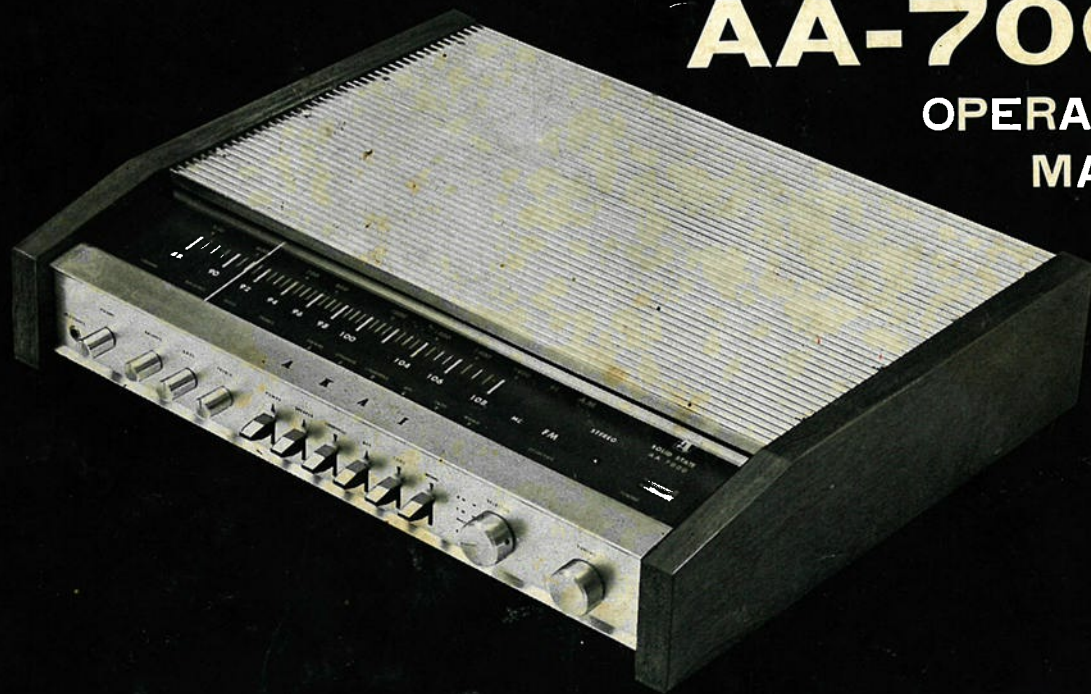


AKAI

AA-7000

**OPERATOR'S
MANUAL**



SOLID STATE AM/FM MULTIPLEX STEREO TUNER AMPLIFIER

FEATURES	1
SPECIFICATIONS	2
CONTROLS AND CONNECTIONS	3
ADJUSTING THE POWER VOLTAGE	7
CONNECTING THE SPEAKER SYSTEM	8
SETTING THE ANTENNA	8
RECEIVING THE FM BROADCAST	9
RECEIVING THE AM BROADCAST	9
CONNECTING THE RECORD PLAYER	10
CONNECTING THE AUX JACK	10
CONNECTING THE TAPE RECORDER	11
HEADPHONE	11
OTHER PRECAUTIONS	12
TROUBLE-SHOOTING	13
SCHEMATIC	16

FEATURES

- ① Low silhouette styling, with side panels made of quality wood.
- ② 80 watts music power.
- ③ Four nuvistors plus four-gang variable condenser to provide pin-point sensitivity.
- ④ Large dial offering easy channel selection and smooth control.
- ⑤ Superb, spacious extruded aluminum cover serving also as a radiator.
- ⑥ All silicon transistor to assure perfect stability.
- ⑦ Easy-to-read stereo indicator.
- ⑧ Muting switch to eliminate noise during channel selection.
- ⑨ Movable AM bar antenna adding to sensitivity.

