

50th ANNIVERSARY
1984
**NISSAN
300ZX**



**STEERING WHEEL SWITCH
& BODY SONIC SYSTEM**

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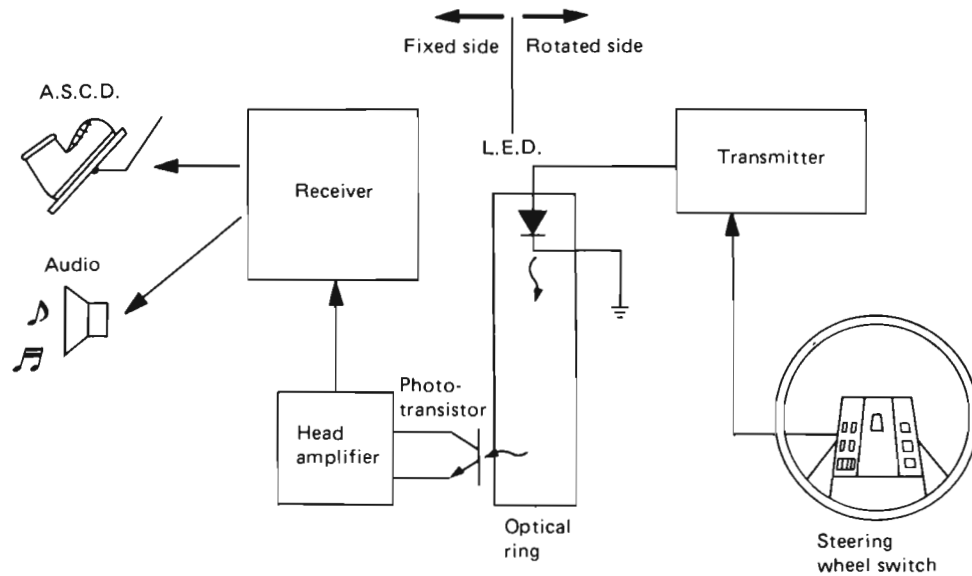
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**SERVICE MANUAL
SUPPLEMENT**

March, 1984

STEERING WHEEL SWITCH SYSTEM

Description



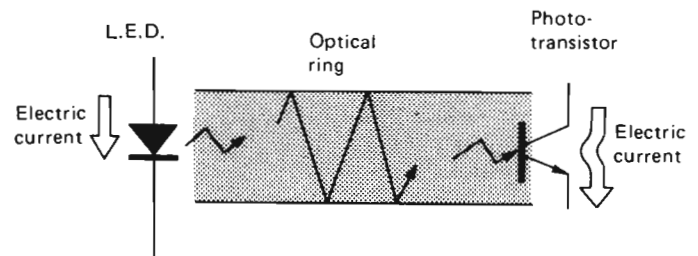
SEL647E

The steering wheel switch system transmits the on-off signal of the switch on the steering wheel to the receiver optically and operates A.S.C.D. and audio.

HOW TO TRANSMIT SWITCH SIGNAL OPTICALLY

- (1) The on-off signal of the switch on the steering wheel is converted into an L.E.D. on-off signal by the transmitter.
- (2) This L.E.D. signal (optical signal) is transmitted to the photo-transistor through the optical ring.
- (3) The optical signal is re-converted into electrical signal by the photo-transistor and transmitted to the receiver. Receiver controls A.S.C.D. and radio.

By the three steps mentioned above, the on-off signal of the switch on the steering wheel is optically transmitted.



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L.E.D. (Light Emitting Diode):

A diode which emits light when voltage is applied.

Photo-transistor:

A transistor which allows current to flow when light is applied.

STEERING WHEEL SWITCH SYSTEM

Description (Cont'd)

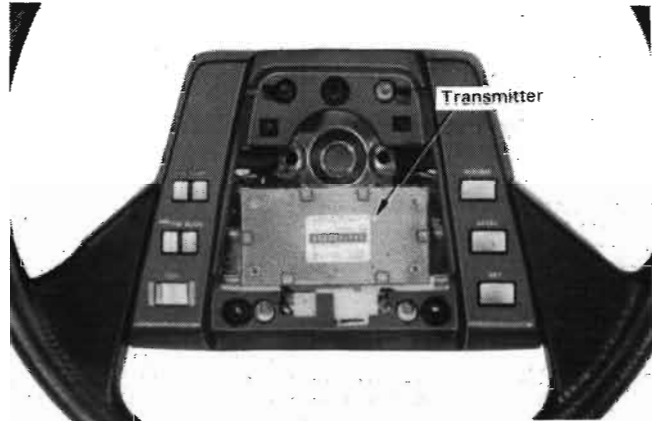
STEERING WHEEL SWITCH



- If two or more audio switches or A.S.C.D. switches are pressed simultaneously, all the pressed switches will be cancelled.
- If one switch is pressed while pressing another, the second one pressed will be cancelled.

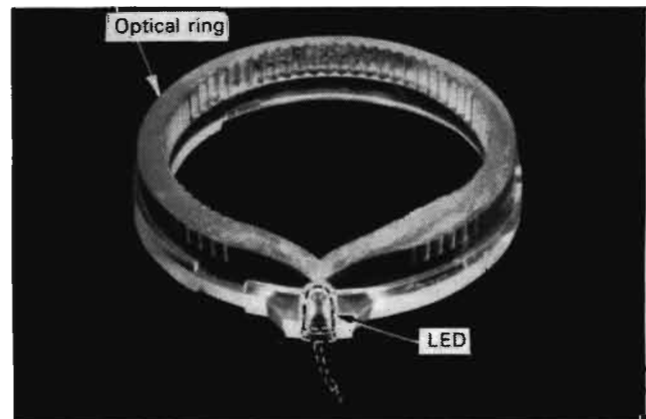
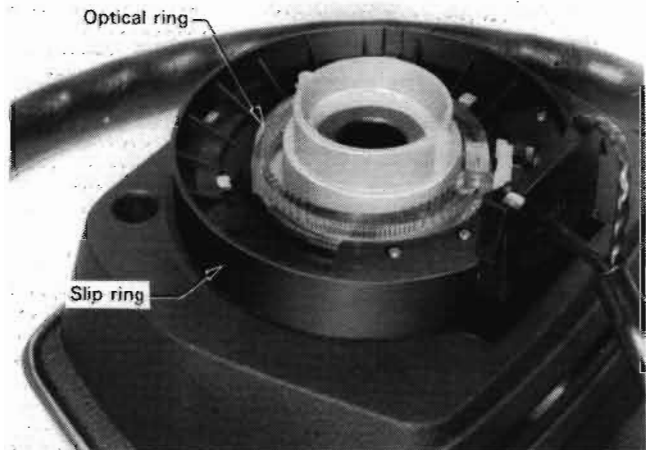
	Switch	Function
For Audio	① SW	Power ON/OFF
	② PLAY	Tape deck play
	③ AM/FM	AM/FM band selection
	④ SCAN	SCAN tuning (for radio) Auto program search (for tape deck)
	⑤ VOL	Volume
For A.S.C.D.	⑥ RESUME	Deceleration and resuming
	⑦ ACCEL	Acceleration
	⑧ SET	Cruising speed setting

TRANSMITTER



The transmitter is a device which converts the signal from the steering wheel switch into intermittent current in order to flash the L.E.D.

OPTICAL RING



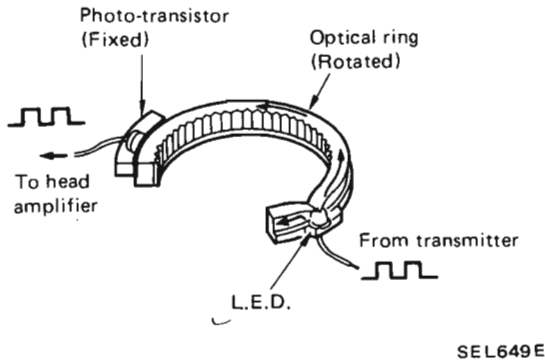
STEERING WHEEL SWITCH SYSTEM

Description (Cont'd)

- The steering wheel switch system uses an acrylic optical ring, and this optical ring functions in the same way as optical fiber. The optical ring is built in the slip ring.

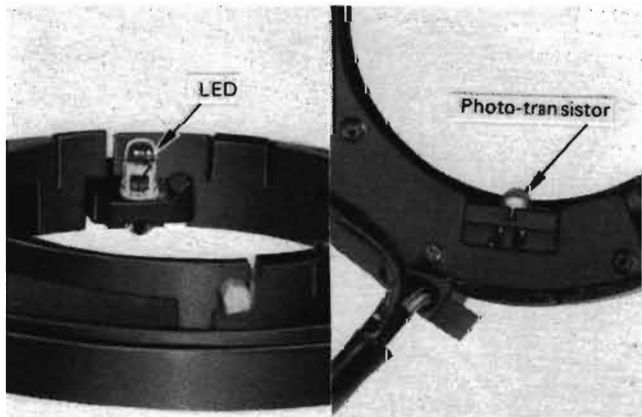
The slip ring must not be disassembled.

Light transmission path:



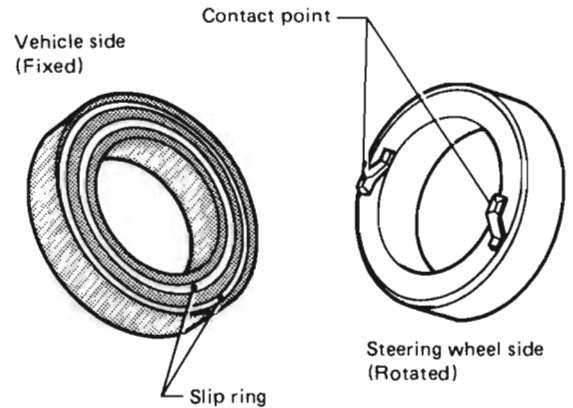
- As the L.E.D. embedded in the optical ring lights, its light moves forward while repeating reflection on the side wall of the ring. It eventually will reach the photo-transistor placed on the outer periphery of the ring.

L.E.D. and photo-transistor:



- The L.E.D. and optical ring are mounted on the steering wheel side of the slip ring and rotate with the steering wheel.
- The photo-transistor is mounted on the vehicle side of the slip ring and it does not rotate.

SLIP RING

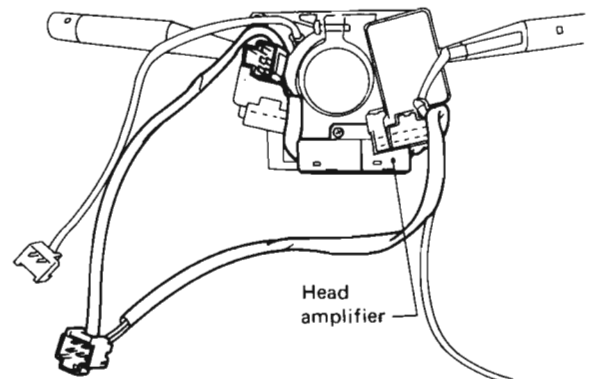


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- Power for the transmitter is fed from the vehicle side through the slip ring.
- The horn switch circuit is connected to the vehicle side through the slip ring.

The slip ring must not be disassembled.

HEAD AMPLIFIER



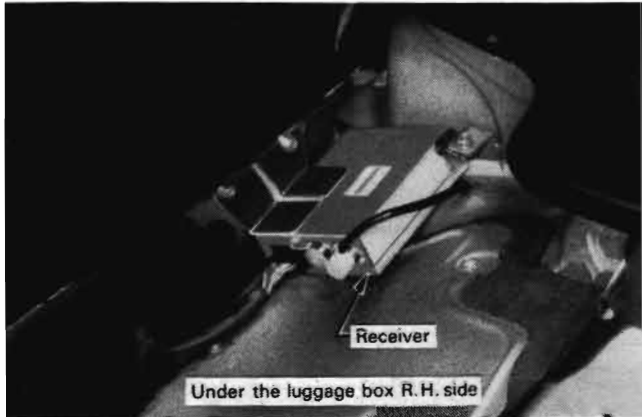
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The photo-transistor allows a minimal amount of current to flow as it receives light. The head amplifier amplifies this current and sends it to the receiver.

STEERING WHEEL SWITCH SYSTEM

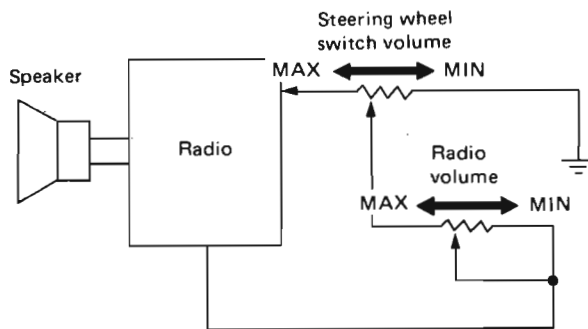
Description (Cont'd)

RECEIVER



The receiver activates the radio or A.S.C.D. drive circuit corresponding to the steering wheel switch signal sent from the head amplifier.

AUDIO VOLUME CONTROL

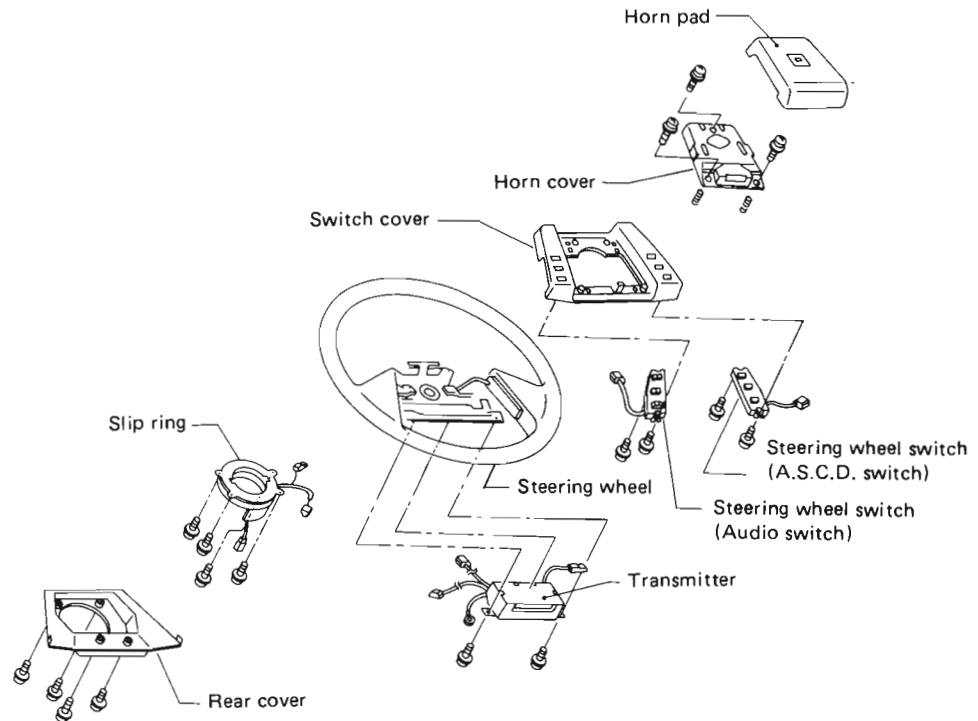


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- The volume control on the steering wheel switch is connected in series with the volume control on the radio.
- When the volume control on the radio is set to a minimum, no sound will be heard from the loudspeaker even if the steering wheel switch volume control is adjusted.
- Sound level from the loudspeaker will be at the maximum when the steering wheel switch volume control is set to the maximum with the volume control on the radio also set to the maximum.

