

# AA-6600 OPERATOR'S MANUAL

**SOLID STATE  
AM/FM MULTIPLEX  
STEREO TUNER AMPLIFIER**



**AKAI®**

## SPECIFICATIONS

### AMPLIFIER SECTION

#### POWER OUTPUT

MUSIC POWER (IHF) : 120 W (60 W/60 W) at 4 $\Omega$   
100 W (50 W/50 W) at 8 $\Omega$

CONTINUOUS POWER (each channel):

75 W (37.5 W/37.5 W) at 8 $\Omega$

HARMONIC DISTORTION: Less than 0.8% at rated output

POWER BANDWIDTH (IHF): 20 ~ 30,000 Hz at 8 $\Omega$

FREQUENCY RESPONSE

(at NORMAL LISTENING LEVEL)

POWER AMPLIFIER SECTION:

20 ~ 50,000 Hz -3 dB

AUX : 20 ~ 50,000 Hz -3 dB

INPUT SENSITIVITY (for rated output)

PHONO : 3 mV

AUX : 200 mV

TAPE MONITOR (Pin Jack):

200 mV

TAPE MONITOR (DIN): 200 mV

RECORDING OUTPUT

(Pin Jack) : 200 mV

(DIN) : 30 mV

HUM AND NOISE (below rated output)

VOLUME MINIMUM : better than 80 dB

PHONO : better than 65 dB

AUX : better than 70 dB

CHANNEL SEPARATION (at rated output)

PHONO : better than 50 dB

AUX : better than 50 dB

OUTPUT IMPEDANCE : 4 ~ 16  $\Omega$

EQUALIZER

PHONO : RIAA

CONTROLS AND SWITCHES

BASS CONTROL : +10 dB ~ -10 dB at 50 Hz

TREBLE CONTROL : +10 dB ~ -10 dB at 10 KHz

LOUDNESS CONTROL: 100 Hz +6 dB  
10 KHz +3 dB  
(Volume control at -30 dB)

LOW FILTER : -8 dB at 50 Hz

HIGH FILTER : -8 dB at 10 KHz

MODE SWITCH : STEREO/MONO.

SELECTOR SWITCH : 1.PHONO 2.AM 3.FM  
4.FM MUTE 5.AUX

SPEAKER SWITCH : 1.OFF 2.SYSTEM A  
3.SYSTEM B 4.SYSTEM A + B

### TUNNER SECTION

FM

FREQUENCY RANGE : 88-108 MHz

SENSITIVITY : 2  $\mu$ V (IHF)

HARMONIC DISTORTION: Less than 0.8%

SIGNAL TO NOISE RATIO: Better than 60 dB

SELECTIVITY : Better than 50 dB at 98 MHz

CAPTURE RATIO : 2 dB (IHF)

IMAGE FREQUENCY REJECTION:

Better than 60 dB at 98 MHz

IF REJECTION : Better than 90 dB at 98 MHz

FM STEREO SEPARATION: Better than 35 dB at 1 KHz

SPURIOUS RESPONSE REJECTION:

Better than 60 dB at 98 MHz

SPURIOUS RADIATION : Less than 34 dB

ANTENNA INPUT IMPEDANCE:

300  $\Omega$  balanced and 75  $\Omega$  unbalanced

AM

FREQUENCY RANGE : 535 ~ 1,605 KHz

SENSITIVITY (IHF) : 20 mV at 1 MHz

IMAGE FREQUENCY REJECTION:

Better than 50 dB at 1 MHz

IF FREQUENCY REJECTION:

Better than 50 dB at 1 MHz

SELECTIVITY : Better than 20 dB at 1 MHz

SEMICONDUCTORS

TRANSISTORS, FET & IC:

