Multimedia Manager

PXA-H900

Alpine F#1 Status™

ALPINE®

Meeting a new challenge to realize the best sound in the passenger compartment AlpineF#1Status

For a quarter of a century, Alpine has been pursuing the best sound in the passenger compartment which is subject to harsh physical and electronic conditions. Alpine has developed its own unique on-board acoustic technology, which is totally different from that of home audio, in order to overcome these tough listening conditions. The Mobile Multimedia Era is flourishing, and recording media and reproduction technology have evolved in a remarkable fashion. For an exciting and wide range of emotional experience, sound is more important than ever, and is becoming the central factor.

While establishing its standing as a Mobile MultiMedia specialist, Alpine has concentrated its incomparable craftsmanship, which resembles that of master artisans of musical instruments, based on its unique technology and expertise accumulated through long experience. Alpine constantly strives to deliver the best possible sound in this new era with an approach called “micro-dynamics.” This approach consists of micro- and macroscopic- technological analysis and design, in order to deliver increased precision in reproduction speed and time measurement, to maximize the musical sensory experience.

The best sound in the passenger compartment promises the most advanced multimedia experience to serious listeners in the passenger compartment.
Alpine F#1Status.
The passionate challenge begins from here.

Multimedia Manager™

A groundbreaking high point in the evolution of mobile installation was reached with the onset of automated system tuning. This high level of installation technique can now be easily achieved by the touch of a button.

■ **Accurate sound focus and alignment is now possible with the touch of a button: "Precision Automated Time Correction"**

This function uses "TSP" (Time Stretched Pulse) technology, which is normally used for designing music halls and sound field analysis, to accurately measure phase shifts automatically with greater precision than other methods. "Auto Time Correction" adjusts the sound from every speaker (including subwoofers and tweeters) so that it reaches the optimum listening point simultaneously. The result is an ultra high level of precision sound and focus by the simple touch of a button.

■ **The sound field inside the passenger compartment can be analyzed and adjusted in 1/3 octave increments: "175 Band digital 1/3 Octave Equalizer & Analyzer"**

The sound field characteristics of the passenger compartment are displayed in 31 bands with superb accuracy. Every one of the 11 channels can be analyzed with the built-in RTA (Real Time Analyzer), either individually or in combination with other channels. Then, every corner of the car (L/R front, center, L/R rear, L/R subwoofers) can be 1/3 octave equalized! Or, if you prefer, parametric equalization can be engaged instead. This will allow you to perform sound field adjustment to a degree previously not available in a vehicle. For greater convenience it is also possible to check the measured values in detail on a PC, and adjust the settings from the keyboard.

■ **High-Precision compensation of SPL & phase characteristics and reflected sound waves: "Adaptive Equalizer"**

Conventional equalizers adjust the AMOUNT of sound, or SPL, arriving at the listener. However, they are unable to modify the timing or phase of these signals. Even if the 1/3-octave equalizations "flatten" the response in an SPL sense, reflections inside the vehicle distort the original sound arrival times compared to the actual recording. To address this problem, Alpine developed a completely new cabin correction technology, which we call "Adaptive Equalizer."

The Adaptive EQ begins by measuring both magnitude (SPL) and time (phase) in the cabin. Then, the Adaptive EQ calculates a correction factor to pre-compensate for low frequency SPL and phase errors caused by reflections in the vehicle. Upon music playback, the Adaptive EQ recalculates every single digital sample using the calculated correction factor. From the lowest bass frequencies up into the lower midrange, the sound will be smoother and exhibit more depth.

This is well beyond the capability of a graphic or parametric equalizer.

Measurement, display, and processing of sound field characteristics of the passenger compartment in real time at the Highest Precision.
Carefully selected high precision parts enable reproduction of even the faintest signals.

■ **Hand picked K-Grade "Sign-Magnitude" 24-bit DACs from Burr-Brown offer the highest precision available.**

Many types of Digital-to-Analog Converters (DACs) exist: the original multi-bit, 1-bit, bitstream, MASH, delta-sigma, etc. But the Sign-Magnitude DAC still remains unequaled. The Sign-Magnitude Multi-bit DAC, uses precision laser-trimmed ladder resistors to precisely decode each bit, while a unique architecture sidesteps zero-cross distortion problems. Since even such precision manufactured products have slight variance, each "K" grade DAC is hand picked and carefully selected for use. K-grade products achieve a three-times lower distortion rating and higher S/N ratio compared to the already awesome basic Sign-Magnitude. It is the highest grade DAC that can be produced at the present time, with incredible capability to eliminate low-level noise, thus reproducing a sensitive expression of the music performance.

■ **Promising the highest precision: Burr-Brown matching 24-bit digital filter.**

The PXA-H900 utilizes a very high grade 24-bit, 8 times oversampling digital filter. This companion unit to the Burr-Brown "Sign-Magnitude" 24-bit DAC promises the highest accuracy and precision available today. In fact, by cutting noise outside the audible range, high-precision reproduction with ultra-wide dynamic range is possible. This creates a rich abundance of musical information and harmonics.

■ **By eliminating high-frequency noise, quietude and depth are reproduced: "GIC-type low-pass filter"**

In all CD systems, a lowpass filter keeps digital noise out of the music. Instead of a typical series filter, Alpine has employed a GIC (Generalized Impedance Converter) filter. This type of filter essentially short-circuits spurious noise signals while letting the music passes directly to the next stage. Removing the series filter keeps the music purer. And, by using the special GIC filter, high-frequency noise that cannot usually be removed by 8 times oversampling is eliminated. This high precision low-pass filter extracts only the true musical information.

■ **Rapid processing of intricate phase compensation calculation: "High speed DSP"**

PXA-H900 uses four 100MIPS DSPs, each of which can process 100 Million Instructions per Second. This totals twice the processing power of a PC with 600MHz CPU; this would qualify as a "supercomputer" under the old U.S. Department of Defense standard. This computing speed is utilized for high-speed processing of such effects as "Adaptive EQ", which mandates fast real time re-processing of complex data for time response compensation of each speaker.

■ **Sound quality not possible with typical "Balance" and "Fader" circuits has been achieved: "Independent Precision Attenuators"**

Analog volume control has been said to be preferable for sound. The common analog implementation requires three circuits in series to achieve volume, balance and fader functions. The sound passes through each of the three stages, and each stage inevitably adds some slight distortion and noise. With the new circuit design, each channel employs its' own high precision ladder resistor electronic volume. Based on the users' settings, a microchip calculates what each channel's output setting should be, and orchestrates all channels together. Loss of music information due to passing through multiple stages does not occur.

■ **Reducing noise by lowering the impedance of the power supply system: "Four-Layer PCB with STAR Circuit"**

A copper through-hole four-layered PCB allows ideal patterning and part layout for noise minimization. Furthermore, by doubling the thickness of the copper foil to 70㎜, reduction of noise is achieved with lower impedance of the power supply system. One layer out of four is the ground and Alpine's unique STAR (Signal Transit for Accurate Response) Circuit is mounted in order to overcome the increase in impedance of the power supply system. By inserting the ground layer, reduction in interference and ideal part layout were targeted.

■ **"High-quality parts" were abundantly used to avoid inhibition of the high performance of the DAC and filter.**

A Signal-to-Noise (S/N) ratio three times better resulted from generously adopting ear-selected high-precision parts, which contribute less noise or distortion. For example, fixed carbon film resistors do not cause magnetic distortion (since they aren't a metallic material). Special audio grade capacitors behave more ideally in the audio range, maintaining the purity of sound.

■ **High-Voltage I/V converter eliminates the necessity of a final stage booster circuit which amplifies noise.**

Inside the DAC, the digital bits are translated into electric currents. An I/V (current, I to voltage, V) converter transforms those currents into output voltage. To achieve high output voltage, a commonly available booster IC typically amplifies the I/V converter output. Unfortunately this amplifies noise as well. Instead of following this standard path, Alpine specially engineered a Direct High Voltage I/V converter. The output from the I/V converter is already high voltage, so no additional noise amplification occurs.

From a full 11ch system, a sound quality-oriented system merges with a multimedia system. Complete system coordination is possible, including "NAVI MIX" navigation audio guidance control.

■ **Complete system control: 11ch Variable Crossover**
Each of the 11 output channels features a fully adjustable digital crossover. Five cut-off slopes between -6dB/octave and -30dB/octave can be set. The crossover frequency is precisely controlled in the digital domain. Additionally, level and phase for each speaker can be set as well.

■ **Voice guidance prompts for route changes are clearly heard: "NAVI MIX"**
Voice guidance is given priority and audio sound is muted when navigation voice guidance interrupts. Five levels of muting can be manually selected. (KCE-900E kit sold separately)

■ **System expansion flexibility: Triple AUX inputs**
In addition to three digital inputs, there are three analog inputs (1 RCA input plus 2 Alpine Ai-NET inputs). Additionally, Versatile Linking into the Ai-NET inputs is provided for even greater flexibility (using KCA-121B connectors, sold separately).

Complicated, car-dependent setup becomes easy with a PC interface. A biologically luminescent "BioLite™ " display gives a very wide viewing angle and superior visibility.

■ **Windows® compatible: "PC compatible"**
Controlling full features of PXA-H900 is possible with Windows® PC. Advanced sound tuning performing on display screens is highly exciting.

Windows® are registered trademarks of Microsoft Corporation.

■ **"Special remote controller"**
A special remote control produces easy operation for the user, having been carefully designed from layout and key feel standpoint.

■ **Superior visibility in the passenger compartment even during daytime.**
Equipped with Organic EL-type "BioLite™" display that promises a high quality of reproduction. Always ensures high-precision / high-contrast display with a wide viewing angle.

Mobile high-quality multi-decording format

■ **Enjoy theatre sound in the passenger compartment: built-in Dolby Digital decoder.**
Incorporation of this format allows transformation from a great car stereo system to a true Mobile MultiMedia experience.

■ **High-sound quality "DTS" decoding**
Compatible with "DTS," the audio format for multi-channel audio surround for DVD video.

■ **A first for car audio: A mobile HDCD decoder.**
HDCD enables storage of 20-bit equivalent music data by compression technology to include 4-bit information in the least-significant bit of the normal 16 bit CD data. Theoretically, high-quality sound reproduction with 120 dB of dynamic range instead of 96dB becomes possible. The decoder of the PXA-H900 fully utilizes the 20-bit information of the HDCD, and thus reproduces a rich dynamic range of sound.

■ **Europe-compatible multimedia: MPEG2**
Compatible with multi-channel compression standards in Europe.

