ELECTRICAL SYSTEM

SECTION EL

When you read wiring diagrams:
• Read GI section, "HOW TO READ WIRING DIAGRAMS".
When you perform trouble diagnoses, read GI section, "HOW TO FOLLOW FLOW CHART IN TROUBLE DIAGNOSES" and "HOW TO PERFORM EFFICIENT DIAGNOSIS FOR AN ELECTRICAL INCIDENT".

CONTENTS

CONTENTS (Cont'd.)

CONTENTS (Cont'd.)

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

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

WARNING:

- **To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal collision, all maintenance must be performed by an authorized INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system.**
- **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.**

Description

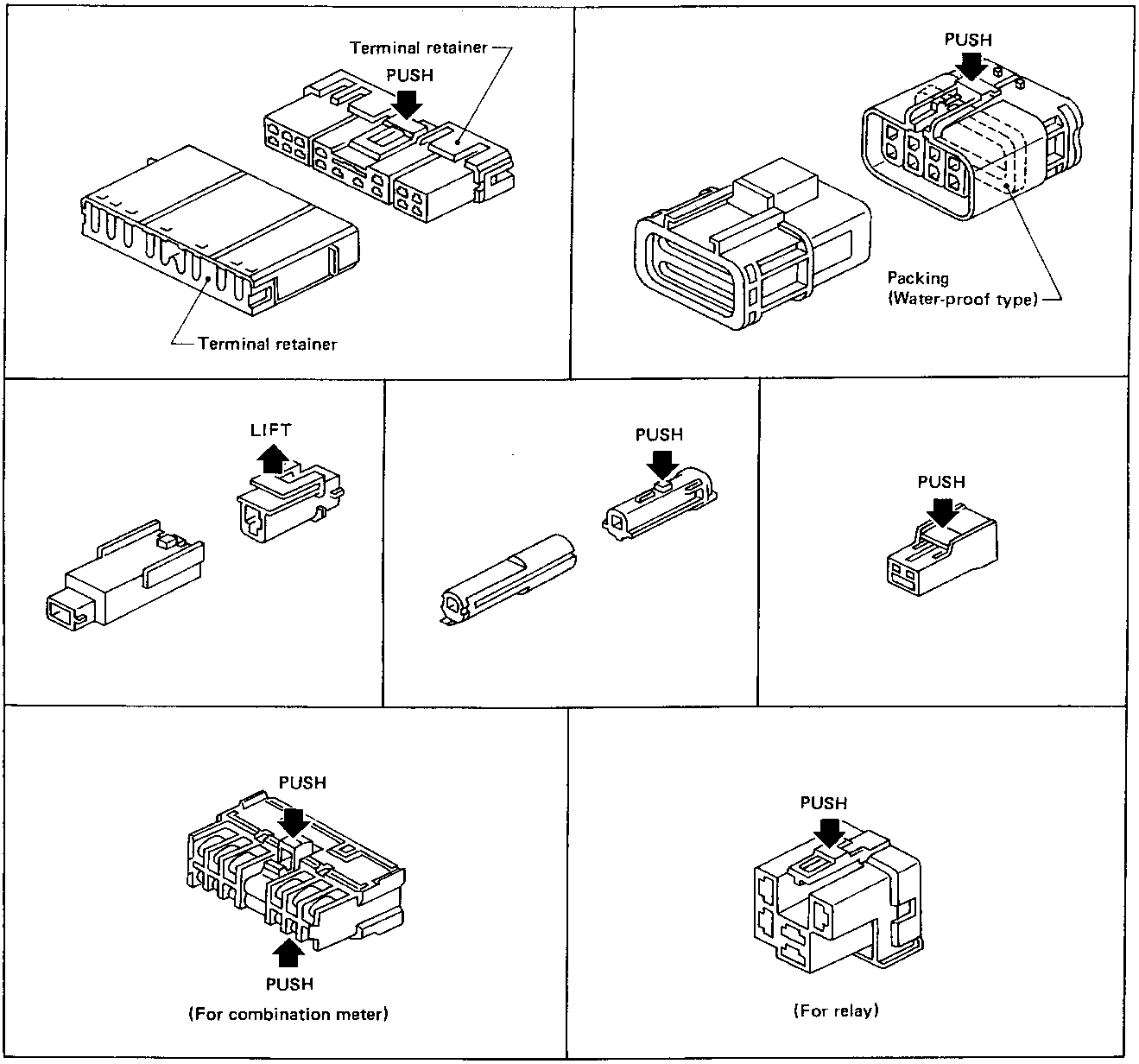
HARNESS CONNECTOR

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

CAUTION:

Do not pull the harness when disconnecting the connector.

[Example]

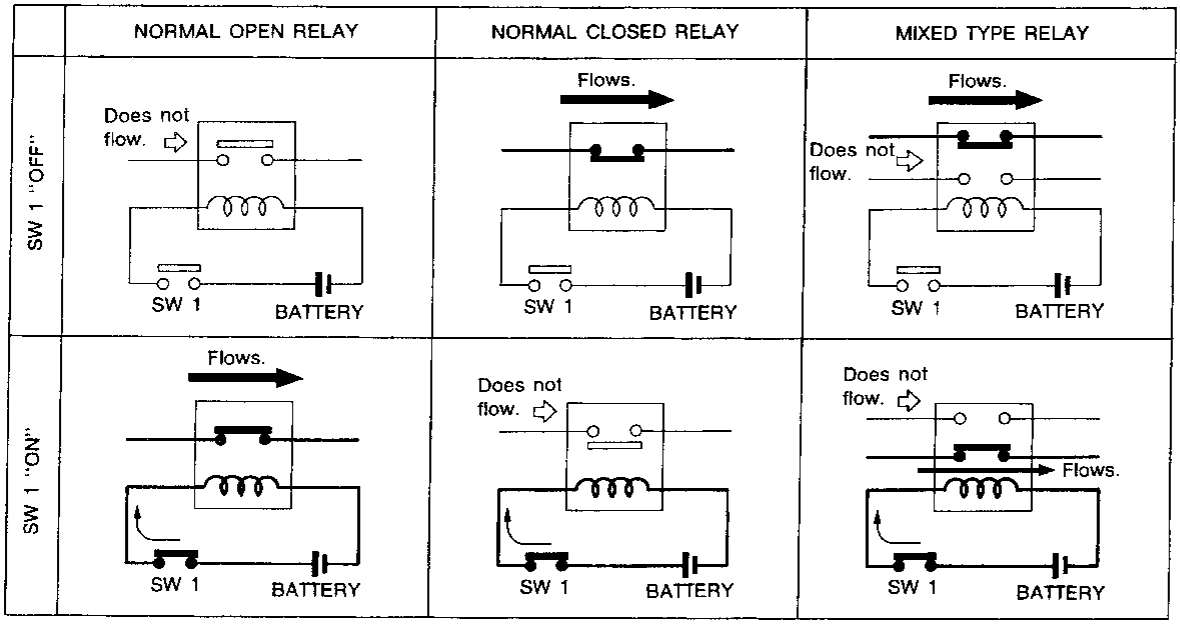


SEL769D

Description

NORMAL OPEN, NORMAL CLOSED AND MIXED TYPE RELAYS

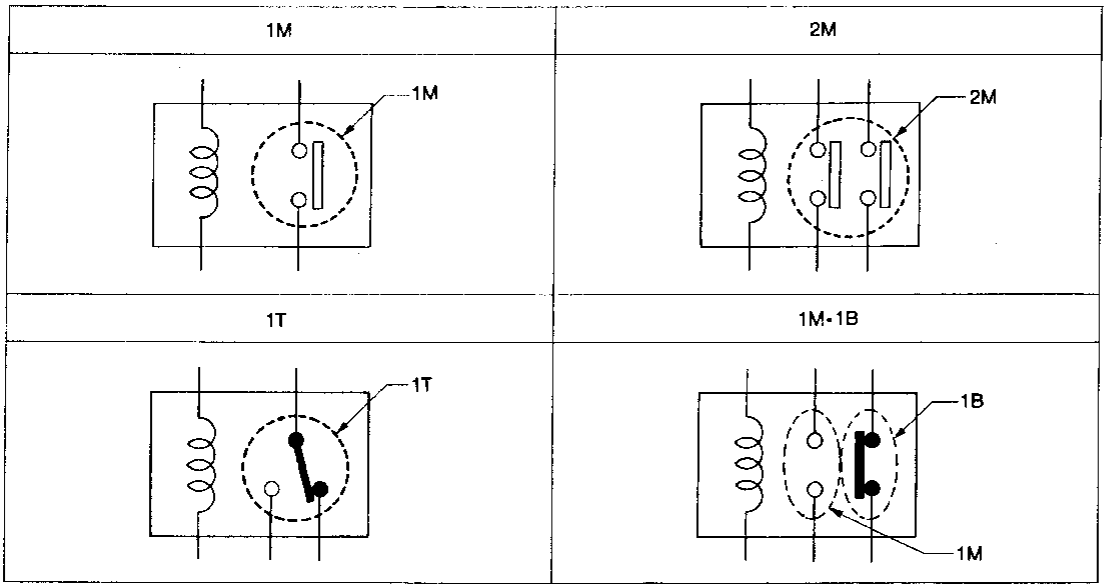
Relays can mainly be divided into three types: normal open, normal closed and mixed type relays.



SEL881H

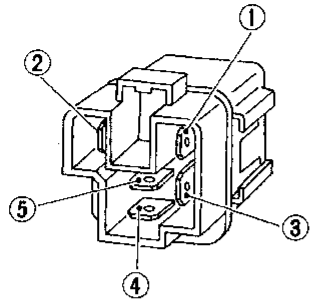
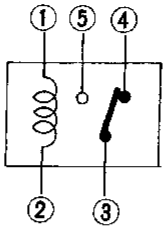
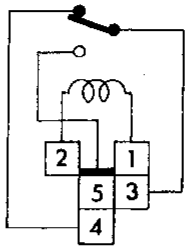
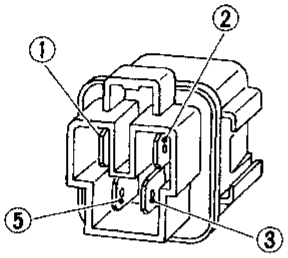
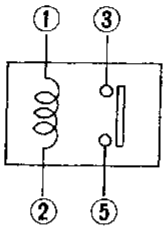
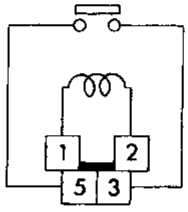
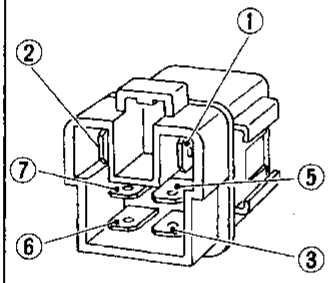
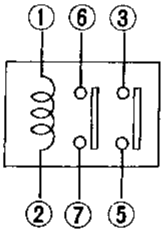
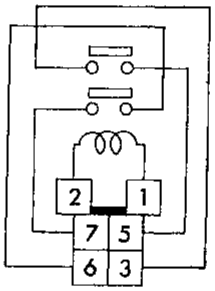
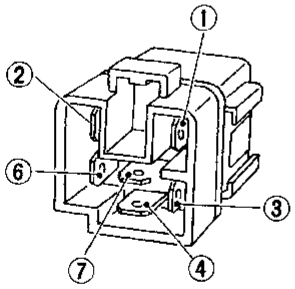
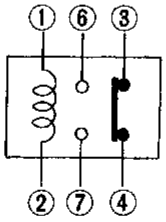
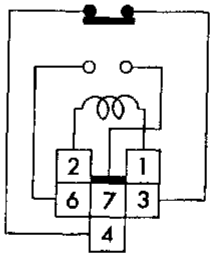
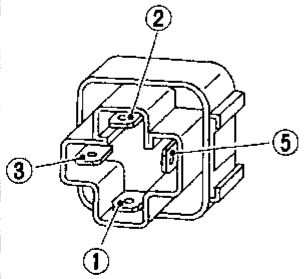
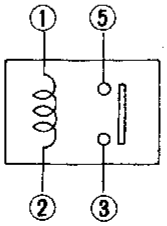
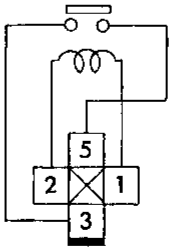
TYPE OF STANDARDIZED RELAYS

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



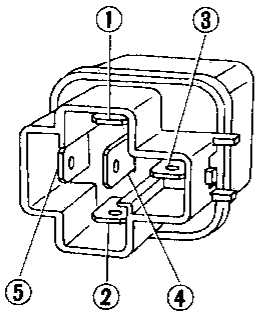
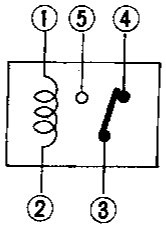
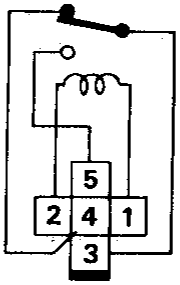
SEL882H

Description (Cont'd)

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

SEL871S

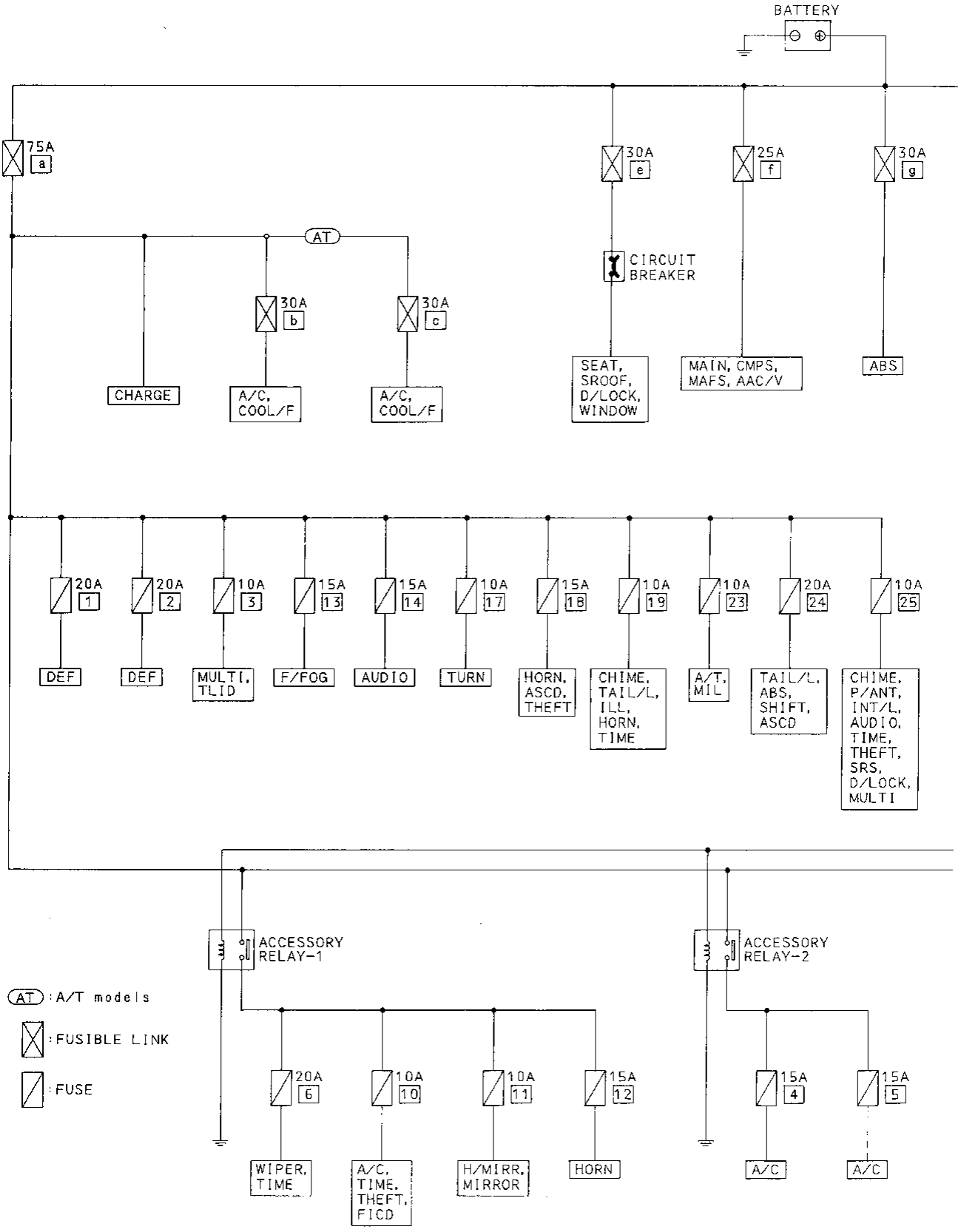
Description (Cont'd)

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

MEL202B

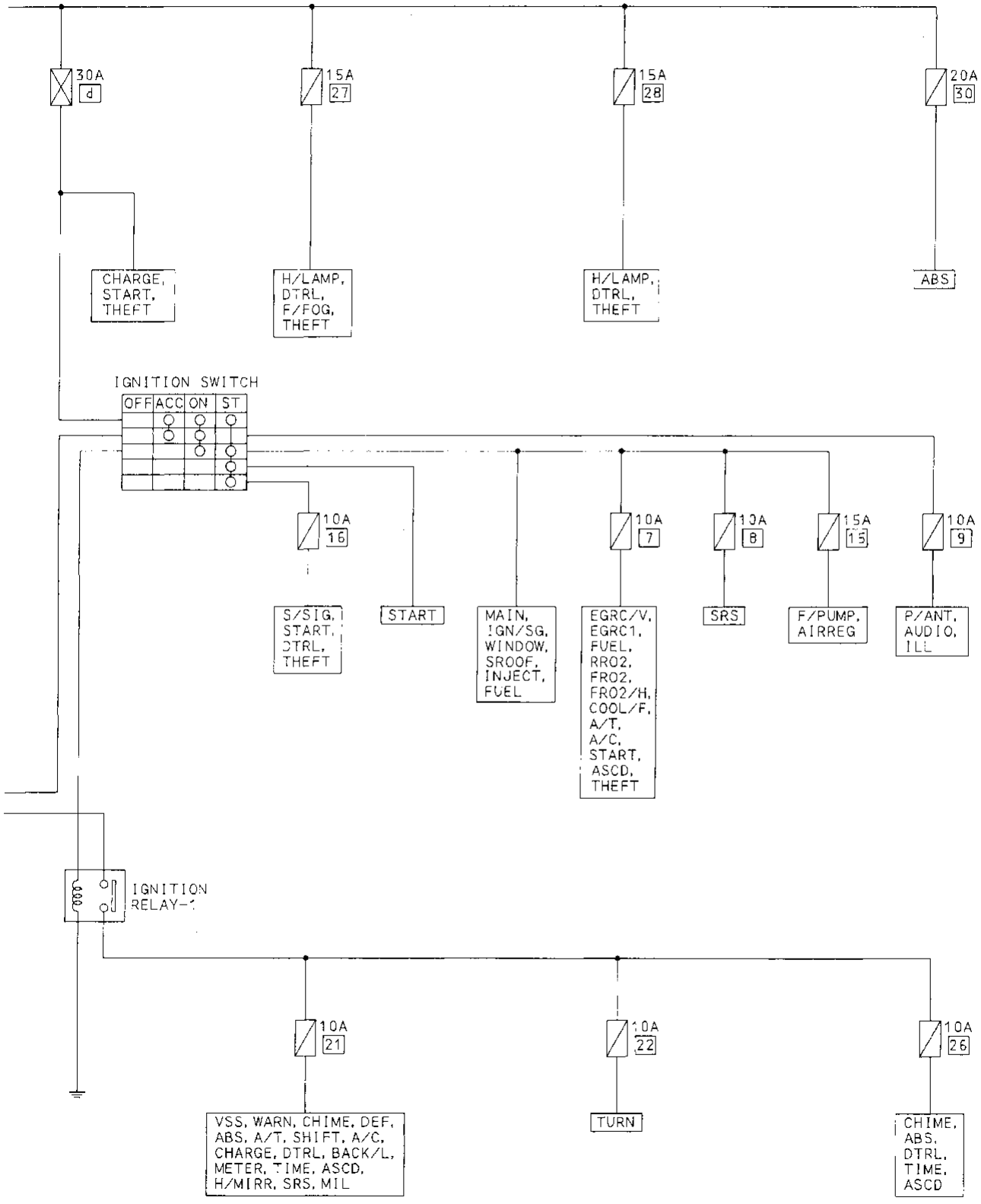
NOTE

Schematic



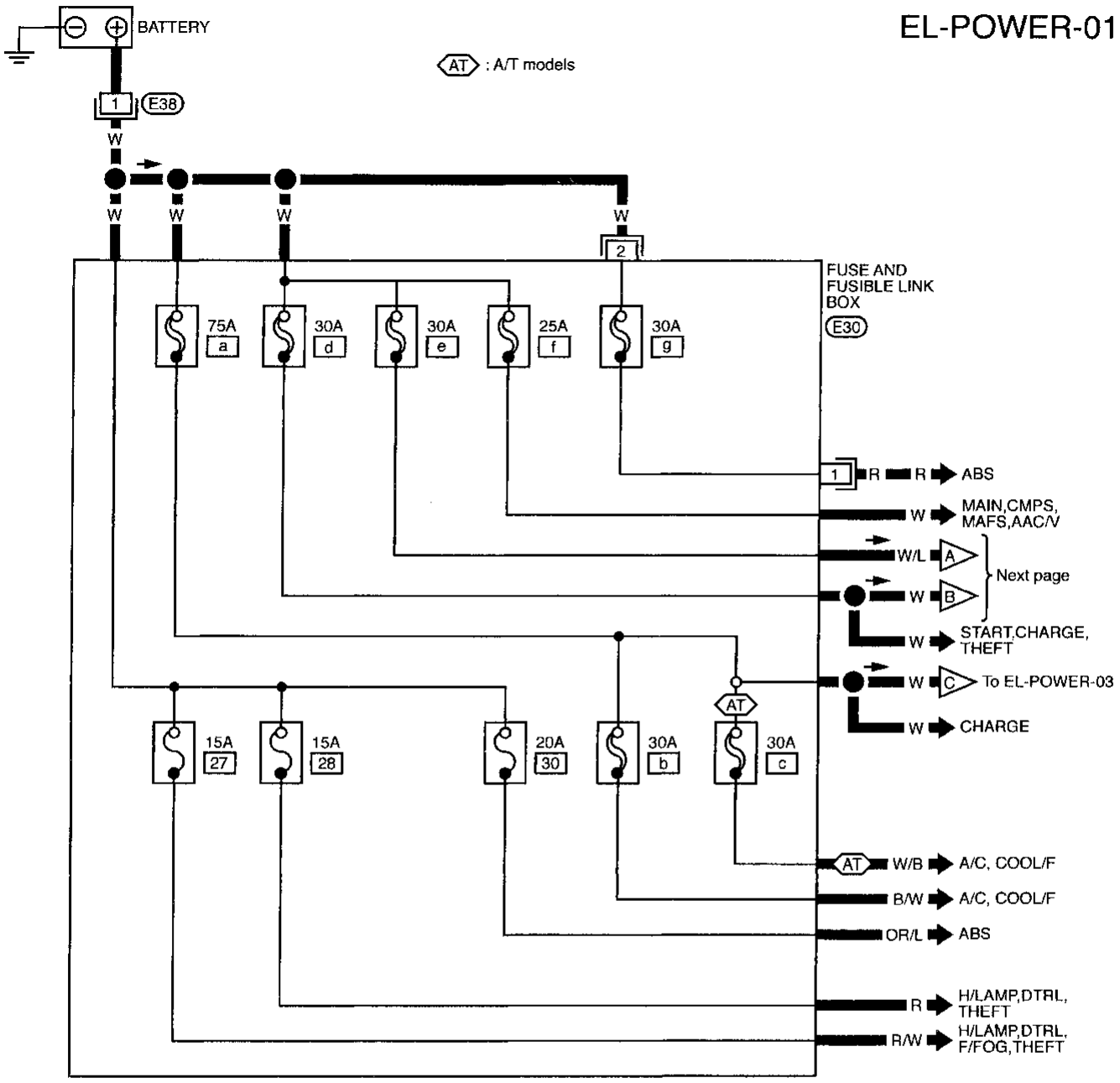
TEL067

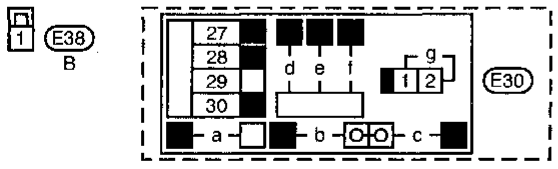
Schematic (Cont'd)



TEL068

Wiring Diagram — POWER —

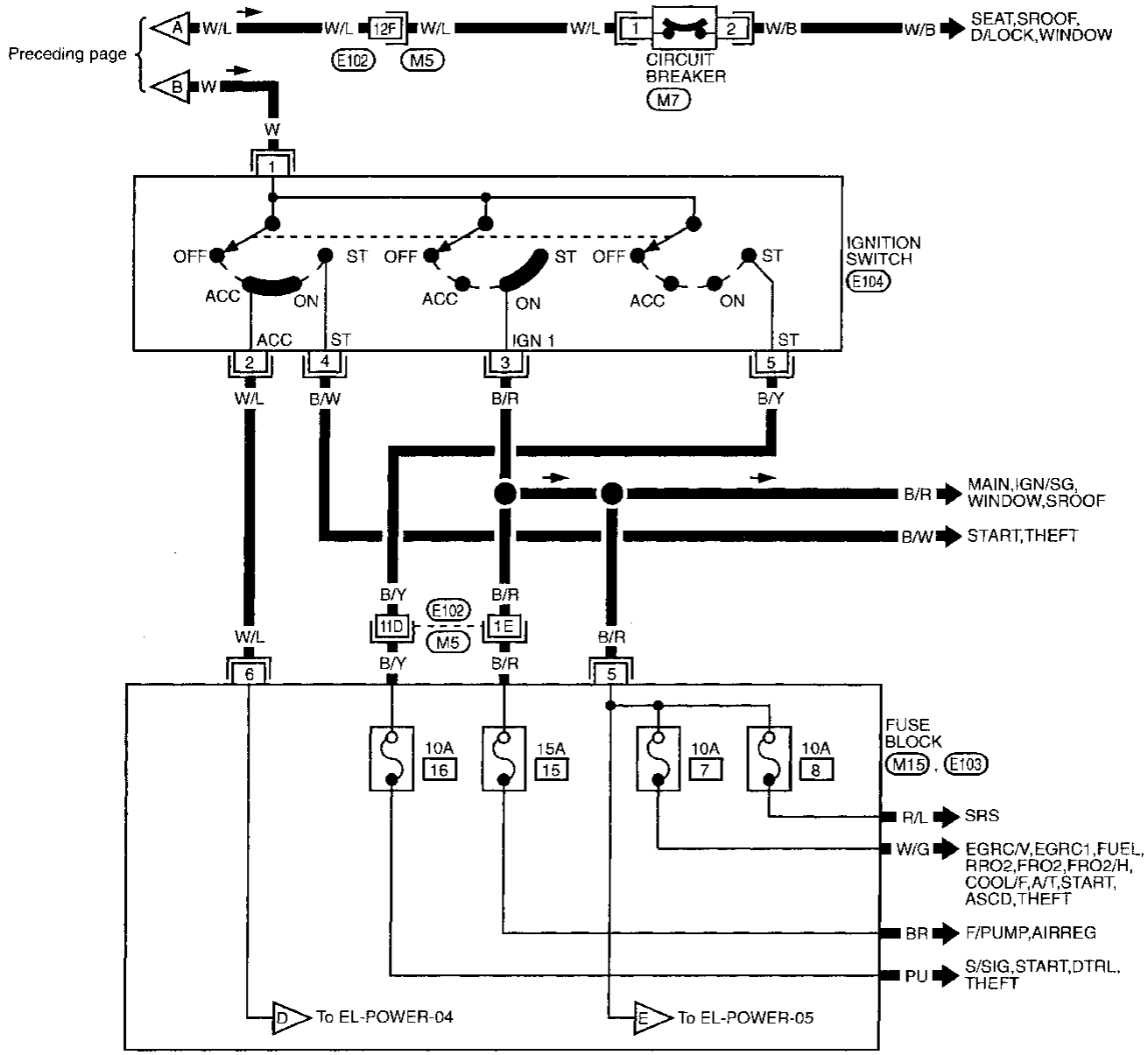


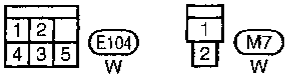


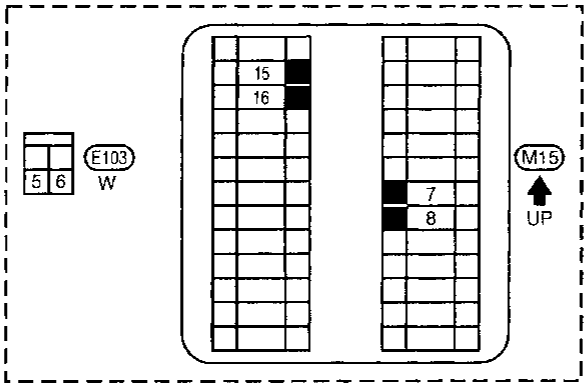
TEL069

Wiring Diagram — POWER — (Cont'd)

EL-POWER-02





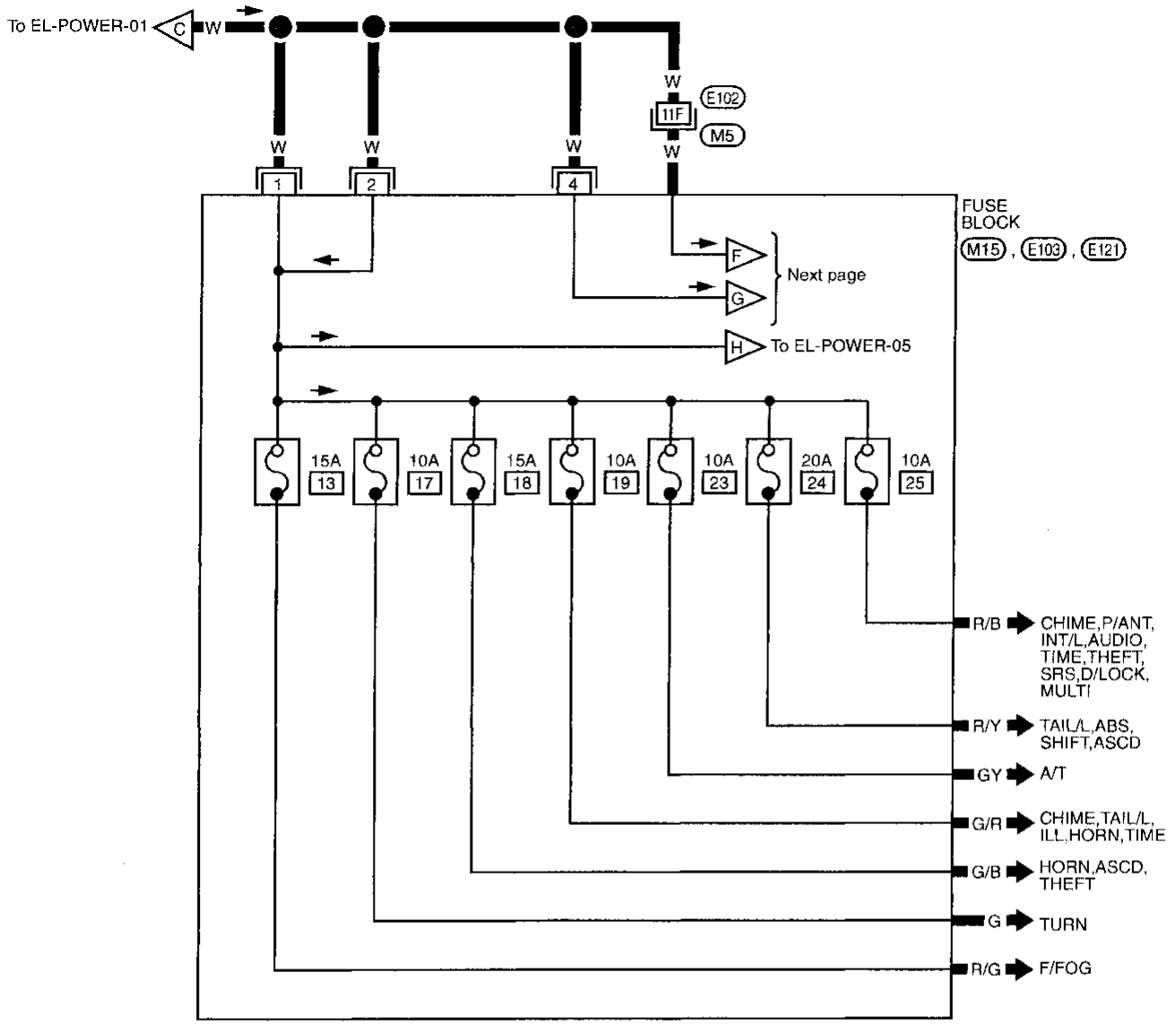


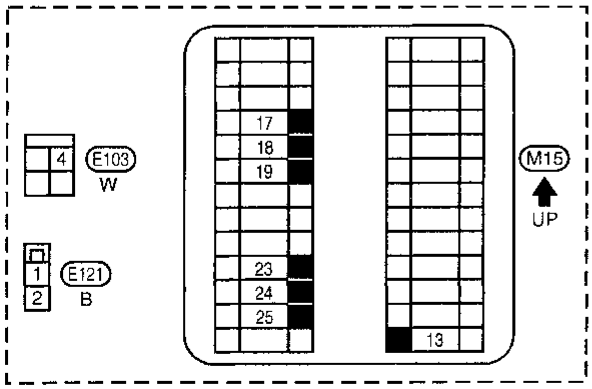
Refer to last page (Foldout page).
M5 , E102

TEL070

Wiring Diagram — POWER — (Cont'd)

EL-POWER-03



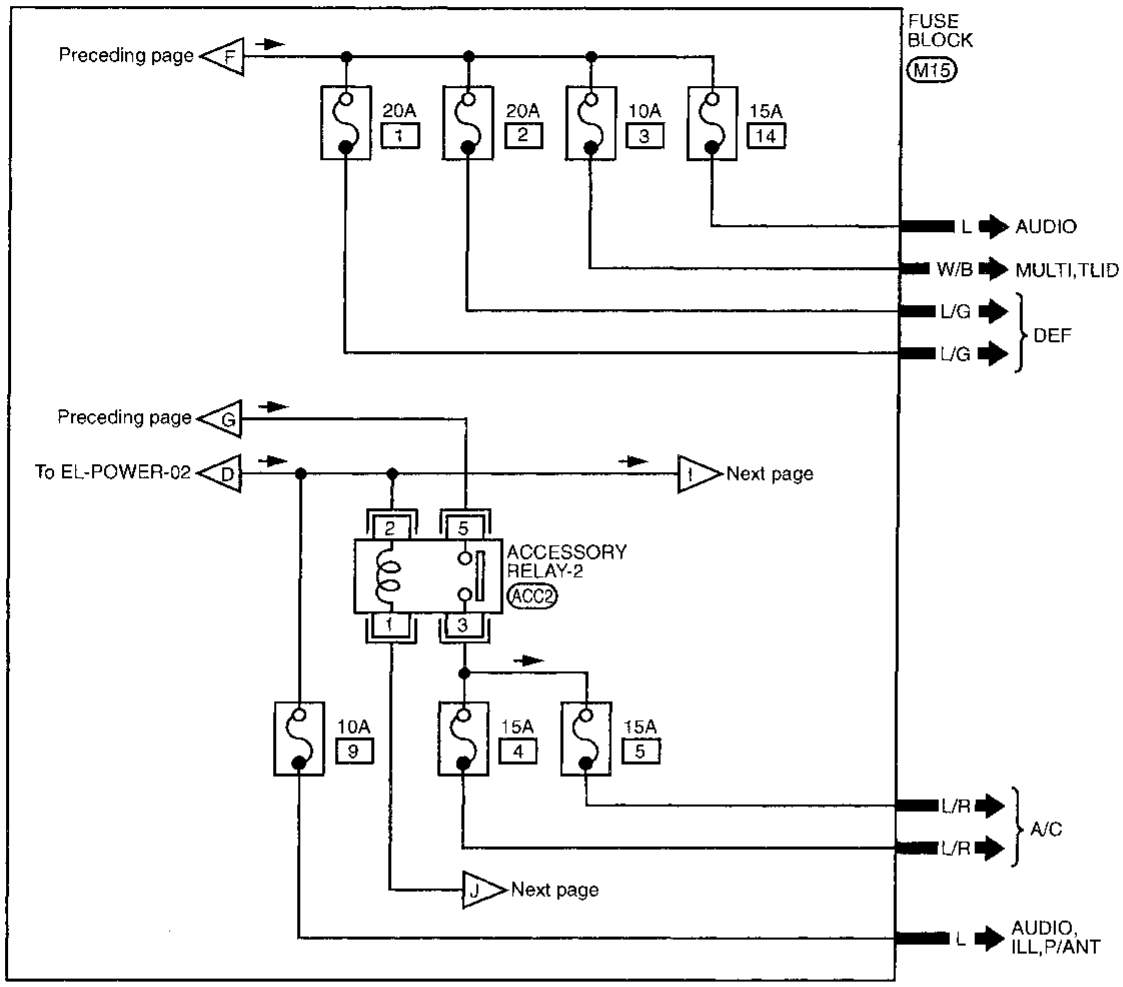


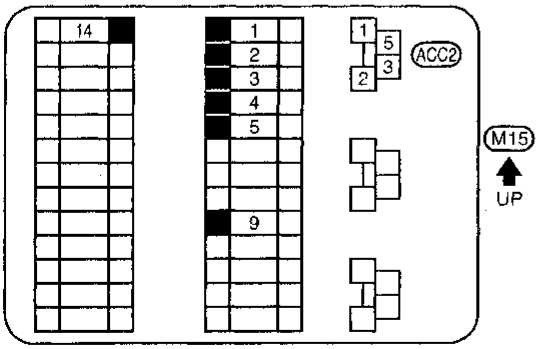
Refer to last page (Foldout page).
E102 , M5

TEL071

Wiring Diagram — POWER — (Cont'd)

EL-POWER-04

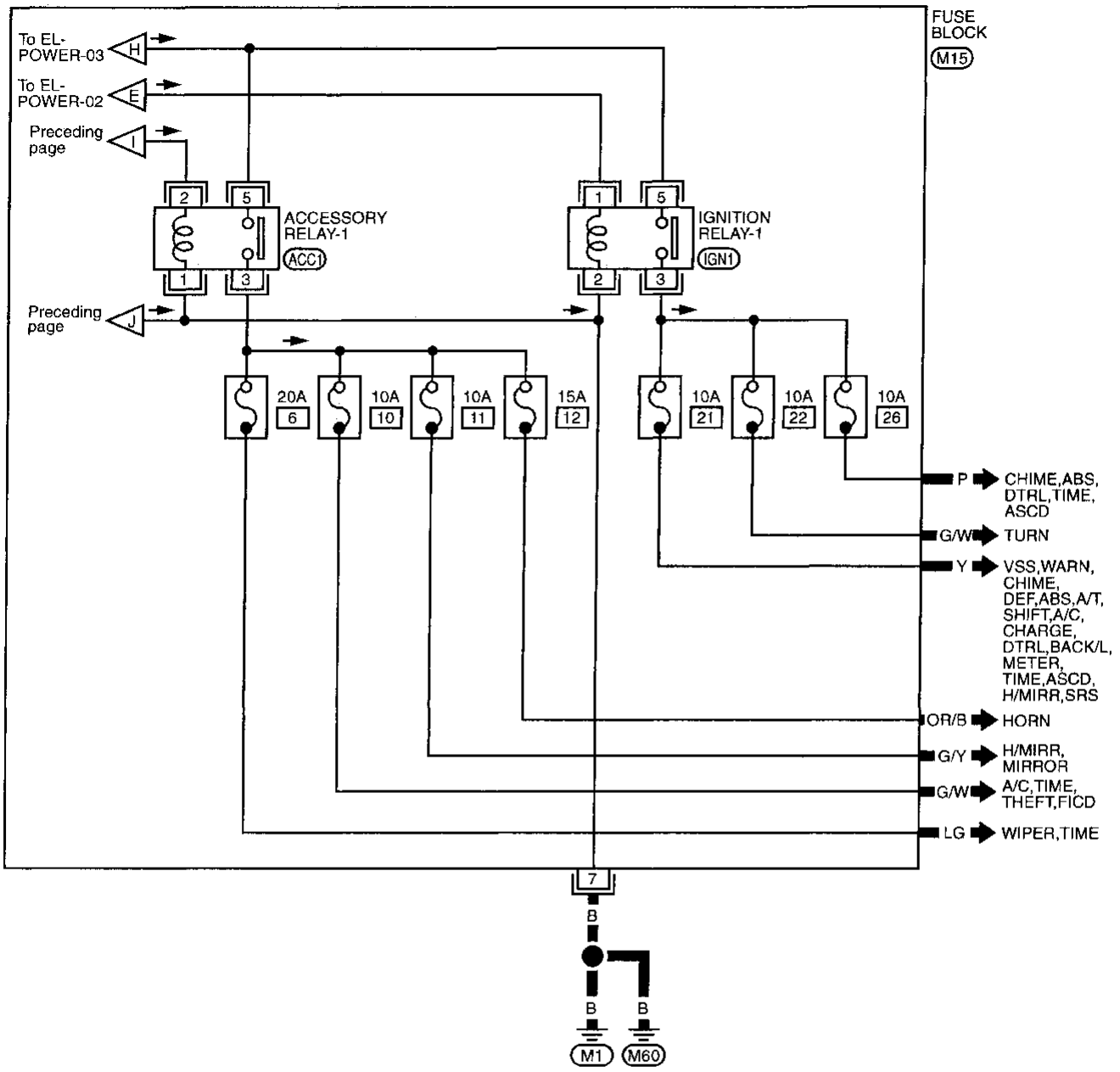


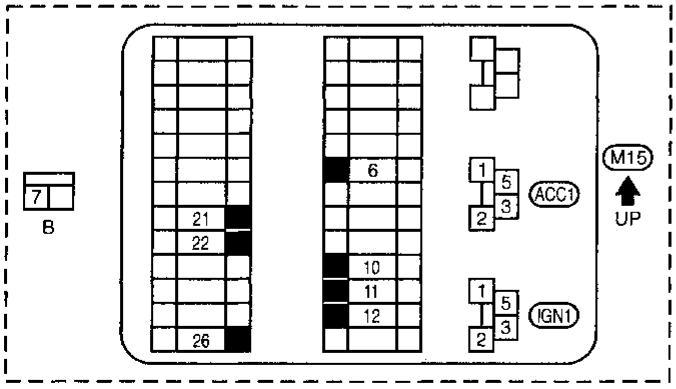


TEL072

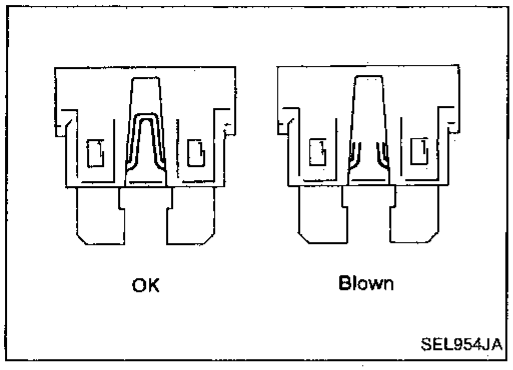
Wiring Diagram — POWER — (Cont'd)

EL-POWER-05



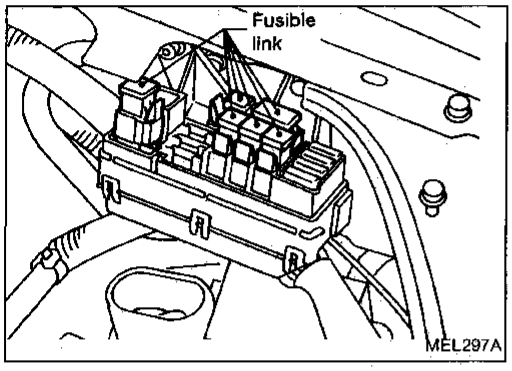


TEL073



Fuse

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



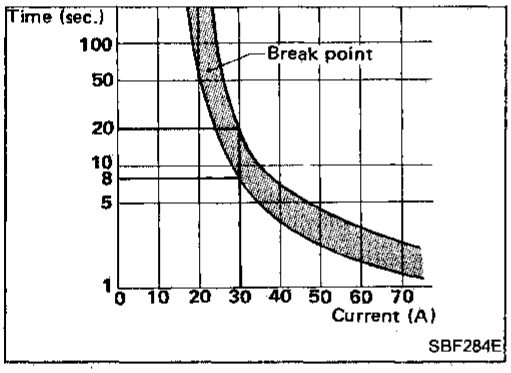
Fusible Link

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

CAUTION:

a. If fusible link should melt, it is possible that critical circuit (power supply or large current carrying circuit) is shorted. In such a case, carefully check and eliminate cause of problem.

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



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
- Power sunroof
- Trunk lid and fuel filler lid opener

GROUND	CONNECT TO	CONN. NO.	CELL CODE
E4	SHIELD WIRE (FRONT WHEEL SENSOR RH)	E2	BR-ABS
E10/E33	ACTUATOR	E71	BR-ABS
	ASCD HOLD RELAY	E47	EL-ASCD
	BRAKE FLUID LEVEL SWITCH	E34	EL-WARN
	CLEARANCE LAMP LH	E25	EL-TAIL/L
	CLEARANCE LAMP RH	E14	EL-TAIL/L
	COOLING FAN MOTOR-1	E20	EC-COOL/F HA-A/C
	COOLING FAN MOTOR-2	E22	EC-COOL/F HA-A/C
	COOLING FAN RELAY-2	E27	EC-COOL/F HA-A/C
	COOLING FAN RELAY-3	E5	EC-COOL/F HA-A/C
	FRONT FOG LAMP LH	E31	EL-F/FOG
	FRONT FOG LAMP RH	E12	EL-F/FOG
	FRONT SIDE MARKER LAMP LH	E32	EL-TAIL/L
	FRONT SIDE MARKER LAMP RH	E11	EL-TAIL/L
	FRONT TURN SIGNAL LAMP LH	E28	EL-TURN
	FRONT TURN SIGNAL LAMP RH	E13	EL-TURN
	FRONT WIPER RELAY	E58	EL-WIPER EL-TIME
	FRONT WIPER SWITCH	E110	EL-WIPER EL-TIME
	HEADLAMP LH	E24	EL-H/LAMP EL-THEFT
	HEADLAMP RH	E15	EL-H/LAMP EL-DTRL EL-THEFT
	HOOD SWITCH	E1	EL-THEFT
	IACV-FICD SOLENOID VALVE	F37	EC-FICD HA-A/C
	INHIBITOR SWITCH	E232	EC-PNP/SW EL-START EL-ASCD EL-THEFT
	NEUTRAL POSITION SWITCH	E210	EC-PNP/SW
	TRIPLE-PRESSURE SWITCH	E26	HA-A/C
	WASHER FLUID LEVEL SWITCH	E9	EL-WARN
E36	SHIELD WIRE (FRONT WHEEL SENSOR LH)	E37	BR-ABS
M1/M60	AIR BAG DIAGNOSIS SENSOR UNIT	Z1	RS-SRS
	ASCD CONTROL UNIT	M16	EL-ASCD
	ASCD MAIN SWITCH	M25	EL-ASCD
	ASHTRAY ILLUMINATION	M44	EL-ILL
	BLOWER RELAY	M66	HA-A/C
	CIGARETTE LIGHTER	M43	EL-HORN
	CLUTCH INTERLOCK SWITCH	M19	EL-START EL-THEFT
	COMBINATION FLASHER UNIT	M31	EL-TURN
	COMBINATION METER	M182	RS-SRS EL-TURN EL-METER EL-WARN EL-ASCD
	COMBINATION METER	M27	AT-A/T EL-METER EL-ASCD
	COMBINATION METER (CLOCK)	M182	EL-HORN
	COMBINATION METER (HIGH BEAM INDICATOR)	M27	EL-H/LAMP EL-DTRL
	DATA LINK CONNECTOR FOR GST	F32	EC-MIL

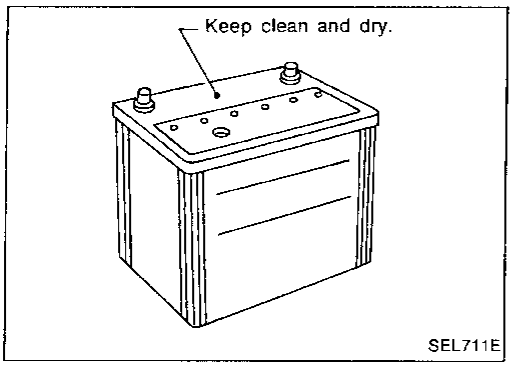
GROUND	CONNECT TO	CONN. NO.	CELL CODE
M1/M60	DAYTIME LIGHT CONTROL UNIT	M46	EL-DTRL
	DOOR LOCK TIMER	M70	EL-D/LOCK
	DOOR MIRROR DEFOGGER (DRIVER SIDE)	D13	EL-H/MIRR
	DOOR MIRROR DEFOGGER (PASSENGER SIDE)	D31	EL-H/MIRR
	DOOR MIRROR REMOTE CONTROL SWITCH	M24	EL-MIRROR EL-H/MIRR
	FRONT DOOR KEY CYLINDER SWITCH (DRIVER SIDE)	D12	EL-D/LOCK EL-MULTI EL-THEFT
	FRONT DOOR KEY CYLINDER SWITCH (PASSENGER SIDE)	D29	EL-D/LOCK EL-MULTI EL-THEFT
	FRONT DOOR LOCK ACTUATOR (DRIVER SIDE) (DOOR UNLOCK SENSOR)	D9	EL-D/LOCK EL-MULTI EL-THEFT
	FRONT DOOR LOCK ACTUATOR (PASSENGER SIDE) (DOOR UNLOCK SENSOR)	D27	EL-D/LOCK EL-MULTI EL-THEFT
	FRONT FOG LAMP SWITCH	M37	EL-F/FOG
	FRONT POWER WINDOW SUB-SWITCH (DRIVER SIDE)	D4	EL-WINDOW
	FRONT WIPER MOTOR	M55	EL-WIPER
	FUSE BLOCK	M15	EL-POWER
	GLOVE BOX LAMP	M51	EL-ILL
	ILLUMINATION CONTROL SWITCH	M23	EL-ILL
	MODE DOOR MOTOR	M32	HA-A/C
	POWER WINDOW AMP.	D7	EL-WINDOW
	POWER WINDOW RELAY	M10	EL-WINDOW EL-SROOF
	PUSH CONTROL UNIT	M40	HA-A/C
	REAR WINDOW DEFOGGER SWITCH	M34	EL-DEF EL-H/MIRR EL-TIME
	SHIFT LOCK CONTROL	M11	AT-SHIFT
	SPOT LAMP	R4	EL-INT/L
	THEFT WARNING CONTROL UNIT	M30	EL-THEFT
	TIME CONTROL UNIT	M17	EL-METER EL-CHIME EL-TIME
	VANITY MIRROR ILLUMINATION (DRIVER SIDE)	R8	EL-INT/L
	VANITY MIRROR ILLUMINATION (PASSENGER SIDE)	R9	EL-INT/L
	VENT MODE SWITCH	M77	HA-A/C
M62	ABS CONTROL UNIT	M63	BR-ABS EL-WARN
M101/M165	DETENTION SWITCH	M115	AT-SHIFT
	DOOR LOCK & UNLOCK SWITCH	M130	EL-D/LOCK
	FRONT DOOR SWITCH (DRIVER SIDE)	M103	RS-SRS EL-CHIME EL-D/LOCK EL-TIME
	FRONT DOOR SWITCH (PASSENGER SIDE)	M118	EL-D/LOCK
	FRONT POWER SEAT (DRIVER SIDE)	M126	EL-SEAT
	FRONT POWER SEAT (PASSENGER SIDE)	M124	EL-SEAT
	FUEL FILLER OPENER ACTUATOR	M160	EL-TLID
	FUEL PUMP	M114	EC-F/PUMP

GROUND	CONNECT TO	CONN. NO.	CELL CODE
M101/M165	FUEL TANK GAUGE UNIT	M113	EL-METER EL-WARN
	HIGH-MOUNTED STOP LAMP (With rear air spoiler)	T4	EL-TAIL/L
	HIGH-MOUNTED STOP LAMP (Without rear air spoiler)	M154	EL-TAIL/L
	LICENSE PLATE LAMP LH	T5	EL-TAIL/L
	LICENSE PLATE LAMP RH	T3	EL-TAIL/L
	MULTI-REMOTE CONTROL UNIT	M191	EL-MULTI
	OD CONTROL SWITCH	M115	AT-A/T
	POWER ANTENNA TIMER	M158	EL-P/ANT
	POWER WINDOW MAIN SWITCH (DRIVER SIDE) (Console box)	M110	EL-WINDOW
	REAR COMBINATION LAMP LH	M163	EL-TAIL/L
	REAR COMBINATION LAMP LH	T7	EL-TAIL/L
	REAR COMBINATION LAMP LH (BACK-UP)	T7	EL-BACK/L
	REAR COMBINATION LAMP LH (TURN SIGNAL)	M163	EL-TURN
	REAR COMBINATION LAMP RH	M166	EL-TAIL/L
	REAR COMBINATION LAMP RH	T1	EL-TAIL/L
	REAR COMBINATION LAMP RH (BACK-UP)	T1	EL-BACK/L
	REAR COMBINATION LAMP RH (TURN SIGNAL)	M166	EL-TURN
	REAR DOOR LOCK ACTUATOR LH (DOOR UNLOCK SENSOR)	D44	EL-MULTI EL-THEFT
	REAR DOOR LOCK ACTUATOR RH (DOOR UNLOCK SENSOR)	D54	EL-MULTI EL-THEFT
	REAR SIDE MARKER LAMP LH	M162	EL-TAIL/L
	REAR SIDE MARKER LAMP RH	M167	EL-TAIL/L
	SEAT BELT BUCKLE SWITCH	M108	RS-SRS EL-CHIME EL-TIME
	SHIFT LOCK SOLENOID	M115	AT-SHIFT
	TRUNK LID KEY CYLINDER SWITCH	T2	EL-THEFT
	TRUNK LID OPENER ACTUATOR	M164	EL-MULTI EL-TLID
	TRUNK ROOM LAMP SWITCH	T6	EL-INT/L EL-MULTI EL-THEFT
M189	SHIELD WIRE (FRONT WHEEL SENSOR LH)	E37	BR-ABS
	SHIELD WIRE (FRONT WHEEL SENSOR RH)	E2	BR-ABS
	SHIELD WIRE (REAR WHEEL SENSOR LH)	M111	BR-ABS
	SHIELD WIRE (REAR WHEEL SENSOR RH)	M112	BR-ABS
A6/A7	ALTERNATOR	A3	EL-CHARGE
F8/F51	A/T CONTROL UNIT	M74	AT-A/T
	DATA LINK CONNECTOR FOR CONSULT	M14	EC-MIL AT-A/T RS-SRS
	DATA LINK CONNECTOR FOR GST	F32	EC-MIL
	DISTRIBUTOR	F35	EC-IGN/SG
	DISTRIBUTOR (CAMSHAFT POSITION SENSOR)	F35	EC-CMPS

GROUND	CONNECT TO	CONN. NO.	CELL CODE
F8/F51	ECM (ECCS CONTROL MODULE)	F29	EC-MAIN EC-RRO2 AT-A/T
	IACV-AIR REGULATOR	F40	EC-AIRREG
	POWER STEERING OIL PRESSURE SWITCH	F18	EC-PST/SW
	SHIELD WIRE (FRONT HEATED OXYGEN SENSOR)	F16	EC-FRO2 EC-FUEL
	SHIELD WIRE (KNOCK SENSOR)	F105	EC-KS
	SHIELD WIRE (MASS AIR FLOW SENSOR)	F12	EC-MAFS
	SHIELD WIRE (REAR HEATED OXYGEN SENSOR)	M128	EC-RRO2
	SHIELD WIRE (RESISTOR)	F17	EC-IGN/SG
	SHIELD WIRE (THROTTLE POSITION SENSOR)	F9	EC-TPS AT-A/T
	SHIELD WIRE [CRANKSHAFT POSITION SENSOR (OBD)]	F34	EC-CKPS
	SHIELD WIRE [DISTRIBUTOR (CAMSHAFT POSITION SENSOR)]	F35	EC-CMPS

CAUTION:

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

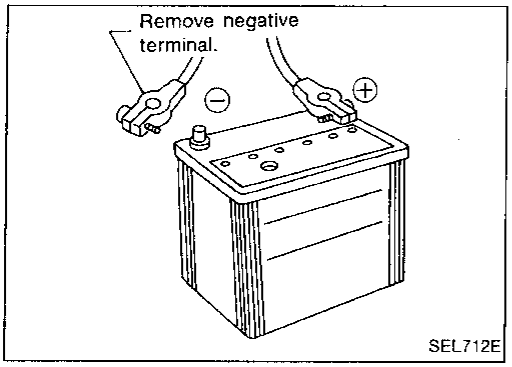


How to Handle Battery

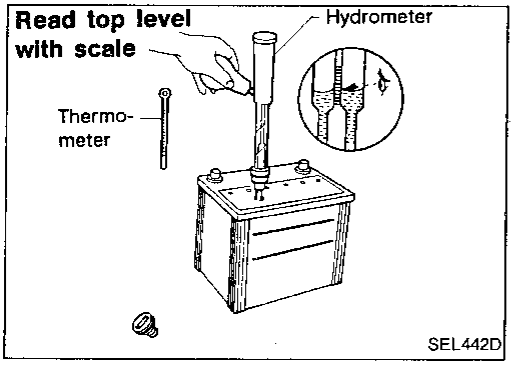
METHODS OF PREVENTING OVER-DISCHARGE

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

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



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



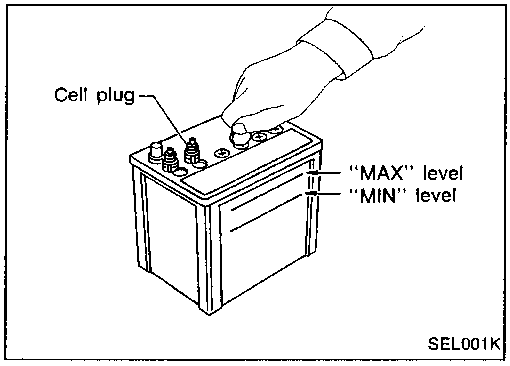
- Check the charge condition of the battery.
  Periodically check the specific gravity of the electrolyte. Keep a close check on charge condition to prevent over-discharge.

How to Handle Battery (Cont'd)

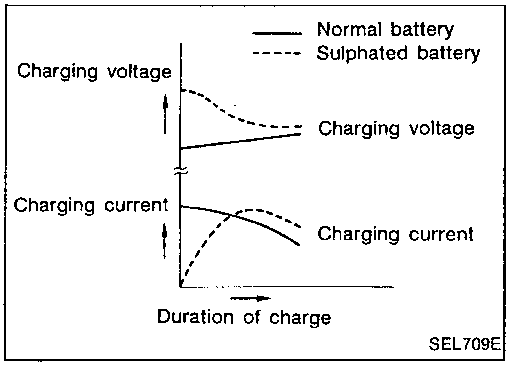
CHECKING ELECTROLYTE LEVEL

WARNING:

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



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

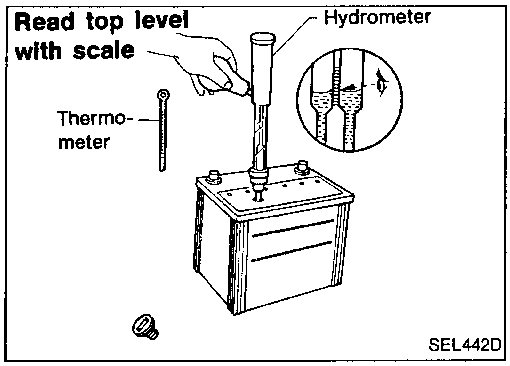


SULPHATION

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

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

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



SPECIFIC GRAVITY CHECK

Read hydrometer and thermometer indications at eye level.

How to Handle Battery (Cont'd)

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

Hydrometer temperature correction

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

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

CHARGING THE BATTERY

CAUTION:

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

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

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

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

Charging rates:

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

How to Handle Battery (Cont'd)

Do not charge at more than 50 ampere rate.

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

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

Service Data and Specifications (SDS)

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

System Description

M/T models

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

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

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

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

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

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

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

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

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

A/T models

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

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

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

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

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

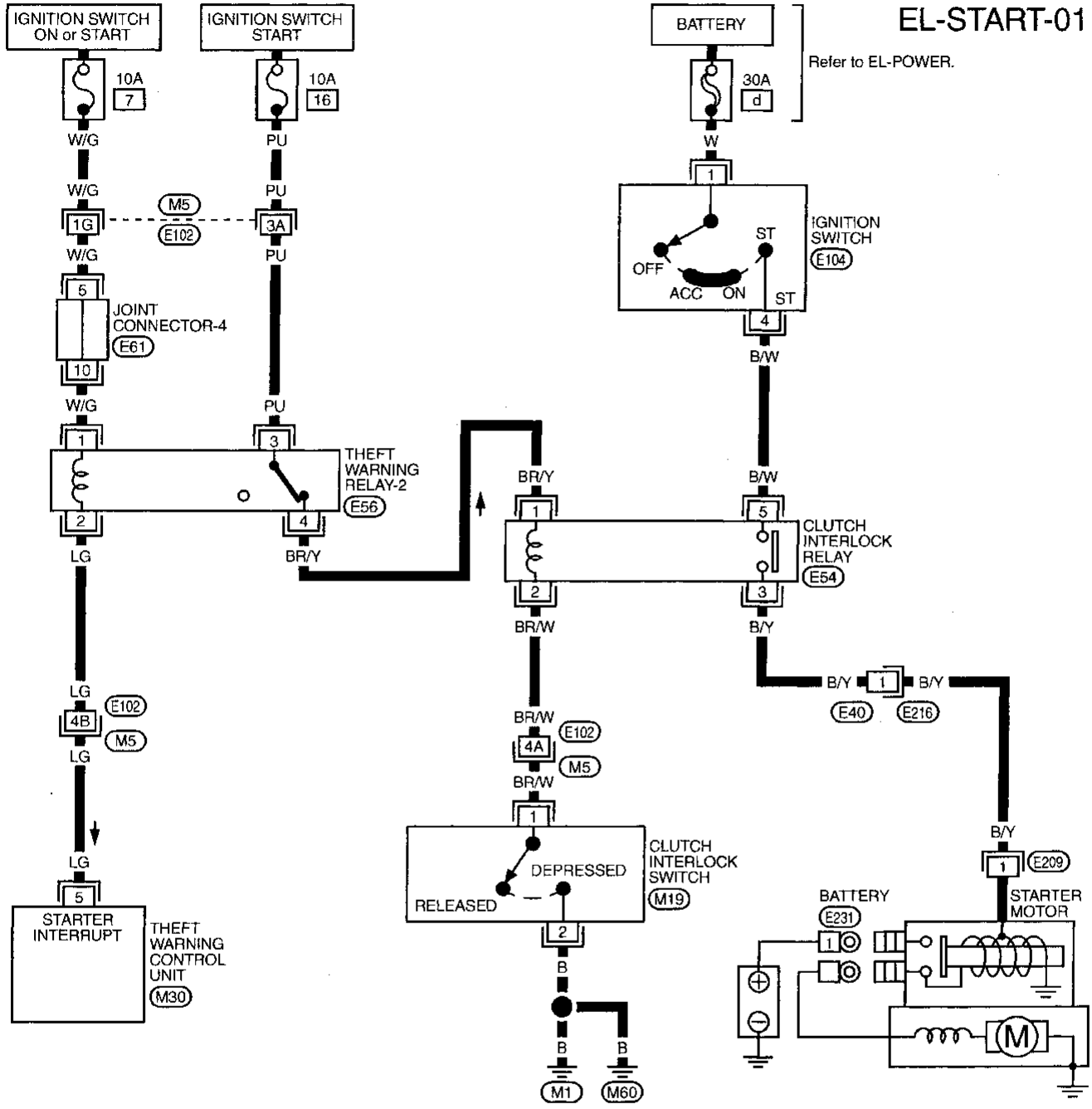
When the selector lever in the P or N position, ground is supplied to inhibitor relay terminal ② through the inhibitor switch and body grounds (E10) and (E33).

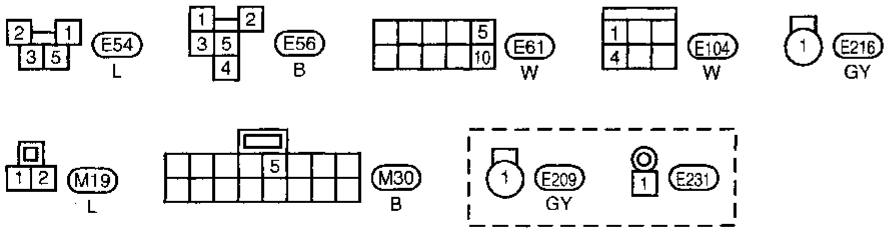
The inhibitor relay is energized and power is supplied
- from terminal ⑥ of the inhibitor relay
- to terminal ① of the starter motor windings.

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

Wiring Diagram — START —

M/T models





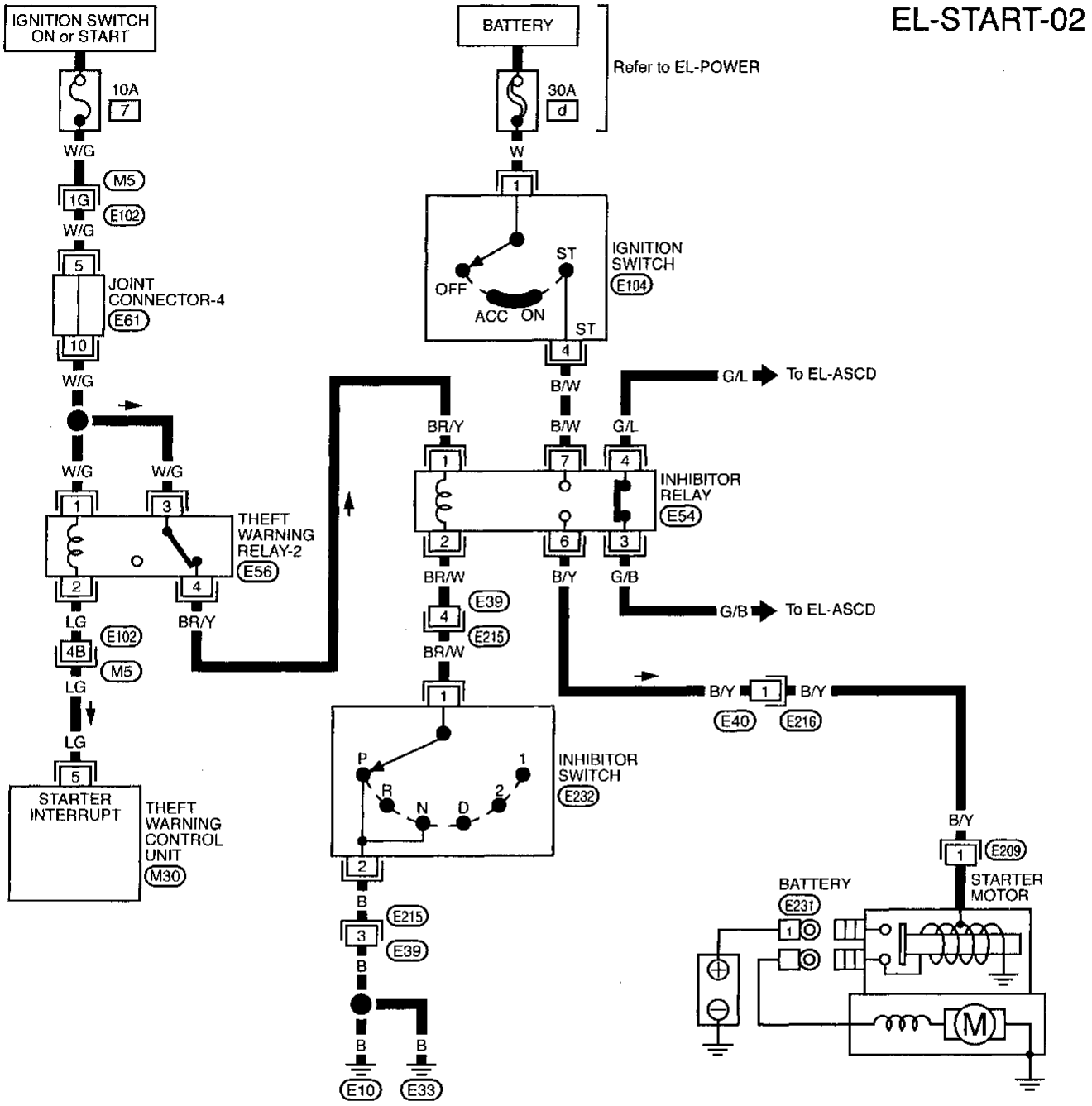
Refer to last page (Foldout page).
E102, M5
E61

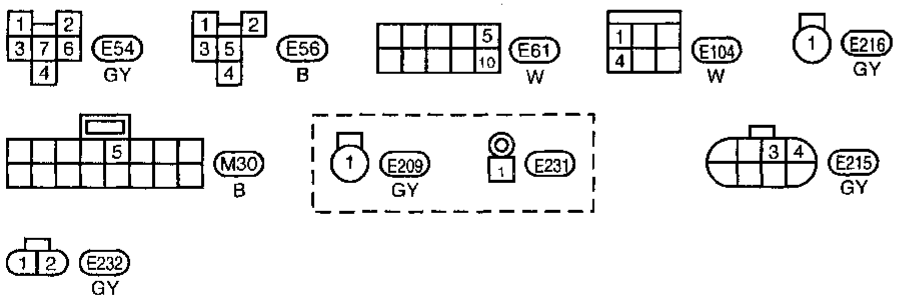
TEL074

1002

Wiring Diagram — START — (Cont'd)

A/T models





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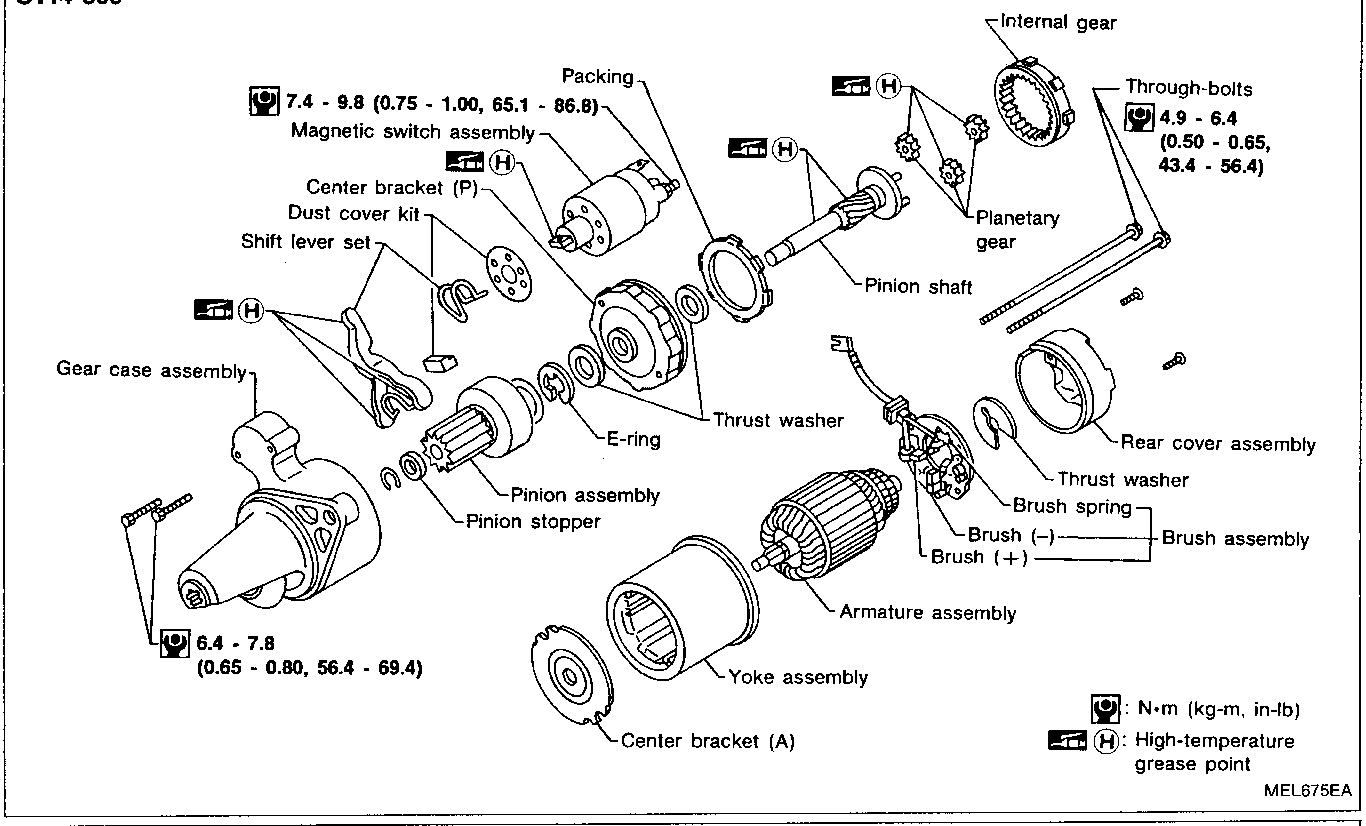
E102, M5
E61

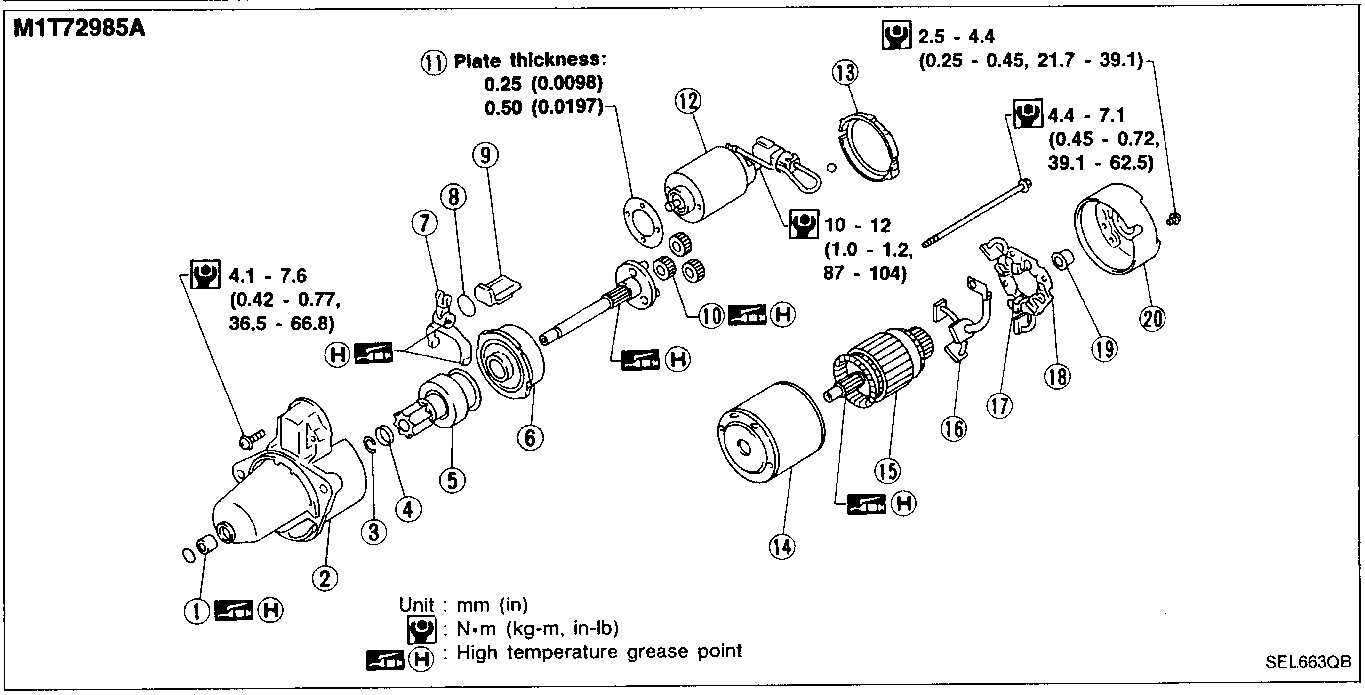
TEL075

Construction

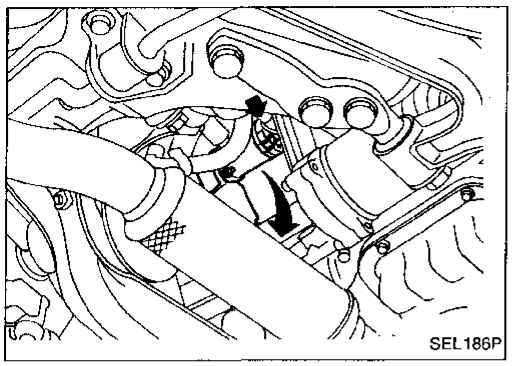
SEC. 233
S114-806



M1T72985A



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



Removal and Installation

REMOVAL

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

INSTALLATION

Installation procedure is basically the reverse order of removal.

Pinion/Clutch Check

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

Service Data and Specifications (SDS)

STARTER

Type		S114-806	M1T72985A
		HITACHI	MITSUBISHI
		Reduction gear	
System voltage	V	12	
No-load			
Terminal voltage	V	11.0	
Current	A	Less than 90	50 - 75
Revolution	rpm	More than 2,700	3,000 - 4,000
Minimum diameter of commutator	mm (in)	28.0 (1.10)	28.8 (1.134)
Minimum length of brush	mm (in)	10.5 (0.413)	12.0 (0.472)
Brush spring tension	N (kg, lb)	12.7 - 17.7 (1.3 - 1.8, 2.9 - 4.0)	13.7 - 25.5 (1.4 - 2.6, 3.1 - 5.7)
Movement "ℓ" in height of pinion assembly	mm (in)	—	—
Clearance of bearing metal and armature shaft	mm (in)	Less than 0.2 (0.008)	
Clearance "ℓ" between pinion front edge and pinion stopper	mm (in)	0.3 - 2.5 (0.012 - 0.098)	0.5 - 2.0 (0.020 - 0.079)

System Description

The alternator provides DC voltage to operate the vehicle's electrical system and to keep the battery charged. The voltage output is controlled by the IC regulator.
Power is supplied at all times to alternator terminal ② through:

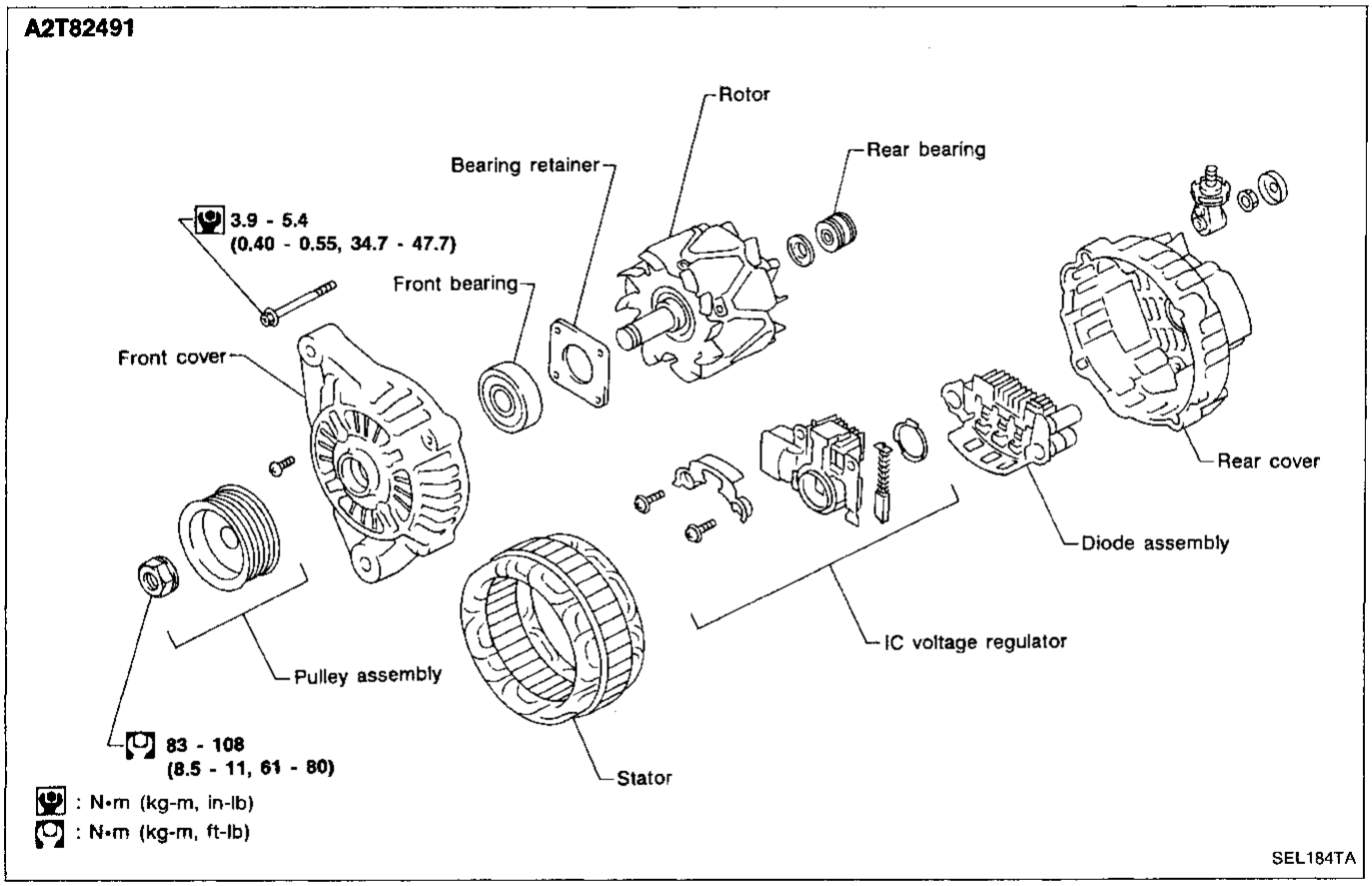
- 30A fusible link (letter [d], located in the fuse and fusible link box).

Voltage output through alternator terminal ③, to charge the battery and operate the vehicle's electrical system, is controlled by the amount of voltage detected by the IC regulator at terminal ②. The charging circuit is protected by the 75A fusible link (letter [a], located in the fuse and fusible link box).
Terminals ④ and ⑤ of the alternator supply ground through body grounds (A6) and (A7).
With the ignition switch in the ON or START position, power is supplied

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

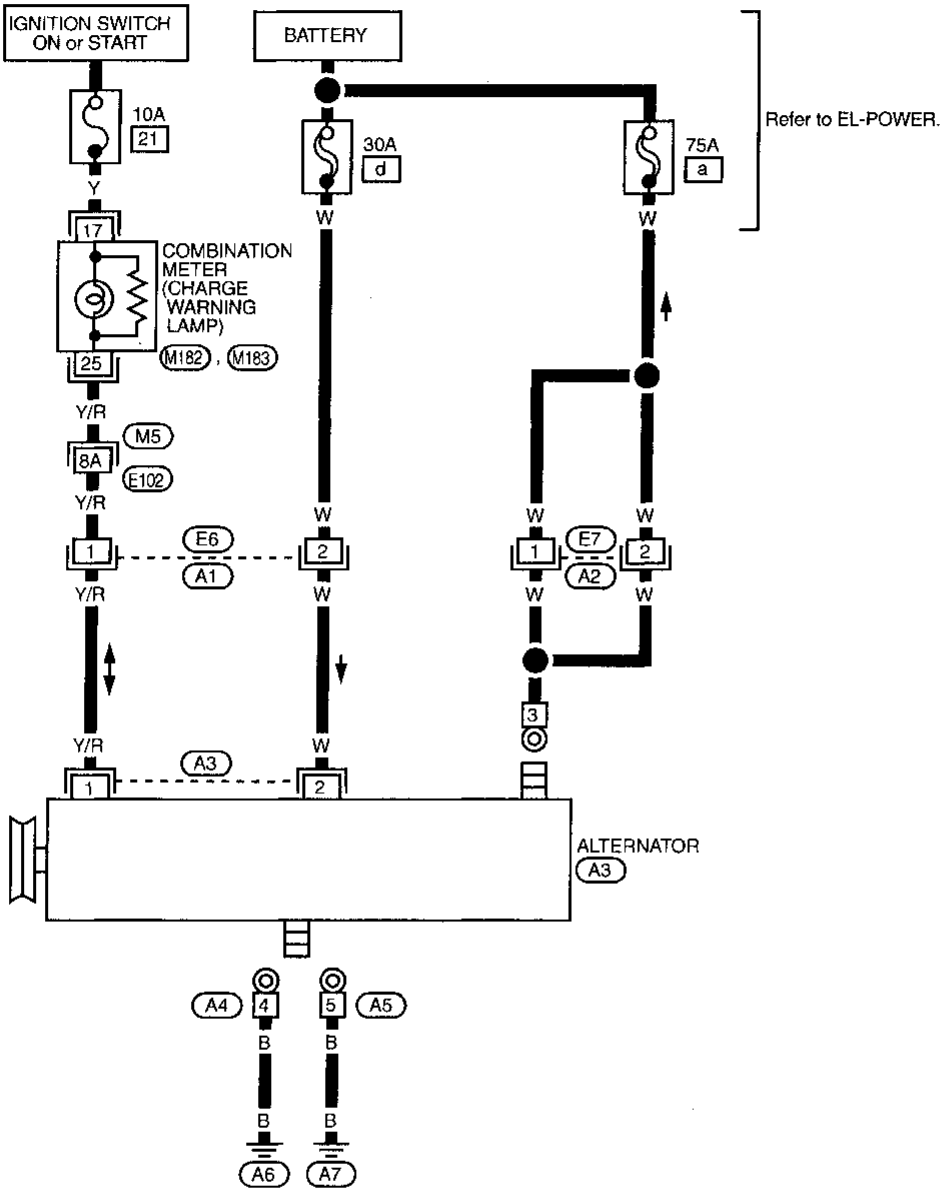
Ground is supplied to terminal ㉕ of the combination meter through terminal ① of the alternator. With power and ground supplied, the charge warning lamp will illuminate. When the alternator is providing sufficient voltage with the engine running, the ground is opened and the charge warning lamp will go off.
If the charge warning lamp illuminates with the engine running, a malfunction is indicated.

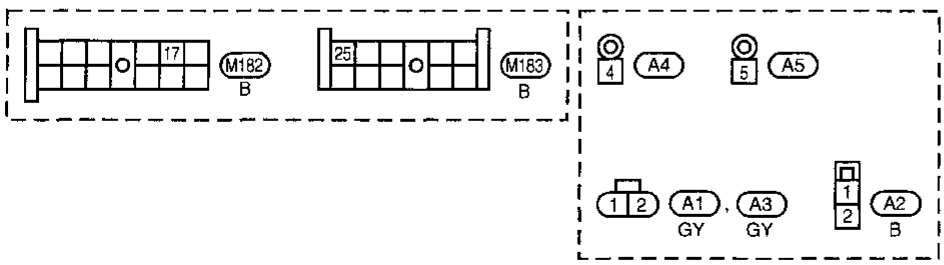
Construction



Wiring Diagram — CHARGE —

EL-CHARGE-01





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

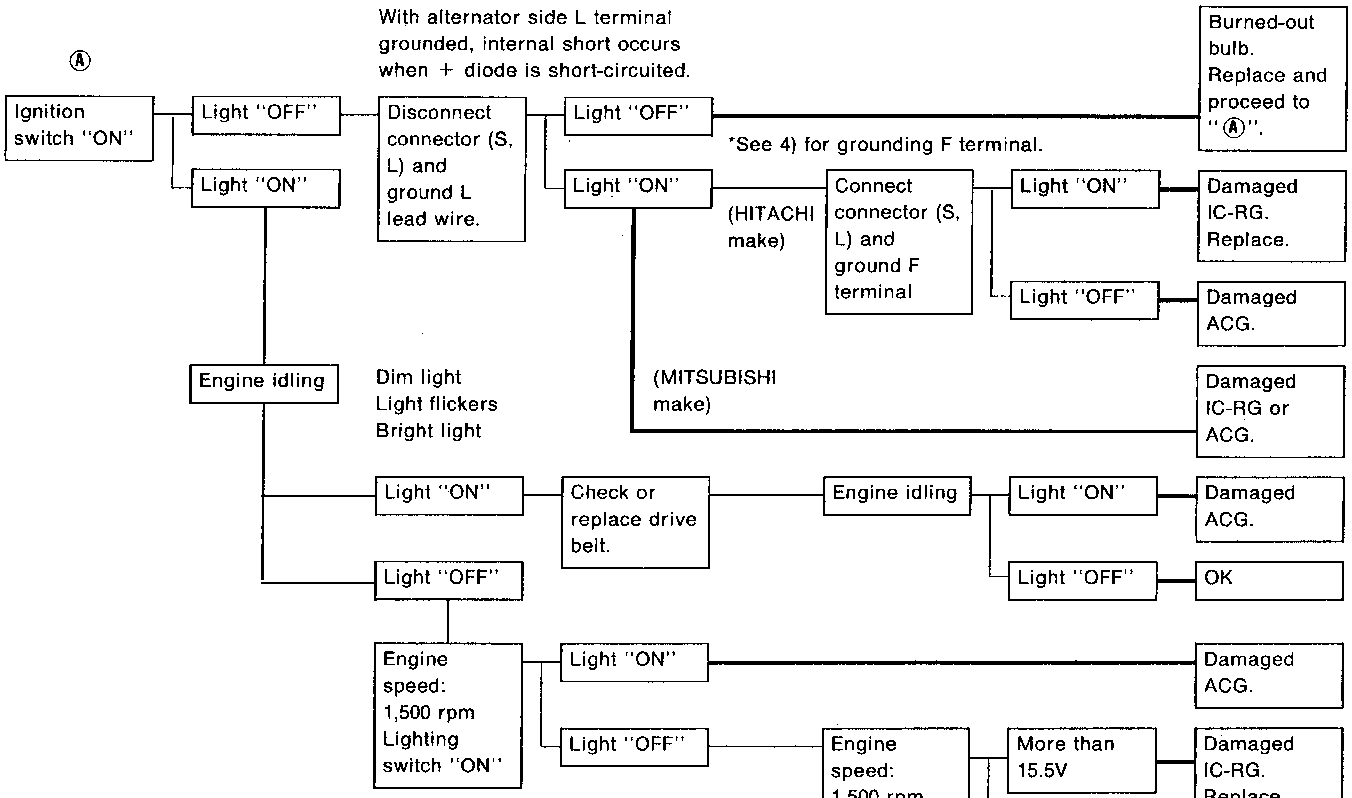
TEL076

Trouble Diagnoses

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

Before starting trouble diagnoses, inspect the fusible link.