STEERING WHEEL SWITCH SYSTEM

Steering Wheel Switch Removal and Installation

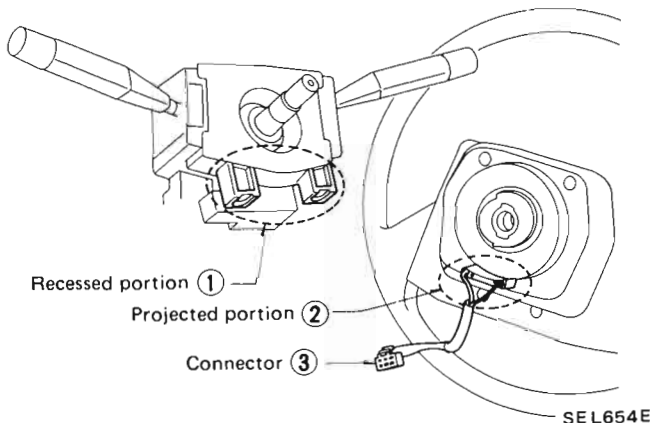


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STEERING WHEEL REMOVAL AND INSTALLATION

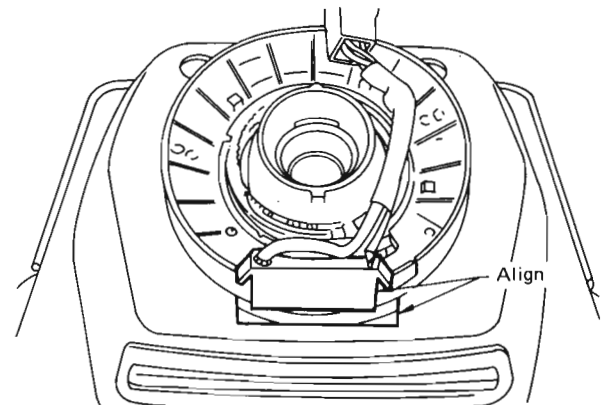
To prevent the steering wheel switch from being damaged, be sure to observe the following procedures:

- When removing the steering wheel:
Be sure to remove the connector ③ first.
- When installing the steering wheel:
First determine the slip ring position so that the projected portion ② of the slip ring will fit in the recessed portion ① of the combination switch. Then install the steering wheel.



STEERING WHEEL REAR COVER REMOVAL

- Remove the rear cover with the projected portion of the slip ring fitted into the cutout portion of the rear cover.



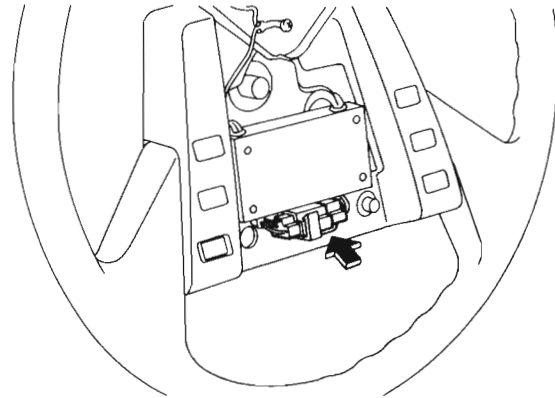
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STEERING WHEEL SWITCH SYSTEM

Steering Wheel Switch Removal and Installation (Cont'd)

SLIP RING REMOVAL

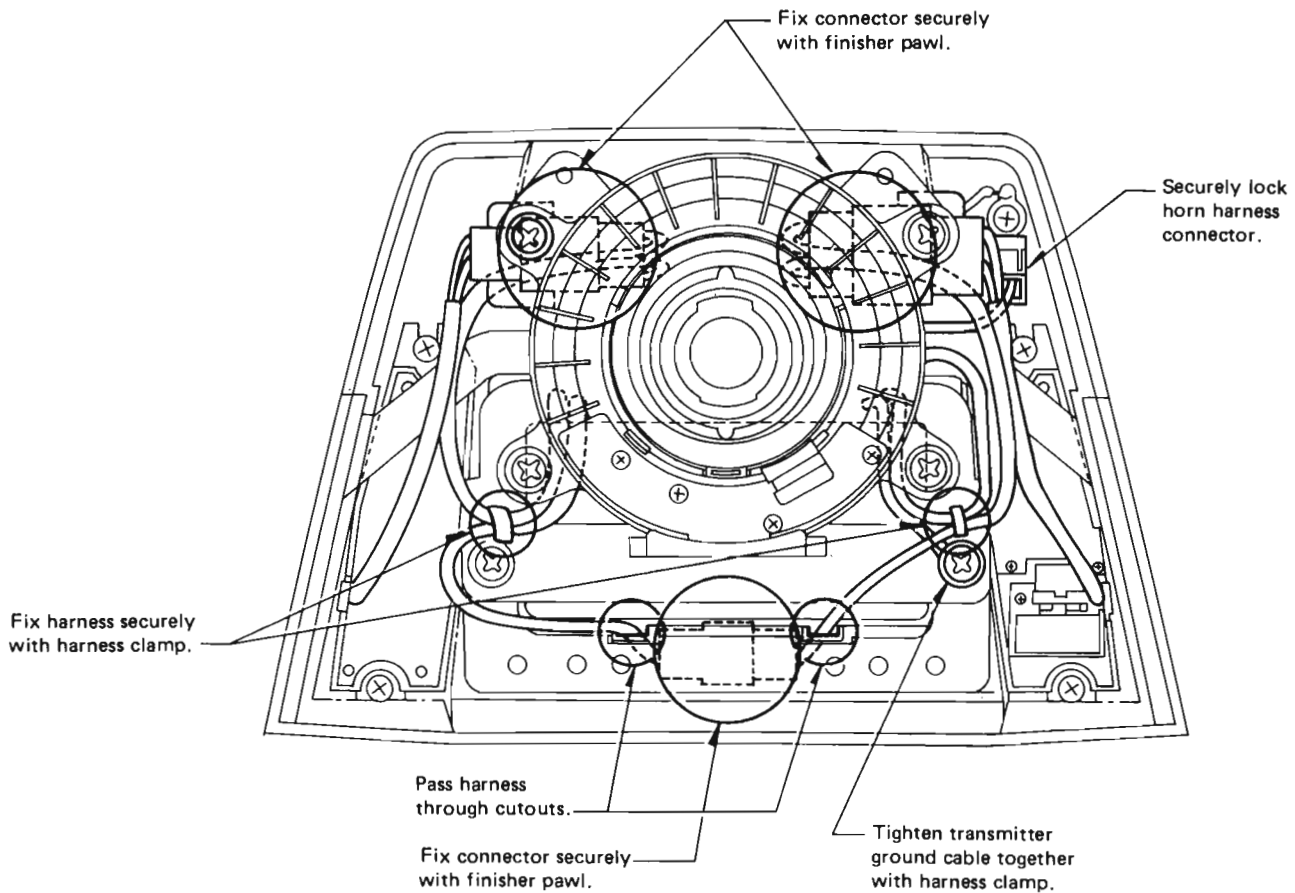
- Remove the connector joining the slip ring and transmitter after removing the transmitter mounting screws. Then remove the transmitter.



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TRANSMITTER AND SLIP RING INSTALLATION

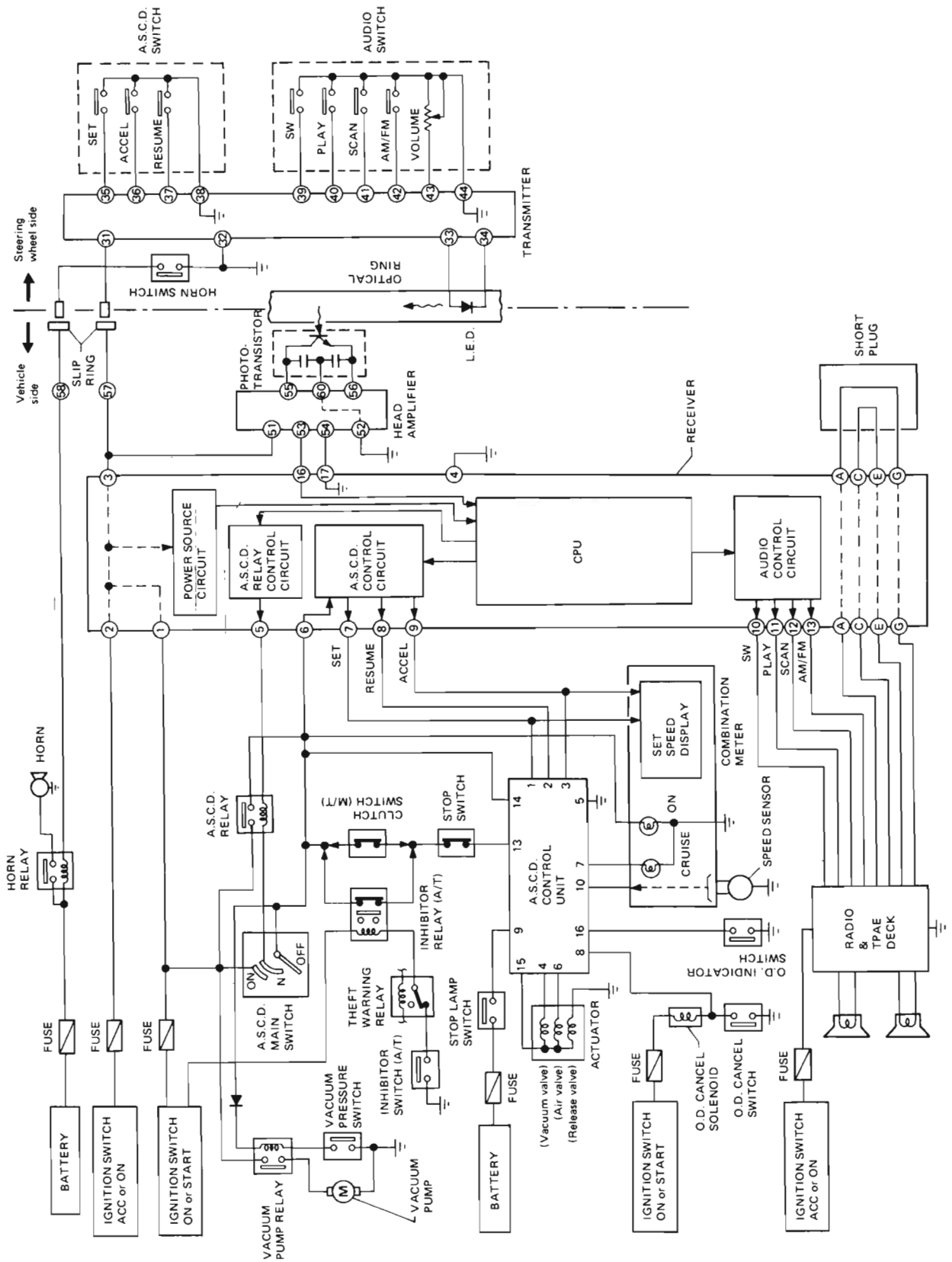
- When installing the transmitter and slip ring, arrange and secure the harnesses and connectors as shown in the following figure.



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STEERING WHEEL SWITCH SYSTEM

