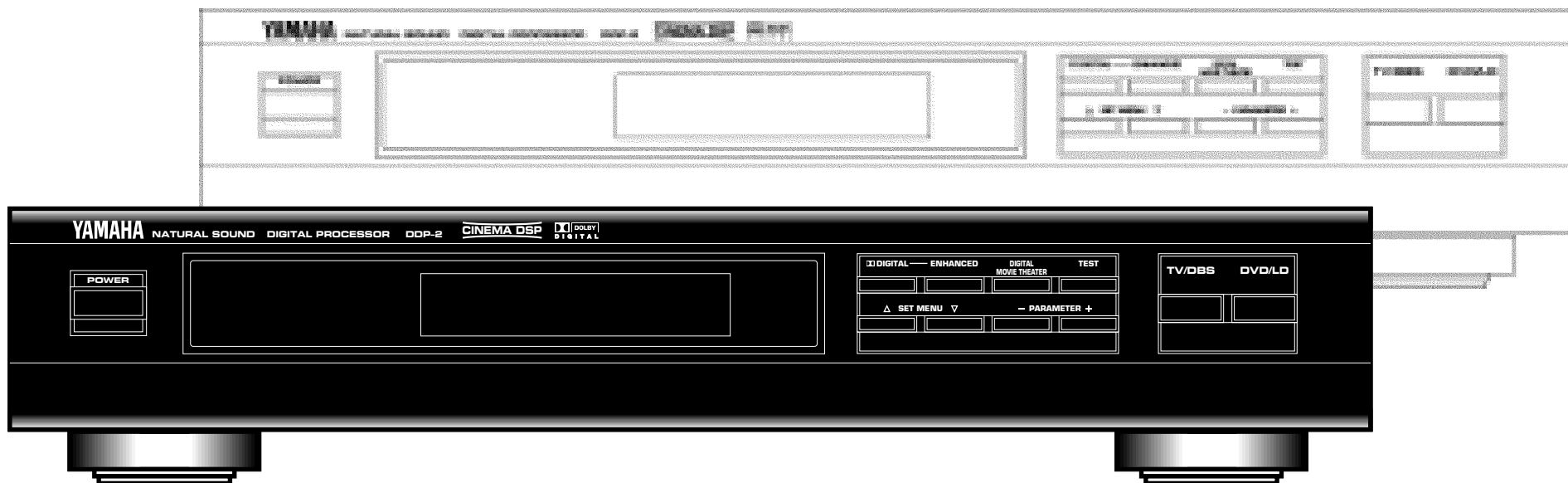


YAMAHA

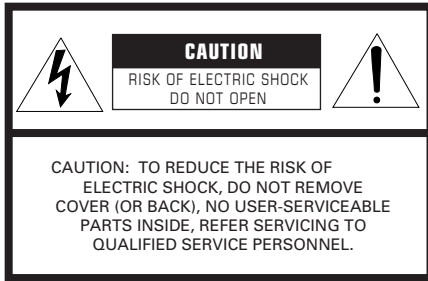
DDP-2



Natural Sound Digital Processor
Processeur numérique "Son Naturel"

OWNER'S MANUAL
MODE D'EMPLOI

SAFETY INSTRUCTIONS



• Explanation of Graphical Symbols



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

1 Read Instructions – All the safety and operating instructions should be read before the unit is operated.

2 Retain Instructions – The safety and operating instructions should be retained for future reference.

3 Heed Warnings – All warnings on the unit and in the operating instructions should be adhered to.

4 Follow Instructions – All operating and other instructions should be followed.

5 Water and Moisture – The unit should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

6 Carts and Stands – The unit should be used only with a cart or stand that is recommended by the manufacturer.

6A A unit and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the unit and cart combination to overturn.



7 Wall or Ceiling Mounting – The unit should be mounted to a wall or ceiling only as recommended by the manufacturer.

8 Ventilation – The unit should be situated so that its location or position does not interfere with its proper ventilation. For example, the unit should not be situated on a bed, sofa, rug, or similar surface, that may block the ventilation openings; or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

9 Heat – The unit should be situated away from heat sources such as radiators, stoves, or other appliances that produce heat.

10 Power Sources – The unit should be connected to a power supply only of the type described in the operating instructions or as marked on the unit.

11 Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the unit.

12 Cleaning – The unit should be cleaned only as recommended by the manufacturer.

13 Nonuse Periods – The power cord of the unit should be unplugged from the outlet when left unused for a long period of time.

14 Object and Liquid Entry – Care should be taken so that objects do not fall into and liquids are not spilled into the inside of the unit.

15 Damage Requiring Service – The unit should be serviced by qualified service personnel when:

- A. The power-supply cord or the plug has been damaged;
- or
- B. Objects have fallen, or liquid has been spilled into the unit;
- or
- C. The unit has been exposed to rain;
- or
- D. The unit does not appear to operate normally or exhibits a marked change in performance;
- or
- E. The unit has been dropped, or the cabinet damaged.

16 Servicing – The user should not attempt to service the unit beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.

17 Power Lines – An outdoor antenna should be located away from power lines.

18 Grounding or Polarization – Precautions should be taken so that the grounding or polarization is not defeated.

SPECIAL NOTES FOR FCC COMPOSITE DEVICE (for US customers only)

This device is a composite system. The digital device component may not cause harmful interference.

FCC INFORMATION (for US customers only)

1. IMPORTANT NOTICE : DO NOT MODIFY THIS UNIT!

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.

2. IMPORTANT : When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product **MUST** be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

3. NOTE : This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices.

This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices.

Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is being affected by the interference.

Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.

In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to coaxial type cable.

If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Electronics Corp., U.S.A. 6660 Orangethorpe Ave, Buena Park, CA 90620.

The above statements apply **ONLY** to those products distributed by Yamaha Corporation of America or its subsidiaries.

We Want You Listening For A Lifetime (for US customers only)

YAMAHA and the Electronic Industries Association's Consumer Electronics Group want you to get the most out of your equipment by playing it at a safe level. One that lets the sound come through loud and clear without annoying blaring or distortion – and, most importantly, without affecting your sensitive hearing. Since hearing damage from loud sounds is often undetectable until it is too late, YAMAHA and the Electronic Industries Association's Consumer Electronics Group recommend you to avoid prolonged exposure from excessive volume levels.



Congratulations!

You are the proud owner of a Yamaha Digital Processor—an extremely sophisticated audio component. This unit takes full advantage of Yamaha's undisputed leadership in the field of digital audio processing to bring you a whole new world of listening experiences. Follow the instructions in this manual carefully when setting up your system, and this unit will sonically transform your room into a newest Dolby Stereo Digital theater. With this unit, you will get incredible realism from Dolby Digital (AC-3) encoded video sources.

Rather than tell you about the wonders of this unit, however, let's get right down to the business of setting up the system and trying out its many capabilities. Please read this operation manual carefully and store it in a safe place for later reference.

PRECAUTIONS

1. AVOID EXCESSIVE HEAT, HUMIDITY, DUST AND VIBRATION

Keep the unit away from locations where it is likely to be exposed to high temperatures or humidity—such as near radiators, stoves, etc. Also avoid locations which are subject to excessive dust accumulation or vibration which could cause mechanical damage.

2. INSTALL THE UNIT IN WELL-VENTILATED CONDITION

Install the unit in well-ventilated condition. Otherwise it may not only damage the unit, but also cause fire.

3. KEEP THE AC POWER PLUG DISCONNECTED DURING VACATION ETC.

When not planning to use this unit for long periods of time (ie., vacation, etc.), disconnect the AC power plug from the wall outlet.

