SOLID STATE
STEREO TUNER

KT-8007

INSTRUCTION MANUAL



the sound approach to quality

KENWOOD

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INTRODUCTION

Because Kenwood Electronics, Inc., takes great pride in the long-tradition of quality components the name Kenwood represents, your purchase of a Kenwood tuner places you in a distinguished family of connoisseurs of superb high-fidelity sound reproduction.

The purpose of this manual is to acquaint you with the operating features of your new tuner. You will notice that in every detail of planning, engineering, styling, operating convenience, and adaptability, we have sought to anticipate your needs and desires.

We suggest that you read this manual carefully. Knowing how to set up your tuner, to the best advantage, will enhance your listening pleasure right from the start. You will also become aware of the ease with which you can adjust your tuner to meet your special requirements.

Turn the pages and become acquainted with the exciting features of your new tuner features that will remain new for endless hours of listening pleasure.

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NOTES

- Units shipped to the U.S.A. and CANADA are designed to be operated with 120 volts only. Units shipped to the Scandinavian countries are designed to be operated with 220 volts AC only. Therefore the above units are not equipped with an AC Voltage Selector Switch so all references to such a switch throughout this manual should be disregarded.

- Units shipped to all other countries are equipped with an AC Voltage Selector Switch on the rear panel that is preset at the factory to the voltage generally available in the destination area.

CAUTION:

It is very important however, to check the Voltage Selector Switch setting and make sure that it corresponds to your line voltage before connecting the power cord into an AC outlet. If the Voltage Selector requires re-setting, follow the directions outlined on page 11.

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KT-8007 FEATURES

1. ACCURATE, VERSATILE METER

Incoming signal level, FM multipath interference and FM carrier deviation can all be measured accurately with a very versatile meter located on the front panel. A separate Tuning Meter is also provided with which FM broadcasts can always be tuned correctly at the center.

2. IMPROVED VOLTAGE REGULATING SYSTEM

Dual (positive and negative) power source systems supply the preamplifier for improved voltage regulation. ON-OFF switching without pulse clicks and perfect muting action during warm-up of all circuits show the resulting difference in smooth action and dependable operation.

3. OUTSTANDING STEREO MULTIPLEX CIRCUIT

The stereo multiplex section features a Double Switching Demodulator (DSD) and Phase Locked Loop (PLL) circuit, and also a three-stage low-pass filter. As a result it has outstanding stereo characteristics including high stability, low distortion ratio, improved subcarrier rejection and stereo separation that is hardly affected by temperature changes.

4. HIGH PERFORMANCE FRONT END AND IF STAGE

Dual gate MOSFET transistors in the RF stages and mixer stages have greatly improved stability and selectivity characteristics, including better AM, cross modulation and image rejection ratios due to very low capacitive feedback.

5. OUTPUT LEVEL VOLUME CONTROL

An output level volume control is located on the front panel to equalize the levels of a record player or tape deck to that of broadcast program sources.

6. FM 4-CHANNEL DET-OUT

These connectors will permit this unit to be used for FM 4-channel reception when 4-channel broadcasts are started in the future.

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

7. FREQUENCY-LINEAR VARIABLE CAPACITOR

Frequency-linear FM tuning capacitor and dial scale that is calibrated in exact frequency ratio intervals ensure accurate tuning.