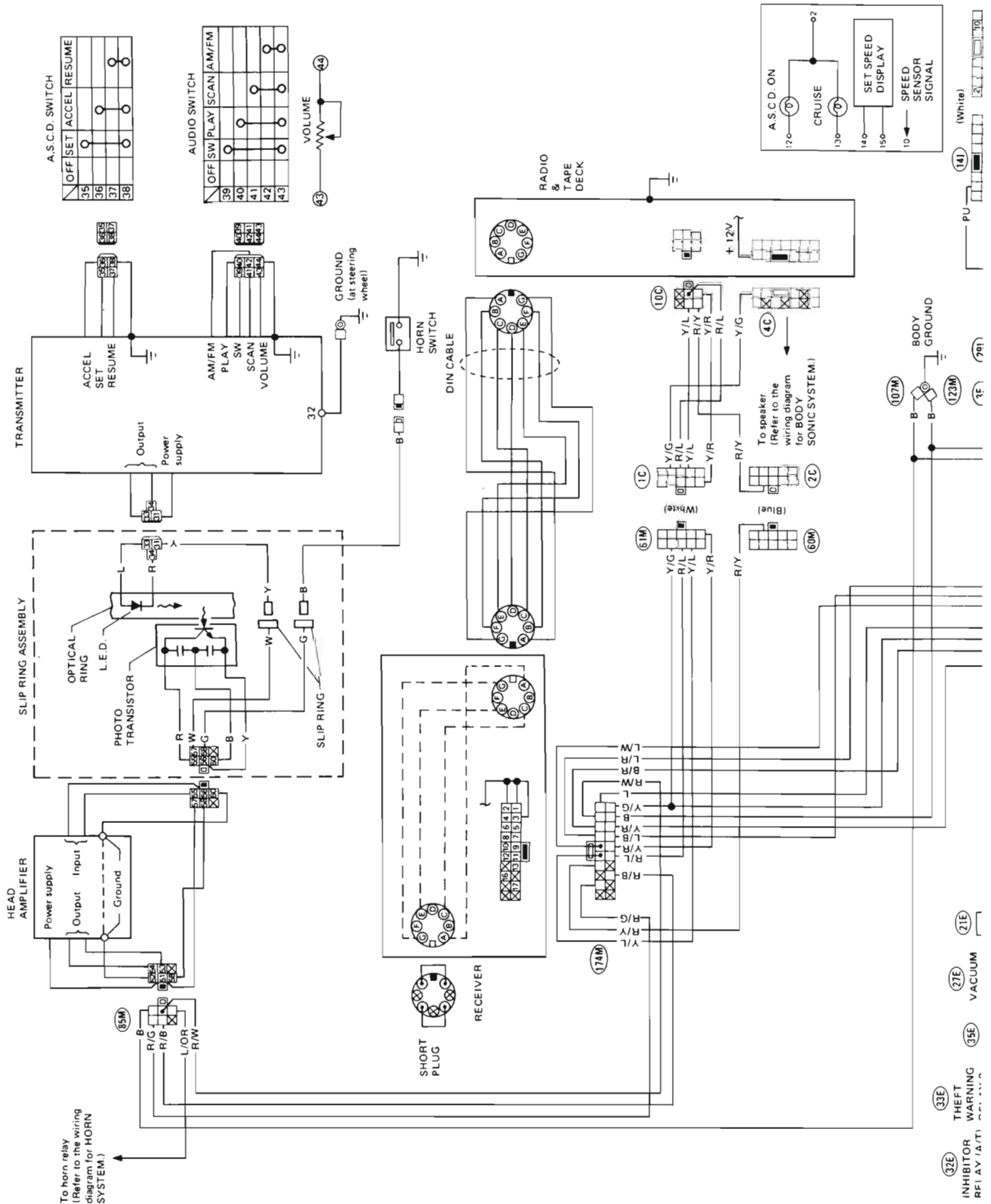
Schematic



SEL658E

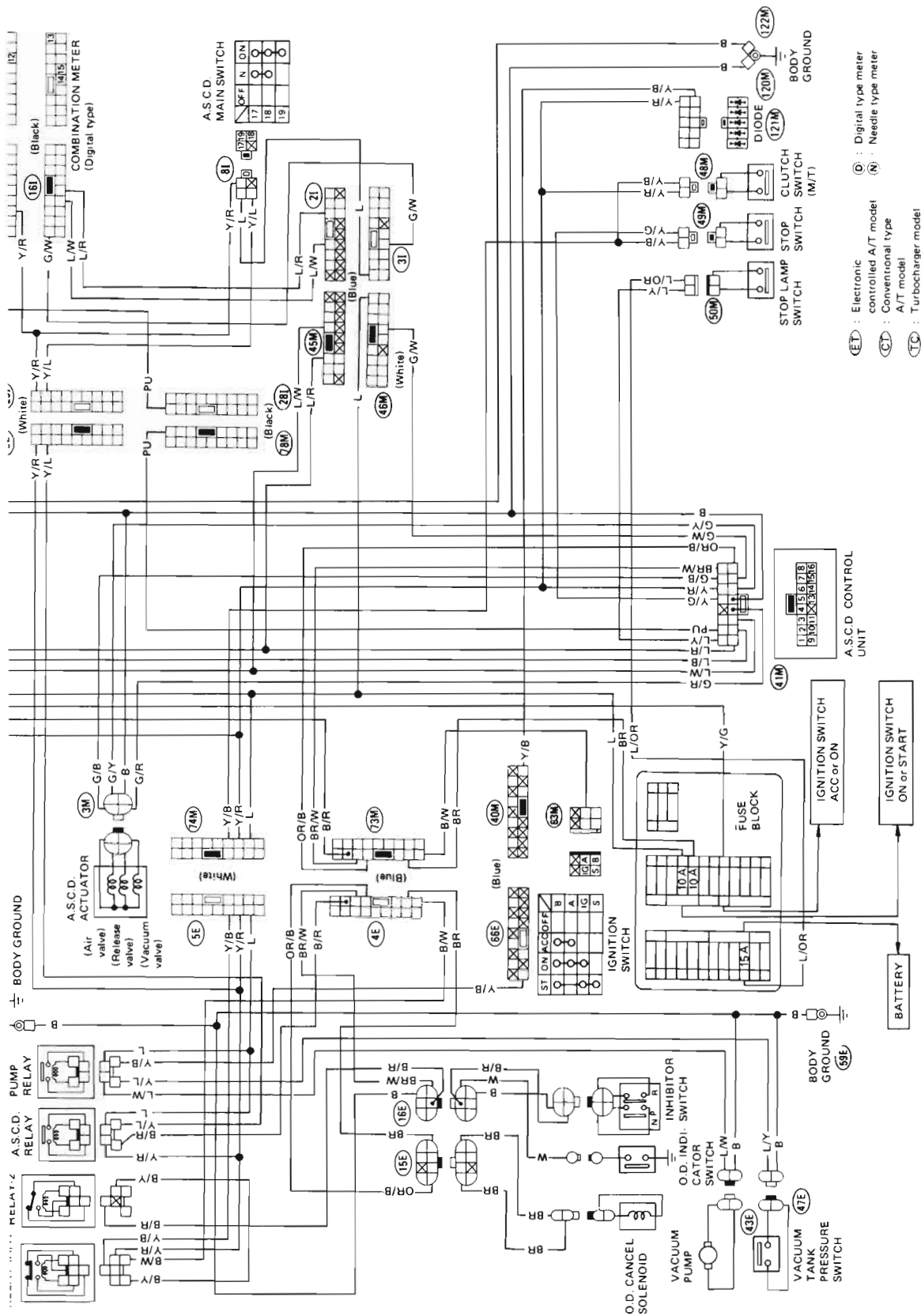
STEERING WHEEL SWITCH SYSTEM

Wiring Diagram



STEERING WHEEL SWITCH SYSTEM

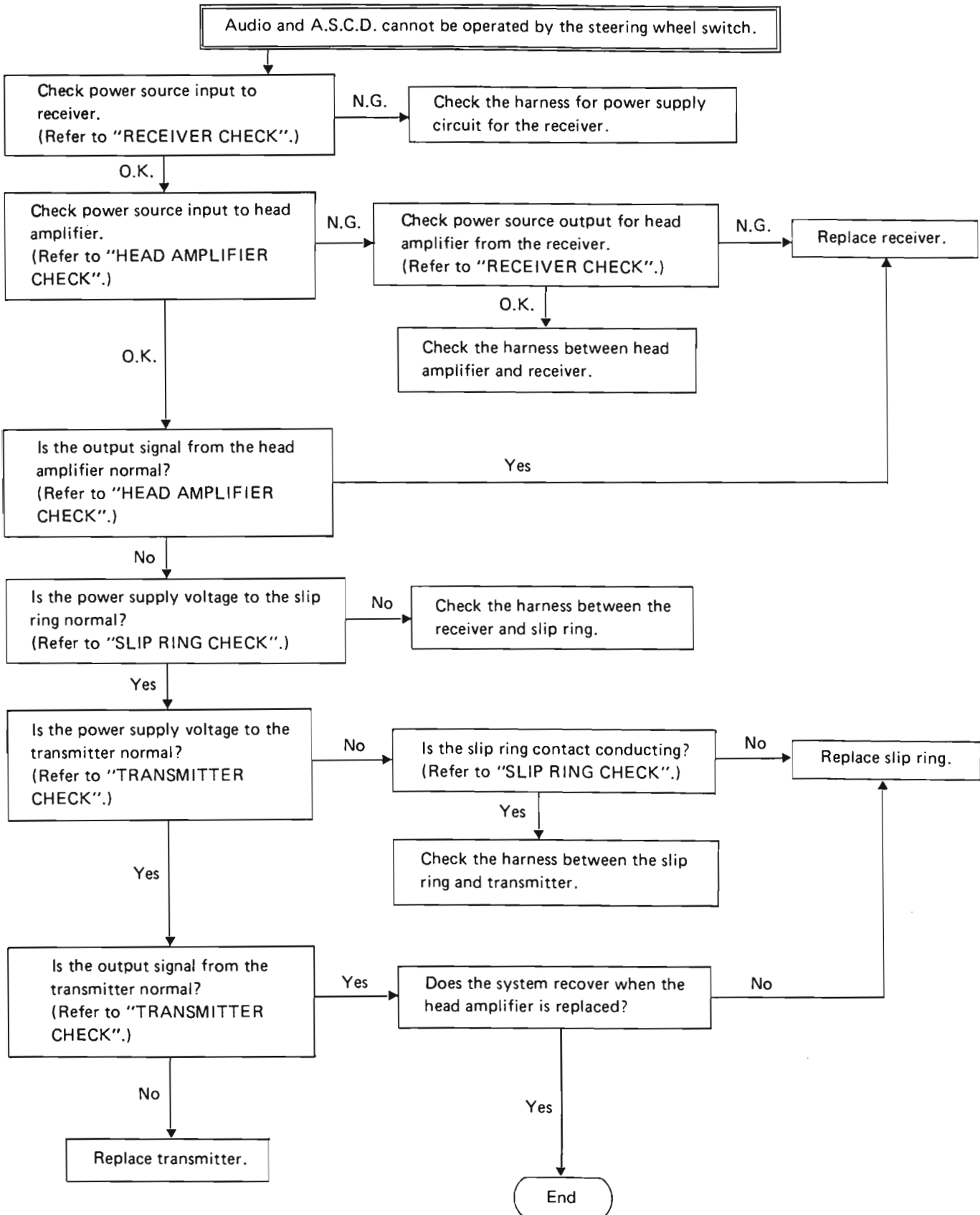
Wiring Diagram (Cont'd)



SEL659E

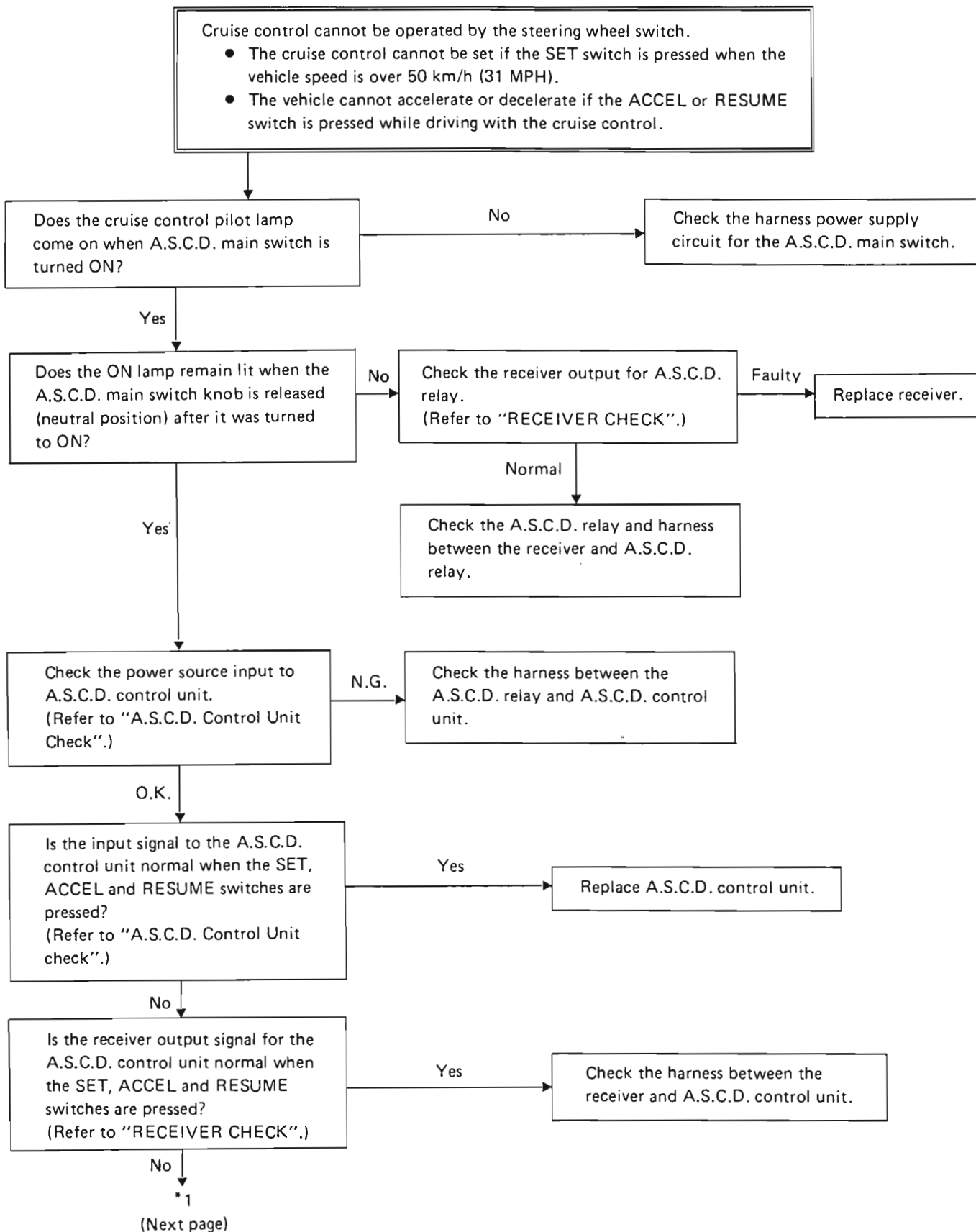
STEERING WHEEL SWITCH SYSTEM

Trouble-shooting



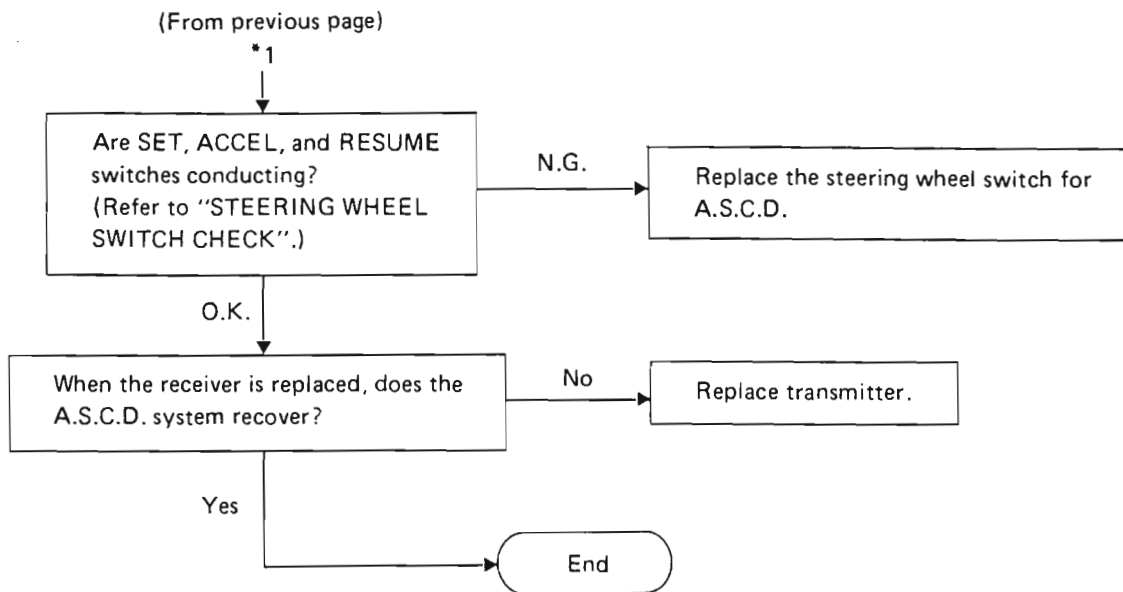
STEERING WHEEL SWITCH SYSTEM

Trouble-shooting (Cont'd)



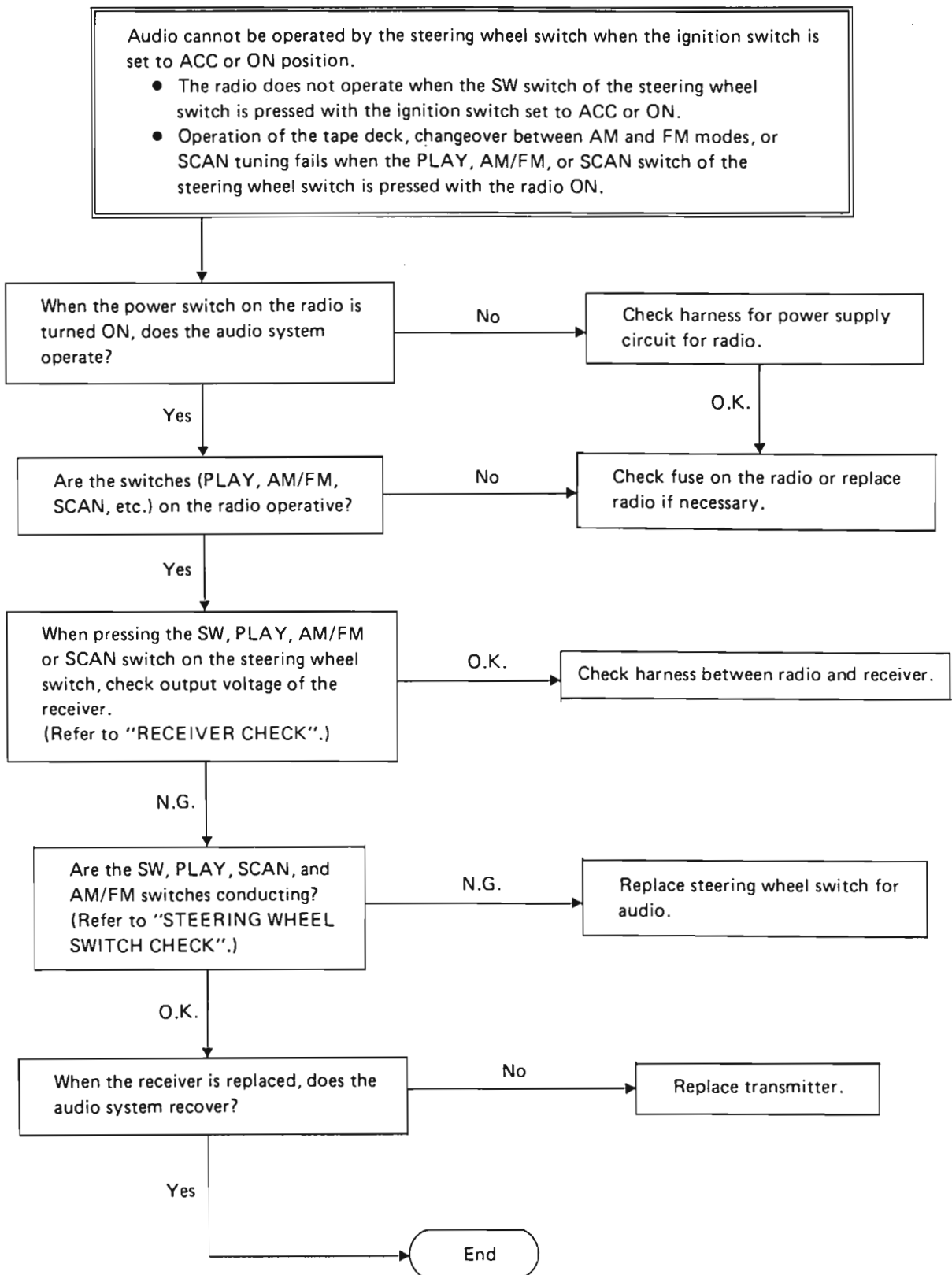
STEERING WHEEL SWITCH SYSTEM

Trouble-shooting (Cont'd)



