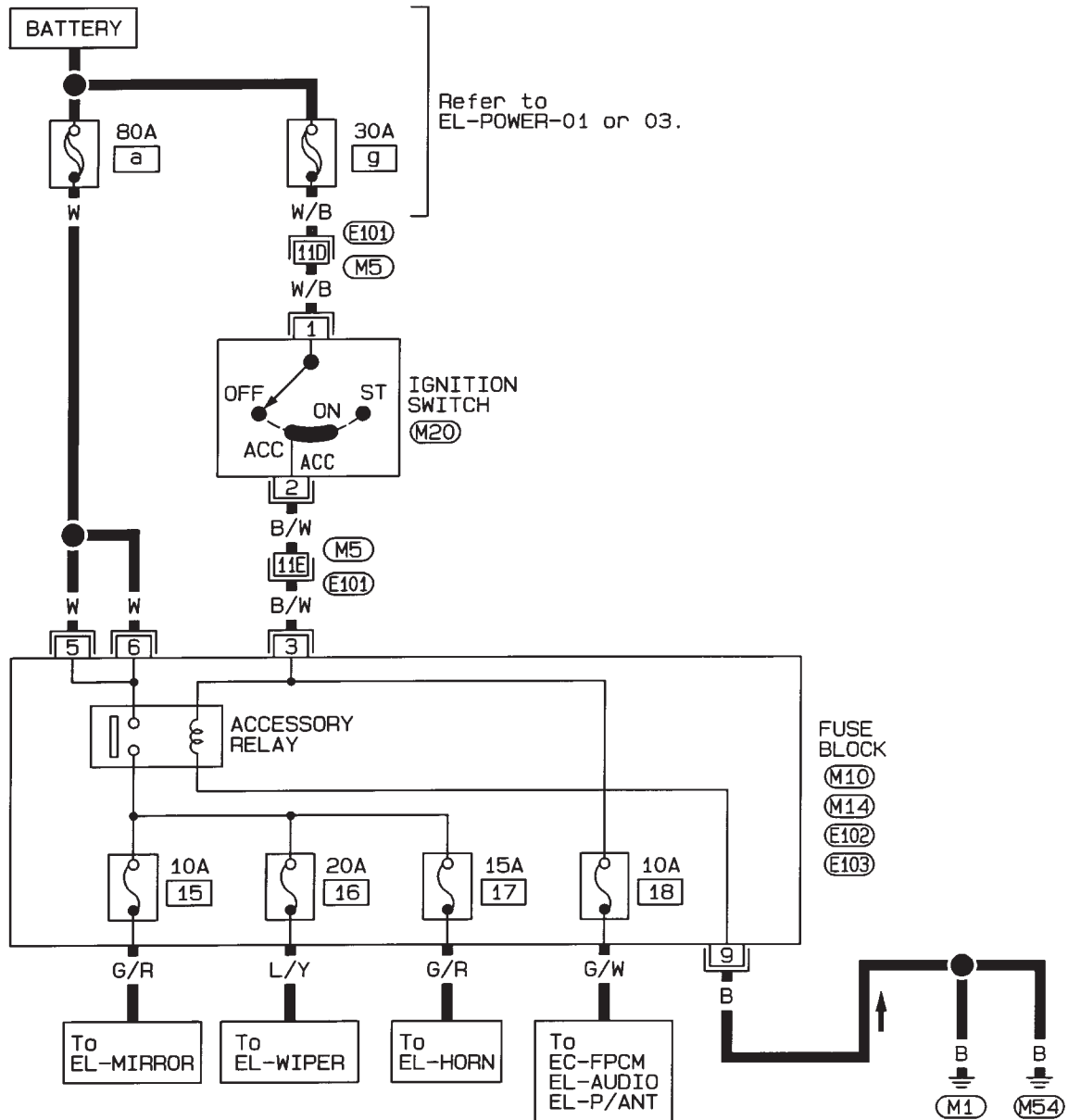


POWER SUPPLY ROUTING

Wiring Diagram — POWER — (Cont'd)

ACCESSORY POWER SUPPLY — IGNITION SWITCH IN "ACC" OR "ON"

EL-POWER-05



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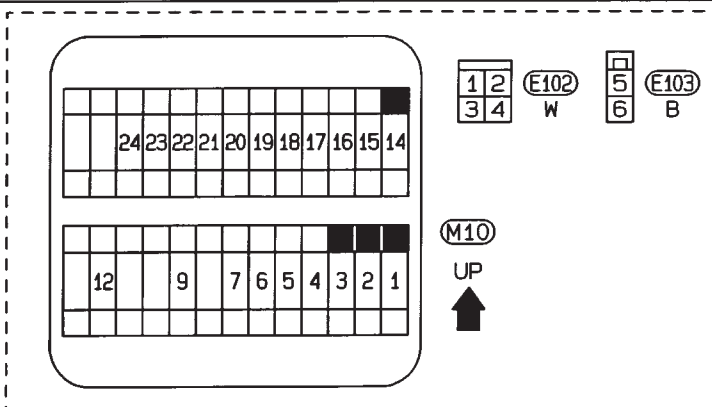
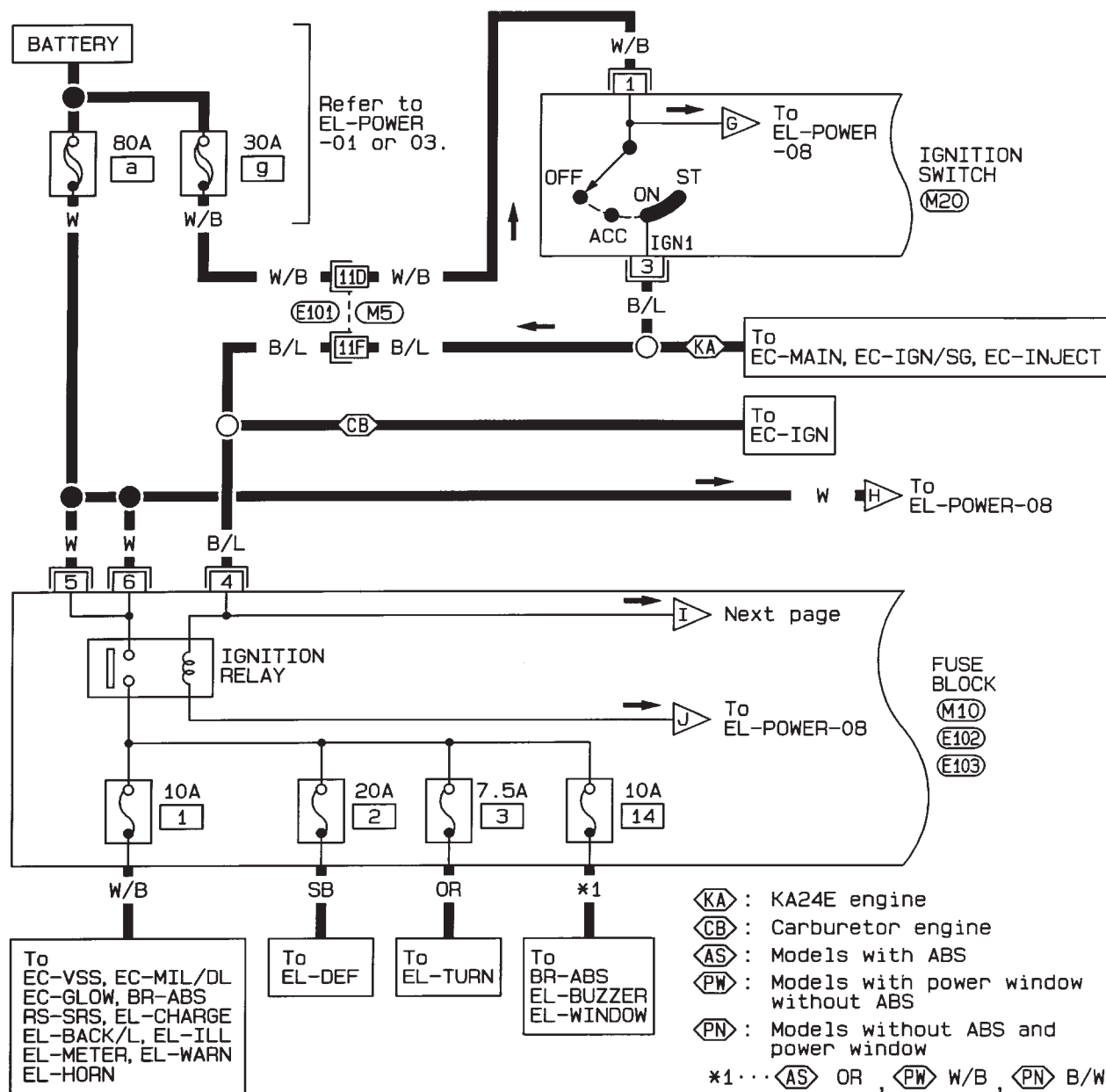
(M5), (E101)

GI
MA
EM
LC
EC
FE
CL
MT
TF
PD
FA
RA
BR
ST
RS
BT
HA
EL
IDX

Wiring Diagram — POWER — (Cont'd)

IGNITION POWER SUPPLY — IGNITION SWITCH IN “ON” OR “START”

EL-POWER-06



| | | |
|---|---|---|
| 1 | 3 | 5 |
| 6 | 2 | 4 |

M20
W

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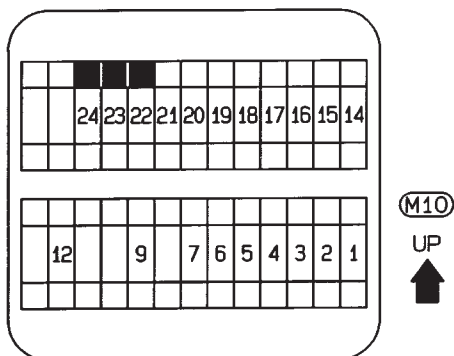
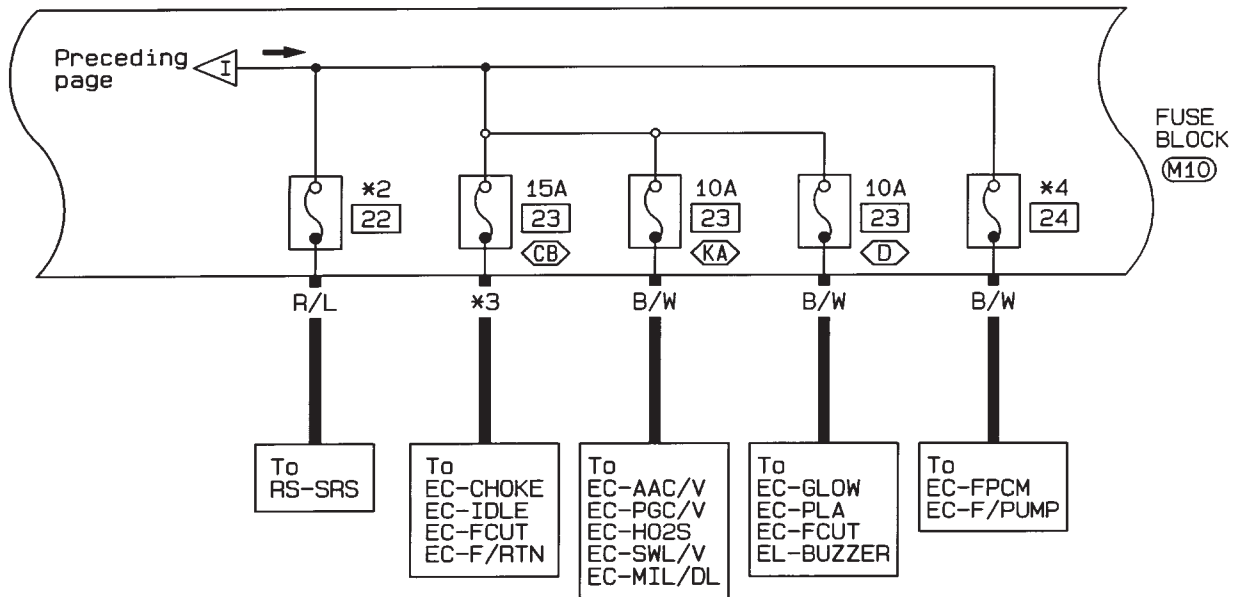
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POWER SUPPLY ROUTING

Wiring Diagram — POWER — (Cont'd)

EL-POWER-07

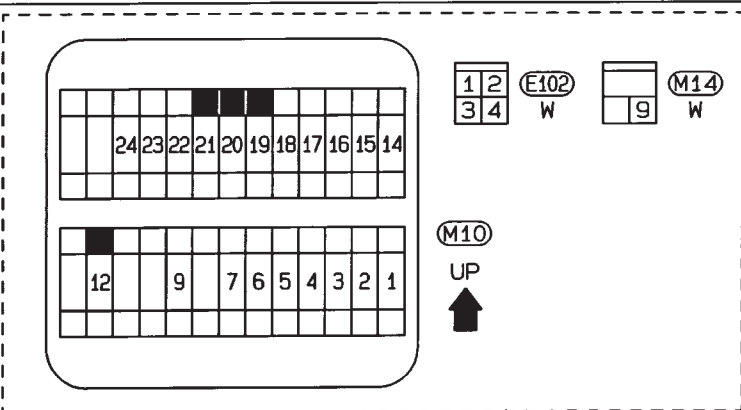
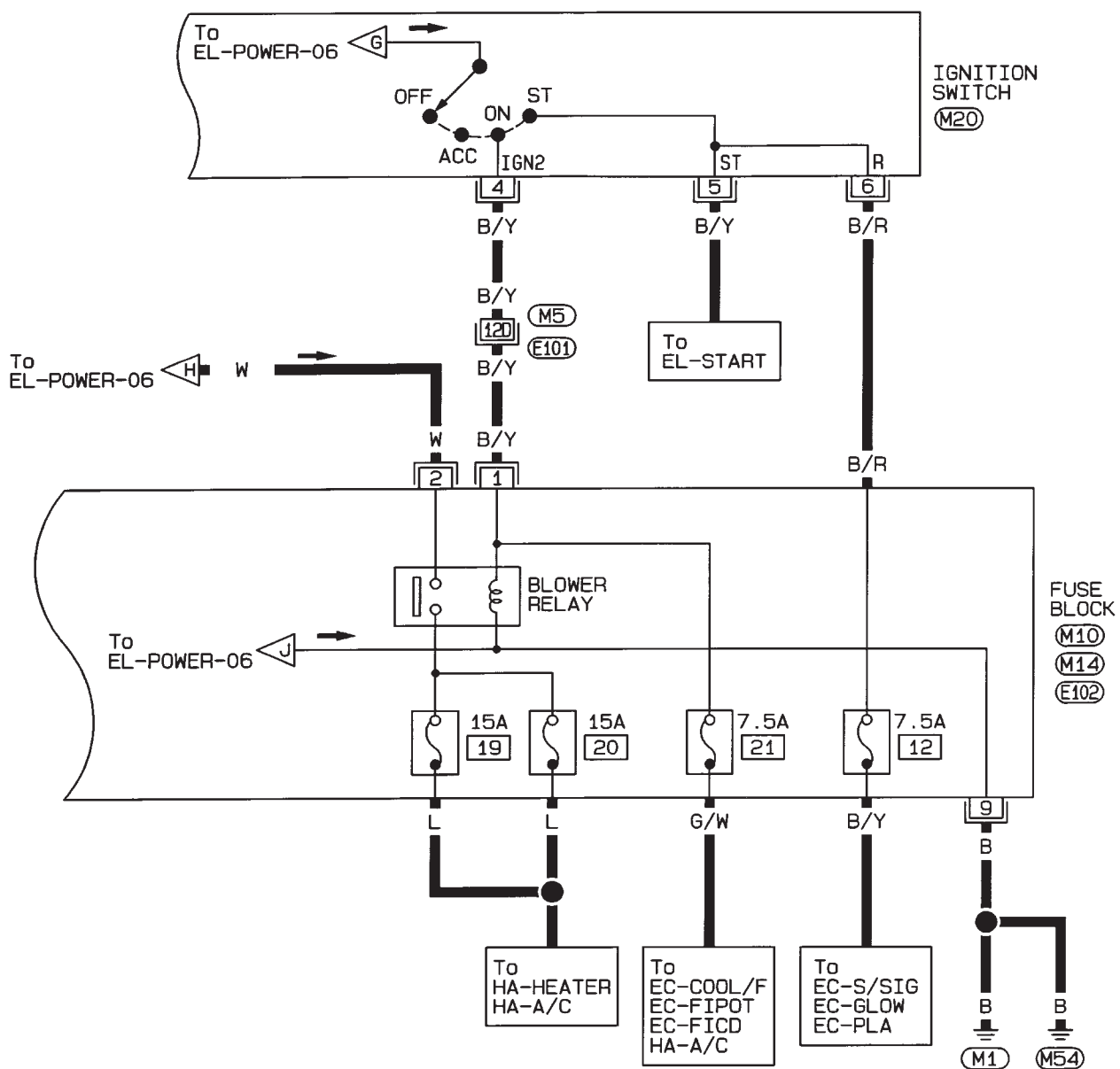
- D : Diesel engine
- NA : NA20S engine
- Z : Z24S engine
- KA : KA24E engine
- CB : Carburetor engine
- 2A : 2-wheel drive models with air bag
- 4A : 4-wheel drive models with air bag
- *2... 2A 3A , 4A 10A
- *3... NA W/G , Z W/L
- *4... CB 10A , KA 15A

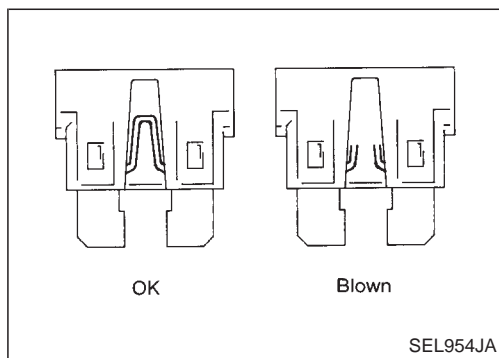


POWER SUPPLY ROUTING

Wiring Diagram — POWER — (Cont'd)

EL-POWER-08





Fuse

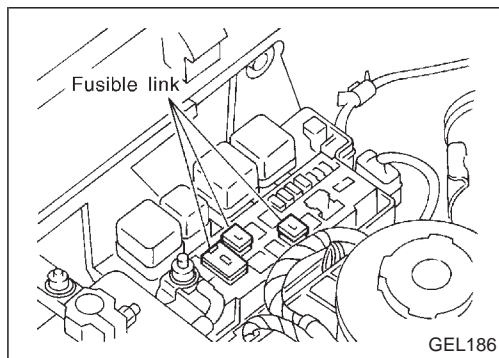
- If fuse is blown, be sure to eliminate cause of problem before installing new fuse.
- Use fuse of specified rating. Never use fuse of more than specified rating.
- Do not partially install fuse; always insert it into fuse holder properly.
- Remove fuse for "ELEC B" if vehicle is not used for a long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

GI

MA

EM

LC



Fusible Link

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

EC

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, vinyl or rubber parts.

FE

CL

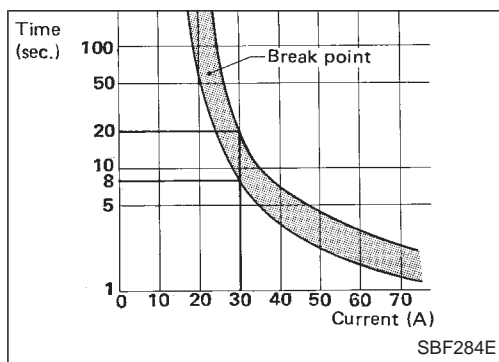
MT

TF

PD

FA

RA



Circuit Breaker Inspection

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

BR

ST

RS

BT

HA

EL

IDX

GROUND DISTRIBUTION

| EARTH | CONNECT TO | CONN. NO. | CELL CODE |
|--------|---|-----------|---------------------------|
| M1/M54 | ACCESSORY RELAY (In fuse block) | M14 | EL-POWER |
| | AIR BAG DIAGNOSIS SENSOR UNIT (4WD models) | M110 | RS-SRS |
| | ASHTRAY ILLUMINATION | M34 | EL-ILL |
| | BLOWER RELAY (In fuse block) | M14 | EL-POWER |
| | CHECK CONNECTOR (NA engine) | M12 | EC-CHOKE |
| | CHECK CONNECTOR (Z engine) | M13 | EC-CHOKE |
| | CIGARETTE LIGHTER SOCKET | M37 | EL-HORN |
| | COMBINATION FLASHER UNIT | M15 | EL-TURN |
| | DOOR LOCK TIMER | M51 | EL-D/LOCK |
| | FAN SWITCH ILLUMINATION (Except for Australia) | M403 | HA-HEATER HA-A/C EL-ILL |
| | FAN SWITCH ILLUMINATION (For Australia) | M40 | HA-HEATER EL-ILL |
| | FAN SWITCH (Except for Australia) | M404 | EC-FIPOT HA-HEATER HA-A/C |
| | FAN SWITCH (For Australia) | M39 | HA-HEATER |
| | FRONT WIPER AMPLIFIER (RHD models without KA engine and LHD models) | M220 | EL-WIPER |
| | FRONT WIPER AND WASHER SWITCH | M28 | EL-WIPER |
| | FRONT WIPER MOTOR (RHD models without KA engine and LHD models) | M221 | EL-WIPER |
| | FUEL FILTER SWITCH (LHD models with diesel engine) | M259 | EL-WARN EL-BUZZER |
| | FUEL PUMP CONTROL MODULE | M22 | EC-FPCM |
| | FUEL RETURN CONTROL SOLENOID VALVE (LHD models with NA engine) | M257 | EC-F/RTN |
| | GLOW CONTROL UNIT (TD engine except for cold areas and QD engine) | M29 | EC-GLOW EC-PLA |
| | GLOW CONTROL UNIT (TD engine for cold areas) | M30 | EC-GLOW EC-PLA |
| | GLOW RELAY-1 (LHD models with diesel engine) | M253 | EC-GLOW |
| | GLOW RELAY-2 (TD engine for cold areas) | M256 | EC-GLOW |
| | HAZARD SWITCH | M41 | EL-TURN EL-ILL |
| | IACV-FICD SOLENOID VALVE (KA engine) | M203 | EC-FICD HA-A/C |
| | IGNITION RELAY (In fuse block) | M14 | EL-POWER |
| | POWER WINDOW RELAY | M9 | EL-WINDOW |
| | REAR WINDOW DEFOGGER SWITCH | M42 | EL-DEF |
| | SEAT BELT SWITCH | M109 | EL-WARN |
| | SPIRAL CABLE (2WD models with air bag) | M26 | RS-SRS |
| | FRONT WIPER AMPLIFIER (RHD models with KA engine) | F20 | EL-WIPER |
| | FRONT WIPER MOTOR (RHD models with KA engine) | F21 | EL-WIPER |
| | COMBINATION METER (4WD WARNING LAMP) | N6 | EL-WARN |
| | COMBINATION METER (ABS WARNING LAMP) | N6 | BR-ABS EL-WARN |
| | COMBINATION METER (AIR BAG WARNING LAMP) | N5 | RS-SRS EL-WARN |
| | COMBINATION METER (CLOCK ILLUMINATION) | N6 | EL-ILL EL-HORN |
| | COMBINATION METER (DIGITAL CLOCK) | N6 | EL-HORN |
| | COMBINATION METER (FUEL GAUGE) | N5 | EL-METER |
| | COMBINATION METER (HIGH BEAM INDICATOR) | N5 | EL-H/LAMP |
| | COMBINATION METER (ODO/TRIP METER ILLUMINATION) | N6 | EL-ILL |

GROUND DISTRIBUTION

| EARTH | CONNECT TO | CONN. NO. | CELL CODE | |
|---|---|-----------|---------------------------------------|-----|
| M1/M54 | COMBINATION METER (TURN LH INDICATOR) | N6 | EL-TURN | GI |
| | COMBINATION METER (TURN RH INDICATOR) | N6 | EL-TURN | |
| | COMBINATION METER (UNIFIED METER CONTROL UNIT) | N5 | EC-VSS EC-GLOW EL-METER | MA |
| | COMBINATION METER (WATER TEMP. GAUGE) | N5 | EL-METER | EM |
| | COMBINATION METER (METER ILLUMINATION) | N6 | EL-ILL | |
| | DOOR MIRROR REMOTE CONTROL SWITCH | N3 | EL-MIRROR | LC |
| | INTERIOR LAMP (Single cab) | R4 | EL-INT/L | |
| | SPOT LAMP | R3 | EL-INT/L | |
| | FUEL TANK GAUGE UNIT (With electric fuel pump) | C3 | EC-FPCM EC-F/PUMP EL-METER EL-WARN | EC |
| | FUEL TANK GAUGE UNIT (With mechanical fuel pump) | C4 | EL-METER EL-WARN | |
| | LICENSE PLATE LAMP LH (With step bumper) | T7 | EL-TAIL/L | FE |
| | LICENSE PLATE LAMP LH (Without step bumper) | T6 | EL-TAIL/L | |
| | LICENSE PLATE LAMP RH (With step bumper) | T3 | EL-TAIL/L | CL |
| | LICENSE PLATE LAMP RH (Without step bumper) | T5 | EL-TAIL/L | |
| | REAR COMBINATION LAMP LH (BACK-UP) (A-chassis models, and except for Australia and China) | T8 | EL-BACK/L | MT |
| | REAR COMBINATION LAMP LH (BACK-UP) (For Australia and China except A-chassis models) | T9 | EL-BACK/L | TF |
| | REAR COMBINATION LAMP LH (TAIL AND STOP) (A-chassis models, and except for Australia and China) | T8 | EL-TAIL/L EL-STOP/L | PD |
| | REAR COMBINATION LAMP LH (TAIL AND STOP) (For Australia and China except A-chassis models) | T9 | EL-TAIL/L EL-STOP/L | FA |
| | REAR COMBINATION LAMP LH (TURN SIGNAL) (A-chassis models, and except for Australia and China) | T8 | EL-TURN | RA |
| | REAR COMBINATION LAMP LH (TURN SIGNAL) (For Australia and China except A-chassis models) | T9 | EL-TURN | |
| | REAR COMBINATION LAMP RH (BACK-UP) (A-chassis models, and except for Australia and China) | T1 | EL-BACK/L | BR |
| | REAR COMBINATION LAMP RH (BACK-UP) (For Australia and China except A-chassis models) | T2 | EL-BACK/L | ST |
| | REAR COMBINATION LAMP RH (TAIL AND STOP) (A-chassis models, and except for Australia and China) | T1 | EL-TAIL/L EL-STOP/L | RS |
| | REAR COMBINATION LAMP RH (TAIL AND STOP) (For Australia and China except A-chassis models) | T2 | EL-TAIL/L EL-STOP/L | BT |
| | REAR COMBINATION LAMP RH (TURN SIGNAL) (A-chassis models, and except for Australia and China) | T1 | EL-TURN | HA |
| | REAR COMBINATION LAMP RH (TURN SIGNAL) (For Australia and China except A-chassis models) | T2 | EL-TURN | |
| | LOCK KNOB SWITCH | D8 | EL-D/LOCK | EL |
| | POWER WINDOW MAIN SWITCH (Double cab) | D5 | EL-WINDOW EL-D/LOCK | |
| | POWER WINDOW MAIN SWITCH (Single cab) | D6 | EL-WINDOW EL-D/LOCK | IDX |
| M33/M207 (LHD models with KA engine) | CONDENSER | M210 | EC-IGN/SG | |
| | DISTRIBUTOR (POWER TRANSISTOR) | M214 | EC-IGN/SG | |
| | ECM (ECCS CONTROL MODULE) | M32 | EC-MAIN | |

GROUND DISTRIBUTION

| EARTH | CONNECT TO | CONN. NO. | CELL CODE |
|---|---|-----------|---|
| M208 (LHD models with KA engine) | DATA LINK CONNECTOR FOR CONSULT | M11 | EC-MIL/DL |
| | DISTRIBUTOR (CAMSHAFT POSITION SENSOR) | M214 | EC-CMPS |
| | ECM (ECCS CONTROL MODULE) | M32 | EC-MAIN |
| | SHIELD WIRE (CAMSHAFT POSITION SENSOR) | M214 | EC-CMPS |
| | SHIELD WIRE (MASS AIR FLOW SENSOR) | M204 | EC-MAFS |
| | SHIELD WIRE (THROTTLE POSITION SENSOR) | M302 | EC-TPS |
| | SHIELD WIRE (HEATED OXYGEN SENSOR) | E3 | EC-HO2S |
| E6/E39 | DATA LINK CONNECTOR FOR CONSULT (With ABS) | M11 | BR-ABS |
| | ABS ACTUATOR ASSEMBLY | E4 | BR-ABS |
| | BRAKE FLUID LEVEL SWITCH | E2 | EL-WARN |
| | COOLING FAN MOTOR | E24 | LC-COOL/F HA-A/C |
| | FRONT COMBINATION LAMP LH (PARKING) (Except for Australia and China) | E11 | EL-TAIL/L |
| | FRONT COMBINATION LAMP LH (PARKING) (For Australia and China) | E12 | EL-TAIL/L |
| | FRONT COMBINATION LAMP LH (TURN SIGNAL) (Except for Australia and China) | E11 | EL-TURN |
| | FRONT COMBINATION LAMP LH (TURN SIGNAL) (For Australia and China) | E12 | EL-TURN |
| | FRONT COMBINATION LAMP RH (PARKING) (Except for Australia and China) | E27 | EL-TAIL/L |
| | FRONT COMBINATION LAMP RH (PARKING) (For Australia and China) | E28 | EL-TAIL/L |
| | FRONT COMBINATION LAMP RH (TURN SIGNAL) (Except for Australia and China) | E27 | EL-TURN |
| | FRONT COMBINATION LAMP RH (TURN SIGNAL) (For Australia and China) | E28 | EL-TURN |
| | FUEL FILTER SWITCH (RHD models with diesel engine) | E5 | EL-WARN EL-BUZZER |
| | FUEL RETURN CONTROL SOLENOID VALVE (RHD models with NA engine) | E40 | EC-F/RTN |
| | GLOW RELAY (RHD models with diesel engine) | E44 | EC-GLOW |
| | HEADLAMP LH | E13 | EL-H/LAMP |
| | HEADLAMP RH | E26 | EL-H/LAMP |
| | IACV-FICD SOLENOID VALVE (Diesel engine) | E37 | HA-A/C |
| | ISC-FI POT CONTROL SOLENOID VALVE | E37 | EC-FIPOT HA-A/C |
| | POWER ANTENNA | E46 | EL-P/ANT |
| | SHIELD WIRE (FRONT WHEEL SENSOR LH) | E15 | BR-ABS |
| | SHIELD WIRE (FRONT WHEEL SENSOR RH) | E31 | BR-ABS |
| | SIDE TURN SIGNAL LAMP LH | E1 | EL-TURN |
| | SIDE TURN SIGNAL LAMP RH | E45 | EL-TURN |
| | THERMOSWITCH | E18 | LC-COOL/F HA-A/C |
| | TRIPLE-PRESSURE SWITCH | E25 | LC-COOL/F HA-A/C |
| | VACUUM CONTROL SOLENOID VALVE | E20 | EC-IDLE |
| | ALTERNATOR (Gasoline engine) | E211 | EC-CHOKE EC-FPCM EL-CHARGE EL-WARN |
| | NEUTRAL POSITION SWITCH | E220 | EC-PNP/SW |
| | POWER STEERING OIL PRESSURE SWITCH (RHD 2WD models with KA engine and LHD models) | E208 | EC-PST/SW |
| | POWER STEERING OIL PRESSURE SWITCH (RHD 4WD models with KA engine) | E207 | EC-PST/SW |
| | SHIELD WIRE (REAR WHEEL SENSOR LH) (4WD models) | C5 | BR-ABS |
| | SHIELD WIRE (REAR WHEEL SENSOR RH) (4WD models) | C5 | BR-ABS |
| | SHIELD WIRE (REAR WHEEL SENSOR) (2WD models) | C6 | BR-ABS |

GROUND DISTRIBUTION

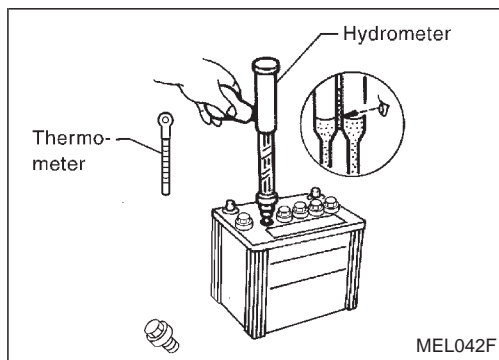
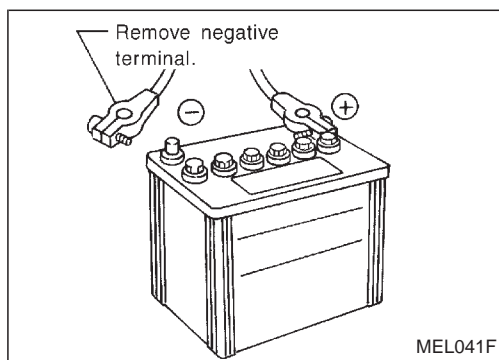
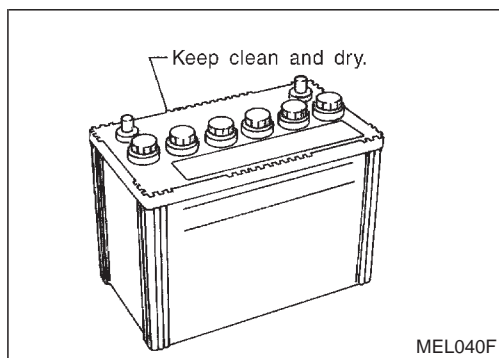
| EARTH | CONNECT TO | CONN. NO. | CELL CODE | |
|---|---|-----------|--------------------------|-----|
| F7/F52 (RHD models with KA engine) | CONDENSER | F10 | EC-IGN/SG | GI |
| | DISTRIBUTOR (POWER TRANSISTOR) | F14 | EC-IGN/SG | |
| | ECM (ECCS CONTROL MODULE) | F51 | EC-MAIN | |
| F8 (RHD models with KA engine) | DATA LINK CONNECTOR FOR CONSULT | M11 | EC-MIL/DL | MA |
| | DISTRIBUTOR (CAMSHAFT POSITION SENSOR) | F14 | EC-CMPS | |
| | ECM (ECCS CONTROL MODULE) | F51 | EC-MAIN | EM |
| | SHIELD WIRE (CAMSHAFT POSITION SENSOR) | F14 | EC-CMPS | |
| | SHIELD WIRE (MASS AIR FLOW SENSOR) | F4 | EC-MAFS | LC |
| | SHIELD WIRE (THROTTLE POSITION SENSOR) | F102 | EC-TPS | |
| A1 (Diesel engine) | ALTERNATOR | A7 | EC-PLA EL-CHARGE EL-WARN | EC |
| | ENGINE COOLANT TEMPERATURE SENSOR | A11 | EC-GLOW | |
| R54 | REAR WINDOW DEFOGGER | R53 | EL-DEF | FE |
| | | | | FE |
| | | | | CL |
| | | | | MT |
| | | | | TF |
| | | | | PD |
| | | | | FA |
| | | | | RA |
| | | | | BR |
| | | | | ST |
| | | | | RS |
| | | | | BT |
| | | | | HA |
| | | | | EL |
| | | | | IDX |

BATTERY

CAUTION:

If it becomes necessary to start the engine with a booster battery and jumper cables,

- Use a 12-volt booster battery.
- After connecting battery cables, ensure that they are tightly clamped to battery terminals for good contact.
- Never add distilled water through the hole used to check specific gravity.



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. This also applies to batteries designated as "low maintenance" and "maintenance-free".
- When the vehicle is not going to be used over a long period of time, disconnect the negative battery terminal.
- Check the charge condition of the battery. Periodically check the specific gravity of the electrolyte. Keep a close check on charge condition to prevent over-discharge.

CHECKING ELECTROLYTE LEVEL

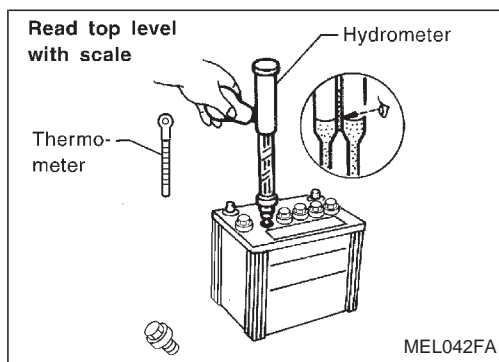
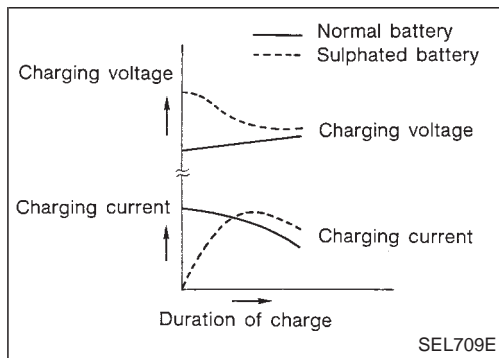
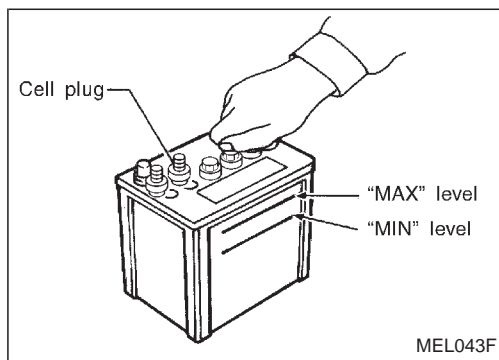
WARNING:

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 acid contacts eyes, skin or clothing, immediately flush with water for 15 minutes and seek medical attention.

BATTERY

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 will become less than 1.100. This may result in sulphation on the cell plates.

To determine if a battery has been "sulphated", note its voltage and current when charging it. As shown in the figure, less current and higher voltage are observed in the initial stage of charging sulphated batteries.

A sulphated battery may sometimes be brought back into service by means of a long, slow charge, 12 hours or more, followed by a battery capacity test.

SPECIFIC GRAVITY CHECK

1. Read hydrometer and thermometer indications at eye level.

GI
MA
EM
LC
EC
FE
CL
MT
TF
PD
FA
RA
BR
ST
RS
BT
HA
EL
IDX

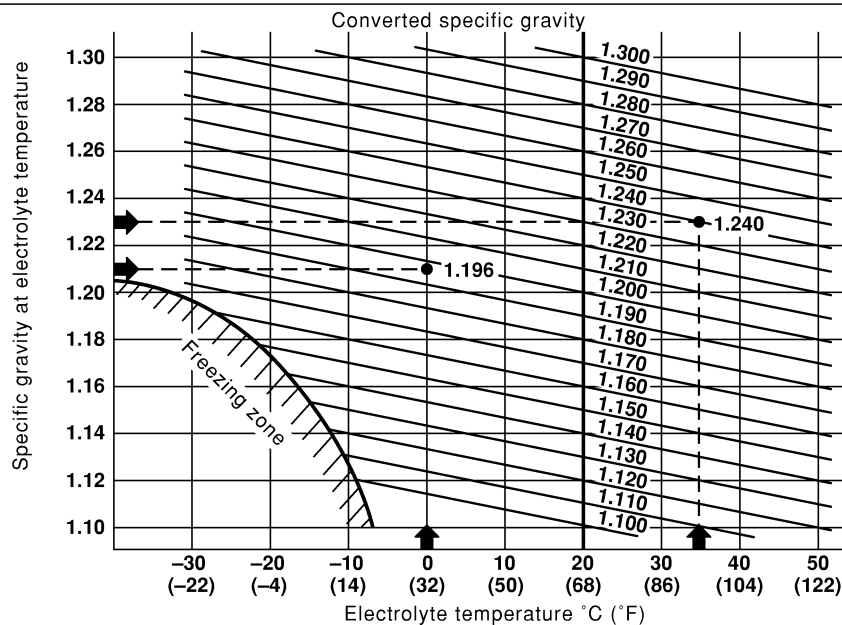
BATTERY

How to Handle Battery (Cont'd)

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

Example:

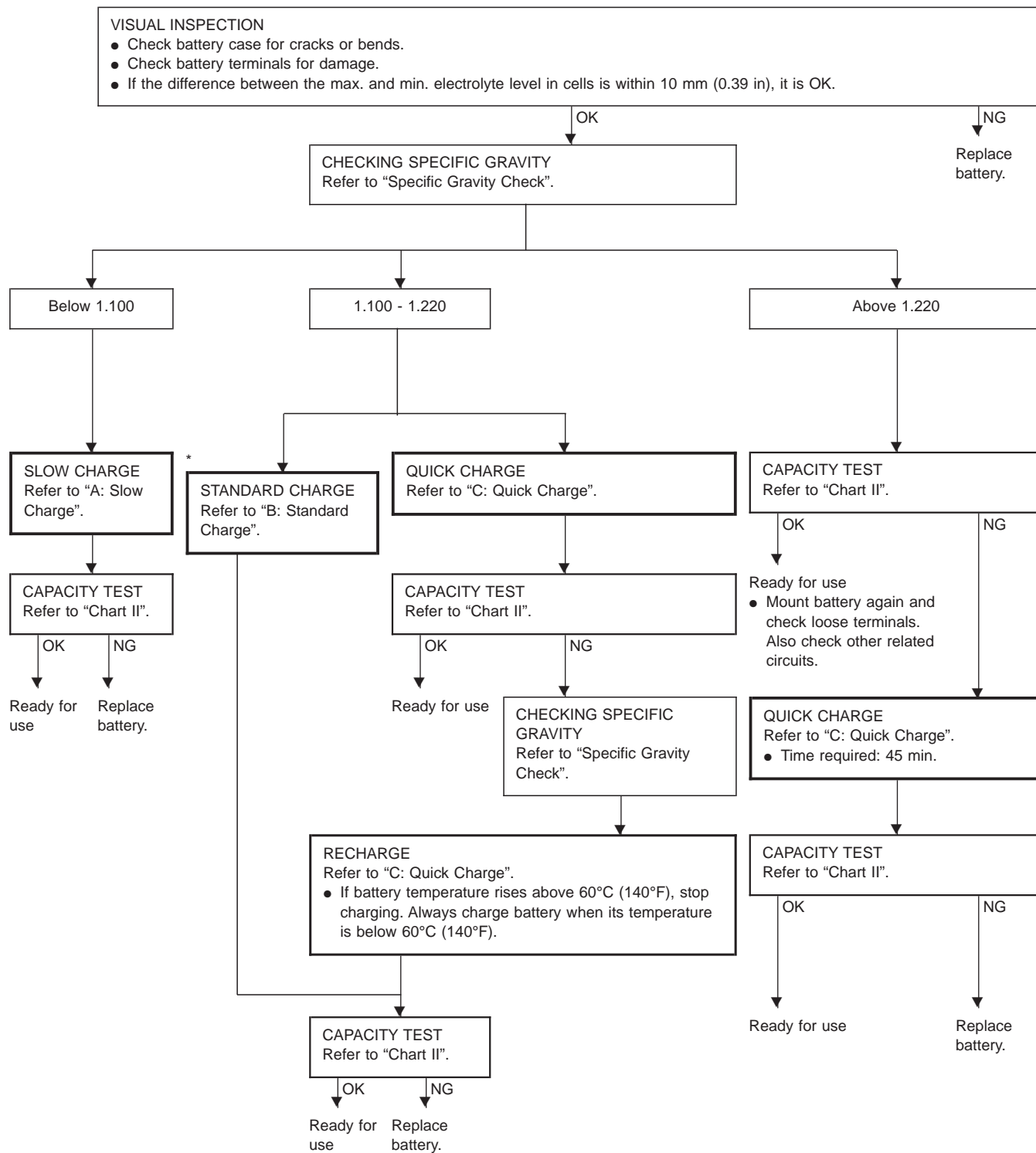
- When electrolyte temperature is 35°C (95°F) and specific gravity of electrolyte is 1.230, converted specific gravity at 20°C (68°F) is 1.240.
- When electrolyte temperature is 0°C (32°F) and specific gravity of electrolyte is 1.210, converted specific gravity at 20°C (68°F) is 1.196.



SEL007Z

Battery Test and Charging Chart

Chart I

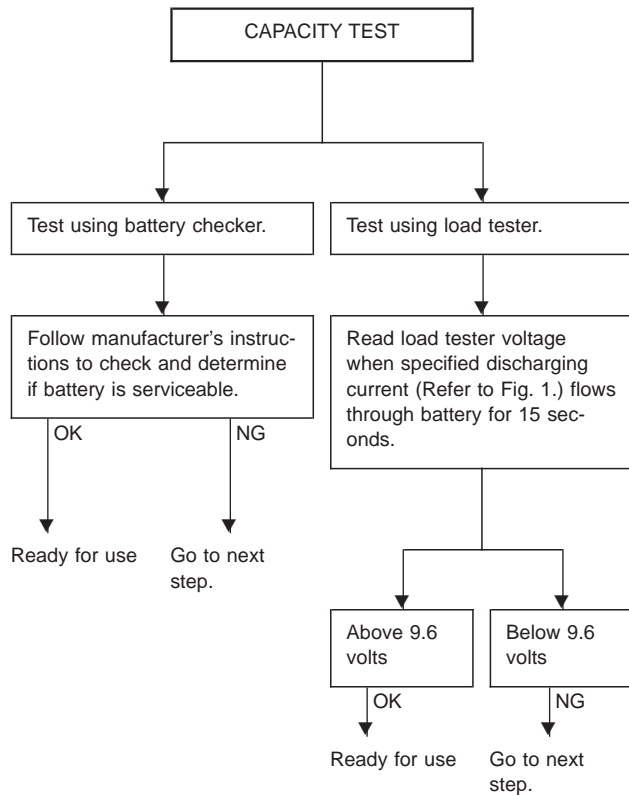


* "STANDARD CHARGE" is recommended if the vehicle is in storage after charging.

BATTERY

Battery Test and Charging Chart (Cont'd)

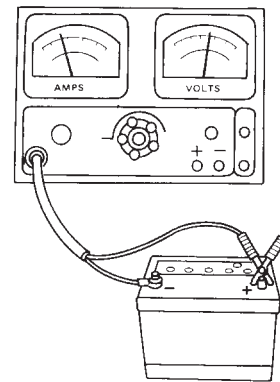
Chart II



- 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 |



SEL008Z

BATTERY

Battery Test and Charging Chart (Cont'd)

A: SLOW CHARGE

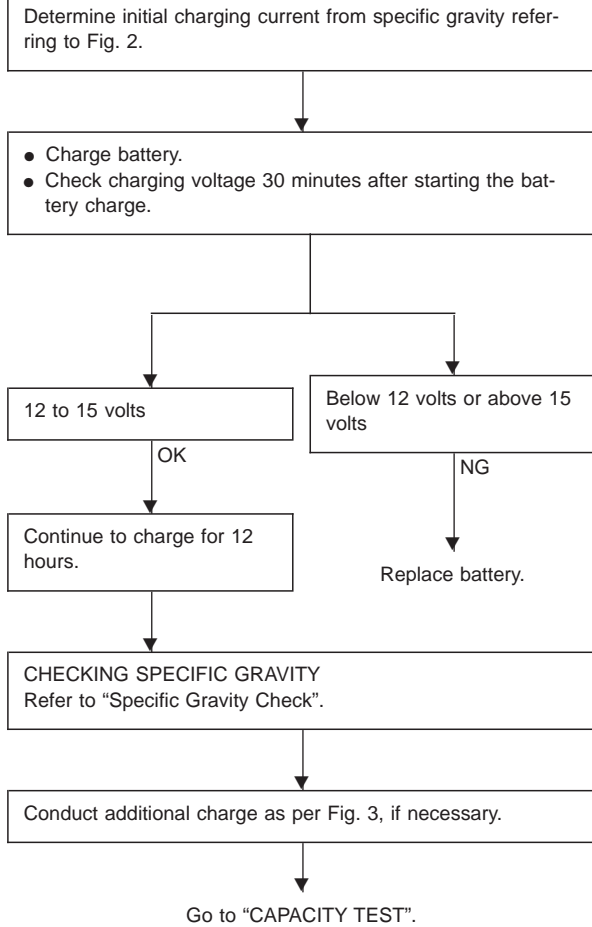
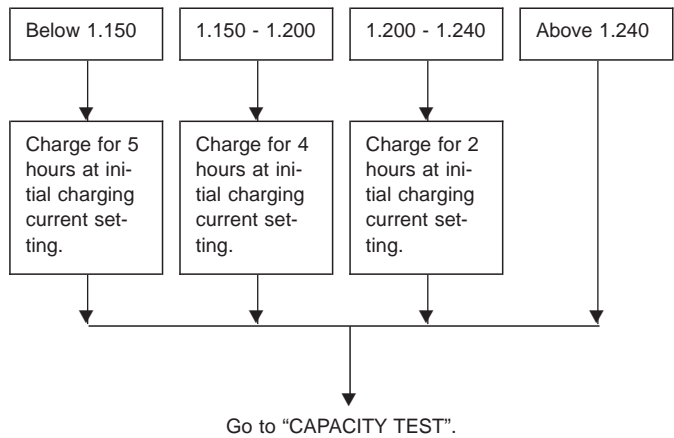


Fig. 2 INITIAL CHARGING CURRENT SETTING (Slow charge)

| CON- VERTED SPECIFIC GRAVITY | BATTERY TYPE | | | | | | | | | |
|---------------------------------------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 28B19R(L) | 34B19R(L) | 46B24R(L) | 55B24R(L) | 50D23R(L) | 55D23R(L) | 65D26R(L) | 80D26R(L) | 75D31R(L) | 95D31R(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

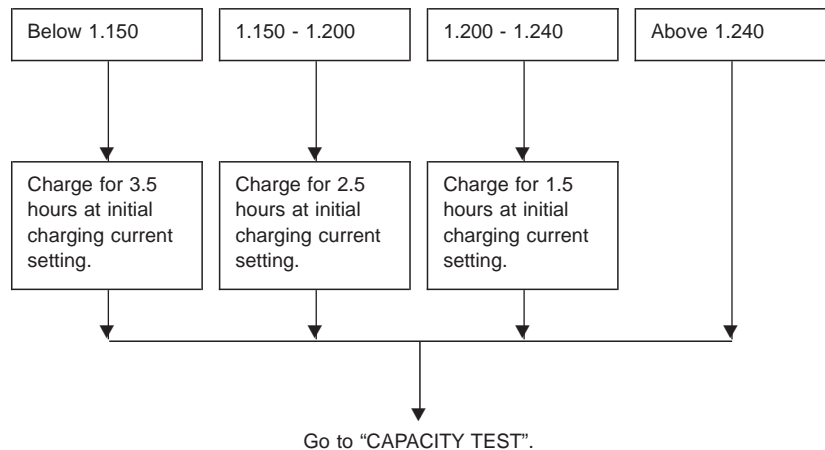
Battery Test and Charging Chart (Cont'd)

Fig. 4 INITIAL CHARGING CURRENT SETTING
(Standard charge)

| CON- VERTED 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).

BATTERY

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.

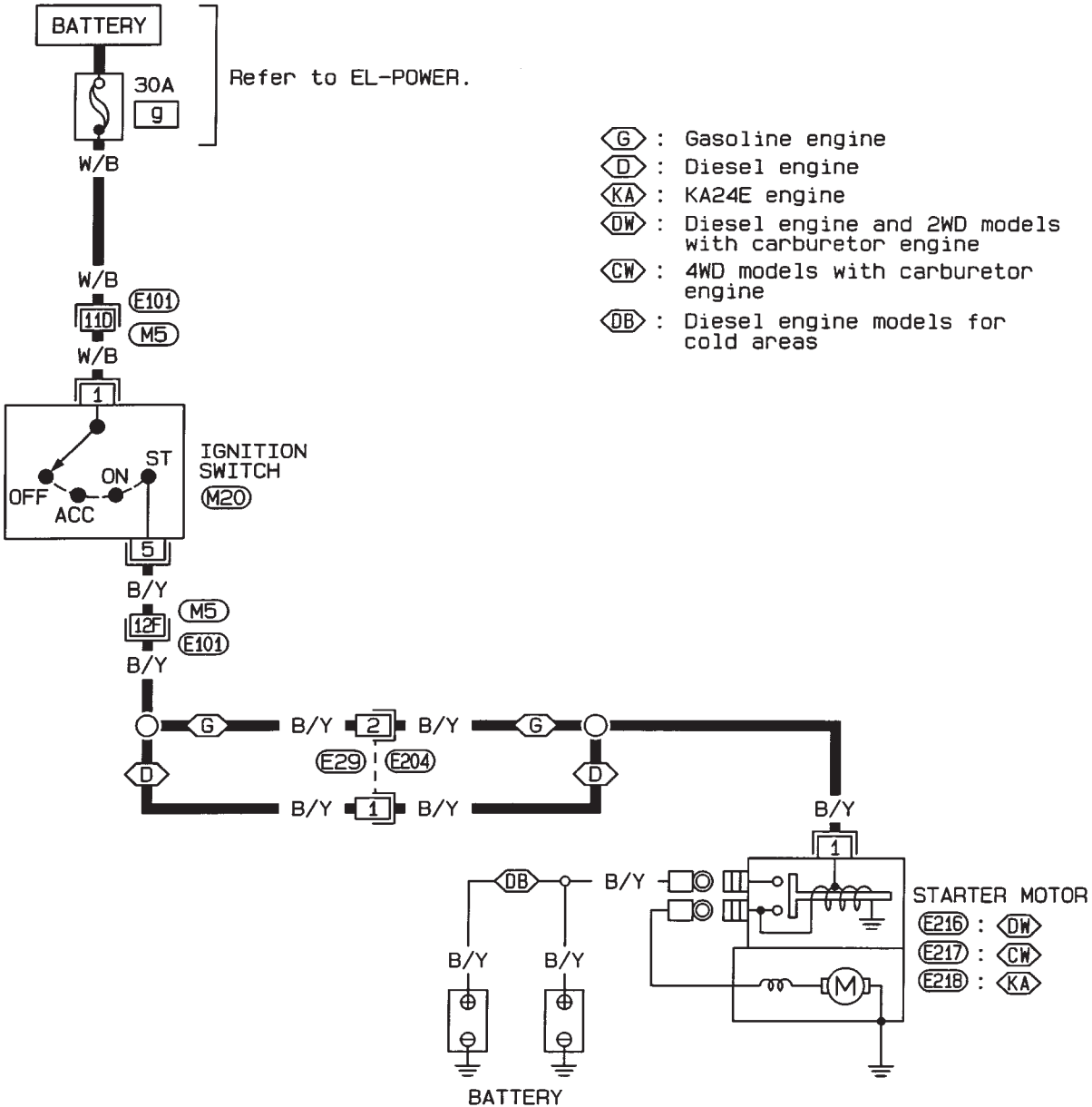
Service Data and Specifications (SDS)

| Applied model | | Australia | | | Middle East | | |
|---------------|------|-----------|------------|--------|-------------|--------|--------|
| | | KA24 | TD27, QD32 | | Z24 | TD27 | |
| | | Standard | | Option | Standard | | Option |
| Type | | 55D23R | 75D31R | 95D31R | 34B19R | 75D31R | 95D31R |
| Capacity | V-AH | 12-48 | 12-60 | 12-64 | 12-27 | 12-60 | 12-64 |

| Applied model | | General areas | | | | |
|---------------|------|---------------|--------|----------|------------|------------------------|
| | | NA20, Z24 | | KA24 | TD27, QD32 | |
| | | Standard | Option | Standard | Standard | Option |
| Type | | 34B19R | 55D23R | | 75D31R | 95D31R, 80D26R, 80D26L |
| Capacity | V-AH | 12-27 | 12-48 | | 12-60 | 12-64, 12-55 |

Wiring Diagram — START —

EL-START-01

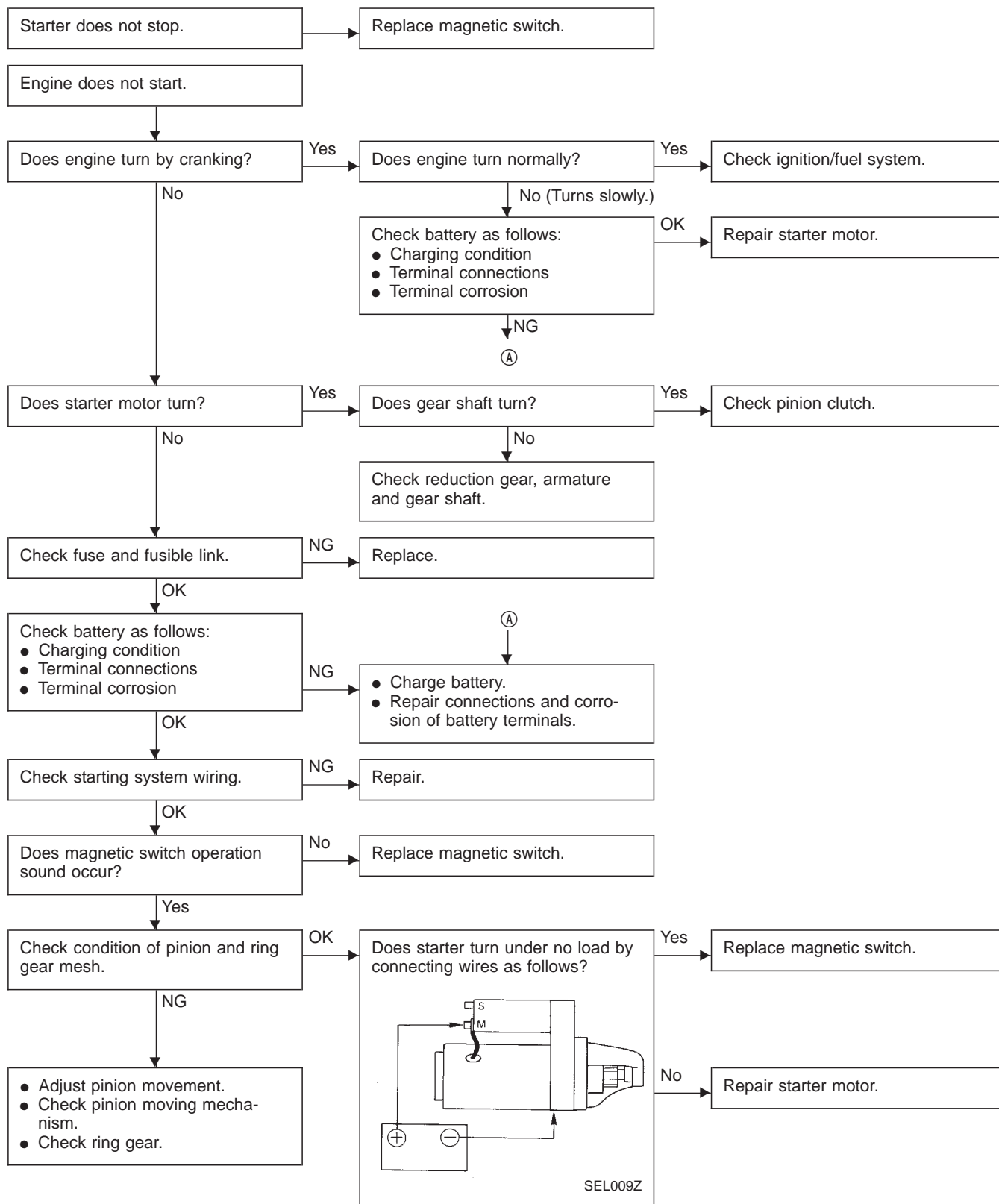


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M5 E101

Trouble Diagnoses

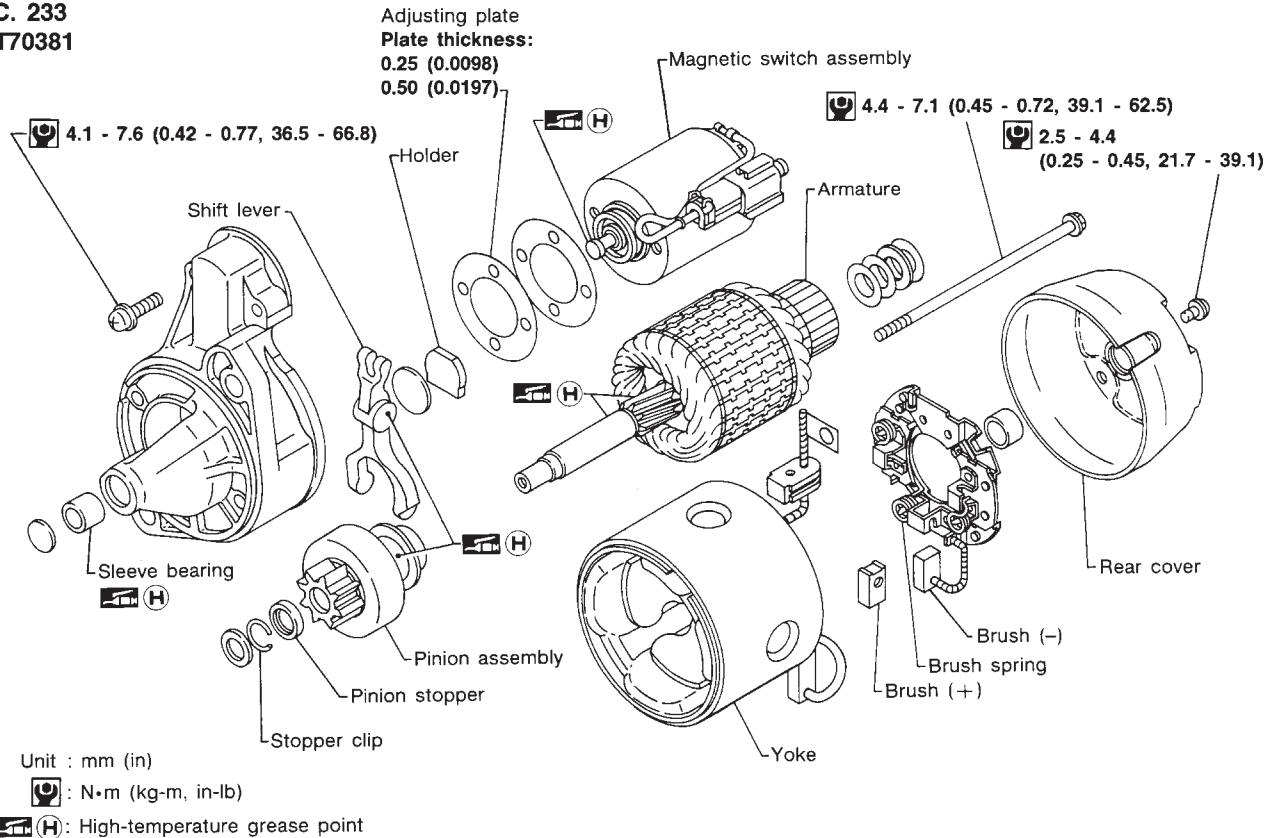
If any abnormality is found, immediately disconnect battery negative terminal.



STARTING SYSTEM

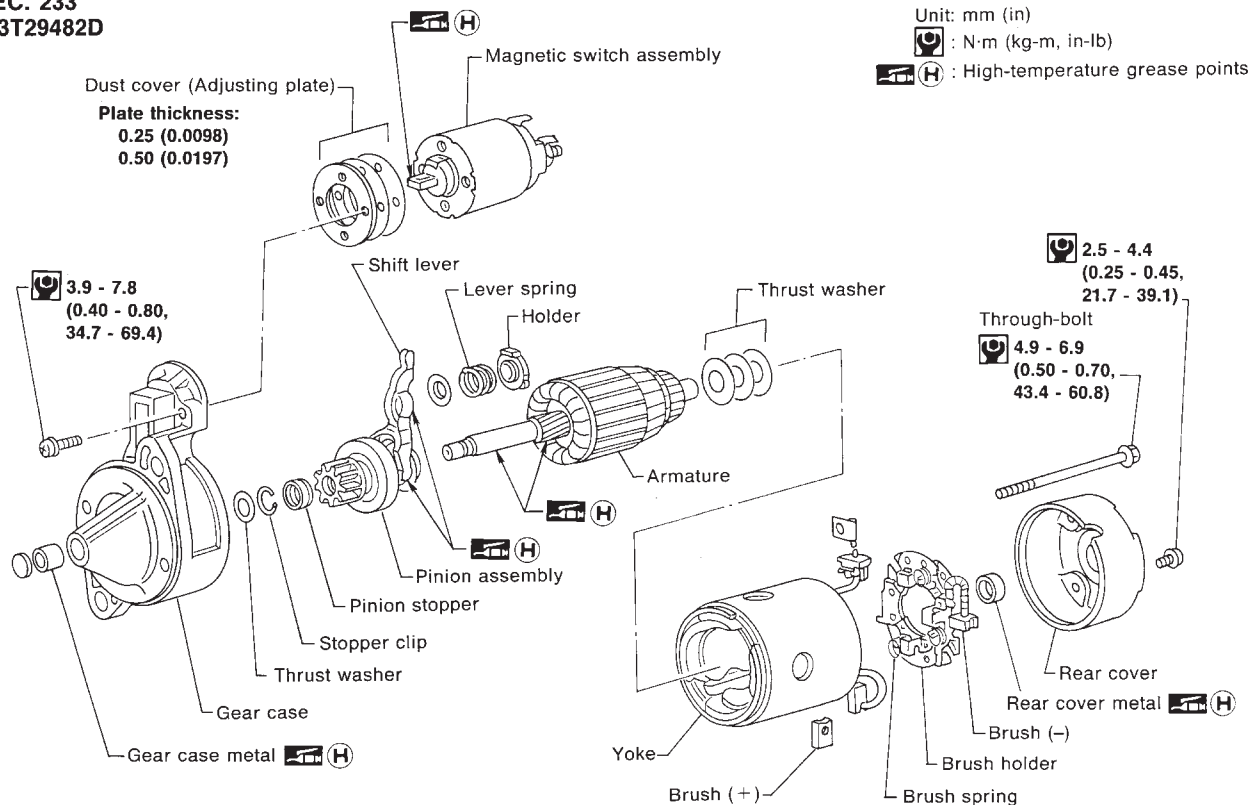
Construction

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M3T70381



MEL673EA

SEC. 233
M3T29482D

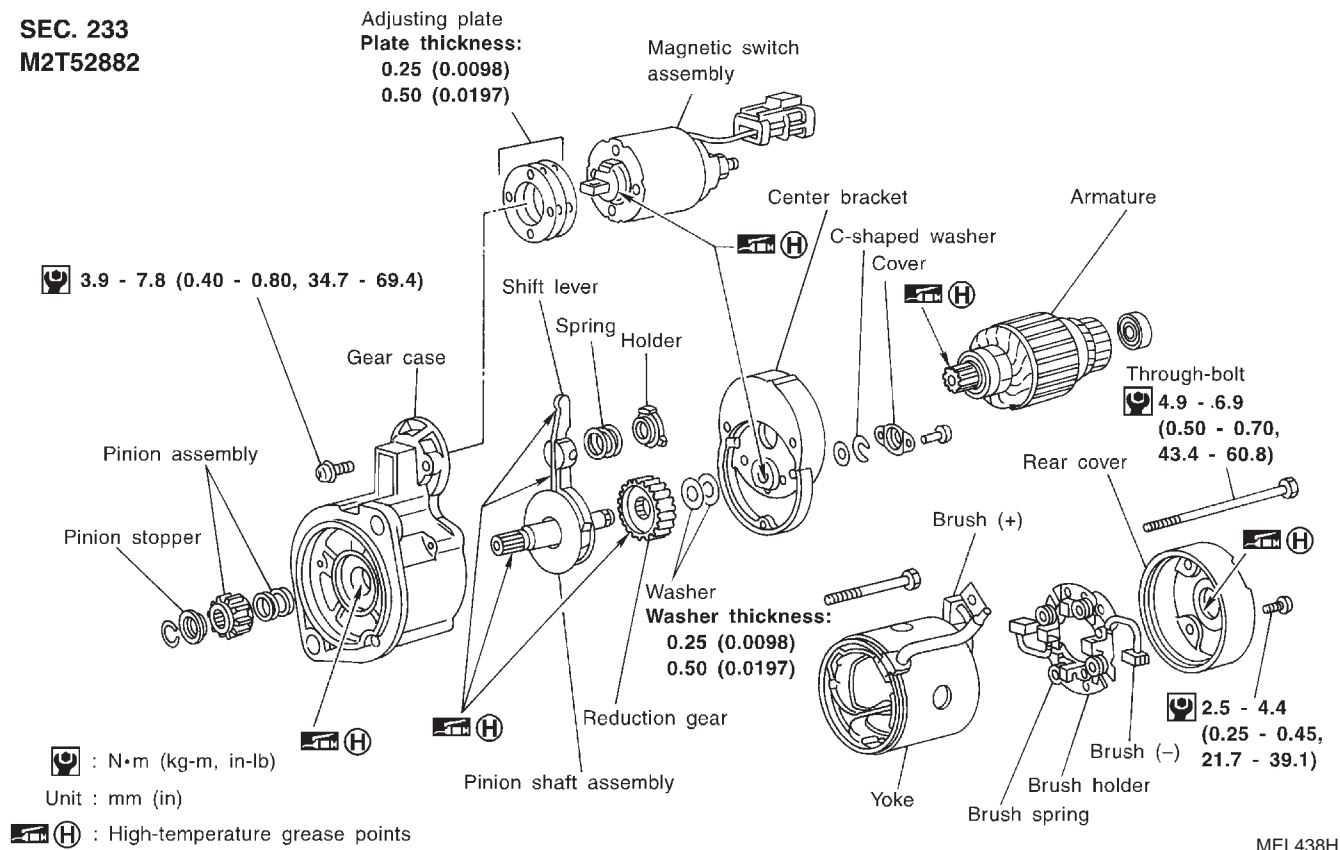


SEL600JA

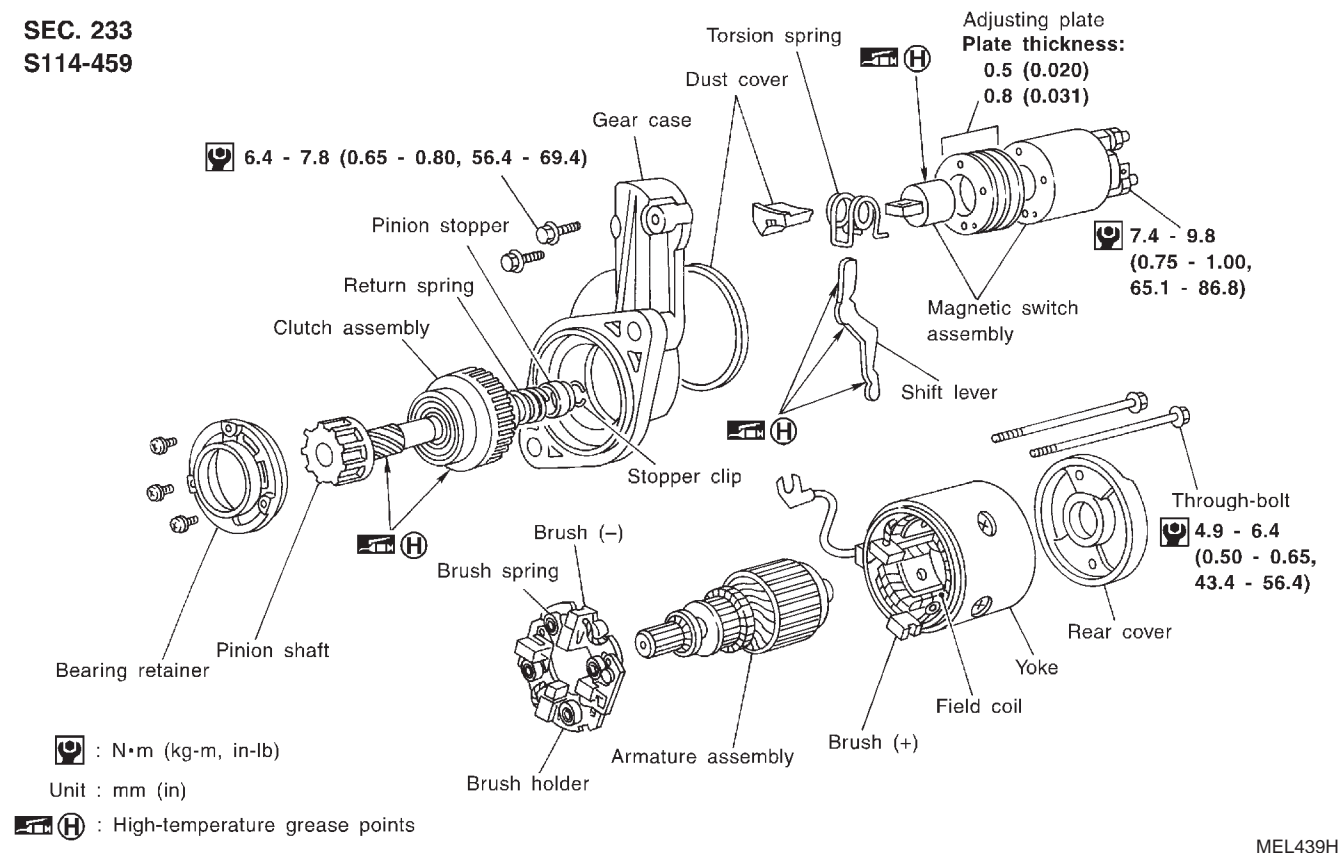
STARTING SYSTEM

Construction (Cont'd)

SEC. 233 M2T52882



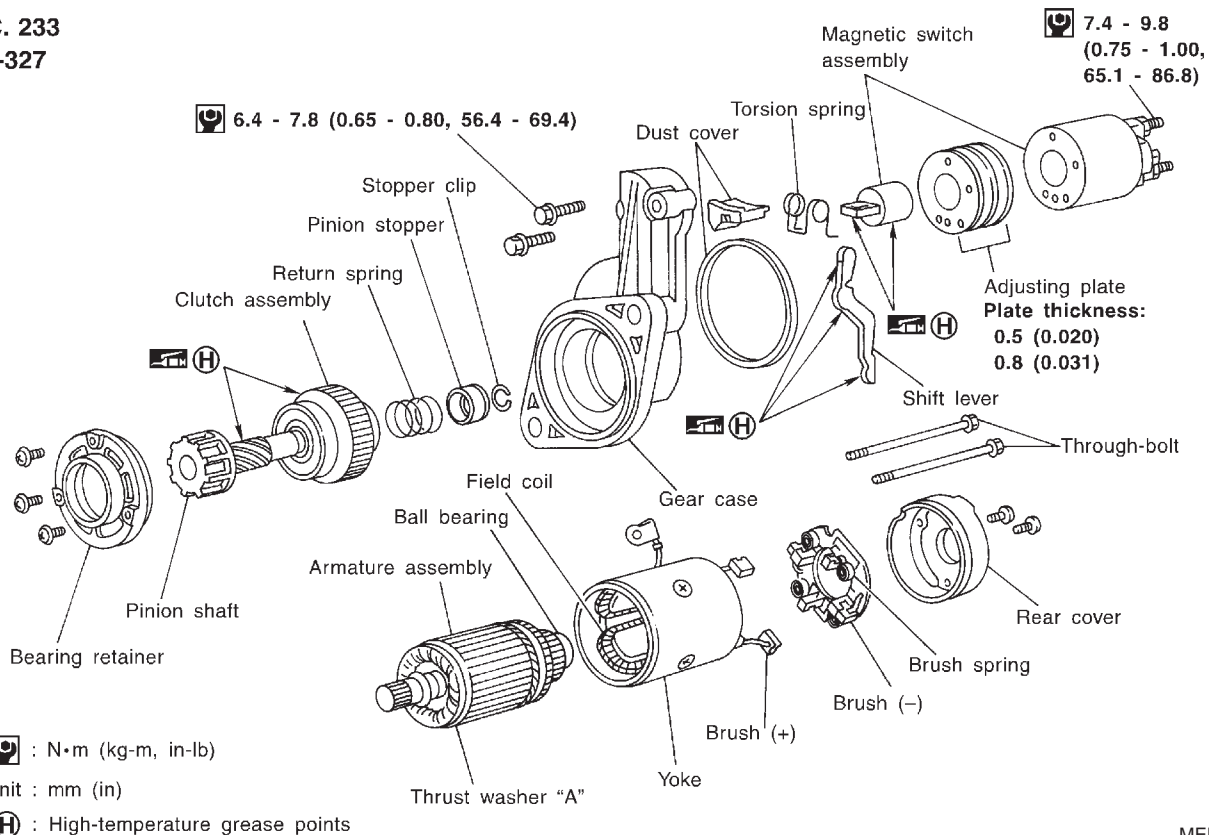
SEC. 233 S114-459



STARTING SYSTEM

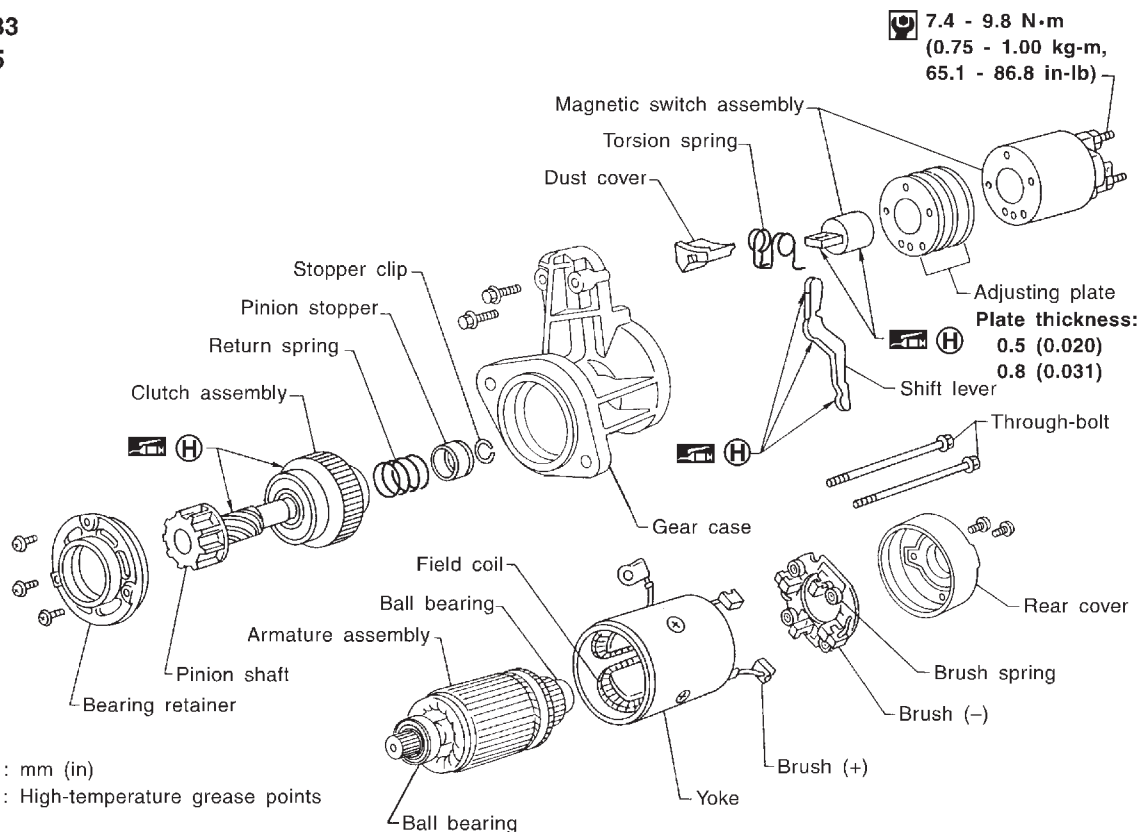
Construction (Cont'd)

SEC. 233
S13-327



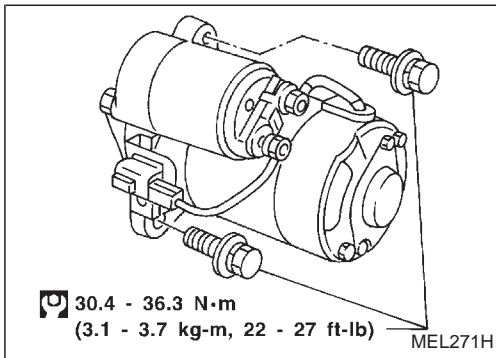
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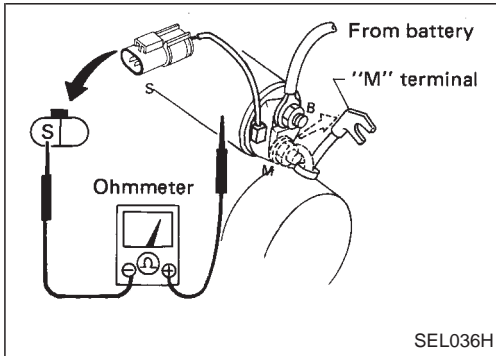
MEL423HA

Removal and Installation

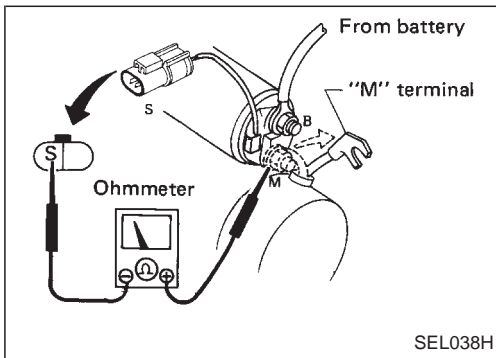


Magnetic Switch Check

- 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.

