

# ELECTRICAL SYSTEM

## SECTION **EL**

**When you read wiring diagrams:**

- Read GI section, "HOW TO READ WIRING DIAGRAMS".

## CONTENTS

<b>HARNESS CONNECTOR</b> .....	3	Combination Flasher Unit Check .....	33	
Description .....	3	Bulb Specifications .....	33	FE
<b>STANDARDIZED RELAY</b> .....	4	<b>INTERIOR LAMP</b> .....	34	
Normal Open, Normal Closed and Mixed Type		Illumination/Wiring Diagram .....	34	CL
Relays.....	4	Interior Lamp/Wiring Diagram .....	36	
Type of Standardized Relays .....	4	<b>METER AND GAUGES</b> .....	38	
<b>POWER SUPPLY ROUTING</b> .....	6	Combination Meter .....	38	MT
Fuse .....	6	Wiring Diagram .....	39	
Fusible Link.....	6	Inspection/Fuel Gauge and Water		AT
Wiring Diagram .....	7	Temperature Gauge.....	40	
<b>BATTERY</b> .....	8	Fuel Tank Gauge Unit Check .....	41	TF
How to Handle Battery.....	8	Thermal Transmitter Check.....	41	
Service Data and Specifications (SDS).....	11	Oil Pressure Switch Check.....	41	
<b>STARTING SYSTEM</b> .....	12	Vehicle Speed Sensor Signal Check .....	41	
Wiring Diagram .....	12	<b>WARNING LAMPS AND CHIME</b> .....	42	PD
Construction .....	14	A/T Indicator Lamp/Wiring Diagram.....	42	
Service Data and Specifications (SDS).....	17	Warning Lamps/Schematic.....	43	FA
<b>CHARGING SYSTEM</b> .....	18	Warning Lamps/Wiring Diagram.....	44	
Wiring Diagram .....	18	Warning Chime/Wiring Diagram .....	46	RA
Construction .....	19	Diode Check .....	47	
Service Data and Specifications (SDS).....	20	Seat Belt Timer Check.....	47	BR
<b>COMBINATION SWITCH</b> .....	21	Warning Chime Check .....	47	
Check .....	21	<b>WIPER AND WASHER</b> .....	48	
Replacement .....	22	Front Wiper and Washer/Wiring Diagram .....	48	ST
<b>HEADLAMP</b> .....	23	Rear Wiper and Washer/Wiring Diagram.....	49	
Operation (Daytime light system for Canada).....	23	Windshield Wiper Installation.....	50	BF
Schematic (Daytime light system for Canada).....	23	Washer Nozzle Adjustment .....	51	
Wiring Diagram (Daytime light system for		Check Valve .....	51	HA
Canada).....	24	Wiper Amplifier Check.....	51	
Wiring Diagram (Except for Canada).....	25	<b>HORN, CIGARETTE LIGHTER, CLOCK</b> .....	52	
Aiming Adjustment.....	26	Wiring Diagram .....	52	EL
<b>EXTERIOR LAMP</b> .....	28	<b>REAR WINDOW DEFOGGER</b> .....	53	
Clearance, License, Tail and Stop		Wiring Diagram .....	53	IDX
Lamps/Wiring Diagram.....	28	Filament Check .....	55	
Back-up Lamp/Wiring Diagram .....	30	Filament Repair.....	56	
Turn Signal and Hazard Warning		<b>AUDIO</b> .....	57	
Lamps/Wiring Diagram.....	31	Audio/Wiring Diagram .....	57	

# CONTENTS (Cont'd.)

Location of Antenna.....	59	<b>HARNES LAYOUT.....</b>	<b>79</b>
Radio Fuse Check.....	59	Outline.....	79
Antenna Trimmer Adjustment.....	59	Main Harness.....	80
Element Check.....	60	Instrument Harness.....	85
Element Repair.....	60	Engine Harness.....	86
<b>AUTOMATIC SPEED CONTROL DEVICE (ASCD).....</b>	<b>61</b>	Engine Control Harness.....	88
Schematic.....	61	Back Door and Rear Wiper Harness.....	90
Wiring Diagram.....	62	Chassis and Tail Harness.....	91
ASCD Wire Adjustment.....	63	Front Door Harness.....	92
Trouble Diagnoses.....	64	Rear Door Harness.....	93
<b>LOCATION OF ELECTRICAL UNITS.....</b>	<b>75</b>	Room Lamp Harness.....	94
Engine Compartment.....	75	<b>SUPER MULTIPLE JUNCTION (SMJ).....</b>	<b>Foldout page</b>
Passenger Compartment.....	76		

## WIRING DIAGRAM REFERENCE CHART

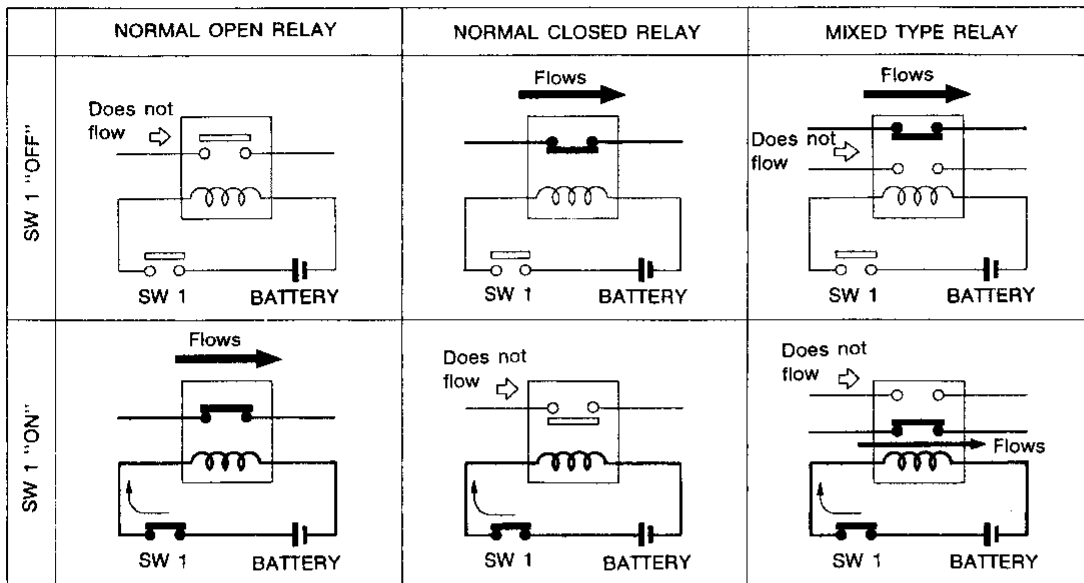
ECCS.....	EF & EC SECTION
A/T CONTROL SYSTEM.....	AT SECTION
REAR WHEEL ANTI-LOCK BRAKE SYSTEM.....	BR SECTION
ADJUSTABLE SHOCK ABSORBER.....	FA SECTION
POWER WINDOW.....	BF SECTION
POWER DOOR LOCK.....	BF SECTION
BACK DOOR WINDOW OPENER.....	BF SECTION
DOOR MIRROR.....	BF SECTION
HEATER AND AIR CONDITIONER.....	HA SECTION



# STANDARDIZED RELAY

## Normal Open, Normal Closed and Mixed Type Relays

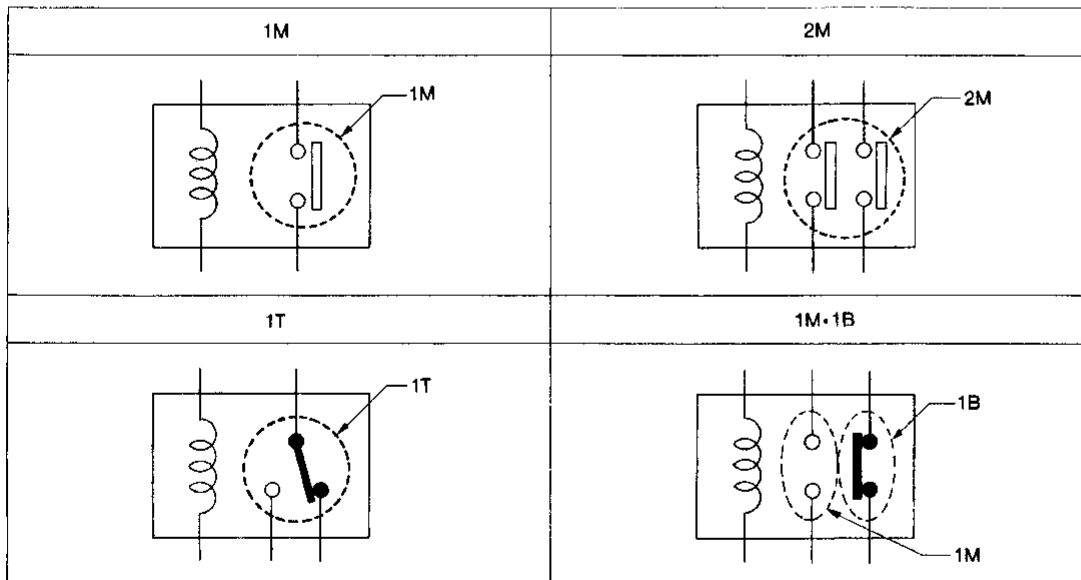
Relays can mainly be divided into three types: normal open, normal closed and mixed type relays.



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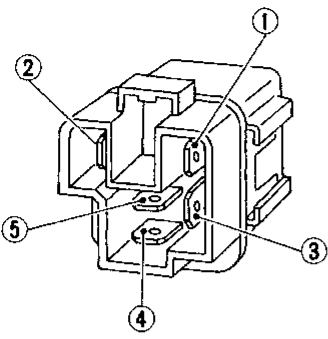
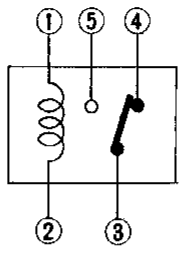
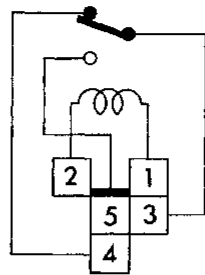
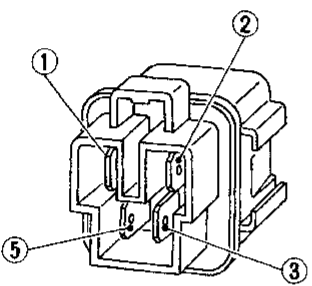
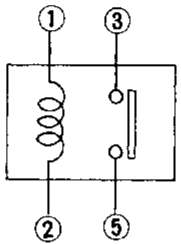
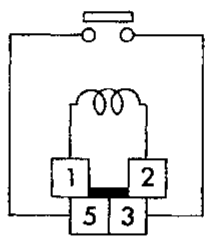
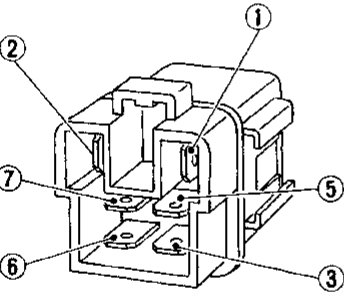
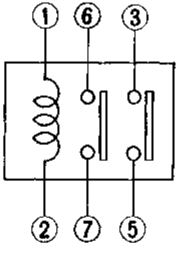
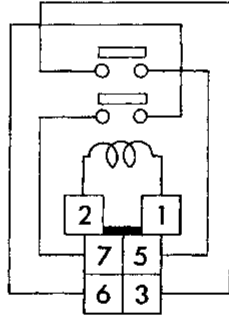
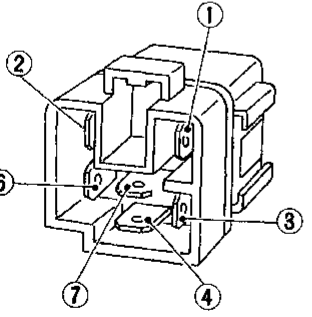
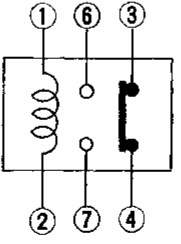
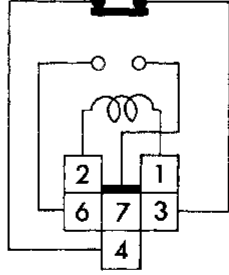
## Type of Standardized Relays

1M ..... 1 Make                      2M ..... 2 Make  
 1T ..... 1 Transfer                    1M•1B ..... 1 Make 1 Brake



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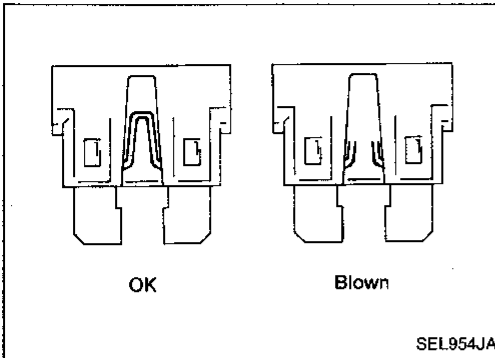
# STANDARDIZED RELAY

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

GI  
MA  
EM  
LC  
EF & EC  
FE  
CL  
MT  
AT  
TF  
PD  
FA  
RA  
BR  
ST  
BF  
HA

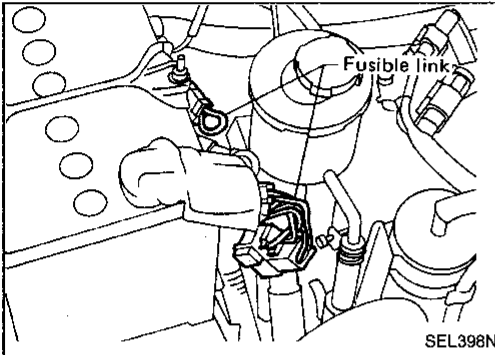
EL

## POWER SUPPLY ROUTING



### Fuse

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



### Fusible Link

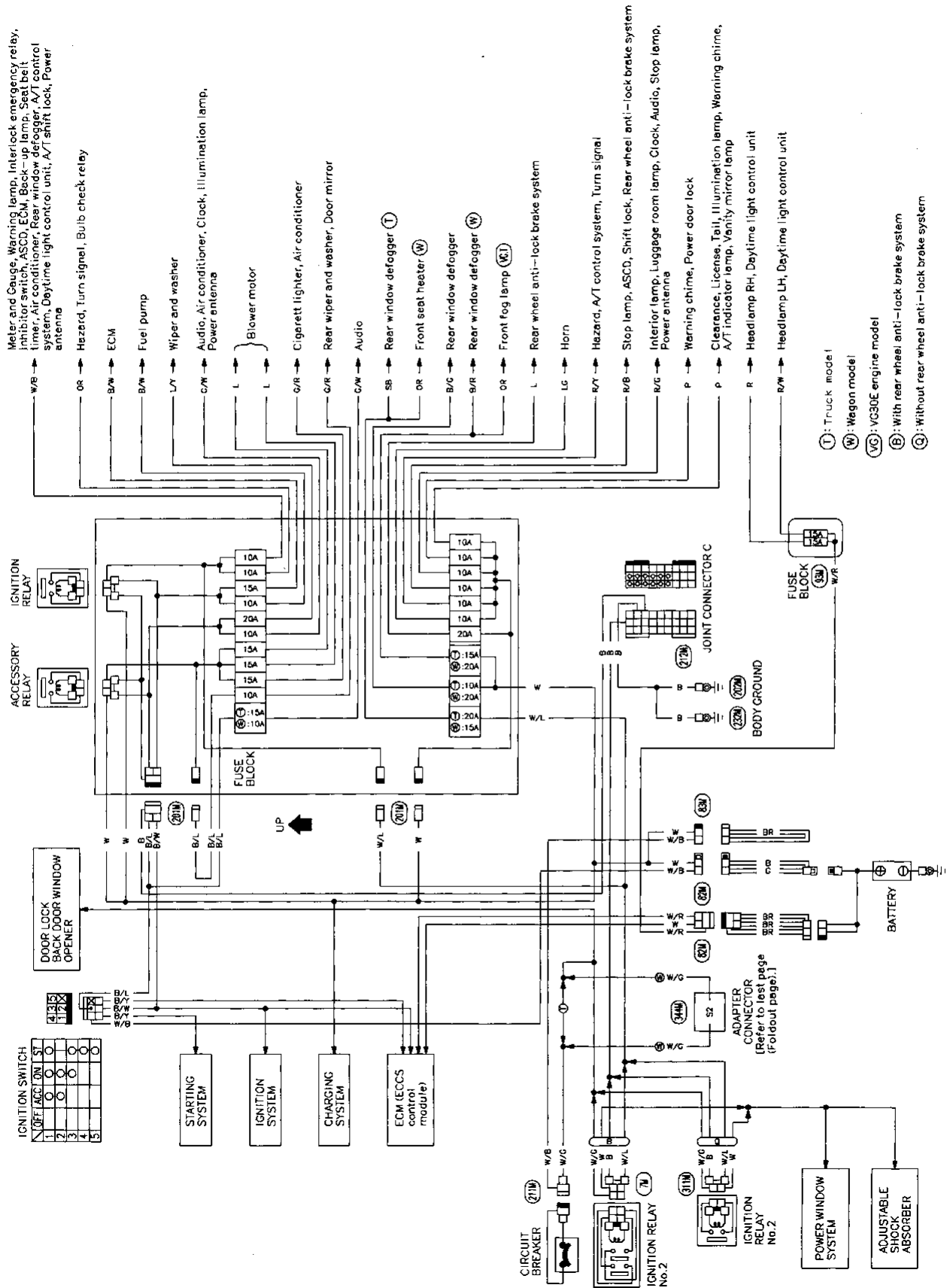
A melted fusible link can be detected either by visual inspection or by feeling with finger tip. If its condition is questionable, use circuit tester or test lamp.

#### CAUTION:

- If fusible link should melt, it is possible that critical circuit (power supply or large current carrying circuit) is shorted. In such a case, carefully check and eliminate cause of problem.
- Never wrap outside of fusible link with vinyl tape. Extreme care should be taken with this link to ensure that it does not come into contact with any other wiring harness or vinyl or rubber parts.

# POWER SUPPLY ROUTING

## Wiring Diagram



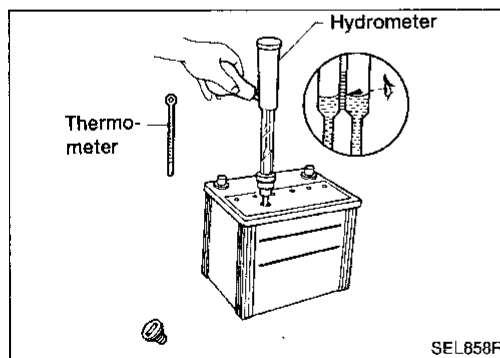
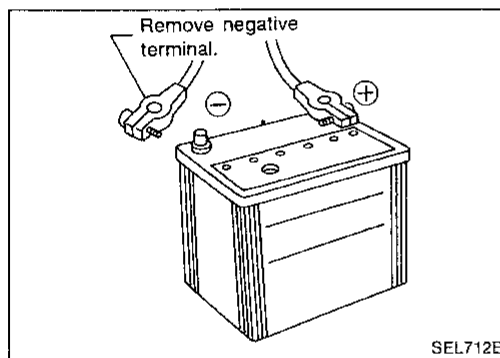
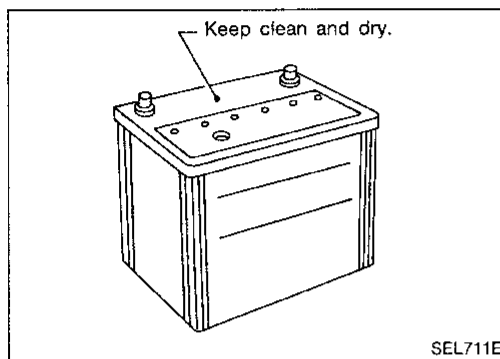
- (T): Truck model
- (W): Wagon model
- (W): VC30E engine model
- (B): With rear wheel anti-lock brake system
- (C): Without rear wheel anti-lock brake system

GI  
MA  
EM  
LC  
FF & EC  
FE  
CL  
MT  
AT  
TF  
PD  
FA  
RA  
BR  
ST  
BF  
HA  
EL

# BATTERY

## CAUTION:

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



# BATTERY

## 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.

GI

MA

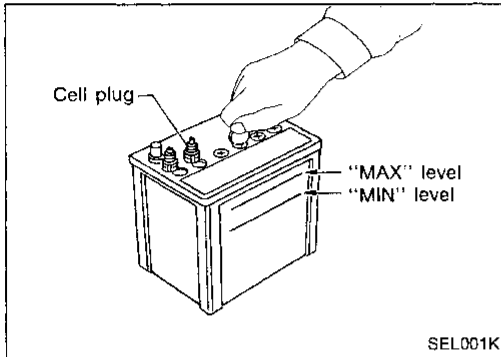
EM

LC

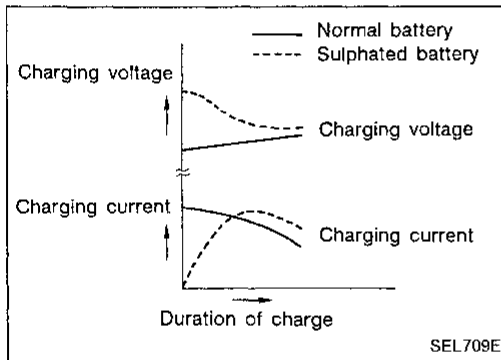
EF &  
EC

FE

CL



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



### SULPHATION

When a battery has been left unattended for a long period of time and has a specific gravity of less than 1.100, it will be completely discharged, resulting in sulphation on the cell plates.

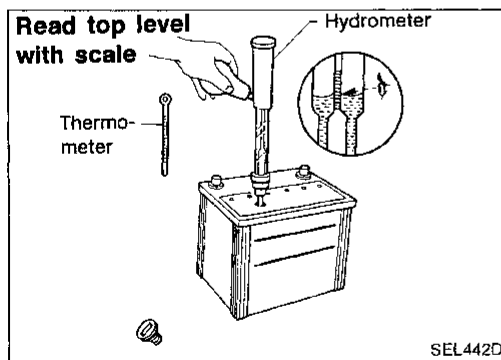
Compared with a battery discharged under normal conditions, the current flow in a "sulphated" battery is not as smooth although its voltage is high during the initial stage of charging, as shown in the figure at the left.

MT

AT

TF

PD



### SPECIFIC GRAVITY CHECK

Read hydrometer and thermometer indications at eye level.

FA

RA

BR

ST

BF

HA

EL

IDX

## BATTERY

### 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:

- Do not "quick charge" a fully discharged battery.
- Keep the battery away from open flame while it is being charged.
- 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.
- 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

# BATTERY

## 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 .050, the battery should be replaced.

## Service Data and Specifications (SDS)

Applied area	U.S.A.	Canada		
		KA24E	VG30E	
Engine	All	KA24E	VG30E	
Type	55D23R	65D26R	75D31R	
Capacity	V-AH	12-60	12-70	
Cold cranking current (For reference value)	A	356	413	447

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HA

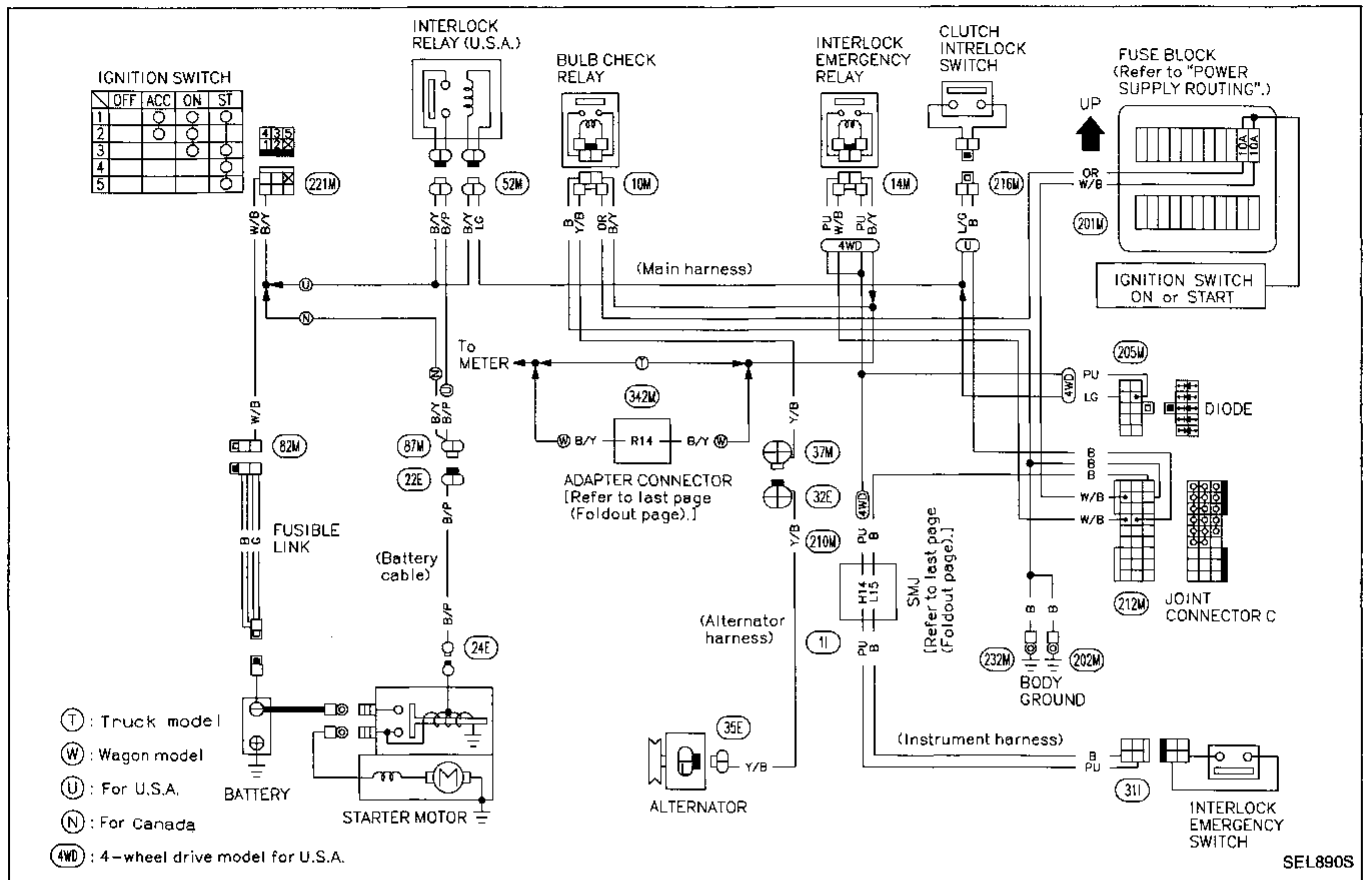
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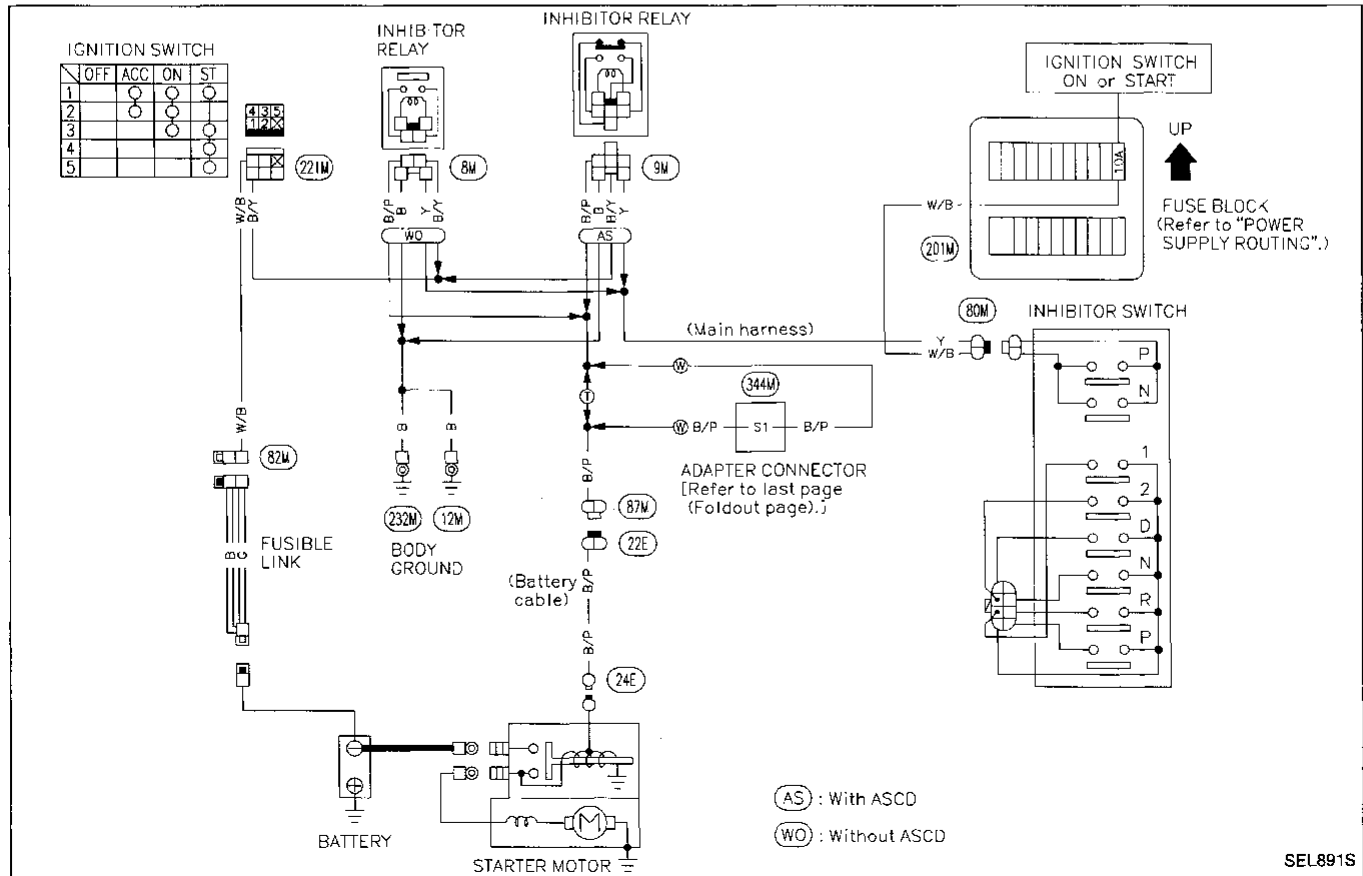
# STARTING SYSTEM

## Wiring Diagram

### VG30E ENGINE MODEL



SEL890S

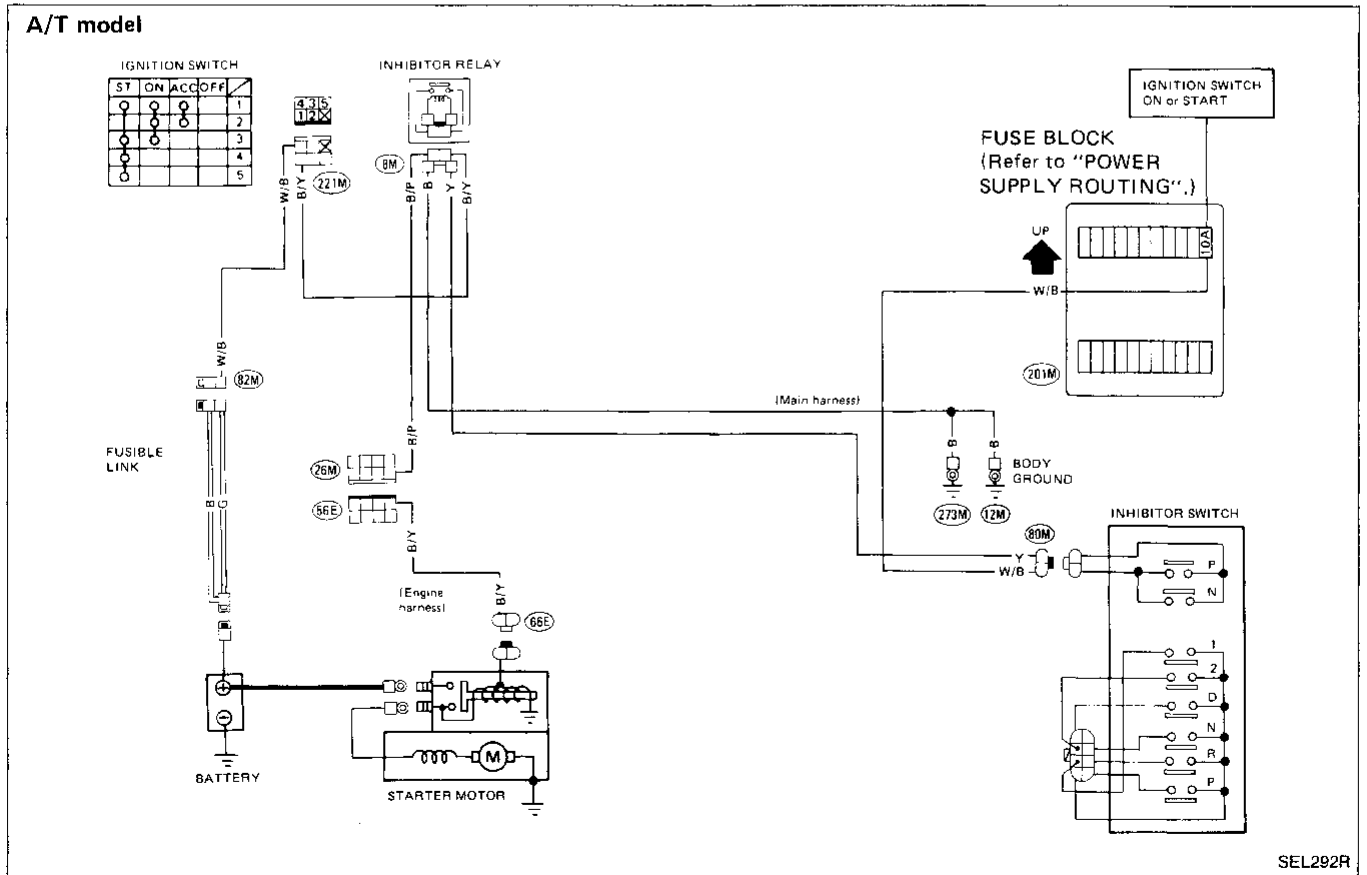
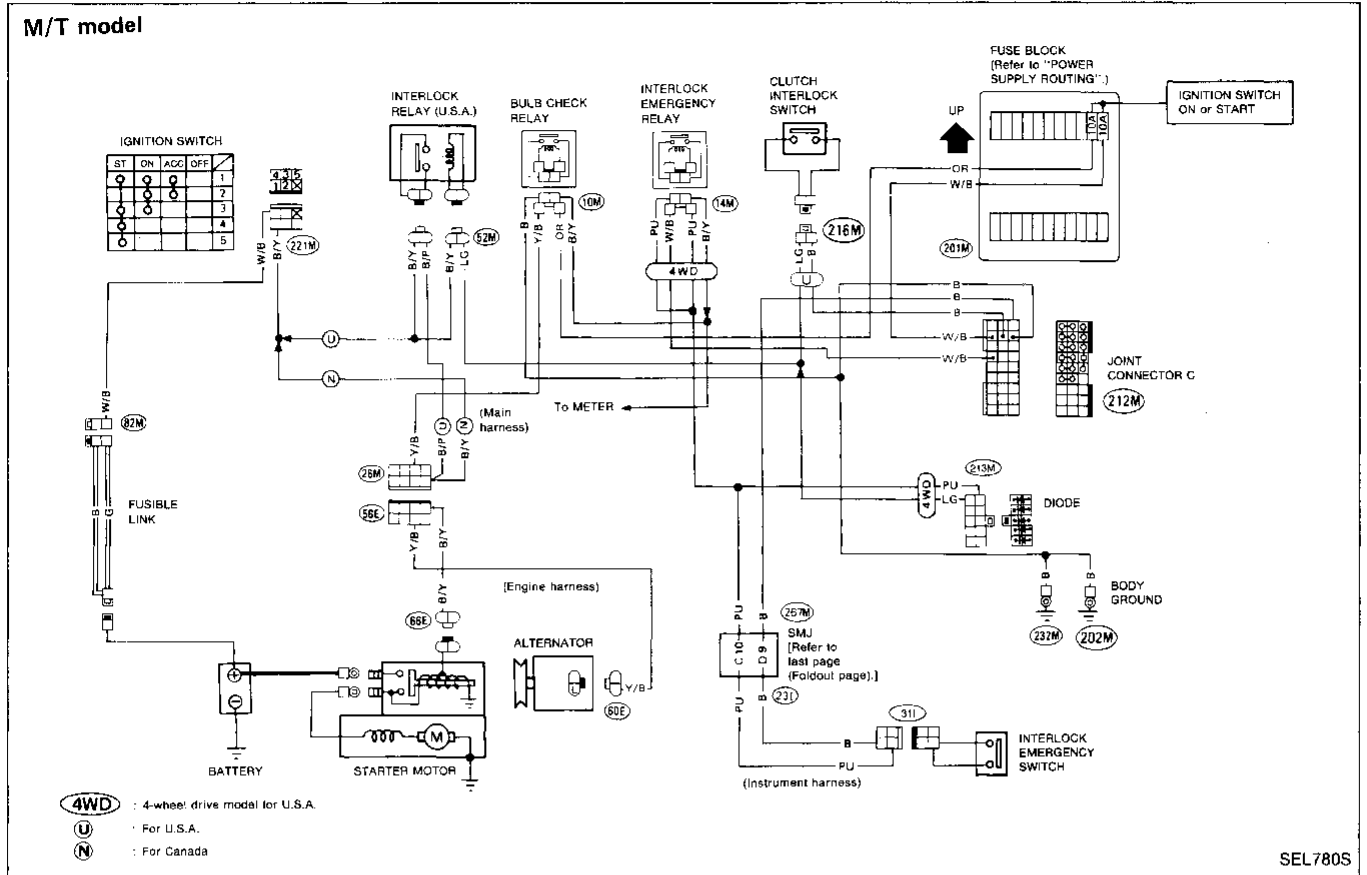


SEL891S

# STARTING SYSTEM

## Wiring Diagram (Cont'd)

### KA24E ENGINE MODEL

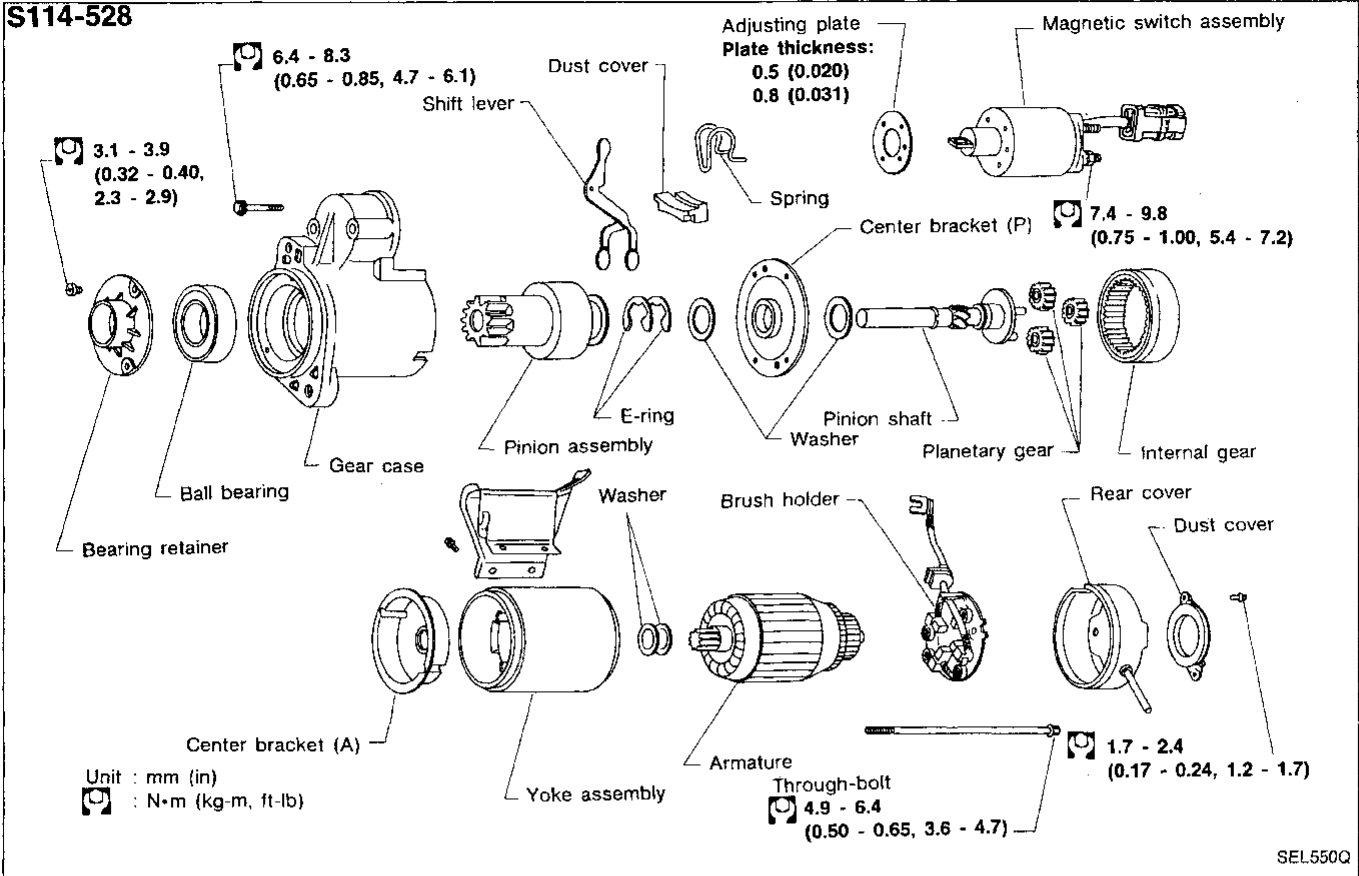


GI  
MA  
EM  
LC  
EF & EC  
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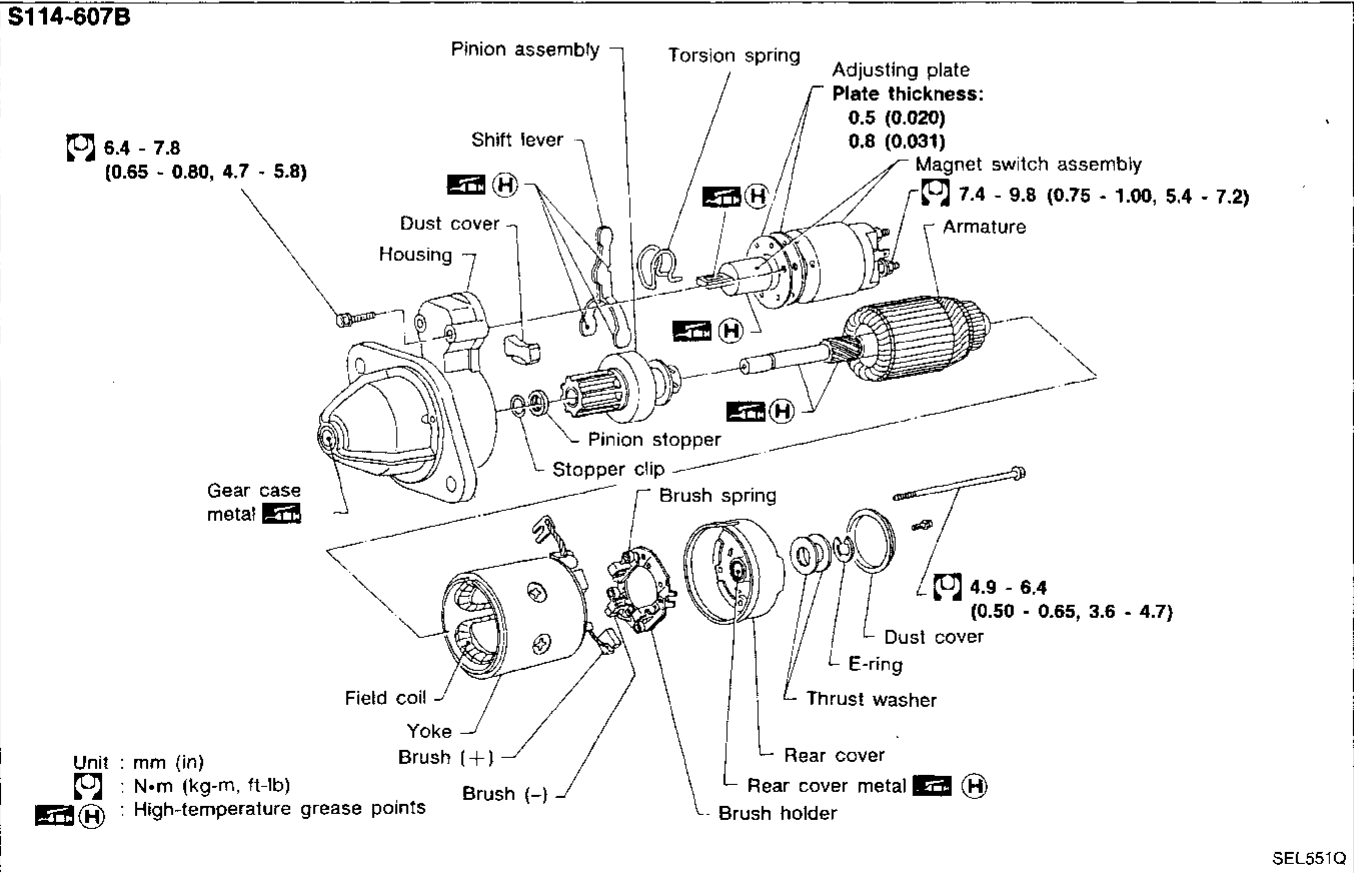
# STARTING SYSTEM

