OPERATING INSTRUCTIONS

STEREO TUNER

SANSUI TU-7700

Sansui

SANSUI ELECTRIC CO., LTD.

We are grateful for your choice of the Sansui TU-7700 AM/FM stereo tuner. Before you begin to operate it, may we suggest that you read this booklet of operating instructions as well as the instructions sheet once carefully? You will then be able to connect and operate it correctly, and enjoy its superb performance for years.

●FUNCTIONAL FEATURES

* Smooth tuning feel.

The SIGNAL and TUNING meters permit instant and accurate station pinpointing. The FM STEREO indicator lights up to let you know when the broadcast you're receiving is in stereo.

* Adjustable output level.

The set is equipped with an OUTPUT LEVEL control on the front panel, you can match the output level of the tuner with that of any other program source (such as a deck or a turntable), connected to your amplifier. Therefore, you do not need to take trouble and adjust the volume control when switching from the tuner to a tape deck or turntable, or vice versa.

* Extra conveniences for clear FM reception.

The set is provided with easily-accessible front-panel switches for steady and clear FM reception. The FM MUTING and MPX NOISE CANCELLER switches come in handy for those living in areas where signal strength is too weak, i.e. the locations where the desired station may be very far or where tall buildings may be dominating the area. The FM ATTENUATOR switch is for those who live in areas where signal strength is too strong.

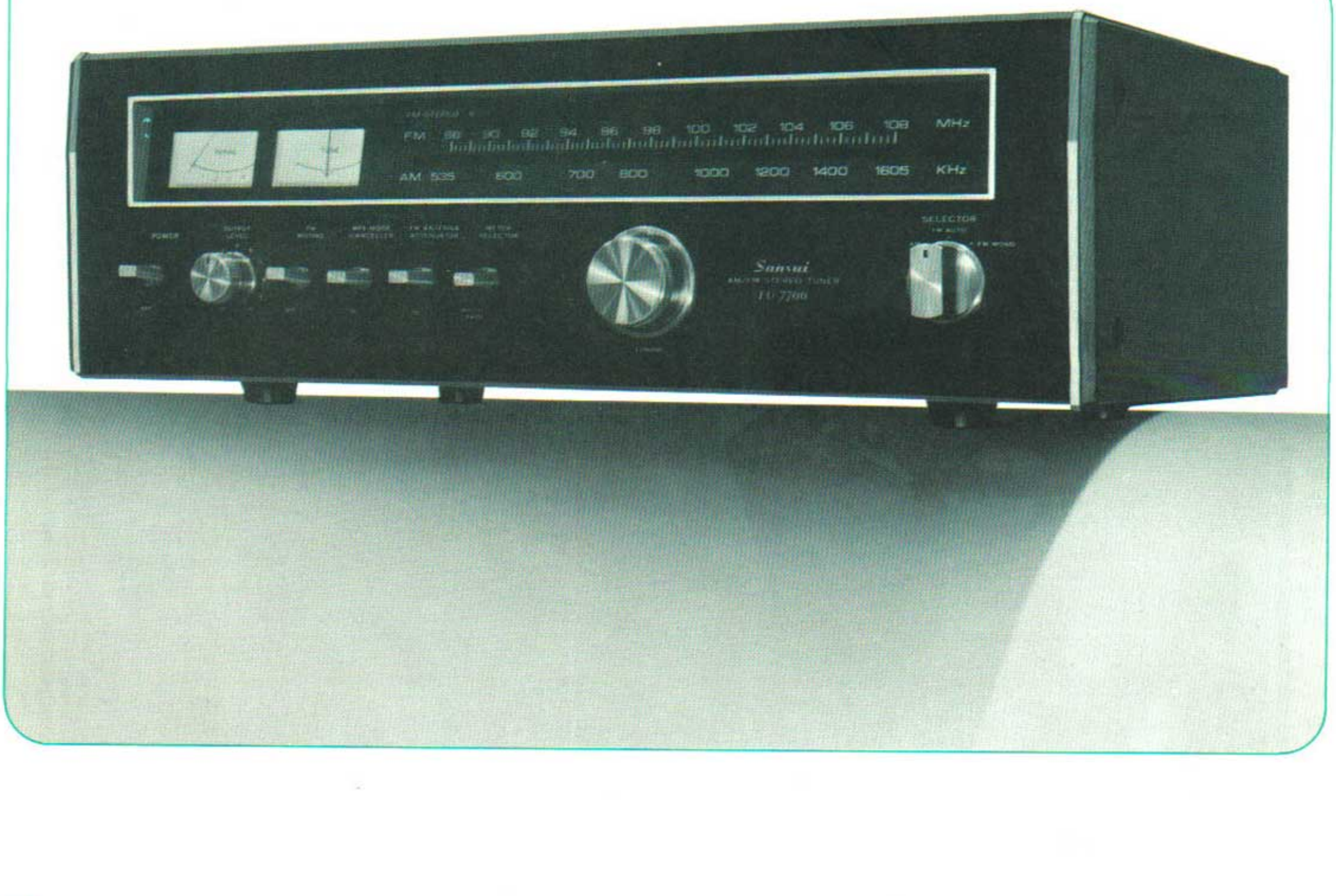
* Device for reduced multipath reception.

Switching the METER SELECTOR switch to MULTIPATH lets the SIGNAL meter function as multipath detection meter. You can thus easily orient an FM antenna in a direction where the multipath reflection is minimum and therefore you hear the optimum FM reception with least distortion. More critical multipath check is possible when an oscilloscope is connected to the FM MULTIPATH OUTPUT terminals on the set's rear panel.

* Terminals provided for two different types of FM antennas.

Provisions are made for both 75-ohm and 300-ohm FM antenna terminals. Connection is extremely simple when setting up an outdoor antenna using either a 75-ohm unbalanced coaxial type lead-in cable or a 300-ohm balanced feeder type lead-in cable.

Table of Contents



IMPORTANT PRECAUTIONS

To keep the set in top condition all the time, observe these precautions:

1. Install the set where there is a good circulation of air.
2. Avoid an extremely hot or dusty place.
3. If the set is placed on a shelf, be sure that the shelf board is thick and strong.

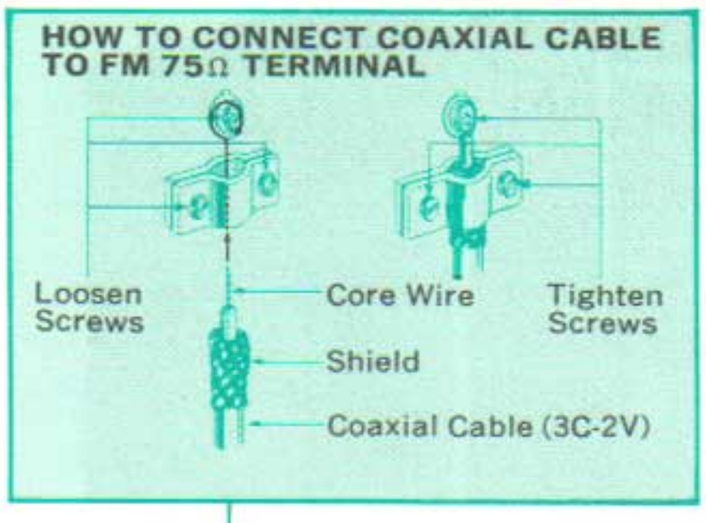
HEAT RADIATED BY THE SET

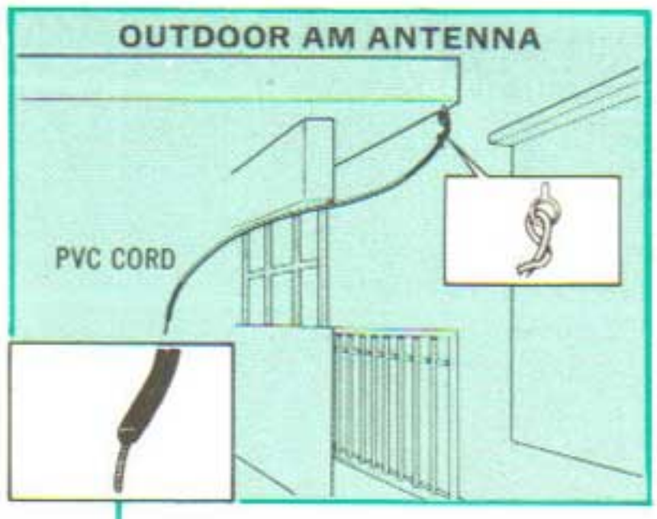
As transistors are sensitive to heat, the enclosure of this set is designed to provide a good dissipation of the heat radiated inside this set. Thus, if you place something on top the enclosure, place the set inside a closed box and operate it for many hours, it is possible that the set will break down. Always try to provide sufficient circulation of air around the set. But removing the enclosure or the bottom plate to allow better ventilation is not only dangerous but undesirable from the standpoint of electrical performance.

