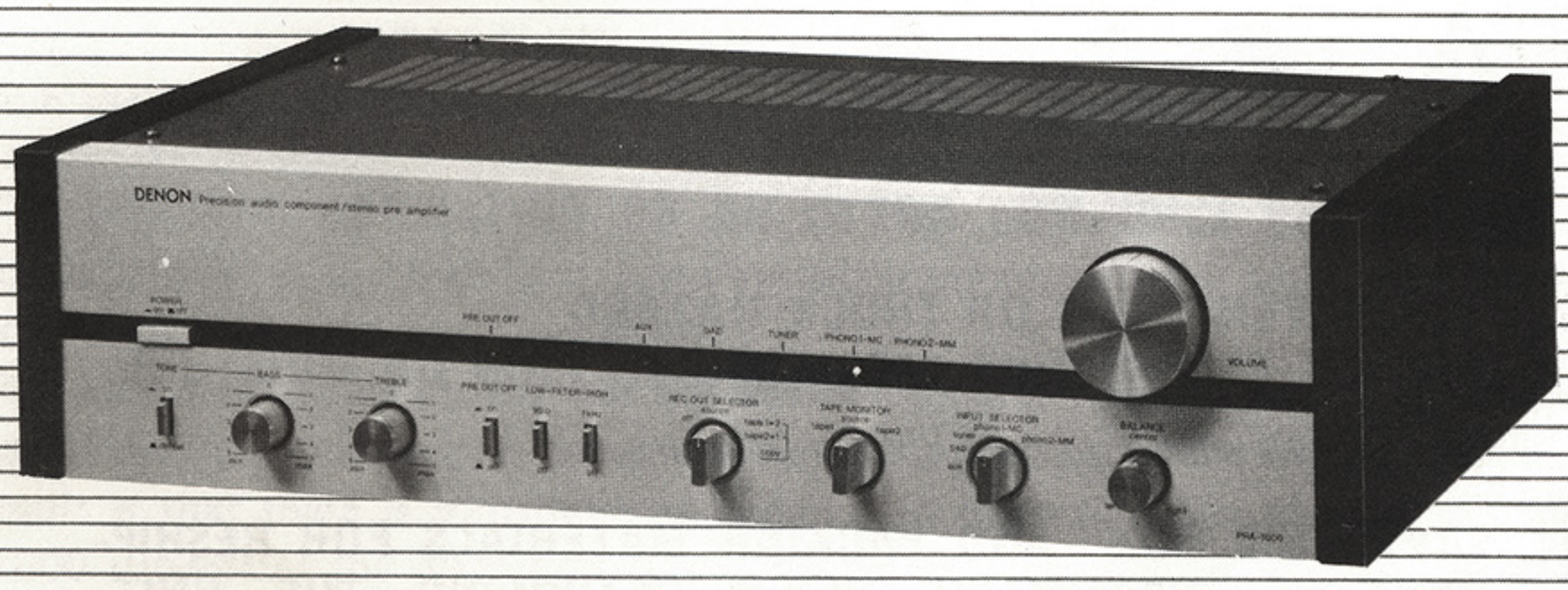
DENON

STEREO PRE-AMPLIFIER

PRA-1000

OPERATING INSTRUCTIONS
MODE D'EMPLOI
BEDIENUNGSANLEITUNG



FOR ENGLISH READERS — PAGE 1 ~ 17
POUR LES LECTEURS FRANCAIS — PAGE 18 ~ 34
FÜR DEUTSCHE LESER — SEITE 34 ~ 51

Your DENON PRA-1000 Stereo Pre-amplifier is a high-performance, high-quality unit. In order to obtain optimum performance and ensure a long service life, please read these instructions thoroughly and carefully. Retain these instructions for future reference.

MAKE SURE THAT THE FOLLOWING ARE INCLUDED IN YOUR PRA-1000 PACKAGE.

1	Operation manual	1 pc.
2	PIN cord	1 pc.
3	Written guarantee	1 copy

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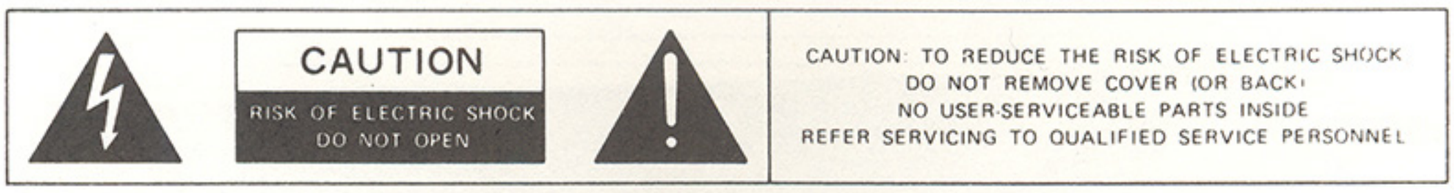


WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION: SAVE THIS BOX AND PACKING MATERIALS FOR RESHIPMENT IF NECESSARY, WHEN RETURNING THE UNIT, PLEASE PACK UNIT AS PACKING INSTRUCTIONS TO AVOID COSTLY SHIPPING DAMAGE. FOR YOUR OWN PROTECTION PLEASE PACK CAREFULLY AS SHIPPING DAMAGES ARE NOT COVERED BY WARRANTY.

"SERIAL NO. _____

PLEASE RECORD UNIT SERIAL NUMBER ATTACHED TO THE REAR OF THE CABINET FOR FUTURE REFERENCE"

FEATURES

DENON has applied their advanced real-time audio technology to the pursuit of ultra-highfidelity component amplifiers that are becoming the standard of the digital age of the 1980's.
DENON's achievements in this pursuit of quality sound reproduction are embodied in the outstanding real-time musical finess of our products. Keeping with our tradition of high-quality components we are proud to present our PRA-1000.
The PRA-1000 is a high-class preamplifier developed by DENON's advanced audio technology. The PRA-1000 boasts quality performance with extra-high-fidelity sound reproduction with no deviation from original musicality. PRA-1000 features include:

EXTRA HIGH-FIDELITY SOUND REPRODUCTION WITH A GREATLY REDUCED DISTORTION DUE TO EMPLOYMENT OF FET-INPUT DC SERVO AMPLIFIERS IN ALL AMPLIFICATION STAGES

The low-noise circuit has been designed to amplify audio signals to the proper level in each stage. Further with the entire circuitry carefully selected, the PRA-1000 can assure extra quality sound reproduction.

HIGH-PERFORMANCE EQUALIZER AMPLIFIER EMPLOYING AN ULTRA LOW-NOISE FET WITH 4 PARALLELY ARRANGED DIFFERENTIAL AMPLIFIERS

The equalizer amplifier which maintains a high Gm-rating has the most vital role in sound reproduction from analog discs. The PRA-1000 has an ultra low-noise FET applied to its first stage and also four differential amplifiers parallely arranged. As a result, the equalizer amplifier has a greatly enhanced SN ratio. This equalizer amplifier is designed to operate with a current mirror circuit, the load of which is applied to the first stage of the equalizer amplifier. Further because of the cascode boot strap circuit additionally installed to compensate for the rise of impedance in the signal source, the equalizer amplification circuit can match most cartridges available on the market.

BUFFER AMPLIFIER TO ENSURE PROPER SIGNAL CONNECTION TO THE POWER AMPLIFIER

To accurately feed audio signals to the power amplifier which is a load to the output side of the preamplifier, a high-performance, non-feedback type buffer amplifier is used. This buffer amplification circuit is a full complimentary FET input non-feedback setup with a totally symmetrical cascode boot strap.
With the aid of this non-feedback type buffer amplifier, the PRA-1000 can provide stable, optimum performance, no matter what the load conditions are.
To prevent drifting, a newly developed servo circuit has been incorporated. Thus, the power amplifier is free from the ill-effects of the DC offset.

FLAT AMPLIFIER CONSISTING OF AN ULTRA LOW-NOISE FET DIFFERENTIAL AMPLIFIER

The flat amplifier in the high-level input system is composed of a high-speed operation amplifier and an ultra low-noise FET differential amplifier.
The flat amplifier circuit usually has the volume control element on the input side; therefore, the impedance of the signal source goes up depending on the position of the volume control.
The result is that there is sometimes an increase in distortion. To remedy this the flat amplifier, the PRA-1000 suppresses the distortion factor thanks to a cascode boot strap circuit additionally installed.
The feedback circuit with tone control elements incorporated makes a simplified tone control circuit.

EXPANDED INPUT SYSTEMS

The PRA-1000 has an expanded input system as detailed below:

- 3 high-level input systems including the terminals for exclusive use with the DAD. This new type of audio equipment is expected to gain a major lead over other conventional audio systems in the future.
- Phono input system of a simplified signal circuit having exclusive input terminals for the MC type (PHONO-1) and MM type (PHONO-2) cartridges.
- 2 tape input systems for convenient tape copying. All input terminals are gold-plated.

A SIMPLIFIED BUT MODERN FUNCTIONAL CASING DESIGN

The PRA-1000 model comes in a beautifully finished, simple but modern casing expected to appeal to audio philes.

PRIOR TO USE

Note the following before use.

FOR SAFE MOVING OF THE PRE-AMPLIFIER SET

Be sure to disconnect the power plug from the pre-amplifier, as well as the connection cords from other audio components before moving the pre-amplifier. Otherwise, the power and connection cords may break or cause shorting.

BEFORE TURNING ON THE POWER SWITCH

Make sure that all connections have been made properly, and that there is no abnormality in the connecting cords. Be sure to turn off the power switch before connecting or disconnecting any connection cord.

STACK NOTHING ON TOP OF THE PRE-AMPLIFIER

The top plate of the pre-amplifier casing is provided with air vents for thermal radition. If a tuner or the power amplifier is stacked over the pre-amplifier set, the internal temperature of the pre-amplifier casing will rise abnormally. This can damage the pre-amplifier. Keep the PRA-1000 more than 10 cm away from the power amplifier to assure normal operation with optimal SN ratio.

KEEP THE OPERATION MANUAL FOR FUTURE REFERENCE

Be sure to keep this operation manual for future reference.

PRECAUTIONS

For the conveniece of description, some of the illustrations herein are sometimes different from those of this model.

BE CAREFUL WITH HEAT

Avoid installing your pre-amplifier in a location where it will be exposed to direct sunlight for long hours or near a stove or other heating equipment.
For normal heat radiation, keep the set more than 10 cm away from the wall.

DUST AND DAMP ARE HARMFUL

Should the pre-amplifier be installed in a location subject to dampness or dust, the unit may develop problems. Do not place water or liquid containers on or near the unit. Accidental liquids or objects getting inside the pre-amplifier casing will cause problems. If this should happen, contact your DENON dealer immediately.

HANDLE THE POWER CORD WITH CARE

Be sure to handle the power cord with care so that it will not be damaged. If the power cord is damaged, consult you DENON dealer immediately.
When disconnecting the power cord, do not pull it by holding the cord; hold the plug firmly and pull it out.

WHEN THE POWER AMPLIFIER IS NOT USED FOR A LONG TIME

When not using the PRA-1000 for an extended time be sure to disconnect the power cord from the outlet.

KEEPING THE PRE-AMPLIFIER INTERIOR FREE FROM FOREIGN SUBSTANCES

Should a needle, hair pin or coin set inside the set, there may be the trouble of electric shock and others.

