AUDIO SYSTEM (April, 2003)

055ZX–05

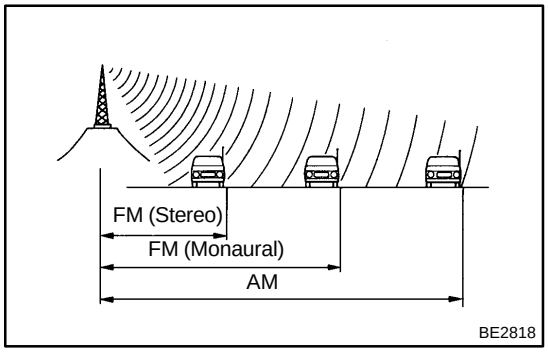
DESCRIPTION

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

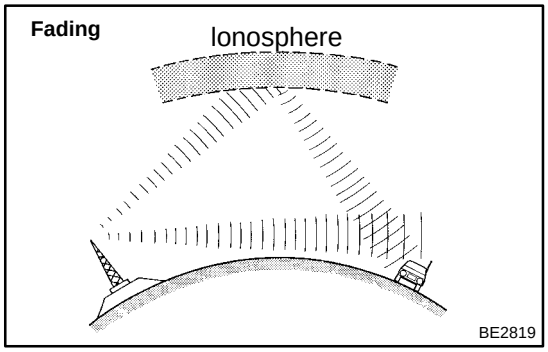


2. SERVICE AREA

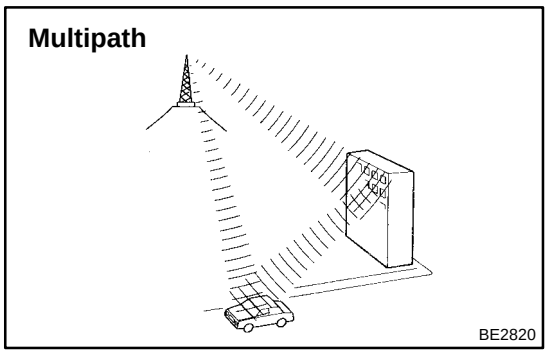
(a) There are great differences in the size of the service area for AM and FM broadcasting. Sometimes FM stereo broadcast cannot be received even through AM can be received very clearly.
Not only does FM stereo have the smallest service area, but it also picks up static and other types of interference (”noise”) easily.

3. RECEPTION PROBLEMS

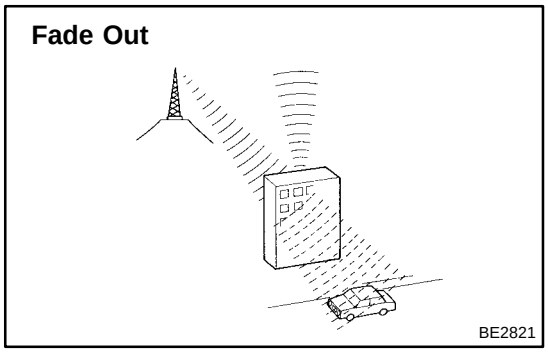
HINT:
Besides the problem of static, there are also the problems called ”fading”, ”multipath” and ”fade out”. These problems are caused not by electrical noise but by the nature of the radio waves themselves.



(a) Fading
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 from the same transmitter that reach the vehicle’s antenna directly. This type of interference is called ”fading”.



(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 is to be received directly.



(c) Fade Out
Because of the frequency higher than that of AM, FM radio wave tends to be reflected against obstructions such as tall buildings or mountains. For this reason, FM signals often seems 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 noise troubleshooting to understand a customer’s claim clearly. Use the following table to diagnose the phenomenon.

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 fading noise caused by changes of FM frequency.

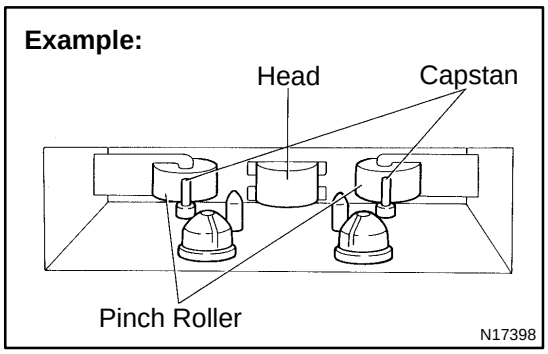
HINT:
If the condition where the noise occurs does not meet any of the above, find out the cause based on ”Reception Problems”. Refer to the description about Multipath and Fading mentioned previously.

5. COMPACT DISC PLAYER

(a) Compact Disc (hereafter called ”CD”) Players use a laser beam pick–up to read the digital signals recorded on the CD and reproduce analog signals of the music, etc. There are 4.7 in. (12 cm) and 3.2 in. (8 cm) discs available for the CD player.

HINT:
Never attempt to disassemble or oil any part of the player unit. Do not insert any object other than a disc into the magazine.

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

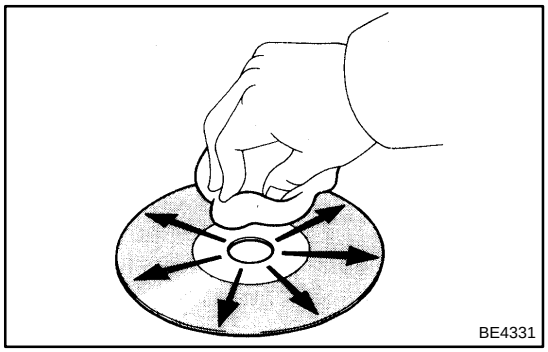


6. MAINTENANCE

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.



7. 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.

8. COMMUNICATION SYSTEM

(a) Components in the audio system communicate each other though AVC–LAN.

(b) The master component of AVC–LAN is the radio receiver assy with a resistance (60 – 80 Ω), which is necessary for communication.

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

9. DIAGNOSIS FUNCTION

(a) The audio system has diagnosis function (The diagnosis result is displayed on the LCD of the radio receiver assy).

(b) The component code (physical address), or three–digit number (in hexadecimal) is set for each component comprising AVC–LAN.

(c) The logical address, or two–digit number (in hexadecimal) is set for each function and component unit in each component.

055ZY–05

HOW TO PROCEED WITH TROUBLESHOOTING

1	VEHICLE BROUGHT TO WORKSHOP

2	CUSTOMER PROBLEM ANALYSIS (SEE PAGE 05–598)

3	CHECK AND CLEAR DTC (SEE PAGE 05–599)

4	PROBLEM SYMPTOM CONFIRMATION

→ SYMPTOM OCCURS (GO TO STEP 6)

SYMPTOM DOES NOT OCCUR (GO TO STEP 5)

5	SYMPTOM SIMULATION (SEE PAGE 01–20)

6	DTC CHECK (SEE PAGE 05–599)

→ MALFUNCTION CODE (GO TO STEP 7)

→ NORMAL CODE (GO TO STEP 8)

7	DTC CHART (SEE PAGE 05–605)

→ GO TO STEP 9

8	PROBLEM SYMPTOMS TABLE (SEE PAGE 05–609)

9	CIRCUIT INSPECTION (SEE PAGE 05–610 – 05–637)

10	CONFIRMATION TEST

END

055ZZ–02

CUSTOMER PROBLEM ANALYSIS CHECK

AUDIO SYSTEM Check Sheet

Inspector's name: _____

Customer's Name		**Registration No.**	
		Registration Year/Date	
		Frame No.	
Brought–in Date	/ /	**Odometer Reading**	**km Mile**

Date of First Occurrence	/ /
Frequency of Problem Occurrence	☐ Constant ☐ Intermittent (Times a day)

Problem Symptom	☐ **Switch**
	☐ **Radio**
	☐ **CD**
	☐ **Noise**

DTC Check	**Parts name**	**DTC (1st time).**	**DTC (2nd time).**
	Radio receiver assy		

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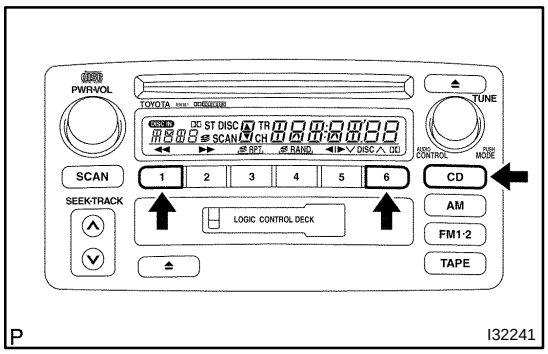


PRE–CHECK

1. DIAGNOSIS CHECK

(a) Starting Diagnosis Mode (Service Check Mode)

(1) Turn off the audio system and turn the IG switch to ACC. While pressing the preset switches ”1” and ”6” at the same time, press ”CD” 3 times.

(2) Reference:

- Beep sound is given 3 times and the system enters the service check mode.
- It may take about 40 sec. to complete the check.
- In the service check mode, the system check and the diagnosis memory check are performed, and the check results are displayed in ascending order of the device codes. (physical address)

Terms	Meaning
Component code (Physical address)	Three–digit code (In hexadecimal) given to each device comprising AVC–LAN. Corresponding to its function, individual symbol is provided.
Logical address	Two–digit code (In hexadecimal) given to each function and device unit in each device comprising AVC–LAN.

