

STEREO INTEGRATED
AMPLIFIER

KA-4006

INSTRUCTION MANUAL



INTRODUCTION

Because Kenwood Electronics, Inc., takes great pride in the long tradition of quality components the name Kenwood represents, your purchase of a Kenwood amplifier places you in a distinguished family of connoisseurs of superb high-fidelity sound reproduction.

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.

Turn the pages and become acquainted with the exciting features of your new amplifier features that will remain new for endless hours of listening pleasure.

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NOTES

* 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.

* 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.

CAUTION: It is very important however, to check the Voltage Selector Switch setting and make sure that it corresponds to your line voltage before connection the power cord into an AC outlet. If the Voltage Selector requires re-setting, follow the directions outlined on page 12.

KA-4006 FEATURES

POWER AMPLIFIER SECTION

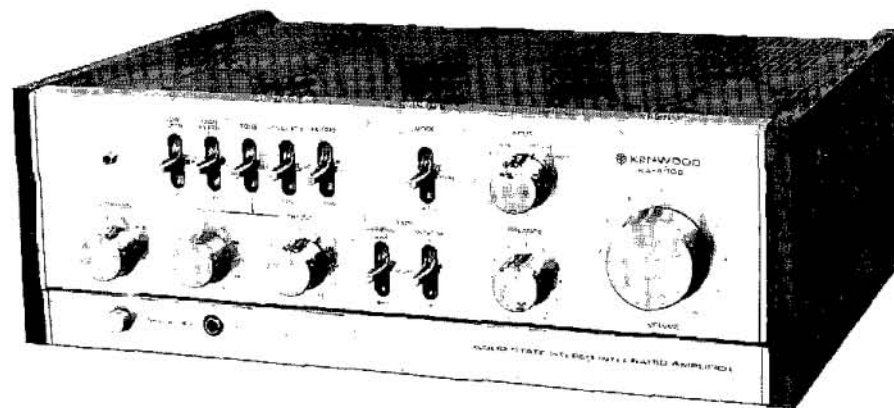
1. Direct coupled with differential amplifier, pure complementary symmetry amplifier circuits are used to assure superior sound quality.
2. Complete protection of expensive power transistors is offered by a dependable ASO detector type limiter protection circuit.

CONTROL AMPLIFIER SECTION

1. Can type, dual low-noise operational amplifier ensures low distortion and high stability characteristics that are truly outstanding.
2. A DEFEAT switch is provided in the tone control circuit which permits sound quality and acoustic compensation control, without which a truly flat response is difficult due to circuit element characteristics.
3. Convenient tape monitor and tape dubbing switches are provided. They enable listening to records or an FM broadcast while simultaneously dubbing a tape, and permit checking the recording, as well.
4. 4 CHANNEL OUT-IN connectors are available. When desired an adaptor or a demodulator can be connected to them to transform this unit quickly into a Front or Rear Pre-main amplifier in a 4-channel system.

