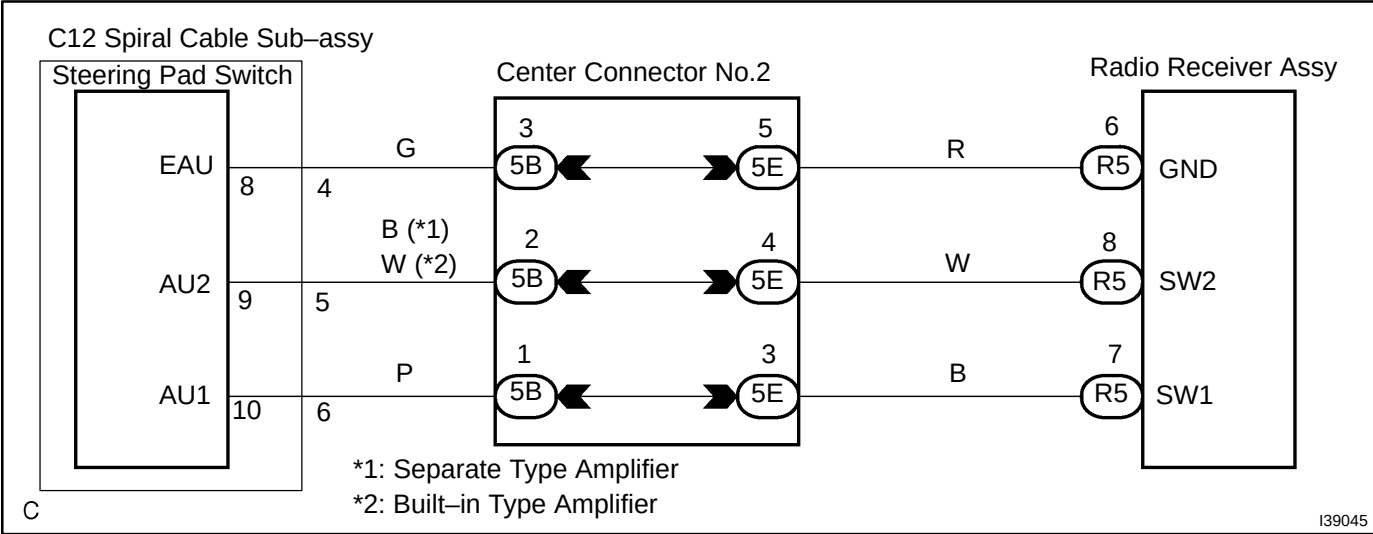


STEERING PAD SWITCH CIRCUIT

CIRCUIT DESCRIPTION

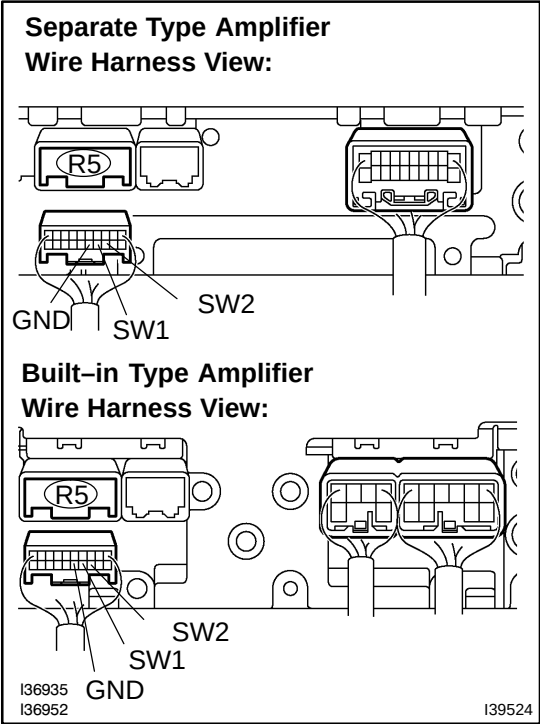
This circuit sends an operation signal from the steering pad switch to the radio receiver assy.
If there is an open in the circuit, the audio system cannot be operated by the steering pad switch.
If there is a short in the circuit, the same condition as that when the switch is continuously depressed occurs.
Therefore, not only the steering pad switch cannot operate the radio receiver assy, but also the radio receiver assy itself does not function.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 INSPECT STEERING PAD SWITCH ASSY



- (a) Disconnect the radio receiver assy R5 connector.
- (b) Measure the resistance according to the values in the table below.

Standard:

Tester connection	Condition	Specified condition
SW1 (R5-7) – GND (R5-6)	Do not switch position	Approx. 100 kΩ
SW1 (R5-7) – GND (R5-6)	SEEK+ switch: push	Below 2.5 Ω
SW1 (R5-7) – GND (R5-6)	SEEK– switch: push	Approx. 0.3 kΩ
SW1 (R5-7) – GND (R5-6)	VOL+ switch: push	Approx. 1 kΩ
SW1 (R5-7) – GND (R5-6)	VOL– switch: push	Approx. 3.2 kΩ
SW2 (R5-8) – GND (R5-6)	Do not switch position	Approx. 100 kΩ
SW2 (R5-8) – GND (R5-6)	MODE switch: push	Below 2.5 Ω

NG Go to step 2

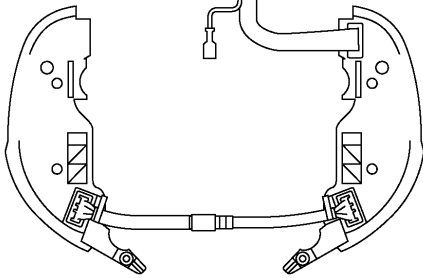
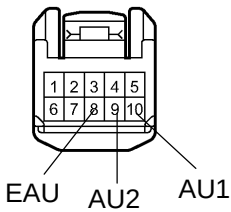
OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE
(SEE PAGE 05-1778)

2 INSPECT STEERING PAD SWITCH ASSY

Steering Pad Switch Assy:

Connector Front View:



- (a) Disconnect the steering pad switch assy connector.
- (b) Measure the resistance according to the values in the table below.

Standard:

Tester connection	Condition	Specified condition
AU1 (10) – EAU (8)	Do not switch position	Approx. 100 kΩ
AU1 (10) – EAU (8)	SEEK+ switch: push	Approx. 2.5 Ω
AU1 (10) – EAU (8)	SEEK– switch: push	Approx. 0.3 kΩ
AU1 (10) – EAU (8)	VOL+ switch: push	Approx. 1 kΩ
AU1 (10) – EAU (8)	VOL– switch: push	Approx. 3.2 kΩ
AU1 (10) – EAU (8)	Do not switch position	Approx. 100 kΩ
AU2 (9) – EAU (8)	MODE switch: push	Below 2.5 Ω

NG

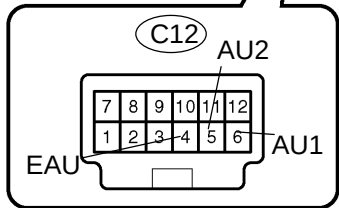
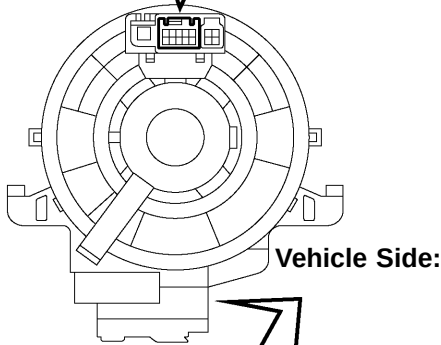
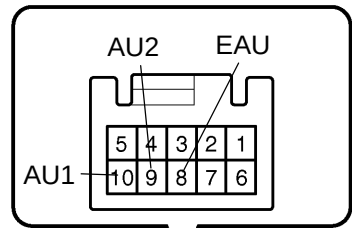
REPLACE STEERING PAD SWITCH ASSY
(SEE PAGE 67-28)

OK

3

INSPECT SPIRAL CABLE SUB-ASSY

Steering Pad Switch Assy Side:



N

I39337

- (a)
- Disconnect the connectors from the spiral cable sub-assy.
- (b)
- Measure the resistance according to the values in the table below.

Standard:

Tester connection	Specified condition
EAU (C12-4) – EAU (8)	Below 1 Ω
AU1 (C12-6) – AU1 (10)	Below 1 Ω
AU2 (C12-5) – AU2 (9)	Below 1 Ω

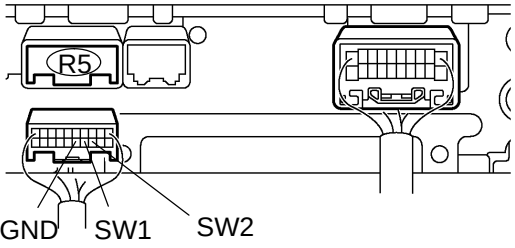
NG

REPLACE SPIRAL CABLE SUB-ASSY
(SEE PAGE 60-29)

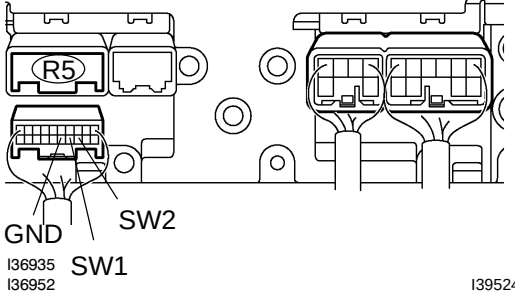
OK

4 CHECK HARNESS AND CONNECTOR(SPIRAL CABLE SUB-ASSY – RADIO RECEIVER ASSY)

**Separate Type Amplifier
Wire Harness View:**



**Built-in Type Amplifier
Wire Harness View:**

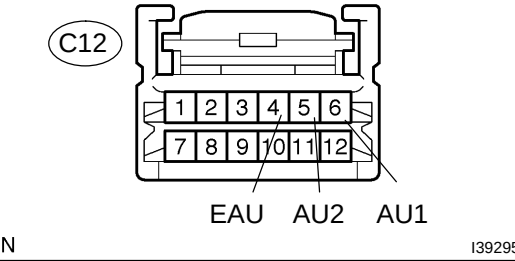


- (a) Disconnect the spiral cable sub-assy connector.
- (b) Measure the resistance according to the values in the table below.

Standard:

Tester connection	Specified condition
SW1 (R5-7) – AU1 (C12-6)	Below 1 Ω
SW2 (R5-8) – AU2 (C12-5)	Below 1 Ω
GND (R5-6) – EAU (C12-4)	Below 1 Ω
SW1 (R5-7) – Body ground	10 k Ω or higher
SW2 (R5-8) – Body ground	10 k Ω or higher
GND (R5-6) – Body ground	10 k Ω or higher

**Spiral Cable Side
Connector Front View:**



NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

**PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE
(SEE PAGE 05-1778)**

AMP MUTE SIGNAL CIRCUIT (FROM RADIO RECEIVER ASSY)

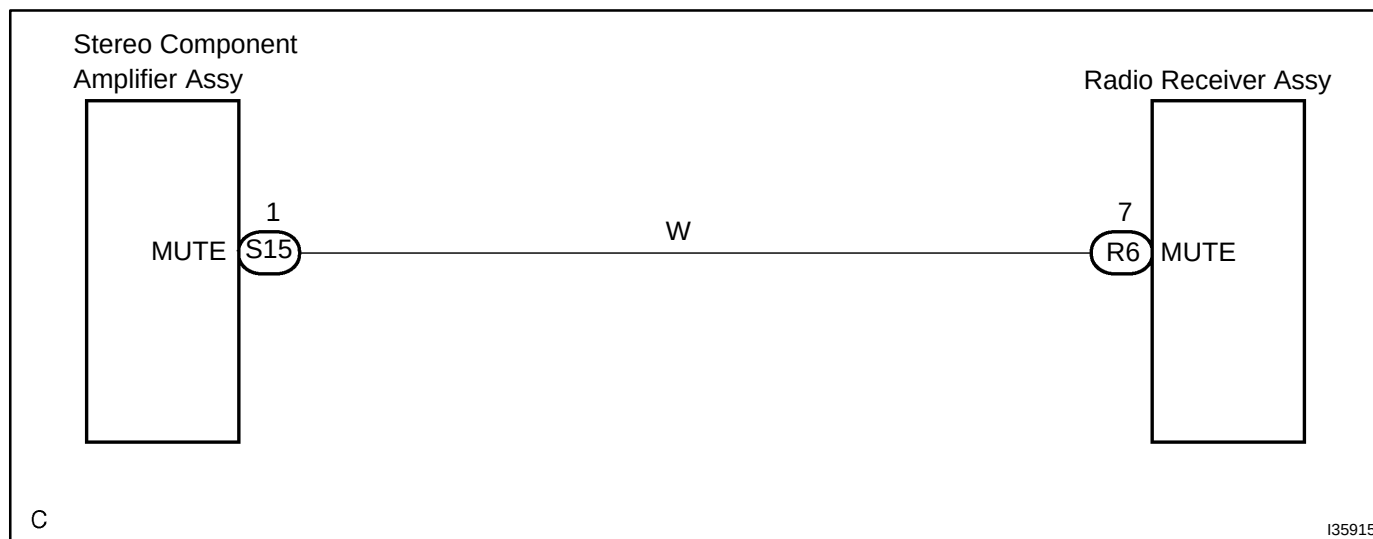
CIRCUIT DESCRIPTION

This circuit sends the signal to the stereo component amplifier to mute the noise. Because of that, the noise produced by changing the sound source ceases.

If there is an open in the circuit, noise can be heard from the speaker when changing the sound source.

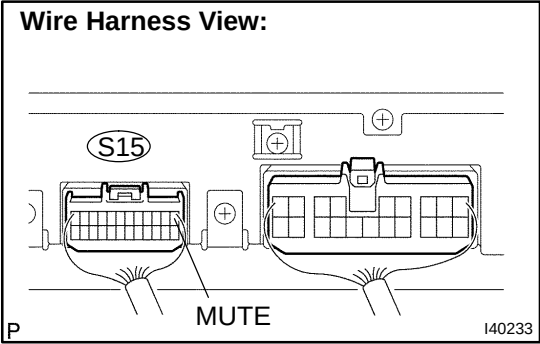
If there is a short in the circuit, even though the stereo component amplifier assy is normal, no sound or only extremely small sound can be produced.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 INSPECT STEREO COMPONENT AMPLIFIER ASSY



(a) Measure the voltage according to the value in the table below.

Standard:

Tester connection	Condition	Specification
MUTE (S15-1) – Body ground	Power switch ON (ACC), Audio system is playing → Changing	Above 3.5 V → Below 1 V

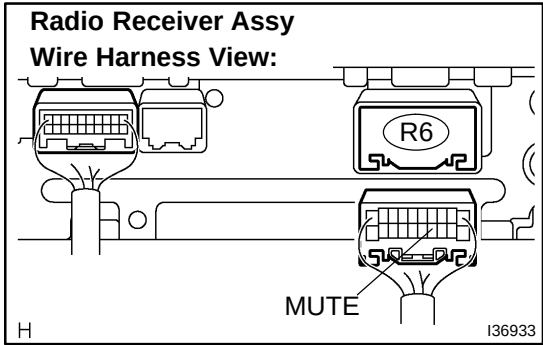
NG Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (SEE PAGE 05-1778)

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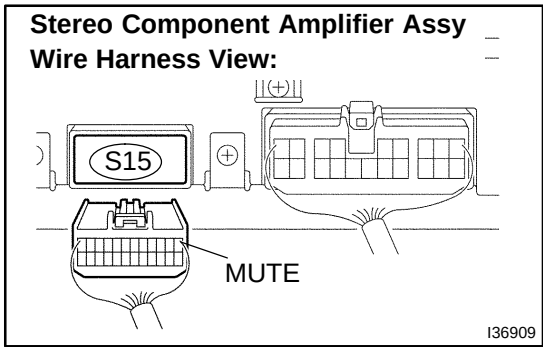
2 CHECK HARNESS AND CONNECTOR (RADIO RECEIVER ASSY - STEREO COMPONENT AMPLIFIER ASSY)



- Disconnect the radio receiver assy R6 connector and stereo component amplifier assy S15 connector.
- Measure the resistance according to the values in the table below.

Standard:

Tester connection	Condition	Specified condition
MUTE (R6-7) - MUTE (S15-1)	Always	Below 1 Ω
MUTE (R6-7) - Body ground	Always	10 k Ω or higher

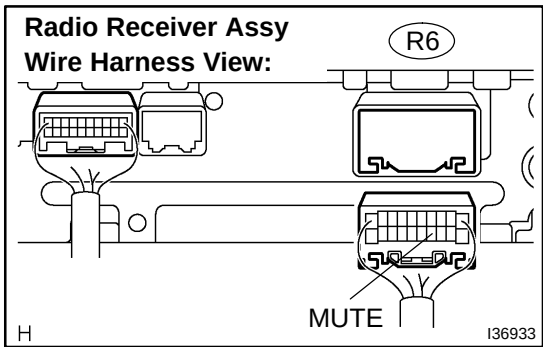


NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

3 INSPECT RADIO RECEIVER ASSY



- Reconnect the stereo component amplifier assy connector.
- Measure the voltage according to the value in the table below.

Standard:

Tester connection	Condition	Specification
MUTE (R6-7) - Body ground	Power switch ON (ACC)	Above 3.5 V

NG

REPLACE STEREO COMPONENT AMPLIFIER ASSY (SEE PAGE 67-25)

OK

REPLACE RADIO RECEIVER ASSY (SEE PAGE 67-5)

AMP MUTE SIGNAL CIRCUIT (FROM NAVIGATION ECU)

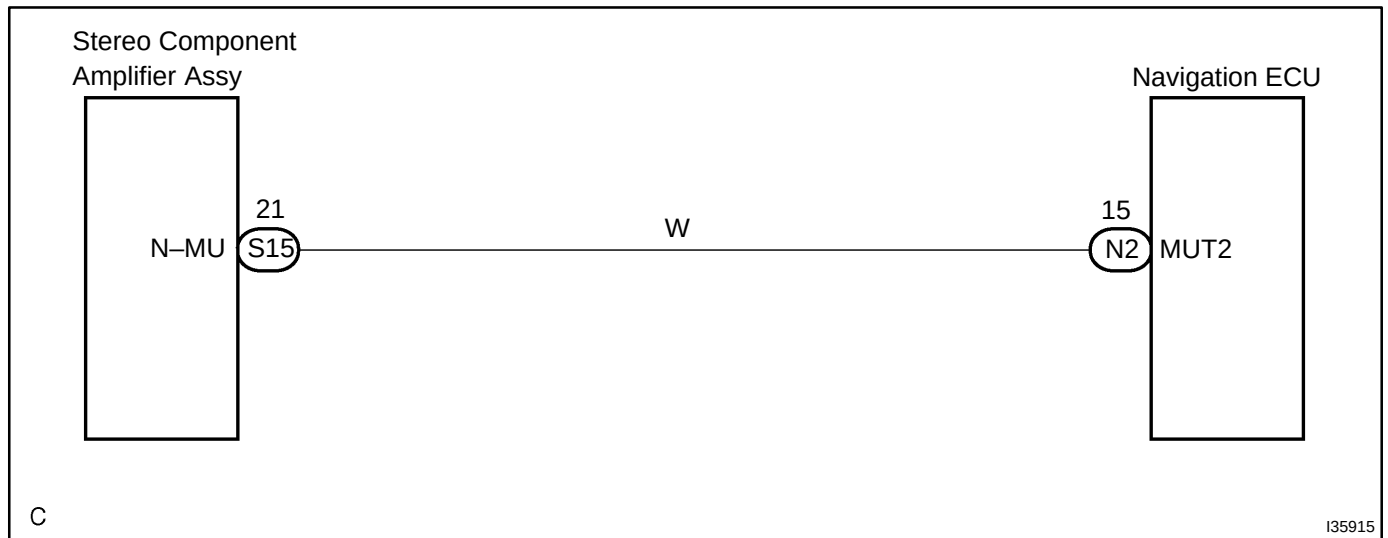
CIRCUIT DESCRIPTION

This circuit sends the signal to the stereo component amplifier to mute the noise. Because of that, the noise produced by changing the sound source ceases.

If there is an open in the circuit, noise can be heard from the speaker when changing the sound source.

If there is a short in the circuit, even though the stereo component amplifier assy is normal, no sound or only extremely small sound can be produced.

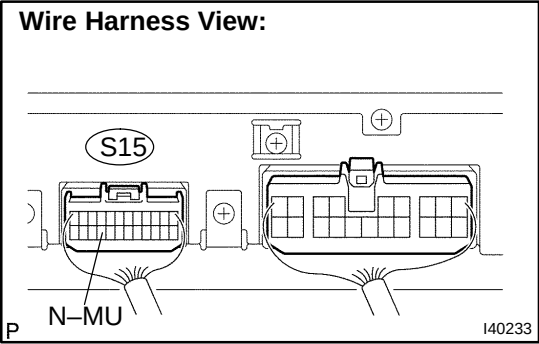
WIRING DIAGRAM



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INSPECTION PROCEDURE

1 INSPECT STEREO COMPONENT AMPLIFIER ASSY



(a) Measure the voltage according to the value in the table below.

Standard:

Tester connection	Condition	Specification
N-MU (S15-21) – Body ground	Power switch ON (ACC), Audio system is playing → Changing	Above 3.5 V → Below 1 V

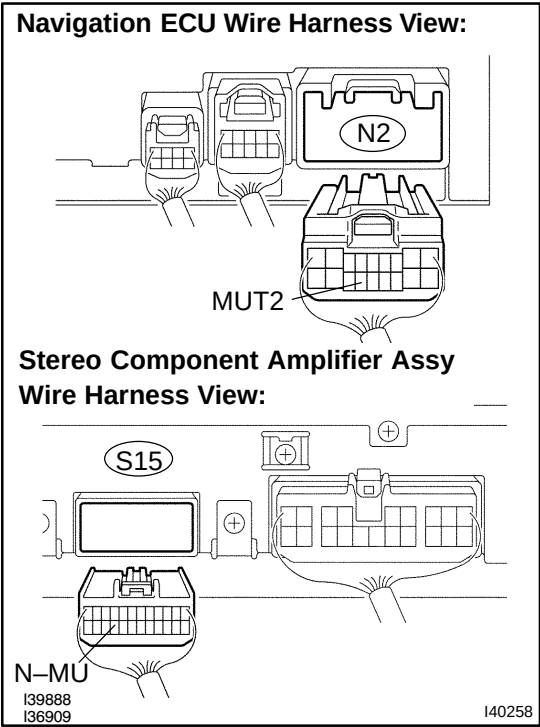
NG Go to step 2

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (SEE PAGE 05-1778)

2

CHECK HARNESS AND CONNECTOR (NAVIGATION ECU – STEREO COMPONENT AMPLIFIER ASSY)



- (a) Disconnect the navigation ECU N2 connector and stereo component amplifier assy S15 connector.
- (b) Measure the resistance according to the values in the table below.

Standard:

Tester connection	Condition	Specified condition
N-MU (S15-21) – MUT2 (N2-15)	Always	Below 1 Ω
N-MU (S15-21) – Body ground	Always	10 kΩ or higher

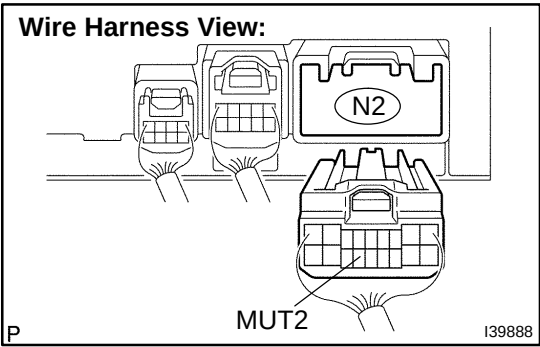
NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

3

INSPECT NAVIGATION ECU



- (a) Reconnect the stereo component amplifier assy connector.
- (b) Measure the voltage according to the value in the table below.

Standard:

Tester connection	Condition	Specification
MUT2 (N2-15) – Body ground	Power switch ON (ACC)	Above 3.5 V

NG

REPLACE STEREO COMPONENT AMPLIFIER ASSY (SEE PAGE 67-25)

OK

REPLACE NAVIGATION ECU (SEE PAGE 67-23)

SPEAKER CIRCUIT

CIRCUIT DESCRIPTION

The sound signal that has been amplified by the stereo component amplifier is sent to the speaker from the stereo component amplifier through this circuit.

As for the vehicle with a navigation system, the sound signal on the driver's side is sent to the navigation ECU from the stereo component amplifier.

If there is a short in this circuit, the stereo component amplifier assy detects it and stops output to the speaker. Thus sound can not be heard from the speaker even if there is no malfunction in the stereo component amplifier assy or speaker.