4. AVOID PHYSICAL SHOCKS

Strong physical shocks to the unit can cause damage. Handle it with care.

5. DO NOT OPEN THE UNIT OR ATTEMPT REPAIRS OR MODIFICATIONS YOURSELF

This product contains no user-serviceable parts. Refer all maintenance to qualified Yamaha service personnel. Opening the unit and/or tampering with the internal circuitry will make servicing difficult and will endanger you and your unit.

6. MAKE SURE POWER IS OFF BEFORE MAKING OR REMOVING CONNECTIONS

Always turn power OFF prior to connecting or disconnecting cables. This is important to prevent damage to the unit itself as well as other connected equipment.

7. HANDLE CABLES CAREFULLY

Always plug and unplug cables—including the AC cord—by gripping the connector, not the cord.

8. CLEAN WITH A SOFT DRY CLOTH

Never use solvents such as benzine or thinner to clean the unit. Wipe clean with a soft, dry cloth.

9. USE THIS UNIT WITH THE CORRECT VOLTAGE

The voltage to be used must be the same as that specified on this unit. Using this unit with a higher voltage than that which is specified is dangerous and may result in a fire or other type of accident causing damage. YAMAHA will not be held responsible for any damage resulting from use of this unit with a voltage other than that which is specified.

10. KEEP AWAY FROM TUNERS

Digital signals generated by the unit may interfere with other equipment such as tuners, receivers or TVs. Move the system farther away from such equipment if interference is observed.

IMPORTANT!

Please record the model and serial number of your unit in the space below.

Model:

Serial No.:

The serial number is located on the rear of the unit. Retain this Owner's Manual in a safe place for future reference.

WARNING

To reduce the risk of fire or electric shock, do not expose this unit to rain or moisture.

Voltage Selector (General Model only)
The voltage selector on the rear panel of this unit must be set for your local mains voltage BEFORE plugging into the AC mains supply. Voltages are 110/120/220/240 AC, 50/60 Hz.

CAUTION (FOR CANADA MODEL)

TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT AND FULLY INSERT.

FOR CANADIAN CUSTOMER

THIS CLASS B DIGITAL APPARATUS MEETS ALL REQUIREMENTS OF THE CANADIAN INTERFERENCE-CAUSING EQUIPMENT REGULATIONS.

The apparatus is not disconnected from the AC power source as long as it is connected to the wall outlet, even if the apparatus itself is turned off.

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FEATURES

This unit is a sophisticated digital sound processor designed specifically for decoding the Dolby Digital (AC-3).

This unit consists of a Dolby Digital (AC-3) Decoder, Yamaha Digital Sound Field Processor and other original Yamaha functions developed using the newest technology to reproduce sources encoded with the Dolby Digital (AC-3) precisely as movie sound creators intended. This unit will lead listeners into a totally new sound experience.

This unit is equipped with “6-channel discrete” output terminals for sending multi-channel audio signals of the Dolby Digital (AC-3) individually. Therefore, the audio amplifier or receiver must have “discrete” input terminals to receive the signals from this unit. If your amplifier or receiver can input 5-channel discrete signals only, see page 12.

Digital Sound Field Processing

This unit incorporates a sophisticated digital sound field processor. The processor allows you to electronically expand and change the shape of the audio sound field from audio and video sources, creating a theater-like experience in your listening room.

Dolby Digital (AC-3)

The built-in Dolby Digital (AC-3) Decoder leads you into a totally new sound experiences.

Dolby Digital (AC-3) is a new generation of multi-channel digital audio technology, or the newest spatial sound processing format developed for 35 mm film-movies by employing a new kind of low bit-rate audio coding.

Dolby Digital (AC-3) is a digital surround sound system that provides completely independent multi-channel audio to consumers. In multi-channel form, Dolby Digital (AC-3) provides five full range channels in what is sometimes referred to as a “3/2” configuration: three front channels (left, center and right), plus two surround channels. A sixth bass-only effect channel is also provided for output of LFE (low frequency effect), or low bass effects that are independent of other channels. This channel is counted as 0.1, thus giving rise to the term 5.1 channels in total.

Compared to Dolby Pro Logic that is referred to a “3/1” system (left front, center, right front and just one surround channel), Dolby Digital (AC-3) features two surround channels, called stereo or split surrounds, each offering the same full range fidelity as the three front channels.

Sound of wide dynamic range reproduced by the five full range channels presents listeners much excitement that has never been experienced before. Precise sound orientation by the discrete digital sound processing expands realism that the original movie possesses.

Laser Disc is a home audio format that could benefit from Dolby Digital (AC-3). In the near future, Dolby Digital (AC-3) will also be applied to DBS, CATV, DVD and HDTV. The ongoing release of Dolby Stereo Digital theatrical films now underway will provide an immediate source of Dolby Digital (AC-3) encoded video software.



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The following original functions make the surround-sound effect of Dolby Digital (AC-3) become the most suitable for your audio system and the listening conditions.

- **Dynamic range (sound scale) of source can be changed so that it will be suitable for the listening conditions.**
- **Output of low bass from any channel can be assigned to either the MAIN output terminals or SUBWOOFER output terminal to maximize system performance.**
- **Output of LFE can be assigned to either the MAIN output terminals or SUBWOOFER output terminal to maximize system performance.**

Dolby Digital (AC-3) + DSP (CINEMA DSP)

Dolby Digital (AC-3) shows its full ability in a large movie theater, because movie sounds are originally designed to be reproduced in a large movie theater using many speakers. It is difficult to create a sound environment similar to that of a movie theater in your listening room, because the room size, materials of inside walls, the number of speakers, etc. of your listening room is much different from those of a movie theater.


Yamaha DSP technology made it possible to present you with nearly the same sound experience as that of a large movie theater in your listening room by compensating for lack of presence and dynamics in your listening room with its original digital sound fields combined with Dolby Digital (AC-3) decoded sound field.

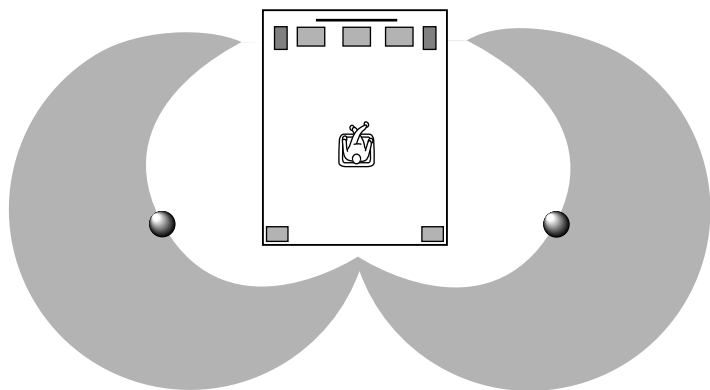
CINEMA DSP

The YAMAHA "CINEMA DSP" logo indicates those programs are created by the combination of Dolby Surround and YAMAHA DSP technology.

Dolby Digital (AC-3) + 2 Digital Sound Fields

Digital sound fields are created on the independent left and right surround sides of the Dolby Digital (AC-3) decoded sound field respectively. They create a wide acoustic environment and emphasize surround-effect in the room, letting you feel much presence as if you are watching a movie in a popular Dolby Stereo Digital theater.

