

AUDIO SYSTEM

BE10X-01

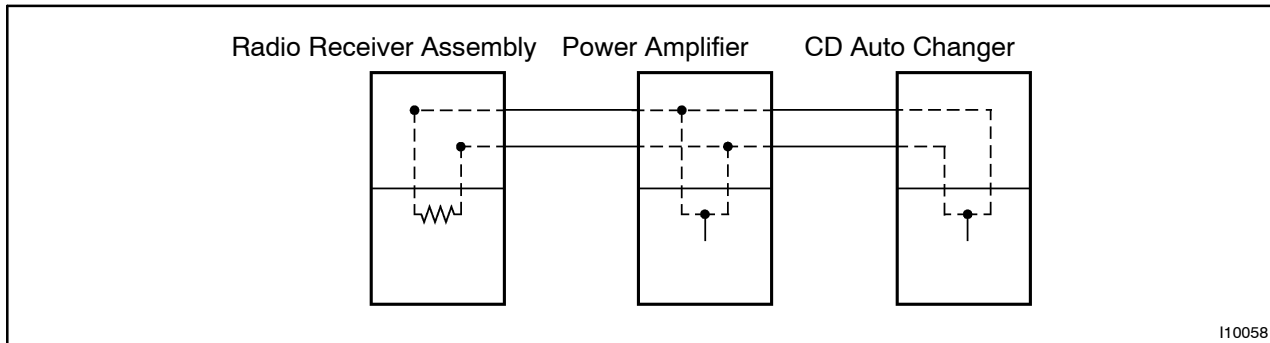
DESCRIPTION

1. OUTLINE OF AVC-LAN

(a) What is AVC-LAN?

AVC-LAN is the abbreviation, which stands for Audio Visual Communication-Local Area Network. This is a unified standard co-developed by 6 audio manufactures associated with Toyota Motor Corporation.

The Unified standard covers signals, such as audio signal, visual signal, signal for switch indication and communication signal.



I10058

(b) Objectives

Recently the car audio system has been rapidly developed and functions have been changed drastically. The conventional system has been switched to the multi-media type such as a navigation system. At the same time the level of customers needs to audio system has been upgraded. This lies behind this standardization.

The concrete objectives are explained below.

- (1) When products by different manufactures were combined together, there used to be a case that malfunction occurred such as sound did not come out. This problem has been resolved by standardization of signals.
- (2) Various types of after market products have been able to add or replace freely.
- (3) Because of the above (2), each manufacture has become able to concentrate on developing products in their strongest field. This has enabled many types of products provided inexpensively.
- (4) Conventionally, a new product developed by a manufacture could not be used due to a lack of compatibility with other manufactures products. Because of this new standard, users can enjoy compatible products provided for them timely.

The above descriptions are the objectives to introduce AVC-LAN. By this standardization, development of new products will no longer cause systematic errors. Thus, this is very effective standard for a product in the future.

HINT:

- When +B short or GND short is detected in AVC-LAN circuit, communication stops. Accordingly the audio system does not function normally.
- When audio system is not equipped with a navigation system, audio head unit is the master unit. (When audio system is equipped with a navigation system, navigation ECU is the master unit.)
- The car audio system using AVC-LAN circuit has a diagnosis function.
- Each product has its own specified numbers called physical address. Numbers are also allotted to each function in one product, which are called logical address.

2. DIAGNOSIS FUNCTION (PIONEER made)

Error codes over tuner and connected equipment are displayed on the screen of tuner.

(a) Diagnosis start-up

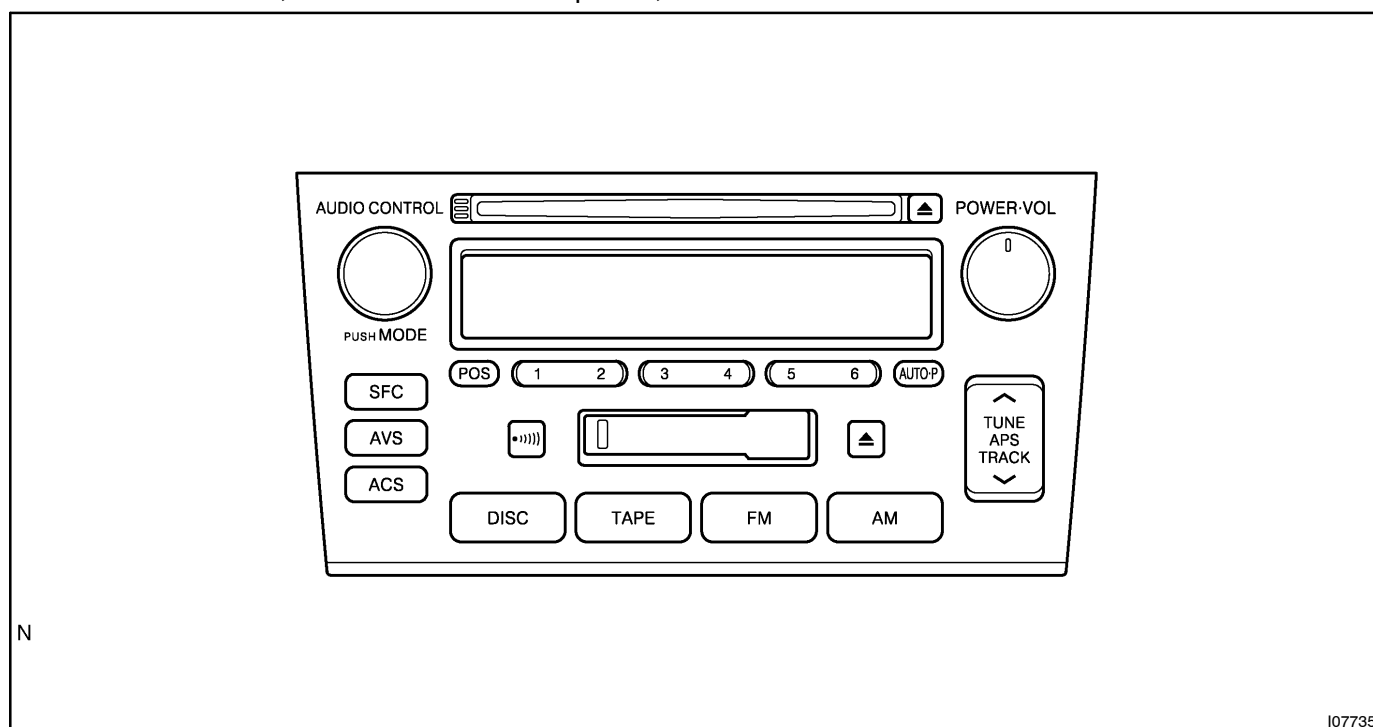
For shifting to diagnosis mode, push "CD" switch 3 times with pressing "1" and "6" of PRESET switch at the same time while the audio power is OFF and ACC is ON.

To exit from diagnosis mode, press "CD" switch for 2 seconds or turn the ignition key OFF.

(When "1-190" is displayed, the mode is transferred to LAN check mode.)

(b) LAN check

When starting up the diagnosis mode, the mode turns to LAN check mode, the screen displays the code numbers (physical address) of tuner and connected equipment. Smaller codes are displayed in order, displayed code numbers are switched by operating TUNE "UP" or "DOWN" switch. In LAN check mode, by pressing "5" of PRESET switch for more than 2 secs., diagnosis memory of each equipment can be deleted, when deletion is completed, the mode returns to LAN check mode.



Code No. (physical address) List

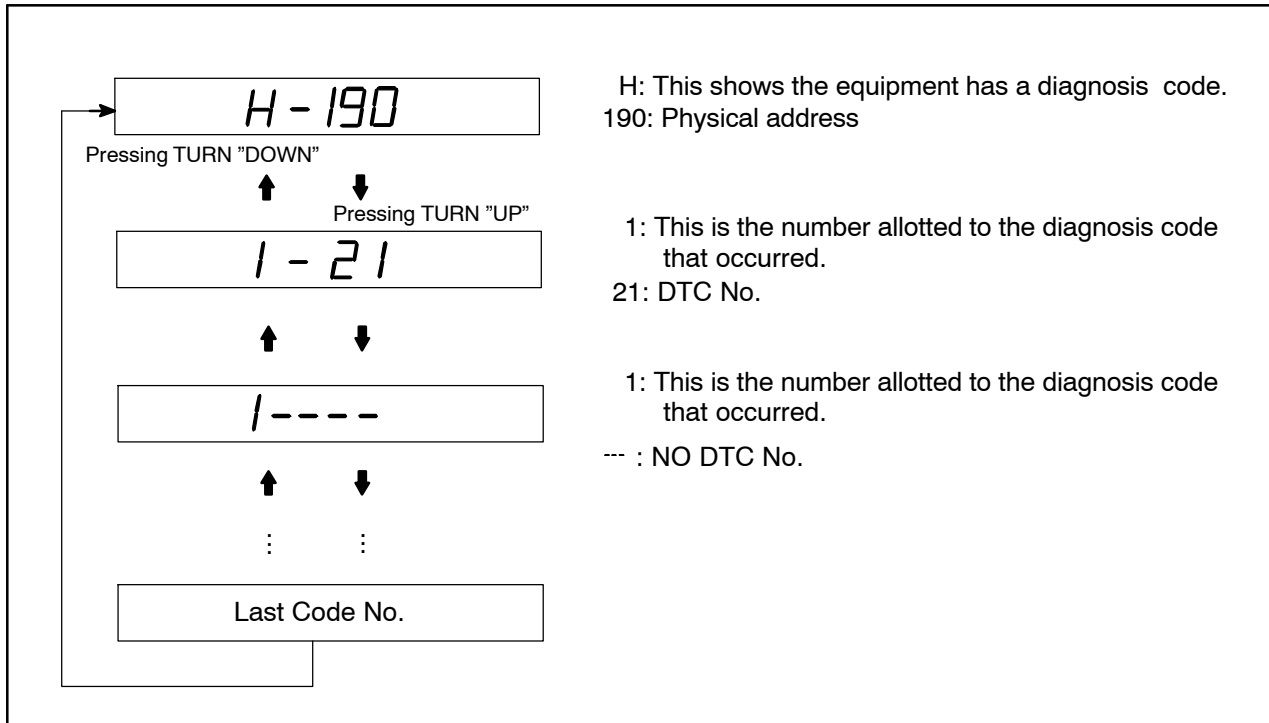
Code No. (physical address)	Equipment name
190	Radio receiver assembly (Audio head unit)
240	CD changer (in Luggage room)
360	CD changer (in center console and glove compartment box)
440	Power amplifier

(c) System check

- When pressing "1" of PRESET switch in LAN check mode, the mode turns to the system check mode, the system performs self diagnosis of connected equipment and displays the results. ("SYS" (showing the system is under detection) is displayed.)
- Perform the operation shown in the following illustration, then read the result of the inspection.

HINT:

- It sometimes takes approx. 40 secs. till the system inspection is completed.
- The chart below is an example of when diagnosis code "21" appears on the physical address (190) equipment. (ROM error occurs on the radio receiver.)
- The smaller code numbers (physical address) are displayed in order (code No., diagnosis code, support code of diagnosis code (object equipment)).
- When no error is detected in the system, "00" is displayed.
- When an error code is detected, up to 6 codes per one system are displayed. Pressing TUNE "UP" or "DOWN" switches the display.
- In the system check mode, when pressing "6" of PRESET switch the mode returns to LAN check mode.

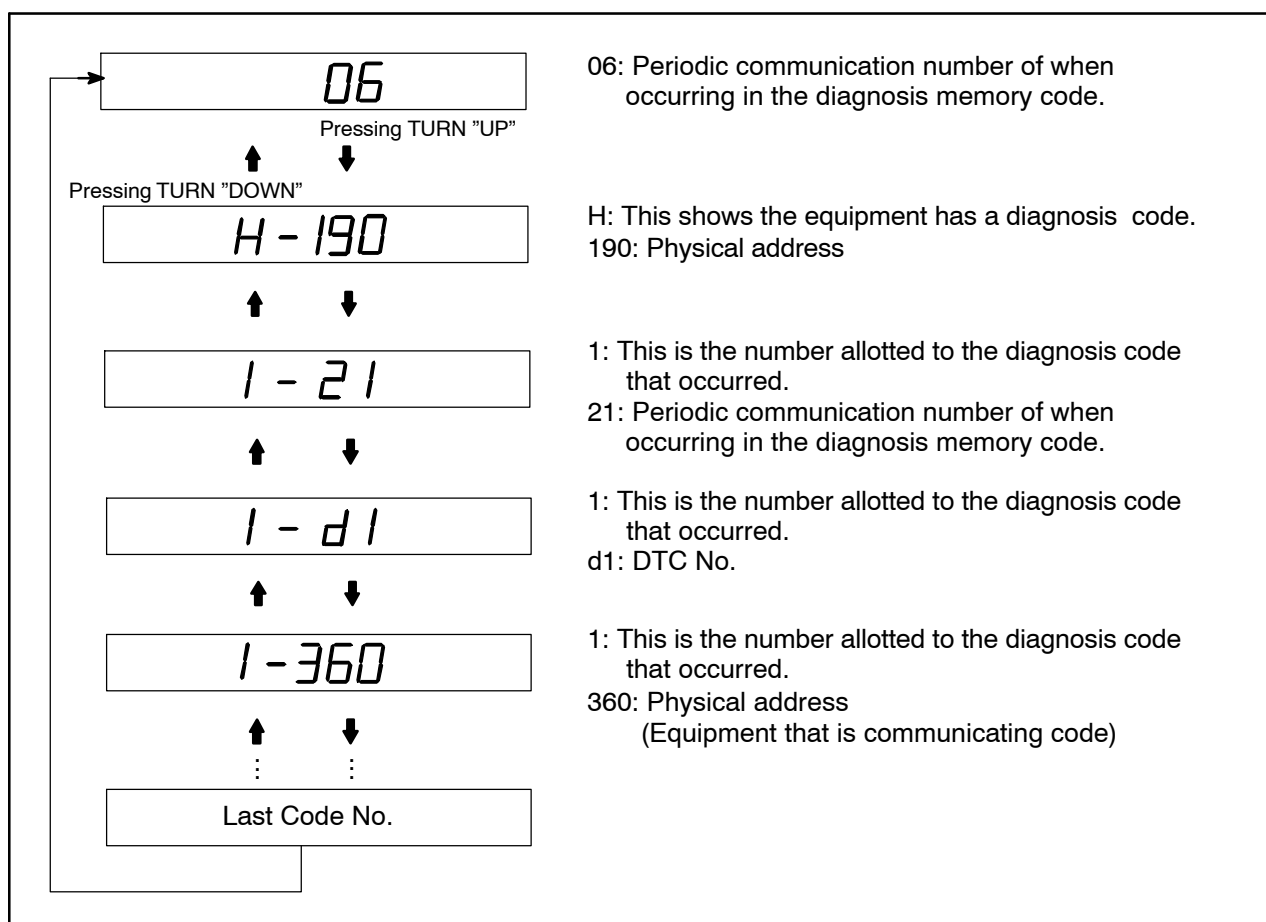


(d) Diagnosis memory

- (1) In LAN check mode, when pressing "2" of PRESET switch the mode turns to the diagnosis memory mode. ("CODE" is displayed.)
The results of self diagnosis performed over tuner and connected equipment are memorized and displayed.
- (2) Perform the operation shown in the following illustration, then read the result of the inspection.

HINT:

- The smaller code numbers (physical address) are displayed in order (code No. , periodic communication number when error occurs, diagnosis code, and support code of diagnosis code (object equipment)).
- When no error is detected in the system, "00" is displayed. When an error code is detected, up to 6 codes per one system are displayed. Pressing TUNE "UP" or "DOWN" switches the display. Each diagnosis code is same as code in the system check mode.
- When pressing "6" of PRESET switch, the mode returns to LAN check mode.
- The following illustration below is an example of when diagnosis code "D1" appears on the code (190) and (240 or 360) equipment. (Communication error occurs between the radio receiver and CD changer.)



(e) Diagnosis memory clear

- (1) After error is fixed, start up the diagnosis mode.
- (2) Continue pressing preset switch "5" for 2 secs. (CLr is displayed.)
- (3) Press the preset switch "2" and transfer to the diagnosis memory mode and check that the normal code (00) is output.

3. DIAGNOSIS CODE LIST

- If there is "O" in the column of system check, an error can be detected when the mode is switched to the system check mode.
- If there is "O" in the column of diagnosis mode, each unit is monitoring whether or not it has failure. In case of detecting failure, it memorizes DTC.

Parts Name	DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts	System Check	Diagnosis memory
Head Unit (190)	42	FM tuner error	There is an error in FM tuner.	Radio receiver check.	X	○
	50	Cassette error	There is an error in cassette deck.		X	○
	51	Cassette eject error	Cassette can not be ejected from Head Unit.		X	○
	D1	Transmitter error	Communication with the equipment that is communicating has failed successively.	Radio receiver check. Wire harness and connector check.	○	○
	D2	Periodic communication no response	Error in periodic communication.	● Wire harness and connector	X	○
	FF	Diagnosis no response	Result of diagnosis is not issued from start to finish.	Radio receiver check.	○	X
CD (240) (360)	60	CD error	Error codes other than 61-69 are detected.	CD changer check.	X	○
	61	EJECT error	CD is not ejected.	CD changer check. Magazine check.	X	○
	62	DISC inside out/flaw	CD is inserted inside out or it has a flaw.	CD check.	X	○
	63	Pickup temperature detection	High temperature of CD changer is detected.	CD changer check.	X	○
	64	Excessive current detection	Excessive current to CD changer is detected.		X	○
	67	Tray insertion/ discharging error	An error occurs in insertion and discharging operation of CD changer tray.	CD changer check. Magazine check.	X	○
	68	Elevator error	An error occurs in elevator of CD changer elevator.	CD changer check.	X	○
	D1	Transmitter error	Communication with the equipment that is communicating has failed successively.		○	○
	D4	Periodic communication error	Connection confirmation has not come from the equipment that is communicating	● Radio receiver check. ● Wire harness check.	X	○

BODY ELECTRICAL - AUDIO SYSTEM

Parts Name	DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts	System Check	Diagnosis memory
	D1	Transmitter error	Communication with the equipment that is communicating has failed successively.	Stereo component amplifier check.	○	○
AMP (440)	D4	Periodic communication error	Connection confirmation has not come from the equipment that is communicating	<ul style="list-style-type: none"> ● Radio receiver check. ● Wire harness check. 	X	○

TROUBLESHOOTING

NOTICE:

When replacing the internal mechanism (computer part) of the audio system, be careful that no part of your body or clothing comes in contact with the terminals of the leads from the IC, etc. of the replacement part (spare part).

HINT:

This inspection procedure is a simple troubleshooting which should be carried out on the vehicle during system operation and was prepared on the assumption of system component troubles (except for the wires and connectors, etc.).

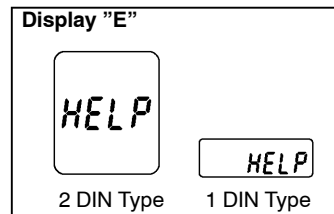
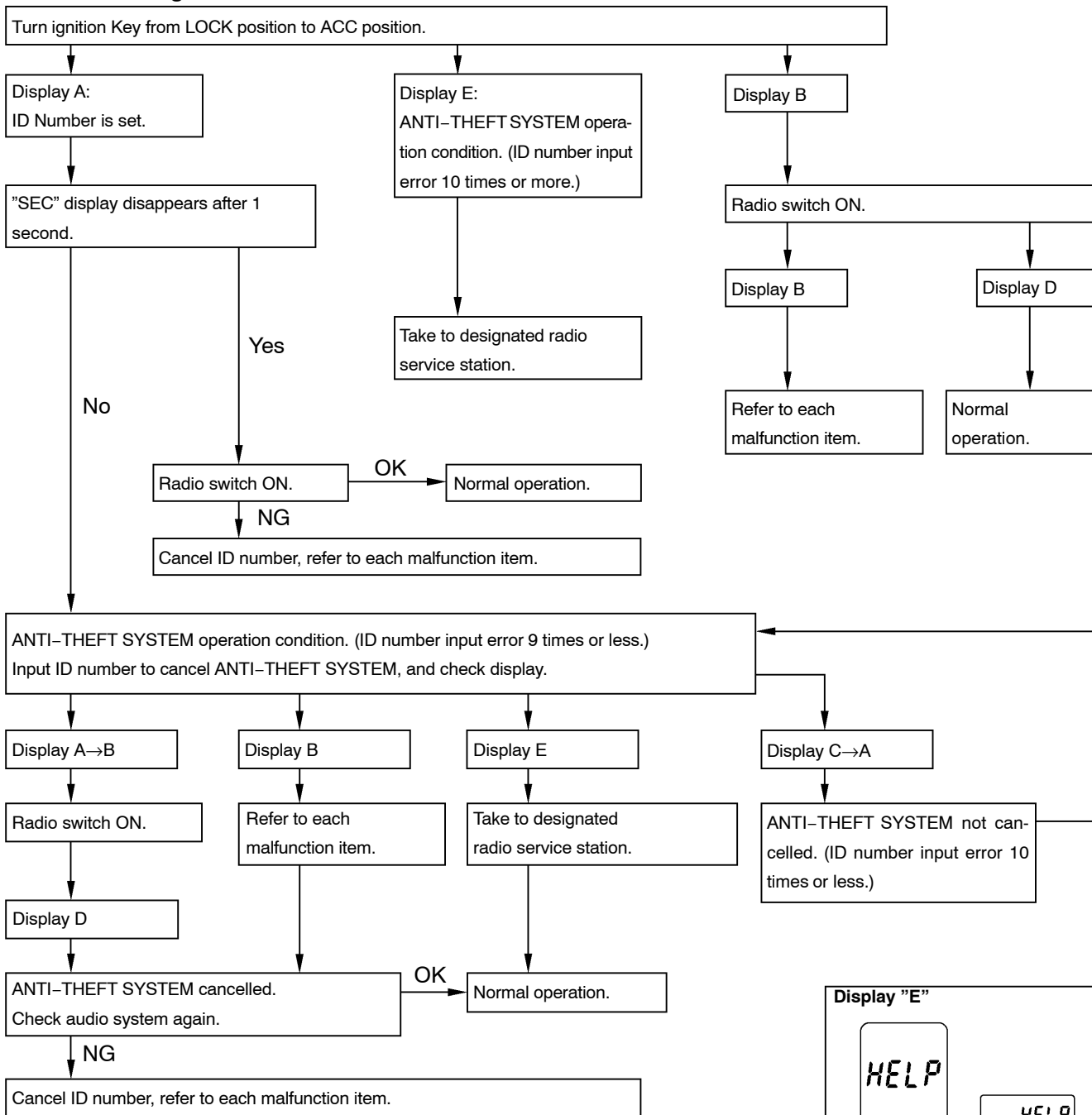
Always inspect the trouble taking the following items into consideration.

- Open or short circuit of the wire harness
- Connector or terminal connection fault
- For audio systems with anti-theft system, troubleshooting items marked (*) indicate that "Troubleshooting for ANTI-THEFT SYSTEM" should be carried out first.

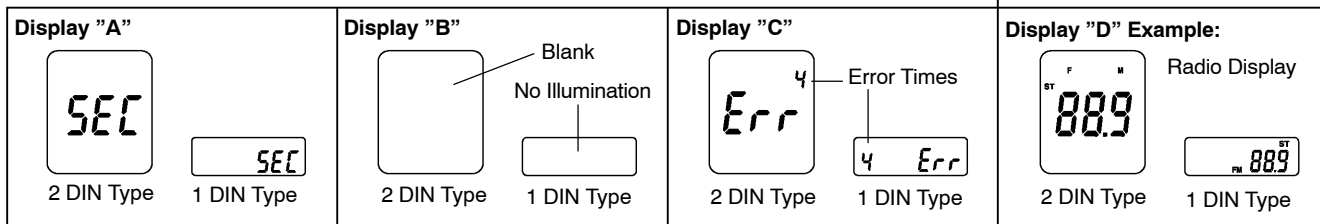
	Problem	No.
Radio	Radio not operating when power switch turned to 'ON'.	1
	Display indicates when power switch turned to 'ON', but no sound (including 'noise') is produced.	2
	Noise present, but AM - FM not operating.	3
	Any speaker does not work.	4
	Any AM or FM does not work.	5
	Few preset turning bands.	5
	Reception poor.	6
	Sound quality poor.	7
	Preset memory disappears.	8
	Tape Player	Cassette tape cannot be inserted.
Cassette tape inserted, but no power.		10
Power coming in, but tape player not operating.		11
Any speaker does not work.		12
Sound quality poor.		13
Tape jammed, malfunction with tape speed or auto-reverse.		14
Cassette tape will not eject.		15
CD Player	CD cannot be inserted.	16
	CD inserted, but no power.	17
	Power coming in, but CD player not operating.	18
	Sound jumps.	19
	Sound quality poor (Volume faint).	20
	Any speaker does not work.	21
	CD will not be ejected.	22
Power Amplifier	No power coming in.	23
	Power coming in, but power amplifier not operating.	24
	Any speaker does not work.	25
Noise	Noise occurs	26
	Noise produced by vibration or shock while driving.	27
	Noise produced when engine starts.	28

The term "AM" includes LW,MW and SW, and the term "FW" includes UKW.