Built-in type amplifier:

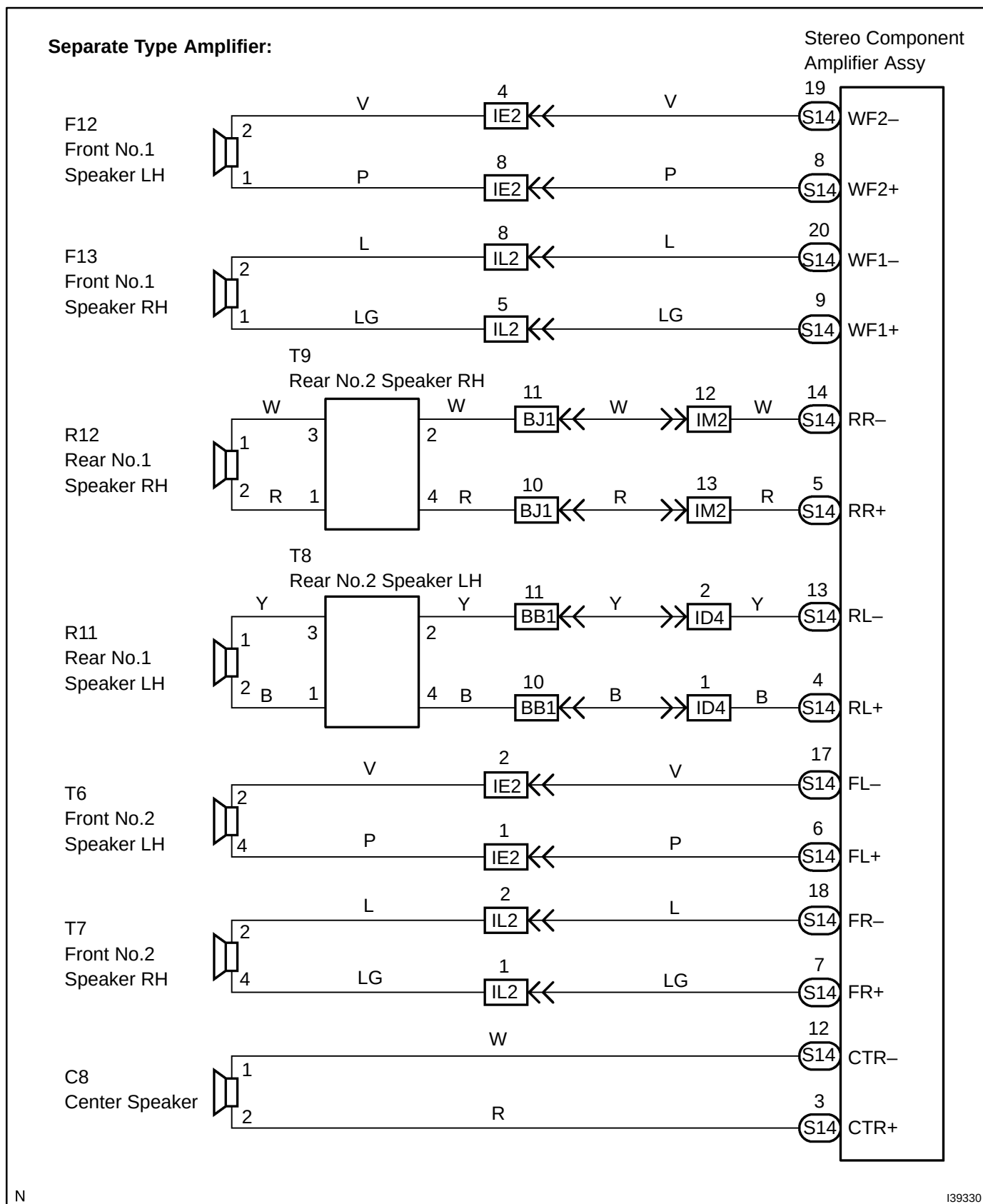
There are two circuits that detect a short circuit.

- When a short in the woofer speaker circuit is detected, sound output from only the woofer speaker circuit stops.
- When a short in the other circuits is detected, sound output from the circuits other than the woofer speaker circuit is stopped.

Separate type amplifier:

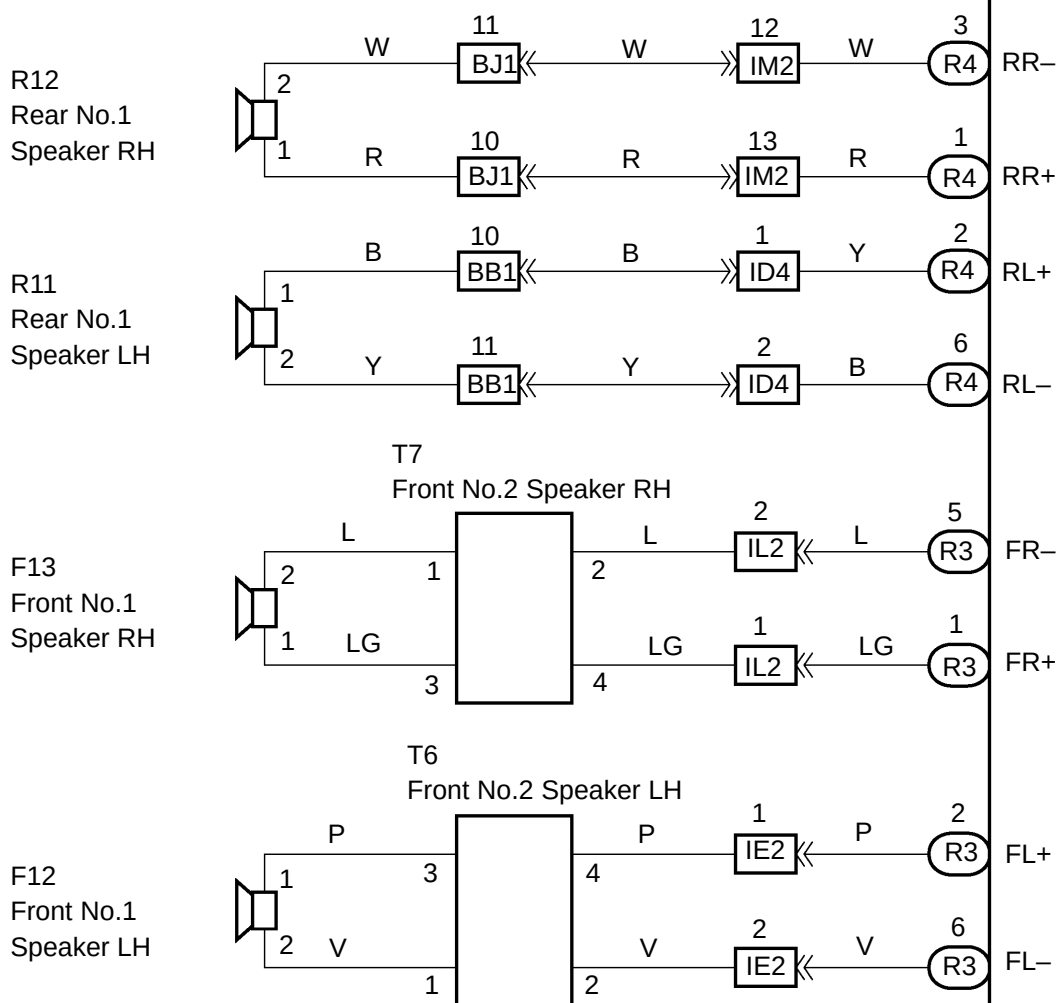
When a short in the speaker circuit is detected, all sound output is stopped.

WIRING DIAGRAM



Built-in Type Amplifier:

Radio Receiver Assy



C

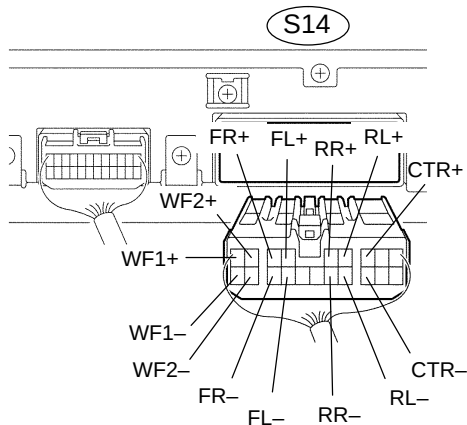
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INSPECTION PROCEDURE

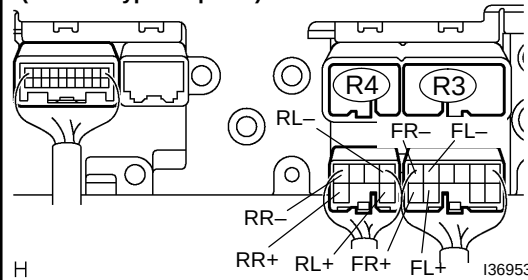
1 CHECK HARNESS AND CONNECTOR

**Stereo Component Amplifier Assy
(Separate Type Amplifier) Wire Harness View:**



I36910

**Radio Receiver Assy
(Built-in Type Amplifier) Wire Harness View:**



I36953

- (a) Disconnect the connectors shown in the illustration on the left from the stereo component amplifier assy and speakers.
- (b) Measure the resistance between the speaker and the stereo component amplifier assy or the radio receiver assy to check for an open circuit in the wire harness.

Standard:

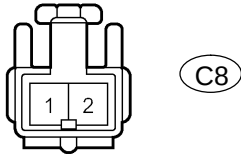
Below 1 Ω

- (c) Measure the resistance between the speaker and body ground to check for a short circuit in the wire harness.

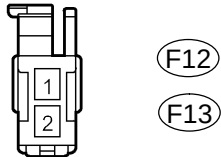
Standard:

10 k Ω or higher

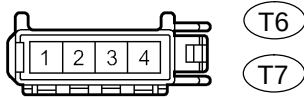
Center Speaker Assy (Wire Harness Side)
Connector Front View:



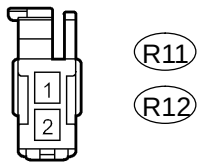
Front No.1 Speaker Assy (Wire Harness Side)
Connector Front View:



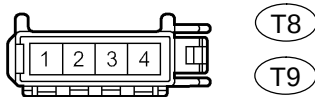
Front No.2 Speaker Assy (Wire Harness Side)
Connector Front View:



Rear No.1 Speaker Assy (Wire Harness Side)
Connector Front View:



Rear No.2 Speaker Assy (Wire Harness Side)
Connector Front View:



H

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REPAIR OR REPLACE HARNESS OR
CONNECTOR

OK

2 INSPECT FRONT NO.1 SPEAKER ASSY

- (a) Resistance check.
- (1) Measure the resistance between the terminals of the speaker.
- Standard:**
- Separate Type Amplifier: 1.8 to 2.6 Ω**
- Built-in Type Amplifier: APPROX. 4 Ω**

NG

REPLACE FRONT NO.1 SPEAKER ASSY
(SEE PAGE 67-8)

OK

3 INSPECT FRONT NO.2 SPEAKER ASSY

- (a) Check that malfunction disappears when another speaker in good condition is installed.

OK: Malfunction disappears.

HINT:

- Connect all the connectors to the speakers.
- When there is a possibility that either right or left front speaker is defective, inspect by interchanging the right one and the left one.

NG

**REPLACE FRONT NO.2 SPEAKER ASSY
(SEE PAGE 67-10)**

OK

4 INSPECT REAR NO.1 SPEAKER ASSY

- (a) Resistance check.

- (1) Measure the resistance between the terminals of the speaker.

Standard:

Separate Type Amplifier: APPROX. 2.6 Ω

Built-in Type Amplifier: APPROX. 4 Ω

NG

**REPLACE REAR NO.1 SPEAKER ASSY
(SEE PAGE 67-12)**

OK

5 CONFIRM MODEL

Result:

Separate Type Amplifier	A
Built-in Type Amplifier	B

B

**PROCEED TO NEXT CIRCUIT INSPECTION
SHOWN IN PROBLEM SYMPTOMS TABLE
(SEE PAGE 05-1778)**

A

6 INSPECT REAR NO.2 SPEAKER ASSY

- (a) Resistance check.

- (1) Measure the resistance between the terminals of the speaker.

Standard: APPROX. 4 Ω

NG

**REPLACE REAR NO.2 SPEAKER ASSY
(SEE PAGE 67-14)**

OK

7 INSPECT CENTER SPEAKER

(a) Resistance check.

(1) Measure the resistance between the terminals of the speaker.

Standard: 1.2 to 2.2 Ω

NG

**REPLACE CENTER SPEAKER
(SEE PAGE 67-11)**

OK

**PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE
(SEE PAGE 05-1778)**

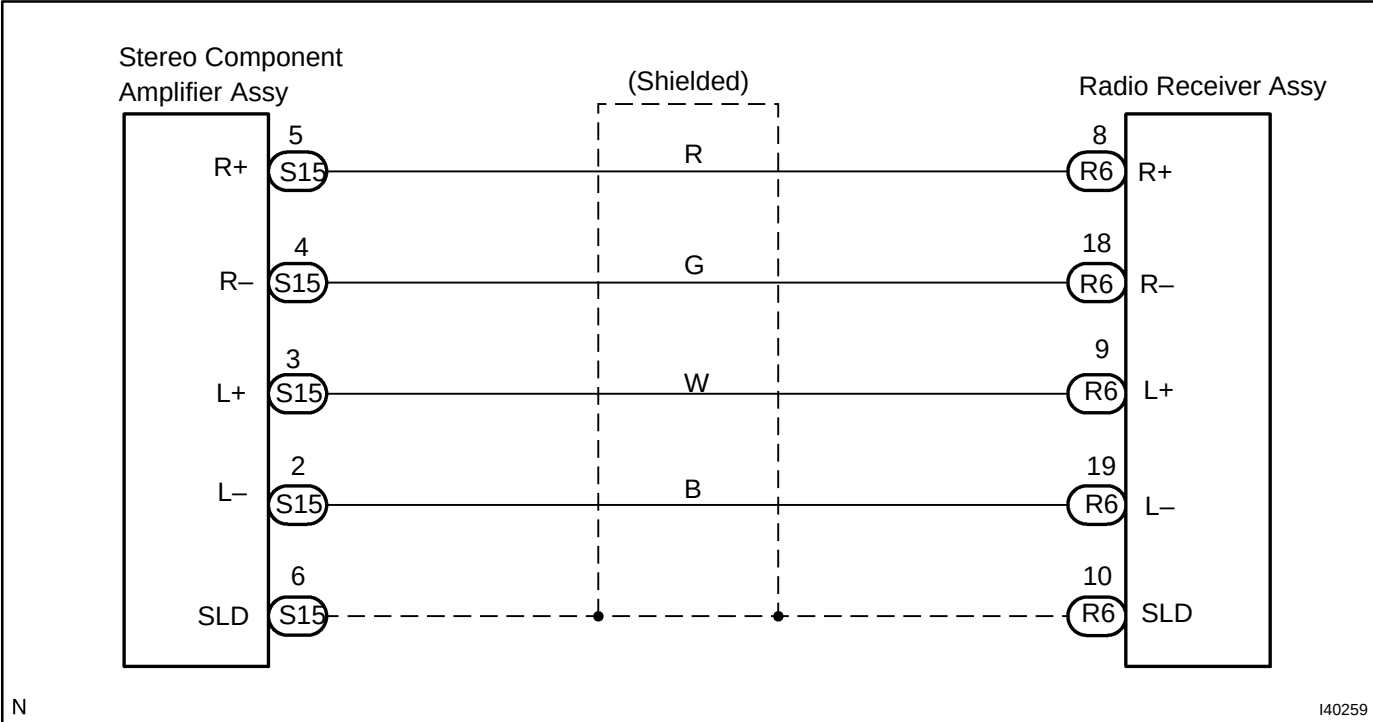
AMP SOUND SIGNAL CIRCUIT (RADIO RECEIVER ASSY – AMP)

CIRCUIT DESCRIPTION

The radio receiver assy sends a sound signal to the stereo component amplifier assy through this circuit. The sound signal that has been sent is amplified by the stereo component amplifier assy, and then sent to the speaker.

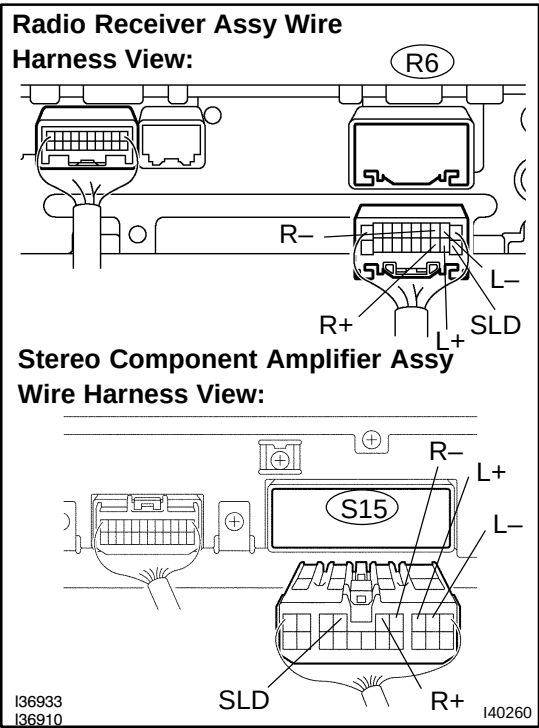
If there is an open or short in the circuit, sound can not be heard from the speaker even if there is no malfunction in the stereo component amplifier assy or speaker.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 CHECK HARNESS AND CONNECTOR (RADIO RECEIVER ASSY - STEREO COMPONENT AMPLIFIER ASSY)



- (a) Disconnect the radio receiver assy R6 connector and stereo component amplifier assy S15 connector.
- (b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester connection	Specified condition
L+ (S15-3) - L+ (R6-9)	Below 1 Ω
L- (S15-2) - L- (R6-19)	Below 1 Ω
R+ (S15-5) - R+ (R6-8)	Below 1 Ω
R- (S15-4) - R- (R6-18)	Below 1 Ω
L+ (S15-3) - Body ground	10 kΩ or higher
L- (S15-2) - Body ground	10 kΩ or higher
R+ (S15-5) - Body ground	10 kΩ or higher
R- (S15-4) - Body ground	10 kΩ or higher

NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

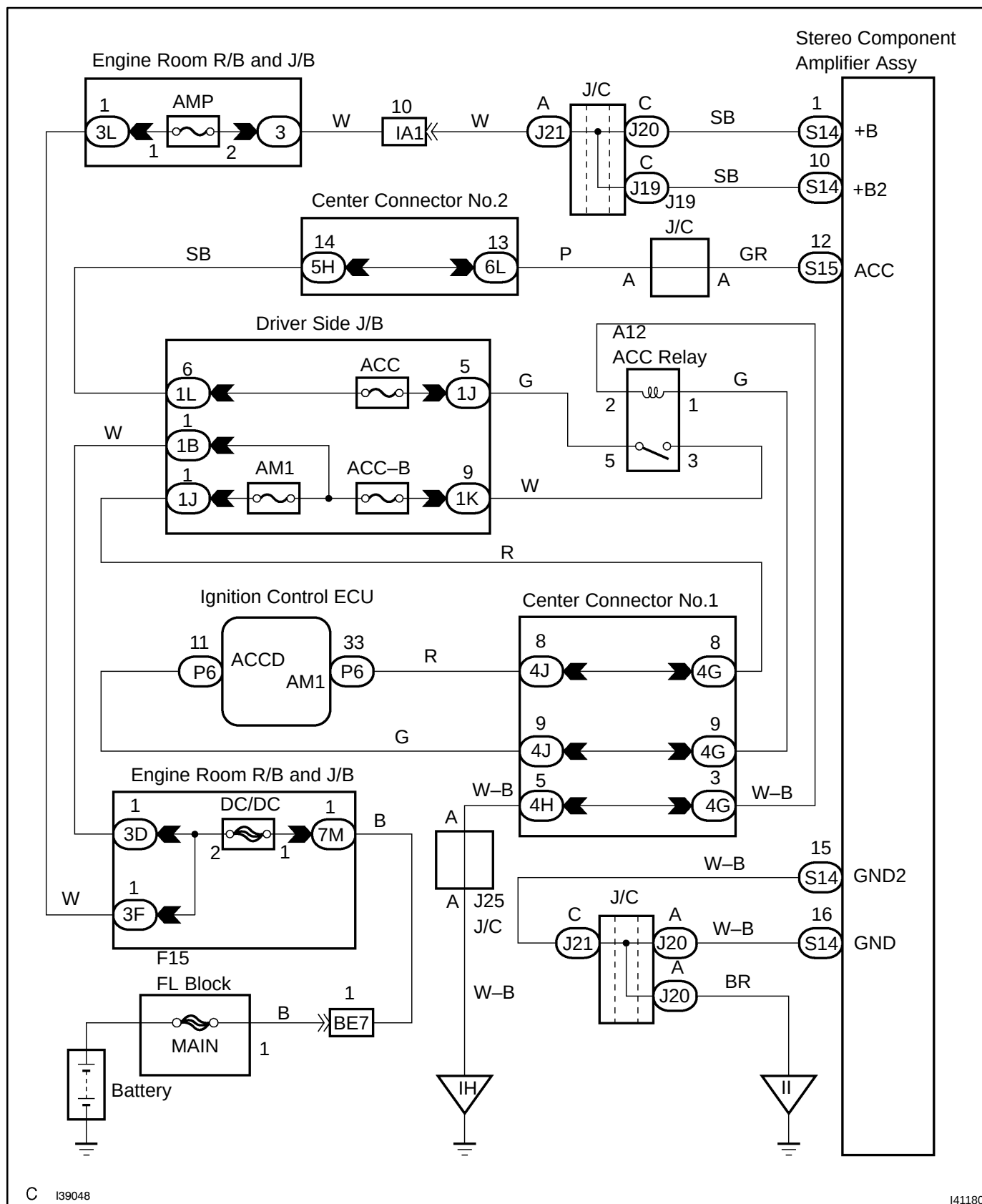
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (SEE PAGE 05-1778)

POWER SOURCE CIRCUIT (STEREO COMPONENT AMPLIFIER ASSY)

CIRCUIT DESCRIPTION

This circuit provides power to the stereo component amplifier assy.

WIRING DIAGRAM

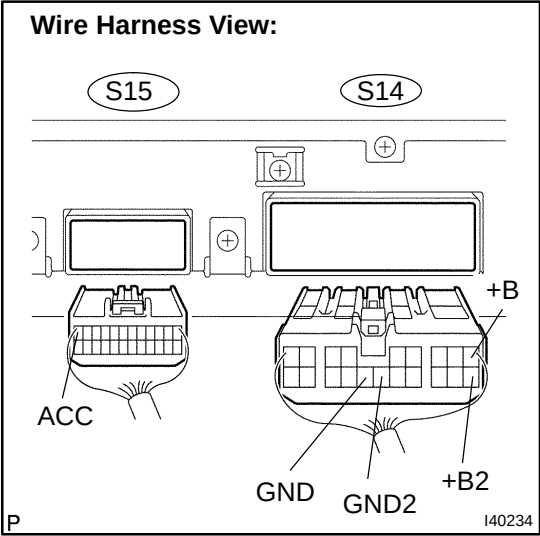


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INSPECTION PROCEDURE

1 INSPECT STEREO COMPONENT AMPLIFIER ASSY



- (a) Disconnect the stereo component amplifier assy S14 connector.
- (b) Measure the resistance according to the values in the table below.

Standard:

Tester connection	Condition	Specified condition
GND (S14-16) – Body ground	Always	Below 1 Ω
GND2 (S14-15) – Body ground	Always	Below 1 Ω

- (c) Disconnect the stereo component amplifier assy S15 connector.
- (d) Measure the voltage according to the values in the table below.

Standard:

Tester connection	Condition	Specified condition
+B (S14-1) – GND (S14-16)	Always	10 to 14 V
+B2 (S14-10) – GND (S14-16)	Always	10 to 14 V
ACC (S15-12) – GND (S15-16)	Power switch ON (ACC)	10 to 14 V

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR (STEREO COMPONENT AMPLIFIER ASSY – BATTERY OR BODY GROUND)

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE OR DIAGNOSTIC TROUBLE CODE CHART (SEE PAGE 05-1778, 05-1785)

AVC-LAN CIRCUIT (RADIO RECEIVER ASSY – AMP)

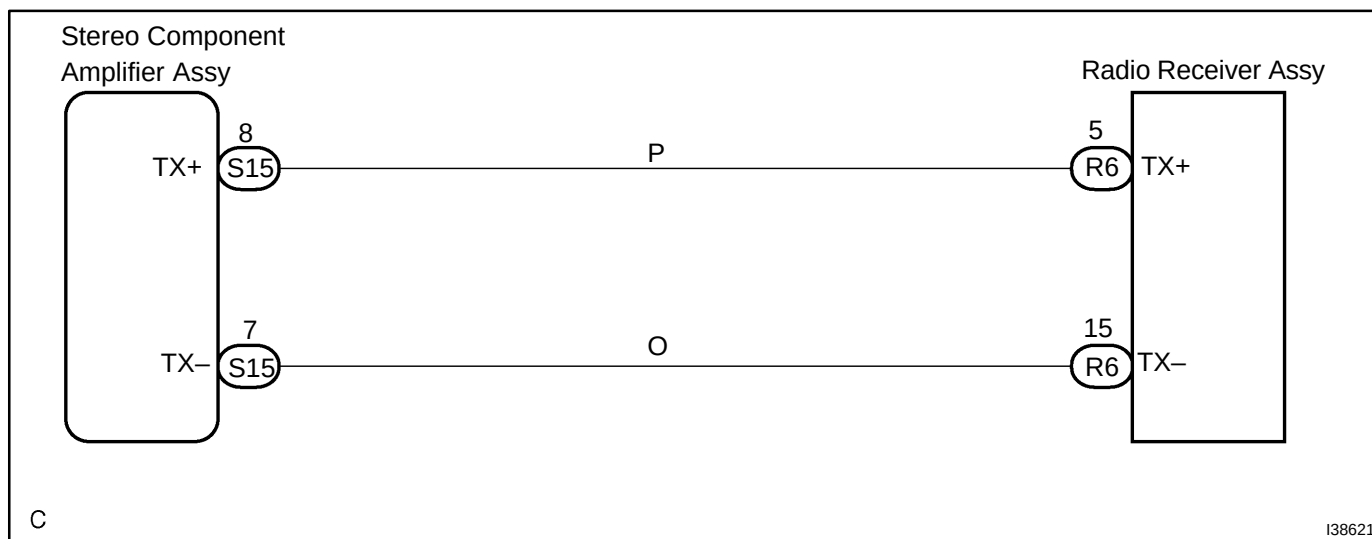
CIRCUIT DESCRIPTION

Each unit of audio system connected to the AVC-LAN (communication bus) transfers the signal of each switch by communication.