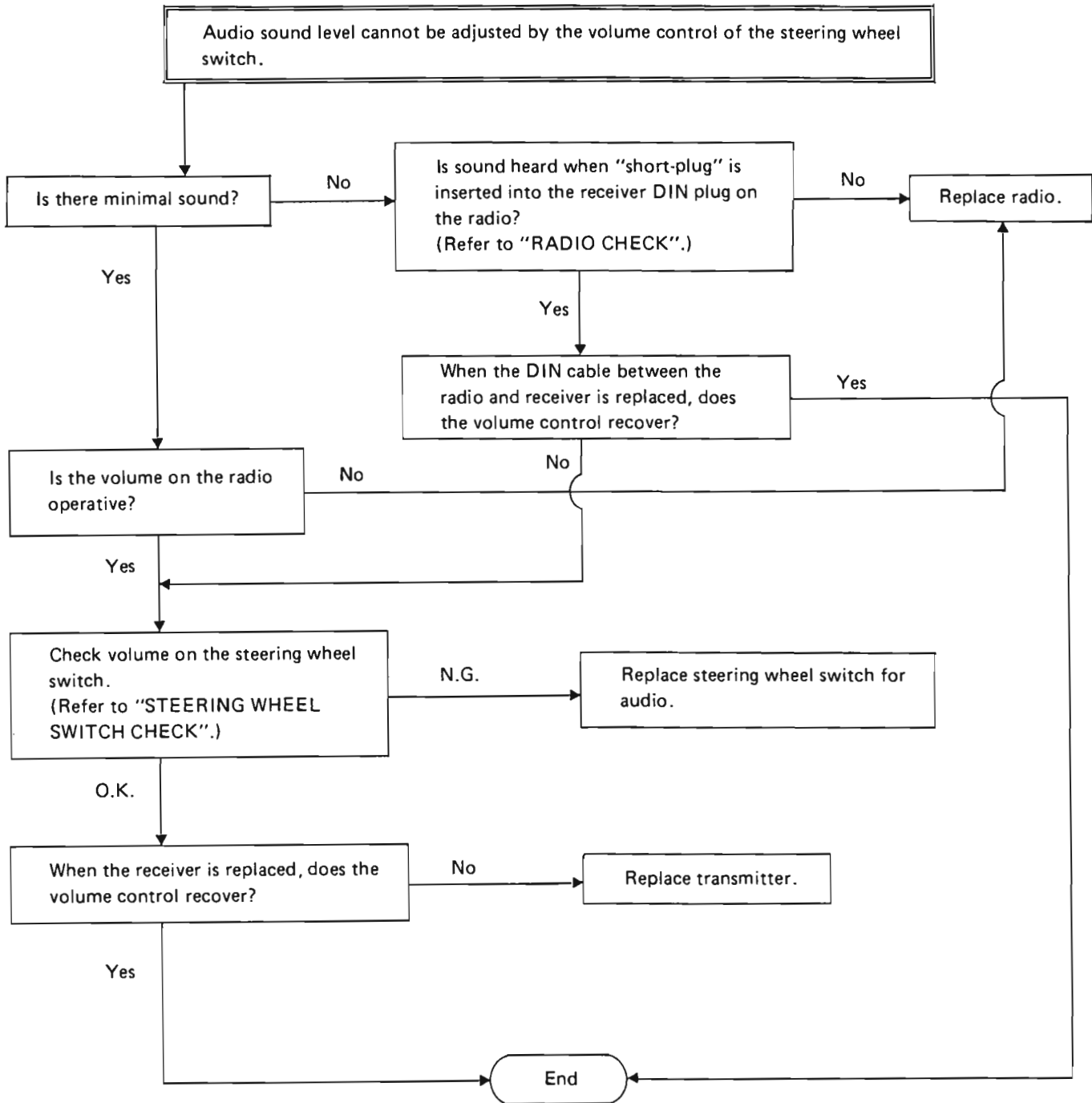
STEERING WHEEL SWITCH SYSTEM

Trouble-shooting (Cont'd)



STEERING WHEEL SWITCH SYSTEM

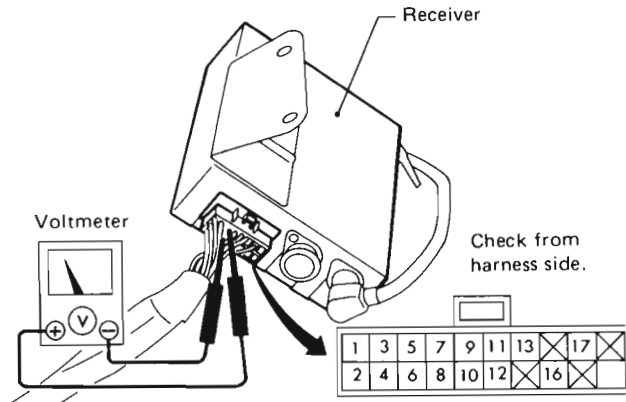
Trouble-shooting (Cont'd)



STEERING WHEEL SWITCH SYSTEM

Receiver Check

1. Remove luggage box.
2. Remove receiver with harness connected.
3. Turn ignition switch to ON.
4. Check voltage between terminals referring to the chart below.



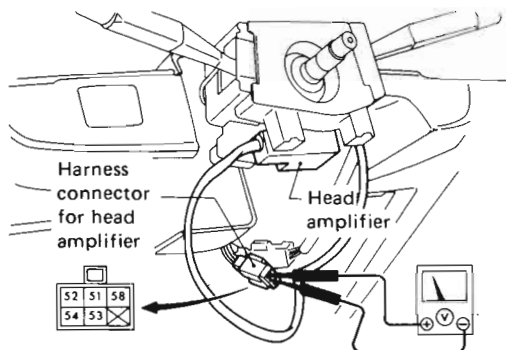
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Check item	Voltmeter terminal		Switch condition	Specified voltage [V]
	(+)	(-)		
Power source input	IG	①	-	Approx. 12
	ACC	②		
Power source output for head amplifier and slip ring	③	④	-	Approx. 12
Output for A.S.C.D. relay	⑤	④	A.S.C.D. main switch ON	0
			OFF	Approx. 5
Output for A.S.C.D. control unit	⑦	④	SET switch ON	Approx. 12
	⑧	④	RESUME switch ON	Approx. 12
	⑨	④	ACCEL switch ON	Approx. 12
Output for audio system (Check voltage while operating the SW, PLAY, SCAN or FM/AM on the steering wheel switch.)	⑩	④	SW switch ON	0
			OFF	Approx. 5
	⑪	④	PLAY switch ON	0
			OFF	Approx. 5
	⑫	④	SCAN switch ON	0
			OFF	Approx. 5
⑬	④	AM/FM switch ON	0	
		OFF	Approx. 5	

STEERING WHEEL SWITCH SYSTEM

Head Amplifier Check

1. Remove steering column cover.
2. Turn ignition switch to ON.
3. Check voltage between terminals at harness connector for head amplifier referring to chart below.
(Leave the harness connector for head amplifier to be connected.)



Check from head amplifier side.

SEL661E

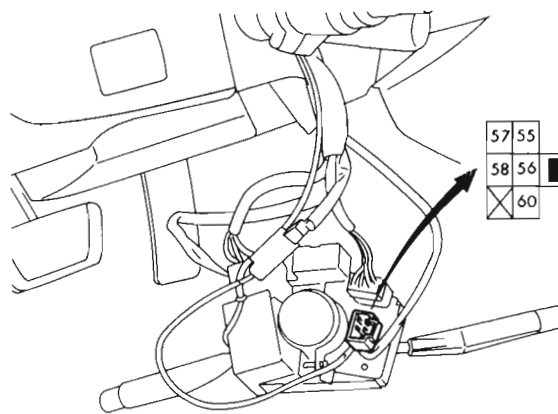
Check item	Voltmeter terminals		Specified voltage [V]
	(+)	(-)	
Power supply input	⑤①	⑤②	Approx. 12
Output for receiver	⑤③	⑤④	Approx. 2 - 4

Slip Ring Check

POWER SUPPLY VOLTAGE CHECK

1. Remove steering column cover.
2. Disconnect harness connector for slip ring at the back of combination switch.
3. Remove steering wheel.
4. Remove combination switch with harness connected.
5. Check voltage between terminals ⑤⑦ and ⑥⑩ when the ignition switch is turned to ON.

Specified voltage: Approx. 12V

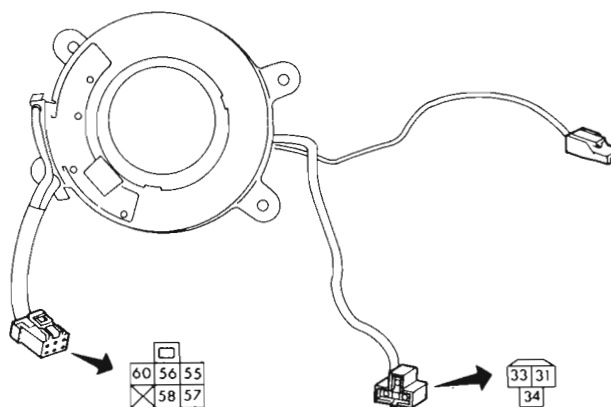


SEL662E

CONTINUITY CHECK

1. Remove slip ring from steering wheel.
2. Check continuity between terminals ⑤⑦ and ③①.

Continuity exists ... O.K.



SEL663E

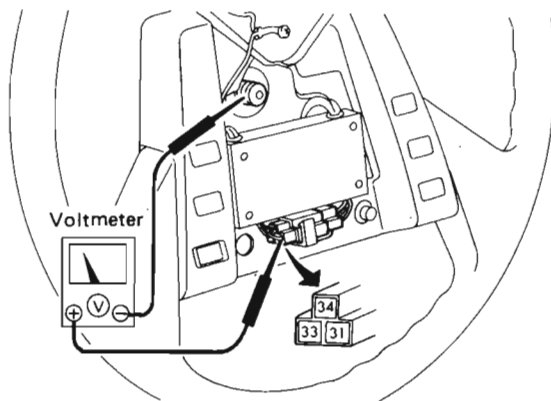
STEERING WHEEL SWITCH SYSTEM

Transmitter Check

POWER SUPPLY VOLTAGE CHECK

1. Connect the harness connector for slip ring at the back of combination switch.
2. Install steering wheel on the column shaft.
3. Connect the voltmeter probe to:
 - (+) terminal ... ③①
 - (-) terminal ... Steering column shaft
4. Check voltage when the ignition switch is turned to ON.

Specified voltage: Approx. 12V

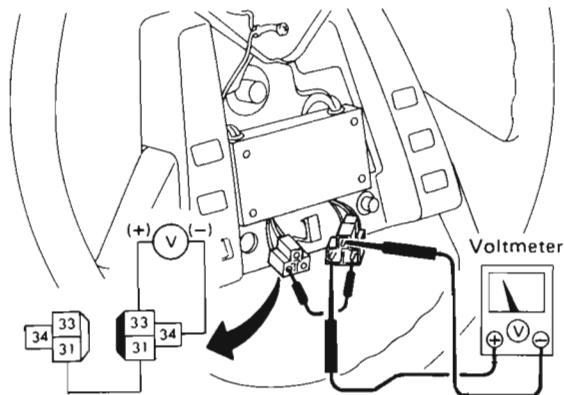


SEL664E

OUTPUT SIGNAL CHECK

1. Disconnect harness connector between transmitter and slip ring.
2. Connect terminals ③① and ③① with a suitable wire.
3. Check voltage between terminals ③③ and ③④ when the ignition switch is turned to ON.

Specified voltage: Approx. 2 - 4V



SEL665E

STEERING WHEEL SWITCH SYSTEM

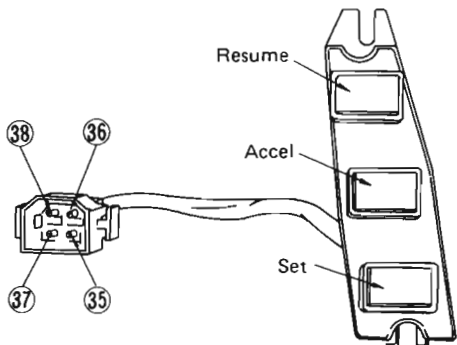
Steering Wheel Switch Check

1. Disconnect harness connector for slip ring at the back of combination switch.
2. Remove steering wheel.
3. Remove steering wheel rear cover.
4. Disconnect harness connector between steering wheel switch and transmitter.
5. Remove steering wheel switches.

A.S.C.D. SWITCH CHECK

- Check continuity while pressing each switch.
Below 300Ω ... O.K.

	OFF	SET	ACCEL	RESUME
③⑤		○		
③⑥		○	○	
③⑦		○	○	○
③⑧		○	○	○

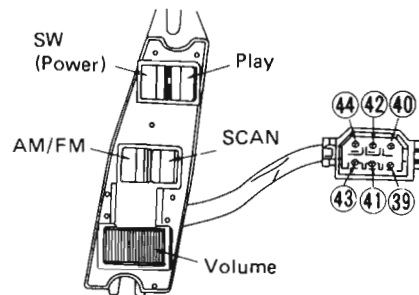


SEL666E

AUDIO SWITCH CHECK

- Check continuity while pressing each switch.
Below 300Ω ... O.K.

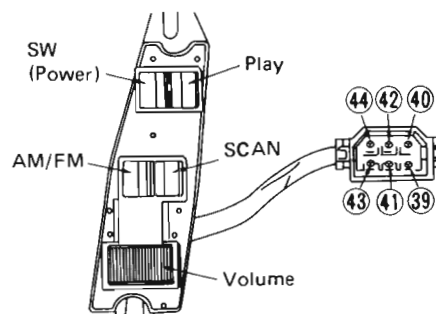
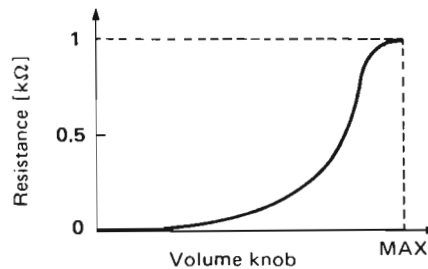
	OFF	SW (Power)	PLAY	SCAN	AM/FM
③⑨		○			
④①		○	○		
④②		○	○	○	
④④		○	○	○	○



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VOLUME CHECK

- Measure resistance between terminals ④③ and ④④ while operating the volume.

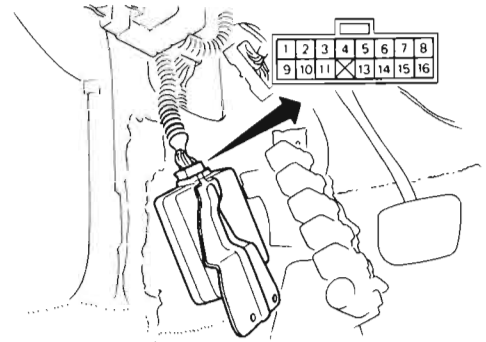


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STEERING WHEEL SWITCH SYSTEM

A.S.C.D. Control Unit Check

1. Remove A.S.C.D. control unit with harness connected.
2. Check terminal voltage referring to chart below.



SEL736D

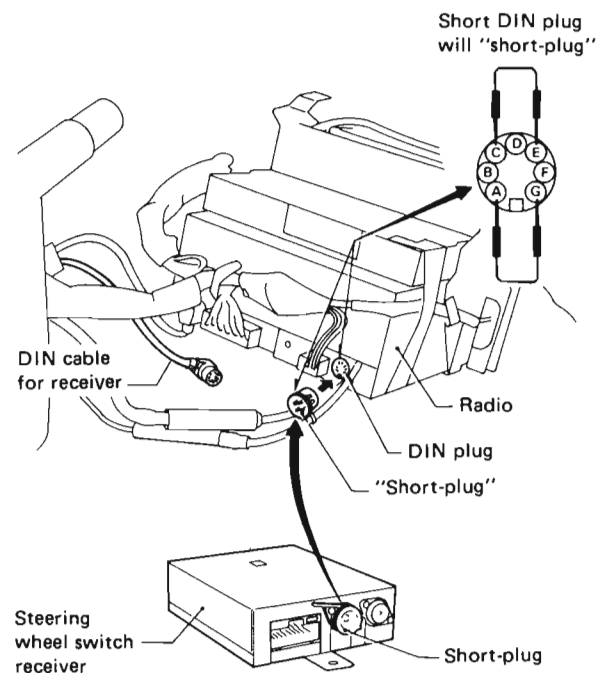
Check item	Voltmeter terminals		Switch condition	Specified voltage [V]
	(+)	(-)		
Power source input	⑭	⑤	A.S.C.D. main switch ON	Approx. 12
Input signal	①	⑤	SET switch ON	Approx. 12
	②	⑤	RESUME switch ON	Approx. 12
	③	⑤	ACCEL switch ON	Approx. 12

Radio Check

1. Remove radio with harness connected.
2. Disconnect DIN cable for steering wheel switch receiver from radio.
3. Remove luggage box.
4. Remove "short-plug" from steering wheel switch receiver.
5. Connect the "short-plug" to radio.
6. Check the sound when the radio is turned on.

The radio is normal if there is sound.