## Construction

S114-528



S114-607B

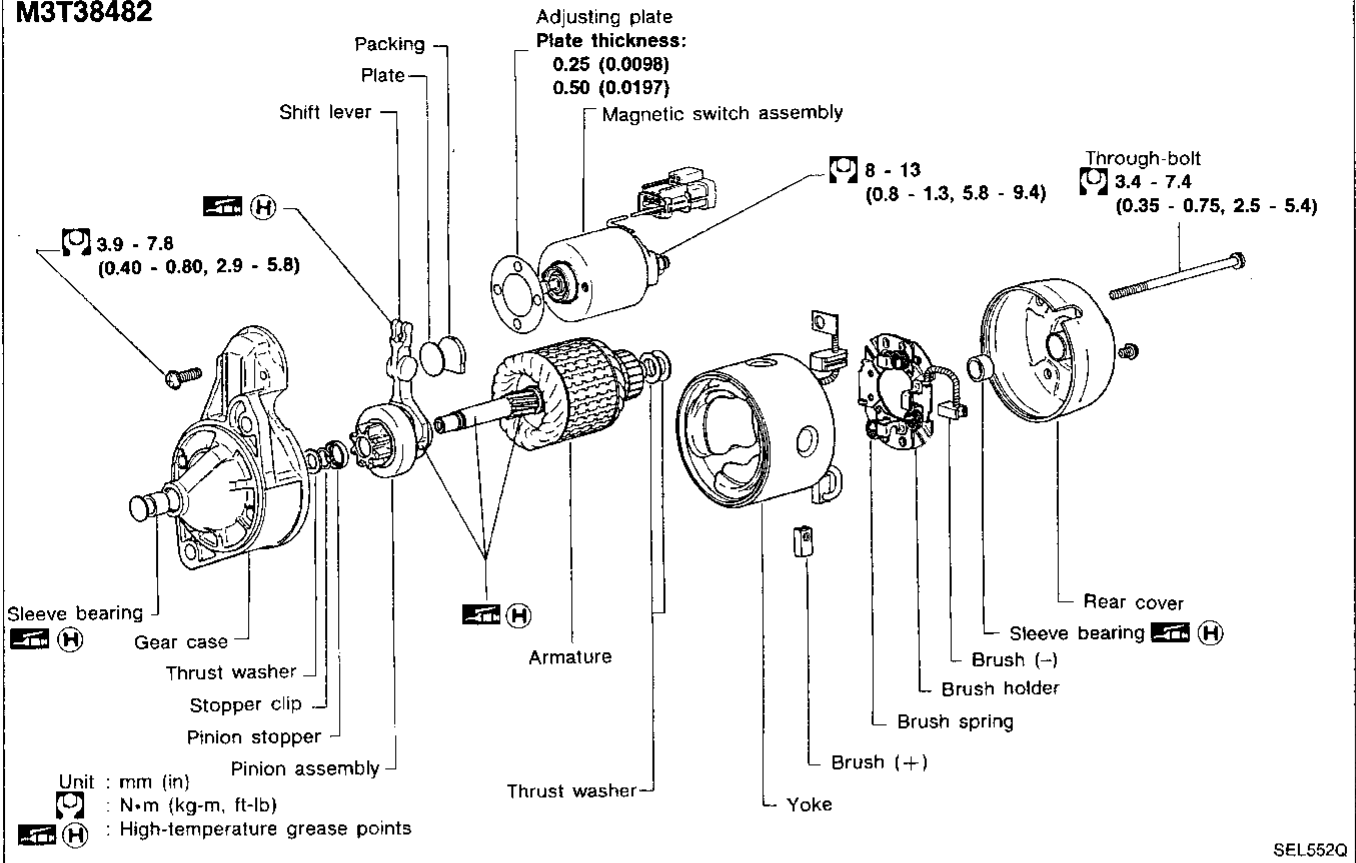


# STARTING SYSTEM

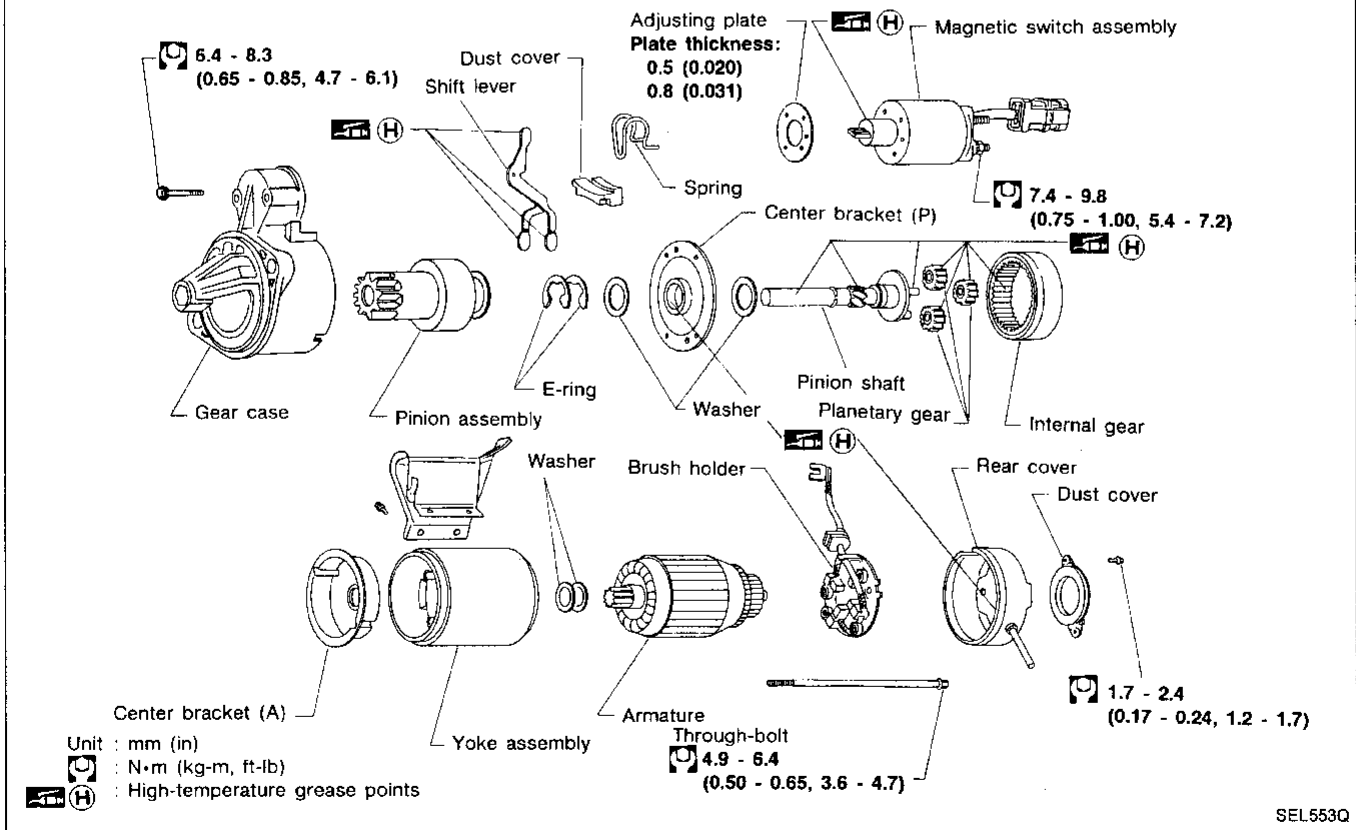
## Construction (Cont'd)

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EF & EC  
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**M3T38482**



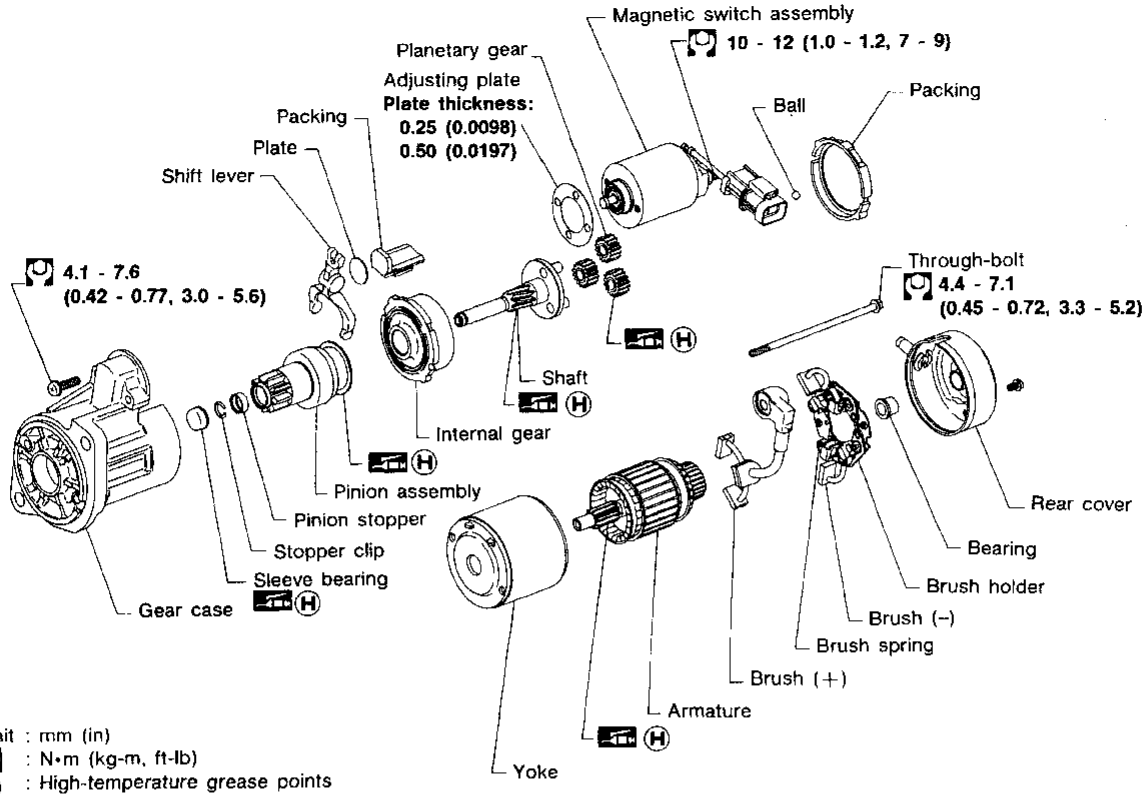
**S114-527A**



# STARTING SYSTEM

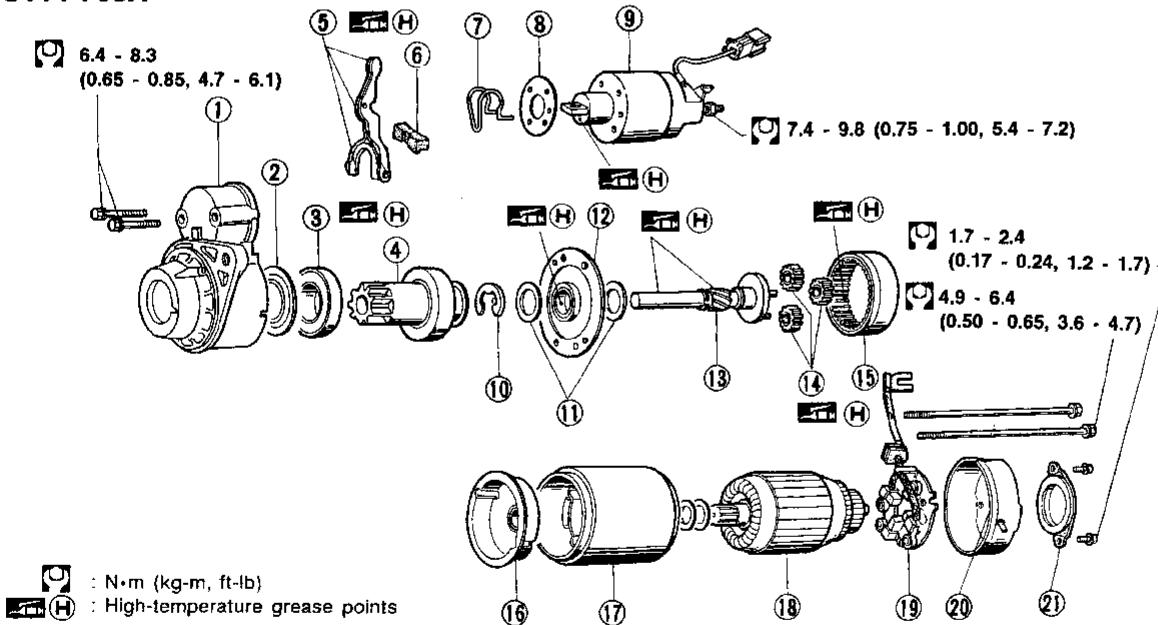
## Construction (Cont'd)

M1T60281



SEL554Q

S114-703A



SEL555Q

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



# STARTING SYSTEM

## Service Data and Specifications (SDS)

### STARTER

Type	S114-528	S114-607B	M3T38482	S114-527A	M1T60281	S114-703A	
	HITACHI		MITSUBISHI	HITACHI	MITSUBISHI	HITACHI	
	Reduction	Non-reduction		Reduction			
Applied model	VG30E	KA24E					All 4WD and CANADA
		U.S.A. 2WD					
		M/T		A/T			
System voltage	V	12					
No-load							
Terminal voltage	V	11.0	11.5		11.0		
Current	A	Less than 90	Less than 60	Less than 60	Less than 90	50 - 75	Less than 90
Revolution	rpm	More than 2,650	More than 7,000	More than 6,500	More than 2,950	3,000 - 4,000	More than 2,950
Minimum diameter of commutator	mm (in)	More than 32 (1.26)	More than 39 (1.54)	More than 31.4 (1.236)	More than 32 (1.26)	More than 28.8 (1.134)	More than 32 (1.26)
Minimum length of brush	mm (in)	11 (0.43)		11.5 (0.453)	11 (0.43)	12 (0.47)	11 (0.43)
Brush spring tension	N (kg, lb)	17.7 - 21.6 (1.8 - 2.2, 4.0 - 4.9)		13.7 - 25.5 (1.4 - 2.6, 3.1 - 5.7)	17.7 - 21.6 (1.8 - 2.2, 4.0 - 4.9)	13.7 - 25.5 (1.4 - 2.6, 3.1 - 5.7)	17.7 - 21.6 (1.8 - 2.2, 4.0 - 4.9)
Movement in height of pinion assembly	mm (in)	—				0.5 - 2.0 (0.020 - 0.079)	—
Clearance of bearing metal and armature shaft	mm (in)	0.03 - 0.3 (0.0012 - 0.0118)	Less than 0.2 (0.008)	—	0.2 (0.008)	—	0.03 - 0.3 (0.0012 - 0.0118)
Clearance between pinion front edge and pinion stopper	mm (in)	0.05 - 1.5 (0.0020 - 0.0591)	0.3 - 2.5 (0.012 - 0.098)	0.5 - 2.0 (0.020 - 0.079)	0.3 - 1.5 (0.012 - 0.059)	—	0.05 - 1.5 (0.0020 - 0.0591)

GI

MA

EM

LC

EF &  
EC

FE

CL

MT

AT

TF

PD

FA

RA

BR

ST

BF

HA

EL

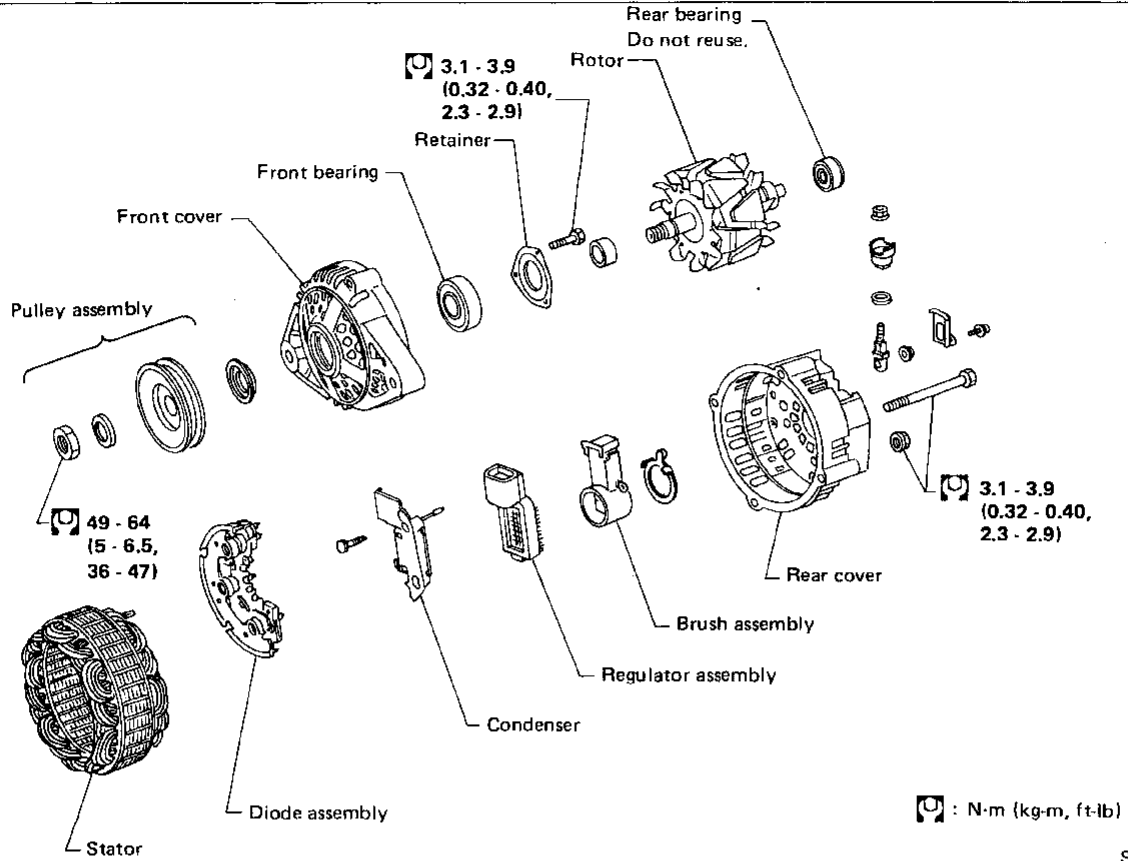
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# CHARGING SYSTEM

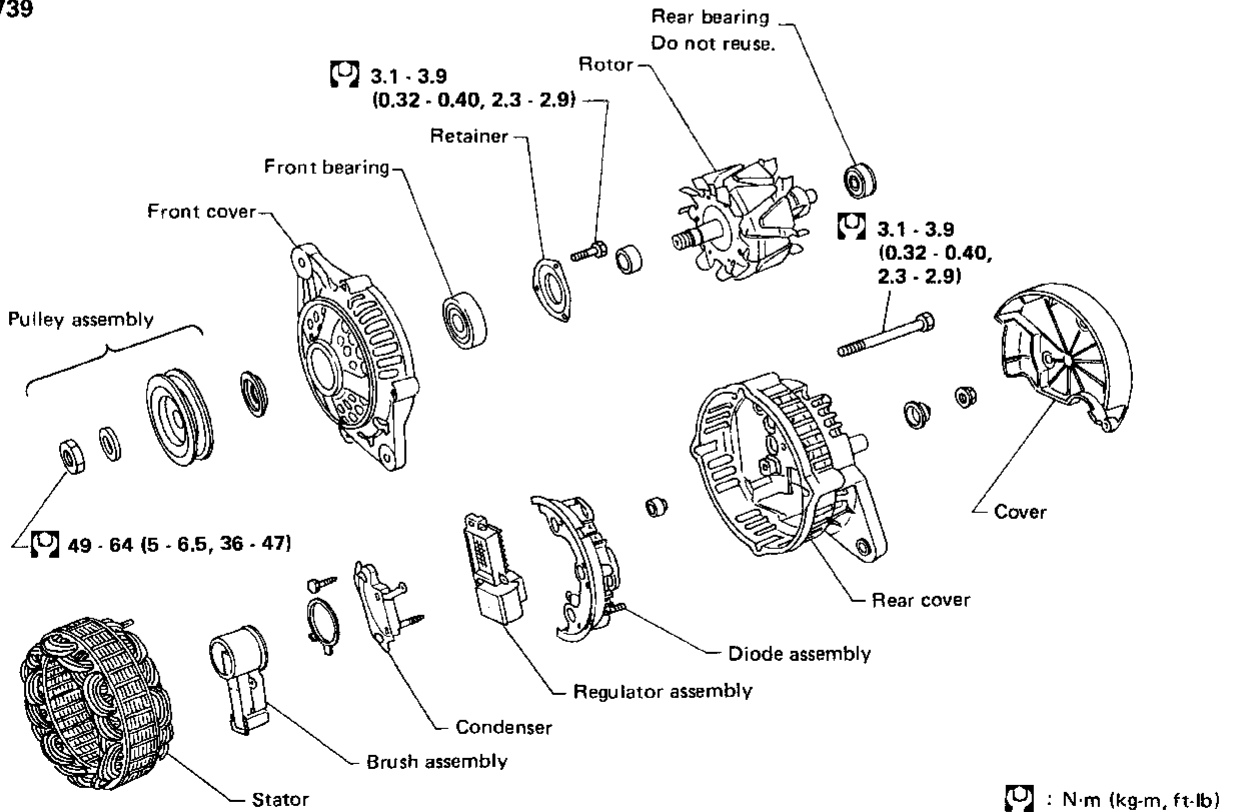
## Construction

LR160-724



SEL458R

LR170-739



SEL958N

GI  
MA  
EM  
LC  
EF & EC  
FE  
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AT  
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HA  
EL

# CHARGING SYSTEM

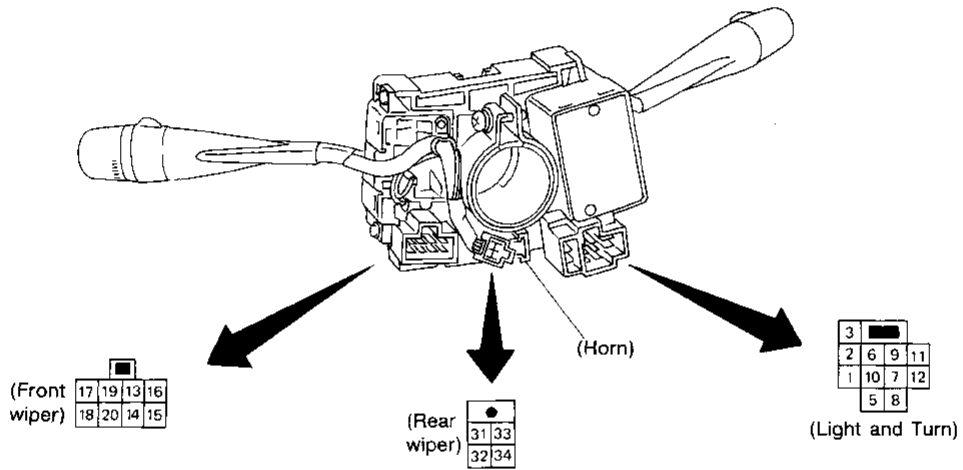
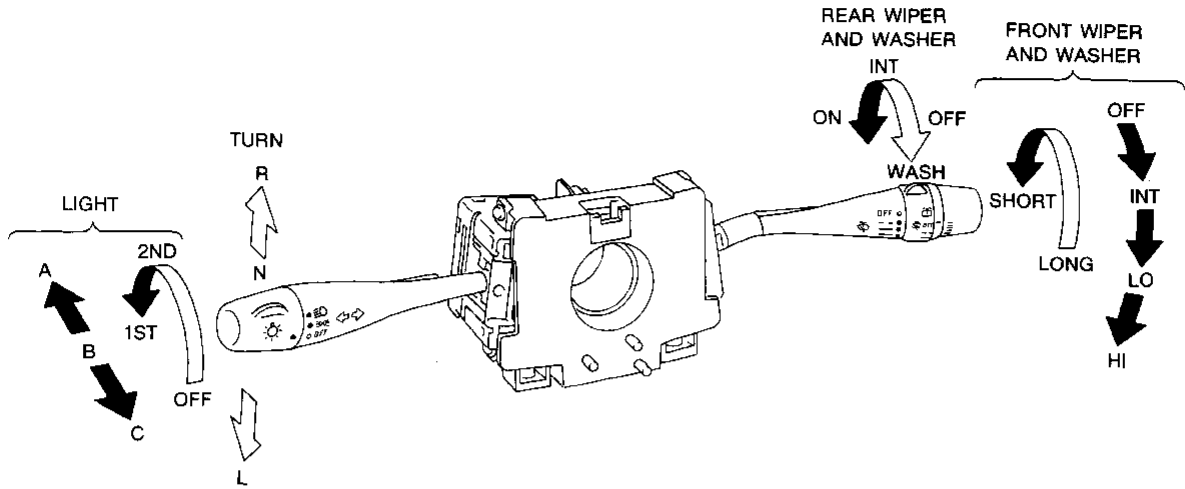
## Service Data and Specifications (SDS)

### ALTERNATOR

Applied model		VG30E	KA24E
Type		LR170-739	LR160-724
Nominal rating	V-A	12-70	12-60
Ground polarity		Negative	
Minimum revolution under no-load (When 13.5 volts is applied)	rpm	Less than 950	Less than 1,000
Hot output current (When 13.5 volts is applied)	A/rpm	More than 22/1,300 More than 50/2,500 More than 67/5,000	More than 17/1,300 More than 48/2,500 More than 57/5,000
Regulated output voltage	V	14.1 - 14.7	
Minimum length of brush	mm (in)	6 (0.24)	
Slip ring minimum outer diameter	mm (in)	More than 26.0 (1.024)	
Rotor (Field coil resistance)	$\Omega$	—	2.58

# COMBINATION SWITCH

## Check



(Front wiper)

17	19	13	16
18	20	14	15

(Rear wiper)

31	33
32	34

(Light and Turn)

3	
2	6 9 11
1	10 7 12
5	8

LIGHT SWITCH

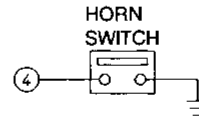
	OFF			1ST			2ND		
	A	B	C	A	B	C	A	B	C
5									
6									
7									
8									
9									
10									
11									
12									

FRONT WIPER SWITCH

	OFF	INT	LO	HI	WASH
13					
14					
15					
16					
17					
18					
19					
20					

	MIST	OFF	LO	HI	WASH
13					
19					
15					
16					
17					
18					

	OFF	LO	HI	WASH
13				
19				
15				
16				
17				
18				



TURN SIGNAL SWITCH

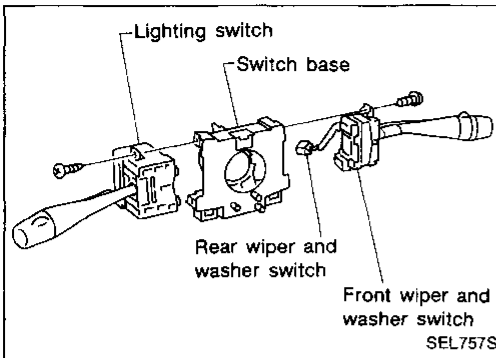
	R	N	L
1			
2			
3			

REAR WIPER SWITCH

	WASH	OFF	INT	ON
31				
32				
33				
34				

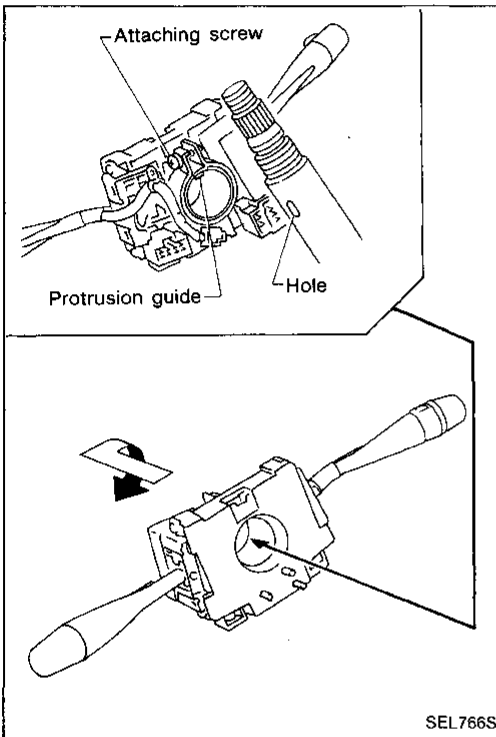
GI  
MA  
EM  
LC  
EF & EC  
FE  
CL  
MT  
AT  
TF  
PD  
FA  
RA  
BR  
ST  
BF  
HA  
EL

## COMBINATION SWITCH



### Replacement

- Lighting switch, wiper & washer switch and can be replaced without removing combination switch base.



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

# HEADLAMP

## Operation (Daytime light system for Canada)

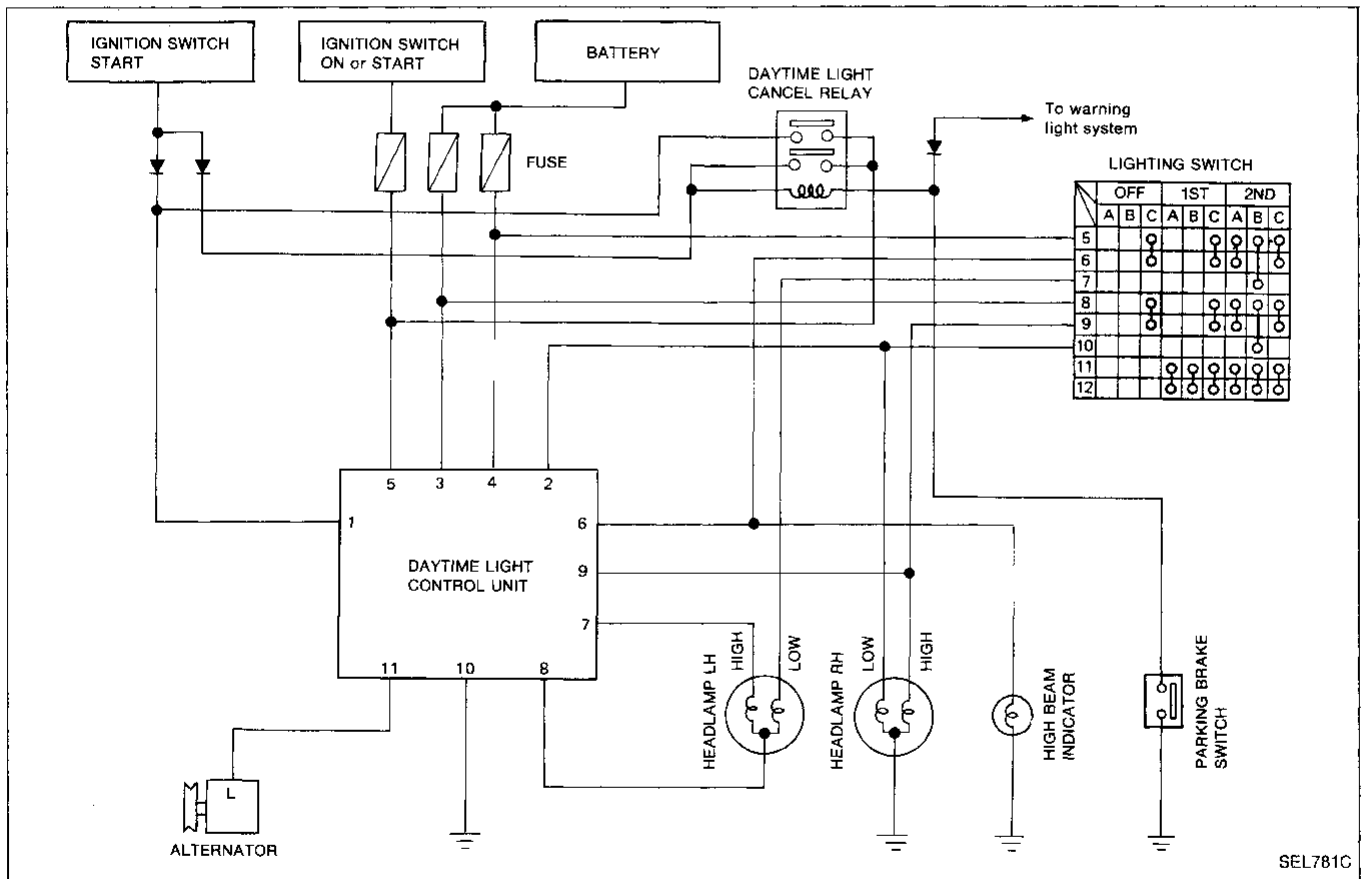
After starting the engine with the lighting switch in the "OFF" position or "1ST" position, the headlamp high beam automatically turns on. Lighting switch operations other than the above are the same as conventional light systems.

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	
Head-lamp	High beam	X	X	O	X	X	O	O	X	O	△*	△*	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	X
Clearance and tail lamp		X	X	X	O	O	O	O	O	O	X	X	X	O	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

O: Lamp "ON"  
 X: Lamp "OFF"  
 △: Lamp dims.  
 □: Added functions

\* : When starting the engine with the parking brake released, the daytime light will come ON.  
 When starting the engine with the parking brake pulled, the daytime light won't come ON.

## Schematic (Daytime light system for Canada)



SEL781C







# HEADLAMP

## Aiming Adjustment

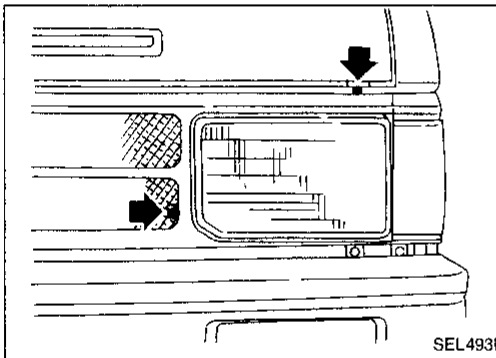
When performing headlamp aiming adjustment, use an aiming machine, aiming wall screen or headlamp tester. For operating instructions of any aimer, it should be in good repair, calibrated and used according to respective operation manuals supplied with the unit.

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

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

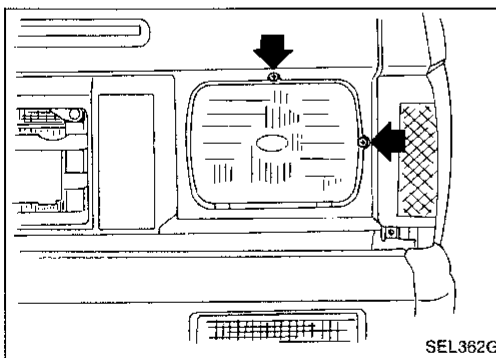
### CAUTION:

- 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).**



### LOW BEAM

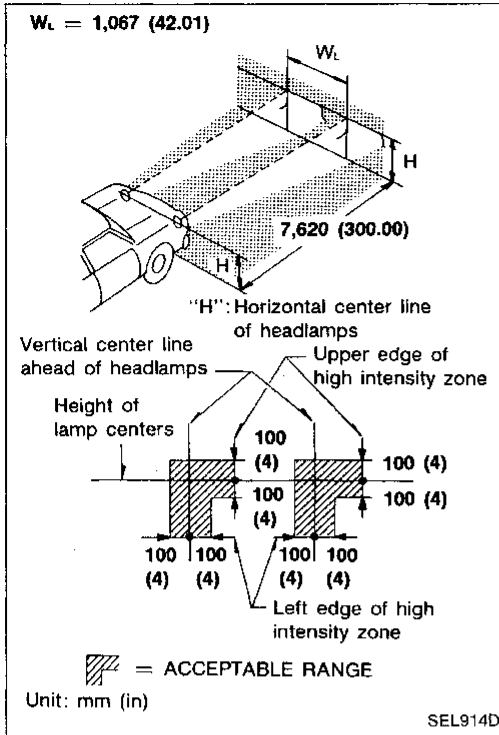
1. Turn headlamp low beam on.
2. Use adjusting screws to perform aiming adjustment.