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

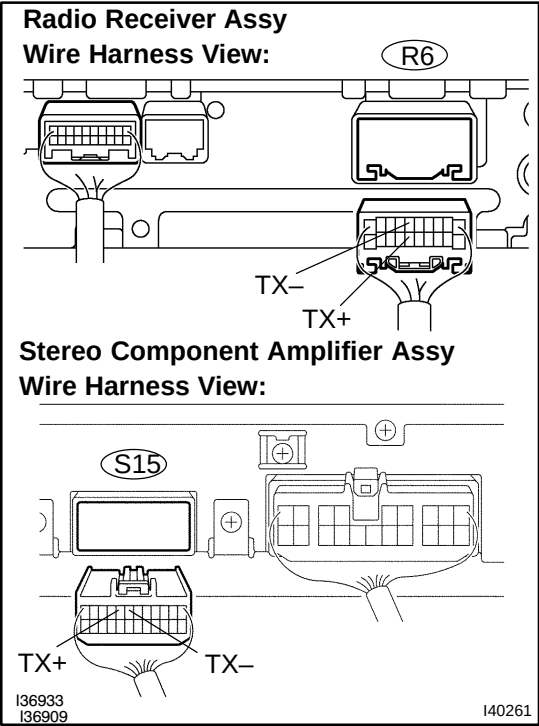
In this AVC-LAN, the radio receiver assy becomes the master of the communication, and the radio receiver assy has resistance necessary for transmitting the communication.

WIRING DIAGRAM



INSPECTION PROCEDURE

1 CHECK HARNESS AND CONNECTOR (RADIO RECEIVER ASSY - STEREO COMPONENT AMPLIFIER ASSY)



- (a) Disconnect the radio receiver assy R6 connector and stereo component amplifier assy S15 connector.
- (b) Measure the resistance according to the values in the table below.

Standard:

Tester connection	Specified condition
TX+ (S15-8) - TX+ (R6-5)	Below 1 Ω
TX- (S15-7) - TX- (R6-15)	Below 1 Ω
TX+ (S15-8) - Body ground	10 k Ω or higher
TX- (S15-7) - Body ground	10 k Ω or higher

NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN DIAGNOSTIC TROUBLE CODE CHART (SEE PAGE 05-1778)

CD CANNOT BE EJECTED

INSPECTION PROCEDURE

1 PRESS "EJECT" AND CHECK OPERATION

(a) Press "EJECT" and check the operation.

- (1) Press the CD EJECT switch of the radio receiver assembly for 2 seconds or more to see if the CD is ejected.

OK: CD is ejected.

HINT:

If the CD is not ejected, bring the vehicle in for repair.

Do not attempt to remove it by force.

NG

REPLACE RADIO RECEIVER ASSY (SEE PAGE 67-5)

OK

2 REPLACE CD WITH ANOTHER AND RECHECK

(a) Replace the CD with another and recheck.

- (1) Check the installation condition of the radio receiver assembly.

OK: Installed properly.

NG

REPLACE RADIO RECEIVER ASSY (SEE PAGE 67-5)

OK

CD IS FAULTY

CD CANNOT BE INSERTED OR IS EJECTED RIGHT AFTER INSERTION

INSPECTION PROCEDURE

1 CHECK IF A NORMAL CD IS INSERTED

(a) Check if a normal CD is inserted.

- (1) Make sure that the CD is a normal audio CD, and that there is no deformation, flaw, stain, burr or other defects on the CD.

OK: Normal audio CD is installed.

HINT:

- Translucent or oddly-shaped CD cannot be played.
- Computer CD-ROMs (even those with music) and CD-R discs cannot be played.
- Playing an 8-cm CD does not require an adapter.

NG

CD IS FAULTY

OK

2 CHECK IF A CD IS INSERTED PROPERLY

(a) Check if a CD is inserted properly.

- (1) Check whether or not the CD is inserted upside down.

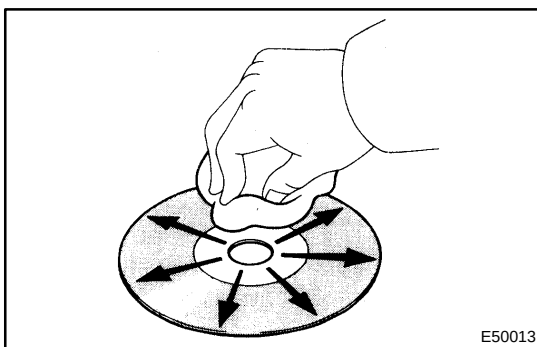
OK: Not upside down.

NG

SET DISC CORRECTLY

OK

3 DISC CLEANING



(a) Disc cleaning

- (1) If the disc gets dirty, clean the disc by wiping the surface from the center to outside in the radial directions with a soft cloth.

NOTICE:

Do not use a conventional record cleaner or anti-static preservative.

OK: Malfunction disappears.

OK

DISC IS DIRTY

NG

4 REPLACE CD WITH ANOTHER AND RECHECK

- (a) Replace the CD with another and recheck.
(1) Replace the CD with another normal one to see if the same trouble occurs again.
OK: Malfunction disappears.

NG**REPLACE RADIO RECEIVER ASSY (SEE PAGE 67-5)****OK****CD IS FAULTY**

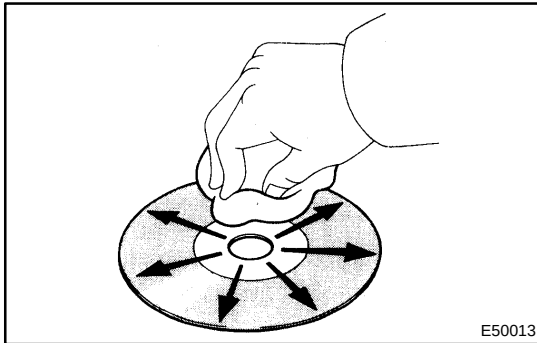
CD SOUND SKIPS

HINT:

- The sound may skip when driving on an unpaved road.
- Sudden temperature changes in the cabin will cause condensation inside the CD player and prevent it from playing.

INSPECTION PROCEDURE

1 DISC CLEANING



(a) Disc cleaning

- (1) If the disc gets dirty, clean the disc by wiping the surface from the center to outside in a radial direction with a soft cloth.

NOTICE:

Do not use a conventional record cleaner or anti-static preservative.

OK: Malfunction disappears.

OK

DISC IS DIRTY

NG

2 REPLACE CD WITH ANOTHER AND RECHECK

(a) Replace the CD with another and recheck.

- (1) Replace the CD with another normal one to see if the same trouble occurs again.

OK: Malfunction disappears.

OK

CD IS FAULTY

NG

3 CHECK OF RADIO RECEIVER ASSEMBLY INSTALLATION

(a) Check the radio receiver assembly installation condition.

- (1) Check that the radio receiver assembly is installed properly.

OK: Installed properly.

NG

INSTALL THE RADIO RECEIVER ASSEMBLY PROPERLY

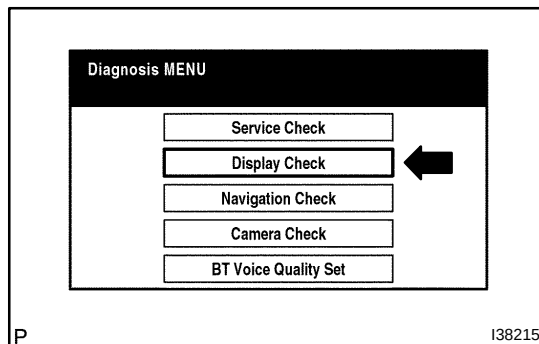
OK

CONDENSATION DUE TO TEMPERATURE CHANGE (LEAVE IT AS IT IS FOR A WHILE BEFORE USING)

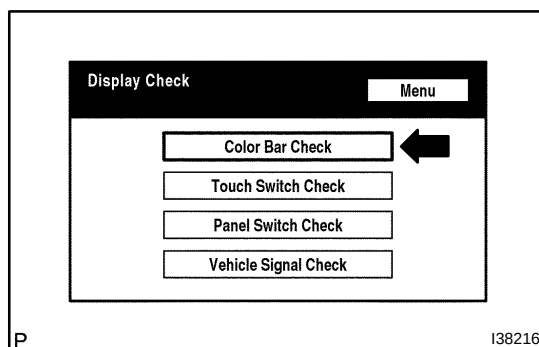
DISPLAY CHECK MODE (COLOR BAR CHECK)

HINT:

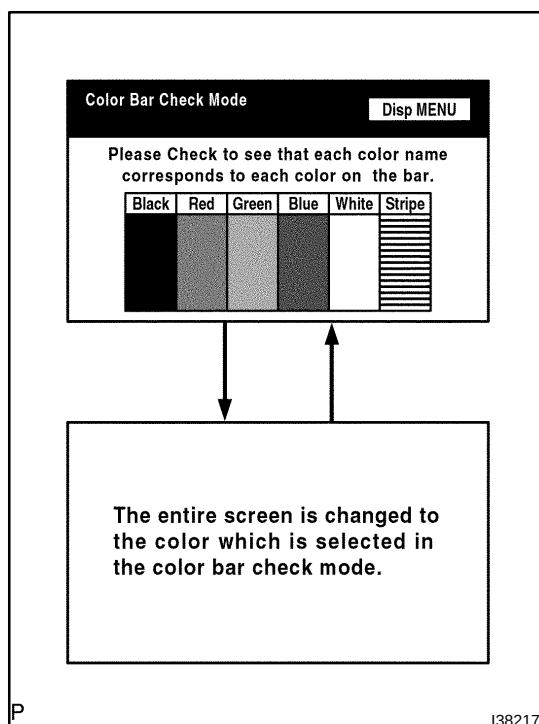
- This mode checks the color display on the multi-display.
 - Illustrations may differ from the actual vehicle depending on the device settings and options. Therefore, some detailed areas may not be shown exactly the same as on the actual vehicle.
1. Enter diagnostic mode (see page [05-1763](#)).



2. Select "Display Check" from the "Diagnosis MENU" screen.



3. Select "Color Bar Check" from the "Display Check" screen.



4. Select a color bar from the "Color Bar Check Mode" screen.

HINT:

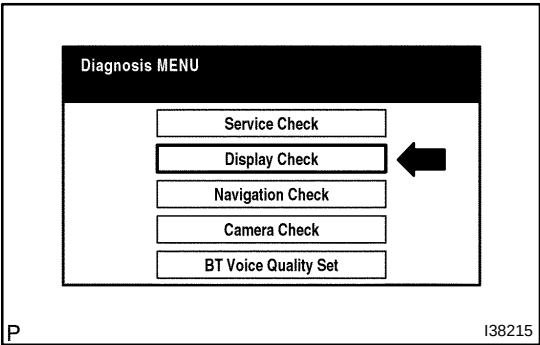
- The entire screen turns to the color or stripe selected.
- Touching the display will return to the "Color Bar Check" screen.

DISPLAY CHECK MODE (PANEL SWITCH CHECK)

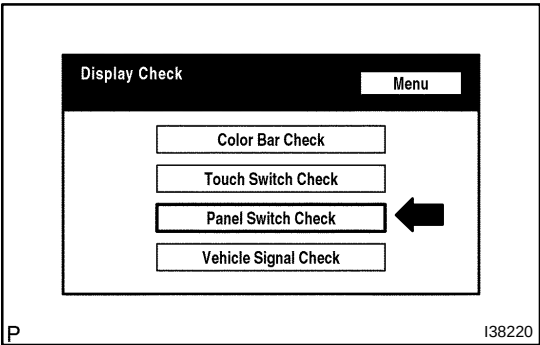
HINT:

- This mode checks the panel switch operation response on the multi-display.
- Illustrations may differ from the actual vehicle depending on the device settings and options. Therefore, some detailed areas may not be shown exactly the same as on the actual vehicle.

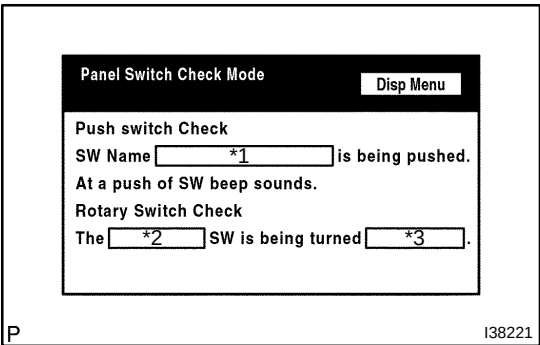
1. Enter diagnostic mode (see page 05-1763).



2. Select "Display Check" from the "Diagnosis Menu" screen.



3. Select "Panel Switch Check" from the "Diagnosis MENU ("Display Check")" display.



4. Operate each switch and check that the switch name and condition are correctly displayed.

HINT:

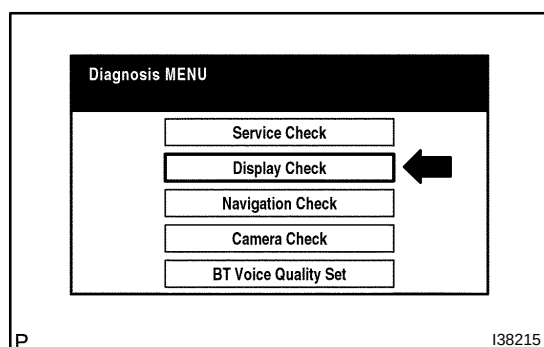
- Pressing the "INFO" switch for 3 seconds will exit the diagnostic mode.

Display	Contents
Push switch name/*1	• Name of the pressed switch is displayed. • If more than one switch is pressed, "MULTIPLE" is displayed.
Rotary switch name/*2	Name of the rotary switch is displayed.
Rotary switch direction/*3	Direction of the rotary switch is rotated.

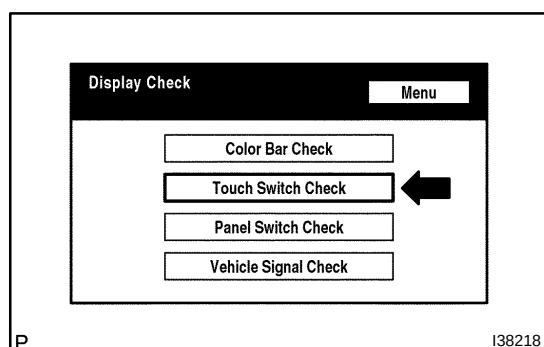
DISPLAY CHECK MODE (TOUCH SWITCH CHECK)

HINT:

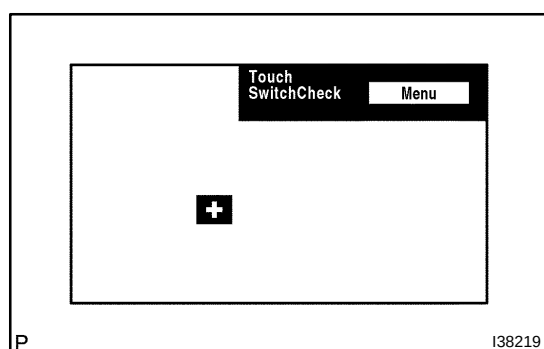
- This mode checks the touch switch operation condition on the multi-display.
 - Illustrations may differ from the actual vehicle depending on the device settings and options. Therefore, some detailed areas may not be shown exactly the same as on the actual vehicle.
1. Enter diagnostic mode (see page [05-1763](#)).



2. Select "Display Check" from the "Diagnosis MENU" screen.



3. Select "Touch Switch Check" from the "Display Check" screen.



4. Touch the display anywhere in the open area to perform the check when the "Touch Switch Check" screen is displayed.

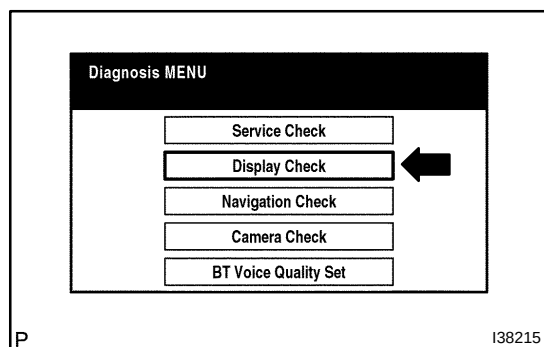
HINT:

- A "+" mark is displayed where the display is touched.
- The "+" mark remains on the display even after the finger is removed.

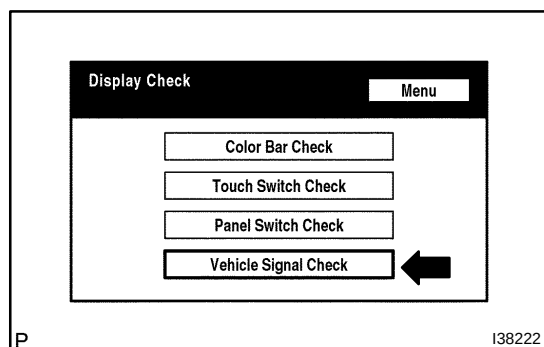
DISPLAY CHECK MODE (VEHICLE SIGNAL CHECK)

HINT:

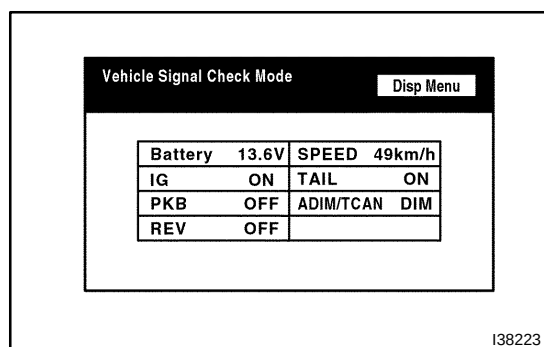
- This mode checks the vehicle signal status input to the multi-display.
 - Illustrations may differ from the actual vehicle depending on the device settings and options. Therefore, some detailed areas may not be shown exactly the same as on the actual vehicle.
1. Enter diagnostic mode (see page 05-1763).



2. Select "Display Check" from the "Diagnosis MENU" screen.



3. Select "Vehicle Signal Check" from the "Diagnosis MENU" screen.



4. When the "Vehicle Signal Check Mode" screen is displayed, check all the vehicle signal conditions.

HINT:

- Only conditions having inputs are displayed.
- This screen is updated once per second when input signals to the vehicle are changed.

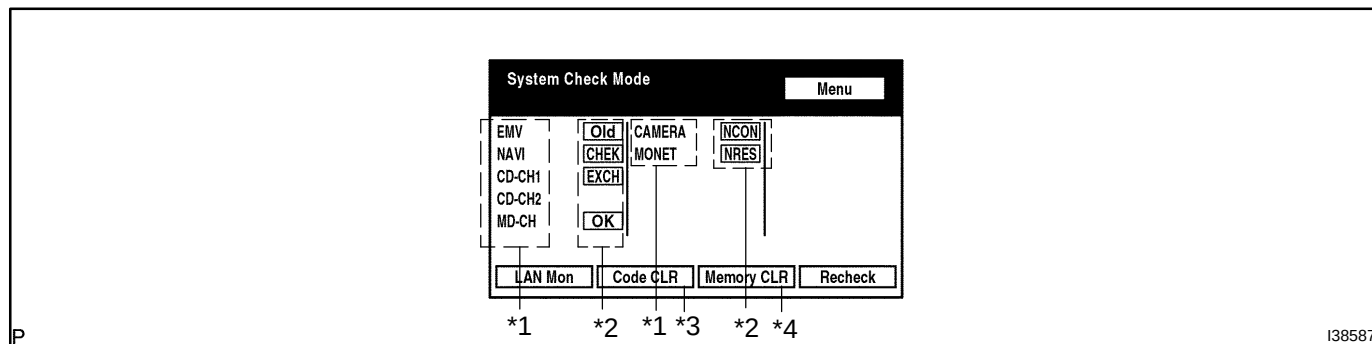
DIAGNOSIS DISPLAY DETAILED DESCRIPTION

HINT:

- This section contains a detailed description of displays within diagnostic mode.
- Illustrations may differ from the actual vehicle depending on the device settings and options. Therefore, some detailed areas may not be shown exactly the same as on the actual vehicle.

1. Service Check (System Check)

(a) System Check Mode Display



Device Names and hardware Address/*1

HINT:

- Registered device names are displayed below.
- If a device name is unknown to the system, its physical address is shown instead.

Address No.	Name	Address No.	Name
110	EMV	120	AVX
128	1DIN TV	140	AVN
144	G-BOOK	178	NAVI
17C	MONET	190	AUDIO H/U
1AC	CAMERA-C	1B0	Rr-TV
1C0	Rr-CONT	1C2	TV-TUNER2
1C2	PANEL	1C6	G/W
1C8	FM-M-LCD	1D8	CONT-SW
1EC	Body	1F0	RADIO TUNER
1F1	XM	1F2	SIRIUS
230	TV-TUNER	240	CD-CH2
250	DVD-CH	280	CAMERA
360	CD-CH1	3A0	MD-CH
17D	TEL	440	DSP-AMP
530	ETC	5C8	MAYDAY
1A0	DVD-P	1D6	CLOCK
1F4	RSA	1F6	RSE
480	AMP	-	-

Check Result/*2

HINT:

Result codes for all devices are shown below.

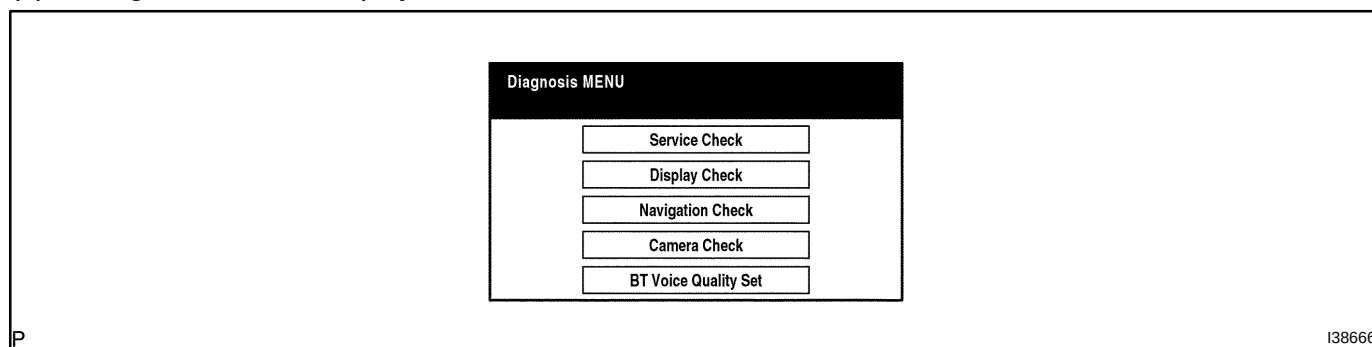
Result	Meaning	Action
OK	The device did not respond with a DTC (excluding communication DTCs from the AVC-LAN)	–
EXCH	The device responds with a "replace"-type DTC	Look up the DTC in "Unit Check Mode" and replace the device.
CHEK	The device responds with a "check"-type DTC	Look up the DTC in "Unit Check Mode".
NCON	The device was previously present, but does not respond in diagnostic mode.	1. Check power supply wire harness of the device. 2. Check the AVC-LAN of the device.
Old	The device responds with an "old"-type DTC	Look up the DTC in "Unit Check Mode".
NRES	The device responds in diagnostic mode, but gives no DTC information.	1. Check power supply wire harness of the device. 2. Check the AVC-LAN of the device.

Code Clear/*3

Present DTCs are cleared.

Memory Clear/*4

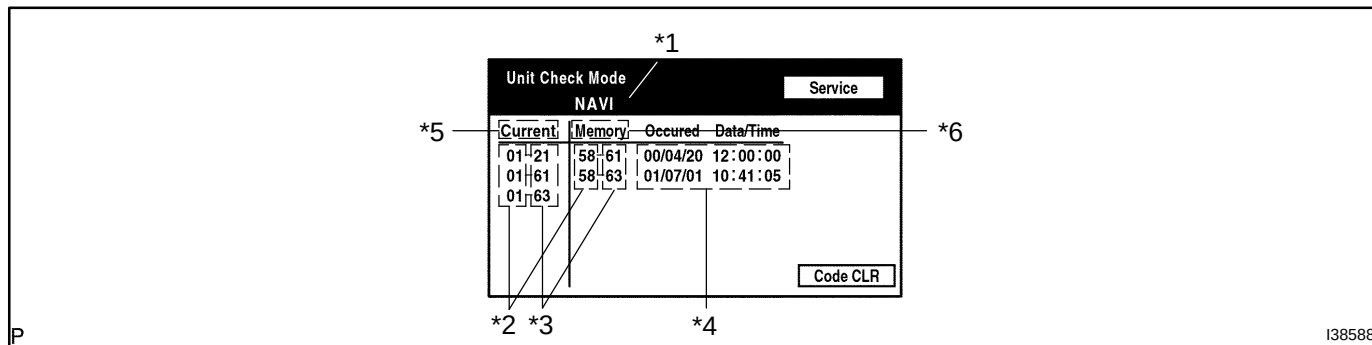
Present and past DTCs and registered connected device names are cleared.