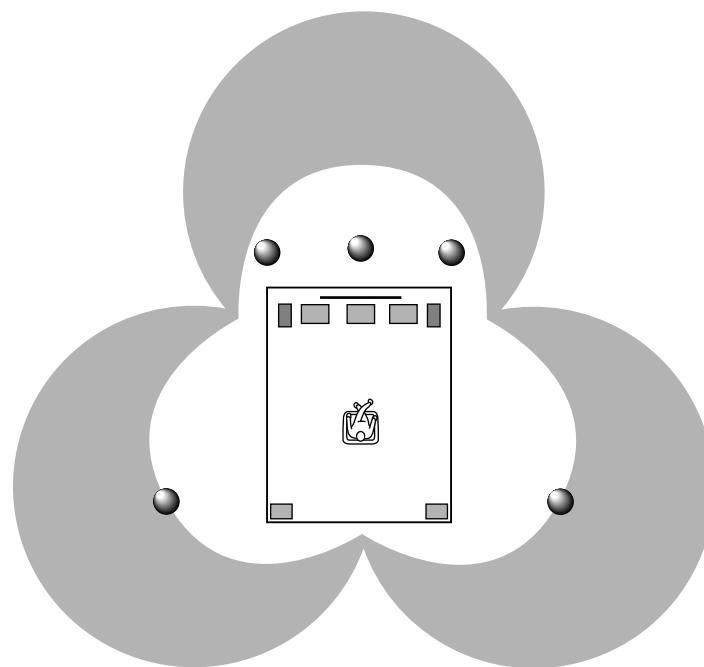
This combination is available on the sound field program “ DIGITAL ENHANCED”.



Dolby Digital (AC-3) + 3 Digital Sound Fields

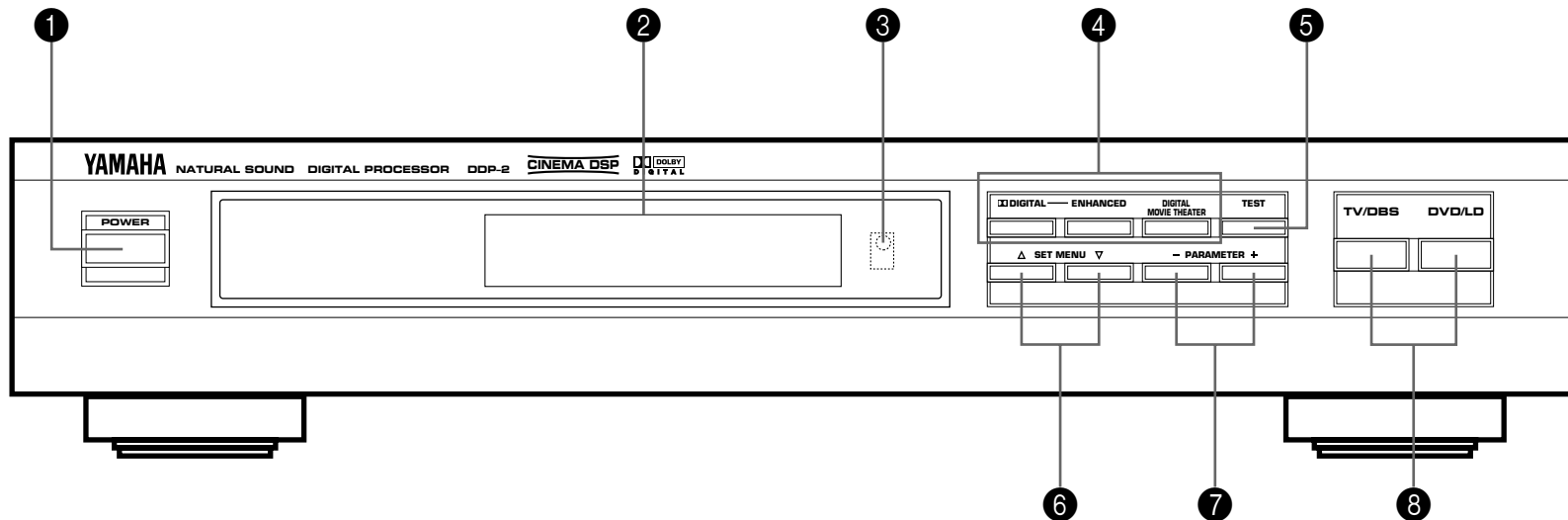
Digital sound fields are created on the presence side and the independent left and right surround sides of the Dolby Digital (AC-3) decoded sound field respectively. They create a wide acoustic environment and much surround effect in the room without losing high channel separation. With wide dynamic range of Dolby Digital (AC-3) sound, this sound field combination lets you feel as if you are watching a movie in the newest Dolby Stereo Digital theater. This will be the most ideal home theater sound at the present time.

This combination is available on the sound field program “DIGITAL MOVIE THEATER”.







CONTROLS & THEIR FUNCTIONS

FRONT PANEL

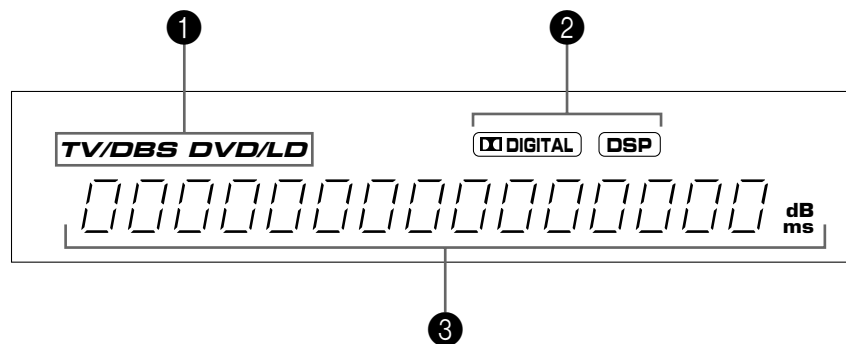




- 1** POWER Switch
Turns this unit on and off.
- 2** Display Panel
See page 7.

- 3** Remote Control Sensor
Receives signals from the remote control unit provided for a Yamaha receiver or amplifier. This sensor receives only signals of switching the input source from TV/DBS to DVD/LD, and vice versa, so only the remote control unit which has the functions of selecting the TV/DBS and DVD/LD input sources is available.

- ④ **Sound Field Program Selector Buttons**
Select the program “ DIGITAL”, “ DIGITAL ENHANCED” or “DIGITAL MOVIE THEATER” by pressing the corresponding button. The name of selected program lights up on the display.
- ⑤ **TEST Switch**
Used when you make the output balance adjustment to maximize the performance of your audio/video system including this unit. (For details, refer to page 17–18.)
- ⑥ **SET MENU  and  Buttons.**
Select functions in the SET MENU mode.
- ⑦ **PARAMETER – and + Buttons**
Make a setting change or an adjustment for the selected function in the SET MENU mode.
These buttons are also used for increasing and decreasing levels in the output balance adjustment using the test tone.
- ⑧ **Input Selector Buttons (TV/DBS, DVD/LD)**
Select the source which you want to listen to.
When the TV/DBS is selected, the source connected to the TV/DBS input jack(s) of this unit is selected, and when the DVD/LD is selected, the source connected to the DVD/LD input jack(s) of this unit is selected.
The currently selected input source is shown on the display panel (as “TV/DBS” or “DVD/LD”).

DISPLAY PANEL



- ① **Input Source Indicators (TV/DBS, DVD/LD)**
Shows the currently selected input source.
- ② ** DIGITAL and DSP Indicators**
“ DIGITAL” lights up when the built-in Dolby Digital (AC-3) Decoder is on, and “DSP” lights up when the built-in digital sound field processor is on. When both the Dolby Digital (AC-3) Decoder and the digital sound field processor are on, both indicators light up.
- ③ **Multi-information Display**
Shows the currently selected program, or information for several adjustments or setting changes made on this unit.