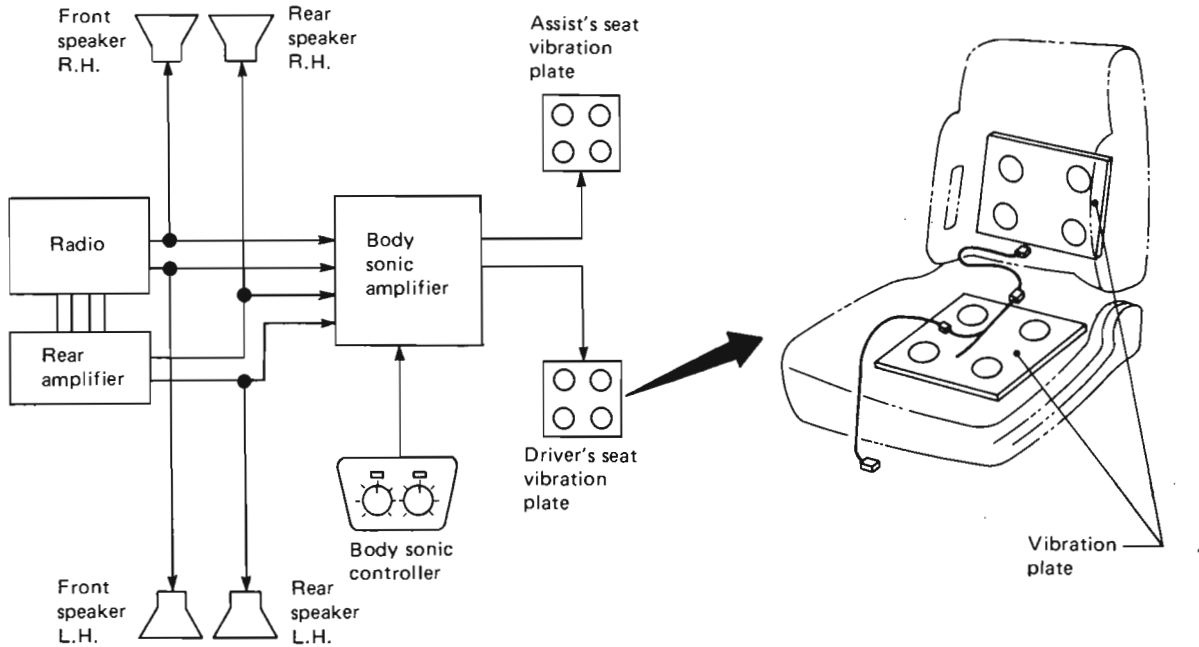
7. After finishing this check, be sure to re-install the "short-plug" on the steering wheel switch receiver.



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BODY SONIC SYSTEM

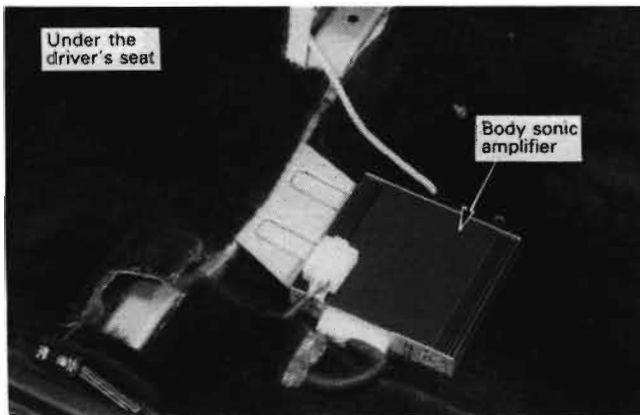
Description



SEL670E

The body sonic is a system in which a vibration plate built into the seat vibrates, resonating with the radio sound.

BODY SONIC AMPLIFIER



The body sonic amplifier receives the radio speaker output, and amplifies the low frequency range below 150Hz. It then transmits the amplified audio signal to the vibration plate built in the seat.

CONTROLLER



The controller permits independent adjustment of vibration intensity for the driver's seat and passenger seat. If the intensity control knob is pressed when the radio is ON, the internal switch of the controller turns ON, and the indicator lights up. Thus, the intensity can be adjusted by turning the control knob.

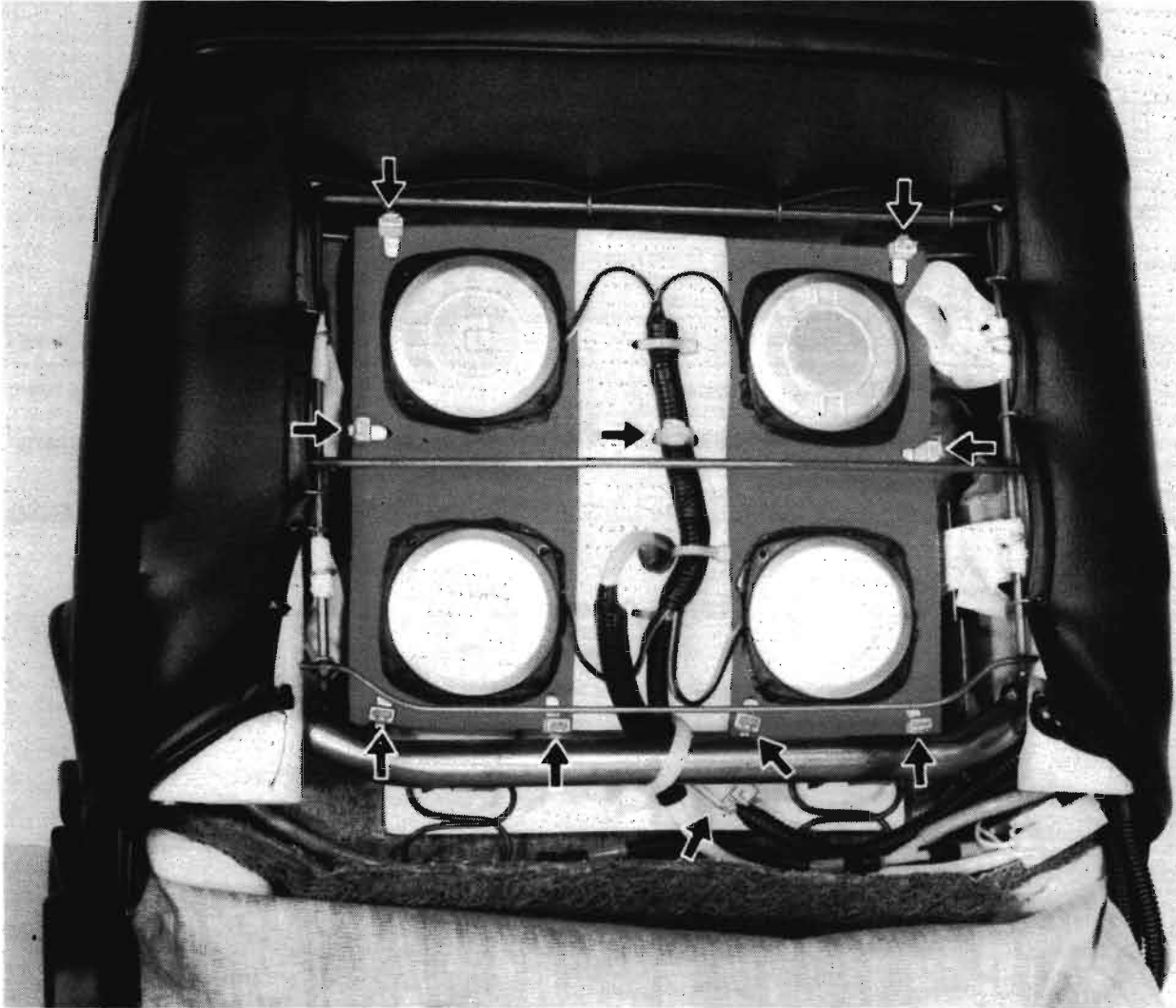
BODY SONIC SYSTEM

Removal and Installation

VIBRATION PLATE

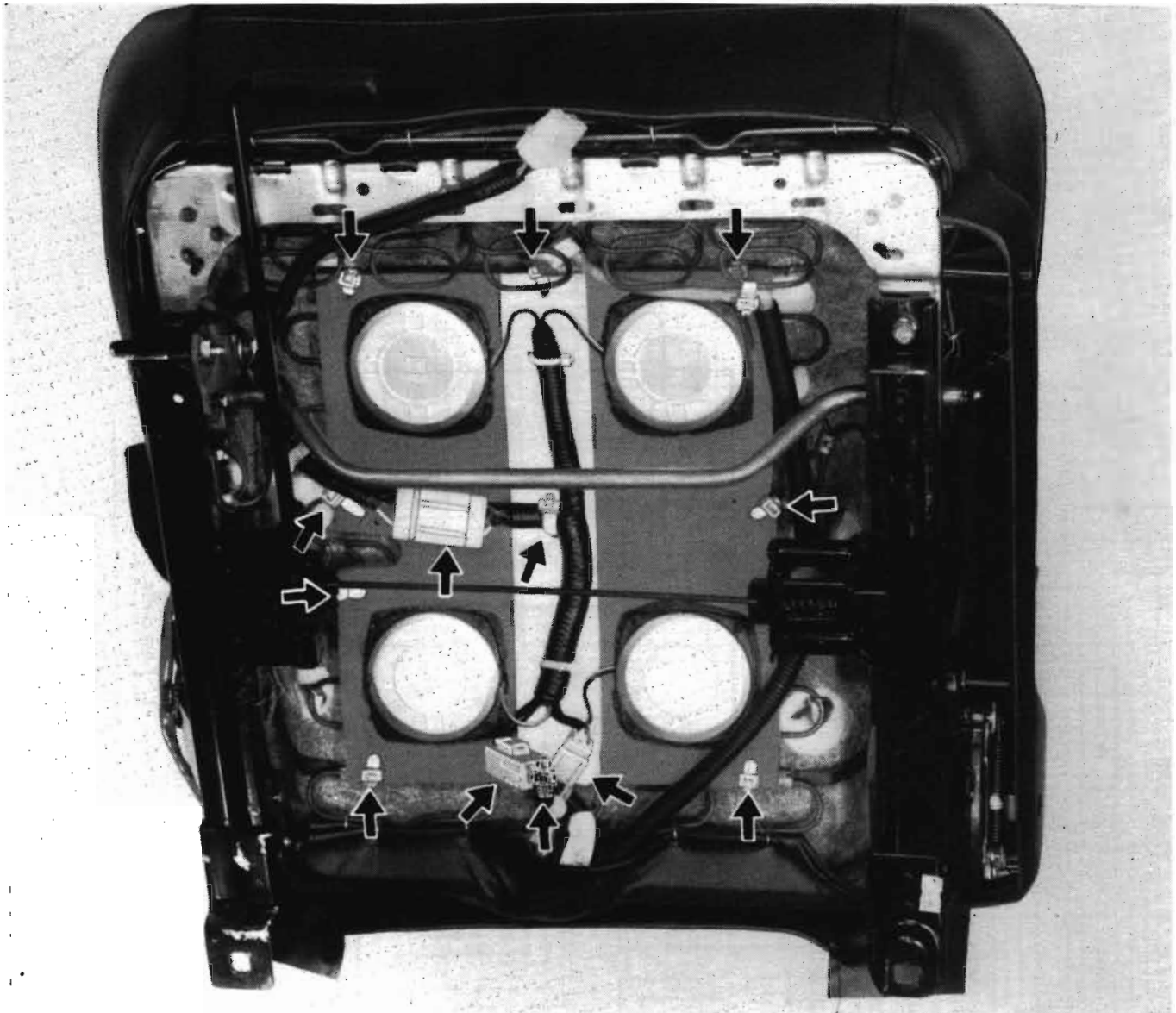
- The vibration plate built into the seat can be removed independently by removing the clips and disconnecting the harness connector as shown below.

Seatback side



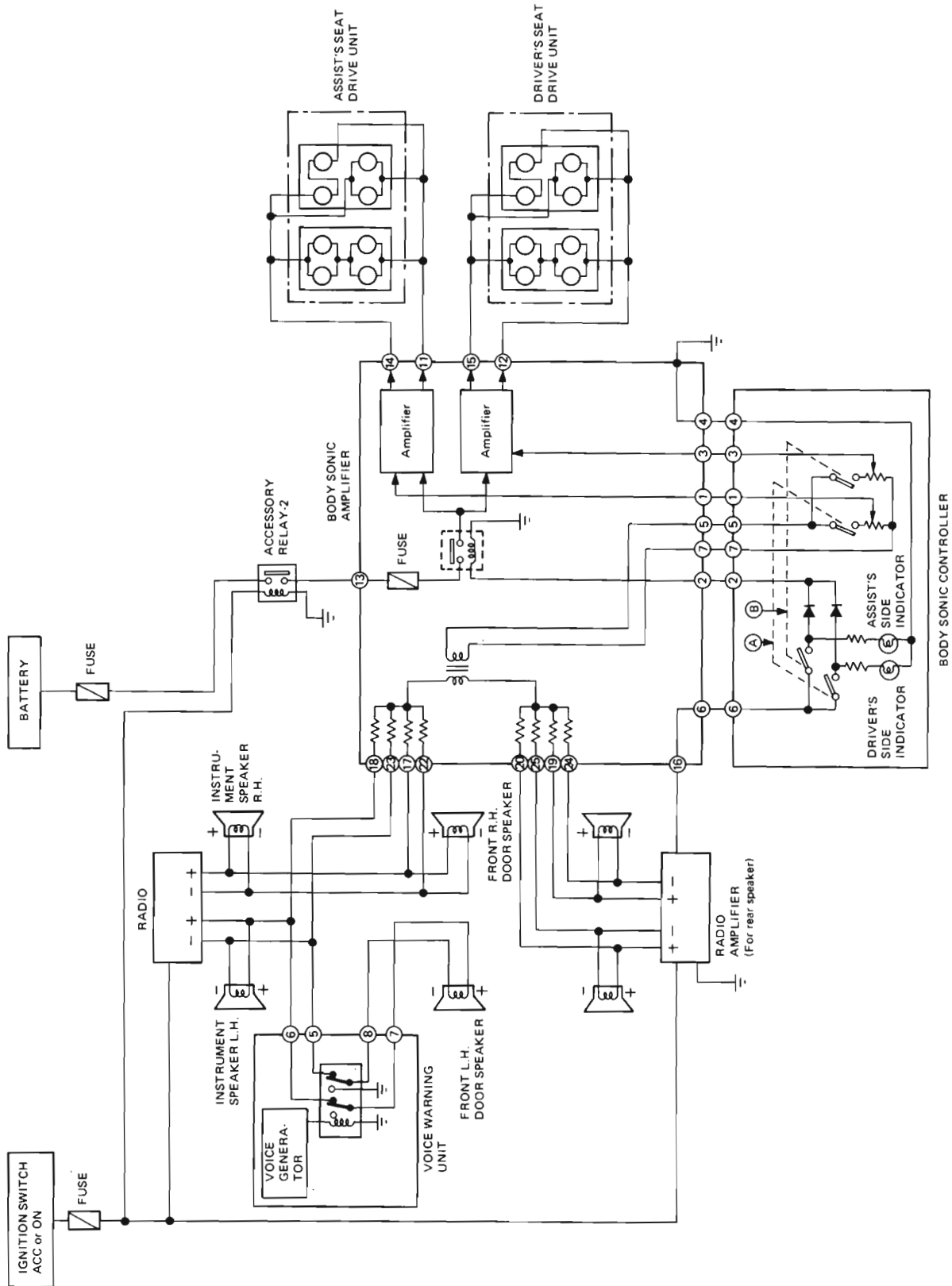
BODY SONIC SYSTEM

Cushion side



BODY SONIC SYSTEM

Schematic

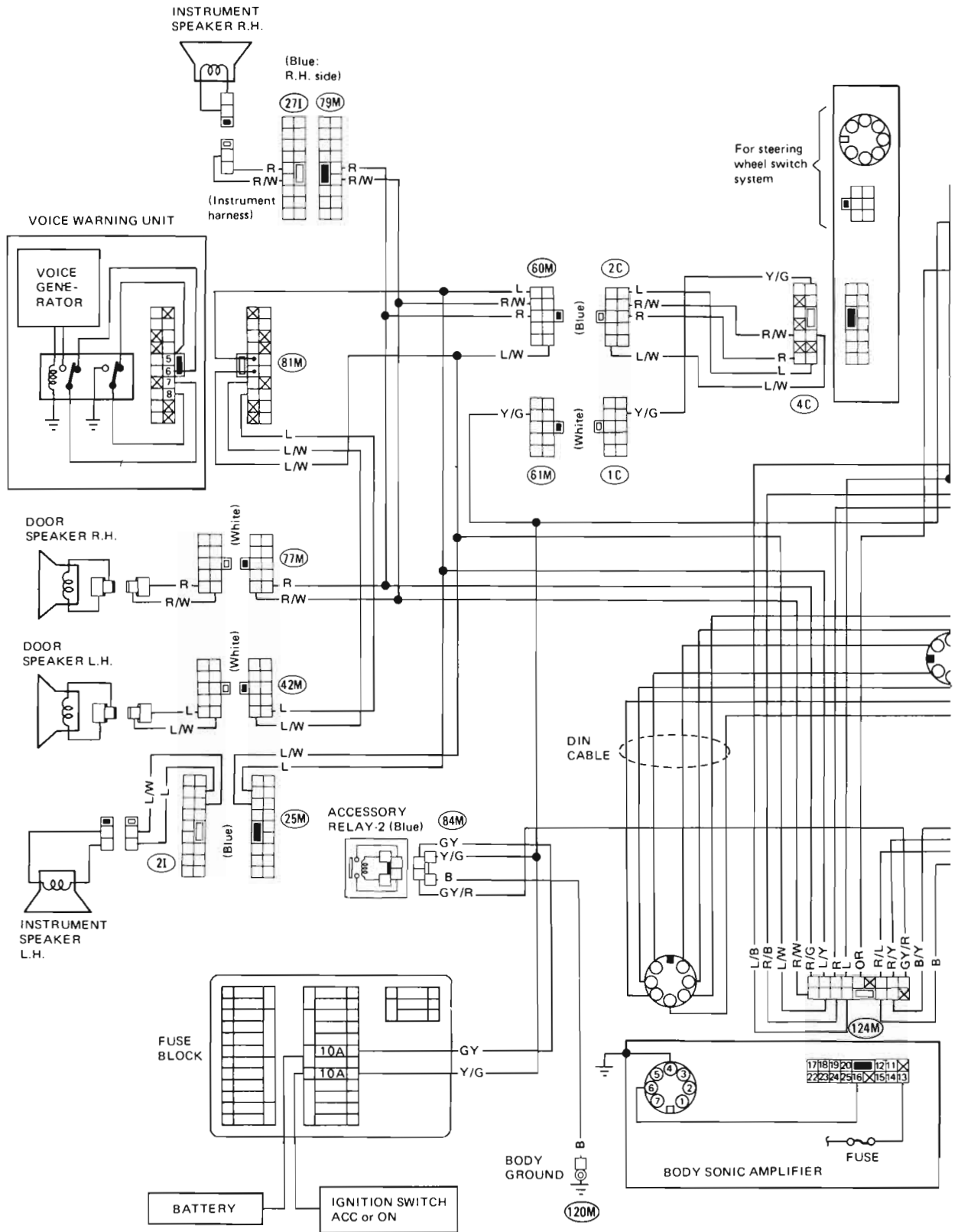


A ... Turns ON when driver's side knob is pushed.
 B ... Turns ON when assist's side knob is pushed.

