

AUDIO SYSTEM

DESCRIPTION

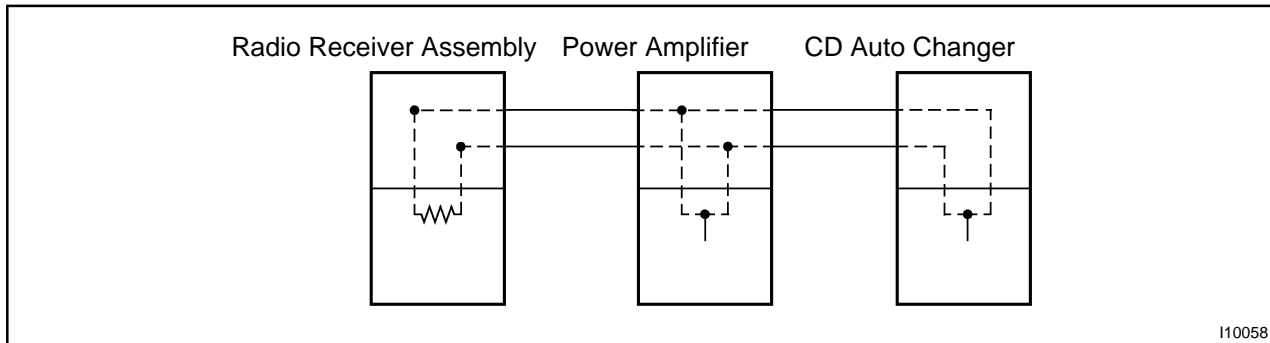
BE20T-01

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.



(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.
- (c) 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, multi-display 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.

TROUBLESHOOTING

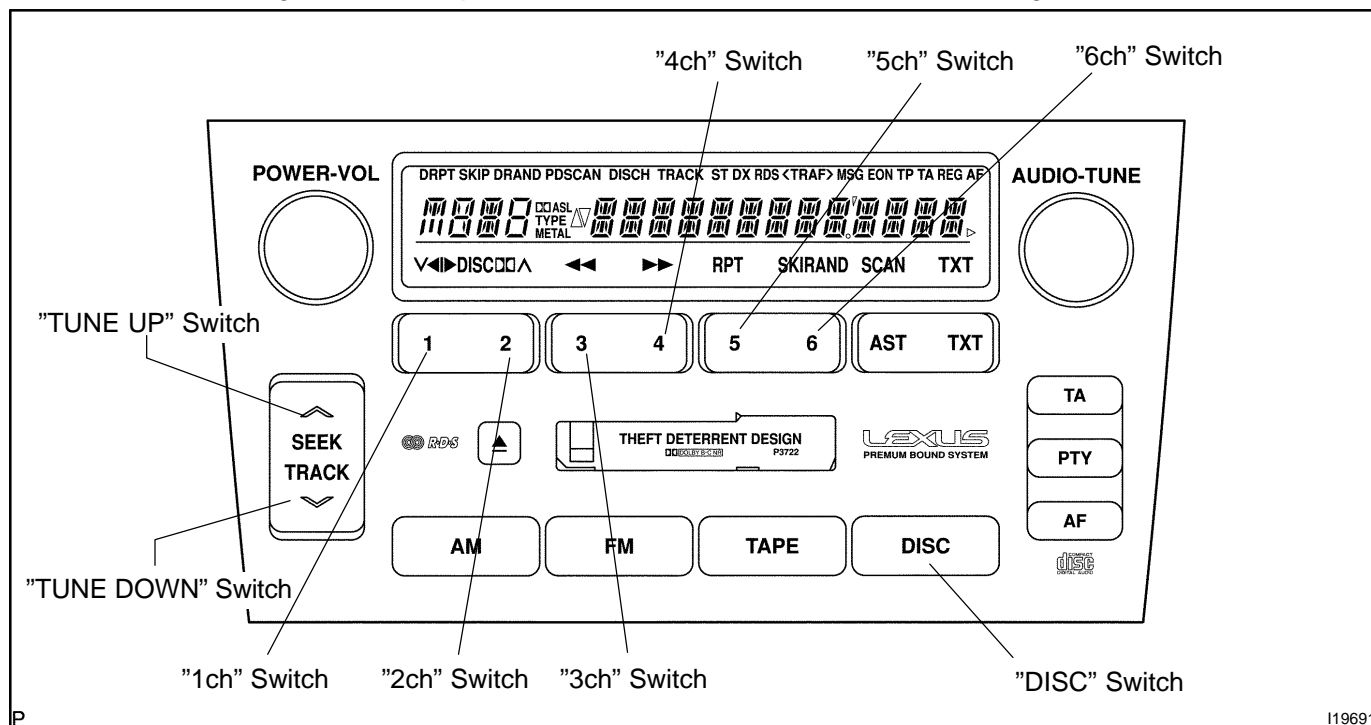
1. USA and CANADA models: DIAGNOSIS FUNCTION

(a) Diagnosis start-up

For shifting diagnosis mode, turn ignition switch ON and push the "DISC" switch 3 times while pressing "ch1" and "ch6" switches.

HINT:

To exist from the diagnosis mode, push the "DISC" switch for 1.7 sec. or turn ignition switch to OFF.



(b) Service check mode

(1) After the diagnosis start-up, the system enters service check mode.

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

Results for each check are displayed as follows:

- good:
No DTC is detected for both "System Check Confirmation" and "Diagnosis Memory Response".
- nCon:
The Component does not respond to the "Diagnosis On Instruction" command.
Applicable to only the system where connected components are limited to be used.
- ECHn:
Application of new version has been confirmed by the "Diagnosis On Check", and there is one or more DTC which indicates "Replacement" in the "System Check Result Response" or "Diagnosis Memory Response".
- CHEC:
Application of new version has been confirmed by the "Diagnosis On Check", and there is no DTC which indicates "Replacement" in the "System Check Result Response" or "Diagnosis Memory Response", but one or more DTC which indicated "Check" is identified.

- Old:
Application of old version is confirmed by the "Diagnosis On Check", and DTC is identified in the "System Check Result Response" or "Diagnosis Memory Response".
- nrES:
No response is identified to the "System Check Start Instruction" and "Request for System Check Result" commands.

HINT:

- Check the present and past condition of components by performing the System Check and collecting stored DTC memories.
- Check results shall be displayed as one of six following indications: "good", "ECHn", "CHEC", "nCon", "Old" or "nrES".

(c) Display Screen for Service Check.

Example:

Connection parts (physical address): Radio receiver (P190), CD Auto Changer (P360), MD chnger (P3A0)

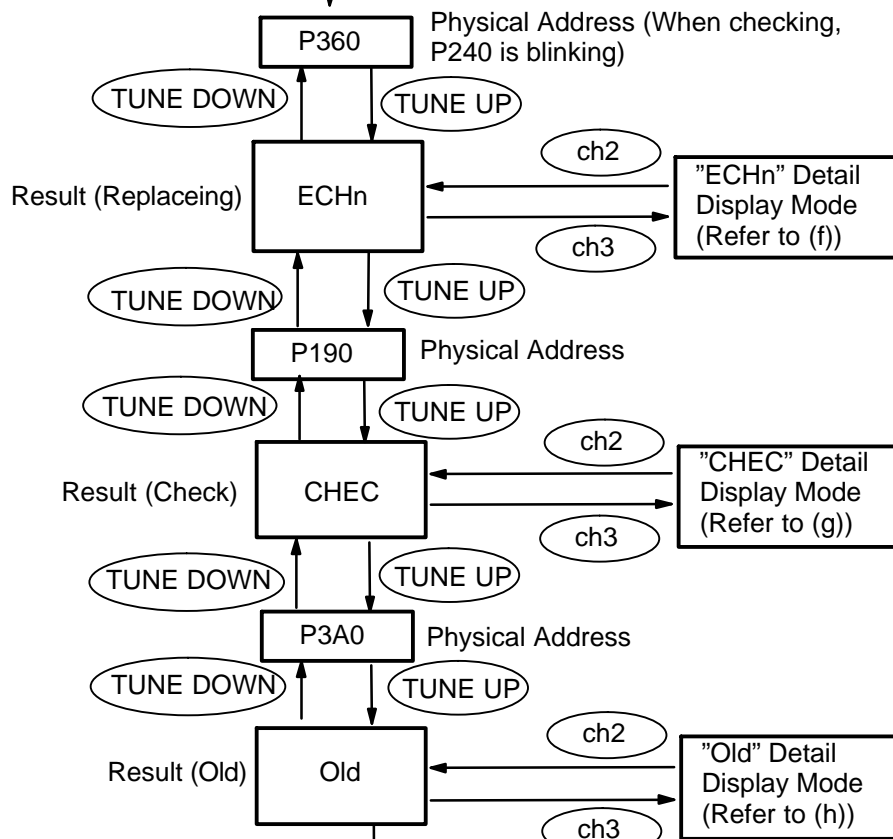
Normal Mode

Turn ignition switch ON.
Push the "DISC" switch 3 times while pressing "ch1" and "ch6" swithes.

HINT:
To exit from diagnosis mode, press the "DISC" switch for 1.7 sec. or turn ignition switch to OFF

★ 3 beeps

Service Check Mode



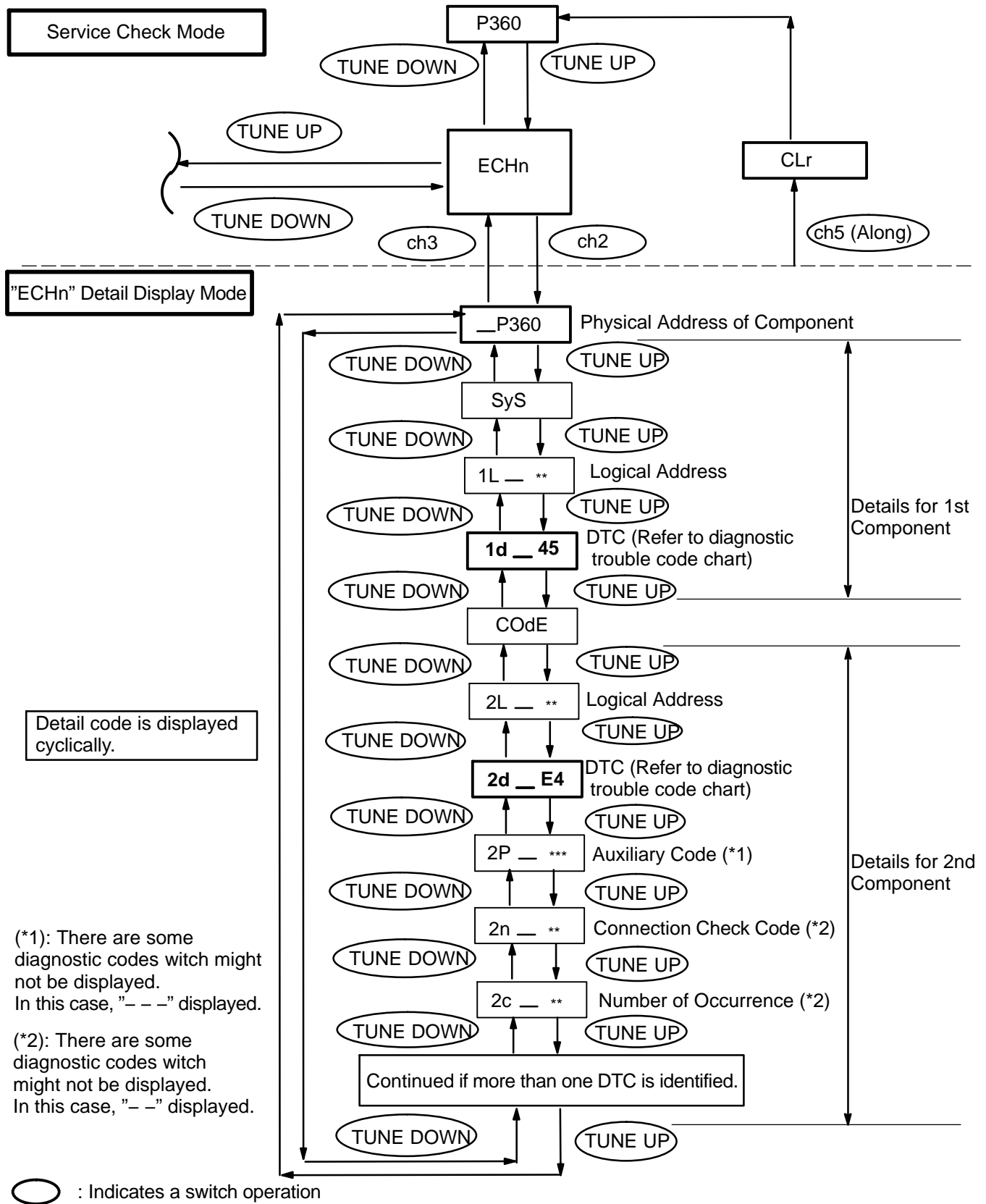
○ : Indicates a switch operation

ch5 (1.7 sec.) ★ A long beep (3 sec.)

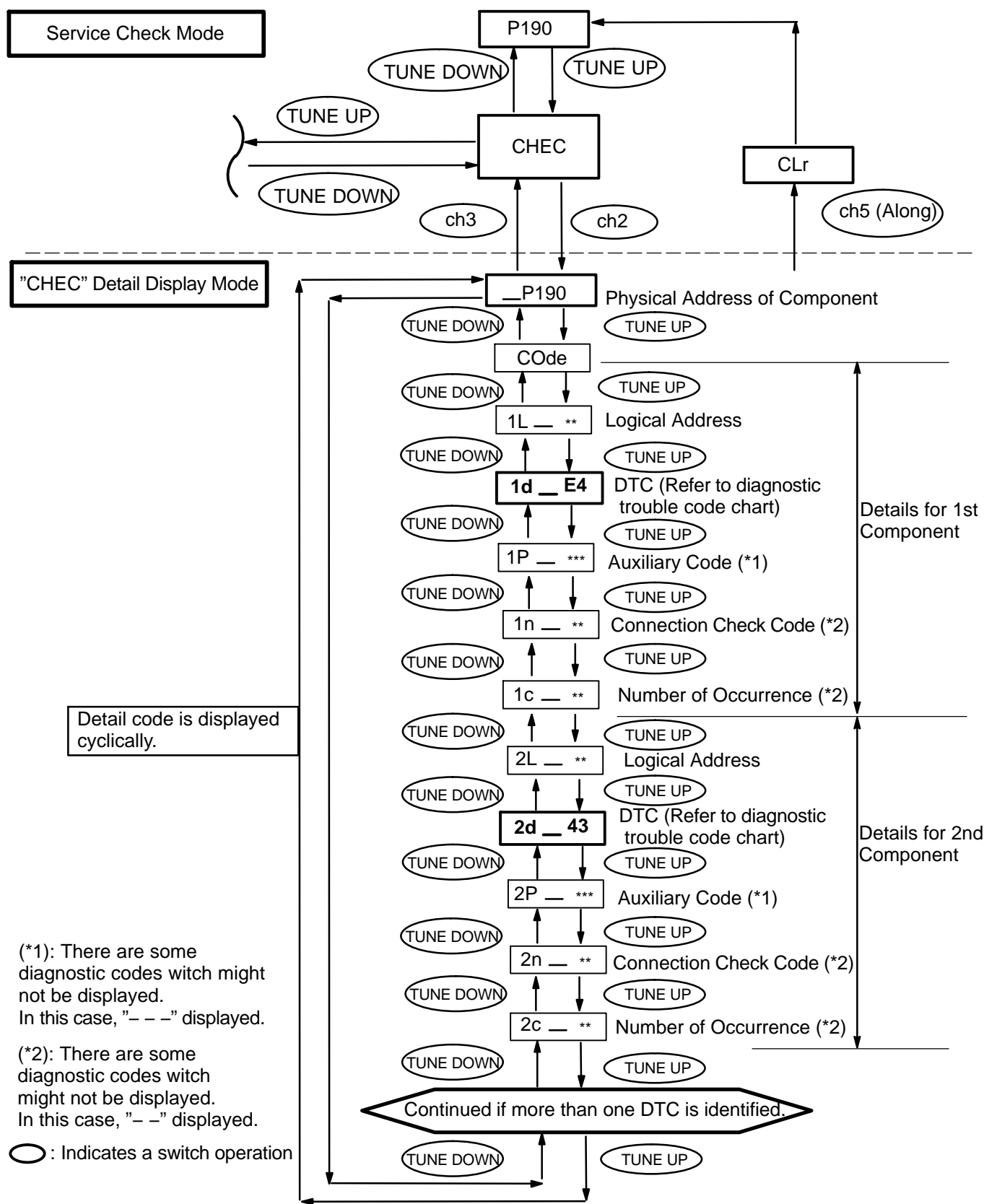
Memory Clear Mode

- After the memory is cleared, only the physical address is displayed cyclically.
- When re-checking (ch1 switch is pressed) in that condition, the result is also displayed as shown above.

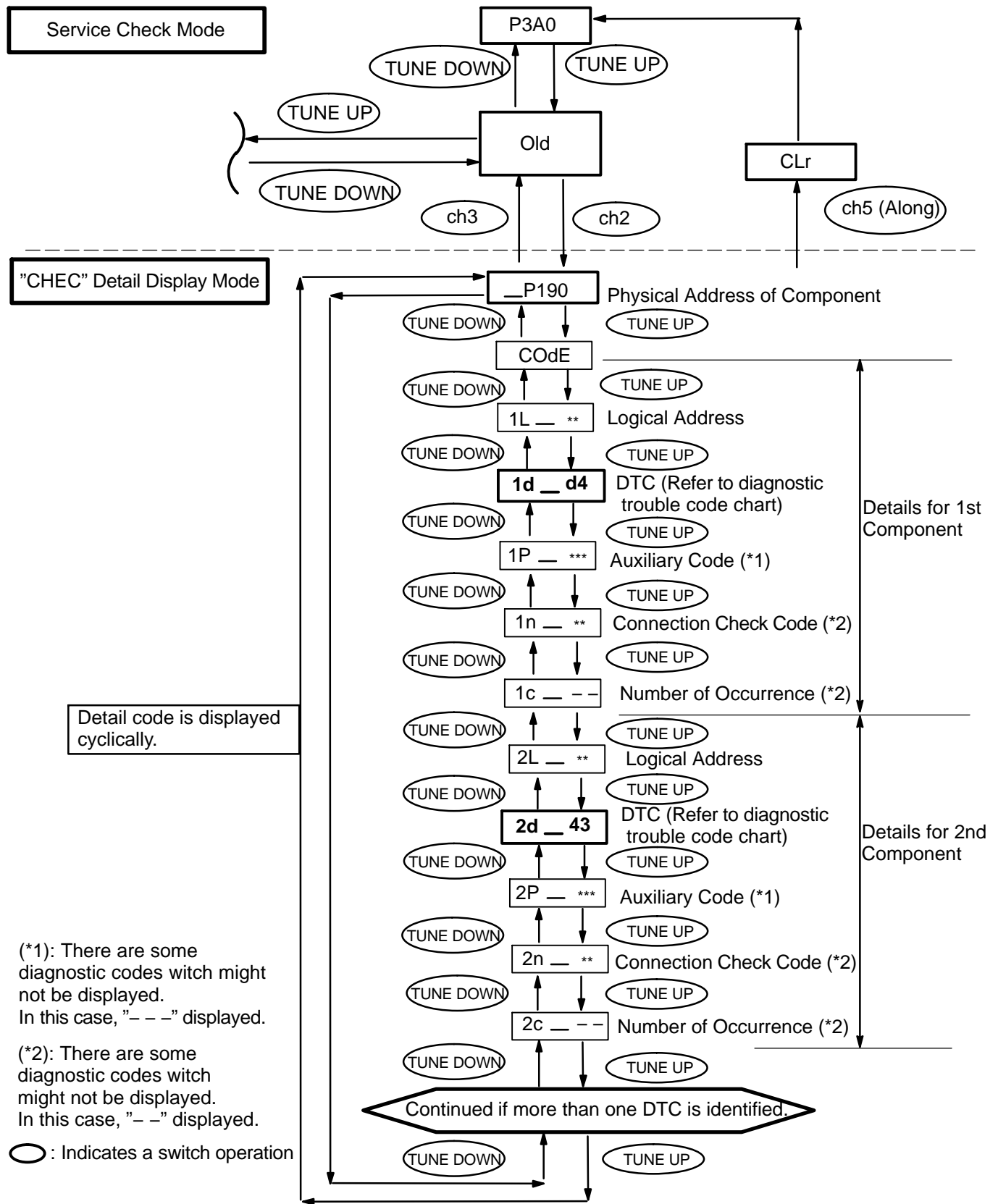
(d) "ECHn" Detail Display Mode Screen



(e) "CHEC" Detail Display Mode Screen



(f) "Old" Detail Display Mode Screen



2. TAIWAN models: DIAGNOSIS FUNCTION

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

(a) Diagnosis start-up

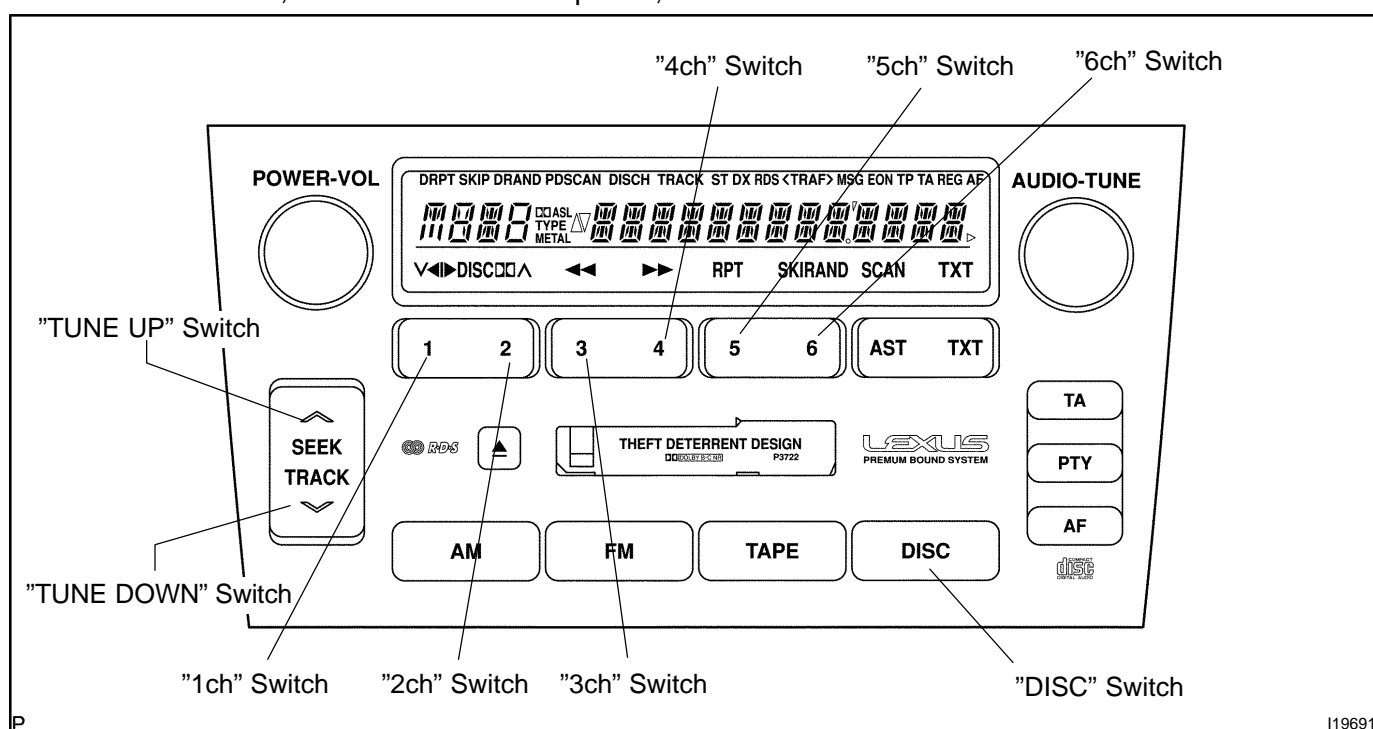
For shifting to diagnosis mode, push "DISC" switch 3 times with pressing "1" and "6" of PRESET switch at the same time while the audio power is OFF and ACC is ON.

To exit from diagnosis mode, press "DISC" 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

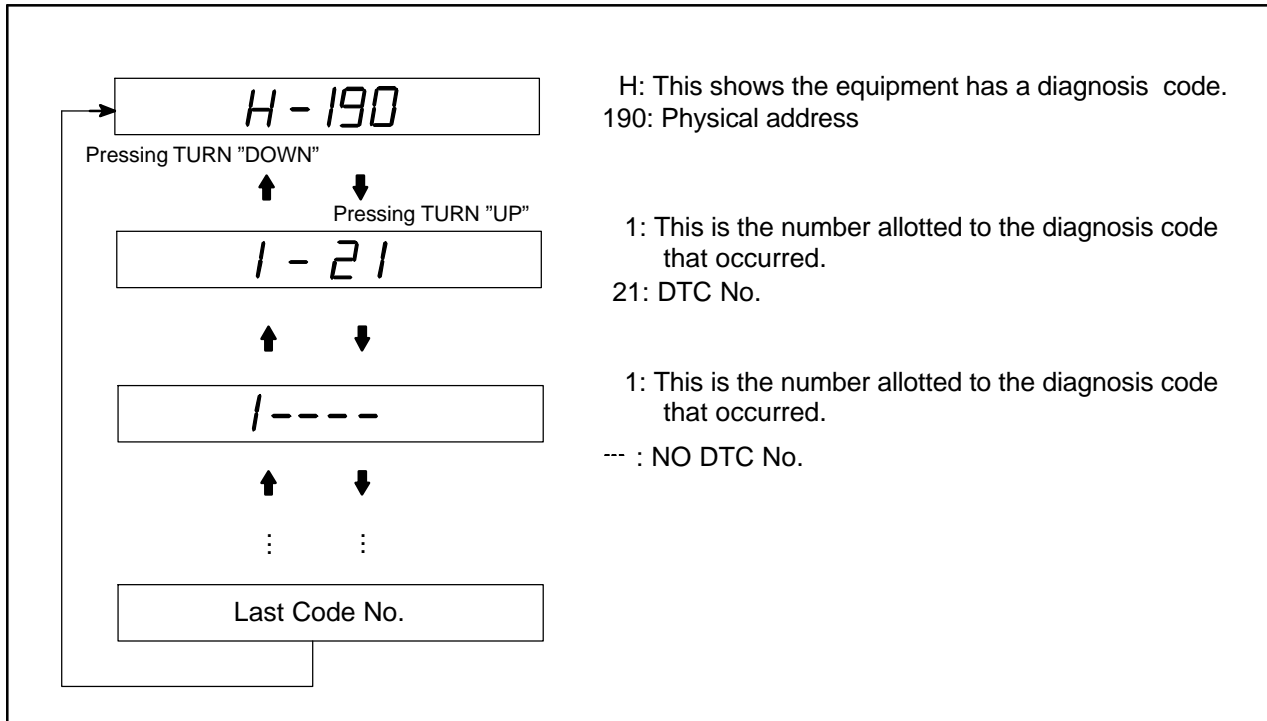
Code No. (physical address)	Equipment name
190	Radio receiver assembly (Audio head unit)
240	CD changer (in Luggage room)
360	CD changer (in center console and glove compartment box)
440	Stereo component amplifier

(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.