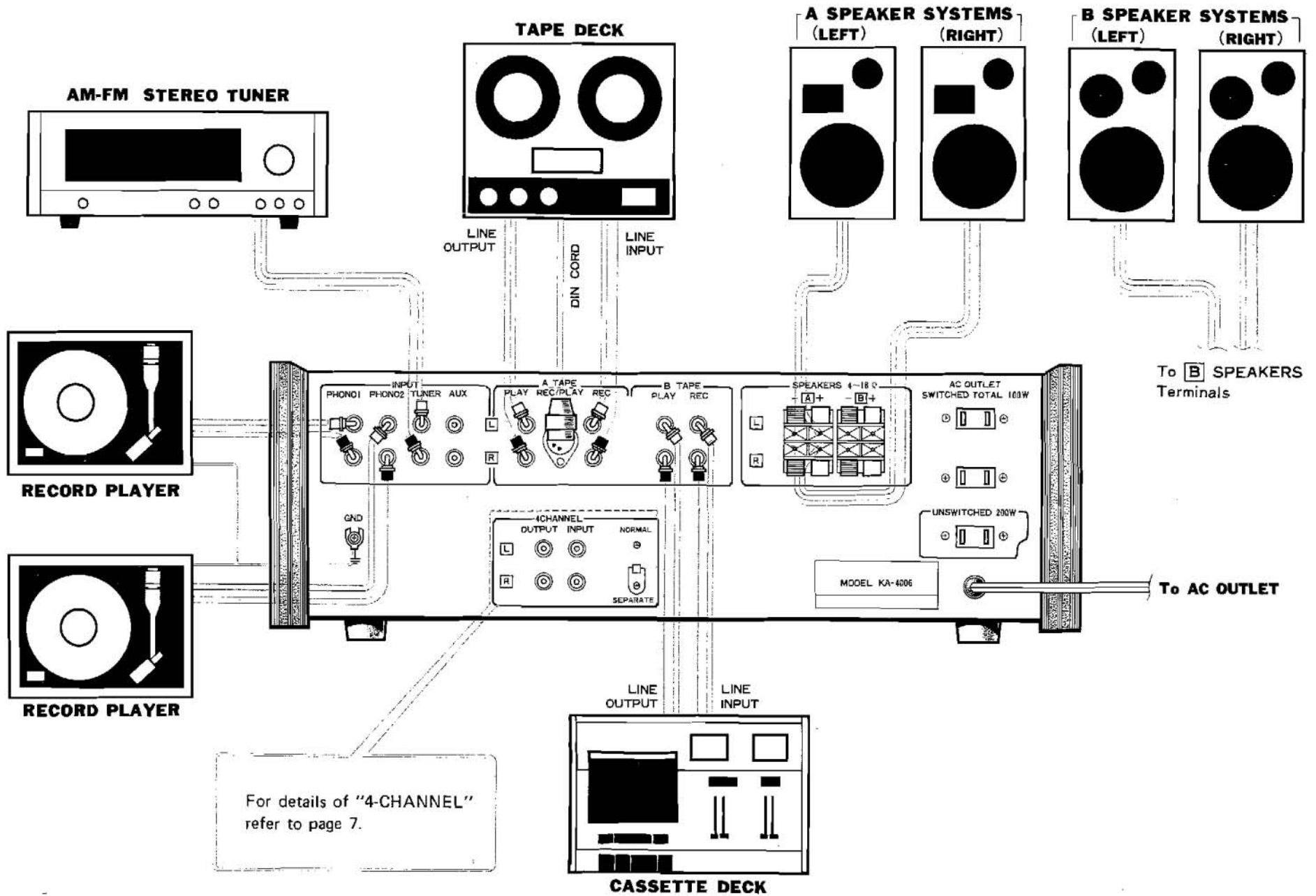
OTHER SECTIONS

1. Both Low and High Cut Filters (6dB Octave) are available to prevent noise entry.
2. Inputs for practically any possible arrangement of program sources are available: 2 pairs of PHONO and TAPE PLAY, and inputs for TUNER, AUX and 4CH-IN.
3. Two sets of Stereo Speaker Terminals and Front Panel Speaker Selector Switch permit operation of speakers in two separate rooms simultaneously or separately.
4. Lever-type Muting Switch permits instantaneous silencing during telephone calls, etc.



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

INTERCONNECTING DIAGRAM



CONNECTING YOUR KA-4006

SPEAKER CONNECTING AND SPEAKER SWITCH

In connecting only one set of speakers, connect the right speaker to right terminals and left speaker to left speaker terminals of "A" speaker terminals. Should plus or minus of either right or left channel be reversely connected, sounds at the center section will be adversely affected by lack of separation. To connect a second set of speakers, connect right speaker to right speaker terminals and left speaker to left speaker terminals of "B" speaker terminals.

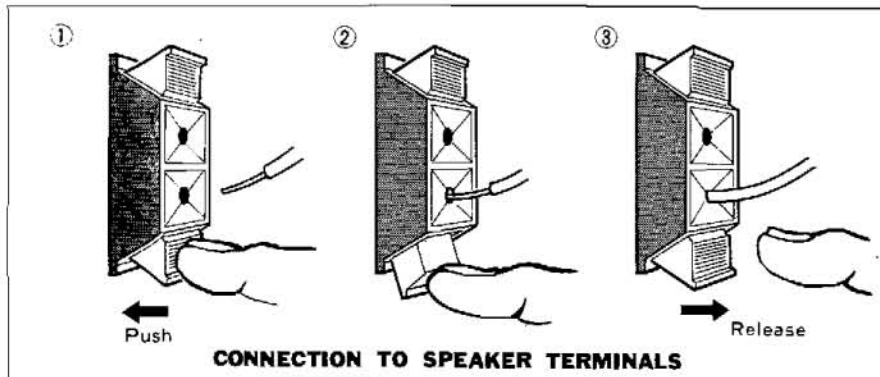
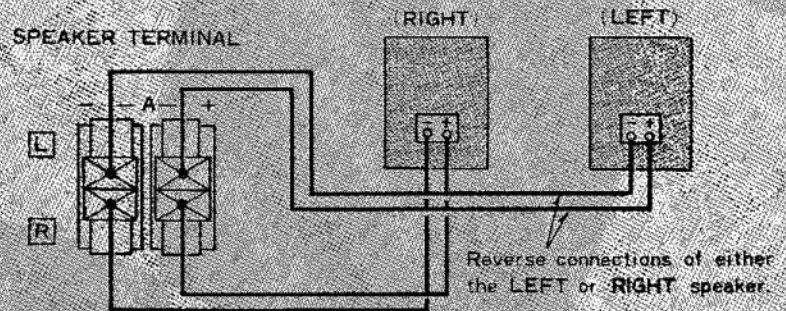
Sound cannot be heard when the SPEAKERS switch on the front panel is set to the A+B position, when only one pair of speaker system is used with connections made either to "A" SPEAKERS terminals or "B" SPEAKERS terminals. When connecting the speaker leads to the SPEAKER terminals, make sure that the bare wire strands at the ends of the speaker leads don't touch each other or adjacent terminal.

