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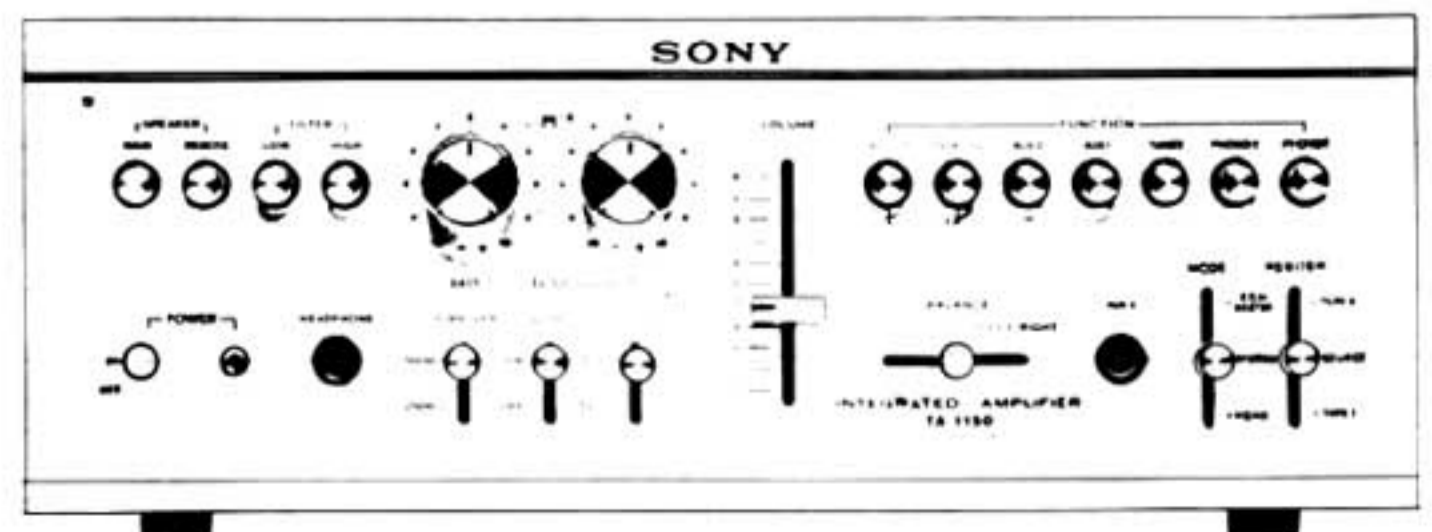
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SONY®

INTEGRATED STEREO AMPLIFIER

**TA-1150**

Owner's instruction manual



The SONY Integrated Stereo Amplifier Model TA-1150 is designed with the most advanced techniques for audiophiles who wish to build a true-fidelity sound reproduction system.

SONY engineers pooled their vast experience in solid-state technology to produce this integrated amplifier. The TA-1150 provides the lowest possible distortion, superior signal-to-noise ratio, wide dynamic range and unexcelled damping factor. You'll hear every sound delicately, naturally and brilliantly as never before.

The TA-1150 also provides high versatility: selection of bass and treble turnover frequencies, separate preamplifier and power amplifier sections, tape duplicating facilities, center woofer system capability, provisions for four-channel stereo use, and so on.

Please take the time to read through this manual completely, so that you can become familiar with the TA-1150's features and capabilities. Keep this booklet handy for future reference.

## PREPARING FOR USE

### UNPACKING

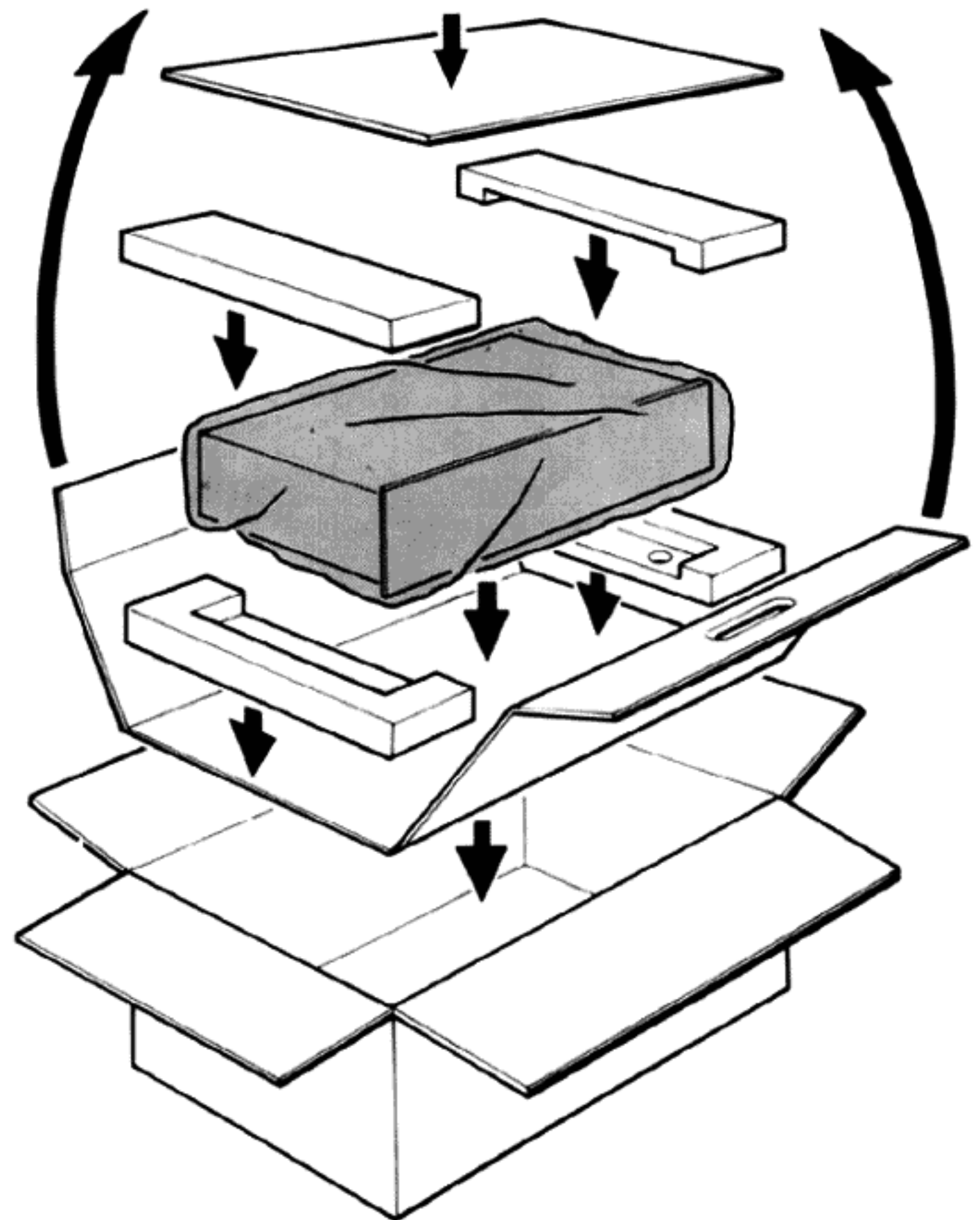
All SONY equipment comes to you carefully packed in cartons designed to withstand the rigors of shipment. Do not throw the carton or associated packing material away; they will come in handy if you ever have to transport or ship the TA-1150.

Inspect your TA-1150 immediately for signs of damage incurred in transit. If damage has occurred, consult your local SONY dealer for further instructions. Once again, save all packing material; it will substantiate your damage claim.

When shipping the unit for repair work or simply to another location, the unit must be repacked in the original carton and the packing material precisely as before.

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## SYSTEM CONNECTIONS

No doubt you have already decided on a location for your TA-1150. However, before going ahead with the installation, make sure that your choice of location agrees with the following list of DO's and DON'T's.

- DO** allow at least one inch clearance around the TA-1150 for ventilation.
- DO** allow sufficient room behind the TA-1150 so you can make connections to the rear panel without disrupting your entire setup.
- DON'T** remove the chassis cover. Refer servicing to qualified personnel.
- DON'T** place the TA-1150 in direct sunlight, or near radiators, hot-air ducts, or any other source of heat. The TA-1150 must not be operated where the room temperature is over 110°F. Similarly, don't place it in any area subject to freezing temperatures or excessive moisture.

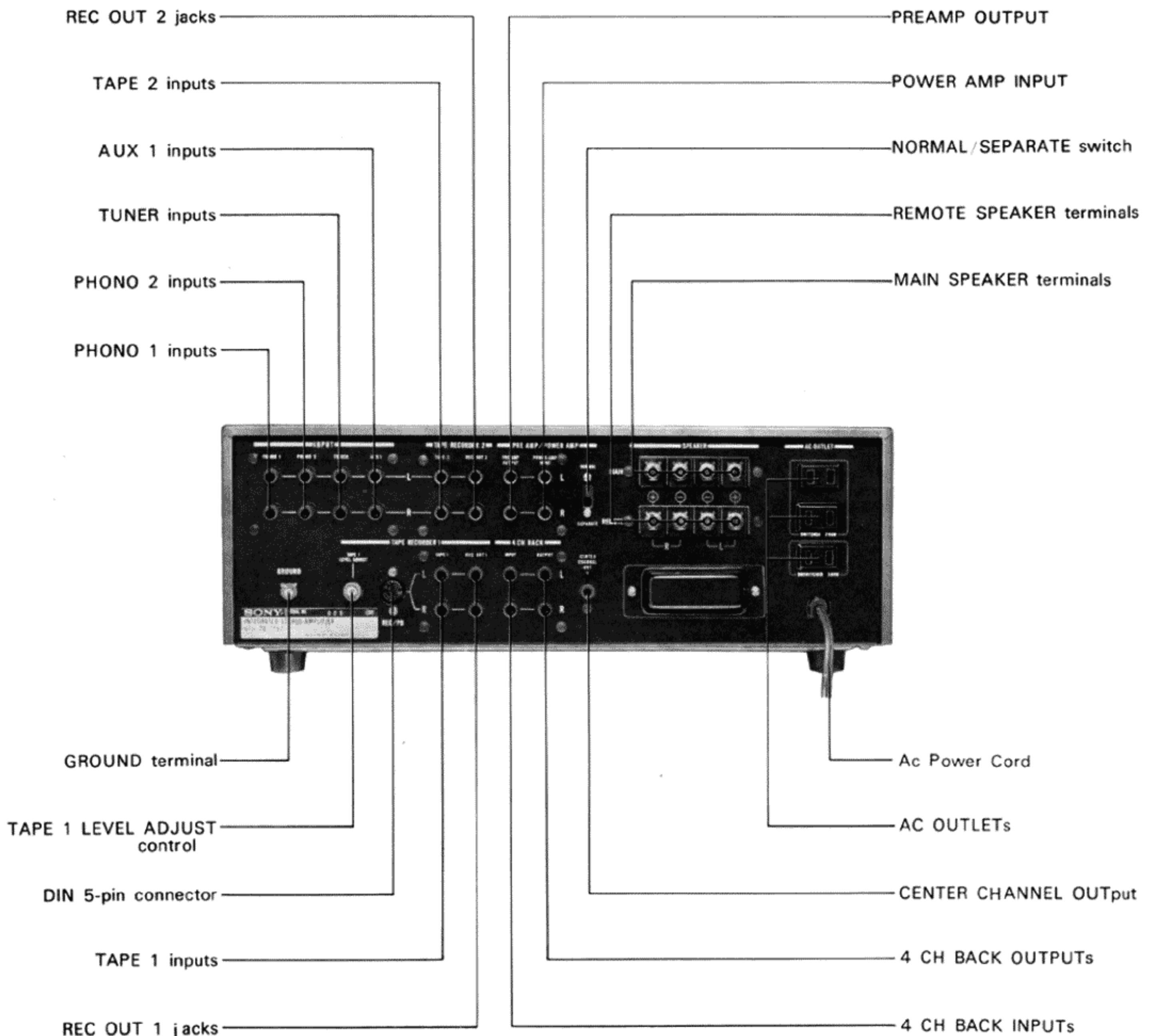
**DON'T** place the TA-1150 on any soft surface which may block the bottom ventilation holes. Similarly, don't place anything on top of the cabinet which might block the top ventilation holes.