SPECIFICATIONS

AA-7000

SILICON TRANSISTOR : 41
 SILICON DIODE : 7
 GERMANIUM DIODE : 14
 VARIABLE CAPACITOR: 1
 VARISTER : 1
 THERMISTER : 4
 NUVISTOR : 4

FREQUENCY RECEPTION

FM : 87 to 109 MC
 AM : 536 to 1,605 KC

SENSITIVITY

FM : 1.6 μ V (98 MC, S/N 30 db)
 AM : 30.0 μ V (1 MC, S/N 20 db, 1 KC, 30% modulation)

IMAGE RATIO

FM : Over 60 db (98 MC)
 AM : Over 50 db (1 MC)

FM SECTION

Multi-separation : Over 35 db (1 KC)
 Distortion : Below 0.8% (1 KC, 100% modulation)

ANTENNA

FM : 75 ohms unbalance
 AM : c/w ^{Movable bar} antenna and external terminal _{corner}

OUTPUT

Effective output : 30W/30W (1 KC, 1% distortion)
 Music power : 40W/40W (1 KC, 1% distortion)

INPUT SENSITIVITY

Phono : 3.5 mV
 AUX-H : 1.2 V
 AUX-L : 400 mV

TAPE TERMINAL

Recording output : 350 mV
 Tape monitor : 400 mV

TONE CONTROL

Bass : 100 cps \pm 11 db
 Treble : 10 KC \pm 10 db

LOUDNESS CONTROL : 100 cps + 6 db, 10 KC + 4 db at -20 db volume position

PHONO EQUALIZER : RIAA

S/N RATIO

AUX : Over 70 db
 Phono : Over 60 db

OTHER SPECIAL CIRCUITS :

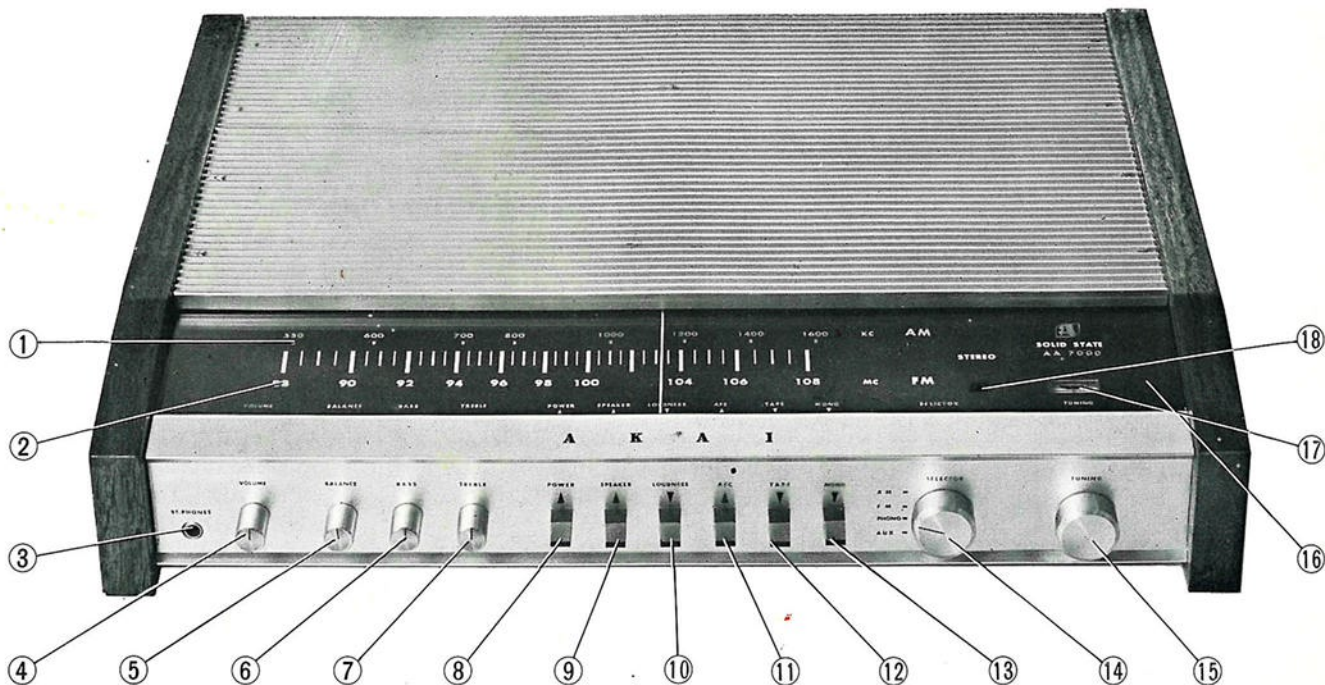
FM multi-stereo electronic selector, FM multi-stereo broadcast indicator, Muting circuit, FM antenna input sensitivity selector, FM-AFC selector, Speaker ON-OFF switch, Head-phone jack, Loudness control, Electronic ~~circuit~~ Protection circuit.