INSECTICIDES AND CHEMICAL CLEANERS WILL CAUSE CORROSION OF THE CASING

If the pre-amplifier casing is stained with insecticide, benzine or thinner, the paint coat will be discolored and the metal casing will corrode, and deform. To clean the casing exterior, use a piece of soft cloth but avoid using a chemical-soaked dustcloth.

DO NOT OPEN THE CASING

The casing contains no user serviceable parts. High voltage is present inside the casing. If your PRA-1000 has any problem, disconnect the power cord and contact your DENON dealer immediately.

KEEP THE AIR VENTS OF THE PRE-AMPLIFIER CASING CLEAR

When a cassette case or the like is placed on the casing, the air vents fail to function, and the internal temperature will rise, sometimes causing problems in the pre-amplifier.

CONNECTIONS

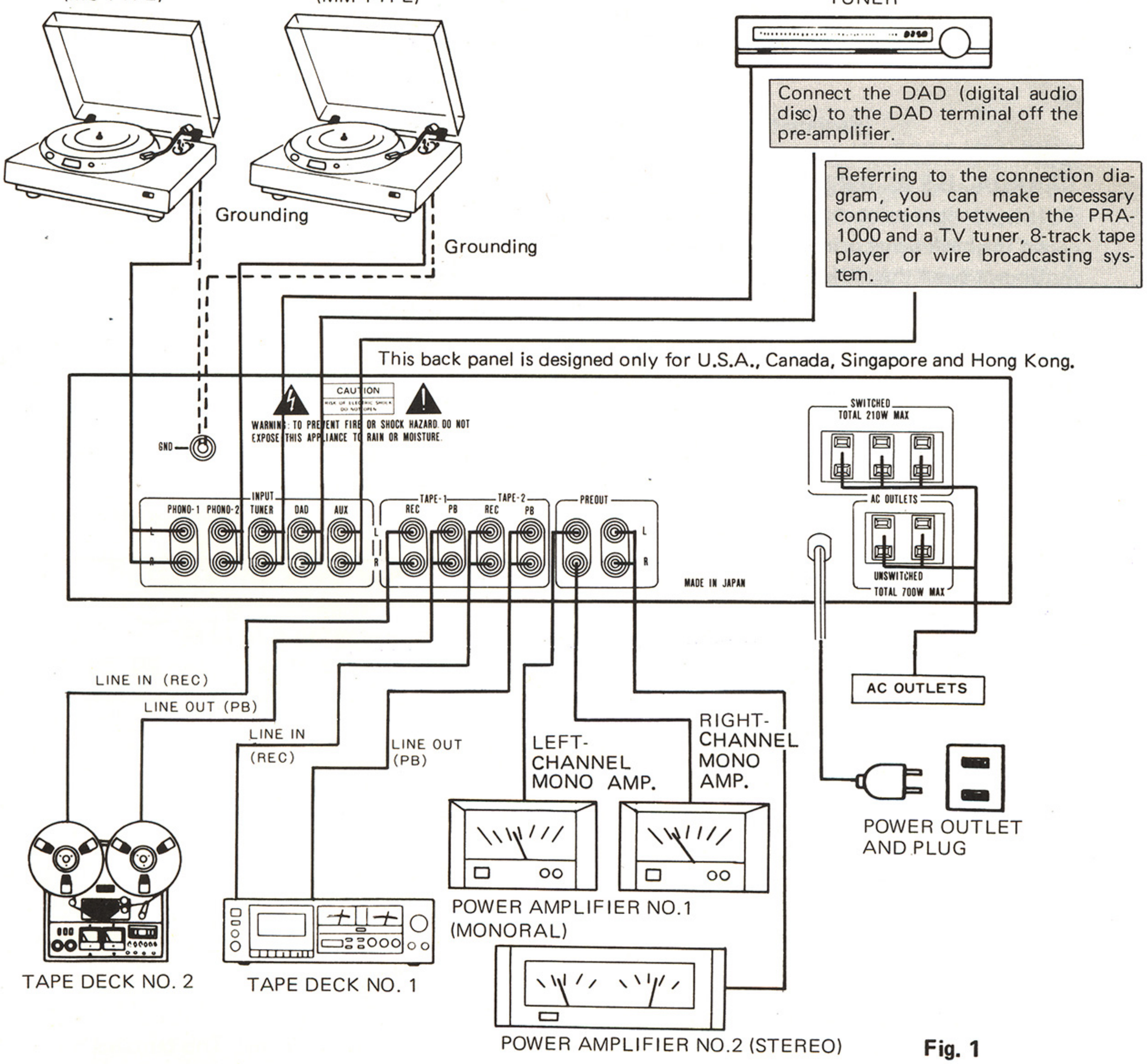


Fig. 1

PRECAUTIONS ON CONNECTION

- Do not connect the power cord to the outlet until all necessary connections are completed.
- For the convenience of easy identification and proper connections, the left and right speaker plugs are marked L and R, and the same with the speaker plug connectors assigned respectively for the left and right channels. Simply referring to these marks, you can make proper connection between each speaker plug marked L or R and its corresponding plug connector.
- Every plug must be inserted firmly into its jack; an incomplete connection will often be the cause of noise.

- Do not connect any other electrical device to the AC outlets of the PRA-1000; these outlets are provided only for audio equipment.
- Avoid bundling the power cord together with the pin plugs, and also keep the power cord away from the power transformer. Otherwise, humming or other noise will occur.

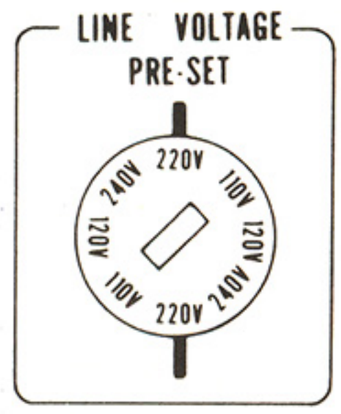
AC OUTLETS

The AC outlets are to supply power to other audio equipment such as a tuner, record player, tape deck, and others which are connected to the PRA-1000 pre-amplifier.

- AC outlets marked SWITCHED (total capacity 210 W):
  The power supply from each outlet is turned on and off with the PRA-1000's power switch.
- AC outlets marked UNSWITCHED (total capacity 700 W):
  The power supply at each of these outlets is always on, regardless of operation of the power switch. Therefore, you can connect the power cord of the DENON power amplifier, POA-1500, for example to each outlet.

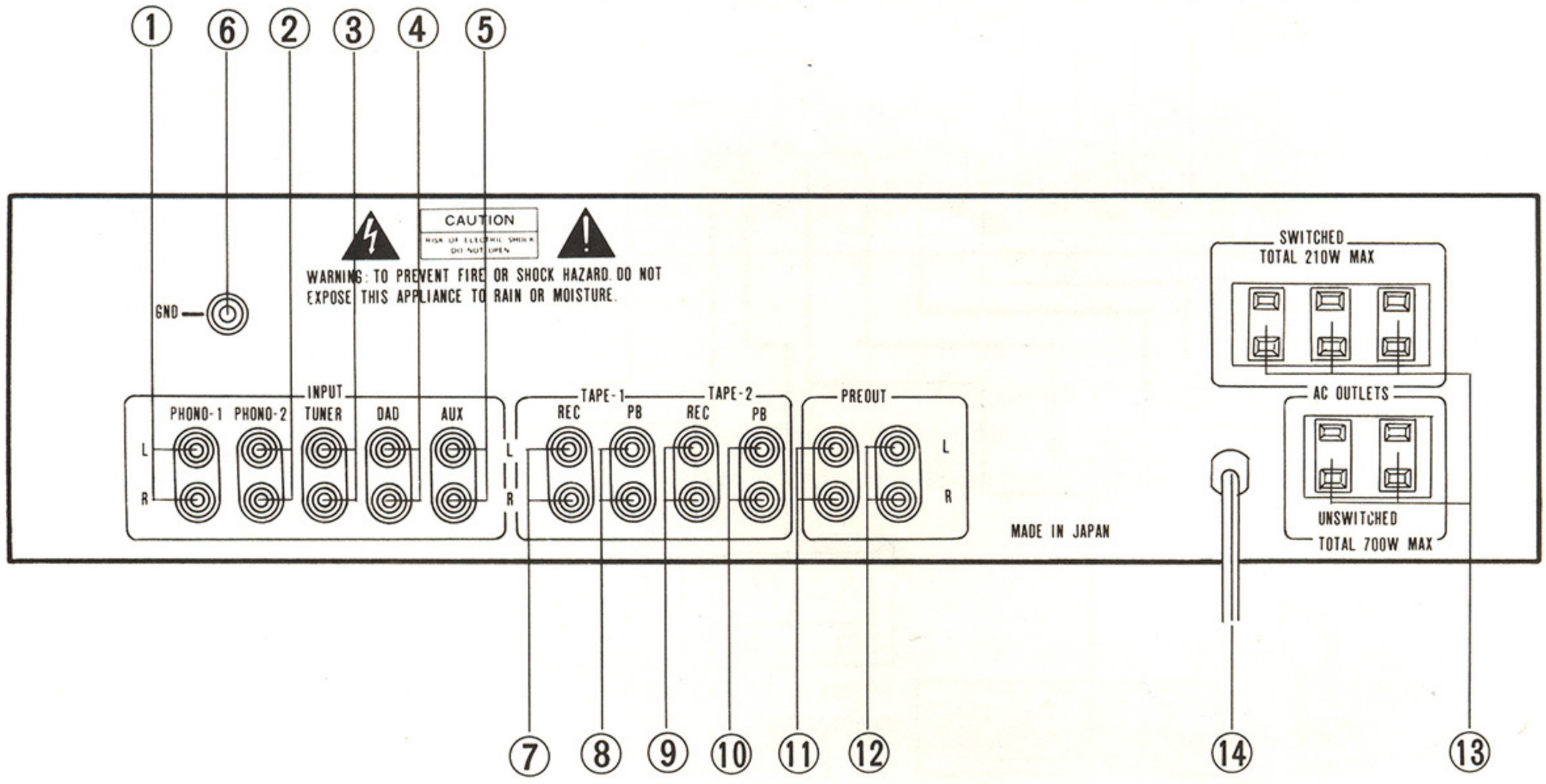
LINE VOLTAGE (Voltage changeover switch) (NOT INCLUDED IN SYSTEMS FOR EUROPE OR CANADA, U.S.A. USE)

* It is possible to change the voltage by turning the VOLTAGE SELECTOR on the back panel using a screw driver.
* Do not twist the VOLTAGE SELECTOR with abnormal force.
* If the voltage switch is not easy, contact your local DENON dealer.



PRA-1000 Back Panel

BACK PANEL VIEW



① PHONO-1 (For MC Type)

Connect the cord of a turntable using an MC type cartridge to this terminal. This terminal is rated for an input level of 100 μV. This terminal is to be used exclusively for turntable with low output voltage when using an MC type cartridge. DENON's DL-305, DL-103 or DL-1000 cartridges will have their output levels amplified sufficiently.

② PHONO-2 (For MM Type)

Connect the cord of a turntable using an MM type cartridge. This terminal is rated for an input level of 2.5 mV. To use this terminal otherwise, connect the boosting transformer (DENON AU-340) or the head transformer (HA-1000, HA-500, etc.) to the terminal.

③ TUNER (tuner input terminal)

Connect the output cord from the tuner to this terminal.

④ DAD (digital audio disc input terminal)

This terminal is used to connect DAD equipment having a wide dynamic range.