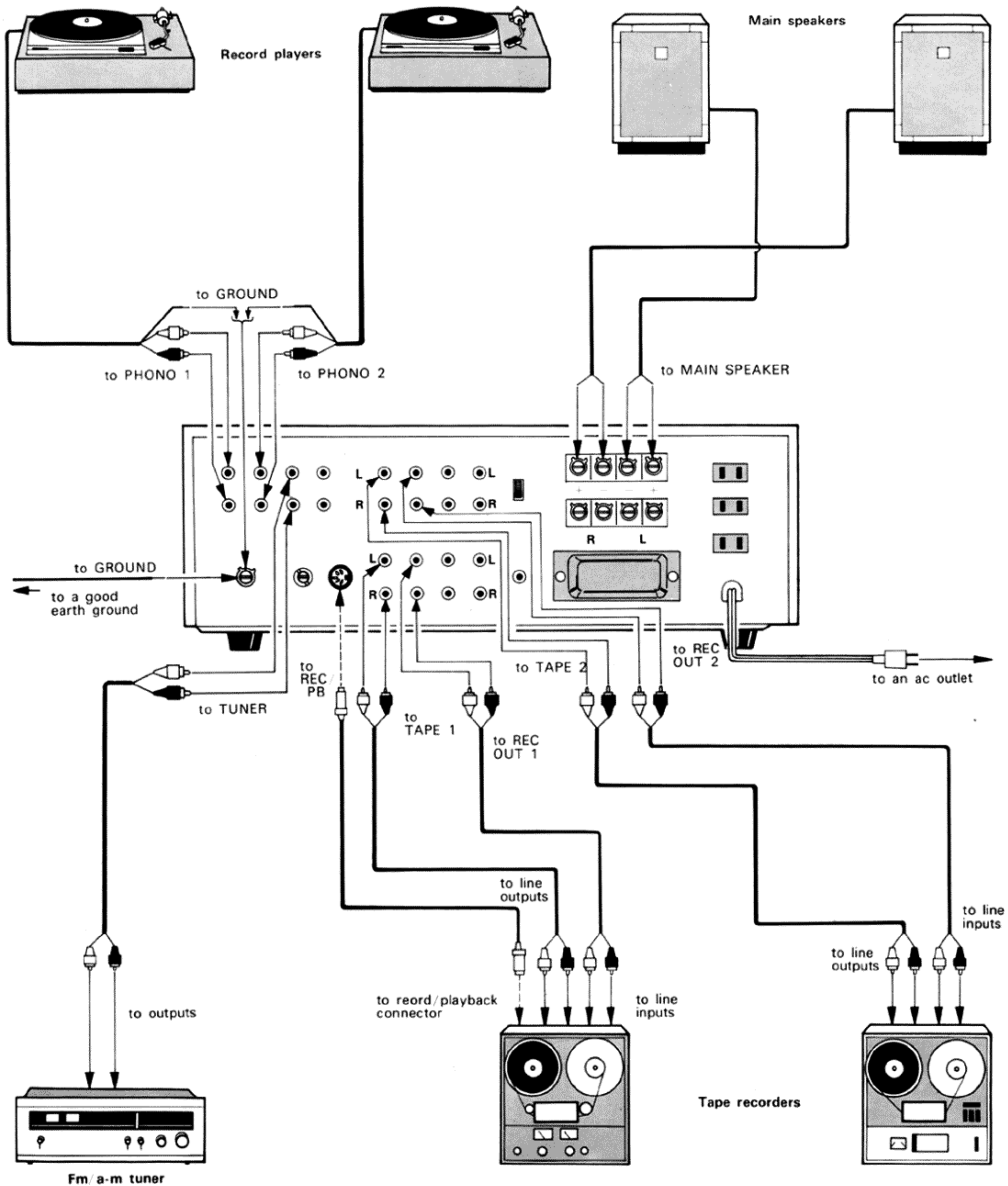
**DON'T** connect the TA-1150 to power sources other than 120 volts, 60 Hz (cycles) ac.

**DON'T** make connections with the POWER switch turned ON.

After you have found a suitable location for your unit, you can begin making the basic connections described in the following paragraphs. Refer to the overall-system connection diagram while making these connections.

For making connections to the PREAMP OUTPUTs and POWER AMP INPUTs, refer to "Use of the NORMAL/SEPARATE Switch" on page 10.





## Speakers

The TA-1150 can drive two pair speaker systems, main and remote, simultaneously or independently. Both systems are turned on or off with the SPEAKER buttons on the front panel. The speakers connected to these terminals should have an impedance of 4-16 ohms.

### CAUTION

The TA-1150 delivers 50 watts (per channel) of dynamic power into a 8-ohm speaker. Be sure to use speakers with suitable power handling capabilities. If lower wattage speakers are to be used, reduce the volume when removing the phonograph pickup from a record or when detuning an fm station. Speaker damage may result if this precaution is not observed.

Set up your speakers in a large room having a rug on the floor. If the room has heavy drapery, so much the better. Rugs, drapery, and upholstered furniture minimize the multiple reflections of high-frequency sound that occur in a bare room and which degrade the stereo effect.

The usual speaker location is on the floor against a wall. If you must position the speakers off the ground, do not put them higher than eye-level. Because of psychological conditioning, sound coming from the vicinity of the ceiling gives an unnatural feeling. Corner locations, however, are ideal for emphasizing the bass notes.

The distance between the right- and left-channel speakers in a stereo system is important to the stereo effect. Closely-spaced speakers produce minimum stereo effect. Widely-separated speakers produce maximum stereo effect, although if the separation is too great, the unnatural "hole-in-the-middle" effect appears. The proper distance between speakers is directly related to the distance from the speakers to the listening areas. In most cases, fine results are obtained if the speakers are separated by an amount slightly more than the distance from the listening area to each speaker. In any case, experiment with different speaker and listening locations until you find the setup that pleases you most.

**Cable Type:** The type of wire used to connect the speakers to the amplifier is not critical in most home stereo systems. Ordinary dual-conductor lamp cord is often used for this purpose. Common 18-gauge lamp cord is fine for short runs. However, 14- to 16-gauge wire may be needed for long runs to low-impedance speakers to prevent excessive power losses in the wiring. If you use lamp cord or any other stranded wire, make sure that none of the strands separates from its group and shorts across the speaker or amplifier terminals.

**Connections:** One of the most important considerations in connecting the speakers of a stereo system is speaker phasing (both cones move in the same direction when energized). Speaker phasing is easy if the speaker terminals are marked and one of the wires in a lamp-cord pair is coded. Most lamp-cord is coded by means of a ridge molded along one conductor, or a colored thread included with the stranded wires of one conductor. For each channel, simply connect one end of the coded conductor to the  $\ominus$  SPEAKER terminals on the TA-1150. Connect the other end of the coded conductor to the speaker terminal marked GROUND or COMMON or  $\ominus$ . After this is done, connect the uncoded conductor ends to the  $\oplus$  SPEAKER terminal on the TA-1150 and the remaining speaker terminal.

If you are also using remote speakers, connect them to the REMOTE SPEAKER terminals as described above.



**Location:** In many home-entertainment stereo systems, the choice of speaker location is often limited by the existing furniture arrangement. However, if rearrangement is possible, or you wish to furnish the area specifically for stereo listening, here are a few suggestions for optimizing your listening pleasure.

## CAUTION

Do not connect the speaker terminals of one channel in parallel with (across) those of other channel.

**Note:** When no sound is heard but the pilot lamp lights, examine whether or not the lamp located inside the cabinet is on and the light comes through ventilation slits of the cabinet. If the lamp is lit, the speaker terminals are shorted and the transistor protection circuit is activated. In such a case, check the speaker connections.

### Headphones

The HEADPHONE jack accepts most\* low- and high-impedance headphones equipped with a standard binaural phone plug. For private listening, make sure that the SPEAKER buttons are released (off).

\* Some electrostatic headphones are designed to be driven by the speaker output and cannot be plugged directly into this jack.

### Notes on Input Connections

Your TA-1150 is equipped to accept a wide variety of program sources, as described in the following paragraphs. However, before proceeding to connect specific sound sources to the TA-1150, note the following practices which should be observed when making input connections.

- To assure correct matching at the input terminals of your sound system, refer to the table of "TECHNICAL SPECIFICATIONS" for the TA-1150 (on page 15), and to the specifications given in the instruction manuals provided with the components you wish to connect to the TA-1150. Generally the output level of a signal source (tuner, phono cartridge, tape recorder etc.) should be within the range of "slightly higher" to "several times higher" than the sensitivity of the corresponding input. Also, the output impedance of a signal source should be considerably lower (several times or more) than the impedance of the corresponding input. For example, a tuner having an output level and impedance of 0.75 volt and 10 k ohms respectively can be connected to the input of an amplifier with 0.15 volt sensitivity and 50 k ohms impedance.
- Use low-capacitance shielded cable, otherwise, hum may occur. Keep the cables as short as possible. In excessively-long horizontal runs (over 6 ft), the high-frequency program content may be reduced.
- Insert the shorting plugs (supplied) for muting the PHONO 1 or PHONO 2 inputs when these inputs are not in use.
- Be sure the cable connectors are full inserted into the jacks. A loose connection may cause hum and noise.
- When reconnection is required, slide the VOLUME control down.

### Record Players

Record players equipped with a magnetic (moving magnet or moving coil) cartridge can be connected to the PHONO 1 and PHONO 2 inputs. The acceptable input range of them is 2-70 millivolts. For a very-low output cartridge (less than 2 millivolts output), use a step-up transformer or a head amplifier unit.

If hum is heard when playing discs, it is usually the result of a poor or incorrect ground connection between the tonearm and the amplifier. In this case, connect a ground wire between the turntable base and the GROUND terminal of the TA-1150. Try reversing the ac line cord. If the tonearm is mounted on a wood surface, it may be necessary to make a ground connection between the base of the tonearm and the amplifier.

### Tuners

For off-the-air listening, connect the line outputs of your tuner to the TUNER inputs.

### Tape Recorders

The two pairs of tape recorder connectors, TAPE 1-2 inputs and REC OUT 1-2 jacks, are provided. They will serve for tape duplicating or for making two recordings simultaneously.

For tape playback, connect the line outputs (or monitor outputs) of a tape recorder or a tape deck (containing its own playback preamplifier) to the TAPE inputs. The input sensitivity of the TAPE 1 inputs is adjustable. Refer to "TAPE 1 LEVEL ADJUST control" on page 9. For tape recording, connect the line inputs of a tape recorder to the REC OUT jacks.

If your tape recorder has the same type DIN 5-pin connector (indicated REC/PB) as that on the TA-1150, the record and playback connections can be made with a single REC/PB cable. The SONY RC-2 Connector Cable (optional) is recommended. In this case the TAPE 1 inputs and the REC OUT 1 jacks cannot be used.

Note that, when making two recordings simultaneously, if there is bias current leak on the recorder connected, the recording may be marred by beat noise. In this case make each recording separately.

#### 4-channel Sources

The VOLUME control of the TA-1150 operates as a master volume control. SONY SQ records or discrete 4-channel tape programs can be reproduced by connecting their front channel to the TAPE 1 (or 2) inputs and back channel to the 4 CHANNEL INPUTs. Connect the back channel amplifier to the 4 CHANNEL OUTPUTs of the TA-1150.

#### Other Input Sources

The AUX 1 and AUX 2 inputs have been provided for connecting various input sources such as a cassette player, additional tuner, etc. The AUX 1 inputs on the rear panel are for connecting sources for permanent use. The AUX 2 input on the front panel is convenient for connecting an input source for temporary use. For this connection, use the binaural-plug cord. The SONY Connecting Cord RK-81 (optional) is recommended.

#### Ground Connection

Connect the ground wire from your record player to the GROUND terminal of the TA-1150. If hum occurs, connect this terminal to a convenient earth ground, such as the mounting screw of an ac outlet cover plate, or a direct earth ground (preferably a cold-water pipe).

#### Power Connections

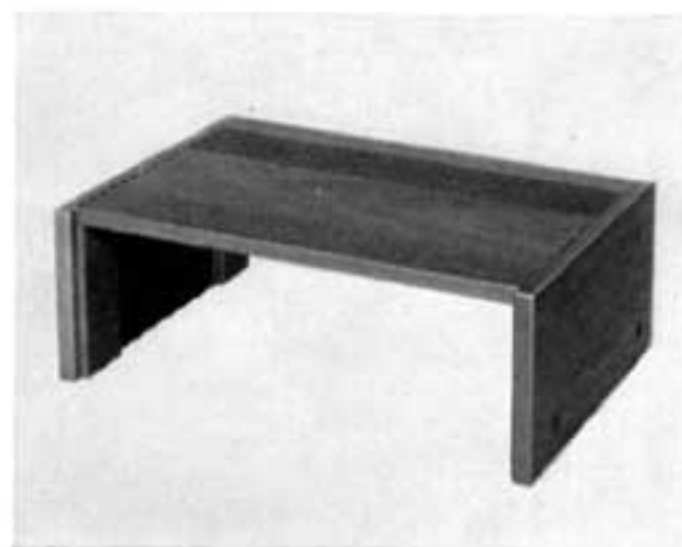
Before making any form of power connection, make sure the TA-1150's POWER switch is set to OFF. Then you can plug the TA-1150's line cord into the electrical outlet. Once again, let us remind you that the power source must be 120 volts, 60 Hz ac.

Female outlets on the rear panel provide a convenient source of ac power for any of your other system components. Equipment plugged into the SWITCHED outlets needs not have a power switch; the POWER switch on the TA-1150 controls the ac power to these outlets. Equipment plugged into the UNSWITCHED outlet must have its own power switch; the POWER switch in the TA-1150 does not control the ac power to this outlet. The total power consumption of the equipment plugged into SWITCHED outlets must not exceed 200 watts, and that plugged into the UNSWITCHED outlet must not exceed 300 watts.

## CUSTOM MOUNTING

#### TAC-1N Wooden Case

The complete line of SONY Stereo High-Fidelity Components are styled with the same simple but elegant lines so that complete systems can be assembled with a truly unitized appearance. They can fit into the handsome walnut case Model TAC-1N, available as an optional accessory.



TAC-1N



## CENTER WOOFER SYSTEM

Stereo sound systems are sometimes characterized by an apparent lack of lows. The stereo effect relies upon mid and higher frequencies because human hearing is quite directional in this range. However, low-frequency sounds, below 200 Hz, produce no directional sensation at all. Therefore, you can reinforce lows with a monophonic channel that carries only low-frequency signals. The use of the CENTER CHANNEL OUTPUT preserves the stereo effect because musical sounds are composed of fundamental frequencies and harmonic multiples of those fundamentals. When a low-frequency note is reproduced, the intensity of the fundamental note is provided by the center-channel speaker, but the harmonics are produced in the left and right speakers. Thus, low-frequency volume is augmented, but the apparent directional response is retained.