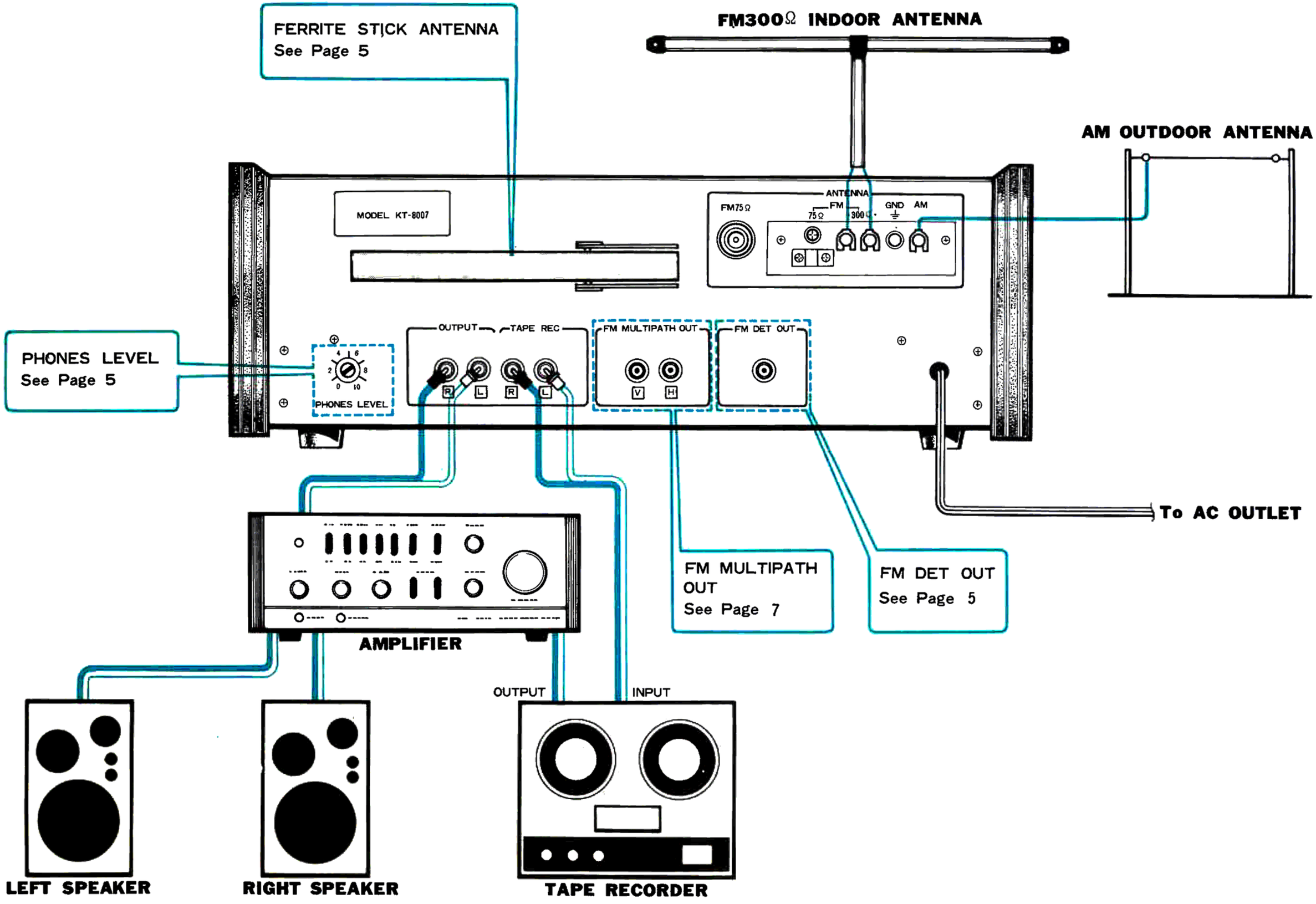
8. MULTIPATH CHECKING OSCILLOSCOPE CONNECTORS

This tuner is provided with connectors to which an oscilloscope can be connected easily to check FM multipath interference wave forms on a scope screen, in addition to its built-in meter detection feature. Both help to determine correct antenna direction for best FM reception.



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INTERCONNECTING DIAGRAM



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CONNECTING YOUR KT-8007

OUTPUT

Signal from the output jacks are fed to the amplifier. Connecting cables should be plugged to the amplifier component's AUXILIARY or TUNER jacks. Shielded cables terminated at both ends with RCA type phono plugs are supplied with this tuner.

If in your particular installation longer connecting cables are necessary, they may be used without fear of excessive high frequency losses as your KT-8007 has a low impedance. However, it is preferable to keep the length of these connecting cables within three or four yards whenever possible.

TAPE RECORDER

You may record AM and FM broadcasts by connecting the TAPE REC output jacks of the tuner to the input of the tape recorder.

FM DETECT OUT

The FM detector circuit output is made available here so that this tuner will be ready for 4-channel broadcasting developments in the future. When FM discrete 4-channel broadcasting becomes a reality, a simple demodulator connected here will enable you to fully enjoy this coming development.

PHONES LEVEL

Use this control to adjust the level of the headphones when using the tuner. Turn clockwise to increase. This control is pre-set to maximum level before shipping.

AM ANTENNA

The ferrite stick antenna mounted at the rear panel of the tuner will provide satisfactory reception of local stations with strong signals. Because the ferrite stick antenna has directive properties, its direction should be adjusted for best reception while listening to a station. (See Figure 1)

AC cords laid adjacent to AM ferrite stick antenna may interfere with reception.

Keep them away as far as possible from the ferrite stick antenna.