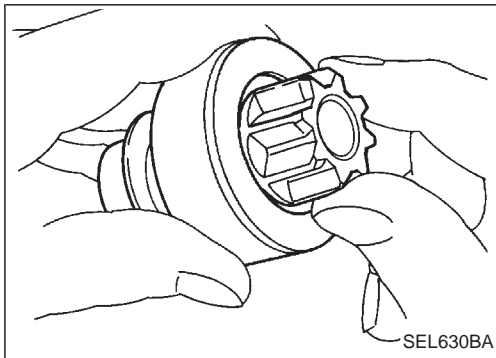


2. Continuity test (between "S" terminal and "M" terminal).
- No continuity ... Replace.



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 (If equipped).
 - 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

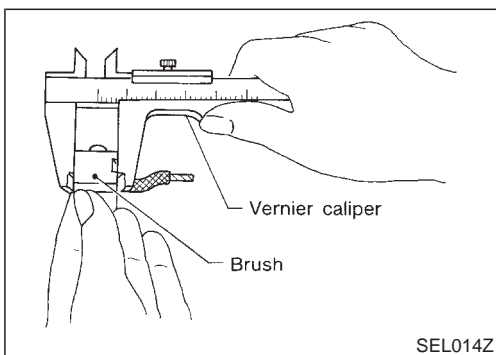
BRUSH

Check wear of brush.

Wear limit length:

Refer to SDS, EL-37.

- Excessive wear ... Replace.



STARTING SYSTEM

Brush Check (Cont'd)

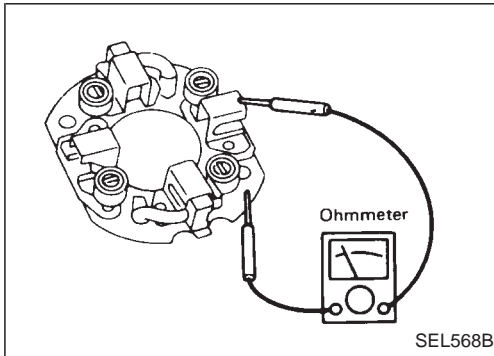
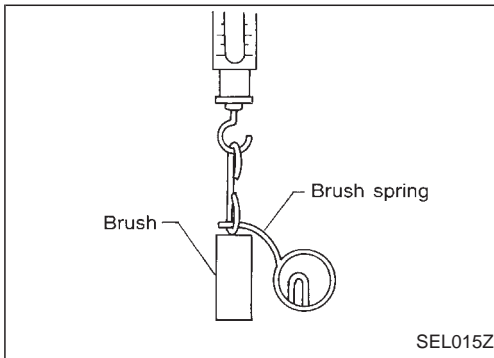
BRUSH SPRING PRESSURE

Check brush spring pressure with brush spring detached from brush.

Spring pressure (with new brush):

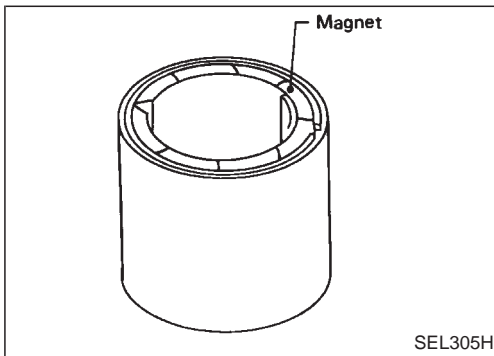
Refer to SDS, EL-37.

- 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.

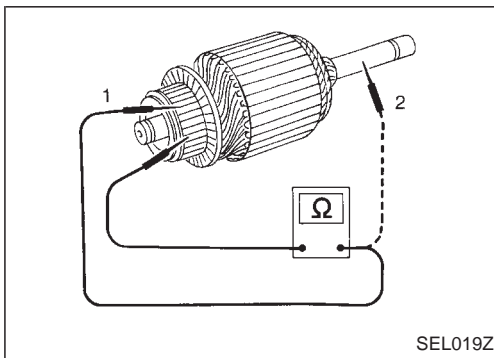


Yoke Check

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.

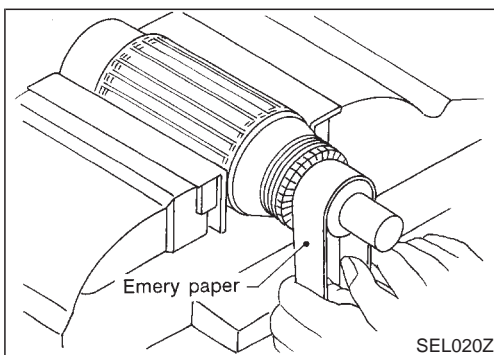
CAUTION:

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



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.

STARTING SYSTEM

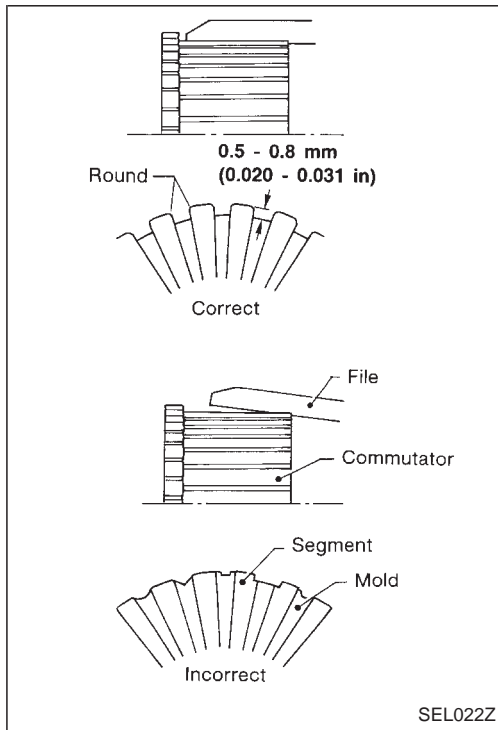
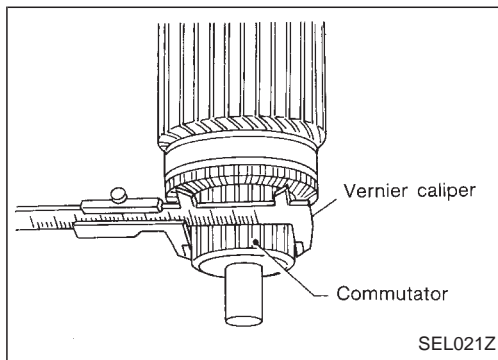
Armature Check (Cont'd)

4. Check diameter of commutator.

Commutator minimum diameter:

Refer to SDS, EL-37.

- Less than specified value ... Replace.



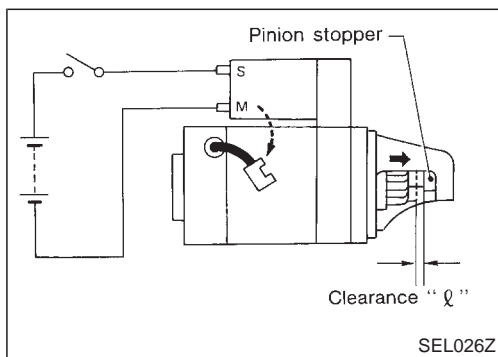
5. Check depth of insulating mold from commutator surface.

- 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

Clearance "ℓ"

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-37.

STARTING SYSTEM

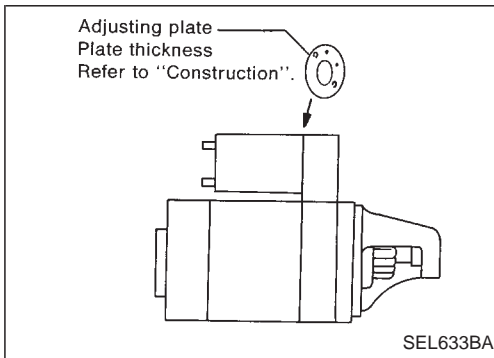
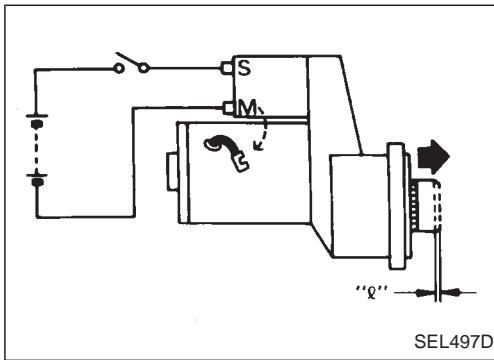
Assembly (Cont'd)

Movement "ℓ"

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

Movement "ℓ":

Refer to SDS, EL-37.



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

Service Data and Specifications (SDS)

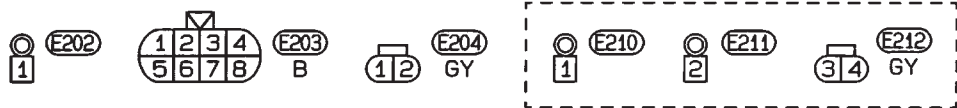
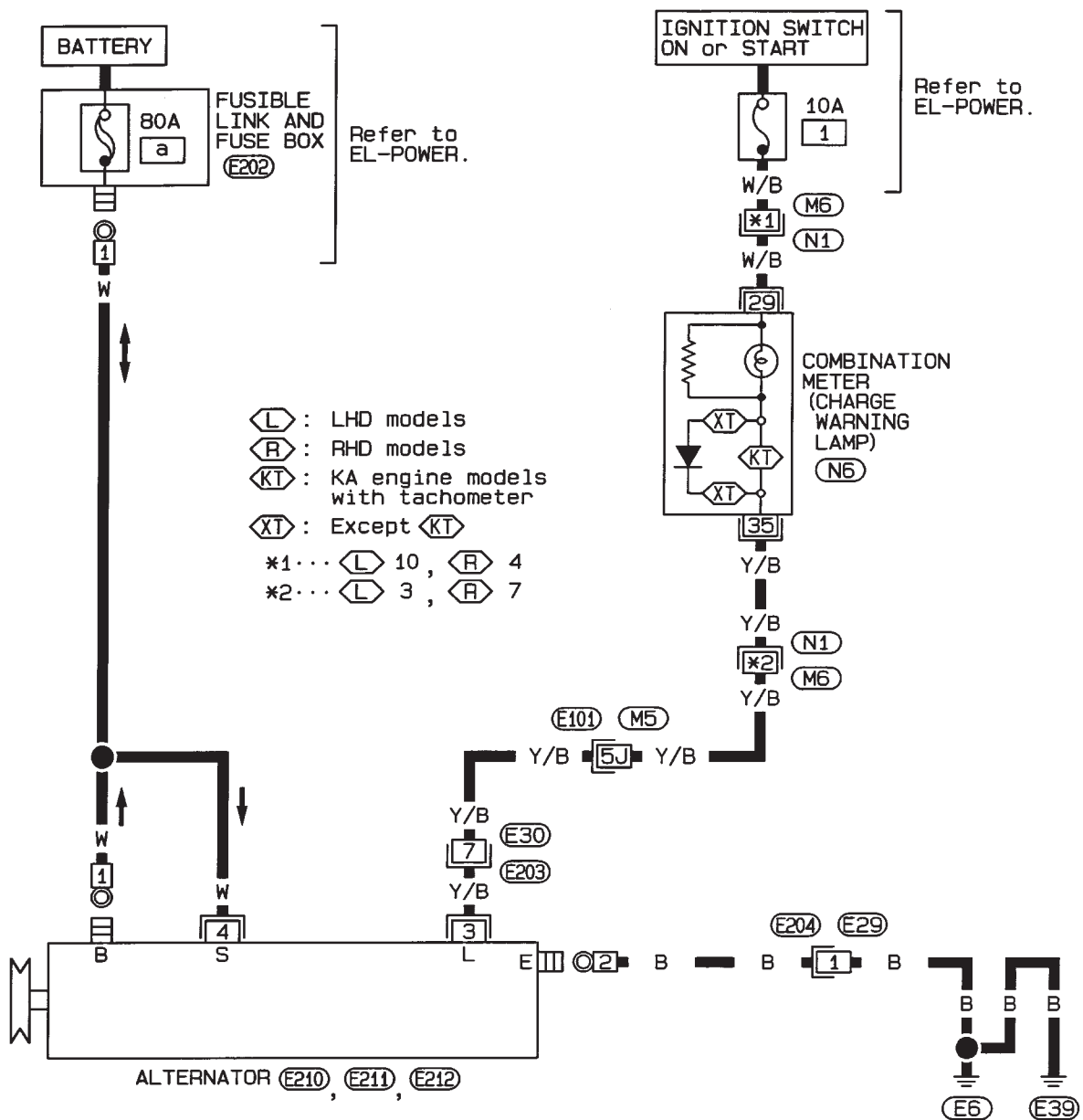
STARTER

| | | | | | | | | | |
|--|---------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|-----------------|------------------------------------|
| Type | M3T70381 | M3T29482D | S114-348A | S114-295B | M0T60081A | M2T52882 | S114-459 | S13-327 | S14-205 |
| | MITSUBISHI | | HITACHI | | MITSUBISHI | | HITACHI | | |
| | Non-reduction | | | | Reduction | | | | |
| Applied model | 2WD | | | | 4WD | | | 2WD | 4WD |
| | KA24 | NA20, Z24 | | | KA24 | Z24 | | TD27 | QD32 |
| | Standard | | | Option | Standard | | | | |
| System voltage | V | 12 | | | | | | | |
| No-load | | | | | | | | | |
| Terminal voltage | V | 11.5 | | | 11.0 | 11.5 | | 11.0 | |
| Current | A | Less than 60 | | | Less than 90 | Less than 100 | | Less than 160 | Less than 160* |
| Revolution | rpm | More than 6,500 | 7,000 | 6,000 | More than 2,500 | 3,000 | 3,900 | More than 4,000 | More than 4,100 |
| Minimum diameter of commutator mm (in) | | 31.4 (1.236) | 39.0 (1.535) | | 28.8 (1.134) | 31.4 (1.236) | 29.0 (1.142) | 35.5 (1.398) | |
| Minimum length of brushmm (in) | | 11.5 (0.453) | 12.0 (0.472) | 11.0 (0.433) | 7.0 (0.276) | 11.5 (0.453) | 11.0 (0.433) | 9.0 (0.354) | 11.0 (0.433) |
| Brush spring tension N (kg, lb) | | 13.7 - 25.5 (1.4 - 2.6, 3.1 - 5.7) | 17.7 - 21.6 (1.8 - 2.2, 4.0 - 4.9) | 13.7 - 17.7 (1.4 - 1.8, 3.1 - 4.0) | 11.8 - 23.5 (1.2 - 2.4, 2.6 - 5.3) | 16.7 - 21.6 (1.7 - 2.2, 3.7 - 4.9) | 15.7 - 19.6 (1.6 - 2.0, 3.5 - 4.4) | — | 28.4 - 34.3 (2.9 - 3.5, 6.4 - 7.7) |
| Clearance between bearing metal and armature shaftmm (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) | 1.3 - 2.0 (0.051 - 0.079) | — | | | | |
| 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) | | 0.3 - 2.0 (0.012 - 0.079) |

*: Not include the current of the magnet switch circuit

GASOLINE ENGINE

EL-CHARGE-01



Refer to last page
(Foldout page) .

M5 E101



Wiring Diagram — CHARGE — (Cont'd)

EL-CHARGE-02

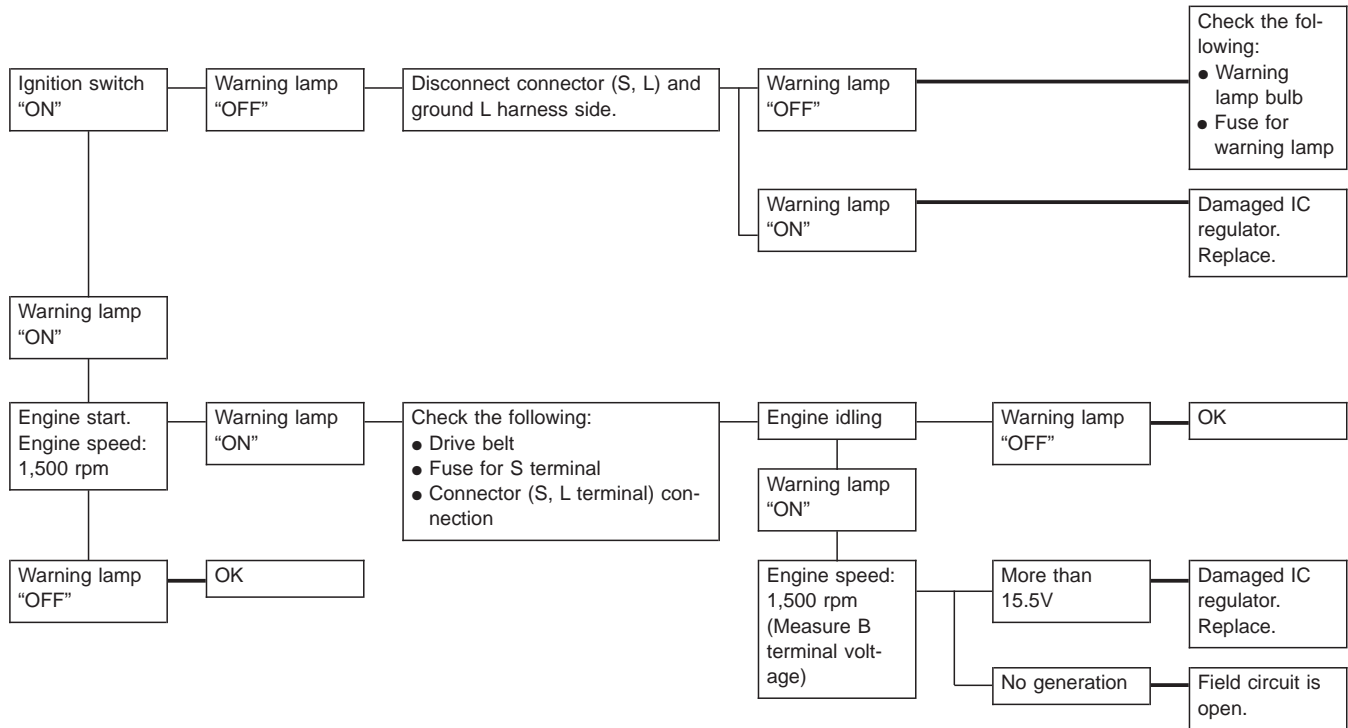


Trouble Diagnoses

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.
- Use fully charged battery.

GASOLINE ENGINE MODELS



Warning lamp: "CHARGE" warning lamp in combination meter

Note:

- If the inspection result is OK even though the charging system is malfunctioning, check the B terminal connection. (Check the tightening torque.)
- When field circuit is open, check condition of rotor coil, rotor slip ring and brush. If necessary, replace faulty parts with new ones.

Malfunction indicator

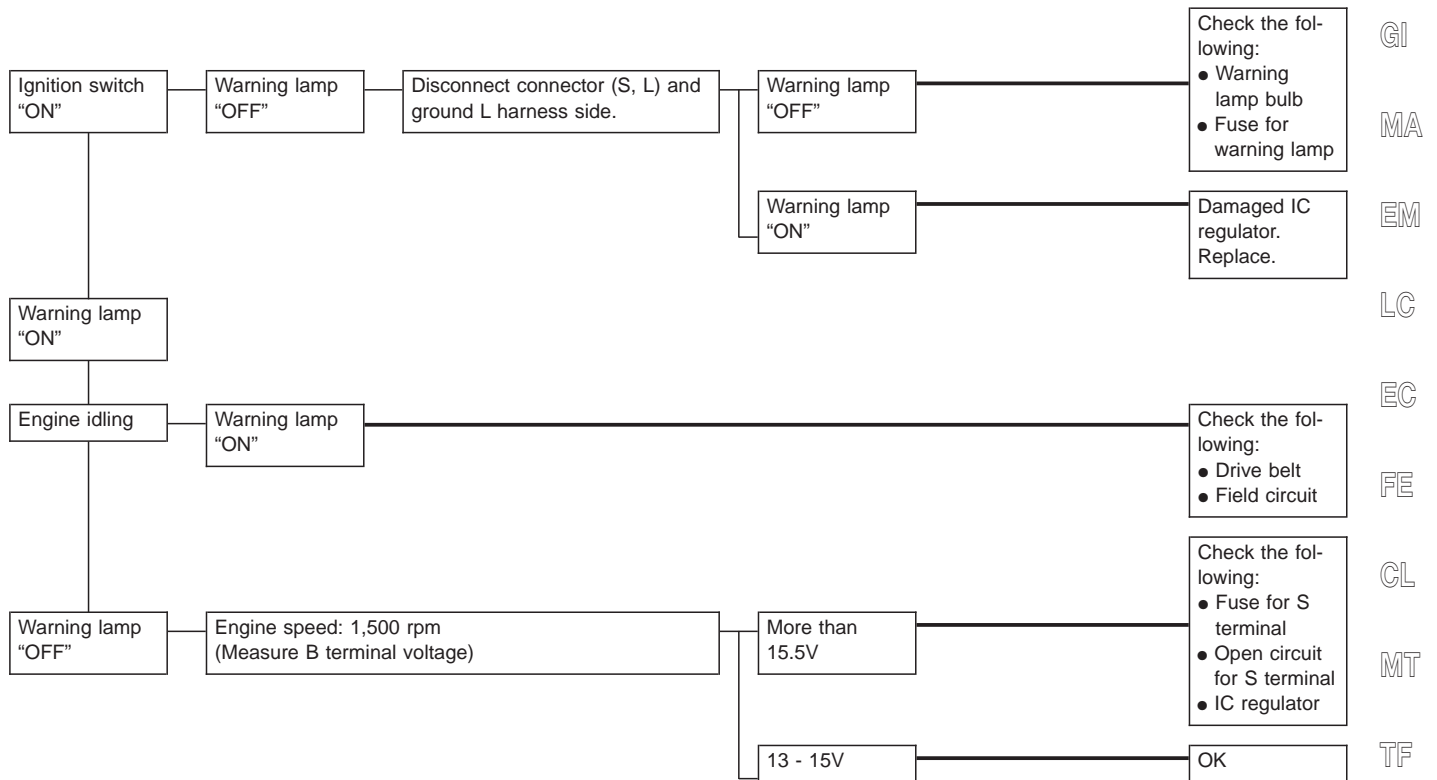
The IC regulator warning function activates to illuminate "CHARGE" warning lamp, if any of the following symptoms occur while alternator is operating:

- Field circuit is open.
- Excessive voltage is produced.

CHARGING SYSTEM

Trouble Diagnoses (Cont'd)

DIESEL ENGINE MODELS



Warning lamp: "CHARGE" warning lamp in combination meter

Note:

- If the inspection result is OK even though the charging system is malfunctioning, check the B terminal connection (check the tightening torque).
- When field circuit is open, check condition of rotor coil, rotor slip ring and brush. If necessary, replace faulty parts with new ones.

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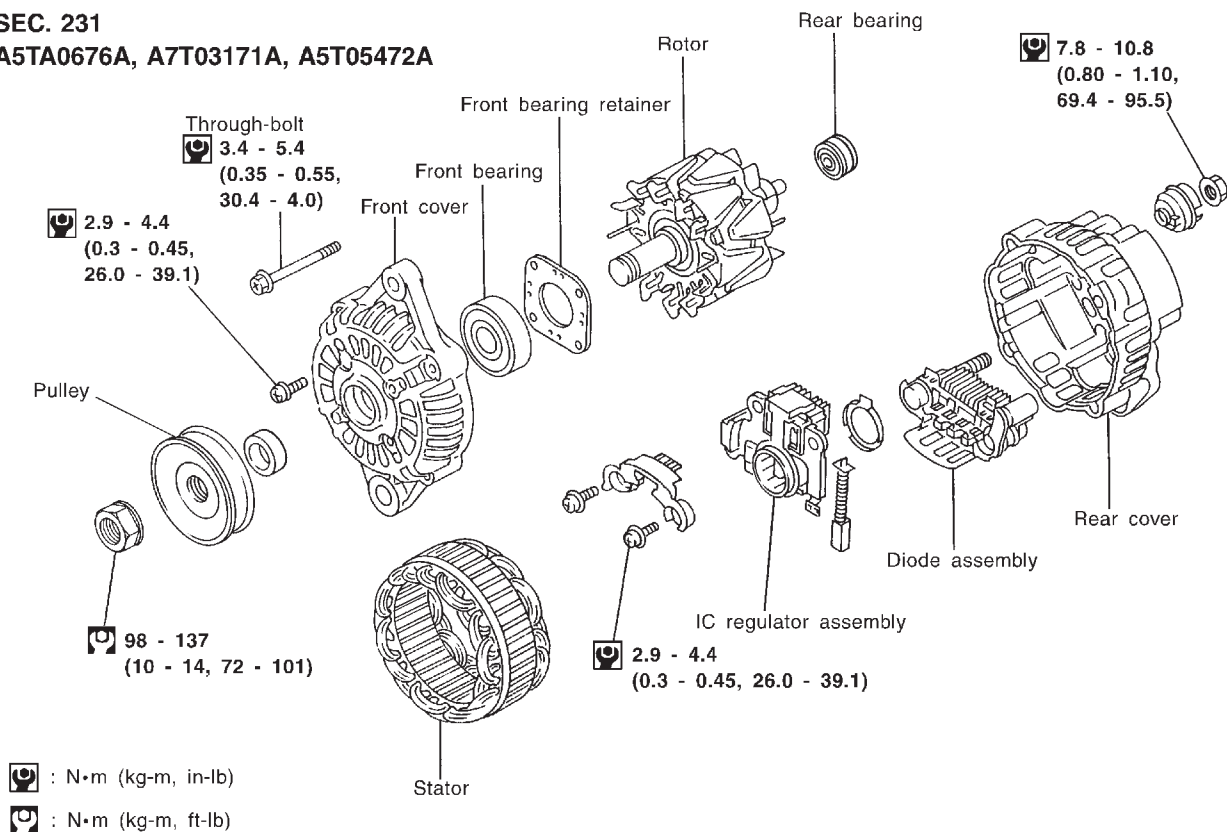
IDX

CHARGING SYSTEM

Construction

SEC. 231

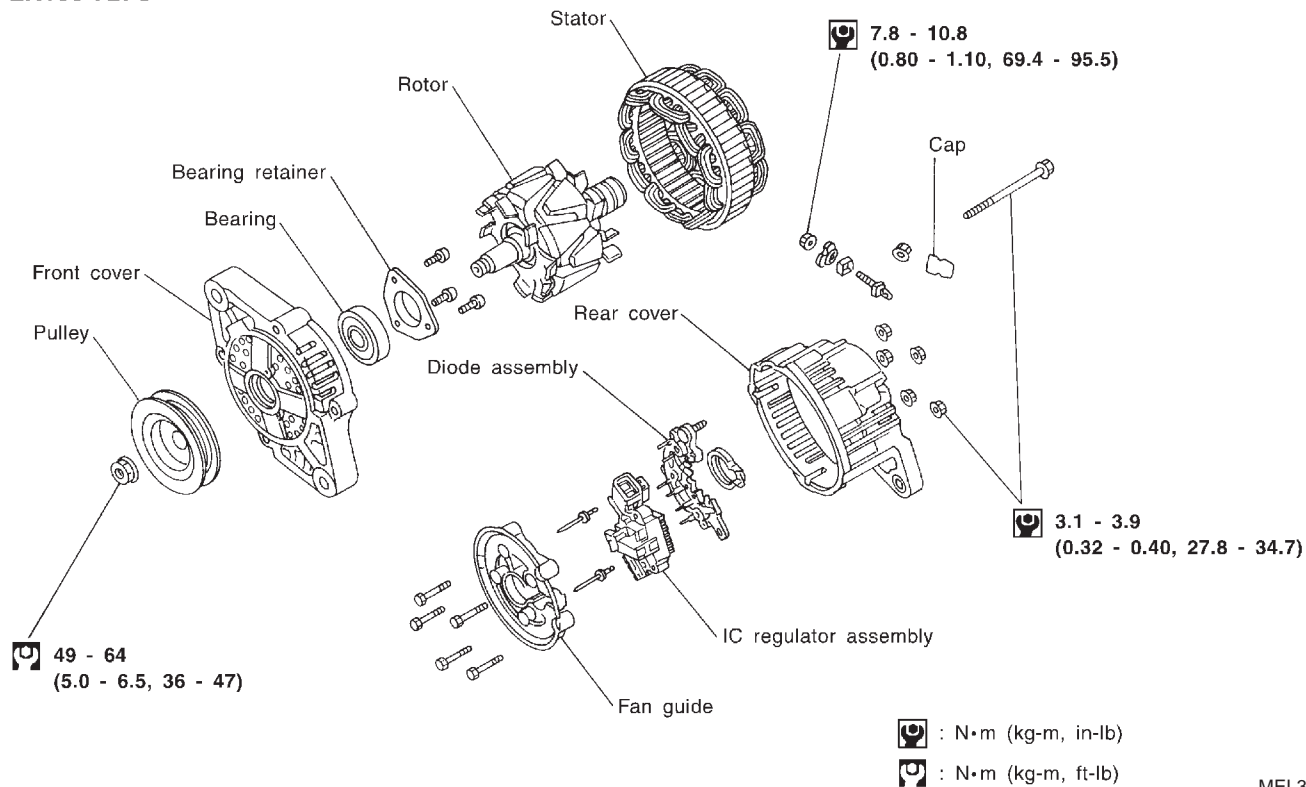
A5TA0676A, A7T03171A, A5T05472A



MEL441H

SEC. 231

LR160-727C

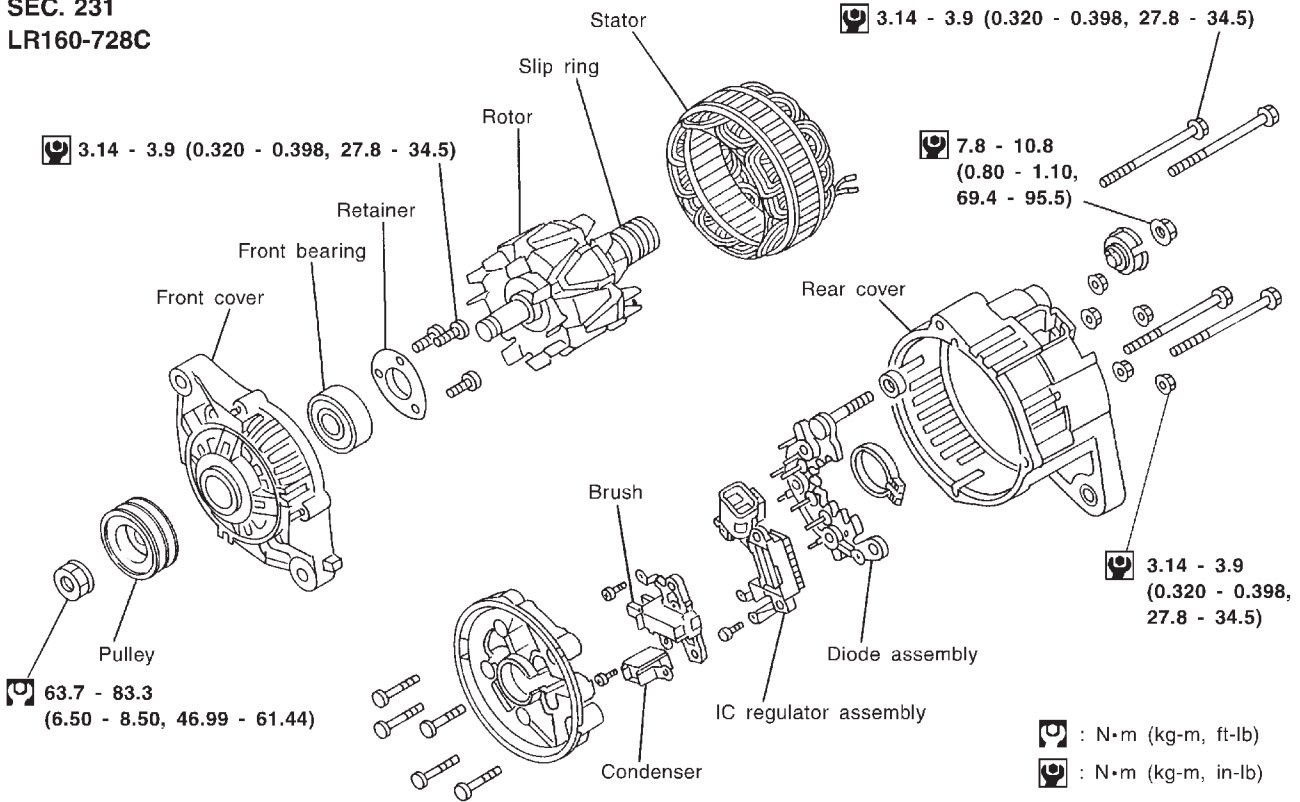


MEL383I

CHARGING SYSTEM

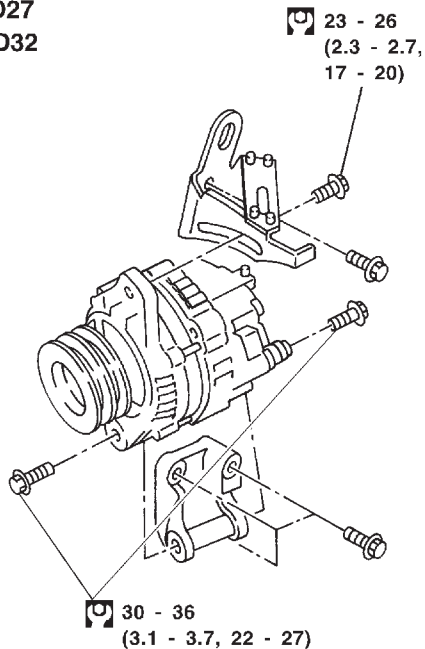
Construction (Cont'd)

SEC. 231 LR160-728C



MEL443H

TD27 QD32



MEL444H

Removal and Installation

CAUTION:

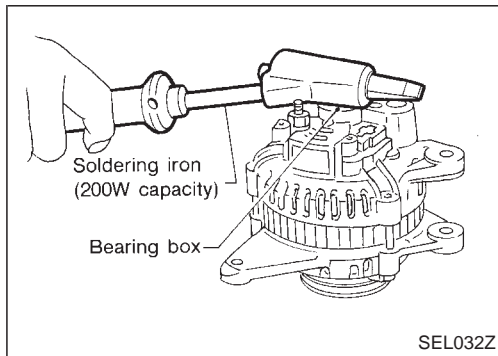
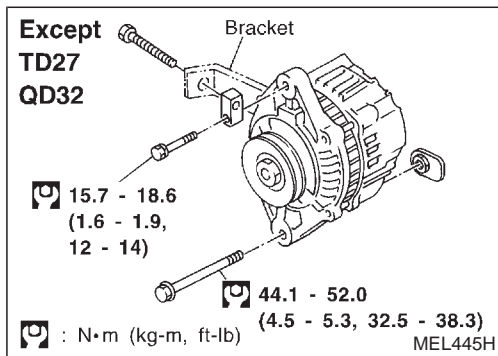
- Start service operation after removing the negative terminal from the battery.
- Also remove the undercover, if equipped, before servicing.

CHARGING SYSTEM

Removal and Installation (Cont'd)

CAUTION:

- Start service operation after removing the negative terminal from the battery.
- Also remove the undercover, if equipped, before servicing.



Disassembly

REAR COVER

CAUTION:

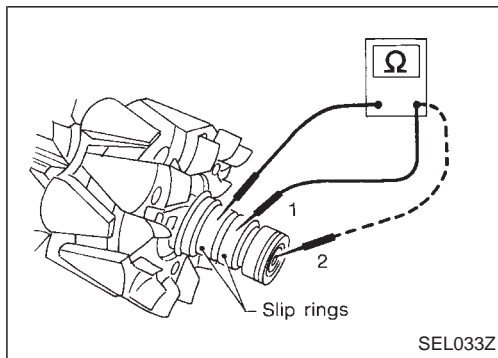
Rear cover may be hard to remove because a ring is used to lock outer race of rear bearing. To facilitate removal of rear cover, heat just bearing box section with a 200W soldering iron.

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

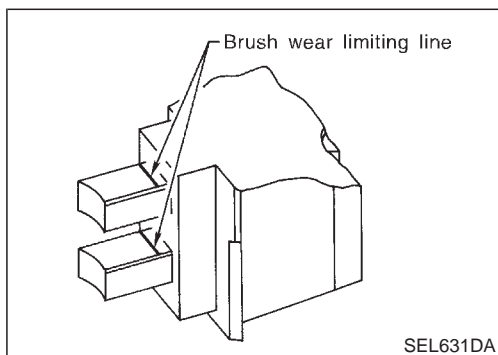
Resistance: Refer to SDS, EL-48.

- 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:

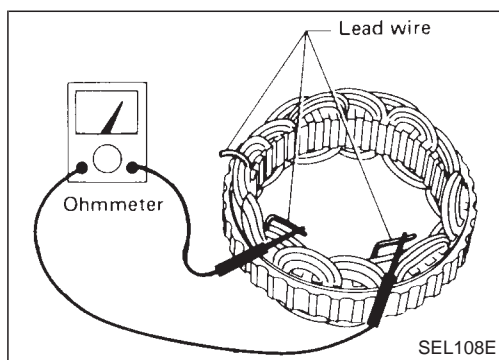
Refer to SDS, EL-48.

- Not within the specified values ... Replace rotor.



Brush Check

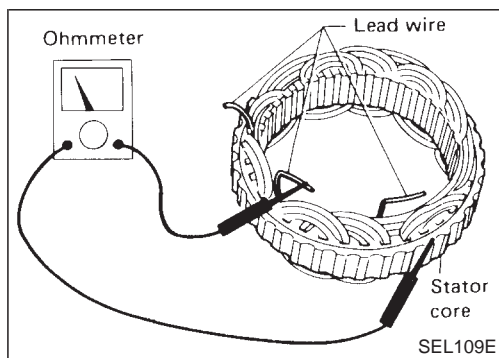
1. Check smooth movement of brush.
- Not smooth ... Check brush holder and clean.
2. Check brush for wear.
- Replace brush if it is worn down to the limit line.



Stator Check

1. Continuity test

- No continuity ... Replace stator.



2. Ground test

- Continuity exists. ... Replace stator.

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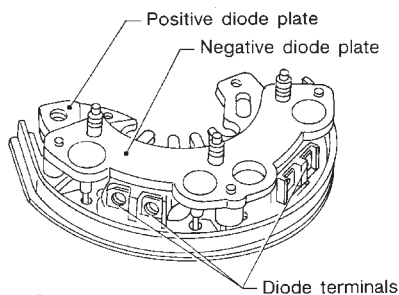
Diode Check

MAIN DIODES

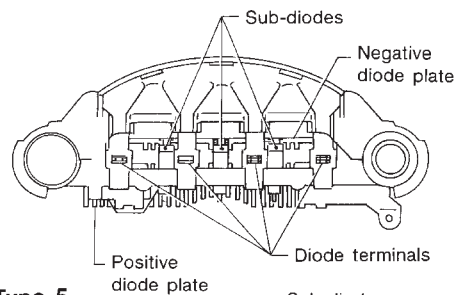
- Use an ohmmeter to check condition of diodes as indicated in chart below.
- If any of the test results is not satisfactory, replace diode assembly.

| | Ohmmeter probes | | Judgement |
|------------------------------|----------------------|----------------------|---------------------------------------|
| | Positive \oplus | Negative \ominus | |
| 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 | |

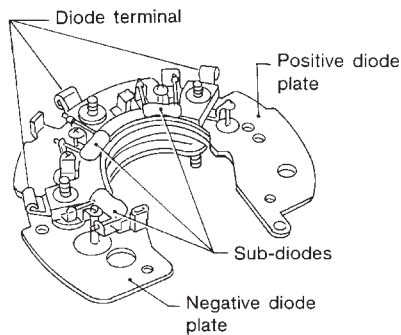
Type 1



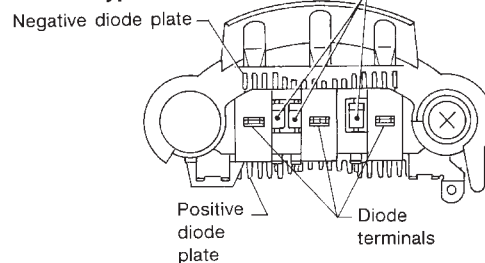
Type 4



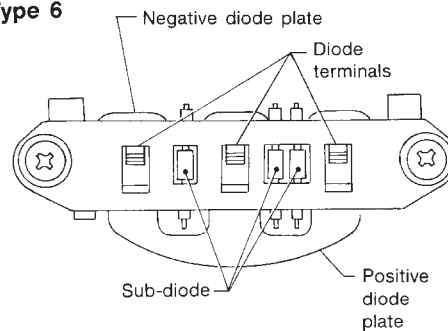
Type 2



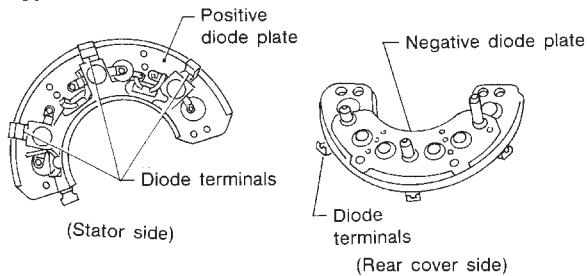
Type 5



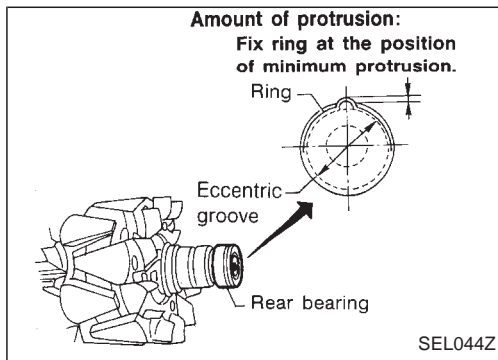
Type 6



Type 3



SEL039Z



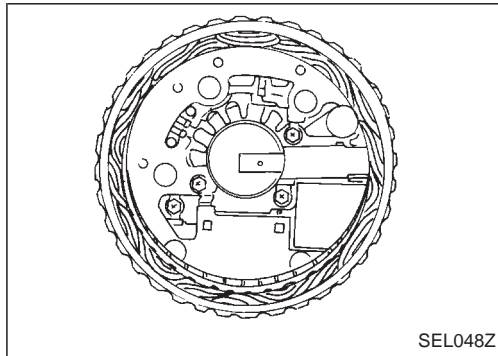
Assembly

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:

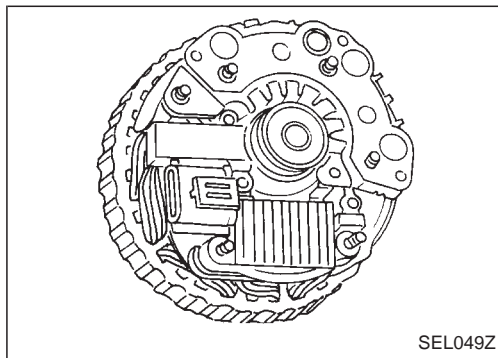
Do not reuse rear bearing after removal.



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.



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CHARGING SYSTEM

Service Data and Specifications (SDS)

ALTERNATOR

| | | | | | |
|---|------------|---|---|---|---|
| Type | A5TA0676A | A7T03171A | A5T05472A | LR160-727C | LR160-728C |
| | MITSUBISHI | | | HITACHI | |
| Applied model | NA20 | Z24 | | KA24 | TD27, QD32 |
| | | Standard | Option* | | |
| Nominal rating | V-A | 12-70 | 12-35 | 12-70 | 12-60 |
| Ground polarity | Negative | | | | |
| Minimum revolution under no-load (When 13.5V is applied) | rpm | Less than 1,300 | | | Less than 1,000 |
| Hot output current | A/rpm | More than 19/1,300 More than 50/2,500 (When 14V is applied) | More than 27.5/2,500 (When 14V is applied) | More than 14/1,300 More than 44/2,500 (When 14V is applied) | More than 17/1,300 More than 48/2,500 More than 57/5,000 (When 13.5V is applied) |
| Regulated output voltage | V | 14.1 - 14.7 | | | |
| Minimum length of brush | mm (in) | 5.0 (0.20) | | | 6.0 (0.236) |
| Brush spring pressure | N (g, oz) | 4.6 - 5.8 (470 - 590, 16.58 - 20.81) | | | 1.0 - 3.43 (102 - 350, 3.60 - 12.34) |
| Slip ring minimum outer diameter | mm (in) | 22.1 (0.870) | | | 26.0 (1.024) |
| Rotor (Field coil) resistance | Ω | 2.5 - 2.9 | 2.6 - 3.1 | 2.5 - 2.9 | 2.58 |

*: Models with power steering and air conditioner

COMBINATION SWITCH

Combination Switch/Check

LHD MODELS

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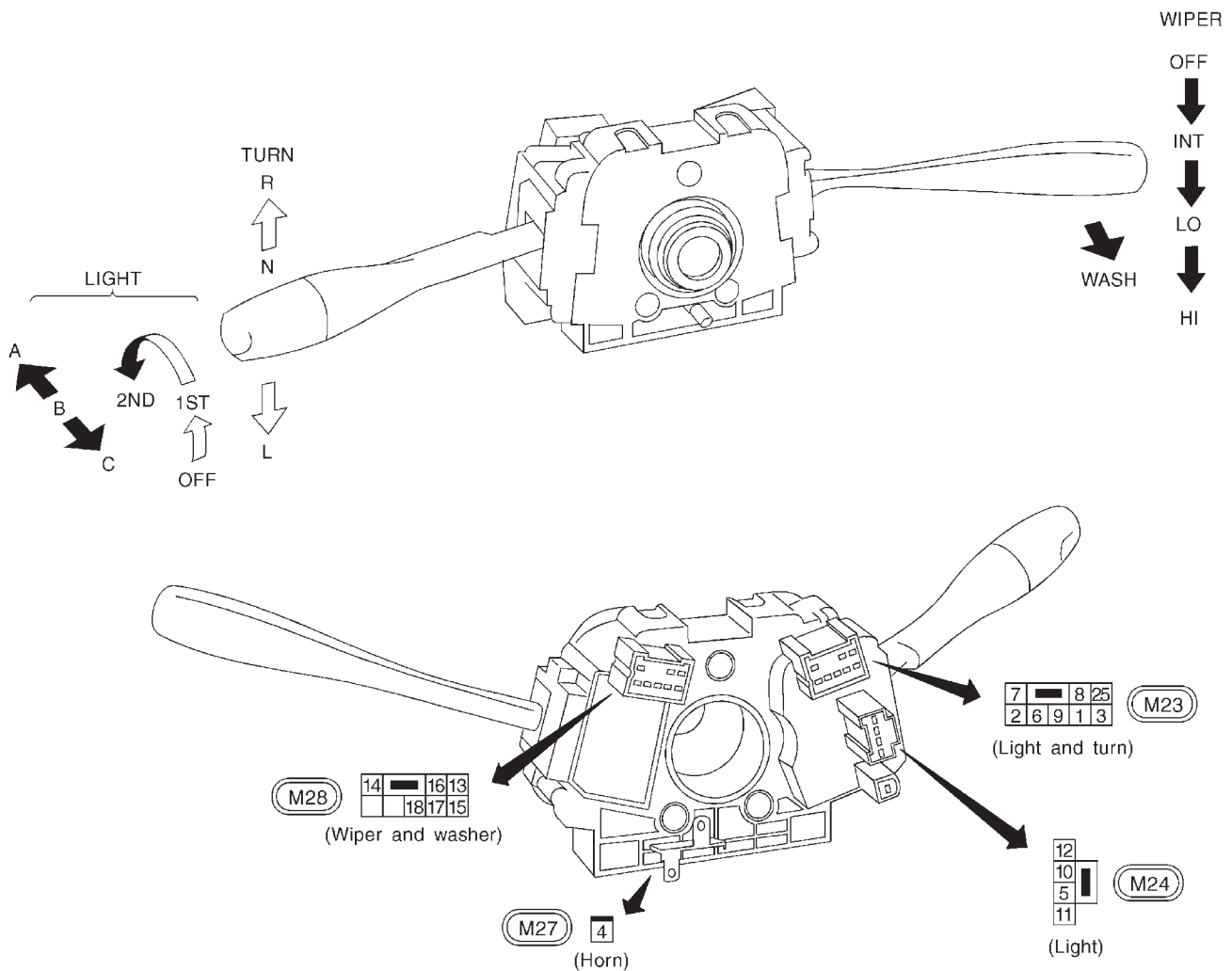
RS

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IDX



LIGHTING SWITCH

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

WIPER AND WASHER SWITCH (With intermittent)

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

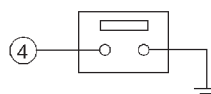
WIPER AND WASHER SWITCH (Without intermittent)

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

TURN SIGNAL LAMP SWITCH

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

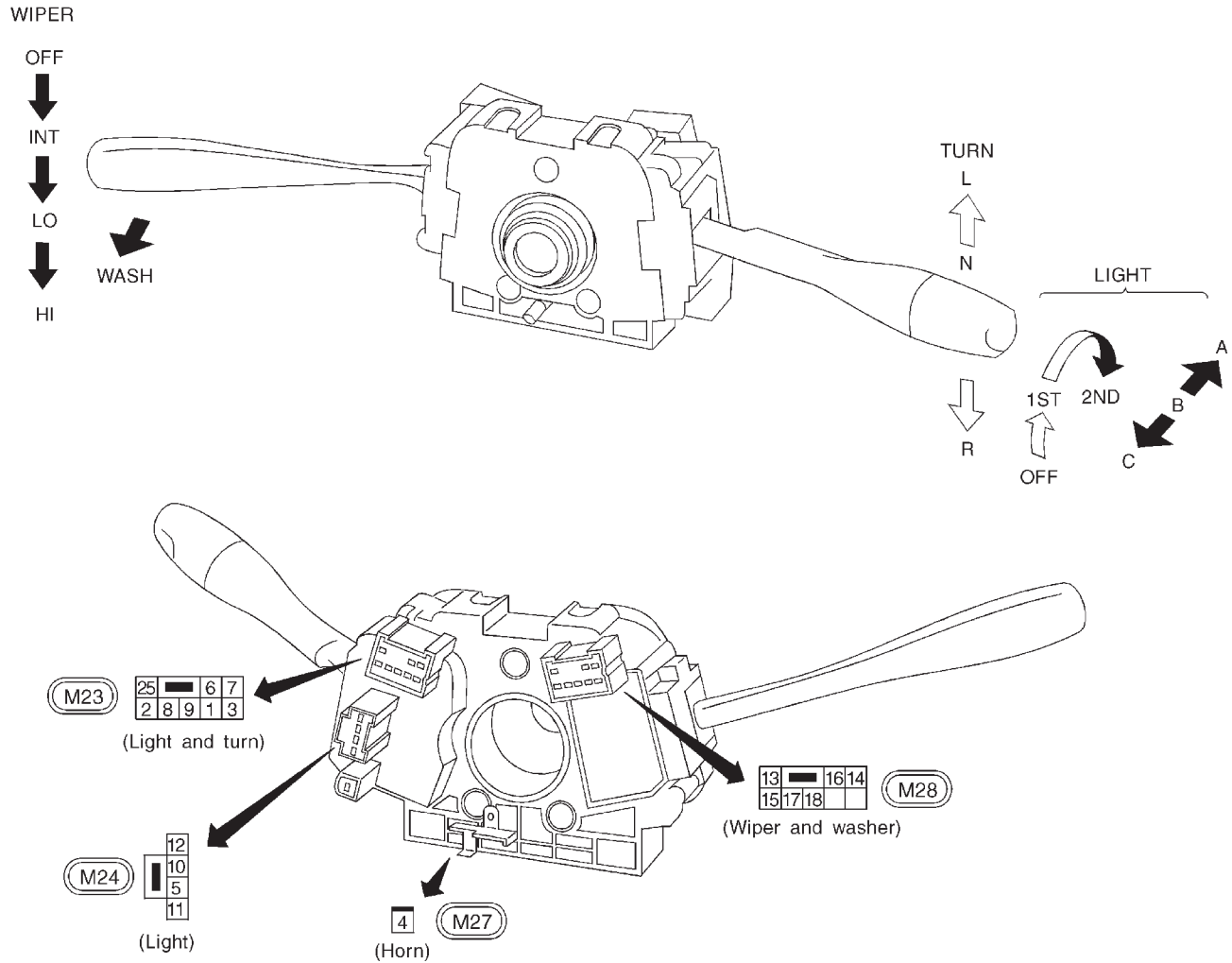
HORN SWITCH (Without air bag)



COMBINATION SWITCH

Combination Switch/Check (Cont'd)

RHD MODELS



LIGHTING SWITCH

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

WIPER AND WASHER SWITCH (With intermittent)

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

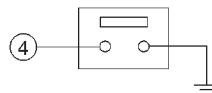
WIPER AND WASHER SWITCH (Without intermittent)

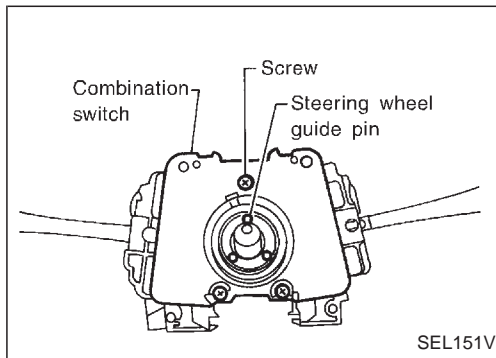
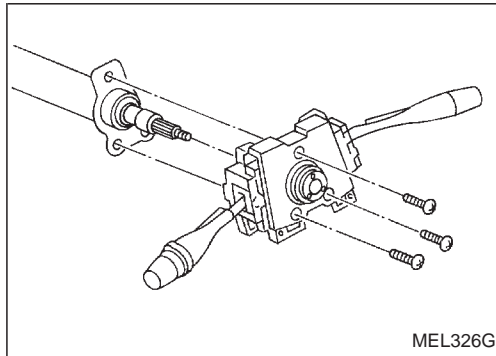
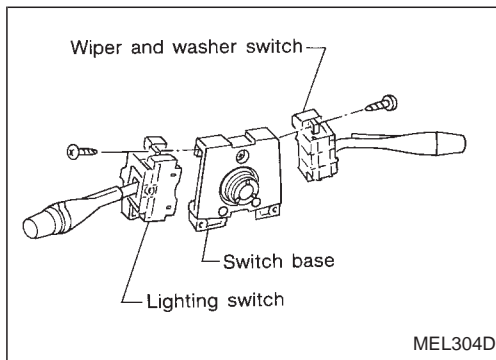
| | OFF | LO | HI | WASH |
|----|-----|----|----|------|
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |

TURN SIGNAL LAMP SWITCH

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

HORN SWITCH





Replacement

For removal and installation of spiral cable, refer to RS section ["Installation — Air Bag Module and Spiral Cable", "SUPPLEMENTAL RESTRAINT SYSTEM (SRS)"].

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

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

- Before installing the steering wheel, align the steering wheel guide pins with the screws which secure the combination switch as shown in the left figure.

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HA

EL

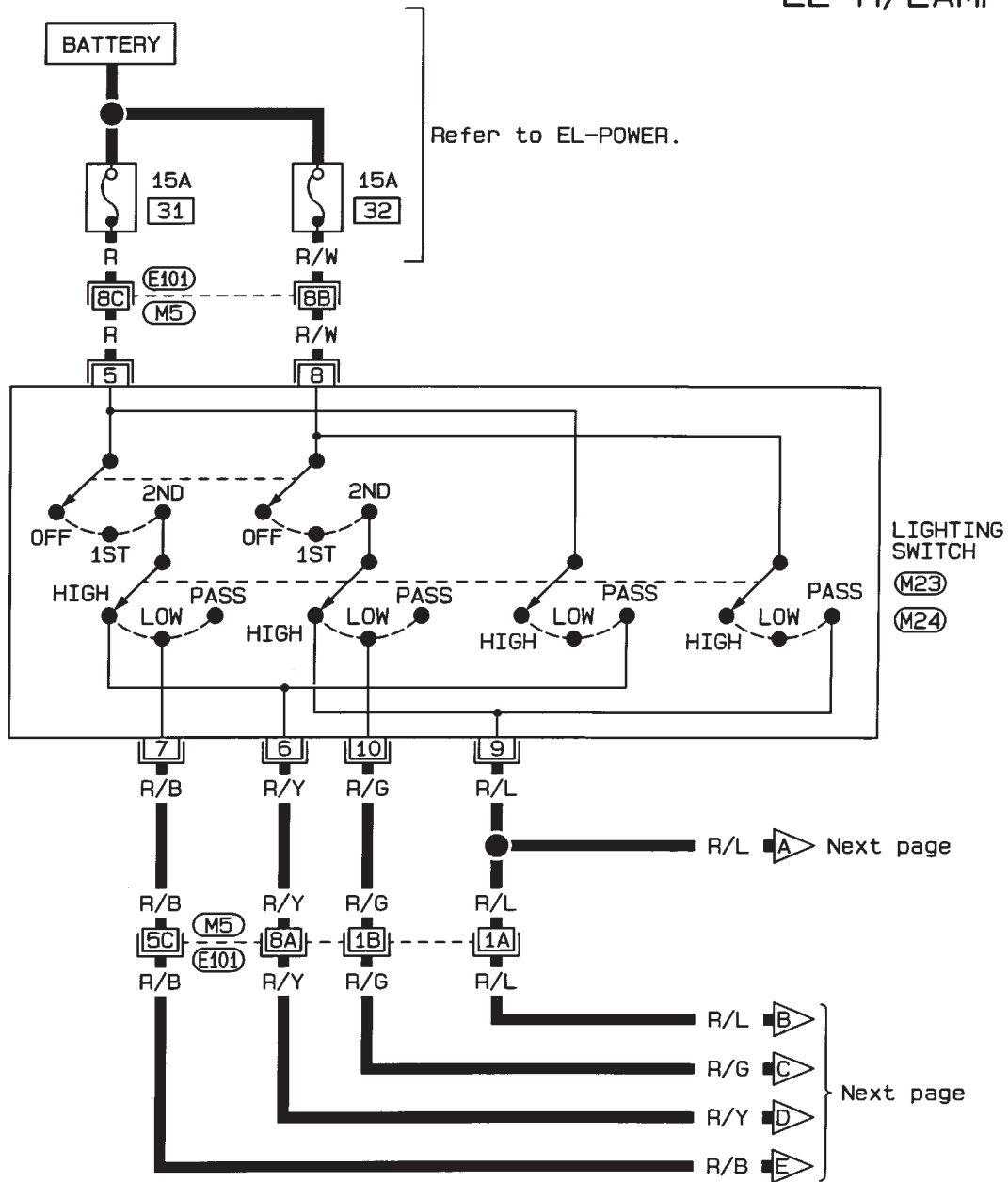
IDX

HEADLAMP

Wiring Diagram — H/LAMP —

LHD MODELS

EL-H/LAMP-01



Refer to last page
(Foldout page).

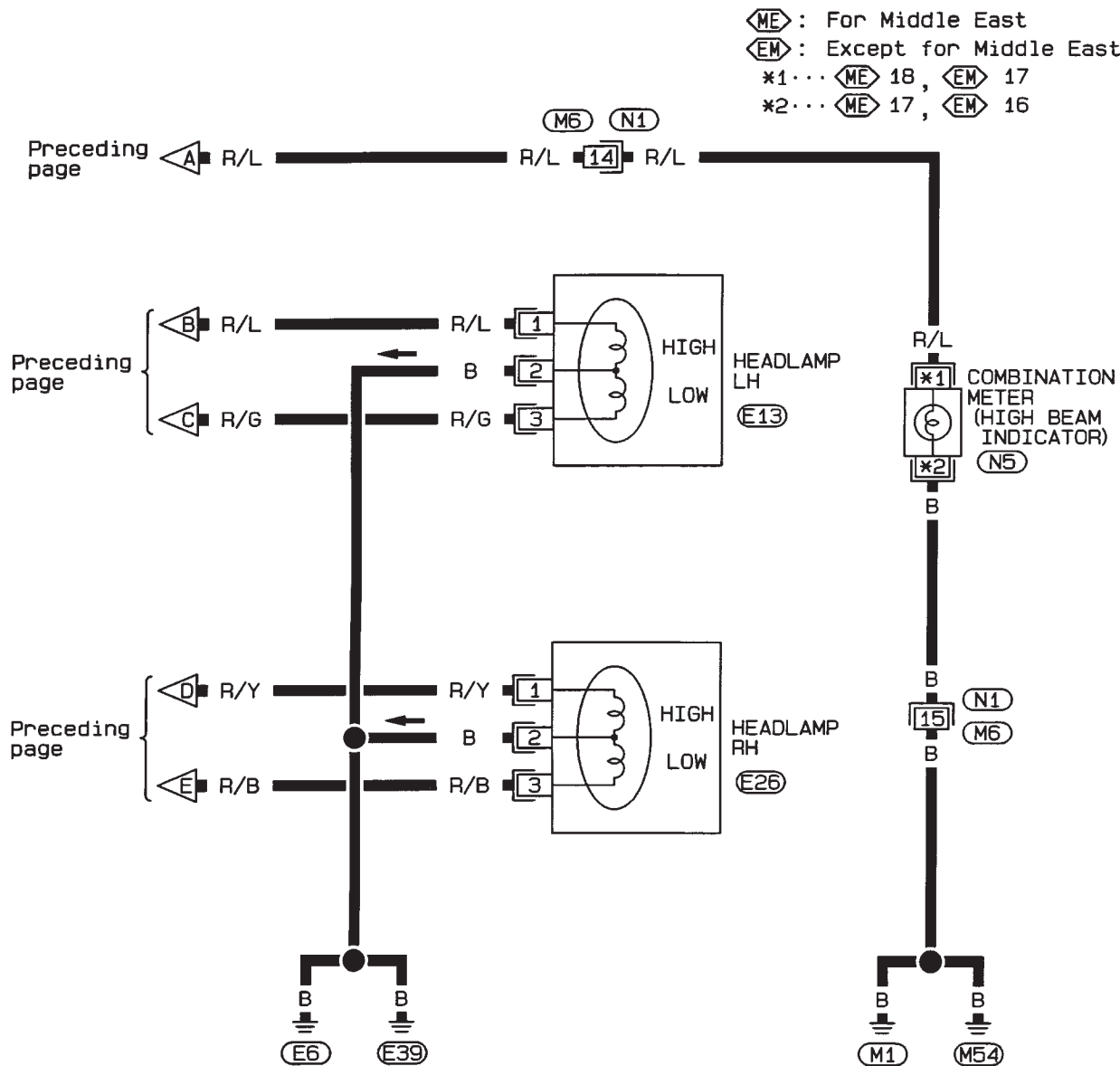
M5, E101

HEADLAMP

Wiring Diagram — H/LAMP — (Cont'd)

LHD MODELS

EL-H/LAMP-02



3 (E13), (E26)
1 2 B B

1 2 3 4 5 6 7 8 9 10 (N1)
11 12 13 14 15 16 17 18 19 20 21 22 23 24 W

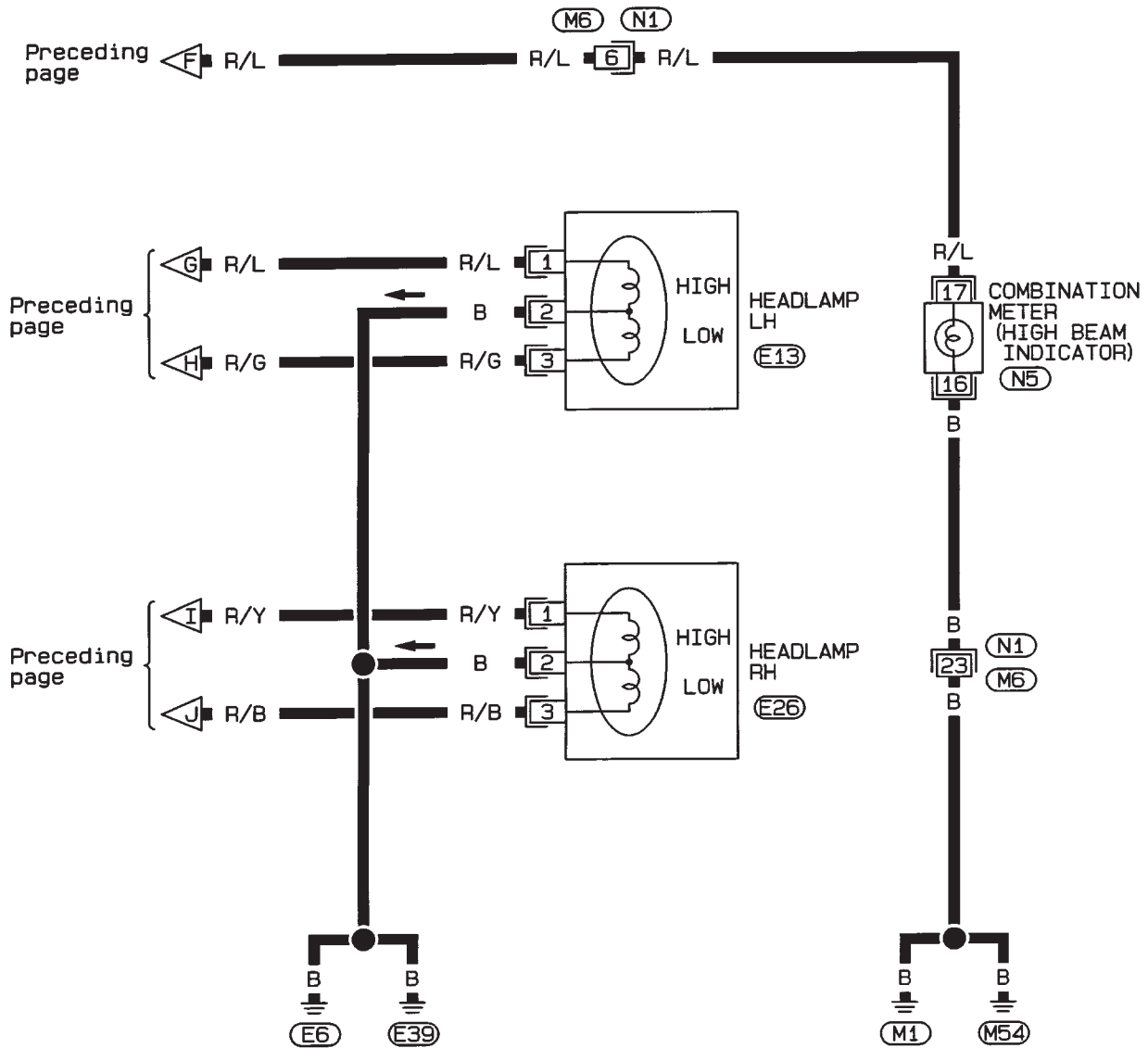
26 25 24 23 22 21 20 (N5)
19 18 17 16 15 14 13 12 11 W

HEADLAMP

Wiring Diagram — H/LAMP — (Cont'd)

RHD MODELS

EL-H/LAMP-04



3 E13, E26
1 2 B B

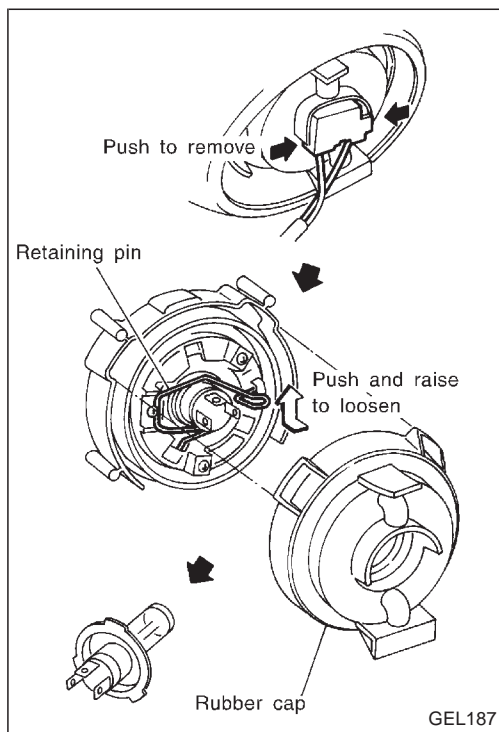
1 2 3 4 5 6 7 8 9 10 N1
11 12 13 14 15 16 17 18 19 20 21 22 23 24 W

26 25 24 23 22 21 20 N5
19 18 17 16 15 14 13 12 11 W

HEADLAMP

Trouble Diagnoses

| Symptom | Possible cause | Repair order |
|--|---|---|
| LH headlamps do not operate. | <ol style="list-style-type: none"> 1. Bulb 2. Grounds (E6) and (E39) 3. 15A fuse 4. Lighting switch | <ol style="list-style-type: none"> 1. Check bulb. 2. Check grounds (E6) and (E39). 3. Check 15A fuse (No. 32, located in fusible link and fuse box). Verify battery positive voltage is present at terminal ⑧ of lighting switch. 4. Check lighting switch. |
| RH headlamps do not operate. | <ol style="list-style-type: none"> 1. Bulb 2. Grounds (E6) and (E39) 3. 15A fuse 4. Lighting switch | <ol style="list-style-type: none"> 1. Check bulb. 2. Check grounds (E6) and (E39). 3. Check 15A fuse (No. 31, located in fusible link and fuse box). Verify battery positive voltage is present at terminal ⑤ of lighting switch. 4. Check lighting switch. |
| LH high beams do not operate, but LH low beam operates. | <ol style="list-style-type: none"> 1. Bulbs 2. Open in LH high beams circuit 3. Lighting switch | <ol style="list-style-type: none"> 1. Check bulbs. 2. Check R/L wire between lighting switch and LH headlamps for an open circuit. 3. Check lighting switch. |
| LH low beam does not operate, but LH high beam operates. | <ol style="list-style-type: none"> 1. Bulb 2. Open in LH low beam circuit 3. Lighting switch | <ol style="list-style-type: none"> 1. Check bulb. 2. Check R/G wire between lighting switch and LH headlamp for an open circuit. 3. Check lighting switch. |
| RH high beams do not operate, but RH low beam operates. | <ol style="list-style-type: none"> 1. Bulbs 2. Open in RH high beams circuit 3. Lighting switch | <ol style="list-style-type: none"> 1. Check bulbs. 2. Check R/Y wire between lighting switch and RH headlamps for an open circuit. 3. Check lighting switch. |
| RH low beam does not operate, but RH high beam operates. | <ol style="list-style-type: none"> 1. Bulb 2. Open in RH low beam circuit 3. Lighting switch | <ol style="list-style-type: none"> 1. Check bulb. 2. Check R/B wire between lighting switch and RH headlamp for an open circuit. 3. Check lighting switch. |
| High beam indicator does not work. | <ol style="list-style-type: none"> 1. Bulb 2. Grounds (M1) and (M54) 3. Open in high beam circuit | <ol style="list-style-type: none"> 1. Check bulb in combination meter. 2. Check grounds (M1) and (M54). 3. Check R/L wire between lighting switch and combination meter for an open circuit. |



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. Pull off the rubber cap.
4. Push and raise retaining pin to loosen it.
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

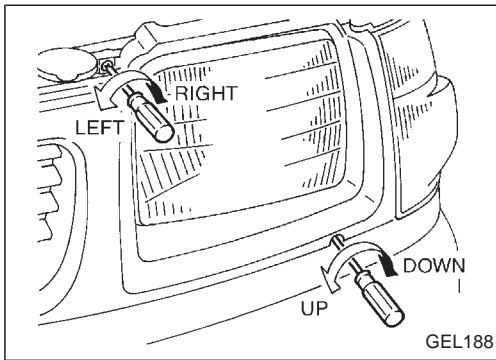
When performing headlamp aiming adjustment, use an aiming machine, aiming wall screen or headlamp tester. Aimers should be in good repair, calibrated and operated in accordance with respective operation manuals.

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

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

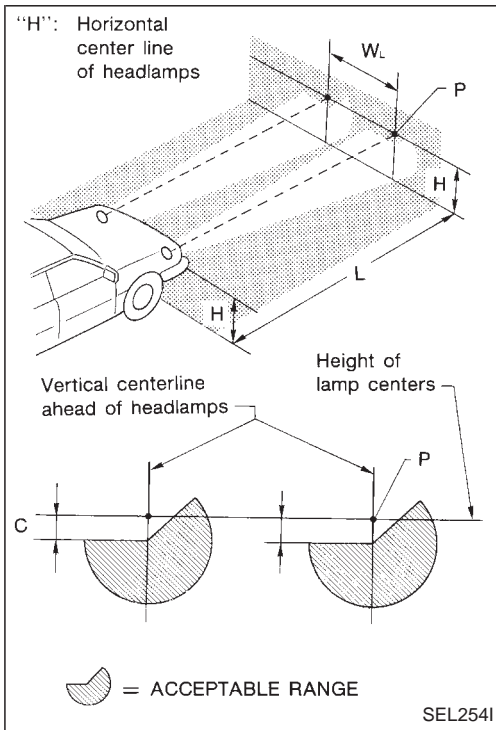
- a. Keep all tires inflated to correct pressures.
- b. Place vehicle and tester on one and same flat surface.
- c. See that there is no-load in vehicle (coolant, engine oil filled up to correct level and full fuel tank) other than the driver (or equivalent weight placed in driver's position).

HEADLAMP



Low Beam

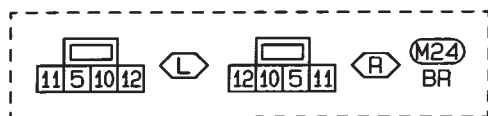
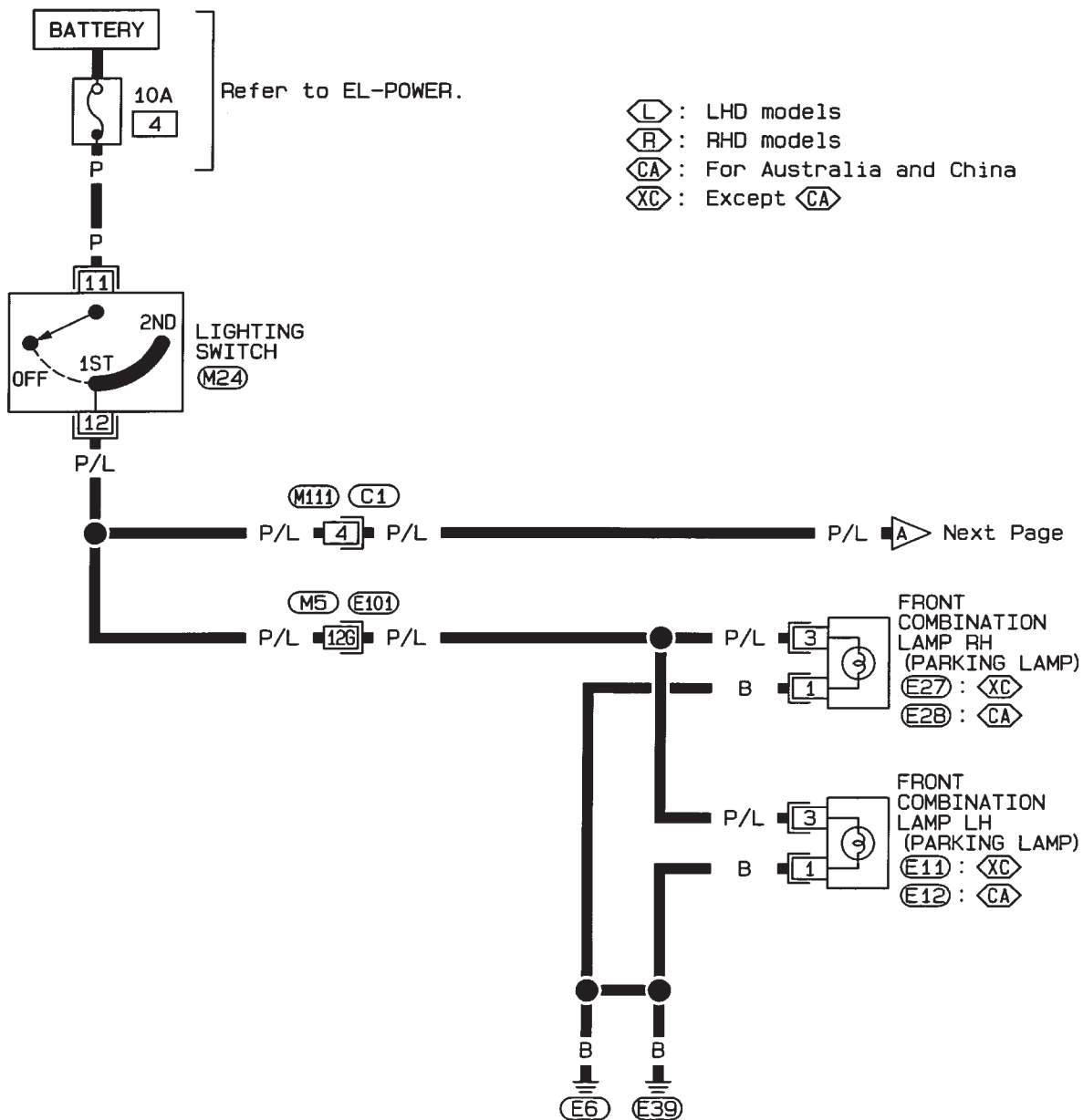
1. Turn headlamp low beam on.
 2. Use adjusting screws to perform aiming adjustment.
- **First tighten the adjusting screw all the way and then make adjustment by loosening the screw.**



- 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)

Parking, License and Tail Lamps/Wiring Diagram — TAIL/L —

EL-TAIL/L-01



1 2 3 E11, E12, E27, E28
GY BR GY BR

Refer to last page
(Foldout page).

