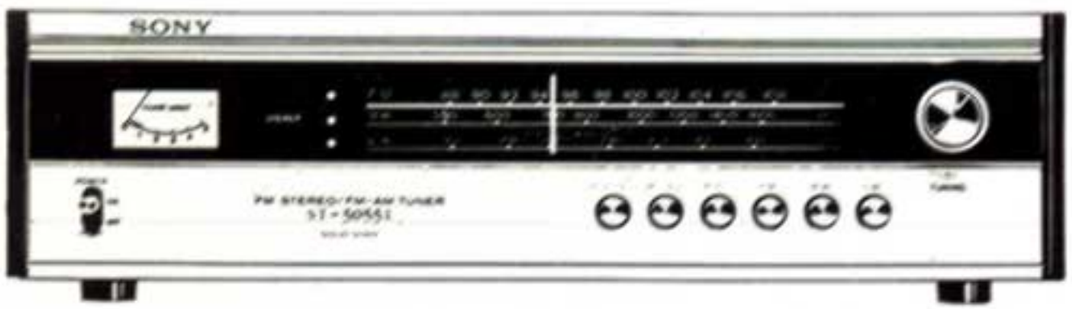
SONY

FM STEREO/FM-AM TUNER

ST-5055L

OWNER'S INSTRUCTION MANUAL



Intensive research combined with superior engineering and careful workmanship offers you high performance FM stereo FM-MW-LW tuner, Model ST-5055L.

Sensitivity, interference rejection, and other vital factors which affect the quality of a tuner are greatly determined by the characteristics of its front end. The front end of this tuner has newly-developed junction FET's in the mixer and RF stages. This results in exceptionally-high sensitivity, image rejection, spurious rejection, and low internal noise.

The FM IF section employs a newly-developed, high-reliability IC and solid-state filters that assure superior capture ratio, good AM suppression, high signal-to-noise ratio and excellent selectivity. The FM discriminator section uses a permanently-tuned solid-state discriminator, thus it achieves extremely stable demodulation with good AM suppression. These components used in the ST-5055L assure the tuner's high performance and long-term stability.

The FM multiplex section employs a high-reliability IC and newly-designed coil units for matching the IC. They provide optimum stereo separation and durability.

The AM tuner employs triple-tuned solid-state filters and an AGC circuit to maintain high sensitivity, minimum distortion, and superior signal-to-noise ratio. AM programs will be received with an audio quality that will surprise hi-fi oriented ears. The built-in ferrite bar aerial assures stable AM (MW and LW) tuning.

Two switches are provided for best FM listening: One is for muting the FM interstation noise; the other is for reducing the background noise when the FM stereo signal is very weak. The tuner-input level meter indicates the signal strength, and is also useful for correct tuning. Precision tuning is easy with the long, accurate, slide-rule dial. Additional features are two pairs of outputs; variable and fixed.

To obtain maximum performance and enjoyment from your tuner, please study these instructions carefully. Installation and operation of the tuner is not complicated, but the flexibility provided by its many features may not be fully appreciated unless you spend a little time gaining familiarity with its controls and connection facilities. Keep this manual handy for future reference.

TABLE OF CONTENTS

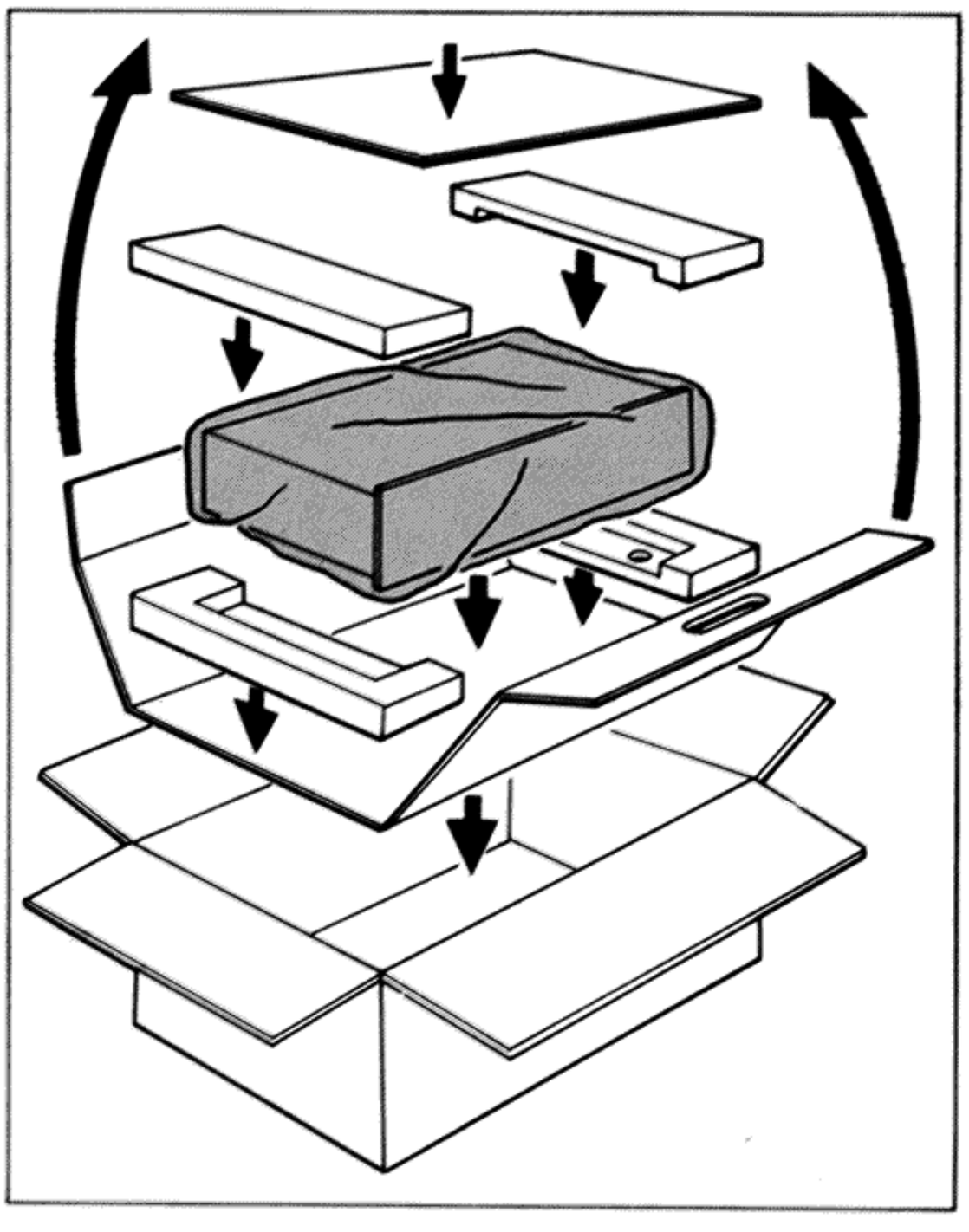
PREPARING FOR USE

UNPACKING

All SONY equipment comes to you carefully packed in cartons designed to withstand the rigors of shipment. Do not throw the carton or associated packing material away; they will come in handy if you ever have to transport or ship the tuner.

Inspect your tuner immediately for signs of damage incurred in transit. If damage has occurred, consult your local SONY dealer for further instructions. Once again, save all packing material; it will substantiate your damage claim.