Troubleshooting for ANTI-THEFT SYSTEM

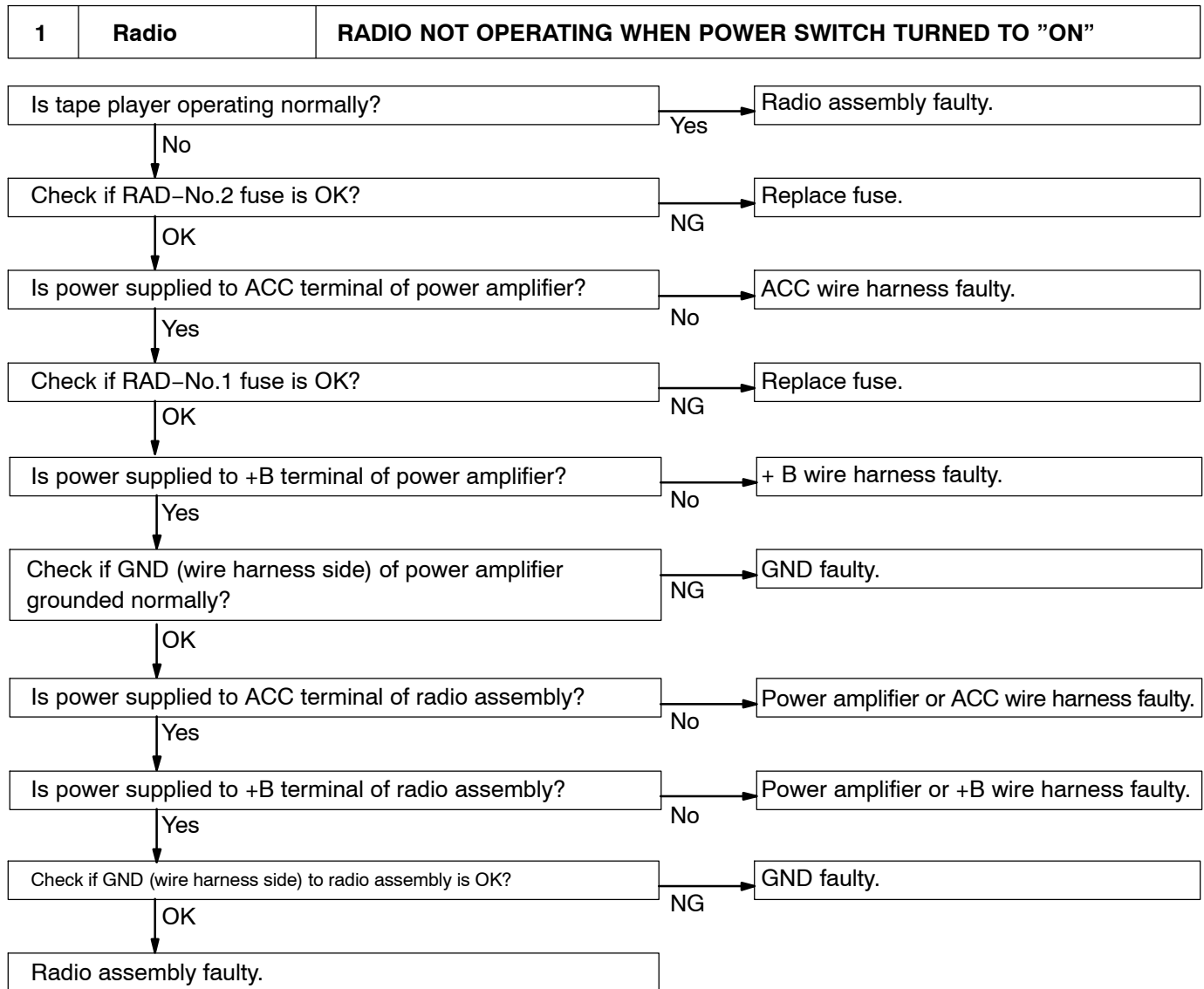


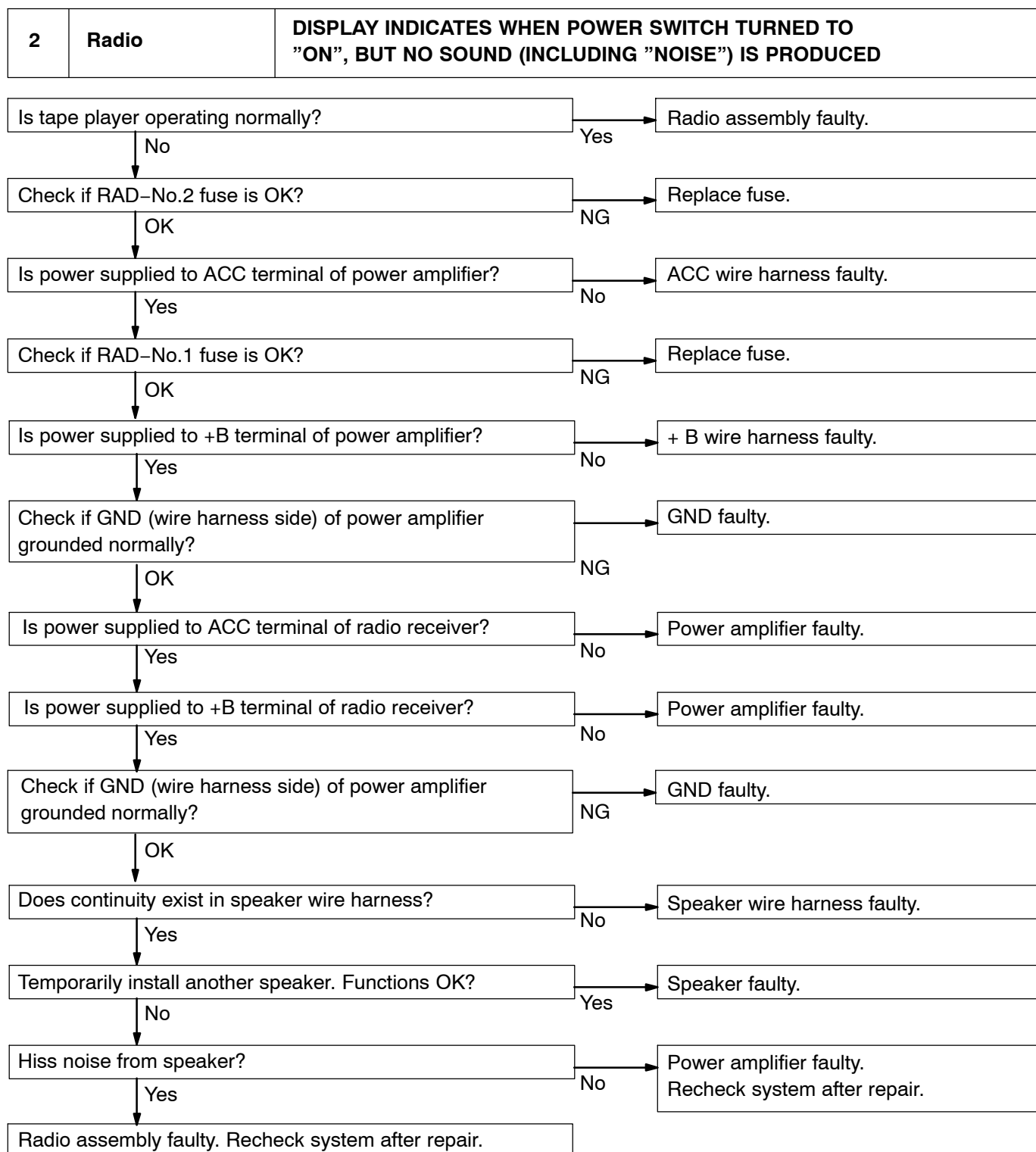
[Liquid Crystal Display (LCD) or VFD for Audio System]



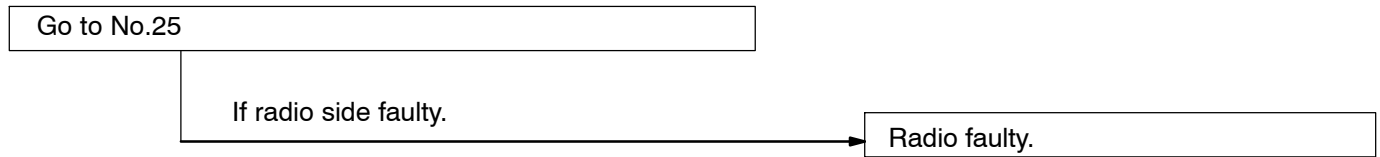
HINT:

- Refer to Owner's Manual for operation details of ANTI-THEFT SYSTEM.
- When the ID number has been cancelled, reset the same number after completing the operation, or inform the customer that it has been cancelled.