Code No. (physical address) List

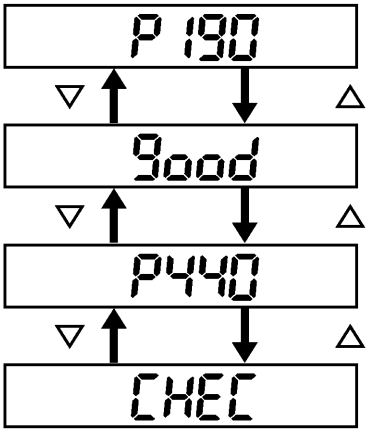
Code No. (physical address)	Equipment name
190	Radio receiver assy (Audio head unit)

(b) Finishing Diagnosis Mode

(1) Press ”CD” for 2 sec. or more, or turn the IG switch OFF.

(c) Service Check Mode Result Display (for checking the current and the past system conditions)

(1) Press the ”TUNE” switch to see the check result of each device.



P——physical address
190——device code

good——”The component is normal”.

P——physical address
440——component code

CHEC——”Check needed”.

The illustration shows the case that the system has 2 devices with codes 190 and 440, and the device (code 440) has a trouble.
The check result is displayed in ascending order of device code. The device code is displayed first, then the check result.

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(2) Check Result Display

Display	Original Language	Meaning	Action to be taken
good	Good (normal)	No DTC is detected in both ”System Check Mode” and ”Diagnosis Memory Mode”.	–
nCon	No connection	The system recognized the component when it was registered, but the component gives no response to the ”Diagnosis Mode ON Request”.	Check the power source circuit and the communication circuit of the device indicated by the device code (physical address).
ECHn	Exchange	One or more DTC for ”Exchange” is detected in either ”System Check Mode” or ”Diagnosis Memory Mode”.	Go to the detail information mode to check the trouble area referring to the DTC list.
CHEC	Check	When no DTC is detected for ”Exchange”, one or more DTC for ”Check is detected in either ”System Check Mode” or ”Diagnosis Memory Mode”.	Go to the detail information mode to check the trouble area referring to the DTC list.

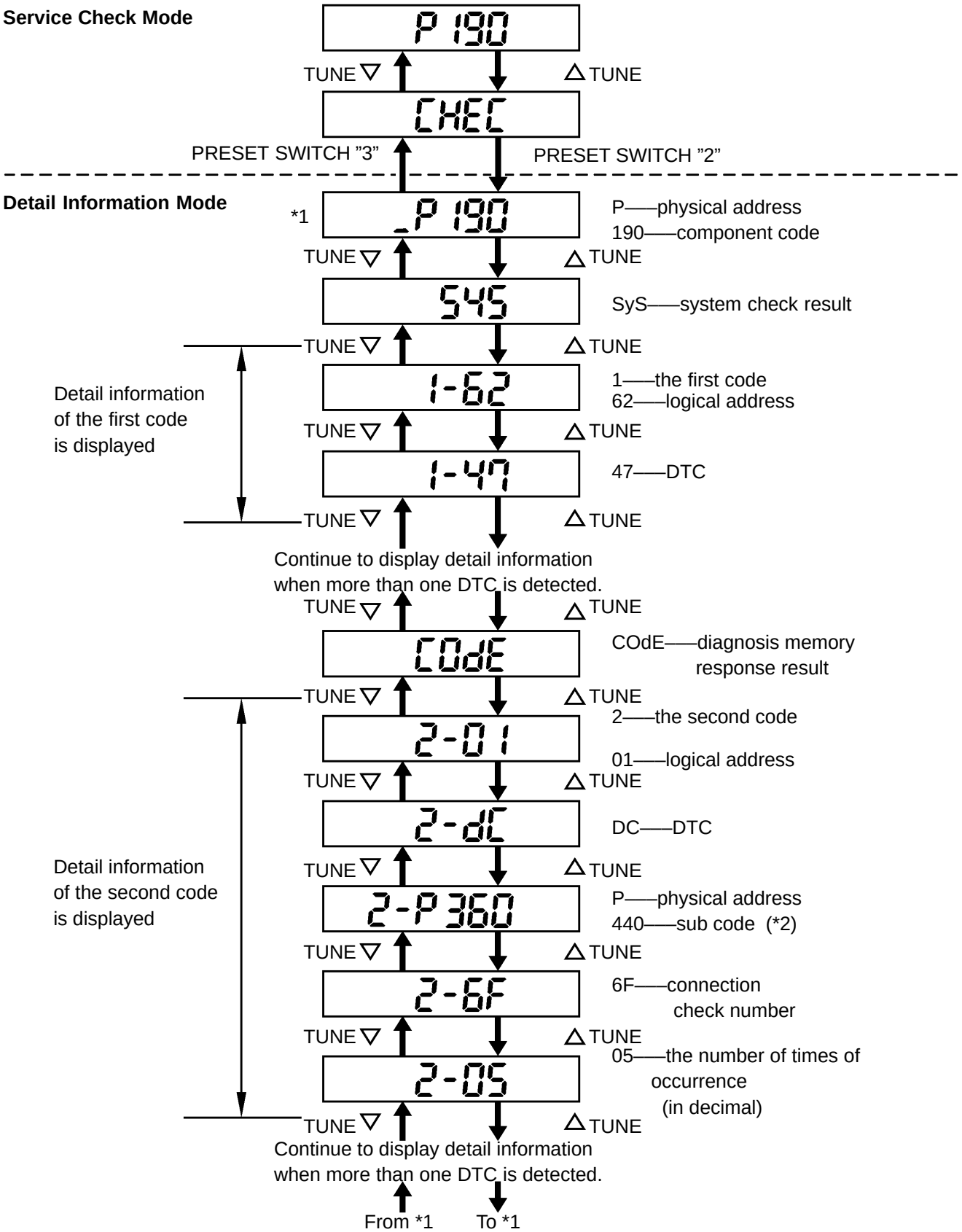
Display	Original Language	Meaning	Action to be taken
Old	Old version	Old DTC application is identified and DTC is detected in either ”System Check Mode” or ”Diagnosis Memory Mode”.	–
nrES	No response	The device gives no response to any one of ”System Check Mode ON Request”, ”System Check Result Request” and ”Diagnosis Memory Request”.	Check the power source circuit and the communication circuit of the device indicated by the device code (physical code).

(3) To perform the Service Check again, press the preset switch ”1”.

(d) Detail information Mode (when displaying the troubled device’s DTC)

(1) With ”CHEC” or ”ECHn” being display, press the preset switch ”2” to go to the detail information mode.

(2) Press the ”TUNE” switch to display ”System Check Result (SyS)” and ”Diagnosis Memory Response (COdE)”.



The illustration shows the case that the component with code 190 has DTC ”47” and ”DC” as a result of the system check and the diagnosis memory response.

The detail information mode shows the system check result first, then the diagnosis memory response result.

(*2): As for DTC that does not have any sub code, sub code is not displayed.

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(3) Displayed Items in Detail Information Mode

Division Code for DTC display	Meaning	Order of detailed information displayed when the "TUNE UP" switch is pressed. (The order is reversed when the "TUNE DOWN" switch is pressed.)
SyS	System check result is displayed.	Logical address → DTC
COdE	Diagnosis memory check result is displayed.	Logical address→ DTC→ Sub code→ Connection confirmation number→ The number of times of occurrence

(4) Check the trouble area referring to the DTC list. (See page 05–605)

(5) To return to the service check mode, press the preset switch "3".

(e) Clearing Individual DTC Memory (when clearing the memory of DTC detected in the pest individually)

(1) Press the preset switch "5" for 2 sec. or more while the "ECHn" is displayed in the service check mode or during the detail information mode.

HINT:

- Beep sound is given once when the DTC memory is completely cleared.
- When DTC memory is cleared, only the component code (physical address) is displayed for the target component.
- To check DTC, press the preset switch "1" and perform the service check again.

(f) Clearance of all DTC memory (when clearing all the memory of DTC detected in the past)

(1) Start the diagnosis mode after repairing the trouble area.

(2) Press the preset switch "5" for 2 sec. or more. ("CLr" is displayed at this time.)

HINT:

- Beep sound is given once when the DTC memory is completely cleared.
- When DTC memory for all the device is cleared, only the component codes (physical address) are displayed.

(3) Press the preset switch "1" to perform the service check again, and check that no DTC is displayed for all the component codes. (physical address)

2. IDENTIFICATION OF NOISE SOURCE

(a) Identify the condition under 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 noise, and stopping the engine erases the noise immediately.	Generator
Noise occurs during the A/C or the heater operation.	Blower motor
Rapid acceleration during driving on the unpaved road or after the IG 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 the window washer operation.	Washer
Noise occurs during the engine running, and it continues after the engine is stopped.	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 untuned makes noise noticeable, making the recognition of the phenomenon easier.