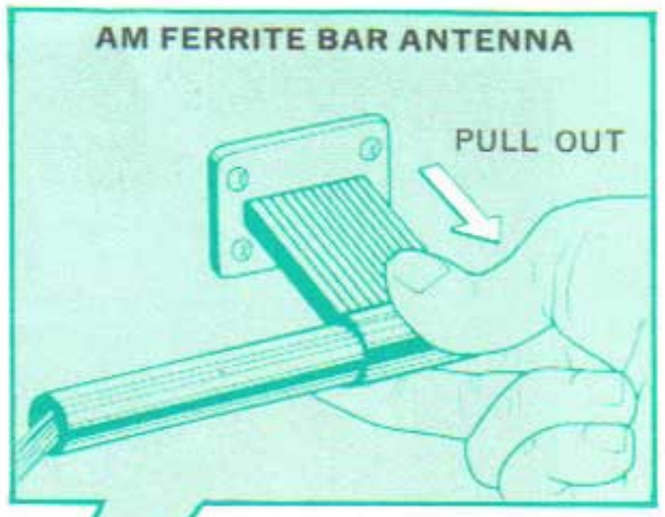
AC OUTLET

An AC outlet marked 'UNSWITCHED' is provided on the rear panel. The voltage delivered at this AC outlet is the same as the power supply voltage used. It is convenient to use it to power a program source such as your turntable or tape deck. It has a 150-watt capacity. Do not connect any equipment whose power consumption exceeds the capacity of the outlet, as it is extremely dangerous.

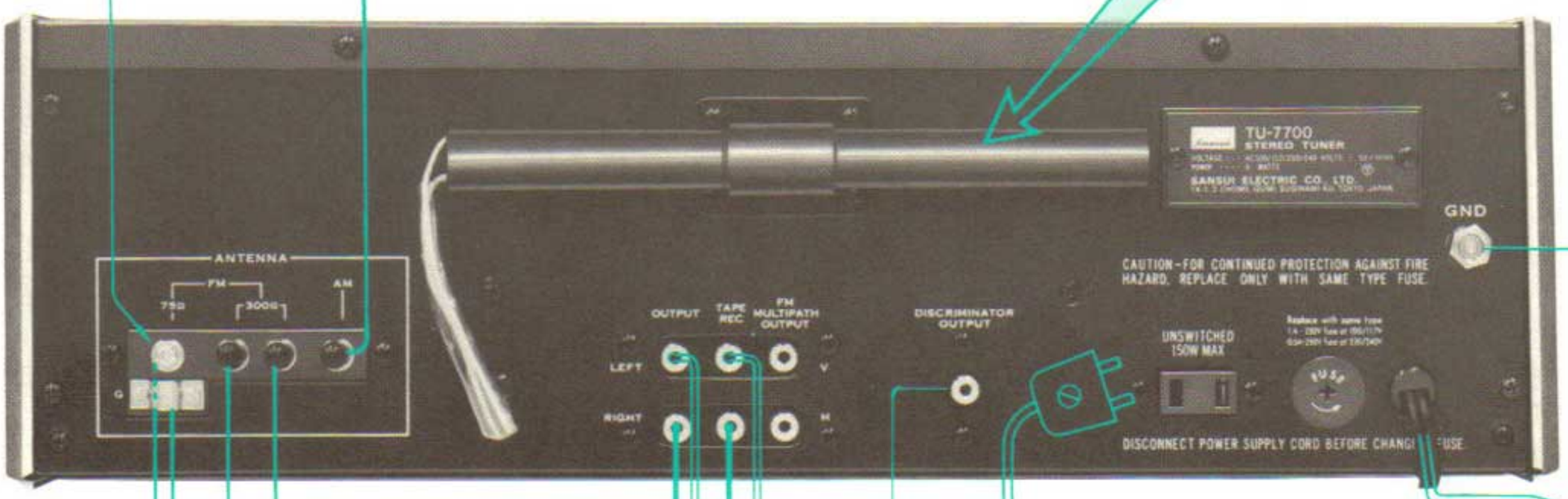
REAR-PANEL CONNECTIONS







GROUNDING
(See p. 4)

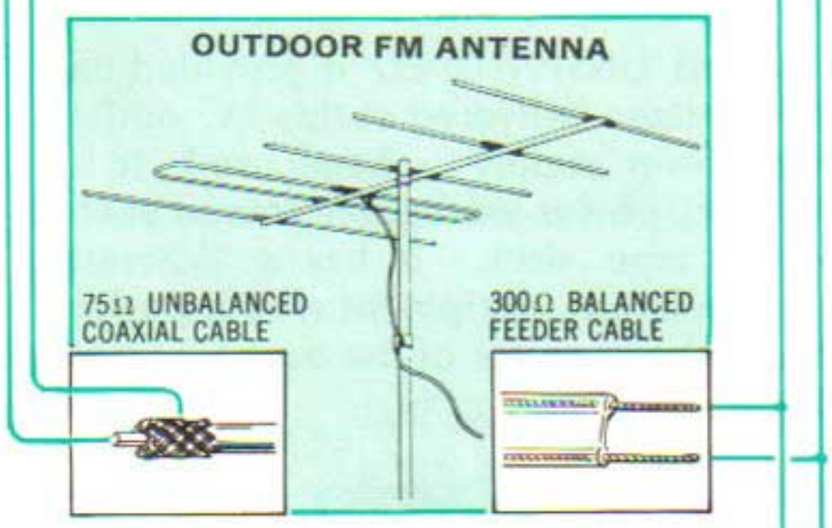


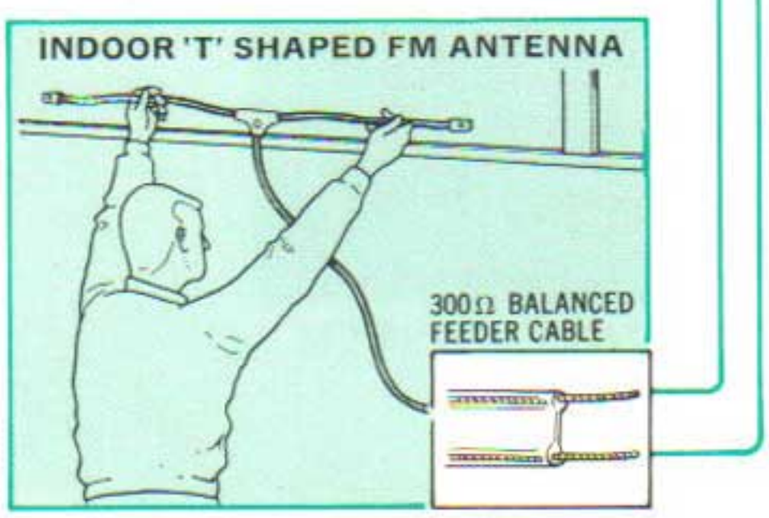
TO TAPEDECK, ETC.

CAUTION:
Never connect equipment with greater power requirements than specified maximum rating.