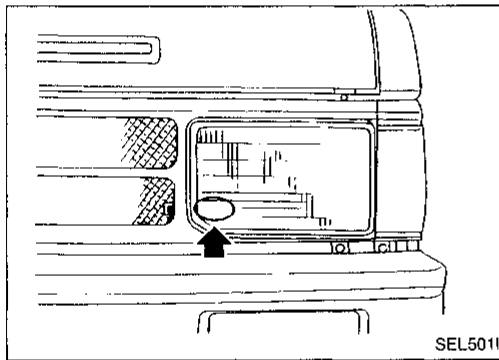
- **Before adjusting headlamps, remove covers.**
- **First tighten the adjust screw all the way and then make adjustment by loosening the screw.**

# HEADLAMP

## Aiming Adjustment (Cont'd)

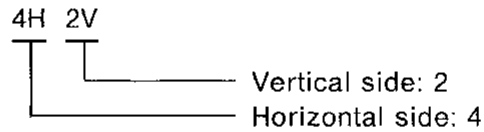


- Adjust headlamps so that upper edge and left edge of high intensity zone are within the acceptable range as shown at left.
  - Dotted lines in illustration show center of headlamp.
- "H": Horizontal center line of headlamps.  
 "W<sub>L</sub>": Distance between each headlamp center



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

Example:



GI

MA

EM

LC

EF &  
EC

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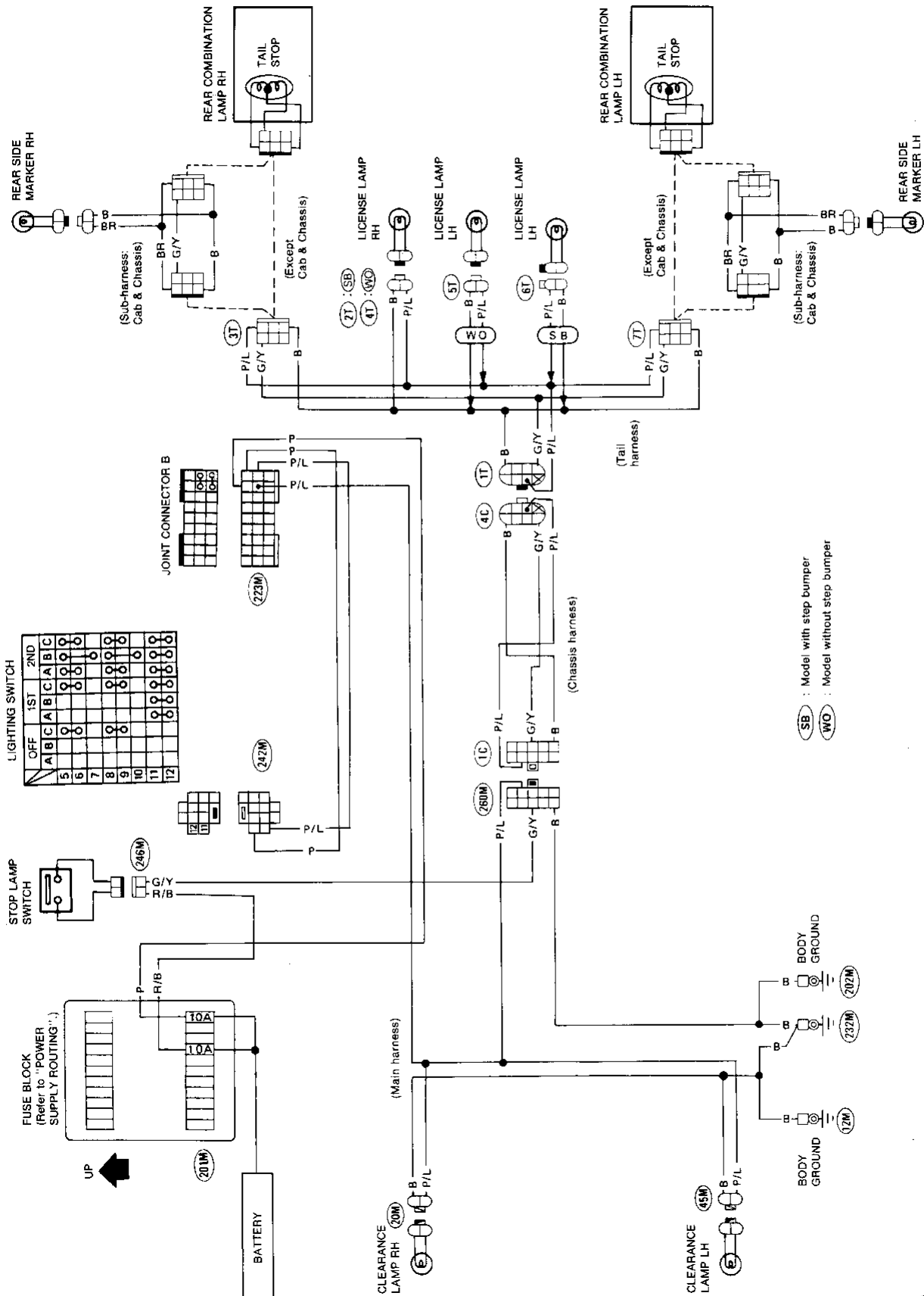
EL

IDX

# EXTERIOR LAMP

## Clearance, License, Tail and Stop Lamps/Wiring Diagram

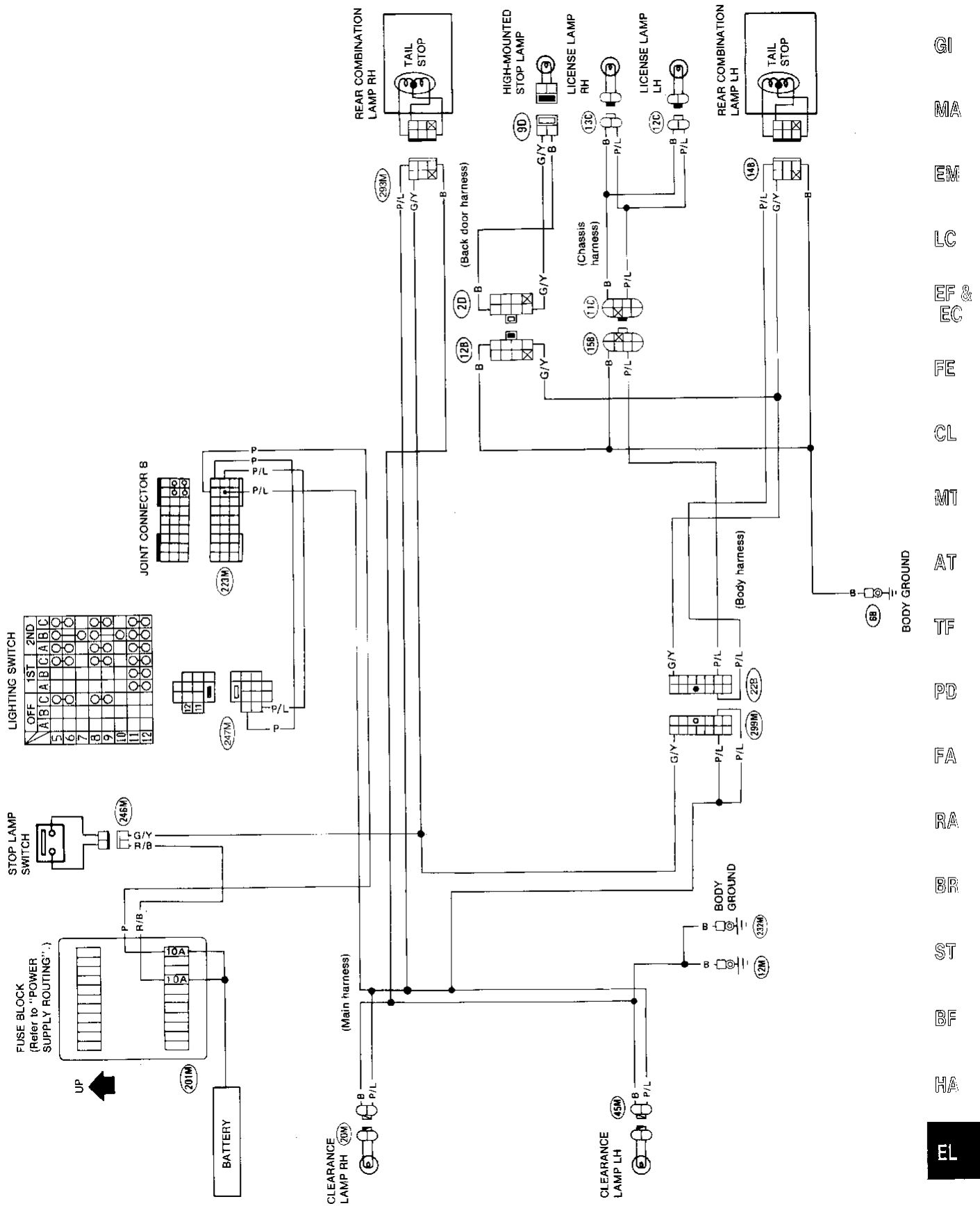
TRUCK MODEL



# EXTERIOR LAMP

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

WAGON MODEL



GI

MA

EM

LC

EF &

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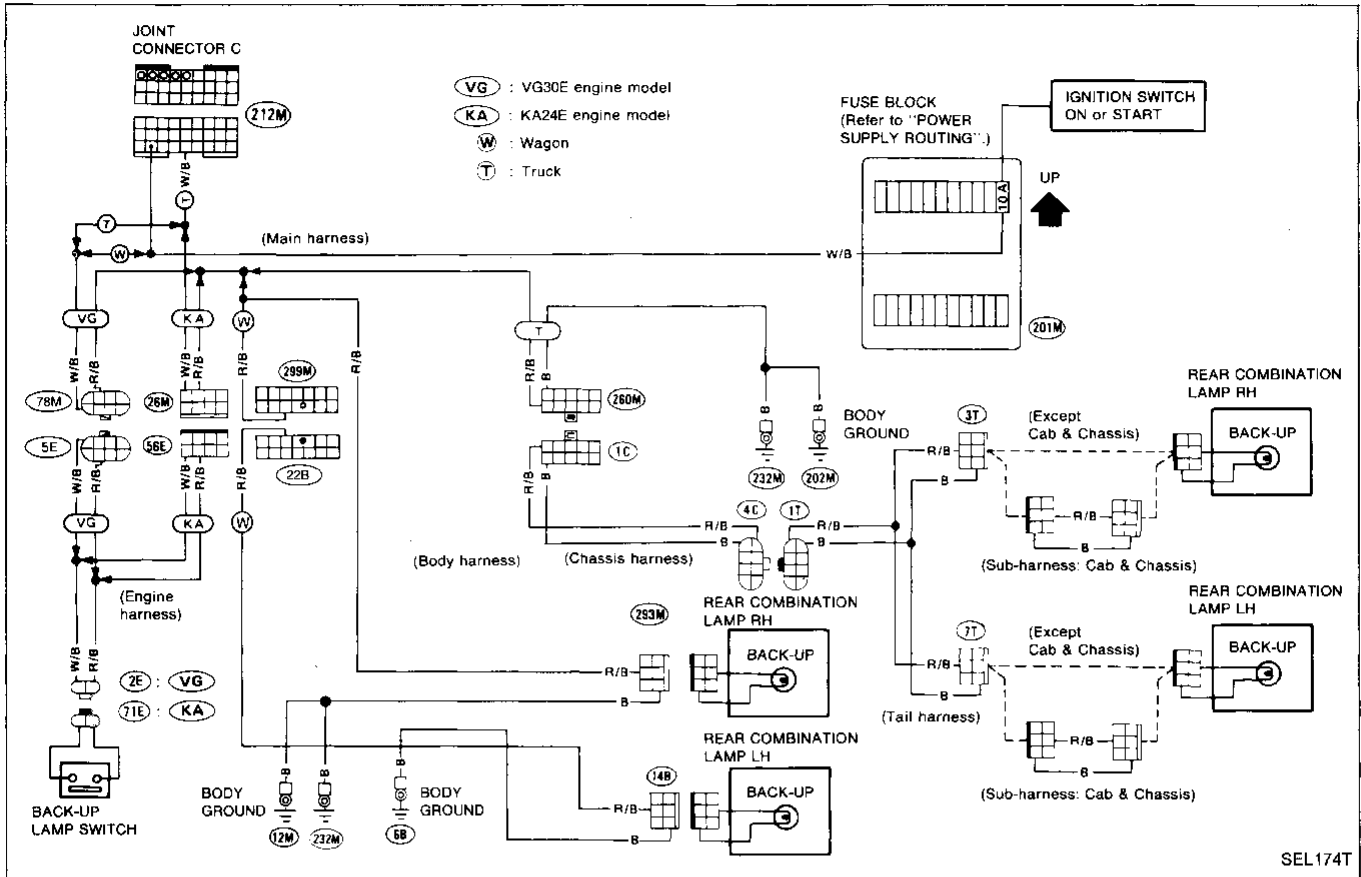
HA

EL

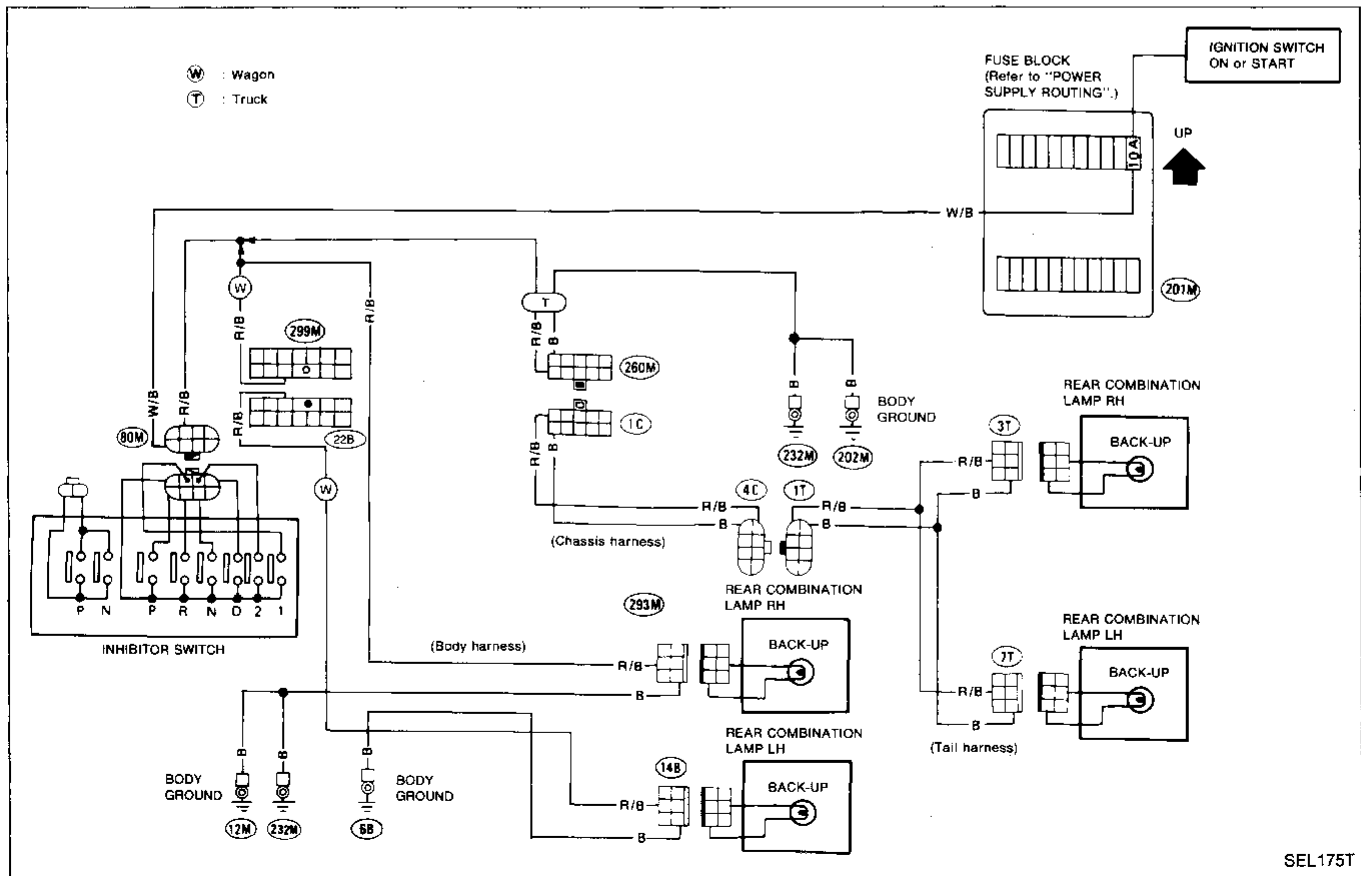
# EXTERIOR LAMP

## Back-up Lamp/Wiring Diagram

### M/T MODEL



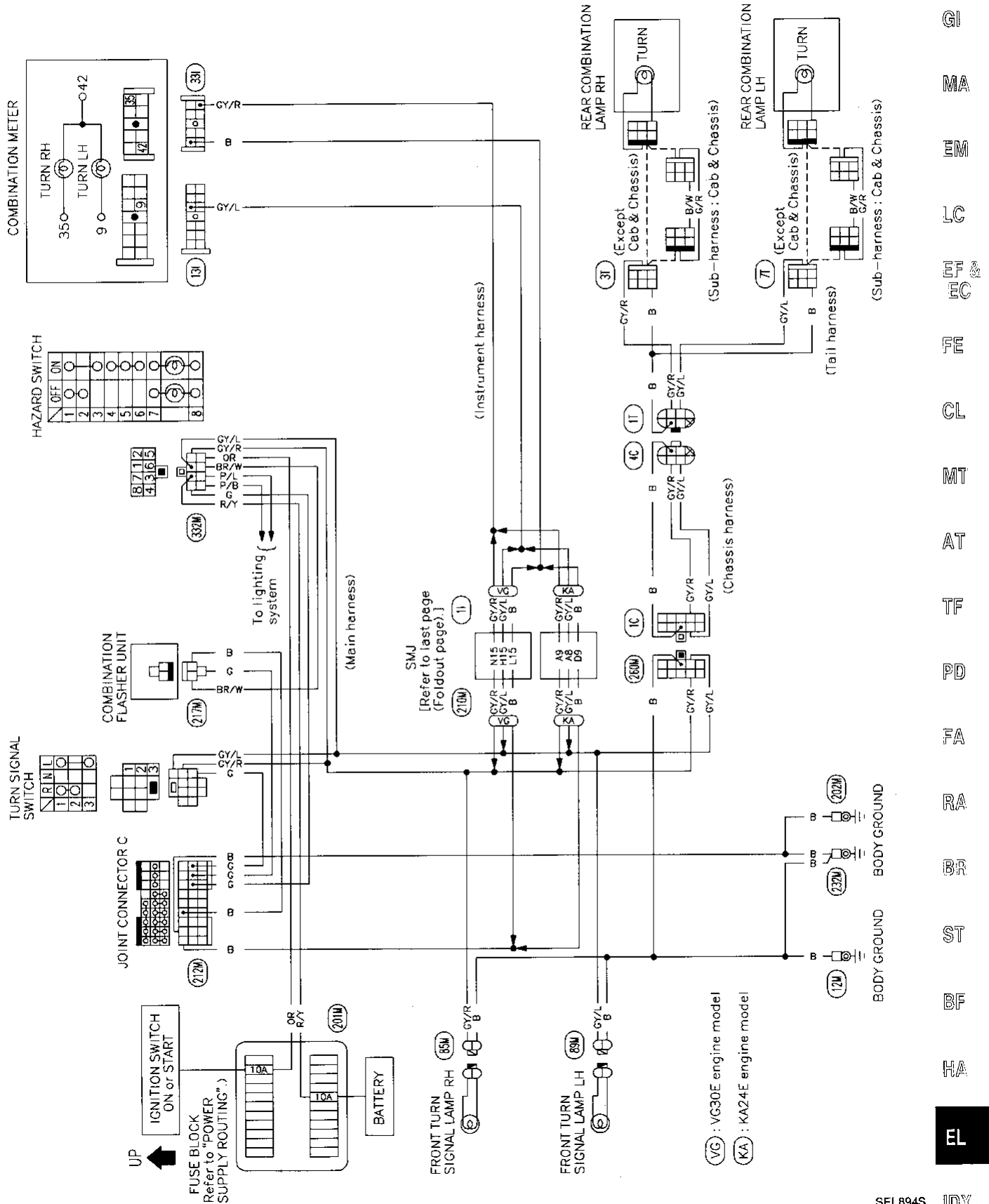
### A/T MODEL



# EXTERIOR LAMP

## Turn Signal and Hazard Warning Lamps/Wiring Diagram

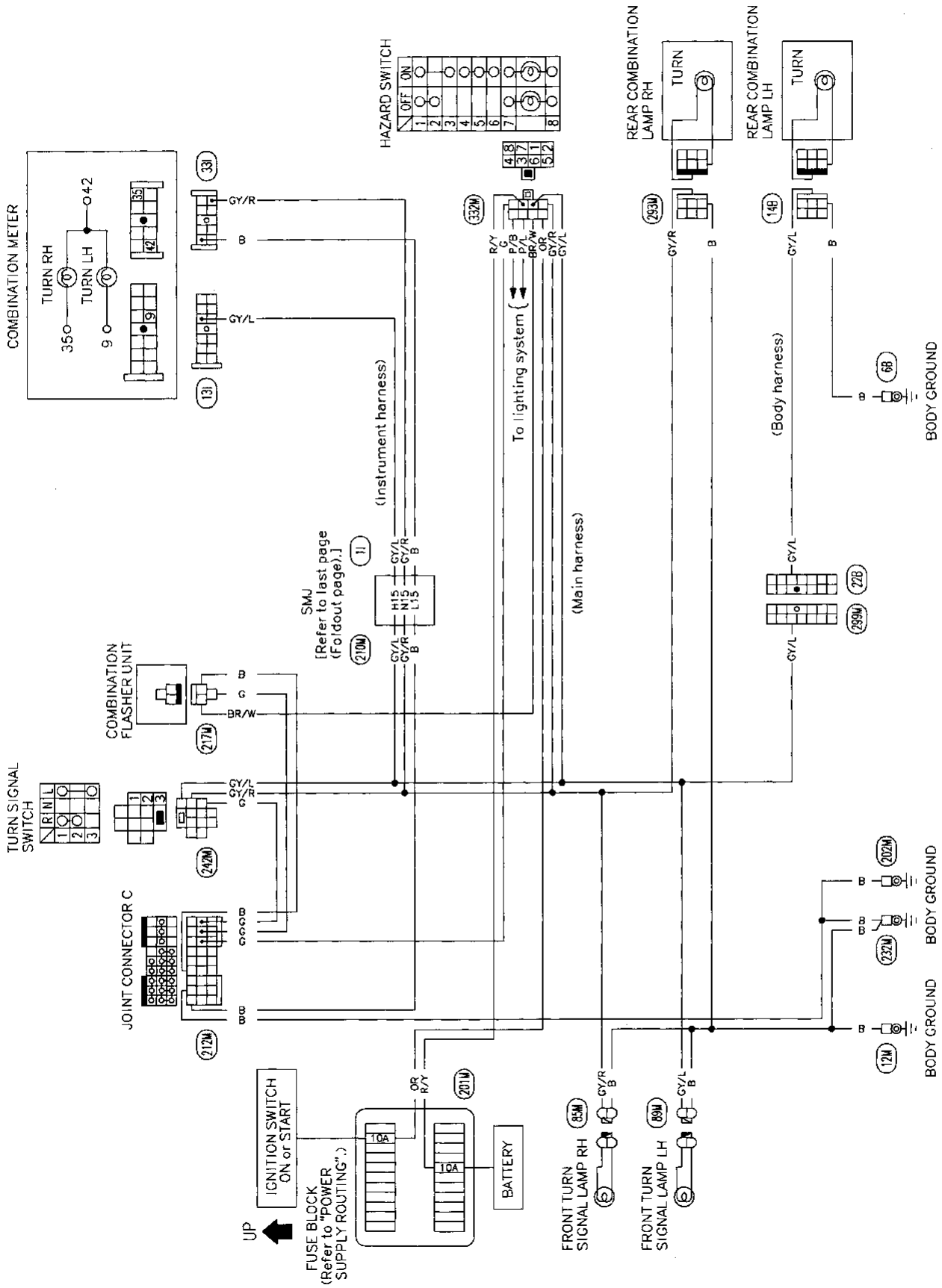
TRUCK MODEL



# EXTERIOR LAMP

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

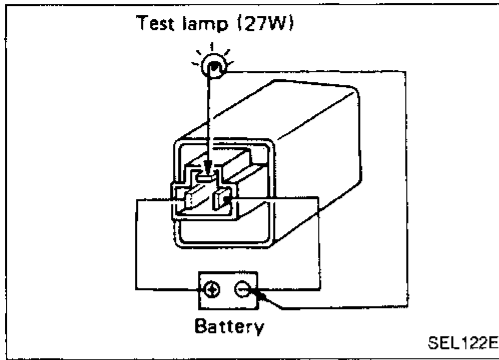
WAGON MODEL



SEL895S



# EXTERIOR LAMP



## 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

### HEADLAMPS

	Wattage (W)	Bulb No.
Conventional bulb	65/55	H6052
Halogen bulb	65/35	H6054

### OTHER LAMPS

	Wattage (W)	Bulb No.
Front turn signal lamp	27	1156
Front clearance lamp	3.8	194
Rear combination lamp		
Turn signal	27	1156
Stop/Tail	27/8	1157
Back-up	27	1156
Rear side marker lamp	3.4	158
License plate lamp	3.8 or 5	194 (For 3.8W lamp)
Interior lamp	10	—

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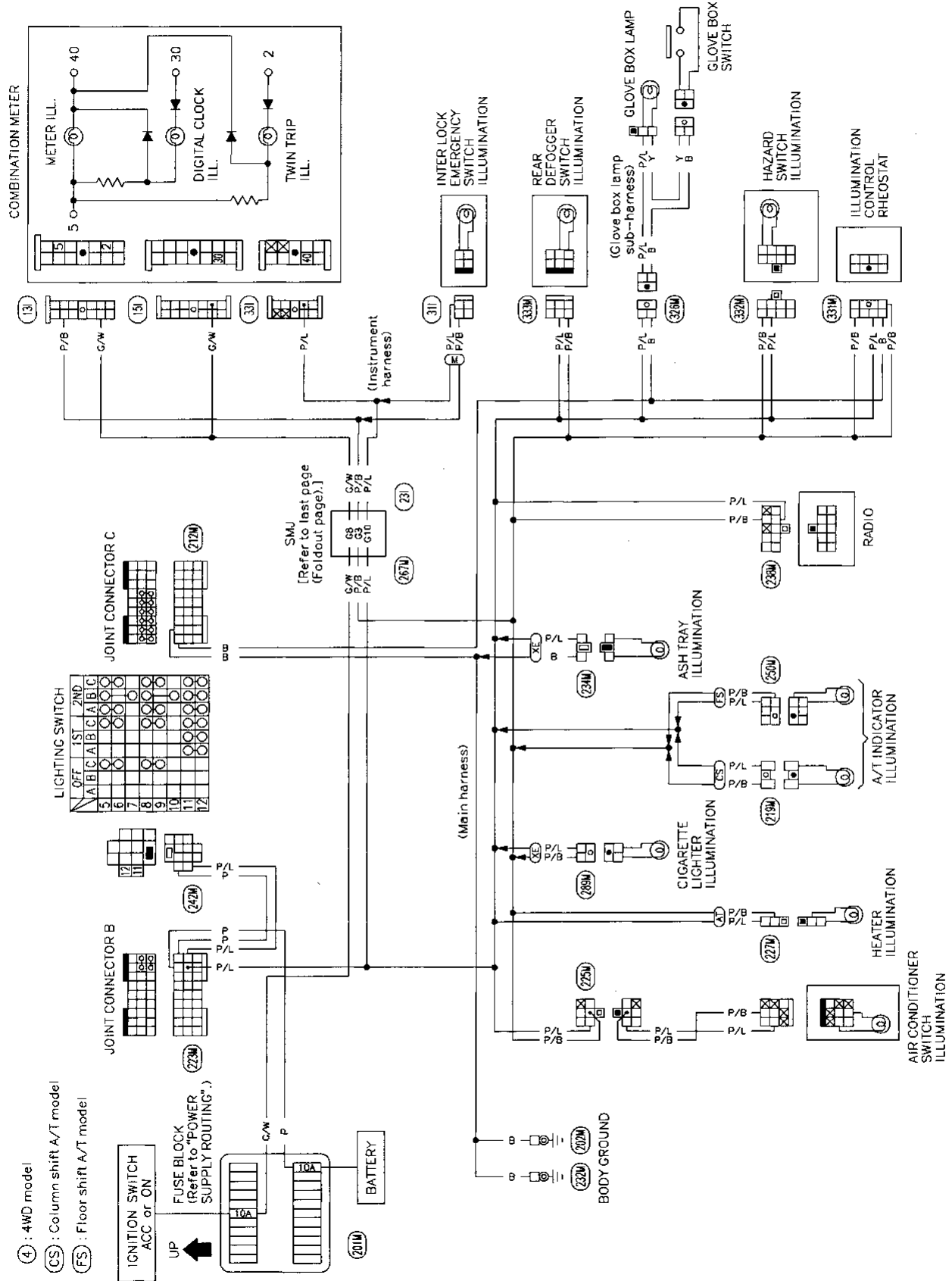
IDX



# INTERIOR LAMP

## Illumination/Wiring Diagram (Cont'd)

KA24E ENGINE MODEL



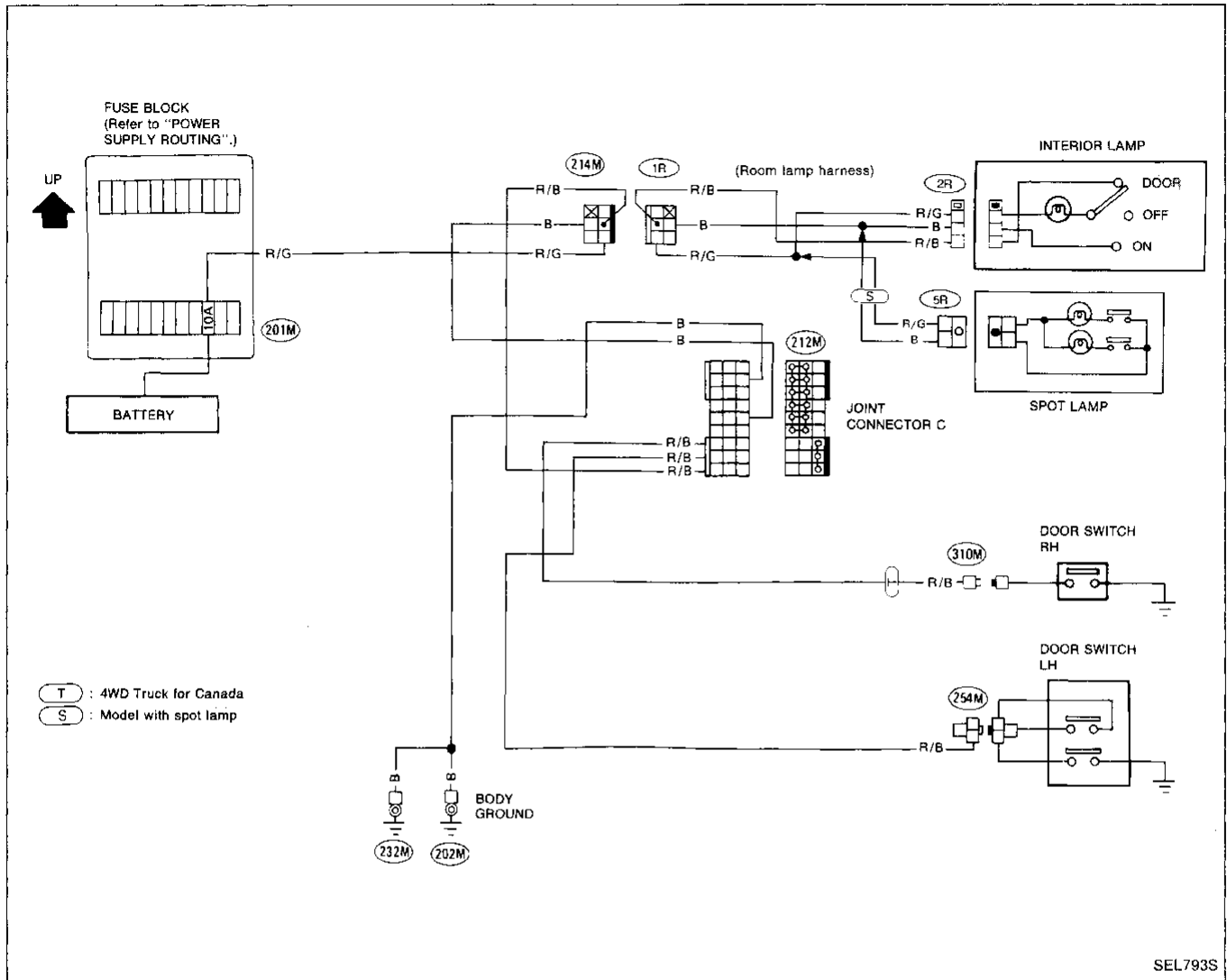
GI  
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# INTERIOR LAMP

## Interior Lamp/Wiring Diagram

### TRUCK MODEL

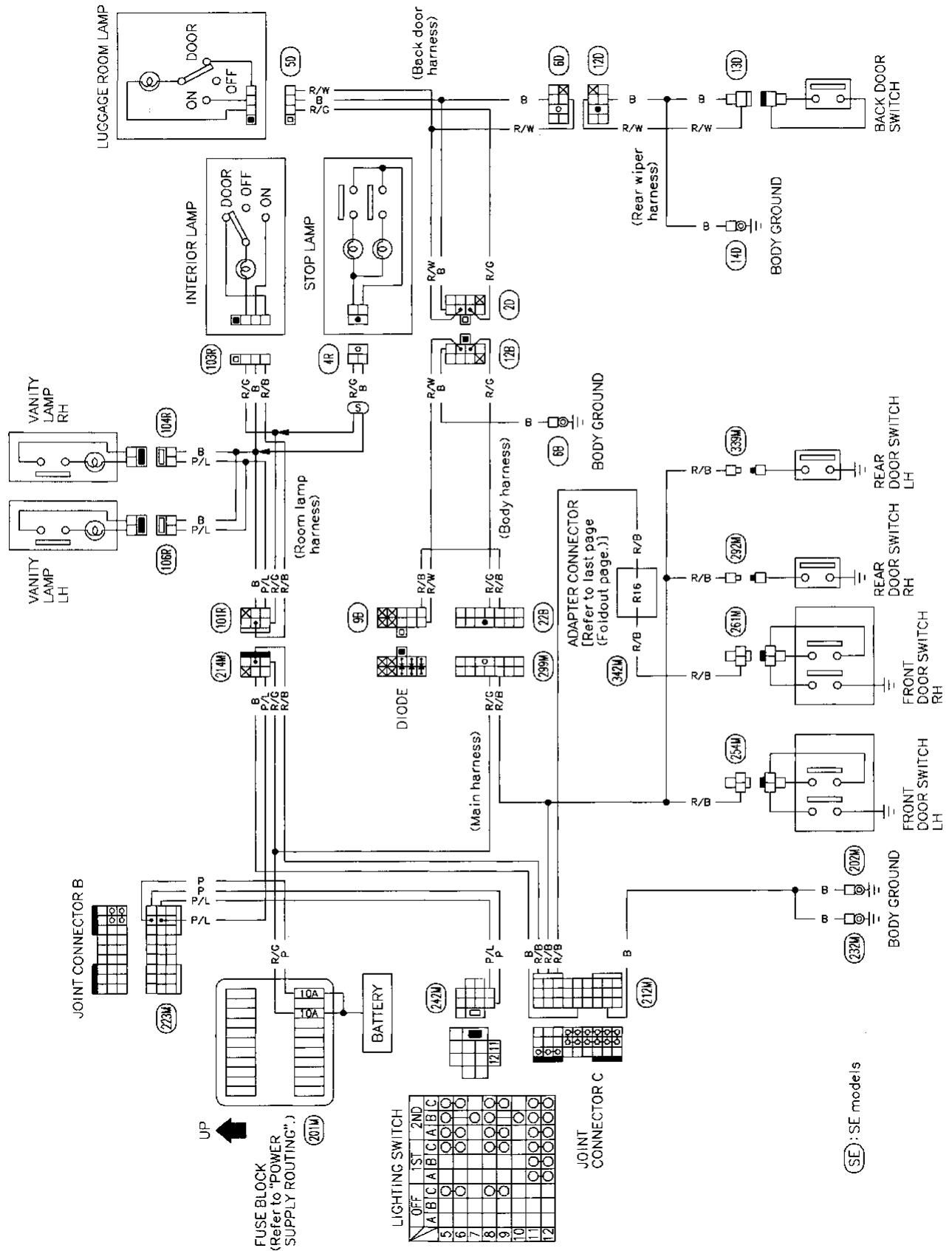


SEL793S

# INTERIOR LAMP

## Interior Lamp/Wiring Diagram (Cont'd)

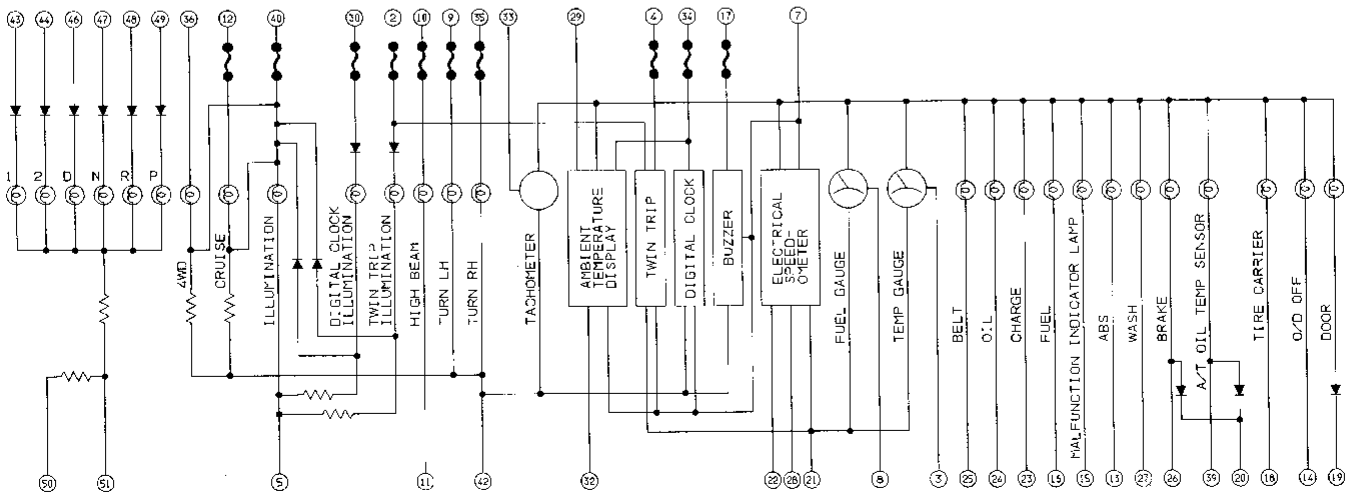
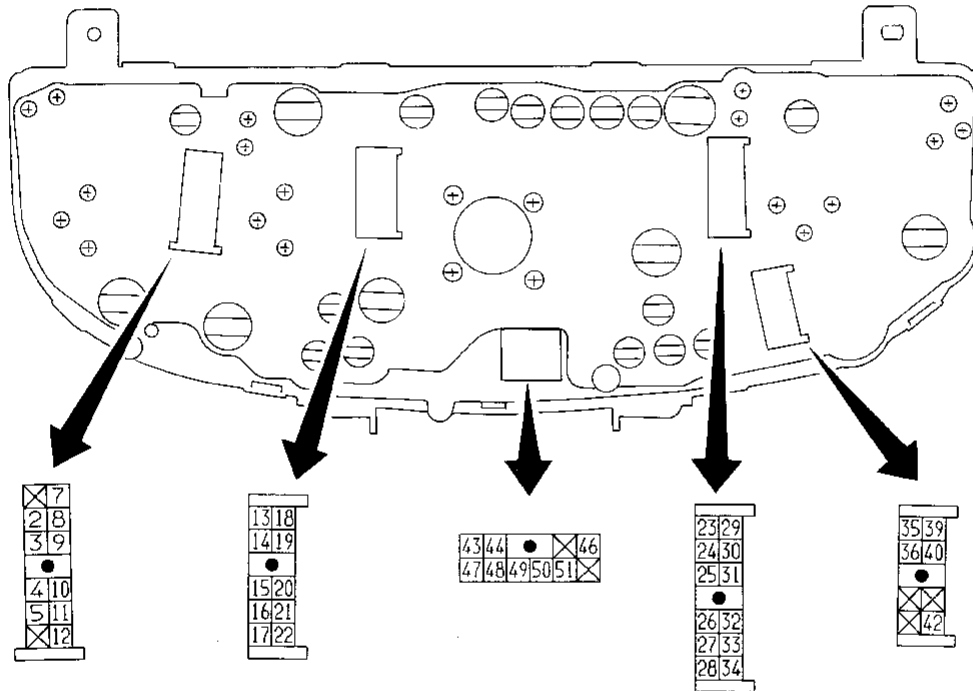
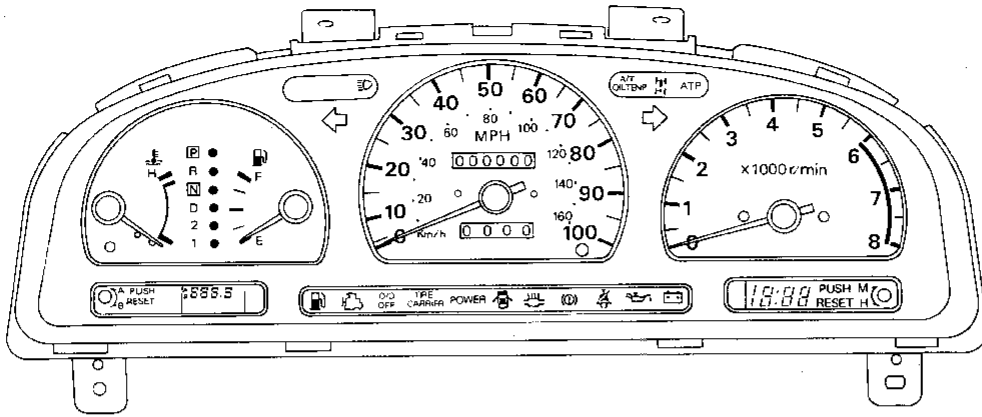
WAGON MODEL



GI  
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EF & EC  
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# METER AND GAUGES

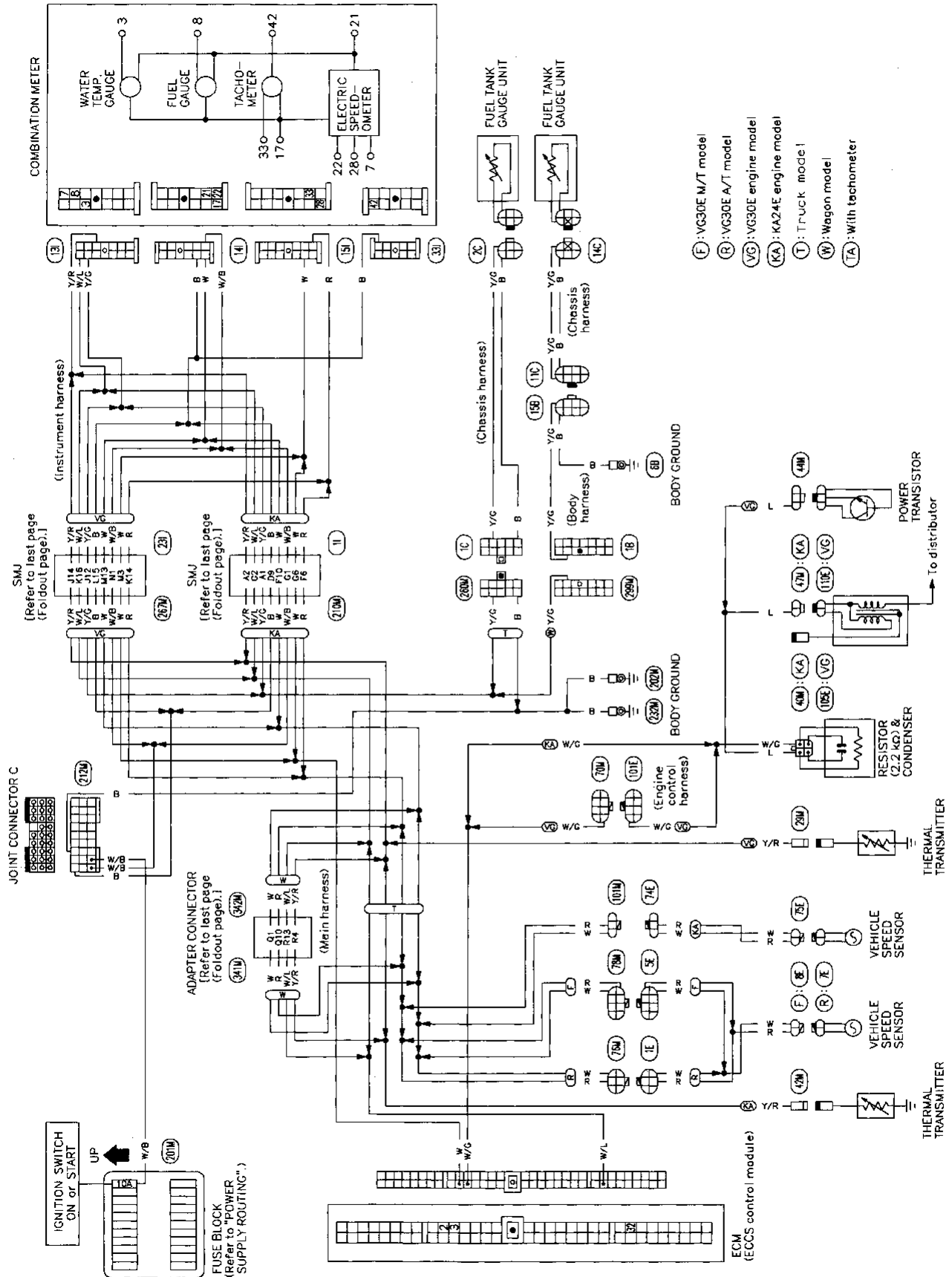
## Combination Meter



SEL899S

# METER AND GAUGES

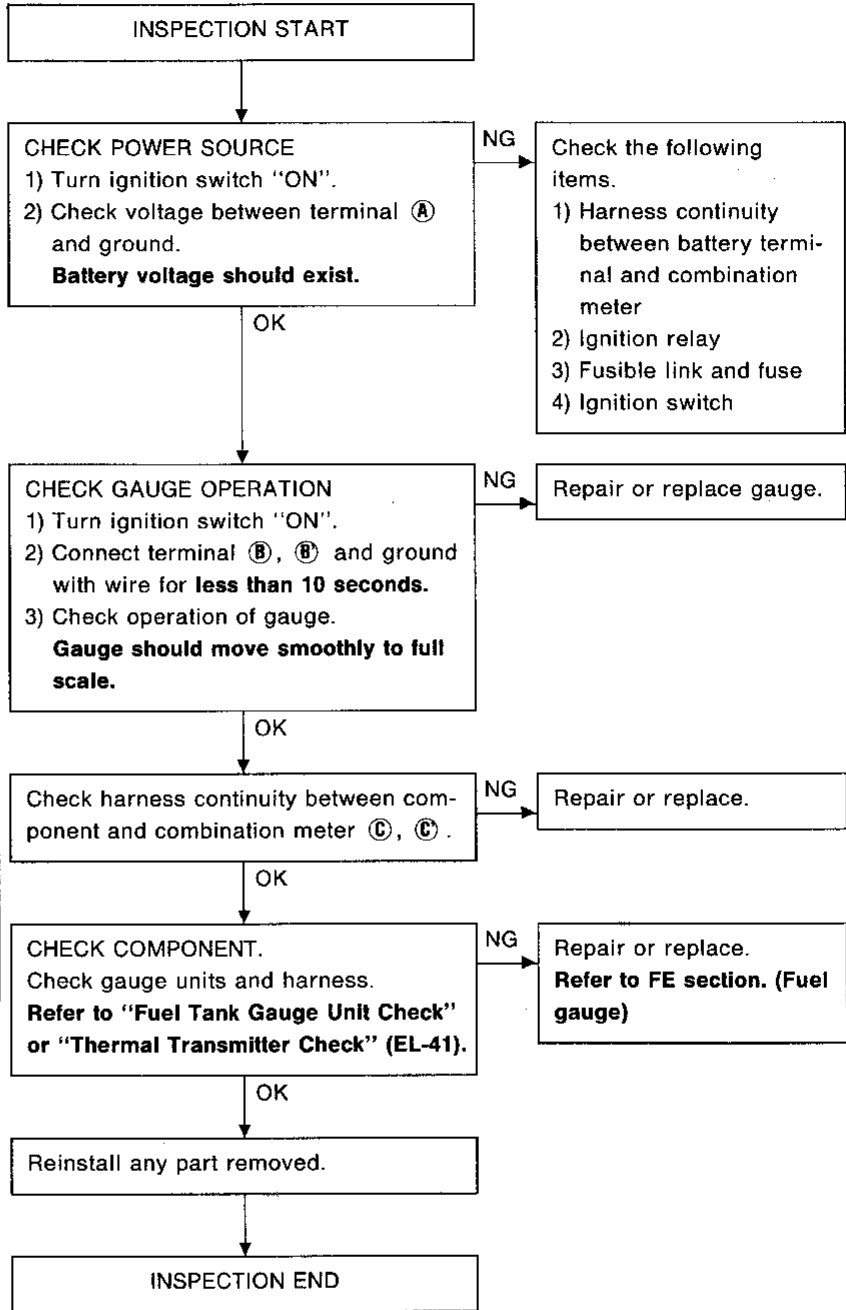
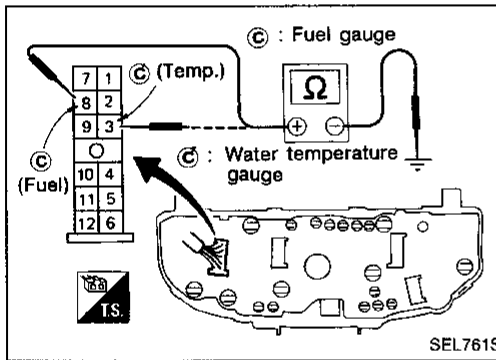
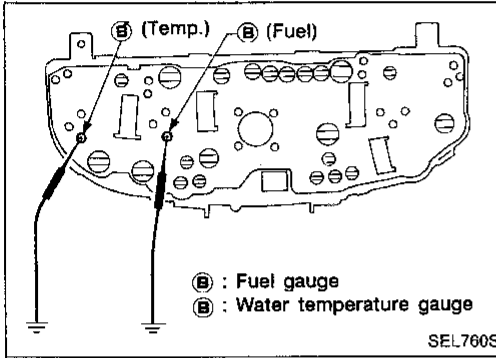
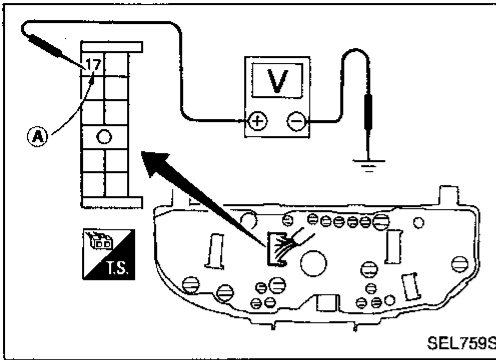
## Wiring Diagram