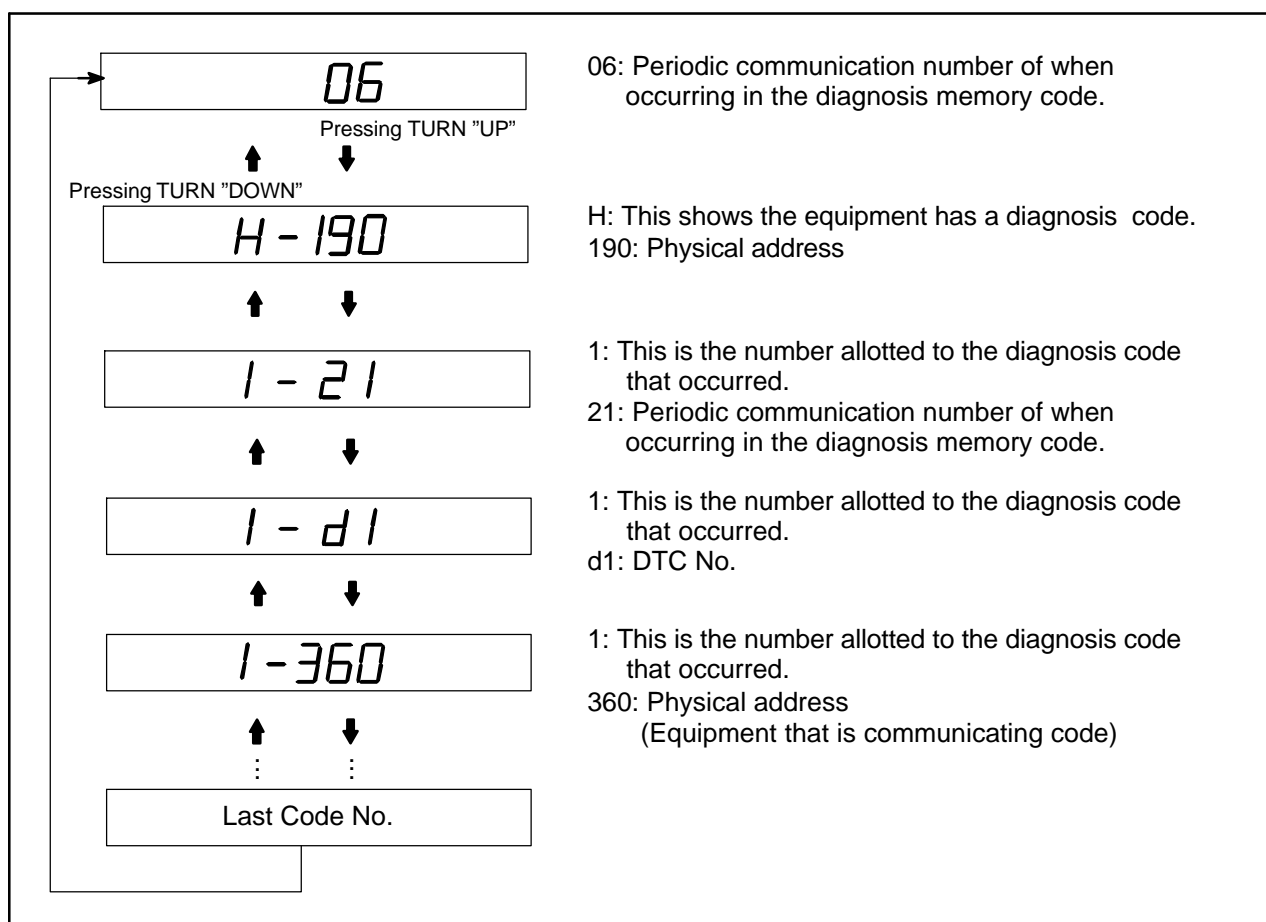


(d) Diagnosis memory

- (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. USA and CANADA models: DIAGNOSTIC TROUBLE CODE CHART

Terms	Meaning
Physical address	Three-digit code (shown in hexadecimal) which is given to each component comprising the AVC-LAN. Corresponding to the function, individual symbols are specified.
Logical address	Two-digit code (shown in hexadecimal) which is given to each function comprising the inner system of the AVC-LAN.

(a) Physical address 190: Radio receiver assembly

HINT:

- *1: Even if no failure is detected, it may be stored depending on the battery condition or voltage for starting an engine.
- *2: It is stored when 180 sec. has passed after the power supply connector is pulled out after engine start.
- *3: It may be stored when the engine key is turned 1 min. again after engine start.
- *4: It may be stored when the engine key is turned again after engine start.
- *5: When 210 sec. has passed after pulling out the power supply connector of the master component with the ignition switch in ACC or ON, this code is stored.

(1) Logical address: 01 (Communication control)

DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts
D6 *1	Absence of Master	Component in which this code is recorded has been disconnected from system with ignition in ACC or ON. Or, when this code was recorded, radio receiver assembly was disconnected.	<ul style="list-style-type: none"> • Check harness for power supply system of radio receiver assembly. • Check harness for communication system of radio receiver assembly.
D8 *2	No Response to Connection Check	Component shown by auxiliary code is or had been disconnected from system after engine is start. D9	<ul style="list-style-type: none"> • Check harness for power supply system of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
D9 *1	Last Mode Error	Component operated (sounds and/or images were provided) before engine stop is or has been disconnected with ignition switch in ACC or ON.	<ul style="list-style-type: none"> • Check harness for power supply system of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
DA	No Response to ON/OFF Instruction	No response is identified when changing mode (audio and visual mode change). Detected when sound and picture does not change by button operation.	<ul style="list-style-type: none"> • Check harness for power supply system of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code. • If error occurs again, replace component shown by auxiliary code.
DB *1	Mode Status Error	Dual alarm is detected.	<ul style="list-style-type: none"> • Check harness for power supply of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
DC *3	Transmission Error	Transmission to component shown by auxiliary code has been failed. (Detecting this DTC does not necessarily mean actual failure.)	If same auxiliary code is recorded in order component, check harness for power supply and communication system of all components shown by code.
DD *4	Master Reset (Momentary Interruption)	After engine is started, radio receiver assembly was disconnected from system.	<ul style="list-style-type: none"> • Check harness for power supply system of radio receiver assembly. • Check harness for communication system of radio receiver assembly. • If this error occurs frequently, replace radio receiver assembly assembly.

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DE *4	Slave Reset (Momentary Interruption)	After engine is started, slave component was disconnected from system.	<ul style="list-style-type: none"> • Check harness for power supply of component shown by auxiliary code. • Check harness for communication system of component shown by auxiliary code.
DF *5	Master Error	Due to defective condition of component with a display, master function is switched to audio equipment. Error occurs in communication between sub-master (audio) and master component.	<ul style="list-style-type: none"> • Check harness for power supply of radio receiver assembly. • Check harness for communication system of radio receiver assembly. • Check harness for communication system between radio receiver assembly and sub-master component.
E0 *1	Registration Completion Instruction Error	"Registration Completion Instruction" command from master cannot be received.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.
E1 *1	Audio processor ON error	While source equipment is operating, AMP output is stopped.	<ul style="list-style-type: none"> • Check harness for power supply of radio receiver assembly. • Check harness for communication system of radio receiver assembly.
E2	ON/OFF Instruction Parameter Error	Error occurs in ON/OFF controlling command from radio receiver assembly.	Replace radio receiver assembly.
E3 *1	Registration Request Transmission	Registration Request command is output from slave component. Receiving Connection Check Instruction, Registration Request command is output from sub-master component.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.
E4 *1	Multiple Frame Abort	Multiple frame transmission is aborted.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.

(2) Logical address: 61 (Cassette switch)

DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts
40	Mechanical of Media Error	Malfunction due to mechanical failure is identified. Or cassette tape is cut or entangled.	<ul style="list-style-type: none"> • Inspect cassette tape. • Replace radio receiver assembly.

(b) Physical address: 440 Stereo component amplifier

HINT:

- *1: Even if no failure is detected, it may be stored depending on the battery condition or voltage for starting an engine.
- *2: It may be stored when the engine key is turned 1 min. again after engine start.
- *3: It may be stored when the engine key is turned again after engine start.
- *4: When 210 sec. has passed after pulling out the power supply connector of the master component with the ignition switch in ACC or ON, this code is stored.

Logical address: 01 (Communication control)

DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts
D6 *1	Absence of Master	Component in which this code is recorded has been disconnected from system with ignition in ACC or ON. Or, when this code was recorded, radio receiver assembly was disconnected.	<ul style="list-style-type: none"> • Check harness for power supply of radio receiver assembly. • Check harness for communication system of radio receiver assembly. • Check harness for power supply of Stereo component amplifier. • Check harness for communication system of Stereo component amplifier.
D7 *2	Communication Check Error	Component in which this code is recorded has been disconnected from system after engine start. Or, when this code was recorded, multi-display assembly was disconnected. D6	<ul style="list-style-type: none"> • Check harness for power supply system of multi-display. • Check harness for communication system of multi-display. • Check harness for power supply system of stereo component amplifier. • Check harness for communication system of stereo component amplifier.
DC *3	Transmission Error	Transmission to component shown by auxiliary code has been failed. (Detecting this DTC does not necessarily mean actual failure.)	If same auxiliary code is recorded in order component, check harness for power supply and communication system of all components shown by code.
DD *4	Master Reset (Momentary Interruption)	After engine is started, Stereo component amplifier was disconnected from system.	<ul style="list-style-type: none"> • Check harness for power supply system of radio receiver assembly. • Check harness for communication system of radio receiver assembly. • If this error occurs frequently, replace radio receiver assembly assembly.
DF *5	Master Error	Due to defective condition of component with a display, master function is switched to audio equipment. Error occurs in communication between sub-master (audio) and master component.	<ul style="list-style-type: none"> • Check harness for power supply of radio receiver assembly. • Check harness for communication system of radio receiver assembly. • Check harness for communication system between Stereo component amplifier and sub-master component.
E0 *1	Registration Completion Instruction Error	"Registration Completion Instruction" command from master cannot be received.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.
E1 *1	Audio processor ON error	While source equipment is operating, AMP output is stopped.	<ul style="list-style-type: none"> • Check harness for power supply of radio receiver assembly. • Check harness for communication system of Stereo component amplifier.

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E2	ON/OFF Instruction Parameter Error	Error occurs in ON/OFF controlling command from Stereo component amplifier.	Replace Stereo component amplifier.
E3 *1	Registration Request Transmission	Registration Request command is output from slave component. Receiving Connection Check Instruction, Registration Request command is output from sub-master component.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.

(c) Physical address: 360 CD Auto Changer

HINT:

- *1: Even if no failure is detected, it may be stored depending on the battery condition or voltage for starting an engine.
- *2: It may be stored when the engine key is turned 1 min. again after engine start.
- *3: It may be stored when the engine key is turned again after engine start.
- *4: It may be stored when the engine key is turned again after engine start.
- *5: When 210 sec. has passed after pulling out the power supply connector of the master component with the ignition switch in ACC or ON, this code is stored.

(1) Logical address: 01 (Communication control)

DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts
D1	Transmission Error	Transmission to component shown by auxiliary code has been failed. (This code does not necessarily mean actual failure.)	If same auxiliary code is recorded in other component(s), check harness for power supply and communication system of components shown sub code.
D4 *5	Connection check Error	Component in which this code is recorded is or was disconnected from system after engine start. Or, when recording this code, radio receiver assembly assembly was disconnected.	<ul style="list-style-type: none"> • Check harness for power supply of radio receiver assembly. • Check harness for communication system of radio receiver assembly. • Check harness for power supply of DVD auto changer. • Check harness for communication system of DVD auto changer.

(2) Logical address: 63 (CD Auto Changer)

DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts
60	CD Error	Error is detected in CD auto changer.	Replace CD auto changer
61	EJECT Error	Magazine cannot be ejected.	Replace CD auto changer
62	No Disc Readout	Disc cannot be read.	Inspect CD
63	CD Auto Changer Temp. Too High	Readout cannot be done because temperature around player's pick-up (reading part) is too high.	With IG switch OFF, leave vehicle in cool shaded place for a while and re-check. After deleting the DTC memory, if same code detected, replace CD auto changer.
64	CD Changer Excess Current	Excess current is applied CD auto changer.	Replace CD auto changer

(d) Physical address: 1C6 Gateway ECU

HINT:

*1: When 210 sec. has passed after pulling out the power supply connector of the master component with the ignition switch in ACC or ON, this code is stored.

Logical address: 01 (Communication control)

DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts
D4 *1	Regular Communication Error	Component in which this code is recorded has been disconnected after engine start. Or, when this code was recorded, radio receiver assembly was disconnected.	<ul style="list-style-type: none"> • Check harness for power supply system of radio receiver assembly assembly. • Check harness for communication system of radio receiver assembly assembly. • Check harness for power supply system of gateway ECU. • Check harness for communication system of gateway ECU.

4. TAIWAN models: 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)	50	Cassette error	There is an error in cassette deck.	Radio receiver check.	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	○	

Parts Name	DTC	Diagnosis item	Diagnosis content	Countermeasure and inspected parts	System Check	Diagnosis memory
AMP (440)	D1	Transmitter error	Communication with the equipment that is communicating has failed successively.	Stereo component amplifier check.	○	○
	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	○

5. PROBLEM SYMPTOMS TABLE

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:

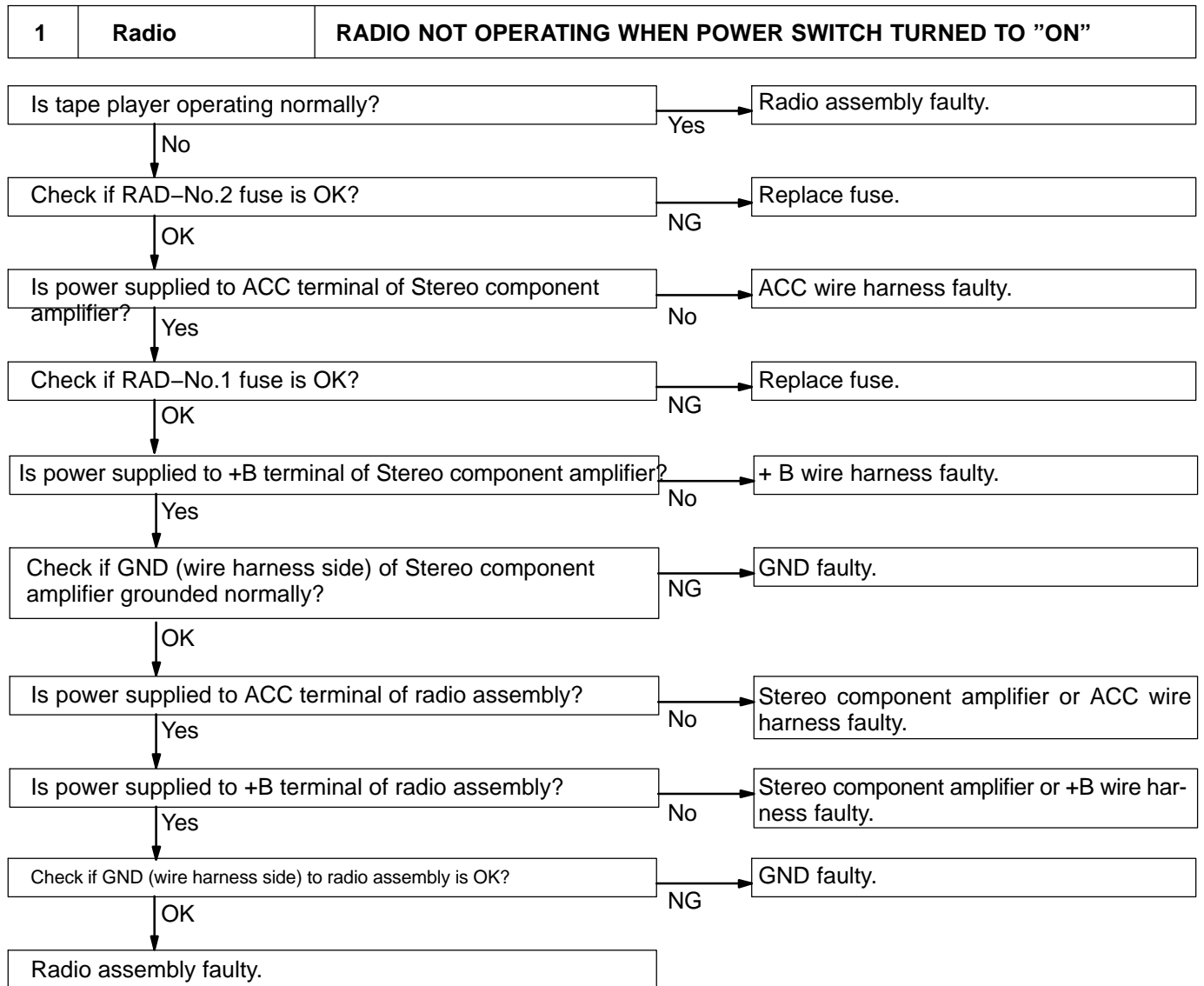
This inspection procedure is a simple troubleshooting which should be carried out on the vehicle during system operation and was prepared on the assumption of system component troubles (except for the wires and connectors, etc.).

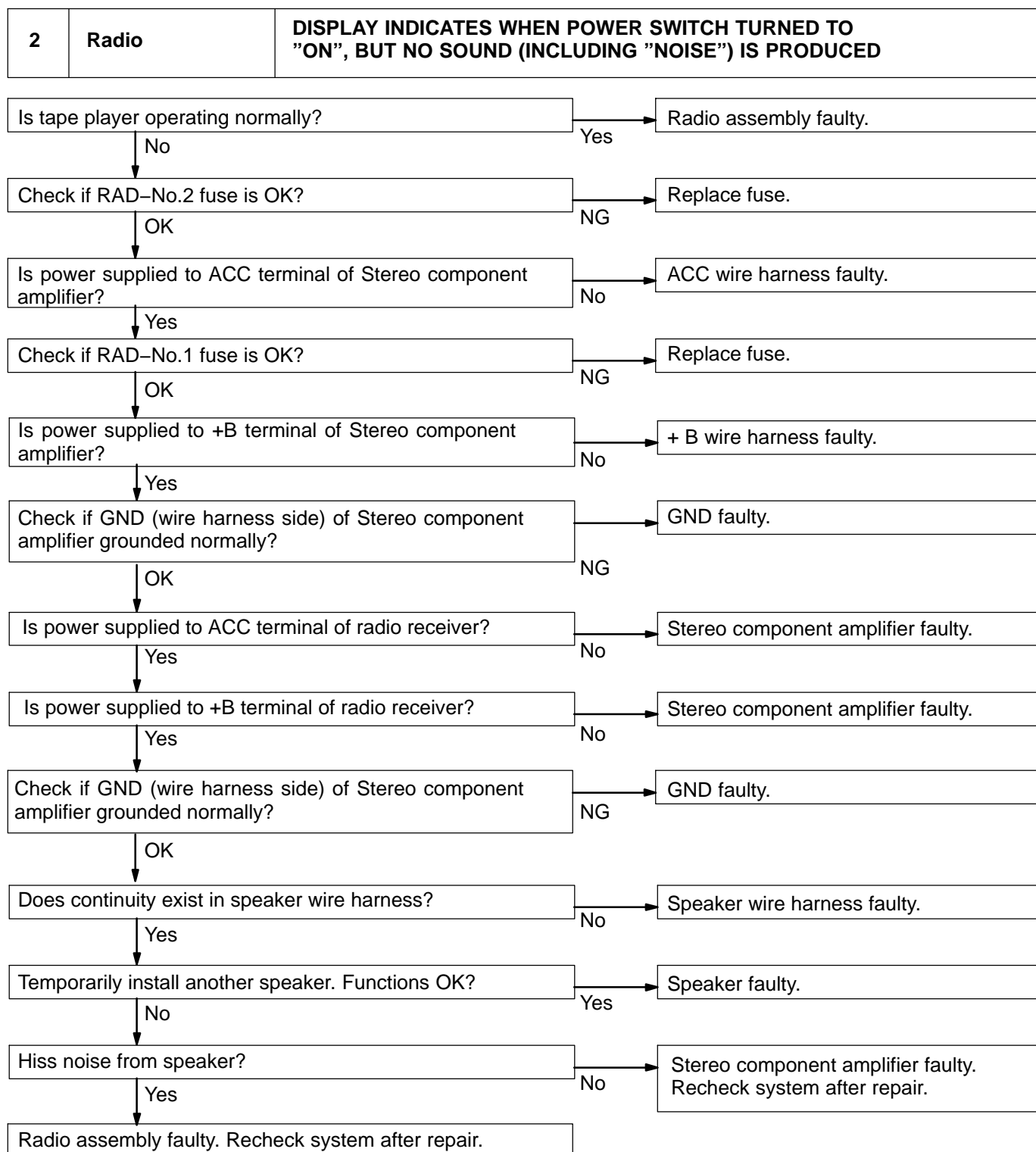
Always inspect the trouble taking the following items into consideration.

- Open or short circuit of the wire harness
- Connector or terminal connection fault

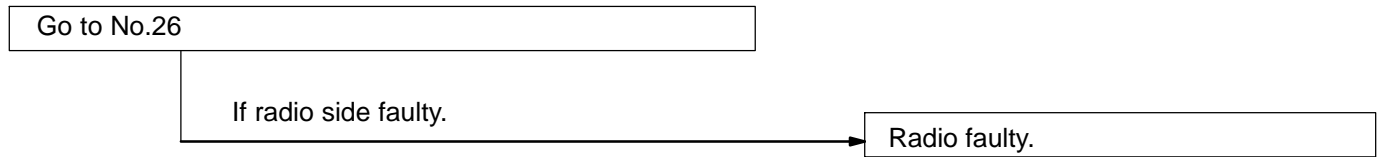
	Problem	No.
Radio	Radio not operating when power switch turned to 'ON'.	1
	Display indicates when power switch turned to 'ON', but no sound (including 'noise') is produced.	2
	Noise present, but AM - FM not operating.	3
	Any speaker does not work.	4
	Any AM or FM does not work.	5
	Few preset tuning bands.	5
	Reception poor.	6
	Sound quality poor.	7
	Preset memory disappears.	8
Tape Player	Cassette tape cannot be inserted.	9
	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
Stereo Component Amplifier	No power coming in.	23
	Power coming in, but Stereo component 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 "FM" includes UKW.