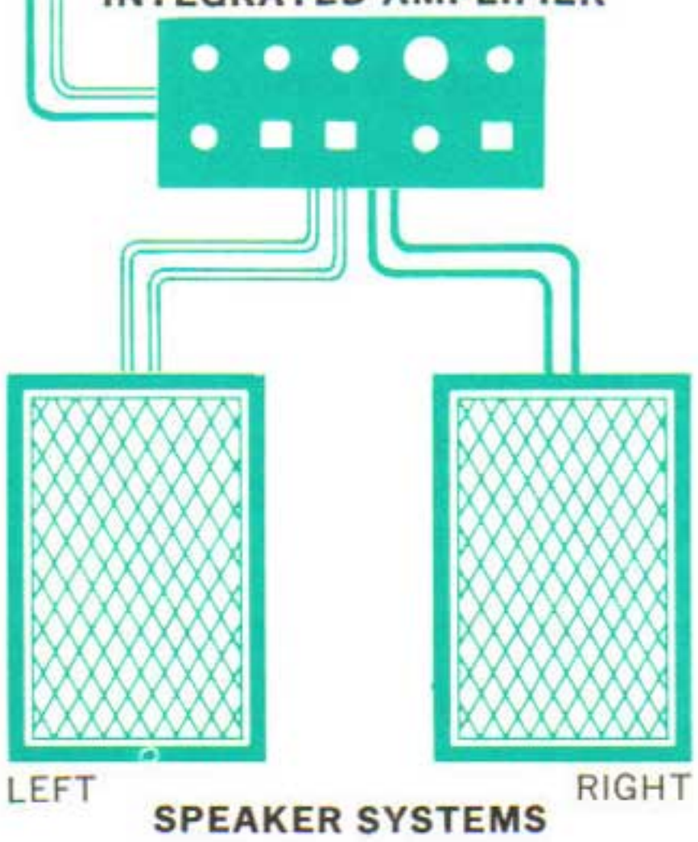
DISCRIMINATOR OUTPUT TERMINAL
(See p. 10)

WALL AC OUTLET





INTEGRATED AMPLIFIER



SPEAKER SYSTEMS

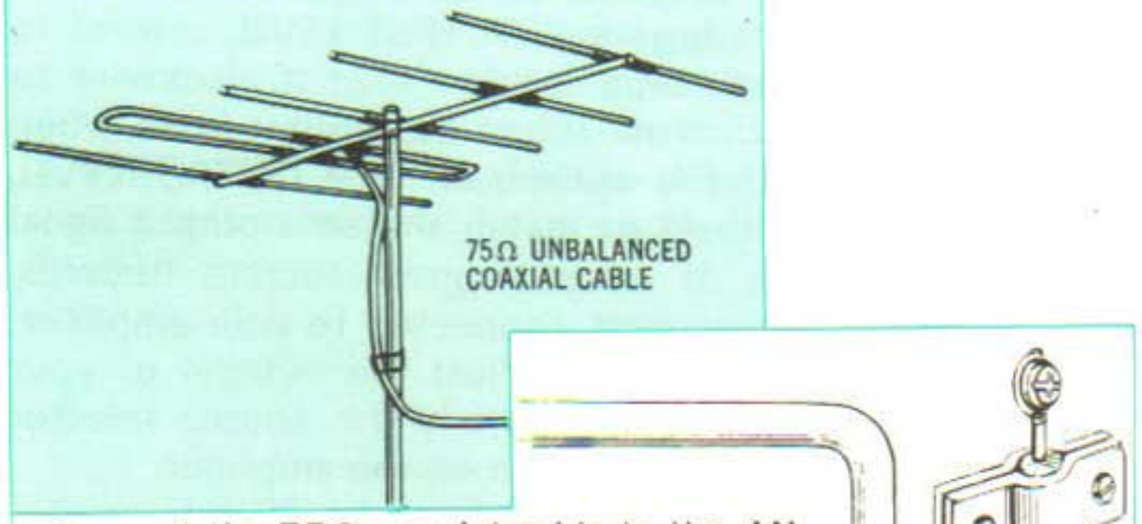
TAPE DECK (RECORDING)
(See p. 10)

LEFT CHANNEL
RIGHT CHANNEL

HINTS FOR BETTER RECEPTION

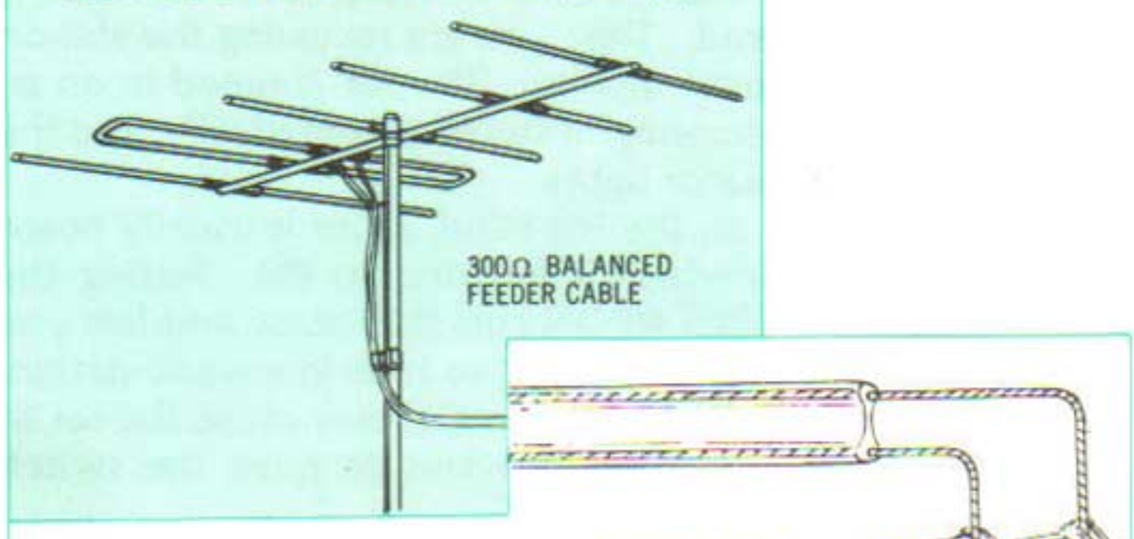
It is always recommended to install outdoor antennas so that you may receive noise-free FM and AM broadcasts with optimum tonal quality. You will find an outdoor antenna—especially one for FM—particularly effective if you are remote from broadcasting transmitters or surrounded by high mountains, buildings or other obstacles.

OUTDOOR FM ANTENNA (75Ω)



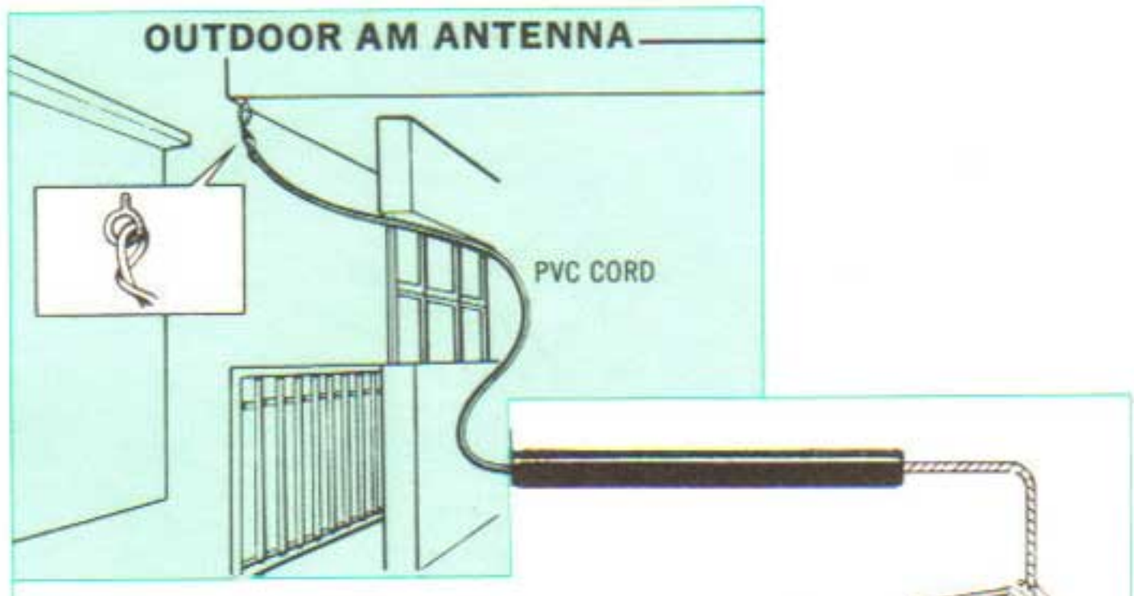
Connect the 75Ω coaxial cable to the ANTENNA FM 75Ω terminal. The mesh shield of the coaxial cable is to facilitate electrical connection with the metal fitting that holds the cable (The mesh is held by the fitting.)