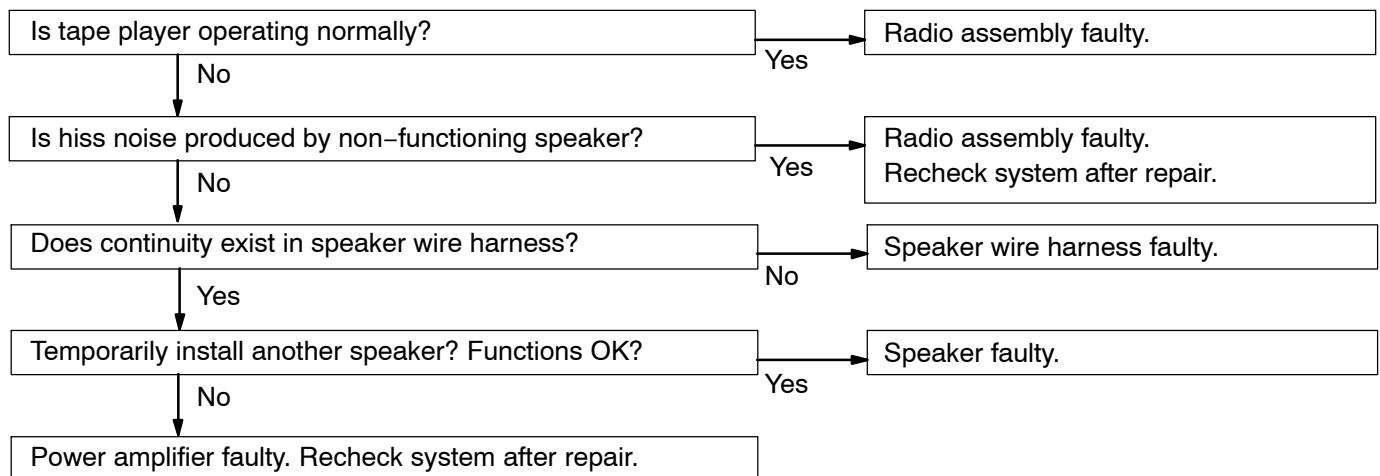




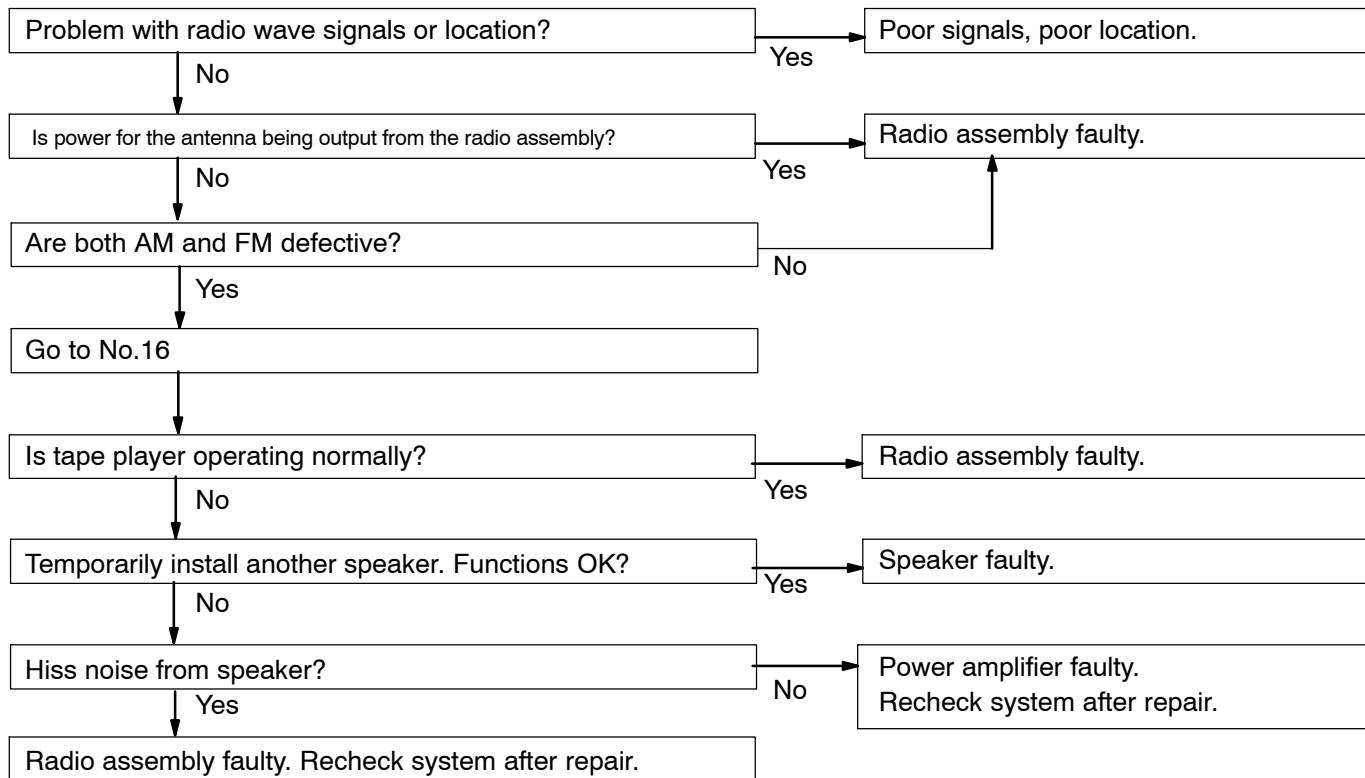
3	Radio	NOISE PRESENT, BUT AM-FM NOT OPERATING
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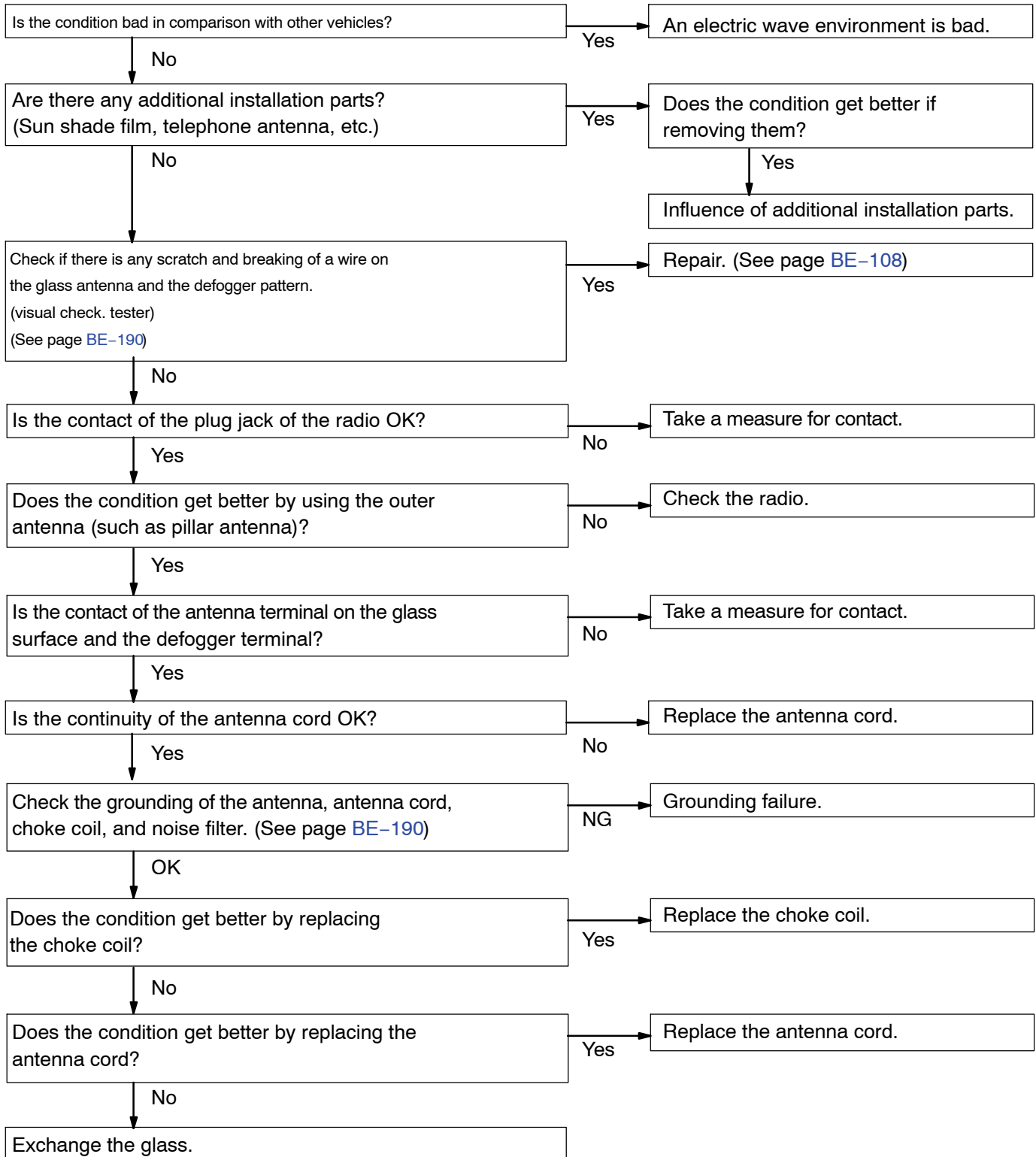
4	Radio	ANY SPEAKER DOES NOT WORK
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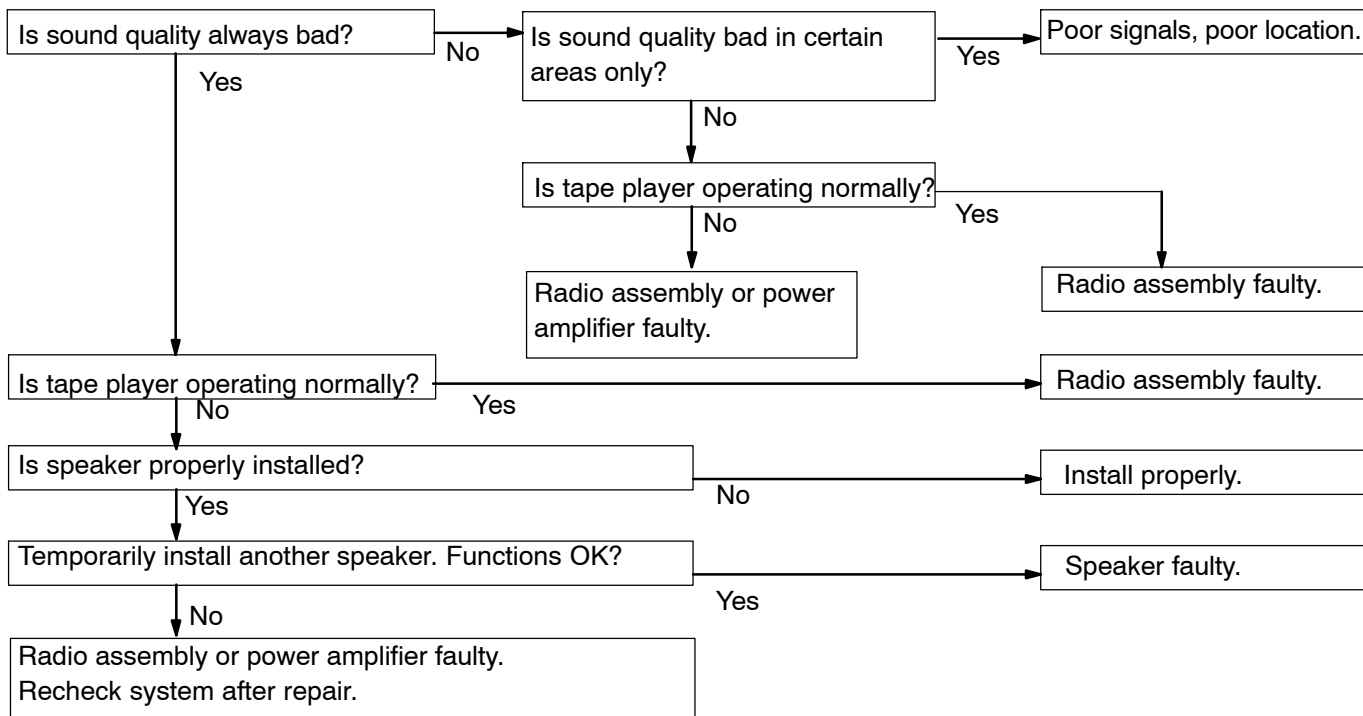
5	Radio	ANY AM OR FM DOES NOT WORK FEW PRESET TUNING BANDS
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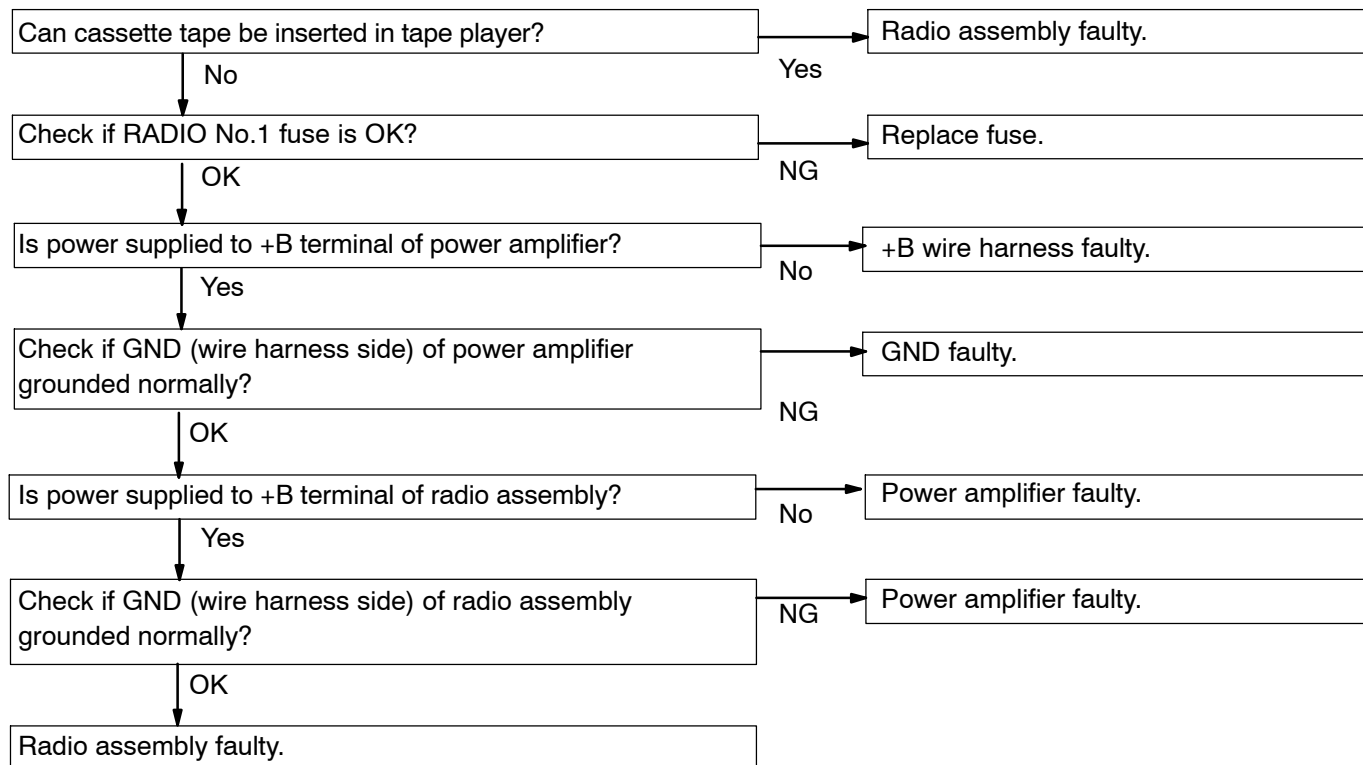
6	Radio	POOR RECEPTION
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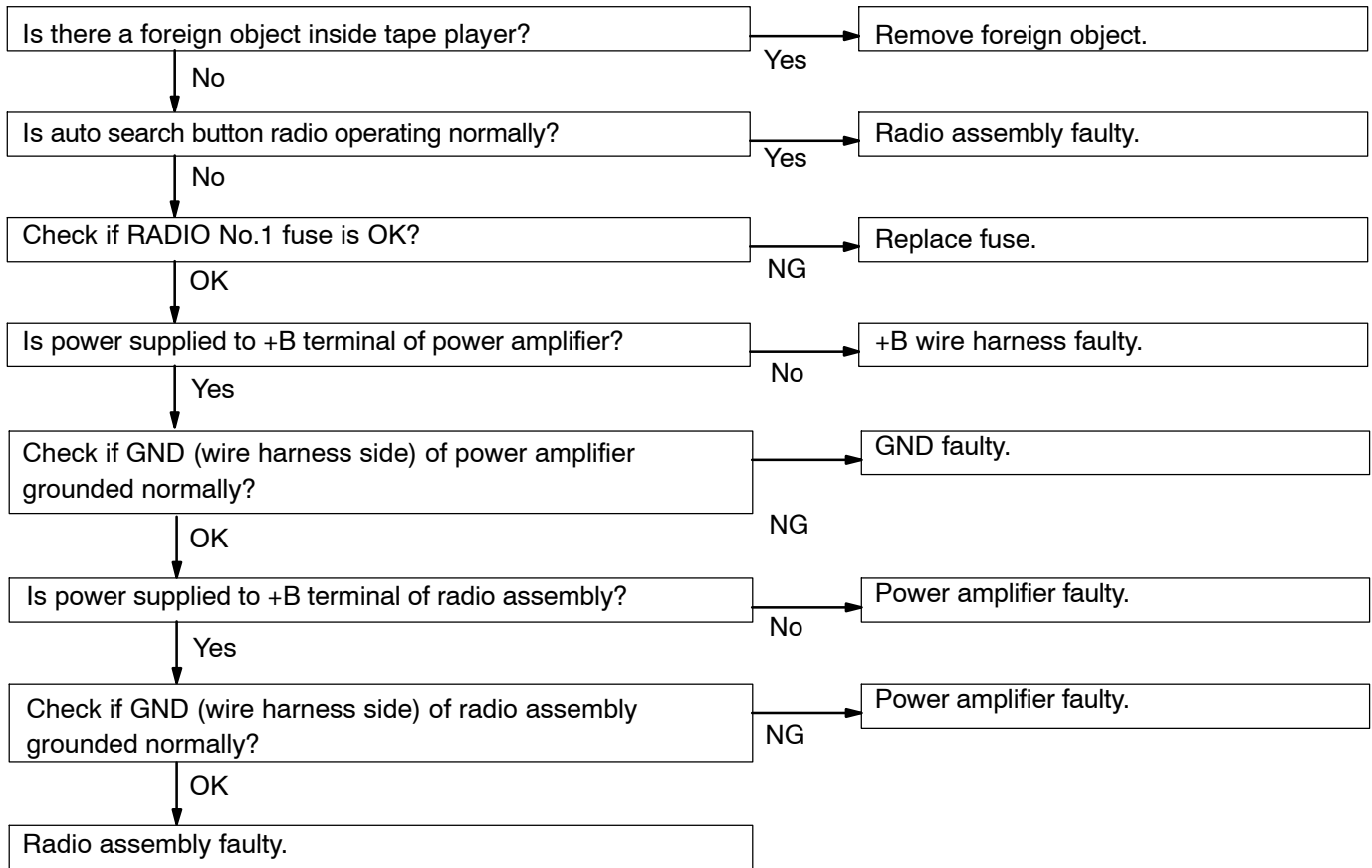
7	Radio	SOUND QUALITY POOR
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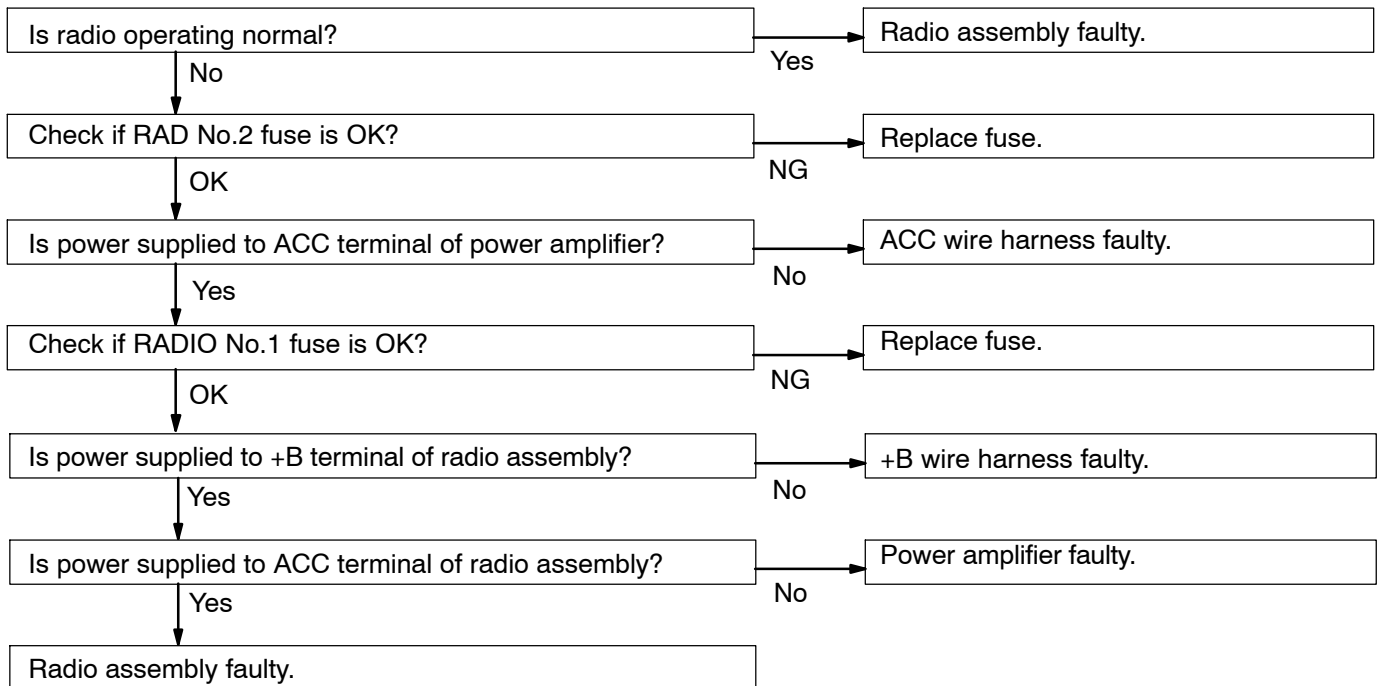
8	Radio	PRESET MEMORY DISAPPEARS
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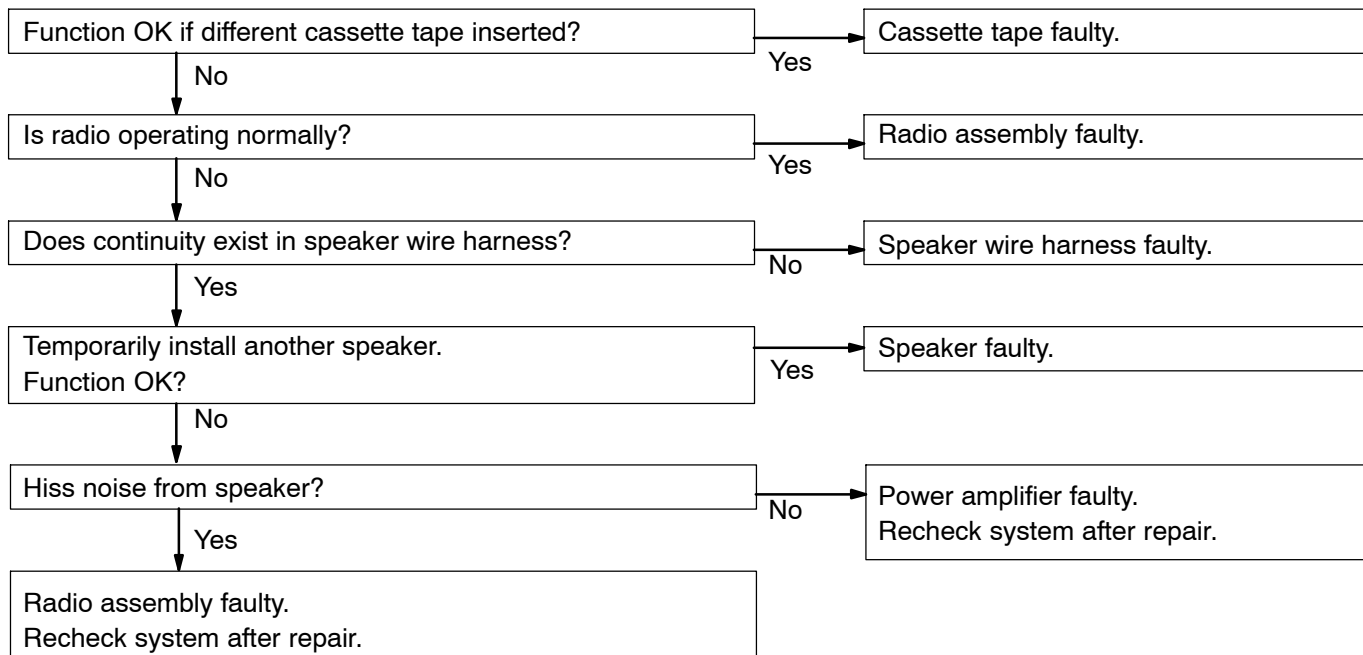
9	Tape Player	CASSETTE TAPE CANNOT BE INSERTED
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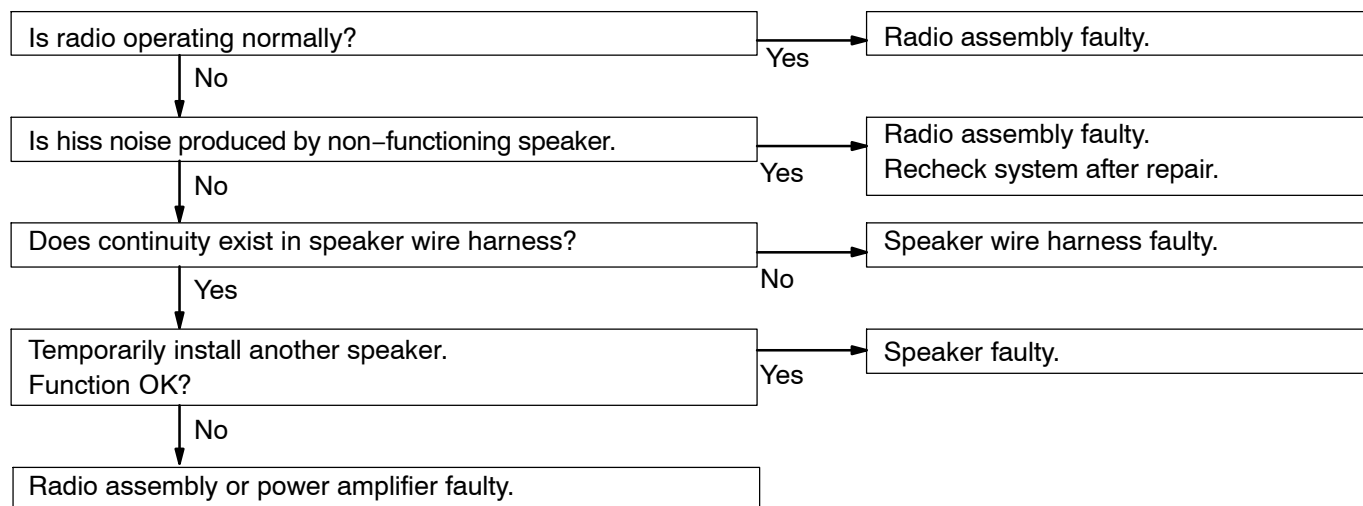
10	Tape Player	CASSETTE TAPE INSERTED, BUT NO POWER
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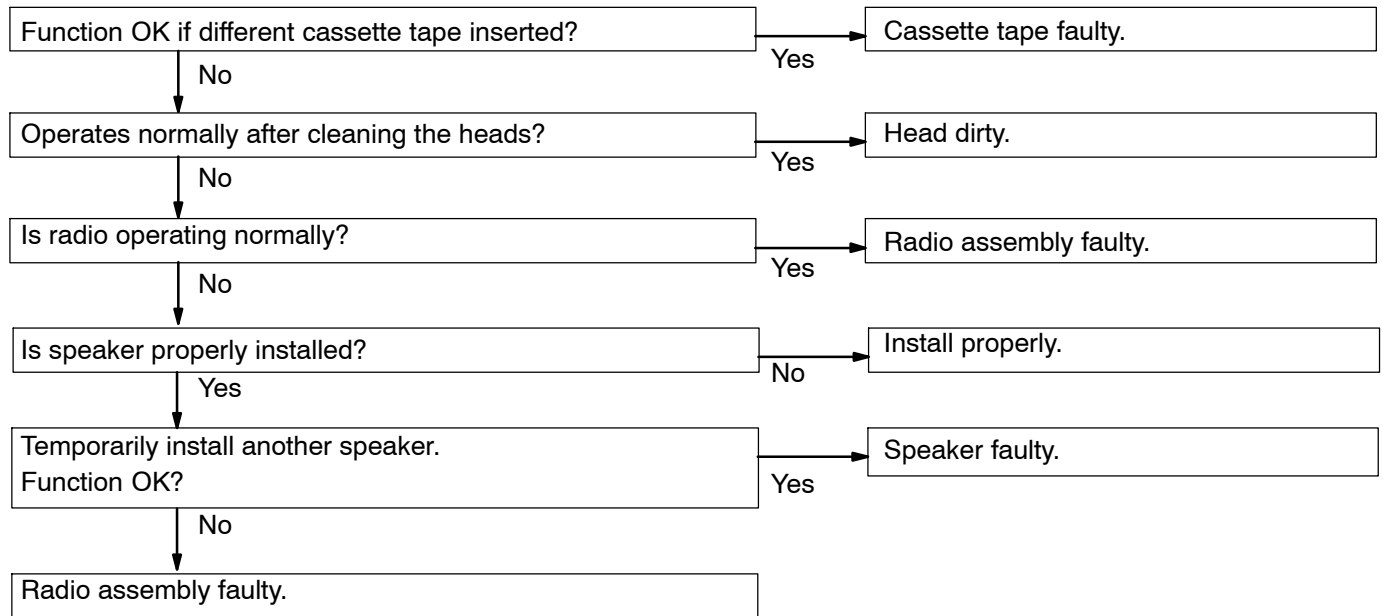
11	Tape Player	POWER COMING IN, BUT TAPE PLAYER NOT OPERATING
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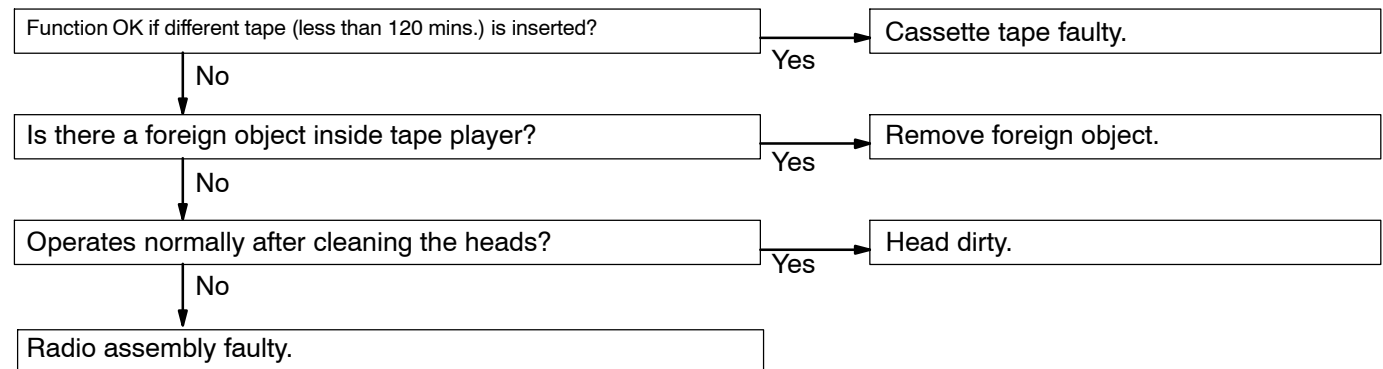
12	Tape Player	ANY SPEAKER DOES NOT WORK
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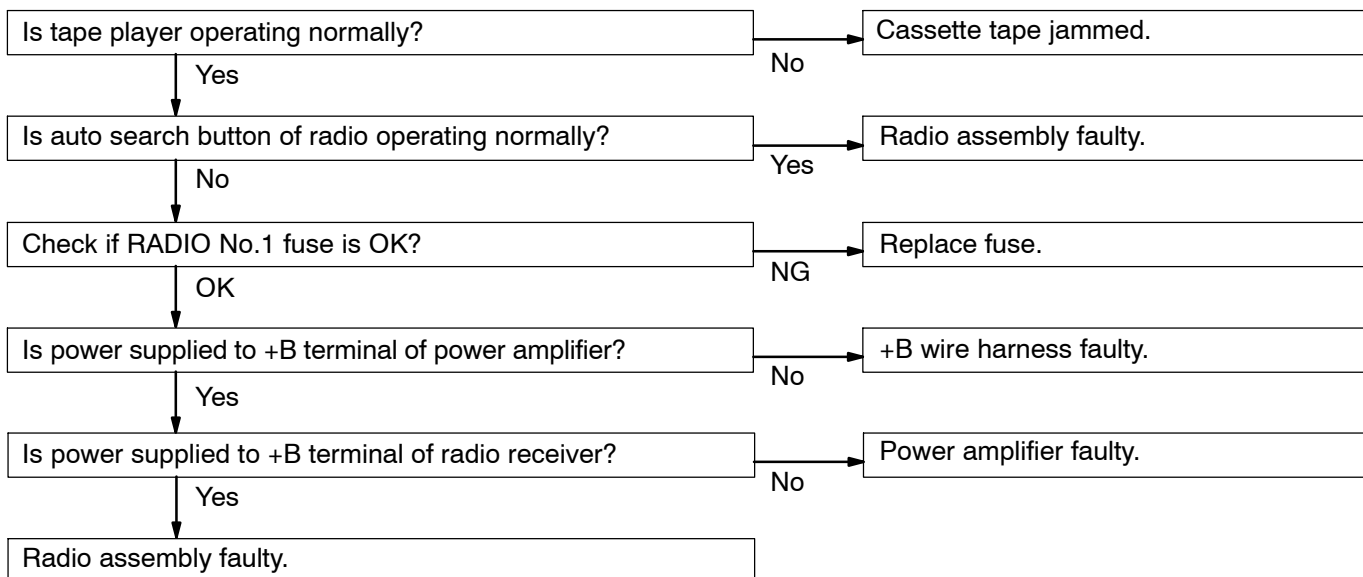
13	Tape Player	SOUND QUALITY POOR (VOLUME FAINT)
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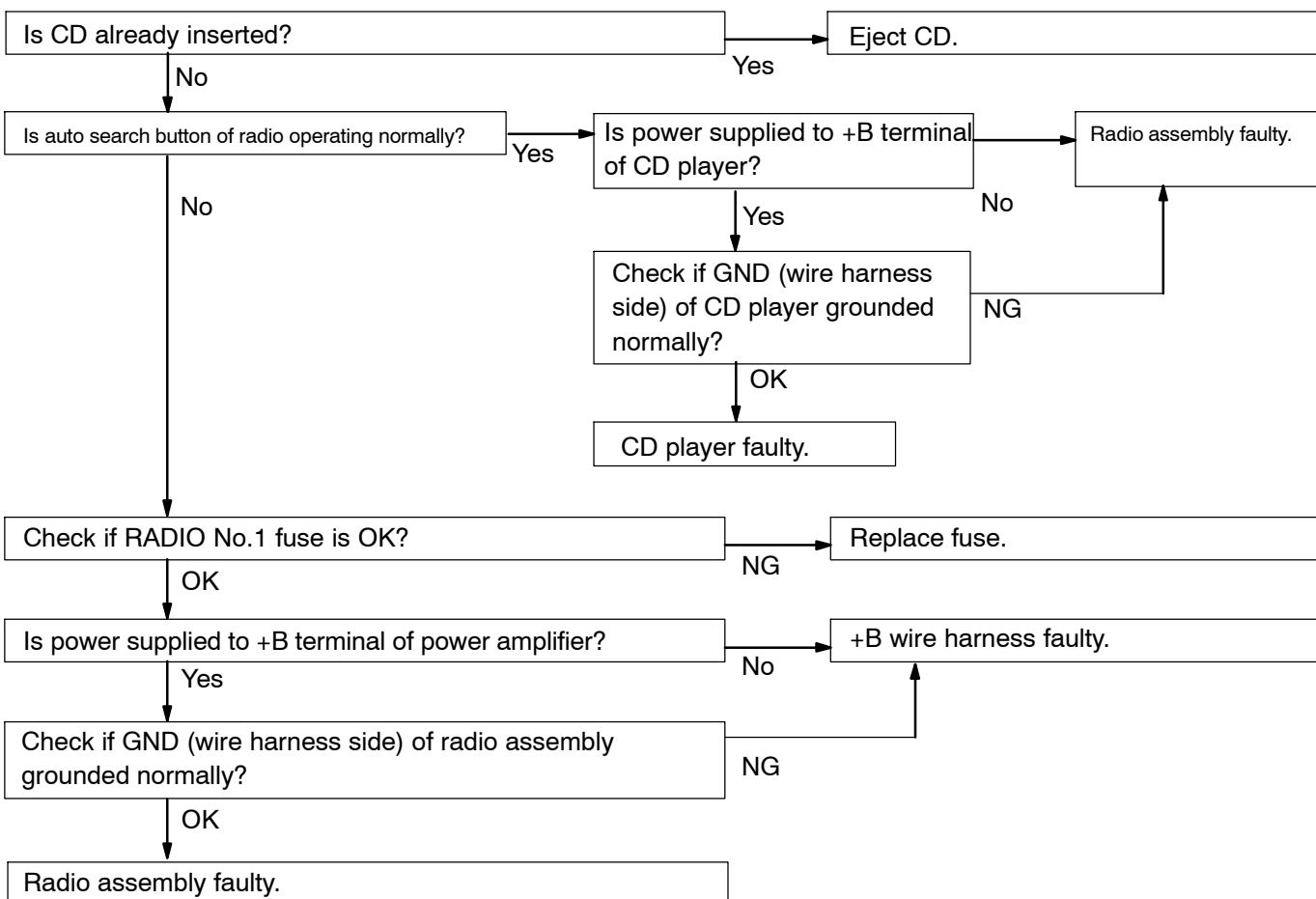
14	Tape Player	TAPE JAMMED MALFUNCTION WITH TAPE SPEED OR AUTO-REVERSE
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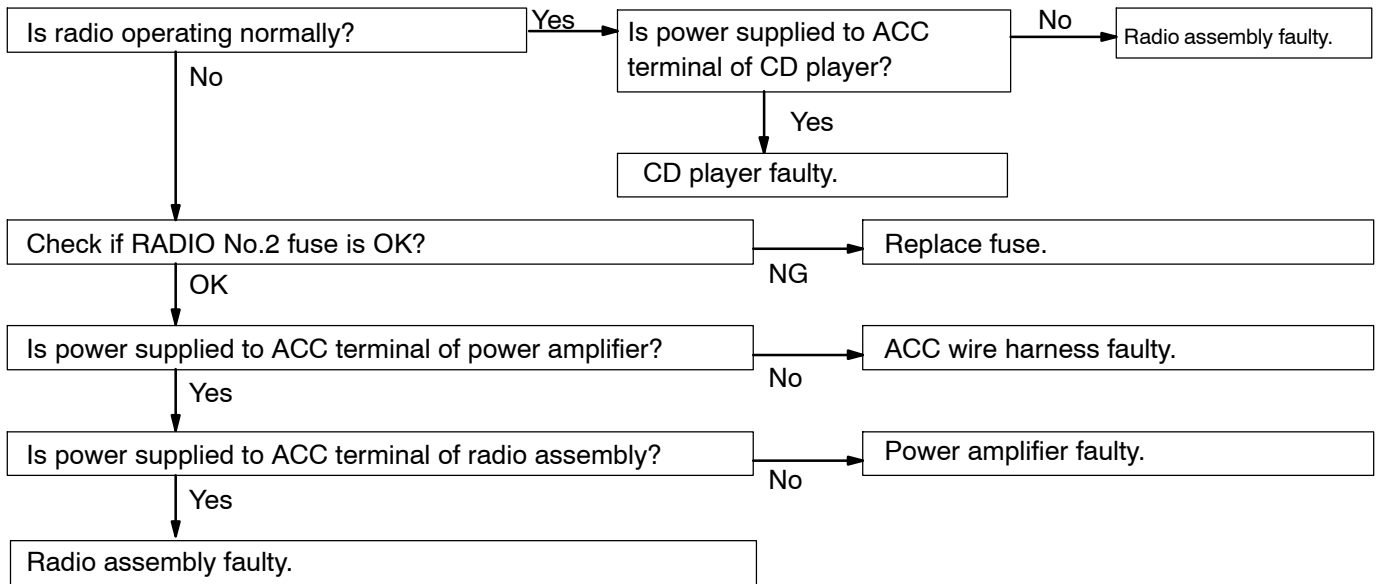
15	Tape Player	CASSETTE TAPE WILL NOT BE EJECTED
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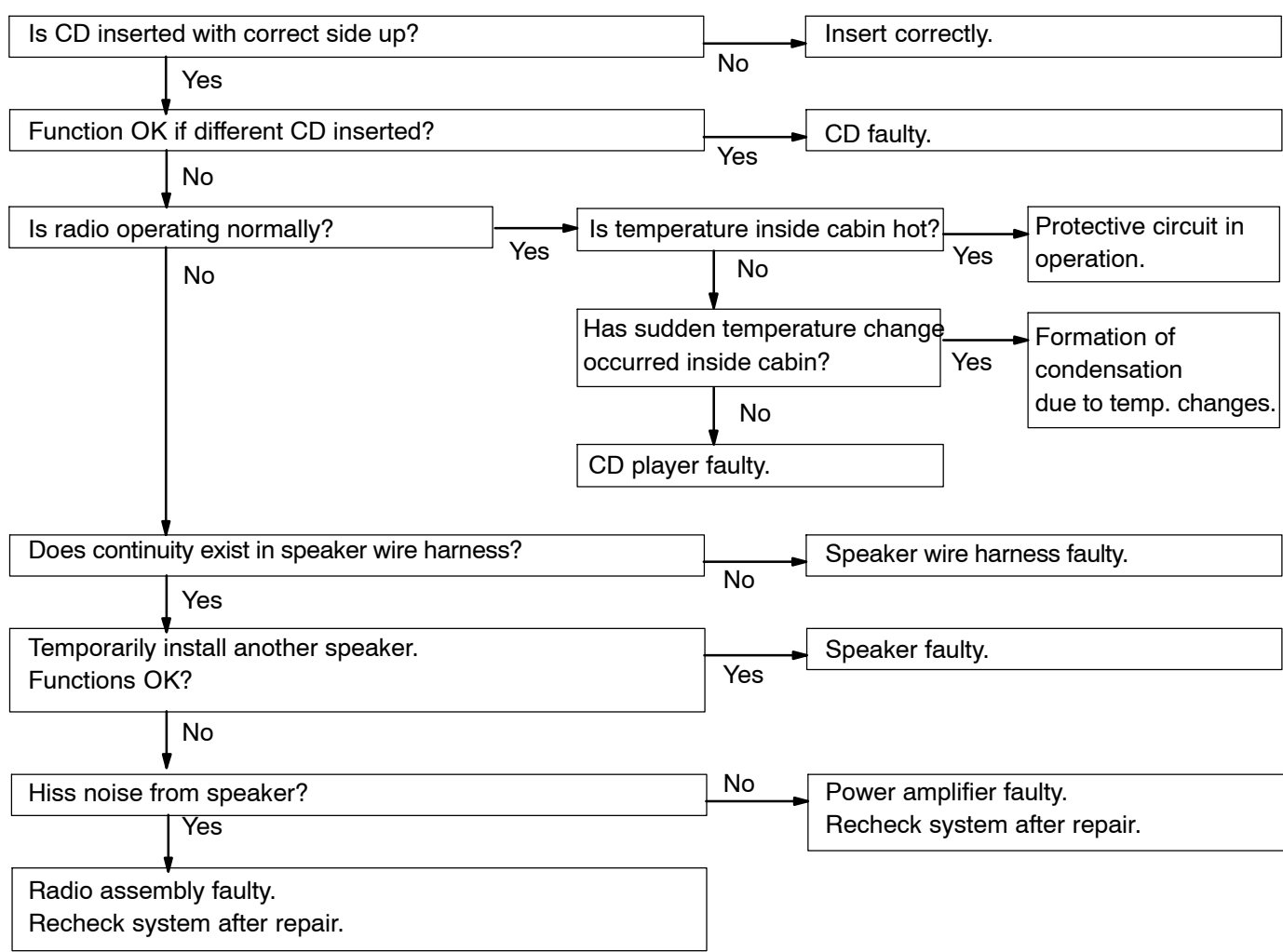
16	CD Player	CD CANNOT BE INSERTED
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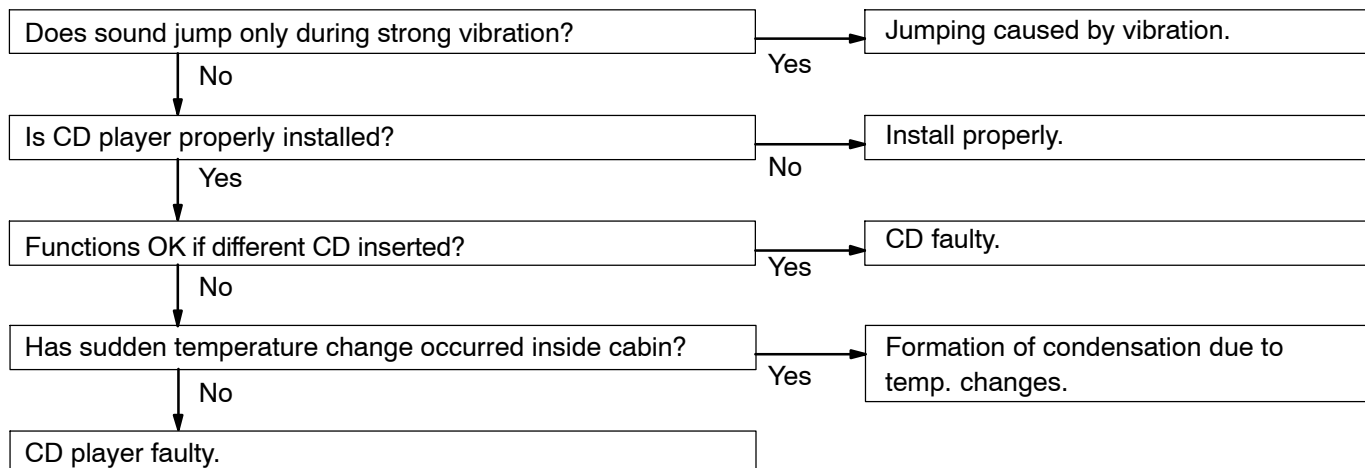
17	CD Player	CD INSERTED, BUT NO POWER
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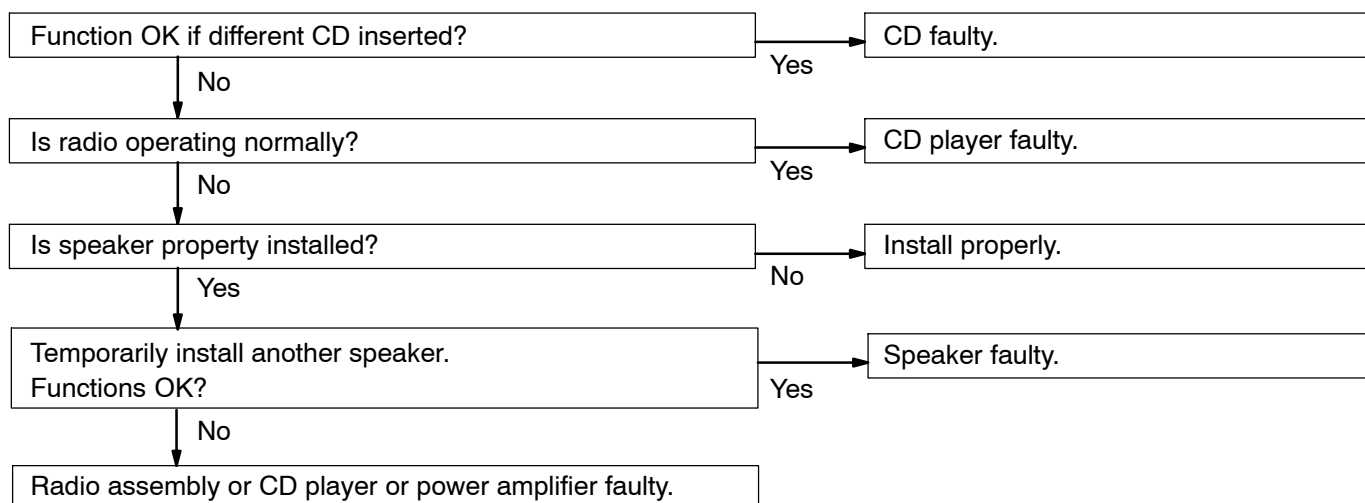
18	CD Player	POWER COMING IN, BUT CD PLAYER NOT OPERATING
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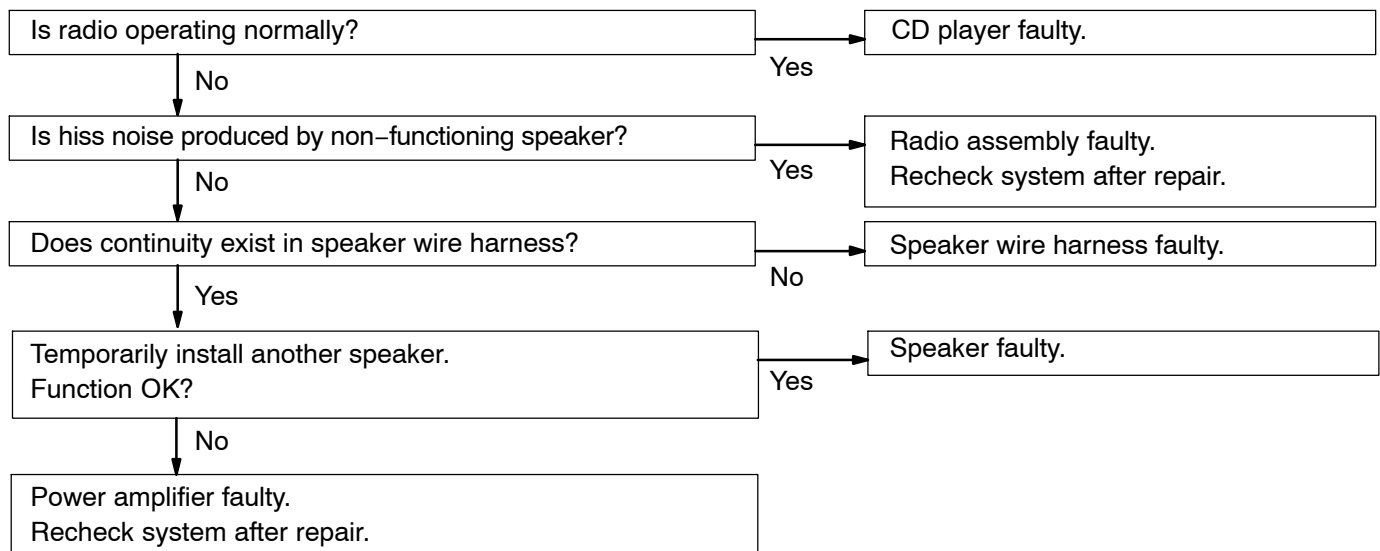
19	CD Player	SOUND JUMPS
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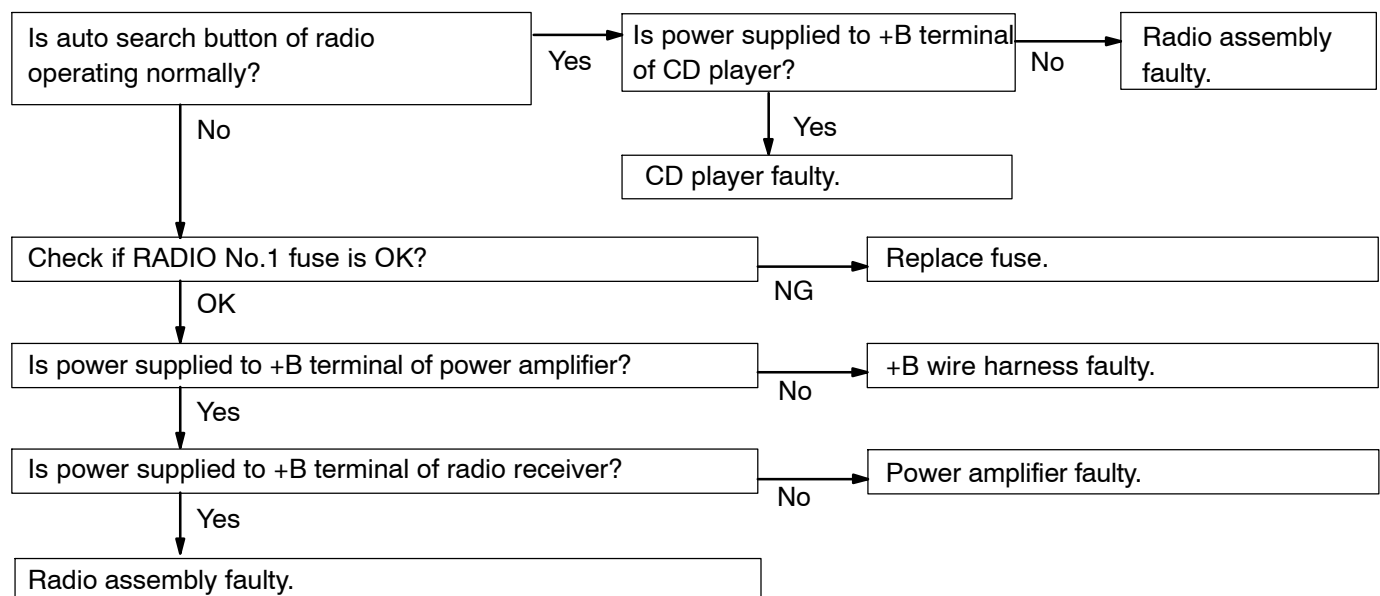
20	CD Player	SOUND QUALITY POOR (VOLUME FAINT)
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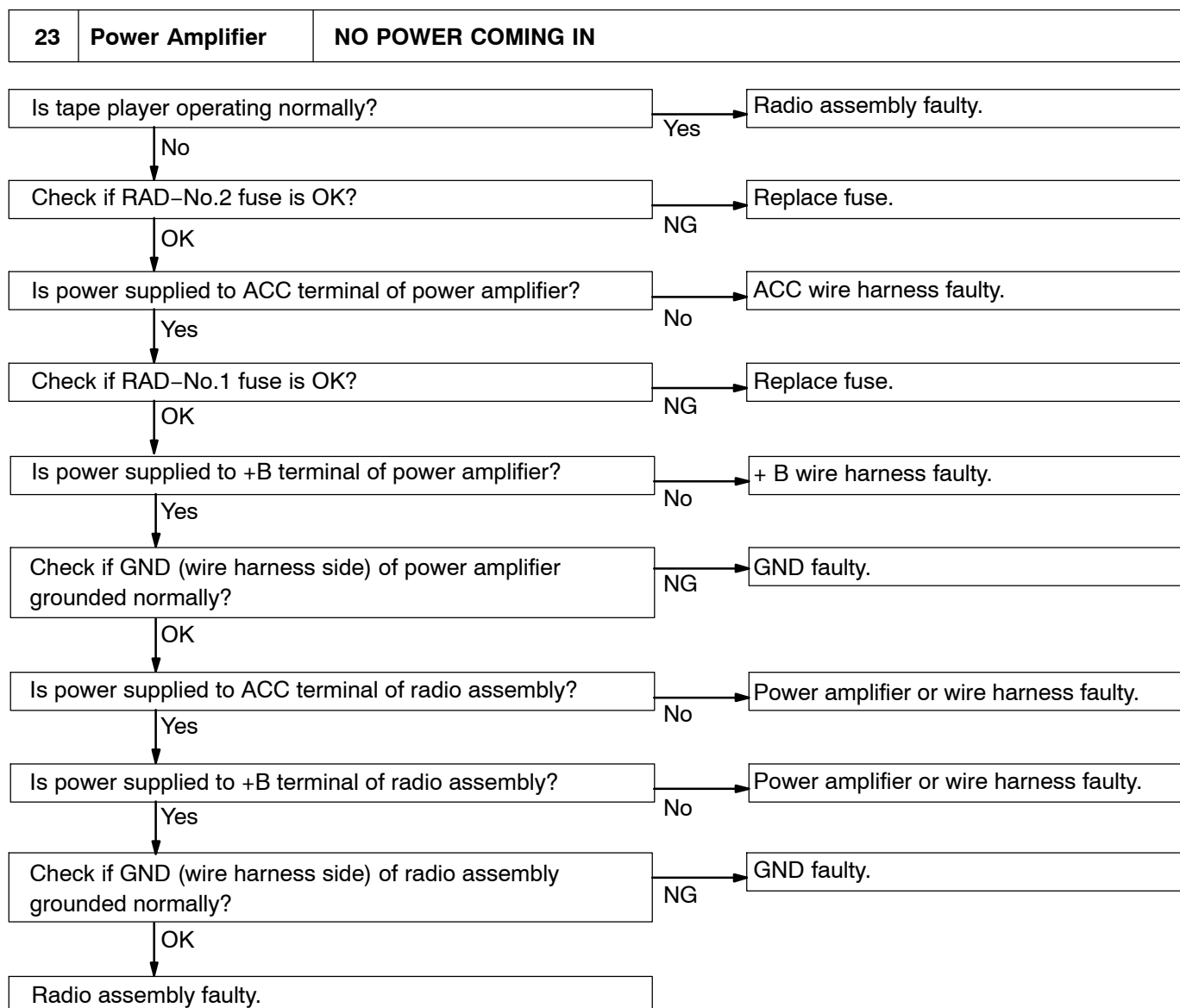


