

Audio, Navigation, and Telematics

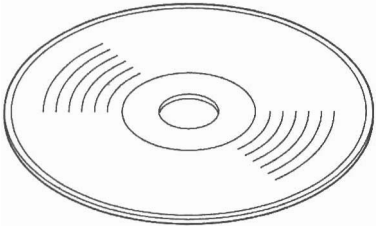
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Audio, Navigation, and Telematics

Special Tools

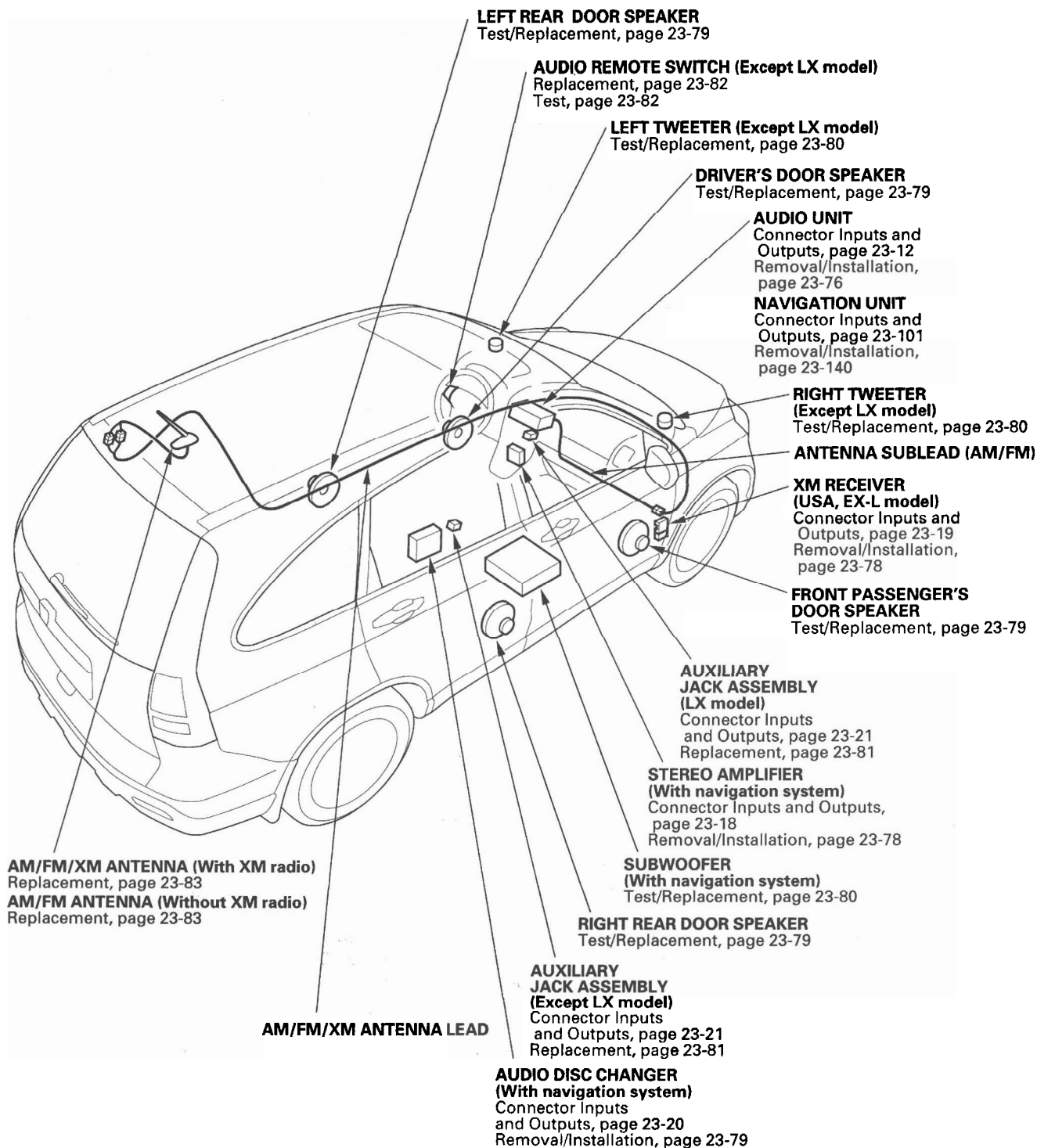
Ref. No.	Tool Number	Description	Qty
①	07AAZ-SDBA100	Diagnostics CD	1
②	07AAZ-SDBA200 (ABEX-TCD-725B)	Skip Test CD	1
③	07AAZ-SDBA300 (ABEX-TCD-721)	Skip Test CD	1