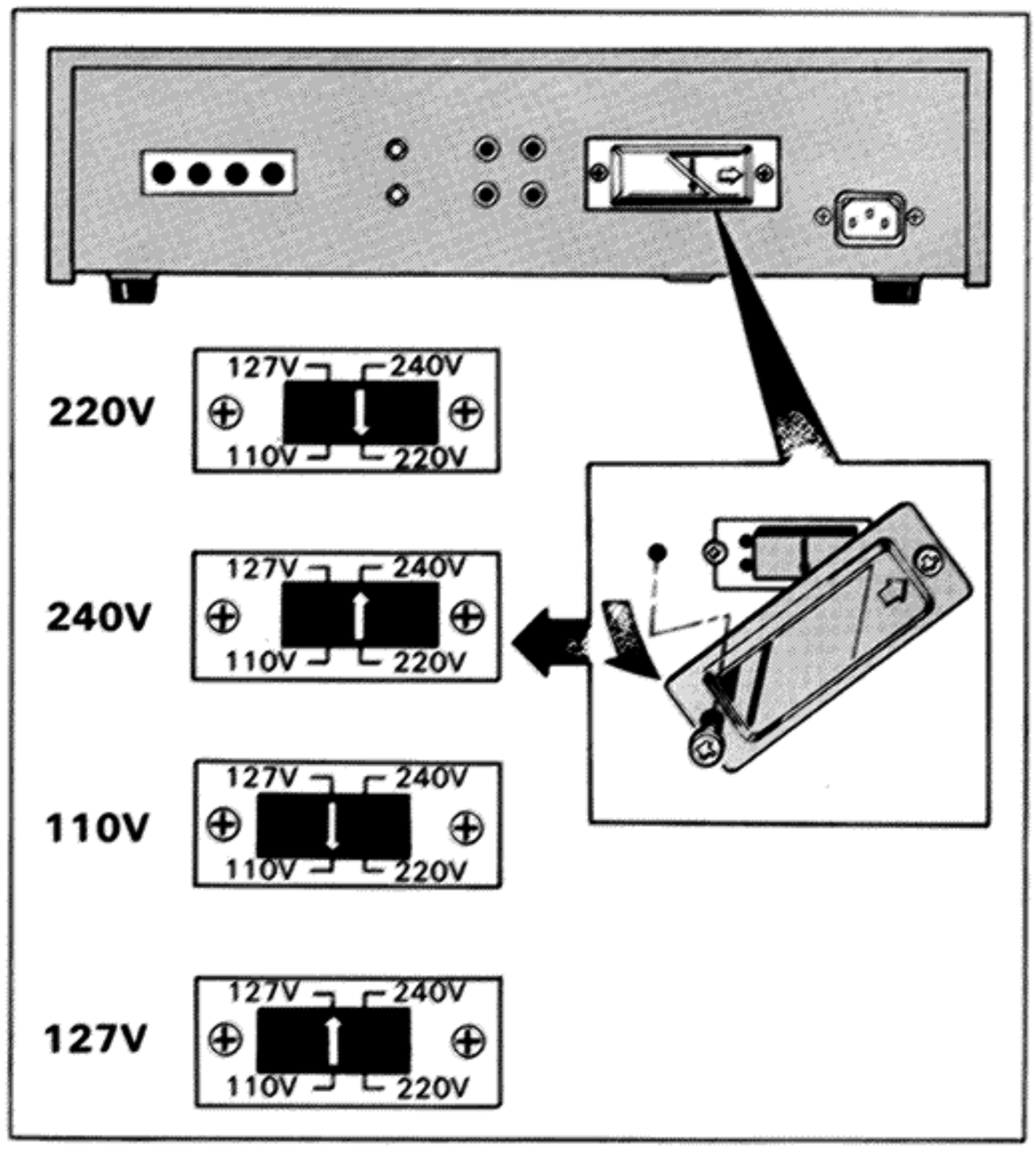
When shipping the unit for repair work or simply to another location, the unit must be repacked in the original carton and packing material (which provide maximum protection) precisely as before.



CONNECTION TO THE LOCAL MAINS SUPPLY

The ST-5055L operates on 110, 127, 220 or 240 volts ac mains. Before connecting to mains, check that the ST-5055L voltage selector is set to the same voltage as your local mains supply. If it is not the same, the voltage selector setting may be changed as follows :

1. Check that the ST-5055L is disconnected from the mains supply.
2. Loosen the screw marked with an arrow on the voltage selector cover, but do not remove it from the cabinet.
3. Remove the other screw on the cover. Then turn the cover around the arrow-marked screw so that you can unplug the voltage selector.
4. Pull out the voltage selector plug, and reset it so that it points to the proper voltage figure.
5. Reinstall the voltage selector cover.



WARNING

This apparatus must be earthed at the terminals in your 3-pin plug as follows :

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code :

Green-and-yellow	:	Earth (safety earth)
Blue	:	Neutral
Brown	:	Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows :

The wire which is coloured green-and-yellow must be connected to the terminals in the pulg which is marked with the letter E or by the safety earth symbol ⏚ or coloured green or green-and-yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

SYSTEM CONNECTIONS

No doubt you have already decided on a location for your tuner. However, before going ahead with the installation, make sure that your choice of location agrees with the following list of DO's and DON'T's.

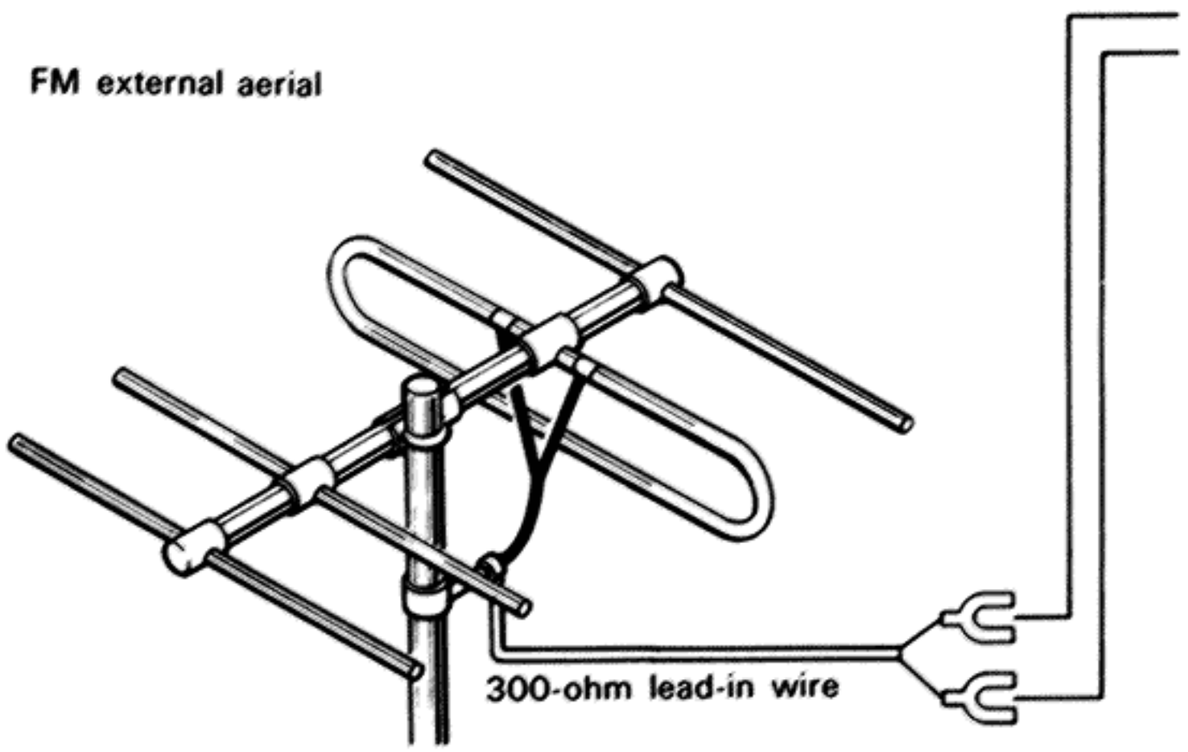
DO allow at least one inch clearance around the tuner for ventilation.

DO allow sufficient room behind the tuner so you can make connections to the rear panel without disrupting your entire setup.

DON'T open the cabinet to prevent electrical shock. No user-serviceable parts inside. Refer servicing to qualified service personnel.