⑤ AUX (auxiliary input terminal)

This auxiliary input terminal is normally used for connection of a spare tuner or tape deck.

⑥ GND (grounding terminal)

Connect the grounding cable of the connected turntable. Humming or noise may occur if grounding is improper.
If hum or other noise is evident even with proper ground connection, try removing the grounding cable.

⑦, ⑧, ⑨, ⑩ TAPE-1 AND TAPE-2 (tape recording and playback terminals)

For tape recording and playback, connect the tape deck to these terminals. Connect the playback cord of the tape deck to the PB terminal, and the recording cord of the tape deck to the REC terminal. With the REC OUT selector switch on the front panel set to SOURCE, it is possible to record from a selected program source. REC-1 and REC-2 are parallelly arranged output terminals. When the REC OUT selector is set to OFF, no audio signal is fed to the REC terminal. Recording is not possible at this time. The output rating of the each REC terminal is 150 mV, and the impedance thereof is 250 ohm. For tape copying, set the REC OUT selector switch to either copy tape-1 ▶ 2 or tape-2 ▶ 1.

⑪, ⑫ PRE OUT (pre-amplifier output terminals)

These are the two pre-amplifier output terminals. Using a connection cord, the input terminal of the power amplifier is coupled to either of these pre-amplifier output terminals. The output rating of each terminal is 1.0 V.

⑬ AC OUTLETS (AC power supply outlets) (NOT INCLUDED IN SYSTEMS FOR EUROPEAN USE)

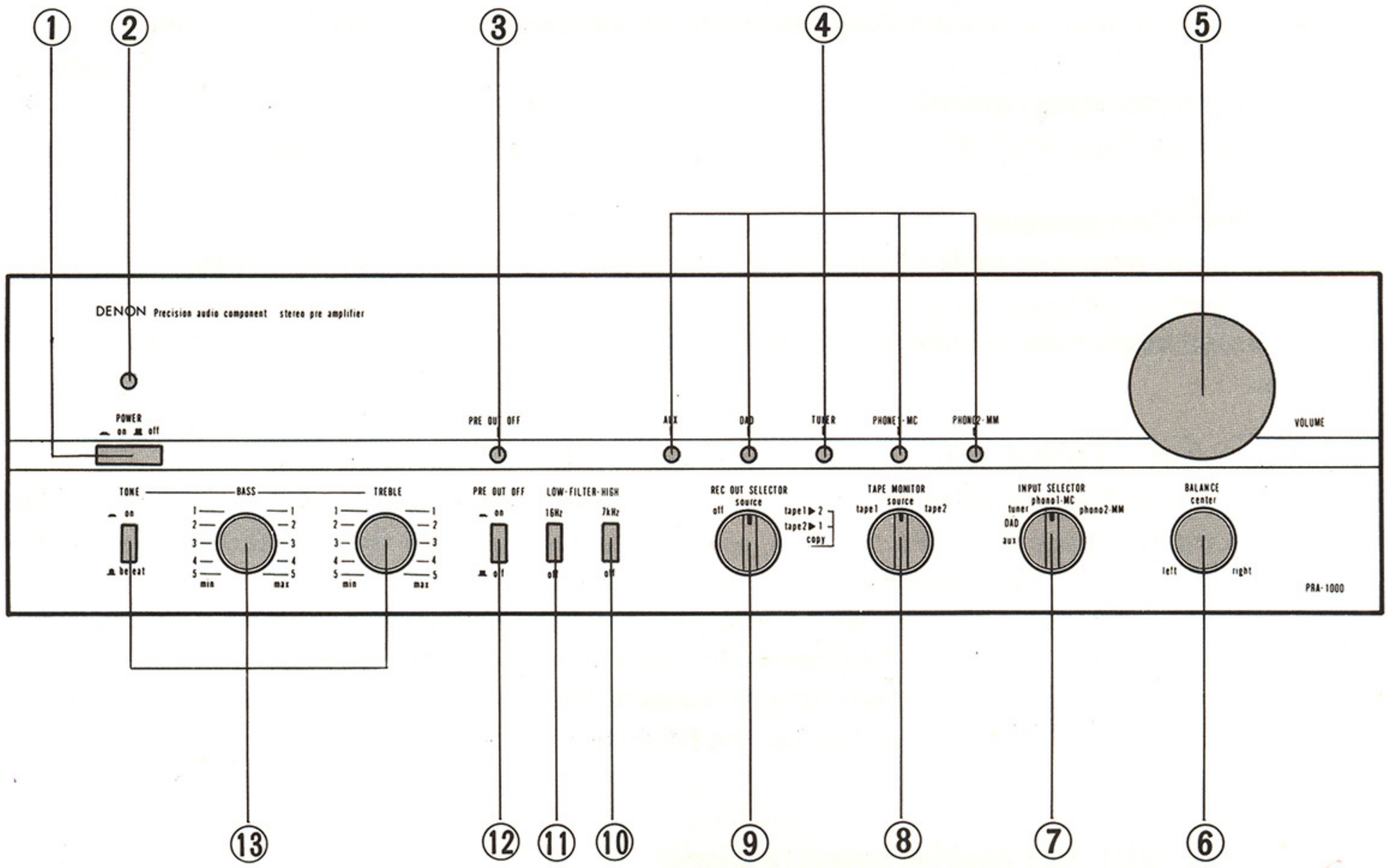
There are a total of 5 AC outlets; three of which are marked SWITCHED, and the remaining two are UNSWITCHED. The total power supply capacity of the switched outlets is 210 W and that of the unswitched is 700 W.

⑭ POWER CORD

Insert the plug of the power cord to the power outlet.

DESCRIPTION OF EACH SECTION AND FUNCTION

FRONT PANEL VIEW



(1) POWER (power switch)

When the POWER button is pressed, the power indicator lamp lights, indicating that the PRA-1000 is ON.

(2) POWER INDICATOR LAMP (power supply pilot lamp)

When the POWER switch is turned on, the power indicator LED lights, indicating that the pre-amplifier is now on.

(3) PRE-OUT OFF PILOT LAMP

Pressing the PRE OUT OFF switch lights the PRE OUT OFF pilot LED. At this time, audio signals at the PRE OUT terminal are cut off, and the pre-amplifier output is muted.
When this switch (12) is pressed again, pre-amplifier is normalized with the light emitting diode going out.

(4) INPUT SELECTOR PILOT LAMP (input select pilot lamp)

When the INPUT SELECTOR pilot LED turns on, it indicates the position of the INPUT SELECTOR switch.

(5) VOLUME (volume control)

This is a high-performance, ganged volume control; ganging error is within ±1 dB over a range of 0 to –57 dB or within ±2 dB over a range of –57 to 70 dB.
When this control knob is turned clockwise (↷), the sound volume increases. Turning the knob counterclockwise (↶), the volume goes down.

⑥ BALANCE (left-right volume balancing control)

With this control knob, the sound volume of the left and right channels is adjusted for good balance. When this control knob is centered, the degree levels of amplified audio outputs in the left and right channel are identical.

The BALANCE knob can also be used to check the left and right speakers for the sound volume of a selected program source. In case some difference is sensed between the left and right speakers, balance with this knob.

⑦ INPUT SELECTOR (input selector switch)

This is for selecting sources. The input selector switch is furnished with a muting function; electronic-controlled muting is instantaneouse when a shift is made between PHONO-1 and PHONO-2 or when shifting from tuner to PHONO 1. In this way, shifting can be effected without noise.

- PHONO-1 (MC) — Set the selector switch to this position when using the turntable connected to the PHONO-1 terminal.
- PHONO-2 (MM) — Set to this position when using the turntable connected to the PHONO-2 terminal. To use the PHONO-2 terminal with a turntable having a moving coil (MC) cartridge, install the DENON MC TRANSFORMER AU-340 or the DENON head amplifiers HA-1000 or HA-500.
- TUNER — Set to this position when using the tuner connected to the TUNER terminal.
- DAD — Set to this position when using DAD equipment connected to the DAD terminal.
- AUX — Set to this position to use equipment attached to the AUX terminal.

⑧ TAPE MONITOR (tape monitor switch)

- SOURCE — Set to this position when no playback is effected with the tape deck.
- TAPE-1 — Set the tape monitor switch to this position to playback from the tape deck connected to TAPE-1 "PB" terminal.
- TAPE-2 — This position is used for playback from the tape deck connected to TAPE-2 "PB" terminal.

⑨ REC OUT SELECTOR (REC OUT selector switch)

Use this selector switch for tape copying and stop recording.

- OFF — Both REC-1 and REC-2 terminals are normally set to off.
  Therefore, the pre-amplifier can work normally with the tape deck left connected to either of the REC terminals.
  But when the selector switch is set to OFF, recording is not possible.
  With this switch set to OFF it is possible to have noise free playback from other sources while the tape deck is connected to one of the REC-1 terminals.
- SOURCE — When the REC OUT selector switch is set to this position, the input signals from the source selected by the input selector are fed respectively to REC-1 and REC-2 terminals. Normally, this position is selected for recording.
- COPY TAPE 1 ▶ 2 — Set to this position when copying tapes. With the REC OUT selector switch set to this position, it is possible to copy from an audio equipment connected to TAPE-1 "PB" to the tape deck coupled to TAPE-2 "REC".
- COPY TAPE 2 ▶ 1 — When this position is selected, it is possible to copy from tape deck 2 to tape deck 1.

⑩ HIGH FILTER (high-frequency cutoff filter switch)

The high cutoff frequency is set at 7 kHz. This filter has attenuation characteristics of 6 dB/oct. When this switch is on, normal playback is possible even with a scratched record or another source containing high-frequency noises. This is because scratch noises and high-frequency noises are eliminated by this filter. With the HIGH FILTER switch set to OFF, the filter circuit is by-passed.

⑪ LOW FILTER (low-frequency cutoff filter switch – subsonic filter switch)

This filter provides a low cutoff frequency of 16 Hz. The filter is assured of an attenuation characteristic made available at 6 dB/oct. Since this filter is for subsonic noise, normal playback can be enjoyed without the ultra low-frequency noises from warped records, etc. when set to OFF the filter circuit is by-passed and in connected from the signal circuit.

⑫ PREOUT OFF (preout off switch)

When this switch is pressed, the signals at the output of the pre-amplifier are cut off, the pre-amplifier is then muted and the muting indicator LED lights.
Pressing it again, the LED goes out, and the pre-amplifier returns to normal.

⑬ TONE (tone controls)

The tone control system is made up of the treble control, bass control, and defeat switch.
When pressing this switch, the control of the pre-amplifier operates. Under normal conditions (with this switch left protruding), this switch is held to DEFEAT. Accordingly the switch control gets jumped, with the frequency becoming flat.

- TREBLE — The TREBLE control knob adjusts treble tone.
  When turned to MIN, the frequency response over a high-frequency range declines.
  When the knob is turned to MAX, the frequency response rises ..... 10 kHz ± 8 dB.
- BASS — The BASS control knob adjusts bass tone.
  When turned to MIN, the frequency response over a low-frequency range declines.
  When turned to MAX, the frequency response goes up ..... 100 Hz ± 8 dB.
- DEFEAT — When pressed, the tone control system turns on. Under normal conditions (the button is out), the tone control system is defeated. A flat frequency response is the result.