M5, E101

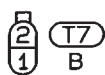
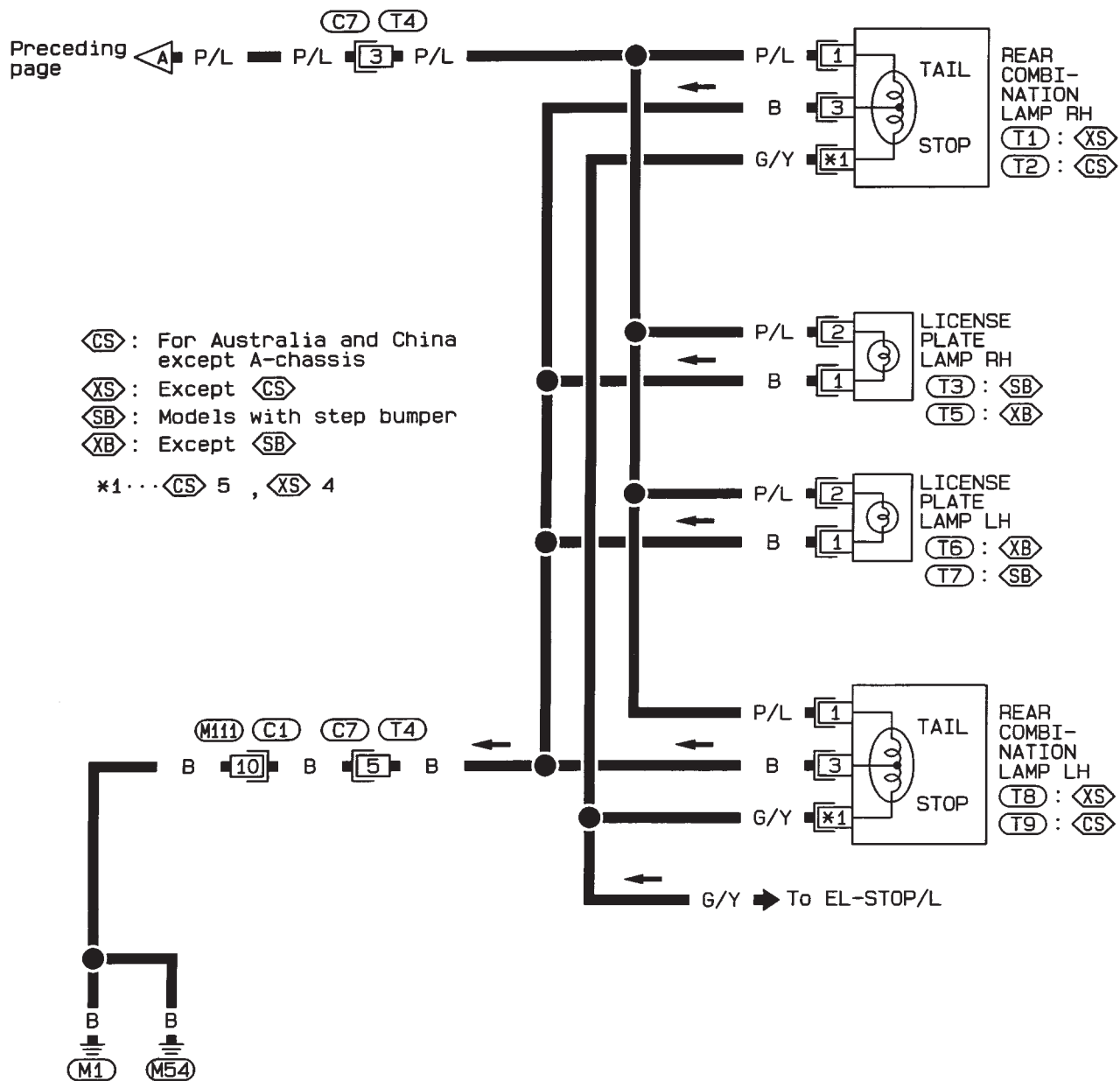
EL

IDX

EXTERIOR LAMP

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

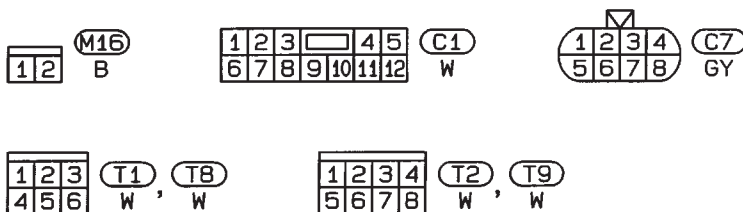
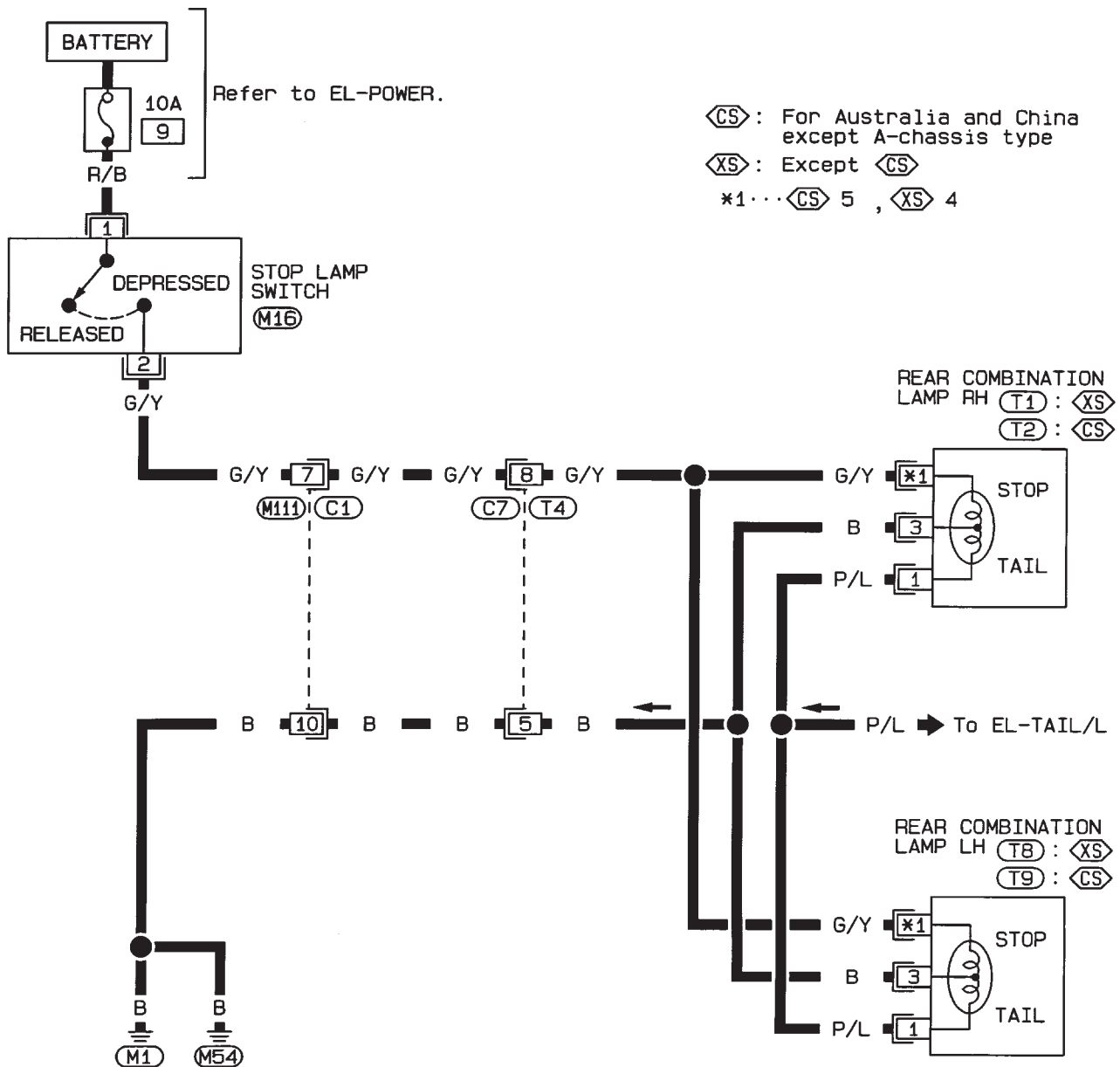
EL-TAIL/L-02



EXTERIOR LAMP

Stop Lamp/Wiring Diagram — STOP/L —

EL-STOP/L-01



GI

MA

EM

LC

EC

FE

CL

MT

TF

PD

FA

RA

BR

ST

RS

BT

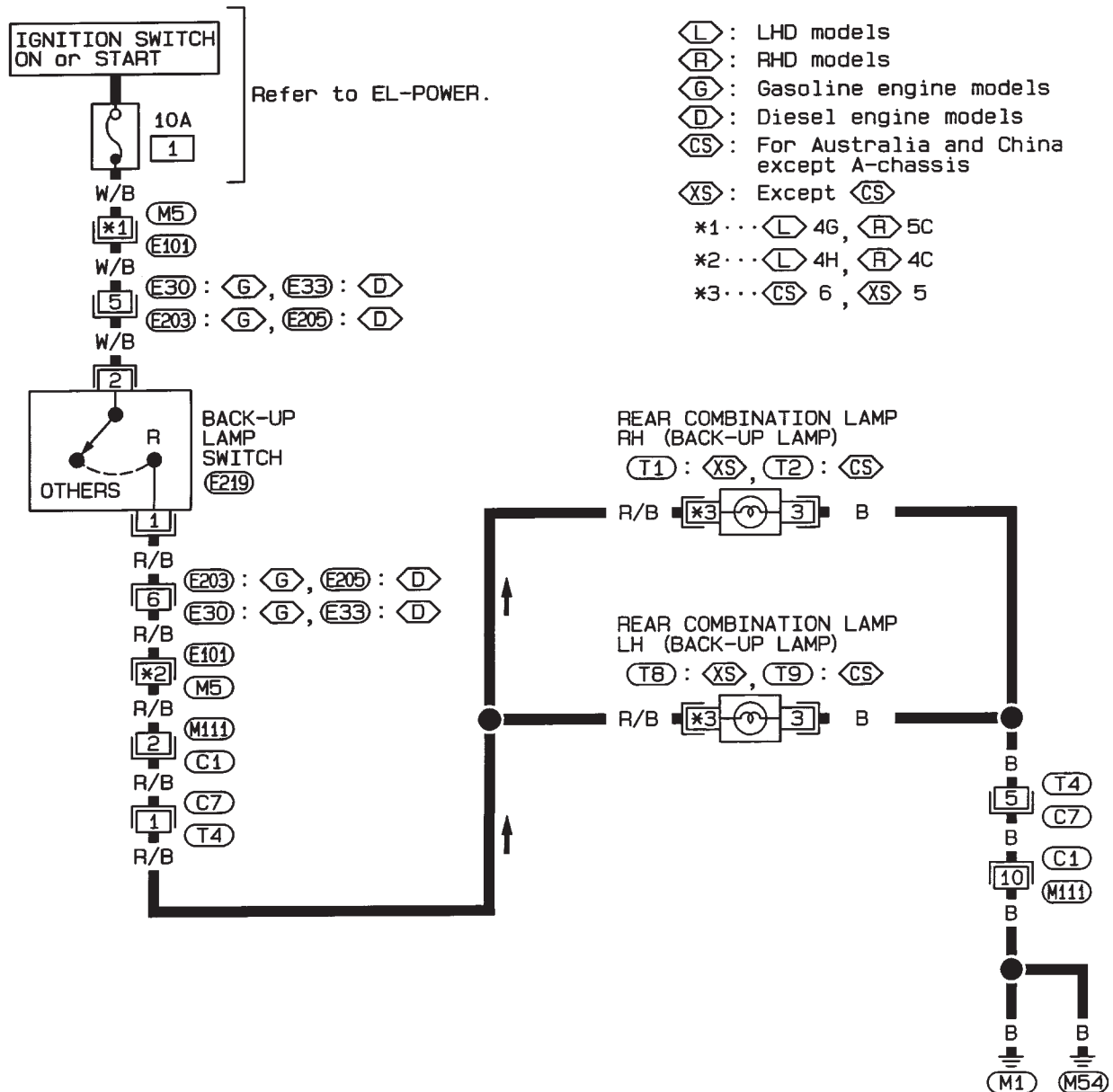
HA

EL

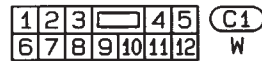
IDX

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

EL-BACK/L-01

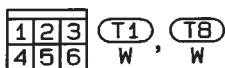


- (L) : LHD models
- (R) : RHD models
- (G) : Gasoline engine models
- (D) : Diesel engine models
- (CS) : For Australia and China except A-chassis
- (XS) : Except (CS)
- *1... (L) 4G, (R) 5C
- *2... (L) 4H, (R) 4C
- *3... (CS) 6, (XS) 5

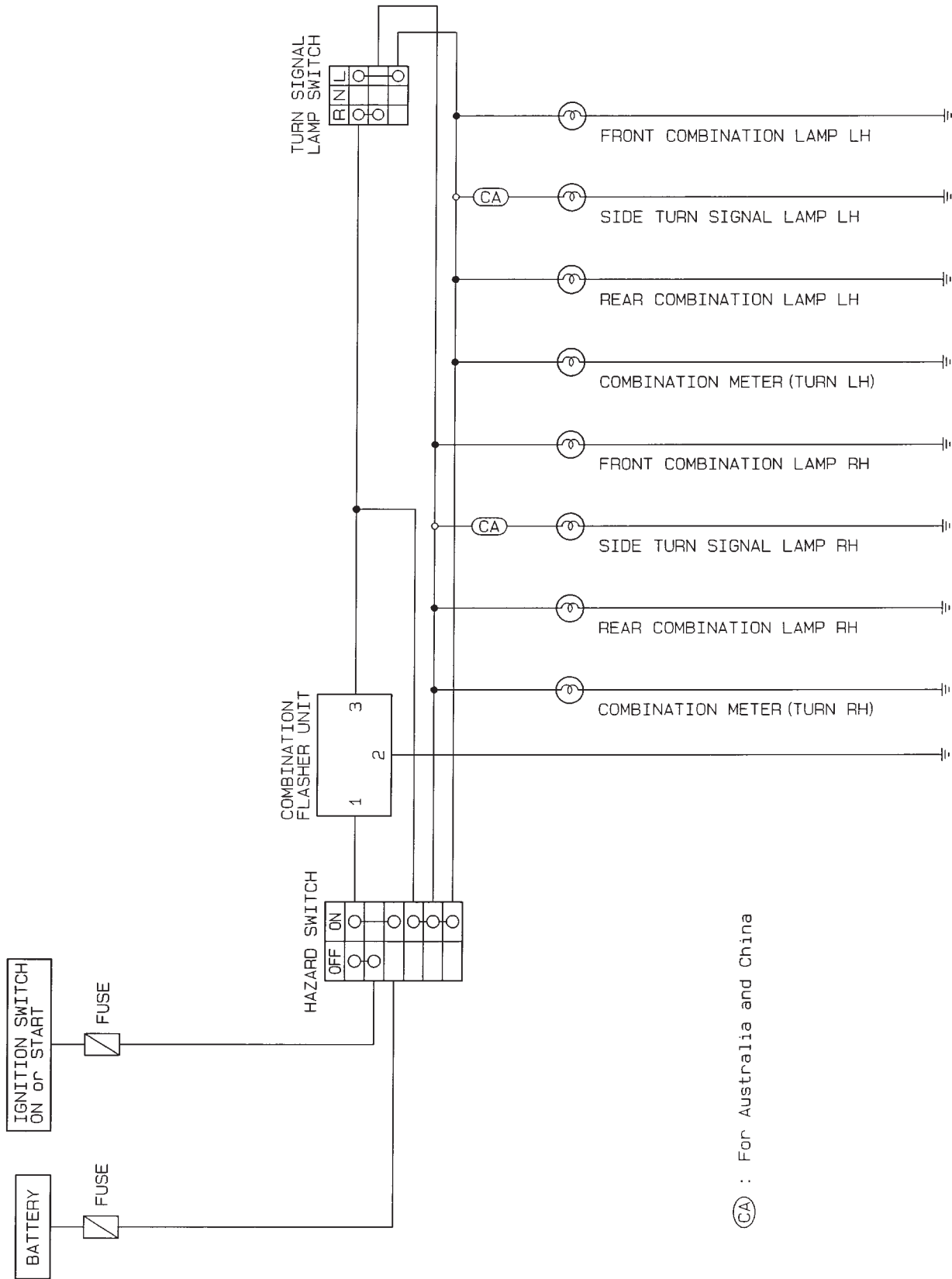


Refer to last page
(Foldout page).

(M5), (E101)



Turn Signal and Hazard Warning Lamps/
Schematic



GI

MA

EM

LC

EC

FE

CL

MT

TF

PD

FA

RA

BR

ST

RS

BT

HA

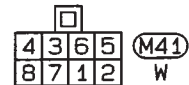
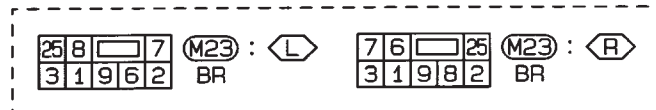
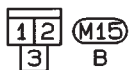
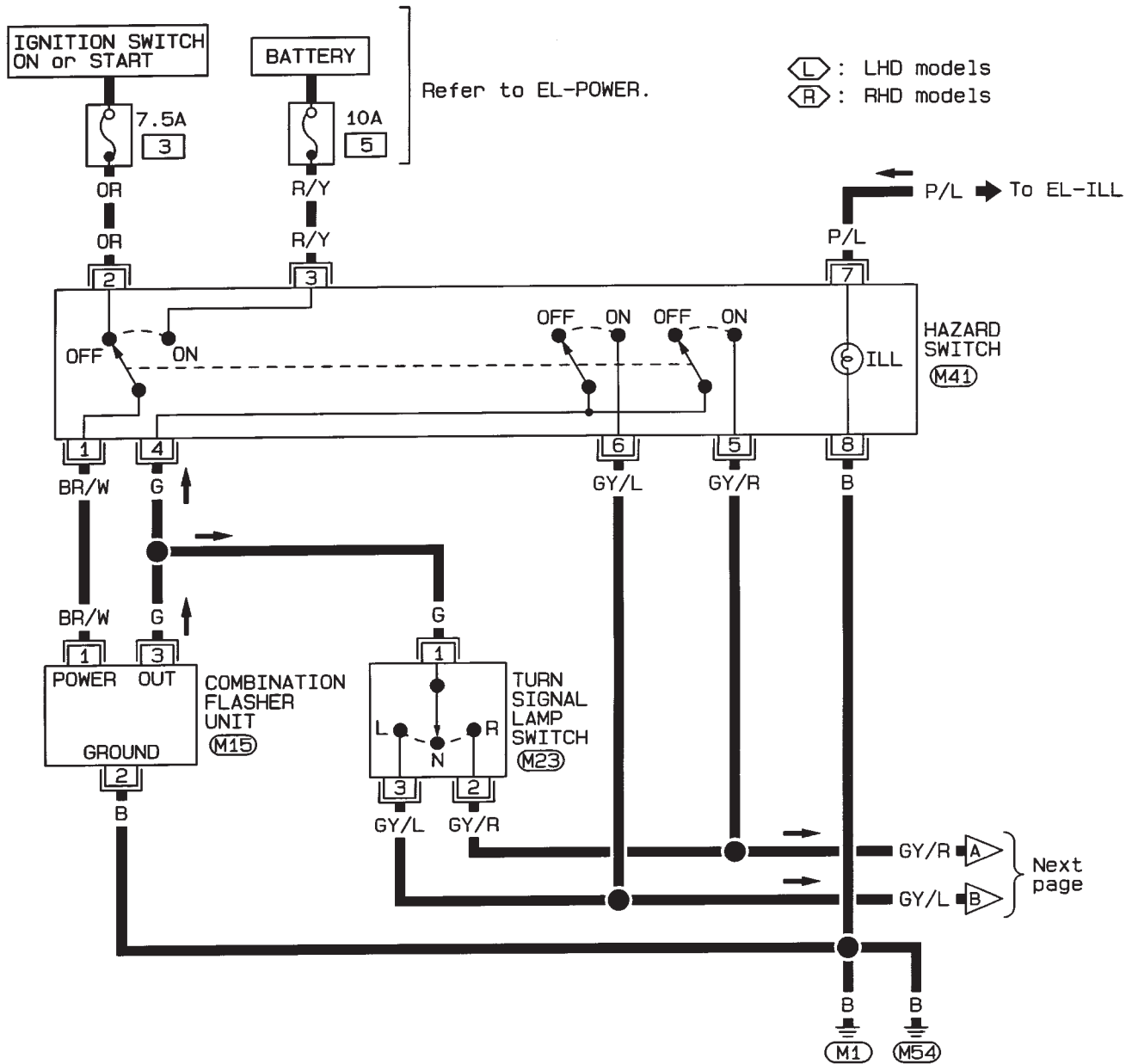
EL

IDX

EXTERIOR LAMP

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

EL-TURN-01

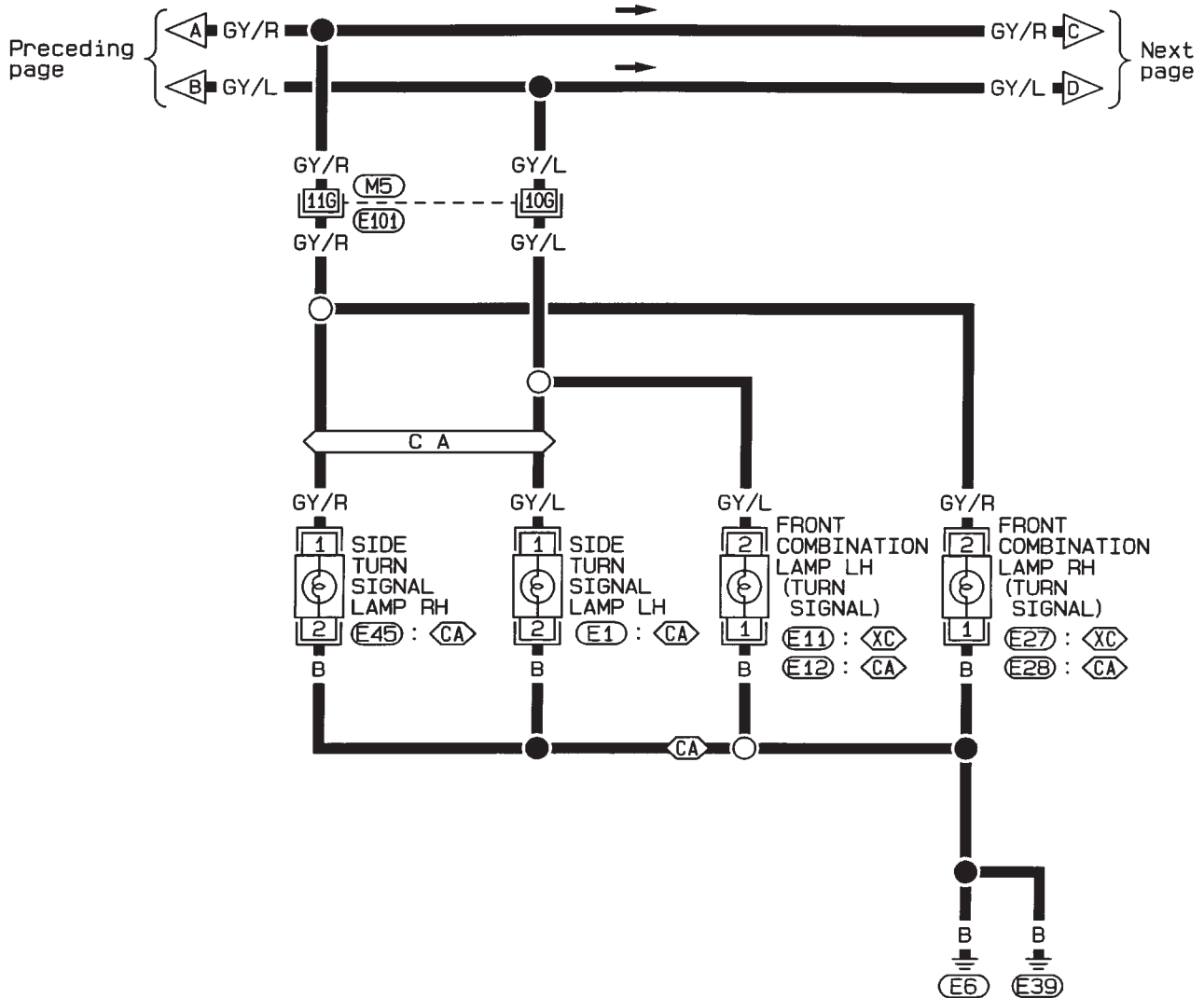


Turn Signal and Hazard Warning Lamps/Wiring Diagram — TURN — (Cont'd)

EL-TURN-02

CA: For Australia and China

XC : Except **CA**



| | |
|---|---|
| 1 | 2 |
|---|---|


E1

B

,

E45

B


 (E11)
GY

,
 (E12)
BR

,
 (E27)
GY

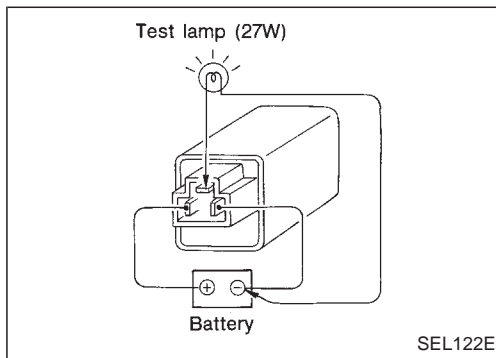
,
 (E28)
BR

Refer to last page
(Foldout page) .

M5, E101

Turn Signal and Hazard Warning Lamps/ Trouble Diagnoses

| Symptom | Possible cause | Repair order |
|--|--|---|
| Turn signal and hazard warning lamps do not operate. | <ol style="list-style-type: none"> 1. Hazard switch 2. Combination flasher unit 3. Open in combination flasher unit circuit | <ol style="list-style-type: none"> 1. Check hazard switch. 2. Refer to combination flasher unit check. 3. Check wiring to combination flasher unit for open circuit. |
| Turn signal lamps do not operate but hazard warning lamps operate. | <ol style="list-style-type: none"> 1. 7.5A fuse 2. Hazard switch 3. Turn signal switch 4. Open in turn signal switch circuit | <ol style="list-style-type: none"> 1. Check 7.5A fuse (No. 3, located in fuse block). Turn ignition switch ON and verify battery positive voltage is present at terminal 2 of hazard switch. 2. Check hazard switch. 3. Check turn signal switch. 4. Check G wire between combination flasher unit and turn signal switch for open circuit. |
| Hazard warning lamps do not operate but turn signal lamps operate. | <ol style="list-style-type: none"> 1. 10A fuse 2. Hazard switch 3. Open in hazard switch circuit | <ol style="list-style-type: none"> 1. Check 10A fuse (No. 5, located in fuse block). Verify battery positive voltage is present at terminal 3 of hazard switch. 2. Check hazard switch. 3. Check G wire between combination flasher unit and hazard switch for open circuit. |
| Front or side turn signal lamp LH or RH does not operate. | <ol style="list-style-type: none"> 1. Bulb 2. Grounds E6 and E39 | <ol style="list-style-type: none"> 1. Check bulb. 2. Check grounds E6 and E39. |
| Rear turn signal lamp LH or RH does not operate. | <ol style="list-style-type: none"> 1. Bulb 2. Grounds M1 and M54 | <ol style="list-style-type: none"> 1. Check bulb. 2. Check grounds M1 and M54. |
| LH and RH turn indicators do not operate. | <ol style="list-style-type: none"> 1. Ground | <ol style="list-style-type: none"> 1. Check grounds M1 and M54. |
| LH or RH turn indicator does not operate. | <ol style="list-style-type: none"> 1. Bulb | <ol style="list-style-type: none"> 1. Check bulb in combination meter. |



Combination Flasher Unit Check

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

EXTERIOR LAMP

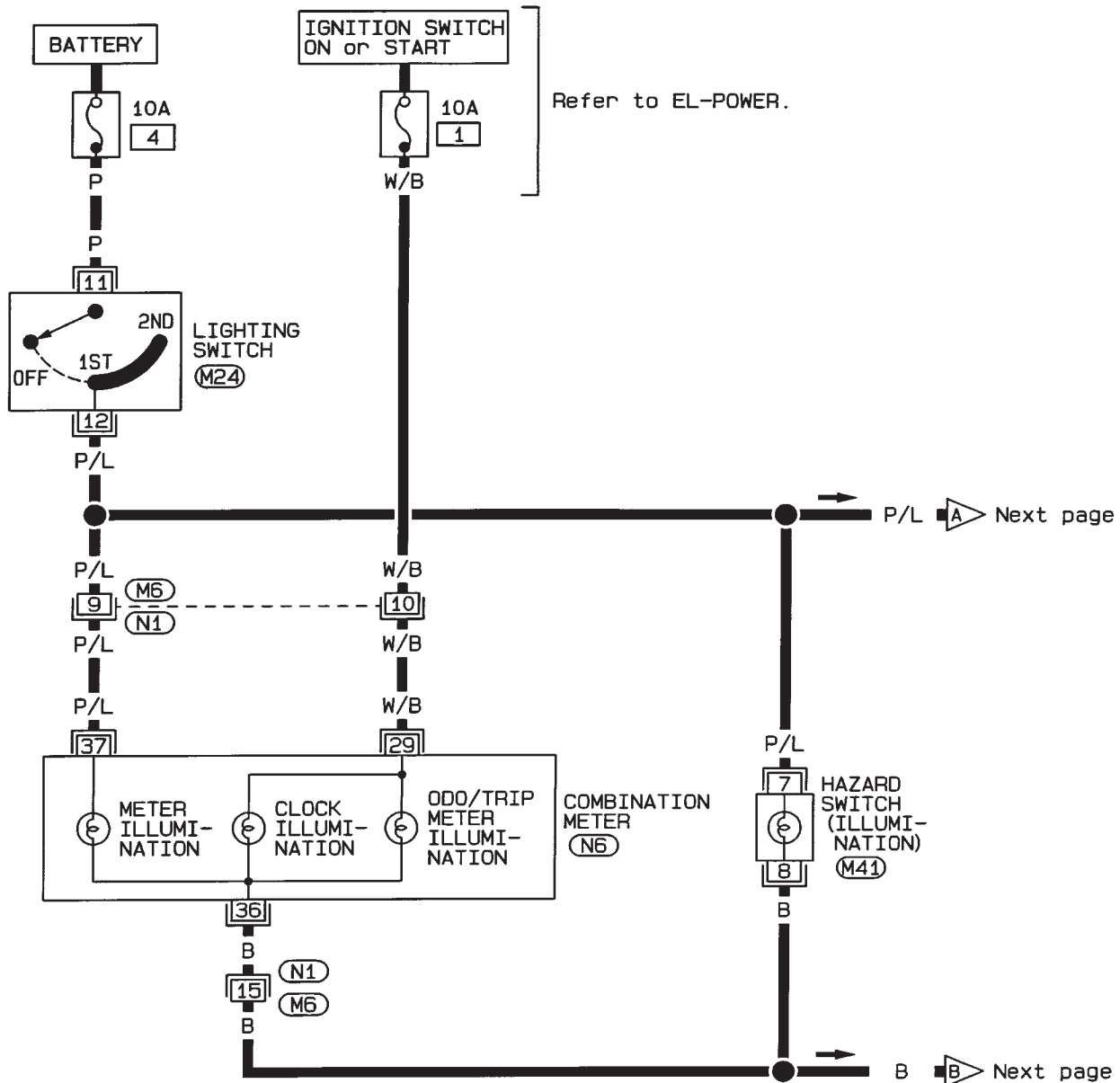
Bulb Specifications

| Item | Wattage (W) |
|-----------------------------|-------------|
| Headlamp (Semi-sealed beam) | |
| High/Low | 60/55 |
| Front combination lamp | |
| Front turn signal lamp | 21 |
| Parking lamp | 5 |
| Side turn signal lamp | 5 |
| Rear combination lamp | |
| Turn signal lamp | 21 |
| Stop/Tail lamp | 21/5 |
| Back-up lamp | 21 |
| License plate lamp | |
| Step bumper | 10 |
| Standard bumper | 5 |

Illumination/Wiring Diagram — ILL —

LHD MODELS

EL-ILL-01



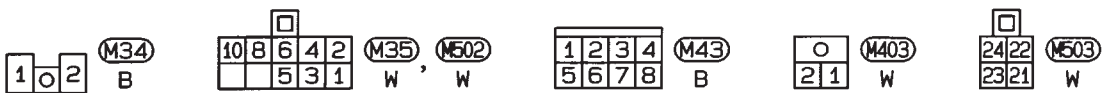
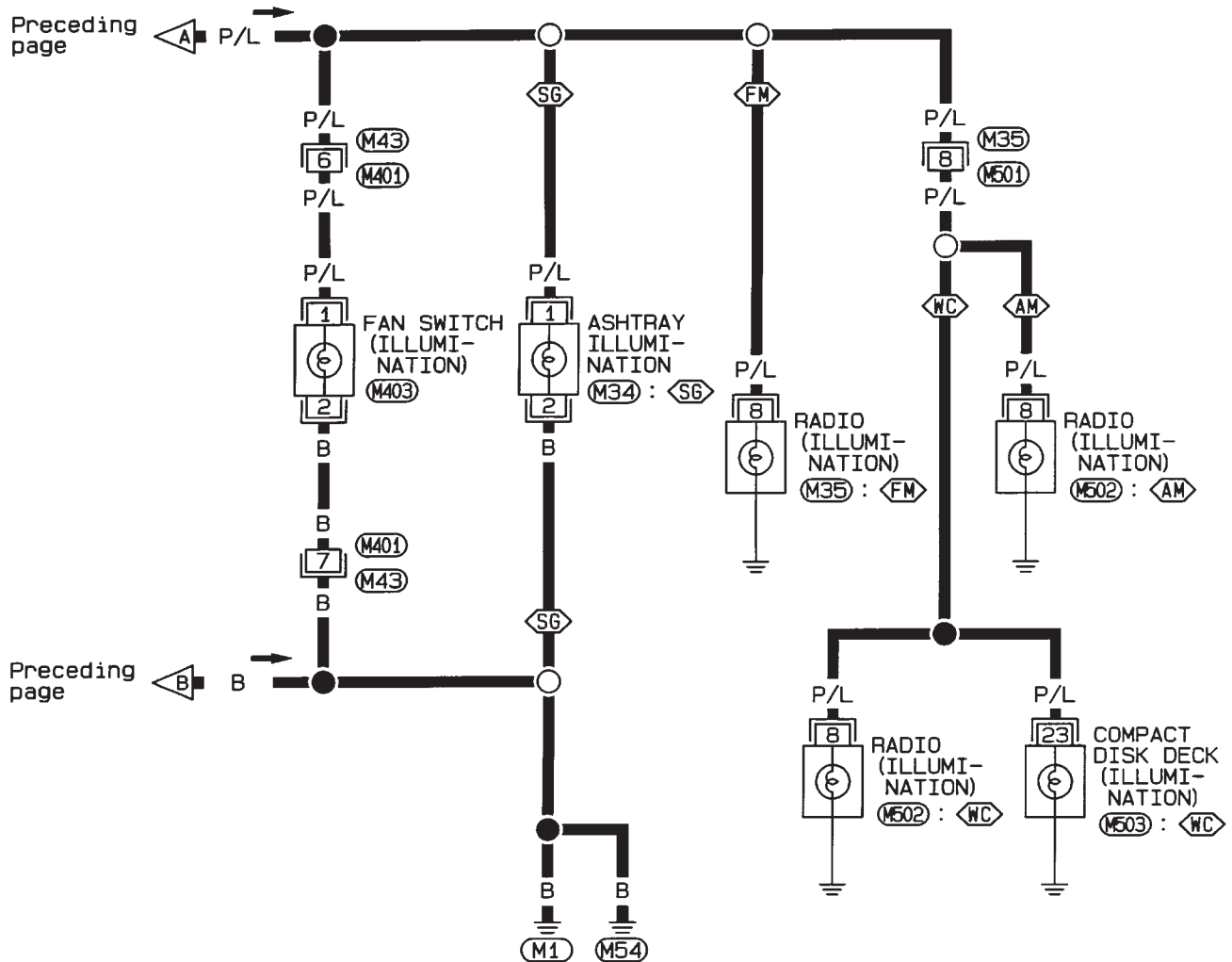
INTERIOR LAMP

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

LHD MODELS

EL-ILL-02

- ◁WC: Models with compact disk deck
- ◁AM: Models without compact disk deck (1-speaker radio)
- ◁FM: Models without compact disk deck (2-speaker radio)
- ◁SG: GL and S-GL grade for Middle East

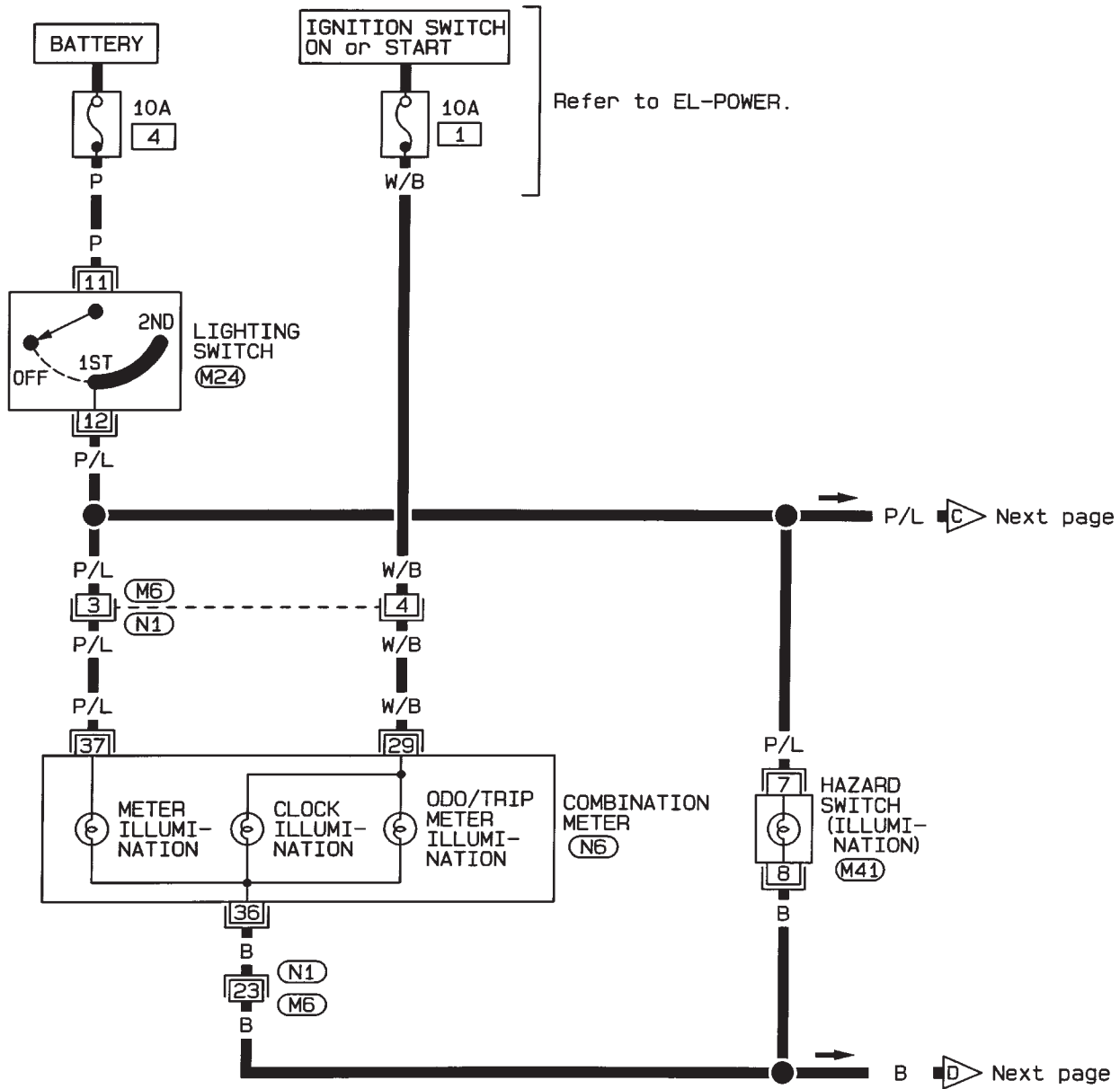


INTERIOR LAMP

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

RHD MODELS

EL-ILL-03

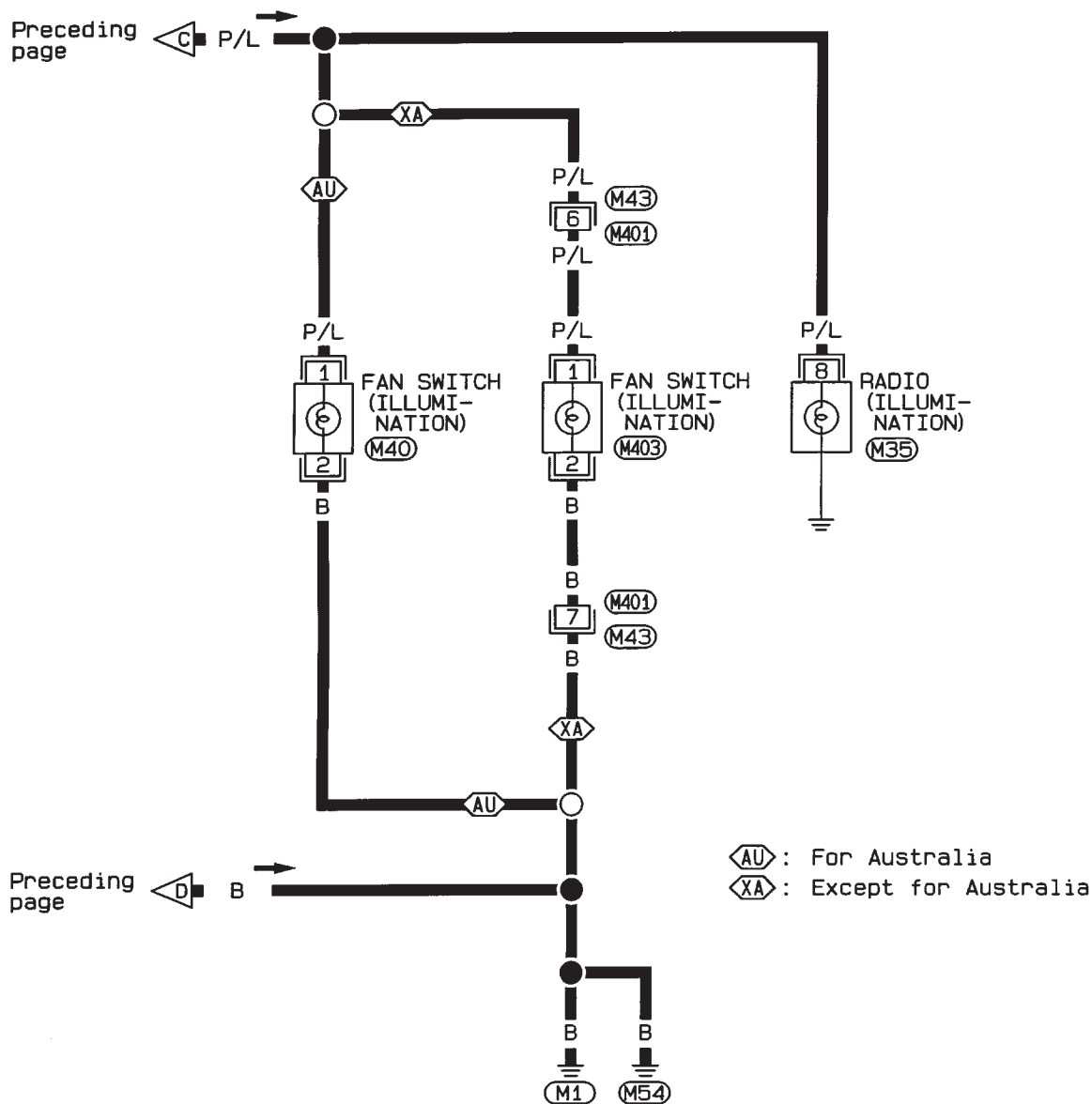


INTERIOR LAMP

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

RHD MODELS

EL-ILL-04

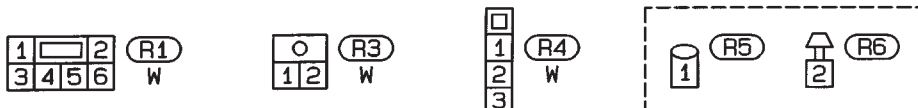
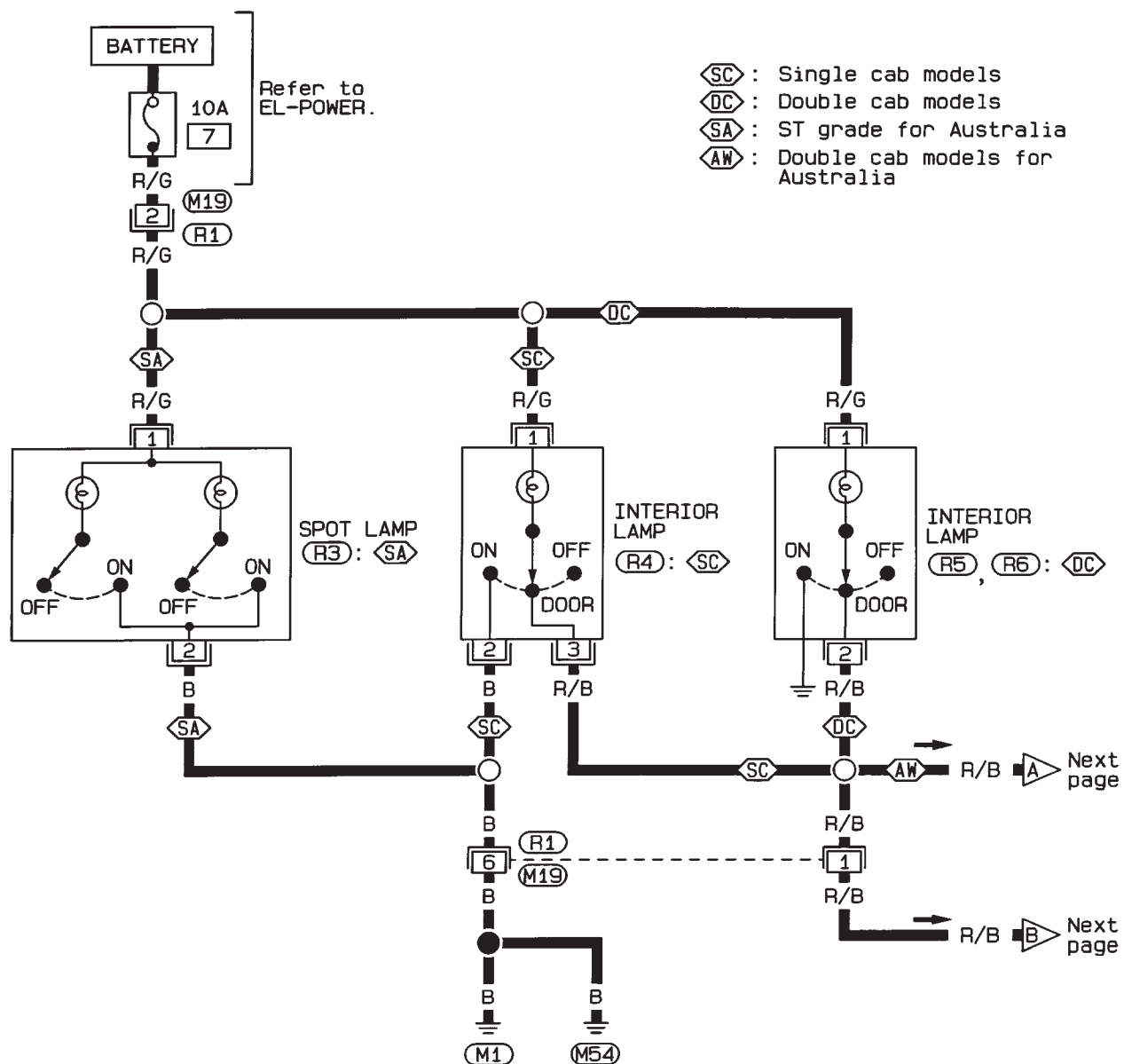


| | | | | | |
|----|---|---|---|---|-------|
| 10 | 8 | 6 | 4 | 2 | (M35) |
| | | 5 | 3 | 1 | W |

| | | |
|-----|-------|--------|
| O | (M40) | (M403) |
| 2 1 | W | W |

| | | | | |
|---|---|---|---|-------|
| 1 | 2 | 3 | 4 | (M43) |
| 5 | 6 | 7 | 8 | B |

EL-INT/L-01

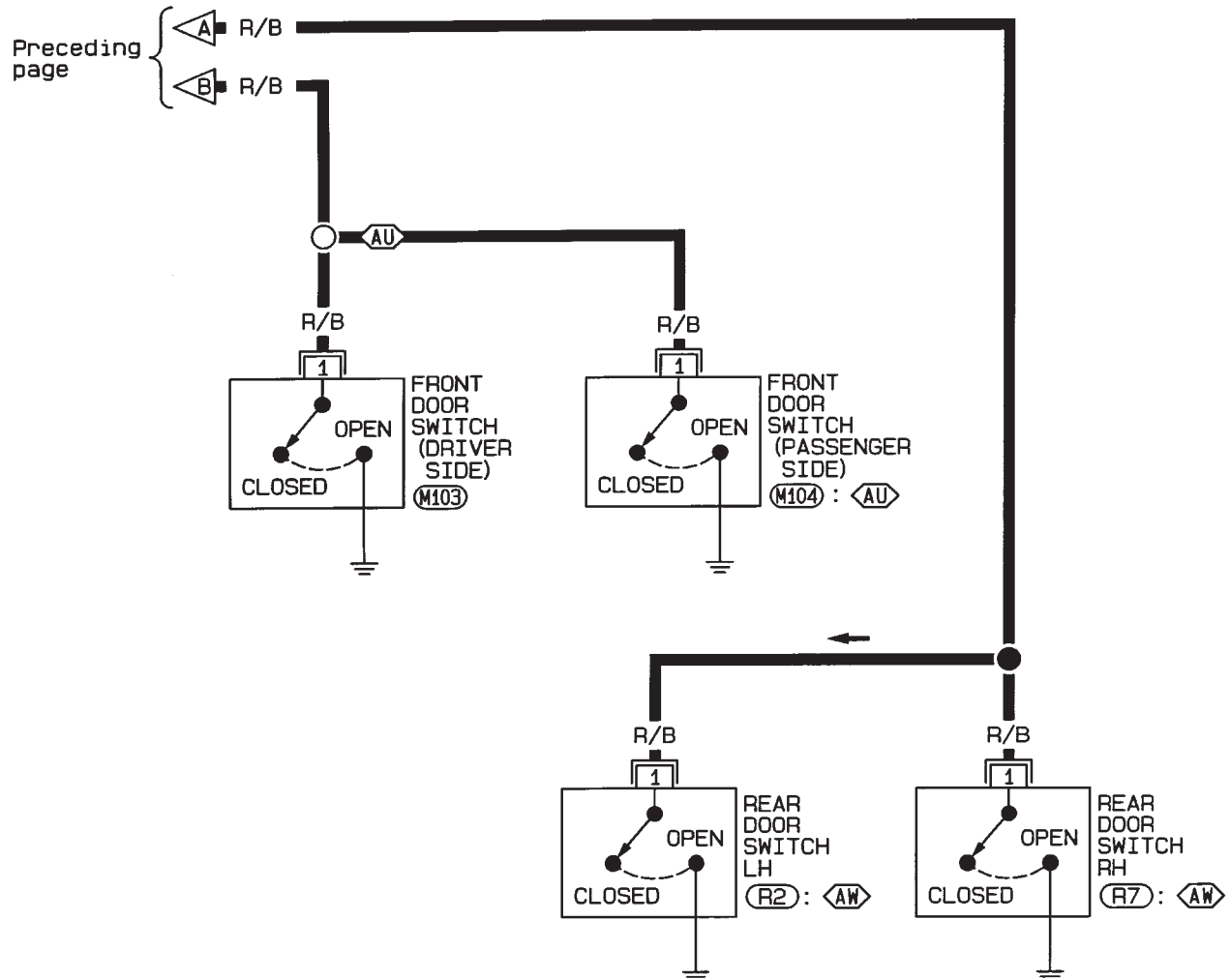


INTERIOR LAMP

Interior and Spot Lamps/Wiring Diagram — INT/L — (Cont'd)

EL-INT/L-02

⬡AU : For Australia
⬡AW : Double cab models
for Australia



1 M103, M104, R2, R7
B, B, B, B

INTERIOR LAMP

Bulb Specifications

| Item | Wattage (W) |
|---------------|-------------|
| Interior lamp | 10 |
| Spot lamp | 8 |

GI

MA

EM

LC

EC

FE

CL

MT

TF

PD

FA

RA

BR

ST

RS

BT

HA

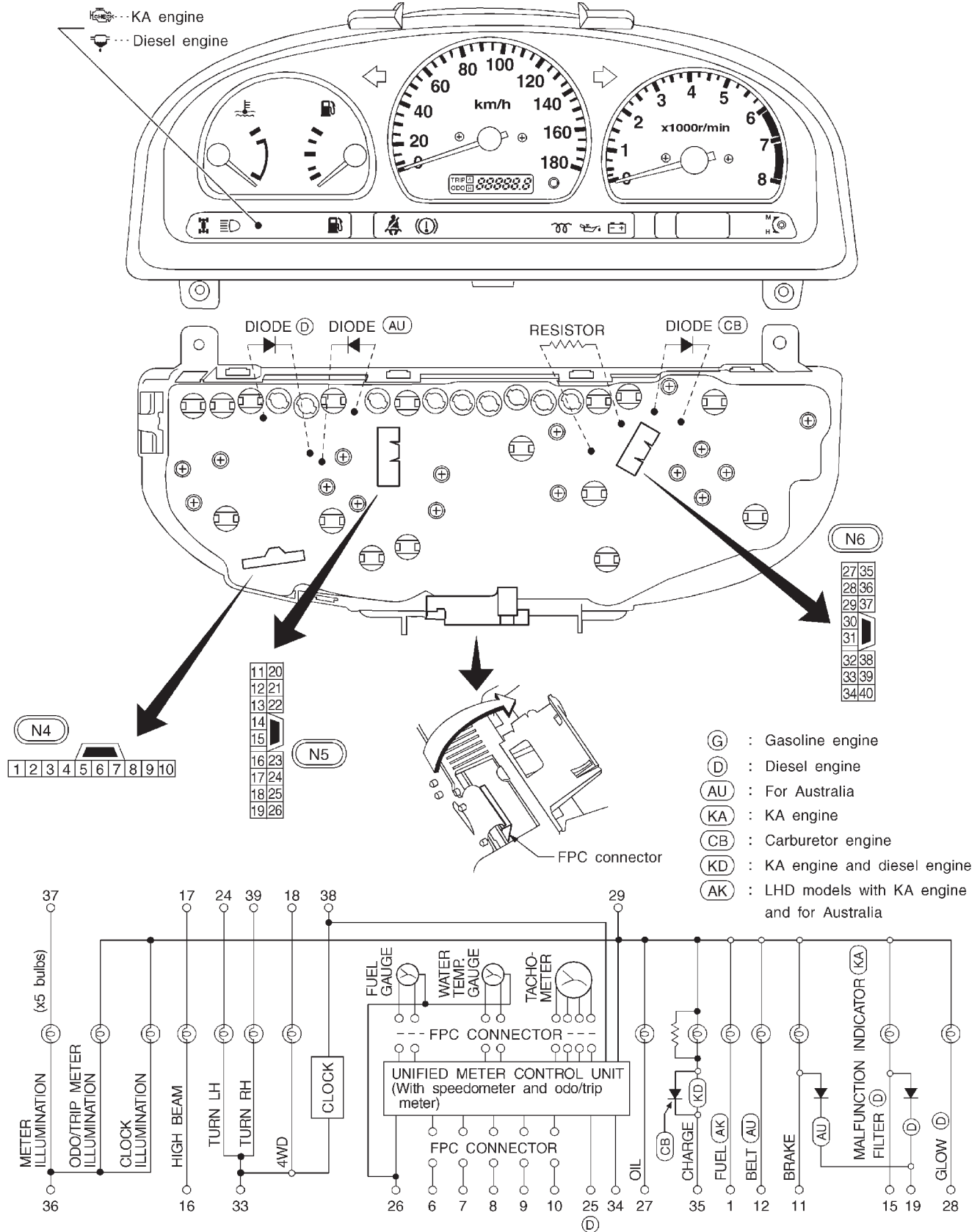
EL

IDX

METER AND GAUGES

Combination Meter

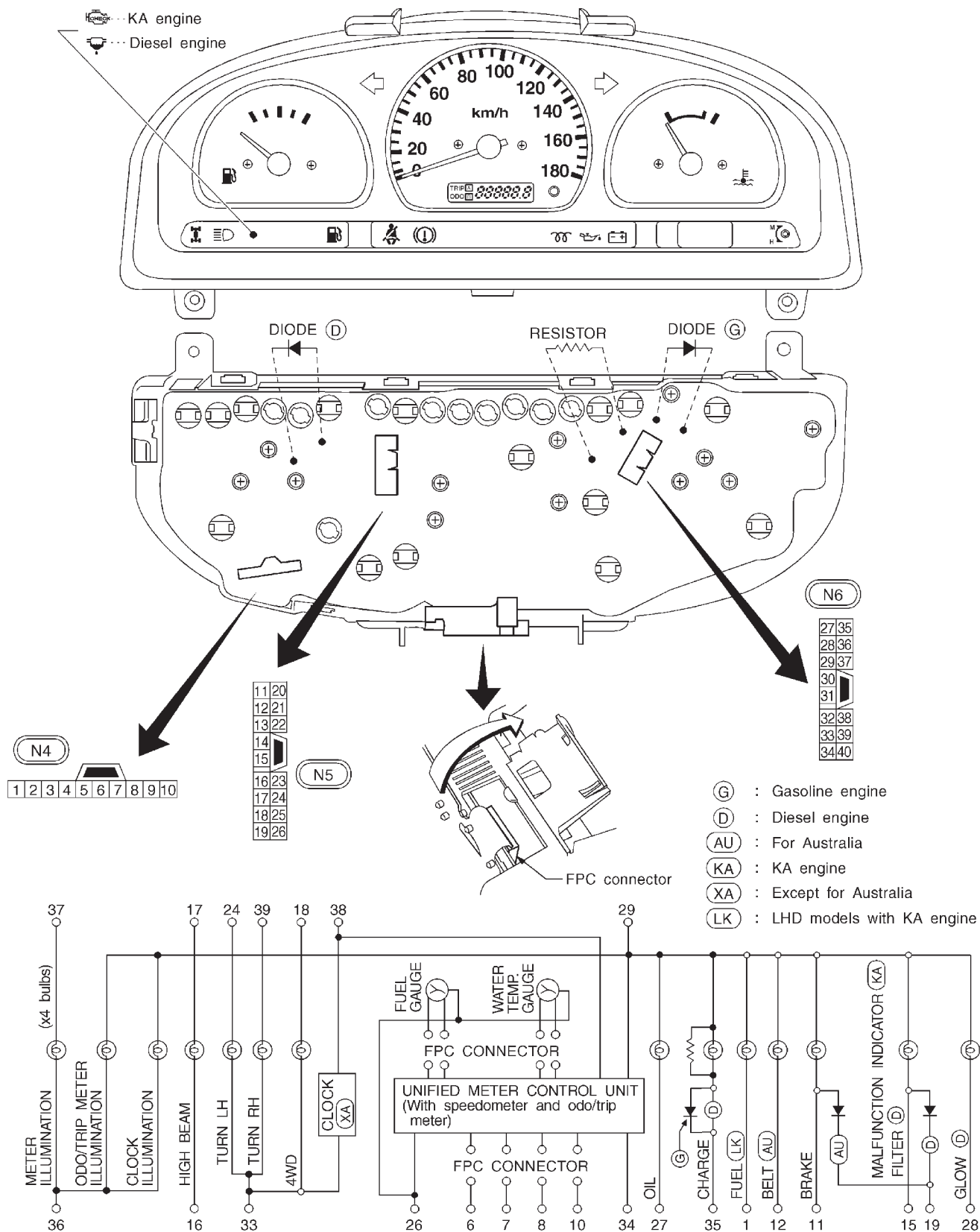
EXCEPT FOR THE MIDDLE EAST (With tachometer)



METER AND GAUGES

Combination Meter (Cont'd)

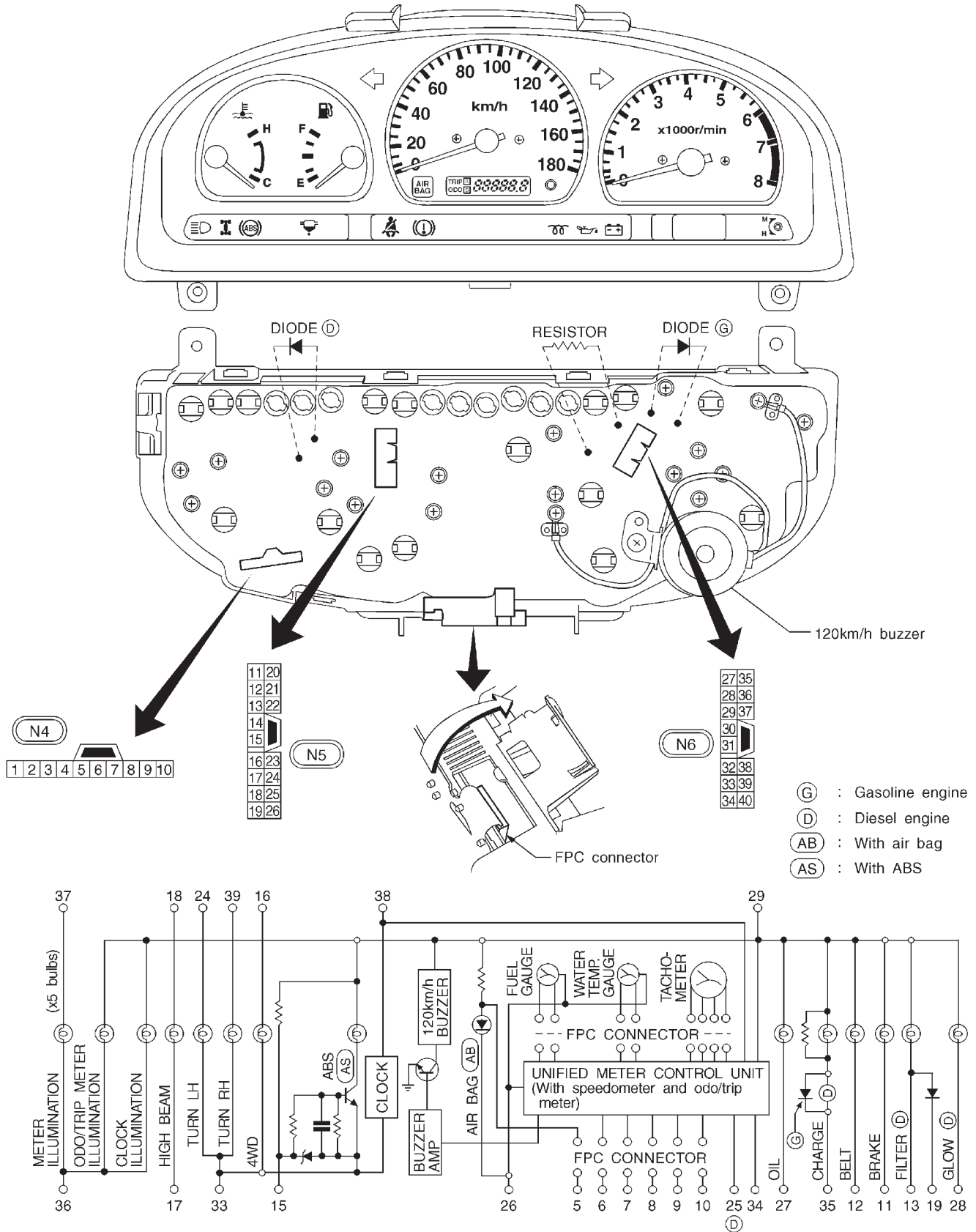
EXCEPT FOR THE MIDDLE EAST (Without tachometer)



METER AND GAUGES

Combination Meter (Cont'd)

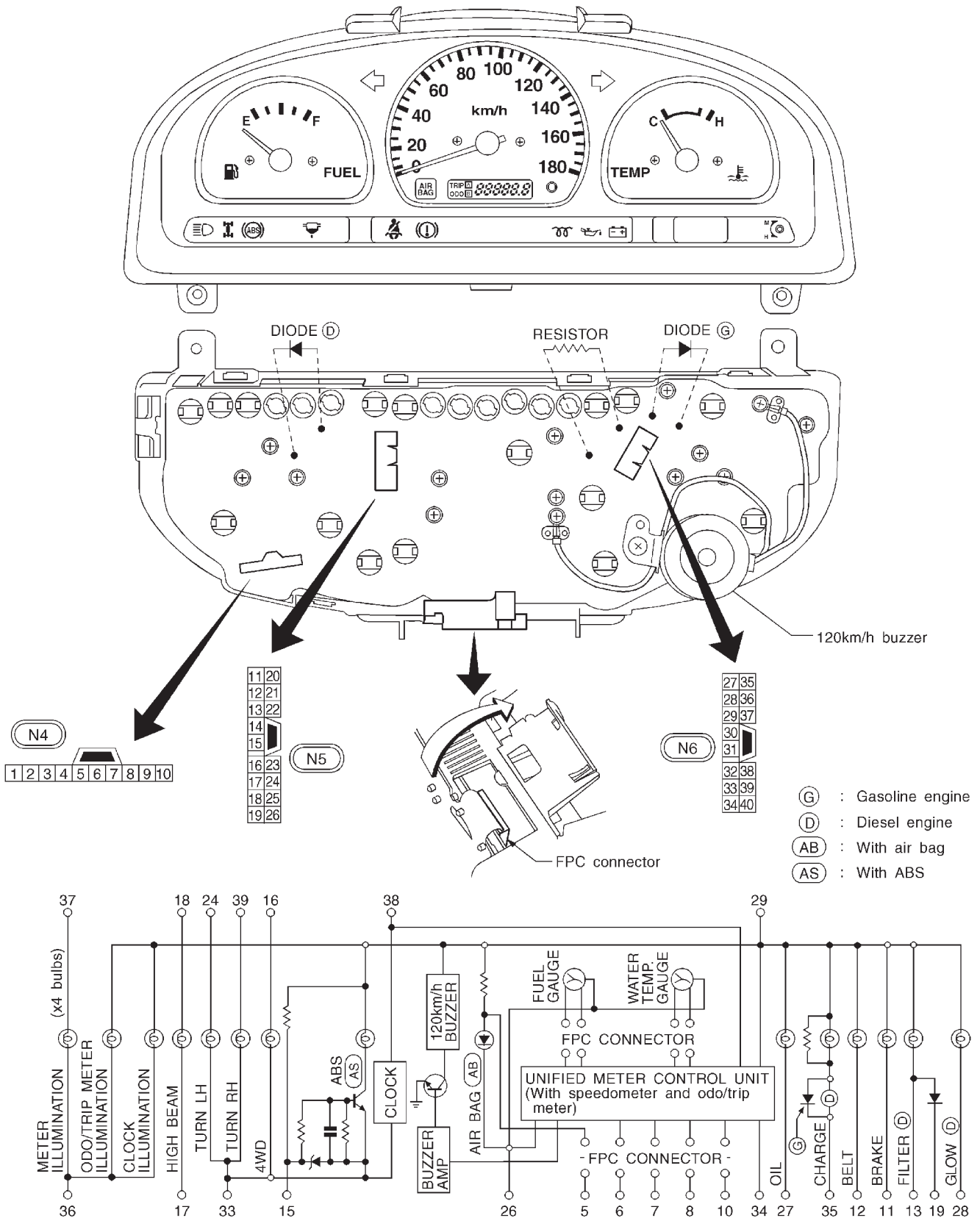
FOR THE MIDDLE EAST (With tachometer)



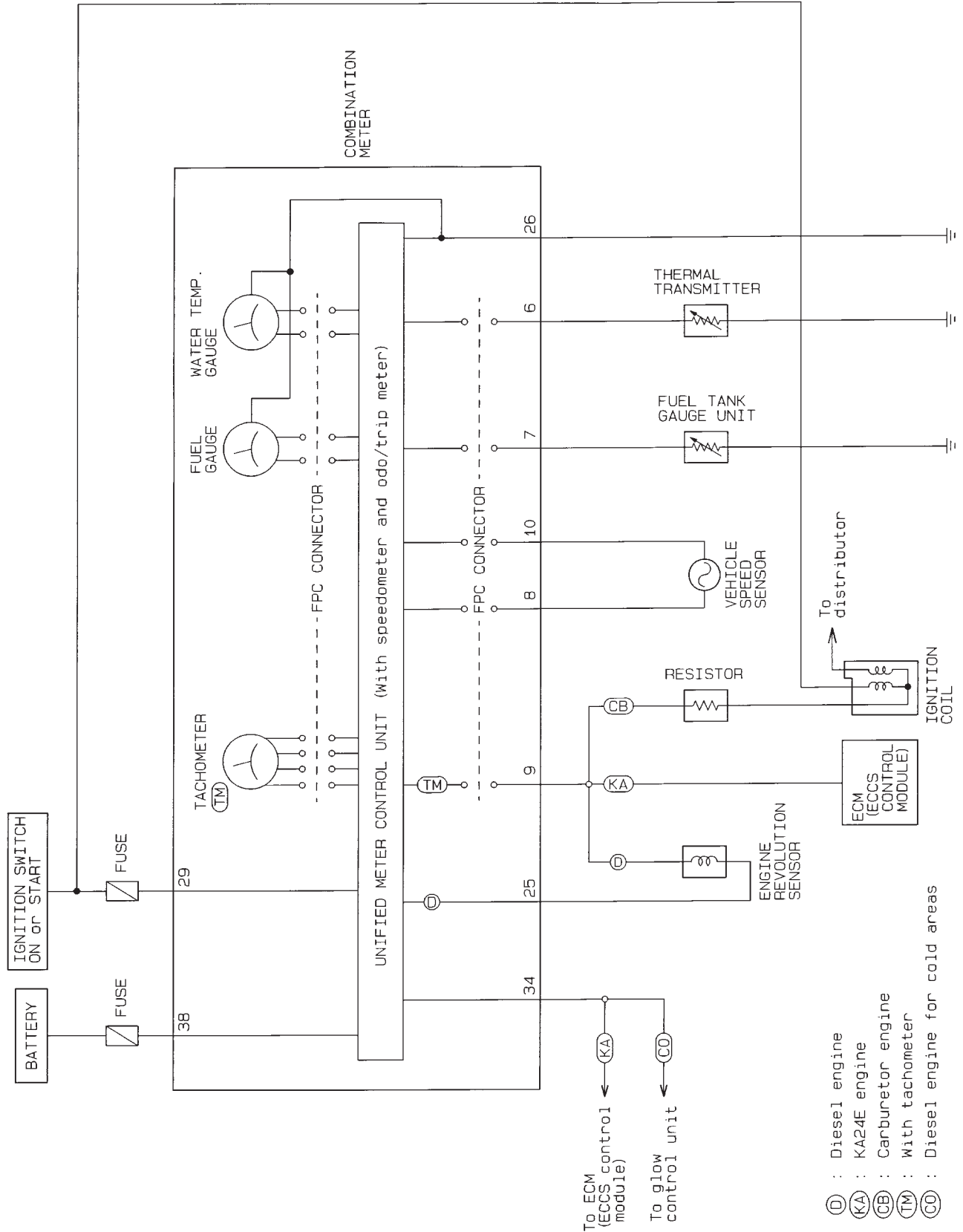
METER AND GAUGES

Combination Meter (Cont'd)

FOR THE MIDDLE EAST (Without tachometer)

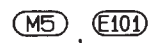
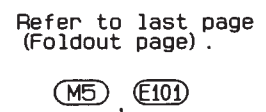


Speedometer, Tachometer, Temp. and Fuel Gauges/Schematic



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

EL-METER-01



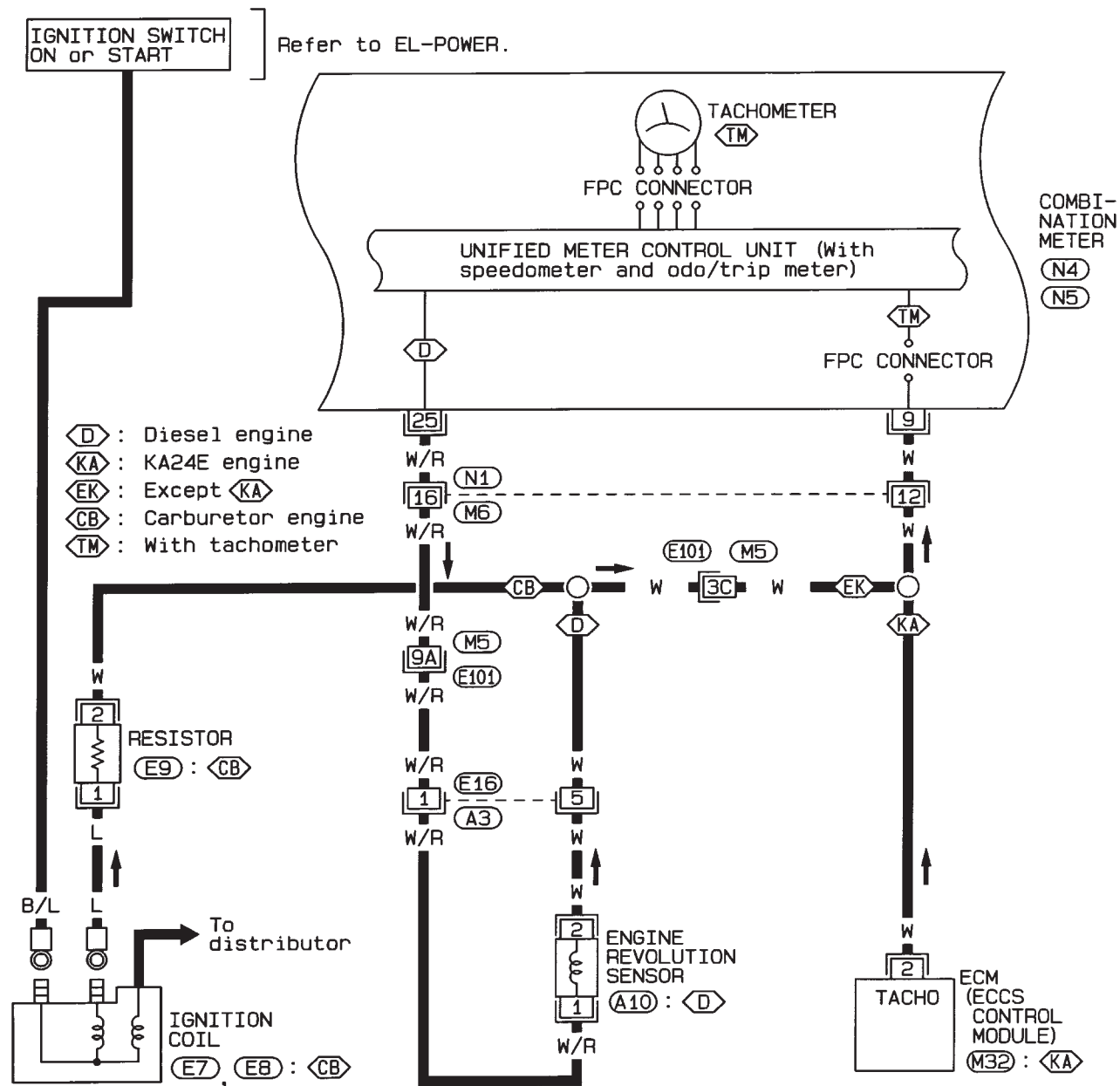
EL-81

METER AND GAUGES

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

LHD MODELS

EL-METER-02



Refer to last page
(Foldout page).

M5, E101

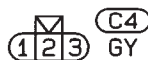
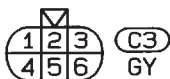
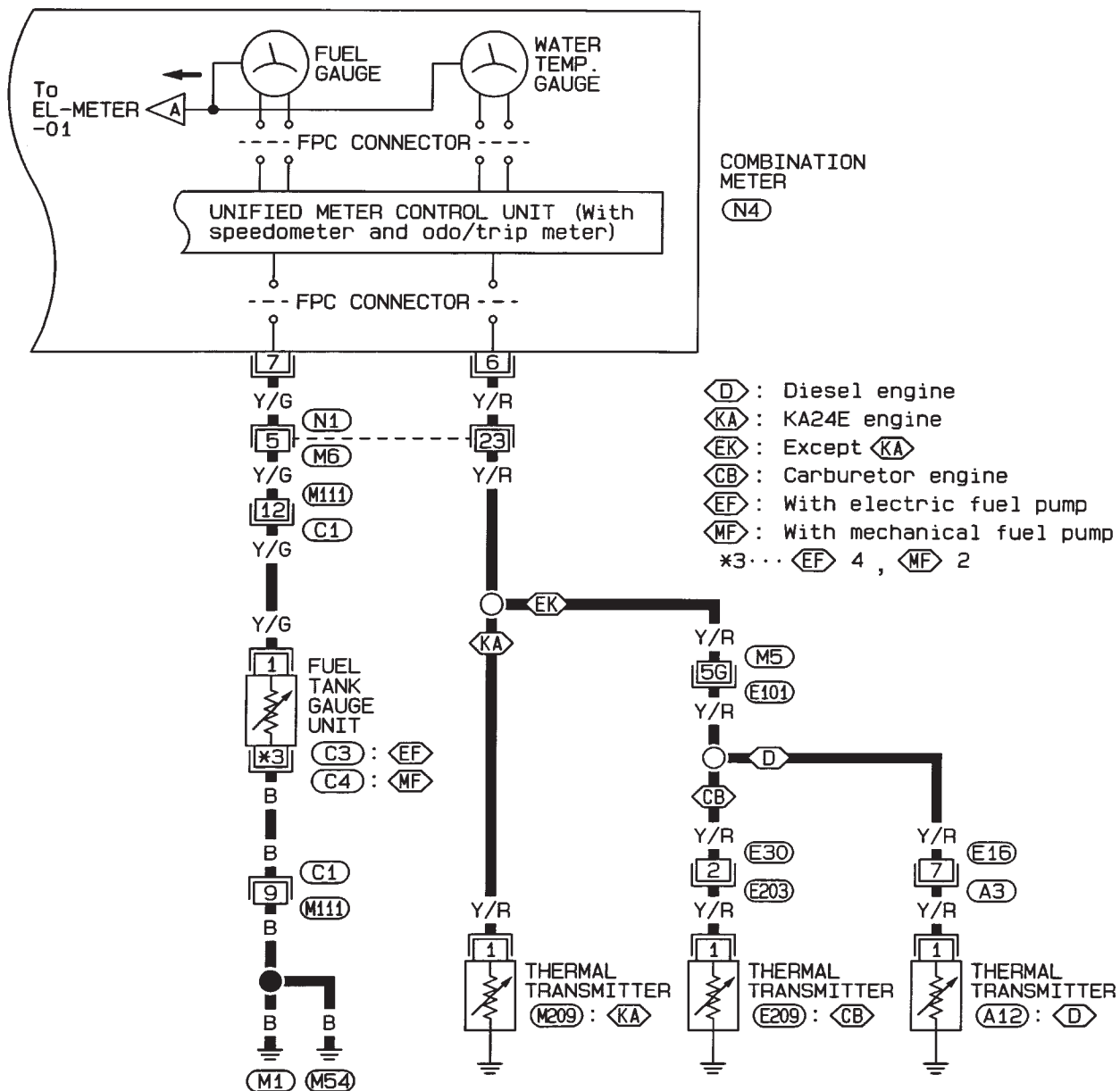
M32

METER AND GAUGES

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

LHD MODELS

EL-METER-03



Refer to last page (Foldout page).