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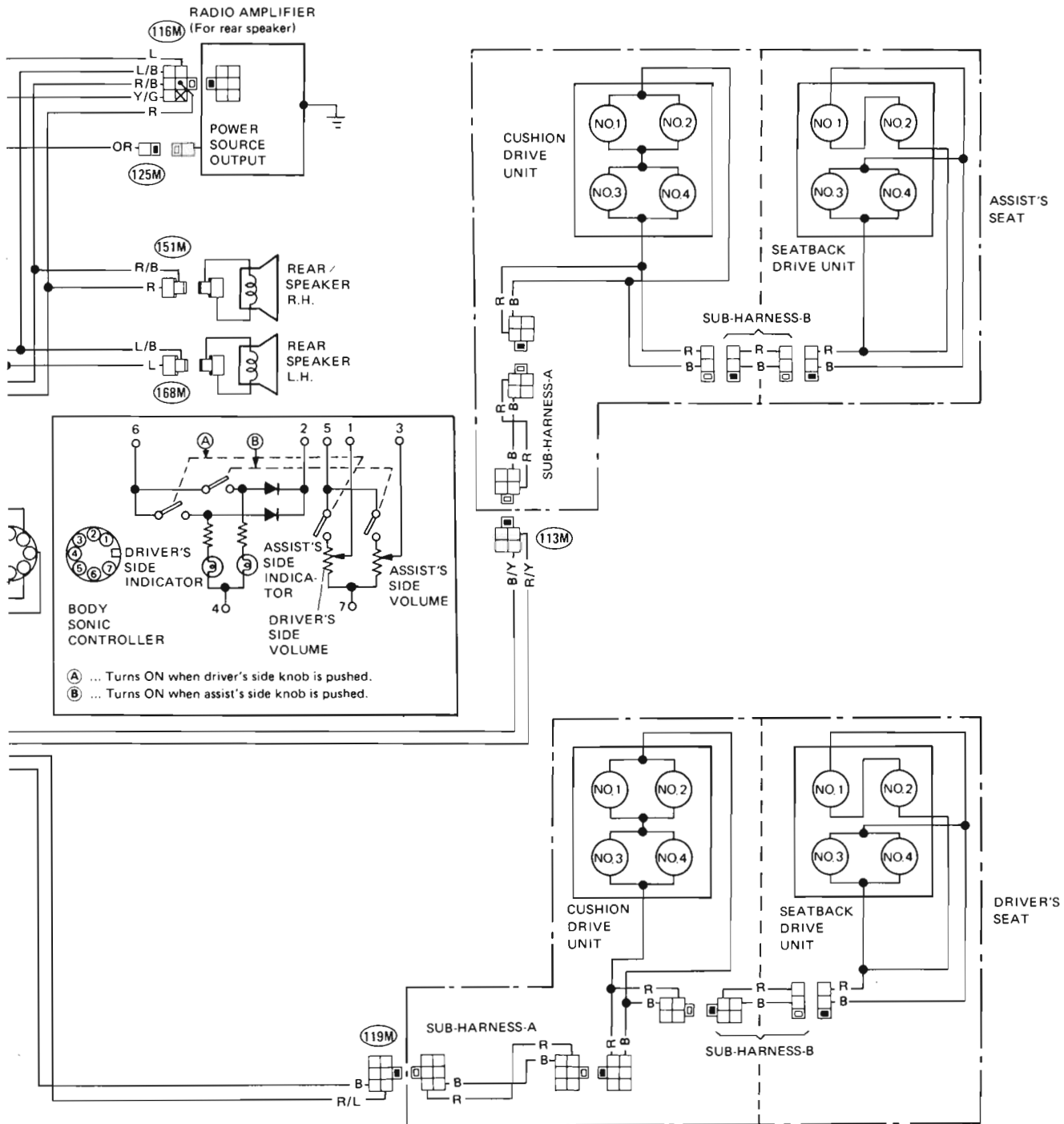
BODY SONIC SYSTEM

Wiring Diagram



BODY SONIC SYSTEM

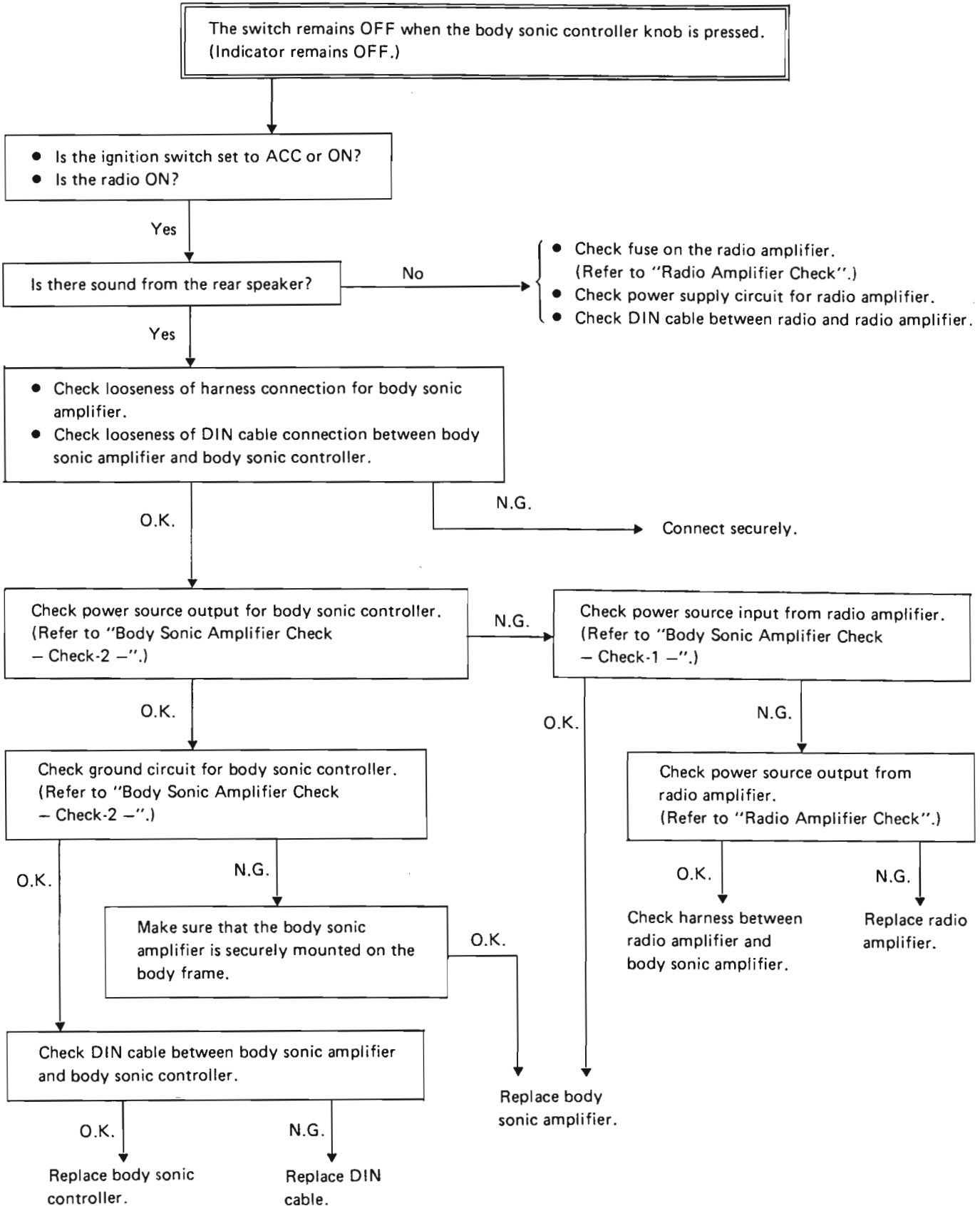
Wiring Diagram (Cont'd)



SEL672E

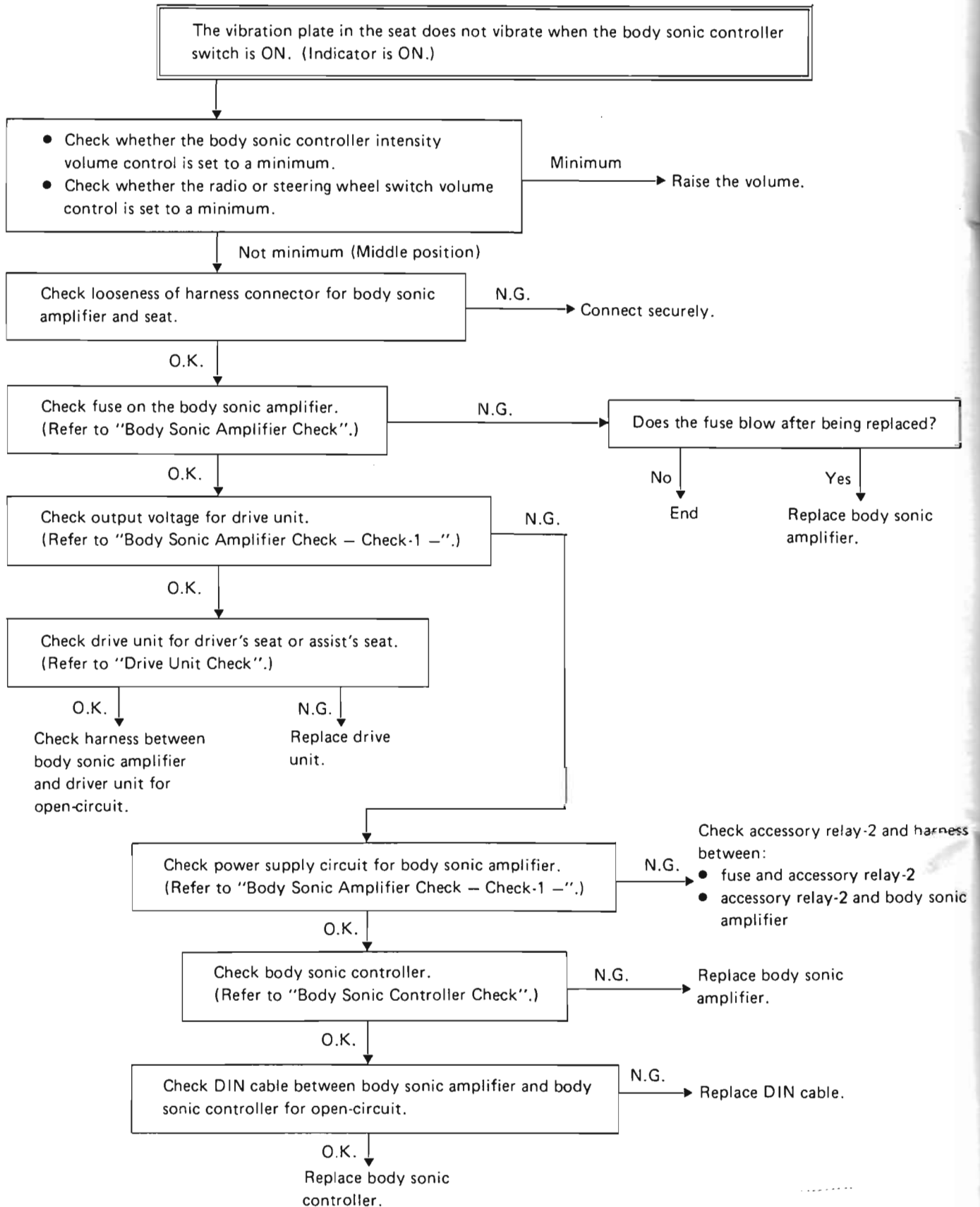
BODY SONIC SYSTEM

Trouble-shooting



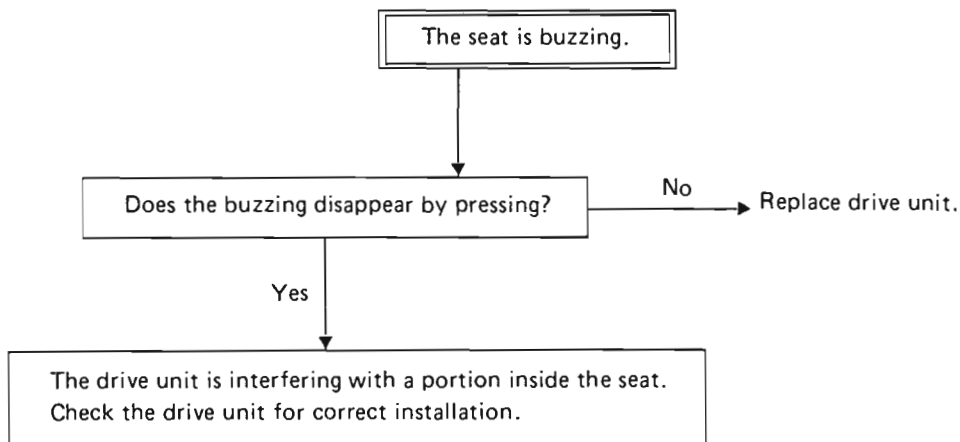
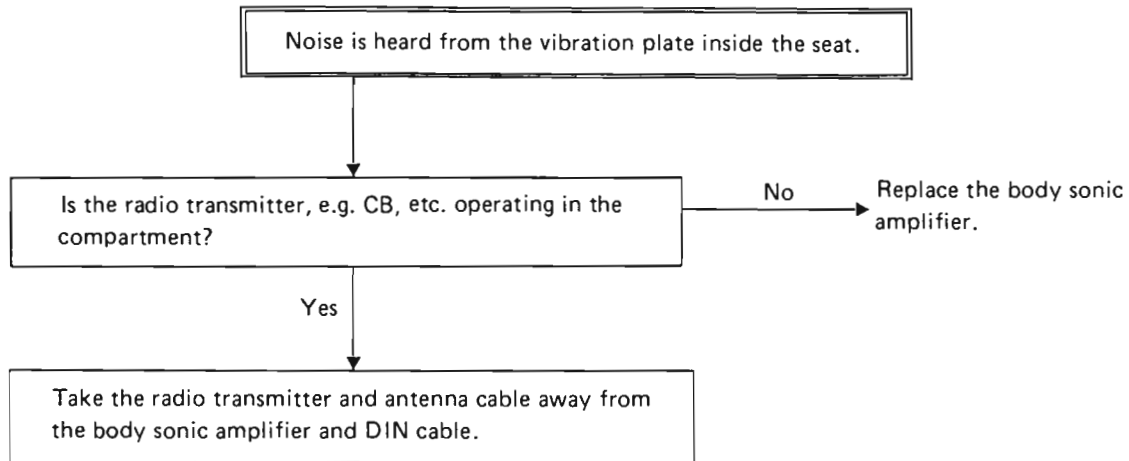
BODY SONIC SYSTEM

Trouble-shooting (Cont'd)



BODY SONIC SYSTEM

Trouble-shooting (Cont'd)



BODY SONIC SYSTEM

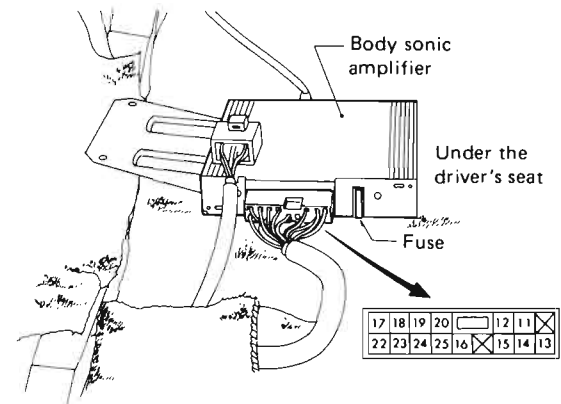
Body Sonic Amplifier Check

PREPARATION FOR CHECK

1. Disconnect harness connector from the driver's seat.
2. Remove driver's seat.
3. Remove body sonic amplifier with harness connected.