OUTDOOR FM ANTENNA (300Ω)



Connect 300Ω feeder cable to FM 300Ω antenna terminals.

OUTDOOR AM ANTENNA



Connect PVC cord to AM antenna terminal.

FM ANTENNAS

Outdoor FM antennas are commercially available with three, five or seven 'elements'. The more elements an antenna has, the greater distance it is generally intended to cover. You may connect an antenna to your set either by means of coaxial cable (75-ohm unbalanced) or feeder cable (300-ohm balanced). The former is more expensive but more effectively keeps out external noise—especially the ignition noise of nearby automobiles—and transmit the signals more efficiently.

It is advised that you decide on the type of antenna and cable to use after consultation with your Sansui dealer. Depending on the type of antenna, you may require an impedance matching transformer between the antenna and the connecting cable, and this too should be found out from the dealer.

How to connect: Connect the antenna to your set as illustrated in the diagram.

If you are using coaxial cable, connect it to the FM 75Ω terminals; if you are using feeder cable, connect it to the FM 300Ω terminals.

〈**Note for Installing**〉

◇ To avoid ignition noise produced by automobiles and motor-cycles, install the antenna as far away from the street as possible.

◇ As an antenna is directional, adjust its height and direction while actually receiving your favorite FM station.

◇ Be careful so that the antenna or the lead-in cable does not touch the electrical power line around your house.

◇ It is always advisable to keep the lead-in cable as short as possible.

AM ANTENNA

When you cannot obtain the desired results by using the AM ferrite bar antenna only, connect a PVC cord to the AM antenna terminal, extending it outdoors if possible.

GROUNDING

If you connect a grounding lead to the grounding terminal marked GND on the rear panel, the noise contained in radio broadcasts may decrease. It may also keep external noises from creeping into the set.

The grounding lead may either be standard PVC cord or enameled wire. Attach a small copper plate or carbon rod to its end, and bury it deep underground. Or if there is a special grounding wire or terminal in your room, or if your water piping is of iron, the grounding lead may be connected to them. NEVER connect it to your gas piping.

OPERATING PROCEDURES

1. POWER

① POWER Switch

Raise the lever switch to ON to turn the set on, push it down to OFF to turn it off.

2. OPERATION OF THE AMPLIFIER

Operate your amplifier to which this set is connected so that you will hear radio broadcasts.

3. BAND SELECTION

② SELECTOR Switch

This switch selects the band (AM or FM) that you want to hear.

AM: To receive AM broadcasts.

FM AUTO: To receive FM broadcasts, whether stereo or mono.

FM MONO: If the FM stereo reception is too noisy for pleasant listening, set the switch to this position. The broadcast will be received in mono but the noise will be substantially decreased.

4. STATION SELECTION and OUTPUT LEVEL ADJUSTMENT

③TUNING Control

④OUTPUT LEVEL Control

⑤ FM MUTING Switch

By turning the TUNING control, first tune in the desired station and adjust the OUTPUT LEVEL control to attain a reasonably loud level. (Turn it clockwise to increase the level.) Fine-adjust the output level when the radio reception is optimized. The OUTPUT LEVEL control is to be used to match the set's output signal level with those of other program sources (records, tapes, etc.) on equipment connected to your amplifier; then you do not need to adjust the volume of your amplifier each time you switch the source selector switch or tape monitor switch on the amplifier.

To tune in an AM station, when the SIGNAL meter deflects fully to the right while turning the TUNING control, you are receiving the station with optimum tonal quality. Ignore the TUNING meter while tuning on AM.

To tune in an FM station, turn the TUNING control so that the SIGNAL meter pointer may swing as far to the right as possible and then so that the TUNING meter is accurately centered. Then you are receiving the station with optimum tonal quality. The set is tuned in on an FM station broadcasting in stereo automatically, and the FM STEREO indicator lights.

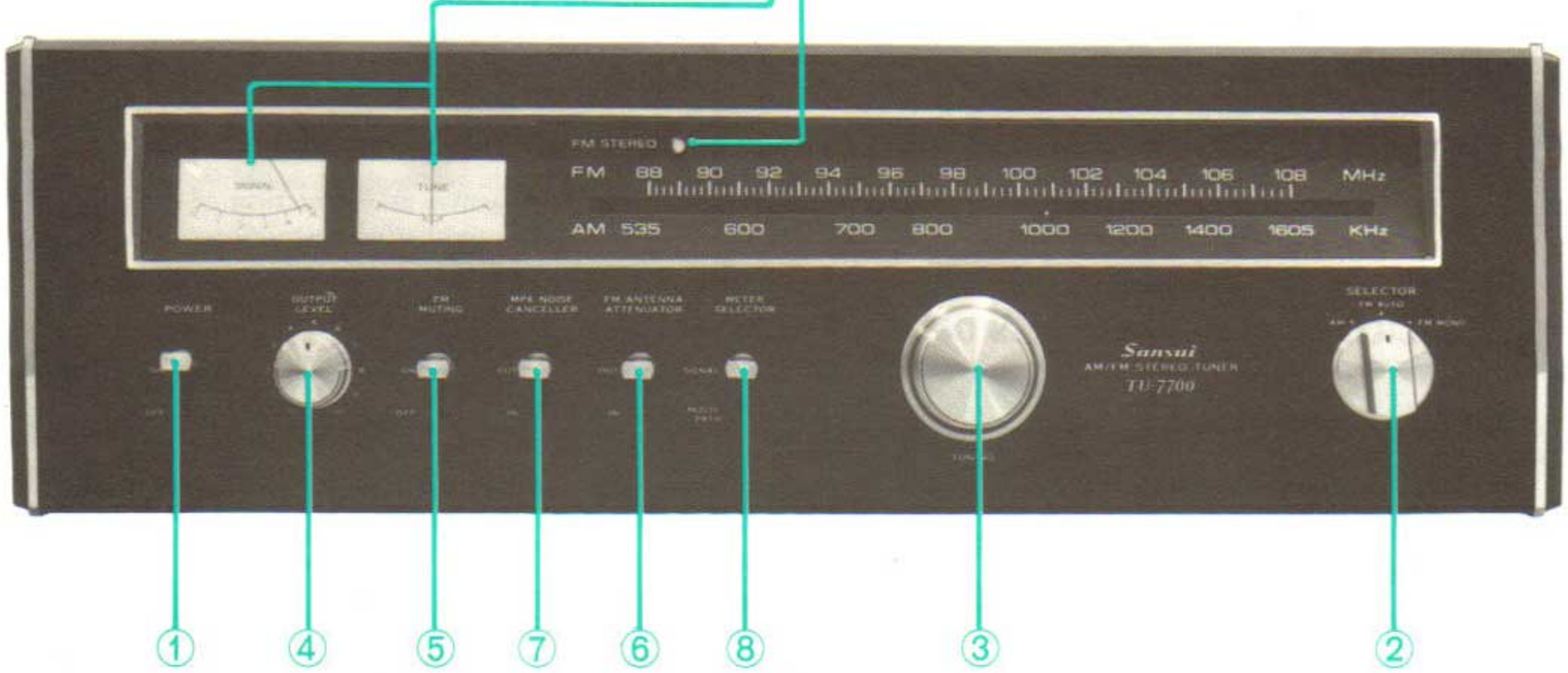
When tuning on the FM band, noise is usually heard between stations which is peculiar to FM. Setting the FM MUTING switch to ON cuts that noise and lets you tune quietly. If you are trying to tune in a weak station, however, setting the switch to ON may cause the set to miss it. In that case, it is better to push the switch down to OFF and then tune.

SIGNAL & TUNING METERS

Tune in the desired station while observing these meters. To use the SIGNAL meter to check the signal strength, the METER SELECTOR switch must be at the SIGNAL position. To use it to check the multipath reflection, the switch must be at the MULTIPATH position.