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

PHASING OF THE SPEAKERS

Speaker phasing can be determined in the following manner:

1. Set the MODE switch to MONO.
2. Set the INPUT switch to PHONO 1 (PHONO 2) and adjust the VOLUME control to the desired listening level.
3. Play a familiar record.
4. If the sound is coming 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 YOUR KA-4006

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.

RECORD PLAYER CONNECTIONS

Connect the left channel of the record player to the "L" PHONO 1 input jack, and the right channel to the "R" PHONO 1 input jack.

If an additional record player is used in order to operate two record players, connect the left channel to the "L" PHONO 2 input jack, and the right channel to the "R" PHONO 2 input jack.

If the record player has a grounding terminal, connect it to this amplifier's GND terminal to prevent hum.

CONNECTIONS FOR TAPE RECORDER

RECORDING

A tape recorder can be connected as follows for recording.

Left channel input of the tape recorder to A TAPE "L" REC jack.

Right channel input of the tape recorder to A TAPE "R" REC jack.

PLAYBACK

A tape recorder can be connected as follows for playback.

Left channel output of the tape recorder to A TAPE "L" PLAY jack.

Right channel output of the tape recorder to A TAPE "R" PLAY jack.

DIN CONNECTOR (REC/PLAY CONNECTOR)

If your tape recorder is equipped with a DIN type 5-pin connector, connect it to the REC/PLAY connector with a DIN connecting cord. A DIN connector enables recording and playback with this single cord.

When a DIN cord is used for connecting to the tape recorder, the PLAY and REC jacks should not be used. For highest fidelity recording and playback sound however, it is recommended that the tape recorder be connected to the PLAY and REC jacks instead of the DIN connector.

CONNECTION FOR ADDITIONAL TAPE RECORDER

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

AUX (AUXILIARY INPUTS)

When a tuner, tape recorder or other unit is connected here, it must have an output of at least 150 mV.

AC OUTLETS

The AC outlets on the rear panel of the amplifier may be used to supply power to other components such as a record player, tape recorder, 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