(b) Diagnosis MENU Display

HINT:

Each item is grayed out or not displayed based on the device settings.

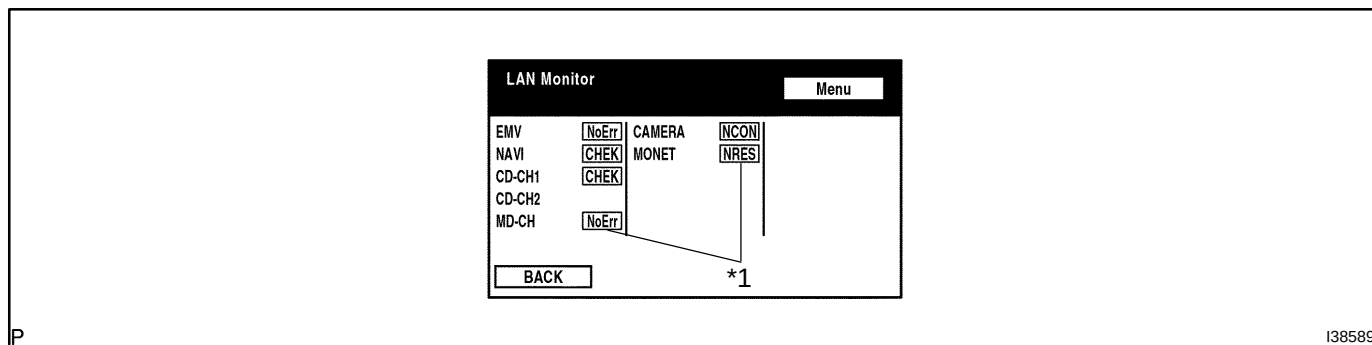
(c) Unit Check Mode Screen



Screen Description

Display	Contents
Device name/*1	Target Device
Segment/*2	Target Device Logical address
DTC/*3	DTC (Diagnostic Trouble Code)
Time stamp/*4	The time and date of past DTCs are displayed. (The year is displayed in 2 digit format.)
Present Code/*5	The DTC output at the service check is displayed.
Past Code/*6	Diagnostic memory results and recorded DTCs are displayed.

(d) LAN Monitor Original Screen



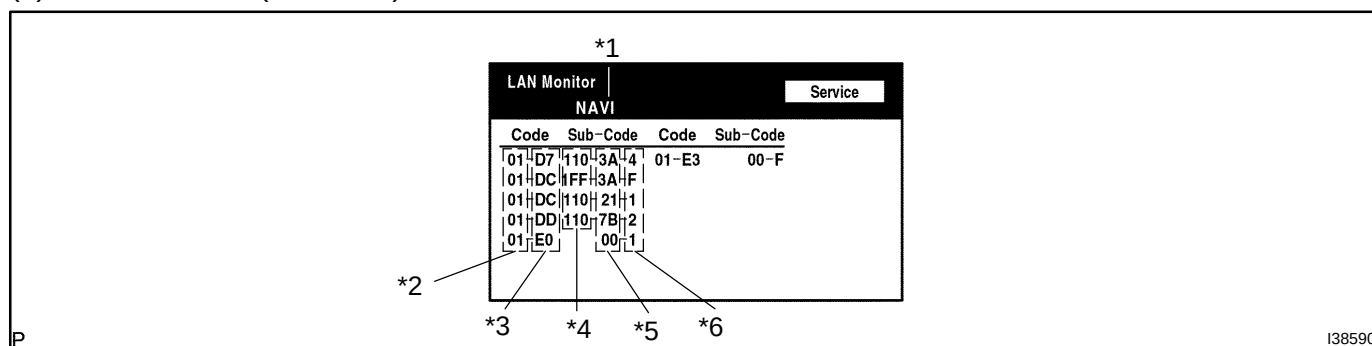
Check result

HINT:

Check results of all the devices are displayed.

Result	Meaning	Action
No Err (OK)	There are no communication DTCs.	–
CHEK	The device responds with a "check"-type DTC.	Look up the DTC in "Unit Check Mode".
NCON	The device was previously present, but does not respond in diagnostic mode.	1. Check power supply wire harness of the device. 2. Check the AVC-LAN of the device.
Old	The device responded with an old-type DTC.	Look up the DTC in "Unit Check Mode".
NRES	Device responds in diagnostic mode, but gives no DTC information.	1. Check power supply wire harness of the device. 2. Check the AVC-LAN of the device.

(e) LAN Monitor (Individual) Screen

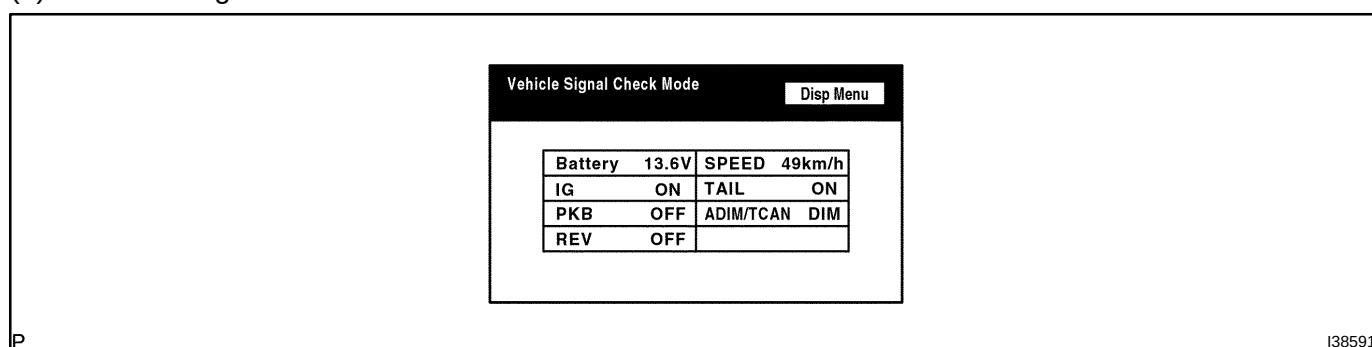


Screen Description

Display	Contents
Device name/*1	Target device
Segment/*2	Target logical address
DTC/*3	DTC (Diagnostic Trouble Code)
Sub-Code (device address)/*4	Physical address stored with DTC. (If there is no address, nothing is displayed.)
Connection check No./*5	Connection check number stored with DTC.
DTC occurrence/*6	Number of times the same DTC has been recorded.

2. DISPLAY CHECK

(a) Vehicle Signal Check Mode Screen



Screen Description

Name	Contents
Battery	Battery voltage is displayed.
PKB	Parking brake ON/OFF state is displayed.
REV	Reverse signal ON/OFF state is displayed.
IG	IG switch ON/OFF state is displayed.
ADIM/TCAN	Brightness state DIM (with)/ BRIGHT (without) is displayed.
SPEED	The vehicle speed, displayed in Km/h.
TAIL	TAIL signal (Head lamp dimmer switch) ON/OFF state is displayed.

HINT:

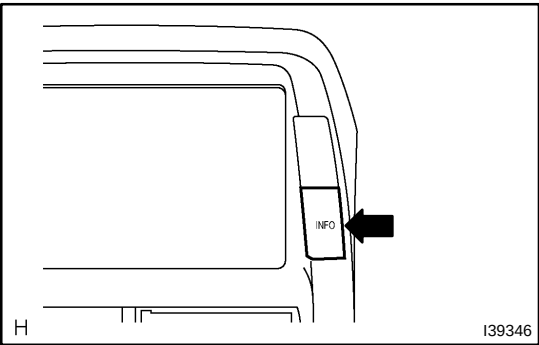
- Only items sending a vehicle signal will be displayed.
- This screen is updated once per second when input signals to the vehicle are changed.

DIAGNOSTIC START-UP/FINISH

HINT:

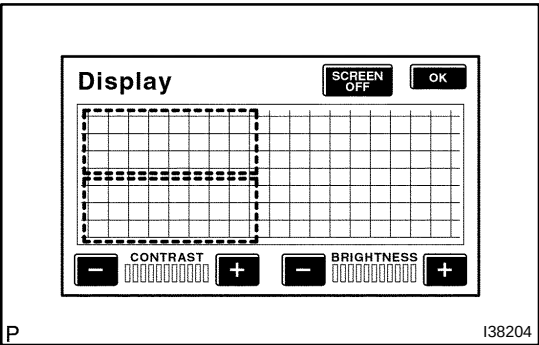
- Illustrations may differ from the actual vehicle depending on the device settings and options. Therefore, some detailed areas may not be shown exactly the same as on the actual vehicle.
- After the power switch is ON (ACC), check that the display is displayed before starting the diagnostic mode. Otherwise, some items cannot be checked.

1. There are 2 methods to start diagnostic mode. Start the mode by using one of them.



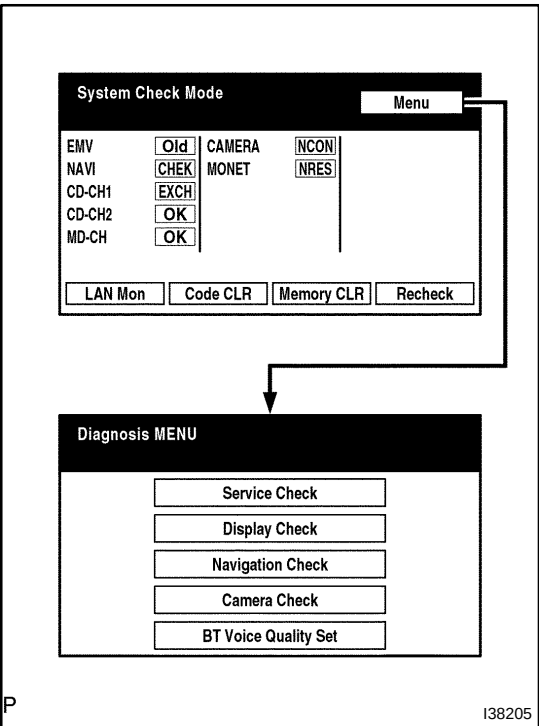
2. Method 1

- (a) Start the HV system.
- (b) While pressing and holding "INFO" switch, operate light control switch, OFF → TAIL → OFF → TAIL → OFF → TAIL → OFF.
- (c) The diagnostic mode starts and the service check screen ("System Check Mode") will be displayed. Service inspection starts automatically and the result will be displayed.



3. Method 2

- (a) Start the HV system.
- (b) Switch to the "Display Check" screen.
- (c) From the display adjustment screen, touch the corners of the screen in the following order: upper left → lower left → upper left → lower left → upper left → lower left.
- (d) The diagnostic mode starts and "Service Check" screen will be displayed. Service inspection starts automatically and the result will be displayed.



5. There are 2 methods to exit. Use one of them.

- (a) Turn the power switch off.
- (b) Press the "INFO" switch for 3 seconds.

ILLUMINATION CIRCUIT

CIRCUIT DESCRIPTION

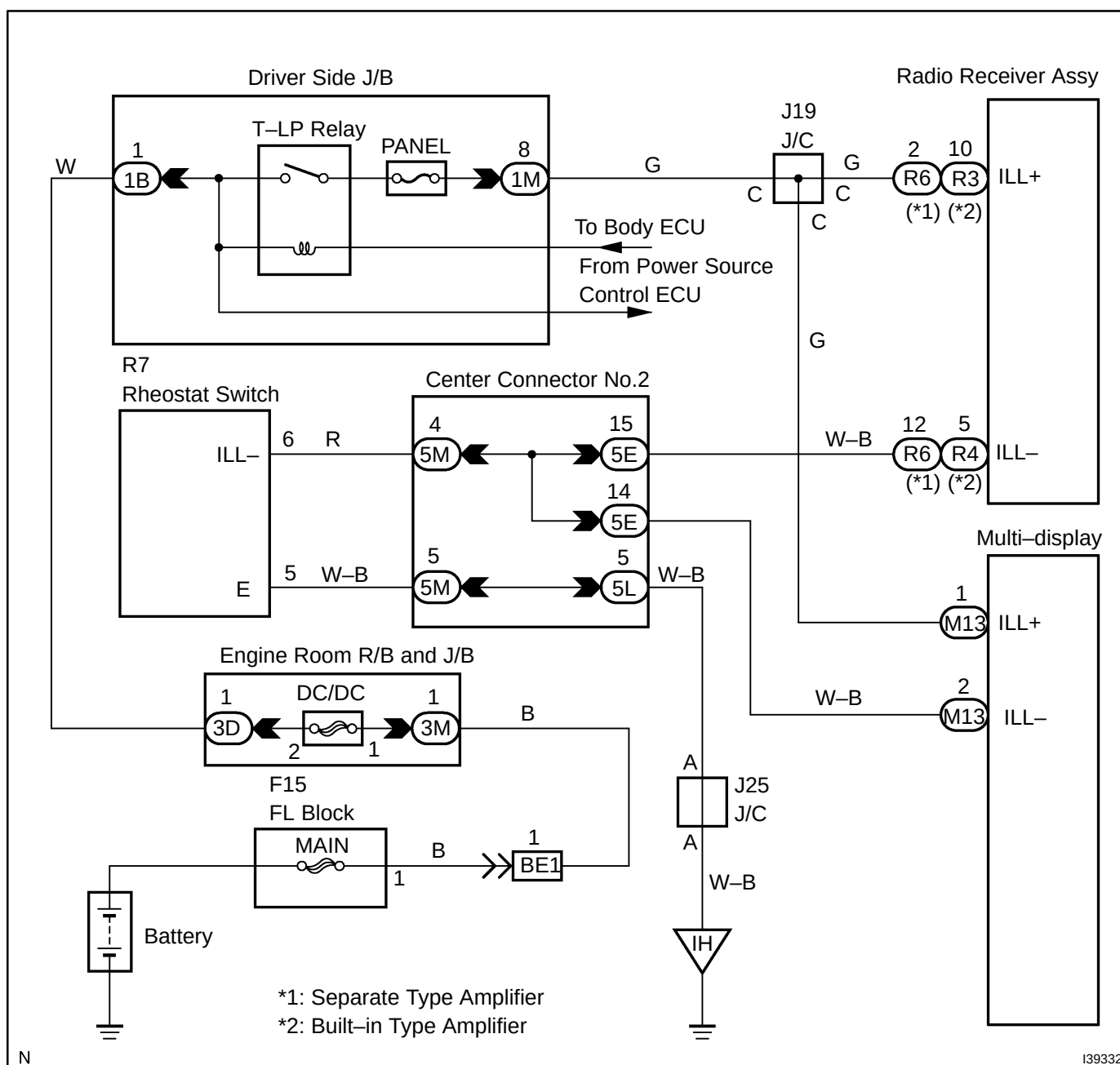
When the light control switch is turned to TAIL or HEAD position, the T-LP relay activates and power is supplied to the radio receiver assy and the multi-display panel illumination. The body ECU determines the surrounding illumination intensity according to the illumination intensity detected by the automatic light control sensor and activates the T-LP relay, allowing power to be supplied to the radio receiver assy and the multi-display panel illumination.

Illumination intensity adjustment for the radio receiver assy and multi-display panel illumination is performed with the rheostat switch.

HINT:

If a problem exists in the automatic light control sensor, DTC B1244 is output.

WIRING DIAGRAM



INSPECTION PROCEDURE

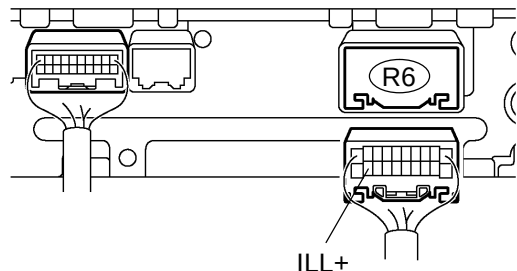
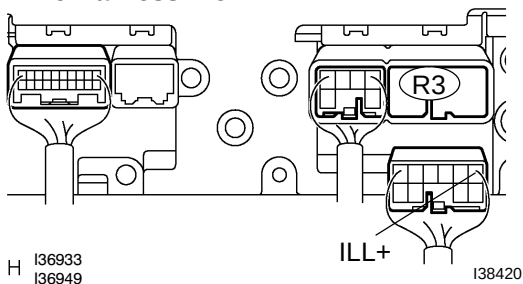
1 CHECK CONDITION

(a) Check all components with illumination malfunctions.

Components with malfunction	Go to step
Radio receiver assy or/and multi-display	A
All illumination (Radio receiver assy, multi-display combination meter and hazard warning switch)	B

HINT:

If all the illuminations have malfunctions, check the rheostat switch.

B**GO TO COMBINATION METER SYSTEM
(SEE PAGE 05-1983)****A****2 CHECK HARNESS AND CONNECTOR (COMPONENTS WITH MALFUNCTION – BATTERY)****Separate Type Amplifier****Wire Harness View:****Built-in Type Amplifier****Wire Harness View:**H I36933
I36949

I38420

(a) RADIO RECEIVER ASSY

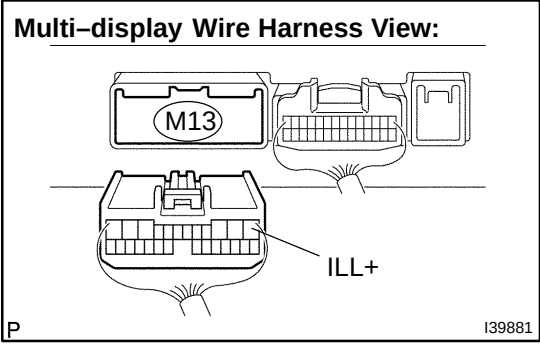
- (1) Disconnect the radio receiver assy R6 or R3 connector.
- (2) Measure the voltage according to the values in the table below.

Standard:

Tester connection	Condition	Specified condition
ILL+ (R6-2) – Body ground *1	Light control switch TAIL or HEAD	10 to 14 V
ILL+ (R3-10) – Body ground *2	Light control switch TAIL or HEAD	10 to 14 V

*1: Separate Type Amplifier

*2: Built-in Type Amplifier



- (b) MULTI-DISPLAY
- (1) Disconnect the multi-display M13 connector.
 - (2) Measure the voltage according to the values in the table below.

Standard:

Tester connection	Condition	Specified condition
ILL+ (M13-1) – Body ground	Light control switch TAIL or HEAD	10 to 14 V

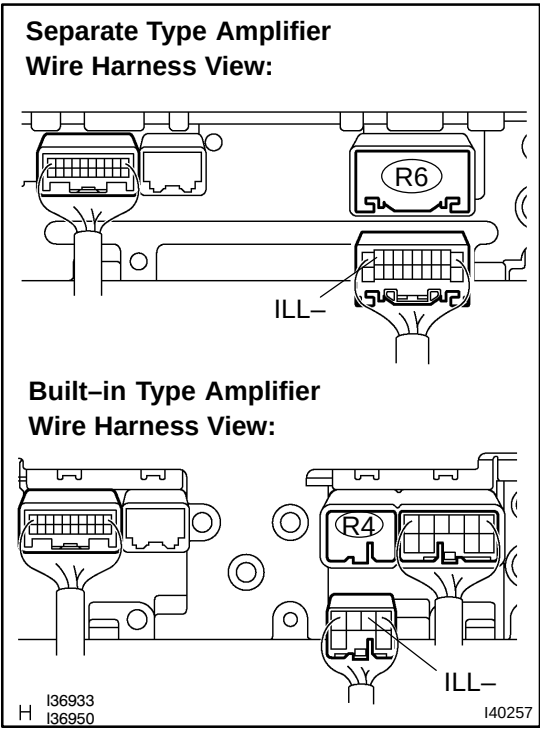
NG

REPAIR OR CONNECTOR

REPLACE HARNESS OR

OK

3 CHECK HARNESS AND CONNECTOR (COMPONENTS WITH MALFUNCTION – RHEOSAT SWITCH)

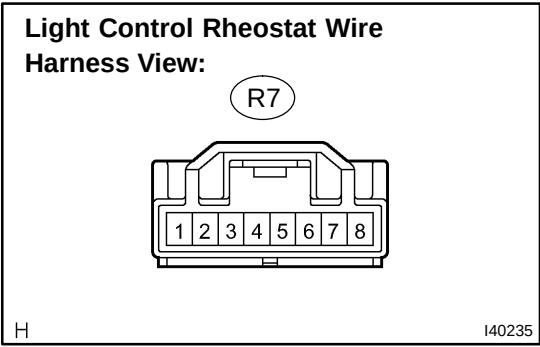


- (a) RADIO RECEIVER ASSY
- (1) Disconnect the radio receiver assy R4 or R6 connector and rheostat switch R7 connector.
 - (2) Measure the resistance according to the values in the table below.

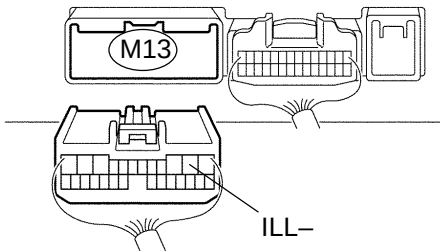
Standard:

Tester connection	Condition	Specified condition
ILL– (R6-12) – ILL– (R7-6) *1	Always	Below 1 Ω
ILL– (R4-5) – ILL– (R7-6) *2	Always	Below 1 Ω

*1: Separate Type Amplifier
*2: Built-in Type Amplifier



Multi-display Wire Harness View:



P

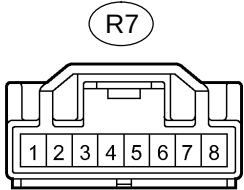
I39881

- (b) MULTI-DISPLAY
- (1) Disconnect the rheostat switch R7 connector.
 - (2) Measure the resistance according to the values in the table below.

Standard:

Tester connection	Condition	Specified condition
ILL- (M13-2) – ILL- (R7-6)	Always	Below 1 Ω

Light Control Rheostat Wire Harness View:



H

I40235

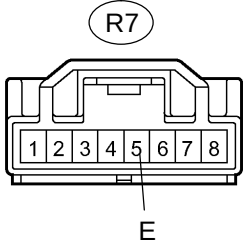
NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

4 CHECK HARNESS AND CONNECTOR (RHEOSTAT SWITCH – BODY GROUND)

Light Control Rheostat Wire Harness View:



H

I40235

- (a) Measure the resistance according to the values in the table below.

Standard:

Tester connection	Condition	Specified condition
E (R7-5) – Body ground	Always	Below 1 Ω

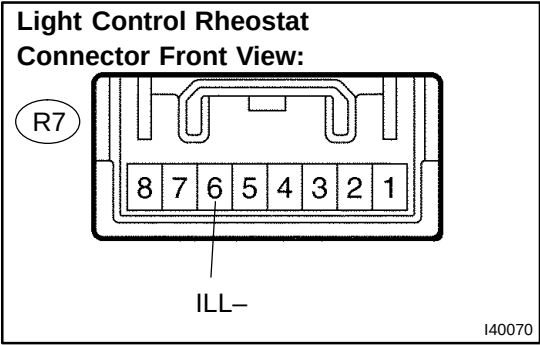
NG

REPAIR OR REPLACE HARNESS OR CONNECTOR (RHEOSTAT SWITCH – BODY GROUND)

OK

5

INSPECT LIGHT CONTROL RHEOSTAT



- (a) Reconnect the connectors.
- (b) Measure the voltage according to the values in the table below.

Standard:

Tester connection	Condition	Specified condition
ILL- (R7-6) – Body ground	Light control rheostat is turned volume up → volume down	Pulse generation (see waveform 1)

HINT:

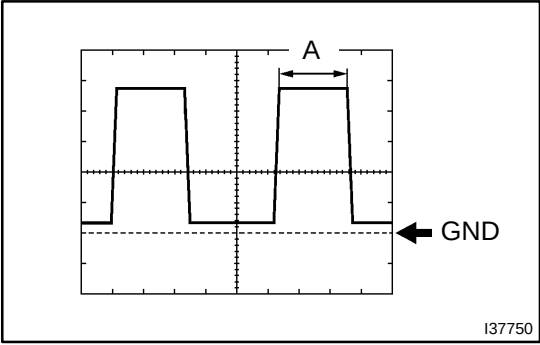
Waveform 1: Inspection using oscilloscope.

Standard:

Item	Condition
Tool setting	2 V/DIV, 1 ms/DIV
Vehicle condition	Light control switch TAIL or HEAD

HINT:

Duty ratio changes as illumination becomes darker ("A" becomes longer).



NG

REPLACE LIGHT CONTROL RHEOSTAT

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE
(SEE PAGE 05-1778)

IDENTIFICATION OF NOISE SOURCE

1. RADIO WAVE BAND

The radio wave bands used in radio broadcasting are as follows.