FM STEREO INDICATOR

Lights when the set is tuned in on an FM station broadcasting in stereo.



● The numbers indicated in the photograph above coincide with the colored switch designations.

5. CLEAR FM RECEPTION

⑥ FM ANTENNA ATTENUATOR Switch

This switch selects the input sensitivity for FM stations. It should normally be at the OUT position. If while receiving an FM station, located in your vicinity, you hear too coarse or distorted reception due to excessively strong signal strength, however, flip the switch down to IN.

⑦ MPX NOISE CANCELLER Switch

When you hear disturbing noise while receiving FM stereo broadcasts, push the switch down to IN; high-frequency noise will then be suppressed and the broadcasts will sound more pleasant. At all other times, however, the switch should be at its OUT position.

If you should still hear noise even when the MPX NOISE CANCELLER switch is IN, turn the SELECTOR switch to FM MONO; you should hear less noise, though in monaural.

● Excessive noise is often caused when the incoming signal is too weak. Re-orientation or re-location of the antenna may result in improving the reception of such a weak signal.

⑧ METER SELECTOR Switch

To use the SIGNAL meter to check the signal strength, this switch should be at the SIGNAL position. To use it to check the multipath reflection, this swith must be pushed down to MULTIPATH; you can orient the antenna for the best FM reception.

The radio wave, used for FM broadcast, possesses a natural tendency to travel straight ahead and be reflected by various obstacles just as a light beam does. As a result, an antenna receives both the radio wave arriving directly from the broadcasting station and the waves reflected by nearby mountains, tall buildings and so forth. (Multipath reflection. Refer to the page 8 for details.) When this condition is present, the radio waves interfering with one another resulting in amplitude and phase modulations, and distortion and reduced separation. To minimize this condition, it is necessary to orient the antenna correctly.

You are receiving optimum FM reception with the least multipath phenomenon when the SIGNAL meter deflects fully to the left. Therefore, tune in an FM station and then turn the antenna until the SIGNAL meter pointer swings as far to the left as possible before fixing it.

● You can orient the antenna more critically if you have an oscilloscope. Refer to page 9.

CONDITIONS MISTAKEN FOR BREAKDOWNS

Many of the troubles which seem to be a fault in the set may be caused by wrong operation or by external devices. These can be easily corrected by simple checking and easy remedies. If you notice a condition which looks like a breakdown of the set, examine the various connections and your operating procedure once, then look up the condition in the following chart to see if it cannot be easily removed. If this fails to improve the situation and the set definitely seems faulty, please contact the Sansui dealer from whom you purchased the set or your nearest Authorized Sansui Service Station.

PROGRAM	SYMPTOM	PROBABLE CAUSE	WHAT TO DO
AM, FM or MPX reception	* Constant or intermittent noise heard at times or in certain areas.	* Discharge or oscillation caused by electrical appliances, such as fluorescent lamp, TV set, D.C. motor, rectifier or oscillator. * Natural atmospheric phenomena * Insufficient antenna input due to ferroconcrete structure or long distance from station.	* Attach noise limiter to electrical appliance producing noise, or attach it to set's power source. * Install outdoor antenna and ground set to improved S/N ratio. * Reverse power cord plug/receptacle connections. * If noise occurs at certain frequency, attach wave trap to input. * Keep set at proper distance from other electrical appliances.
FM reception	* Noisy	* Poor noise limiter effect or too low S/N ratio due to insufficient antenna input. Note: FM reception is affected considerably by transmitting conditions of station, such as power and antenna efficiency. As a sesult, you may receive one station quite well while receiving another station poorly.	* Install antenna for maximum signal strength. * If this does not prove effective, use exclusive FM outdoor antenna. * Excessively long lead-in wire of antenna may cause noise.
	* A series of pops	* Ignition noise caused by starting of nearby automobile engine.	* Install antenna and its lead-in wire at proper distance from street or increase antenna input.
	* Tuning noise between station.	* Results from nature of FM reception. * FM MUTING switch at OFF.	* Turn on FM MUTING switch.
FM-MPX reception	* Noise heard during FM-MPX reception but inaudible during FM mono reception.	* Weaker signal because service area of FM-MPX broadcast is only half that of FM mono broadcast.	* Orient antenna for maximum antenna input. * Set MPX NOISE CANCELLER switch to IN position.
AM reception	* Noise heard at particular time of day, in certan area or over part of dial.	* Peculiar to AM broadcasts.	* Install antenna for maximum antenna efficiency. See 'AM Antenna'. * In some cases, noise can be eliminated by grounding tuner or reversing power cord plug/receptacle connections.
	* High-frequency noise.	* Beat interference by adjacent station. * TV set too close to stereo systems.	* Turn on amplifier's High Filter. * Keep TV set at proper distance from stereo system.

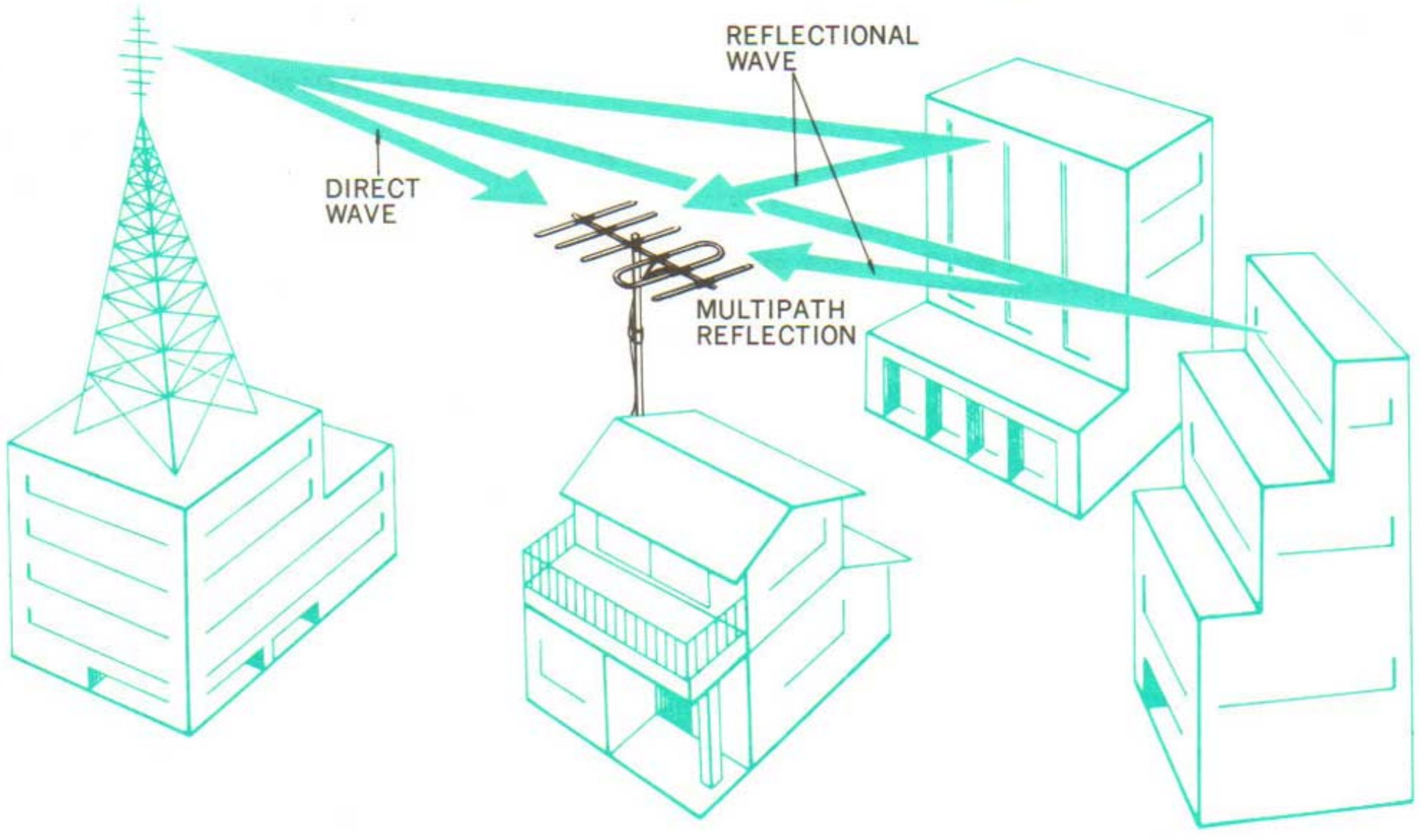
INSTALLING OUTDOOR FM ANTENNA CORRECTLY

WHAT IS MULTIPATH REFLECTION?

