

OPERATING INSTRUCTIONS

AM/FM MULTIPLEX STEREO TUNER AMPLIFIER

SANSUI MODEL 3000



Sansui

SANSUI ELECTRIC COMPANY LIMITED

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SANSUI

AM/FM MULTIPLEX STEREO TUNER AMPLIFIER



MODEL 3000

Special component selection, sophisticated engineering and precision fabrication combine to put this all-transistorized model in a class by itself.

Every single one of its 96 transistors and diodes has been painstakingly tested and retested for superior long life and current stability characteristics. High quality standards like these have enabled Sansui engineers to incorporate the latest SEPP OTL output circuit for an IHFM music power of 130 watts ± 1 dB with a harmonic distortion factor of less than 0.8%. They have also made possible a power bandwidth (IHFM) ranging from 20 to 20,000 Hz with a damping factor of 15 (IHFM).

Again, it is these standards that has enabled Sansui engineers to utilize special transistors and 7-gang variable capacitors—4 in the FM circuit alone—for an extremely high FM sensitivity of $1.8\mu\text{V} \pm 3$ dB (IHFM). The range, power, distortion factor and sensitivity form the heart of any tuner amplifier. They, more than anything else, determine how sound—in all its exciting dimensions—is captured, filtered, amplified, divided and delivered. We invite you to compare the heart of the Model 3000 with any other model on the market before you make it the heart of your home music center. This booklet explains the steps necessary for operating and caring for your now Model 3000. Read this manual carefully and retain for future use.

FEATURES

ULTIMATE PERFORMANCE OF A TRANSISTOR AMPLIFIER

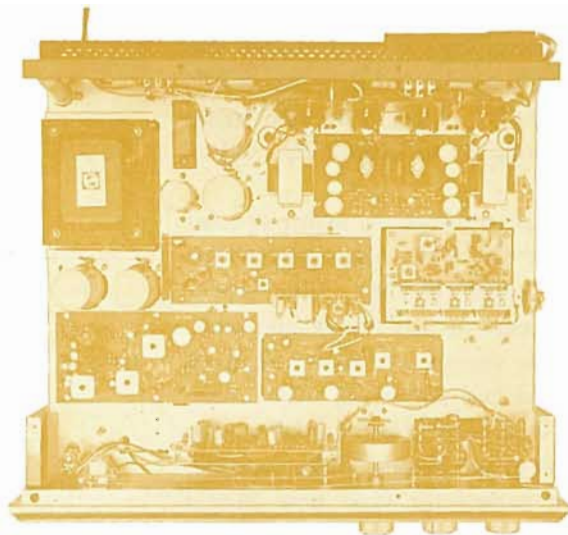
The latest SEPP OTL output circuit, using a Sansui-developed drive transformer plus Mesa type silicon transistor 2SD45, provides IHF music power of 130 watts ± 1 dB total, RMS power of 48/48 watts ± 1 dB and stereo RMS power of 45 watts $\times 2 \pm 1$ dB. What's more, the power bandwidth (IHFM) is 20 to 20,000 Hz with large damping factor of 15 (IHFM).

NEWLY DEVELOPED DRIVE TRANSFORMER

This Sansui-developed drive transformer has a special winding structure, assuring steady and reliable performance of the power circuit at any operating and ambient temperature.

ALL SILICON TRANSISTOR LOW-FREQUENCY AMPLIFIER STAGE

Silicon epitaxial transistors with high thermal stability are used in the low-frequency amplifier stage not only to eliminate noise but also to widen the dynamic range.

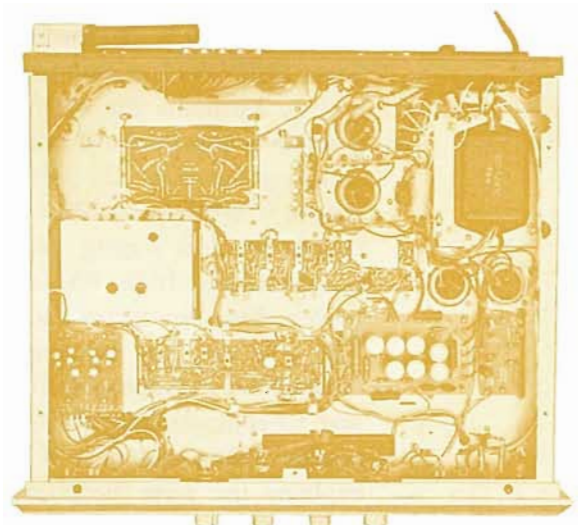
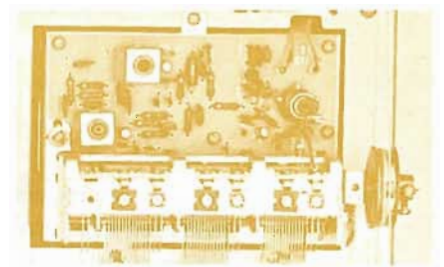


PROTECTION CIRCUIT FOR POWER TRANSISTORS IN ELECTRONIC CIRCUITS

All the power transistors are protected by the silicon controlled rectifier through the electric valve which functions in a few microseconds.

HIGH-SENSITIVITY TUNER

The high-frequency amplifier stage has selective transistors and 7-gang variable capacitors, 4 for FM and 3 for AM. The FM circuit is an IF circuit consisting of 1-stage RF and multiple tuned 5 stages, giving high sensitivity of $1.8\mu\text{V}$ (IHFM). In the AM tuner section, a 1-stage RF and a built-in directional bar antenna enable you to pick up distant stations with a minimum of noise.



PERFECT CIRCUITS FOR CLEAR FM RECEPTION

(1) The built-in muting switch automatically cuts off the IF section when the receiver input voltage is reduced below a rated value, and eliminates interstation noise for quiet channel selection. (2) The FM multiplex circuit is provided with a SCA filter to clip off the interference of the SCA broadcast. (3) The AFC circuit maintains long stabilized FM reception, once the dial is set to your desired station. (4) The Model 3000 will not interfere with any other receivers, since the image rejection is 50 dB and the cross modulation and unnecessary radiation are close to zero. (5) The antenna input circuit to select the reception of distant or nearby stations.

FM STEREO SEPARATION OF MORE THAN 35 dB

The FM multiplex circuit incorporates the most advanced switching matrix system available, providing the channel separation above 35dB while keeping distortion below 1% at 1,000 Hz



FM AUTOMATIC CIRCUIT AND FM STEREO INDICATOR

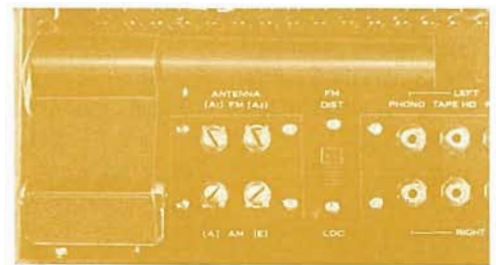
The Model 3000 is provided with the automatic circuit to automatically switch the FM reception from MONO to STEREO or from STEREO to MONO. For easier channel selection in the weak electric field, you can select FM-MONO or FM-STEREO. The indicator lamp is lit orange for stereo and blue for mono.