①, ②, ③



Component Location Index



Audio System

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Poor AM or FM radio reception or interference (with navigation)	Symptom Troubleshooting (see page 23-32)	Antenna lead (sub or main) short or open in the wire
Poor AM or FM radio reception or interference (without navigation)	Symptom Troubleshooting (see page 23-35)	Antenna lead (sub or main) short or open in the wire
Power switch will not turn ON (No information display and no sound) (with navigation)	Symptom Troubleshooting (see page 23-38)	
Power switch will not turn ON (No information display and no sound) (without navigation)	Symptom Troubleshooting (see page 23-39)	
Power will not turn OFF (with navigation)	Symptom Troubleshooting (see page 23-40)	
Power will not turn OFF (without navigation)	Symptom Troubleshooting (see page 23-41)	
No sound is heard from speaker(s) (display is normal) (with navigation)	Symptom Troubleshooting (see page 23-41)	
No sound is heard from speaker(s) (display is normal) (without navigation)	Symptom Troubleshooting (see page 23-45)	
Audio system sound is weak or distorted (display is normal)	Symptom Troubleshooting (see page 23-47)	
Radio preset memory is lost	Symptom Troubleshooting (see page 23-47)	
Volume does not change	Symptom Troubleshooting (see page 23-48)	
Volume does not increase with speed	Symptom Troubleshooting (see page 23-49)	
Volume is too high or too low when driving at freeway speeds	Symptom Troubleshooting (see page 23-50)	
Radio tuner does not change stations	Symptom Troubleshooting (see page 23-50)	
Display does not dim or brighten with dimmer (without navigation)	Symptom Troubleshooting (see page 23-51)	
Navigation unit button illumination does not work (with navigation)	Symptom Troubleshooting (see page 23-52)	
Audio unit button illumination does not work (without navigation)	Symptom Troubleshooting (see page 23-53)	
Audio remote switch does not work properly	Symptom Troubleshooting (see page 23-54)	
Audio disc does not load	Symptom Troubleshooting (see page 23-57)	
Audio disc does not eject	Symptom Troubleshooting (see page 23-57)	
Audio disc cannot be inserted and/or ejected (with navigation)	Symptom Troubleshooting (see page 23-58)	
Audio disc does not play	Symptom Troubleshooting (see page 23-58)	
Audio disc skips	Symptom Troubleshooting (see page 23-59)	Tire pressure (over inflated), disc smudged, dirty, or scratched



Symptom	Diagnostic procedure	Also check for
Poor or no sound with audio disc changer (with navigation)	Symptom Troubleshooting (see page 23-60)	
PC card will not play/card icon on audio screen cannot be selected (with navigation)	Symptom Troubleshooting (see page 23-62)	
Error code: XM NO SIGNAL or XM ANTENNA is displayed	Symptom Troubleshooting (see page 23-63)	Disconnected XM antenna lead
XM radio display is blank and no station information is displayed	Symptom Troubleshooting (see page 23-64)	
XM radio preset memory is lost	Symptom Troubleshooting (see page 23-67)	
Poor or no sound with XM radio (navigation unit can display XM channels) (with navigation)	Symptom Troubleshooting (see page 23-68)	
XM radio does not change channels in order	XM radio is in the category mode. See the owner's manual to select the channel mode.	
XM radio only tunes to channels 000, 001, 174, and 247	XM receiver has been deactivated. Call XM listener care to verify the account status.	

Audio System

System Description

Overview

The audio unit acts as the “processor” for all audio functions. Select audio functions from the audio unit, the audio remote (on the steering wheel), or by using the navigation voice control system. The audio display provides the current audio status. For vehicles with navigation, additional audio information is available by touching the audio button on the Navigation Audio Screen. (See the owner’s manual and the navigation system manual for more details.)

The XM receiver and audio disc changer passes its signal to the audio unit. In addition, it communicates with the audio unit via the GA-Net bus. Any open connections in the GA-Net bus circuit will cause audio and navigation functions to appear inoperative.