DON'T place the tuner in direct sunlight, or near radiators, hot-air ducts, or any other source of heat. The tuner must not be operated where the room temperature is over 45°C (110°F). Similarly, don't place it in any area

FM external aerial



AM aerial lead

subject to freezing temperatures or excessive moisture.

DON'T place the tuner on any soft surface which may block the bottom ventilation holes.

DON'T connect the tuner to any voltage other than that indicated by the voltage selector.

DON'T make connections with the power turned on.

After you have found a suitable location for your unit, you can begin making the basic connections described in the following paragraphs. Refer to the overall-system connection diagram while making these connections.

Notes on Connections

To assure correct matching at the input and output terminals of your sound system, erfer to the table of "TECHNICAL SPECIFICATIONS" for the tuner (on page 11), and the specifications given in the instruction manuals provided with the components you wish to connect the tuner.

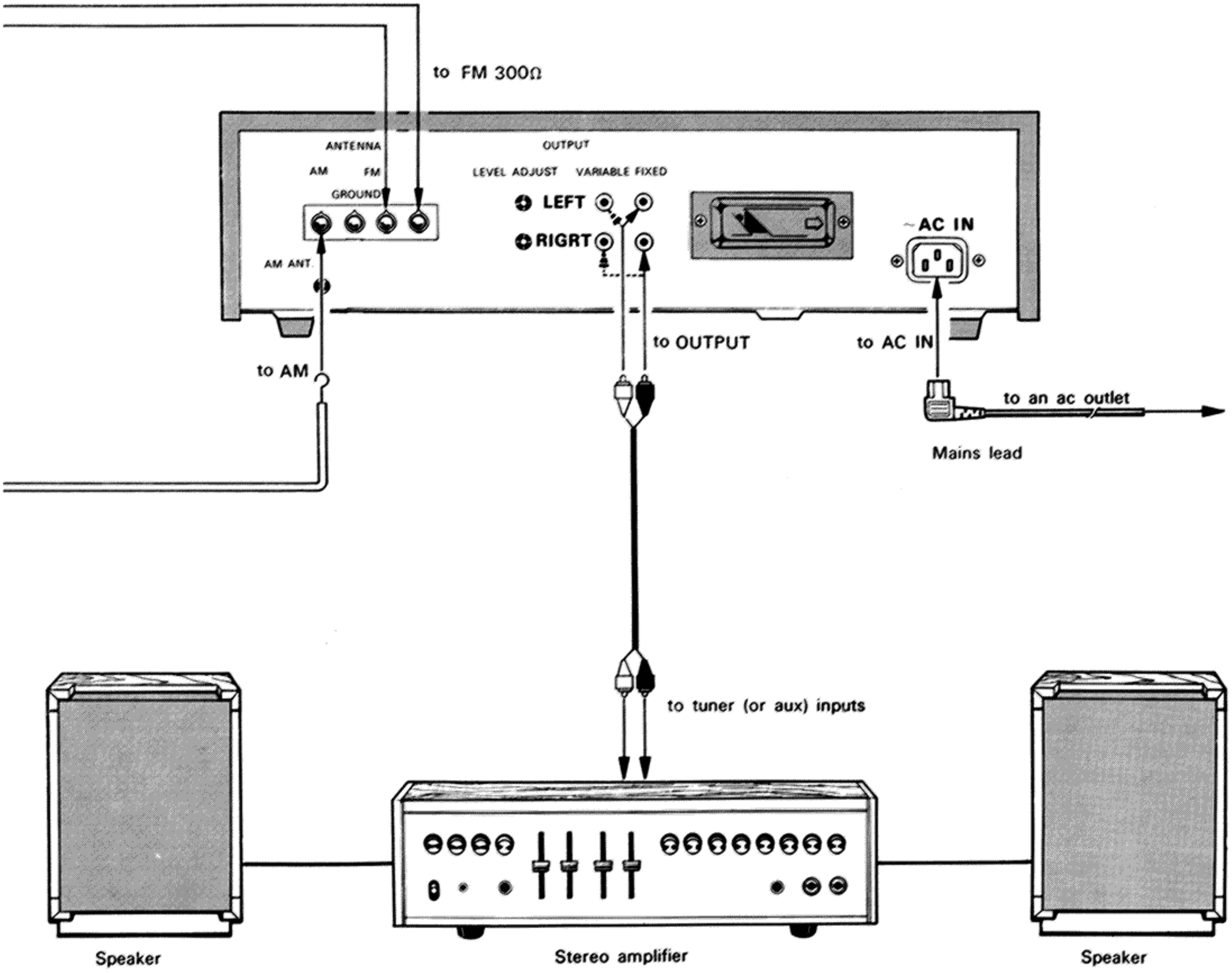
Be sure the cable connectors are fully inserted into the jacks. A loose connection may cause hum and noise.

When reconnection is required, turn the amplifier's volume control counter-clockwise.

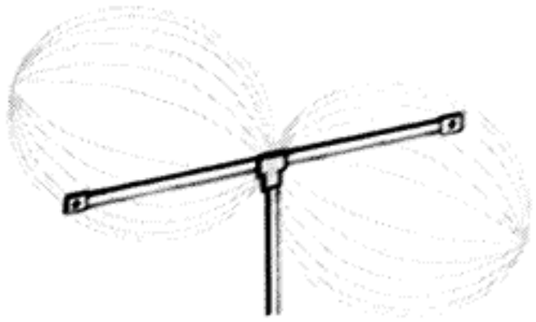
Aerials

Good FM reception depends not only on the sensitivity of the tuner but on the quality of the received signals. What shall you do to improve your FM reception and get the best from the tuner? That answer is to use the proper aerial for your location. The factors determining the minimum aerial requirements for your location include the following:

1. How strong are the signals in your neighborhood?
2. Are all the FM stations in the same direction, or are they scattered all over?
3. Is multipath reception a problem?

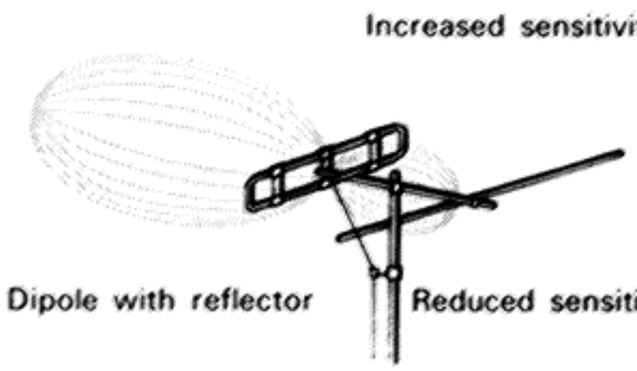


Ribbon dipole aerial, rabbit ears type aerial

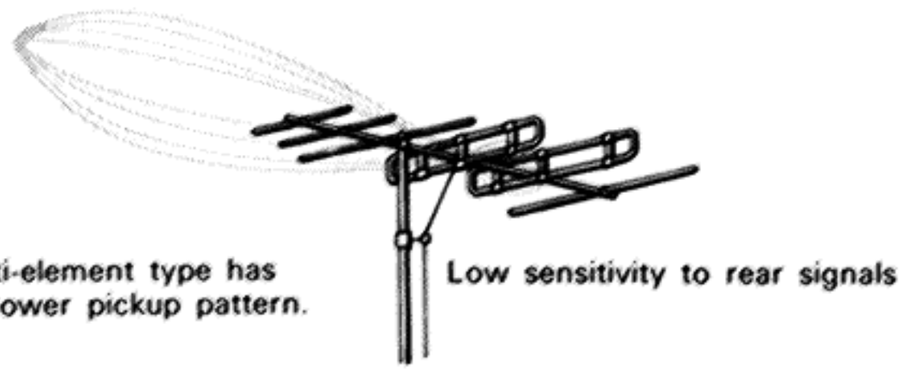


Dipole aerial picks up signals from both the front and rear equally well.