SPEAKER SETUP

Setting Up Your Speaker System

This unit has been designed to provide the best sound field quality with a five-speaker system setup, using one pair of main speakers for main and front effect sound reproduction, one pair of surround speakers for rear effect and surround sounds and one center speaker for dialog. We therefore recommend that you use a five-speaker setup. A four-speaker system excluding a center speaker will still provide impressive ambience and effects, however, and may be a good way to begin with this unit. You can always upgrade to the five-speaker system later.

Use of the Center Dialog Speaker Is Recommended

When playing back a source with the Dolby Digital (AC-3) decoded, dialog etc. are output from the center channel. Therefore, if you want to maximize the performance of your Audio/Video home theater system, it is recommended that you use a center channel speaker.

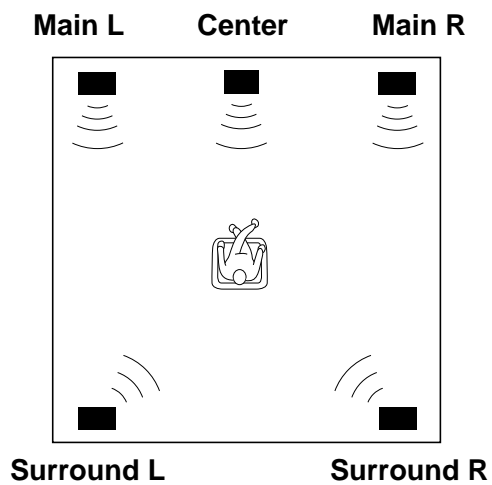
If for some reason it is not practical to use a center speaker, it is possible to enjoy movie viewing without it. Best results, however, are obtained with the full system.

Use of a Subwoofer Expands Your Sound Field

The use of a subwoofer is effective not only for reinforcing bass frequencies from any or all channels, but also for reproducing the LFE (low frequency effect) sound with high fidelity when playing back a source with the Dolby Digital (AC-3) decoded. You may wish to choose the convenience of a Yamaha Active Servo Processing Subwoofer System, which has its own built-in power amplifier.

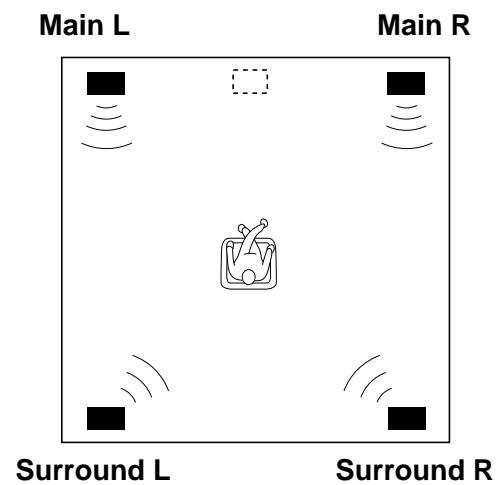
Speaker System Configurations

Five-speaker system



Set the center channel mode (1. CENTER SPEAKER) to the NRML or WIDE position. (See page 14.)

A simple system without a center speaker



Set the center channel mode (1. CENTER SPEAKER) to the PHNTM position. (See page 14.)

Speakers and Speaker Placement

Your five-speaker system will require two speaker pairs: the MAIN SPEAKERS (your normal stereo speakers) and the SURROUND SPEAKERS, plus the CENTER SPEAKER. You may also be using a SUBWOOFER.

The MAIN SPEAKERS should be high performance models and have enough power handling capacity to accept the maximum output of your audio system.

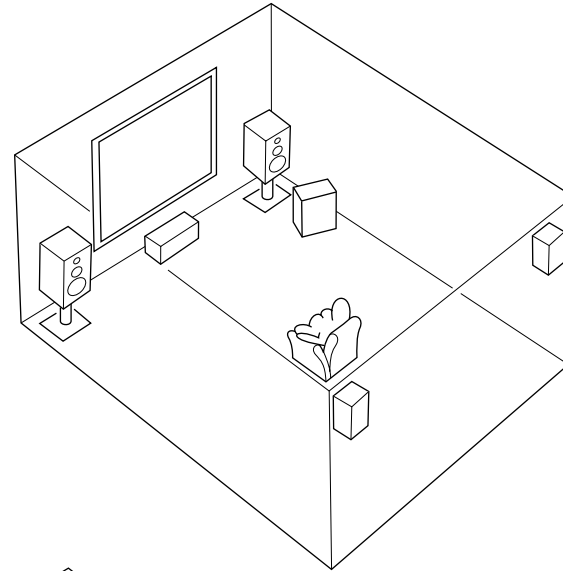
Other speakers do not have to be equal to the MAIN SPEAKERS. For precise sound localization, however, it is ideal to use high performance models that can reproduce sounds in full range for the CENTER SPEAKER and the SURROUND SPEAKERS.

Place the MAIN SPEAKERS in the normal position.

Place the SURROUND SPEAKERS behind your listening position. They should be nearly six feet up from the floor.

Place the CENTER SPEAKER precisely between the two MAIN SPEAKERS. (To avoid interference, keep the speaker above or below the television monitor, or use a magnetically shielded speaker.)

If using a SUBWOOFER, such as a Yamaha Active Servo Subwoofer System, the position of the speaker is not so critical because low bass tones are not highly directional.