ALPINE®

PXA-H900

Multimedia Manager™

- OWNER'S MANUAL
  Please read before using this equipment.
- BEDIENUNGSANLEITUNG
  Lesen Sie diese Bedienungsanleitung bitte vor Gebrauch des Gerätes.
- MODE D'EMPLOI
  Veuillez lire avant d'utiliser cet appareil.
- MANUAL DE OPERACIÓN
  Léalo antes de utilizar este equipo.
- ISTRUZIONI PER L'USO
  Si prega di leggere prima di utilizzare l'attrezzatura.
- ANVÄNDARHANDLEDNING
  Innan du använder utrustningen bör du läsa igenom denna användarhandledning.

DOLBY DIGITAL

DOLBY SURROUND PRO • LOGIC

DIGITAL dts SURROUND

HDCD®

Ai-NET

ENGLISH

DEUTSCH

FRANÇAIS

ESPAÑOL

ITALIANO

SVENSKA

Contents

WARNING

⚠ WARNING

This symbol means important instructions.
Failure to heed them can result in serious injury or death.

DO NOT OPERATE ANY FUNCTION THAT TAKES YOUR ATTENTION AWAY FROM SAFELY DRIVING YOUR VEHICLE.

Any function that requires your prolonged attention should only be performed after coming to a complete stop. Always stop the vehicle in a safe location before performing these functions. Failure to do so may result in an accident.

KEEP THE VOLUME AT A LEVEL WHERE YOU CAN STILL HEAR OUTSIDE NOISE WHILE DRIVING.

Failure to do so may result in an accident.

MINIMIZE DISPLAY VIEWING WHILE DRIVING.

Viewing the display may distract the driver from looking ahead of the vehicle and cause an accident.

DO NOT DISASSEMBLE OR ALTER.

Doing so may result in an accident, fire or electric shock.

USE THIS PRODUCT FOR MOBILE 12V APPLICATIONS.

Use for other than its designed application may result in fire, electric shock or other injury.

KEEP SMALL OBJECTS SUCH AS BATTERIES OUT OF THE REACH OF CHILDREN.

Swallowing them may result in serious injury. If swallowed, consult a physician immediately.

USE THE CORRECT AMPERE RATING WHEN REPLACING FUSES.

Failure to do so may result in fire or electric shock.

USE ONLY IN CARS WITH A 12 VOLT NEGATIVE GROUND.

(Check with your dealer if you are not sure.)
Failure to do so may result in fire, etc.

DO NOT BLOCK VENTS OR RADIATOR PANELS.

Doing so may cause heat to build up inside and may result in fire.

⚠ CAUTION

This symbol means important instructions.
Failure to heed them can result in injury or material property damage.

HALT USE IMMEDIATELY IF A PROBLEM APPEARS.

Failure to do so may cause personal injury or damage to the product. Return it to your authorized Alpine dealer or the nearest Alpine Service Center for repairing.

DO NOT MIX NEW BATTERIES WITH OLD BATTERIES. INSERT WITH THE CORRECT BATTERY POLARITY.

When inserting the batteries, be sure to observe proper polarity (+ and –) as instructed. Rupture or chemical leakage from the battery may cause fire or personal injury.

⚠ PRECAUTIONS

Temperature

Be sure the temperature inside the vehicle is between +60°C (+140°F) and –10°C (+14°F) before turning your unit on.

Installation Location

Make sure the PXA-H900 will not be installed in a location subjected to:

- Direct sun and heat
- High humidity and water
- Excessive dust
- Excessive vibrations

Maintenance

If you have problems, do not attempt to repair the unit yourself. Return it to your Alpine dealer or the nearest Alpine Service Station for servicing.

Basic Operation

Remote control unit

When using the remote control unit

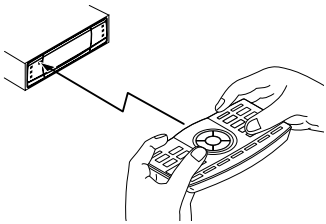
- Point the remote control unit's transmitter at the remote control sensor and operate it within a distance of 2 meters.
- Note that the remote control unit may not operate if the remote control sensor is exposed to direct sunlight.
- The remote control unit is a compact, lightweight, high precision device. To avoid damage, battery wear, erroneous operation or reduced operability, be careful of the following:
  - Do not subject the remote control unit to shocks.
  - Do not place it in pant pockets.
  - Do not spill liquids on it.
  - Avoid humidity and dust.
  - Do not set it in places exposed to direct sunlight.

Remote control unit light

When the **LIGHT** button on the remote control unit is pressed, the remote control unit's light section turns on for 10 seconds.

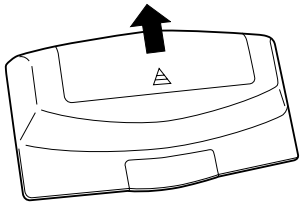
Holding the remote control unit

Be careful not to cover the transmitter with your fingers, etc., when operating the remote control unit.



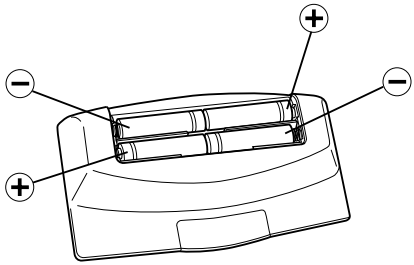
Loading batteries

1 Press down on the groove shown on the diagram and push forward to remove the lid.

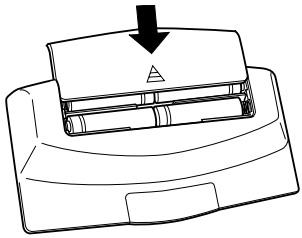


2 Load four “AAA” sized batteries in the indicated directions.

- Use four “AAA” sized batteries.



3 Set the lid back in place and insert until a click is heard.



⚠ WARNING

DO NOT OPERATE ANY FUNCTION THAT TAKES YOUR ATTENTION AWAY FROM SAFELY DRIVING YOUR VEHICLE.

Any function that requires your prolonged attention should only be performed after coming to a complete stop. Always stop the vehicle in a safe location before performing these functions. Failure to do so may result in an accident.

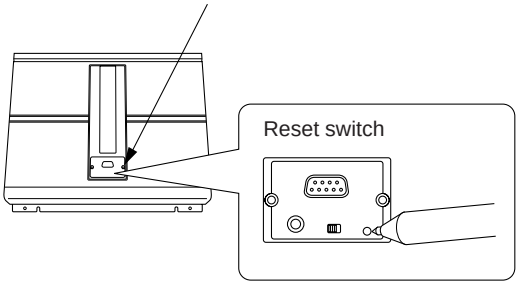
Basic Operation

Resetting

Reset the unit when using it for the first time or after replacing the vehicle's battery.

1 Press the reset switch with the tip of a pen, etc.

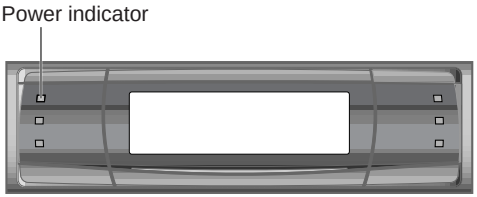
Open the cover using a hexagonal wrench.



Turning the power on and off

This unit does not have a power switch. The head unit to which the unit is connected, controls its power.

1 The power indicator lights when the power is turned on.

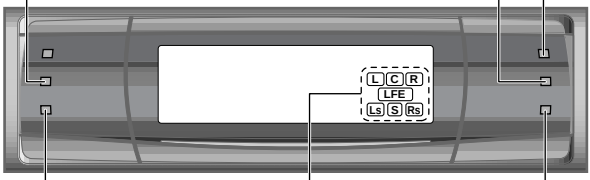


About indicators

HDCD indicator
Lights amber in the HDCD decode mode

Dolby Digital indicator
Lights amber in the Dolby Digital decode mode

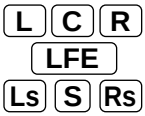
PRO LOGIC indicator
Lights amber in the Dolby Surround decode mode



DTS indicator
Lights amber in the DTS decode mode

MPEG indicator
Lights amber in the MPEG2 decode mode

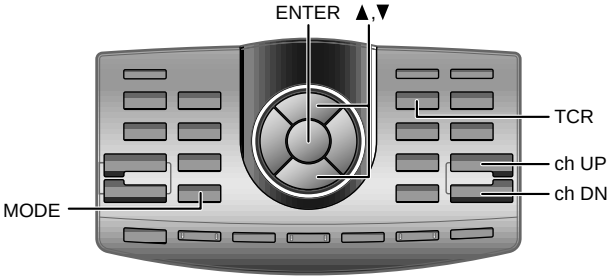
Input signal indicators



These indicate the signals being input.

L: Left front channel
R: Right front channel
C: Center channel
Ls: Left surround channel
Rs: Right surround channel
S: Monaural surround signal
LFE: Low frequency deep bass signal

Basic Operation



Setting the speakers

First make the speaker settings.
Turn off speaker channels that are not connected.

1 Press the **TCR** button.

2 Press the **ch UP** or **ch DN** button to select a speaker channel to which no speaker is connected.

→**FLLOW**↔**FRLOW**↔ **FLMID** ↔**FRMID** ↔**FLHIGH** ↔ **FRHIGH**←
↳ **Sub Wf.R** ↔ **Sub Wf.L** ↔ **CENTER** ↔ **REAR R** ↔ **REAR L** ←

3 Press the ▼ button to set the speaker level to "OFF".
Repeat steps **2** and **3** to turn "OFF" all non-connected speaker channels.

```
TCR CENTER 0.0[ms]
      (  0.0[inch]/ 0.0 [cm])  L  R
LEVEL:   OFF
```

4 Press the **ENTER** button to complete the setting.

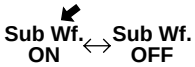
• Names of speakers displayed
FLLOW :
Front low range speaker (L)
FRLOW:
Front low range speaker (R)
FLMID :
Front mid range speaker (L)
FRMID :
Front mid range speaker (R)
FLHIGH :
Front high range speaker (L)
FRHIGH :
Front high range speaker (R)
REAR L :
Rear speaker (L)
REAR R :
Rear speaker (R)
CENTER :
Center speaker
Sub Wf. L :
Subwoofer (L)
Sub Wf. R :
Subwoofer (R)

Using with Ai-NET connections

Adjusting the subwoofer

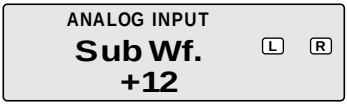
When Ai-NET connections are used, the volume, subwoofer, balance and fader are adjusted from the head unit (they cannot be adjusted from the PXA-H900). The subwoofer level only can be adjusted from the PXA-H900 as well.

1 Press the **MODE** button for at least 2 seconds to turn the “Sub Wf.” setting to “ON”.



- The subwoofer cannot be adjusted when the “Sub Wf.” setting is set to “OFF”.

