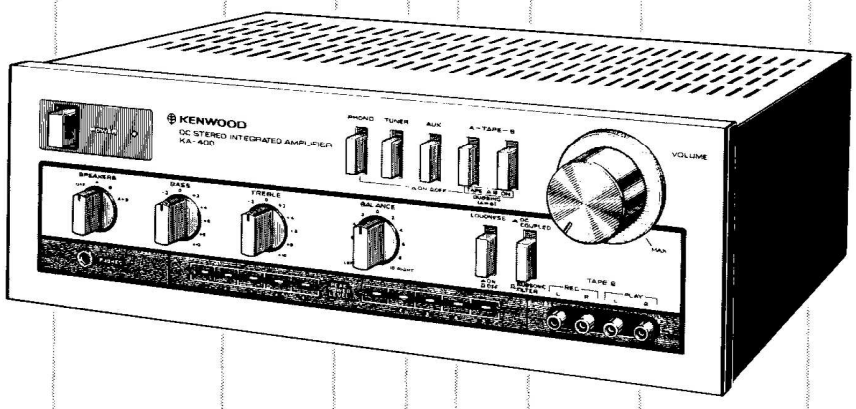
DC STEREO INTEGRATED AMPLIFIER

KA-400

INSTRUCTION MANUAL



KENWOOD

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DEAR AUDIO FAN

The purpose of this manual is to acquaint you with the operating features of your new amplifier. You will notice that in every detail of planning, engineering, styling, operating convenience, and adaptability, we have sought to anticipate your needs and desires.

We suggest that you read this manual carefully. Knowing how to set up your amplifier to the best advantage will enhance your listening pleasure right from the start. You will also become aware of the ease with which you can adjust your amplifier to meet your special requirements.

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FOR YOUR RECORDS

Record the serial number, found on the back of the unit, in the spaces designated on the warranty card, and in the space provided below. Refer to the model and serial numbers whenever you call upon your Kenwood dealer for information or service on this product.

Model KA-400 Serial number _____

AFTER UNPACKING

After unpacking, we recommend that you inspect the unit for any possible shipping damage, If your unit is damaged or fails to operate, notify your dealer immediately. If your unit was shipped to you directly, notify the shipping company without delay. Only the consignee (the person or company receiving the unit) can file a claim against the carrier for shipping damage.

We recommend that you retain the original carton and packing materials to prevent any damage should you transport or ship your unit in the future.

INSTALLATION PRECAUTIONS

a) Avoid locations subject to direct sunlight.
b) Avoid high or low temperature extremes.
c) Keep the unit away from heat radiating sources.
d) Choose a location that is relatively free of vibration or excessive dust.
e) Make sure power is off before making any system connections.

WARNING:

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

IMPORTANT!

U.S.A. AND CANADA

Units shipped to the U.S.A. and Canada are designed for operation on 120 volts AC only. These units are not equipped with an AC Voltage Selector switch and the discussion of such a switch that follows should be disregarded.

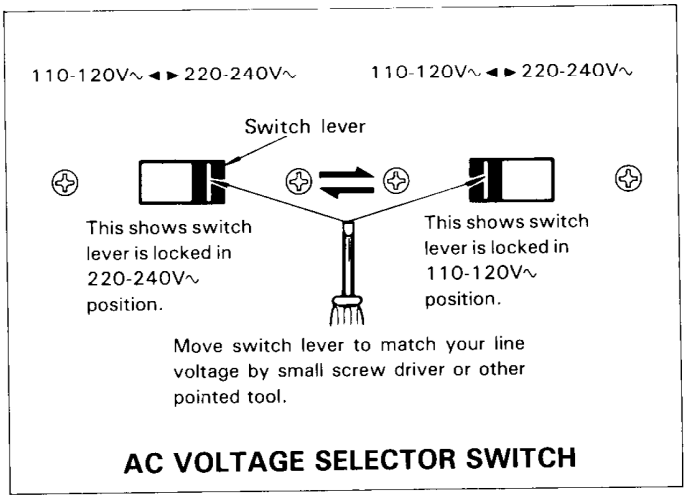
ALL OTHER COUNTRIES

Units shipped to countries other than the U.S.A. and Canada are equipped with an AC Voltage Selector switch on the bottom plate. Refer to the following paragraph for the proper setting of this switch.