POWER SUPPLY : 100 V/110 V/120 V/200 V/220 V/240 V, 50-60 cps

DIMENSIONS : 20-3/4"(W) \times 17-1/2"(D) \times 4-1/2"(H)
 [525(W) \times 445(D) \times 115(H) mm]

WEIGHT : 32.4 lbs (14.7 kg)

FRONT PANEL



- ① AM DIAL SCALE : Choose AM broadcast. Unit in KC (kilo cycle).
- ② FM DIAL SCALE : Choose FM broadcast. Unit in MC (mega cycle).
- ③ ST. PHONE JACK : Insert the headphone plug as far in as it can go.
- ④ VOLUME CONTROL :
Adjust the volume.
- ⑤ BALANCE CONTROL :
Balance the volume of each of the left and right speakers.
- ⑥ BASS CONTROL : Strengthen the bass, and adjust the damping.
- ⑦ TREBLE CONTROL : Strengthen the treble and adjust the damping.
- ⑧ POWER SWITCH : Switch in the power by soft finger touch.
- ⑨ SPEAKER SWITCH : When listening with headphone, speaker sound may be eliminated by moving the speaker switch to OFF position.
Regardless of the position of this switch, the headphone remains operative.
- ⑩ LOUDNESS SWITCH :
Compensate for insufficient sound volume of bass and treble, during low-volume operation.
- ⑪ AFC SWITCH : Eliminate the FM tuning distortion. Set this switch in OFF position at the beginning of the performance, and afterward in ON position so as to avoid distortion.
- ⑫ TAPE SWITCH : Monitor the progress of recording with a three-head tape recorder when this switch is set in ON position. Used also for playback.
- ⑬ MONO. SWITCH : Shift from stereo to monaural in ON position.
- ⑭ SELECTOR SWITCH : Select the input.
- ⑮ TUNING KNOB : Select the channel.
- ⑯ DIAL : Easy-to-read with ample space.
- ⑰ TUNING METER : Indicate the tuning effect; the pointer stands still at the right limit of the meter, meaning the tuning is perfect.
- ⑱ STEREO INDICATOR :
Indicating the reception of stereo broadcast by a pilot lamp.

- ⑱ GROUNDING TERMINAL: Ground the phono motor and arm of a record player. This ground connection occasionally invites noise; choose either this or the ground connection of PHONO JACK ⑳, as the case may be.
- ⑳ PHONO JACK: Used ^{with} the low input cartridge (3 to 5 mV) inserted. ^{Keep this} jack in inserted position by a short pin when not in use.
- ㉑ AUX-(H): Inserted by relatively high voltage input, such as
- ㉒ AUX-(L) radio tuner, output from the amplifier of a tape recorder and record player with ceramic or crystal cartridge.
- ㉑ - for 1.0 to 1.2 V
 - ㉒ - for 350 to 400 mV
- ㉓ TAPE-REC. JACK: Connected to the input terminal of a tape recorder. The recording source selected by SELECTOR SWITCH ⑭.
- ㉔ TAPE-MONI. JACK: Connected to the output terminal of a three-head tape recorder, there-by monitoring the progress of performance by TAPE SWITCH ⑫.
- ㉕ DIN CONNECTOR: Capable of the functions of both TAPE-REC. JACK ㉓ and TAPE-MONI. JACK ㉔, if jointly used with a tape recorder furnished with the corresponding connections.
- ㉖ AM BAR ANTENNA: Receive AM broadcast. Before use pull it out. When moving the amplifier elsewhere, set it back so as to protect it from possible failure.
- ㉗ AM ANT. TERMINAL: Used, for example, with the radio ^{and} wave ^{not} ^{strong} enough to be caught by BAR ANTENNA ㉖.
- ㉘ FM. ANT. TERMINAL: Receive FM broadcast. Connected directly with a 75 ohms coaxial cable. Where the wave is strong enough, the ~~finder~~ ^{feeder} antenna will do.
- ㉙ FM GAIN SWITCH: Set normally in ^{finder} DIST position, but in LOCAL position where the wave is unusually as strong as to cause the sound distortion due to excess input.
- ㉚ MUTING CONTROL: Remove ^{bruit} noise during the aperiodic state in FM reception. Readjust it before performance, although it is adjusted when shipped.
- ㉛ FM SEPARATION CONTROL: Adjust the separation of the volume of each of the left and right speakers. Do not turn it unless positively necessary, as it is completely adjusted when shipped.
- ㉜ SPEAKER OUTPUT JACK: Connected by the 2P plug to the speaker, not allowing the output into SPEAKER OUTPUT TERMINAL ㉝.
- ㉝ SPEAKER OUTPUT TERMINAL: Supply the output to the speaker. Fit the plus and minus terminal to the corresponding polarity of the speaker. Use a speaker with the impedance preferably of more than 8 ohm.
- ㉞ FUSE: In case the fuse is blown off, replace it with a new 2 ampere fuse.
- ㉟ POWER CORD: Applicable to 6-step power voltage ranging from 100 to 240 volts.
- ㊱ AUX AC: Power supply for record player and tape recorder. Two of these power supplies provides up to 200 watts. Note that this power is not interlocked with POWER SWITCH ⑧.