Directional outdoor aerial



High frontal sensitivity

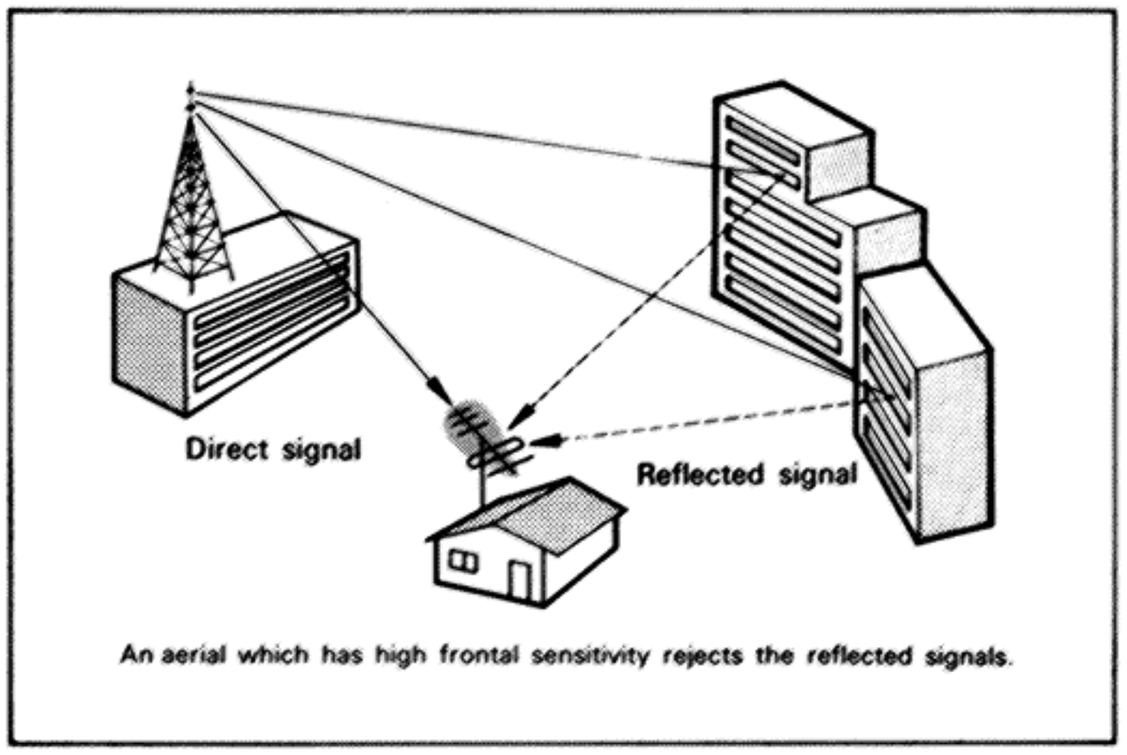


A convenient indoor FM ribbon aerial is supplied with the tuner. Use it temporarily until you install the proper aerial.

In a strong-signal (metropolitan) area : A ribbon-type FM dipole or the familiar "rabbit ears" aerial is easy to install and is usually suitable for good FM reception. The rabbit ear aerial is the more preferable of the two since it can easily be turned for the best signal pickup. If there are many high structures nearby, and "FM ghosts" (multipath reception) cause the problems described later, use a highly-directive outdoor aerial and a rotator. The tuner can handle the resulting high input signal level without causing distortion because it is designed to have outstanding overload capability.

In the far suburbs : If you want to receive not only the local stations that an indoor aerial pulls in, but to reach out into areas where there may be programs more to your taste, a high-gain highly-directive outdoor FM aerial properly installed with a rotator is recommended.

Multipath reception : The most important factor affecting signal quality is "multipath" reception. Multipath is caused by signal reflections that bounce off hills or structures and rearch the receiving aerial much later in time. With FM—especially in stereo—multipath can cause severe distortion and complete loss of channel separation. Much of the multipath problem appears as high-frequency noise and distortion, therefore a small table-model FM radio with a limited high-frequency response might be relatively unaffected.

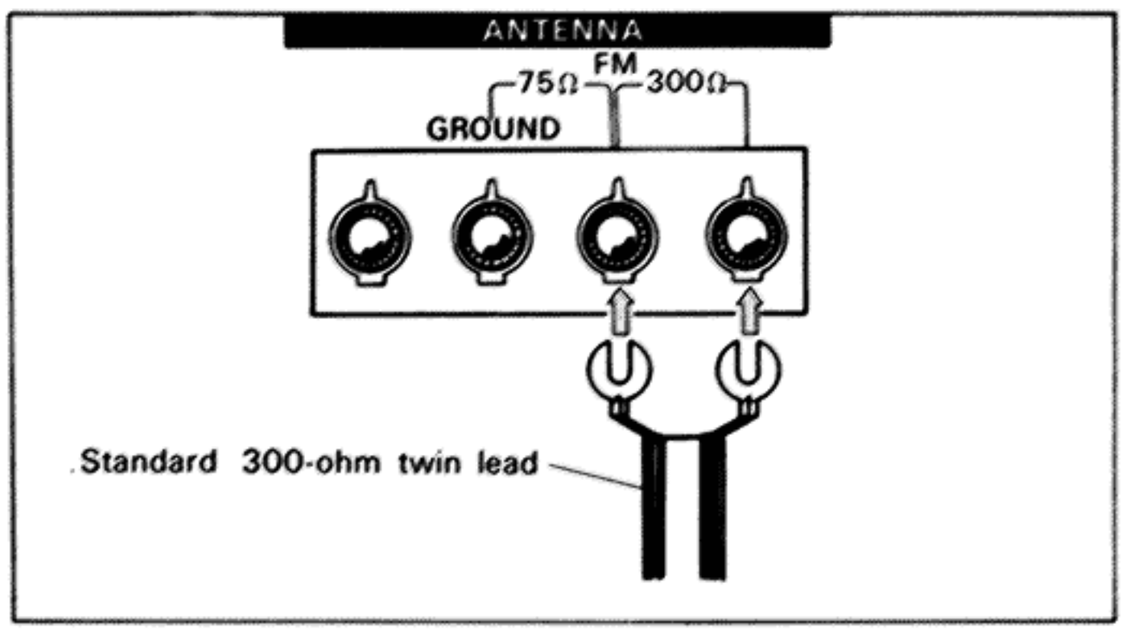


An aerial which has high frontal sensitivity rejects the reflected signals.

Multipath reception can be avoided to a great extent by using shielded twin lead or coaxial cable, and a good directional aerial that is correctly oriented.

