

DC STEREO INTEGRATED AMPLIFIER

KA-9100

INSTRUCTION MANUAL



the sound approach to quality
KENWOOD

INTRODUCTION

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.

PRECAUTIONS CONCERNING INSTALLATION

- (a) The KA-9100 is heavy and should always be handled with great care.
- (b) Avoid locations subject to direct sunlight.
- (c) Avoid high or low temperature extremes.
- (d) Keep the amplifier away from heat radiating source.

SERIAL NUMBER

Record your SERIAL NUMBER on the spaces designated on the warranty card. You will find the serial number on the back of the unit.

AFTER UNPACKING

After unpacking, we recommend you inspect and examine 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 you retain the original carton and packing materials to prevent any damage should you transport or ship your unit in the future.

WARNING:

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

NOTES

1. Units shipped to the U.S.A. and CANADA are designed to be operated with 120 volts AC only. Units shipped to the Scandinavian countries are designed to be operated with 220 volts AC only. Therefore the above units are not equipped with an AC Voltage Selector Switch so all reference to such a switch throughout this manual should be disregarded.
2. Units shipped to all other countries are equipped with an AC Voltage Selector Switch on the rear panel that is preset at the factory to the voltage generally available in the destination area.

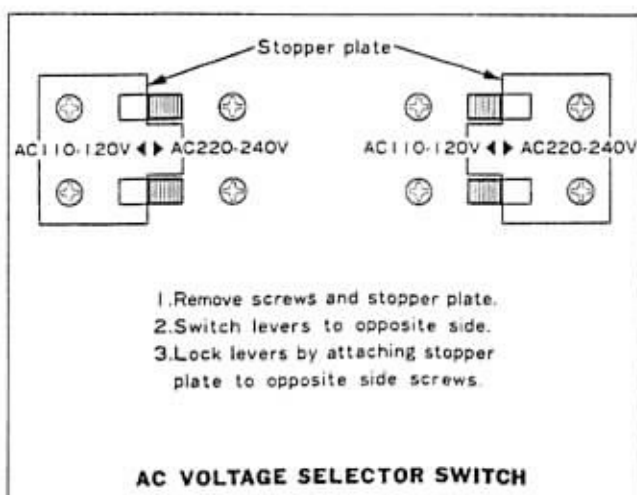
AC VOLTAGE SELECTION

The KA-9100 operates on 110 ~ 120 volt or 220 ~ 240 volt AC. The AC Voltage Selector Switch on the rear panel is set to the voltage that prevails in the area to which the amplifiers are shipped. Before operating this unit, make sure that the position of the AC Voltage Selector Switch matches your line voltage. If not, it must be changed to the proper setting.

To change, first remove the stopper plate and slide the AC Voltage Selector Switch to the opposite side. Then reattach the stopper plate to the other side.

Note:

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



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FEATURES

1. DC POWER AMPLIFIER

Although an ordinary amplifier is generally provided with input or interstage capacitors, the KA-9100 power amplifier section does not have any input or interstage capacitors. In addition, the NF loop circuit also does not have any capacitor that may be accompanied with a time constant. Therefore there is no phase difference throughout the frequency range including the super-low-frequency zone. Since the DC power amplifier is almost free from distortion, excessive distortion, rising time, etc., it offers extensively improved sharpness and depth of sound as well as gorgeous dimensional feeling.

Resolution is very good even at a low sound level, and there is no oppressive sensation at a high sound level. This amplifier assures highly qualified reproduction.

2. TWO INDEPENDENT POWER SUPPLIES

The KA-9100 uses the equivalent of two separate mono amplifiers, each with its own power supply. This arrangement completely eliminates the occurrence of *dynamic crosstalk* which is considered to influence the quality of sound rigorously.

In particular, the power supply for the preamplifier section employs exclusively designed transistorized regulators to remove a mutual interference between former and latter stages of the amplifier.

3. ICL EQUALIZER USING A CONSTANT CURRENT LOAD

Use of an ICL has greatly improved the phase and transience characteristics. And the use of a constant current load has provided low distortion over a wide range.

4. LOW DISTORTION, HIGH S/N RATIO TONE CONTROL CIRCUIT

A tone control circuit is necessary to correct the frequency response in accordance with the influence of the room, the speaker characteristics, etc., but this section can be harmful due to the generation of distortion and noise. Kenwood, however, has prevented it by using a FET differential amplifier circuit in the first stage of the amplifier and a BAX type tone amplifier.

5. FULL RANGE OF STEEP-SLOPE FILTERS

Filters are an important part of any quality amplifier. The KA-9100 gets two and what is particularly noteworthy is their steep-slope: 12 dB per octave. The high filter begins

at 8 kHz and the subsonic at 18 Hz. These filters can eliminate high frequency noise, record scratch, turntable rumble, and, depending on the speaker, eliminate frequency doubling when caused by signals too low for the speaker to respond to.

6. SPECIAL TAPE-THROUGH CIRCUITRY

The KA-9100 has facilities for simultaneous recording by two tape decks and for dubbing, either from deck A to B or vice-versa.

In addition, Kenwood's tape-through circuitry allows you to dub while listening to a different program source. This may not be a feature you will use every day, but it is quite practical and will be appreciated when the occasion arises.

7. GAIN CONTROL

The gain in flat amp in the tone circuit can be switched to +10 dB, 0, -10 dB. It works as a normal attenuator and direct playback is possible with a low output type cartridge when set at the +10 dB position.

8. ACCURATE VOLUME CONTROL EXPANDS FINE ADJUSTMENT

The volume control is equipped with a precision attenuator of the type employed in measuring instruments and other high reliability equipment. Volume adjustment can be easily performed when listening at low volume levels, temporarily reducing the volume, or employing a low input level (high gain) power amplifier. The volume adjustment range can also be expanded by employing the volume control and gain control switch in combination.