05601–02

DIAGNOSTIC TROUBLE CODE CHART

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

1. RADIO RECEIVER ASSY (Physical address: 190)

HINT:

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

(a) Logical address: 01 (Communication control)

DTC	Diagnosis item	Description	Action to be taken
22	RAM Error	Abnormal condition of RAM is detected.	Replace radio receiver assy.
D6 *1	Absence of Master	Component in which this code is recorded had been disconnected from system or master component with ignition in ACC or ON.	• Check harness for power supply system of radio receiver assy. • Check harness for communication system of radio receiver assy.
D7 *5	Connection check Error	Component in which this code is recorded had been disconnected from system or master component ignition with in ACC or ON.	• Check harness for power supply of radio receiver assy. • Check harness for communication system of radio receiver assy.
D8 *2	No Response to Connection Check	Component shown by sub code is or had been disconnected from system after engine start.	• Check harness for power supply system of component shown by sub code. • Check harness for communication system of component shown by sub code.
D9 *1	Last Mode Error	Audio or visual component operated before engine stop is or had been disconnected with ignition switch in ACC or ON.	• Check harness for power supply system of component shown by sub code. • Check harness for communication system of component shown by sub code.
DA	No Response to ON/OFF Instruction	No response is identified when changing mode (audio and visual mode change). Detected when sound and picture does not change by button operation.	• Check harness for power supply system of component shown by sub code. • Check harness for communication system of component shown by sub code. • If error occurs again, replace component shown by sub code.
DB *1	Mode Status Error	Dual alarm is detected.	• Check harness for power supply of component shown by sub code. • Check harness for communication system of component shown by sub code.
DC *3	Transmission Error	Transmission to component shown by auxiliary code has been failed. (Detecting this DTC does not necessarily mean actual failure.)	If same sub code is recorded in other component, check harness for power supply and communication system of all components shown by code. (If not, delete DTC and recheck.)

DD *4	Master Reset (Momentary Interruption)	After engine is started, master component had been disconnected from system.	• Check harness for power supply system of multi–display. • Check harness for communication system of radio receiver assy. • If this error occurs frequently, replace radio receiver assy.
DE *4	Slave Reset (Momentary Interruption)	After engine is started, component shown by sub code had been disconnected from system.	• Check harness for power supply of component shown by sub code. • Check harness for communication system of component shown by sub code.
E0 *1	Registration Completion Instruction Error	”Registration Completion Instruction” command from master cannot be received.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.
E2	ON/OFF Instruction Parameter Error	Error occures in ON/OFF controlling command from master component.	Replace radio receiver assy
E3 *1	Registration Request Transmission	Registration Request command is output from component shown by sub code. Receiving Connection Check Instruction, Registration Request command is output from sub–master component.	Since this DTC is provided for engineering purpose, it may be detected when no actual failure exists.

(b) Logical address: 61 (Cassette switch)

DTC	Diagnosis item	Description	Action to be taken
40	Mechanical Error of Media	Malfunction due to mechanical failure is identified. Or cassette tape is cut or entangled.	• Inspect cassette tape. • Replace radio receiver assy.
41	EJECT Error	Malfunction due to mechanical failure.	Replace radio receiver assy.
42	Tape caught in the radio receiver assy	Hub lock etc.	Inspect cassette tape.

(c) Logical address: 62 (CD player)

DTC	Diagnosis item	Description	Action to be taken
42	No Disc Readout	Disc cannot be read.	• Inspect CD. • Replace radio receiver assy.
44	CD player Error	Error is detected in CD player.	Replace radio receiver assy.
45	EJECT Error	Magazine cannot be ejected.	Replace radio receiver assy.
46	Scratched/Reversed Disc	Scratches or dirt is found on CD surface or CD is set upside down.	Inspect CD.

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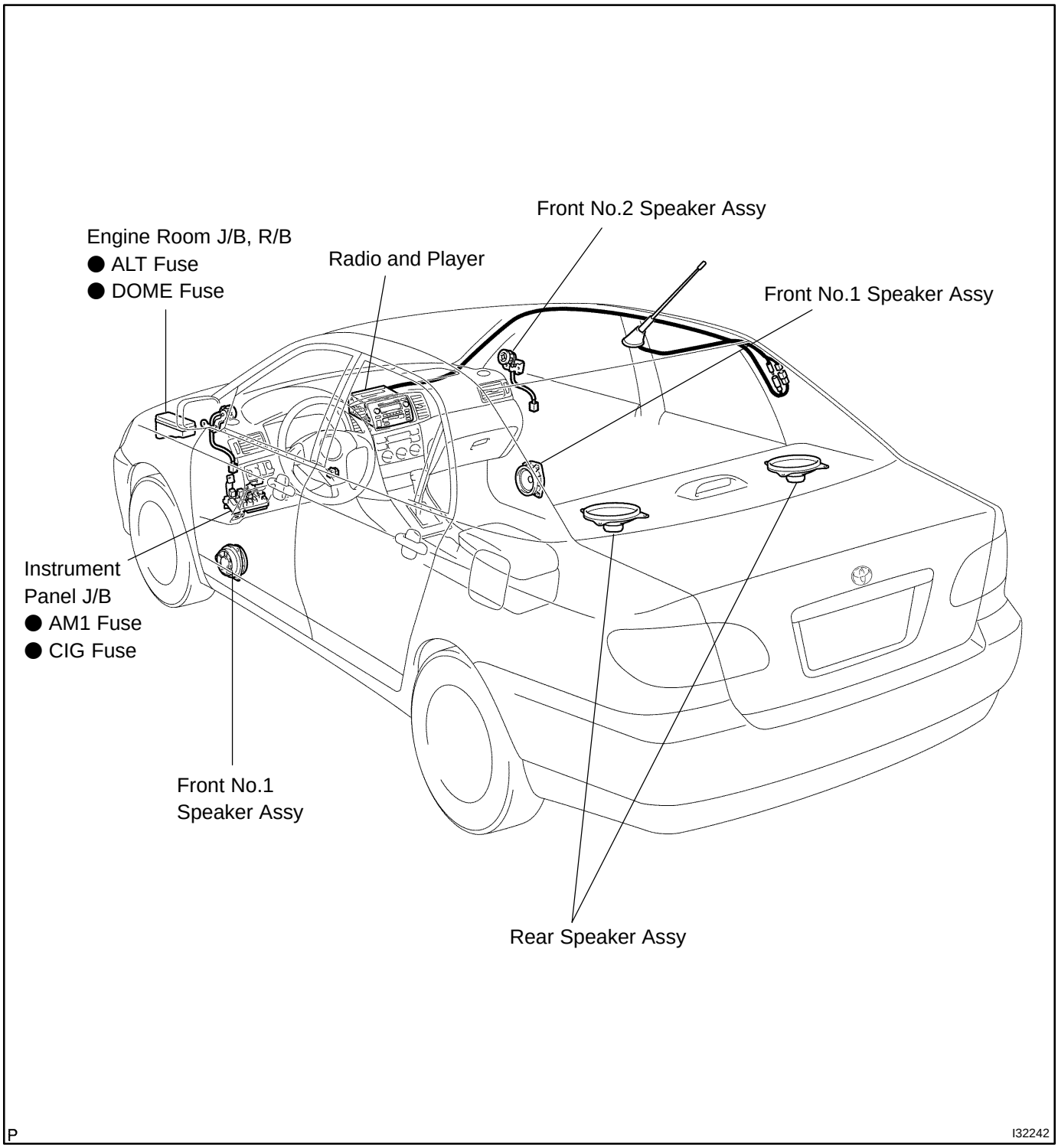
LOCATION



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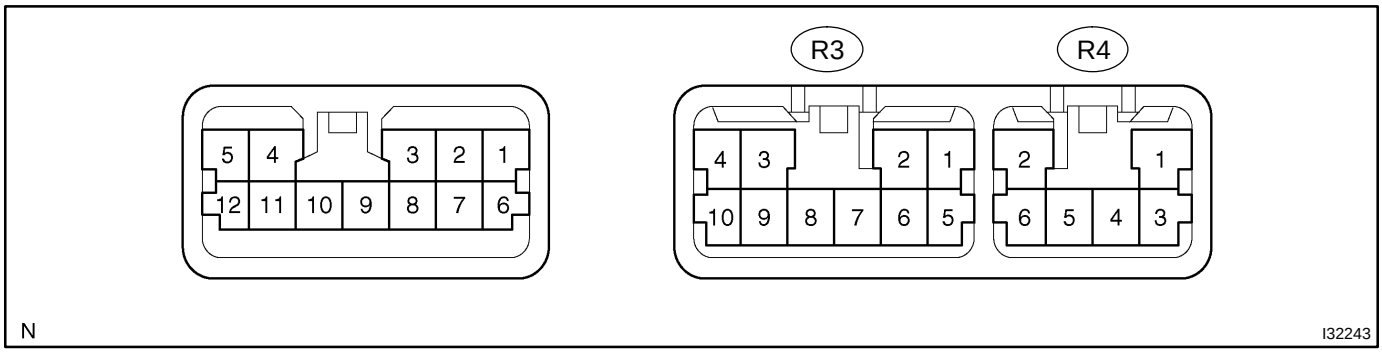
TERMINALS OF ECU