For vehicles with navigation, pressing the “open/close” switch on the navigation display panel allows access to the CD slot and PC card.

A security signal is daisy-chained between the audio and vehicle components for integration into the vehicle’s security system.

Speed-sensitive volume compensation (SVC)

Some audio systems are equipped with speed-sensitive volume compensation (SVC). The navigation or audio unit receives the vehicle speed pulse (VSP) from the ECM/PCM. The system processes the speed input and increases the navigation or audio system volume level as the vehicle speed increases to compensate for the various interior noise that occurs at higher speeds. When the vehicle slows down, the volume returns to its normal level. The SVC has four settings: SVC OFF, LOW, MID and HIGH that can be adjusted using the navigation or audio unit. The SVC comes from the factory with MID set as the default.

To change the audio unit SVC setting, press the “tune folder sound” knob repeatedly until the SVC is displayed, then rotate the knob to adjust the SVC to the desired setting (SVC OFF, LOW, MID, or HIGH)

To change the navigation unit SVC setting, press the AUDIO button, and then select the SOUND icon on the navigation display. Press the navigation display to select the desired setting (OFF, LOW, MID, HI)

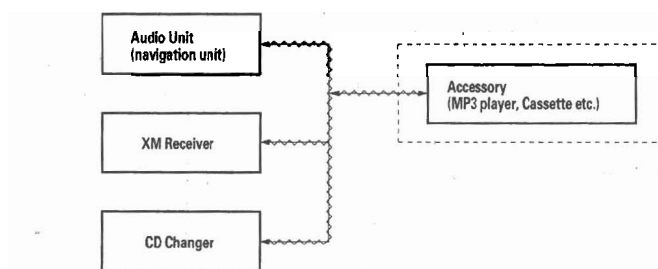


The navigation system allows voice control for the audio, XM, PC card, and CD player. The GA-Net (audio unit) communicates the voice control commands. When using the TALK/BACK button, the audio is muted on all speakers and you hear navigation sound on the front channels. When using the navigation or route guidance (RG), the front speakers provides the navigation sound and the rear speakers continue to play. For more information, see the navigation section. The outline of the interruption function is shown in this table.

Contents	Audio output				
	Left front CH	Right front CH	Right rear CH	Left rear CH	Subwoofer CH
TALK/BACK Buttons	Navigation voice output	Navigation voice output	Muted	Muted	Muted
Route guidance	Navigation voice output	Navigation voice output	Audio	Audio	Audio

GA-Net Bus Configuration

The GA-Net bus passes audio and navigation commands throughout the navigation and audio components. These commands include navigation touch screen and hard button signals, audio/XM selections by voice, and XM station and music title names. Because the entire bus is daisy-chained between components (see diagram), any open or short in the GA-Net bus harness will cause any or all of these functions to become inoperative. The addition of any audio accessory must maintain the continuity of the GA-Net bus by installing the "Y" cable included with the accessory kit.