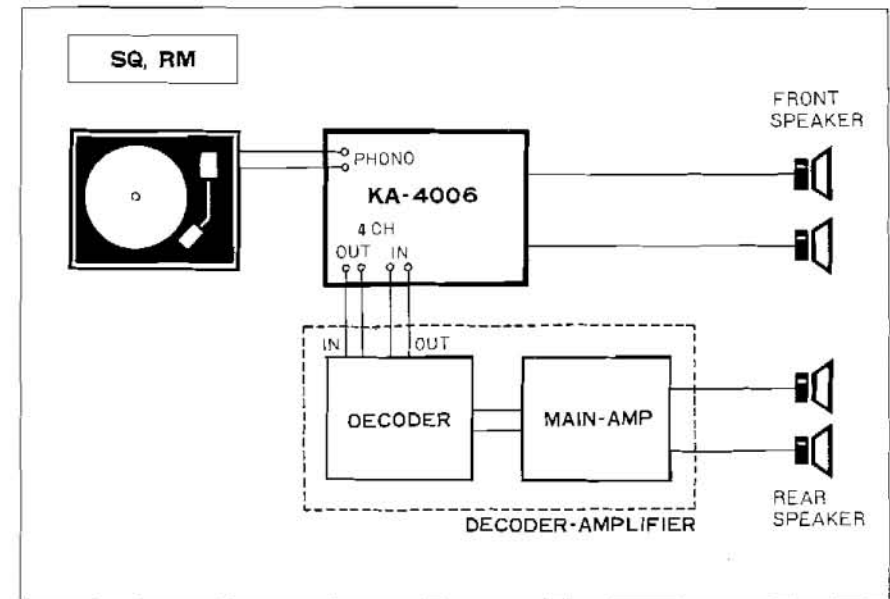
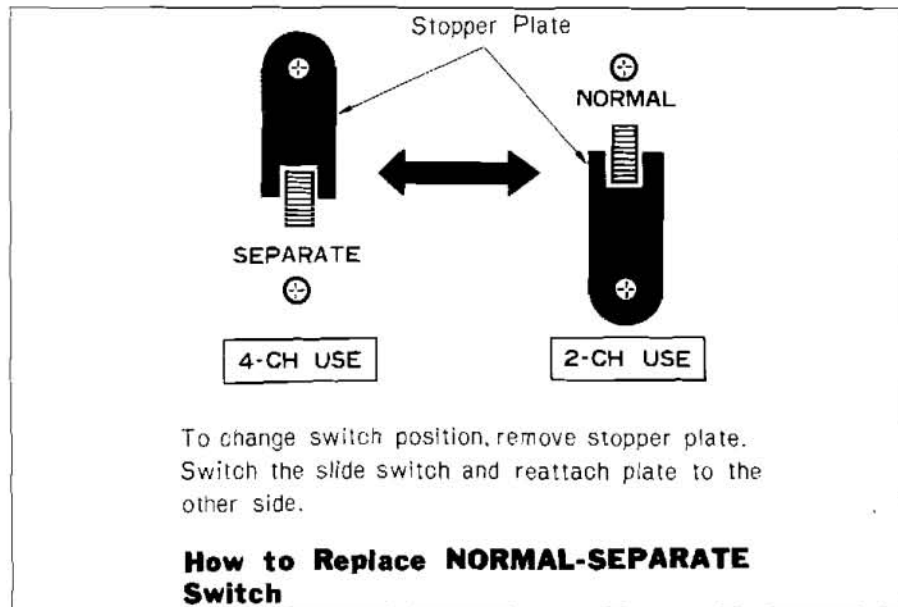
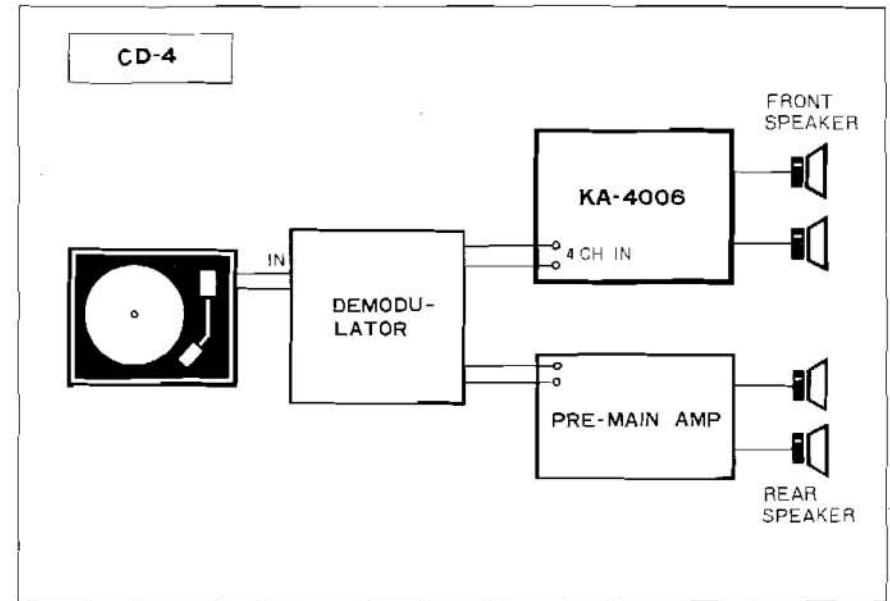
This outlet is available at all times. (The capacity is 200 watts maximum.)

