

# AUDIO SYSTEM SYSTEM DESCRIPTION

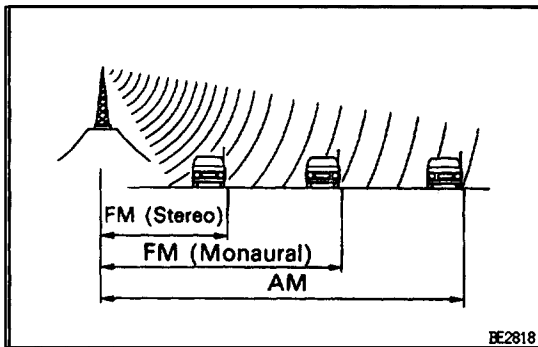
BE2FR-01

## 1. RADIO WAVE BAND

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

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

LF: Low Frequency    MF: Medium Frequency    HF: High Frequency    VHF: Very High Frequency



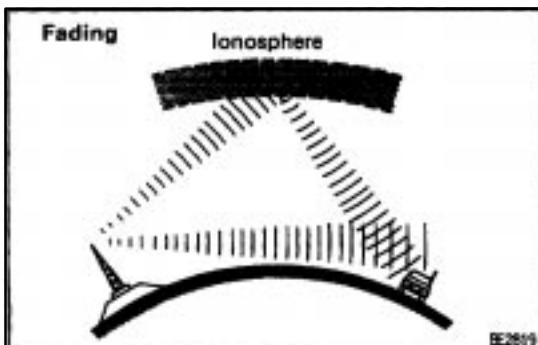
## 2. SERVICE AREA

There are great differences in the size of the service area for AM, FM monaural, and FM stereo broadcasts cannot be received even though AM comes in 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.

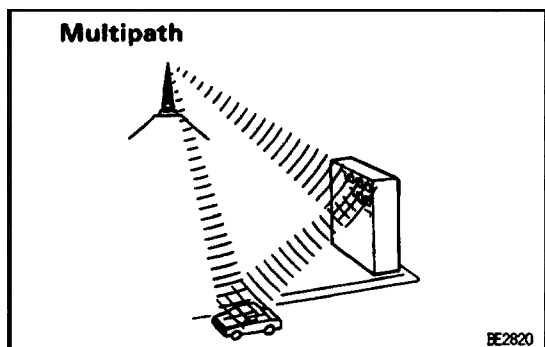
## 3. RECEPTION PROBLEMS

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.



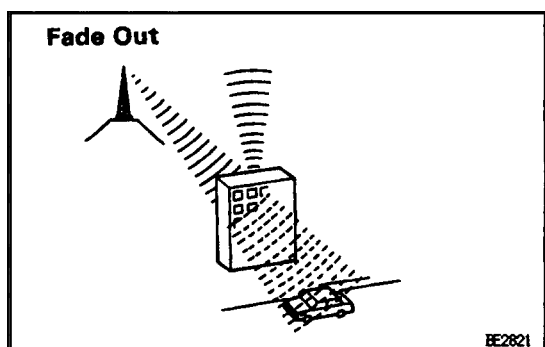
### Fading

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".



### Multipath

One type of interference caused by the bouncing of radio waves off of obstructions is called "multipath". Multipath occurs when a signal from the broadcast transmitter antenna bounces off buildings and mountains and interferes with the signal that is received directly.



### Fade Out

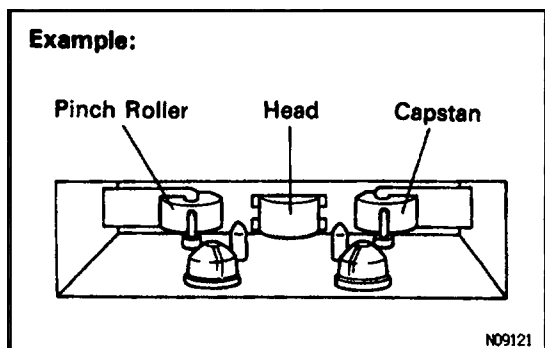
Because FM radio waves are of higher frequencies than AM radio waves, they bounce off buildings, mountains, and other obstructions. For this reason, FM signals often seem to gradually disappear or fade away as the vehicle goes behind a building or other obstruction. This is called "fade out".

## 4. COMPACT DISC PLAYER

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 in 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.

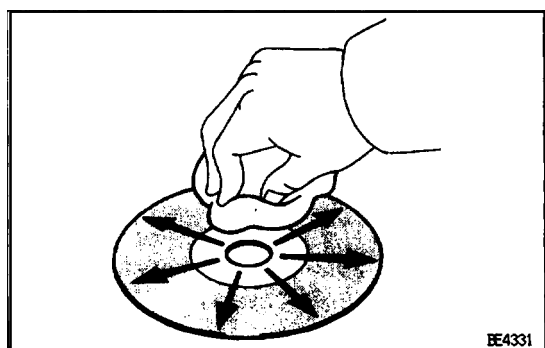


## MAINTENANCE

BE2FS-01

### Tape Player/Head Cleaning

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



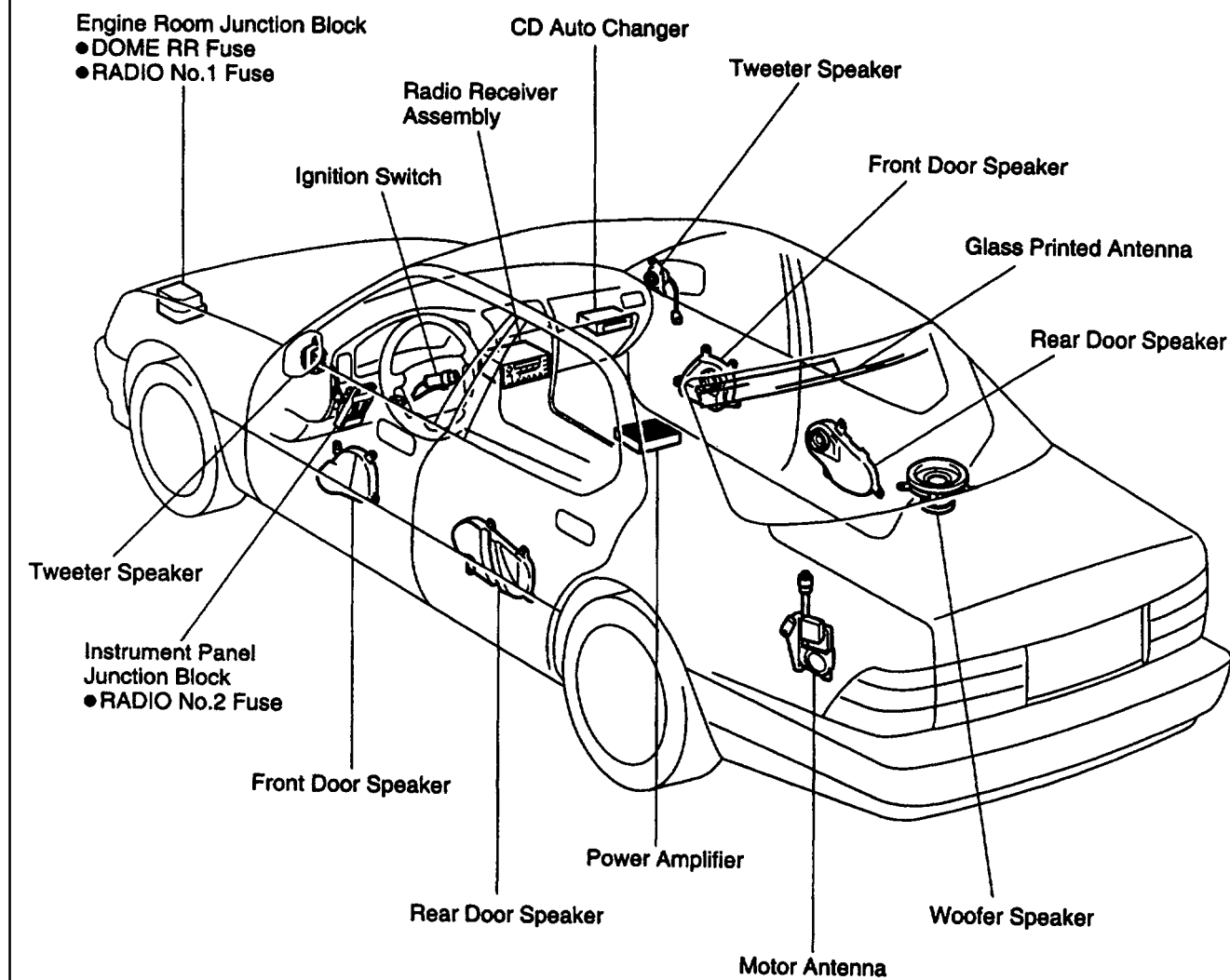
### CD Player/Disc Cleaning

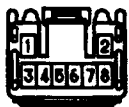
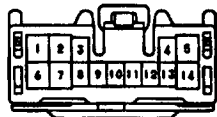
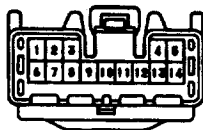
If the disc gets dirty, clean the disc by wiping the surfaces from the center to outside in the radial directions with a soft cloth.

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

## PARTS LOCATION

BE0RA-03



**Wire Harness Side****Connector "A"****Connector "B"****Connector "C"**h-8-1-B  
eh-14-1 h-14-1-A

Z14756

**RADIO RECEIVER ASSEMBLY INSPECTION**

BE1KY-02

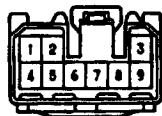
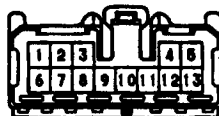
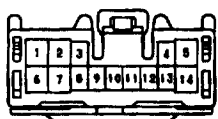
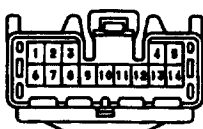
**INSPECT RECEIVER ASSEMBLY CIRCUIT**

Disconnect the connectors from the radio receiver assembly. And inspect the connector on the wire harness side, as shown.

Tester connection to terminal number	Condition	Specified condition
C14-Ground	Constant	Continuity
C6-Ground	Ignition switch position ACC or ON	Battery positive voltage
C6-Ground	Ignition switch position LOCK	No voltage
C1-Ground	Constant	Battery positive voltage

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

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

**Wire Harness Side****Connector "A"****Connector "B"****Connector "C"****Connector "D"**e-9-1 e-13-1-A  
eh-14-1 h-14-1-A

Z14757

**POWER AMPLIFIER INSPECTION**

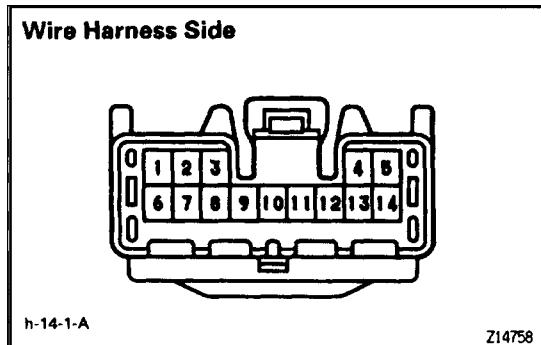
BE1L1-02

**INSPECT AMPLIFIER CIRCUIT**

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

Tester connection to terminal number	Condition	Specified condition
A1–Ground	Constant	Continuity
A4–Ground	Constant	Continuity
A2–Ground	Constant	Battery positive voltage
A5–Ground	Constant	Battery positive voltage
A6–Ground	Ignition switch position ACC or ON Radio, Tape or CD switch ON	Battery positive voltage
A6–Ground	Ignition switch position ACC or ON Radio, Tape or CD switch OFF	No voltage
D6–Ground	Ignition switch position ACC or ON Radio, Tape or CD switch ON	Battery positive voltage
D6–Ground	Ignition switch position ACC or ON Radio, Tape or CD switch OFF	Battery positive voltage

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



## CD AUTO CHANGER INSPECTION

BE0S3-04

### INSPECT CHANGER CIRCUIT

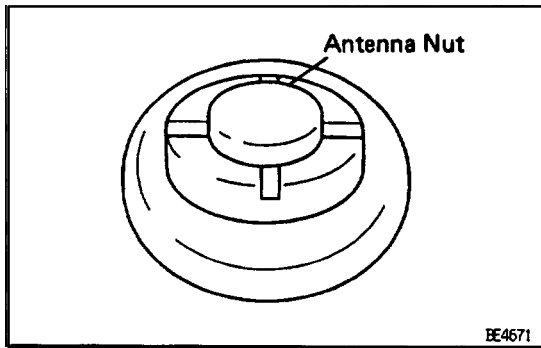
Disconnect the connectors from the CD auto changer and inspect the connector on the wire harness side, as shown.

Tester connection to terminal number	Condition	Specified condition
14–Ground	Constant	Continuity
4–Ground	Ignition switch position ACC or ON Radio, Tape or CD switch ON	Battery positive voltage
4–Ground	Ignition switch position LOCK Radio, Tape and CD switch OFF	No voltage
5–Ground	Constant	Battery positive voltage

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

#### HINT:

- Check the wire harness between the radio receiver assembly and the CD auto changer.
- Since the signals to and from the CDL+, CDL–, CDR+, CDR– terminals are serial signals, they cannot ordinarily be measured with a tester.



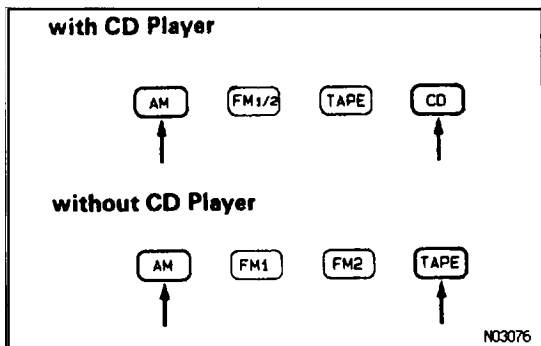
## ANTENNA ROD REMOVAL AND INSTALLATION

BE0SB-04

### 1. REMOVE ANTENNA ROD

HINT: Perform this operation with the battery negative (-) cable connected to the battery terminal.

- (a) Turn the ignition switch to "LOCK" position.
- (b) Remove the antenna nut.



- (c) (w/ CD player)

Press the "AM" and "CD" buttons on the radio receiver and simultaneously turn the ignition switch to "ACC" position.

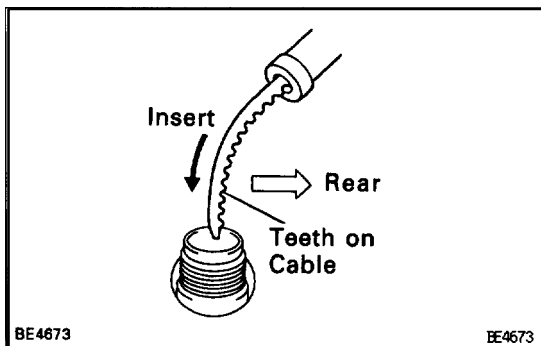
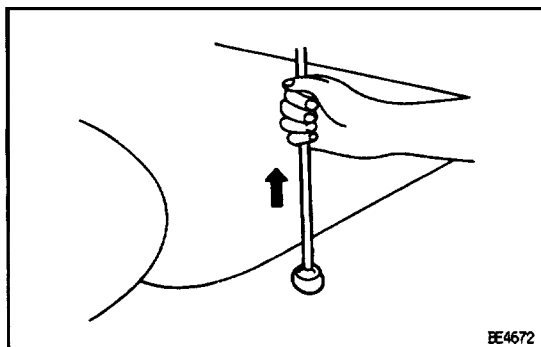
(w/o CD player)

Press the "AM" and "TAPE" buttons on the radio receiver, and simultaneously turn the ignition switch to "ACC" position.