Tr. 33, FET 1, IC 1,

ZD 1, Di 22

DIODES

VARISTORS

2

POWER REQUIREMENTS

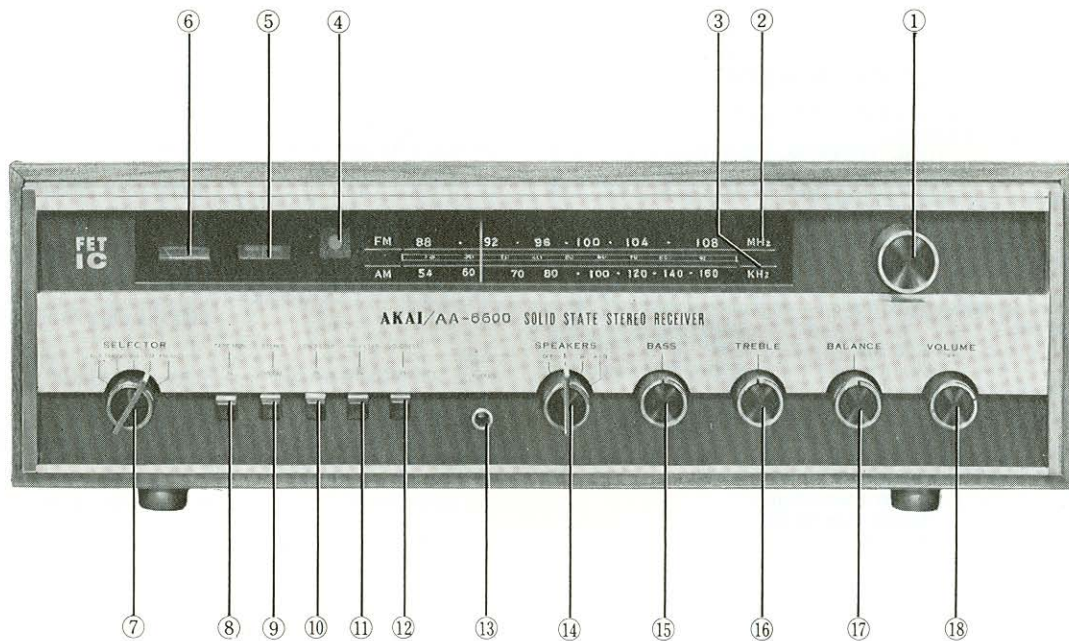
POWER VOLTAGE : 100 ~ 240 volts

50 ~ 60 Hz

POWER CONSUMPTION: 250 VA (max.)

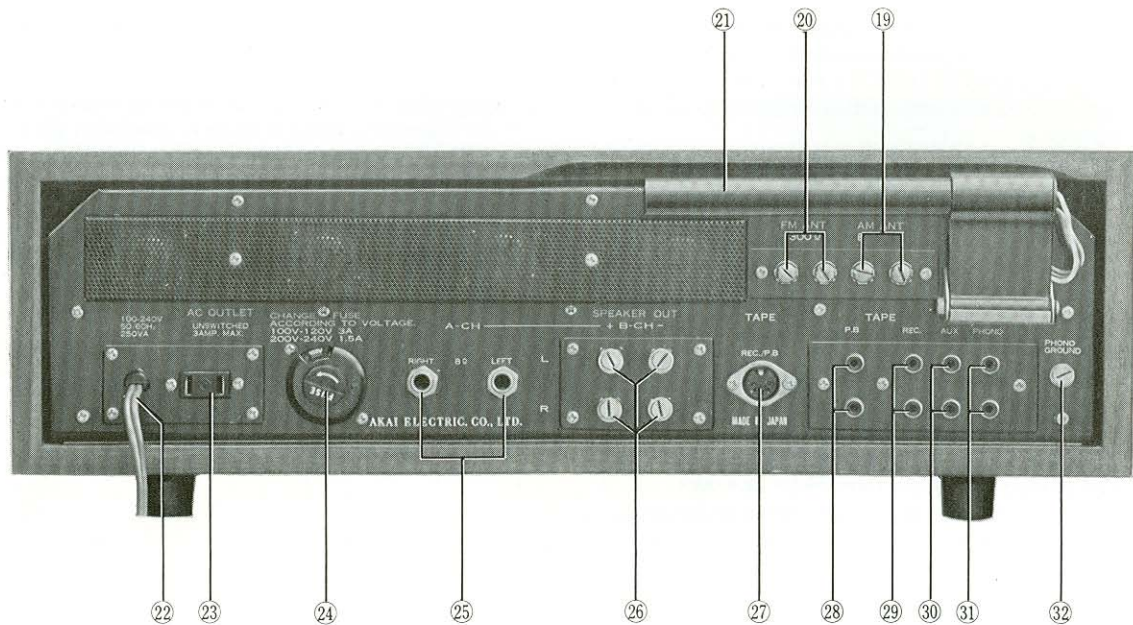
DIMENSIONS : 5-1/4" x 17-1/2" x 13-3/8"  
(133 x 445 x 340 mm)

WEIGHT : 24.4 lbs (11.1 kg)



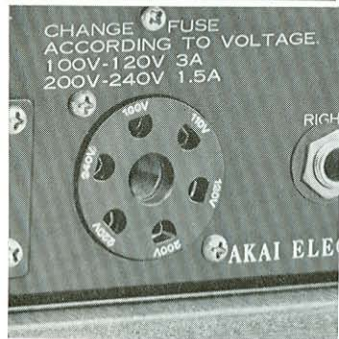
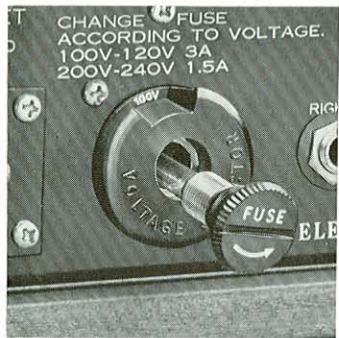
## CONTROLS