2 Press the **MODE** button.
Press the ▲ or ▼ button within 5 seconds to adjust.
The level can be adjusted between 0 and +15.



Using with RCA-type or optical cable connections (non Ai-NET connections)

Switching the input

The PXA-H900 is equipped with three sets of analog signal inputs and three sets of digital signal inputs.

1 Press the **INPUT SELECT** button to select the input mode.
The sound of the selected mode is output.

→ANALOG1→ANALOG2→ANALOG3→DIGITAL1→DIGITAL2→DIGITAL3

Non Ai-NET connections
Alpine products are equipped for a bus connection system called “Ai-NET” which can only be used for connections between Ai-NET products.
The PXA-H900 is an Ai-NET product, but is designed to allow connections to other (non Ai-NET) products as well. Thus RCA-type and optical cable connections are also possible.
Connections to non Ai-NET products are referred to as “non Ai-NET connections”.

Adjusting the input level

Using the analog, RCA-type connections, the PXA-H900's input level must be preset from the head unit.
Adjust the input level using a sound source with a high recording level (such as pops or rock music).

1 Turn on the head unit's power.

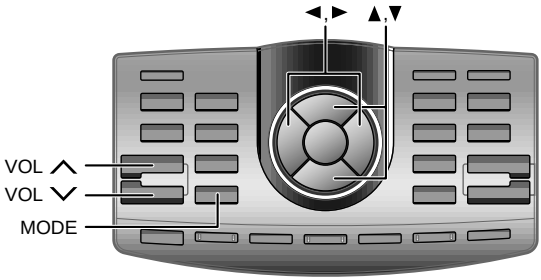
2 Press the **VOL** ∨ button on the PXA-H900 and set the volume level to "0".

3 Gradually increase the volume of the head unit until the "OVER" indicator appears in the display.

Reduce the volume slightly from this position, until the OVER indicator just turns off. This completes the setting. (The OVER indicator should only flash momentarily while playing any source.)

Do not change the head unit volume level from this optimum setting. Use the PXA-H900, only, for changing the volume level.

➔ next page



Using with RCA-type or optical cable connections (non Ai-NET connections)

Adjusting the volume, fader, balance and subwoofer

After determining the input level, adjust the volume, fader, balance and subwoofer from the PXA-H900. Be careful not to make these adjustments on the head unit.

Adjusting the volume

1 Use the **VOL** ∧ and **VOL** ∨ buttons to adjust the volume (from 0 to 35).

Adjusting the fader and balance

1 Press the **MODE** button and select the mode to be adjusted.

→ **Sub Wf.** → **BALANCE** → **FADER** →

2 Use the ▲ and ▼ buttons or the ◄ and ► buttons within 5 seconds to adjust to the desired level.

BALANCE:
Press the ◄ or ► button to adjust the balance of the volume between the left and right speakers (from L15 to R15).

FADER:
Press the ▲ or ▼ button to adjust the balance of the volume between the front and back speakers (from F15 to R15).

Adjusting the subwoofer

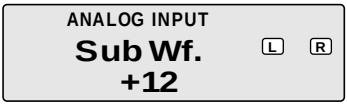
1 Press the **MODE** button for at least 2 seconds to turn the “Sub Wf.” setting to “ON”.

Sub Wf. **ON** ↔ **Sub Wf.** **OFF**

2 Press the **MODE** button and select “Sub Wf.”.

→ **Sub Wf.** → **BALANCE** → **FADER** →

3 Press the ▲ or ▼ button within 5 seconds to adjust to the desired level (from 0 to +15).



Automatic Adjustments

Preparations for automatic adjustments

The PXA-H900 is equipped with two automatic adjustment functions: “Adaptive Equalizer” and “Precision Automated Time Correction”.
The preparations described below must be made in order to perform these automatic adjustments. After making these preparations, refer to “Automatic adjustments (Adaptive Equalizer)” (page 16) and “Performing time correction automatically (Precision Automated Time Correction)” (page 20) to perform the respective automatic adjustments.

1 Check that the defeat mode is off.
(See page 53.)

2 Adjust the head unit and amplifier levels.

Head unit:
Set the balance and fader to “center”.

Front, rear and center amplifiers:
Set the amp gains to “center” or “normal” to start. If there are no rear speakers, check that the rear speakers are turned off. (See page 8.) Gain levels may be changed if you are not satisfied with the automatic results. Make the gain changes and return the automatic adjustment.

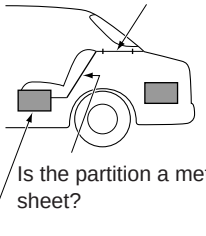
Subwoofer amplifier:
Set the amplifier gain to “center” or “normal”. If the subwoofer is located in the trunk or a remote place (for example at the very back of a station wagon), adjust the subwoofer to increase the volume several steps.

Speaker Crossovers:
Set the crossovers for all the speakers in the system that will require them. See page 32, “Crossover adjustment”, for more information on setting the crossovers.

3 Connect the included microphone to the PXA-H900.
Refer to the Installation manual.

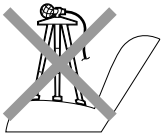
- The adjustment differs according to the position of the microphone. Search for the position at which the desired sound quality can be achieved.
- We recommend using speaker boxes or box locations that produce low levels of indirect sound (for example, sealed boxes or vented boxes with the vents firing into the trunk).
- The proper adjustments cannot be achieved if the subwoofer is located in the trunk and the trunk and cabin are separated by a metal sheet. Either move the subwoofer into the cabin or open a hole in the rear tray to join the two spaces. (This is not necessary if the partition is not a metal sheet.)

If the partition is a metal sheet, open a hole in the rear tray.
If you encounter a problem, consult your authorized dealer.



Or move the subwoofer into the cabin.

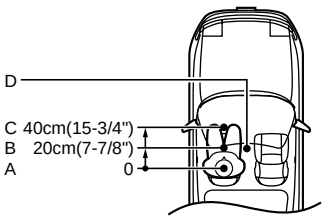
4 Secure the microphone in place.
Failure to fix the microphone securely in place may result in distortion or improper acoustic positioning. The microphone must be mounted very securely so the bass frequencies will not vibrate it. For example, the microphone could be wedged between the headrest and the seat. If the microphone is placed on a tripod, the microphone must be very securely mounted to the tripod (not loosely clamped). The tripod must also be very securely weighted and/or strapped so it cannot move. The microphone would usually be placed near the driver's ear position. However, since the Adaptive Equalizer is adjusting low frequencies, the microphone does not need to be at the exact ear position, it is more important that it is securely mounted.



Hints for making the Adaptive Equalizer adjustments

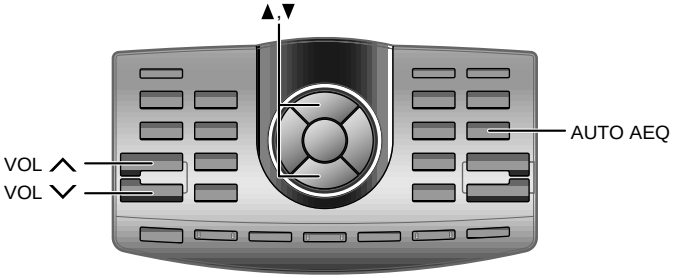
To achieve the desired acoustic image, we recommend fastening the microphone to the four points described below. (The figures are approximates. Adjust them according to the vehicle.)

A Ceiling directly above the listening position (driver's seat position – sharp sound)
B 20 cm (7-7/8") in front of above position (driver's seat position – softer sound than above, bass sound positioned toward front)
C 20 cm (7-7/8") further in front of above position (driver's seat position – even softer sound, bass sound positioned further toward front)
D Base of rearview mirror (position for both driver's and passenger's seats)



- The acoustic positioning changes according to the position of the microphone because the human ear senses the distance from the sound's focal position. Adjust according to your personal tastes.

Automatic Adjustments



Automatic adjustments (Adaptive Equalizer)

Use this function to automatically perform frequency, phase and time correction. Adjustments for the acoustic properties specific to the vehicle's interior are made to achieve the ideal acoustic space.

1 Before starting the automatic adjustment procedure, park the vehicle in a quiet place to avoid the effects of external sounds.

2 Set the vehicle's key to the ACC position.
Do not start the engine. The vibrations may make it impossible to achieve the proper adjustment values.

- Preparations must be made before performing the automatic adjustment procedure. Refer to page 14.
- The adjustments differ according to the position of the microphone. We recommend performing the operation repeatedly with the microphone in different positions. After each operation, store the settings. Compare the sound at the different setting and from different locations. Select the one you prefer.
- The Adaptive Equalizer eliminates or reduces the boomy bass peaks common to the car cabin. Elimination of the peaks "uncovers" the lower bass information which was masked before. However, because your ear and brain are used to those peaks, the subwoofers may sound less loud. You must listen for a few weeks to allow your ears and brain to recalibrate and become used to the flat sound.

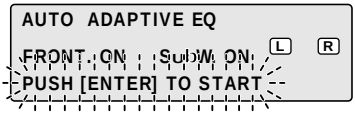
3 Adjust the volume.

- When using RCA-type connections, use the PXA-H900's **VOL** ∧ and **VOL** ∨ buttons to display "5" (on the PXA-H900's display).
- When using Ai-NET connections, perform the head unit's volume operation to display "5" (on the head unit's display).
  When the CDA-7990R is combined as a head unit, adjust to "–50dB".

4 Press the **AUTO AEQ** button.

5 Press the ▲ or ▼ button to select the channel or speaker environment for outputting the correction signals.

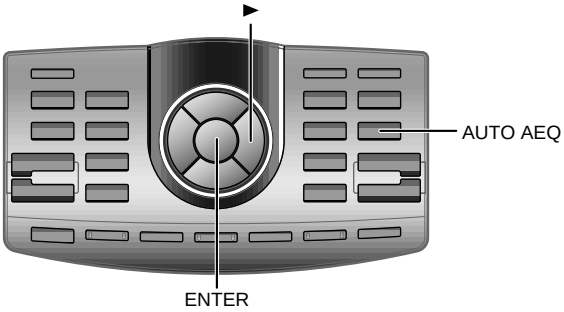
→FRONT.ON SubWf. ON↔FRONT.ON SubWf. OFF↔FRONT.OFF SubWf. ON←



- The Adaptive Equalizer flattens the overall bass response, both the SPL and the phase. Depending on how noisy your vehicle is, a flat SPL response may cause low bass notes to be masked by road noise. In such cases, use the conventional EQ features of the PXA-H900 to gently "tilt up" the low bass response. Again, listen for a few weeks to allow your ears and brain to recalibrate and become used to the flat sound.
- After the automatic adjustments are performed, the sound from the different speakers arrives at the listening position at virtually the same time. If you are accustomed to delays in the bass sound (which is common with conventional systems), the sound may seem somewhat strange to you. If so, increase the subwoofer delay time slightly to achieve sound closer to that of home audio systems.
- Heavy bass speakers do not reproduce medium low frequencies (150 to 400 Hz) well (the sound tends to be distorted). When using such speakers, lower the subwoofer's cutoff frequency.
- If the volume of the subwoofer is too low after the automatic adjustment procedure is performed, the adjustments have not been performed properly. Refer to step **2** under "Preparations for automatic adjustments" and perform the adjustments again.
- If no microphone is connected, a warning message is displayed and the adjustment is not performed.
- Depending on the speaker settings (on or off), certain speakers may not be displayed (in which case they cannot be set).