21	CD Player	ANY SPEAKER DOES NOT WORK
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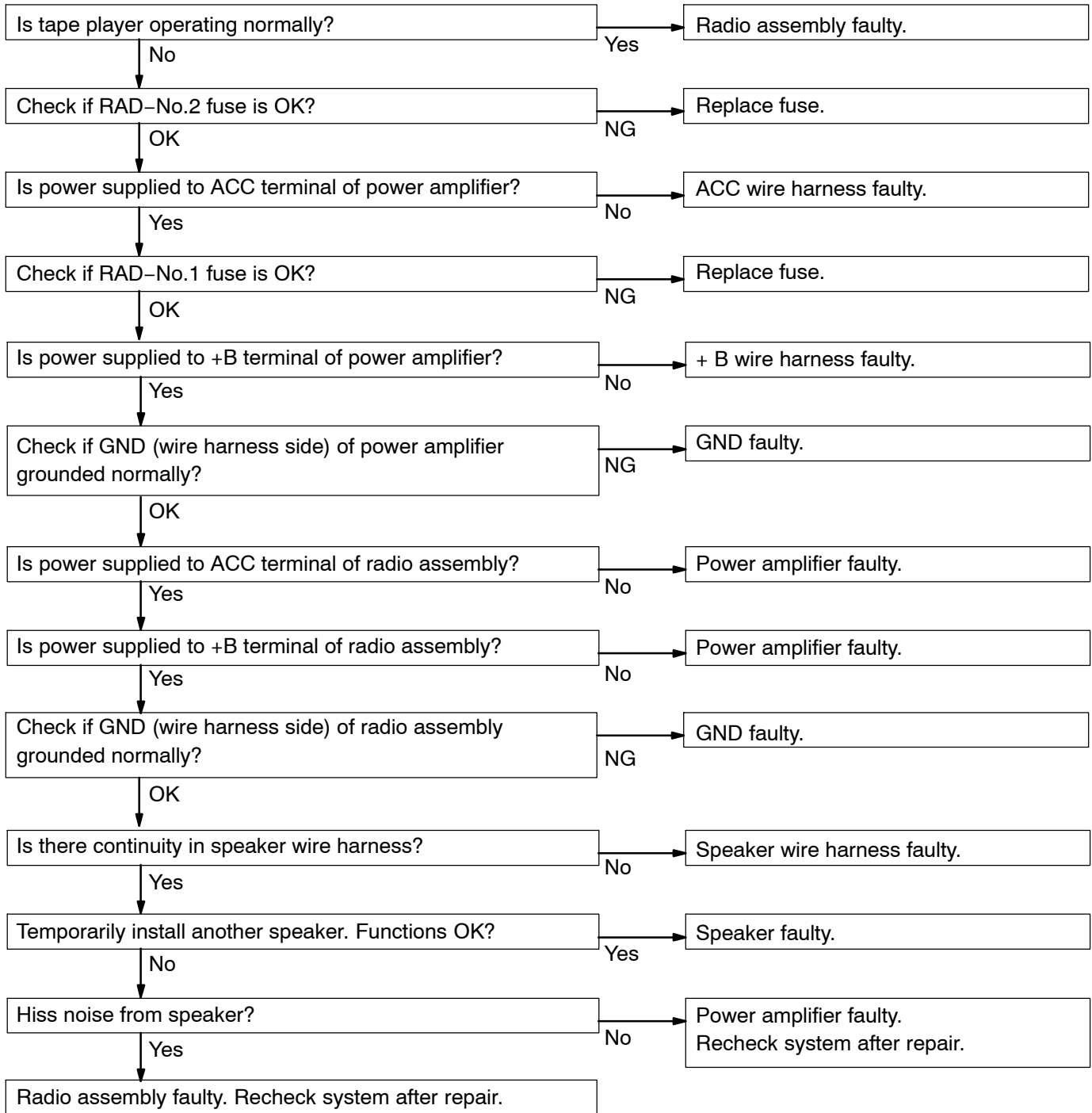


22	CD Player	CD WILL NOT BE EJECTED
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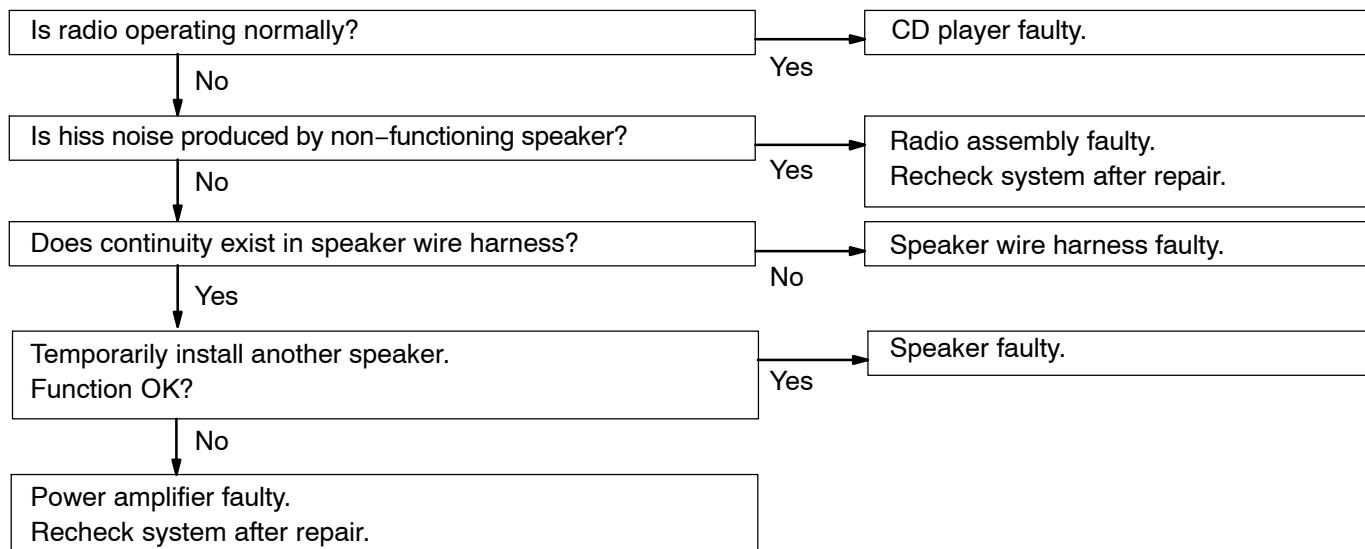


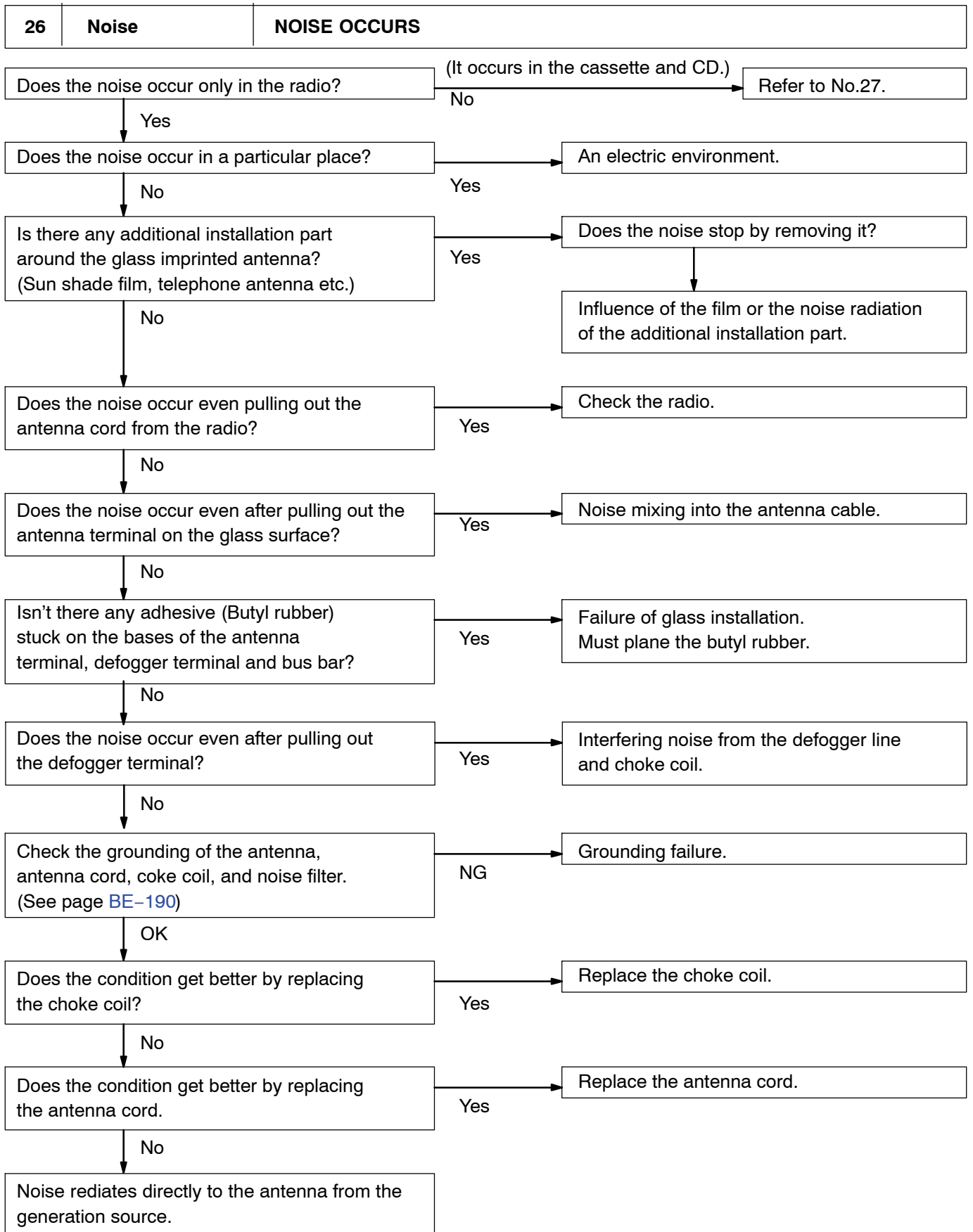


24	Power Amplifier	POWER COMING IN, BUT WOOFER (POWER) AMPLIFIER NOT OPERATING
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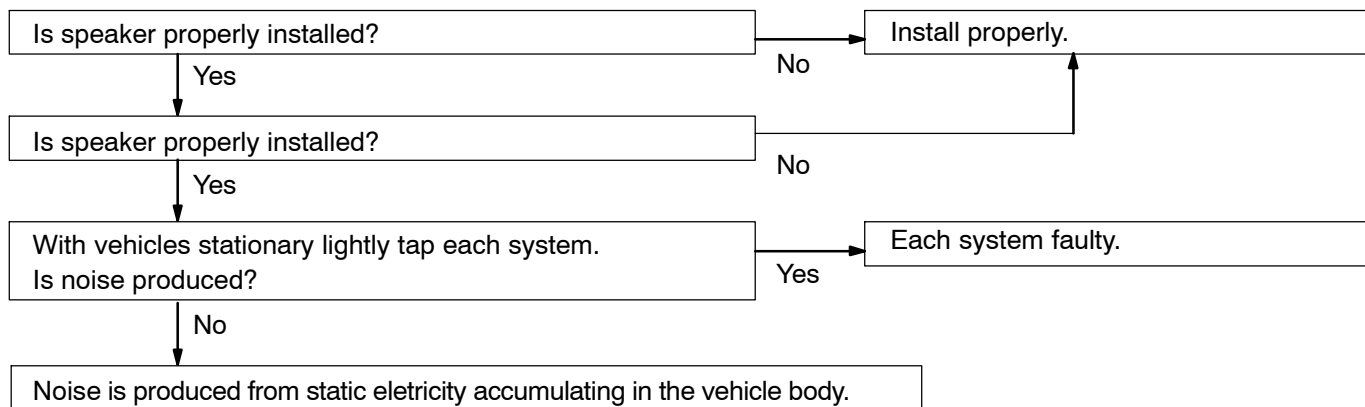


25	Power Amplifier	ANY SPEAKER DOES NOT WORK
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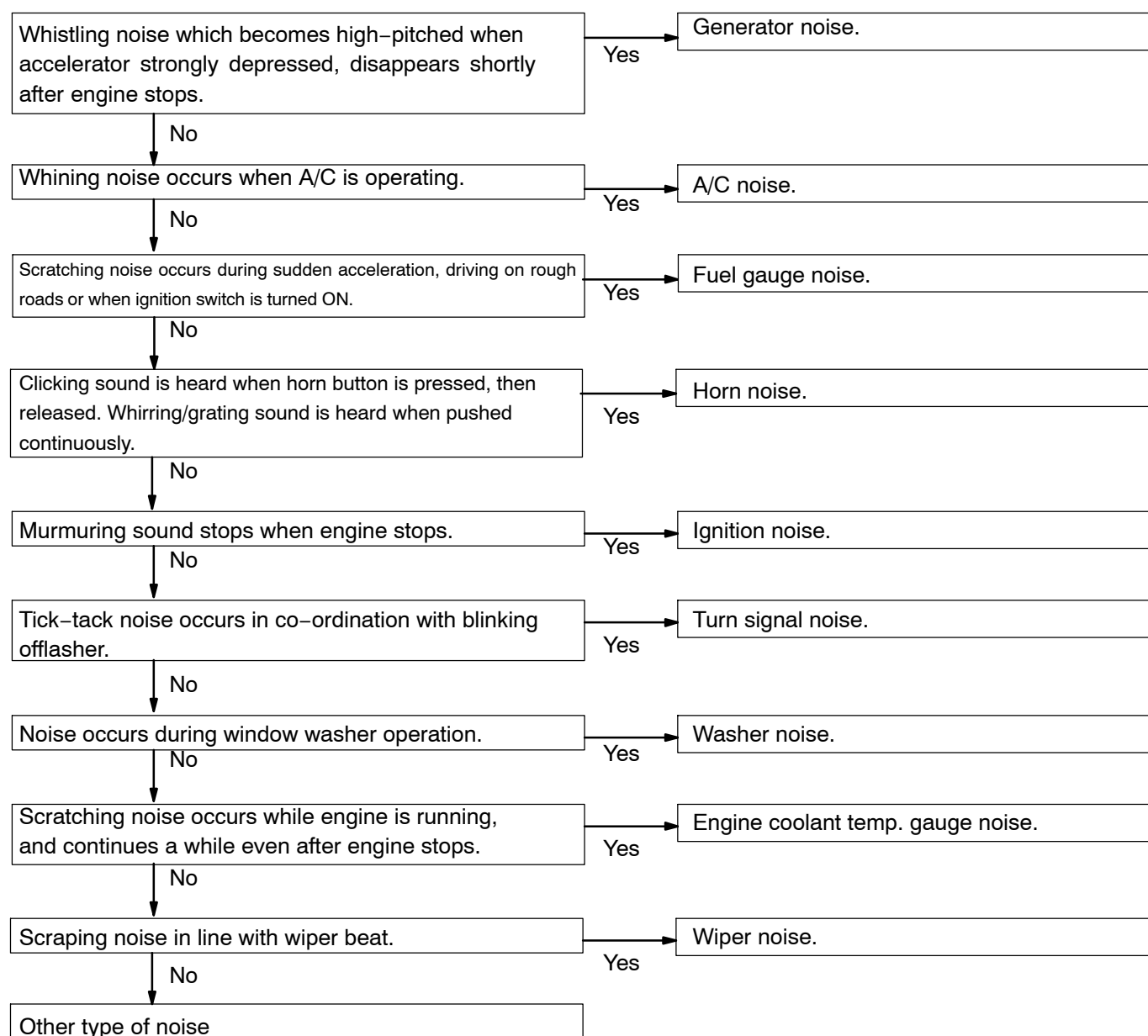




27	Noise	NOISE PRODUCED BY VIBRATION OR SHOCK WHILE DRIVING
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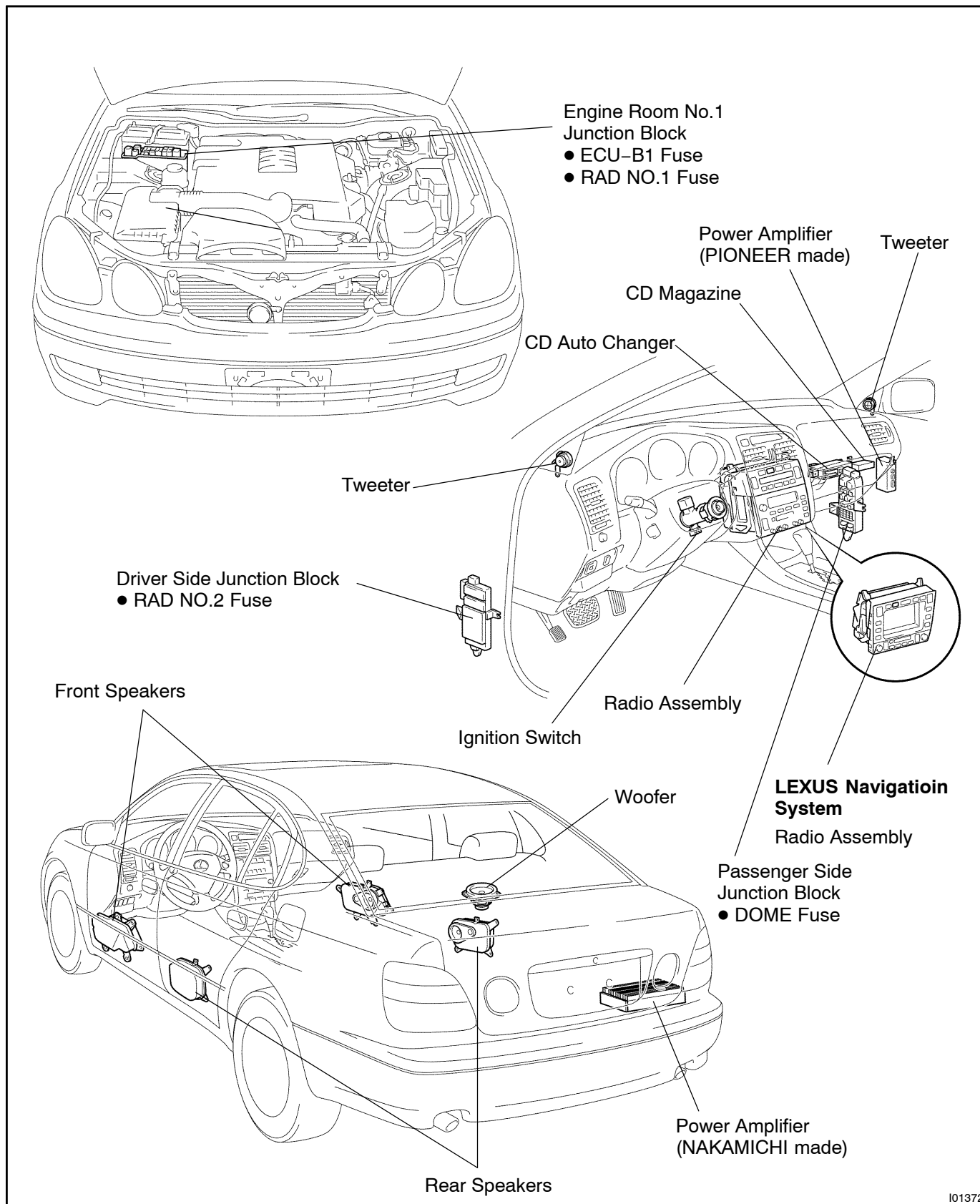


28	Noise	NOISE PRODUCED WHEN ENGINE STARTS
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LOCATION

- The vehicle shown in this illustration is "GS400".
- All components of "GS300" other than the ones used for engine are same as "GS400".