- ① TUNING KNOB : For station selection.
- ② FM DIAL SCALE : Indicates FM broadcast band. Calibrated in MHz (mega hertz)
- ③ AM DIAL SCALE : Indicates AM broadcast band. Calibrated in KHz (kilo hertz)
- ④ STEREO INDICATOR : Pilot lamp indicates reception of stereo FM broadcast.
- ⑤ FM CENTER TUNING METER : Indicates FM proper tuning. Meter needle in center indicates perfect tuning.
- ⑥ FM/AM SIGNAL STRENGTH METER : For FM/AM signal strength indication. Meter needle at right limit indicates perfect tuning.
- ⑦ SELECTOR SWITCH : Select the input.
  - AUX : For tape recorder and external tuner
  - PHONO : For turntable
  - AM : For AM radio reception
  - FM : For FM radio reception
  - FM MUT : For elimination the FM tuning distortion on FM radio reception
- ⑧ TAPE MONITOR SWITCH : Permits of recording with a three-head tape recorder when in "IN" position. Also used for playback.
- ⑨ MODE SWITCH : Select stereo or monaural.
- ⑩ LOW FILTER : For eliminating very low frequency noises, such as those produced by phono turntable or tape deck.
- ⑪ HIGH FILTER : For eliminating annoying noises produced by record scratch, radio static, whistle and other interference.
- ⑫ LOUDNESS CONTROL : Compensates for insufficient sound volume of bass and treble, during low-volume operation.
- ⑬ PHONES JACK : For stereo headphones. Effective in all conditions.
- ⑭ SPEAKER SYSTEMS SELECTOR : For selection of speaker systems "A", "B" or "A+B". In OFF position speakers are off and only headphones output remains.
- ⑮ BASS CONTROL : Bass response control for loudspeakers. Designed to be got the most naturalized bass reproduction when this knob is made site at the flat position. By turning it to clockwise, the bass response can be increased.
- ⑯ TREBLE CONTROL : Treble response control for loudspeakers. By turning this knob to clockwise the treble response can be increased.
- ⑰ BALANCE CONTROL : For balancing volume of left and right speakers. When it turns to clockwise, the volume of the left channel is decreased. When it turns to counter-clockwise, on the contrary, the volume of the right channel is decreased.
- ⑱ VOLUME CONTROL & POWER SWITCH : For volume adjustment. In OFF position power cuts off.



## CONTROLS

- ⑲ AM ANT. TERMINAL : Used for external antenna connection if the radio wave not strong enough to be caught by BAR ANTENNA ⑳.
- ⑳ FM ANT. TERMINAL : Used for external 300  $\Omega$  feeder antenna connection.
- ㉑ AM BAR ANTENNA : A hinged ferrite antenna for reception of AM broadcast. For best results extend this antenna.
- ㉒ AC CORD : 100 V ~ 240 V 50/60 Hz. Connect this cord to AC power source after checking power voltage.
- ㉓ AC OUTLET : A power supply for record player or tape recorder. This power supply provides up to 300 watts. Note that this power is not interlocked with POWER SWITCH.
- ㉔ VOLTAGE SELECTOR & FUSE : Permits power voltage change ranging from AC 100 to 240 volts. Fuse must be as follows :
- |                       |       |
|-----------------------|-------|
| 100 - 120 V . . . . . | 3 A   |
| 200 - 240 V . . . . . | 1.5 A |
- ㉕ SPEAKER OUTPUT JACK : For connection of 2 P plug permitting speaker system 'A' operation. Use a speaker with the impedance preferably of more than 4 $\Omega$  (usually 8 $\Omega$ ).
- ㉖ SPEAKER OUTPUT TERMINAL : Supplies out-put to Speaker System 'B'. Connect plus and minus terminals to correspond with polarity of the speaker. Use a speaker with the impedance preferably of more than 4 $\Omega$  (usually 8 $\Omega$ ).
- ㉗ DIN JACK : This connection is used instead of TAPE REC. JACK ㉙ and TAPE P.B. JACK ㉚ if the tape recorder has corresponding connections.
- ㉘ TAPE P.B. JACK : Connects to the output terminal of a three-head tape recorder, and thereby permits monitoring the progress of performance by using MONITOR SWITCH ⑧.
- ㉙ TAPE-REC. JACK : Connects to the input terminal of a tape recorder. The recording source may be selected by SELECTOR SWITCH ⑦.
- ⑳ AUX JACK : Used for relatively high voltage input, such as radio tuner, output from the amplifier of a tape recorder or record player with ceramic or crystal cartridge. (200 mV)
- ㉑ PHONO JACK : Used with a low input cartridge (2 to 5 mV). This jack must be shorted by a shorting pin when not in use, to avoid hum.
- ㉒ PHONO GROUND TERMINAL : Used to ground phono motor and arm of record player. If this connection occasions noise, do not use.



## POWER VOLTAGE ADJUSTMENT

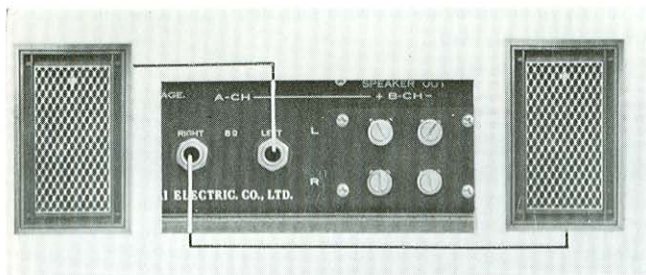
Power voltage ranges from AC 100 to 240 volts. Each unit is pre-set at the factory to a specified voltage depending upon its destination. Readjust, if necessary, the voltage according to the following instructions :

- (1) Remove the FUSE POST as shown in Figure. Remove the PLUG of VOLTAGE SELECTOR ②4 and reinsert so that the desired voltage appears.
- (2) The VOLTAGE SELECTOR ②4 as shown in Figures is a rotatable plug-in type offering six selections, 100/110/120/200/220/240.
- (3) Change the fuse according to voltage.