1. RADIO RECEIVER ASSY



Symbols (Terminals No.)	Wirin Color	Condition	STD Voltage (V)
R3–1 ⇔ R3–7 (FR+ ⇔ GND)	LG ⇔ BR	Audio system is sounding	A waveform synchronized with sounds is output
R3–2 ⇔ R3–7 (FL+ ⇔ GND)	P ⇔ BR	Audio system is sounding	A waveform synchronized with sounds is output
R3–3 ⇔ R3–7 (ACC ⇔ GND)	GR ⇔ BR	Ignition switch OFF	Below 1 V
		Ignition switch ON	10 – 14 V
R3–4 ⇔ R3–7 (+B ⇔ GND)	L–W ⇔ BR	Constant	10 – 14 V
R3–5 ⇔ R3–7 (FR– ⇔ GND)	L ⇔ BR	Audio system is sounding	A waveform synchronized with sounds is output
R3–6 ⇔ R3–7 (FL– ⇔ GND)	V ⇔ BR	Audio system is sounding	A waveform synchronized with sounds is output
R3–7 ⇔ Body ground (GND ⇔ Body ground)	BR ⇔ Body ground	Constant	Below 1 V
R3–8 ⇔ – (ANT+ ⇔ –)	B ⇔ –	See ”Service check mode”	–
R3–10 ⇔ R3–7 (ILL+ ⇔ GND)	G ⇔ BR	Light control switch TAIL or HEAD	10 – 14 V
R4–1 ⇔ R3–7 (RR+ ⇔ GND)	R ⇔ BR	Audio system is sounding	A waveform synchronized with sounds is output
R4–2 ⇔ R3–7 (RL+ ⇔ GND)	B ⇔ BR	Audio system is sounding	A waveform synchronized with sounds is output
R4–3 ⇔ R3–7 (RR– ⇔ GND)	W ⇔ BR	Audio system is sounding	A waveform synchronized with sounds is output
R4–5 ⇔ R3–7 (ILL– ⇔ GND)	W–B ⇔ BR	Light control switch HI or FLASH	10 – 14 V
R4–6 ⇔ R3–7 (RL– ⇔ GND)	Y ⇔ BR	Audio system is sounding	A waveform synchronized with sounds is output

05604–04

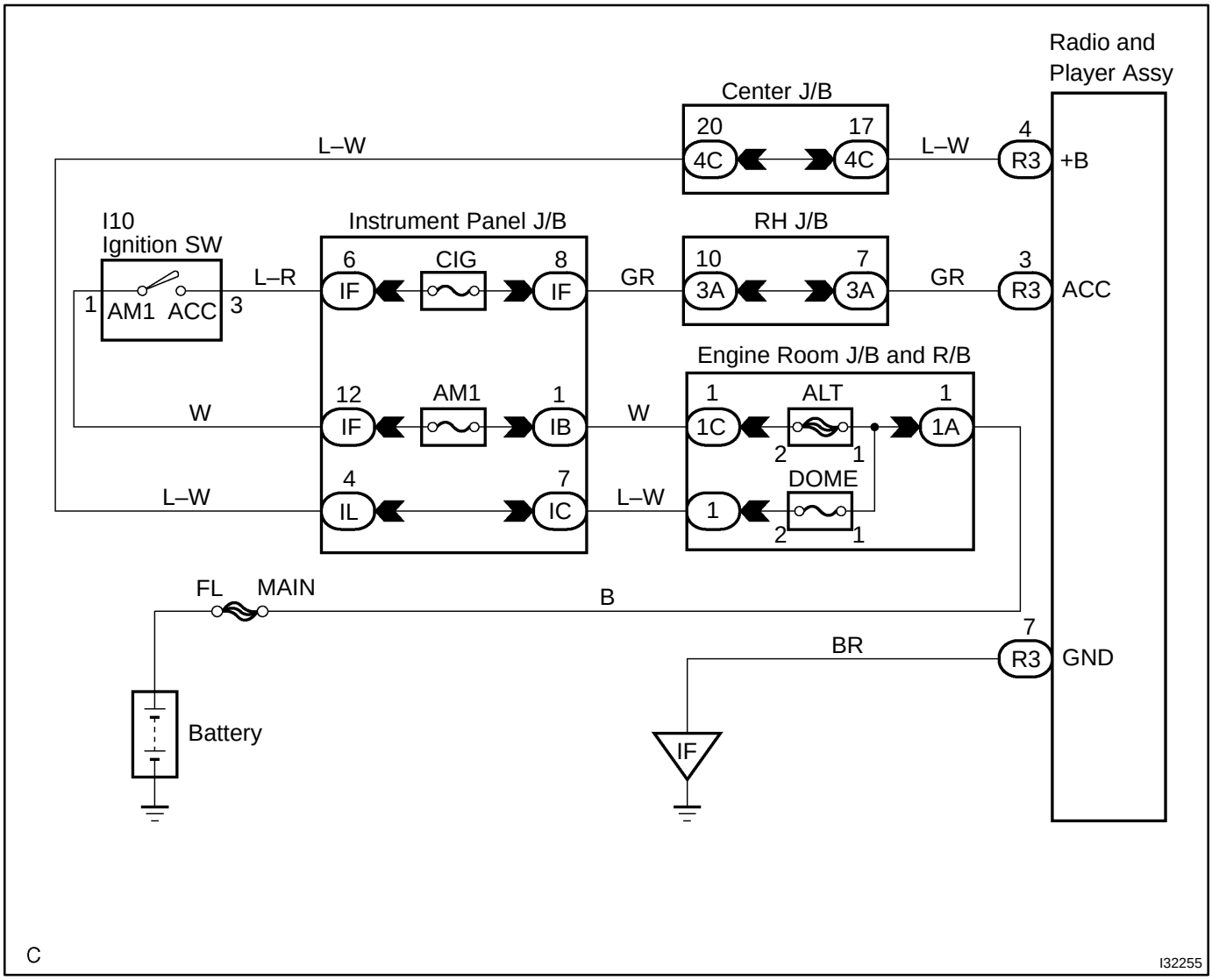
PROBLEM SYMPTOMS TABLE

If a normal code is displayed during the DTC check but the problem still occurs, check the circuits for each problem symptom in the order given in the table below and proceed to the relevant troubleshooting page.

Symptom	Suspect Area	See page
Pressing power switch does not start system.	3. Radio receiver assy power source circuit 4. Radio receiver assy	05–610
Turning on light switch does not light up night time illumination of radio receiver.	1. Radio receiver assy ILL terminal circuit 2. Radio receiver assy	05–612
No sound is heard from speaker in all modes.	1. Speaker circuit 2. Radio receiver assy power source circuit 3. Radio receiver assy	05–614
Sound quality is bad in all modes. (Volume is too low)	1. Speaker circuit 2. Radio receiver assy power source circuit 3. Radio receiver assy	05–617
Radio broadcast cannot be received. (Bad reception)	1. Antenna circuit 2. Radio receiver assy	05–619
Cassette tape cannot be inserted or played.	1. Cassette tape 2. Radio receiver assy power source circuit 3. Radio receiver assy	05–621
Cassette tape cannot be ejected.	1. Cassette tape 2. Radio receiver assy power source circuit 3. Radio receiver assy	05–623
Sound quality is bad only when playing tape.	1. Cassette tape 2. Radio receiver assy	05–617
Tape is tangled due to incorrect tape speed or auto–reverse malfunction.	1. Cassette tape 2. Radio receiver assy	05–626
CD cannot be inserted or is ejected right after insertion.	1. CD 2. Radio receiver assy power source circuit 3. Radio receiver assy	05–627
Although system is powered, CD cannot be played.	1. CD 2. Radio receiver assy power source circuit 3. Radio receiver assy	05–629
CD cannot be taken out.	1. CD 2. Radio receiver assy power source circuit 3. Radio receiver assy	05–632
Sound quality is bad only when CD is played.(Volume is too low)	1. CD	05–634
CD sound skips.	1. CD 2. Radio installation	05–635
Noise occurs.	–	05–637

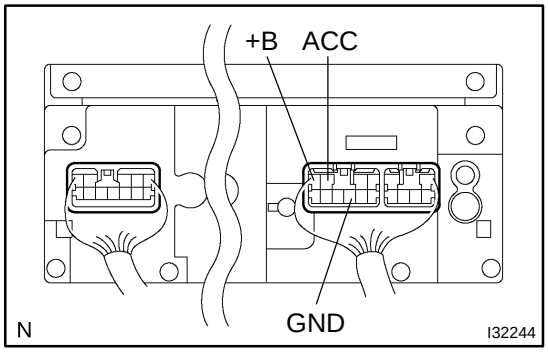
PRESSING POWER SWITCH DOES NOT START SYSTEM

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT RADIO RECEIVER ASSY(+B, ACC, GND)



(a) Check that the continuity between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
GND – Body ground	Constant	Continuity

(b) Check that the voltage between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
+B – GND	Constant	10 – 14 V
ACC – GND	Ignition switch ACC or ON	10 – 14 V