HINT:

- The rod will extend fully and be released from the motor antenna.
- After removing the antenna rod, leave the ignition switch at "ACC".

**NOTICE:** To prevent body damage when the antenna rod is released, hold the rod while it comes out.



### 2. INSTALL ANTENNA ROD

- (a) Insert the cable of the rod until it reaches the bottom.

HINT: When inserting the cable, the teeth on the cable must face toward the rear of the vehicle.

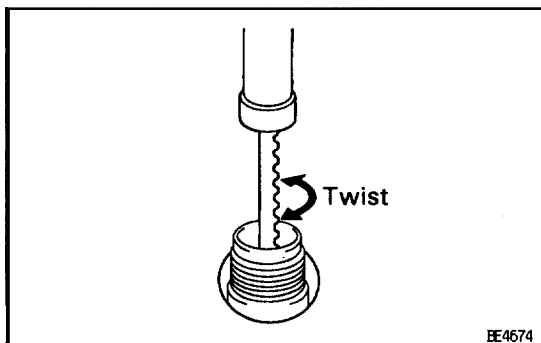
- (b) Wind the cable to retract the rod by running the ignition switch to "LOCK" position.

HINT:

- If the ignition switch is already in "LOCK" position, perform step 1 (c) first, then turn the ignition switch to "ACC" position.
- In case the cable is not wound, twist it, as shown in the illustration.
- Even if the rod has not retracted fully, install the antenna nut and inspect the antenna rod operation.

It will finally retract fully.

- (c) Inspect the antenna rod operation by pushing the radio wave band select buttons.



## Wire Harness Side



e-8-1

Z08924

## MOTOR ANTENNA INSPECTION

BE0SD-03

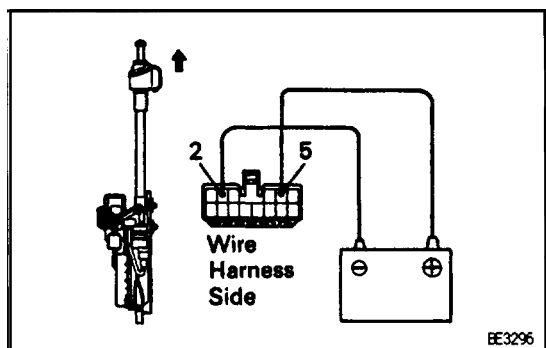
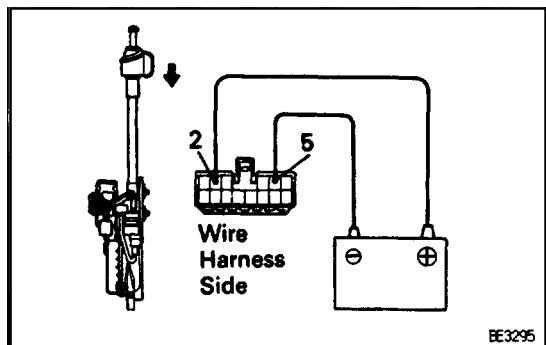
## 1. INSPECT ANTENNA CIRCUIT

Disconnect the motor antenna connector from the body wire harness and inspect the connector on body wire harness side, as shown.

Tester connection to terminal number	Condition	Specified condition
7–Ground	Constant	Continuity
1–Ground	Ignition switch ACC or ON and radio switch ON and AM position	Battery positive voltage
1–Ground	Ignition switch ACC or ON and radio switch ON and Others position	No voltage
2–Ground	Ignition switch ACC or ON, Radio or Tape or CD switch ON	Battery positive voltage
2–Ground	Ignition switch ACC or ON, Radio or Tape or CD switch OFF	No voltage
3–Ground	Constant	Battery positive voltage
4–Ground	Ignition switch ACC or ON and radio switch ON, AM or FM (87.9–96.0 MHz)	Battery positive voltage
4–Ground	Ignition switch ACC or ON and radio switch ON, Others	No voltage
5–Ground	Ignition switch ACC or ON, Radio switch ON	Battery positive voltage
5–Ground	Ignition switch ACC or ON, Radio switch OFF	No voltage
6–Ground	Ignition switch position ON	Battery positive voltage
6–Ground	Ignition switch position ACC or LOCK	No voltage
8–Ground	Ignition switch position ACC or ON	Battery positive voltage
8–Ground	Ignition switch position LOCK	No voltage

If circuit is not as specified, inspect the radio or wire harness.

If circuit is as specified, replace the motor antenna.



## 2. INSPECT ANTENNA MOTOR

- (a) Install the antenna nut.
- (b) Disconnect the connector from the motor antenna control relay.
- (c) Connect the positive (+) lead from the battery to terminal 2 and the negative (-) lead to terminal 5 on the wire harness side connector.
- (d) Check that the motor turns (moves downward).

**NOTICE:** These tests must be performed quickly (within 4 –8 seconds) to prevent the coil from burning out.

- (e) Reverse the polarity and check that the motor turns the opposite way (moves downward).

**NOTICE:** These tests must be performed quickly (within 4 –8 seconds) to prevent the coil from burning out.

HINT: When the motor is normal, lower the antenna to the lowermost position.

If operation is not as specified, replace the antenna motor assembly.

## GLASS PRINTED ANTENNA INSPECTION

BE0SF-04

### 1. INSPECT GLASS PRINTED ANTENNA

(Use same procedure as for "INSPECT DEFOGGER WIRES" on page [BE-215](#).)

### 2. REPAIR GLASS PRINTED ANTENNA

(Use same procedure as for "REPAIR DEFOGGER WIRES" on page [BE-216](#).)



## TROUBLESHOOTING

BE2FT-01

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

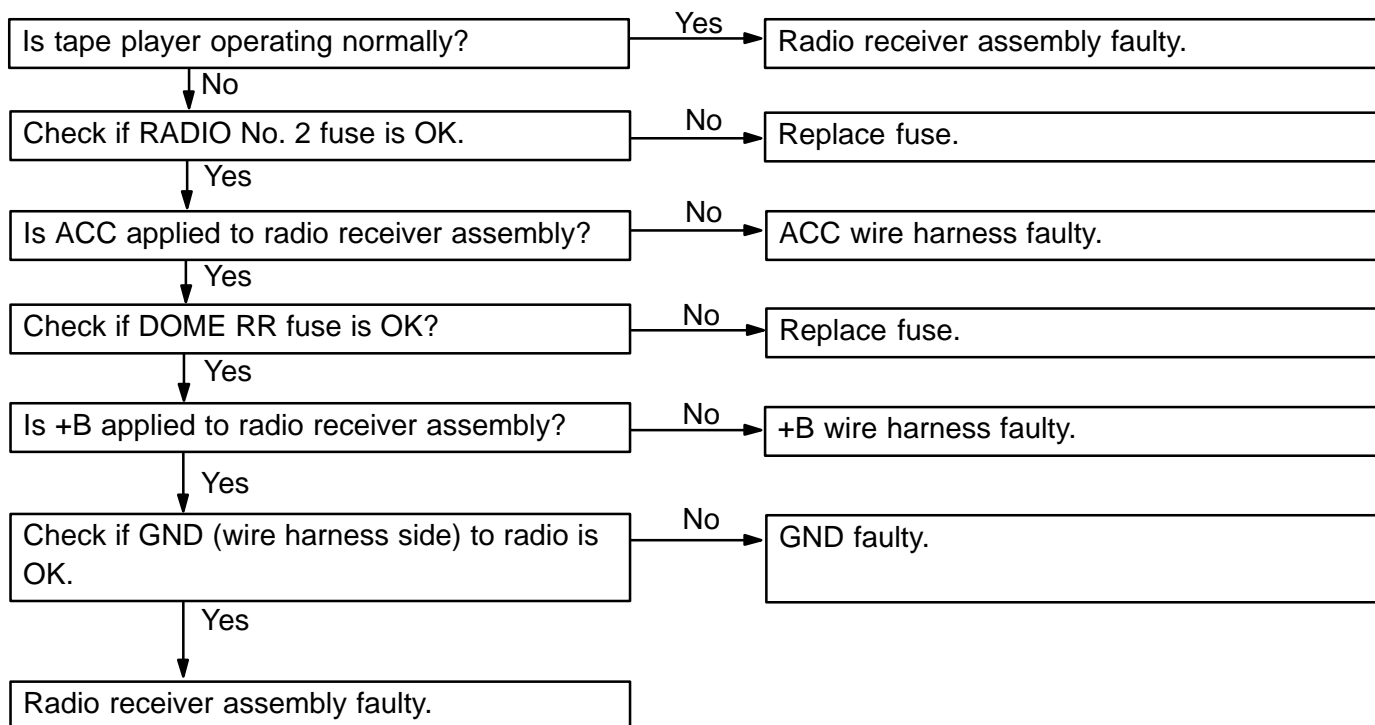
**HINT:** This inspection procedure is a simple troubleshooting which should be carried out on the vehicle during system operation and was prepared on the assumption of system component troubles (except for the wires and connectors, etc.).

Always inspect the trouble taking the following items into consideration.

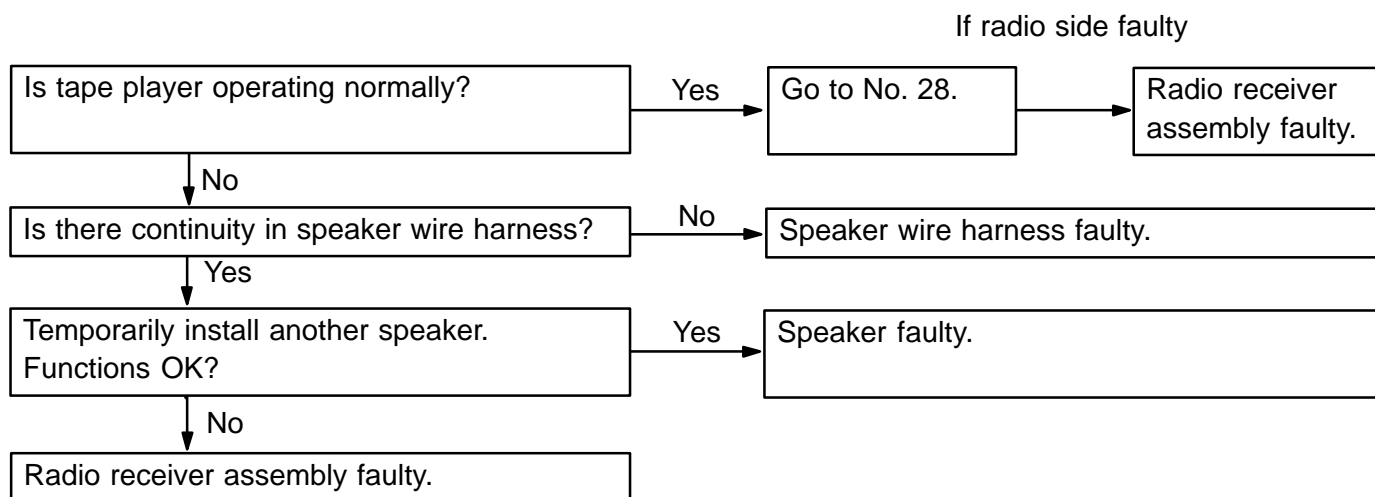
- Open or short circuit of the wire harness
- Connector or terminal connection fault

	Problem	No.
Radio	No power coming in.	1
	Power coming in, but radio not operating.	2
	Noise present, but AM–FM not operating.	3
	Either speaker does not work.	4
	Woofer speaker does not work.	5
	Either AM or FM does not work.	6
	Reception poor (Volume faint).	6
	Few preset tuning bands.	6
	Sound quality poor.	7
	Cannot set station select button.	8
	Preset memory disappears.	8
Tape Player	Cassette tape cannot be inserted.	9
	Cassette tape inserts, but no power.	10
	Power coming in, but tape player not operating.	11
	Either speaker does not work.	12
	Woofer speaker does not work.	13
	Sound quality poor (Volume faint).	14
	Tape jammed, malfunction with tape speed or auto–reverse.	15
	APS, SKIP, RPT buttons not operating.	16
CD Player	Cassette tape will not eject.	17
	CD cannot be inserted.	18
	CD inserts, but no power.	19
	Power coming in, but CD player not operating.	20
	Sound jumps.	21
	Sound quality poor (Volume faint).	22
	Either speaker does not work.	23
	Woofer speaker does not work.	24
Amplifier	CD will not eject.	25
	No power coming in.	26
	Power coming in, but power amplifier not operating.	27
	Either speaker does not work.	28
	Woofer speaker does not work.	29
Noise	Noise produced by vibration or shock while driving.	30
	Noise produced when engine starts.	31
Antenna	Antenna does not fully extended or fully retract	32
	Antenna–related.	33