Fuse : 100 V - 120 V 3 A, 200 V - 240 V 1.5 A

### NOTE :

Do not fail to remove the VOLTAGE SELECTOR ②4 before re-setting the voltage. To maintain optimum performance and to prolong the life of your machine, it is important that the line voltage be kept within 10 percent deviations from the standard voltage.

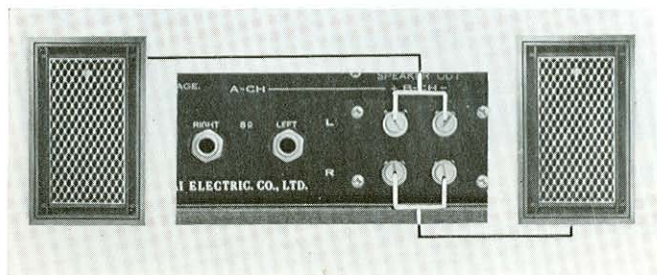
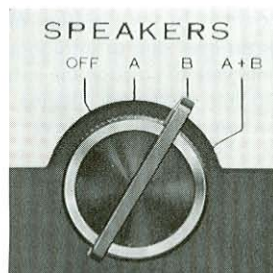
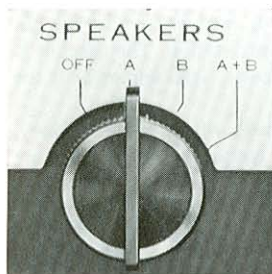


## SPEAKER SYSTEM CONNECTION

The speaker system should preferably be of more than  $4\Omega$  (usually  $8\Omega$ ) Attention is invited to connect it with correct polarity.

SYSTEM - A (25) connects to 2 P jack and SYSTEM - B (26) connects to TERMINALS.

SYSTEM - A, SYSTEM - B and PHONE can be switched by operating SPEAKER SYSTEMS SELECTOR (14) on the front panel. The two SPEAKER SYSTEMS permit easy selection.

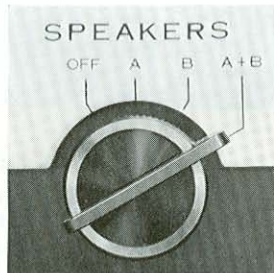
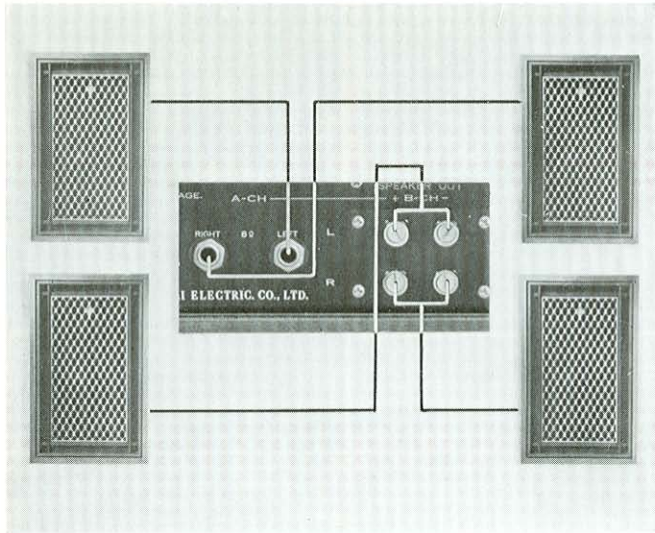


## ANTENNA ADJUSTMENT

### 1) FM Antenna

For best FM Broadcast reception, an exclusively designed FM antenna is recommended. In areas where the radio wave is sharp enough, the attached FM antenna should suffice. Inadvertent antenna setting would often be the cause of distorted sound or dull separation of the left and right sound pockets, thus affecting the stereophonic performance.





A variety of antennas are available each depending upon the specific area in which it is used.

Typical examples are :

- Indoor antenna – for about 20 km radius from the station.
- 3-element antenna – for about 60 km radius from the station.
- 5-element antenna – for about 80 km radius from the station.

(Antenna of 5 or more elements should be used at more remote location or where the radio wave is relatively weak, for geographical or other reason in spite of the fact the station is more closely located.

## 2) Adjusting the FM Antenna

Install the antenna near electric wires or high-voltage cables, but orient it in the direction of the broadcast station. The antenna is directional due to ultra-short FM broadcasts. Trial and error is the only way to position the antenna.

Do not place the antenna near the street where traffic is heavy, because it easily captures traffic noise. Noise can be considerably reduced by the use of a 75 ohm coaxial cable.