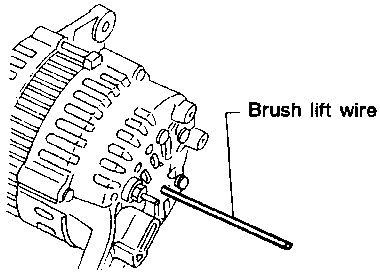
WITH IC REGULATOR



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

Gasoline engine model

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



SEL030Z

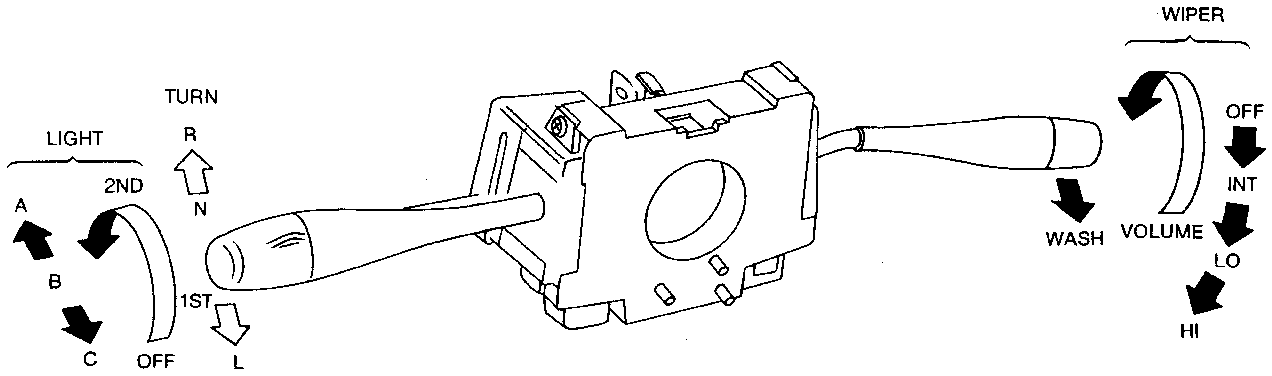
5) **Terminals "S", "L", "B" and "E" are marked on rear cover of alternator.**

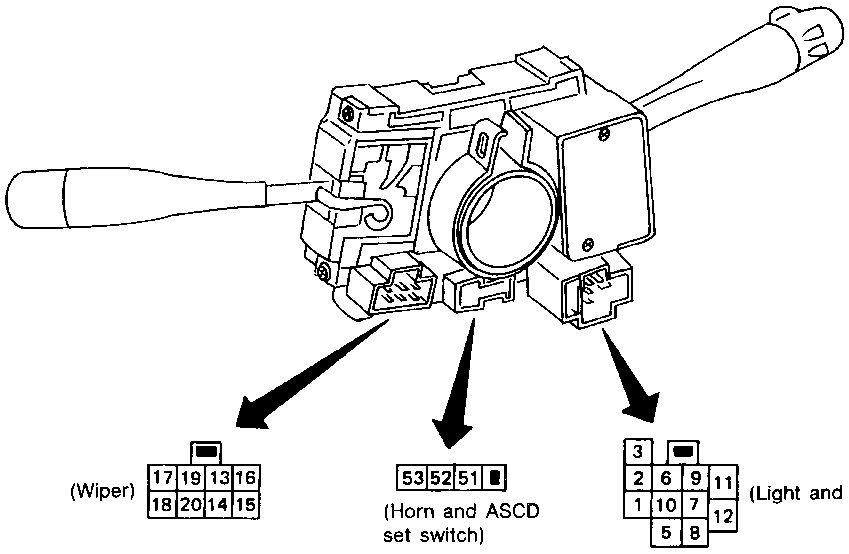
Service Data and Specifications (SDS)

ALTERNATOR

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

Combination Switch/Check



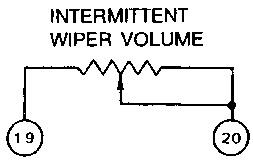


LIGHTING SWITCH

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

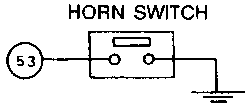
WIPER SWITCH

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

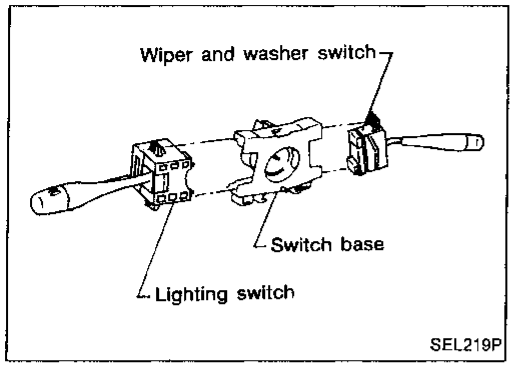


TURN SIGNAL SWITCH

	R	N	L
1	○		○
2	○		
3			○

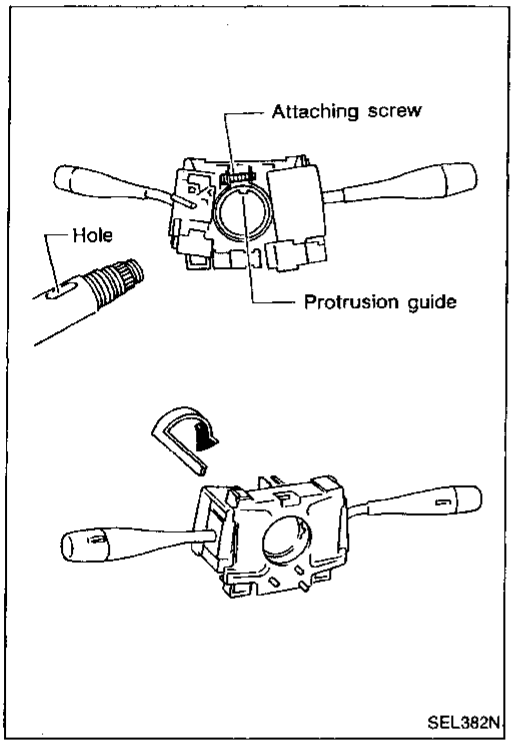


SEL615NA



Replacement

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



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

System Description (For U.S.A.)

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

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

Low beam operation

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

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

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

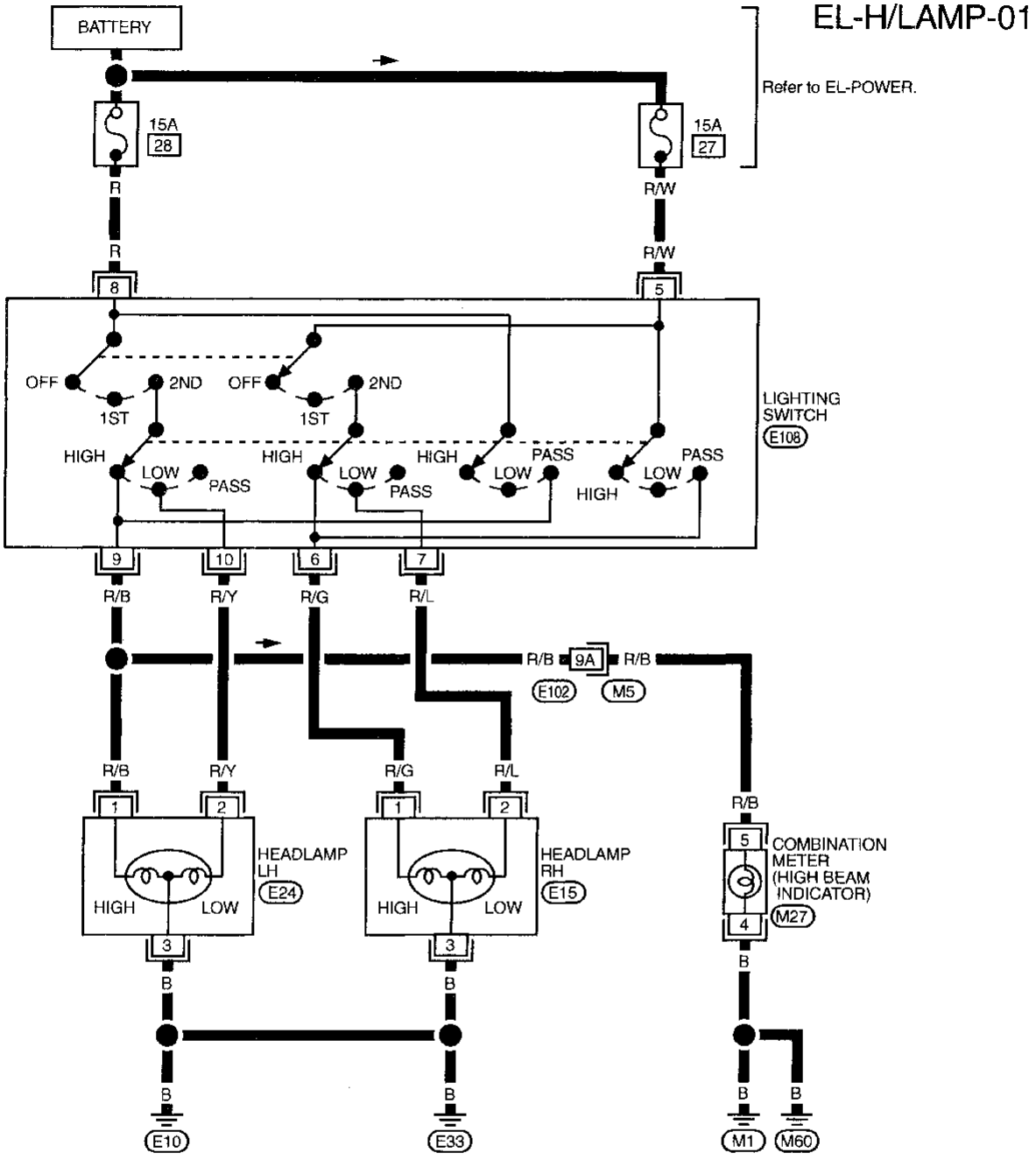
High beam operation/flash-to-pass operation

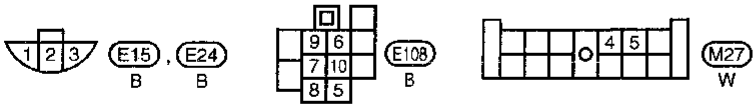
When the lighting switch is placed in the 2ND and HIGH ("A") position or PASS ("C") position, power is supplied

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

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

Wiring Diagram (For U.S.A.) — H/LAMP —





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

TEL077

Trouble Diagnoses (For U.S.A.)

Symptom	Possible cause	Repair order
LH headlamps do not operate.	1. Bulb 2. Grounds (E10) and (E33) 3. 15A fuse 4. Lighting switch	1. Check bulb. 2. Check grounds (E10) and (E33). 3. Check 15A fuse (No. 28 , located in fusible link and fuse box). Verify battery positive voltage is present at terminal ⑧ of lighting switch. 4. Check lighting switch.
RH headlamps do not operate.	1. Bulb 2. Grounds (E10) and (E33) 3. 15A fuse 4. Lighting switch	1. Check bulb. 2. Check grounds (E10) and (E33). 3. Check 15A fuse (No. 27 , located in fusible link and fuse box). Verify battery positive voltage is present at terminal ⑤ of lighting switch. 4. Check lighting switch.
LH high beam does not operate, but LH low beam operates.	1. Bulb 2. Open in LH high beam circuit 3. Lighting switch	1. Check bulb. 2. Check R/B wire between lighting switch and LH headlamp for an open circuit. 3. Check lighting switch.
LH low beam does not operate, but LH high beam operates.	1. Bulb 2. Open in LH low beam circuit 3. Lighting switch	1. Check bulb. 2. Check R/Y wire between lighting switch and LH headlamp for an open circuit. 3. Check lighting switch.
RH high beam does not operate, but RH low beam operates.	1. Bulb. 2. Open in RH high beam circuit 3. Lighting switch.	1. Check bulb. 2. Check R/G wire between lighting switch and RH headlamp for an open circuit. 3. Check lighting switch.
RH low beam does not operate, but RH high beam operates.	1. Bulb 2. Open in RH low beam circuit 3. Lighting switch	1. Check bulb. 2. Check R/L wire between lighting switch and RH headlamp for an open circuit. 3. Check lighting switch.
High beam indicator does not work.	1. Bulb 2. Grounds (M1) and (M60) 3. Open in high beam circuit	1. Check bulb in combination meter. 2. Check grounds (M1) and (M60). 3. Check R/B wire between lighting switch and combination meter for an open circuit.

System Description (For Canada)

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

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

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

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

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

HEADLAMP OPERATION

Low beam operation

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

Ground is supplied to RH headlamp terminal ③ through body grounds (E10) and (E33).

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

Ground is supplied
- to LH headlamp terminal ③
- from daytime light control unit terminal ⑧
- through daytime light control unit terminal ⑩
- through body grounds (M1) and (M60).

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

High beam operation/flash-to-pass operation

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

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

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

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

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

DAYTIME LIGHT OPERATION

With the engine running and the lighting switch in the OFF or 1ST position, power is supplied
- to daytime light control unit terminal ④,
- through daytime light control unit terminal ⑦
- to LH headlamp terminal ①,
- through LH headlamp terminal ③

System Description (For Canada) (Cont'd)

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

Ground is supplied to RH headlamp terminal ③ through body grounds (E10) and (E33).
Because the high beam headlamps are now wired in series, they operate at half illumination.

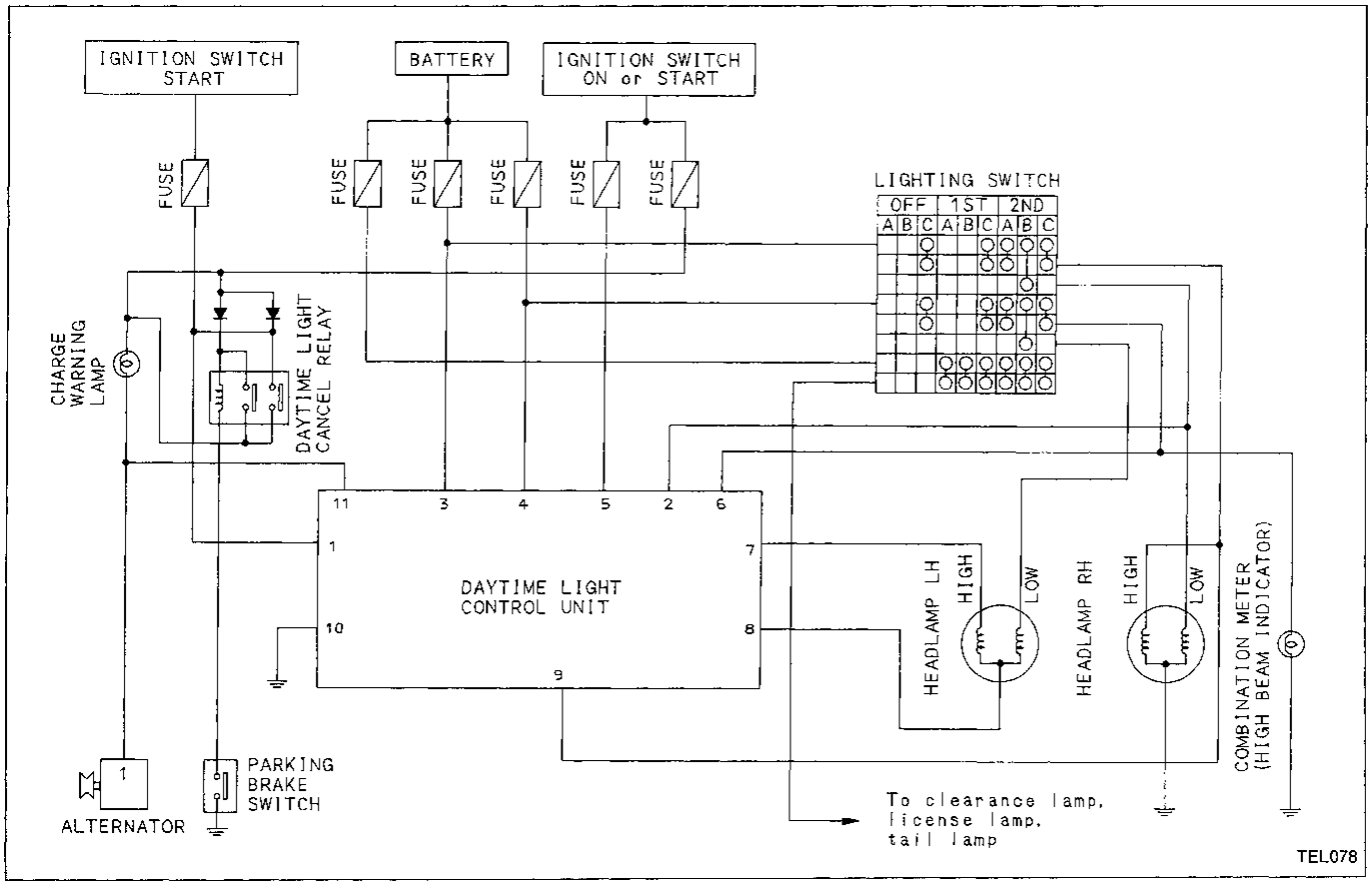
Operation

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

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

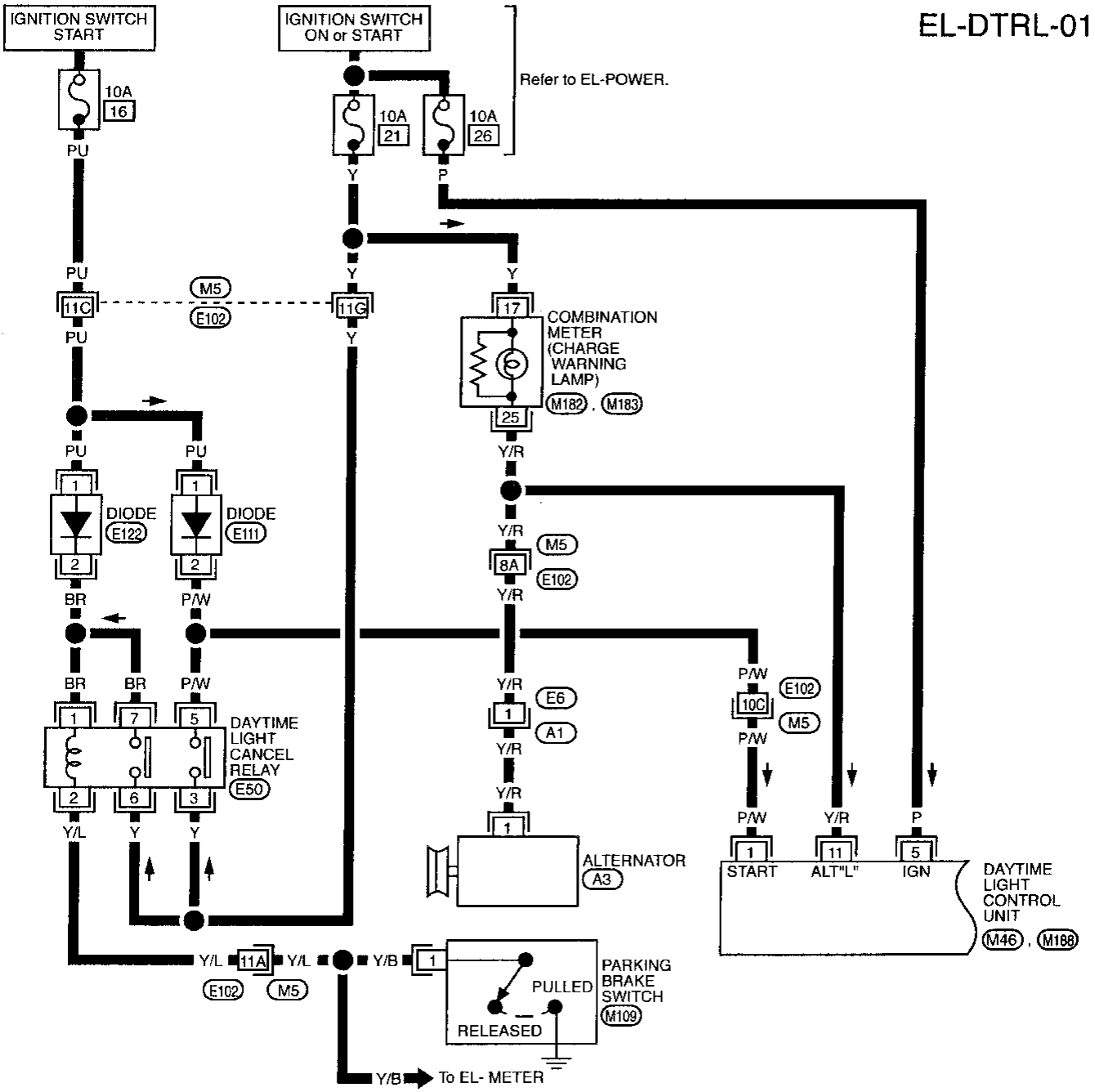
O : Lamp "ON"
X : Lamp "OFF"
△ : Lamp dims.

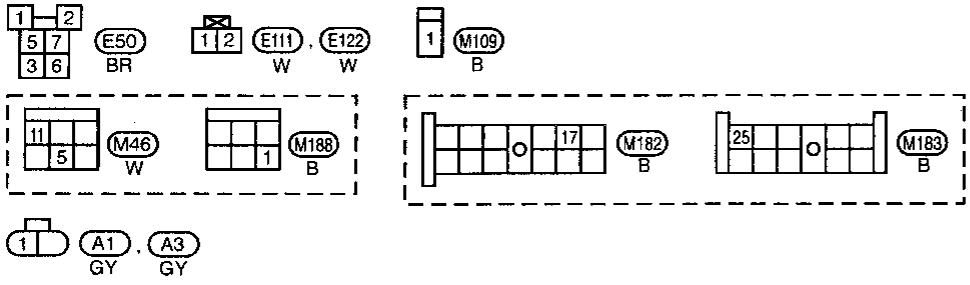
Schematic



1016

Wiring Diagram (For Canada) — DTRL —



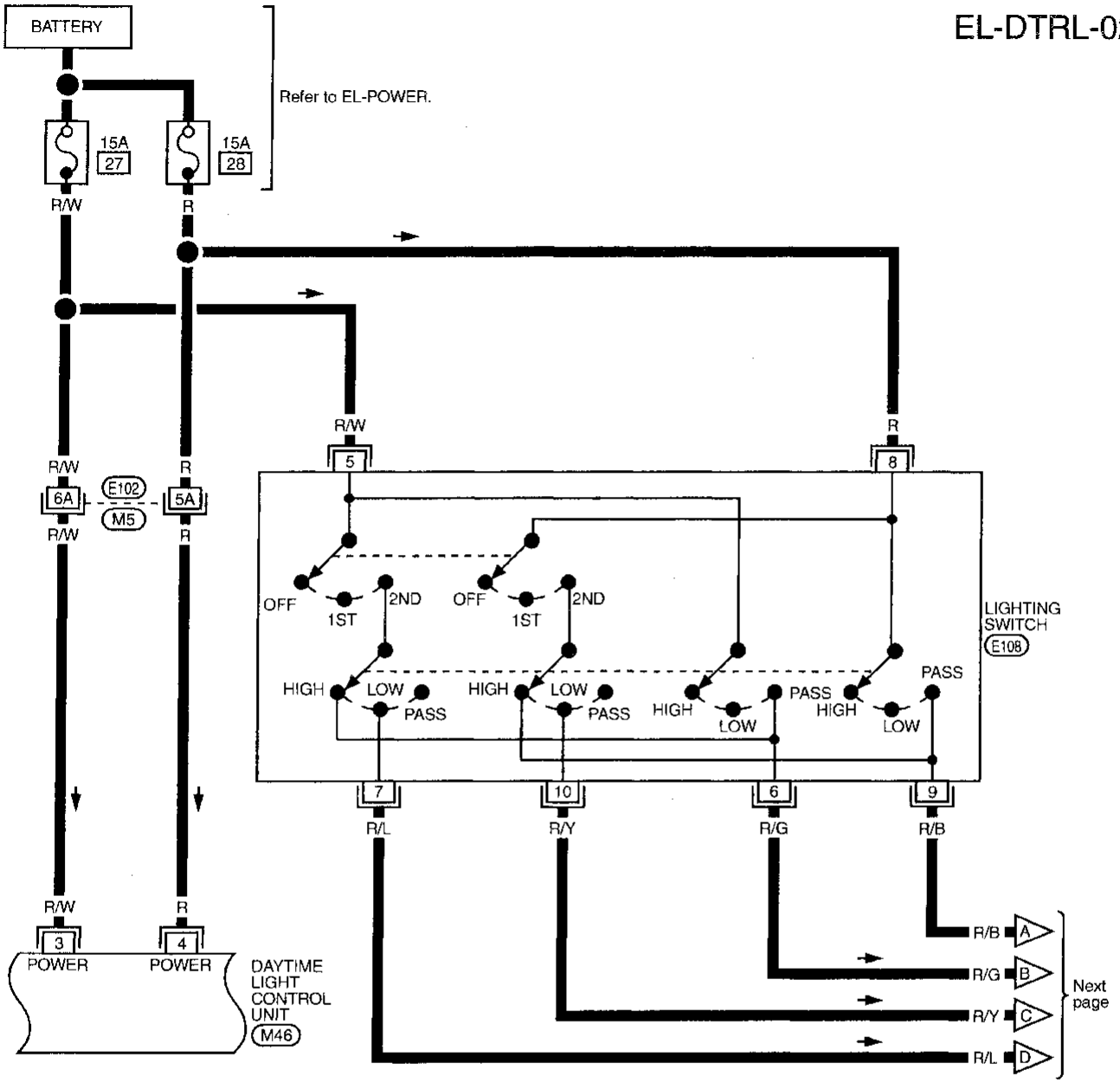


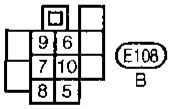
Refer to last page (Foldout page).
E102, M5

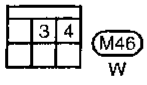
TEL079

Wiring Diagram (For Canada) — DTRL — (Cont'd)

EL-DTRL-02





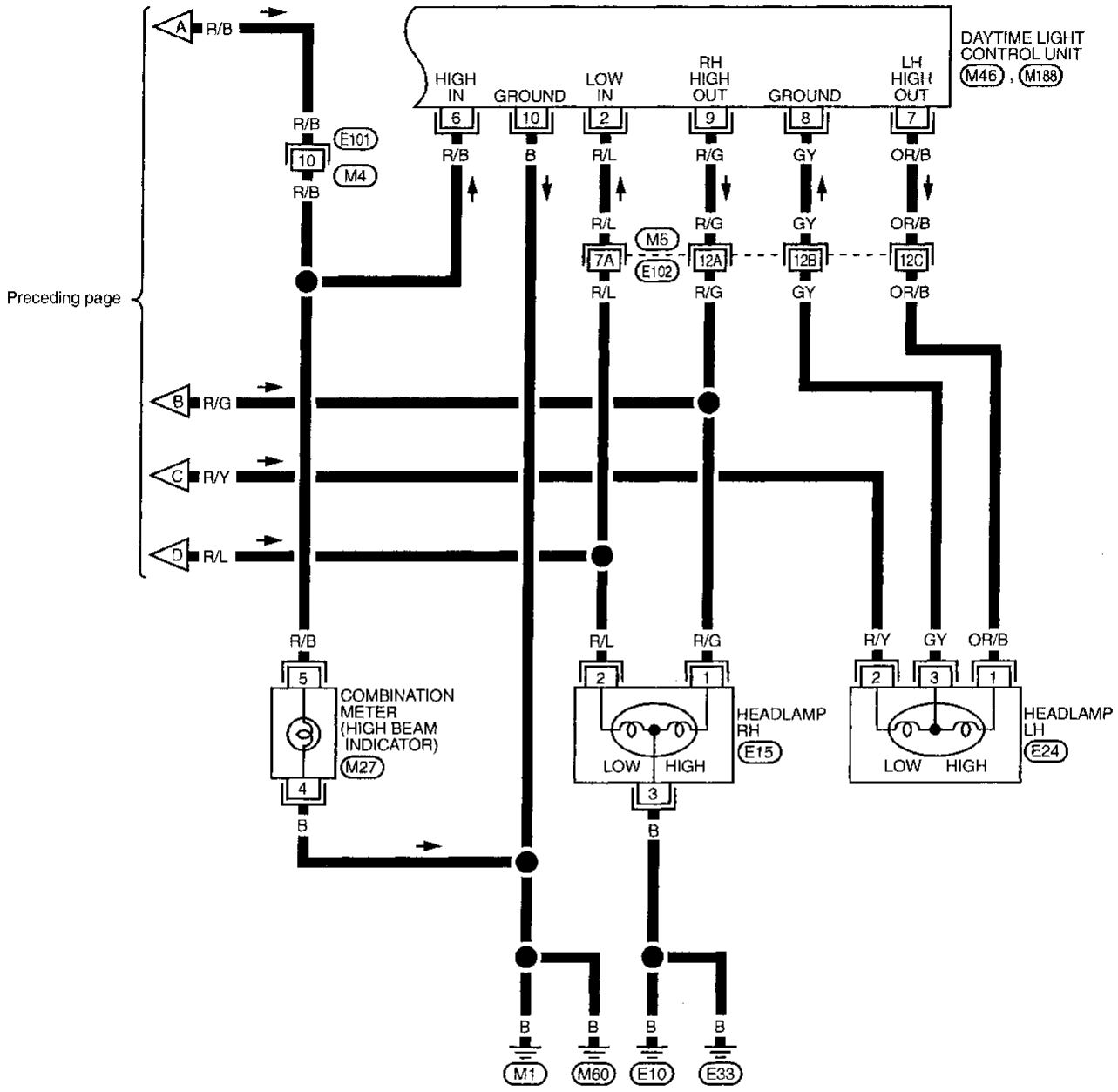


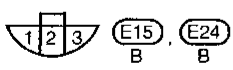
Refer to last page (Foldout page).
E102, M5

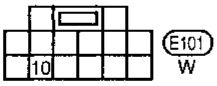
TEL080

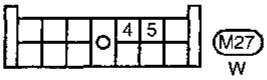
Wiring Diagram (For Canada) — DTRL — (Cont'd)

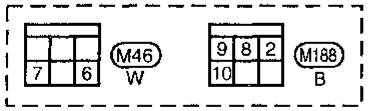
EL-DTRL-03











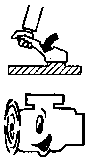
Refer to last page (Foldout page).
E102, M5

TEL081

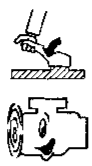
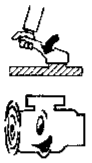
Trouble Diagnoses (For Canada)

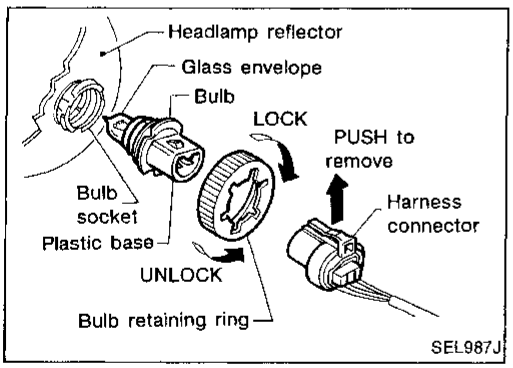
DAYTIME LIGHT CONTROL UNIT INSPECTION TABLE

(Data are reference values.)

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

Trouble Diagnoses (For Canada) (Cont'd)

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



Bulb Replacement

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

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

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

CAUTION:

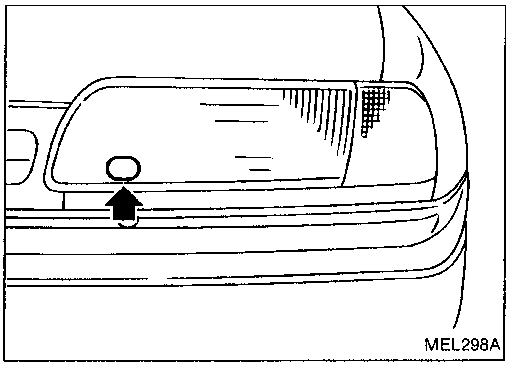
- **Do not leave headlamp reflector without bulb for a long period of time. Dust, moisture, smoke, etc. entering headlamp body may affect the performance of the headlamp. Remove headlamp bulb from the headlamp reflector just before a replacement bulb is installed.**

Aiming Adjustment

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

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

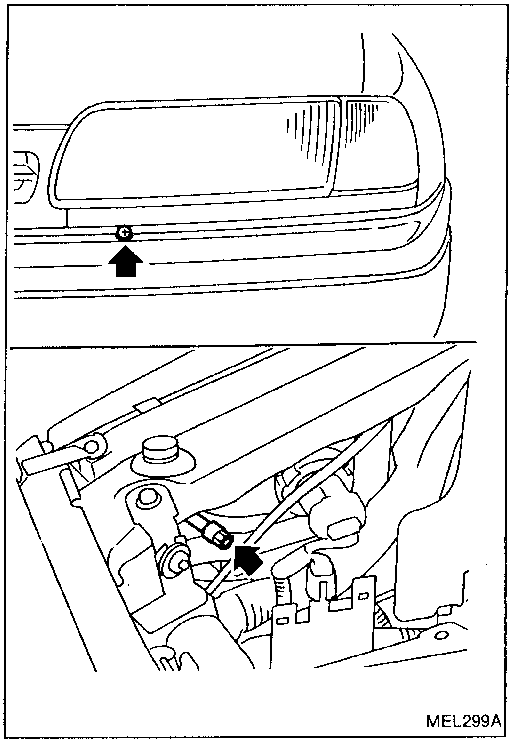
a. **Keep all tires inflated to correct pressures.**
b. **Place vehicle and tester on one and same flat surface.**
c. **See that there is no-load in vehicle (coolant, engine oil filled up to correct level and full fuel tank) other than the driver (or equivalent weight placed in driver's position).**


MEL298A

AIMER ADJUSTMENT MARK

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

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

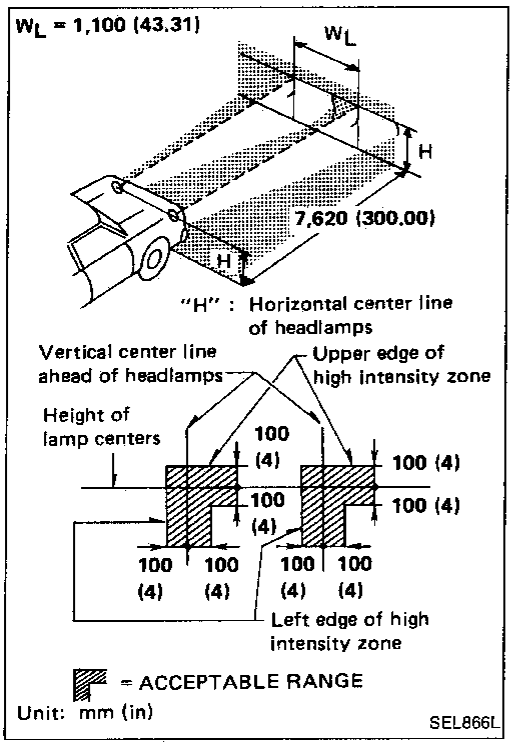

MEL299A

LOW BEAM

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

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

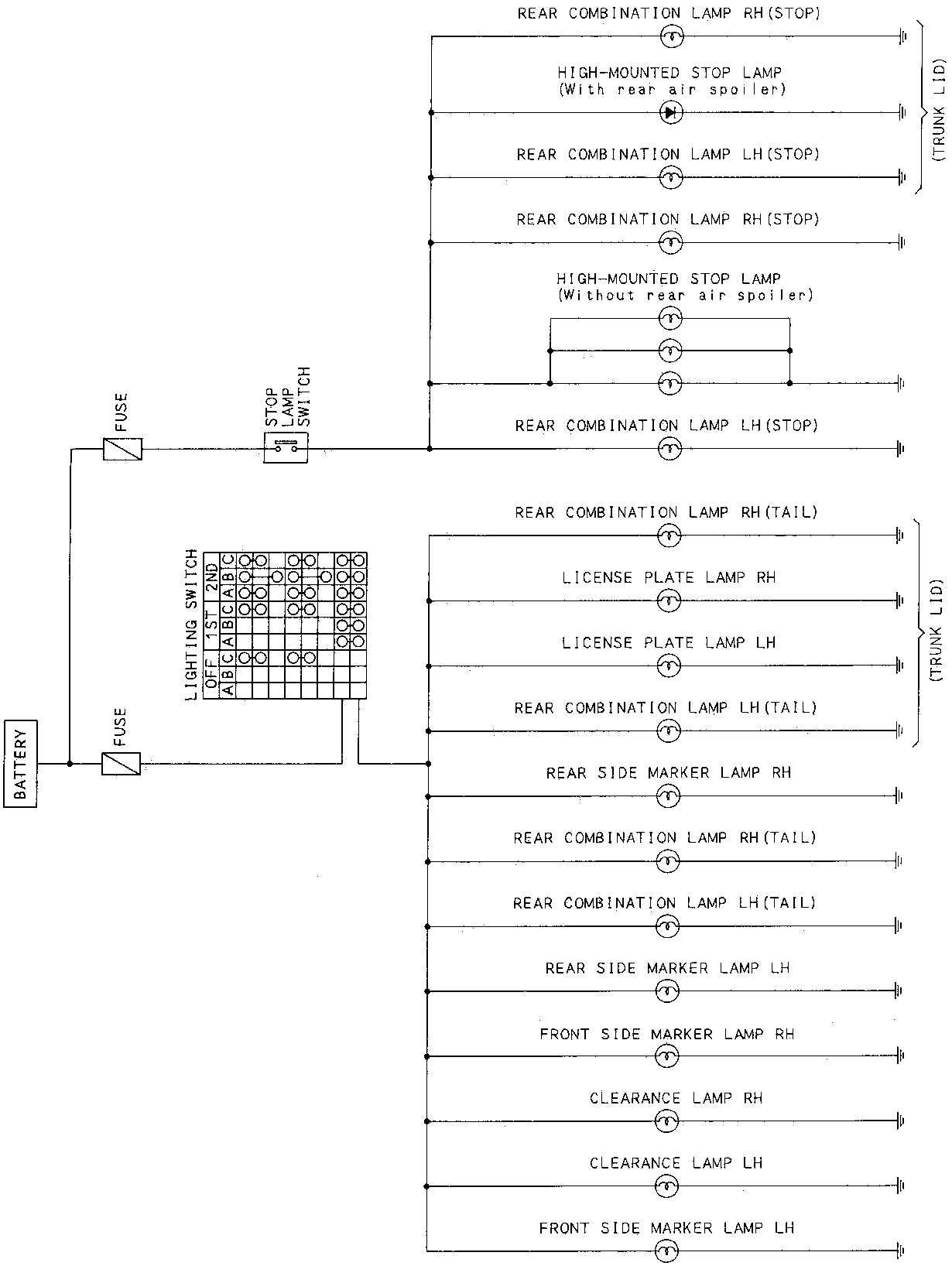
Aiming Adjustment (Cont'd)



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

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

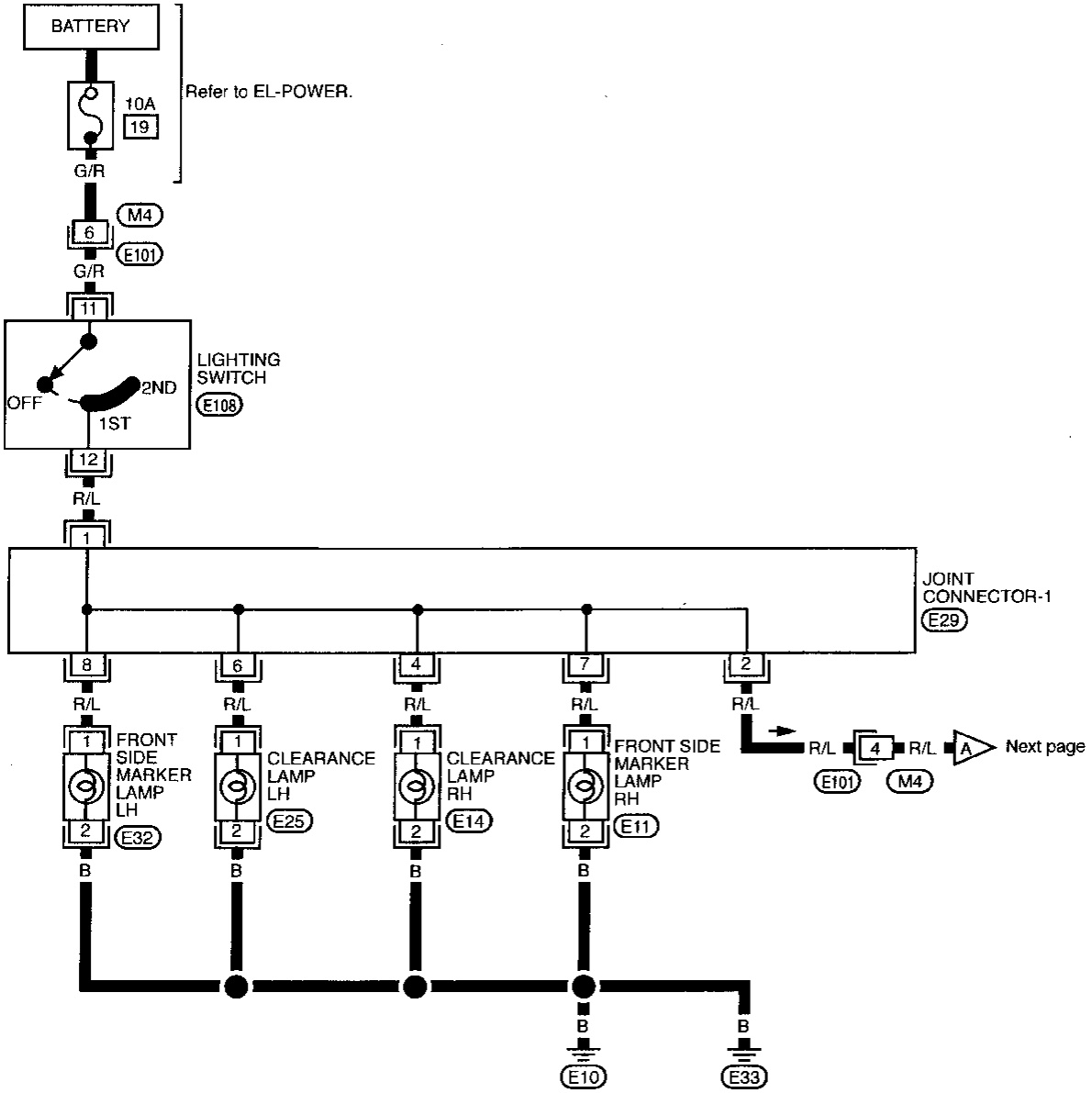
Clearance, License, Tail and Stop Lamps/ Schematic

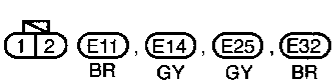


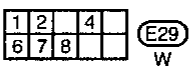
TEL085

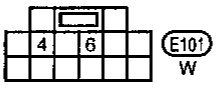
Clearance, License, Tail and Stop Lamps/Wiring Diagram — TAIL/L —

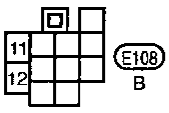
EL-TAIL/L-01









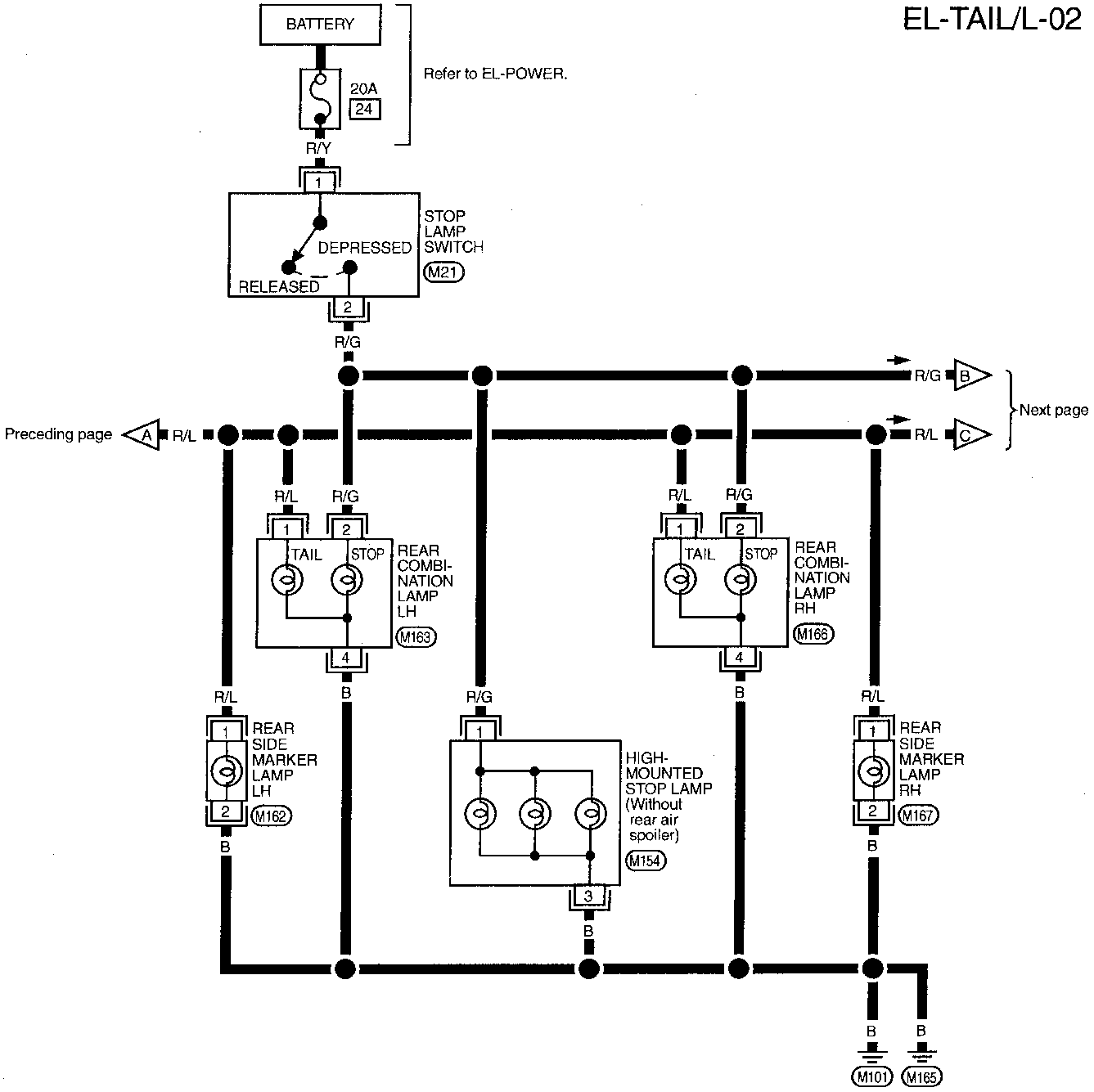


Refer to last page (Foldout page).
E29

TEL082

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

EL-TAIL/L-02

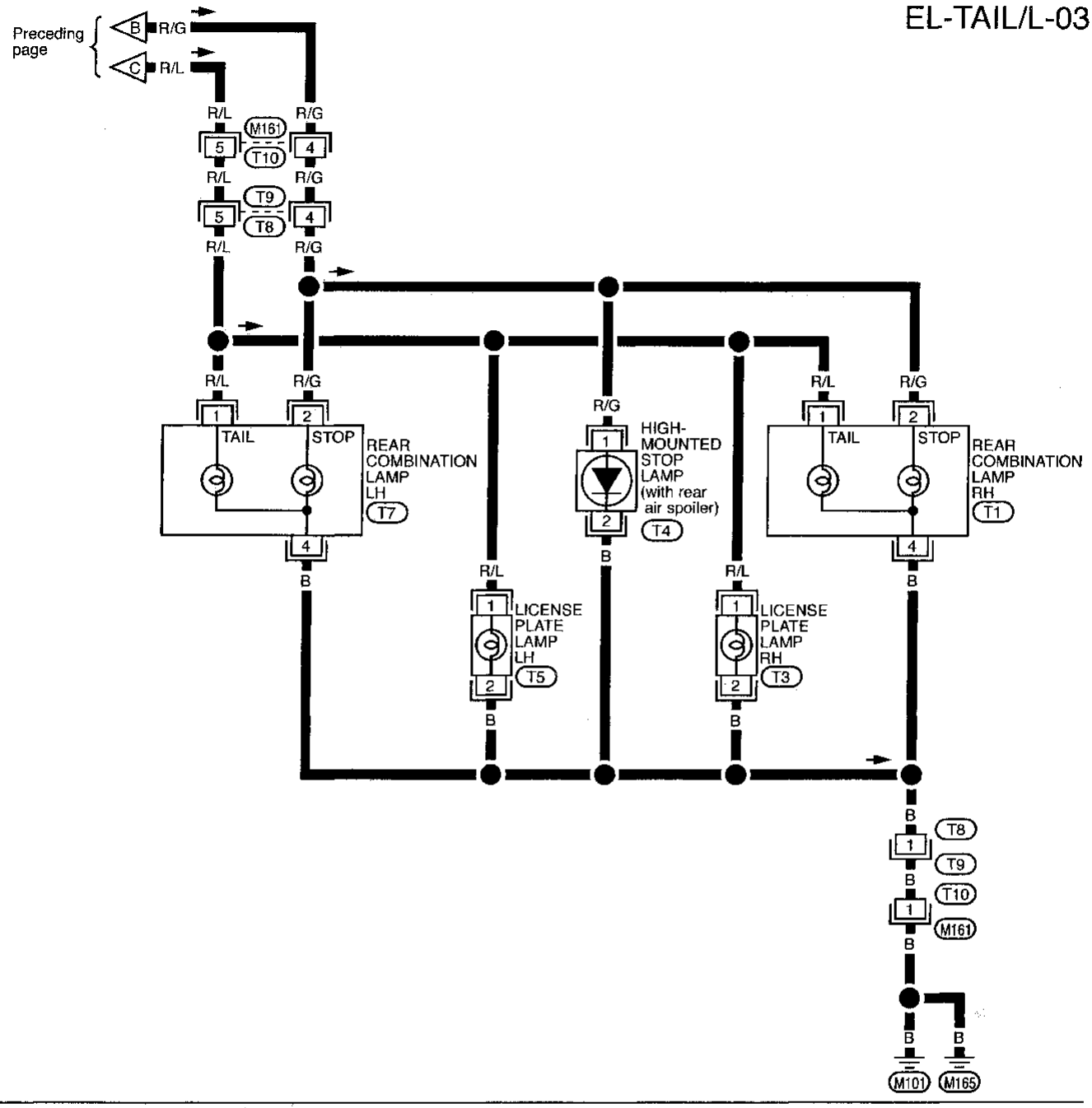


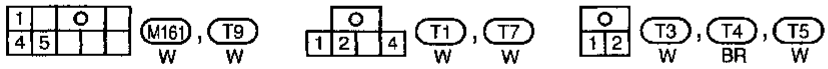
M21 (B) M154 (W) M162, M167 (W, W) M163, M166 (W, W)

TEL083

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

EL-TAIL/L-03

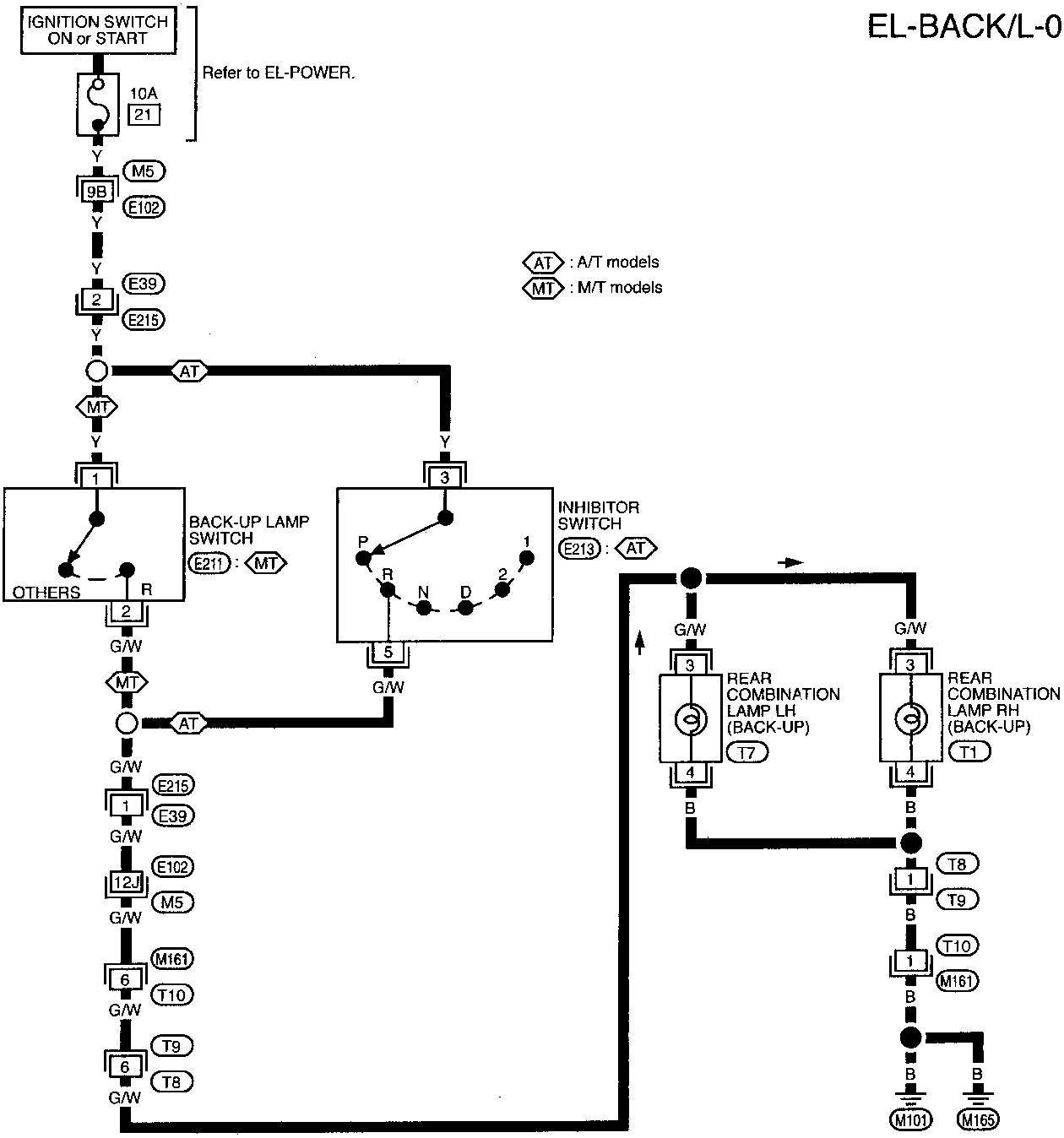


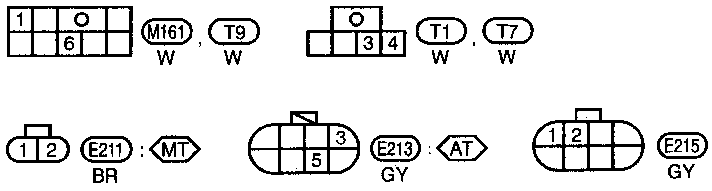


TEL084

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

EL-BACK/L-01





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

TEL086

Front Fog Lamp/System Description

Power is supplied at all times to fog lamp relay terminal ③ through:

- 15A fuse (No. 13, located in the fuse block).

With the lighting switch in the 2ND and LOW ("B") position, power is supplied

- through 15A fuse (No. 27, located in the fuse and fusible link box)
- to lighting switch terminal ⑤
- through terminal ⑦ of the lighting switch
- to fog lamp relay terminal ①.

Fog lamp operation

The lighting switch must be in the 2ND and LOW ("B") position for fog lamp operation.

With the fog lamp switch in the ON position:

- ground is supplied to fog lamp relay terminal ② through the fog lamp switch and body grounds (M1) and (M60).

The fog lamp relay is energized and power is supplied

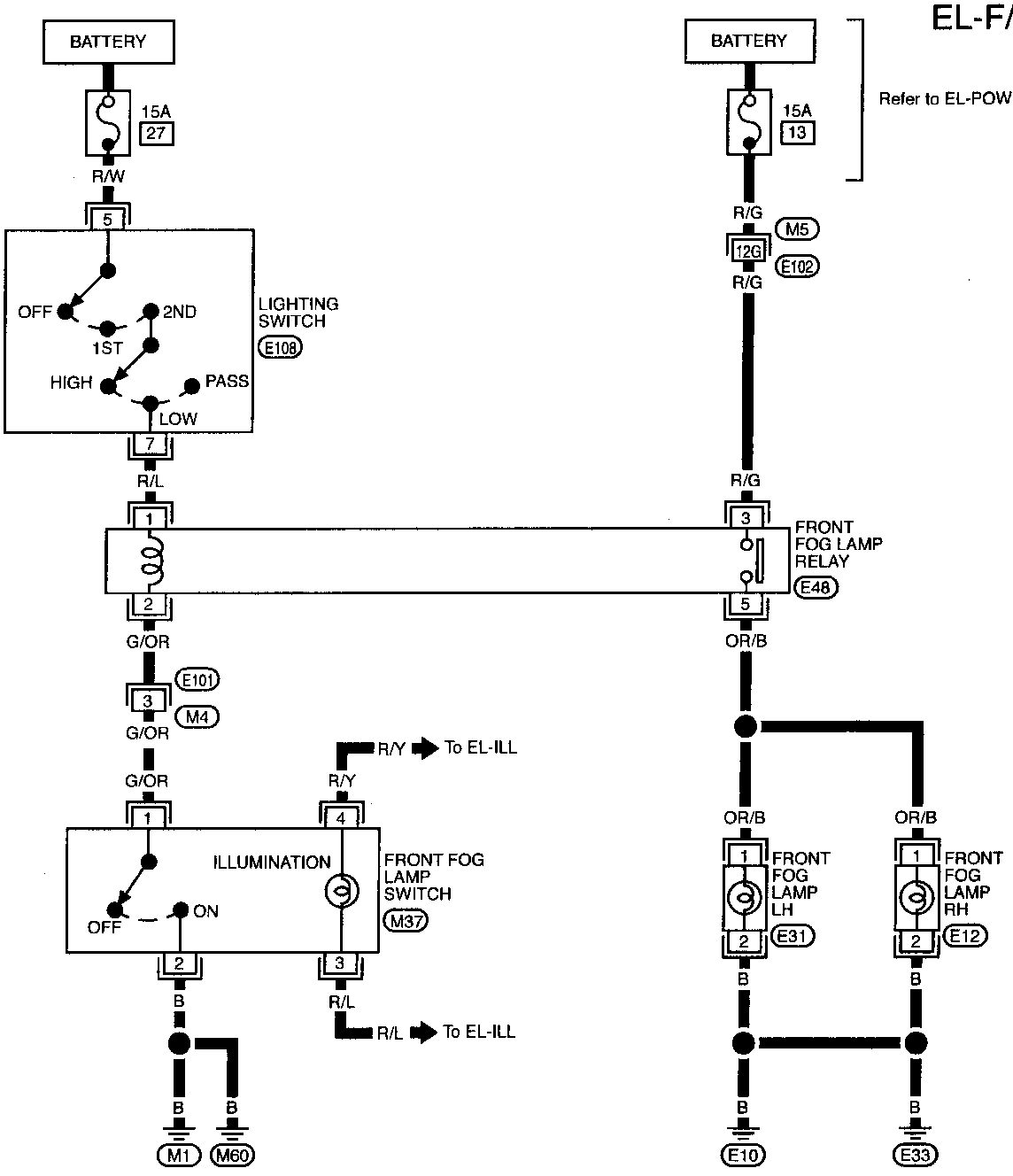
- from fog lamp relay terminal ⑤
- to terminal ① of each fog lamp.

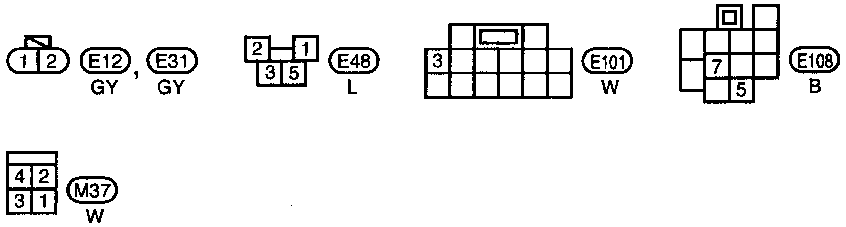
Ground is supplied to terminal ② of each fog lamp through body grounds (E10) and (E33).

With power and ground supplied, the fog lamps illuminate.

Front Fog Lamp/Wiring Diagram — F/FOG —

EL-F/FOG-01





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

TEL087

Turn Signal and Hazard Warning Lamps/System Description

TURN SIGNAL OPERATION

With the hazard switch in the OFF position and the ignition switch in the ON or START position, power is supplied
- through 10A fuse (No. 22 , located in the fuse block)
- to hazard switch terminal ②
- through terminal ① of the hazard switch
- to combination flasher unit terminal ①
- through terminal ③ of the combination flasher unit
- to turn signal switch terminal ①.

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

LH turn

When the turn signal switch is moved to the LH position, power is supplied
- from turn signal switch terminal ③
- to front turn signal lamp LH terminal ①,
- to rear combination lamp LH terminal ③ and
- to combination meter terminal ⑥.

Ground is supplied to the front turn signal lamp LH terminal ② through body grounds (E10) and (E33).
Ground is supplied to the rear combination lamp LH terminal ④ through body grounds (M101) and (M166).
Ground is supplied to combination meter terminal ⑲ through body grounds (M1) and (M60).
With power and ground supplied, the flasher unit controls the flashing of the LH turn signal lamps.

RH turn

When the turn signal switch is moved to the RH position, power is supplied
- from turn signal switch terminal ②
- to front turn signal lamp RH terminal ①,
- to rear combination lamp RH terminal ③ and
- to combination meter terminal ㉗.

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

HAZARD LAMP OPERATION

Power is supplied at all times
- to hazard switch terminal ③
- through 10A fuse (No. 17 , located in the fuse block).

With the hazard switch in the ON position, power is supplied
- through terminal ① of the hazard switch
- to combination flasher unit terminal ①
- through terminal ③ of the combination flasher unit
- to hazard switch terminal ④.

Ground is supplied to combination flasher unit terminal ② through body grounds (M1) and (M60).
Power is supplied
- through terminal ⑤ of the hazard switch
- to front turn signal lamp LH terminal ①,
- to rear combination lamp LH terminal ③ and
- to combination meter terminal ⑥.

Power is supplied
- through terminal ⑥ of the hazard switch
- to front turn signal lamp RH terminal ①,
- to rear combination lamp RH terminal ③ and
- to combination meter terminal ㉗.

Ground is supplied to terminal ② of the front turn signal lamps through body grounds (E10) and (E33).

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

Ground is supplied to terminal ④ of the rear combination lamps through body grounds (M101) and (M165).
Ground is supplied to combination meter terminal ⑲ through body grounds (M1) and (M60).
With power and ground supplied, the flasher unit controls the flashing of the hazard warning lamps.

WITH MULTI-REMOTE CONTROL SYSTEM

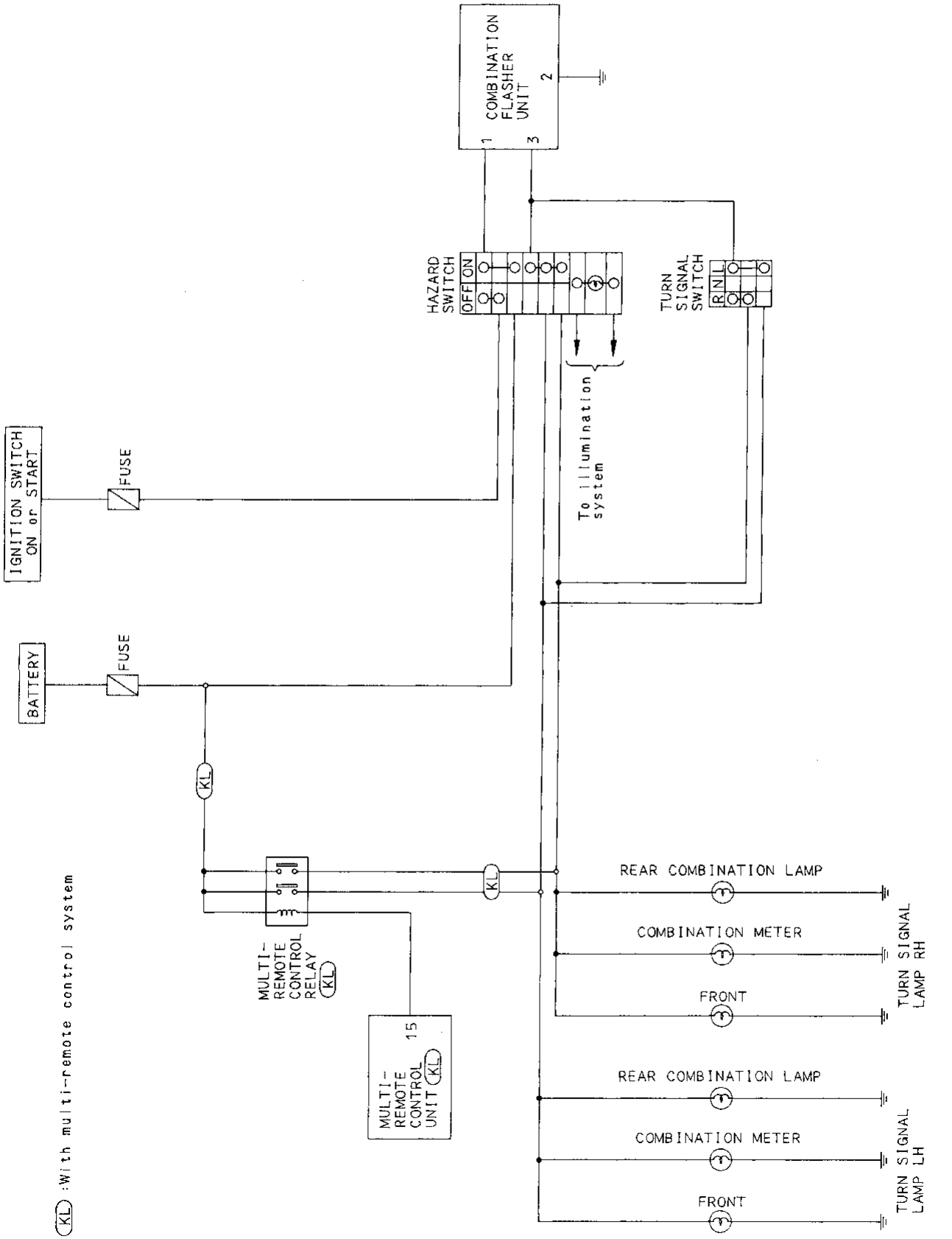
Power is supplied at all times
- through 10A fuse (No. 17 located in the fuse block)
- to multi-remote control relay terminal ①, ⑥ and ③.

Ground is supplied to multi-remote control relay terminal ②, when the multi-remote control system is triggered through the multi-remote control unit.
(Refer to "MULTI-REMOTE CONTROL SYSTEM".)
The multi-remote control relay is energized.
Power is supplied through terminal ⑦ of the multi-remote control relay
- to front turn signal lamp RH terminal ①,
- to rear combination lamp RH terminal ③ and
- to combination meter terminal ㉗.

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

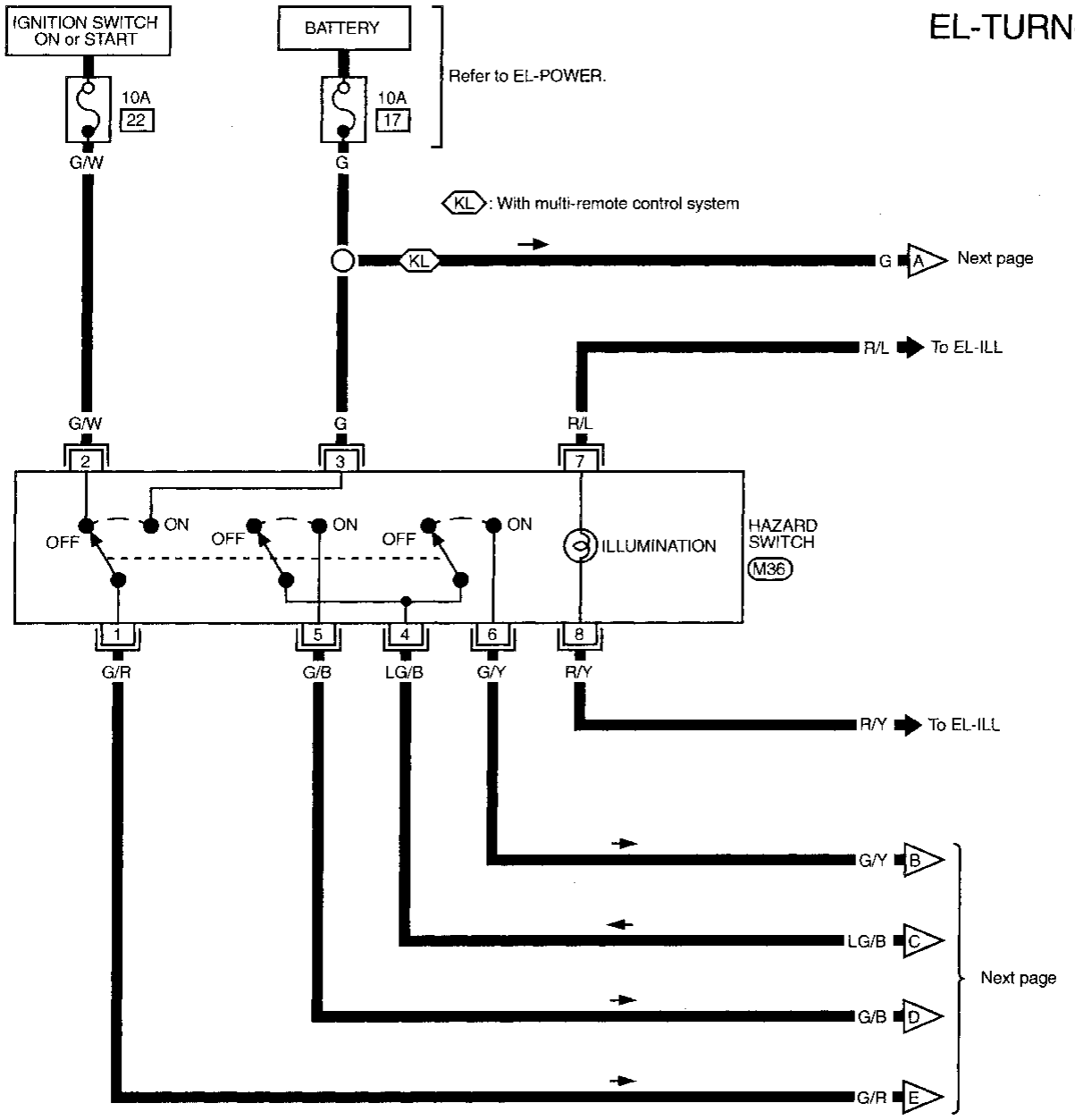
With power and ground supplied, the multi-remote control unit controls the flashing of the hazard warning lamps.

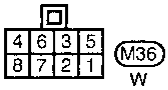
Turn Signal and Hazard Warning Lamps/ Schematic



TEL091

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

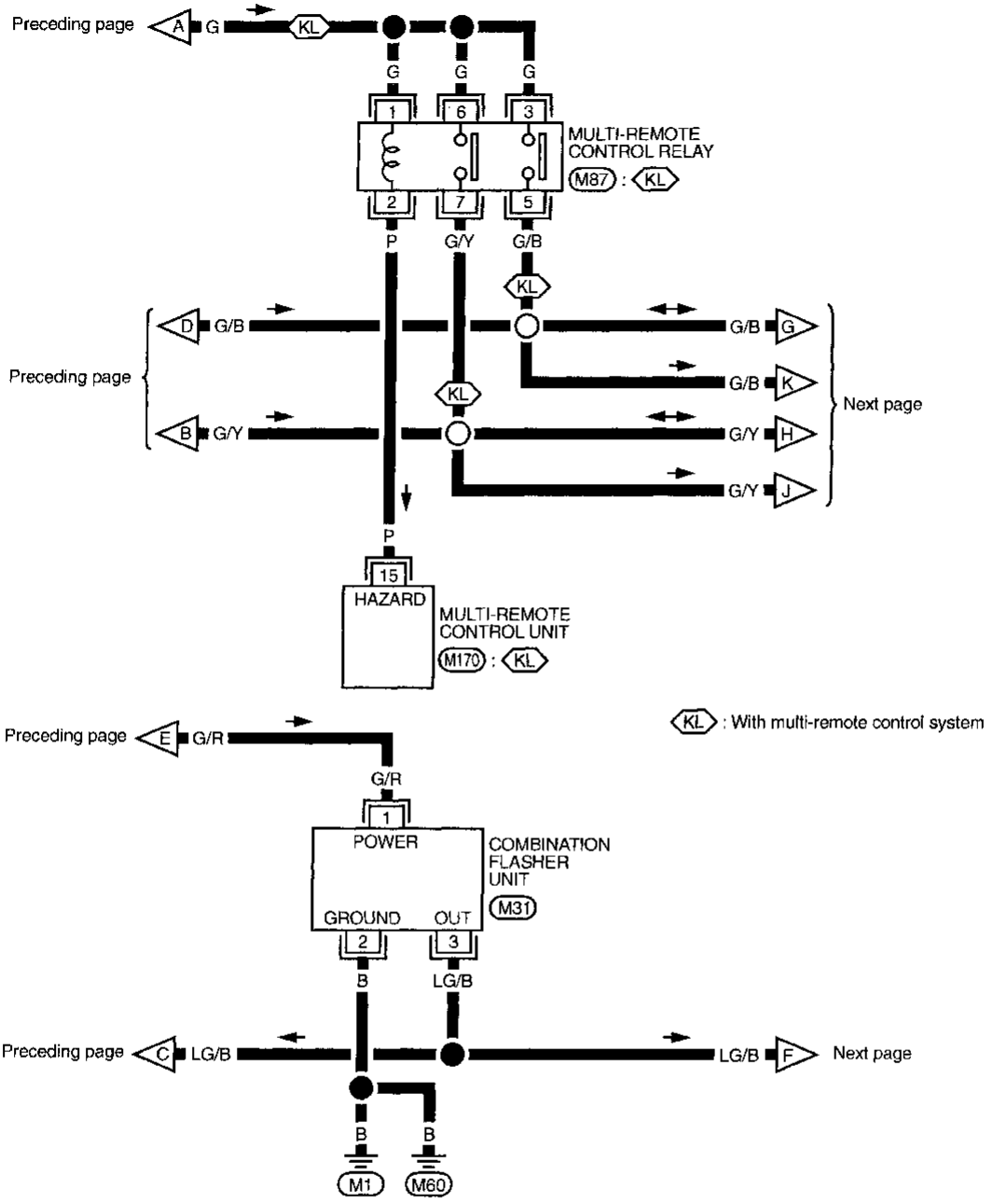




TEL088

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

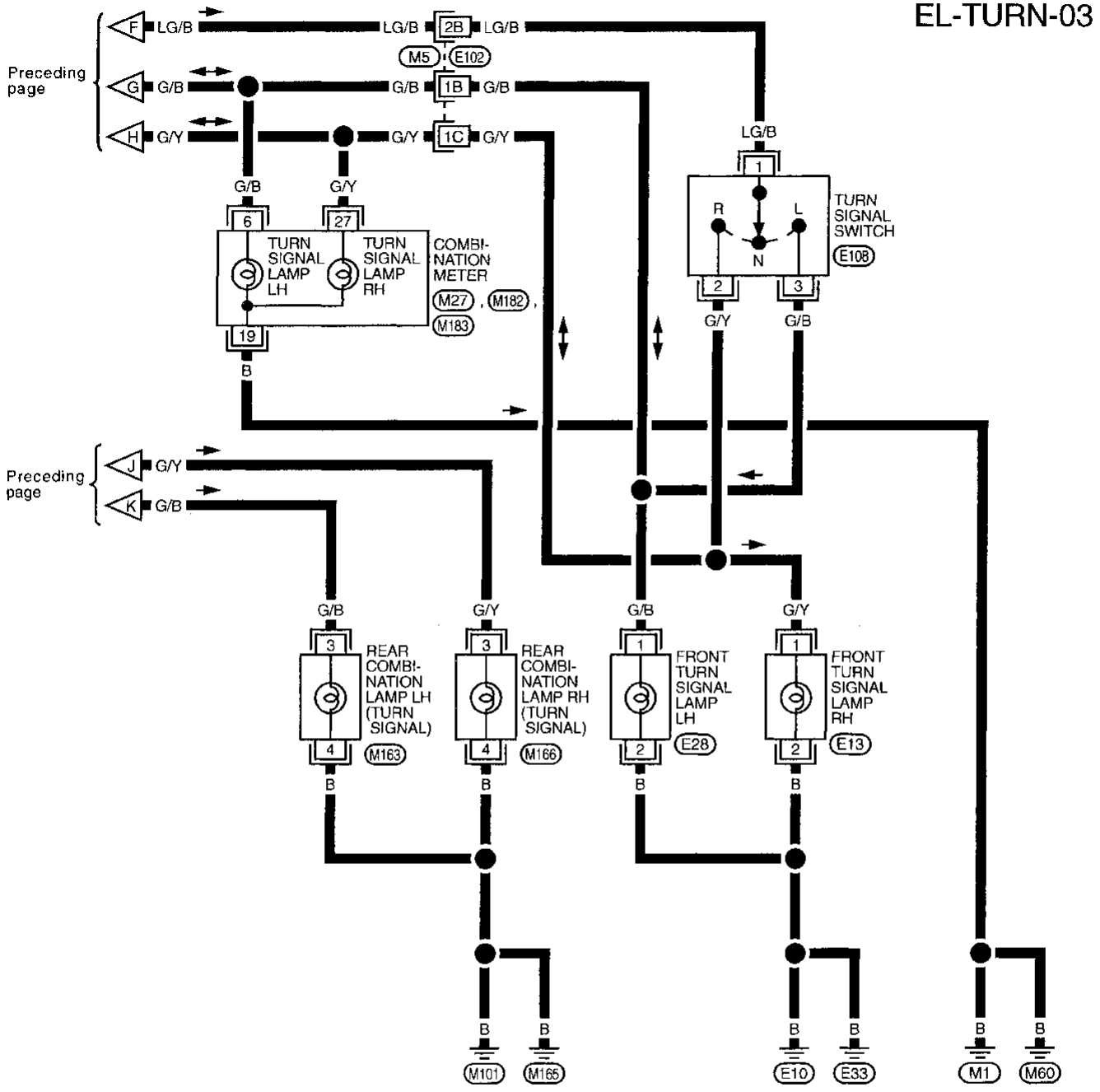
EL-TURN-02

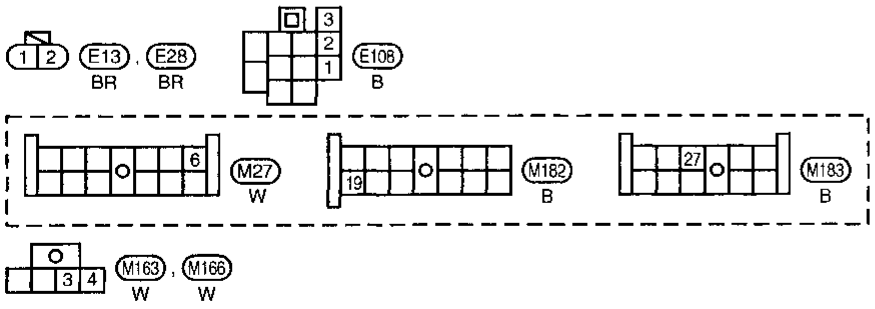


TEL089

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

EL-TURN-03



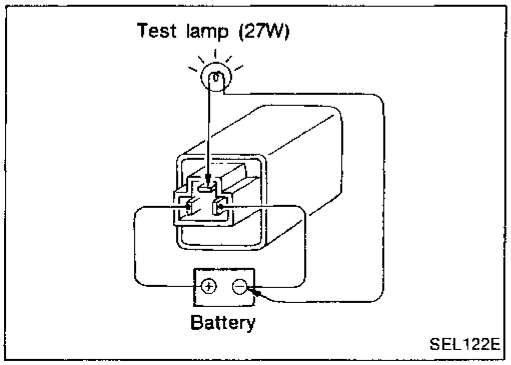


Refer to last page (Foldout page).
E102, M5

TEL090

Turn Signal and Hazard Warning Lamps/Trouble Diagnoses

Symptom	Possible cause	Repair order
Turn signal and hazard warning lamps do not operate.	1. Hazard switch 2. Combination flasher unit 3. Open in combination flasher unit circuit 4. Multi-remote control relay 5. Open in multi-remote control unit circuit	1. Check hazard switch. 2. Refer to combination flasher unit check. 3. Check wiring to combination flasher unit for open circuit. 4. Check multi-remote control relay. 5. Check P wire to multi-remote control unit for open circuit.
Turn signal lamps do not operate but hazard warning lamps operate.	1. 10A fuse 2. Hazard switch 3. Turn signal switch 4. Open in turn signal switch circuit	1. Check 10A fuse (No. 22 , located in fuse block). Turn ignition switch ON and verify battery positive voltage is present at terminal ② of hazard switch. 2. Check hazard switch. 3. Check turn signal switch. 4. Check LG/B wire between combination flasher unit and turn signal switch for open circuit.
Hazard warning lamps do not operate but turn signal lamps operate.	1. 10A fuse 2. Hazard switch 3. Open in hazard switch circuit	1. Check 10A fuse (No. 17 , located in fuse block). Verify battery positive voltage is present at terminal ③ of hazard switch. 2. Check hazard switch. 3. Check LG/B wire between combination flasher unit and hazard switch for open circuit.
Front turn signal lamp LH or RH does not operate.	1. Bulb 2. Grounds (E10) and (E33)	1. Check bulb. 2. Check grounds (E10) and (E33).
Rear turn signal lamp LH or RH does not operate.	1. Bulb 2. Grounds (M101) and (M165)	1. Check bulb. 2. Check grounds (M101) and (M165).
LH and RH turn indicators do not operate.	1. Grounds (M1) and (M60)	1. Check grounds (M1) and (M60).
LH or RH turn indicator does not operate.	1. Bulb	1. Check bulb in combination meter.



Combination Flasher Unit Check

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

Bulb Specifications

	Wattage (12 volt)
Headlamp (Semi-sealed beam)	
High/Low	65/45
Front turn signal lamp	27
Front clearance lamp	3.8
Front side marker lamp	3.8
Front fog lamp	55
Rear combination lamp	
Turn signal	27
Stop/Tail	27/8
Back-up	27
Rear side marker lamp	3.8
License plate lamp	5
High-mounted stop lamp	13
Interior lamp	10
Spot lamp	10
Trunk room lamp	3.4

Illumination/System Description

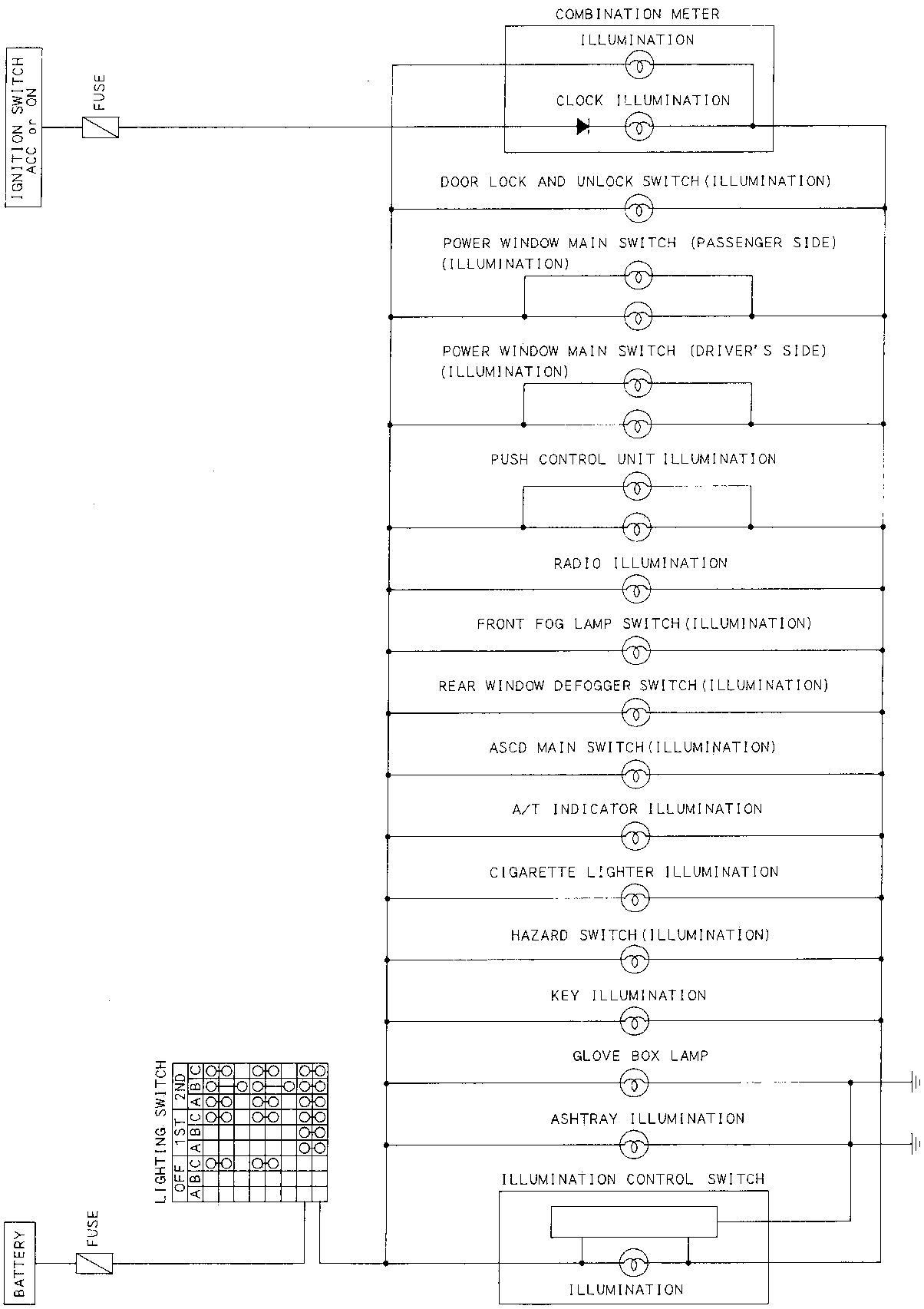
Power is supplied at all times
- through 10A fuse (No. 19 , located in the fuse block)
- to lighting switch terminal ⑪ .