OTHER CONVENIENCE FEATURES

1. High and low cut filters for cutting down hums and noises at high and low frequencies;
2. Separate bass and treble controls for each channel;



3. Output connections for speakers with (switch selected) impedances of 4 to 32 ohms;
4. Function switch specially designed to minimize its switching noise;
5. Indicator lamp for the function switch;
6. Loudness control to automatically compensate audible balance at low volumes by adding bass and treble;
7. Headphone jack for private stereo listening;
8. DIN standard plug receptacle for recording on tapes;
9. High-sensitivity ferrite antenna for AM;



10. Tape monitor switch that enables you to hear a tape while you are recording it;
11. Center-channel output for the so-called 3-D stereo reproduction.

REFINED EXTRUSION PANEL DESIGN

The refined extrusion panel plus functional arrangement of switches and controls will enhance the beauty of your listening room.

SPECIFICATIONS

AUDIO SECTION

POWER OUTPUT (AT 8Ω LOAD)

MUSIC POWER (IHFM): 130 watts ±1dB total

RMS POWER (LEFT/RIGHT): 48/48 watts ±1dB

RMS STEREO POWER (BOTH CHANNEL DRIVEN):

45 watts × 2 ±1dB

HARMONIC DISTORTION: 0.8%

POWER BANDWIDTH (IHFM): 20~20,000Hz

FREQUENCY RESPONSE: 20~20,000Hz ±1.5dB
at normal listening level

CHANNEL SEPARATION

PHONO: 50dB

AUX: 50dB

HAM AND NOISE (IHFM)

PHONO: 70dB below rated output

AUX: 75dB below rated output

OUTPUT IMPEDANCE: 4 & 8~32Ω

DAMPING FACTOR: (IHFM) 15

INPUT SENSITIVITY (FOR RATED OUTPUT)

PHONO (MAG): 2.5 mV

TAPE HEAD: 1.8 mV

AUX: 180 mV

TAPE MONITOR (PIN): 150 mV

TAPE MONITOR (DIN): 150 mV

CENTER-CHANNEL OUTPUT: 5V at rated output

RECORDING OUTPUT

REC OUTPUT (PIN): 150 mV

REC OUTPUT (DIN): 30 mV

EQUALIZER

PHONO (MAG): RIAA NF type

TAPE HEAD: NAB NF type

CONTROLS AND SWITCHES

BASS CONTROLS: 50Hz +12dB~-13dB

TREBLE CONTROLS: 10,000Hz +12dB~-13dB

LOUDNESS CONTROL: 50Hz +10dB, 10,000Hz +5dB

LOW FILTER: 50Hz -10dB

HIGH FILTER: 10,000Hz -10dB

MODE SWITCH: 1. Stereo 2. Mono

FUNCTION SWITCH: 1. Tuner 2. Phono
3. Tape Head 4. AUX

BAND SELECTOR SWITCH:

1. AM 2. FM-MONO
3. FM-AUTO 4. FM-STEREO

OTHER SPECIAL FEATURES

Direct tape monitor, DIN Connector, Headphone jack, Center-channel output for connection to third amplifier, Protection circuit.

FM SECTION

FREQUENCY RANGE: 88~108MHz

SENSITIVITY: 1.4μV ±3dB (20dB quieting)

USABLE SENSITIVITY (IHFM): 1.8μV ±3dB

IMAGE REJECTION: 50dB at 98MHz

SELECTIVITY: 45dB at 98MHz

SIGNAL TO NOISE RATIO: 50dB

HARMONIC DISTORTION: 1.0%

FREQUENCY RESPONSE: 30~20,000Hz ±2dB

FM-MULTIPLEX SECTION

CHANNEL SEPARATION: 35dB

HARMONIC DISTORTION: 1.0%

FREQUENCY RESPONSE: 40~15,000Hz ±2dB

AM SECTION

FREQUENCY RANGE: 535~1605KHz

USABLE SENSITIVITY (IHFM): 15μV ±3dB at 1MHz

IMAGE REJECTION: 50dB at 1MHz

SELECTIVITY: 20dB at 1MHz

OTHER SPECIAL FEATURES

Muting, tuning Meter, FM stereo indicator, Heavy fly wheel tuning, Automatic Frequency Control, AM Ferrite bar antenna, Stereo auto, Audio (Phono, Tape) Indicator, Power indicator, Protection indicator.

TRANSISTORS AND DIODES THERMISTOR SCR

TR: 2SA525×3, 2SC372×6, 2SC374×3, 2SA101×2,
2SA102×2, 2SA49×2, 2SB54×2, 2SB324×2,
2SC292 (2SC696) ×2, 2SC696 (2SC292) ×4,
2SC458×4, 2SC536×9, 2SC649×2, 2SC693×6,
2SC650×2, 2SD45×4 (2SC245×4)

Di: OA91×7, OA79×4, IN60×8, SM150-01×1,
SW0.5a×11, SW-1×8, 1S352M×1

TH: D-22A×1

SCR: V-312B×1

POWER REQUIREMENTS

POWER VOLTAGE: 100, 117, 220, 240 Volts, 50 and
60Hz

POWER CONSUMPTION: 70VA (No signal)
230VA (Max. Power)

DIMENSIONS

WIDTH: 18 3/10"

HEIGHT: (Excluding rubber stands) 6 4/5"

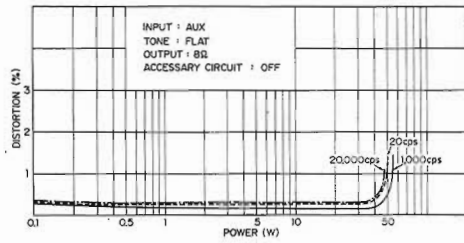
DEPTH: (Excluding knobs) 15"