AC VOLTAGE SELECTION

This unit operates on 110 – 120 volts or 220 – 240 volts AC. The AC Voltage Selector Switch on the bottom plate is set to the voltage that prevails in the area to which the unit is shipped. Before connecting the power cord to your AC outlet, make sure that the setting position of this switch matches your line voltage. If not, it must be set to your voltage in accordance with the following directions.

Note:
Our warranty does not cover damage caused by excessive line voltage due to improper setting of the AC Voltage Selector Switch.



AC VOLTAGE SELECTOR SWITCH

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SAFETY PRECAUTIONS

CLEANING

Do not use volatile solvents such as alcohol, paint thinner, gasoline, benzine, etc. to clean the cabinet. Use a silicone cloth or a clean dry cloth.

VENTILATION HOLES

The case top is slotted to allow ventilation. Never block these holes with ornamental cloths, books or other objects. Make sure that metal objects such as coins, hairpins, or needles do not enter the unit through the ventilation holes. The result could be a serious malfunction or a possible shock hazard. Make sure that children do not insert foreign objects into the ventilation holes.

MODIFICATIONS AND SERVICE

Each unit is shipped after it has been carefully adjusted and tested to provide optimum performance. The unit must not be modified internally. Unauthorized modifications will void the terms of the warranty. High voltages are used in some of the internal circuits. Therefore, do not remove the cabinet or touch internal parts. Refer all service to qualified service personnel.

ACOUSTIC FEEDBACK

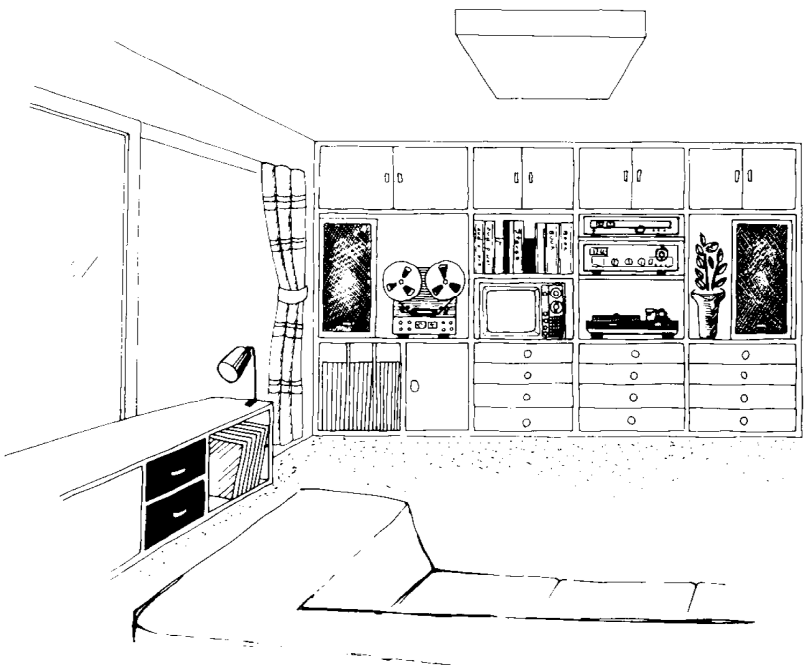
Occasionally a disturbing howling sound caused by acoustic feedback, may be heard. This is generally caused by the relative positions of the turntable and speaker enclosures. The sound pressure radiated from the speakers surrounds and vibrates the turntable.

This vibration is picked up by the cartridge, sent to the unit as an electrical signal, and returned to the speaker. This again causes the speakers to radiate vibration which induces sympathetic vibrations in the turntable and cartridge. Sympathetic vibrations are reinforced with each repeating cycle and result in an undesirable sound called oscillation or "howling". To prevent it, keep your turntable away from your speakers. Also, mounting your turntable on shock-absorbing pads may help.

POWER CORD

Always insert or remove the power plug from the AC outlet by grasping the plug body. Never pull or stretch the cord. Take care that the cord is not subject to traffic or bent sharply around furniture. Keep heavy objects off the cord; never route it under rugs, and avoid the use of extra extension cords. Attention to these precautions will prevent fire or shock hazards.

SYSTEM PLANNING CONSIDERATIONS



KA-400
- Thick curtains shut out direct sunlight.
- Do not permit curtains, tablecloths, books or other materials to block the ventilation holes.