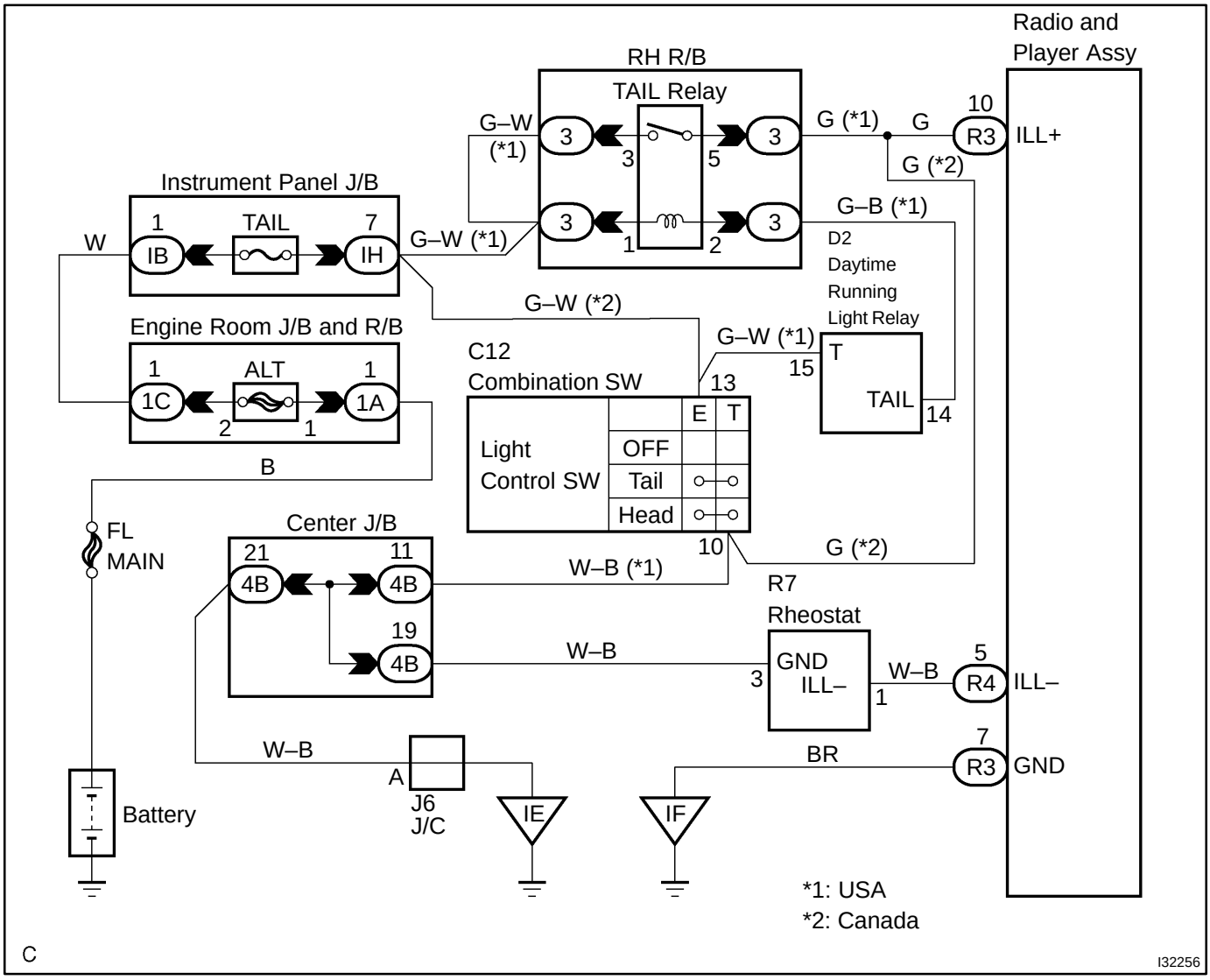
NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

CHECK AND REPLACE RADIO RECEIVER ASSY

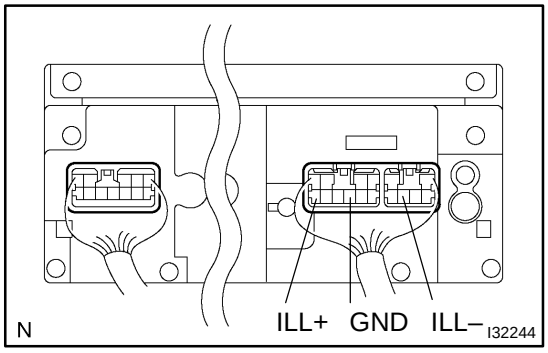
TURNING ON LIGHT SWITCH DOES NOT LIGHT UP NIGHT TIME ILLUMINATION OF RADIO RECEIVER

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT RADIO RECEIVER ASSY(ILL+, ILL–)



(a) Check that the voltage between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
ILL+ – GND	Light control switch TAIL or HEAD	10 – 14 V
ILL– – GND	Light control switch HI or FLASH	10 – 14 V

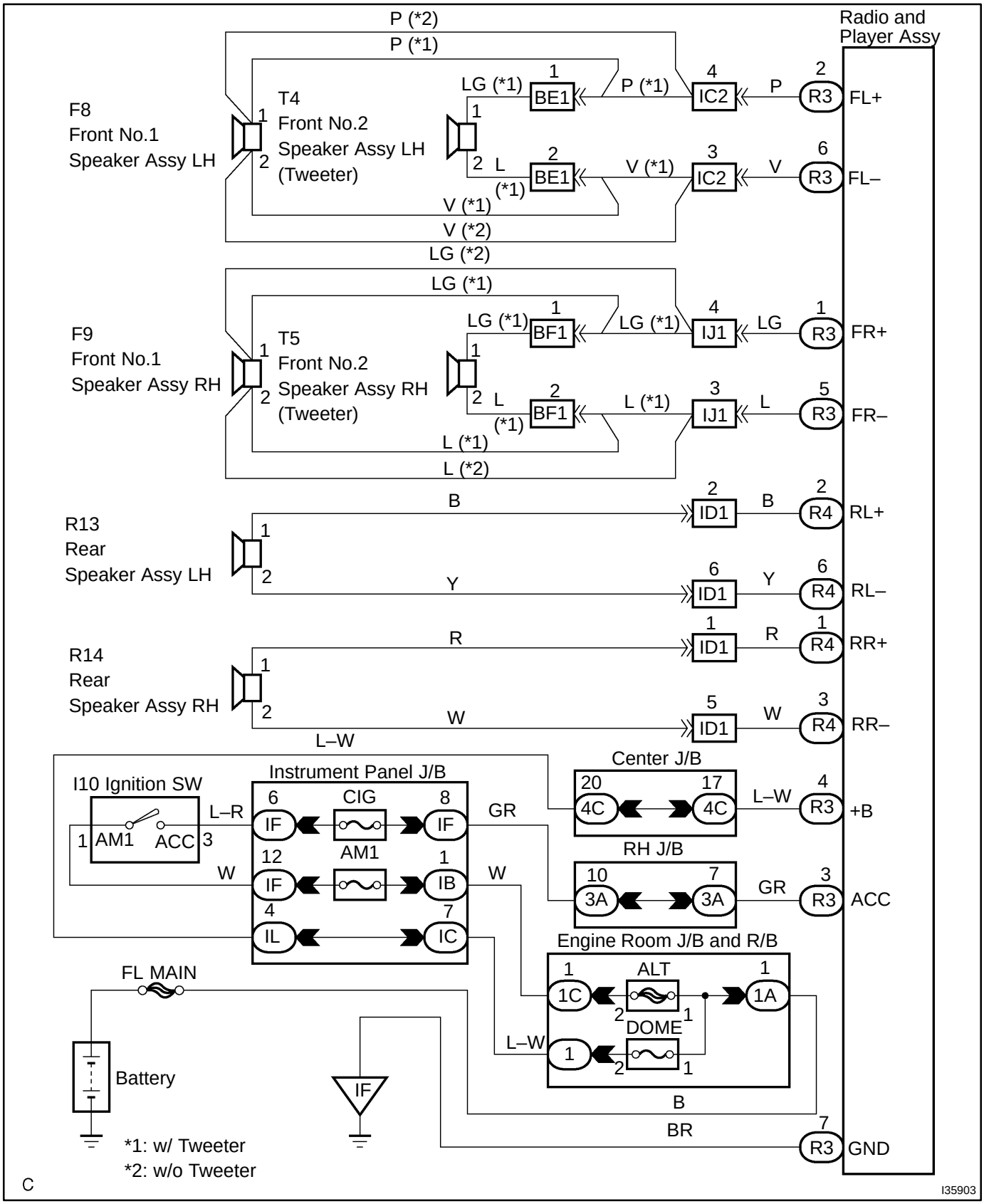
OK → **CHECK AND REPLACE RADIO RECEIVER ASSY**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

NO SOUND IS HEARD FROM SPEAKER IN ALL MODES

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK LCD (LIQUID CRYSTAL DISPLAY) FOR LIGHTING

(a) LCD Illumination Check
  (1) Turn the ignition switch ACC.
  (2) Turn the radio receiver assembly ON.
  Standard: LCD illumination of the radio receiver assembly light.

NG → **Go to step 7**

OK

2	CONTROL FADER AND ADJUST SOUND BALANCE

(a) Fader and Balance Adjustment
  (1) Operate the radio receiver assembly to adjust the fader and the balance to identify the speaker that does not sound.