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

Component	Connector No.	Power terminal	Ground terminal
Radio	M38	⑧	⑦
Door lock and unlock switch	M130	⑥	⑦
Key illumination	E105	①	②
Push control unit	M40	⑮	⑯
Front fog lamp switch	M37	③	④
A/T indicator	M115	③	④
Hazard switch	M36	⑦	⑧
Power window main switch (Driver side)	M110	⑥	⑦
Power window main switch (Passenger side)	M129	⑦	⑧
Cigarette lighter	M187	③	④
Ashtray	M44	①	②
Combination meter	M182	㉓	⑳
Clock	M182	㉒	⑳
ASCD main switch	M25	⑤	⑥
Rear window defogger switch	M34	⑤	⑥
Glove box lamp	M51	①	②
Illumination control switch	M23	①	②

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

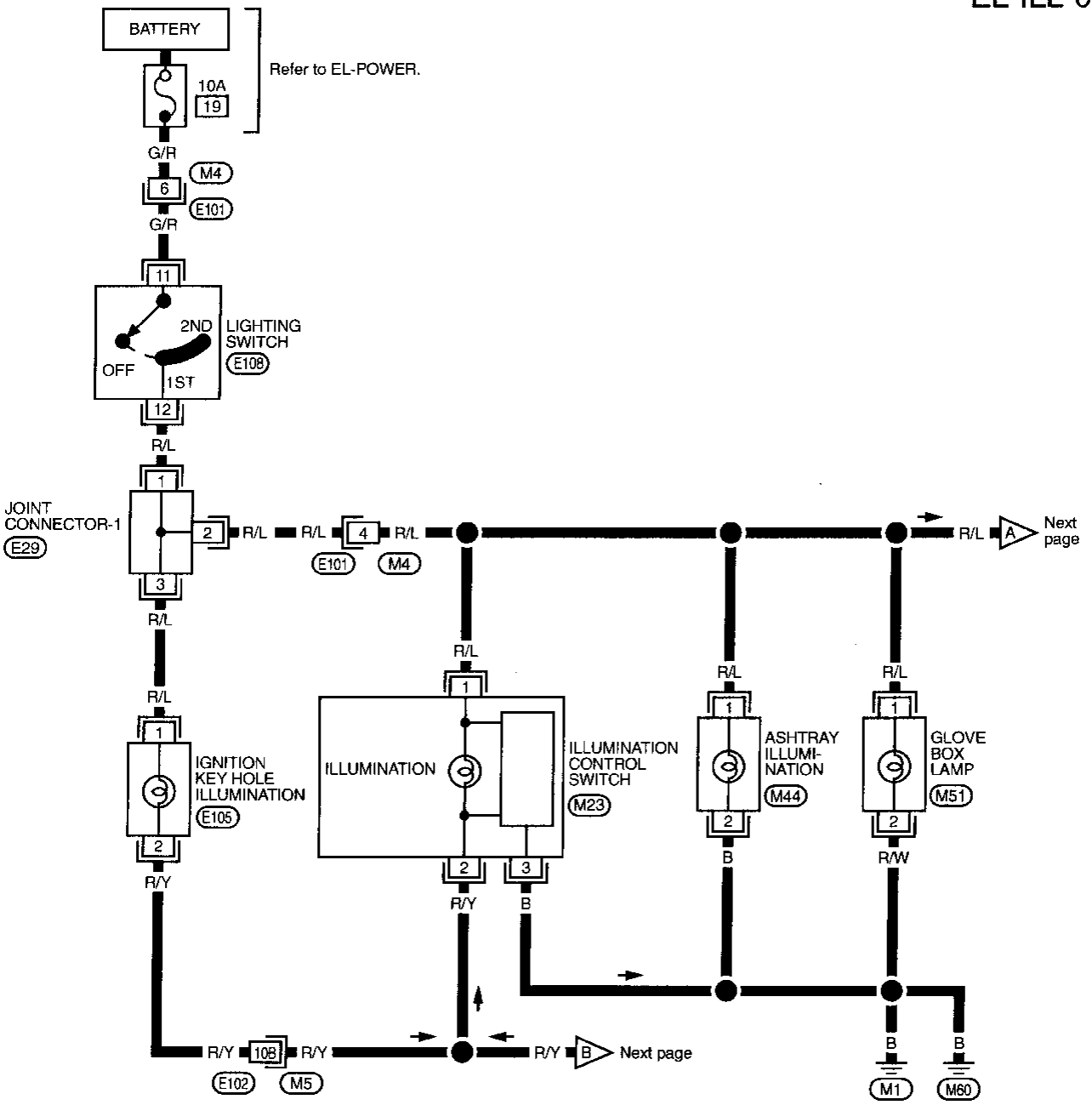
Illumination/Schematic

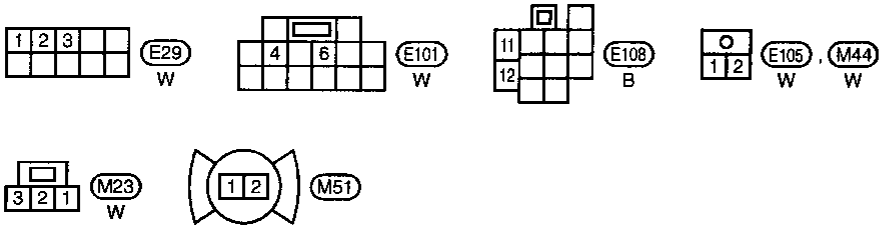


TEL095

Illumination/Wiring Diagram — ILL —

EL-ILL-01



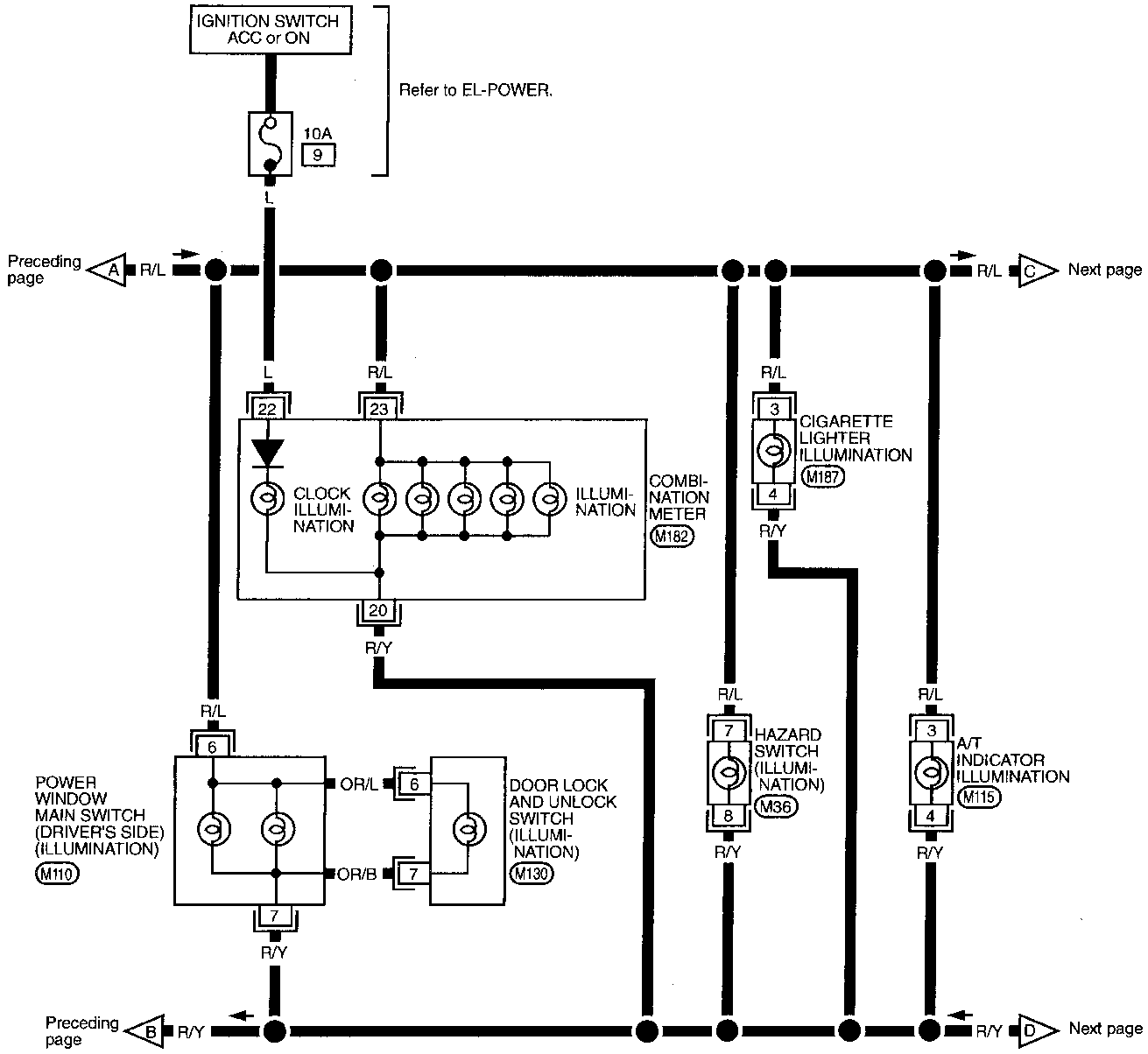


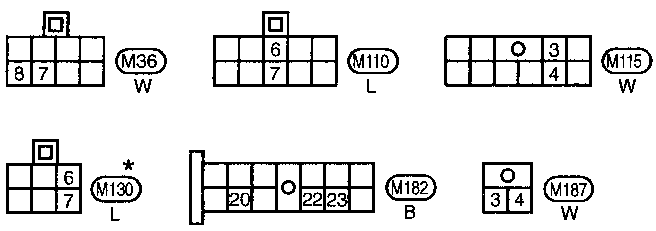
Refer to last page (Foldout page).
E102 , M5
E29

TEL092

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

EL-ILL-02





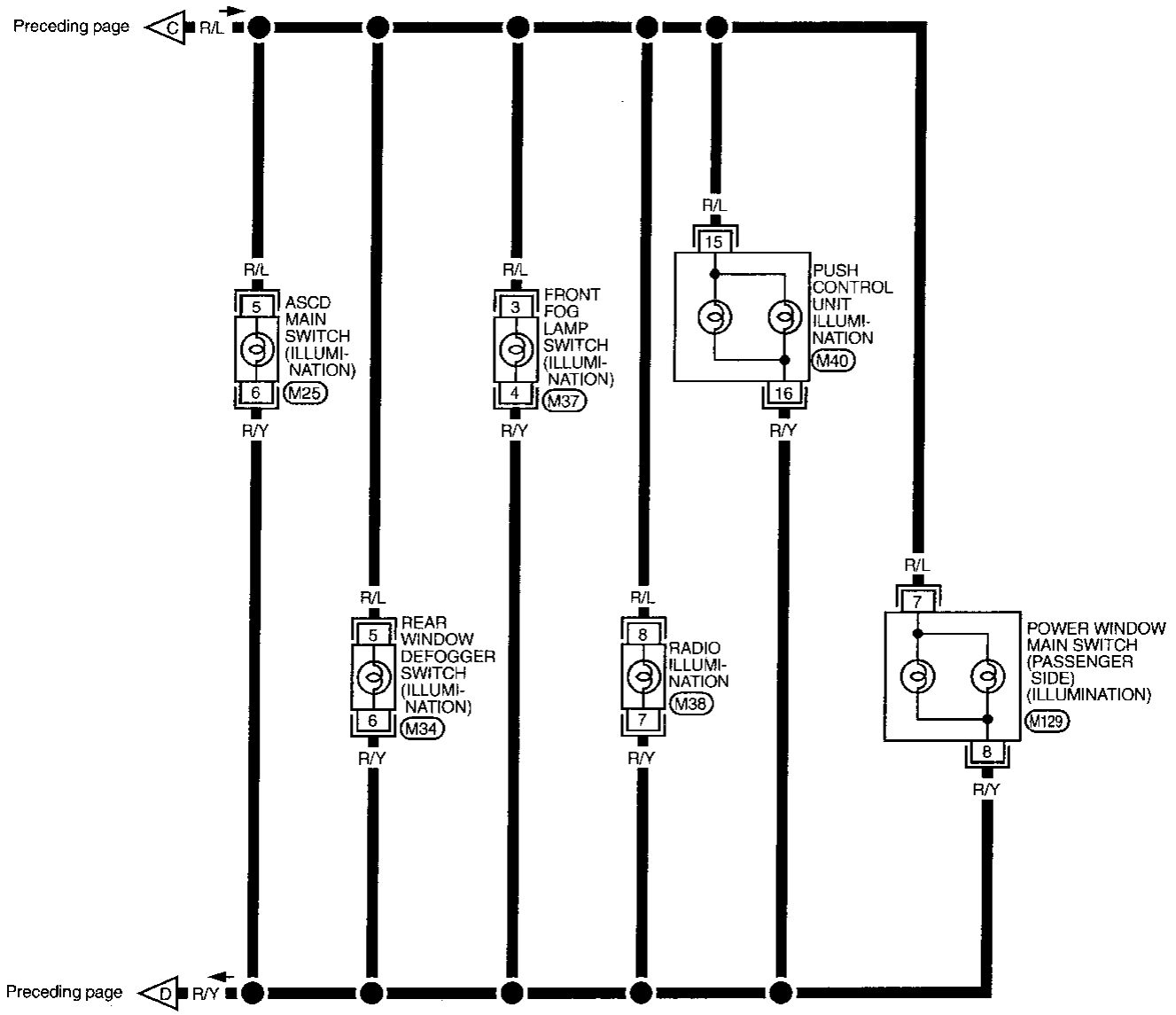
★ : This connector is not shown "HARNESS LAYOUT" in EL section.

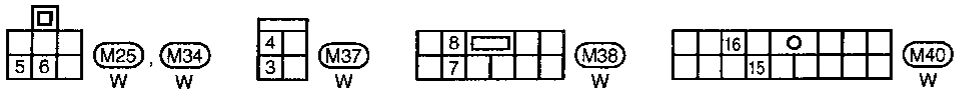
TEL093

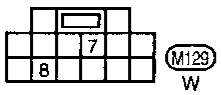
1042

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

EL-ILL-03







TEL094

Interior, Spot and Trunk Room Lamps/System Description

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

INTERIOR LAMP

Switch operation

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

Interior lamp timer operation by time control system

Refer to "TIME CONTROL SYSTEM" (EL-124).

Interior lamp control by multi-remote control system

Refer to "MULTI-REMOTE CONTROL SYSTEM" (EL-108).

SPOT LAMP AND VANITY MIRROR ILLUMINATION

With a switch ON, power is supplied
- to spot lamp,
- to vanity mirror illumination (Driver side) and
- to vanity mirror illumination (Passenger side).

Ground is supplied
- to spot lamp terminal ②,
- to vanity mirror illumination (Driver side) terminal ② and
- to vanity mirror illumination (Passenger side) terminal ②
- through body grounds (M1) and (M60).

With power and ground supplied, the lamp and/or illumination turns on.

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

TRUNK ROOM LAMP

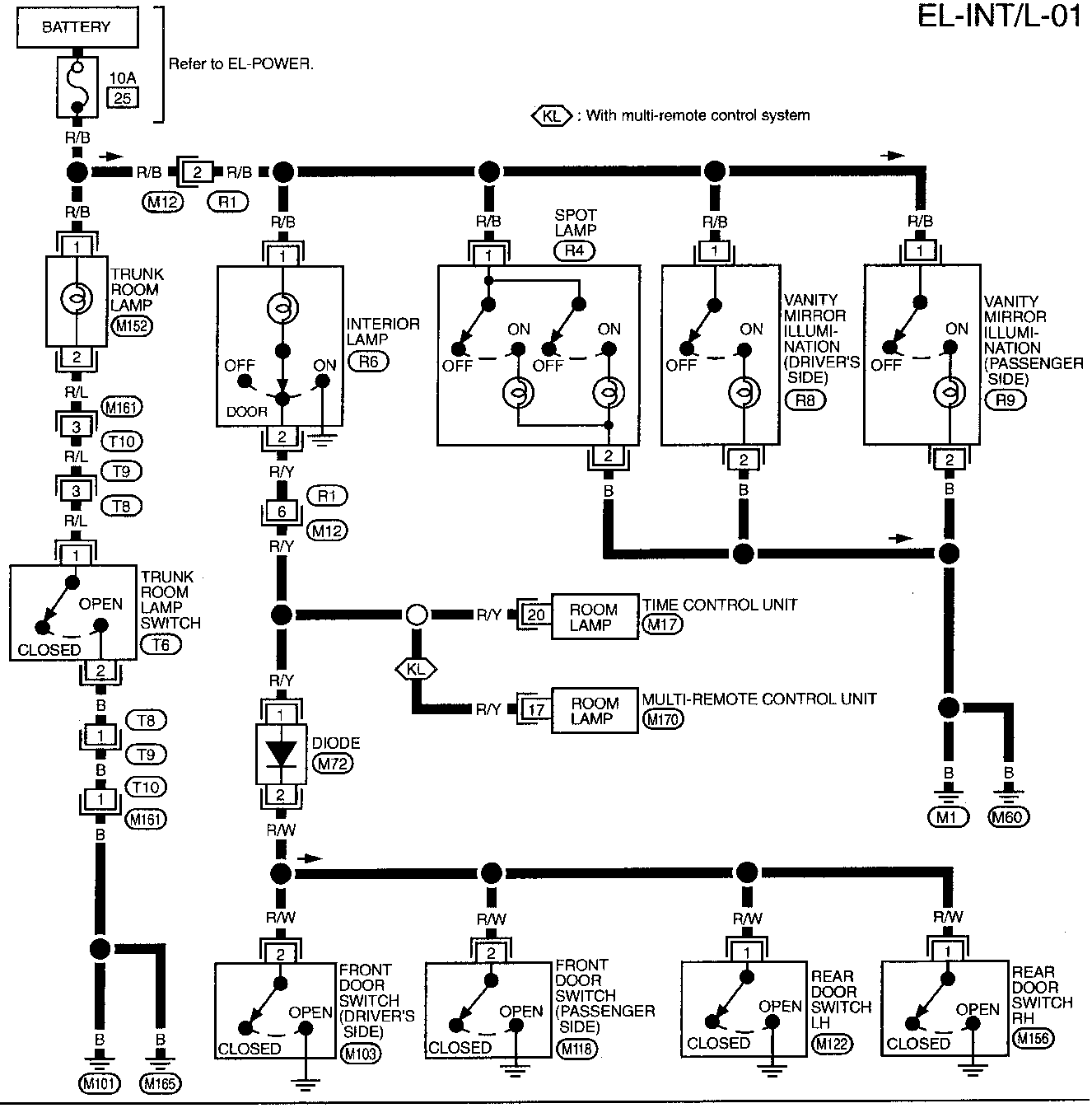
When trunk room lamp switch is in OPEN position, ground is supplied

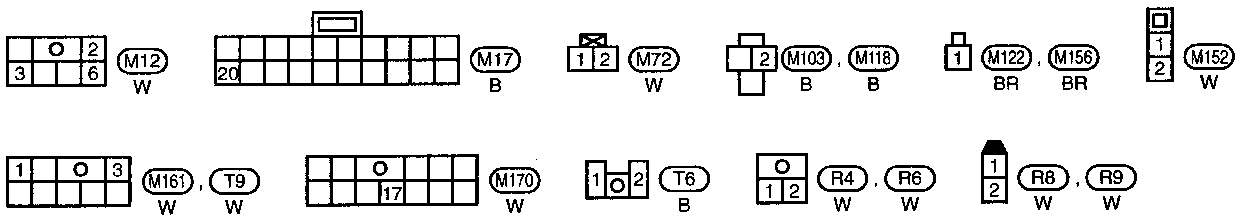
- to trunk room lamp terminal ②
- through trunk room lamp switch terminal ①
- to trunk room lamp switch terminal ②
- through body grounds M101 and M165.

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

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

EL-INT/L-01





TEL096

System Description

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

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

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

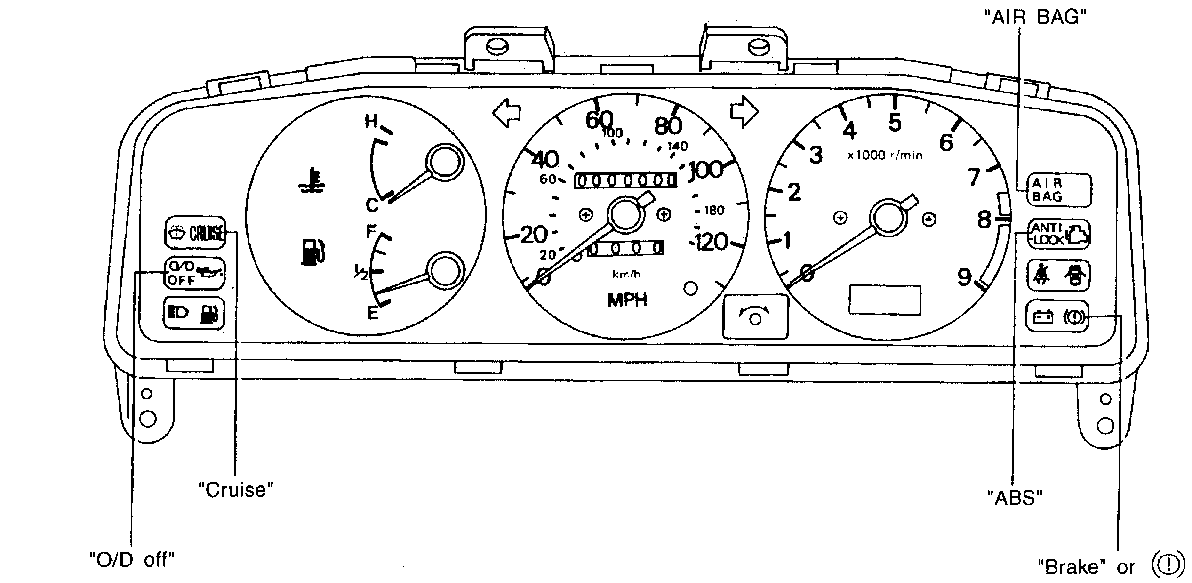
The tachometer indicates engine speed in revolutions per minute (rpm).
The tachometer is regulated by a signal
- from terminal ③ of the ECM (ECCS control module)
- to combination meter terminal ㉑ for the tachometer.

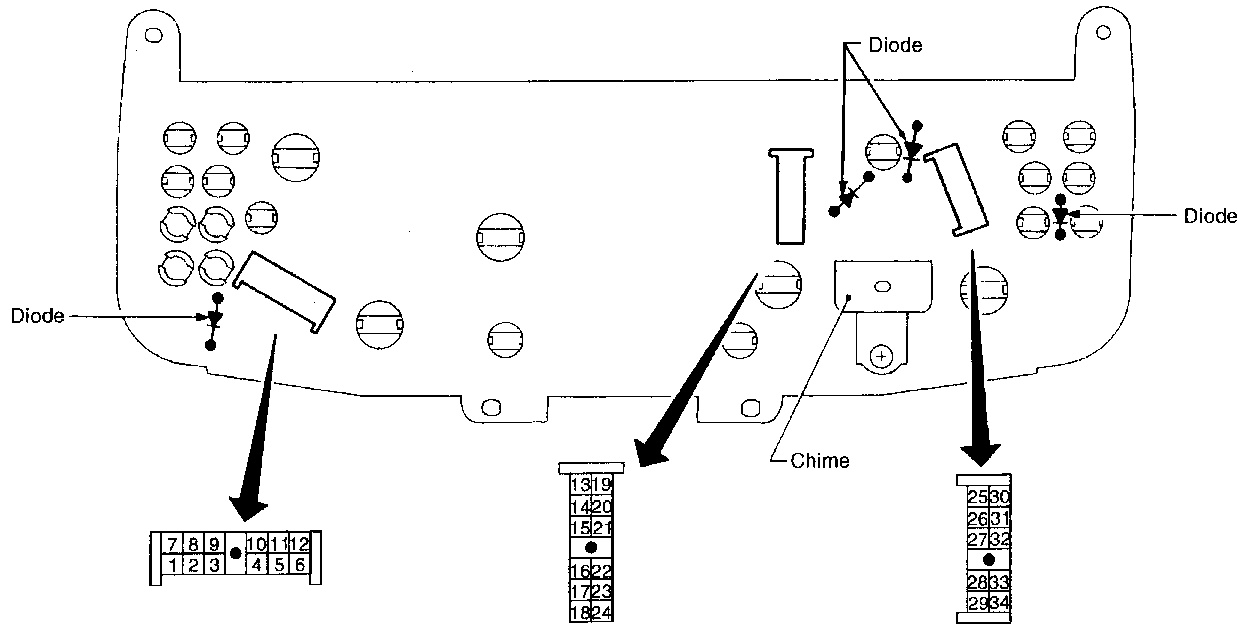
The fuel gauge indicates the approximate fuel level in the fuel tank.
The fuel gauge is regulated by a variable ground signal supplied
- to combination meter terminal ⑱ for the fuel gauge
- from terminal ① of the fuel tank gauge unit
- through terminal ③ of the fuel tank gauge unit and
- through body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

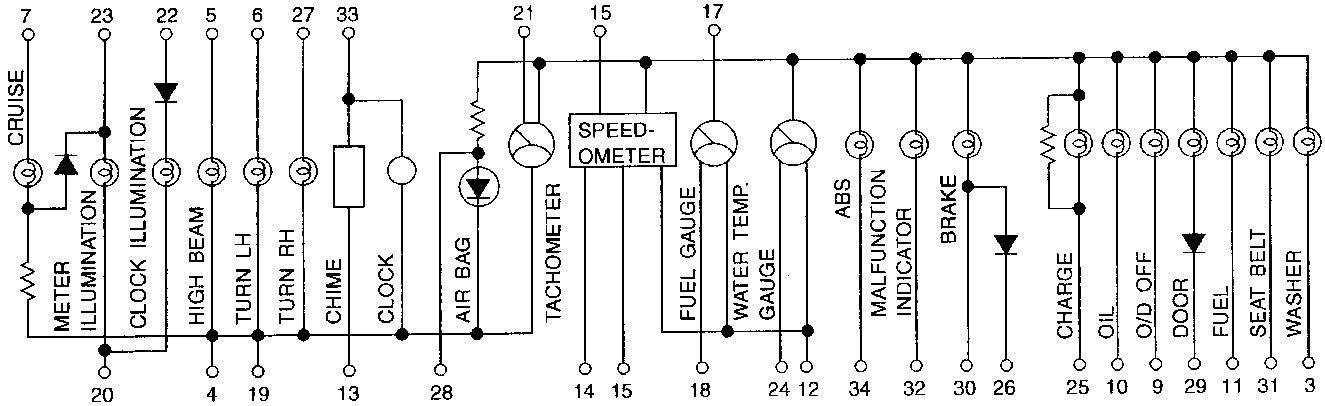
The vehicle speed sensor provides a voltage signal to the combination meter for the speedometer.
The voltage is supplied
- to combination meter terminals ⑭ and ⑯ for the speedometer
- from terminals ① and ② of the vehicle speed sensor.

The speedometer converts the voltage into the vehicle speed displayed.

Combination Meter



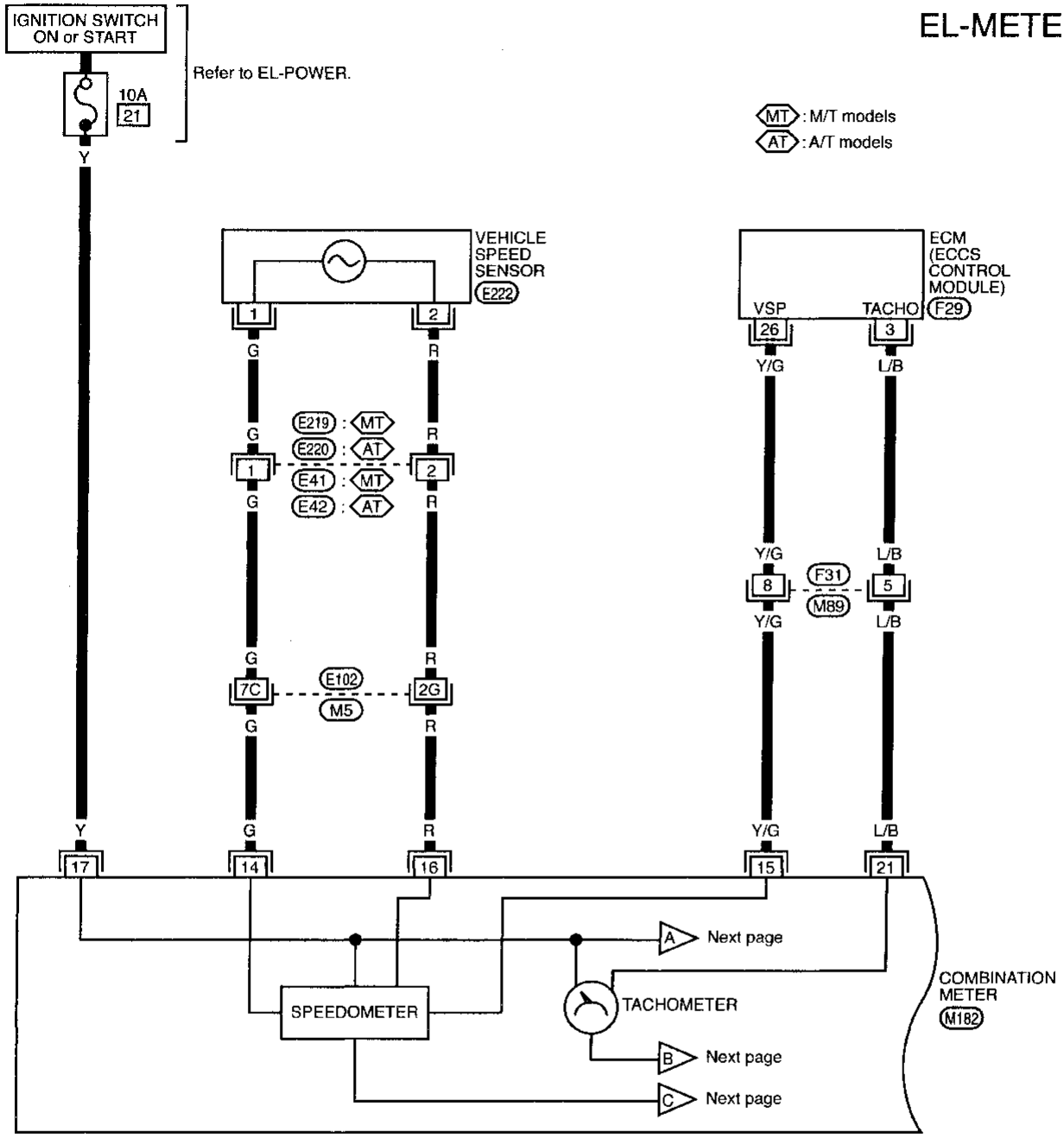


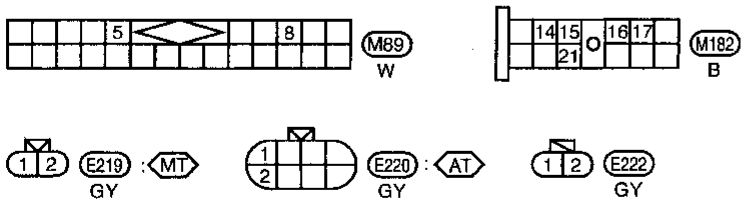


CEL193

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

EL-METER-01

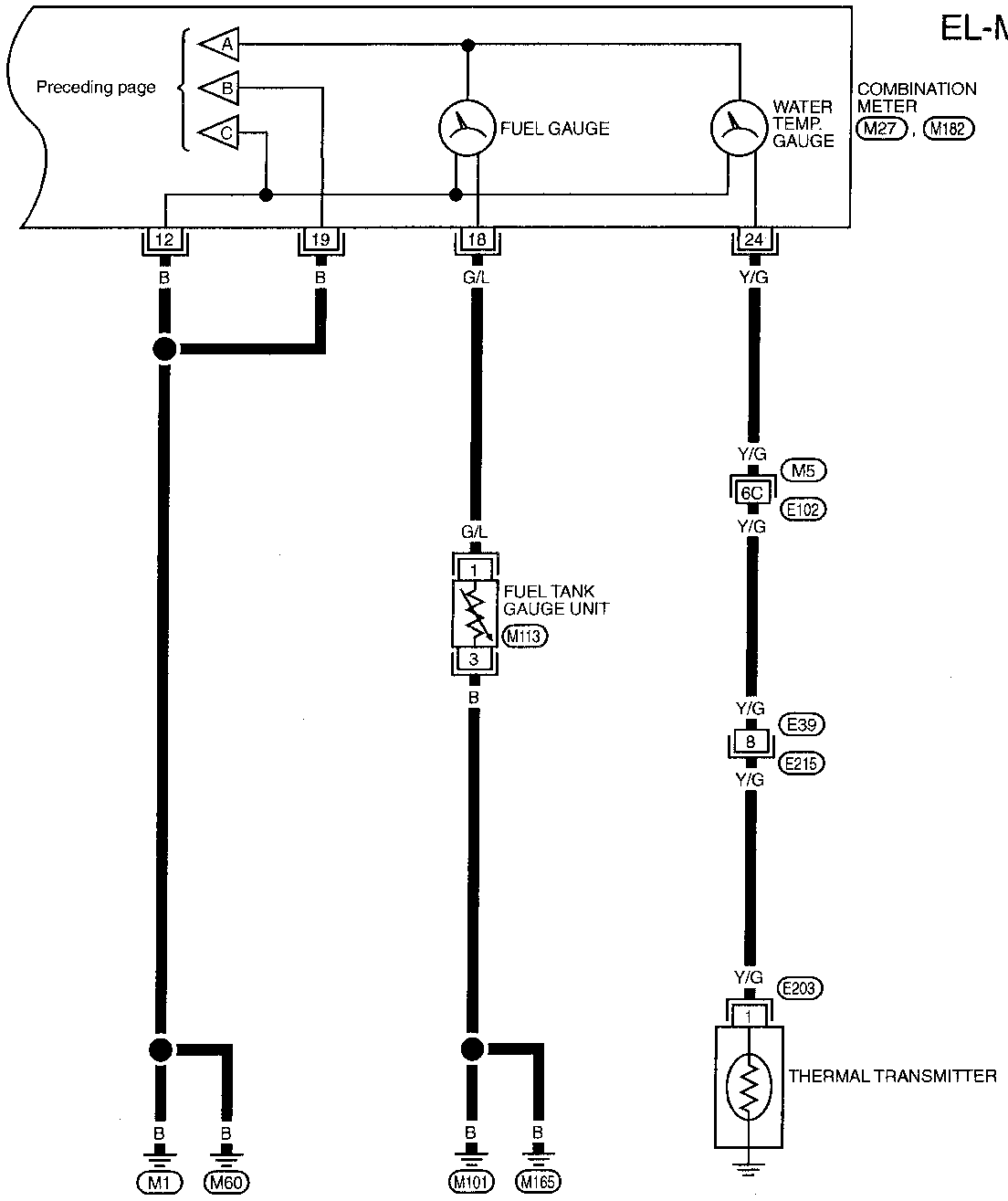


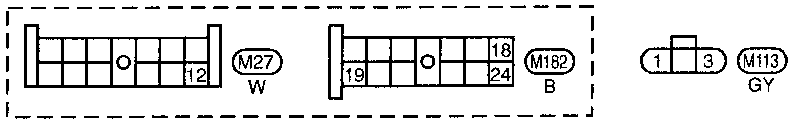


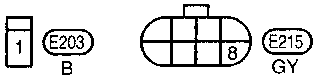
Refer to last page (Foldout page).
E102, M5
F29

TEL097

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

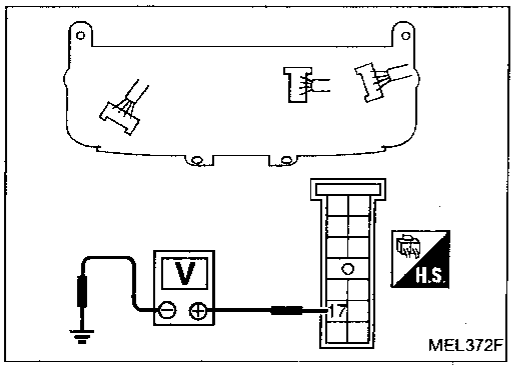


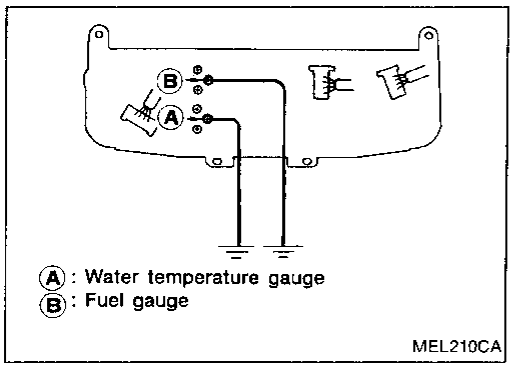


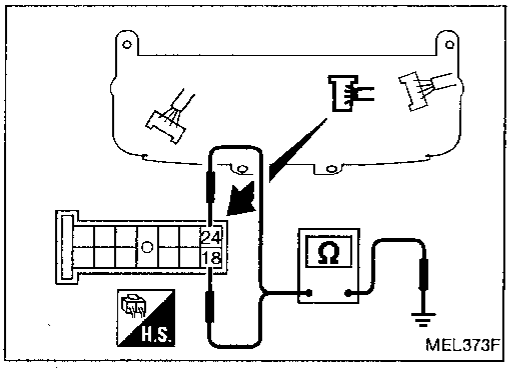


Refer to last page (Foldout page).
E102, M5

TEL098







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

INSPECTION START

CHECK POWER SOURCE.
1) Turn ignition switch "ON".
2) Check voltage between combination meter terminal ⑰ and ground.
Battery voltage should exist.

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

OK ↓

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

NG → Repair or replace gauge.

OK ↓

Check harness continuity between component and combination meter.
Water temperature gauge
(M27)·㉔-(E203)·①
Fuel gauge (M27)·⑱-(M113)·①
Continuity should exist.

NG → Repair or replace.

OK ↓

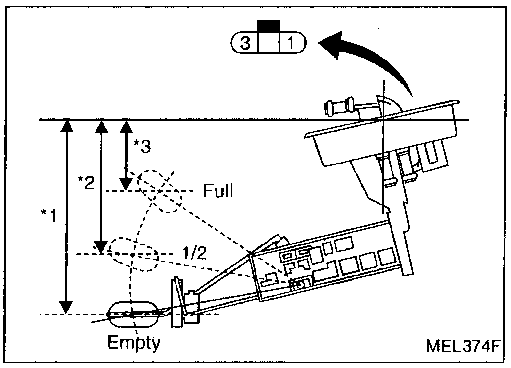
CHECK COMPONENT.
Check gauge units and harness.
Refer to "Fuel Tank Gauge Unit Check" (EL-77) and "Thermal Transmitter check" (EL-77).

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

OK ↓

Reinstall any part removed.

INSPECTION END

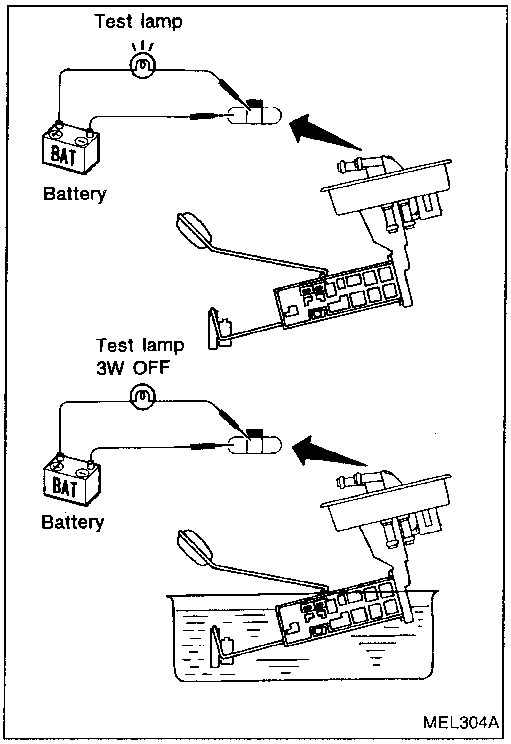


Fuel Tank Gauge Unit Check

- For removal, refer to FE section.

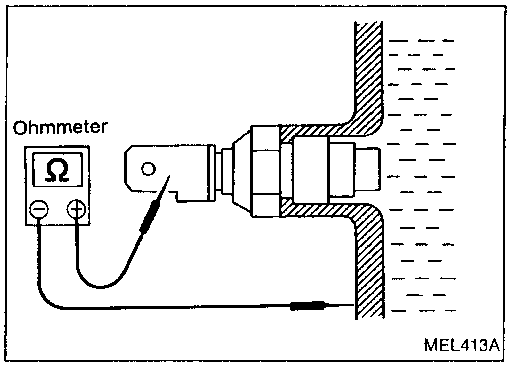
Check the resistance between terminals (1) and (3).

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



Fuel Warning Lamp Sensor Check

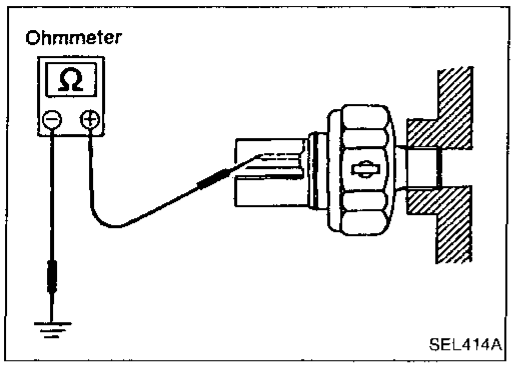
- It will take a short time for the bulb to light.



Thermal Transmitter Check

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

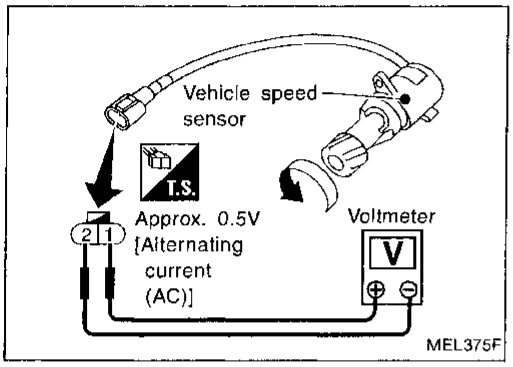
Water temperature	Resistance
65°C (149°F)	Approx. 60 - 75Ω
91°C (196°F)	Approx. 21 - 24Ω



Oil Pressure Switch Check

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

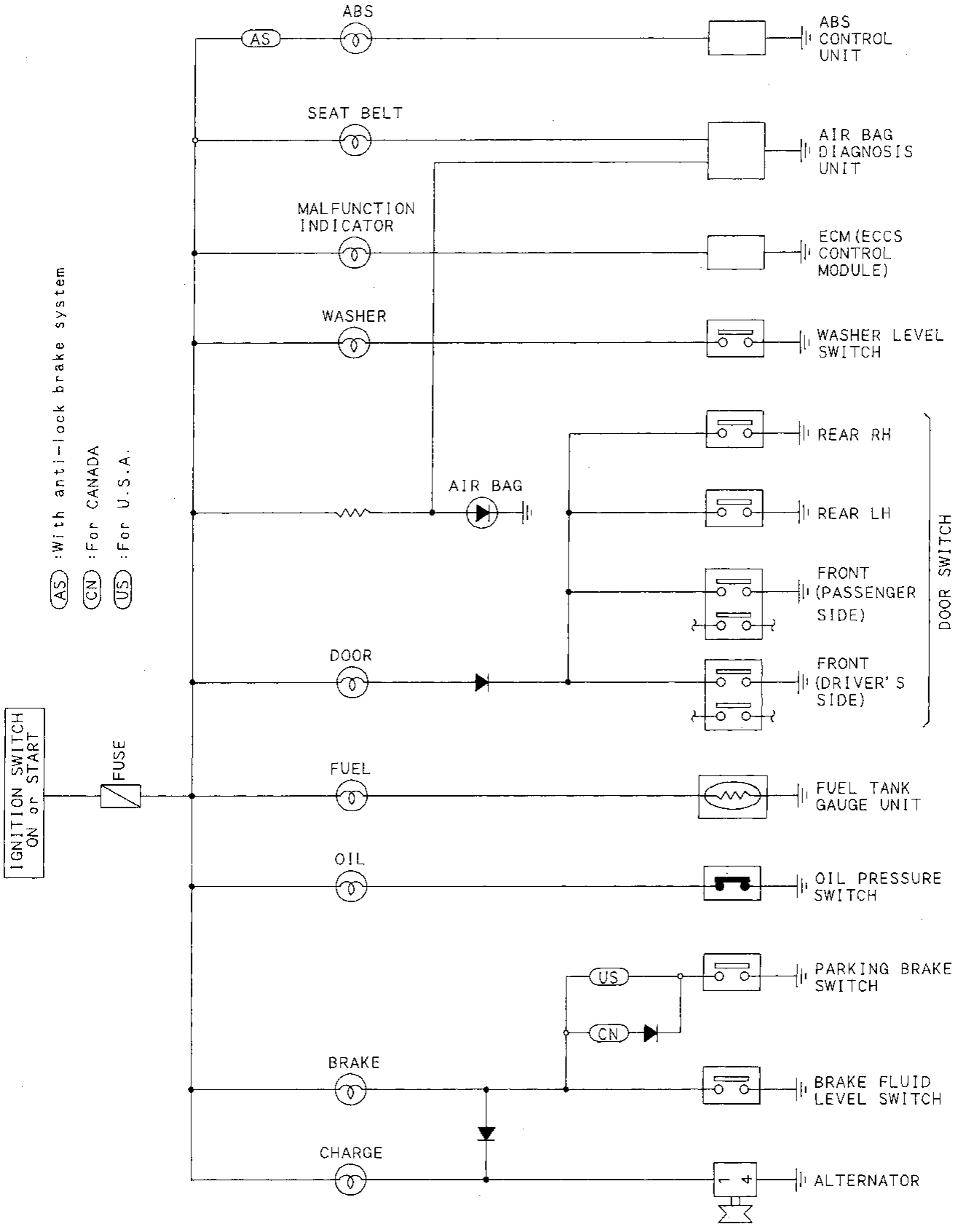
	Oil pressure kPa (kg/cm^2, psi)	Continuity
Engine start	More than 10 - 20 (0.1 - 0.2, 1 - 3)	NO
Engine stop	Less than 10 - 20 (0.1 - 0.2, 1 - 3)	YES



Vehicle Speed Sensor Signal Check

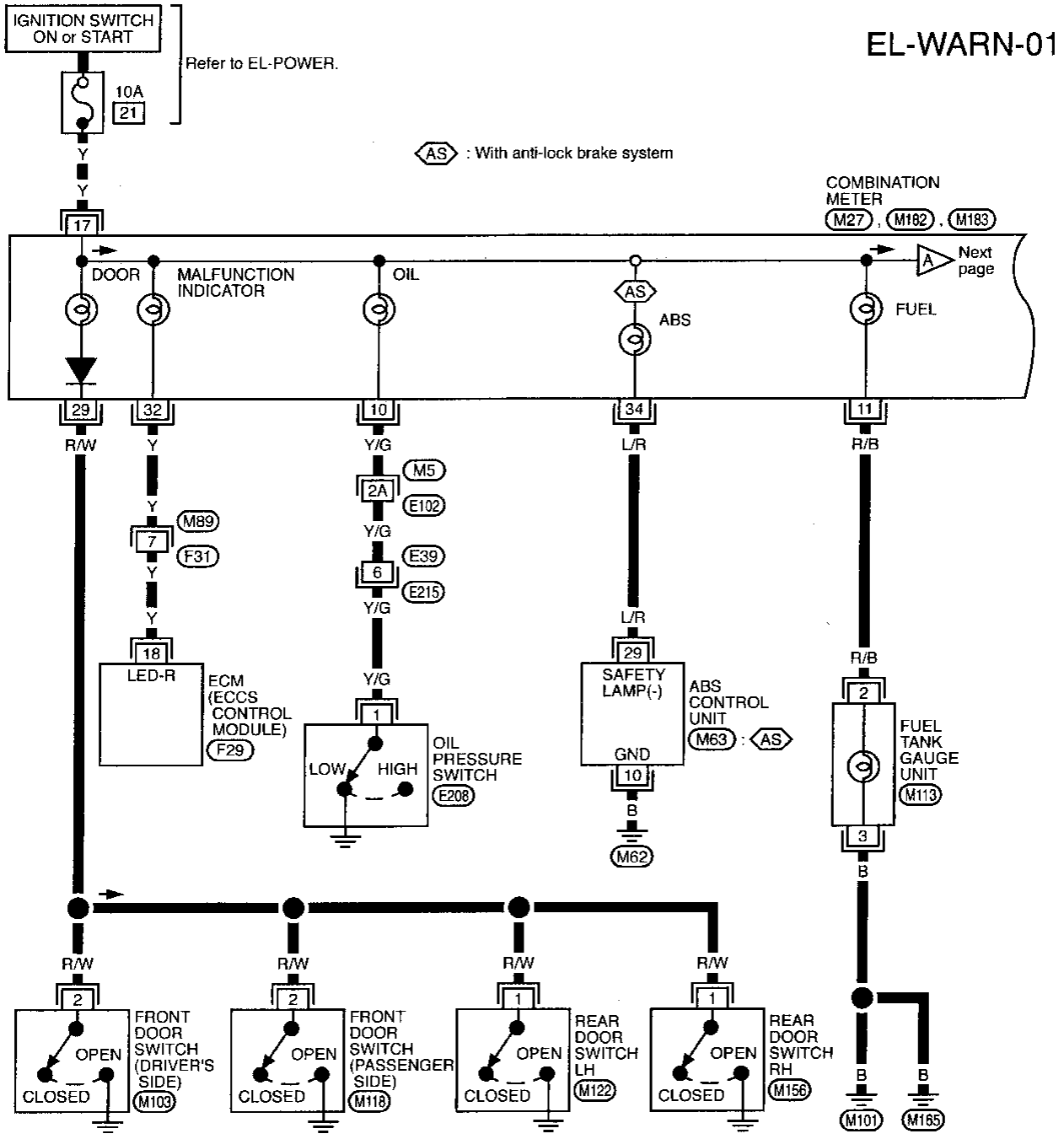
1. Remove vehicle speed sensor from transaxle.
2. Turn vehicle speed sensor pinion quickly and measure voltage across ① and ②.

Warning Lamps/Schematic



TEL099

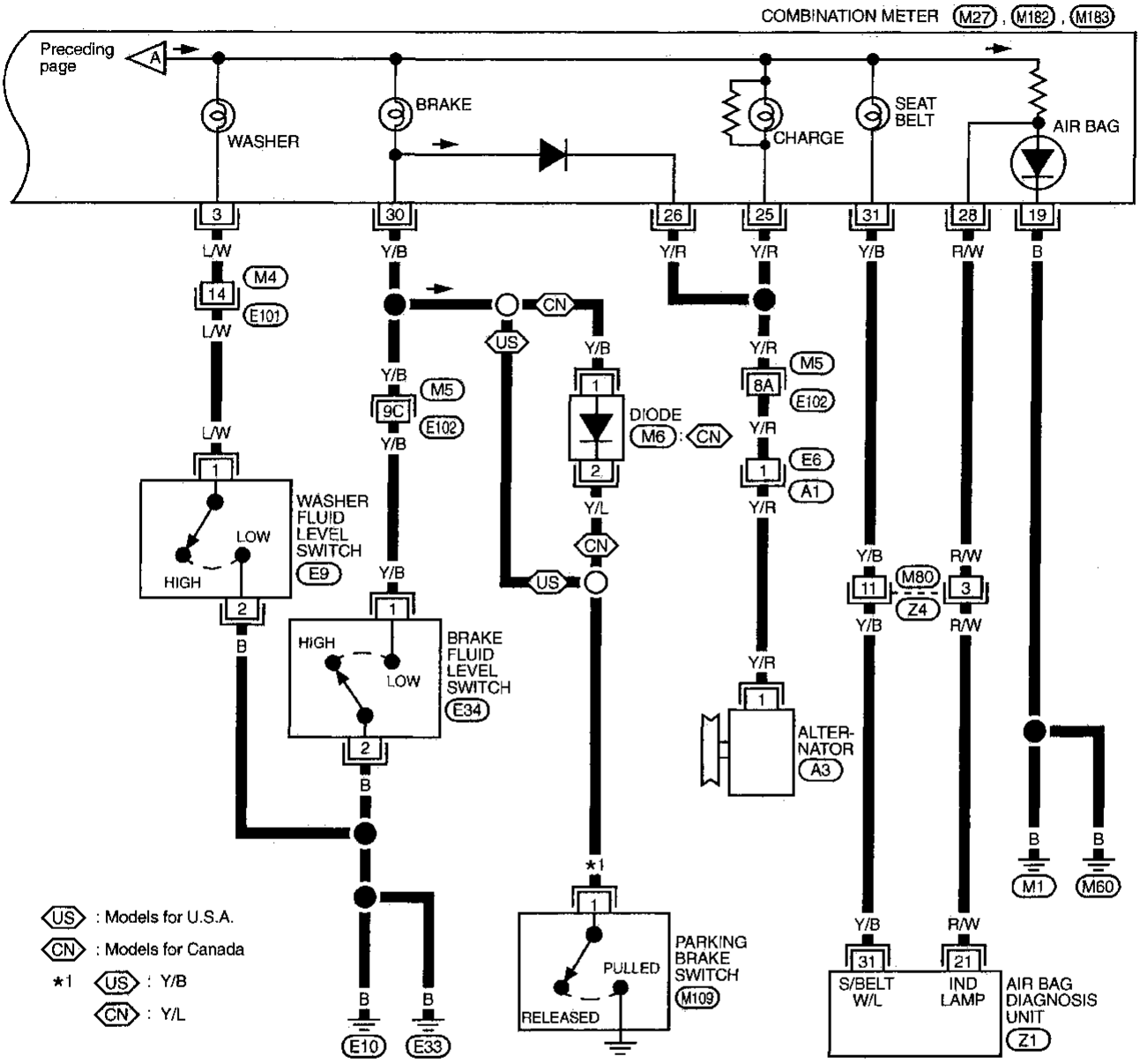
Warning Lamps/Wiring Diagram — WARN —

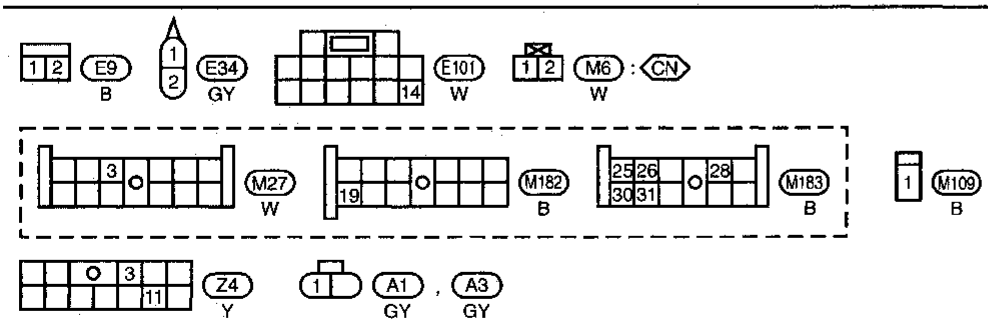


TEL100

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

EL-WARN-02





Refer to last page (Foldout page).
E102, M5
Z1

Warning Chime/System Description

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

Power is supplied at all times
- through 10A fuse (No. 19 , located in the fuse block)
- to lighting switch terminal ⑪, and
- combination meter terminal ㉝.

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

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

Ground is supplied to time control unit terminal ⑮ through body grounds (M1) and (M60).
When a signal, or combination of signals, is received by the time control unit, ground is supplied
- through time control unit terminal ⑲ or
- through seat belt relay terminals ③, ④ and time control unit terminal ⑯
- to combination meter terminal ⑬.

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

Ignition key warning chime

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

Ground is supplied
- from front door switch (Driver side) terminal ①
- to time control unit terminal ⑱.

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

Light warning chime

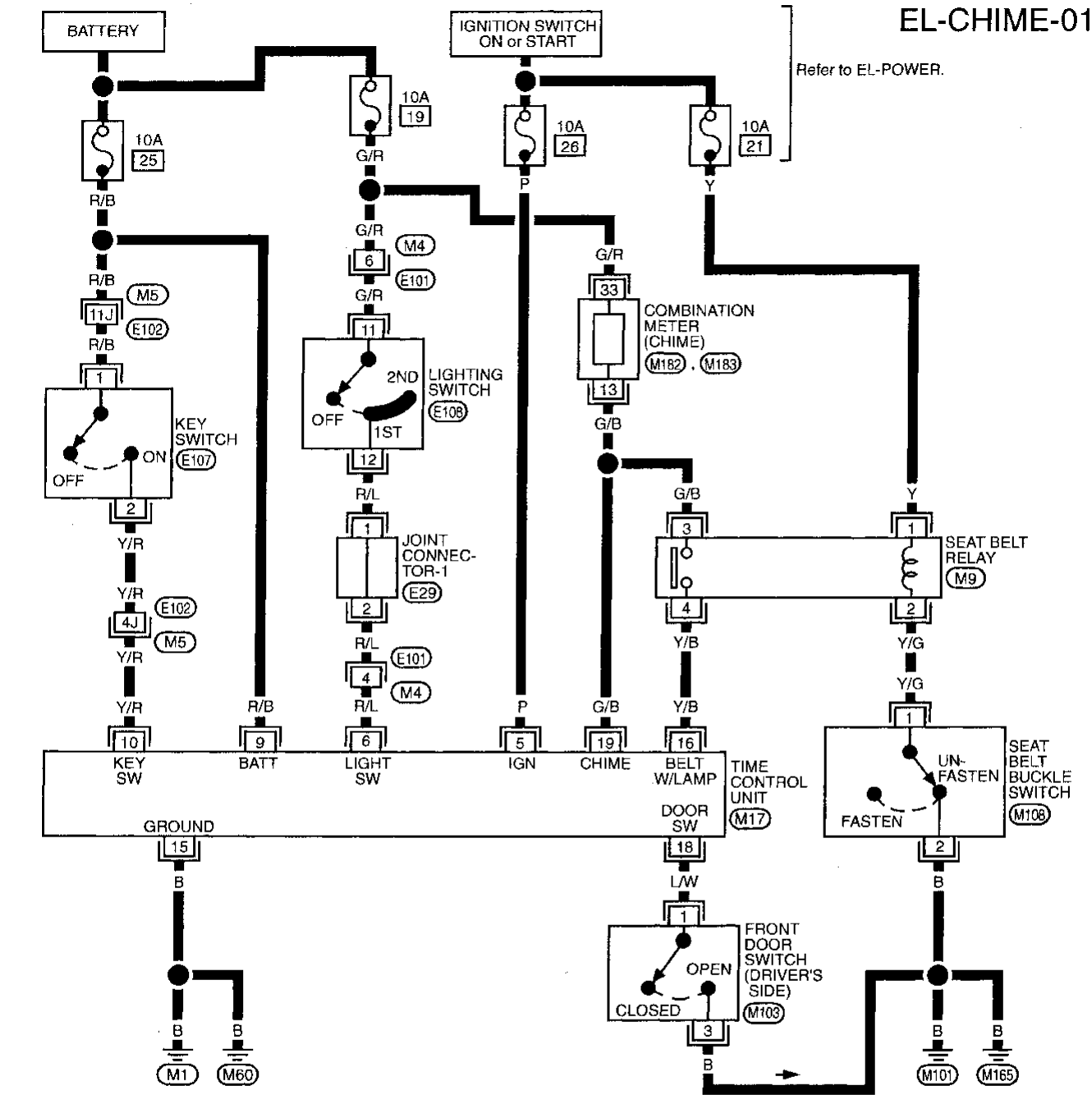
With the ignition switch in the OFF position, the driver's door open, and the lighting switch in the 1ST or 2ND position, the warning chime will sound. A battery positive voltage is supplied
- from lighting switch terminal ⑫
- to time control unit terminal ⑥ and
- from front door switch (Driver side) terminal ①
- to time control unit terminal ⑱.

Seat belt warning chime

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

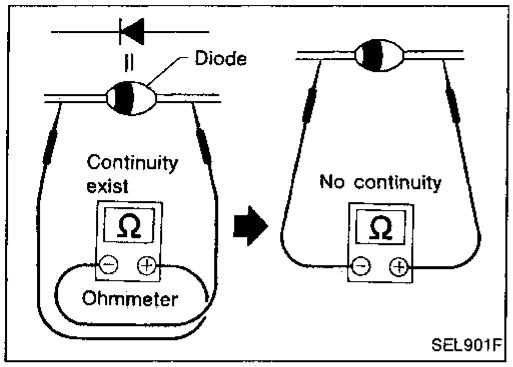
The warning chime sounds until seat belt buckle switch is turned OFF (seat belt tongue is inserted into buckle).
Ground is supplied to seat belt relay terminal ② when the seat belt is unfastened through the seat belt buckle switch and body grounds (M101) and (M165).
The seat belt relay is energized and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

Warning Chime/Wiring Diagram — CHIME —



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

TEL102



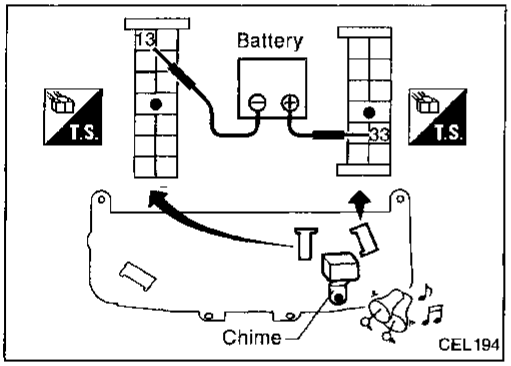
Diode Check

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

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

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

Refer to "Combination Meter" (EL-73).



Warning Chime Check

System Description

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

Power is also supplied
- from 30A fusible link (Letter [e], located in the fuse and fusible link 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 ignition switch terminal ③
- to power window relay terminal ②.

Ground is supplied to power window relay terminal ①
- through body grounds (M1) and (M60).

The power window relay is energized and power is supplied
- through power window relay terminal ⑤
- to power window main switch (Driver side) terminal ①,
- to power window main switch (Passenger side) terminal ①,
- to front power window sub-switch (Passenger side) terminal ①,
- to rear power window sub-switch LH terminal ④,
- to rear power window sub-switch RH terminal ④,
- to power window amplifier terminal ③ and
- to power window amplifier terminal ④.

MANUAL OPERATION

Driver side door

Ground is supplied
- to front power window sub-switch (Driver side) terminal ① and
- to power window amplifier terminal ⑦
- through body grounds (M1) and (M60).

WINDOW UP

When a front power window sub-switch (Driver side) is pressed in the up position, ground signal is supplied
- to power window amplifier terminal ①
- from front power window sub-switch (Driver side) terminal ②.

Power is supplied
- to front power window regulator (Driver side) terminal ①
- through power window amplifier terminal ⑤.

Ground is supplied
- to front power window regulator (Driver side) terminal ②
- through power window amplifier terminal ⑥.

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

WINDOW DOWN

When a front power window sub-switch (Driver side) is pressed in the down position, ground signal is supplied
- to power window amplifier terminal ②
- from front power window sub-switch (Driver side) terminal ③.

Power is supplied
- to front power window regulator (Driver side) terminal ②
- through power window amplifier terminal ⑥.

Ground is supplied
- to front power window regulator (Driver side) terminal ①
- through power window amplifier terminal ⑤.

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

System Description (Cont'd)

Except driver side door

Ground is supplied
- to power window main switch (Driver side) terminal ⑤
- through body grounds M101 and M165.

FRONT DOOR (Passenger side)

NOTE:

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

Operation by main switch
Power is supplied
- through power window main switch (Passenger side) (③, ②)
- to front power window sub-switch (Passenger side) (②, ③).

The subsequent operations are the same as those outlined under "Operation by sub-switches".
Operation by sub-switches
Power is supplied
- through front power window sub-switch (Passenger side) (④, ⑤)
- to front power window regulator (Passenger side) (①, ②).

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

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

NOTE:

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

Operation by main switch
Power is supplied
- through power window main switch (Driver side) (③, ②)
- to rear power window sub-switch LH (①, ⑤).

The subsequent operations are the same as those outlined under "Operation by sub-switches".
Operation by sub-switches
Power is supplied
- through rear power window sub-switch LH (②, ③)
- to rear power window regulator LH (①, ②).

Ground is supplied
- to rear power window regulator LH (②, ①)
- through rear power window sub-switch LH (③, ②)
- to rear power window sub-switch LH (⑤, ①)
- through power window main switch LH (②, ③).

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

NOTE:

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

Operation by main switch
Power is supplied
- through power window main switch (Passenger side) (⑤, ④)
- to rear power window sub-switch RH (①, ⑤).

The subsequent operations are the same as those outlined under "Operation by sub-switches".
Operation by sub-switches
Power is supplied
- through rear power window sub-switch RH (②, ③)

- to rear power window regulator RH (①, ②).

Ground is supplied

- to rear power window regulator RH (②, ①)
- through rear power window sub-switch RH (③, ②)
- to rear power window sub-switch RH (⑤, ①)
- through power window main switch (Passenger side) (④, ⑤)
- to power window main switch (Passenger side) (⑥, ⑥)
- through power window main switch (Driver side) (④, ④).

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

AUTO OPERATION

The power window AUTO feature enables the driver to lower the driver's window without holding the window switch in the down position.

The AUTO feature only operates on the driver's window downward movement.

When a front power window sub-switch (Driver side) is pressed and released in the AUTO position, ground signal is supplied

- to power window amplifier terminal ⑧
- from front power window sub-switch (Driver side) terminal ④.

The subsequent operations are the same as front door (Driver side) operations outlined under "Manual Operation".

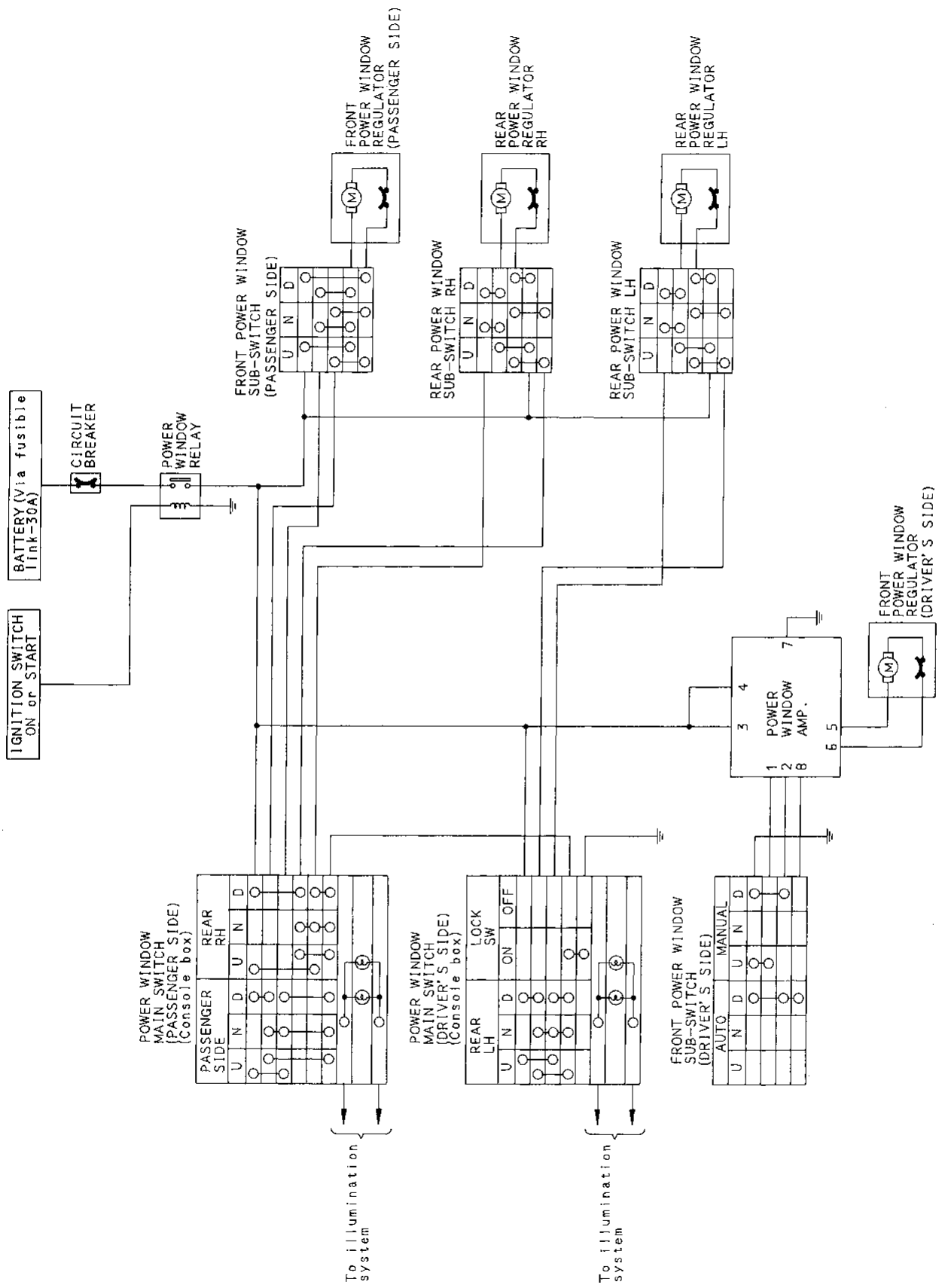
Then, the front door (Driver side) window will travel to the fully open position.

POWER WINDOW LOCK

The power window lock is designed to lock-out window operation to all windows except the front door (Driver side) window.

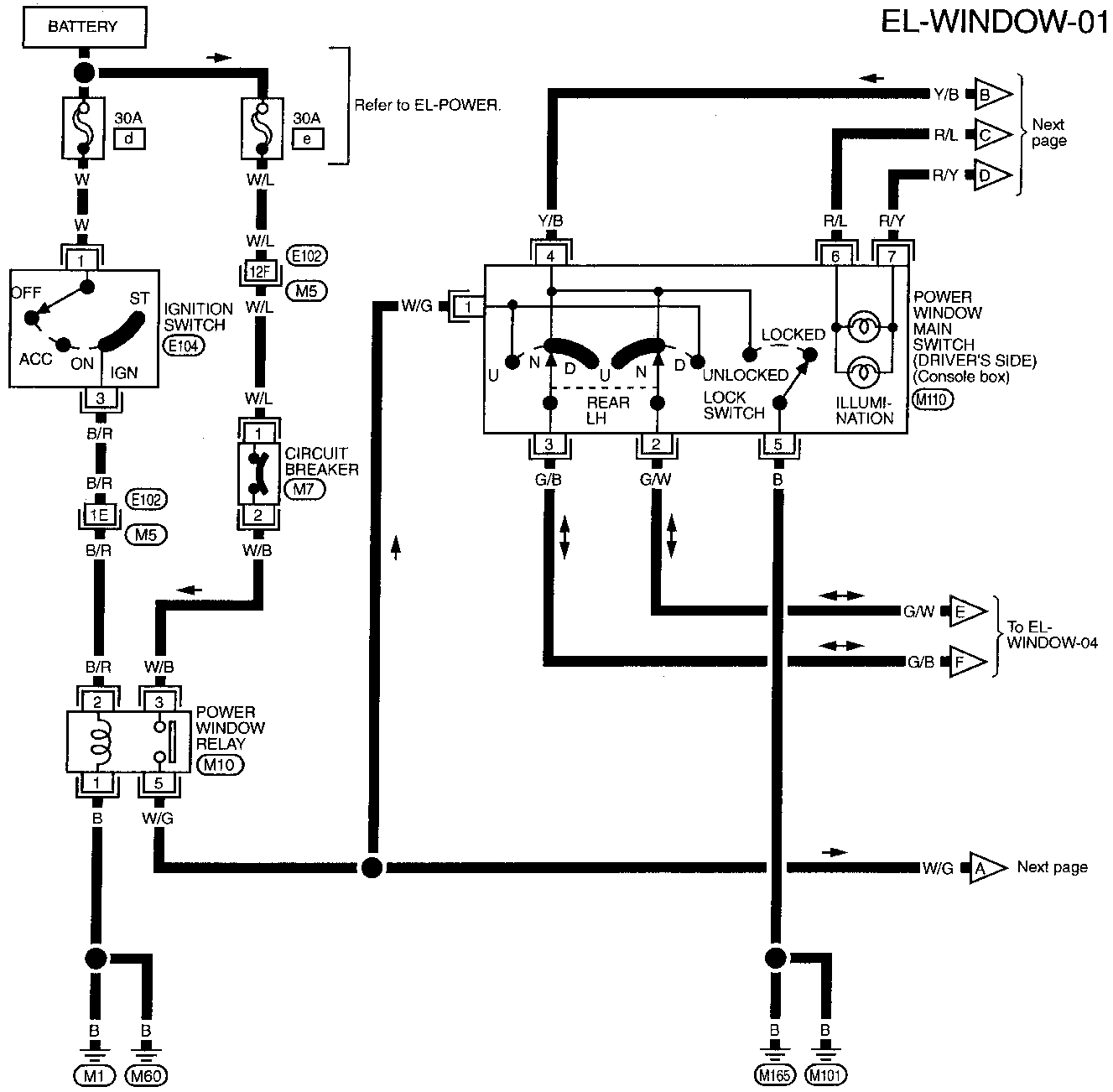
When the lock switch is pressed to lock position, ground of the power window main switch (Driver side) is disconnected. This prevents the power window motors from operating.

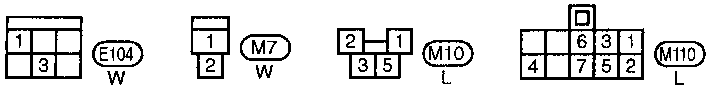
Schematic



TEL131

Wiring Diagram — WINDOW —

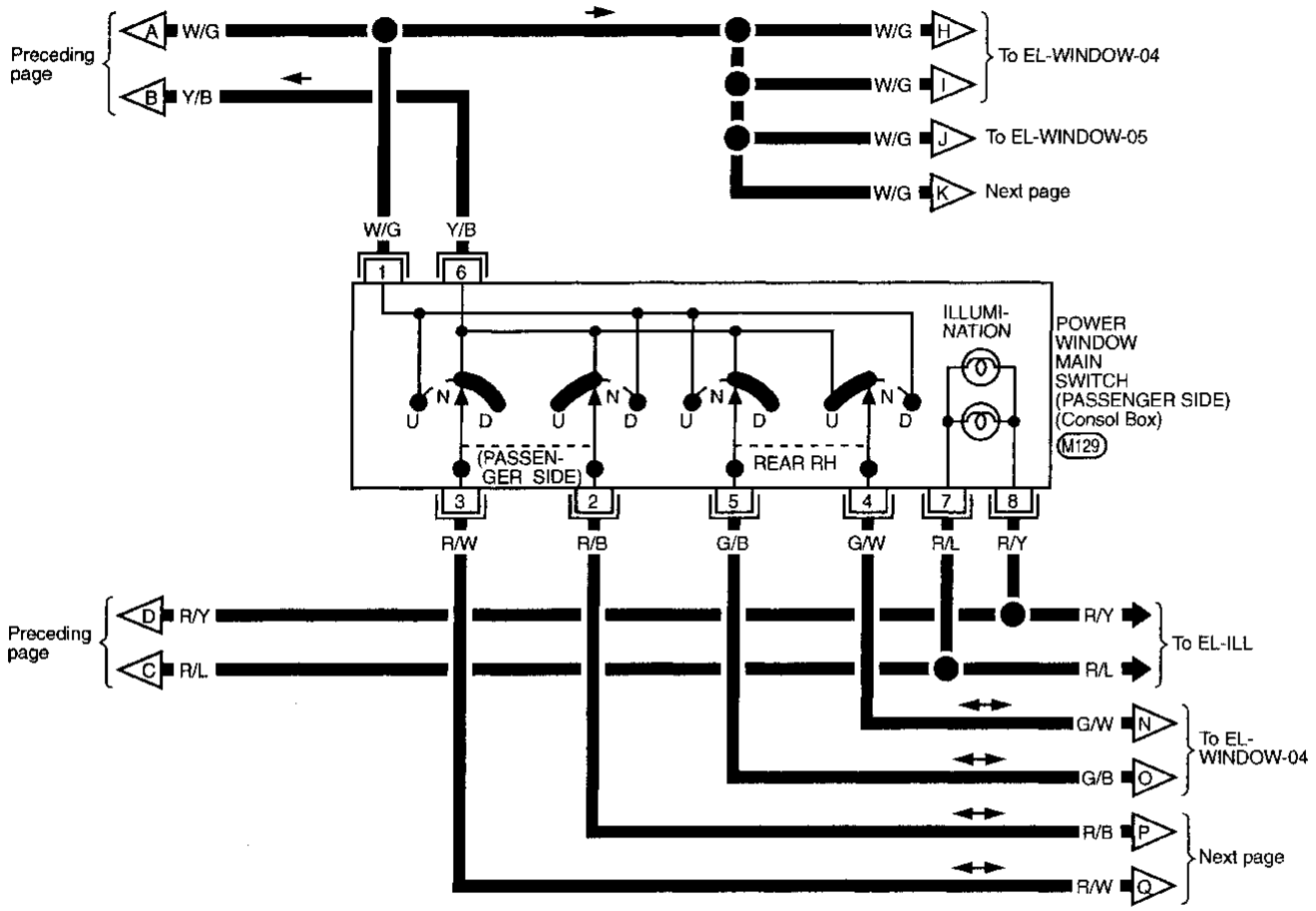


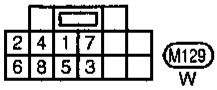


Refer to last page (Foldout page).
E102, M5

Wiring Diagram — WINDOW — (Cont'd)

EL-WINDOW-02

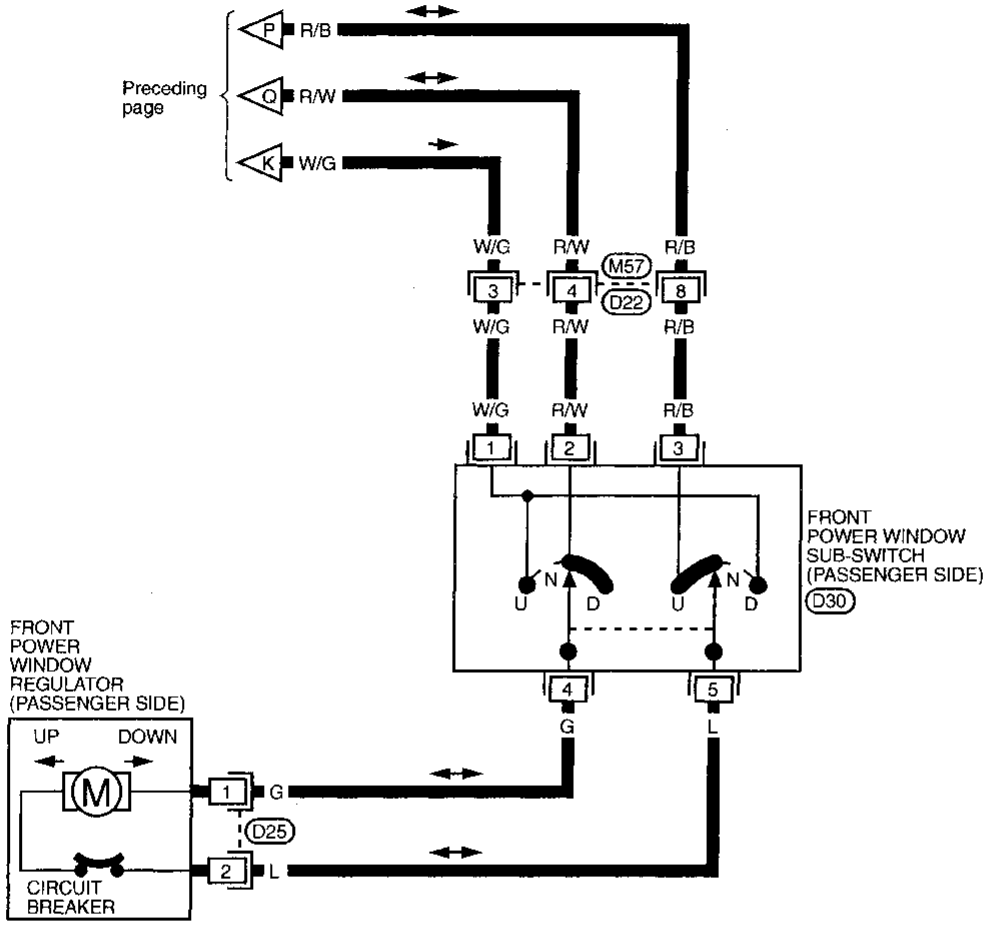


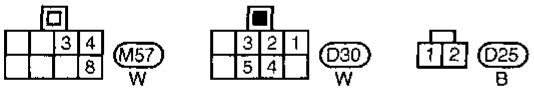


TEL133

Wiring Diagram — WINDOW — (Cont'd)

EL-WINDOW-03

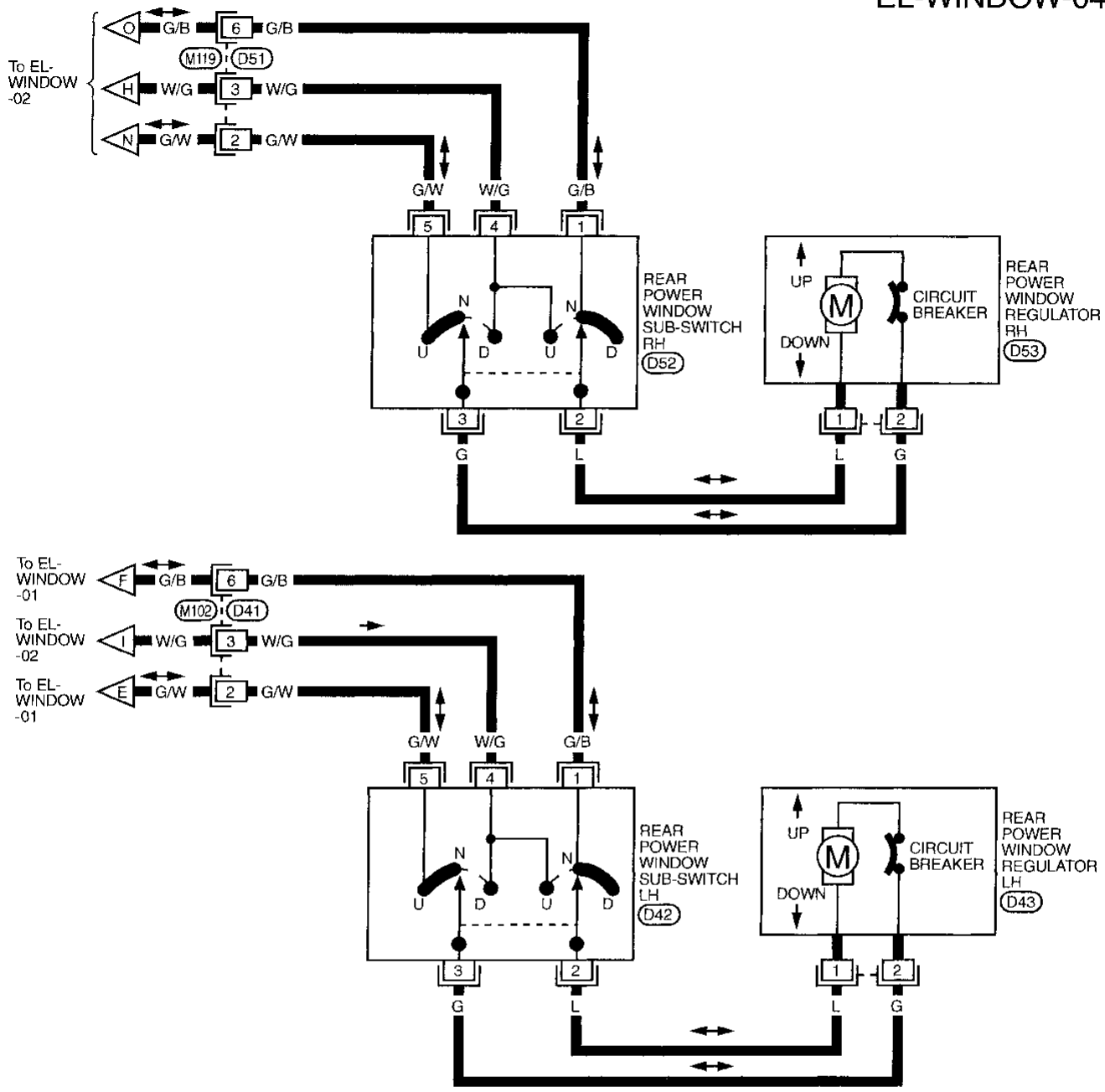


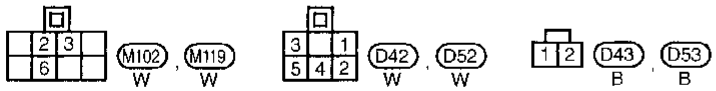


TEL134

Wiring Diagram — WINDOW — (Cont'd)

EL-WINDOW-04

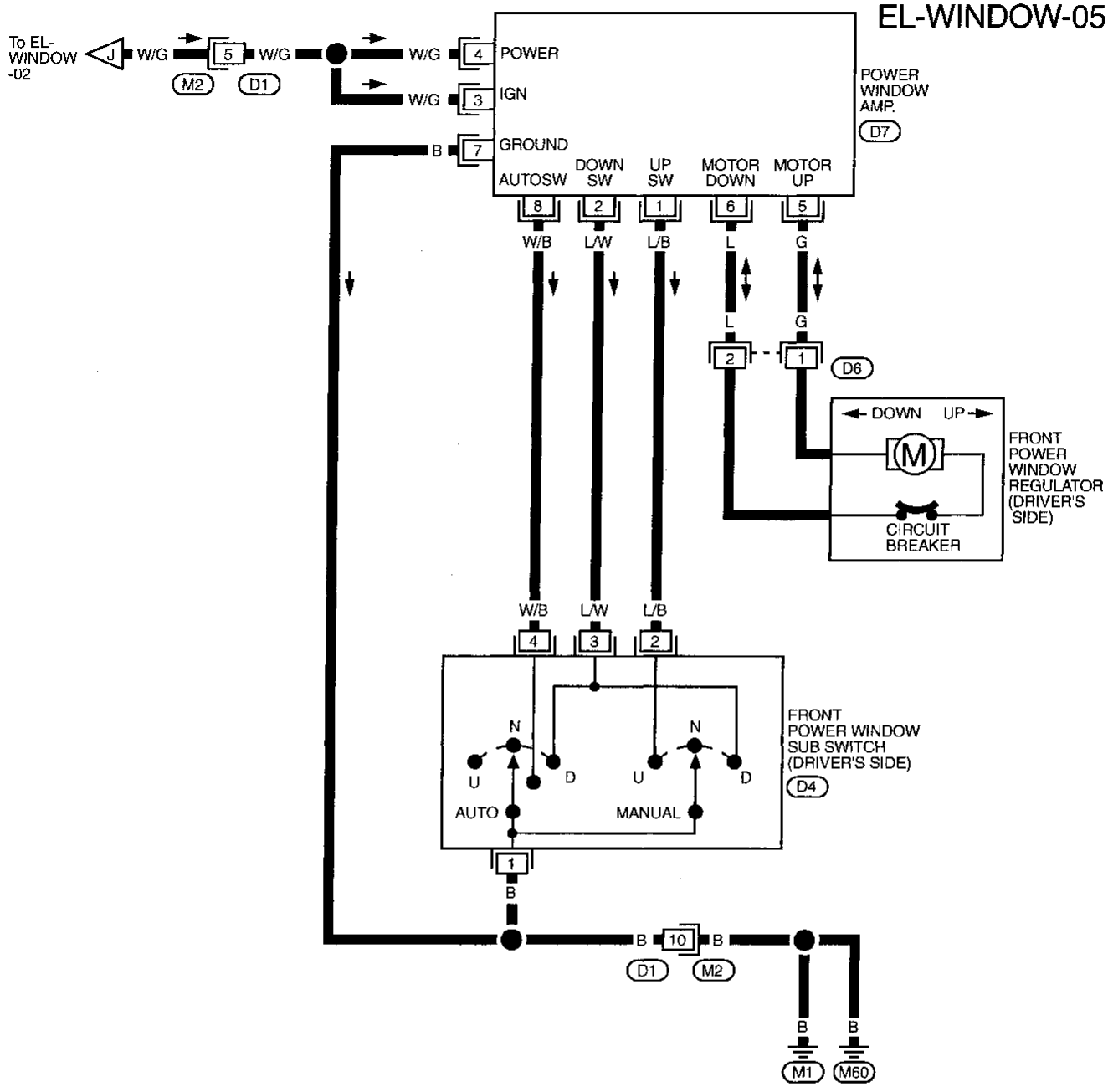


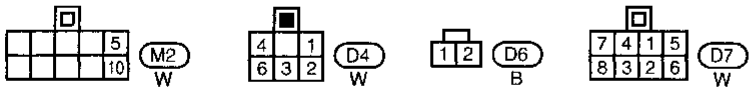


TEL135

Wiring Diagram — WINDOW — (Cont'd)

EL-WINDOW-05





TEL136

Trouble Diagnoses

Symptom	Possible cause	Repair order
None of the power windows can be operated using any switch.	1. 30A fusible link and (M7) circuit breaker	1. Check 30A fusible link (letter [e] , located in fuse and fusible link box) and (M7) circuit breaker. Turn ignition switch "ON" and verify battery positive voltage is present at terminal ① of power window main switch and any other switches.
	2. Grounds (M1), (M60), (M165) and (M101)	2. Check grounds (M1), (M60), (M165) and (M101).
	3. Power window relay	3. Check power window relay.
	4. Open/short in power window main switch circuit	4. Check W/G wire between power window relay and power window main switch for open/short circuit.
Driver's side power window cannot be operated but other windows can be operated.	1. Driver's side power window regulator circuit	1. Check driver's side power window regulator circuit
	2. Driver's side power window regulator	2. Check driver's side power window regulator
One or more passenger power windows cannot be operated.	1. Power window switches (front sub-switch, rear sub-switch RH, rear sub-switch LH)	1. Check power window switches (front sub-switch, rear sub-switch RH, rear sub-switch LH)
	2. Power window regulators (front sub-switch, rear sub-switch RH, rear sub-switch LH)	2. Check power window regulators (front sub-switch, rear sub-switch RH, rear sub-switch LH)
	3. Power window main switch	3. Check power window main switch
	4. Power window circuit	4-1. Check harnesses between power window main switch and power window sub-switches for open/short circuit. 4-2. Check harnesses between power window sub-switches and power window regulators for open/short circuit.
One or more passenger power windows cannot be operated using power window main switch but can be operated by power window sub-switches.	1. Power window main switch	1. Check power window main switch.
Driver's side power window auto function cannot be operated using power window main switch.	1. Power window main switch	1. Check power window main switch.

System Description

Power is supplied at all times
- through 30A fusible link (Letter [e], located in the fuse and fusible link box)
- to circuit breaker terminal ①
- through circuit breaker terminal ②
- to door lock timer terminal ①.

Power is also supplied
- through 10A fuse (No.[25] located in the fuse block)
- to key switch terminal ①.

INPUT

When the key switch is in ON position (ignition key is inserted in the key cylinder), power is supplied
- through key switch terminal ②
- to door lock timer terminal ⑦.

When the front door (Driver side) is open, ground signal is supplied
- to door lock timer terminal ④
- through front door switch (Driver side) terminal ①
- to front door switch (Driver side) terminal ③
- through body grounds (M101) and (M165).

When the front door (Passenger side) is open, ground signal is supplied
- to door lock timer terminal ⑫
- through front door switch terminal ①
- to front door switch terminal ③
- through body grounds (M101) and (M165).

When the door lock & unlock switch is in LOCK position, ground signal is supplied
- to door lock timer terminal ⑯
- through door lock & unlock switch terminal ⑩
- to door lock & unlock switch terminal ⑫
- through body grounds (M101) and (M165).

When the door lock & unlock switch is in UNLOCK position, ground signal is supplied
- to door lock timer terminal ⑮
- through door lock & unlock switch terminal ⑪
- to door lock & unlock switch terminal ⑫
- through body grounds (M101) and (M165).

When the door lock knob or door key is turned to UNLOCK position, then door lock actuator (door unlock sensor) is in UNLOCK position.
Ground signal is supplied
- to door lock timer terminal ⑩
- through front door lock actuator (Driver side) (door unlock sensor) terminal ④
- to front door lock actuator (Driver side) (door unlock sensor) terminal ②
- through body grounds (M1) and (M60), and
- to door lock timer terminal ⑨
- through front door lock actuator (Passenger side) (door unlock sensor) terminal ④
- to front door lock actuator (Passenger side) (door unlock sensor) terminal ②
- through body grounds (M1) and (M60).

With door key turned to UNLOCK position, continuity exists between Full Stroke and Neutral of the front key cylinder switch (lock/unlock switch).
A ground signal is then sent
- to door lock timer terminal ⑪ or ⑭
- through front door key cylinder switches (Driver side) and (Passenger side) (unlock switch) terminal ① or ②
- to front door key cylinder switches (Driver side) and (Passenger side) (unlock switch) terminal ④
- through body grounds (M1) and (M60).

OUTPUT

Unlock

Ground is supplied

System Description (Cont'd)

- to front door lock actuator (Driver side) terminal ①,
- to front door lock actuator (Passenger side) terminal ①,
- to rear door lock actuator LH terminal ① and
- to rear door lock actuator RH terminal ①
- through door lock timer terminal ②.

FRONT DOOR (Driver side)
Power is supplied to front door lock actuator (Driver side) terminal ③

- through door lock timer terminal ⑥.

OTHER DOORS
Power is supplied

- to front door lock actuator (Passenger side) terminal ③,
- to rear door lock actuator LH terminal ③ and
- to rear door lock actuator RH terminal ③
- through door lock timer terminal ③.

Then, the door is unlocked.

Lock

Ground is supplied

- to front door lock actuator (Driver side) terminal ③
- through door lock timer terminal ⑥, and
- to front door lock actuator (Passenger side) terminal ③,
- to rear door lock actuator LH terminal ③ and
- to rear door lock actuator RH terminal ③
- through door lock timer terminal ③.

Power is supplied

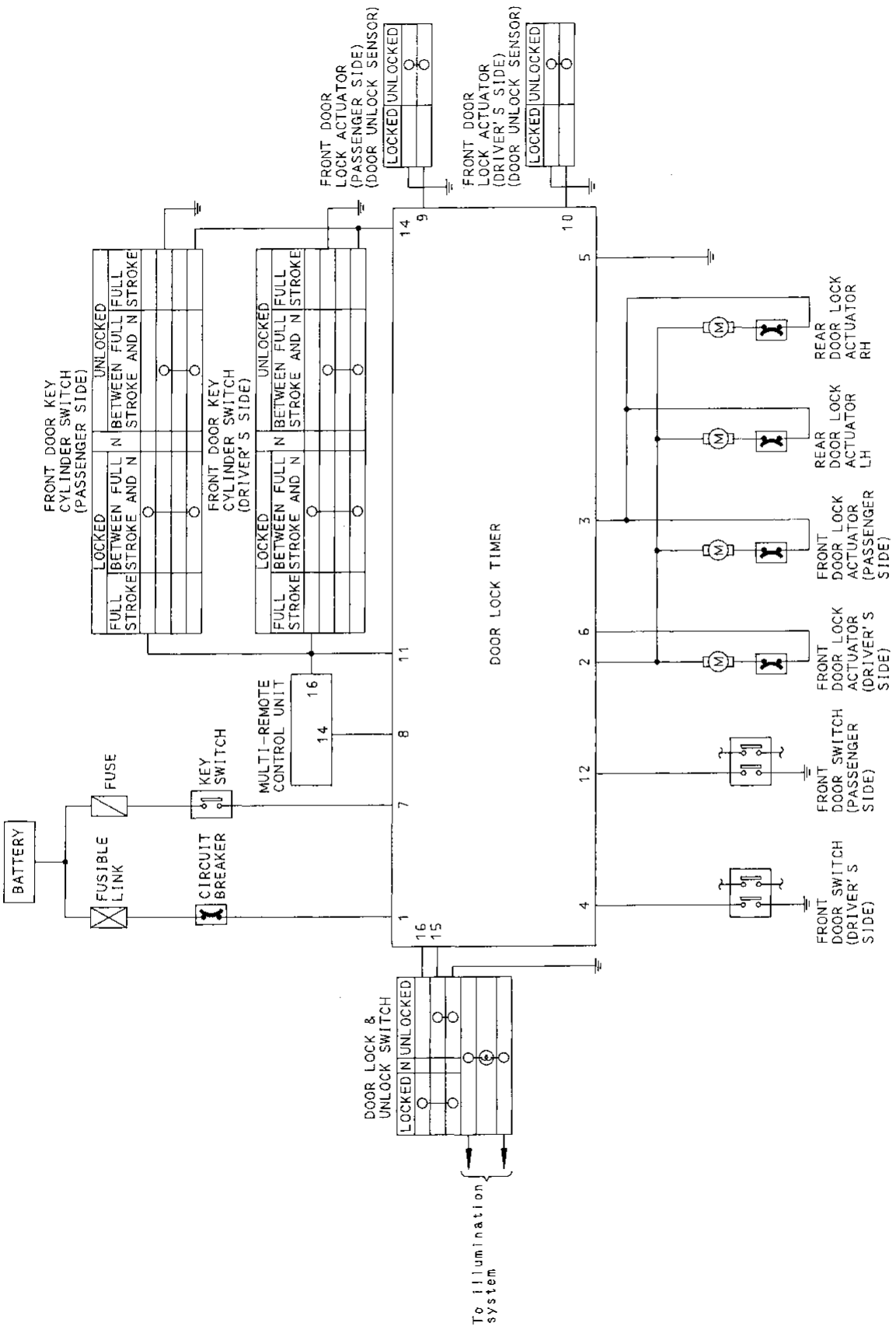
- to front door lock actuator (Driver side) terminal ①,
- to front door lock actuator (Passenger side) terminal ①,
- to rear door lock actuator LH terminal ① and
- to rear door lock actuator RH terminal ①
- through door lock timer terminal ②.