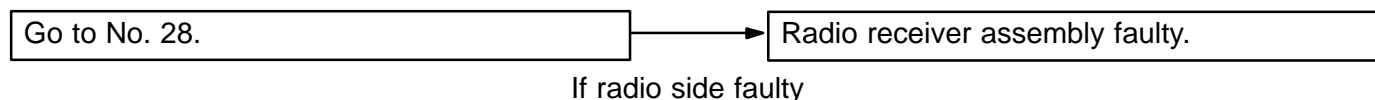
<b>1</b>	<b>Radio</b>	<b>NO POWER COMING IN</b>
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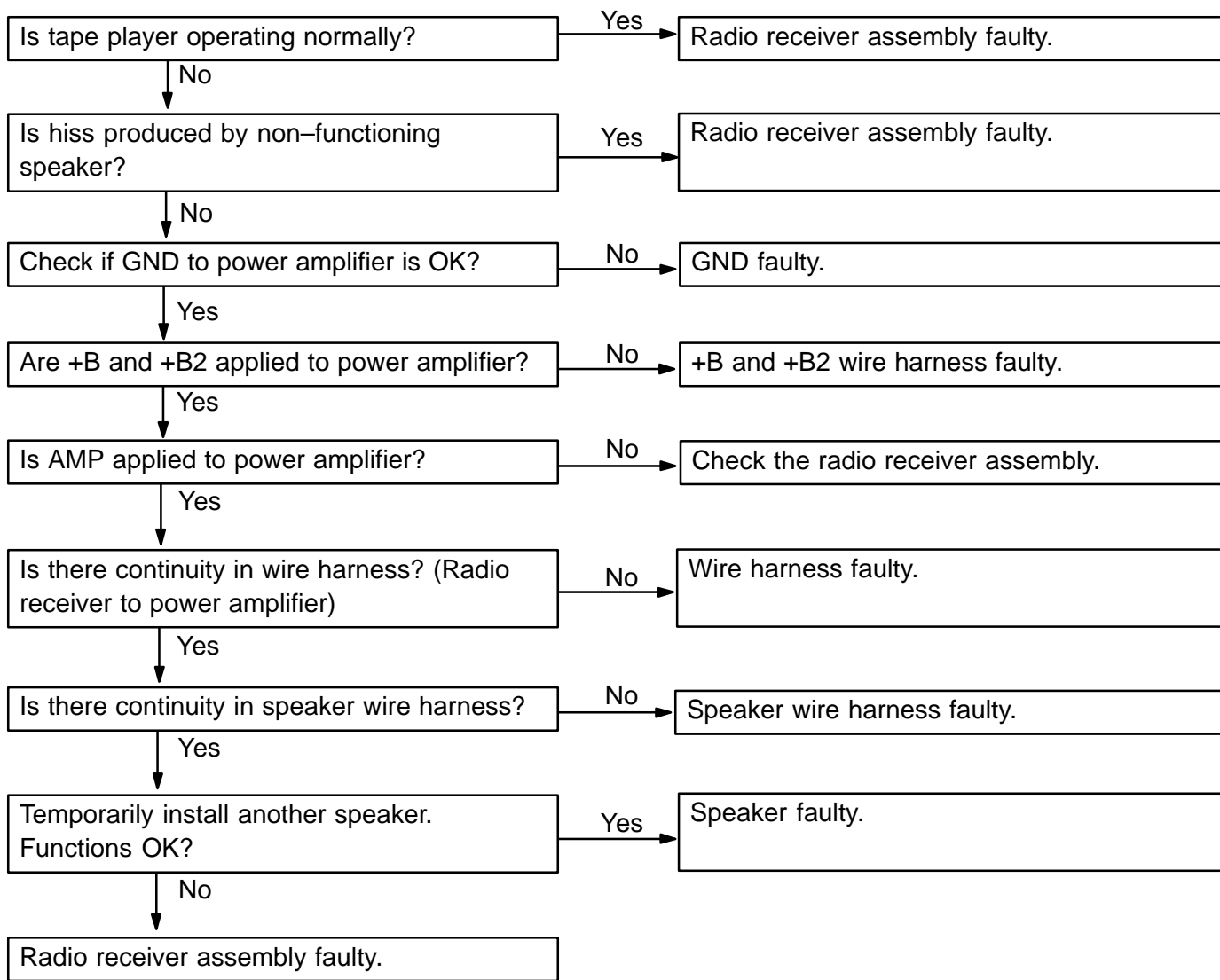
<b>2</b>	<b>Radio</b>	<b>POWER COMING IN, BUT RADIO NOT OPERATING</b>
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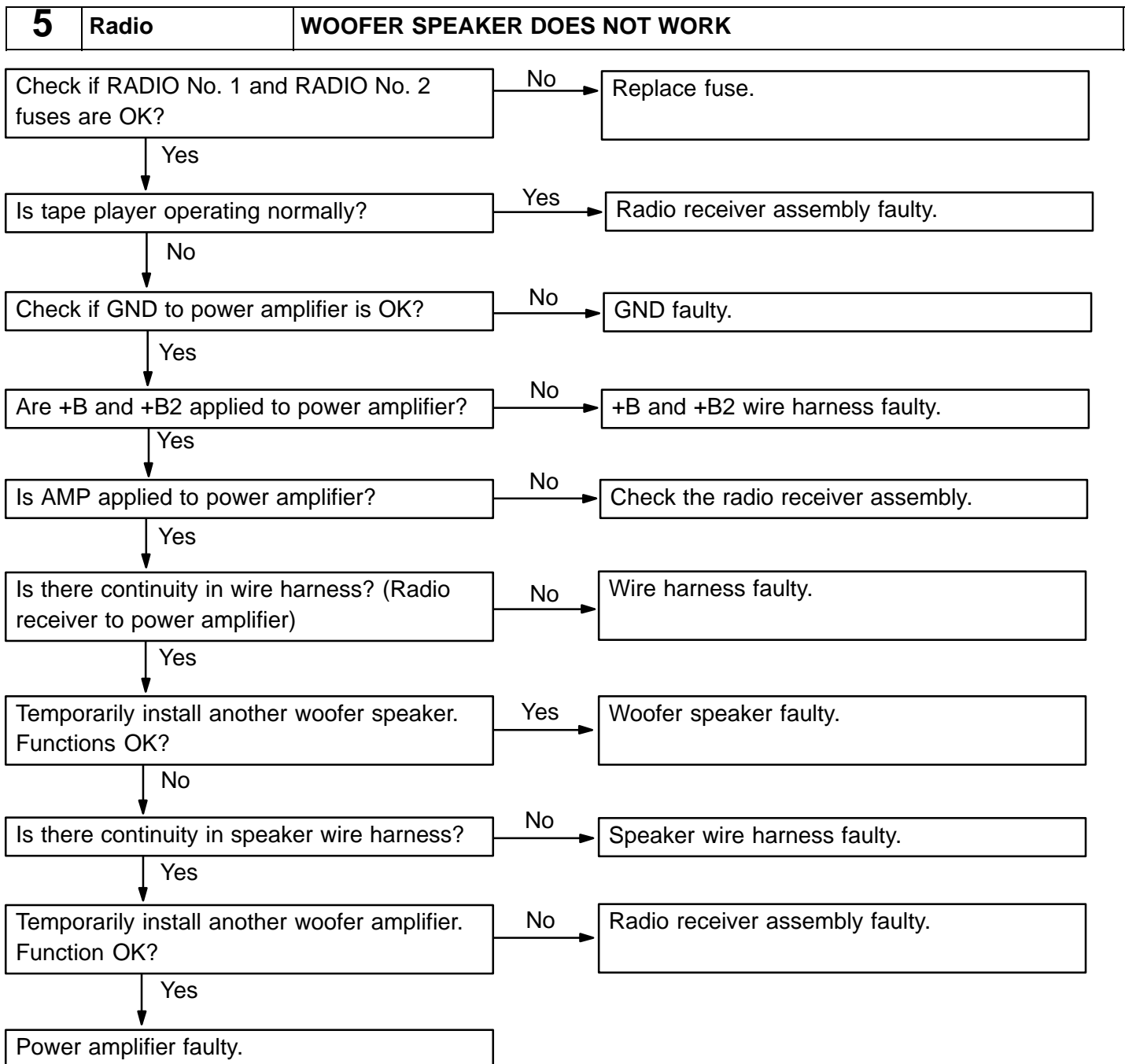


<b>3</b>	<b>Radio</b>	<b>NOISE PRESENT, BUT AM-FM NOT OPERATING</b>
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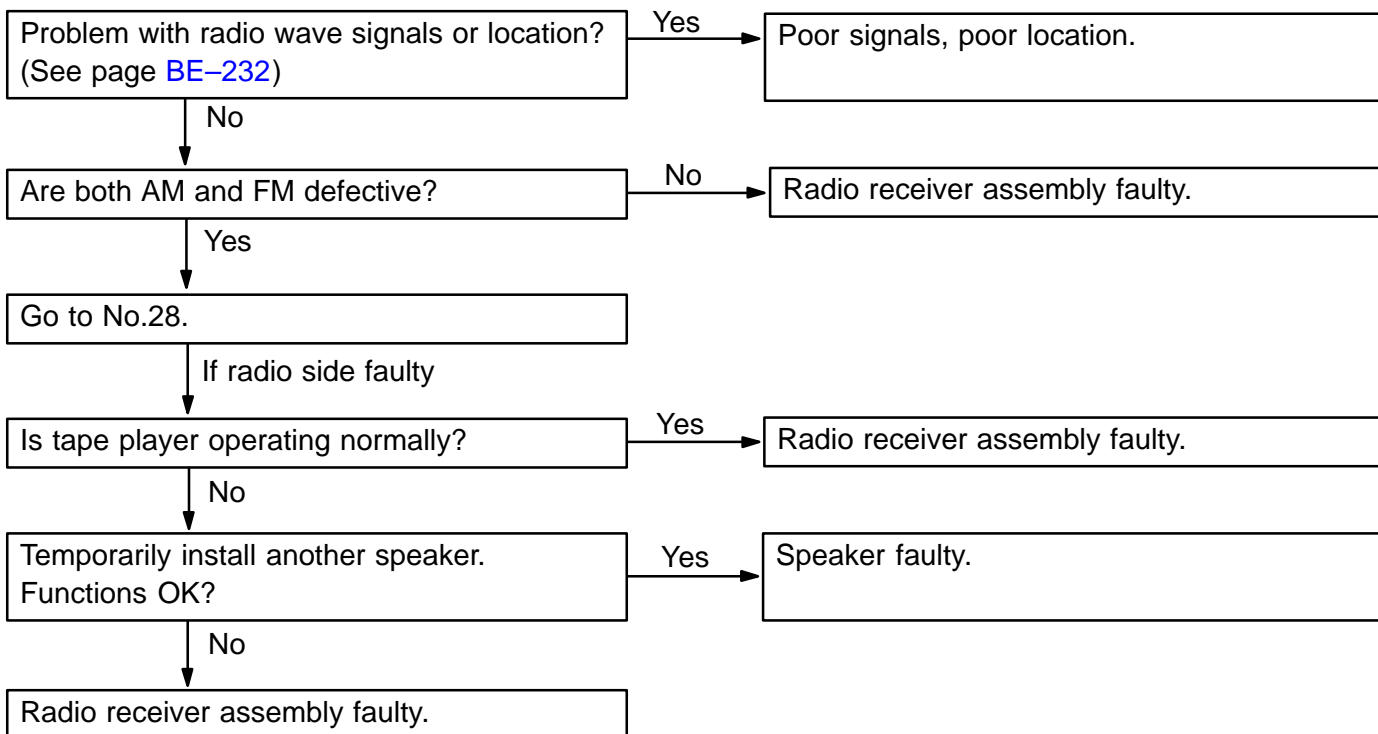


<b>4</b>	<b>Radio</b>	<b>EITHER SPEAKER DOES NOT WORK</b>
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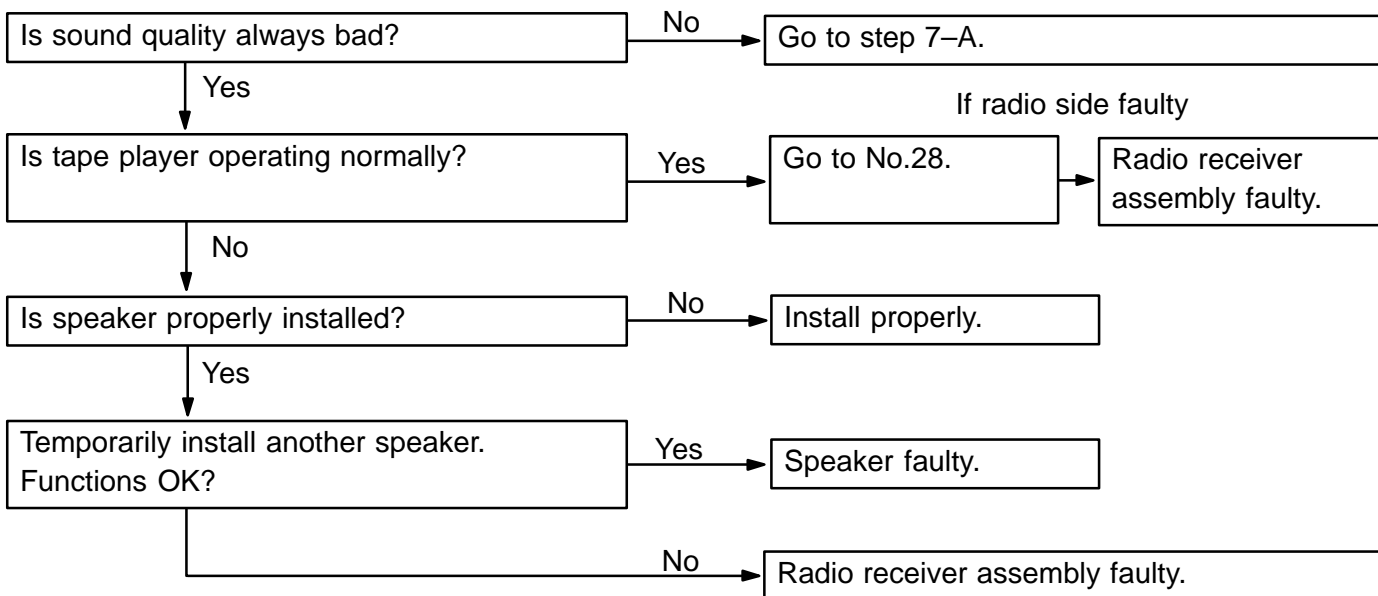
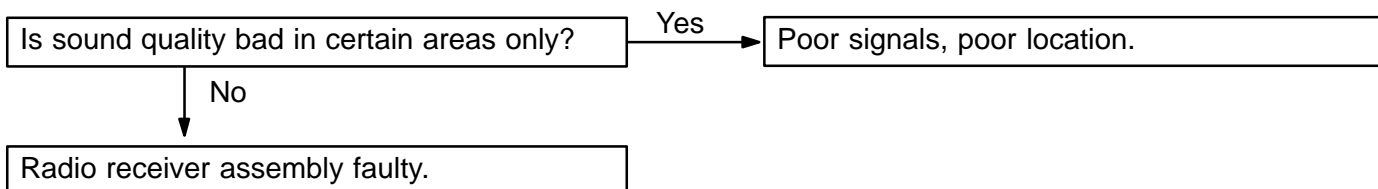