Wire Harness Side

I04310

INSPECTION

**1. Except NAKAMICHI made:
INSPECT CD AUTO CHANGER CIRCUIT**

Disconnect connectors from CD auto changer and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
8 - Ground	Constant	Continuity
5 - Ground	Constant	Battery positive voltage
10 - Ground	Ignition switch LOCK	No voltage
10 - Ground	Ignition switch ACC or ON	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

HINT:

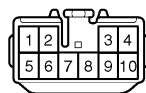
- Check the wire harness between the radio receiver assembly and the CD auto changer.
- Since the signals to and from the MUTE, R⁻, R⁺, L⁻, L⁺, TX⁻ and TX⁺ terminals are serial signals, they cannot ordinarily be measured with a tester.

Wire Harness Side

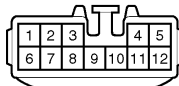
Connector "A"



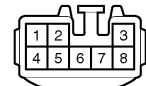
Connector "B"



Connector "C"



Connector "D"



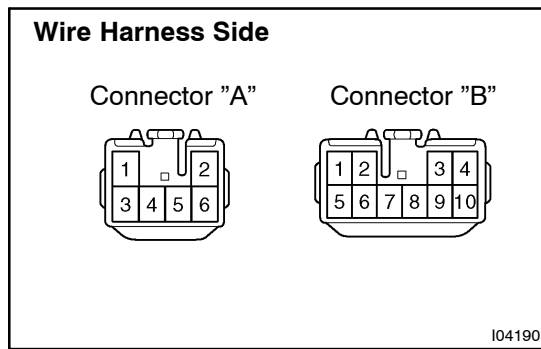
I04189

**2. Except NAKAMICHI made:
INSPECT POWER AMPLIFIER CIRCUIT**

Disconnect the connector from power amplifier and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
B7 - Ground	Constant	Continuity
C12 - Ground	Ignition switch LOCK and radio switch ON	No voltage
C12 - Ground	Ignition switch ACC or ON and radio switch ON	Battery positive voltage
B4 - Ground	Constant	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.



3. Except NAKAMICHI made:

INSPECT RADIO RECEIVER ASSEMBLY CIRCUIT

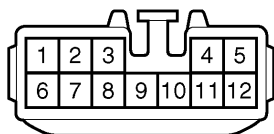
Disconnect the connectors from the radio receiver assembly, and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
A2 - Ground	Constant	Continuity
A4 - Ground	Constant	Battery positive voltage
A1 - Ground	Ignition switch LOCK	No voltage
A1 - Ground	Ignition switch ACC or ON	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

HINT:

Check the wire harness between radio receiver assembly and the CD auto changer, between radio receiver assembly and power amplifier.

Wire Harness Side

I04188

**4. NAKAMICHI made:
INSPECT CD AUTO CHANGER CIRCUIT**

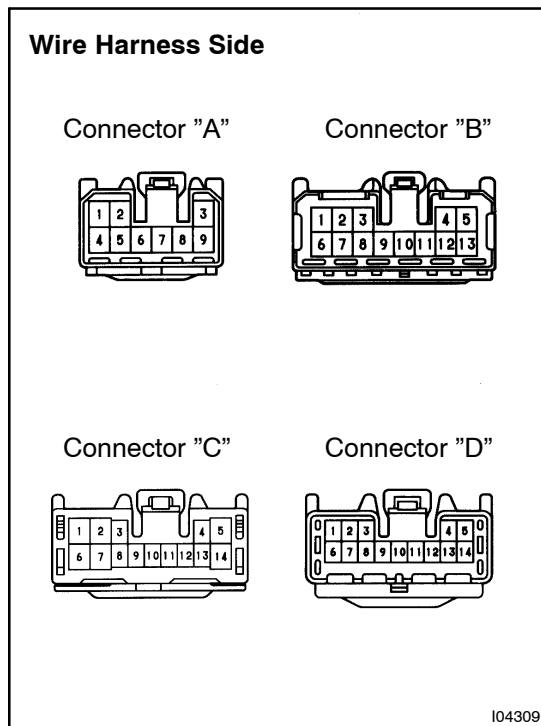
Disconnect connectors from CD auto changer and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
14 - Ground	Constant	Continuity
4 - Ground	Ignition switch LOCK	No voltage
4 - Ground	Ignition switch ACC or ON	Battery positive voltage
5 - Ground	Constant	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

HINT:

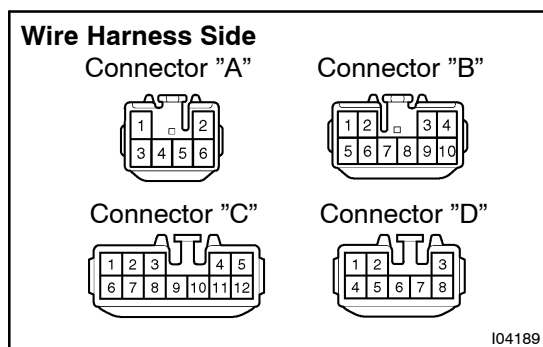
- Check the wire harness between the radio receiver assembly and the CD auto changer.
- Since the signals to and from the MUTE, R⁻, R⁺, L⁻, L⁺, TX⁻ and TX⁺ terminals are serial signals, they cannot ordinarily be measured with a tester.



**5. NAKAMICHI made:
INSPECT POWER AMPLIFIER CIRCUIT**
Disconnect the connector from power amplifier and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
A1 - Ground A4 - Ground D1 - Ground	Constant	Continuity
A6 - Ground	Ignition switch LOCK and radio switch ON	No voltage
A6 - Ground	Ignition switch ACC or ON and radio switch ON	Battery positive voltage
A2 - Ground	Constant	Battery positive voltage
A5 - Ground	Constant	Battery positive voltage

If the circuit is not as specified, inspect the circuits connected to other parts.

**6. NAKAMICHI made:****INSPECT RADIO RECEIVER ASSEMBLY CIRCUIT**

Disconnect the connectors from the radio receiver assembly, and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
D3 - Ground	Constant	Continuity
D4 - Ground	Constant	Battery positive voltage
D1 - Ground	Ignition switch LOCK	No voltage
D1 - Ground	Ignition switch ACC or ON	Battery positive voltage

*: w/ LEXUS navigation system

If the circuit is not as specified, inspect the circuits connected to other parts.

HINT:

Check the wire harness between radio receiver assembly and the CD auto changer, between radio receiver assembly and power amplifier.

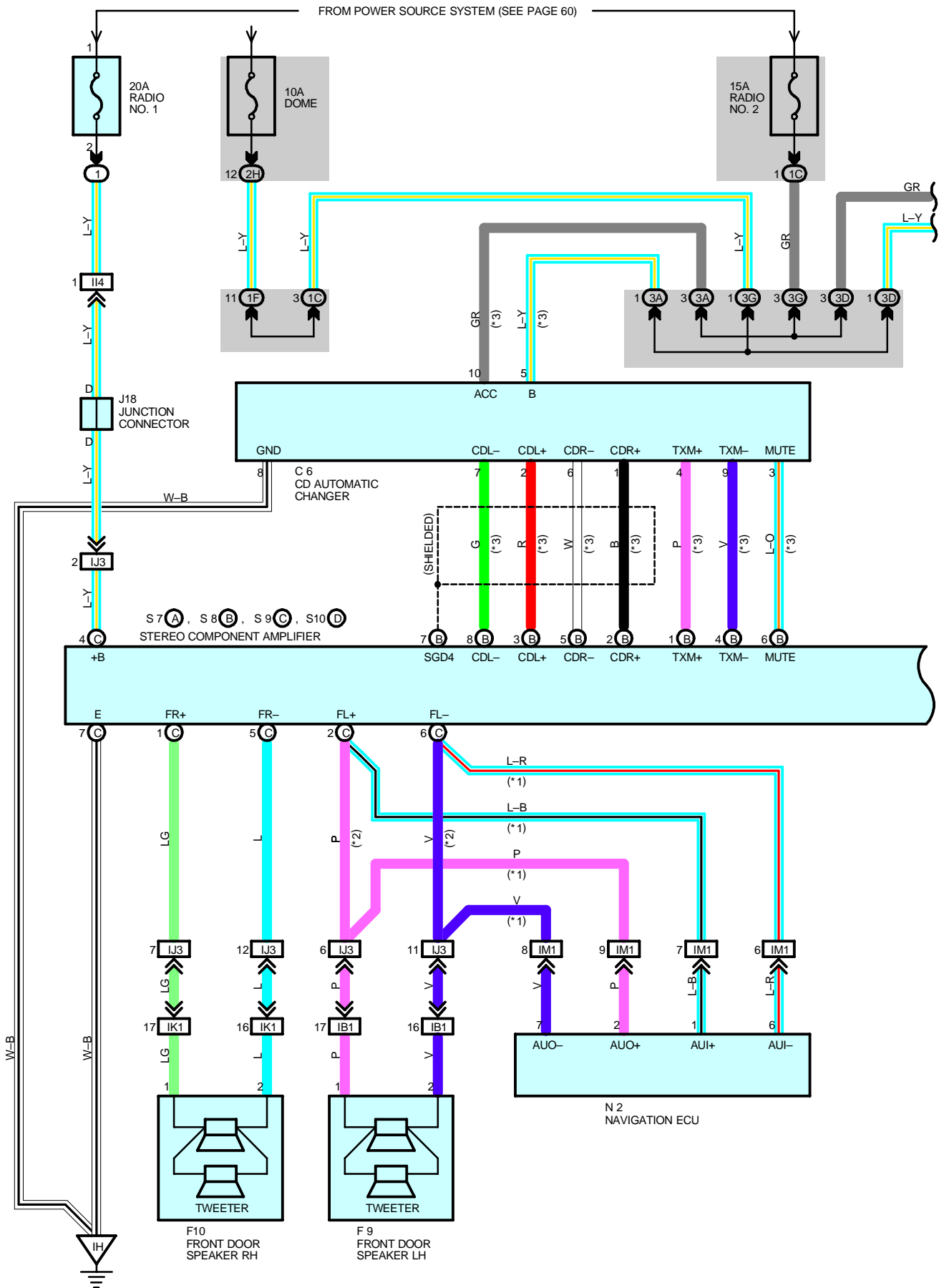
7. INSPECT GLASS IMPRINTED ANTENNA

(Use same procedure as for "INSPECT DEFOGGER WIRES" on page [BE-108](#).)

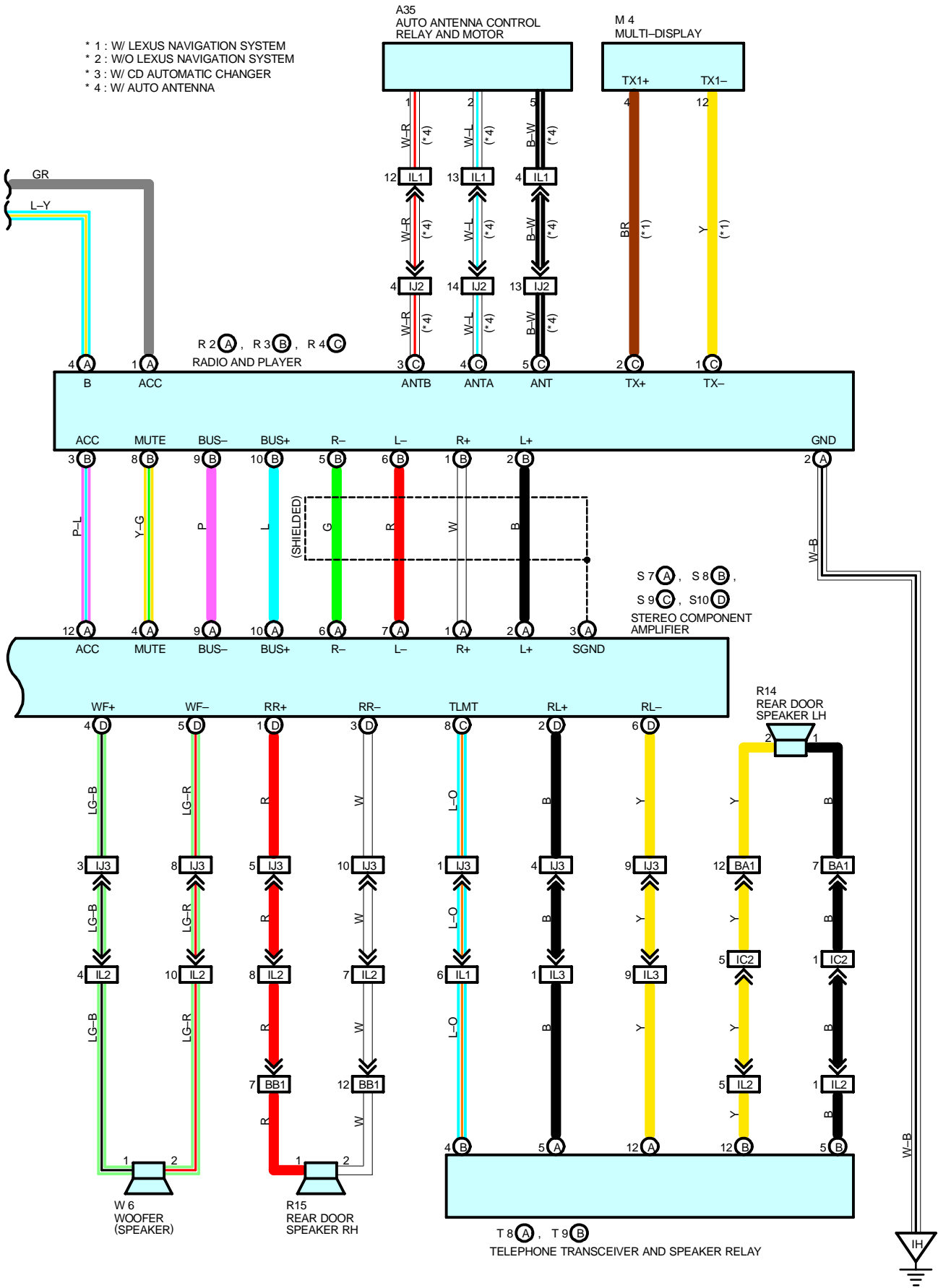
8. REPAIR GLASS IMPRINTED ANTENNA

(Use same procedure as for "REPAIR DEFOGGER WIRES" on page [BE-108](#).)

RADIO AND PLAYER (EXCEPT NAKAMICHI)



- * 1 : W/ LEXUS NAVIGATION SYSTEM
- * 2 : W/O LEXUS NAVIGATION SYSTEM
- * 3 : W/ CD AUTOMATIC CHANGER
- * 4 : W/ AUTO ANTENNA



RADIO AND PLAYER (EXCEPT NAKAMICHI)

SERVICE HINTS

R2 (A) RADIO AND PLAYER

- (A) 1-GROUND : Approx. 12 volts with ignition SW at **ACC** or **ON** position
- (A) 4-GROUND : Always approx. 12 volts
- (A) 2-GROUND : Always continuity

S9 (C) STEREO COMPONENT AMPLIFIER

- (C) 4-GROUND : Always approx. 12 volts
- (C) 7-GROUND : Always continuity

C6 CD AUTOMATIC CHANGER

- 5-GROUND : Always approx. 12 volts
- 10-GROUND : Approx. 12 volts with ignition SW at **ACC** or **ON** position
- 8-GROUND : Always continuity

○ : PARTS LOCATION

Code	See Page	Code	See Page	Code	See Page
A35	42	R2	A 41	S9	C 41
C6	40	R3	B 41	S10	D 41
F9	42	R4	C 41	T8	A 43
F10	42	R14	43	T9	B 43
J18	41	R15	43	W6	43
M4	41	S7	A 41		
N2	43	S8	B 41		

○ : RELAY BLOCKS

Code	See Page	Relay Blocks (Relay Block Location)
1	22	Engine Room No.1 R/B (Engine Compartment Right)

○ : JUNCTION BLOCK AND WIRE HARNESS CONNECTOR

Code	See Page	Junction Block and Wire Harness (Connector Location)
1C	26	Instrument Panel Wire and Driver Side J/B (Left Kick Panel)
1F	26	Cowl Wire and Driver Side J/B (Left Kick Panel)
2H	29	Cowl Wire and Passenger Side J/B (Right Kick Panel)
3A	30	Instrument Panel Wire and Instrument Panel J/B (Instrument Panel Reinforcement Center)
3D		
3G		

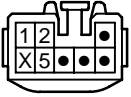
□ : CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
IB1	50	Front Door LH Wire and Cowl Wire (Left Kick Panel)
IC2	50	Floor No.2 Wire and Cowl Wire (Left Kick Panel)
II4	52	Engine Room Main Wire and Cowl Wire (Near the Passenger Side R/B)
IJ2	52	Instrument Panel Wire and Cowl Wire (Left Side of the Blower Unit)
IJ3		
IK1	52	Front Door RH Wire and Cowl Wire (Right Kick Panel)
IL1	52	Floor No.1 Wire and Cowl Wire (Right Kick Panel)
IL2		
IL3		
IM1	52	Instrument Panel Wire and Floor No.1 Wire (Front RH Side of the Shift Lever)
BA1	54	Rear Door LH Wire and Floor No.2 Wire (Under the Center Pillar LH)
BB1	54	Rear Door RH Wire and Floor No.1 Wire (Under the Center Pillar RH)

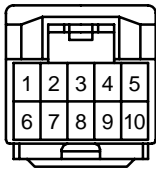
▽ : GROUND POINTS

Code	See Page	Ground Points Location
IH	50	Instrument Panel Brace RH

A35



C6



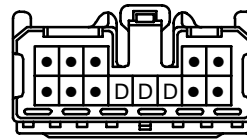
F9



F10

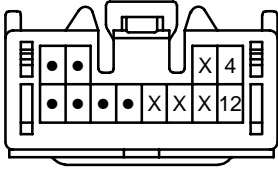


J18
BLUE

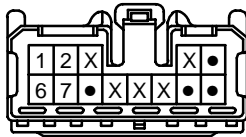


(Hint : See Page 7)

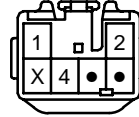
M4



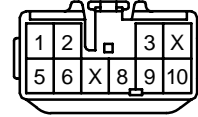
N2



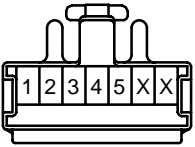
R2 (A)



R3 (B)



R4 (C)



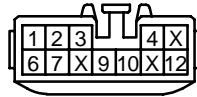
R14



R15



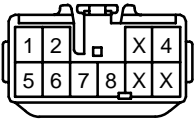
S7 (A)
BLACK



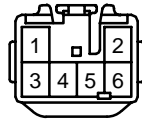
S8 (B)
ORANGE



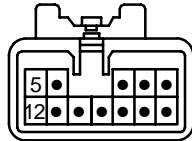
S9 (C)



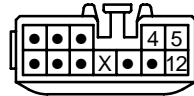
S10 (D)



T8 (A)



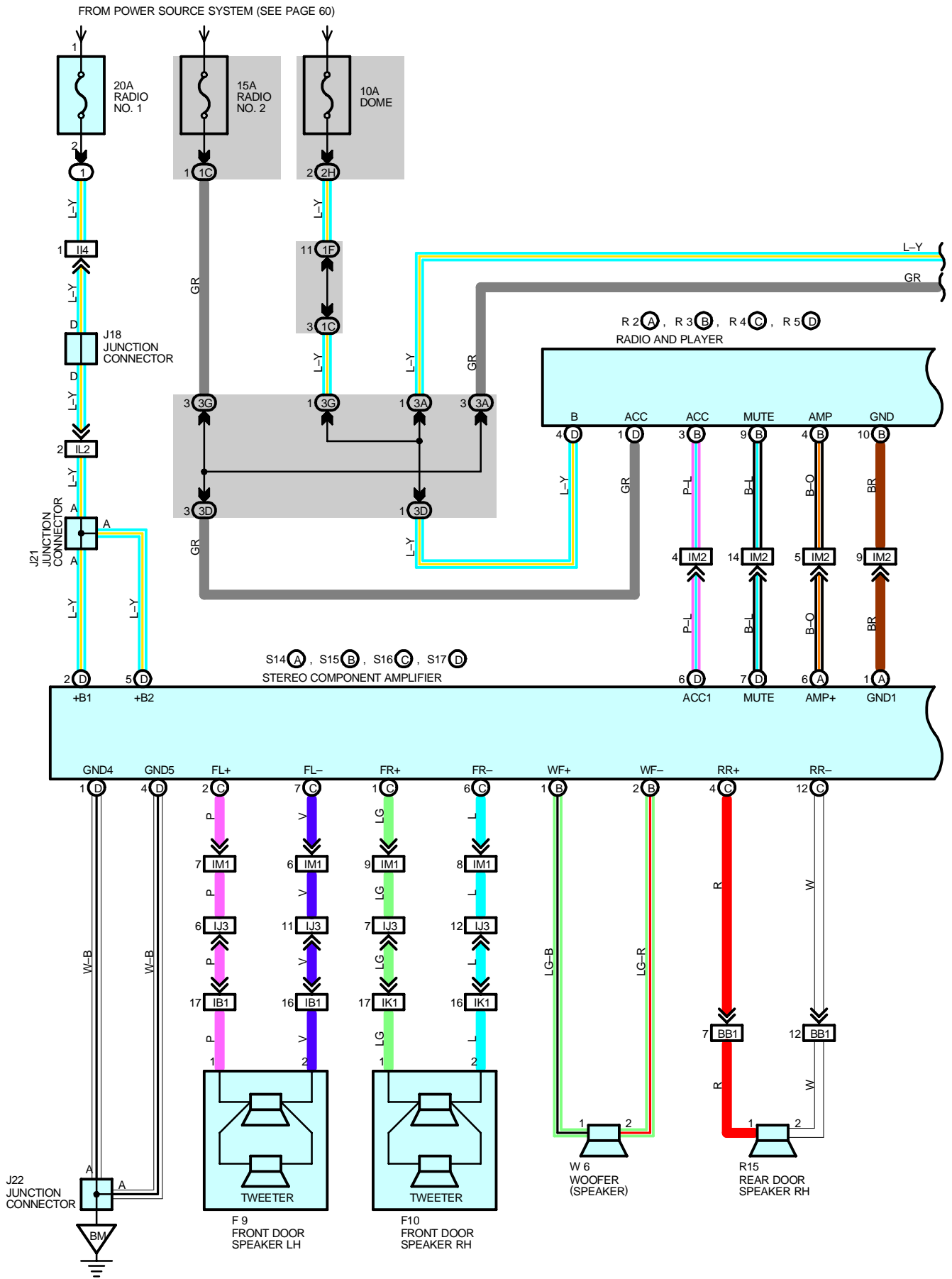
T9 (B)

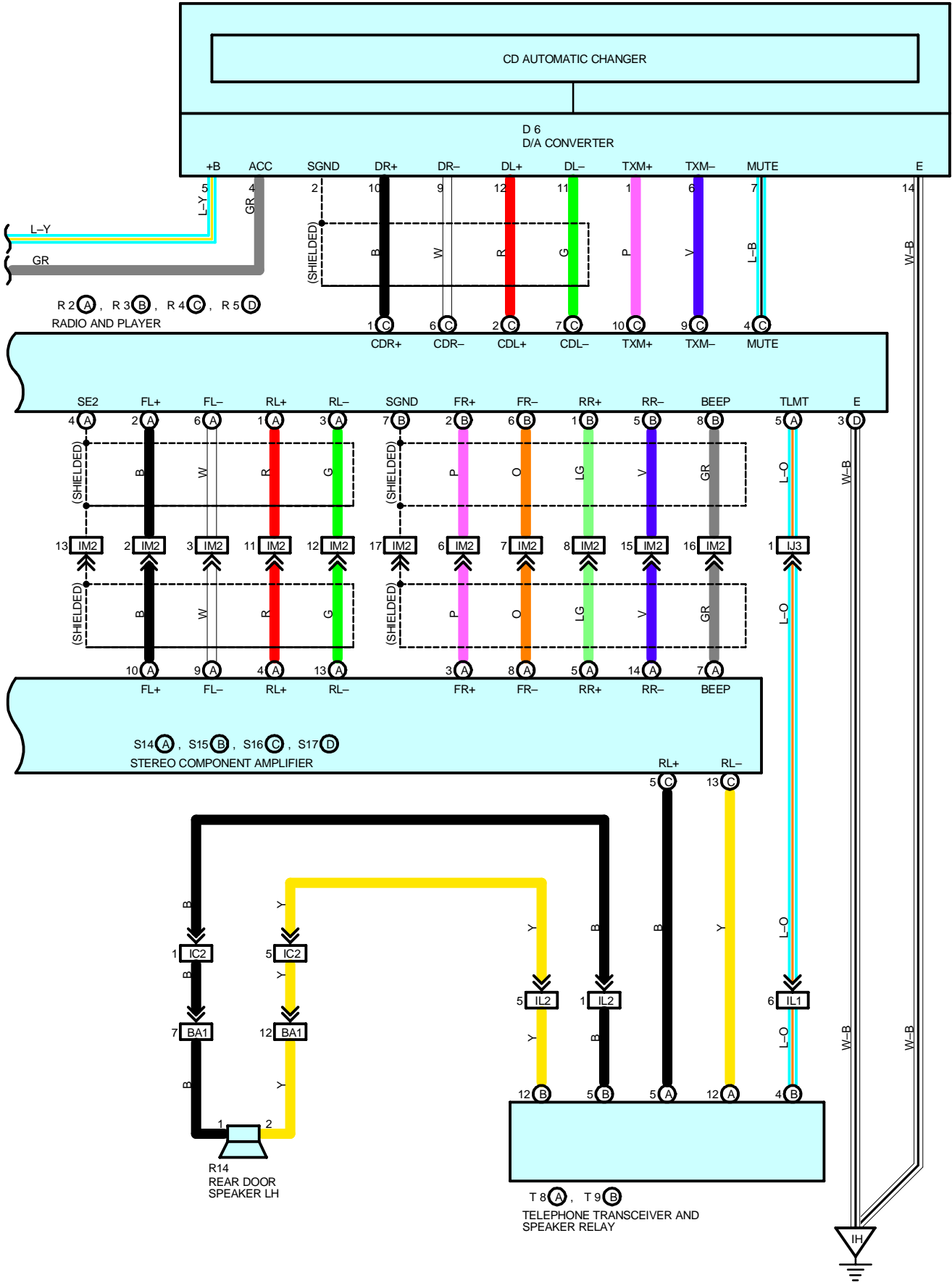


W6



RADIO AND PLAYER (NAKAMICHI)