(A)	(B)
A specific speaker does not sound.	All speakers do not sound.

B → **CHECK AND REPLACE RADIO RECEIVER ASSY**

A

3	INSPECT FRONT NO.1 SPEAKER ASSY

(a) Preparation for Check
  (1) Disconnect the connector of the speaker.
(b) Resistance Check
  (1) Check the resistance between the terminals of the speaker.

NOTICE:
The speaker should not be removed for checking.
  Standard value: 4 Ω

NG → **REPLACE FRONT NO.1 SPEAKER ASSY**

OK

4	INSPECT FRONT NO.2 SPEAKER ASSY

(a) Check that malfunction disappear when a known good speaker is installed.
  Standard: malfunction disappear.

HINT:
Connect the all connectors of speakers.

NG → **REPLACE FRONT NO.2 SPEAKER ASSY**

OK

5	INSPECT REAR SPEAKER ASSY

(a) Preparation for Check
  (1) Disconnect the connector of the speaker.
(b) Resistance Check
  (1) Check the resistance between the terminals of the speaker.

NOTICE:
The speaker should not be removed for checking.

Standard value: 6 Ω

NG → **REPLACE REAR SPEAKER ASSY**

OK

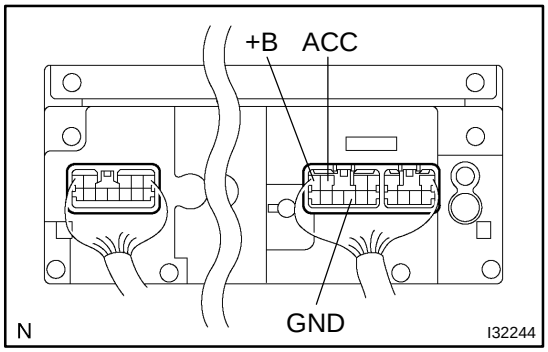
6	CHECK HARNESS AND CONNECTOR(BETWEEN RADIO RECEIVER ASSY AND SPEAKER)

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

CHECK AND REPLACE RADIO RECEIVER ASSY

7	INSPECT RADIO RECEIVER ASSY(+B, ACC, GND)



(a) Check that the continuity between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
GND – Body ground	Constant	Continuity

(b) Check that the voltage between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
+B – GND	Constant	10 – 14 V
ACC – GND	Ignition switch ACC or ON	10 – 14 V

OK → **CHECK AND REPLACE RADIO RECEIVER ASSY**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

SOUND QUALITY IS BAD IN ALL MODES (VOLUME IS TOO LOW)

WIRING DIAGRAM

See page 05–614

INSPECTION PROCEDURE

1	ADJUST SOUND QUALITY

(a) Adjust the sound quality.
  (1) Operate the radio receiver assy to adjust the sound quality.
  Standard: malfunction disappear.

OK	BAD SOUND QUALITY

NG

2	COMPARE IT WITH ANOTHER CAR OF SAME MODEL

(a) Compare it with another vehicle of the same model.
  (1) Compare with the vehicle of the same type which does not have a trouble to see if there is any difference in the condition of trouble occurrence.
  Standard: No difference found.

OK	SETTING

NG

3	CHECK HARNESS AND CONNECTOR(BETWEEN RADIO RECEIVER ASSY AND SPEAKER)

NG	REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

4	INSPECT FRONT NO.1 SPEAKER ASSY

(a) Preparation for Check
  (1) Disconnect the connector of the speaker.
(b) Resistance Check
  (1) Check the resistance between the terminals of the speaker.

NOTICE:
The speaker should not be removed for checking.
  Standard value: 4 Ω

NG	REPLACE FRONT NO.1 SPEAKER ASSY

OK

5 INSPECT FRONT NO.2 SPEAKER ASSY

(a) Check that malfunction disappear when a known good speaker is installed.
Standard: malfunction disappear.

HINT:
Connect the all connectors of speakers.

NG → **REPLACE FRONT NO.2 SPEAKER ASSY**

OK

6 INSPECT REAR SPEAKER ASSY

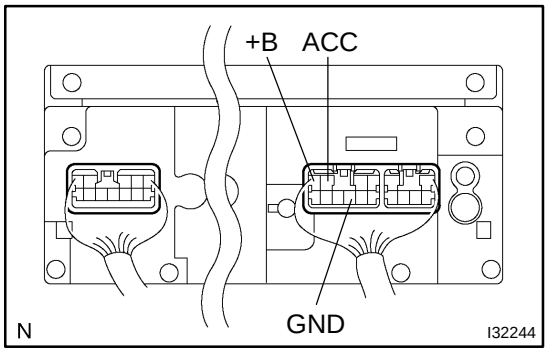
(a) Preparation for Check
(1) Disconnect the connector of the speaker.
(b) Resistance Check
(1) Check the resistance between the terminals of the speaker.

NOTICE:
The speaker should not be removed for checking.
Standard value: 6 Ω

NG → **REPLACE REAR SPEAKER ASSY**

OK

7 INSPECT RADIO RECEIVER ASSY(+B, ACC, GND)



(a) Check that the continuity between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
GND – Body ground	Constant	Continuity

(b) Check that the voltage between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
+B – GND	Constant	10 – 14 V
ACC – GND	Ignition switch ACC or ON	10 – 14 V

OK → **CHECK AND REPLACE RADIO RECEIVER ASSY**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

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.
Standard: The radio auto–search functions properly.

OK → **CHECK AND REPLACE RADIO RECEIVER ASSY**

NG

2	CHECK OPTIONAL COMPONENT

(a) Check optional component (Sun shade film, telephone antenna etc.).
(1) Check whether or not any optional component is installed, such as the sunshade film and the telephone antenna, is installed.
Standard: Optional component is installed.

OK → **EFFECT FROM OPTIONAL COMPONENT**

NG

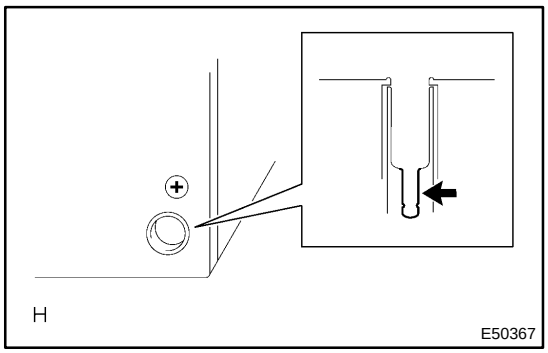
3	CHECK ANTENNA FOR NOISE PRODUCTION

(a) Noise Check with Antenna
(1) With the ignition switch in ACC, turn on the radio and choose the AM mode.
(2) Place a tip of a screwdriver or the antenna of the antenna assembly w/ holder and check that the noise heard from the speaker.
Standard: Noise occurs.

OK → **CHECK AND REPLACE RADIO RECEIVER ASSY**

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 assembly connector connected, turn the ignition switch to ACC.
  (2) Turn on the radio and choose the AM mode.
  (3) Place a flat–head screwdriver or a metal such as a thin wire on the antenna jack of the radio receiver assembly and check that the noise heard from the speaker.

Standard: Noise occurs.

OK → **CHECK AND REPLACE RADIO RECEIVER ASSY**

NG

REPLACE AMPLIFIER ANTENNA ASSY

CASSETTE TAPE CANNOT BE INSERTED OR PLAYED

WIRING DIAGRAM

See page 05–610

INSPECTION PROCEDURE

1	CHECK FOR ANY FOREIGN OBJECT

(a) Check for any foreign object.
(1) Check that no foreign object or defect is detected in the cassette tape player of radio receiver assembly.
Standard: No foreign object and defect 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 to which music or voice is recorded.
Standard: Proper cassette tape to which music or voice is recorded.

NG → **CASSETTE TAPE FAULTY**

OK

3	REPLACE CASSETTE TAPE WITH ANOTHER AND RECHECK

(a) Replace the cassette tape with another and recheck.
(1) Replace the faulty cassette tape with the normal one to see if the same trouble occurs again.
Standard: The function is recovered to be normal.

OK → **CASSETTE TAPE FAULTY**

NG

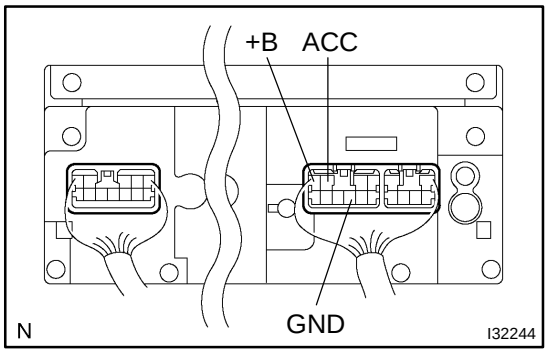
4	CHECK IF RADIO AUTO–SEARCH FUNCTIONS PROPERLY

(a) Check if the radio auto–search functions properly.
(1) Perform the auto–search of the radio and check that the operation is normal.
Standard: The operation returns to be normal.