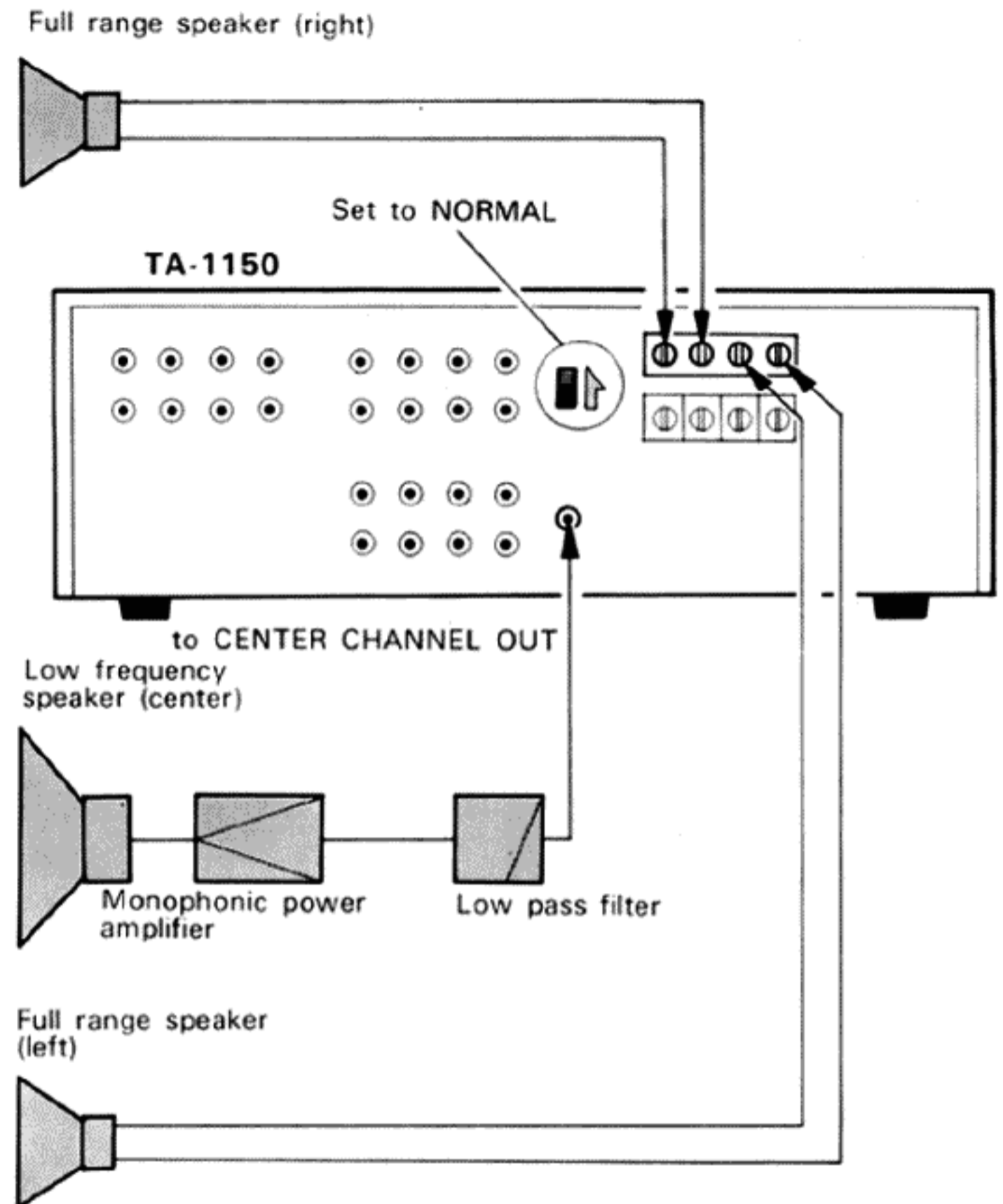
One of the arrangements of a center woofer system with the TA-1150 are shown right.

In Systems Using the TA-1150's Center Channel Output and Power Amplifier Section:

Make the usual speaker connections for the right and left channels, and connect a low pass filter between the CENTER CHANNEL OUTPUT and monophonic power amplifier. The low pass filter eliminates high-frequency signals.

With the arrangement shown in the right illustration, you will obtain the advantage described above. However, if you wish to assemble a near perfect center woofer system, you should connect high pass filters to eliminate low-frequency signals in the feed to the full-range speakers. In this way, you also achieve to some extent, the benefit of the multichannel amplification system; more effective sound reproduction with less overall distortion. This is because harmonic and IM distortion can be avoided in the full-range speakers, and the system is no longer restricted by the limitation of small full-range speaker system.

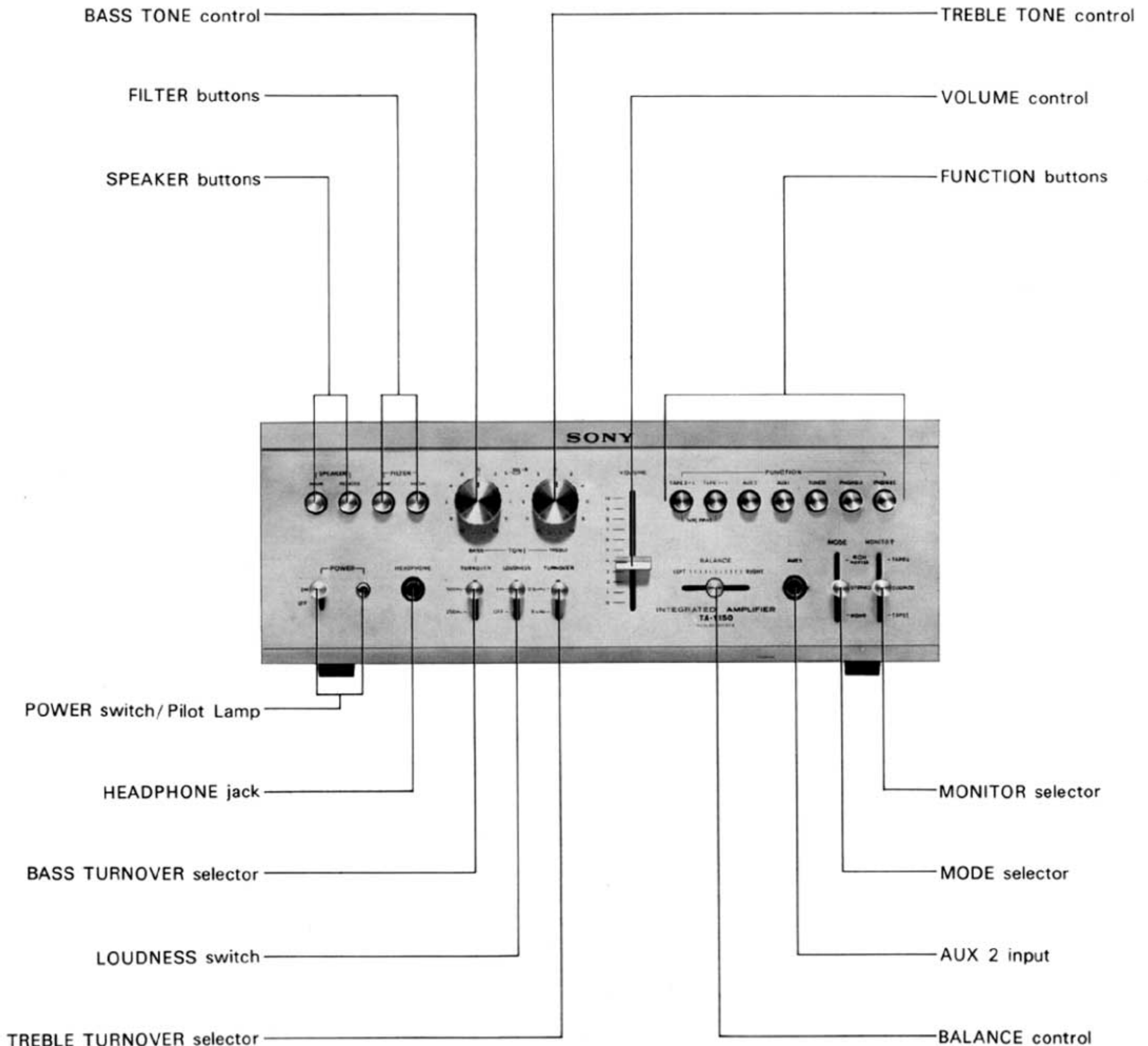
The left and right speakers should be placed with the usual care required for good stereo effect. However, the center-channel speaker may be located with less care required than the above, because the low frequency sound disperses vastly.



# OPERATING INSTRUCTIONS

## LOCATION AND FUNCTION OF CONTROLS

Before attempting to operate your TA-1150, take a few minutes to learn the location and function of the controls, connectors, and other parts mentioned in the operating instructions.



### POWER switch and pilot lamp

This switch turns the operating power on or off. The pilot lamp lights when the power is on.

### BASS TONE controls and TURNOVER selector

These knobs control the prominence of bass notes below 500 Hz or 250 Hz. Left and right channels can be controlled simultaneously or separately; the outer knob controls the right channel, and the inner knob controls the left channel. Turn these knobs clockwise to increase response, counterclockwise to decrease response. The center position provides a flat response.

The selector lever sets the frequency below which the bass response is changed.

### TREBLE TONE controls and TURNOVER selector

These knobs control the prominence of treble notes above 2.5 kHz or 5 kHz. Left and right channels can be controlled simultaneously or separately; the outer knob controls the right channel, and the inner knob controls the left channel. Turn these knobs clockwise to increase response, counterclockwise to decrease response. The center position provides a flat response.

The selector lever sets the frequency above which the treble response is changed.

### LOUDNESS switch

When this switch is set to ON, an equalization network is

switched into the circuit to compensate for the change in the tonal response of human hearing at low sound levels. Your ear is most sensitive to those frequencies between 1,500 Hz and 6,000 Hz and at low levels may not be sensitive to frequencies above or below that range. The LOUDNESS switch will boost the low and high frequency response to provide an apparently flat output. It is automatically disconnected when the set is operated at high volume levels.

### MAIN and REMOTE SPEAKER buttons

To turn on the main speakers, push in the MAIN SPEAKER button. Similarly, to turn on the remote speakers, push in the REMOTE SPEAKER button. To use both speaker systems simultaneously, push in both SPEAKER buttons. Make sure that both speaker systems are connected to the SPEAKER terminals when both SPEAKER buttons are pushed, otherwise, no sound will be heard.

For private listening, use a stereo headphone and turn off the SPEAKER buttons by pushing them again.

### LOW FILTER button

The low frequency filter can be used to reduce turntable rumble and low-frequency noises, or "boomy, exaggerated" bass. This button reduces signal strength by 6 dB/octave below 100 Hz when pushed in to ON. Since use of this filter will reduce desired low-frequency sound as well as the unwanted noise, the filter should be used judiciously with troublesome program sources.

### HIGH FILTER button

This button can be used to reduce high-frequency noises associated with the playing of poorly recorded tapes or old worn disc recordings. This button reduces signal strength by 6 dB/octave above 5 kHz when set to ON by pushing the button, and proves effective in suppressing tape "hiss" or the "scratchy" sound from poor-quality or carelessly handled records.

### VOLUME control

This lever regulates the overall sound volume level. To increase the volume, slide the lever up, and to decrease the volume, slide it down.

### BALANCE control

This lever regulates the level of either the left or right channel to produce the optimum stereo effect.

### FUNCTION buttons

These buttons select the input source as follows:

PHONO 1 .....for the record player connected to the PHONO 1 inputs.

PHONO 2 .....for the record player connected to the PHONO 2 inputs.

TUNER .....for off-the-air program listening by the tuner connected to the TUNER inputs.

AUX 1 .....for the input source connected to the AUX 1 inputs.

AUX 2 .....for the input source connected to the AUX 2

input on the front panel by using a binaural-plug cord.

TAPE 1→2 } .....for tape duplicating. Refer to page 11.  
TAPE 2→1 }

### MONITOR selector

TAPE 1 .....Taped programs connected to either the TAPE 1 inputs or to the DIN 5-pin connector can be played back.

TAPE 2 .....Taped programs connected to TAPE 2 inputs can be played back.

SOURCE .....For all other program sources, set the selector to this position and push the desired FUNCTION button.

This selector can also be used as a source/tape comparator when using a 3-head tape recorder (recorder having recording and playback heads and preamplifiers). The recording signal is monitored when the selector is set at SOURCE and the recorded signal is monitored when the selector is set at TAPE 1 or TAPE 2 (according to the tape recorder used). In this case the recorder should not be connected to the DIN 5-pin connector of the TA-1150.

### MODE selector

Determines the mode of the program reproduced at the outputs.

MODE selector setting	Input	Output	Use
4 CH MASTER	Front L (left) R (right) Back L R	→ L → R → L → R	For listening to SQ 4-channel stereo or discrete 4-channel tape. Refer to page 12.
STEREO	L R	→ L → R	Conventional 2-channel stereo sound.
MONO	L R	→ L → R	For recording with a monaural tape recorder. For balancing right and left channel sound levels. For listening to any input program monophonically.

### TAPE 1 LEVEL ADJUST control (on the rear panel)

This screw controls the input level of the TAPE 1 input, and is turned fully clockwise at the factory to provide maximum input sensitivity, counterclockwise rotation will decrease the volume level.