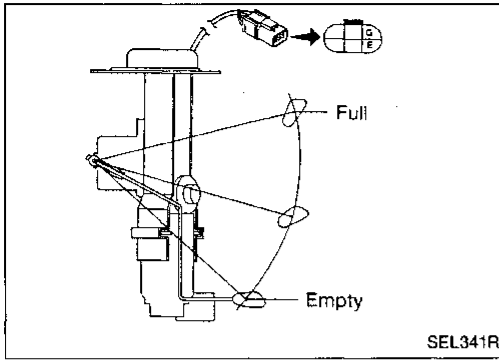
GI  
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LC  
EF & EC  
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HA

# METER AND GAUGES

## Inspection/Fuel Gauge and Water Temperature Gauge

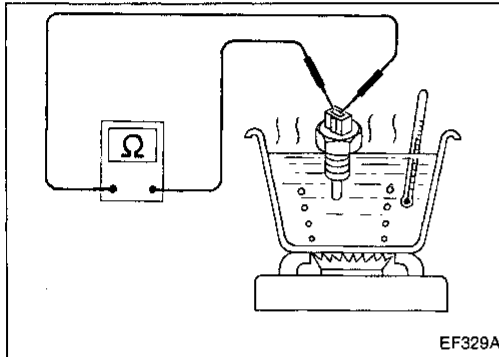






## Fuel Tank Gauge Unit Check

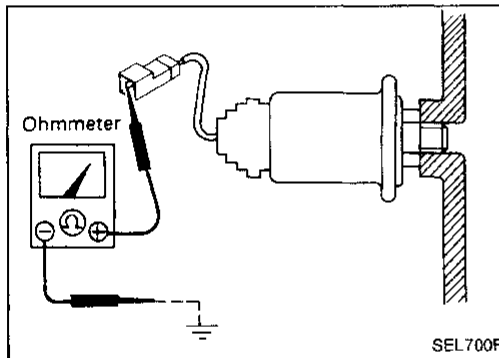
Ohmmeter		Model	Float position	Resistance value
(+)	(-)			
ⓐ	ⓑ	Truck	Full	Approx. 3.8 - 8.5Ω
			Empty	Approx. 83.6 - 93.6Ω



## Thermal Transmitter Check

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

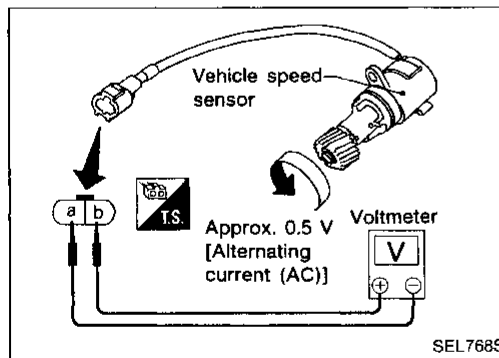
Water temperature	Resistance
60°C (140°F)	Approx. 70 - 90Ω
100°C (212°F)	Approx. 21 - 24Ω



## Oil Pressure Switch Check

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

Oil pressure kPa (kg/cm <sup>2</sup> , psi)	Continuity
More than 10 - 20 (0.1 - 0.2, 1 - 3)	NO
Less than 10 - 20 (0.1 - 0.2, 1 - 3)	YES



## Vehicle Speed Sensor Signal Check

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

GI

MA

EM

LC

EF &  
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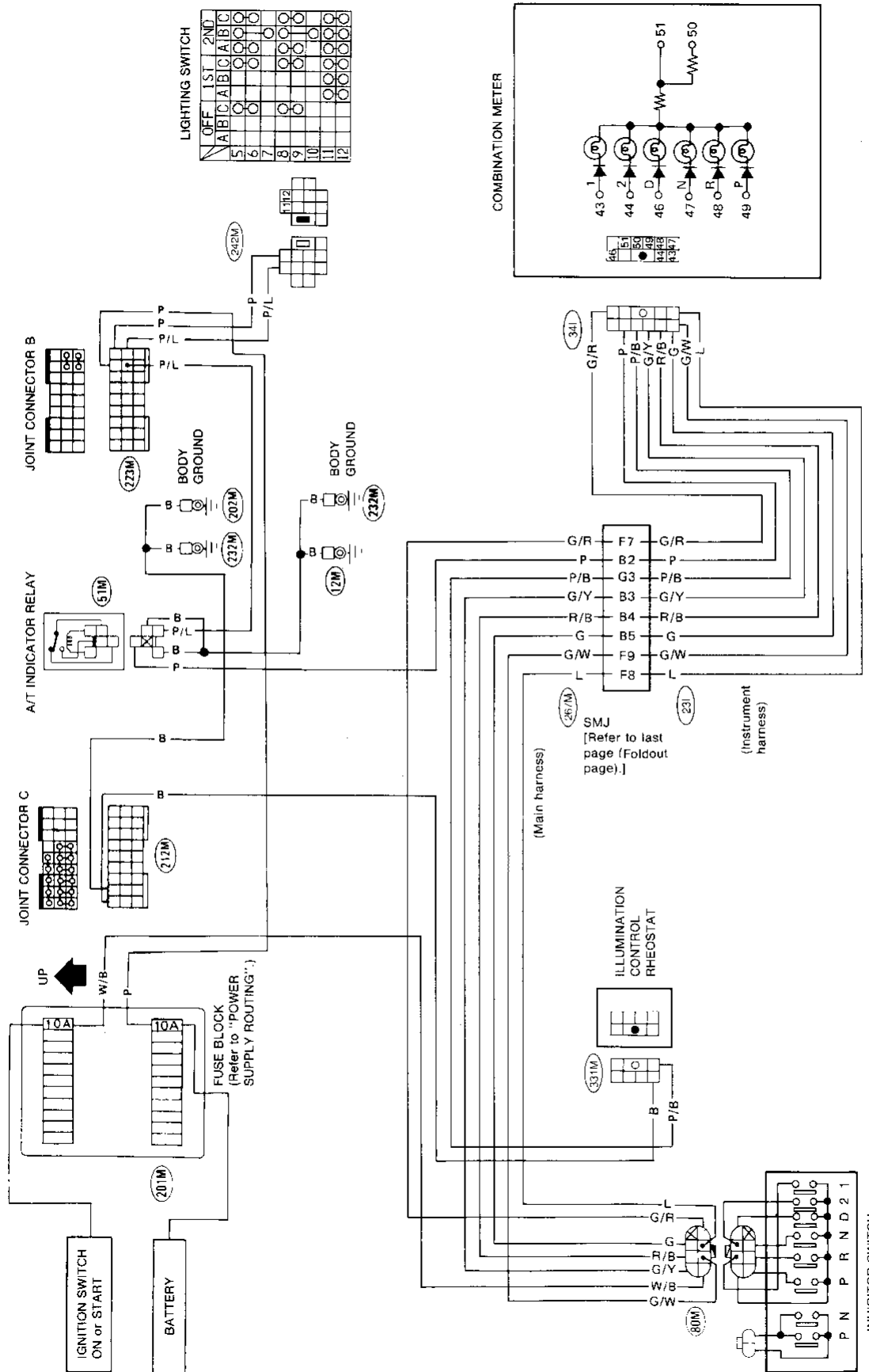
BF

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EL

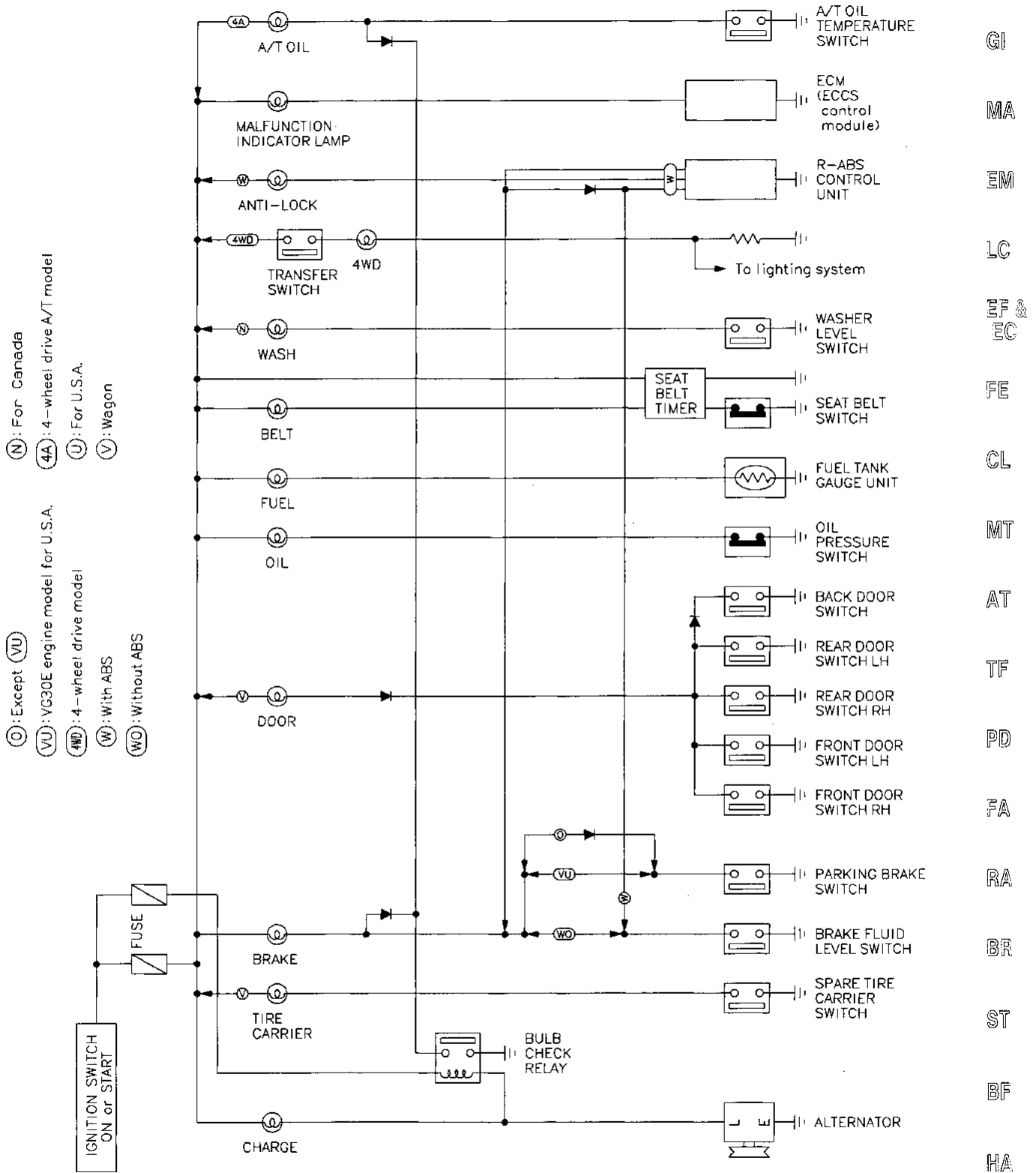
IDX

A/T Indicator Lamp/Wiring Diagram



# WARNING LAMPS AND CHIME

## Warning Lamps/Schematic

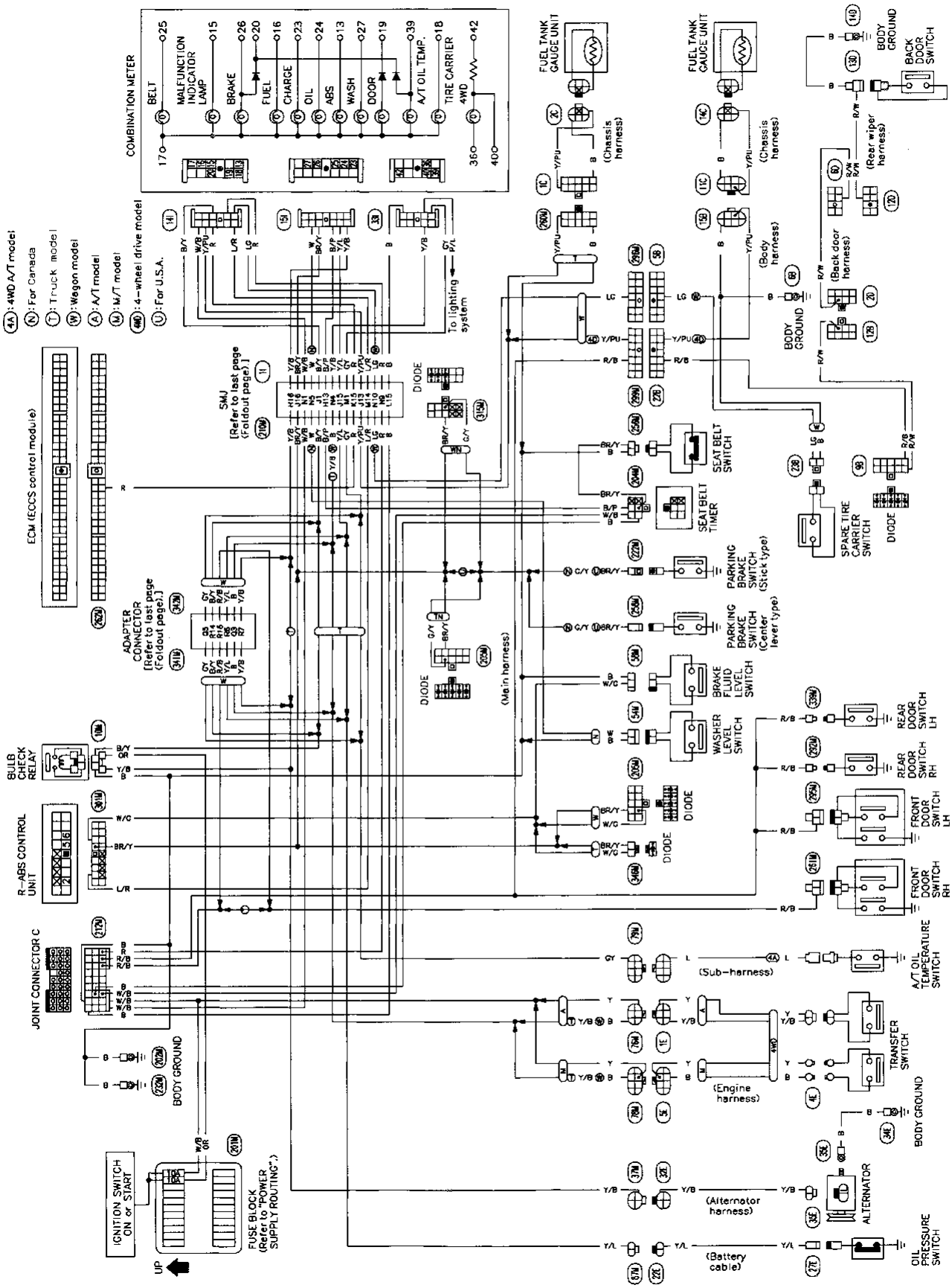


EL

# WARNING LAMPS AND CHIME

## Warning Lamps/Wiring Diagram

### VG30E ENGINE MODEL

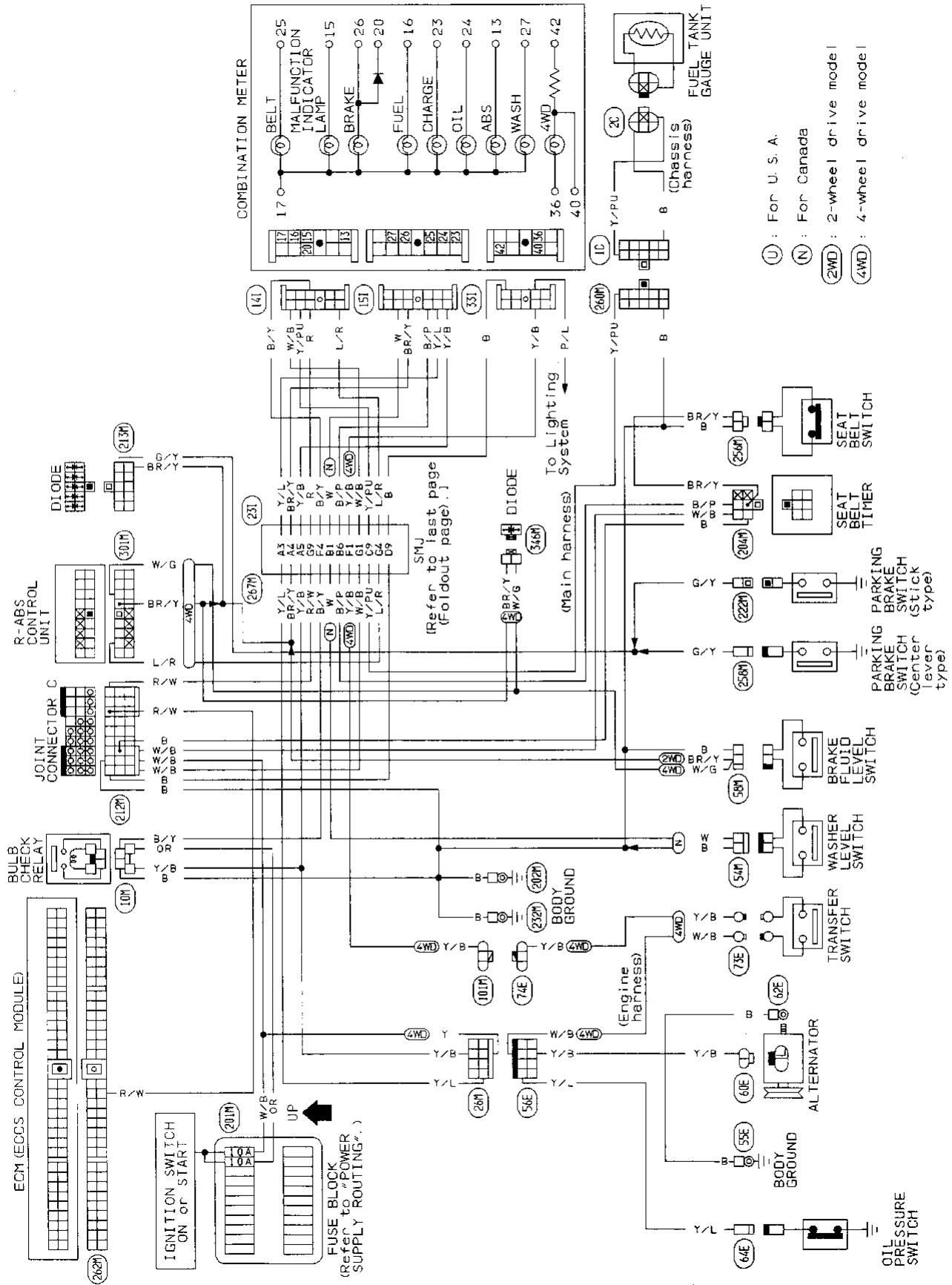


SEL902S

# WARNING LAMPS AND CHIME

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

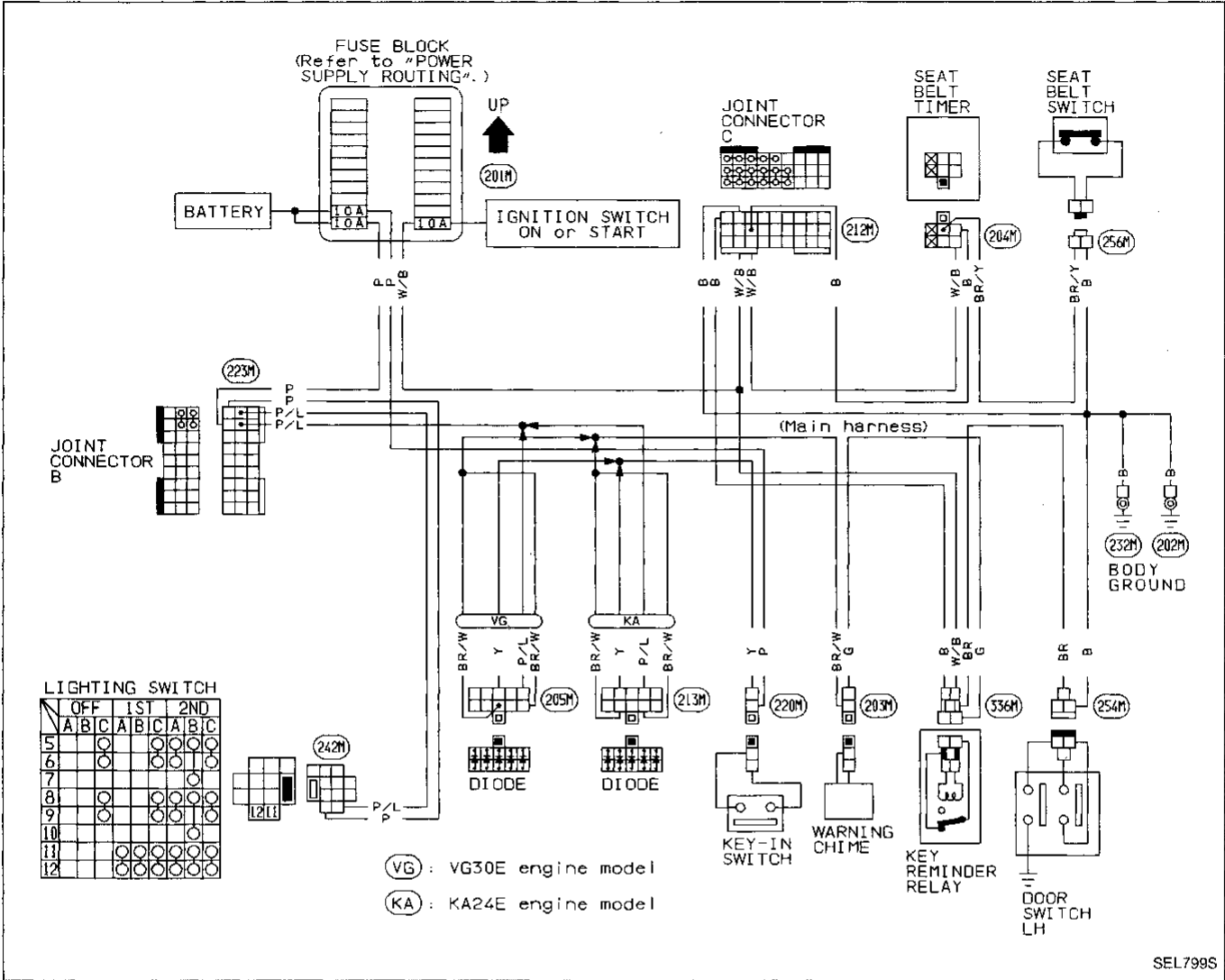
KA24E ENGINE MODEL



GI  
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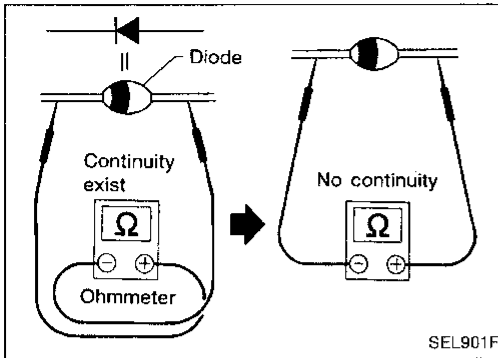
# WARNING LAMPS AND CHIME

## Warning Chime/Wiring Diagram



SEL799S

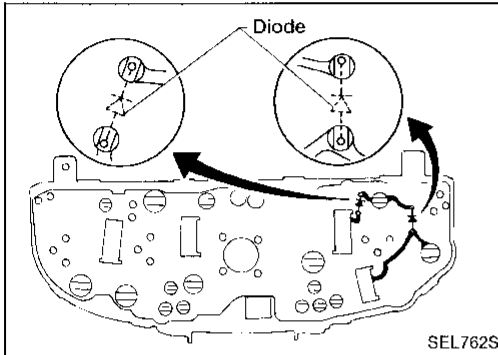
# WARNING LAMPS AND CHIME



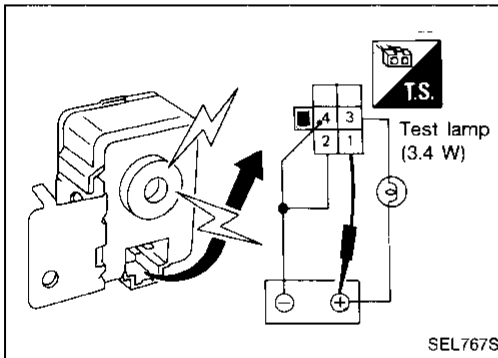
## Diode Check

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

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

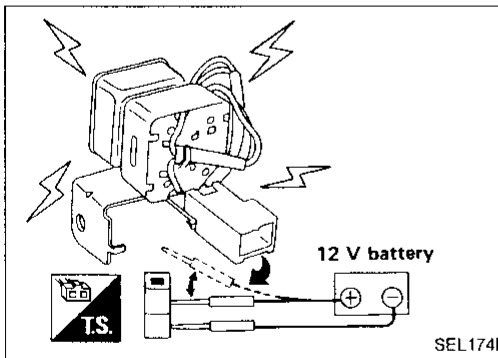


- Diodes for clock illumination lamp are built into the combination meter printed circuit.



## Seat Belt Timer Check

Connect as shown in the figure to the left. If chime and test lamp come on for 4-8 seconds when connecting terminal ① to battery ⊕ terminal, seat belt timer is normal.



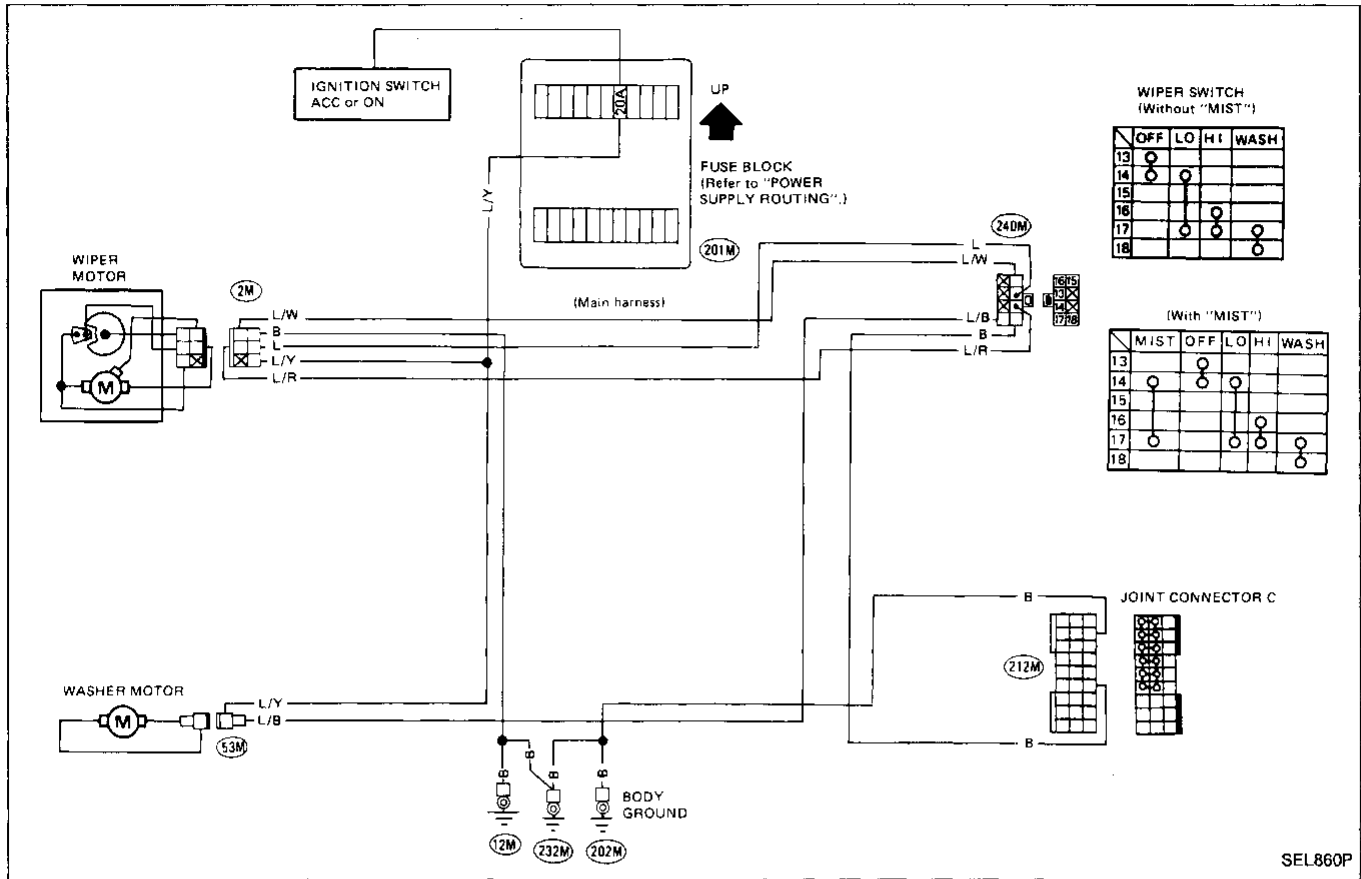
## Warning Chime Check

GI  
MA  
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LC  
EF & EC  
FE  
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MT  
AT  
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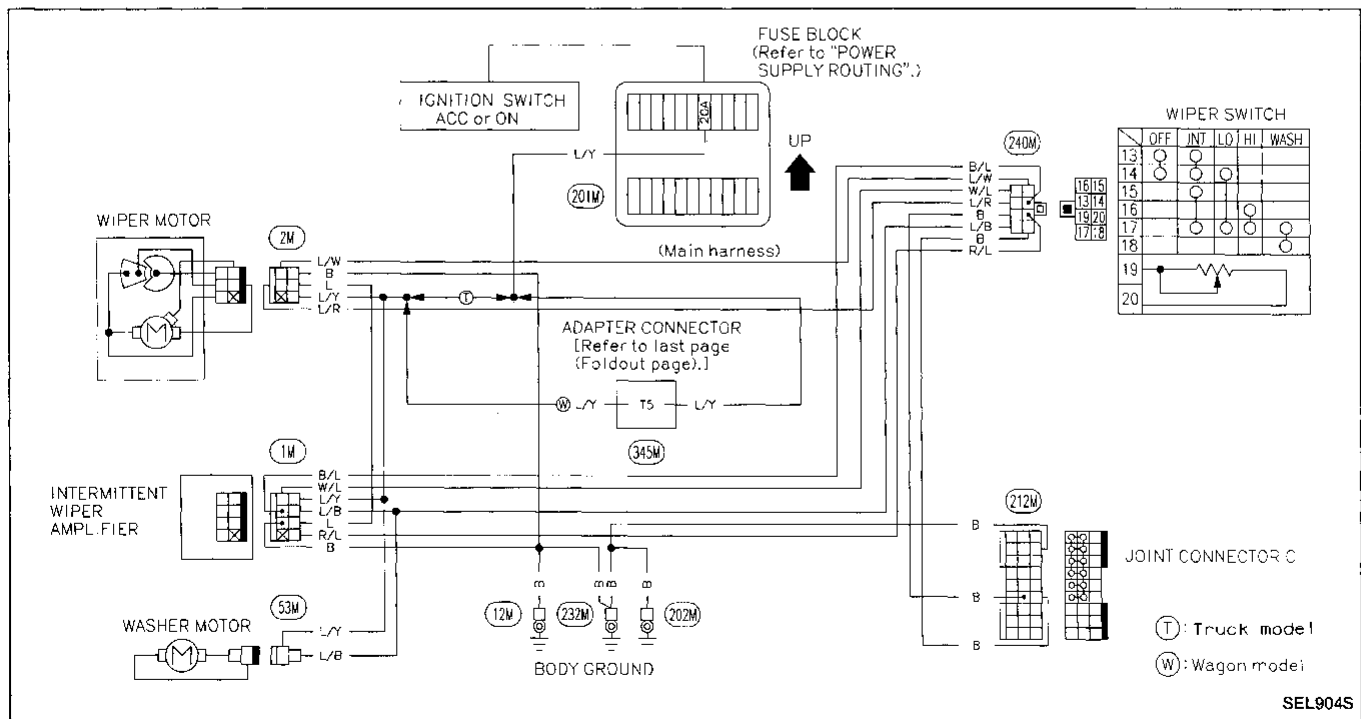
# WIPER AND WASHER

## Front Wiper and Washer/Wiring Diagram

### WITHOUT INTERMITTENT WIPER



### WITH INTERMITTENT WIPER







# WIPER AND WASHER

## Windshield Wiper Installation

### Adjustment

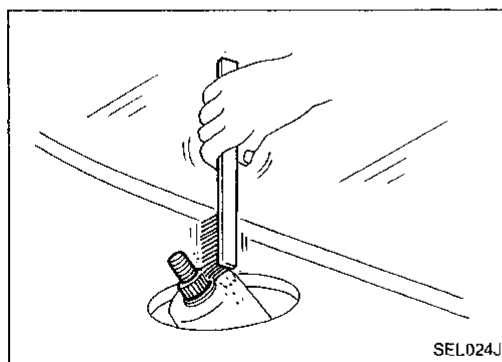
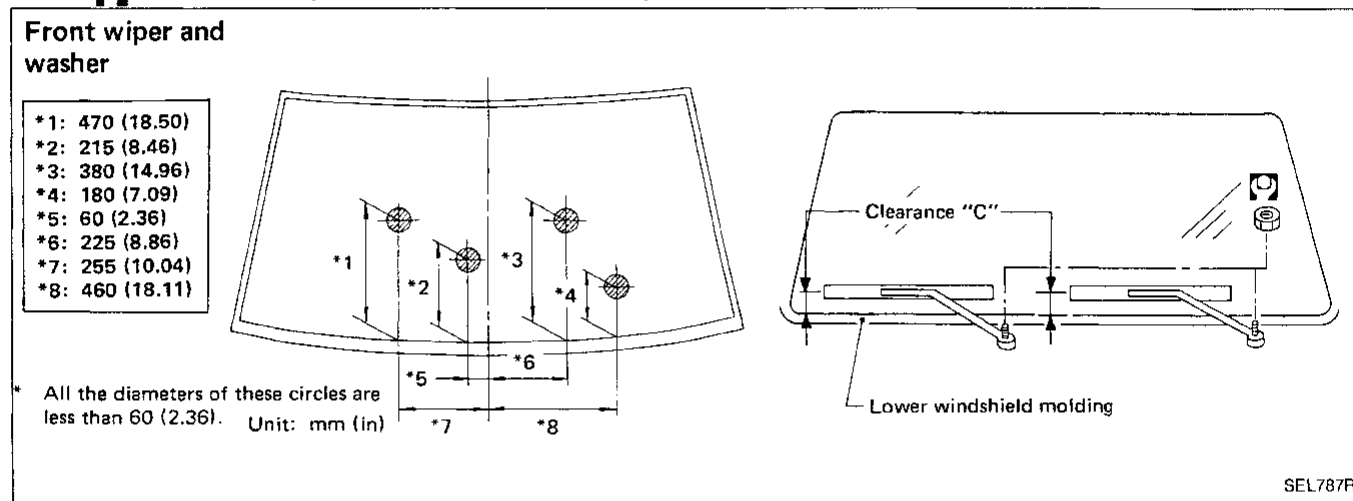
1. Prior to wiper arm installation, turn on wiper switch to operate wiper motor and then turn it "OFF" (Auto Stop).
2. Lift the blade up and then set it down onto glass surface to set the blade center to clearance "C" immediately before tightening nut.
3. Eject washer fluid. Turn on wiper switch to operate wiper motor and then turn it "OFF".
4. Ensure that wiper blades stop within clearance "C".

**Clearance "C": 20 - 30 mm (0.79 - 1.18 in)**

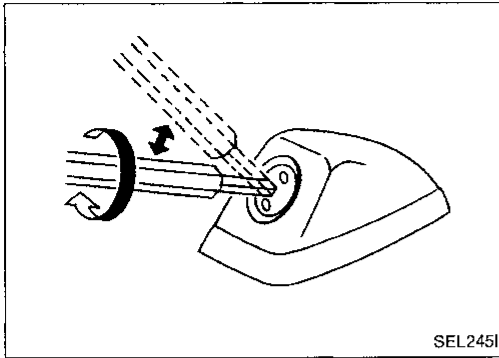
### Installation

- Tighten windshield wiper arm nuts to specified torque.

: **13 - 18 N·m (1.3 - 1.8 kg·m, 9 - 13 ft·lb)**



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

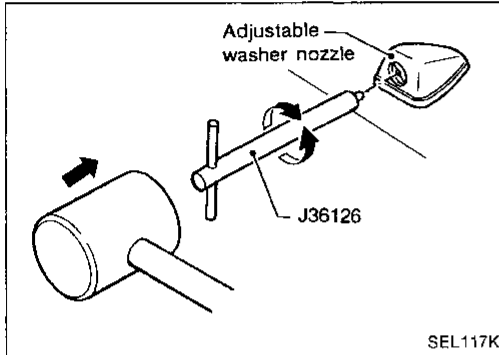


## Washer Nozzle Adjustment

- Using Tool J36126, adjust windshield washer nozzle to correct its spray pattern.

Before attempting to turn the nozzle, gently tap the end of the tool to free the nozzle.

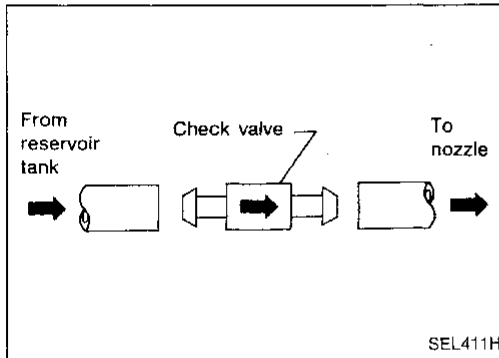
This will prevent "rounding out" the small female square in the center of the nozzle.