Speaker System
- Speakers placed in front of a hard surface such as a wall, will generate more bass response.
- For best stereo reproduction, both speakers should work into the same acoustic conditions.

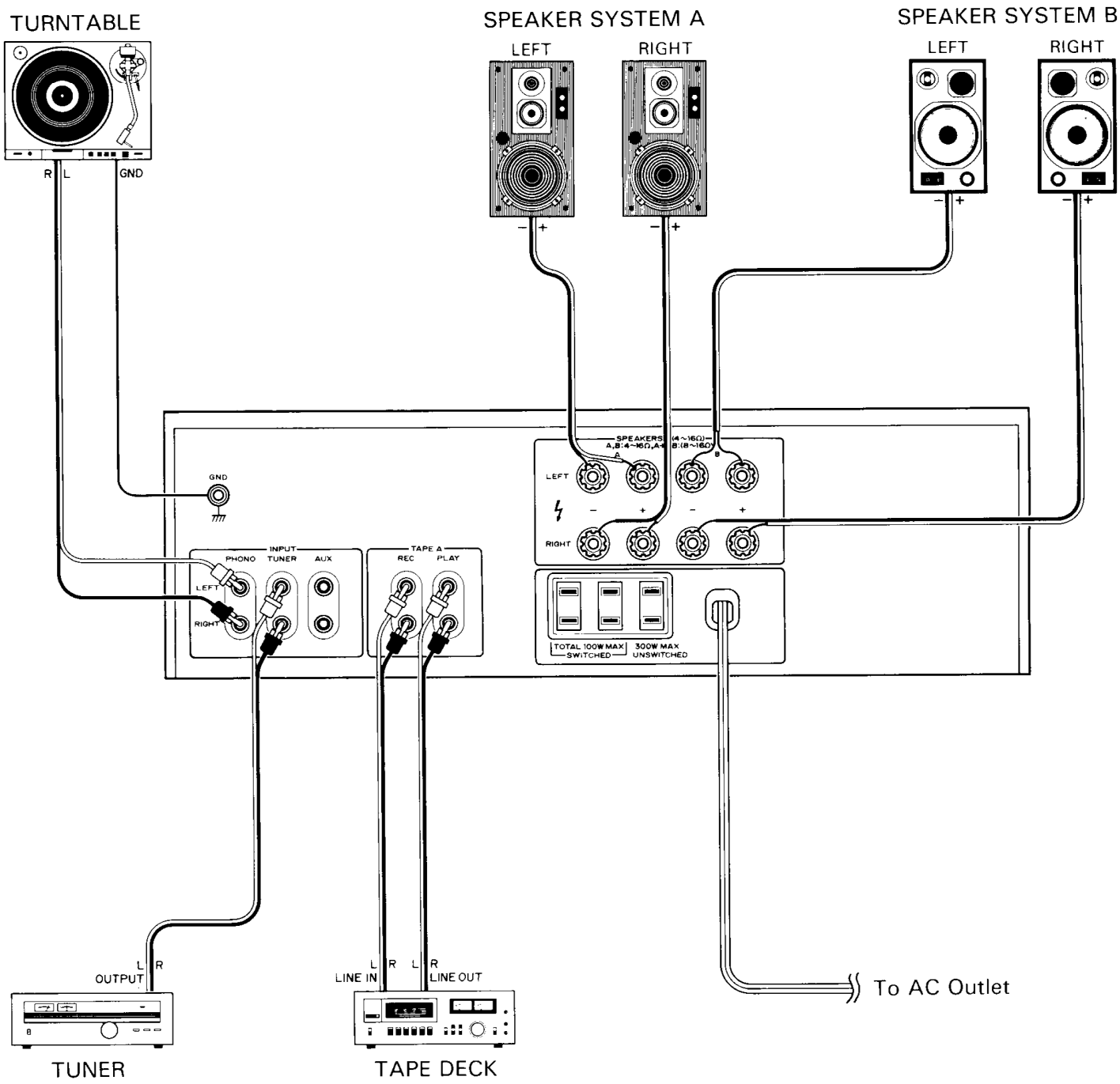
Turntables
- Protect from vibration and close dust cover whenever possible.
- Store records vertically and protect from dust and dirt.

Tape Decks
- Be sure to install reel clamps when using vertically.
- Always keep heads clean.
- Avoid magnetic fields.