→ next page

Automatic Adjustments



6 Press the **ENTER** button to set the automatic adjustment mode, then leave the vehicle.

To cancel, press the **AUTO AEQ** button.

The automatic adjustment procedure consists of the operations described below and requires 2 to 8 minutes to be completed.

Perform the time correction.

↓

Perform the acoustic response measurement.

↓

Perform the frequency response and phase response corrections.

↓

"ADJUSTMENTS ARE COMPLETED" is displayed for about 5 seconds and the automatic adjustment mode is canceled.

Strong sounds (about 90 dB) are produced during the automatic adjustment procedure. These sounds can be heard outside the vehicle. Be sure to park the vehicle in a place where the sound will not be a nuisance.

- The time required to perform the adjustments depends on the speaker connections.

- If the microphone does not pick up the sound or the speakers are not working or are connected or wired improperly, the automatic adjustments are not performed and a warning message is displayed.
  Check the various speakers then perform the automatic adjustments again.

  Example of warning message

```
      NOTICE
PLEASE CHECK
AMPLIFIER GAIN
AND  CONNECTIONS
```

7 Check that the automatic adjustments have been completed (that “ADJUSTMENTS ARE COMPLETED” has been displayed for 5 seconds), get back in the vehicle, then disconnect the microphone.

8 To store the settings, refer to “Storing settings in the memory” (page 52).

Turning the adjusted settings off

The adjusted settings can be turned off. Doing so clears the settings, so we recommend storing them in the memory before turning them off.

1) Press the **AUTO AEQ** button.
2) Press the ► button.
3) Press the **ENTER** button.

- Note that using for extended periods of time without turning on the engine may wear down the battery.

Automatic Adjustments

Performing time correction automatically (Precision Automated Time Correction)

Due to the particular conditions inside the vehicle, there is a major difference between the distances of the various speakers and the listening position. This function uses the included measurement microphone to automatically measure and analyze the distances between the speakers and the listening position and perform the optimum time correction.

1 Before starting the automatic adjustment procedure, park the vehicle in a quiet place to avoid the effects of external sounds.

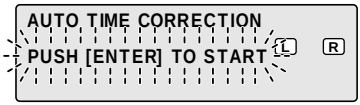
2 Set the vehicle's key to the ACC position.
Do not start the engine. The vibrations may make it impossible to achieve the proper adjustment values.

- Preparations must be made before performing the automatic adjustment procedure. Refer to page 14.
- The PXA-H900's automatic adjustments take into account the delay time between the time at which the signals are input to the speakers until the sound is output. This does not correspond to the actual distance.
- With the automatic adjustments, the average delay time within the speakers' playable frequency range is measured. Measurements may not be possible when using special speakers or in special playback environments. If this is the case, perform the adjustments manually.

3 Adjust the volume.

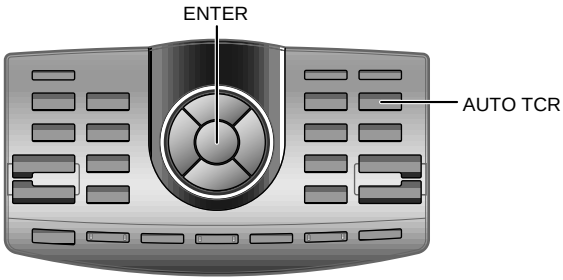
- When using RCA-type connections, use the PXA-H900's **VOL** ∧ and **VOL** ∨ buttons to display "5" (on the PXA-H900's display).
- When using Ai-NET connections, perform the head unit's volume operation to display "5" (on the head unit's display).
  When the CDA-7990R is combined as a head unit, adjust to "–50dB".

4 Press the **AUTO TCR** button.



→ next page

Automatic Adjustments



5 Press the **ENTER** button to set the automatic adjustment mode, then leave the vehicle.

To cancel, press the **AUTO TCR** button.

The automatic adjustment procedure consists of the operations described below and requires about 2 minutes to be completed.

Perform the time correction.

⬇

"ADJUSTMENTS ARE COMPLETED" is displayed for about 5 seconds and the automatic adjustment mode is canceled.

Strong sounds (about 90 dB) are produced during the automatic adjustment procedure. These sounds can be heard outside the vehicle. Be sure to park the vehicle in a place where the sound will not be a nuisance.

- If the microphone does not pick up the sound or the speakers are not working or are connected or wired improperly, the automatic adjustments are not performed and a warning message is displayed.
  Check the various speakers then perform the automatic adjustments again.

  Example of warning message

```
      NOTICE
PLEASE CHECK
AMPLIFIER GAIN
AND  CONNECTIONS
```

6 Check that the automatic adjustments have been completed (that “ADJUSTMENTS ARE COMPLETED” has been displayed for 5 seconds), get back in the vehicle, then disconnect the microphone.

7 To store the settings, refer to “Storing settings in the memory” (page 52).

- Note that using for extended periods of time without turning on the engine may wear down the battery.

Performing time correction manually (Time Correction)

Though sufficient correction can be achieved with the “Adaptive Equalizer” and “Precision Automated Time Correction” automatic adjustments, it is also possible for the user to calculate the correction values and make the adjustments manually. This manual adjustment requires sufficient knowledge and experience, however, so we suggest you have it performed at your store of purchase.

1 Check that the defeat mode is off.
(See page 53.)

2 Sit in the listening position (the driver’s seat, for example) and measure the distance (in meters) between your head and the various speakers.

3 Calculate the difference in distance between the farthest speaker and the other speakers.

L = (distance of farthest speaker) – (distance of other speakers)

4 Divide the distances calculated for the different speakers by the speed of sound (340 m/s temperature 14°C).

This value is the time correction value for the different speakers.

- When the microphone is connected, the sound in the car is input through the microphone and displayed on the spectrum analyzer. This display can be used as reference when making the adjustment. For details of the spectrum analyzer display, see “Switching the display mode” (page 53).
- This adjustment is easier when test signals such as pink noise are used. For information on test signals, consult your store of purchase.

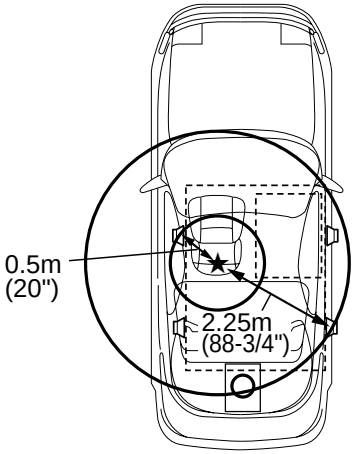
- The speed of sound fluctuates according to the temperature. The accurate speed of sound can be achieved with the formula shown below.
  Speed of sound = 331.45 + C x T
  C: 0.607
  T: Temperature (°C)

• Concrete examples

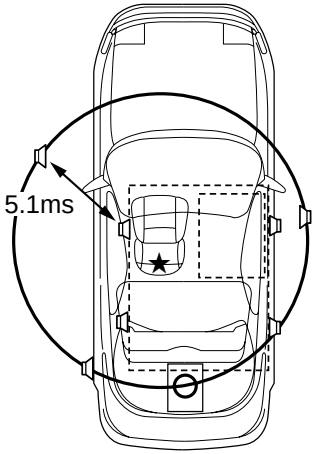
1. Calculating the time correction value for the front left speaker on the diagram below.

   Conditions:
   Distance between farthest speaker and listening position: 2.25 m (88-3/4")
   Distance between front left speaker and listening position: 0.5 m (20")
   Calculation: L = 2.25 m (88-3/4") – 0.5 m (20") = 1.75 m (68-3/4")
   Compensation time = 1.75 ÷ 340 x 1000 = 5.1 (ms)

   In other words, setting the time correction value for the front left speaker to 5.1 (ms) sets a virtual distance matching the distance to the farthest speaker.

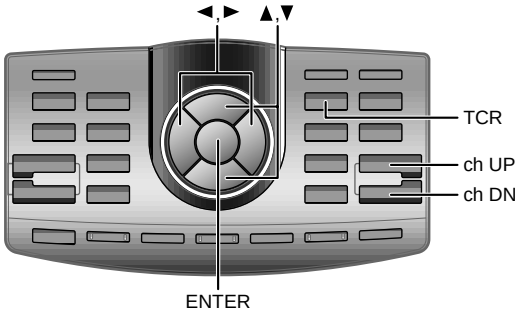


The sound is uneven because the distance between the listening position and the different speakers is different.
The difference in the distance between the front left and rear right speakers is 1.75 meters (68-3/4").



Time correction eliminates the difference between the time required for the sound from the different speakers to reach the listening position.
Setting the time correction of the front left speaker to 5.1 ms makes it possible to coordinate the distance from the listening position to the speaker.

➔ next page



5 Press the **TCR** button to set the time correction mode.

6 Press the **ch UP** or **ch DN** button to select the desired channel.

→**FLLOW**↔**FRLOW**↔ **FLMID** ↔**FRMID**↔**FLHIGH** ↔**FRHIGH**←
→ **Sub Wf.R** ↔ **Sub Wf.L** ↔ **CENTER** ↔ **REAR R** ↔ **REAR L** ←

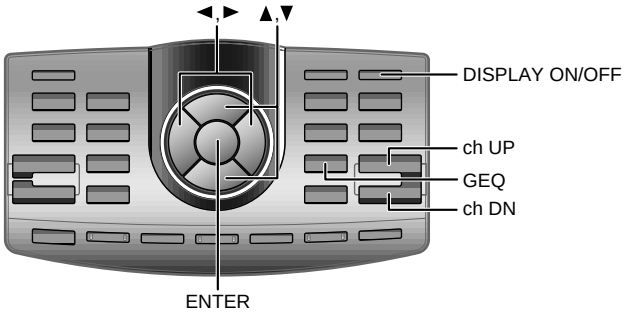
7 Press the ◄ or ► button to adjust the time correction value.

```
TCR  FRLOW   5.1[ms]
       (68.3[inch]/ 173[cm])  L   R
LEVEL:    0[dB]
```

- Displayed distance
  The values indicated for “inch” and “cm” are the distance calculated from the time. (340 m/s temperature 14°C, 1 inch is calculated as 2.54 cm.)
- In reality the time difference depends not only on the difference in physical distance but also on the delay time between the time at which the signals are input to the speakers until the sound is output. This delay time depends on the speaker, and may also be somewhat affected on how the speaker is mounted on the vehicle. After making the setting, we recommend listening to the sound and fine-adjusting if necessary.