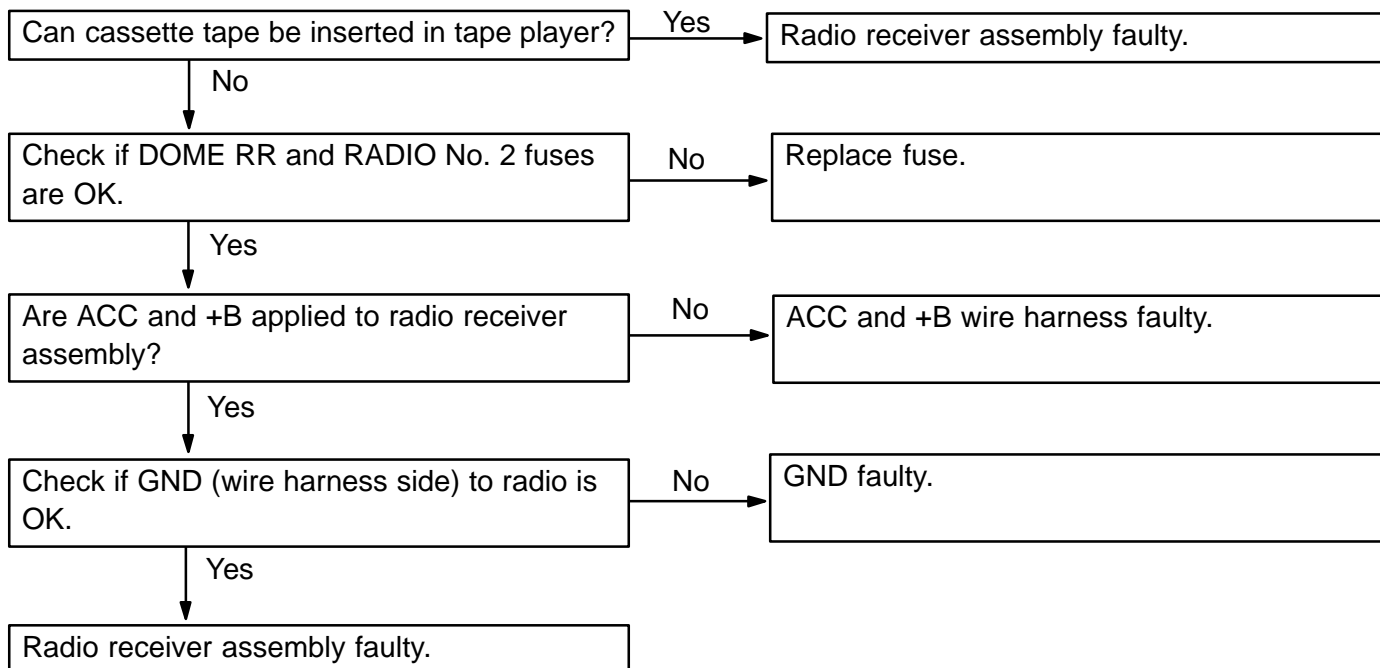
<b>6</b>	<b>Radio</b>	<b>EITHER AM OR FM DOES NOT WORK, RECEPTION POOR (VOLUME FAINT), FEW PRESET TUNING BANDS</b>
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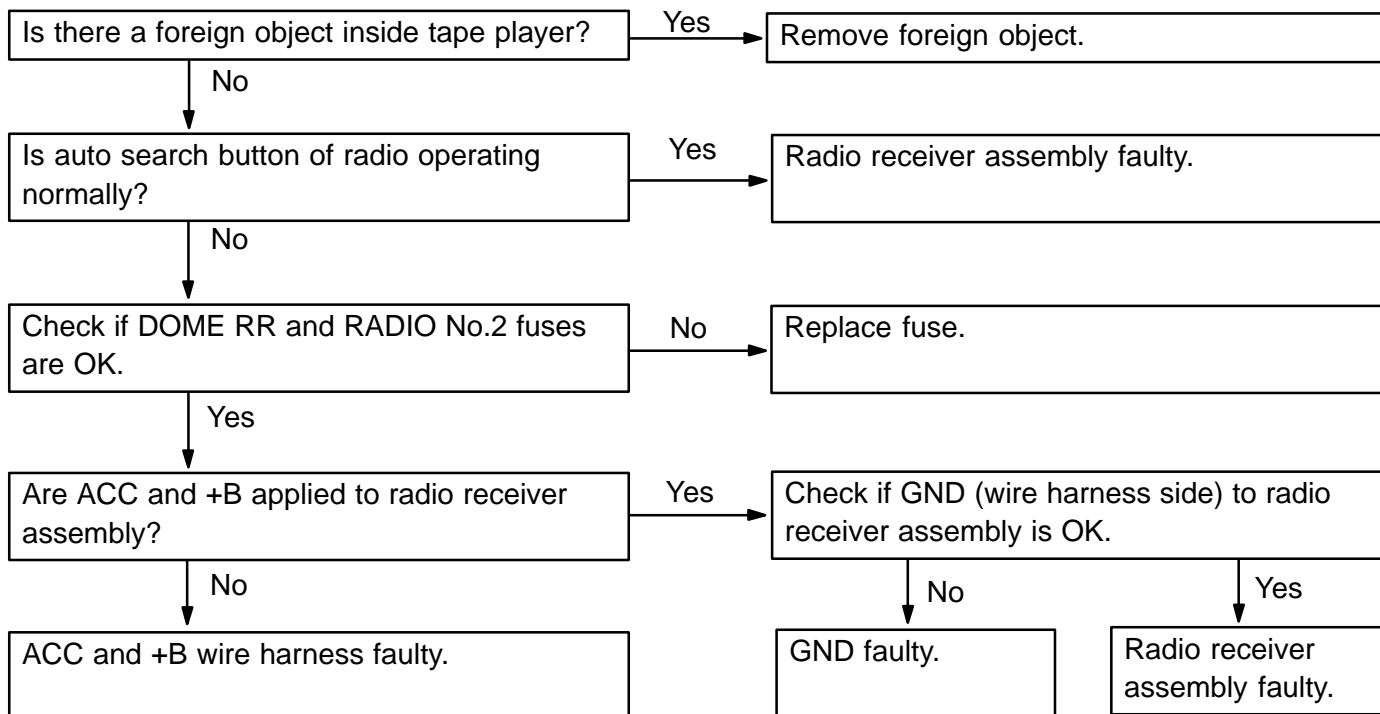
<b>7</b>	<b>Radio</b>	<b>SOUND QUALITY POOR</b>
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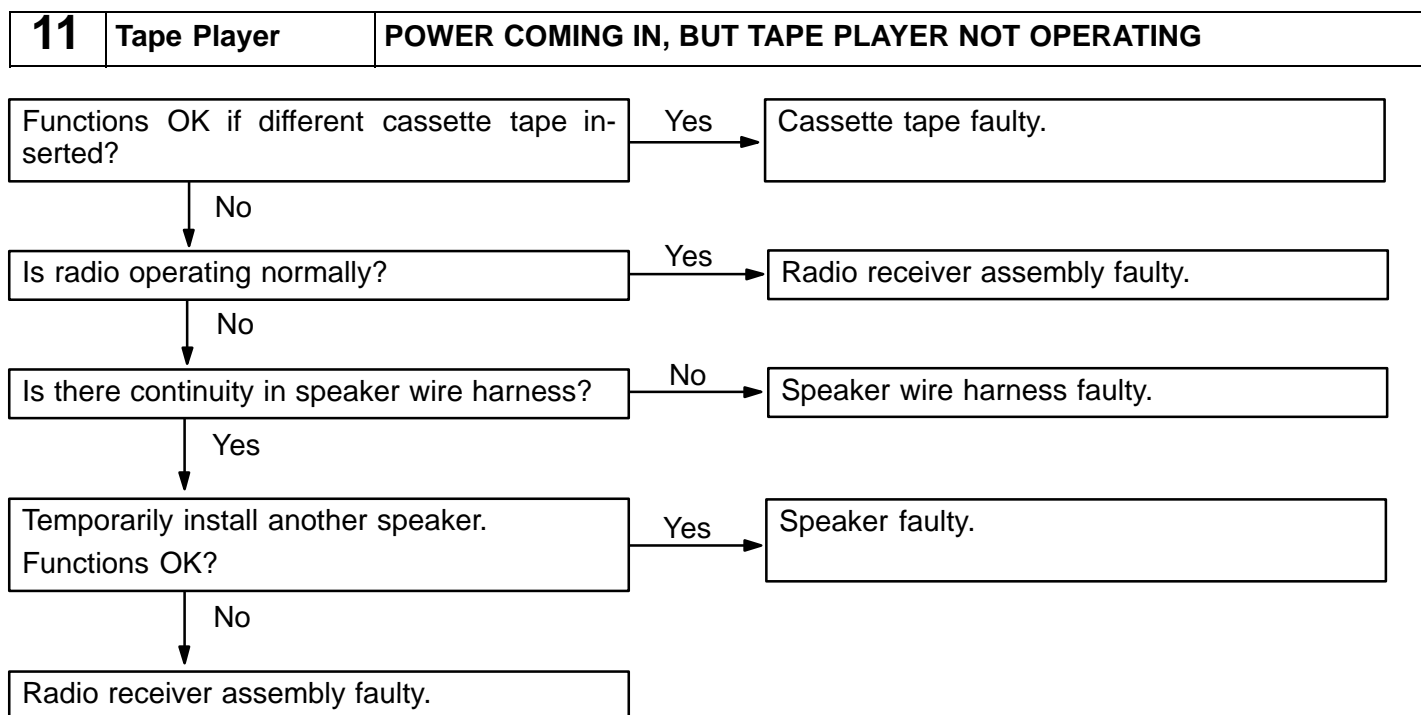
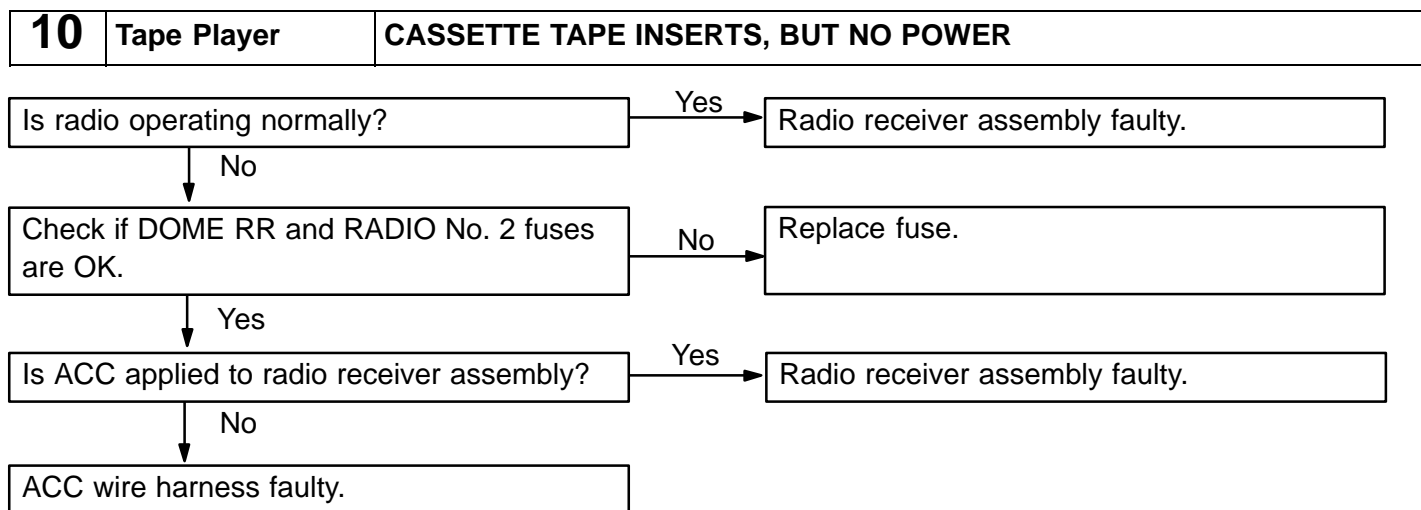
**7-A.**

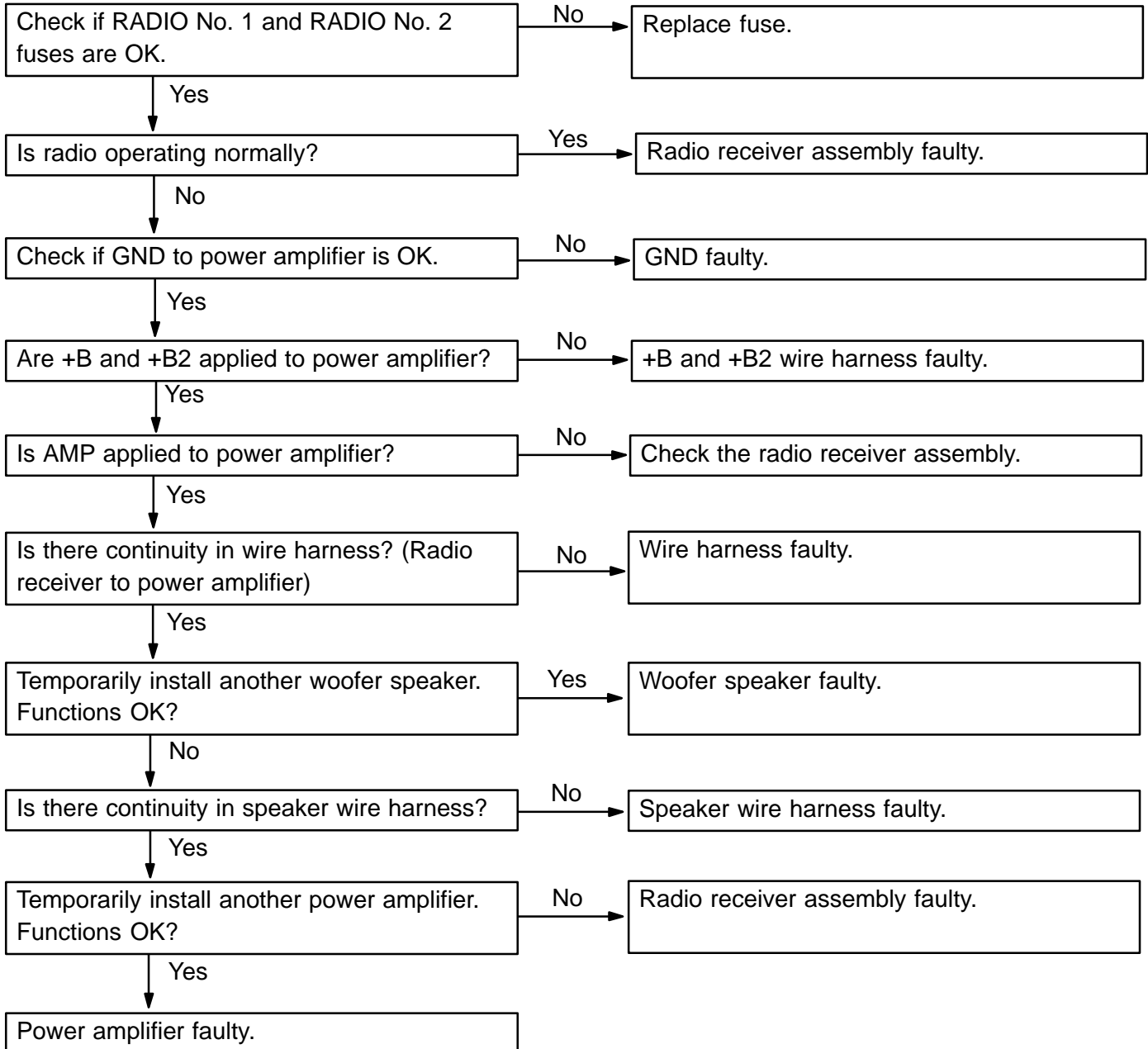
<b>8</b>	<b>Radio</b>	<b>CANNOT SET STATION SELECT BUTTON, PRESET MEMORY DISAPPEARS</b>
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<b>9</b>	<b>Tape Player</b>	<b>CASSETTE TAPE CANNOT BE INSERTED</b>
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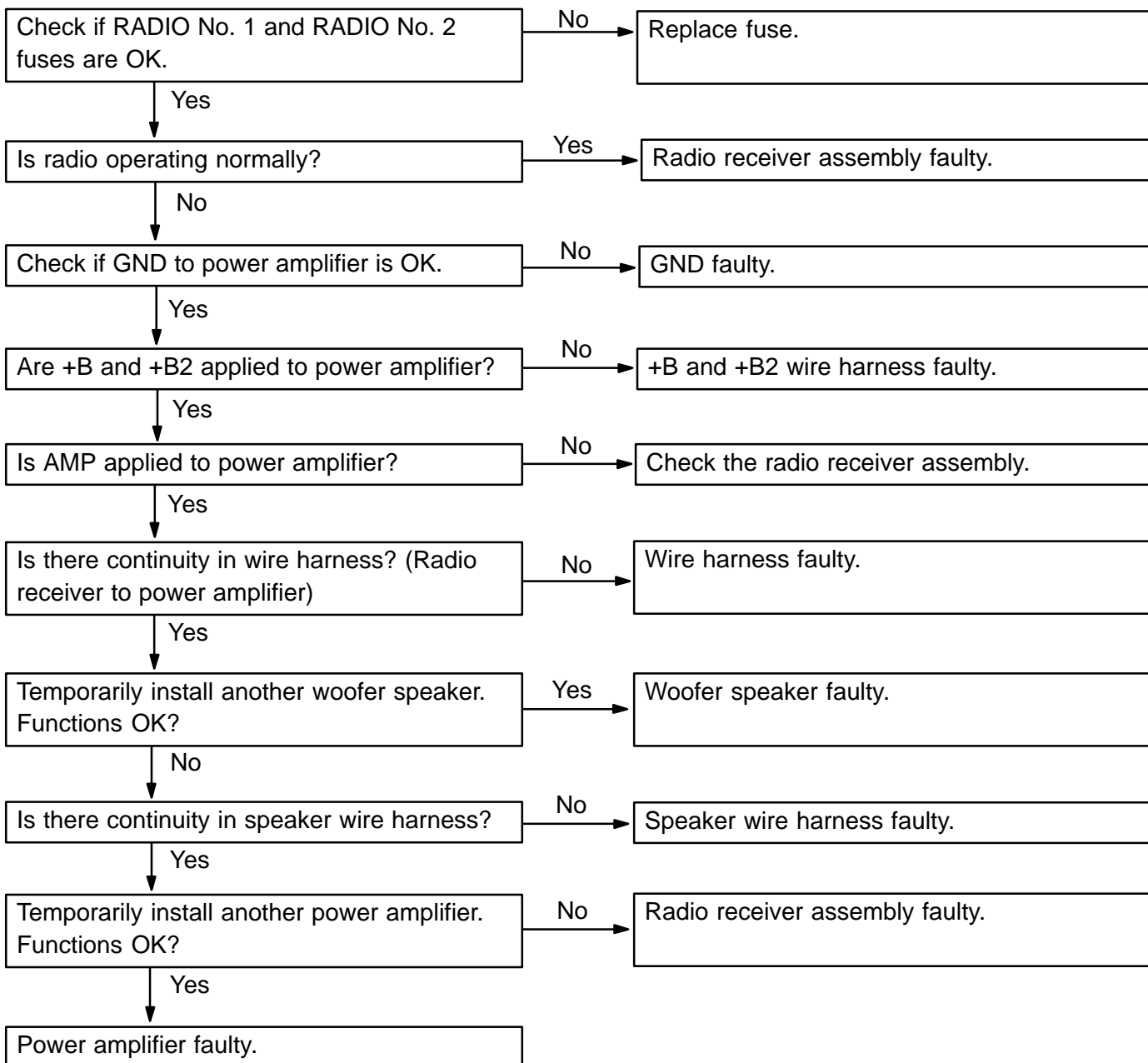