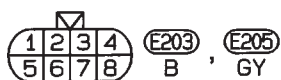
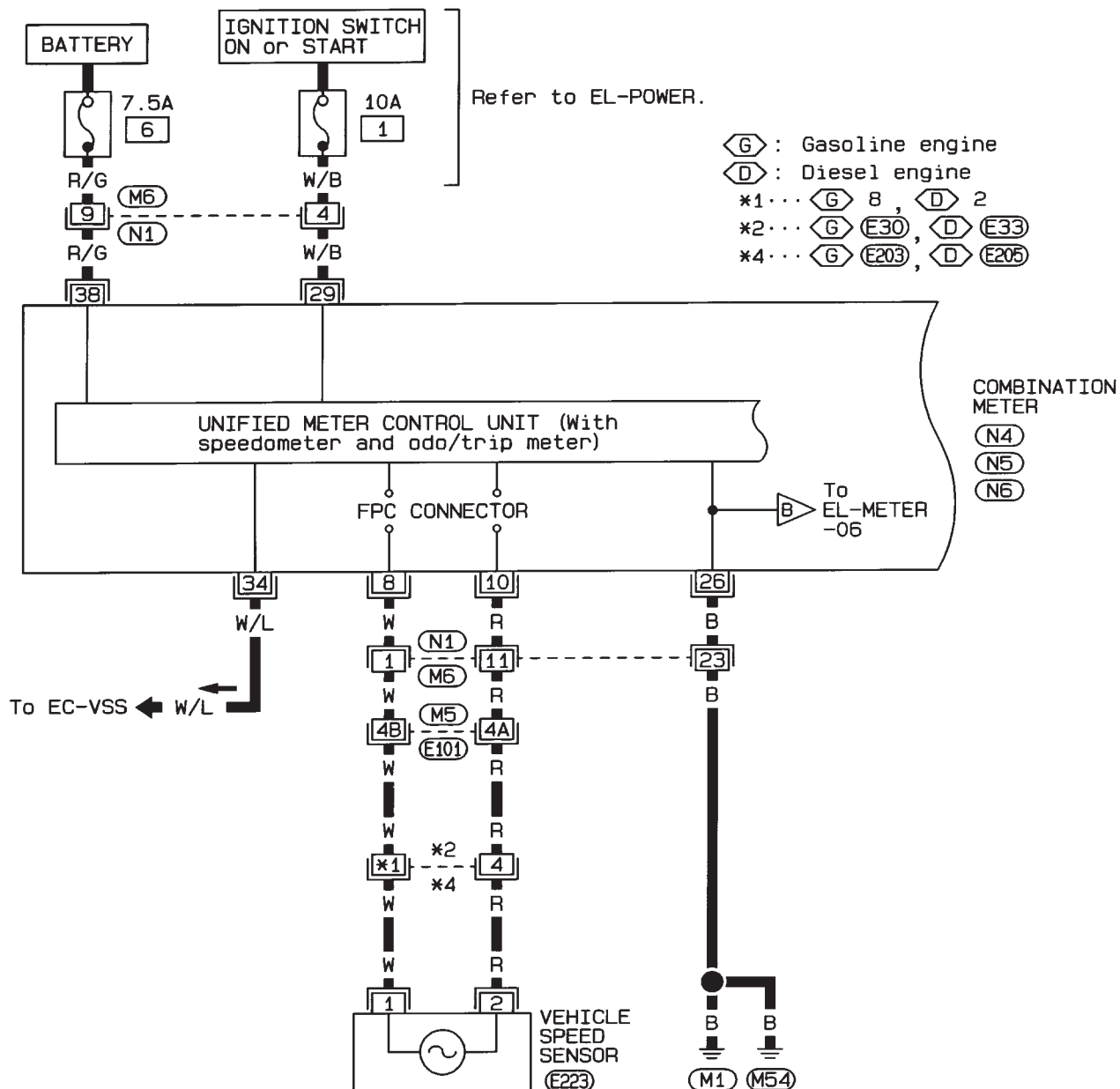
M5, E101

METER AND GAUGES

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

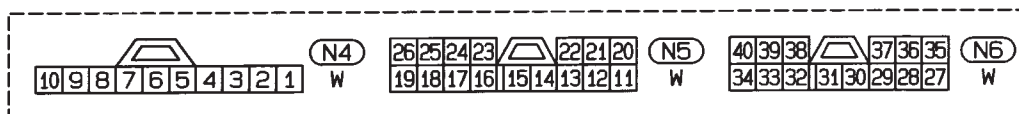
RHD MODELS

EL-METER-04



Refer to last page (Foldout page).

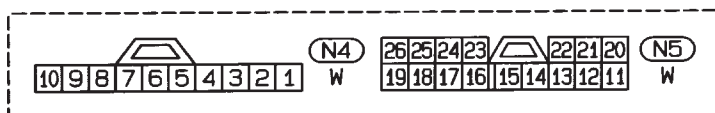
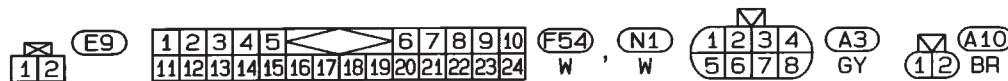
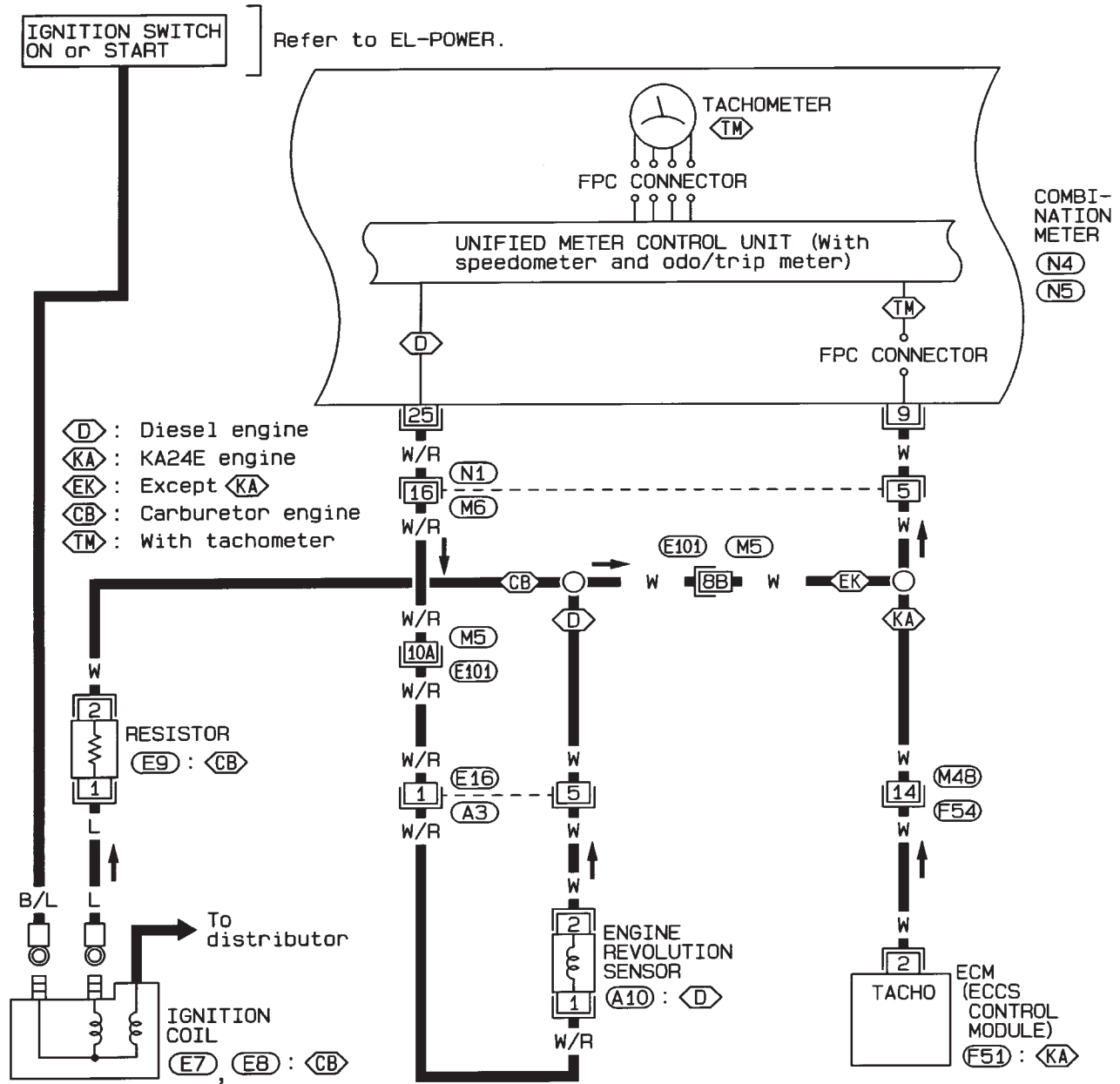
(M5), (E101)



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

RHD MODELS

EL-METER-05



Refer to last page
(Foldout page).

(M5) (E101)

F51

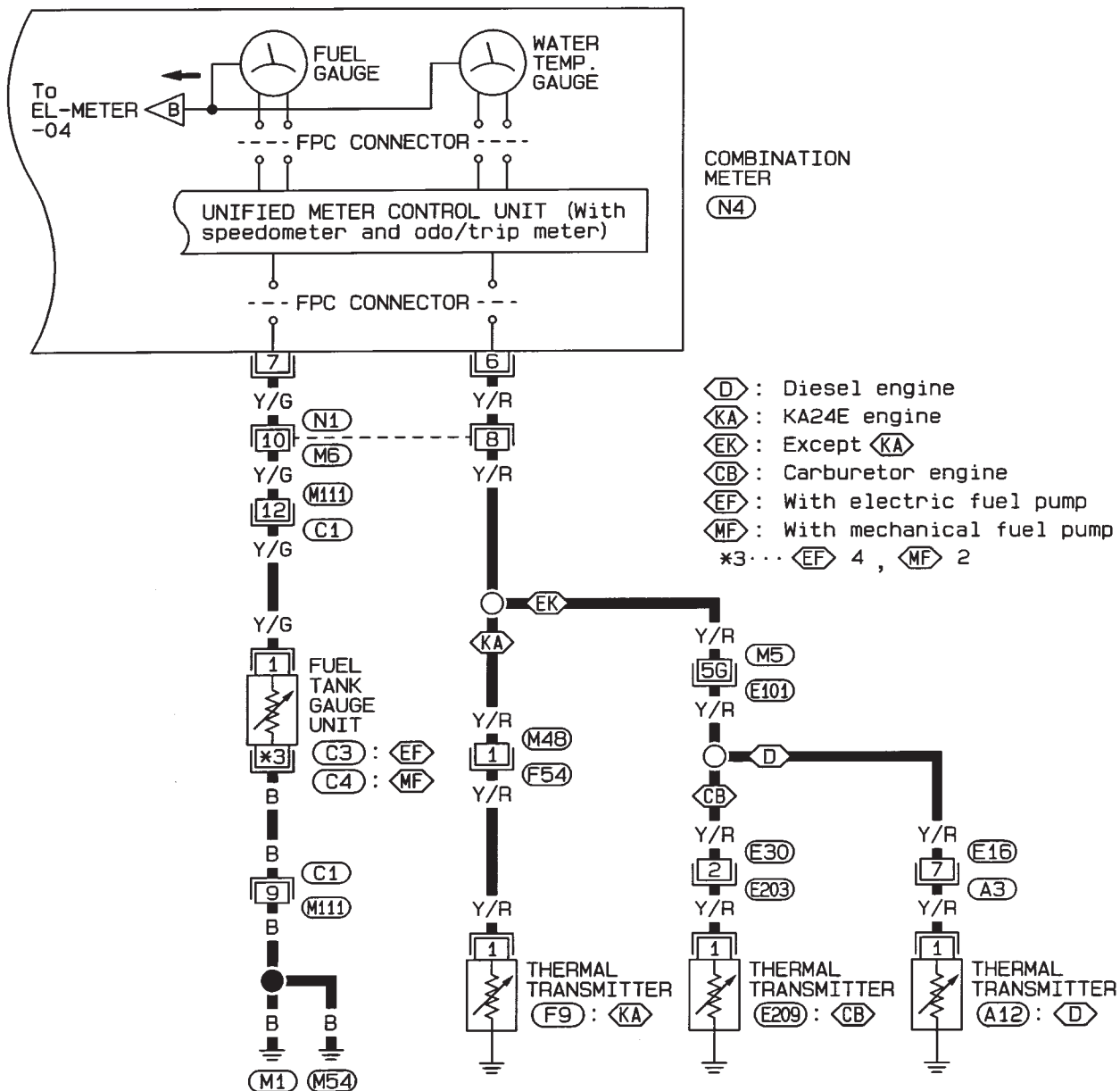
GI
MA
EM
LC
EC
FE
GL
MT
TF
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FA
RA
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BT
HA
EL
IDX

METER AND GAUGES

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

RHD MODELS

EL-METER-06



1 (F9) (E209) (A12)
B B B

1 2 3 4 5 6 7 8 9 10 (F54) (N1)
11 12 13 14 15 16 17 18 19 20 21 22 23 24 W W

1 2 3 4 (E203) (A3)
5 6 7 8 B GY

10 9 8 7 6 5 4 3 2 1 (N4)
W

1 2 3 4 5 (C1)
6 7 8 9 10 11 12 W

1 2 3 (C3)
4 5 6 GY

1 2 3 (C4)
GY

Refer to last page
(Foldout page).

(M5) (E101)

Unified Control Meter System Description

UNIFIED CONTROL METER

Speedometer, odo/trip meter, tachometer, fuel gauge and water temperature gauge are controlled totally by control unit combined with speedometer.

GI

MA

EM

LC

EC

FE

CL

MT

TF

PD

FA

RA

BR

ST

RS

BT

HA

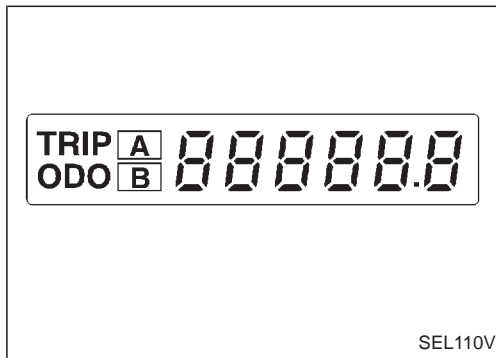
EL

IDX

Meter/gauge Operation and Odo/Trip Meter Segment Check in Diagnosis Mode

DIAGNOSIS FUNCTION

- Odo/trip meter segment can be checked in diagnosis mode.
- Meters/gauges can be checked in diagnosis mode.

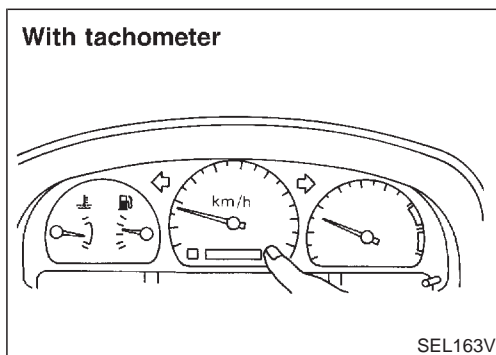


HOW TO ALTERNATE DIAGNOSIS MODE

1. Turn ignition switch to ON and change odo/trip meter to "TRIP A" or "TRIP B".
2. Turn ignition switch to OFF.
3. Turn ignition switch to ON when pushing odo/trip meter switch.
4. Confirm that trip meter indicates "000.0".
5. Push odo/trip meter switch more than three times within 5 seconds.
6. All odo/trip meter segments should be turned on.

NOTE: If some segments are not turned on, speedometer (unified meter control unit) with odo/trip meter should be replaced.

At this point, the unified control meter is turned to diagnosis mode.



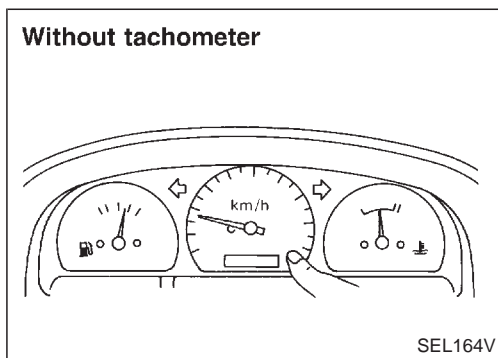
7. Push odo/trip meter switch. Indication of each meter/gauge should be as shown left during pushing odo/trip meter switch if it is no malfunctioning.

NOTE: It takes about 1 minute for indication of fuel gauge to become stable.

METER AND GAUGES

Meter/gauge Operation and Odo/Trip Meter Segment Check in Diagnosis Mode (Cont'd)

Without tachometer

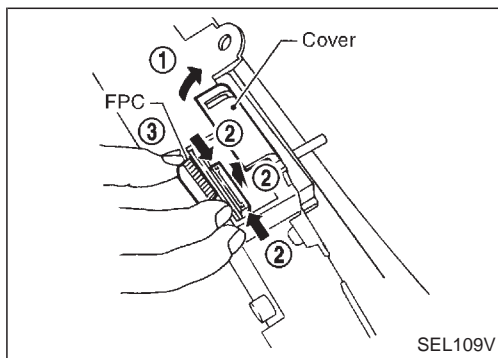


Flexible Print Circuit (FPC)

Tachometer, fuel gauge and water temperature gauge are connected with unified meter control unit (speedometer) by Flexible Print Circuit (FPC) connector. When replace or remove and install unified control unit (speedometer), disconnect and connect FPC connector according to the following steps.

DISCONNECT

1. Open connector cover.
2. Release connector lock by holding both ends of it and pulling it up.
3. Disconnect FPC by pulling it up.

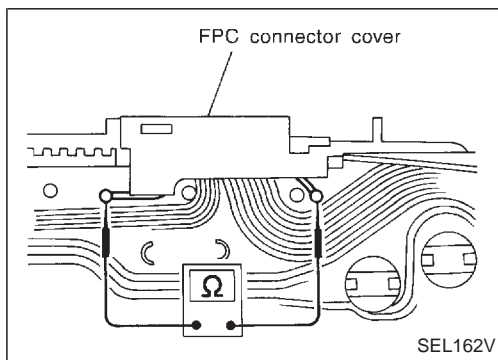


CONNECT

1. Insert FPC into connector and lock connector pushing FPC downward.
2. Check secure connection of FPC.
3. Check continuity of check land terminals for secure connection of FPC.

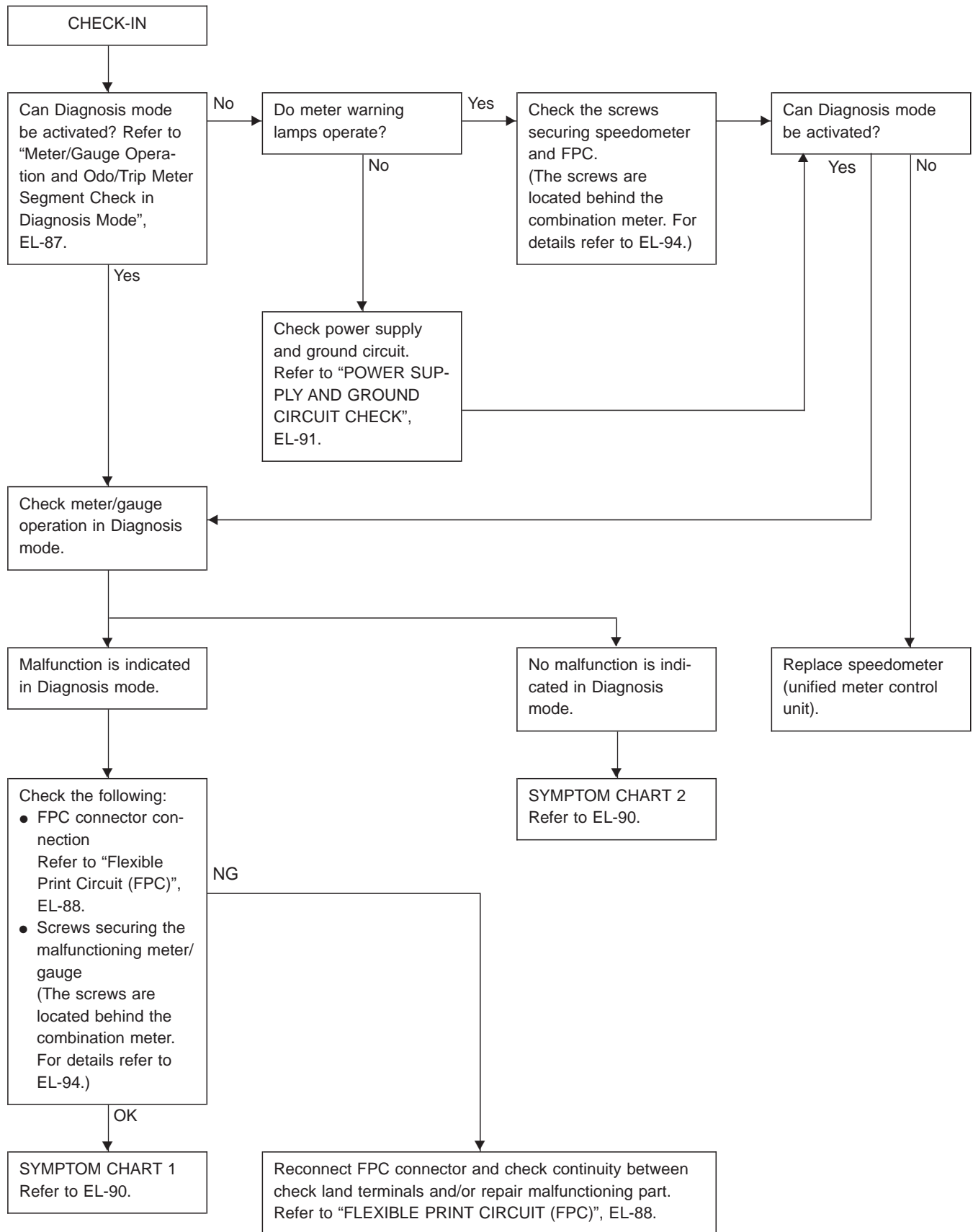
Resistance: 0Ω

4. Close connector cover.



Trouble Diagnoses

PRELIMINARY CHECK



GI
MA
EM
LC
EC
FE
CL
MT
TF
PD
FA
RA
BR
ST
RS
BT
HA
EL
IDX

METER AND GAUGES

Trouble Diagnoses (Cont'd)

Before starting trouble diagnoses below, perform PRELIMINARY CHECK, EL-89.

SYMPTOM CHART 1 (MALFUNCTION IS INDICATED IN DIAGNOSIS MODE)

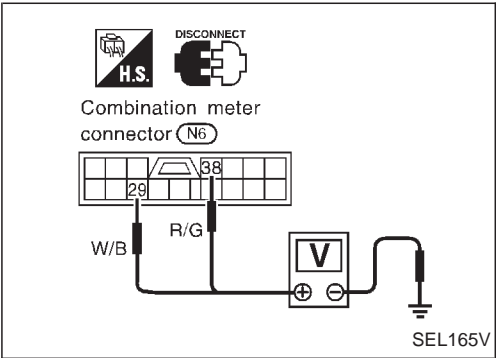
| Symptom | Possible causes | Repair order |
|---|---|---|
| Speedometer and/or odometer indicate(s) malfunction in Diagnosis mode. | <ul style="list-style-type: none"> Speedometer (Unified meter control unit) | <ul style="list-style-type: none"> Replace speedometer (unified meter control unit). |
| Multiple meter/gauge indicate malfunction in Diagnosis mode. | | |
| One of tachometer/fuel gauge/water temp. gauge indicates malfunction in Diagnosis mode. | <ul style="list-style-type: none"> Meter/Gauge Speedometer (Unified meter control unit) | <ol style="list-style-type: none"> Check resistance of meter/gauge indicating malfunction. If the resistance is NG, replace the meter/gauge. Refer to "METER/GAUGE RESISTANCE CHECK", EL-94. If the resistance is OK, replace speedometer (unified meter control unit). |

SYMPTOM CHART 2 (NO MALFUNCTION IS INDICATED IN DIAGNOSIS MODE)

| Symptom | Possible causes | Repair order |
|--|---|---|
| Speedometer and odometer/trip meter are malfunctioning. | <ol style="list-style-type: none"> Sensor <ul style="list-style-type: none"> Speedometer, Odo/Trip meter FPC connector Speedometer (Unified meter control unit) | <ol style="list-style-type: none"> Check vehicle speed sensor. INSPECTION/VEHICLE SPEED SENSOR (Refer to EL-92.) Check FPC connector. Refer to "FLEXIBLE PRINT CIRCUIT (FPC)", EL-88. Replace speedometer (unified meter control unit). |
| Multiple meter/gauge are malfunctioning. (except speedometer, odometer/trip meter) | <ol style="list-style-type: none"> FPC connector Speedometer (Unified meter control unit) | <ol style="list-style-type: none"> Check FPC connector. Refer to "FLEXIBLE PRINT CIRCUIT (FPC)", EL-88. Replace speedometer (unified meter control unit). |
| One of tachometer/fuel gauge/water temp. gauge is malfunctioning. | <ol style="list-style-type: none"> Sensor/Engine revolution signal <ul style="list-style-type: none"> Tachometer Fuel gauge Water temp. gauge FPC connector Speedometer (Unified meter control unit) | <ol style="list-style-type: none"> Check the sensor for malfunctioning meter/gauge. INSPECTION/ENGINE REVOLUTION SIGNAL (Refer to EL-92.) INSPECTION/FUEL TANK GAUGE (Refer to EL-93.) INSPECTION/THERMAL TRANSMITTER (Refer to EL-93.) Check FPC connector. Refer to "FLEXIBLE PRINT CIRCUIT (FPC)", EL-88. Replace speedometer (unified meter control unit). |

METER AND GAUGES

Trouble Diagnoses (Cont'd)
POWER SUPPLY AND GROUND CIRCUIT CHECK

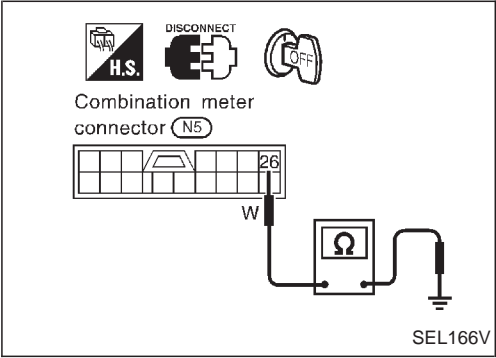


Power supply circuit check

| Terminals | | Ignition switch position | | |
|-----------|--------|--------------------------|-----------------|-----------------|
| ⊕ | ⊖ | OFF | ACC | ON |
| Ⓢ | Ground | Battery voltage | Battery voltage | Battery voltage |
| Ⓓ | Ground | 0V | 0V | Battery voltage |

If NG, check the following.

- 7.5A fuse [No. 6], located in fuse block (J/B)]
- 10A fuse [No. 1], located in fuse block (J/B)]
- Harness for open or short between fuse and combination meter



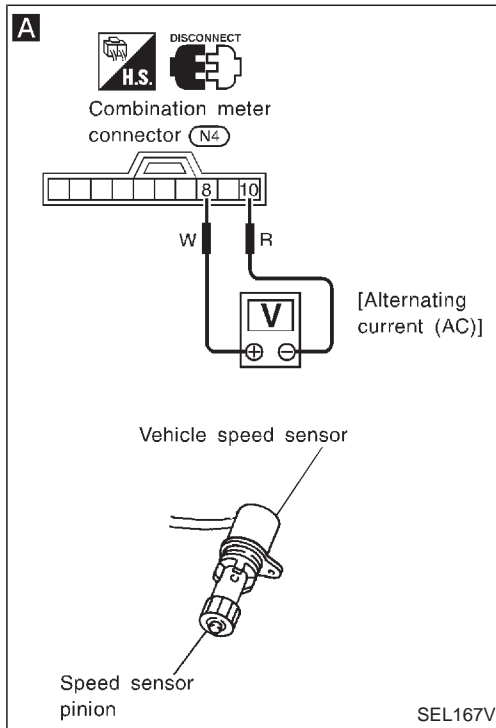
Ground circuit check

| Terminals | Continuity |
|------------|------------|
| Ⓓ - Ground | Yes |

METER AND GAUGES

Trouble Diagnoses (Cont'd)

INSPECTION/VEHICLE SPEED SENSOR



A

CHECK VEHICLE SPEED SENSOR OUTPUT.

1. Remove vehicle speed sensor from transmission.
2. Check voltage between combination meter terminals ⑧ and ⑩ while quickly turning speed sensor pinion.

Voltage: Approx. 0.5V

OK

Vehicle speed sensor is OK.

NG

B

CHECK VEHICLE SPEED SENSOR.

Check resistance between vehicle speed sensor terminals ① and ②.

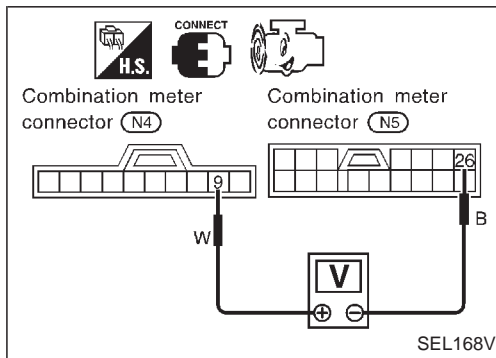
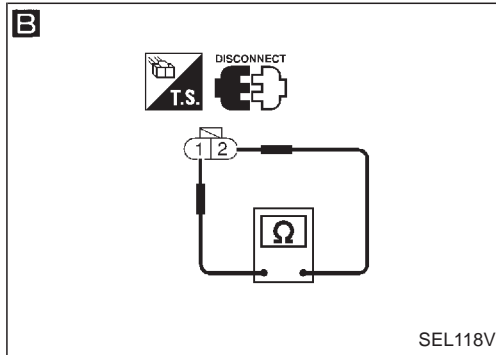
Resistance: Approx. 250Ω

NG

Replace vehicle speed sensor.

OK

Check harness or connector between speedometer and vehicle speed sensor.



INSPECTION/ENGINE REVOLUTION SIGNAL (Models with tachometer)

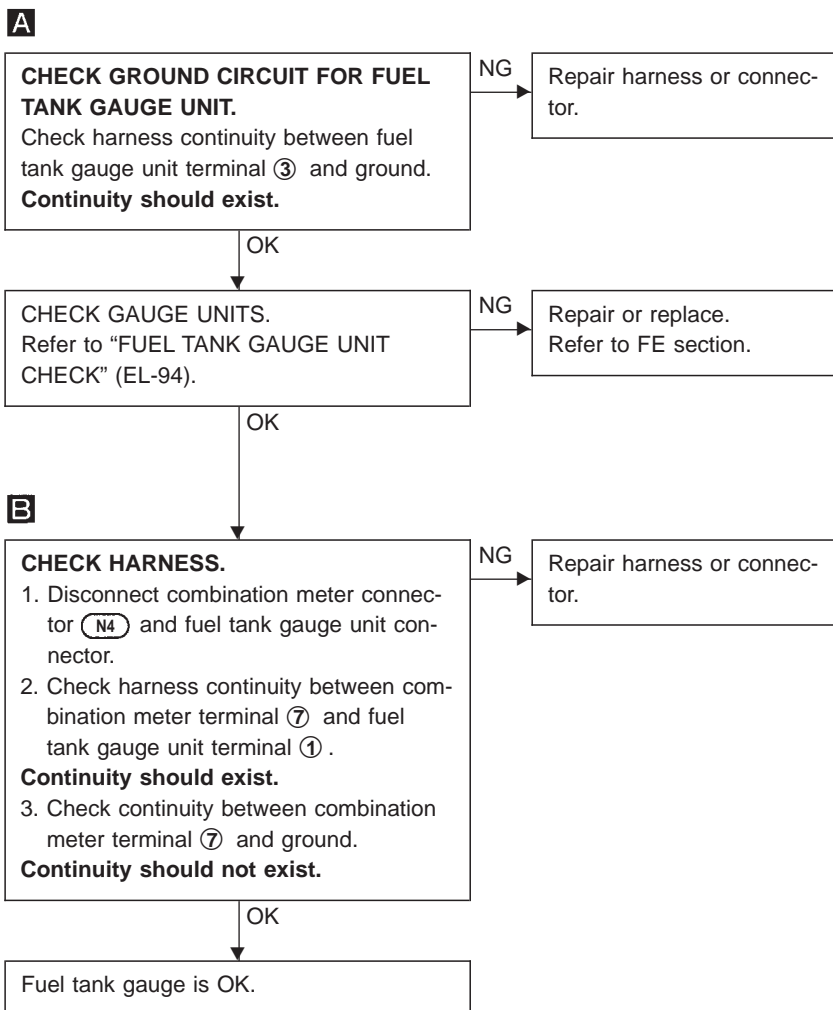
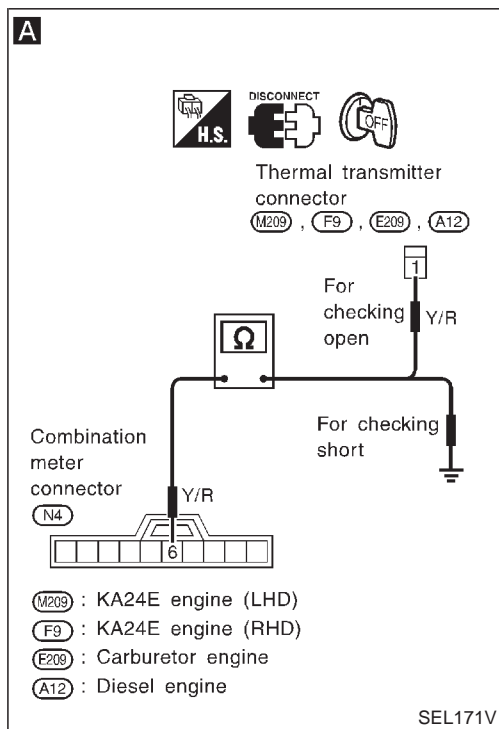
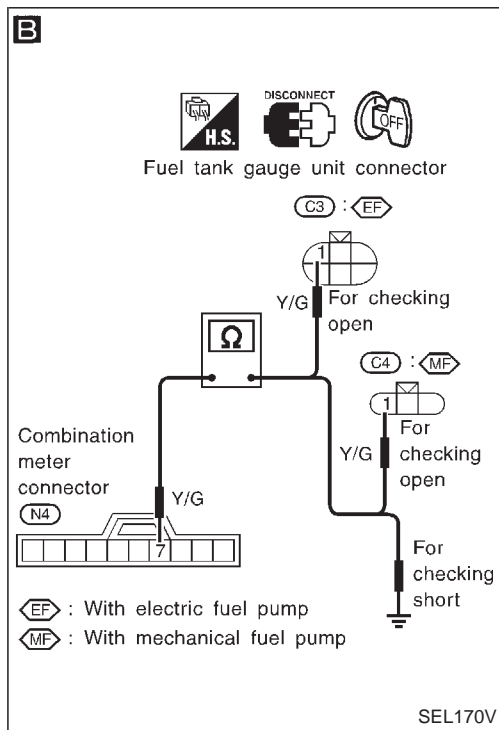
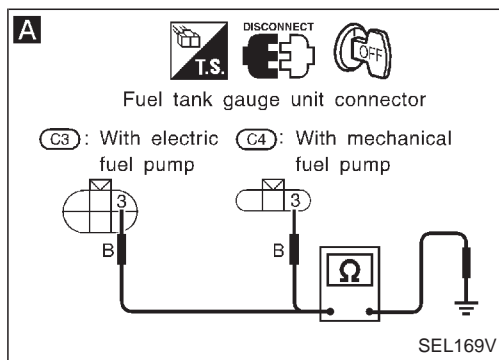
| Engine | Check item | Terminals | | Explanation |
|------------|------------|-----------|----|---|
| | | ⊕ | ⊖ | |
| Injection | DC voltage | ⑨ | ②⑥ | Higher rpm = Higher voltage Lower rpm = Lower voltage Voltage should change with rpm. |
| Carburetor | AC voltage | | | |
| Diesel | | | | |

If NG, check the following.

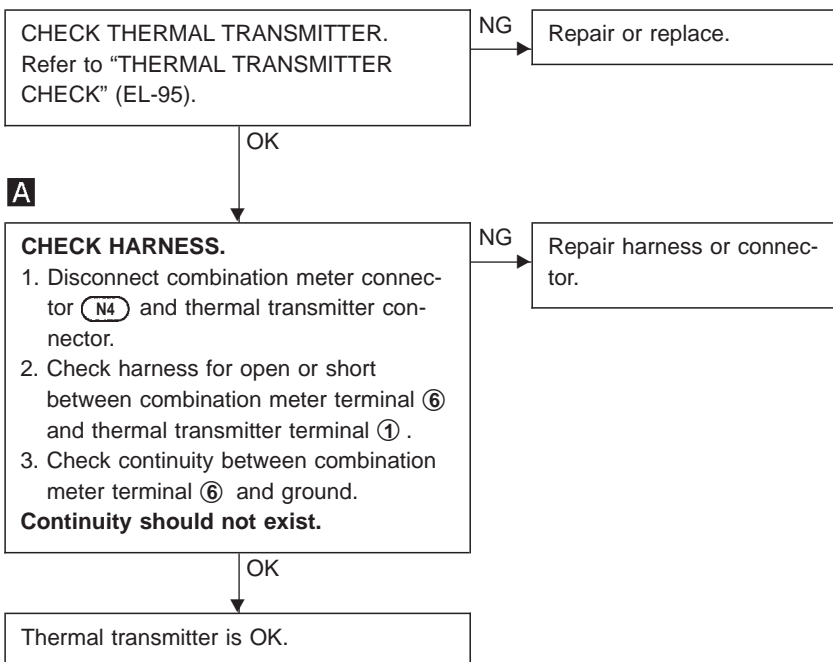
| Engine | Check item |
|------------|---|
| Injection | <ul style="list-style-type: none"> • Harness for open or short and connection |
| Carburetor | <ul style="list-style-type: none"> • Harness for open or short and connection • Resistor etc. |
| Diesel | <ul style="list-style-type: none"> • Harness for open or short and connection • Engine revolution sensor etc. |

METER AND GAUGES

Trouble Diagnoses (Cont'd) INSPECTION/FUEL TANK GAUGE



INSPECTION/THERMAL TRANSMITTER



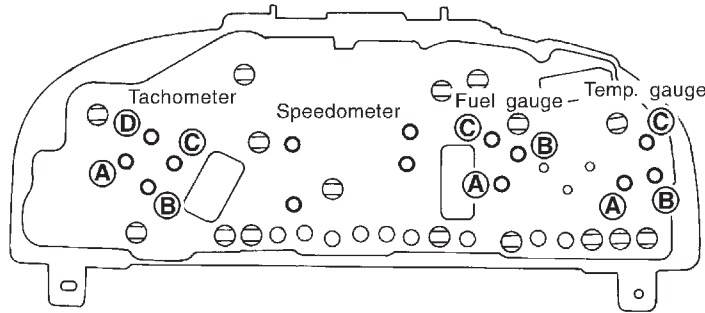
Electrical Components Inspection

METER/GAUGE RESISTANCE CHECK

1. Disconnect FPC connector. Refer to EL-88.
2. Check resistance between installation screws of meter/gauge.

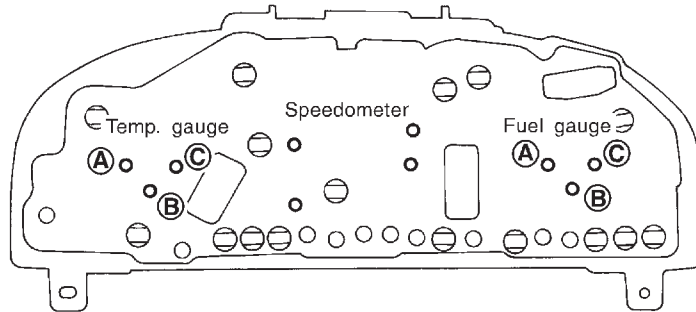
| Screws | | Resistance Ω |
|------------|------------------|--------------------------|
| Tachometer | Fuel/Temp. gauge | |
| A - C | A - C | Approx. 70 - Approx. 140 |
| B - D | B - C | Approx. 90 - Approx. 170 |

With tachometer



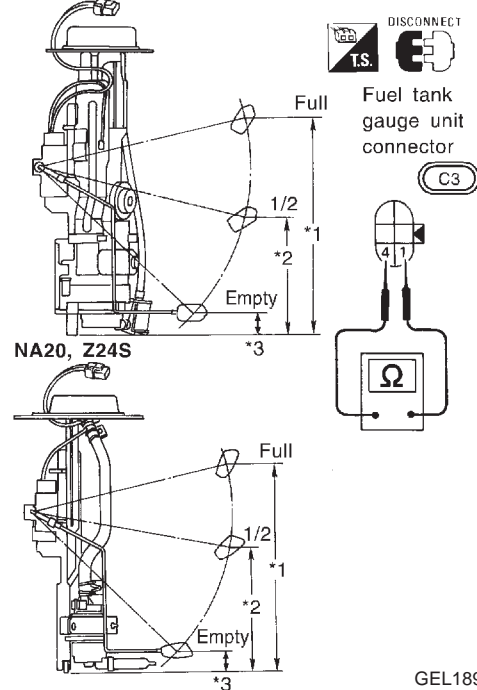
SEL172V

Without tachometer



SEL173V

KA24E



GEL189

FUEL TANK GAUGE UNIT CHECK (With electric fuel pump)

- For removal, refer to FE section.
- Check the resistance between terminals ① and ④ .

| Ohmmeter | | Float position | | mm (in) | | Resistance value (Ω) |
|----------|-----|----------------|-------|---------------------------|---------------------------|----------------------------------|
| (+) | (-) | | | 60ℓ (13-1/4 Imp gal) tank | 80ℓ (17-5/8 Imp gal) tank | |
| ① | ④ | *1 | Full | 253 (9.96) | 247 (9.72) | Approx. 4 - 6 |
| | | *2 | 1/2 | 130 (5.12) | 130 (5.12) | 27 - 35 |
| | | *3 | Empty | 27 (1.06) | 26 (1.02) | 78 - 85 |

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

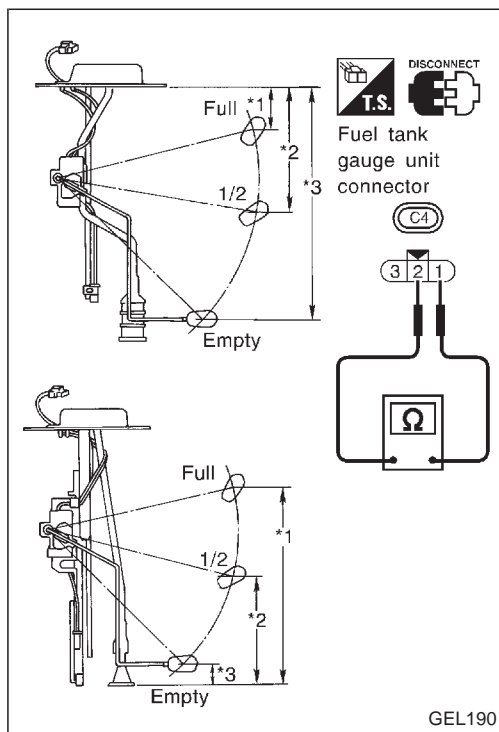
IDX

METER AND GAUGES

Electrical Components Inspection (Cont'd)

FUEL TANK GAUGE UNIT CHECK (With mechanical fuel pump)

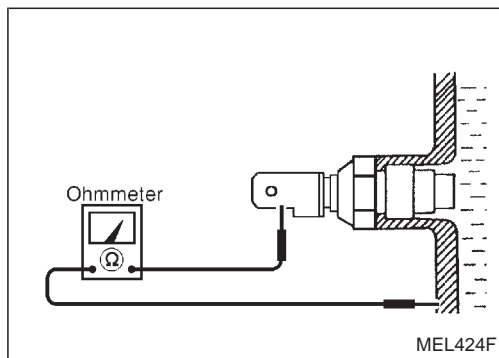
- For removal, refer to FE section.
Check the resistance between terminals ① and ②.



| Ohmmeter | | Float position mm (in) | | | | Resistance value (Ω) |
|----------|-----|---------------------------|------------------------------|------------------------------|------------|----------------------------|
| (+) | (-) | | 60ℓ (13-1/4 Imp gal) tank | 80ℓ (17-5/8 Imp gal) tank | | |
| ① | ② | *1 | Full | 50 (1.97) | 247 (9.72) | Approx. 4 - 6 |
| | | *2 | 1/2 | 174 (6.85) | 130 (5.12) | 27 - 35 |
| | | *3 | Empty | 277 (10.91) | 26 (1.02) | 78 - 85 |

THERMAL TRANSMITTER CHECK

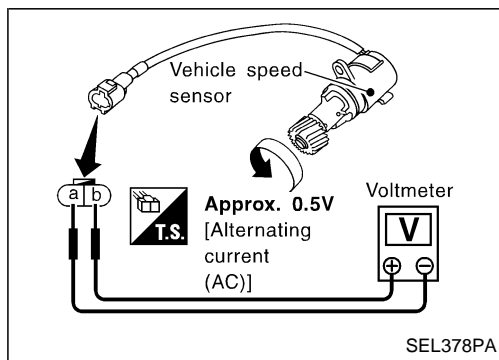
Check the resistance between the terminals of thermal transmitter and body ground.



| | |
|-------------------|--------------------|
| Water temperature | Resistance |
| 60°C (140°F) | Approx. 167 - 211Ω |
| 100°C (212°F) | Approx. 47 - 53Ω |

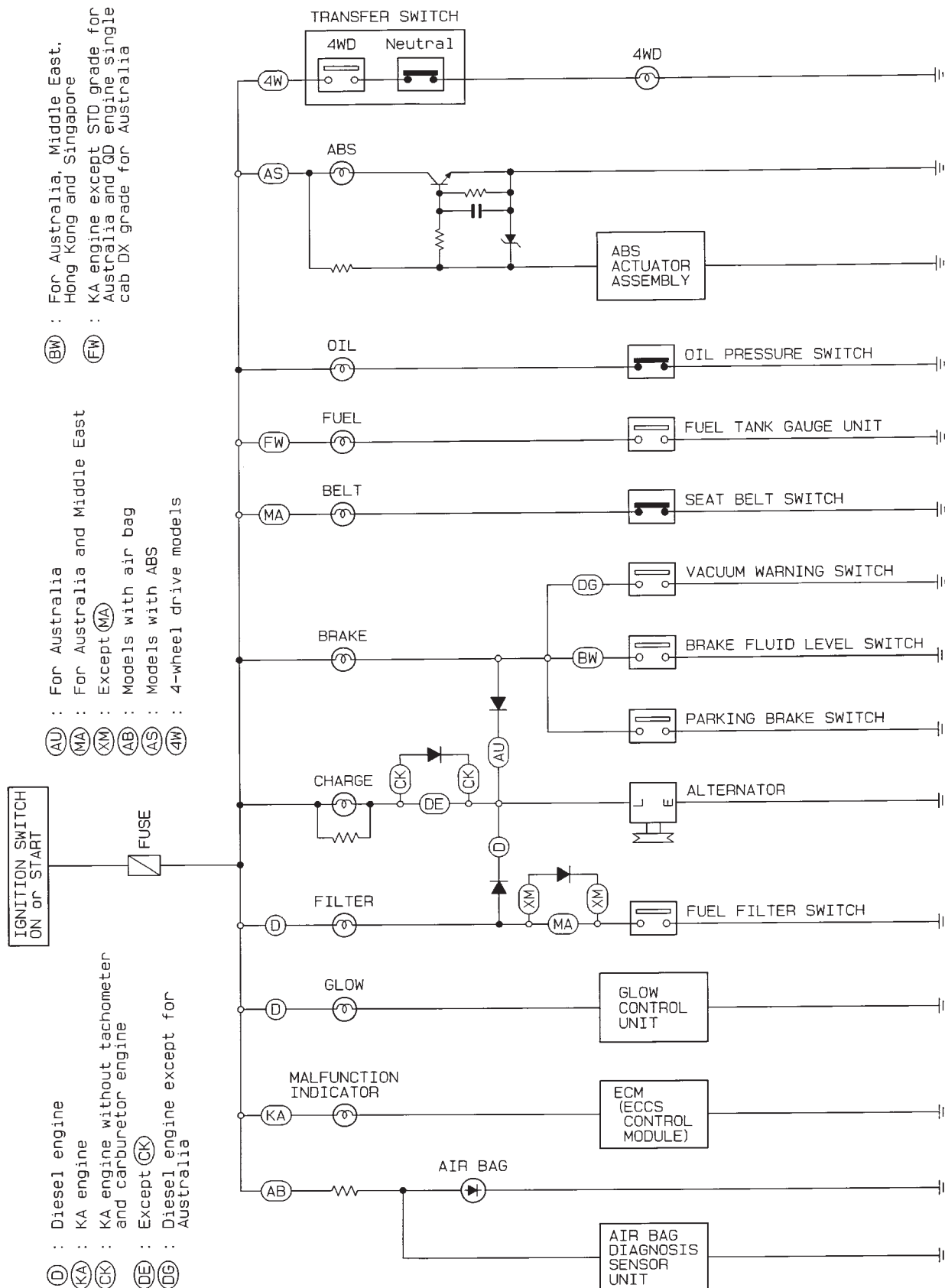
VEHICLE SPEED SENSOR SIGNAL CHECK

1. Remove vehicle speed sensor from transmission.
2. Turn vehicle speed sensor pinion quickly and measure voltage between terminals (a) and (b).



WARNING LAMPS

Schematic

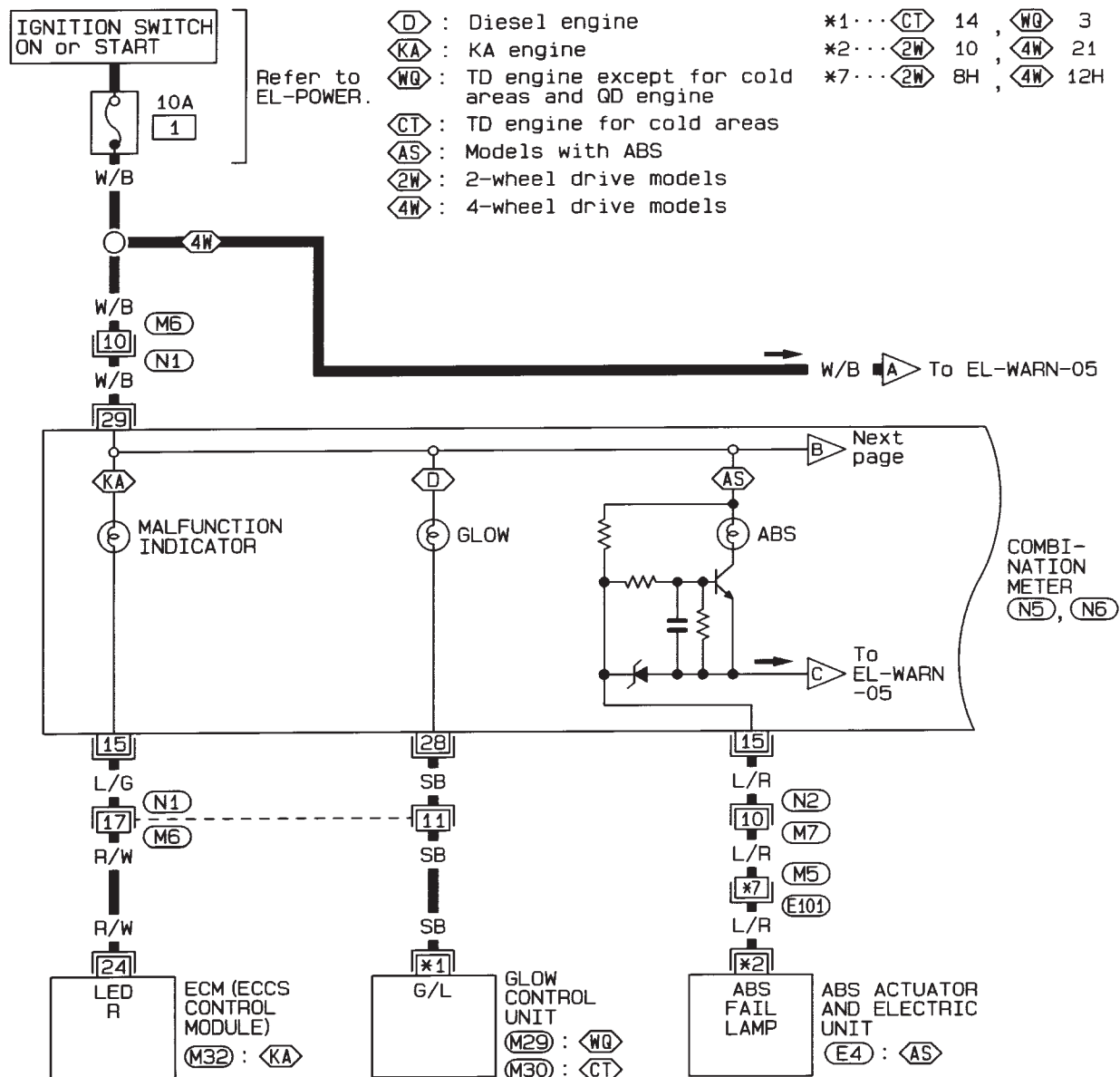


WARNING LAMPS

Wiring Diagram — WARN —

LHD MODELS

EL-WARN-01



Refer to last page
(Foldout page).

(M5, E101)
(M32)
(E4)

WARNING LAMPS

Wiring Diagram — WARN — (Cont'd)

LHD MODELS

EL-WARN-02

G : Gasoline engine

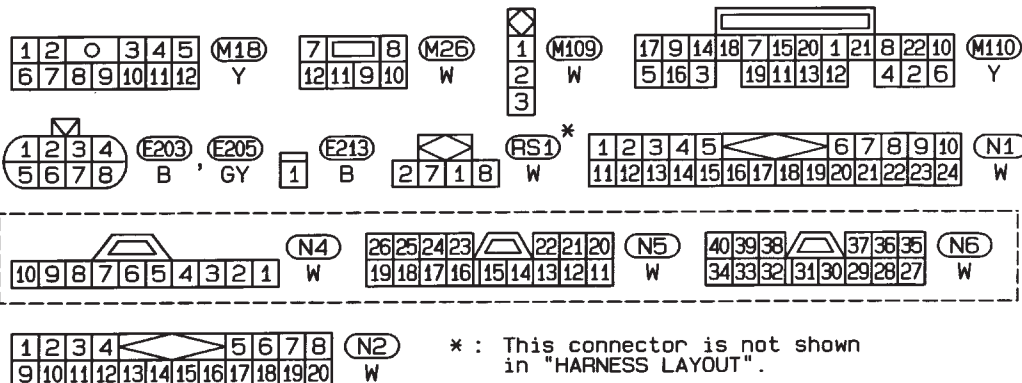
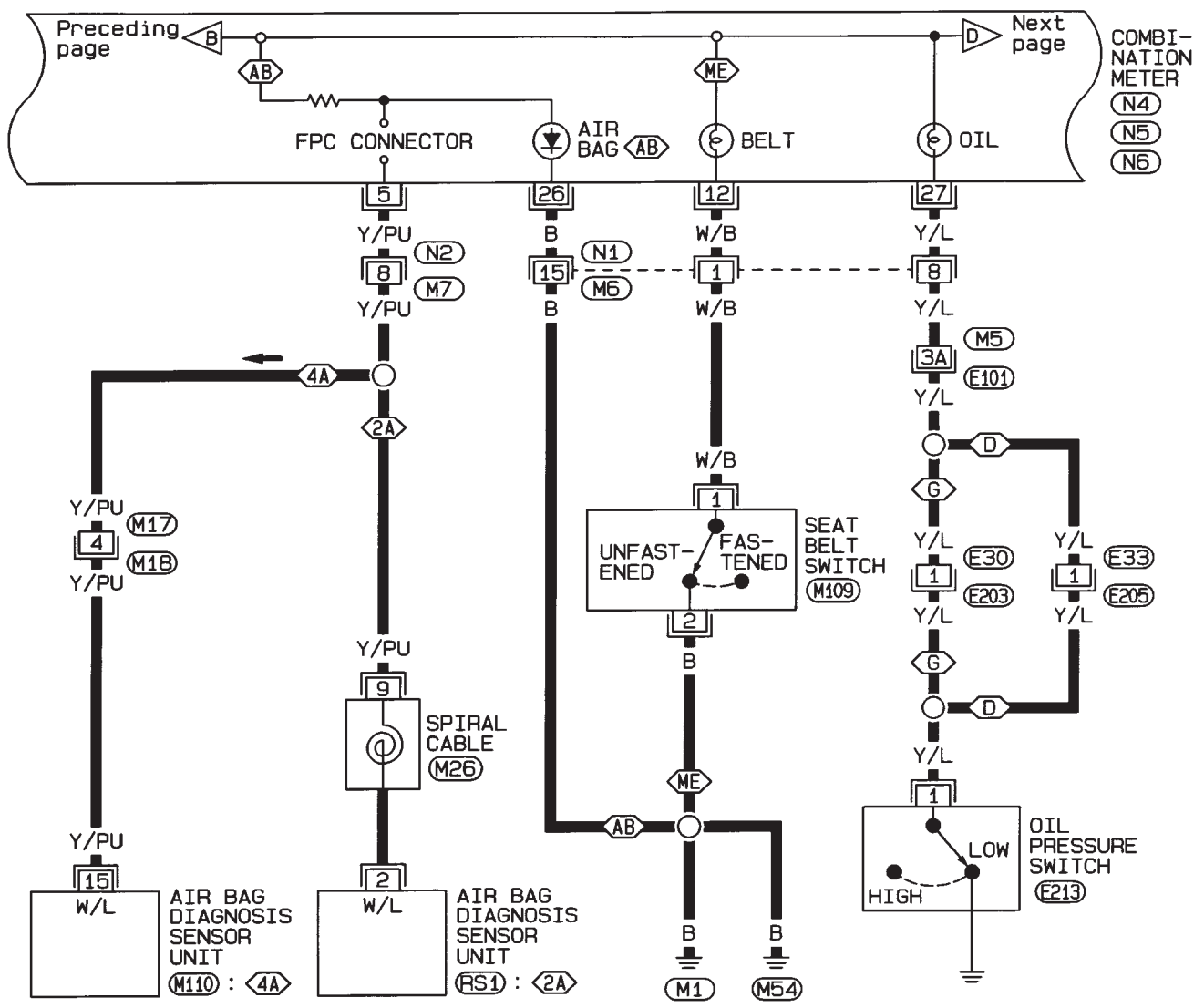
D : Diesel engine

ME : For the Middle East

AB : Models with air bag system

2A : 2WD models with air bag system

4A : 4WD models with air bag system



Refer to last page (Foldout page).

(M5), (E101)

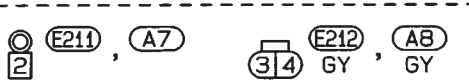
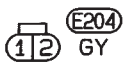
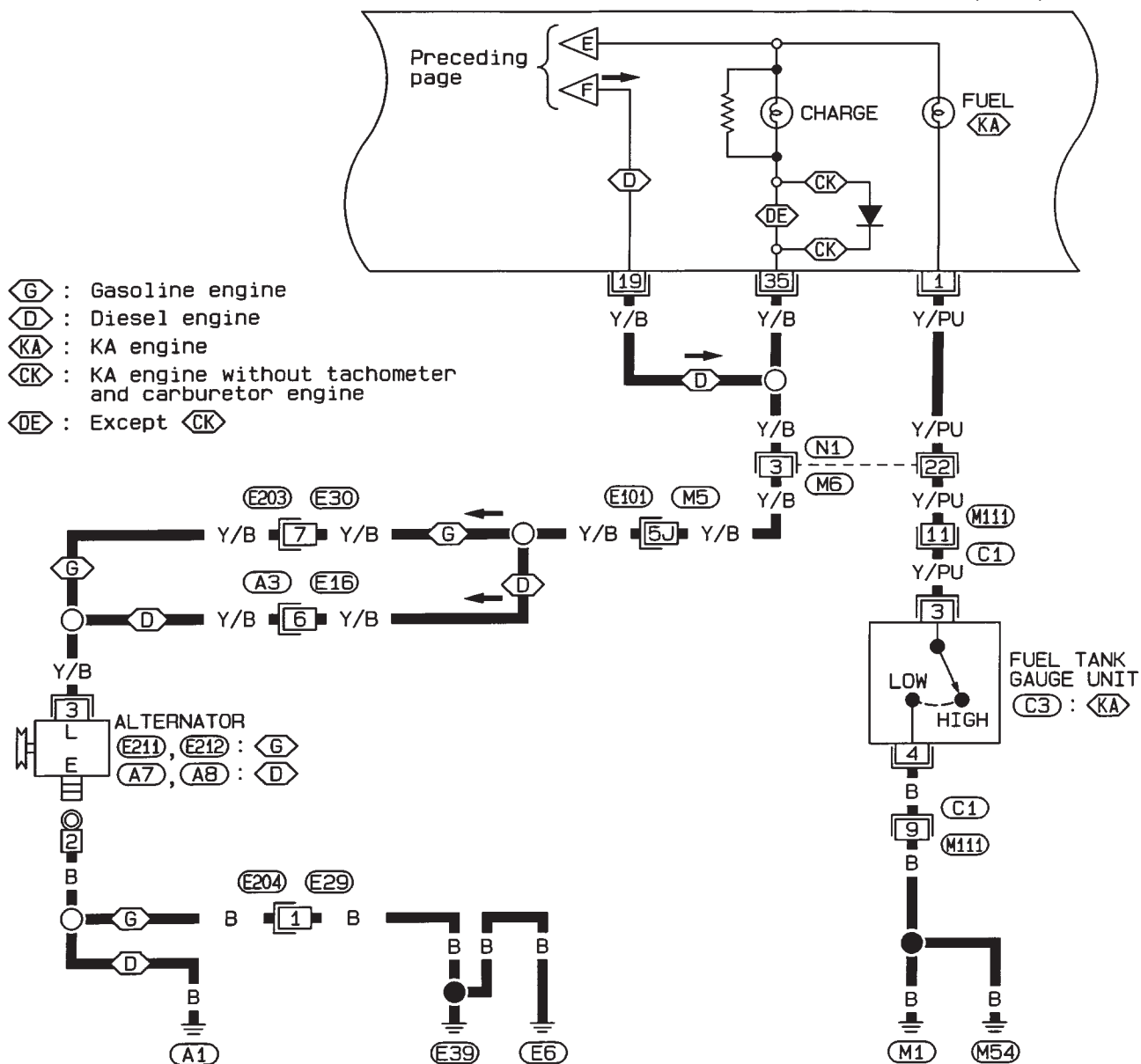
WARNING LAMPS

Wiring Diagram — WARN — (Cont'd)

LHD MODELS

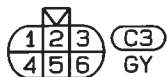
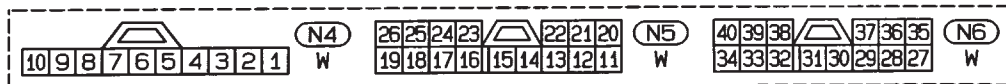
EL-WARN-04

COMBINATION METER (N4), (N5), (N6)



Refer to last page (Foldout page).

(M5), (E101)

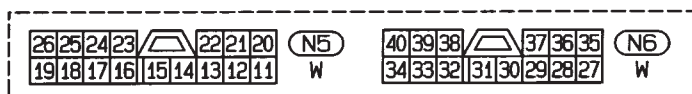
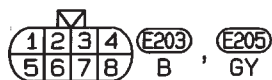
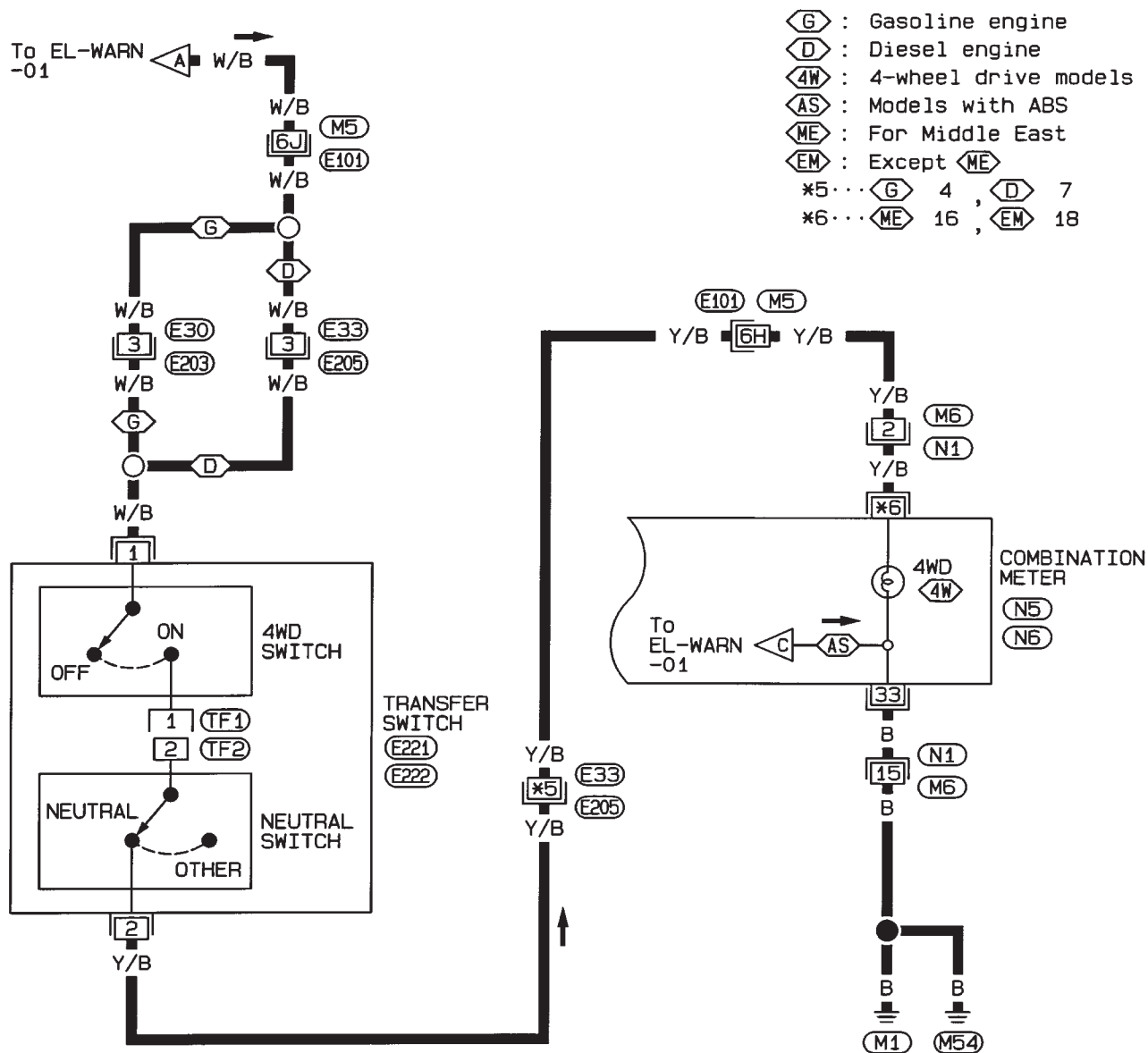


WARNING LAMPS

Wiring Diagram — WARN — (Cont'd)

LHD MODELS

EL-WARN-05



* : This connector is not shown in "HARNESS LAYOUT".

Refer to last page (Foldout page).

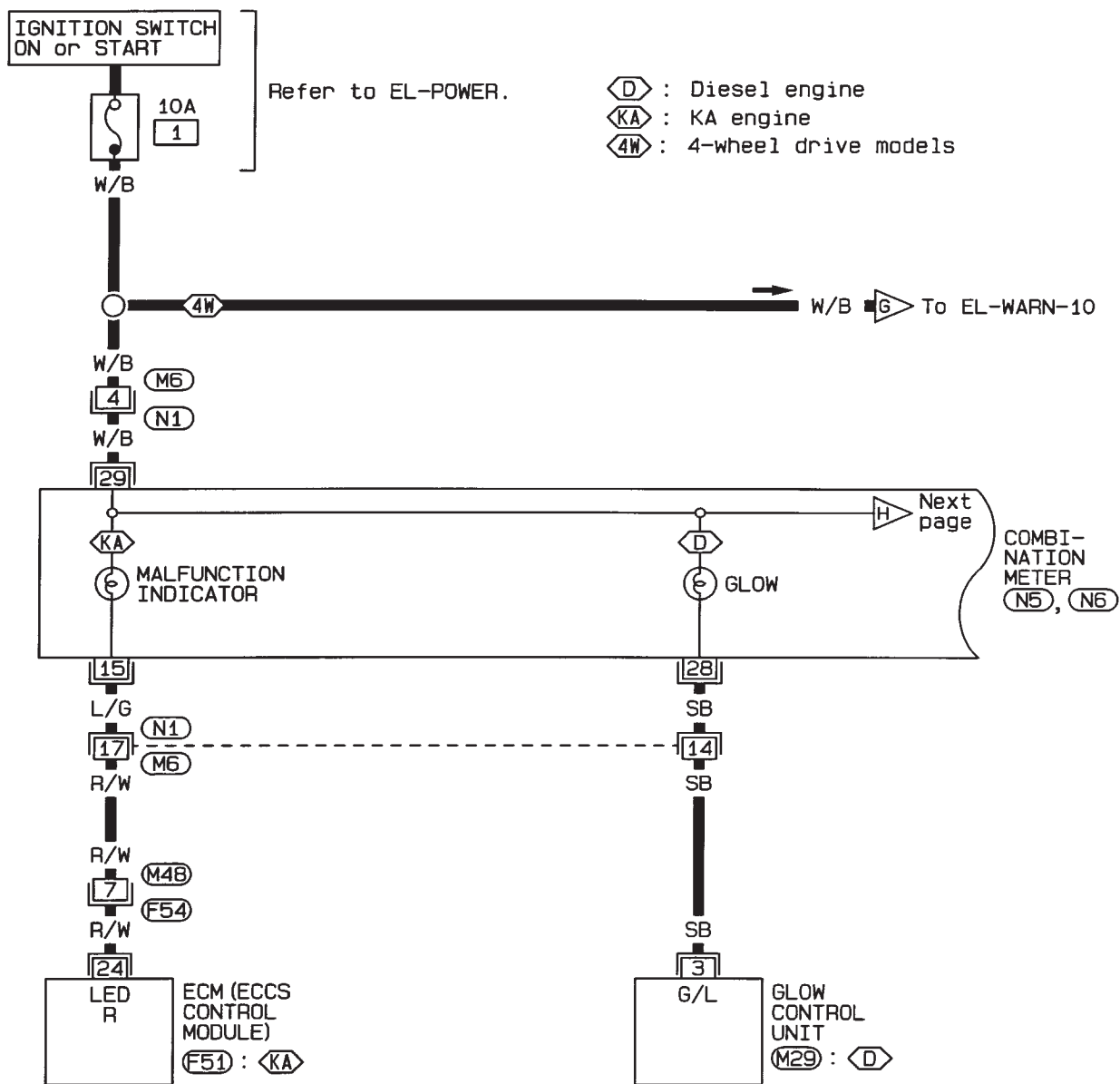
(M5, E101)

WARNING LAMPS

Wiring Diagram — WARN — (Cont'd)

RHD MODELS

EL-WARN-06



| | | | | | | | |
|---|---|----|----|----|-------|---|---|
| 8 | 9 | 10 | 11 | 12 | (M29) | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | W |

| | | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|-------|------|----|----|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (F54) | (N1) | | | | |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | W | W |

Refer to last page
(Foldout page).

(F51)



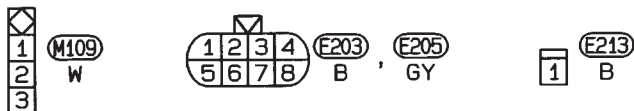
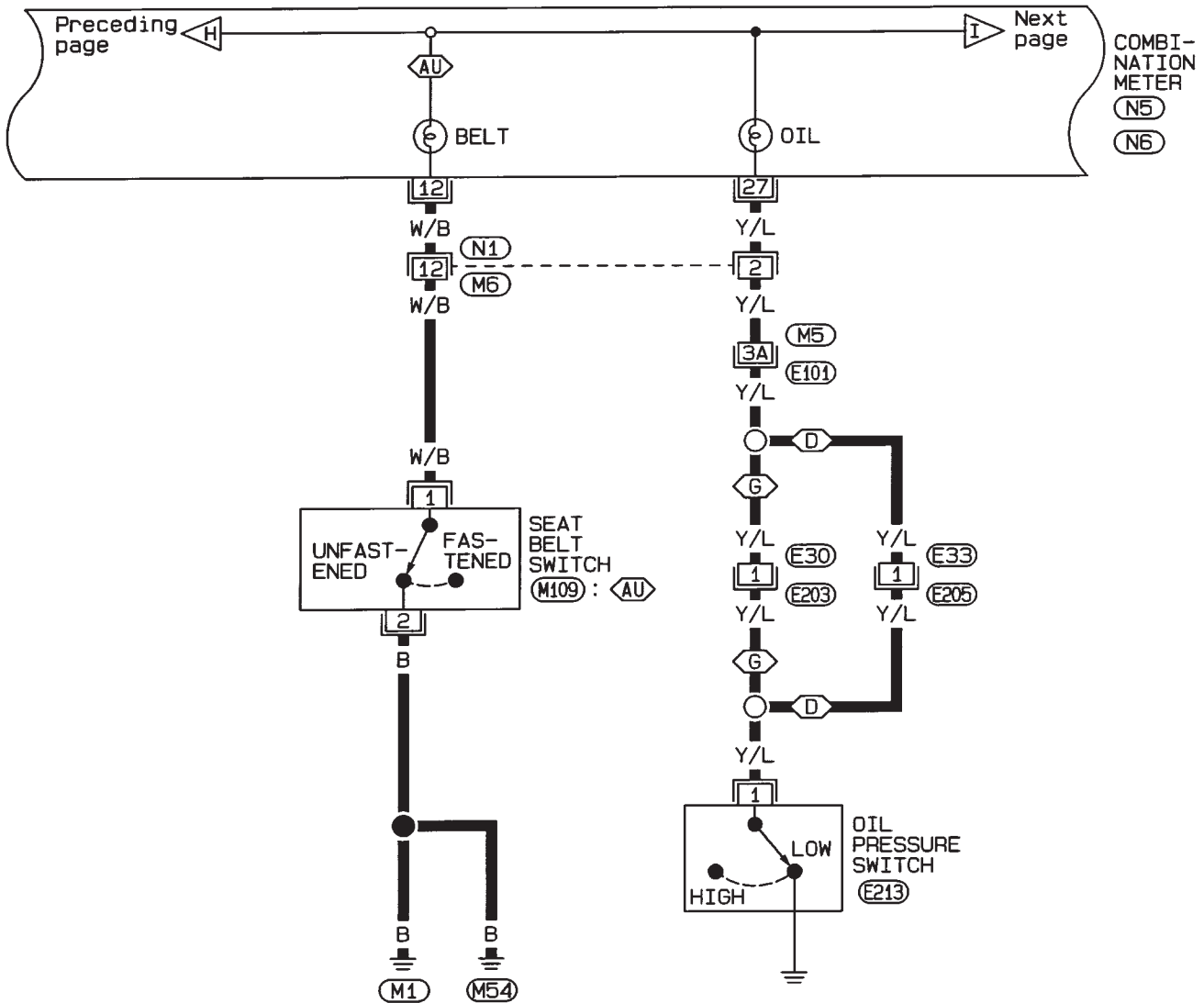
WARNING LAMPS

Wiring Diagram — WARN — (Cont'd)

RHD MODELS

EL-WARN-07

- G : Gasoline engine
- D : Diesel engine
- AU : For Australia



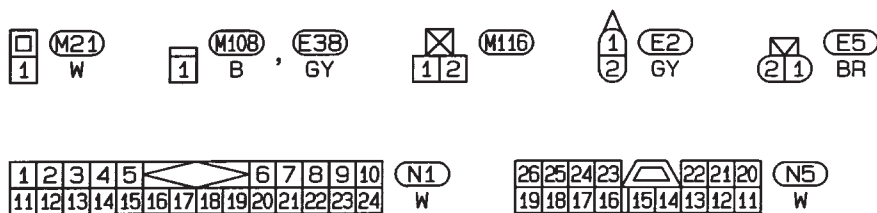
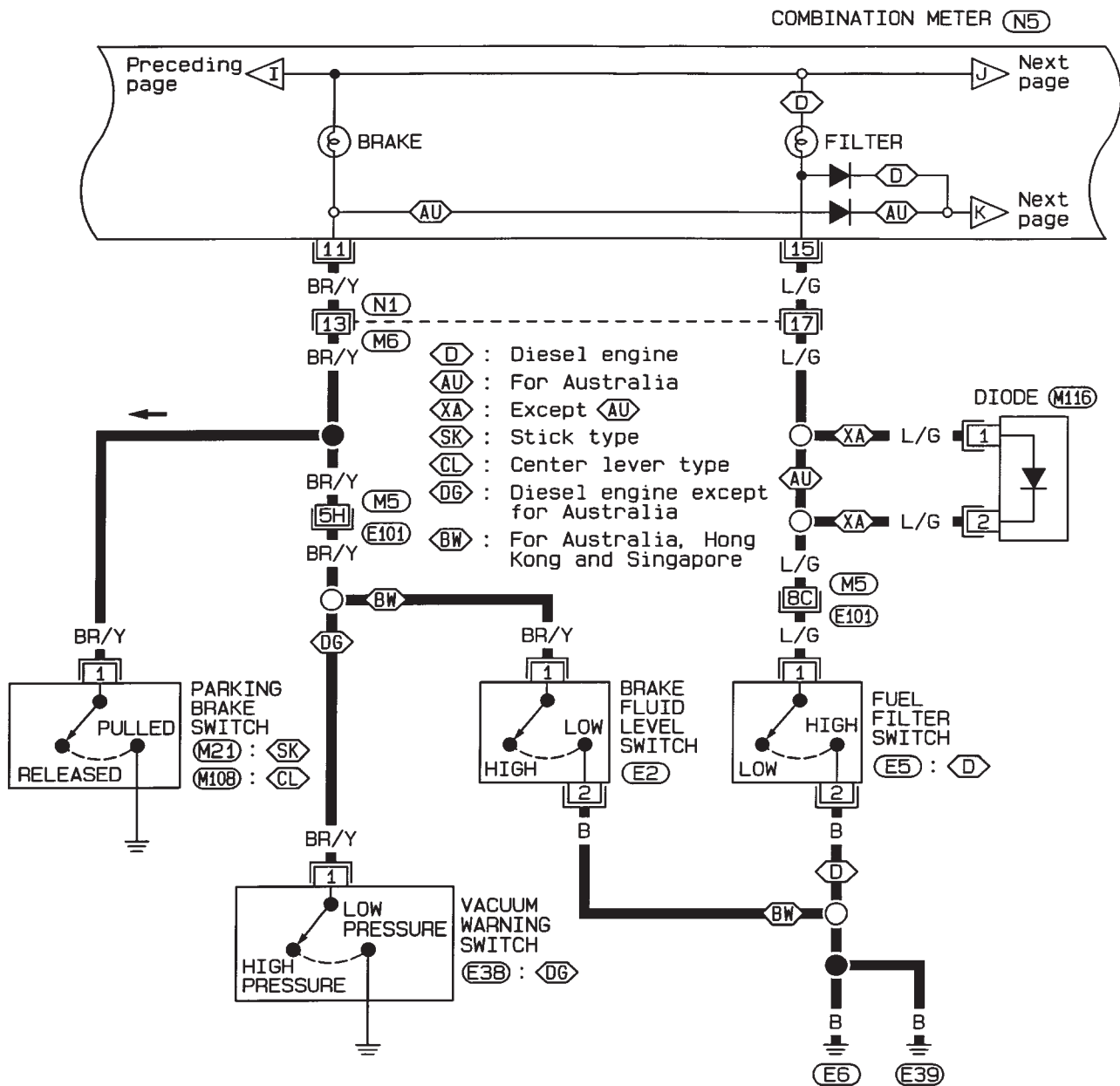
Refer to last page (Foldout page).