Carpets
Absorb sound
(Placing in front of speakers is also effective.)
- Furniture materials can improve tone.
- For better sound, install curtains or drapes on the wall opposite the speakers.
- The best listening position is on a line perpendicular to the center of a line drawn between the two speakers.

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SYSTEM CONNECTION DIAGRAM



AC OUTLETS

The AC outlets on the rear panel of the unit may be used to supply power to other components in the system, such as turntable, tape deck, etc. Never connect equipment whose power consumption exceeds the maximum value shown at each outlet.

1. SWITCHED outlets: These outlets supply power only when the KA-400 is turned on. Maximum total capacity (both outlets) is 100 watts.
2. UNSWITCHED outlet: This outlet provides power when the unit is plugged into an active AC wall outlet, regardless of the setting of the POWER switch. Its maximum capacity is 300 watts.

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SYSTEM CONNECTIONS

SPEAKERS

If only one set of speakers is to be connected, make connections to the terminals marked SPEAKERS A, as shown on page 4. Connect the speakers to the RIGHT and LEFT terminals in accordance with the location selected for each speaker. To ensure correct speaker phasing, observe polarity marks; connect terminals marked + on the amplifier to similarly-marked speaker terminals. Do the same for amplifier and speaker terminals marked with a minus sign. Reversal of speaker leads will result in loss of bass tones and poor stereo separation.

If a second set of speakers is to be used make connections at the right set of terminals, marked B.

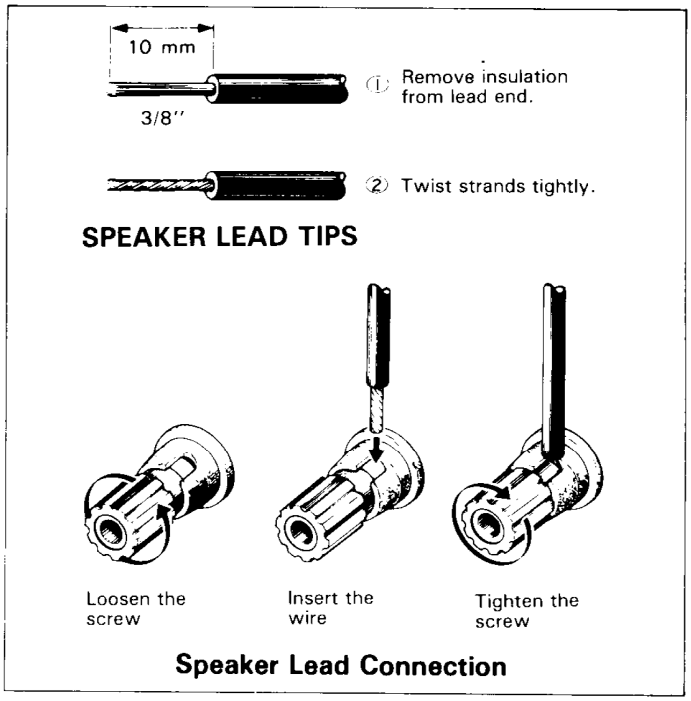
When connecting the speaker leads to the speaker terminals, make sure that the bare wire strands at the ends of the speaker leads do not touch the adjacent terminal.

It is recommended that the tips of the speaker leads be soldered, or the strands of individual leads be twisted together to eliminate any possibility of short-circuits forming in the speaker connecting network.

Note:

If a single pair of speakers is to be used, each speaker must be rated at 4 ohms or more.

When two pairs of speakers are connected (A + B) each speaker must be rated at 8 ohms or more.



Speaker Lead Connection

TURNTABLE

Your stereo turntable has two audio cables that are terminated with phono plugs. Plug the left channel plug into the "LEFT" and the right channel plug into the "RIGHT" PHONO INPUT jacks as shown on page 4.

If the turntable has a ground wire, connect it to the unit's GND terminal to avoid hum.

TUNER

Use the TUNER terminals for connection to an FM stereo or AM-FM stereo tuner.

Connect the left channel of the tuner to the "LEFT" TUNER INPUT jack and the right channel of the tuner to the "RIGHT" TUNER INPUT jack.

AUX JACKS

INPUT AUX jacks are used to connect other high-level signal sources, such as tuners, extra tape decks (equipped with preamps), TV or VTR sound outputs, mic preamps, etc.

TAPE DECKS

If only one tape deck is to be connected to the system it is recommended that it be connected to the jacks marked TAPE A.