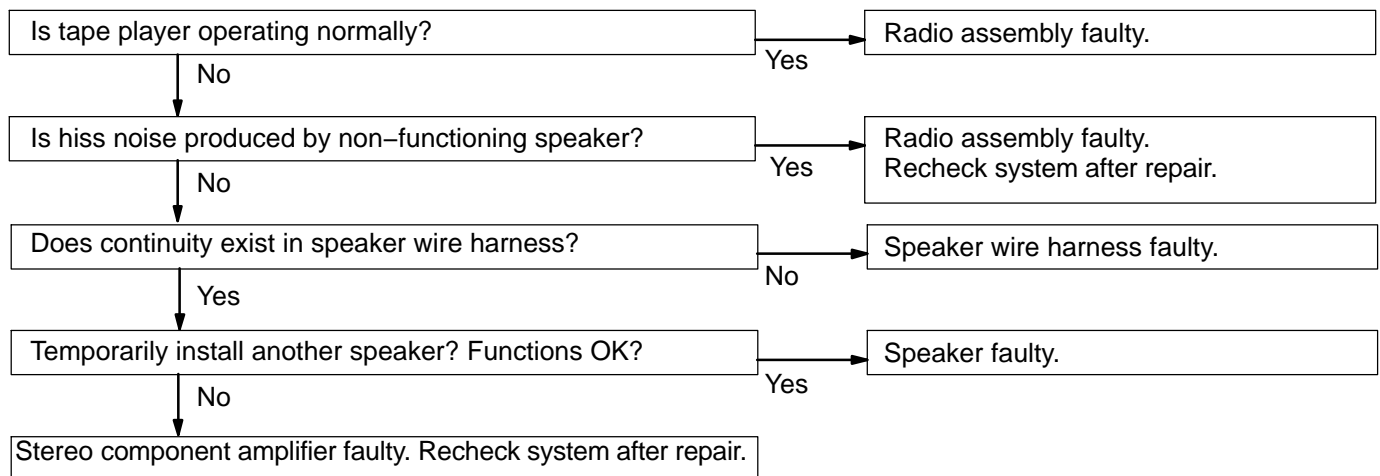




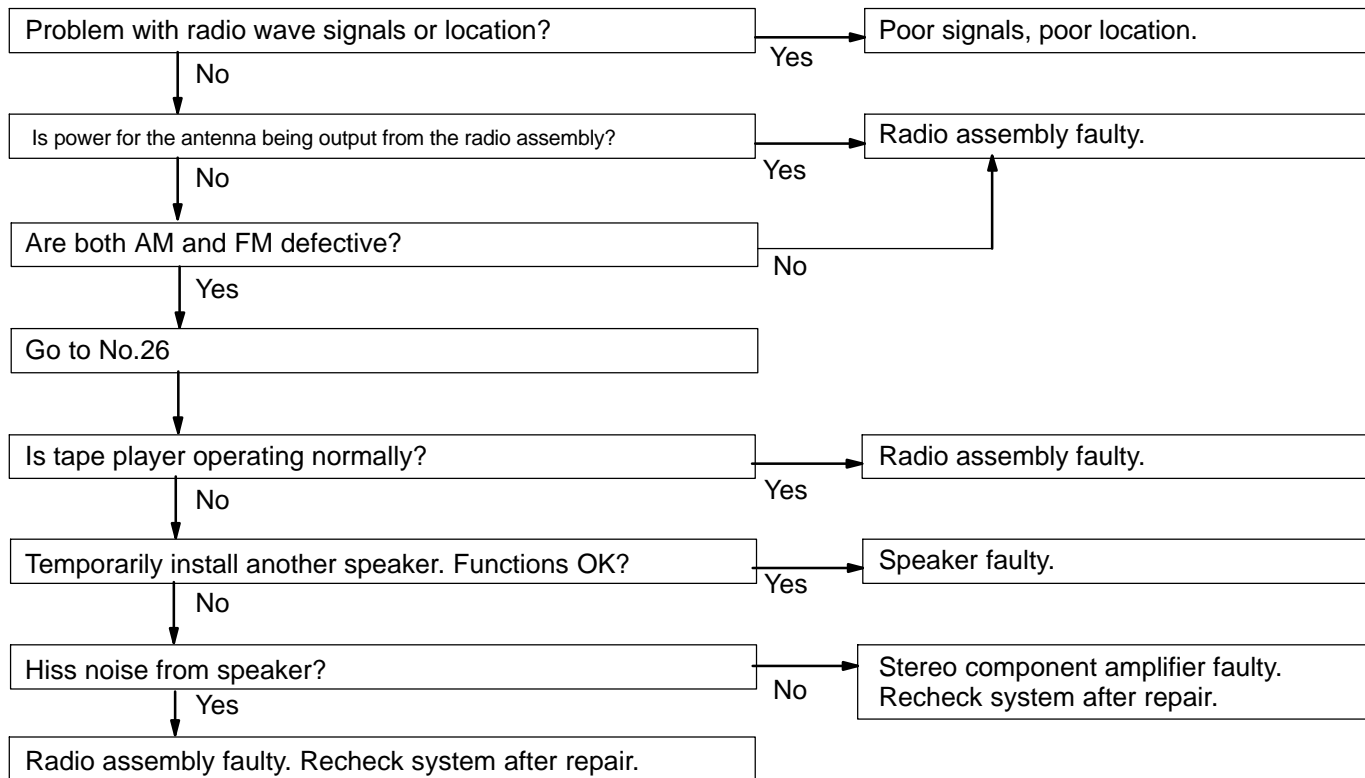
3	Radio	NOISE PRESENT, BUT AM-FM NOT OPERATING
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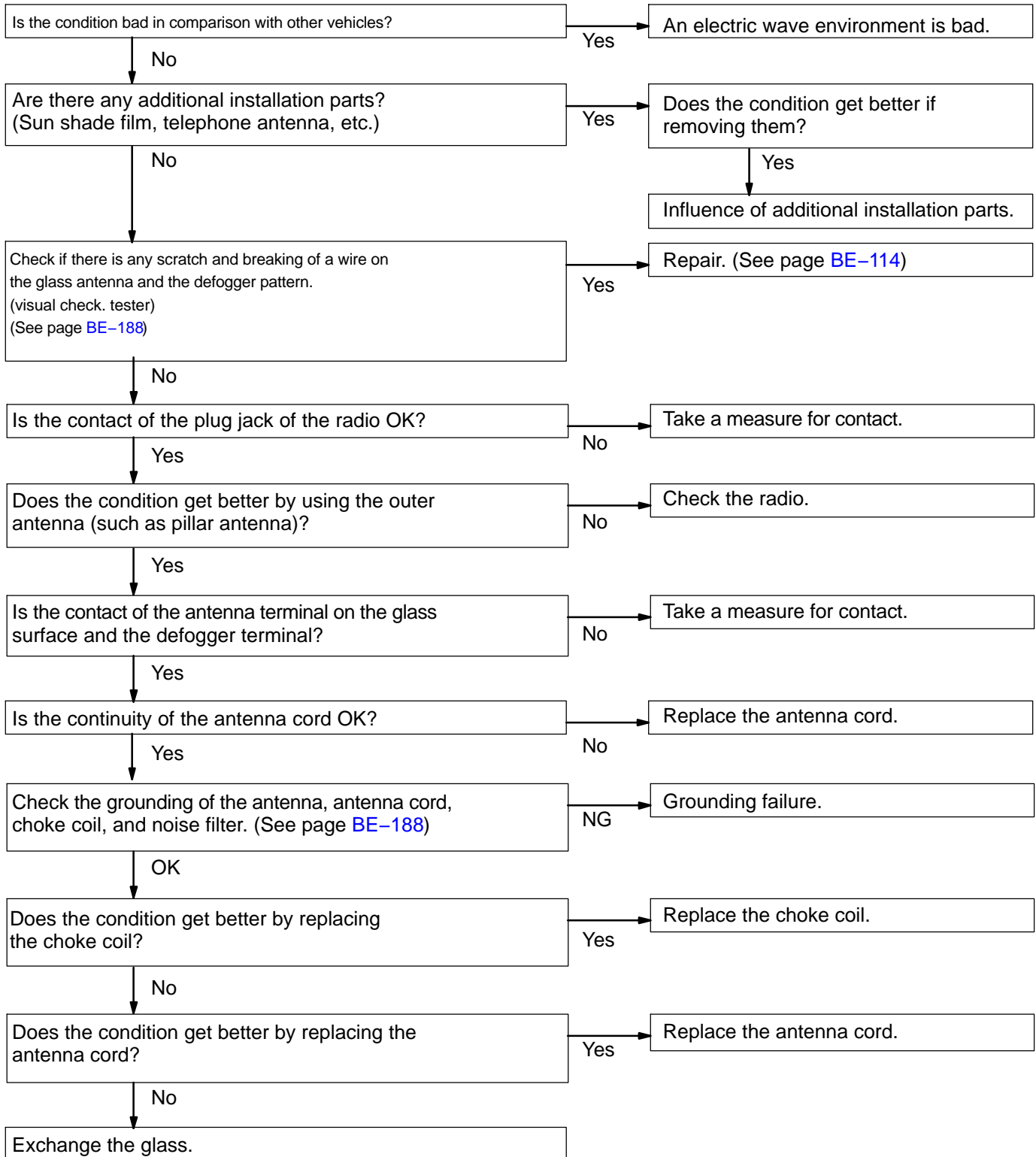
4	Radio	ANY SPEAKER DOES NOT WORK
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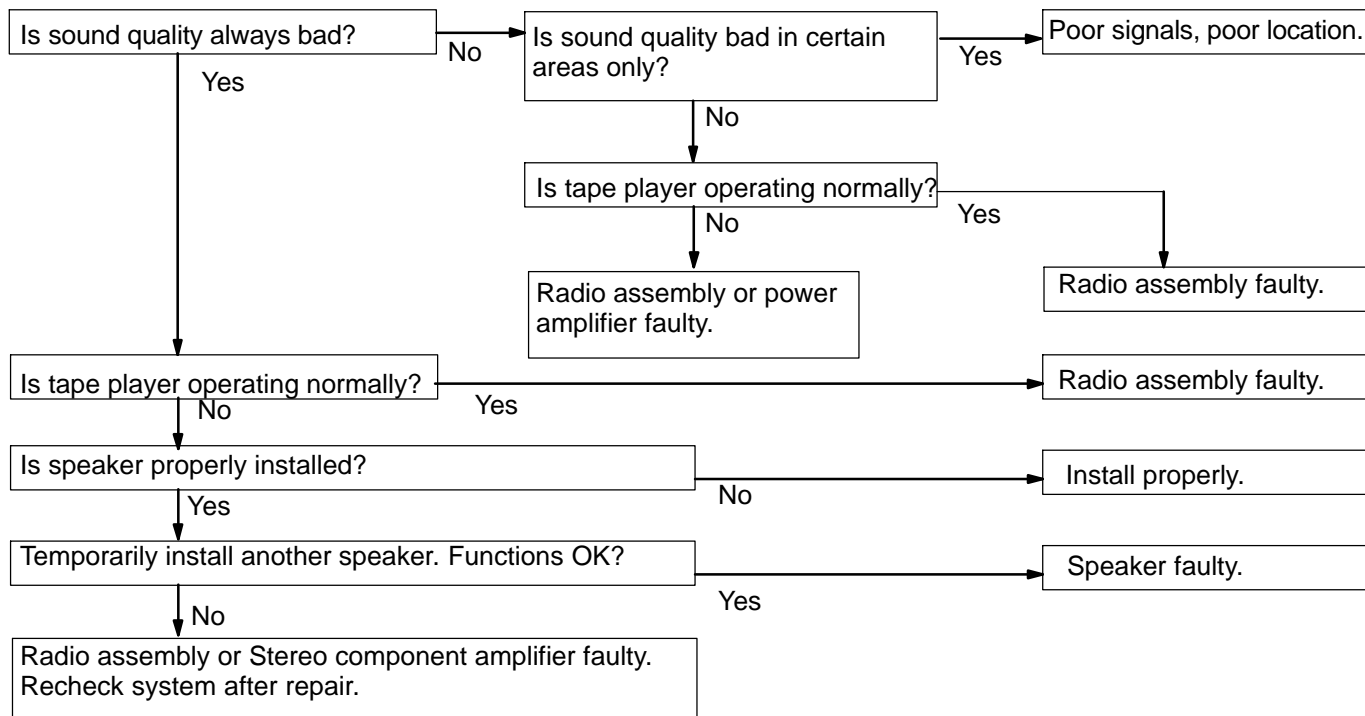
5	Radio	ANY AM OR FM DOES NOT WORK FEW PRESET TUNING BANDS
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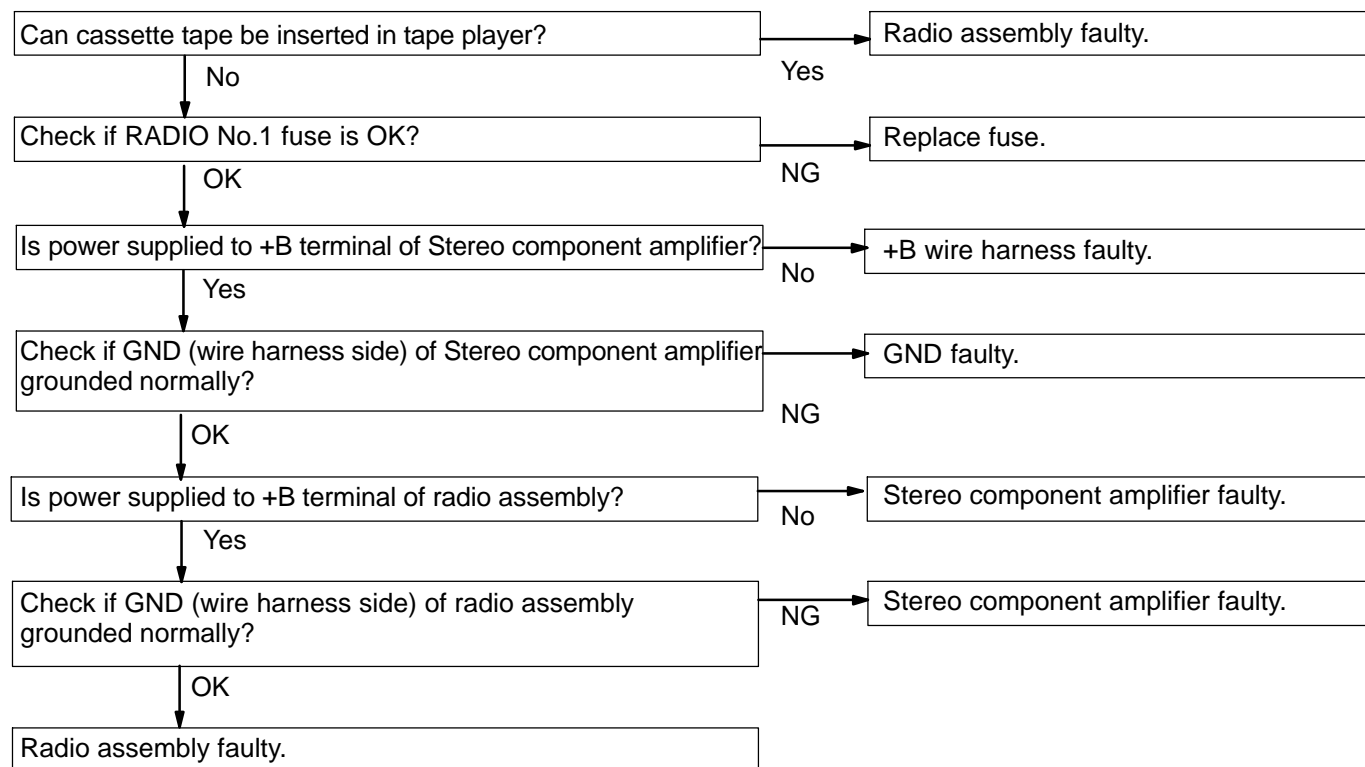
6	Radio	POOR RECEPTION
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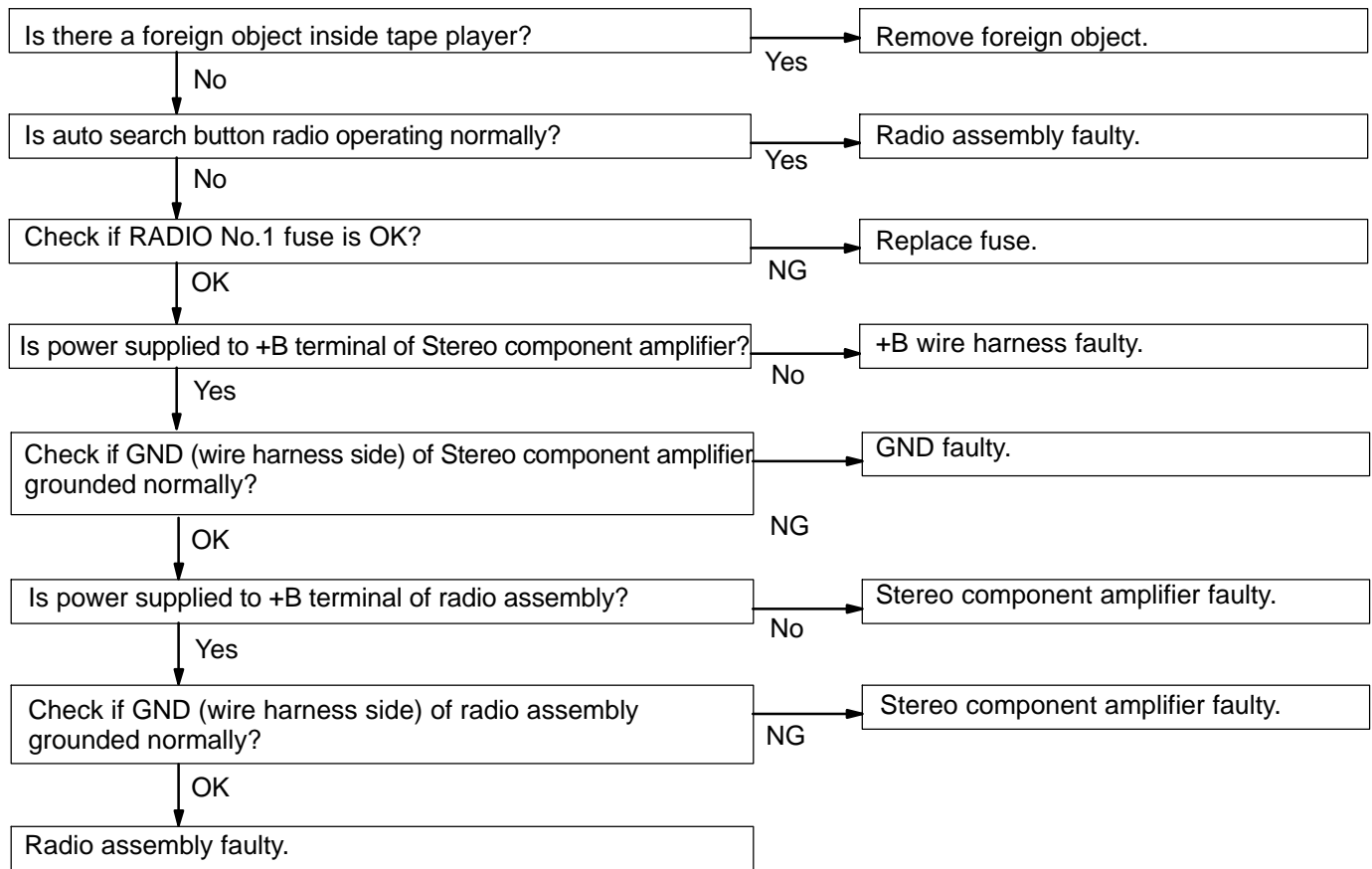
7	Radio	SOUND QUALITY POOR
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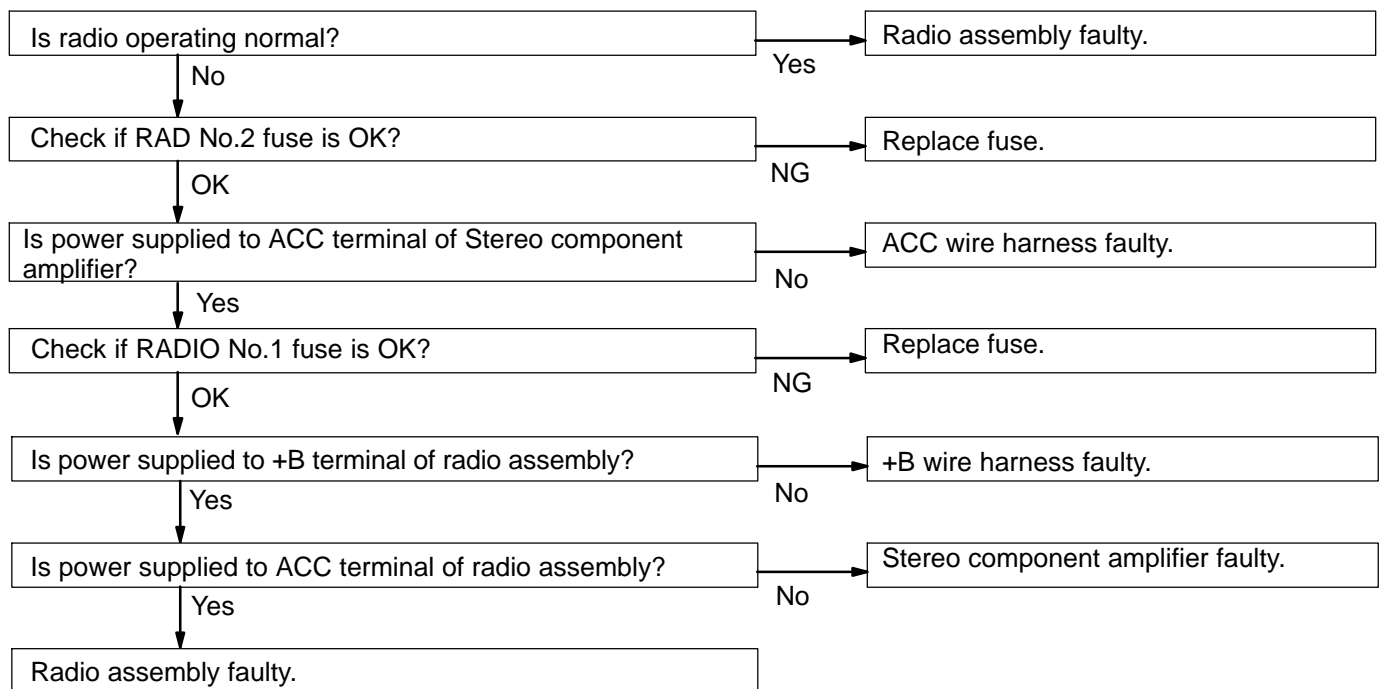
8	Radio	PRESET MEMORY DISAPPEARS
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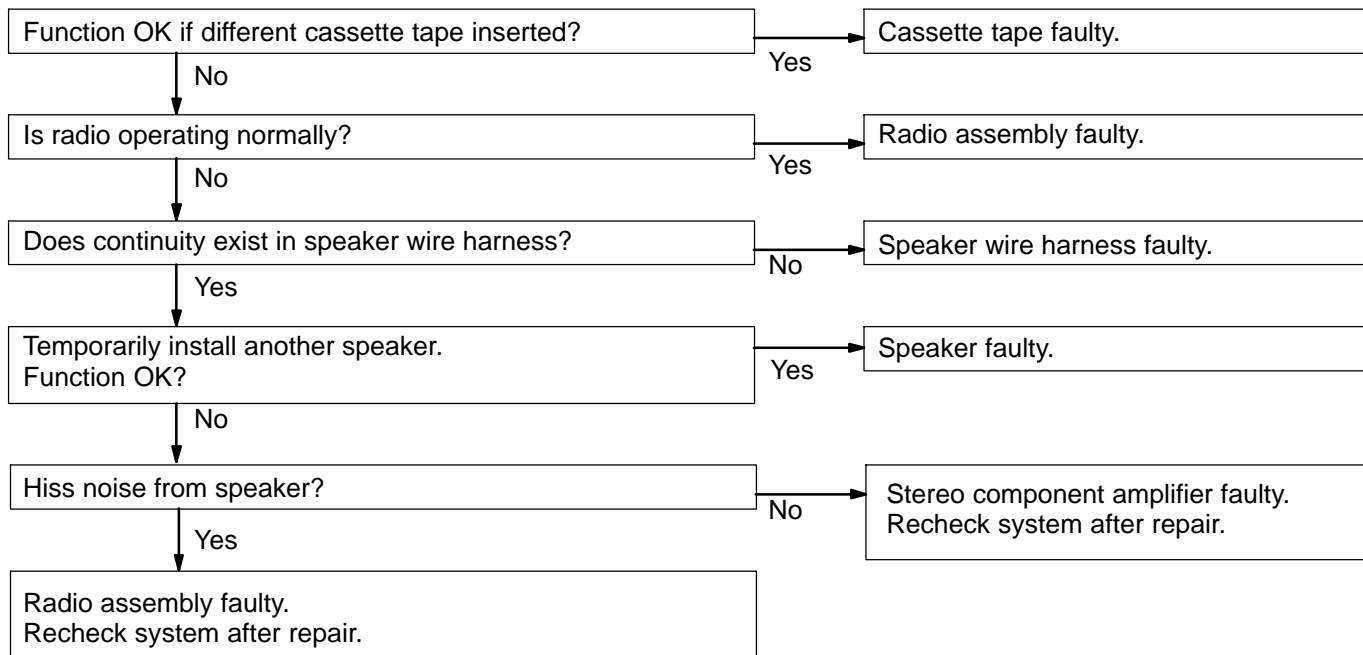
9	Tape Player	CASSETTE TAPE CANNOT BE INSERTED
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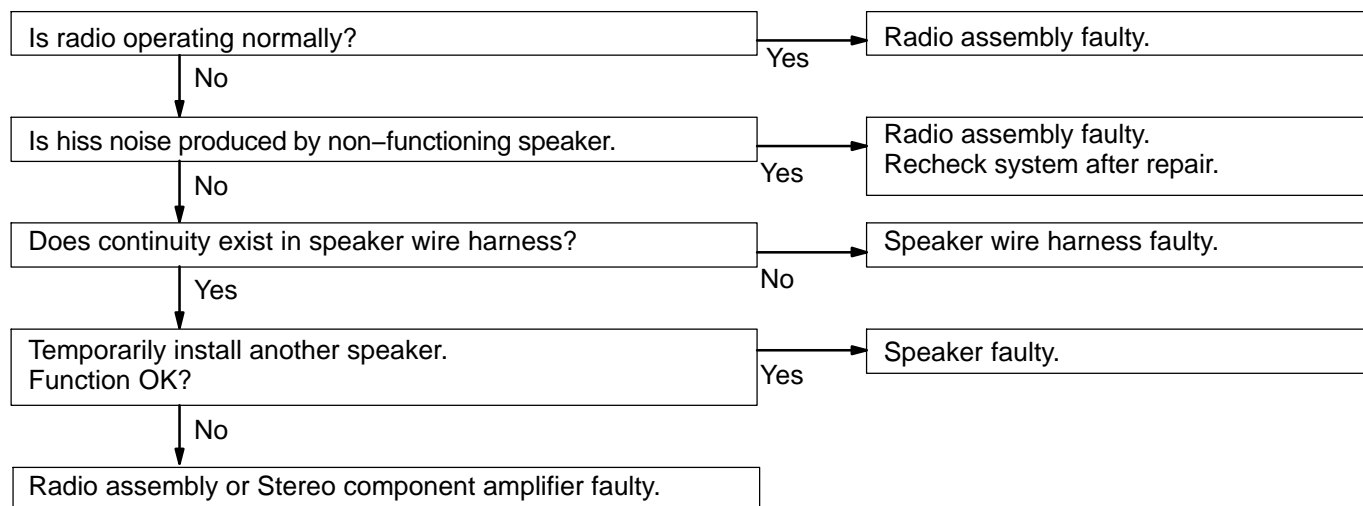
10	Tape Player	CASSETTE TAPE INSERTED, BUT NO POWER
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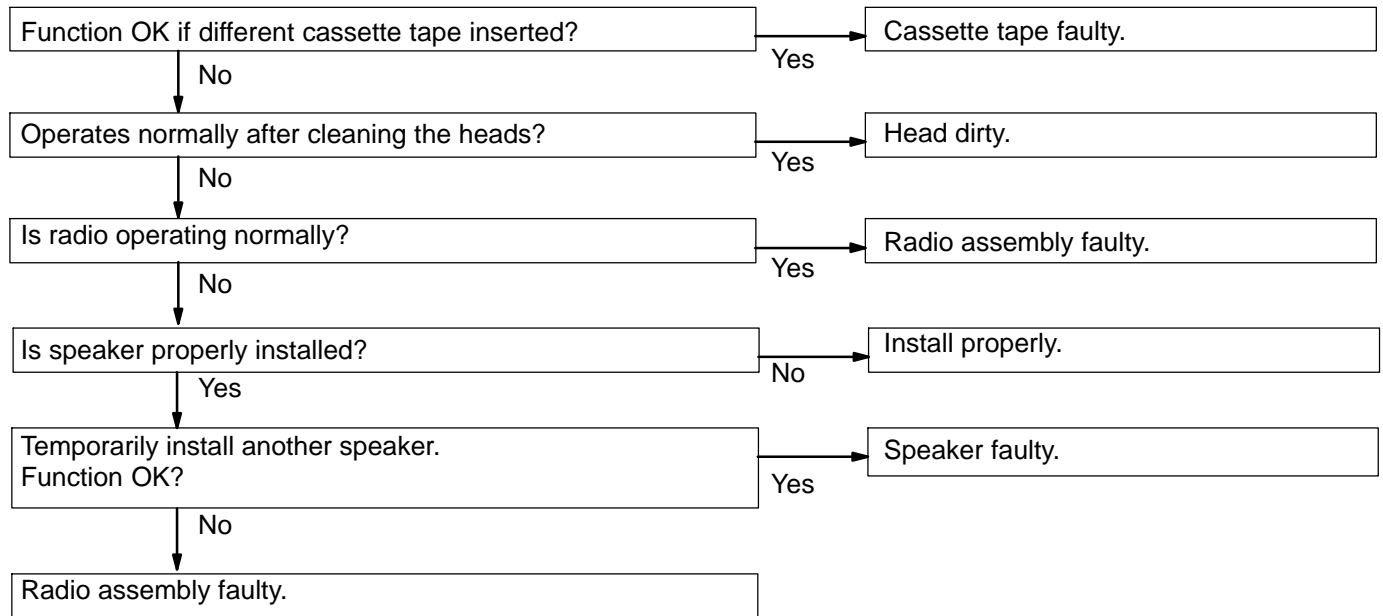
11	Tape Player	POWER COMING IN, BUT TAPE PLAYER NOT OPERATING
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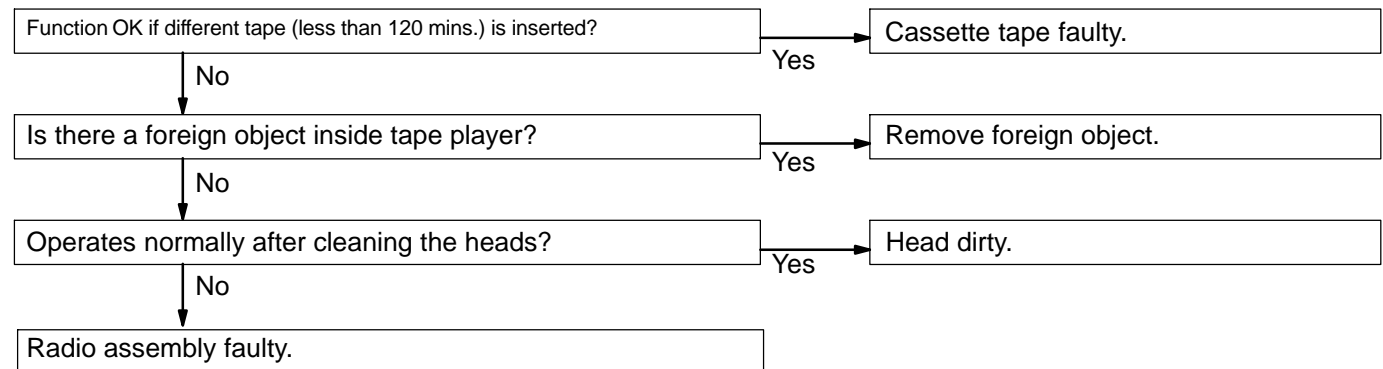
12	Tape Player	ANY SPEAKER DOES NOT WORK
-----------	--------------------	----------------------------------