Main speaker



Surround speaker



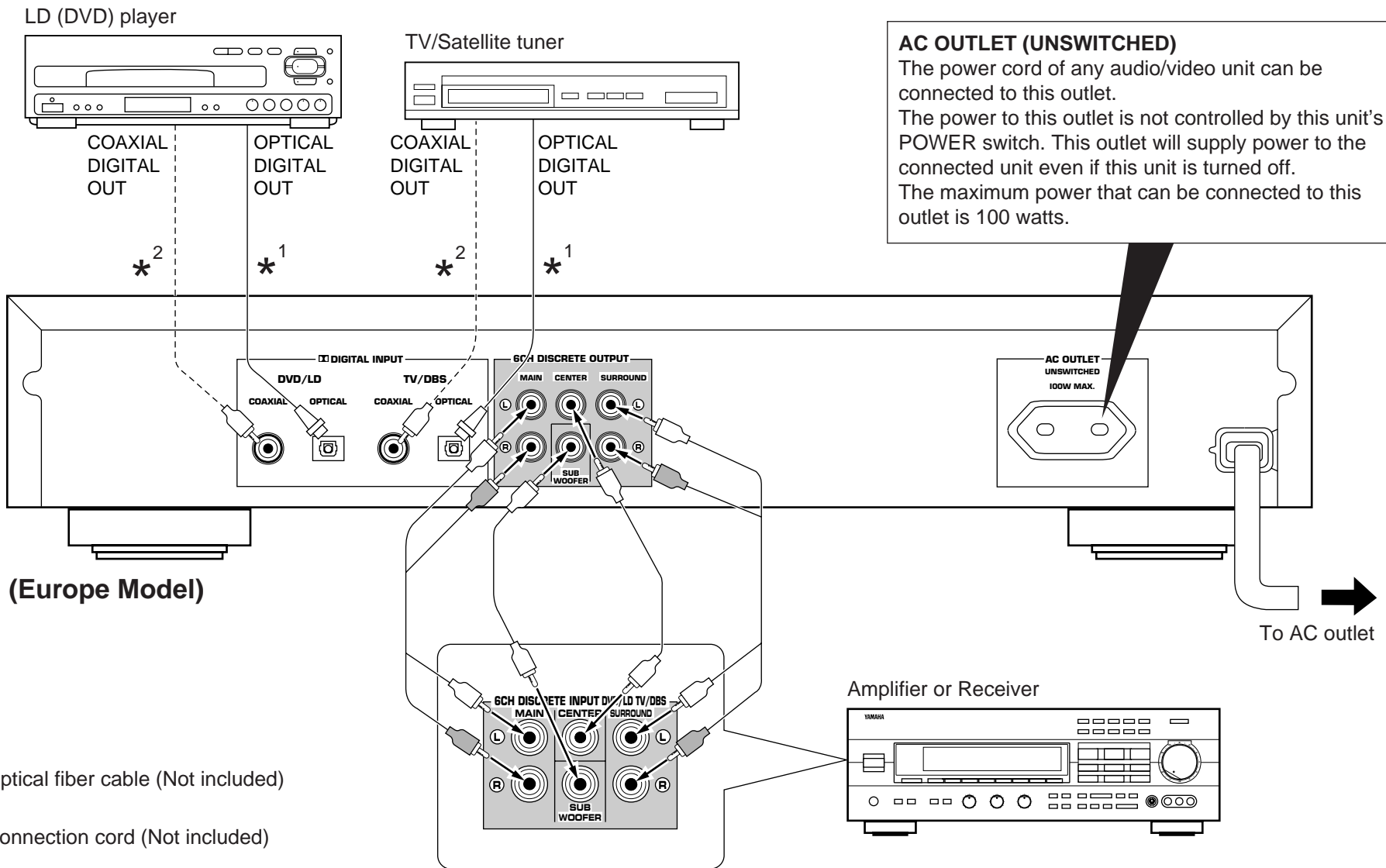
Center speaker



Subwoofer

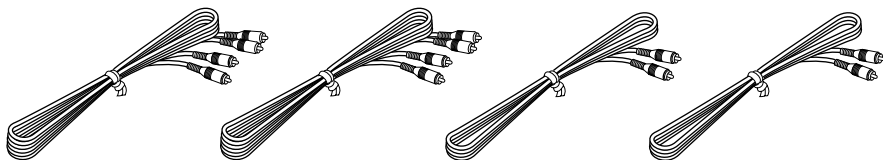
CONNECTIONS

Before you start making connections make sure all related electronic components are turned OFF.
Also, refer to the owner's manual for each component to be connected to this unit.



CONNECTING TO THE AMPLIFIER OR RECEIVER

For connections with the amplifier or receiver, use the included connection cords.



Make sure that you have the left (L) and right (R) channels correctly connected. That means that jacks marked “L” on this unit must be connected to jacks marked “L” on the other unit. Likewise with the “R” jacks. This is easy if you remember to always use the red plug for the “R” jacks and the white plug for the “L” jacks.

Use an amplifier or receiver equipped with discrete audio signal input jacks.

Connect the 6CH DISCRETE OUTPUT jacks of this unit to the discrete audio input jacks of the amplifier or receiver so that each channel output is correctly connected to the corresponding input, that is “MAIN” to “MAIN”, “CENTER” to “CENTER”, “SURROUND” to “SURROUND” and “SUBWOOFER” to “SUBWOOFER”.

If you use an amplifier or receiver (the Yamaha model RX-V2090 etc.) which has only 5-channel discrete input jacks without a SUBWOOFER input jack, no connection can be made from the SUBWOOFER output jack of this unit to the amplifier (or receiver).

In this case, select the MAIN position on the function “4. LFE/BASS OUT”. (See page 15.)

CONNECTING WITH AN LD (DVD) PLAYER, TV/SATELLITE TUNER, ETC.

Connect an LD player, DVD player, TV/Satellite tuner etc. which outputs digital audio signals encoded with the Dolby Digital (AC-3) to this unit. Two audio/video units can be connected to this unit.

Connect an audio/video unit (LD player, DVD player, etc.) to the DVD/LD COAXIAL or OPTICAL digital signal input jack of this unit. In the same way, connect another unit (TV/Satellite tuner, etc.) to the TV/DBS COAXIAL or OPTICAL digital signal input jack of this unit.

To make a connection between optical digital audio signal jacks, remove the cover from each jack, and then connect them by using a commercially available optical fiber cable that conforms to EIAJ standards. Other cables might not function correctly.

Even if you connect an audio/video unit to the OPTICAL (or COAXIAL) jack of this unit, you must keep the unit connected with analog audio signal input jacks of the amplifier (or receiver), because the 6 channel discrete signals cannot be recorded by a tape deck or VCR connected to the amplifier (or receiver).

NOTE: Be sure to attach the covers when the OPTICAL jacks are not being used, in order to protect the jacks from dust.

NOTE: All digital audio signal input jacks are applicable to the sampling frequency of 32 kHz, 44.1 kHz and 48 kHz.

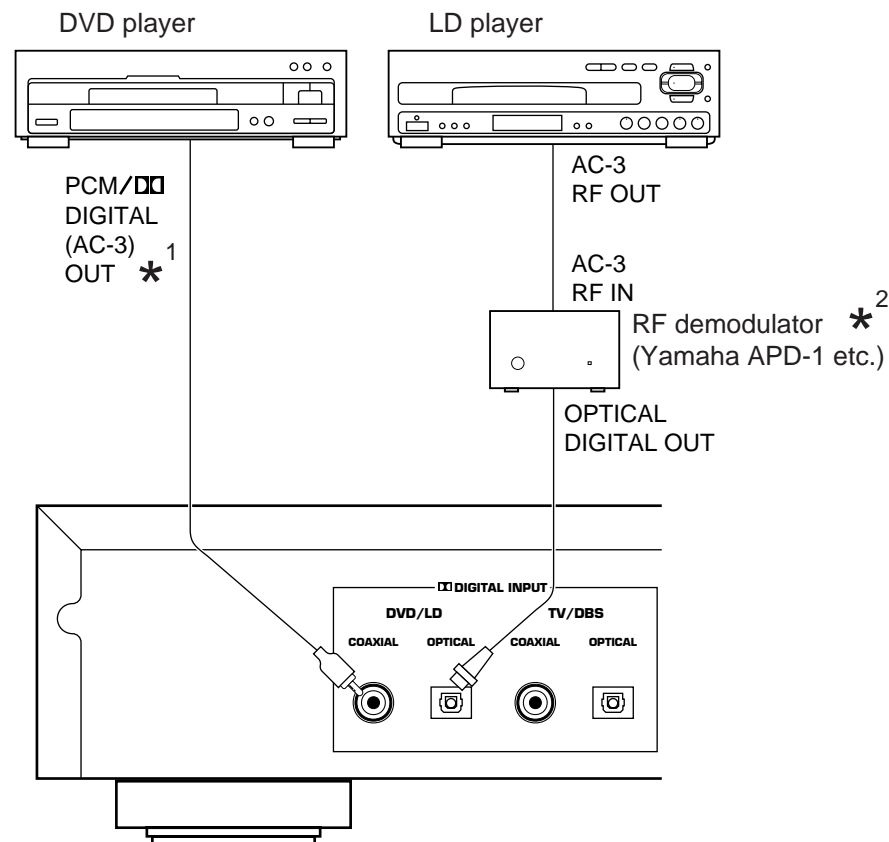
Notes on connecting with an LD player equipped with an AC-3 RF output

If your LD player has AC-3 RF signal output jack and no digital signal output jack for AC-3 discrete audio signals, connect the AC-3 RF signal output jack to this unit's OPTICAL (or COAXIAL) digital signal input jack by using an RF demodulator (separate purchase). First, connect the AC-3 RF signal output jack of the LD player to the AC-3 RF signal input jack of the RF demodulator. Next, connect the optical (or coaxial) digital signal output jack of the RF demodulator to the OPTICAL (or COAXIAL) digital signal input jack of this unit.