Then, the door is locked.
For details concerning input and output conditions, refer to "DOOR LOCK TIMER INSPECTION".

OPERATION BY MULTI-REMOTE CONTROL SYSTEM

Multi-remote control unit sends a signal to terminal ⑧ (Unlock signal) or terminal ⑪ (Lock signal) of the door lock timer. Door lock timer will operate the same when it receives a lock or unlock signal from other switches.

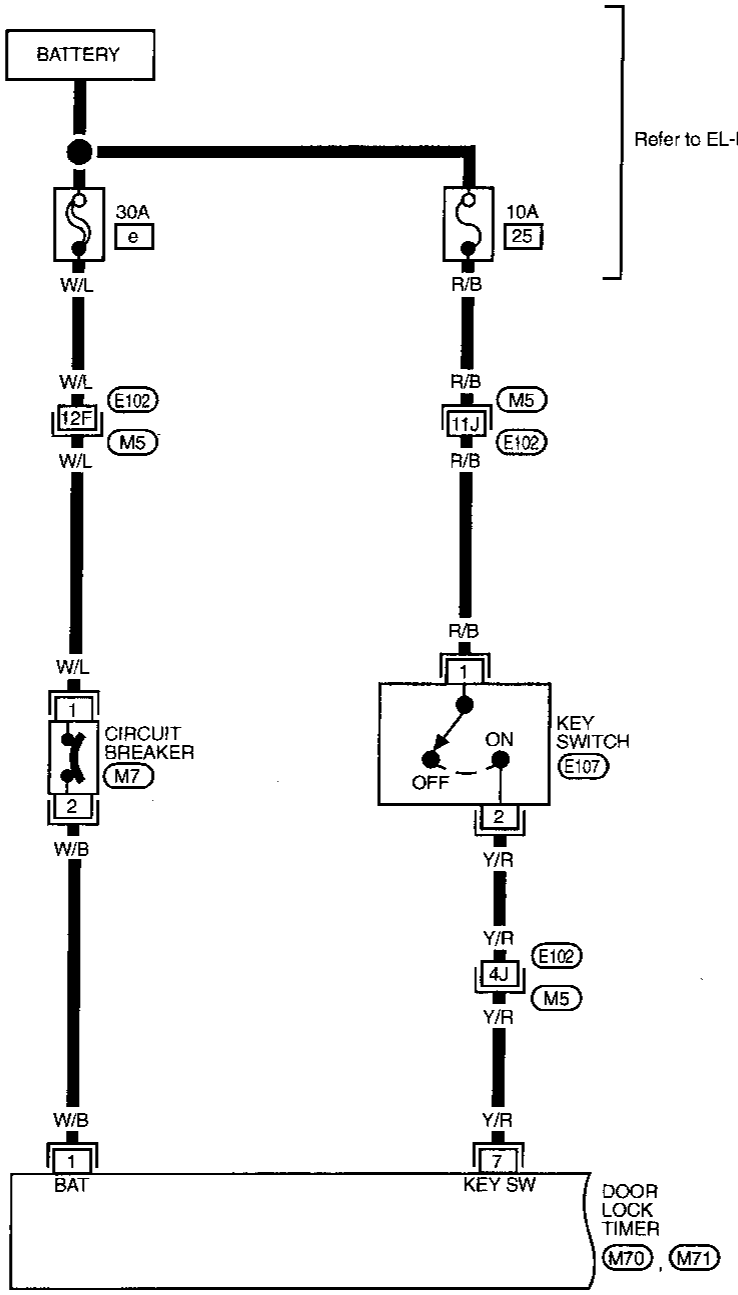
Schematic

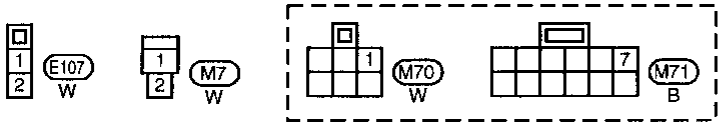


TEL137

Wiring Diagram — D/LOCK —

EL-D/LOCK-01



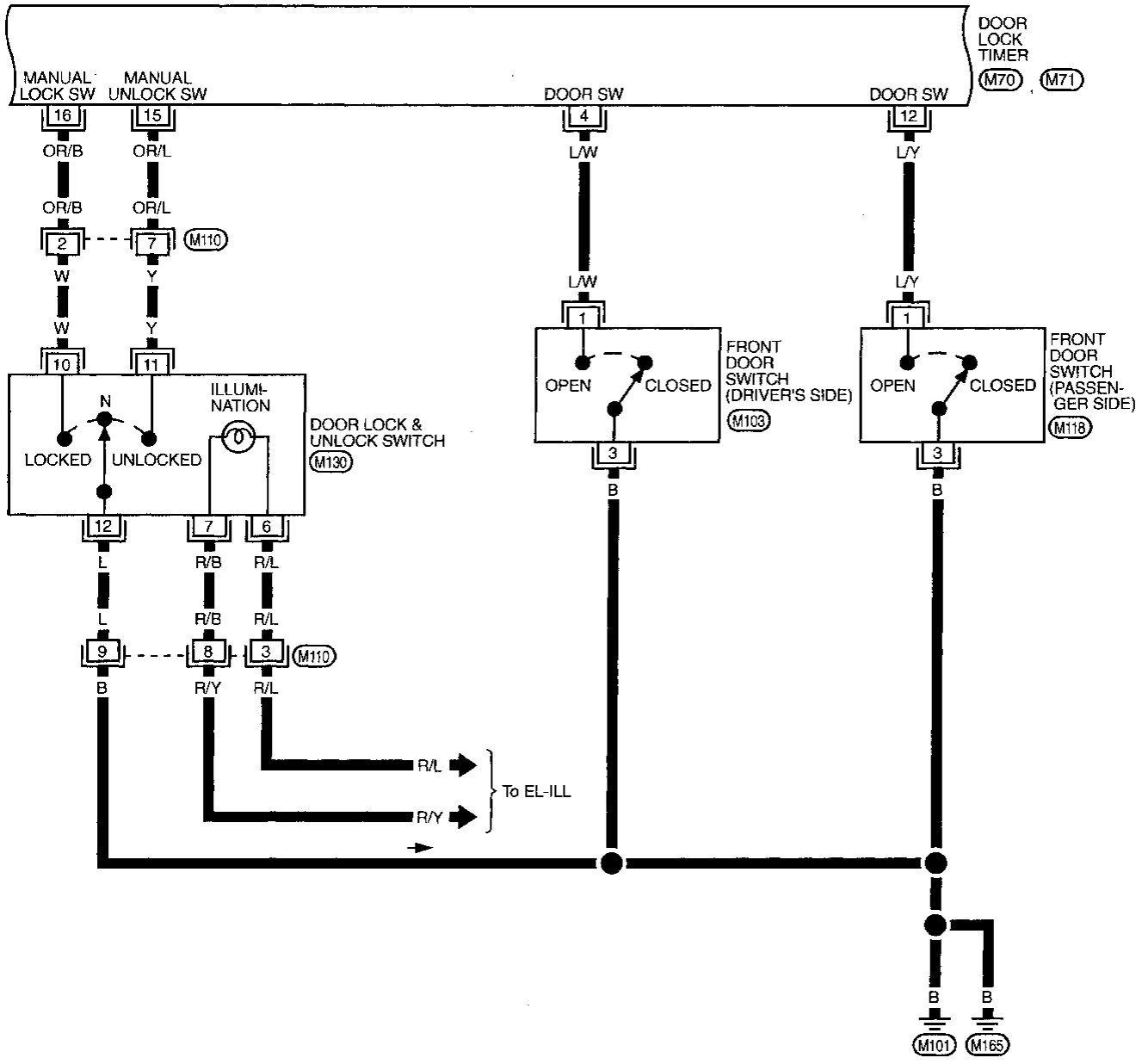


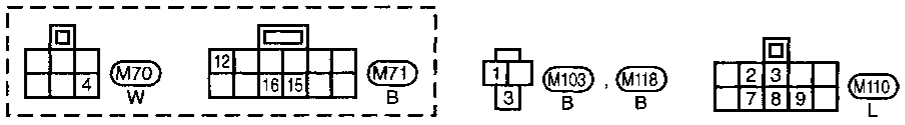
Refer to last page (Foldout page).
E102, M5

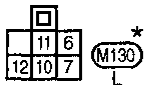
TEL138

Wiring Diagram — D/LOCK — (Cont'd)

EL-D/LOCK-02





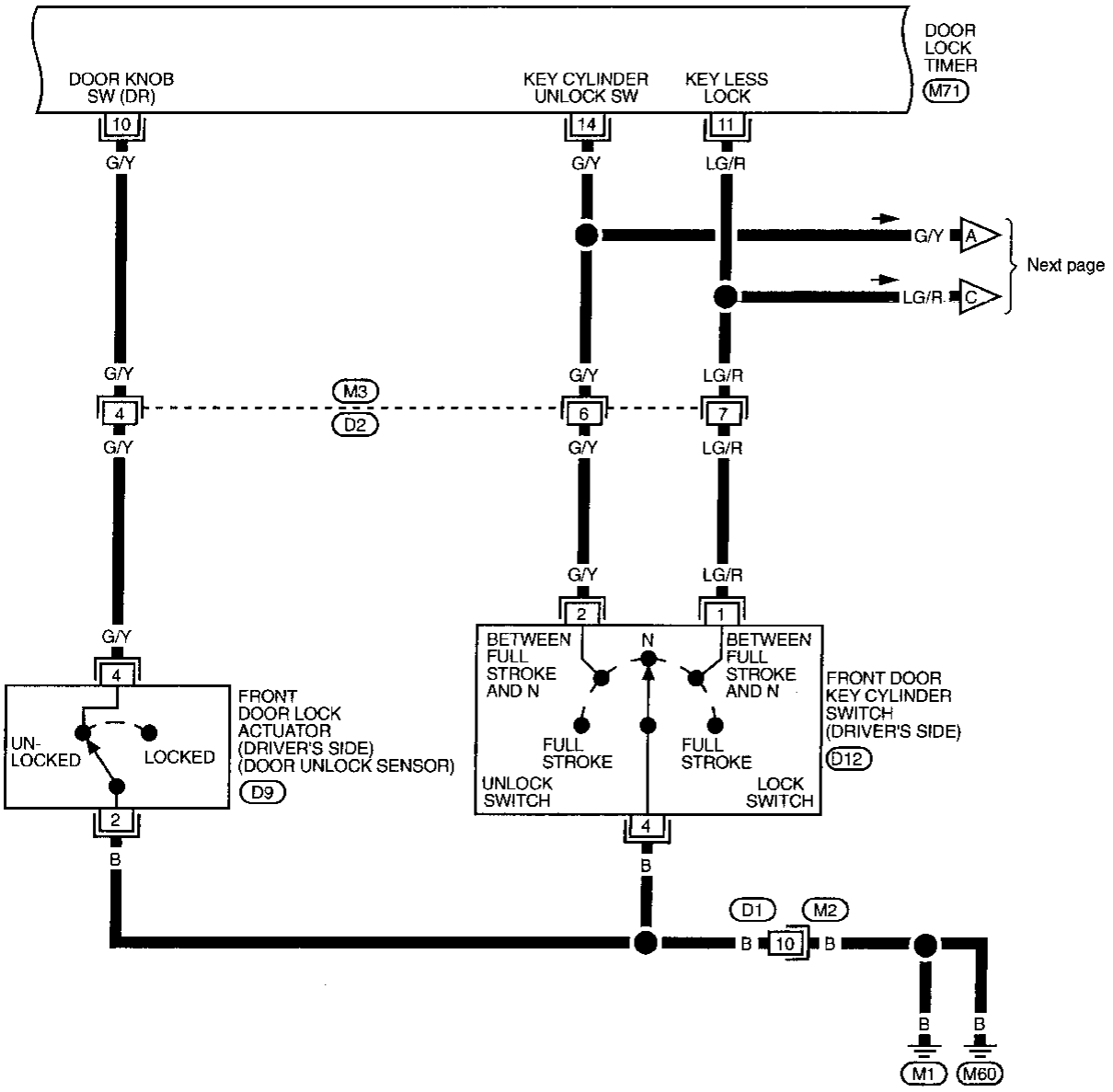


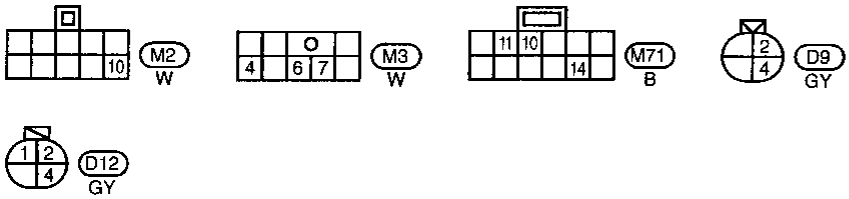
★ : This connector is not shown "HARNESS LAYOUT" in EL section.

TEL139

Wiring Diagram — D/LOCK — (Cont'd)

EL-D/LOCK-03

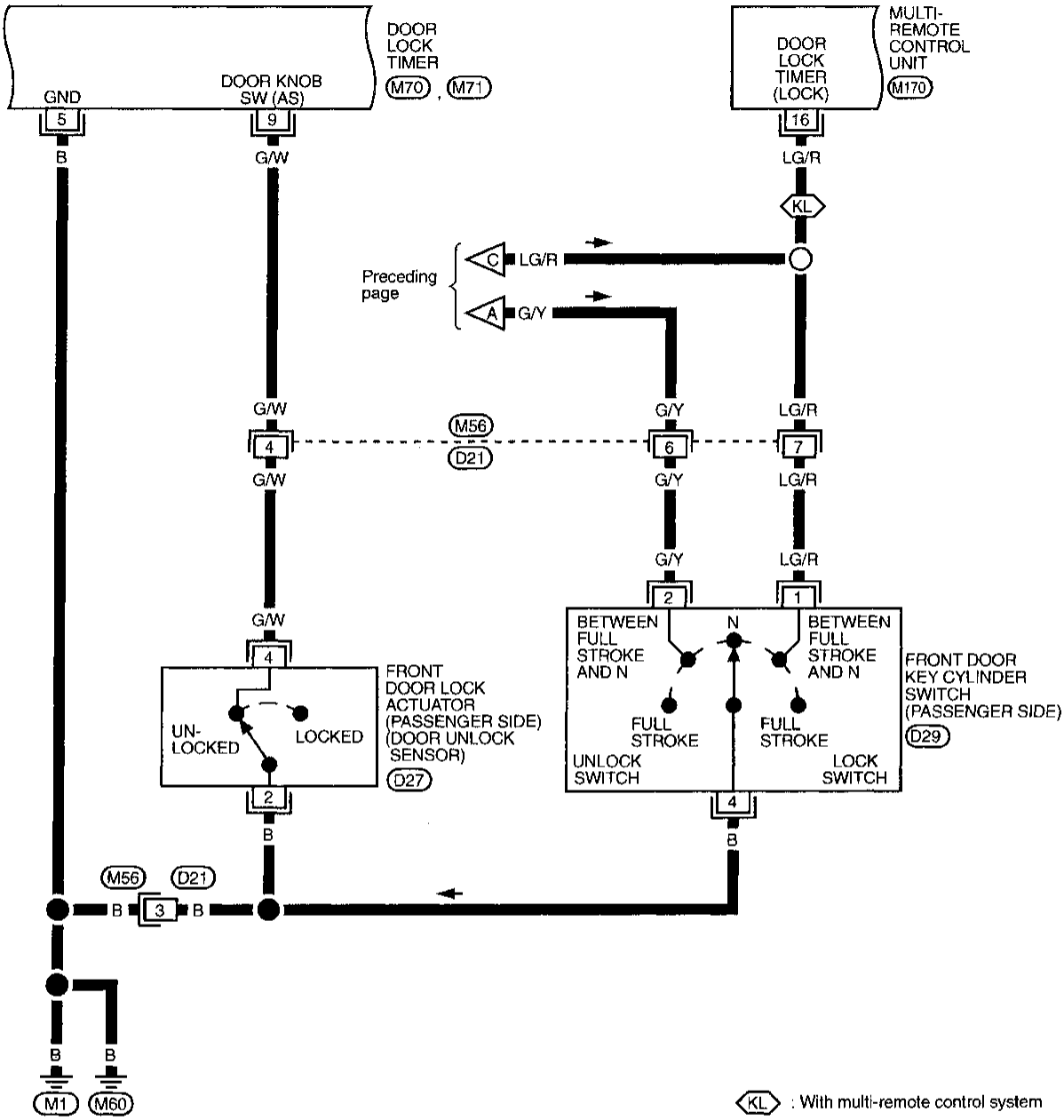


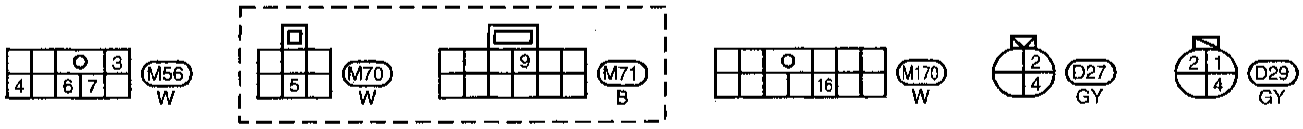


TEL140

Wiring Diagram — D/LOCK — (Cont'd)

EL-D/LOCK-04

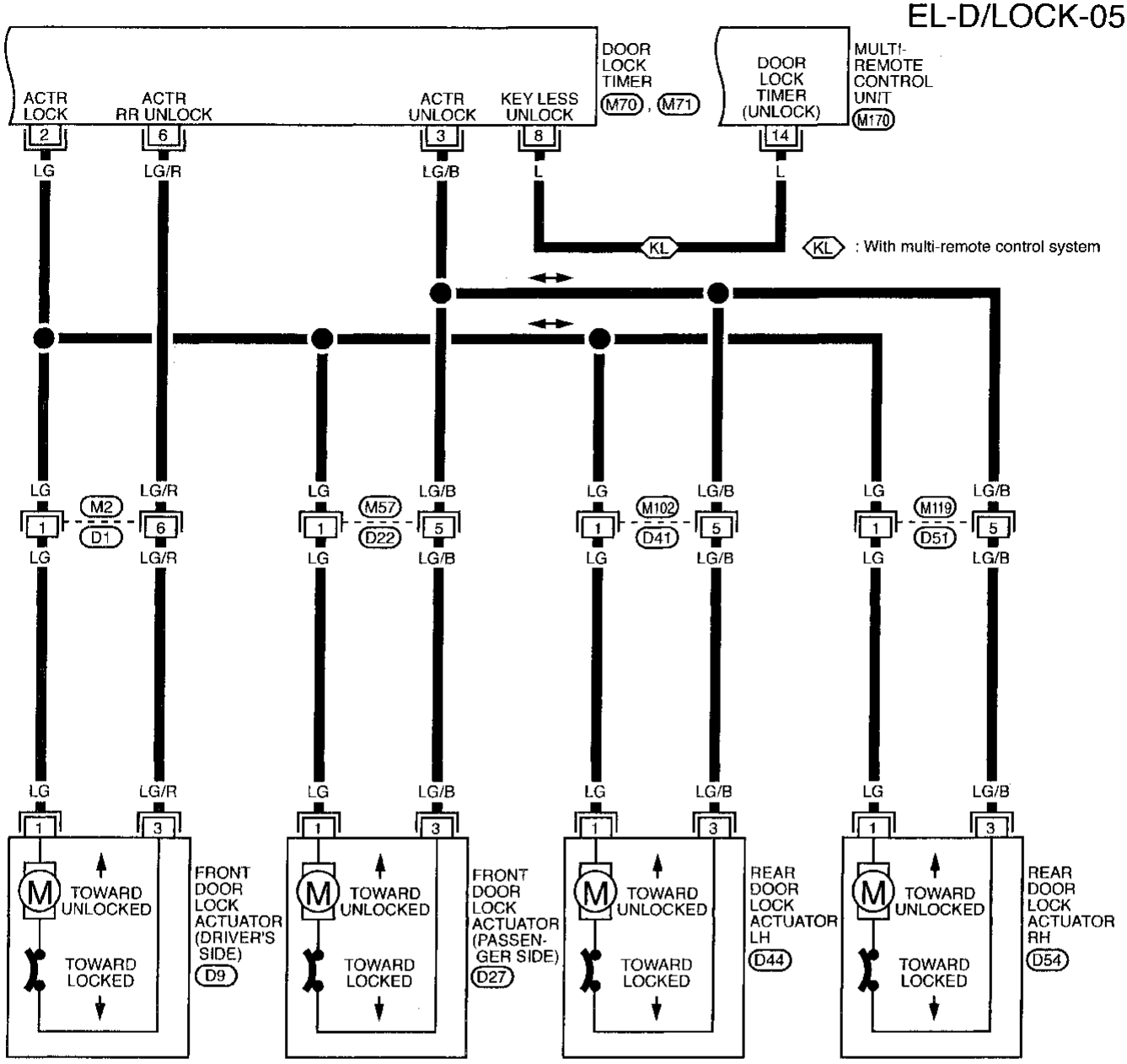


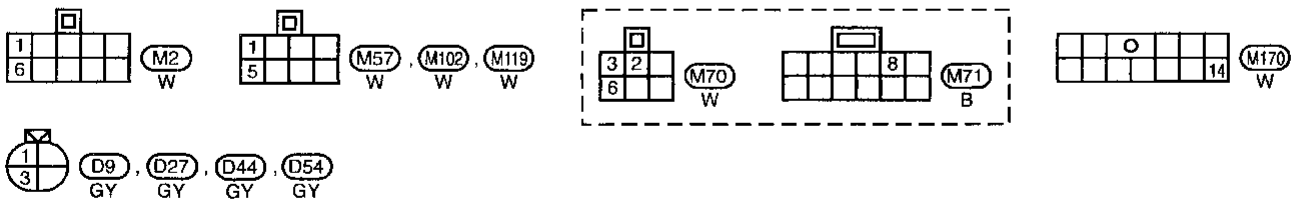


TEL141

Wiring Diagram — D/LOCK — (Cont'd)

EL-D/LOCK-05





TEL142

Door Lock Timer Inspection

- Carry out the following inspections:

(1) Check power source and ground.
(2) Check input signals.
If the input signal is NG, check corresponding components.
(3) Check output signals.
If the output signal is OK, check the door lock actuator.

Lock & unlock operation by lock knob or lock & unlock switch

	Connections		Operations			
			Lock knob LH	Lock knob RH	Lock & unlock switch	
			Unlock → Lock	Unlock → Lock	N → Unlock	N → Lock
1	Power source		12V	12V	12V	12V
5	Ground		Ground	Ground	Ground	Ground
7	Input signals	Key switch	Either key switch or door switches are off. (Key is not in the ignition or all doors are closed.)			
4		Door switch (Driver side)				
12		Door switch (Passenger side)				
10		Door unlock sensor (Driver side)	ON (Ground) → OFF (Open)	—	—	—
9		Door unlock sensor (Passenger side)	—	ON (Ground) → OFF (Open)	—	—
16		Lock & unlock switch (Passenger side) (Between N and lock)	—	—	—	OFF (Open) → ON (Ground)
15		Lock & unlock switch (Passenger side) (Between N and unlock)	—	—	OFF (Open) → ON (Ground)	—
2	Output signals	Door lock actuator (Lock power source)	0V → 12V → 0V (Approx. 1.0 sec.)	0V → 12V → 0V (Approx. 1.0 sec.)	0V	0V → 12V → 0V (Approx. 1.0 sec.)
6		Door lock actuator (Driver side) (Unlock power source)	0V	0V	0V → 12V → 0V (Approx. 1.0 sec.)	0V
3		Door lock actuator (Except Driver side) (Unlock power source)	0V	0V	0V → 12V → 0V (Approx. 1.0 sec.)	0V

- The voltage values are approximate.

Door Lock Timer Inspection (Cont'd)

Unlock operation by door lock key switch

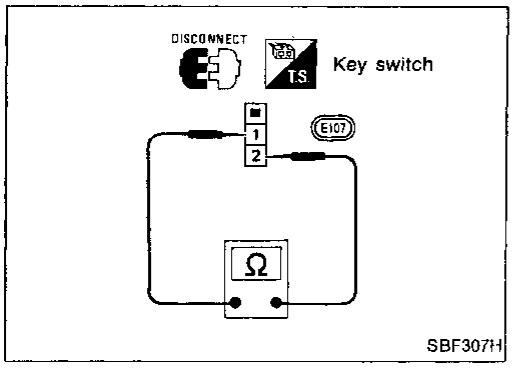
Connections			Operations		
			Front door key cylinder		
			N → Unlock → N → Unlock		N → Lock → N
1	Power source		12V	12V	12V
5	Ground		Ground	Ground	Ground
7	Input signal	Key switch	Either key switch or door switches are off. (Key is not in the ignition or all doors are closed.)		
4		Door switch (Driver side)			
12		Door switch (Passenger side)			
11		Front door key cylinder switch (Lock switch)	OFF (Open)	OFF (Open)	OFF → ON → OFF (Open) (Ground) (Open)
14		Front door key cylinder switch (Unlock switch)	OFF → ON → OFF → ON → OFF (Open) (Ground) (Open) (Ground) (Open)		OFF (Open)
2	Output signal	Door lock actuator (Lock power source)	0V	0V	0V → 12V → 0V (Approx. 1.0 sec.)
6		Door lock actuator (Driver side) (Unlock power source)	0V	0V → 12V → 0V (Approx. 1.0 sec.)	0V
3		Door lock actuator (Except Driver side) (Unlock power source)	0V	0V → 12V → 0V (Approx. 1.0 sec.)	0V

- The second unlock signal of the door lock key switch is counted within 4 seconds of the first.

Key reminder operation

Connections			Operations
			Lock knob LH
			Unlock → Lock → Automatically Unlocked
1	Power source		12V
5	Ground		0V
7	Input signal	Key switch	ON (12V) — Key is in the ignition.
4		Door switch (Driver side)	ON (Ground) — Door is open.
12		Door switch (Passenger side)	ON (Ground) — Door is open.
10		Door unlock sensor (Driver side)	ON → OFF → ON (Ground) (Open) (Ground)
9		Door unlock sensor (Passenger side)	—
2	Output signal	Door lock actuator (Lock power source)	0V
6		Door lock actuator (Driver side) (Unlock power source)	0V → 12V → 0V (Approx. 1.4 sec.)
3		Door lock actuator (Except Driver side) (Unlock power source)	0V → 12V → 0V (Approx. 1.4 sec.)

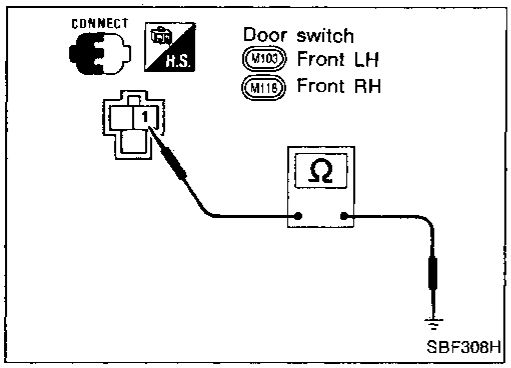
- Operation of lock knob switch RH is the same as LH.



Electrical Components Inspection

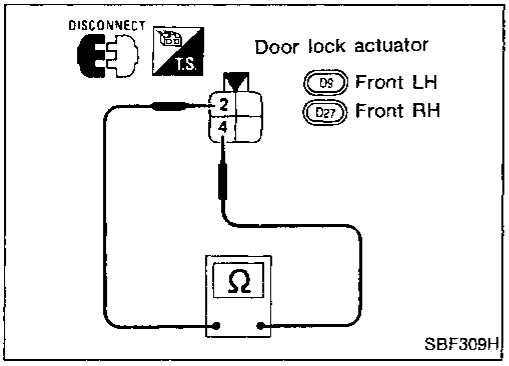
Key switch

Terminals	Condition	Continuity
① - ②	Key is in the ignition.	Yes
	Key is not in the ignition.	No



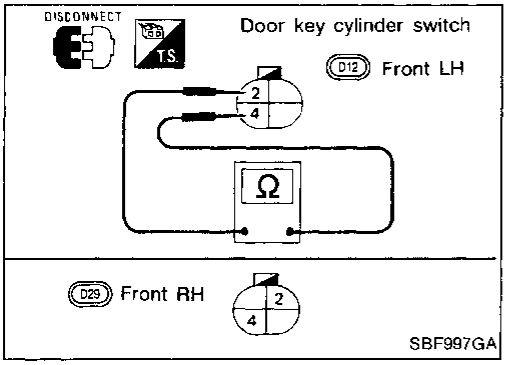
Door switch

Terminals	Condition	Continuity
① - Ground	Door is closed.	No
	Door is open.	Yes



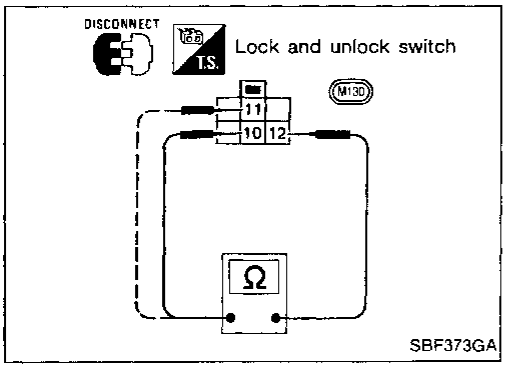
Door unlock sensor

Terminals	Lock knob condition	Continuity
② - ④	Lock	No
	Unlock	Yes



Door lock key switch

Terminals	Operation	Continuity
② - ④	Key is turned toward unlock	Yes
	Except above	No

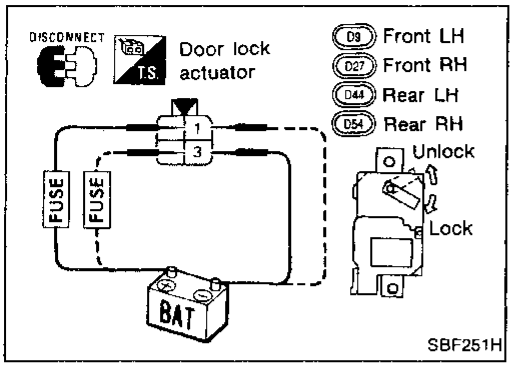


Lock and unlock switch

Terminals	Operation	Continuity
⑩ - ⑫	Lock	Yes
	Neutral and unlock	No
⑪ - ⑫	Unlock	Yes
	Neutral and unlock	No

Electrical Components Inspection (Cont'd)

Door lock actuator



Terminals		Operation
⊕	⊖	
①	③	Lock
③	①	Unlock

System Description

Power is supplied at all times
- to multi-remote control unit terminal ②
- through 10A fuse (No. 3 located in the fuse block).

Power is supplied at all times
- to multi-remote control unit terminal ① and
- to key switch terminal ①
- through 10A fuse (No. 25 located in the fuse block).

Terminal ⑧ of the multi-remote control unit is grounded through body grounds M101 and M165.

INPUTS

When the key switch is ON (ignition key is inserted in key cylinder), power is supplied
- through key switch terminal ②
- to multi-remote control unit terminal ⑨ and
- to door lock timer terminal ⑦.

When any of the four door switches are set to OPEN position, ground is provided
- to multi-remote control unit terminal ⑬
- through door switches body grounds.

When the trunk room lamp switch is in OPEN position (trunk lid is open), ground is supplied
- to multi-remote control unit terminal ④
- through body grounds M101 and M165.

When the front door lock actuator (Driver side) (door unlock sensor) is in UNLOCK position, ground is supplied
- to multi-remote control unit terminal ⑩
- through front door lock actuator (Driver side) (door unlock sensor) terminal ④
- to front door lock actuator (Driver side) (door unlock sensor) terminal ②
- through body grounds M1 and M60.

When the front door lock actuator (Passenger side) (door unlock sensor) is in UNLOCK position, ground is supplied
- to multi-remote control unit terminal ⑪
- through front door lock actuator (Passenger side) (door unlock sensor) terminal ④
- to front door lock actuator (Passenger side) (door unlock sensor) terminal ②
- through body grounds M1 and M60.

When the rear door lock actuator LH and/or RH (door unlock sensor) is in UNLOCK position, ground is supplied
- to multi-remote control unit terminal ⑫
- through rear door lock actuator LH (door unlock sensor) terminal ④ and/or
- through rear door lock actuator RH (door unlock sensor) terminal ④
- to rear door lock actuator LH (door unlock sensor) terminal ② and/or
- to rear door lock actuator RH (door unlock sensor) terminal ②
- through body grounds M101 and M165.

Remote controller signal input
- through window antenna
- to multi-remote control unit terminal ㉒.

The multi-remote control system controls operation of the
- power door lock
- trunk lid opener
- interior lamp
- panic alarm
- hazard lamp
- ID code entry

OPERATED PROCEDURE

Power door lock operation

- Key switch OFF signal (key not in cylinder)
- Door switch CLOSE signal (all doors closed)

The two above signals are already input into multi-remote control unit. At this point, multi-remote con-

System Description (Cont'd)

trol receives a LOCK signal from remote controller. Multi-remote control unit will then send a signal
- from its terminal ⑯
- to door lock timer terminal ⑪ and
- to theft warning control unit terminal ⑦.

Door lock timer now locks all doors and activates theft warning system.
With key switch in OFF position (key not in cylinder), multi-remote control unit receives an UNLOCK signal from remote controller. Remote controller will then send a signal
- from its terminal ⑭
- to door lock timer terminal ⑧
- from multi-remote control unit terminal ⑳
- to theft warning control unit terminal ⑪.

Door lock timer now unlocks all doors and deactivates theft warning system.
Refer to "POWER DOOR LOCK" and "THEFT WARNING SYSTEM" in EL section.

Trunk lid opener operation

With key switch in OFF position (key not in cylinder), multi-remote control unit receives an OPEN signal from remote controller. Power is then supplied
- from multi-remote control unit terminal ③
- to trunk lid opener cancel switch terminal ①.

With trunk lid opener cancel switch in ON position, a signal is sent
- through trunk lid opener cancel switch terminal ②
- to trunk lid opener actuator terminal ①.

Ground is supplied
- to trunk lid opener actuator terminal ③
- through body grounds M101 and M165.

Ground is also supplied
- to multi-remote controller terminal ④
- through trunk room lamp switch terminal ①.

When power and ground are provided, trunk lid opener actuator activates to open trunk lid. Then a signal is sent
- from multi-remote control unit terminal ⑳
- to theft warning control unit terminal ⑪.

Theft warning system now deactivates.
When trunk is closed, a signal is sent
- from multi-remote control unit terminal ⑯
- to theft warning control unit terminal ⑦.

Theft warning system now activates again.
Refer to "THEFT WARNING SYSTEM" in EL section.

Interior lamp operation

Multi-remote control system turns interior lamp ON or OFF according to various inputs received.
Operating conditions
- Key switch in OFF position (key not in cylinder)
- Door switch in CLOSE position (all doors closed)

With interior lamp OFF under the above conditions, an ON signal is sent to remote controller.
- Interior lamp then comes on for 30 seconds.

An ON or LOCK signal is sent from remote controller with interior lamp ON.
- Interior lamp will turn off.

An UNLOCK signal is sent from remote controller with interior lamp ON or OFF.
- Interior lamp will turn on for 30 seconds.

For detailed description, refer to "Interior, Spot and Trunk Room Lamps" in EL section.

Panic alarm operation

Multi-remote control system activates horn and headlamps intermittently under the following conditions:
- Key switch OFF (key not in cylinder)
- An alarm signal is sent from remote controller to multi-remote control system.

For detailed description, refer to "THEFT WARNING SYSTEM" in EL section.

System Description (Cont'd)

Hazard lamp operation

Multi-remote control system receives a LOCK signal from remote controller with the following signals already entered.

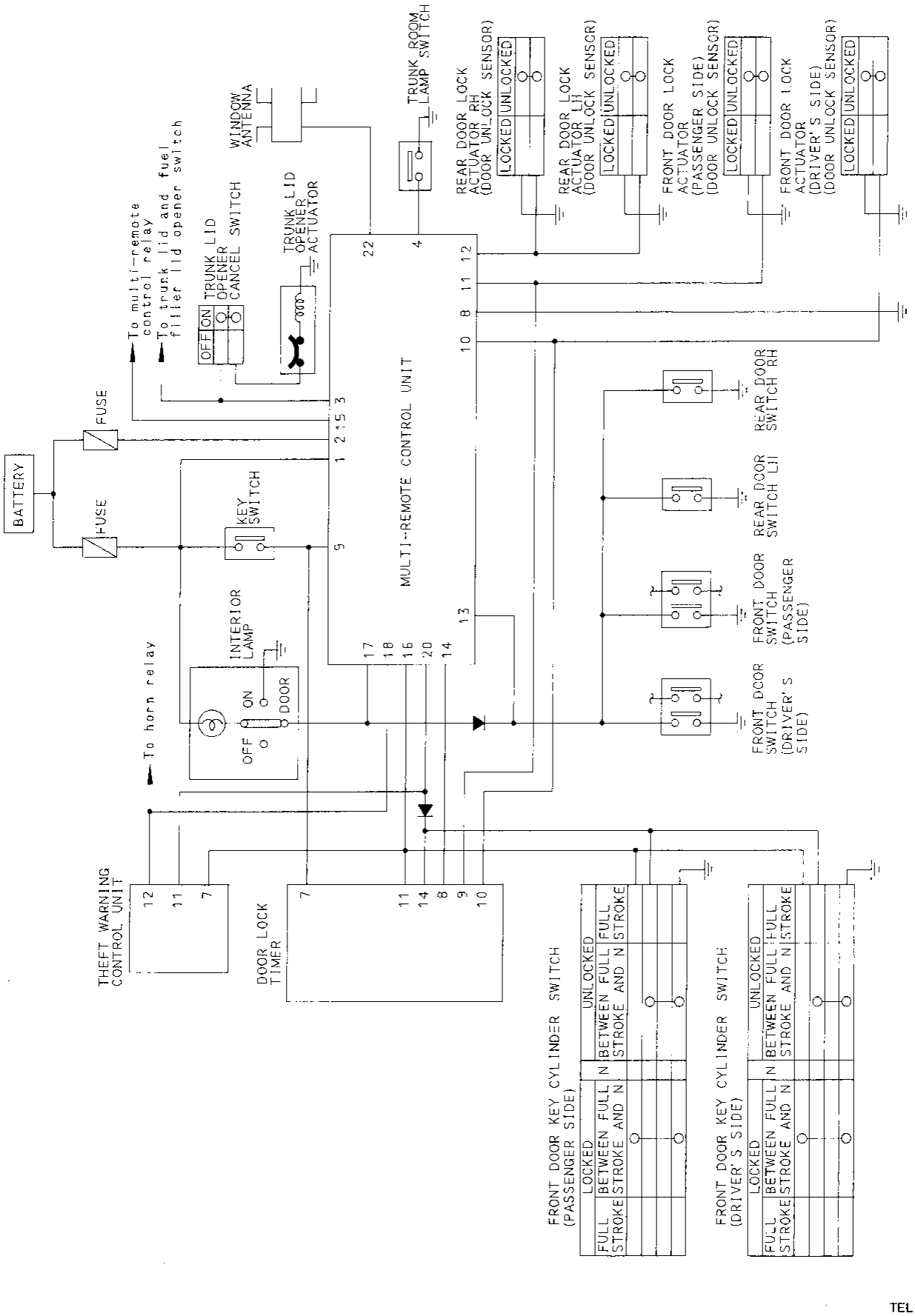
- Key switch OFF signal (key not in cylinder)
- Door switch CLOSE signal (all doors closed)
- Door lock actuator (door unlock sensor) LOCK (all doors locked)

Multi-remote control system will then send a ground signal

- to multi-remote control relay terminal ②
- through multi-remote control unit terminal ⑮.

Multi-remote control relay is now energized and hazard warning lamps flash.

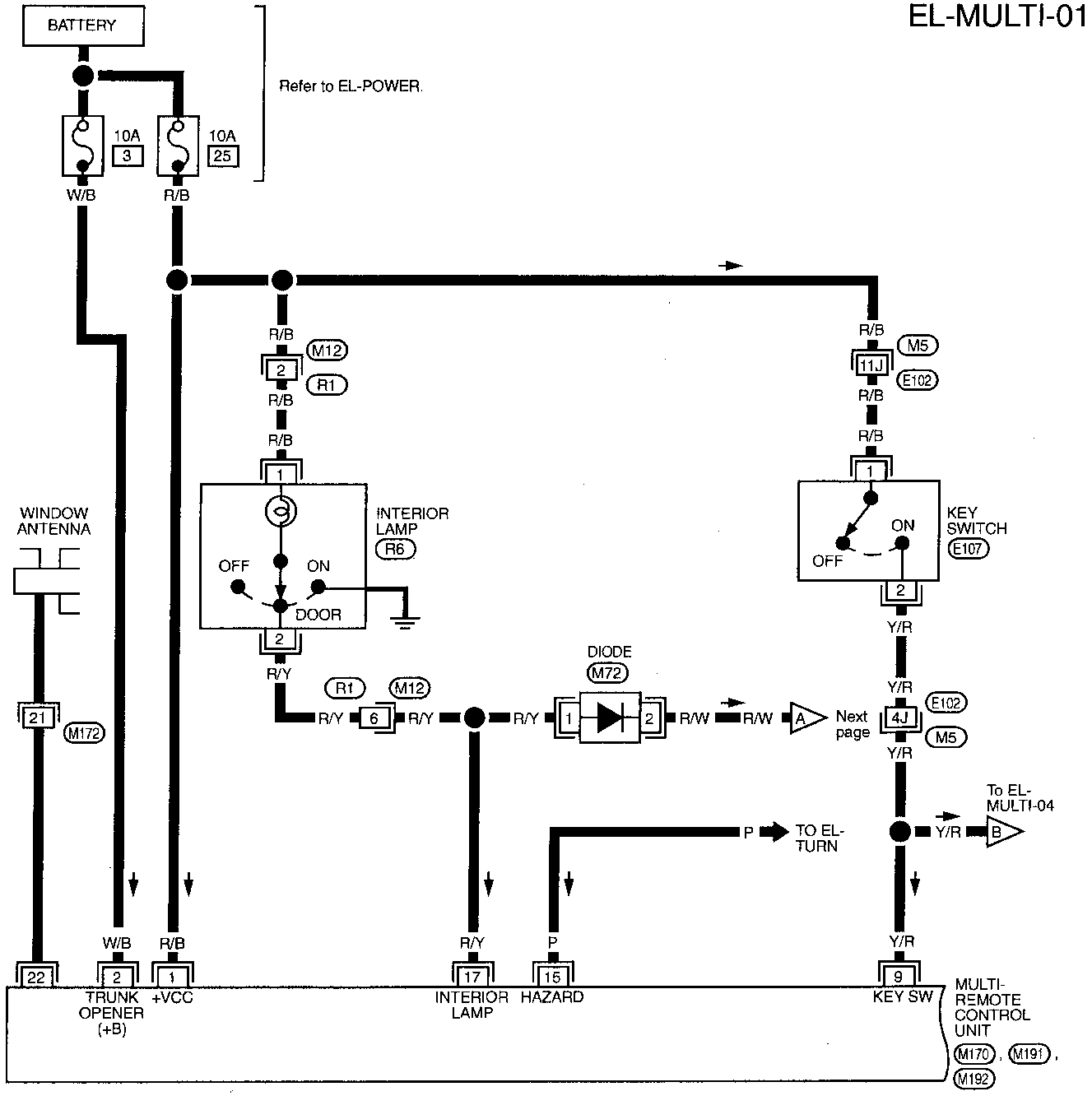
Schematic



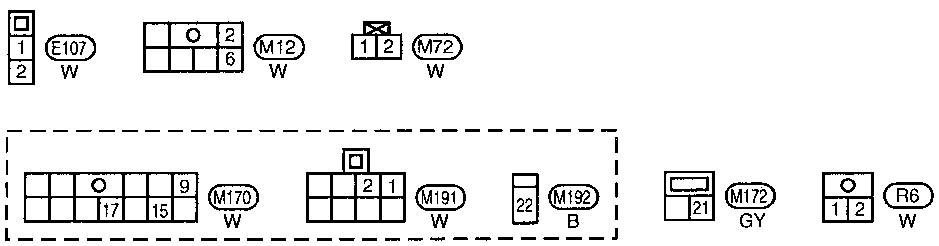
TEL151

Wiring Diagram — MULTI —

EL-MULTI-01



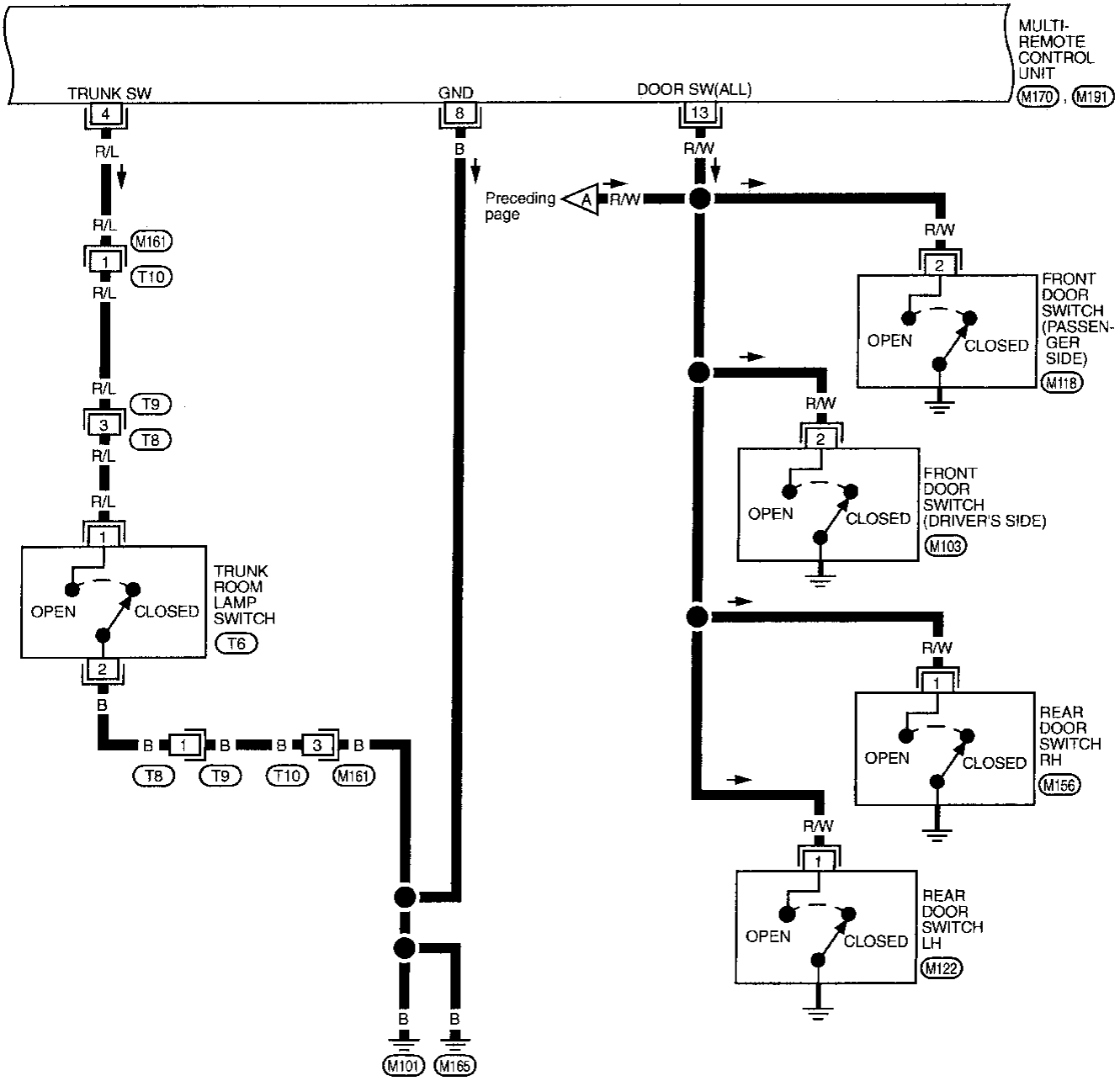
Refer to last page (Foldout page).
E102, M5

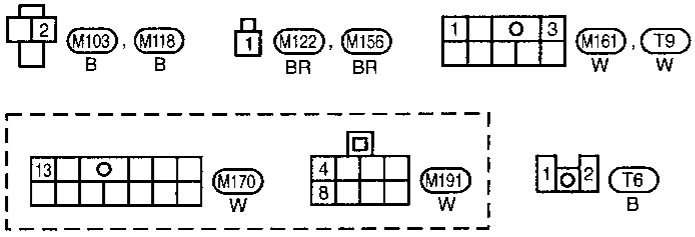


TEL143

Wiring Diagram — MULTI — (Cont'd)

EL-MULTI-02

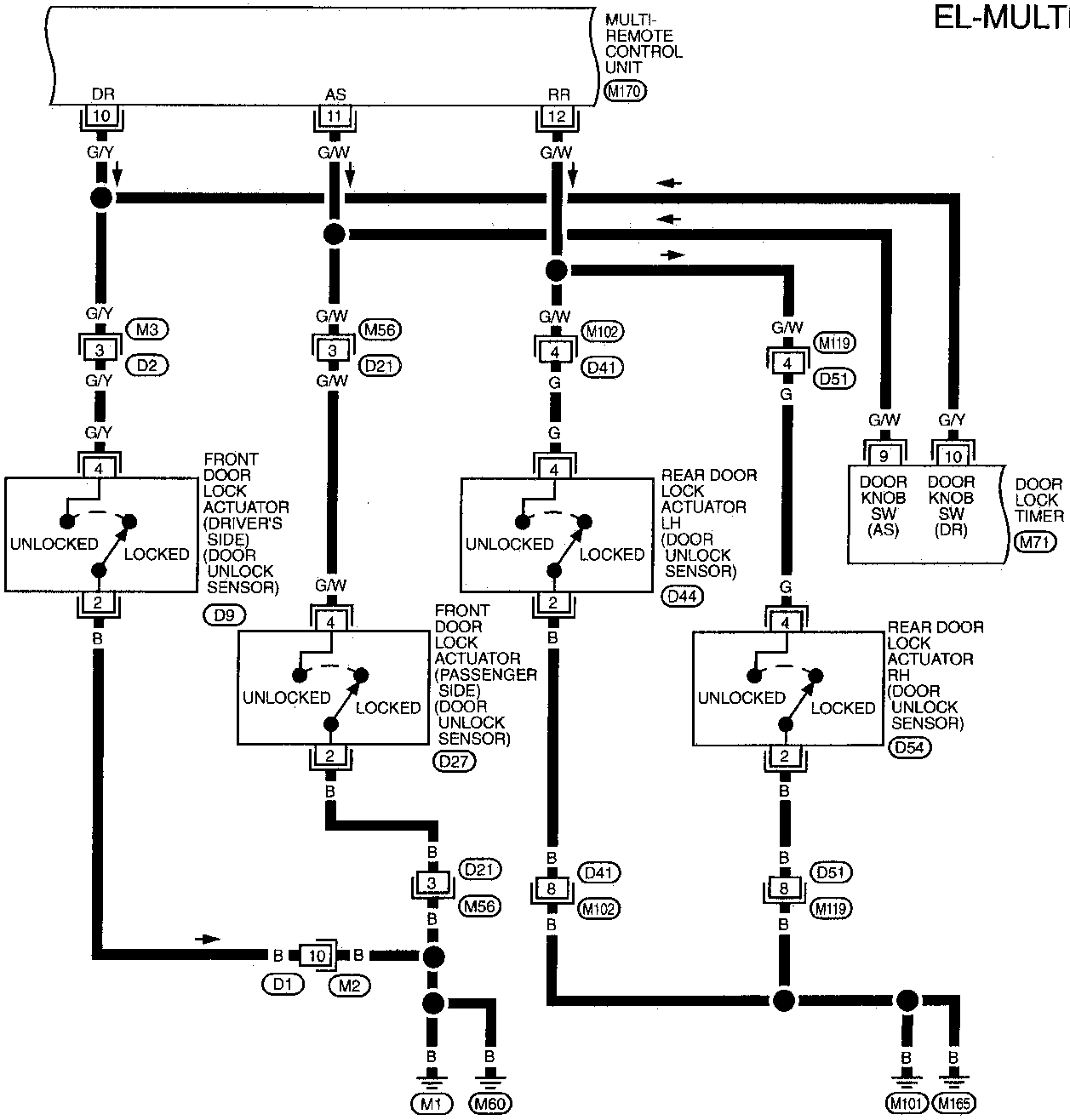


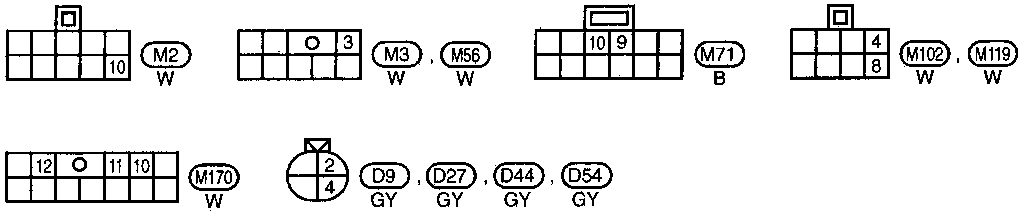


TEL144

Wiring Diagram — MULTI — (Cont'd)

EL-MULTI-03

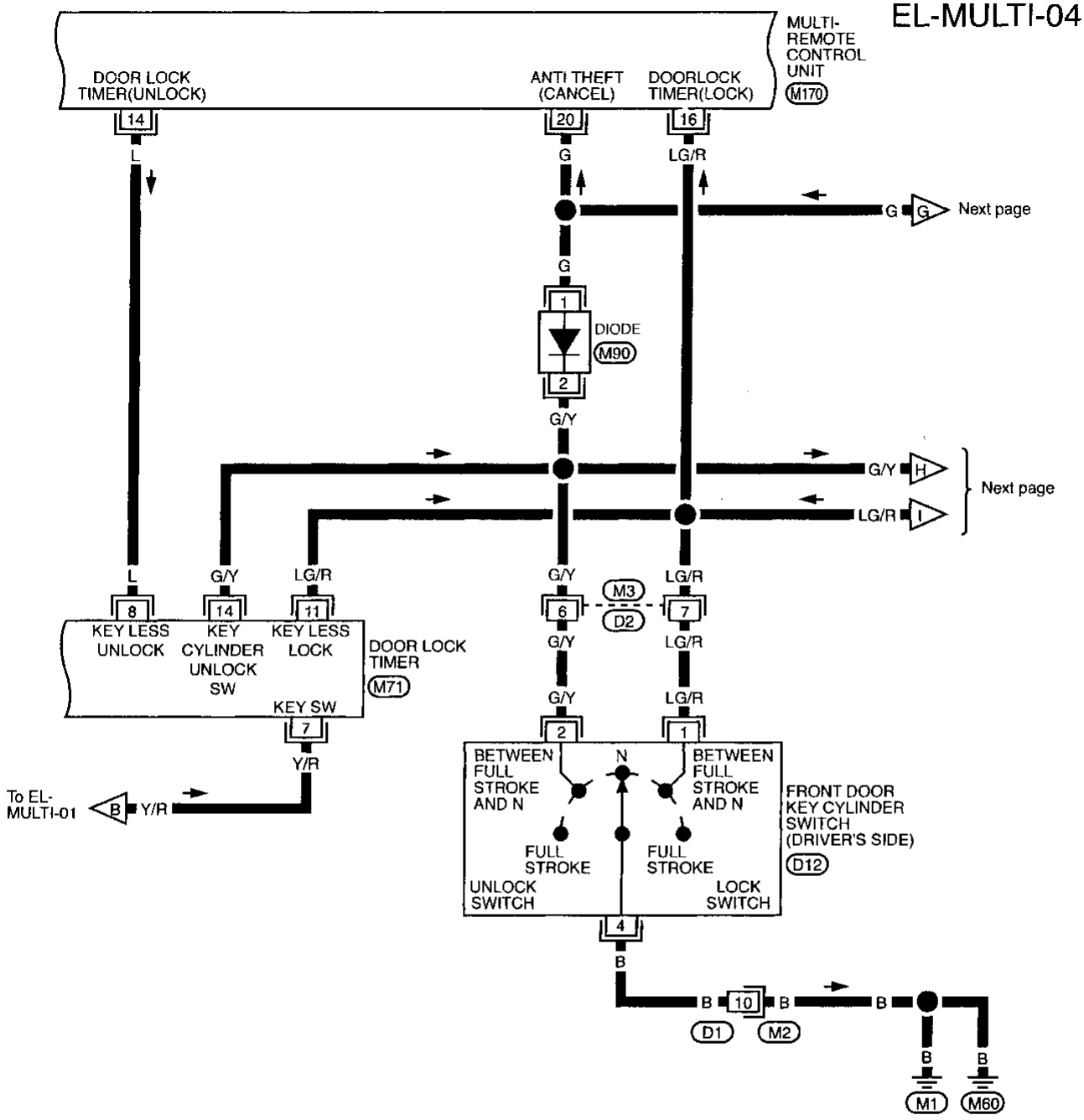


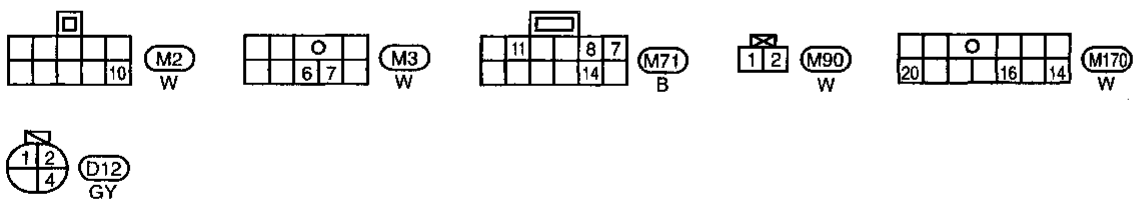


TEL145

Wiring Diagram — MULTI — (Cont'd)

EL-MULTI-04

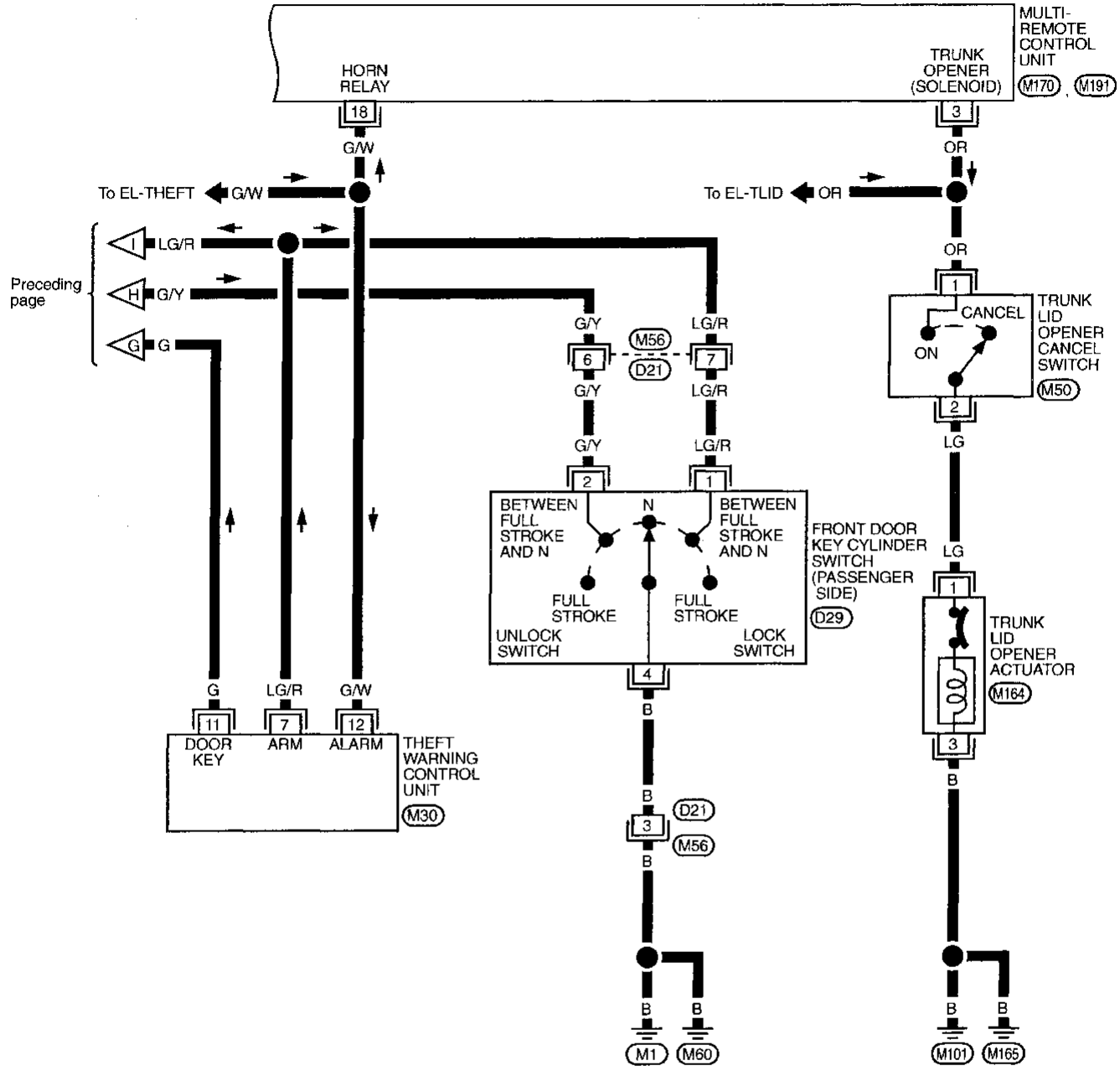


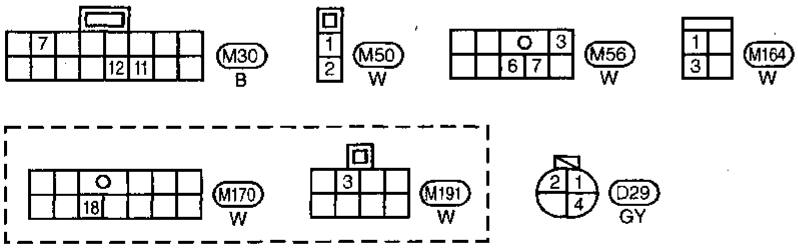


TEL146

Wiring Diagram — MULTI — (Cont'd)

EL-MULTI-05



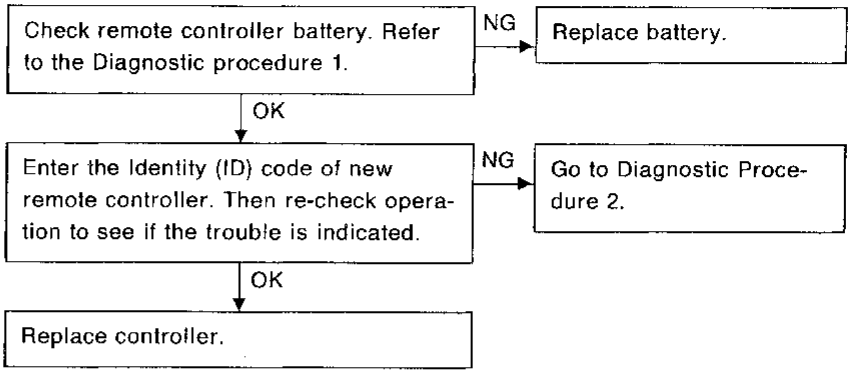


TEL147

Trouble Diagnoses Preliminary Inspection

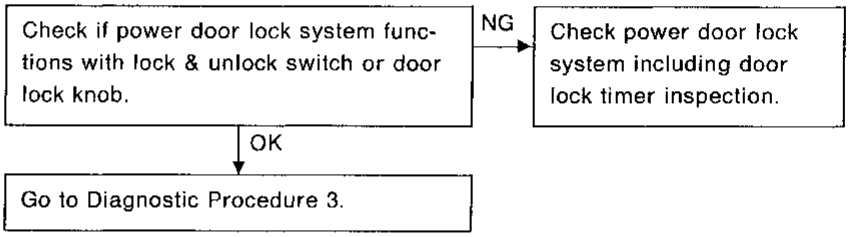
PRELIMINARY INSPECTION PROCEDURE 1

All functions of multi remote control system do not function.



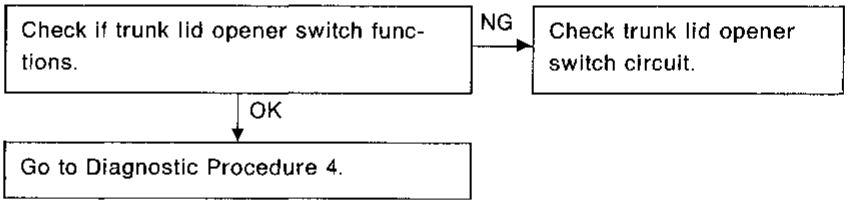
PRELIMINARY INSPECTION PROCEDURE 2

Door lock and unlock do not function.



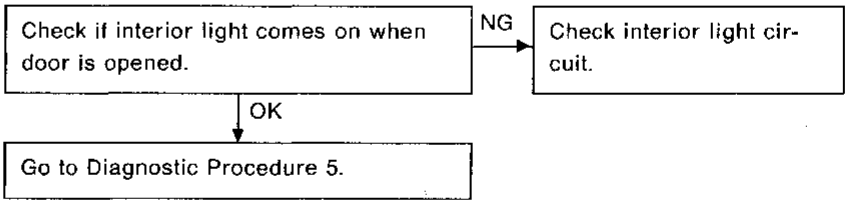
PRELIMINARY INSPECTION PROCEDURE 3

Trunk lid open function does not function.



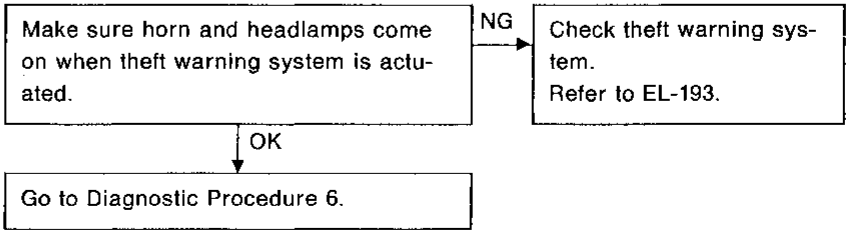
PRELIMINARY INSPECTION PROCEDURE 4

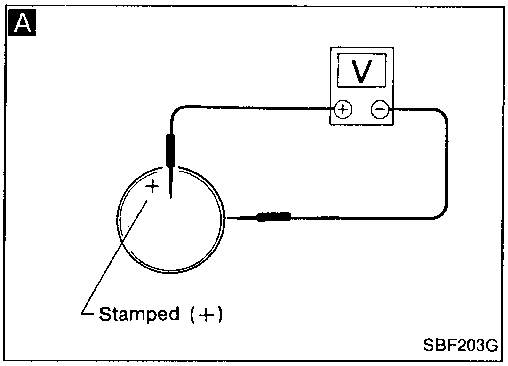
Interior light does not function.



PRELIMINARY INSPECTION PROCEDURE 5

Panic alarm does not function.





Trouble Diagnoses

DIAGNOSTIC PROCEDURE 1

Check remote controller battery.

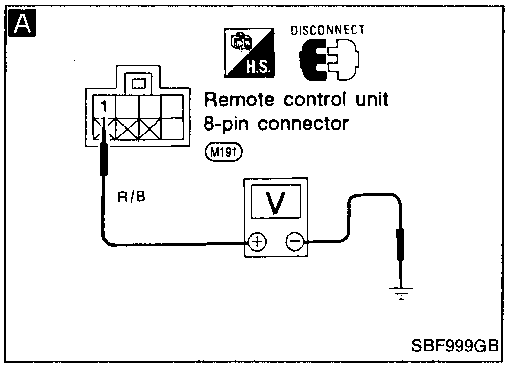
A

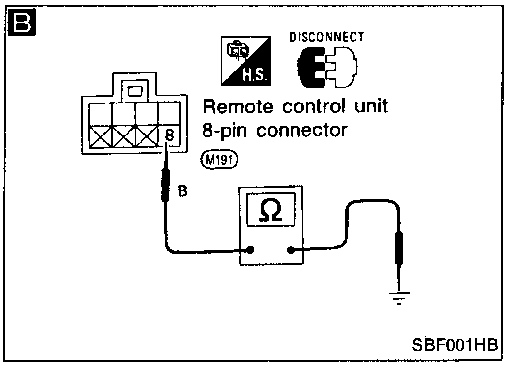
CHECK VOLTAGE OF REMOTE CONTROLLER BATTERY.

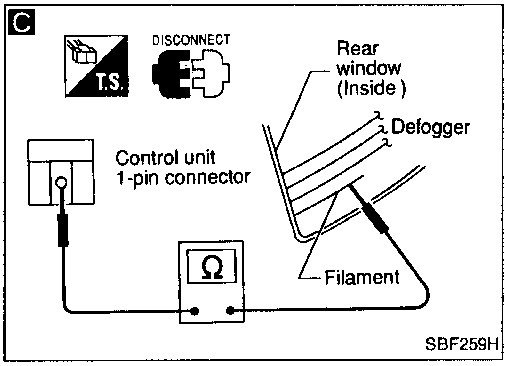
Remove battery and measure voltage across battery positive and ground terminals ⊕ and ⊖.

Measuring terminal		Standard value
⊕	⊖	
Battery positive terminal ⊕	Battery negative terminal ⊖	3V or more

Note:
Remote controller does not function if battery is not set correctly.







DIAGNOSTIC PROCEDURE 2

All remote control systems do not function even if remote controller does.

A

CHECK MAIN POWER SUPPLY AND GROUND CIRCUIT.

1) Remove key from ignition.
2) Disconnect 8-pin connector from control unit. Check voltage across remote control unit terminal ① and GND.
Battery voltage should exist.

NG → Check power supply harness.

OK ↓

B

Check continuity between terminal ⑧ and GND.
Continuity should exist.

NG → Check GND harness.

OK ↓

C

CHECK ANTENNA CIRCUIT.

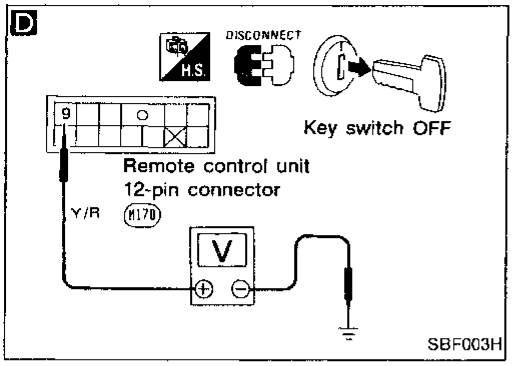
Disconnect 1-pin connector from control unit.
Check continuity between a terminal and filament on the rear window.
Continuity should exist.

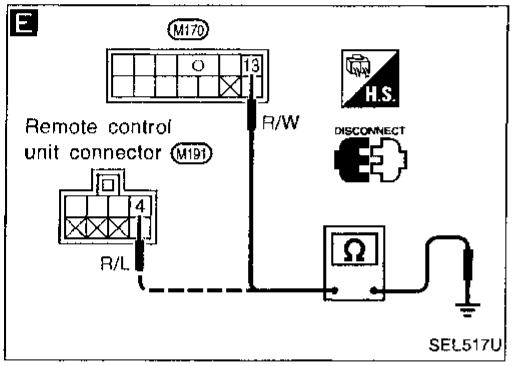
NG → Check antenna circuit. (Refer to REAR WINDOW DEFOGGER "Filament Repair".)

OK ↓

Ⓐ

Trouble Diagnoses (Cont'd)





Ⓐ

D **CHECK IGNITION KEY SWITCH CIRCUIT.**

Disconnect 12-pin connector from control unit.

Check voltage across remote control unit terminal ⑨ and GND.

Terminal	Condition of key switch	Voltage
⑨ - GND	Removed	Approx. 0V
	Inserted	Approx. 12V

Yes → Check key switch.

No ↓

E **CHECK DOOR SWITCH CIRCUIT.**

Turn interior lamp switch to "OFF" and disconnect 12-pin connector from control unit.

Check continuity between terminal ⑬ and GND.

Terminal	Condition of door switch	Continuity
⑬ - GND	At least one door is open	Yes
	All doors are closed	No

No → Check door switch circuit.

Yes ↓

E **CHECK TRUNK ROOM LAMP SWITCH CIRCUIT.**

Disconnect 8-pin connector from control unit.

Check continuity between terminal ④ and GND.

Terminal	Condition of trunk room lamp switch	Continuity
④ - GND	Open	Yes
	Closed	No

NG → Check trunk room lamp switch circuit.

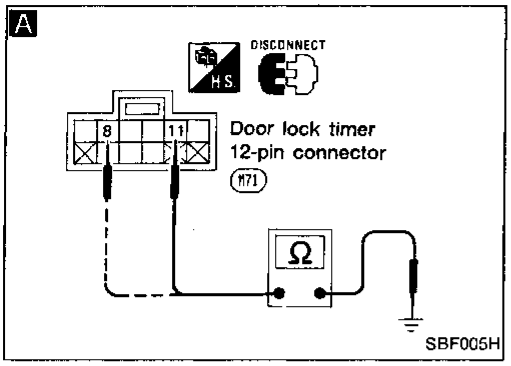
OK ↓

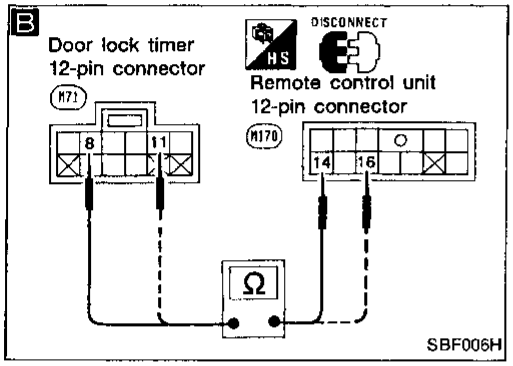
Replace control unit.

Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 3

Door lock and unlock remote control do not function. Everything else does function.





A

CHECK DOOR LOCK AND UNLOCK SIGNAL FOR DOOR LOCK TIMER.

1) Remove key from ignition.
2) Close all doors and trunk lid.
3) Remove door lock timer 12-pin connector.
   Push remote controller buttons and check continuity between terminals ⑪ and GND, ⑧ and GND.

Terminals	Operation	Continuity
⑪ - GND	Lock	Yes
	Unlock	No
⑧ - GND	Unlock	Yes
	Lock	No

OK → Check power door lock system.

NG ↓

Does continuity exist continually?

Yes → Repair harness. (There might be incorrect grounding.)

No ↓

B

Remove remote control unit 12-pin connector.
Check continuity between remote control unit terminals and door lock timer.

Terminals	
Remote control	Door lock timer
⑭	⑧
⑯	⑪

Continuity should exist.

NG → Repair harness.

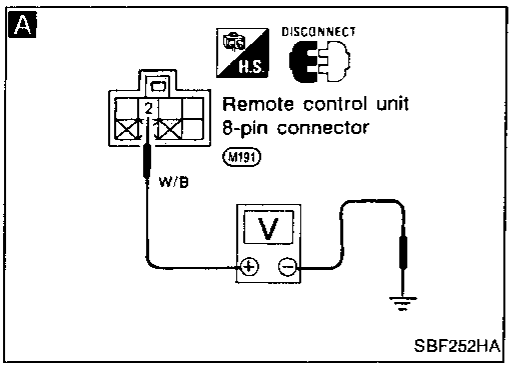
OK ↓

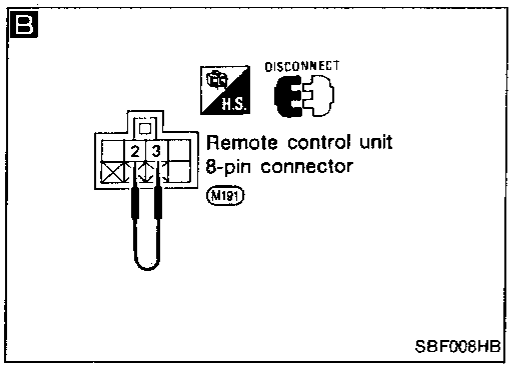
Replace multi remote control unit.

Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 4

Trunk lid open remote control does not function. Everything else does function.





A

CHECK POWER SUPPLY CIRCUIT FOR TRUNK OPEN FUNCTION.
Disconnect 8-pin connector from remote control unit.
Check voltage between terminal ② and ground.
Battery voltage should exist.

NG → Repair harness.

OK ↓

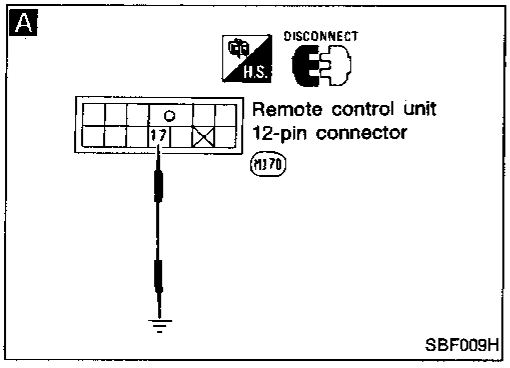
B

Connect remote control unit connector terminal ② to ③.
Does trunk lid opener function?

No → Check trunk lid opener circuit.

Yes ↓

Replace control unit.



DIAGNOSTIC PROCEDURE 5

Interior light does not function. Everything else does function.

A

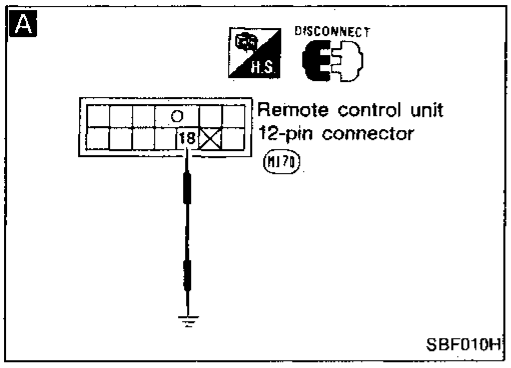
CHECK INTERIOR LIGHT CIRCUIT.
Disconnect remote control unit 12-pin connector.
Turn interior lamp switch to "Door".
Ground remote control unit connector terminal ⑰.
Does interior light function?

No → Check interior light circuit.

Yes ↓

Replace control unit.

Trouble Diagnoses (Cont'd)



DIAGNOSTIC PROCEDURE 6

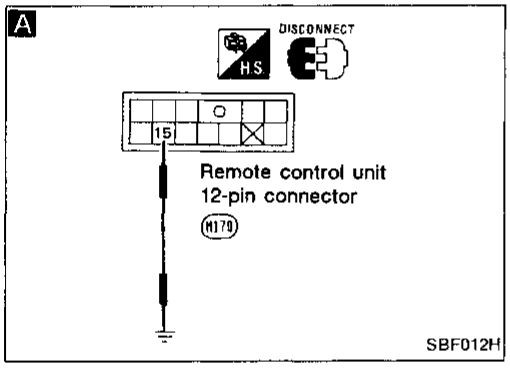
Panic alarm function does not function. Everything else does function.

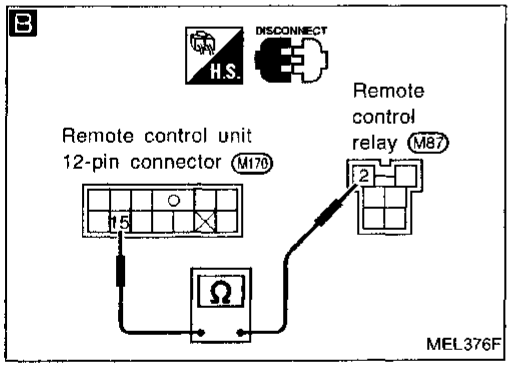
A

CHECK PANIC ALARM CIRCUIT.
Disconnect 12-pin connector from remote control unit.
Ground remote control unit connector terminal ⑱.
Does panic alarm function function?

Yes → Replace control unit.

No → Check theft warning system.
Refer to EL-193.





DIAGNOSTIC PROCEDURE 7

Hazard indicator flashing does not function. Everything else does function.

A

CHECK HAZARD INDICATOR FLASHING CIRCUIT.
Disconnect 12-pin connector from remote control unit.
Ground remote control unit connector terminal ⑮.
Does hazard indicator flashing function function?

Yes → Replace control unit.

No

B

Disconnect remote control relay connector.
Check continuity between terminals ⑮ of remote control unit connector and ② of remote control relay.
Does continuity exist?

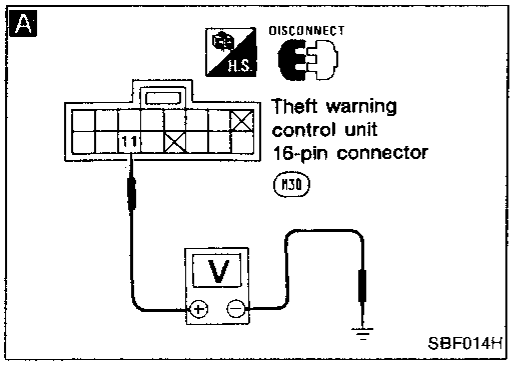
Yes → Check remote control relay and harness.
Refer to "EXTERIOR LAMP".

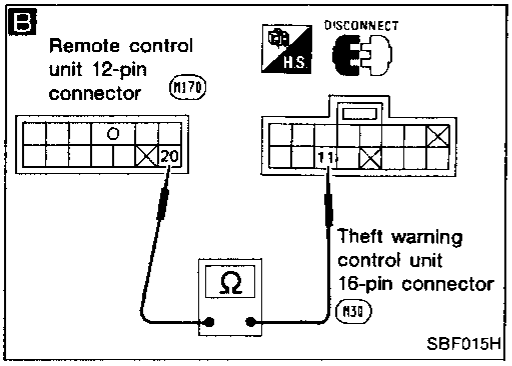
No → Repair harness.

Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 8

Theft warning is actuated when door is unlocked or trunk lid is opened with remote control.





A

CHECK THEFT WARNING CANCEL SIGNAL CIRCUIT.

1) Disconnect theft warning control unit 16-pin connector.
2) Remove key from ignition.
3) Close all doors and trunk lid.
   Check voltage between terminal ⑪ and GND when door unlock remote control function is operated.

Terminal	Operation	Voltage
⑪ - GND	Door is unlocked	12V → 0V → 12V

Does voltmeter gauge move when door is unlocked?

Yes → Check theft warning system.
Refer to EL-193.

No ↓

B

Disconnect 12-pin connector from remote control unit.
Check continuity between terminals ⑳ of remote control unit and ⑪ of theft warning control unit.
Does continuity exist?

Yes → Replace remote control unit.

No ↓

Repair harness.

Replacing Remote Controller or Control Unit

Enter the ID manually when:

- **Remote controller or controller unit needs to be replaced.**
- **An additional remote controller needs to be installed.**

ID Code Entry Procedure

To enter the ID code, follow this procedure.

"Setting mode".

Three steps must be followed to establish the "setting mode".

(1) Open the trunk.
(2) Close and lock all doors.
(3) Insert and remove the key from the ignition more than six times within 10 seconds.

- **At this time, the original ID codes are eliminated.**

ID code entry:

(4) Unlock and lock the driver's door inside lock lever once.
(5) Push lock button on the new remote controller once (for example, if door is locked using the remote controller during this ID code entry enable state, a new ID code can be entered).

- **At this time, the new ID code is entered.**

(6) If you need to enter additional remote controllers, repeat steps (4) and (5) for each controller.
(7) This ID code entry enable state and setting mode remain until any one of the doors is opened.

Note

- **If the same ID code that exists in the memory is input, the entry is canceled.**
- **Entry of maximum four ID codes is allowed and any attempt to enter more will be ignored.**
- **Any ID codes entered after termination of the "setting" mode will not be accepted. Additionally remote control signals will be inhibited when an ID code has not been entered during the "setting" mode.**

System Description

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

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

With the ignition switch in the ON or START position, power is supplied
- to time control unit terminal ⑤
- through 10A fuse (No. 28 , located in the fuse block).

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

Rear Window and Door Mirror Defogger

The time control unit will operate the rear window and door mirror defogger for 15 minutes as long as the rear window defogger switch is in the ON position. For detailed description, refer to "REAR WINDOW DEFOGGER" (EL-147).

Warning Chime

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

For detailed description, refer to "Warning Chime" (EL-82).

Front Wiper and Washer

The time control system controls operation of the intermittent feature for the front wiper. It also controls wiper motor for the washer operation.
For detailed description, refer to "Front Wiper and Washer" (EL-141).

Interior lamp

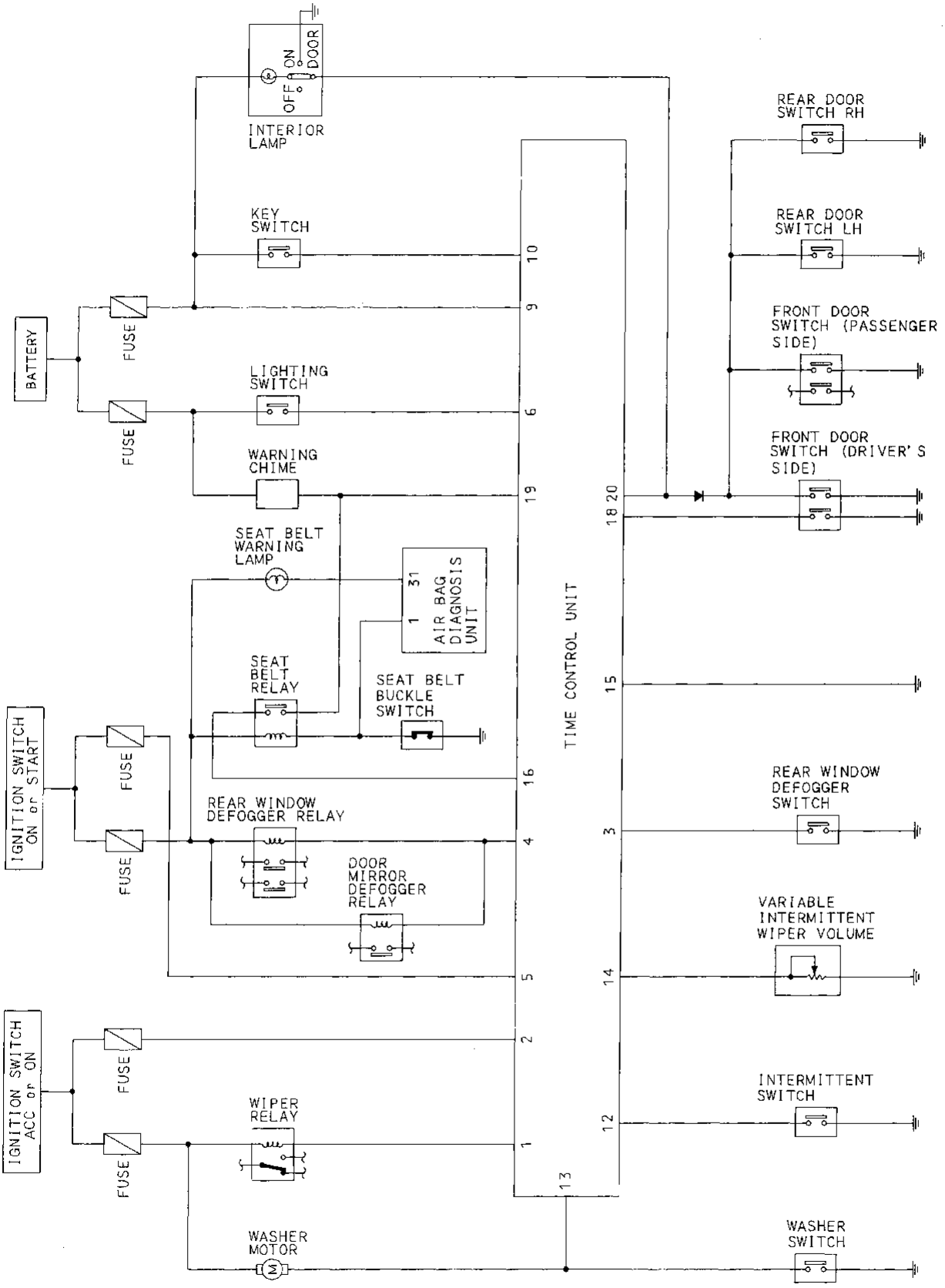
Time control unit starts to dim interior lamp and turns it off within approximately 10 seconds when
- interior lamp switch is set to DOOR and front door switch (Driver side) to CLOSED.

FUNCTION

- Time control unit has the following functions.