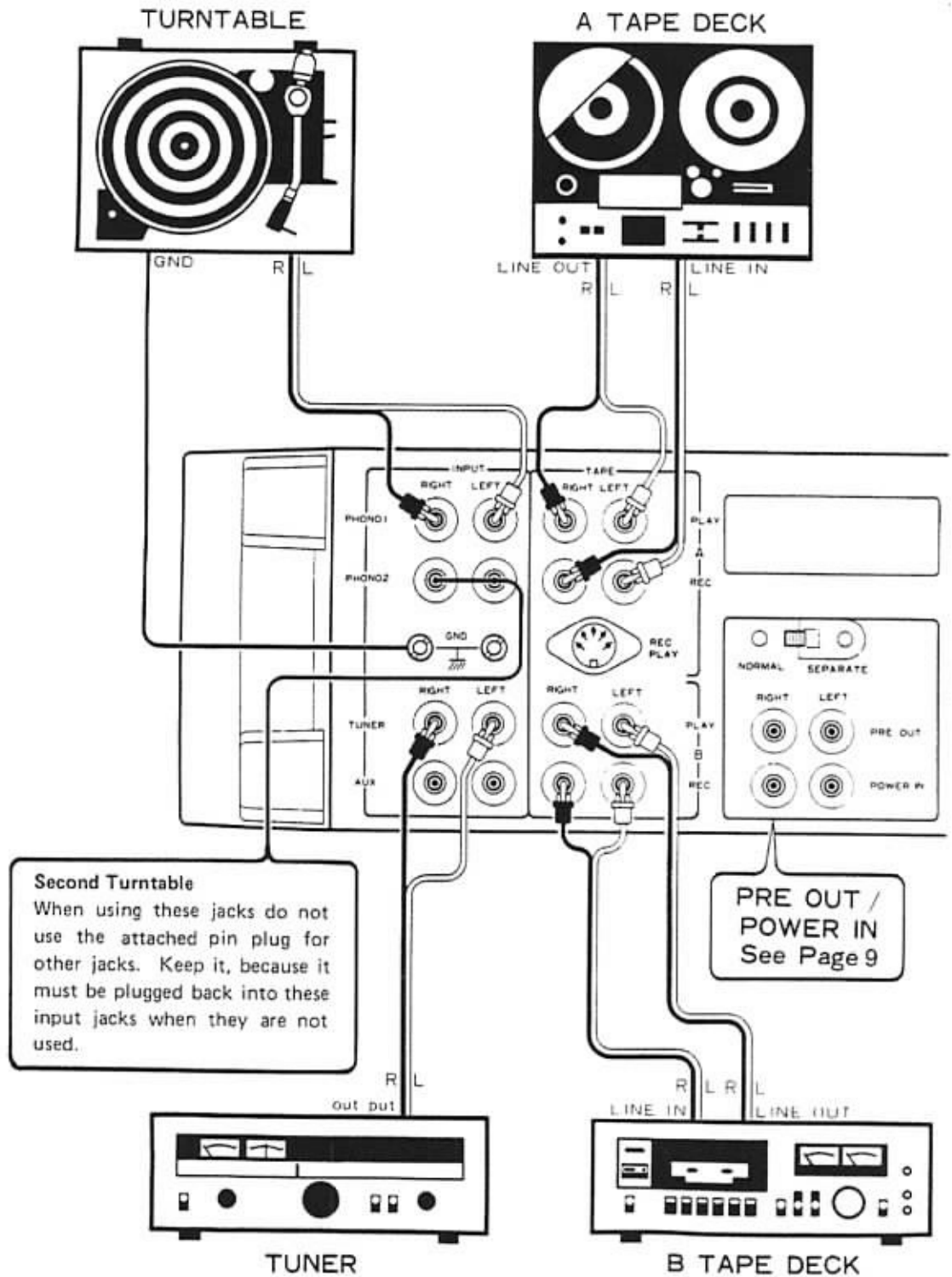
9. REFINED LOUDNESS CONTROL

Essential for high-fidelity listening at low levels, this control has been designed in accordance with the latest research in the differential response human hearing. Choice of two curves and turnover frequencies.

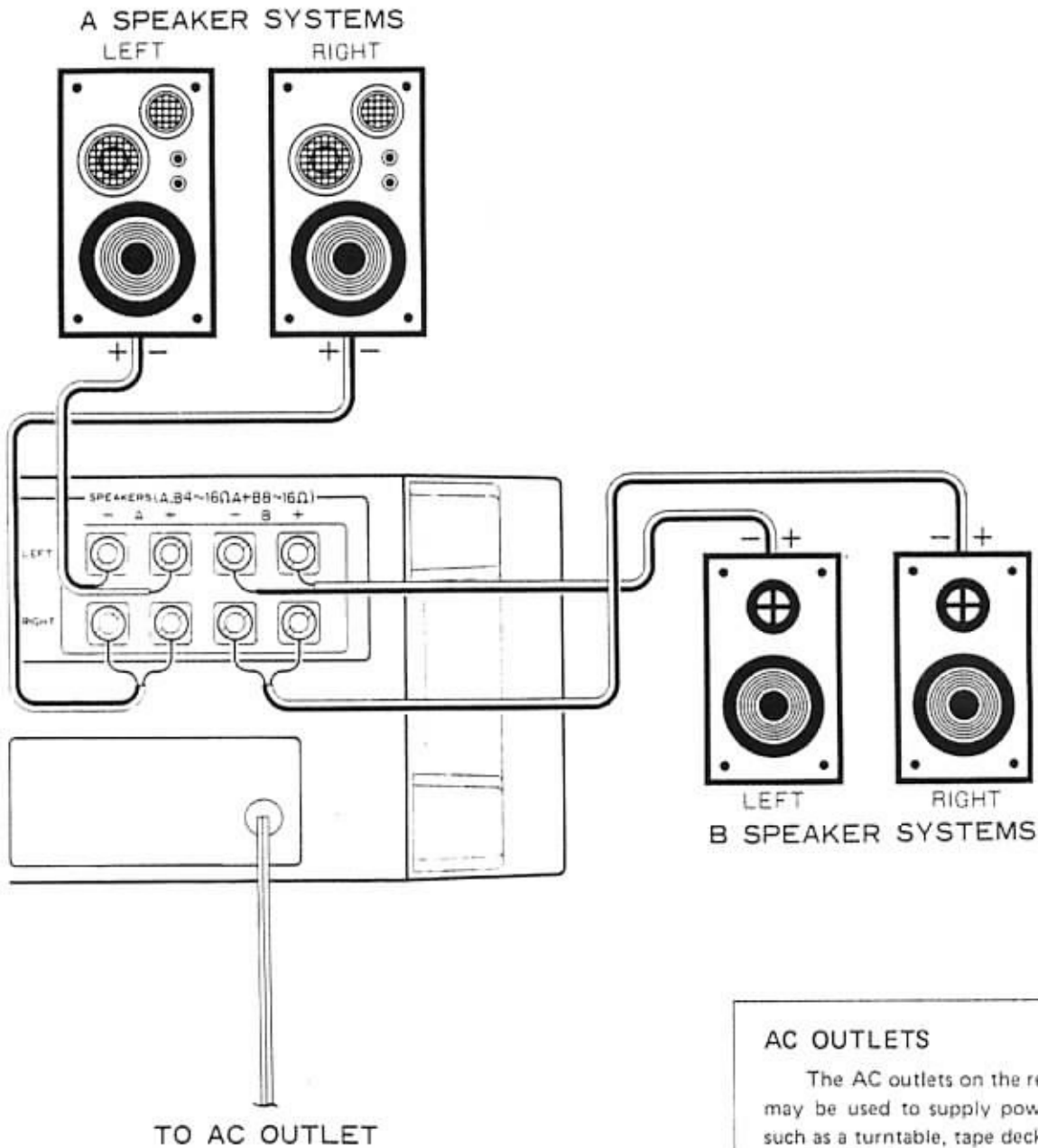
10. LARGE POWER METERS VISUALLY SHOW OUTPUT POWER