M5 , E101

Wiring Diagram — WARN — (Cont'd)

RHD MODELS

EL-WARN-08



Refer to last page
(Foldout page) .

M5 E101

WARNING LAMPS

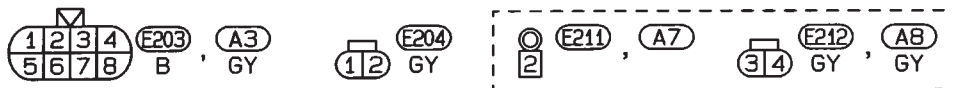
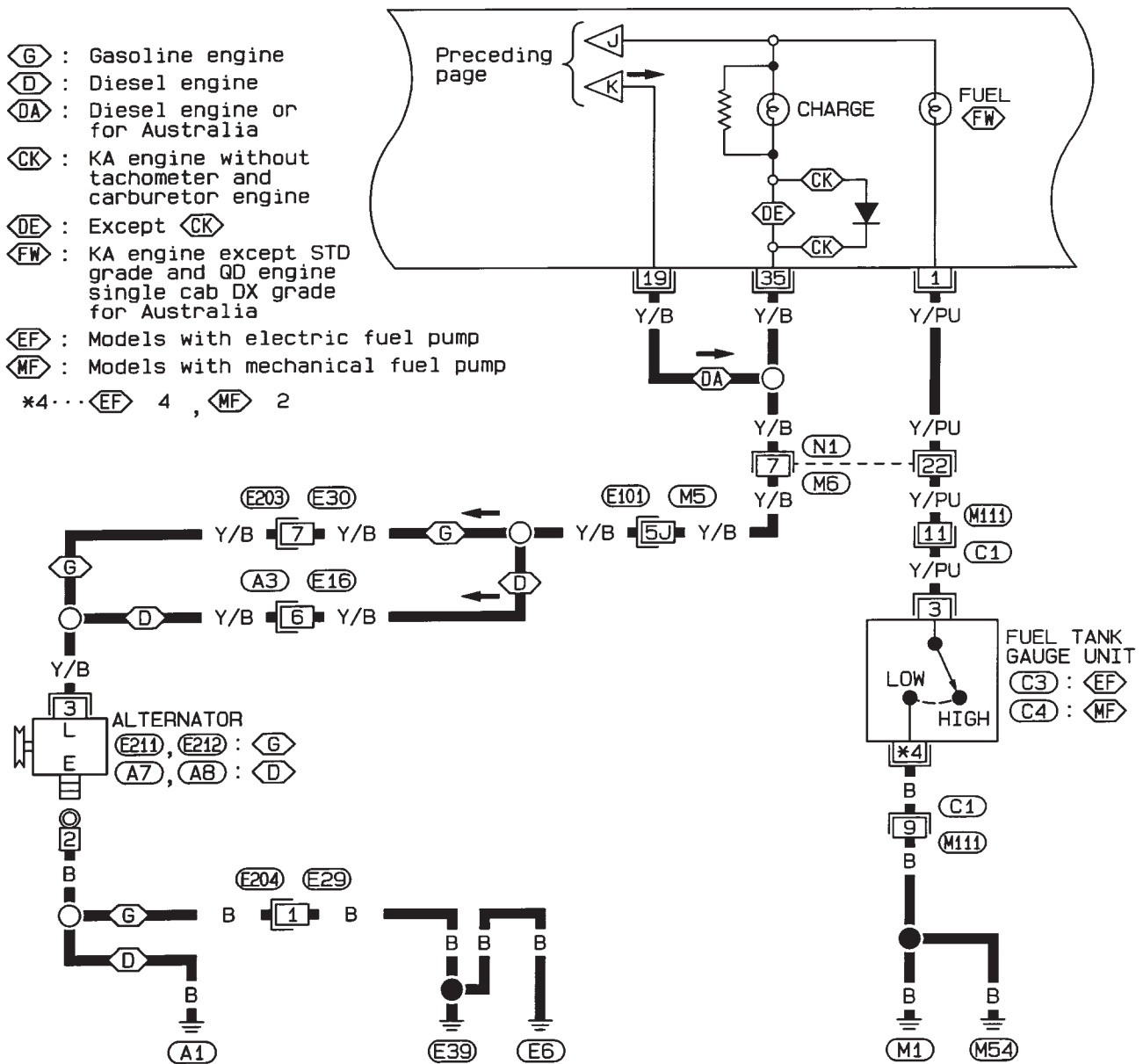
Wiring Diagram — WARN — (Cont'd)

RHD MODELS

EL-WARN-09

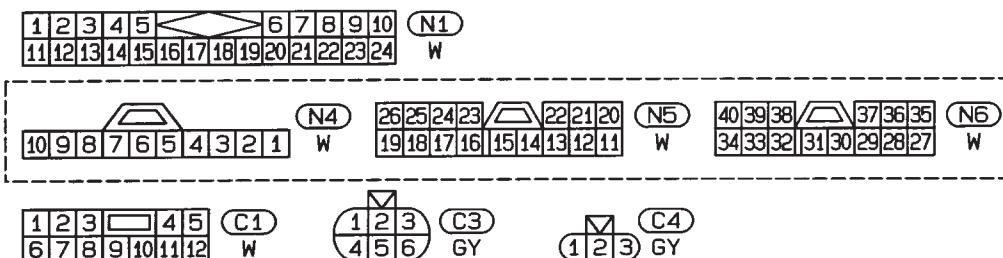
COMBINATION METER (N4), (N5), (N6)

- (G) : Gasoline engine
- (D) : Diesel engine
- (DA) : Diesel engine or for Australia
- (CK) : KA engine without tachometer and carburetor engine
- (DE) : Except (CK)
- (FW) : KA engine except STD grade and QD engine single cab DX grade for Australia
- (EF) : Models with electric fuel pump
- (MF) : Models with mechanical fuel pump
- *4... (EF) 4 , (MF) 2



Refer to last page (Foldout page).

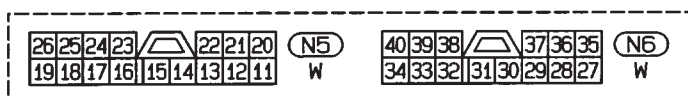
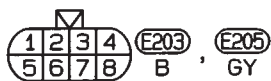
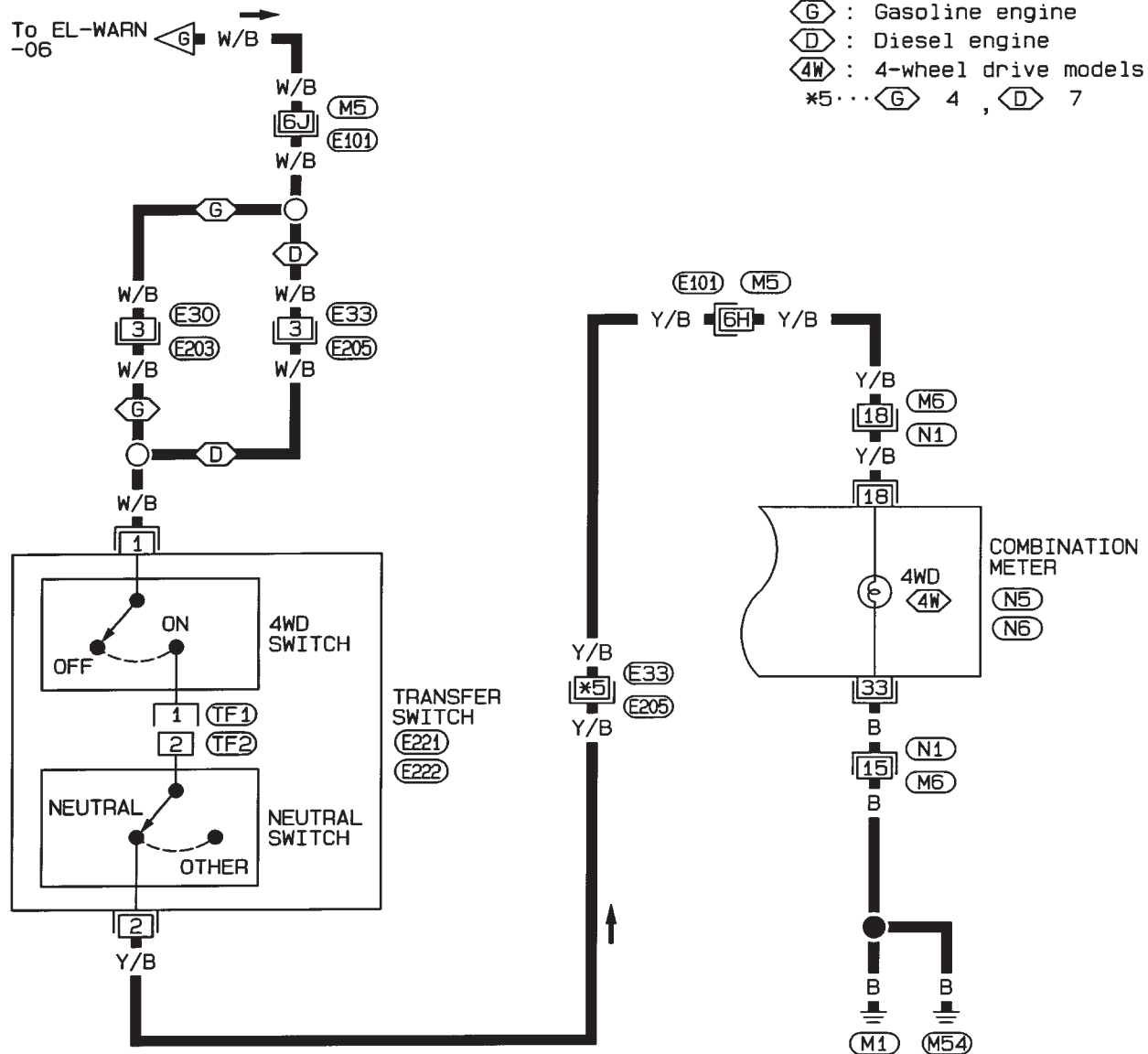
(M5), (E101)



Wiring Diagram — WARN — (Cont'd)

RHD MODELS

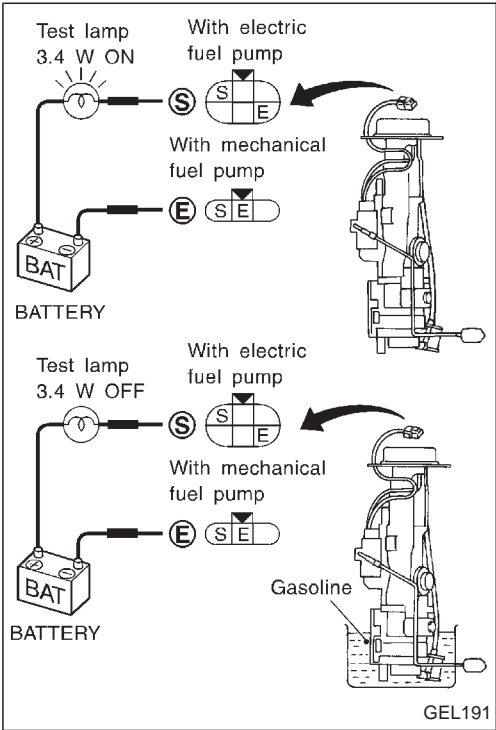
EL-WARN-10



* : This connector is not shown in "HARNESS LAYOUT".

Refer to last page
(Foldout page) .

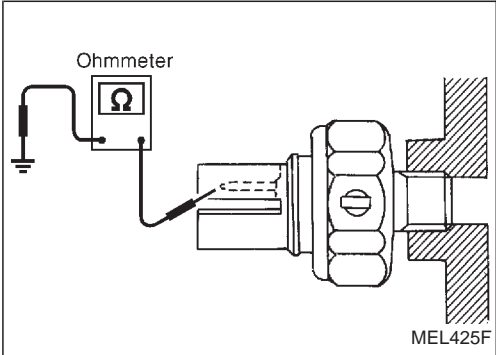
M5, E101



Electrical Components Inspection

FUEL WARNING LAMP SENSOR CHECK

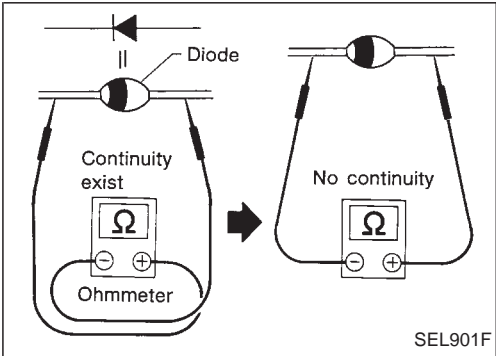
- It will take a short time for the bulb to light.



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 - 3) | NO |
| Engine stop | Less than 10 - 20 (0.10 - 0.20, 0.1 - 0.2, 1 - 3) | YES |

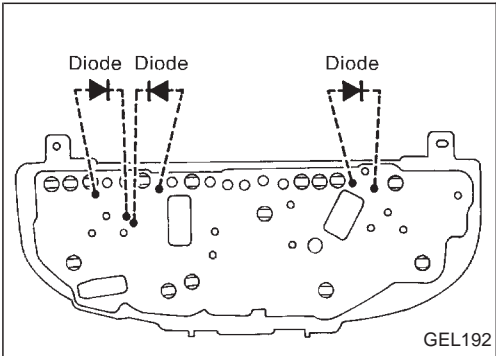
Check the continuity between the terminals of oil pressure switch and body ground.



DIODE CHECK

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

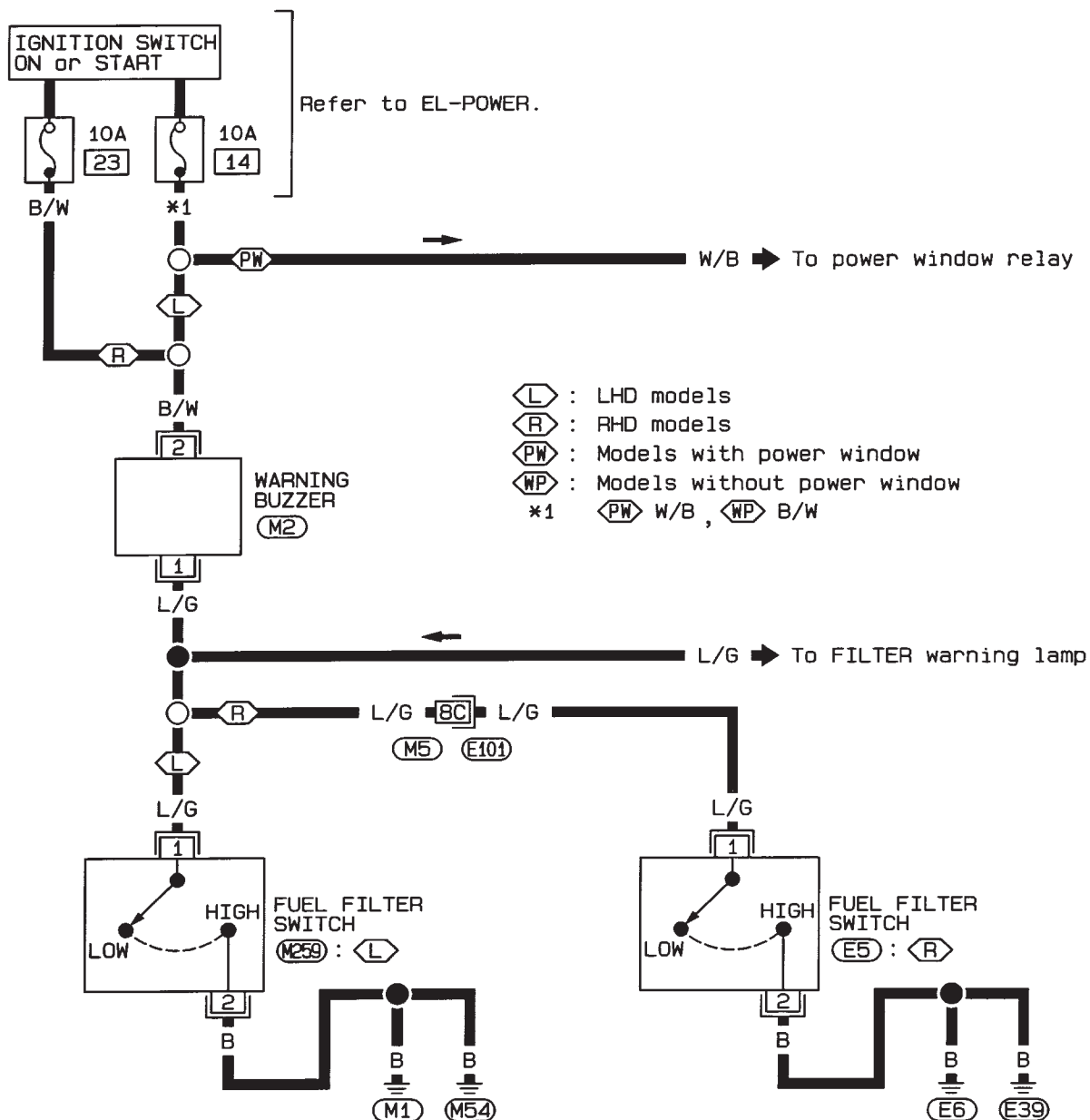
NOTE: Specification may vary depending on the type of tester. Before performing this inspection, be sure to refer to the instruction manual for the tester to be used.



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

Wiring Diagram — BUZZER —

EL-BUZZER-01

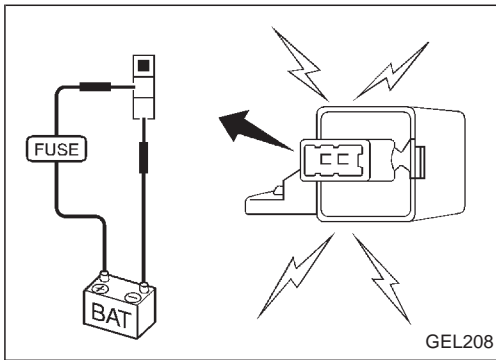


2 (M2)
1 W

2 (M259) (E5)
1 BR, BR

Refer to last page
(Foldout page).

(M5), (E101)



Electrical Components Inspection

WARNING BUZZER CHECK

GI

MA

EM

LC

EC

FE

CL

MT

TF

PD

FA

RA

BR

ST

RS

BT

HA

EL

IDX

System Description

WIPER OPERATION

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

- LO speed
- HI speed
- INT (Intermittent wiper models only)

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

- through 20A fuse (No. 16, located in the fuse block)
- to wiper motor terminal ④.

Low and high speed wiper operation

Ground is supplied to wiper switch terminal ⑰ through body grounds (M1) and (M54).

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

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

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

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

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

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

Auto stop operation

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 (Intermittent wiper models only)
- through terminal ⑦ of the wiper amplifier (Intermittent wiper models only)
- to wiper motor terminal ⑤
- through terminal ⑥ of the wiper motor, and
- through body grounds (M1) and (M54).

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

Intermittent operation

The wiper motor operates the wiper arms one time at low speed at 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 (M1) and (M54).
- 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 (M1) and (M54).

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

WASHER OPERATION

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

- through 20A fuse (No. 16, located in the fuse block)
- to washer motor terminal ①.

With intermittent wiper

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 M1 and M54.

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 times after the lever is released. This feature is controlled by the wiper amplifier in the same manner as the intermittent operation.

Without intermittent wiper

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

- to washer motor terminal ②
- from terminal ⑱ of the wiper switch
- through terminal ⑰ of the wiper switch, and
- through body grounds M1 and M54.

With power and ground supplied, the washer motor operates.

GI

MA

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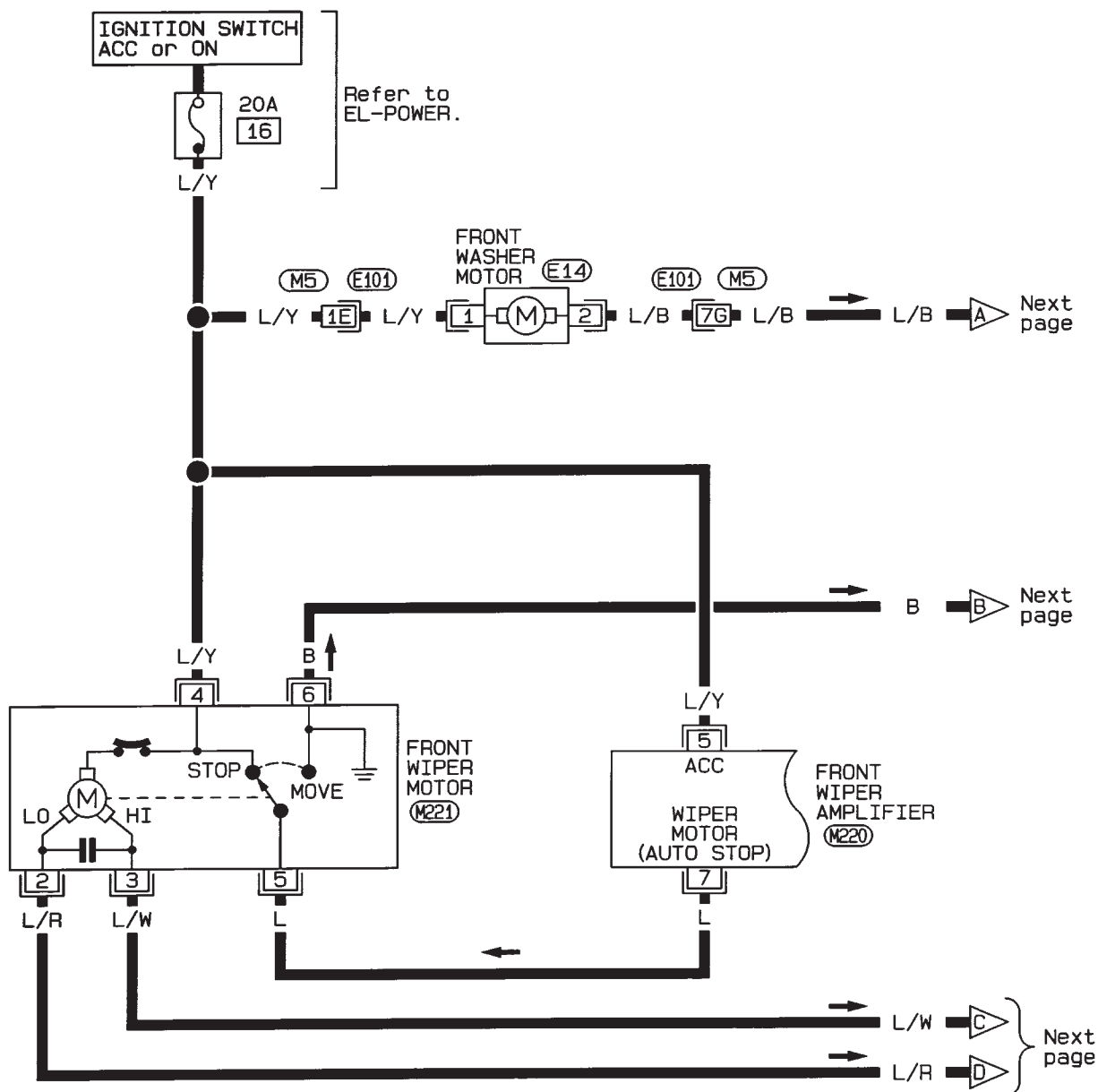
IDX

WIPER AND WASHER

Front Wiper and Washer/Wiring Diagram — WIPER —

LHD MODELS — WITH INTERMITTENT WIPER

EL-WIPER-01



| | | | | |
|--|---|---|---|--------|
| | 3 | 2 | 1 | (M220) |
| | 7 | 6 | 5 | GY |

| | | |
|---|---|---|
| | 2 | 3 |
| 4 | 5 | 6 |

M221

W

| | |
|----|-------|
| 21 | (E14) |
| | GY |

Refer to last page
(Foldout page).

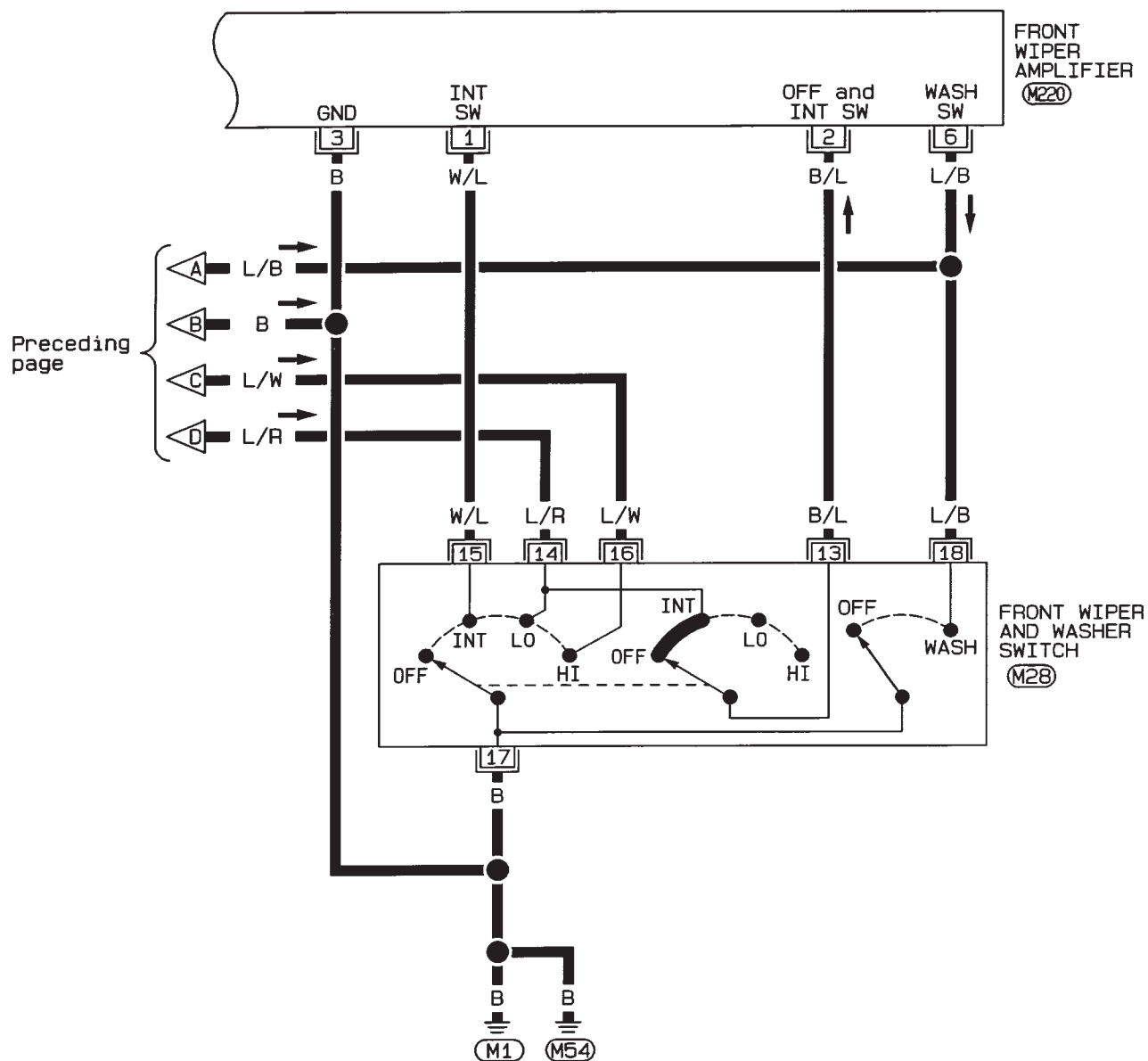
(M5) , (E101)

WIPER AND WASHER

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

LHD MODELS — WITH INTERMITTENT WIPER

EL-WIPER-02



| | | | |
|----|----|----|-------|
| 13 | 16 | 14 | (M28) |
| 15 | 17 | 18 | GY |

| | | | |
|---|---|---|--------|
| 3 | 2 | 1 | (M220) |
| 7 | 6 | 5 | GY |

GI

MA

EM

LC

EC

FE

CL

MT

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IDX

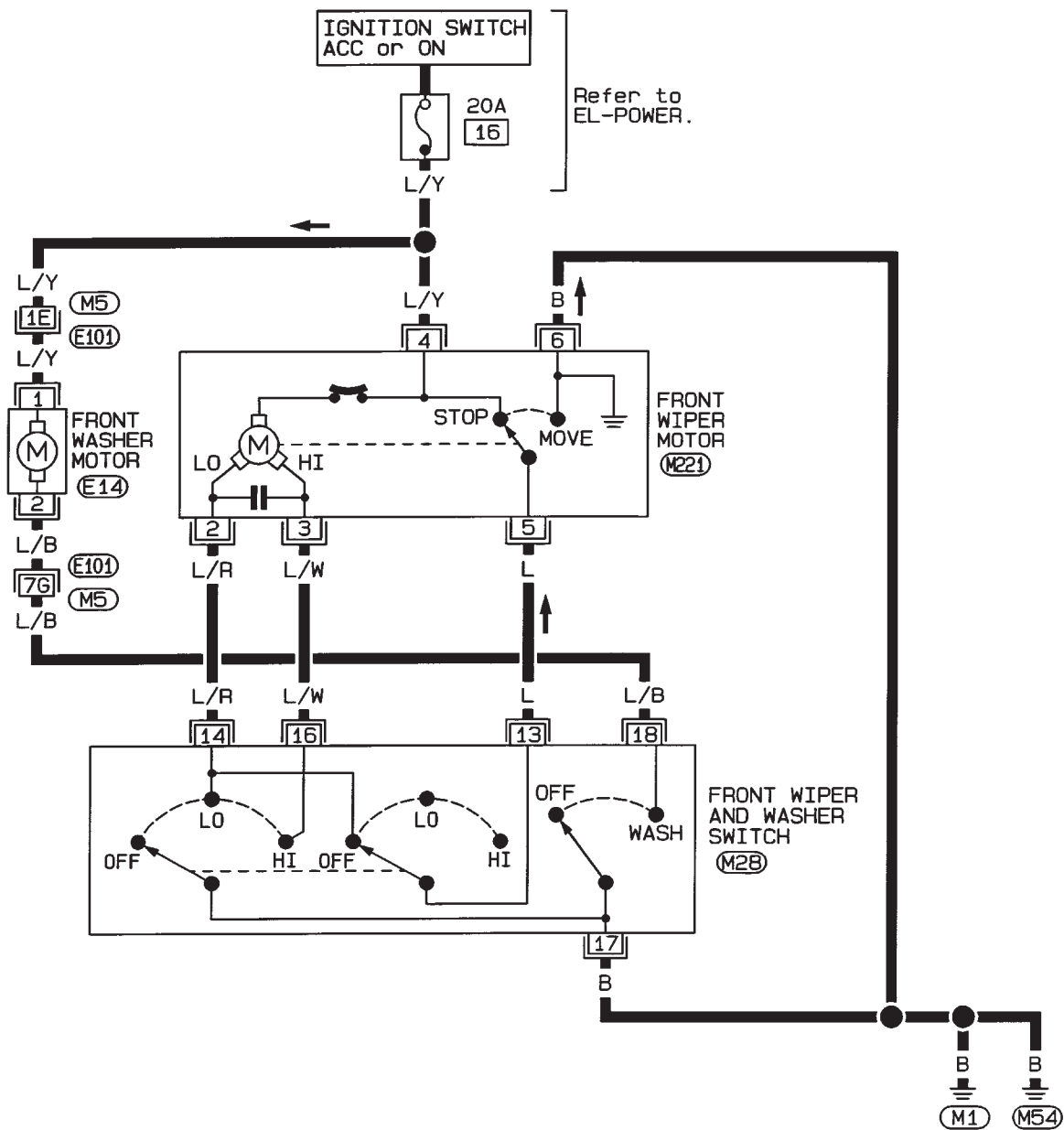
WIPER AND WASHER

Front Wiper and Washer/Wiring Diagram

— WIPER — (Cont'd)

LHD MODELS — WITHOUT INTERMITTENT WIPER

EL-WIPER-03



| | | | |
|----|----|----|-----|
| 13 | 16 | 14 | M28 |
| 17 | 18 | | GY |

| | | |
|---|---|------|
| 2 | 3 | M221 |
| 4 | 5 | W |

| | |
|----|-----|
| 21 | E14 |
| | GY |

Refer to last page
(Foldout page).

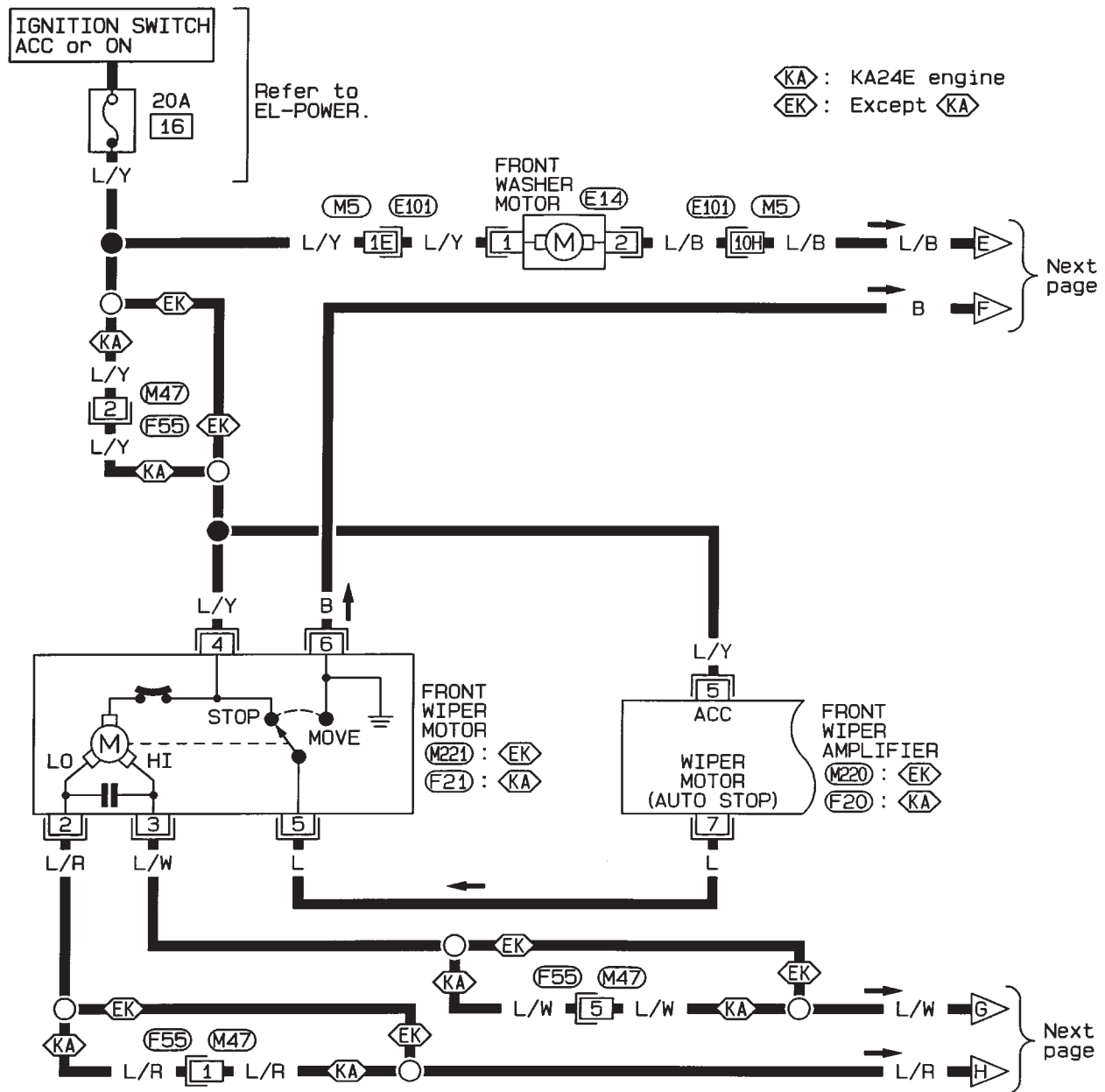
M5 , E101



WIPER AND WASHER

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

RHD MODELS — WITH INTERMITTENT WIPER

EL-WIPER-04



| | | | | | | | | | | | | | | | | | | |
|---|---|---|--------|-------|---|---|--------|-------|---|-------|---|---|---|---|---|-------|----|---|
| 3 | 2 | 1 | (M220) | (F20) | 3 | 2 | (M221) | (F21) |  | (E14) | 1 | 2 |  | 3 | 4 | (F55) | | |
| | 7 | 6 | GY | GY | 6 | 5 | W | W | | GY | | 5 | 6 | 7 | 8 | 9 | 10 | W |

Refer to last page
(Foldout page).

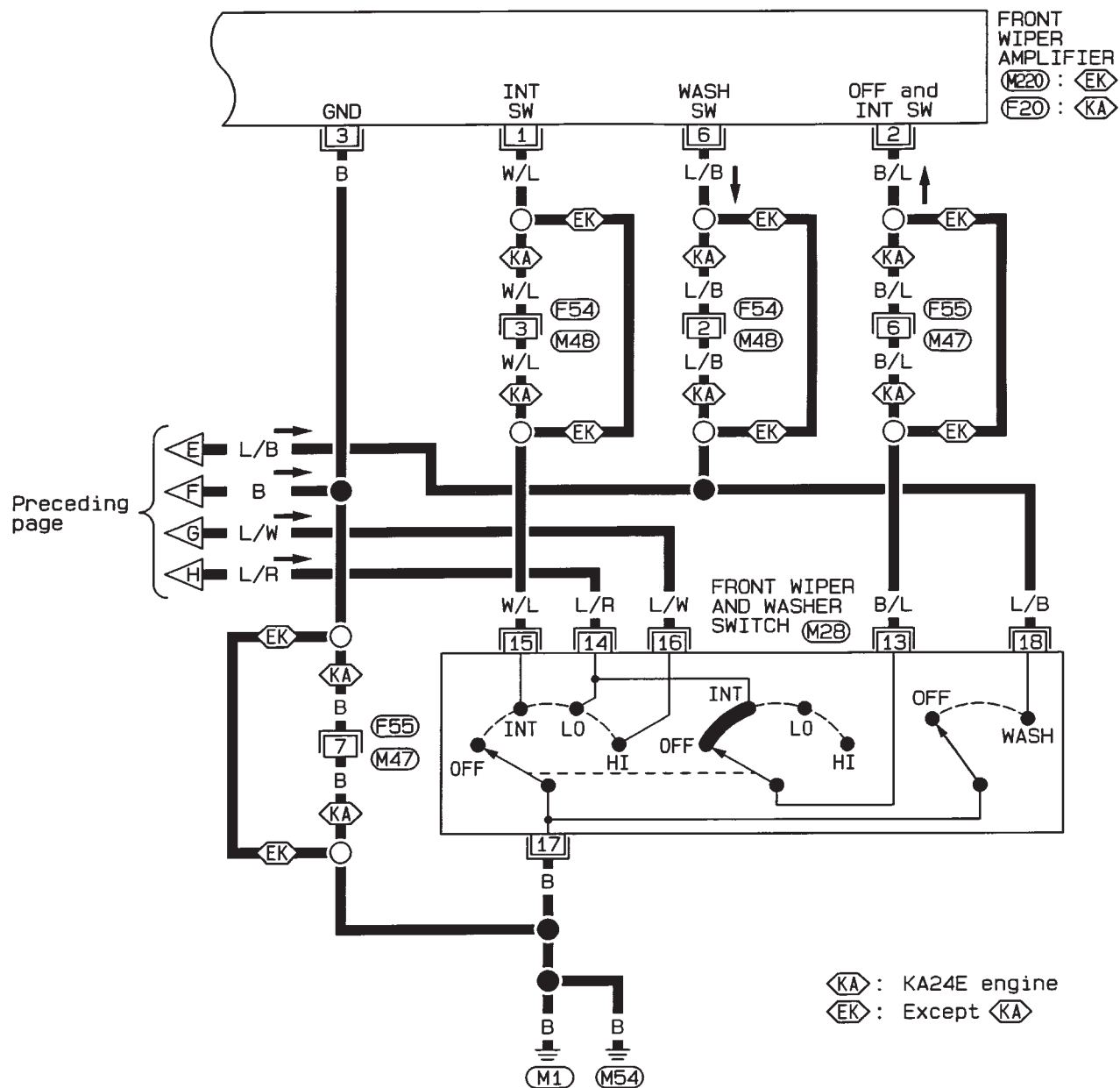
(M5) , (E101)

WIPER AND WASHER

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

RHD MODELS — WITH INTERMITTENT WIPER

EL-WIPER-05



| | | | |
|----|----|----|-------|
| 14 | 16 | 13 | (M28) |
| | 18 | 17 | 15 |

GY

| | | | | |
|---|---|---|--------|-------|
| 3 | 2 | 1 | (M220) | (F20) |
| 7 | 6 | 5 | GY | GY |

| | | | | | | | | | | | | | | |
|----|----|----|----|----|---|----|----|----|----|----|----|----|----|-------|
| 1 | 2 | 3 | 4 | 5 |  | | | | 6 | 7 | 8 | 9 | 10 | (F54) |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | W |

| | | | | | |
|---|---|---|---|---|----|
| 1 | 2 | | 3 | 4 | |
| 5 | 6 | 7 | 8 | 9 | 10 |

F55

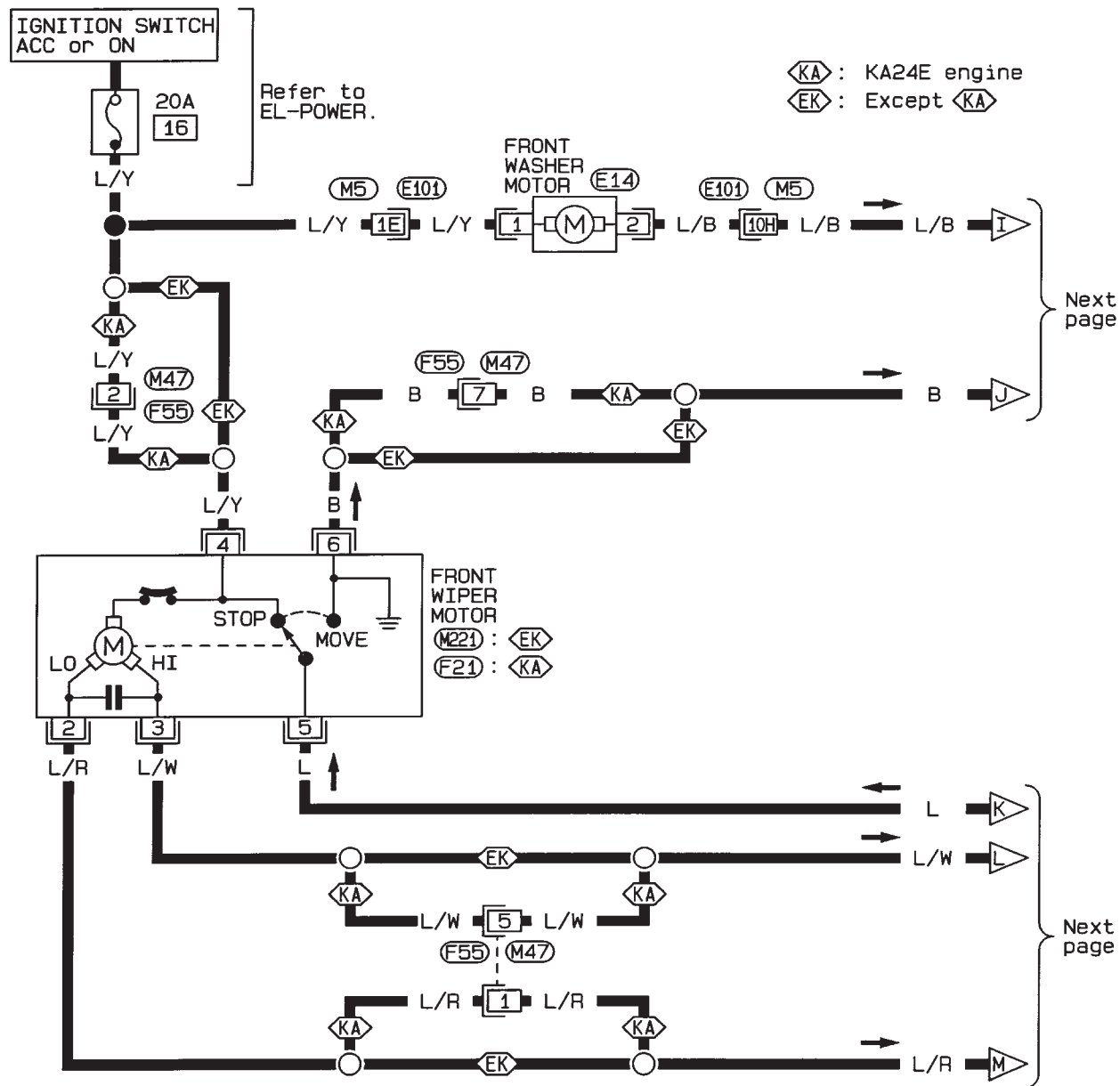
W

WIPER AND WASHER

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

RHD MODELS — WITHOUT INTERMITTENT WIPER

EL-WIPER-06



3 2 M221, F21
6 5 4 W, W

2 1 E14
GY

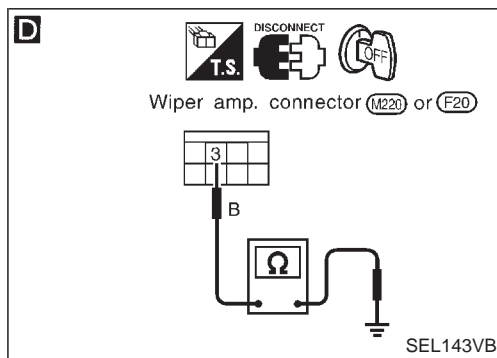
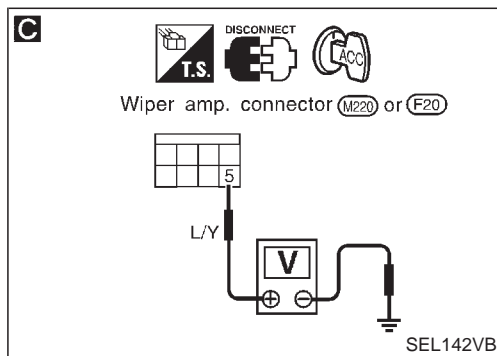
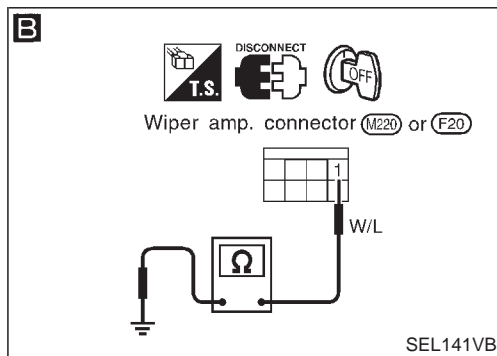
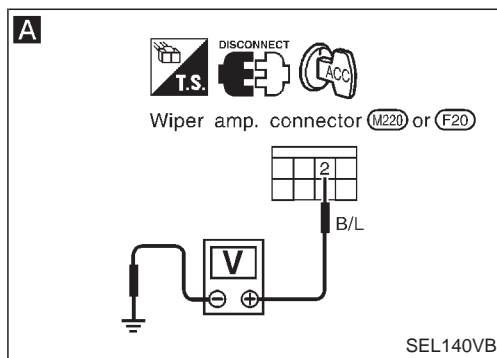
1 2 3 4 F55
5 6 7 8 9 10 W

Refer to last page
(Foldout page).

M5, E101

EL

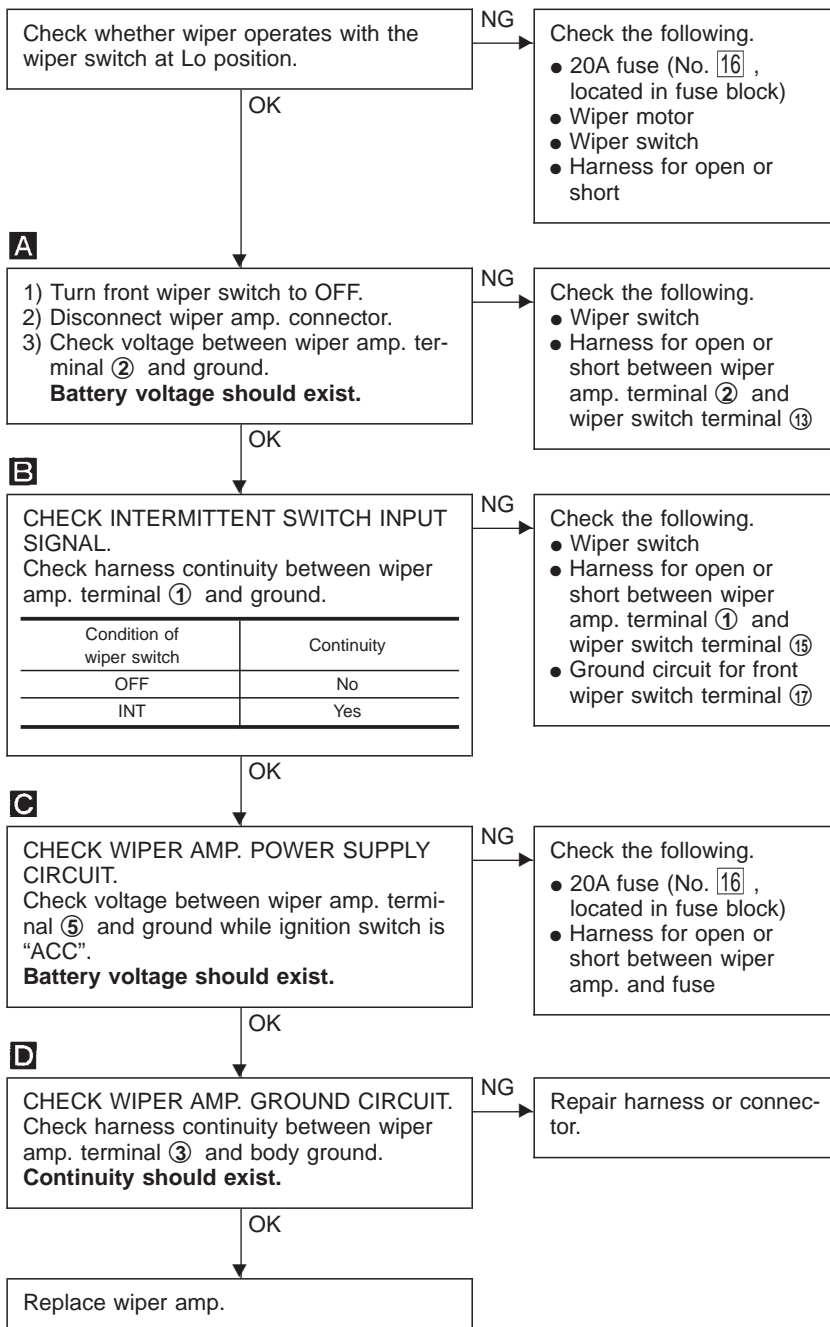
IDX



Trouble Diagnoses

DIAGNOSTIC PROCEDURE 1

SYMPTOM: Intermittent wiper does not operate.

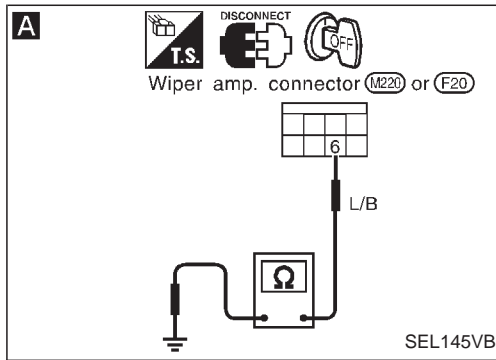


WIPER AND WASHER

Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 2

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



A

CHECK WASHER SWITCH INPUT SIGNAL.

- 1) Turn ignition switch to "OFF".
- 2) Disconnect wiper amp. connector.
- 3) Check harness continuity between wiper amp. terminal ⑥ and ground.

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

OK

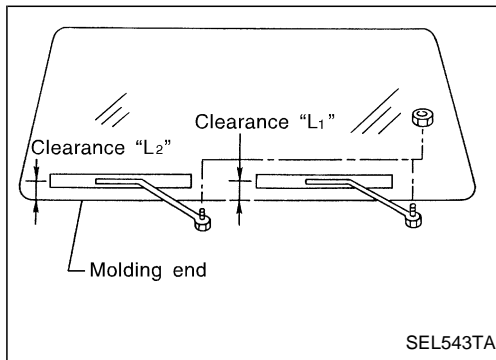
Go to DIAGNOSTIC PROCEDURE 1.

NG

Check harness for open or short between wiper amp. terminal ⑥ and wiper switch terminal ⑱.

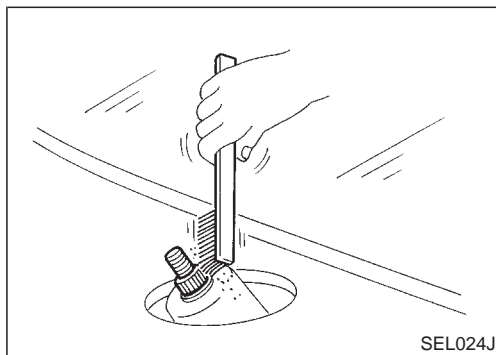
NG

Replace wiper amp.

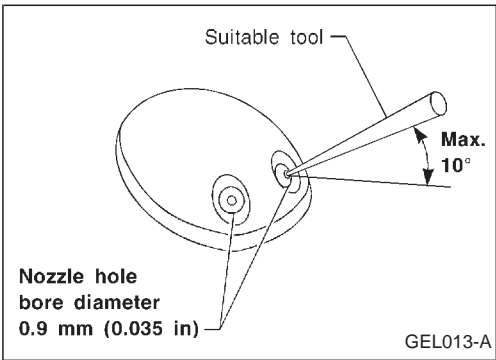


Wiper Installation and Adjustment

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 to set the blade center to clearance "L₁" & "L₂" 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 "L₁" & "L₂".
 - Clearance "L₁": 20 - 30 mm (0.79 - 1.18 in)**
 - Clearance "L₂": 20 - 30 mm (0.79 - 1.18 in)**
- Tighten wiper arm nuts to specified torque.
 - Front wiper: 12.7 - 17.7 N·m (1.3 - 1.8 kg-m, 9 - 13 ft-lb)**



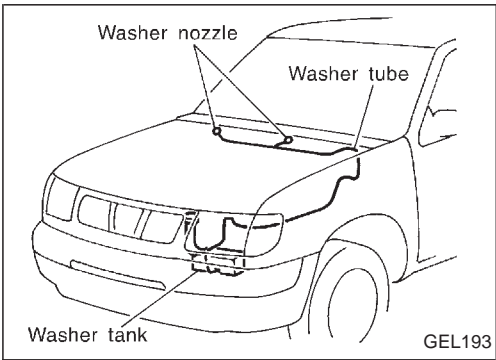
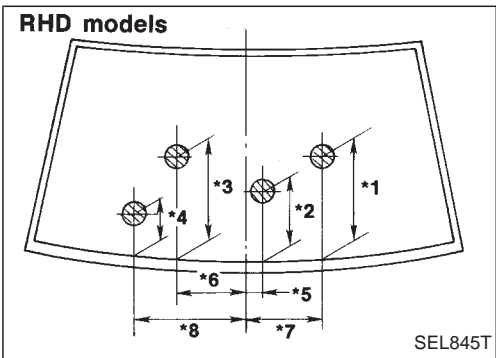
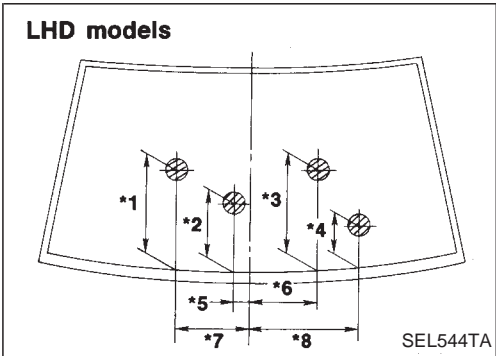
- Before reinstalling wiper arm, clean up the pivot area as illustrated. This will reduce possibility of wiper arm looseness.



Washer Nozzle Adjustment

- Adjust washer nozzle with suitable tool as shown in the figure at left.

Adjustable range: $\pm 10^\circ$



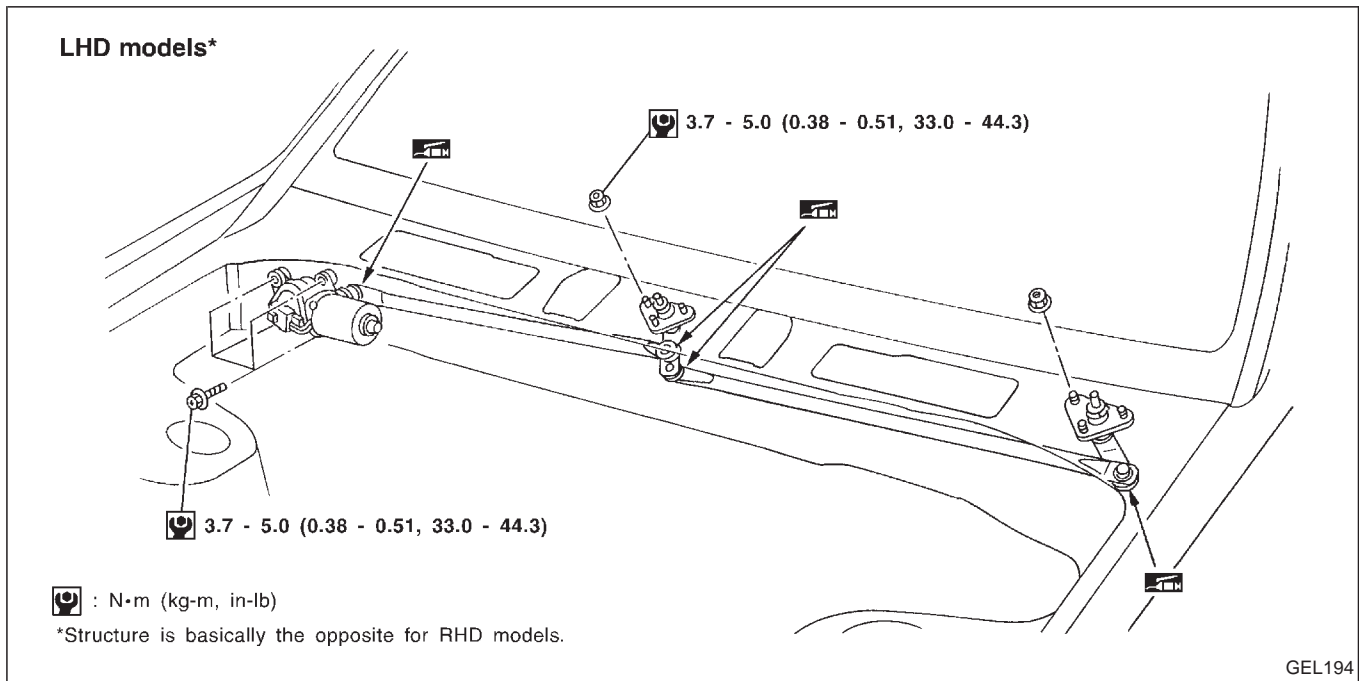
Washer Tube Layout

Unit: mm (in)

| | | | |
|----|-------------|----|-------------|
| *1 | 470 (18.50) | *5 | 60 (2.36) |
| *2 | 215 (8.46) | *6 | 225 (8.86) |
| *3 | 380 (14.96) | *7 | 255 (10.04) |
| *4 | 180 (7.09) | *8 | 460 (18.11) |

*: The diameters of these circles are less than 60 mm (2.36 in).

Wiper Linkage



REMOVAL

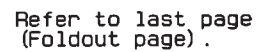
1. Remove 4 bolts that secure wiper motor.
2. Detach wiper motor from wiper linkage at ball joint.
3. Remove wiper linkage.

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-HORN-01



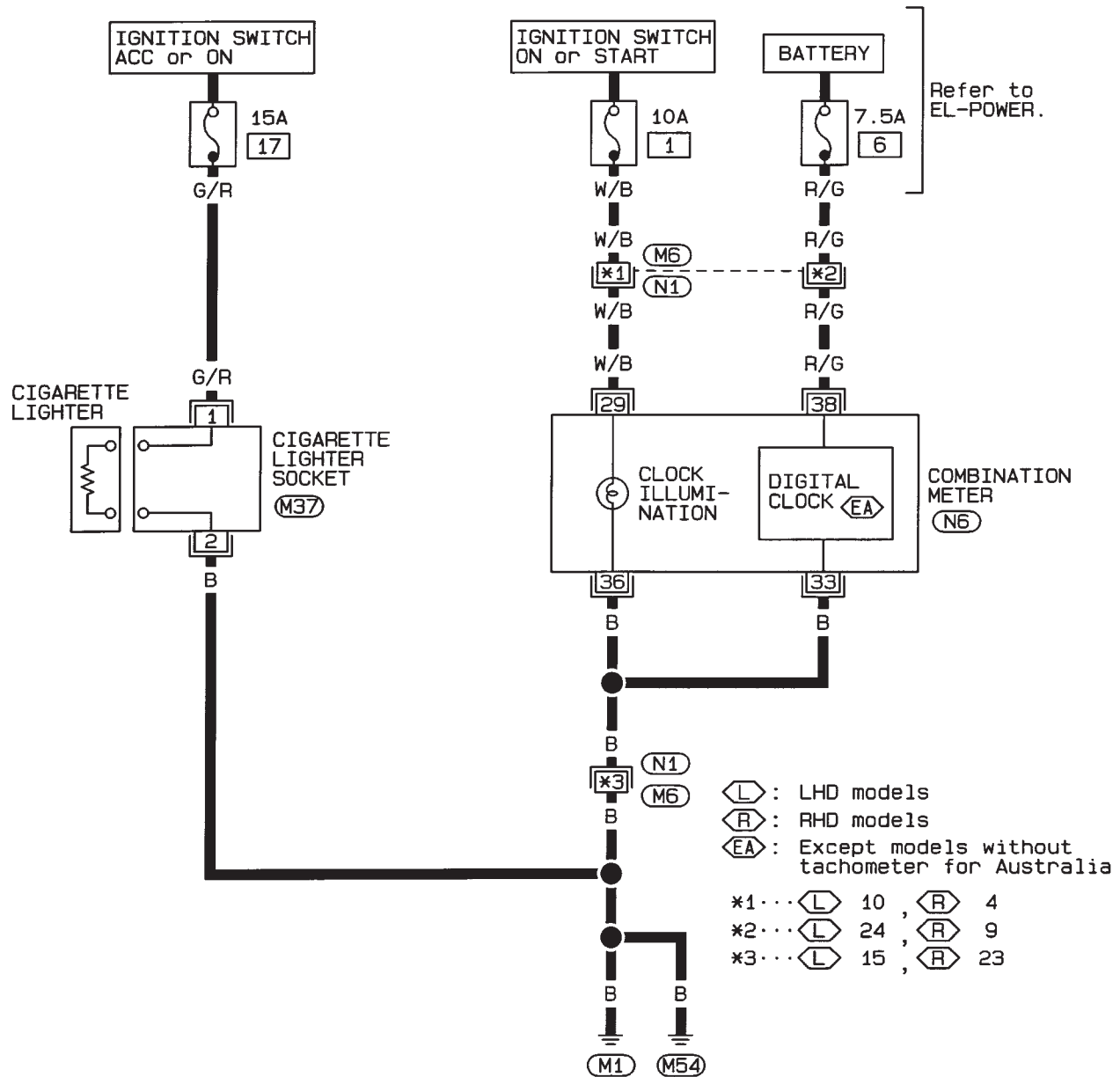
M5, E101

* : This connector is not shown in "HARNESS LAYOUT".

HORN, CIGARETTE LIGHTER AND CLOCK

Wiring Diagram — HORN — (Cont'd)

EL-HORN-02



| | |
|---|-------|
| 1 | (M37) |
| 2 | B |

| | | | | | | | | | | | | | | |
|----|----|----|----|----|---|----|----|----|----|----|----|----|----|------|
| 1 | 2 | 3 | 4 | 5 |  | | | | 6 | 7 | 8 | 9 | 10 | (N1) |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | W |

| | | | | | | | | |
|----|----|----|---|----|----|----|------|---|
| 40 | 39 | 38 |  | 37 | 36 | 35 | (N6) | |
| 34 | 33 | 32 | 31 | 30 | 29 | 28 | 27 | W |

Wiring Diagram — DEF —

GI

MA

EM

LC

EC

FE

CL

MT

TF

PD

FA

RA

BR

ST

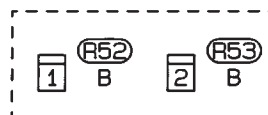
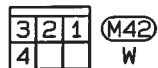
RS

BT

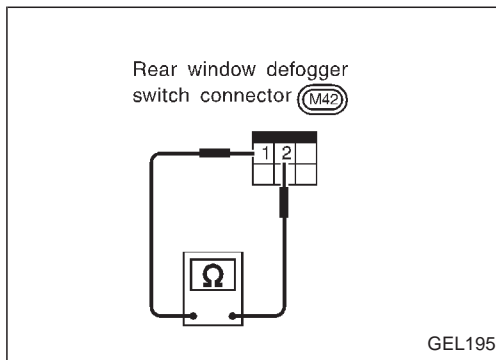
HA

EL

IDX



REAR WINDOW DEFOGGER

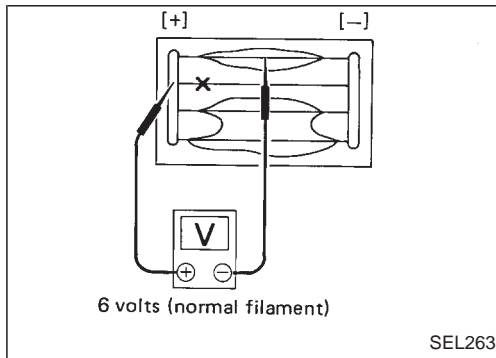


Electrical Components Inspection

REAR WINDOW DEFOGGER SWITCH

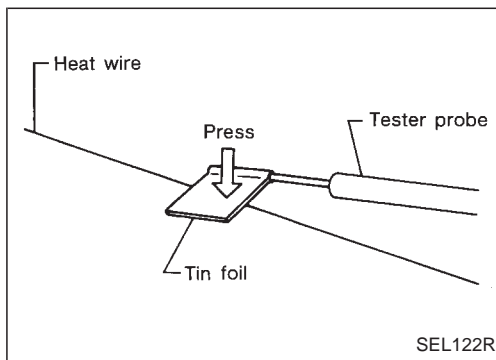
Check continuity between terminals when rear window defogger switch is pushed and released.

| Terminals | Condition | Continuity |
|-----------|---|------------|
| ① - ② | Rear window defogger switch is pushed | Yes |
| | Rear window defogger switch is released | No |

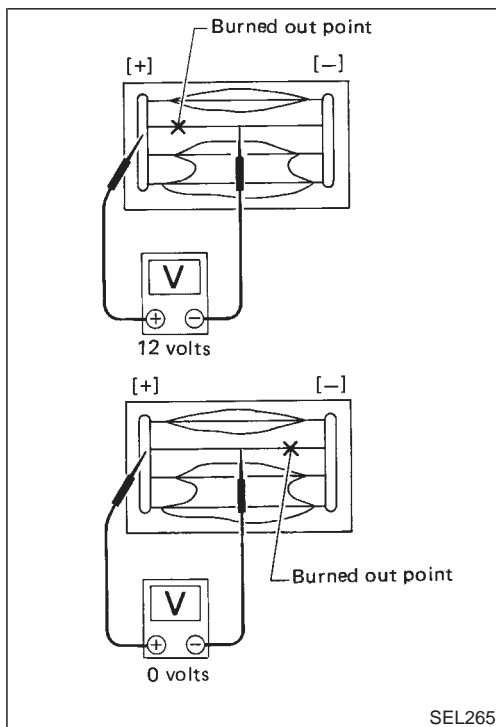


Filament Check

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



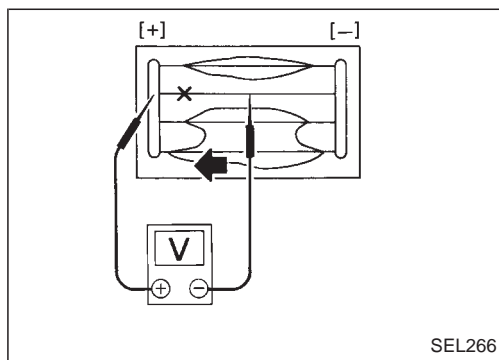
- When measuring voltage, wrap tin foil around the top of the negative probe. Then press the foil against the wire with your finger.



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

REAR WINDOW DEFOGGER

Filament Check (Cont'd)



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

Filament Repair

REPAIR EQUIPMENT

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

REPAIRING PROCEDURE

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

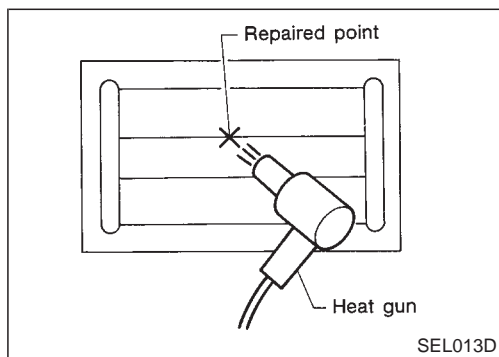
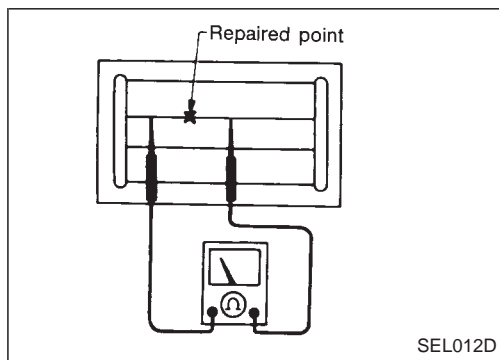
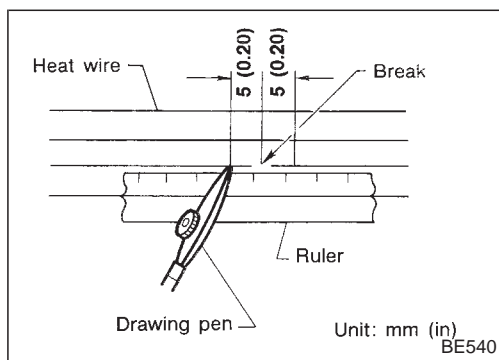
Shake silver composition container before use.

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

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

Do not touch repaired area while test is being conducted.