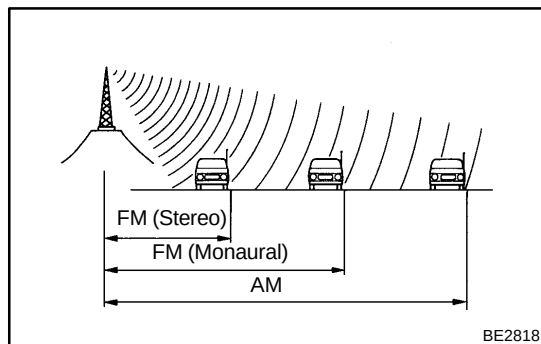
Frequency	30 kHz	300 kHz	3 MHz	30 MHz	300 MHz
Designation	LF	MF	HF	VHF	
Radio wave		AM		FM	
Modulation	Amplitude modulation			Frequency modulation	

LF: Low Frequency

MF: Medium Frequency

HF: High Frequency

VHF: Very High Frequency



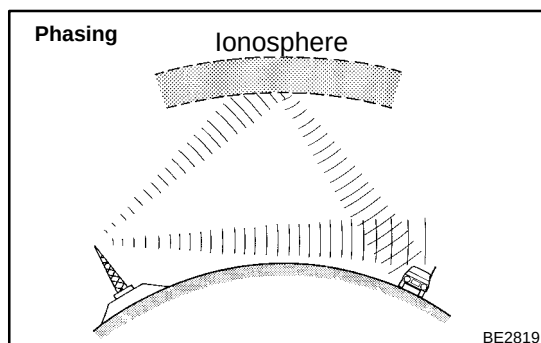
2. SERVICE AREA

- (a) There is a great difference in the size of the service areas for AM and FM broadcasting. Sometimes an FM stereo broadcast cannot be received even though AM can be received very clearly. FM stereo has the smaller service area, it also picks up static and other types of interference ("noise") easily.

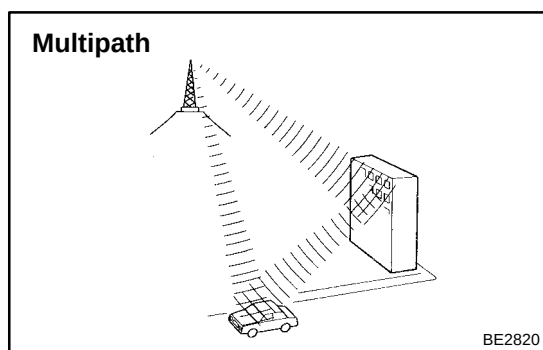
3. RECEPTION PROBLEMS

HINT:

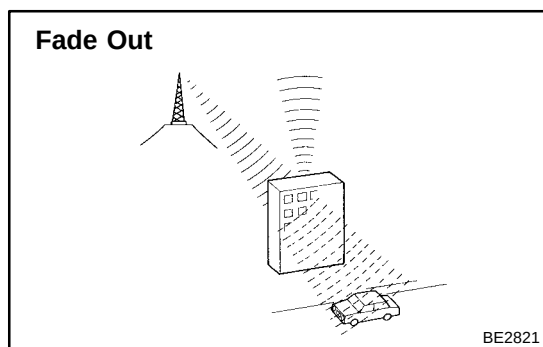
Besides the problem of static, there are other problems called "phasing", "multipath" and "fade out". These problems are caused not by electrical noise but by the nature of the radio waves themselves.



- (a) Phasing
Besides electrical interference, AM broadcasts are also susceptible to other types of interference, especially at night. This is because AM radio waves bounce off the ionosphere at night. These radio waves then interfere with the signals that reach the vehicle's antenna directly from the same transmitter. This type of interference is called "phasing".



- (b) **Multipath**
Interference caused by reflection of radio waves against obstructions is called "Multipath". Multipath occurs when radio signals emitted from the broadcast transmitter antenna are reflected against tall buildings or mountains and interferes with other signals which are to be received directly.



- (c) **Fade Out**
FM radio wave tends to be reflected against obstructions such as tall buildings or mountains because FM frequency is higher than that of AM. For this reason, FM signals often seem to gradually disappear or fade away as the vehicle goes behind those obstructions. This phenomenon is called "fade out".

4. NOISE PROBLEMS

- (a) It is very important for technicians to understand a customer's claim about noise clearly. Use the following table to diagnose the phenomena.

Radio wave	Condition in which noise occurs	Probable cause
AM	Noise occurs at a specific place.	Strong possibility of foreign noise.
	Noise occurs when listening to faint broadcasting.	The same program may be broadcasted from some local stations. If the program is the same, one of those may be tuned in.
FM	Noise occurs only at night.	Strong possibility of beat from a distant broadcasting.
	Noise occurs at a specific place during driving.	Strong possibility of multipath noise and phasing noise caused by changes of FM frequency.

HINT:

If the condition when the noise occurs does not meet any of the above, find out the cause based on "Reception Problems". Refer to the description about Multipath and Phasing mentioned previously.

5. IDENTIFICATION OF NOISE SOURCE

(a) Identify the condition in which the noise occurs, and check the noise filter on the related part.

Condition in which noise occurs	Noise Source
Depressing the acceleration pedal increases the noise, and stopping the engine erases the noise immediately.	Generator
Noise occurs during A/C or the heater operation.	Blower motor
Rapid acceleration while driving on the unpaved road or after the ignition switch is turned on makes noise.	Fuel pump
Pressing and then releasing the horn switch, and keeping pressing the horn switch makes unusual noise.	Horn
Stopping the engine erases small noise that has been heard.	Ignition
Noise occurs synchronously with the turn signal flash.	Flasher
Noise occurs during window washer operation.	Washer
Noise occurs during the engine running, and it continues even after the engine stops.	Engine coolant temperature sensor
Noise occurs during the wiper operation.	Wiper
Noise occurs when the brake pedal is depressed.	Stop light switch
Others.	Static electricity stored on the vehicle

(b) Reference:

- Make sure first that there is no noise from outside. Failing to do so makes the noise source detection difficult and leads to misunderstanding.
- The noise should be removed in descending order of loudness.
- Setting the radio unturned makes noise noticeable, making the recognition of the phenomenon easier.

AVC-LAN CIRCUIT (MULTI-DISPLAY ASSY – RADIO RECEIVER ASSY)

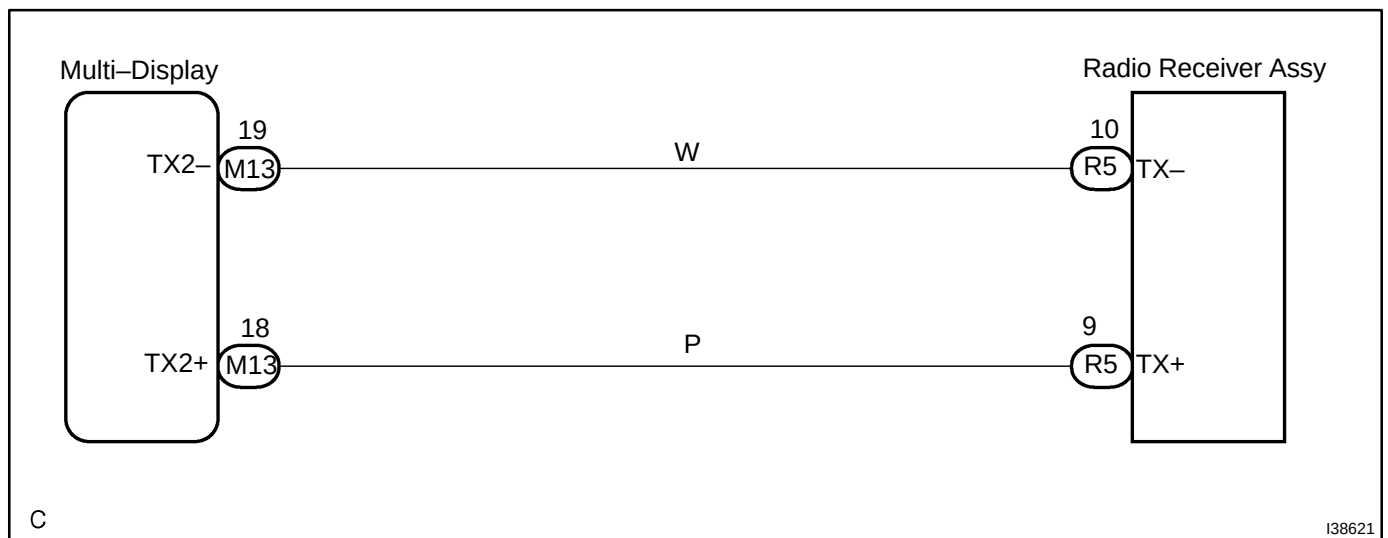
CIRCUIT DESCRIPTION

Each unit of audio system connected to the AVC-LAN (communication bus) transfers the signal of each switch by communication.

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

In this AVC-LAN, the radio receiver assy becomes the master of the communication, and the radio receiver assy has resistance necessary for transmitting the communication.

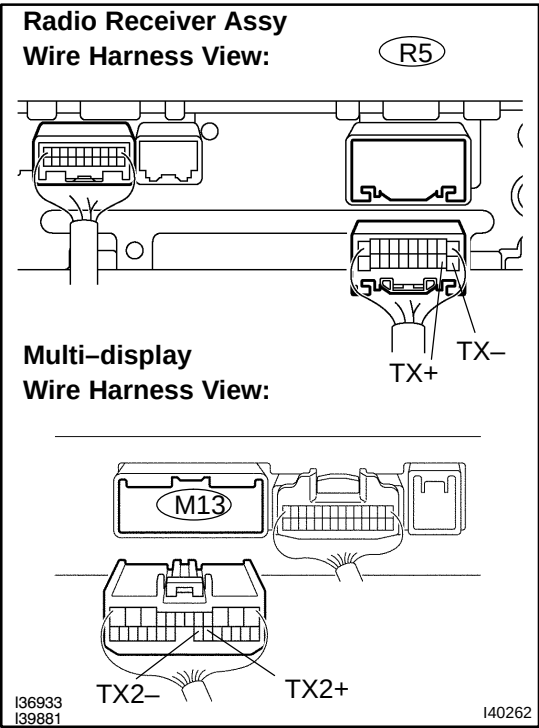
WIRING DIAGRAM



cardiagn.com

INSPECTION PROCEDURE

1 CHECK HARNESS AND CONNECTOR (RADIO RECEIVER ASSY – MULTI-DISPLAY)



- (a) Disconnect the radio receiver assy R5 connector and multi-display M13 connector.
- (b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester connection	Specified condition
TX+ (R5-9) – TX2+ (M13-18)	Below 1 Ω
TX- (R5-10) – TX2- (M13-19)	Below 1 Ω
TX+ (R5-9) – Body ground	10 k Ω or higher
TX- (R5-10) – Body ground	10 k Ω or higher

NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN DIAGNOSTIC TROUBLE CODE CHART (SEE PAGE 05-1778)

NOISE OCCURS

INSPECTION PROCEDURE

1 CHECK OF SPEAKER INSTALLATION

- (a) Check the speaker installation condition.
 (1) Check that each speaker is securely installed.

OK: Malfunction disappears.

HINT:

The radio is equipped with a noise prevention system that blocks only excessively loud noise. If loud noise occurs, check whether or not the ground on the antenna installation part and the proper noise-prevention equipment are all installed, and whether or not there is improper wiring.

Condition in which noise occurs	Noise type
Depressing the acceleration pedal increases the noise, and stopping the engine stops the noise immediately.	Alternator noise
Noise occurs during A/C or the heater operation.	Blower motor noise
Rapid acceleration during the drive on an unpaved road or after the ignition switch is turned on makes noise.	Fuel pump noise
Pressing and then releasing the horn switch, and keeping pressing the horn switch makes noise.	Horn noise
Quiet noise is heard while the engine is running, but stops with the engine.	Ignition noise
Noise occurs in turn with the blink of the turn signal flash.	Flasher noise
Noise occurs during window washer operation.	Washer noise
Noise occurs while the engine is running, and it continues even after the engine is stopped.	Water temperature sensor noise
Noise occurs during wiper operation.	Wiper noise
Noise occurs when the brake pedal is depressed.	Stop light switch noise
Others.	Static electricity on the vehicle

HINT:

- Identify the condition in which the noise occurs, and check the noise filter on the related part.
- Make sure first that there is no noise from outside. Failing to do so makes the noise occurrence source detection difficult and leads to misdiagnosis.
- The noise should be removed in descending order of loudness.

NG

INSTALL IT PROPERLY

OK

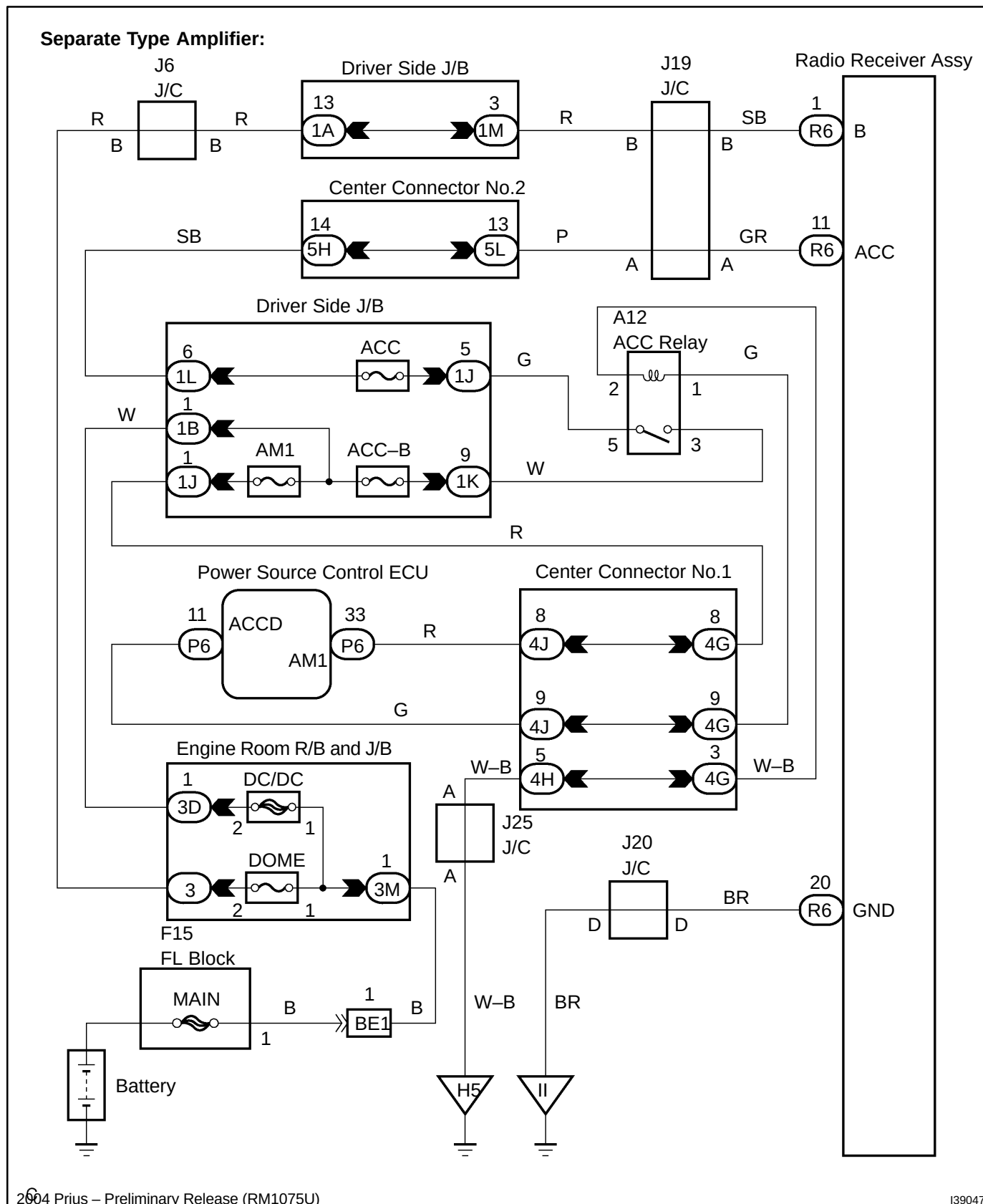
IDENTIFICATION OF NOISE SOURCE (SEE PAGE 05-1760)

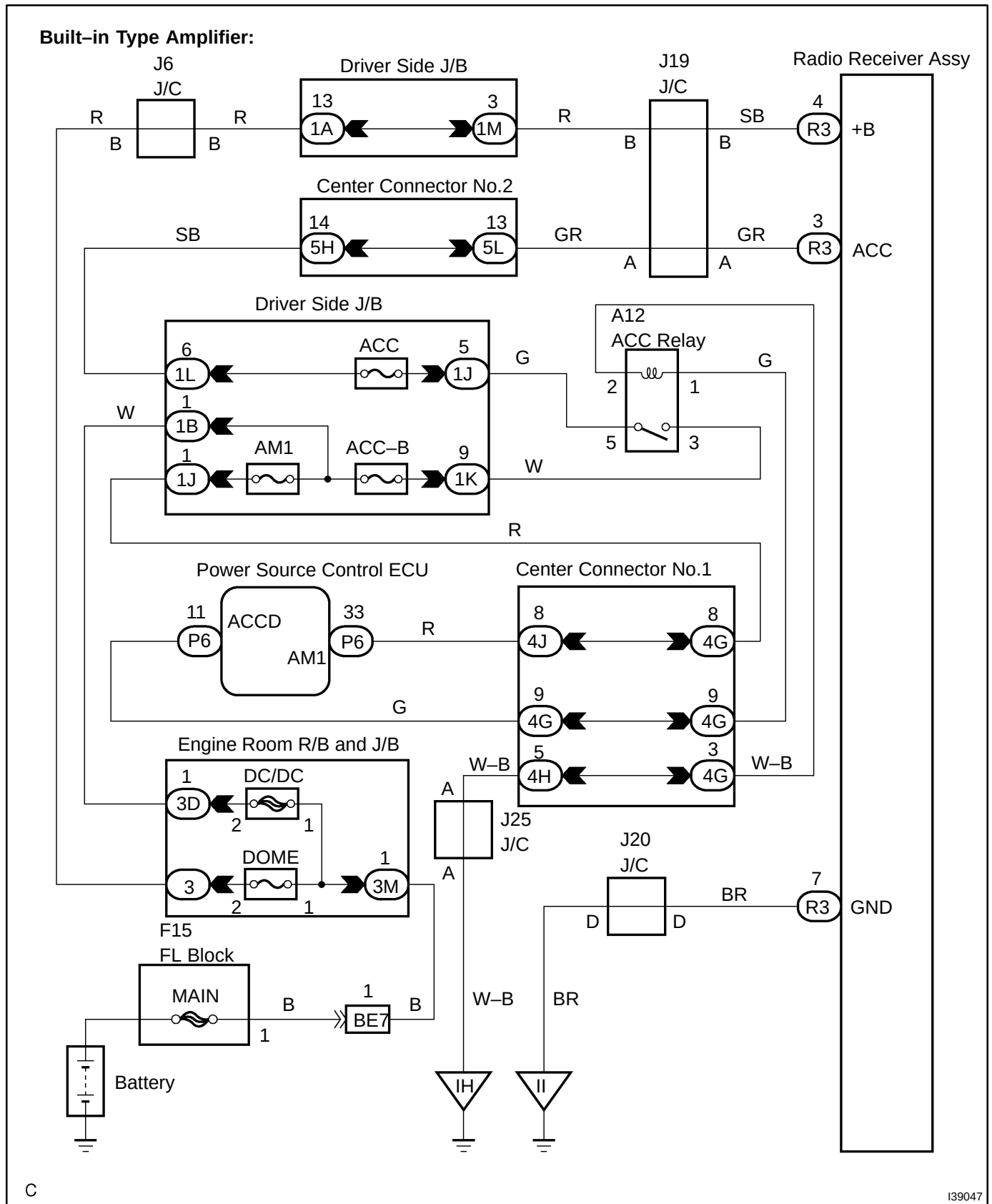
POWER SOURCE CIRCUIT (RADIO RECEIVER ASSY)

CIRCUIT DESCRIPTION

This circuit provides power to the radio receiver assy.

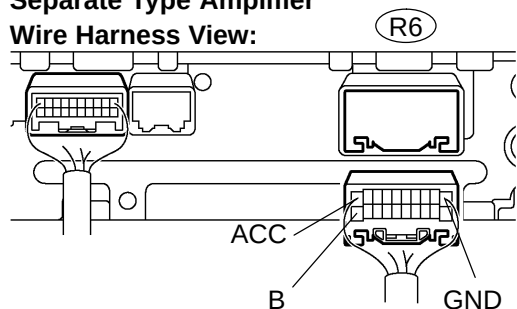
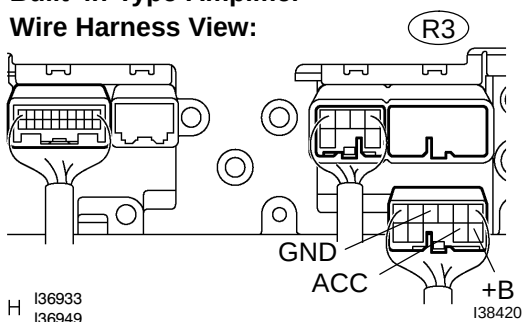
WIRING DIAGRAM





INSPECTION PROCEDURE

1 INSPECT RADIO RECEIVER ASSY

**Separate Type Amplifier
Wire Harness View:**

**Built-in Type Amplifier
Wire Harness View:**


- (a) Disconnect the radio receiver assy R3 or R6 connector.
 (b) Measure the resistance according to the values in the table below.

Standard:

Tester connection	Condition	Specified condition
GND (R6-20) – Body ground *1	Always	Below 1 Ω
GND (R3-7) – Body ground *2	Always	Below 1 Ω

*1: Separate Type Amplifier

*2: Built-in Type Amplifier

- (c) Measure the voltage according to the values in the table below.

Standard:

Tester connection	Condition	Specified condition
B (R6-1) – GND (R6-20) *1	Always	10 to 14 V
+B (R3-4) – GND (R3-7) *2	Always	10 to 14 V
ACC (R6-11) – GND (R6-20) *1	Power switch ON (ACC)	10 to 14 V
ACC (R3-3) – GND (R3-7) *2	Power switch ON (ACC)	10 to 14 V

*1: Separate Type Amplifier

*2: Built-in Type Amplifier

NG

**REPAIR OR REPLACE HARNESS OR
CONNECTOR (RADIO RECEIVER ASSY – BATTERY OR BODY GROUND)**

OK

**PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE OR
DIAGNOSTIC TROUBLE CODE CHART (SEE PAGE 05-1778, 05-1785)**

RADIO BROADCAST CANNOT BE RECEIVED(BAD RECEPTION)**INSPECTION PROCEDURE****1 CHECK IF RADIO AUTO-SEARCH FUNCTIONS PROPERLY**

(a) Check if the radio auto-search functions properly.

(1) Perform the auto-search of the radio and check that it functions normally.

OK: The radio auto-search functions properly.

OK

REPLACE RADIO RECEIVER ASSY (SEE PAGE 67-5)

NG

2 CHECK OPTIONAL COMPONENT

(a) Check optional component (sun shade film, telephone antenna etc.).

(1) Check whether or not any optional component such as the sunshade film and the telephone antenna is installed.

OK: Optional component is installed.

OK

EFFECT FROM OPTIONAL COMPONENT

NG

3 CHECK ANTENNA FOR NOISE PRODUCTION

(a) Noise Check with Antenna

(1) With the power switch in the ACC position, turn on the radio and choose the AM mode.

(2) Place the tip of a screwdriver on the antenna of the antenna pole sub-assy, and check that the noise is heard from the speaker.

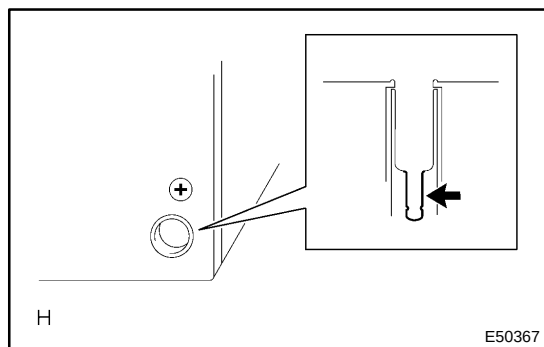
OK: Noise occurs.

OK

REPLACE RADIO RECEIVER ASSY (SEE PAGE 67-5)

NG

4 INSPECT RADIO RECEIVER ASSY(ANTENNA)



- (a) Preparation for Check
 - (1) Remove the antenna plug of the radio receiver assembly.
- (b) Noise Check
 - (1) With the radio receiver assy connector connected, turn the ignition switch to the ACC position.
 - (2) Turn on the radio and choose the AM mode.
 - (3) Place a flat-head screwdriver or a piece of metal such as thin wire on an antenna jack of the radio receiver assy and check that the noise is heard from the speaker.

OK: Noise occurs.

NG

REPLACE RADIO RECEIVER ASSY (SEE PAGE 67-5)

OK

REPLACE ANTENNA CORD SUB-ASSY (SEE PAGE 67-15)

SOUND QUALITY IS BAD ONLY WHEN CD IS PLAYED (VOLUME IS TOO LOW)

INSPECTION PROCEDURE

1 REPLACE CD WITH ANOTHER AND RECHECK

- (a) Replace the CD with another one and recheck.
(1) Check the installation condition of the radio receiver assembly.

OK: Malfunction disappears.