With these power meters, you always know what your amplifier is doing. You can visually check output and balance channels. Sensitivity is adjustable for operation at both high and low levels.

INTERCONNECTING DIAGRAM



INTERCONNECTING DIAGRAM



AC OUTLETS

The AC outlets on the rear panel of the amplifier may be used to supply power to other components, such as a turntable, tape deck, etc.

1. SWITCHED outlets

These outlets are controlled by the POWER switch on the front panel. (The total capacity is 100 watts maximum.)

2. UNSWITCHED outlet

This outlet delivers power at all times. (The capacity is 300 watts maximum.)

Note:

Do not connect any equipment whose power consumption exceeds the capacity of each outlet.

CONNECTING INSTRUCTIONS

SPEAKER CONNECTING AND SPEAKER SWITCH

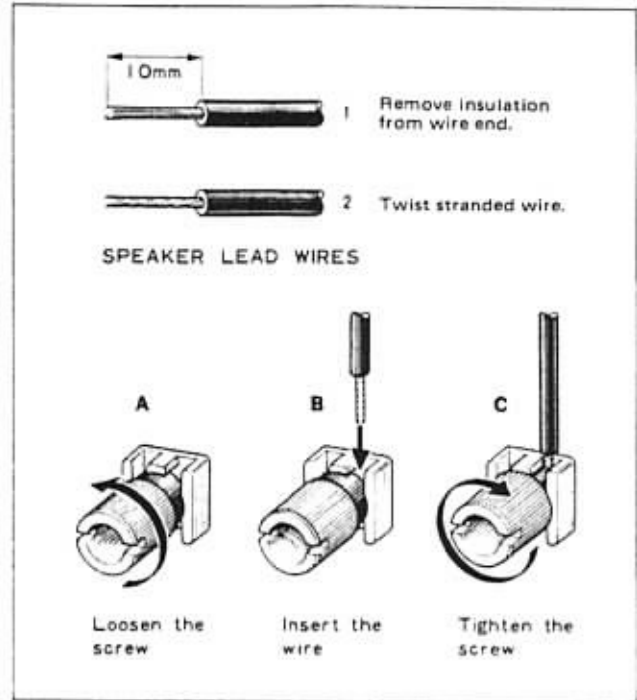
In connecting only one pair of speakers, connect the right speaker to RIGHT SPEAKERS terminals and the left speaker to LEFT SPEAKERS terminals of "A" SPEAKERS terminals. Should (+) or (-) of either right or left channel be reversely connected, sounds at the center section will be adversely affected by the lack of separation. To connect an additional pair of speakers, connect the right speaker to RIGHT SPEAKERS terminals and the left speaker to LEFT SPEAKERS terminals of "B" SPEAKERS terminals.

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 are soldered, or the strands of individual leads are twisted together to eliminate any possibility of short-circuits forming in the speaker connecting network.

Note:

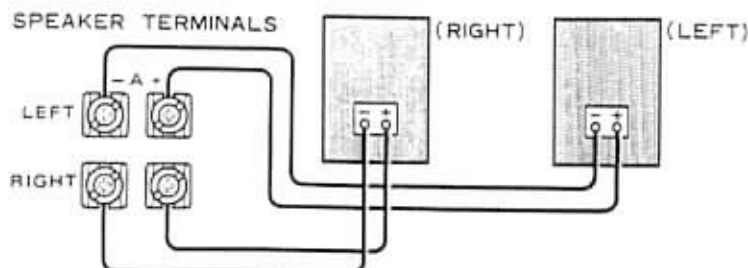
When only one pair of speaker systems are used, please ensure that the impedance of each speaker system is 4 ohm or more. When two pairs of speaker systems are used at the same time (A+B), please ensure that the impedance of each speaker system is 8 ohm or more.



PHASING OF THE SPEAKERS

Speaker phasing can be determined in the following manner:

1. Set the MODE switch to MONO.
2. Set the INPUT SELECTOR switch to PHONO 1, and adjust the VOLUME control to the desired listening level.
3. Play a familiar record.
4. If the sound comes directly from the front, the speakers are in phase. If the sound comes from both sides and there is a noticeable loss in low frequencies, the speakers are out of phase. In this case reverse the leads on one speaker.



CONNECTING INSTRUCTIONS

TURNTABLE CONNECTION

The two shielded audio cables from your stereo turntable are normally terminated with phono plugs. Connect the left channel of the turntable to the "L" PHONO 1 input jack and the right channel to the "R" PHONO 1 input jack.

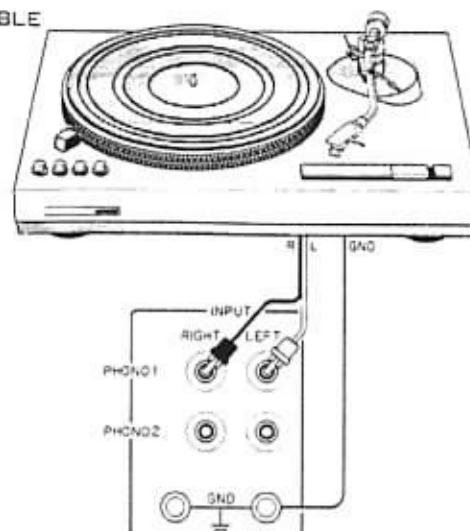
If an additional turntable is used in order to operate two turntables or two tonearms on the same turntable, connect the left channel to the "L" PHONO 2 input jack and the right channel to the "R" PHONO 2 input jack.