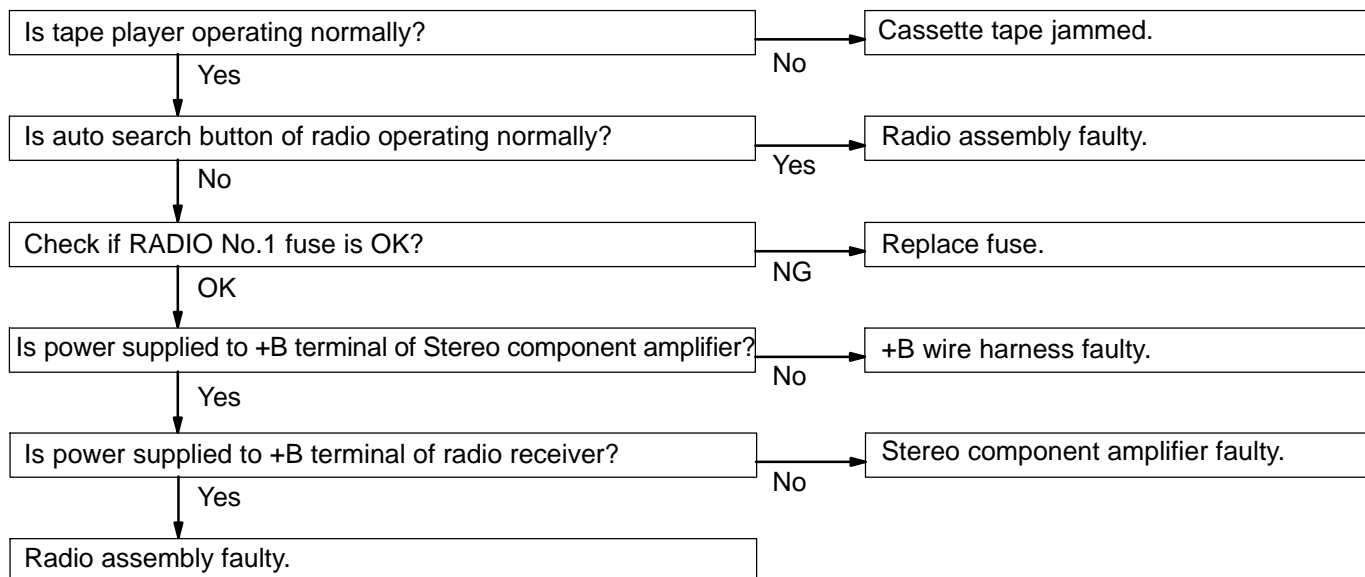
13	Tape Player	SOUND QUALITY POOR (VOLUME FAINT)
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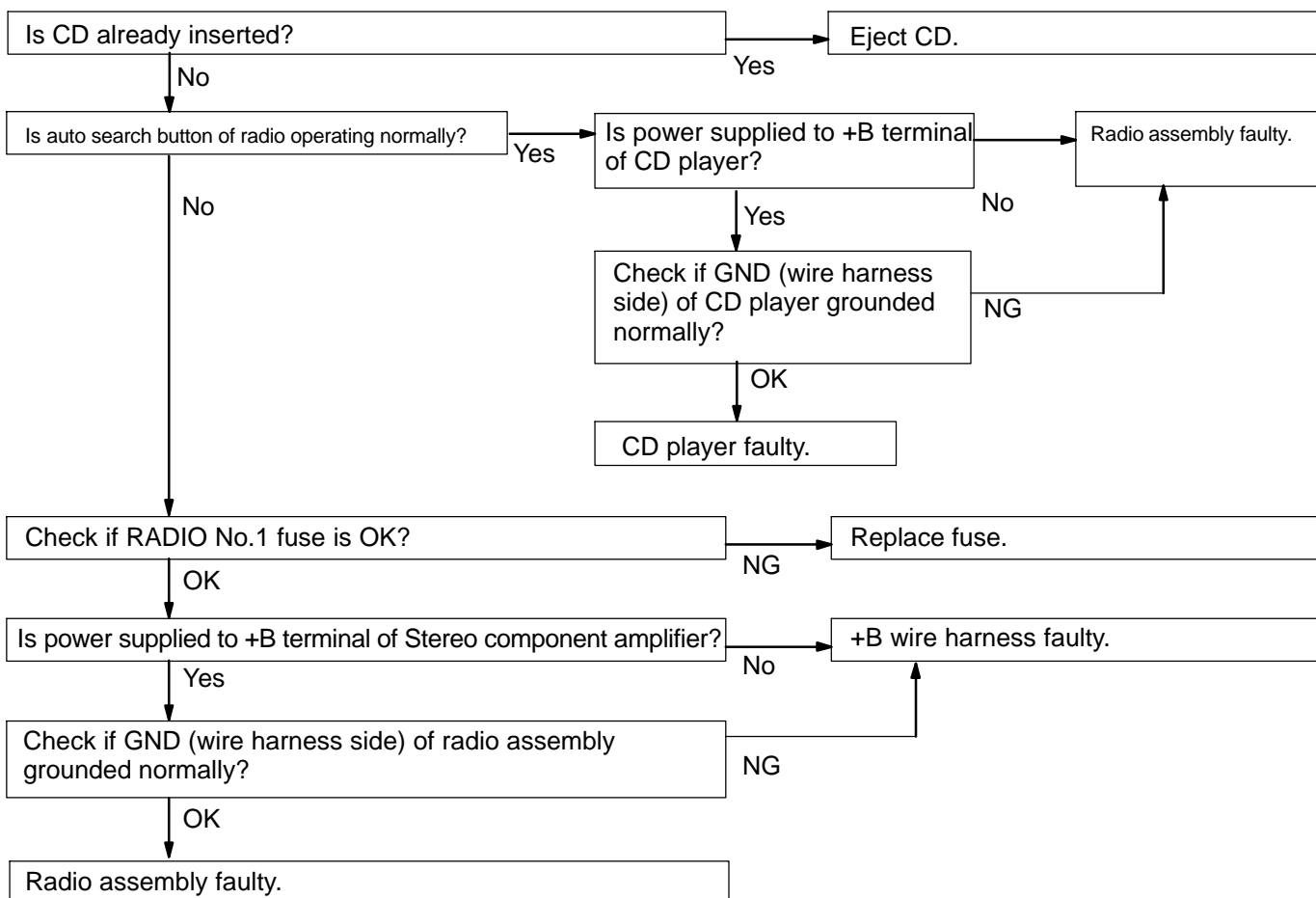
14	Tape Player	TAPE JAMMED MALFUNCTION WITH TAPE SPEED OR AUTO-REVERSE
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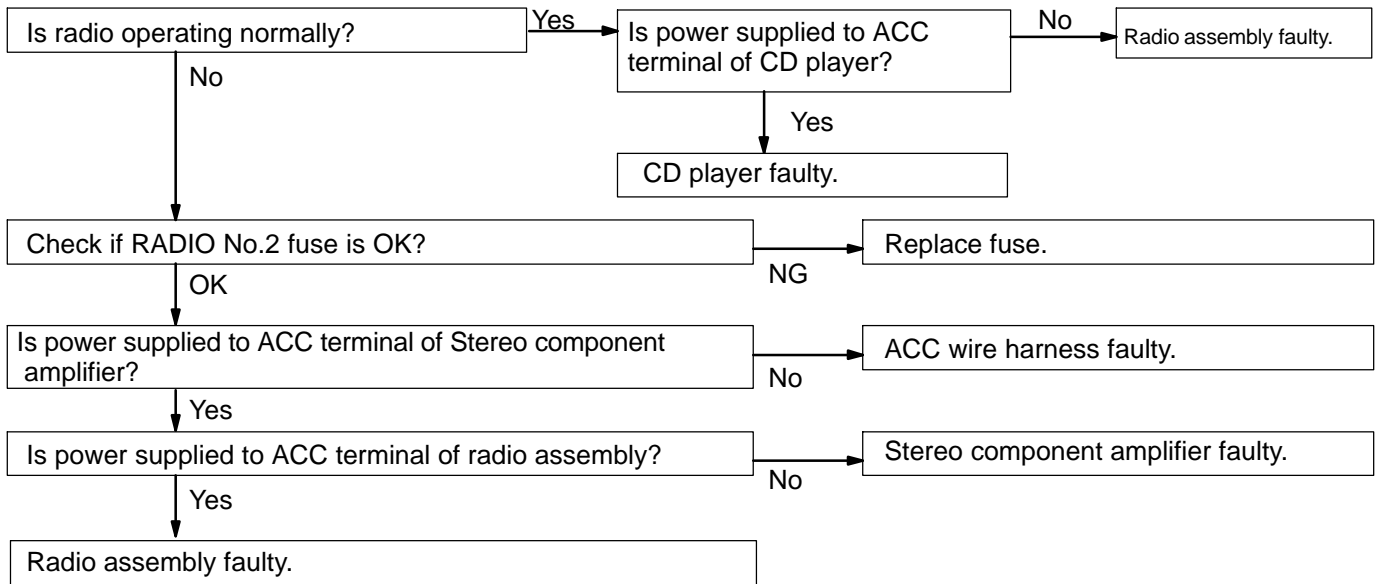
15	Tape Player	CASSETTE TAPE WILL NOT BE EJECTED
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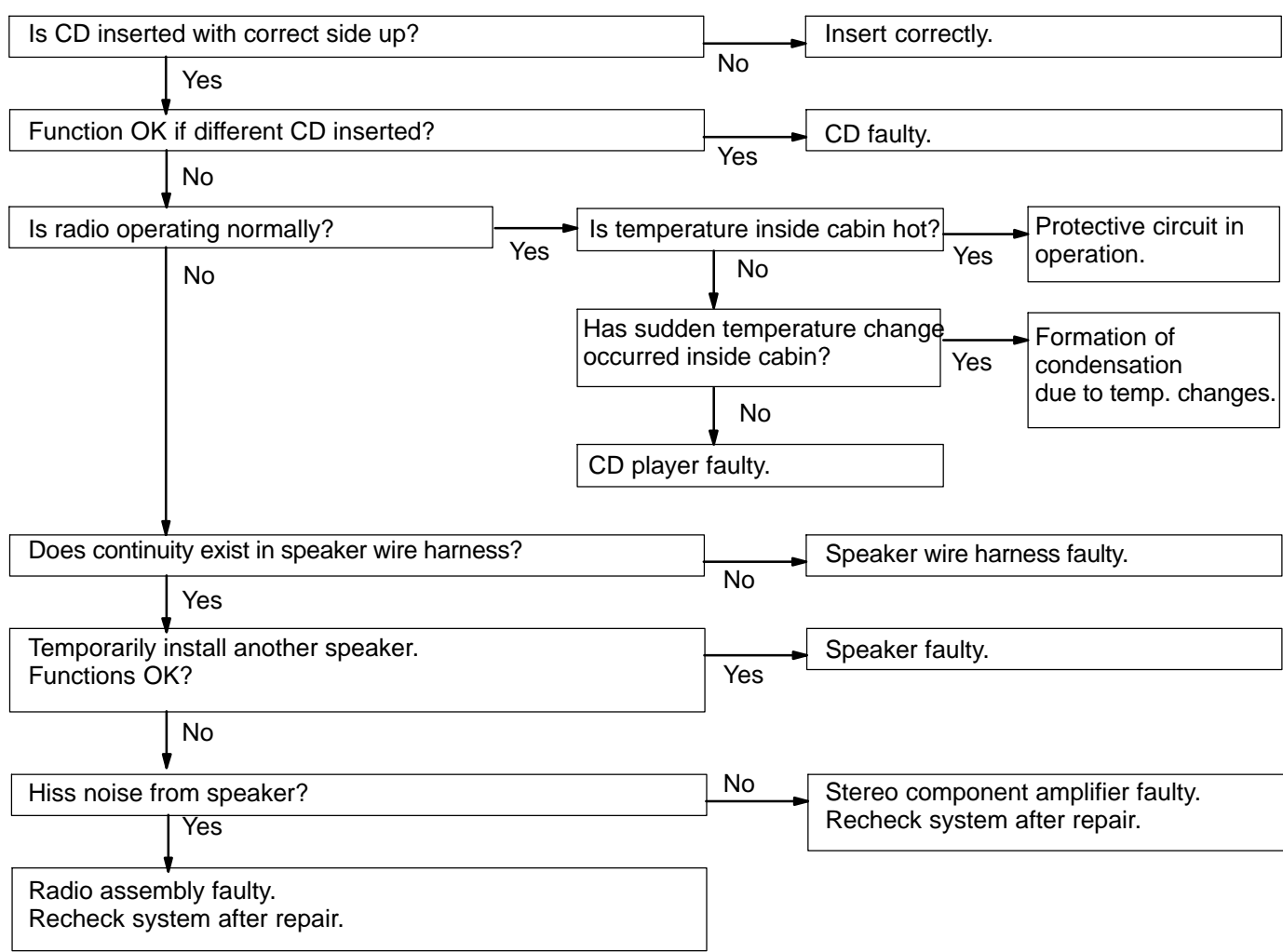
16	CD Player	CD CANNOT BE INSERTED
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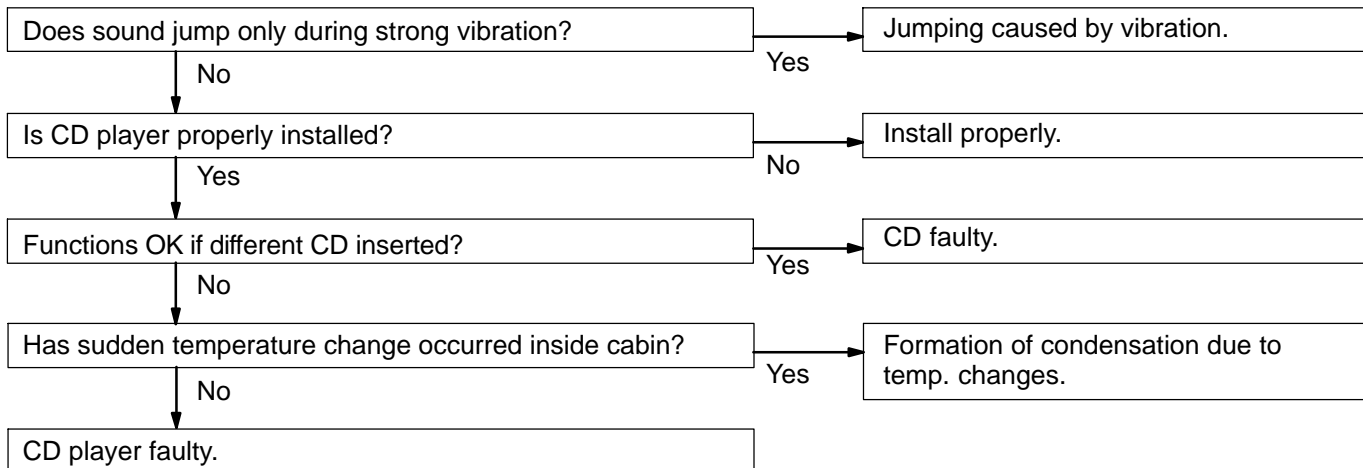
17	CD Player	CD INSERTED, BUT NO POWER
-----------	------------------	----------------------------------



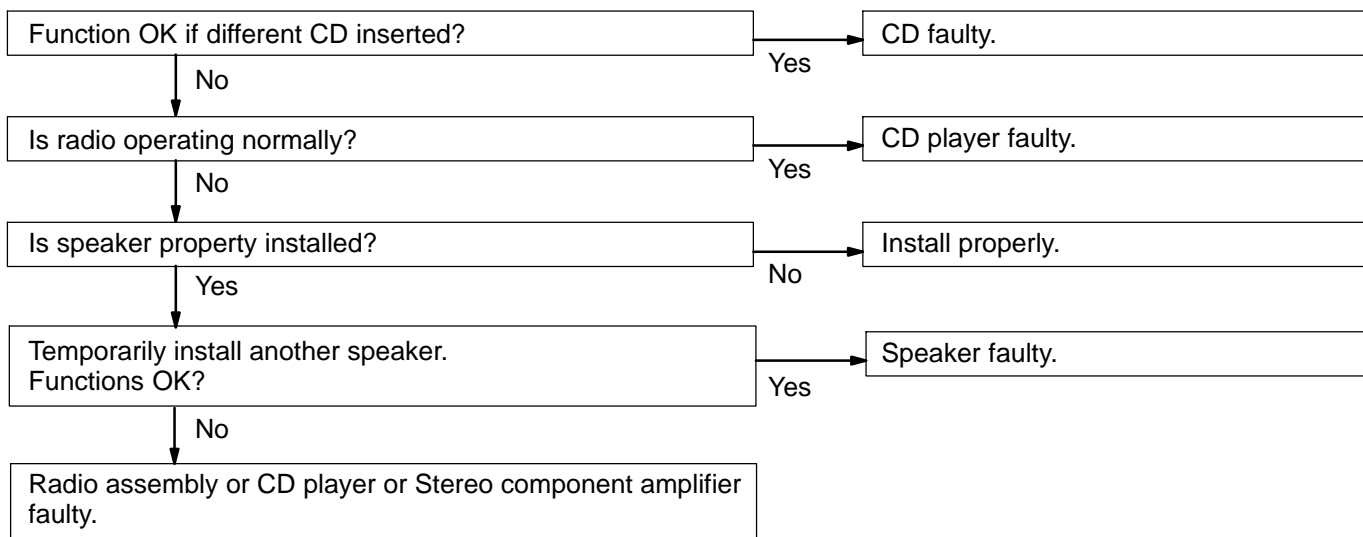
18	CD Player	POWER COMING IN, BUT CD PLAYER NOT OPERATING
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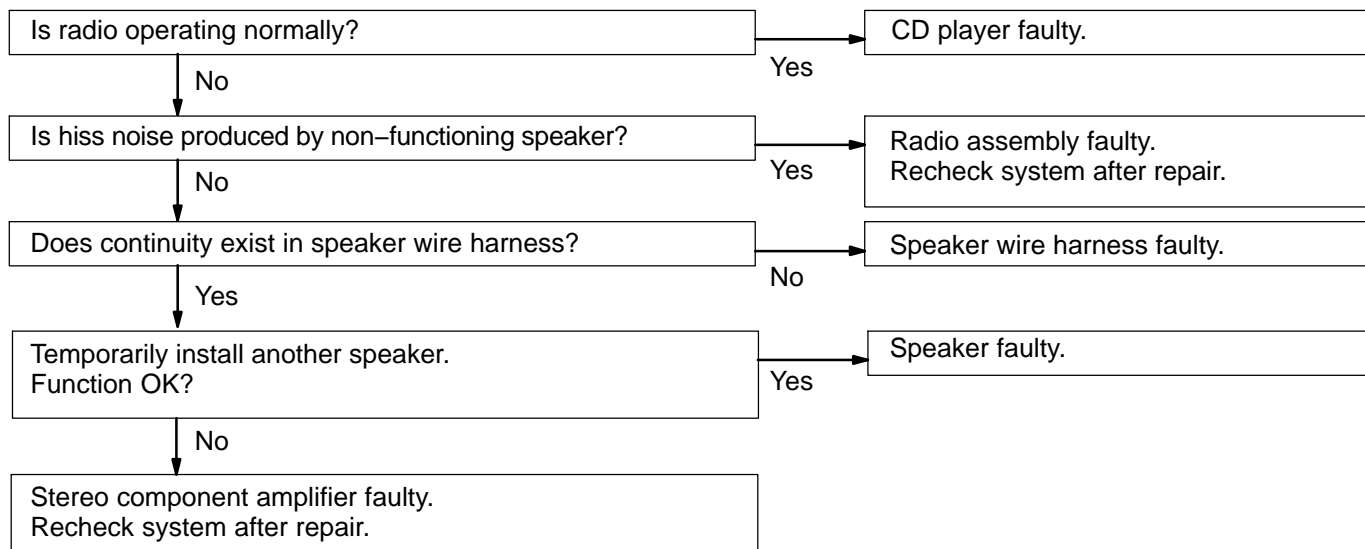
19	CD Player	SOUND JUMPS
-----------	------------------	--------------------



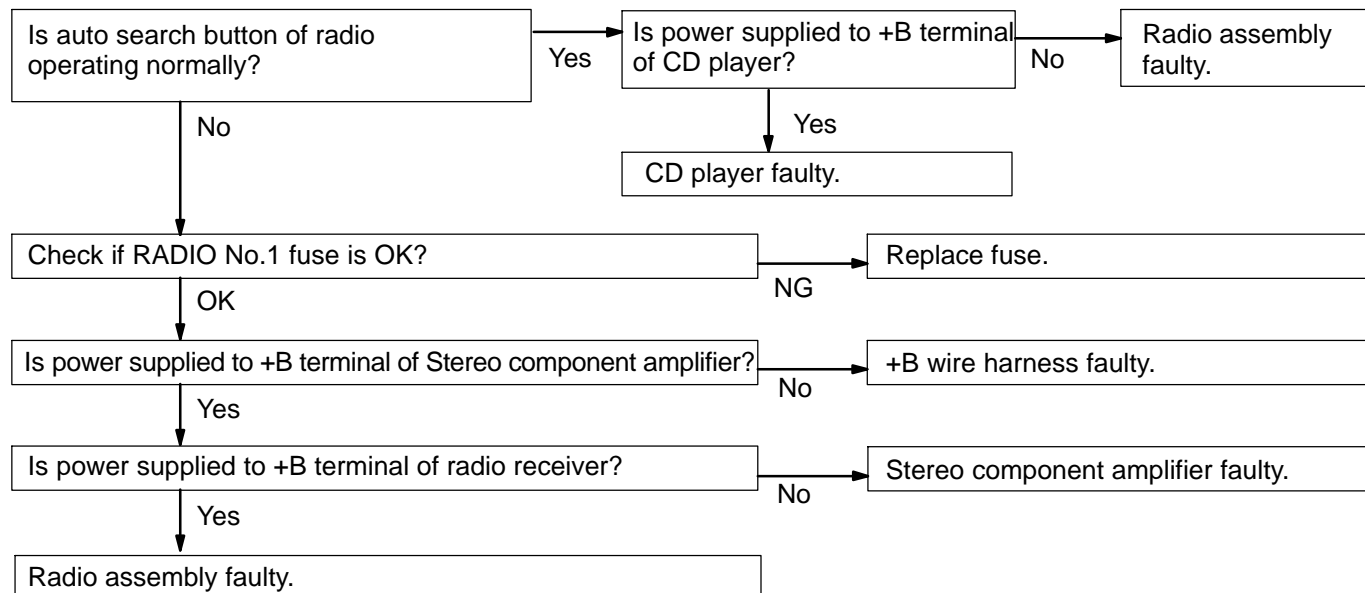
20	CD Player	SOUND QUALITY POOR (VOLUME FAINT)
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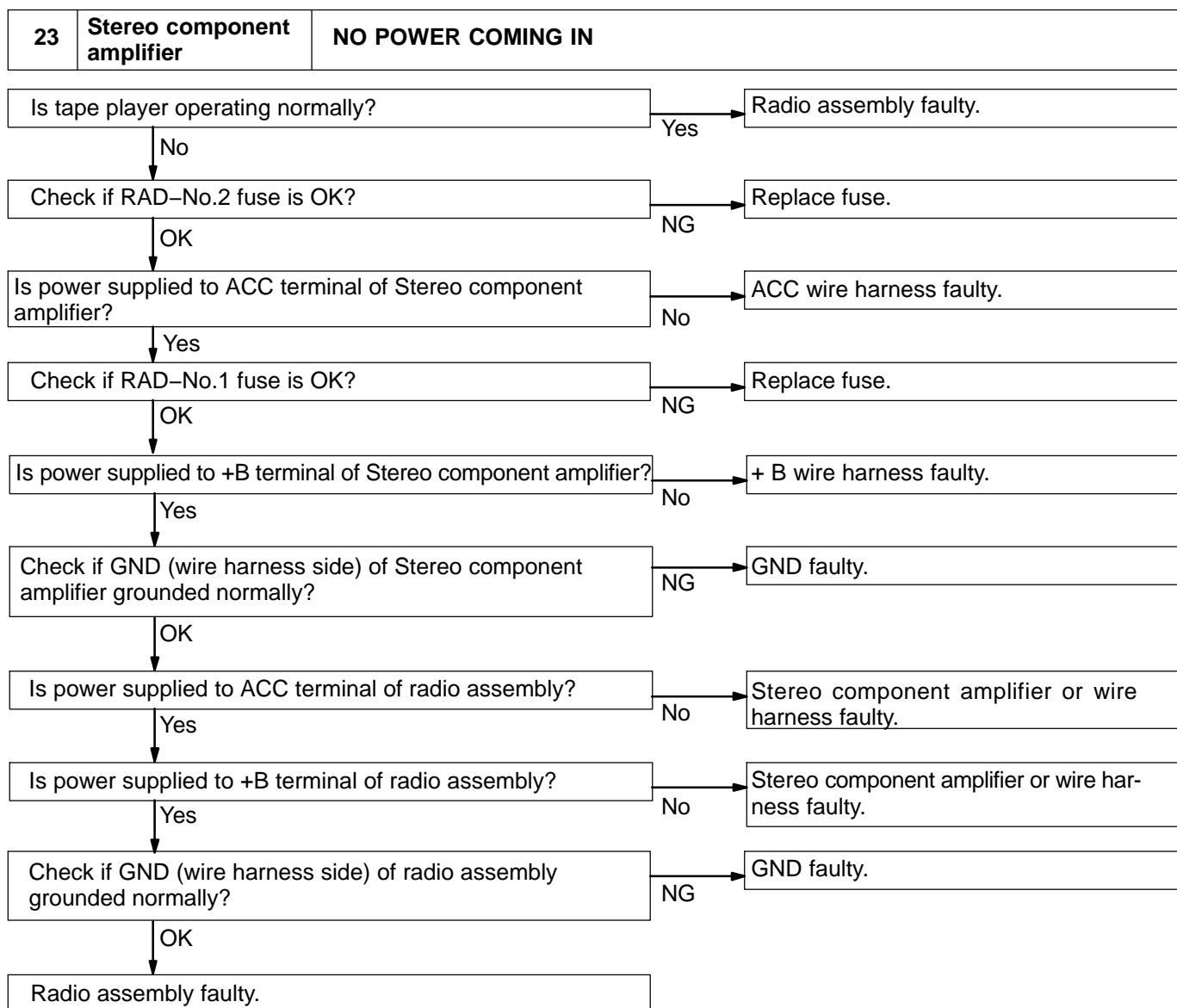