OK → **CHECK AND REPLACE RADIO RECEIVER ASSY**

NG

5	INSPECT RADIO RECEIVER ASSY(+B, ACC, GND)



(a) Check that the continuity between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
GND – Body ground	Constant	Continuity

(b) Check that the voltage between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
+B – GND	Constant	10 – 14 V
ACC – GND	Ignition switch ACC or ON	10 – 14 V

OK → **CHECK AND REPLACE RADIO RECEIVER ASSY**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

CASSETTE TAPE CANNOT BE EJECTED

WIRING DIAGRAM

See page 05–610

INSPECTION PROCEDURE

1	CHECK IF RADIO AUTO–SEARCH FUNCTIONS PROPERLY

(a) Check if the radio auto–search function properly.
(1) Perform the auto–research of the radio and check that the operation is normal.
Standard: malfunction disappear.

NG → **Go to step 5**

OK

2	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 sec or more and check that the cassette tape is ejected.
Standard: The cassette tape is ejected.

NG → **CHECK AND REPLACE RADIO RECEIVER ASSY**

OK

3	CHECK CASSETTE TAPE

(a) Check the cassette tape.
(1) Check that the ejected cassette tape does not have the label peeling, cassette body deformation and others.
Standard: No fault on the cassette tape.

NG → **CASSETTE TAPE FAULTY**

OK

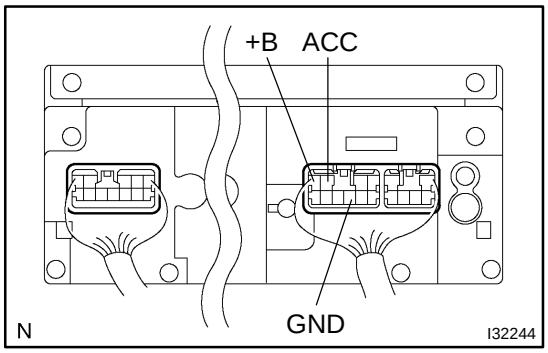
4	REPLACE CASSETTE TAPE WITH ANOTHER AND RECHECK

(a) Replace the cassette tape with another and recheck.
(1) Replace the faulty cassette tape with the normal one to see if the same trouble occurs again.
Standard: malfunction disappear.

OK → **CASSETTE TAPE FAULTY**

NG

5	INSPECT RADIO RECEIVER ASSY(+B, ACC, GND)



(a) Check that the continuity between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
GND – Body ground	Constant	Continuity

(b) Check that the voltage between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
+B – GND	Constant	10 – 14 V
ACC – GND	Ignition switch ACC or ON	10 – 14 V

OK → **CHECK AND REPLACE RADIO RECEIVER ASSY**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

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 and recheck.
  (1) Replace the faulty cassette tape with the normal one to see if the same trouble occurs again.
  Standard: malfunction disappear.

OK → **CASSETTE TAPE FAULTY**

NG

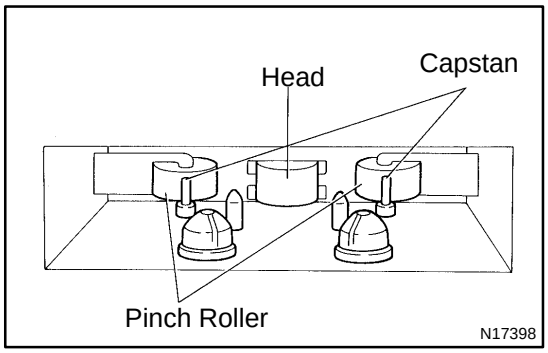
2	CHECK FOR ANY FOREIGN OBJECT

(a) Check for foreign object.
  (1) Check that no foreign material and troubles are detected in the radio receiver assembly cassette tape player.

NG → **REMOVE FOREIGN OBJECT**

OK

3	CLEAN HEAD AND CHECK OPERATION



(a) Head cleaning
  (1) Raise the cassette door with your finger. Next, 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 that the same trouble occurs again.

OK → **HEAD DIRTY**

NG

CHECK AND REPLACE RADIO RECEIVER ASSY

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 object.
  (1) Check that no foreign material and troubles are detected in the radio receiver assembly cassette tape player.

Standard: No foreign material and trouble detected.

NG → **REMOVE FOREIGN OBJECT**

OK

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

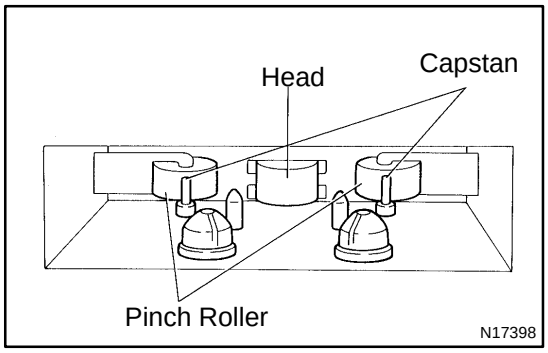
(a) Replace the cassette tape with another and recheck.
  (1) Replace the faulty cassette tape with the normal one (90 min. or less) to see if the same trouble occurs again.

Standard: malfunction disappear.

OK → **CASSETTE TAPE FAULTY**

NG

3	CLEAN HEAD AND CHECK OPERATION



(a) Head cleaning
  (1) Raise the cassette door with your finger. Next, 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 that the same trouble occurs again.

OK → **HEAD DIRTY**

NG

CHECK AND REPLACE RADIO RECEIVER ASSY

CD CANNOT BE INSERTED OR IS EJECTED RIGHT AFTER INSERTION

WIRING DIAGRAM

See page 05–610

INSPECTION PROCEDURE

1	CHECK IF A PROPER CD IS INSERTED

(a) Check that a proper CD is inserted.
  (1) Make sure that the CD is normal audio CD, and that there is no deformation, flaw, stain, burr and other defects on the CD.
  Standard: Normal audio CD.

Reference:
- Translucent or different–shaped CD cannot be played.
- CD–ROM for personal computers (with music recorded in) and recorded CD–R may not be played.
- Playing an 3.2 in. (8–cm) CD does not require an adapter.

NG → **CD FAULTY**

OK

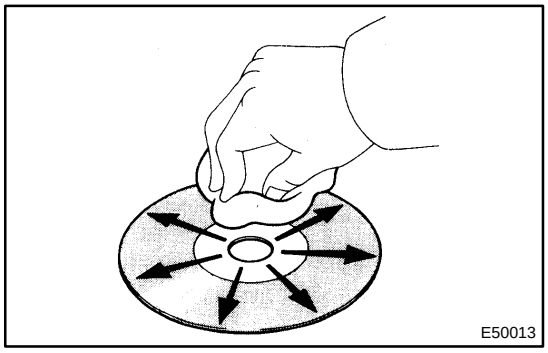
2	CHECK THAT A PROPER CD IS INSERTED

(a) Check that a proper CD is inserted.
  (1) Check whether or not the CD is inserted upside down.
  Standard: Not upside down.

NG → **SET DISC CORRECTLY**

OK

3	DISC CLEANING



(a) Disk cleaning
  (1) If the disk gets dirty, clean the disk 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 → **DISC DIRTY**

NG

4	REPLACE CD WITH ANOTHER AND RECHECK

(a) Replace the CD with another and recheck.
(1) Replace the faulty CD with the normal one to see if the same trouble occurs again.
Standard: malfunction disappear.

OK	CD FAULTY

NG

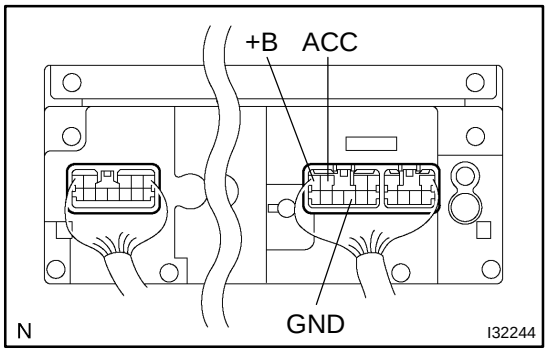
5	CHECK IF RADIO AUTO–SEARCH FUNCTIONS PROPERLY

(a) Check if the radio auto–search function properly.
(1) Perform the auto–research of the radio and check that the operation is normal.
Standard: malfunction disappear.

OK	CHECK AND REPLACE RADIO RECEIVER ASSY

NG

6	INSPECT RADIO RECEIVER ASSY(+B, ACC, GND)



(a) Check that the continuity between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
GND – Body ground	Constant	Continuity

(b) Check that the voltage between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
+B – GND	Constant	10 – 14 V
ACC – GND	Ignition switch ACC or ON	10 – 14 V

OK	CHECK AND REPLACE RADIO RECEIVER ASSY

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

ALTHOUGH SYSTEM IS POWERED,CD CANNOT BE PLAYED

WIRING DIAGRAM

See Page 05–610

INSPECTION PROCEDURE

1	CHECK IF A PROPER CD IS INSERTED

(a) Check that a proper CD is inserted.
  (1) Make sure that the CD is a normal audio CD, and that there is no deformation, flaw, stain, burr and other defects on the CD.
  Standard: Normal audio CD.