WEIGHT

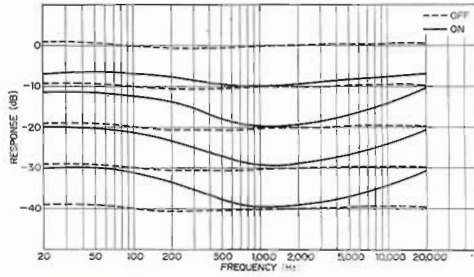
34.4 lbs

CHARACTERISTICS

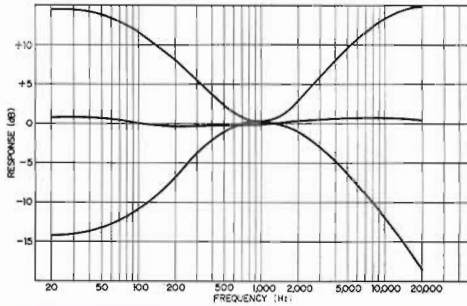
POWER OUTPUT HARMONIC DISTORTION



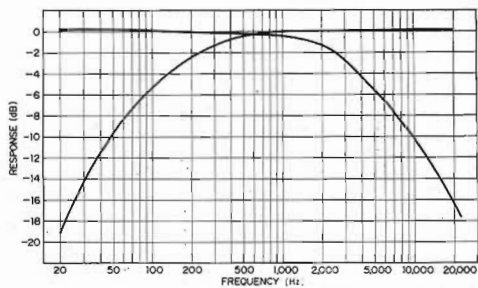
LOUDNESS CONTROL



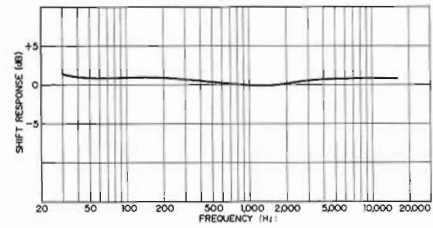
TONE CONTROL



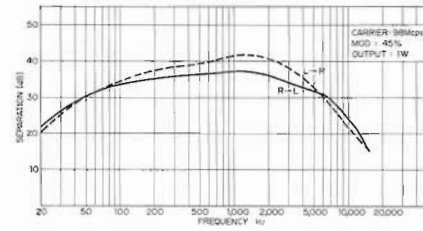
HIGH LOW CUT FILTER



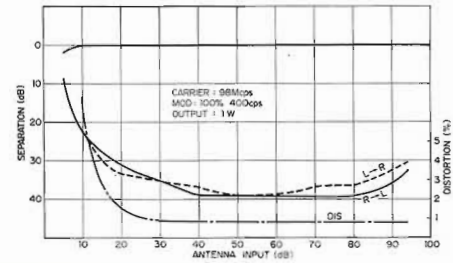
PHONO EQUALIZATION ERROR



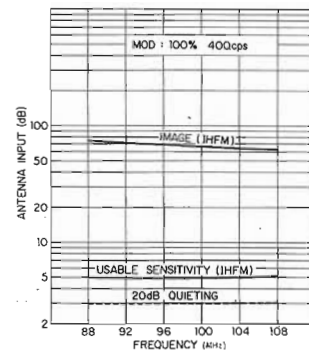
FM SEPARATION



FM SEPARATION & DISTORTION



FM SENSITIVITY



CONNECTIONS

BUILT-IN AM ANTENNA

As shown in Fig. 3, and Fig. 4, move the built-in ferrite bar antenna (B) out of the amplifier by moving the angle (A) on the axis (a). Loosen the screw (c) and then move (B) on the axis (b) to the position where you can receive the broadcast best. This antenna will perform satisfactorily except in ferroconcrete buildings or in areas remote from broadcasting stations.

AM ANTENNA

If the ferrite bar antenna is inadequate to weak AM station signals, connect the flexible PVC wire (supplied) to the terminal screw marked AM. The antenna should be installed outdoors apart from the building and, at the same time, the unit should be grounded. Install it until the best reception is obtained. For safety reason, be sure to attach a lightning arrester to the outdoor antenna.

FM ANTENNA

Connect the FM antenna (feeder wire supplied with the M-3000) to the terminals marked FM A₁ and A₂ on the back of the amplifier. In high intensity signal areas, near to broadcasting stations, the antenna should be installed indoors in a T-shape for the best signal reception. If not still enough, turn the ANTENNA switch to the LOC position.

If you use the M-3000 in a thick-wall building or in an area far from the station, and if the signals are too weak to receive by the indoor antenna, an outdoor antenna designed exclusively for FM should be installed.

NOTE: The FM sensitivity cannot be raised simply by lengthening the antenna. Adjust its height and direction for the best signal reception.

RECORD PLAYER

1. Connect the left output of the player to the input

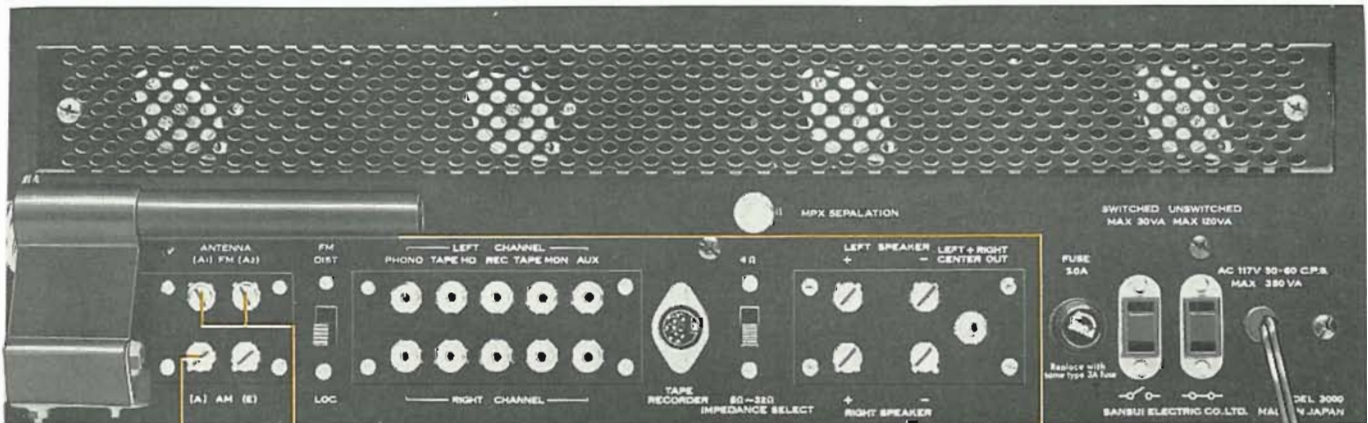


Fig. 1

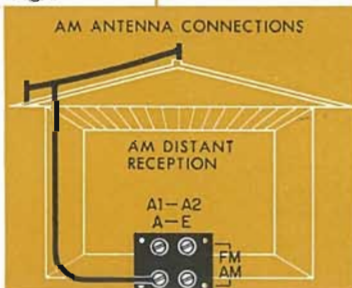


Fig. 2



Fig. 3

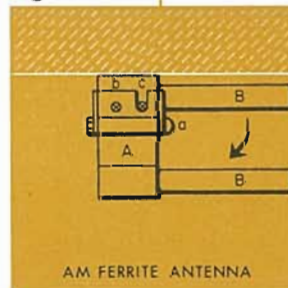
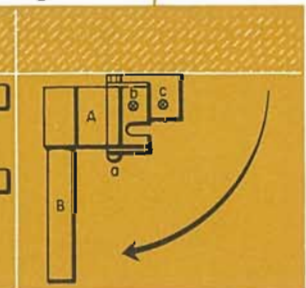


Fig. 4



CONNECTIONS

2. PIN-JACK TAPE RECORDER

a. For Recording

Connect the recording input of the tape recorder to the terminals marked REC. L & R CHANNEL for stereo or to either terminal L or R for mono.

b. For Playback

Connect the playback output of the tape recorder to the terminals marked TAPE MON. L & R CHANNEL for stereo or to either terminal L or R for mono.

3. FOR MONITORING WITH A 3-HEAD TAPE RECORDER

Connect the 3-head tape recorder as indicated in (1) and (2).

4. FOR PLAYBACK WITH A TAPE DECK (DIRECT TAPE HEAD)

Connect the output of the tape deck to the terminals marked TAPE L & R CHANNEL for

stereo or to either terminal L or R for mono.