If the turntable has a grounding wire, connect it to this amplifier's GND terminal to avoid hum.

Note:

At our shipments, a short-circuit pin is inserted in PHONO 2 jacks for the prevention of noise due to open-circuiting. When PHONO 2 jacks are used, this pin should be put aside or inserted in AUX jacks only. If it is carelessly inserted in REC of TAPE A and B, for example, signal does not come out of the speaker terminals.

TURNTABLE



TAPE DECK CONNECTION

Recording

A tape deck can be connected for recording as follows: left channel input of the tape deck to TAPE A "L" REC jack, right channel input of the tape deck to TAPE A "R" REC jack.

Playback

A tape deck can be connected for playback as follows: left channel output of the tape deck to TAPE A "L" PLAY jack, right channel output of the tape deck to TAPE A "R" PLAY jack.

If an additional tape deck is used and two tape decks are operated simultaneously, the same connections must be provided for TAPE B jacks.

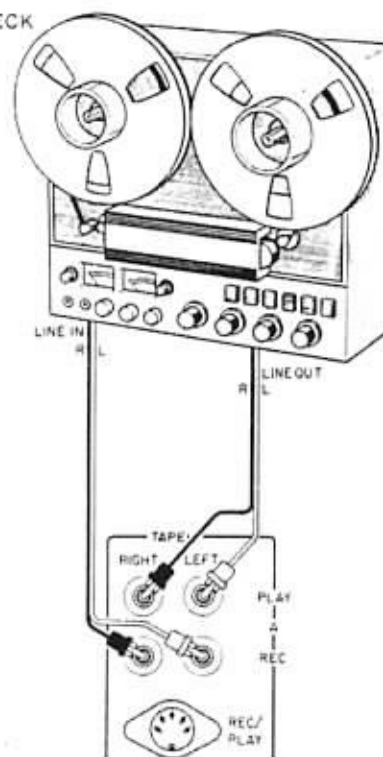
DIN CONNECTOR (REC/PLAY CONNECTOR)

If your tape deck is equipped with a DIN connector, connect it to the "TAPE A" REC/PLAY connector with a DIN connecting cord. A DIN connector enables recording and playback with this single cord.

Notes:

1. Please note that the REC/PLAY connector corresponds to the TAPE A REC jacks and TAPE A PLAY jacks — the signal must be controlled with TAPE (MONITOR) switch on the front panel.
2. When a DIN cord is connected, the TAPE A PLAY jacks and TAPE A REC jacks should not be used.

TAPE DECK



CONNECTING INSTRUCTIONS

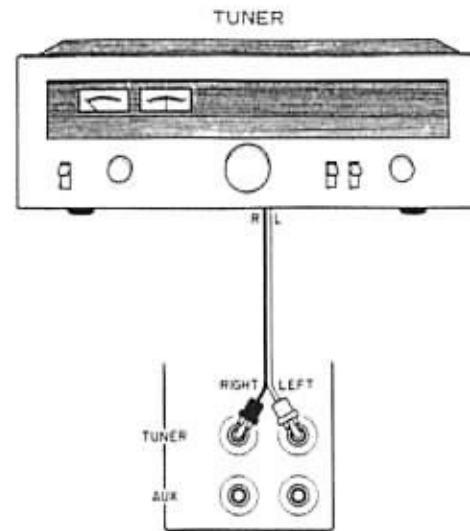
TUNER CONNECTION

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

Connect the left channel of the tuner to the "L" TUNER input jack and the right channel of the tuner to the "R" TUNER input jack.

AUX (AUXILIARY INPUTS)

High level AUX input jacks are for miscellaneous sources, such as extra tape decks, additional tuners and/or receivers, TV sound outputs, and other external components.



TECHNICAL DESCRIPTION

DC Power Amplifier

In many ways the direct current (DC) amplifier is the ideal amplifier for audio use. Kenwood audio engineers have taken up the challenge of producing this ideal amplifier. The result has been success in producing a power amplifier which makes this dream come true.

Characteristics of DC Amplifier

1. They make reproduction of low frequencies down to subsonic and DC levels possible.
The result is to give a greater sense of power in the audio reproduction which greatly increases enjoyment of music and reproduces the low-frequency high-energy sounds of a live performance as only a DC amplifier can.
2. There is zero phase difference between input and output.
Because there are no capacitors in the signal path to cause phase rotation, phase distortion is absent.
3. Output waveform is a faithful duplication of the input waveform. Although this would seem to be a natural prerequisite for a hi-fi amplifier, it is a fact that only a DC amplifier makes faithful duplication possible.

The performance of a DC amplifier depends upon the stability of each individual circuit within it. In the input stage, special dual FETs are used, intended for the most demanding electronic computer applications (in packs of perfectly balanced pairs). This is followed by a three-stage differential amplifier operating in Class A, in which the open loop gain is high, and in which a fully adequate degree of negative feedback is applied with a pre-driver load circuit in which the power transistor bias is stabilized by a constant current supply circuit. This circuit configuration gives excellent stability and extremely wide frequency response.

CONNECTING INSTRUCTIONS

PRE OUTPUT POWER IN JACKS

Independent Preamplifier/Power Amplifier System

By utilizing these jacks, the KA-9100 can be used independently to drive an external power amplifier or preamplifier. This allows comparison listening between the KA-9100 power amplifier and a homebuilt or other separate power amplifier. And also an external preamplifier can be connected to the KA-9100 power amplifier section to compose a stereo system. In such a case, first the power switch off, then the NORMAL-SEPARATE switch must be set to the SEPARATE position as follows:

1. Remove the stopper which holds the slide switch in place in its present position at NORMAL.
2. Reset the switch to SEPARATE for preamplifier or power amplifier only function.
3. Reattach plate to lock switch in the new position.