HOW TO OPERATE (to familiarize yourself with the PRA-1000 before use, thoroughly read Chapter 5 "Description of each section and function")

MAKING READY

1. CONFIRM CONNECTIONS
   - Referring to the connection diagram (Fig. 1) make sure that all connections have been made properly.
   - See that the left and right speakers are connected to their corresponding left and right channel terminals. Also check each speaker connection for polarity (+), (—).
   - Check the left and right pin cords for proper left/right connection.
   - Confirm whether or not every cord is positively connected to its corresponding terminal.
2. CHECKING THE POSITIONS OF INDIVIDUAL CONTROL KNOBS
   - Fully turn the VOLUME control knob counterclockwise.
   - Center the BALANCE control knob.
   - Keep the tone control knobs (BASS and TREBLE) at "0", set each "TONE" switch to defeat.
   - Set the REC OUT selector switch to "SOURCE".
   - Set the TAPE MONITOR switch to the "SOURCE".
   - Set both the HIGH FILTER and LOW FILTER to "OFF" position (out-position).

   Next, turn on the power switch.

RECORD PLAYBACK (See Fig. 4)

Select the input terminal (PHONO-1 and PHONO-2) to which the turntable to be used is connect.
For the turntable mounted with an MC type cartridge, select PHONO-1 terminal, and PHONO-2 terminal for an MM type.

1. Using the input selector, set the input level, as instructed below, for the input terminal which has been selected according to the type of cartridge.
   - In case the cartridge is of a low output type (below 0.5 mV — MC type), select PHONO-1 "MC" but when it is of a high output type (over 2 mV — MM type), set the input selector to PHONO-2 "MM".
2. Start the turntable (see the turntable instruction manual for details).
3. Adjust the sound volume and tone properly by manipulating the volume, tone, and balance control knobs.
   - If a warped record is played, low frequency noises, outside the audible frequency range are emitted, causing each woofer to vibrate excessively. As a result, sound quality suffers. However, with the LOW FILTER button pressed these noises are eliminated, and you can enjoy quality sound even with warped records.
   - The table below gives the input levels and impedance at the PHONO-1 "MC" and PHONO-2 "MM" positions.

	Input level	Input impedance	Regular cartridges
PHONO-1 MC	100 μV	100 ohm	MC
PHONO-2 MM	2.5 mV	50 k ohm	MM

Table 1

PLAYING RECORDS (follow the steps below according to the sequence of numbering)

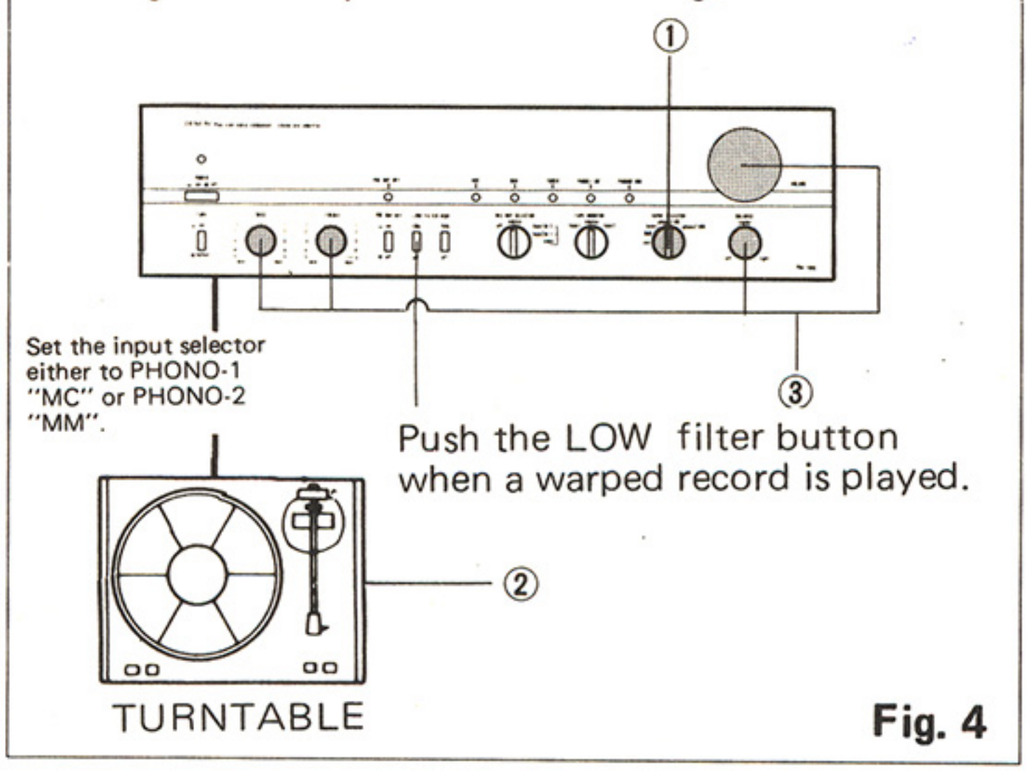


Fig. 4

RADIO RECEPTION (See Fig. 5)

1. Set the selector to the "TUNER" position.
2. Tune to the desired station.
3. Adjust the sound volume and tone by manipulating the volume, tone, and balance control knobs.
   - To enjoy quality radio reception, it is necessary to select suitable antenna and to carefully select the antenna installation location. For details, see the tuner instruction manual.

RADIO RECEPTION (follow the steps below according to the sequence of numbering)

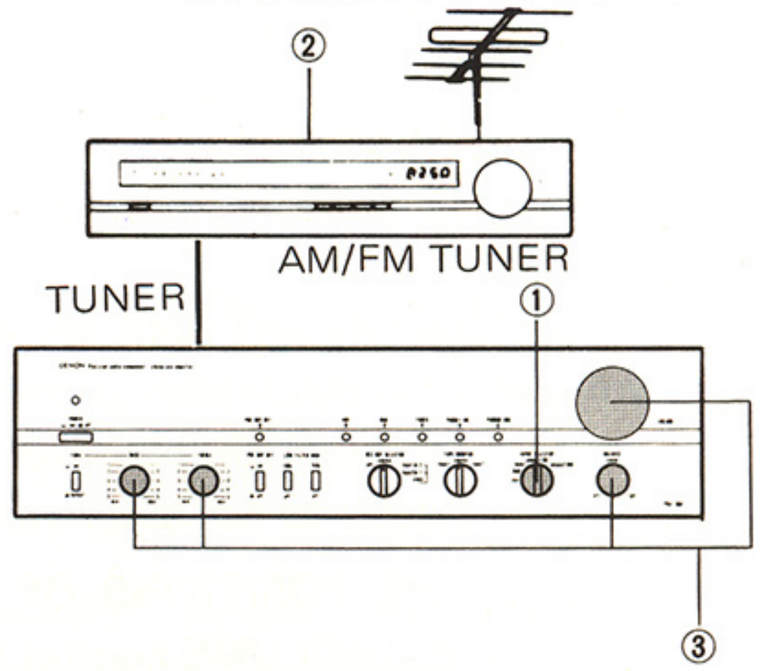


Fig. 5

PLAYBACK FROM EQUIPMENT CONNECTED TO THE AUX TERMINAL (See Fig. 6)

1. Set the input selector to "AUX".
2. Set the controls of the connected equipment to make it ready for operation.
3. Adjust the sound volume and tone properly by the volume, tone, and balance control knobs.

PLAYBACK FROM EQUIPMENT CONNECTED TO THE AUX TERMINAL (follow the steps below according to the sequence of numbering)

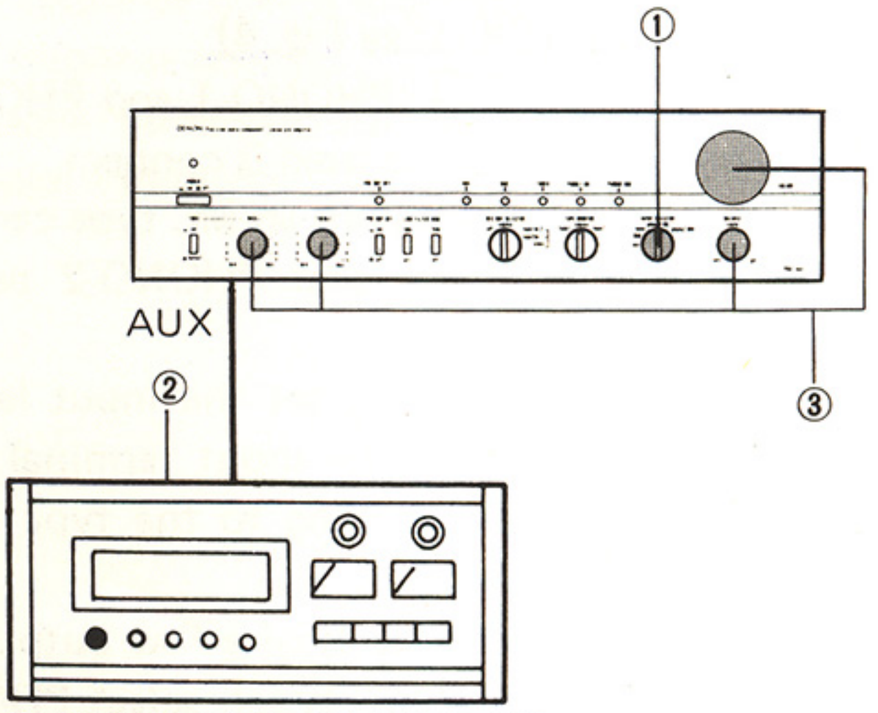


Fig. 6

PLAYBACK FROM DAD CONNECTED TO THE DAD TERMINAL (See Fig. 7)

1. Set the input selector to "DAD".
2. Set the controls of the DAD to the desired positions.
3. Adjust the sound volume and tone by turning the volume, tone, and balance control knobs.