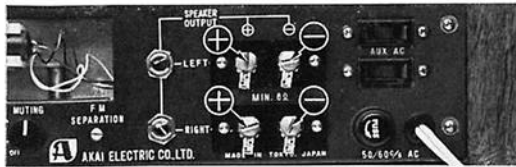
The power voltage can be switched in six steps ranging from AC 100 to 240 volts. Each unit is pre-set at the manufacturer's factory to a specified voltage depending upon the destination to which it is shipped. Check the amplifier for correct voltage level by checking on the voltage regulator mounted at the bottom of the unit. (See Figures ① and ②)

Readjust, if necessary, the voltage according to the following instructions:

- 1) Take off the cover by removing the screw as shown in Figure ①. Then, raise (for 200 to 240 volts) or lower (for 100 to 120 volts) the slide switch of the voltage regulator, and insert the plug into the appropriate opening. Be careful not to connect it in wrong polarity as the plug corresponds in polarity to the cord.
- 2) The regulator has a voltage coverage of 100, 110, 120, 200, 220 and 240 volts. For instance, if the power is to be set at 100 volts, the 100-120 V range should be selected. (See Figure ③)

Note: Do not fail to remove the power cord before re-setting the voltage. It is important to suppress the voltage variations to not more than 10% of the rating to achieve the best mode of operation and prolonged amplifier life.





CONNECTING THE SPEAKER SYSTEM

The speaker system should preferably be of more than 8 ohms. Attention is invited to connect it with correct polarity.



SETTING THE ANTENNA

1) FM Antenna :

For better reception of FM broadcast, 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 for a choice 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) Setting the FM Antenna

Install the antenna away from electric wires or high-voltage cables, but orient it in the direction of the broadcast station. The direction of the antenna, however, is subject to change due to, for examples, wave radiation of the ultra-short FM broadcast. Trial and error is the only way to the ultimate antenna position.

Do not place the antenna near the street where traffic is heavy, because it easily captures the noise from travelling cars or other city noise. The noise can be considerably reduced by the use of a 75 ohms coaxial cable.

When using a feeder for TV reception, it must be borne in mind that the feeder is susceptible to salty wind and that it lasts only for two or three years. Therefore, check it carefully as possible especially where it has been used over extended periods of time. Failing this may result in sound distortion or increase noise level, destroying the sharpness of an FM stereo broadcast.

Note: The FM antenna for AA-7000 has a 75 ohms input, but an ordinary 300 ohms antenna may also be used with minimum of noise. Where a gain is required from the antenna, it will prove effective to connect the antenna with a 75 ohms coaxial cable through a matching transformer.