### Special service tool

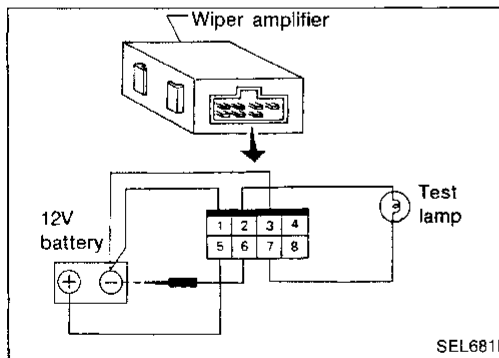
Tool number: J36126

Tool name: Washer nozzle adjusting tool



## 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.



## Wiper Amplifier Check

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

GI

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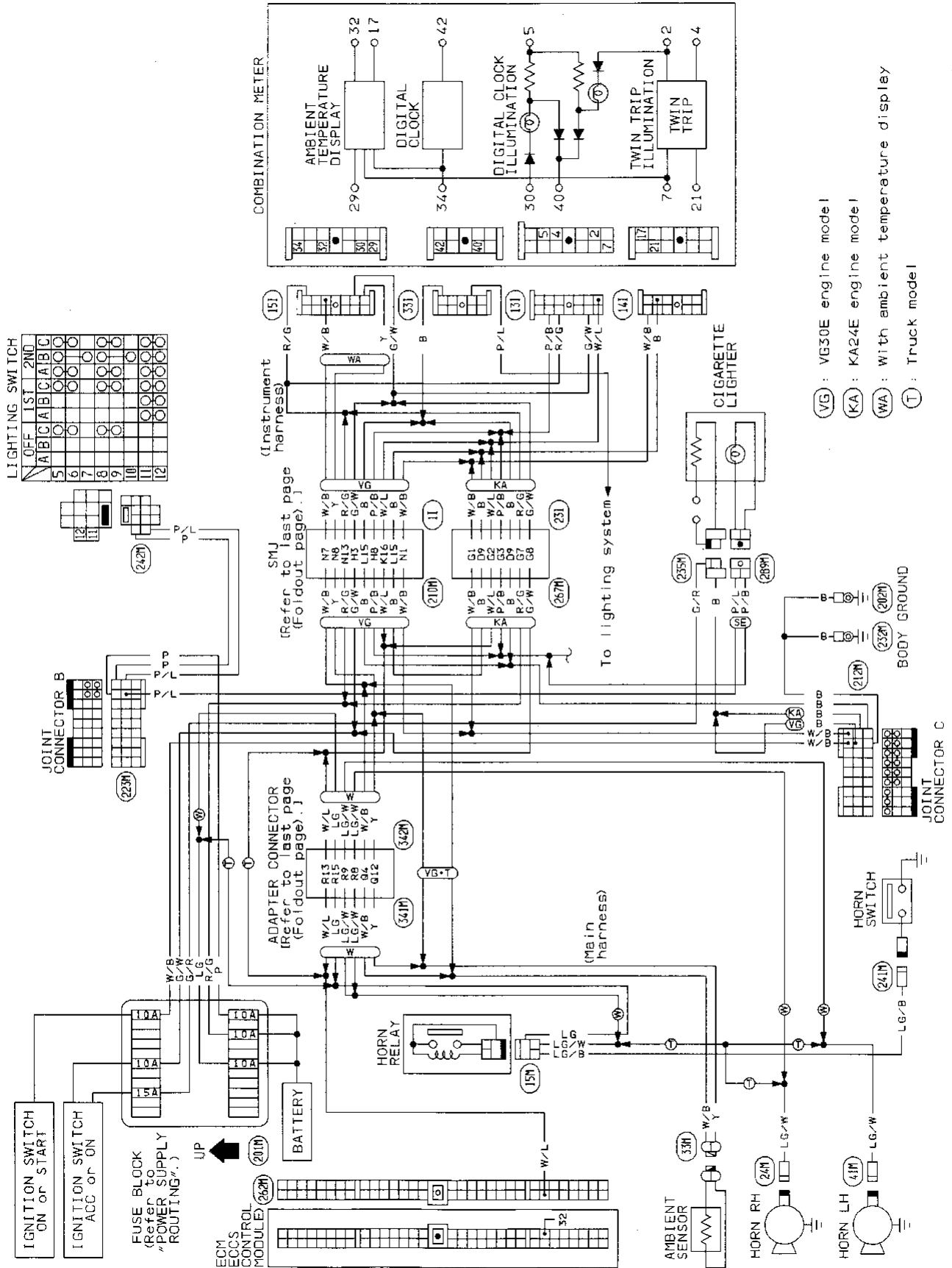
HA

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IDX

# HORN, CIGARETTE LIGHTER, CLOCK

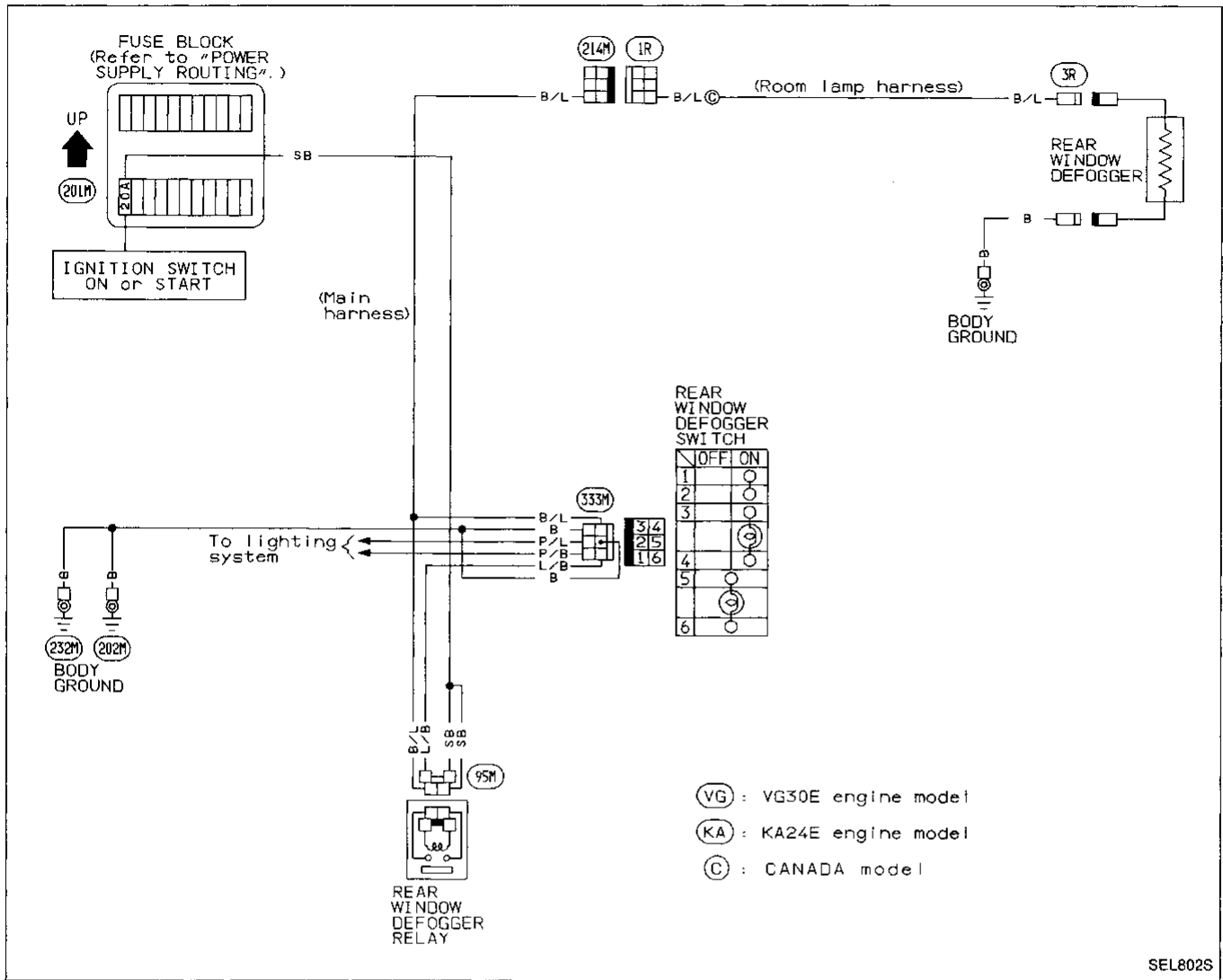
## Wiring Diagram



# REAR WINDOW DEFOGGER

## Wiring Diagram

### TRUCK MODEL

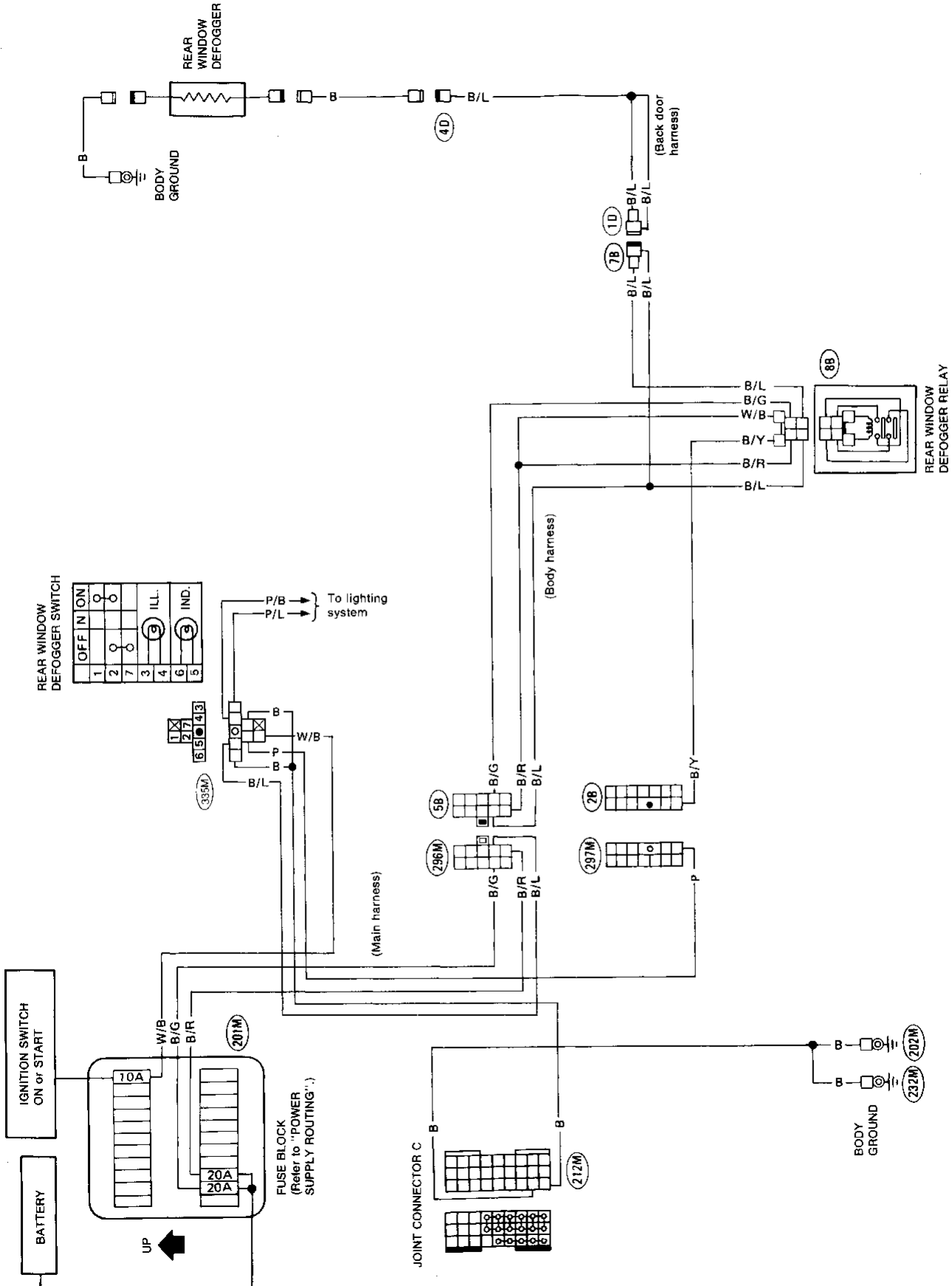


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# REAR WINDOW DEFOGGER

## Wiring Diagram (Cont'd)

WAGON MODEL

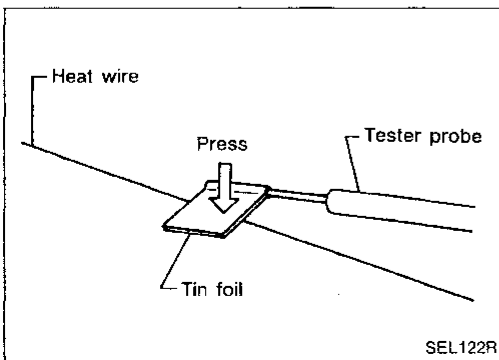
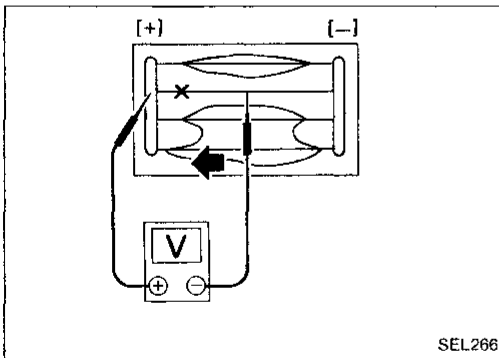
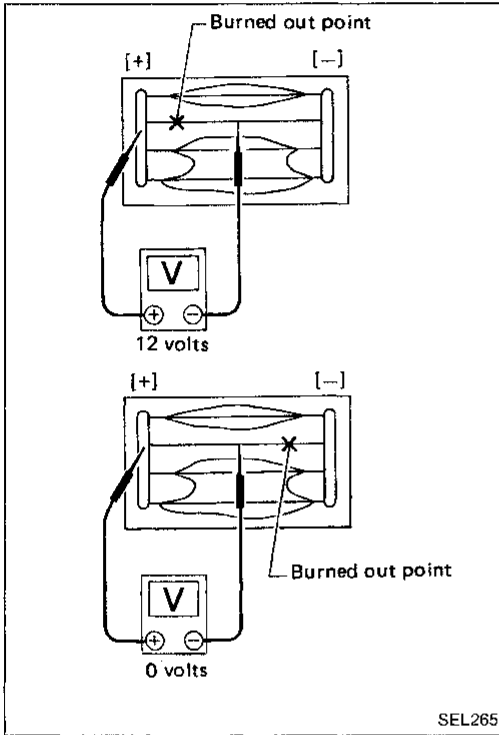
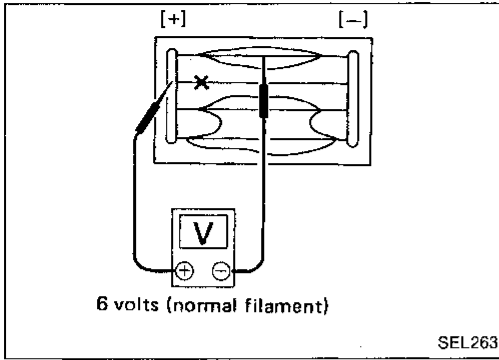


REAR WINDOW DEFOGGER SWITCH

	OFF	I	ON
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
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SEL803S

# REAR WINDOW DEFOGGER



## Filament Check

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

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

3. To locate burned out point, move probe to left and right along filament to determine point where tester needle swings abruptly.

- When measuring voltage, wind a piece of tin foil around the top of the negative probe and press the foil against the wire with your finger as shown.

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# REAR WINDOW DEFOGGER

## 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.

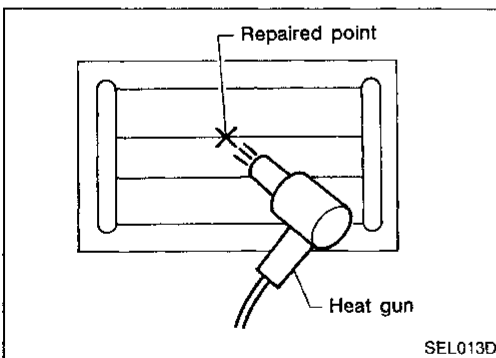
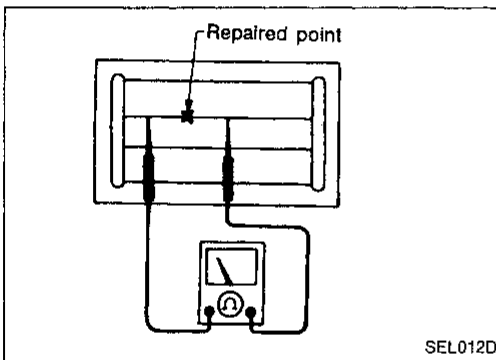
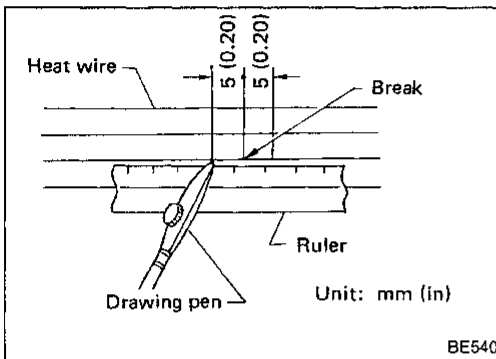
**Shake silver composition container before use.**

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.

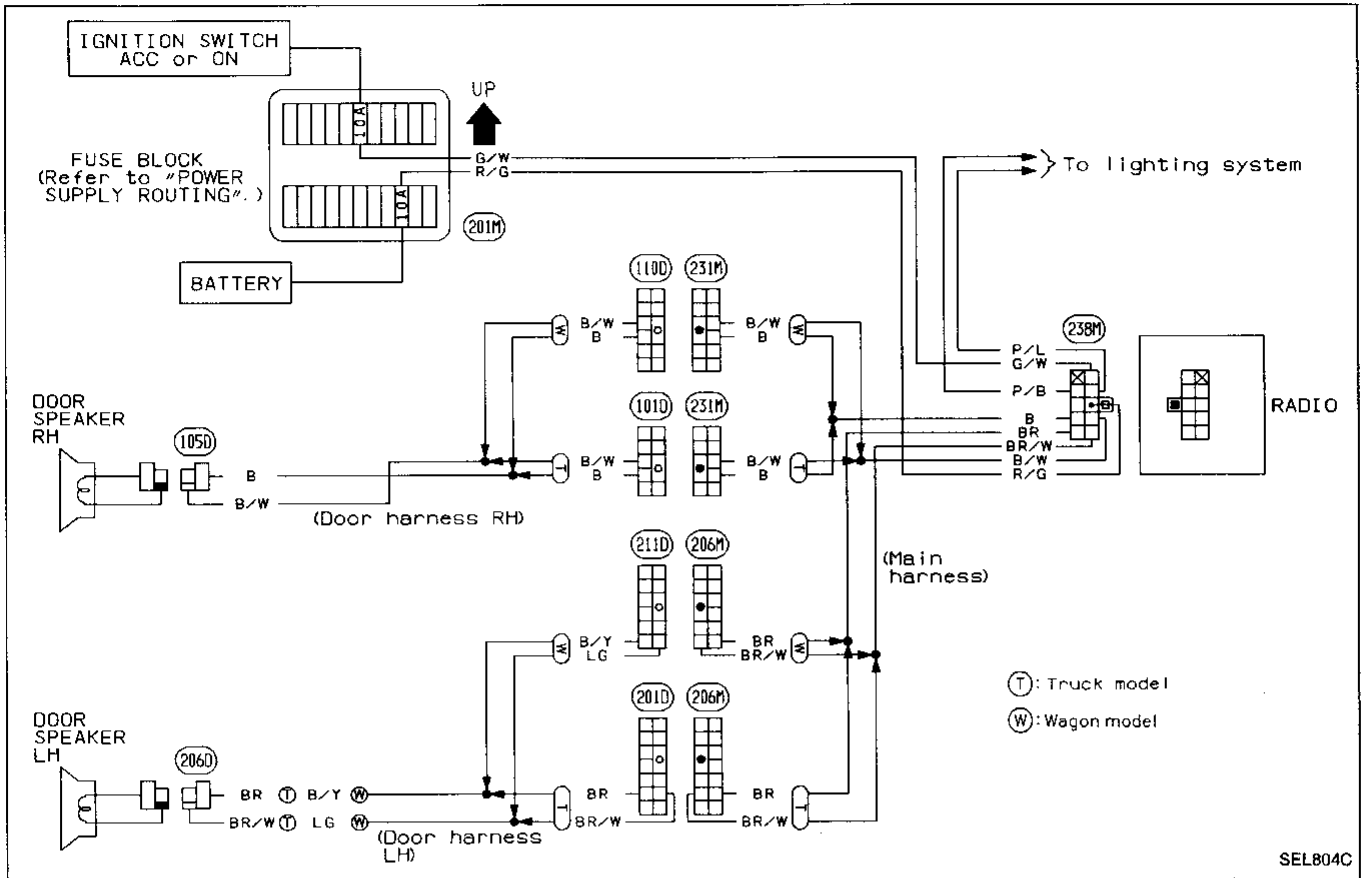




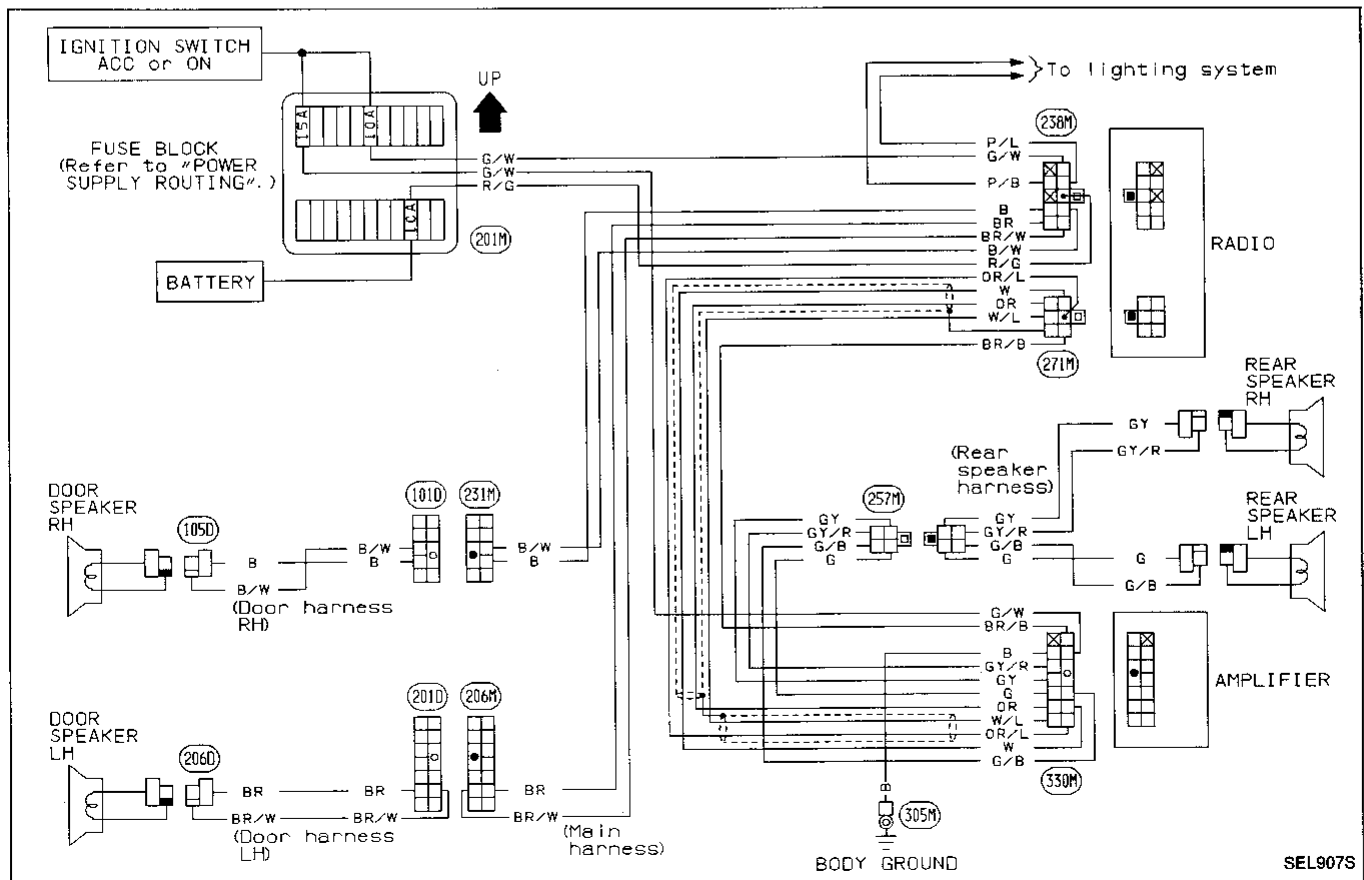
# AUDIO

## Audio/Wiring Diagram

### 2 SPEAKER TYPE



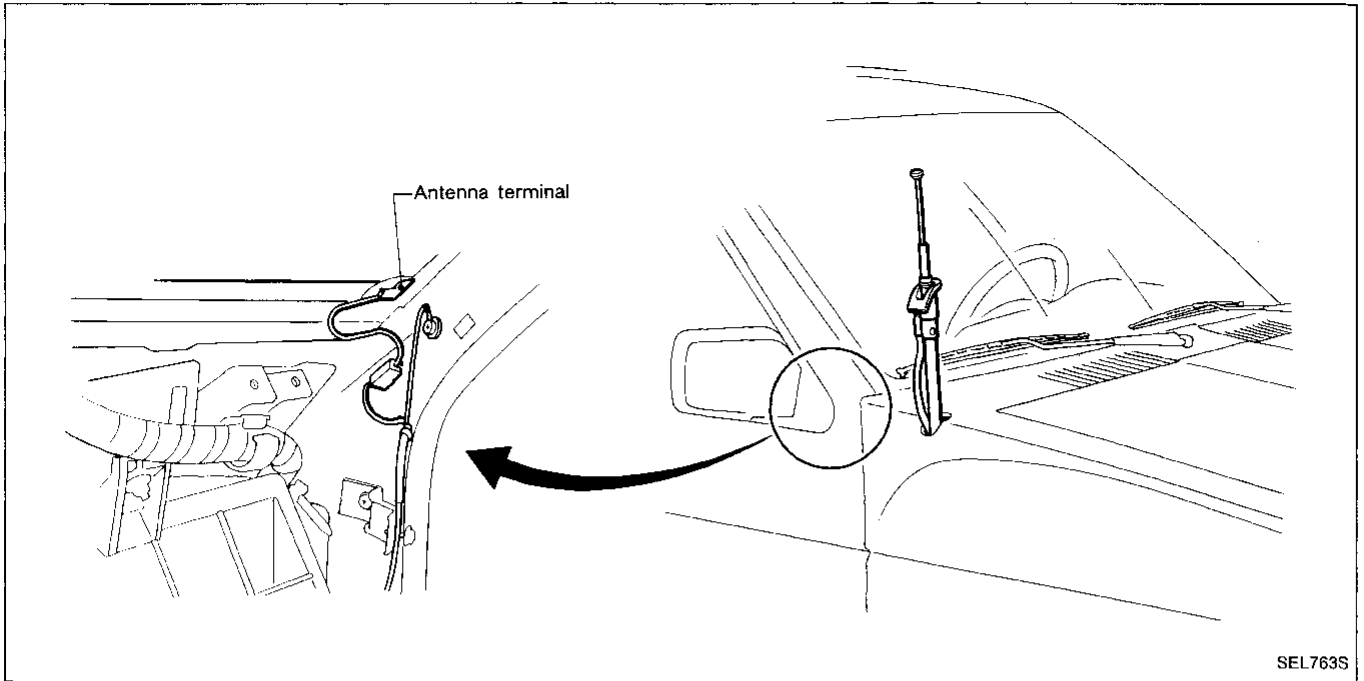
### 4 SPEAKER TYPE



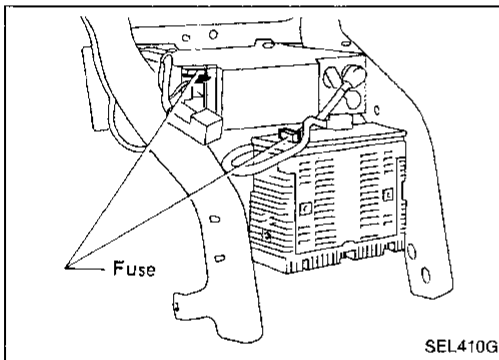
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Location of Antenna

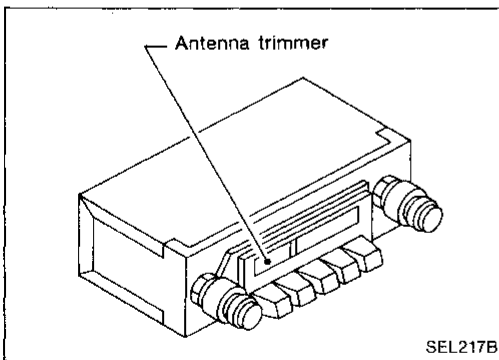


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Radio Fuse Check

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Antenna Trimmer Adjustment

The antenna trimmer should be adjusted in the following cases:

- Fading and weak MW (AM) reception.
- After installation of new antenna, feeder cable or radio receiver.

**Before adjusting, be sure to check harness and antenna feeder cable connectors for proper connection.**

1. Extend antenna completely.
2. Turn radio on, and turn volume control to increase speaker volume.
3. Tune in the weakest station (barely audible) on dial at the range around 14 (1,400 kHz).
4. Turn antenna trimmer to left or right slowly, and set it in the position where reception is strongest.

**CAUTION:**

**Do not turn antenna trimmer more than one-half turn.**

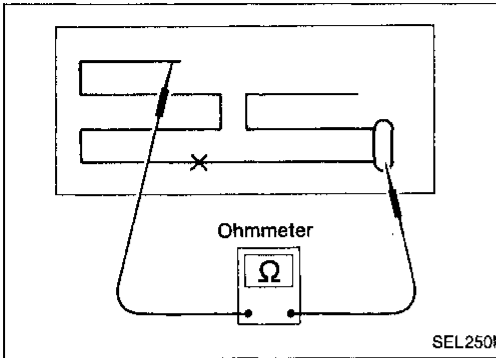
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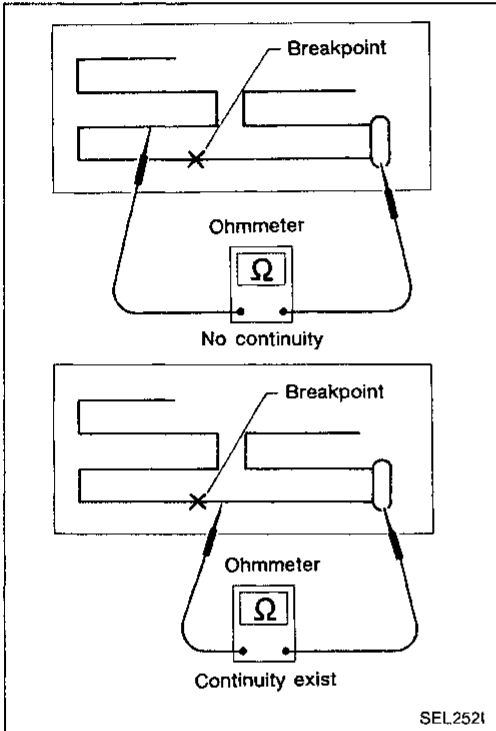
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## Element Check

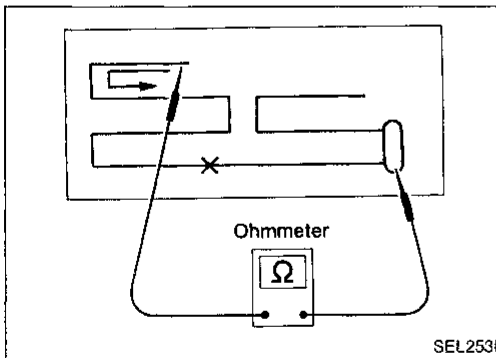
1. Attach probe circuit tester (in ohm range) to antenna terminal on each side.



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



3. To locate broken point, move probe to left and right along element to determine point where tester needle swings abruptly.

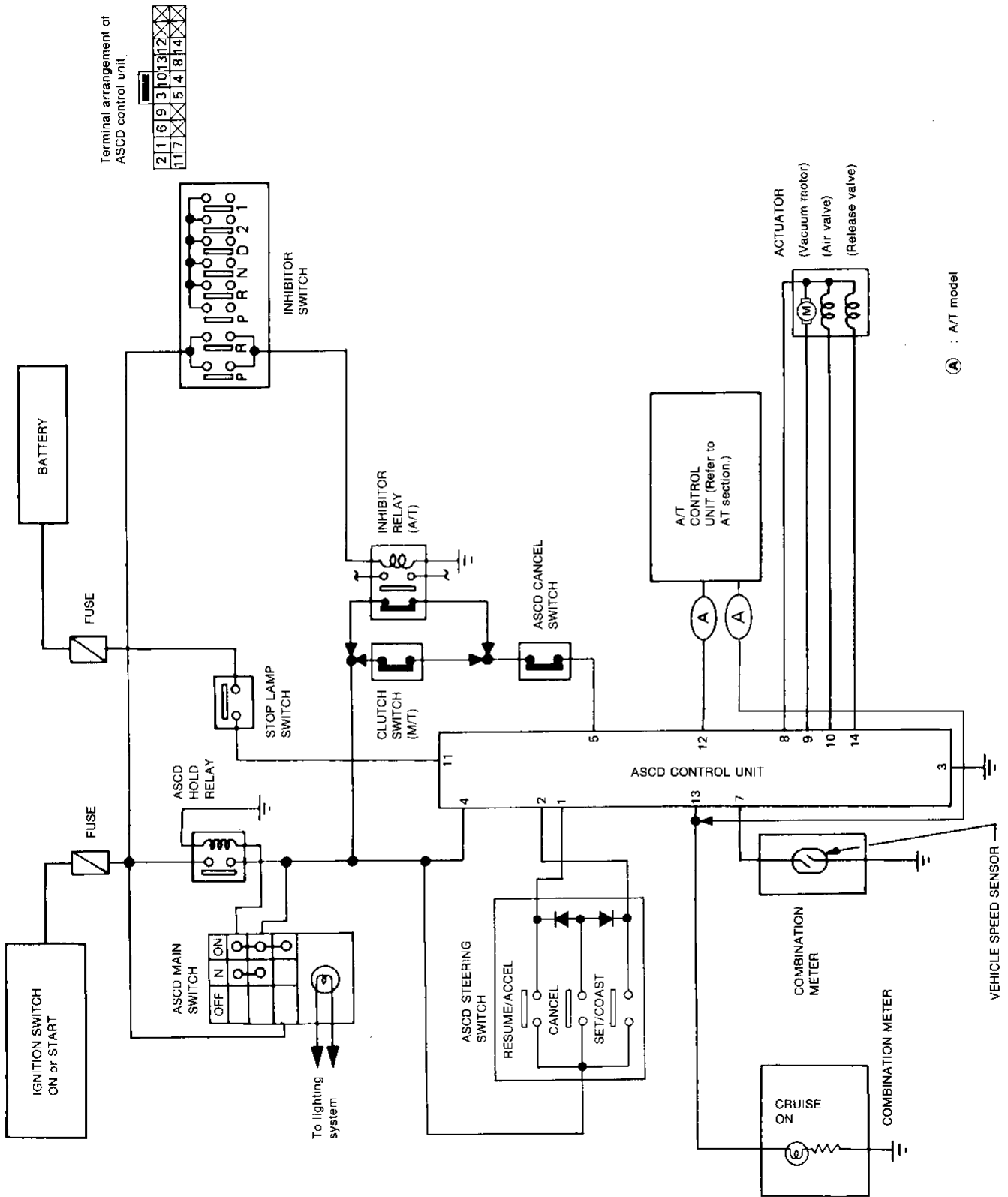


## Element Repair

Refer to REAR WINDOW DEFOGGER "Filament Repair" (EL-56).

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## Schematic

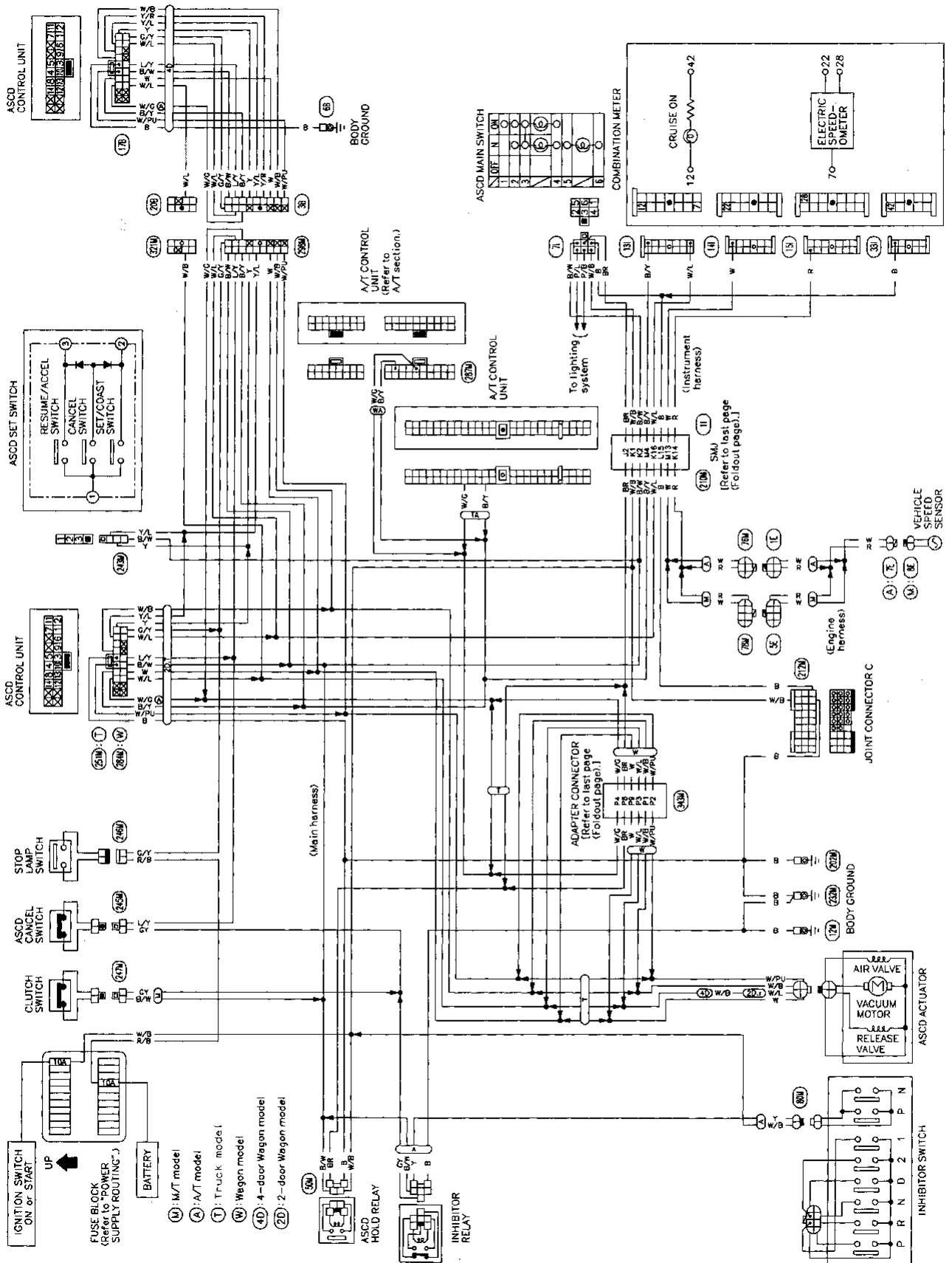


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# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## Wiring Diagram



SEL909S

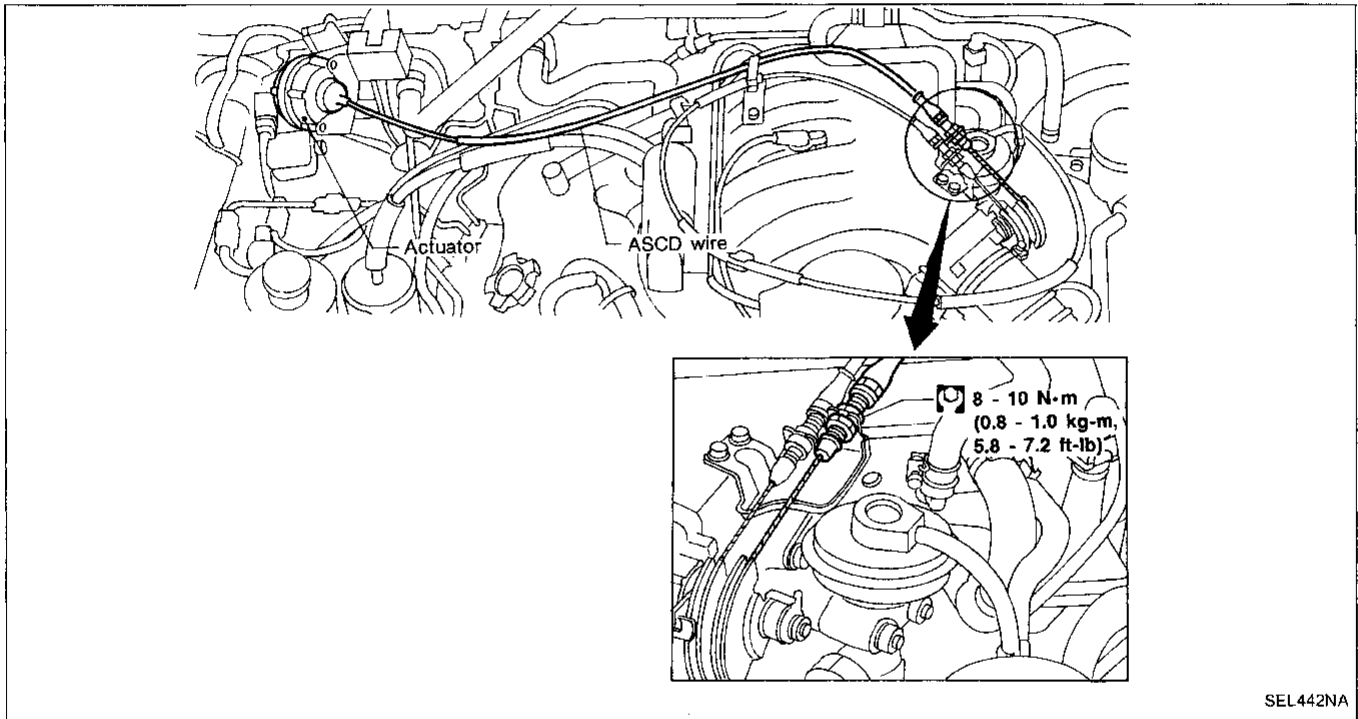
## ASCD Wire Adjustment

### CAUTION:

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

After confirming that accelerator wire is properly adjusted, adjust the tension of ASCD wire in the following manner:

- (1) After adjusting the length of the accel wire, turn a securing nut by 1/2 to 1 turn from throttle open starting position to the wire loosening direction to fix. (Must be securing carried out to prevent response delay of operation of the ASCD.)
  - (2) Securely tighten lock nut to hold adjusting nut in place.
- For ASCD stop switch and clutch switch adjustment, refer to BR and CL sections.