PLAYBACK FROM DAD CONNECTED TO THE DAD TERMINAL (follow the steps below according to the sequence of numbering)

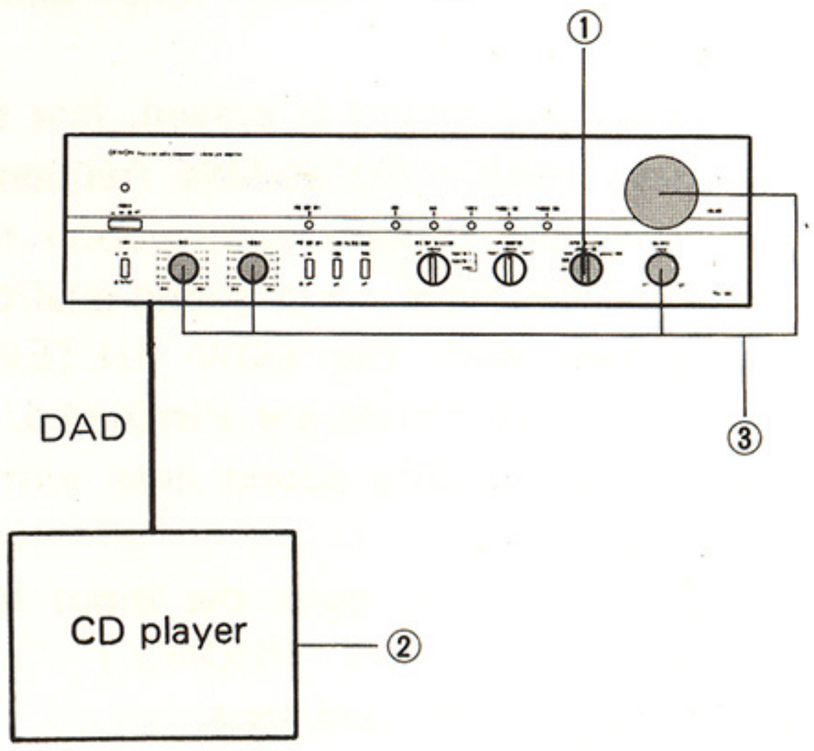
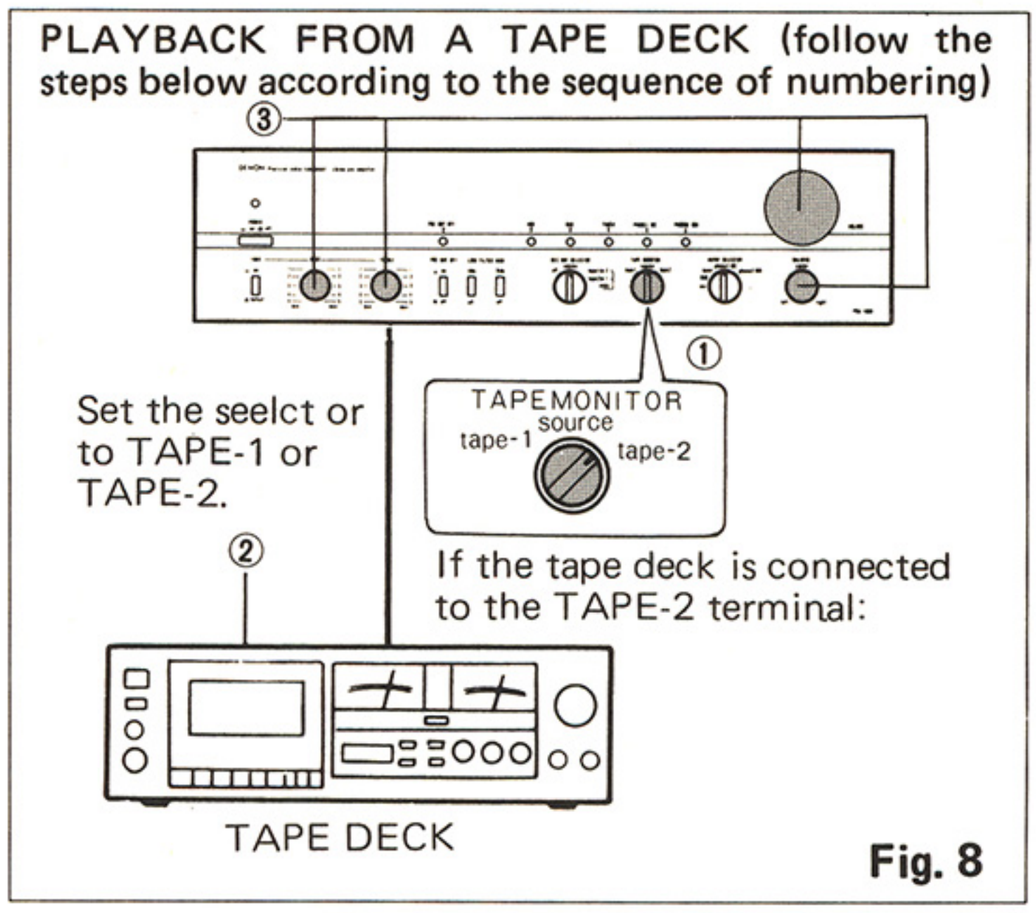


Fig. 7

PLAYBACK FROM A TAPE DECK (See Fig. 8)

1. Set the tape monitor switch either to "TAPE-1" of "TAPE-2".
   *To use the tape deck connected to TAPE-1 terminal, set the tape monitor switch to TAPE-1. Set to TAPE-2 for the tape deck coupled to TAPE-2 terminal.
2. Set the controls of the tape deck to the desired settings (for details, see the tape deck instruction manual).
3. Adjust the sound volume and tone properly by tuning the volume, tone, and balance control knobs.

- If the connected tape deck is used continuously, the magnetic heads and capstain will get dirty and become magnetized. This will result in poor sound quality. Make it a point to clean and maintain your tape deck according to the deck's instruction manual. This should be done periodically for the best quality sound.

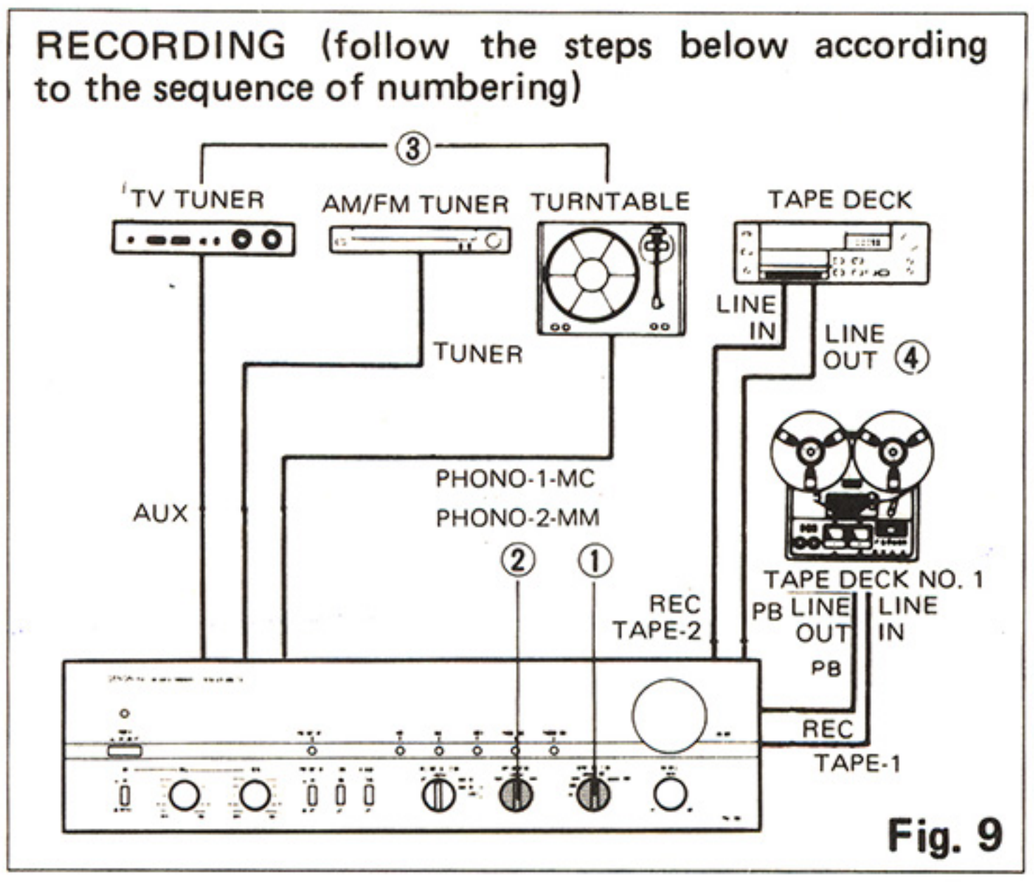


RECORDING (See Fig. 9)

Records, radio, and other sources can be recorded on the tape deck connected to the "TAPE REC" terminal.

The audio signals, respectively, from "PHONO-1, MC" "PHONO-2, MM" "TUNER" "DAD" "AUX" terminals are selected by the input selector switch, and selected signals are connected to the REC OUT terminal. In this way you can do recording what ever you like.

1. Set the input selector either to "PHONO-1" or "TUNER", for example, according to the desired source.
2. Set the tape monitor switch to "SOURCE".
3. Set the controls of the turntable or adjust the AM/FM tuner TV.
4. Adjust the recording level with the control on the tape deck. Refer to the tape deck instruction manual for further details.