Reference:
- Translucent or different–shaped CD cannot be played.
- CD–ROM for personal computers (with music recorded in) and recorded CD–R may not be played.
- Playing an 3.2 in. (8–cm) CD does not require an adapter.

NG → **CD FAULTY**

OK

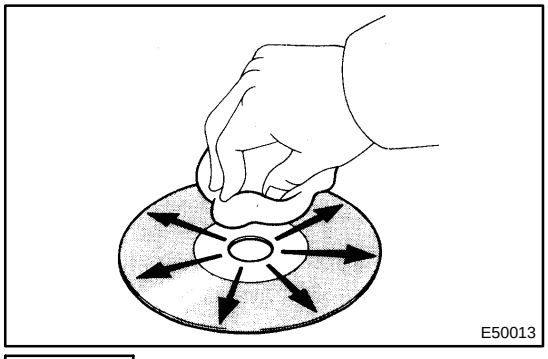
2	CHECK THAT A PROPER CD IS INSERTED

(a) Check that a proper CD is inserted.
  (1) Check whether or not the CD is inserted upside down.
  Standard: Not upside down.

NG → **SET DISC CORRECTLY**

OK

3	DISC CLEANING


E50013

NG

(a) Disk cleaning
  (1) If the disk gets dirty, clean the disk 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 → **DISC DIRTY**

4	REPLACE CD WITH ANOTHER AND RECHECK

(a) Replace the CD with another and recheck.
(1) Replace the faulty CD with the normal one to see if the same trouble occurs again.
Standard: malfunction disappear.

OK	CD FAULTY

NG

5	CHECK IF RADIO AUTO–SEARCH FUNCTIONS PROPERLY

(a) Check if the radio auto–search function properly.
(1) Perform the auto–research of the radio and check that the operation is normal.
Standard: malfunction disappear.

NG	Go to step 7

OK

6	DID THE TEMPERATURE IN THE CABIN CHANGE RAPIDLY?

(a) Did the temperature in the cabin change rapidly?
(1) Check whether or not the rapid temperature change occurred in the cabin.
Standard: The rapid temperature change occurred.

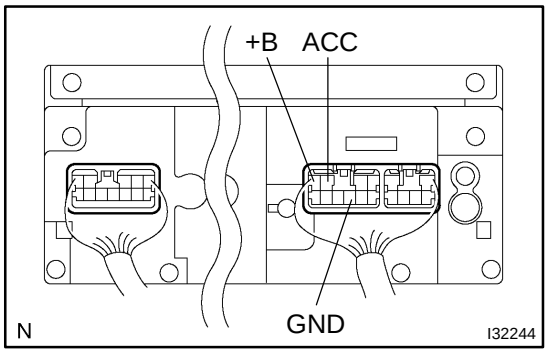
Reference:
The rapid temperature change creates condensation inside the CD player, which may disable playing CD.

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

NG

CHECK AND REPLACE RADIO RECEIVER ASSY

7	INSPECT RADIO RECEIVER ASSY(+B, ACC, GND)



(a) Check that the continuity between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
GND – Body ground	Constant	Continuity

(b) Check that the voltage between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
+B – GND	Constant	10 – 14 V
ACC – GND	Ignition switch ACC or ON	10 – 14 V

OK → **CHECK AND REPLACE RADIO RECEIVER ASSY**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

CD CANNOT BE TAKEN OUT

WIRING DIAGRAM

See page 05–610

INSPECTION PROCEDURE

1	CHECK IF RADIO AUTO–SEARCH FUNCTIONS PROPERLY

(a) Check if the radio auto–search function properly.
(1) Perform the auto–research of the radio and check that the operation is normal.
Standard: malfunction disappear.

NG → **Go to step 5**

OK

2	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 sec or more to see if the CD is ejected.
Standard: CD is ejected.

Reference:
If the CD is not ejected, send the vehicle for repair.
Do not try to drag it out by force.

NG → **CHECK AND REPLACE RADIO RECEIVER ASSY**

OK

3	CHECK IF A PROPER CD IS INSERTED

(a) Check that a proper CD is inserted.
(1) Check that in what conditions the sound skipping occurs.
Standard: Driving on the bad road.

NG → **CD FAULTY**

OK

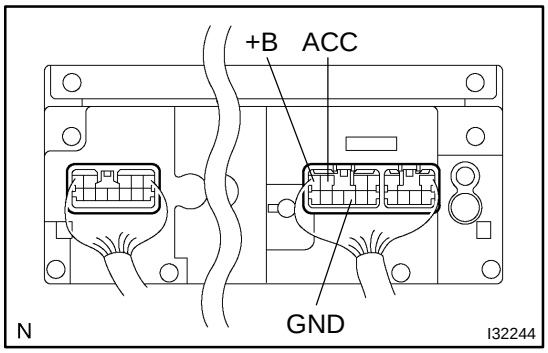
4	REPLACE CD WITH ANOTHER AND RECHECK

(a) Replace the CD with another and recheck.
(1) Check the installation condition of the radio receiver assembly.
Standard: Installed properly.

OK → **CD FAULTY**

NG

5	INSPECT RADIO RECEIVER ASSY(+B, ACC, GND)



(a) Check that the continuity between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
GND – Body ground	Constant	Continuity

(b) Check that the voltage between terminals at each condition, as shown in the chart.

Standard:

Tester connection	Condition	Specified condition
+B – GND	Constant	10 – 14 V
ACC – GND	Ignition switch ACC or ON	10 – 14 V

OK → **CHECK AND REPLACE RADIO RECEIVER ASSY**

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

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 and recheck.
(1) Check the installation condition of the radio receiver assembly.
Standard: malfunction disappear.

OK → **CD FAULTY**

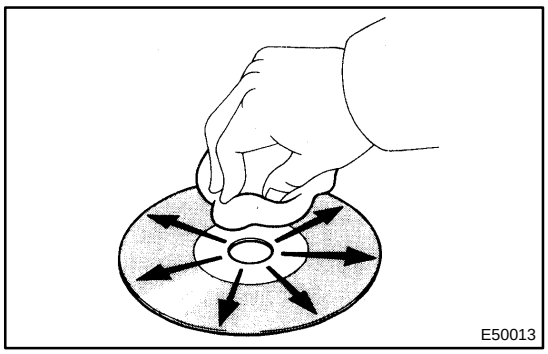
NG

CHECK AND REPLACE RADIO RECEIVER ASSY

CD SOUND SKIPS

INSPECTION PROCEDURE

1	DISC CLEANING



(a) Disk cleaning
  (1) If the disk gets dirty, clean the disk 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.

Standard: malfunction disappear.

OK → **DISC DIRTY**

NG

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.

Standard: malfunction disappear.

OK → **CD FAULTY**

NG

3	CHECK WHEN THIS HAPPENS

(a) Check then this happens.
  (1) Check that in what condition (place) noise occurs.

Standard: Driving on the bumpy road.

OK → **Go to step 5**

NG

4	COMPARE IT WITH ANOTHER CAR OF SAME MODEL

(a) Compare it with another vehicle of the same model.
  (1) Compare with the vehicle of the same type which does not have a trouble to see if there is any difference in the condition of trouble occurrence.

Standard: No difference found.

OK → **SETTING**

NG

5	CHECK OF RADIO RECEIVER ASSEMBLY INSTALLATION

(a) Check of radio receiver assembly installation.
(1) Check the installation condition of the radio receiver assembly.
Standard: Installed properly.

NG → **INSTALL THE RADIO RECEIVER ASSEMBLY PROPERLY**

OK

6	DID THE TEMPERATURE IN THE CABIN CHANGE RAPIDLY?

(a) Did the temperature in the cabin change rapidly?
(1) Check whether or not the rapid temperature change occurred in the cabin.
Standard: The rapid temperature change occurred.

Reference:
The rapid temperature change creates condensation inside the CD player, which may disable playing CD.

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

NG

CHECK AND REPLACE RADIO RECEIVER ASSY

NOISE OCCURS

INSPECTION PROCEDURE

1 CHECK OF SPEAKER INSTALLATION

(a) Check speaker installation condition.
  (1) Check that each speaker is securely installed.
  Standard: malfunction disappear.

HINT:
The radio is equipped with noise prevention system that does not work against the regular use of the radio, thereby excessively large noise cannot occur in the radio. If large noise occurs, check whether or not the earth on the antenna installation part and the proper noise–prevention equipment are all installed, and whether or not the improper wiring is held.

Condition in which noise occurs	Noise type
Depressing the acceleration pedal increases noise, and stopping the engine erases the noise immediately.	Alternator noise
Noise occurs during the A/C or the heater operation.	Blower motor noise
Rapid acceleration during the drive on the unpaved road or after the IG 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
Stopping the engine erases the small noise that has been heard.	Ignition noise
Noise occurs in turn with the blink of the turn signal flash.	Flasher noise
Noise occurs during the window washer operation.	Washer noise
Noise occurs during the engine running, and it continues to occur after the engine is stopped.	Water temperature sensor noise
Noise occurs during the 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 under 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 impossible and leads to misunderstanding.
- The noise should be removed in descending order of loudness.

NG → **INSTALL IT PROPERLY**

OK

IDENTIFICATION OF NOISE SOURCE