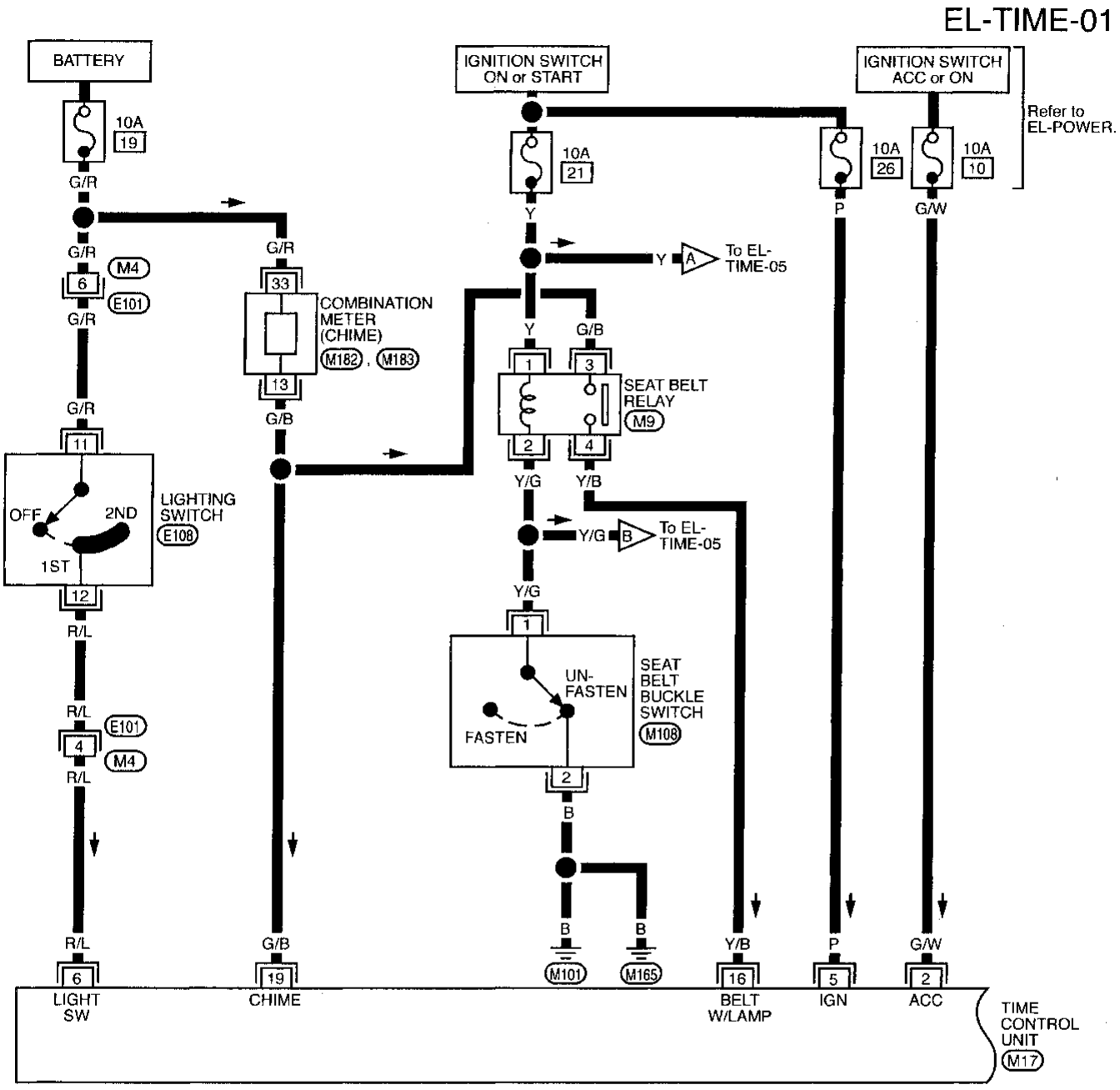
Item	Details of control
Intermittent wiper control	Regulates intermittent time from approximately 1 to 20 seconds depending on the intermittent wiper volume setting.
Washer and wiper combination control	Wiper is operated in conjunction with washer switch.
Light warning chime timer	When driver's door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

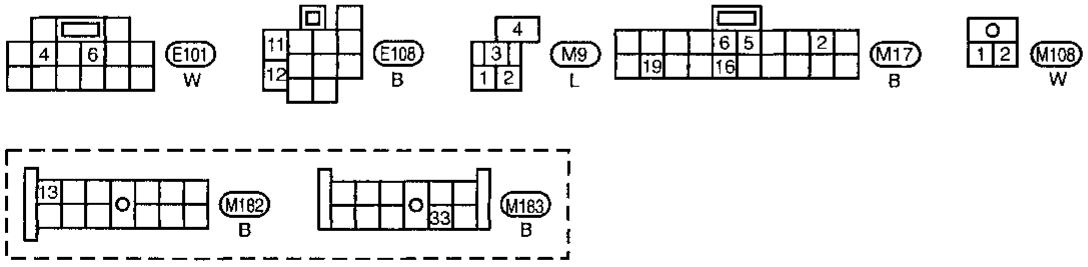
Schematic



TEL108

Wiring Diagram — TIME —

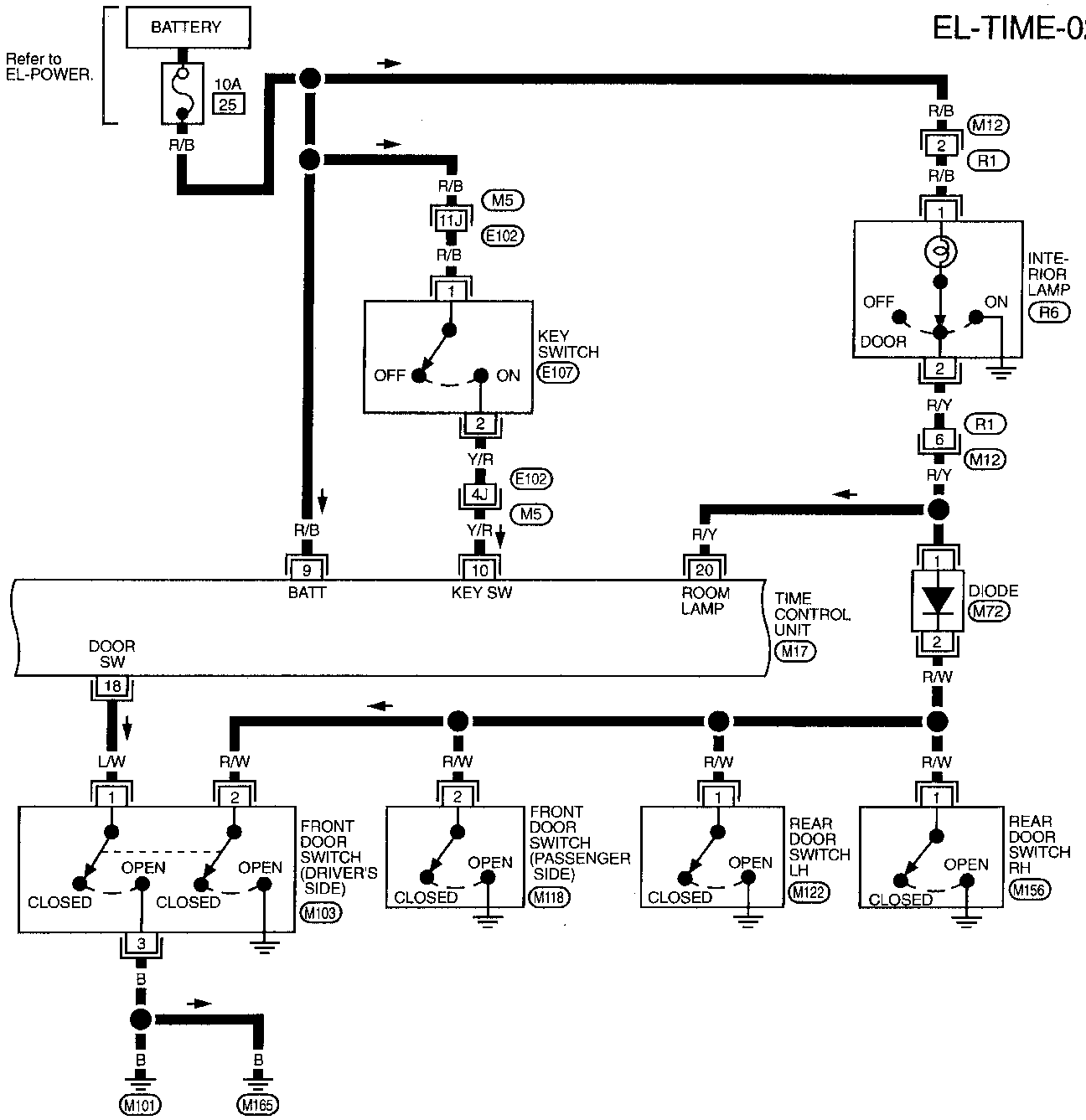


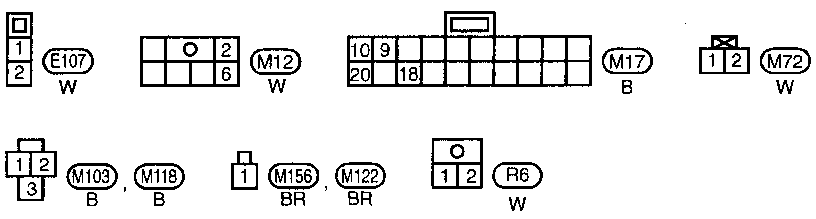


TEL103

Wiring Diagram — TIME — (Cont'd)

EL-TIME-02



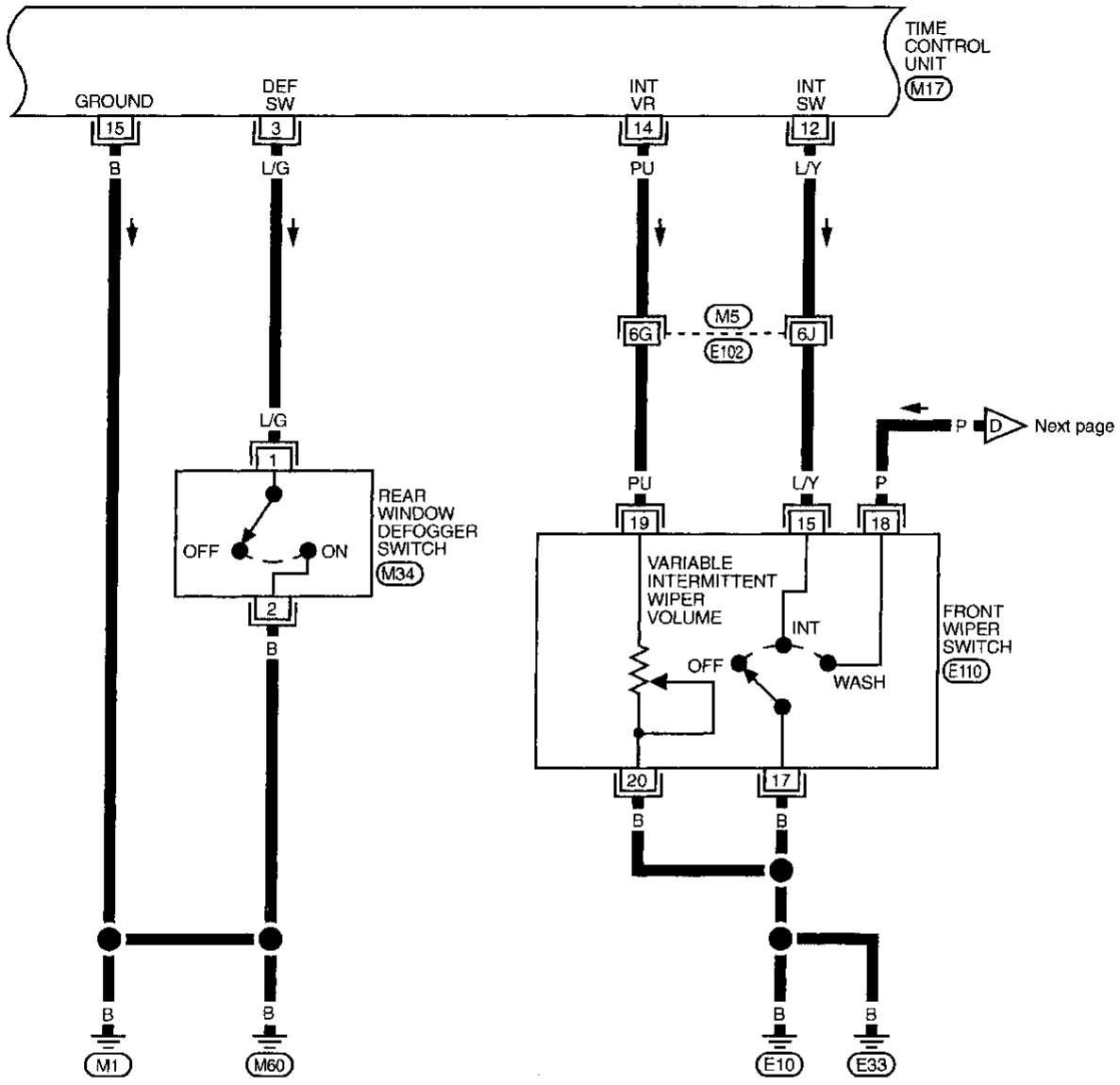


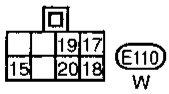
Refer to last page (Foldout page).
E102, M5

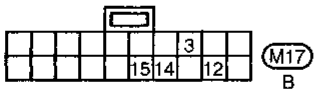
TEL104

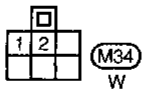
Wiring Diagram — TIME — (Cont'd)

EL-TIME-03







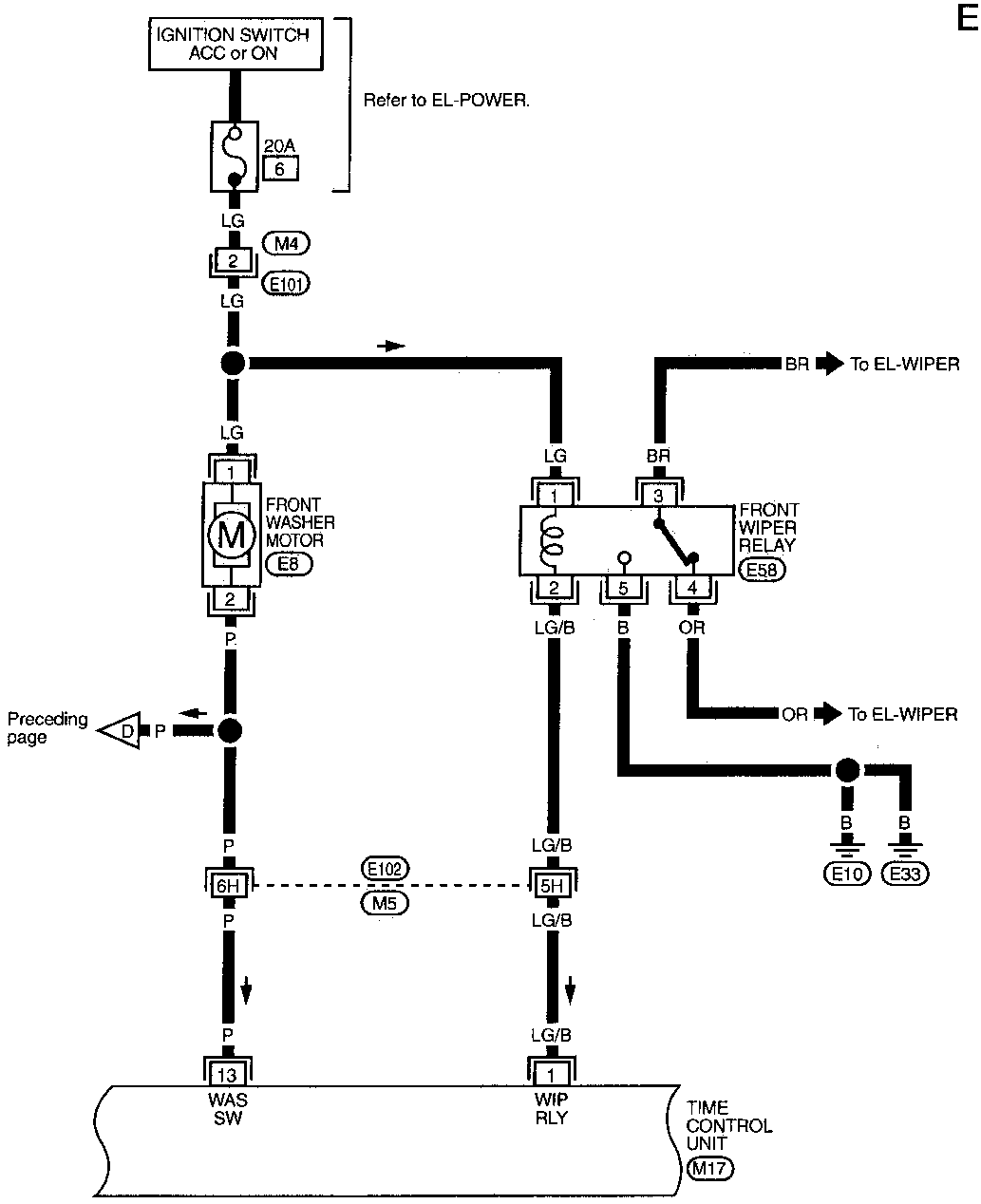


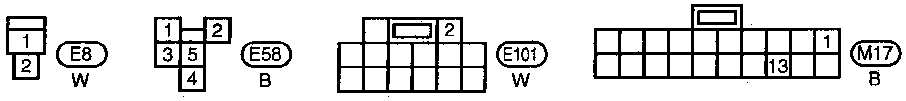
Refer to last page (Foldout page).
E102, M5

TEL105

Wiring Diagram — TIME — (Cont'd)

EL-TIME-04



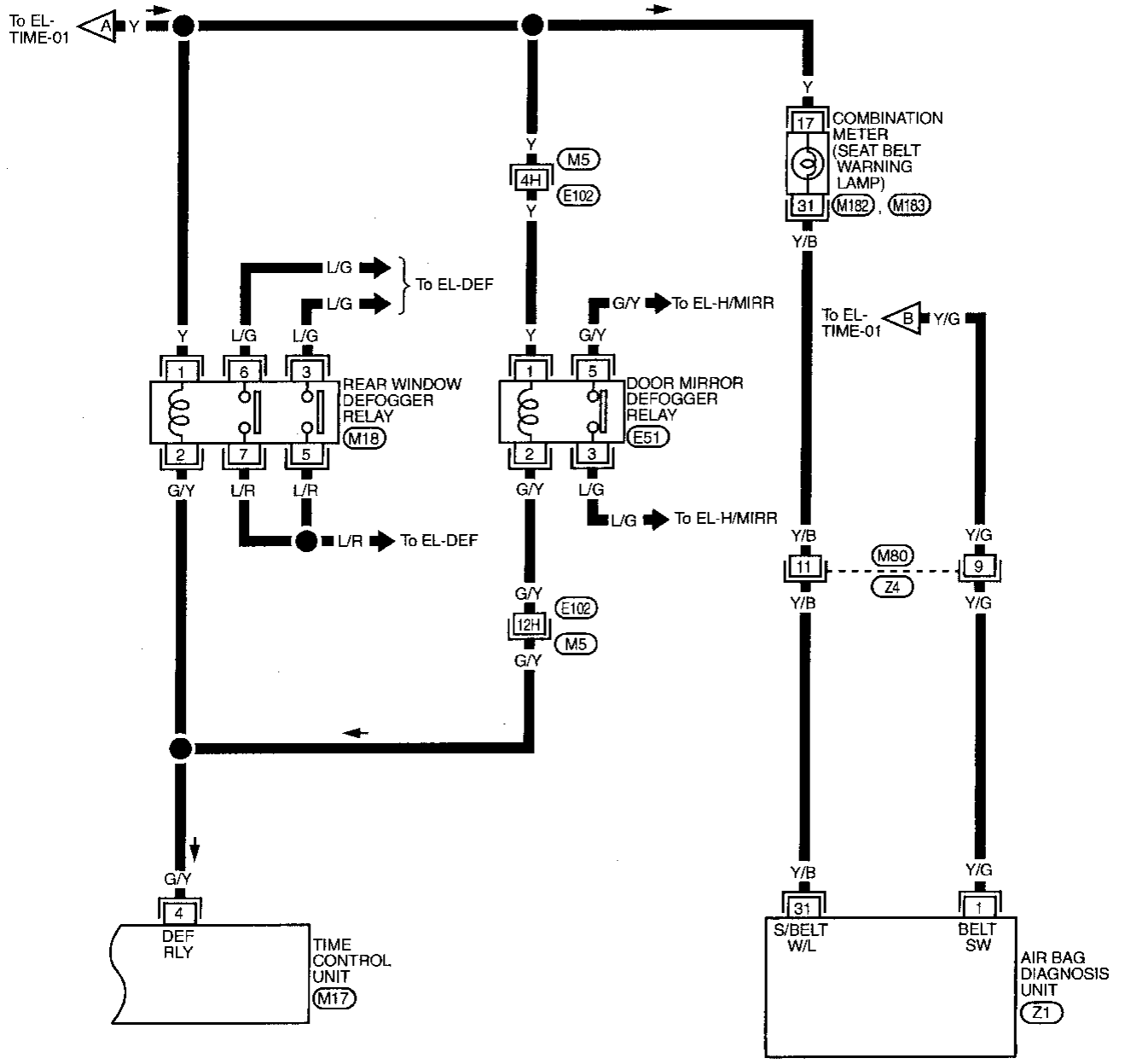


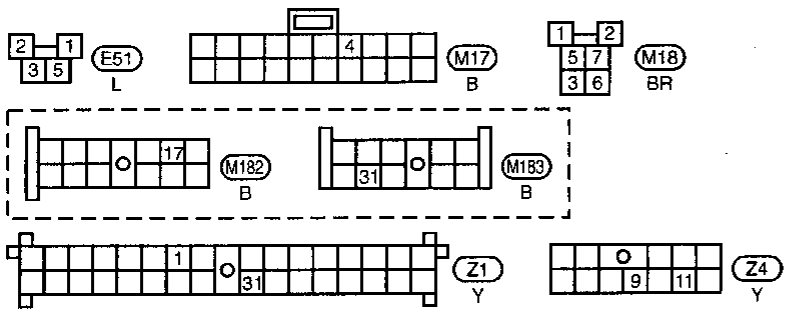
Refer to last page (Foldout page).
E102, M5

TEL106

Wiring Diagram — TIME — (Cont'd)

EL-TIME-05





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

TEL107

Trouble Diagnoses

SYMPTOM CHART

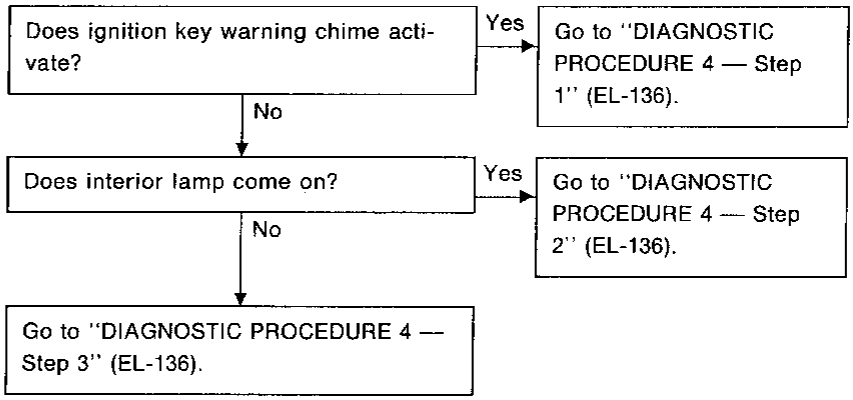
PROCEDURE		Preliminary Check			Main Power Supply and Ground Circuit Check	Diagnostic Procedure							
REFERENCE PAGE		EL-132	EL-132	EL-132	EL-133	EL-134	EL-135	EL-135	EL-136	EL-137	EL-138	EL-139	EL-140
SYMPTOM		Procedure 1	Procedure 2	Procedure 3	Main power supply and Ground circuit	Diagnostic Procedure 1	Diagnostic Procedure 2	Diagnostic Procedure 3	Diagnostic Procedure 4	Diagnostic Procedure 5	Diagnostic Procedure 6	Diagnostic Procedure 7	Diagnostic Procedure 8
Wiper & washer	Intermittent wiper does not operate.				○	○							
	Intermittent time of wiper cannot be adjusted.						○						
	Wiper and washer activate individually but not in combination.							○					
Warning	Light warning chime does not activate.	○			○				○				
	Ignition key warning chime does not activate.		○		○					○			
	Seat belt warning chime does not activate.			○	○						○		
Rear defogger	Rear defogger does not activate, or go off after activating.				○							○	
Illumination	Interior lamp does not fade out after driver's door is closed.				○								○

Trouble Diagnoses (Cont'd)

PRELIMINARY CHECK

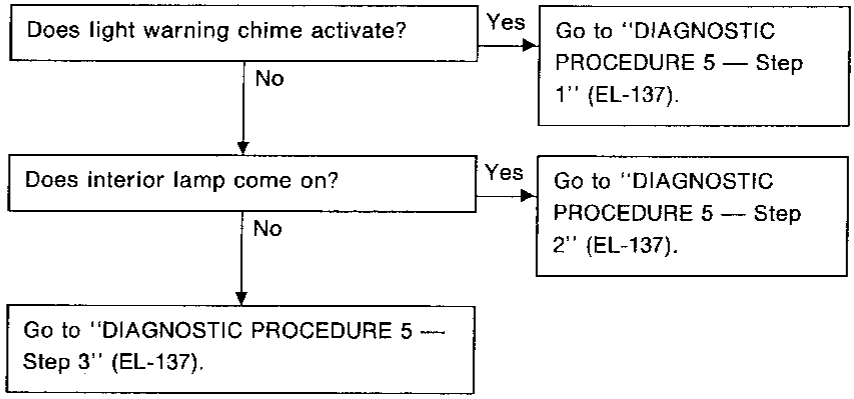
Preliminary check 1

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



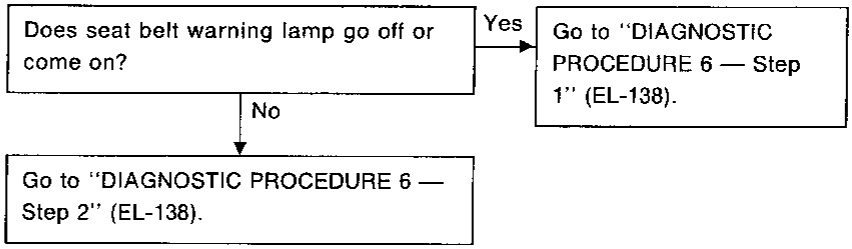
Preliminary check 2

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

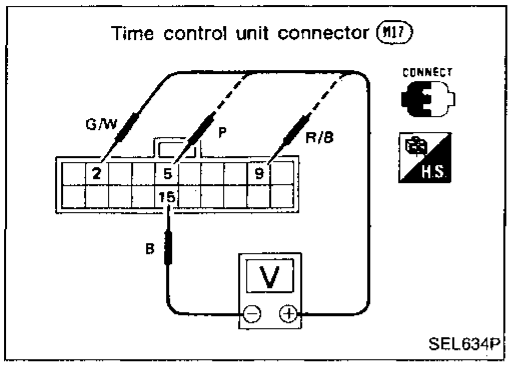


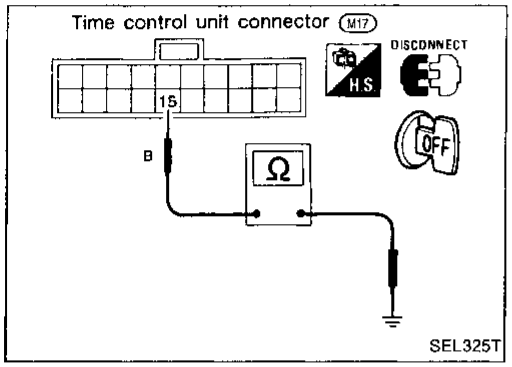
Preliminary check 3

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



Trouble Diagnoses (Cont'd)





MAIN POWER SUPPLY AND GROUND CIRCUIT CHECK

Main power supply

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

Ground circuit

Terminals	Continuity
⑮ - Ground	Yes

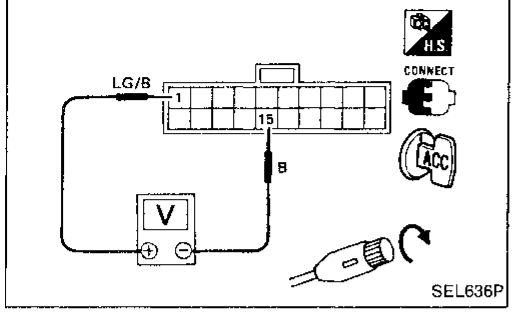
Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 1

SYMPTOM: Intermittent wiper does not operate.

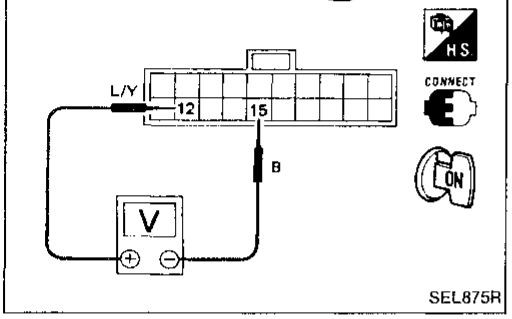
A

Time control unit connector (M17)



B

Time control unit connector (M17)



A

WIPER RELAY OUTPUT SIGNAL CHECK

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

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

OK → Check wiper relay. Refer to "WIPER AND WASHER" (EL-141).

OK → Check wiper relay circuit.

NG → Replace wiper relay.

NG

B

INTERMITTENT SWITCH INPUT SIGNAL CHECK

Measure voltage between control unit harness terminals ⑫ and ⑮.

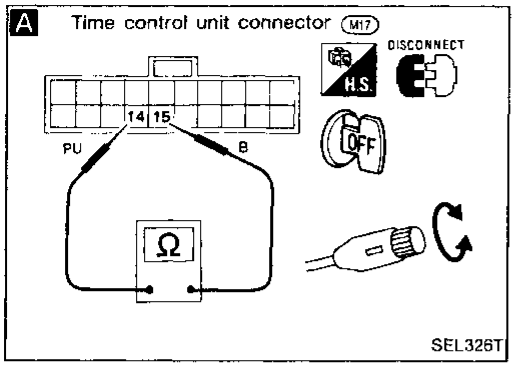
Condition of wiper switch	Voltage [V]
OFF	Approx. 12
INT	0

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

OK

Replace control unit.

Trouble Diagnoses (Cont'd)



DIAGNOSTIC PROCEDURE 2

SYMPTOM: Intermittent time of wiper cannot be adjusted.

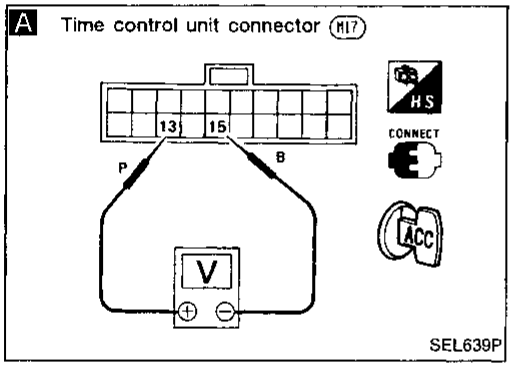
A

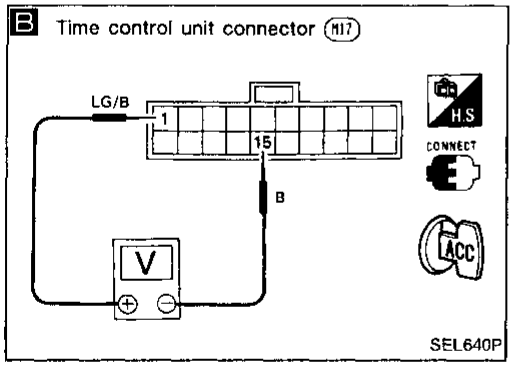
INTERMITTENT WIPER VOLUME INPUT SIGNAL CHECK
Measure resistance between control unit harness terminals ⑭ and ⑮ while turning intermittent wiper volume.

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

OK → Replace control unit.

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





DIAGNOSTIC PROCEDURE 3

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

A

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

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

NG → Check harness continuity between TCU and washer switch.

OK ↓

B

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

NG → Replace control unit.

OK ↓

Replace wiper relay.

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

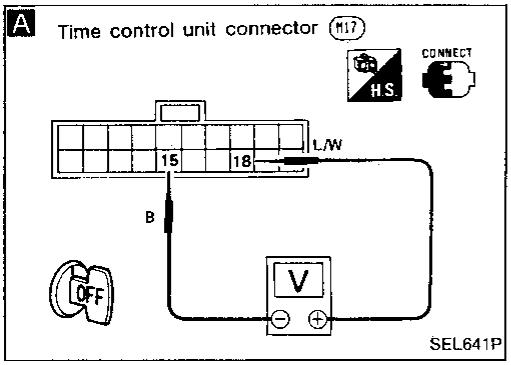
Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 4

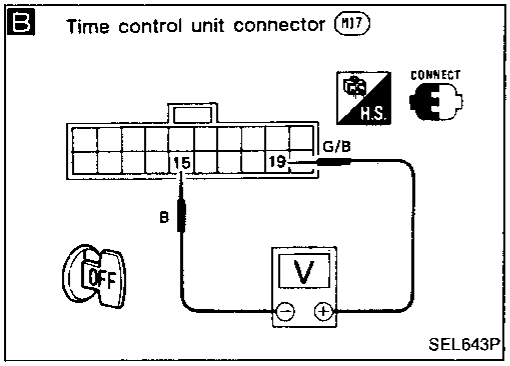
SYMPTOM: Light warning chime does not activate.

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

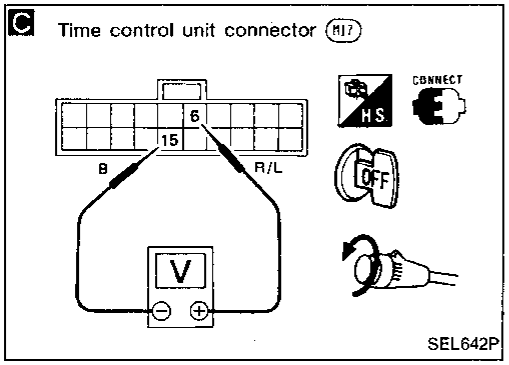
A Time control unit connector (M17)



B Time control unit connector (M17)



C Time control unit connector (M17)



A

Step 3

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

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

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

OK ↓

B

Step 2

CHIME OUTPUT SIGNAL CHECK
Open driver's door.
Measure voltage between control unit harness terminals ⑲ and ⑮.

Condition	Voltage [V]
Light switch ON	Approx. 12
Light switch OFF	Pointer deflects intermittently.

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

NG ↓

C

Step 1

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

Condition of light switch	Voltage [V]
ON	Approx. 12
OFF	Pointer deflects intermittently.

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

OK ↓

Replace control unit.

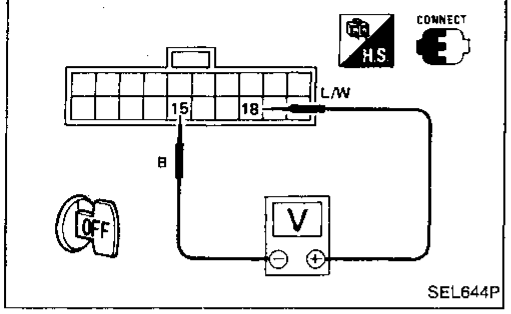
Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 5

SYMPTOM: Ignition key warning chime does not activate.

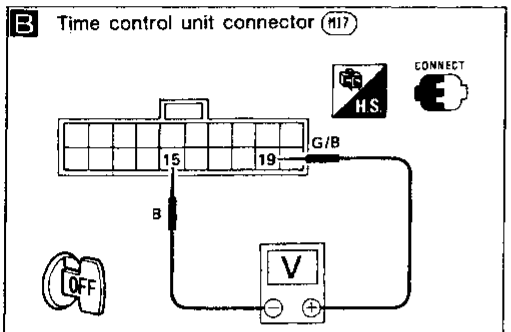
- Perform "PRELIMINARY CHECK — Procedure 2" before referring to the following flow chart.

A Time control unit connector (M17)



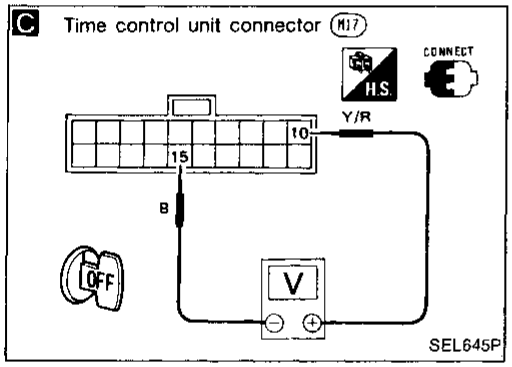
SEL644P

B Time control unit connector (M17)



SEL646P

C Time control unit connector (M17)



SEL645P

A

Step 3

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

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

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

OK ↓

B

Step 2

CHIME OUTPUT SIGNAL CHECK
Open driver's door.
Measure voltage between control unit harness terminals ⑲ and ⑮.

Condition of key switch	Voltage [V]
Inserted	Approx. 12
Removed	Pointer deflects intermittently

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

NG ↓

C

Step 1

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

Condition of key switch	Voltage [V]
Inserted	Approx. 12
Removed	0

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

OK ↓

Replace control unit.

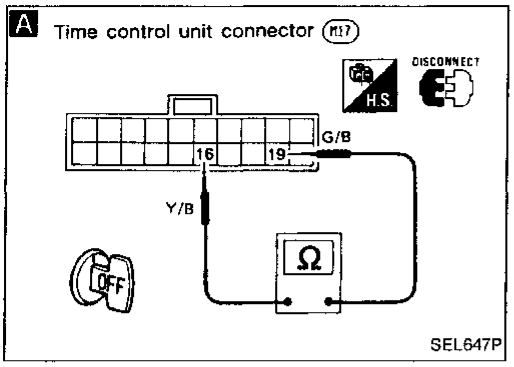
Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 6

SYMPTOM: Seat belt warning chime does not activate.

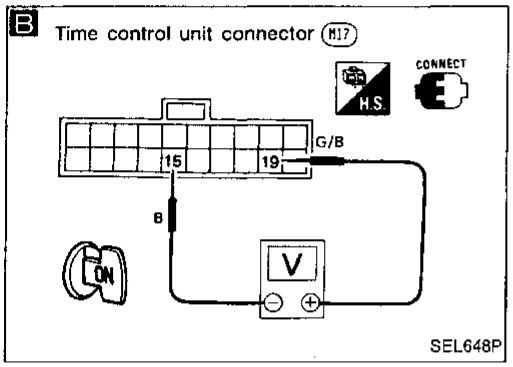
- Perform "PRELIMINARY CHECK — Procedure 3" before referring to the following flow chart.

A Time control unit connector (M17)



SEL647P

B Time control unit connector (M17)



SEL648P

A

Step 2

SEAT BELT SWITCH INPUT SIGNAL CHECK

Check continuity between control unit harness terminals (16) and (19).

Condition	Continuity
Unfastened	Yes
Fastened	No

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

OK ↓

B

Step 1

CHIME OUTPUT SIGNAL CHECK

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

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

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

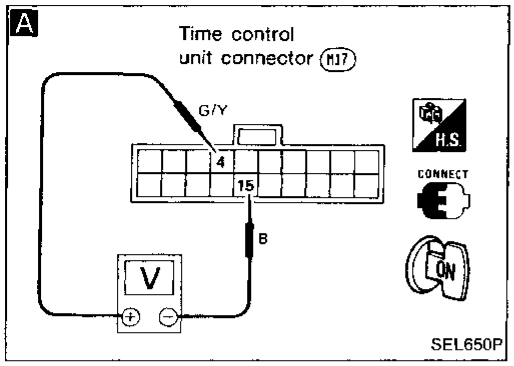
NG ↓

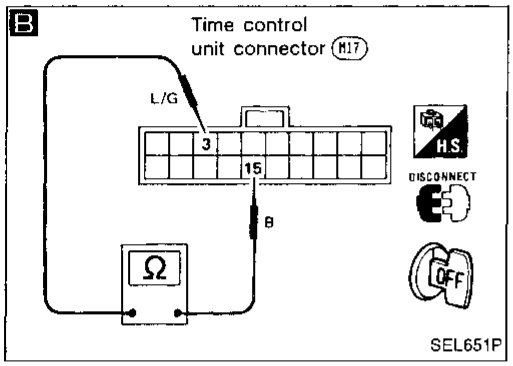
Replace control unit.

Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 7

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





A

REAR WINDOW DEFOGGER OUTPUT SIGNAL CHECK

Measure voltage between control unit harness terminals ④ and ⑮.

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

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

NG ↓

B

REAR WINDOW DEFOGGER SWITCH INPUT SIGNAL CHECK

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

Condition of defogger switch	Continuity
OFF	No
ON	Yes

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

OK ↓

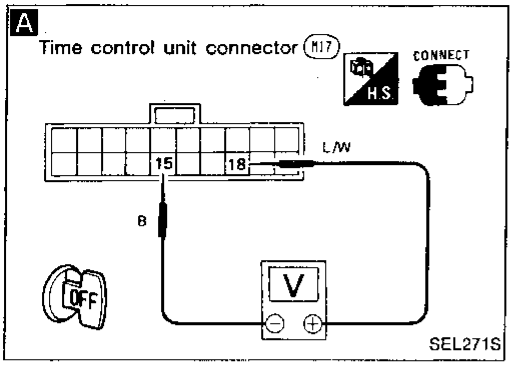
Replace control unit.

Trouble Diagnoses (Cont'd)

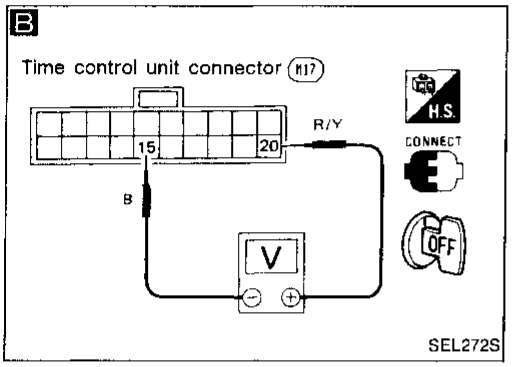
DIAGNOSTIC PROCEDURE 8

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

A



B



A

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

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

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

OK ↓

B

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

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

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

NG → Replace TCU.

Front Wiper and Washer/System Description

WIPER OPERATION

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

- LO speed
- HI speed
- INT (Intermittent)

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

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

Low and high speed wiper operation

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

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

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

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

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

Auto stop operation

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

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

Ground is also supplied

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

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

Intermittent operation

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

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

The desired interval time is input

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

Based on these two inputs, an intermittent ground is supplied

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

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

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

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

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

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

WASHER OPERATION

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

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

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

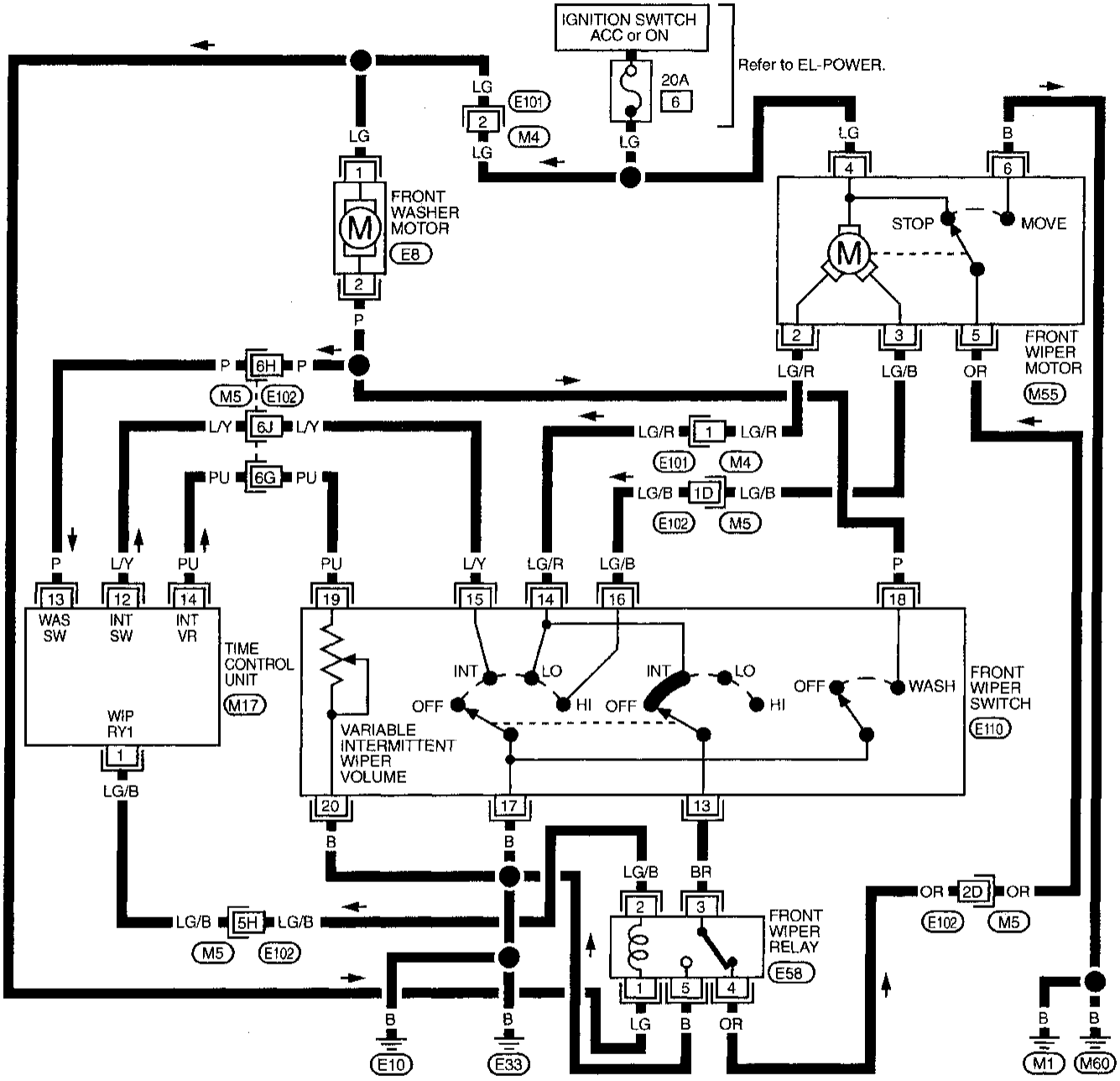
- to washer motor terminal ②, and
- to time control unit terminal ⑬
- from terminal ⑱ of the wiper switch
- through terminal ⑰ of the wiper switch, and
- through body grounds E10 and E33.

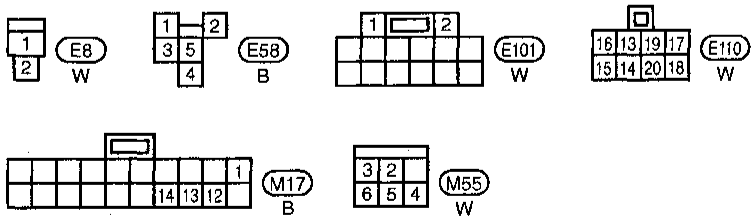
With power and ground supplied, the washer motor operates.

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

Front Wiper and Washer/Wiring Diagram
— WIPER —

EL-WIPER-01





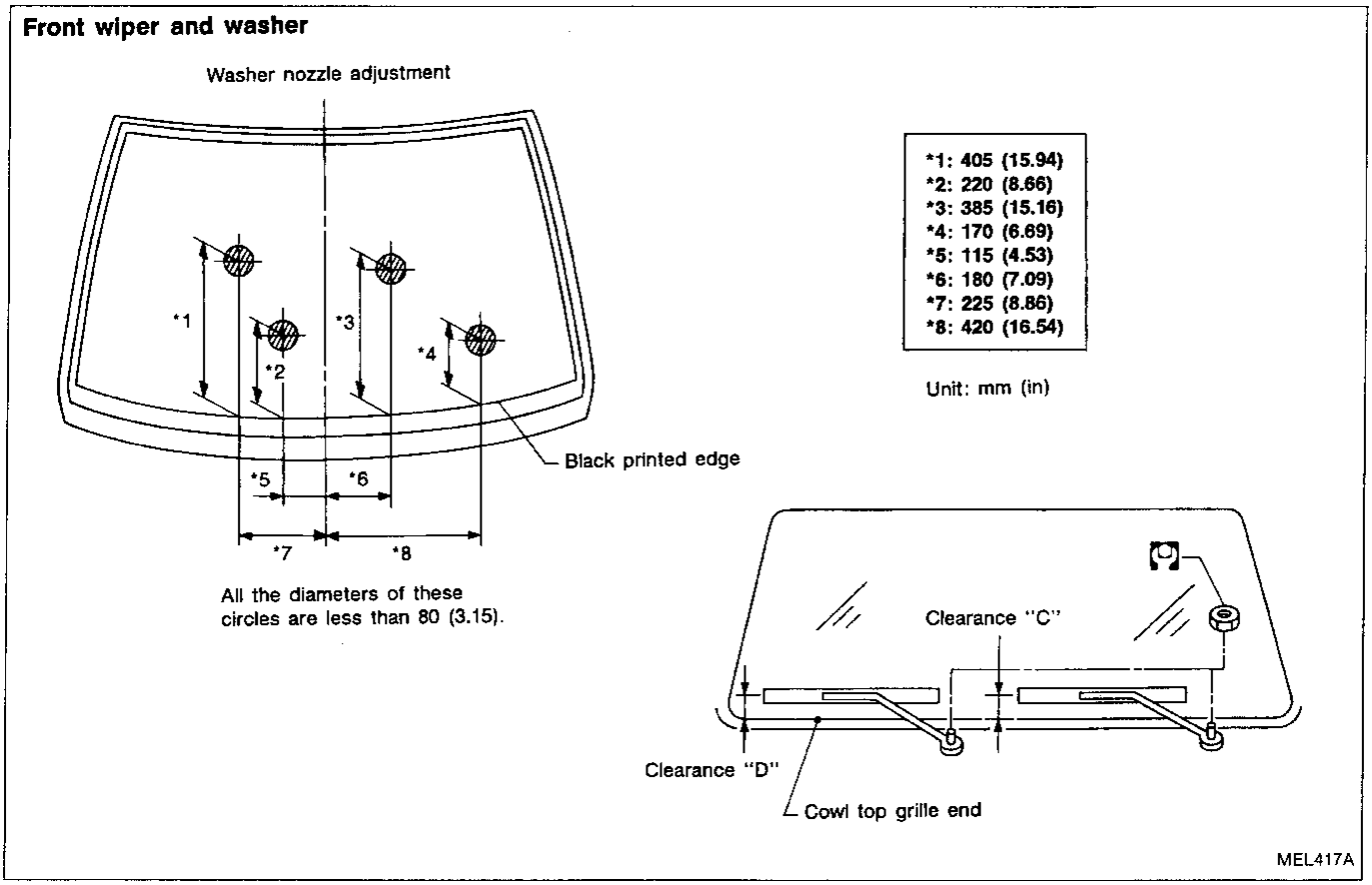
Refer to last page (Foldout page).
E102 · M5

Installation

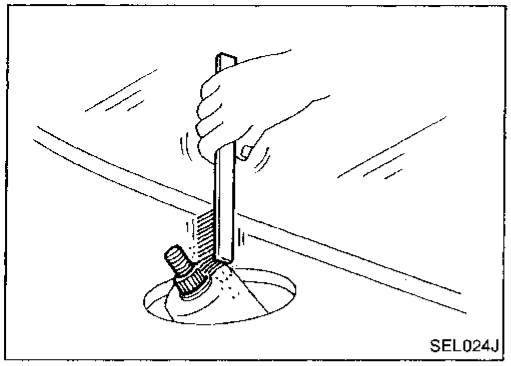
1. Turn on wiper switch to operate wiper motor and then turn it "OFF" (Auto Stop).
2. Lift the blade up and then set it down onto glass surface. Set the blade center to clearance "C" or "D" immediately before tightening nut.
3. Eject washer fluid. Turn on wiper switch to operate wiper motor and then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

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

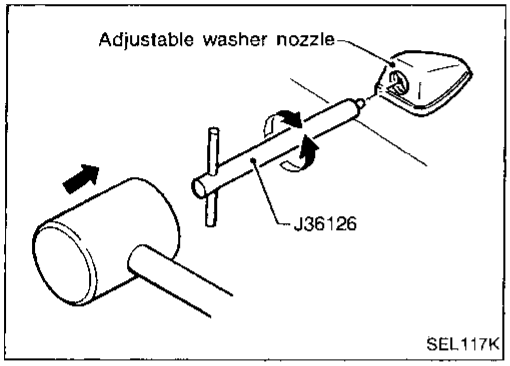
Front wiper and washer



Installation (Cont'd)



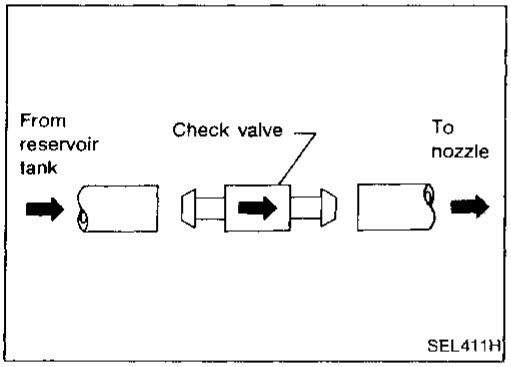
- **Before reinstalling wiper arm, clean up the pivot area as illustrated. This will reduce possibility of wiper arm looseness.**



Washer Nozzle Adjustment

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

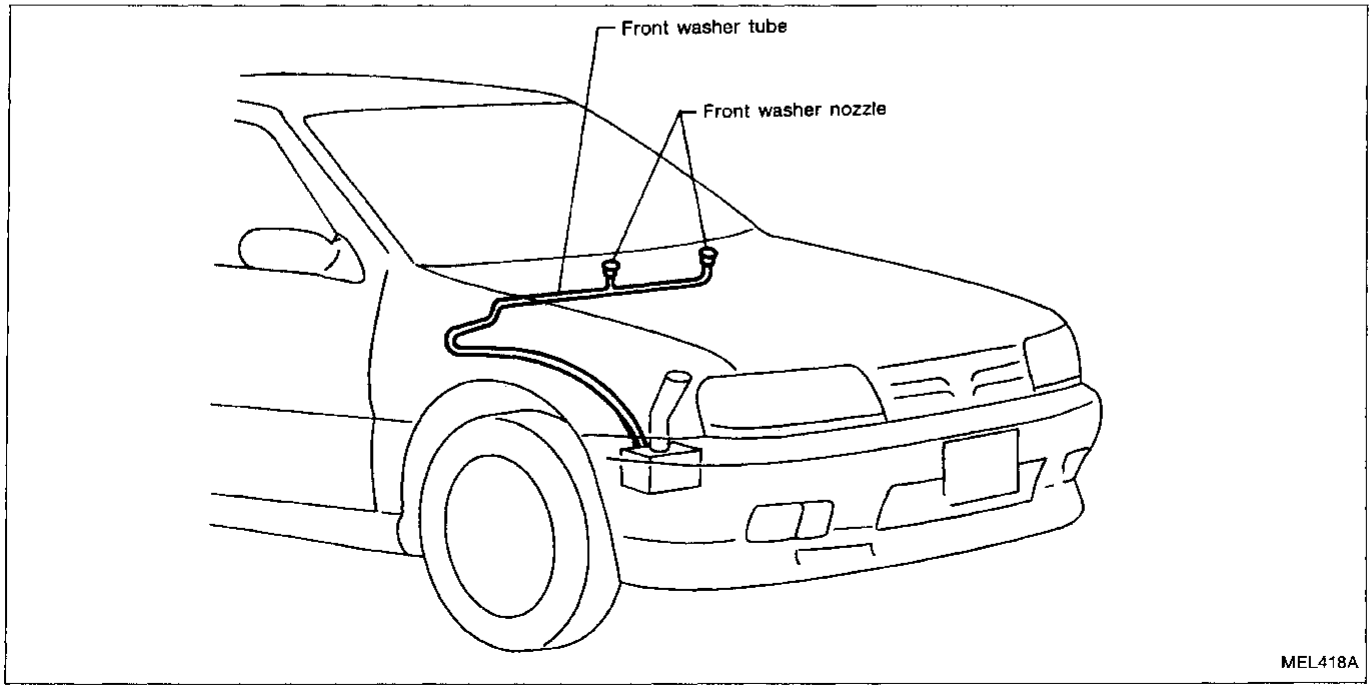
Before attempting to turn the nozzle, gently tap the end of the tool to free the nozzle. This will prevent "rounding out" the small female square in the center of the nozzle.



Check Valve

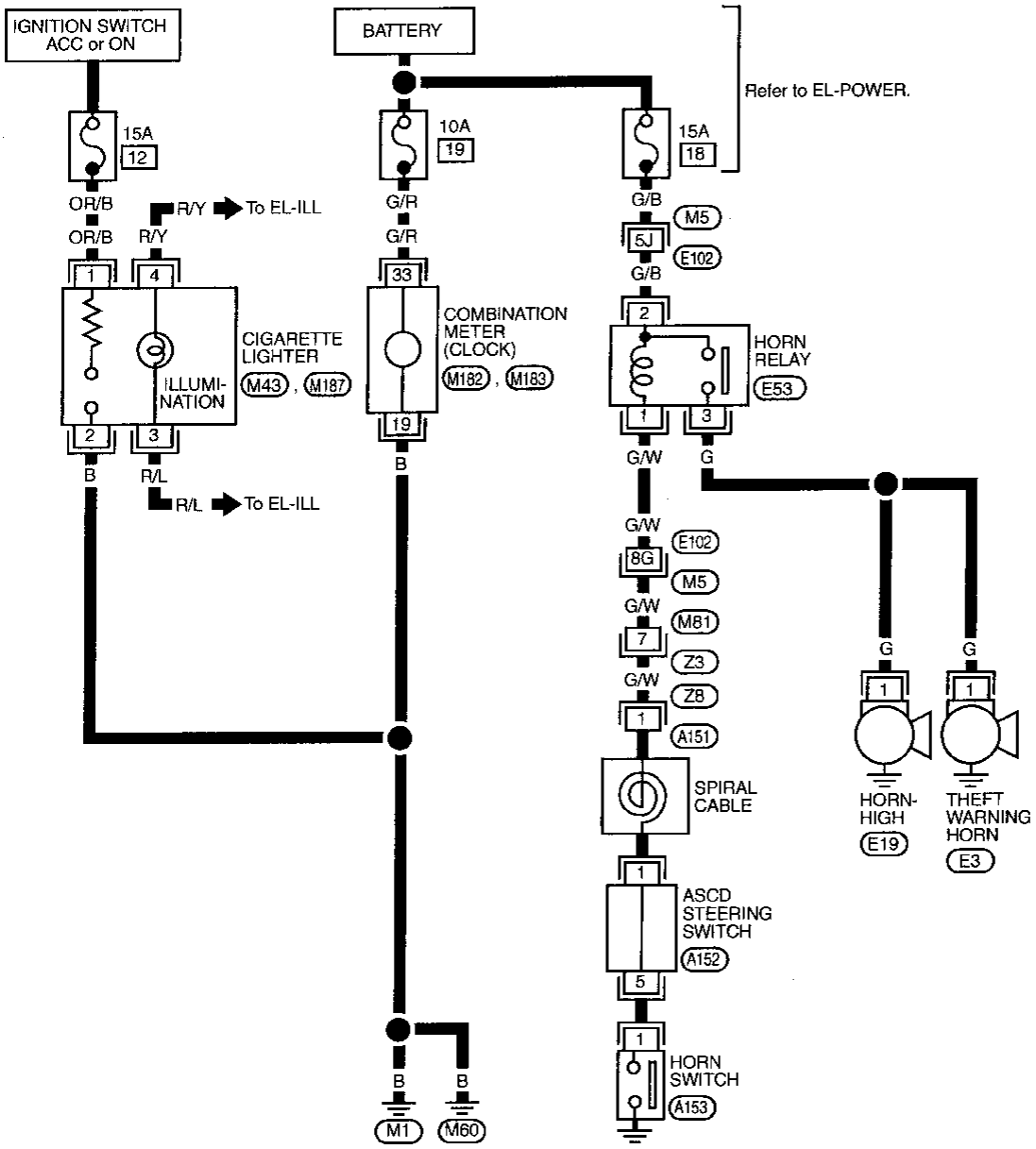
- A check valve is provided in the washer fluid line. Be careful not to connect check valve to washer tube in the wrong direction.

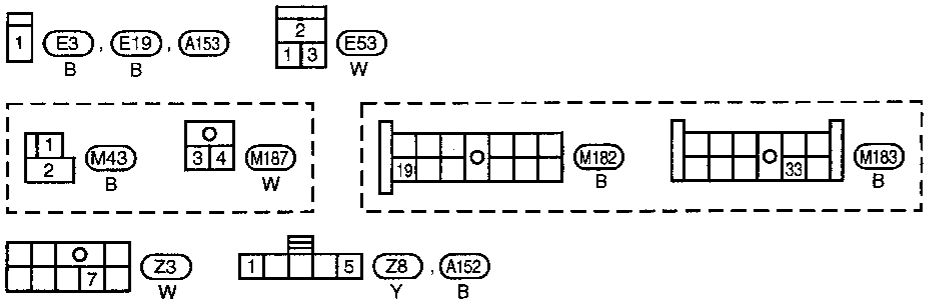
Washer Tube Layout



Wiring Diagram — HORN —

EL-HORN-01





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

TEL110

System Description

The rear window defogger system is controlled by the time control unit. The rear window defogger operates only for approximately 15 minutes.
Power is supplied at all times
- to rear window defogger relay terminal ③
- through 20A fuse (No. 1, located in the fuse block) and
- to rear window defogger relay terminal ⑥
- through 20A fuse (No. 2, located in the fuse block).

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

Ground is supplied to terminal ② of the rear window defogger switch through body grounds (M1) and (M60).
When the rear window defogger switch is activated, ground is supplied
- through terminal ① of the rear window defogger switch
- to time control unit terminal ③.

Terminal ④ of the time control unit then supplies ground to the rear window defogger relay terminal ②.
With power and ground supplied, the rear window defogger relay is energized.
Power is supplied
- through terminals ⑤ and ⑦ of the rear window defogger relay
- to condenser terminal ①
- through terminal ② of the condenser
- to the rear window defogger.

The rear window defogger has an independent ground.
With power and ground supplied, the rear window defogger filaments heat and defog the rear window.
When the system is activated, the rear window defogger indicator on the rear window defogger switch illuminates.
Power is supplied
- to terminal ③ of the rear window defogger switch
- from terminal ⑤ and ⑦ of the rear window defogger relay.

Terminal ④ of the rear window defogger switch is grounded through body grounds (M1) and (M60).

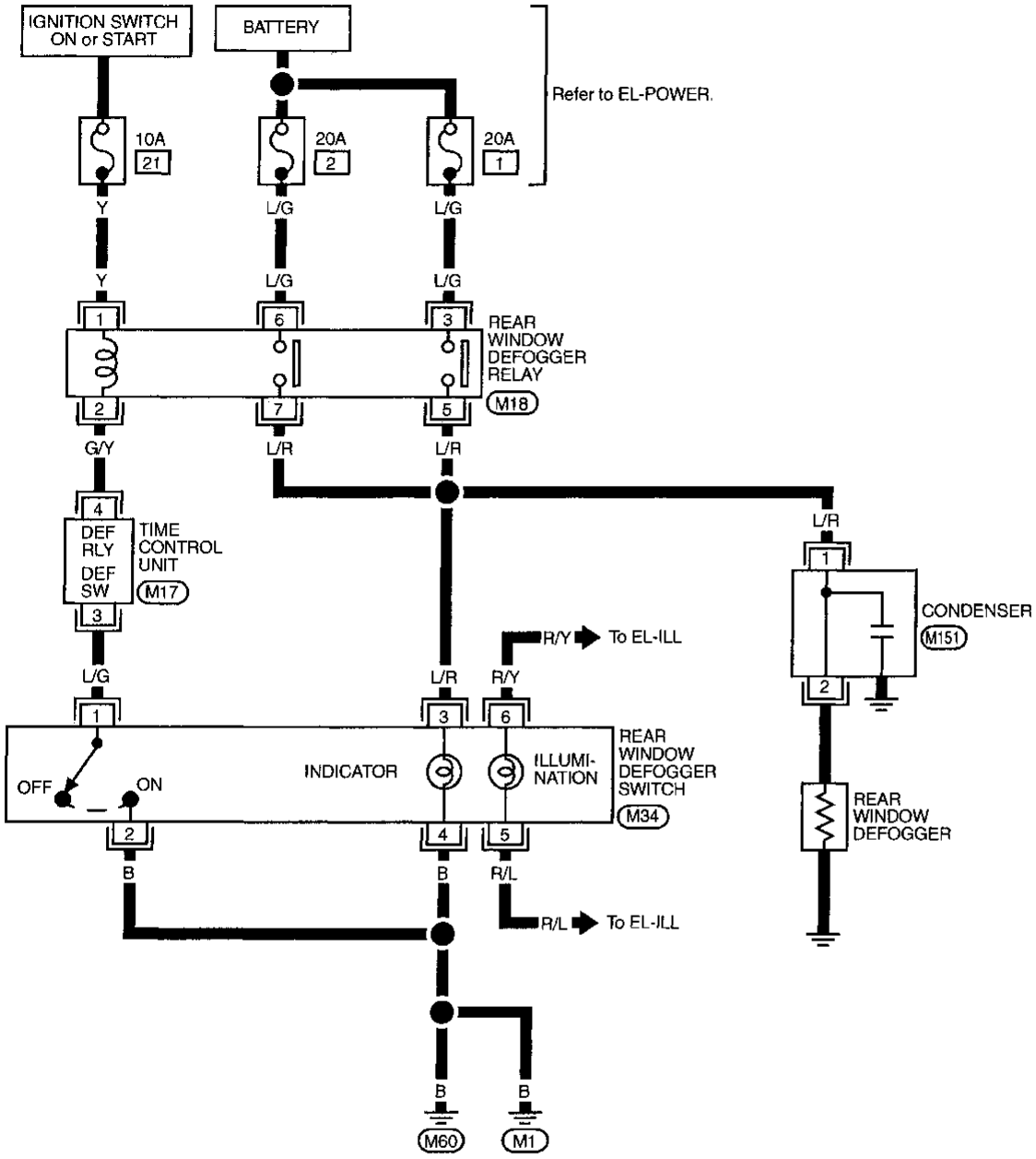
With door mirror defogger models

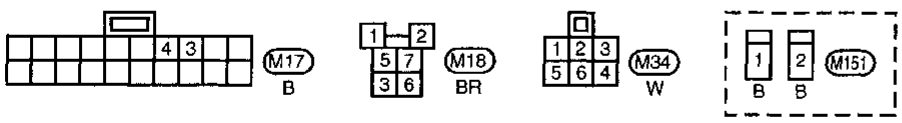
Door mirror defogger is connected parallel to rear window defogger.
With rear window defogger switch ON, time control unit activates rear window defogger relay. Ground is supplied
- to door mirror defogger relay terminal ②
- through time control unit terminal ④.

Then door mirror defogger relay is energized, power is supplied to door mirror defogger.
For wiring diagram, refer to "DOOR MIRROR WITH HEATED MIRROR" (EL-166).

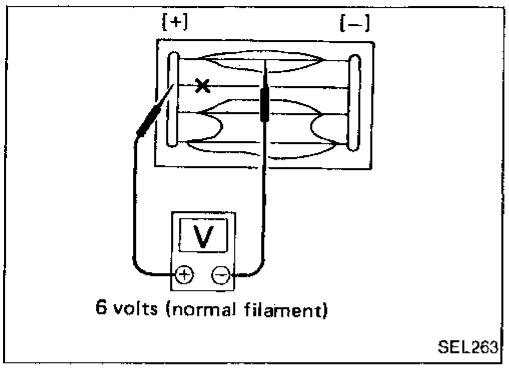
Wiring Diagram — DEF —

EL-DEF-01



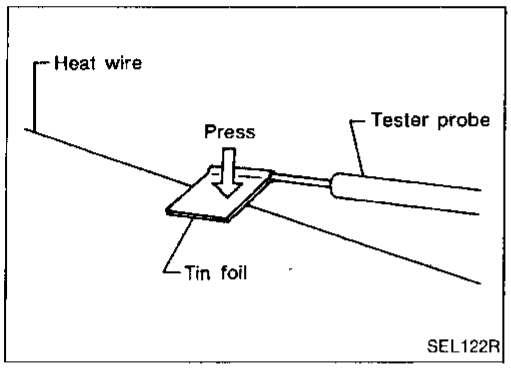


TEL111

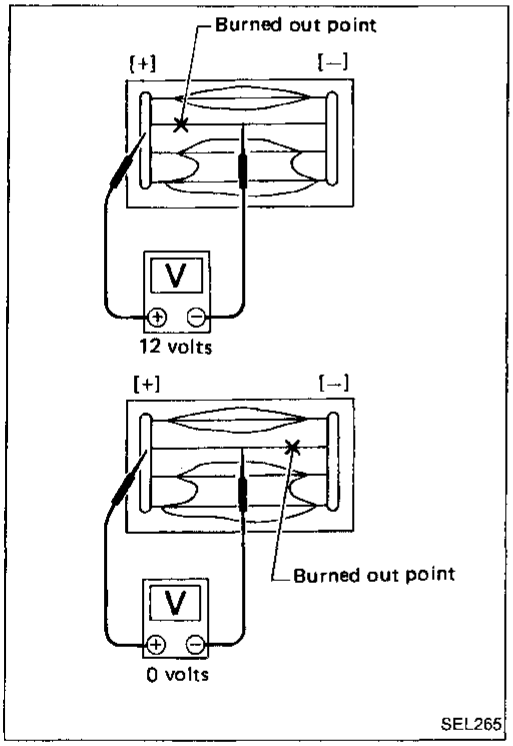


Filament Check

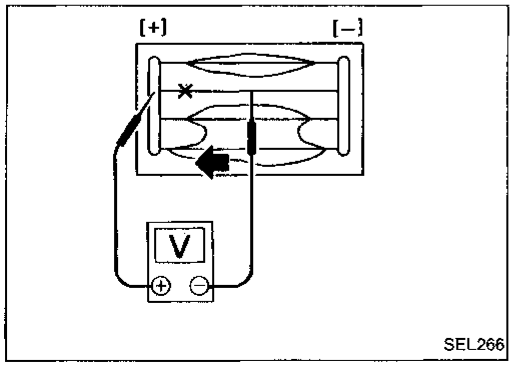
1. Attach probe circuit tester (in volt range) to middle portion of each filament.



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



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

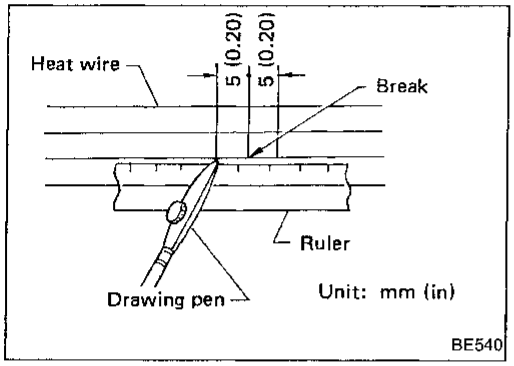


3. To locate a burned out point, move probe to left and right along filament. Tester needle will swing abruptly when probe passes the point.

Filament Repair

REPAIR EQUIPMENT

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

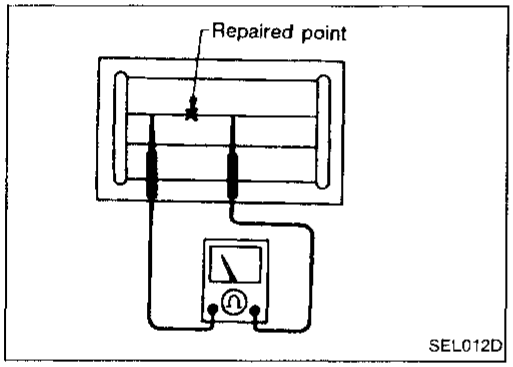


REPAIRING PROCEDURE

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

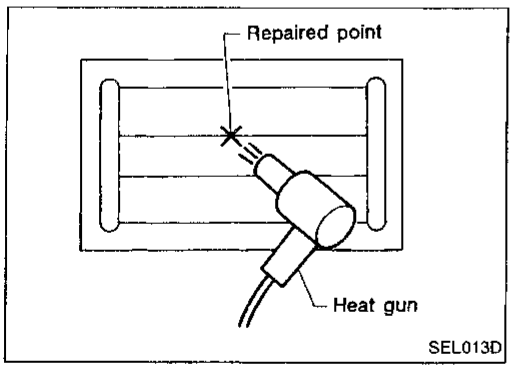
Shake silver composition container before use.

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



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

Do not touch repaired area while test is being conducted.



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

Audio/System Description

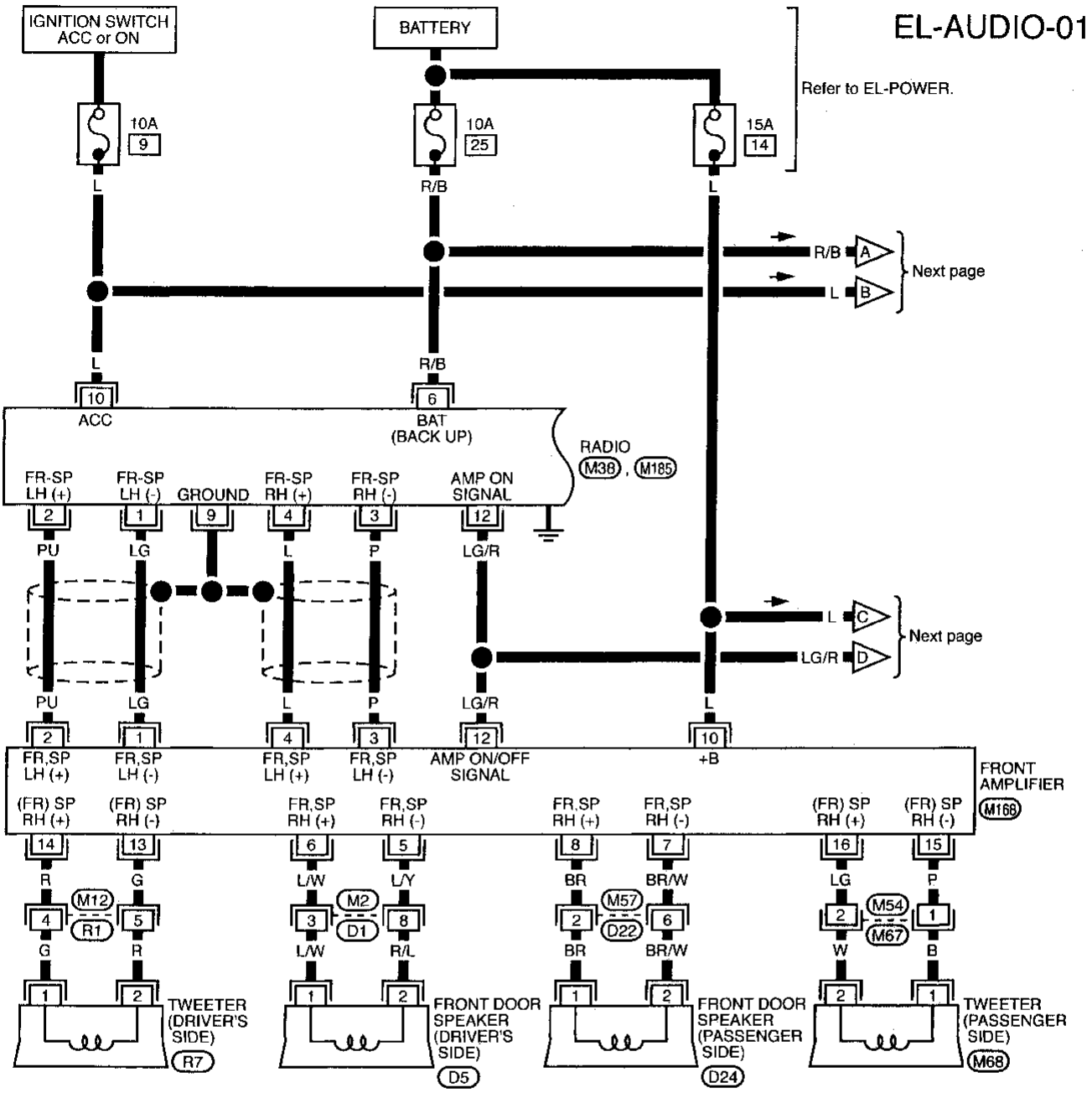
Refer to Owner's Manual for audio system operating instructions.

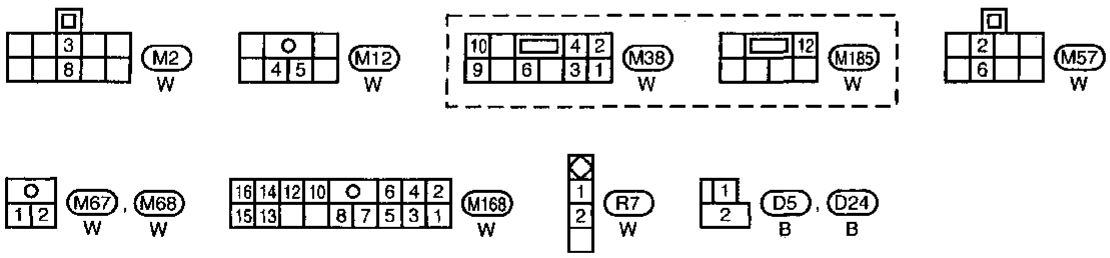
Power is supplied at all times
- through 10A fuse (No. 25 , located in the fuse block)
- to radio terminal ⑥
- through 15A fuse (No. 14 , located in the fuse block)
- to front amplifier terminal ⑩ and
- to rear amplifier terminal ⑩ .

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

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

Audio/Wiring Diagram — AUDIO —

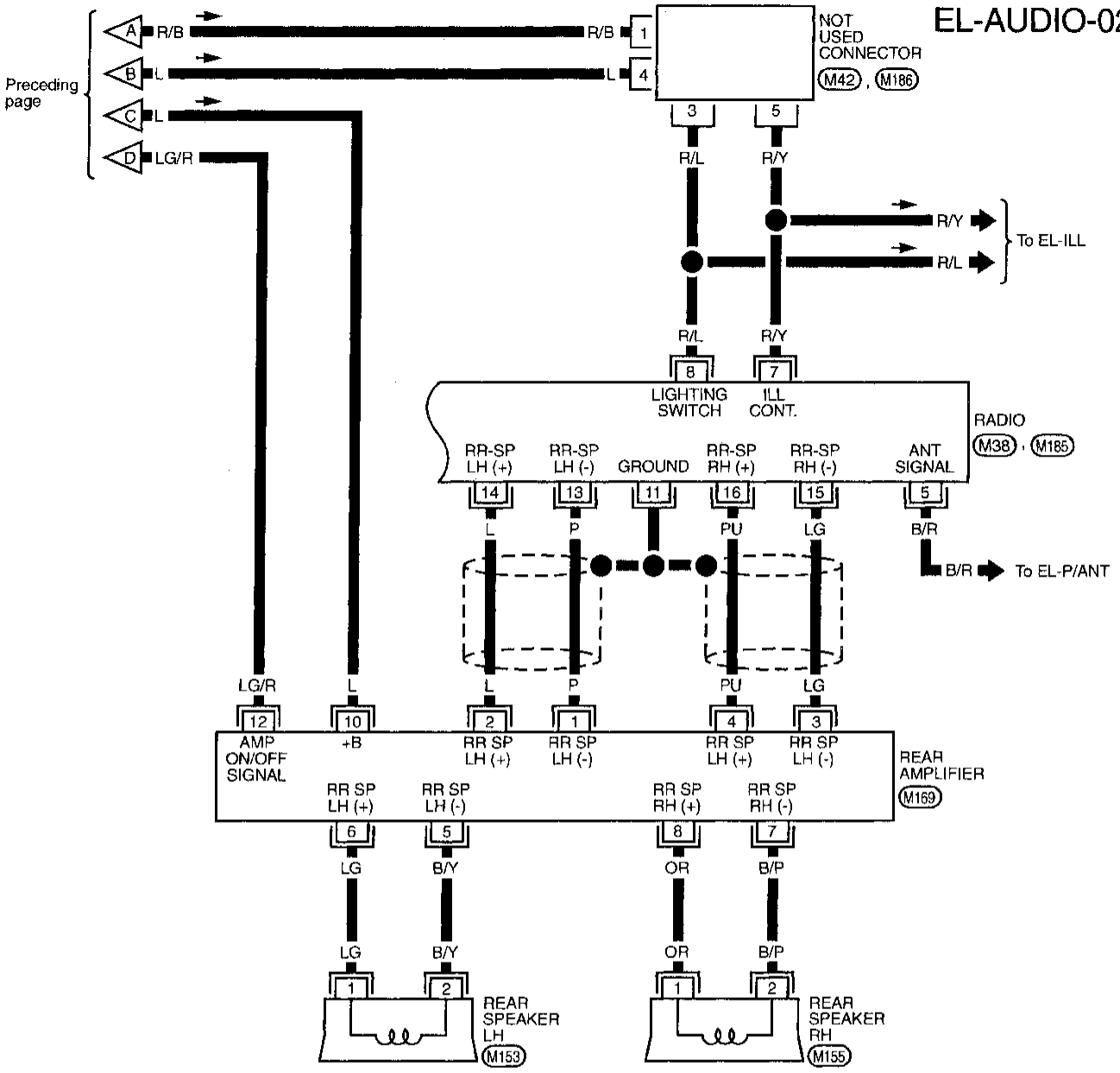


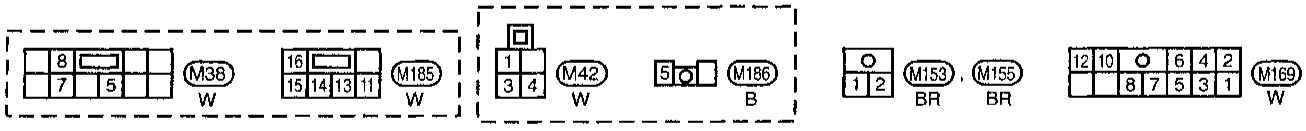


TEL112

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

EL-AUDIO-02





TEL113

Power Antenna/System Description

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

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

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

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

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

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

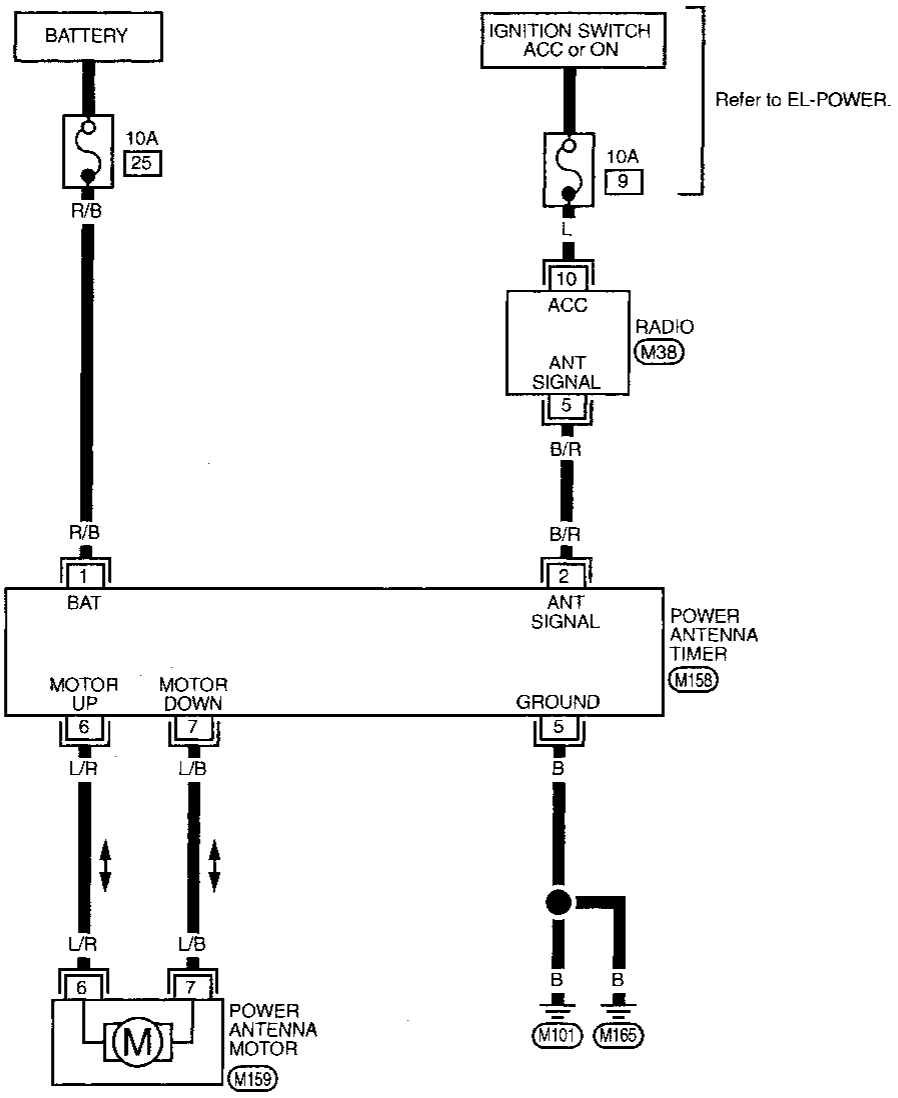
Power is supplied
- to power antenna motor terminal ⑦
- through power antenna timer terminal ⑦.

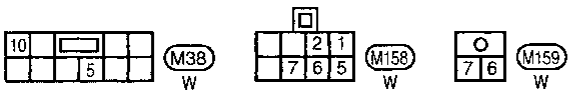
Ground is supplied
- to power antenna motor terminal ⑥
- through power antenna timer terminal ⑥.

The antenna retracts.

Power Antenna/Wiring Diagram — P/ANT —

EL-P/ANT-01





TEL114

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. 9, located in fuse block). Turn ignition switch to ACC or 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. 15A fuse 2. Radio output 3. Radio	1. Check 15A fuse (No. 14, located in fuse block). Verify that battery positive voltage is present at terminal ⑩ of front and rear speaker amps. 2. Check radio output voltages. 3. Remove radio for repair.
Radio presets are lost when ignition switch is turned OFF.	1. 10A fuse 2. Radio	1. Check 10A fuse (No. 25, located in fuse block) and verify battery positive voltage is present at terminal ⑥ of radio. 2. Remove radio for repair.
Rear speakers are inoperative.	1. Rear speaker amp. 15A fuse 2. Poor rear amp. case ground 3. Rear speaker amp. 4. Rear speaker amp. circuit 5. Radio	1. Check 15A fuse on amp. 2. Check rear amp. case ground. 3. Check rear speaker amp. voltages. 4. Check wires for open or short between radio, rear speaker amp. and rear speakers. 5. Remove radio for repair.
Front speakers are inoperative.	1. Front speaker amp. 10A fuse 2. Poor front amp. case ground 3. Front speaker amp. 4. Front speaker amp. circuit 5. Radio	1. Check 10A fuse on amp. 2. Check front amp. case ground. 3. Check front speaker amp. voltages. 4. Check wires for open or short between radio, front speaker amp. and front speakers. 5. Remove radio for repair.
Individual speaker is noisy or inoperative.	1. Speaker 2. Radio/amp. output 3. Speaker circuit 4. Radio	1. Check speaker. 2. Check radio/amp. output voltages. 3. Check wires for open or short between radio/amp. and speaker. 4. Remove radio for repair.
AM stations are weak or noisy (FM stations OK).	1. Antenna 2. Poor radio ground 3. Radio	1. Check antenna. 2. Check radio ground. 3. Remove radio for repair.
FM stations are weak or noisy (AM stations OK).	1. Window antenna 2. Radio	1. Check window antenna. 2. Remove radio for repair.
Radio generates noise in AM and FM modes 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 noise in AM and FM modes 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.
Power antenna does not operate.	1. 10A fuse 2. 10A fuse 3. Radio signal 4. Grounds (M101) and (M165) 5. Power antenna motor 6. Open in power antenna motor circuit	1. Check 10A fuse (No. 25, located in fuse block). Verify that battery positive voltage is present at terminal ① of power antenna timer. 2. Check 10A fuse (No. 9, located in fuse block). Turn ignition switch to ACC or ON and verify that battery positive voltage is present at terminal ⑩ of radio. 3. Turn ignition switch to ACC or ON and radio ON. Verify that battery positive voltage is present at terminal ② of power antenna timer. 4. Check grounds (M101) and (M165). 5. Check power antenna motor. 6. Check L/R and L/B wires between power antenna timer and power antenna motor.

Trouble Diagnoses (Cont'd)

SPEAKER INSPECTION

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

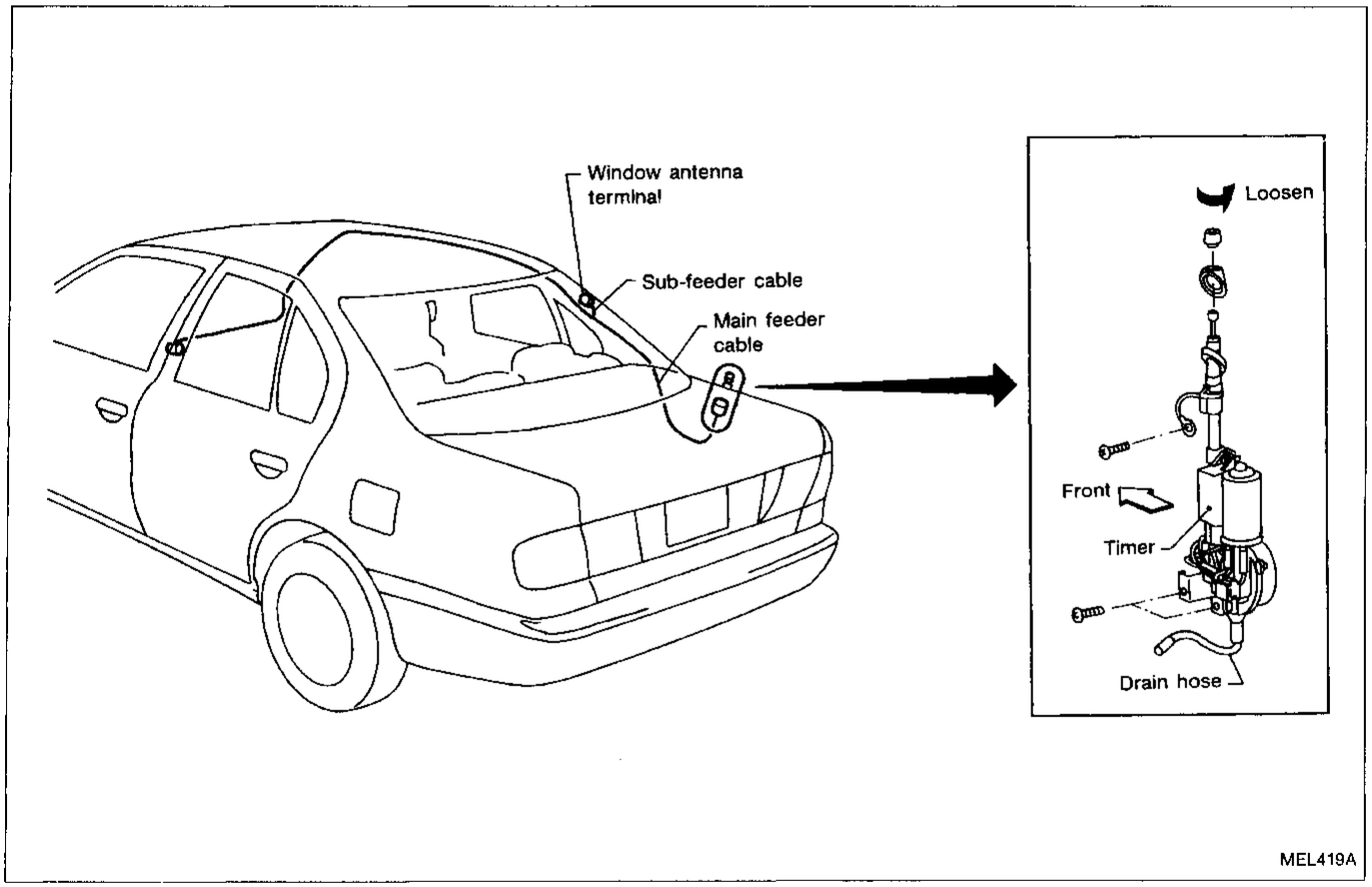
ANTENNA INSPECTION

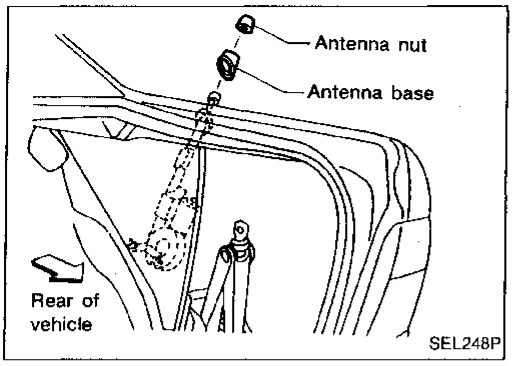
1. Using a jumper wire, clip an auxiliary ground between antenna and body.
- If reception improves, check antenna ground (at body surface).
- If reception does not improve, check main feeder cable for short circuit or open circuit.