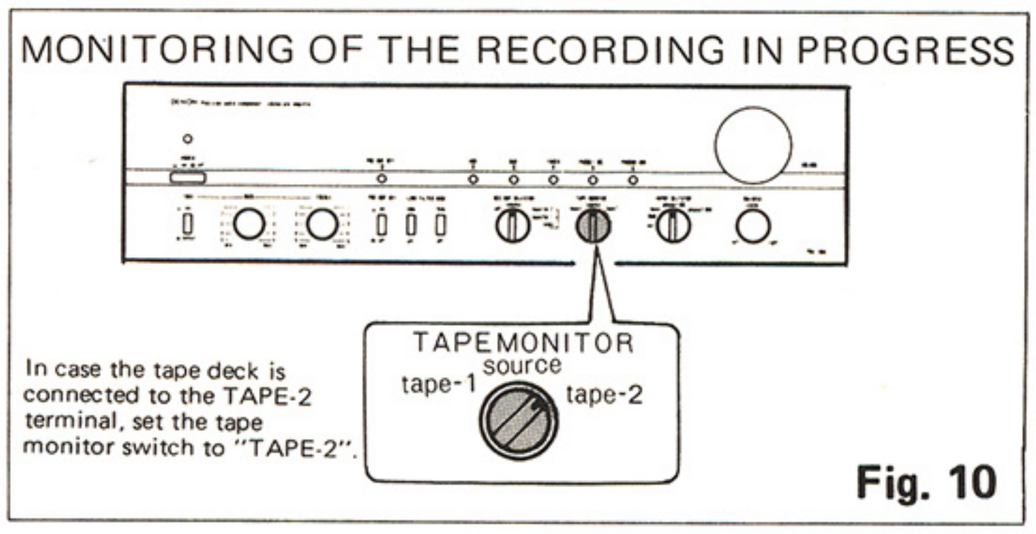


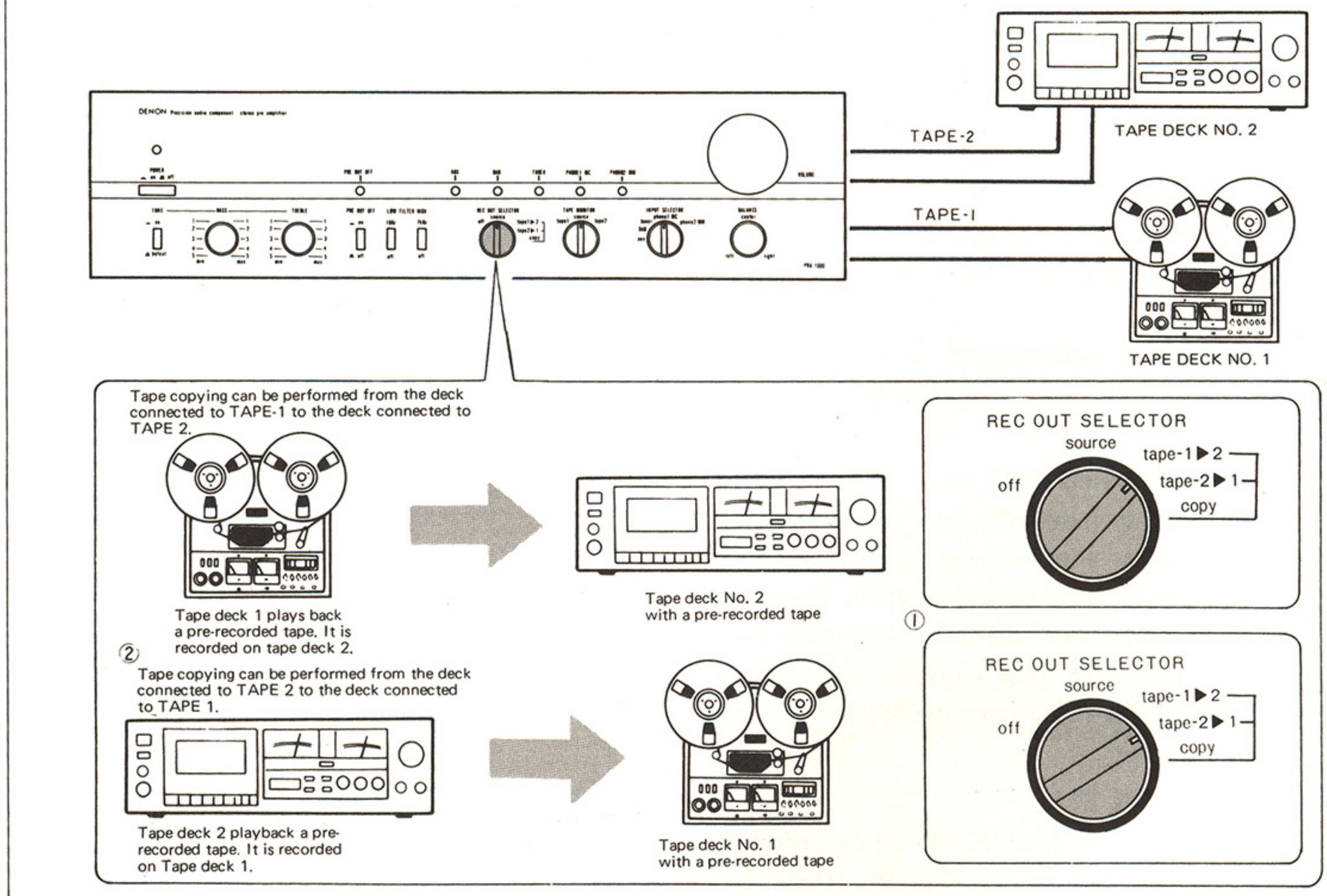
MONITORING THE RECORDING IN PROGRESS (See Fig. 10)

Monitoring of the recording under way (playback immediately following recording) is possible with the use of a 3-head type tape deck which has independent heads for recording and playback.

With a tape deck having only a record/playback combination type head, it is impossible to monitor simultaneously during recording.

- Set the tape monitor switch either to "TAPE-1" or "TAPE-2" after making sure that the tape deck incorporated in your audio system is a 3-head type.





TAPE COPYING (follow the steps below according to the sequence of numbering)

Fig. 11

COPY RECORDING FROM ONE TAPE TO ANOTHER (See Fig. 11) (tape copying)

Tape copying is possible if you have two tape decks in your audio system.

1. Set the REC OUT selector switch either to "TAPE-1 ▶ 2" or "TAPE-2 ▶ 1".
   - To effect tape copying from the tape on tape deck No. 1 to the tape of tape deck No. 2, select the position of "TAPE-1 ▶ 2".
     Select the position of "TAPE-2 ▶ 1" to do tape copying in the reverse.
2. Start the tape deck that is playing back the recorded tape and then start the deck used for recording.
   - You can enjoy listening to other music, for example, from the radio or other program source while tape copying is in progress. Just select the desired program source with the input selector switch.
   - Follow the steps below to monitor tape copying:
     1) When tape copying is under way in the "TAPE-1 ▶ 2" mode, set the tape monitor switch to "TAPE-2".
     2) When tape copying is under way in the "TAPE-2 ▶ 1"mode, set the tape monitor switch to "TAPE 1".

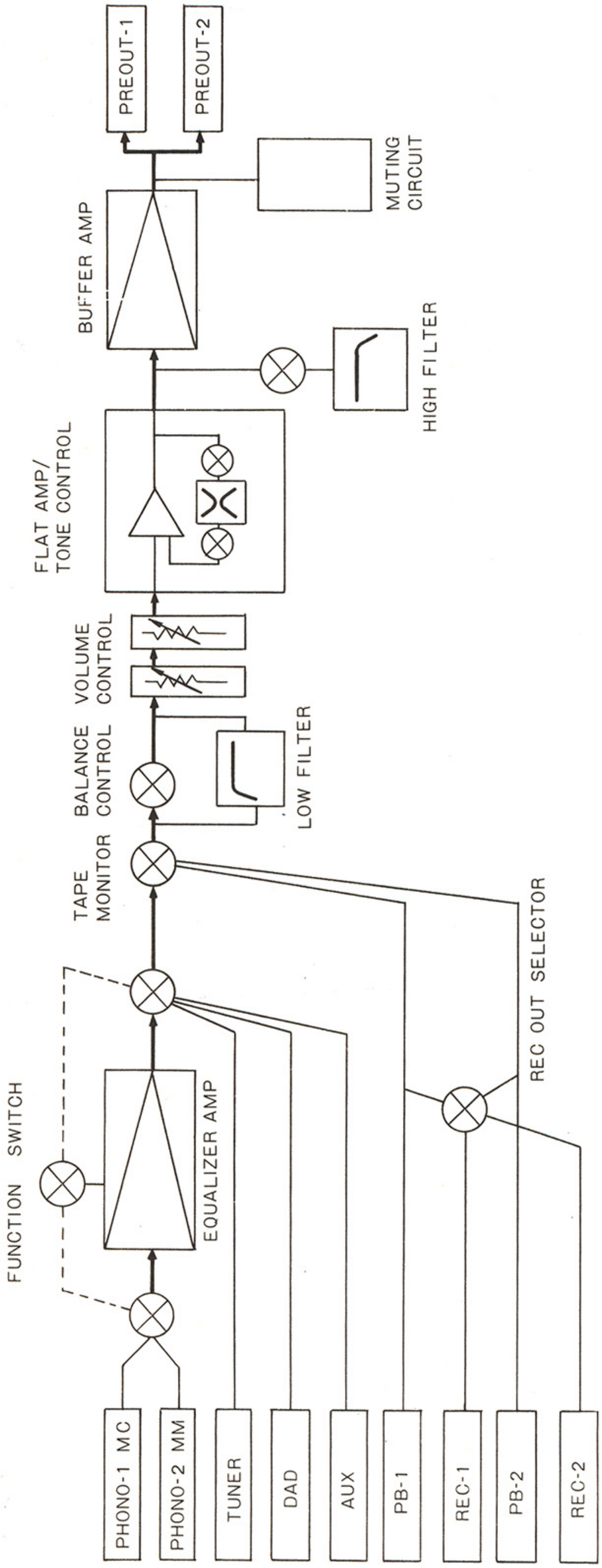
TONE CONTROLS

The tone controls (BASS and TREBLE) are used to compensate for distortion that occurs due to the operational characteristics of the speaker system or the cartridge, as well as the acoustic conditions of the room.

They can also be applied to adjust the tone to your taste.

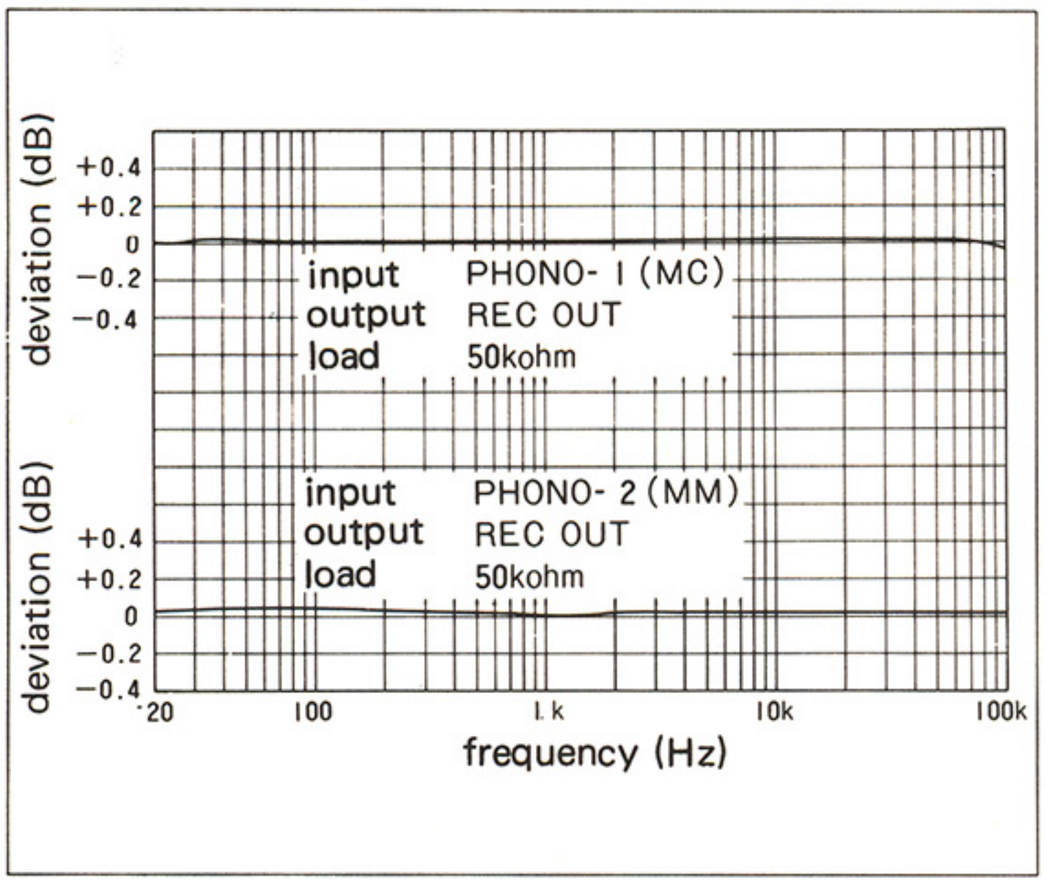
- When setting TONE switch "on (▬)", the tone control operates, and the BASS control is allowed adjusts bass tone. The TREBLE control is also allowed adjusts treble tone.
- If the tone control switch is set to "DEFEAT", the tone controls are ineffective, and the frequency response is made flat, regardless of the positions of the bass and treble controls.