CONNECTING SPEAKERS

The M-3000 is designed to enable you to use 4-ohm and 8 to 32-ohm speakers. Before connecting, be sure to switch the IMPEDANCE SELECTOR to the correct impedance of the speakers used.

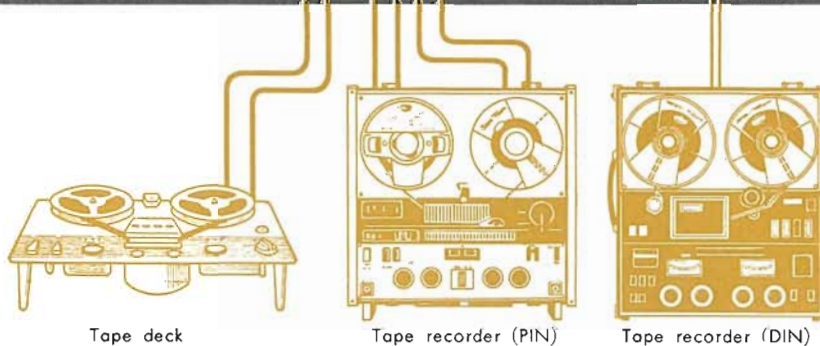
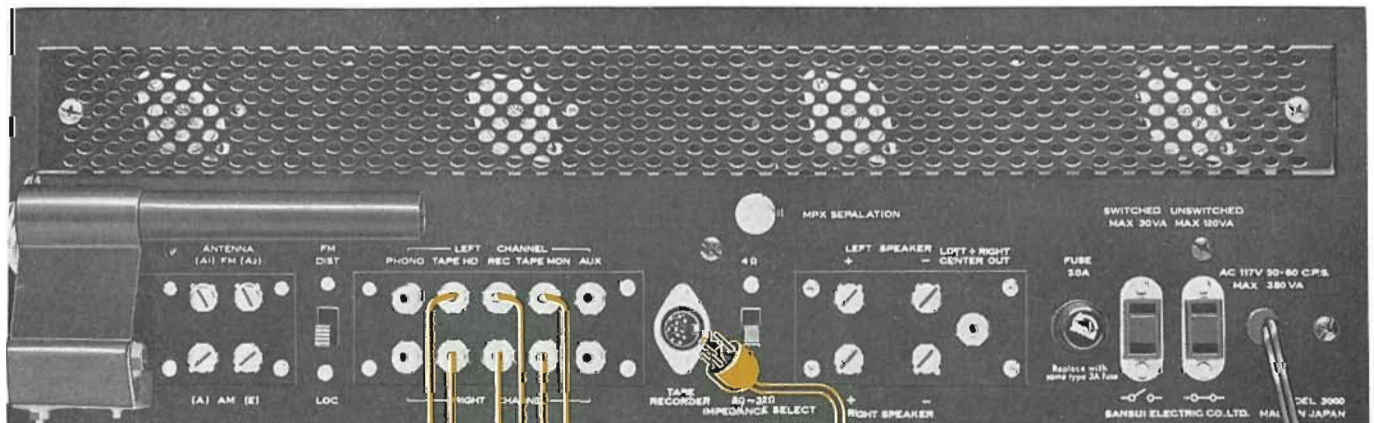
STEREO

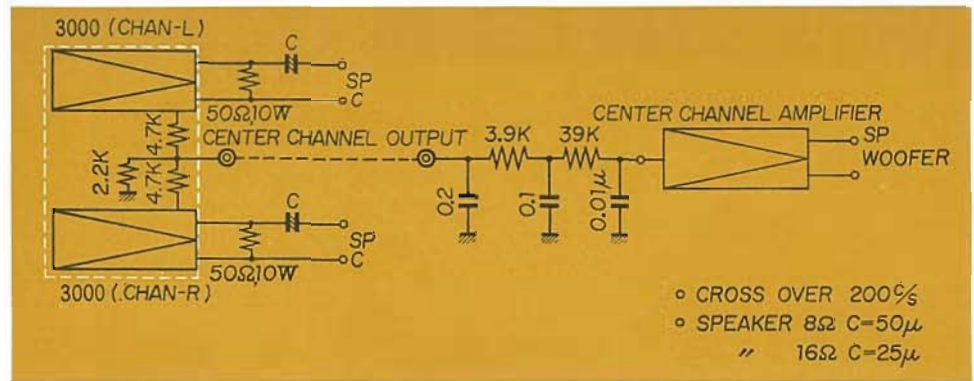
1. Connect (+) of the left speaker system to the upper terminal marked L SPEAKER on the back of the amplifier.

Connect (-) of the left speaker system to the upper terminal marked C on the back of the amplifier.

2. Connect (+) of the right speaker system to the lower terminal marked R SPEAKER on the back of the amplifier.

Connect (-) of the right speaker system to the lower terminal marked C on the back of the amplifier.





MONO

To use a set of speaker system as mono, assuming that the speaker impedance is 4 ohms:

1. Connect the upper terminal to the lower terminal marked 8-32 ohms on the back of the amplifier and then the (+) terminal of the speaker to the connected terminals.
2. Connect the upper terminal to the lower terminal marked C on the back of the amplifier and then the (-) terminal of the speaker to the connected terminals.

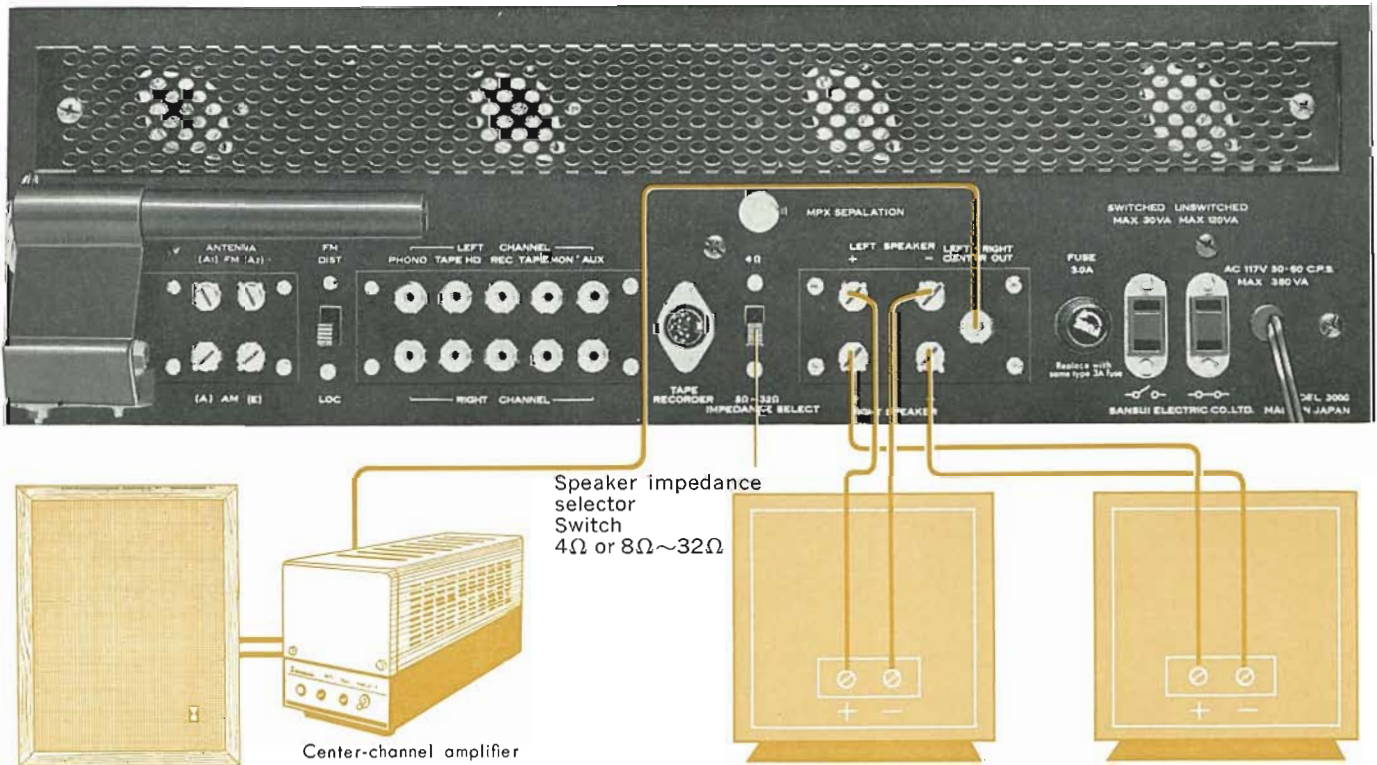
NOTES:

1. After connecting, check to see if the speaker connections are correct and firm, and that the leads are not in contact with each other at the terminals for both channels.
2. The speakers for both left and right channels must push the sound wave out together. If one pushes while the other pulls, there is sound cancellation at some frequencies or in some listening locations. To remedy such a trouble, reverse the phase (+ and -) of either group of speakers.

3-D SPEAKER SYSTEM

The M-3000 is equipped with an extra terminal for connecting a center-channel speaker. To make the so-called 3-D speaker system, connect an input of a low-frequency amplifier* to the output terminal (pin jack) located at the right of the speaker terminal plate on the back of the amplifier and then connect one woofer to the center-channel amplifier. Be sure to use shielded wire. Only the bass sounds of both right and left channels are mixed and come from the center-channel speaker. Refer to the above diagram.

* This amplifier is a main amplifier equipped with a filter circuit on the input side. You can, by using a main amplifier alone (not equipped with the filter circuit), obtain the second best three-dimensional effect.



SWITCHES AND CONTROLS

TUNING INDICATOR WITH BUILT-IN FM MPX STEREO INDICATOR

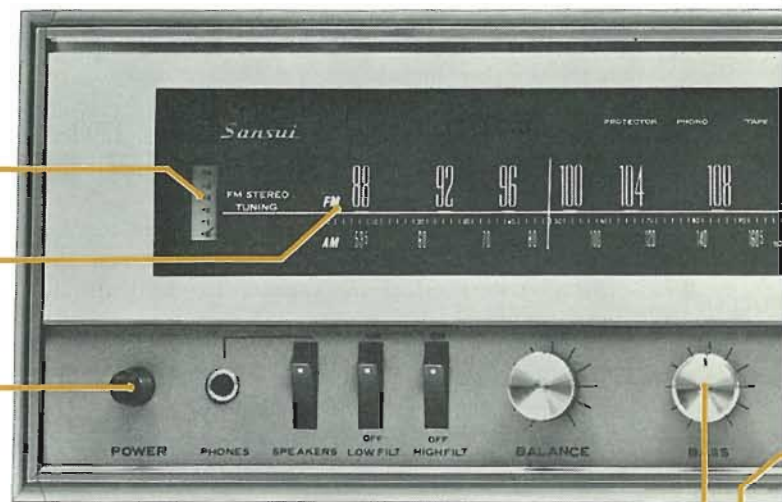
The tuning indicator aids in pinpointing a station: when the needle moves to the closest position to "5", the station is correctly tuned. Note that the action of this indicator is substantially independent of the signal strength of the station. The FM MPX STEREO indicator will light up orange when a FM MPX station is received. It remains green during the FM mono reception.

DIAL SCALES

The upper scale indicates FM and the lower AM. To select your desired station, turn the TUNING knob at the right of the dial.

POWER SWITCH

The POWER switch is used to connect and disconnect the power supply. Push it; power will be on. Push it again; the power will be off. It also controls the power to one of the two A.C. OUTLETS (marked with $\text{--}\text{O}\text{--}\text{O}\text{--}$) on the back panel of the amplifier.

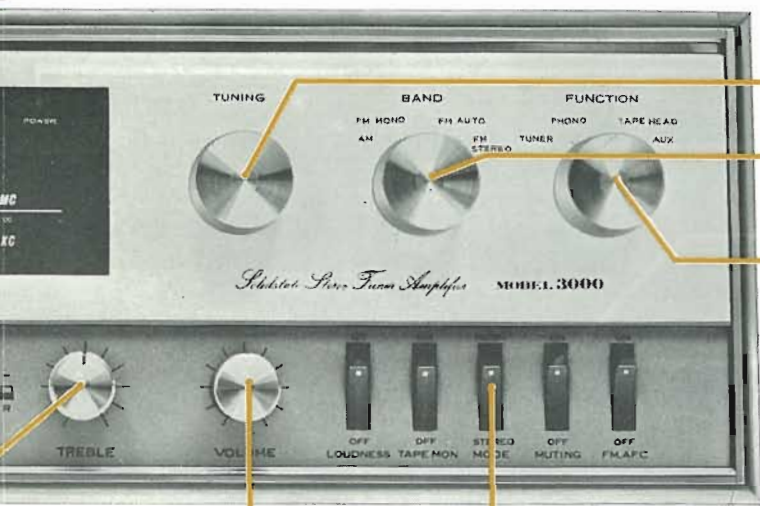


BASS TONE CONTROL

The BASS tone control is used to boost or to cut the low-end response according to your taste and listening conditions. To boost, turn it clockwise; to cut, turn it counterclockwise. It is of a friction-coupled, dualconcentric type: it is actually two controls. The outer ring controls the bass loudness in the right channel. The inner or small knob controls the bass loudness in the left channel. The pair can be used simultaneously or independently, as required.

TREBLE TONE CONTROL

The TREBLE control does for the high-frequencies what the BASS control does for the lows.



TUNING KNOB

The TUNING knob is used to select your desired FM or AM station.

BAND SELECTOR

- AM: For listening to a AM program
- FM MONO: For listening to a monophonic FM program
- FM AUTO: For listening to a monophonic or stereophonic FM program automatically
- FM STEREO: For listening to a stereo FM program from a distant station.

FUNCTION SELECTOR

- TUNER: For listening to a FM or AM program
- PHONO: For record playing
- TAPE HEAD.: For use with a tape deck
- AUX: For any auxiliary service requiring flat frequency response, such as a crystal phono cartridge, etc.

VOLUME CONTROL

The VOLUME control adjusts the over-all sound level. Turning the control clockwise increases the volume of both channels.