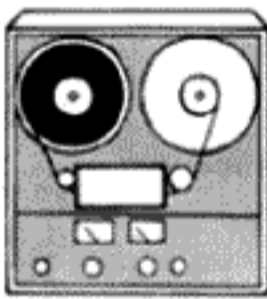





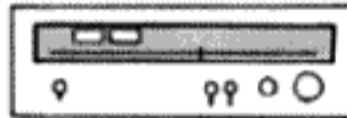






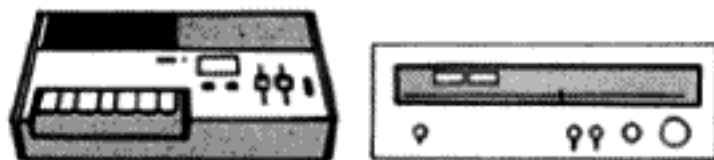

### NORMAL/SEPARATE switch (on the rear panel)

Generally keep the switch at the NORMAL setting. However, with the switch in the SEPARATE position, the preamplifier and power amplifier are disconnected from one another.

## USING THE TA-1150

After you have connected all of the components in your system as described in the previous section, your TA-1150 is ready for operation. Its operation entails little more than the following simple steps:

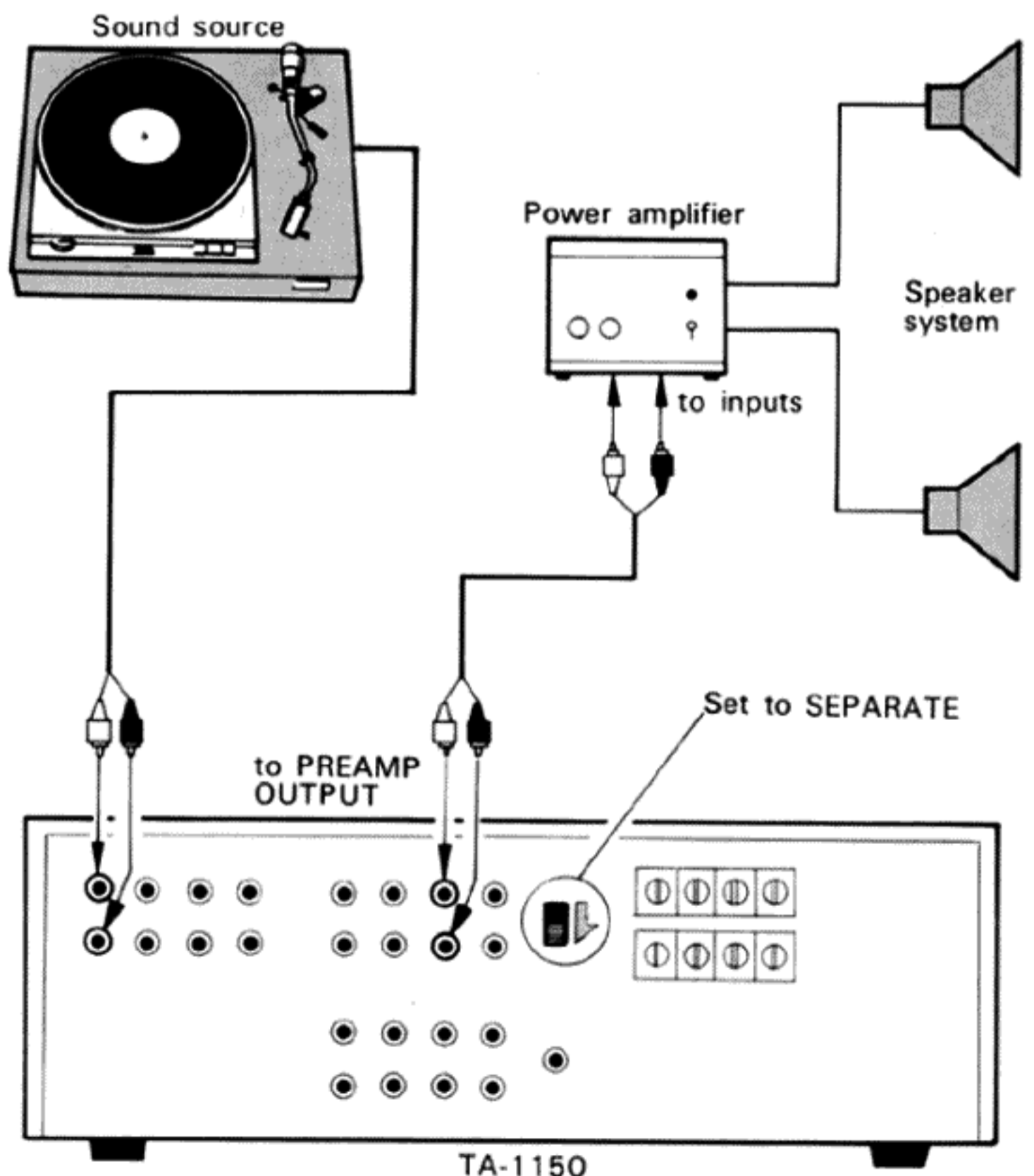
1. Slide down the VOLUME control, then turn on the TA-1150 and other components of the system.
2. Push in the MAIN SPEAKER button.
3. Set the MODE selector to STEREO.
4. To playback a tape connected to the TAPE 1 inputs or DIN 5-pin connector (indicated REC/PB), set the MONITOR selector to TAPE 1. To playback a tape connected to the TAPE 2 inputs, set it to TAPE 2.  
For any other program source, set the MONITOR selector to SOURCE and push in the desired FUNCTION button; PHONO 1, PHONO 2, TUNER, AUX 1, AUX 2, or TAPE 1→2, TAPE 2→1 for tape duplicating.
5. Adjust the VOLUME, BALANCE, and TONE controls to your listening preference.

PROGRAM SOURCE	POSITION OF CONTROL	MONITOR SELECTOR	FUNCTION BUTTON
Tape recorder (connected to TAPE 1 or REC/PB)		MONITOR  TAPE 1	
Tape recorder (connected to TAPE 2)		MONITOR  TAPE 2	
Tuner (connected to TUNER)			TUNER 
Records (connected to PHONO 1)		MONITOR  SOURCE	PHONO 1 
Records (connected to PHONO 2)			PHONO 2 
Auxiliary sound sources (connected to AUX 1 or AUX 2)			AUX 1 or AUX 2 

## Use of the NORMAL/SEPARATE Switch

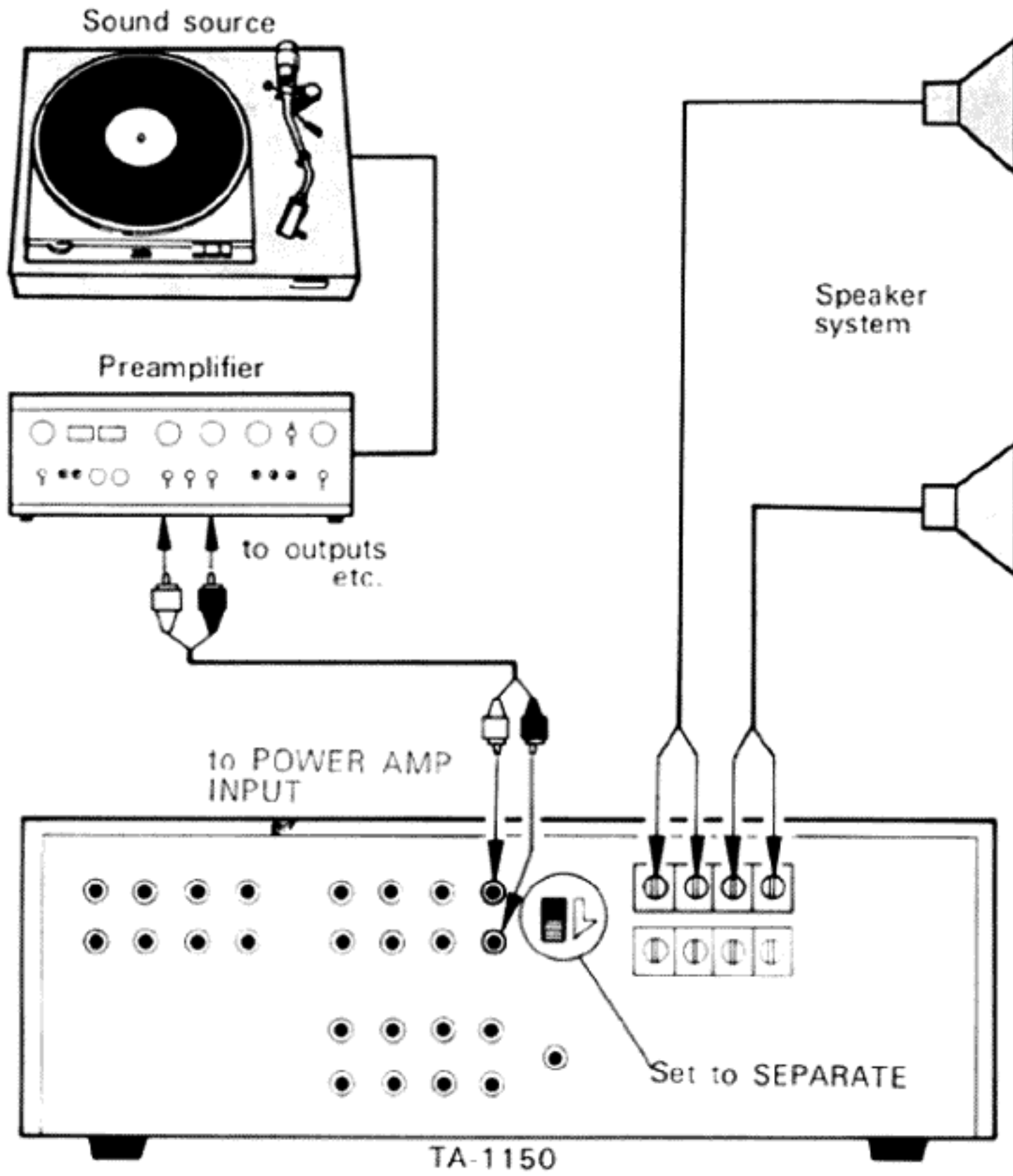
By setting the NORMAL/SEPARATE switch on the TA-1150 to SEPARATE, you can use the preamplifier and power amplifier sections completely independently of each other as shown in the illustration. In SEPARATE, the connections between preamplifier and power amplifier sections are broken. The preamplifier output is available at the PREAMP OUTPUTS, allowing you to use the preamplifier section to drive a different power amplifier. Input to the power amplifier section of the TA-1150 is made to the POWER AMP INPUTS, allowing you to use a different preamplifier to drive the TA-1150's power amplifier. When the NORMAL/SEPARATE switch is set to NORMAL, the output of the preamplifier section is connected to the power amplifier. Thus, the preamplifier output appearing at POWER AMP INPUTS can be used to drive an additional power amplifier.