BLOCK DIAGRAM

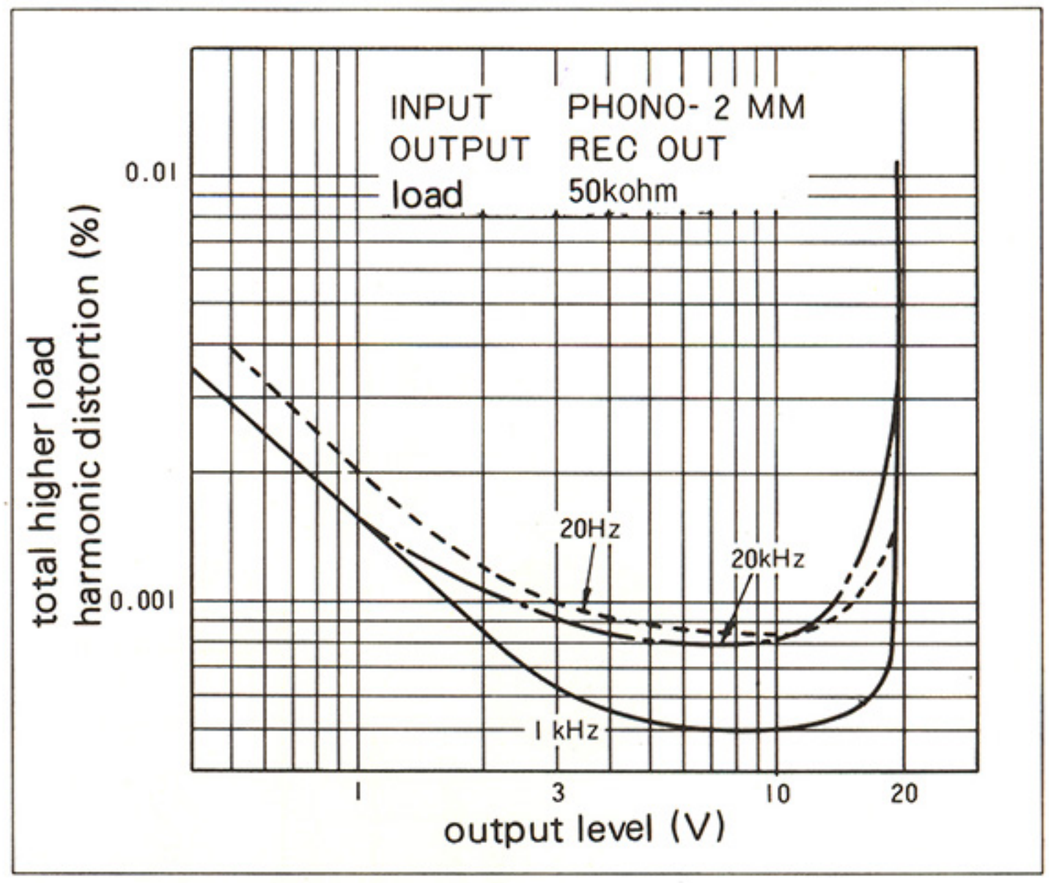


OPERATIONAL CHARACTERISTIC CURVES

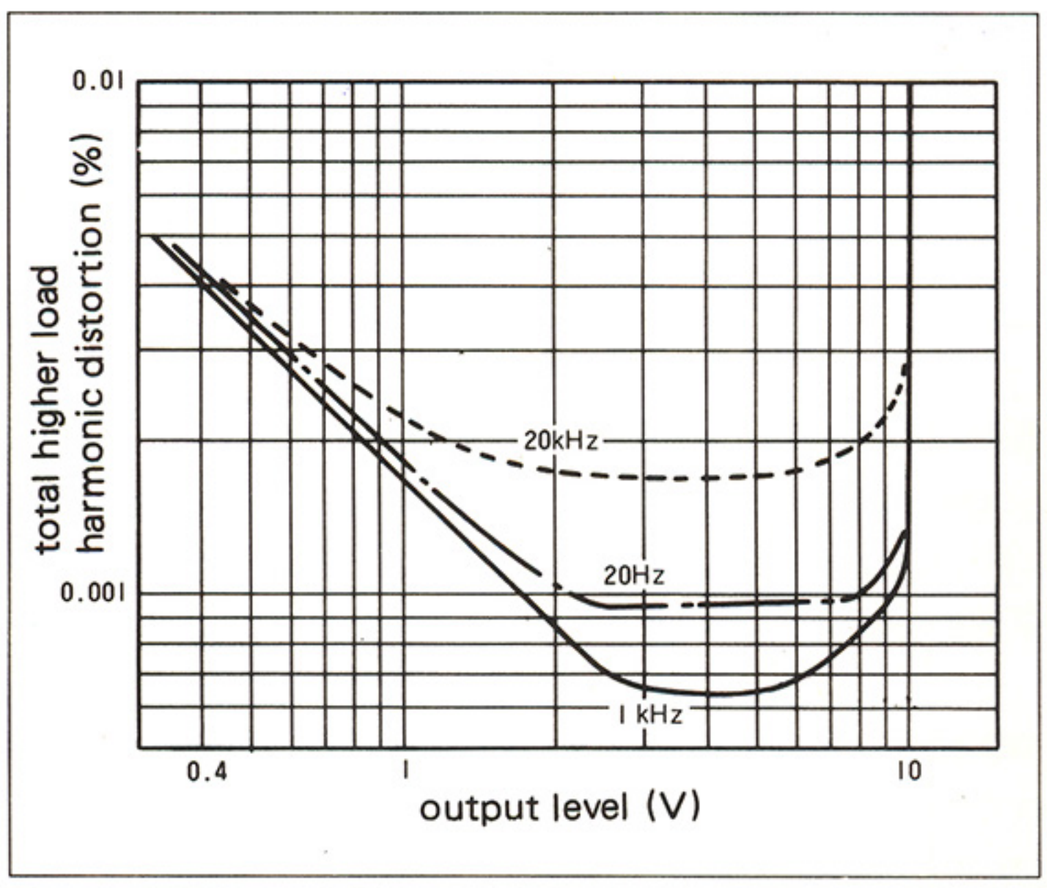
- **Equalizer RIAA deviation characteristic**



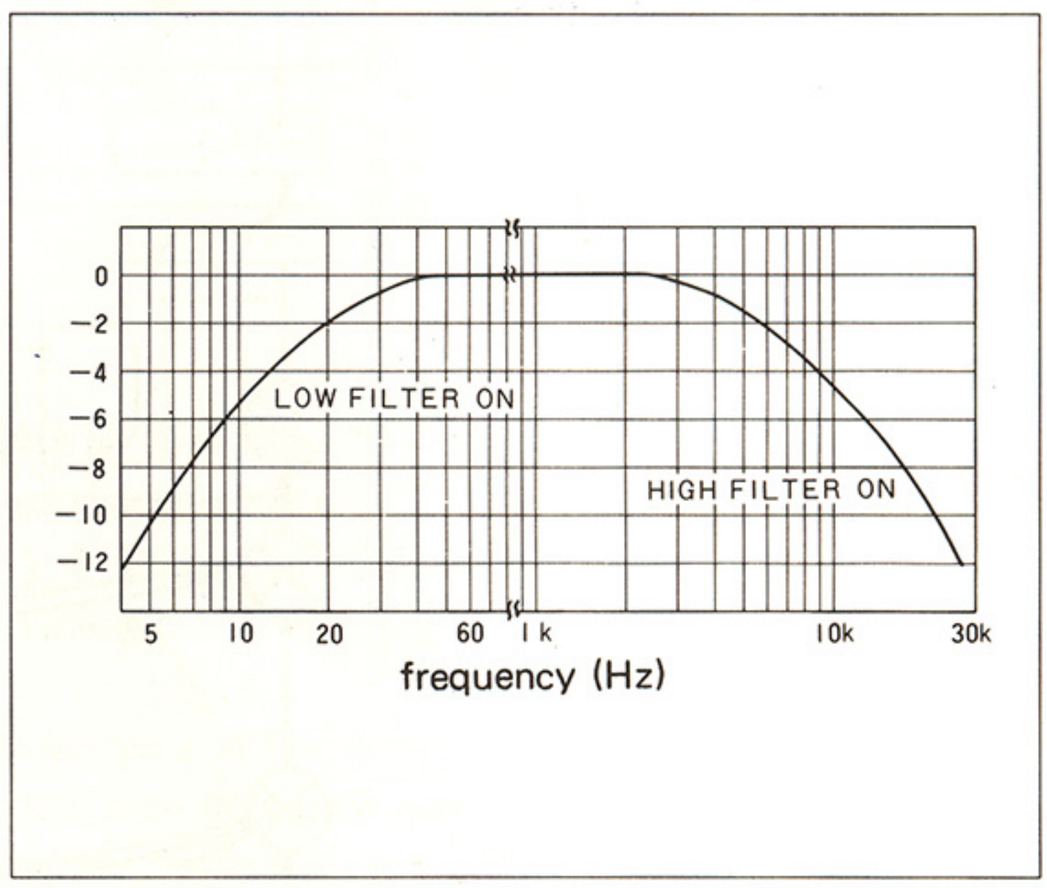
- **Equalizer output/harmonic distortion characteristic**



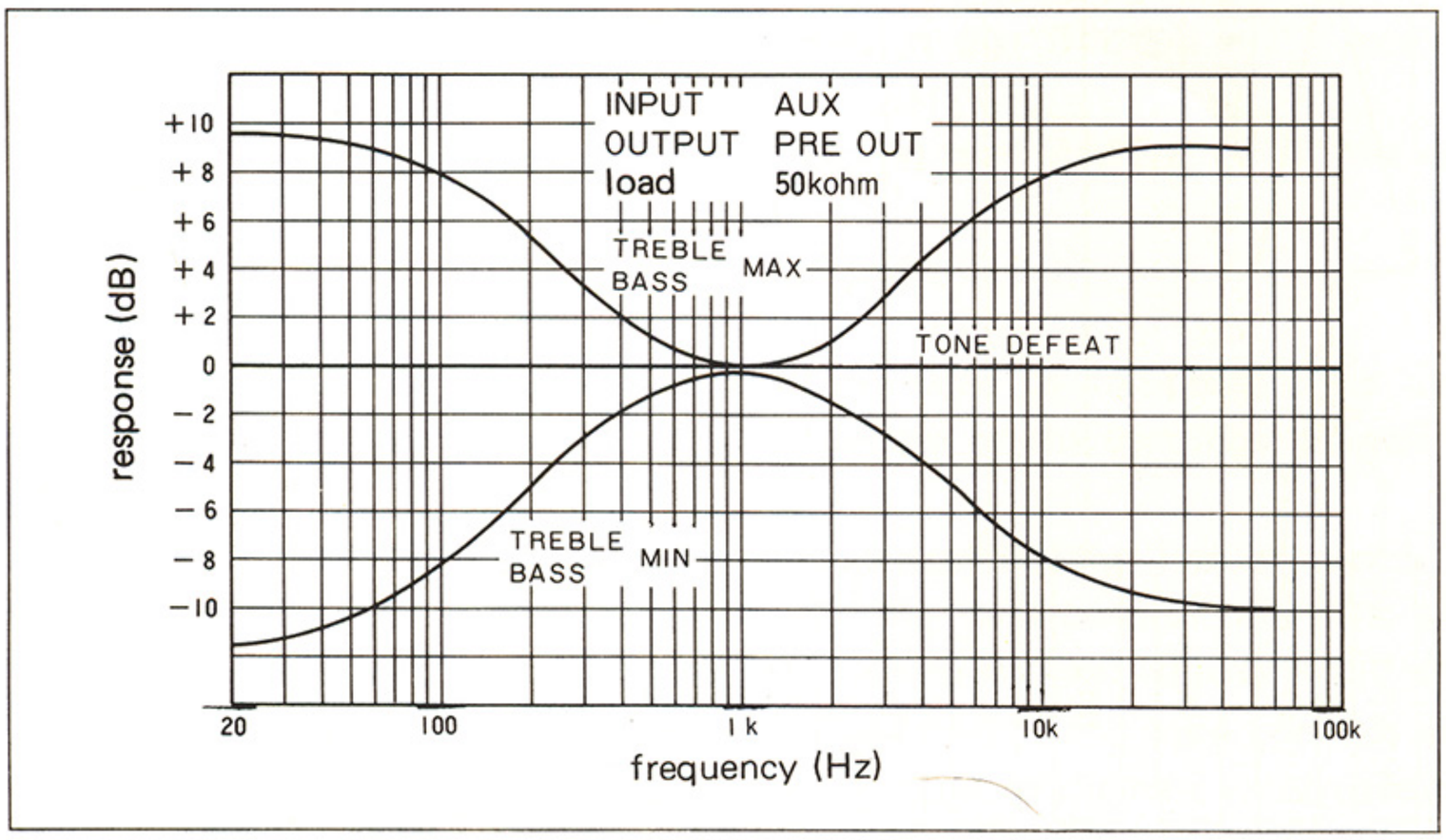
- **Flat amplifier output/distortion characteristic**