21	CD Player	ANY SPEAKER DOES NOT WORK
-----------	------------------	----------------------------------

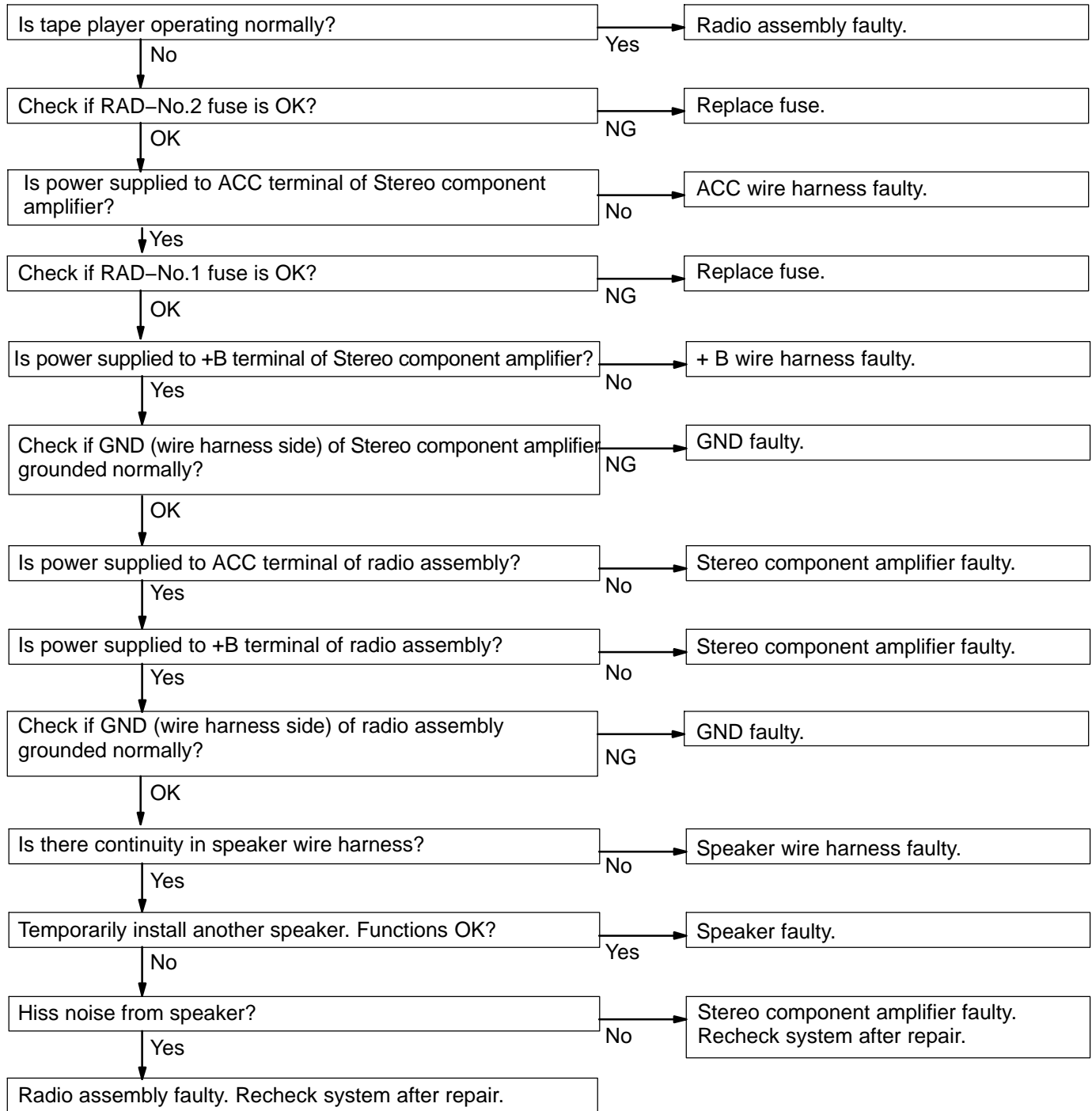


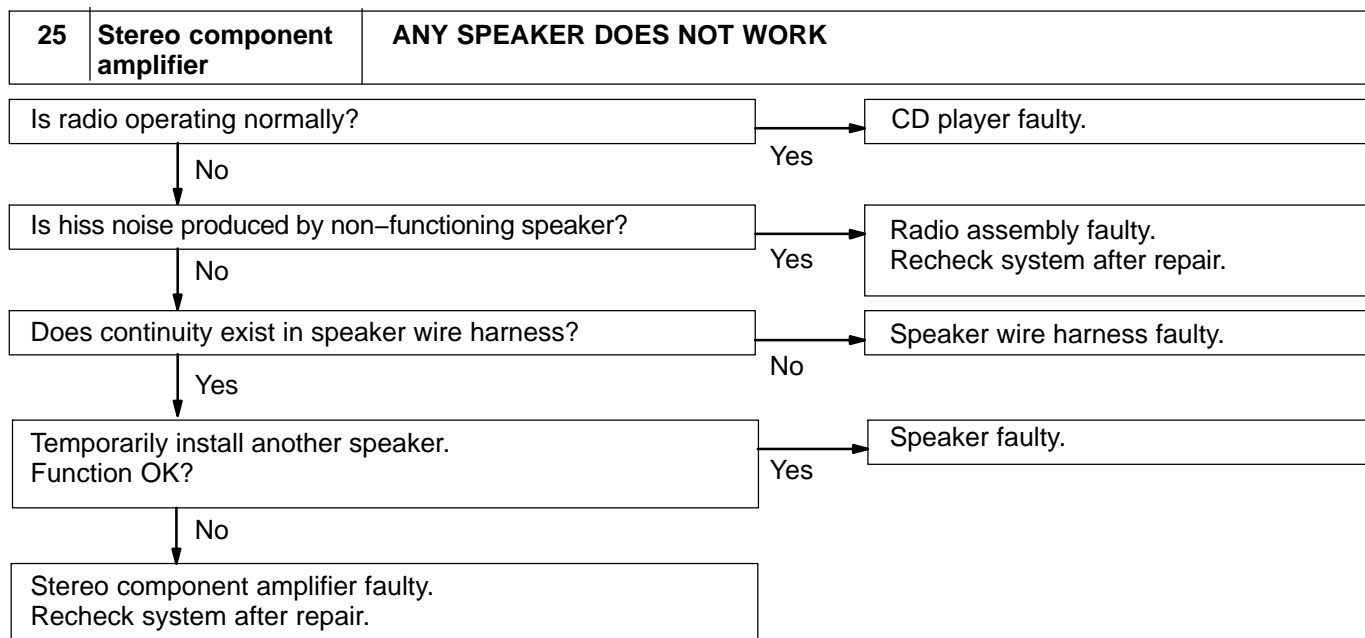
22	CD Player	CD WILL NOT BE EJECTED
-----------	------------------	-------------------------------

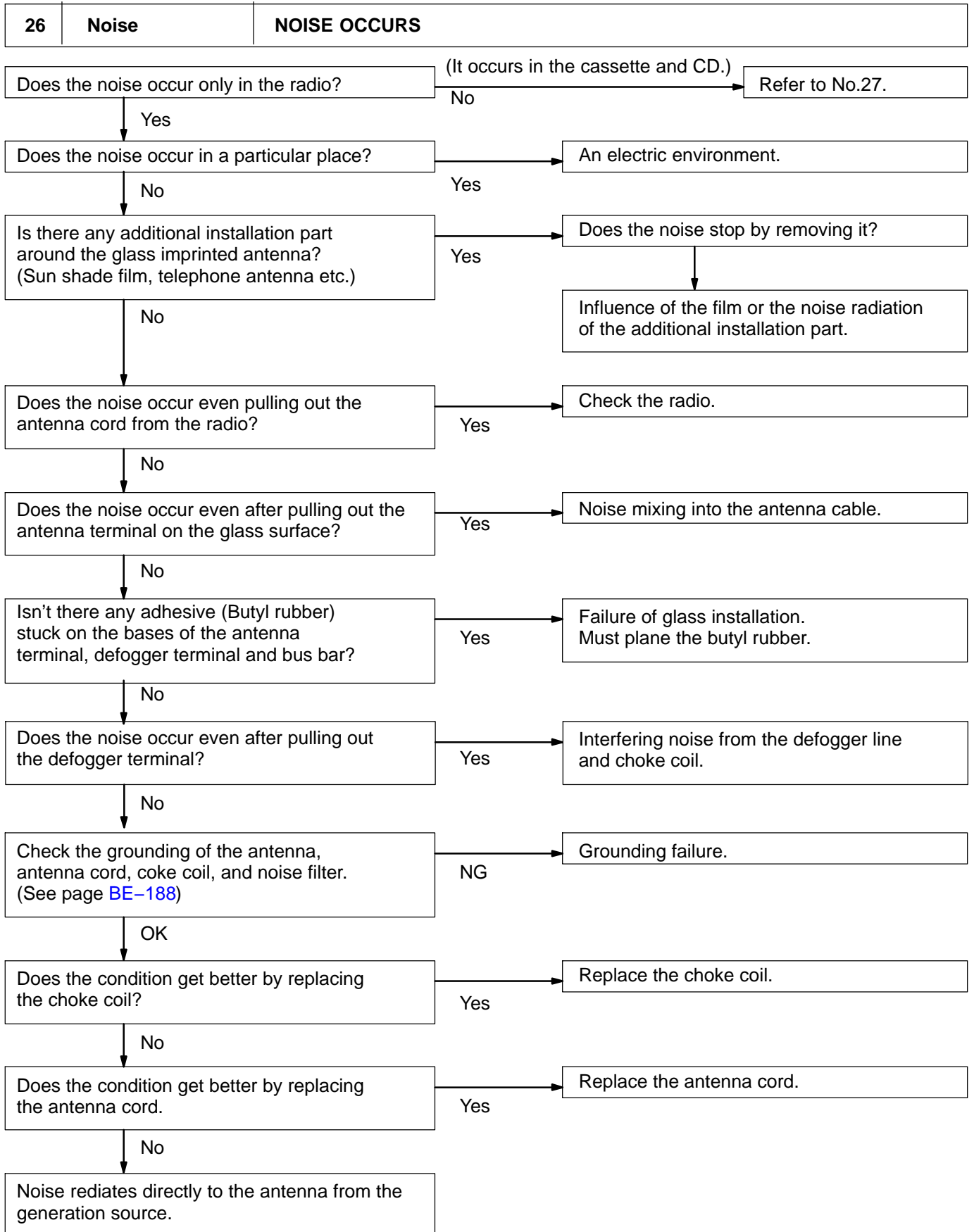




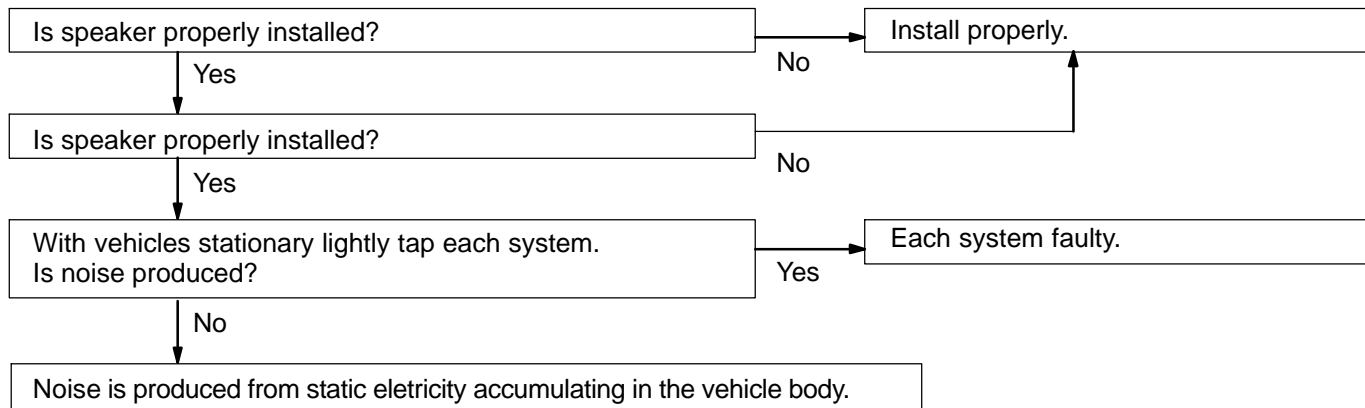
24	Stereo component amplifier	POWER COMING IN, BUT WOOFER (POWER) AMPLIFIER NOT OPERATING
----	----------------------------	---



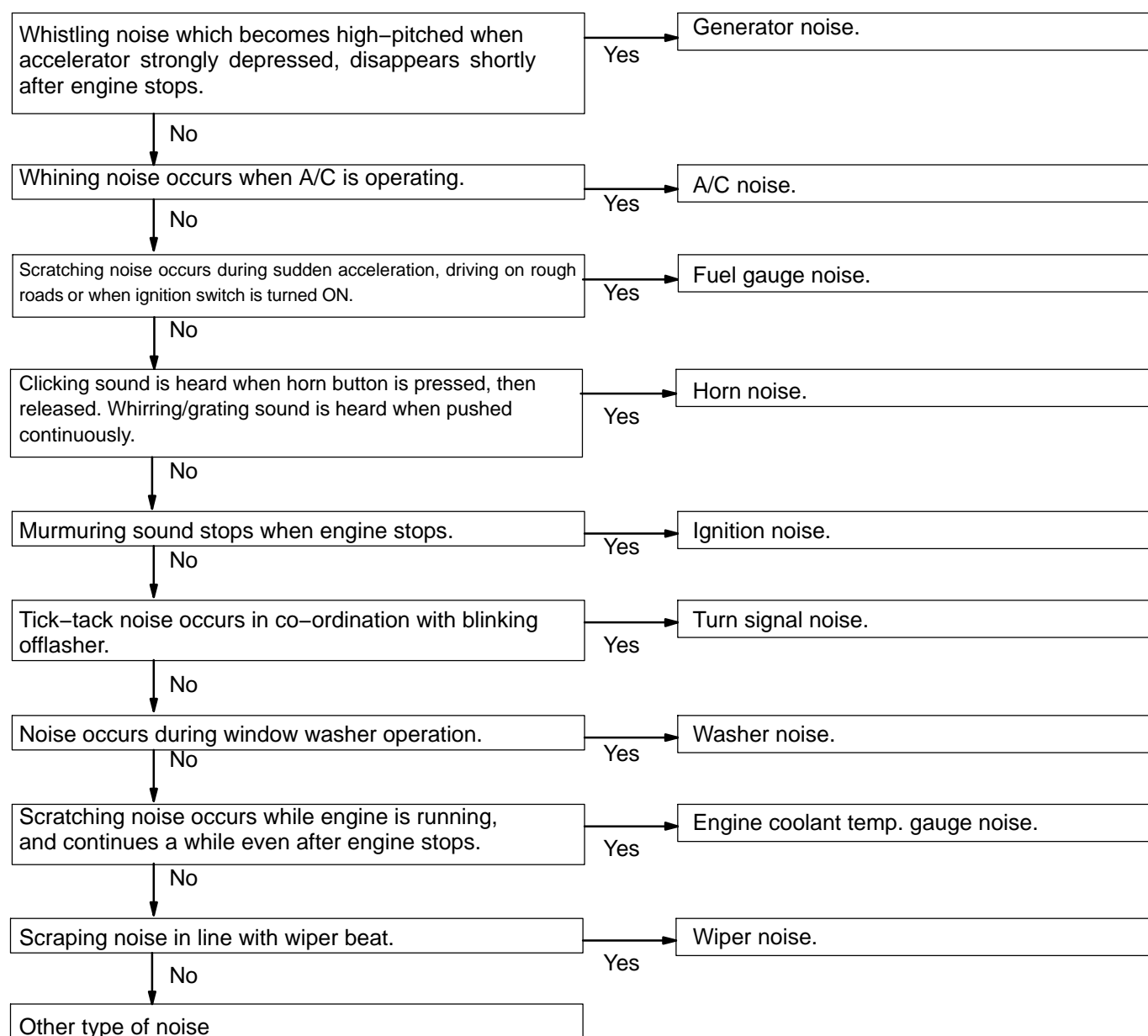




27	Noise	NOISE PRODUCED BY VIBRATION OR SHOCK WHILE DRIVING
-----------	--------------	---

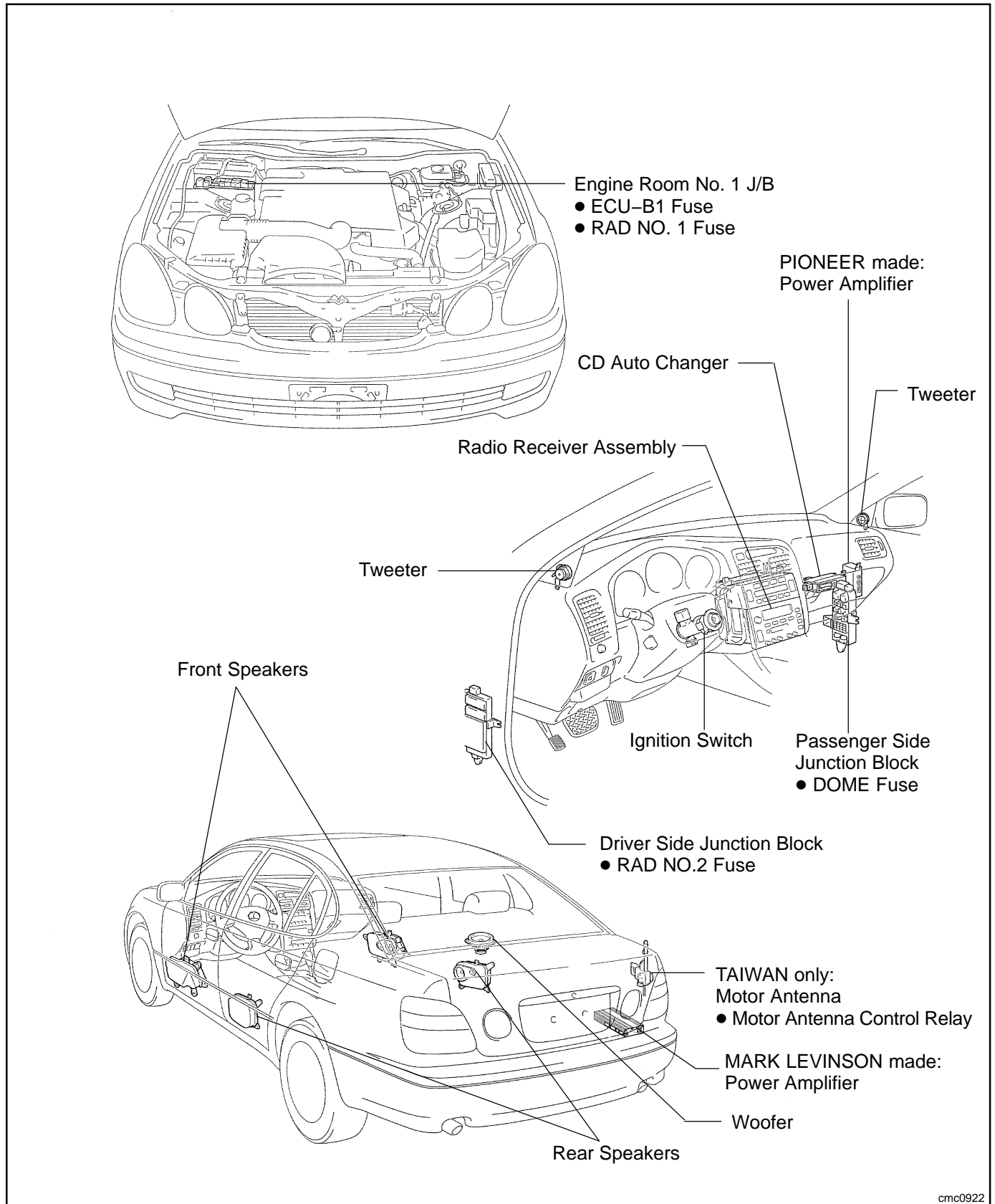


28	Noise	NOISE PRODUCED WHEN ENGINE STARTS
-----------	--------------	--

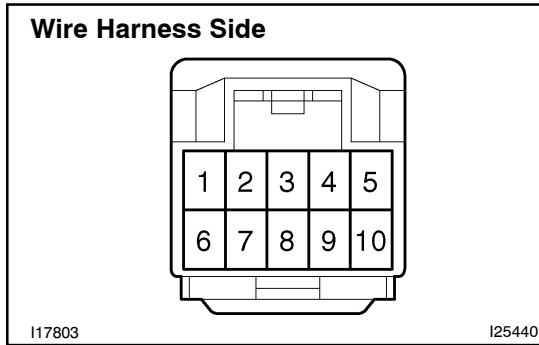


LOCATION

- The vehicle shown in this illustration is "GS430".
- All components of "GS300" other than the ones used for engine are same as "GS430".



cmc0922



INSPECTION

1. INSPECT CD AUTO CHANGER CIRCUIT

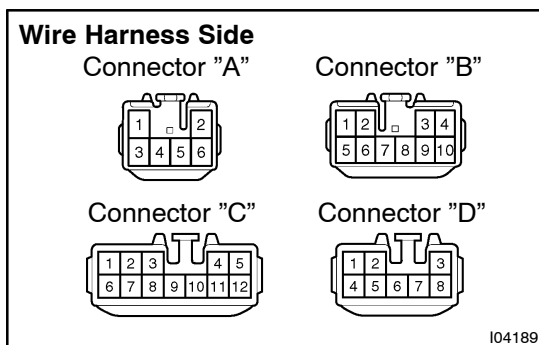
Disconnect connectors from CD auto changer and inspect the connector on the wire harness side.

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

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(3), CDL+(2), CDL-(7), CDR+(1), CDR-(6), TXM⁽⁹⁾ and TX⁽⁴⁾ terminals are serial signals, they cannot ordinarily be measured with a tester.



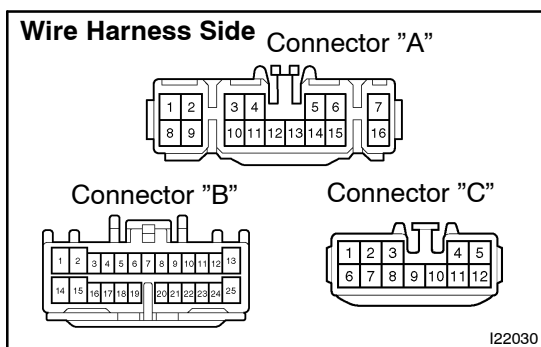
2. PIONEER made:

INSPECT POWER AMPLIFIER CIRCUIT

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

Tester connection	Condition	Specified condition
B4 - Ground	Constant	Battery positive voltage
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

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

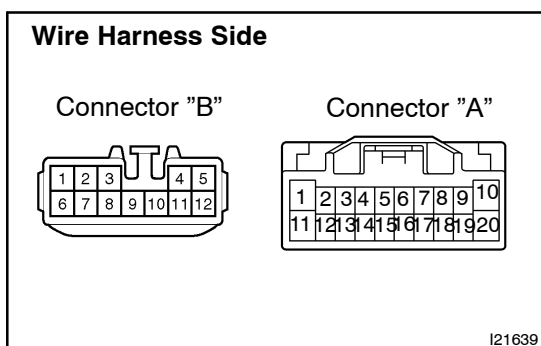


**3. MARK LEVINSON made:
INSPECT POWER AMPLIFIER CIRCUIT**

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

Tester connection	Condition	Specified condition
A7 - Ground	Constant	Battery positive voltage
A12 - Ground	Constant	Continuity
A13 - Ground	Constant	Continuity
A16 - Ground	Constant	Battery positive voltage
B20 - Ground	Ignition switch ACC	Battery positive voltage

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



**4. USA and CANADA models:
INSPECT RADIO RECEIVER ASSEMBLY CIRCUIT**

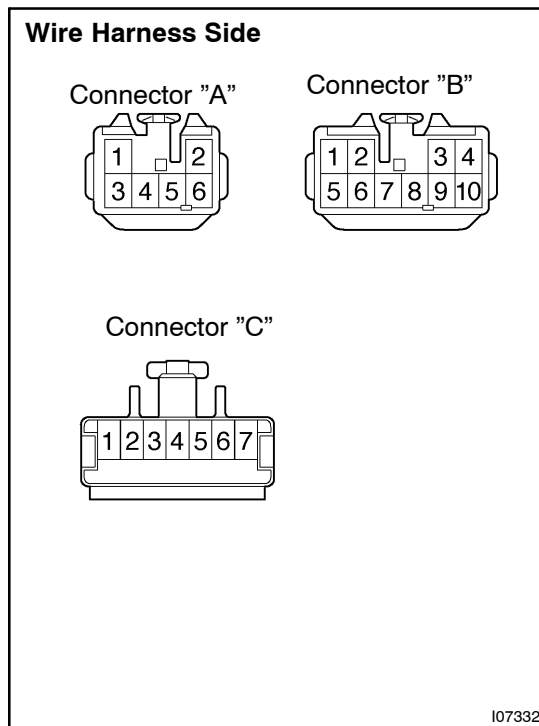
Disconnect the connectors from the radio receiver assembly, and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
A1 - Ground	Ignition switch LOCK	No voltage
A1 - Ground	Ignition switch ACC or ON	Battery positive voltage
A2 - Ground	Constant	Continuity
A4 - 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 radio receiver assembly and the CD auto changer, between radio receiver assembly and power amplifier.