3) Setting the AM Antenna

A bar antenna is adequate for normal AM reception, although the attached AM antenna may of course be used, except the case where the radio wave is not strong enough, in a ferroconcrete building or in an area far from the station.

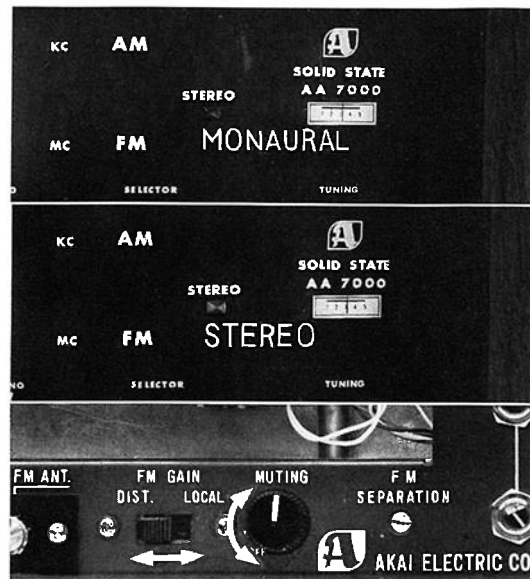
Note: Where the FM or AM antenna is to be placed high in the air, use a lightning arrester to protect the receiver.

RECEIVING THE FM BROADCAST

Set the SELECTOR SWITCH to FM position, then the AFC SWITCH to OFF. Select a desired channel by rotating the TUNING KNOB, while watching the white-coloured numbers on the dial scale. Continue rotating this knob, until the pointer of the TUNING METER stands still at the right limit of the meter, so that the tuning is complete. The STEREO INDICATOR lamp then lights, meaning the stereophonic performance is switched in. When the desired channel has been selected, set the AFC SWITCH to ON so as to actuate the AFC circuit for stabilized reception of the broadcast.

In the event the stereo broadcast is received with too much jamming, set the MONO. SWITCH to ON in order to reduce the noise, at which time the receiver should be set for monaural reception. For increased sensitivity, set the FM GAIN SWITCH to DIST. Conversely, set it to LOCAL position for overcoming the distorted sound resulting from an excess field strength.

The MUTING CONTROL serves to eliminate annoying noise occurring when the speaker is in an aperiodic state. This muting effect can be varied by the MUTING CONTROL on the rear panel. As it is turned clockwise, the noise is proportionally reduced. At the same time, however, the radio wave as well is eliminated. Turn the MUTING CONTROL counter clockwise or to OFF position, when the wave is too weak to receive.

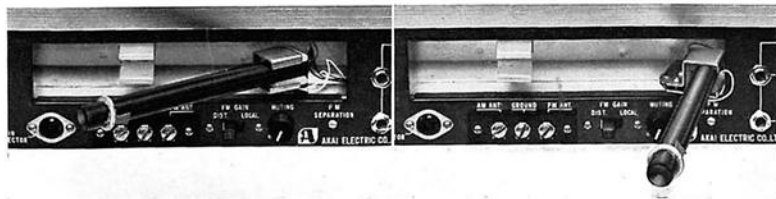


RECEIVING THE AM BROADCAST

Set the SELECTOR SWITCH to AM position. Select a desired channel by rotating the TUNING KNOB, while watching the blue numbers on the upper portion of the dial. Set the TUNING METER until the pointer of the meter stands still at the right limit so as to ensure the best tuning quality. Note that the AFC SWITCH, MONO SWITCH, FM GAIN SWITCH and MUTING CONTROL are all inoperable, different from the case of FM reception.



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



Enregistrer son vin

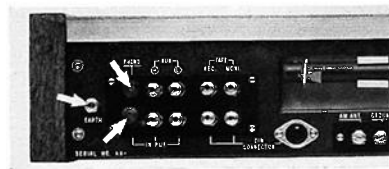
CONNECTING THE RECORD PLAYER

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

Set the SELECTOR SWITCH to PHONO position. Use a player preferably with a low output cartridge (3 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 where a high output ceramic or crystal cartridge is put to use.