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# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## Trouble Diagnoses

### SYMPTOM CHART

PROCEDURE	Diagnostic Procedure								Electrical Components Inspection							
REFERENCE PAGE	EL-65	EL-67	EL-67	EL-67	EL-68	EL-69	EL-70	EL-71	EL-72	EL-73	EL-73	EL-73	EL-73	EL-73	EL-73	EL-74
SYMPTOM	Diagnostic Procedure 1	Diagnostic Procedure 2	Diagnostic Procedure 3	Diagnostic Procedure 4	Diagnostic Procedure 5	Diagnostic Procedure 6	Diagnostic Procedure 7	Diagnostic Procedure 8	ASCD actuator/ASCD pump	ASCD main switch	ASCD steering switch	ASCD cancel switch and stop lamp switch	ASCD clutch switch (For M/T models)	Inhibitor switch (For A/T models)	Vehicle speed sensor	
ASCD control unit cannot be set properly.	<input type="radio"/>								<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Engine hunts		<input type="radio"/>							<input type="radio"/>							
Large difference between set speed and actual vehicle speed.			<input type="radio"/>						<input type="radio"/>							
Deceleration is greatest immediately after ASCD has been set.				<input type="radio"/>					<input type="radio"/>							
ACCEL switch will not operate.	<input type="radio"/>				<input type="radio"/>						<input type="radio"/>					
RESUME switch will not operate.	<input type="radio"/>					<input type="radio"/>					<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
Set speed cannot be cancelled.							<input type="radio"/>		<input type="radio"/>			<input type="radio"/>	<input type="radio"/>			
"CRUISE" indicator lamp blinks.								<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>				

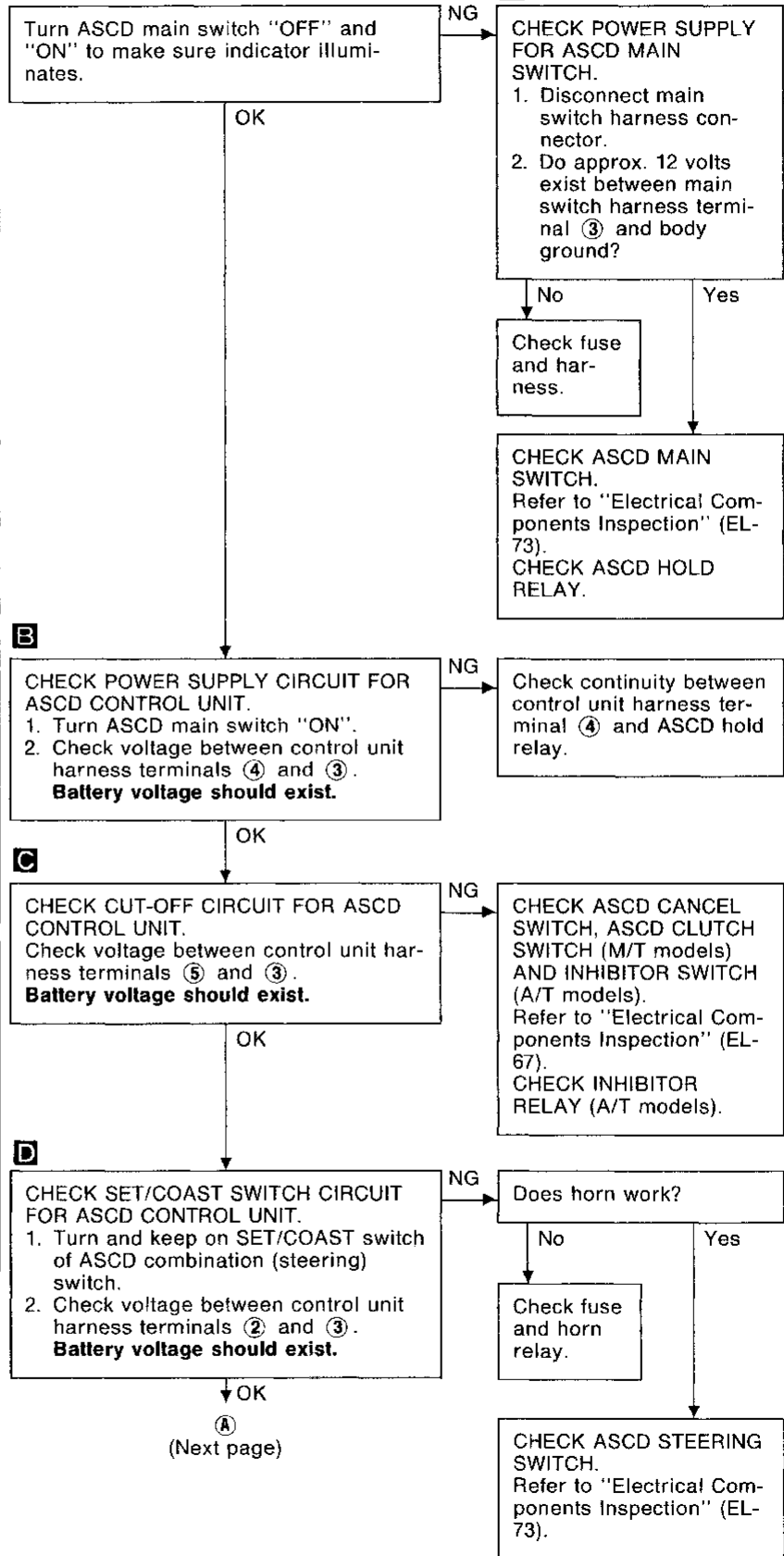
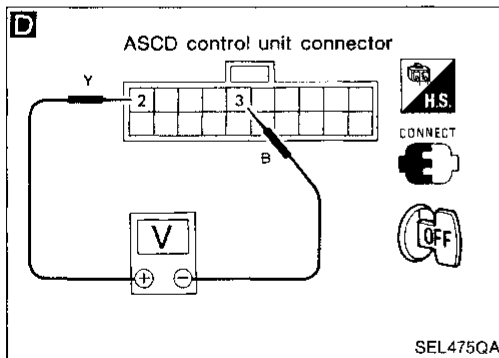
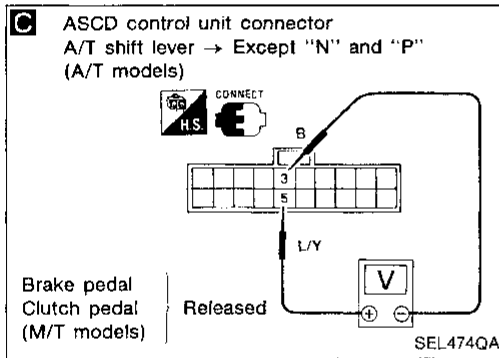
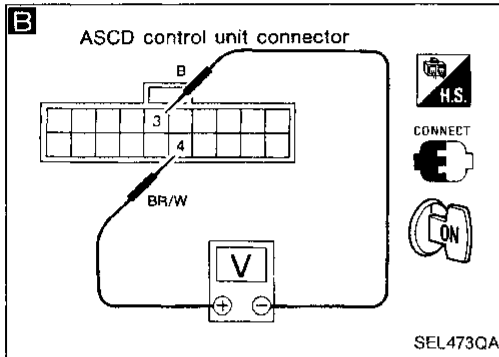
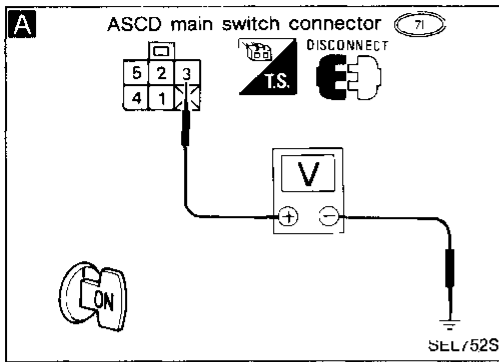


# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 1

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

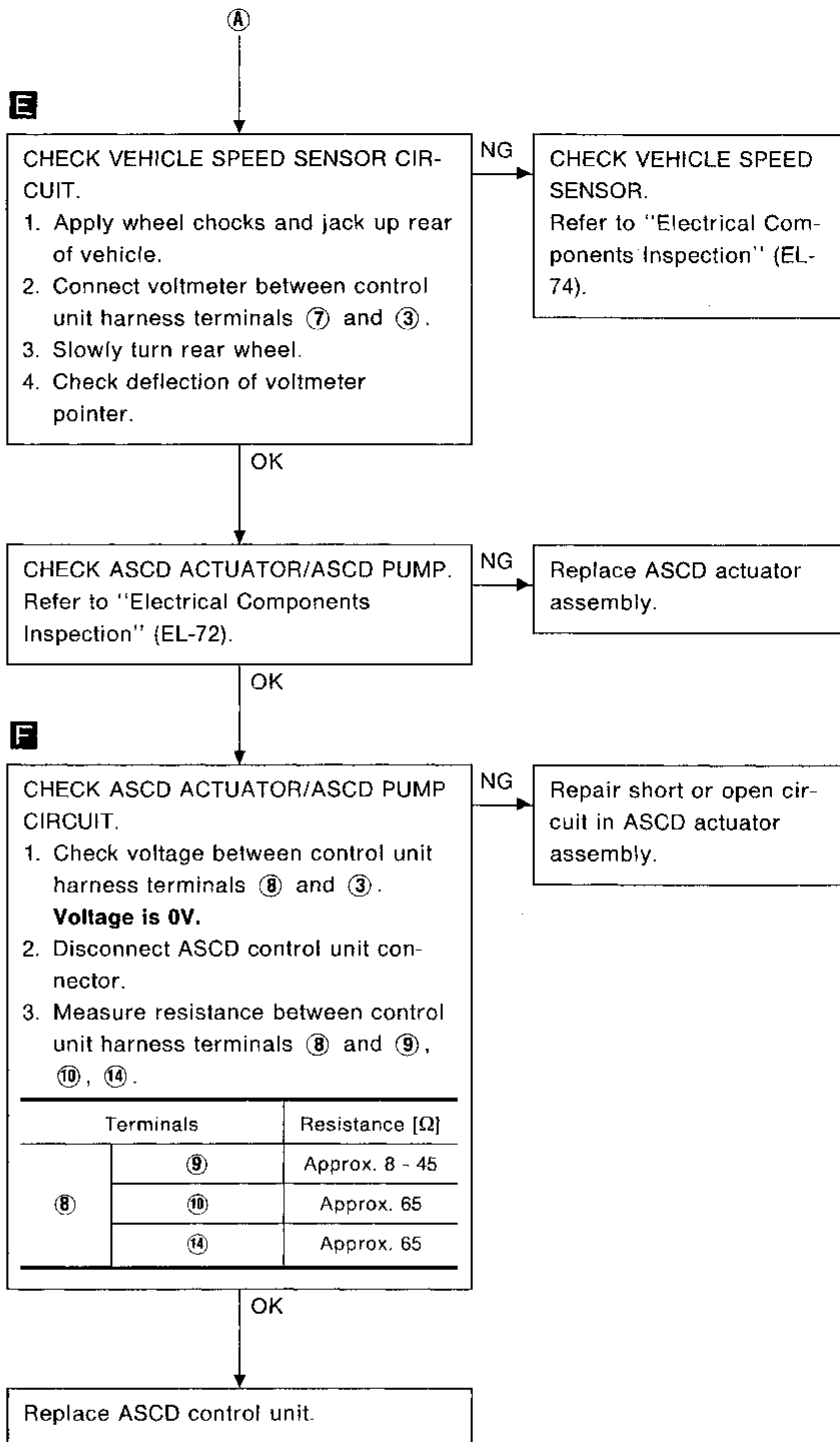
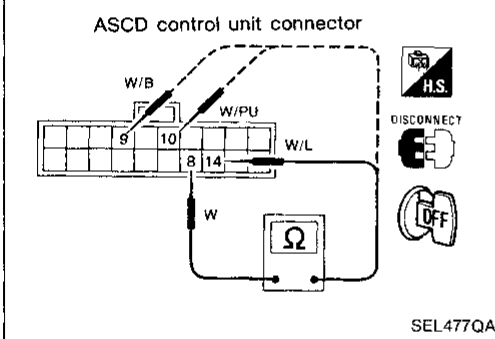
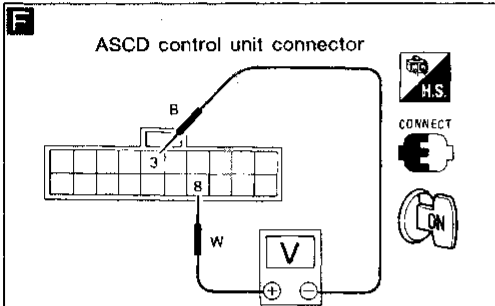
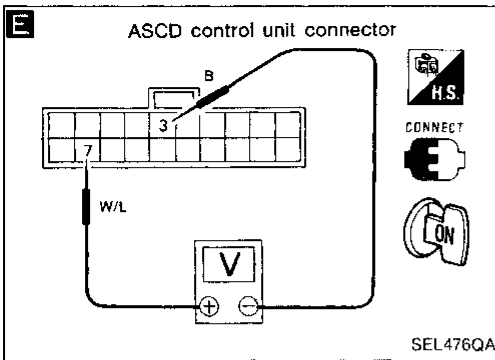


(Next page)

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# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## Trouble Diagnoses (Cont'd)

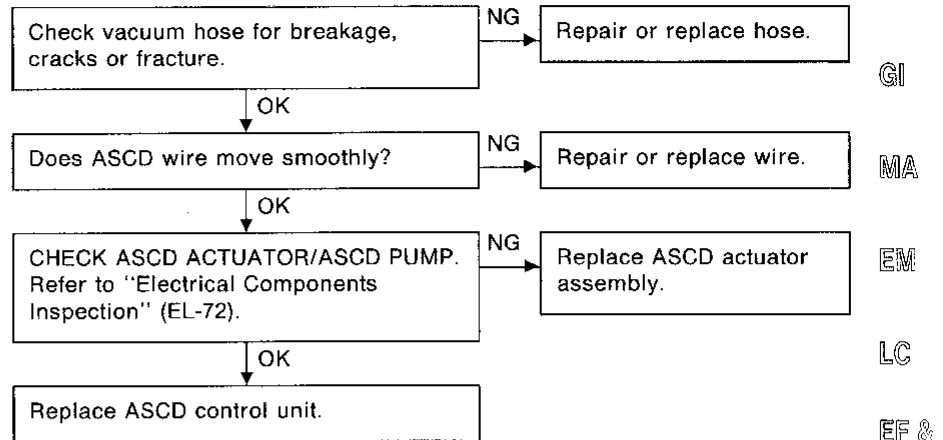


# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## Trouble Diagnoses (Cont'd)

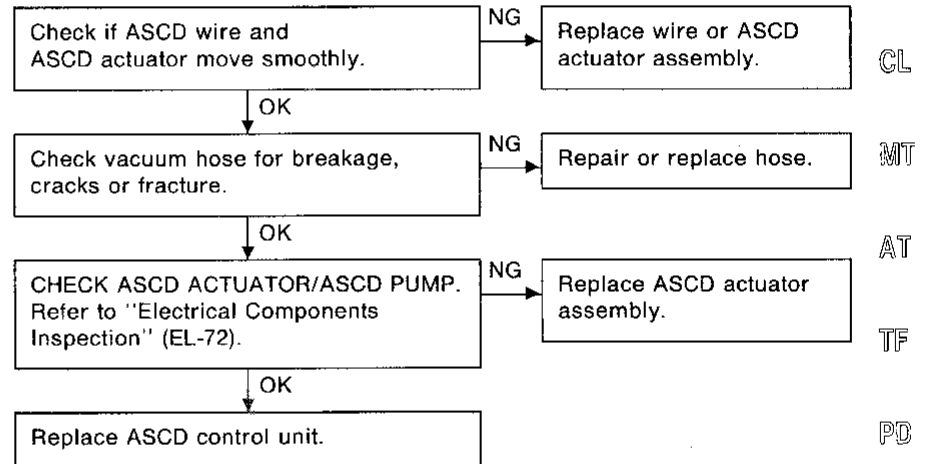
### DIAGNOSTIC PROCEDURE 2

**SYMPTOM: Engine hunts.**



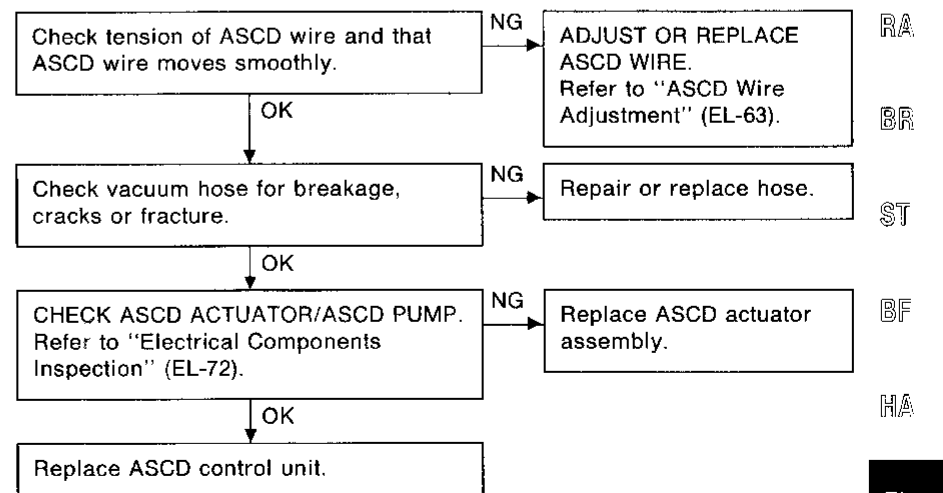
### DIAGNOSTIC PROCEDURE 3

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



### DIAGNOSTIC PROCEDURE 4

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



EL

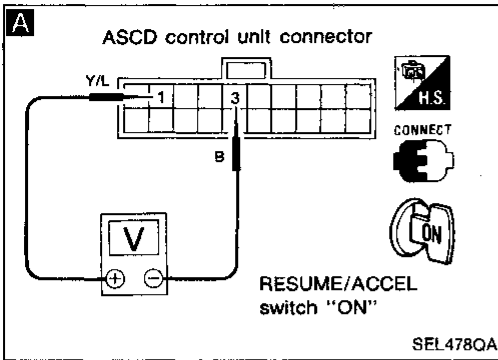
IDX

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 5

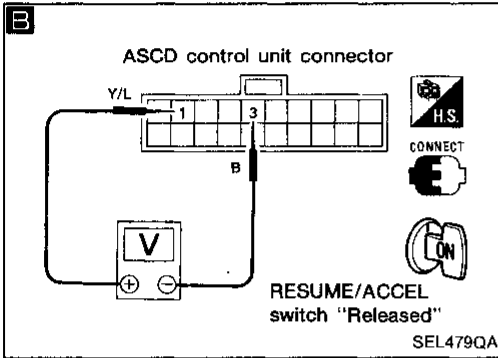
**SYMPTOM: ACCEL switch will not operate.**



Check constant-speed function for operation using SET/COAST switch.

NG → Go to "DIAGNOSTIC PROCEDURE 1" (EL-65).

OK ↓



Check voltage between control unit harness terminals ① and ③ after turning on and holding RESUME/ACCEL switch. **Battery voltage should exist.**

NG →

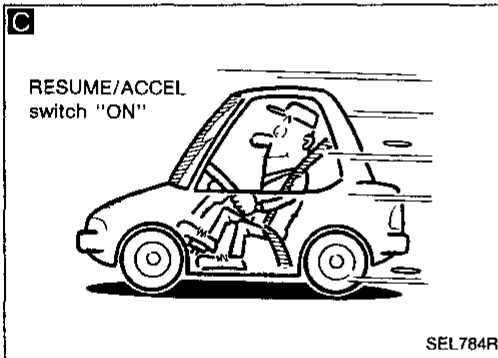
OK ↓

**B**

Check voltage between control unit harness terminals ① and ③ after releasing RESUME/ACCEL switch. **Voltage is 0V.**

NG → CHECK ASCD STEERING SWITCH. Refer to "Electrical Components Inspection" (EL-73).

OK ↓



**C**

Does vehicle accelerate when RESUME/ACCEL switch is turned on?

No → Replace control unit.

Yes ↓

Does vehicle maintain the new (faster) speed when RESUME/ACCEL switch is released?

No → Replace control unit.

Yes ↓

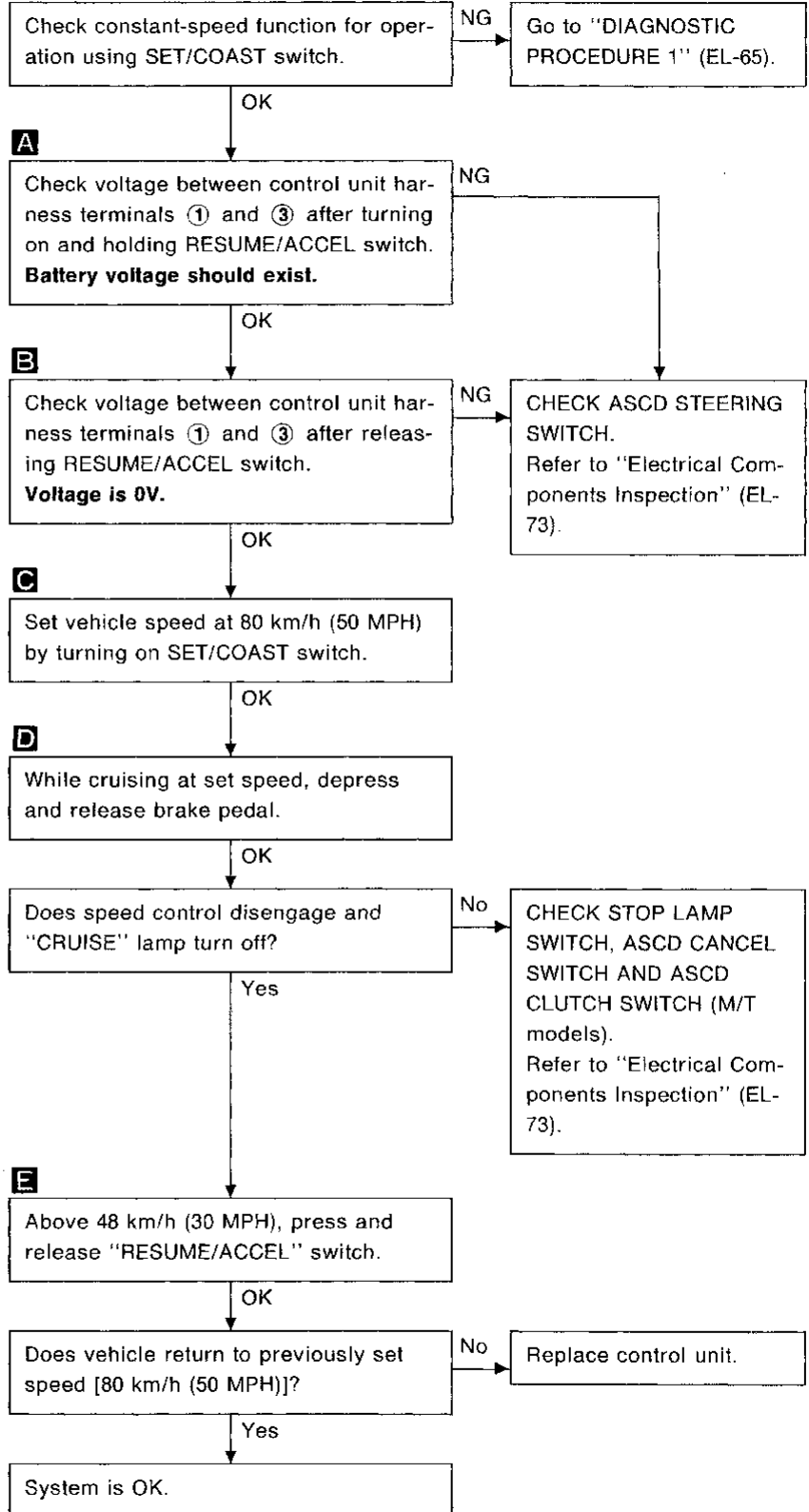
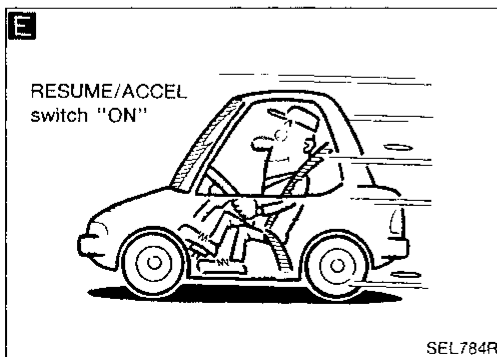
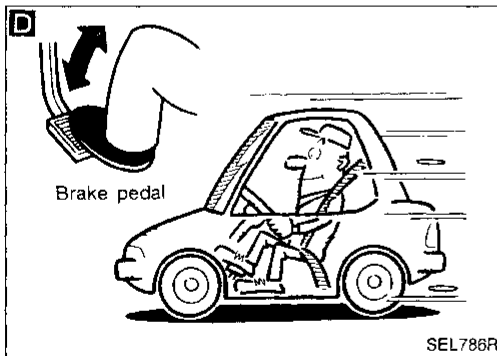
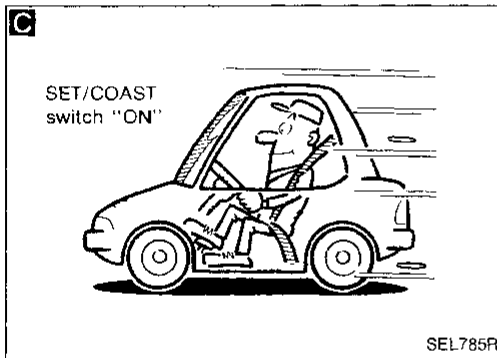
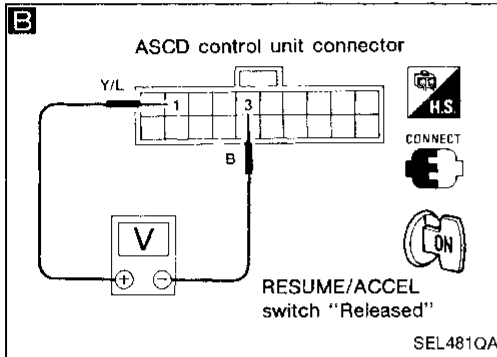
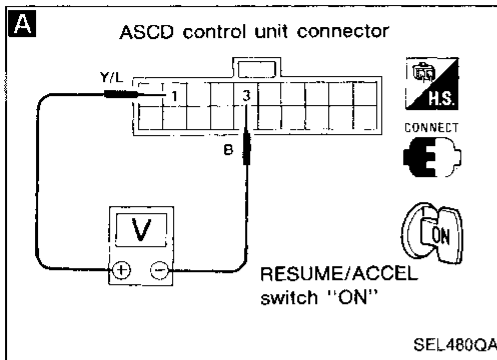
System is OK.

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 6

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



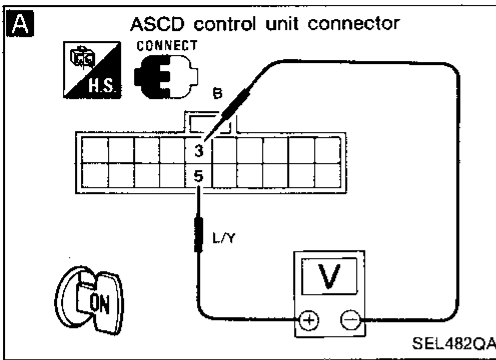
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# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 7

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



**A**

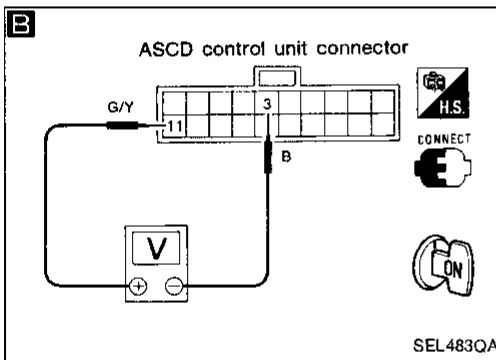
**CHECK ASCD CANCEL, CLUTCH, INHIBITOR SWITCH CIRCUIT.**

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

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

NG

**CHECK ASCD CANCEL, CLUTCH, and INHIBITOR SWITCH.**  
Refer to "Electrical Components Inspection" (EL-73).



**B**

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

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

NG

**CHECK STOP LAMP SWITCH.**  
Refer to "Electrical Components Inspection (EL-73).

OK

OK

Check if ASCD wire moves smoothly.

NG

Replace ASCD wire.

OK

**CHECK ASCD ACTUATOR/ASCD PUMP.**  
Refer to "Electrical Components Inspection" (EL-72).

NG

Replace ASCD actuator assembly.

OK

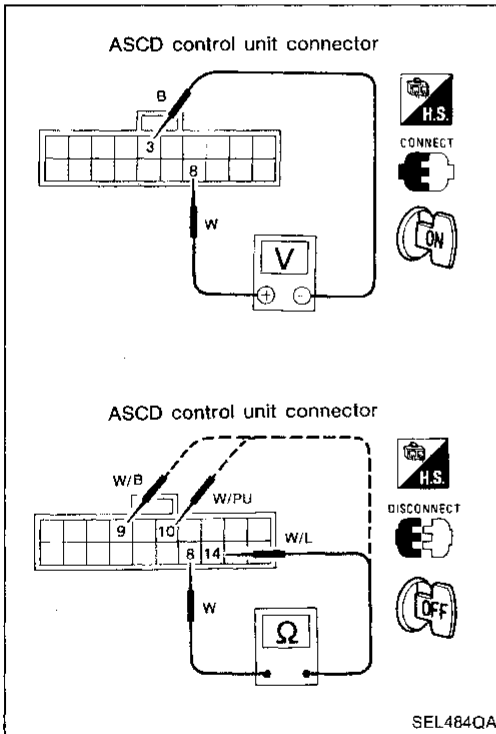
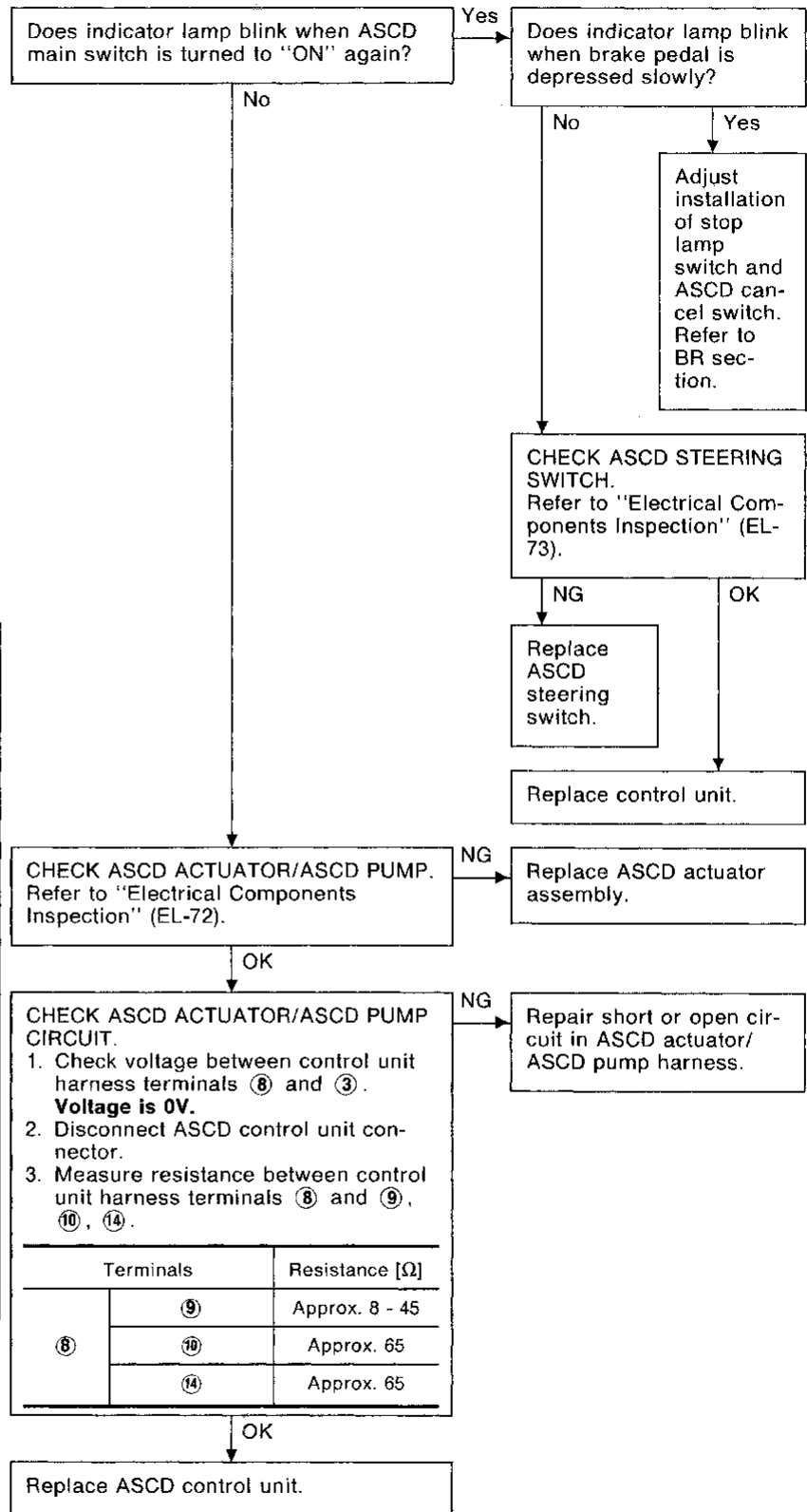
Replace ASCD control unit.

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## Trouble Diagnoses (Cont'd)

### DIAGNOSTIC PROCEDURE 8

SYMPTOM: "CRUISE" indicator lamp blinks.



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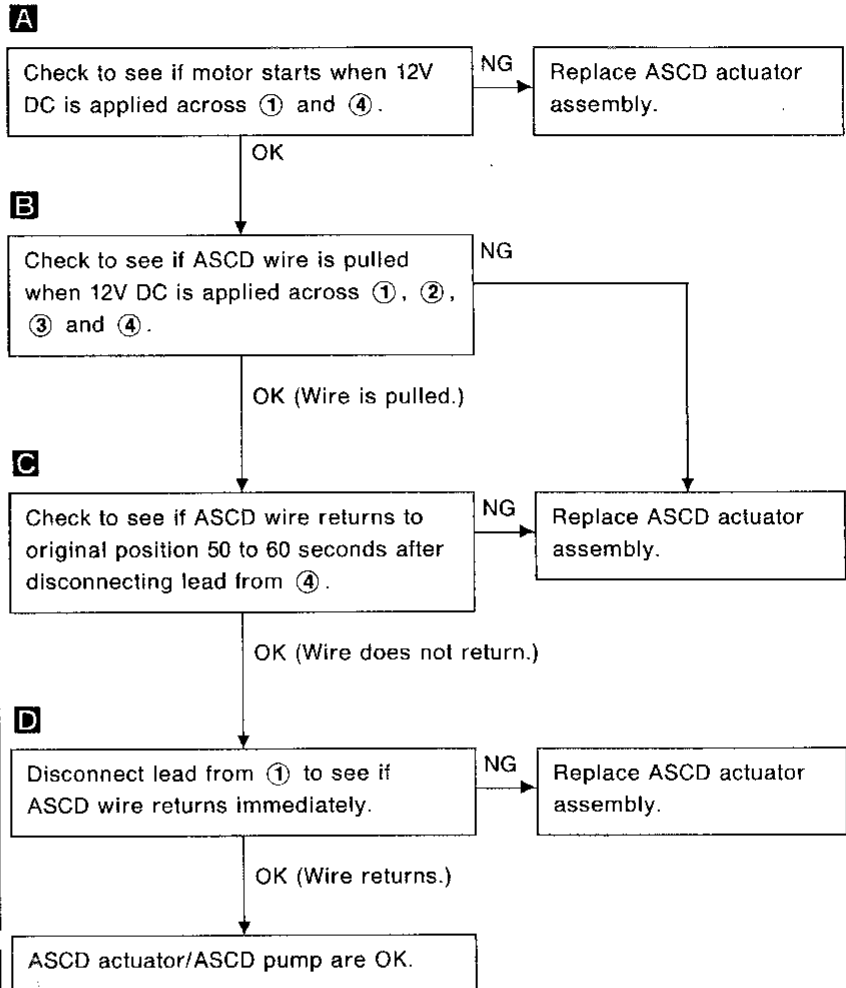
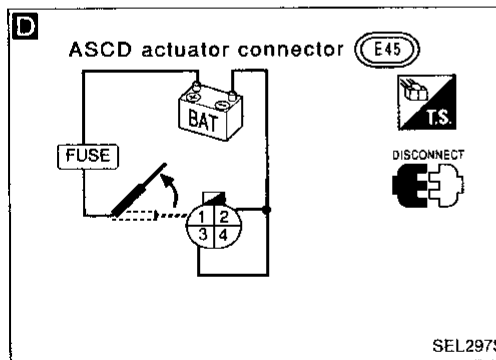
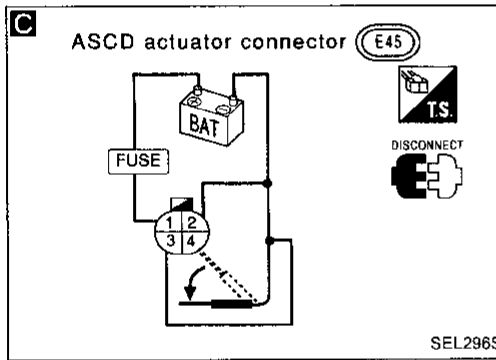
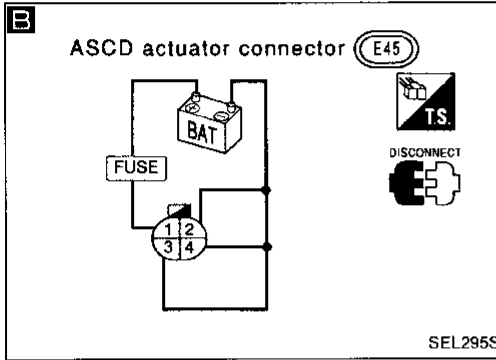
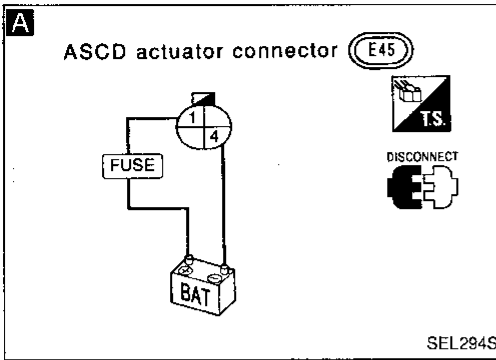
# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## 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.



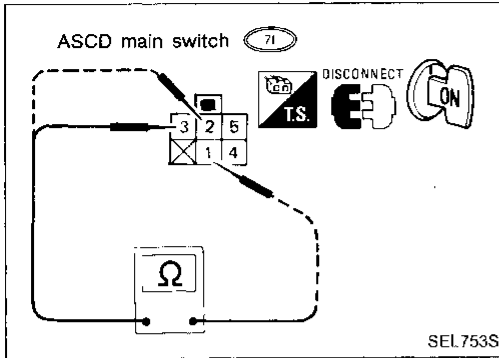


# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

## Trouble Diagnoses (Cont'd)

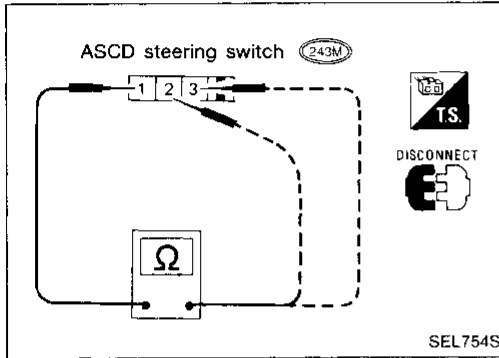
### ASCD main switch

Check continuity between terminals by pushing switch to each position.



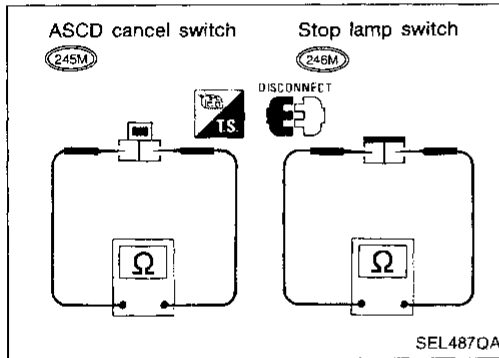
### ASCD steering switch

Check continuity between terminals by pushing each button.



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

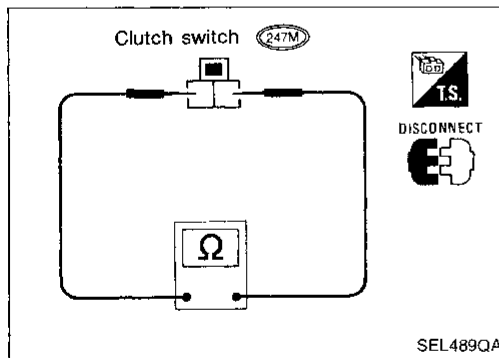
### ASCD cancel switch and stop lamp switch



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

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

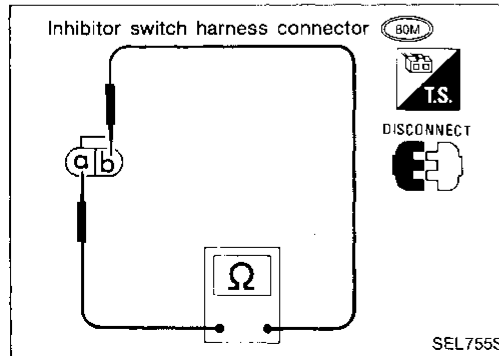
### Clutch switch (For M/T models)



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

Check switch after adjusting clutch pedal — refer to CL section.