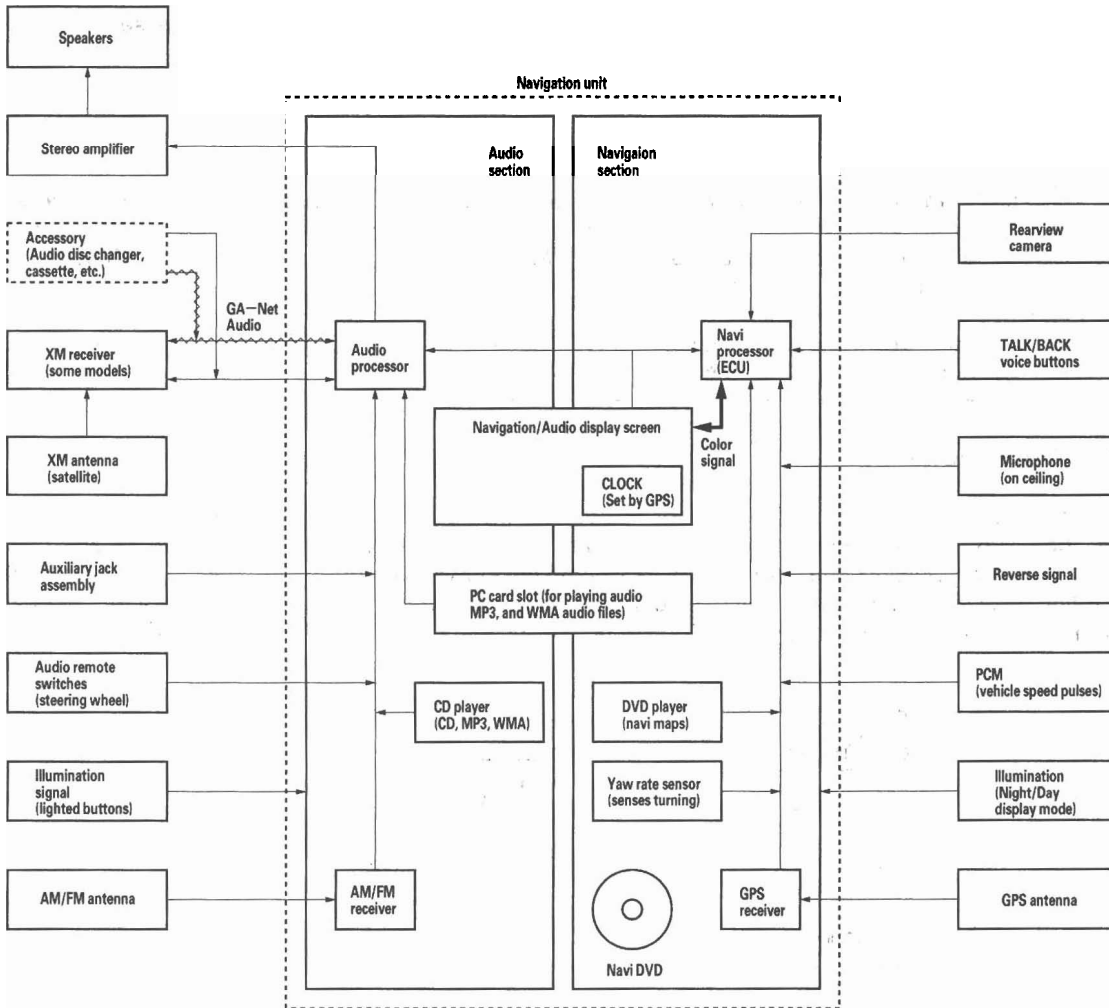


(cont'd)

Audio System

System Description (cont'd)

With navigation





NOTE: All items may not apply to this vehicle. See the owner's manual for more information.

Audio Glossary

Item	Definition
Active noise control	The active noise control system cancels some of the vehicle noise. This occurs in the 1,500—2,400 rpm range. Microphones detect the low frequency sound, and the system outputs a cancelling sound from the audio speaker.
AM (amplitude modulation)	The type of transmission used in the standard radio broadcast band from 530 to 1,705 kHz.
Amplifier	A device that increases the level of a signal by increasing the current or voltage.
Antenna	A device used to send or receive electromagnetic waves through the air.
ATA (PC card)	A type of card that has been tested for use in playing WMA and MP3 music files in the PC card slot. Sizes of up to 1 GB have been tested.
Audio remote switch	The switches on the steering wheel that control the audio system.
Auxiliary jack	Allows the customer to use a portable audio device to input music recordings.
Balance	A control that changes the relative volume of the left and right channels.
Band	A range of frequencies between two definite limits. Bands are assigned by the Federal Communications Commission for specific uses.
Bass	An adjustment for the low frequency sounds of around 160 Hz and below.
Byte	A unit of storage for computer files and memory. A CD holds approximately 700 million bytes.
Cassette	Audio or video magnetic tape container having two reels. Customers can insert it for recording or play back.
Compact flash	A standard for small-size (3 x 4 cm) , memory cards used in mobile computers, PDAs, digital cameras. Compact flash memory cards are available in size of 32 Mb up to 4 GB or more and can be played in the audio PC slot. Sizes above 1 GB have not been tested.
CD (compact disc)	A 4.5-inch plastic disc containing digital audio recording that is played optically on a laser equipped player. Never use discs with a paper label. In a hot car, labels can curl up and jam the unit.
CD (audio disc) changer	CD player that can store and play more than one CD. Two types are available. Some units accept CDs fed into the changer one at a time, and others accept a magazine (with CD's stacked in a container).
CD player	A component designed to play compact disc CD recording using a laser optical pickup. The signal from a CD player usually requires amplification.
CSF (cold start fix) screens	These screens are displayed if the system requires a GPS initialization. The vehicle should be moved outside into an open area away from buildings/power lines.
Distortion	Inexact reproduction of an audio signal caused by playing music at levels the audio system cannot handle.
Dolby (noise reduction)	A processing system developed by Dolby Laboratories that reduces the background noise on recoding media. The result is a clearer playback from the audio system.
DVD (digital versatile disc)	A 4.5-inch CD-like format used for storing movies with digital audio and video features. The DVD-A format is a DVD format designed for DVD audio systems. Some vehicles can play DVD and DVD-A formats.
Equalizer	A device that changes the relative volume of individual frequency bands to suit personal tastes of the listener.
Fader	The control that adjusts the relative volume levels of front and rear speakers in a four-speaker system.
Format	To prepare a PC card to receive files. This function is done on a PC. Always choose either FAT or FAT32 as the format type-NTSF format is not accepted by the system. Pick the default sectors for the format method selected.