RADIO AND PLAYER (NAKAMICHI)

SERVICE HINTS

R5 (D) RADIO AND PLAYER

(D) 1-GROUND : Approx. 12 volts with ignition SW at **ACC** or **ON** position

(D) 4-GROUND : Always approx. 12 volts

(D) 3-GROUND : Always continuity

S17 (D) STEREO COMPONENT AMPLIFIER

(D) 2, (D) 5-GROUND : Always approx. 12 volts

(D) 1, (D) 4-GROUND : Always continuity

D6 D/A CONVERTER

4-GROUND : Approx. 12 volts with ignition SW at **ACC** or **ON** position

5-GROUND : Always approx. 12 volts

○ : PARTS LOCATION

Code	See Page	Code	See Page	Code	See Page
D 6	40	R3	B 41	S16	C 43
F9	42	R4	C 41	S17	D 43
F10	42	R5	D 41	T8	A 43
J18	41	R14	43	T9	B 43
J21	42	R15	43	W6	43
J22	42	S14	A 43		
R2	A 41	S15	B 43		

○ : RELAY BLOCKS

Code	See Page	Relay Blocks (Relay Block Location)
1	22	Engine Room No.1 R/B (Engine Compartment Right)

○ : JUNCTION BLOCK AND WIRE HARNESS CONNECTOR

Code	See Page	Junction Block and Wire Harness (Connector Location)
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2H	29	Cowl Wire and Passenger Side J/B (Right Kick Panel)
3A	30	Instrument Panel Wire and Instrument Panel J/B (Instrument Panel Reinforcement Center)
3D		
3G	31	

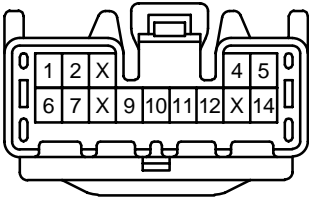
□ : CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
IB1	50	Front Door LH Wire and Cowl Wire (Left Kick Panel)
IC2	50	Floor No.2 Wire and Cowl Wire (Left Kick Panel)
II4	52	Engine Room Main Wire and Cowl Wire (Near the Passenger Side R/B)
IJ3	52	Instrument Panel Wire and Cowl Wire (Left Side of the Blower Unit)
IK1	52	Front Door RH Wire and Cowl Wire (Right Kick Panel)
IL1	52	Floor No.1 Wire and Cowl Wire (Right Kick Panel)
IL2		
IM1	52	Instrument Panel Wire and Floor No.1 Wire (Front RH Side of the Shift Lever)
IM2		
BA1	54	Rear Door LH Wire and Floor No.2 Wire (Under the Center Pillar LH)
BB1	54	Rear Door RH Wire and Floor No.1 Wire (Under the Center Pillar RH)

▽ : GROUND POINTS

Code	See Page	Ground Points Location
IH	50	Instrument Panel Brace RH
BM	54	Quarter Panel RH

D6



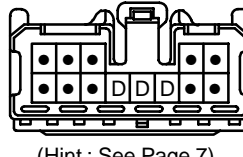
F9



F10



J18
BLUE



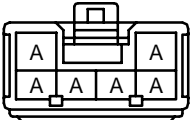
(Hint : See Page 7)

J21
BLACK



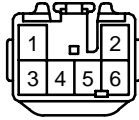
(Hint : See Page 7)

J22

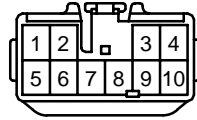


(Hint : See Page 7)

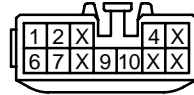
R2 (A)



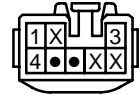
R3 (B)



R4 (C)



R5 (D)
ORANGE



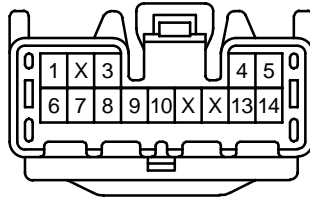
R14



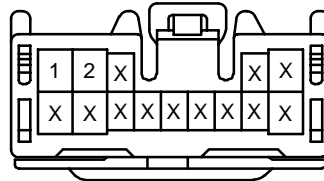
R15



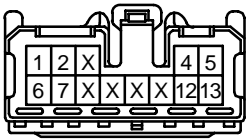
S14 (A)



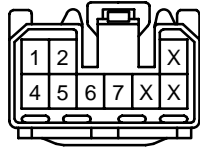
S15 (B)
GRAY



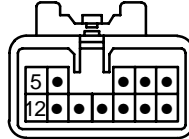
S16 (C)
GREEN



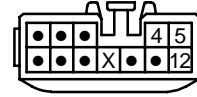
S17 (D)
ORANGE



T8 (A)



T9 (B)



W6

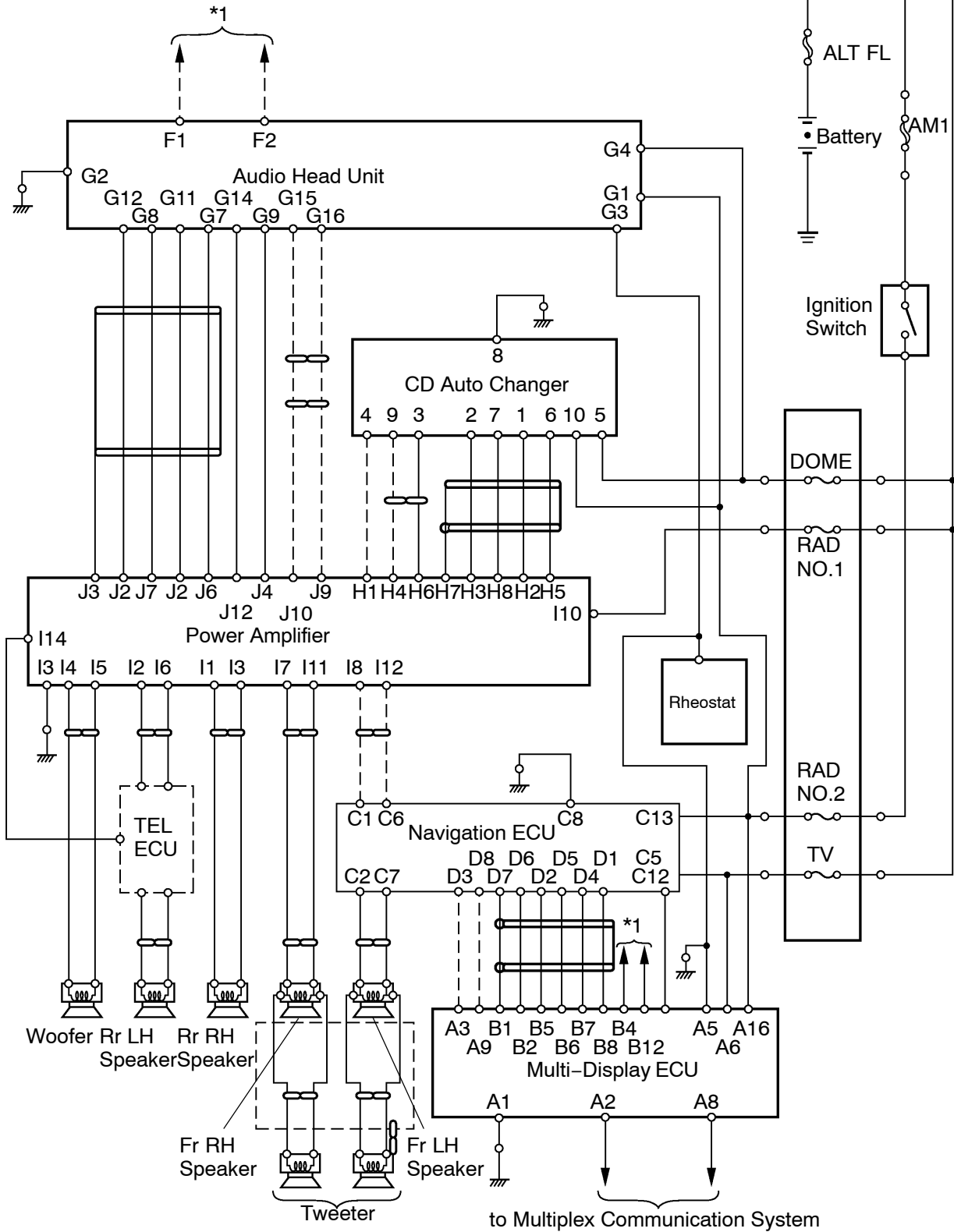


PRE-CHECK

1. WIRING DIAGRAM

---: AVC-LAN circuit

Connector number See page DI-1061



104318

2. DIAGNOSIS SYSTEM DESCRIPTION

HINT:

There are several diagnosis functions in the LEXUS Navigation System.

Though each operation procedure is explained on the following pages, the outline is as follows.

- (a) **SYSTEM CHECK**

In this mode, communication circuit is inspected and self diagnosis is conducted in each system (Navigation ECU, display ECU, radio receiver, power amplifier and CD auto changer). The result is displayed on the screen.
At the bottom of the screen the map area is displayed.
- (b) **DISPLAY CHECK**

In this mode, images and touch switches on the screen are inspected.
- (c) **VEHICLE SIGNAL DISPLAY CHECK**

In this mode, 2 items of vehicle signal conditions input in the navigation ECU are displayed at the real time (renewed every approx. 1 sec.).
- (d) **INTERNAL COEFFICIENT SET**

This sets time and data of calender and compensation coefficient to improve the accuracy of navigation system.
It is not always necessary to adjust the compensation coefficient, however when the error is excessive due to replacement of tires etc., reset the coefficient again.
- (e) **DIAGNOSIS MEMORY**

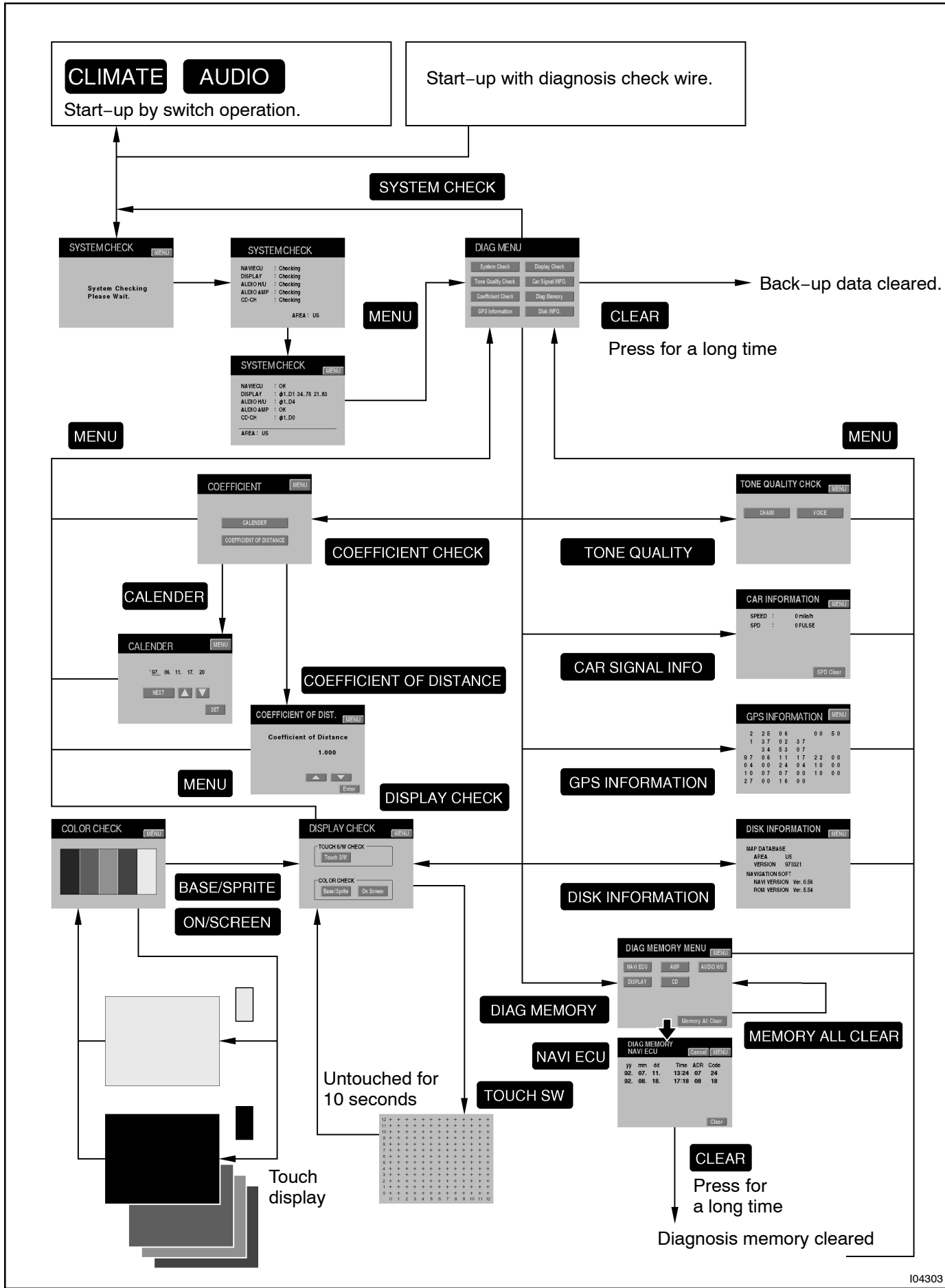
Information is stored in the diagnosis memory when an error occurs in the communication of the system and the system.
- (f) **GPS INFORMATION**

GPS information receiving condition is displayed.
- (g) **TONE QUALITY CHECK**

Chime or navigation voice recorded in HARDDISK can be heard when necessary.
- (h) **DISK INFORMATION**

Area and version No. of map data base and version No. of navigation soft are displayed.

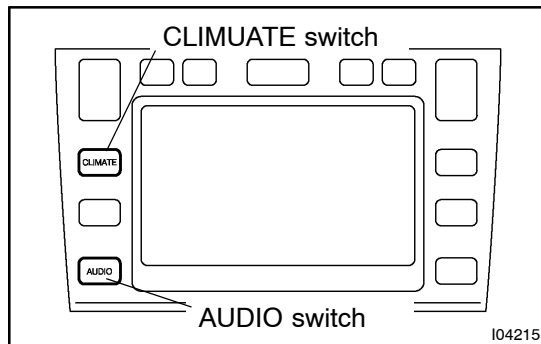
3. DIAGNOSIS CHECK



(a) DIAGNOSIS START-UP

HINT:

There are two ways to startup diagnosis menu, one is using the diagnosis check wire and the other is using the switch.

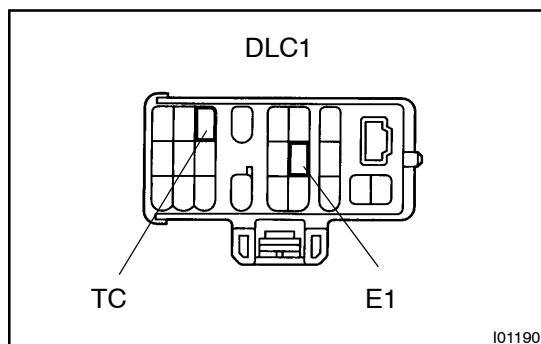


(b) START-UP BY SWITCH OPERATION

While pressing "CLIMATE" and "AUDIO" switches simultaneously, by turning the light control switch to OFF, TAIL, OFF, TAIL, and OFF the system is started up.

NOTICE:

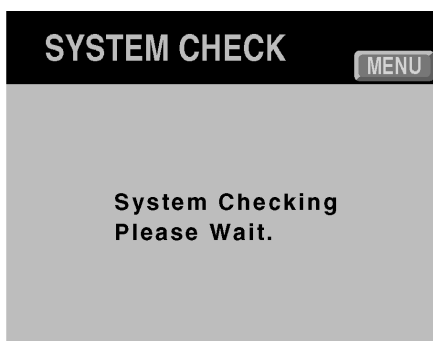
On the screen with LEXUS mark displayed at the time of starting up, do not perform the transmitting operation to the diagnosis mode.



(c) START-UP WITH DIAGNOSIS CHECK WIRE

With the switch in ACC or ON position or engine running, the system is started up by connecting TC and E1 terminals of DLC1 to SST.

SST 09843-18020



(d) SYSTEM STARTING

It takes approximately 30 seconds to check the system.

(e) FINISHING

Diagnosis mode finishes by turning the ignition switch ACC or OFF.



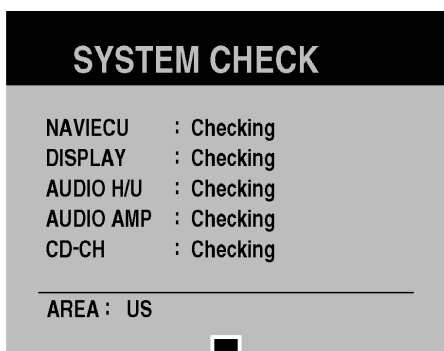
104217

(f) DIAGNOSIS MENU DISPLAY

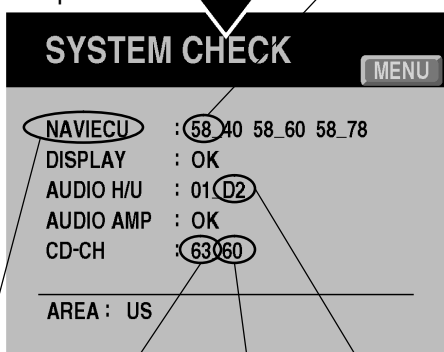
When starting up by switch operation the top menu is displayed on the screen.

Each diagnosis function can be performed by touching switches on this screen.

• Checking



<Example>



Parts
Logical Address
Diagnosis code
Not connected

104218

(g) SYSTEM CHECK SCREEN

- This screen performs the system inspection.
- After the system inspection completes, when pressing "MENU", screen returns to the diagnosis menu screen.

(In diagnosis mode, the every screen can return to the diagnosis menu screen by pressing "MENU".)

- On "SYSTEM CHECK" screen, up to 3 logical addresses and 3 diagnosis codes of the equipment are displayed.

In the case of normal condition, "O.K." is displayed.

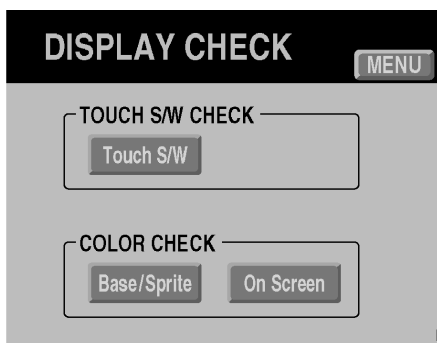
- On a screen, up to 3 diagnosis codes for each equipment are displayed.

When diagnosis codes are more than 4, the screen is switched to another screen and returned every 3 seconds.

HINT:

*: Logical address refers to the codes allotted to each part of objected equipment which has been subdivided.

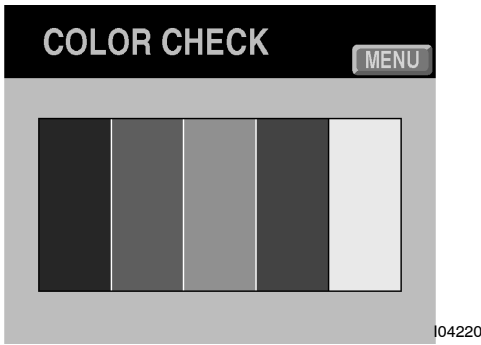
- When an objected equipment is not connected, "-D0" of the diagnosis code is displayed.
- Diagnosis codes are displayed orderly when diagnosis completes.
- If the same diagnosis code is received several times, only 1 code is displayed.



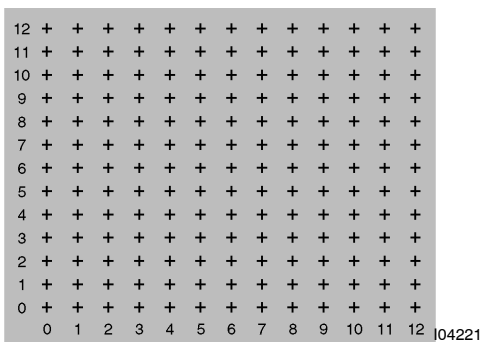
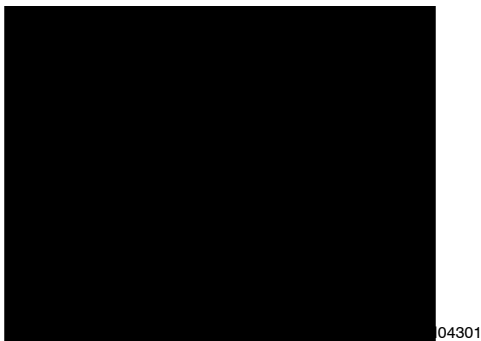
104219

(h) DISPLAY CHECK SCREEN

- On the diagnosis menu screen when pressing "DISPLAY CHECK", the screen turns to the screen shown in the illustration.
- On this screen when pressing "BASE/SPRITE" or "ON SCREEN", the screen changes to the one shown in the illustration, this screen displays a color bar.



- When pressing the color bar, the color of whole screen changes to the color of the touched bar. If pressing the screen again, the screen returns to the display inspection screen.
- When pressing "TOUCH S/W", screen turns to the touch switch check screen.



(i) TOUCH SWITCH CHECK SCREEN

- On this screen when "+" displayed on the screen is touched, the touched part is deleted.
- If the screen is left untouched for 10 seconds, it turns to display check screen.



- (j) CAR SIGNAL INFORMATION SCREEN
- When pressing "CAR SIGNAL INFO." the screen turns to the screen shown in the illustration.
 - This screen inspects whether the following signals are received or send normally.
- SPEED: This displays the current vehicle speed.
(The displayed unit is the unit currently set.)
- SPD: This displays the count of pulse. Pulse is added as the vehicle runs.
- If touching "SPD Clear", the value of SPD turns to "0".
 - Each signal is renewed every 1 seconds.



- (k) SPEED COMPENSATION COEFFICIENT SCREEN
- When pressing "COEFFICIENT OF DISTANCE" on the internal coefficient set screen, the screen turns to the speed compensation coefficient screen.

HINT:

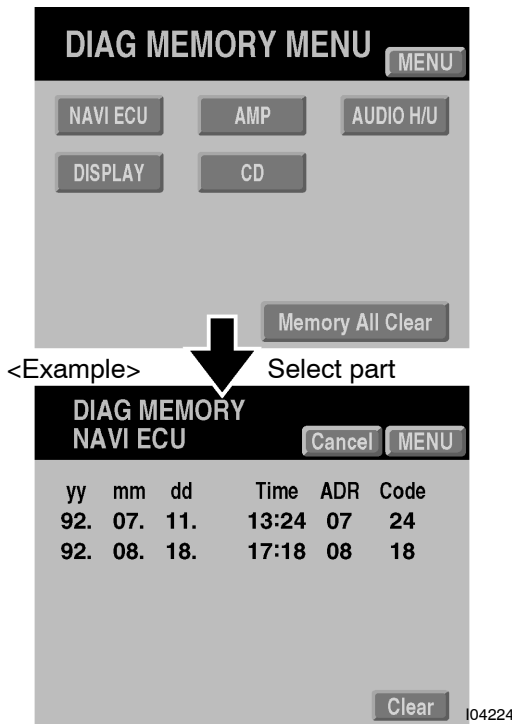
Navigation ECU compensates automatically the error between the distance calculated by ECU and actually measured and performs map-matching. Accordingly it is not necessary for a driver to compensate the error.

- This screen sets the value of how far the vehicle should go or should delay, when the present site on the map directed by a cursor does not match the real site because of tire replacement etc., This value is called speed compensation coefficient.

HINT:

After matching the present site directed by a cursor on the map with the real site correctly the vehicle is driven on the straight road for 5 Km. When the site on the map is 50 M (1 %) ahead of the real site, the value is 0.990, when 50 M behind, the value is 1.010.

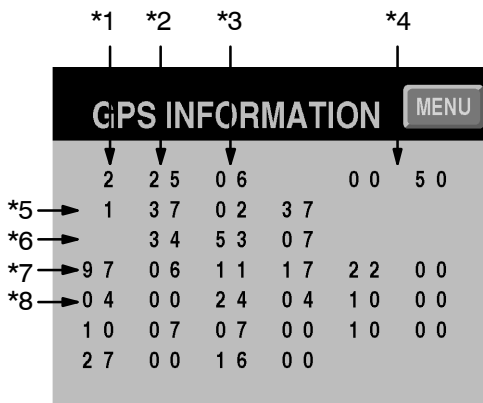
- By pressing triangularity mark, the value is changes, by pressing "Enter", setting completes.



(l) DIAGNOSIS MEMORY SCREEN

- On the diagnosis menu screen when pressing "DIAG. MEMORY" the screen turns to the screen shown in the illustration.
- Up to 6 diagnosis codes per an equipment are displayed. If more than 6 diagnosis codes are displayed, oldest diagnosis code will be deleted orderly.
- If the same diagnosis code occurred, the date when the code occurred is renewed.
- When the same diagnosis code occurs, the data when it occurred is renewed.
- When the diagnosis code does not occur to any equipment in the system, "O.K." is displayed.
- When "CLEAR" is kept to touch for 3 seconds, all diagnosis memories are cleared.
- When pressing "Memory All Clear" for 3 secs., diagnosis memories of all equipment are cleared.

<Example>



- *1: Two-measurement satellite is caught
- *2: 25 satellites available for navigation
- *3: 6 satellites that GPS antenna receives the signals from
- *4: Height +50 M
- *5: East longitude
137 degree, 2 minutes, 37 seconds
- *6: North altitude
34 degree, 53 minutes, 7 seconds
- *7: 97 years, 6 monthes, 11 days,
17 times, 22 minutes, 00 seconds
- *8: ID number of satellite

(m) GPS INFORMATION SCREEN

- On the diagnosis menu screen, when pressing "GPS INFORMATION", the screen turns to the screen shown in the illustration.
- The displayed contents on this screen are as follows.