CHECK-1

- Check terminal voltage with DC or AC voltmeter referring to chart below.



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Check with DC-voltmeter

Check item	Voltmeter terminal		Condition	Specified voltage [V]
	(+)	(-)		
Power supply circuit for body sonic amplifier	⑬	Body ground	Turn ignition switch to ACC.	Approx. 12
Power source input from radio amplifier	⑯		<ul style="list-style-type: none"> • Turn ignition switch to ACC. • Switch the radio on. 	Approx. 12

Check with AC-voltmeter

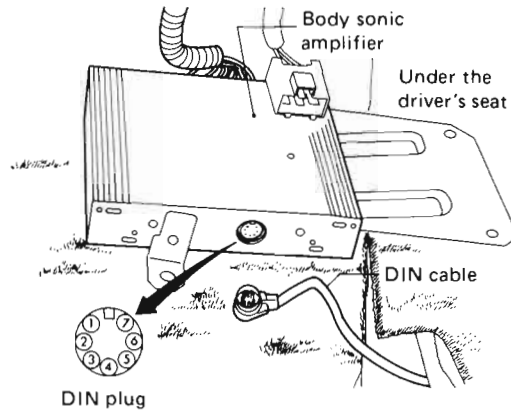
Check item	Voltmeter terminal		Condition	Specified voltage [V]
	(+)	(-)		
Output voltage for drive unit	⑮	⑫	<ul style="list-style-type: none"> • Turn ignition switch to ACC. • Switch the radio on and set the radio volume in the middle. • Switch the body sonic controller on and set both intensity volumes to MAX. 	The voltmeter needle oscillates in the following range when sound is heard from the speaker. Approx. 1 - 6
	⑭	⑪		

BODY SONIC SYSTEM

Body Sonic Amplifier Check (Cont'd)

CHECK-2

1. Disconnect DIN-cable from body sonic amplifier.
2. Leave harness connector connected to body sonic amplifier.
3. Check terminal voltage or continuity at DIN plug on the body sonic amplifier referring to chart below.



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Check with DC-voltmeter

Check item	Voltmeter terminal		Condition	Specified voltage
	(+)	(-)		
Power source output for body sonic controller	⑥	④	<ul style="list-style-type: none"> • Turn ignition switch to ACC. • Switch the radio on. 	Approx. 12V

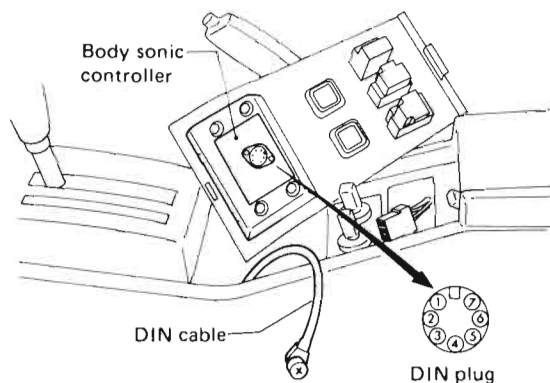
Check with ohmmeter

Check item	Ohmmeter terminal		Condition	Specified resistance
	(+)	(-)		
Ground circuit for body sonic controller	④	Body ground	<ul style="list-style-type: none"> • Turn ignition switch OFF. 	0Ω

BODY SONIC SYSTEM

Body Sonic Controller Check

1. Remove switch panel from the floor console.
2. Disconnect DIN cable from the body sonic controller.
3. Check continuity between terminals of DIN plug with ohmmeter referring to chart below.



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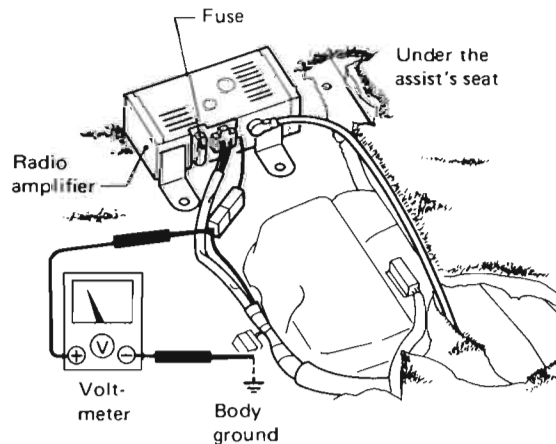
Check item	Ohmmeter terminals		Specified resistance
	(+)	(-)	
Switch	②	⑥	If the controller knob is pressed first, the switch will be conducted. If the controller knob is pressed second, the switch conduction must disappear.
	⑤	⑦	Approx. 5 k Ω when the controller knob is pressed first. $\infty \Omega$ (infinity) when the knob is pressed second.
Volume	①	⑦	Approx. 0 Ω when the volume control is set to MIN. Approx. 10 k Ω when the volume control is set to MAX.
	③	⑦	

Radio Amplifier Check

POWER SOURCE OUTPUT CHECK

1. Remove assist's seat.
2. Remove radio amplifier with harness connected.
3. Turn ignition switch to ACC.
4. Switch the radio on.
5. Check terminal voltage at 1-pin harness connector leading to radio amplifier.

Specified voltage: Approx. 12V



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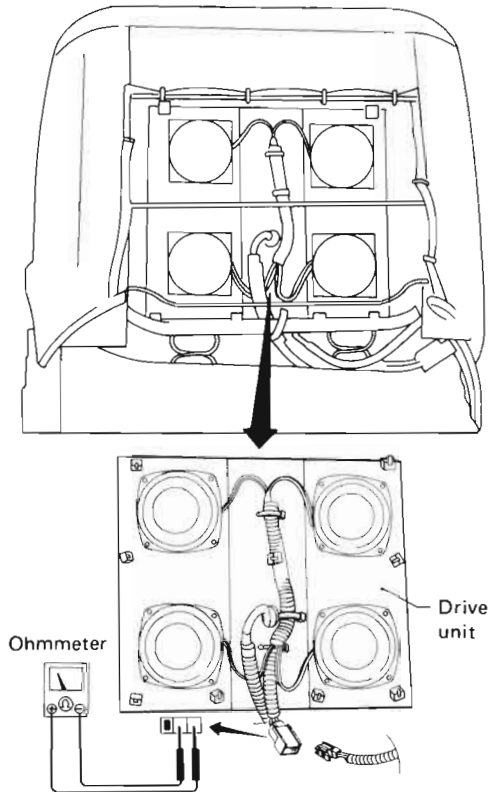
BODY SONIC SYSTEM

Drive Unit Check

- Remove driver's seat or assist's seat from which vibration is not coming.

SEATBACK DRIVE UNIT CHECK

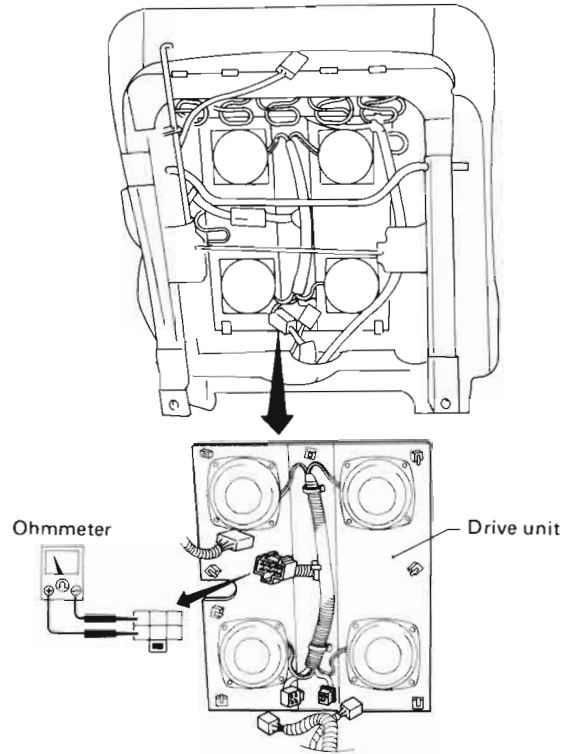
1. Remove seatback board.
2. Disconnect harness connector from the drive unit.
3. Measure resistance of the drive unit.



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CUSHION DRIVE UNIT CHECK

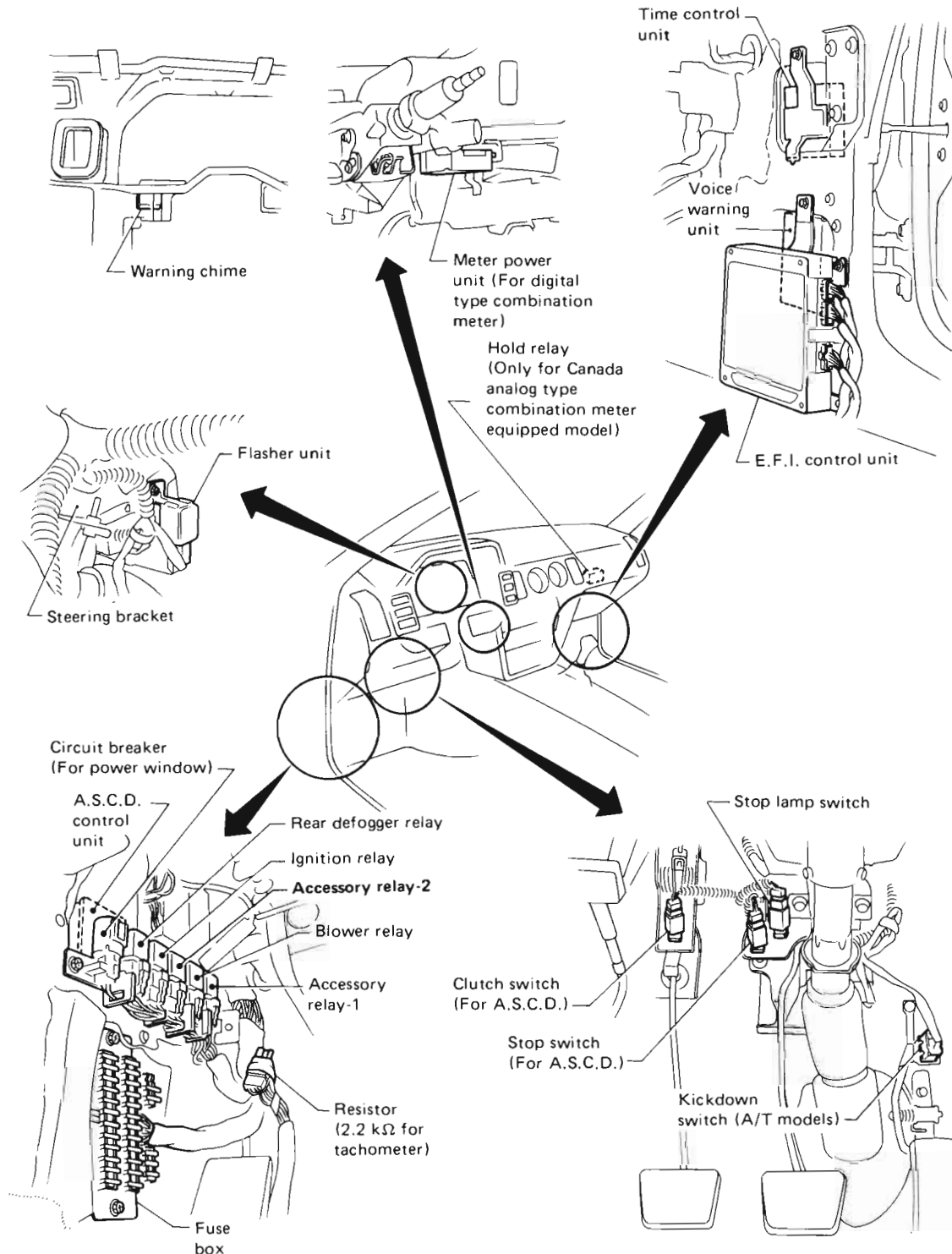
1. Disconnect harness connector from drive unit.
2. Measure resistance of the drive unit.



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LOCATION OF ELECTRICAL UNITS

- The accessory relay 2 has been added to the relay bracket of the driver's side dash in correspondence to the adoption of the body sonic system.
- Refer to the "Description" of each system for other component parts of the steering wheel switch system and body sonic system.

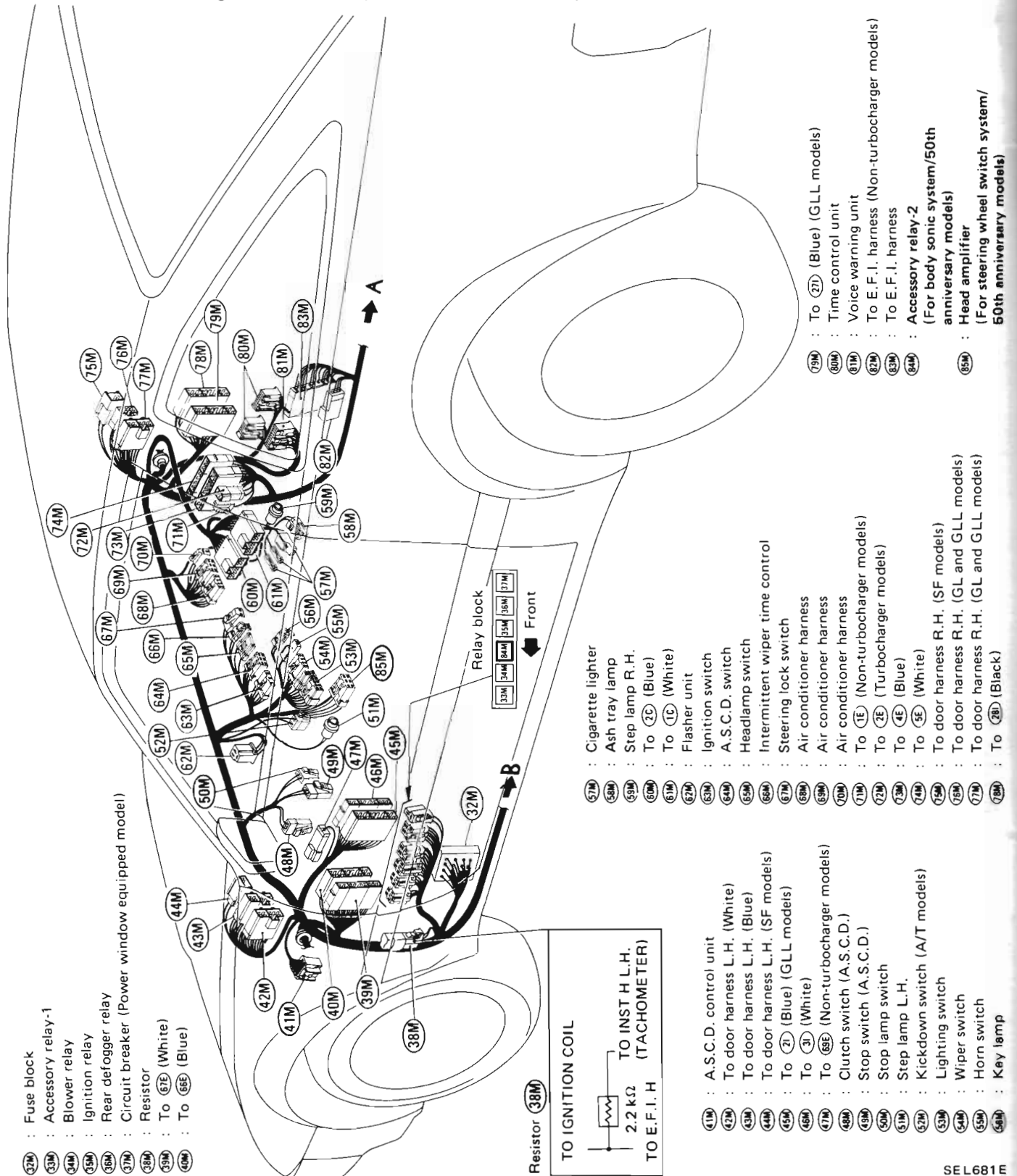


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HARNESS LAYOUT

Main Harness

- The harness connectors (84M), (85M), (124M), and (174M) have been added in correspondence to the adoption of the steering wheel switch system and body sonic system.