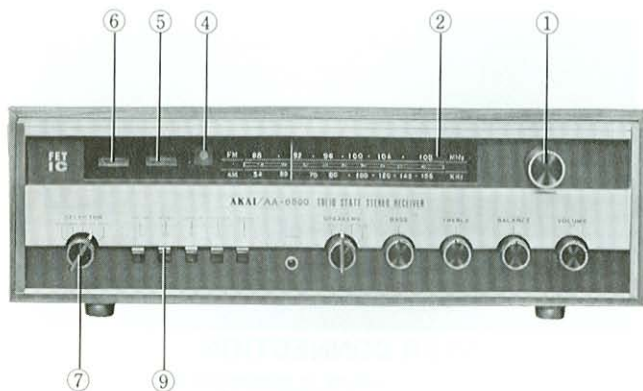
When using a feeder wire for TV reception, it must be born in mind that the feeder is susceptible to salty wind and that it only lasts for two or three years. Therefore, check it carefully especially when it has been used over extended periods of time. Failure to do this may result in sound distortion or increased noise level.

## 3) Adjusting the AM Antenna

The bar antenna ②1 is adequate for normal AM reception, although the enclosed AM antenna may be used, where the radio wave is not strong enough as in a ferroconcrete building or in a remote area.

### NOTE :

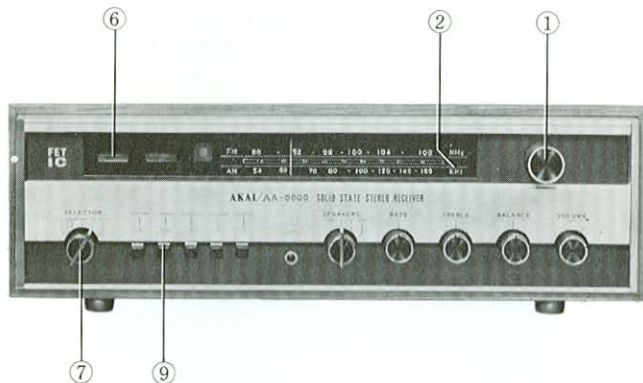
When the FM or AM antenna is placed high in the air, use a lightning arrester to protect the receiver.



## FM BROADCAST RECEPTION

Set SELECTOR SWITCH ⑦ to the FM position. Rotate TUNING KNOB ①, while watching FM DIAL SCALE ②. As FM broadcast reception begins the needle of FM CENTER TUNING METER ③ moves right or left. Continue rotating TUNING KNOB ① slowly, until the needle comes to the center of the meter. And FM/AM SIGNAL STRENGTH METER ④ is for FM or AM signal strength indication ; tune to maximum deflection. This meter ④ now automatically registers relative strength of incoming signal.

STEREO INDICATOR ④ will light—and set will receive stereo automatically—if station is broadcasting stereo and MODE SWITCH ⑤ is in STEREO position ; mono FM is also automatically received if station is broadcasting mono even through MODE SWITCH ⑤ is in STEREO position.



## AM BROADCAST RECEPTION

Set SELECTOR SWITCH ⑦ to the AM position. Select a desired channel by rotating TUNING KNOB ① until the pointer of FM/AM SIGNAL STRENGTH METER ④ remains at the right limit to ensure the best tuning quality. Note that MODE SWITCH ⑤ is inoperable during AM tuning.

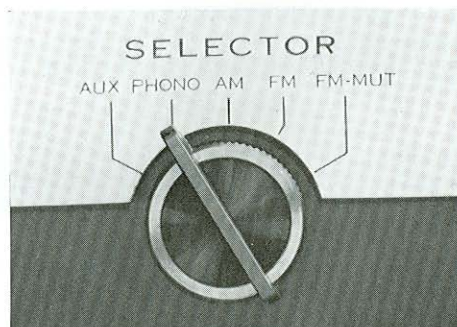
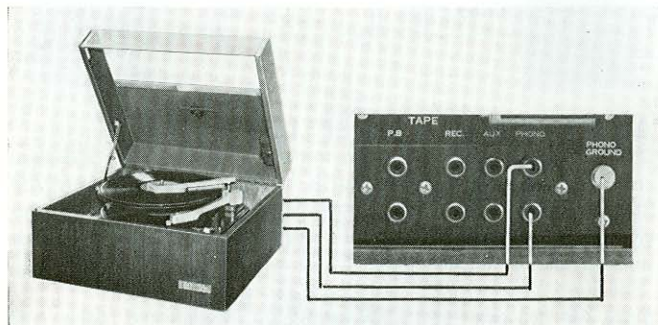
Since AM broadcast waves are variable in strength and radius, it is essential for better reception to adjust the bar antenna on the spot. Extend the antenna from the rear panel and position it so that the broadcast is received with maximum fidelity.

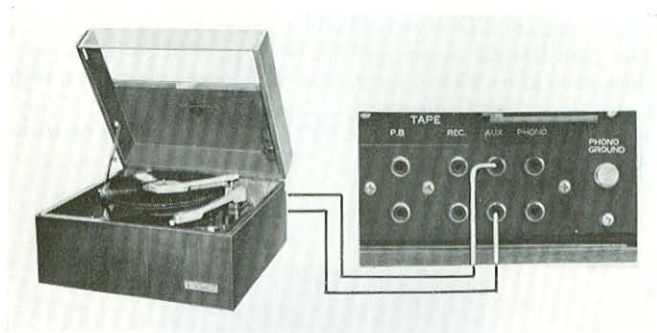


## RECORD PLAYER CONNECTION

Cartridge output from the player is connected to PHONO JACKS ⑳ on the rear panel. Where ground lines of the phono motor and arm are available, connect them to the GROUNDING TERMINAL ㉔.