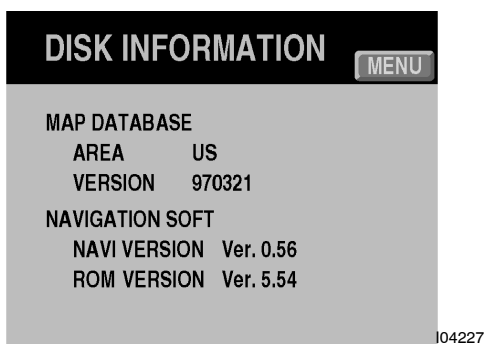
- *1: Measurement conditions on present site
0: No measurement satellite is caught.
1: One measurement satellite is caught.
2: Two-measurement satellites are caught.
3: Two-dimensional measurement
4: Three dimensional measurement
F: Receiver disorder
- *2: Number of satellites available for navigation.
- *3: Number of satellites that GPS antenna receives the signals from
- *4: Height (M)
- *5: Longitude (degree; minute; second)
(In the case of west longitude, "-" is displayed on the column of first letter, in the case of east longitude, nothing is displayed.)
- *6: Altitude (degree; minute; second)
(In the case of south altitude, "-" is displayed on the column of first letter, in the case of north altitude, nothing is displayed.)
- *7: Year, date
(Year: month: day: time: minute: second)
- *8: ID of satellite that GPS antenna receives radio wave from setellitry.

104225



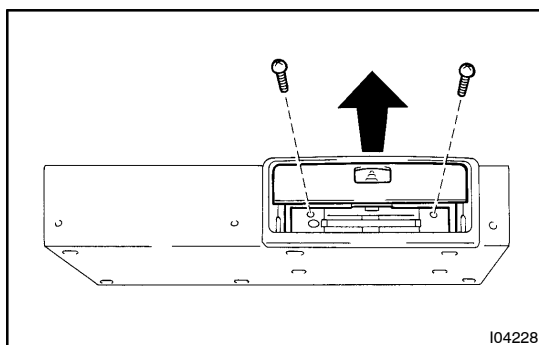
(n) TONE QUALITY CHECK

- On the diagnosis menu screen, when pressing "TONE QUALITY CHECK", the screen turns to the screen shown in the illustration.
- Tone check is performed by pressing the menu displayed on this screen.
- When pressing "CHIME", chime of "poop" sounds 3 times.
- When pressing "VOICE", the voice saying "Please proceed to the highlighted route. Then the route guidance will start." sounds 1 time.



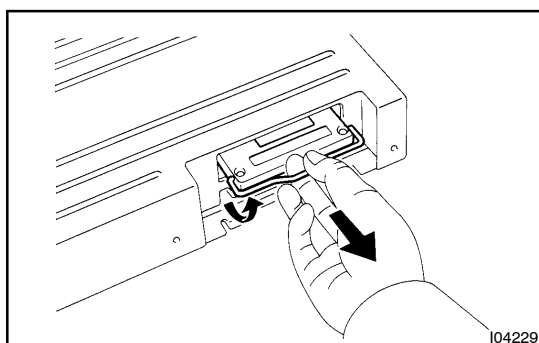
(o) DISK INFORMATION

- On the diagnosis menu screen when pressing "DISK INFORMATION", the screen turns to the screen shown in the illustration.
- This screen displays the information MAP DATABASE and NAVIGATION SOFT.



4. REPLACE HARDDISK

- Remove the 3 bolts and the navigation ECU.
- Raise the lid up.
- Remove the 2 screws and the cover.



- Replace harddisk.

NOTICE:

- **Do not apply any impact to the harddisc. There is a fear to damage the harddisc if applying impact.**
- **When inserting a harddisk again, insert it furthest securely.**

DIAGNOSTIC TROUBLE CODE CHART

HINT:

- *: Logical address refers to the code allotted to each part of objected equipment which has been subdivided.
- Must have DTC judgement for the items with the making of a circle (○) in the system check at the time of system checking. (See page [DI-1047](#))
- Diagnosis memory can be memorized when detecting DTC under the usual using condition. (See page [DI-1047](#))
- In case that DTC D1 and D4 of each unit are detected, check the wire harness of AVC-LAN, then change each unit.
- In case that DTC other than DTC D1 or D4 of each unit is detected, change the parts specified.

1. NAVIGATION ECU

*: Logic address	DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts	System Check	Diagnosis memory
01	D1	Transmitter error	Transmitting error from Navigation ECU occurs twice in a row.	<ul style="list-style-type: none"> ● Wire harness and connector ● Navigation ECU 	X	○
58	40	Navigation ECU error	When JAIRO error is detected.	<ul style="list-style-type: none"> ● Navigation ECU 	○	X
58	60	GPS error	There is an error on the GPS receiver.	<ul style="list-style-type: none"> ● Navigation ECU 	○	X
58	61	GPS antenna not connected	GPS antenna is not connected.	<ul style="list-style-type: none"> ● Connect GPS antenna 	○	X
58	71	SPD signal not connected	Conditions that GPS speed is more than 16 mph and SPD signal remains "0" continue for more than 10 seconds.	<ul style="list-style-type: none"> ● Wire harness and connector 	X	○
58	78	Harddisk error	Harddisc reading error.	<ul style="list-style-type: none"> ● Replace the harddisk (See page) 	○	○
58	79	Harddisk not inserted	Harddisk is not inserted	<ul style="list-style-type: none"> ● Insert the harddisk 	○	○

2. AUDIO HEAD UNIT

*: Logic address	DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts	System Check	Diagnosis memory
01	D0	ECU unconnected	ECU is unconnected.	<ul style="list-style-type: none"> ● Wire harness and connector ● Audio head unit 	○	X
01	D1	Transmitter error	An error occurs when transmitting signal from audio head unit to the system.	<ul style="list-style-type: none"> ● Wire harness and connector ● Audio head unit 	X	○
01	D2	Periodical communication no response	Error in periodic communication.	<ul style="list-style-type: none"> ● Wire harness and connector 	X	○
01	D4	Periodic transmitting error	Direction to confirm connection from audio head unit is not acquired.	<ul style="list-style-type: none"> ● Wire harness and connector ● Audio head unit 	X	○
01	FF	Diagnosis no response	Nothing is responded to the required command.	<ul style="list-style-type: none"> ● Wire harness and connector ● Audio head unit 	○	X
61	50	Cassette deck error	There is an error on the .cassette deck operation.	<ul style="list-style-type: none"> ● Audio head unit 	X	○

3. POWER AMPLIFIER

*: Logic address	DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts	System Check	Diagnosis memory
01	D0	ECU unconnected	ECU is unconnected.	<ul style="list-style-type: none"> ● Wire harness and connector ● Power amplifier 	○	X
01	D1	Transmitter error	An error occurs when transmitting signal from power amplifier to the system.	<ul style="list-style-type: none"> ● Wire harness and connector ● Power amplifier 	X	○
01	D2	Periodical communication no response	Error in periodic communication.	<ul style="list-style-type: none"> ● Wire harness and connector 	X	○
01	D4	Periodic transmitting error	Direction to confirm connection from power amplifier is not acquired.	<ul style="list-style-type: none"> ● Wire harness and connector ● Power amplifier 	X	○
01	FF	Diagnosis no response	Nothing is responded to the required command.	<ul style="list-style-type: none"> ● Wire harness and connector ● Power amplifier 	○	X

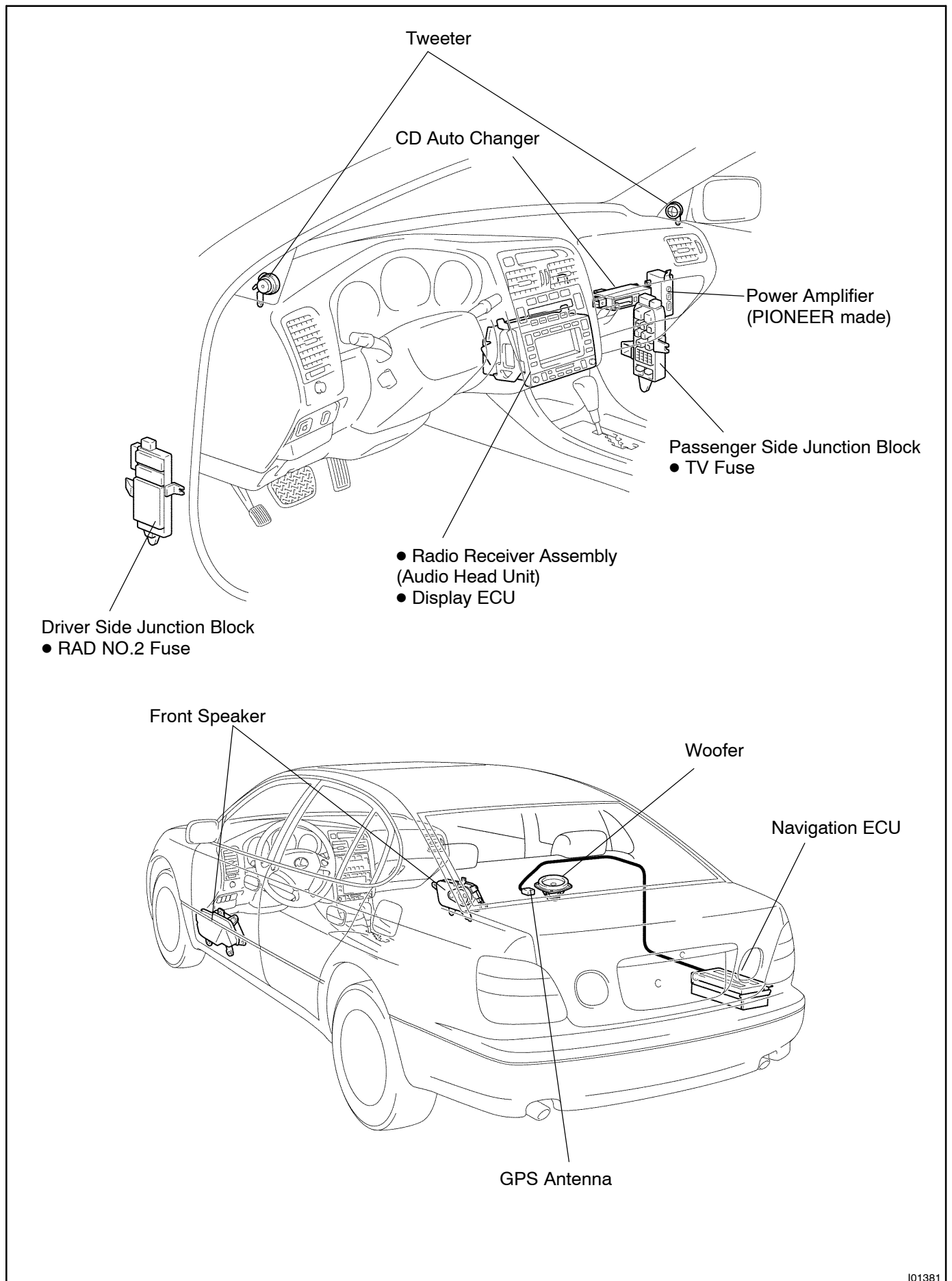
4. CD AUTO CHANGER

*: Logic address	DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts	System Check	Diagnosis memory
01	D0	ECU unconnected	ECU is unconnected.	<ul style="list-style-type: none"> ● Wire harness and connector ● Display ECU 	○	X
01	D1	Transmitter error	An error occurs from CD auto changer to the system.	<ul style="list-style-type: none"> ● Wire harness and connector ● CD auto changer 	X	○
01	D2	Periodic communication no response	Error in periodic communication.	<ul style="list-style-type: none"> ● Wire harness and connector 	X	○
01	D4	Periodic transmitting error	Direction to confirm connection from CD auto changer is not acquired.	<ul style="list-style-type: none"> ● Wire harness and connector ● CD auto changer 	X	○
01	FF	Diagnosis no response	Nothing is responded to the required command.	<ul style="list-style-type: none"> ● Wire harness and connector ● Display ECU 	○	X
63	60	CD auto changer error	There is an error referring to the diagnosis codes except 61 to 69.	<ul style="list-style-type: none"> ● CD auto changer 	X	○
63	61	CD auto changer eject error	Magazine can not be ejected from CD auto changer.	<ul style="list-style-type: none"> ● CD auto changer ● Magazine 	X	○
63	62	Reversed CD or defect on CD	CD is reversed or has a spot or defect.	<ul style="list-style-type: none"> ● CD 	X	○
63	63	CD pick up temperature detection.	High temperature of CD changer is detected.	<ul style="list-style-type: none"> ● CD auto changer 	X	○
63	64	CD auto changer excessive voltage check	Excessive voltage is supplied to CD auto changer.	<ul style="list-style-type: none"> ● CD auto changer 	X	○
63	67	CD auto changer tray discharging error	Discharging error of the CD auto changer tray occurs.	<ul style="list-style-type: none"> ● CD auto changer ● Magazine 	X	○
63	68	CD auto changer elevator error	An error occurs on the CD auto changer elevator.	<ul style="list-style-type: none"> ● CD auto changer 	X	○

5. DISPLAY ECU

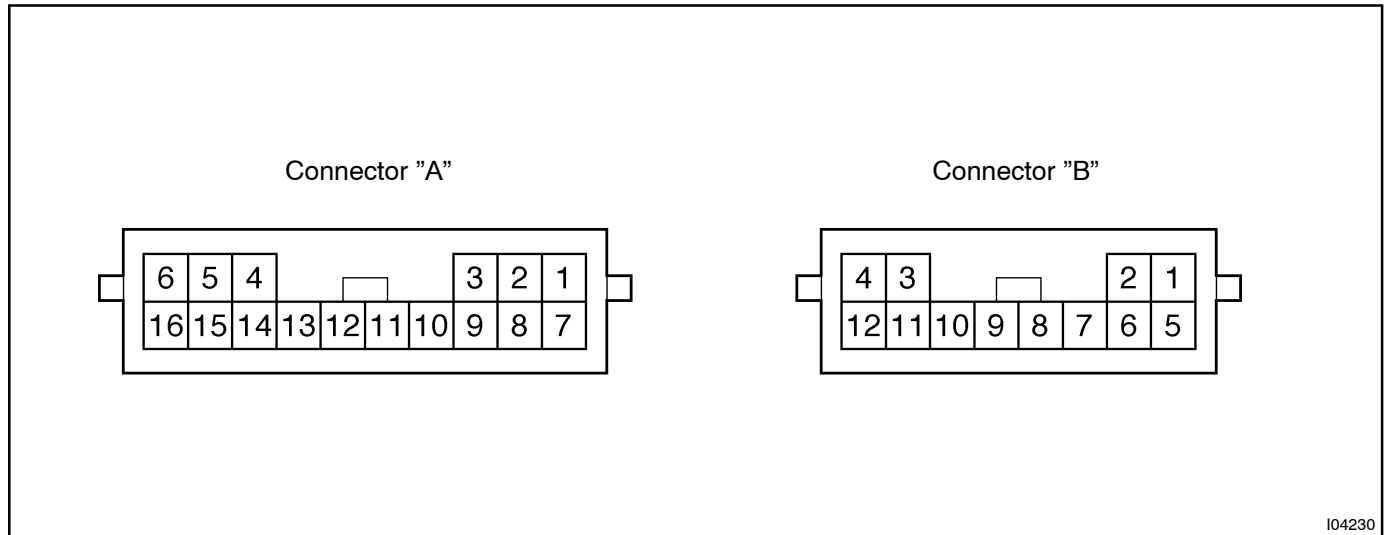
*: Logic address	DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts	System Check	Diagnosis memory
01	D0	ECU unconnected	ECU is unconnected.	<ul style="list-style-type: none"> ● Wire harness and connector ● Display ECU 	○	X
01	D2	Periodic communication no response	Error in periodic communication.	<ul style="list-style-type: none"> ● Wire harness and connector 	X	○
01	D1	Transmitter error	An error occurs during transmitting a signal from display ECU to the system.	<ul style="list-style-type: none"> ● Wire harness and connector ● Display ECU 	X	○
01	D4	Periodic transmitting error	Direction to confirm connection from display ECU is not acquired.	<ul style="list-style-type: none"> ● Wire harness and connector ● Display ECU 	X	○
01	FF	Diagnosis no response	Nothing is responded to the required command.	<ul style="list-style-type: none"> ● Wire harness and connector ● Display ECU 	○	X
01	21	ROM error	There is an error on internal ROM.	<ul style="list-style-type: none"> ● Display ECU 	○	X
01	22	RAM error	There is an error on internal RAM.	<ul style="list-style-type: none"> ● Display ECU 	○	X
34	76	Back light error 1 (No current)	There is an error on the cathode tube in back light system.	<ul style="list-style-type: none"> ● Display ECU 	X	○
34	77	Back light error 2 (Excessive current)	There is an error on the cold cathode tube in back light system.	<ul style="list-style-type: none"> ● Display ECU 	X	○
21	83	Panel switch error	Nothing is responded from the panel switches.	<ul style="list-style-type: none"> ● Display ECU 	○	X
21	84	Touch switch error	Nothing is responded from the touch switches.	<ul style="list-style-type: none"> ● Display ECU 	○	X

PARTS LOCATION



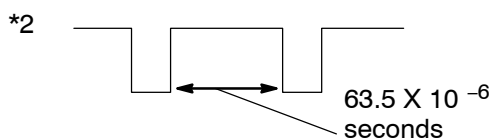
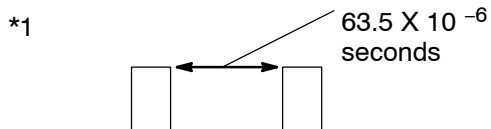
TERMINALS OF ECU

1. DISPLAY ECU

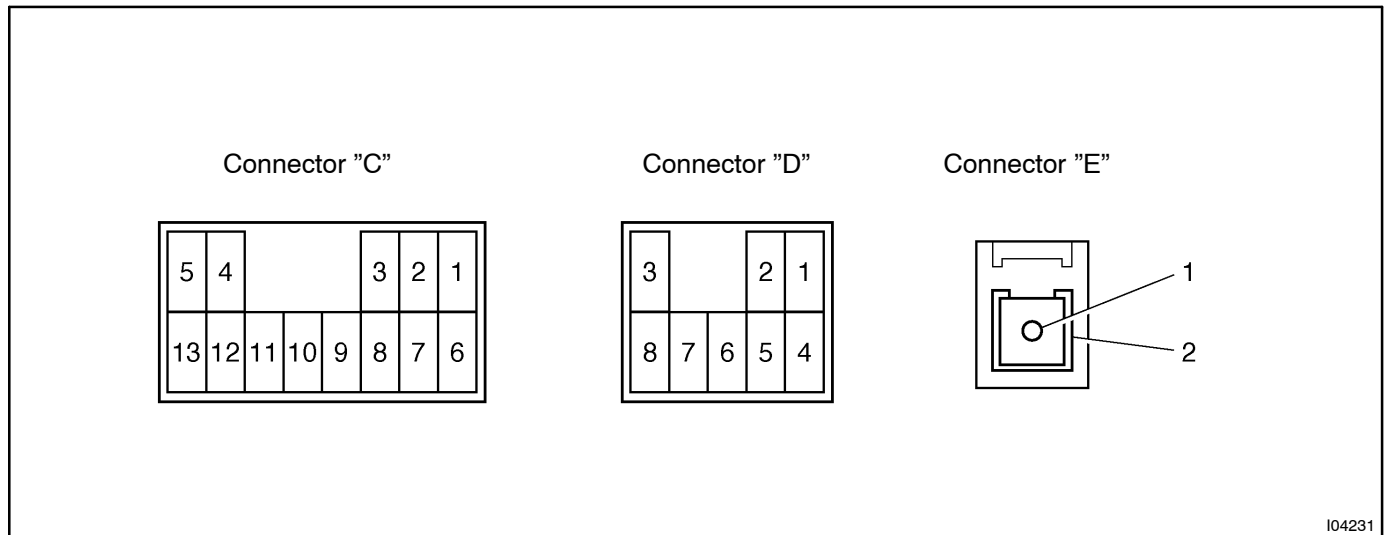


Terminals	Condition	Specified value	Problem symptom when open circuit is detected.
(Symbols)			Problem symptom when short circuit is detected.
A1 - Body ground	Constant	Continuity	Screen noise or other types of noise occur.
(GND1 - Body ground)			LEXUS navigation system is normal.
A2 - A1	Ignition switch ACC or ON (Using an oscilloscope)	10 - 14 V	A/C does not operate.
(MPX1 - GND1)		1 V or below	
A3 - A1	Ignition switch ACC or ON	2 - 3 V	LEXUS navigation system does not operate.
(TX1+ - GND1)			
A4 - A1	Seat belt unfastened	0.5 V or below	Seat belt warning light does not light up.
(PBEW - GND1)			Seat belt warning light lights up.
A5 - A1	Light control switch TAIL (Using an oscilloscope)	10 - 14 V	Panel switch illumination does not light up.
(ILL- - GND1)		0.5 V or below	Light control rheostat does not operate.
A6 - A1	Constant	10 - 14 V	LEXUS navigation system does not operate.
(+B1 - GND1)			Fuse is blown.
A8 - A1	Ignition switch ACC or ON (Using an oscilloscope)	10 - 14 V	A/C system does not operate.
(MPX2 - GND1)		1 V or below	
A9 - A1	Ignition switch ACC or ON	2 - 3 V	LEXUS navigation system does not operate.
(TX1- - GND1)			
A15 - A1	Light control switch TAIL	10 - 14 V	Panel switch illumination does not light up.
(ILL+ - GND1)			Fuse is blown. (Panel switch illumination does not light up.)

A16 - A1			LEXUS navigation system does not operate.
(ACC - GND1)	Ignition switch ACC or ON	10 - 14 V	Fuse is blown. (LEXUS navigation system does not operate.)
B1 - B5	Constant	Continuity	Screen noise or other types of noise occur.
(VR - VG)			LEXUS navigation system does not operate.
B2 - B5	Display ON (Using an oscilloscope)	0.5 - 1.3 V *2	Screen is in disorder.
(SYNC - VG)			
B3 - A1	Ignition switch ACC or ON	2 - 3 V	Cellular phone does not operate.
(DTX+ - GND1)			LEXUS navigation system does not operate.
B4 - A1	Ignition switch ACC or ON	2 - 3 V	LEXUS navigation system does not operate.
(TX+ - GND1)			
B5 - A1	Constant	Continuity	Screen noise or other types of noise occur.
(VG - GND1)			LEXUS navigation system is normal.
B6 - B5	Diagnosis display check screen is white. (Using an oscilloscope)	0.7 V ± 0.1 V *1	Screen color turns to yellow.
(B - VG)			Screen color turns to red-purple.
B7 - B5			
(G - VG)			
B8 - B5			
(R - VG)	Screen color turns to light blue.		
B11 - A1	Ignition switch ACC or ON	2 - 3 V	Cellular phone does not operate.
(DTX- - GND1)			LEXUS navigation system does not operate.
B12 - A1	Ignition switch ACC or ON	2 - 3 V	Audio system does not operate.
(TX- - GND1)			LEXUS navigation system does not operate.



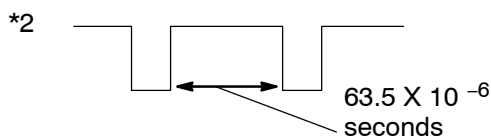
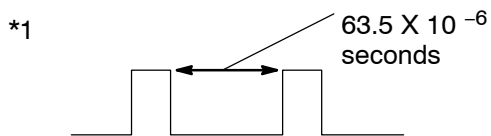
2. NAVIGATION ECU



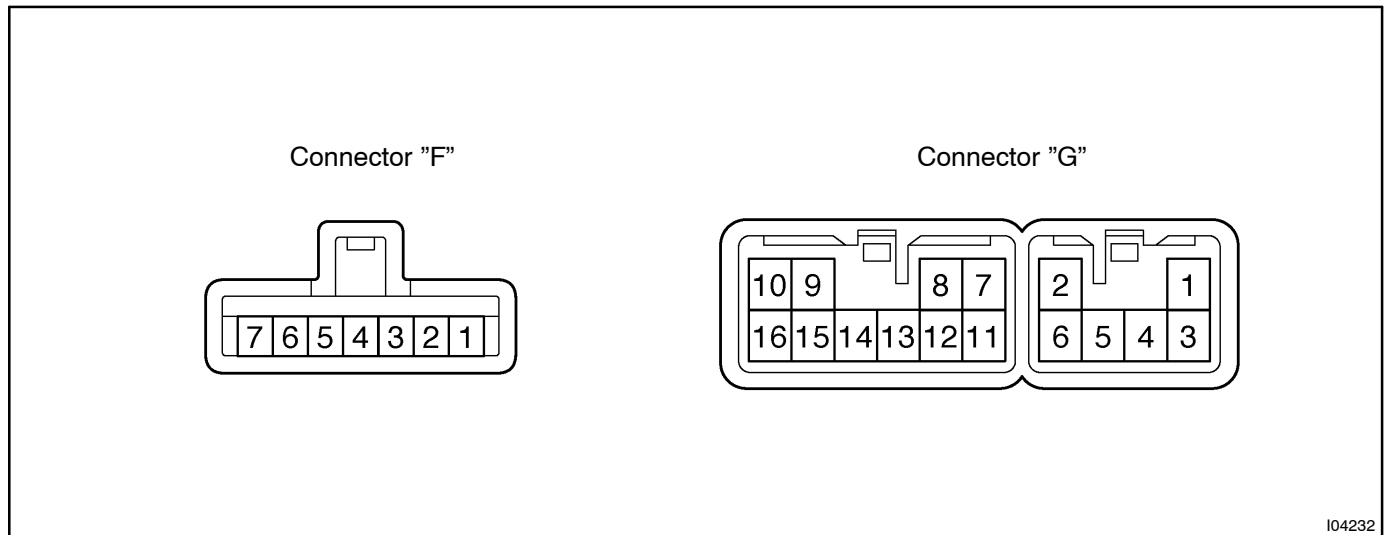
I04231

Terminals	Condition	Specified value	Problem symptom when open circuit
(Symbols)			Problem symptom when short circuit
C1 - C8 (AUI+ - GND1)	Radio switch ON	5 - 7 V	Driver's side speaker does not sound.
C2 - C8 (AUO+ - GND1)			
C5 - C8 (+B - GND1)	Constant	10 - 14 V	The set route can not be memorized. (The route disappears by turning the ignition switch OFF.)
C6 - C8 (AUI- - GND1)			Fuse is blown.
C7 - C8 (AUO- - GND1)	Radio switch ON	5 - 7 V	Driver's side speaker does not sound.
C8 - Body ground (GND1 - Body ground)	Constant	Continuity	LEXUS navigation system does not operate.
			LEXUS navigation system is normal.
C12 - C8 (SPD - GND1)	Ignition switch ON and driving wheel rotated slowly.	Repeatedly changes from below 1 V to 9 V	Navigation operation is available during driving, or a cursor on present site does not move.
C13 - C8 (ACC - GND1)	Ignition switch ACC	10 - 14 V	LEXUS navigation system does not operate.
			Fuse is blown.
D1 - D6 (R - VR)	Diagnosis display check screen is white. (Using an oscilloscope)	0.7 V ± 0.1 V *1	Screen color turns to light blue.
D2 - D6 (SYNC - VR)	Ignition switch ACC or ON (Using an oscilloscope)	0.5 - 1.3 V *2	Screen is in disorder.
D3 - C8 (TX+ - GND1)	Ignition switch ACC or ON	2 - 3 V	LEXUS navigation system does not operate.