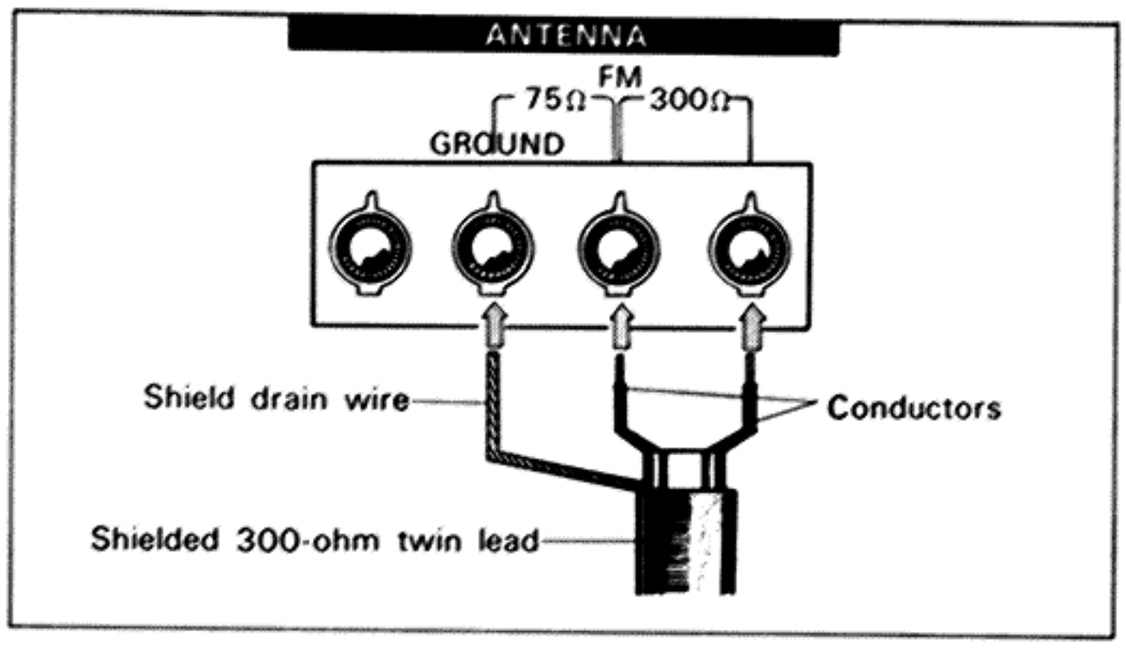
Connecting the FM aerial lead : The tuner accepts either 300-ohm transmission line (twin lead) or 75-ohm coaxial cable. The 300-ohm twin lead may be either the standard or shielded type. Standard 300-ohm twin lead is inexpensive and will be perfectly adequate for most installations. However, in cases where local noise or multipath pickup on the transmission line causes interference, a shielded transmission line must be used. Coaxial cable and a matching transformer can be used, but 300-ohm shielded twin lead is preferable because most FM aerials are designed to directly match a 300-ohm impedance line.

To connect standard 300-ohm twin lead to the tuner, loosen the Aerial terminals [ANTENNA] marked FM 300Ω. Strip the plastic



insulation from the two-conductor lead-in wire and wrap each conductor around a terminal. Tighten the terminal screws.

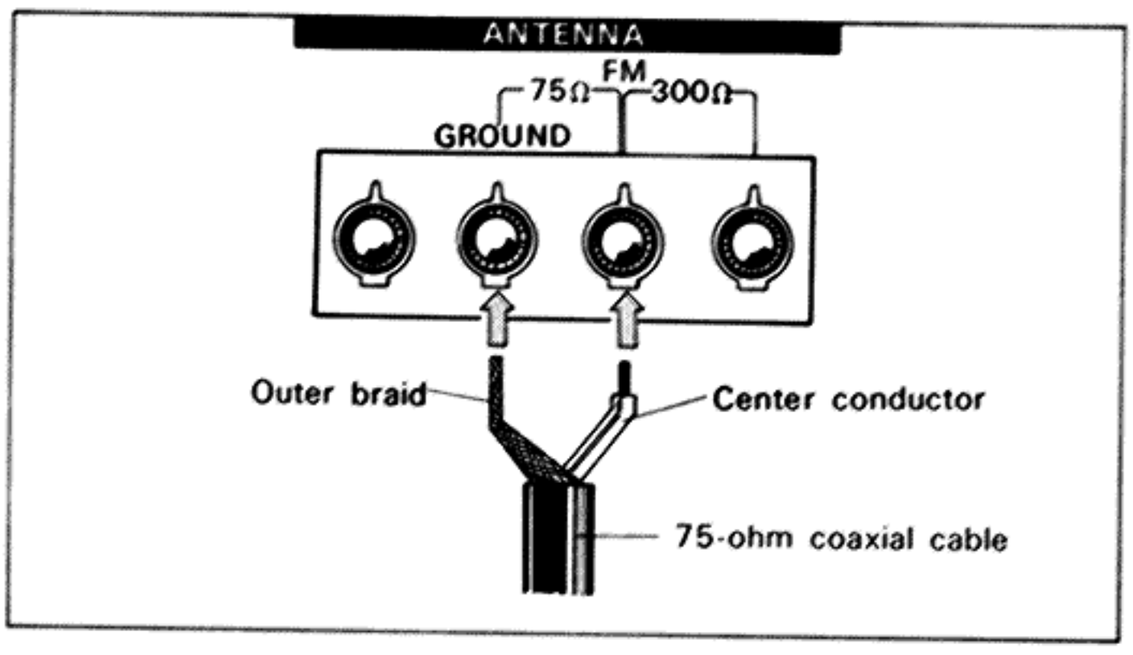
To connect shielded 300-ohm twin lead to the tuner, connect the two conductors, then connect the shield drain wire to the Singal Earth terminal [GROUND].



To obtain minimum signal leakage and pickup on the line, observe the following precautions, when using standard 300-ohm lead-in wire.

- ○When installing the outdoor aerial lead, use stand-off insulators (available on the market) to route the lead over the roof, outer wall, etc.
- ○Keep the lead as short as possible and avoid long horizontal runs.
- ○Do not fold the unused portion of the lead at the input of the tuner.

To connect 75-ohm coaxial cable to the tuner, strip the insulation from the cable and separate the center conductor from the outer braid. Connect the center conductor to the FM 75Ω terminal, and the braid to the Signal Earth terminal [GROUND].



Aerial orientation: First, tune in the desired station by adjusting the TUNING knob, then adjust the aerial direction and height for clearest sound. The signal strength is indicated by the amount of deflection of the TUNER INPUT meter. The stronger the signal, the greater the deflection.

- ○If distortion is audible, adjust the direction and/or height of the aerial until the distortion is eliminated. Often, a slight turn will be sufficient.
- ○In some cases multipath reception on two or more stations may require the aerial to be pointed in several different directions. An effective and relatively inexpensive solution to this problem is the use of a remote-controlled aerial rotator.
- ○If an outdoor aerial cannot be erected, use a good indoor aerial ("rabbit ears" are satisfactory). Adjust the aerial for minimum distortion by listening to the quality of the sound.

AM (MW, LW) reception: In most areas, the built-in ferrite bar aerial will provide optimum AM reception.
In difficult reception areas an outdoor aerial will be helpful. Connect a length of lead 20–50 feet long, to the Aerial terminal [AM ANTENNA]. The signal strength of the AM station is indicated on the TUNER INPUT meter; the stronger the signal, the greater the deflection towards the right.

AM Aerial selector
To receive AM signals clearly without interference noise, the ST-5055L has an Aerial selector [AM ANT] on the rear panel.

When listening to the programs with the use of an external aerial, push the selector in (EXT).
When listening to the programs with the built-in ferrite bar aerial, keep the selector in the released (BUILT-IN) position.

Output Connections

The OUTPUT jacks (VARIABLE and FIXED) supply audio signals to the tuner or auxiliary input terminals of your amplifier. Both VARIABLE and FIXED outputs are provided to suit the needs of your amplifier.

Be sure to connect the LEFT channel output of the tuner to the left-channel input of the amplifier, and do likewise for the RIGHT channel.

The FIXED jacks provide a fixed 750 millivolt outputs. A SONY stereo amplifier or any high-quality amplifier can be connected to these outputs.

The output levels at the VARIABLE jacks can be varied continuously from 0 to 1.5 volts by turning the associated LEVEL ADJUST screws. These outputs are useful in equalizing the volume produced by the tuner with that provided by other signal source such as tape players, phono players, etc.

If a monophonic amplifier is used with the tuner, connect either the LEFT or RIGHT OUTPUT jack to the proper input terminal of the amplifier. Operate the tuner with the MONO switch in the pushed position.