8 Press the ▲ or ▼ button to adjust the speaker output level.
The level can be set to “OFF” or adjusted between –12 and 0.

9 Press the **ENTER** button to complete the setting.



Equalizer adjustments

The level of the front, rear and center channels can be adjusted separately for 31 bands and the subwoofer can be adjusted for 10 bands (a total of 175 bands) to achieve the desired sound field.

1 Check that the defeat mode is off.
(See page 53.)

2 Press the **GEQ** button.

3 Press the **ch UP** or **ch DN** button to select the desired channel.

→**FRONT**↔**REAR**↔**CENTER**↔ **Sub Wf.**←

- When the microphone is connected, the sound in the car is input through the microphone and displayed on the spectrum analyzer. This display can be used as reference when making the adjustment. For details of the spectrum analyzer display, see "Switching the display mode" (page 53).
- This adjustment is easier when test signals such as pink noise are used. For information on test signals, consult your store of purchase.

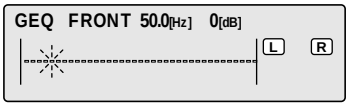
- Even more subtle adjustments can be used using a computer. For details, consult your store of purchase.
- Check the playable frequency ranges of the connected speakers before making the equalizer adjustments. If the speaker's playable frequency range is 55 Hz to 30 kHz, for example, adjusting the 40 Hz or 20 Hz band has no effect. Additionally, you may overload and damage the speakers.

4 Press the ◄ or ► button so that the frequency band is flashing.

Adjustable frequency bands

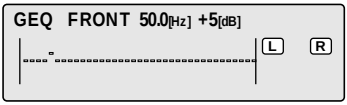
"FRONT"/"REAR"/"CENTER": 20 Hz to 20 kHz (in 1/3 octave steps)

"Sub Wf.": 20 Hz to 160 Hz (in 1/3 octave steps)



5 Press the ▲ or ▼ button to adjust to the desired level (between ±9 dB in 1 dB steps).

Repeat the above operation to adjust other frequency bands.



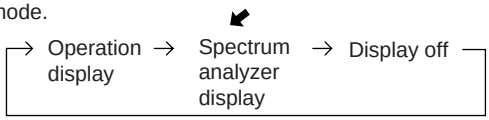
6 Press the **ENTER** button to complete the setting.

- Once the settings have been made, we recommend storing them in the memory. See page 52 for instructions.

Real time analyzer

When the microphone included with the PXA-H900 is connected, the sounds inside the vehicle are input through the microphone and displayed on the spectrum analyzer display.

1) With the microphone connected, press the **DISPLAY ON/OFF** button and select the spectrum analyzer display mode.



For details, refer to "Switching the display mode" (page 53).

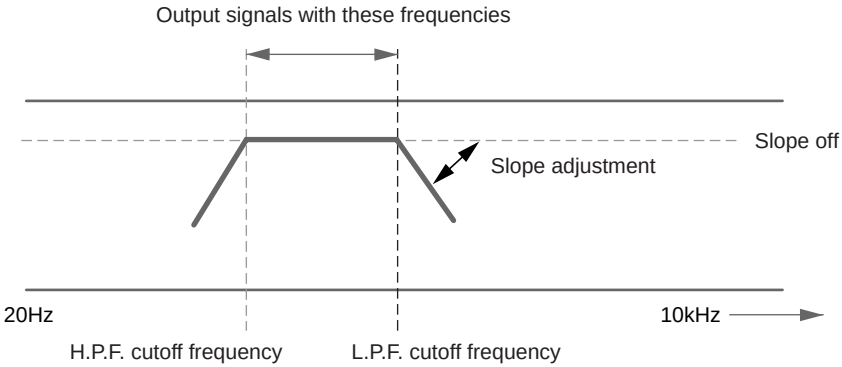
- **Real time analyzer**
  This is a function for displaying the microphone input signals or input signals on the spectrum analyzer display. This allows the signal properties or the acoustic properties inside the vehicle (amplitude) to be measured even without special equipment.
  When microphone connected:
  Spectrum analyzer display of acoustic properties inside the vehicle
  When microphone not connected:
  Spectrum analyzer display of input signals

Crossover network

The PXA-H900 is equipped with an active dividing network allowing the bands to be split before amplification by the power amplifier.
Because of this, there is no need for a passive network between the speakers and amplifiers and the amplifiers are fully independent, thus eliminating the problem of interference and making it possible to achieve the optimum acoustic space by dividing the playback frequencies in a way suited to the capacities of the speakers.
This adjustment requires sufficient knowledge and experience. If you have problems, so we suggest you have the adjustment made by your store of purchase.

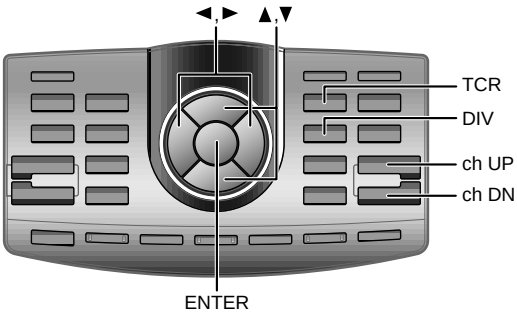
Adjust the high pass filter (H.P.F.) and low pass filter (L.P.F.) and set the slope (filter response attenuation slope) for the different bands.
Make the adjustments according to the playable frequency ranges and frequency responses of the connected speakers.

	Cutoff frequency adjustment range (1/6 octave steps)		Slope adjustment	
	H.P.F.	L.P.F.	H.P.F.	L.P.F.
FLOW (Front low range speaker)	20Hz – 18kHz	22.5Hz – 20kHz	-6/-12/-18/-24/-30dB/ Filter OFF	-6/-12/-18/-24/-30dB/ Filter OFF
FMID (Front mid range speaker)	20Hz – 18kHz	22.5Hz – 20kHz	-6/-12/-18/-24/-30dB/ Filter OFF	-6/-12/-18/-24/-30dB/ Filter OFF
FHIGH (Front high range speaker)	1kHz – 18kHz	1.1kHz – 20kHz	-6/-12/-18/-24/-30dB	-6/-12/-18/-24/-30dB/ Filter OFF
REAR (Rear speaker)	20Hz – 18kHz	22.5Hz – 20kHz	-6/-12/-18/-24/-30dB/ Filter OFF	-6/-12/-18/-24/-30dB/ Filter OFF
CENTER (Center speaker)	20Hz – 18kHz	22.5Hz – 20kHz	-6/-12/-18/-24/-30dB/ Filter OFF	-6/-12/-18/-24/-30dB/ Filter OFF
Sub Wf. (Subwoofer)	20Hz – 180Hz	22.5Hz – 200Hz	-6/-12/-18/-24/-30dB/ Filter OFF	-6/-12/-18/-24/-30dB



The H.P.F. setting cannot be the same as or exceed the L.P.F. setting for that channel.

- The crossover network is a filter that divides specific frequency bands.
- The high pass filter is a filter that cuts frequencies below a certain frequency (bass frequencies) and lets through treble frequencies.
- The low pass filter is a filter that cuts frequencies above a certain frequency (treble frequencies) and lets through bass frequencies.
- The slope is a value expressing the attenuation of the signal in decibels when the frequency is increased or decreased by one octave.
- The higher the slope value, the steeper the slope.
- If the slope is set to “OFF”, the signal does not pass through the filter, so there is no effect.
- In order to protect the speakers, the front high range high pass filter cannot be turned off (the slope cannot be set to “OFF”).
  For the same reason, the subwoofer low pass filter cannot be turned off (the slope cannot be set to “OFF”).
- Tweeters may be damaged if low frequency signals are input to them.



Crossover adjustment

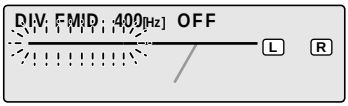
1 Check that the defeat mode is off.
(See page 53.)

2 Press the **DIV** button to set the divider adjustment mode.

3 Press the **ch UP** or **ch DN** button to select the channel (speaker) to be adjusted.

→**FLOW** ↔ **FMID** ↔ **FHIGH** ↔ **REAR** ↔ **CENTER** ↔ **Sub Wf.**←

4 Press the ▲ or ▼ button to select the crossover H.P.F. or L.P.F. band.
The selected band flashes.

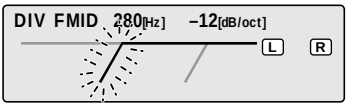


- If the Adaptive Equalizer adjustment has been performed, adjusting “FLOW” or “Sub Wf.” has no effect since this is no longer the Adaptive Equalizer “DIV” setting.
  A caution message appears on the screen. Press the ENTER button to continue the adjustment, ch UP or ch DN button to cancel it.

5 Press the ◄ or ► button to select the desired cutoff frequency (crossover point).
The bands that can be adjusted differ according to the channel (speaker).

6 Adjust the slope by pressing the **DIV** button.
Repeat steps **3** to **6** to adjust the crossover point/slope for other channels.

- The selected slope flashes.



7 Press the **ENTER** button to complete the setting.

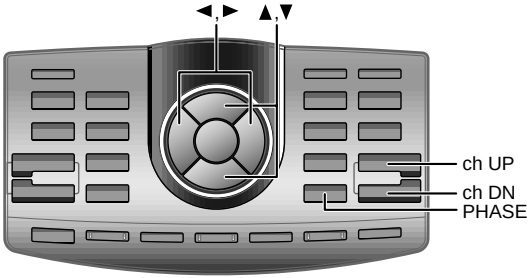
- After making the settings, we recommend storing them in the memory. See page 52 for instructions.
- Listen to the sound of the various speakers and adjust the levels if the balance is poor.

Hint for adjusting the subwoofer
- If the subwoofer is installed on the rear deck, setting a gentle L.P.F. slope (for example –6 dB/oct.) makes the sound localization more to the rear. This can also affect the acoustic localization of the front.

Hints for adjusting the high range
- Depending on the speaker, inputting low frequency component signals (about 2 kHz or less) with the H.P.F. adjustment could result in distortion. If so, set a steep slope (for example –36 dB/oct.).
  When doing so, adjust so that the mid and high range sounds do not separate.
- Normally use with the L.P.F. off. If the high range is too strong, we recommend adjusting for a gentle slope.