As the radio wave used for FM broadcast is of high frequencies, it possesses a natural tendency to advance in a straight line and be reflected by various obstacles just as a light beam does. As result, an antenna receives both the radio wave arriving directly from the broadcasting station and the waves reflected by nearby mountains, tall buildings and so forth. This phenomenon is called a multipath reflection.

When this condition is present, the radio waves interfere with one another and cause amplitude and phase modulation, which result in distortion and reduced separation. To minimize this condition, it is necessary to select an antenna with good directionality and also orient it correctly.

DIRECT WAVE & REFLECTIONAL WAVE



HOW TO USE FM MULTIPATH OUTPUT TERMINALS

The multipath condition can be visually observed by connecting an oscilloscope to the FM MULTIPATH OUTPUT terminals on the rear panel of the set, so that you may install the antenna in the correct direction.

The two terminals (indicated as V and H) deliver the output signals described below:

V: Delivers the detector output of signals amplitude-modulated by the multipath reflection, if any. If no multipath reflection exists, no output will be provided.

H: Delivers the set's discriminator output signal, whose level changes with the level of the original audio signal.

HOW TO CONNECT AND OPERATE AN OSCILLOSCOPE

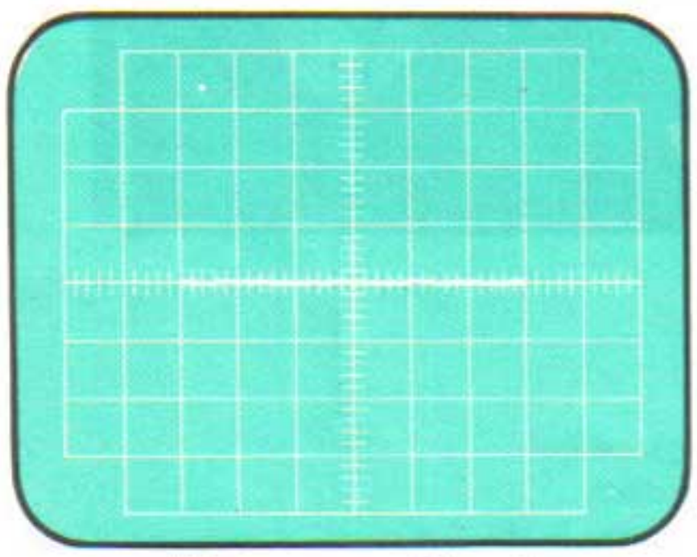
1. Connect the oscilloscope to the FM MULTIPATH OUTPUT terminals as indicated in the diagram below—namely, its vertical axis to the V terminal and its horizontal axis to the H terminal.

2. Tune in your favorite FM station accurately while watching the SIGNAL and TUNING meters, and actually receive it.

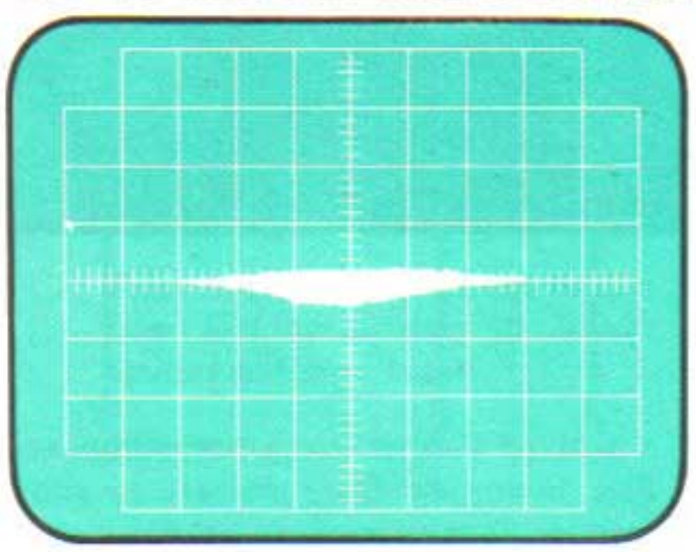
3. Observe the waveform on the oscilloscope. Set the horizontal axis sensitivity of the oscilloscope to 10mV/cm while raising its vertical axis sensitivity to an optimum level.

4. Adjust the position and direction of the antenna and fix it where the height of the waveform is minimized. See a sample oscilloscope waveform as below.