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

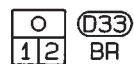
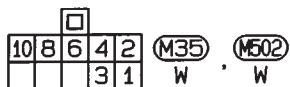
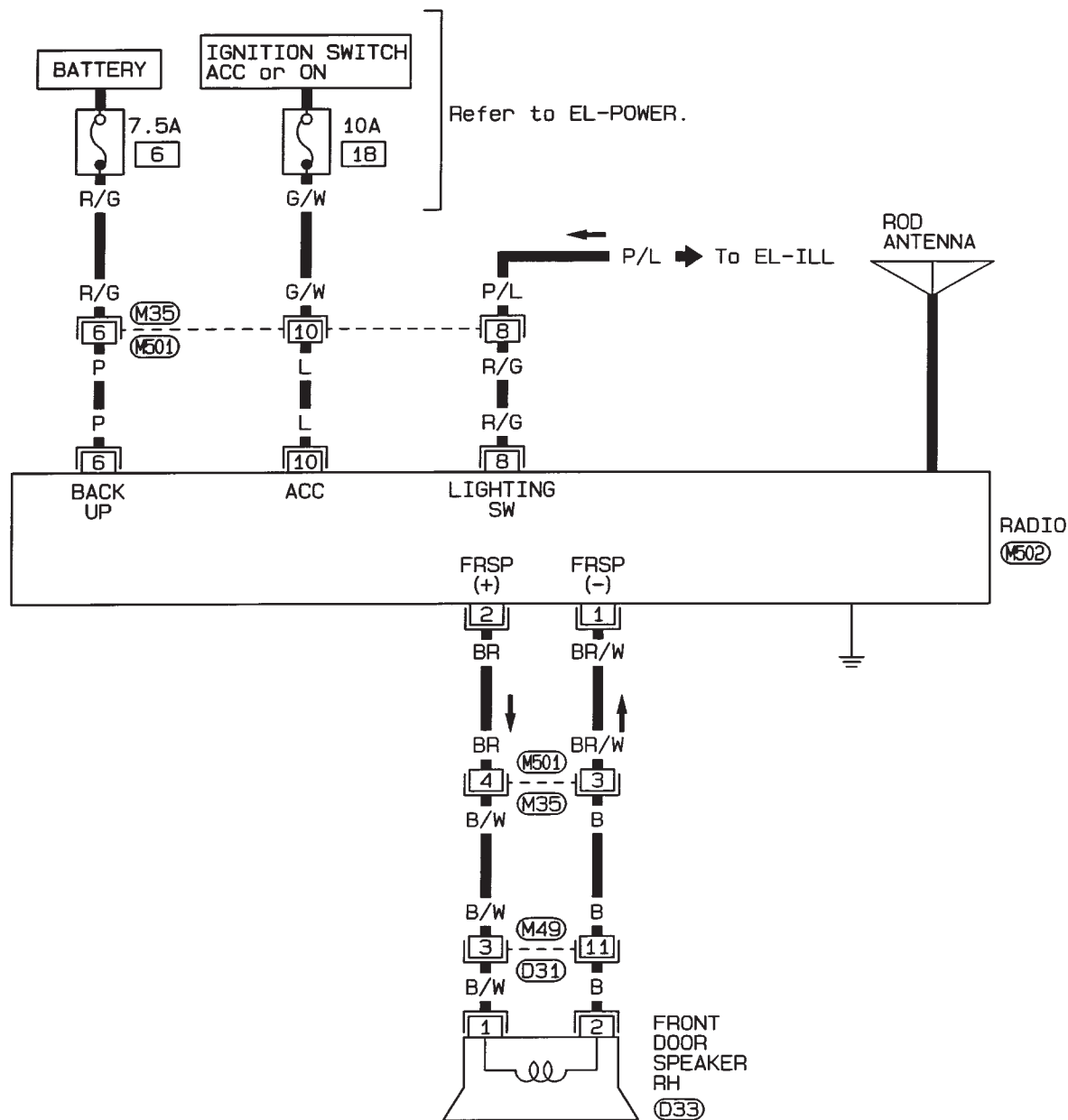


AUDIO

Wiring Diagram — AUDIO —

LHD MODELS — RADIO WITH 1-SPEAKER

EL-AUDIO-01

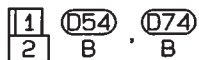
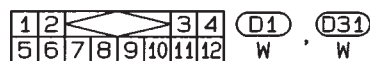
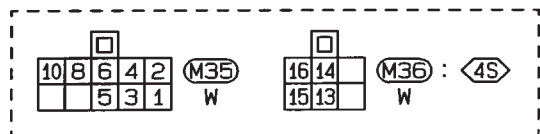
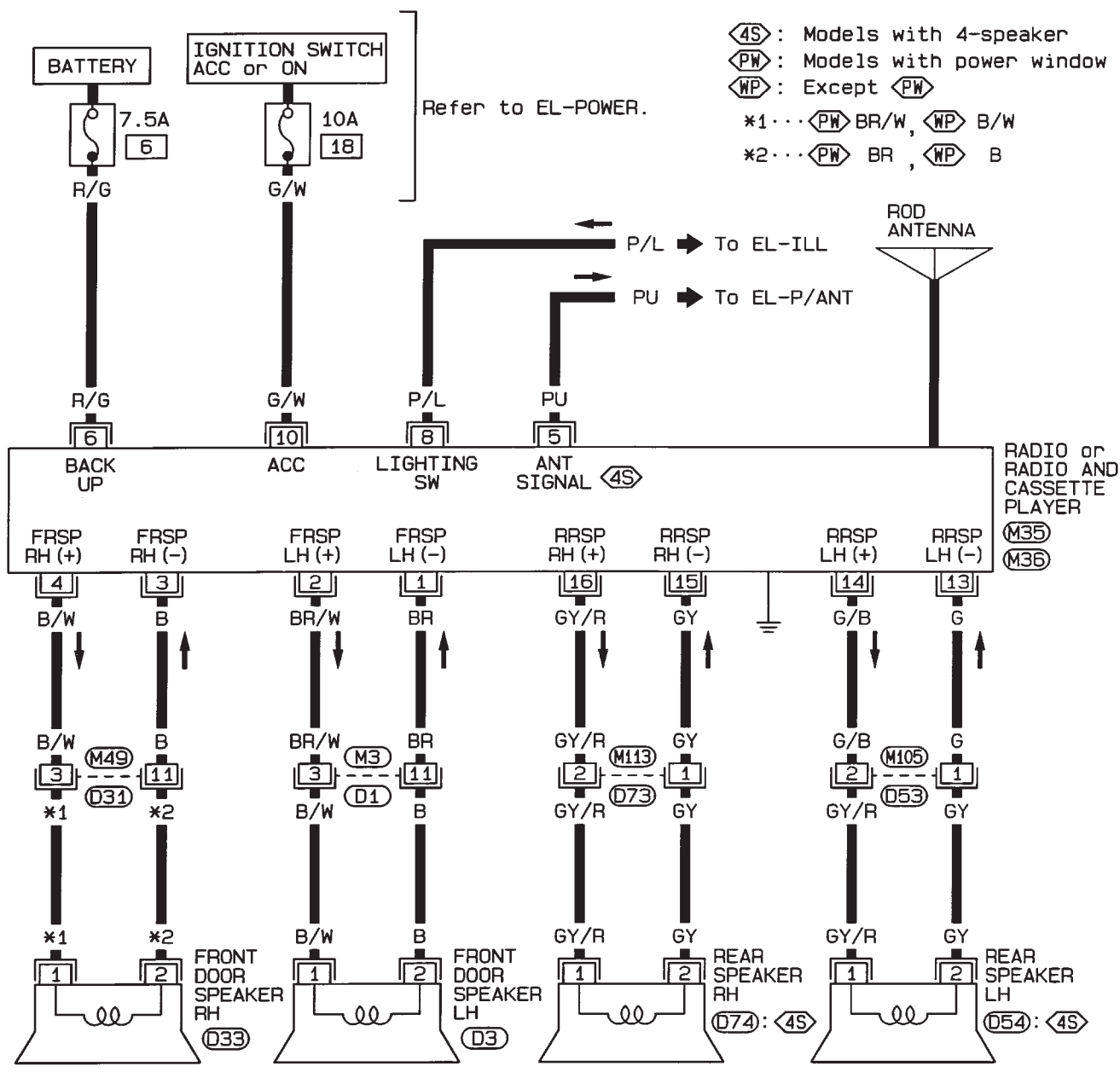


AUDIO

Wiring Diagram — AUDIO — (Cont'd)

LHD MODELS — RADIO WITH 2 OR 4-SPEAKERS (Without CD deck)

EL-AUDIO-02

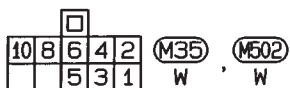
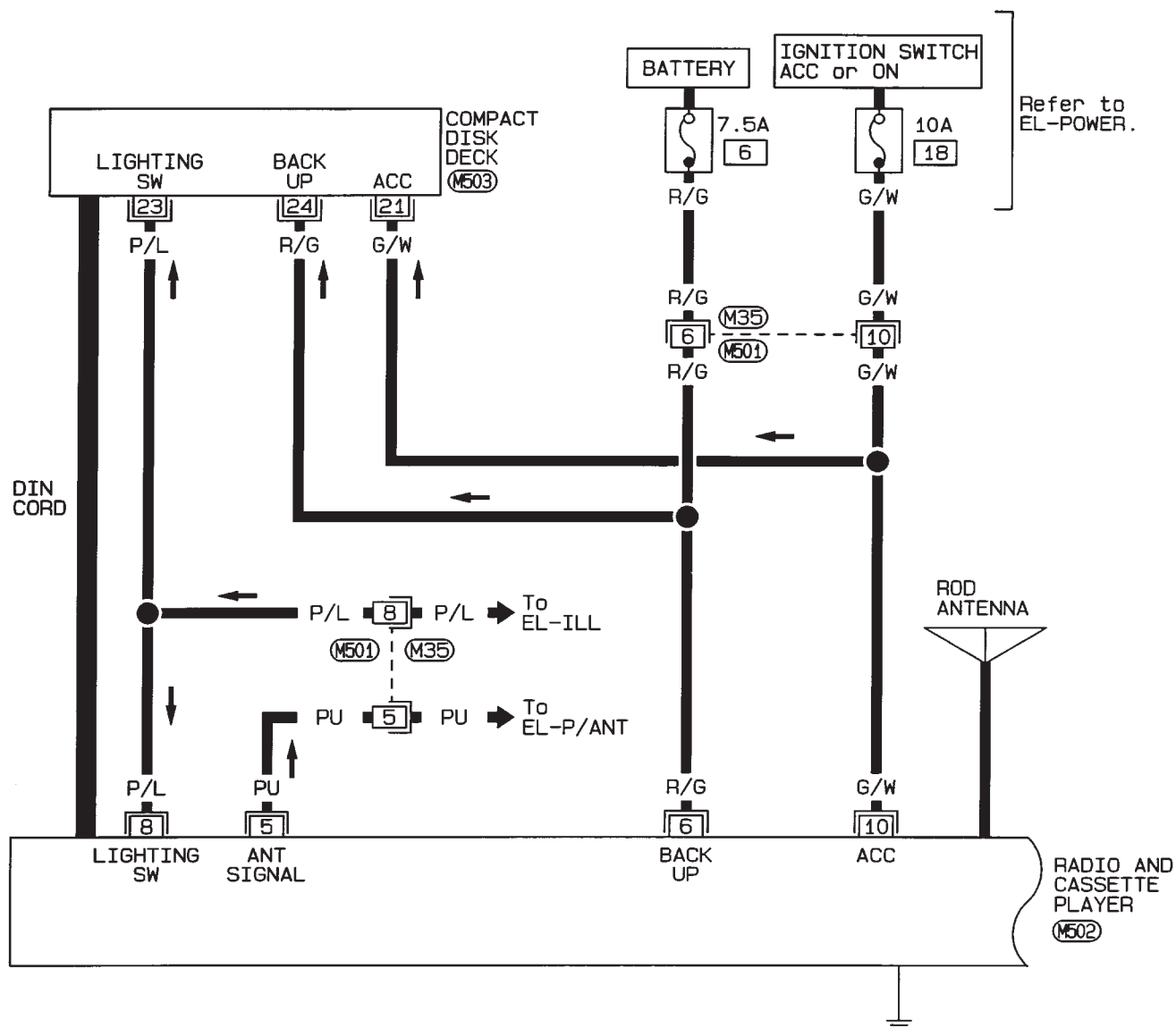


AUDIO

Wiring Diagram — AUDIO — (Cont'd)

LHD MODELS — RADIO WITH 4-SPEAKERS (With CD deck)

EL-AUDIO-03

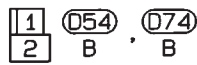
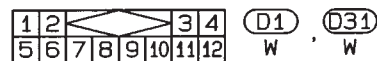
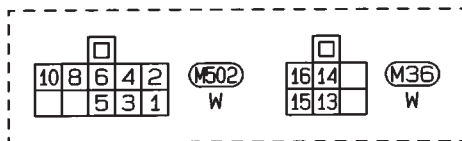
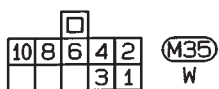
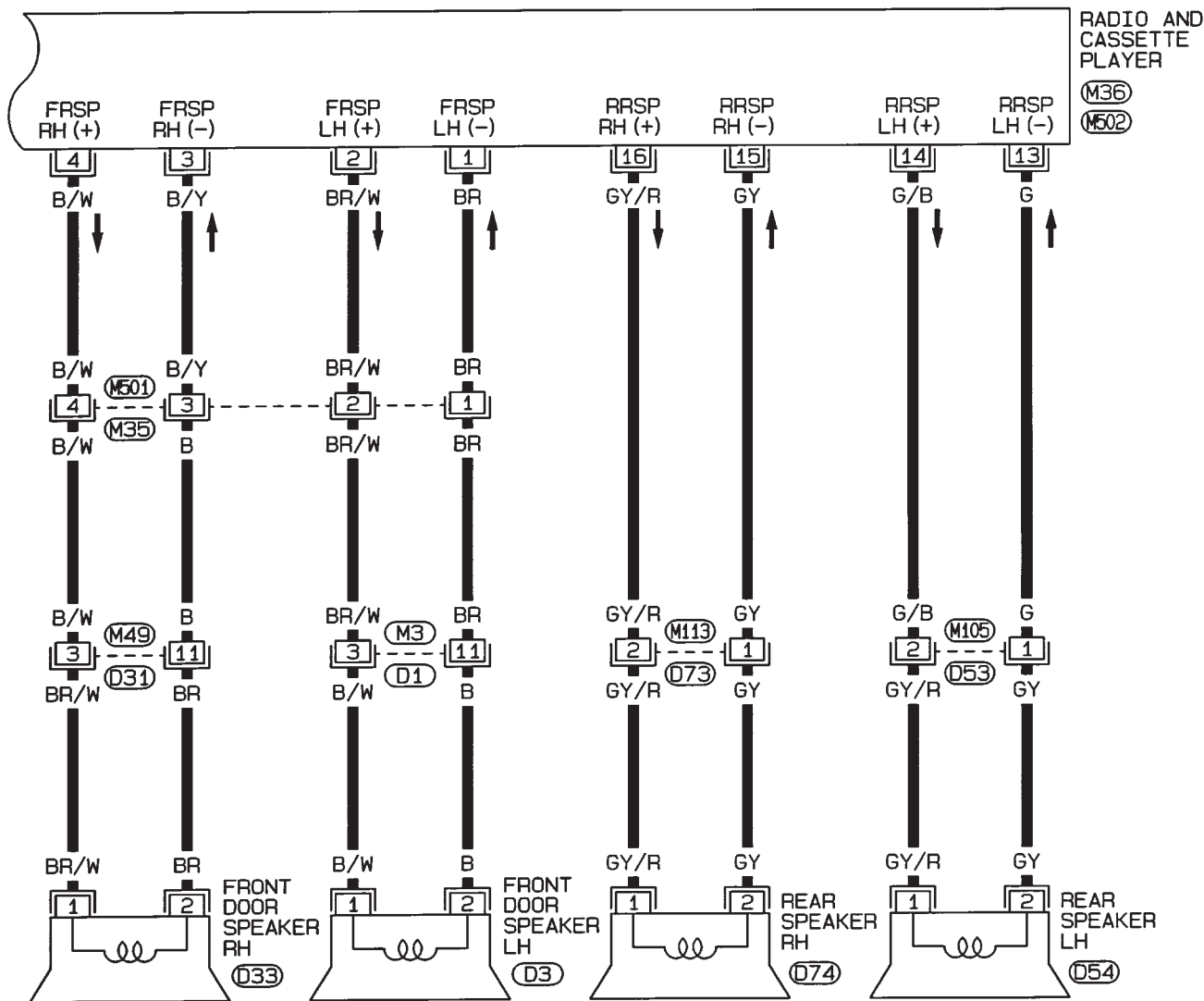


AUDIO

Wiring Diagram — AUDIO — (Cont'd)

LHD MODELS — RADIO WITH 4-SPEAKERS (With CD deck)

EL-AUDIO-04



EL

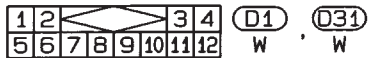
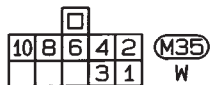
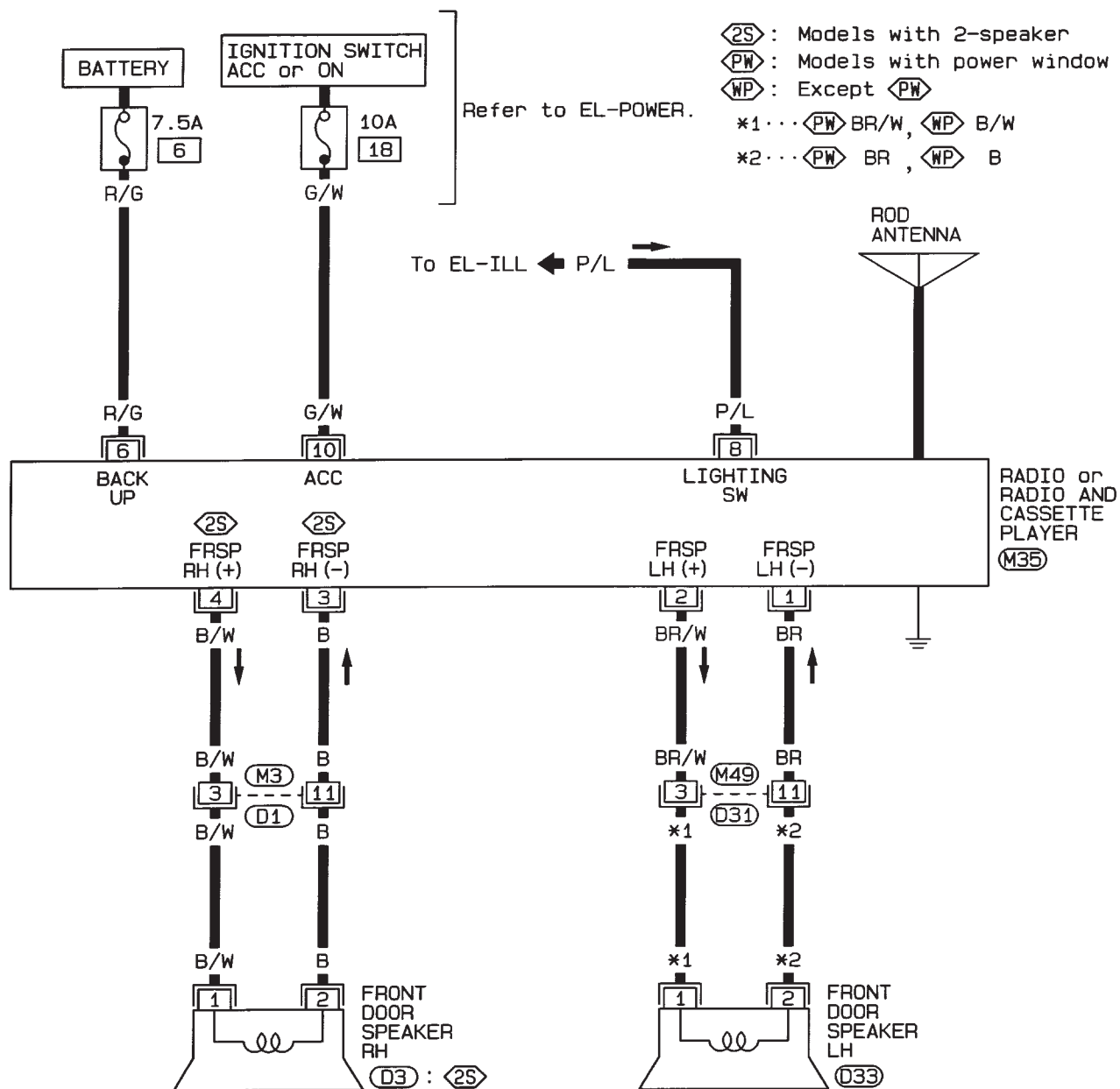
IDX

AUDIO

Wiring Diagram — AUDIO — (Cont'd)

RHD MODELS

EL-AUDIO-05



Trouble Diagnoses

| Symptom | Possible causes | Repair order |
|---|--|---|
| Radio inoperative (no digital display and no sound from speakers). | 1. 10A fuse 2. Poor radio case ground 3. Radio | 1. Check 10A fuse (No. 18, located in fuse block). Turn ignition switch ON and verify battery positive voltage is present at terminal 10 of radio. 2. Check radio case ground. 3. Remove radio for repair. |
| Radio controls are operational, but no sound is heard from any speaker. | 1. Radio output 2. Radio | 1. Check radio output voltages. 2. Remove radio for repair. |
| Radio presets are lost when ignition switch is turned OFF. | 1. 7.5A fuse 2. Radio | 1. Check 7.5A fuse (No. 6, located in fuse block) and verify battery positive voltage is present at terminal 6 of radio. 2. Remove radio for repair. |
| Individual speaker is noisy or inoperative. | 1. Speaker 2. Radio output 3. Speaker circuit 4. Radio | 1. Check speaker. 2. Check radio output voltages. 3. Check wires for open or short between radio and speaker. 4. Remove radio for repair. |
| Radio stations are weak or noisy. | 1. Antenna 2. Poor radio ground 3. Radio | 1. Check antenna. 2. Check radio ground. 3. Remove radio for repair. |
| Radio generates static noise with engine running. | 1. Poor radio ground 2. Loose or missing ground bonding straps 3. Ignition condenser or rear window defogger noise suppressor condenser 4. Alternator 5. Ignition coil or secondary wiring 6. Radio | 1. Check radio ground. 2. Check ground bonding straps. 3. Replace ignition condenser or rear window defogger noise suppressor condenser. 4. Check alternator. 5. Check ignition coil and secondary wiring. 6. Remove radio for repair. |
| Radio generates static noise with accessories on (switch pops and motor noise). | 1. Poor radio ground 2. Antenna 3. Accessory ground 4. Faulty accessory | 1. Check radio ground. 2. Check antenna. 3. Check accessory ground. 4. Replace accessory. |

SPEAKER INSPECTION

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

ANTENNA INSPECTION

Using a jumper wire, clip an auxiliary ground between antenna and body.

- If reception improves, check antenna ground (at body surface).
- If reception does not improve, check main feeder cable for short circuit or open circuit.

RADIO INSPECTION

All voltage inspections are made with:

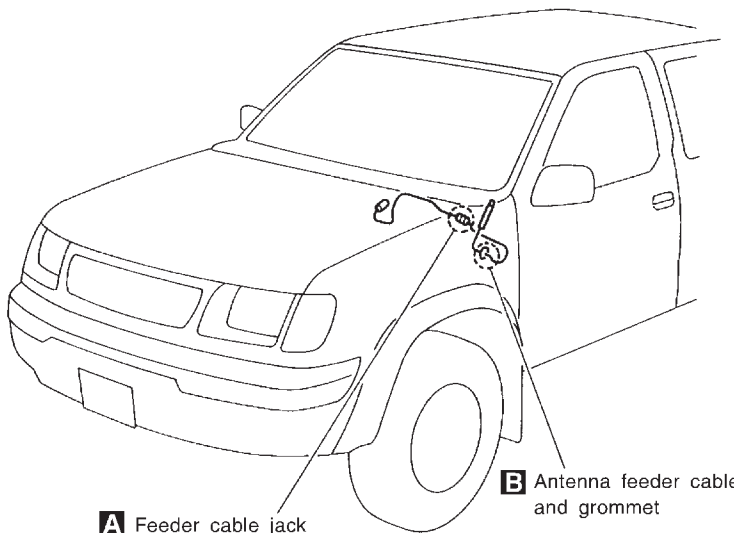
- Ignition switch ON or ACC
- Radio ON
- Radio connected (If removed for inspection, supply a ground to the case using a jumper wire.)

AUDIO ANTENNA

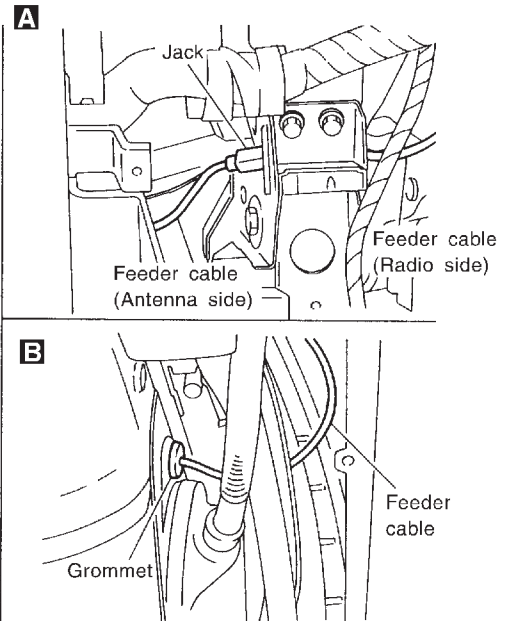
Manual Antenna

LOCATION OF ANTENNA

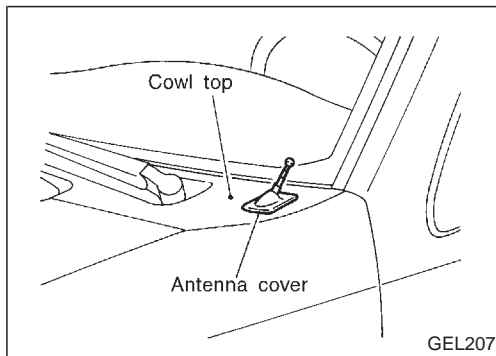
LHD models*



* Structure is basically the opposite of the structure for RHD models.



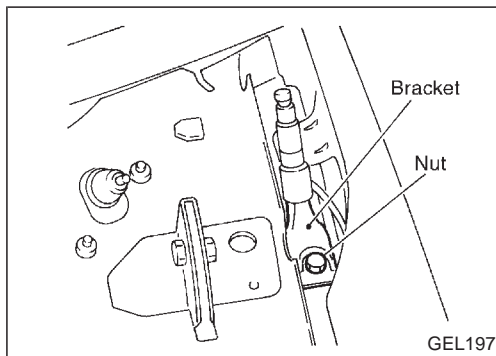
GEL196



GEL207

ANTENNA ASSEMBLY REPLACEMENT

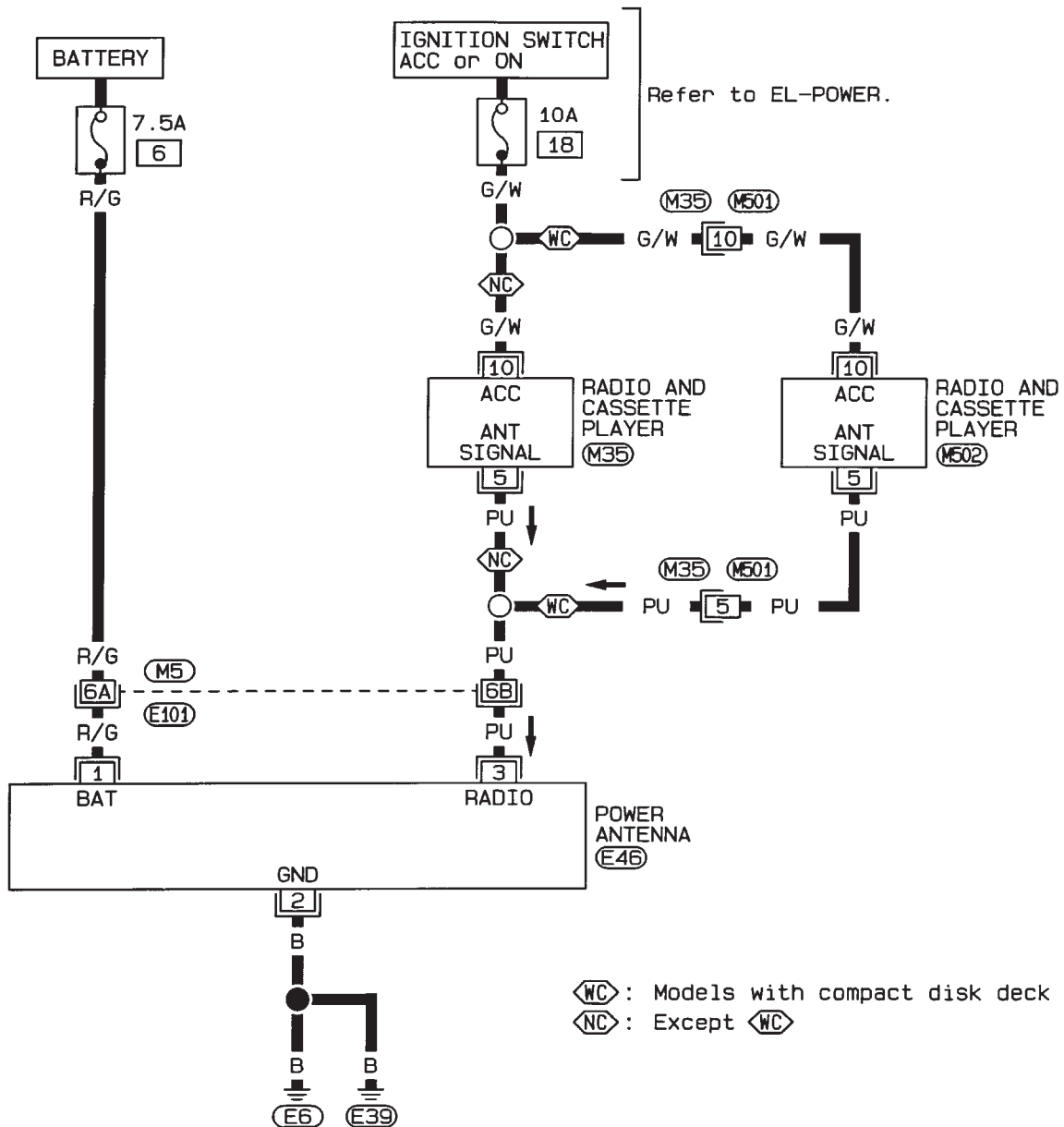
1. Remove antenna cover in cowl top.
2. Remove wiper arm and cowl top.
3. Loosen nut at antenna bracket.
4. Disconnect antenna feeder cable jack shown in the above illustration.
5. Remove fender protector.
6. Remove the grommet and pull the feeder cable out from fender inner.
7. Remove antenna assembly and replace with a new one.



GEL197

Power Antenna/Wiring Diagram — P/ANT —

EL-P/ANT-01



| | | | | | | |
|----|---|---|---|---|-----|------|
| 10 | 8 | 6 | 4 | 2 | M35 | M502 |
| | | 5 | 3 | 1 | W | W |

| | | | |
|---|---|---|-----|
| 3 | 2 | 1 | E46 |
| | | | GY |

Refer to last page
 (Foldout page).

M5 , E101

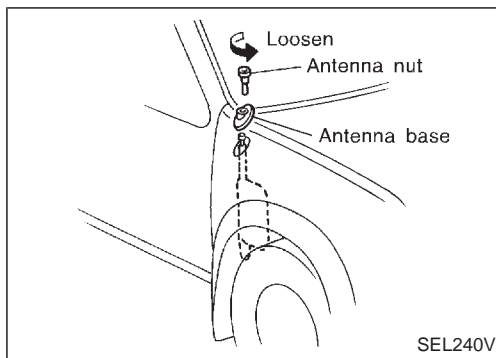
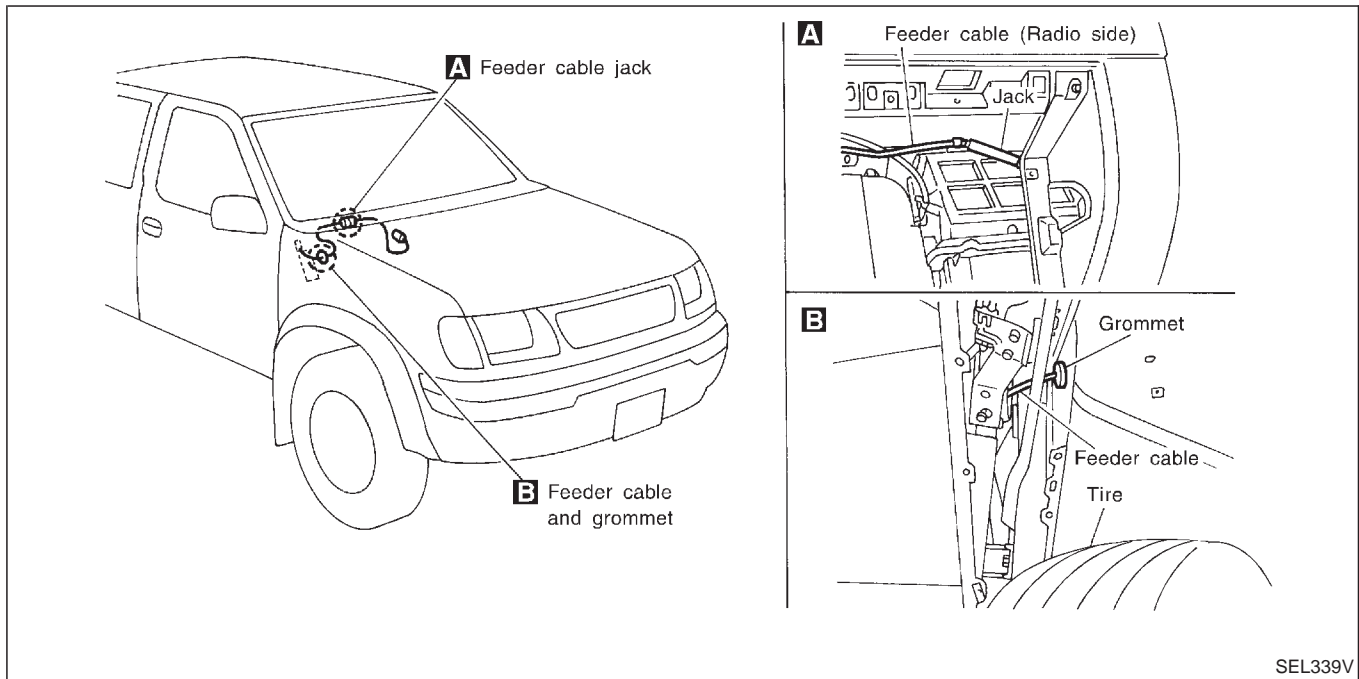
AUDIO ANTENNA

Power Antenna

TROUBLE DIAGNOSES

| Symptom | Possible causes | Repair order |
|---------------------------------|--|---|
| Power antenna does not operate. | 1. 7.5A fuse 2. Radio signal 3. Grounds (E6) and (E39) | 1. Check 7.5A fuse (No. 6, located in fuse block). Verify that battery positive voltage is present at terminal ① of power antenna. 2. Turn ignition switch and radio ON. Verify that battery positive voltage is present at terminal ③ of power antenna. 3. Check grounds (E6) and (E39). |

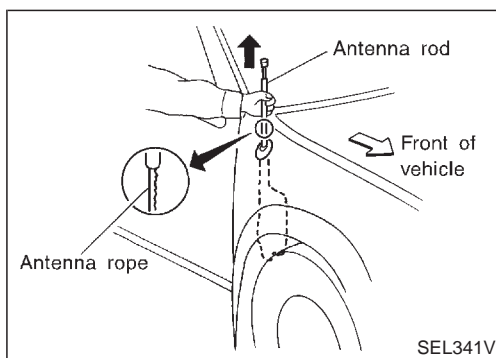
LOCATION OF ANTENNA



ANTENNA ROD REPLACEMENT

Removal

1. Remove antenna nut and antenna base.



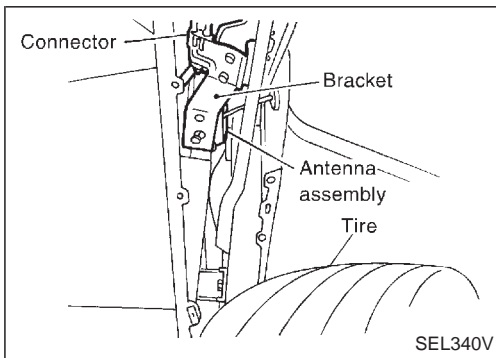
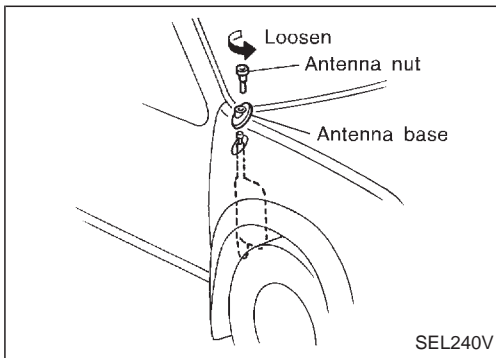
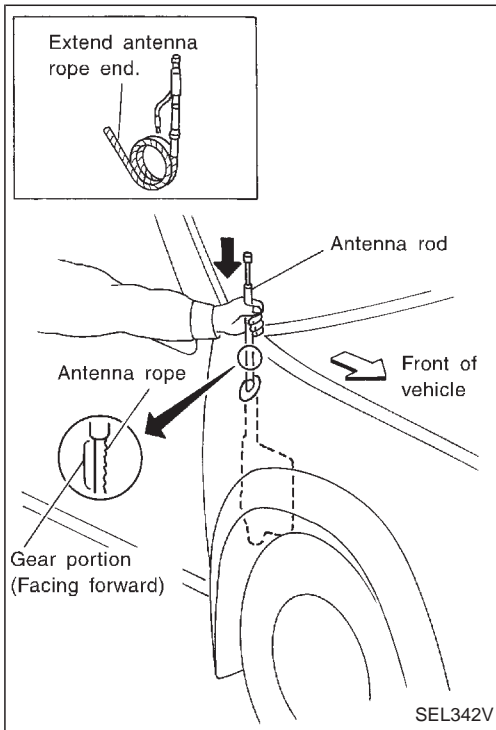
2. Withdraw antenna rod while raising it by operating antenna motor.

AUDIO ANTENNA

Power Antenna (Cont'd)

Installation

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



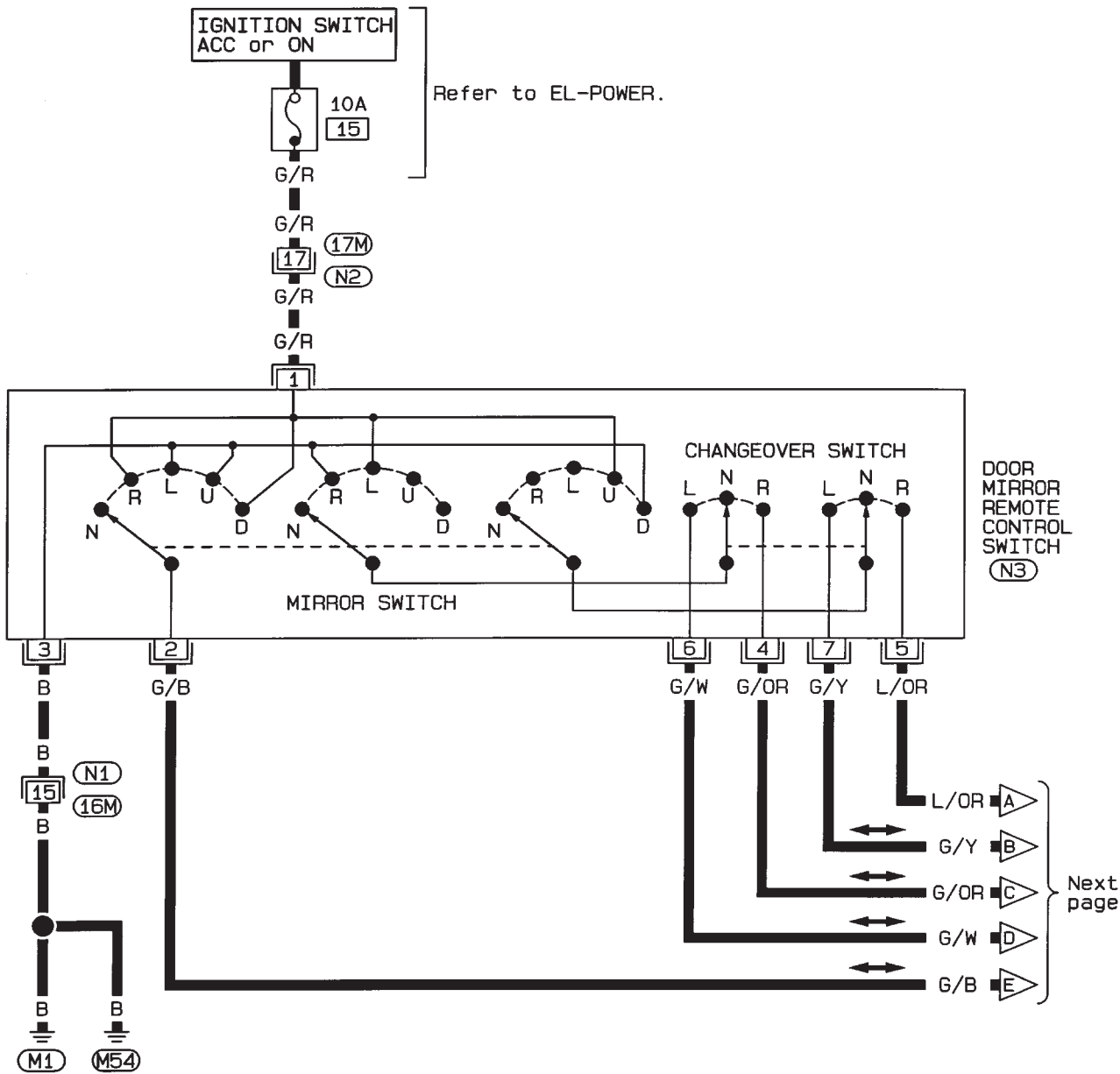
ANTENNA ASSEMBLY REPLACEMENT

1. Remove antenna nut and antenna base.
2. Loosen bolts at antenna bracket and disconnect power antenna connector.
3. Disconnect antenna feeder cable jack shown in "LOCATION OF ANTENNA".
4. Remove fender protector.
5. Remove the grommet and pull the feeder cable out from fender inner.
6. Remove antenna assembly and replace with a new one.

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Wiring Diagram — MIRROR —

EL-MIRROR-01



| | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | N1 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | W |

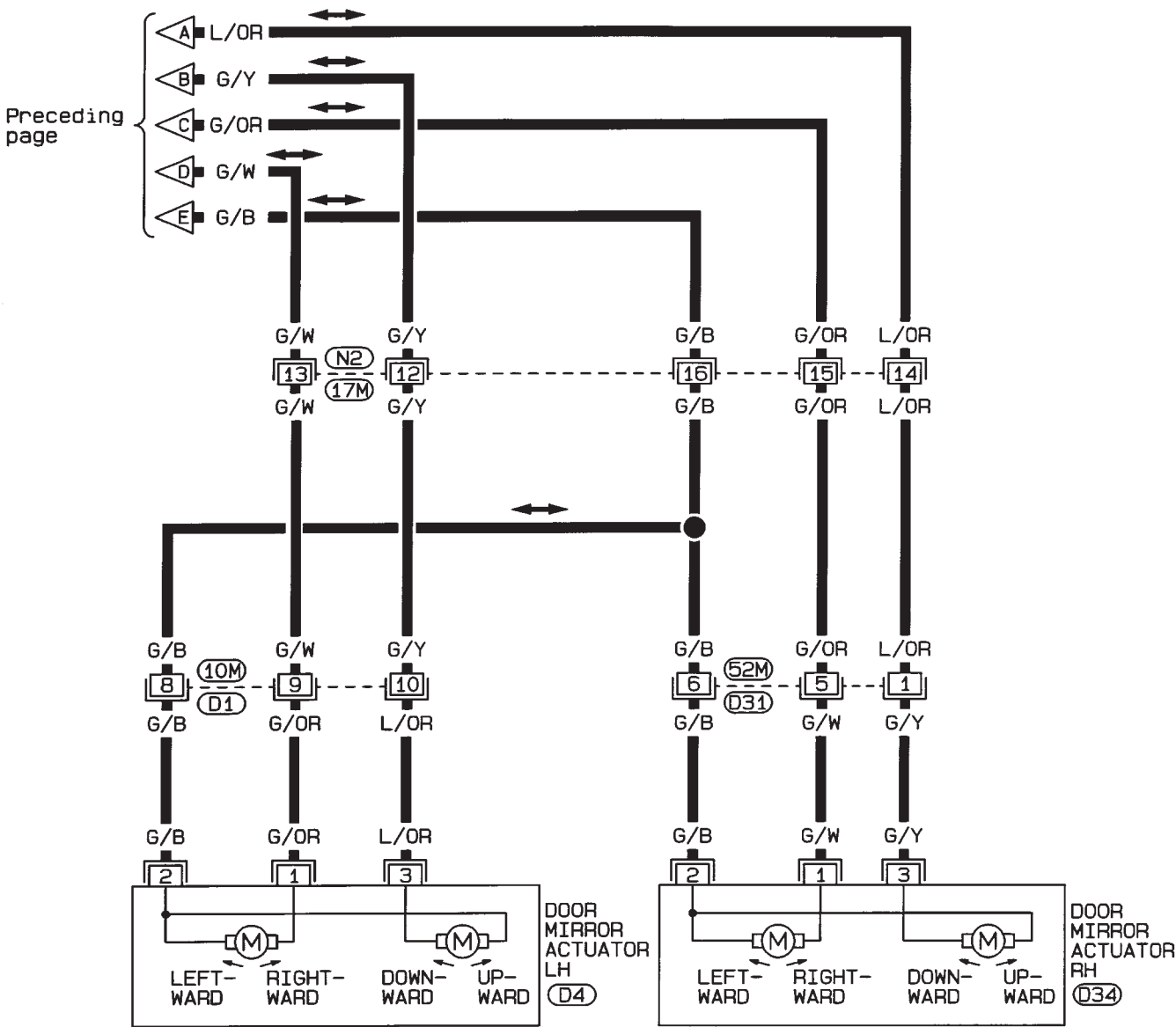
| | | | | | | | | |
|---|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | N2 |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | W |

| | | | | |
|---|---|---|---|----|
| 2 | 3 | 4 | 1 | N3 |
| 5 | 7 | 4 | 6 | GY |

POWER DOOR MIRROR

Wiring Diagram — MIRROR — (Cont'd)

EL-MIRROR-02



| | | | | | | | | |
|---|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | N2 |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | W |

| | | | | | |
|---|---|---|---|----|-----|
| 1 | 2 | 3 | 4 | D1 | 031 |
| 5 | 6 | 7 | 8 | W | W |

| | | | | |
|---|---|---|----|-----|
| 1 | 2 | 3 | D4 | 034 |
| | | | GY | GY |

System Description

Power is supplied at all times

- from 30A fusible link (Letter **b**, 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 10A fuse (No. **14** , located in the fuse block)
- to power window relay terminal ② .

Ground is supplied to power window relay terminal ①

- through body grounds **(M1)** and **(M54)** .

The power window relay is energized and power is supplied

- through power window relay terminal ⑤
- to power window main switch terminal ① ,
- to power window sub-switch terminal ⑤ .

MANUAL OPERATION

Driver side door

Ground is supplied

- to power window main switch terminal ③
- through body grounds **(M1)** and **(M54)** .

WINDOW UP

When the 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 the 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.

Front passenger side door

Ground is supplied

- to power window main switch terminal ③
- through body grounds **(M1)** and **(M54)** .

NOTE:

Numbers in parentheses are terminal numbers, when power window switch is pressed in the up and down positions respectively.

MAIN SWITCH OPERATION

Power is supplied

- through power window main switch (⑤ , ⑥)
- to front power window sub-switch (④ , ③) .

The subsequent operation is the same as the sub-switch operation.

POWER WINDOW

System Description (Cont'd)

SUB-SWITCH OPERATION

Power is supplied

- through front power window sub-switch (② , ①)
- to front passenger side power window regulator (② , ①).

Ground is supplied

- to front passenger side power window regulator (① , ②)
- through front power window sub-switch (① , ②)
- to front 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

Rear door windows will raise and lower in the same manner as front passenger side door window.

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.

POWER WINDOW LOCK

The power window lock is designed to lock operation of all windows except for driver's door window.

When the lock switch is pressed to lock position, ground of the sub-switches in the power window main switch is disconnected. This prevents the power window motors from operating.

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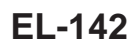
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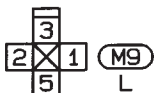
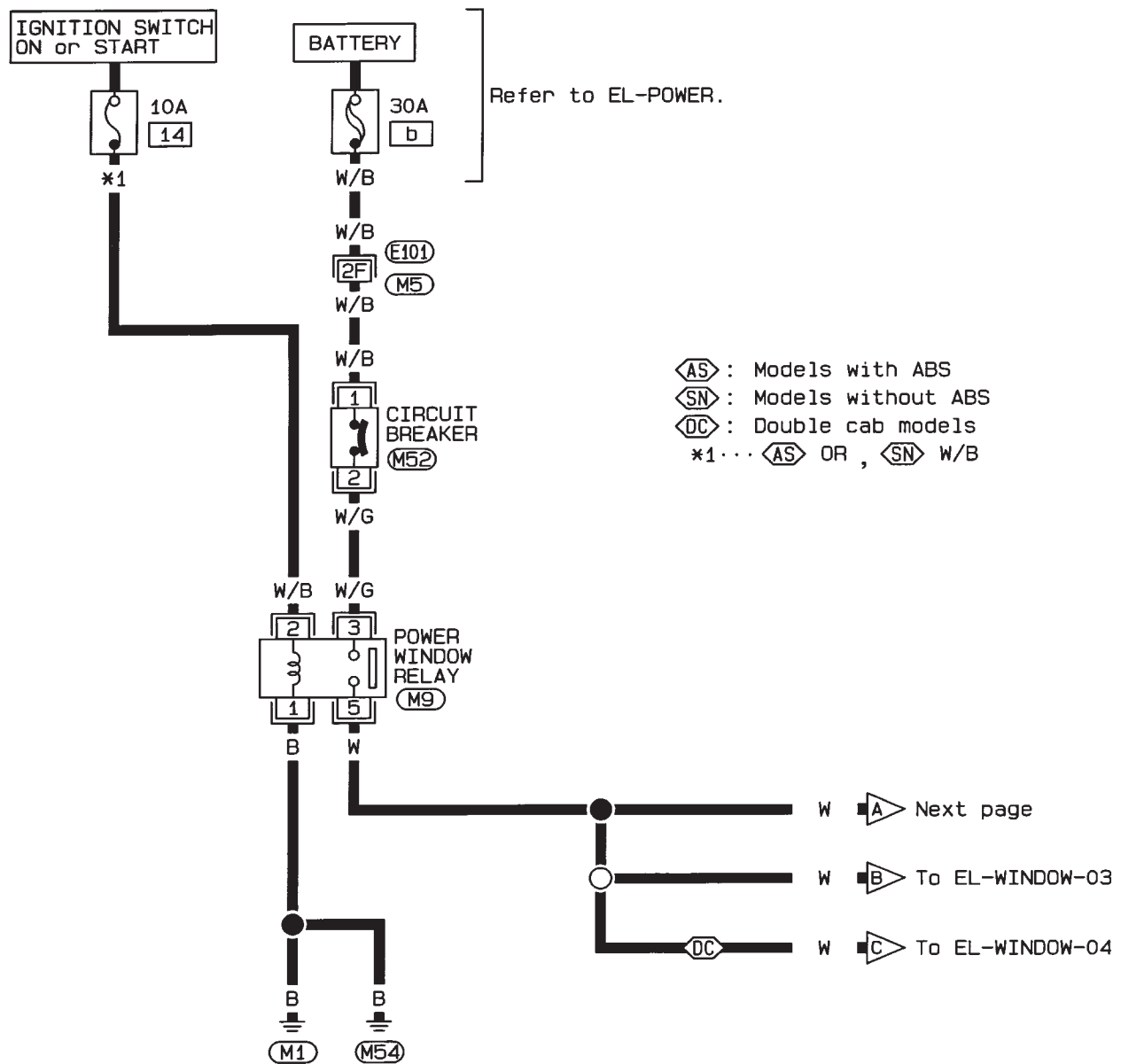
Ⓒ : Double cab models



Wiring Diagram — WINDOW —

LHD MODELS

EL-WINDOW-01

Refer to last page
(Foldout page).

M5 , E101

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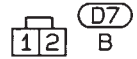
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Wiring Diagram — WINDOW — (Cont'd)

EL-WINDOW-02

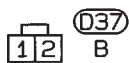
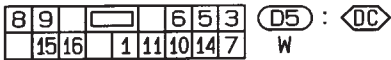
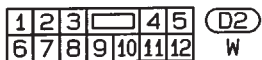
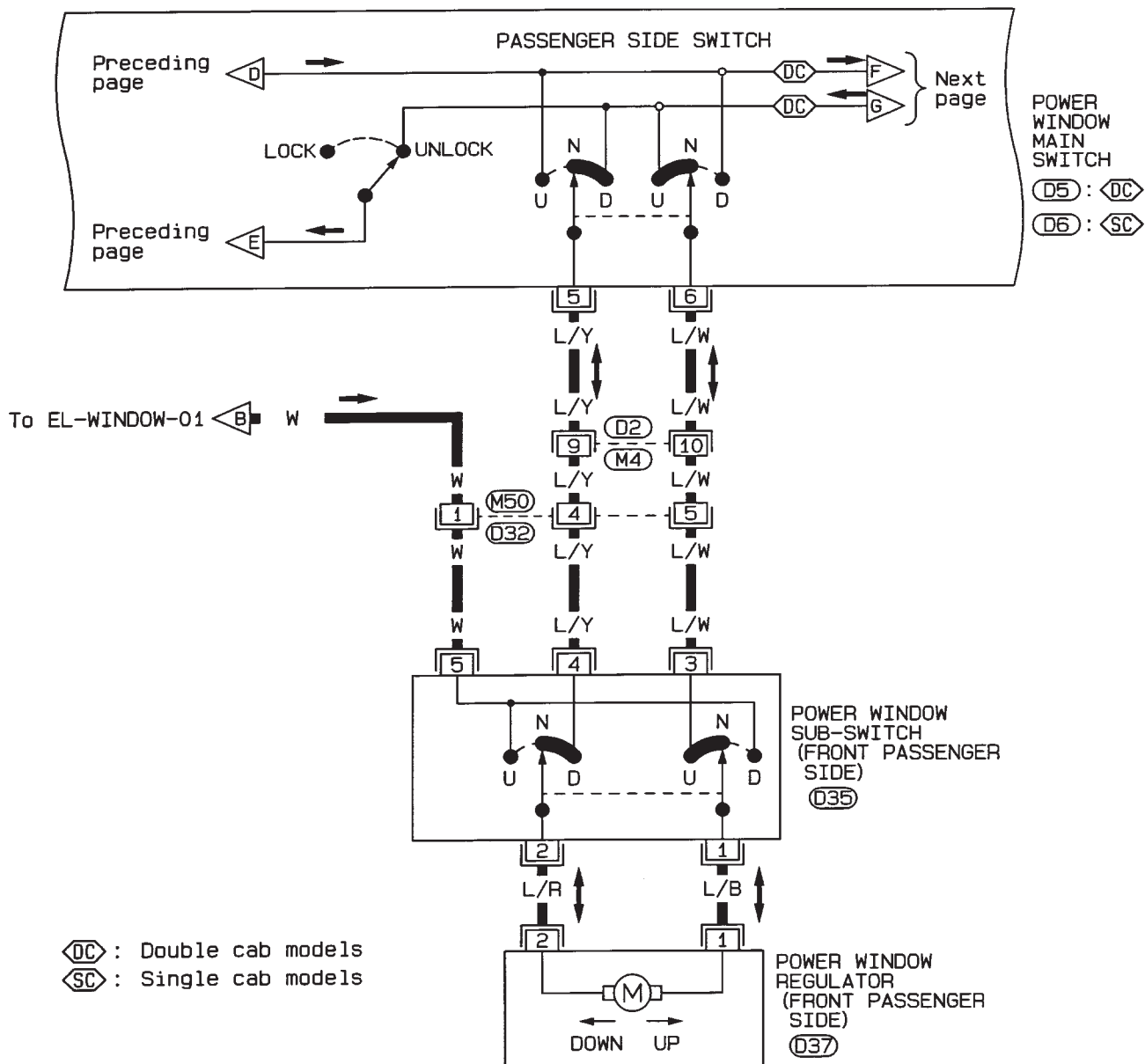


POWER WINDOW

Wiring Diagram — WINDOW — (Cont'd)

LHD MODELS

EL-WINDOW-03

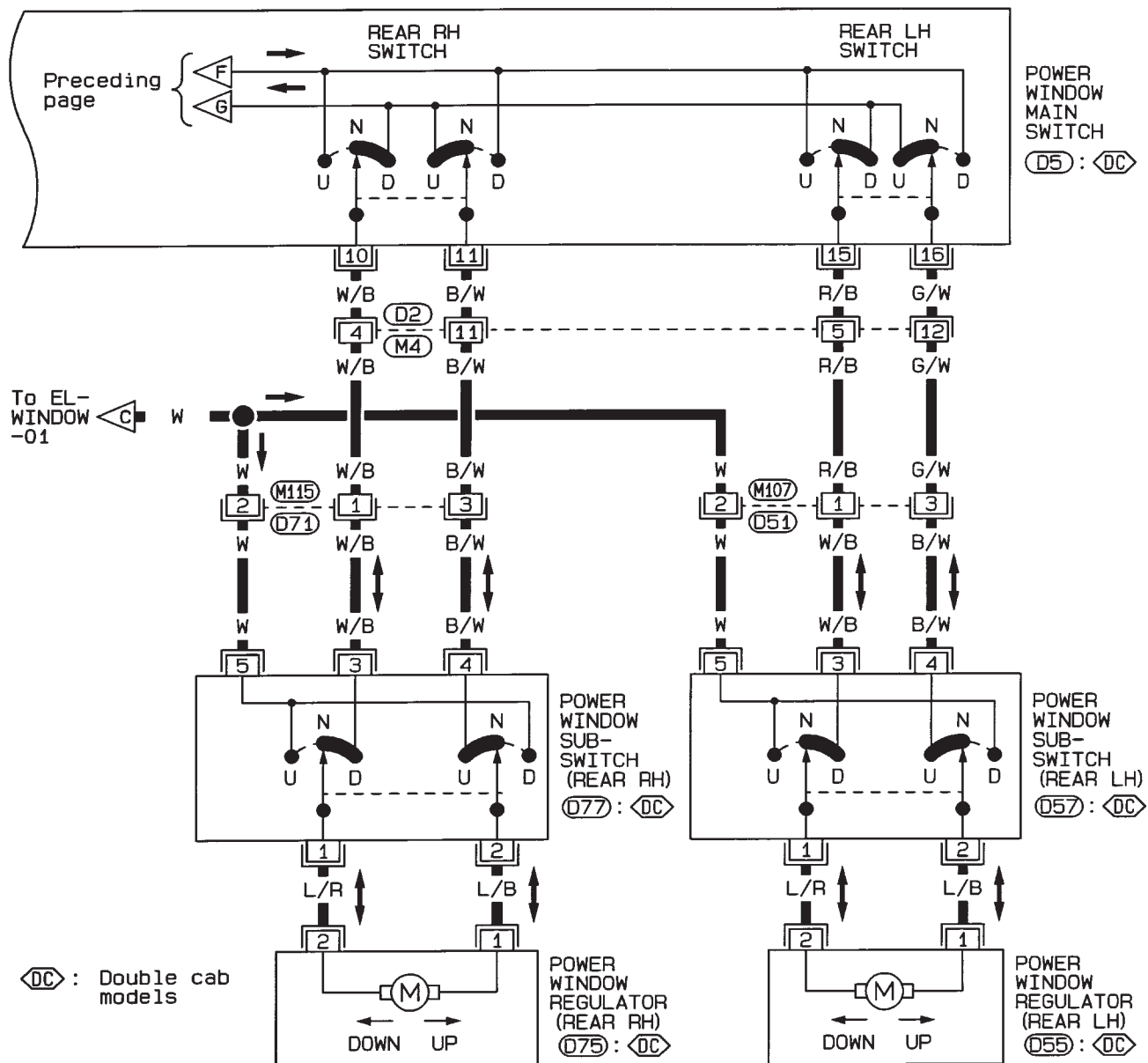


POWER WINDOW

Wiring Diagram — WINDOW — (Cont'd)

LHD MODELS

EL-WINDOW-04



| | | | | | | |
|---|---|---|---|----|----|----|
| 1 | 2 | 3 | | 4 | 5 | |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |

D2

W

| | | | | | | | | |
|---|----|----|--|---|----|----|----|------|
| 8 | 9 | | | | 6 | 5 | 3 | (D5) |
| | 15 | 16 | | 1 | 11 | 10 | 14 | 7 |

W

| | | | |
|---|---|---|--------------|
| 1 | 2 | 3 | (D51), (D71) |
| 4 | 5 | 6 | W |

| | | |
|---|---|--------------|
| 1 | 2 | (D55), (D75) |
| 3 | 4 | B |

| | | | | |
|---|---|---|---|---|
| | | | 6 | |
| 4 | 1 | 3 | 2 | 5 |

(D57), (D77)
W W

Wiring Diagram — WINDOW — (Cont'd)

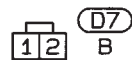
EL-WINDOW-05



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Wiring Diagram — WINDOW — (Cont'd)

EL-WINDOW-06

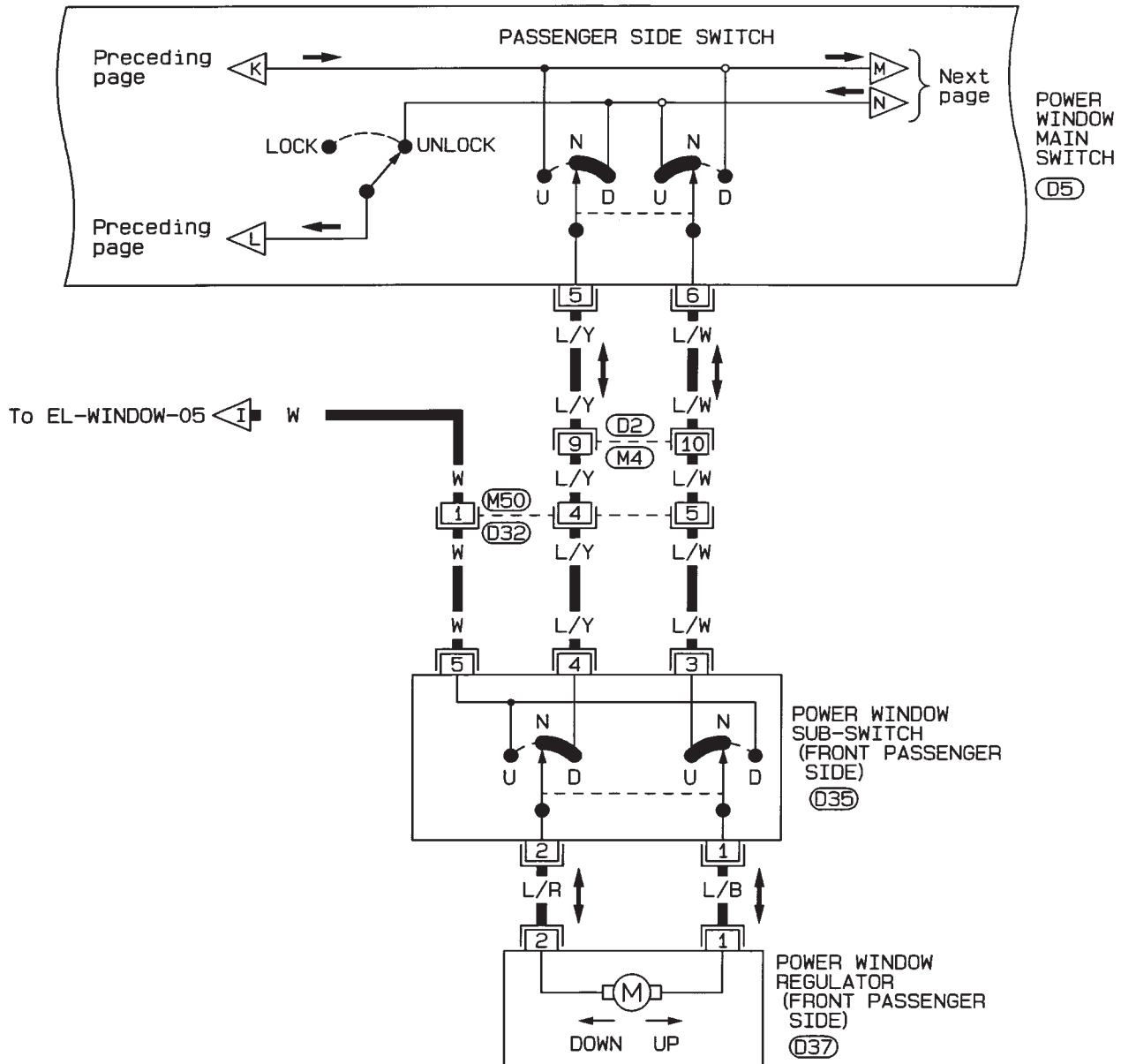


POWER WINDOW

Wiring Diagram — WINDOW — (Cont'd)

RHD MODELS

EL-WINDOW-07



| | | | | | |
|----|---|---|---|----|------|
| 1 | 2 | 3 | 4 | 5 | (D2) |
| 6 | 7 | 8 | 9 | 10 | 11 |
| 12 | W | | | | |

| | | | | |
|----|---|----|----|------|
| 3 | 6 | 5 | 1 | (D5) |
| 14 | 7 | 15 | 16 | 11 |
| 10 | 9 | 8 | W | |

| | | |
|---|---|-------|
| 1 | 2 | (D32) |
| 3 | 4 | 5 |
| 6 | W | |

| | | | | | |
|---|---|---|---|---|-------|
| 4 | 1 | 3 | 2 | 5 | (D35) |
| W | | | | | |

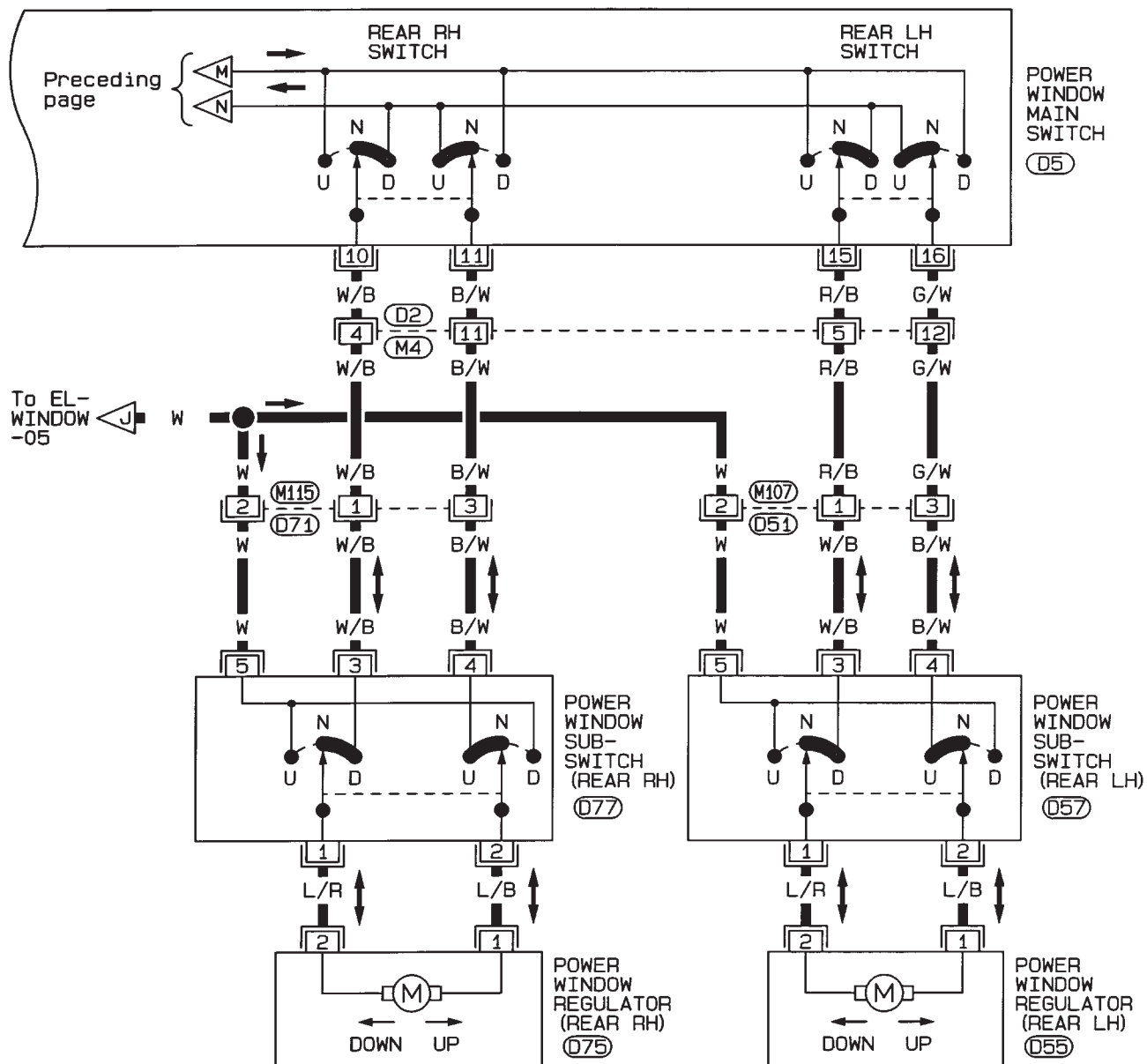
| | | |
|---|---|-------|
| 1 | 2 | (D37) |
| B | | |

POWER WINDOW

Wiring Diagram — WINDOW — (Cont'd)

RHD MODELS

EL-WINDOW-08



| | | | | | | |
|---|---|---|---|----|----|----|
| 1 | 2 | 3 | | 4 | 5 | |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |

D2

W

| | | | | | | | | | |
|----|---|----|--|----|----|----|---|------|---|
| | 3 | 6 | | 5 | | | 1 | (D5) | |
| 14 | 7 | 15 | | 16 | 11 | 10 | 9 | 8 | W |

| | | | |
|--------------------------------------|-----------------------------|---|-----------------------------|
| <div><div></div><div>123</div></div> | <div>D51</div> <div>W</div> | , | <div>D71</div> <div>W</div> |
|--------------------------------------|-----------------------------|---|-----------------------------|

| | | | |
|-------------------------------------|---------------------------------------|---|---------------------------------------|
| <div><div></div><div>12</div></div> | <div><div>D55</div><div>B</div></div> | , | <div><div>D75</div><div>B</div></div> |
|-------------------------------------|---------------------------------------|---|---------------------------------------|

| | | | | |
|---|---|---|---|---|
| | | | 6 | |
| 4 | 1 | 3 | 2 | 5 |

(D57) W, (D77) W

Trouble Diagnoses

| Symptom | Possible cause | Repair order |
|--|--|---|
| None of the power windows can be operated using any switch. | <ol style="list-style-type: none"> 10A fuse, 30A fusible link and (M52) circuit breaker Grounds (M1) and (M54) Power window relay Open/short in power window main switch circuit | <ol style="list-style-type: none"> Check 10A fuse (No. 14, located in fuse block), 30A fusible link (letter b, located in fusible link and fuse box) and (M52) circuit breaker. Turn ignition switch "ON" and verify battery positive voltage is present at terminal ① of power window main switch and terminal ⑤ of sub-switch. Check grounds (M1) and (M54). Check power window relay. Check W wire between power window relay and power window main switch for open/short circuit. |
| Driver side power window cannot be operated but other windows can be operated. | <ol style="list-style-type: none"> Driver side power window regulator circuit Driver side power window regulator | <ol style="list-style-type: none"> Check harness between power window main switch and power window regulator for open or short circuit. Check driver side power window regulator. |
| Passenger power window cannot be operated. | <ol style="list-style-type: none"> Power window sub-switches Passenger side power window regulators Power window main switch Power window circuit | <ol style="list-style-type: none"> Check power window sub-switch. Check passenger side power window regulator. Check power window main switch. 4-1. Check harnesses between power window main switch and power window sub-switch for open/short circuit. 4-2. Check harnesses between power window sub-switch and power window regulator for open/short circuit. |
| Passenger power window cannot be operated using power window main switch but can be operated by power window sub-switch. | <ol style="list-style-type: none"> Power window main switch | <ol style="list-style-type: none"> Check power window main switch. |
| Driver side power window auto function cannot be operated using power window main switch. | <ol style="list-style-type: none"> Power window main switch | <ol style="list-style-type: none"> Check power window main switch. |

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System Description

Power is supplied at all times

- through 30A fusible link (Letter **B**, located in the fusible link and fuse box)
- to circuit breaker terminal ①
- through circuit breaker terminal ②
- to door lock timer terminal ③.

Ground is supplied to door lock timer terminal ① through body grounds **M1** and **M54**.

INPUT

When the door lock & unlock switch (power window main switch) is in LOCKED position, ground signal is supplied

- to door lock timer terminal ⑤
- through door lock & unlock switch terminal ⑭
- to door lock & unlock switch terminal ③
- through body grounds **M1** and **M54**.

When the door lock & unlock switch (power window main switch) is in UNLOCKED position, ground signal is supplied

- to door lock timer terminal ⑧
- through door lock & unlock switch terminal ⑦
- to door lock & unlock switch terminal ③
- through body grounds **M1** and **M54**.

Driver side door key cylinder and driver side lock knob are connected to lock knob switch with a rod. When lock knob switch is in UNLOCKED position, ground signal is supplied

- to door lock timer terminal ⑥
- through lock knob switch terminal ②
- to driver side lock knob switch terminal ①
- through body grounds **M1** and **M54**.

When lock knob switch is in LOCKED position, ground signal is interrupted.

Door lock operates according to the conditions of the door lock & unlock switch (power window main switch) and lock knob switch.

OUTPUT

Unlock

Ground is supplied

- to passenger side door lock actuator, rear door lock actuator LH and RH terminal ① (double cab models)
- through door lock timer terminal ②.

Power is supplied

- to passenger side door lock actuator, rear door lock actuator LH and RH terminal ② (double cab models)
- through door lock timer terminal ④.

Then, the doors are unlocked.

Lock

Ground is supplied

- to passenger side door lock actuator, rear door lock actuator LH and RH terminal ②
- through door lock timer terminal ④.

Power is supplied

- to passenger side door lock actuator, rear door lock actuator LH and RH terminal ①
- through door lock timer terminal ②.

Then, the doors are locked.

Wiring Diagram — D/LOCK —

EL-D/LOCK-01

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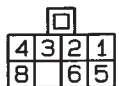
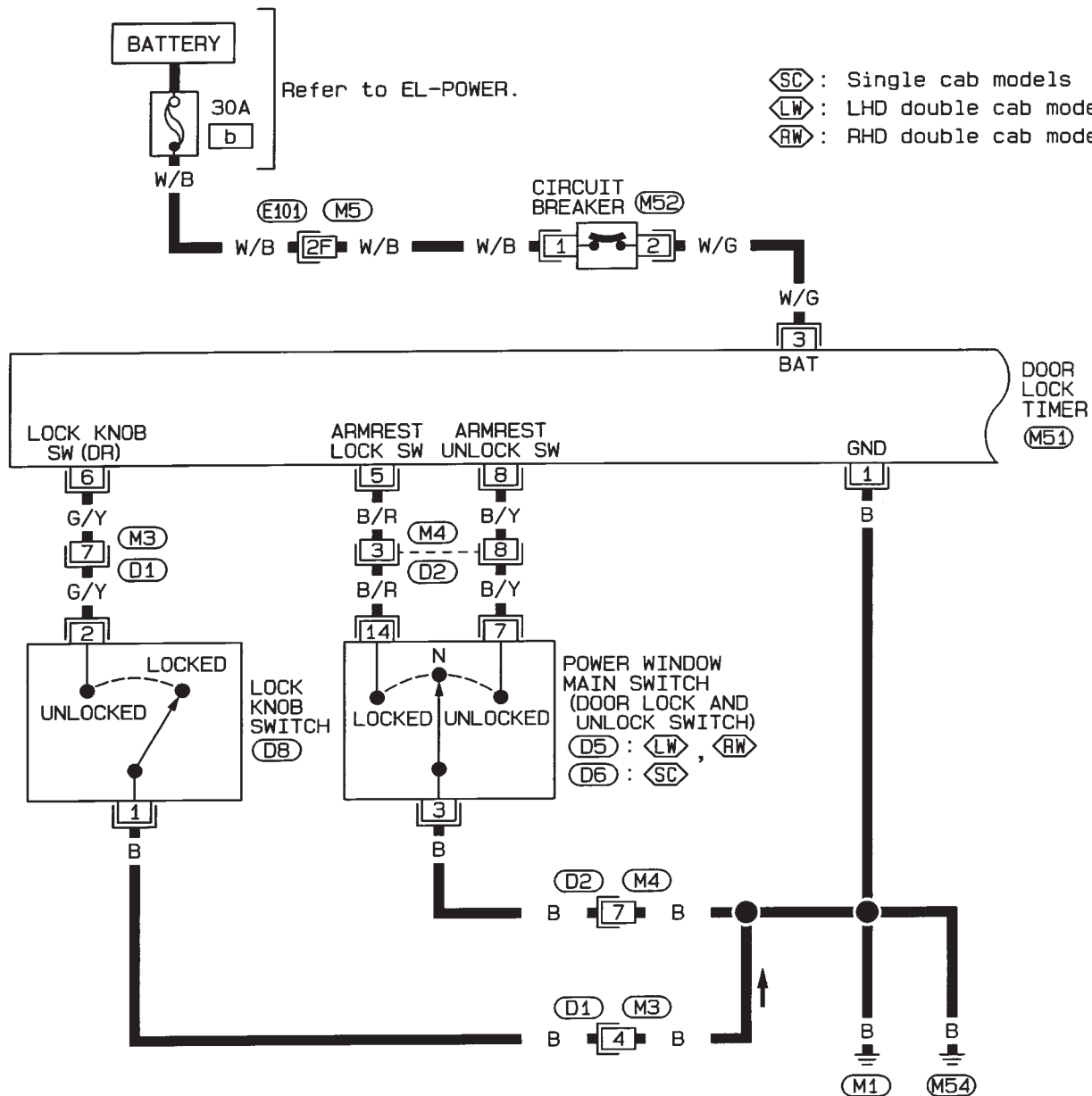
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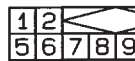
IDX



M51



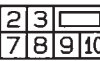
M52



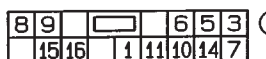
D1



D2



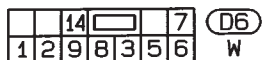
W



D5 : <RW>



D5 : <LW>



D6 : <SC>



D8

GY

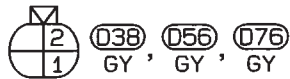
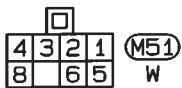
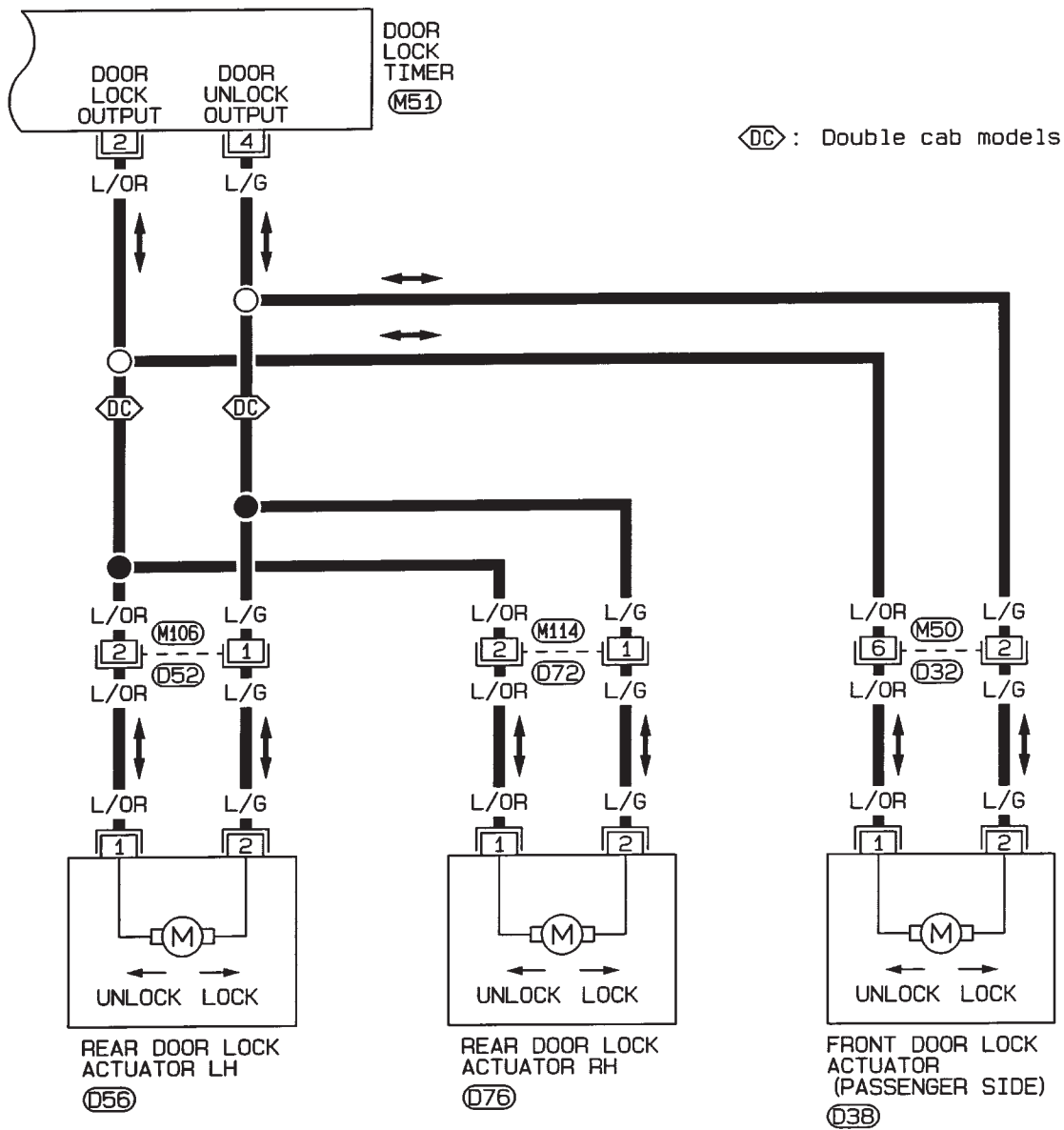
Refer to last page (Foldout page).

M5, E101

POWER DOOR LOCK

Wiring Diagram — D/LOCK — (Cont'd)

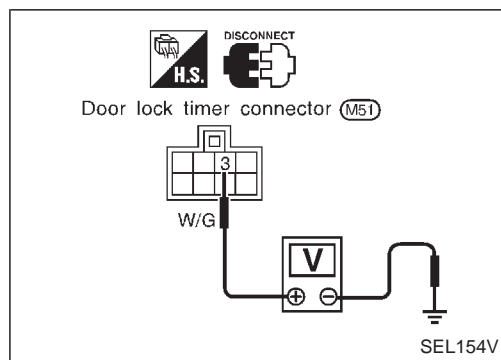
EL-D/LOCK-02



Trouble Diagnosis

SYMPTOM CHART

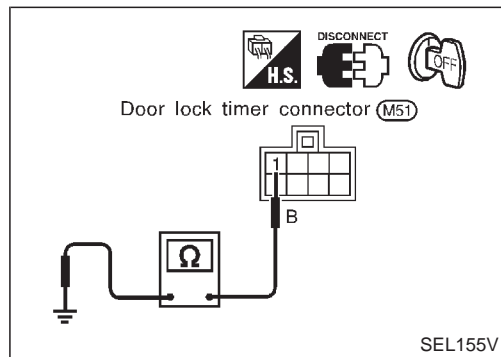
| REFERENCE PAGE | EL-155 | EL-156 | EL-157 | EL-158 |
|--|--|---|--|--|
| SYMPTOM | Main power supply and ground circuit check | Diagnostic procedure 1 (Door lock and unlock switch check) | Diagnostic procedure 2 (Door lock actuator check) | Diagnostic procedure 3 (Driver side lock knob switch check) |
| None of the doors lock/unlock when operating any switch. | X | | X | |
| One or more doors are not locked and/or unlocked. | | | X | |
| Door lock and unlock switch does not operate. | | X | | |
| Lock knob switch on driver's door does not operate. | | | | X |



MAIN POWER SUPPLY AND GROUND CIRCUIT CHECK

Main power supply for door lock timer

| Terminal | | Ignition switch | | |
|----------|--------|-----------------|-----------------|-----------------|
| ⊕ | ⊖ | OFF | ACC | ON |
| ③ | Ground | Battery voltage | Battery voltage | Battery voltage |



Ground circuit for door lock timer

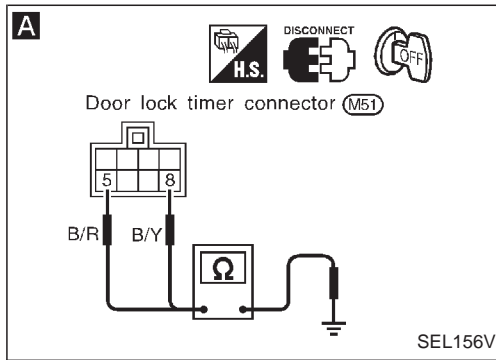
| Terminals | Continuity |
|------------|------------|
| ① - Ground | Yes |

POWER DOOR LOCK

Trouble Diagnosis (Cont'd)

DIAGNOSTIC PROCEDURE 1

(Door lock and unlock switch check)



A

CHECK DOOR LOCK AND UNLOCK SWITCH INPUT SIGNAL.

1. Disconnect door lock timer connector.
2. Check continuity between control unit terminal ⑤ or ⑧ and ground.

OK

Door lock and unlock switch is OK.

| Terminals | Door lock and unlock switch condition | Continuity |
|------------|---------------------------------------|------------|
| ⑤ - Ground | Lock | Yes |
| | N and Unlock | No |
| ⑧ - Ground | Unlock | Yes |
| | N and Lock | No |

NG

B

CHECK DOOR LOCK AND UNLOCK SWITCH.