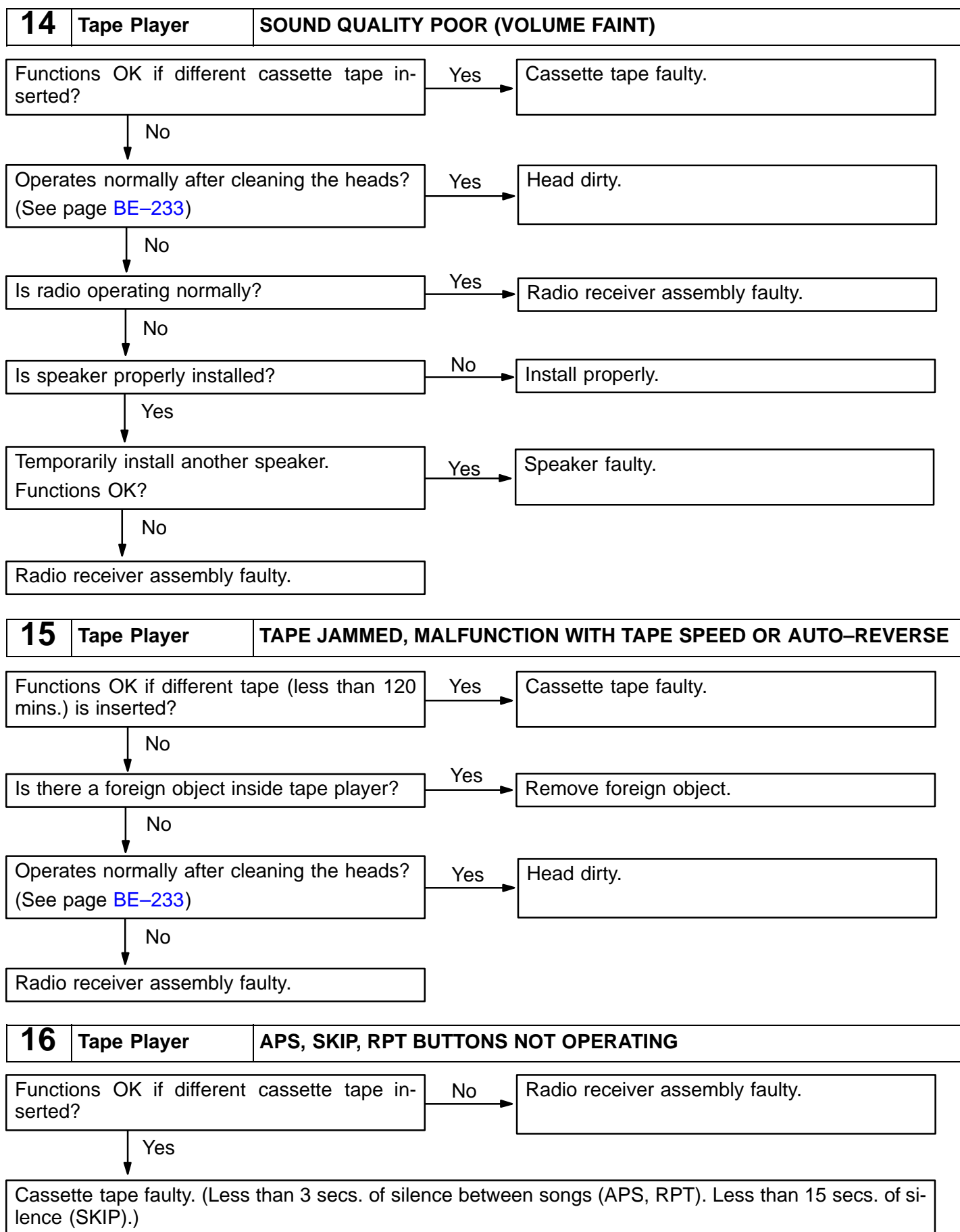


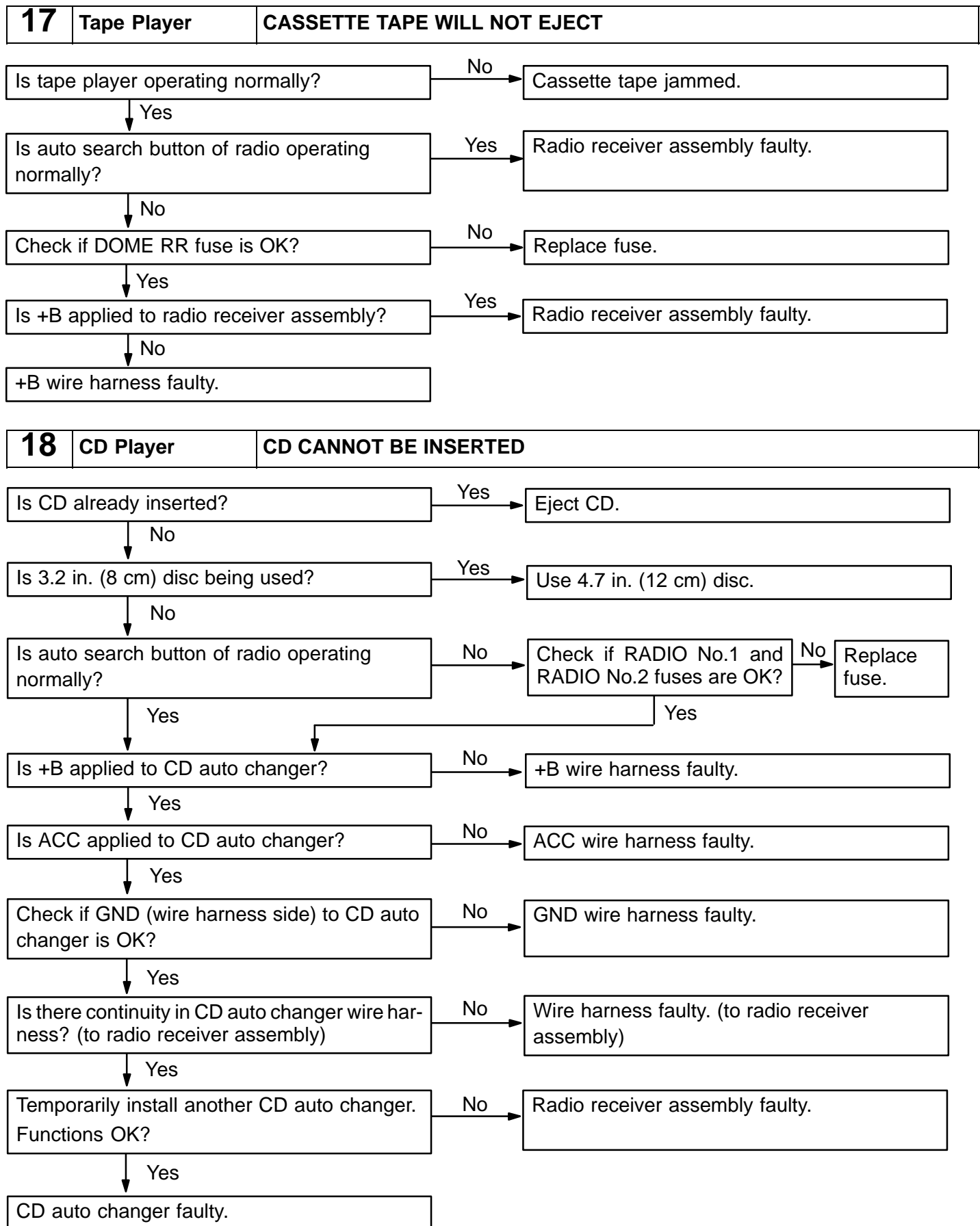
**12****Tape Player****EITHER SPEAKER DOES NOT WORK**



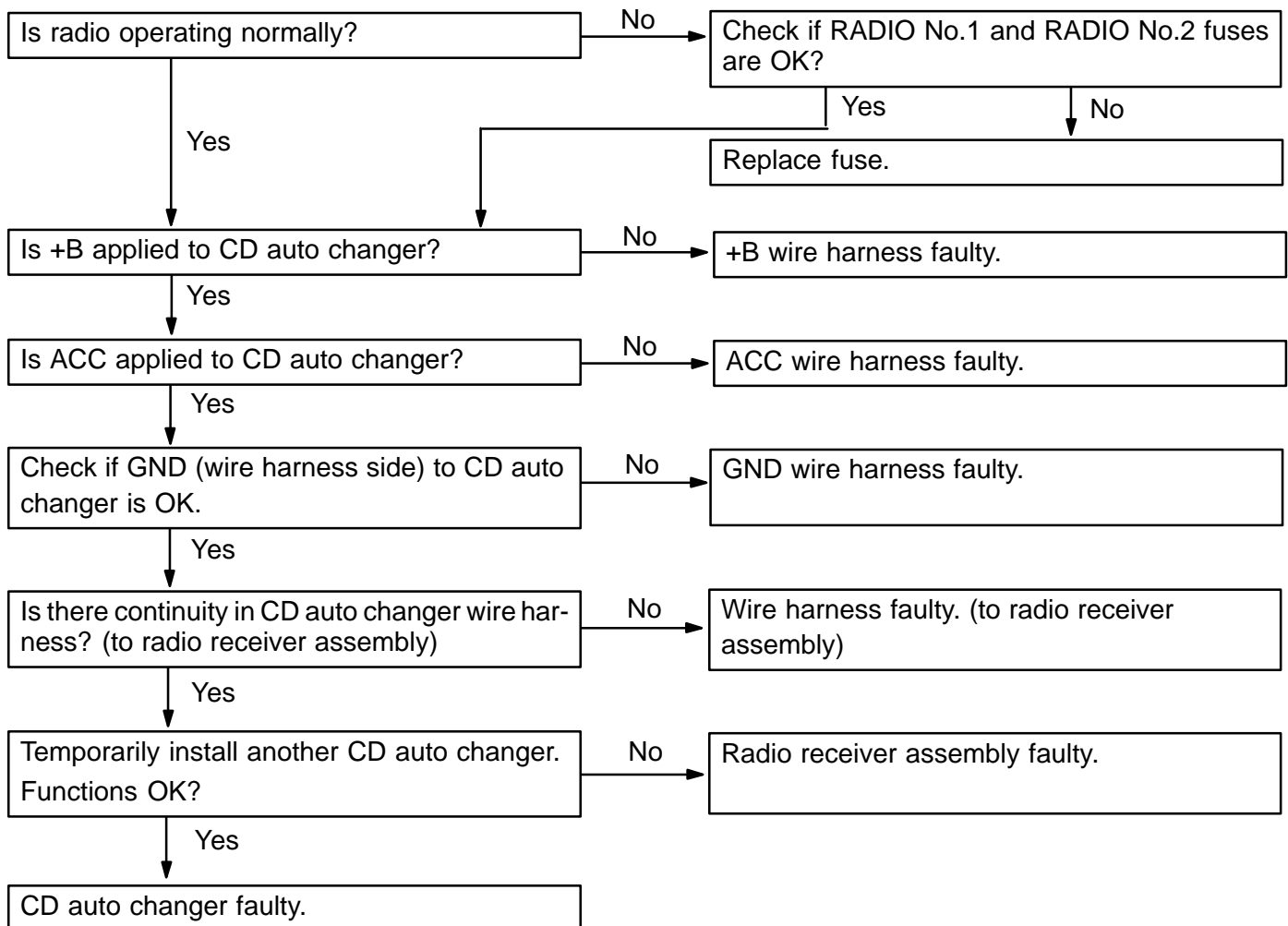
<b>13</b>	<b>Tape Player</b>	<b>WOOFER SPEAKER DOES NOT WORK</b>
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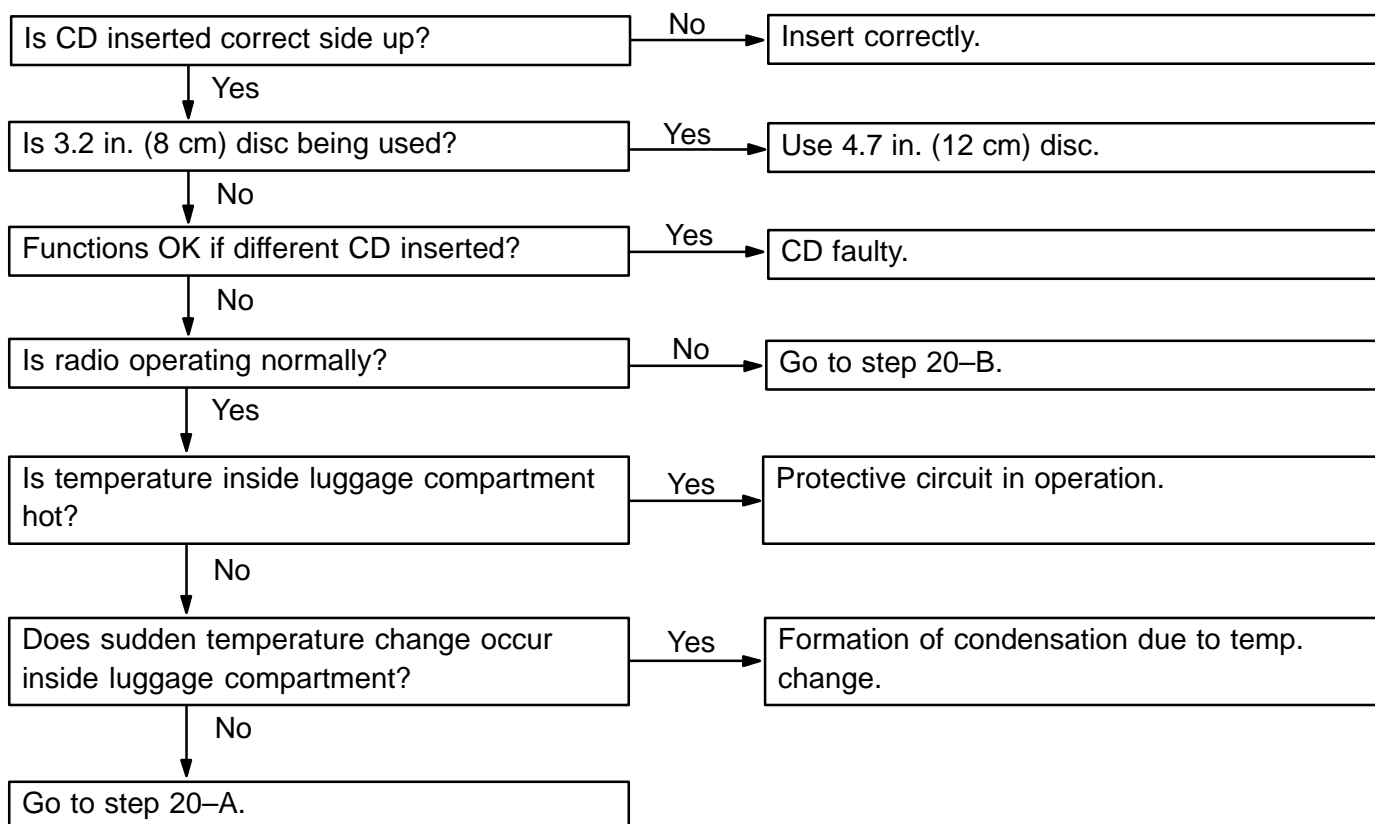
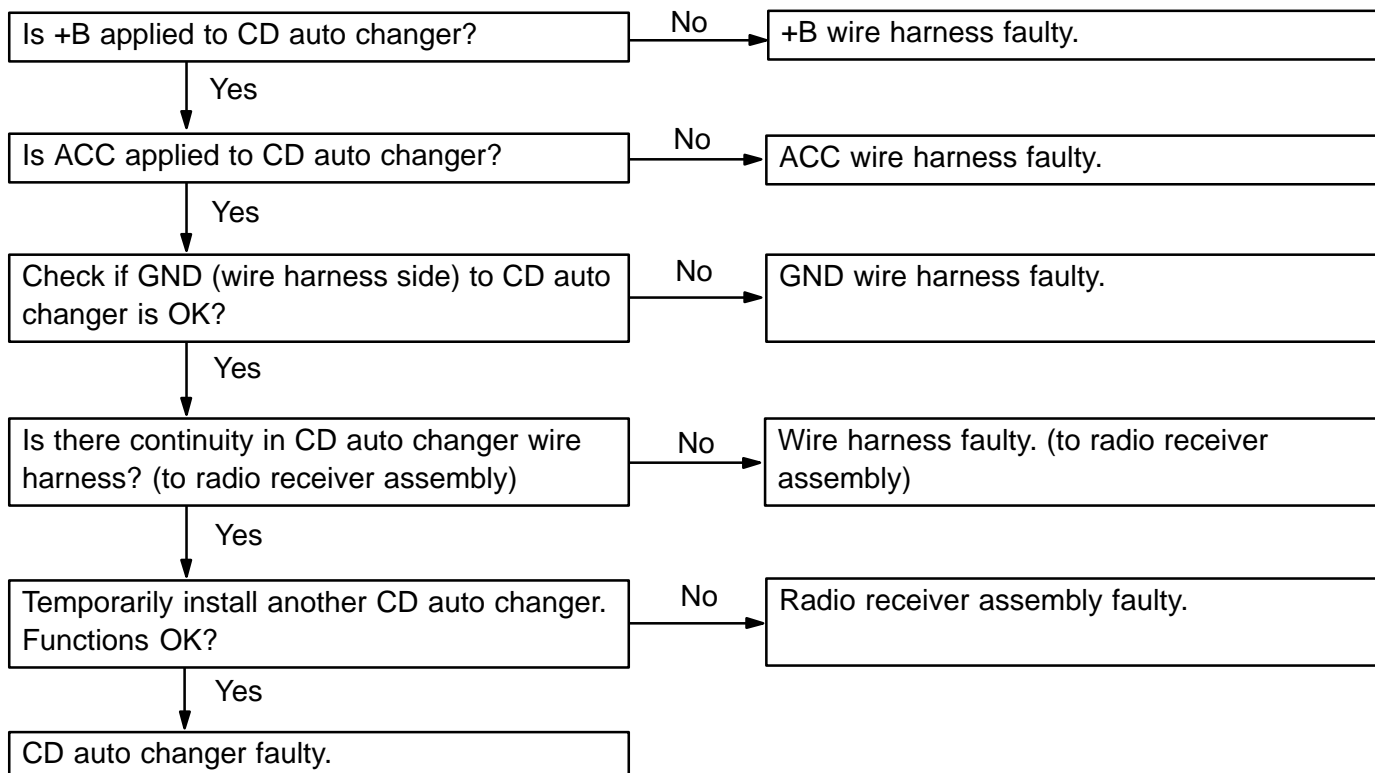