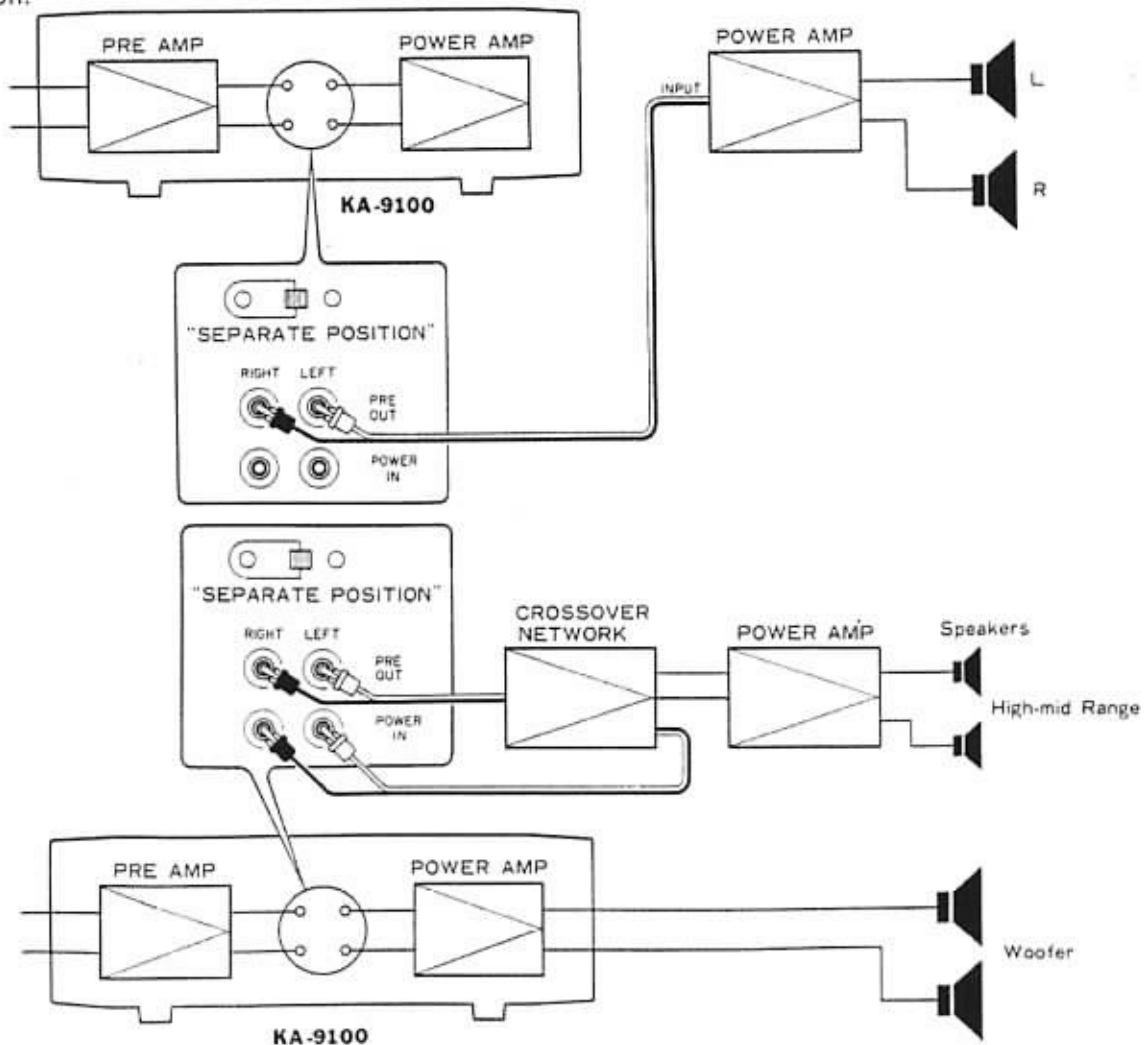
A Multi-amplifier System

By adding an electronic crossover network and one or two additional power amplifier, a high-grade multi-amplifier system can be built in the following manner.

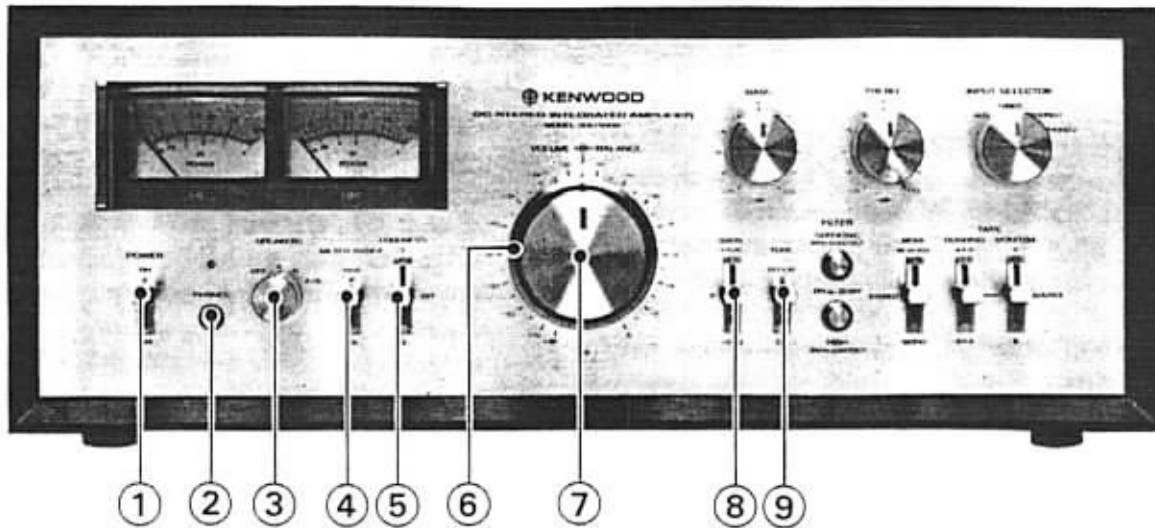
1. Connect the PRE OUT jacks to the input jacks of the crossover network.
2. Connect the POWER IN jacks to the low range output jacks of the crossover network.
3. Connect the HIGH range output jacks of the crossover network to the input jacks of a separate power amplifier for the high frequency range.
4. Connect the speakers for the lower frequencies to the amplifier, and those for the higher frequencies to the separate amplifiers.

Note:

For further details on connections, etc., see the instruction manual supplied with the adaptor.