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



CONNECTING THE AUX JACK

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

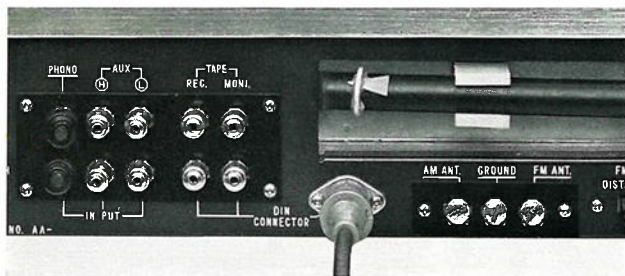
The ① and ② displays are given on the AUX JACKS on the rear panel; the ① jacks is used for relatively high output connection (1.0 to 1.2 V), while the ② jacks for relatively low output connection (350 to 400 mV).

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

CONNECTING THE TAPE RECORDER

Connect the recording input terminal of the tape recorder to TAPE-REC. JACK and output terminal of the tape recorder to TAPE MONI. JACK, respectively.

Where there is available a tape recorder provided with DIN CONNECTOR, these jacks can be connected to a single DIN connector receptable.



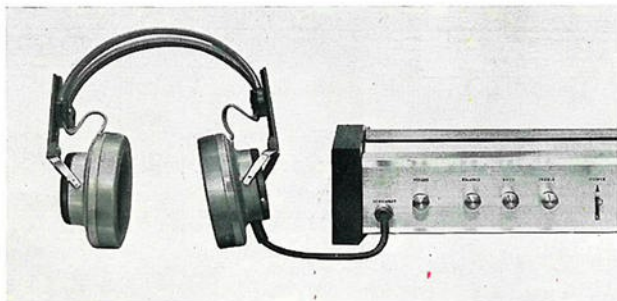
1-Head Tape Recorder

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

3-Head Tape Recorder

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

HEADPHONE



The headphone can be used by inserting the plug of the phone into the ST. PHONE. Be careful not to insert the plug suddenly during operation of the recorder set at high sound level. Make it a rule to insert the plug after lowering the sound volume. If it is desired to listen to the program by the headphone alone, set the SPEAKER SWITCH to OFF so as to break off the sound from the speaker.

Protection Circuit

A power transistor protection circuit is incorporated in the amplifier AA-7000. 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 sets itself back after a predetermined length of time. If, however, the output remains shorted, the protection circuit breaks off the power supply once again, thus repeating connection and disconnection until the shorted circuit is recovered.

In the event the sound breaks off intermittently or goes off while in playing, cut off the power supply immediately to trouble-shoot the failed circuit, and then switch in the power.

Note that this protection circuit works also either when the output is excessively high or when speaker impedance is excessively low.

Changing the Fuse

When the fuse is blown off, replace it with a new glass tube 2 A fuse. The use of fuses of larger capacity or wires will cause damage to the amplifier.

Allowable Wattage of AUX AC

The AUX AC terminals are furnished with a total of 200 watts.

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 up 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 MONO. SWITCH in OFF position?
- * Is the antenna installed correctly?

The FM SEPARATION KNOB on the rear panel is adapted to adjust sound separation. Do not touch it except when necessary, for it has been minutely calibrated at manufacturer's factory. When adjusting the sound separation, listen to the test pattern broadcast with perfect tuning and correct antenna position.

Heavy noise and declined response of TUNING METER during AM reception

Move the bar antenna attached to the rear panel, while receiving AM broadcast. Maximum sensitivity is obtained when the TUNING 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. Especially, be sure not to place the antenna near fluorescent lamps.