1. Disconnect door lock and unlock switch connector.
2. Check continuity between power window main switch (Door lock and unlock switch) terminals.

NG

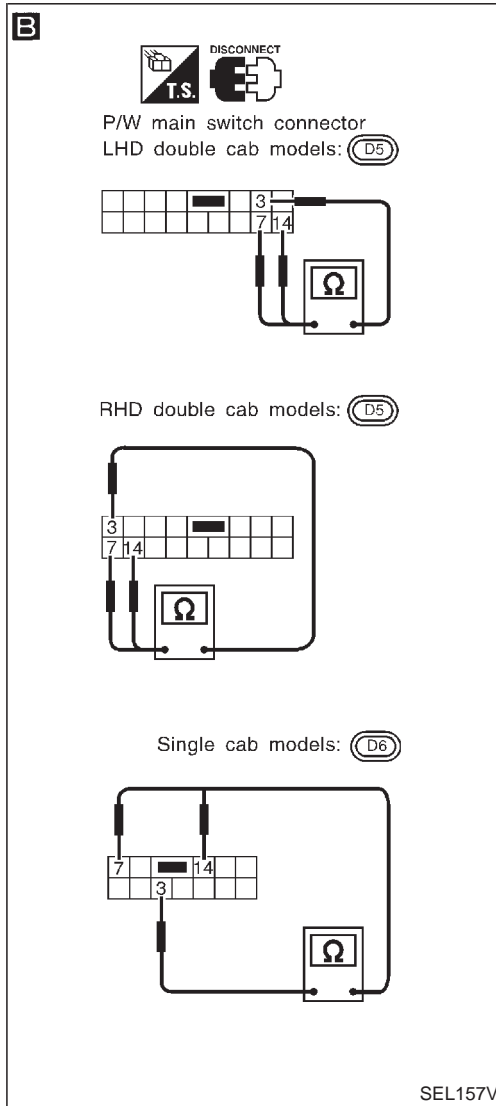
Replace door lock and unlock switch.

| Condition | Terminals | | |
|-----------|---------------|---|----|
| | 3 | 7 | 14 |
| Lock | ○ | — | ○ |
| N | No continuity | | |
| Unlock | ○ | ○ | — |

OK

Check the following.

- Ground circuit for door lock and unlock switch
- Harness for open or short between door lock and unlock switch and door lock timer connector

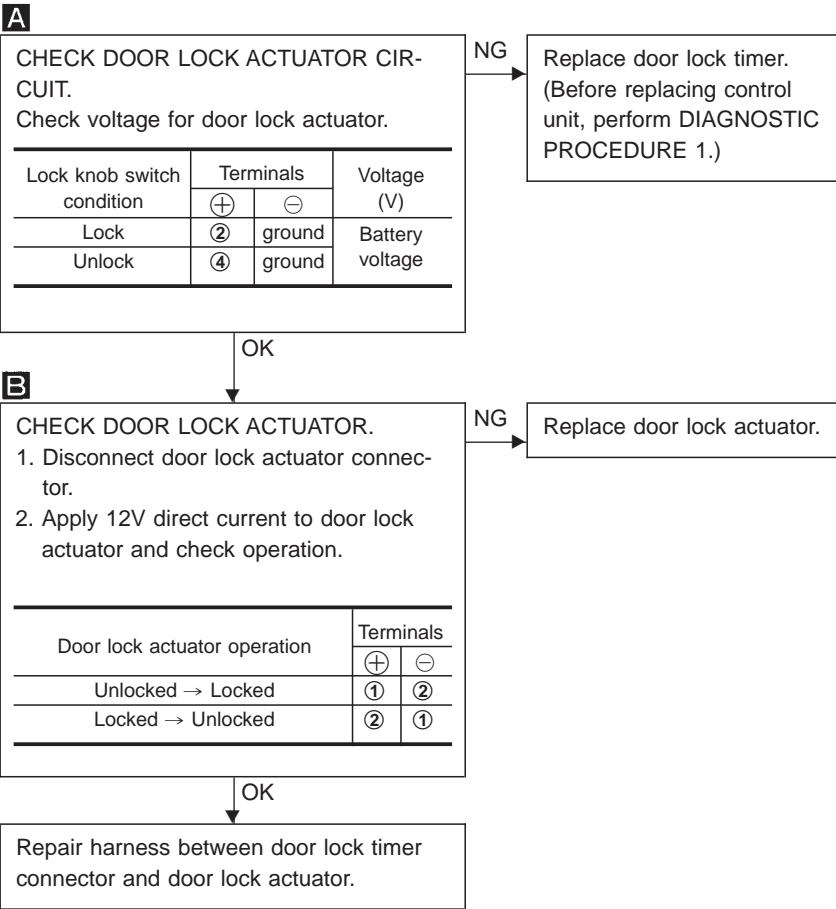
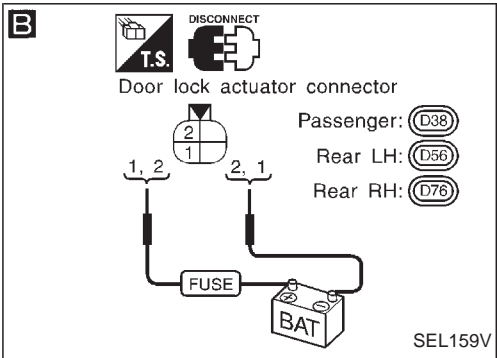
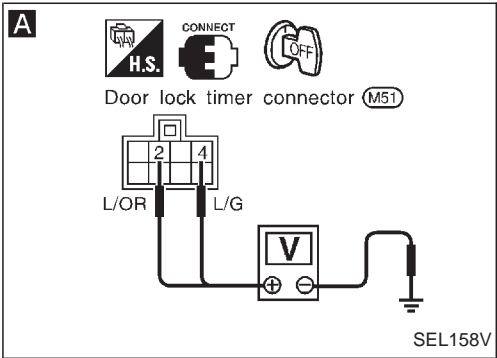


POWER DOOR LOCK

Trouble Diagnosis (Cont'd)

DIAGNOSTIC PROCEDURE 2

(Door lock actuator check)



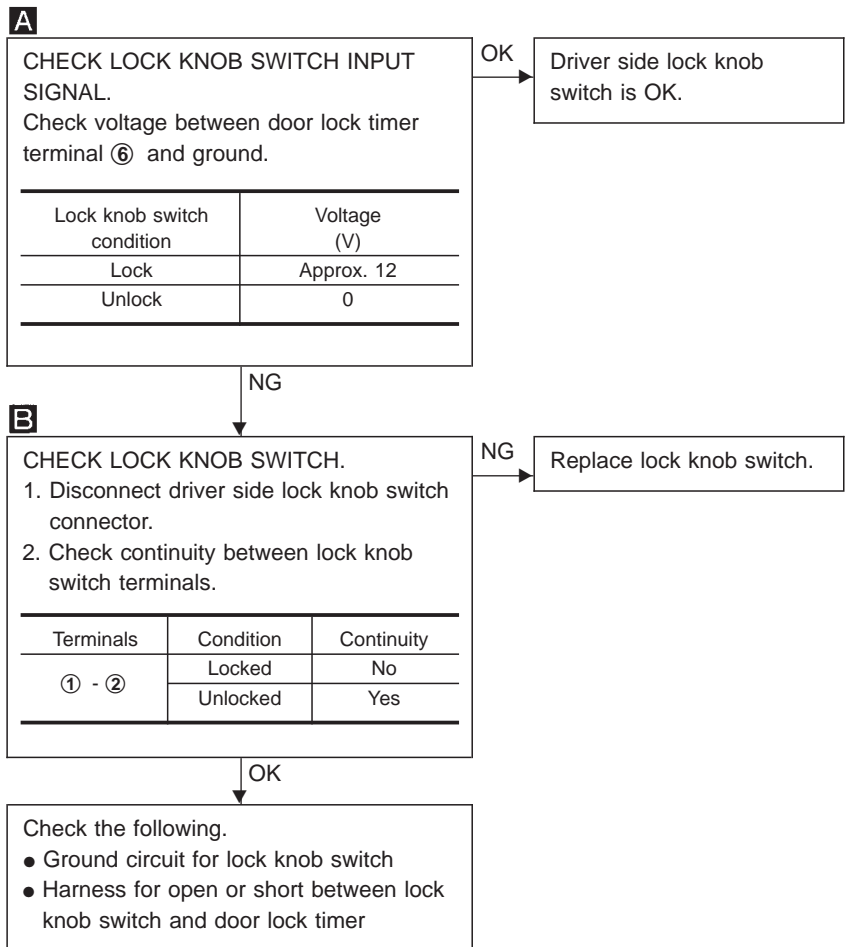
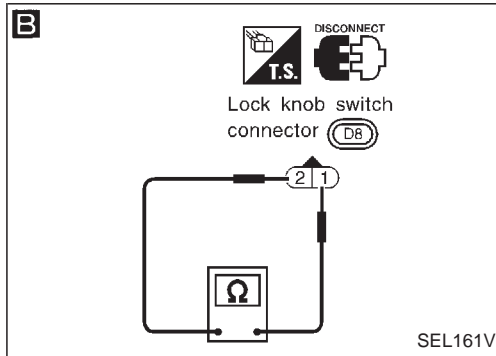
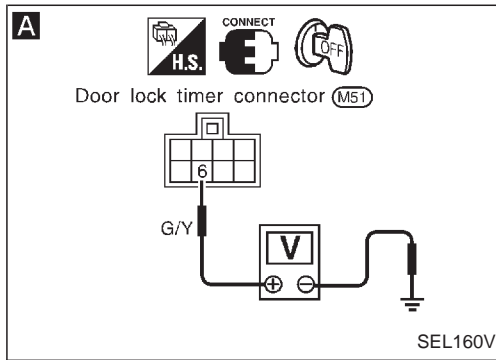
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POWER DOOR LOCK

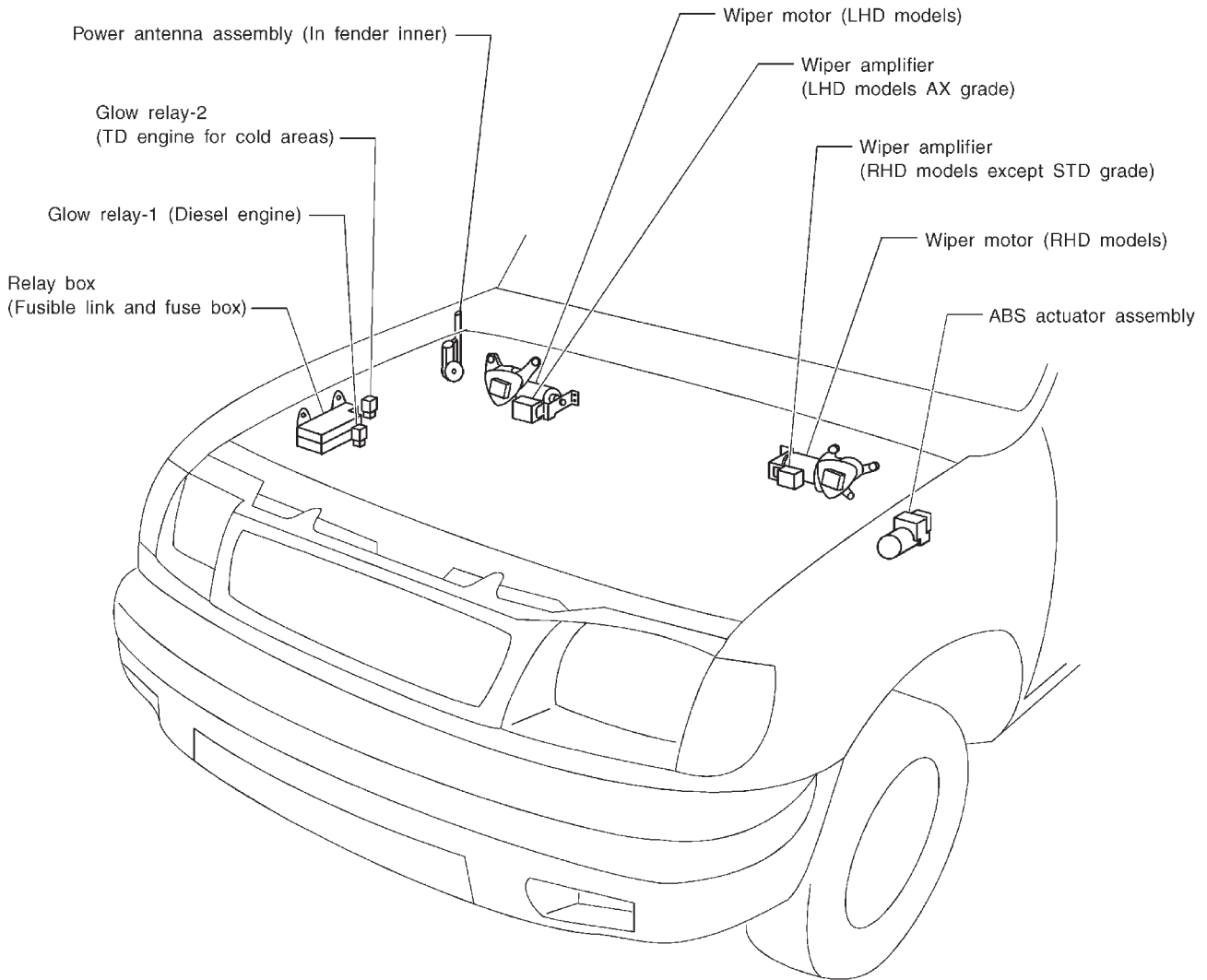
Trouble Diagnosis (Cont'd)

DIAGNOSTIC PROCEDURE 3

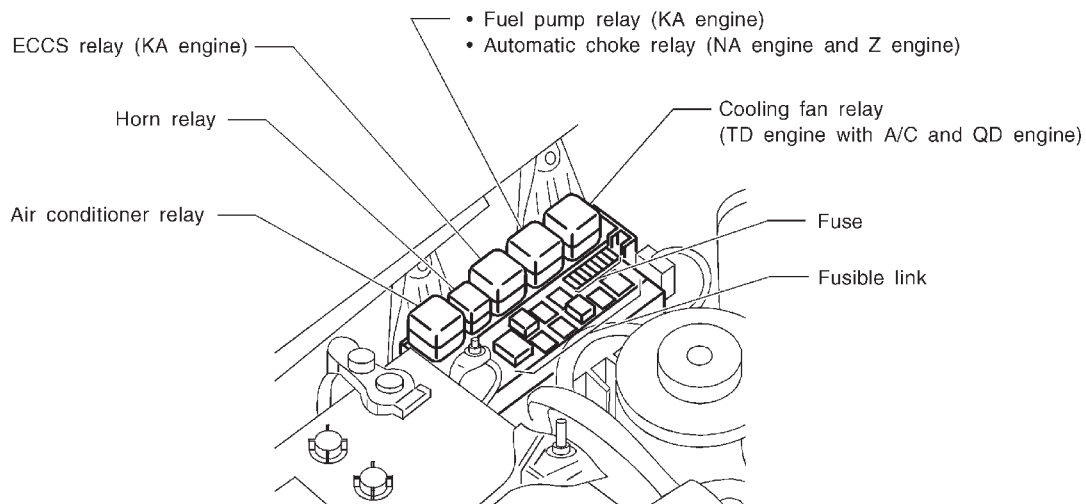
(Driver side lock knob switch check)



Engine Compartment



RELAY BOX



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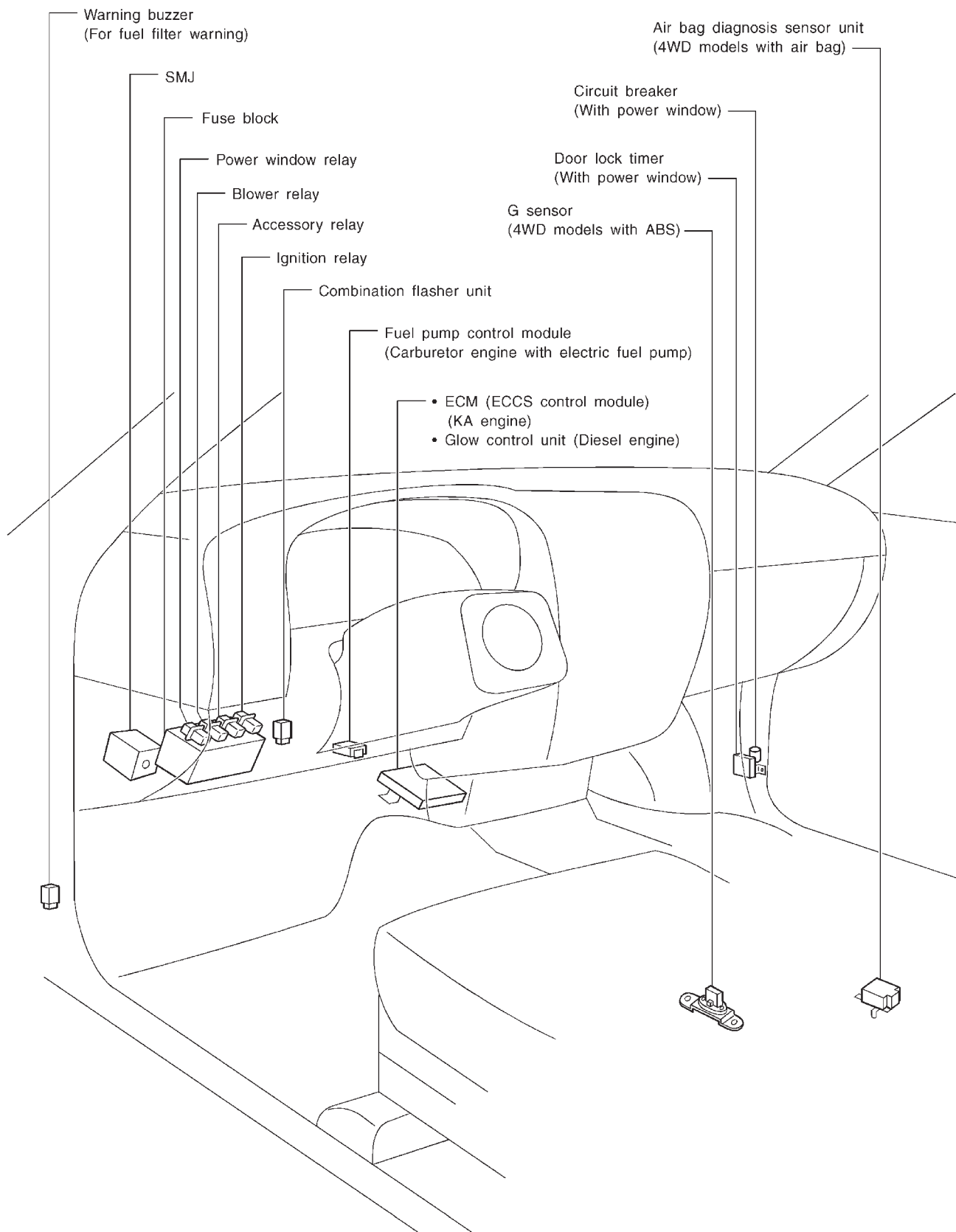
EL

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LOCATION OF ELECTRICAL UNITS

Passenger Compartment

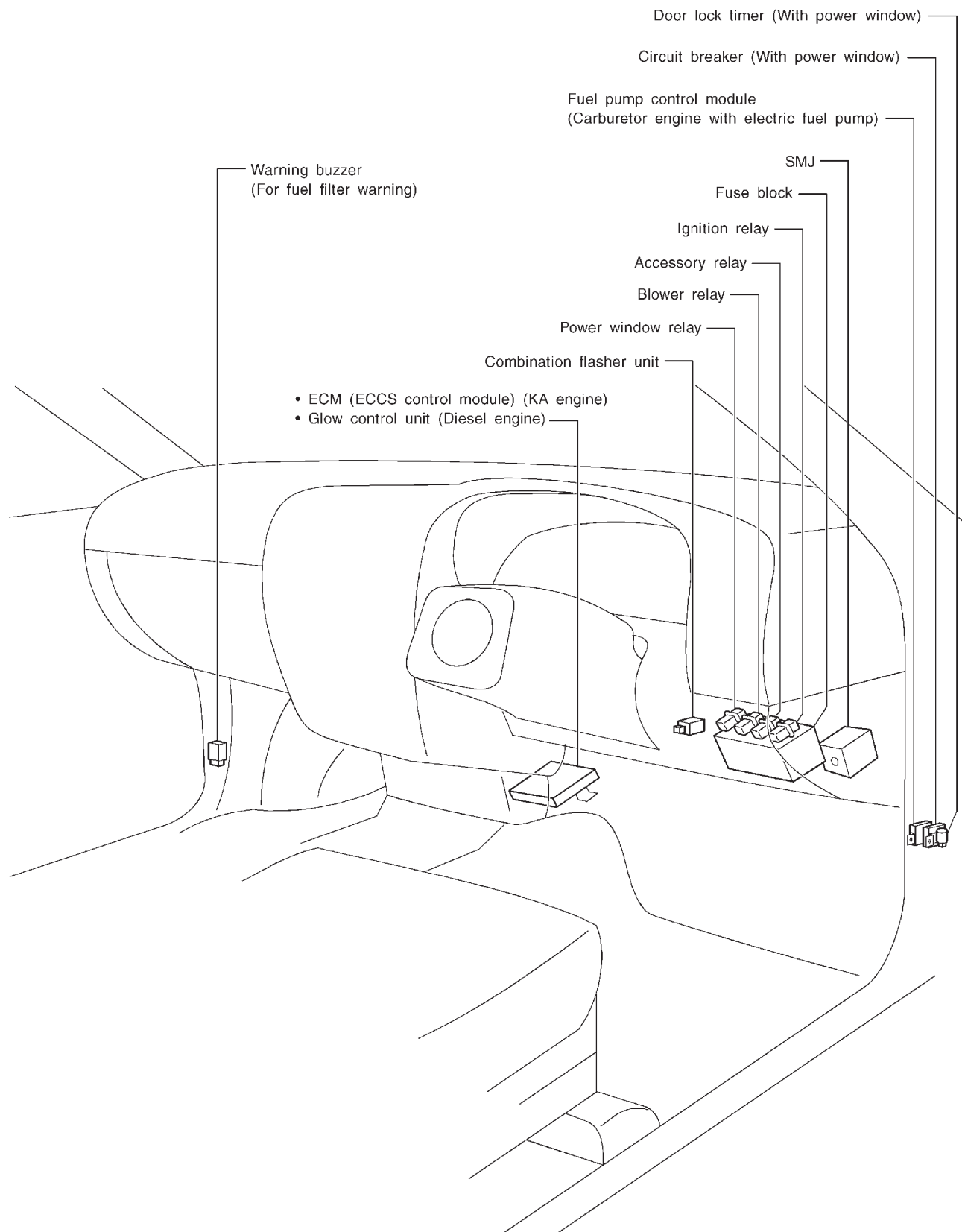
LHD MODELS



LOCATION OF ELECTRICAL UNITS

Passenger Compartment (Cont'd)

RHD MODELS



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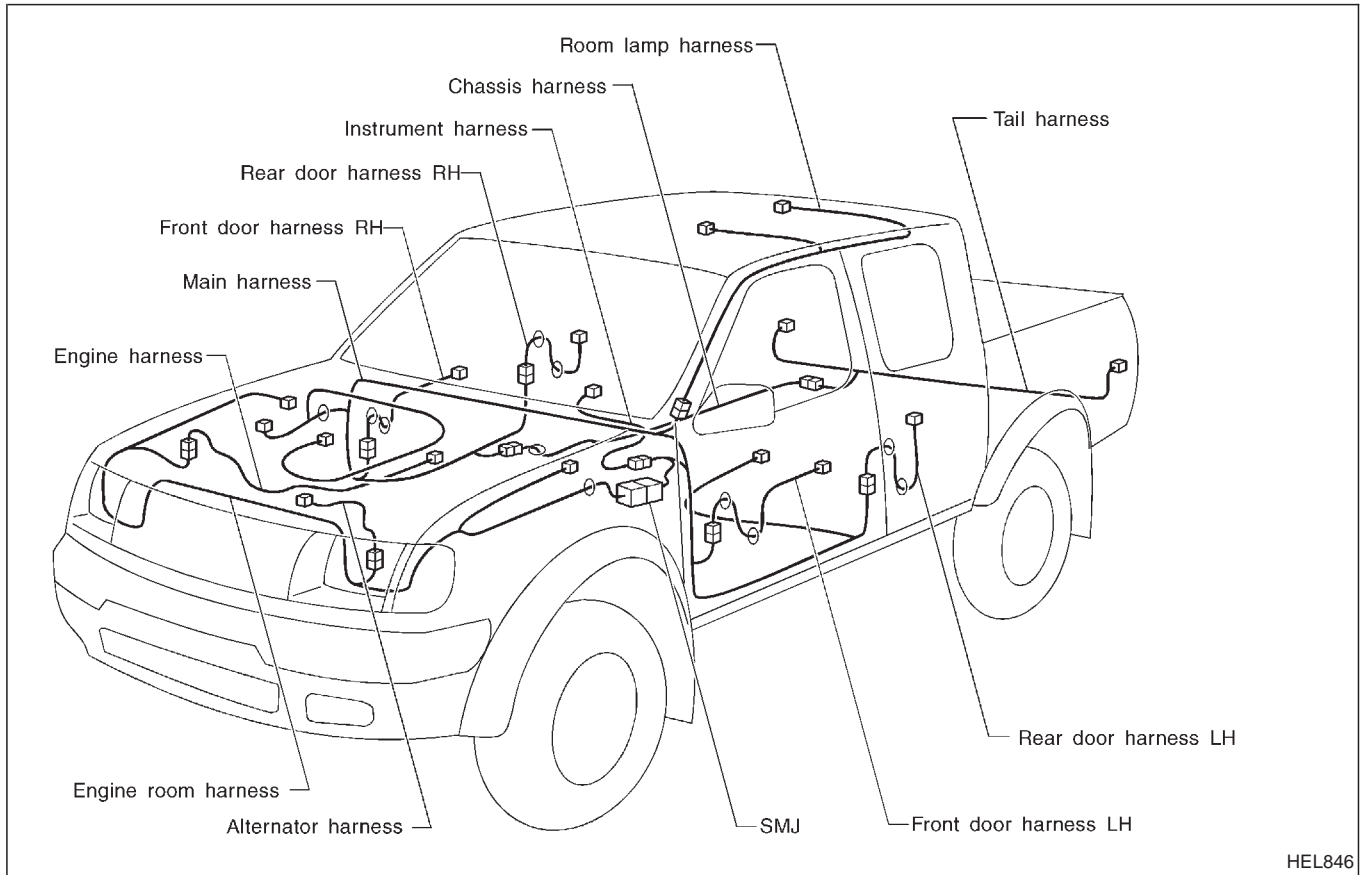
EL

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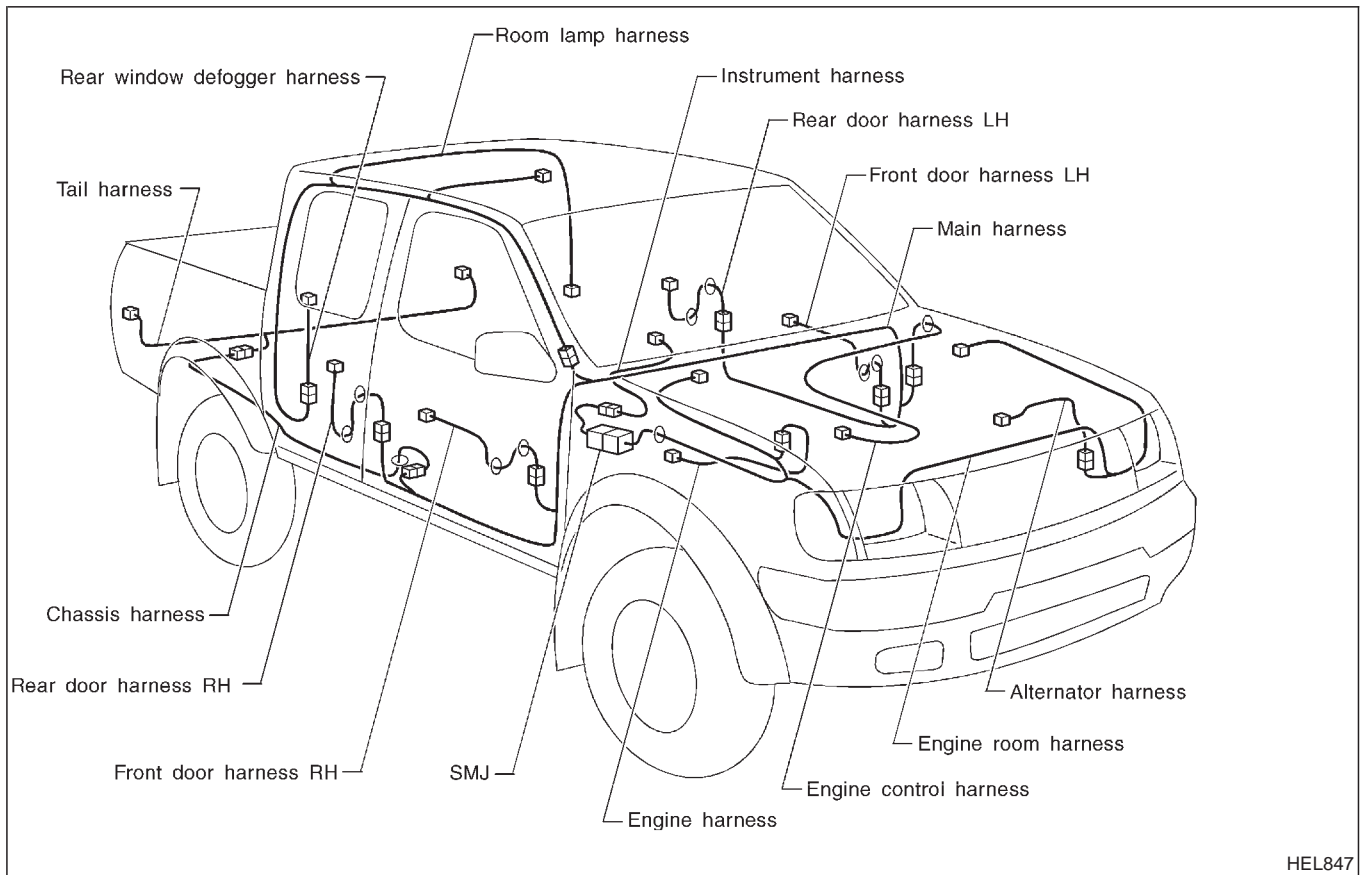
HARNESS LAYOUT

LHD MODELS

Outline

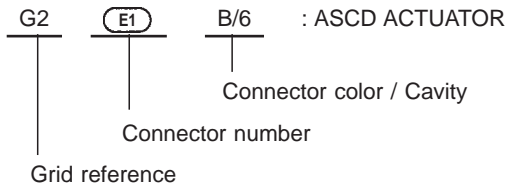


RHD MODELS



How to Read Harness Layout

Example:



The following Harness Layouts use a map style grid to help locate connectors on the drawings:

- Main Harness (Instrument Panel, Engine Compartment)
- Engine Room Harness
- Engine Control 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

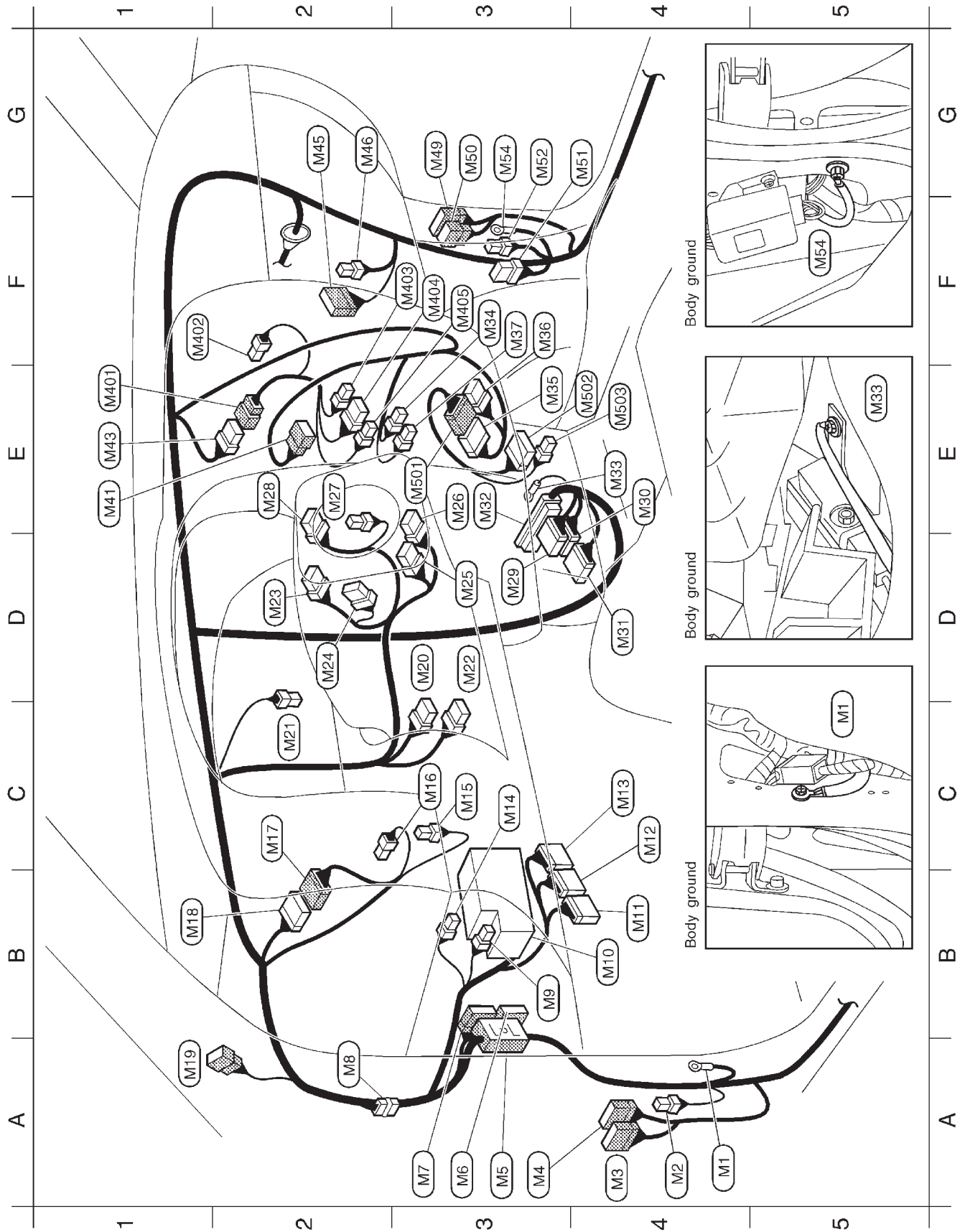
Main symbols of connector (in Harness Layout) are indicated in the below.

| Connector type | Water proof type | | Standard type | |
|--|------------------|--------|---------------|--------|
| | Male | Female | Male | Female |
| <ul style="list-style-type: none"> • Cavity: Less than 4 • Relay connector | | | | |
| <ul style="list-style-type: none"> • Cavity: From 5 to 8 | | | | |
| <ul style="list-style-type: none"> • Cavity: More than 9 | — | — | | |
| <ul style="list-style-type: none"> • Ground terminal etc. | — | | | |

HARNESS LAYOUT

Main Harness

INSTRUMENT PANEL — LHD MODELS



HARNESS LAYOUT

Main Harness (Cont'd)

INSTRUMENT PANEL — LHD MODELS

| | | | | | |
|----------|-------|---|----------|------|--|
| A4 (M1) | — | : Body ground | E1 (M41) | W/8 | : Hazard switch |
| A4 (M2) | W/2 | : Warning buzzer (Diesel engine except for Middle East) | E1 (M43) | B/8 | : To (M401) |
| A4 (M3) | W/12 | : To (D1) | G2 (M45) | BR/4 | : Fan resistor |
| A3 (M4) | W/12 | : To (D2) | G2 (M46) | W/2 | : Blower motor |
| A3 (M5) | SMJ | : To (E101) | G3 (M49) | W/12 | : To (D31) |
| A3 (M6) | W/24 | : To (N1) | G3 (M50) | W/6 | : To (D32) |
| A3 (M7) | W/20 | : To (N2) | G4 (M51) | W/8 | : Door lock timer (GL,S-GL and AX grade) |
| A2 (M8) | -/2 | : Diode | G3 (M52) | W/2 | : Circuit breaker (GL,S-GL and AX grade) |
| B3 (M9) | L/4 | : Power window relay (GL,S-GL and AX grade) | G3 (M54) | — | : Body ground |
| B4 (M10) | — | : Fuse block | | | |
| B4 (M11) | GY/14 | : Data link connector for CONSULT (KA engine and for Middle East) | | | |
| C4 (M12) | B/12 | : Check connector (NA engine) | | | |
| C4 (M13) | B/10 | : Check connector (Z engine) | | | |
| C3 (M14) | W/3 | : Fuse block | | | |
| C3 (M15) | B/3 | : Combination flasher unit | | | |
| C3 (M16) | B/2 | : Stop lamp switch | | | |
| C2 (M17) | Y/12 | : To (M18) (4WD models with air bag) | | | |
| B1 (M18) | Y/12 | : To (M17) (4WD models with air bag) | | | |
| A1 (M19) | W/6 | : To (R1) | | | |
| D3 (M20) | W/6 | : Ignition switch | | | |
| C2 (M21) | W/1 | : Parking brake switch (Stick type) | | | |
| D3 (M22) | W/6 | : Fuel pump control module (NA and Z engine) | | | |
| D2 (M23) | BR/8 | : Lighting switch • Turn signal lamp switch | | | |
| D2 (M24) | BR/4 | : Lighting switch | | | |
| D3 (M25) | Y/6 | : Spiral cable (4WD models with air bag) | | | |
| E3 (M26) | W/6 | : Spiral cable (2WD models with air bag) | | | |
| E2 (M27) | B/1 | : Horn switch | | | |
| E2 (M28) | GY/8 | : Wiper and washer switch | | | |
| D3 (M29) | W/12 | : Glow control unit (Except TD engine for cold areas) | | | |
| E4 (M30) | W/16 | : Glow control unit (TD engine for cold areas) | | | |
| D4 (M31) | GY/6 | : Joint connector (KA engine) | | | |
| E3 (M32) | W/64 | : ECM (ECCS control module) (KA engine) | | | |
| E4 (M33) | — | : Body ground (KA engine) | | | |
| F3 (M34) | B/2 | : Ashtray illumination (GL and S-GL grade for Middle East) | | | |
| E3 (M35) | W/10 | : Radio or to (M501) | | | |
| F3 (M36) | W/6 | : Radio (Models with 4-speaker) | | | |
| F3 (M37) | B/2 | : Cigarette lighter | | | |

Sub-harness

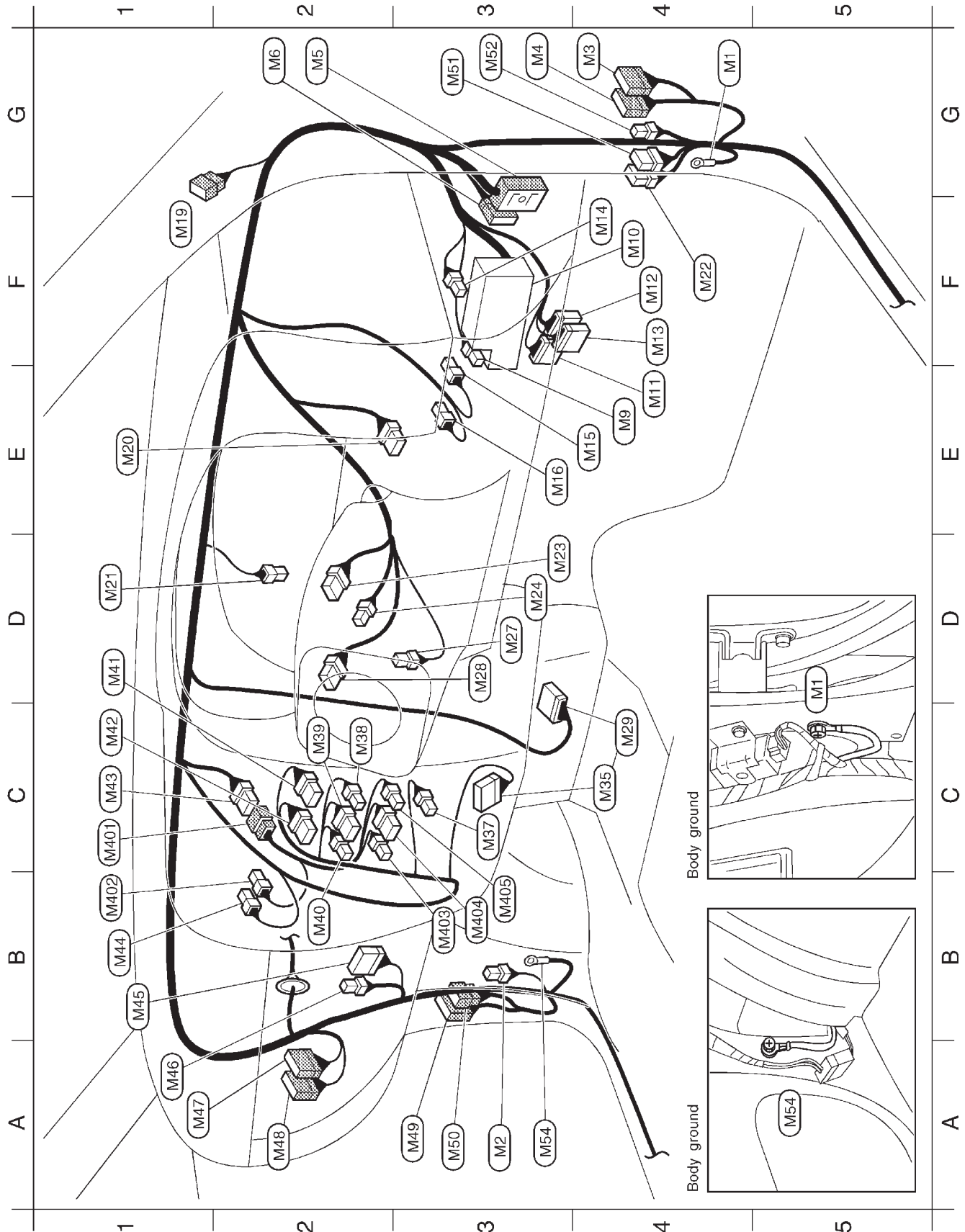
| | | |
|-----------|------|--|
| E1 (M401) | B/8 | : To (M43) |
| F1 (M402) | BR/4 | : Thermo control amplifier (Models with A/C) |
| F3 (M403) | W/2 | : Fan switch illumination |
| F3 (M404) | W/6 | : Fan switch |
| F3 (M405) | W/3 | : A/C switch (Models with A/C) |
| E3 (M501) | W/10 | : To (M35) |
| E4 (M502) | W/10 | : Radio |
| E4 (M503) | W/4 | : Compact disk deck |

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HARNESS LAYOUT

Main Harness (Cont'd)

INSTRUMENT PANEL — RHD MODELS

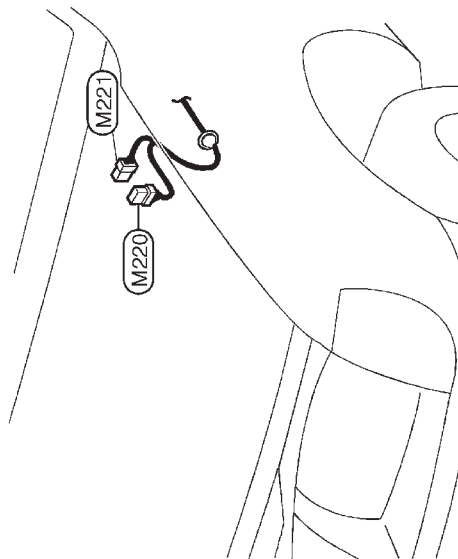


HARNESS LAYOUT

Main Harness (Cont'd)

INSTRUMENT PANEL — RHD MODELS

| | | |
|----------|-------|--|
| G4 (M1) | — | : Body ground |
| A3 (M2) | W/2 | : Warning buzzer (Diesel engine except for Australia) |
| G4 (M3) | W/12 | : To (D1) |
| G3 (M4) | W/12 | : To (D2) |
| G2 (M5) | SMJ | : To (E101) |
| G2 (M6) | W/24 | : To (N1) |
| E4 (M9) | L/4 | : Power window relay |
| F4 (M10) | — | : Fuse block |
| E4 (M11) | GY/14 | : Data link connector for CONSULT (KA engine) |
| F4 (M12) | B/12 | : Check connector (NA engine) |
| F4 (M13) | B/10 | : Check connector (Z engine) |
| F4 (M14) | W/3 | : Fuse block |
| E4 (M15) | B/3 | : Combination flasher unit |
| E3 (M16) | B/2 | : Stop lamp switch |
| F1 (M19) | W/6 | : To (R1) |
| E1 (M20) | W/6 | : Ignition switch |
| D1 (M21) | W/1 | : Parking brake switch (Stick type) |
| F4 (M22) | W/6 | : Fuel pump control module (NA engine and Z engine) |
| D3 (M23) | BR/8 | : Lighting switch • Turn signal lamp switch |
| D3 (M24) | BR/4 | : Lighting switch |
| D3 (M27) | B/1 | : Horn switch |
| D3 (M28) | GY/8 | : Wiper and washer switch |
| C4 (M29) | W/12 | : Glow control unit (Diesel engine) |
| C4 (M35) | W/10 | : Radio |
| C3 (M37) | B/2 | : Cigarette lighter |
| C2 (M38) | W/3 | : Not used (For Australia) |
| C2 (M39) | W/6 | : Fan switch (For Australia) |
| B2 (M40) | W/2 | : Fan switch illumination (For Australia) |
| D1 (M41) | W/8 | : Hazard switch |
| C1 (M42) | W/6 | : Rear window defogger switch (Double cab for Australia) |
| C1 (M43) | B/8 | : To (M401) (Except for Australia) |
| B1 (M44) | BR/4 | : Not used (For Australia) |
| B1 (M45) | BR/4 | : Fan resistor |
| A1 (M46) | W/2 | : Blower motor |
| A1 (M47) | W/10 | : To (F55) (KA engine) |
| A2 (M48) | W/24 | : To (F54) (KA engine) |
| A3 (M49) | W/12 | : To (D31) |
| A3 (M50) | W/6 | : To (D32) |
| G3 (M51) | W/8 | : Door lock timer (Double cab ST grade) |
| G3 (M52) | W/2 | : Circuit breaker (Double cab ST grade) |
| A3 (M54) | — | : Body ground |



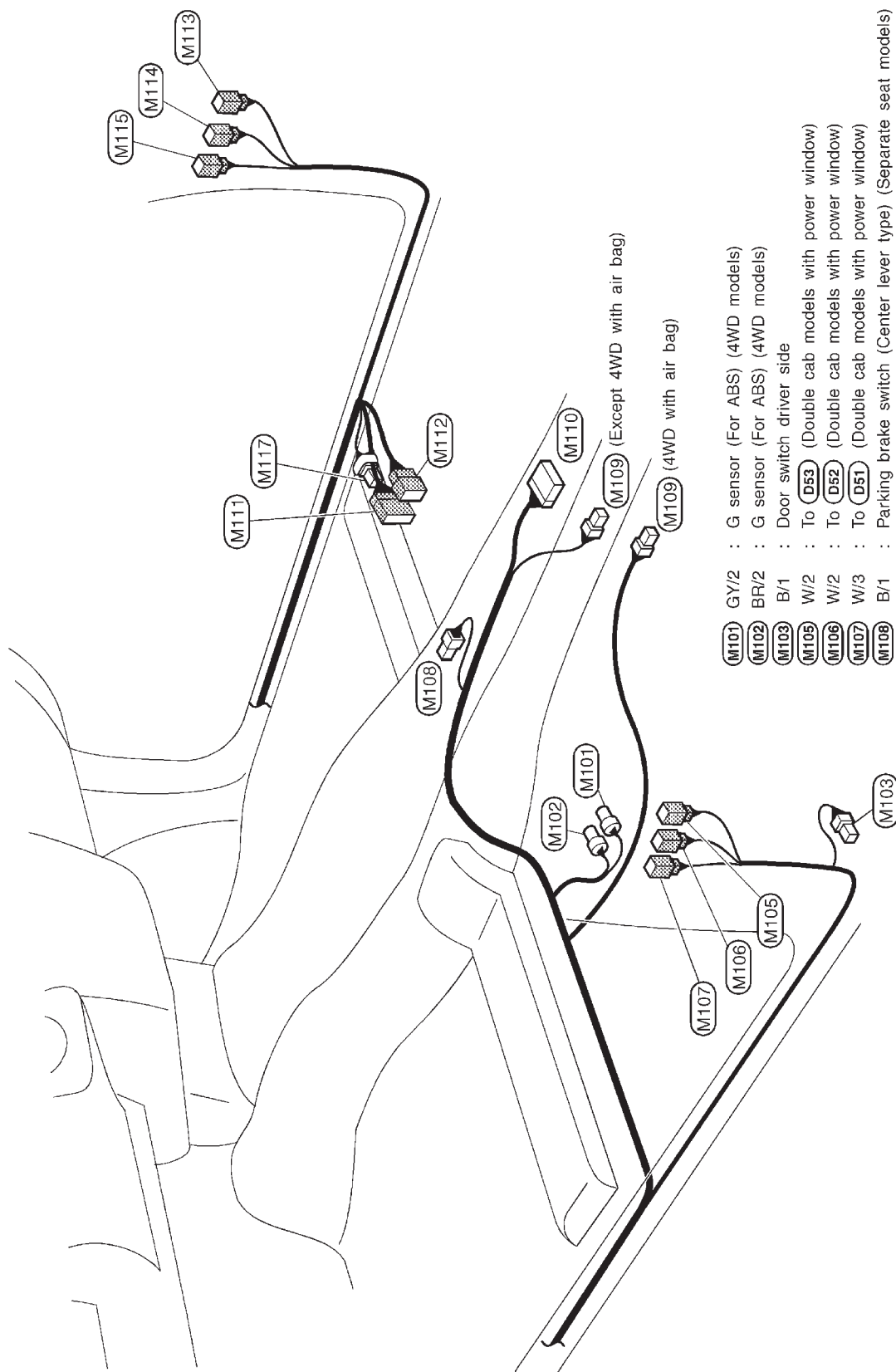
- (M220) GY/8 : Wiper amplifier or jumping connector
(Diesel engine models for Australia)
- (M221) W/6 : Wiper motor (Except KA engine)
- Sub-harness**
- C1 (M401) B/8 : To (M43)
- B1 (M402) BR/4 : Thermo control amplifier (Models with A/C)
- B3 (M403) W/2 : Fan switch illumination
- B3 (M404) W/6 : Fan switch
- B3 (M405) W/3 : A/C switch (Models with A/C)

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HARNESS LAYOUT

Main Harness (Cont'd)

BODY SIDE — LHD MODELS

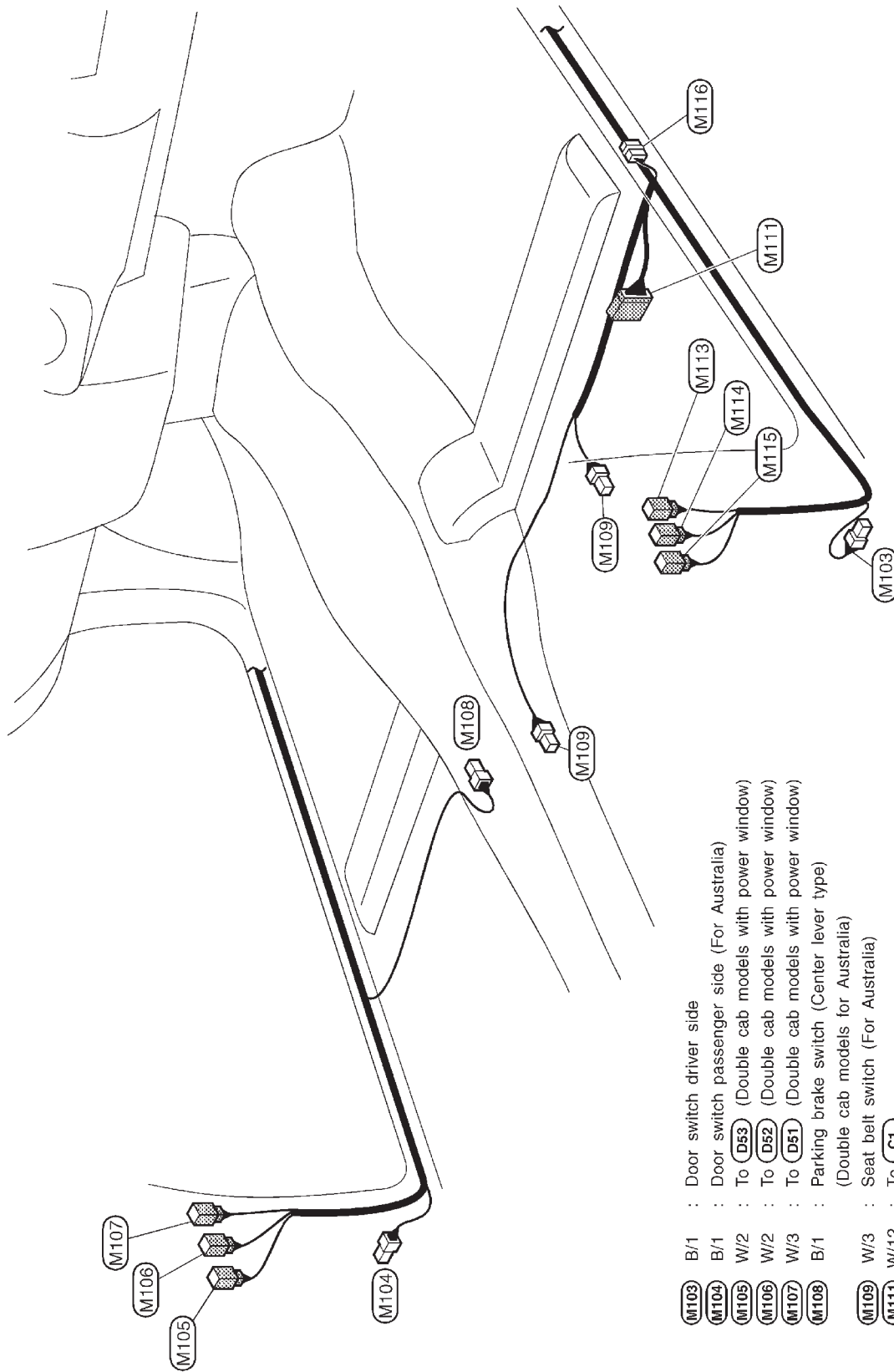


- M101 : GY/2 : G sensor (For ABS) (4WD models)
- M102 : BF/2 : G sensor (For ABS) (4WD models)
- M103 : B/1 : Door switch driver side
- M105 : W/2 : To D53 (Double cab models with power window)
- M106 : W/2 : To D52 (Double cab models with power window)
- M107 : W/3 : To D51 (Double cab models with power window)
- M108 : B/1 : Parking brake switch (Center lever type) (Separate seat models)
- M109 : W/3 : Seat belt switch (For the Middle East)
- M110 : Y/22 : Air bag diagnosis sensor unit (4WD models)
- M111 : W/12 : To C1
- M112 : W/6 : To C2 (For ABS)
- M113 : W/2 : To D73 (Double cab models with power window)
- M114 : W/2 : To D72 (Double cab models with power window)
- M115 : W/3 : To D71 (Double cab models with power window)
- M117 : W/2 : Condenser (GL and S-GL grade for the Middle East)

HARNESS LAYOUT

Main Harness (Cont'd)

BODY SIDE — RHD MODELS



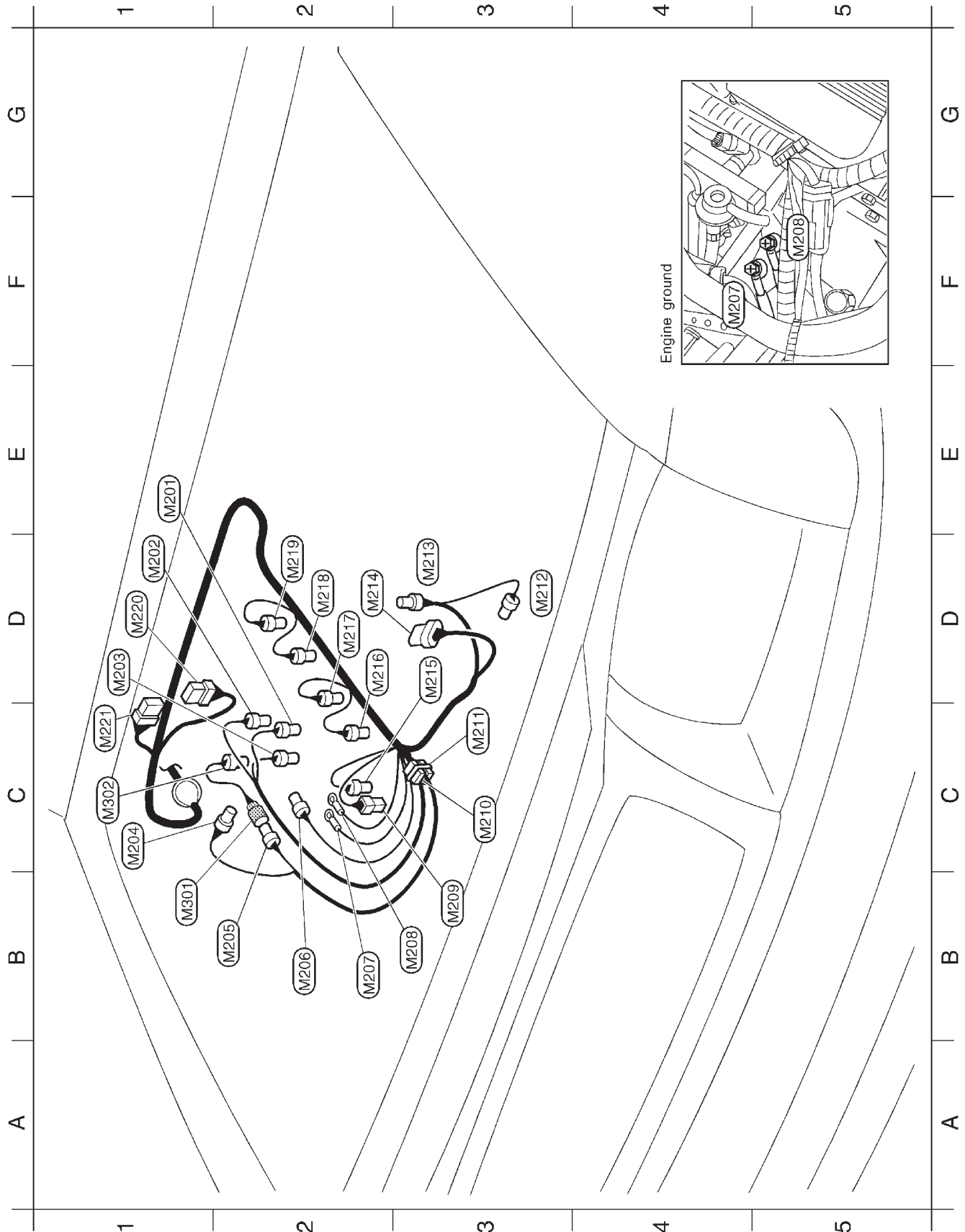
| | | |
|------|------|--|
| M103 | B/1 | : Door switch driver side |
| M104 | B/1 | : Door switch passenger side (For Australia) |
| M105 | W/2 | : To D53 (Double cab models with power window) |
| M106 | W/2 | : To D52 (Double cab models with power window) |
| M107 | W/3 | : To D51 (Double cab models with power window) |
| M108 | B/1 | : Parking brake switch (Center lever type) |
| | | (Double cab models for Australia) |
| M109 | W/3 | : Seat belt switch (For Australia) |
| M110 | W/12 | : To C1 |
| M111 | W/2 | : To D73 (Double cab models with power window) |
| M112 | W/2 | : To D72 (Double cab models with power window) |
| M113 | W/3 | : To D71 (Double cab models with power window) |
| M114 | -/2 | : Diode (Diesel engine except for Australia and NA engine) |
| M115 | | |
| M116 | | |

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HARNESS LAYOUT

Main Harness (Cont'd)

ENGINE COMPARTMENT — KA24E ENGINE (LHD models)



HARNESS LAYOUT

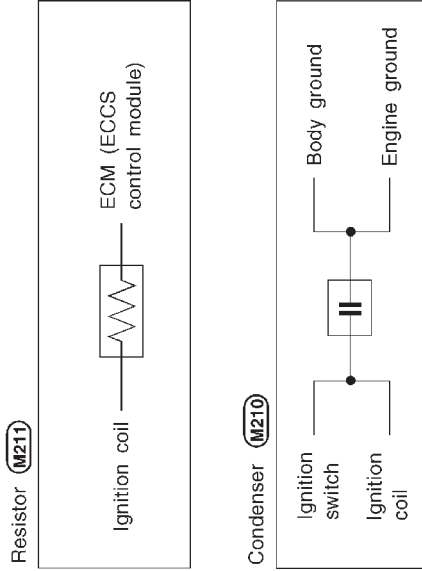
Main Harness (Cont'd)

ENGINE COMPARTMENT — KA24E ENGINE (LHD models)

Sub-harness

B1 (M301) GY/3 : To (M205)
C1 (M302) BR/3 : Throttle position sensor

| | | |
|-----------|------|---|
| E1 (M201) | BR/2 | : Swirl control valve control solenoid valve |
| D1 (M202) | B/2 | : EVAP canister purge control solenoid valve |
| D1 (M203) | GY/4 | : IACV-AAC valve • IACV-FICD solenoid valve |
| C1 (M204) | GY/3 | : Mass air flow sensor |
| B2 (M205) | GY/3 | : To (M301) |
| B2 (M206) | GY/2 | : Intake air temperature sensor |
| B2 (M207) | — | : Engine ground |
| B3 (M208) | — | : Engine ground |
| B3 (M209) | B/1 | : Thermal transmitter |
| C3 (M210) | W/2 | : Condenser |
| C3 (M211) | -/2 | : Resistor |
| D3 (M212) | B/1 | : Compressor |
| D3 (M213) | GY/2 | : Distributor |
| D2 (M214) | GY/6 | : Distributor |
| D3 (M215) | GY/2 | : Engine coolant temperature sensor |
| D2 (M216) | B/2 | : Injector No.1 |
| D2 (M217) | B/2 | : Injector No.2 |
| D2 (M218) | B/2 | : Injector No.3 |
| D2 (M219) | B/2 | : Injector No.4 |
| D1 (M220) | GY/8 | : Wiper amplifier or jumping connector (SE grade) |
| C1 (M221) | W/6 | : Wiper motor |



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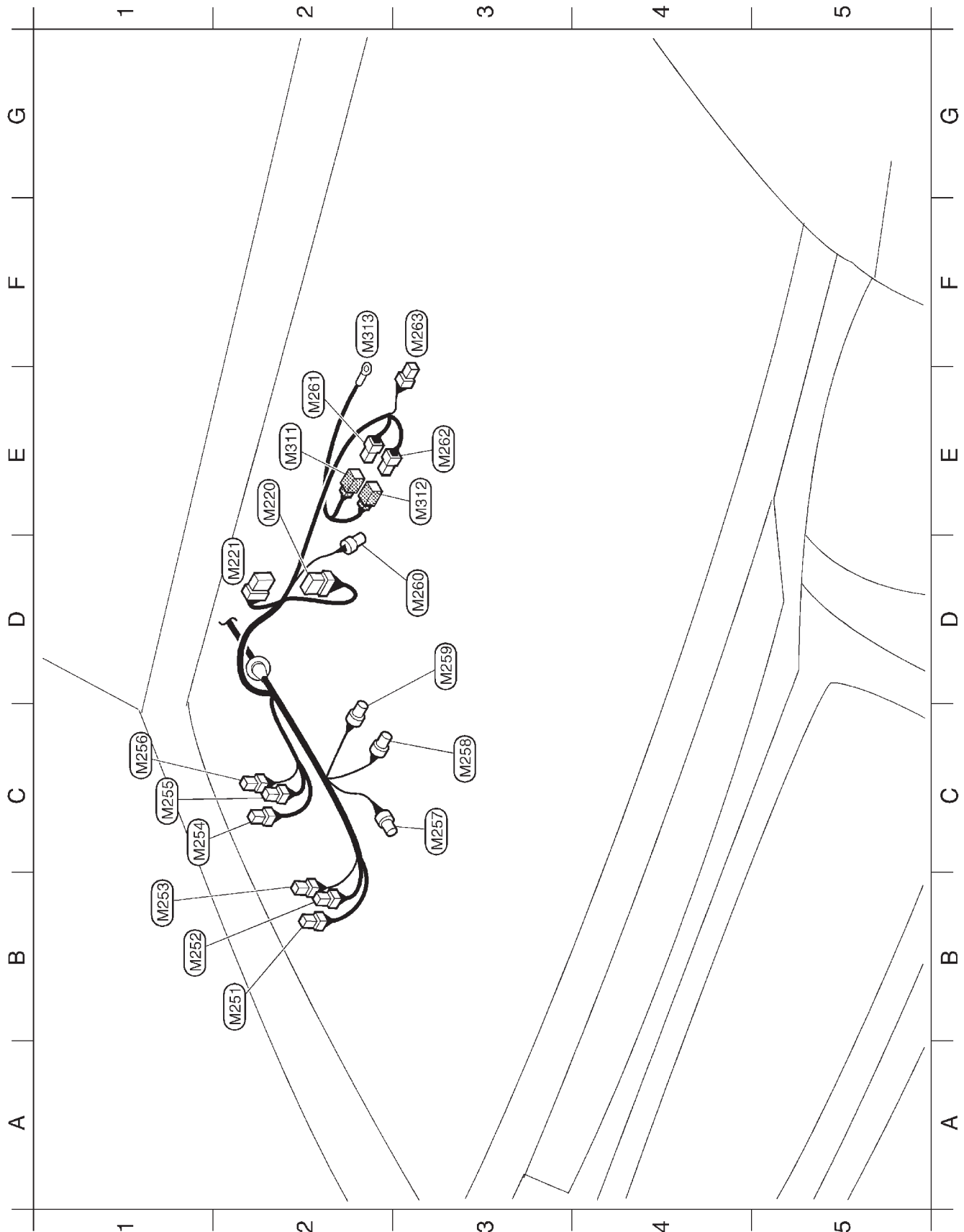
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HARNESS LAYOUT

Main Harness (Cont'd)

ENGINE COMPARTMENT — EXCEPT KA24E ENGINE (LHD models)



HARNESS LAYOUT

Main Harness (Cont'd)

ENGINE COMPARTMENT — EXCEPT KA24E ENGINE (LHD models)

Sub-harness (Diesel engine)

| | | | | |
|----|--------|------|---|--|
| E2 | (M220) | GY/8 | : | Wiper amplifier (AX grade) |
| D2 | (M221) | W/6 | : | Wiper motor |
| B2 | (M251) | W/1 | : | Glow relay-1 (Diesel engine) |
| B1 | (M252) | W/1 | : | Glow relay-1 (Diesel engine) |
| B1 | (M253) | G/2 | : | Glow relay-1 (Diesel engine) |
| C1 | (M254) | W/1 | : | Glow relay-2 (TD engine for cold areas) |
| C1 | (M255) | W/1 | : | Glow relay-2 (TD engine for cold areas) |
| C1 | (M256) | G/2 | : | Glow relay-2 (TD engine for cold areas) |
| C3 | (M257) | BR/2 | : | Fuel return control solenoid valve (NA engine) |
| C3 | (M258) | GY/2 | : | Vacuum switch (NA engine) |
| D3 | (M259) | BR/2 | : | Fuel filter switch (Diesel engine) |
| D3 | (M260) | GY/3 | : | Carburetor (NA engine and Z engine) |
| E2 | (M261) | B/1 | : | To (M311) (QD engine) |
| E3 | (M262) | L/2 | : | To (M312) (TD engine) |
| F3 | (M263) | B/2 | : | Dropping resistor (TD engine for cold areas) |

| | | | | |
|----|--------|-----|---|-----------------------|
| E2 | (M311) | B/1 | : | To (M261) (QD engine) |
| E3 | (M312) | L/2 | : | To (M262) (TD engine) |
| F2 | (M313) | — | : | Glow plug |

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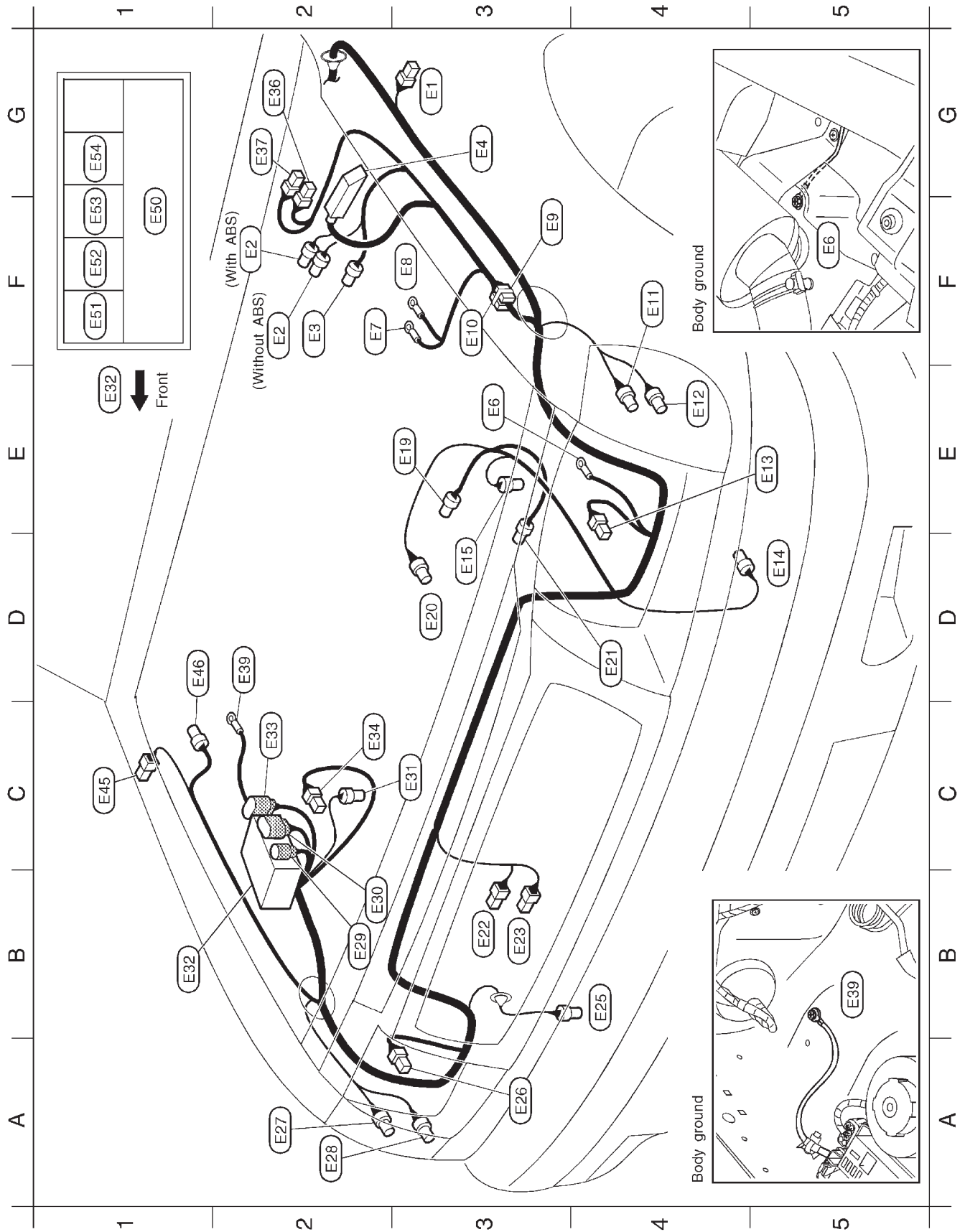
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HARNESS LAYOUT

Engine Room Harness

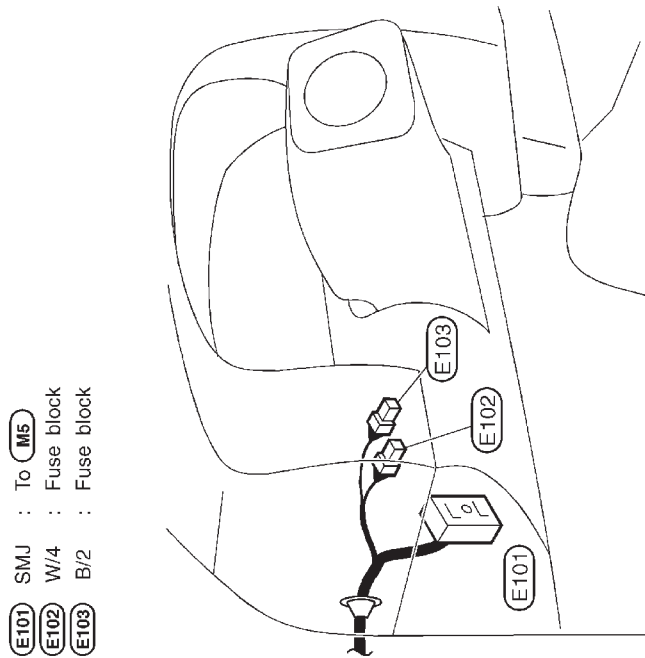
LHD MODELS — GASOLINE ENGINE



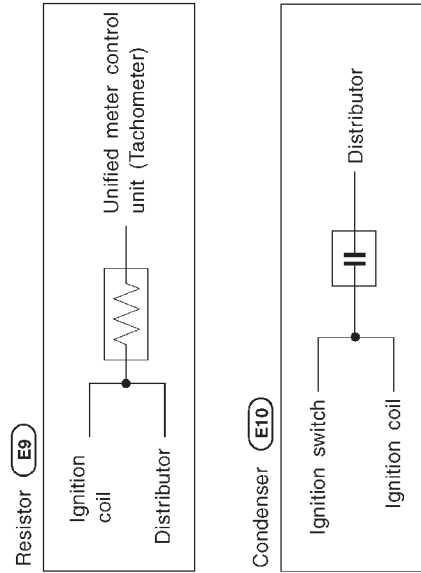
HARNESS LAYOUT

Engine Room Harness (Cont'd)

LHD MODELS — GASOLINE ENGINE



E101 SMJ : To **M5**
E102 W/4 : Fuse block
E103 B/2 : Fuse block

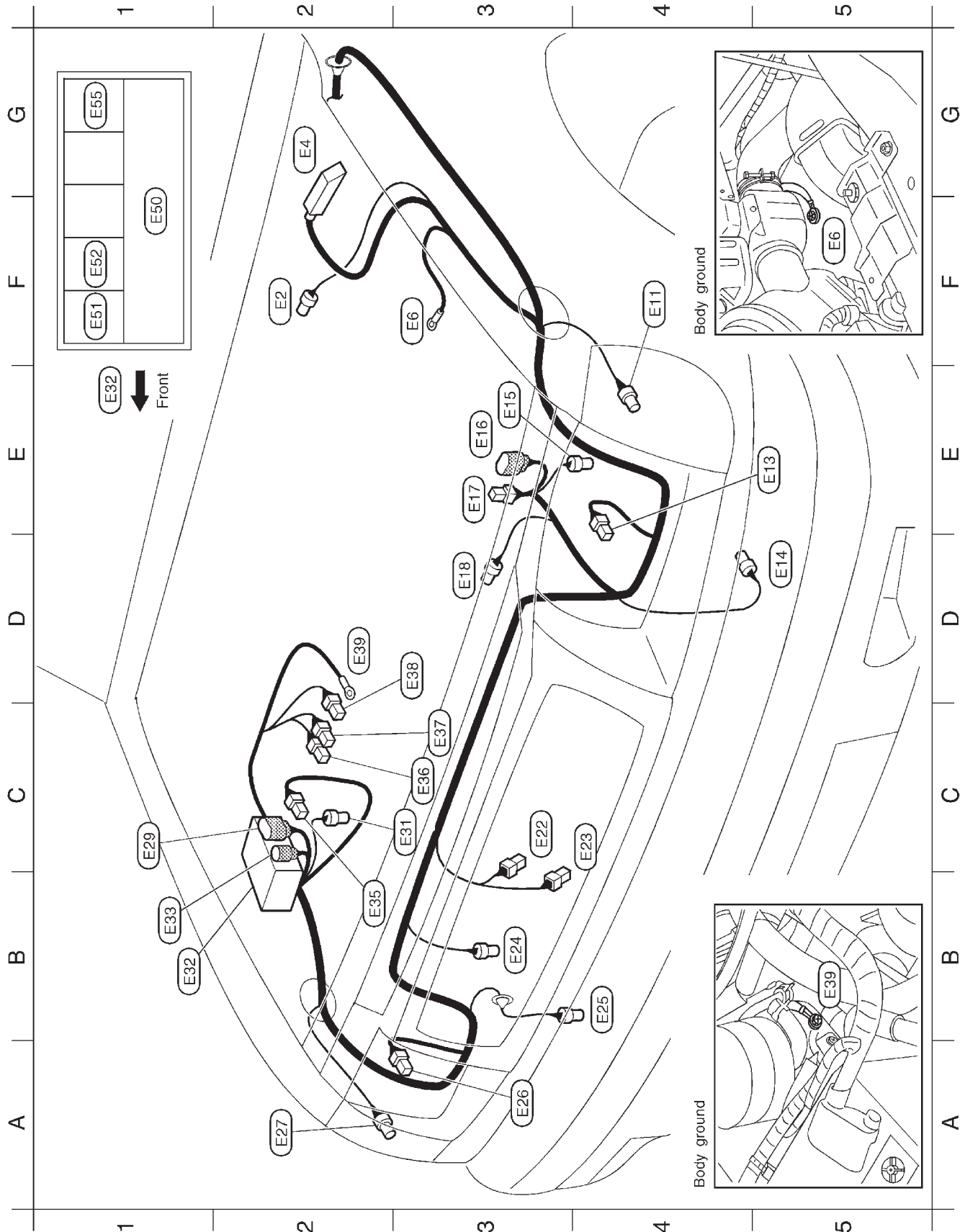


| | | | |
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| G3 | E1 | B/2 | : Side turn signal lamp LH (For China) |
| F2 | E2 | GY/2 | : Brake fluid level switch |
| F2 | E3 | GY/3 | : Heated oxygen sensor (KA engine) |
| G3 | E4 | B/31 | : ABS actuator assembly (For ABS) |
| E3 | E6 | — | : Body ground |
| F2 | E7 | — | : Ignition coil (NA engine and Z engine) |
| F3 | E8 | — | : Ignition coil (NA engine and Z engine) |
| F3 | E9 | -/2 | : Resistor (NA engine and Z engine) |
| F3 | E10 | W/2 | : Condenser (NA engine and Z engine) |
| F4 | E11 | GY/3 | : Front combination lamp LH (Except for China) |
| E4 | E12 | BR/3 | : Front combination lamp LH (For China) |
| E5 | E13 | B/3 | : Headlamp LH |
| D5 | E14 | GY/2 | : Washer motor |
| D3 | E15 | BR/2 | : Front wheel sensor LH (For ABS) |
| E3 | E19 | GY/3 | : Distributor (NA engine and Z engine) |
| D3 | E20 | B/2 | : Vacuum control solenoid valve (NA engine) |
| D4 | E21 | B/1 | : Compressor (NA engine and Z engine) |
| B3 | E22 | B/1 | : Horn low |
| B3 | E23 | B/1 | : Horn high |
| B4 | E25 | B/4 | : Triple-pressure switch |
| A3 | E26 | B/3 | : Headlamp RH |
| A2 | E27 | GY/3 | : Front combination lamp RH (Except for China) |
| A2 | E28 | BR/3 | : Front combination lamp RH (For China) |
| B2 | E29 | GY/2 | : To E204 |
| B2 | E30 | B/8 | : To E203 |
| C3 | E31 | GY/2 | : Front wheel sensor RH (For ABS) |
| B1 | E32 | — | : Relay box (Fusible link and fuse box) |
| C2 | E33 | GY/8 | : To E205 |
| C2 | E34 | B/1 | : Battery |
| G2 | E36 | B/1 | : ISC-FI pot control solenoid valve (NA engine and Z engine) |
| G2 | E37 | B/1 | : ISC-FI pot control solenoid valve (NA engine and Z engine) |
| D2 | E39 | — | : Body ground |
| C1 | E45 | B/2 | : Side turn signal lamp RH (For China) |
| D1 | E46 | GY/3 | : Power antenna (For Middle East) |
| F1 | E50 | — | : Fusible link and fuse box |
| F1 | E51 | L/4 | : Air conditioner relay |
| F1 | E52 | W/3 | : Horn relay |
| F1 | E53 | L/4 | : ECCS relay (KA engine) |
| G1 | E54 | B/5 | : Automatic choke relay (NA engine and Z engine) |
| | | L/4 | : Fuel pump relay (KA engine) |