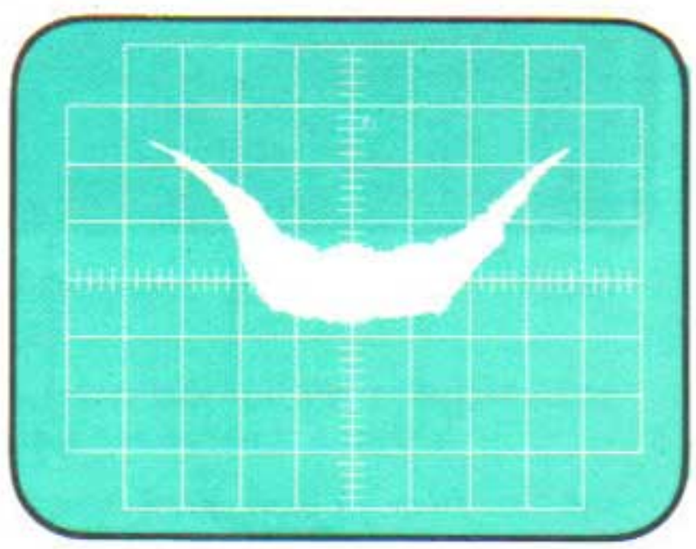
SAMPLE OSCILLOSCOPE WAVEFORMS OF MULTIPATH REFLECTION



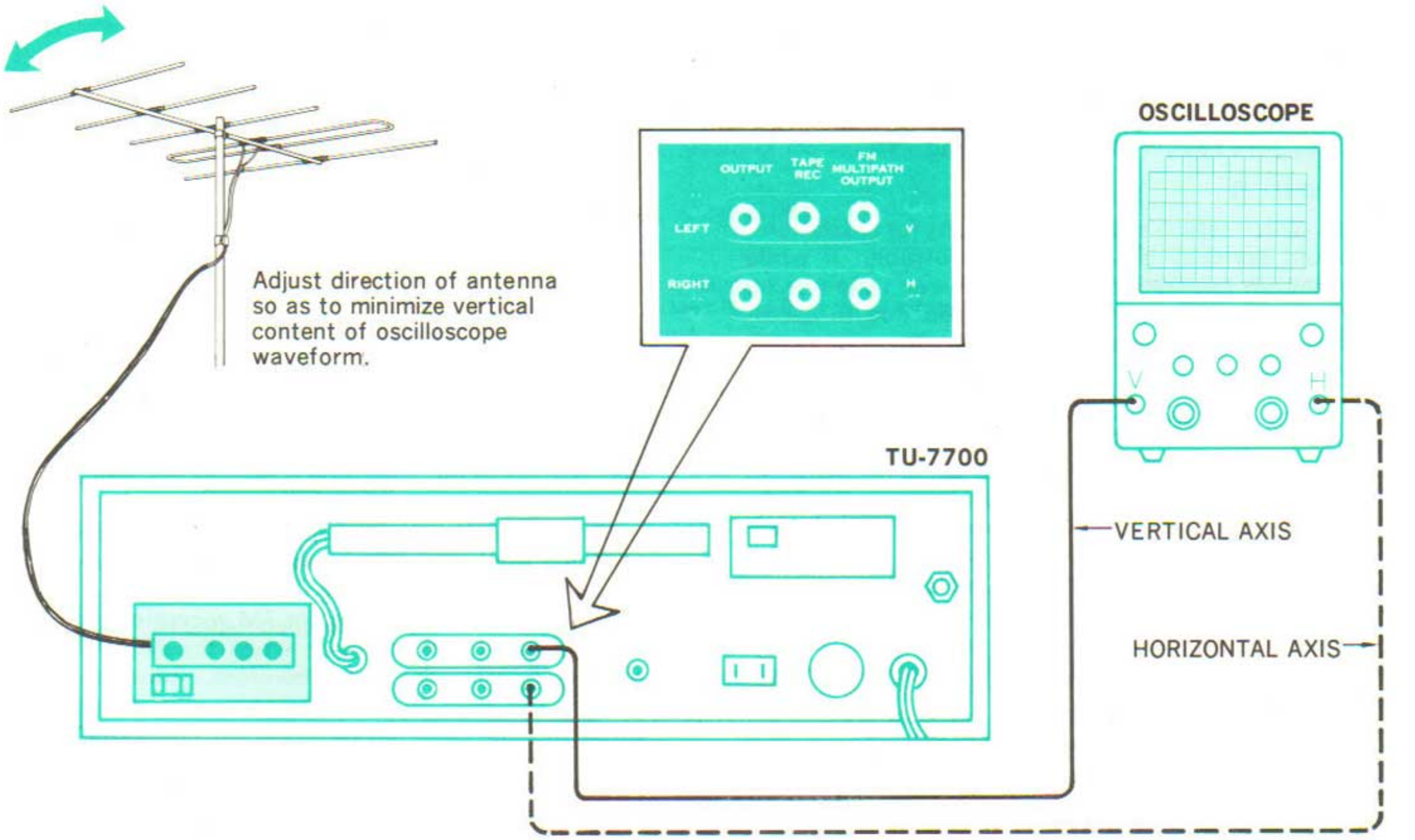
When no multipath reflection exists



When a slight multipath reflection exists



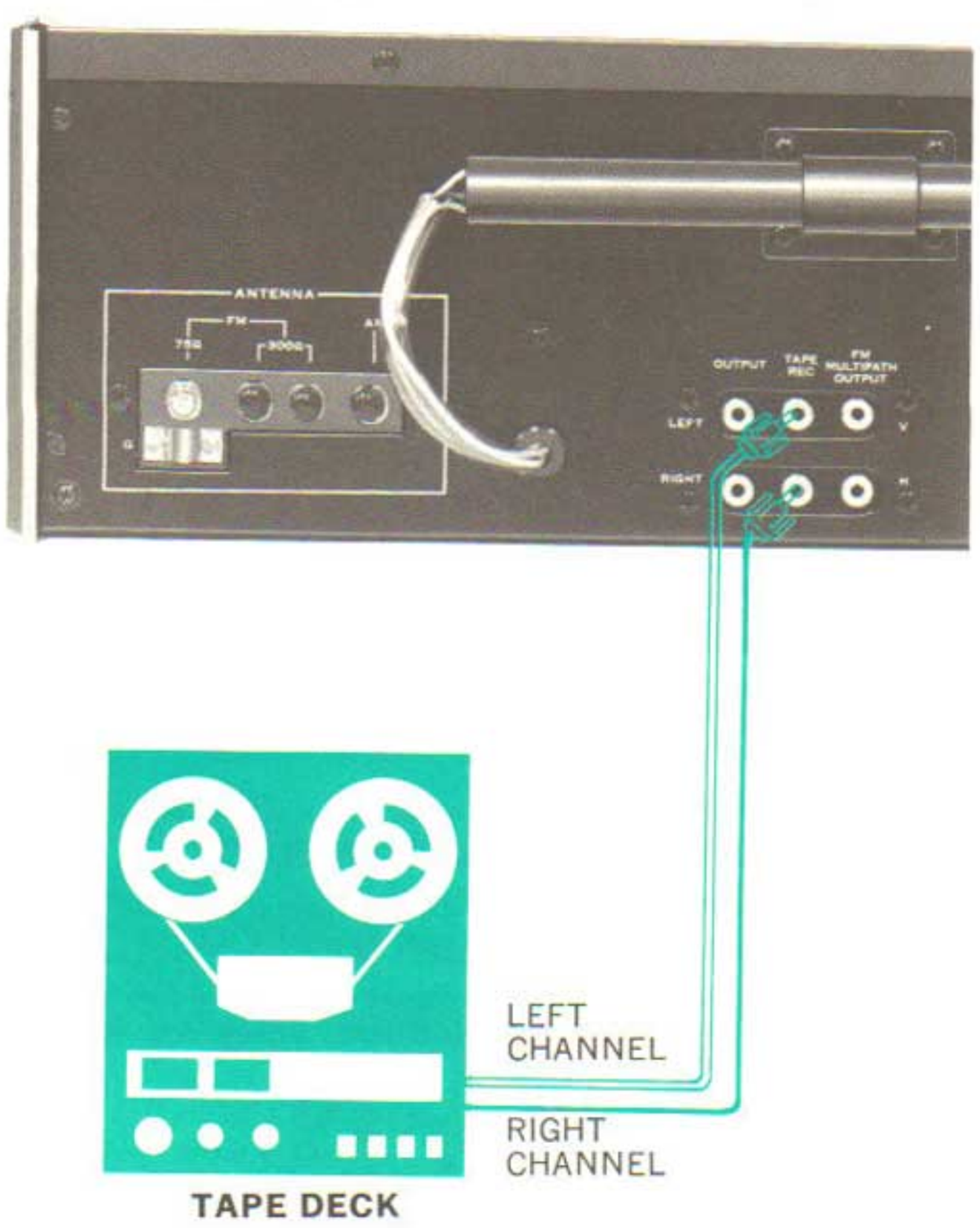
When a serious multipath reflection exists



SIMPLE MAINTENANCE HINTS

RECORDING INTO A TAPE DECK

Radio broadcasts can be recorded by connecting a tape deck to the set. Connect the TAPE REC terminals on the rear panel with the recording inputs of a tape deck (often indicated LINE INPUT), utilizing shielded cables with pin plugs.



TAPE DECK

DISCRIMINATOR OUTPUT TERMINAL

Four-channel stereo is fast becoming popular as a means of reproduction of the live sound field. Four-channel FM broadcasts are already underway in many areas of the world using Sansui QS and other matrix 4-channel systems. The discrete 4-channel system is also expected to be introduced to FM in the not to distant future. To receive discrete 4-channel FM broadcasts, you will need an adaptor in addition to the set itself. The DISCRIMINATOR OUTPUT terminal on the set's rear panel is for connecting such adaptor.

SIMPLE MAINTENANCE HINTS

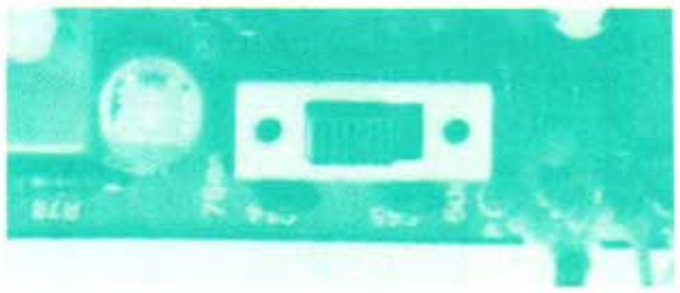
SHOULD THE POWER FUSE BLOW

If no Dial Indicator should glow and the set simply remains dead even after you have turned on its POWER switch, it is possible that its power fuse has blown.

If this happens, disconnect the power cord from the AC outlet at once and examine the power fuse on the rear panel. If you find it blown, replace it with a new glass-tubed fuse of the rated capacity (1-ampere for 100 to 117 volts, 0.5-ampere for 220 to 240 volts).
Never use a fuse of a different capacity or a piece of wire, even as a stop-gap measure, or serious danger could result.