CONNECTING YOUR KA-4006

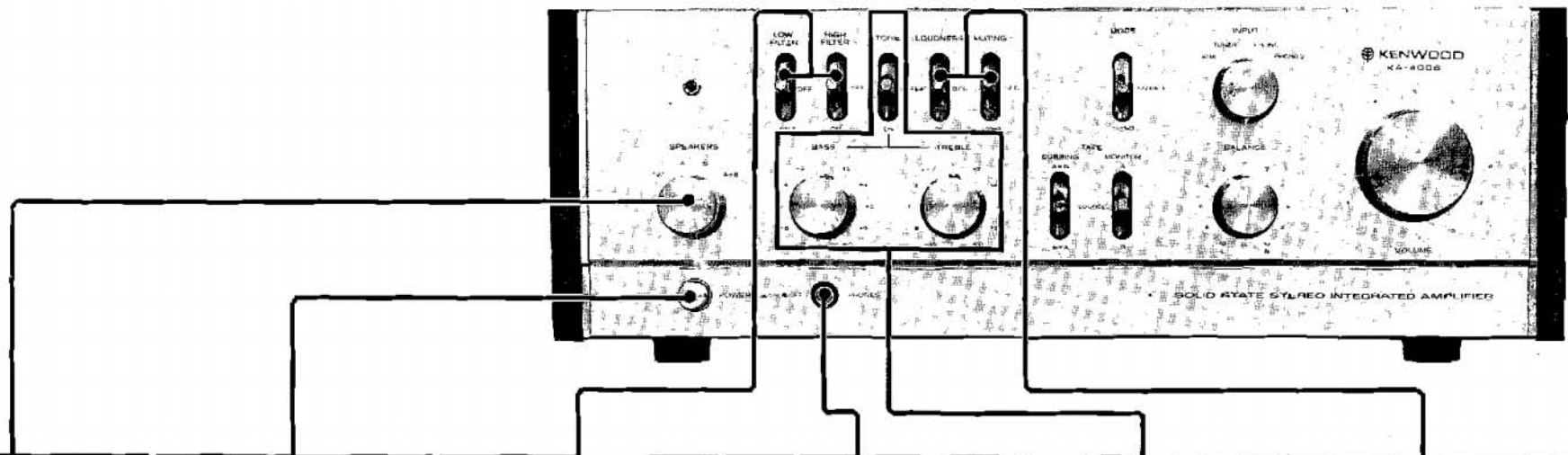
4-CHANNEL INPUTS AND OUTPUTS

When it is desired to set up a 4-channel stereo system, connect another decoder-amplifier or demodulator to the 4-CHANNEL OUTPUT INPUT jacks at the rear of this unit. It must be remembered, however, that a 4-channel program source is necessary for such operation. (See Fig.)

With a 4-channel stereo system thus set up and the NORMAL-SEPARATE switch of the KA-4006 set to SEPARATE position. (See Fig.)



CONTROLS AND THEIR FUNCTIONS



SPEAKERS switch

OFF – This position silences all speakers for private headphone listening.
A – Activates speakers connected to the A SPEAKERS terminals on the rear panel.
B – Activates speakers connected to the B SPEAKERS terminals on the rear panel.
A+B – Activates simultaneously two sets of speaker systems connected to the A and B SPEAKERS terminals.

POWER switch

Push the **POWER** switch to turn the amplifier on. Push it again to turn the amplifier off.

LOW and HIGH FILTER switches

LOW FILTER – Setting these switches to on reduces low frequency noise such as turntable rumble, hum, etc., which may interfere with program material.
HIGH FILTER – Setting this switch to on reduces any high frequency noise such as tape hiss, record scratch, etc.

Generally, these switches should be used only when necessary.

HEADPHONES jack

Plug stereo headphones into this jack for private listening. The speakers are silenced when the **SPEAKERS** switch is set to **OFF** position.

TONE switch

This switch provides flat frequency response with tone control circuit deactivated. **BASS** and **TREBLE** controls do not operate when this switch is set to **DEFEAT**.

BASS control

Turning it clockwise increases bass tone and counterclockwise decreases it. Tone is flat at center (zero) position.

TREBLE control

Turning it clockwise increases treble tone and counterclockwise decreases it. Tone is flat at center (zero) position.