CONTROLS AND THEIR FUNCTIONS



① POWER switch

ON – This position turns the amplifier on. The pilot lamp lights when the power is on. Also controls the AC outlet marked SWITCHED on the rear panel.
OFF – This position turns the amplifier off.

② PHONES jack

Plug stereo headphones into this jack. For private listening through headphones, set the SPEAKERS switch to the OFF position.

③ SPEAKERS switch

OFF – This position silences all speakers for private headphones listening.

A – Activates speakers connected to the "A" speaker terminals on the rear panel.

B – Activates speakers connected to the "B" speaker terminals on the rear panel.

A+B – Activates simultaneously two sets of speaker systems connected to the "A" and "B" speaker terminals.

④ METER RANGE switch

This switch controls the sensitivity of both the left and right channel output level meters. Use the switch suitable for your listening requirements.

Note:

To protect the meters from overswing, make it a practice to move up the switch to the "100W" first, and advance successively to "3W" when no deflection can be observed.

⑤ LOUDNESS switch

The LOUDNESS switch boosts bass response to compensate for the human ear's lack of response to those frequencies at low volume levels. This switch can also select the turnover frequencies.

Set it to your own most satisfactory listening level. Switch positions and functions are as follows:

"OFF" flat

"1" +10 dB at 100 Hz (turnover 600 Hz)

"2" +10 dB at 30 Hz (turnover 150 Hz)

⑥ BALANCE control

This BALANCE control (Outer knob) adjusts unequal volume from any program source in right and left channels. The left channel is accentuated when this adjuster is turned from center toward the left side, and conversely.

⑦ VOLUME control

Adjust output level to speakers and headphones. Scale is graduated in dB, and when used in conjunction with the GAIN control, finer and wider range attenuation can be performed.

⑧ GAIN control

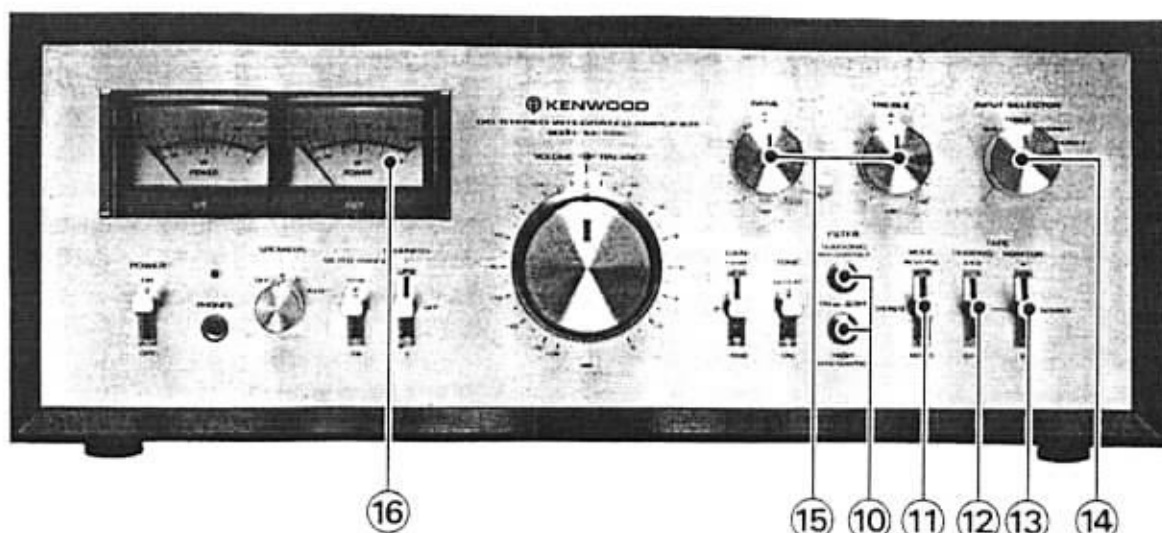
Set to -10 dB to attenuate the output by 10 dB. For example, with GAIN set at -10 dB and VOLUME at -22 dB, it means that this amplifier is operating at -32 dB gain below its rated level.

This position (-10 dB) can also be used to briefly lower the volume when changing records or tapes. Set to +10 dB to boost the output by 10 dB.

⑨ TONE switch

In position DEFEAT, the bass and treble control do not function. By switching between DEFEAT and ON, this enables you making frequency response measurements of phono cartridges, loudspeakers and the acoustic conditions of the room.

CONTROLS AND THEIR FUNCTIONS



⑩ FILTER buttons

SUBSONIC – Frequencies below 18 Hz are attenuated by 12 dB/octave. Although such subsonic frequencies are inaudible to the human ear, they can cause intermodulation distortions and even damage to the speakers. It is recommendable to depress (in) the button at all times, even if no record rumble etc. is heard.

OFF – No attenuation of subsonic frequencies

HIGH – Setting this button to ON (in) reduces any high frequency noise, such as tape hiss, record scratch, etc.

Frequencies above 8 kHz are attenuated by 12 dB/octave.

⑪ MODE switch

Switch positions and functions are as follows:

STEREO – This provides stereo reproduction of any stereo program source. The left channel is heard from the left speaker, and the right channel is heard from the right speaker.

REVERSE – Stereo reproduction with reversed channels: left channel to right speaker, right channel to left speaker.

MONO – Mono reproduction. The left and right channels are mixed together and heard from both speakers.

⑫ TAPE (DUBBING) switch

Switch positions and functions are as follows:

DUBBING (A ► B) – For dubbing from a tape deck connected to the TAPE A jacks into a tape deck connected to the TAPE B jacks.

DUBBING (B ► A) – For dubbing from a B tape deck to A.

For further details refer to pages 12 and 13.

⑬ TAPE (MONITOR) switch

Switch positions and functions are as follows:

SOURCE – The source signal is heard.

A – For monitoring a recording or for playback on a tape deck connected to the TAPE A jacks.

Sound recorded on the tape is heard.

B – For monitoring a recording or for playback on a tape deck connected to the TAPE B jacks.

Sound recorded on the tape is heard.

For further details refer to pages 12 and 13.

⑭ INPUT SELECTOR switch

Switch positions and functions are as follows:

AUX – Selects source connected to the AUX jacks.

TUNER – In this position the tuner is available if connected to the TUNER input jacks on the rear panel.

PHONO 1 – In this position the turntable is available if connected to the PHONO 1 input jacks on the rear panel.