(cont'd)

Audio System

System Description (cont'd)

Audio Glossary

Item	Definition
FM (frequency modulation)	The form of modulation used for radio and television sound transmission in most of the world. Less prone to interference than AM. The FM broadcast band covers roughly 87 to 108 MHz.
GB (gigabyte)	A unit of memory or disk storage equal to one billion bytes (1000 million bytes).
HDD	Abbreviation for hard disc drive. They are sensitive to heat and it is not recommended that they be used in the PC card slot for playing audio files.
Hertz (HZ)	The unit of frequency equal to one cycle per second (cps). One kilohertz (kHz) equals 1,000 cps; one megahertz (MHz) equals 1 million cps.
Integrated amplifier	A component that combines a pre amp and a power amp into a single unit. A receiver combines an integrated amp and a tuner into a single unit.
Jewel case	The hard plastic case that contains a compact disc or DVD. Always use a jewel case to prevent scratches on the underside of a CD or DVD.
LCD (liquid crystal display)	A type of digital display that changes reflectance or transmittance when an electrical field is applied to it.
Memory	Circuitry or devices that hold information in electrical or magnetic form, such as the AM/FM radio presets.
Megabyte (M byte)	One million bytes. Written as 1 Mb. Megabytes are used as a measure of digital storage space. For example, a CD can hold 650 Mb.
Mic	An abbreviation for microphone. For vehicles with navigation, the microphone accepts navigation voice commands to control audio and navigation functions.
MP3 music files	MP3 is an audio coding format. MP3 is a popular audio compression format on the Internet and computers. CDs, and PC card with these files can be played some this vehicle's audio system.
Mute	When the navigation gives guidance, the front speakers are muted (no music). When you use the voice control system, all of the speakers are muted.
Noise	Unwanted random sounds like buzzing, hiss, pops, static, whine, etc.
PC card	The slot used for playing MP3 and WMA music files. The PC card is usually a combination of a small flash card in a PCMCIA adaptor that slides into the slot. The ATA, SD, and compact flash types of cards have been tested up to 1 GB.
PCMCIA	A computer standard for the slot that the PC card slides into. Another term for the PC card slot.
Processor	The part of an audio device that performs task/calculations. In the audio unit the processor handles muting to allow the navi to speak voice commands, and the decoding/playback of the sound files etc.
Radio	A head unit that combines a tuner, a preamplifier, and often a power-amplifier.
Stereo	A recording of at least two channels where you can hear sound or music from the left or right side.
SD (secure digital) card	This compact type of memory card allows for fast data transfer and has built-in security functions. SD cards have a small write-protection switch on the side.
Shield	A metallic foil or braided wire layer surrounding conductors which are designed to prevent electrostatic or electromagnetic interference (noise) from external sources such as buzzing or popping sounds from being heard through the speakers.
Speaker (Loudspeaker)	A device that converts electrical energy into acoustical energy (sound).
Speed-sensitive volume compensation (SVC)	The SVC increases the audio volume to compensate for increased interior noise when the vehicle drives at freeway speeds.
Sub-woofer	A loudspeaker made to reproduce the lowest audio frequencies, approx 25 Hz to 125 Hz.