**5. TAIWAN models:****INSPECT RADIO RECEIVER ASSEMBLY CIRCUIT**

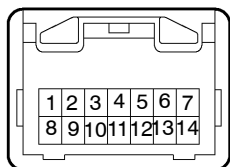
Disconnect the connectors from the radio receiver assembly, and inspect the connector on the wire harness side.

Tester connection	Condition	Specified condition
A1 - Ground	Ignition switch LOCK	No voltage
A1 - Ground	Ignition switch ACC or ON	Battery positive voltage
A2 - Ground	Constant	Continuity
A4 - 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 radio receiver assembly and the CD auto changer, between radio receiver assembly and power amplifier.

Wire Harness Side

N

I13684

6. INSPECT GATEWAY ECU CIRCUIT

Disconnect the connectors from the gateway ECU, and inspect the connector on the wire harness side.

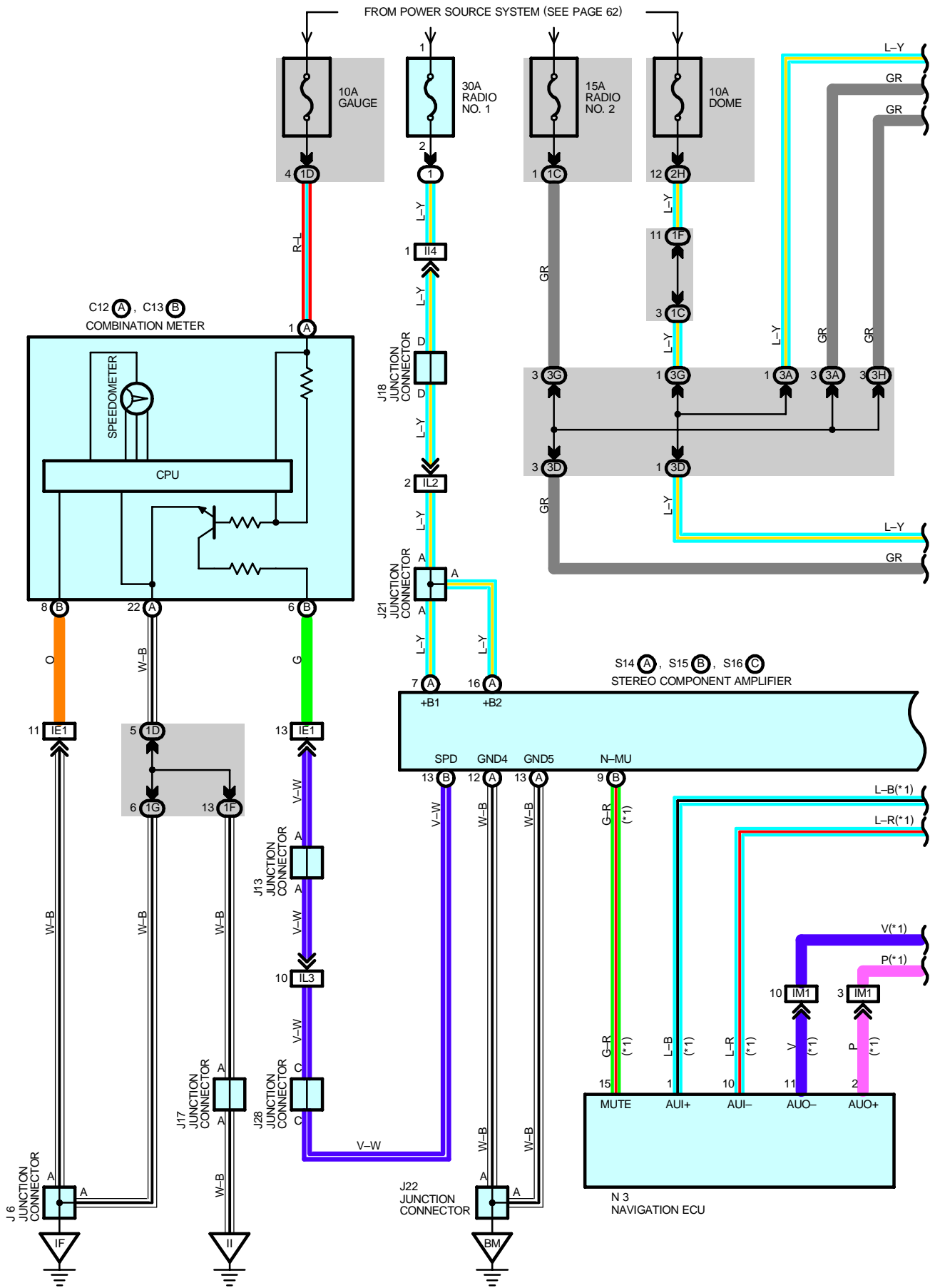
Tester connection	Condition	Specified condition
2 - Ground	Ignition switch ON	Battery positive voltage
7 - Ground	Constant	Continuity
8 - Ground	Constant	Battery positive voltage
9 - Ground	Ignition switch ACC	Battery positive voltage
14 - Ground	Constant	Continuity

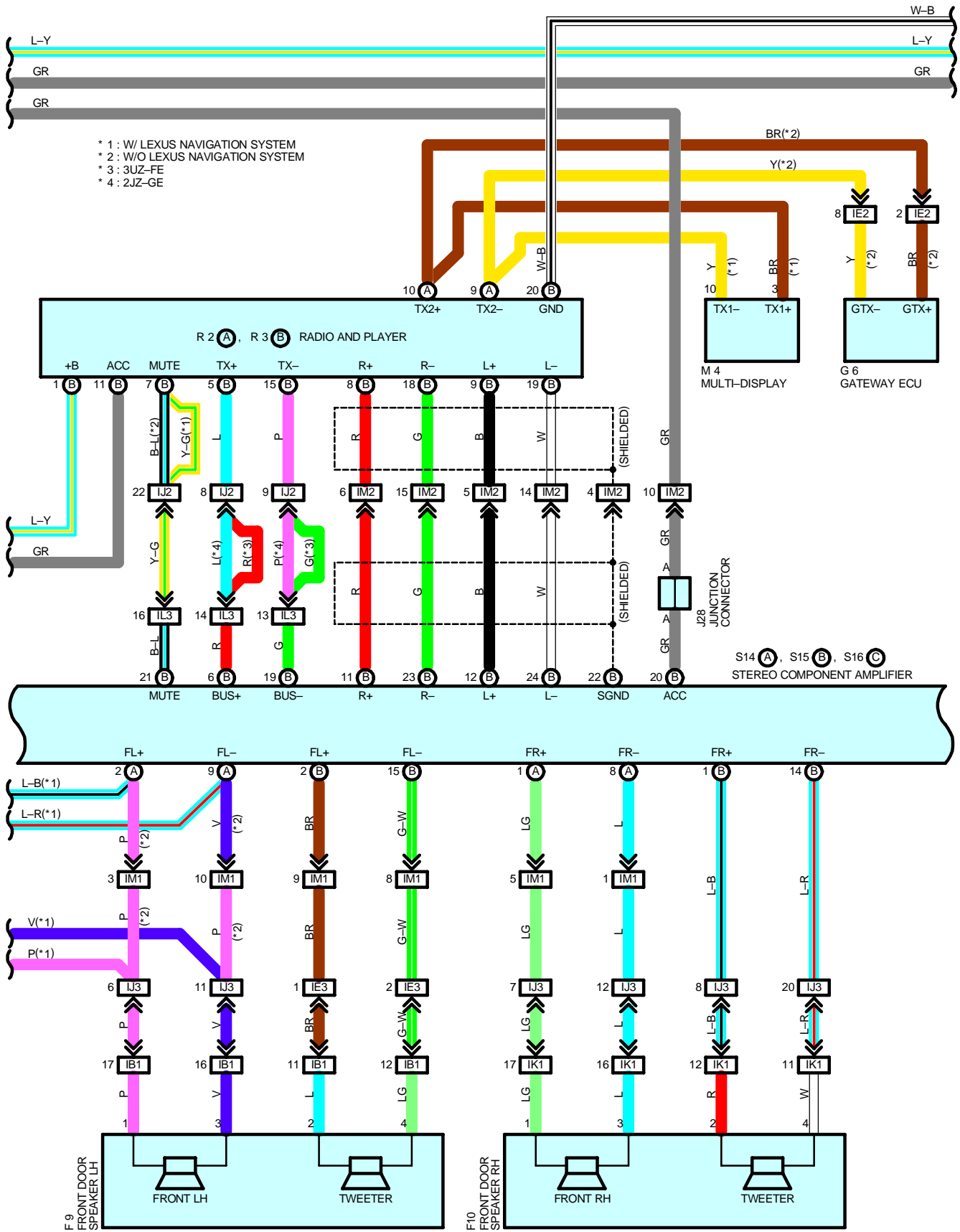
If the circuit is not as specified, inspect the circuits connected to other parts.

HINT:

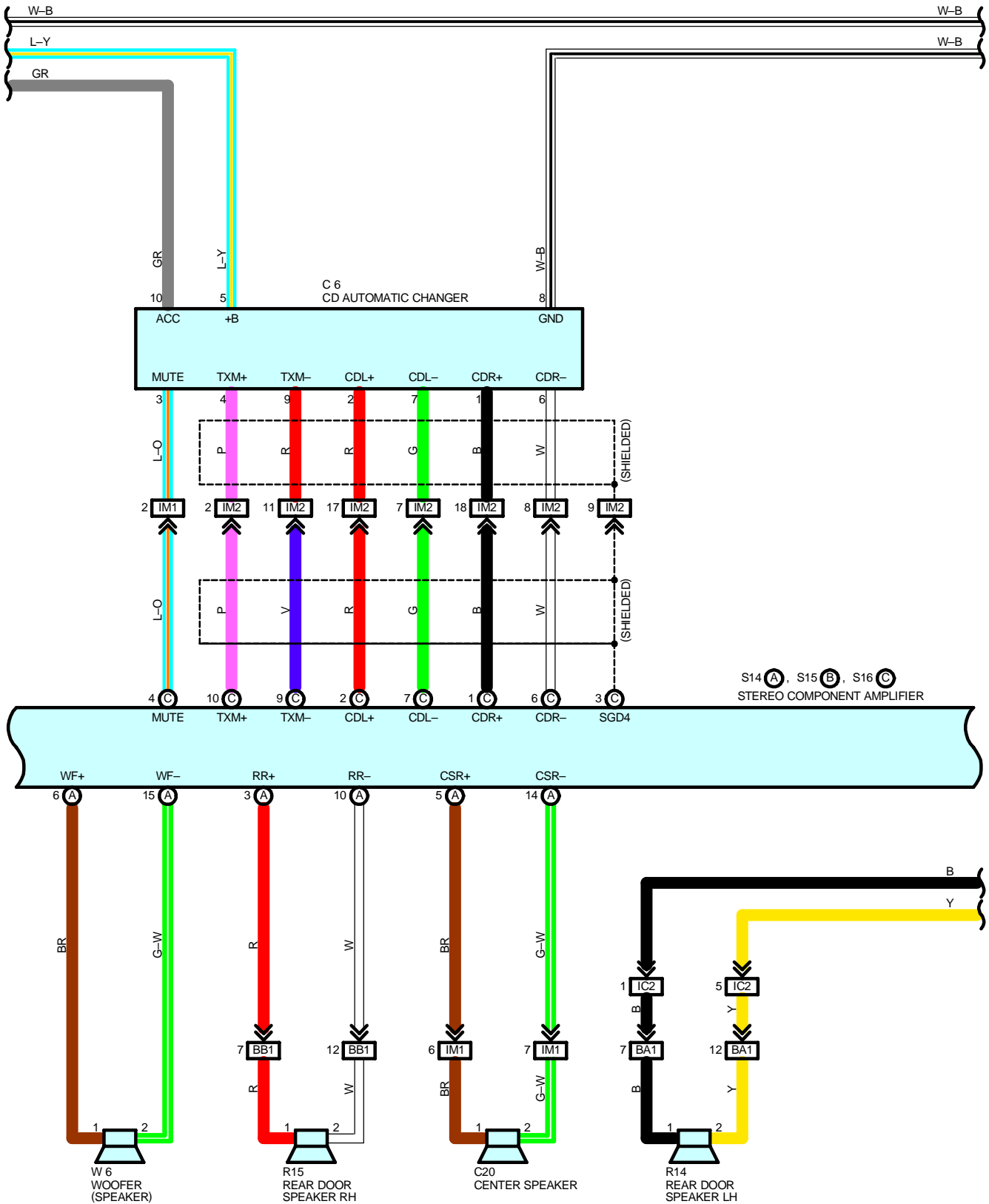
Check the wire harness between radio receiver assembly and the gateway ECU.

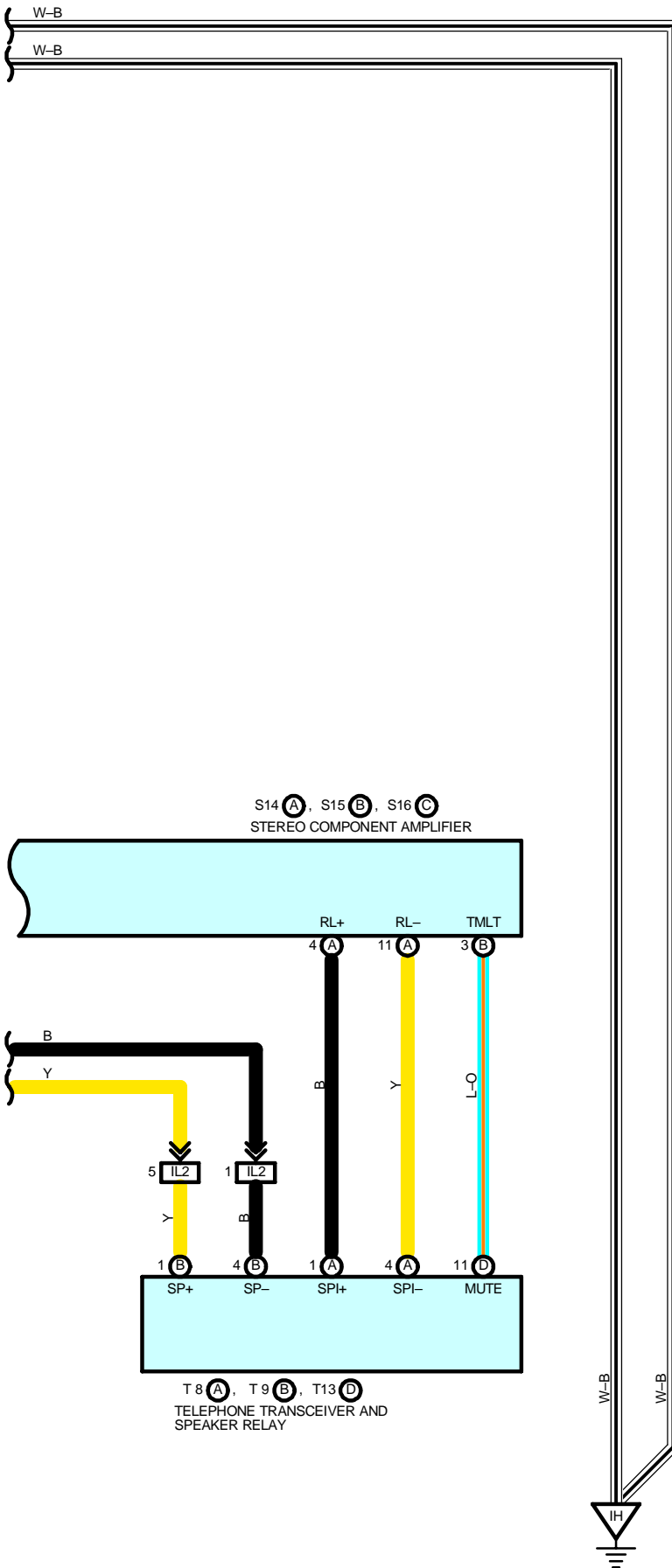
RADIO AND PLAYER (MARK LEVINSON)





RADIO AND PLAYER (MARK LEVINSON)





RADIO AND PLAYER (MARK LEVINSON)

SERVICE HINTS

R3 (B) RADIO AND PLAYER

(B)11-GROUND : Approx. **12** volts with ignition SW at **ACC** or **ON** position

(B) 1-GROUND : Always approx. **12** volts

(B)20-GROUND : Always continuity

S14 (A) STEREO COMPONENT AMPLIFIER

(A) 7-GROUND : Always approx. **12** volts

(A)16-GROUND : Always approx. **12** volts

(A)12-GROUND : Always continuity

(A)13-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
C6	42	J17	43	R14	45
C12	A 42	J18	43	R15	45
C13	B 42	J21	44	S14	A 45
C20	42	J22	44	S15	B 45
F9	44	J28	44	S16	C 45
F10	44	M4	43	T8	A 45
G6	42	N3	45	T9	B 45
J6	43	R2	A 43	T13	D 45
J13	43	R3	B 43	W6	45

○ : RELAY BLOCKS

Code	See Page	Relay Blocks (Relay Block Location)
1	24	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	28	Instrument Panel Wire and Driver Side J/B (Left Kick Panel)
1D		
1F	28	Cowl Wire and Driver Side J/B (Left Kick Panel)
1G	29	
2H	31	Cowl Wire and Passenger Side J/B (Right Kick Panel)
3A	32	Instrument Panel Wire and Instrument Panel J/B (Instrument Panel Reinforcement Center)
3D		
3G	33	
3H		

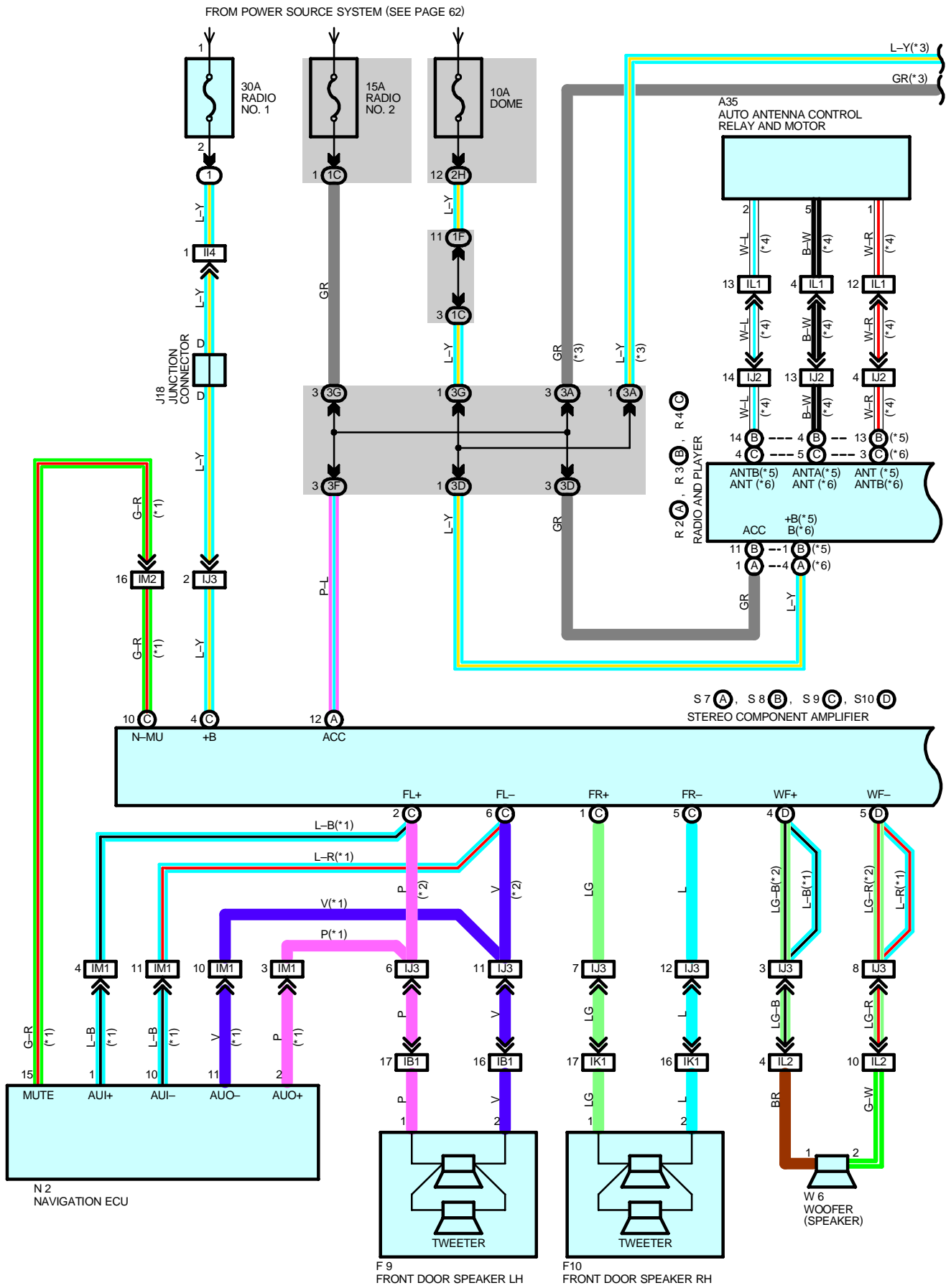
 : CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
IB1	52	Front Door LH Wire and Cowl Wire (Left Kick Panel)
IC2	52	Floor No.2 Wire and Cowl Wire (Left Kick Panel)
IE1	52	Instrument Panel Wire and Cowl Wire (Left Side of the Steering Column)
IE2		
IE3		
II4	52	Engine Room Main Wire and Cowl Wire (Near the Passenger Side R/B)
IJ2	54	Instrument Panel Wire and Cowl Wire (Left Side of the Blower Unit)
IJ3		
IK1	54	Front Door RH Wire and Cowl Wire (Right Kick Panel)
IL2	54	Floor No.1 Wire and Cowl Wire (Right Kick Panel)
IL3		
IM1	54	Instrument Panel Wire and Floor No.1 Wire (Front RH Side of the Shift Lever)
IM2		
BA1	56	Rear Door LH Wire and Floor No.2 Wire (Under the Center Pillar LH)
BB1	56	Rear Door RH Wire and Floor No.1 Wire (Under the Center Pillar RH)

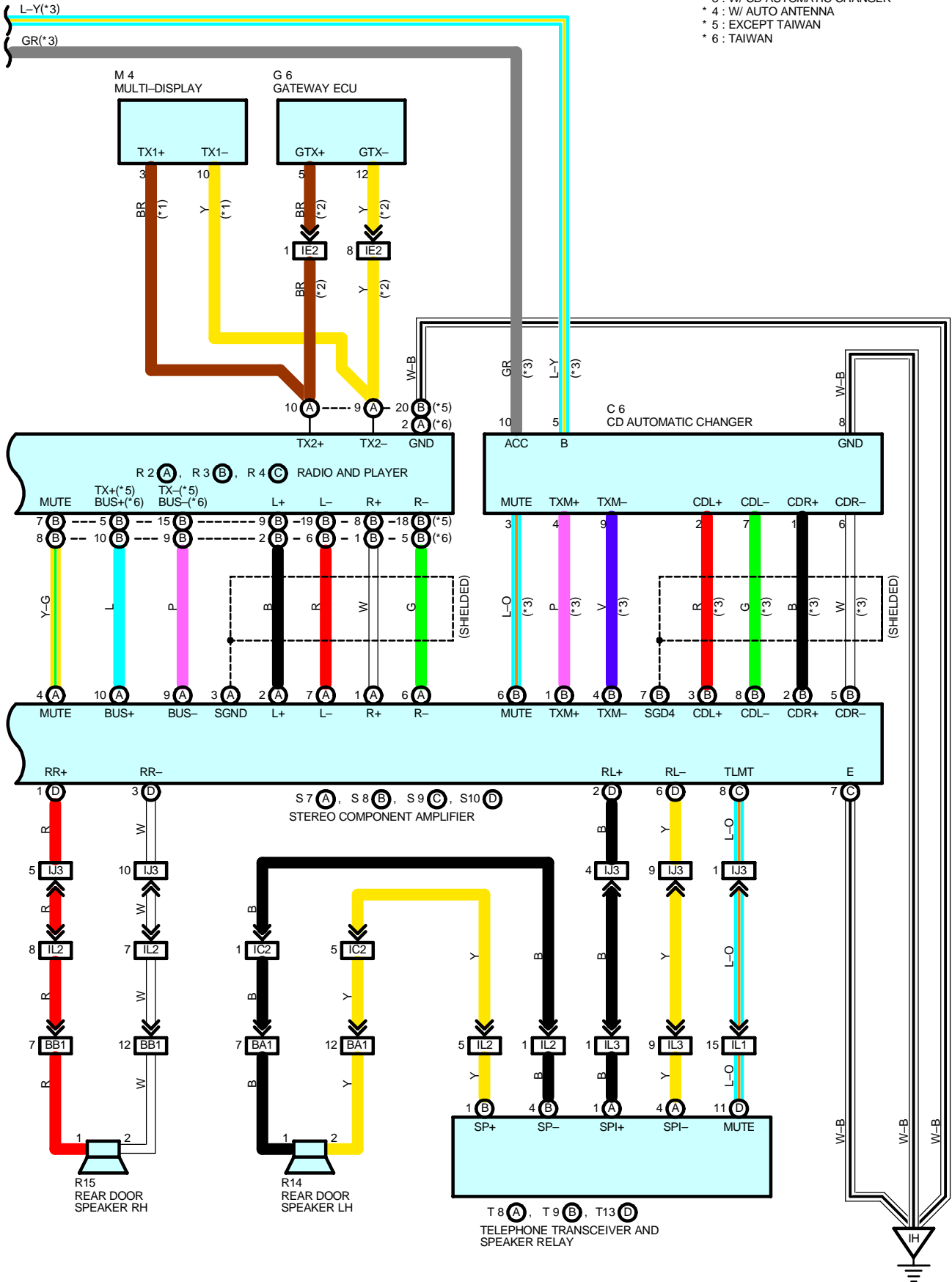
 : GROUND POINTS

Code	See Page	Ground Points Location
IF	52	Left Kick Panel
IH	52	Instrument Panel Brace RH
II	52	Right Side of the Cowl Panel
BM	56	Quarter Panel RH

RADIO AND PLAYER (EXCEPT MARK LEVINSON)



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



RADIO AND PLAYER (EXCEPT MARK LEVINSON)

SERVICE HINTS

R3 (B) RADIO AND PLAYER (EXCEPT TAIWAN)

- (B)11-GROUND : Approx. 12 volts with ignition SW at **ACC** or **ON** position
- (B) 4-GROUND : Always approx. 12 volts
- (B)20-GROUND : Always continuity

R2 (A) RADIO AND PLAYER (TAIWAN)

- (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	44	N2	45	S8	B 43
C6	42	R2	A 43	S9	C 43
F9	44	R3	B 43	S10	D 43
F10	44	R4	C 43	T8	A 45
G6	42	R14	45	T9	B 45
J18	43	R15	45	T13	D 45
M4	43	S7	A 43	W6	45

○ : RELAY BLOCKS

Code	See Page	Relay Blocks (Relay Block Location)
1	24	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	28	Instrument Panel Wire and Driver Side J/B (Left Kick Panel)
1F	28	Cowl Wire and Driver Side J/B (Left Kick Panel)
2H	31	Cowl Wire and Passenger Side J/B (Right Kick Panel)
3A	32	Instrument Panel Wire and Instrument Panel J/B (Instrument Panel Reinforcement Center)
3D		
3F	33	
3G		

 : CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
IB1	52	Front Door LH Wire and Cowl Wire (Left Kick Panel)
IC2	52	Floor No.2 Wire and Cowl Wire (Left Kick Panel)
IE2	52	Instrument Panel Wire and Cowl Wire (Left Side of the Steering Column)
II4	52	Engine Room Main Wire and Cowl Wire (Near the Passenger Side R/B)
IJ2	54	Instrument Panel Wire and Cowl Wire (Left Side of the Blower Unit)
IJ3		
IK1	54	Front Door RH Wire and Cowl Wire (Right Kick Panel)
IL1	54	Floor No.1 Wire and Cowl Wire (Right Kick Panel)
IL2		
IL3		
IM1	54	Instrument Panel Wire and Floor No.1 Wire (Front RH Side of the Shift Lever)
IM2		
BA1	56	Rear Door LH Wire and Floor No.2 Wire (Under the Center Pillar LH)
BB1	56	Rear Door RH Wire and Floor No.1 Wire (Under the Center Pillar RH)

 : GROUND POINTS

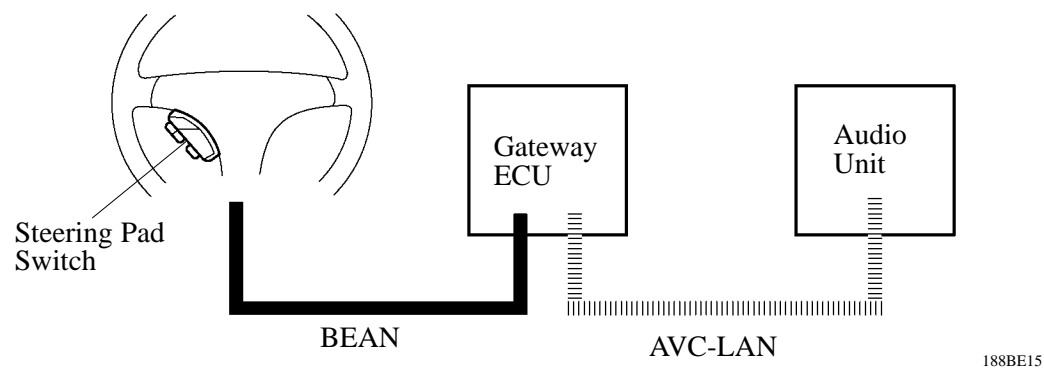
Code	See Page	Ground Points Location
IH	52	Instrument Panel Brace RH

■ AUDIO

1. General

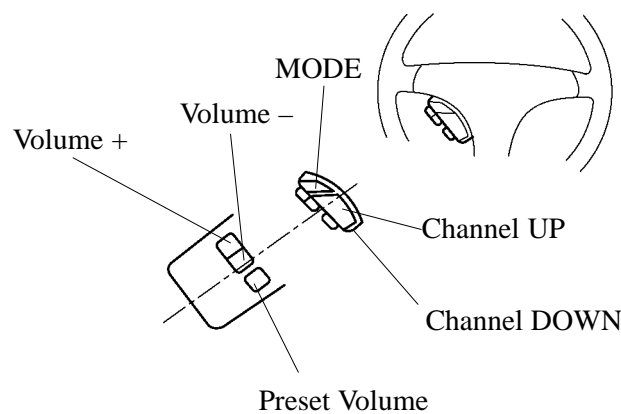
- A steering pad switch that operates the audio unit has been provided on the steering wheel of the '01 GS430. This steering pad switch, which contains frequently used audio switches, improves the ease of use of the audio unit.
- For LEXUS premium sound system, usual Nakamichi product has been discontinued and a new power amplifier and speaker of Mark Levinson products have been adopted.