Hint for adjusting the low range
- When a subwoofer is connected and you are using a speaker with a low range of under 10 or 12 cm (3-15/16" or 4-3/4"), setting the low range H.P.F. to “OFF” can result in distortion when low frequency components are input. If so, set the H.P.F. slope to a value suited for the speaker’s frequency response.

Adjusting the speaker output level
1) Press the TCR button.
2) Press the ch UP or ch DN button to select the desired speaker.
3) Press the ▲ or ▼ button to adjust the speaker output level. The level can be set to “OFF” or adjusted between –12 and 0.
4) Press the ENTER button.



Switching the phase

The phase of the different speakers can be switched.
Set to the phase at which the sound from the speakers is clearest.
It is also possible to switch the subwoofer between stereo and monaural.

1 Check that the defeat mode is off.
(See page 53.)

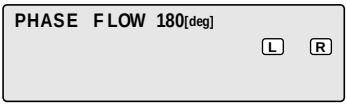
2 Press the **PHASE** button.

3 Press the **ch UP** or **ch DN** button to select the desired channel.

→**FLOW** ↔ **FMID** ↔ **FHIGH** ↔ **REAR** ↔ **CENTER** ↔ **Sub Wf.**←

4 Press the ◄ or ► button to switch the phase.

0° ↔ 180°
◄ ►



Switching the subwoofer between stereo and monaural

1) At step **3** above, select “Sub Wf.”.
2) Press the ▲ or ▼ button to switch between “ST” (stereo) and “MONO” (monaural).

ST ↔ MONO
▲ ▼

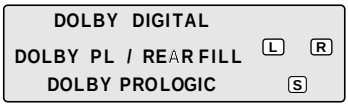
Using Dolby Surround

Using the Pro Logic mode

With the PXA-H900, Pro Logic processing can be conducted on the music signals recorded on two channels to achieve Dolby Pro Logic surround sound. For two-channel Dolby Digital, DTS and MPEG2 signals, there is also a “REAR FILL” function for outputting the signals of the front channel to the rear channel.

1 Press the **PL/REAR FILL** button to select the desired mode.

→**DOLBY PROLOGIC** →**REAR FILL** → **OFF**



- This function only works with two-channel signals. This operation cannot be performed when 5.1-channel DTS or Dolby Digital signals are input.
- “REAR FILL” function
  Depending on the input signals, the sound may only be output from the front speakers. In this case, the “REAR FILL” function can be used to output signals from the rear speakers as well.
- Once the settings are made, we recommend storing them in the memory. See page 52 for instructions.
- When the “REAR FILL” mode is turned on, sound may be produced from the rear speakers even if the rear speakers are set to “OFF”. Do not use the “REAR FILL” function if you do not want to output sound from the rear speakers.
- The HDCD decode mode cannot be used in the “DOLBY PROLOGIC” mode.

Adjustment procedure for Dolby Surround

Make the adjustments described below in order to reproduce Dolby Digital and DTS sound with greater accuracy.

Adjustment procedure

1 **Speaker setup (page 38)**
(Turning the speakers to be used on and off and setting their response)

↓

2 **Adjusting the speaker levels (page 40)**
(Adjusting the signal output level to the various speakers)

↓

3 **Center/rear speaker time correction (pages 42 and 44)**
(Adjusting the signal output time compensation (timing) of the various speakers)

↓

4 **Adjusting the acoustic image (page 46)**
(Adjusting the acoustic image to achieve a sound as if the center speaker were directly in front of the listener)

↓

5 **Mixing bass sound to the rear channel (page 48)**
(Achieving smooth sound in the rear seat by mixing the front audio signals with the rear speaker signals)

↓

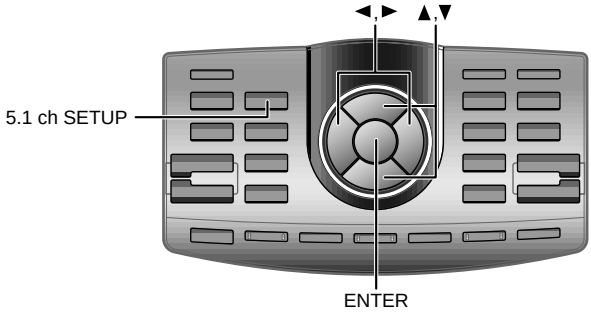
6 **Achieving powerful high volume sound (page 50)**
(Achieving energetic sound with even greater power, like the sound in a movie theater)

↓

7 **Storing settings in the memory (page 52)**
(Storing all the settings and adjustments made on the PXA-H900 (not only the above settings/adjusts) in the memory)

Note: In case of combining the Automatic adjustments etc.
We recommend to make the Automatic adjustments before the Dolby Surround adjustments.

Using Dolby Surround



Speaker setup

The PXA-H900 can be set according to the playable frequency range of your speakers.
Check the playable frequency range of the speakers (not including the subwoofer) before performing this operation to verify whether the speakers can play low frequencies (of about 80 Hz or less).

1 Press the **5.1ch SETUP** button.

2 Press the ▲ or ▼ button and select “SPEAKER SETUP”.

→**SPEAKER SETUP** ↔ **OUTPUTLEVEL SETUP** ↔ **BI-PHANTOM SETUP** ←
→**REAR DELAY SETUP** ↔ **CENTER DELAY SETUP** ↔ **REAR-MIX SETUP** ←

3 Press the **ENTER** button.

- This function can be set in the Pro Logic, DTS, MPEG and Dolby Digital modes.
- Avoid stopping, pausing, switching the disc, cueing, fast-forwarding or switching the audio channel of the player while making this adjustment. The setting is canceled if the decode mode is switched.

4 Press the ▲ or ▼ button and select the speakers to be set.

→**FRONT**↔ **CENTER** ↔**REAR**←

5 Press the ◄ or ► button and select the speaker response.

→**SMALL**↔ **LARGE** *2 ↔**OFF** *1 ←

SMALL:
When a speaker that cannot play low frequencies (80 Hz or less) is connected
LARGE:
When a speaker that can play low frequencies (80 Hz or less) is connected
OFF:
When no speaker is connected

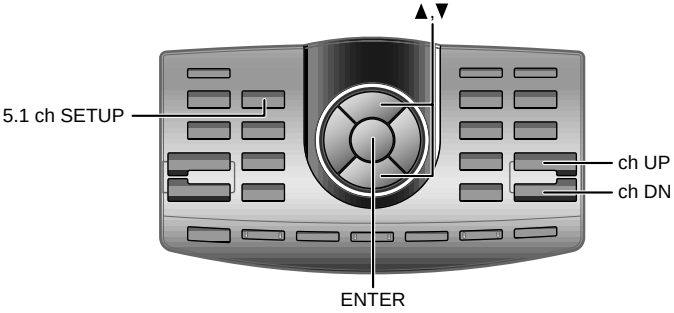
6 Press the **5.1ch SETUP** button to complete the setting.

To perform other setup operations, press the **ENTER** button to display the setup menu.

- If the center speaker is turned “OFF”, the center channel’s audio signals are added to the audio signals output from the front speakers.
- If you set the speaker response to “OFF”, also set the speaker level adjustment (speaker setting) to “OFF”. (See page 8.)
- *1 It is not possible to set the front speakers to “OFF”.
- *2 If the front speakers are set to “SMALL”, the rear and center speakers cannot be set to “LARGE”.
- Perform the setup for the all the speakers (“FRONT”, “CENTER” and “REAR”). If not, the sound may not be balanced.

- Once the settings are made, we recommend storing them in the memory. See page 52 for instructions.

Using Dolby Surround



Adjusting the speaker levels

Use the test tones output from the PXA-H900 to adjust so that the volume of the different speakers is equal.
To achieve a strong sense of presence, adjust so that the volume of the sound heard from the different speakers at the listening position is the same.

1 Press the **5.1ch SETUP** button.

2 Press the ▲ or ▼ button and select “OUTPUT LEVEL SETUP”.

→**SPEAKER SETUP** ↔ **OUTPUTLEVEL SETUP** ↔ **BI-PHANTOM SETUP*** ←
→**REAR DELAY SETUP*** ↔ **CENTER DELAY SETUP*** ↔ **REAR-MIX SETUP*** ←

∗ Not displayed when the rear/center speaker setting is set to “OFF”.

3 Press the **ENTER** button. Test tones are output from the various speaker channels in order for about 2 seconds each.

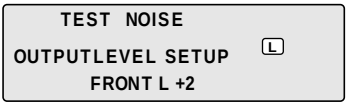
→ L (left front) → C (center) → R (right front) →
← LS (left surround) ← RS (right surround) ←

- This function can be set in the Pro Logic, DTS, MPEG and Dolby Digital modes.
- Avoid stopping, pausing, switching the disc, cueing, fast-forwarding or switching the audio channel of the player while making this adjustment. The setting is canceled if the decode mode is switched.

- If a speaker is set to the off mode, that speaker’s level cannot be adjusted.
Refer to “Speaker setup” (page 38).

4 While the test tones are being produced from the speakers, press the ▲ or ▼ button to adjust so that the volume of the different speakers is equal.

The level of the different speakers can be adjusted within a range of ±10 dB.



- Adjust based on the front speakers.

Adjusting with the speaker fixed

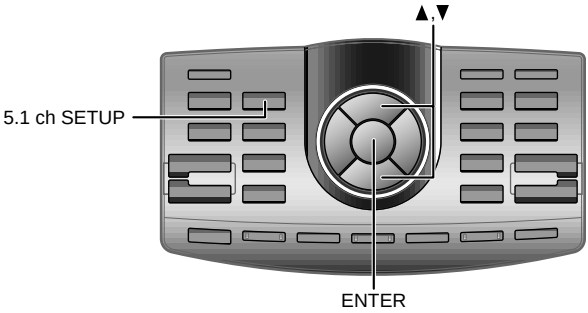
1) Press the **ch UP** or **ch DN** button to select the speaker to be adjusted.
2) Press the ▲ or ▼ button to adjust the volume.
3) Repeat steps 1) and 2) to adjust, then press the **ENTER** button.
4) To complete the adjustment, press the **5.1ch SETUP** button.

5 Press the **5.1ch SETUP** button to complete the adjustment.

To perform other setup operations, press the **ENTER** button to display the setup menu.

- Once the settings are made, we recommend storing them in the memory. See page 52 for instructions.

Using Dolby Surround



Center speaker time correction

Use this function after adjusting the delay time of the different speakers with the “Adaptive Equalizer”, “Precision Automated Time Correction” and “automatic/manual time compensation” functions. Using this function results in sound with a sense of presence.