With a different power amplifier



## TAPE DUPLICATION

### With a different preamplifier

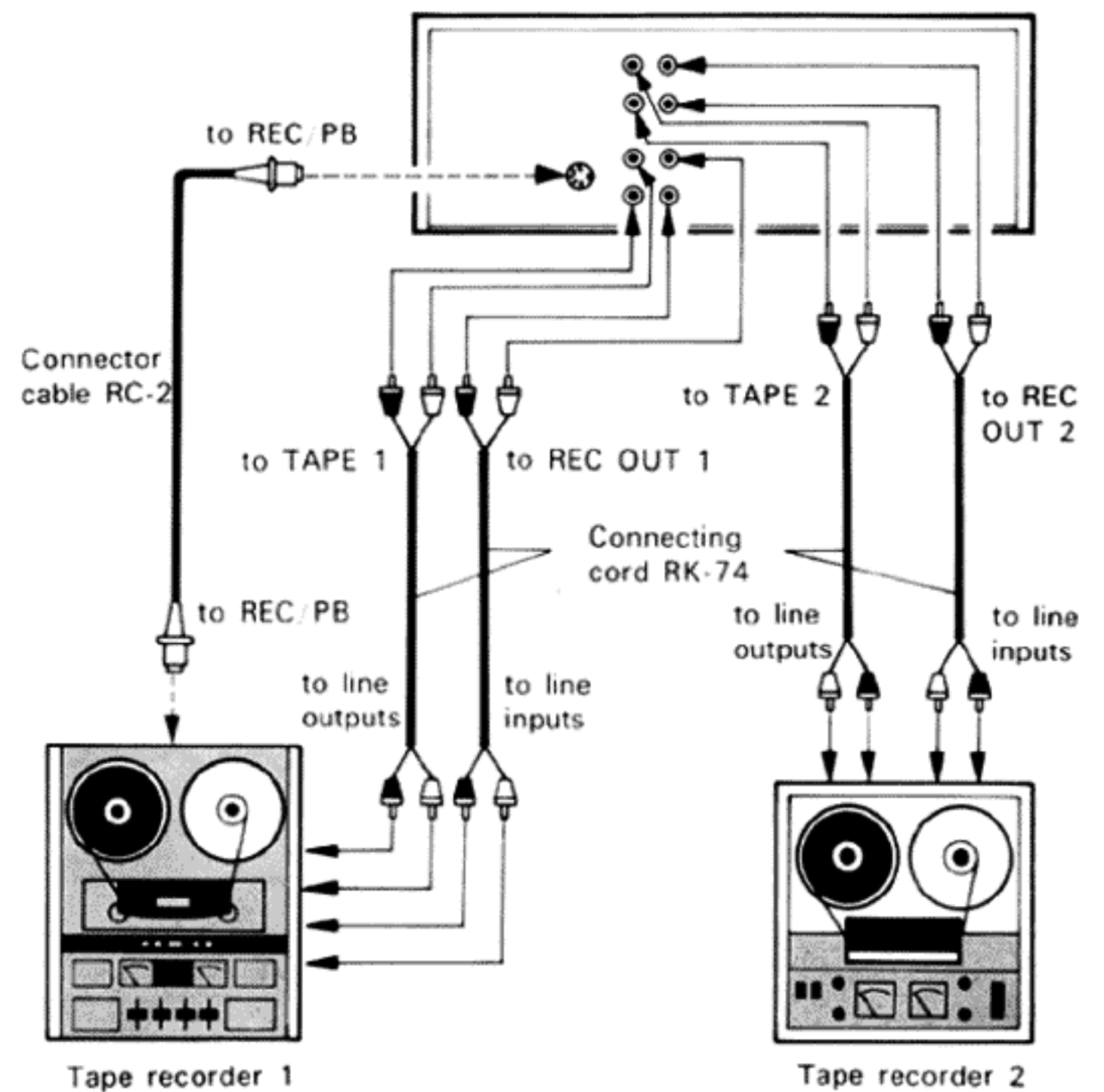
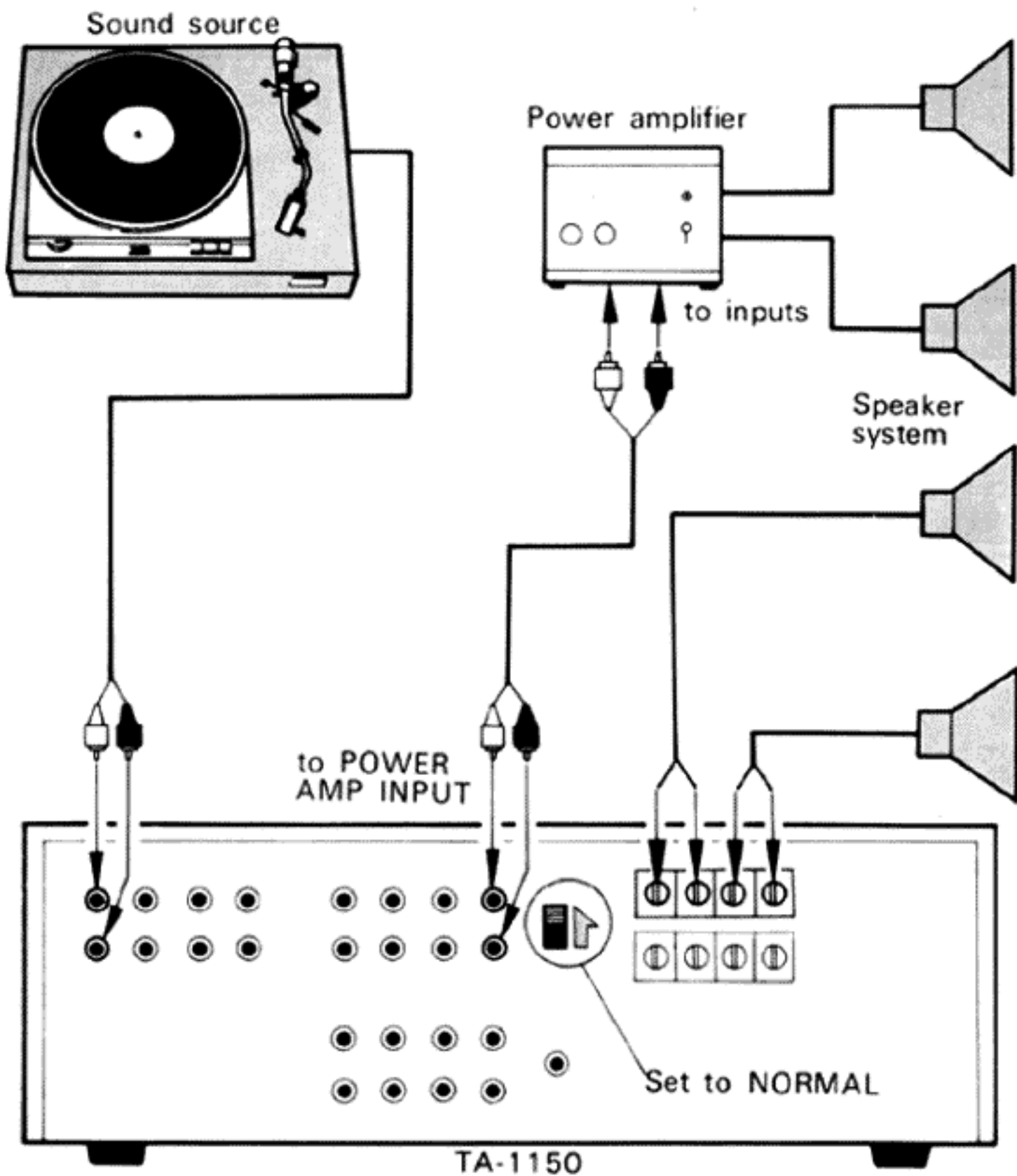


Without changing the tape recorder connection, you can copy a tape program through the TA-1150.

1. Connect tape recorder 1 to the TAPE 1 inputs and the REC OUT 1 jacks, and tape recorder 2 to the TAPE 2 inputs and REC OUT 2 jacks.
2. To duplicate from tape recorder 1 to tape recorder 2, push in the TAPE 1→2 button. Start tape recorder 1 in its playback mode and tape recorder 2 in its record mode. To duplicate from tape recorder 2 to tape recorder 1, push in the TAPE 2→1 button. Start tape recorder 2 in its playback mode and tape recorder 1 in its record mode.

FUNCTION buttons	Tape recorder 1—Tape recorder 2
Push the TAPE 1 → 2	Playback → Recording
Push the TAPE 2 → 1	Recording ← Playback

### With an additional power amplifier



## USING THE TA-1150 IN A 4-CHANNEL SYSTEM

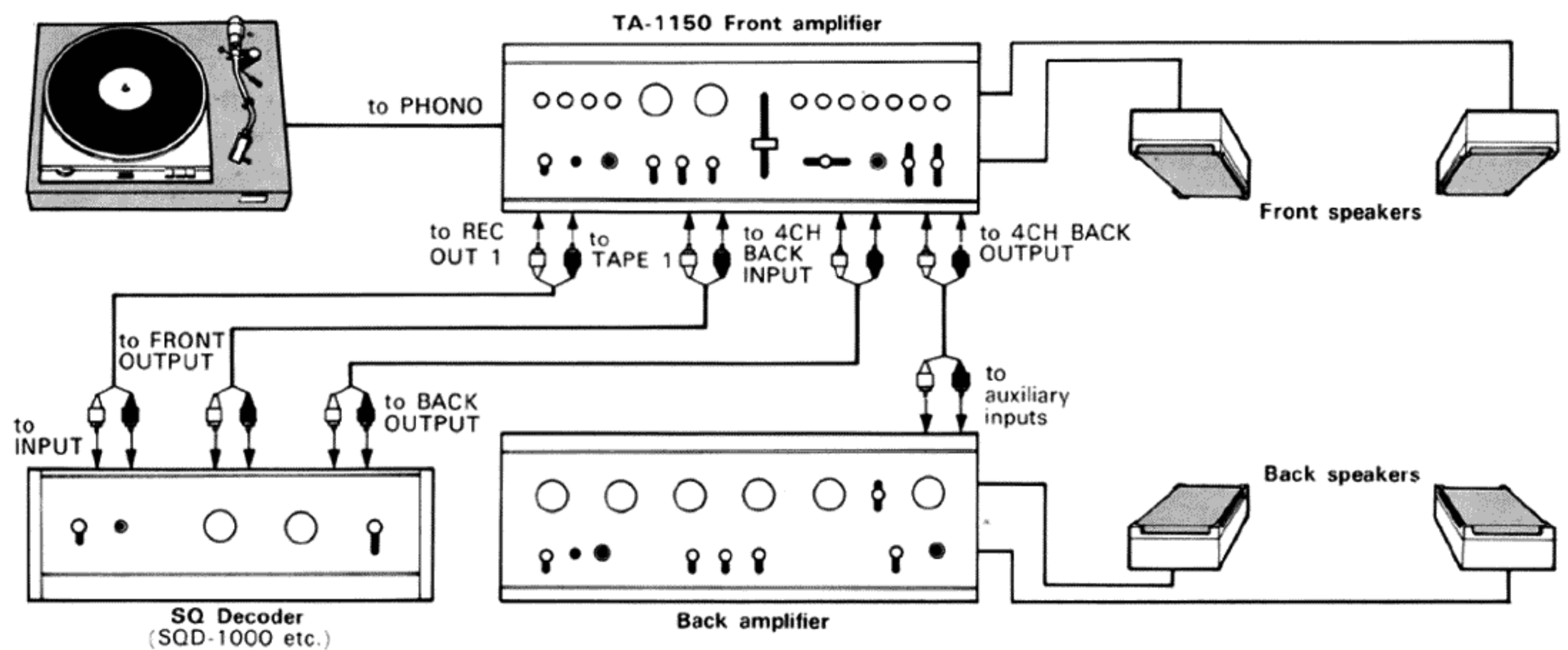
You can use the TA-1150 as a front amplifier in a 4-channel stereo system. In this case the VOLUME control of the TA-1150 operates as a master volume and you can control the sound level of the front and back channels simultaneously. The LOUDNESS switch functions on all 4 channels when set to ON.

1. Connect a back amplifier and matrix decoder, such as SONY SQD-1000, or a 4-channel tape recorder, to the TA-1150 as illustrated.
2. Set the MODE selector to 4 CH MASTER.
3. Set the MONITOR selector to TAPE 1.

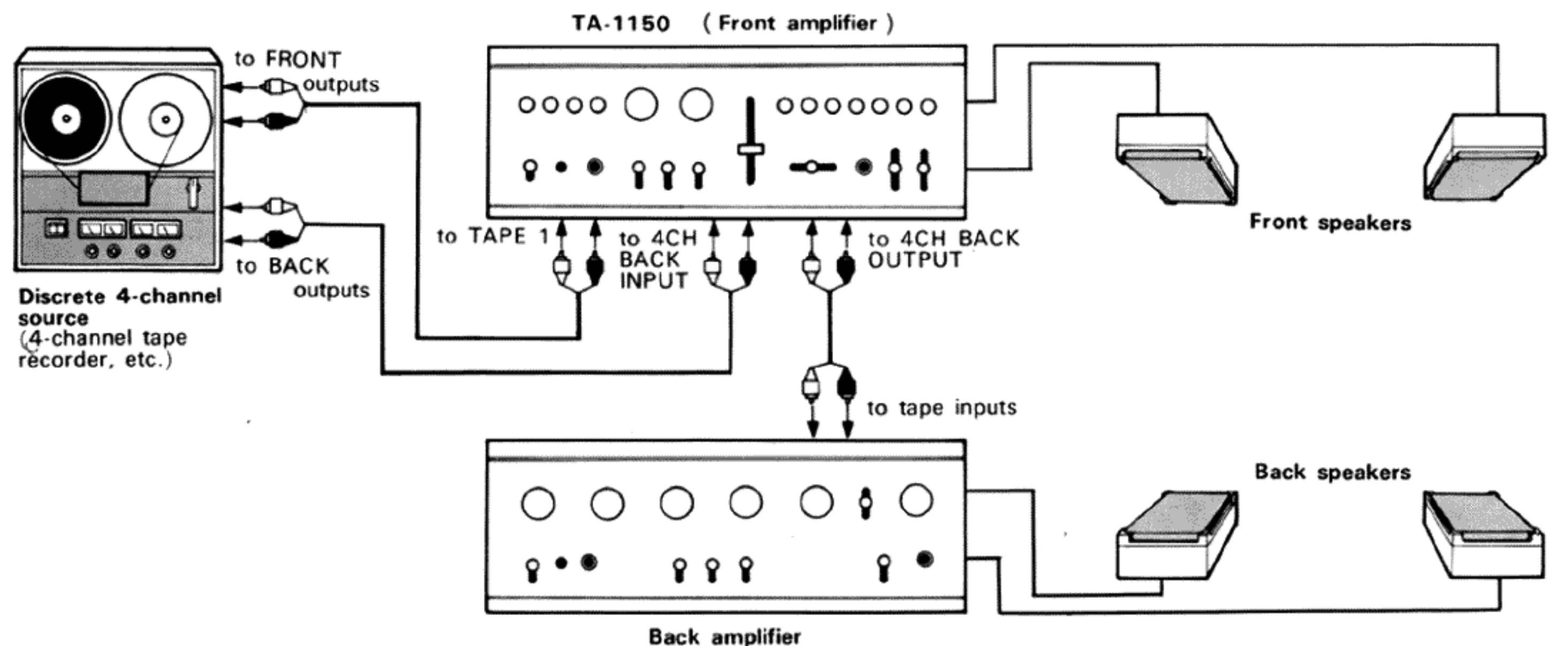
4. Turn the TAPE 1 LEVEL ADJUST control on the rear panel counterclockwise and adjust the sound level of front and back channels with the use of the VOLUME control of the TA-1150.

Note: When you set the MONITOR selector to SOURCE, be sure to decrease the volume to avoid speaker damage.