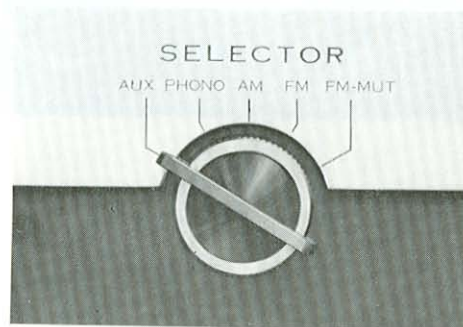
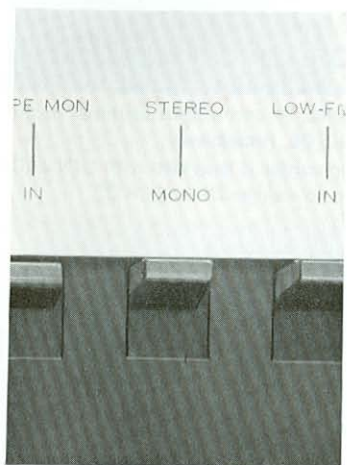
Set SELECTOR SWITCH ⑦ to PHONO position. Use a player preferably with a low output cartridge (2 to 5 mV) of a moving magnetic type or a moving coil type. Use a quality shielded wire to ensure high amplifier sensitivity.



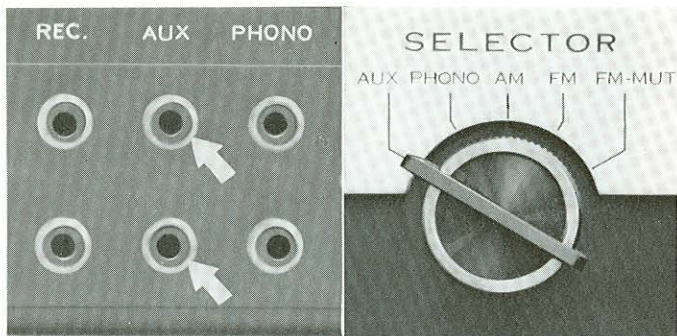


Employ AUX JACKS ⑩ when a high output ceramic or crystal cartridge is used.

Keep PHONO JACKS ⑪ inserted by the attached short pin when not in use.



Set MODE SWITCH ⑨ to STEREO to play a stereo record. When using a monaural-player, connect the cord to L or R channel and set MODE SWITCH ⑨ to MONO position.



## AUX JACK CONNECTION

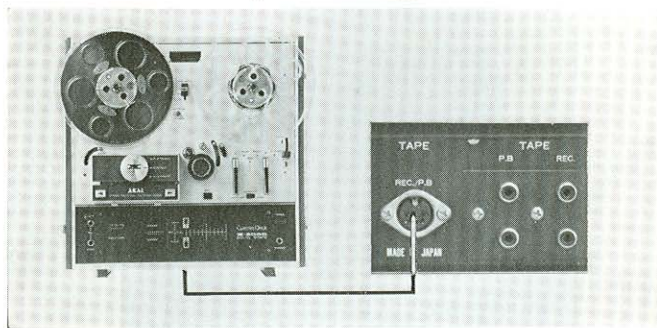
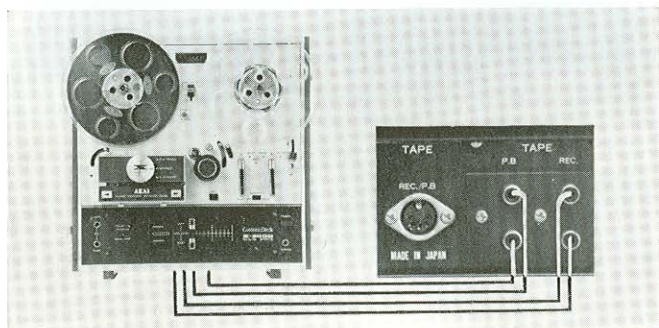
The AUX JACKS ③⑩ are used for relatively high output connections, such as from radio tuner, tape recorder or record player with a ceramic or crystal cartridge.

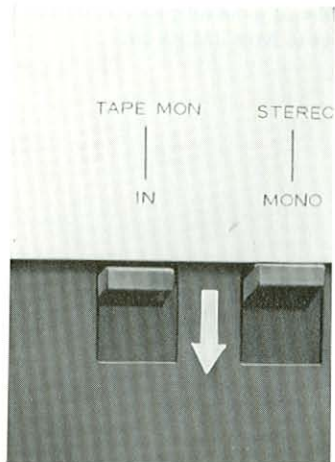
When using these jacks, SELECTOR SWITCH ⑦ should be set to AUX position.

## TAPE RECORDER CONNECTION

Connect the recording input terminal of the tape recorder to TAPE-REC. JACKS ②⑨ and output terminal of the tape recorder to TAPE P.B. JACKS ②⑧, respectively.

Where the tape recorder is provided with DIN JACK ②⑦, these jacks can be connected to a single DIN JACK ②⑦.