MODE SELECTOR

STEREO: The MODE selector in the STEREO position connects the left input to the left channel and the right input to the right channel. To listen to the FM MPX stereo program, stereo records or stereo tape, set this selector to the STEREO position.

MONO: The MODE selector in the MONO position connects either right or left input to both channels. To listen to the monophonic AM or FM program, mono record or mono tape, set this selector to the MONO position.

SWITCHES AND CONTROLS

FUNCTION INDICATOR

The left-hand half of the FUNCTION indicator will light up green when the FUNCTION selector is set to PHONO position; the right-hand half of the indicator will glow violet when the selector is set to TAPE HEAD. position.

PROTECTOR INDICATOR

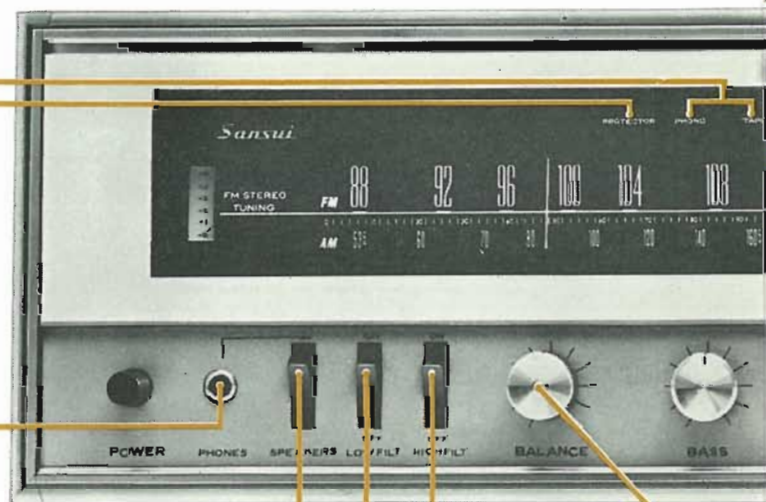
The M-3000 has a special circuit to protect the power transistors against any damage. The PROTECTOR indicator lights up to caution you that there occurs a trouble in the unit.

HEADPHONE JACK

To monitor a tape or to enjoy private listening through a headset without disturbing others, plug into the HEADPHONE jack. Dynamic stereo headphones are recommended for use.

SPEAKER SWITCH

The SPEAKER switch is used to cut out all the speakers for private listening through a headset without disturbing others.



LOW FILTER

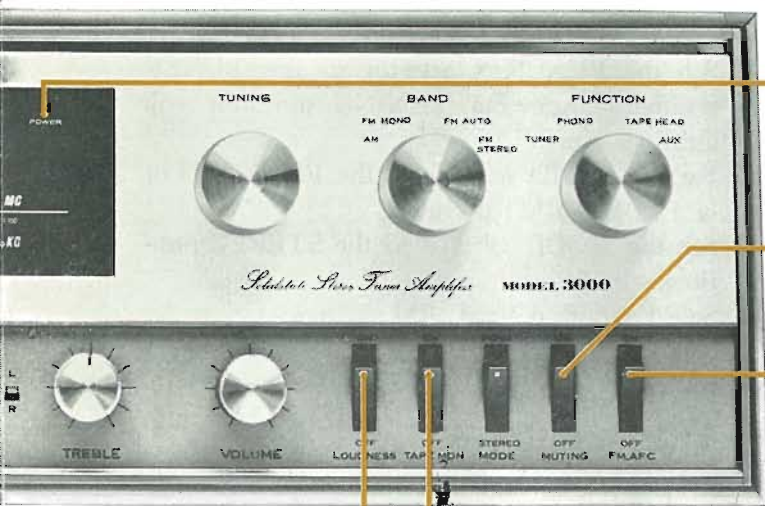
The LOW FILTER eliminates or reduces such low-frequency disturbances as turntable rumble.

HIGH FILTER

The HIGH FILTER eliminates or reduces high-frequency noises, such as scratch noise from worn records, radio noise caused by nearby fluorescent lamps and tape hiss.

BALANCE CONTROL

The BALANCE control is used to balance the amplifier for unequal program sources. Adjust it so that the sound is heard equally from both left and right channels. Turning it to the left accents the left channel by reducing the right channel output, or vice versa.



POWER INDICATOR

The POWER indicator will light up when the POWER switch is turned on.

MUTING SWITCH

The MUTING switch eliminates interstation tuning noise. It should be used sparingly: when you want to receive a weak station, it should be kept off.

FM-AFC SWITCH

The FM-AFC switch prevents FM station signals from drifting. This is likely to happen because of the very high frequencies used. If it occurs, the total quality deteriorates or you cannot hear the program at all. To avoid this, switch on the AM-AFC after tuning in your desired station. If you switch it on before tuning, you may not be able to tune accurately. If it is kept on even when there are a number of nearby stations, you may suffer from their interference. In such a case, switch it off.

LOUDNESS CONTROL

You may feel at low listening level as if both treble and bass are missing. This control compensates for an apparent loss of those tones at such a level.

TAPE MONITOR SWITCH

For recording on a tape with a 3-head tape recorder, the TAPE MONITOR switch enables you to hear the tape while you are recording it, comparing it with the source material. When the TAPE MONITOR switch is in "ON" position, the recorded tape is heard from the speakers.

IMPORTANT: When not in use, make sure the switch is in "OFF" position.

OPERATIONS

LISTENING TO RADIO PROGRAMS

A) TO LISTEN TO AM PROGRAM

1. Set the FUNCTION selector to the TUNER position. And the TUNING indicator will light up green.
2. Set the BAND selector to the AM position.
3. Select your desired station by means of the TUNING knob and pinpoint the station by the TUNING indicator.
4. Leave the MODE selector in either MONO or STEREO position.
5. Use other controls and switches according to your taste and listening conditions.

B) TO LISTEN TO MONOPHONIC FM PROGRAM

1. Set the FUNCTION selector to the TUNER position. And the TUNING indicator will light up green.
2. Set the BAND selector to the FM MONO or FM AUTO position.
3. Turn off the FM-AFC switch.
4. Select your desired FM station by means of the TUNING knob and pinpoint the station by the TUNING indicator.
5. Turn on the MUTING switch if interstation tuning noise will be heard.
6. Turn on the FM-AFC switch immediately after the channel selection.
7. Leave the MODE selector in either MONO or STEREO position.
8. Use other controls and switches according to your taste and listening conditions.

C) TO LISTEN TO MPX STEREO

1. Set the FUNCTION selector to the TUNER position. And the TUNING indicator will light up green.
2. Set the BAND selector to the FM AUTO or or FM STEREO position.
3. Set the MODE selector to the STEREO position.
4. Select your desired FM stereo station by means of the TUNING knob and pinpoint the station by the TUNING indicator.
The FM MPX STEREO indicator built into the TUNING indicator will change in color from green to orange if the dial pointer crosses a station broadcasting MPX stereo.
5. Use the FM-AFC and the MUTING switches as described in the preceding section.
6. Adjust the BALANCE control for equal sound from both right and left channels.
7. Use other controls and switches according to your taste and listening conditions.