### With an SQ Decoder



### With a 4-channel Tape Recorder



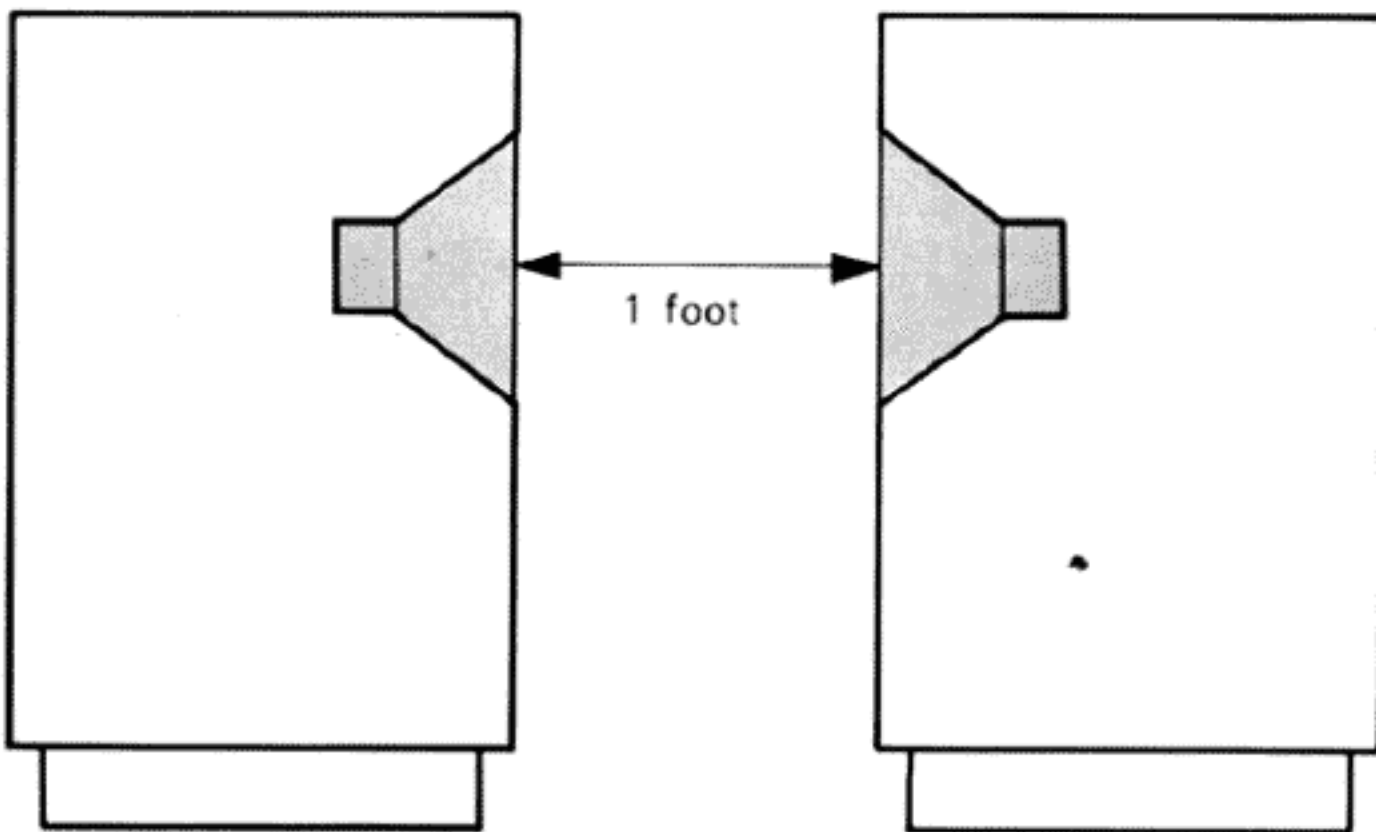
## CARE OF YOUR TA-1150

### BALANCING THE STEREO SYSTEM

As soon as you are familiar with the operation of your TA-1150, make the following checks and adjustments in your stereo system to secure the best possible stereo listening.

#### Speaker Phasing Check

Make sure your speakers are properly phased by performing this simple test. Move the right- and left-channel speakers so that they are about one foot apart and facing each other. Adjust the system controls for balanced L+R operation (by setting the MODE selector to MONO and the BALANCE control to center). Listen to a recorded passage containing prominent bass notes. Then reverse the connection to one of the speakers and listen to the same bass passage again. If it now sounds like there is less bass, the speakers were correctly phased and the original connection should be restored. However, if the bass appears to have increased, the speakers were originally phased incorrectly and the new connection should be used.



#### Stereo Balance

The feeling of direction and depth that stereophonic sound produces is greatly degraded if the levels of both channels are not balanced. Set the MODE selector to MONO and adjust the BALANCE control for equal output from right and left speakers. Balance variations with different program sources are due to differences in the recording levels. Stereo balance is also influenced by the acoustics of the room. Carpets, furniture placement, and room size and shape have a definite effect upon sound quality and balance.

### CLEANING

The finish on the TA-1150's front panel and knobs is practically indestructible. However, finger prints, the kid's chocolate candy, and similar household annoyances can mar the beauty of your unit. These can be cleaned up by wiping the panel and knobs with a soft clean cloth moistened with water. If this is ineffective, use a soft cloth saturated with methanol. Do not use any type of scouring powder or abrasive pad.

### TROUBLE CHECKS

If trouble with the TA-1150 arises, make the following simple checks to determine if the trouble is really in the TA-1150 or external to it. Quite often hi-fi equipment fails to work properly because of incorrectly-made system connections. If the trouble persists after you have made these checks, consult your SONY dealer for further instructions.

Symptom	Check
No audio and the pilot lamp does not light.	Check the power cord connection.
No audio but the pilot lamp lights.	Check the speaker connections. Push the corresponding SPEAKER button. Set the MONITOR selector to the proper position. Push the proper FUNCTION button. Slide the VOLUME control up. Set the NORMAL/SEPARATE switch to NORMAL.
No audio from one channel, or unbalanced output.	Check the connections to each speaker. Adjust the BALANCE control.
Output levels of radio programs and recordings are different.	Adjust the VOLUME control. Adjust the output level of the tuner connected.
Audio output is intermittent at high volume levels.	Check the impedance of the speakers (4-16 ohms). If speakers with an impedance of less than 4 ohms are used, lower the volume of the amplifier.
Severe hum or noise.	Use shielded connection cables. Avoid long horizontal runs. Keep cables away from transformers or generators, and at least 10 feet from TV sets and fluorescent lights. Reverse the ac plug in the receptacle. Ground the amplifier.

# TECHNICAL DATA

## HOW THE TA-1150 WORKS

### Complementary Circuit

The TA-1150 uses differential amplifiers and incorporates balanced positive and negative power supplies. A paralleled complementary push-pull power amplifier stage which eliminates the big speaker coupling capacitor provides better low frequency response, high damping factor and low distortion even at sub-sonic and supersonic frequencies. Suitable amount of negative feed-back are applied so that the frequency response is further improved, and distortion is reduced to a minimum. These techniques make it possible for the TA-1150 to provide abundant output power: 30 watts of continuous rms power per channel into 8 ohms, with both channels driven simultaneously, at any frequency between 20 Hz and 20,000 Hz with less than 0.2% total harmonic distortion.

### Natural Sounding Preamplifier

In the equalizing amplifier and the tone amplifier sections the TA-1150 employs a newly-developed low-noise high-voltage integrated circuit especially designed for audio preamplifier use. This assures exceptionally low noise and superior signal-to-noise ratio. The equalizing amplifier of the TA-1150 has high input capabilities so that wide dynamic range is achieved to transfer the distortion-free-pure signals to the power amplifier stage even at the loudest passage of the latest high performance records.

### Four-channel Master Level Control Facility

The VOLUME control knob adjust not only the sound volume level of the TA-1150 but also that of the four-channel program which is connected to the 4 CH BACK INPUTs. The 4 CH BACK INPUTs and OUTPUTs are designed to reproduce newly developed Stereo Quadraphonic (SQ) Sound and to connect a four-channel tape recorder. With the use of an SQ Decoder you can play SQ records on a conventional stereophonic player and enjoy other programs with an impression of "surround sound". When playing SQ records, tapes and discrete four-channel tapes etc., you can simultaneously adjust the four channel's sound levels with loudness compensation capability.

### Improved Tone Controls

An ordinary amplifier's tone controls do not change the corner frequencies but only boost or reduce signals above or below the fixed frequencies. Therefore, when adjusting the tone unnecessary highs or lows are simultaneously boosted or cut. In the TA-1150, the turnover frequency at which the bass or treble controls become effective can be selected (500 Hz or 250 Hz for BASS, 2.5 kHz or 5 kHz for TREBLE). This advanced tone control circuit permits extremely-precise tone compensation.

### Stable and Instantaneous Input Selection

The use of the push-button function selectors allows instantaneous and noiseless selection of either PHONO 1, PHONO 2, TUNER, AUX 1, AUX 2, TAPE 1→2 and TAPE 2→1. Tape duplicating between two tape recorders connected to the amplifier is set up simply by pushing the TAPE 1→2 or TAPE 2→1 button.

### Versatility

An interesting feature of the TA-1150 is the separation of the preamplifier and power amplifier sections. They are normally internally coupled, but a slide switch in the rear panel breaks the connection so that the preamplifier outputs can be fed to an external crossover unit or another amplifier, and its outputs returned to the power amplifier of the TA-1150. Also, the TA-1150 allows you to set up a center woofer system via the center channel output on the rear panel.



# TECHNICAL SPECIFICATIONS

## Power Amplifier Section

Dynamic power output (IHF constant power supply method)	100 watt (8 ohm) 150 watts (4 ohms)
Continuous RMS power output (Less than 0.2% THD)	At 1 kHz 35+35 watts (8 ohms) 40+40 watts (4 ohms) both channels driven simultaneously At 20 Hz-20 kHz 30+30 watts (8 ohms) both channels driven simultaneously
Power bandwidth (IHF)	8 Hz-35 kHz
Harmonic distortion	Less than 0.2% at rated output Less than <del>0.1%</del> <sup>0.06%</sup> at 1 watt output
IM distortion (60 Hz : 7 kHz = 4 : 1)	Less than 0.2% at rated output Less than 0.1% at 1 watt output
Frequency response	12Hz-150 kHz $\pm 0$ / <sub>-2</sub> dB at 1 watt output
S/N ratio	110 dB, network A, short-circuited
Residual noise (incl. preamplifier)	Less than 0.05 $\mu$ watt (8 ohms), network A
Damping factor	100 (8 ohms), at 1 kHz
Inputs	POWER AMP INPUT Sensitivity 0.85 volt (for rated output) Impedance 50 k ohms
Outputs	SPEAKER terminals Accept 4-16 ohm speakers Equipped with 2 pairs of speaker outputs. HEADPHONE jack Accepts low- and high-impedance stereo headphone

## Preamplifier Section

Inputs	Sensitivity (maximum input capability)	Impedance	S/N	Weighting network
PHONO 1-2	2 mV	47 k $\Omega$	70 dB	B
TUNER, AUX 1-2, TAPE 1-2, REC/PB (Input)	(70 mV) 140 mV	50 k $\Omega$	90 dB	A
Outputs	Output voltage	Impedance		
REC OUT 1-2	140 mV	10 k $\Omega$		
PRE AMP OUT	0.8 V	2.7 k $\Omega$		
REC/PB (Output)	24 mV	82 k $\Omega$		
CENTER CHANNEL OUT	0.8 V	680 $\Omega$		