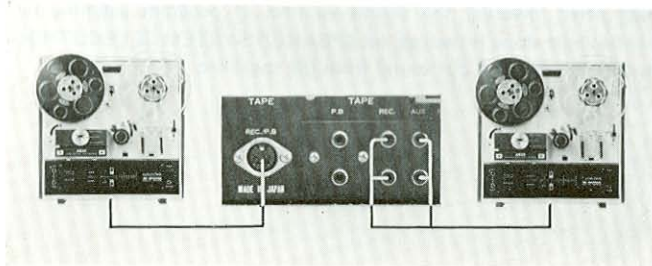


### 1-Head Tape Recorder

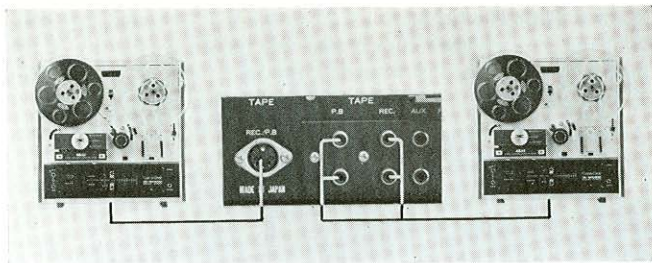
With this tape recorder in recording operation, the sound from the speaker is recorded. For playback, set TAPE MONITOR SWITCH ⑧ to IN after rewinding the tape.

### 3-Head Tape Recorder

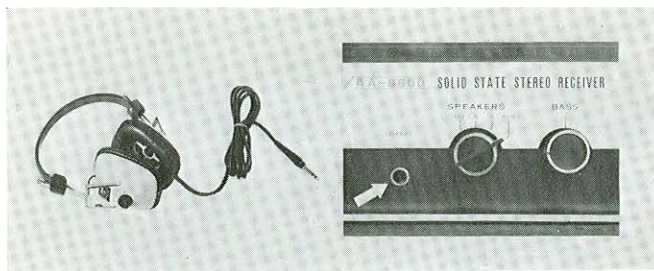
With this tape recorder, the progress of recordings can be monitored instantly by setting TAPE MONITOR SWITCH ⑧ to IN.



To connect two tape recorders, connect DIN JACK of the recorder with DIN JACK ⑳ of the AA-6600 and DIN JACK of the other recorder with TAPE REC. JACKS ㉑ and TAPE P.B. JACKS ㉒ of the AA-6600.



To use one recorder as a dubbing source, do not connect to TAPE P.B. JACKS (28) but to AUX JACKS (30).



## HEADPHONES

The headphones can be used by inserting the plug of the phones into PHONE JACK (13). Be careful not to insert the plug suddenly with the AA-6600 at a high sound level. Make it a rule to insert the plug after lowering the sound volume. If program listening by headphones alone is desired, set SPEAKER SYSTEM SELECOTR (14) to OFF so as to cut out sound from the speakers.

## PRECAUTIONS

### Protection Circuit

A power transistor protection circuit is incorporated in the AA-6600 amplifier. In the event the output circuit becomes shorted (from the amplifier speaker output terminal to the speaker), this protection circuit is automatically actuated to disconnect the power supply to the internal amplifier. The protection circuit resets itself after a predetermined length of time. If, however, the output remains shorted, the protection circuit cuts off the power supply once again, and repeats until the shorted circuit is repaired.

In the event the sound cuts off intermittently or fails, turn off the power supply immediately in order to trouble-shoot the failed circuit.

Note that this protection circuit works also either when the output is excessively high or when speaker impedance is excessively low. If the protection circuit does not operate due to a sudden short of OUTPUT, the protection fuse between source and POWER AMP is blown.

If the AA-6600 does not operate after setting the switch to ON position, contact our service station for a fuse change.

### Changing the Fuse

When the fuse is blown, replace it with a new glass tube fuse. The use of larger capacity fuses or wires will damage the amplifier.

100 - 120 V ..... 3 A

200 - 240 V ..... 1.5 A

### Allowable Wattage of AUX AC

The AC OUTLET (23) terminals are furnished with a total of 300 watts.



## TROUBLE-SHOOTING

Summarized below are some typical symptoms and remedies. It should be noted, however, some of these seemingly failure-like situations may not always be the real trouble. In such instance, check the whole unit for proper condition.

### Heavy noise and poor response of the TUNING METER during FM broadcast reception

- \* Check and see if the antenna is oriented in the right direction ; a blow of wind sometimes changes the direction of the antenna.
- \* Check for broken wiring from the antenna to the receiver set, especially at the output terminal of the antenna and the antenna terminal of the amplifier.
- \* Also check the antenna for proper size from the geographical point of view.

### Jamming in FM broadcast reception when cars are running nearby

It is necessary to install the antenna away from the high-ways or high in the air. It is also advisable, for noise suppression, to use an exclusive FM multi-element antenna for strengthening the wave, or to use a 75 ohm coaxial cable in place of TV feeder.

### Poor sound separation between left and right speaker for FM stereophonic broadcast

Check and see if sound separation is satisfactory, listening to test pattern before setting the stereo set in full operation.

- \* Is the MODE SWITCH in STEREO position?
- \* Is the antenna installed correctly?