This connection is necessary for inputting audio signals encoded with the Dolby Digital (AC-3) on the LD player to this unit.

If you have a DVD player as well, it can be connected to this unit's DVD/LD COAXIAL digital signal input jack. In this case, if you play sources encoded with the Dolby Digital (AC-3) on both LD player and DVD player, the signals from the LD player are input to this unit (because signals input to the OPTICAL jack take priority of signals input to the COAXIAL jack).

It is also necessary to connect the LD player (and/or DVD player) to analog audio signal input jacks of the amplifier or receiver regardless of the AC-3 RF signal connection, for playing back a source with the Dolby Pro Logic Surround decoded or in normal stereo (or monaural).



- *¹: If PCM signals (digital signals not encoded with the Dolby Digital (AC-3)) are input to this unit, they cannot be output from the 6CH DISCRETE OUTPUT jacks of this unit.
- *²: If you want to input the signals from the DVD player to the DVD/LD COAXIAL input jack of this unit surely, it is recommended to switch off the RF demodulator. However, if your RF demodulator is the Yamaha model APD-1, you do not have to switch it off.

SELECTING THE OUTPUT MODES SUITABLE FOR YOUR SPEAKER SYSTEM

This unit provides you the following four functions to determine the method of distributing output signals to speakers suitable for your audio system. When speaker connections are all completed, select a proper position on each function to make the best use of your speaker system.

1. CENTER SPEAKER
2. REAR SPEAKER
3. MAIN SPEAKER
4. LFE/BASS OUT

DESCRIPTION OF EACH FUNCTION

1. CENTER SPEAKER (CNTR SP)

Choices: NRML/WIDE/PHNTM
Preset position: NRML

NRML (Normal):

Select this position when you use a center speaker that is smaller than the main speakers. In this position, low bass signals (below 90 Hz) at the center channel are output from the MAIN output jacks (or the SUBWOOFER output jack if the SMALL position is selected on "3. MAIN SPEAKER" and the SWFR position is selected on "4. LFE/BASS OUT").

WIDE: Select this position when your center speaker is approximately the same size as the main speakers.

PHNTM (Phantom):

Select this position when you do not have a center speaker. The center channel sound will be output from the left and right main speakers.

2. REAR SPEAKER (REAR SP)

Choices: SMALL/LARGE
Preset position: SMALL

SMALL:

Select this position if your rear surround speakers do not have a high ability for bass reproduction. In this position, low bass signals (below 90 Hz) at the rear surround channels are output from the SUBWOOFER output jacks (or the MAIN output jacks if the MAIN position is selected on "4. LFE/BASS OUT").

LARGE:

Select this position if your rear surround speakers have a high ability for bass reproduction, or a subwoofer is connected to the rear surround speaker in parallel. In this position, full range signals are output from the SURROUND output jacks.

3. MAIN SPEAKER (MAIN SP)

Choices: **SMALL/LARGE**

Preset position: **LARGE**

SMALL:

Select this position if your main speakers do not have a high ability for bass reproduction. However, if your system does not include a subwoofer, do not select this position. In this position, low bass signals (below 90 Hz) at the main channels are output from the SUBWOOFER output jack (if the SWFR or BOTH position is selected on “4. LFE/BASS OUT”).

LARGE:

Select this position if your main speakers have a high ability for bass reproduction. In this position, full range signals present at the main channels are output from the MAIN output jacks.

4. LFE/BASS OUT (LFE/BASS)

Choices: **MAIN/SWFR/BOTH**

Preset position: **SWFR**

MAIN: Select this position if your system does not include a subwoofer.

In this position, full range signals present at the main channels, signals from the LFE channel and other low bass signals that are selected on “1. CENTER SPEAKER” to “3. MAIN SPEAKER” to be distributed from other channels are output from the MAIN output jacks.

SWFR/BOTH:

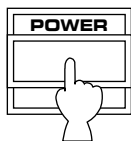
Select either the SWFR or BOTH position if your system includes a subwoofer.

In either position, signals at LFE channel and other low bass signals that are selected on “1. CENTER SPEAKER” to “3. MAIN SPEAKER” to be distributed from other channels are output from the SUBWOOFER output jack. When the LARGE position is selected on “3. MAIN SPEAKER”, in the **SWFR** position, no signal is distributed from the main channels to the SUBWOOFER output jack, however in the **BOTH** position, low bass signals from the main channels are output to both of the MAIN and the SUBWOOFER output jack.

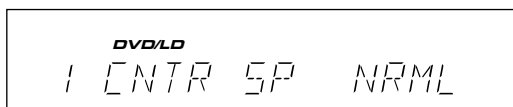
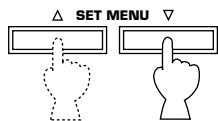
METHOD OF CHANGING SELECTIONS

Operations should be made watching information on this unit's display panel.

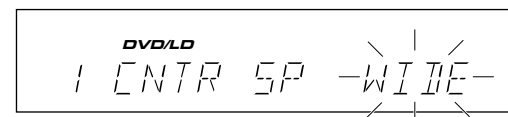
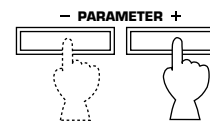
1. Turn the power of this unit on.



2. Press "▽" or "△" once or more until the title of function on which you will change the selection appears on the display.



3. Press "+" or "-" once or more so that the desired position is selected.



4. Repeat step 2 and 3 to change selections on other functions in the same way.

OUTPUT BALANCE ADJUSTMENT

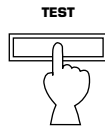
Adjusting the output level balance among all the channels are very important to maximize the performance of your system including this unit. This unit lets you adjust the sound output level balance among the left main, center, right main, right surround and left surround channels using the built-in test tone generator. If your amplifier (or receiver) connected with this unit is equipped with the Dolby Pro Logic Surround Decoder, you should make the output balance adjustment for Dolby Pro Logic on the amplifier (or receiver) connected with this unit, before making the adjustment on this unit. Follow the instructions below.

BEFORE MAKING THE ADJUSTMENT ON THIS UNIT

Be sure to adjust the output level balance among the left main, center, right main and surround channels for Dolby Pro Logic on the amplifier (or receiver) connected to this unit using a test tone generator built into the amplifier. Adjust the balance so that the levels of those channels become almost the same when you hear the test tone at the listening position.

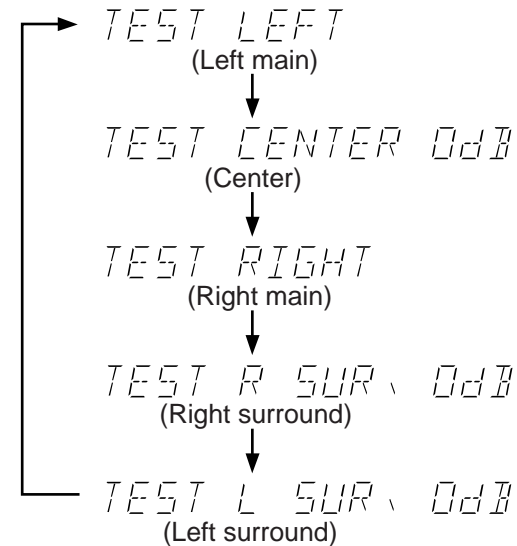
If you have finished adjusting the output balance on the amplifier, then go on to the adjustment on this unit by following the procedure below.