D4 - D6 (G - VR)	Diagnosis display check screen is white. (Using an oscilloscope)	0.7 V \pm 0.1 V *1	Screen color turns to red-purple.
D5 - D6 (B - VR)			Screen color turns to yellow.
D6 - D7 (VR - VG)	Constant	Continuity	Screen noise or other types of noise occur.
D7 - C8 (VG - GND1)			LEXUS navigation system does not operate.
D8 - C8 (TX- - GND1)	Ignition switch ACC or ON	2 - 3 V	Screen noise or other types of noise occur.
E1 (GPS)			LEXUS navigation system does not operate.
E2 - Body ground (GND1 - Body ground)	Constant	Continuity	LEXUS navigation system does not operate.
			GPS signal reception error



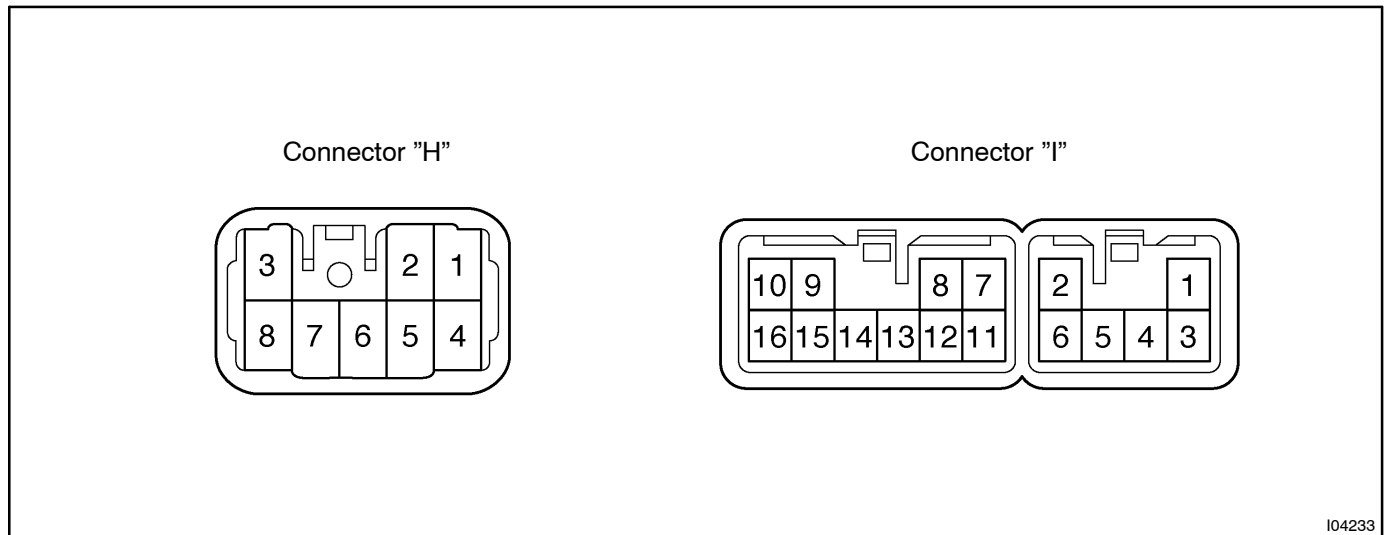
3. AUDIO HEAD UNIT



Terminals	Condition	Specified value	Problem symptom when open circuit
(Symbols)			Problem symptom when short circuit
F1 - G2 (TX- - GND)	Ignition switch ACC or ON	2 - 3 V	LEXUS navigation system does not operate.
F2 - G2 (TX+ - GND)			
F3 - G2 (ANTB - GND)	Radio switch ON	10 - 14 V	Antenna does not extend.
F4 - G2 (ANTA - GND)			
F5 - G2 (ANT - GND)			
G1 - G2 (ACC - GND)	Ignition switch ACC or ON	10 - 14 V	Audio system does not sound.
G2 - Body ground (GND - Body ground)			
G4 - G2 (B - GND)	Light control switch TAIL	10 - 14 V	Audio head unit illumination does not light up.
G5 - G3 (ILL+ - GND)			Constant
G6 - G2 (ILL- - GND)	Light control switch TAIL	10 - 14 V	Audio head unit illumination does not light up.
G7 (R+)		0.5 V or below	Light control rheostat does not operate.
G8 (L+)	-	-	Sound from right side speaker is small.
	-	-	Sound from left side speaker is small.

G9 - G2 (ACC - GND)	Radio switch ON	10 - 14 V	Audio system does not sound.
G11 (R-)	-	-	Sound from right side speaker is small.
G12 (L-)	-	-	Sound from left side speaker is small.
G14 - G2 (MUTE - GND)	Radio switch ON	5 V	Pop sound etc., during key operation.
G15 - G2 (BUS- - GND)	Ignition switch ACC or ON	2 - 3 V	Audio system does not operate. LEXUS navigation system does not operate.
G16 - G2 (BUS+ - GND)	Ignition switch ACC or ON	2 - 3 V	LEXUS navigation system does not operate.

4. POWER AMPLIFIER - 1

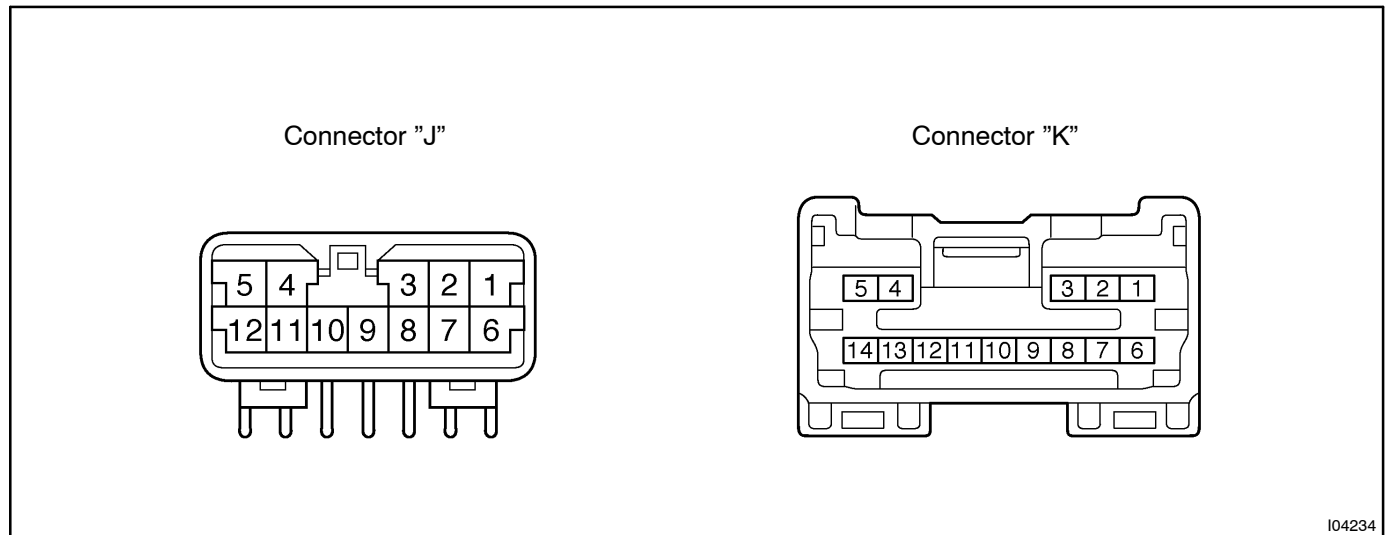


I04233

Terminals	Condition	Specified value	Problem symptom when open circuit
(Symbols)			Problem symptom when short circuit
H1 - I13	Ignition switch ACC or ON	2 - 3 V	Audio system does not operate.
(TXM+ - E)			LEXUS navigation system does not operate.
H2	-	-	Sound from right side speaker is small.
(CDR+)			
H3	-	-	Sound from left side speaker is small.
(CDL+)			
H4 - I13	Ignition switch ACC or ON	2 - 3 V	Audio system does not operate.
(TXM+ - E)			LEXUS navigation system does not operate.
H5	-	-	Sound from right side speaker is small.
(CDR-)			
H6 - I13	CD auto changer operation	5 V	Pop sound etc..
(CDMT - E)			
H7 - Body ground	Constant	Continuity	Audio system is normal.
(SGND - Body ground)			
H8	-	-	Sound from left side speaker is small.
(CDL-)			
I1 - I13	Radio switch ON	5 - 7 V	Rear RH speaker does not sound.
(SRR+ - E)			Rear speaker does not sound.
I2 - I13	Radio switch ON	5 - 7 V	Rear LH speaker does not sound.
(SRL+ - E)			Rear speaker does not sound.
I3 - I13	Radio switch ON	5 - 7 V	Rear RH speaker does not sound.
(SRR- - E)			Rear speaker does not sound.
I4 - I13	Radio switch ON	5 - 7 V	Woofers does not sound.
(WF+ - E)	Radio switch ON	5 - 7 V	Woofers does not sound.
I5 - I13	Radio switch ON	5 - 7 V	Woofers does not sound.
(WF- - E)			

I6 - I13	Radio switch ON	5 - 7 V	Rear LH speaker does not sound.
(SRL- - E)			Rear speaker does not sound.
I7 - I13	Radio switch ON	5 - 7 V	Rear RH speaker does not sound.
(SFR+ - E)			Rear speaker does not sound.
I8 - I13	Radio switch ON	5 - 7 V	Rear LH speaker does not sound.
(SFL+ - E)			Rear speaker does not sound.
I10 - I13	Constant	10 - 14 V	Audio system does not sound.
(+B - E)			Fuse is blown.
I11 - I13	Radio switch ON	5 - 7 V	Rear RH speaker does not sound.
(SFR- - E)			Rear speaker does not sound.
I12 - I13	Radio switch ON	5 - 7 V	Rear LH speaker does not sound.
(SFL- - E)			Rear speaker does not sound.
I13 - Body ground	Constant	Continuity	Audio system is normal.
(E - Body ground)			
I14 - I13	Cellular phone system is switched.	5 V	Pop sound.
(TLMT - E)			
I16 - I13	LEXUS navigation system is switched.	5 V	Pop sound.
(NVMT - E)			No navigation voice.

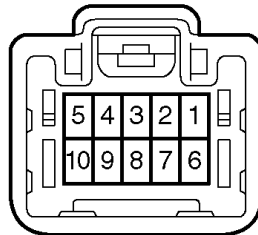
5. POWER AMPLIFIER - 2



Terminals	Condition	Specified value	Problem symptom when open circuit is detected.
(Symbols)			Problem symptom when short circuit is detected.
J1	-	-	RH side speaker does not sound.
(R+)			
J2	-	-	LH side speaker does not sound.
(L+)			
J3 - Body ground (SGND - Body ground)	Constant	Continuity	Audio system is normal.
J4 - J3 (MUTE - SGND)	Radio switch ON	5 V	Pop sound etc..
			Audio system does not sound.
J6	-	-	RH side speaker does not sound.
(R-)			
J7	-	-	LH side speaker does not sound.
(L-)			
J9 - J3 (RTX- - SGND)	Ignition switch ACC or ON	2 - 3 V	Audio system does not sound.
			LEXUS navigation system does not sound.
J10 - J3 (RTX+ - SGND)	Ignition switch ACC or ON	2 - 3 V	Audio system does not sound.
			LEXUS navigation system does not sound.
J12 - J3 (ACC - SGND)	Ignition switch ACC or ON	10 - 14 V	Audio system does not sound.

6. CD AUTO CHANGER

Connector "L"



I04235

Terminals	Condition	Specified value	Problem symptom when open circuit is detected.
(Symbols)			Problem symptom when short circuit is detected.
L1	-	-	Sound from right side speaker is small.
(CDR+)			
L2	-	-	Sound from left side speaker is small.
(CDL+)			
L3 - Body ground	Constant	Continuity	Audio system does not sound.
(SGND - Body ground)			
L3 - L8	Radio switch ON	5 V	Pop sound etc..
(MUTE - SGND)			Audio system does not sound.
L4 - L8	Ignition switch ACC or ON	2 - 3 V	CD auto changer does not operate.
(TXM+ - GND)			LEXUS navigation system does not operate.
L5 - L8	Constant	10 - 14 V	CD auto changer does not operate.
(+B - SGND)			Fuse is blown.
L6	-	-	Sound from right side speaker is small.
(CDR-)			
L7	-	-	Sound from left side speaker is small.
(CDL-)			
L8 - Body ground	Constant	Continuity	Audio system is normal.
(GND - Body ground)			
L9 - L8	Ignition switch ACC or ON	2 - 3 V	CD auto changer does not operate.
(TXM- - GND)			LEXUS navigation system does not operate.
L10 - L8	Ignition switch ACC or ON	10 - 14 V	CD auto changer does not operate.
(ACC - GND)			Fuse is blown.

PROBLEM SYMPTOMS TABLE

HINT:

Inspect the input/ output voltage of the terminals which are described in the column of terminal in the table. Inspect other terminals which are not described referring to "Terminal of ECU".

Symptom	Suspect Area	See page
The screen is dark, nothing shines on the screen.	3. Display ECU (connector "A") 4. Wire harness and connector	DI-1061 IN-31
Nothing appears on the screen. (Back light lights up.)	1. Display ECU (Connector "B" terminal R, G, B) 2. Navigation ECU (Connector "C" terminal ACC, +B Connector "D" terminal R, G,B) 3. Wire harness and connector	DI-1061 DI-1061 DI-1061 IN-31
The screen is white.	1. Display ECU (Connector "B" terminal R, G, B) 2. Navigation ECU (Connector "D" terminal R, G,B) 3. Wire harness and connector	DI-1061 DI-1061 IN-31
The screen is in disorder. (Synchronizing disorderly.)	1. Display ECU (Connector "B" terminal SYNC) 2. Navigation ECU (Connector "D" terminal SYNC) 3. Wire harness and connector	DI-1061 DI-1061 IN-31
The color on the screen is unusual.	1. Display ECU (Connector "B" terminal R, G, B) 2. Navigation ECU (Connector "D" terminal R, G,B) 3. Wire harness and connector	DI-1061 DI-1061 IN-31
Panel switch does not work. (Touch switch is normal.)	1. Display ECU	DI-1061
Panel switch does not work. (Touch switch does not work.)	1. AVC-LAN circuit	DI-1073
All touch switches do not work. (Panel switch does not work.)	1. AVC-LAN circuit	DI-1073
Each touch switch does not work. (Panel switch is normal.)	1. Display ECU	DI-1061
GPS mark does not appear at any time and at any place.	1. Navigation ECU (Diagnosis check) 2. Wire harness and connector (Connector "E")	DI-1061 IN-31
A cursor on present site does not move.	1. Navigation ECU (SPD signal is checked on the "CAR SIGNAL INFORMATION" during diagnosis check.) 2. Wire harness and connector (Connector "C" terminal "SPD")	DI-1061 IN-31
Movement of cursor on present site is always unusual.	1. Navigation ECU	DI-1061
Even though the battery has not been removed, the route and destination are not displayed.	1. Navigation ECU (Connector "C" terminal "+B") 2. Wire harness and connector	DI-1061 IN-31
Navigation voice can not be heard at all from the driver's side speaker.	1. Navigation ECU (Volume adjustment)	DI-1061

No sound except the navigation voice can be heard at all from the driver's side speaker.	1. Power amplifier (Connector "I" terminal "SFL+", "SFL-", ("SFR+", "SFR-"))	DI-1061
	2. Navigation ECU (Connector "C" terminal "AUI+", "AUI-", "AUO+", "AUO-")	DI-1061
	3. Wire harness and connector	IN-31
No sound can be heard at all from the driver's side speaker.	1. Driver's side speaker 2. Wire harness and connector	- IN-31
No sound can be heard from any speakers.	1. See "AUDIO SYSTEM"	BE-190
The A/C operation screen does not tone down.	1. Display ECU 2. Navigation ECU 3. Wire harness and connector	DI-1061 DI-1061 IN-31
The audio operation screen is unusual.	1. Audio head unit 2. Navigation ECU	DI-1061 IN-31
The screen does not turn to the audio operation screen.	1. Audio head unit 2. Wire harness and connector	DI-1061 IN-31
The all indicators of A/C do not light up. (The switches related to the A/C do not work.)	1. Display ECU 2. A/C ECU 3. Multiplex communication system	DI-1061 DI-1061 IN-31
The each indicator of A/C does not light up. (The switches related to the A/C do not work.)	1. Bulb	-
No map is displayed on the screen.	1. Navigation ECU (Diagnosis check)	DI-1061

CIRCUIT INSPECTION

AVC-LAN (Communication bus) Circuit

CIRCUIT DESCRIPTION

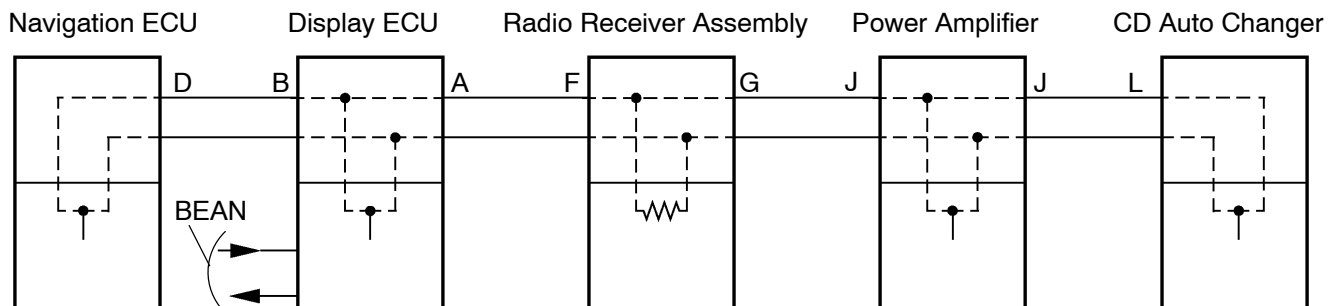
Each unit of LEXUS navigation system connected with AVC-LAN (communication bus) transfers the signal of each switch by communication.

When +B short and GND short occur in this AVC-LAN, LEXUS navigation system will not function normally as the communication is discontinued.

In this AVC-LAN, Navigation ECU becomes the master of the communication, and the audio head unit has a resistance necessary for transmitting the communication.

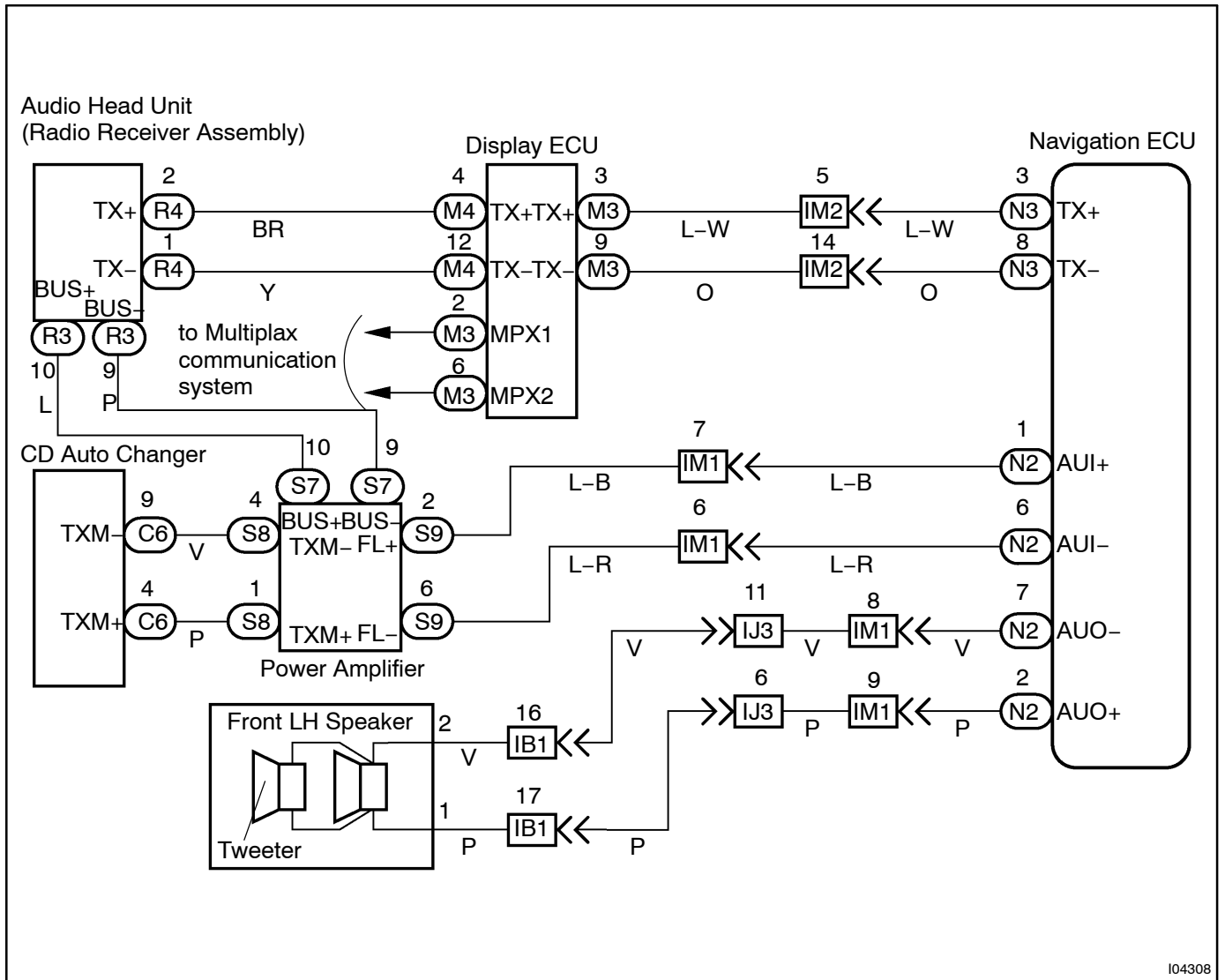
Display ECU is connected between Navigation ECU and Audio head unit, LEXUS navigation system has the structure that makes communication impossible without Navigation ECU, Display ECU or Audio head unit.

AVC-LAN



I04236

WIRING DIAGRAM



104308

INSPECTION PROCEDURE

1	Disconnect the connector of CD auto changer and check if AVC-LAN will be recovered normally.
----------	---

CHECK:

Check that the display will change by pressing either of the Panel switch or Touch switch on the display.

HINT:

It can be judged that AVC-LAN is recovered if the display is changed.

OK	Replace the CD auto changer.
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NG

2	Disconnect the "J" connector of the Amplifier, check if AVC-LAN will be recovered normally.
----------	--

CHECK:

Check that the display will change by pressing either of the Panel switch or Touch switch on the display.

HINT:

It can be judged that AVC-LAN is recovered if the display is changed.

OK	Repair or replace wire harness or connector between amplifier and CD auto changer.
-----------	---

NG

3	Disconnect the "I" connector of the Amplifier, check if AVC-LAN will be recovered normally.
----------	--

CHECK:

Check that the display will change by pressing either of the Panel switch or Touch switch on the display.

HINT:

It can be judged that AVC-LAN is recovered if the display is changed.

OK	Replace the amplifier.
-----------	-------------------------------

NG

- | | |
|----------|--|
| 4 | Disconnect the "G" connector of the Audio head unit, check if AVC-LAN will be recovered normally. |
|----------|--|

CHECK:

Check that the display will change by pressing either of the Panel switch or Touch switch on the display.

HINT:

It can be judged that AVC-LAN is recovered if the display is changed.

OK**Repair or replace wire harness or connector between Audio head unit and amplifier.****NG**

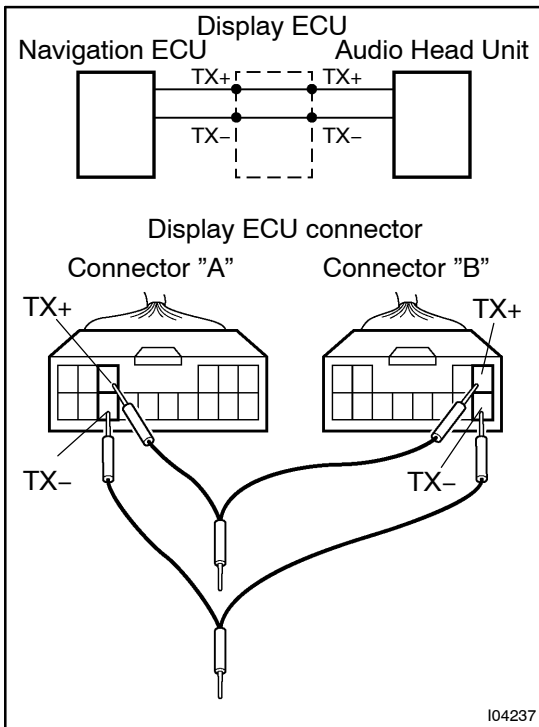
- | | |
|----------|---|
| 5 | Check wire harness and connector between Audio head unit and Display ECU.
(See page IN-31) |
|----------|---|

NG**Repair or replace wire harness or connector between Audio head unit and Display ECU.****OK**

- | | |
|----------|--|
| 6 | Check wire harness and connector between Display ECU and Navigation ECU.
(See page IN-31) |
|----------|--|

NG**Repair or replace wire harness or connector between Display ECU and Navigation ECU.****OK**

7 Skip Display ECU and check AVC-LAN.



PREPARATION:

- Connect all the connectors except "A" and "B" of the Display ECU.
- Using 2 SSTs (Diagnosis check wire P/N 09893-12040), connect the terminal TX+ of connector "A" and TX+ of connector "B", the terminal TX- of connector "A" and TX- of connector "B" respectively of Display ECU.

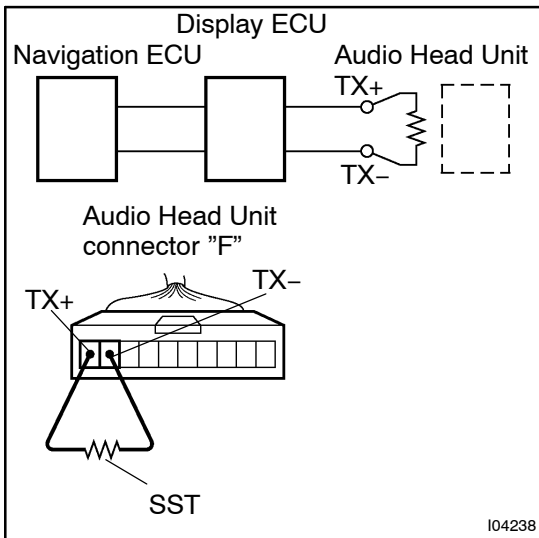
CHECK:

Operate Audio head unit (CD, Cassette tape, etc.) and check that the sound comes out from the speaker.
(Check that AVC-LAN is recovered.)

OK

Replace the Display ECU.

NG

8 Skip Audio head unit and check AVC-LAN.

PREPARATION:

- Connect Display ECU connector.
- Disconnect Audio head unit "F" connector.
- Using SST (Navigation Check Wire P/N 09843-18050), connect the terminal TX+ to terminal TX- of "F" connector of Audio head Unit.

CHECK:

Operate the panel switch and the touch switch of the display and check that the navigation functions.
(Check that AVC-LAN is recovered.)

OK
Replace the Audio head unit.
NG
Replace the Navigation ECU.