1 Press the **5.1ch SETUP** button.

2 Press the ▲ or ▼ button and select “CENTER DELAY SETUP”.

→**SPEAKER SETUP** ↔ **OUTPUTLEVEL SETUP** ↔ **BI-PHANTOM SETUP*** ←
→**REAR DELAY SETUP*** ↔ **CENTER DELAY SETUP*** ↔ **REAR-MIX SETUP*** ←

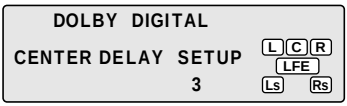
∗ Not displayed when the rear/center speaker setting is set to “OFF”.
(See page 38.)

- This function can be set in the Pro Logic, DTS, MPEG and Dolby Digital modes.
- Avoid stopping, pausing, switching the disc, cueing, fast-forwarding or switching the audio channel of the player while making this adjustment. The setting is canceled if the decode mode is switched.

3 Press the **ENTER** button.

4 Press the ▲ or ▼ button to adjust the time correction value.

The center delay setting can be adjusted within the range of 0 to 5 ms.



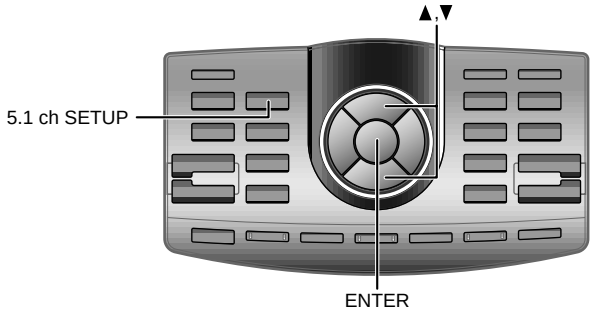
- This adjustment cannot be performed when the center speaker setup setting is set to "OFF".
- If the distance of the front speaker is shorter than or the same as that of the center speaker, set to "0". If the distance of the front speaker is longer, set to 1 to 5.

5 Press the **5.1ch SETUP** button to complete the adjustment.

To perform other setup operations, press the **ENTER** button to display the setup menu.

- Once the settings are made, we recommend storing them in the memory. See page 52 for instructions.

Using Dolby Surround



Rear speaker time correction

Perform this function after adjusting the delay time of the various speakers.
Adding this time correction to the values adjusted with the "Adaptive Equalizer", "Precision Automated Time Correction" and "automatic/manual time compensation" functions gives the sound a sense of expansion.

1 Press the **5.1ch SETUP** button.

2 Press the ▲ or ▼ button and select "REAR DELAY SETUP".

→SPEAKER SETUP ↔ OUTPUTLEVEL SETUP ↔ BI-PHANTOM SETUP*
→REAR DELAY SETUP* ↔ CENTER DELAY SETUP* ↔ REAR-MIX SETUP*

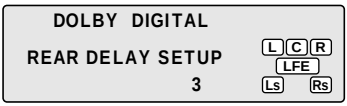
* Not displayed when the rear/center speaker setting is set to "OFF".
(See page 38.)

3 Press the **ENTER** button.

- This function can be set in the Pro Logic, DTS, MPEG and Dolby Digital modes.
- Avoid stopping, pausing, switching the disc, cueing, fast-forwarding or switching the audio channel of the player while making this adjustment. The setting is canceled if the decode mode is switched.

4 Press the ▲ or ▼ button to adjust the time correction value.

When the Pro Logic mode is off:
0: 0ms, 1: 5ms, 2: 10ms, 3: 15ms
When the Pro Logic mode is on:
0: 15ms, 1: 20ms, 2: 25ms, 3: 30ms

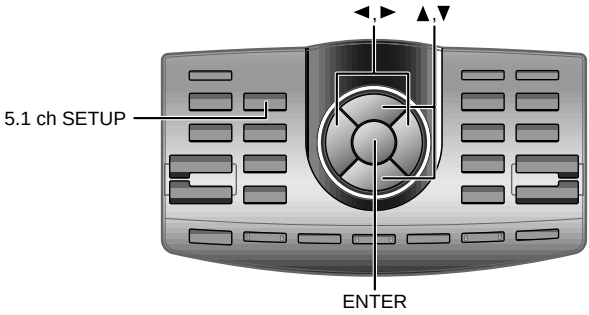


- This adjustment cannot be performed when the rear speaker mode setting is set to “OFF”.
- If the distance of the front speaker is shorter than or the same as that of the center speaker, set to “0”. If the distance of the front speaker is longer, set to 1 to 3.

5 Press the **5.1ch SETUP** button to complete the adjustment.
To perform other setup operations, press the **ENTER** button to display the setup menu.

- Once the settings are made, we recommend storing them in the memory. See page 52 for instructions.

Using Dolby Surround



Adjusting the acoustic image

To achieve sound with a sense of presence, the center speaker must be placed directly in front of the listening position. With this function, the center channel information is distributed to the left and right speakers. This creates an acoustic images simulating a center speaker directly in front of the listener.

1 Press the **5.1ch SETUP** button.

2 Press the ▲ or ▼ button and select “BI-PHANTOM SETUP”.

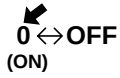
→**SPEAKER SETUP** ↔ **OUTPUTLEVEL SETUP** ↔ **BI-PHANTOM SETUP*** ←
→**REAR DELAY SETUP*** ↔ **CENTER DELAY SETUP*** ↔ **REAR-MIX SETUP*** ←

∗ Not displayed when the rear/center speaker setting is set to “OFF”.
(See page 38.)

3 Press the **ENTER** button.

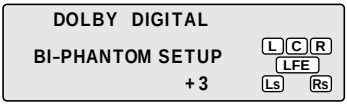
- This function can be set in the Pro Logic, DTS, MPEG and Dolby Digital modes.
- Avoid stopping, pausing, switching the disc, cueing, fast-forwarding or switching the audio channel of the player while making this adjustment. The setting is canceled if the decode mode is switched.

4 Press the ◄ or ► button to select “ON”.



- This adjustment cannot be performed when the center speaker setup setting is set to “OFF”.
- The off mode is set automatically when the center speaker setup setting is set to “OFF”.

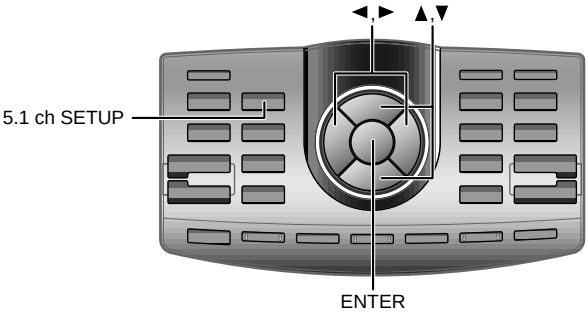
5 Press the ▲ or ▼ button to adjust the level.
The level can be adjusted within the range of –5 to +5. The higher the level, the more the position of the center speaker is shifted to the sides.



6 Press the **5.1ch SETUP** button to complete the adjustment.
To perform other setup operations, press the **ENTER** button to display the setup menu.

- Once the settings are made, we recommend storing them in the memory. See page 52 for instructions.

Using Dolby Surround



Mixing bass sound to the rear channel

This function mixes the front channel audio signals to the audio signals output from the rear speakers, improving the sound in the vehicle's rear seat.

1 Press the **5.1ch SETUP** button.

2 Press the ▲ or ▼ button and select "REAR-MIX SETUP".

→ **SPEAKER SETUP** ↔ **OUTPUTLEVEL SETUP** ↔ **BI-PHANTOM SETUP*** ←
→ **REAR DELAY SETUP*** ↔ **CENTER DELAY SETUP*** ↔ **REAR-MIX SETUP*** ←

∗ Not displayed when the rear/center speaker setting is set to "OFF".
(See page 38.)

3 Press the **ENTER** button.

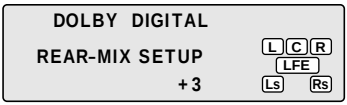
- This function can be set in the Pro Logic, DTS, MPEG and Dolby Digital modes.
- Avoid stopping, pausing, switching the disc, cueing, fast-forwarding or switching the audio channel of the player while making this adjustment. The setting is canceled if the decode mode is switched.

4 Press the ◄ or ► button to select “ON”.

0 ↔ OFF
(ON)

- This adjustment cannot be performed when the rear speaker setup setting is set to “OFF”.
- The off mode is set automatically when the rear speaker setup setting is set to “OFF”.
- When the “REAR-MIX” function is turned “ON”, sound may be produced from the rear speakers even if the rear speakers are set to “OFF”. If you do not want sound to be produced from the rear speakers, turn the “REAR-MIX” mode “OFF”.

5 Press the ▲ or ▼ button to adjust the level.
The level can be set to one of five positions: –6, –3, 0, +3, and +6. The higher the level, the more the bass sound output from the rear speakers. (The effect differs according to the software (DVD, etc.).)

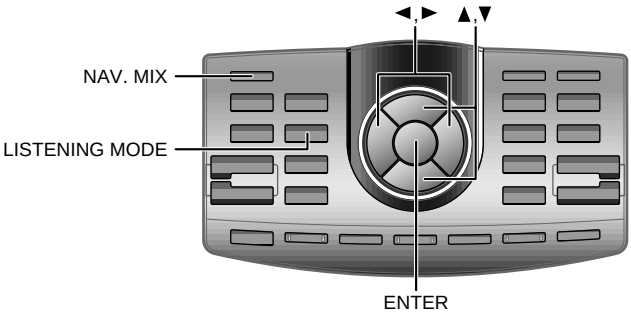


- If the “REAR-MIX” adjustment is performed when the “REAR FILL” function is on, during the 2-channel decode mode the “REAR FILL” function is given priority, so the sound does not change as adjusted with the “REAR-MIX” function.

6 Press the **5.1ch SETUP** button to complete the adjustment.
To perform other setup operations, press the **ENTER** button to display the setup menu.

- Once the settings are made, we recommend storing them in the memory. See page 52 for instructions.

Using Dolby Surround



Achieving powerful high volume sound

With Dolby Digital, the dynamic range is compressed so that powerful sound can be achieved at regular volume levels. This compression can be canceled to achieve an energetic sound with even greater power, like the sound in a movie theater.

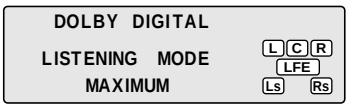
- This function works only in the Dolby Digital mode.

1 Press the **LISTENING MODE** button and select the “MAXIMUM” mode.

STANDARD↔MAXIMUM

STANDARD:
For powerful sound at regular volume levels
MAXIMUM:
For powerful sound at high volumes

- Keep the volume to a level at which sounds outside the vehicle can still be heard.
- This function may have no effect, depending on the type of software (DVD, etc.).