### Heavy noise during AM reception

Move the bar antenna attached to the rear panel, while receiving AM broadcast. Maximum sensitivity is obtained when the SIGNAL STRENGTH METER pointer reaches the extreme right end of the meter.

In congested building sector of the city or in an area remote from the station, connect a vinyl covered wire to the AM ANTENNA terminal. Hanging the wire out of the window is advisable for better sensitivity.

AM broadcast is more susceptible than FM broadcast to city noise. Be sure not to place the antenna near fluorescent lamps.

### Humming during AM reception

The tuning hum varies with the location of the receiver. Move the bar antenna attached to the rear panel so as to find a point at which the humming is held to a minimum.

### Distorted sound and reduced sound level

These occur when the power transistor protection circuit is in operation. Disconnect the power supply to check the wiring of both speakers. Shorted wiring should of course be corrected. Then switch on the power.

This protection circuit sets itself into operation when the output is excessively high (especially when speaker impedance is too low). In such case, lower the sound volume slowly, and about five seconds later, raise the sound volume once again.



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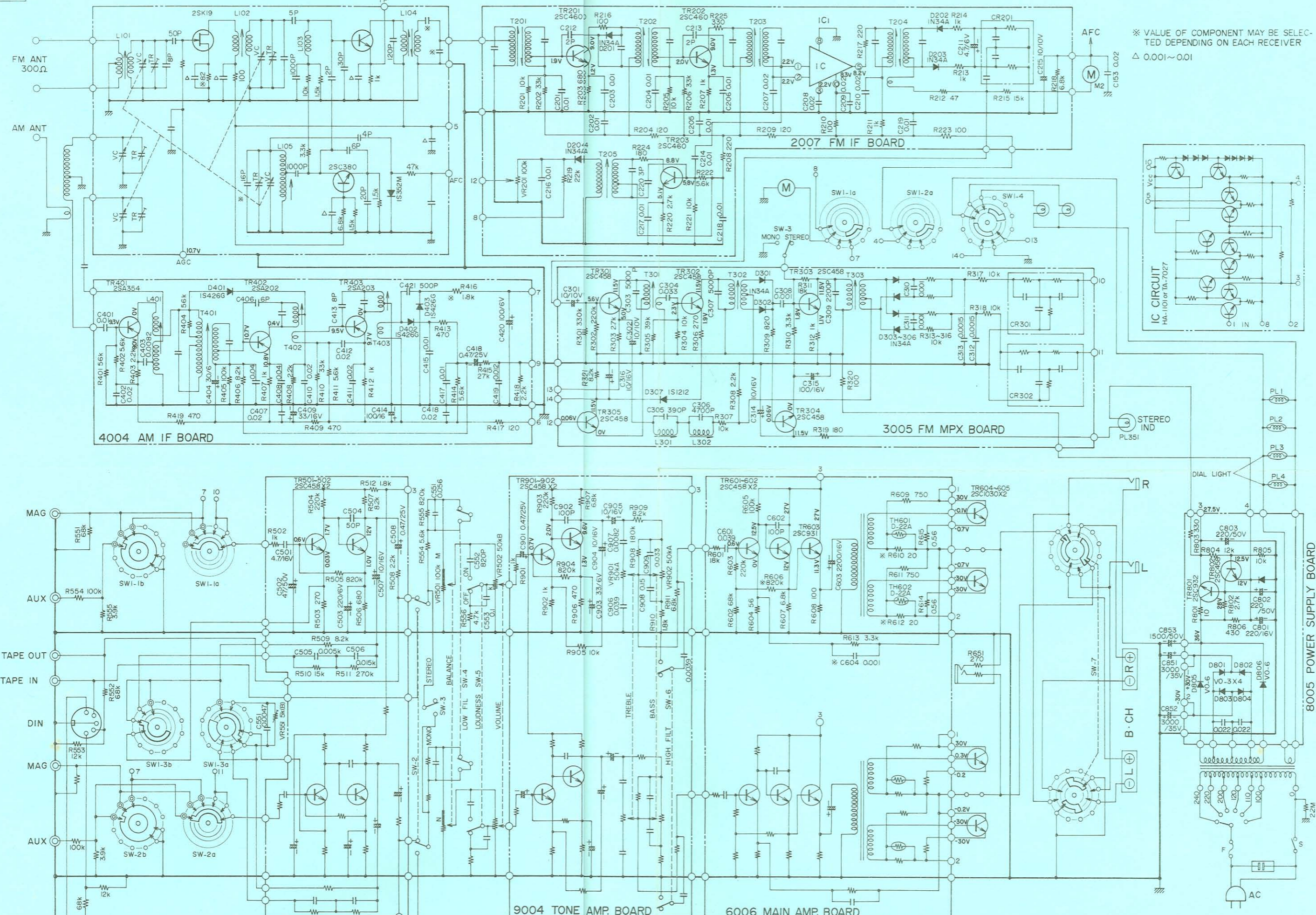
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Ohta-ku, Tokyo, Japan

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Printed in Japan



※ VALUE OF COMPONENT MAY BE SELEC-  
TED DEPENDING ON EACH RECEIVER  
△ 0.001~0.01

AA-6600 CIRCUIT DIAGRAM 13820161