▶ System Diagram ◀



2. Steering Pad Switch

The steering pad switch contains frequently used audio switches (volume +, volume -, preset volume, mode, and channel up/down) to improve the ease of use of the audio unit. This switch has a built-in ECU that transmits the operating conditions of the switch to the gateway ECU via the BEAN (Body Electronics Area Network). The gateway ECU converts these into the transmission signals for the AVC-LAN (Audio Visual Communication - Local Area Network), which are then output to the audio unit.



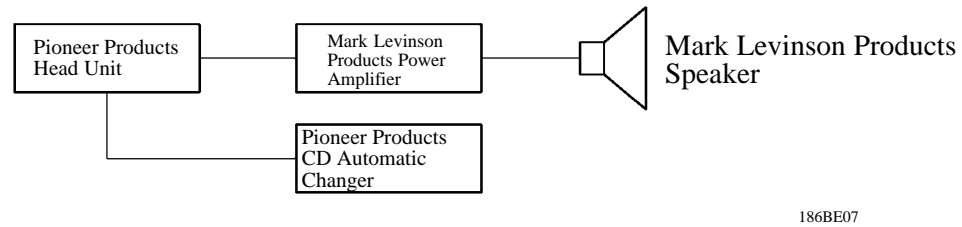
3. LEXUS Premium Sound System

Usual head unit, power amplifier, speaker and equalizer assembly of Nakamichi products used for LEXUS premium sound system have been discontinued and a new power amplifier and speaker of Mark Levinson products have been adopted. With this, LEXUS premium sound system can be selected in spite of whether or not it has a multi-information display.

1

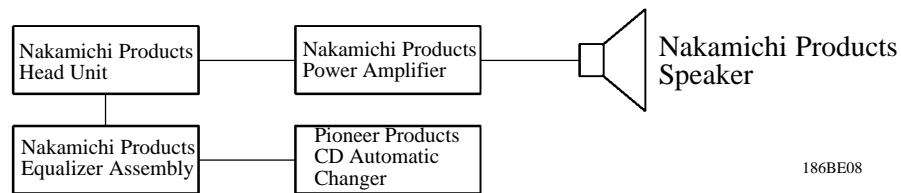
► System Diagram ◀

With and without multi display



'01 GS430/300

Without multi display only



'00 GS400/300

AVC-LAN (Communication bus) Circuit

CIRCUIT DESCRIPTION

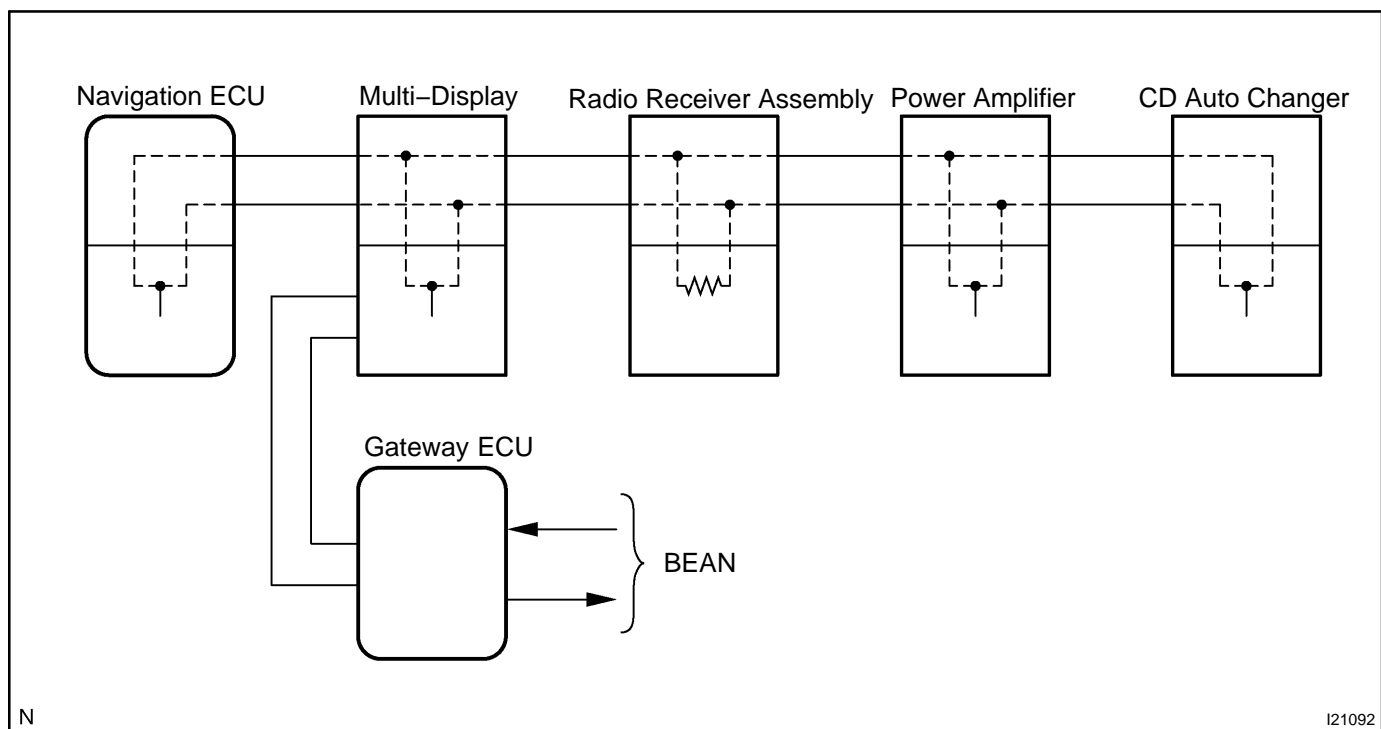
Each unit of LEXUS navigation system connected with AVC-LAN (communication bus) transfers the signal of each switch by communication.

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, multi-display becomes the master of the communication, and the radio receiver assembly has a resistance necessary for transmitting the communication.

multi display is connected between Navigation ECU and radio receiver assembly, LEXUS navigation system has the structure that makes communication impossible without Navigation ECU, or radio receiver assembly.

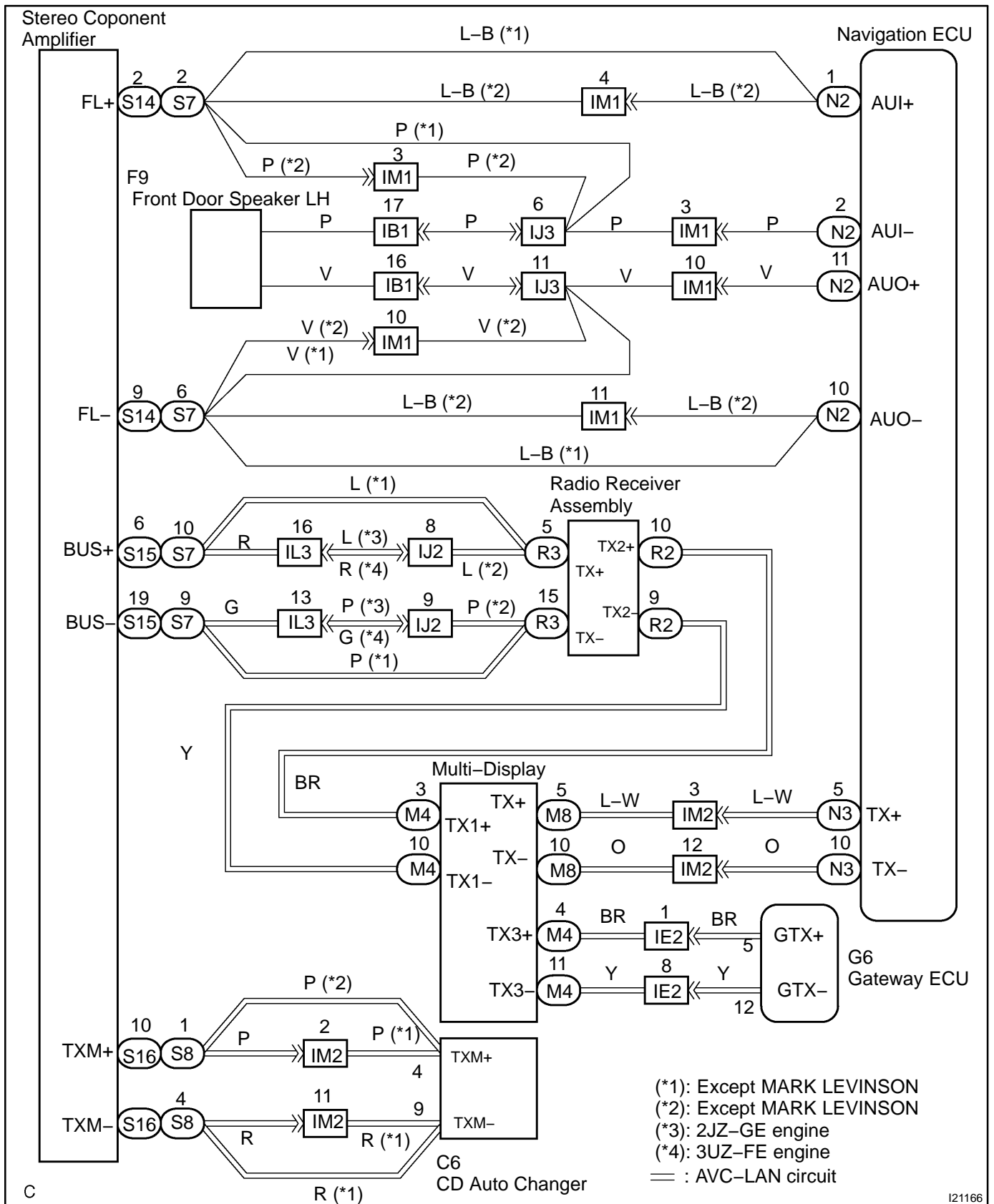
AVC-LAN



N

I21092

WIRING DIAGRAM



I21166

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.

NG

- | | |
|----------|--|
| 2 | Disconnect the "S8"(PIONEER made), "S16" (MARK LEVINSON made) connector of the stereo component 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 stereo component amplifier and CD auto changer.

NG

- | | |
|----------|---|
| 3 | Disconnect the "S7" (PIONNER made), "S15" (MARK LEVINSON made) connector of the stereo component 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 stereo component amplifier.****NG**

- | | |
|----------|---|
| 4 | Disconnect the "R3" connector of the radio receiver assembly, 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 radio receiver assembly and stereo component amplifier.****NG**

- | | |
|----------|--|
| 5 | Check wire harness and connector between radio receiver assembly and multi display (See page IN-32) |
|----------|--|

NG**Repair or replace wire harness or connector between radio receiver assembly and multi display.****OK**

6 Check wire harness and connector between multi display and navigation ECU.
(See page IN-32)

NG

Repair or replace wire harness or connector between multi display and navigation ECU.

OK

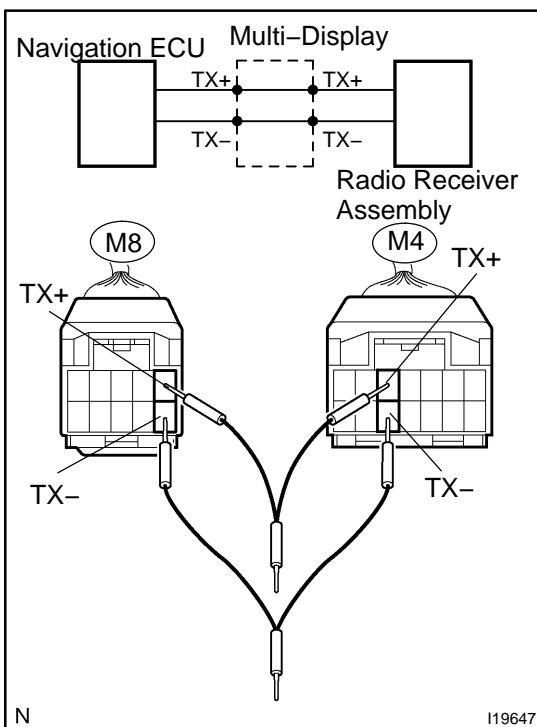
7 Check wire harness and connector between multi display and gateway ECU.
(See page IN-32)

NG

Repair or replace wire harness or connector between multi display and gateway ECU.

OK

8 Skip multi display and check AVC-LAN.



PREPARATION:

- Connect all the connectors except "M4" and "M8" of the multi display..
- Using 2 SSTs (Diagnosis check wire P/N 09893-12040), connect the terminal TX+ of connector "M4" and TX+ of connector "M8", the terminal TX- of connector "M3" and TX- of connector "M6" respectively of multi-display.

CHECK:

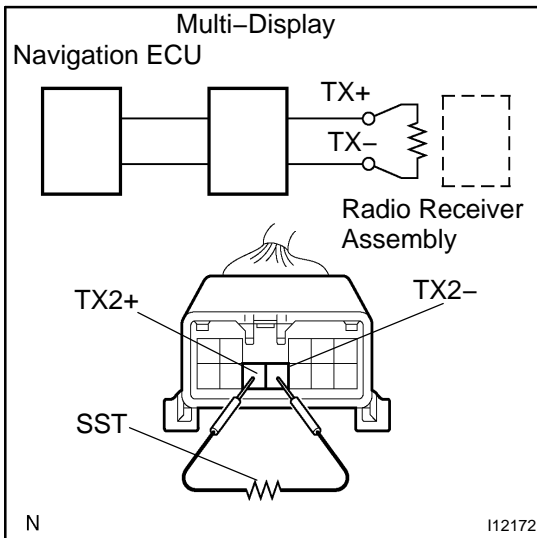
Operate audio head unit (CD, Cassette tape, etc.) and check that the sound comes out from the speaker.
(Check that AVC-LAN is recovered.)

OK

Replace the Display ECU.

NG

9 Skip radio receiver assembly and check AVC-LAN.



PREPARATION:

- Connect multi display connector.
- Disconnect radio receiver assembly "R2" connector.
- Using SST (Navigation Check Wire P/N 09843-18050), connect the terminal TX2+ to terminal TX2- of "R2" connector of radio receiver assembly.

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

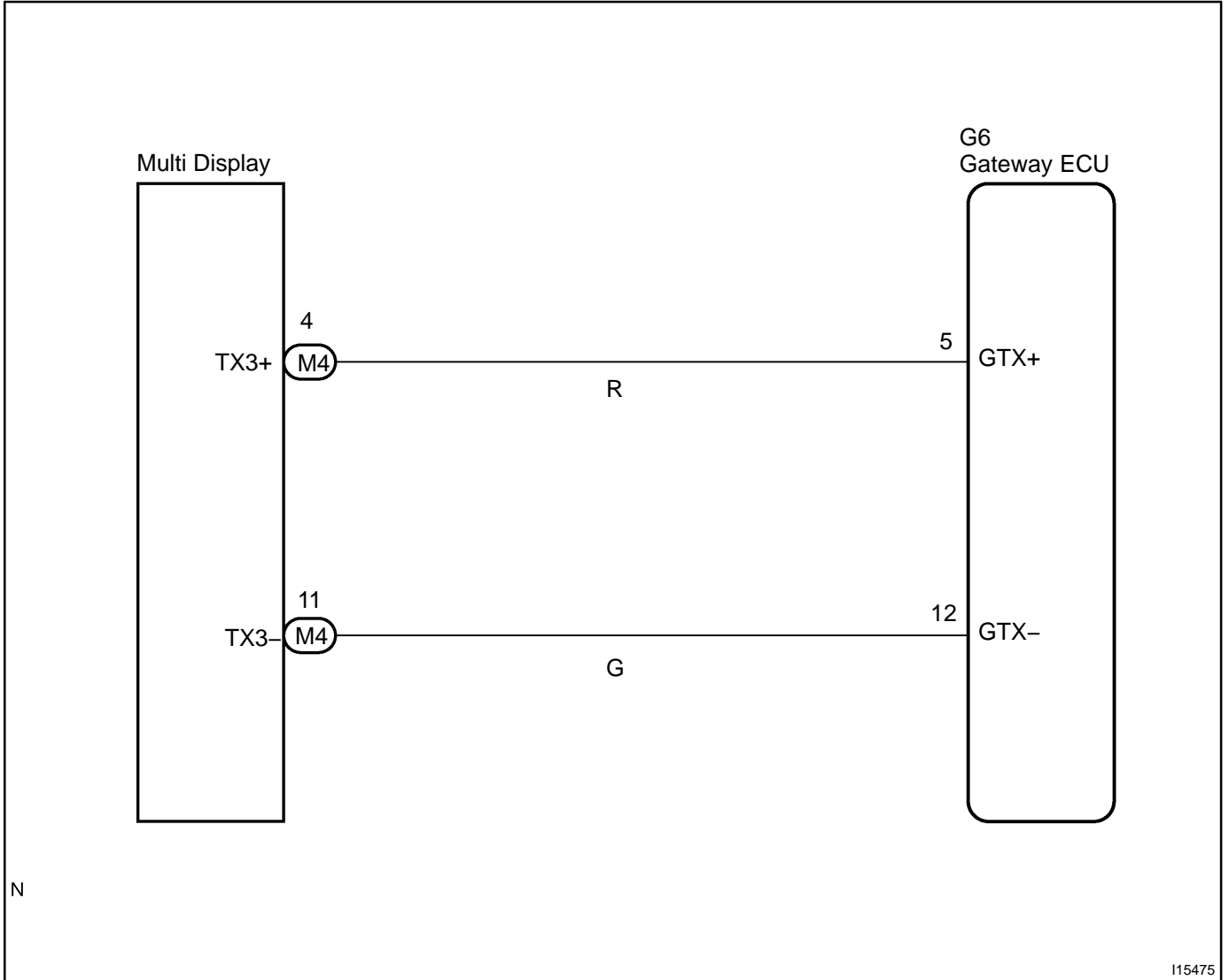
Replace the radio receiver assembly.

NG

Replace the navigation ECU.

Gateway ECU (AVC-LAN adapter) circuit

WIRING DIAGRAM



115475

INSPECTION PROCEDURE

- | | |
|----------|---|
| 1 | Check "Service check mode" of audio system. (AVC-LAN diagnosis check)
(See page DI-1186) |
|----------|---|

CHECK:

Connection of the gateway ECU can be checked by AVC-LAN diagnosis. ("Service check mode" of audio system)

OK:

Display

G/W: OK (System is normal)

G/W: NG (Communication error)

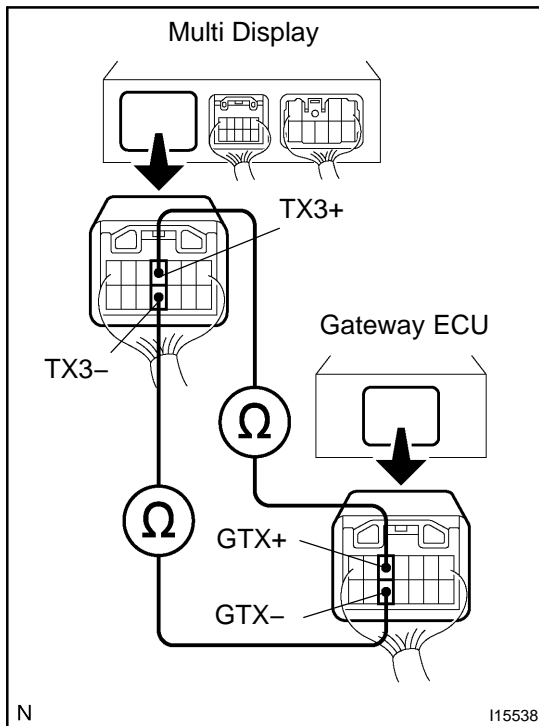
G/W: None (Never registered)

NG

Replace the gateway ECU.

OK

- | | |
|----------|--------------------------|
| 2 | Check wireharness |
|----------|--------------------------|

**PREPARATION:**

Disconnect connector "G6" of gateway ECU and "M4" of multi display.

CHECK:

- Check continuity between terminals GTX+ of gateway ECU and TX3+ of multi display.
- Check continuity between terminals GTX- of gateway ECU and TX3- of multi display.

OK:

There is a continuity in wireharness of both (a) and (b), or either (a) or (b).

HINT:

If there is OPEN in wireharness of either (a) or (b), please repair it.

NG

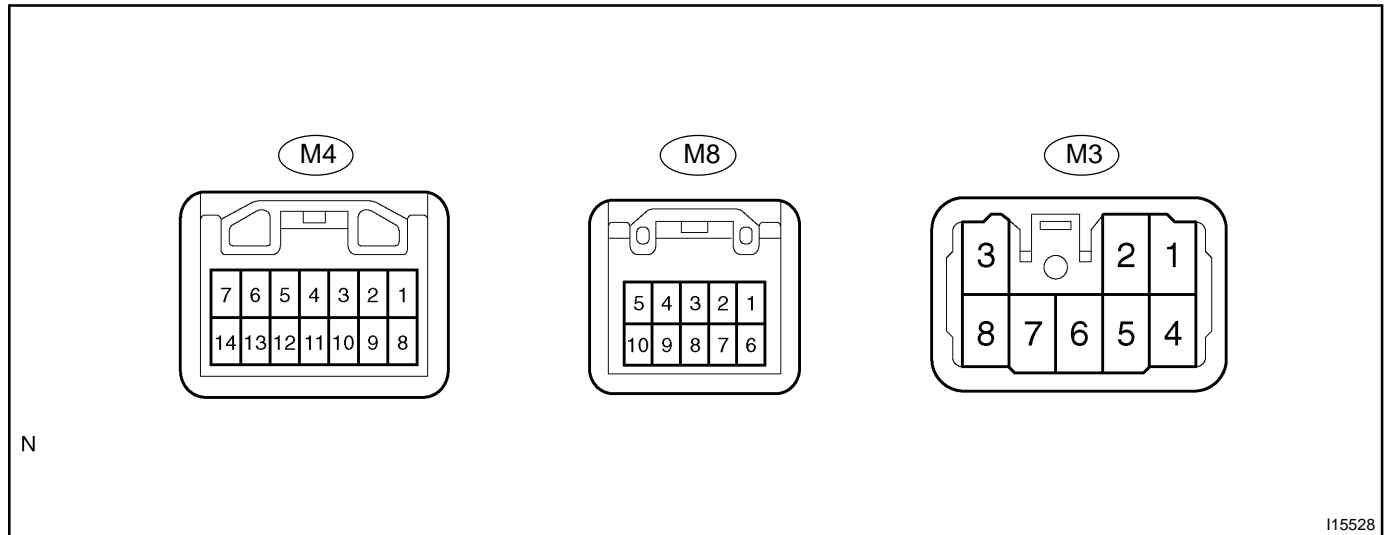
Repair or replace wireharness.

OK

Replace the gateway ECU.