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



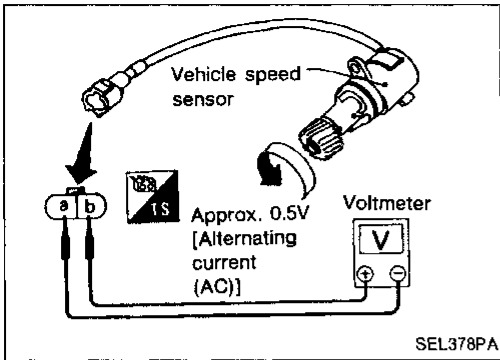
Terminal	a	b
Shift lever position		
"P"		
Except "N" or "P"		

## AUTOMATIC SPEED CONTROL DEVICE (ASCD)

### Trouble Diagnoses (Cont'd)

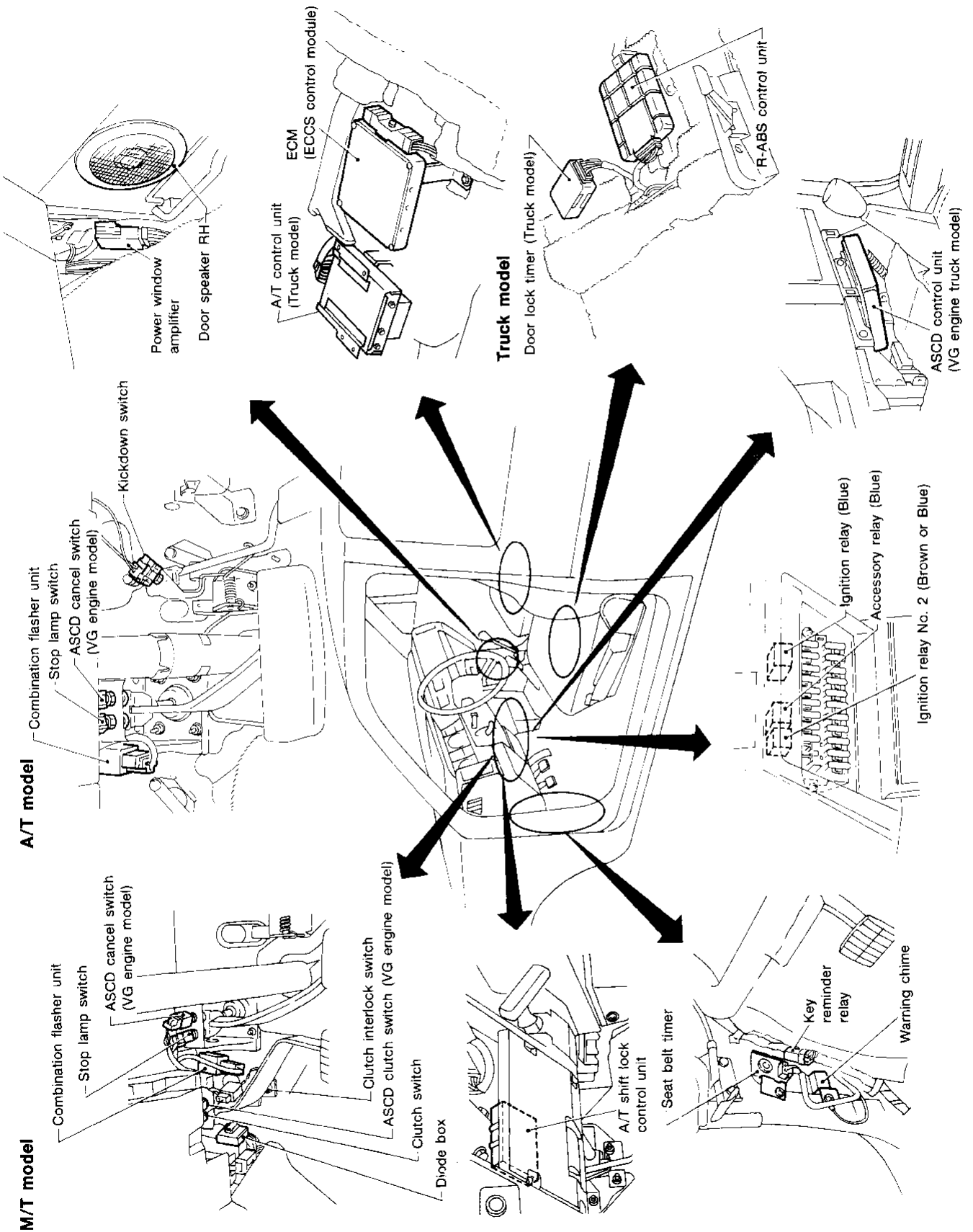
#### Vehicle speed sensor

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



# LOCATION OF ELECTRICAL UNITS

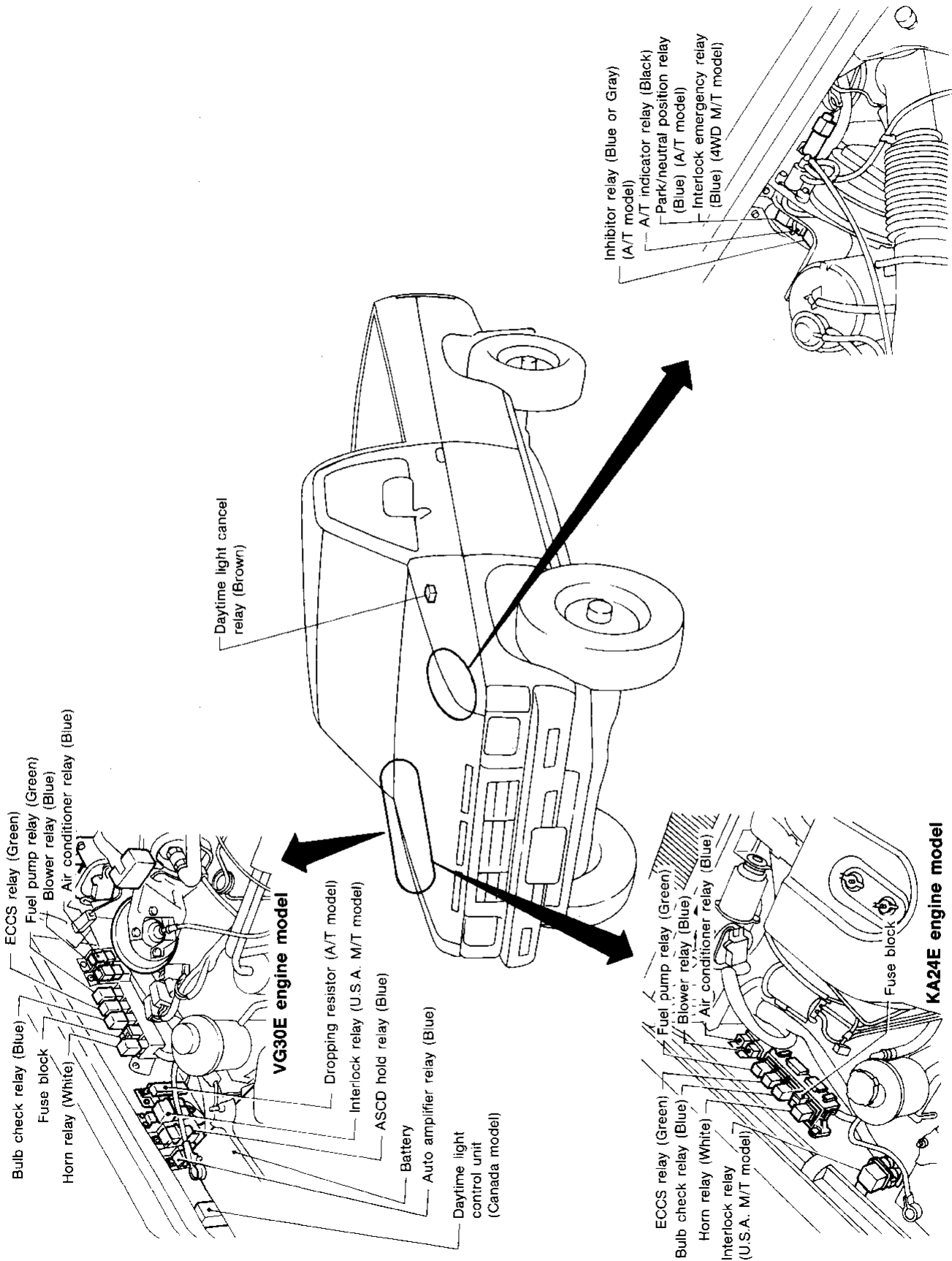
## Engine Compartment



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# LOCATION OF ELECTRICAL UNITS

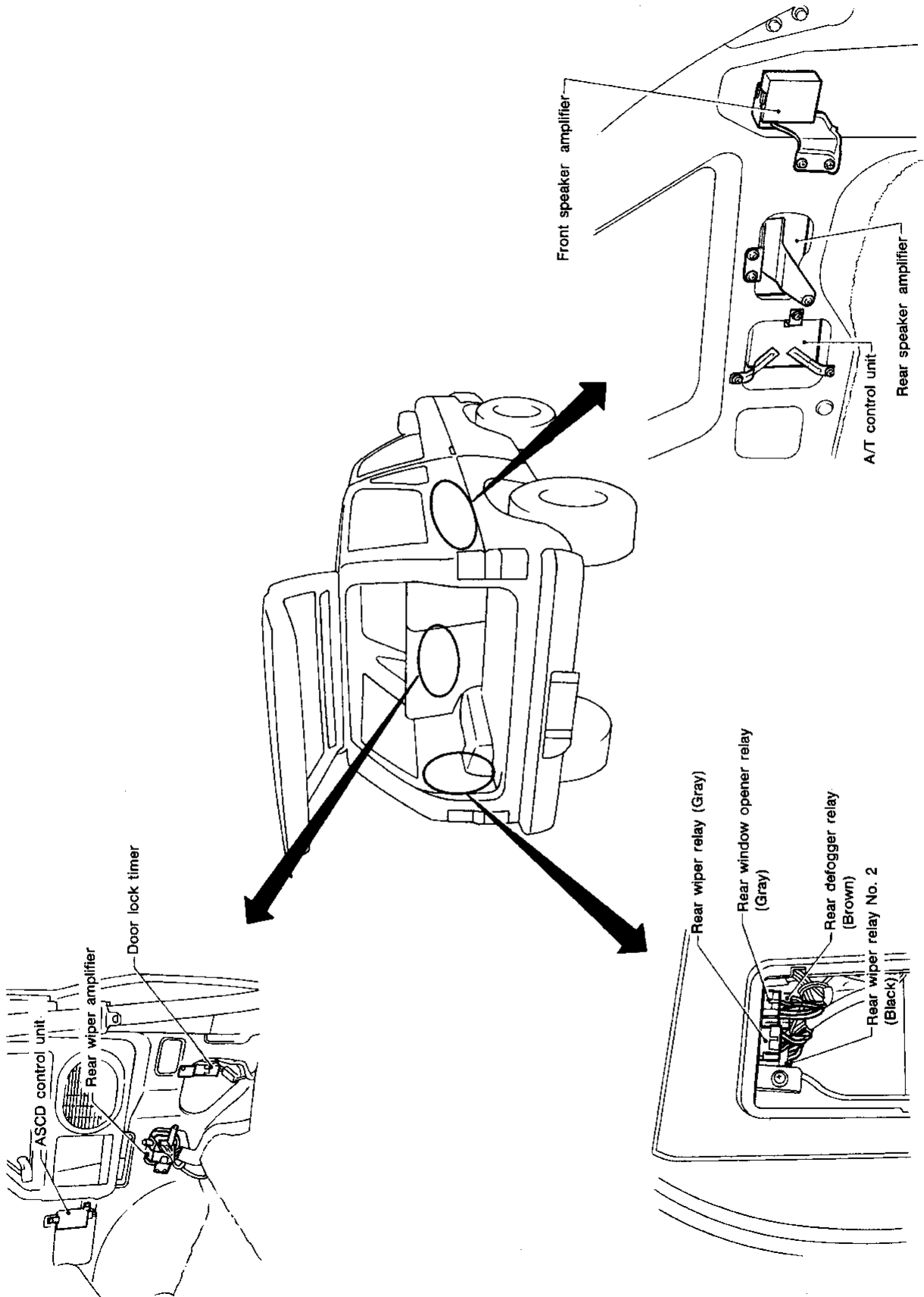
## Passenger Compartment



# LOCATION OF ELECTRICAL UNITS

## Passenger Compartment (Cont'd)

WAGON MODEL



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## LOCATION OF ELECTRICAL UNITS

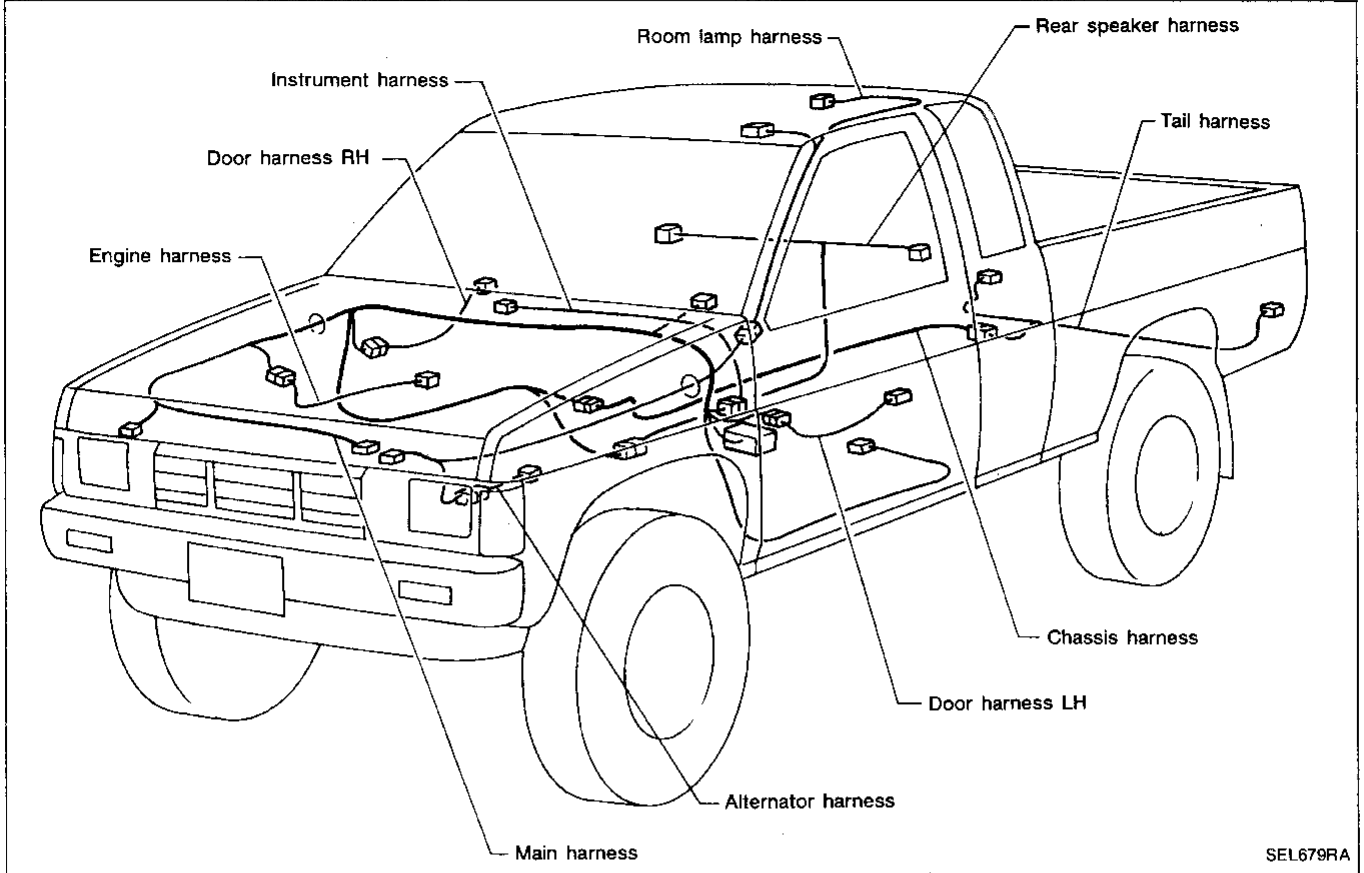
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NOTE

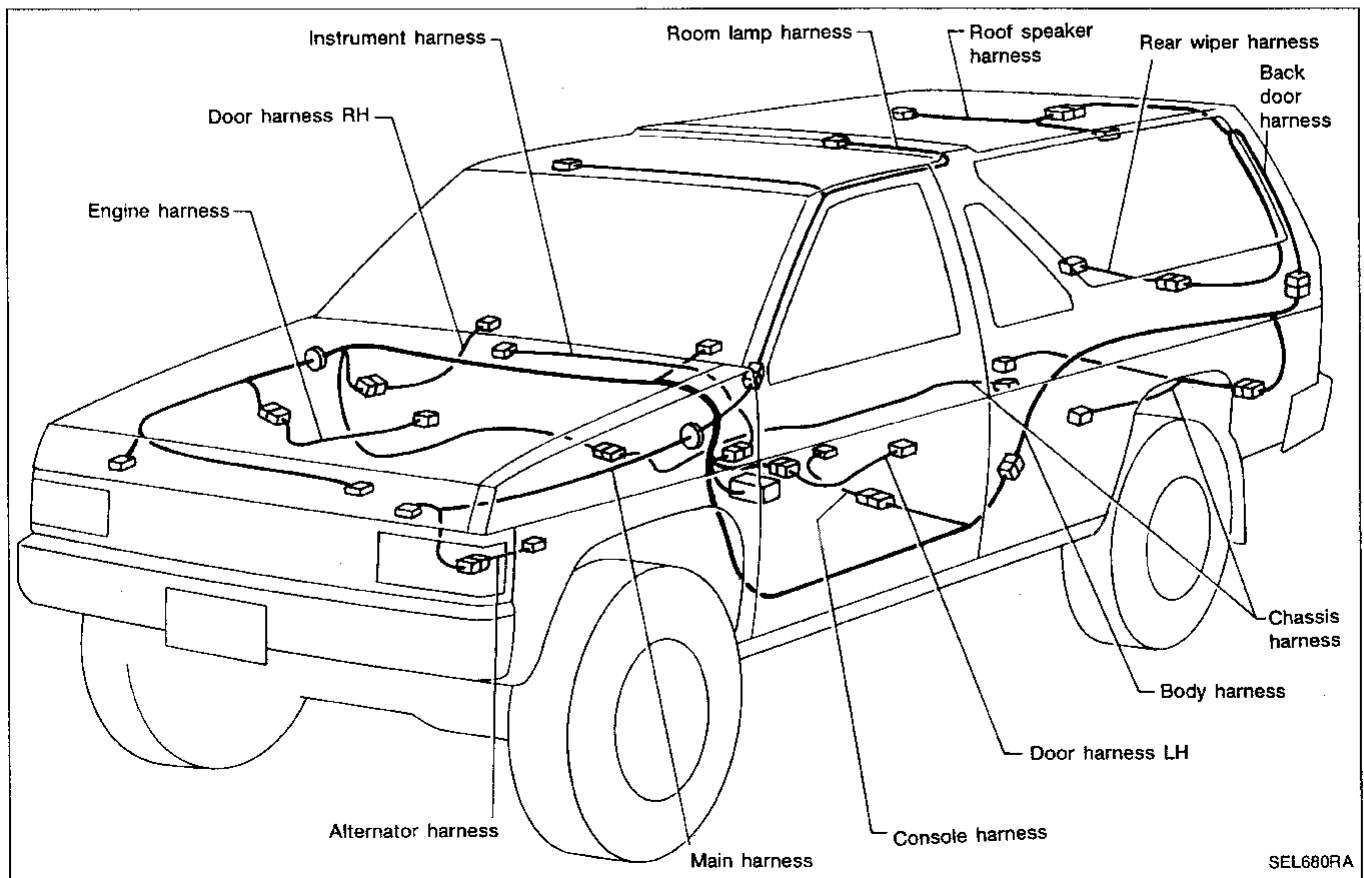
# HARNES LAYOUT

## Outline

### TRUCK MODEL



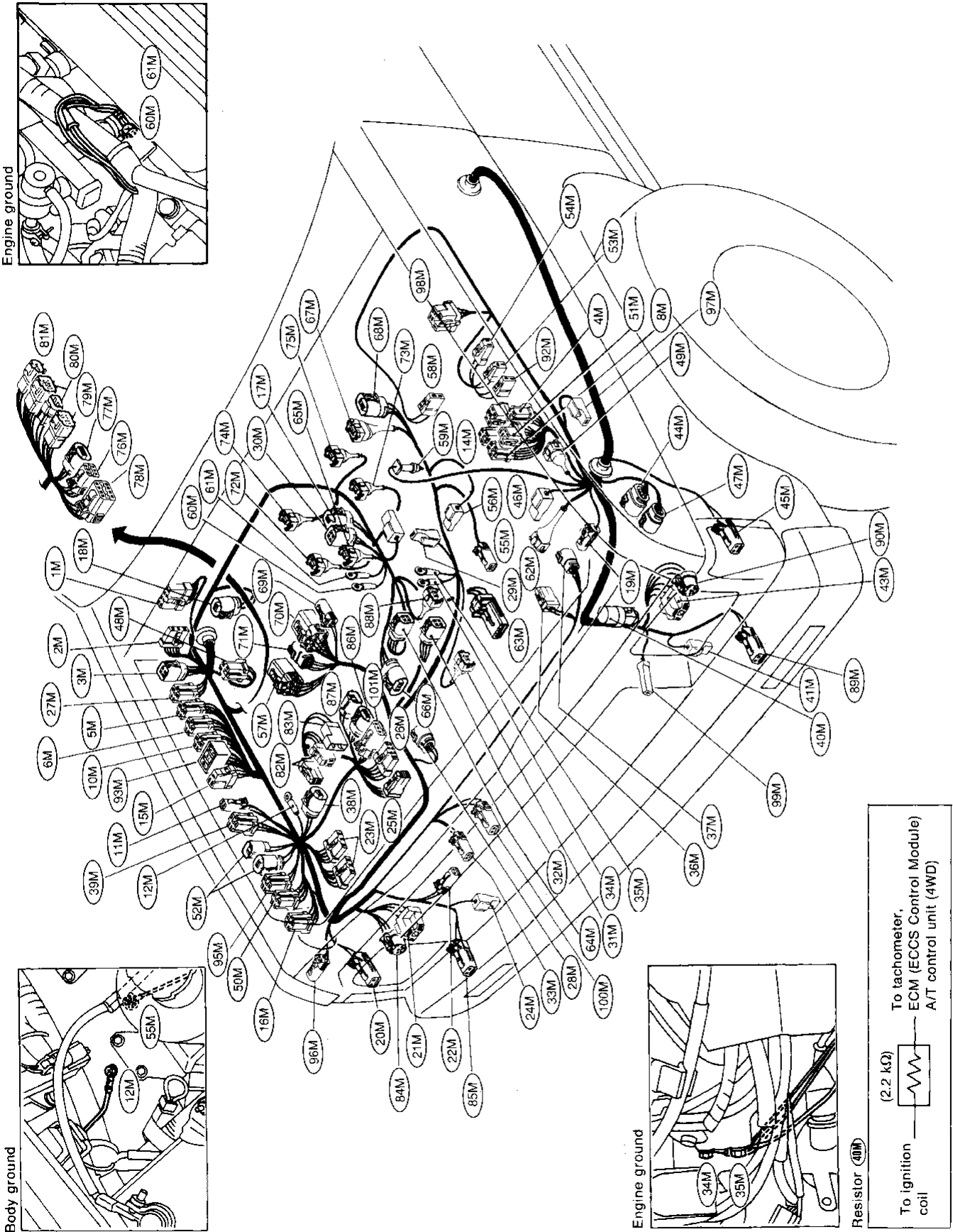
### WAGON MODEL



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# HARNESS LAYOUT

## Main Harness





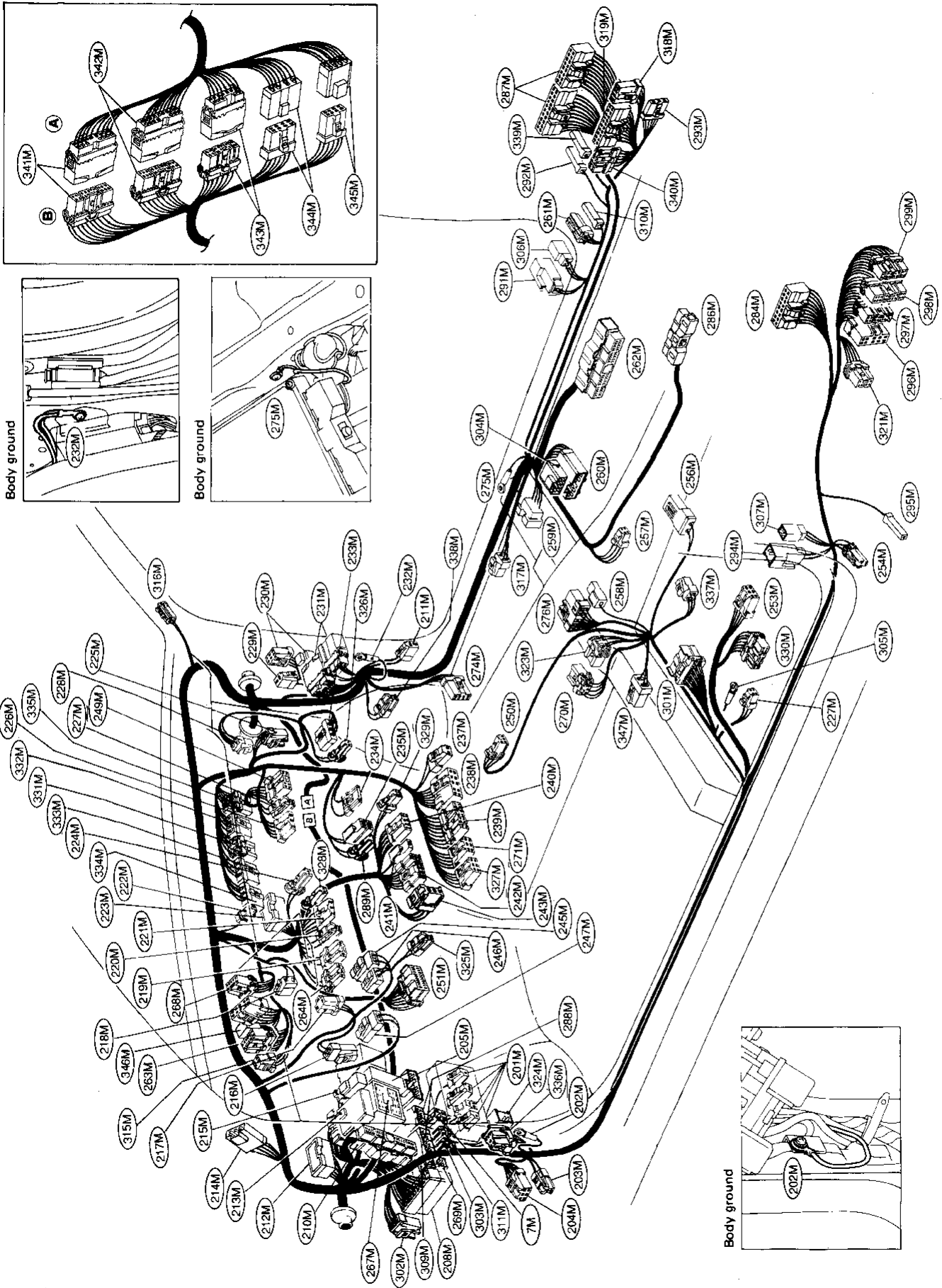
# HARNES LAYOUT

## Main Harness (Cont'd)

(1W)	: Intermittent wiper amplifier (VG30E engine model)	(47N)	: Ignition coil (KA24E engine model)	(93M)	: Fuse block
(2W)	: Wiper motor	(48N)	: Air conditioner relay	(95M)	: Rear defogger relay (Truck)
(3K)	: ASCD actuator (VG30E engine model)	(49N)	: PAIRC-solenoid valve (KA24E engine model)	(96M)	: Power antenna motor (Wagon)
(4N)	: Park/Neutral position relay (VG30E engine A/T model)	(50N)	: ASCD hold relay (VG30E engine model)	(97N)	: Ignition coil (KA24E engine model)
(5M)	: Fuel pump relay	(51N)	: A/T indicator relay (Truck A/T model)	(98M)	: Daytime light cancel relay (For Canada)
(6N)	: ECCS relay	(52N)	: Interlock relay (M/T model for U.S.A.)	(99M)	: To fog lamp (VG30E engine Truck model)
(7M)	: Inhibitor relay (VG30E engine A/T model without ASCD)	(53M)	: Washer motor	(100M)	: Ambient sensor (VG30E engine model)
(8N)	: Inhibitor relay (VG30E engine A/T model with ASCD)	(54M)	: Washer level switch		: To (74E) (KA24E engine Truck 2-door model)
(9M)	: Bulb check relay	(55M)	: Compressor (VG30E engine model)		
(10N)	: Dropping resistor (A/T model)	(56M)	: Distributor (VG30E engine model)		
(11N)	: Body ground	(57N)	: To (104E) (VG30E engine model)		
(14M)	: Interlock emergency relay (4WD M/T model for U.S.A.)	(58M)	: Brake fluid level switch		
(15N)	: Horn relay	(59M)	: Heated oxygen sensor (KA24E engine model)		
(16N)	: Park/Neutral position relay (KA24E engine A/T model)	(60M)	: Engine ground (KA24E engine model)		
(17N)	: EGR temperature sensor (KA24E engine model)	(61M)	: Engine ground (KA24E engine model)		
(18N)	: Intake air temperature sensor (KA24E engine model)	(62M)	: Mass air flow sensor (VG30E engine model)		
(19N)	: Compressor (KA24E engine model)	(63M)	: Mass air flow sensor (KA24E engine model)		
(20M)	: Clearance lamp RH	(64M)	: IACV-AAC, FICD valve (KA24E engine model)		
(21M)	: Headlamp RH (Truck)	(65M)	: Water temperature sensor (KA24E engine model)		
(22N)	: Low-pressure switch	(66M)	: Throttle position sensor (KA24E engine model)		
(23M)	: Daytime light control unit (For Canada)	(67M)	: Closed throttle position switch (VG30E engine model)		
(24M)	: Horn RH (VG30E engine model)	(68M)	: Throttle position sensor (VG30E engine model)		
(25M)	: To (59E) (KA24E engine A/T model)	(69M)	: To (106E) (VG30E engine model)		
(26M)	: To (59E) (KA24E engine M/T model)	(70M)	: To (107E) (VG30E engine model)		
(27M)	: Blower only	(71M)	: To (108E) (VG30E engine model)		
(28M)	: Power steering oil pressure switch (VG30E engine model)	(72M)	: Injector solenoid (KA24E engine model)		
(29M)	: Thermal transmitter (VG30E engine model)	(73M)	: Injector solenoid (KA24E engine model)		
(30M)	: Camshaft position sensor (KA24E engine model)	(74M)	: Injector solenoid (KA24E engine model)		
(31M)	: Camshaft position sensor (VG30E engine model)	(75M)	: Injector solenoid (KA24E engine model)		
(32M)	: Cylinder head temperature sensor (VG30E engine model)	(76M)	: To (1E) (VG30E engine A/T model)		
(33M)	: Ambient sensor (Wagon)	(77M)	: Heated oxygen sensor (Truck VG30E engine model)		
(34M)	: Engine ground (VG30E engine model)	(78M)	: To (3E) (VG30E engine M/T model)		
(35M)	: Engine ground (VG30E engine model)	(79M)	: To sub-harness (VG30E engine A/T model)		
(36M)	: To (33E) (VG30E engine model)	(80M)	: Inhibitor switch (A/T model)		
(37M)	: To (32E) (VG30E engine model)	(81M)	: Solenoid unit (A/T model)		
(38M)	: To (57E) (KA24E engine model)	(82M)	: Fusible link		
(39M)	: Auto amplifier relay (Wagon)	(83M)	: Fusible link (VG30E engine model)		
(40M)	: Resistor & condenser (KA24E engine model)	(84M)	: Headlamp RH (Wagon)		
(41M)	: Horn LH	(85M)	: Front turn signal lamp RH		
(42M)	: Thermal transmitter (KA24E engine model)	(86M)	: To (23E) (Wagon)		
(43M)	: Headlamp LH (Truck)	(87M)	: To (22E) (VG30E engine model)		
(44M)	: Power transistor (KA24E engine model)	(88M)	: EGRC-solenoid valve (KA24E engine model)		
(45M)	: Clearance lamp LH	(89M)	: Front turn signal lamp LH		
(46M)	: Distributor (KA24E engine model)	(90M)	: Headlamp LH (Wagon)		
		(92M)	: Rear washer motor (Wagon)		

# HARNESS LAYOUT

## Main Harness (Cont'd)



# HARNES LAYOUT

## Main Harness (Cont'd)

201H	Fuse block		
202H	Body ground	245H	ASCD cancel switch (VG30E engine model)
203H	Warning chime	246H	Stop lamp switch
204H	Seat belt timer	247H	ASCD clutch switch (VG30E engine M/T model)
205H	Diode (VG30E engine model)	249H	Air conditioner sub-harness (Wagon)
206H	To 201D (Truck)	250H	Overdrive control switch and A/T indicator lamp (Floor shift A/T model)
206H	To 211D (Wagon)	251H	ASCD control unit (VG30E engine Truck model)
208H	Check connector	253H	Door lock timer (VG30E engine Truck model)
210H	To 1I (SMJ) (VG30E engine model)	254H	Door switch LH
211H	Circuit breaker (VG30E engine model)	256H	Seat belt switch
212H	Joint connector C	257H	To rear speaker harness (VG30E engine Truck model)
213H	Diode (KA24E engine model)	258H	Parking brake switch (Center lever type)
214H	To 1F (Truck)	259H	Joint connector A
214H	To 1B1R (Wagon)	260H	To 1E (Truck)
215H	Diode (VG30E engine A/T model)	261H	Door switch RH (Wagon)
216H	Clutch interlock switch (M/T model for U.S.A.)	262H	ECM (ECCS control module)
217H	Combination flasher unit	263H	Shift lock unit (A/T model)
218H	Knockdown switch (VG30E engine A/T model)	264H	Key solenoid (VG30E engine Truck A/T model)
219H	A/T indicator illumination (KA24E engine column shift model)	267H	To 2B (KA24E engine model)
220H	Key-in switch	268H	Shift lock solenoid (KA24E engine A/T model)
221H	Ignition switch	269H	To 213D (Wagon)
222H	Parking brake switch (Stick type) (Truck)	270H	Shift lock solenoid (VG30E engine A/T model)
223H	Joint connector B	271H	Audio amplifier (VG30E engine model)
224H	Overdrive control switch (KA24E engine model)	274H	Power window amplifier (VG30E engine model)
225H	Air conditioner switch	275H	Body ground
226H	Fan switch	276H	To console harness (VG30E engine Wagon model)
227H	Heater illumination	277H	Heating seat (VG30E engine Wagon model)
228H	Thermo control amplifier	284H	ASCD control unit (VG30E engine Wagon model)
229H	Blower motor	286H	A/T control unit (VG30E engine Truck A/T model)
230H	To 1Q2D (VG30E engine Truck model)	287H	A/T control unit (VG30E engine A/T model)
230H	To 111D (Wagon)	288H	To 202D (VG30E engine model)
231H	To 1B1D (Truck)	289H	Cigarette lighter illumination
231H	To 110D (Wagon)	291H	To 302D (Wagon)
232H	Body ground	292H	Door switch (Wagon)
233H	Resistor	293H	Rear combination lamp (Wagon)
234H	Ash tray illumination (VG30E engine and KA24E engine 4WD model for Canada)	294H	To 402D (Wagon)
235H	Cigarette lighter	295H	Door switch (Wagon)
237H	Audio illumination (Wagon)	296H	To 5B (Wagon)
238H	Radio	297H	To 2B (Wagon)
239H	Amplifier (Wagon)	298H	To 3B (Wagon)
240H	Wiper switch	299H	To 22D (Wagon)
241H	Horn switch	301H	R-ABS control unit
242H	Lighting switch	302H	Check connector (For R-ABS)
243H	ASCD switch (VG30E engine model)	303H	Ignition relay No.2 (Without power window)

304H : To 17E

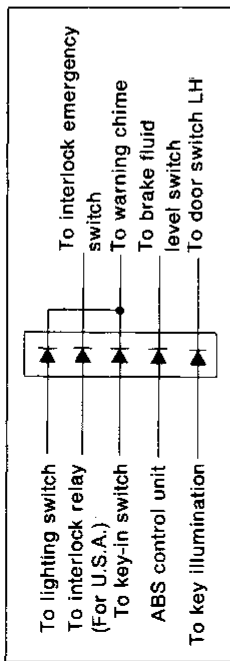
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# HARNESS LAYOUT

## Main Harness (Cont'd)

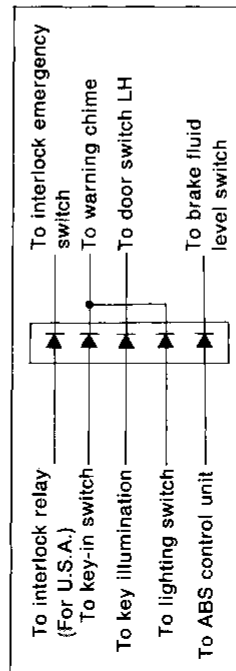
- 305M : Body ground
- 306M : To 301D (Wagon)
- 307M : To 401D (Wagon)
- 309M : To 212D (Wagon)
- 310M : Door switch RH (Truck 4WD model for Canada)
- 311M : Ignition relay No.2 (Truck 2WD model)

Diode 205M (VG30E engine model)

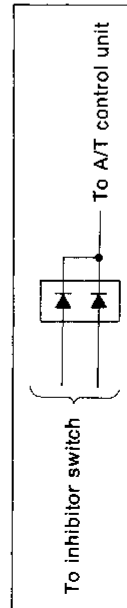


- 7M : Ignition relay No.2 (With powerwindow)
- 315M : Diode (For Canada)
- 316M : Speaker RH (Wagon with 6-speaker or 8-speaker)
- 317M : Seat heater (Wagon)
- 318M : Power antenna timer (Wagon)
- 319M : Front speaker amplifier (Wagon)
- 321M : To 208 (Wagon)

Diode 213M (KA24E engine model)



Diode 215M (VG30E engine model)

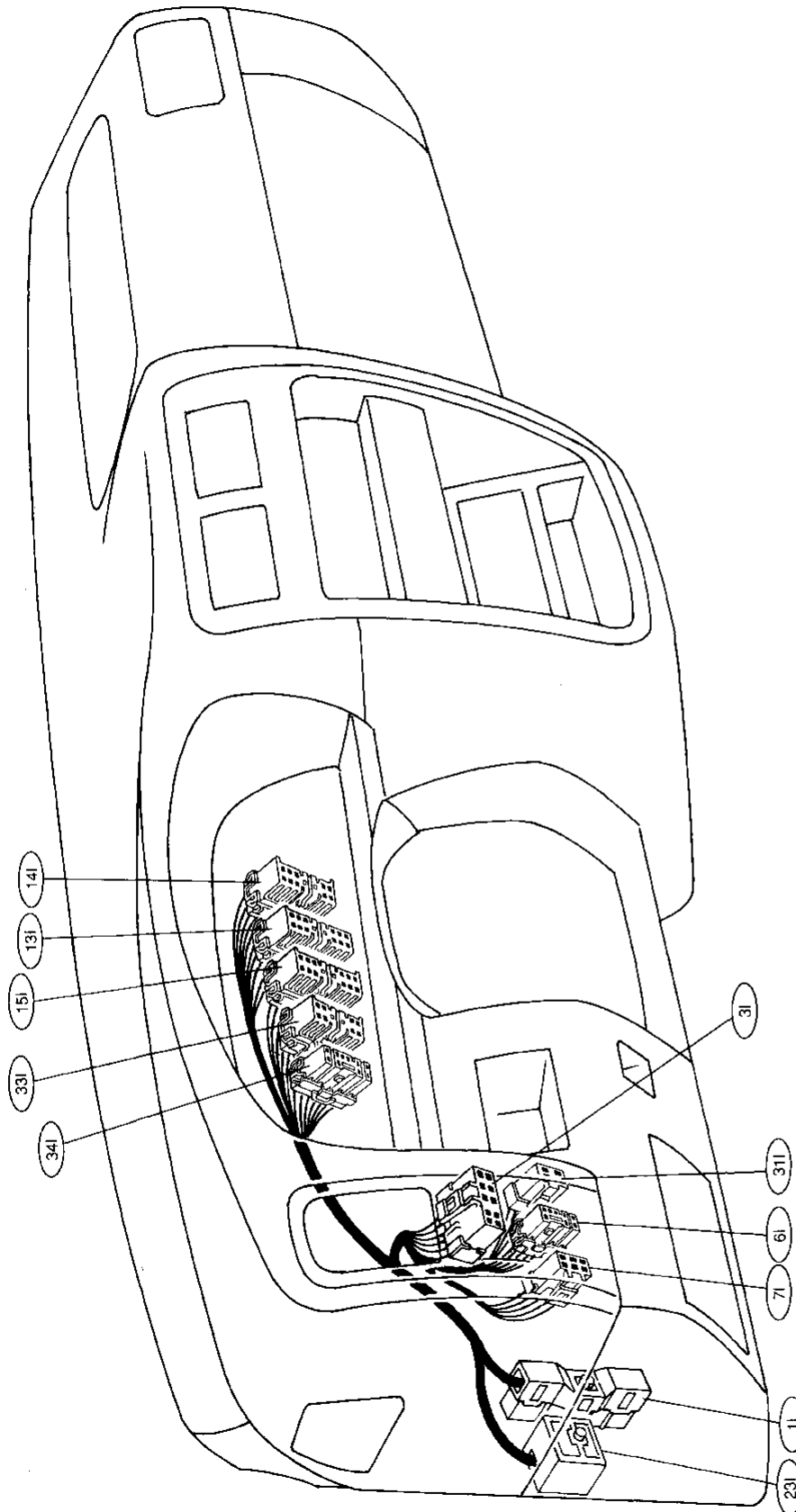


(For A/T control system)

- 323M : To console harness (Wagon)
- 324M : To 209D (VG30E engine Truck model)
- 325M : Foot lamp LH (Wagon)
- 326M : Glove box lamp
- 327M : Audio amplifier (Wagon)
- 328M : Key illumination (4WD model)
- 329M : Rear wiper switch (Wagon)
- 330M : Audio amplifier (VG30E engine Truck model)
- 331M : Illumination control rheostat
- 332M : Hazard switch
- 333M : Rear defogger switch (Truck)
- 334M : Front fog lamp switch (VG30E engine Truck 4WD model)
- 335M : Rear defogger switch (Wagon)
- 336M : Key reminder relay
- 337M : To console harness (VG30E engine Truck model)
- 338M : Foot lamp RH (Wagon)
- 339M : Rear door switch RH (Wagon)
- 340M : Rear speaker amplifier (Wagon)
- 341M : Adapter connector-1
- 342M : Adapter connector-2
- 343M : Adapter connector-3
- 344M : Adapter connector-4
- 345M : Adapter connector-5
- 346M : Diode (Truck model with ABS)
- 347M : Fog lamp relay

# HARNESS LAYOUT

## Instrument Harness



- (14) : Combination meter
- (15) : Combination meter
- (23) : To (267M) (SMJ) (KA24E engine model)
- (31) : Interlock switch (Wagon M/T model)
- (32) : Combination meter
- (34) : Combination meter

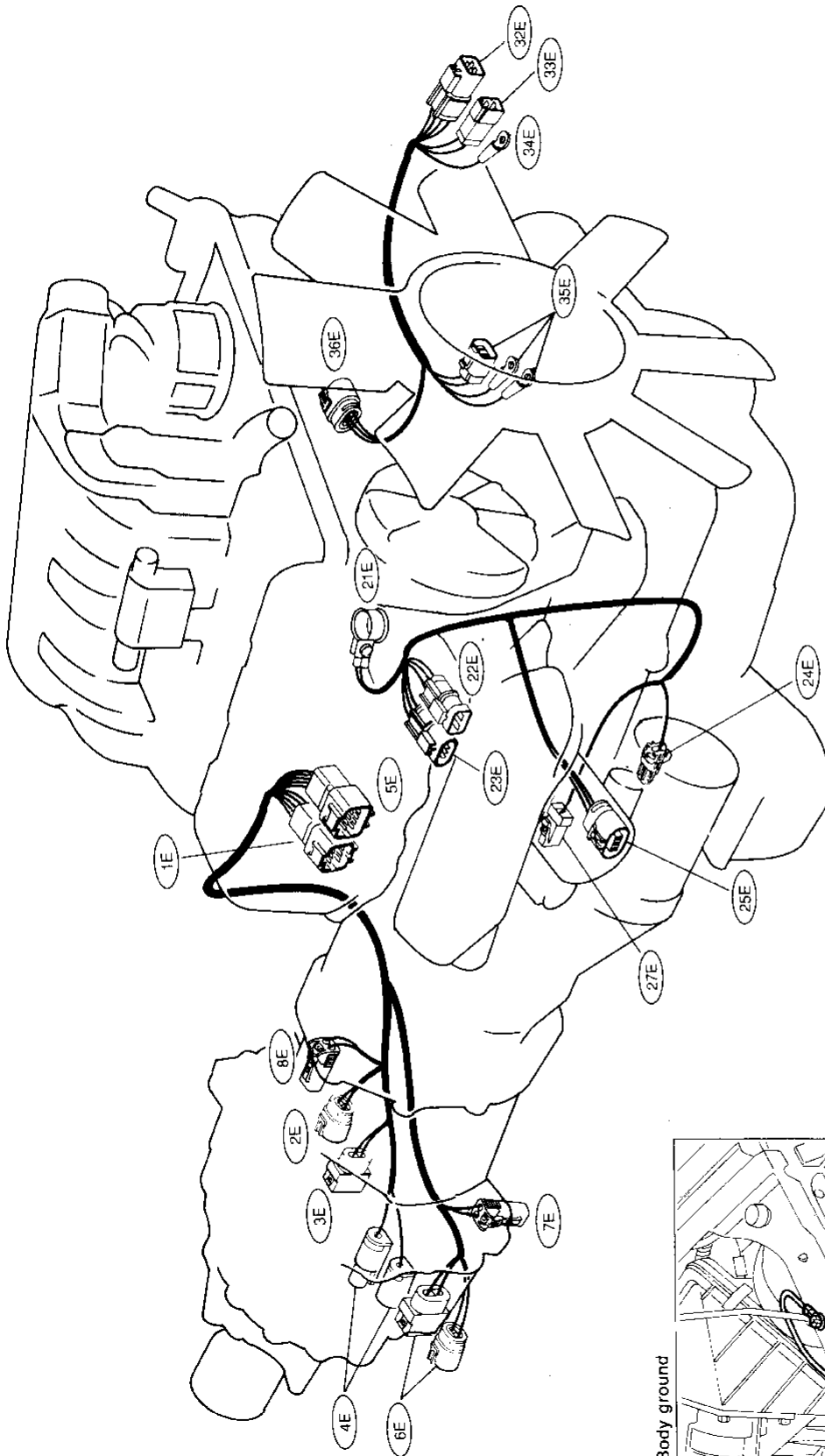
- (1) : To (210M) (SMJ) (VG30E engine model)
- (3) : Remote control mirror switch
- (6) : A/T mode switch (VG30E engine A/T model)
- (7) : ASCD switch (Wagon and VG30E engine Truck SE model)
- (13) : Combination meter