1. Turn down the volume to a minimum level on the amplifier or receiver.
2. Press the TEST switch.



3. Turn up the volume on the amplifier or receiver.

You will hear a test tone (like pink noise) from the left main speaker, then the center speaker, then the right main speaker, then the right surround speaker and then the left surround speaker, for about two seconds each. The display changes as shown below.

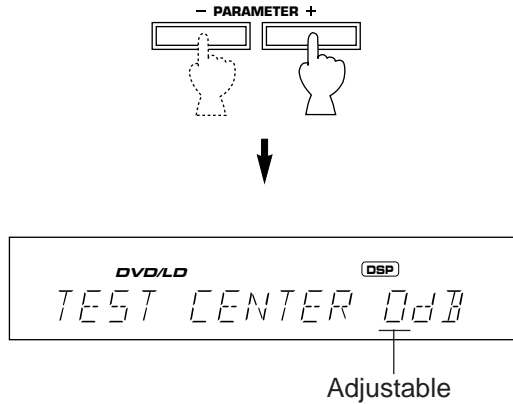


NOTE: If not using a center speaker, be sure to set the function "1. CENTER SPEAKER" in the SET MENU mode to the PHNTM (phantom) position. You will then hear the center channel test tone from the left and right main speakers.

CONTINUED

4. When “TEST CENTER ...dB” is shown on the display, adjust the level of test tone from the center speaker by pressing the PARAMETER + or – button so that it becomes almost as same as that of the main speakers.

* While adjusting, the test-tone is fixed on the selected speaker.



* Pressing “+” increases and “-” decreases the value.
Pressing and holding the button will change the value continuously.

5. In the same way, when “TEST R SUR. ...dB” is shown on the display, adjust the level of test tone from the right surround speaker so that it becomes almost as same as that of the main speakers.

6. In the same way, adjust the level of test tone from the left surround speaker.

7. When adjustments are finished, press the TEST switch once again.

NOTE: Once you have completed these adjustments, use only the master VOLUME control of the amplifier (or receiver) to adjust the whole listening volume. Do not change any other volume setting in the system.

ADJUSTMENTS IN THE “SET MENU” MODE

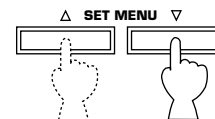
The following nine types of functions maximize the performance of your system and expand your enjoyment for audio listening and video watching.

1. CENTER SPEAKER
2. REAR SPEAKER
3. MAIN SPEAKER
4. LFE/BASS OUT
5. LFE LEVEL
6. CENTER DELAY
7. SURROUND DELAY
8. DYNAMIC RANGE
9. OUTPUT TRIM

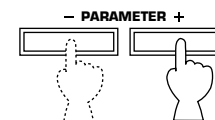
METHOD OF SETTING CHANGE AND ADJUSTMENT

Operations should be made watching information on this unit's display panel.

1. Select the function (title) on which you will make a change.



2. Select any desired position or edit parameters on the function.



In the same way, make a setting change or adjustment on any other function.

DESCRIPTIONS OF THE FUNCTIONS

- | | |
|--------------------------|------------------------|
| 1. CENTER SPEAKER | 3. MAIN SPEAKER |
| 2. REAR SPEAKER | 4. LFE/BASS OUT |

See pages 14 to 16 for details. (Once you have selected proper modes, you do not have to make a setting change until any alteration is made in your speaker system.)

5. LFE LEVEL (Adjusting the output level at the LFE (low frequency effect) channel)

Control range: -20 dB to 0 dB (in 1 dB step)
Preset value: 0 dB

Adjusts the output level at the LFE (low frequency effect) channel. If the LFE signals are mixed with signals at other channels to output them from the same speakers, the ratio of LFE signal level to the level of other signals are adjusted. (See page 3 for details about the LFE channel.)

6. CENTER DELAY (Adjusting the delay of center sounds (dialog etc.))

Control range: 0 ms to 5 ms (in 1 ms step)
Preset value: 0 ms

Adjusts the delay between the main sounds (at the main channels) and dialog etc. (at the center channel). The larger the value, the later the dialog etc. is generated.

This is for making sounds from the left main, center and right main speakers reach your listening position at the same time by delaying the sound from the center speaker if the distance from the center speaker to your listening position is shorter than the distance from the left or right main speaker to your listening position.

7. SURROUND DELAY (Adjusting the delay of rear surround sounds)

Control range: 0 ms to 15 ms (in 1 ms step)
Preset value: 15 ms

Adjusts the delay between the main sounds (at the main channels) and surround sounds. (at the rear channel). The larger the value, the later the surround sounds is generated.

8. DYNAMIC RANGE (Adjusting dynamic range)

Choices: MAX/STD/MIN

Preset position: MAX

MAX: “Dynamic range” is the difference between the maximum level and the minimum level of sounds. Sounds on a movie originally designed for movie theaters feature very wide dynamic range.

Dolby Digital (AC-3) technology can bring the original sound track into a home audio format with this wide dynamic range unchanged.

In this position, a source encoded with the Dolby Digital (AC-3) is reproduced in the original sound track’s wide dynamic range providing you with powerful sounds like a movie theater.

Selecting this position will be more ideal if you can listen to a source in a high output level in a room specially soundproofed for audio/video enjoyment.

STD (Standard):

Powerful sounds of extremely wide dynamic range are not always suitable for home use. Depending upon the condition of your listening environment, it may not be possible to increase the sound output level as high as a movie theater, however, in a level proper for listening to in your room, the low level parts of source sound cannot be heard as well because they will be lost among noises in your environment.

Dolby Digital (AC-3) technology also makes it possible to reduce an original sound track’s dynamic range for a home audio format by “compressing” the data.

In this position, a source encoded with the Dolby Digital (AC-3) is reproduced in the “compressed” dynamic range of the source suitable for low level listening.

MIN: In this position, dynamic range is more reduced than in the STD position. Selecting this position will be effective when you must listen to a source in extremely low level.

9. OUTPUT TRIM (Adjusting the whole level of signals output from this unit)

Control range: –9 dB to 9 dB (in 1 dB step)

Preset value: 0 dB

Adjusts the whole level of signals output from the 6CH DISCRETE OUTPUT jacks on the rear of this unit.

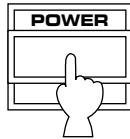
Memory back up

Setting changes and adjustments you made the last time will remain memorized even if the power of this unit is switched off or the power cord is disconnected. However, if the power is not supplied for more than about two weeks, they will be automatically changed back to the original settings.

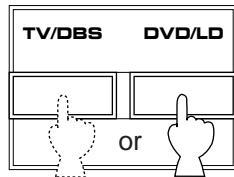
OPERATIONS

To enjoy listening to a source with the Dolby Digital (AC-3) decoded

1. Turn down the volume to a minimum level on the amplifier or receiver.
2. Turn on the power of this unit and other audio/video units to be used.

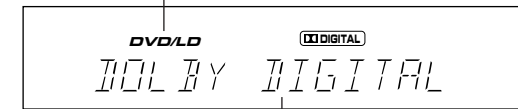


3. On the amplifier or receiver, select the "6-ch. (or 5-ch.) discrete signals" sent from this unit as the input source.
4. Select the input source to play.