NG

REPLACE RADIO RECEIVER ASSY (SEE PAGE 67-5)

OK

CD IS FAULTY

SOUND QUALITY IS BAD ONLY WHEN PLAYING TAPE

INSPECTION PROCEDURE

1 REPLACE CASSETTE TAPE WITH ANOTHER AND RECHECK

- (a) Replace the cassette tape with another one and recheck.
- (1) Replace the cassette tape with another normal one to see if the same trouble occurs again.
- OK: Malfunction disappears.**

OK

CASSETTE TAPE IS FAULTY

NG

2 CHECK FOR ANY FOREIGN OBJECT

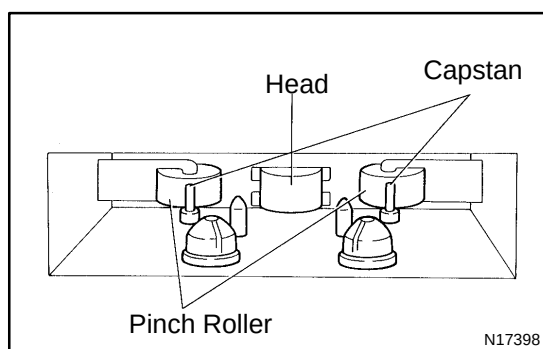
- (a) Check for foreign objects.
- (1) Check that no foreign objects or defects are detected in the cassette tape player.
- OK: No foreign objects or defects are detected.**

NG

REMOVE FOREIGN OBJECT

OK

3 CLEAN HEAD AND CHECK OPERATION



- (a) Head cleaning
- (1) Raise the cassette door with your finger. Using a pencil or similar object, push in the guide.
- (2) Using a cleaning pen or cotton applicator soaked in cleaner, clean the head surface, pinch rollers and capstans.
- (3) Check if the same trouble occurs again.
- OK: Malfunction disappears.**

NG

REPLACE RADIO RECEIVER ASSY (SEE PAGE 67-5)

OK

HEAD IS DIRTY

SOUND QUALITY IS BAD IN ALL MODES (VOLUME IS TOO LOW)**INSPECTION PROCEDURE****1 ADJUST SOUND QUALITY**

(a) Adjust the sound quality.

(1) Operate the radio receiver assy to adjust the sound quality.

OK: Malfunction disappears.

Reference:

Check if the sound quality is the same with the same model of another vehicle.

NG

**REPLACE RADIO RECEIVER ASSY
(SEE PAGE [67-5](#))**

OK

SYSTEM OK

SYSTEM DESCRIPTION

1. COMPACT DISC PLAYER

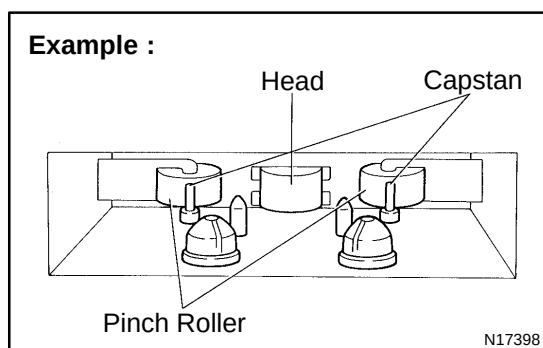
- (a) Compact Disc Players (hereafter called "CD") use a laser beam pick-up to read the digital signals recorded on the CD and reproduce analog signals of the music, etc. 4.7 in. (12 cm) discs are available for the CD player.

HINT:

Never disassemble or apply oil to any part of the player unit. Do not insert any object other than a disc into the CD player.

NOTICE:

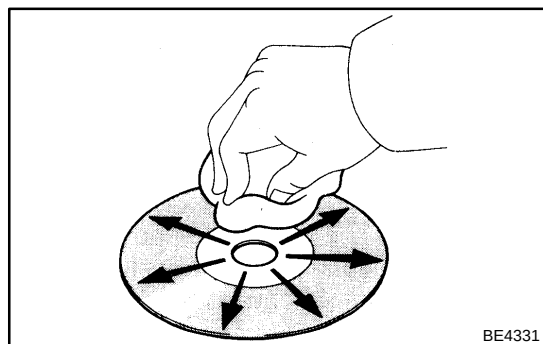
CD players use an invisible laser beam which could cause hazardous radiation exposure. Be sure to operate the player correctly as instructed.



2. MAINTENANCE

Tape Player / Head Cleaning:

- (a) Raise the cassette door with your finger.
Using a pencil or similar object, push in the guide.
- (b) Using a cleaning pen or cotton applicator soaked in cleaner, clean the head surface, pinch rollers and capstans.



3. MAINTENANCE

CD Player / Disc Cleaning:

If the disc gets dirty, clean the disc by wiping the surface from the center to outside in the radial directions with a soft cloth.

NOTICE:

Do not use a conventional record cleaner or anti-static preservative.

4. OUTLINE OF AVC-LAN

- (a) What is AVC-LAN?

AVC-LAN is the abbreviation for Audio Visual Communication-Local Area Network. This is an unified standard co-developed by 6 audio manufacturers associated with Toyota Motor Corporation.

The unified standard includes signals, such as audio, visual and signals for switch indication and communication.

Example:

P

I39082

(b) Objectives

Recently, development in car audio systems has been rapid 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, customers want to upgrade their audio systems. This is the factor that lies behind this standardization.

The concrete objectives are explained below.

- (1) When products by different manufacturers were combined together, malfunctions such as sound failure occurred. This problem can be solved by standardization of signals.
- (2) Various types of after market products are available.
- (3) Because of the above (2), each manufacturer has been able to concentrate on developing products in their strongest field. This has enabled the development of inexpensive products.
- (4) In general, a new product developed by a particular manufacturer could not be used due to a lack of compatibility with other manufacturer's products. By developing this new standard, users can enjoy a range of compatible products from different manufacturers.

(c) The above stated are the reasons for the introduction of AVC-LAN. Under this standardization, development of new products no longer causes systematic errors.

HINT:

- When +B short or GND short is detected in the AVC-LAN circuit, communication stops, and the audio system does not function normally.
- The radio receiver assy is equipped with a resistor (60 to 80 Ω) for communication.
- The car audio system using AVC-LAN circuit has a diagnostic function.

5. COMMUNICATION SYSTEM

- (a) Components in the audio system communicate each other through AVC-LAN.
- (b) The master component of AVC-LAN is the multi-display. The radio receiver assy has a resistor (60 to 80 Ω), which is necessary for communication.

HINT:

For the AVC-LAN circuit with the navigation system, see page [05-1967](#), "NAVIGATION SYSTEM".

- (c) When a short circuit or circuit breakdown occurs in the AVC-LAN circuit, the audio system does not operate normally due to the communication cutoff.

6. DIAGNOSTIC FUNCTION

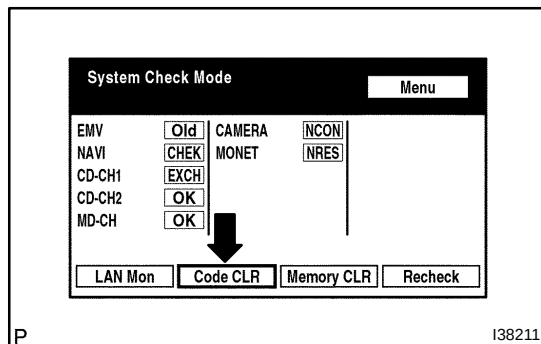
- (a) The audio system has diagnostic function (the diagnostic result is displayed on the LCD of the radio receiver assy).
- (b) The components on the AVC-LAN have a three-digit identification number (physical address). The two-digit numbers (logical address) are also allocated to each function. These codes are referred to as "DTC (Diagnosis Trouble Code)." For details of DTC, see page [05-1785](#).

SYSTEM CHECK MODE (DTC CLEAR/RECHECK)

HINT:

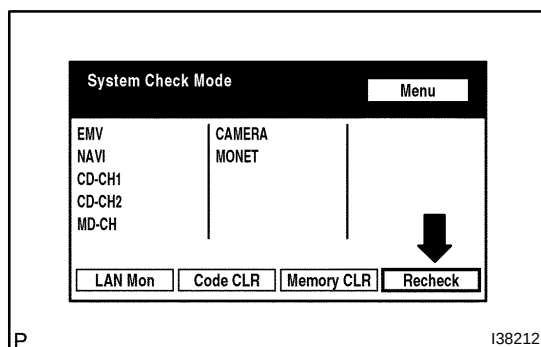
The illustrations may differ from the actual vehicle depending on the device settings and options. Therefore, some detailed areas may not be shown exactly the same as on the actual vehicle.

1. Enter diagnostic mode (see page 05-1763).



2. Clear DTC

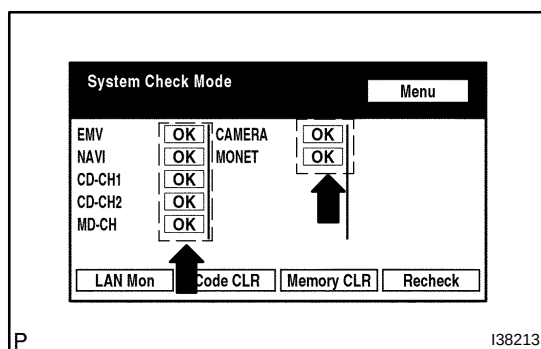
- (a) Press the "Code CLR" switch for 3 seconds.



- (b) Check result is cleared.

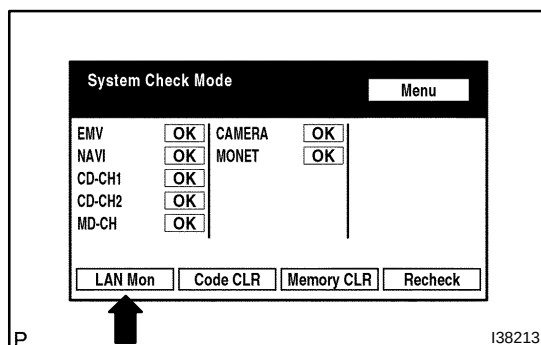
3. Recheck

- (a) Press the "Recheck" switch.

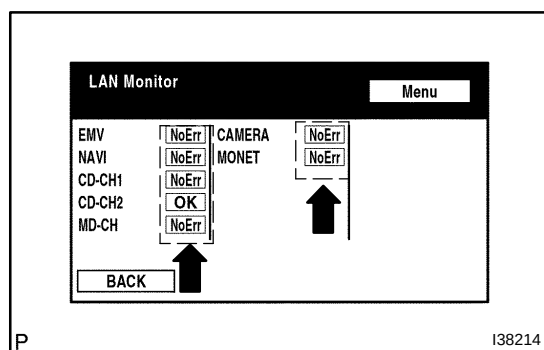


- (b) Confirm that all diagnostic codes are "OK" when the check results are displayed.

If a code other than "OK" is displayed, troubleshoot again.



- (c) Press the "LAN Mon" switch to change to "LAN Monitor" mode.



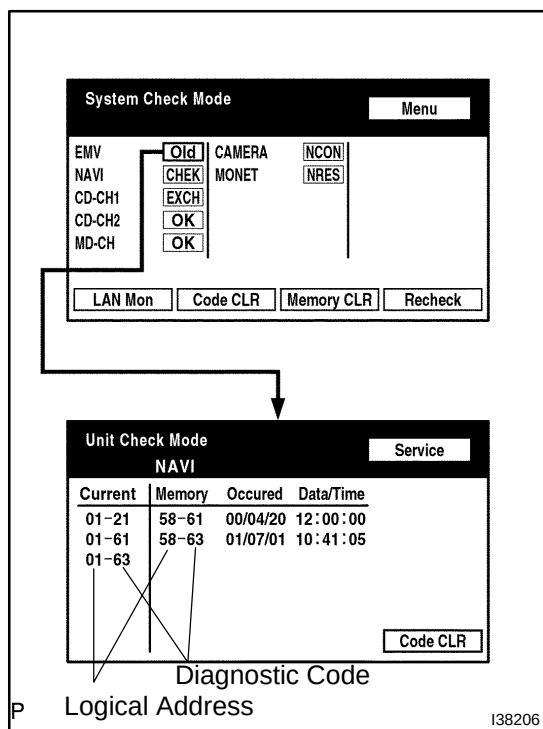
(d) Confirm that all diagnostic codes are "No Err".
If a code other than "No Err" is displayed, troubleshoot again.

SYSTEM CHECK MODE (DTC CHECK)

HINT:

The illustrations may differ from the actual vehicle depending on the device settings and options. Therefore, some detailed areas may not be shown exactly the same as on the actual vehicle.

1. Start the diagnostic mode (see page 05-1763).

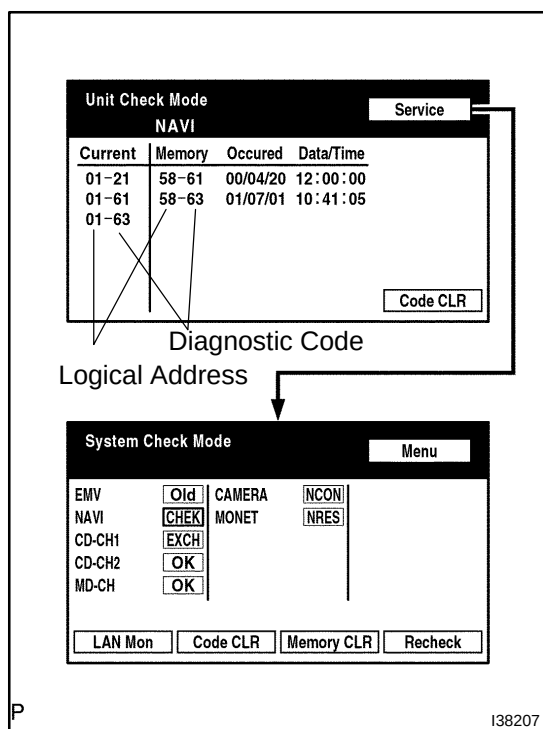


2. Read the service check result.

- (a) If all check results of other devices are "EXCH," "CHEK" or "Old," touch the display to check the contents on the "Unit Check Mode" screen and record them on the customer problem analysis check sheet.

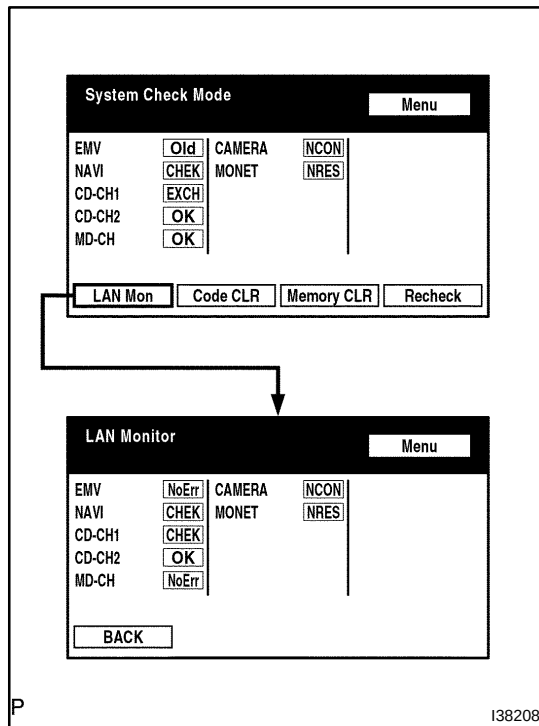
HINT:

- If all check results are "OK," go to communication DTC check (go to step 3).
- If a device name is not known, its physical address is displayed.

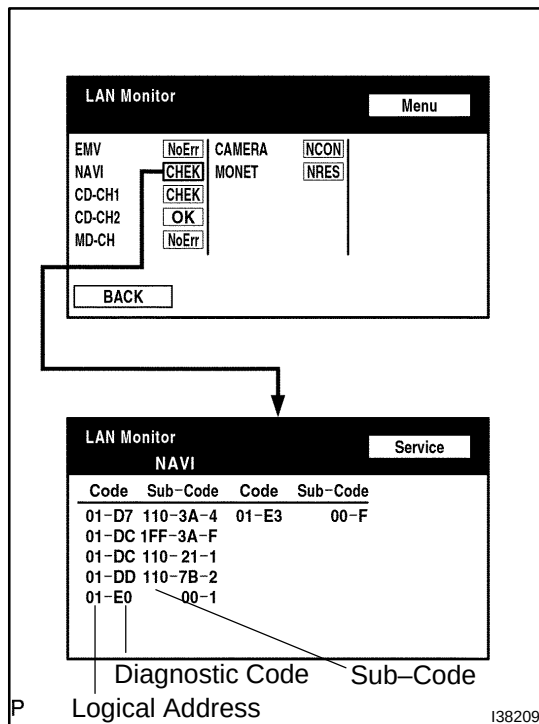


HINT:

If "EXCH", "CHEK" and "Old" as well as "OK" exist, press the service switch to return to the "System Check Mode". Then, check the "Unit Check Mode" screen and record them on the customer problem analysis check sheet.



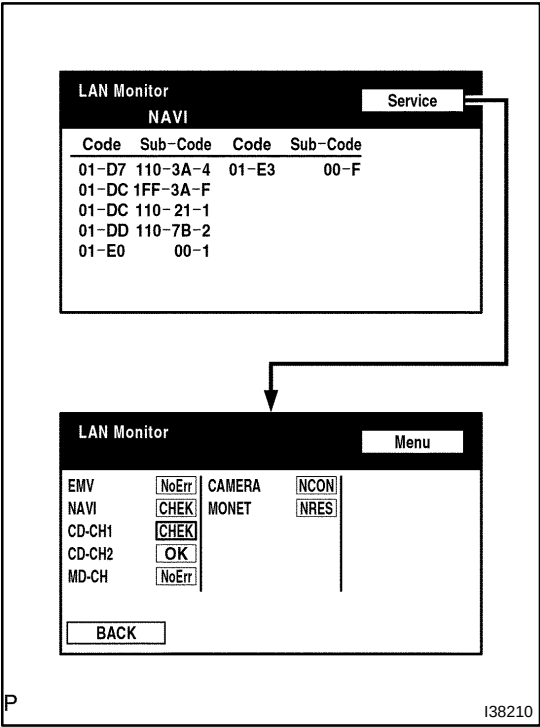
- 3. Read the communication diagnostic check result.**
- (a) Return to the "System Check Mode", and press "LAN Mon" switch to enter the LAN monitor screen.



- (b) If the result is "CHEK" or "Old," touch the result switch to check the contents on the individual communication diagnostic screen and record them on the customer problem analysis check sheet.

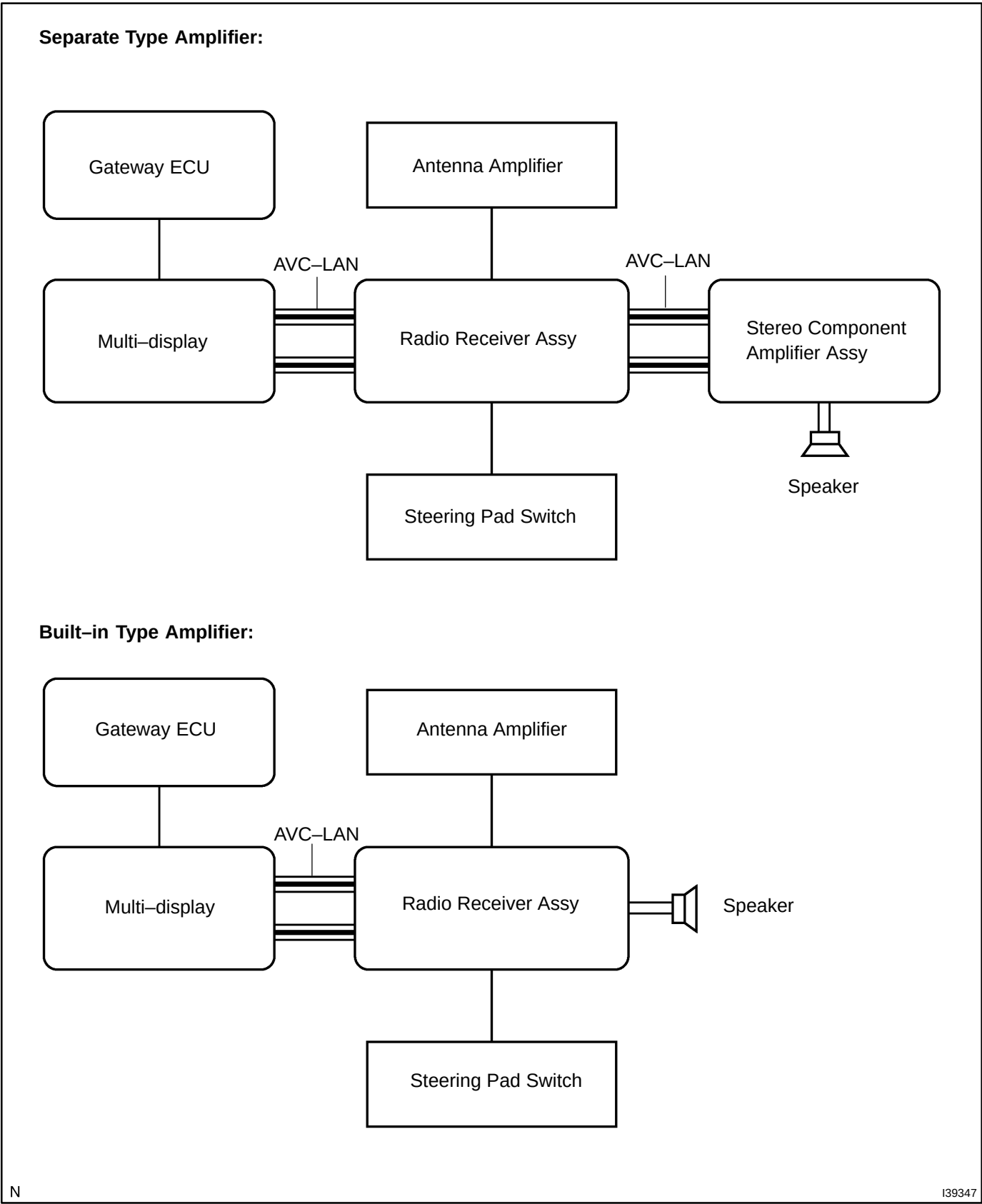
HINT:

- If all check results are "No Err," the system judges that no DTC exists.
- The sub-code (relevant device) will be indicated by its physical address.



HINT:
If check results of other devices are "CHEK," press the "Service" switch to return to the original "LAN Monitor" screen. Then, check the individual communication diagnostic screen for the next device and record the result on the customer problem analysis check sheet.

SYSTEM DIAGRAM



CASSETTE TAPE CANNOT BE EJECTED

INSPECTION PROCEDURE

1 PRESS "EJECT" AND CHECK OPERATION

(a) Press "EJECT" and check the operation.

- (1) Press the cassette tape EJECT switch of the radio receiver assembly for 2 seconds or more and check that the cassette tape is ejected.

OK: The cassette tape is ejected.

NG

REPLACE RADIO RECEIVER ASSY (SEE PAGE 67-5)

OK

2 CHECK CASSETTE TAPE

(a) Check the cassette tape.

- (1) Check that the ejected cassette tape does not have a peeled label, a cassette body deformation or any other defect.

OK: No fault on the cassette tape.

NG

CASSETTE TAPE IS FAULTY

OK

3 REPLACE CASSETTE TAPE WITH ANOTHER AND RECHECK

(a) Replace the cassette tape with another and recheck.

- (1) Replace the cassette tape with another normal one to see if the same trouble occurs again.

OK: Malfunction disappears.

NG

REPLACE RADIO RECEIVER ASSY (SEE PAGE 67-5)

OK

CASSETTE TAPE IS FAULTY

CASSETTE TAPE CANNOT BE INSERTED OR PLAYED**INSPECTION PROCEDURE****1 CHECK FOR ANY FOREIGN OBJECT**

(a) Check for any foreign objects.

- (1) Check that no foreign objects or defects are detected in the cassette tape player of the radio receiver assembly.

OK: No foreign objects or defects are detected.

NG**REMOVE FOREIGN OBJECT****OK****2 CHECK CASSETTE TAPE**

(a) Check the cassette tape.

- (1) Check that the cassette tape is a normal tape with music or voice recorded.

OK: Proper cassette tape with music or voice recorded.

NG**CASSETTE TAPE IS FAULTY****OK****3 REPLACE CASSETTE TAPE WITH ANOTHER AND RECHECK**

(a) Replace the cassette tape with another one and recheck.

- (1) Replace the cassette tape with another normal one to see if the same trouble occurs again.

OK: The function returns to be normal.

NG**REPLACE RADIO RECEIVER ASSY (SEE PAGE 67-5)****OK****CASSETTE TAPE IS FAULTY**

TAPE IS TANGLED DUE TO INCORRECT TAPE SPEED OR AUTO-REVERSE MALFUNCTION

INSPECTION PROCEDURE

1 CHECK FOR ANY FOREIGN OBJECT

(a) Check for any foreign objects.

- (1) Check that no foreign objects or defects are detected in the cassette tape player of the radio receiver assy.

OK: No foreign objects or defects are detected.

NG

REMOVE FOREIGN OBJECT

OK

2 REPLACE CASSETTE TAPE WITH ANOTHER AND RECHECK(BELOW 90 MIN.)

(a) Replace the cassette tape with another one and recheck.

- (1) Replace the cassette tape with another normal one (90 minutes. or less) to see if the same trouble occurs again.