Tape deck input and output cables are normally terminated with phono plugs.

Playback

Plug the left and right output cables of the tape deck into the "LEFT" and "RIGHT" TAPE A PLAY jacks.

Record

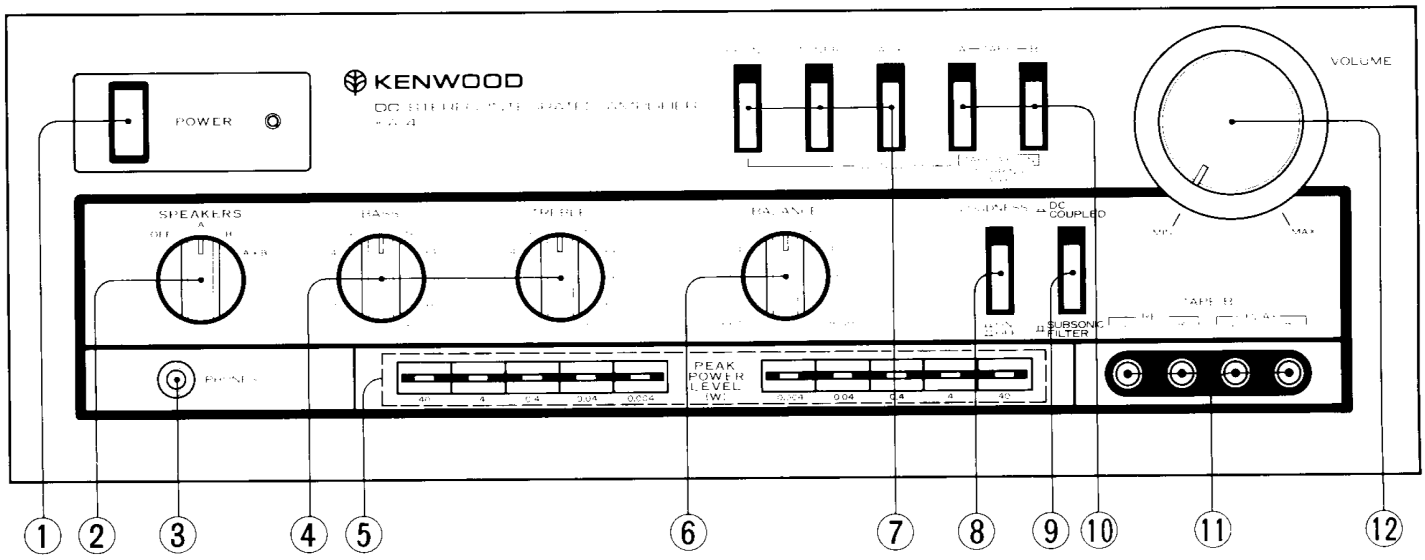
Plug the left and right input cables of the tape deck into the "LEFT" and "RIGHT" TAPE A REC jacks.

Second Tape Deck

Plug the input and output cables from the second tape deck into the REC and PLAY jacks marked TAPE B on the front panel.

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CONTROLS, INDICATORS AND CONNECTORS



① POWER switch/POWER indicator
Push in to turn on power. The POWER INDICATOR (LED) will light. Push it again to turn power off.

② SPEAKERS switch
OFF — This position silences all speakers to permit private use of headphones.
A — Activates speakers connected to the SPEAKERS A terminals on the rear panel.
B — Activates speakers connected to the SPEAKERS B terminals on the rear panel.
A+B — Activates speakers connected to the SPEAKERS A and B terminals simultaneously.

③ PHONES jack
Stereo headphones are plugged into this jack.

④ TONE controls
BASS — Turn clockwise to increase bass response, counterclockwise to lower bass response.
TREBLE — Turn clockwise to increase treble response, counterclockwise to reduce treble response.
Flat response is obtained when the two tone controls are set to their mid-range (zero) positions.

⑤ PEAK POWER LEVEL indicator
The PEAK POWER LEVEL indicators (LED) show the effective power being delivered to your speakers. The indicators are calibrated for an 8-ohm load. If 4-ohm speakers are used, multiply the reading by 2; for 16-ohm speakers, divide the reading by 2.

⑥ BALANCE control
This control permits balancing of left and right channels when an imbalance exists from the sound source, or to correct acoustic imbalance due to room conditions. Turn it to the left from the mid-range to boost the left channel; turn it to the right of mid-range to raise the level of the right channel.