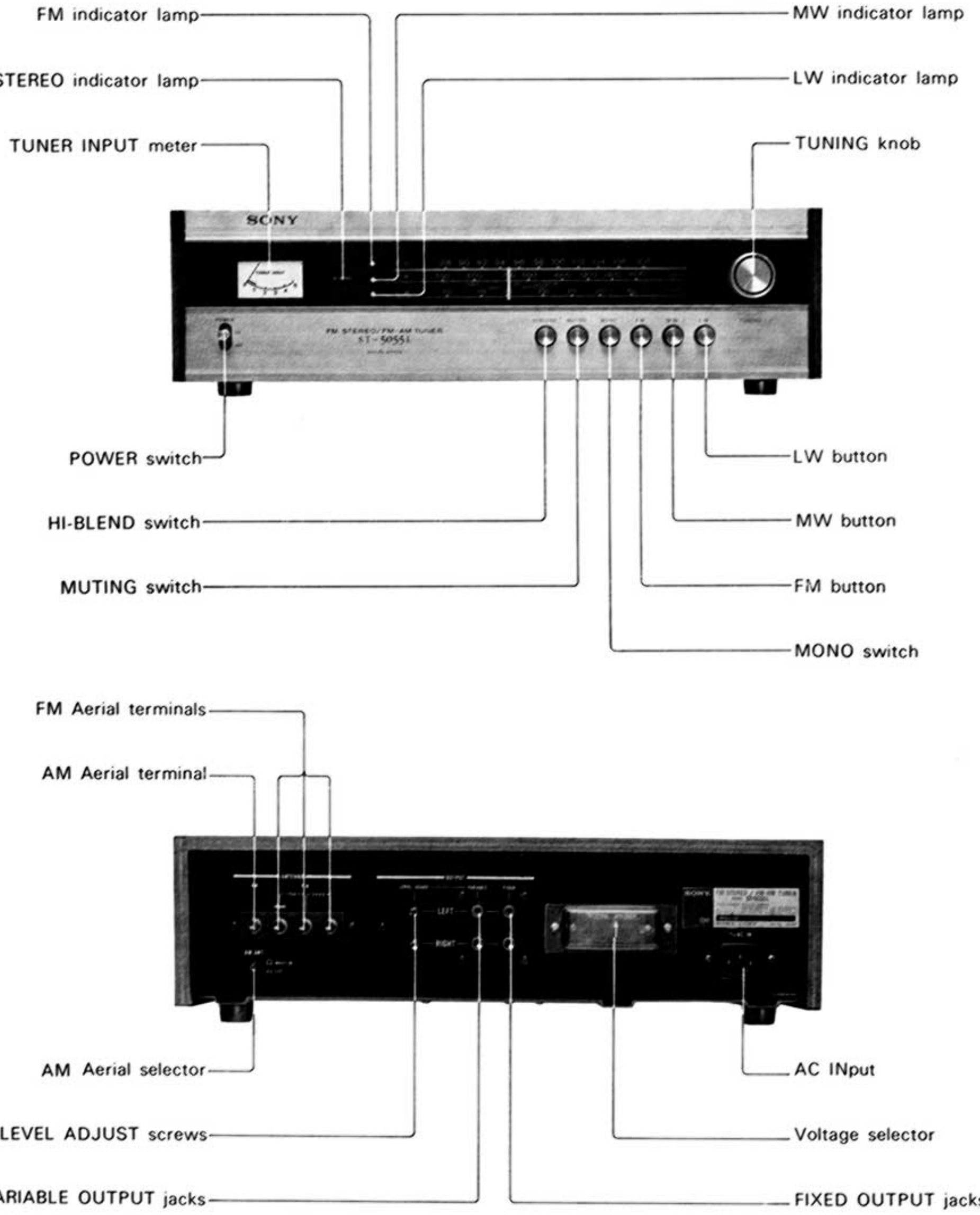
Signal Earth Connection

As the safety earth connection is made through the 3-pin plug mains lead, no earth connection is required on the Signal Earth terminal [GROUND].

OPERATING INSTRUCTIONS

LOCATION AND FUNCTION OF CONTROLS

Before attempting to operate your tuner, take a few minutes to learn the function and location of the controls mentioned in the operating instructions. The locations are shown in the illustration, and the functions are described on page 9.



POWER switch
Set to ON to apply power to the tuner. The dial will then light with a soft green glow.

HI-BLEND switch
For normal listening the switch should be in the released (OFF) position. If an FM stereo program contains background hiss or static, push the switch in to obtain satisfactory listening. This activates the high-blend circuit to blend the high-frequency components of the left and right channels. Thus, the cancellation of noise is accomplished without affecting frequency response. When an FM signal is strong enough but background noise is still noticeable, this switch will be highly effective.

MUTING switch
This switch is usually pushed in (ON). In this position, FM interstation noise is reduced while tuning from station to station. The muting circuit of this tuner is designed for only partial muting of very weak stations. To tune these weak stations, push the switch in and to listen to them, push the switch again to release it after tuning.

MONO switch
For normal listening, the switch should be in the released position (stereo operation is on). In this position, the tuner adjusts itself automatically to stereo or mono depending upon the signal received. When a stereophonic signal is received, the STEREO lamp will light. If the FM program is weak and noisy, push the switch in. In this position the tuner is locked into the monophonic mode and the distracting noise will be effectively reduced.

FM button
Push in to listen to FM stereo or mono programs. Then the FM indicator lamp will light.

MW button
Push in to listen to MW programs. Then the MW indicator lamp will light.

LW button
Push in to listen to LW programs. Then the LW indicator lamp will light.

TUNER INPUT meter
The signal strength of FM and AM, and correct tuning are indicated at the TUNER INPUT meter. The relative strength of the received signal is shown by the amount of meter deflection towards the right. In this case, when the needle stops for a moment, the desired station is tuned correctly. If the needle stays in the left black zone, aerial input level is too weak for full performance especially for FM stereo reception.

STEREO lamp
This lamp lights when the tuner receives an FM stereo broadcast of sufficient signal strength for good stereo reception.

TUNING knob
Turn this knob to tune in the desired station. Use the TUNER INPUT meter to facilitate tuning.

HOW TO USE YOUR TUNER FOR FM RECEPTION

1. Flip the POWER switch to ON. The markings on the dial scale light up in green when power is applied to the tuner.
2. Turn on the amplifier and speaker system you are using with the tuner.
3. Push the FM button and MUTING switch in. The FM indicator lamp will light.
4. tune in the desired station by turning the TUNING knob. Tune for maximum reading on the TUNER INPUT meter. The STEREO lamp lights when a multiplex FM stereo broadcast is received. When stereo signals shift to monophonic, the lamp goes out, indicating that the tuner has automatically switched to monophonic reception.
   When an FM stereo signal is too weak or noisy for enjoyable stereo listening, push the HI-BLEND switch in.
   If an FM program is weak (the STEREO lamp flickers) or noisy, push the MONO switch in.
   In poor reception areas, connect an external FM aerial according to the instructions on page 6.
5. Adjust the sound level and tone quality to your preference by turning the volume, bass and treble controls of your amplifier.

HOW TO USE YOUR TUNER FOR AM RECEPTION

1. Flip the POWER switch to ON.
2. Turn on the amplifier and speaker system you are using with the tuner.
3. Push the MW or LW button in. The indicator lamp of the selected band will light.
4. Tune in the desired station by turning the TUNING knob. Tune for maximum indication on the TUNER INPUT meter.
5. Adjust the sound level and tone quality to your preference by turning the volume, bass and treble controls of your amplifier. In poor reception areas, connect an external AM aerial according to the instructions on page 7.