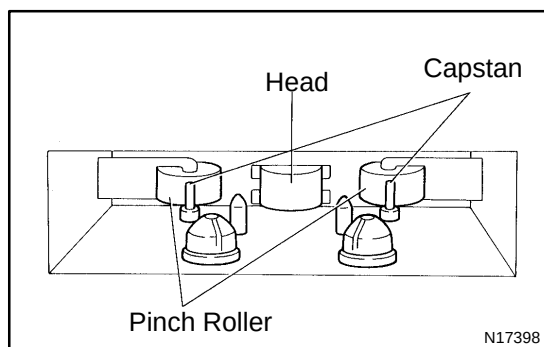
OK: Malfunction disappears.

OK

CASSETTE TAPE IS FAULTY

NG

3 CLEAN HEAD AND CHECK OPERATION



(a) Head cleaning

- (1) Raise the cassette door with your finger. Using a pencil or similar object, push in the guide.
- (2) Using a cleaning pen or cotton applicator soaked in cleaner, clean the head surface, pinch rollers and capstans.
- (3) Check if the same trouble occurs again.

OK: Malfunction disappears.

NG

REPLACE RADIO RECEIVER ASSY (SEE PAGE 67-5)

OK

HEAD IS DIRTY

CUSTOMER PROBLEM ANALYSIS CHECK

AUDIO SYSTEM CHECK SHEET

Inspector's Name: _____

Customer's Name		VIN	
		Production Date	
		Licence Plate No.	
Brought-in Date	/ /	Odometer Reading	km mile

Problem Occurrence Condition	Date malfunction occurred		
	Frequency malfunction occurs	☐ Always	☐ Intermittently (Times per day)
	Vehicle speed when the malfunction occurs	km (mile)	

Malfunction Area	☐ Switch
	☐ Radio
	☐ CD
	☐ Noise

DTC Confirmation	Parts name	DTC (1st time)	DTC (2nd time)
	Radio receiver assy		
	Stereo component amplifier assy		
	Multi-display		
	Gateway ECU		

DIAGNOSTIC TROUBLE CODE CHART

Terms	Description
Physical address	3-digit hexadecimal code assigned to all components connected to the AVC-LAN. Individual symbols are specified based on function. Units whose names are unknown or relevant units are displayed with physical address.
Logical address	2-digit hexadecimal code assigned to all the functions in the AVC-LAN system.

HINT:

- Titles for each unit are stated in the following order: component name, (physical address) [DTC displayed name].
- For the DTC of a vehicle with a navigation system, refer to "NAVIGATION SYSTEM" (see page 05-1888).

1. MULTI-DISPLAY (PHYSICAL ADDRESS: 110) [EMV]

(a) Logical address: 01 (Communication control)

DTC	Name	Diagnosis	Verification	See page
21	ROM error	Abnormal condition of ROM is detected.	Replace multi-display	67-7
22	RAM error	Abnormal condition of RAM is detected.	Replace multi-display	67-7

DTC	Name	Diagnosis	Verification
D5	Registered component is missed	Component in which this code is recorded is or was disconnected from the system when power switch is in ACC (ON).	• Inspection of components indicated by sub-codes. • Refer to the table for inspection of components indicated by sub-code.
D8	No response for connection check	The device indicated by the sub code is (was) disconnected from the system after engine start.	• Inspection of components indicated by sub-codes. • Refer to the table for inspection of components indicated by sub-code.
D9	Last mode error	The device (for audio visual system) that had functioned before the engine stopped is (was) disconnected from the system when the power switch is (was) in the ACC or ON state.	• Inspection of components indicated by sub-codes. • Refer to the table for inspection of components indicated by sub-code.
DA	No response against ON/OFF command	No response is identified when changing mode (audio and visual mode change). Detected when sound and image do not change by switch operation	• Inspection of components indicated by sub-codes. • Refer to the table for inspection of components indicated by sub-code.
DB	Mode status error	This code detects a dual alarm.	• Inspection of components indicated by sub-codes. • Refer to the table for inspection of components indicated by sub-code.
DC	Failure in transmission	This code indicates a transmission failure to the device indicated by the sub code. NOTE: This DTC may have no direct relationship with the malfunction.	• Inspection of components indicated by sub-codes. • Refer to the table for inspection of components indicated by sub-code.
DE	Slave reset	This code is stored when a slave device has been disconnected after engine start.	• Inspection of components indicated by sub-codes. • Refer to the table for inspection of components indicated by sub-code.

- (b) Logical address: 21 (SW unit): 23 (SW with name unit): 24 (SW converting unit): 25 (command SW unit)

HINT:

The numbers used to verify the cause of the problem are listed in order of probability in the verification column.

DTC	Name	Diagnosis	Verification	See page
10	Panel SW failure	Panel SW detection circuit failure	Replace multi-display	67-7

2. RADIO RECEIVER ASSY (PHYSICAL ADDRESS: 190) [AUDIO H/U]

- (a) Logical address: 01 (Communication control)

HINT:

The numbers used to verify the cause of the problem are listed in order of probability in the verification column.

DTC	Name	Diagnosis	Verification	See page
D6	Absence of master unit	Component in which this code is recorded was disconnected from system or master component with ignition switch in ACC or ON.	1. Power source circuit (multi-display) 2. Power source circuit (radio receiver assy) 3. AVC-LAN circuit (multi-display – radio receiver assy) 4. Replace multi-display 5. Replace radio receiver assy	05-1933 05-1793 05-1826 67-7 67-5
D7	Connection check error	Component in which this code is recorded is (was) disconnected from system after engine start. Either that, or radio receiver assy was disconnected when this code was recorded.	1. Power source circuit (multi-display) 2. Power source circuit (radio receiver assy) 3. AVC-LAN circuit (multi-display – radio receiver assy) 4. Replace multi-display 5. Replace radio receiver assy	05-1933 05-1793 05-1826 67-7 67-5
DC	Failure in transmission	This code indicates a transmission failure to the device indicated by the sub code. NOTE: This DTC may have no direct relationship with the malfunction.	1. Inspection of components indicated by sub-codes. 2. Refer to the table for inspection of components indicated by sub-code.	– –
DD	Master reset	After the power switch ON (READY), master component was disconnected from system.	1. Power source circuit (multi-display) 2. AVC-LAN circuit (multi-display – radio receiver assy) 3. Replace multi-display	05-1933 05-1826 67-7
DF	Master error	Due to defective cognition of component with a display, master function is switched to audio equipment. Error occurs in communication between sub-master (audio) and master component.	1. Power source circuit (multi-display) 2. AVC-LAN circuit (multi-display – radio receiver assy) 3. Replace multi-display	05-1933 05-1826 67-7
E0	Registration complete indication error	"Registration complete" command from the master device cannot be received. NOTE: This DTC may not be directly related to the problem.	–	–

DIAGNOSTICS – AUDIO SYSTEM

E1	Voice processing device ON error	The AMP device records that the AMP output does not function even while the source device operates.	1. Power source circuit (multi-display) 2. AVC-LAN circuit (multi-display – radio receiver assy) 3. Replace multi-display	05-1933 05-1826 67-7
E2	ON/OFF indication parameter error	The command for ON/OFF control from the master device has a problem.	Replace multi-display	67-7
E3	Registration demand transmission	The registration demand command from the slave device is output, or the registration demand command is output by receiving connection confirmation command from the sub master device. NOTE: This DTC may not be directly related to the problem.	–	–
E4	Multiple frame incomplete	The multiple frame transmission ends incomplete. NOTE: This DTC may not be directly related to the problem.	–	–

DTC	Name	Diagnosis	Verification
D5	Registered component is missed	Component in which this code is recorded is or was disconnected from the system when power switch is in ACC (ON).	• Inspection of components indicated by sub-codes. • Refer to the table for inspection of components indicated by sub-code.
D8	No response for connection check	The device indicated by the sub code is (was) disconnected from the system after engine start.	• Inspection of components indicated by sub-codes. • Refer to the table for inspection of components indicated by sub-code.
D9	Last mode error	The device (for audio visual system) that had functioned before the engine stopped is (was) disconnected from the system when the power switch is (was) in the ACC or ON state.	• Inspection of components indicated by sub-codes. • Refer to the table for inspection of components indicated by sub-code.
DA	No response against ON/OFF command	No response is identified when changing mode (audio and visual mode change). Detected when sound and image do not change by switch operation.	• Inspection of components indicated by sub-codes. • Refer to the table for inspection of components indicated by sub-code.
DB	Mode status error	This code detects a dual alarm.	• Inspection of components indicated by sub-codes. • Refer to the table for inspection of components indicated by sub-code.
DE	Slave reset	This code is stored when a slave device has been disconnected after engine start.	• Inspection of components indicated by sub-codes. • Refer to the table for inspection of components indicated by sub-code.

(b) Logical address: 60 (Radio unit)

HINT:

The numbers used to verify the cause of the problem are listed in order of probability in the verification column.

DTC	Name	Diagnosis	Verification	See page
10	AM tuner PLL does not lock	The PULL circuit in the AM tuner is abnormal.	1. After clearing the DTC, check the antenna wiring. 2. If the same code is detected again, replace the radio receiver assy.	05-1768 67-5

11	FM tuner PLL does not lock	The PULL circuit in the FM tuner is abnormal.	1. After clearing the DTC, check the antenna wiring. 2. If the same code is detected again, replace the radio receiver assy.	05-1768 67-5
40	Antenna not connection	Antenna is disconnected.	1. After clearing the DTC, check the antenna wiring. 2. If the same code is detected again, replace the radio receiver assy.	05-1768 67-5
41	Antenna power source error	A malfunction is detected in the antenna power supply system.	1. After clearing the DTC, check the antenna wiring. 2. If the same code is detected again, replace the radio receiver assy.	05-1768 67-5
42	Tuner power source error	The power source of the tuner is abnormal.	1. Power source circuit (radio receiver assy) 2. Replace radio receiver assy	05-1793 67-5
43	AM tuner error	The AM tuner is abnormal.	Replace radio receiver assy	67-5
44	FM tuner error	The FM tuner is abnormal.	Replace radio receiver assy	67-5
45	SW tuner error	The SW tuner is abnormal.	Replace radio receiver assy	67-5

(c) Logical address: 62 (CD unit): 63 (CD changer unit)

HINT:

The numbers used to verify the cause of the problem are listed in order of probability in the verification column.

DTC	Name	Diagnosis	Verification	See page
10	CD player mechanical error	A mechanical error in the CD player is detected while the CD is not being inserted or ejected.	Replace radio receiver assy	67-5
11	CD insertion & eject error	CD insertion or ejection is failed.	Replace radio receiver assy	67-5
12	CD reading abnormal	CD read problem occurs.	Replace radio receiver assy	67-5
40	No disc	No disc is inserted.	1. Check if a CD is inserted. If a CD is inserted, check if it can be ejected. If it cannot be ejected, replace the radio receiver assy. 2. Inspect CD 3. If the same code is detected again, replace the radio receiver assy.	05-1832 05-1755 67-5
41	Wrong disc	An unsuitable disc is inserted.	1. Inspect CD 2. If the same code is detected again, replace the radio receiver assy.	05-1755 67-5
42	Disc cannot be read	The disc cannot be read.	1. Inspect CD 2. If the same code is detected again, replace the radio receiver assy.	05-1755 67-5
43	CD-ROM abnormal	CD-ROM operation is abnormal.	Replace radio receiver assy	67-5

DIAGNOSTICS – AUDIO SYSTEM

45	EJECT error	The magazine cannot be ejected.	1. Eject the magazine, check the inserting direction, and check the symptom. 2. If the same code is detected again, replace the radio receiver Assy.	– 67-5
44	CD abnormal	Operation error in the CD mechanism (except for code 10).	1. After clearing the DTC, check the malfunction symptom. 2. If the same code is detected again, replace the radio receiver Assy.	– 67-5
46	CD has scratches or upside down	CD has dirt or scratches on the surface or is upside down.	1. Inspect CD 2. If the same code is detected again, replace the radio receiver Assy.	05-1755 67-5
47	CD temperature is high	The sensor detects that the CD unit temperature is high.	1. Park the vehicle in a cool place. Turn the engine off. After checking that the temperature of the radio receiver Assy becomes sufficiently low, turn the engine on in order to verify the malfunction symptom. 2. If the same code is detected again, replace the radio receiver Assy.	– 67-5
48	Over-current detection	Over-current flows in to the CD changer.	Replace radio receiver Assy	67-5
50	Tray insertion/ejection error	The tray insertion/ejection error occurs in the CD changer.	1. Foreign matter is found. 2. Replace radio receiver Assy	– 67-5
51	Elevator error	Elevator error occurs in the CD changer.	Replace radio receiver Assy	67-5
52	Clamp error	Clamp error occurs in the CD changer.	Replace radio receiver Assy	67-5

(d) Logical address: 61 (Cassette unit)

HINT:

The numbers used to verify the cause of the problem are listed in order of probability in the verification column.

DTC	Name	Diagnosis	Verification	See page
10	Belt cut	The inside belt is cut or come off.	Replace radio receiver Assy	67-5
40	Mechanical error of media	A malfunction due to mechanical problem, cassette tape is cut or entangled.	1. Replace the cassette tape and recheck the symptom. 2. If the same code is detected again, replace the radio receiver Assy.	05-1755 67-5
41	EJECT error	A malfunction due to mechanical problem.	Replace radio receiver Assy	67-5
42	Tape tangling	Cassette tape is tangled	Replace radio receiver Assy	67-5

43	Head dirt	Head is dirty	1. Clean the head and recheck the symptom. 2. If the same code is detected again, replace the radio receiver Assy.	05-1755 67-5
44	Device power supply problem	A short or open in the power circuit	1. Power source circuit (radio receiver Assy) 2. Replace radio receiver Assy	05-1793 67-5

3. GATEWAY ECU (PHYSICAL ADDRESS: 1C6) [G/W]

(a) Logical address: 01 (Communication control)

HINT:

The numbers used to verify the cause of the problem are listed in order of probability in the verification column.

DTC	Name	Diagnosis	Verification	See page
D4	Regulator communication error	The device whose code is recorded is separated when the power switch is in ON (or ACC) position. When the code is recorded, the multi-display is disconnected.	1. Power source circuit (multi-display) 2. Power source circuit (gateway ECU) 3. AVC-LAN circuit (multi-display – gateway ECU) 4. Replace multi-display 5. replace gateway ECU	05-1933 – 05-1826 67-7 67-5

4. STEREO COMPONENT AMPLIFIER ASSY (PHYSICAL ADDRESS: 440) [DSP AMP]

(a) Logical address: 01 (Communication control)

HINT:

The numbers used to verify the cause of the problem are listed in order of probability in the verification column.

DTC	Name	Diagnosis	Verification	See page
D6	Absence of master unit	Component in which this code is recorded was disconnected from system or master component with ignition switch in ACC or ON.	1. Power source circuit (multi-display) 2. AVC-LAN circuit (multi-display – radio receiver Assy) 3. Power source circuit (stereo component amplifier Assy) 4. AVC-LAN circuit (radio receiver Assy – stereo component amplifier Assy) 5. Replace multi-display 6. Replace stereo component amplifier Assy	05-1933 05-1826 05-1796 05-1822 67-7 67-11
D7	Connection check error	Component in which this code is recorded is (was) disconnected from system after engine start. Either that, or radio receiver Assy was disconnected when this code was recorded.	1. Power source circuit (multi-display) 2. AVC-LAN circuit (multi-display – radio receiver Assy) 3. Power source circuit (stereo component amplifier Assy) 4. AVC-LAN circuit (radio receiver Assy – stereo component amplifier Assy) 5. Replace multi-display 6. Replace stereo component amplifier Assy	05-1933 05-1826 05-1796 05-1822 67-7 67-11

DIAGNOSTICS – AUDIO SYSTEM

DC	Failure in transmission	This code indicates a transmission failure to the device indicated by the sub code. NOTE: This DTC may have no direct relationship with the malfunction.	1. Power source circuit (multi-display) 2. AVC-LAN circuit (multi-display – radio receiver assy) 3. Power source circuit (stereo component amplifier assy) 4. AVC-LAN circuit (radio receiver assy – stereo component amplifier assy) 5. Replace multi-display 6. Replace stereo component amplifier assy	05-1933 05-1826 05-1796 05-1822 67-7 67-11
DD	Master reset	After the power switch ON (READY), master component was disconnected from system.	1. Power source circuit (multi-display) 2. AVC-LAN circuit (multi-display – radio receiver assy) 3. Replace multi-display	05-1933 05-1826 67-7
DF	Master error	Due to defective cognition of component with a display, master function is switched to audio equipment. Error occurs in communication between sub-master (audio) and master component.	1. Power source circuit (multi-display) 2. AVC-LAN circuit (multi-display – radio receiver assy) 3. Replace multi-display	05-1933 05-1826 67-7
E0	Registration complete indication error	"Registration complete" command from the master device cannot be received. NOTE: This DTC may not be directly related to the problem.	–	–
E1	Voice processing device ON error	The AMP device records that the AMP output does not function even while the source device operates.	1. Power source circuit (radio receiver assy) 2. AVC-LAN circuit (multi-display – radio receiver assy) 3. Replace radio receiver assy	05-1793 05-1826 67-5
E2	ON/OFF indication parameter error	The command for ON/OFF control from the master device has a problem.	Replace multi-display	67-7
E3	Registration demand transmission	The registration demand command from the slave device is output, or the registration demand command is output by receiving connection confirmation command from the sub master device. NOTE: This DTC may not be directly related to the problem.	–	–
E4	Multiple frame incomplete	The multiple frame transmission ends incomplete. NOTE: This DTC may not be directly related to the problem.	–	–

5. COMPONENT CHECK TABLE INDICATED BY SUB CODES**HINT:**

The numbers used to verify the cause of the problem are listed in order of probability in the verification column.

Sub code address	Verification	See page
110 (Multi-display)	1. Power source circuit (multi-display) 2. AVC-LAN circuit (multi-display – radio receiver assy) 3. Replace multi-display	05-1933 05-1826 67-7
190 (Radio Receiver Assy)	1. Power source circuit (radio receiver assy) 2. AVC-LAN circuit (multi-display – radio receiver assy) 3. Replace radio receiver assy	05-1793 05-1826 67-5

Sub code address	Verification	See page
1C6 (Gateway ECU)	1. Power source circuit (gateway ECU) 2. AVC-LAN circuit (multi-display – gateway ECU) 3. Replace gateway ECU	– 05-1971 67-26
440 (Stereo Component Amplifier Assy)	1. Power source circuit (stereo component amplifier assy) 2. AVC-LAN circuit (radio receiver assy – stereo component amplifier assy) 3. Replace stereo component amplifier assy	05-1796 05-1824 67-25

HOW TO PROCEED WITH TROUBLESHOOTING

1 VEHICLE BROUGHT TO WORK SHOP



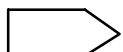
2 CUSTOMER PROBLEM ANALYSIS (SEE PAGE 05-1759)

- (a) Ask the customer about and identify the problem.
 (1) Identify the problem occurrence conditions.



3 BASIC INSPECTION

- (a) Basic inspection.
 (1) Check the battery voltage.
Standard: 11 to 14 V
- (b) Check the power supply to the multi-display.
 (1) Turn the power switch on (ACC).
 (2) Check if the screen appears on the multi-display.



DISPLAY APPEARS (GO TO STEP 4)



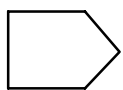
SCREEN DOES NOT APPEAR (PROCEED TO PROBLEM SYMPTOMS TABLE "BLACK SCREEN" (MULTI-DISPLAY))" (SEE PAGE 05-1873)

4 BODY MULTIPLEX COMMUNICATION SYSTEM (SEE PAGE 05-2549)

- (a) Check if a DTC is output.

HINT:

This system is connected to the multiplex communication system (BEAN). Therefore, check for a malfunction in the multiplex communication system before troubleshooting.



DTC IS OUTPUT (PROCEED TO "BODY MULTIPLEX COMMUNICATION SYSTEM")

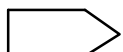


DTC IS NOT OUTPUT (GO TO STEP 8)

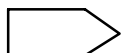
5 DTC CHECK AND CLEAR (OTHER THAN MULTIPLEX DTC) (SEE PAGE 05-1768)



6 DTC CHECK (OTHER THAN MULTIPLEX DTC) (SEE PAGE 05-1765)



DTC IS OUTPUT (GO TO STEP 12)



DTC IS NOT OUTPUT (GO TO STEP 8)

7	DTC CHART (SEE PAGE 05-1785)
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GO TO STEP 9

8	PROBLEM SYMPTOMS TABLE (SEE PAGE 05-1778)
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9	CIRCUIT INSPECTION AND PART INSPECTION (SEE PAGE 05-1793 – 05-1840)
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10	IDENTIFICATION OF PROBLEM
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11	REPAIR OR REPLACE
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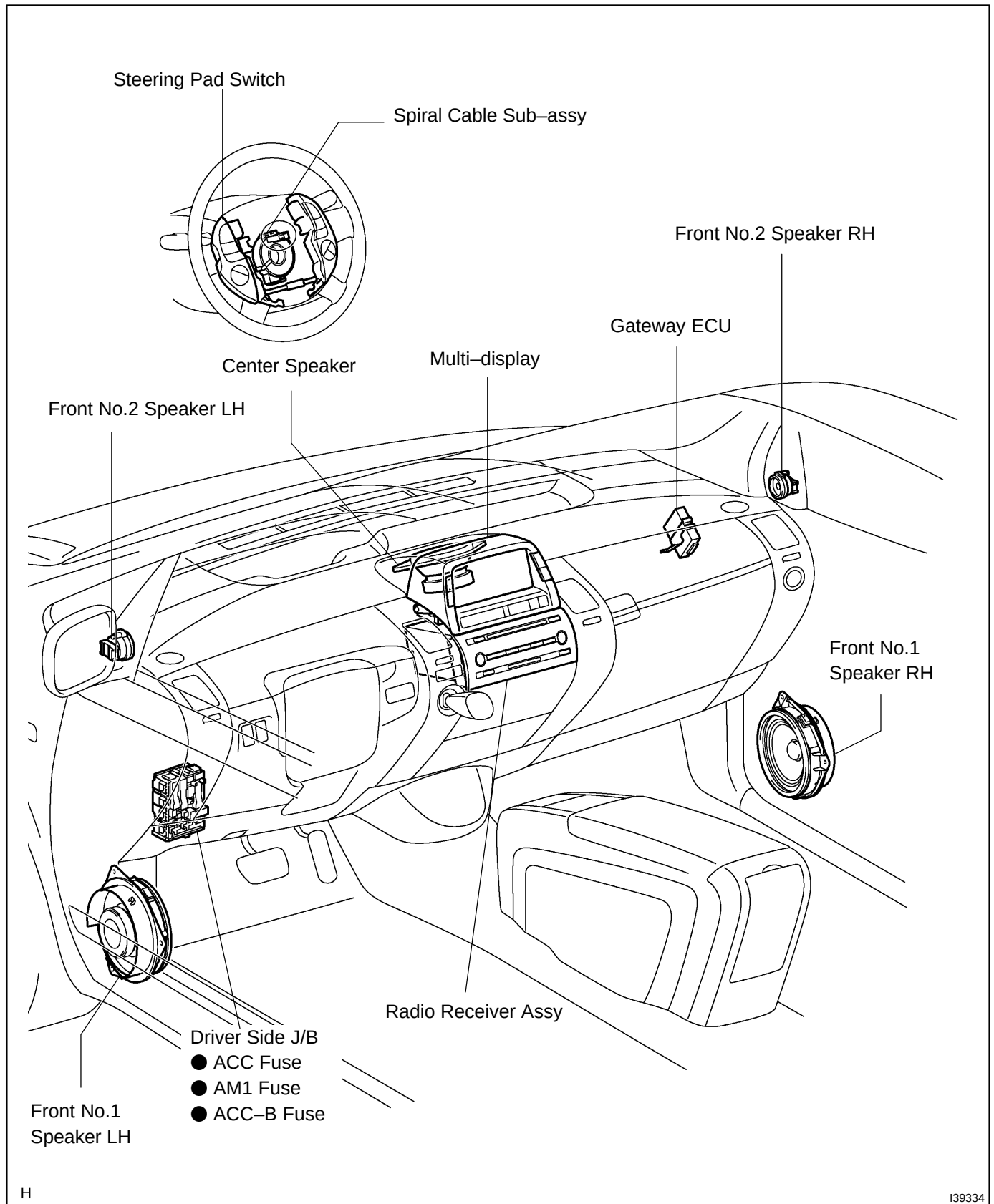
12	CONFIRMATION TEST
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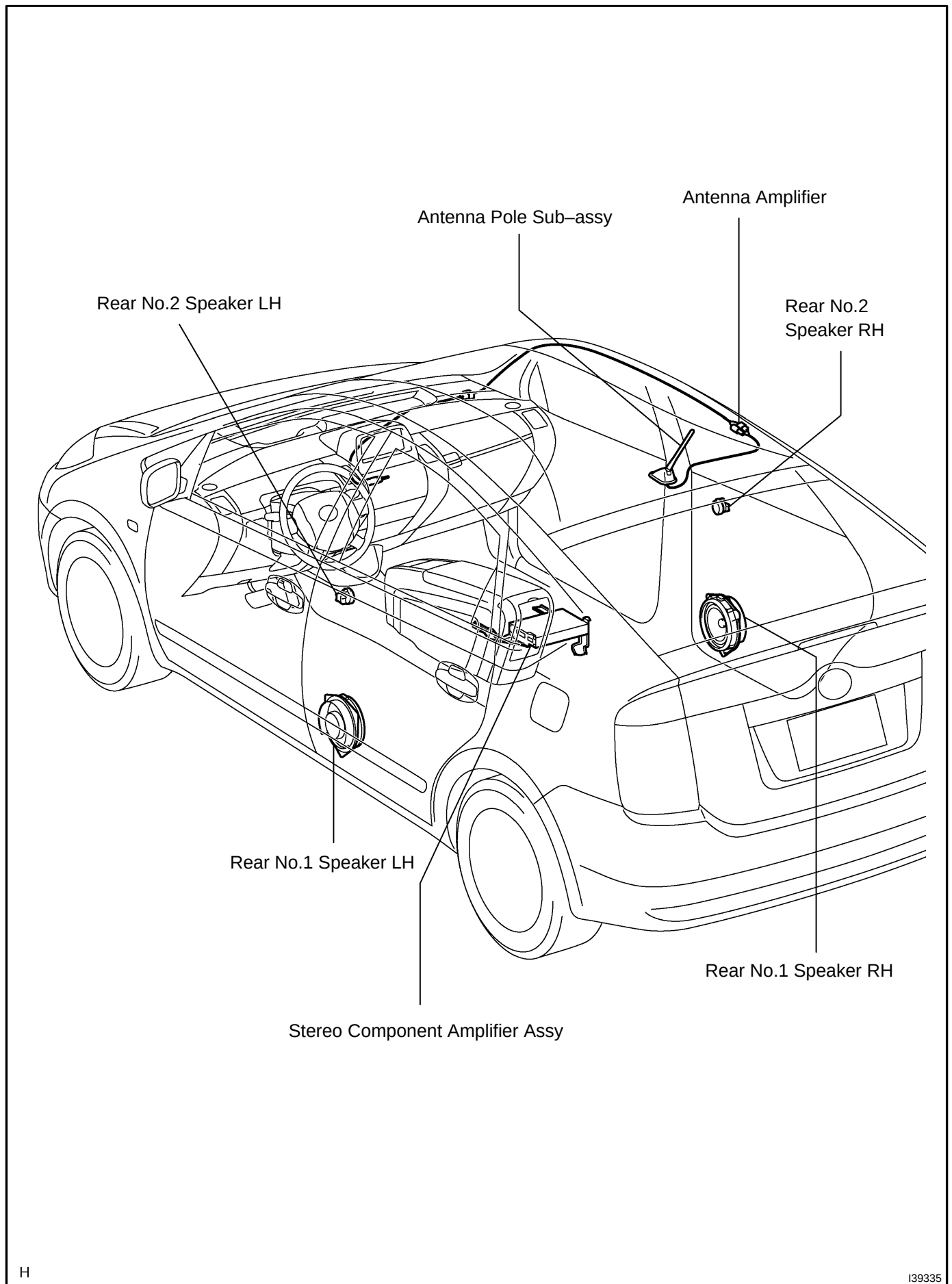
END

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LOCATION



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AUDIO SYSTEM

05CKV-03

PRECAUTION

NOTICE FOR INITIALIZATION:

When disconnecting the negative (–) battery terminal, initialize the following system after the terminal is reconnected.