HARNESS LAYOUT

Engine Room Harness (Cont'd)

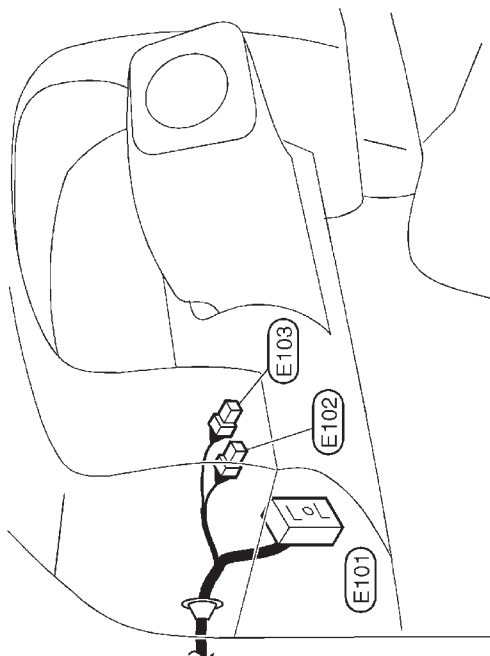
LHD MODELS — DIESEL ENGINE



HARNESS LAYOUT

Engine Room Harness (Cont'd)

LHD MODELS — DIESEL ENGINE



(E101) SMJ : To (M5)
 (E102) W/4 : Fuse block
 (E103) B/2 : Fuse block

| | | | |
|----|-------|------|---|
| F2 | (E2) | GY/2 | : Brake fluid level switch |
| G2 | (E4) | B/31 | : ABS actuator assembly (For ABS) |
| F3 | (E6) | — | : Body ground |
| F4 | (E11) | GY/3 | : Front combination lamp LH |
| E5 | (E13) | B/3 | : Headlamp LH |
| D5 | (E14) | GY/2 | : Washer motor |
| E3 | (E15) | BR/2 | : Front wheel sensor LH (For ABS) |
| E3 | (E16) | GY/8 | : To (A3) |
| E3 | (E17) | B/2 | : To (A2) |
| D3 | (E18) | GY/2 | : Thermostat (Except TD engine for cold areas) |
| C3 | (E22) | B/1 | : Horn low |
| C4 | (E23) | B/1 | : Horn high (Except TD engine for cold areas) |
| B3 | (E24) | GY/2 | : Cooling fan motor (Except TD engine for cold areas) |
| B4 | (E25) | B/4 | : Triple-pressure switch |
| A3 | (E26) | B/3 | : Headlamp RH |
| A2 | (E27) | GY/3 | : Front combination lamp RH |
| C1 | (E29) | GY/2 | : To (E204) |
| C3 | (E31) | GY/2 | : Front wheel sensor RH (For ABS) |
| B1 | (E32) | — | : Relay box (Fusible link and fuse box) |
| B1 | (E33) | GY/8 | : To (E205) |
| B2 | (E35) | B/1 | : To (E206) |
| C3 | (E36) | B/1 | : IACV-FICD solenoid valve |
| C3 | (E37) | B/1 | : IACV-FICD solenoid valve |
| D3 | (E38) | GY/1 | : Vacuum warning switch |
| D2 | (E39) | — | : Body ground |
| F1 | (E50) | — | : Fusible link and fuse box |
| F1 | (E51) | L/4 | : Air conditioner relay |
| F1 | (E52) | W/3 | : Horn relay |
| G1 | (E55) | L/4 | : Cooling fan relay (Except TD engine for cold areas) |

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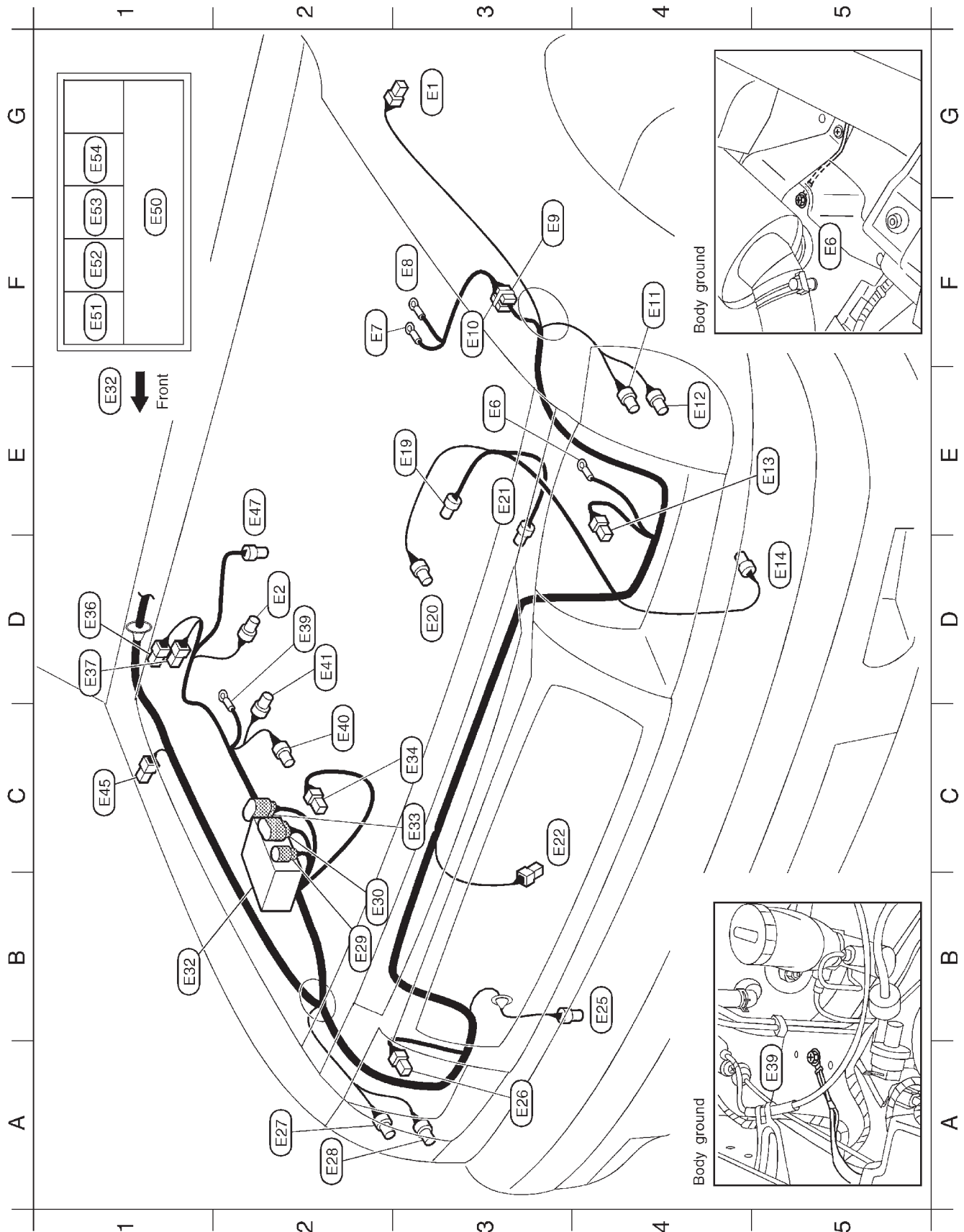
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HARNESS LAYOUT

Engine Room Harness (Cont'd)

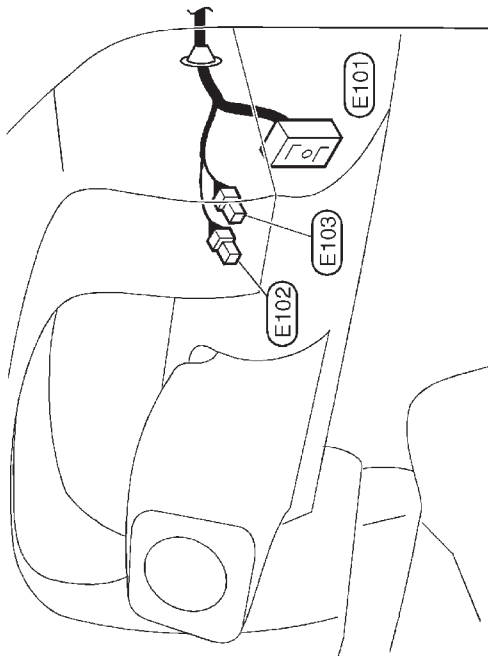
RHD MODELS — GASOLINE ENGINE



HARNESS LAYOUT

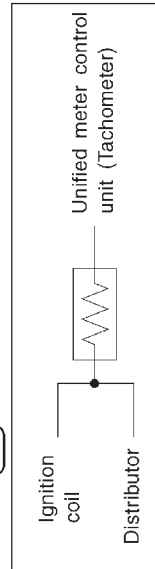
Engine Room Harness (Cont'd)

RHD MODELS — GASOLINE ENGINE

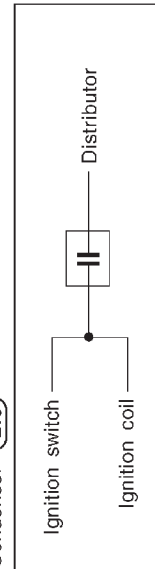


(E101) SMJ : To **(M5)**
(E102) W/4 : Fuse block
(E103) B/2 : Fuse block

Resistor **(E9)**



Condenser **(E10)**



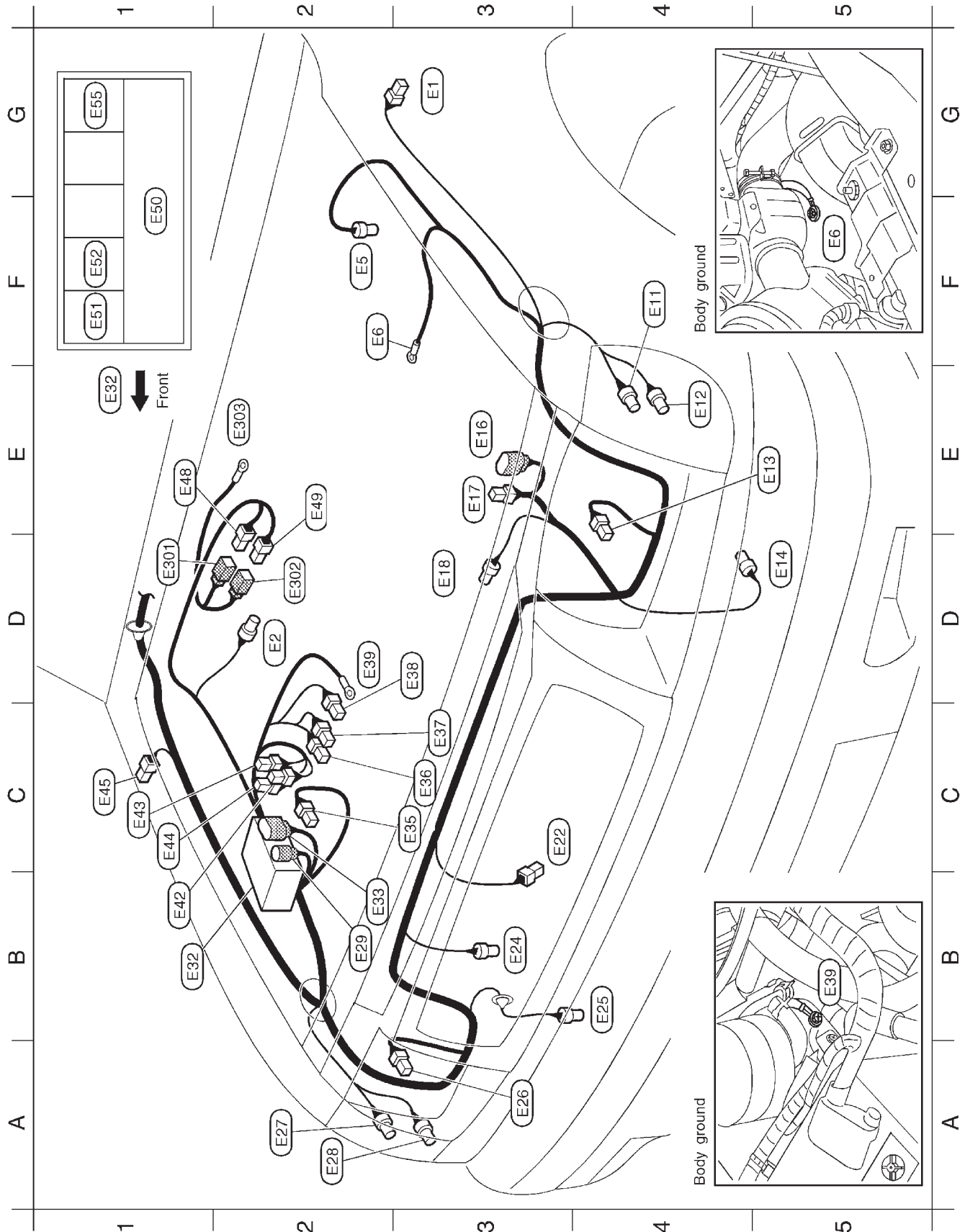
| | | | |
|----|--------------|------|--|
| G3 | (E1) | B/2 | : Side turn signal lamp LH (For Australia) |
| D2 | (E2) | GY/2 | : Brake fluid level switch |
| E3 | (E6) | — | : Body ground |
| F2 | (E7) | — | : Ignition coil (NA engine and Z engine) |
| F3 | (E8) | — | : Ignition coil (NA engine and Z engine) |
| F3 | (E9) | -/2 | : Resistor (NA engine and Z engine) |
| F3 | (E10) | W/2 | : Condenser (NA engine and Z engine) |
| F4 | (E11) | GY/3 | : Front combination lamp LH (Except for Australia) |
| E4 | (E12) | BR/3 | : Front combination lamp LH (For Australia) |
| E5 | (E13) | B/3 | : Headlamp LH |
| D5 | (E14) | GY/2 | : Washer motor |
| E3 | (E19) | GY/3 | : Distributor (NA engine and Z engine) |
| D3 | (E20) | B/2 | : Vacuum control solenoid valve (NA engine) |
| E3 | (E21) | B/1 | : Compressor (Except for Australia) |
| C3 | (E22) | B/1 | : Horn low |
| B4 | (E25) | B/4 | : Triple-pressure switch |
| A3 | (E26) | B/3 | : Headlamp RH |
| A2 | (E27) | GY/3 | : Front combination lamp RH (Except for Australia) |
| A2 | (E28) | BR/3 | : Front combination lamp RH (For Australia) |
| B2 | (E29) | GY/2 | : To (E204) |
| B2 | (E30) | B/8 | : To (E203) |
| B1 | (E32) | — | : Relay box (Fusible link and fuse box) |
| C3 | (E33) | GY/8 | : To (E205) |
| C3 | (E34) | B/1 | : Battery |
| D1 | (E36) | B/1 | : ISC-FI pot control solenoid valve (Except for Australia) |
| D1 | (E37) | B/1 | : ISC-FI pot control solenoid valve (Except for Australia) |
| D2 | (E39) | — | : Body ground |
| C2 | (E40) | BR/2 | : Fuel return control solenoid valve (NA engine) |
| D2 | (E41) | GY/2 | : Vacuum switch (NA engine) |
| C1 | (E45) | B/2 | : Side turn signal lamp RH (For Australia) |
| E2 | (E47) | GY/3 | : Carburetor (NA engine and Z engine) |
| F1 | (E50) | — | : Fusible link and fuse box |
| F1 | (E51) | L/4 | : Air conditioner relay |
| F1 | (E52) | W/3 | : Horn relay |
| F1 | (E53) | L/4 | : ECCS relay (KA engine) |
| G1 | (E54) | B/5 | : Automatic choke relay (NA engine and Z engine) |
| | | L/4 | : Fuel pump relay (KA engine) |

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HARNESS LAYOUT

Engine Room Harness (Cont'd)

RHD MODELS — DIESEL ENGINE

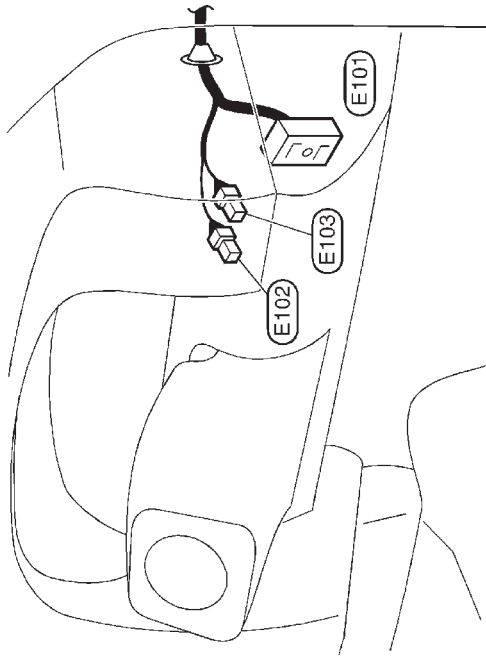


HARNESS LAYOUT

Engine Room Harness (Cont'd)

RHD MODELS — DIESEL ENGINE

| | | |
|----------|------|--|
| G3 (E1) | B/2 | : Side turn signal lamp LH (For Australia) |
| D2 (E2) | GY/2 | : Brake fluid level switch |
| F2 (E5) | BR/2 | : Fuel filter switch |
| F2 (E6) | — | : Body ground |
| F4 (E11) | GY/3 | : Front combination lamp LH (Except for Australia) |
| E4 (E12) | BR/3 | : Front combination lamp LH (For Australia) |
| E5 (E13) | B/3 | : Headlamp LH |
| D5 (E14) | GY/2 | : Washer motor |
| E3 (E16) | GY/8 | : To (A3) |
| E3 (E17) | B/2 | : To (A2) |
| D3 (E18) | GY/2 | : Thermoswitch (QD engine) |
| C3 (E22) | B/1 | : Horn low |
| B3 (E24) | GY/2 | : Cooling fan motor (QD engine) |
| B4 (E25) | B/4 | : Triple-pressure switch |
| A3 (E26) | B/3 | : Headlamp RH |
| A2 (E27) | GY/3 | : Front combination lamp RH (Except for Australia) |
| A2 (E28) | BR/3 | : Front combination lamp RH (For Australia) |
| B2 (E29) | GY/2 | : To (E204) |
| B1 (E32) | — | : Relay box (Fusible link and fuse box) |
| B2 (E33) | GY/8 | : To (E205) |
| C3 (E35) | B/1 | : To (E206) |
| C3 (E36) | B/1 | : IACV-FICD solenoid valve |
| C3 (E37) | B/1 | : IACV-FICD solenoid valve |
| D3 (E38) | GY/1 | : Vacuum warning switch (Except for Australia) |
| D2 (E39) | — | : Body ground |
| B1 (E42) | W/1 | : Glow relay-1 |
| C1 (E43) | W/1 | : Glow relay-1 |
| C1 (E44) | G/2 | : Glow relay-1 |
| C1 (E45) | B/2 | : Side turn signal lamp RH (For Australia) |
| E1 (E48) | B/1 | : To (E301) (QD engine) |
| E2 (E49) | L/2 | : To (E302) (TD engine) |
| F1 (E50) | — | : Fusible link and fuse box |
| F1 (E51) | L/4 | : Air conditioner relay |
| F1 (E52) | W/3 | : Horn relay |
| G1 (E55) | L/4 | : Cooling fan relay (QD engine) |

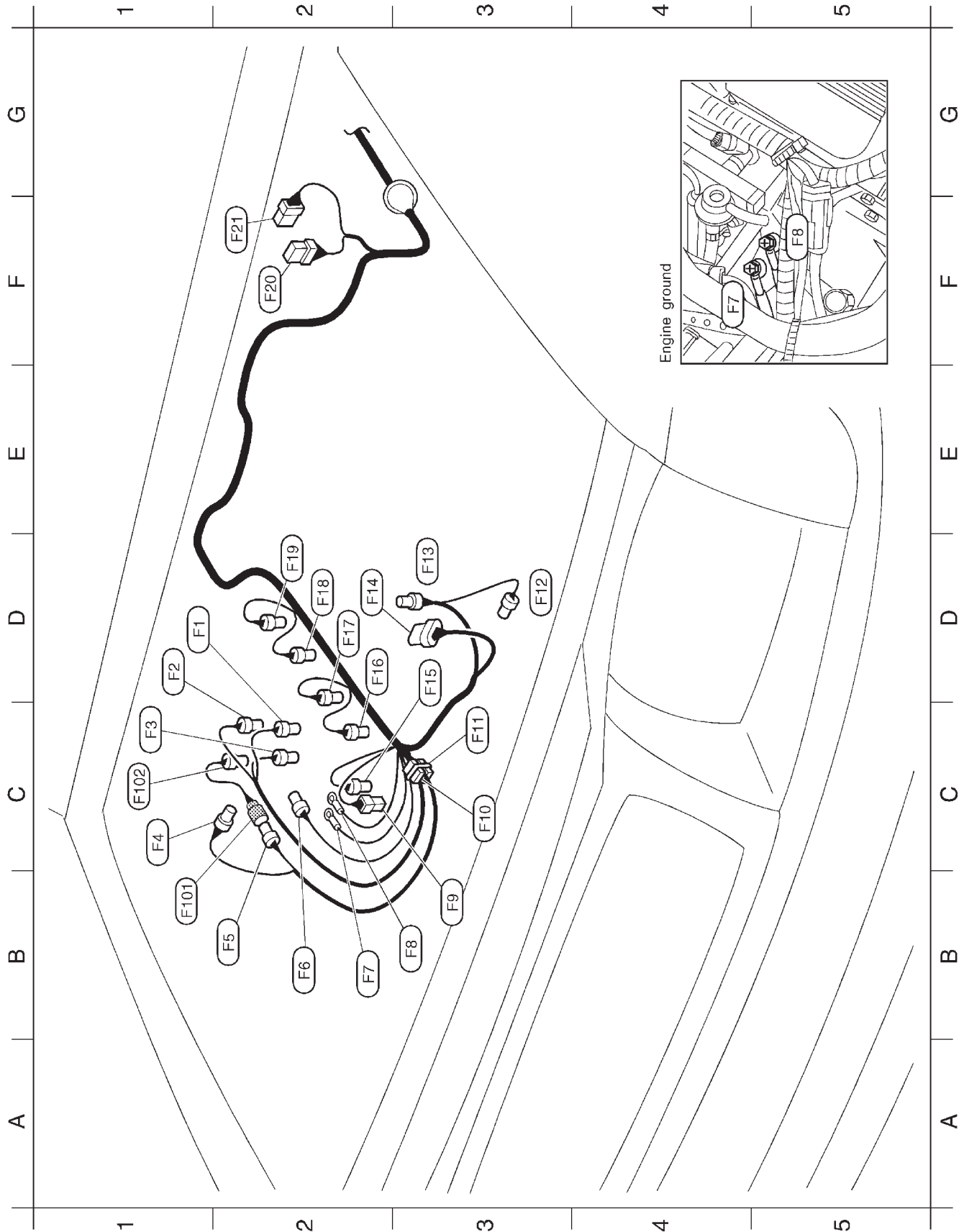


| | | |
|-----------|-----|------------------------|
| (E101) | SMJ | : To (M5) |
| (E102) | W/4 | : Fuse block |
| (E103) | B/2 | : Fuse block |
| D1 (E301) | B/1 | : To (E48) (QD engine) |
| D2 (E302) | L/2 | : To (E49) (TD engine) |
| E2 (E303) | — | : Glow plug |

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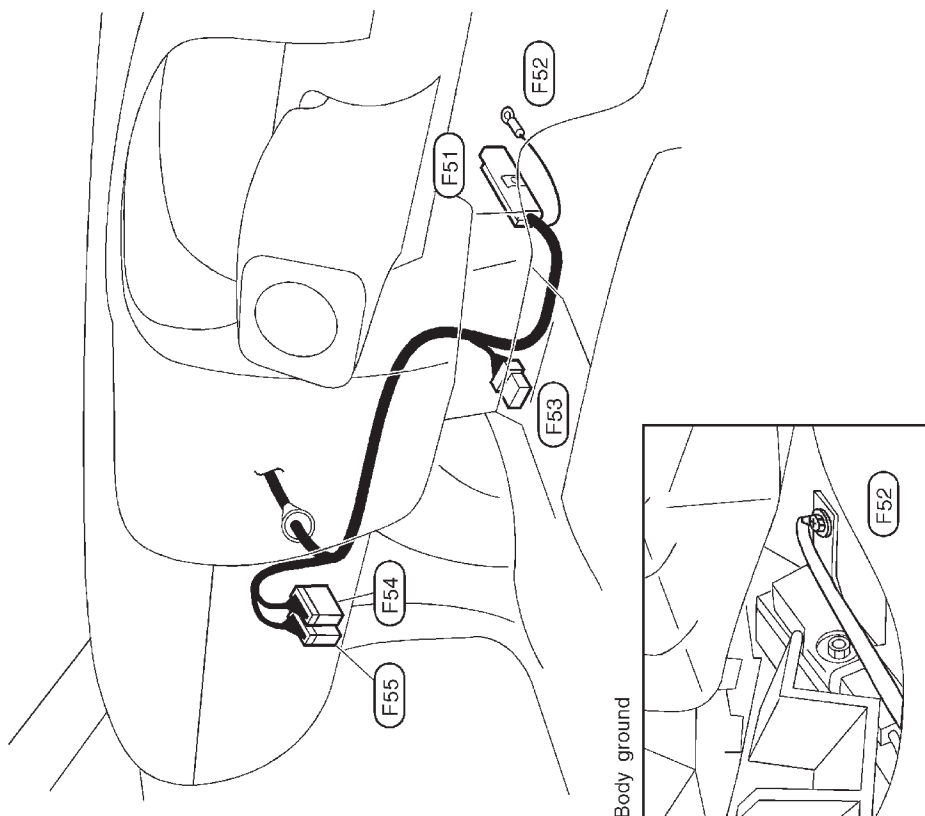
HARNESS LAYOUT

Engine Control Harness



HARNESS LAYOUT

Engine Control Harness (Cont'd)

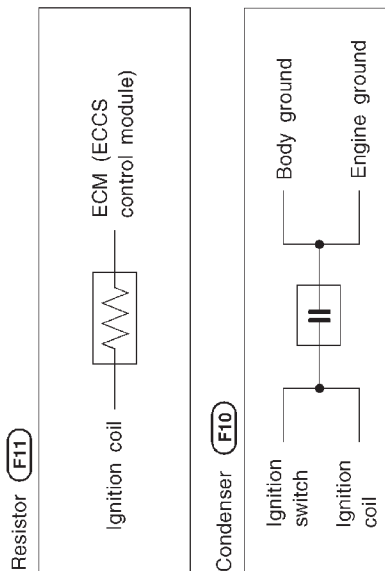


| | | | |
|----|-----|------|--|
| D1 | F1 | BR/2 | : Swirl control valve control solenoid valve |
| D1 | F2 | B/2 | : EVAP canister purge control solenoid valve |
| C1 | F3 | GY/4 | : IACV-AAC valve • IACV-FICD solenoid valve |
| C1 | F4 | GY/3 | : Mass air flow sensor |
| B2 | F5 | GY/3 | : To (F101) |
| B2 | F6 | GY/2 | : Intake air temperature sensor |
| B2 | F7 | — | : Engine ground |
| B3 | F8 | — | : Engine ground |
| B3 | F9 | B/1 | : Thermal transmitter |
| C3 | F10 | W/2 | : Condenser |
| C3 | F11 | -/2 | : Resistor |
| D3 | F12 | B/1 | : Not used |
| D3 | F13 | GY/2 | : Distributor |
| D2 | F14 | GY/6 | : Distributor |
| D3 | F15 | GY/2 | : Engine coolant temperature sensor |
| D2 | F16 | B/2 | : Injector No.1 |
| D2 | F17 | B/2 | : Injector No.2 |
| D2 | F18 | B/2 | : Injector No.3 |
| D2 | F19 | B/2 | : Injector No.4 |
| F2 | F20 | GY/8 | : Wiper amplifier or jumping connector |
| F2 | F21 | W/6 | : Wiper motor |

| | | |
|-----|------|-----------------------------|
| F51 | GY/8 | : ECM (ECCS control module) |
| F52 | — | : Body ground |
| F53 | GY/6 | : Joint connector |
| F54 | W/24 | : To (M48) |
| F55 | W/10 | : To (M47) |

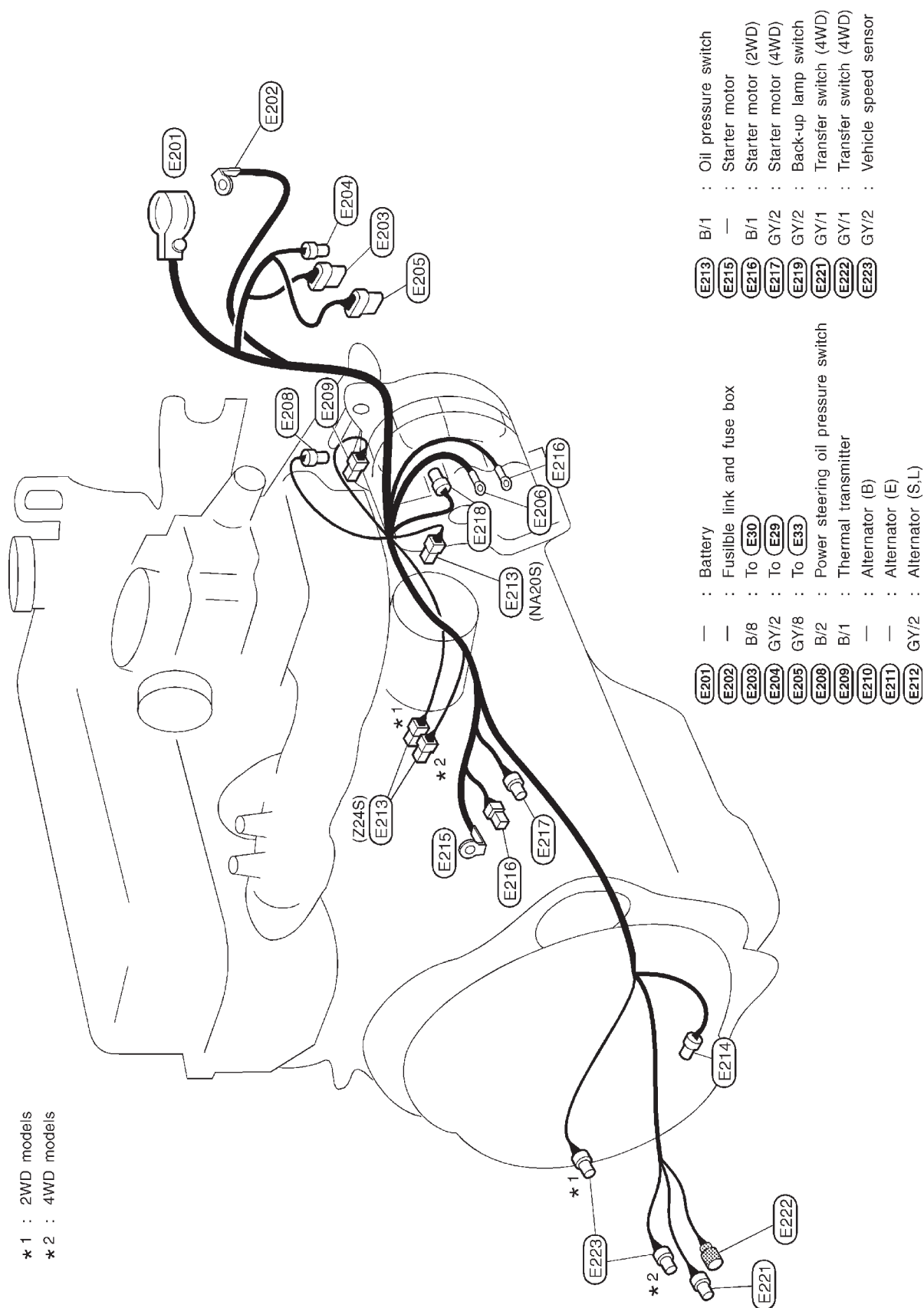
Sub-harness

| | | | |
|----|--------|------|----------------------------|
| B1 | (F101) | GY/3 | : To (F5) |
| C1 | (F102) | BR/3 | : Throttle position sensor |



Engine Harness

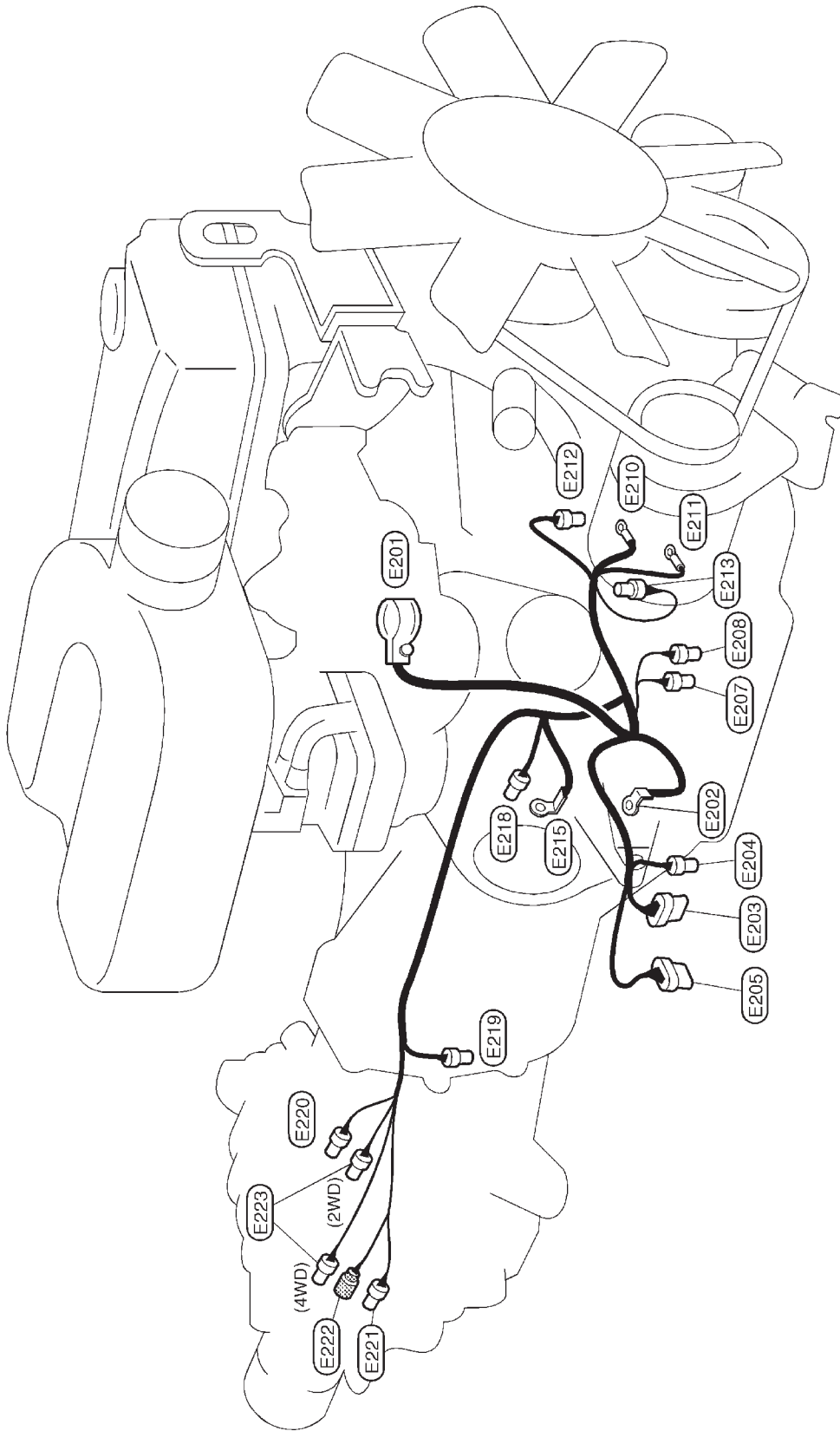
NA AND Z ENGINES



HARNESS LAYOUT

Engine Harness (Cont'd)

KA ENGINE



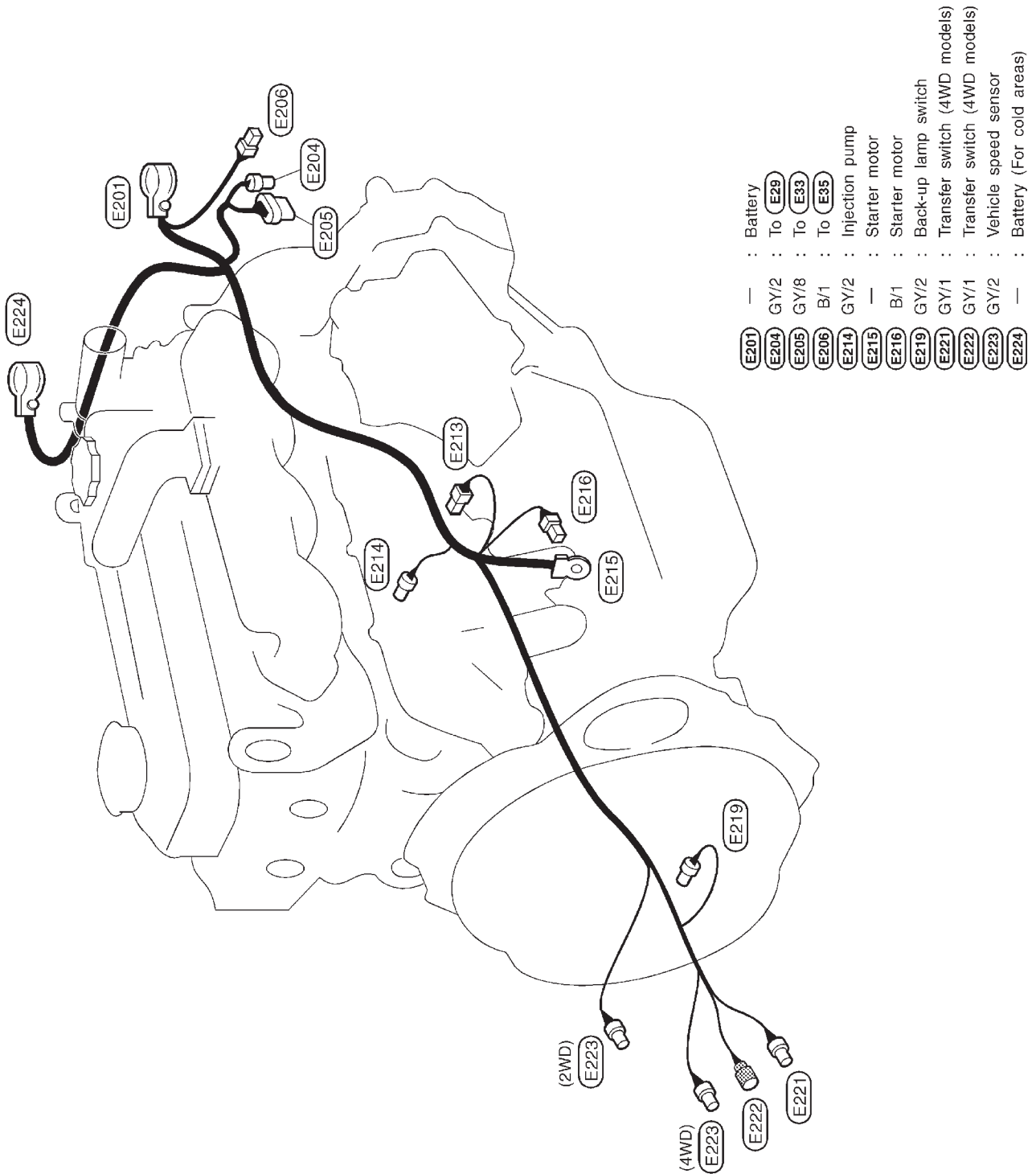
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|-------------|------|--|-------------|------|--------------------------------|
| E201 | — | : Battery | E213 | B/1 | : Oil pressure switch |
| E202 | — | : Fusible link and fuse box | E215 | — | : Starter motor |
| E203 | B/8 | : To E30 | E218 | GY/1 | : Starter motor |
| E204 | GY/2 | : To E29 | E219 | GY/2 | : Back-up lamp switch |
| E205 | GY/8 | : To E33 | E220 | B/2 | : Neutral position switch |
| E207 | GY/2 | : Power steering oil pressure switch (RHD 4WD models) | E221 | GY/1 | : Transfer switch (4WD models) |
| E208 | B/2 | : Power steering oil pressure switch (Except RHD 4WD models) | E222 | GY/1 | : Transfer switch (4WD models) |
| E210 | — | : Alternator (B) | E223 | GY/2 | : Vehicle speed sensor |
| E211 | — | : Alternator (E) | | | |
| E212 | GY/2 | : Alternator (S,L) | | | |

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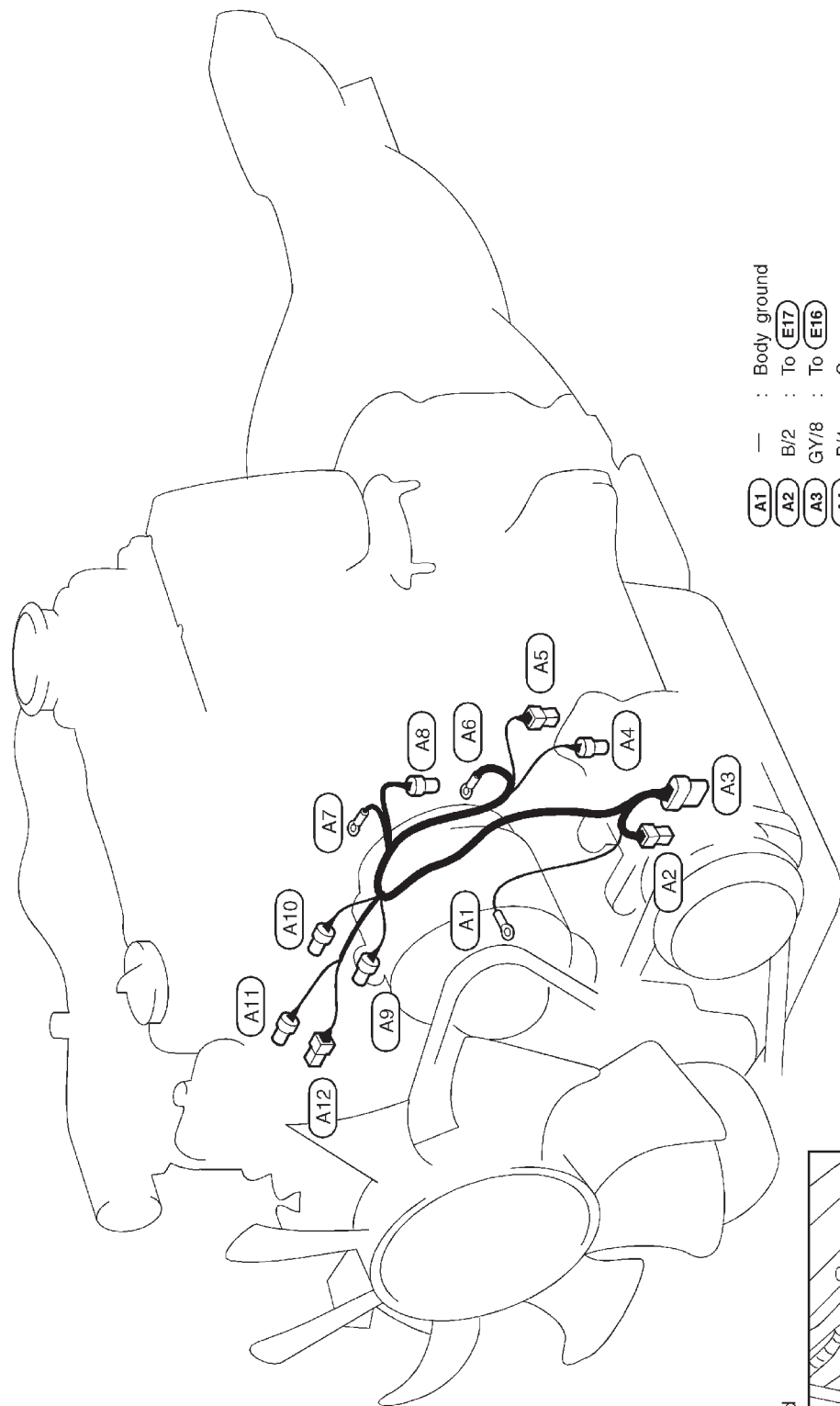
HARNESS LAYOUT

Engine Harness (Cont'd)

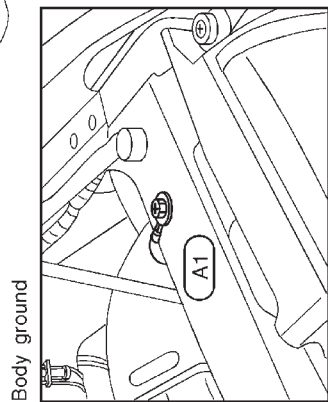
TD AND QD ENGINES



Alternator Harness



| | | |
|-------|------|-------------------------------------|
| (A1) | — | : Body ground |
| (A2) | B/2 | : To (E17) |
| (A3) | GY/8 | : To (E16) |
| (A4) | B/1 | : Compressor |
| (A5) | B/1 | : Not used |
| (A6) | — | : Alternator (B) |
| (A7) | — | : Alternator (E) |
| (A8) | GY/2 | : Alternator (S,L) |
| (A9) | GY/2 | : Not used |
| (A10) | BR/2 | : Revolution sensor |
| (A11) | GY/2 | : Engine coolant temperature sensor |
| (A12) | B/1 | : Thermal transmitter |

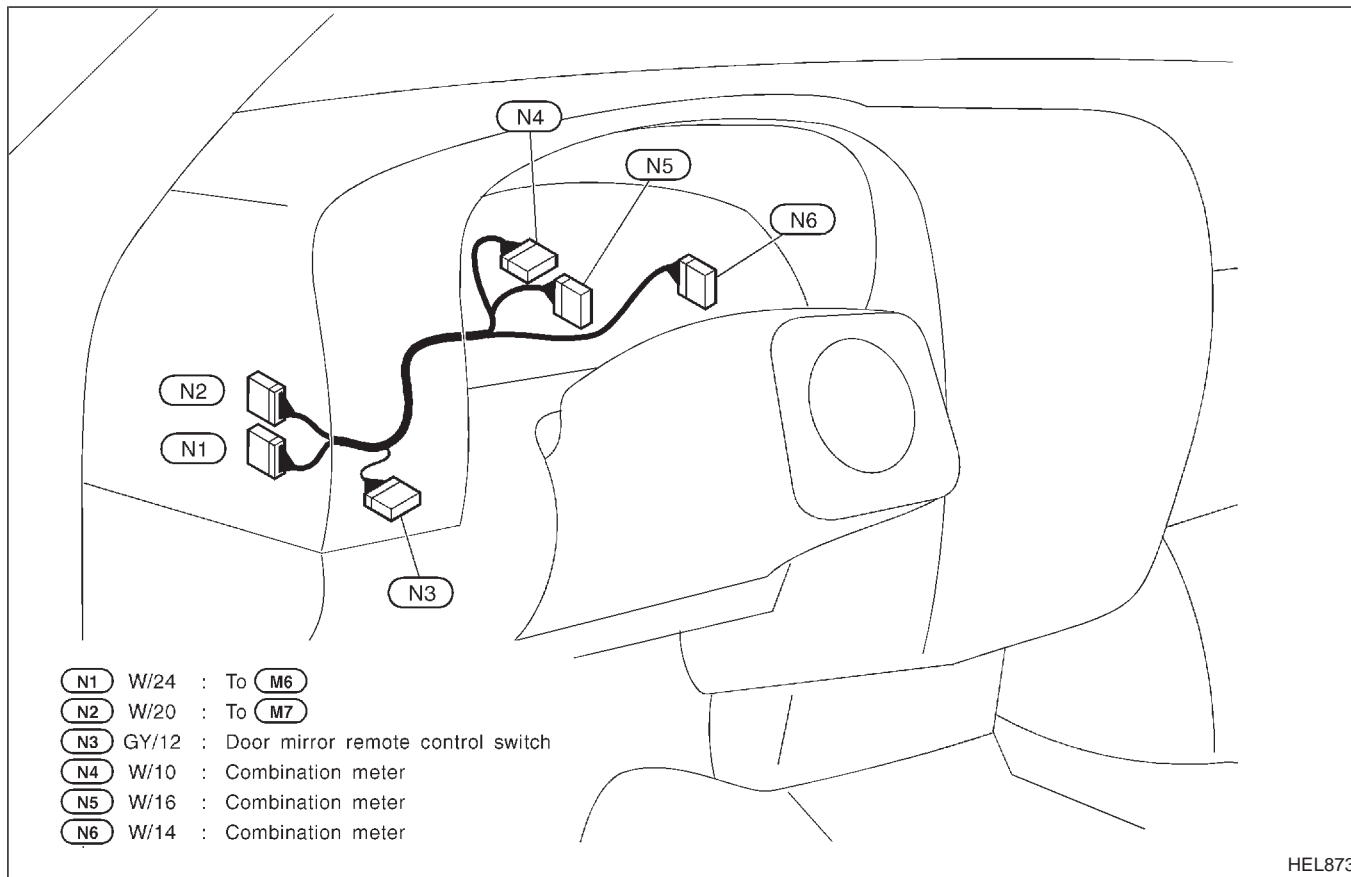


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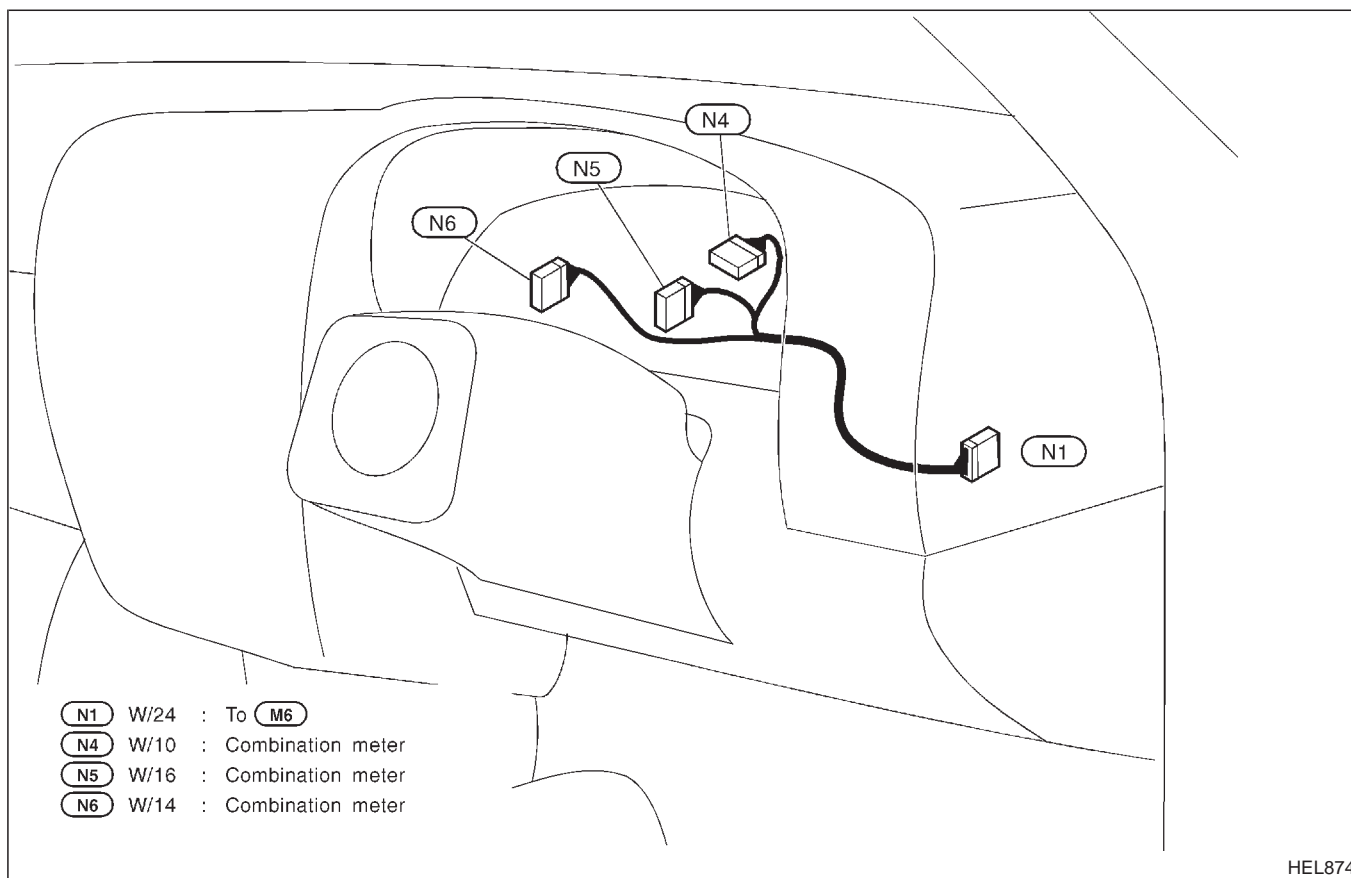
HARNESS LAYOUT

LHD MODELS

Instrument Harness



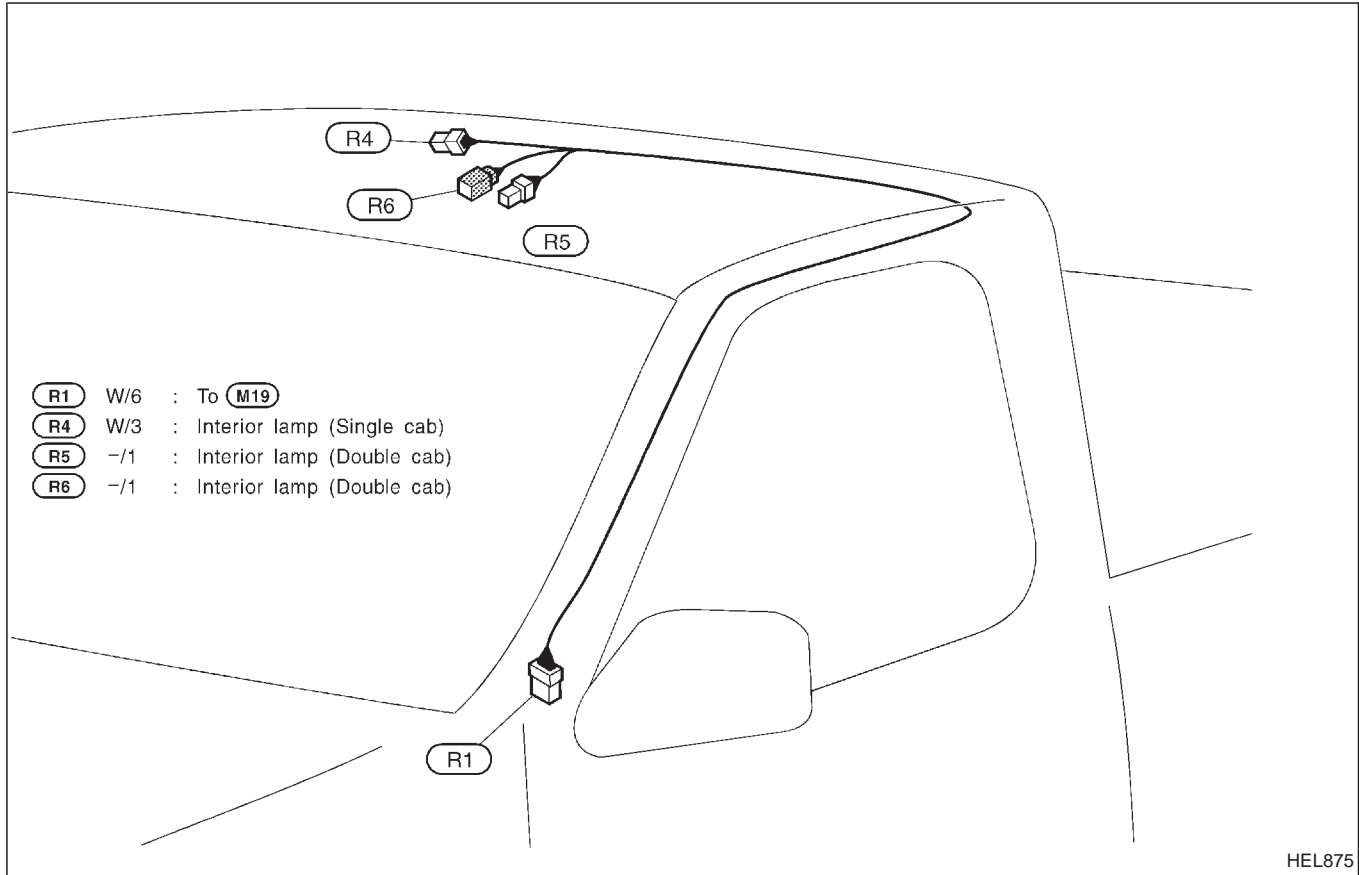
RHD MODELS



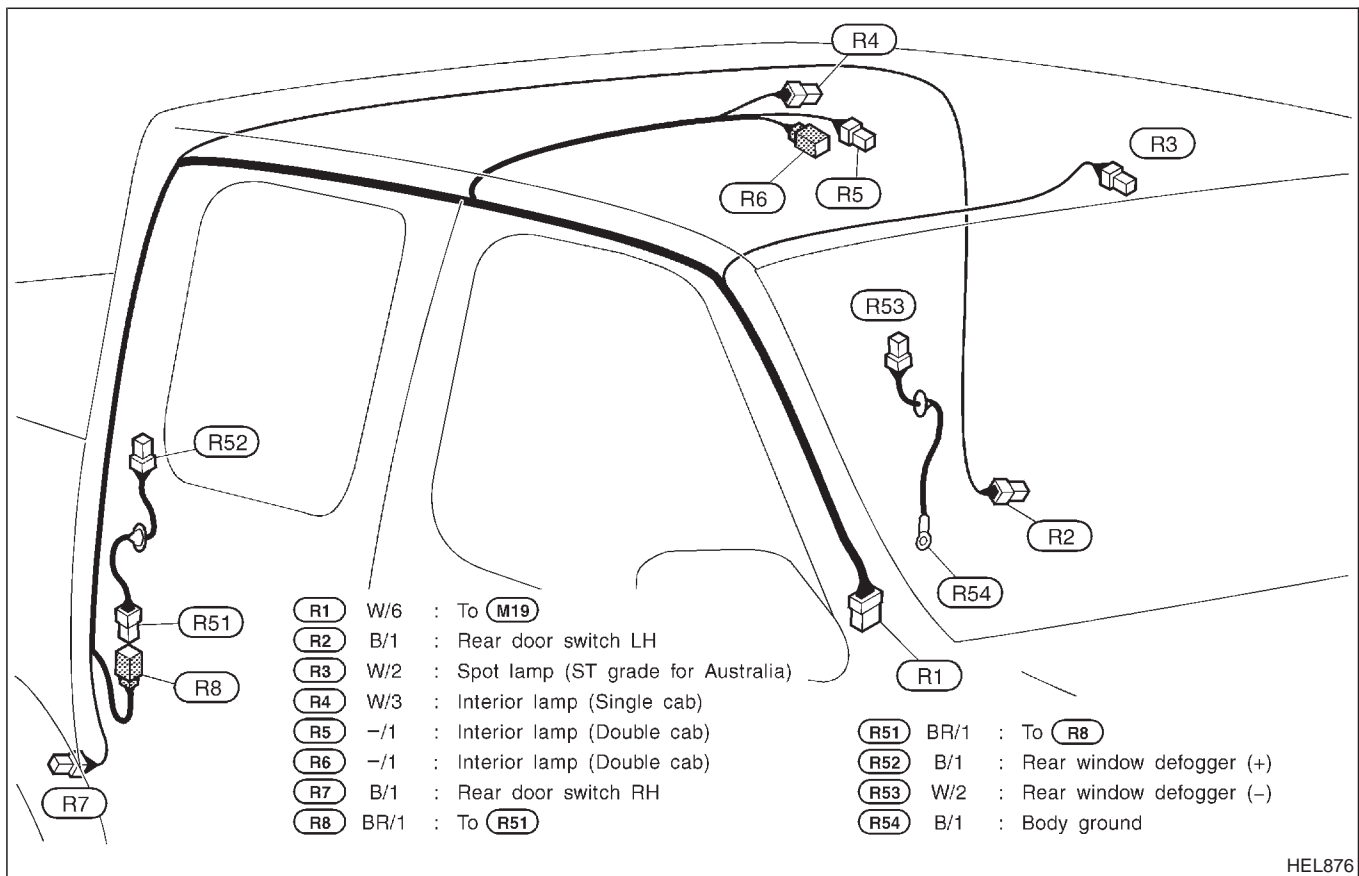
HARNESS LAYOUT

LHD MODELS

Room Lamp Harness



RHD MODELS



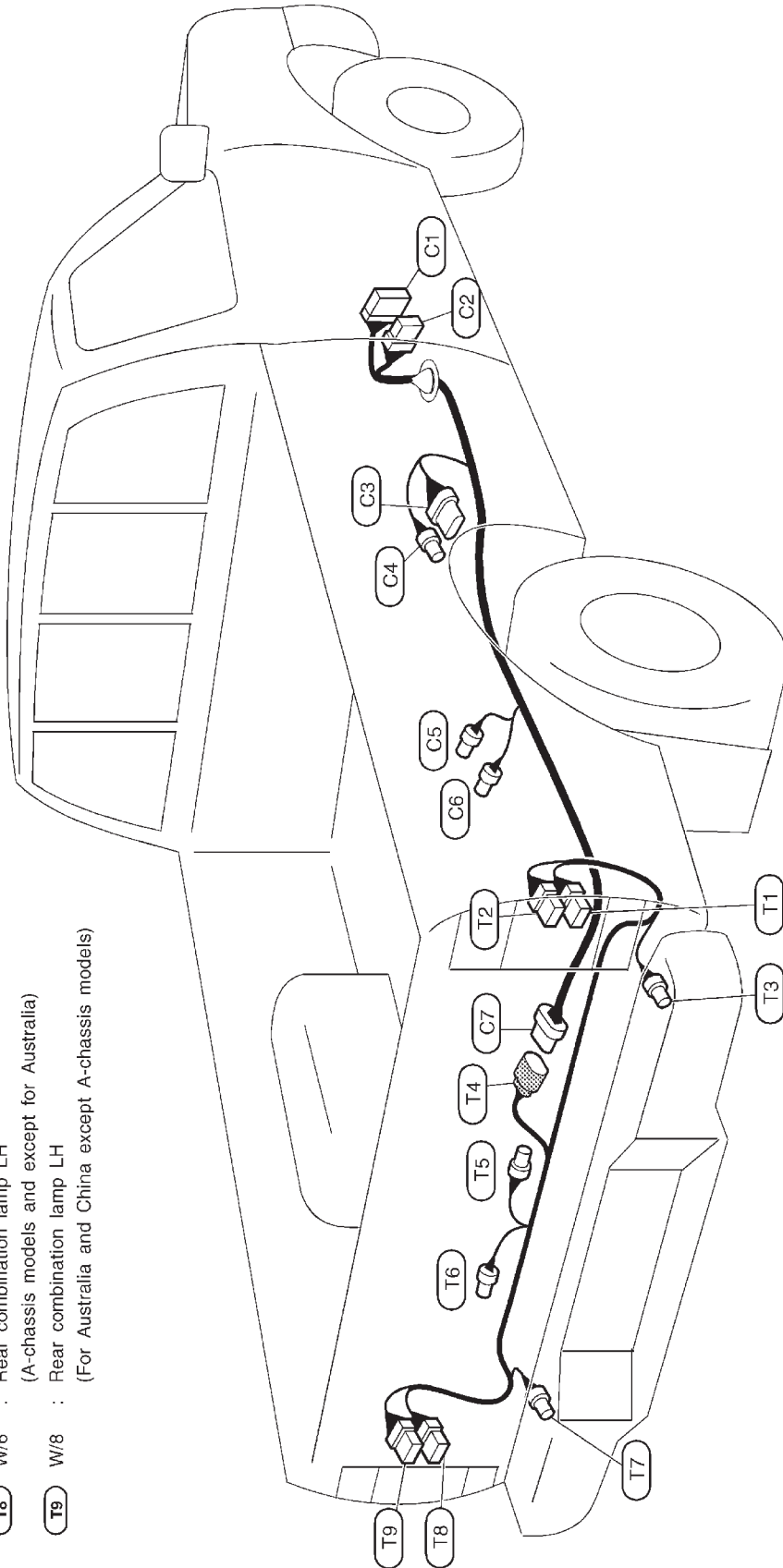
Chassis Harness and Tail Harness

Tail harness

- T1** : W/6 : Rear combination lamp RH
 (A-chassis models and except for Australia)
T2 : W/8 : Rear combination lamp RH
 (For Australia and China except A-chassis models)
T3 : GY/2 : License plate lamp RH (With step bumper)
T4 : GY/8 : To **C7**
T5 : GY/2 : License plate lamp RH (Without step bumper)
T6 : GY/2 : License plate lamp LH (Without step bumper)
T7 : B/2 : License plate lamp LH (With step bumper)
T8 : W/6 : Rear combination lamp LH
 (A-chassis models and except for Australia)
T9 : W/8 : Rear combination lamp LH
 (For Australia and China except A-chassis models)

Chassis harness

- C1** : W/12 : To **M111**
C2 : W/6 : To **M112** (LHD models with ABS)
C3 : GY/6 : Fuel tank gauge unit (With electric fuel pump)
C4 : GY/3 : Fuel tank gauge unit (With mechanical fuel pump)
C5 : GY/4 : Rear wheel sensor (For ABS)(4WD models)
C6 : GY/2 : Rear wheel sensor (For ABS)(2WD models)
C7 : GY/8 : To **T4**

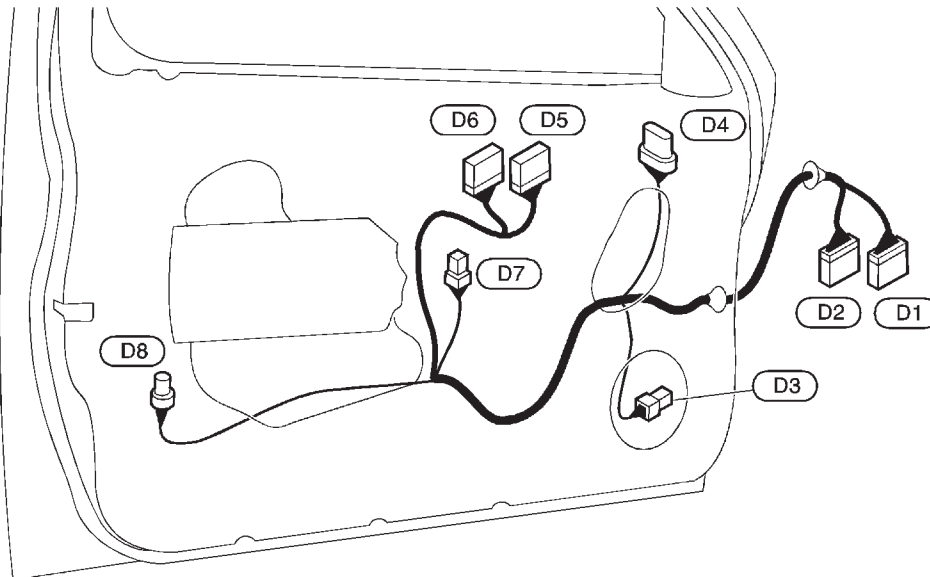


HARNESS LAYOUT

LHD MODELS

Front Door Harness (LH side)

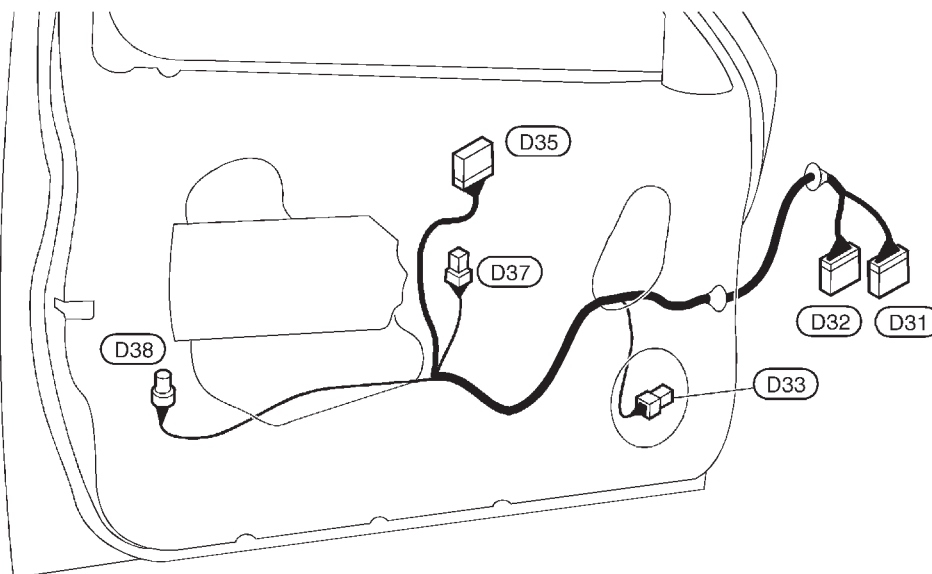
- (D1) W/12 : To (M3)
- (D2) W/12 : To (M4) (With power window)
- (D3) BR/2 : Front speaker
- (D4) GY/5 : Door mirror actuator (Double cab models with power window)
- (D5) W/16 : Power window main switch (With front and rear power window)
- (D6) W/12 : Power window main switch (With front power window only)
- (D7) B/2 : Power window regulator (With power window)
- (D8) GY/2 : Lock knob switch (With power door lock)



HEL878

RHD MODELS

- (D31) W/12 : To (M49)
- (D32) W/6 : To (M50) (With power window)
- (D33) BR/2 : Front speaker
- (D35) W/8 : Power window sub-switch (With power window)
- (D37) B/2 : Power window regulator (With power window)
- (D38) GY/4 : Door lock actuator (With power door lock)



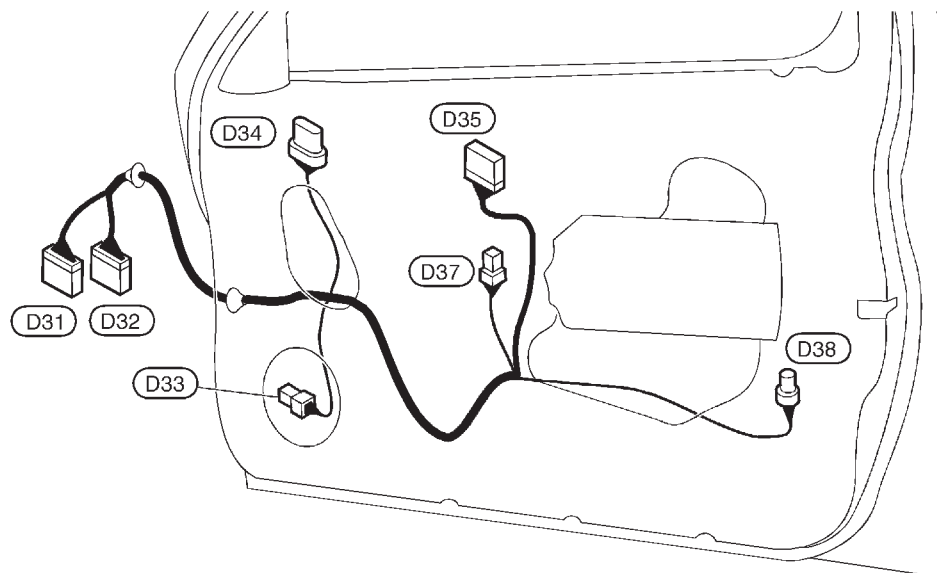
HEL879

HARNESS LAYOUT

LHD MODELS

Front Door Harness (RH side)

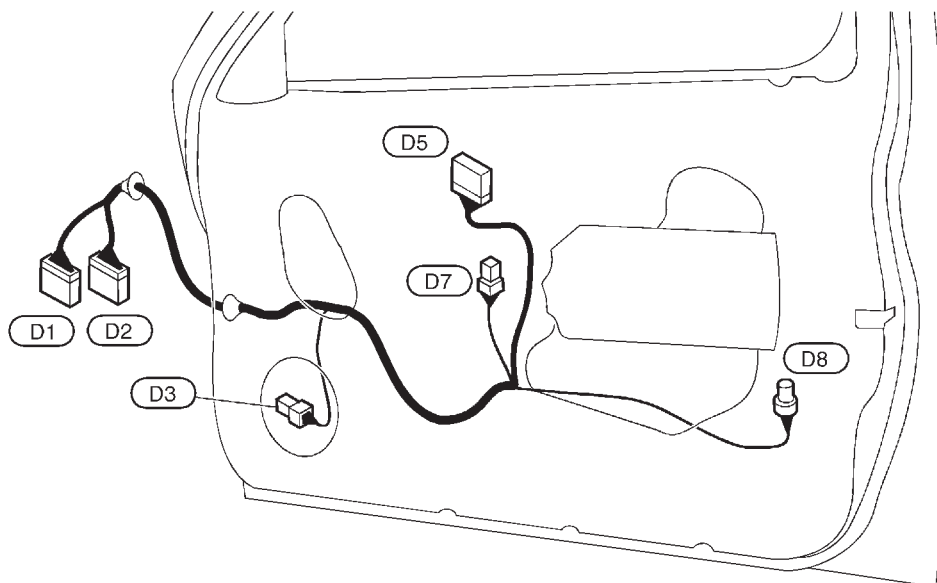
- (D31) W/12 : To (M49)
- (D32) W/6 : To (M50) (With power window)
- (D33) BR/2 : Front speaker
- (D34) GY/5 : Door mirror actuator (With power window)
- (D35) W/8 : Power window sub-switch (With power window)
- (D37) B/2 : Power window regulator (With power window)
- (D38) GY/4 : Door lock actuator (With power door lock)



HEL880

RHD MODELS

- (D1) W/12 : To (M3)
- (D2) W/12 : To (M4) (With power window)
- (D3) BR/2 : Front speaker
- (D5) W/16 : Power window main switch (With front and rear power window)
- (D7) B/2 : Power window regulator (With power window)
- (D8) GY/2 : Lock knob switch (With power door lock)



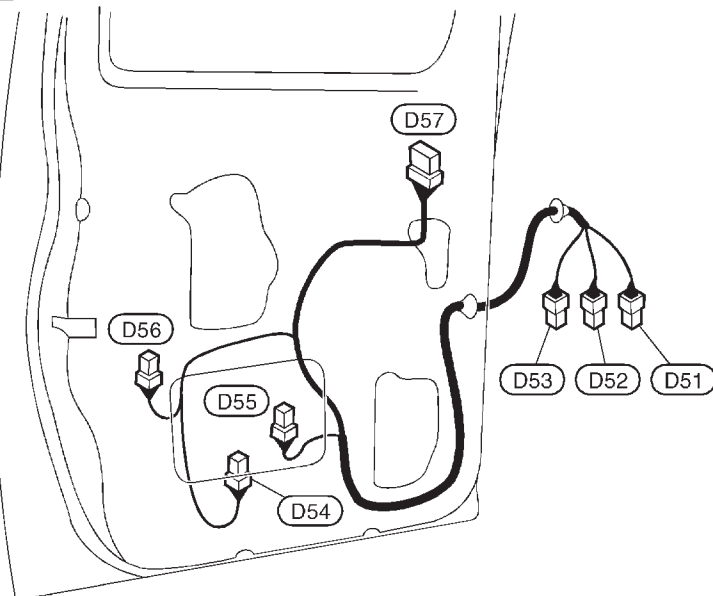
HEL881

HARNESS LAYOUT

LH SIDE

Rear Door Harness

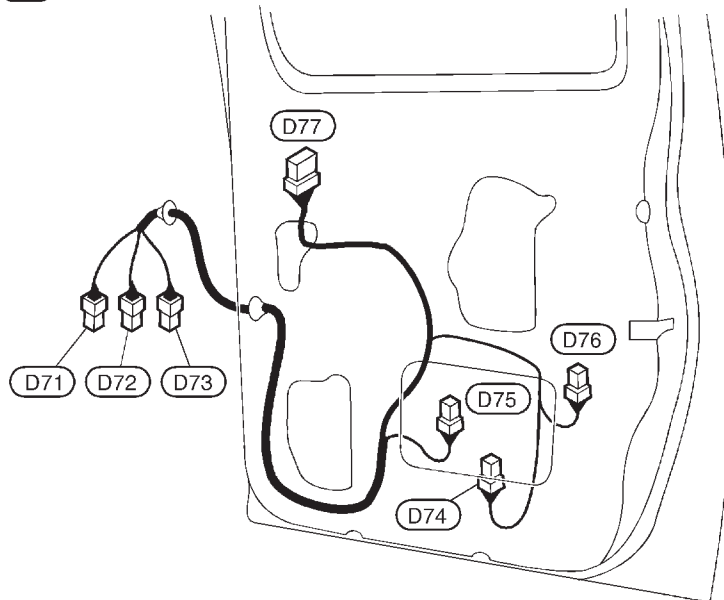
- (D51) W/3 : To (M107)
- (D52) W/2 : To (M106)
- (D53) W/2 : To (M105)
- (D54) B/2 : Rear speaker
- (D55) B/2 : Power window regulator
- (D56) GY/4 : Door lock actuator
- (D57) W/8 : Power window sub-switch



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RH SIDE

- (D71) W/3 : To (M115)
- (D72) W/2 : To (M114)
- (D73) W/2 : To (M113)
- (D74) B/2 : Rear speaker
- (D75) B/2 : Power window regulator
- (D76) GY/4 : Door lock actuator
- (D77) W/8 : Power window sub-switch



HEL883