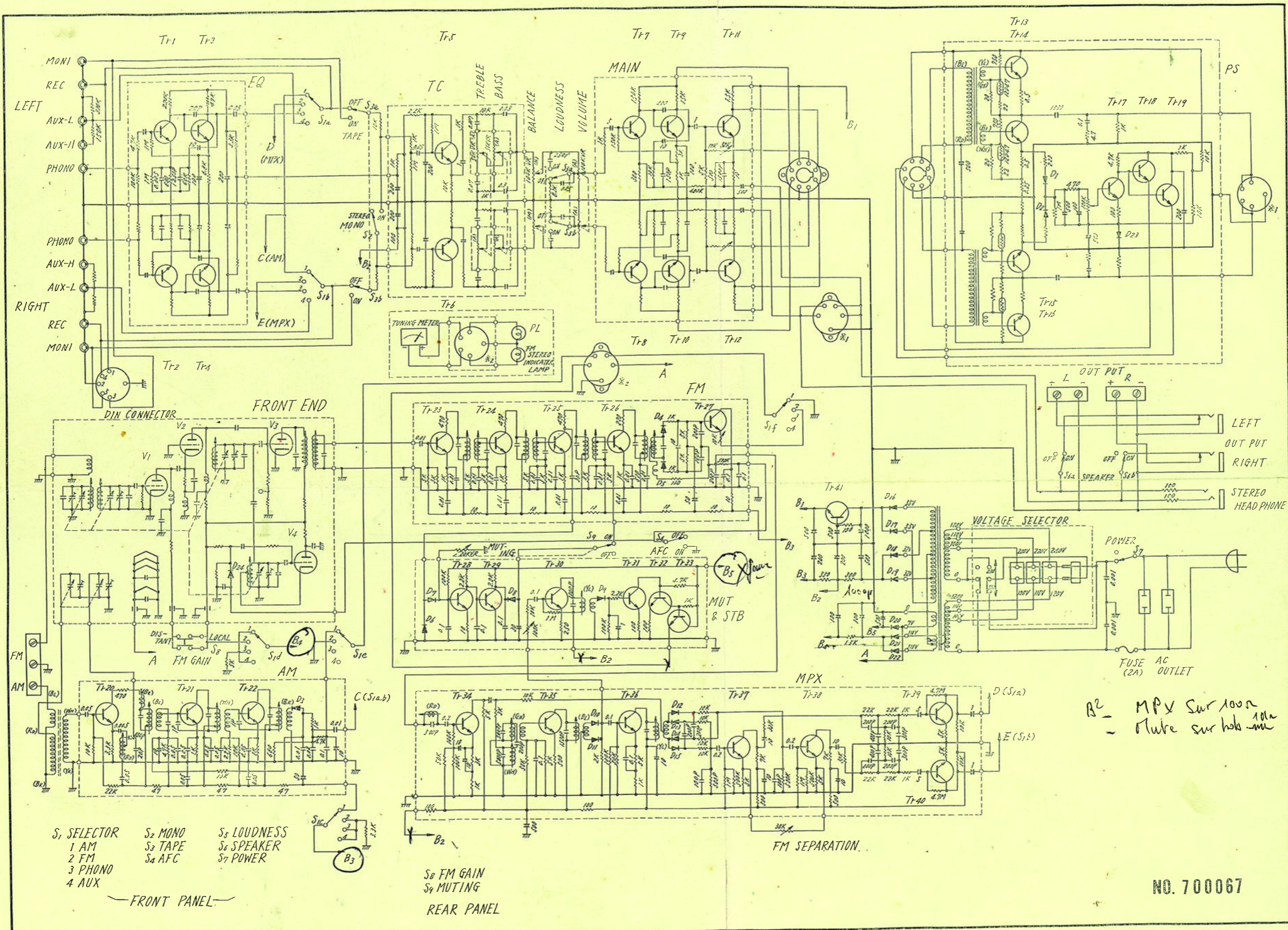
Humming in AM reception

The tuning hum varies with the location of the receiver. Slightly 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 for both speakers. Shorted wiring should of course be corrected. Then, switch in the power.

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



- S₁ SELECTOR
 1 AM
 2 FM
 3 PHONO
 4 AUX
- S₂ MONO
 S₃ TAPE
 S₄ AFC
- S₅ LOUDNESS
 S₆ SPEAKER
 S₇ POWER

— FRONT PANEL —

- S₈ FM GAIN
 S₉ MUTING
- REAR PANEL

B₂ - MPX SUR 100Ω
 - PLATE SUR HOLD 100Ω

NO. 700067

819.28



MANUFACTURED & DISTRIBUTED BY
AKAI ELECTRIC CO., LTD.
AKAI TRADING CO., LTD.

12, 2-chome, Higashi-Kojiya,

Ohta-ku, Tokyo, Japan.

PHONE, Tokyo 741-1426~9

Price ¥ 360.00
US \$ 1.00

Printed in Japan