⑦ INPUT SELECTOR switches
Switch positions and functions are as follows:
PHONO — Selects the turntable connected to the PHONO input jacks on the rear panel.
TUNER — Selects the tuner connected to the TUNER input jacks on the rear panel.
AUX — Selects source connected to the AUX jacks.

⑧ LOUDNESS switch
ON — Bass notes are boosted at low listening levels. This precisely offsets a characteristics of human hearing whereby we are less sensitive to bass notes at very low listening levels.
OFF — The low-level bass boost is removed and the VOLUME control provides flat response at all settings.

⑨ DC COUPLED/SUBSONIC FILTER Switch
DC COUPLED — Switch ON to obtain DC (direct) coupling through all amplifier circuits from the Tuner, Tape and Aux inputs to the speaker terminals. Two coupling capacitors are inserted into the chain for Phono operation only. This provides a totally flat response for low frequency tones. The equalizer and DC power amplifier chains are in use for Phono operation, but the in-

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put circuits are AC coupled. (Magnetic phono cartridges do not respond to DC or static values).

SUBSONIC FILTER — Switch to OFF, a single coupling capacitor is inserted into the Tuner, Tape and Aux inputs. This capacitor is also put into the Phono chain for a total of three capacitors. Switch OFF position will produce low-frequency attenuation rate of 6 dB at 18 Hz, functioning as a subsonic filter. Use this setting to eliminate low-frequency rumble from the program source such as might be caused by warped records. Always switch to OFF if a static DC leak is suspected at the input due to a circuit fault or imbalance in the program source. A DC leak will cause a steady displacement of the speaker voice coil.

⑩ TAPE switches

A, B OFF — The signal applied to the record terminals of a tape deck is heard.

A ON — To monitor a recording in progress or to play back a tape from a tape deck connected to the TAPE A jacks.

B ON — To monitor a recording in progress or to play back a tape from a tape deck connected to the TAPE B jacks.

A, B ON — Depressing A and B simultaneously facilitates dubbing (tape copying) from the tape deck connected to the A jacks into the tape deck connected to the B jacks.

Note:
Be sure to set both TAPE switches to "OFF" when not operating a tape deck.

⑪ TAPE B jacks

This is the jack for "B" tape deck.
Refer to page 5 "Second Tape Deck".

⑫ VOLUME control

This control adjusts left- and right-channel volume simultaneously. Set it for the desired listening level.

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OPERATING INSTRUCTIONS

INITIAL SETUP

Set controls and switches as follows:

VOLUME ——→ Fully counterclockwise (MIN)
BASS, TREBLE, BALANCE ——→ Center (zero)
LOUDNESS ——→ OFF
TAPE A, B ——→ OFF
DC COUPLED/SUBSONIC FILTER ——→ SUBSONIC FILTER

Unplug headphones from the PHONES jack.
Turn POWER ON.

TUNER OPERATION

1. Depress the TUNER button.
2. Operate the tuner as usual.

VOLUME, TONE, BALANCE AND LOUDNESS

1. Turn up VOLUME to the desired listening level.
2. Adjust BASS and TREBLE to suit your taste.
3. If an imbalance occurs (the left or right channel appears louder than the other) due to source imbalance or room acoustics, adjust BALANCE to equalize the sound from both speakers.
4. If you customarily listen at low listening levels, set the LOUDNESS switch to ON. If not, set to OFF.

TURNTABLE

1. Depress the PHONO button.
2. Set the turntable in operation.
3. Adjust volume and tone controls for your preference.

AUX

1. Depress the AUX button.
2. Operate the component or accessory connected to the AUX jacks.
3. Adjust volume and tone for your preference.

TAPE DECKS

Tape Playback

1. Set the appropriate TAPE switch (A or B) to ON to select output from tape decks connected to the TAPE A or B jacks (The setting of the INPUT SELECTOR switches affect speaker output only when both TAPE switches are set to OFF).
2. Operate the tape deck.
3. Adjust volume and tone for your preference.

Monitoring

If tape deck is equipped with three heads, you can compare the sound quality of the recording in progress with that of the source material by switching the appropriate TAPE switch between OFF and ON while the recording is being made.