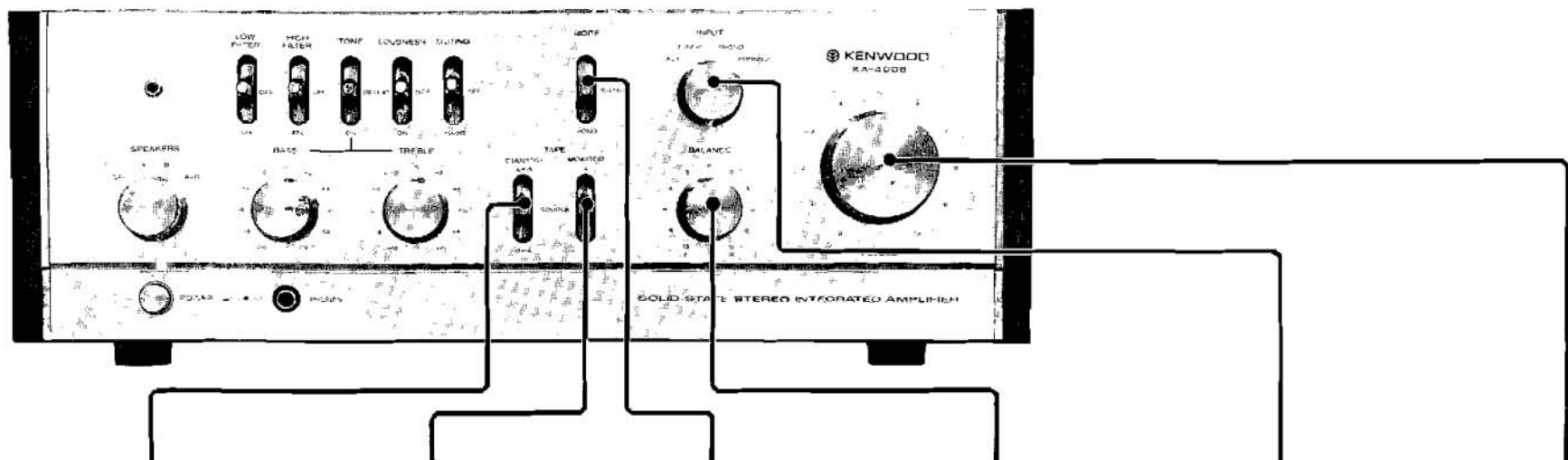
LOUDNESS control

The **LOUDNESS** control boosts bass and treble tones at low listening levels. Our ears have less sensitivity to low and high frequencies at low listening levels and the **LOUDNESS** control compensates for this deficiency. This control should be switched off when listening at normal and high levels.

MUTING switch

This switch reduces volume level momentarily as during a telephone call, etc. Output power is reduced 20 dB without touching the **VOLUME** control. Setting this switch to off returns volume level to original level.

CONTROLS AND THEIR FUNCTIONS



TAPE switch (DUBBING)

DUBBING (A→B) — For dubbing from a tape recorder connected to the A TAPE jacks into a tape recorder connected to the B TAPE jacks.

DUBBING (B→A) — For dubbing from a B tape recorder to A.

For further details refer to page on 11.

TAPE switch (MONITOR)

Switch positions and functions are as follows:

SOURCE — The source signal is heard

A — For monitoring a recording or for playback on a tape recorder connected to the A TAPE jacks. Sound recorded on the tape is heard.

B — For monitoring a recording or for playback on a tape recorder connected to the B TAPE jacks. Sound recorded on the tape is heard.

For further details refer to page on 11.

MODE

This switch determines the manner in which program sources (previously selected by the INPUT switch) will go through the amplifier section.

- **STEREO** — This provides stereophonic reproduction of stereo program source.
- **MONO** — Mixes left and right channels.

BALANCE control

This BALANCE adjusts unequal volume from any program source in right and left channels. The left channel is accentuated when this adjuster is turned from center "0" toward the left side, and conversely.

INPUT switch

Switch positions and functions are as follows:

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 record player is available if connected to the PHONO 1 input jacks on the rear panel.

PHONO 2 — In this position the record player is available if connected to the PHONO 2 input jacks on the rear panel.

AUX — Selects source connected to the AUX jacks on the rear panel.

VOLUME control

The VOLUME control performs simultaneous adjustment of volumes in both channels (right and left). Set it to your own most satisfactory listening level.

OPERATING INSTRUCTIONS

AM-FM RECEPTION

1. Set the INPUT switch to TUNER.
2. Set the MODE switch to STEREO and the TAPE MONITOR switch to SOURCE.
3. Adjust the VOLUME control to the desired listening level.
4. Use the BASS, TREBLE, FILTERS and LOUDNESS controls to adjust sound as desired and to match the acoustic conditions of your room.

PHONO OPERATION

1. Two pairs of phono input jacks, PHONO 1 and PHONO 2, are provided to enable connections to two record players. To reproduce the output of the record player that is connected to PHONO 1 jacks, set the INPUT switch to PHONO 1. To reproduce the output of the record player that is connected to PHONO 2 jacks, set the INPUT switch to PHONO 2.
2. Set the MODE switch to STEREO and the TAPE MONITOR switch to SOURCE.
3. Adjust the VOLUME to the desired listening level.
4. Use the BASS, TREBLE, FILTERS and LOUDNESS controls to adjust the sound to your preference and to the acoustic conditions of your room.