System Name	See Page
Power Window Control System	01-28

NOTICES FOR HYBRID SYSTEM ACTIVATION:

- When the warning lamp is illuminated or the battery has been disconnected and reconnected, pressing the power switch may not start the system on the first try. If so, press the power switch again.
- With the power switch's power mode changed to ON (IG), disconnect the battery. If the key is not in the key slot during reconnection, DTC B2799 may be output.

PROBLEM SYMPTOMS TABLE

HINT:

Before performing verification listed in the table below, check the fuse and relay.

RADIO RECEIVER ASSY

Symptom	Suspected Area	See page
Pressing PWR switch does not turn on system.	1. Power source circuit (radio receiver assy) 2. Power source circuit (multi-display) 3. AVC-LAN circuit (radio receiver assy – EMV) 4. Radio receiver assy 5. Multi-display	05-1793 05-1933 05-1826 67-5 67-7
The audio system does not function.	1. Steering pad switch circuit 2. Radio receiver assy	05-1799 67-5
No sound can be heard. (separate type amplifier)	1. Power source circuit (stereo component amplifier assy) 2. AMP sound signal circuit 3. Speaker circuit 4. AVC-LAN circuit (radio receiver assy – AMP) 5. AMP mute signal circuit (from radio receiver assy) 6. Stereo component amplifier assy	05-1796 05-1822 05-1815 05-1824 05-1809 67-25
No sound can be heard. (built-in type amplifier)	1. Power source circuit (radio receiver assy) 2. Speaker circuit 3. Radio receiver assy	05-1793 05-1796 67-5
Sound cannot be heard from the front driver side speaker (low volume). (separate type amplifier)	1. AMP mute signal circuit (from navigation ECU) 2. Stereo component amplifier assy	05-1812 67-25
Poor sound quality in all modes (low volume). (separate type amplifier)	1. Power source circuit (radio receiver assy) 2. Power source circuit (stereo component amplifier assy) 3. Speaker circuit 4. AMP sound signal circuit (radio receiver assy – AMP) 5. Sound quality is bad in all modes (volume is too low)	05-1793 05-1796 05-1815 05-1822 05-1828
Poor sound quality in all modes (low volume). (built-in type amplifier)	1. Power source circuit (radio receiver assy) 2. Speaker circuit 3. Sound quality is bad in all modes (volume is too low)	05-1793 05-1815 05-1828
Abnormal noise occurs.	–	05-1829
Radio broadcast cannot be received (poor reception).	–	05-1830
CD cannot be inserted/played or CD is ejected right after insertion.	1. Power source circuit (radio receiver assy) 2. CD cannot be inserted or is ejected right after insertion	05-1793 05-1832
CD cannot be ejected.	1. Power source circuit (radio receiver assy) 2. CD cannot be ejected	05-1793 05-1834
CD sound is poor (low volume).	–	05-1835
CD sound skips.	–	05-1836
Cassette tape cannot be inserted or cannot be played.	1. Power source circuit (radio receiver assy) 2. Cassette tape cannot be inserted or played	05-1793 05-1837
Cassette tape cannot be ejected.	1. Power source circuit (radio receiver assy) 2. Cassette tape cannot be ejected	05-1793 05-1838
Poor sound quality when playing cassette tape.	–	05-1839
The tape is tangled due to unsuitable tape speed or auto-reverse malfunction.	–	05-1840

STEERING PAD SWITCH

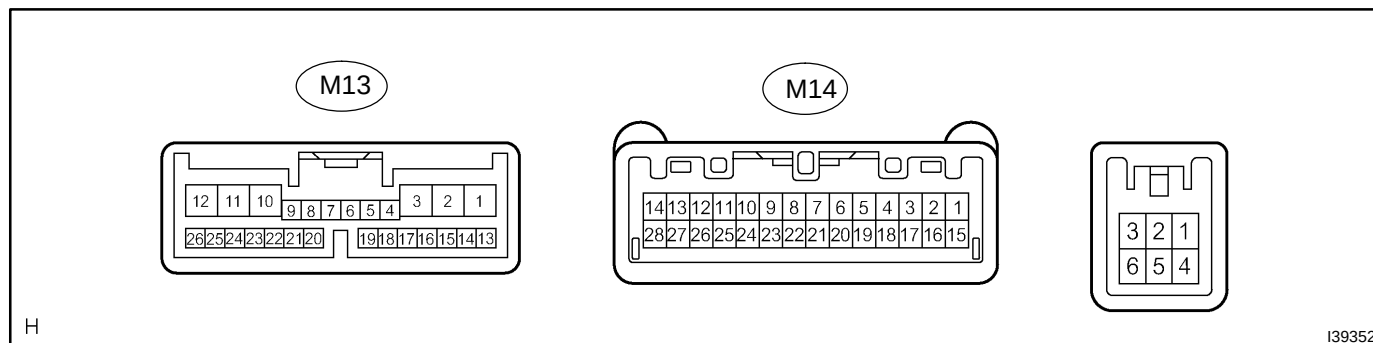
Symptom	Suspected Area	See page
Audio system is not operated using a steering pad switch.	1. Steering pad switch circuit 2. Radio receiver assy	05-1799 67-5

OTHERS

Symptom	Suspected Area	See page
Radio receiver or multi-display illumination does not illuminate at night (when the light control switch is turned to TAIL or HEAD).	1. Illumination circuit 2. Radio receiver assy 3. Multi-display	05-1804 67-5 67-7

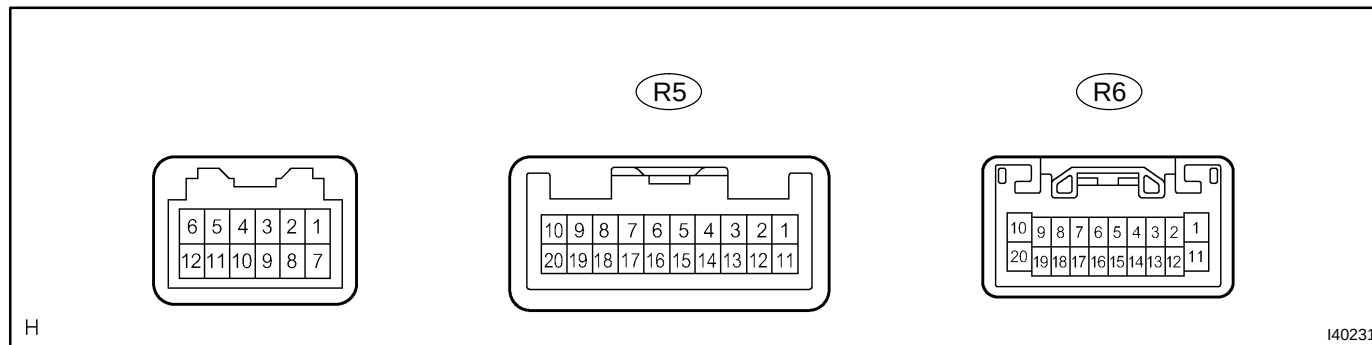
TERMINALS OF ECU

1. MULTI-DISPLAY



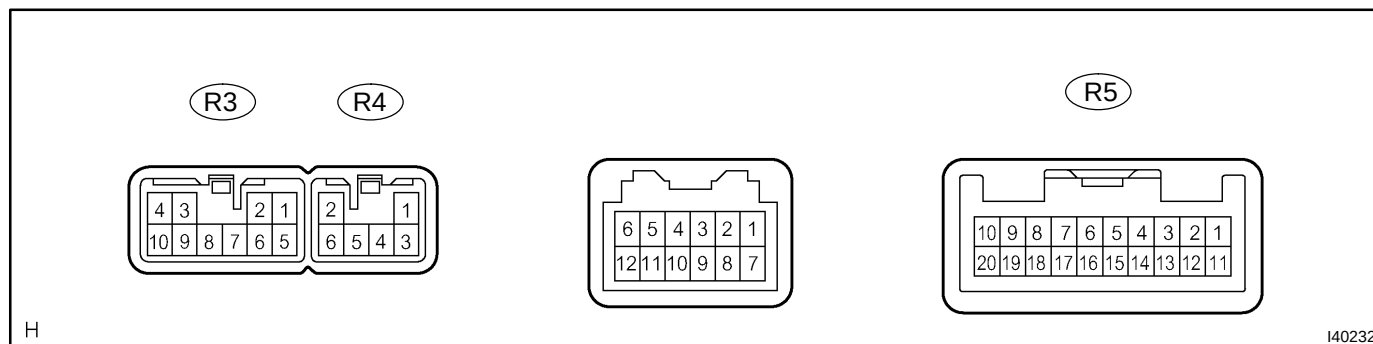
Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specification
ILL+ (M13-1) – GND1 (M13-3)	G – BR	Illumination (rheostat) signal	Power switch OFF → ON (IG)	Below 1 V → 10 to 14 V
ILL- (M13-2) – Body ground	W-B – Body ground	Illumination (rheostat) signal	Power switch OFF → ON (IG)	Below 1 V → 10 to 14 V
GND1 (M13-3) – Body ground	BR – Body ground	Ground	Always	Below 1 Ω
TX1+ (M13-4) – GND1 (M13-3)	B – BR	AVC-LAN communication signal	See "system check mode" → Power switch ON (ACC)	– → 2 to 3 V
TX1- (M13-5) – GND1 (M13-3)	W – BR	AVC-LAN communication signal	See "system check mode" → Power switch ON (ACC)	– → 2 to 3 V
TC (M13-7) – GND1 (M13-3)	P – BR	Diagnosis ON signal	Power switch OFF → ON (IG)	Below 1 V → 10 to 14 V
IG (M13-10) – GND1 (M13-3)	B – BR	Power switch IG	Power switch OFF → ON (IG)	Below 1 V → 10 to 14 V
ACC (M13-11) – GND1 (M13-3)	GR – BR	Power switch ACC	Power switch OFF → ON (ACC)	Below 1 V → 10 to 14 V
+B1 (M13-12) – GND1 (M13-3)	Y – BR	Battery	Always	10 to 14 V
PKB (M13-16) – GND1 (M13-3)	R – BR	Parking brake signal	Turn parking brake switch ON → OFF	Below 1 V → 10 to 14 V
DR (M13-17) – GND1 (M13-3)	B – BR	Dimmer signal	Light control switch OFF → TAIL or HEAD	Below 1 V → 10 to 14 V
TX2+ (M13-18) – GND1 (M13-3)	P – BR	AVC-LAN communication signal	See "system check mode" → Power switch ON (ACC)	– → 2 to 3 V
TX2- (M13-19) – GND1 (M13-3)	W – BR	AVC-LAN communication signal	See "system check mode" → Power switch ON (ACC)	– → 2 to 3 V
SPD (M13-25) – GND1 (M13-3)	V – BR	Speed signal from combination meter	See "vehicle signal check mode"	–

2. RADIO RECEIVER ASSY (SEPARATE TYPE AMPLIFIER)



Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specification
GND (R5-6) – Body ground	R – Body ground	Steering pad switch ground	Always	Below 1 Ω
SW1 (R5-7) – GND (R6-20)	B – BR	Steering pad switch signal	Steering pad switch not operating. → SEEK+ switch push → SEEK– switch push → VOL+ switch push → VOL– switch push	4 V or more → Approx. 0.5 V → Approx. 0.9 V → Approx. 2.0 V → Approx. 3.4 V
SW2 (R5-8) – GND (R6-20)	W – BR	Steering pad switch signal	Steering pad switch not operating. → MODE switch push	4 V or more → Below 2.5 V
TX+ (R5-9) – GND (R6-20)	P – BR	AVC–LAN communication signal	See "system check mode" → Power switch ON (ACC)	– → 2 to 3 V
TX– (R5-10) – GND (R6-20)	W – BR	AVC–LAN communication signal	See "system check mode" → Power switch ON (ACC)	– → 2 to 3 V
B (R6-1) – GND (R6-20)	SB – BR	Battery	Always	10 to 14 V
ILL+ (R6-2) – GND (R6-20)	G – BR	Illumination (rheostat) signal	Power switch OFF → ON (IG) Light control switch TAIL or HEAD	Below 1 V → 10 to 14 V
TX+ (R6-5) – GND (R6-20)	P – BR	AVC–LAN communication signal	See "system check mode" → Power switch ON (ACC)	– → 2 to 3 V
MUTE (R6-7) – GND (R6-5)	W – BR	Mute signal	Audio system is playing → Changing	Above 3.5 V → Below 1 V
R+ (R6-8) – GND (R6-5)	R – BR	Sound signal (Right)	Audio system is playing	A waveform synchronized with sounds is output
L+ (R6-9) – GND (R6-5)	W – BR	Sound signal (Left)	Audio system is playing	A waveform synchronized with sounds is output
SLD (R6-10) – Body ground	Shield – Body ground	Shielded ground	Always	Below 1 Ω
ACC (R6-11) – GND (R6-20)	GR – BR	Power switch ACC	Power switch OFF → ON (ACC)	Below 1 V → 10 to 14 V
ILL– (R6-12) – Body ground	W–B – Body ground	Illumination (rheostat) signal	Power switch OFF → ON (IG) Light control switch TAIL or HEAD	Below 1 V → 10 to 14 V
ANT+ (R6-13) – GND (R6-20)	O – BR	Power source of antenna	Radio power switch ON and AM or FM	10 to 14 V
TX– (R6-15) – GND (R6-20)	O – BR	AVC–LAN communication signal	See "system check mode" → Power switch ON (ACC)	– → 2 to 3 V
R– (R6-18) – GND (R6-20)	G – BR	Sound signal (Right)	Audio system is playing	A waveform synchronized with sounds is output
L (R6-19) – GND (R6-20)	B – BR	Sound signal (Left)	Audio system is playing	A waveform synchronized with sounds is output
GND (R6-20) – Body ground	BR – Body ground	Ground	Always	Below 1 Ω

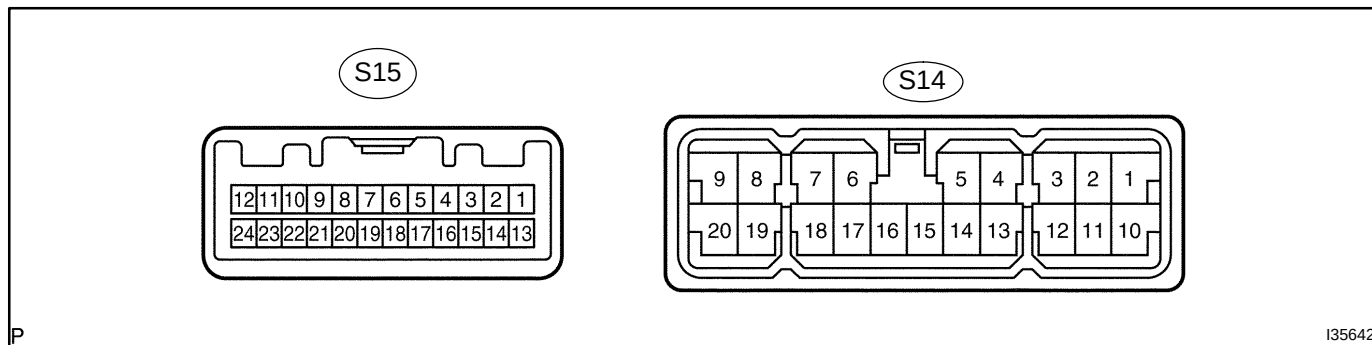
3. RADIO RECEIVER ASSY (BUILT-IN TYPE AMPLIFIER)



Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specification
GND (R5-6) – Body ground	R – Body ground	Steering pad switch ground	Always	Below 1 Ω
SW1 (R5-7) – GND (R3-7)	B – BR	Steering pad switch signal	Steering pad switch not operating. → SEEK+ switch push → SEEK– switch push → VOL+ switch push → VOL– switch push	4 V or more → Approx. 0.5 V → Approx. 0.9 V → Approx. 2.0 V → Approx. 3.4 V
SW2 (R5-8) – GND (R3-7)	W – BR	Steering pad switch signal	Steering pad switch not operating. → MODE switch push	4 V or more → Below 2.5V
TX+ (R5-9) – GND (R3-7)	P – BR	AVC–LAN communication signal	See "system check mode" → Power switch ON (ACC)	– → 2 to 3 V
TX– (R5-10) – GND (R3-7)	W – BR	AVC–LAN communication signal	See "system check mode" → Power switch ON (ACC)	– → 2 to 3 V
FR+ (R3-1) – GND (R3-7)	LG – BR	Sound signal (Right)	Audio system is playing	A waveform synchronized with sounds is output
FL+ (R3-2) – GND (R3-7)	P – BR	Sound signal (Left)	Audio system is playing	A waveform synchronized with sounds is output
ACC (R3-3) – GND (R3-7)	GR – BR	Power switch ACC	Power switch OFF → ON (ACC)	Below 1 V → 10 to 14 V
+B (R3-4) – GND (R3-7)	SB – BR	Battery	Always	10 to 14 V
FR– (R3-5) – GND (R3-7)	L – BR	Sound signal (Right)	Audio system is playing	A waveform synchronized with sounds is output
FL– (R3-6) – GND (R3-7)	V – BR	Sound signal (Left)	Audio system is playing	A waveform synchronized with sounds is output
GND (R3-7) – Body ground	BR – Body ground	Ground	Always	Below 1 Ω
ANT+ (R3-8) – GND (R3-7)	O – BR	Power source of antenna	Radio power switch ON and AM or FM	10 to 14 V
ILL+ (R3-10) – GND (R3-7)	G – BR	Illumination (rheostat) signal	Power switch OFF → ON (IG) Light control switch TAIL or HEAD	Below 1 V → 10 to 14 V
RR+ (R4-1) – GND (R3-7)	R – BR	Sound signal (Right)	Audio system is playing	A waveform synchronized with sounds is output
RL+ (R4-2) – GND (R3-7)	B – BR	Sound signal (Left)	Audio system is playing	A waveform synchronized with sounds is output
RR– (R4-3) – GND (R3-7)	W – BR	Sound signal (Right)	Audio system is playing	A waveform synchronized with sounds is output

ILL- (R4-5) – Body ground	W-B – Body ground	Illumination (rheostat) signal	Power switch OFF → ON (IG) Light control switch TAIL or HEAD	Below 1 V → 10 to 14 V
RL- (R4-6) – GND (R3-7)	Y – BR	Sound signal (Left)	Audio system is playing	A waveform synchronized with sounds is output

4. STEREO COMPONENT AMPLIFIER ASSY



Terminal No. (Symbols)	Wiring Color	Terminal Description	Condition	Specification
+B (S14-1) – GND (S14-16)	SB – W-B	Battery	Always	10 to 14 V
CTR+ (S14-3) – GND (S14-16)	R – W-B	Sound signal (Center)	Audio system is playing	A waveform synchronized with sounds is output
RL+ (S14-4) – GND (S14-16)	B – W-B	Sound signal (Left)	Audio system is playing	A waveform synchronized with sounds is output
RR+ (S14-5) – GND (S14-16)	R – W-B	Sound signal (Right)	Audio system is playing	A waveform synchronized with sounds is output
FL+ (S14-6) – GND (S14-16)	P – W-B	Sound signal (Left)	Audio system is playing	A waveform synchronized with sounds is output
FR+ (S14-7) – GND (S14-16)	LG – W-B	Sound signal (Right)	Audio system is playing	A waveform synchronized with sounds is output
WF2+ (S14-8) – GND (S14-16)	P – W-B	Sound signal (Left)	Audio system is playing	A waveform synchronized with sounds is output
WF1+ (S14-9) – GND (S14-16)	LG – W-B	Sound signal (Right)	Audio system is playing	A waveform synchronized with sounds is output
+B2 (S14-10) – GND (S14-16)	SB – W-B	Battery	Always	10 to 14 V
CTR- (S14-12) – GND (S14-16)	W – W-B	Sound signal (Center)	Audio system is playing	A waveform synchronized with sounds is output
RL- (S14-13) – GND (S14-16)	Y – W-B	Sound signal (Left)	Audio system is playing	A waveform synchronized with sounds is output
RR- (S14-14) – GND (S14-16)	W – W-B	Sound signal (Right)	Audio system is playing	A waveform synchronized with sounds is output
GND2 (S14-15) – Body ground	W-B – Body ground	Ground	Always	Below 1 Ω
GND (S14-16) – Body ground	W-B – Body ground	Ground	Always	Below 1 Ω
FL- (S14-17) – GND (S14-16)	V – W-B	Sound signal (Left)	Audio system is playing	A waveform synchronized with sounds is output

FR- (S14-18) – GND (S14-16)	L – W-B	Sound signal (Right)	Audio system is playing	A waveform synchronized with sounds is output
WF2- (S14-19) – GND (S14-16)	V – W-B	Sound signal (Left)	Audio system is playing	A waveform synchronized with sounds is output
WF1- (S14-20) – GND (S14-16)	L – W-B	Sound signal (Right)	Audio system is playing	A waveform synchronized with sounds is output
MUTE (S15-1) – GND (S14-16)	W – W-B	Mute signal	Audio system is playing → Changing	Above 3.5 V → Below 1 V
L- (S15-2) – GND (S14-16)	B – W-B	Sound signal (Left)	Audio system is playing	A waveform synchronized with sounds is output
L+ (S15-3) – GND (S14-16)	W – W-B	Sound signal (Left)	Audio system is playing	A waveform synchronized with sounds is output
R- (S15-4) – GND (S14-16)	G – W-B	Sound signal (Right)	Audio system is playing	A waveform synchronized with sounds is output
R+ (S15-5) – GND (S14-16)	R – W-B	Sound signal (Right)	Audio system is playing	A waveform synchronized with sounds is output
SLD (S15-6) – Body ground	Shield – Body ground	Shielded ground	Always	Below 1 Ω
TX- (S15-7) – GND (S14-16)	O – W-B	AVC-LAN communication signal	See "system check mode" → Power switch ON (IG)	– → 2 to 3 V
TX+ (S15-8) – GND (S14-16)	P – W-B	AVC-LAN communication signal	See "system check mode" → Power switch ON (IG)	– → 2 to 3 V
ACC (S15-12) – GND (S14-16)	GR – W-B	Power switch ACC	Power switch OFF → ON (ACC)	Below 1 V → 10 to 14 V
N-MU (S15-21) – GND (S14-16)	W (*1) – W-B	Mute signal	Audio system is playing → Changing	Below 3.5 V → Below 1 V

*1: w/ Navigation system

*2: w/o Navigation system