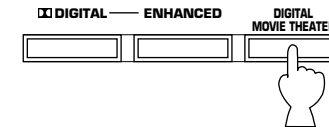
To select the audio/video unit connected to the DVD/LD jack(s) of this unit, press the DVD/LD button.
To select the audio/video unit connected to the TV/DBS jack(s) of this unit, press the TV/DBS button.

The name of selected input source lights up.



The program which was used when the same input source was selected the last time will automatically recalled and its name is shown.



5. If desired, select another program.



* For details about the sound field programs, refer to page 23.

6. Play the source and turn up the volume to a desired listening level gradually on the amplifier or receiver.

SELECTING SOUND FIELD PROGRAMS

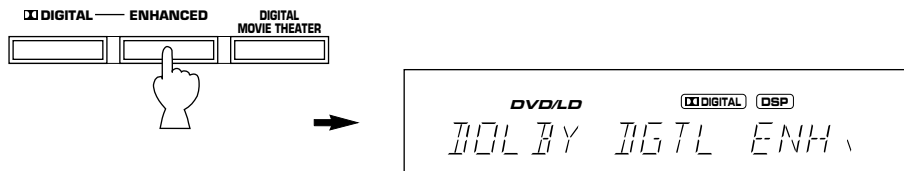
This unit provides you with three sound field programs ( DIGITAL,  DIGITAL ENHANCED and DIGITAL MOVIE THEATER) to enjoy listening to an audio/video source with the Dolby Digital (AC-3) decoded.

To select a program, simply press a sound field program selector button for the desired program. The name of selected program appears on the display panel.

To select DIGITAL:



To select DIGITAL ENHANCED:



To select DIGITAL MOVIE THEATER:



* The following indicators on the display panel show you what sound processing is being made.

Lights up when the Dolby Digital (AC-3) is being decoded



Lights up when the Digital Sound Field Processing is being made

NOTES

- When the power of this unit turns on or when the input source is changed to the other, the program which was used when the currently selected input source was selected the last time will automatically recalled.
- When no signal is input or signals not encoded with the Dolby Digital (AC-3) are input to this unit, "NO DOLBY DGTL" appears on the display panel, and no signal is output from the 6CH DISCRETE OUTPUT jacks of this unit.
- When the input signals encoded with the Dolby Digital (AC-3) are in 2-channels only, "DOLBY DGTL 2ch" appears on the display panel, and the signals are output from this unit without the Digital Sound Field Processing.
- Make sure that the source you will play is encoded with Dolby Digital (AC-3). Dolby Digital (AC-3) will not be decoded if the source is not encoded with Dolby Digital (AC-3).

DESCRIPTIONS OF THE SOUND FIELD PROGRAMS

DIGITAL ()

The built-in Dolby Digital (AC-3) decoder precisely reproduces sounds and sound effects of a source encoded with the Dolby Digital (AC-3). The realization of a highly efficient decoding process improves crosstalk and channel separation and makes sound positioning smoother and more precise.

DIGITAL MOVIE THEATER ()

This program is ideal for precisely reproducing the sound design of the newest Dolby Digital multi-track films. The sound field is made to be similar to that of the newest movie theaters, so the reverberations of the sound field itself are restrained as much as possible. The three dimensional feeling of the sound field is emphasized, and dialog is precisely oriented on the screen. You can enjoy watching Sci-Fi, adventure movies, etc. with much presence.

DIGITAL ENHANCED ()

This program ideally simulates the multi-surround speaker systems of the Dolby Stereo Digital theater. The Dolby Digital (AC-3) decoding and the digital sound field processing is precisely performed without altering the originally designed sound orientation. The surround effects produced by this sound field folds the viewer naturally from the rear to the left and right and toward the screen.

NOTES

- The Dolby Digital (AC-3) Decoder is designed to be used with program material (mainly movie soundtracks) encoded with the Dolby Digital (AC-3).
- The consequence of signal processing depends on the mode of Dolby Digital (AC-3) encoded on the signals of source. For example, if the input signals of source encoded with the Dolby Digital (AC-3) are in 2-channels only, the decoded signals are output from this unit in 2-channels, no matter what program is selected.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	WHAT TO DO
Power does not come on.	AC cord not properly plugged in.	Carefully plug AC plug into outlet.
Hum.	Bad cable connection.	Firmly plug in all connection cables.
No sound.	Bad or incorrect input or output connections. Incorrect input source selection. Improper input mode selection on the amplifier	Check connections. Select the input selector button for the source to be played. Select the "6 channel discrete signals" sent from this unit as the input source.
	The signals input to this unit are not encoded with the Dolby Digital (AC-3).	Refer to the instructions for the audio/video unit sending signals to this unit or the source played on the unit.
No sound from the center speaker.	The setting of CENTER SPEAKERS is in "PHNTM". The input signals of source encoded with the Dolby Digital (AC-3) do not have center channel signals.	Select the NRML or WIDE position. Refer to the instructions for the source currently played.
Poor bass reproduction.	The setting of LFE/BASS OUT is in the SWFR or BOTH position, though your system does not include a subwoofer. Output mode selection for each channel (MAIN, CENTER or REAR SPEAKER) is improper.	Select the MAIN position. Make output mode selections suitable for your speaker system.
Sound output level to the center speaker is lower than other speakers.	Sound output level to the center speaker is decreased.	Increase the level.
Sound output level to either or both of the rear surround speakers is lower than other speakers.	Sound output level to either or both of the rear surround speakers is decreased.	Increase the level.
No output of LFE sound.	The output level of LFE (LFE LEVEL) is low.	Increase the level.
Whole sound level is low, even though the volume is increased on the amplifier.	Output level (OUTPUT TRIM) adjustment on this unit is low.	Increase the level.
The difference of sound level between a high level part and a low level part is too great.	The setting of the DYNAMIC RANGE is at the MAX position.	Select the STD position.
Noise from nearby TV or tuner.	This unit is too close to the affected equipment.	Move the unit further away from the affected equipment.

SPECIFICATIONS

Output Level/Impedance

MAIN L/R, CENTER, SURROUND L/R 1 kHz, 0 dB INPUT	2V/1.2 k Ω
SUBWOOFER 50 Hz, 0 dB INPUT	6V/1.2 k Ω

Input Impedance

COAXIAL.....	75 Ω
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Frequency Response (20 Hz – 20 kHz)

MAIN L/R, CENTER, SURROUND L/R (LARGE)	0 \pm 1 dB
--	--------------

Total Harmonic Distortion

MAIN L/R, CENTER, SURROUND L/R (1 kHz).....	0.01% or less
SUBWOOFER (50 Hz).....	0.01% or less

Signal-to-Noise Ratio (IHF-A)

MAIN L/R.....	105 dB or more
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Filter Characteristics

MAIN L/R, CENTER, SURROUND L/R (SMALL)	
H.P.F.	fc=90 Hz, 12 dB/oct.
SUBWOOFER	
L.P.F.	fc=90 Hz, 24 dB/oct.

Power Supply

U.S.A. and Canada models	AC 120V/60 Hz
Europe and U.K. models	AC 230V/50 Hz
Australia model	AC 240V/50 Hz
General model	AC 110/120/220/240V 60/50 Hz

Power Consumption 25W

AC Outlet

1 UNSWITCHED OUTLET	100W max.
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Dimensions (W x H x D) 435 x 86 x 273 mm
(17-1/8" x 3-3/8" x 10-3/4")

Weight 4.0 kg (8 lbs. 13 oz.)

Accessories Connection cord (2-pins) x 2
Connection cord (1-pin) x 2

* Specifications are subject to change without notice.

YAMAHA

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VY74270 Printed in Malaysia