TAPE RECORDER OPERATION

TAPE MONITORING

If you use the KA-4006 with 3-head type tape recorders, 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 Recorder

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

RECORDING

1. Set the INPUT switch to the desired program source. Set the TAPE DUBBING switch to SOURCE. To monitor the recording, set the TAPE MONITOR switch to A or B, whichever side the tape recorder is connected.
2. Recording level should be adjusted with the volume control of your tape recorder.
3. Recording is not affected by the VOLUME, BASS, TREBLE, FILTERS, LOUDNESS, etc., controls of the amplifier.

Simultaneous Recording With Two Recorders

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

RECORDING

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

OPERATING INSTRUCTIONS

PLAYBACK

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

DUBBING

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

1. The INPUT switch can be at any position.
2. Set the TAPE switch to DUBBING (A ► B) when it is desired to copy recorded material on the tape recorder A for re-recording on the tape recorder B.
Set the TAPE switch to DUBBING (B ► A) when it is desired to copy a recording on the tape recorder B for re-recording on the tape recorder A.
The recording can be monitored.
3. Operate both tape recorders simultaneously.

Moreover, this unit permits listening to other program sources such as an FM broadcast or records while tape dubbing.

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

1. Connect the Tuner to the "PLAY" jacks of the A TAPE group connector jacks on the rear panel of this unit, and the Tape Deck to the B TAPE group connectors.
2. Connect the Turntable to either PHONO 1 or PHONO 2 and set the INPUT switch to whichever connector that is used.
3. FM broadcasts can be recorded when the TAPE DUBBING switch is then set to A ► B and the Tape Deck operated in recording mode.
4. Disc record sound is reproduced when the TAPE MONITOR switch is set to SOURCE.
5. 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:

1. Connect the Tuner to the "PLAY" jacks of the A TAPE group connector jacks on the rear panel of this unit and the Tape Deck to the B TAPE group connectors.
2. Connect the turntable to either PHONO 1 or PHONO 2, and set the INPUT switch to whichever connector that is used.
3. Set the TAPE MONITOR switch to A and tune in an FM broadcast.
4. Set the TAPE DUBBING Switch to SOURCE and the Tape Deck to recording mode. The sound from the disc record can then be recorded.
5. 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.

MAINTENANCE

CONCERNING TRANSISTORS

Transistors differ fundamentally from radio vacuum tubes and require special attention to ensure their full performance capabilities. Given proper care, transistors will provide years of practically trouble-free performance.

- (a) Avoid locations subject to direct sunlight.
- (b) Avoid high or low temperature extremes.
- (c) Keep the amplifier away from heat radiating sources.

PROTECTION CIRCUIT

The newly developed protection circuit is completely effective and prevents damage which may be caused by short-circuiting at the speaker terminals or the power output circuit of the amplifier. When a short-circuit occurs, this protection circuit will function automatically to protect the power output transistors and the speakers. If the power output transistor fails, this protection circuit will function automatically to protect the speaker.

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 speaker box surrounds and vibrates the turntable. This vibration is picked up by the cartridge, sent to the amplifier 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.

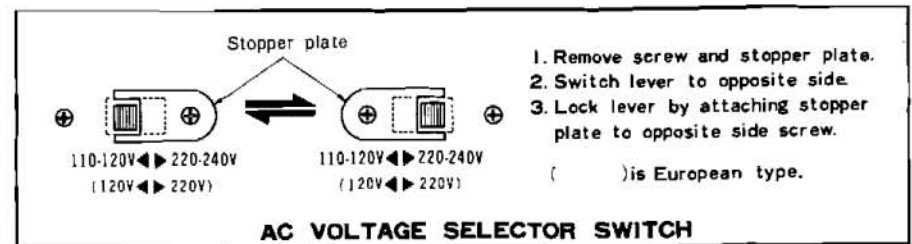
AC VOLTAGE SELECTION AND POWER FUSE

The KA-4006 operates on 110 - 120 volt AC 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 amplifier, 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 disconnect the AC line cord. Then remove the stopper plate and slide the AC Voltage 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.