2 Press the **ENTER** button to complete the setting.

- Once the settings are made, we recommend storing them in the memory. See page 52 for instructions.

Navigation system voice guidance interruption

When a navigation system is connected, this setting makes it possible for the system's voice guidance messages to interrupt the sound of the PXA-H900.
It is also possible to set the audio volume level during voice guidance message interruptions.

1 Press the **NAV. MIX** button.

2 Press the ◄ or ► button and select the mode.

VOICE GUIDANCE ↔ AUDIO ATT.

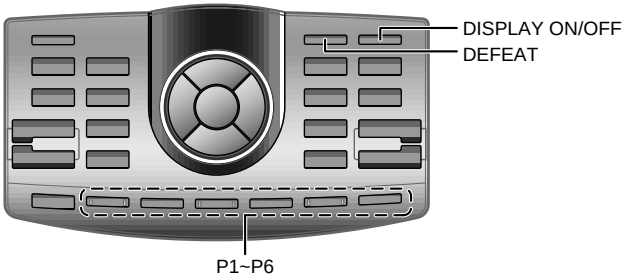
3 Press the ▲ or ▼ button to adjust the volume level.

VOICE GUIDANCE:
OFF and 1 to 7 (navigation system voice guidance message volume level)
AUDIO ATT.:
0 to 7 (Audio attenuation level during navigation system voice guidance interruptions)

4 Press the **ENTER** button to complete the setting.

- This function does not work when no center speaker is connected.
  For details, refer to the Installation manual.

Convenient Functions



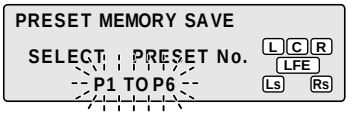
Storing settings in the memory

The PXA-H900 includes six memories in which all the current adjustments and settings can be stored.

1 Make the adjustments and settings you wish to store in the memory.

2 Press and hold any of buttons **P1** to **P6** for at least 2 seconds.

3 Within 5 seconds, press the button (**P1** to **P6**) at which you want to store the values.



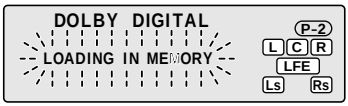
- Release the PXA-H900's MEMORY LOCK switch (set it to the left side) when you wish to store settings.
  For instructions on using the MEMORY LOCK switch, refer to the installation manual.

- Approximately 5 seconds are required for memory processing.
- The operations "Storing settings in the memory" and "Calling out stored values" are effective only when the defeat is off.

Calling out stored values

1 Press the **P1** to **P6** button to select the number ("MEMORY1" to "MEMORY6") you wish to call out.

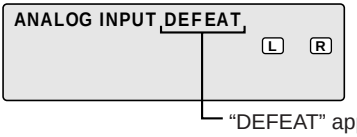
Approximately 3 seconds are required to call out the stored values.



- The display flashes while the values are being called out.

Defeat mode

1 Press the **DEFEAT** button.
All the settings become flat.



2 To cancel, press the **DEFEAT** button again.

- When the defeat mode is turned on, none of the Adaptive Equalizer, Precision Automated Time Correction, Time Correction, phase switching, equalizer adjustment, crossover network, memory or memory recall operations can be performed.
- To protect the speakers, the crossover network settings do not change.

Switching the display mode

1 Press the **DISPLAY ON/OFF** button to select the desired display mode.

→ Operation display → Spectrum analyzer display → Display off →

Operation display

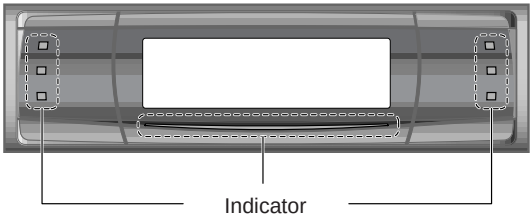
Spectrum analyzer display

Display off

- Press the VOL or INPUT SELECT button in the Display off mode to display for a few seconds.

Switching the indicator color (for non Ai-NET connections only)

1 Press and hold the **DISPLAY** button for at least 2 seconds to select the desired indicator color.
Select blue or green.



DTS

Normally the PXA-H900 automatically identifies DTS signals so there is no need to perform any particular operation to output DTS signals.
If for some reason the DTS input signals cannot be identified, perform the operation described below.

1 Press the **DTS** button.

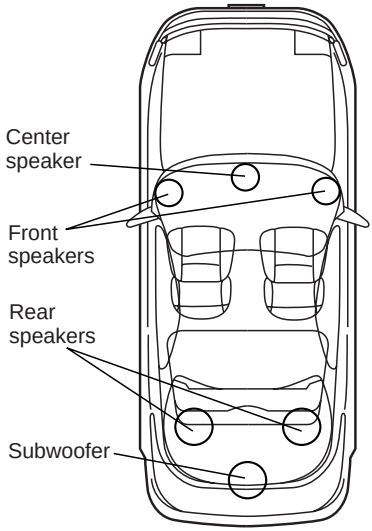
2 To cancel, press the **DTS** button again.

- Check whether the disc contains DTS signals.
- If the DTS button is pressed while no DTS signals are being input, in some cases the sound will be turned off.
- DTS is the abbreviation for Digital Theater Systems.

Terminology

Dolby Digital

Dolby Digital is a digital audio compression technology developed by Dolby Laboratories that allows large quantities of audio data to be efficiently recorded on discs. It is compatible with audio signals from mono (1 channel) all the way up to 5.1-channel surround sound. The signals for the different channels are completely independent, and since the sound is high quality digital there is no loss of sound quality.



Speaker layout for enjoying Dolby Digital sound/DTS sound

DTS

This is a home-use digital sound format of the DTS Sound System. This is a high quality sound system, developed by Digital Theater Systems Corp for use in movie theaters. DTS has six independent sound tracks. The theater presentation is fully realized in the home and other settings. DTS is the abbreviation for Digital Theater Systems.

Dolby Pro Logic

Dolby Pro Logic is the technology used to decode programs encoded in Dolby Surround. Pro Logic decoding will provide you with four channels of sound (front left/right, center and monaural rear surround) from a 2-channel (stereo) source.

HDCD (High Definition Compatible Digital)

Normally, the signals on music CDs use 16-bit digitization. Discs mastered with HDCD, however, contain data equivalent to 20 bits. This set is equipped with an HDCD decoder. When HDCD decoder compatible discs are played, the sound is reproduced with a sense of expansion and quality near that of the original sound.

HDCD Equipped Car Audio

Your Alpine Car Audio PXA-H900 is equipped with HDCD playback technology which improves the audio fidelity of all CDs. Please note that HDCD playback decoding will increase the dynamic range of some CD tracks recorded with the HDCD process, which may cause their average level to sound quieter than some other CD tracks.

Information

In case of difficulty

If you encounter a problem, please review the items in the following checklist. This guide will help you isolate the problem if the unit is at fault. Otherwise, make sure the rest of your system is properly connected or consult your authorized Alpine dealer.

Set does not operate.

Nothing appears on the display.

- Vehicle's ignition key is turned off.
  - Turn the vehicle's ignition key on.
- Set's power is not turned on.
  - Turn the vehicle's ignition key on then turn on the power of the head unit.
- Power cord is not securely connected.
  - Connect the power cord securely.
- Fuse is blown.
  - Replace with a fuse of the specified capacity.
- Display mode is set to off.
  - Switch the display to another mode. (Page 53)

Power is on but no sound is produced.

- Volume level is set to the minimum.
  - Increase the volume level. (Page 12)
- Input mode is set to a mode to which nothing is connected.
  - Set to a connected mode. (Page 10)
- DTS mode is turned on though no DTS signals are being input.
  - Turn the DTS mode off. (Page 54)

No sound is produced from the speakers.

- Cords are not securely connected.
  - Connect the cords securely.
- Speaker is set to the off mode.
  - Set the speaker to the on mode. (Pages 8 and 38)
- Subwoofer is turned off.
  - Turn the subwoofer on. (Pages 9 and 13)

Dolby Surround adjustments cannot be made.

- No Dolby Digital, DTS or MPEG signals are being input.
  - Input Dolby Digital, DTS or MPEG signals.
- Pro Logic mode is turned off.
  - Set the Pro Logic mode to "DOLBY PROLOGIC". (Page 36)

Speaker setup settings cannot be made.

- Front speakers are set to "SMALL".
  - Set the front speakers to "LARGE". (Page 38)

Speaker level cannot be adjusted.

- Speaker is set to the off mode.
  - Set the speaker to the on mode. (Pages 8 and 38)

Speaker time correction cannot be set.

- Speaker is set to the off mode.
  - Set the speaker to the on mode. (Pages 8 and 38)

Center speaker's acoustic image cannot be adjusted.

- Speaker is set to the off mode.
  - Set the speaker to the on mode. (Pages 8 and 38)

Sound cannot be mixed with the rear channel.

- Speaker is set to the off mode.
  - Set the speaker to the on mode. (Pages 8 and 38)

Caution when connecting the DVA-5205 series/DVA-5200 series

Although the DVA-5205 series and DVA-5200 series provide adjustment screens for Parametric Equalizer and Sound, these do not apply to the PXA-H900.

Specifications

EQ number of bands:	Front:	31
	Rear:	31
	Center:	31
	Subwoofer:	10
Graphic equalizer boost cut range:	±9 dB	
Time correction control range:	0 to 20 ms (0.1 ms steps)	
Frequency response:	20 Hz to 20 kHz	
S/N ratio:	110 dB	
Channel separation:	80 dB	
Input sensitivity:	850 mA (2V for analog 1 only)	
Subwoofer crossover:	20 to 200 Hz (1/6 oct. steps)	
Subwoofer level control:	0 dB to +15 dB	
Rated output:	4V (with 10 k ohms load)	
Input impedance:	10 k ohms or greater	
Output impedance:	1 k ohm or less	
Weight:	Display unit	180 g (6 oz)
	Remote control unit	140 g (5 oz) (not including batteries)
	Base unit	5.1 kg (11 lbs. 4 oz)

Dimensions

Display unit	
Width	170 mm (6-3/4")
Height	46 mm (1-13/16")
Depth	24.6 mm (1")
Remote control unit	
Width	144.7 mm (5-3/4")
Height	30.7 mm (1-3/16")
Depth	80 mm (3-1/8")
Base unit	
Width	325 mm (12-25/32")
Height	69 mm (2-3/4")
Depth	280 mm (11")

<Components>

Parts name	Quantity
Parts for mounting	1set
Owner's manual	1set
Remote control unit/holder	1set
Batteries (AAA)	4
Microphone/stand	1set

Due to continuous product improvement, specifications and design are subject to change without notice.
The illustrations included in these instructions may appear different from the actual product due to printing conditions.

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