RADIO AND AMP INSPECTION

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

Location of Antenna

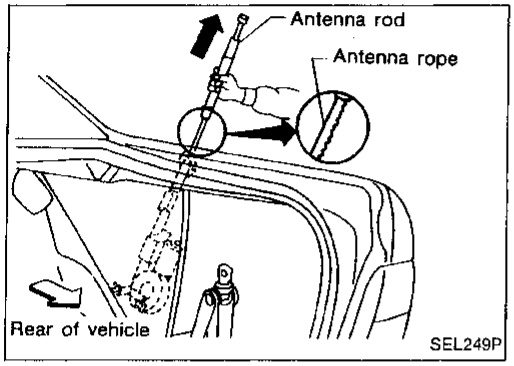




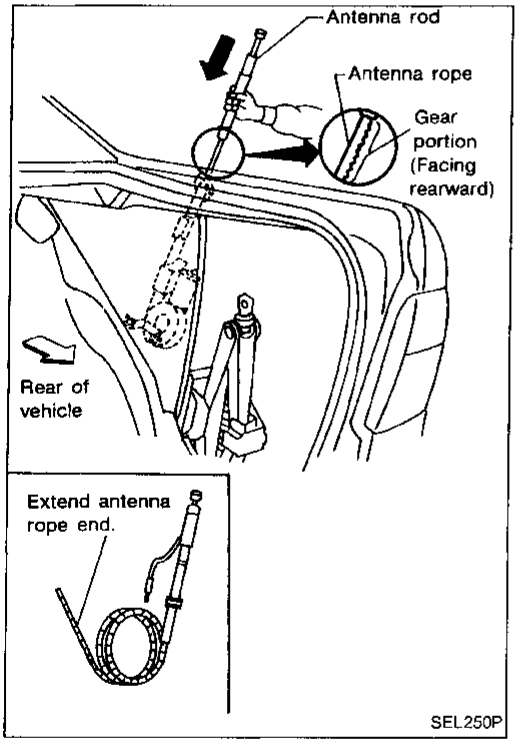
Antenna Rod Replacement

REMOVAL

1. Remove antenna nut and antenna base.

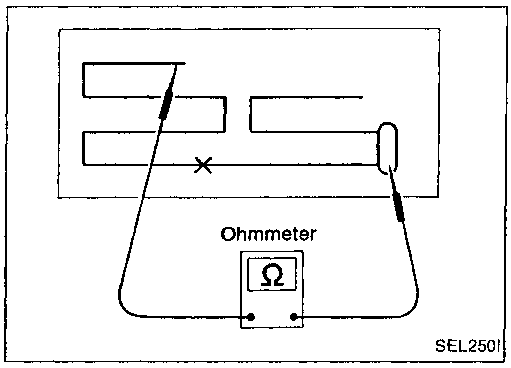


2. Withdraw antenna rod while raising it by operating antenna motor.



INSTALLATION

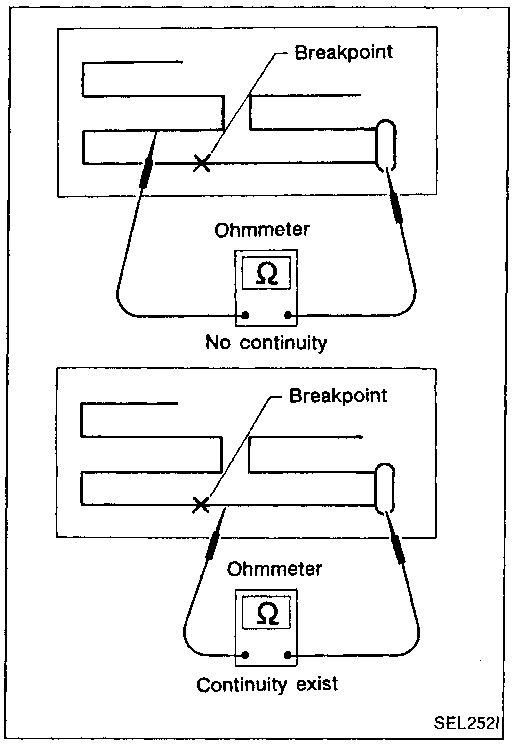
1. Lower antenna rod by operating antenna motor.
2. Insert gear section of antenna rope into place with it facing toward antenna motor.
3. As soon as antenna rope is wound on antenna motor, stop antenna motor. Insert antenna rod lower end into antenna motor pipe.
4. Retract antenna rod completely by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



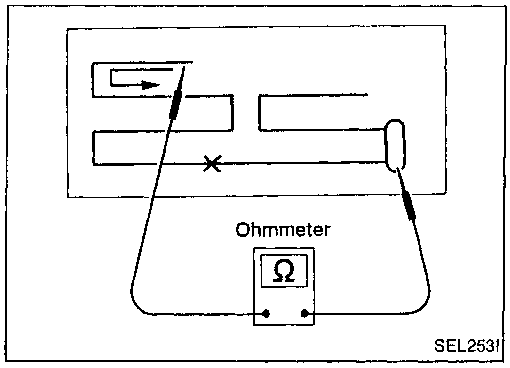
Window Antenna Repair

ELEMENT CHECK

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



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



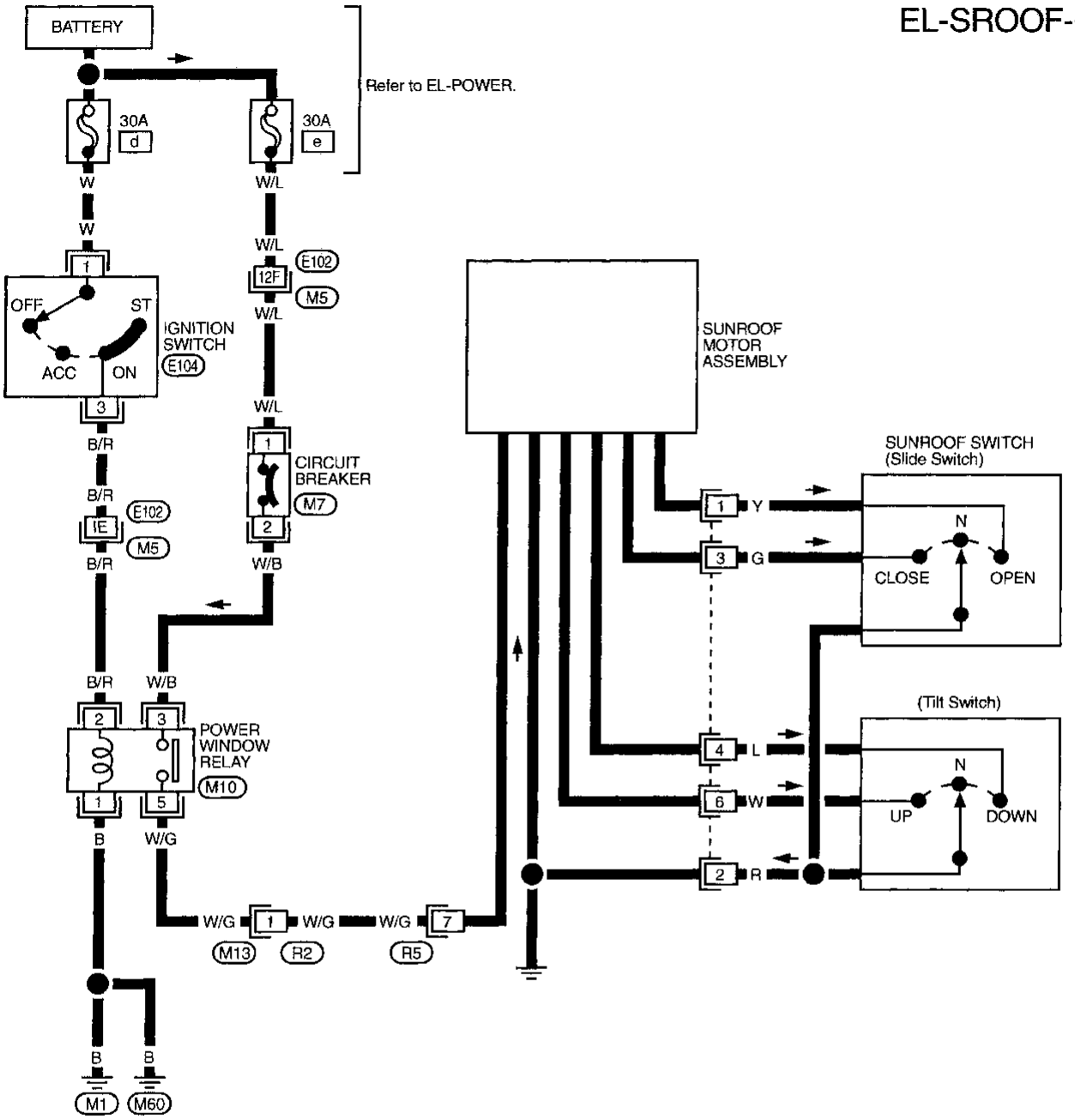
3. To locate broken point, move probe to left and right along element. Tester needle will swing abruptly when probe passes the point.

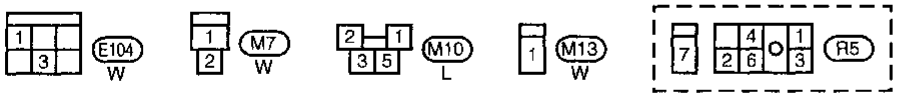
ELEMENT REPAIR

Refer to REAR WINDOW DEFOGGER "Filament Repair" (EL-150).

Wiring Diagram — SROOF —

EL-SROOF-01

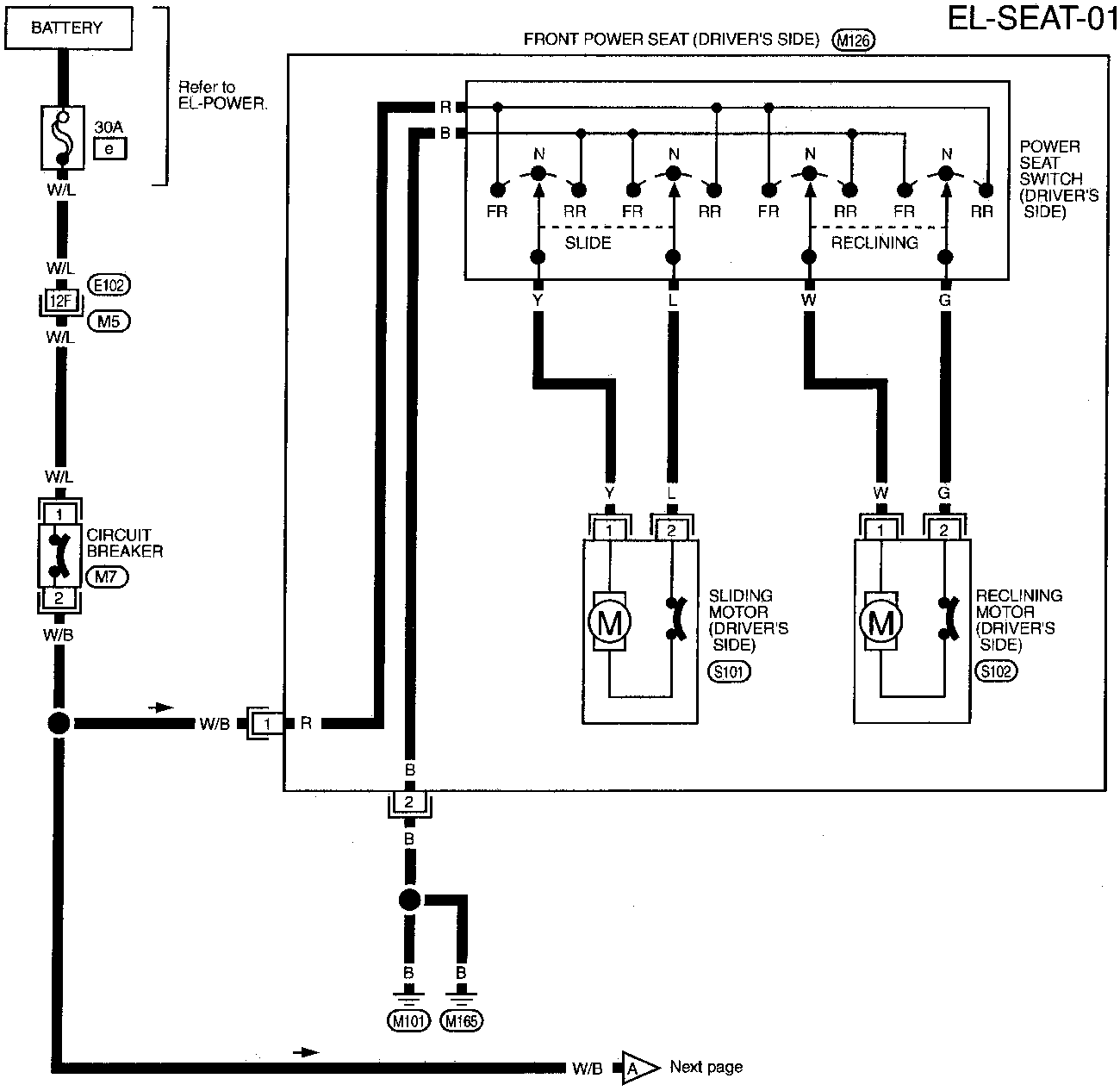




Refer to last page (Foldout page).
E102, M5

TEL150

Wiring Diagram — SEAT —

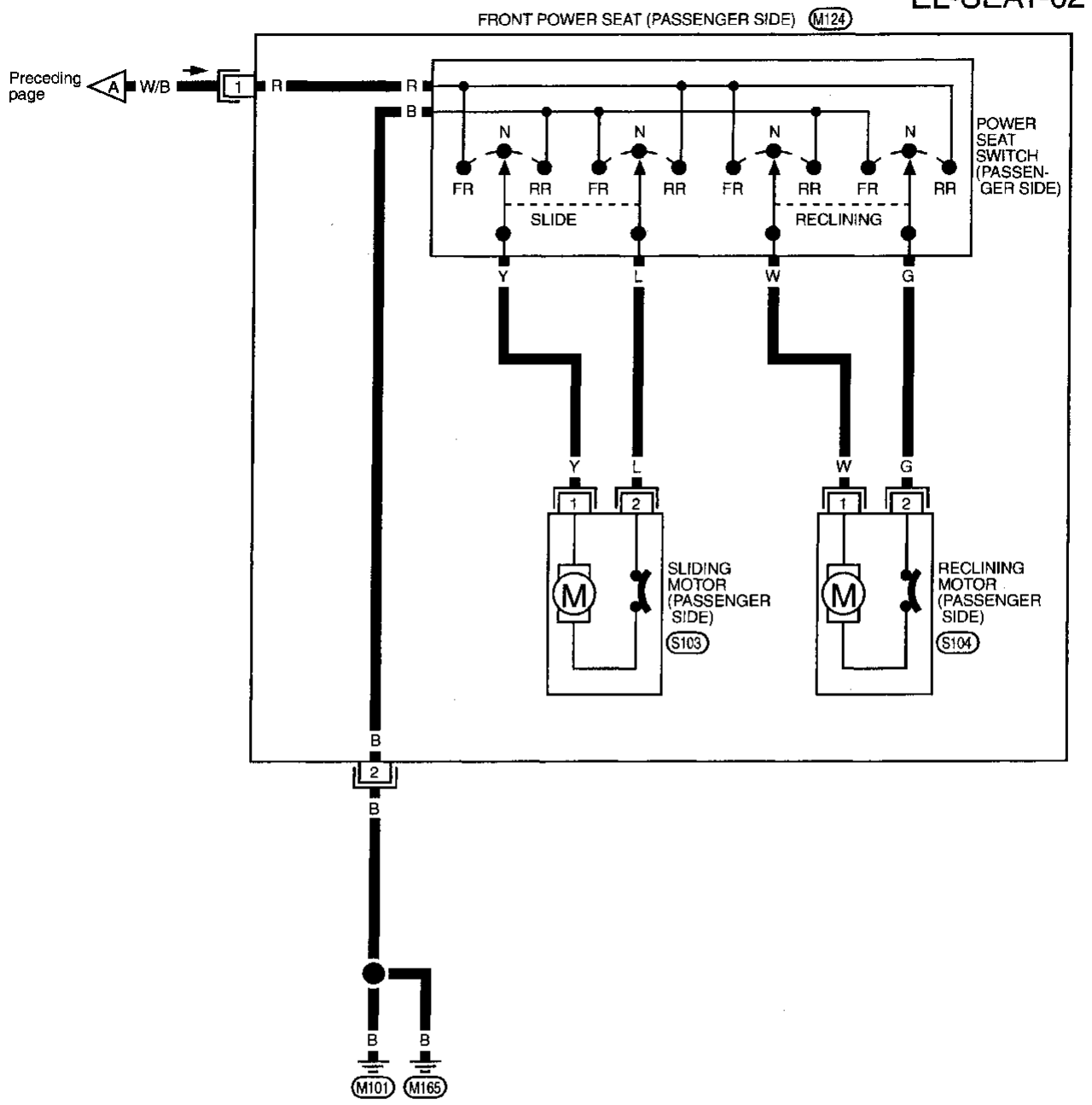


1 2 M7 W, M126 W, S101, S102

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

Wiring Diagram — SEAT — (Cont'd)

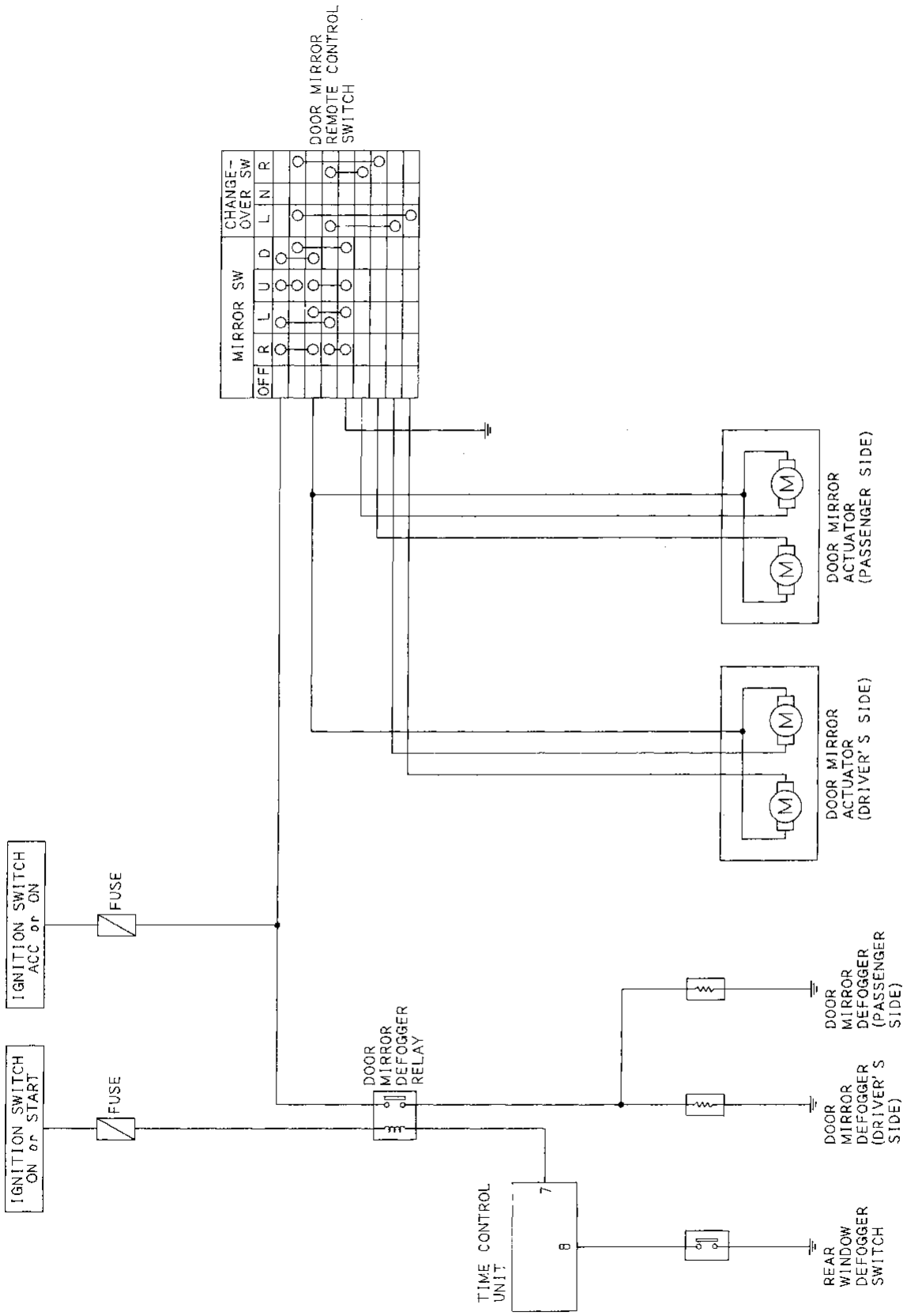
EL-SEAT-02



1
2
M124
W
, S103, S104

TEL149

Schematic

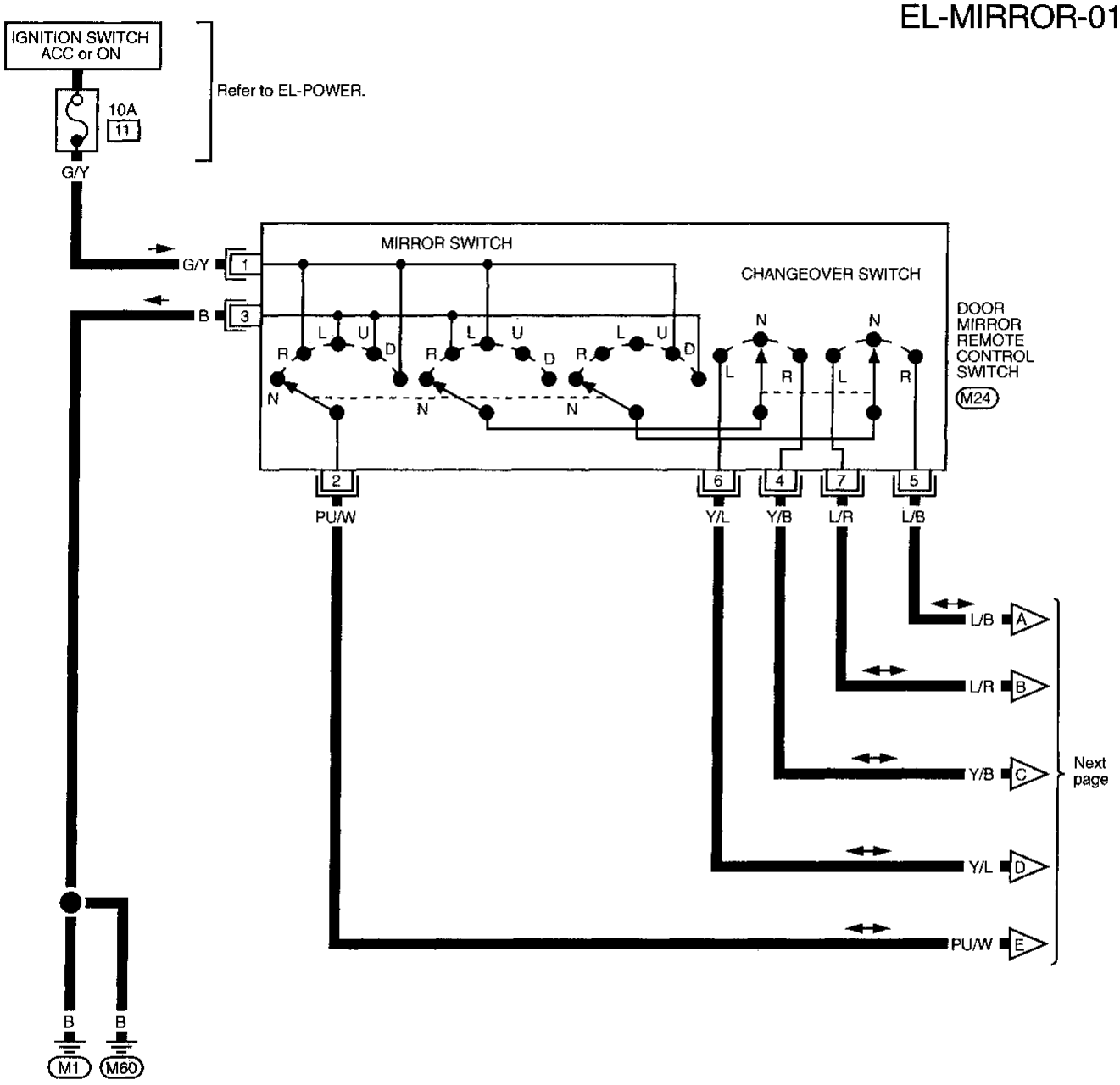


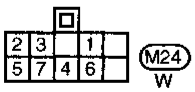
TEL158

Wiring Diagram — MIRROR —

Without heated mirror

EL-MIRROR-01

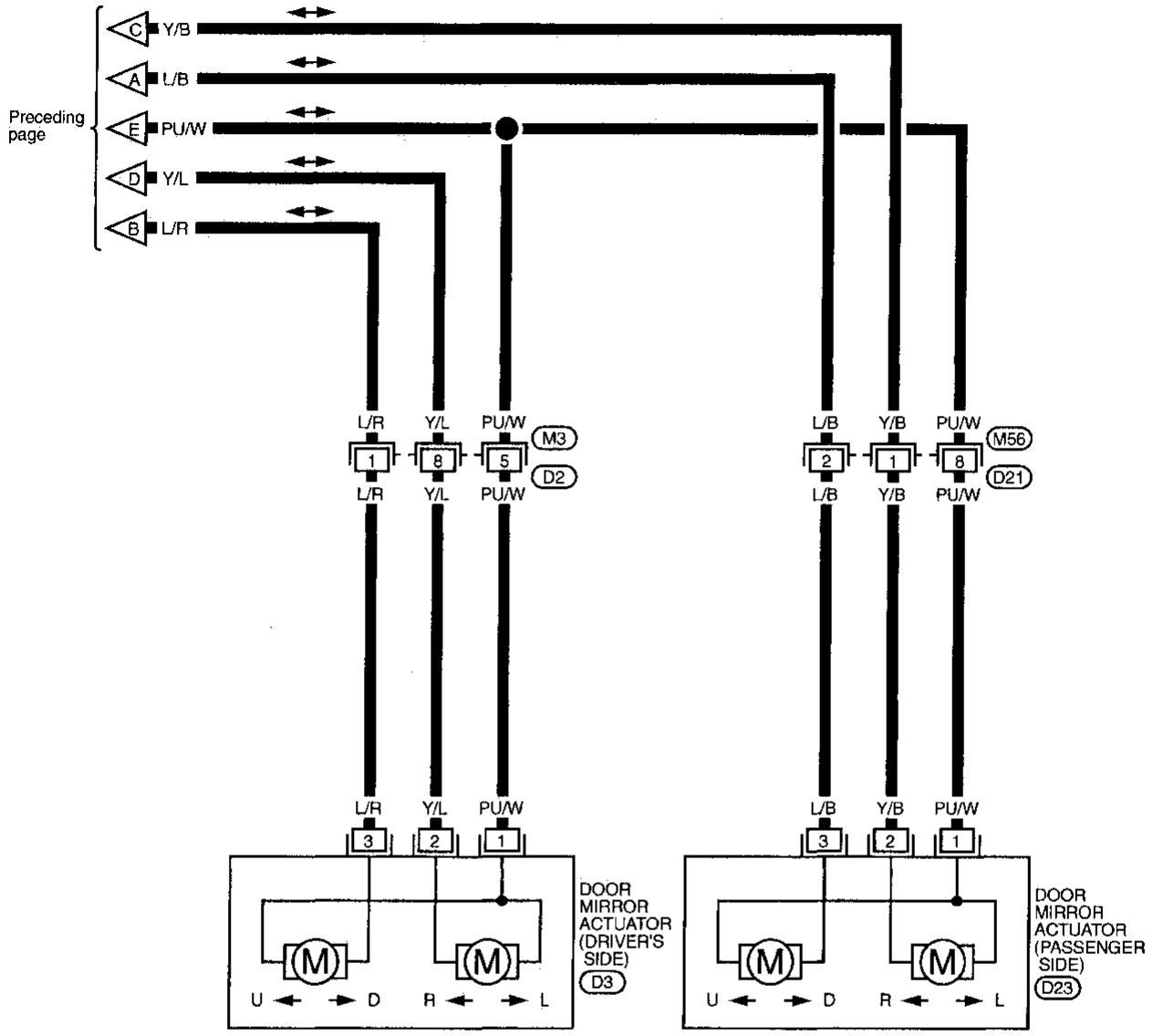




TEL152

Wiring Diagram — MIRROR — (Cont'd)

EL-MIRROR-02



1 2 O / 5 8 M3 W, M56 W

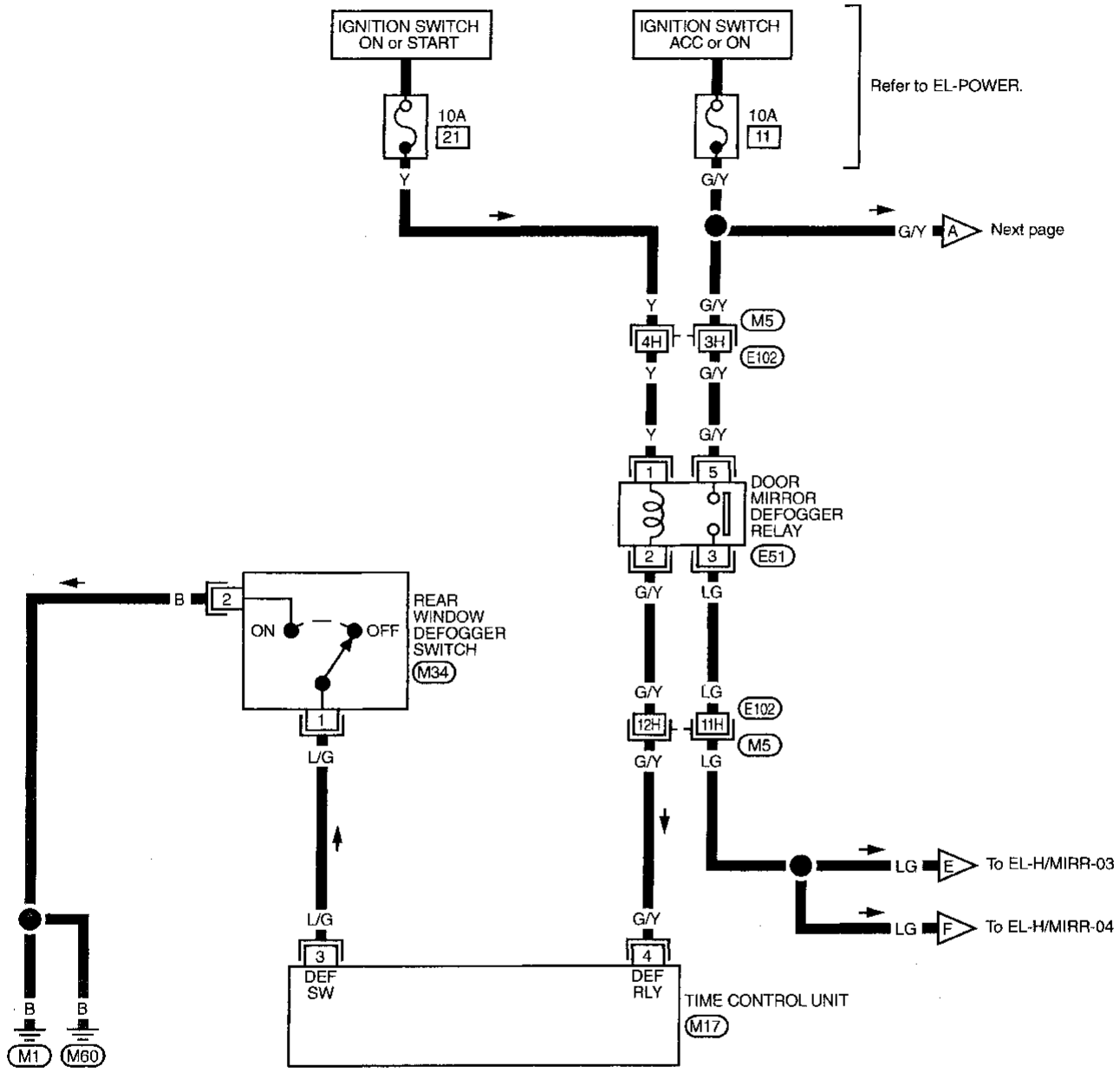
1 2 3 D3 W, D23 W

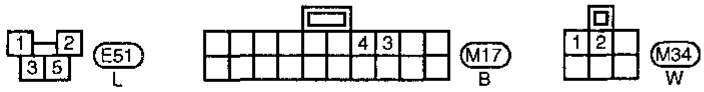
TEL153

Wiring Diagram — H/MIRR —

With heated mirror

EL-H/MIRR-01



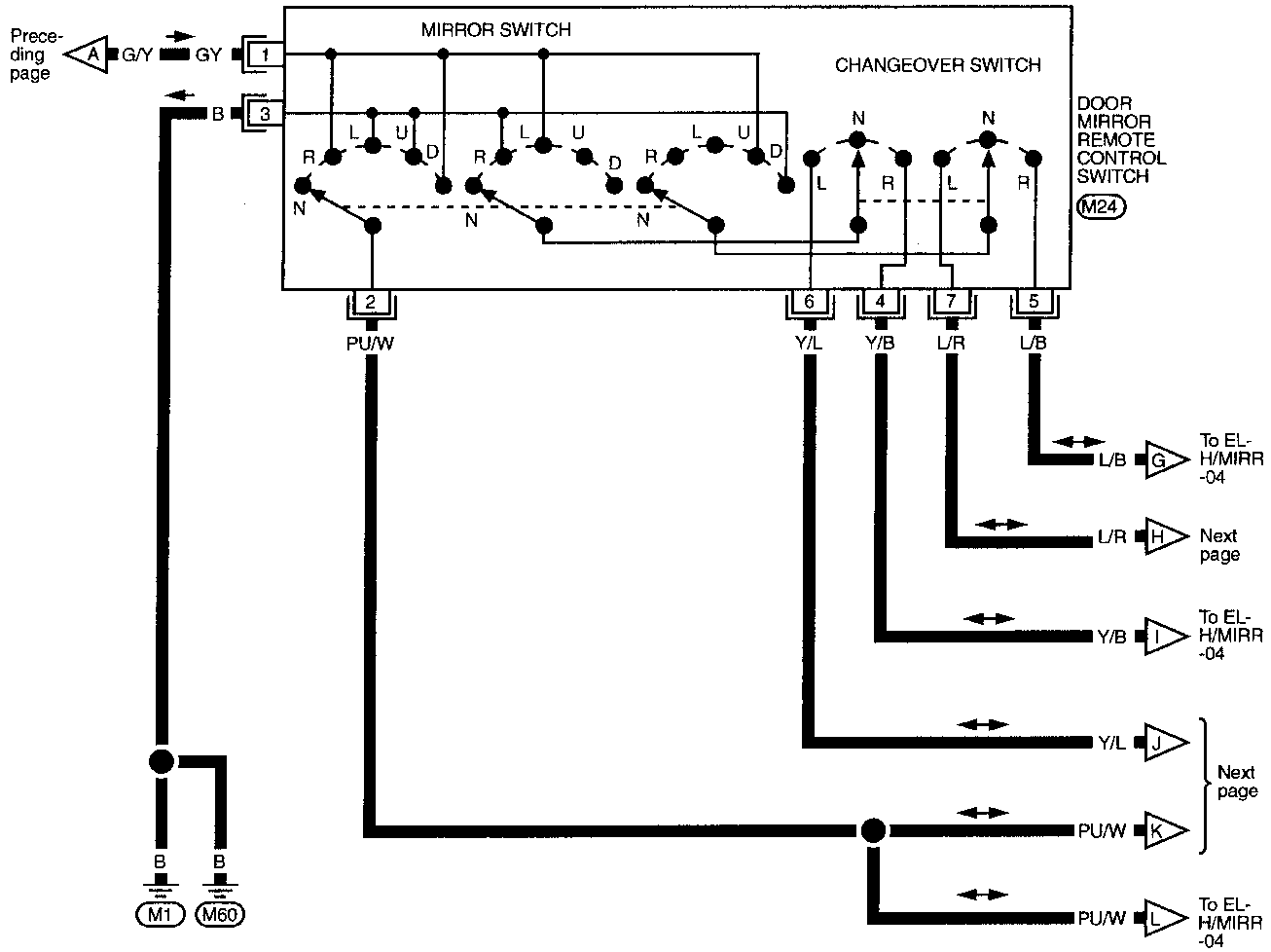


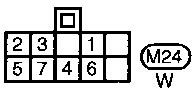
Refer to last page (Foldout page).
E102, M5

TEL154

Wiring Diagram — H/MIRR — (Cont'd)

EL-H/MIRR-02

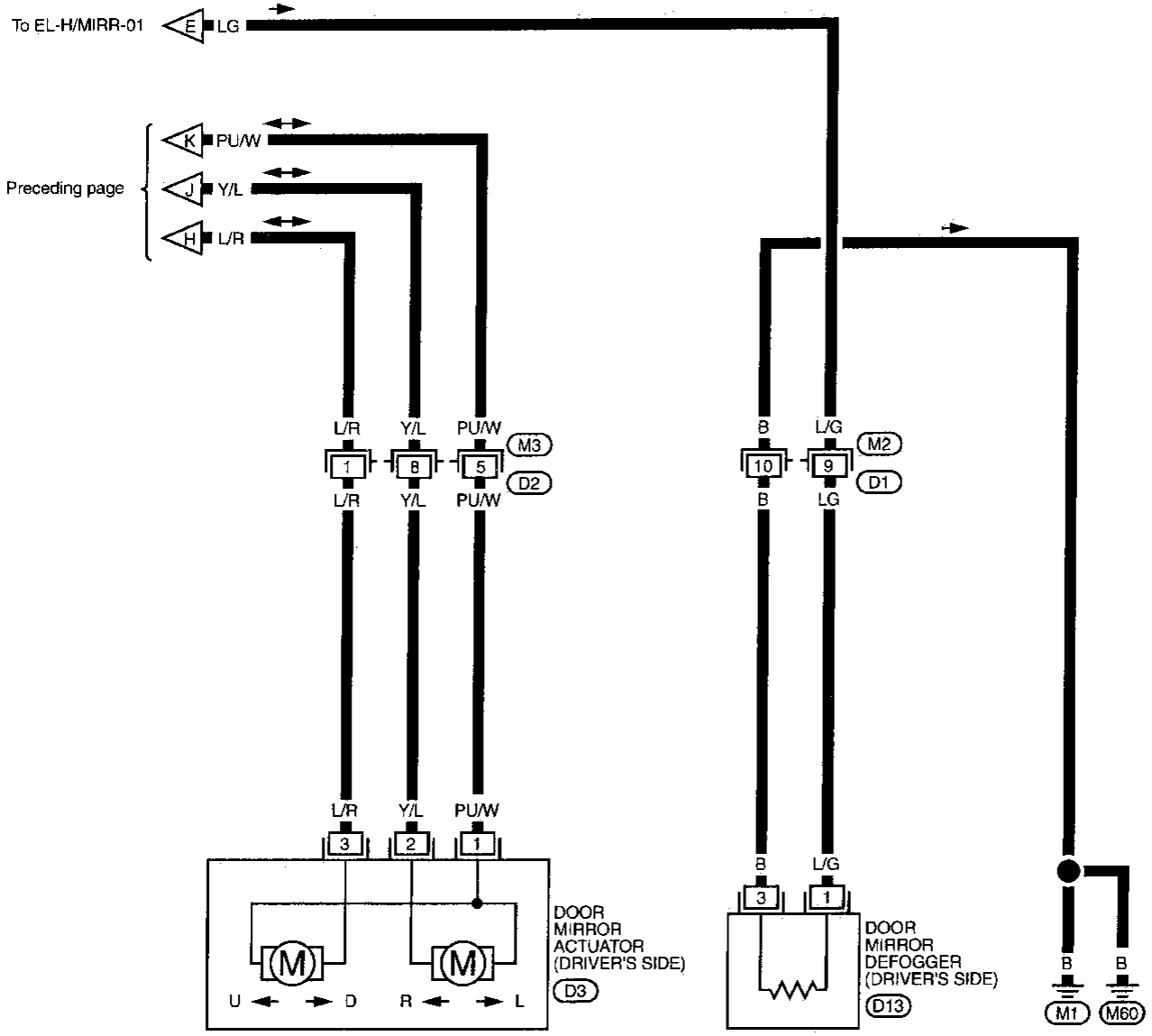


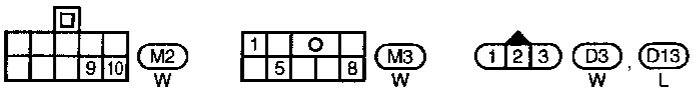


TEL155

Wiring Diagram — H/MIRR — (Cont'd)

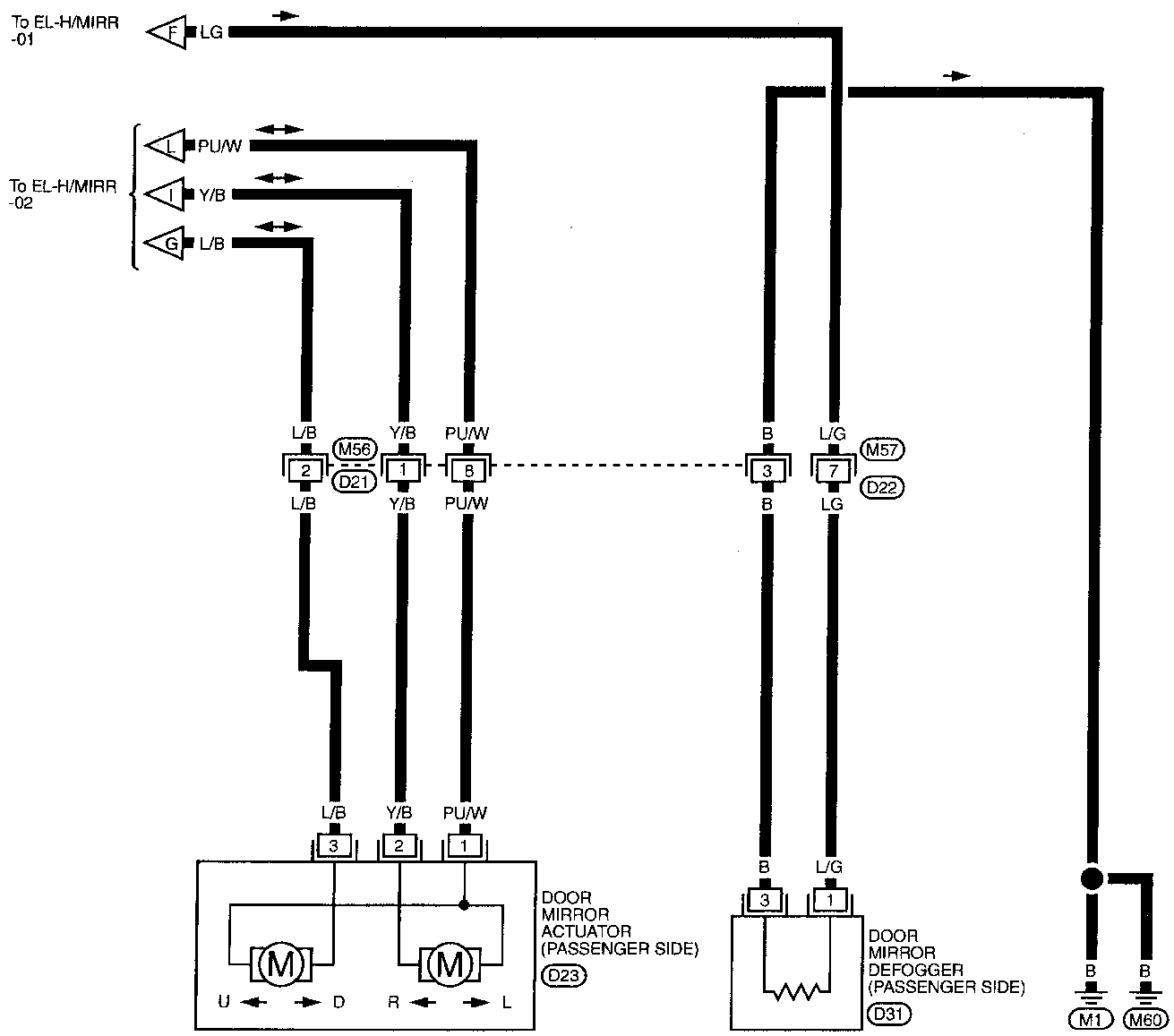
EL-H/MIRR-03

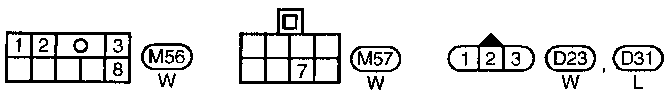




Wiring Diagram — H/MIRR — (Cont'd)

EL-H/MIRR-04

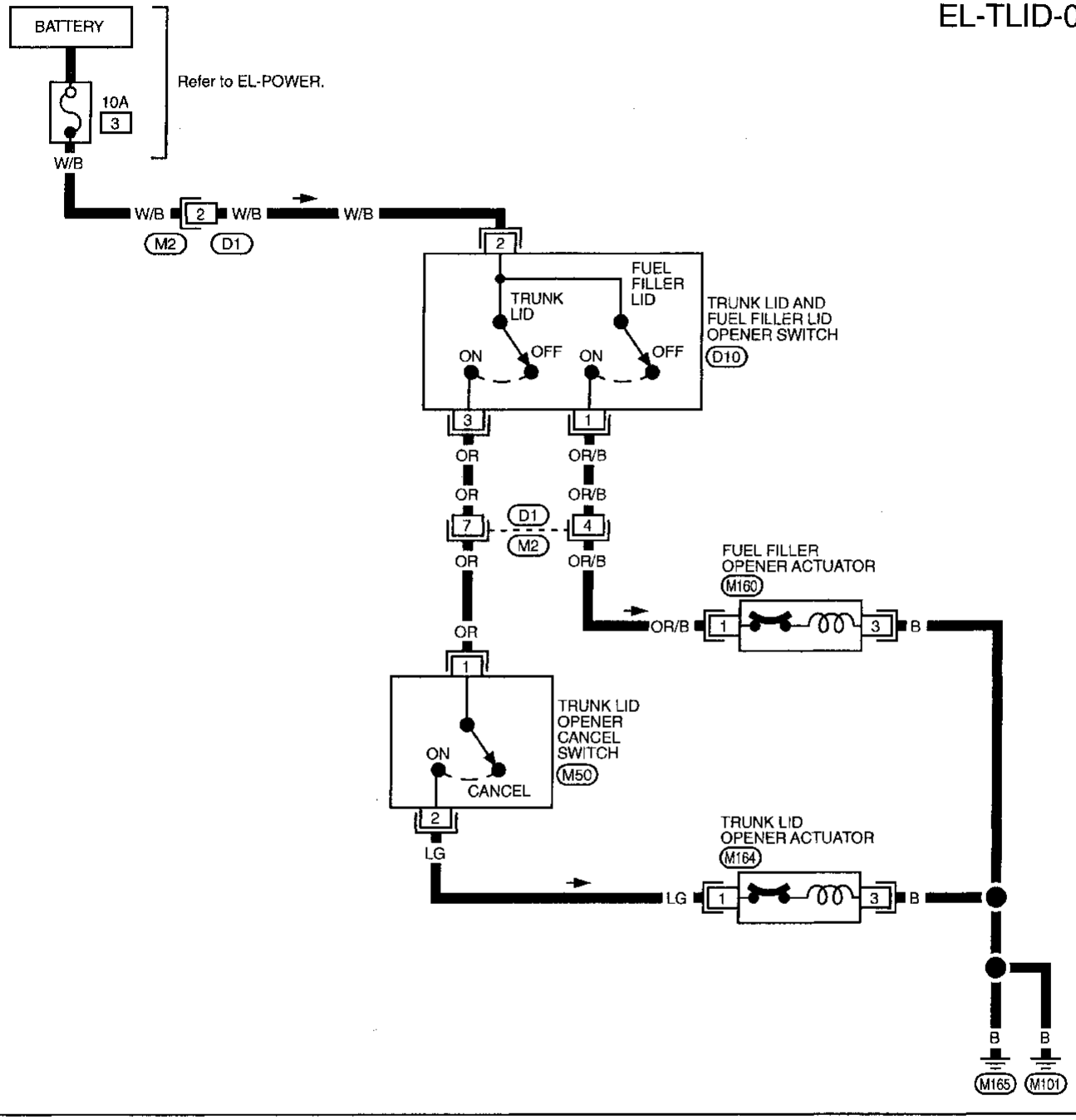


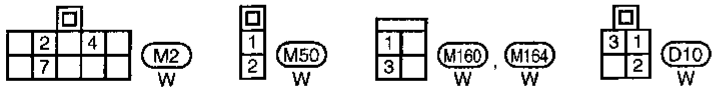


TEL157

Trunk Lid and Fuel Filler Lid Opener/Wiring Diagram — TLID —

EL-TLID-01





TEL130

System Description

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

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

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

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

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

Inputs

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

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

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

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

Power is supplied at all times
- through 15A fuse (No. 18 , located in the fuse and fusible link box)
- to horn relay terminal ②
- through terminal ① of the horn relay
- to ASCD steering switch terminal ①.

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

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

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

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

Power is interrupted when

System Description (Cont'd)

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

Outputs

The ASCD actuator controls the throttle drum via the ASCD wire based on inputs from the ASCD control unit. The ASCD actuator consists of a vacuum motor, an air valve, and a release valve.
Power is supplied
- from terminal ⑧ of the ASCD control unit
- to ASCD actuator terminal ①.

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

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

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

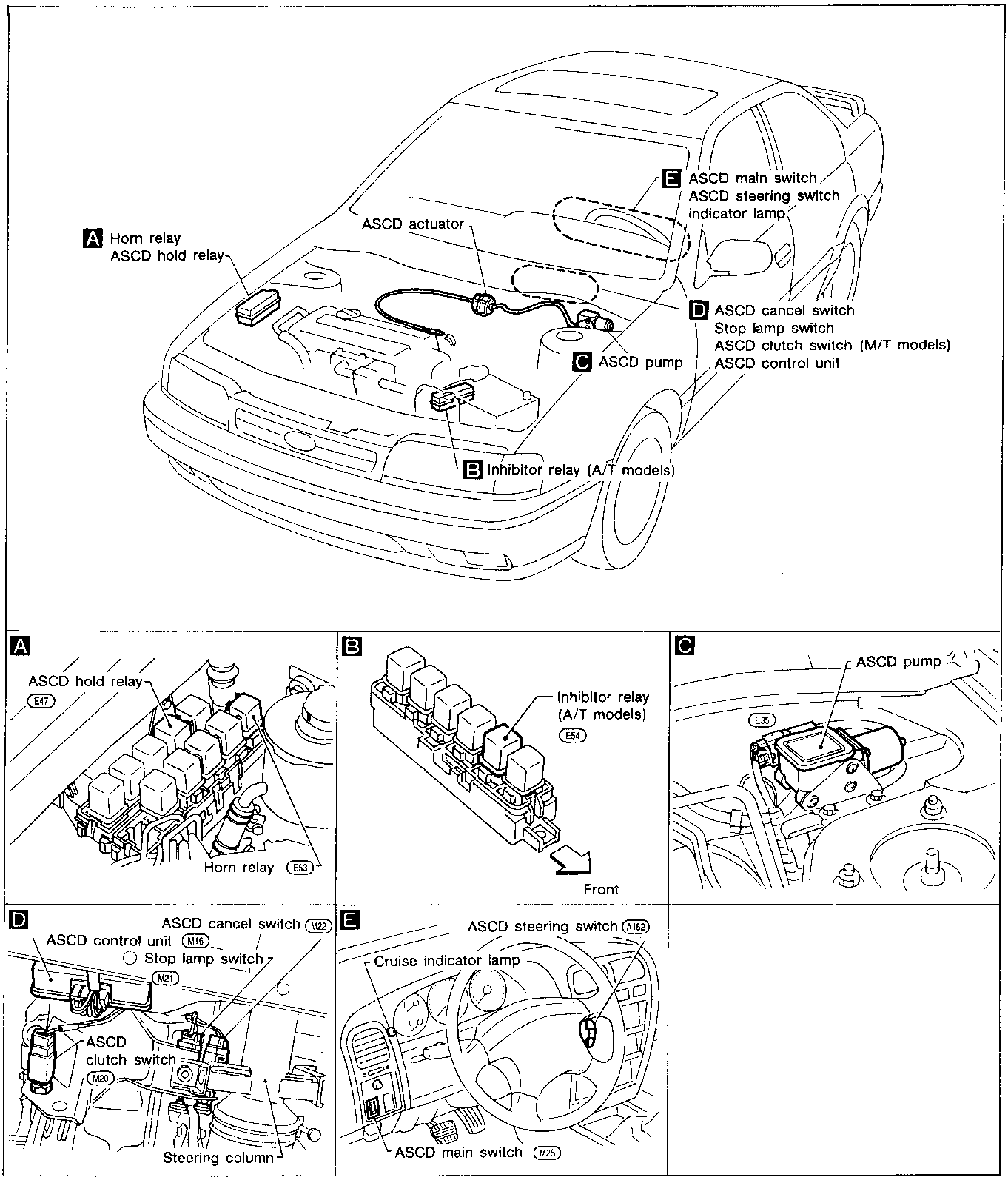
When the system is activated, power is supplied
- from terminal ⑬ of the ASCD control unit
- to combination meter terminal ⑦ and
- to A/T control unit terminal ㊲ (A/T models).

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

With power and ground supplied, the CRUISE indicator lamp illuminates.
When the RESUME/ACCEL switch is depressed on A/T models, a signal is sent
- from terminal ⑫ of the ASCD control unit
- to A/T control unit terminal ㊵.

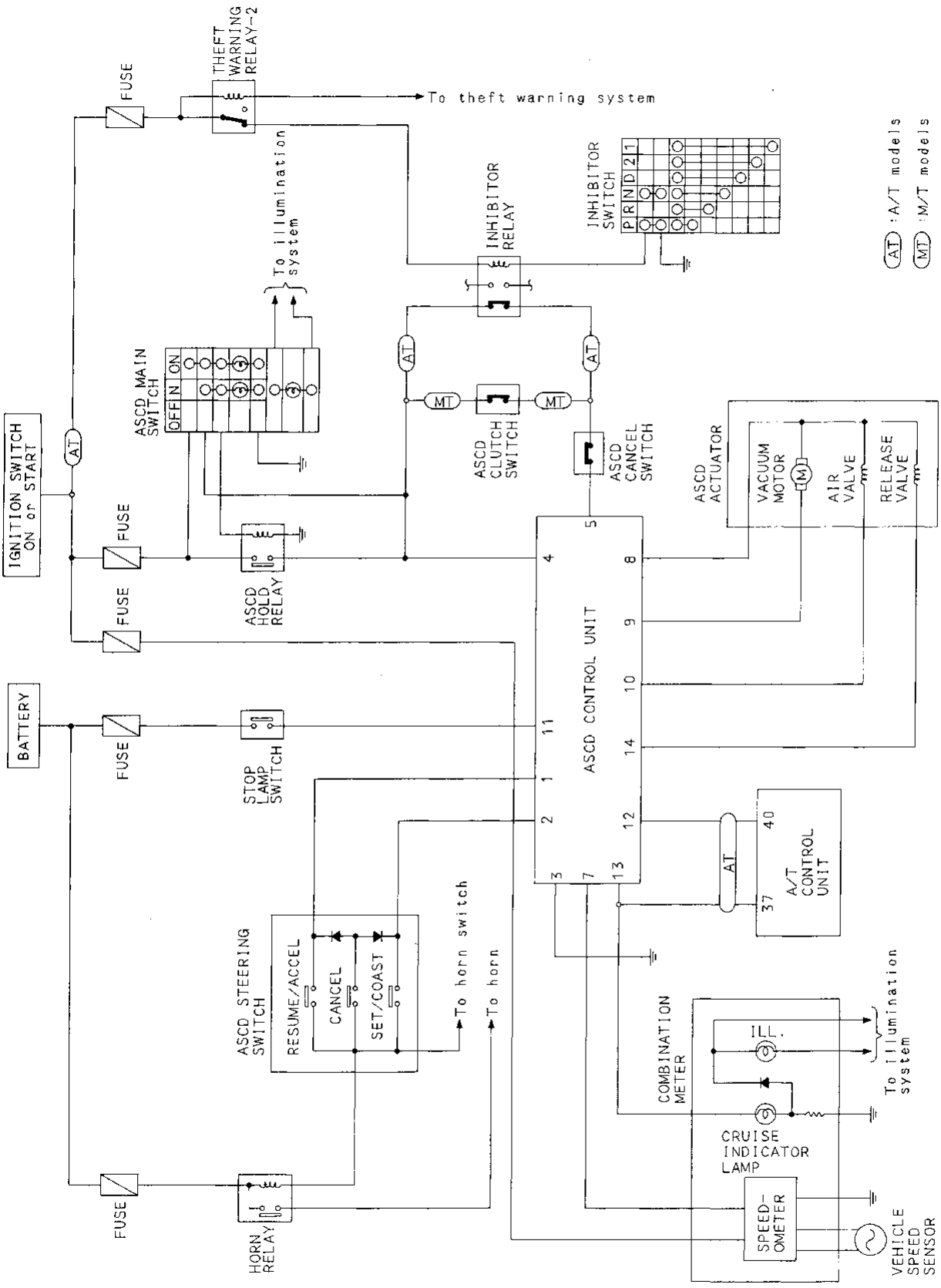
When this occurs, the A/T control unit cancels overdrive.

Component Parts and Harness Connector Location



SEL273SA

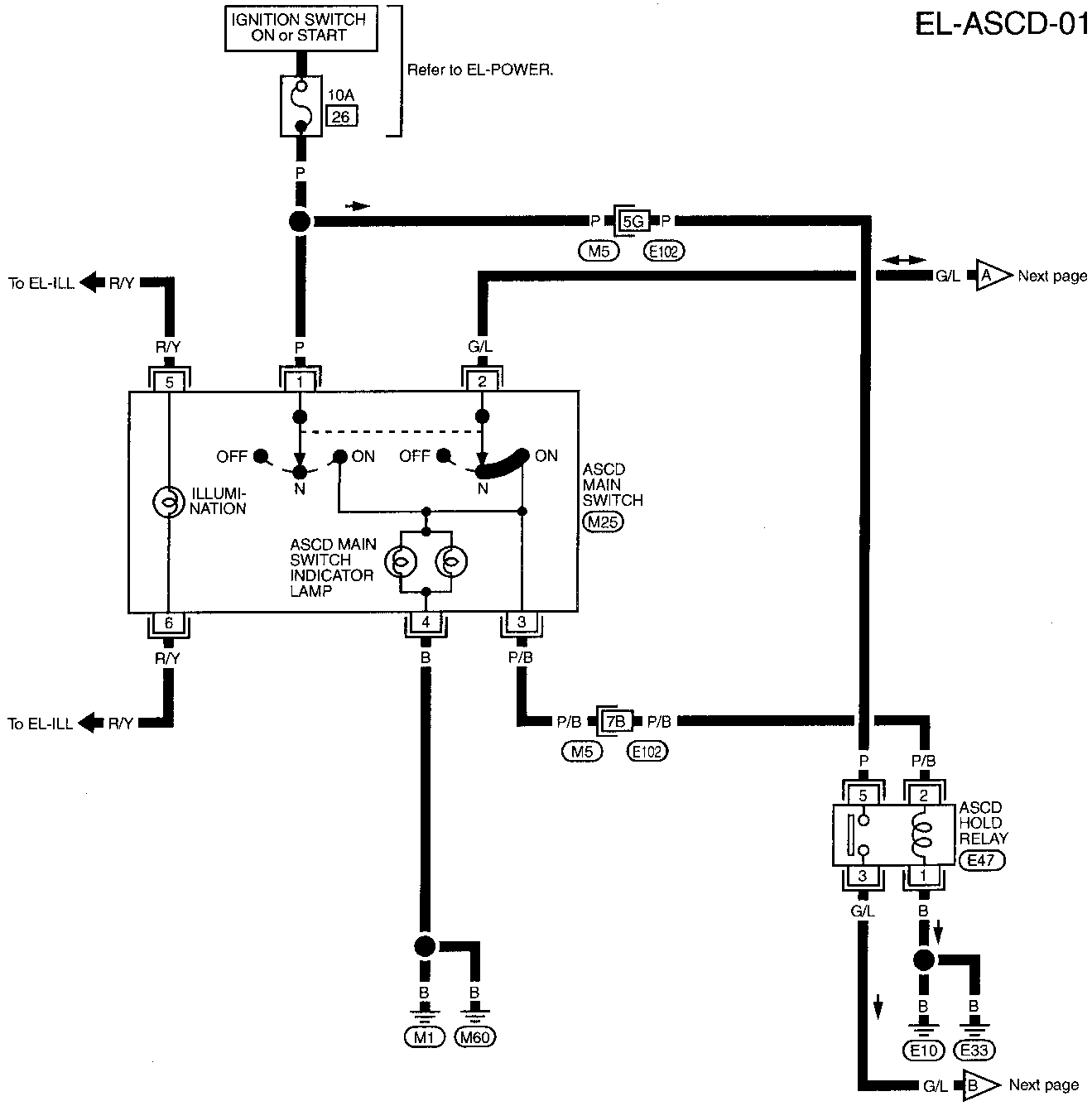
Schematic

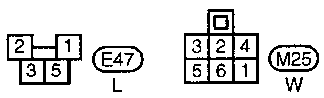


TEL120

Wiring Diagram — ASCD —

EL-ASCD-01

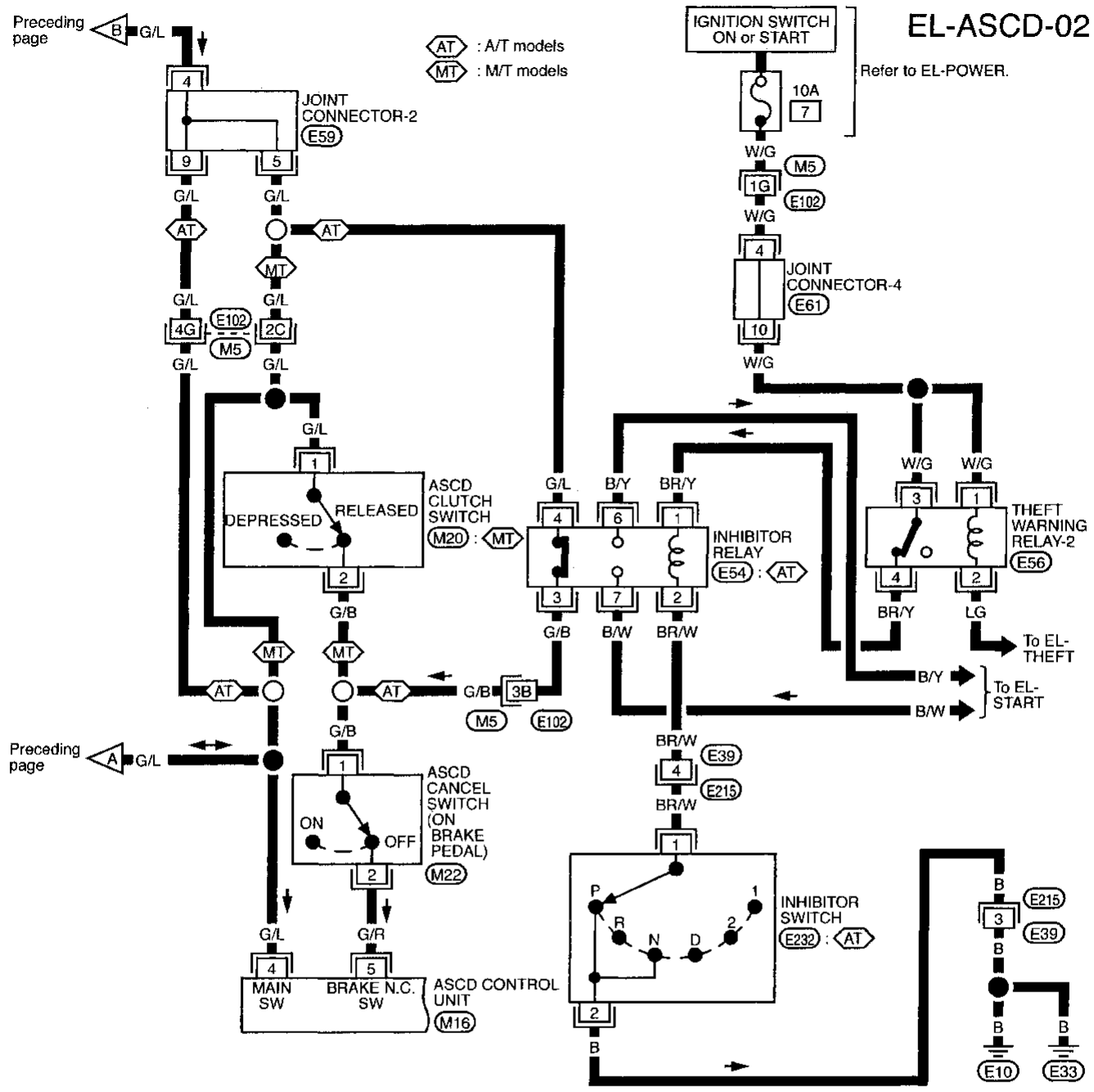


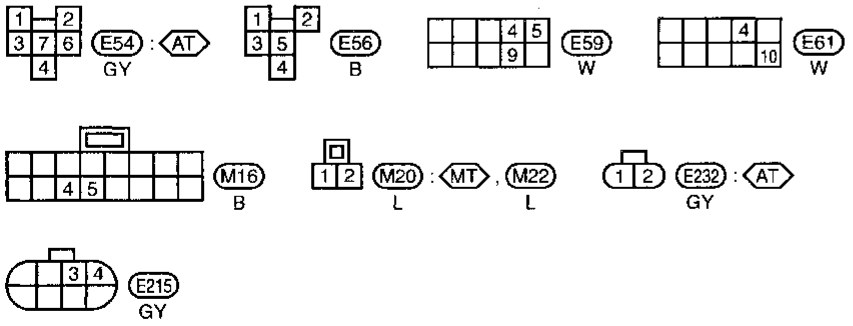


Refer to last page (Foldout page).

E102, M5

Wiring Diagram — ASCD — (Cont'd)



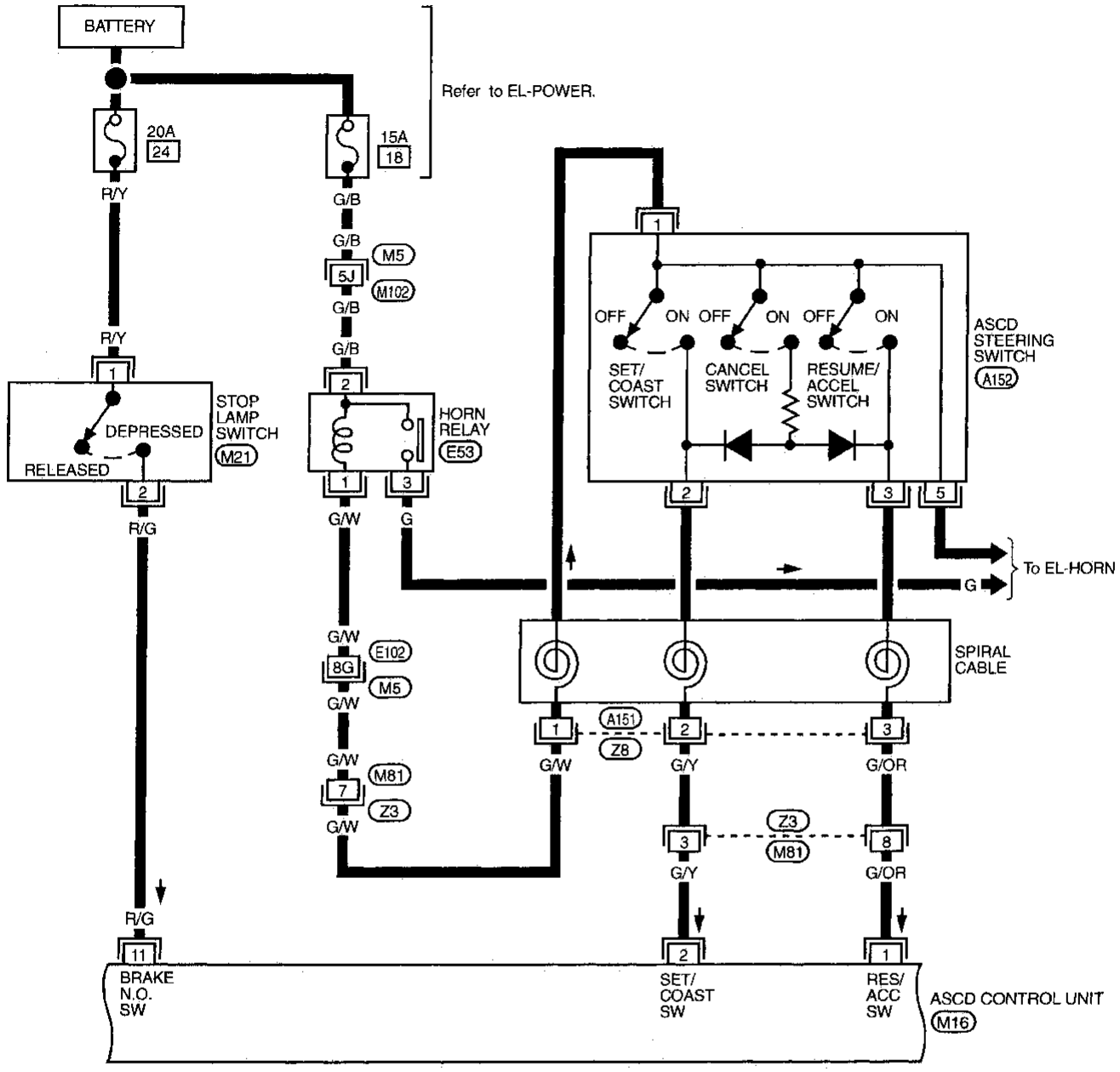


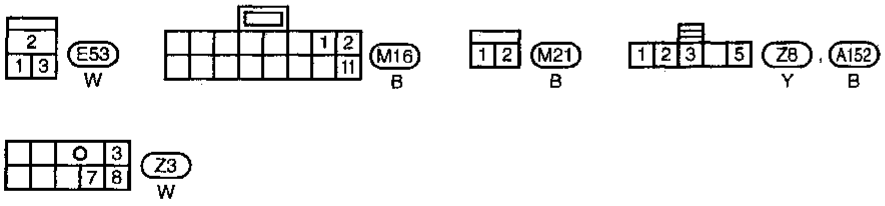
Refer to last page (Foldout page).
E102 , M5
E59
E61

TEL116

Wiring Diagram — ASCD — (Cont'd)

EL-ASCD-03

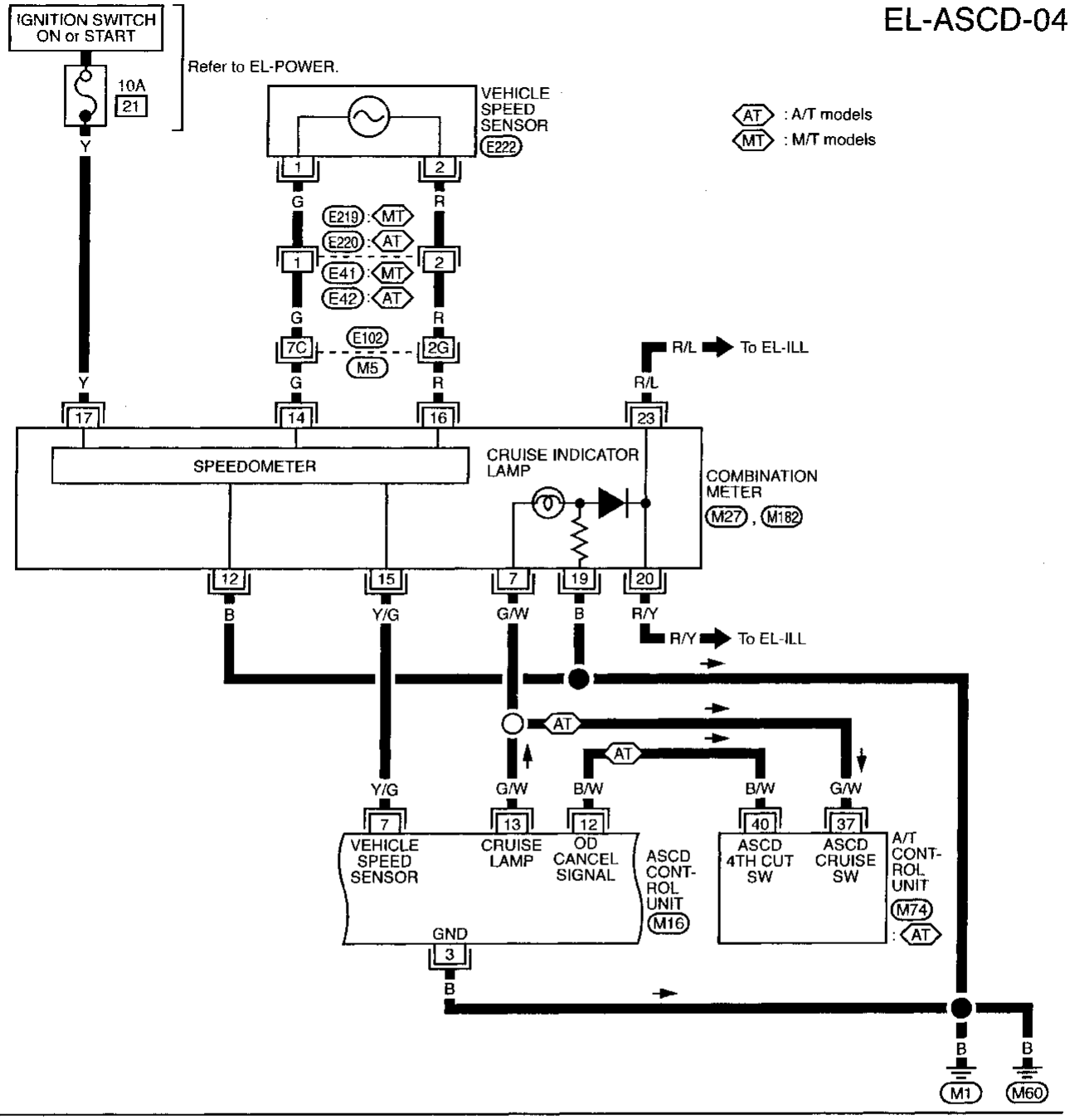


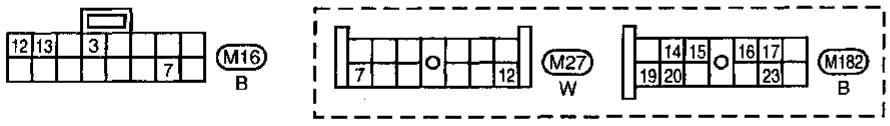


Refer to last page (Foldout page).
E102, M5

Wiring Diagram — ASCD — (Cont'd)

EL-ASCD-04



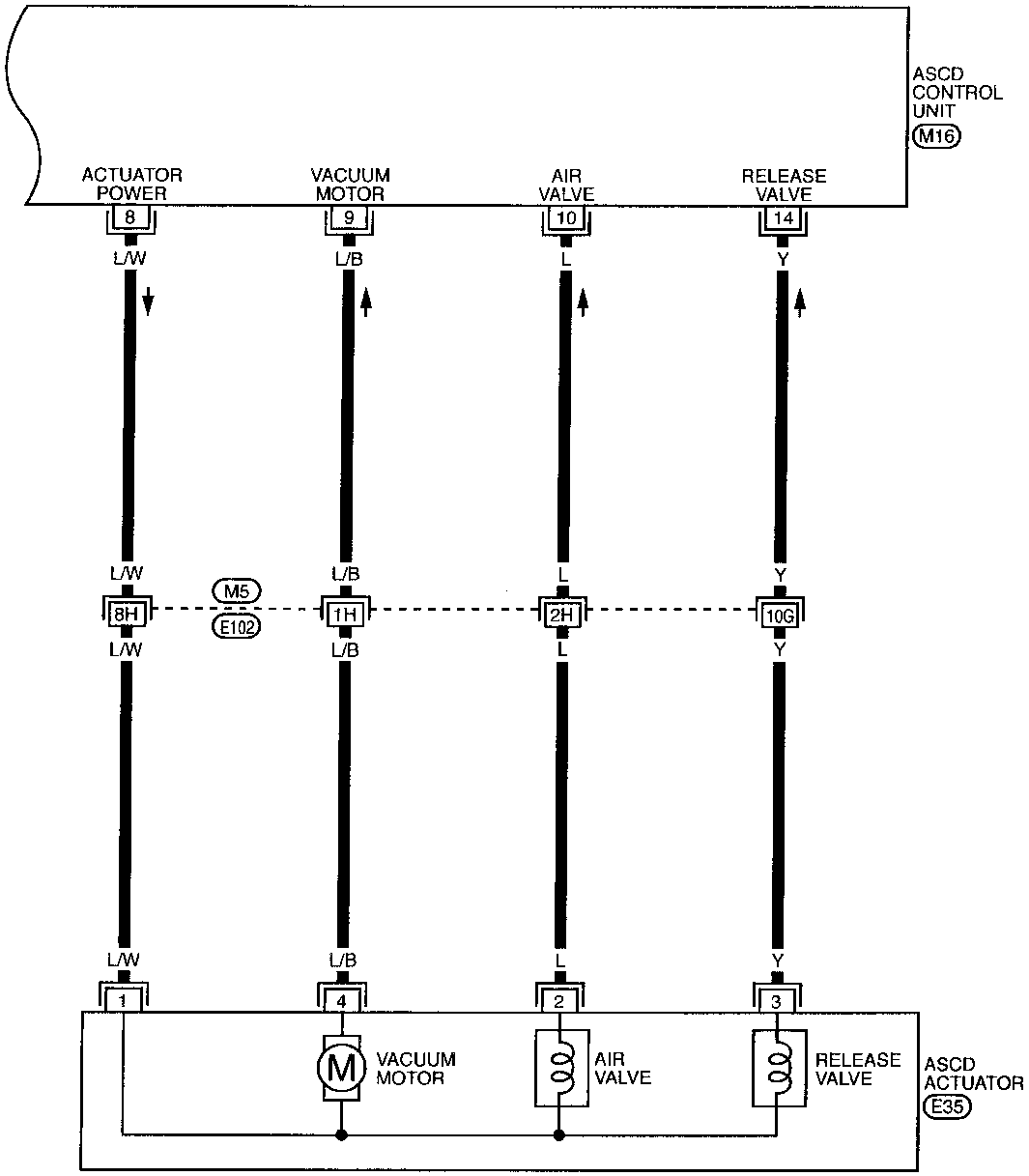


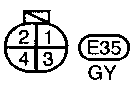
Refer to last page (Foldout page).
E102, M5
M74

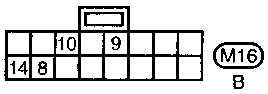
TEL118

Wiring Diagram — ASCD — (Cont'd)

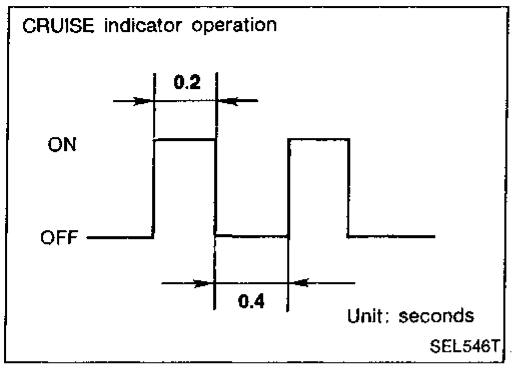
EL-ASCD-05







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



Trouble Diagnoses

FAIL-SAFE SYSTEM

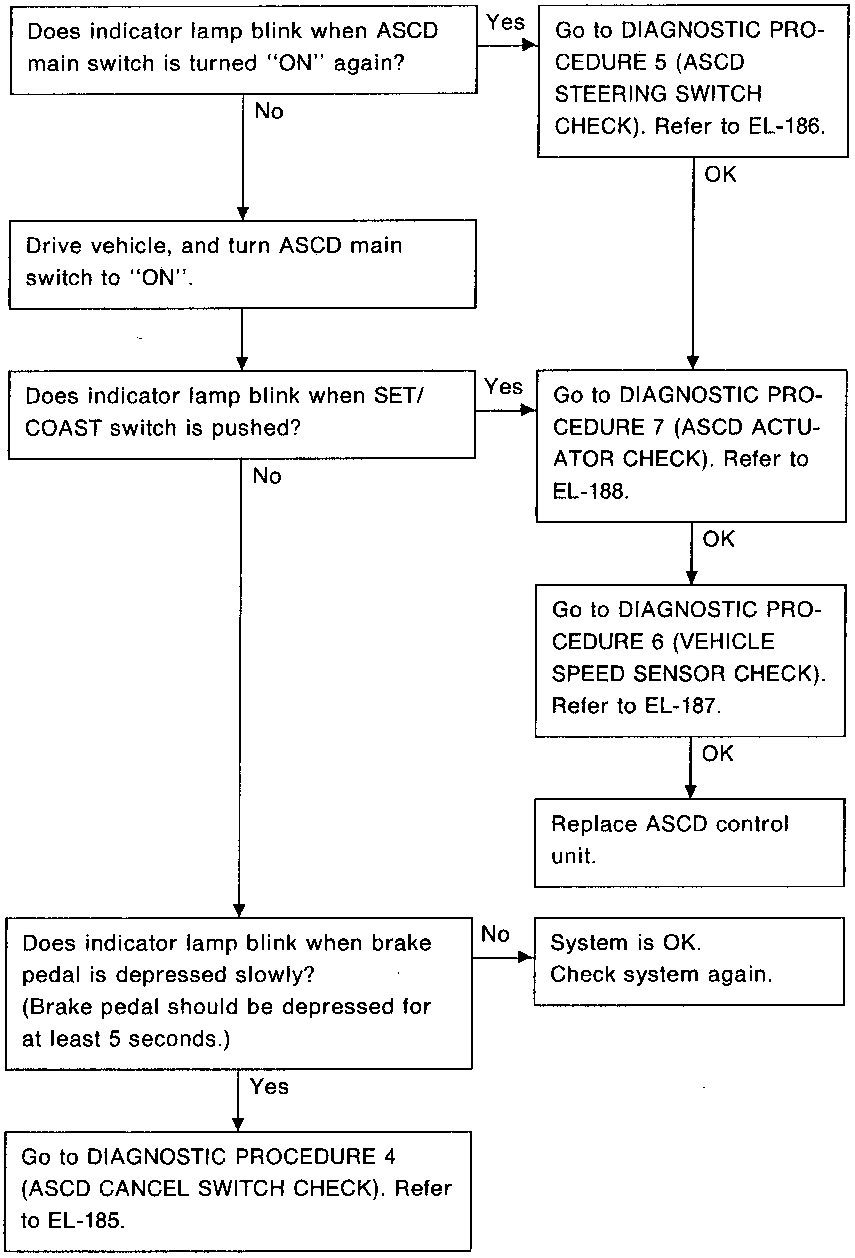
When the fail-safe system senses a malfunction, it deactivates ASCD operation. The CRUISE indicator in the combination meter will then flash.

Malfunction detection conditions

Detection conditions	ASCD operation during malfunction detection
• ASCD steering (RESUME/ACCEL, CANCEL, SET/COAST) switch is stuck. • Vacuum motor ground circuit or power circuit is open or shorted. • Air valve ground circuit or power circuit is open or shorted. • Release valve ground circuit or power circuit is open or shorted. • Vehicle speed sensor is faulty. • ASCD control unit internal circuit is malfunctioning.	• ASCD is deactivated. • Vehicle speed memory is canceled.
• ASCD cancel switch or stop lamp switch is faulty.	• ASCD is deactivated. • Vehicle speed memory is not canceled.

Trouble Diagnoses (Cont'd)

Fail-safe system check



Trouble Diagnoses (Cont'd)

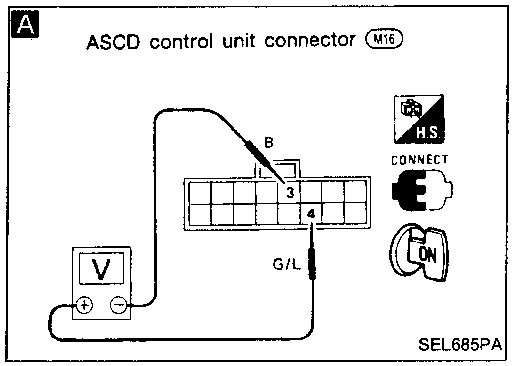
SYMPTOM CHART

PROCEDURE	—	Diagnostic procedure							
REFERENCE PAGE	EL-181	EL-183	EL-183	EL-184	EL-185	EL-186	EL-187	EL-188	EL-188
SYMPTOM	Fail-safe system check	DIAGNOSTIC PROCEDURE 1 (POWER SUPPLY AND GROUND CIRCUIT CHECK)	DIAGNOSTIC PROCEDURE 2 (ASCD MAIN SWITCH CHECK)	DIAGNOSTIC PROCEDURE 3 (ASCD HOLD RELAY CHECK)	DIAGNOSTIC PROCEDURE 4 (ASCD CANCEL SWITCH CHECK)	DIAGNOSTIC PROCEDURE 5 (ASCD STEERING SWITCH CHECK)	DIAGNOSTIC PROCEDURE 6 (VEHICLE SPEED SENSOR CHECK)	DIAGNOSTIC PROCEDURE 7 (ASCD ACTUATOR CHECK)	DIAGNOSTIC PROCEDURE 8 (VACUUM HOSE AND ACCEL WIRE CHECK)
ASCD cannot be set.	X	X	X	X	X	X	X	X	X
Steering CANCEL switch will not operate.						X			
Steering ACCEL switch will not operate.						X			
Steering RESUME switch will not operate.						X			
Large difference between set speed and actual vehicle speed.	X	X			X	X	X	X	X
Deceleration is greatest immediately after ASCD has been set.	X	X			X	X	X	X	X
"CRUISE" indicator lamp blinks. (It indicates that system is in fail-safe.)	X	X			X	X	X	X	
Engine hunts.	X	X			X	X	X	X	X

Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 1

(POWER SUPPLY AND GROUND CIRCUIT CHECK)



1. Turn ignition switch ON.
2. Turn ASCD main switch "ON" to make sure indicators illuminate.

NG → Go to DIAGNOSTIC PROCEDURE 2 (ASCD MAIN SWITCH CHECK).

OK ↓

A

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

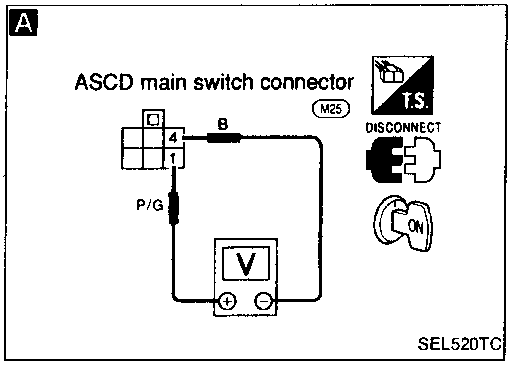
NG → Go to DIAGNOSTIC PROCEDURE 3 (ASCD HOLD RELAY CIRCUIT CHECK). Refer to EL-184.

OK ↓

Go to next procedure.

DIAGNOSTIC PROCEDURE 2

(ASCD MAIN SWITCH CHECK)



A

CHECK POWER SUPPLY FOR ASCD MAIN SWITCH.
1. Disconnect main switch connector.
2. Measure voltage between main switch terminals ① and ④.
Battery voltage should exist.

NG → Check fuse and harness.

OK ↓

Check ASCD main switch. Refer to "ELECTRICAL COMPONENTS INSPECTION" (EL-190).

NG → Replace ASCD main switch.

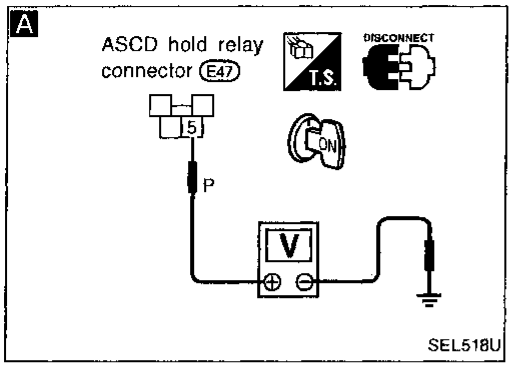
OK ↓

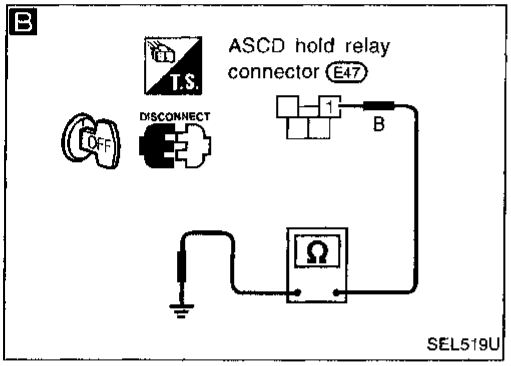
Go to next procedure.

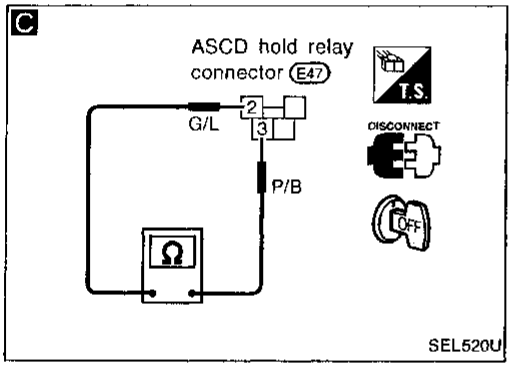
Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 3

(ASCD HOLD RELAY CIRCUIT CHECK)







A

CHECK POWER SUPPLY CIRCUIT FOR ASCD HOLD RELAY.
1. Disconnect ASCD hold relay
2. Do approx. 12 volts exist between ASCD hold relay harness terminal ⑤ and body ground?

No → Repair harness or connector.

Yes ↓

B

CHECK GROUND CIRCUIT FOR ASCD HOLD RELAY.
Does continuity exist between ASCD hold relay harness terminal ① and body ground?

No → Repair harness or connector.

Yes ↓

C

CHECK ASCD HOLD RELAY CIRCUIT.
Does continuity exist between ASCD hold relay harness terminals ③ and ②?

Yes → Check ASCD hold relay.

No ↓

CHECK ASCD MAIN SWITCH.
Refer to "ELECTRICAL COMPONENTS INSPECTION" (EL-190).

NG → Replace ASCD main switch.

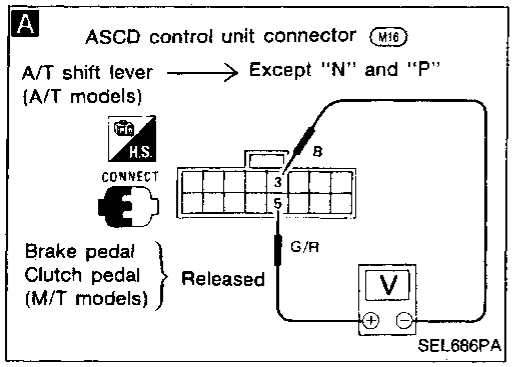
OK ↓

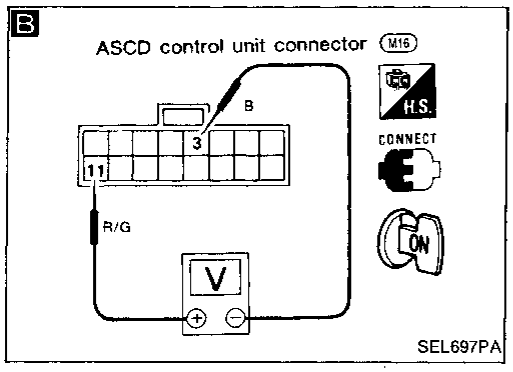
Go to next procedure.

Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 4

(ASCD CANCEL SWITCH CHECK)





A

CHECK ASCD CANCEL SWITCH, ASCD CLUTCH SWITCH AND PARK/NEUTRAL POSITION RELAY CIRCUIT

1. Turn ASCD main switch "ON".
2. Check voltage between control unit harness terminals ⑤ and ③.

Battery voltage should exist.

NG → CHECK THE FOLLOWING.