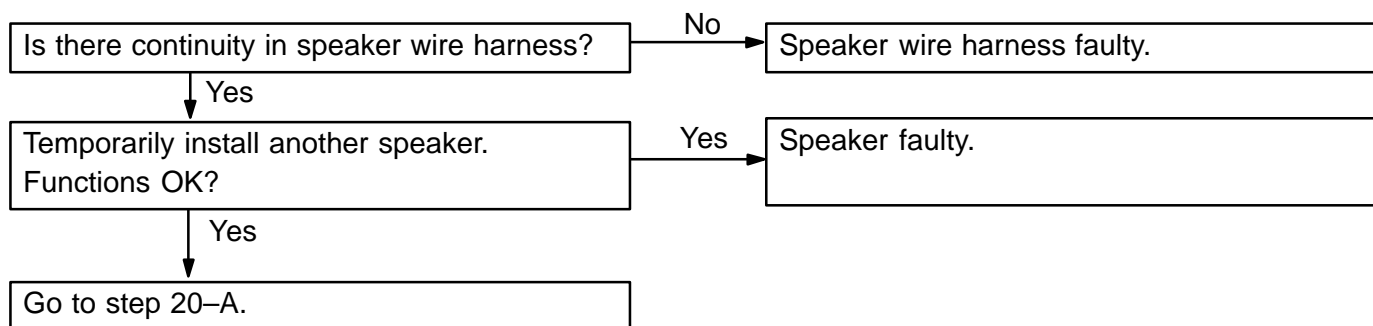
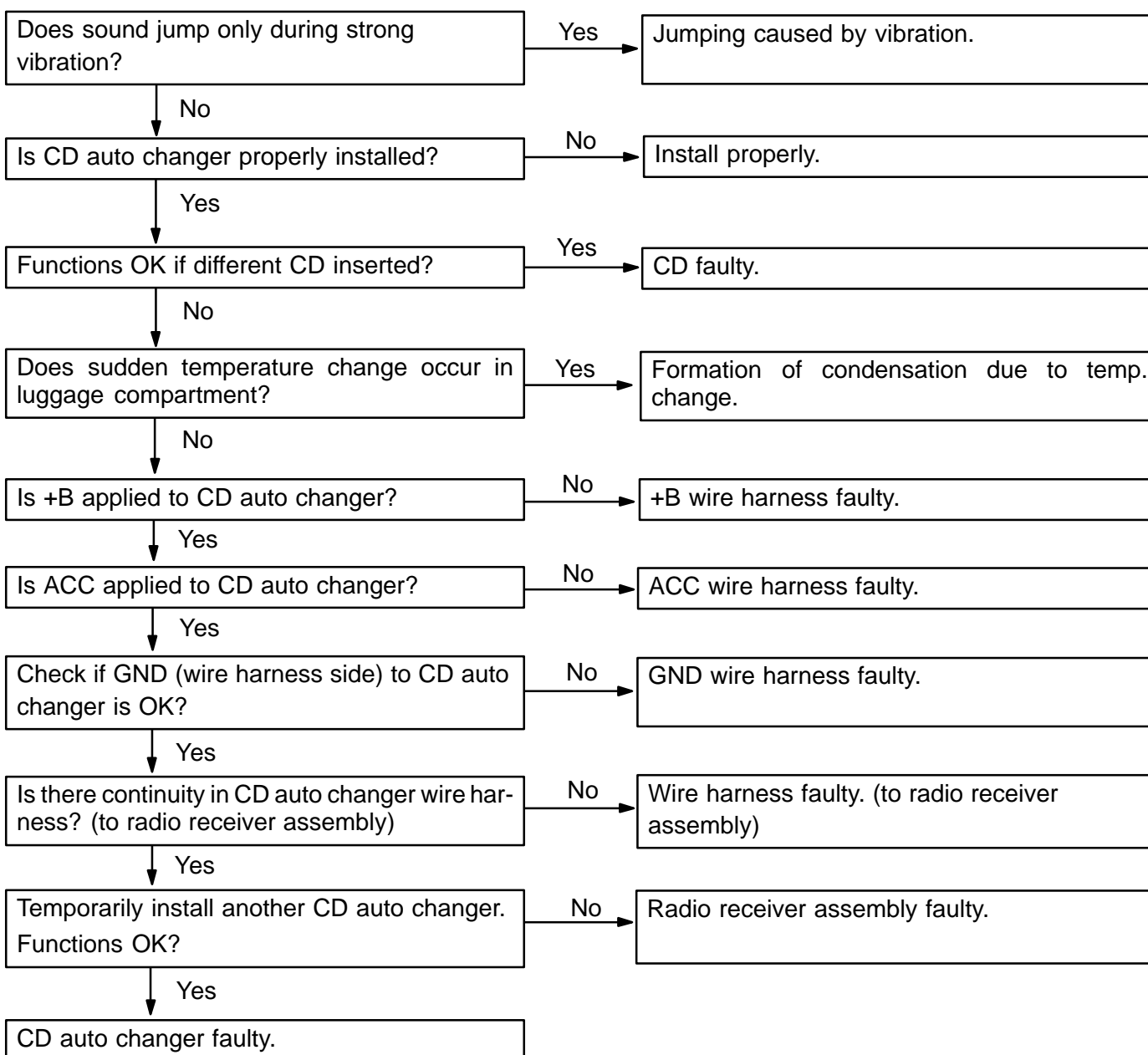