ABOUT THE FM DE-EMPHASIS SWITCH

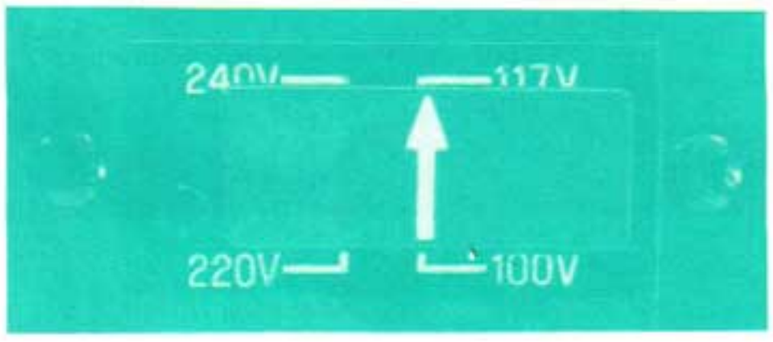
Use this switch inside the set only if you move to an area where the FM de-emphasis characteristic is different. It is adjusted to the correct de-emphasis characteristic of your area in our factory prior to shipment, so there is normally no need to touch it. The correct de-emphasis is 50 μsec for Japan and Europe, and 75 μsec for the U.S.A. and Southeast Asia.



ABOUT THE VOLTAGE ADJUSTMENT

Your set is adjusted to operate at the correct power supply voltage of your area prior to shipment from our factory. If you move after purchasing it, or send it as a gift to a friend living in an area where the voltage is different, it may be necessary to adjust its Voltage Selector.

To adjust it, remove the two screws securing the name plate on the rear panel, then set the arrow mark on the Voltage Selector Plug to the correct Voltage indication (100, 117, 220 or 240 volts). It may be necessary to replace the power fuse as well whenever the voltage has changed. For operation at 100 to 117 volts, use a 1-ampere fuse. For operation at 220 to 240 volts use a 0.5-ampere one.



LIST OF ACCESSORIES

1.	FM ANTENNA	1
2.	CONNECTION CABLE WITH PIN PLUGS	2
3.	OPERATING INSTRUCTIONS	1
4.	OPERATING INSTRUCTIONS SHEET	1

Operating Instructions **Stock No. 9208350**

SPECIFICATIONS

FM SECTION

TUNING RANGE .....88 to 108MHz
SENSITIVITY (IHF) 1.8μV
QUIETING SLOPE.....40dB 1.8μV, 50dB 3μV, 60dB 10μV, 70dB 50μV
TOTAL HARMONIC DISTORTION
  MONO .....less than 0.2%
  STEREO .....less than 0.3%
SIGNAL TO NOISE RATIO..better than 75dB
SELECTIVITY .....better than 80dB
CAPTURE RATIO (IHF) ....less than 1.5dB
IMAGE FREQUENCY REJECTION
.....better than 75dB
IF REJECTION .....better than 90dB
SPURIOUS RESPONSE REJECTION
.....better than 80dB
STEREO SEPARATION.....better than 40dB at 1KHz, better than 30dB at 10KHz
SPURIOUS RADIATION....less than 34dB
FREQUENCY RESPONSE....20 to 15,000Hz
FM ANTENNA INPUT IMPEDANCE
.....300Ω balanced, 75Ω unbalanced
FM ANTENNA ATTENUATOR
.....—20dB

AM SECTION

TUNING RANGE .....535 to 1,605KHz
SENSITIVITY (Bar Antenna) 50dB/m
SELECTIVITY .....better than 30dB
IMAGE FREQUENCY REJECTION
.....better than 80dB/m at 1MHz
IF REJECTION .....better than 80dB/m at 1MHz

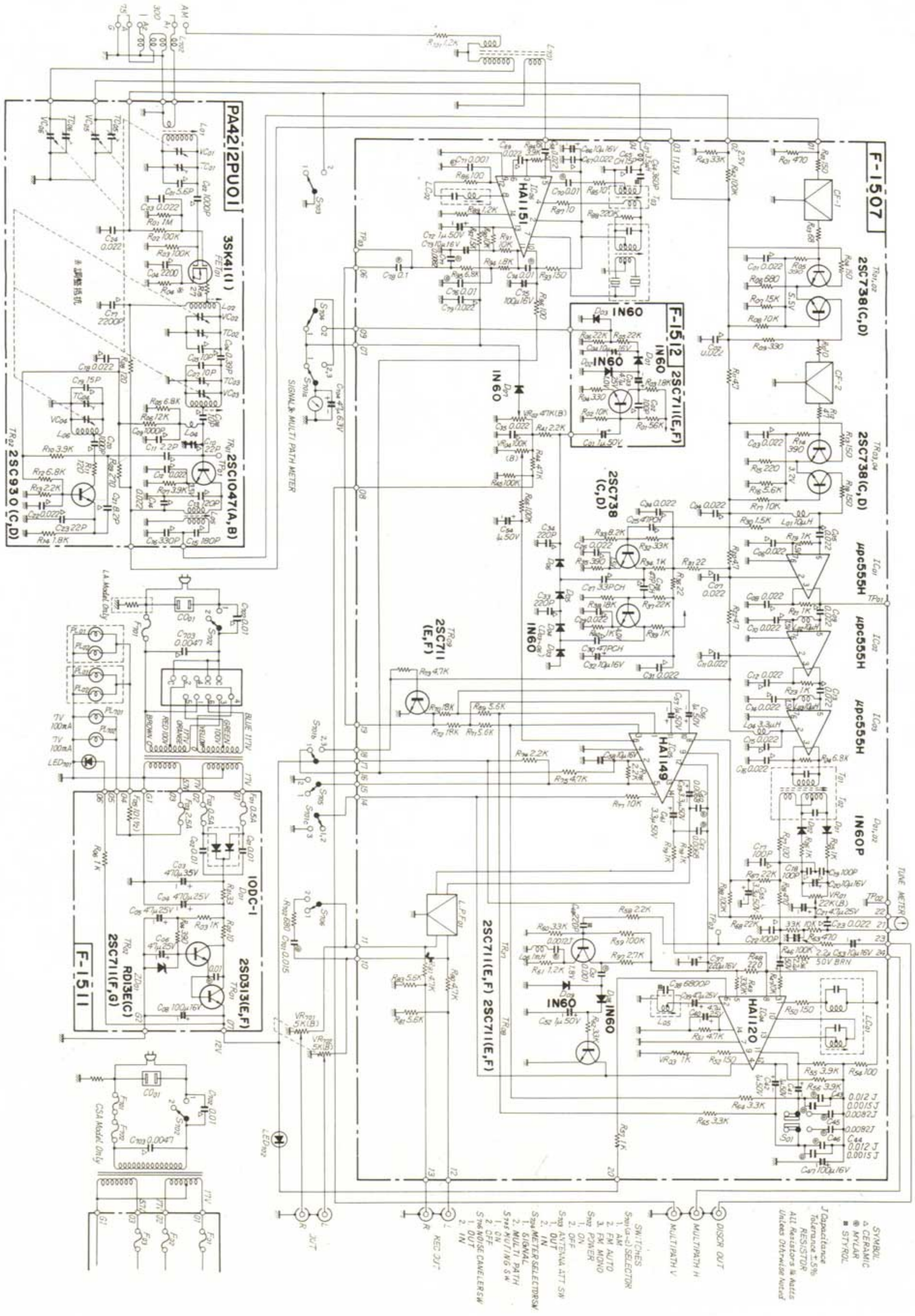
OTHERS

OUTPUT .....0 to 0.775V
REC OUTPUT 0.4V
POWER REQUIREMENTS
  POWER VOLTAGE 100, 117, 220, 240V 50/60Hz
  POWER CONSUMPTION ..9W (rated)
DIMENSIONS .....434mm, (17$\frac{1}{8}$") W
130mm (5$\frac{1}{8}$") H
243mm (9$\frac{9}{16}$") D
WEIGHT.....6.9Kg (15.2 lbs) net
8.3Kg (18.3 lbs) packed

* Design and specifications subject to change without notice for improvements.

SCHEMATIC DIAGRAM

* Design and specifications subject to change without notice for improvements.



Sansui

SANSUI ELECTRIC CO., LTD.
14-1, 2-chome, Izumi, Suginami-ku, Tokyo 168, Japan.
TELEPHONE: (03) 323-1111 /TELEX: 232-2076

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