TERMINALS OF ECU

MULTI DISPLAY

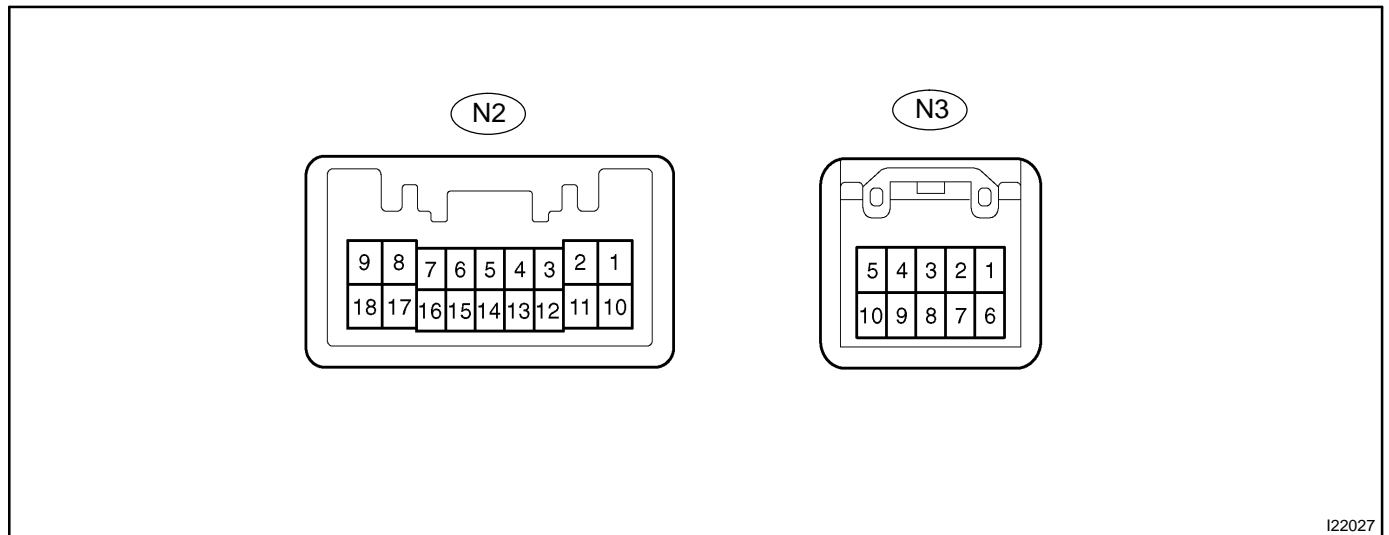


Symbols (Terminal No.)	Condition	STD Voltage (V)	Problem symptom when open circuit is detected.
			Problem symptoms when short circuit is detected.
+B ↔ GND1 (M3-1 ↔ M3-6)	Constant	10-14	Navigation system does not operate.
IG ↔ GND1 (M3-2 ↔ M3-6)	Ignition switch ON	10-14	Navigation system does not operate.
ACC ↔ GND1 (M3-4 ↔ M3-6)	Ignition switch ACC	10-14	Navigation system does not operate.
GND1 ↔ Body ground (M3-6 ↔ Body ground)	Constant	Continuity	Navigation system does not operate.
			Navigation system is normal.
TX1+ (M4-3)	AVC-LAN communication circuit	-	Navigation system does not operate.
SPD ↔ GND1 (M4-5 ↔ M3-6)	Ignition switch ON, and driving wheel rotated smoothly	Repeatedly changes from below 1 to 9 V	Fuel efficiency cannot be calculated.
TX3+ ↔ GND1 (M4-4 ↔ M3-6)	Ignition switch ACC or ON	About 2.5	Screen is disorder.
TX1- (M4-10)	AVC-LAN communication circuit	-	Navigation system does not operate.
TX3- ↔ GND1 (M4-11 ↔ M3-6)	Ignition switch ACC or ON	About 2.5	Screen is disorder.
PKB ↔ GND1 (M4-13 ↔ M3-6)	Ignition switch ON, and parking brake switch ON (parking brake pedal released)	5	The system cannot enter Diagnostic system mode.
			Navigation system is normal
TC ↔ GND1 (M4-14 ↔ M3-6)	Ignition switch OFF and connect terminals TC and E1 of check connector	Continuity	Navigation system is normal.
			The system does not exit Service check mode.
VR ↔ VG (M8-1 ↔ M8-6)	Constant	Continuity	Screen noise or other types of noise occur.
R ↔ VG (M8-2 ↔ M8-6)	Diagnosis display check screen is white (Using an oscilloscope)	$0.7 \pm 0.1 * 2$	Screen color turns to blue

2001 LEXUS GS300/GS430 (RM791U)

B ↔ VG (M8-3 ↔ M8-6)	Diagnosis display check screen is white (Using an oscilloscope)	0.7 ± 0.1 *2	Screen color turns to yellow
G ↔ VG (M8-7 ↔ M8-6)	Diagnosis display check screen is white (Using an oscilloscope)	0.7 ± 0.1 *2	Screen color turns to red-purple.
SYVC ↔ VG (M8-8 ↔ M8-6)	Display ON (Using an oscilloscope)	$0.5 - 1.3$ *1	Screen is in disorder

NAVIGATION ECU

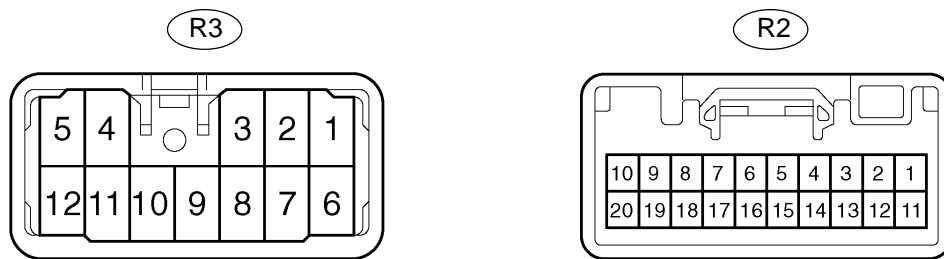


I22027

Symbols (Terminal No.)	Condition	STD Voltage (V)	Problem symptom when open circuit is detected.
			Problem symptom when short circuit is detected.
VR ↔ VG (N3-1 ↔ N3-6)	Constant	Continuity	Screen noise or other types of noise occur. Navigation system does not operate.
R ↔ VG (N3-2 ↔ N3-6)	Diagnosis display check screen is white (Using an oscilloscope)	0.7 ± 0.1 *1	Screen color turns to blue.
B ↔ VG (N3-3 ↔ N3-6)	Diagnosis display check screen is white (Using an oscilloscope)	0.7 ± 0.1 *1	Screen color turns to yellow.
TX+ (N3-5)	AVC-LAN Communication circuit	-	Navigation system does not operate.
G ↔ VG (N3-7 ↔ N3-6)	Diagnosis display check screen is white (Using an oscilloscope)	0.7 ± 0.1 *1	Screen color turns to red-purple.
SYNC ↔ VG (N3-8 ↔ N3-6)	Display ON (Using an oscilloscope)	0.5 - 1.3 *1	Screen is in disorder.
TX- (N3-10)	AVC-LAN Communication circuit	-	Navigation system does not operate.
AUI+ ↔ GND (N2-1 ↔ N2-17)	Radio switch ON	5 - 7	Driver's side speaker does not sound.
AUI+ ↔ GND (N2-2 ↔ N2-17)	Radio switch ON	5 - 7	Driver's side speaker does not sound.
SPD ↔ GND (N2-5 ↔ N2-17)	Ignition switch ON, and driving wheel rotated smoothly.	Repeatedly changes from below 1 to 9 V	Fuel efficiency cannot be calculated.
AUI- ↔ GND (N2-10 ↔ N2-17)	Radio switch ON	5 - 7	Driver's side speaker does not sound.
AUI- ↔ GND (N2-11 ↔ N2-17)	Radio switch ON	5 - 7	Driver's side speaker does not sound.
+B ↔ GND (N2-9 ↔ N2-17)	Constant	10 - 14	Navigation system does not operate.

REV ↔ GND (N2-11 ↔ N2-17)	A/T shift position R	5	The direction of advance of the vehicle is different from that of cursor.
MUTE ↔ GND (N2-15 ↔ N2-17)	Radio switch ON	5	Pop sound etc. Navigation system does not operate.
GND ↔ Body ground (N2-17 ↔ Body ground)	Constant	Continuity	Audio system is normal
ACC ↔ GND (N2-18 ↔ N2-17)	Ignition switch ACC	10 - 14	Navigation system does not operate.

AUDIO HEAD UNIT



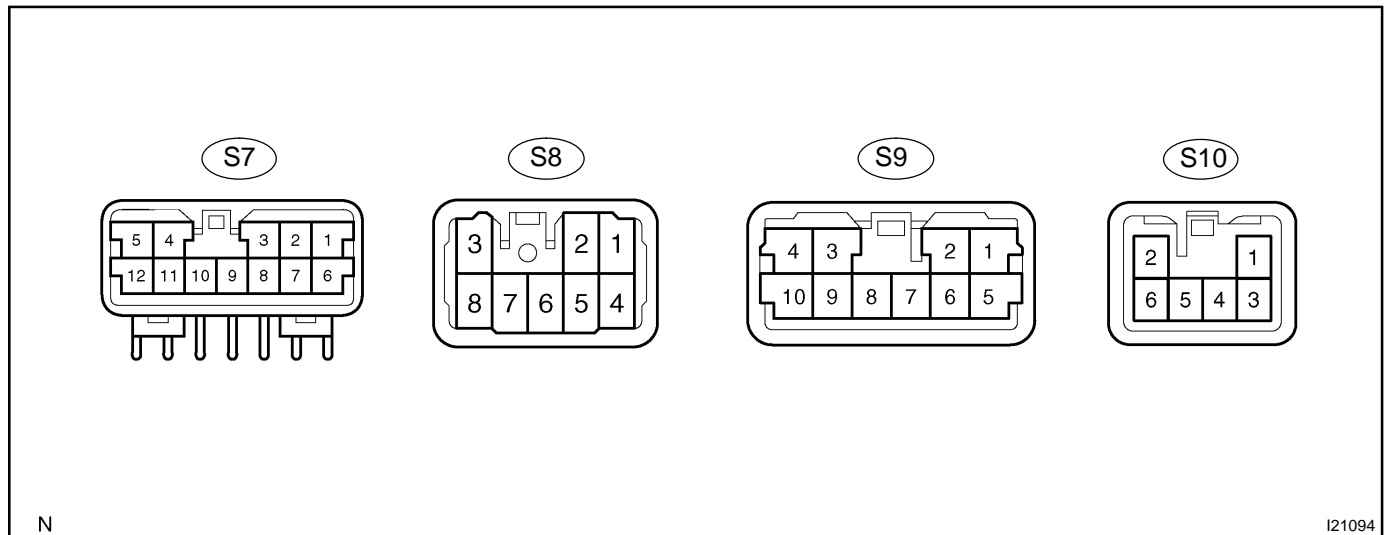
N

I21093

Symbols (Terminal No.)	Condition	STD Voltage (V)	Problem symptom when open circuit is detected.
			Problem symptoms when short circuit is detected.
B ↔ GND (R2-1 ↔ R2-20)	Constant	10 - 14	Audio system does not operate.
ILL+ ↔ GND (R2-2 ↔ R2-20)	Light control switch TAIL	10 - 14	Audio head unit illumination does not light up.
			Fuse is blown.
ANT ↔ GND (R2-4 ↔ R2-20)	Radio switch ON	10 - 14	Antenna does not extend.
BUS+ (R2-5)	AVC-LAN Communication circuit	-	Audio system does not operate.
MUTE ↔ GND (R2-7 ↔ R2-20)	Radio switch ON	5	Pop sound etc.
			Audio system does not operate.
R+ ↔ GND (R2-8 ↔ R2-20)	Constant	10 - 14	Sound from right side speaker is small.
L+ ↔ GND (R2-9 ↔ R2-20)	Constant	10 - 14	Sound from left side speaker is small.
ACC ↔ GND (R2-11 ↔ R2-20)	Ignition switch ACC	10 - 14	Audio system does not operate.
ILL- ↔ GND (R2-12 ↔ R2-20)	Light control switch TAIL	Below 0.5	Audio head unit illumination does not light up.
			Fuse is blown.
ANTB ↔ GND (R2-13 ↔ R2-20)	Radio switch ON	10 - 14	Antenna does not extend.
ANTA ↔ GND (R2-14 ↔ R2-20)	Radio switch ON	10 - 14	Antenna does not extend.
BUS- (R2-15)	AVC-LAN Communication circuit	-	Audio system does not operate.
L- ↔ GND (R2-19 ↔ R2-20)	Constant	10 - 14	Sound from left side speaker is small.
GND ↔ Body ground (R2-20 ↔ Body ground)	Constant	Continuity	Audio system is normal.

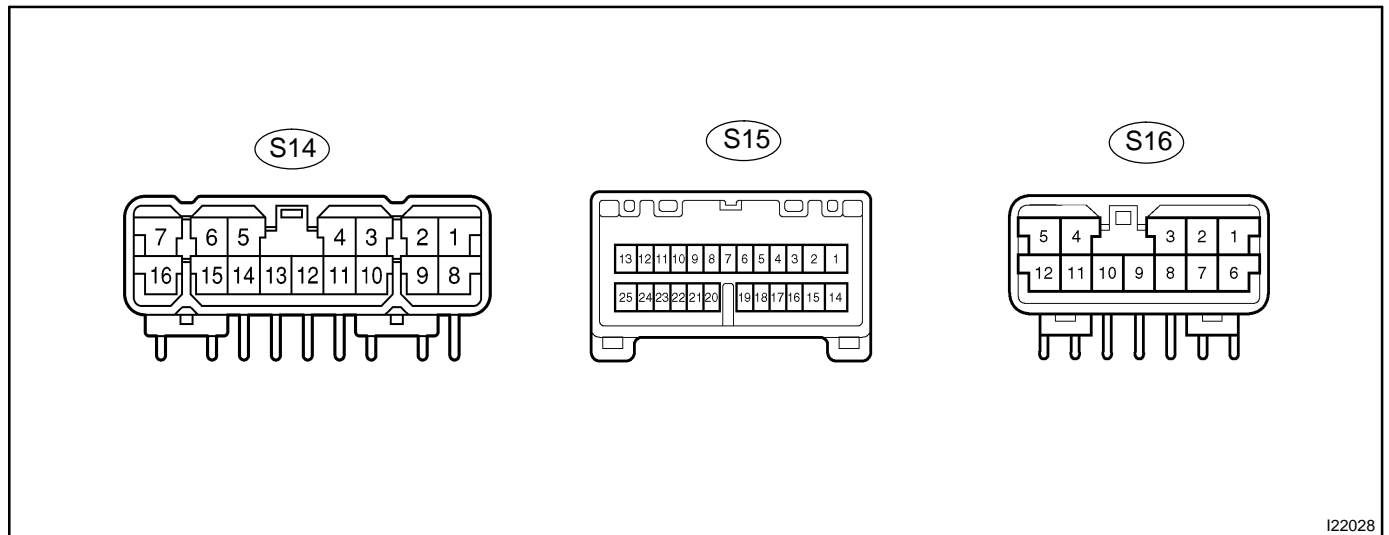
TX- (R3-9)	AVC-LAN Communication circuit	-	Audio system does not operate.
TX+ (R2-10)	AVC-LAN Communication circuit	-	Audio system does not operate.

STEREO COMPONENT AMPLIFIER (PIONEER made)



Symbols (Terminal No.)	Condition	STD Voltage (V)	Problem symptom when open circuit is detected.
			Problem symptoms when short circuit is detected.
R+ (S7-1)	-	-	RH side speaker does not sound.
L+ (S7-2)	-	-	LH side speaker does not sound.
MUTE ↔ E (S7-4 ↔ S9-7)	Radio switch ON	5 V	Pop sound etc. Audio system does not operate.
R- (S7-6)	-	-	RH side speaker does not sound.
L- (S7-7)	-	-	LH side speaker does not sound.
BUS+ (S7-9)	AVC-LAN Communication circuit	-	Audio system does not operate.
BUS- (S7-10)	AVC-LAN Communication circuit	-	Audio system does not operate.
ACC ↔ E (S7-12 ↔ S9-7)	Ignition switch ACC	10 - 14 V	Audio system does not operate.
TXM+ (S8-1)	AVC-LAN Communication circuit	-	Audio system does not operate.
CDR+ (S8-2)	-	-	Sound from right side speaker is small.
CDL+ (S8-3)	-	-	Sound from left side speaker is small.
TXM- ↔ E (S8-4)	AVC-LAN Communication circuit	-	Audio system does not operate.
CDR- (S8-5)	-	-	Sound from right side speaker is small.
MUTE ↔ E (S8-6 ↔ S10-7)	CD auto changer switch ON	5 - 7 V	Pop sound etc. Audio system does not operate.
CDL- (S8-8)	-	-	Sound from left side speaker is small.

FR+ ↔ E (S9-1 ↔ S9-7)	Radio switch ON	5 - 7 V	RH side speaker does not sound.
FL+ ↔ E (S9-2 ↔ S10-7)	Radio switch ON	5 - 7 V	LH side speaker does not sound.
FR- ↔ E (S9-5 ↔ S9-7)	Radio switch ON	5 - 7 V	RH side speaker does not sound.
FL- ↔ E (S9-6 ↔ S9-7)	Radio switch ON	5 - 7 V	LH side speaker does not sound.
E ↔ Body ground (S9-7 ↔ Body ground)	Constant	Continuity	-
N-MU (S9-10)	AVC-LAN Communication circuit	-	Navigation system does not operate.
RR+ ↔ E (S10-1 ↔ S9-7)	Radio switch ON	5 - 7 V	Rear RH side speaker does not sound.
RL+ ↔ E (S10-2 ↔ S9-7)	Radio switch ON	5 - 7 V	Rear LH side speaker does not sound.
RR- ↔ E (S10-3 ↔ S9-7)	Radio switch ON	5 - 7 V	Rear RH side speaker does not sound.
WF+ ↔ E (S10-4 ↔ S9-7)	Radio switch ON	5 - 7 V	Woofer does not sound.
WF- ↔ E (S10-5 ↔ S9-7)	Radio switch ON	5 - 7 V	Woofer does not sound.
RL- ↔ E (S10-6 ↔ S9-7)	Radio switch ON	5 - 7 V	Rear LH side speaker does not sound.

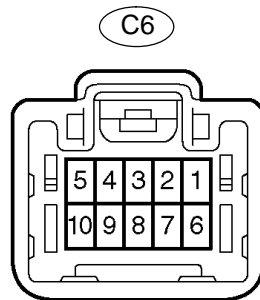
STEREO COMPONENT AMPLIFIER (MARK LEVINSON made)

I22028

Symbols (Terminal No.)	Condition	STD Voltage (V)	Problem symptom when open circuit is detected.
			Problem symptoms when short circuit is detected.
RR+ ↔ GND4, GND5 (S14-3 ↔ S14-12, 13)	Radio switch ON	5 - 7 V	Rear RH side speaker does not sound.
RL+ ↔ GND4, GND5 (S14-4 ↔ S14-12, 13)	Radio switch ON	5 - 7 V	Rear LH side speaker does not sound.
WF+ ↔ GND4, GND5 (S14-6 ↔ S14-12, 13)	Radio switch ON	5 - 7 V	Woofers does not sound.
FR- ↔ GND4, GND5 (S14-8 ↔ S14-12, 13)	Radio switch ON	5 - 7 V	RH side speaker does not sound.
RR- ↔ GND4, GND5 (S14-10 ↔ S14-12, 13)	Radio switch ON	5 - 7 V	Rear RH side speaker does not sound.
RL- ↔ GND4, GND5 (S14-11 ↔ S14-12, 13)	Radio switch ON	5 - 7 V	Rear LH side speaker does not sound.
GND4 ↔ Body ground (S14-12 ↔ Body ground)	Constant	Continuity	-
GND5 ↔ Body ground (S14-13 ↔ Body ground)	Constant	Continuity	-
WF- ↔ GND4, GND5 (S14-15 ↔ S14-12, 13)	Radio switch ON	5 - 7 V	Woofers does not sound.
FR+ ↔ GND4, GND5 (S15-1 ↔ S14-12, 13)	Radio switch ON	5 - 7 V	RH side speaker does not sound.
FL+ ↔ GND4, GND5 (S15-2 ↔ S14-12, 13)	Radio switch ON	5 - 7 V	LH side speaker does not sound.
BUS+ (S15-6)	AVC-LAN Communication circuit	-	Audio system does not operate.
N-MU (S15-9)	-	-	Navigation system does not operate.
R+ (S15-11)	-	-	RH side speaker does not sound.
L+ (S15-12)	-	-	LH side speaker does not sound.

FL- ↔ GND4, GND5 (S15-15 ↔ S14-12, 13)	Radio switch ON	5 - 7 V	LH side speaker does not sound.
BUS- (S15-19)	AVC-LAN Communication circuit	-	Audio system does not operate.
ACC ↔ GND4, GND5 (S15-20 ↔ S14-12, 13)	Ignition switch ACC	10 - 14 V	Audio system does not operate.
R- (S15-23)	-	-	RH side speaker does not sound.
L- (S15-24)	-	-	LH side speaker does not sound.
CDR+ (S16-1)	-	-	Sound from right side speaker is small.
CDL+ (S16-2)	-	-	Sound from left side speaker is small.
MUTE ↔ GND4, GND5 (S16-4 ↔ S14-12, 13)	Radio switch ON	5 V	Pop sound etc.
			Audio system does not operate.
CDR- (S16-6)	-	-	Sound from right side speaker is small.
CDL- (S16-7)	-	-	Sound from left side speaker is small.
TXM+ (S16-10)	AVC-LAN Communication circuit	-	Audio system does not operate.
TXM- ↔ GND4, GND5 (S16-9 ↔ S14-12, 13)	AVC-LAN Communication circuit	-	Audio system does not operate.

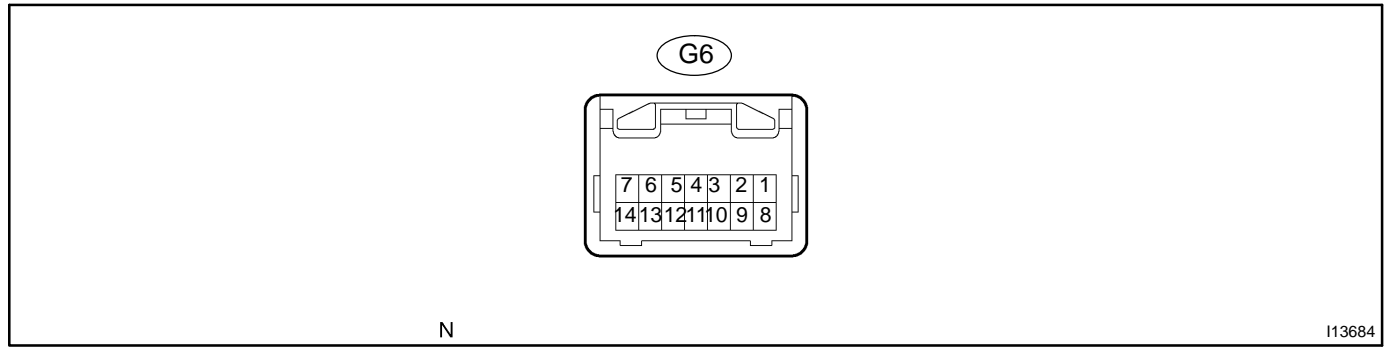
CD AUTO CHANGER



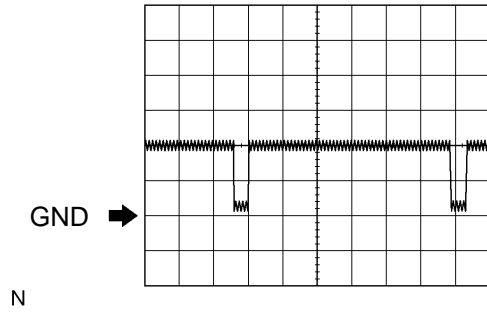
I04235

Symbols (Terminal No.)	Condition	STD Voltage (V)	Problem symptom when open circuit is detected.
			Problem symptoms when short circuit is detected.
CDR+ (C6-1)	-	-	Sound from right side speaker is small.
CDL+ (C6-2)	-	-	Sound from left side speaker is small.
MUTE ↔ GND (C6-3 ↔ C6-8)	Radio switch ON	5	Pop sound etc. Audio system does not operate.
TXM+ ↔ GND (C6-3 ↔ C6-8)	Ignition switch ON	2 - 3	Audio system does not operate.
B ↔ GND (C6-5 ↔ C6-8)	Constant	10 - 14	CD auto changer does not operate. Audio system does not operate.
CDR- (C6-6)	-	-	Sound from right side speaker is small.
CDL- (C6-7)	-	-	Sound from left side speaker is small.
GND ↔ Body ground (C6-8 ↔ Body ground)	Constant	Continuity	Audio system does not operate.
TXM- ↔ GND (C6-3 ↔ C6-8)	Ignition switch ON	2 - 3	Audio system does not operate.
ACC ↔ E (C6-10 ↔ C6-8)	Ignition switch ACC	10 - 14	CD auto changer does not operate.

GATEAY ECU



Symbols (Terminals No.)	Wiring Color	Condition	STD Voltage (V)
IG ↔ GND (G6-2 ↔ G6-14)	GR ↔ W-B	Ignition switch ON	10 - 14
MPD1 (G6-2)	W	Multiplex communication circuit	-
GTX+ (G6-5)	BR	AVC-LAN communication circuit	-
CG ↔ BODy ground (G6-7 ↔ Body ground)	W-B ↔ Body ground	Constant	Continuity
BATT ↔ GND (G6-8 ↔ G6-14)	G-W ↔ W-B	Constant	10 - 14
ACC ↔ GND (G6-9 ↔ G6-14)	GR ↔ W-B	Ignition switch ACC	10 - 14
MPD2 (G6-11)	W	Multiplex communication circuit	-
GTX- (G6-12)	Y	AVC-LAN communication circuit	-
GND ↔ Body ground (G6-14 ↔ Body ground)	W-B ↔ Body ground	Constant	Continuity

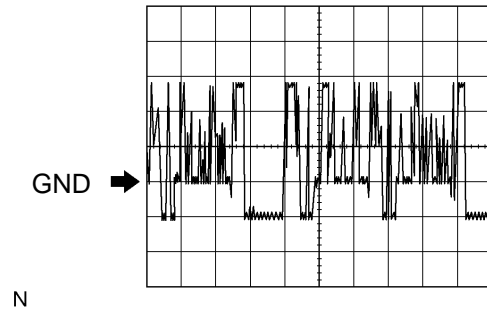


Oscilloscope

*1: wave1

- Measure terminal: SYNC ↔ GND1
- Measure set: 500 mV/DIV 10 μs/DV
- Condition: Navigation display is displayed

I15531



Oscilloscope

*1: wave1

- Measure terminal: R, G, B ↔ GND1
- Measure set: 200 mV/DIV 10 μs/DV
- Condition: Navigation map is switched

I15532