Recording (one tape deck)

1. Depress the appropriate INPUT SELECTOR. Both TAPE switches may be set to OFF. However, to monitor the output signal of your tape deck while the recording is in progress, set the appropriate TAPE switch to ON.
2. Set up your tape deck for recording and set recording levels with the controls on your tape deck. The volume control and tone controls on the amplifier do not affect the signal applied to the tape deck for recording purposes.
3. Adjust listening level and tone at the amplifier for your preference in monitoring the signal; these settings will not affect the recording.

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OPERATING INSTRUCTIONS

Recording (two tape decks)

1. Depress the appropriate INPUT SELECTOR.
2. Set both TAPE switches to OFF.
3. Recordings can now be made on both tape decks simultaneously.
   To monitor these recordings, use the TAPE switch as follows: Set to "B ON" to monitor the recording being made in the tape deck connected to the TAPE B jacks.

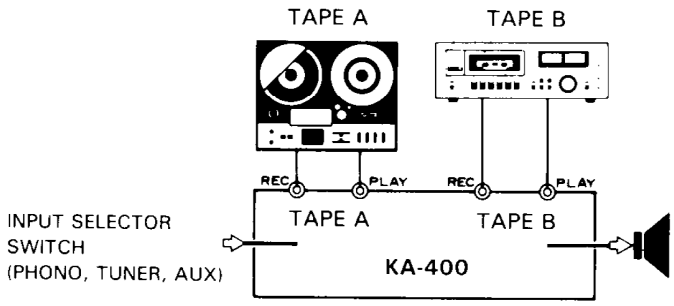
Note:
When recording with two tape decks, a source signal can not be recorded in the tape deck connected to "B PLAY" jacks when the TAPE switch is set to "A ON". Therefore, be sure to set both TAPE switches to "OFF" or "B ON" only.

4. Recording levels should be set using the controls on the individual tape decks.

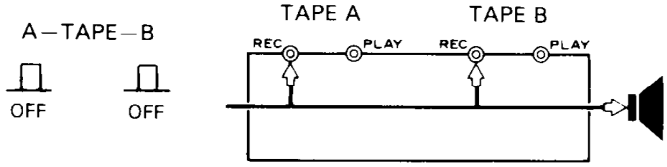
Tape-to-Tape Dubbing

Tape recordings may be duplicated easily using tape deck A to play the prerecorded tape and tape deck B to record the copy.

Note:
The setting of the INPUT SELECTOR switch does not affect this operation.
Adjust record levels on the deck that is making the copy using that deck's operating controls.
Start both decks (play and record) simultaneously.

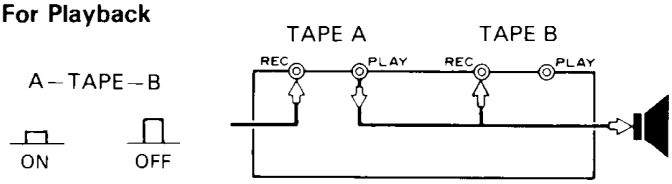


For Recording



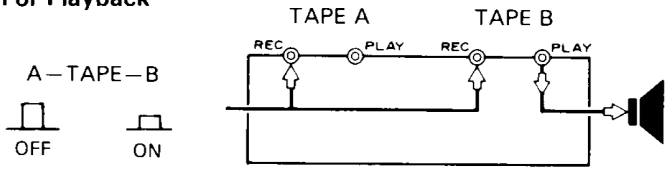
The input signal selected by the INPUT SELECTOR switch is always present at a fixed level at the TAPE A and TAPE B REC jacks.

For Playback



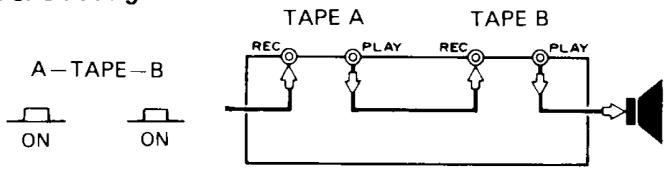
Playback signal is supplied to the TAPE A PLAY jacks, and is heard from the speakers.

For Playback



Playback signal is supplied to the TAPE B PLAY jacks, and is heard from the speakers.

For Dubbing



Switch as shown to record a copy on tape deck B from a tape played on tape deck A. The recording can be monitored.