NOTE:

The FUNCTION selector in the FM AUTO position enables you to receive automatically between stereo or mono station. FM reception, therefore, it is advisable to set the FUNCTION selector to the FM AUTO position rather than to the STEREO position. It should be, however, to set to the FM STEREO (or FM MONO) position if the station signal is too weak to receive well.

LISTENING TO RECORDS

1. Set the FUNCTION selector to the PHONO position. And the FUNCTION indicator will light up green.
2. Set the MODE selector to the STEREO or MONO position depending on the type of the record player used.
3. Switch on the record player at correct speed (rpm).
4. Place the pickup on the record.
5. Adjust the BALANCE control for equal sound from both right and left channels.
6. Use other controls and switches according to your taste and listening conditions.

NOTES:

1. To play a monophonic record on a stereo record player, follow the same procedures as for a stereo record to obtain better result.
2. To adjust the balance of sound from both channels, play a monophonic record just like a stereo record and adjust the BALANCE control so that the sound is heard at a point midway between the right and left speakers.

USING WITH A TAPE RECORDER OR A TAPE DECK

Recording

1. Set the FUNCTION selector to the program source which is going to be recorded.
2. Set the MODE selector to the STEREO position for stereo recording or to the MONO position for monophonic recording.
3. Set the tape recorder for recording.
4. Use the controls and switches of the M-3000 according to your need and operate the tape recorder properly.

Playback

1. a) For use with a tape deck (direct TAPE HEAD)
Set the FUNCTION selector to the TAPE HEAD position. And the FUNCTION indicator will glow violet.
b) For use with a tape recorder
Turn on the TAPE MONITOR switch.
2. Set the MODE selector to the STEREO position for stereo playback or to the MONO position for mono playback.
3. Set the tape deck or the tape recorder for playback.
4. Use the controls and switches of the M-3000 according to your need.

Monitoring

To monitor a tape by using a 3-head tape recorder, follow the same procedures as for the preceding section "PLAYBACK" with a tape recorder.

NOTES:

1. The sound level to be recorded on the tape is not controlled by the knobs of the M-3000.
2. To obtain better recording result, record on the tape not through a microphone placed in front of the speakers, but through the M-3000.
3. Before use of the tape recorder, be sure to look up the manufacturer's instructions.
4. When not in use, the TAPE MONITOR switch must be in the OFF position.
5. Connecting a tape recorder can be done by using either a single connection plug or by pinjacks. The single connection plug conforms with German DIN standard specifications. It makes it easier to connect the tape recorder to the amplifier because it has a five-pin plug for both recording and playback.

MAINTENANCE

FM MPX SEPARATION

If the channel separation during the FM MPX stereo reception is inadequate or excessive, turn the screw marked MPX SEPARATION for natural proportions. Never attempt to adjust it without reason.



HOW TO ELIMINATE RADIO NOISE

A) AM RECEPTION

Noise during AM reception can often be eliminated just by changing the position of the antenna.

In an area far from the station or in the mountains where radio waves can't reach easily, or in a thick-wall building or a block of such buildings, the waves are not received well, resulting in unstable reception and increased noise. In such a case, connect a vinyl wire to the AM antenna terminal and stretch it along a pillar, lintel or ceiling in such a way that the signals come in best. If this does not reduce the noise or improve sensitivity, erect an antenna outside the building, slightly apart from the wall.

In high intensity signal areas, turn the AM antenna switch to the LOC position. It is located near the AM ferrite bar antenna on the back panel of the M-3000.

Some noise is peculiar to a certain broadcasting frequency or a certain time of a day. This noise results from the nature of AM signals. In some cases, it can be eliminated by grounding the M-3000 or reversing the power cord plug receptacle connections.

If the antenna terminal marked A will be touched with a finger, hum may be heard. But this does not mean that the unit is at fault.

B) FM RECEPTION

Noise during FM reception can be generally attributed to either of these: insufficient antenna input or interference from other electrical appliances.

Antenna input is insufficient when the antenna is not installed properly or when the station is far away. Extend and fix the attached antenna in such a position that noise is minimized and the antenna input is maximized. To obtain better result, install an exclusive FM antenna in such a position that you can receive the signals most effectively.

When you use a T.V. antenna for both T.V. set and FM unit with the help of a divider, make sure that the television reception is not affected.

To prevent noise, avoid using an unnecessary long antenna wire.

The FM reception is affected considerably by the conditions of transmission by station: power and antenna efficiency. As a result, you may receive one station quite well while having difficulty in receiving another station.

To eliminate interstation tuning noise, turn on the MUTING switch.

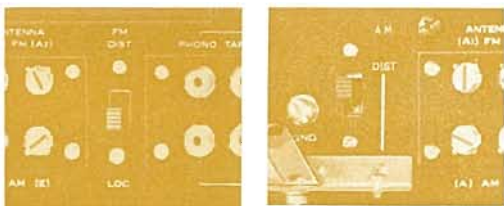
C) COMMON TO FM AND AM RECEPTIONS

In an area occupied by many ferroconcrete buildings, you may notice noise which occurs at a particular time of day. This type of noise can be easily distinguished from that described above. To eliminate such noise, attach a noise arrester to the electrical appliance or to the power source of the M-3000.

When you are listening to a FM MPX program, you may notice a noise which does not accompany monophonic FM broadcasts. This does not mean that the unit is at fault. In such a case, turn on the HIGH FILTER switch. In some cases, you can eliminate the noise by setting the TREBLE control to "flat" or lower.

LOCAL/DISTANT SWITCH

This adjusts the tuner to the strength of FM and AM waves. Set it to "DISTANT" if you live in an area where FM and AM signals are weak. If you live near broadcasting stations and there is the danger of interference from other stations, set the switch to "LOCAL".



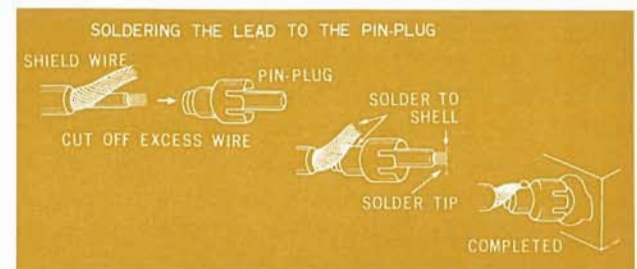
MONOPHONIC RECEPTION OF FM MULTPLEX STEREO BROADCASTS

When you receive FM MULTPLEX stereo broadcasts monophonically—with the FUNCTION selector in FM MONO position—the sounds from both right and left channels mix into a monophonic reproduction as if you were tuned to an ordinary monophonic station. Use this method if you find too much noise when receiving an FM MPX stereo broadcast.

CONNECTING WIRE

To connect a tape recorder, record player, tuner or others to the M-3000, be sure to use shielded wire. The use of an ordinary cord or vinyl wire may cause hum or buzz. The length of the shielded wire used should be shorter than 5 feet (2 meters).

For mono, connect it to the upper terminal marked LEFT CHANNEL for easier operation.



HUM AND HOWLING

When you play a record or tape, you may sometimes hear unpleasant humming or howling.