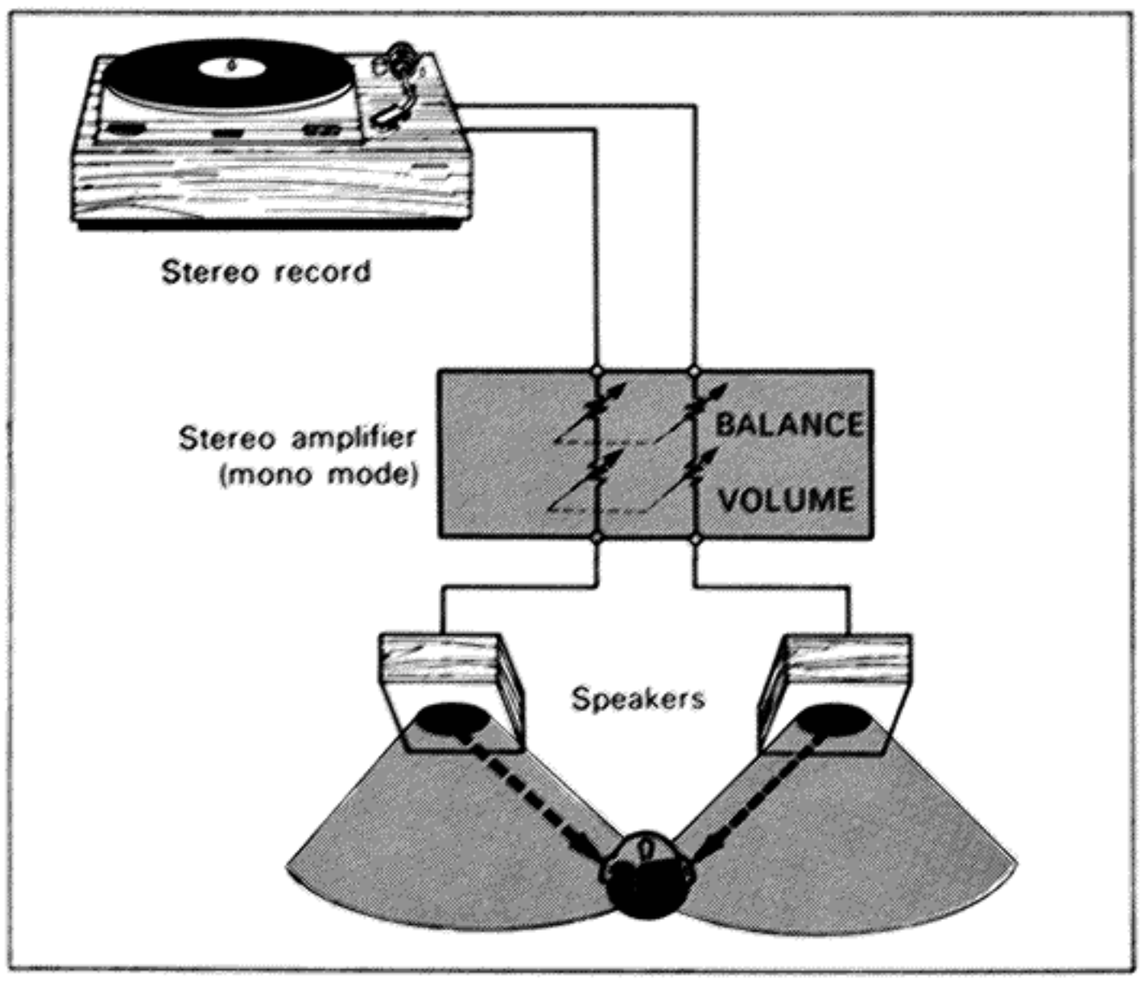
CARE OF YOUR TUNER

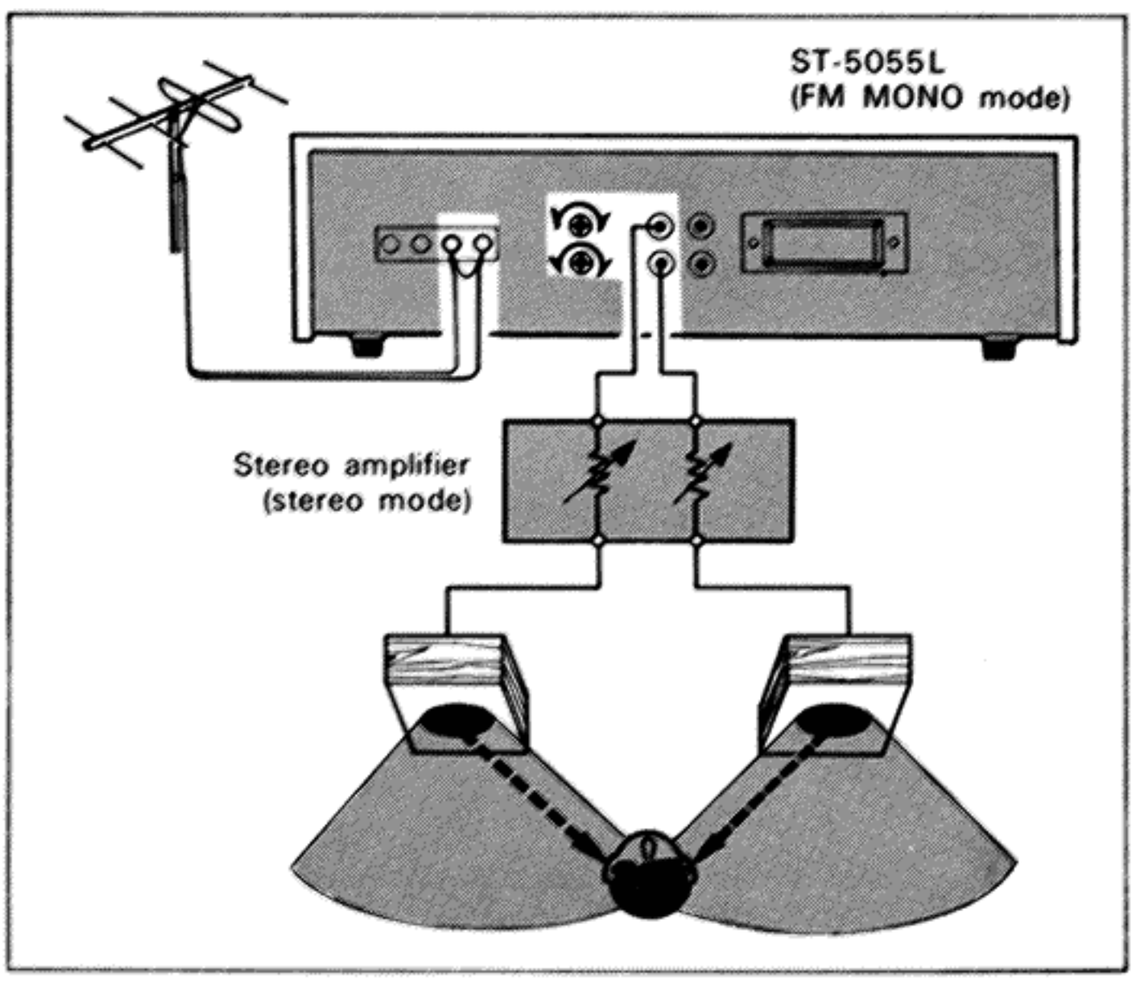
LEVEL CONTROLS

If the VARIABLE OUTPUT jacks are being used, adjust the LEVEL ADJUST screws as follows.

1. Push the FM button in, and tune in an FM program. Push the MONO switch in.
2. Switch the input selector on your amplifier to phono, and play a record to establish a normal listening level.
3. Compare the volume level of the phonograph with that of the tuner by switching the amplifier's input selector back and forth between phono and tuner.
4. Adjust the LEVEL ADJUST screws on the tuner to produce the same volume as the phonograph. Turn these screws clockwise to increase the volume. Make sure you keep the amplifier's volume control at the original setting (Step 2) while the output-level adjustments are being made.

Note: Be sure to balance the volume of both left and right channels precisely.





CLEANING

Finger prints, the kid's chocolate candy, and similar house-hold annoyances can mar the beauty of your tuner. These can be cleaned up by wiping the dial glass, panel and knobs with a supplied polishing cloth or a soft clean cloth moistened with water. Do not use any type of scouring powder, abrasive pad, or solvent.