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# HARNES LAYOUT

## Engine Harness

VG30E ENGINE



### Alternator harness

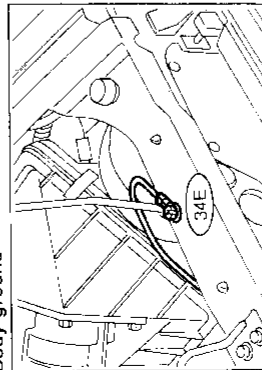
- ③②E : To ③⑦M
- ③③E : To ③⑥M
- ③④E : Body ground
- ③⑤E : Alternator
- ③⑥E : Front shock absorber LH (Wagon)

### Battery cable

- ②①E : Battery
- ②②E : To ②⑦M
- ②③E : To ②⑥M (Wagon SE model)
- ②④E : Starter motor
- ②⑤E : Front shock absorber RH (Wagon SE model)
- ②⑦E : Oil pressure switch

- ①E : To ①⑥M (M/T model)
- ②E : Back-up lamp switch (M/T model)
- ③E : Neutral position switch (M/T model)
- ④E : Transfer switch (4WD M/T model)
- ⑤E : To ⑤⑥M (4WD A/T model)
- ⑥E : Transfer switch (4WD A/T model)
- ⑦E : Vehicle speed sensor (A/T model)
- ⑧E : Vehicle speed sensor (M/T model)

Body ground

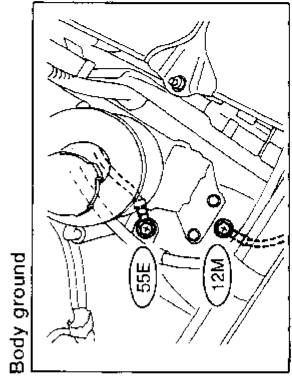
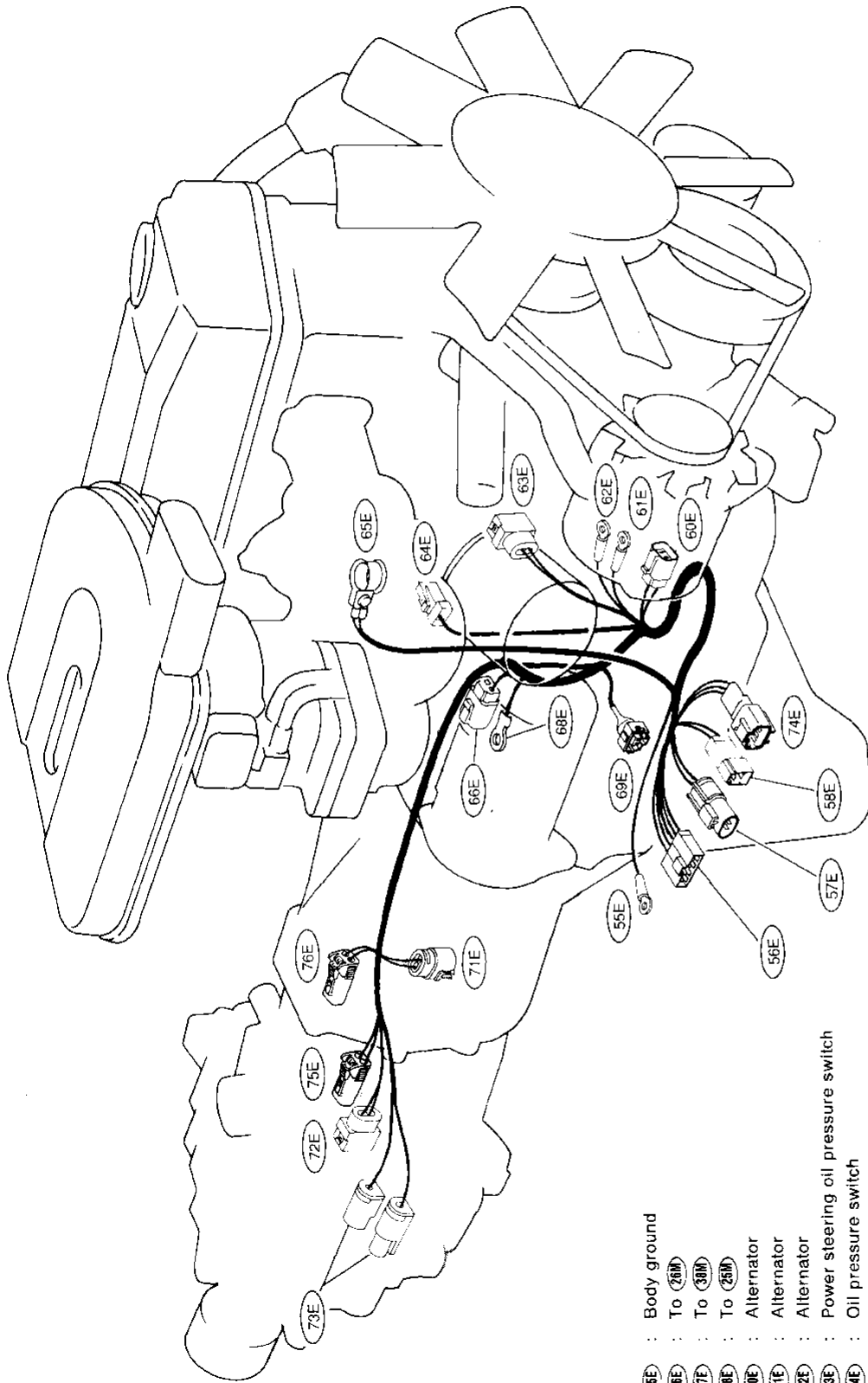


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# HARNES LAYOUT

## Engine Harness (Cont'd)

KA24E ENGINE



Body ground

- 55E : Body ground
- 60E : To (26M)
- 57E : To (30M)
- 58E : To (25M)
- 60E : Alternator
- 61E : Alternator
- 62E : Alternator
- 63E : Power steering oil pressure switch
- 64E : Oil pressure switch
- 65E : Battery
- 66E : Starter motor
- 68E : Starter motor
- 69E : SCV control solenoid valve
- 70E : Back-up lamp switch (M/T model)
- 71E : Neutral position switch (M/T model)
- 72E : Transfer switch (4WD M/T model)
- 73E : To (101M)
- 74E : Vehicle speed sensor (M/T model)
- 75E : Vehicle speed sensor (2WD A/T model)
- 76E : Vehicle speed sensor (2WD A/T model)

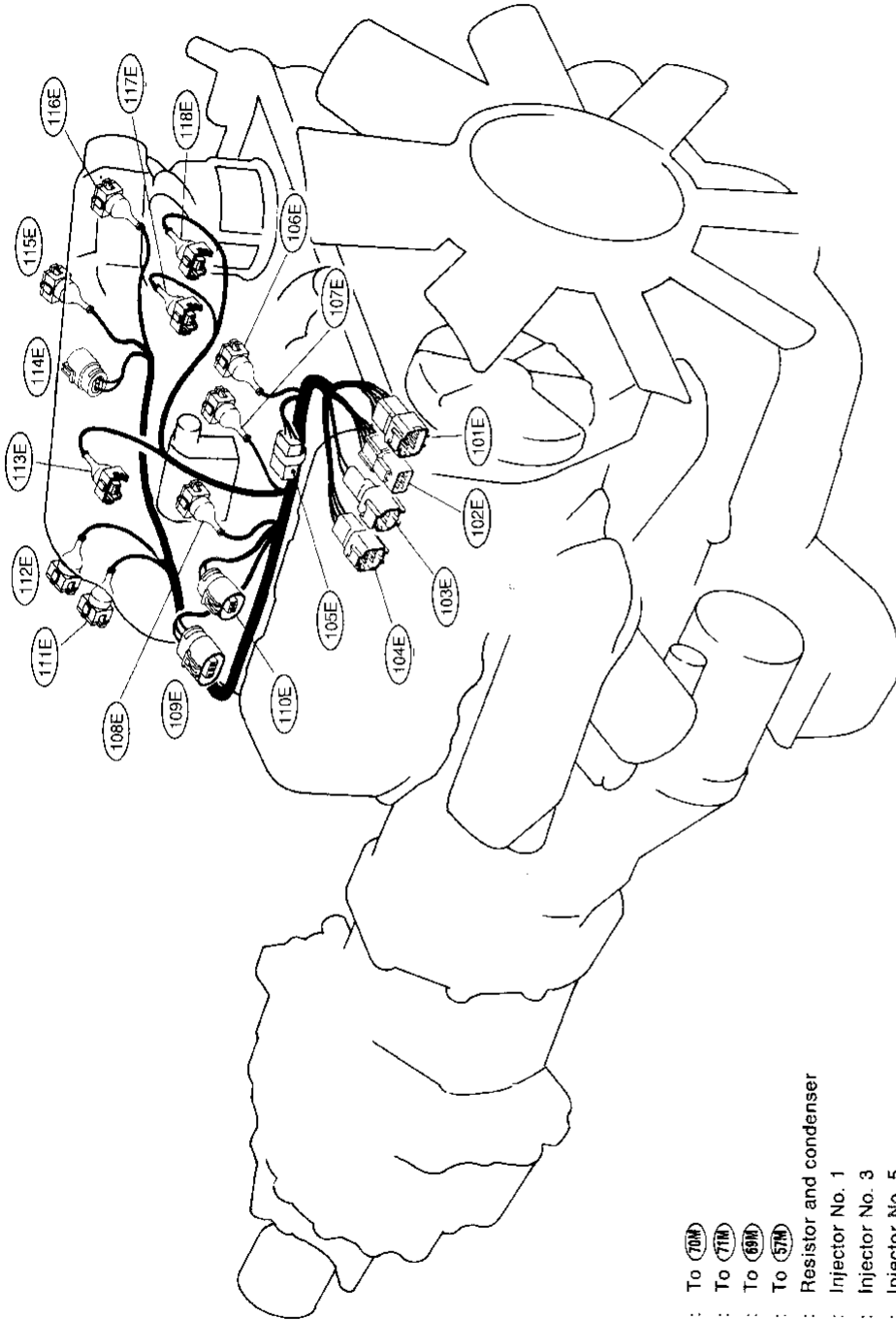
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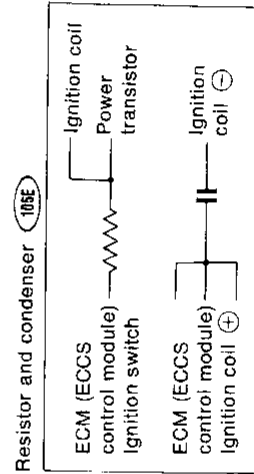
# HARNESS LAYOUT

## Engine Control Harness

### VG30E ENGINE



- 101E : To 70M
- 102E : To 71M
- 103E : To 69M
- 104E : To 57M
- 105E : Resistor and condenser
- 106E : Injector No. 1
- 107E : Injector No. 3
- 108E : Injector No. 5
- 109E : Power transistor
- 110E : Ignition coil
- 111E : Knock sensor
- 112E : IACV-AAC valve
- 113E : Injector No. 6
- 114E : EGR temperature sensor (For California)
- 115E : IACV-air regulator
- 116E : EGRC-solenoid valve
- 117E : Injector No. 4
- 118E : Injector No. 2

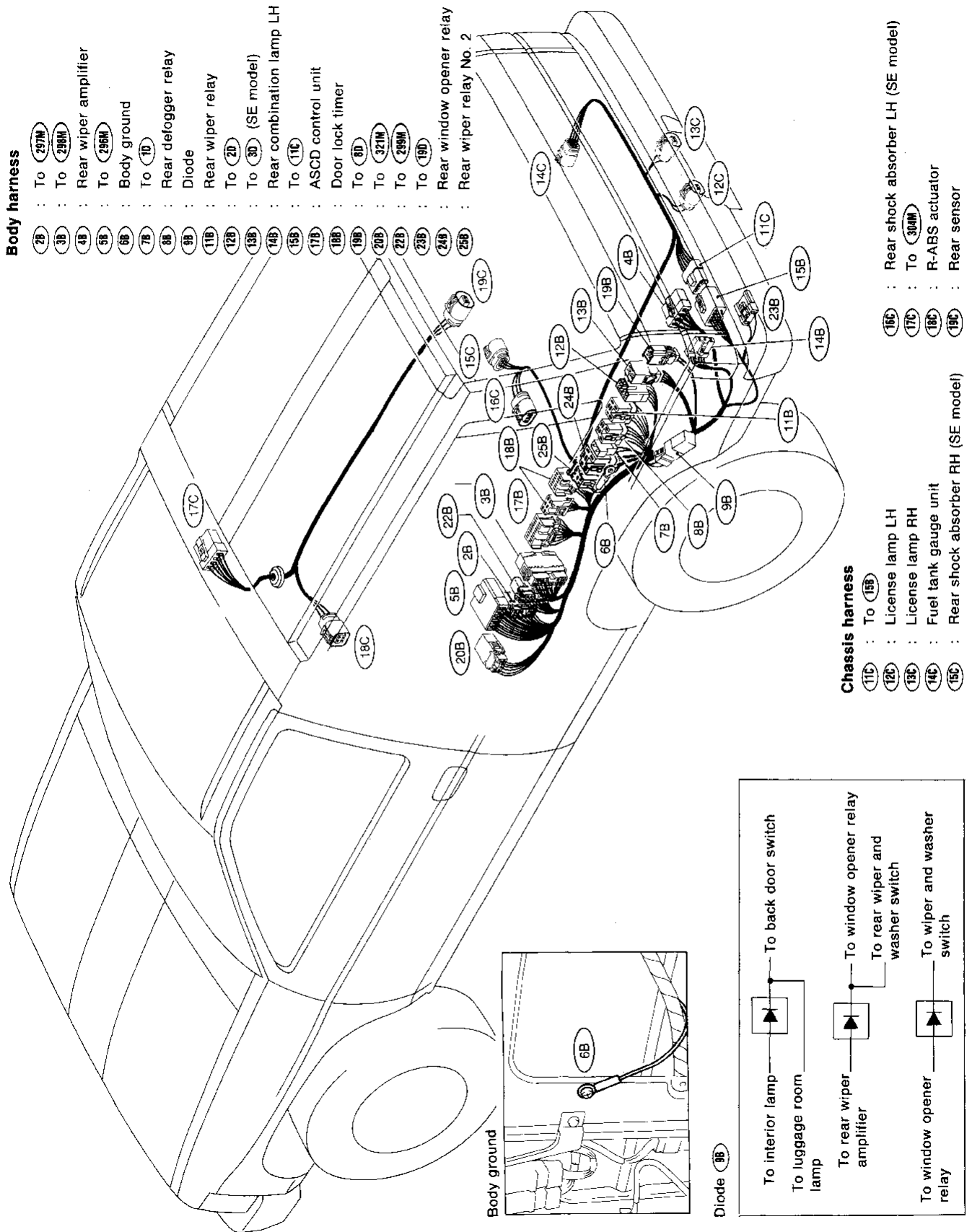




# HARNESS LAYOUT

## Engine Control Harness (Cont'd)

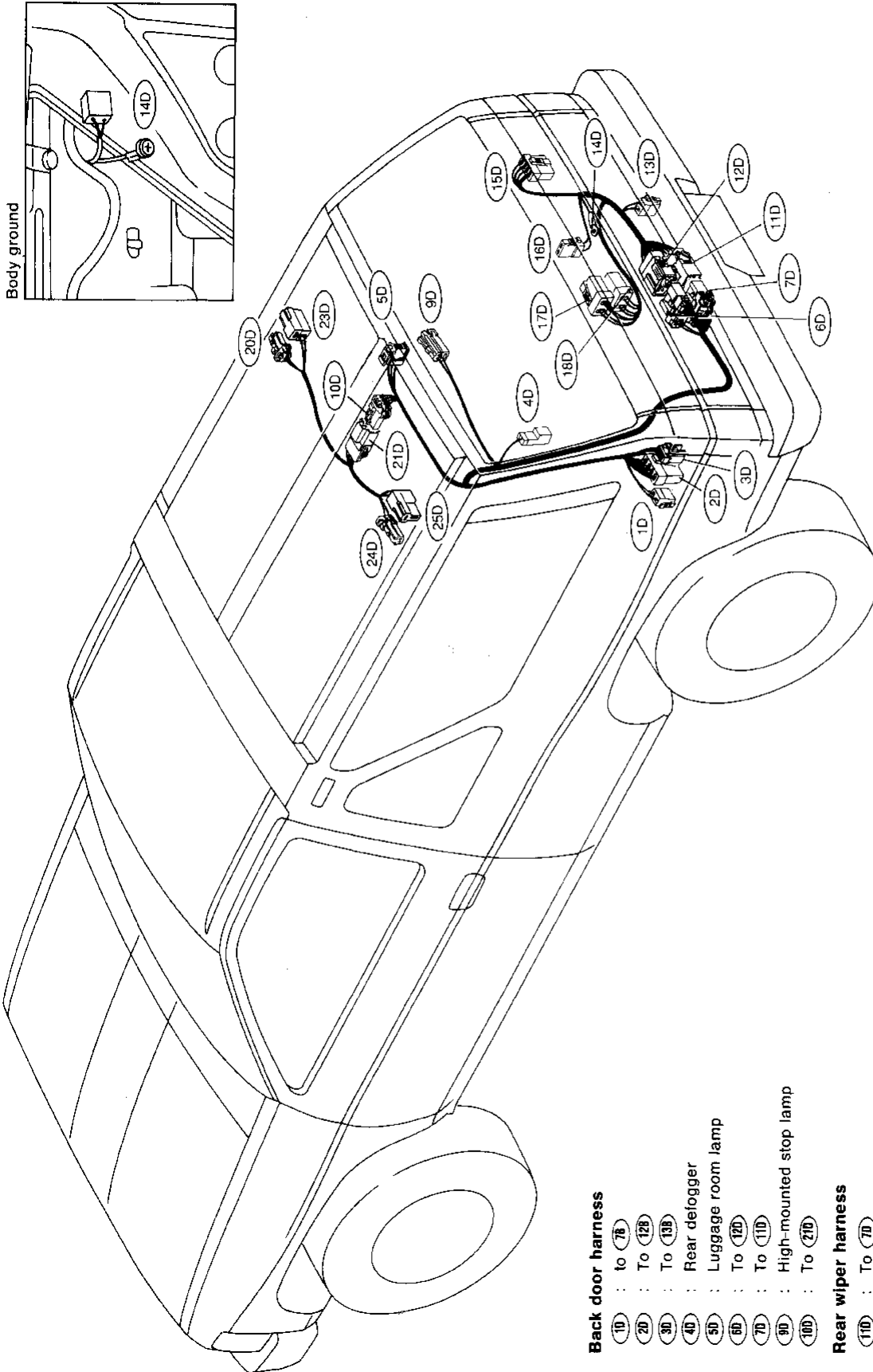
### WAGON MODEL



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# HARNES LAYOUT

## Back Door and Rear Wiper Harness



### Back door harness

- (10) : to (78)
- (20) : To (128)
- (30) : To (138)
- (40) : Rear defogger
- (50) : Luggage room lamp
- (60) : To (170)
- (70) : To (110)
- (90) : High-mounted stop lamp
- (100) : To (210)

### Rear wiper harness

- (110) : To (70)
- (120) : To (60)
- (130) : Back door switch
- (140) : Body ground
- (150) : Rear wiper motor
- (160) : Glass hatch switch
- (170) : Glass hatch opener solenoid
- (180) : Door lock actuator
- (190) : To (230)

### Roof speaker harness

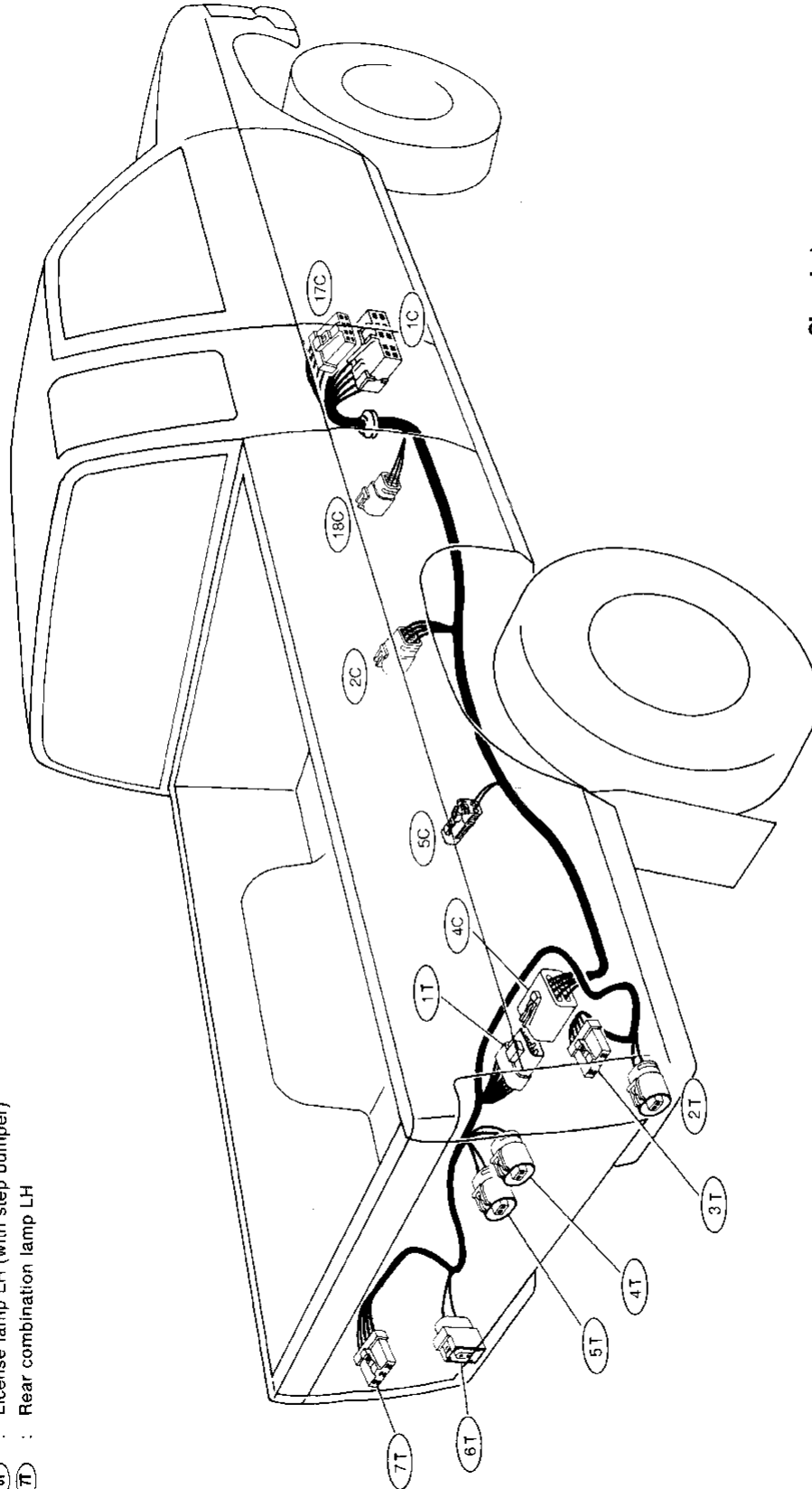
- (210) : To (100) (4-door model with 8 speakers)
- (220) : Tweeter RH (4-door model with 8 speakers)
- (230) : Woofer speaker RH (4-door model with 8 speakers)
- (240) : Tweeter LH (4-door model with 8 speakers)
- (260) : Woofer speaker LH (4-door model with 8 speakers)

# HARNES LAYOUT

## Chassis and Tail Harness

### Tail harness

- ①T : To ④C
- ②T : License lamp RH (With step bumper)
- ③T : Rear combination lamp RH
- ④T : License lamp RH (Without step bumper)
- ⑤T : License lamp LH (Without step bumper)
- ⑥T : License lamp LH (with step bumper)
- ⑦T : Rear combination lamp LH



### Chassis harness

- ①C : To ②60M
- ②C : Fuel tank gauge unit
- ④C : To ①T
- ⑤C : Rear sensor (4WD model)
- ⑦C : To ③04M (4WD model)
- ⑧C : R-ABS actuator (4WD model)

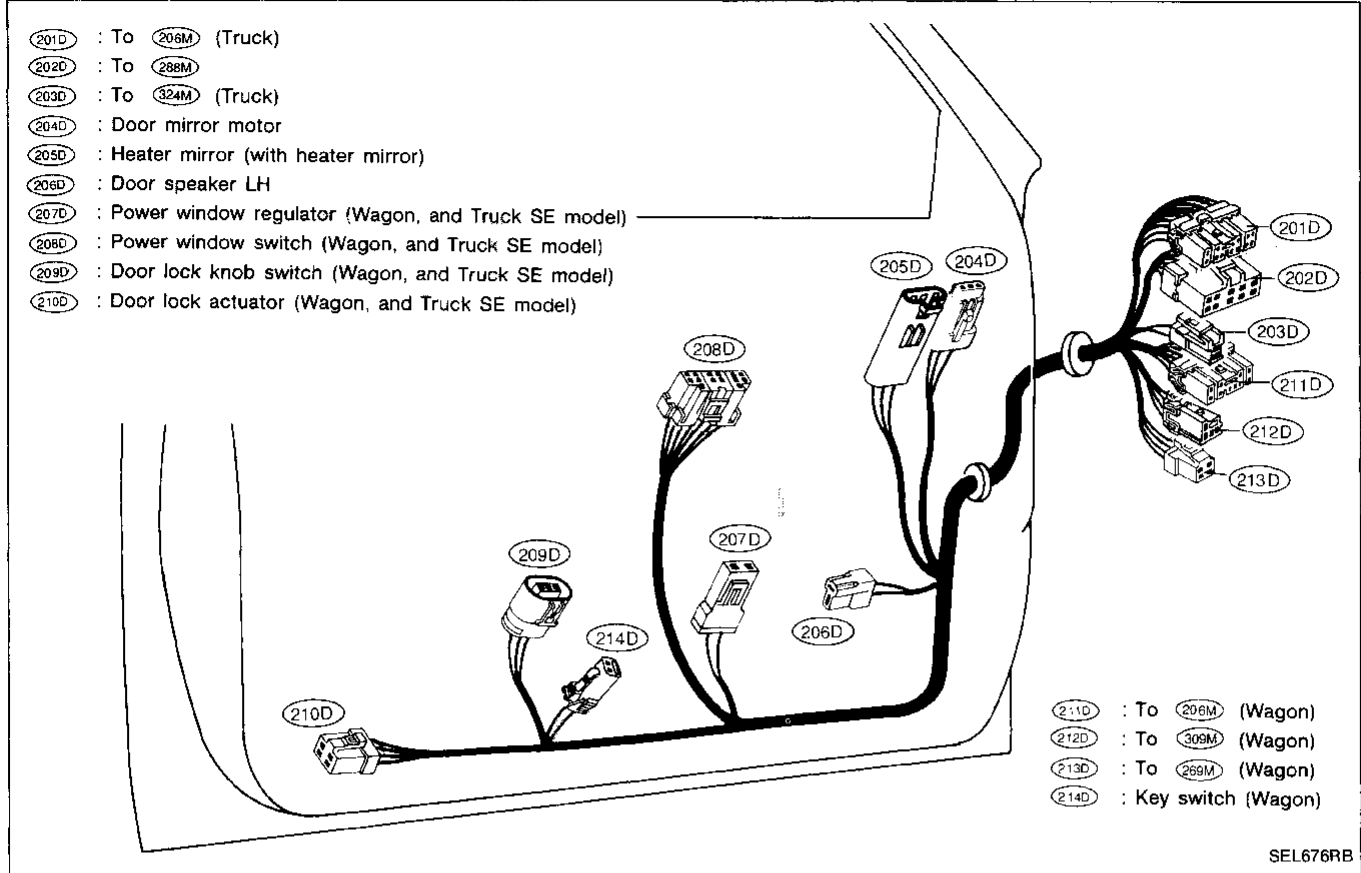
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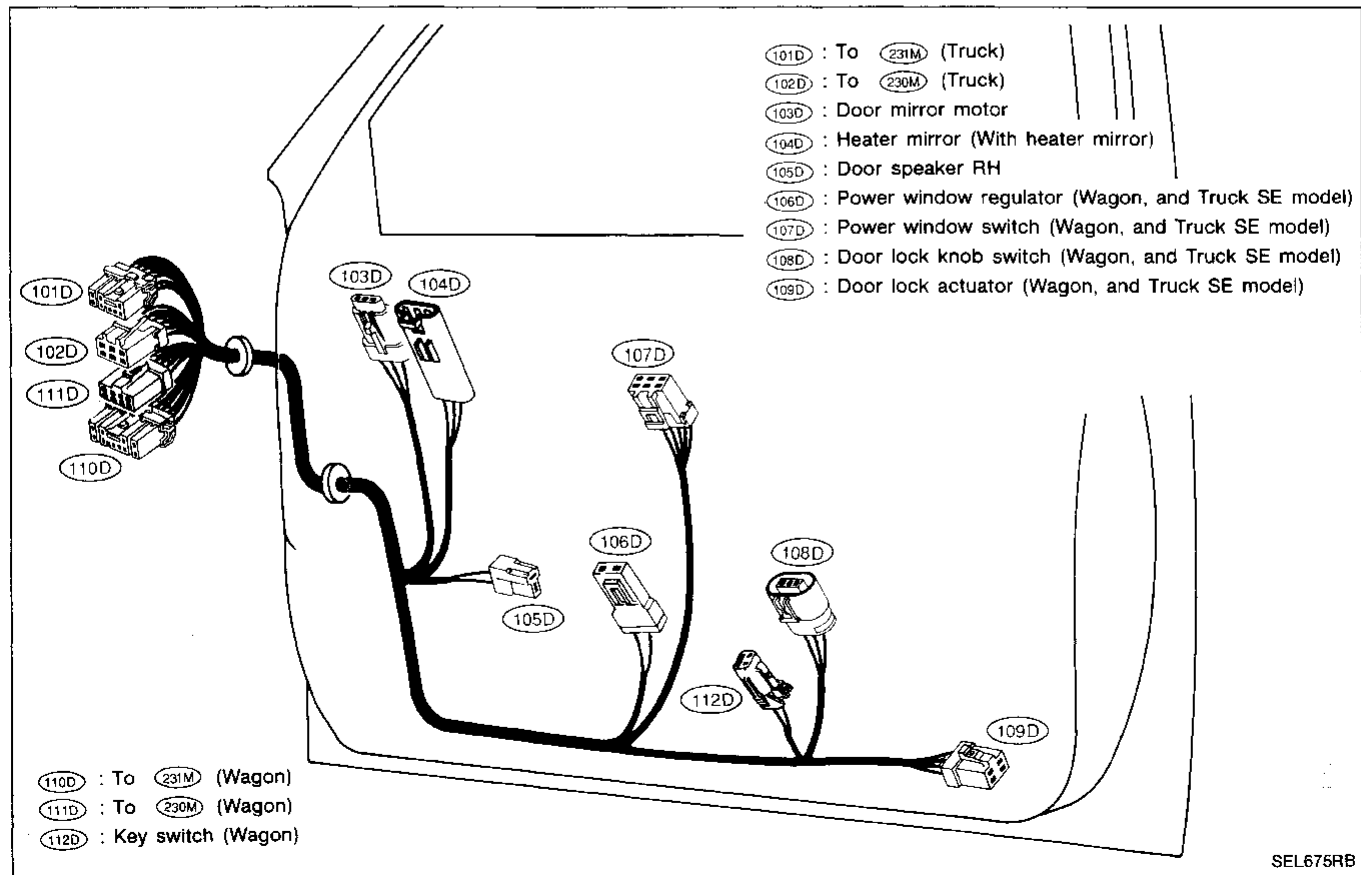
# HARNESS LAYOUT

## Front Door Harness

### Door harness LH



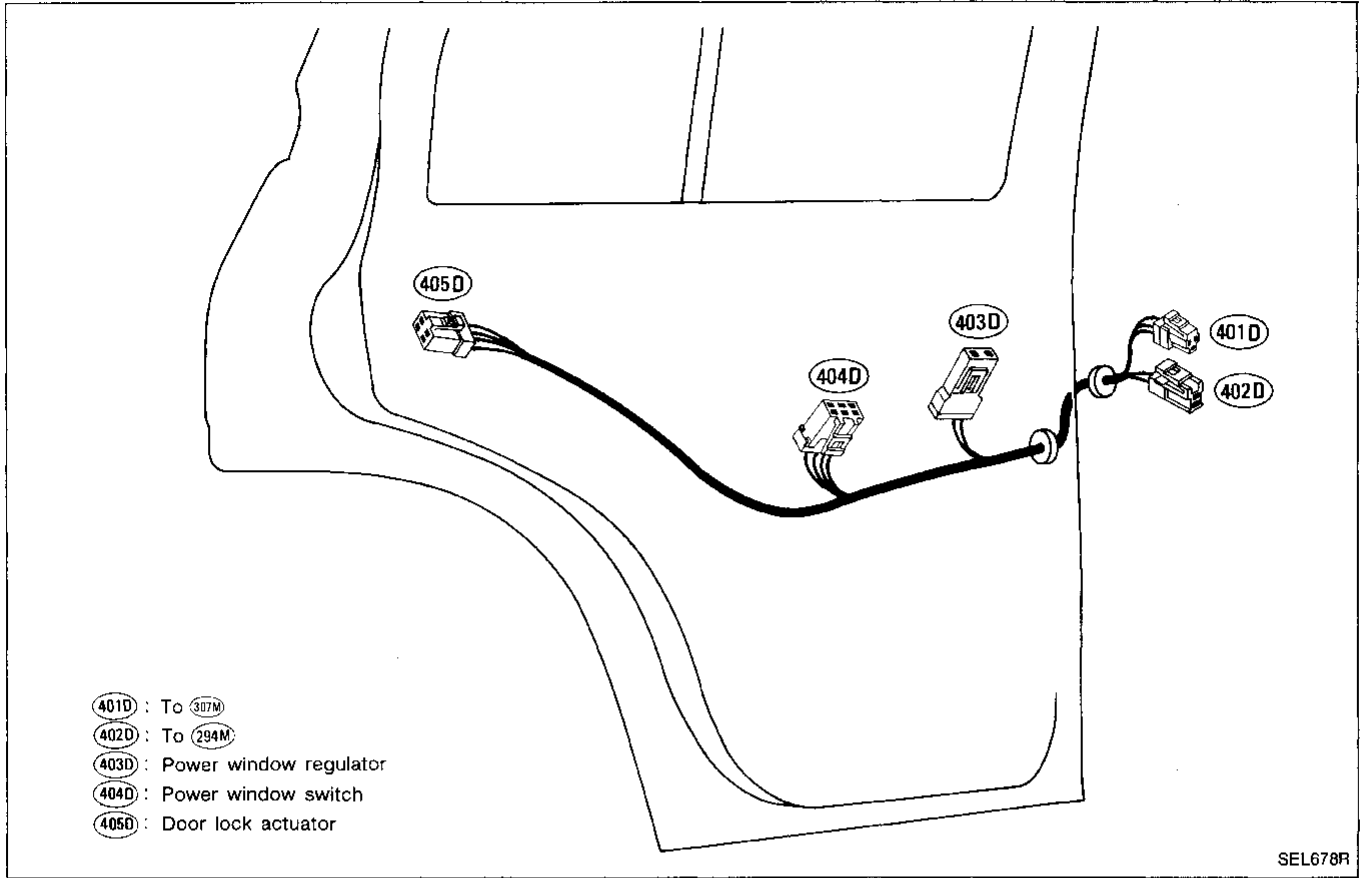
### Door harness RH



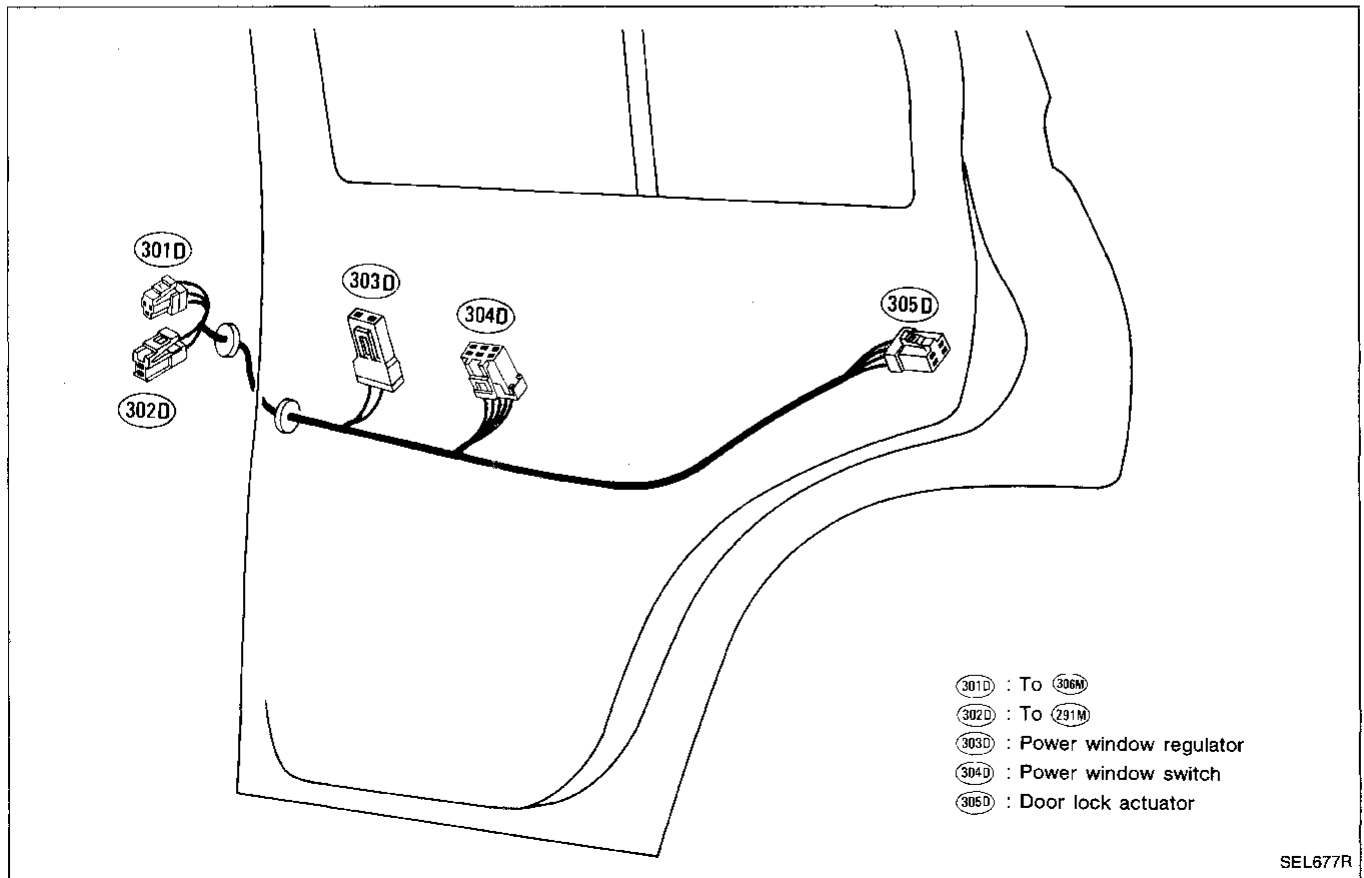
# HARNESS LAYOUT

## Door harness LH

## Rear Door Harness



## Door harness RH



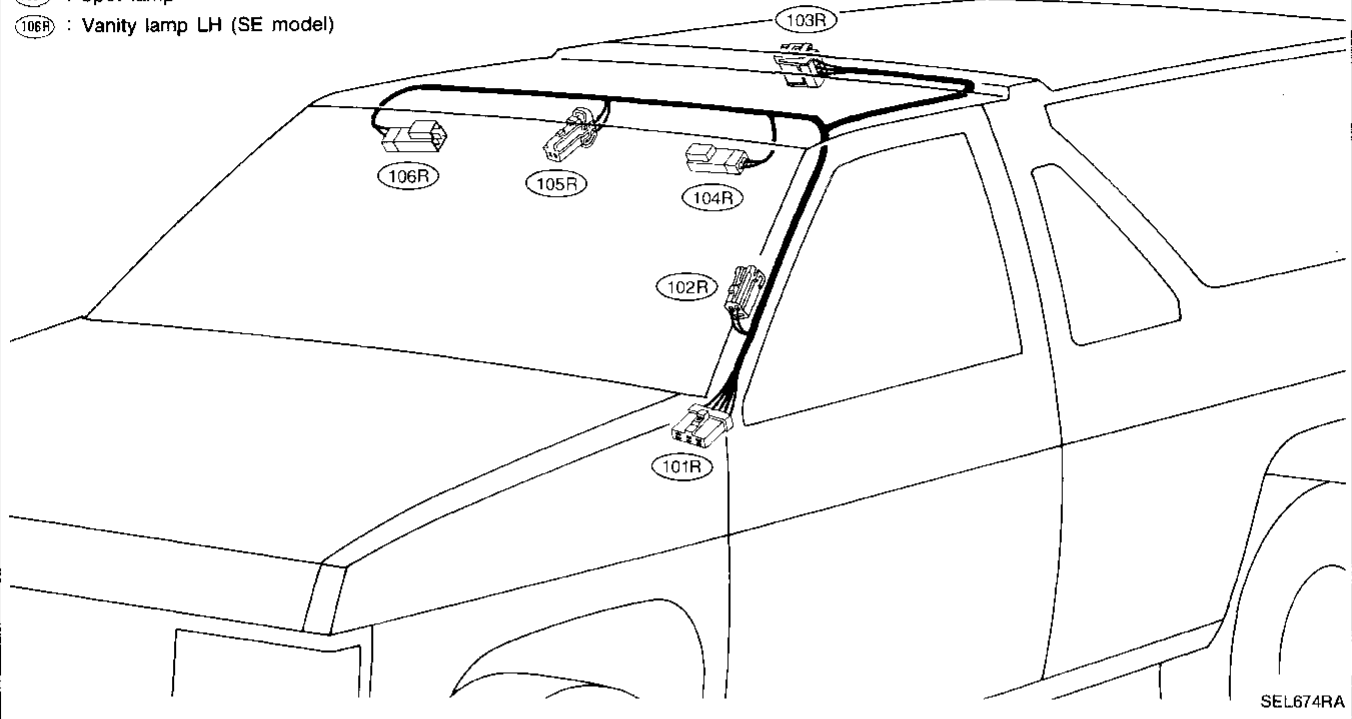
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# HARNES LAYOUT

## WAGON MODEL

## Room Lamp Harness

- (101R) : To (214M)
- (102R) : Speaker LH (With 6 speakers or 8 speakers)
- (103R) : Room lamp
- (104R) : Vanity lamp RH (SE model)
- (105R) : Spot lamp
- (106R) : Vanity lamp LH (SE model)



## TRUCK MODEL

- (1R) : To (214M)
- (2R) : Room lamp
- (3R) : Rear defogger (King cab for Canada)
- (4R) : Spot lamp (With spot lamp model)
- (5R) : Spot lamp