MAINTENANCE

This does not mean that the M-3000 is defective. In most cases, humming or howling is a result of these causes: if you place a record player on or near the speaker box, the vibrations caused by the sound waves from the speakers are transmitted to the player and cause howling. To prevent this, keep the record player away from the speaker box or put a thick cushion between the player and the speaker box. A low buzzing sound will also be produced if you don't use shielded wire for connection. If this is not the cause, examine the connections closely. Make sure that the earth and live ends are not reversed so that the motor and arm are inadequately grounded.

IF THE PROTECTOR INDICATOR SHOULD LIGHT UP...

The M-3000 has a special circuit to protect the power transistors. The circuit mainly consists of silicon-controlled rectifiers. If the speaker terminals should be shorted to each other, or to the chassis during the use of the unit or if the current should flow in beyond the allowable limit for the power transistors, the silicon-controlled rectifiers will stop the function of the amplifier within few microseconds and the PROTECTOR indicator on the front panel will light up to caution that there occurs a trouble in the unit. If the PROTECTOR indicator should light up, immediately check the unit for short circuit.



IF A FUSE SHOULD BLOW...

A) POWER FUSE

To protect against line surges and other adverse conditions sometimes encountered by electronic equipment, the M-3000 is fused at strategic locations.

In case the lamps of both dial scale and power indicator should not light up when the power switch turned on, or in case it should not work even if the respective buttons of the amplifier are operated, generally speaking, the fuse has blown. In case the fuse has blown, remove the power cord of the amplifier from the plug socket and replace the backside fuse by the glass-tubed 3A one which is the same in capacity as that blown. Be sure not to use a piece of fine wire as a stopgap measure or a fuse with the different capacity. If used, it will cause the damage of the amplifier. It should not work as it ought to or the fuse should blow at once after replacement, the amplifier has been damaged. In this case, replace the fuse after repairing the amplifier upon confirming the cause of the damage of the amplifier.

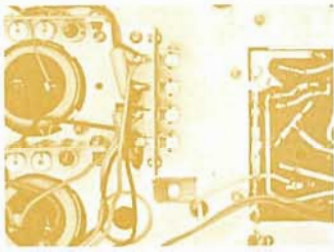


B) QUICK ACTING FUSES

If the dial and power indicator light up, yet the set does not play, no matter what program source (tuner, tape recorder, etc) is used, it may be the result of a blown quick acting fuse in the power circuit of the power amplifier. Power transistors could easily be destroyed if the speaker terminals were accidentally shorted to each other, or to the chassis. To protect the transistors, as well as the speakers, each output stage uses two fuses.

These fuses are precisely rated, and manufactured to function within extremely narrow tolerances. To replace, remove the bottom plate from the set. Never attempt to use any fuses other than the fuse attached to the set.

If it should not work as it ought to or the quick acting fuse blows at once even after the replacement, the amplifier has been damaged. In this case, replace it after repairing the amplifier.



A.C. OUTLETS

Of the two A.C. outlets provided on the back of the amplifier, the one nearer to the output terminals can be switched on or off by means of the power switch while the other one cannot. These receptacles have capacities of 30 VA and 120 VA, respectively. Note that the overload may cause a trouble.

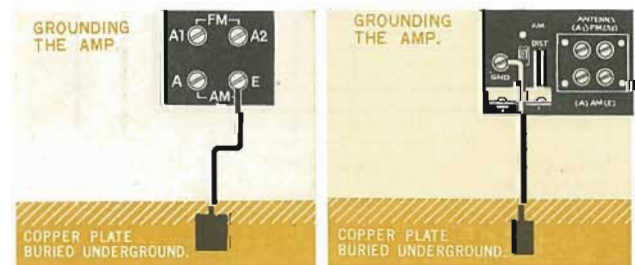


CONNECT LEADWIRES PROPERLY

Connect leadwires properly to the speakers and other input and output terminals. If connections are loose or touch other parts, the M-3000 will not work properly. Moreover, it may produce noise. If you use the M-3000 in such a way for a long time, it may eventually break down. Be sure to read the instructions for your tape recorder or record player carefully before connecting them to the M-3000.

OTHERS

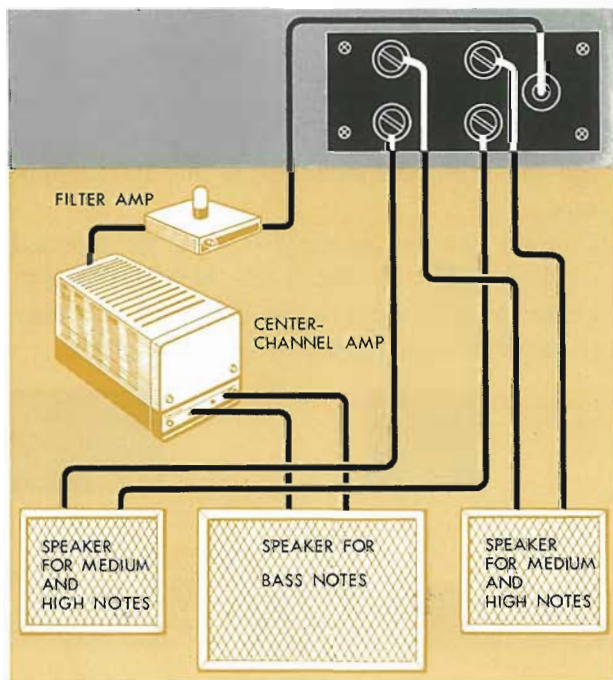
- * Transistors are extremely susceptible to heat. Therefore, the M-3000 must not be installed in the place where is exposed directly to the sun or high temperature, or in an air-tight box.
- * Connect one end of vinyl wire to the terminal marked GND on the back of the M-3000; attach a copper plate to the other end and bury it under ground. This avoids hum pickup.



MAINTENANCE

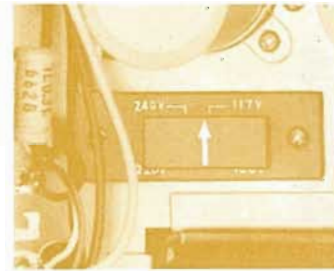
3-D STEREO SYSTEM

The 3-D stereo system has become popular in the increasing number of stereo fans. The speaker arrangement for this new system is characterized by a woofer installed at a point midway between right and left groups of tweeter/midrange speakers. This idea is based on the fact that human ears are not sensitive to the direction of sound whose frequency is less than 200 to 300 Hz. Therefore, only one woofer is good enough for this system. You can enjoy the 3-D stereo system by connecting a bass amplifier together with a woofer to the center-channel terminal of this amplifier as described in Section "SPEAKERS".



VOLTAGE SELECTOR PLUG

The voltage selector plug allows you to use this amplifier at any of the four different supply voltages: 100, 117, 220 and 240 volts. If you move to the area where the supply voltage is not the same as before, pull out the plug and reset the arrow (➔) marked on it to the figure of volts in the new area.



The Sansui logo is written in a stylized, italicized serif font. It is centered between two horizontal gold bars. The top bar is a solid gold rectangle. The bottom bar is a gold rectangle with a thin white line running through its center, creating a double-line effect.

Sansui[®]

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