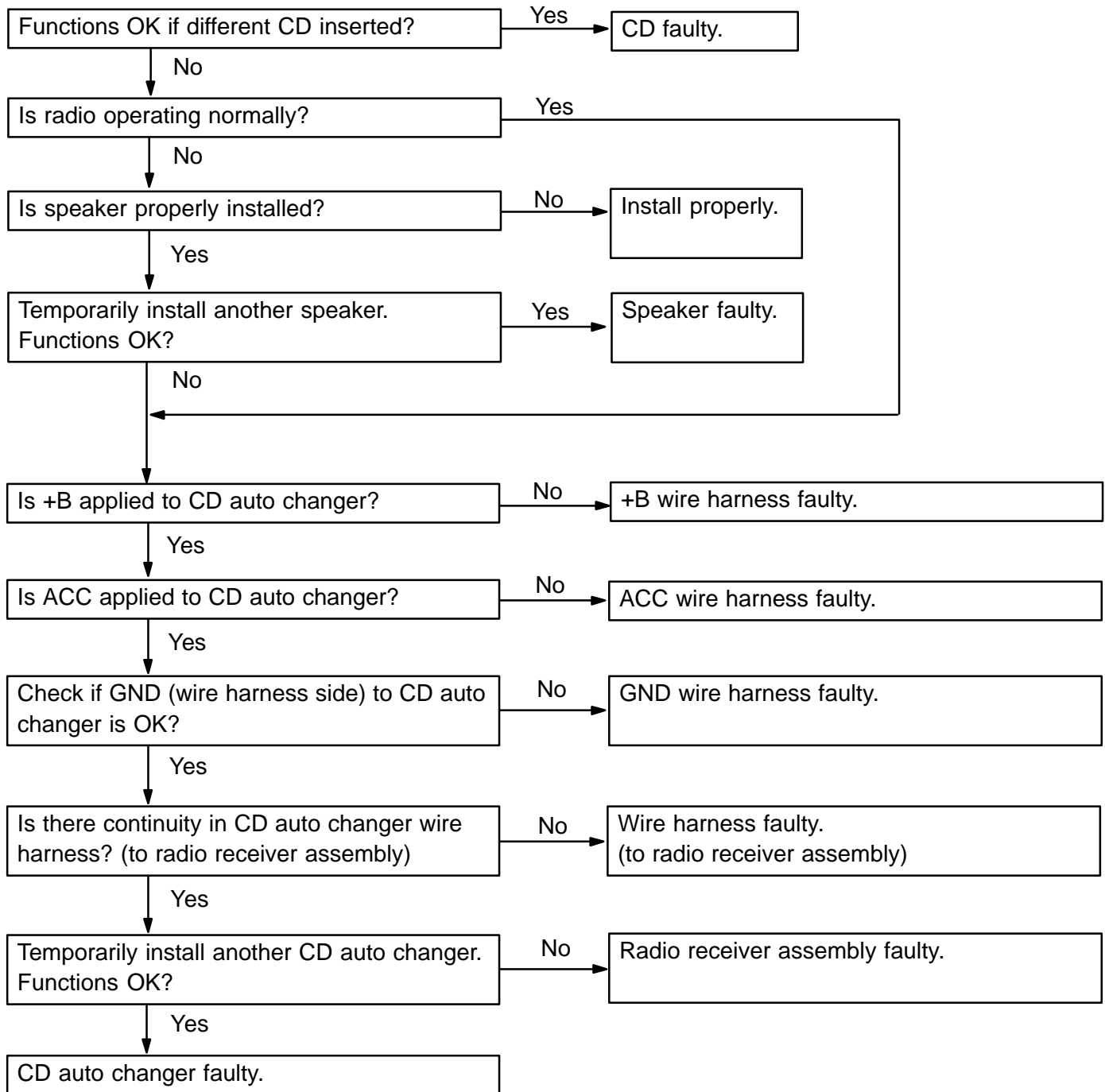


<b>19</b>	<b>CD Player</b>	<b>CD INSERTS, BUT NO POWER</b>
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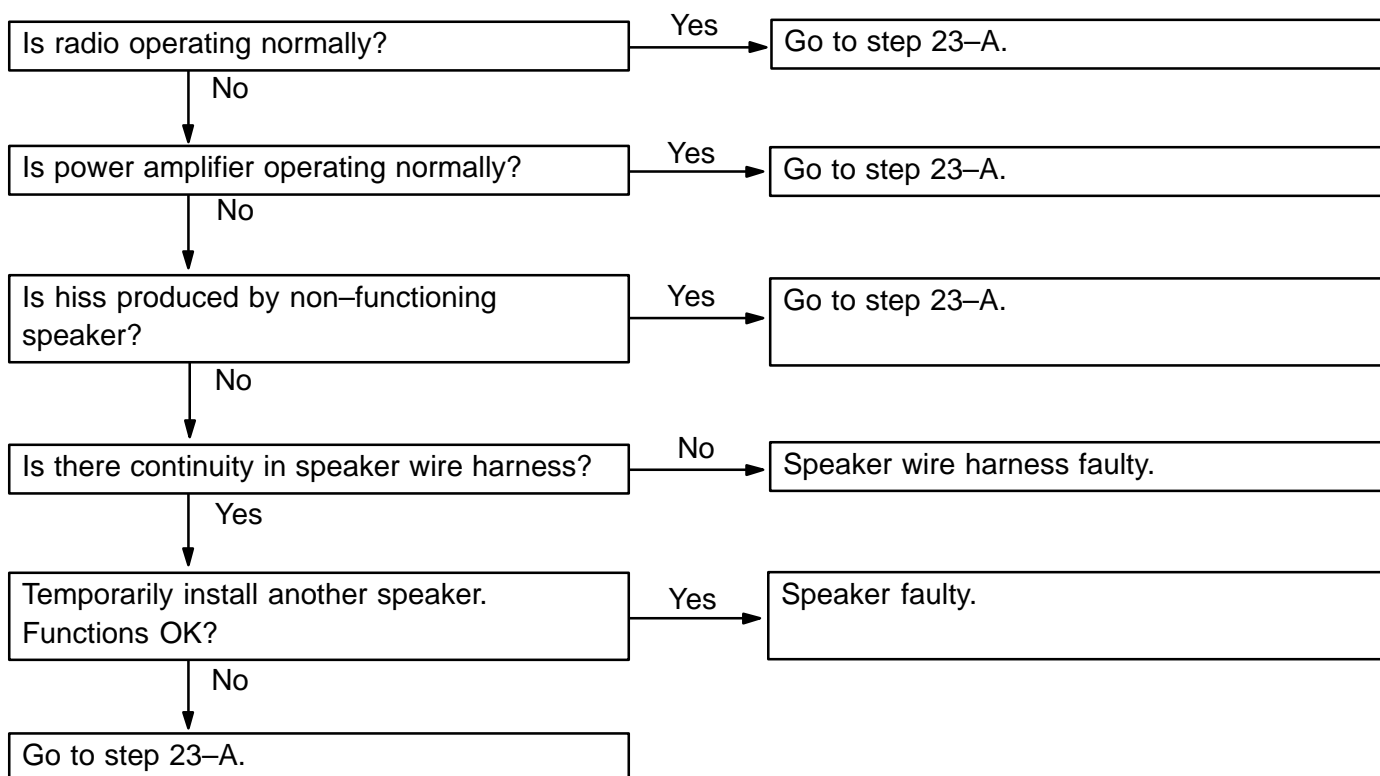
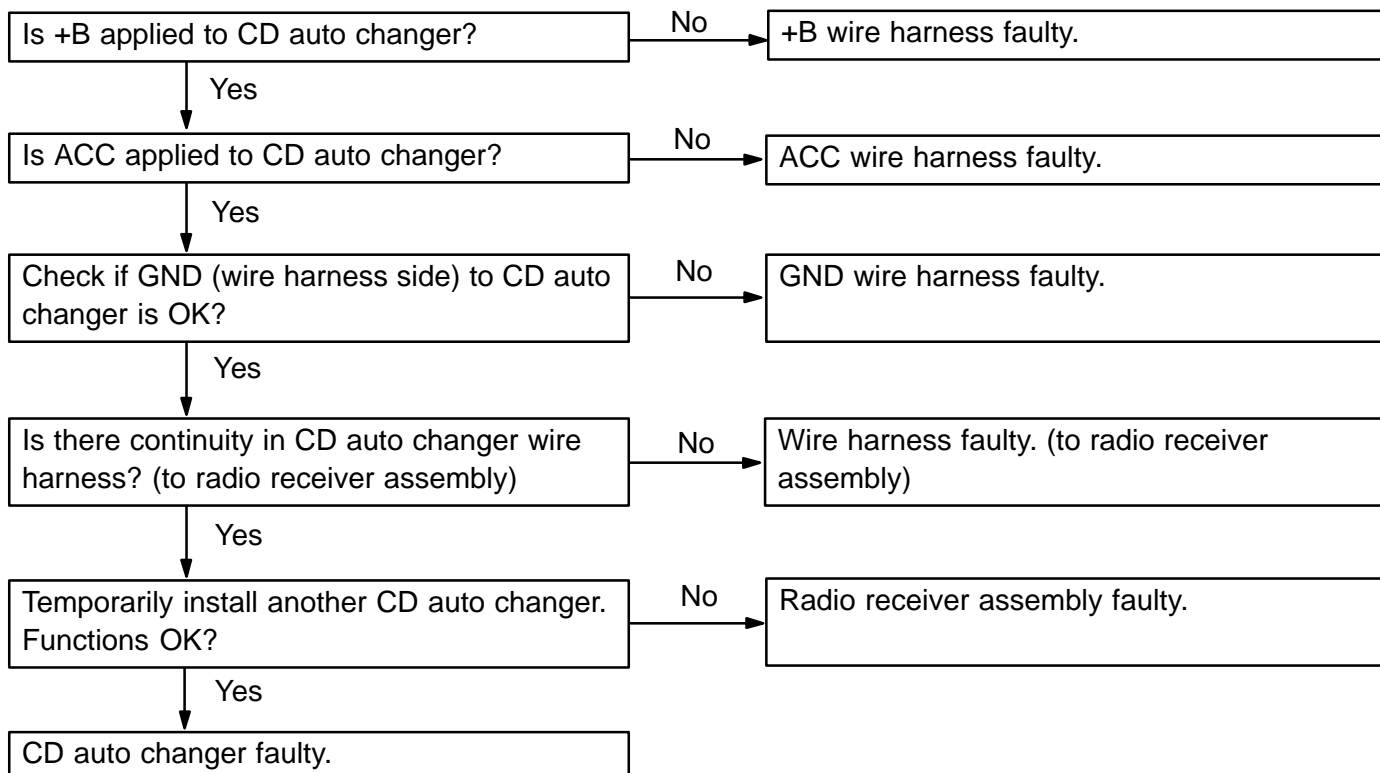


**20****CD Player****POWER COMING IN, BUT CD PLAYER NOT OPERATING****20-A.**

**20-B.****21****CD Player****SOUND JUMPS**

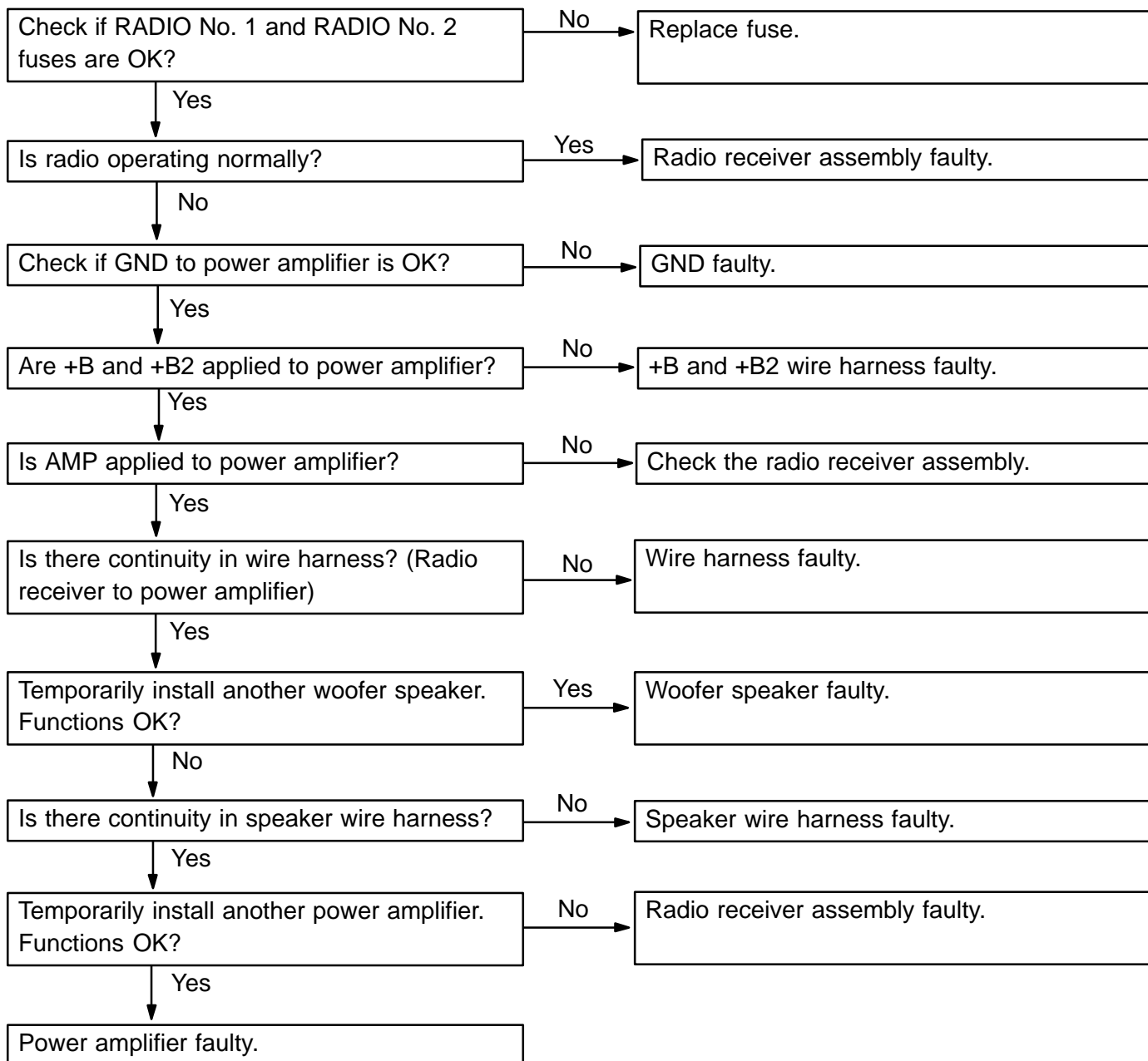
**22****CD Player****SOUND QUALITY POOR (VOLUME FAINT)**

<b>23</b>	<b>CD Player</b>	<b>EITHER SPEAKER DOES NOT WORK</b>
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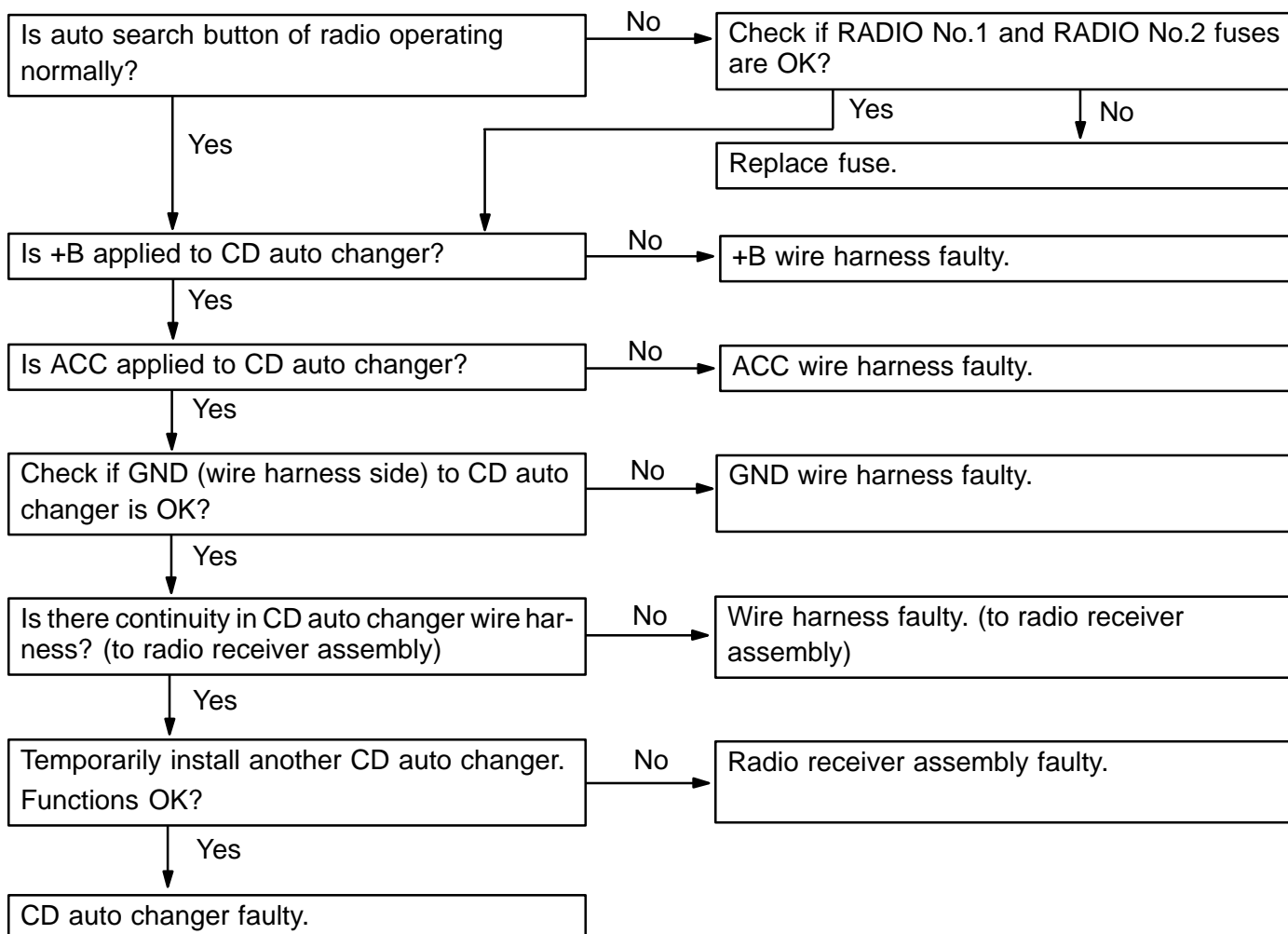
**23-A.**



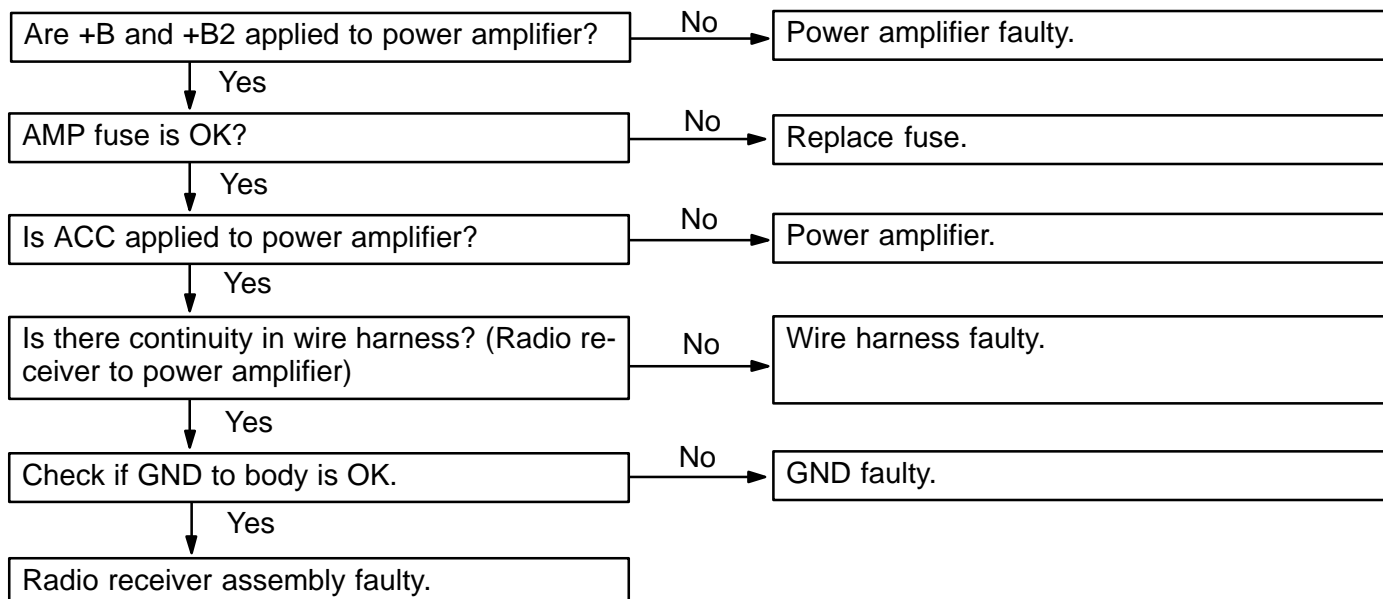
<b>24</b>	<b>CD Player</b>	<b>WOOFER SPEAKER DOES NOT WORK</b>
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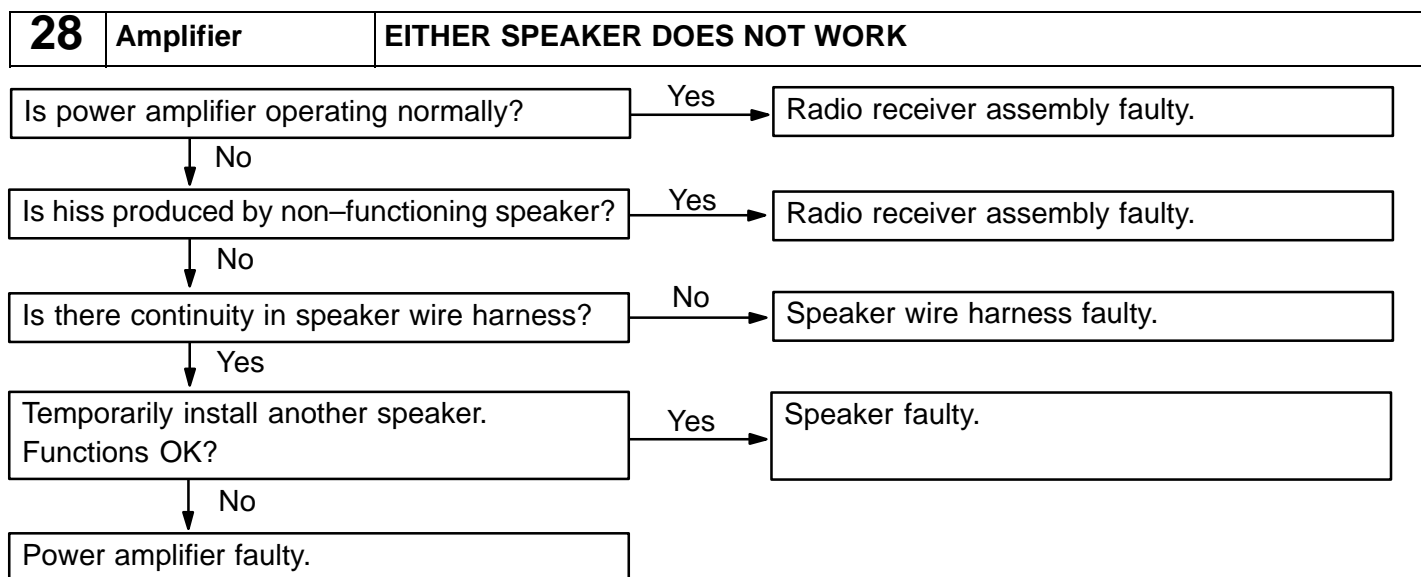
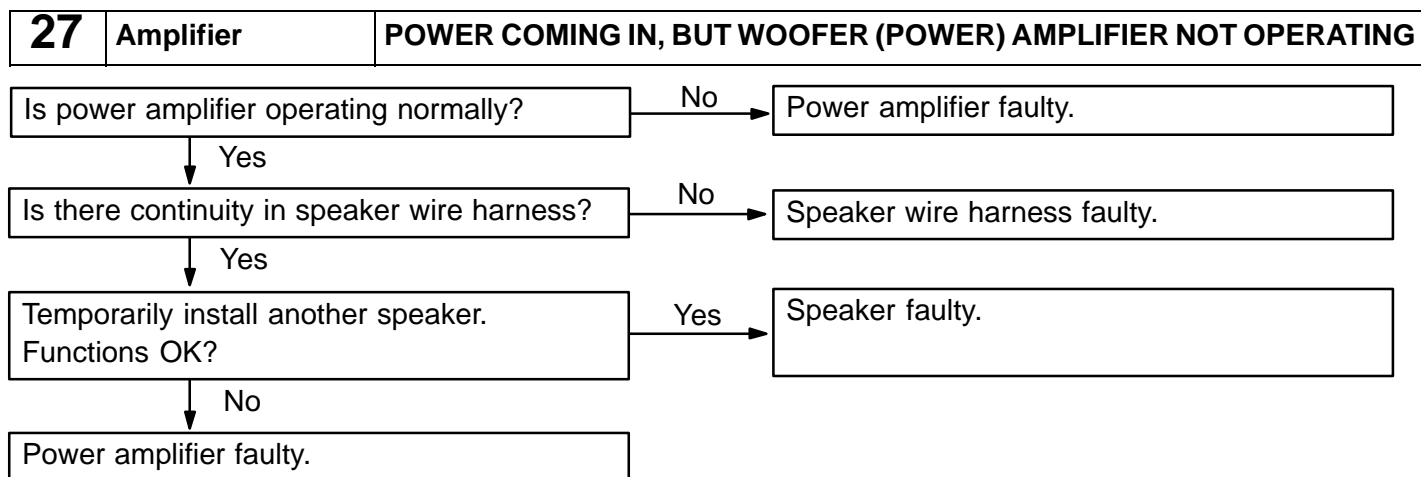