TROUBLE CHECKS

If trouble with the tuner arises, make the following simple checks to determine if the trouble is really in the tuner, or external to it. Quite often hi-fi equipment fails to work properly because of incorrectly-made system connections. If the trouble persists after you have made these checks, consult your SONY dealer for further instructions.

Symptom	Check
Stereo broadcast is noisy and distorted.	Adjust aerial for maximum signal strength. Push in the HI-BLEND or the MONO switch.
STEREO lamp blinks on and off.	Adjust aerial to eliminate weak or multipath reception.
Unbalanced stereo channels (connections made to VARIABLE OUTPUTs)	Readjust output levels.
Severe hum or noise.	Use shielded connection cables. Avoid long horizontal runs. Keep cables away from transformers or generators, and at least 10 feet from TV sets and fluorescent lights.
Distortion or beat signals.	Adjust aerial to eliminate multipath reception.
High noise level between FM stations.	Push in the MUTING switch.
Volume level is too high or too low.	Reconnect the amplifier to the VARIABLE OUTPUTs and adjust the output level.
No sound.	To listen to a weak FM program, keep the MUTING switch in the released (off) position. If you are using the VARIABLE OUTPUTs,adjust the output level.
Poor reception.	Tune accurately with the use of the TUNER INPUT meter. Adjust aerial for maximum signal strength.

TECHNICAL DATA

TECHNICAL SPECIFICATIONS

FM Tuner Section

Tuning range :	87.5 MHz – 108 MHz
Aerial terminals :	300-ohm balanced 75-ohm unbalanced
Intermediate frequency :	10.7 MHz
Sensitivity :	2.2 μV, IHF 1.7 μV, S/N = 30 dB
Image rejection :	45 dB
IF rejection :	95 dB
Spurious rejection :	75 dB
AM suppression :	45 dB
Capture ratio :	1.0 dB
Selectivity :	70 dB
S/N :	68 dB
Frequency response :	30 Hz – 15 kHz $^{+1}_{-3}$ dB
Harmonic distortion :	Mono 0.4% at 400 Hz, 100% modulation Stereo 0.6% at 400 Hz, 100% modulation
Stereo separation :	35 dB at 400 Hz

AM (MW and LW) Tuner Section

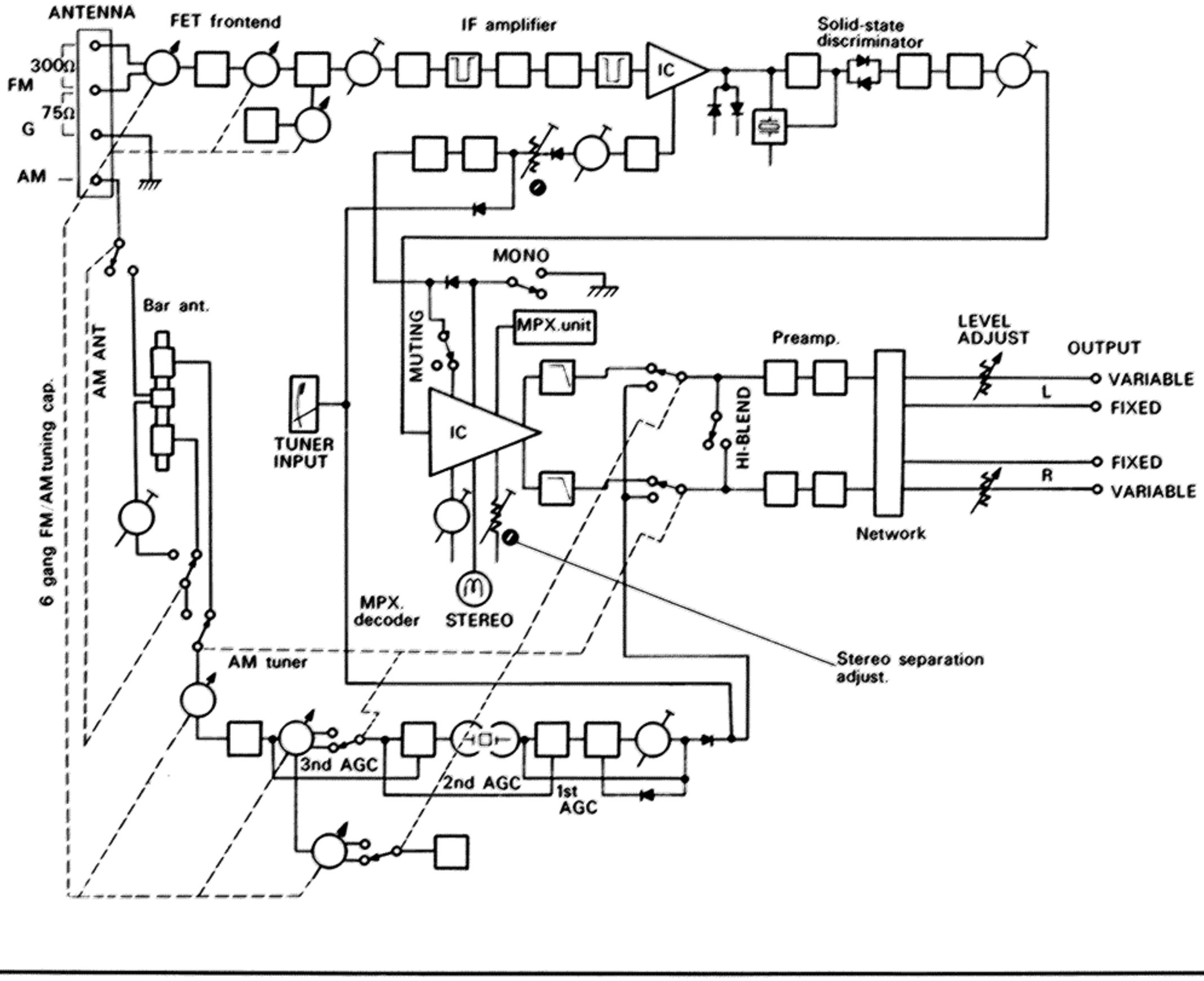
Tuning range :	MW 530 kHz – 1,605 kHz LW 150 kHz – 350 kHz
Aerial :	Built-in bar aerial and external aerial terminal
Intermediate frequency :	468 kHz (MW, LW)
Sensitivity :	MW 46 dB/m built-in aerial 100 μV external aerial LW 50 dB/m built-in aerial 100 μV external aerial
S/N :	50 dB at 50 mV/m
Image rejection :	MW 70 dB at 1,000 kHz LW 90 dB at 250 kHz
IF rejection :	MW 65 dB at 1,000 kHz LW 55 dB at 250 kHz
Harmonic distortion :	0.5% at 50 mV/m

General

Outputs :	FIXED 750 mV, 10 k ohm impedance VARIABLE 0 – 1.5 V, 1.8 k ohm impedance
System :	FM stereo, FM/AM superheterodyne tuner, switching MPX
Semiconductors :	2 IC's, 2 FET's + 16 transistors for reception 5 transistors for auxiliary circuit 14 diodes
Power requirements :	110, 127, 220 or 240 volts ac~, adjustable (factor-set at 240 volts ac~) 50/60 Hz
Power consumption :	23 watts
Dimensions :	approx. 412(W) × 120(h) × 284(d)mm (approx. 16¼ × 4¾ × 11¼ inches) Including projecting parts and controls
Weight :	Net : approx. 4.9 kg (approx. 10 lb 13 oz) In shipping carton : approx. 6.8 kg (approx. 15 lb)
Supplied accessories :	FM ribbon aerial (1) Connecting cord RK-74 (1) Polishing cloth (1) Mains lead (1)

While the information given is true at the time of printing, small production changes in the course of our company's policy of improvement through research and design might not necessarily be indicated in the specifications. We would ask you to check with your appointed SONY dealer if clearification on any point is required.

BLOCK DIAGRAM



SONY CORPORATION

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