KA-4006 SPECIFICATIONS

MAIN-AMPLIFIER SECTION

Power Output	34 watts per channel, minimum RMS at 8 ohms from 20 Hz to 20 kHz with no more than 0.5% Total Harmonic Distortion.	
Both Channels Driven	35 watts per channel into 8 ohms at 1,000 Hz	
Each Channel Driven	48 watts per channel into 4 ohms at 1,000 Hz	
Dynamic Power Output	40 watts per channel into 8 ohms at 1,000 Hz	
	56 watts per channel into 4 ohms at 1,000 Hz	
	95 watts into 8 ohms	
	145 watts into 4 ohms	
Total Harmonic Distortion	0.05% at ½ rated power into 8 ohms at 1,000 Hz	
Inter Modulation Distortion (60 Hz : 7 kHz = 4 : 1)	0.5% at rated power into 8 ohms	
	0.08% at ½ rated power into 8 ohms	
Power Bandwidth	8 Hz – 45 kHz	
Signal to Noise Ratio	110 dB	
Damping Factor	32 at 8 ohms	
Speaker Impedance	Accept 4 ohms to 16 ohms	

PRE-AMPLIFIER SECTION

Input Sensitivity and Impedance		
Phono 1	2.5 mV	50 k ohms
Phono 2	2.5 mV	50 k ohms
Tuner	150 mV	50 k ohms
AUX	150 mV	50 k ohms
Tape Play A, B	150 mV	50 k ohms
4 CH IN		
Maximum Input Voltage (rms)		
Phono 1, 2	140 mV	T.H.D. 0.5% at 1,000 Hz
Signal to Noise Ratio (IHF A CURVE)		
Phono 1, 2	76 dB	
Tuner	90 dB	
AUX	90 dB	
Tape Play A, B	90 dB	
4 CH IN		
Output Voltage and Impedance		
Tape Rec. A, B (Pin)	150 mV	50 ohms
(DIN Connector)	40 mV	70 k ohms
4 CH OUT	150 mV	50 ohms

Frequency Response

Phono 1, 2
Tuner, AUX, Tape Play

Tone Controls

Bass
Treble
Loudness Control (–30 dB)

Low Filter 80 Hz
High Filter 7 kHz

RIAA Standard curve ±0.3 dB
10 Hz – 40,000 Hz +0
–1.5 dB

±10 dB at 100 Hz
±10 dB at 10,000 Hz
+8 dB at 100 Hz
+3 dB at 10,000 Hz
6 dB/oct
6 dB/oct

GENERAL

Switches

Speaker Selector
Input Selector
Mode
Function
Tape Monitor
Others

AC Outlet

Power Consumption

Dimensions

Weight

OFF – A, B, A + B
Phono 1, 2, Tuner, Aux.
Stereo – Mono
Muting, Defeat, Low Hi-Filter, Loudness
A, B, Tape Dubbing A → B, B → A
Phones jack
Switched 2, Unswitched 1
140 watts at full power
15 watts at no signal
W 17-1/8" (435mm), H 6-3/16" (157mm),
D 12" (306mm)
24.2 lbs (11 kg)

TROUBLE SHOOTING

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

INDICATIONS

During Tuner or Record Operation	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.	SPEAKERS switched to A + B position. Speaker cords disconnected. SPEAKERS switched to OFF. Volume Control at 0 (Extreme left). TAPE MONITOR switch at A (or B). 4 CHANNEL NORMAL-SEPARATE switch at SEPARATE position.	Both A-B groups of speakers are required in this case. Check connections from amp. output to speakers. SPEAKERS switch should be switched to OFF only when using stereo headphones. Set to appropriate volume level. Always set to SOURCE except when using tape recorders. Always set to NORMAL except when using together with 4 channel system.
Sound only front one side.	Poor speaker cord connections. BALANCE control set to one extreme or other.	Check amp. output and speakers connections. Adjust BALANCE control.
Unbalance results when volume is lowered. Difference in volume level of radio and phono.	LEFT RIGHT resistor values unbalanced. Difference in received signal and phono output levels.	Adjust BALANCE control. Set to appropriate volume level.
During Phono Record Operation Only	Cause	Correction
No sound from LEFT and RIGHT, or sound only from one side.	Player output disconnected.	See that player output cord is firmly plugged into amp. input.
Loud hum drowns out sound.	Poor Player output cord prong connections.	See that player output cord is firmly plugged into amp. input.
Sound audible but background hum occurs.	Player output cord picking up hum from AC cord. Player not grounded.	Keep player output cord away from AC cords. Choose cord paths which keep hum at a minimum. Twist LEFT RIGHT player output cords together. Reverse player AC plug connections. Connect player ground wire to GND terminals.
Sound audible but continuous background buzz interferes.	TV signal picked up by player output cord. Frequently occurs near TV transmitting antenna.	Route player cord so buzz hum is minimized.
Howling noise occurs when volume is raised or bass response is increased.	Speaker vibrations induce feedback in pickup.	Increase distance between player and speakers. Choose speaker locations carefully. Remember, loose flooring induces howling.

NOTE



the sound approach to quality

KENWOOD