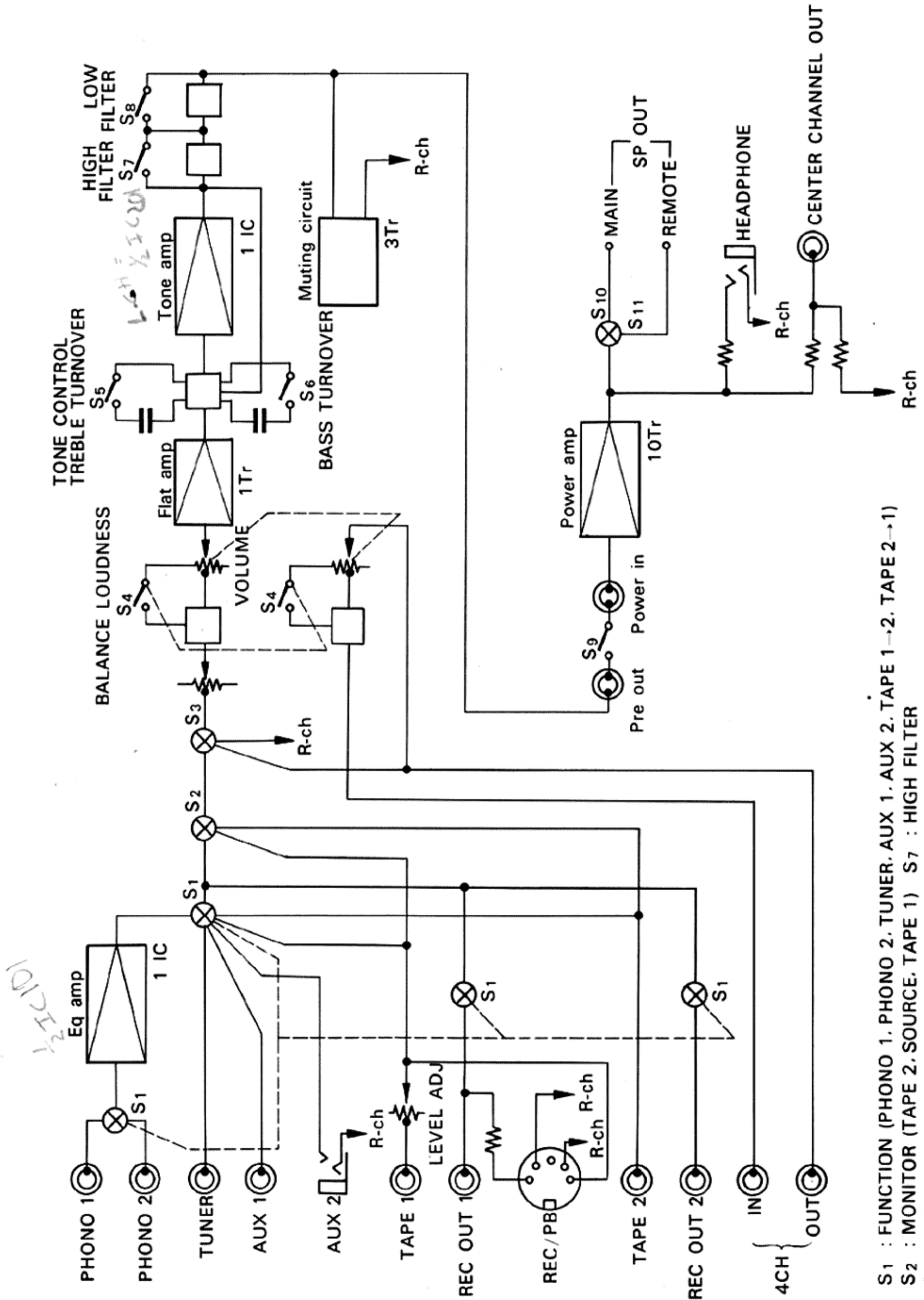
Harmonic distortion	Less than 0.1% at rated output, 1kHz	
IM distortion (60 Hz : 7 kHz = 4 : 1)	Less than 0.1% at rated output	
Frequency response	PHONO 1-2 RIAA equalization curve $\pm 1$ dB TUNER, AUX 1-2, TAPE 1-2, REC/PB (Input) } 15 Hz-80 kHz $\pm 2$ dB	
Loudness control	50 Hz +10 dB, 10 kHz +3 dB (att. -30 dB)	
Tone controls	TURNOVER frequencies 250 Hz 500 Hz	BASS control 50 Hz 100 Hz $\pm 10$ dB
	TURNOVER frequencies 2.5 kHz 5 kHz	TREBLE control 10 kHz 20 kHz $\pm 10$ dB
Filters	LOW FILTER	6dB/oct. below 100Hz
	HIGH FILTER	6dB/oct. above 5kHz

## General

System	All silicon-transistor stereo integrated amplifier. Power amplifier section: direct output coupling, complementary symmetry circuit (SEPP OTL), balanced positive and negative power supplies. Transistor protection and speaker protection circuits are included. Preamplifier section: direct coupling and complementary transistors in each equalizer and tone amplifier.
Semiconductors	26 transistors, 3 diodes, 2 IC's
Power requirements	120 volts, 60 Hz ac
Power consumption	180 watts
Ac outlets	2 switched, 200 watts 1 unswitched, 300 watts
Dimensions	15 $\frac{3}{4}$ (W) $\times$ 5 $\frac{1}{16}$ (H) $\times$ 12 $\frac{7}{16}$ (D) inches
Weight	18 lb 5 oz (net) 25 lb 6 oz (in shipping carton)
Supplied accessories	Shorting plugs (2)
Optional accessories	Wooden Case Model TAC-1N Connecting Cord RK-74, RK-81

Design and specifications subject to change without notice.

# BLOCK DIAGRAM



S1 : FUNCTION (PHONO 1, PHONO 2, TUNER, AUX 1, AUX 2, TAPE 1 → 2, TAPE 2 → 1)

S2 : MONITOR (TAPE 2, SOURCE, TAPE 1) S7 : HIGH FILTER

S3 : MODE (4 CH MASTER, STEREO, MONO) S8 : LOW FILTER

S4 : LOUDNESS

S5 : TREBLE TURNOVER (2.5 kHz, 5 kHz)

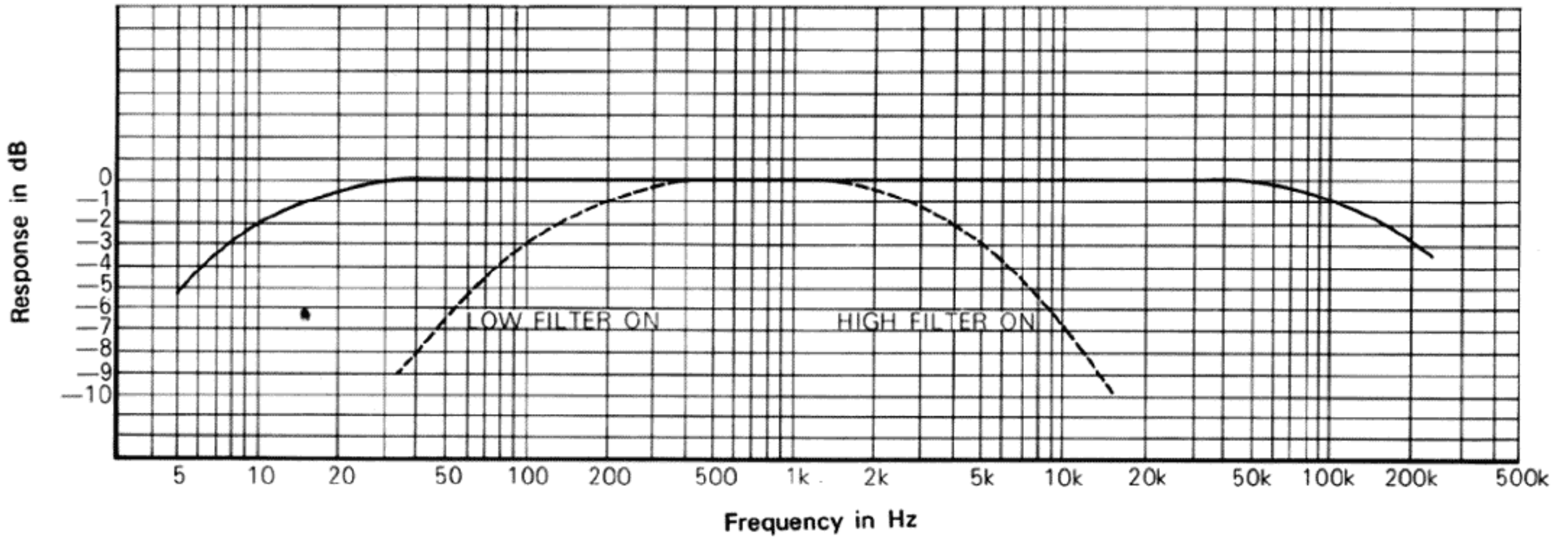
S6 : BASS TURNOVER (500 Hz, 250 Hz) S9 : NORMAL/SEPARATE switch (NORMAL, SEPARATE)

S10 : MAIN SPEAKER

S11 : REMOTE SPEAKER

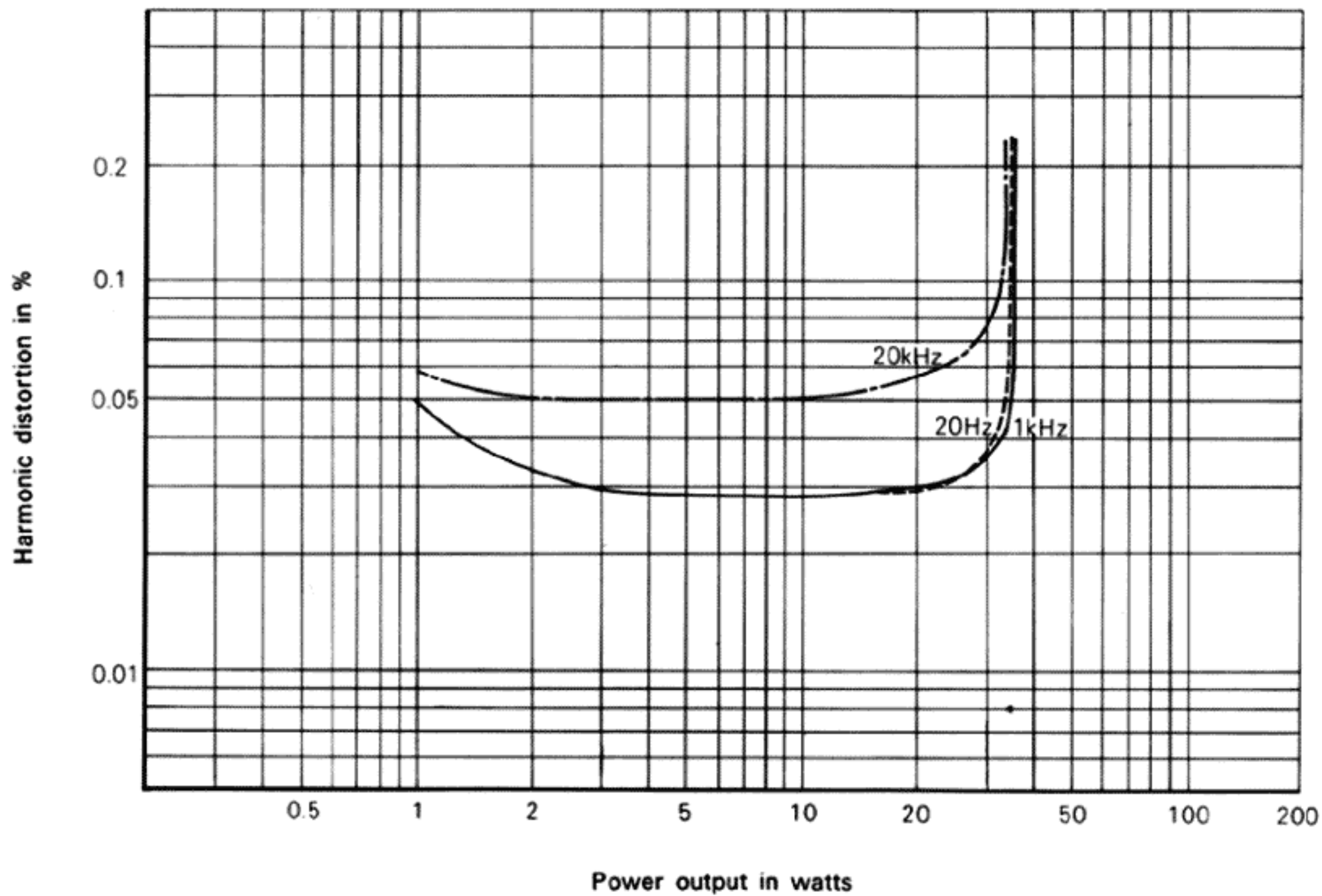
# OPERATING CURVES

## Frequency Response



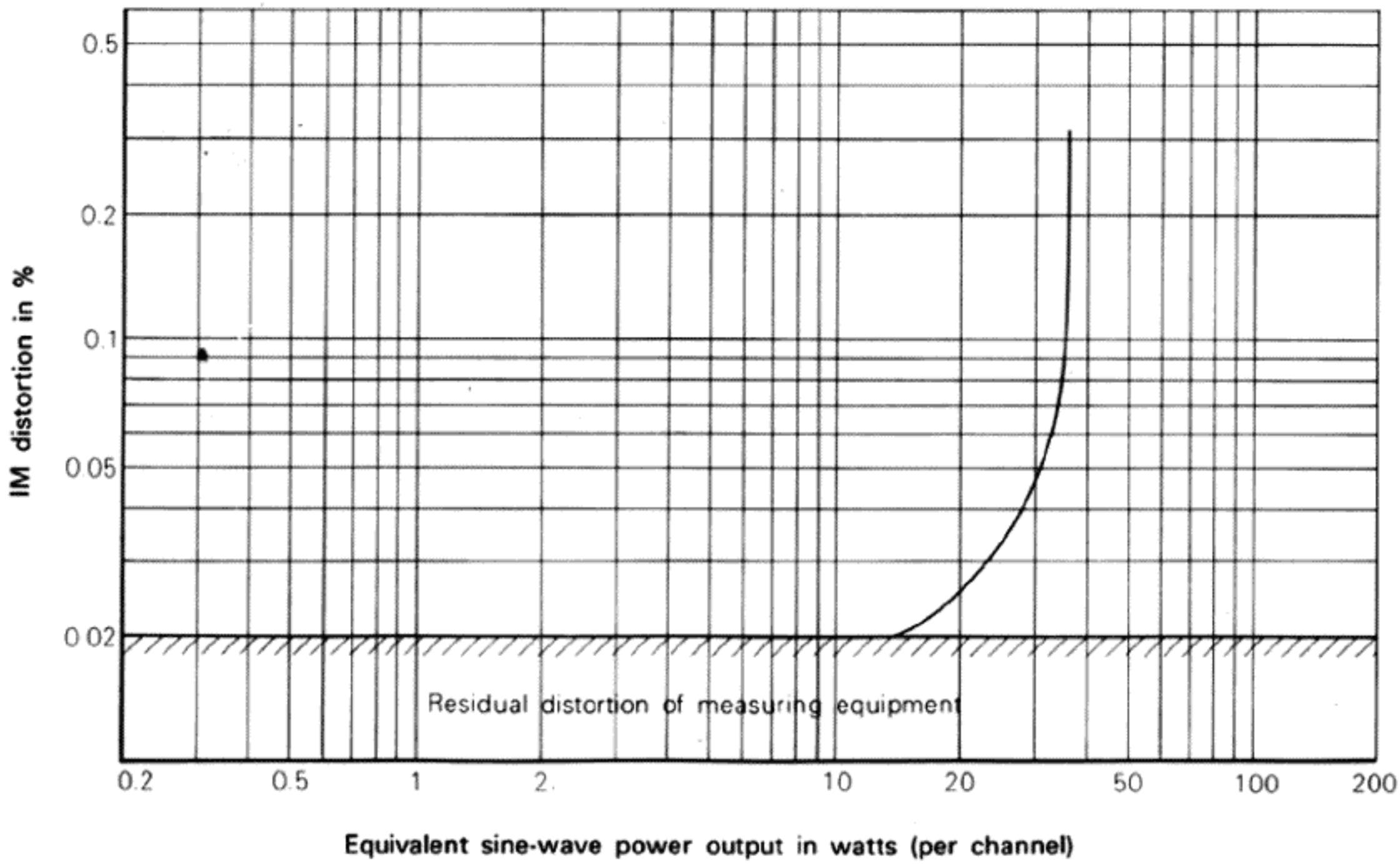
Input signal applied to TUNER inputs  
Outputs: SPEAKER terminals  
1 watt (0 dB on graph)