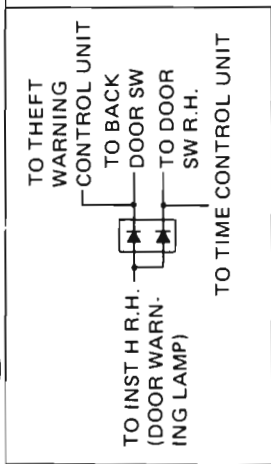


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HARNES LAYOUT

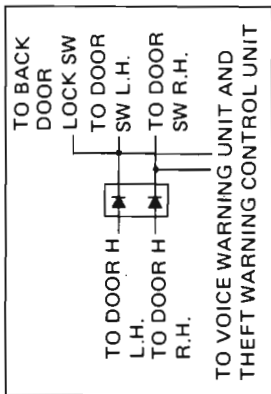
Main Harness (Cont'd)

Diode (111M) *



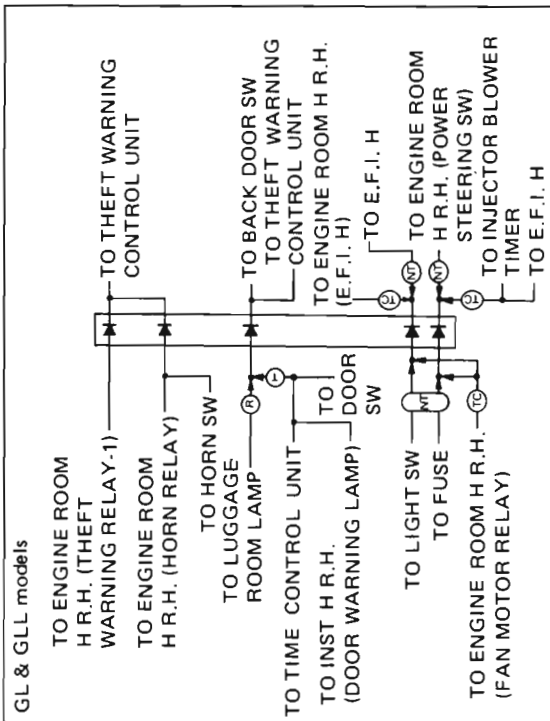
(For theft warning system & time control system)

Diode (110M)



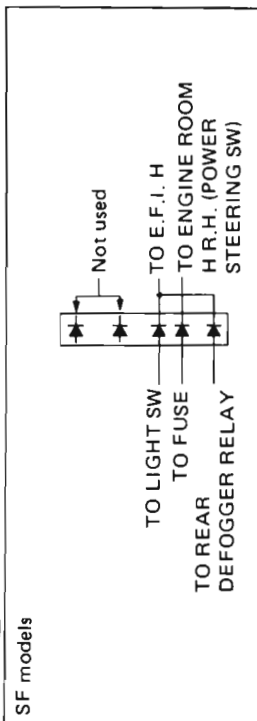
(For voice warning system & theft warning system)

Diode (108M)



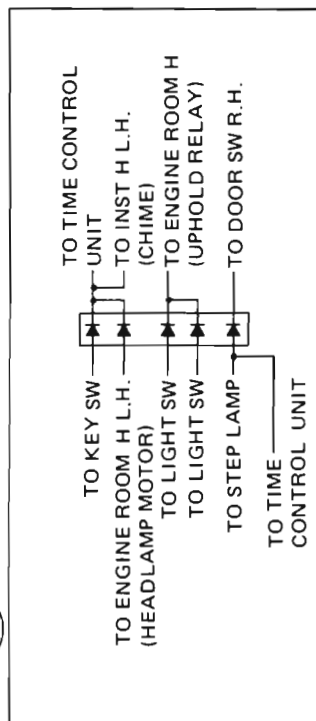
(For theft warning system & E.F.I. system)

Diode (108M)



(For E.F.I. system)

Diode (109M)



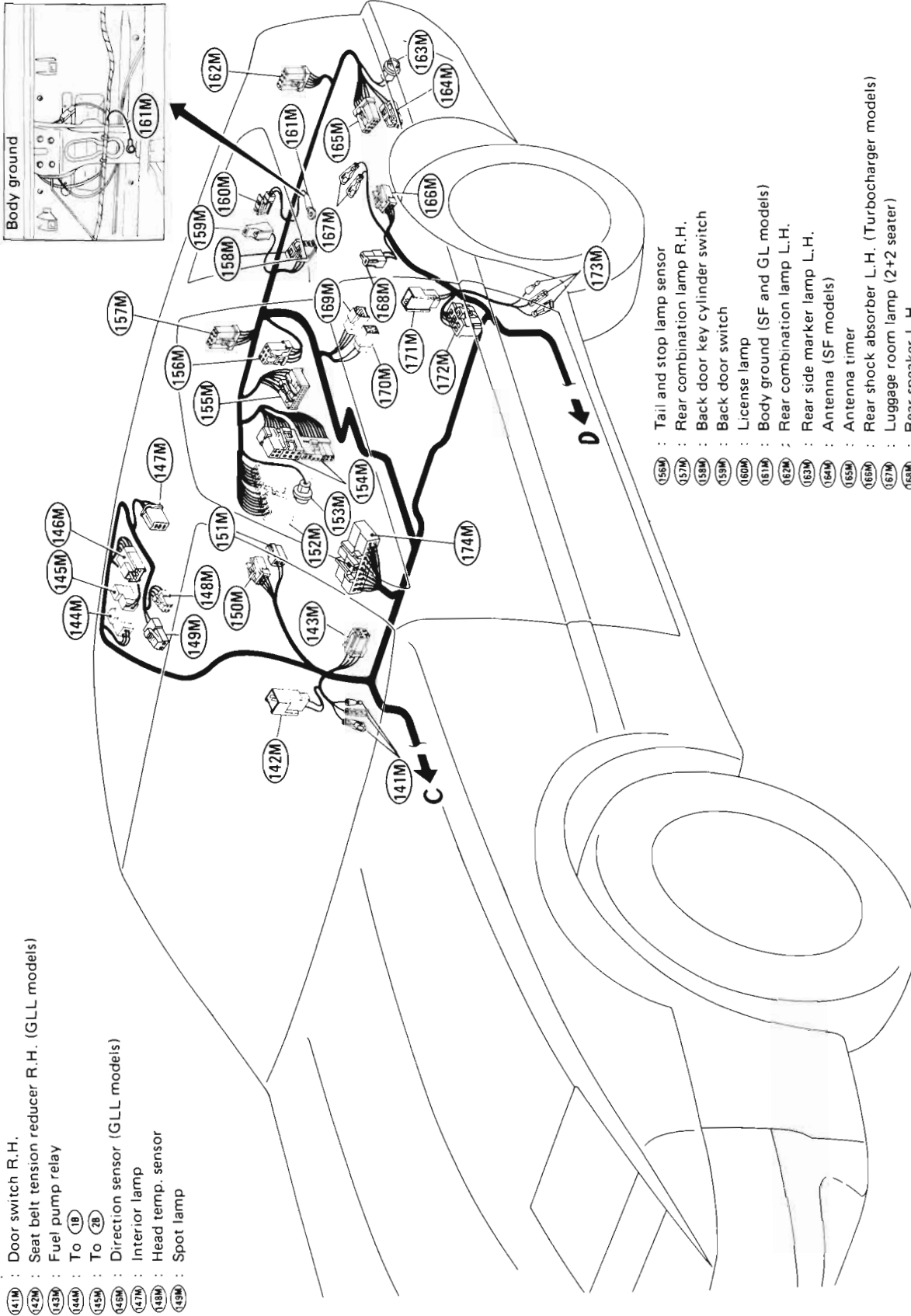
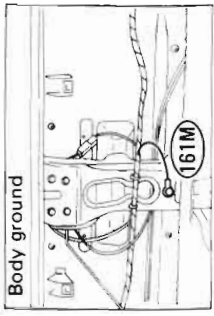
(For headlamp system & time control system)

- Ⓣ : Turbocharger models
- Ⓝ : Non-turbocharger models
- Ⓟ : 2+2 seater
- Ⓞ : 2 seater

- Ⓜ101 : Door mirror defogger switch
- Ⓜ102 : A/T indicator lamp
- Ⓜ103 : Remote control mirror switch
- Ⓜ104 : O.D. switch (A/T models)
- Ⓜ105 : Headlamp cleaner switch
- Ⓜ106 : Shock absorber switch (Turbocharger models)
- Ⓜ107 : Body ground
- Ⓜ108 : Diode
- Ⓜ109 : Diode (SF models)
- Ⓜ110 : Diode (GL and GLL models)
- Ⓜ111 : Diode (2+2 seater)
- Ⓜ112 : Theft warning control unit
- Ⓜ113 : Seat belt switch R.H. (GLL models)
- Ⓜ114 : O₂ sensor control amp. (GLL models)
- Ⓜ115 : Parking brake switch
- Ⓜ116 : Radio amplifier (GLL models)
- Ⓜ117 : Seat belt switch L.H. (SF models)
- Ⓜ118 : Seat belt switch L.H. (GL models)
- Ⓜ119 : To power seat harness (GLL models)
- Ⓜ120 : Body ground (GLL models)
- Ⓜ121 : Didoe (GL and GLL models)
- Ⓜ122 : Body ground (GLL models)
- Ⓜ123 : Body ground (GLL models)
- Ⓜ124 : Body ground (GLL models)
- Ⓜ125 : Body sonic amplifier (50th anniversary models)
- Ⓜ126 : Radio amplifier
- Ⓜ127 : (For body sonic system)

HARNES LAYOUT

Main Harness (Cont'd)



- (141M) : Door switch R.H.
- (142M) : Seat belt tension reducer R.H. (GLL models)
- (143M) : Fuel pump relay
- (144M) : To (1B)
- (145M) : To (2B)
- (146M) : Direction sensor (GLL models)
- (147M) : Interior lamp
- (148M) : Head temp. sensor
- (149M) : Spot lamp

- (150M) : Tail and stop lamp sensor
- (151M) : Rear combination lamp R.H.
- (152M) : Back door key cylinder switch
- (153M) : Back door switch
- (154M) : License lamp
- (155M) : Body ground (SF and GL models)
- (156M) : Rear combination lamp L.H.
- (157M) : Rear side marker lamp L.H.
- (158M) : Antenna (SF models)
- (159M) : Antenna timer
- (160M) : Rear shock absorber L.H. (Turbocharger models)
- (161M) : Luggage room lamp (2+2 seater)
- (162M) : Rear speaker L.H.
- (163M) : Fuel tank gauge unit
- (164M) : Fuel pump
- (165M) : Seat belt tension reducer L.H. (GLL models)
- (166M) : Injector blower timer
- (167M) : Door switch L.H.
- (168M) : Receiver (For steering wheel switch system/ 50th anniversary models)

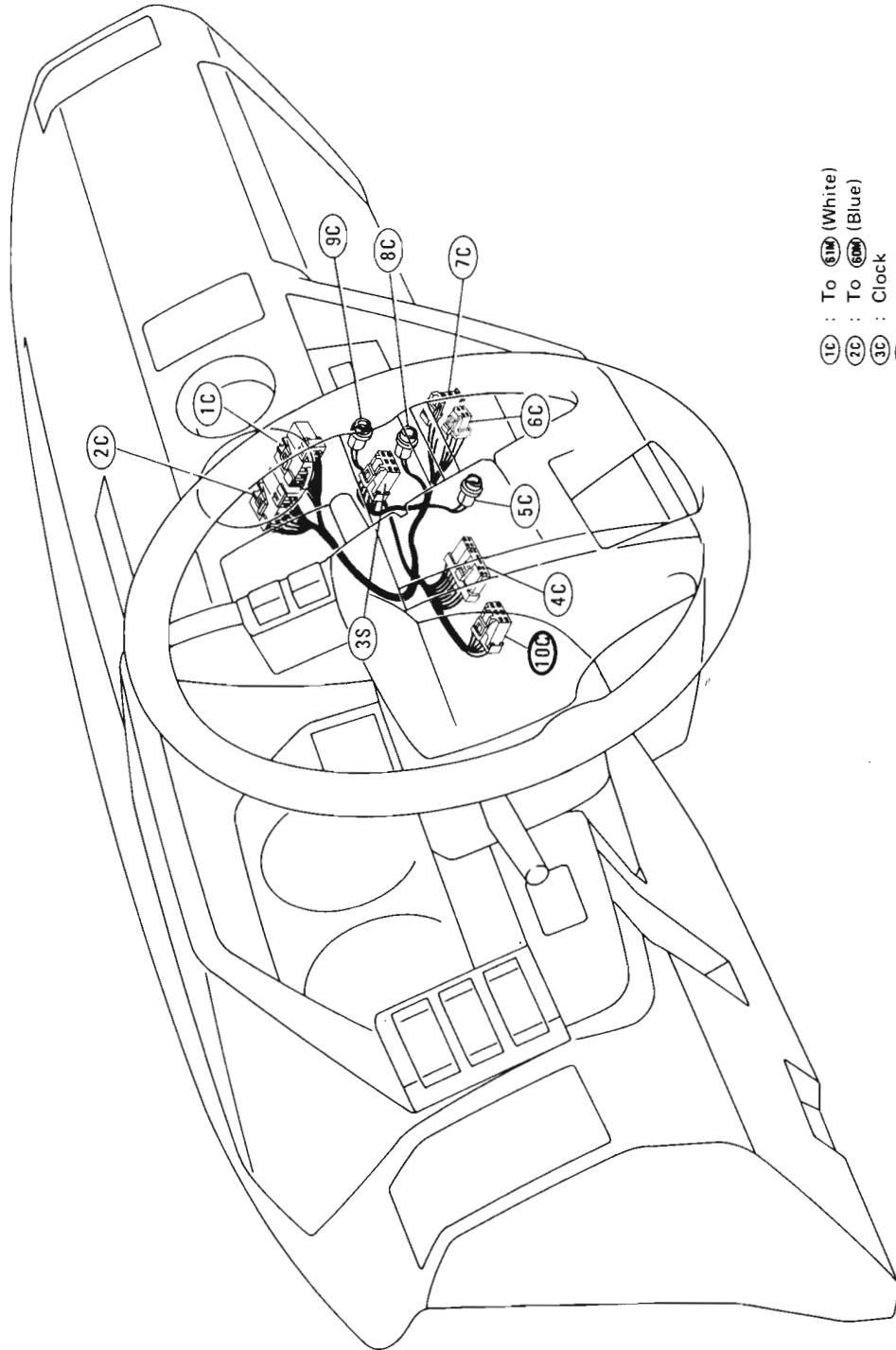
- (169M) : Rear shock absorber R.H. (Turbocharger models)
- (170M) : Rear speaker R.H.
- (171M) : Direction sensor amplifier (GLL models)
- (172M) : Rear side marker lamp R.H.
- (173M) : Lock-up control unit (Non-turbocharger A/T models)
- (174M) : Shock absorber control unit (Turbocharger models)

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HARNES LAYOUT

Console Harness

- The harness connector (10C) has been added in correspondence to the adoption of the steering wheel switch system.



- (1C) : To (11C) (White)
- (2C) : To (60M) (Blue)
- (3C) : Clock
- (4C) : Radio
- (5C) : Illumination lamp
- (6C) : Antenna switch (SF models)
- (7C) : Full auto antenna switch
- (8C) : Illumination lamp
- (9C) : Illumination lamp
- (10C) : Radio (For steering wheel switch system/50 th anniversary model)
- (11C) : Radio

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