- **Filter operational characteristic**



- **Tone control characteristic**



SPECIFICATIONS

EQUALIZER AMPLIFIER (PHONO IN ~ REC OUT)

Input level/input impedance:	PHONO-1 MC: 0.1 mV/100 ohm
	PHONO-2 MM: 2.5 mV/47 k ohm
Max. allowable input:	PHONO-1 MC: 12 mV/1 kHz
	PHONO-2 MM: 320 mV/1 kHz
Max. output/rated output:	20 V/150 mV
Total higher harmonic distortion:	Below 0.001% over a range of 20 Hz to 20 kHz (5 V OUT)
RIAA deviation:	PHONO-1 MC: 20 Hz ~ 100 kHz ±0.2 dB
	PHONO-2 MM: 20 Hz ~ 100 kHz ±0.2 dB
SN ratio:	PHONO-1 MC: 77 dB
	PHONO-2 MM: 90 dB (IHF "A" curve) 0.25 mV or the equivalent
Separation:	20 Hz, 1 kHz, over 80 dB, 20 kHz over 70 dB
Gain:	35.6 dB (1 kHz) ..... PHONO-2 MM
	63.5 dB (1 kHz) ..... PHONO-1 MC

HIGH-LEVEL AMPLIFIER (AUX IN ~ PRE OUT)

Input level/input impedance:	TUNER, DAD, AUX, PB-1, PB-2 150 mV/47 k ohm
Max. output/rated output:	10 V/1.0 V
Total higher harmonic distortion:	Below 0.002% over a range of 20 Hz to 20 kHz (5 V OUT)
Frequency response:	2 Hz ~ 300 kHz $^{+0}_{-3}$ dB (10 Hz ~ 100 kHz $^{+0}_{-0.3}$ dB)
SN ratio:	105 dB
Separation:	100 dB Vol max 20 Hz, 1 kHz, 80 dB 20 kHz
Muting:	PRE OUT off Muting (indication by LED)
Filters	HIGH FILTER 7 kHz 6 dB/OCT
	LOW FILTER 16 Hz 6 dB/OCT
Tone controls	TREBLE 10 kHz ± 8 dB
	BASS 100 Hz ± 8 dB

OTHERS

AC outlets	2 AC outlets (700 W — total) unswitched
(For U.S.A., Canada, Singapore and Hong Kong)	3 AC outlets (210 W — total) switched
Power source voltage and power supply frequency:	AC 120 V, 60 Hz
	or AC 110/120/220/240 V 50 Hz/60 Hz (Multiple)
	or AC 220V 50 Hz
	or AC 240 V 50 Hz
Power consumption:	20 W
Dimensions:	W x H x D (mm) (including control knobs and stand)
	464 x 124 x 312
Weight:	6.0 kg

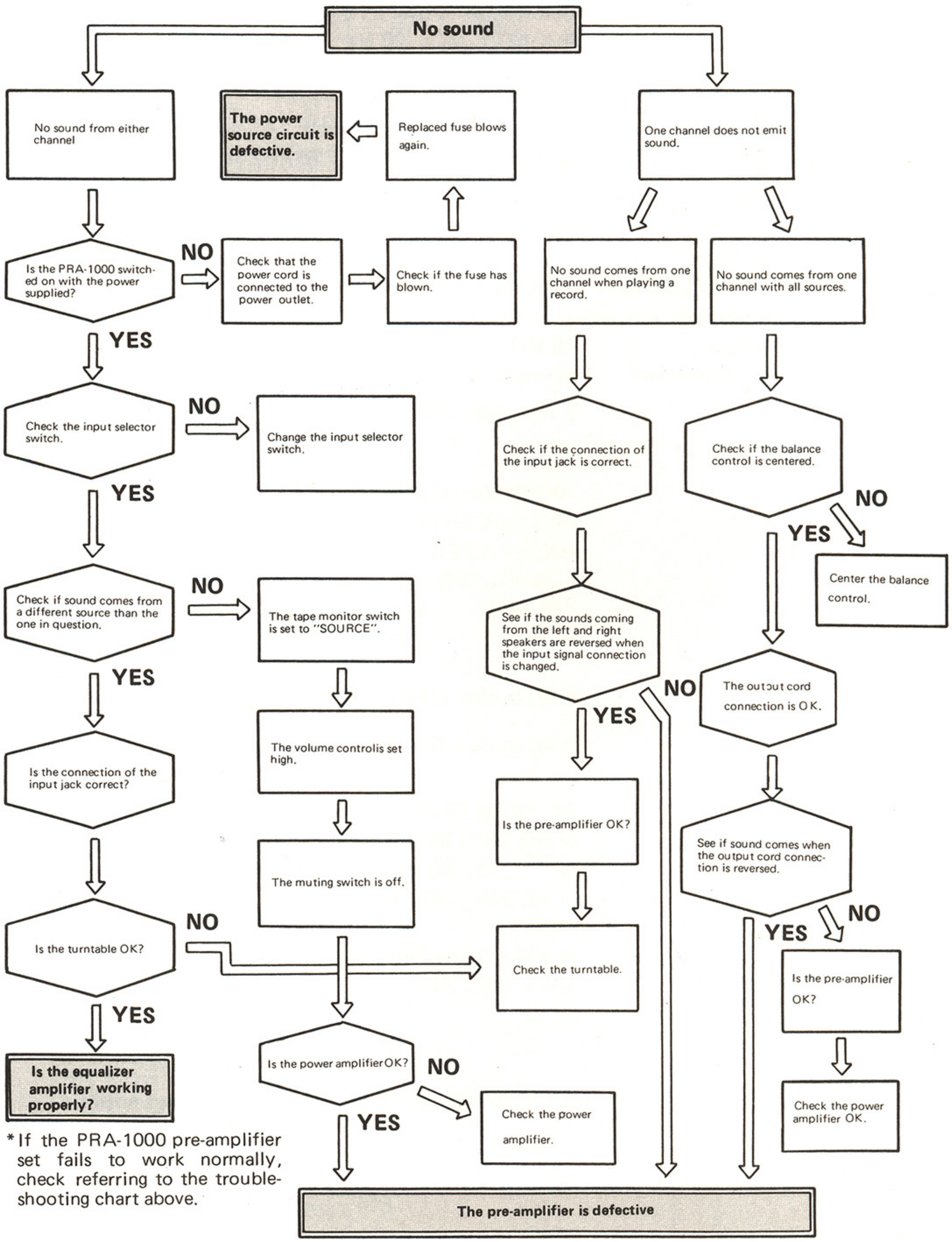
Design and specifications of the PRA-1000 are subject to change without notice.

TROUBLESHOOTING

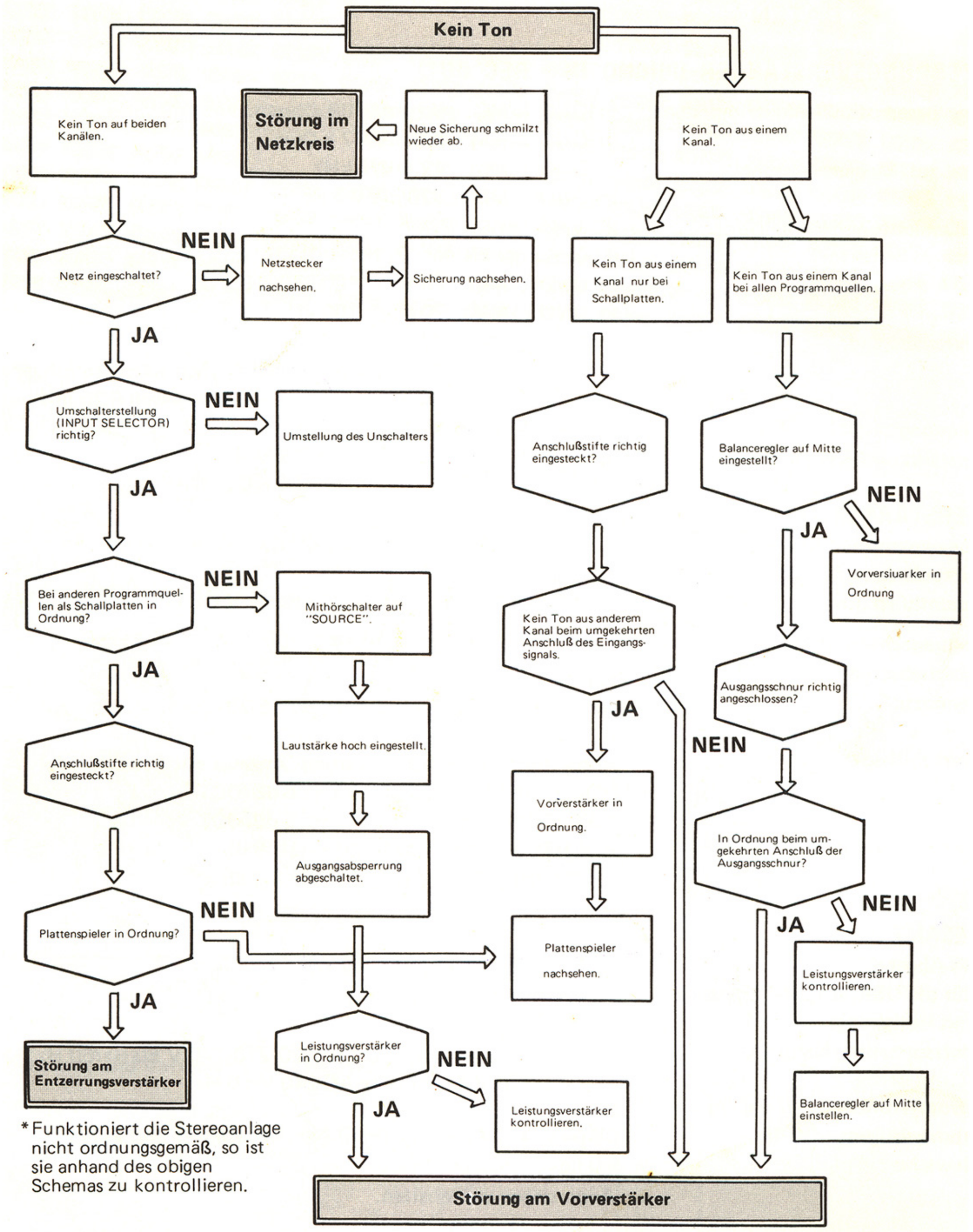
Prior to anything, be sure whether or not your audio system is really in trouble.

1. Check all connections for correctness.
2. See to it that your audio system is operated properly according to the instruction manual.
3. Check that the speakers and turntable are working properly.

If your PRA-1000 pre-amplifier does not provide normal performance, check it referring to the following troubleshooting chart. If the unit still malfunctions after this check, contact your local DENON dealer.



*If the PRA-1000 pre-amplifier set fails to work normally, check referring to the troubleshooting chart above.



*Funktioniert die Stereoanlage nicht ordnungsgemäß, so ist sie anhand des obigen Schemas zu kontrollieren.

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Printed in Japan 5111146007