- Harness continuity between ASCD hold relay harness terminal ③ and ASCD control unit harness terminal ⑤.
  M/T model:
  Brake pedal is depressed or clutch pedal is depressed.
  A/T model:
  Brake pedal is depressed or shift lever is set "N" or "P".
  Continuity should not exist.
- ASCD cancel switch
  Refer to "ELECTRICAL COMPONENTS INSPECTION" (EL-191).
- ASCD clutch switch (M/T model)
  Refer to "ELECTRICAL COMPONENTS INSPECTION" (EL-191).
- Inhibitor switch (A/T model)
  Refer to "ELECTRICAL COMPONENTS INSPECTION" (EL-191).

OK ↓

B

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

When brake pedal is released: 0V
When brake pedal is depressed: Approx. 12V

NG → CHECK THE FOLLOWING.

- Harness continuity between ASCD control unit harness terminal ⑪ and fuse.
  When brake pedal is depressed.
  Continuity should exist.
- Fuse
- Stop lamp switch
  Refer to "ELECTRICAL COMPONENTS INSPECTION" (EL-191).

OK ↓

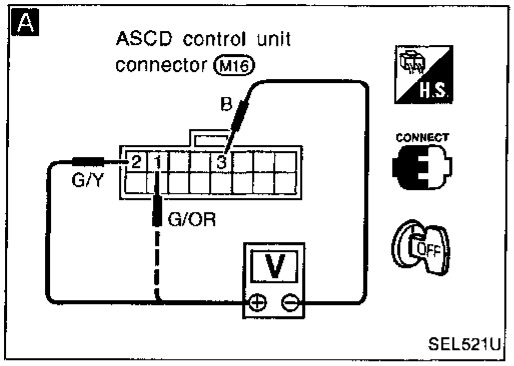
ASCD cancel switch is OK.

Trouble Diagnoses (Cont'd)

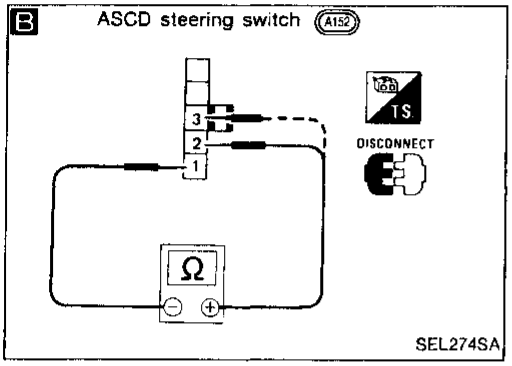
DIAGNOSTIC PROCEDURE 5

(ASCD STEERING SWITCH CHECK)

A



B



A

CHECK ASCD STEERING SWITCH CIRCUIT FOR ASCD CONTROL UNIT.
1. Disconnect control unit connector.
2. Check voltage between control unit harness terminals.

	Terminal No.		Switch condition	
	⊕	⊖	Pressed	Released
SET/ COAST SW	②	③	12V	0V
RESUME/ ACC SW	①	③	12V	0V
CANCEL SW	②	③	6V	0V
	①	③	6V	0V

OK → ASCD steering switch is OK.

NG ↓

CHECK POWER SUPPLY FOR ASCD STEERING SWITCH.
Does horn work?

NG → Check the following.
- Fuse
- Horn relay
- Harness

OK ↓

B

CHECK ASCD STEERING SWITCH.
Check continuity between terminals by pushing each button.

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

NG → Replace ASCD steering switch.

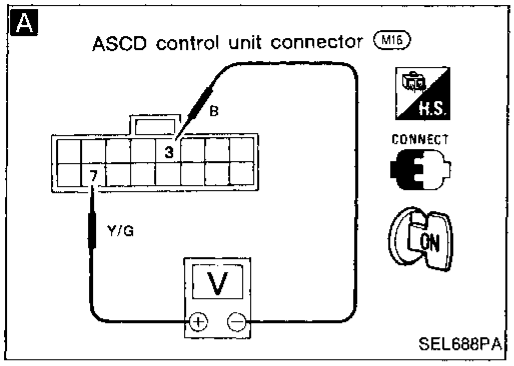
OK ↓

Check harness between ASCD steering switch and ASCD control unit.

Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 6

(VEHICLE SPEED SENSOR CHECK)



A

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

OK → Vehicle speed sensor is OK.

OK ↓

Does speedometer operate normally?

No → Check speedometer and vehicle speed sensor circuit. Refer to EL-191.

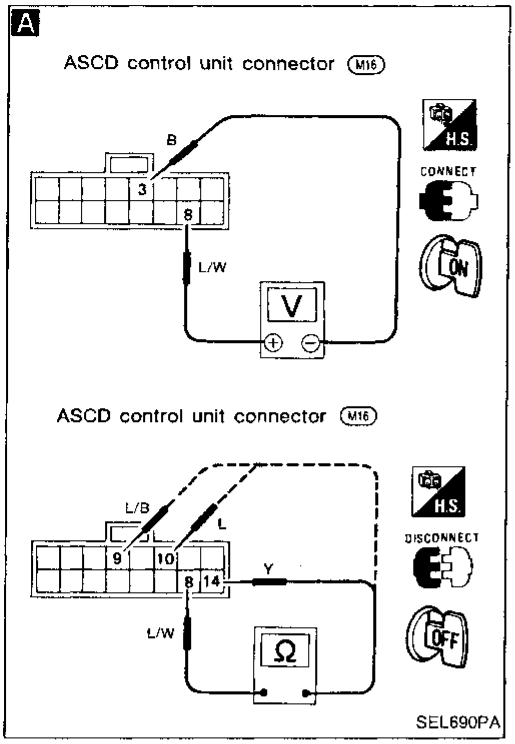
Yes ↓

Check harness between ASCD control unit terminal ⑦ and combination meter terminal ⑭.

Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 7

(ASCD ACTUATOR CHECK)



A

CHECK OUTPUT FOR ASCD ACTUATOR/ASCD PUMP.
1. Turn ignition switch ON.
2. Check voltage between control unit harness terminals ⑧ and ③.
Voltage is 0V.

NG → Replace ASCD control unit.

OK ↓

A

1. Disconnect ASCD control unit connector.
2. Measure resistance between control unit harness terminals ⑧ and ⑨, ⑩, ⑭.

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

OK → ASCD actuator is OK.

NG ↓

CHECK ASCD ACTUATOR.
Refer to "ELECTRICAL COMPONENTS INSPECTION" (EL-190).

OK → Check and repair harness.

NG ↓

Replace ASCD actuator.

DIAGNOSTIC PROCEDURE 8

(VACUUM HOSE AND ACCEL WIRE CHECK)

Check vacuum hose for breakage, cracks or fracture.

NG → Repair or replace hose.

OK ↓

Check ASCD wire smoothly.

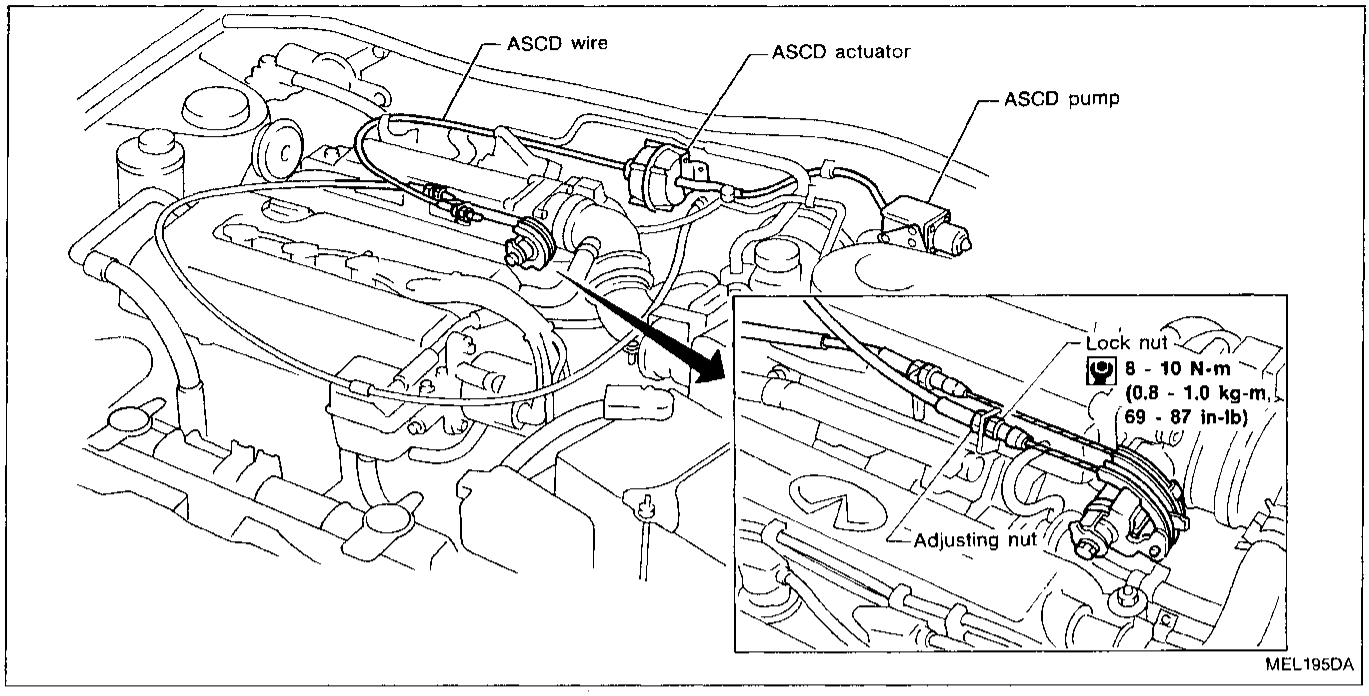
NG → Repair or replace wire. Refer to "ASCD WIRE ADJUSTMENT" (EL-189).

OK ↓

Vacuum hose and accelerator wire are OK.

Trouble Diagnoses (Cont'd)

ASCD WIRE ADJUSTMENT



CAUTION:

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

Adjust the tension of ASCD wire in the following manner.

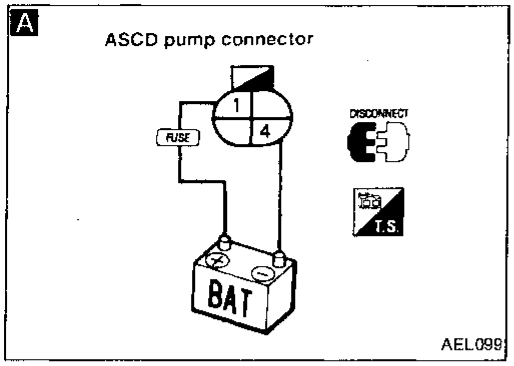
(1) Loosen lock nut and adjusting nut.
(2) Make sure that accelerator wire is properly adjusted. Refer to FE section ("ACCELERATOR CONTROL SYSTEM").
(3) Tighten adjusting nut until throttle drum just starts to move.
(4) Loosen adjusting nut again 1/2 to 1 turn.
(5) Tighten lock nut.

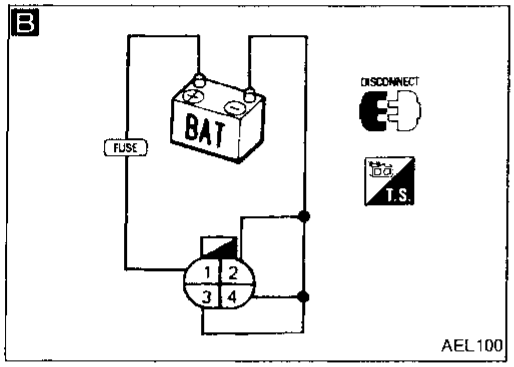
Trouble Diagnoses (Cont'd)

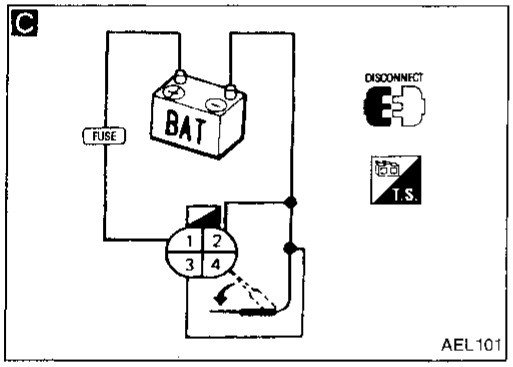
ELECTRICAL COMPONENTS INSPECTION

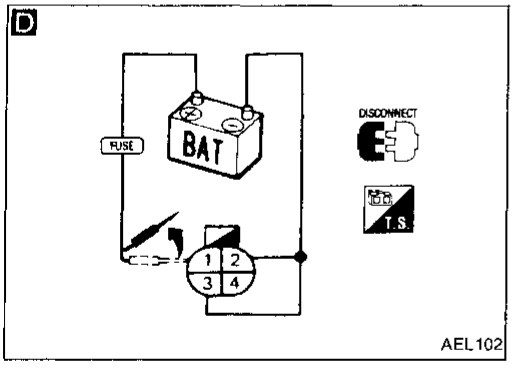
ASCD actuator/ASCD pump

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









A

Does motor start when 12V DC is applied across ① and ④?

No → Replace ASCD pump.

Yes ↓

B

Is ASCD wire pulled when 12V DC is applied across ①, ②, ③ and ④?

No → Disconnect vacuum hose from ASCD actuator and check for presence of vacuum pressure at ASCD pump.

NG → Replace ASCD actuator.

OK

Yes ↓

C

Does ASCD wire return to original position 50 to 60 seconds after disconnecting lead from ④?

Yes → Replace ASCD pump.

No ↓

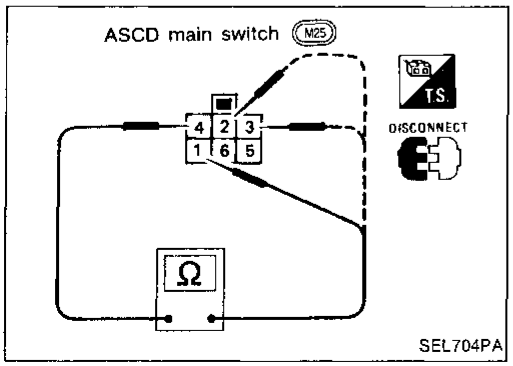
D

Disconnect lead from ①. Does ASCD wire return immediately?

No → Replace ASCD pump.

Yes ↓

ASCD actuator/ASCD pump are OK.

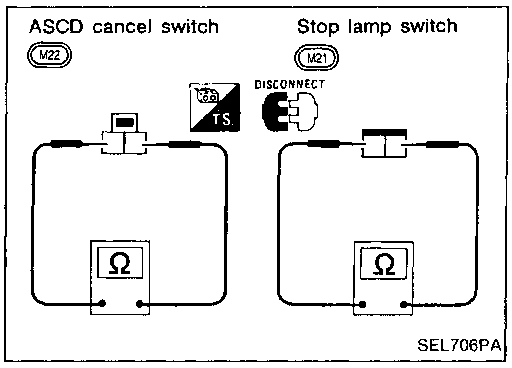


ASCD main switch

Check continuity between terminals by pushing switch to each position.

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

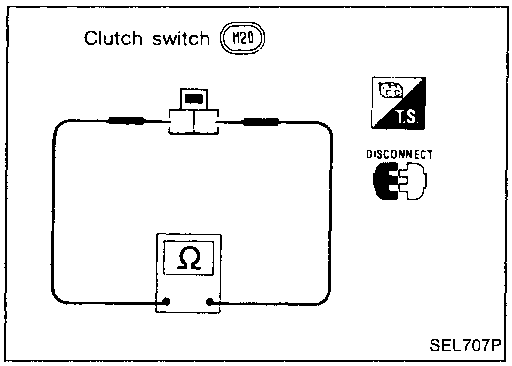
Trouble Diagnoses (Cont'd)



ASCD cancel switch and stop lamp switch

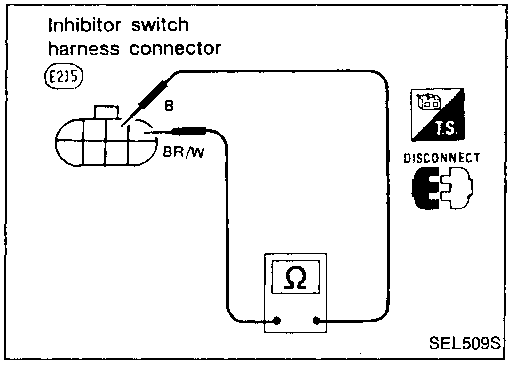
Condition	Continuity	
	ASCD cancel switch	Stop lamp switch
When brake pedal is depressed	No	Yes
When brake pedal is released	Yes	No

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



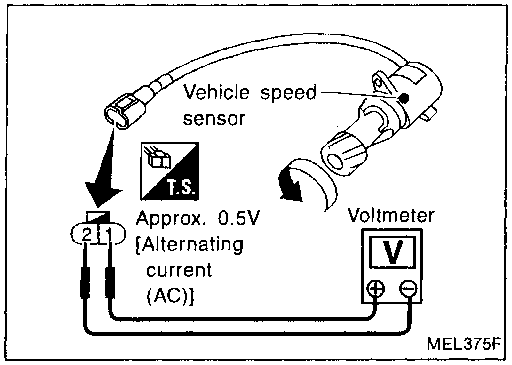
ASCD clutch switch (For M/T models)

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



Inhibitor switch (For A/T models)

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

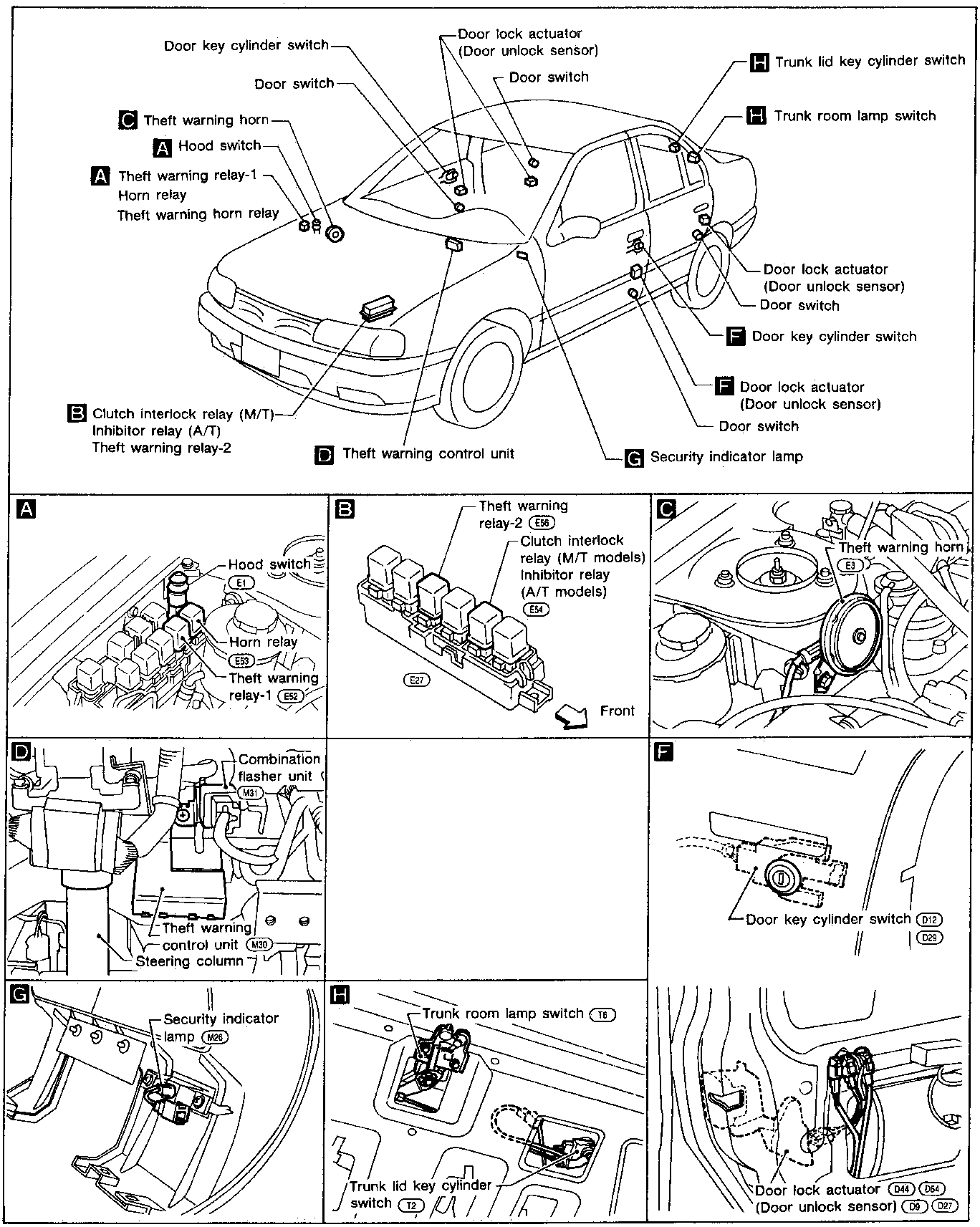


Vehicle speed sensor

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

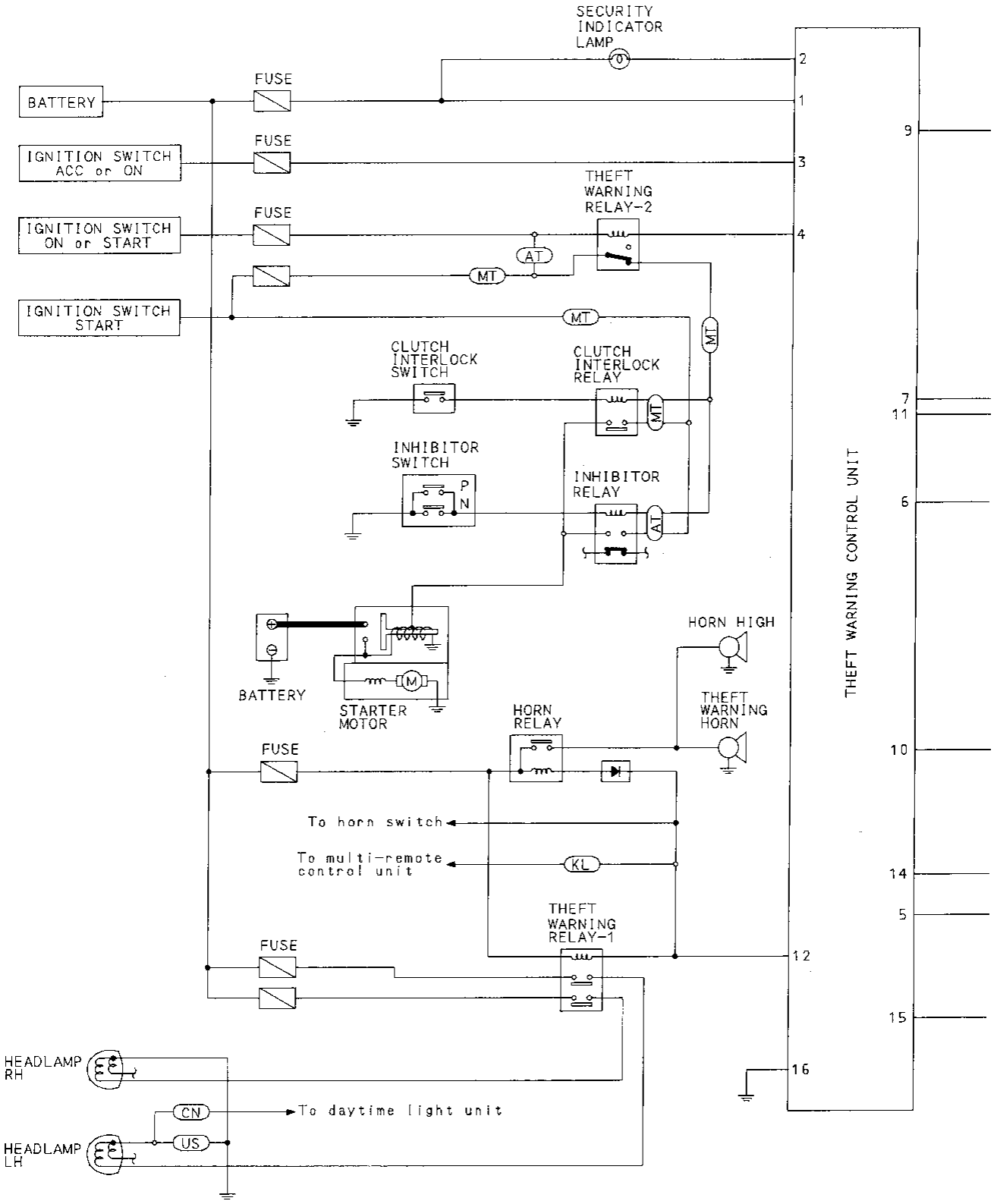
NOTE

Component Parts and Harness Connector Location



MEL196D

Schematic



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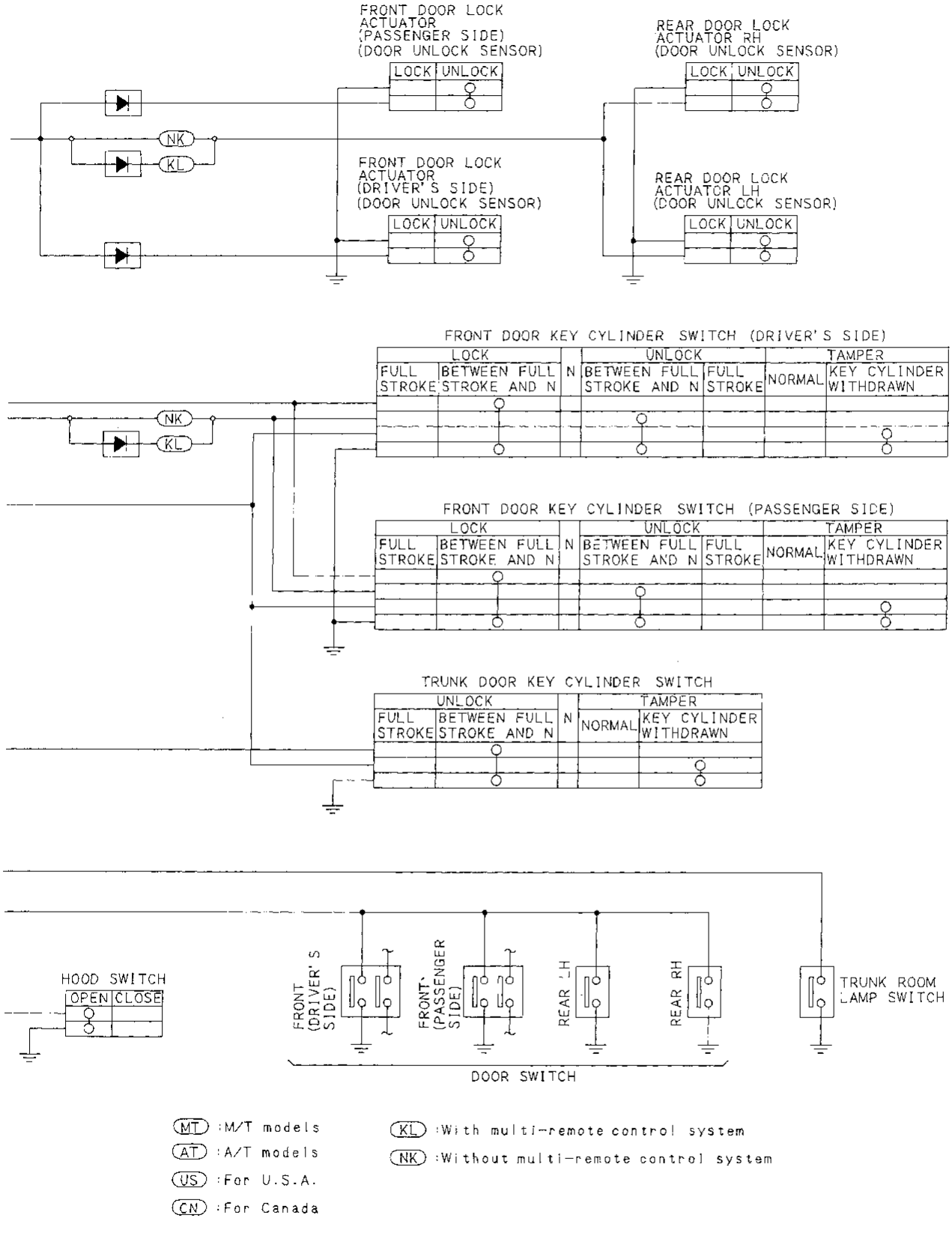
Schematic (Cont'd)



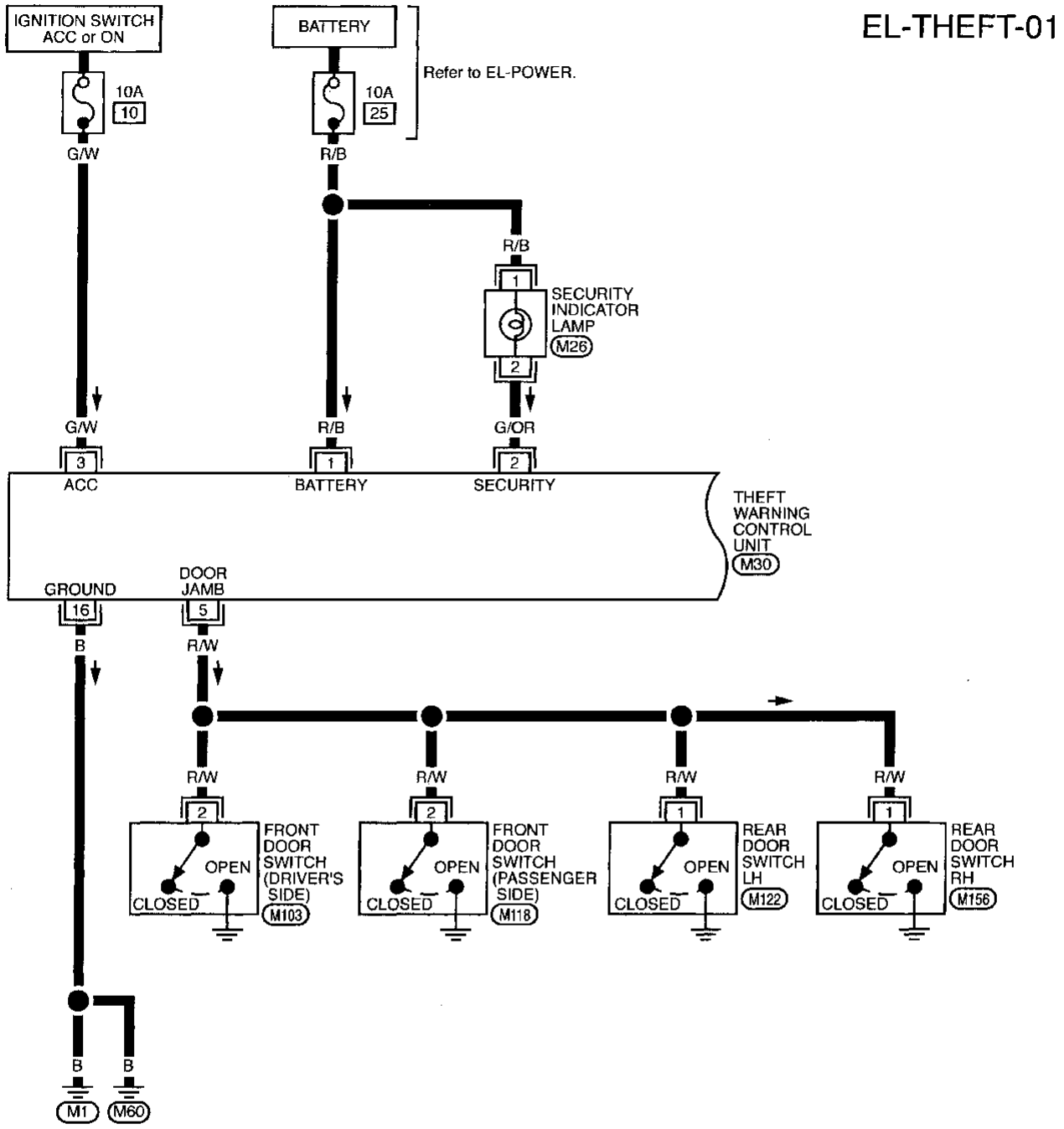
(MT) :M/T models
(AT) :A/T models
(US) :For U.S.A.
(CN) :For Canada

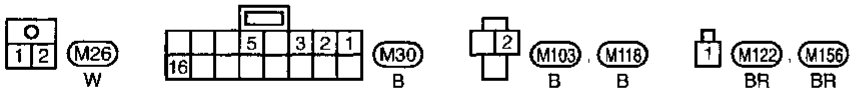
(KL) :With multi-remote control system
(NK) :Without multi-remote control system

TEL129

Wiring Diagram — THEFT —

EL-THEFT-01

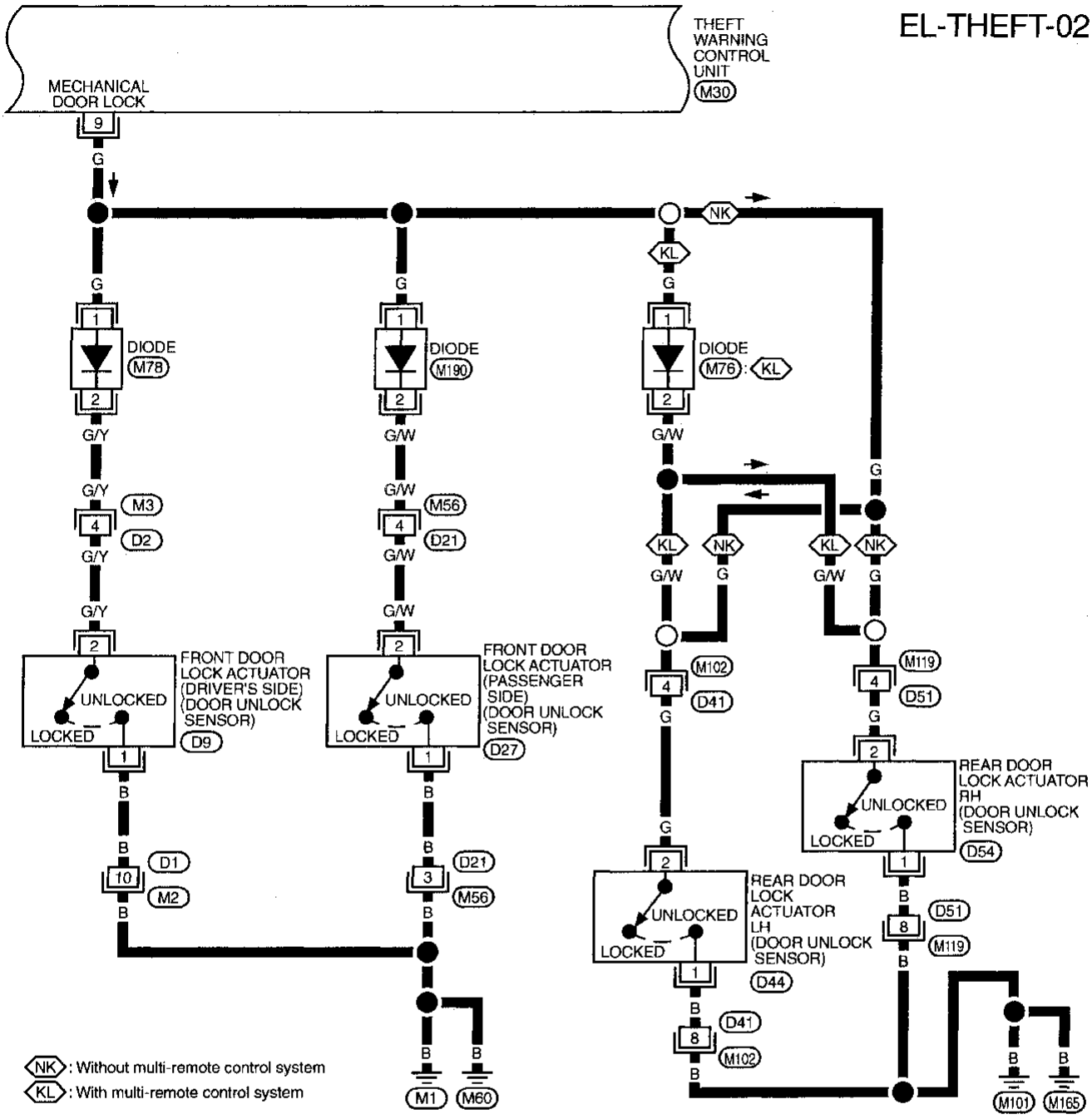


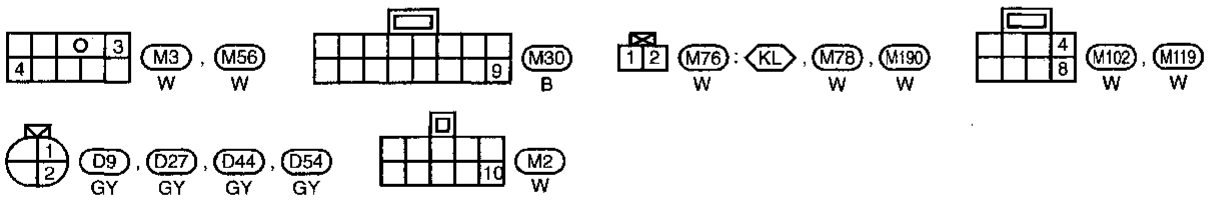


TEL121

Wiring Diagram — THEFT — (Cont'd)

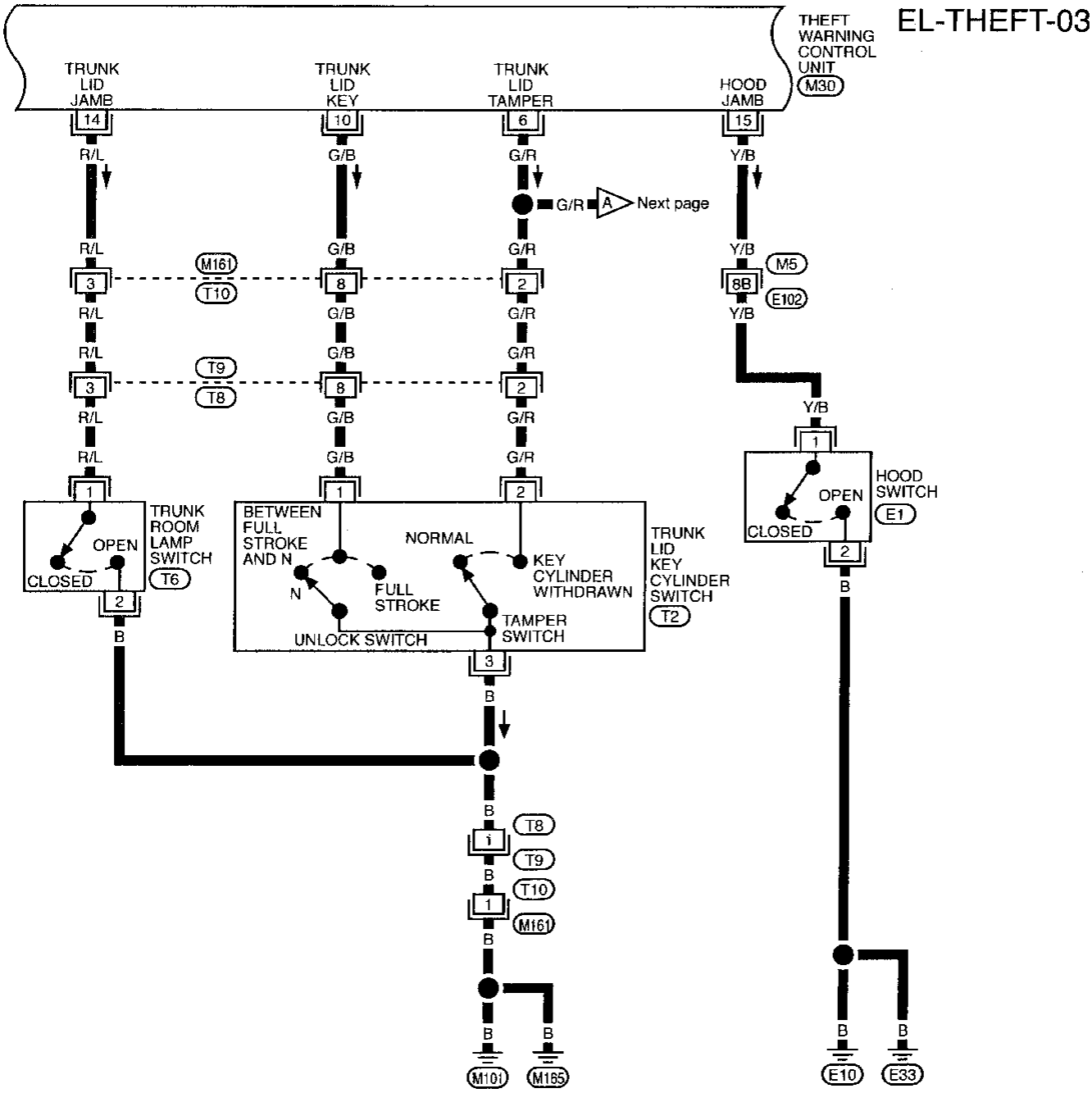
EL-THEFT-02

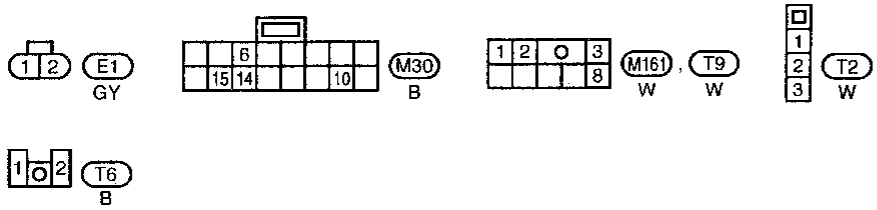




TEL122

Wiring Diagram — THEFT — (Cont'd)



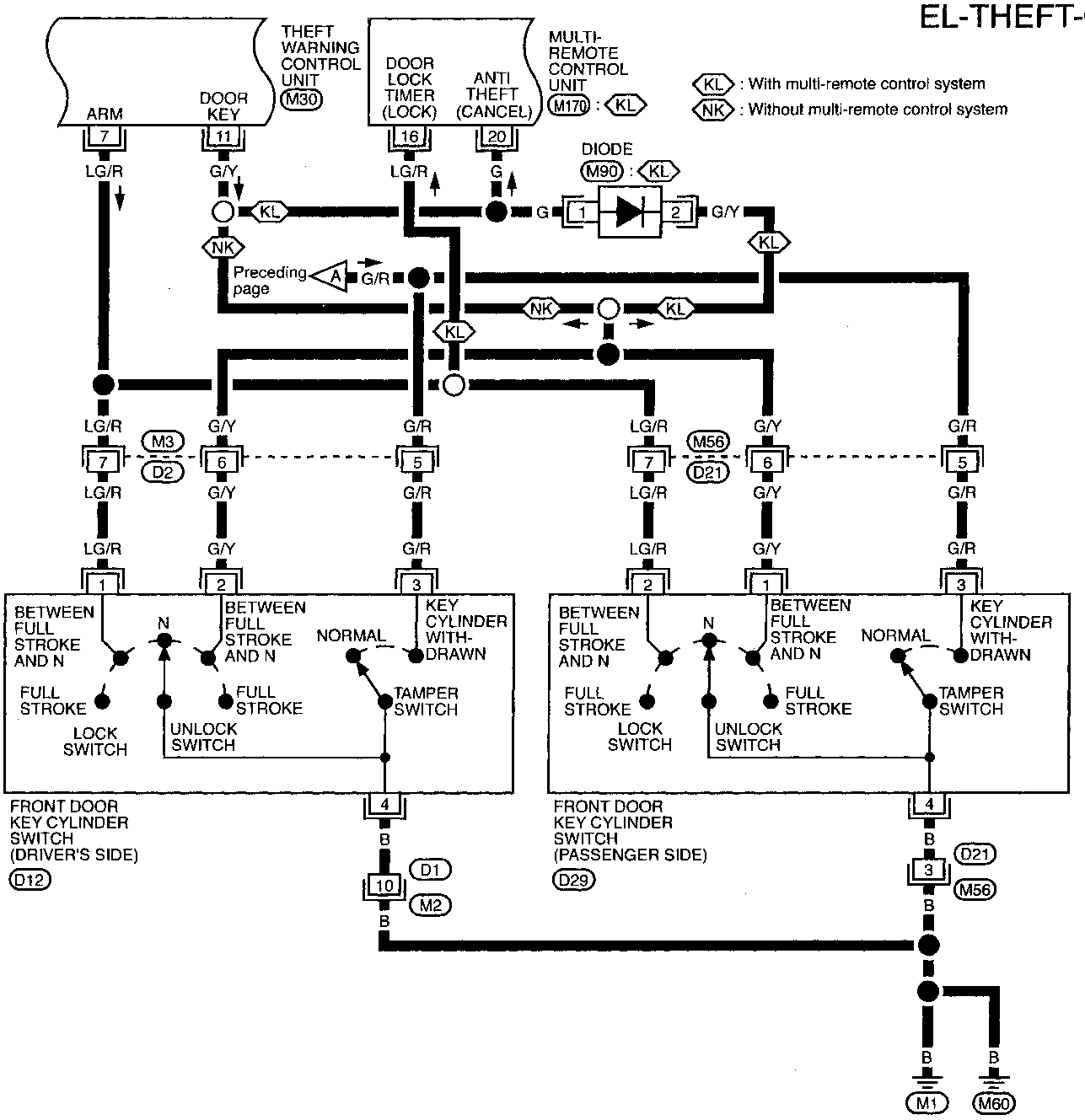


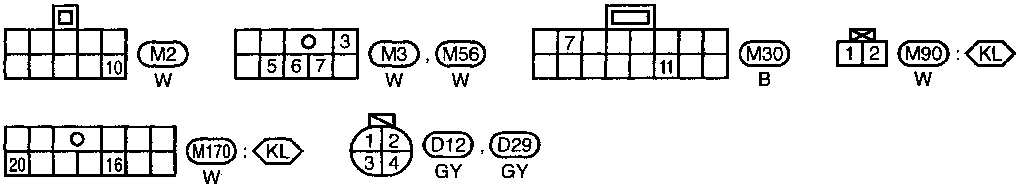
Refer to last page (Foldout page).
E102, M5

TEL123

Wiring Diagram — THEFT — (Cont'd)

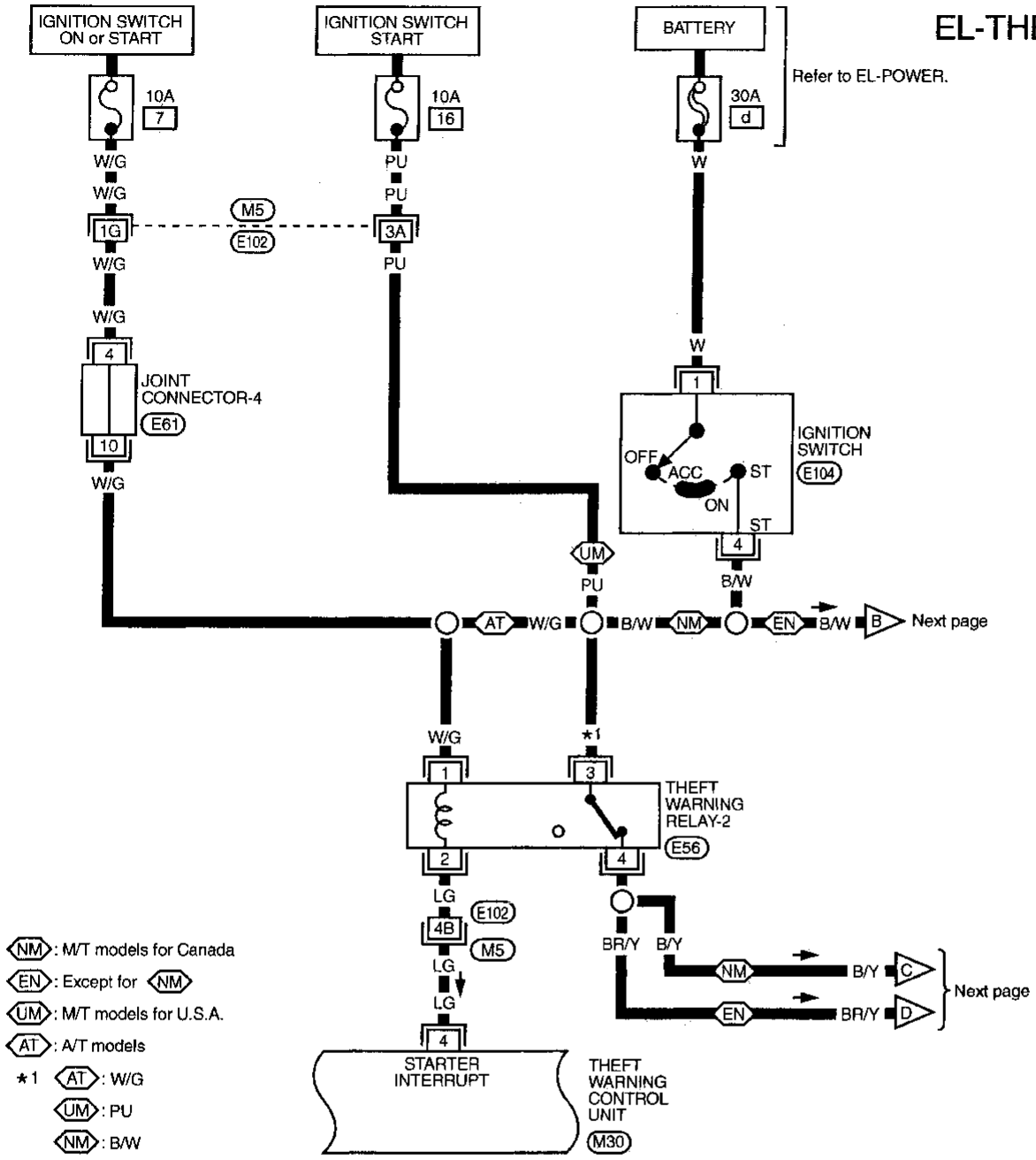
EL-THEFT-04

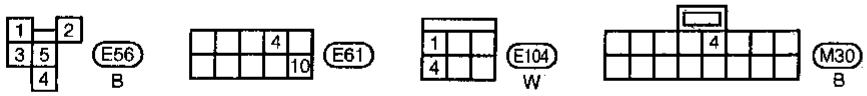




Wiring Diagram — THEFT — (Cont'd)

EL-THEFT-05

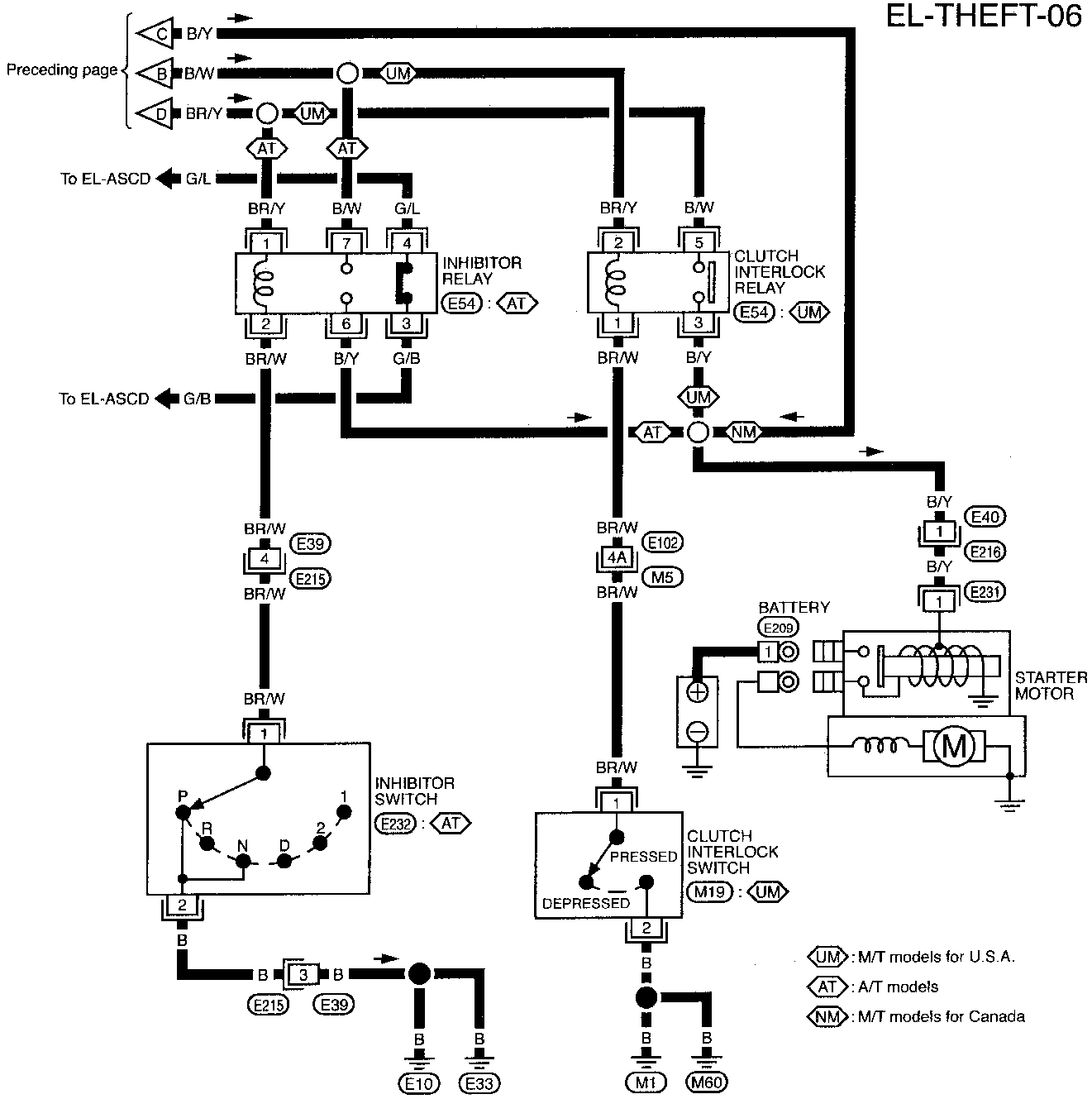


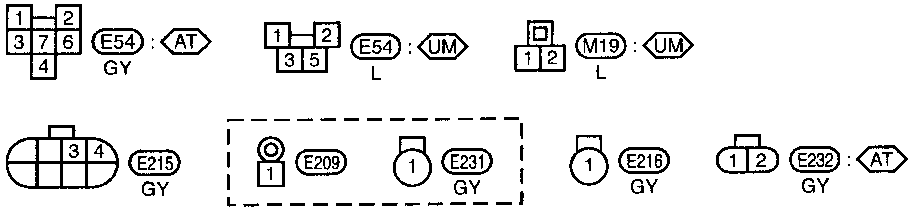


Refer to last page (Foldout page).
E102, M5
E61

Wiring Diagram — THEFT — (Cont'd)

EL-THEFT-06

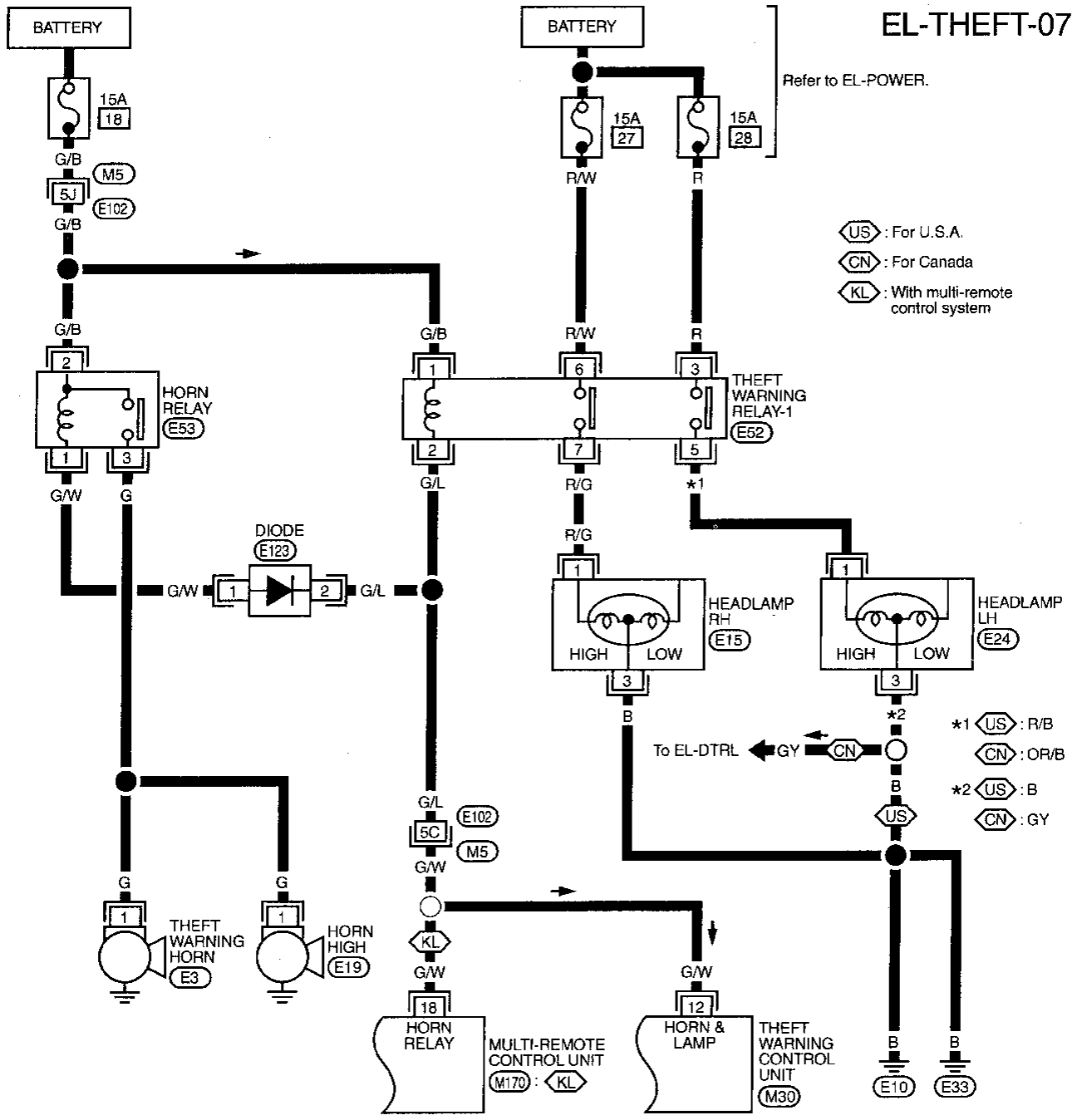


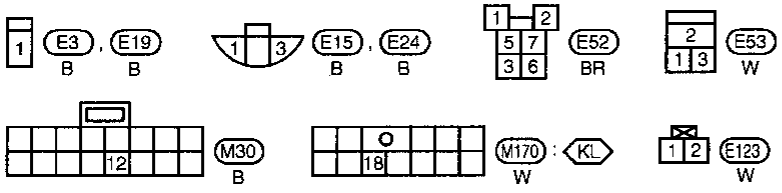


Refer to last page (Foldout page).
E102 , M5

TEL126

Wiring Diagram — THEFT — (Cont'd)





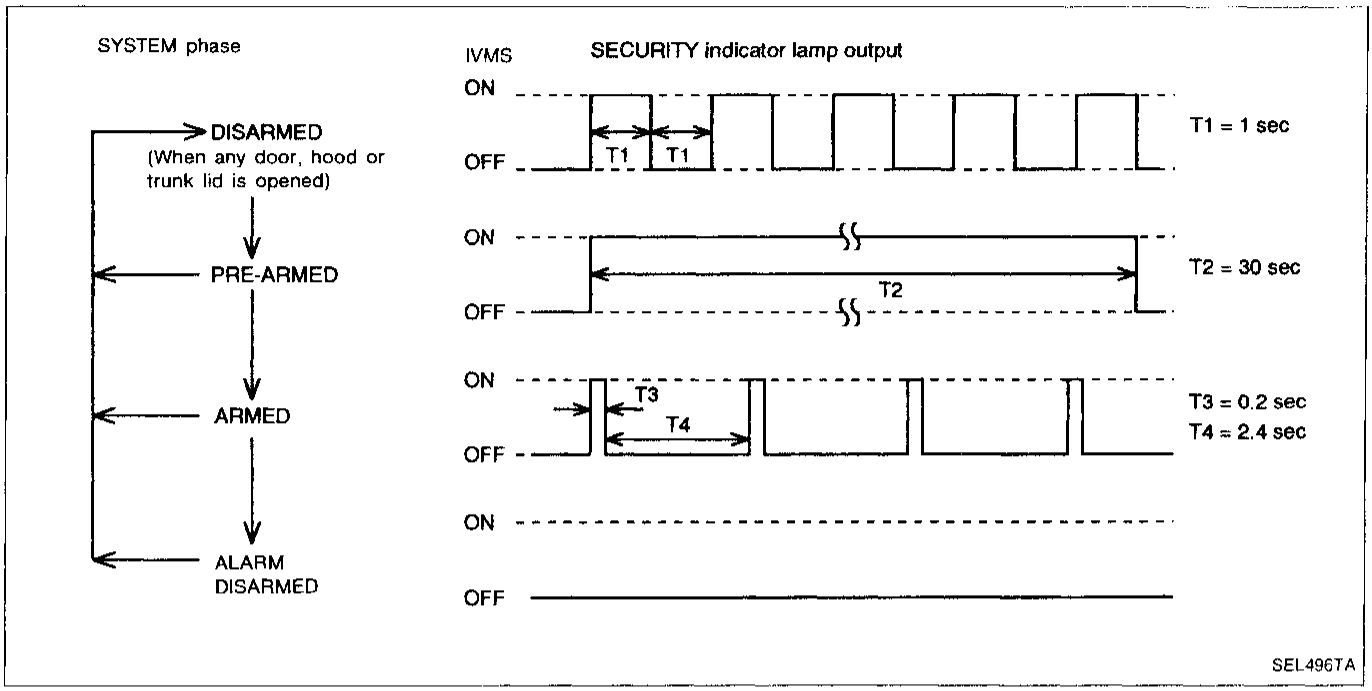
Refer to last page (Foldout page).
E102 , M5

TEL127

Trouble Diagnoses

DESCRIPTION

1. Operation flow



2. Setting the theft warning system

Initial condition

(1) Close all doors.
(2) Close hood and trunk lid.
(3) Pull key out of ignition.

Disarmed phase

The theft warning system is in the disarmed phase when any door(s), hood or trunk lid is opened. The security indicator lamp blinks every second.

Pre-armed phase and armed phase

The theft warning system turns into the "pre-armed" phase when hood, trunk lid and all doors are closed and locked by key or multi-remote control. (The security indicator lamp illuminates.)
After about 30 seconds, the system automatically shifts into the "armed" phase (the system is set). (The security indicator lamp blinks every 2.4 seconds.)

3. Canceling the set theft warning system

When the following (a) or (b) operation is performed, the armed phase is canceled.
(a) Unlock the doors or the trunk lid with the key.
(b) Unlock the doors or the trunk lid with the multi-remote controller.

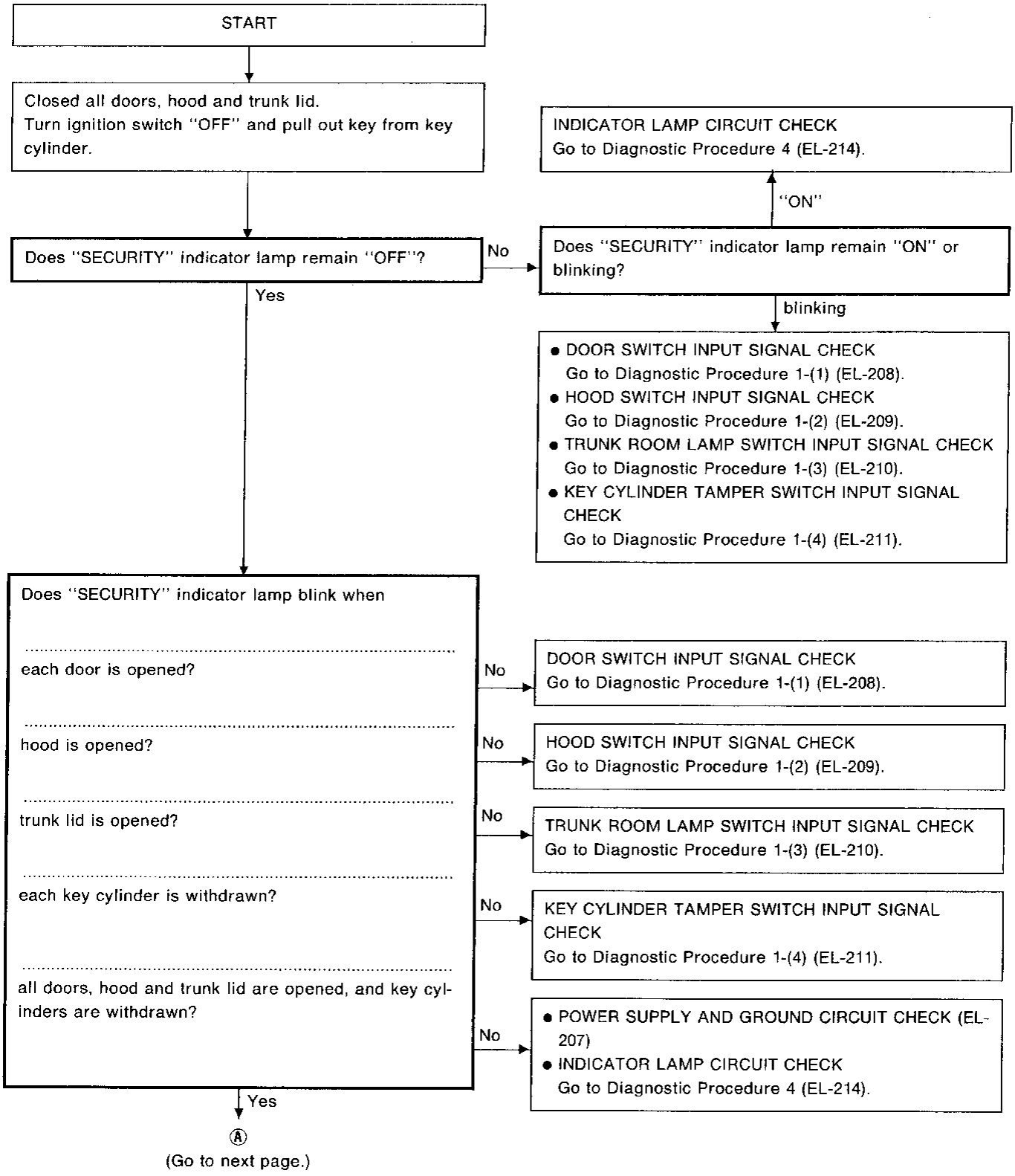
4. Activating the alarm operation of the theft warning system

Make sure the system is in the armed phase. (The security indicator lamp blinks every 2.4 seconds.)
When any of the following operations (a), (b) and (c) is performed, the system sounds the horns and flashes the headlamps for about 2.5 minutes. (At the same time, the system disconnects the starting system circuit.) The starting system is kept dead even after the alarm turns off.
(a) Open the engine hood or trunk lid using the hood or trunk lid opener.
(b) Unlock any door without key or multi remote controller.
(c) Pull out the key cylinder from either front door or the trunk lid.

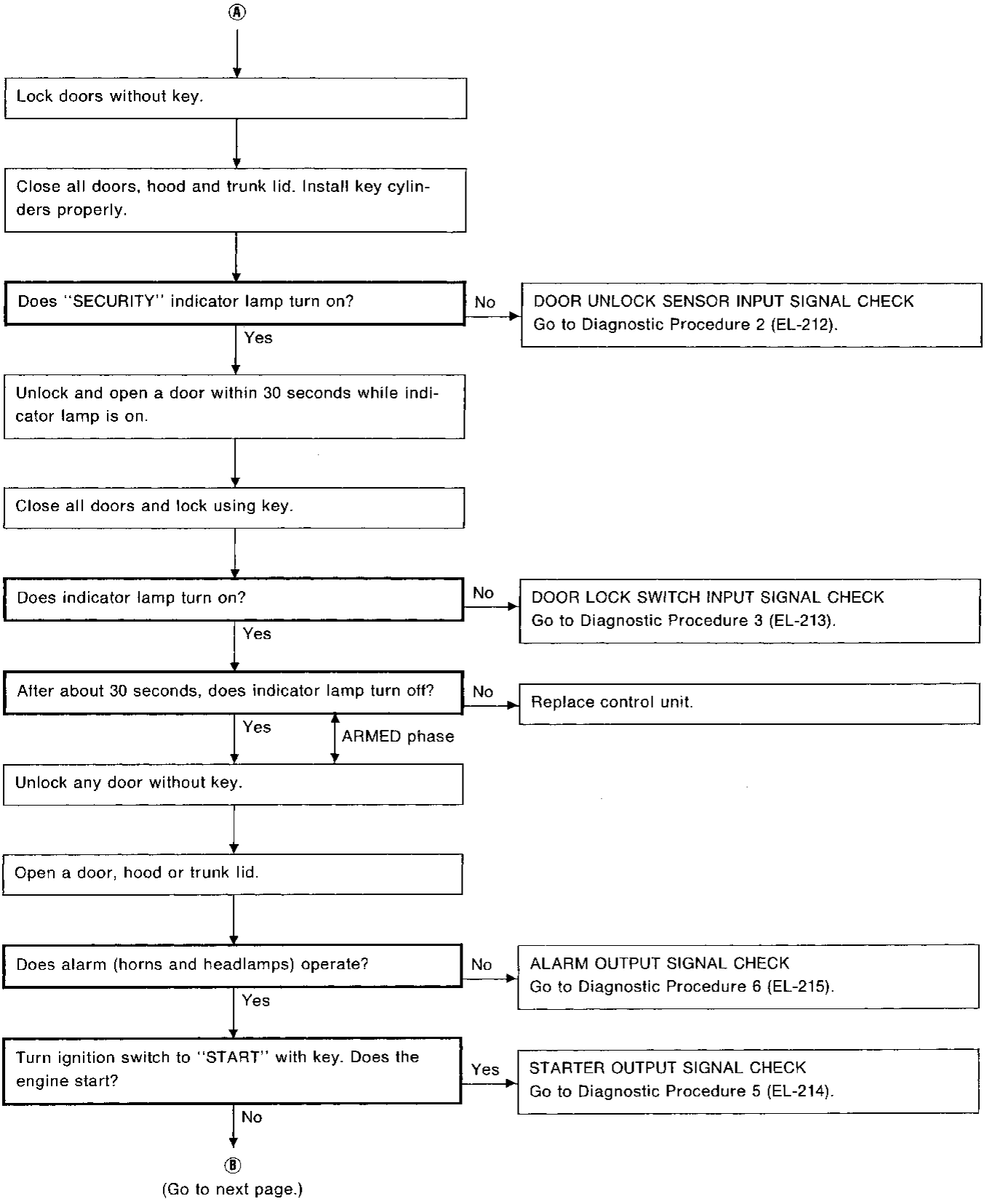
Trouble Diagnoses (Cont'd)

SYSTEM OPERATION CHECK

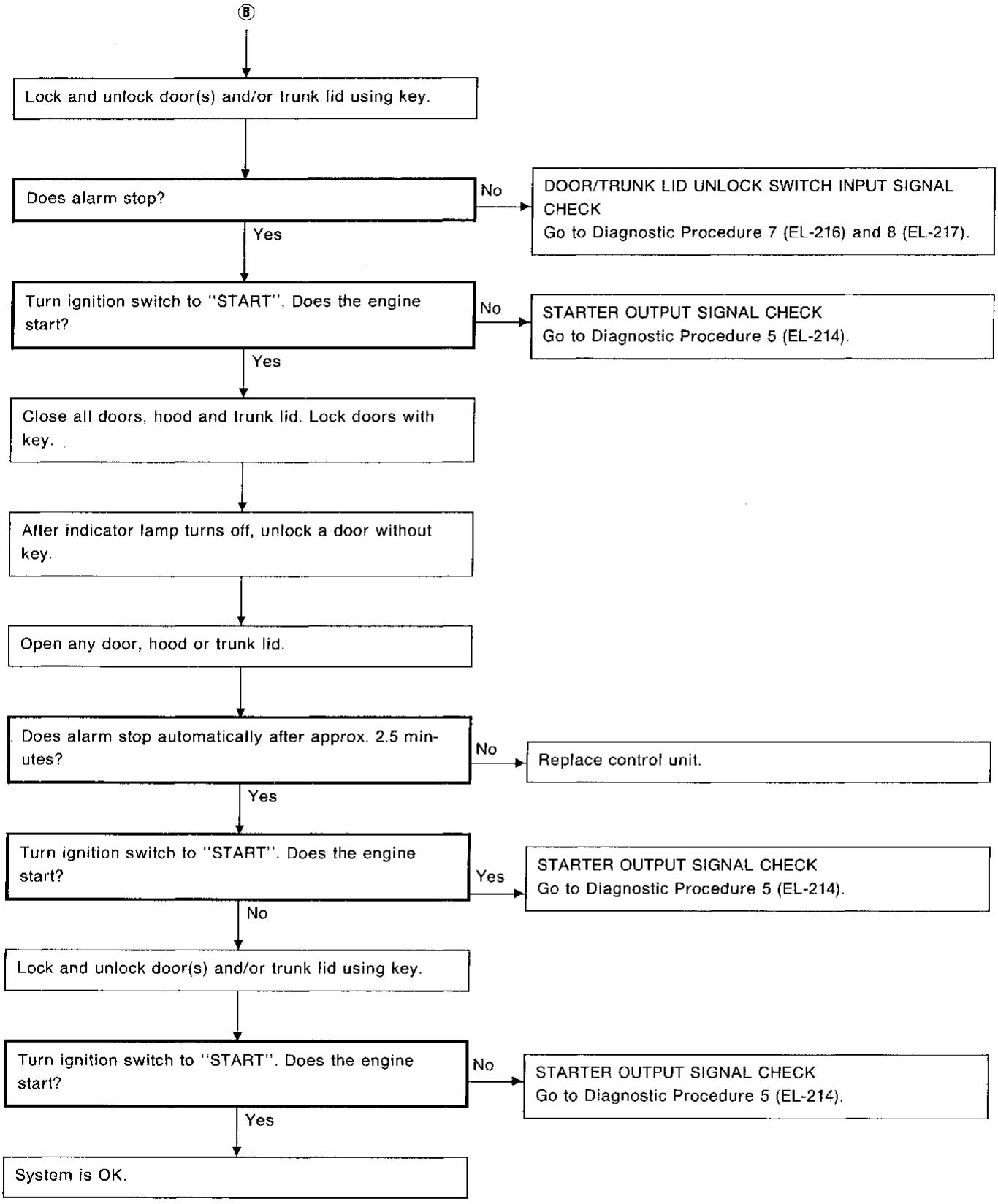
If ignition switch is turned to "ACC" at a step between START and ARMED or in the ARMED phase shown in this flow chart, the system operation is canceled.



Trouble Diagnoses (Cont'd)

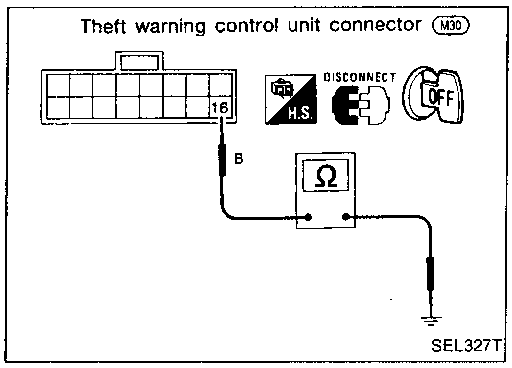


Trouble Diagnoses (Cont'd)



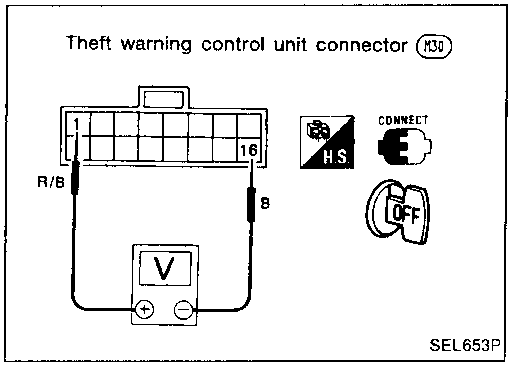
Trouble Diagnoses (Cont'd)

POWER SUPPLY AND GROUND CIRCUIT CHECK



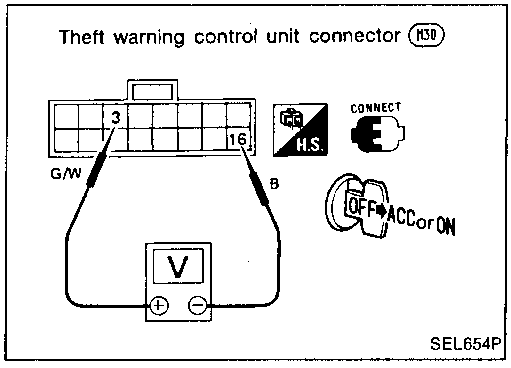
Ground circuit check

Terminals	Continuity
⑯ - Ground	Yes



Main power supply circuit check

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



Power supply circuit check for system cancel

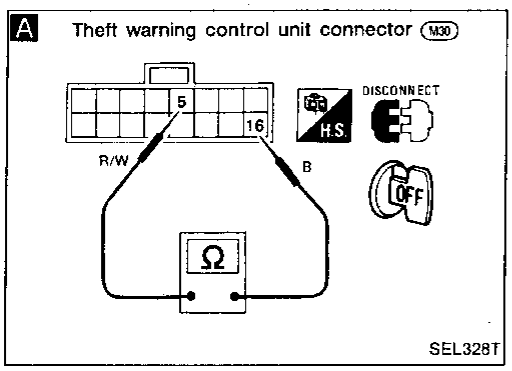
Terminals	Ignition switch position		
	OFF	ACC	ON
③ - ⑯	0V	Battery voltage	Battery voltage

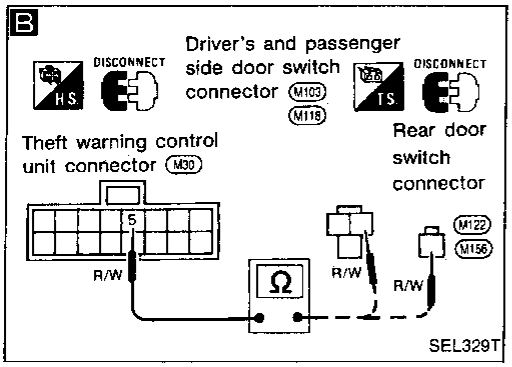
Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 1

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

Diagnostic procedure 1-(1)





A

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

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

OK → Go to Diagnostic Procedure 4 (EL-214).

NG ↓

DOOR SWITCH CHECK
Refer to "Electrical Components Inspection" (EL-218).

NG → Replace door switch.

OK ↓

B

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

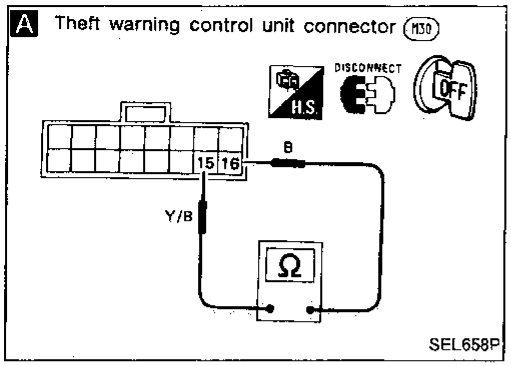
NG → Repair harness or connectors.

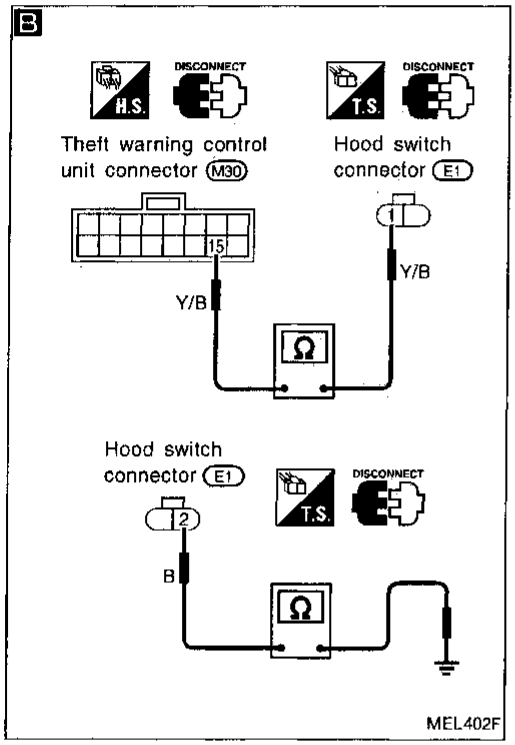
OK ↓

CHECK THE CONNECTIONS AT EACH CONNECTOR.

Trouble Diagnoses (Cont'd)

Diagnostic procedure 1-(2)





A

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

Condition	Continuity
Hood is open	Yes
Hood is closed	No

OK → Go to Diagnostic Procedure 4 (EL-214).

NG

Check hood switch and hood fitting condition.

NG → Adjust installation of hood switch or hood.

OK

HOOD SWITCH CHECK
Refer to "Electrical Components Inspection" (EL-218).

NG → Replace hood switch.

OK

B

HOOD SWITCH CIRCUIT CHECK
- Check harness continuity between control unit harness terminal ⑮ and hood switch harness terminal ①.
- Check harness continuity between hood switch terminal ② and body ground.

Continuity should exist.

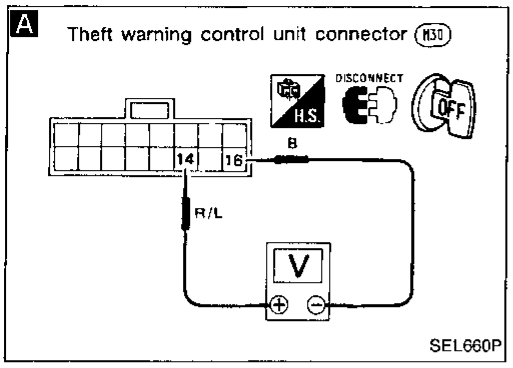
NG → Repair harness or connectors.

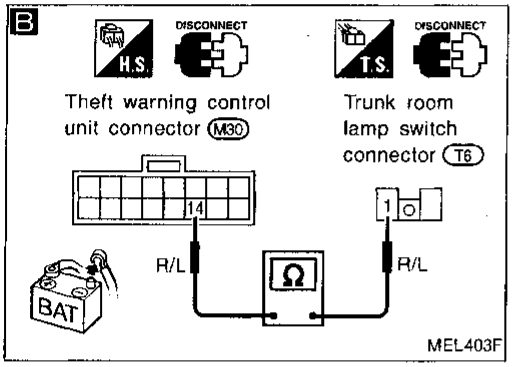
OK

CHECK THE CONNECTIONS AT EACH CONNECTOR.

Trouble Diagnoses (Cont'd)

Diagnostic procedure 1-(3)





A

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

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

OK → Go to Diagnostic Procedure 4 (EL-214).

NG

Does trunk room lamp come on?

Yes → B

No

TRUNK ROOM LAMP SWITCH CHECK
Refer to "Electrical Components Inspection" (EL-218).

OK → B

NG → Replace trunk room lamp switch.

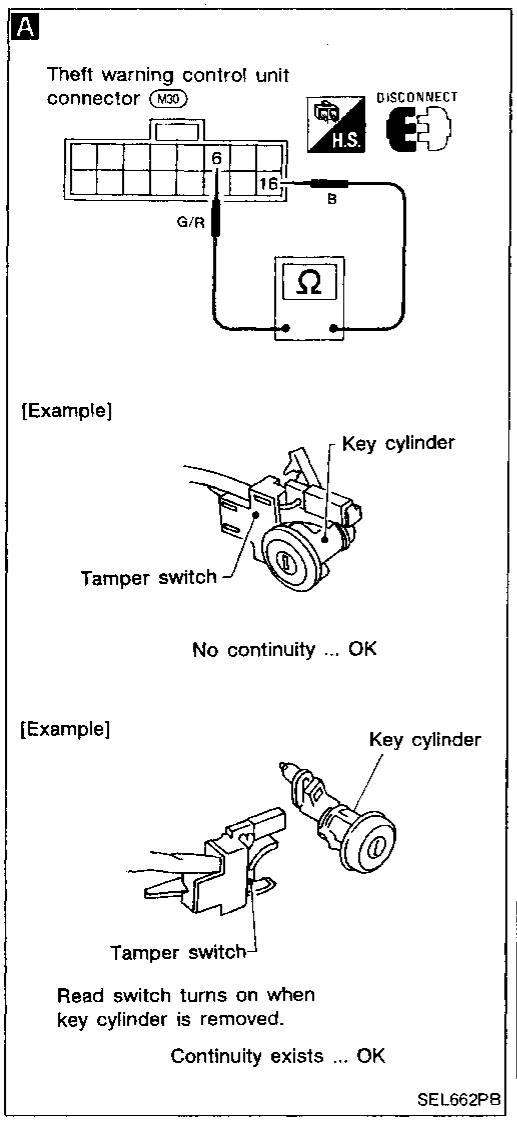
B

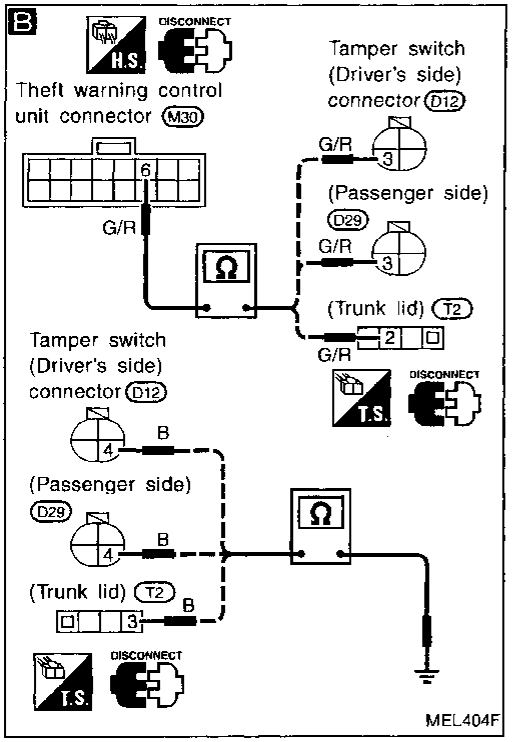
TRUNK ROOM LAMP SWITCH CIRCUIT CHECK
Check harness continuity between control unit harness terminal ⑭ and trunk room lamp switch harness terminal ①.

OK → CHECK THE CONNECTIONS AT EACH CONNECTOR.

Trouble Diagnoses (Cont'd)

Diagnostic procedure 1-(4)





A

KEY CYLINDER TAMPER SWITCH INPUT SIGNAL CHECK
Check continuity between control unit harness terminals ⑥ and ⑯.

Condition	Continuity
Tamper switch is	
Normal	No
Removed	Yes

OK → Go to Diagnostic Procedure 4 (EL-214).

NG

KEY CYLINDER TAMPER SWITCH CHECK
Refer to "Electrical Components Inspection" (EL-219).

NG → Replace key cylinder tamper switch.

OK

B

KEY CYLINDER TAMPER SWITCH CIRCUIT CHECK
- Check harness continuity between control unit harness terminal ⑥ and tamper switch harness terminals ③ and ② (Trunk lid).
- Check harness continuity between tamper switch terminals ④ and ③ (Trunk lid) and body ground.

Continuity should exist.

NG → Repair harness and connectors.

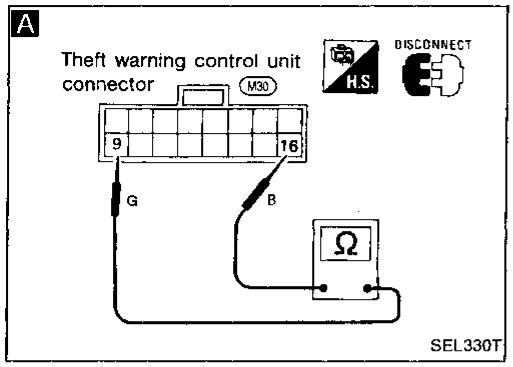
OK

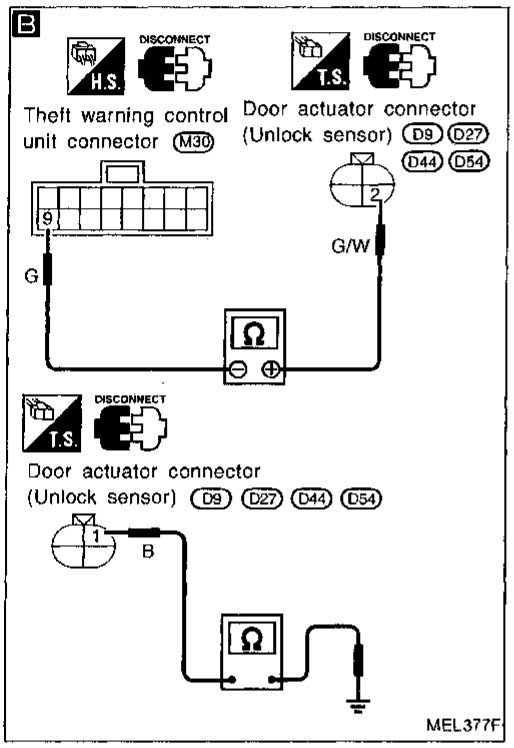
CHECK THE CONNECTIONS AT EACH CONNECTOR.

Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 2

SYMPTOM: Indicator lamp does not come on.





A

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

Condition	Continuity
Locked	No
Unlocked	Yes

OK → Go to Diagnostic Procedure 3 (EL-213).

OK → Replace control unit.

NG

DOOR UNLOCK SENSOR CHECK
Refer to "Electrical Components Inspection" (EL-219).

NG → Replace door lock actuator.

OK

B

DOOR UNLOCK SENSOR CIRCUIT CHECK

- Check harness continuity between control unit harness terminal ⑨ and door actuator terminal ②.
- Check harness continuity between door actuator terminal ① and body ground.

Continuity should exist.

NG → Repair harness or connectors.

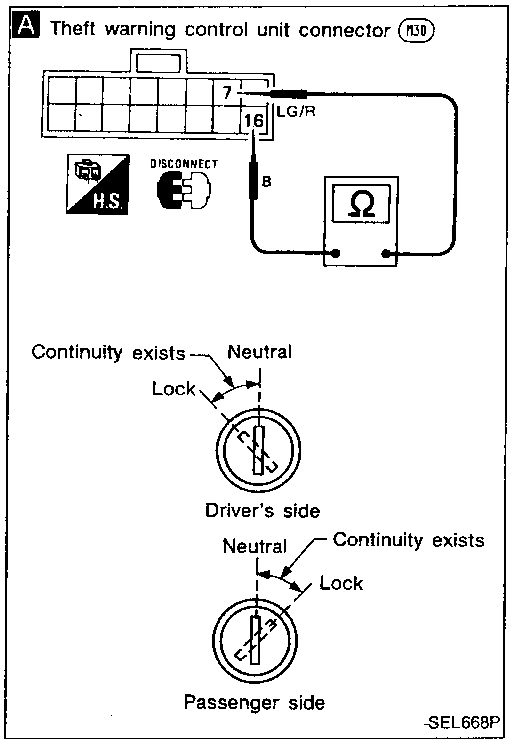
OK

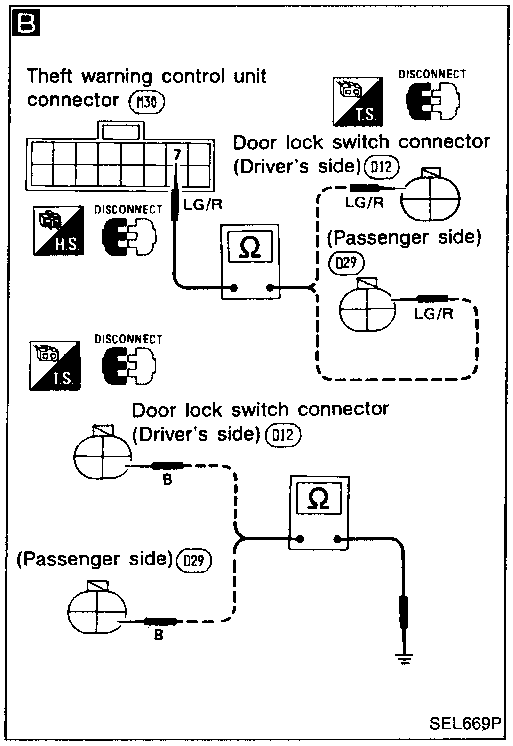
CHECK THE CONNECTIONS AT EACH CONNECTOR.

Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 3

SYMPTOM: Indicator lamp does not come on.





A

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

Key position	Continuity
Neutral or Lock	No
Between neutral and lock	Yes

OK → Go to Diagnostic Procedure 2 (EL-212).

OK → Replace control unit.

NG

DOOR LOCK SWITCH CHECK
Refer to "Electrical Components Inspection" (EL-219).

NG → Replace key cylinder switch.

OK

B

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

Continuity should exist.

NG → Repair harness or connectors.

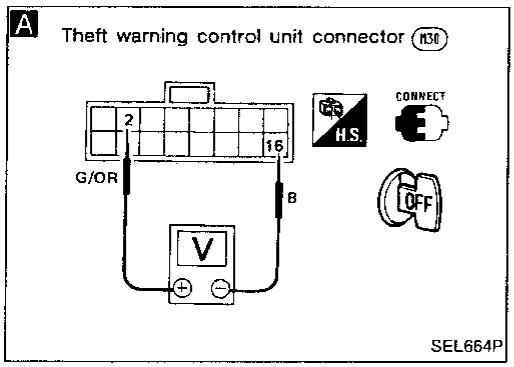
OK

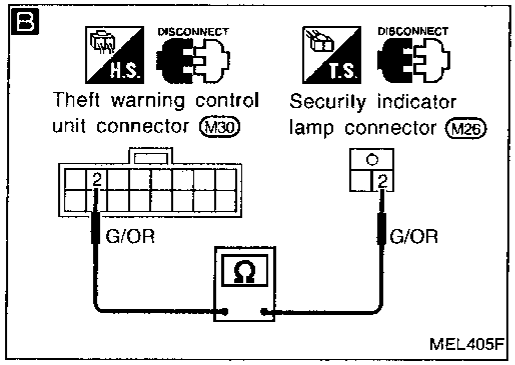
CHECK THE CONNECTIONS AT EACH CONNECTOR.

Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 4

SYMPTOM: Indicator lamp does not blink.





A

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

NG → Replace control unit.

OK ↓

CHECK INDICATOR LAMP.

NG → Replace indicator lamp.

OK ↓

B

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

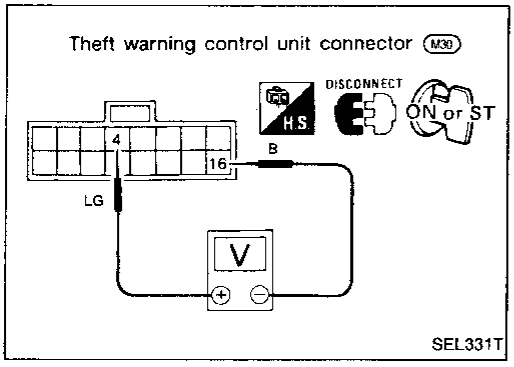
NG → Repair harness or connectors.

OK ↓

CHECK THE CONNECTIONS AT EACH CONNECTOR.

DIAGNOSTIC PROCEDURE 5

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



Approx. 12V

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

→ Replace control unit.

Approx. 0 volt ↓

Check theft warning relay-2.

NG → Replace theft warning relay-2.

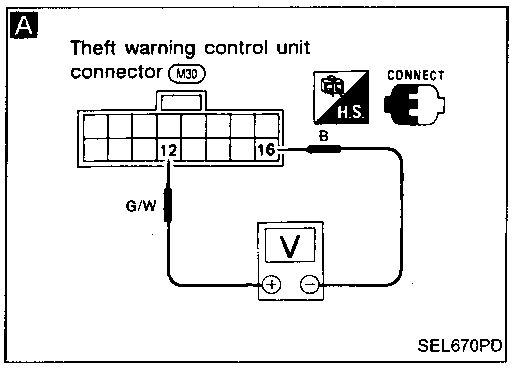
OK ↓

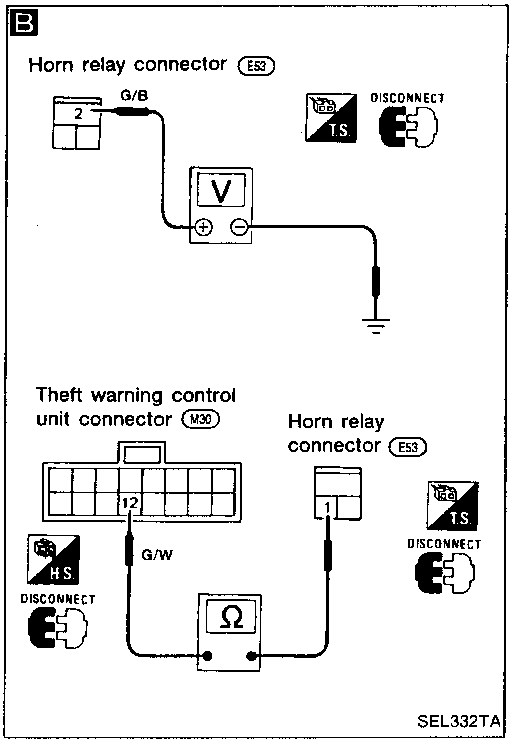
Repair harness between control unit and theft warning relay-2.

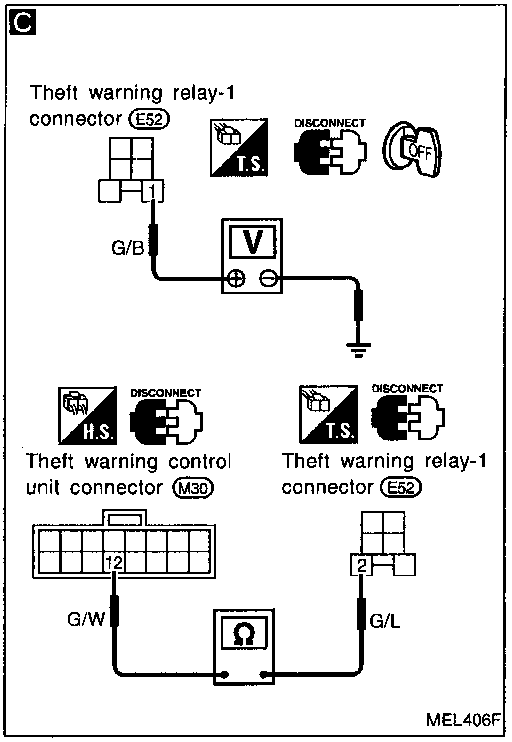
Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 6

SYMPTOM: Alarm does not operate.







A

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

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

NG → Replace control unit.

OK ↓

Check horn relay. NG → Replace relay.

OK ↓

B

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

NG → Repair harness and connectors.

OK ↓

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

OK ↓

C

THEFT WARNING HEADLAMP CIRCUIT CHECK
Check if voltage across theft warning relay-1 harness terminal and body is 12V.
Check continuity between theft warning relay-1 terminal ② and control unit harness terminal ⑫.

NG → Repair harness and connectors.

OK ↓

Does headlamp come on when turning lighting switch "ON"? No → Check headlamp system. Refer to "HEADLAMP" (EL-37).

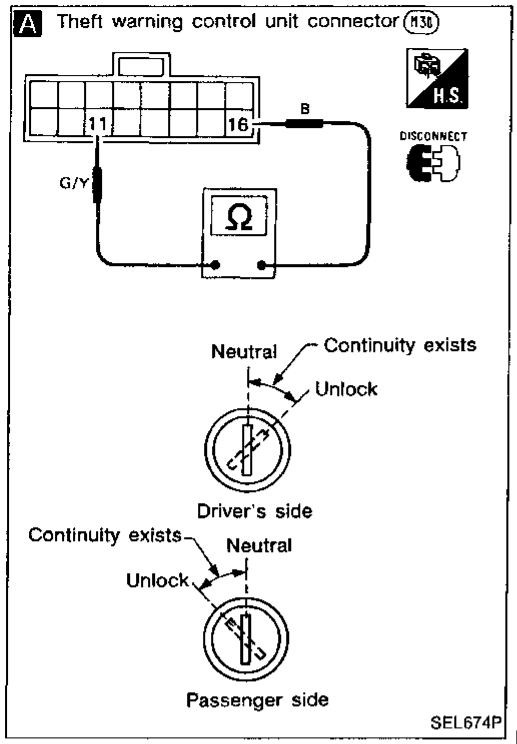
Yes ↓

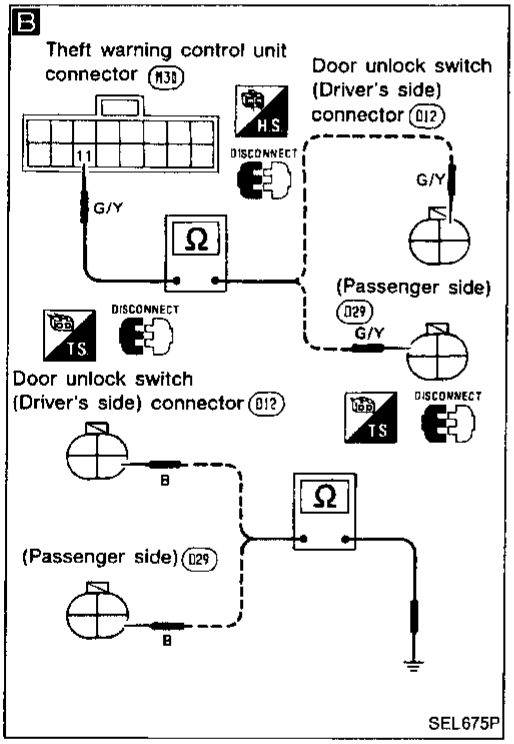
Repair harness and connectors between lamp relay and headlamp.

Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 7

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





A

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

Key position	Continuity
Neutral or Unlock	No
Between neutral and unlock	Yes

OK → Replace control unit.

NG ↓

DOOR UNLOCK SWITCH CHECK
Refer to "Electrical Components Inspection" (EL-219).

NG → Replace key cylinder switch.

OK ↓

B

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

Continuity should exist.

NG → Repair harness or connectors.

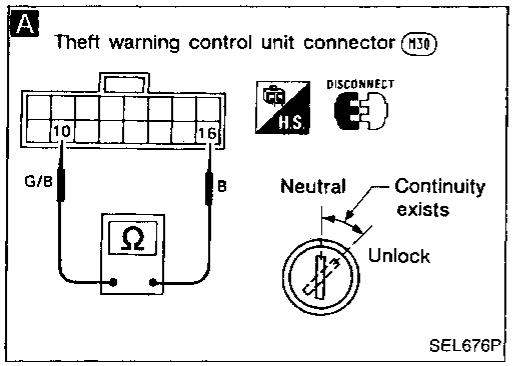
OK ↓

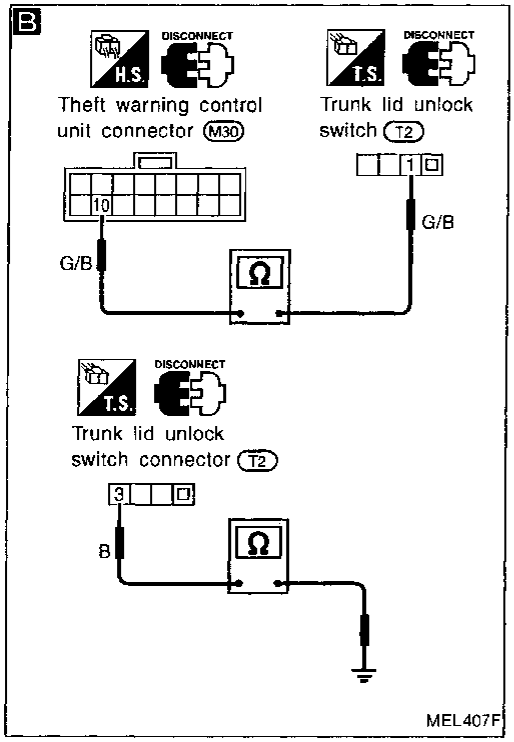
CHECK THE CONNECTIONS AT EACH CONNECTOR.

Trouble Diagnoses (Cont'd)

DIAGNOSTIC PROCEDURE 8

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





A

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

Key position	Continuity
Neutral or Unlock	No
Between neutral and unlock	Yes

OK → Replace control unit.

NG ↓

TRUNK LID UNLOCK SWITCH CHECK
Refer to "Electrical Components Inspection" (EL-219).

NG → Replace key cylinder switch.

OK ↓

B

TRUNK LID UNLOCK SWITCH CIRCUIT CHECK
- Check harness continuity between control unit harness terminal ⑩ and trunk lid unlock switch terminal ①.
- Check harness continuity between trunk lid unlock switch terminal ③ and body ground.

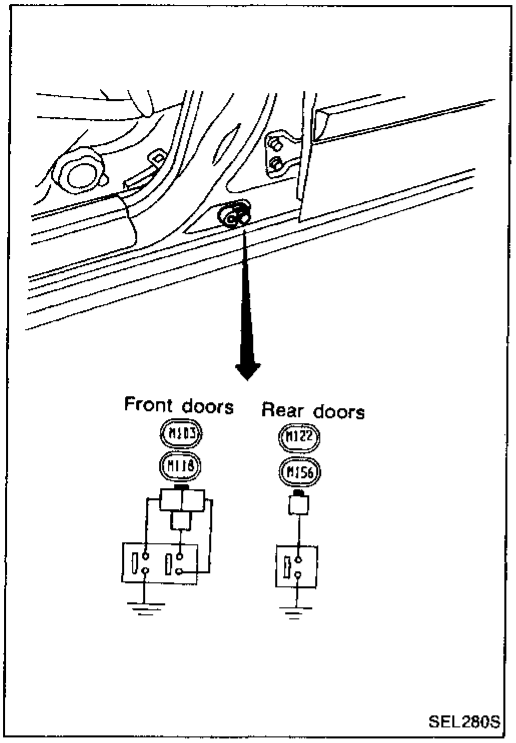
NG → Repair harness or connectors.

OK ↓

CHECK THE CONNECTIONS AT EACH CONNECTOR.

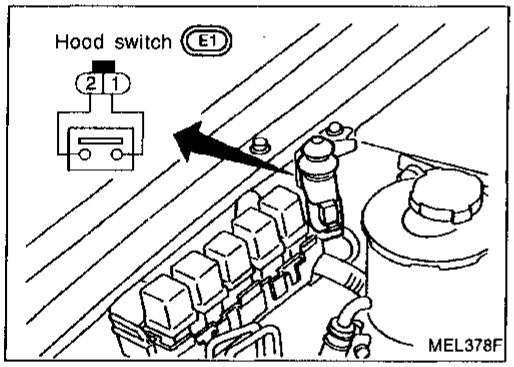
Trouble Diagnoses (Cont'd)

ELECTRICAL COMPONENTS INSPECTION



Door switches

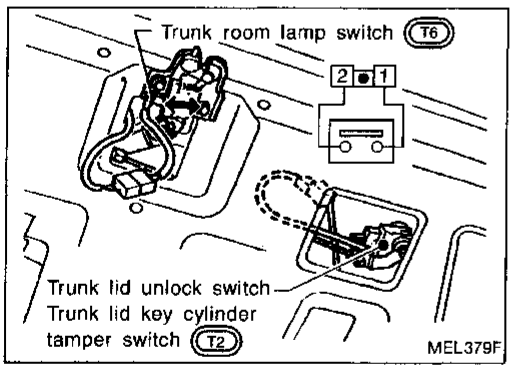
Check continuity between terminal and switch body.



Hood switch

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

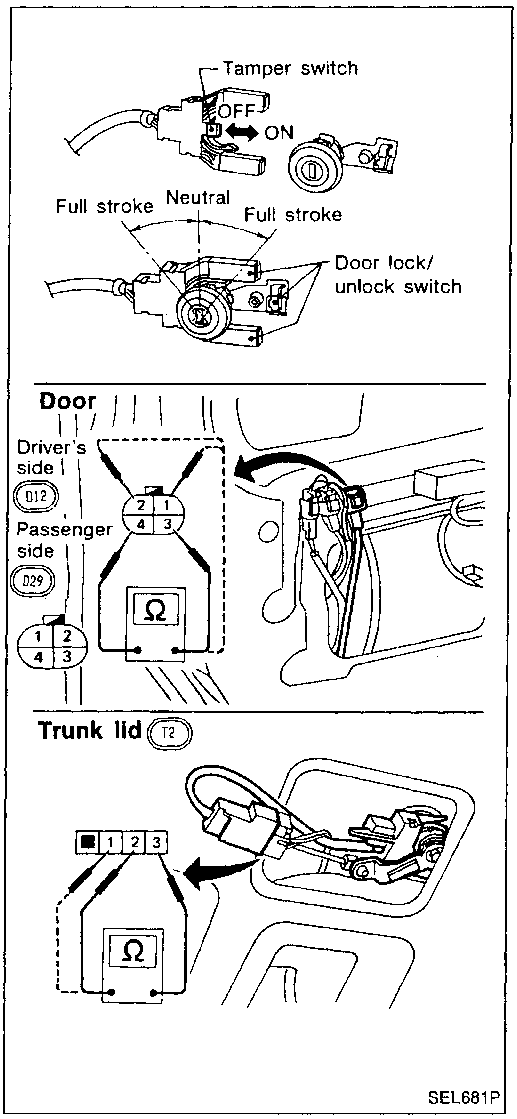
Terminal	Pushed	Released
1		○
2		○



Trunk room lamp switch

Terminal	Trunk lid	
	Closed	Open
1		○
2		○

Trouble Diagnoses (Cont'd)



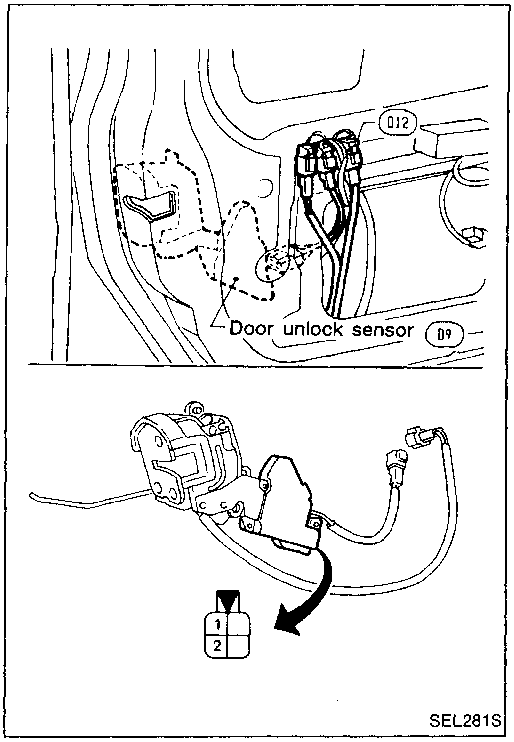
Key cylinder tamper switch, door lock switch and door unlock switch

- **Door**

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

- **Trunk lid**

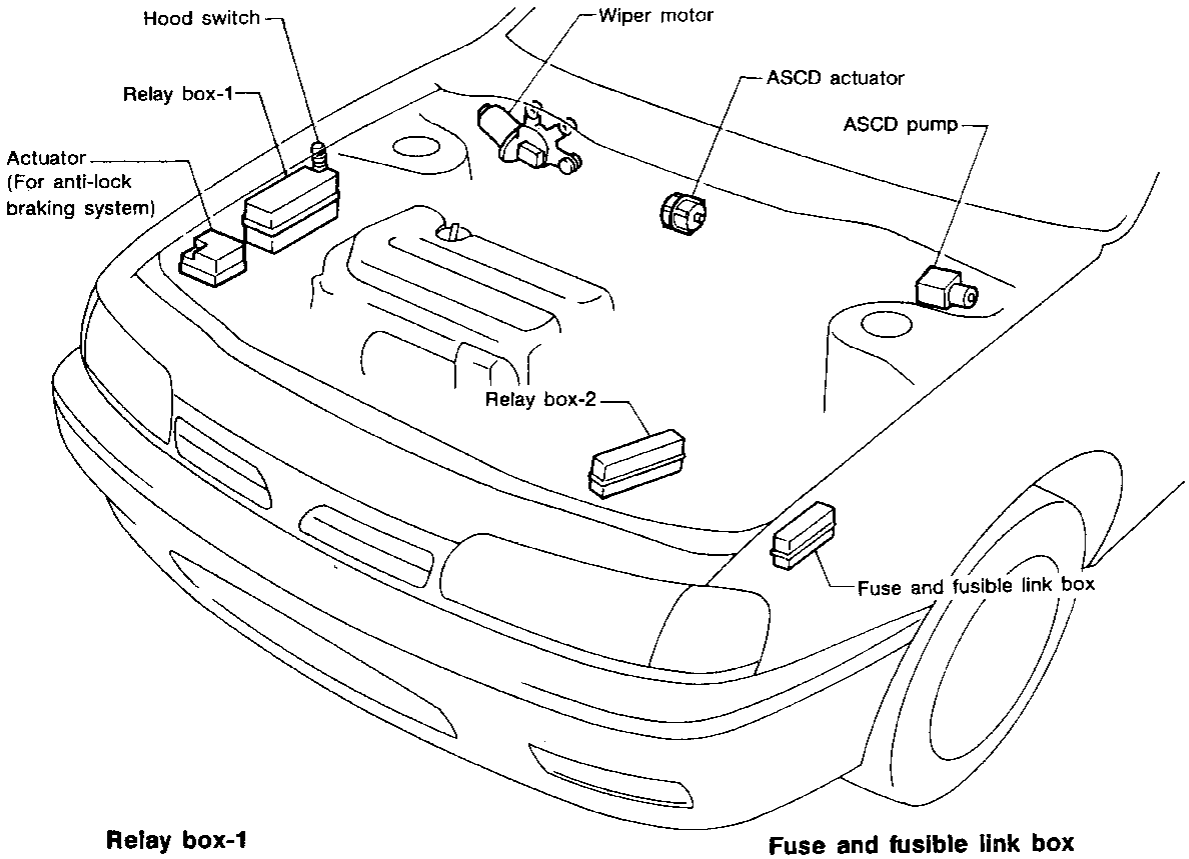
	TAMPER SWITCH		Trunk lid unlock switch		
	Key cylinder is installed	Key cylinder is removed	Full stroke	Between full stroke and neutral	Neutral
1				○	
2		○		○	
3		○		○	



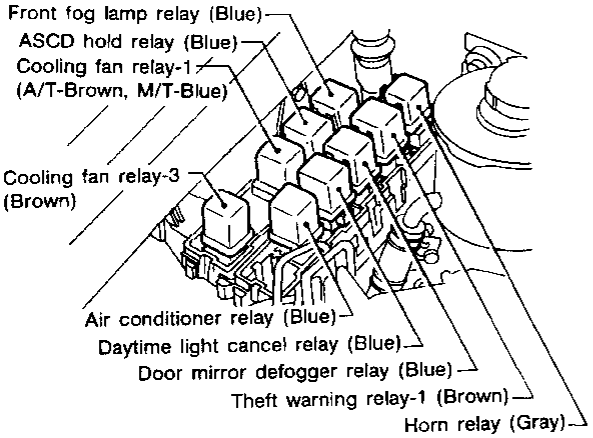
Door unlock sensor

	LOCK	UNLOCK
1		○
2		○

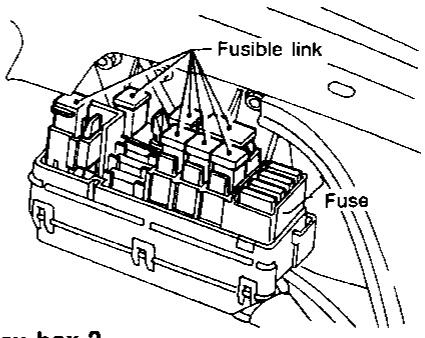
Engine Compartment



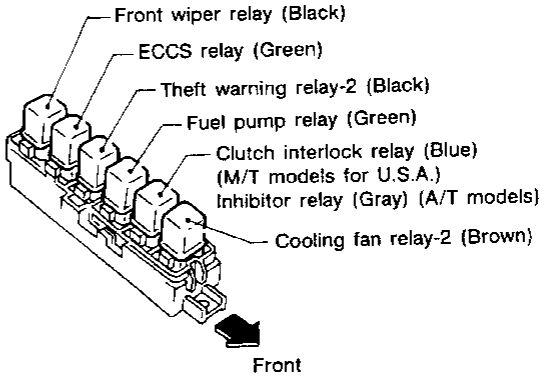
Relay box-1



Fuse and fusible link box

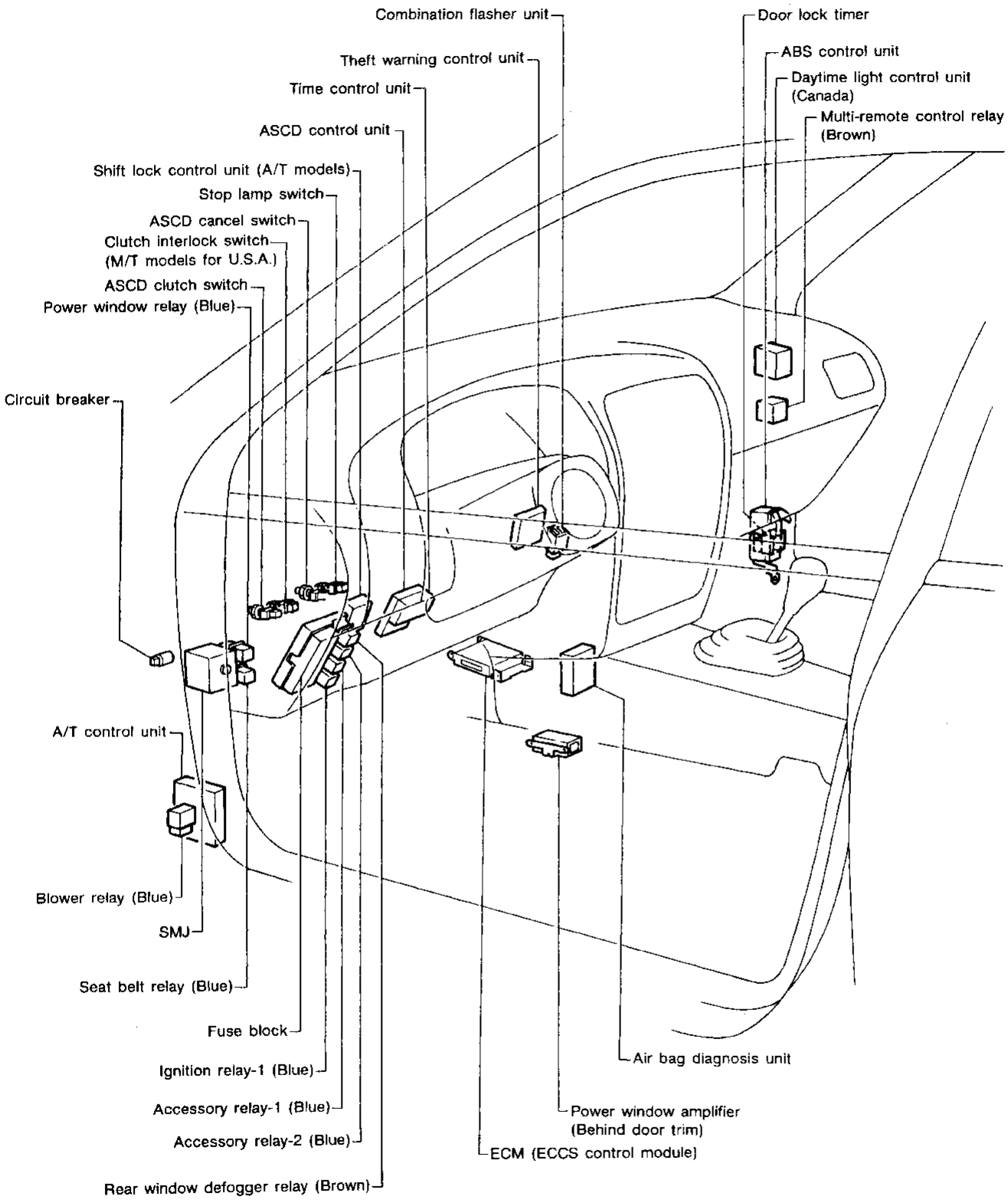


Relay box-2



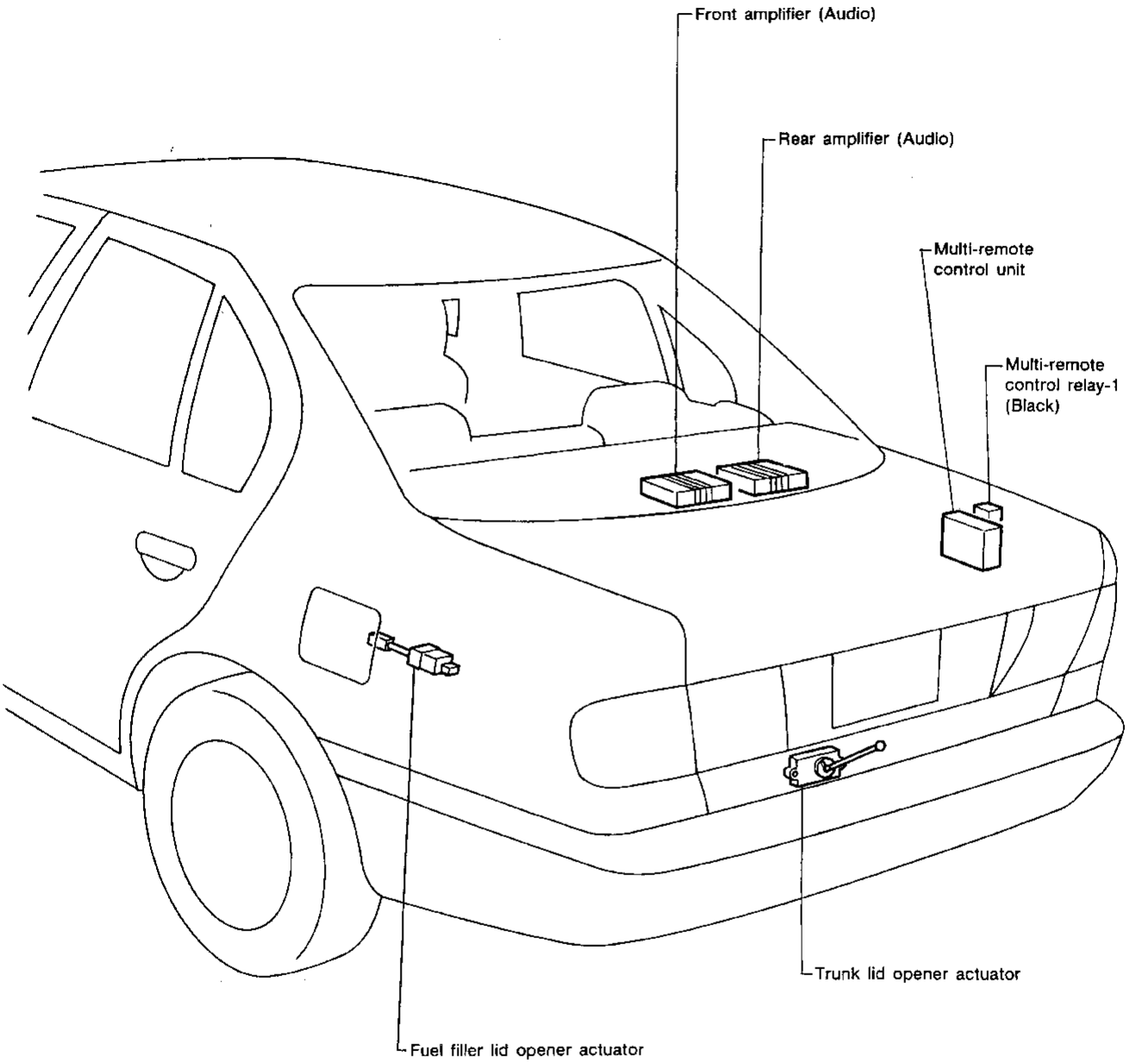
MEL197DA

Passenger Compartment



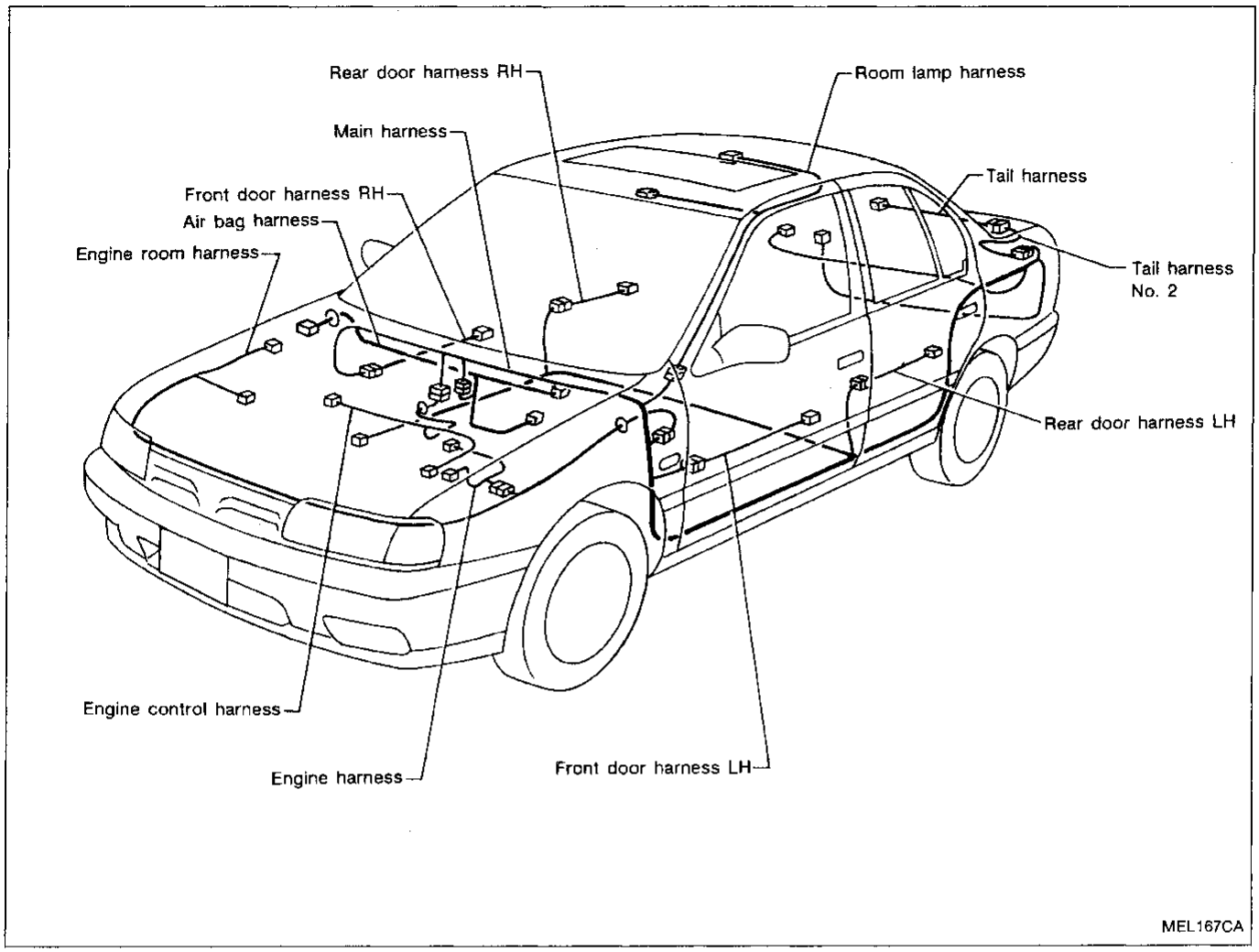
MEL214CB

Luggage Compartment

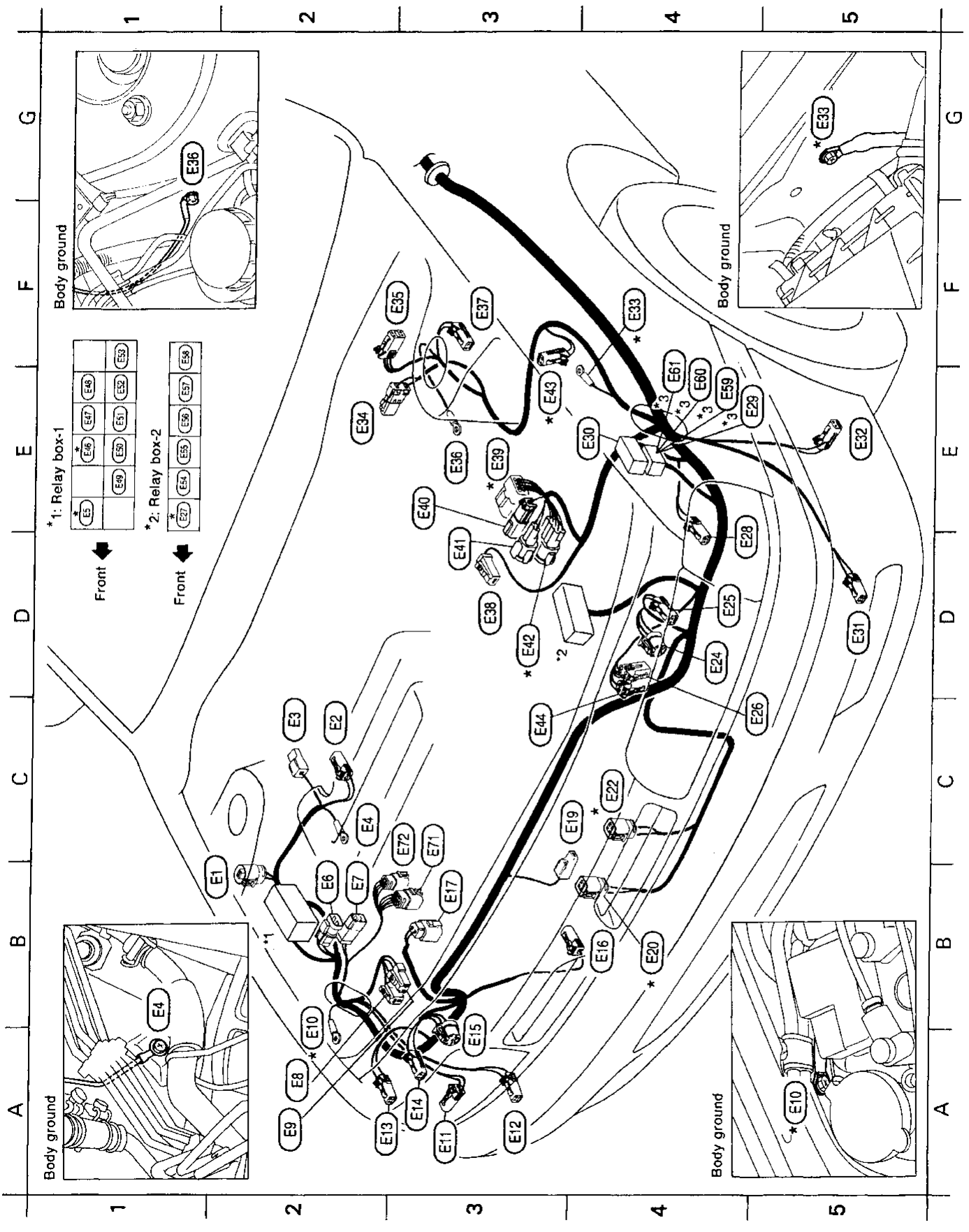


MEL215CA

Outline


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

Engine Room Harness

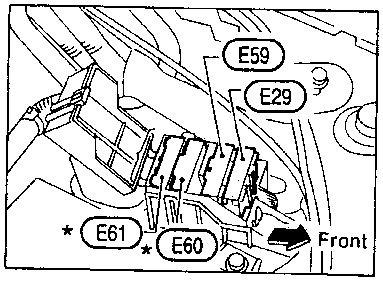


CEL117

B2 (E1) : Hood switch
C2 (E2) : Front wheel sensor RH (For anti-lock brake system)
C2 (E3) : Theft warning horn
C2 (E4) : Body ground (For anti-lock brake system)
E1 * (E5) : Cooling fan relay-3 (A/T models)
B2 (E6) : To (A1)
B2 (E7) : To (A2)
A2 (E8) : Front washer motor
A2 (E9) : Washer fluid level switch
B2 * (E10) : Body ground
A3 (E11) : Front side marker lamp RH
A3 (E12) : Front fog lamp RH
A2 (E13) : Front turn signal lamp RH
A3 (E14) : Clearance lamp RH
A3 (E15) : Headlamp RH
B4 (E16) : Compressor
B3 (E17) : Actuator (For anti-lock brake system)
C3 (E19) : Horn (High)
B4 * (E20) : Cooling fan motor-1
C4 * (E22) : Cooling fan motor-2
D4 (E24) : Headlamp LH
D4 (E25) : Clearance lamp LH
C5 (E26) : Triple-pressure switch (For U.S.A.)
E1 * (E27) : Cooling fan relay-2
D4 (E28) : Front turn signal lamp LH
E4 (E29) : Joint connector-1
E4 (E30) : Fuse and fusible link box
D5 (E31) : Front fog lamp LH
E5 (E32) : Front side marker lamp LH
F4 * (E33) : Body ground
E2 (E34) : Brake fluid level switch
F3 (E35) : ASCD actuator

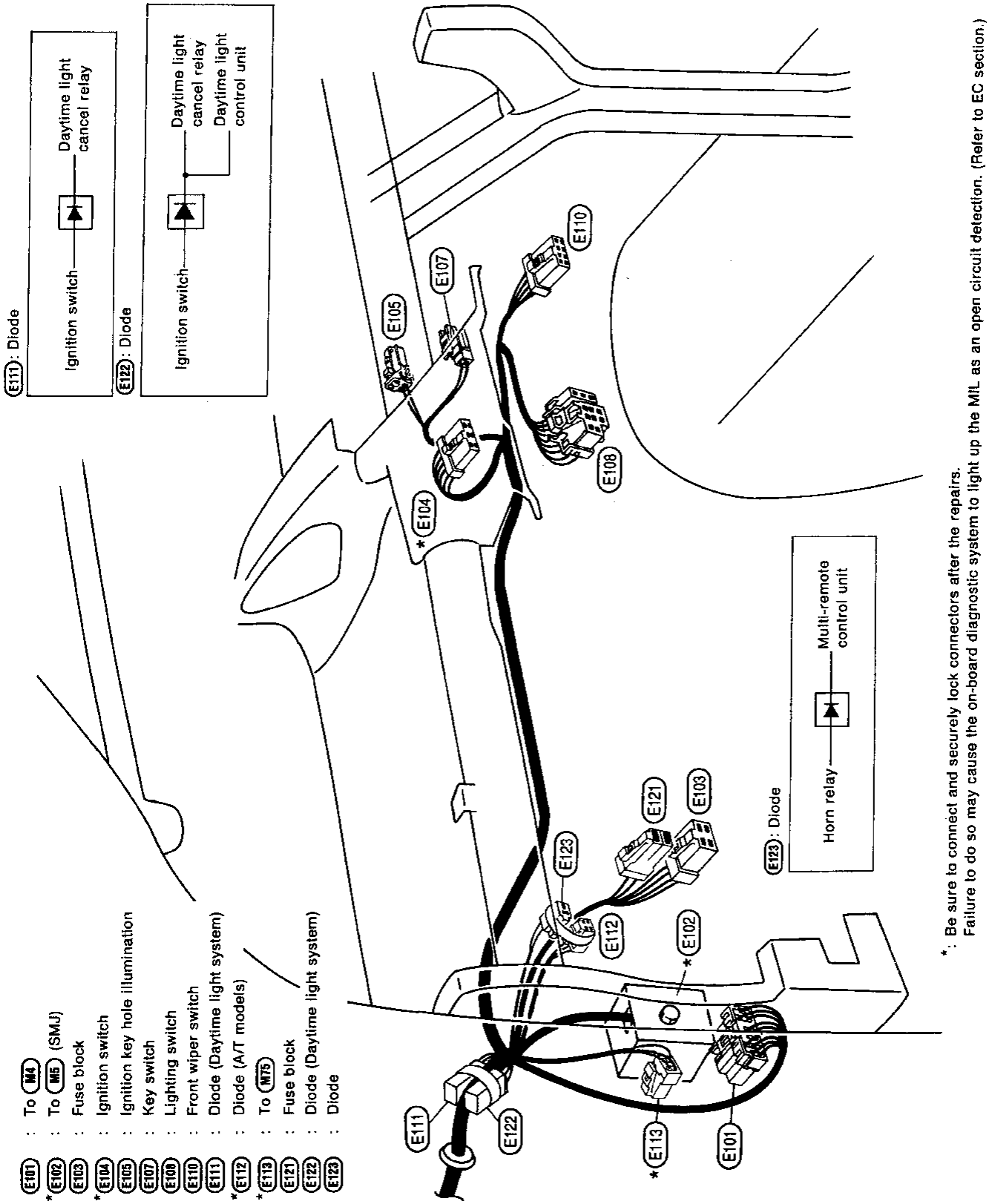
E3 (E36) : Body ground (For anti-lock brake system)
F3 (E37) : Front wheel sensor LH (For anti-lock brake system)
D3 (E38) : Battery
E3 * (E39) : To (E215)
E3 (E40) : To (E216)
D3 (E41) : To (E219)
D3 * (E42) : To (E220)
E3 * (E43) : Dropping resistor (A/T models)
C3 (E44) : Dual-pressure switch (For Canada)
E1 * (E46) : Cooling fan relay-1
E1 (E47) : ASCD hold relay
E1 (E48) : Front fog lamp relay
E1 (E49) : Air conditioner relay
E1 (E50) : Daytime light cancel relay
E1 (E51) : Door mirror defogger relay
E1 (E52) : Theft warning relay-1
F1 (E53) : Horn relay
E1 (E54) : Inhibitor relay (A/T models)
Clutch inter lock relay (M/T models)
E1 (E55) : Fuel pump relay
E1 (E56) : Theft warning relay-2
E1 (E57) : ECCS relay
F1 (E58) : Front wiper relay
E4 (E59) : Joint connector-2
E4 * (E60) : Joint connector-3
E4 * (E61) : Joint connector-4
C3 (E71) : Actuator (For anti-lock brake system)
C3 (E72) : Actuator (For anti-lock brake system)

Joint connector box



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

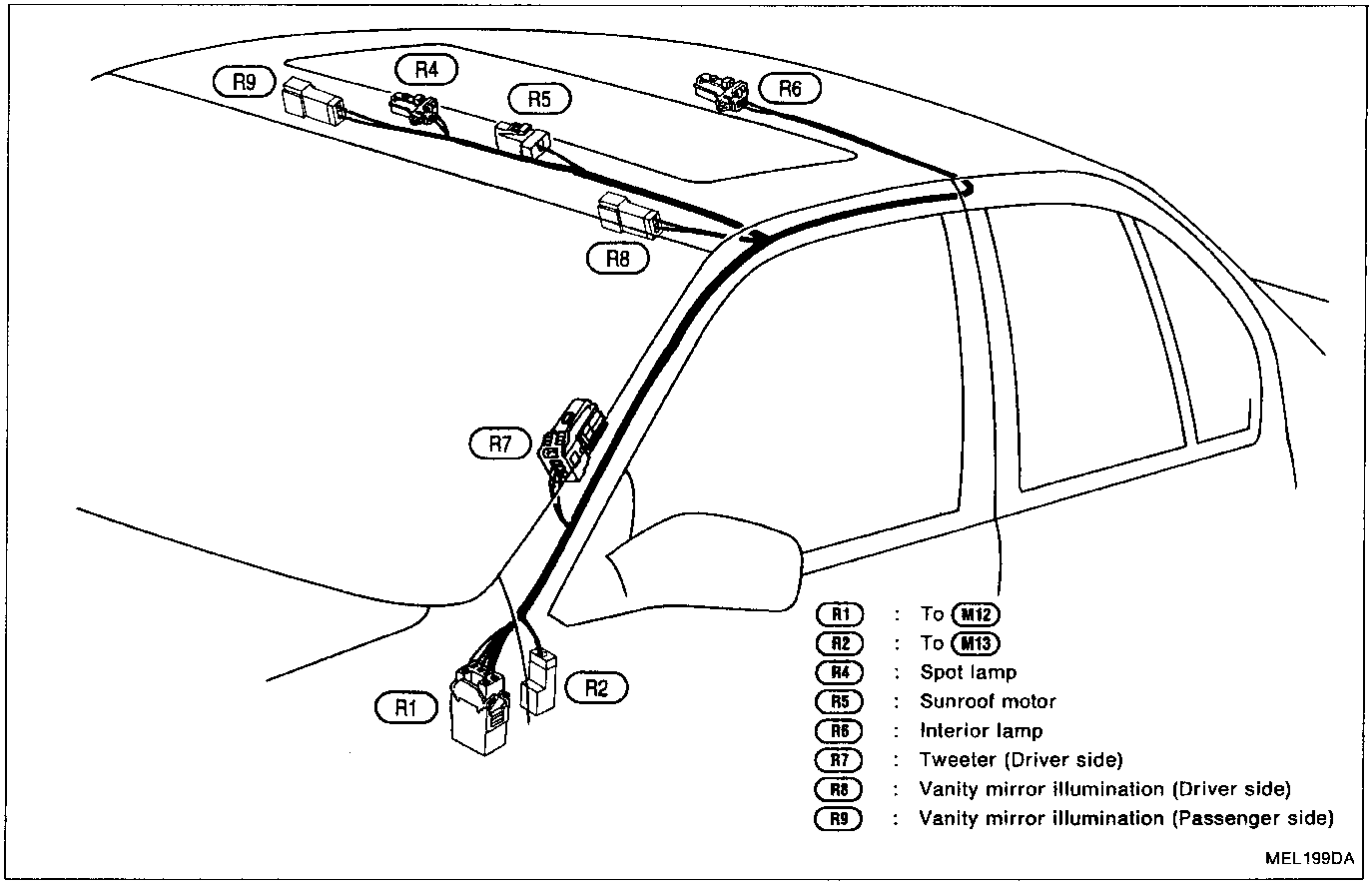
Engine Room Harness (Cont'd)



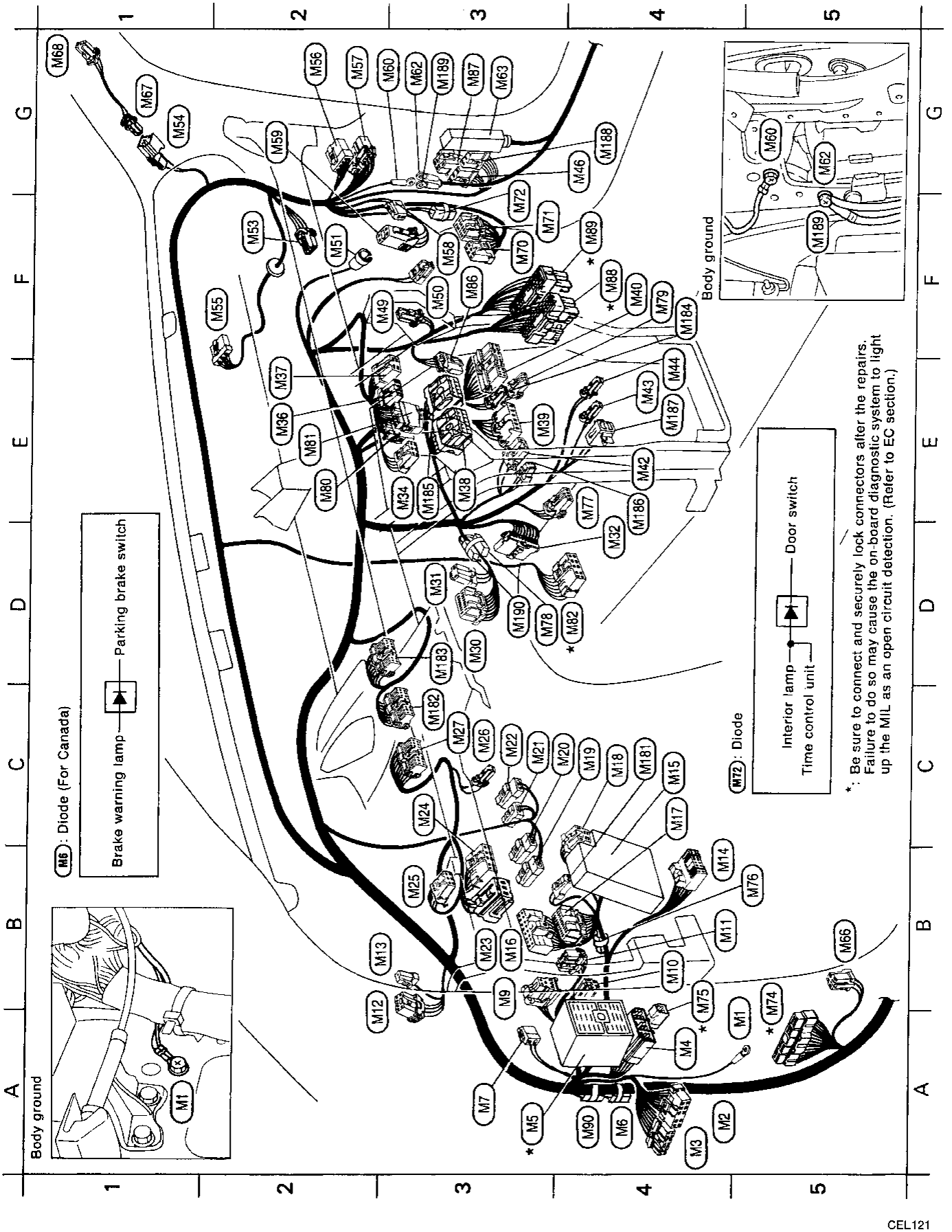
*: Be sure to connect and securely lock connectors after the repairs.
Failure to do so may cause the on-board diagnostic system to light up the MIL as an open circuit detection. (Refer to EC section.)

CEL119

Room Lamp Harness



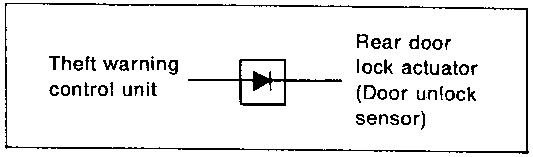
Main Harness



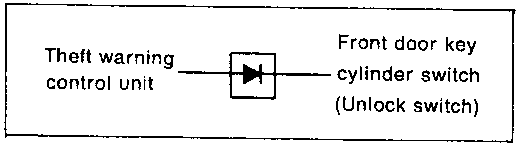
CEL121

A5 (M1) : Body ground
A4 (M2) : To (D1)
A4 (M3) : To (D2)
A4 (M4) : To (E101)
A3 * (M5) : To (E102) (SMJ)
A4 (M6) : Diode
A3 (M7) : Circuit breaker
B3 (M9) : Seat belt relay
B4 (M10) : Power window relay
B4 (M11) : Shift lock control unit (A/T models)
A2 (M12) : To (R1)
B3 (M13) : To (R2)
B4 (M14) : Data link connector for CONSULT
C4 (M15) : Fuse block
B3 (M16) : ASCD control unit
C4 (M17) : Time control unit
C4 (M18) : Rear window defogger relay
C4 (M19) : Clutch interlock switch (For U.S.A. M/T models)
C4 (M20) : ASCD clutch switch (M/T models)
C3 (M21) : Stop lamp switch
C3 (M22) : ASCD cancel switch (On brake pedal)
B3 (M23) : Illumination control switch
C3 (M24) : Door mirror remote control switch
B3 (M25) : ASCD main switch
C3 (M26) : Security indicator lamp
C3 * (M27) : Combination meter
D3 (M30) : Theft warning control unit
D3 (M31) : Combination flasher unit
D4 (M32) : Mode door motor
E3 (M34) : Rear window defogger switch
E2 (M36) : Hazard switch
E2 (M37) : Front fog lamp switch
E3 (M38) : Radio
E3 (M39) : Fan switch
F4 (M40) : Push control unit
E4 (M42) : Not used
E4 (M43) : Cigarette lighter
F4 (M44) : Ashtray illumination
G4 (M45) : Daytime light control unit (For Canada)
F2 (M49) : Thermo control amplifier
F3 (M50) : Trunk lid opener cancel switch
F2 (M51) : Glove box lamp
F2 (M53) : Intake door motor
G1 (M54) : To (M67)
F2 (M55) : Front wiper motor
G2 (M56) : To (D21)
G2 (M57) : To (D22)
F3 (M58) : Blower motor
G2 (M59) : Resistor
G2 (M60) : Body ground
G3 (M62) : Body ground (For anti-lock brake system)
G3 (M63) : ABS control unit
B5 (M66) : Blower relay
G1 (M67) : To (M54)
G1 (M68) : Tweeter (Passenger side)
F3 (M70) : Door lock timer
F3 (M71) : Door lock timer
F3 (M72) : Diode
B5 * (M74) : A/T control unit
B4 * (M75) : To (E113)
B5 (M76) : Diode
E4 (M77) : Vent mode switch
D3 (M78) : Diode
F4 (M79) : Full cold switch
E2 (M80) : To (Z4)
E2 (M81) : To (Z3)
D4 * (M82) : To (F28)
F3 (M86) : Maximum cold door motor
G3 (M87) : Multi-remote control relay
F4 * (M88) : To (F30)
F4 * (M89) : To (F31)
A4 (M90) : Diode (Models with multi-remote control system)
C4 (M181) : Fuse block
C3 (M182) : Combination meter
D3 (M183) : Combination meter
F4 (M184) : Push control unit
E3 (M185) : Radio
E4 (M186) : Not used
E4 (M187) : Cigarette lighter illumination
G4 (M188) : Daytime light control unit (For Canada)
G3 (M189) : Body ground (For anti-lock brake system)
D3 (M190) : Diode

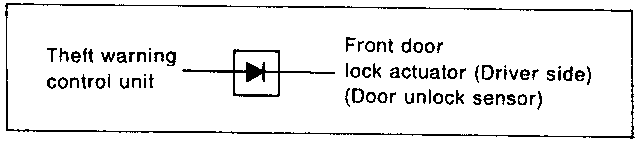
(M76): Diode (Models with multi-remote control system)



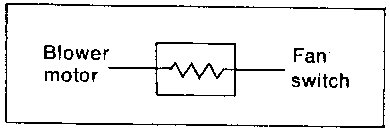
(M90): Diode (Models with multi-remote control system)



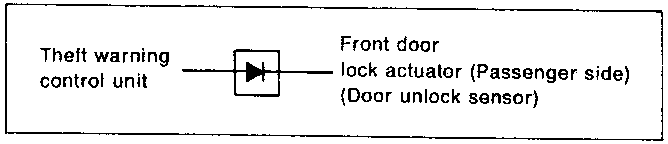
(M78): Diode



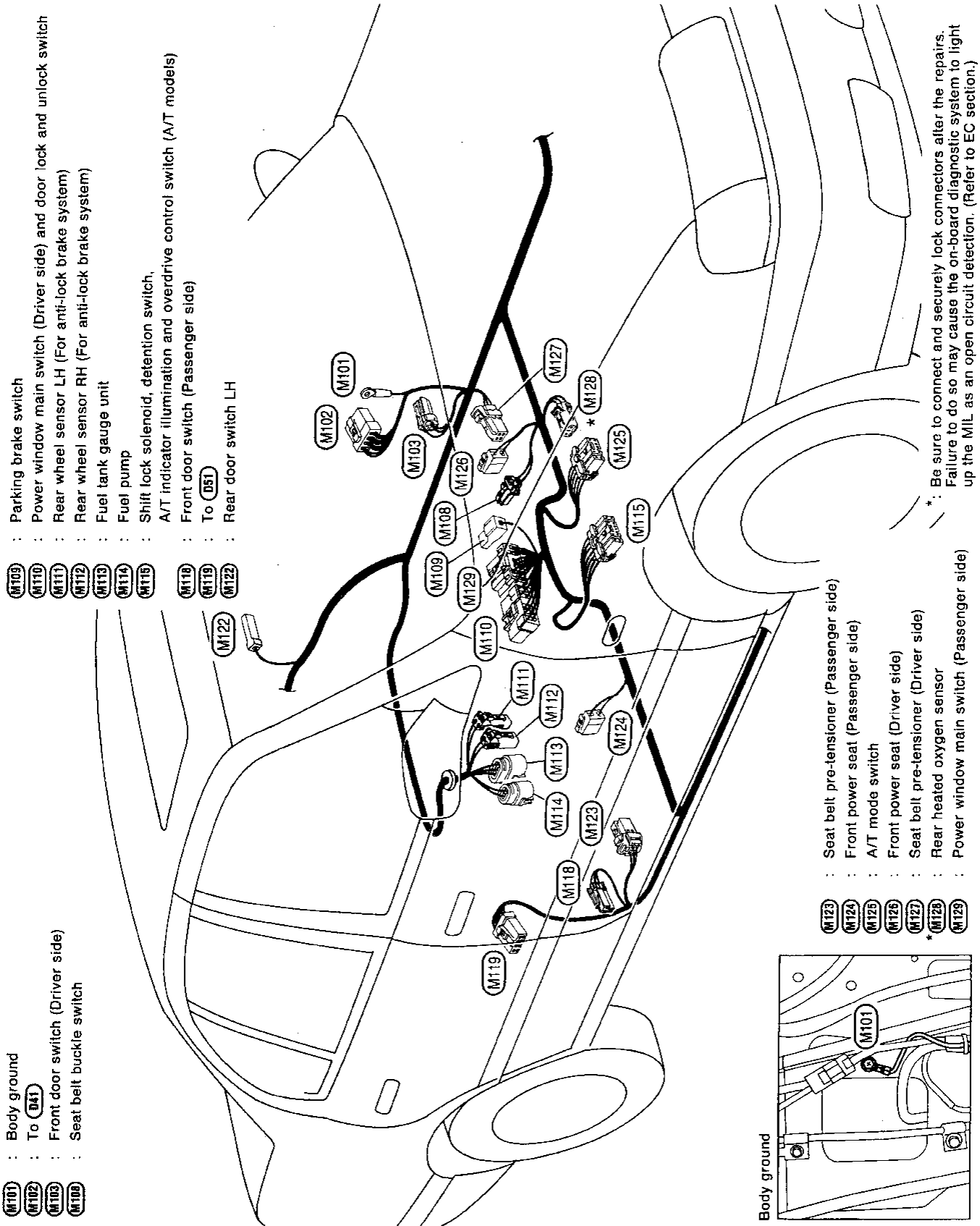
(M59): Resistor



(M190): Diode

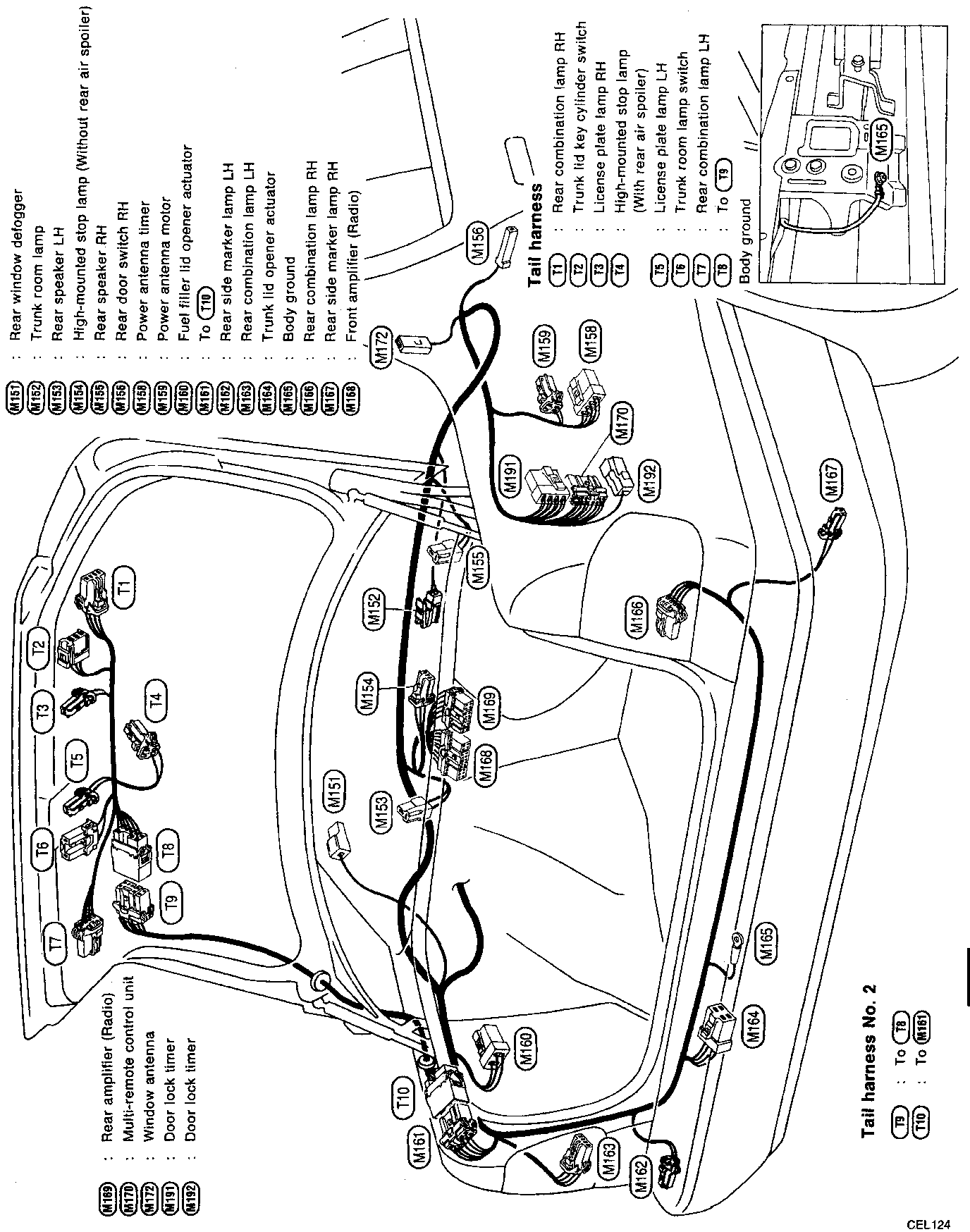


Main Harness (Cont'd)



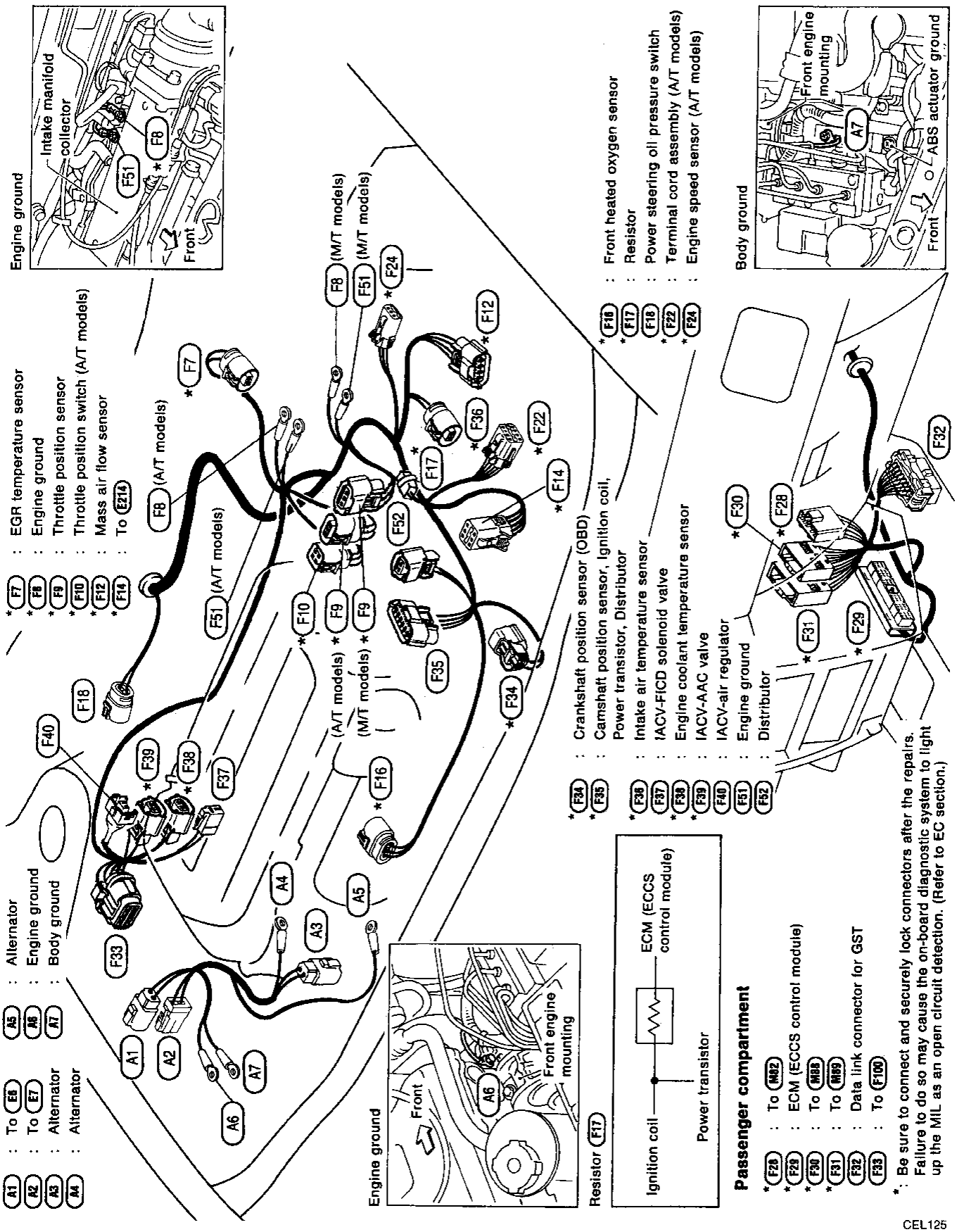
MEL405DA

Main Harness, Tail Harness and Tail Harness No.2



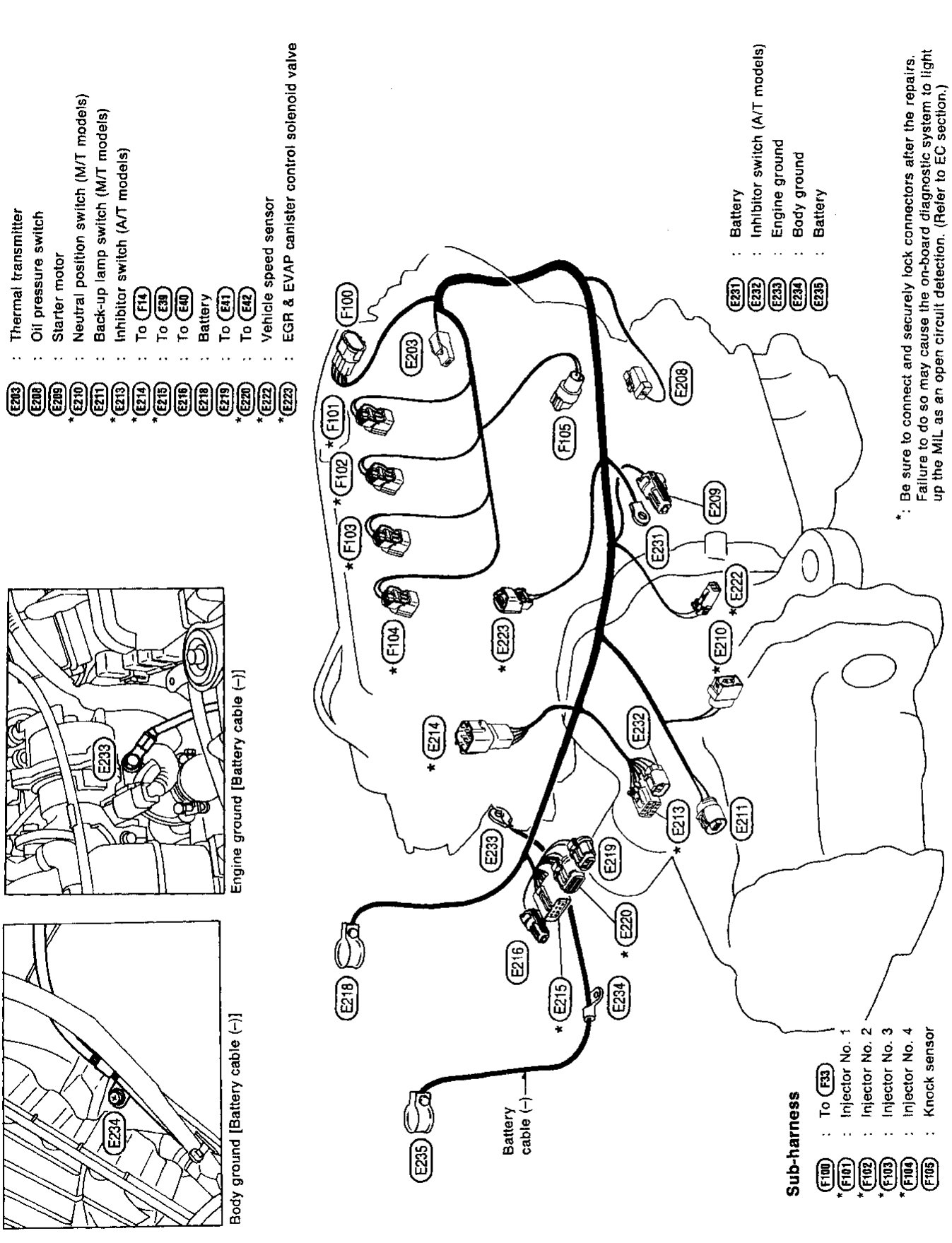
CEL124

Engine Control Harness and Alternator Harness



CEL125

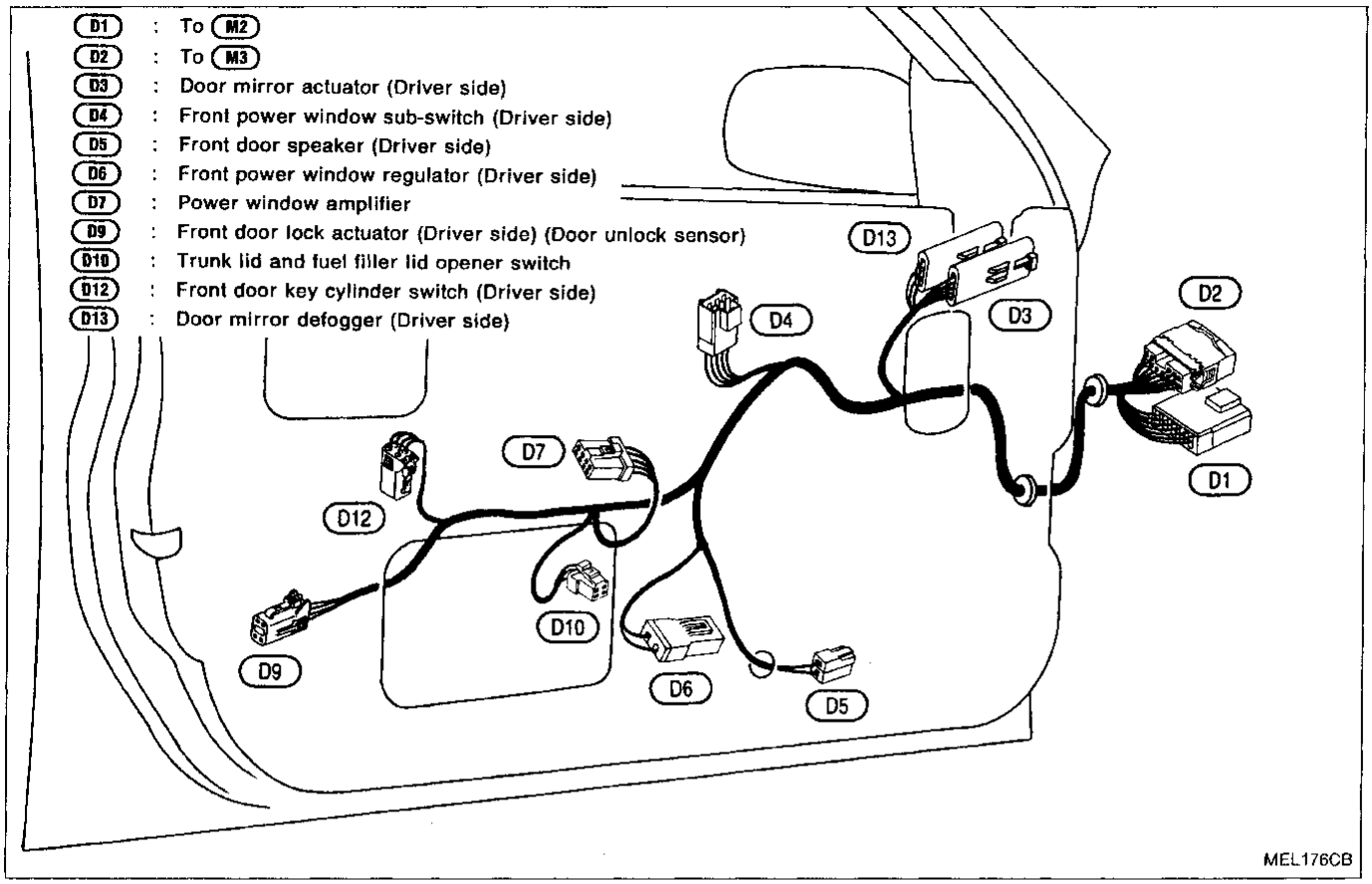
Engine Harness



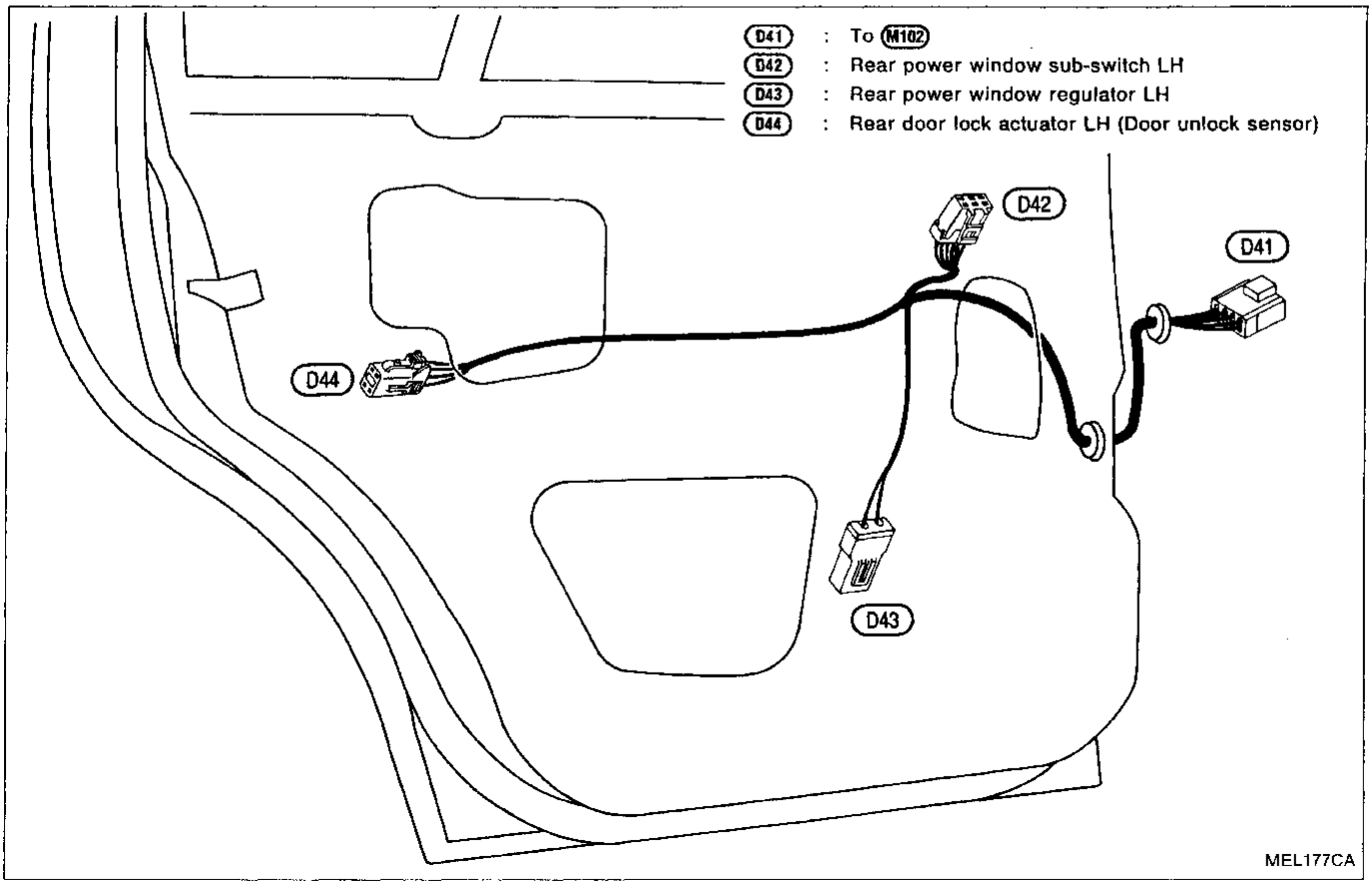
CEL126

Door Harness (LH side)

FRONT

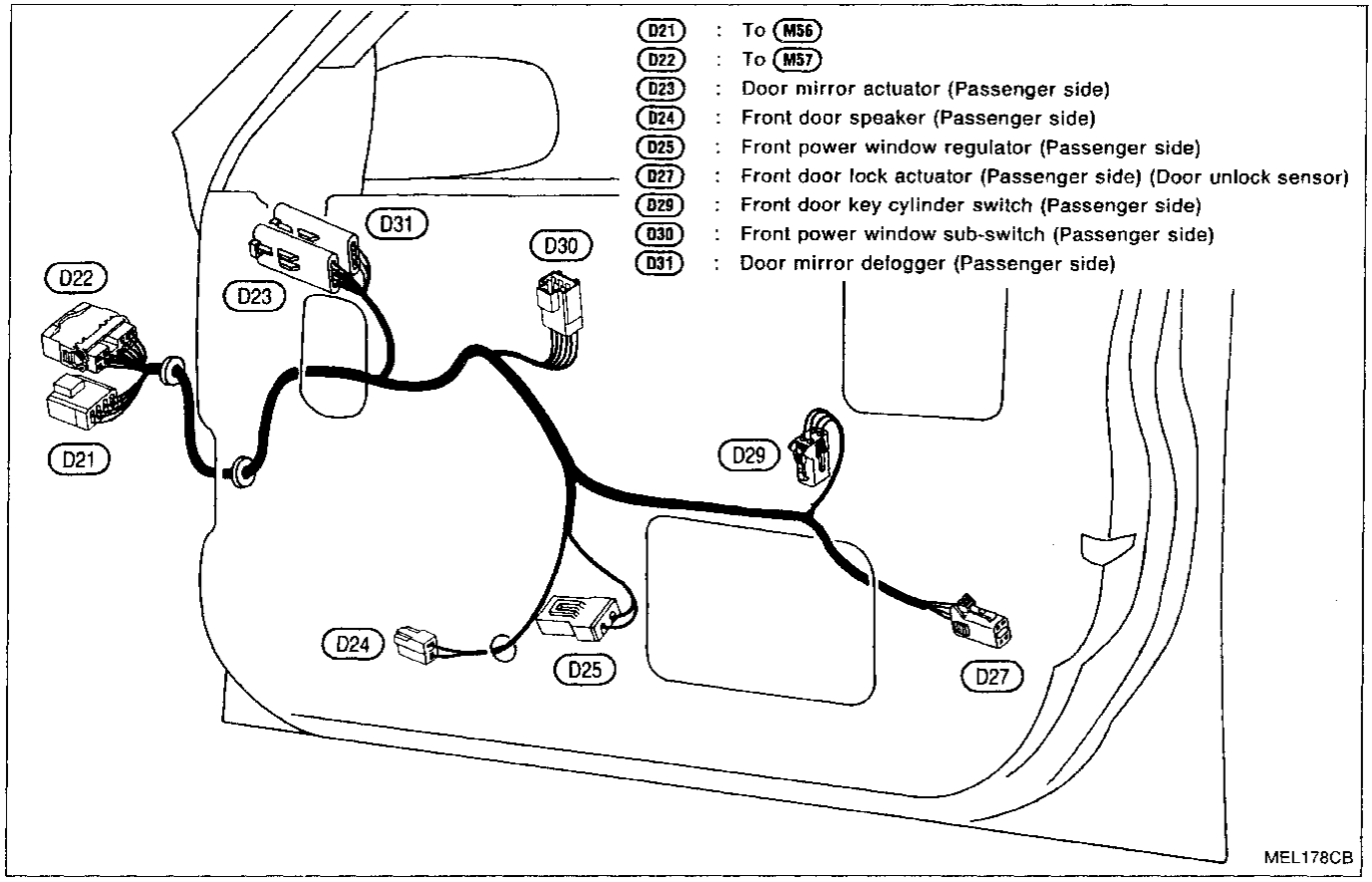


REAR

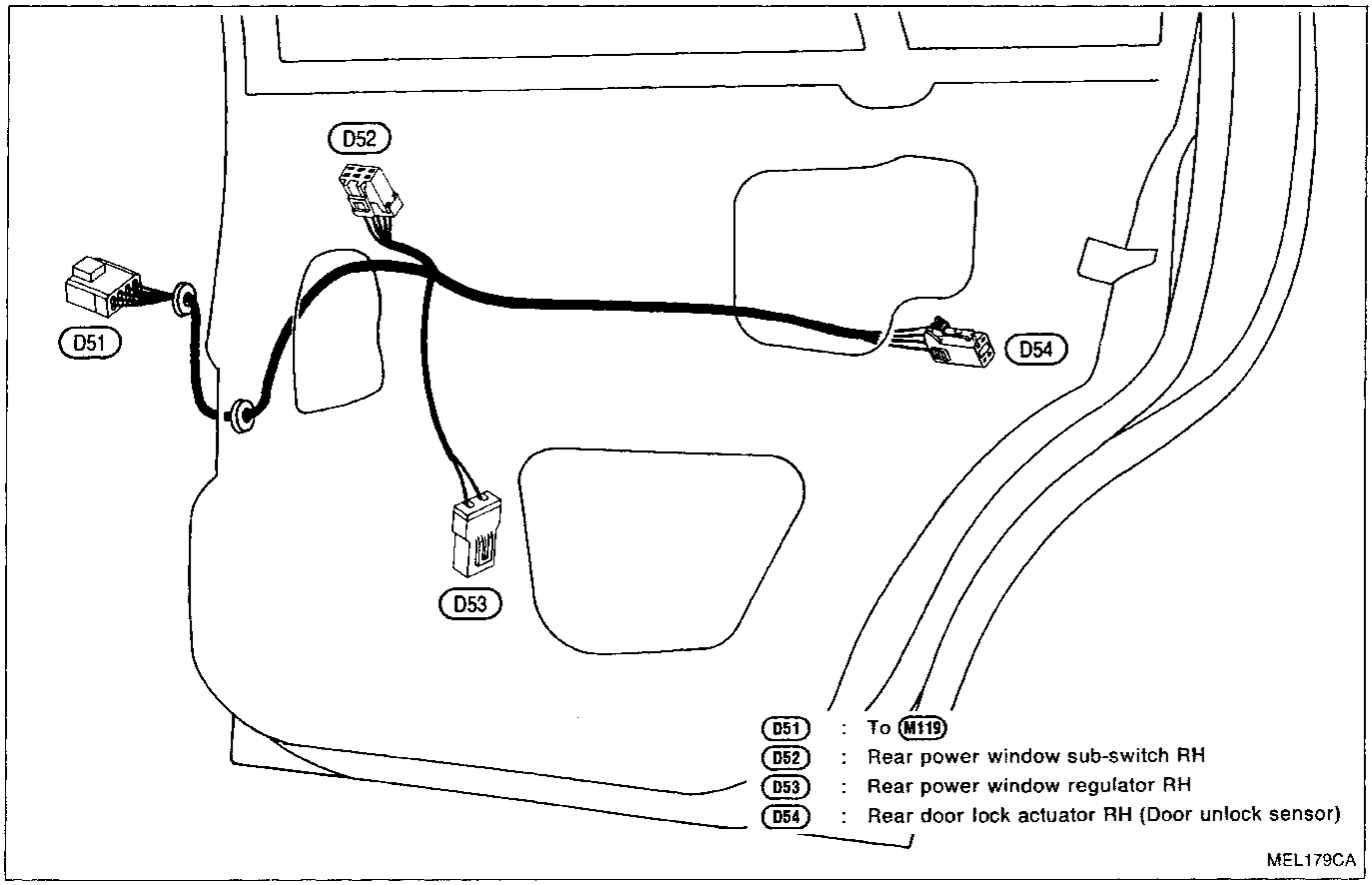


FRONT

Door Harness (RH side)

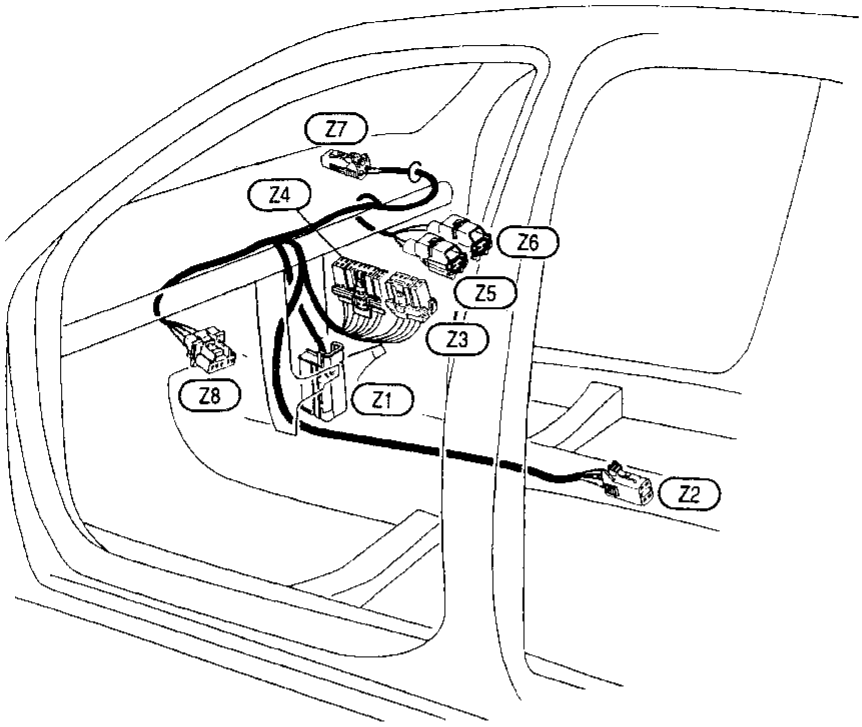


REAR



Air Bag Harness

LHD MODELS



Z1 : Air bag diagnosis unit
Z2 : Tunnel sensor & safing sensor
Z3 : To M81
Z4 : To M80
Z5 : Air bag module (Passenger side)
Z6 : Air bag module (Passenger side)
Z7 : Front crash zone sensor
Z8 : Spiral cable (Driver side)

CEL131