## Power Output vs. Harmonic Distortion



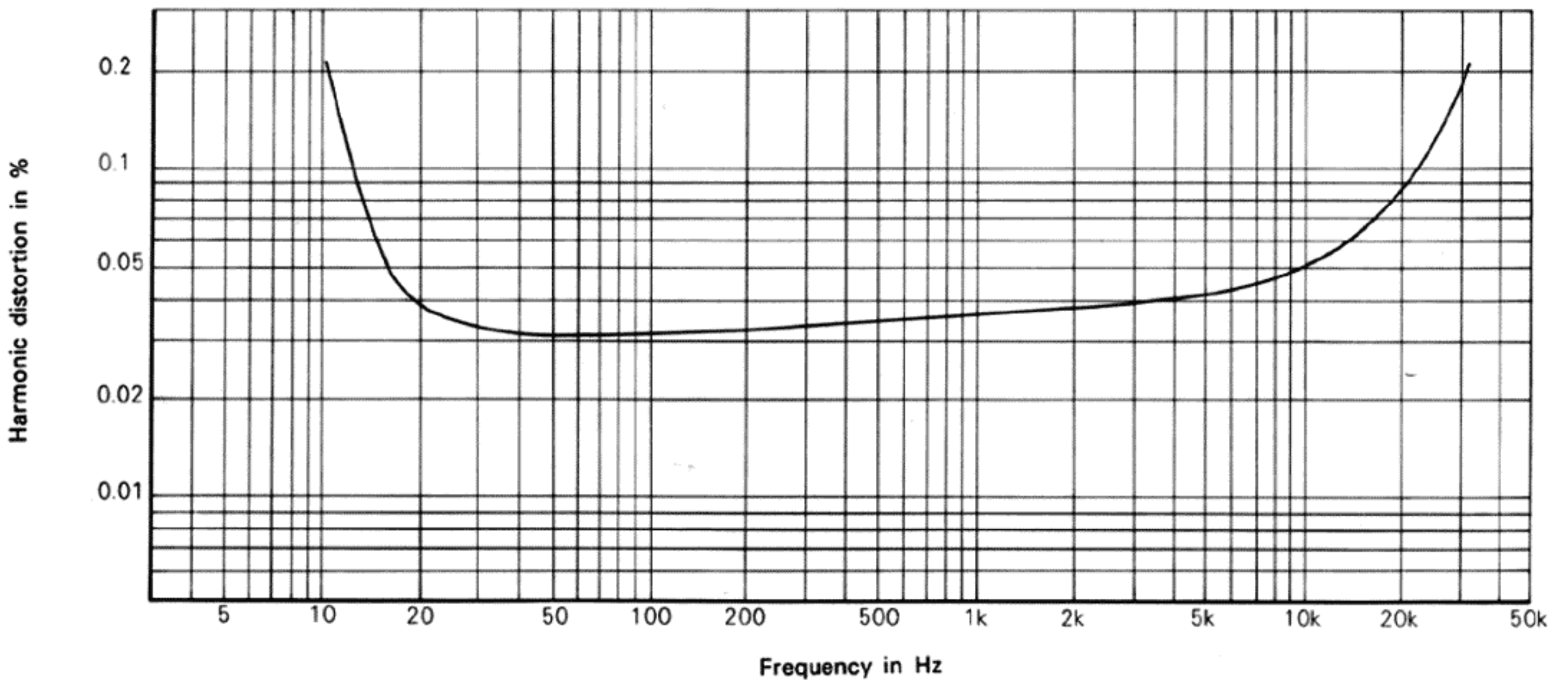
Input signal to TUNER inputs  
Load impedance: 8 ohms  
Measured output per channel, both channels driven to equal output levels.

## Power Output vs. IM Distortion



60 Hz and 7 kHz input signals: 4:1 amplitude ratio  
 Input signal applied to TUNER inputs  
 Load impedance: 8 ohms  
 Measured output per channel, both channels driven to equal output levels.

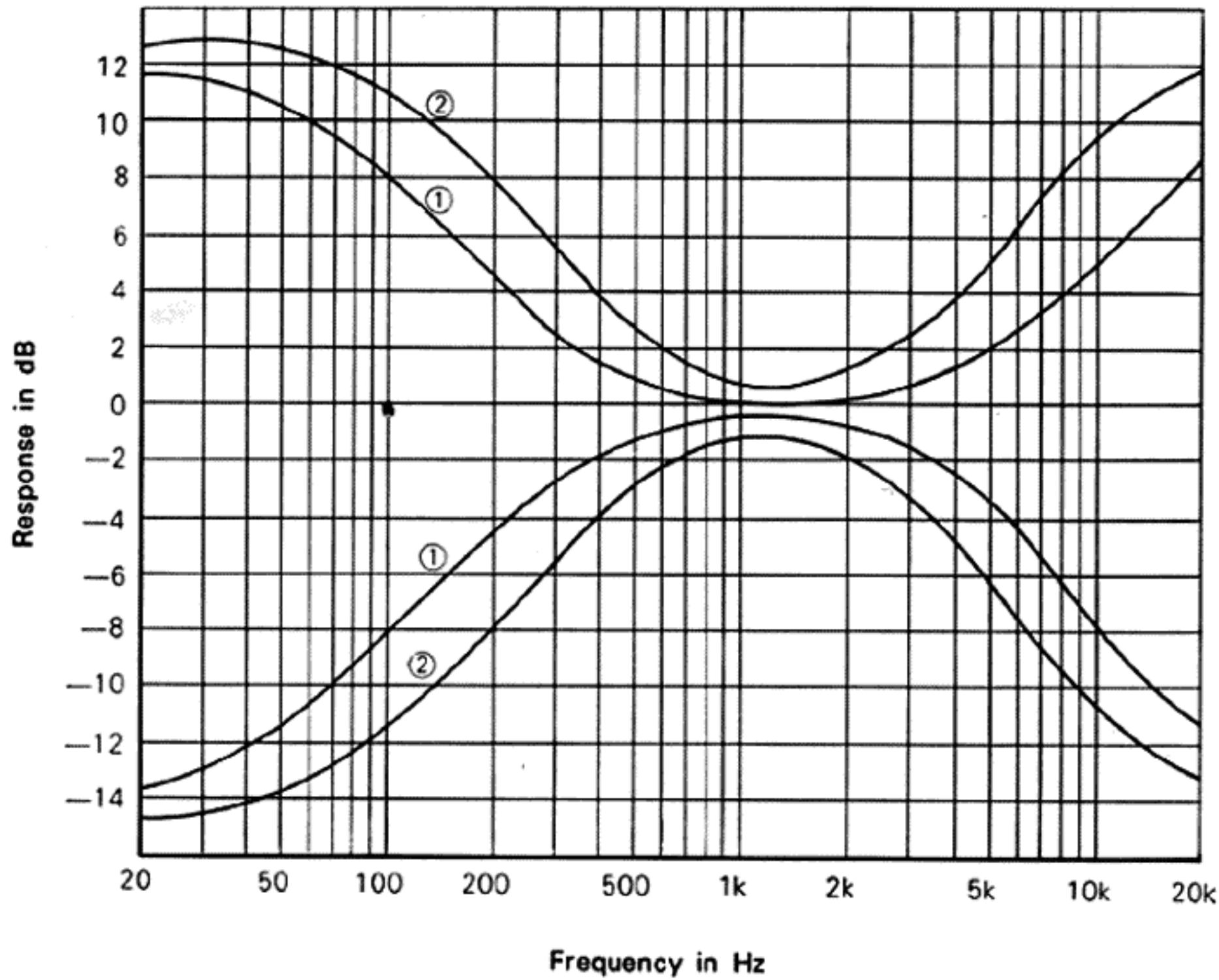
## Harmonic Distortion vs. Frequency



Input signal applied to TUNER inputs  
 Load impedance: 8 ohms

Output: 30 watts  
 Measured output per channel, both channels driven to equal output levels.

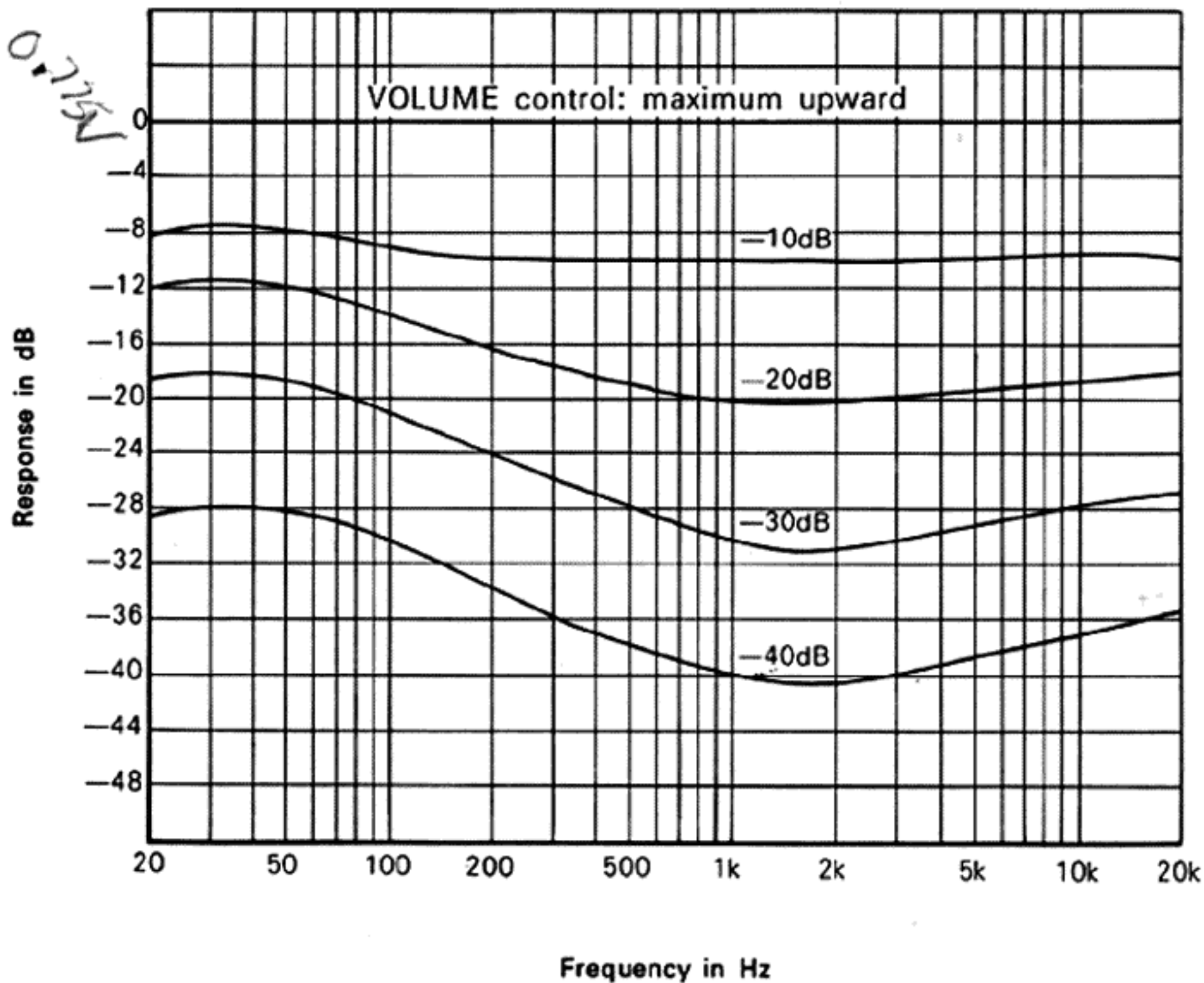
### Tone Control Frequency Response



Input signal applied to TUNER inputs  
 Outputs: PREAMP OUTputs  
 1 volt (0 dB on graph)

TURNOVER selectors:  
 ① { TREBLE 5 kHz  
     { BASS 250 Hz  
 ② { TREBLE 2.5 kHz  
     { BASS 500 Hz

### Loudness Switch Frequency Response



Input signal applied to TUNER inputs  
 Output signal: SPEAKER terminals  
 1 watt (0 dB on graph)