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IN CASE OF DIFFICULTY

If your amplifier does not operate as expected, the cause may be some error in system connections or control settings. Consult the table below to see if the problem can be corrected. If trouble persists consult your Kenwood dealer or service representative.

AM, FM, PHONO or Tape Playback	**CAUSE**	**REMEDY**
No sound although AC is switched On.	Poor AC plug connection.	Check plug connection. Make sure AC outlet in active.
No sound from LEFT and RIGHT.	a) Speaker cords disconnected. b) Volume Control (fully CCW). c) TAPE switches set to A ON or B ON.	a) Check connections from amp. output to speakers. b) Set to appropriate volume level. c) Always set to OFF except when using tape decks.
Sound from one side only.	a) Poor speaker cord connections. b) BALANCE control set to one extreme.	a) Check amp. output and speaker connections. b) Adjust BALANCE control.
Difference in volume level between tuner and phono.	Difference in received signal and phono output levels.	May be normal. Adjust tuner output, if possible.
During Phono Playback Only	**CAUSE**	**REMEDY**
No sound from LEFT and RIGHT, or sound only from one side.	Turntable output cord disconnected.	See that turntable output cord is firmly plugged into amp. input.
Loud hum drowns out sound.	Poor turntable output cord plug-shell connections.	See that plugs are inserted fully so that outer shells make contact.
Sound audible but background hum occurs.	a) Turntable output cord picking up hum from AC cord. b) Turntable not grounded.	a) Keep turntable output cord away from AC cords. Choose cord paths which keep hum at a minimum. Reverse turntable AC plug connections. b) Connect ground wire to GND terminal.
Sound audible but continuous background buzz interferes.	TV signal picked up by turntable output cord. Frequently occurs near TV transmitting antenna.	Route turntable cord so that hum is minimized.
Howling noise occurs when volume is raised or bass response is increased.	Speaker vibrations induce feedback in Pickup.	Increase distance between turntable and speakers. Choose speaker locations carefully.

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SPECIFICATIONS

Power output

45 watts* per channel minimum RMS, both channels driven, at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.035% total harmonic distortion.

Both Channels Driven	50 + 50 watts 8 ohms at 1,000 Hz
	60 + 60 watts 4 ohms at 1,000 Hz
Total Harmonic Distortion (20 Hz to 20,000 Hz)	
AUX input to SPEAKER output	0.035% at rated power into 8 ohms
	0.03% at 1/2 rated power into 8 ohms
PHONO input to SPEAKER output at 1 kHz	0.01% at rated power with VOLUME − 20 dB
Intermodulation Distortion (60 Hz : 7 kHz = 4 : 1)	0.005% at rated power into 8 ohms
Damping Factor	50, at 1 kHz into 8 ohms
Power Bandwidth	5 Hz to 55,000 Hz at 0.05% T.H.D.
Frequency Response	DC to 100 kHz, +0 dB, −3 dB
Speaker Impedance	Accept 4 ohms to 16 ohms
Input Sensitivity/Impedance	
Phono	2.5 mV/50 kohms
Tuner, AUX, Tape A, B	150 mV/50 kohms
Signal to Noise Ratio (IHF. A)	
Phono	78 dB for 2.5 mV input
	84 dB for 5.0 mV input
	90 dB for 10 mV input
Tuner, AUX, Tape A, B	105 dB for 150 mV input
Maximum Input Level for Phono	220 mV (RMS), T.H.D. 0.05% at 1,000 Hz
Output Level/Impedance	
Tape REC (Pin)	150 mV/330 ohms
(DIN)	30 mV/75 kohms
Frequency Response for Phono	RIAA standard curve ±0.4 dB
	(30 Hz to 15,000 Hz)
Tone Control	
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10,000 Hz
Subsonic Filter	18 Hz, 6 dB/oct.
Loudness Control	+8 dB at 100 Hz (at −30 dB VOLUME Level)

GENERAL

Power Consumption	2.2 A (UL and CSA)
	230 W (IEC)
	200 W (8 ohms at rated power)
	28.5 W (Non signal)
A.C. Outlet	Switched 2, Unswitched 1
Dimensions	W 400 mm (15-3/4")
	H 139 mm (5-15/32")
	D 341 mm (13-7/16")
Weight (Net)	6.7 kg (14.7 lbs)

* Measured pursuant to Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifier in U.S.A.

Note: Kenwood follows a policy of continuous advancements in developments. For this reason specifications may be changed without notice.

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