PHONO 2 – In this position the turntable is available if connected to the PHONO 2 input jacks on the rear panel.

⑮ TONE controls

The **BASS** and **TREBLE** controls are for adjusting the bass and treble response. This is a click stop type control graduated by 1.5 dB. Turning the controls clockwise increase bass and treble response and counterclockwise decrease bass and treble response. The turnover frequencies are as follows: 400 Hz for bass, 3 kHz for treble. Bass and Treble controls do not function when the TONE switch is set to **DEFEAT**.

⑯ POWER meters

These meters indicate the strength of the output volume level. They can be read directly in watts from 0.01 to 100 watts into 8 ohms (controlled by the Meter Range switch). When speaker impedance is 4Ω, output power is twice the figure on the scale. If speaker impedance is 16Ω, output power is then half the scale amount. However, musical signals actually assume complex wave forms with much variations, and the indicated power corresponds approximately to the mean value of these wave forms.

OPERATING INSTRUCTIONS

PRIOR TO SWITCHING POWER ON

1. VOLUME control at $-\infty$.
2. GAIN control at 0.
3. TAPE DUBBING, TAPE MONITOR switch at SOURCE.
4. SPEAKERS switch at correct position for speakers to be driven: A, B, A+B.
5. MODE switch at STEREO position.
6. BALANCE, BASS and TREBLE controls at center position.
7. TONE switch at DEFEAT position.

RADIO RECEPTION

1. Set the INPUT SELECTOR switch to TUNER.
2. Operate the tuner as usual.
3. Use the VOLUME, BASS, TREBLE, BALANCE, etc. controls to adjust sound as desired and to match the acoustic conditions of your room.

TURNTABLE OPERATION

1. If the turntable is connected to the PHONO 1 inputs, set the INPUT SELECTOR switch at PHONO 1. If the turntable is connected to the PHONO 2 inputs, set the INPUT SELECTOR switch to position PHONO 2.
2. Set the turntable in operation.
3. Use the VOLUME, TREBLE, BALANCE, etc. controls to obtain the desired listening volume and tonal quality.

TAPE DECK OPERATION

TAPE MONITORING

If you use the amplifier with 3-head type tape decks, you can check the sound quality of the recording that is being made by momentarily comparing the recorded signal with the source signal as follows: Set the TAPE (MONITOR) switch to A (or B) to monitor the recorded sound. Set the TAPE (MONITOR) switch to SOURCE to monitor the source signal before it is recorded.

WHEN RECORDING WITH ONE TAPE DECK

Connect the tape deck to either the TAPE A jacks or TAPE B jacks on the rear panel.

Recording

1. Set the INPUT SELECTOR switch to the desired program source.
Set the TAPE (MONITOR) switch to A or B, whichever side the tape deck is connected.
2. Recording level should be adjusted with the volume control of your tape deck.
3. Recording is not affected by the VOLUME, BASS, TREBLE, FILTER, LOUDNESS, etc., controls of the amplifier.

WHEN RECORDING WITH TWO TAPE DECKS

Connect one tape deck to TAPE A jacks and the other to TAPE B jacks on the rear panel.

Recording

1. Set the INPUT SELECTOR switch to the desired program source.
2. Set the TAPE (MONITOR, DUBBING) switch to SOURCE.
3. Recordings can now be made into both tape decks simultaneously.
To monitor these recordings, use the TAPE (MONITOR) switch as follows: Set it to A to monitor the recording being made with the tape deck connected to TAPE A jacks. Set it to B to monitor the recording being made in the tape deck connected to TAPE B jacks.
4. Recording levels should be adjusted exactly as described previously for single tape deck operation.

Playback

1. The INPUT SELECTOR switch can be at any position.
2. Set the TAPE (MONITOR) switch to the corresponding position (A or B).
3. Adjust volume and tonal quality.

Dubbing

Tape recordings may be easily duplicated from one tape deck to another with minimal loss of quality by setting the TAPE (DUBBING) switch to (A \blacktriangleright B) or (B \blacktriangleright A) as follows:

1. The INPUT SELECTOR switch can be at any position.
2. Set the TAPE (DUBBING) switch to (A \blacktriangleright B) when it is desired to copy recorded material

OPERATING INSTRUCTIONS

on the tape deck A for re-recording on the tape deck B.

Set the TAPE (DUBBING) switch to (B → A) when it is desired to copy a recording on the tape deck B for re-recording on the tape deck A. The recording can be monitored.

- Operate both tape decks simultaneously.

THE THROUGH CIRCUIT

This unit permits listening to other program sources such as FM broadcasts or records while tape dubbing.

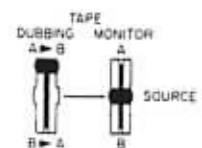
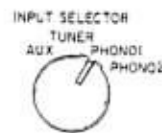
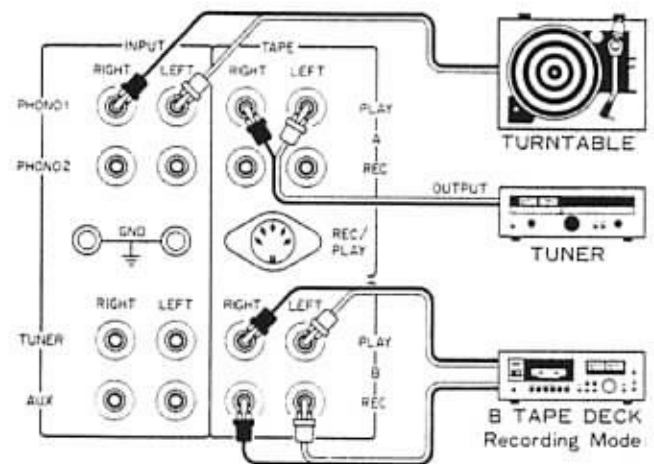
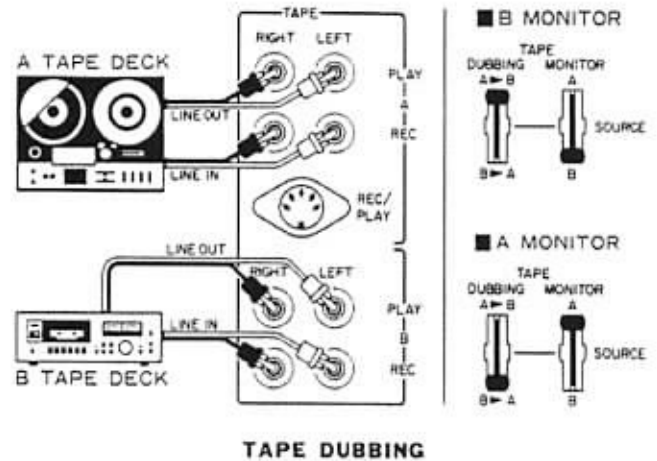
- FM broadcasts can be tape recorded while simultaneously listening to records as follows:

- Connect the Tuner to the "PLAY" jacks of the TAPE A group connector jacks on the rear panel of this unit and the Tape Deck to the TAPE B group connectors.
- Connect the Turntable to either PHONO 1 or PHONO 2 and set the INPUT SELECTOR switch to whichever connector that is used.
- FM broadcasts can be recorded when the TAPE (DUBBING) switch is then set to A → B and the Tape Deck operated in recording mode.
- Disc record sound is reproduced when the TAPE (MONITOR) switch is set to SOURCE.
- FM broadcasts are reproduced when the TAPE (MONITOR) switch is set to A. The recorded sound of FM broadcasts are reproduced and can be monitored when the TAPE (MONITOR) switch is set to B.

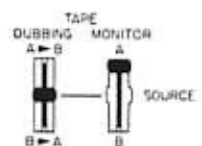
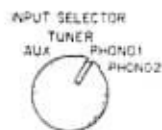
- Disc record sound sources can be tape recorded while simultaneously listening to FM broadcasts as follows:

- Connect the Tuner to the "PLAY" jacks of the TAPE A group connector jacks on the rear panel of this unit and the Tape Deck to the TAPE B group connectors.
- Connect the Turntable to either PHONO 1 or PHONO 2, and set the INPUT SELECTOR switch to whichever connector being is used.
- Set the TAPE (MONITOR) switch to A, and tune in FM broadcasts.
- Set the TAPE (DUBBING) switch to SOURCE and the Tape Deck to recording mode. The sound from the disc record can then be recorded.
- The FM broadcasts are reproduced when the TAPE (MONITOR) switch is then set to A.

When it is set to SOURCE, the sound of the disc record will be reproduced. When it is set to B, the tape recorded sound of the disc record can be monitored.



FM broadcasts can be tape recorded while simultaneously listening to records



Disc record sound sources can be tape recorded while simultaneously listening to FM broadcasts

POINTS TO BE CHECKED PRIOR TO SERVICING

In initially installing this amplifier improper connections to a tuner or turntable may result in one of the following indications of trouble. Their possible causes and corrective measures are listed below to facilitate installation.

SYMPTOM	PROBABLE CAUSE	CORRECTION
No pilot lamp indication, no sound although AC is switched ON.	Poor AC plug connection.	Check plug contact.
No sound from LEFT and RIGHT.	a) Speaker cords disconnected. b) SPEAKERS switch set to OFF position. c) Volume Control (extreme left). d) TAPE (MON) switch at A or B position.	a) Check connections from amp. output to speakers. b) SPEAKERS switch should be switched to OFF only when using stereo headphones. c) Set to appropriate volume level. d) Always set to SOURCE except when using tape decks.
Sound only from one side.	a) Poor speaker cord connections. b) BALANCE control set to one extreme or other.	a) Check amp. output and speakers connections. b) Adjust BALANCE control.
Difference in volume level of radio and phono.	Difference in received signal and phono output levels.	Set to appropriate volume level.
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 prong connections.	See that turntable output cord is firmly plugged into amp. input.
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. Frequency 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. Place the turntable where no vibration occurs. Remember, loose flooring induces howling.

SPECIFICATIONS

POWER AMPLIFIER SECTION

POWER OUTPUT

90 watts* per channel, minimum RMS, at 8 ohms, from 20 Hz to 20,000 Hz with no more than 0.03% total harmonic distortion.

Both Channels Driven	95 + 95 watts 8 ohms at 1,000 Hz
	110 + 110 watts 4 ohms at 1,000 Hz
Dynamic Power Output	470 watts 4 ohms
Total Harmonic Distortion	0.03% at rated power into 8 ohms
	0.01% at 1 watt into 8 ohms
Intermodulation Distortion	0.03% at rated power into 8 ohms
(60 Hz : 7 kHz = 4 : 1)	0.01% at 1 watt into 8 ohms
Power Bandwidth	5 Hz to 60,000 Hz
Frequency Response	DC to 100,000 Hz +0 dB, -1 dB
Signal to Noise Ratio	115 dB (short circuited)
Damping Factor	50 at 8 ohms
Input Sensitivity/Impedance	1.0V/50 kohms
Speaker Impedance	Accept 4 ohms to 16 ohms

PRE AMPLIFIER SECTION

Input Sensitivity/Impedance/Signal to Noise Ratio (IHF, A)

Phono 1	2.5 mV/50 kohms/83 dB
Phono 2	2.5 mV/50 kohms/83 dB
Tuner	150 mV/50 kohms/100 dB
AUX	150 mV/50 kohms/100 dB
Tape A, B	150 mV/50 kohms/100 dB
Maximum Input Level for Phono 1	250 mV (rms), T.H.D. 0.03% at 1,000 Hz

Output Level/Impedance

Tape REC (Pin)	150 mV/450 ohms
(DIN)	30 mV/80 kohms
Pre Out	1 V/330 ohms

Frequency Response

Phono	RIAA standard curve +0.2 dB, -0.2 dB
AUX & Tape	7 Hz to 50,000 Hz +0 dB, -1 dB

Tone Control

Bass (Turnover at 400 Hz)	7.5 dB at 100 Hz
Treble (Turnover at 3 kHz)	7.5 dB at 10,000 Hz

Loudness Control (-30 dB)	(1) +10 dB at 100 Hz
	(2) +10 dB at 30 Hz

Gain Control

Subsonic Filter

High Filter

GENERAL

Power Consumption	660 watts at full power
A.C. Outlets	Switched 2, Unswitched 1
Dimensions	W 16-15/16" (430 mm)
	H 5-7/8" (149 mm)
	D 15-1/8" (384 mm)
Weight (Net)	36.8 lb (16.7 kg)

* 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 development. For this reason specifications may be changed without notice.



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