## 25 CD Player CD WILL NOT EJECT

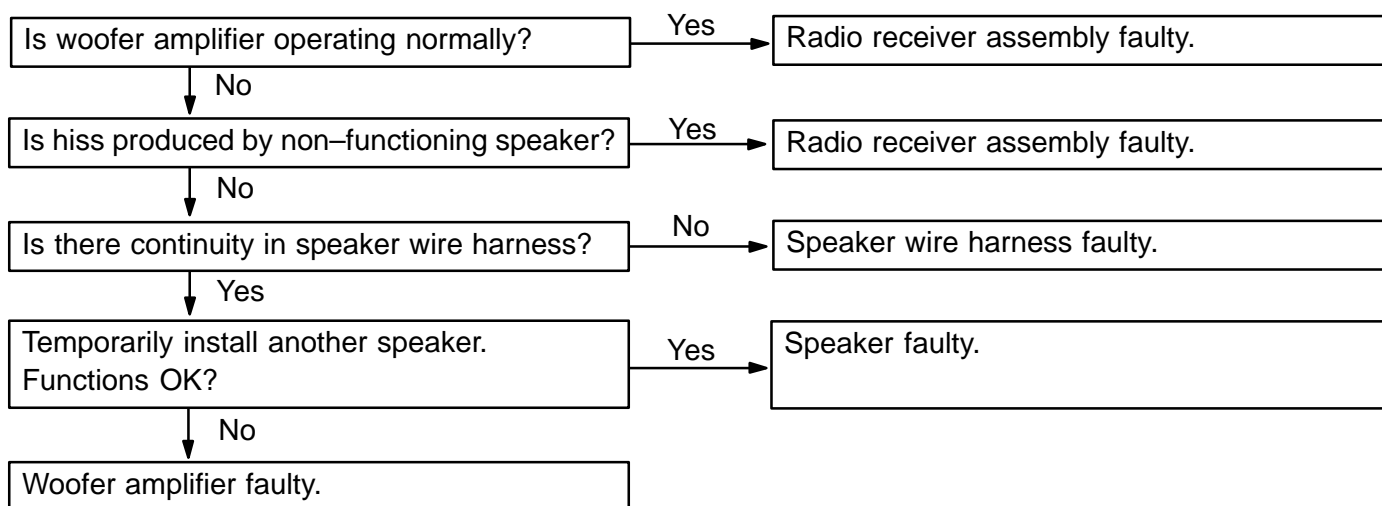


## 26 Amplifier NO POWER COMING IN

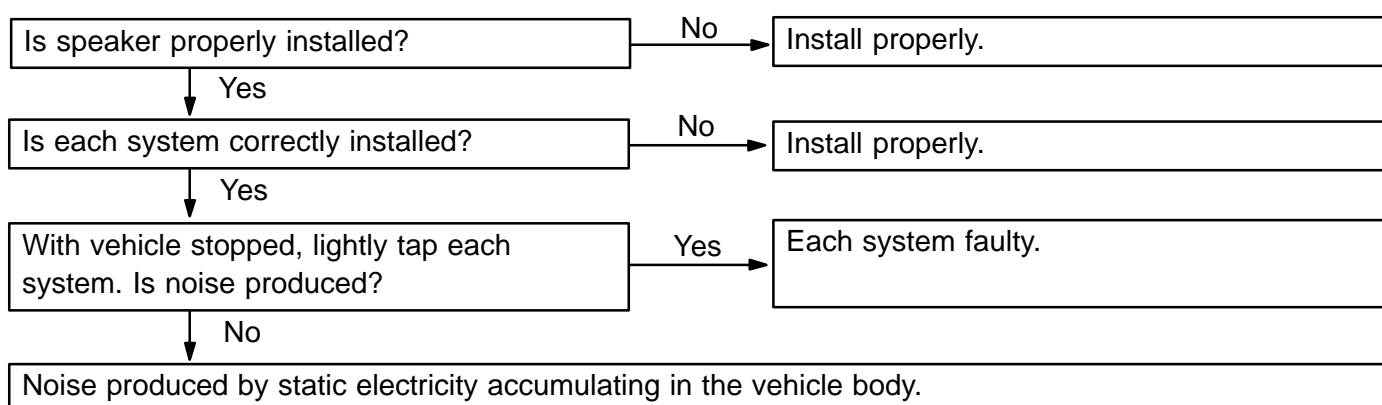




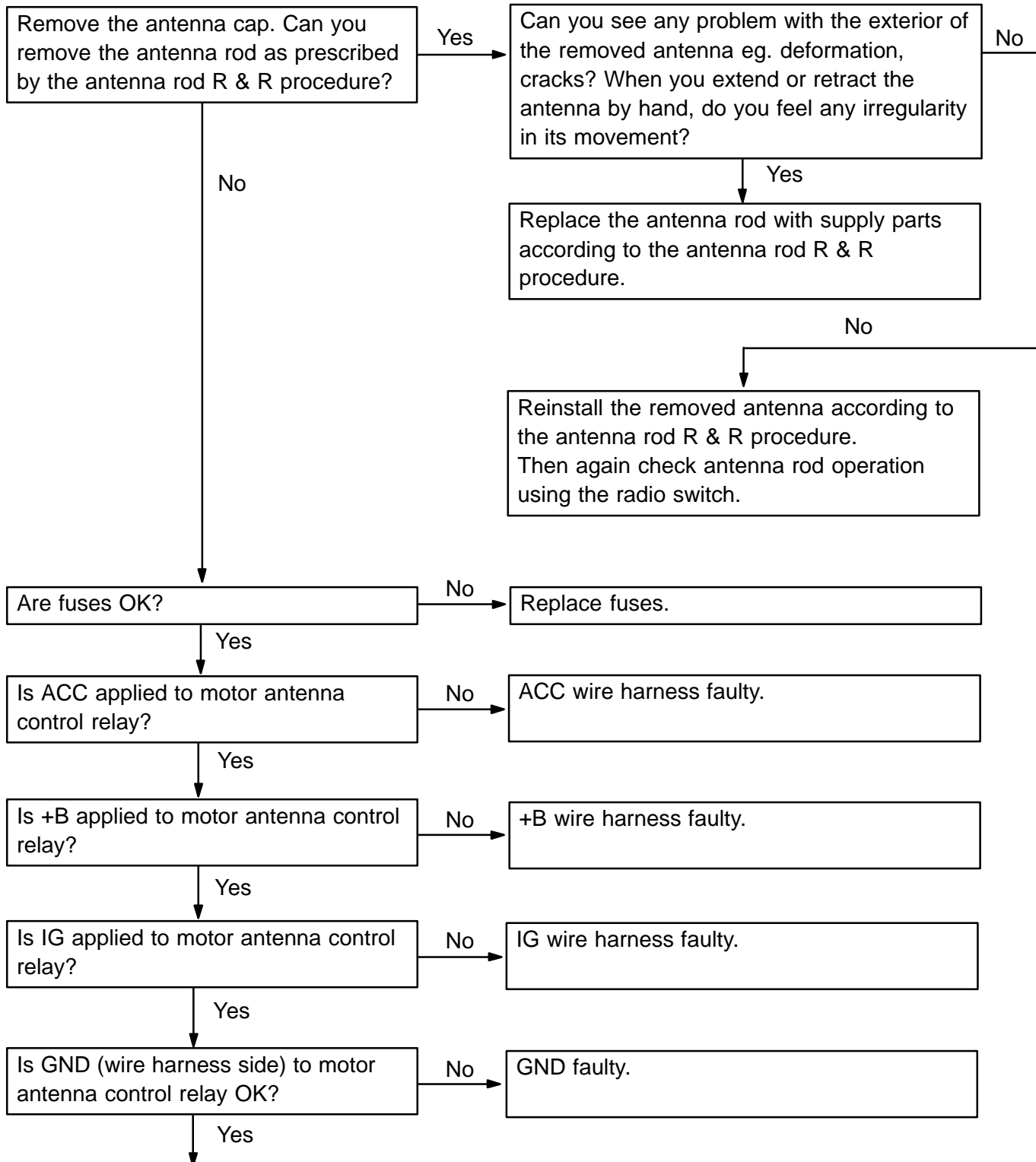
## 29 Amplifier WOOFER SPEAKER DOES NOT WORK



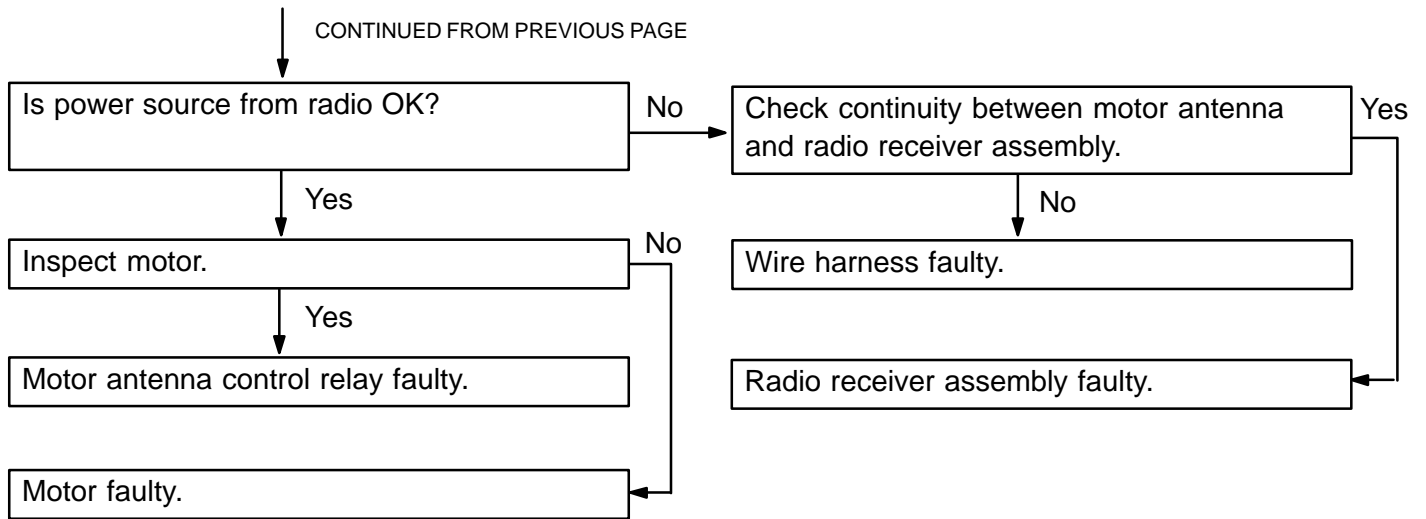
## 30 Noise NOISE PRODUCED BY VIBRATION OR SHOCK WHILE DRIVING



31	Noise	NOISE PRODUCED WHEN ENGINE STARTS
	Whistling noise which becomes high-pitched when accelerator strongly depressed, disappears shortly after engine stops.	<div>Yes → Alternator noise.</div> <div>No ↓</div>
	Whining noise occurs when A/C is operating.	<div>Yes → A/C noise.</div> <div>No ↓</div>
	Scratching noise occurs during sudden acceleration, driving on rough roads or when ignition switch is turned on.	<div>Yes → Fuel gauge noise.</div> <div>No ↓</div>
	Clicking sound heard when horn button is pressed, then released. Whirring/grating sound when pushed continuously.	<div>Yes → Horn noise.</div> <div>No ↓</div>
	Murmuring sound, stops when engine stops.	<div>Yes → Ignition noise.</div> <div>No ↓</div>
	Tick-tock noise, occurs in co-ordination with blinking of flasher.	<div>Yes → Turn signal noise.</div> <div>No ↓</div>
	Noise occurs during window washer operation.	<div>Yes → Washer noise.</div> <div>No ↓</div>
	Scratching noise occurs while engine is running and continues a while even after engine stops.	<div>Yes → Engine coolant temp. gauge noise.</div> <div>No ↓</div>
	Scraping noise in time with wiper beat.	<div>Yes → Wiper noise.</div> <div>No ↓</div>
	Other types of noise.	

**32****Antenna****ANTENNA DOES NOT FULLY EXTEND OR FULLY RETRACT**

CONTINUED FROM PREVIOUS PAGE



**33****Antenna****ANTENNA-RELATED**