In fringe areas or in locations surrounded by steel frame buildings where satisfactory reception cannot be obtained with the ferrite stick antenna, an AM outdoor antenna should be connected to the AM terminal. (See Figure 2)

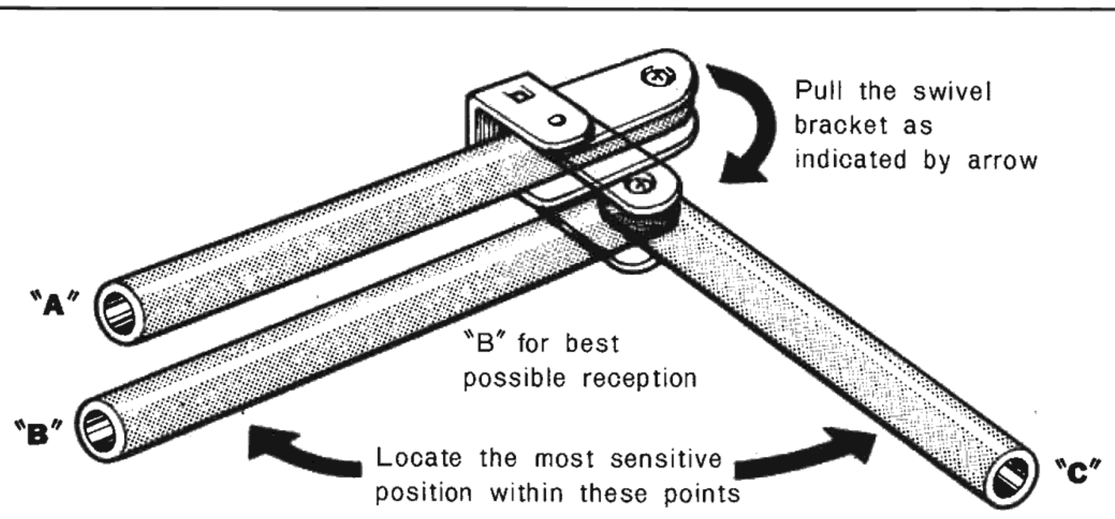


Figure 1. AM Antenna Setting

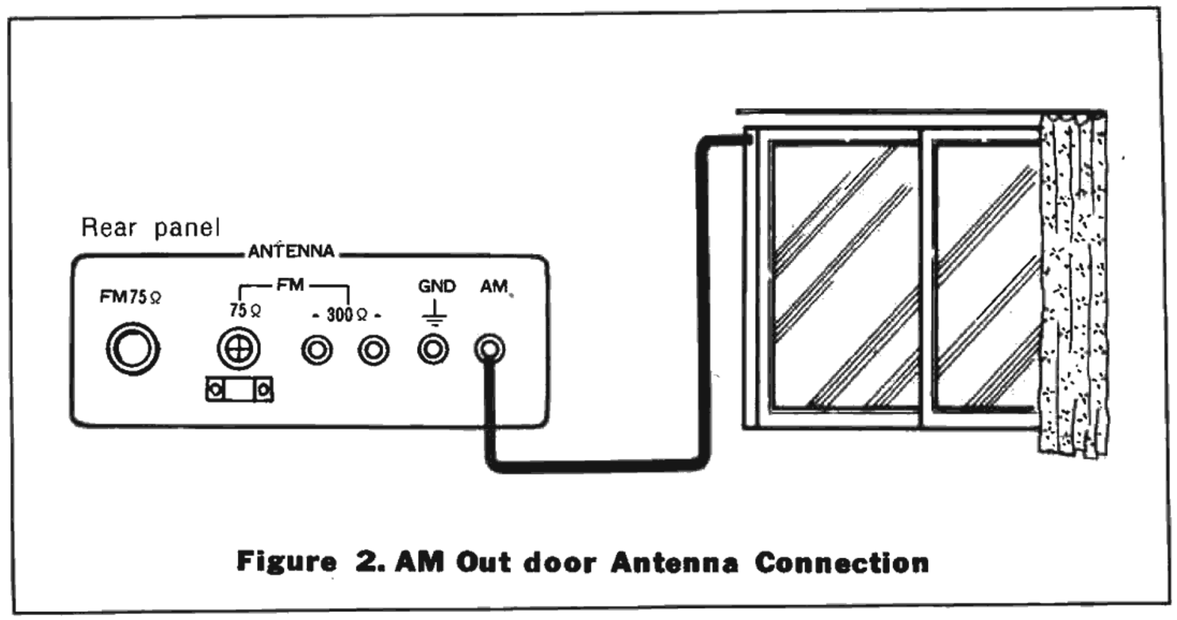


Figure 2. AM Out door Antenna Connection

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CONNECTING YOUR KT-8007

FM ANTENNA

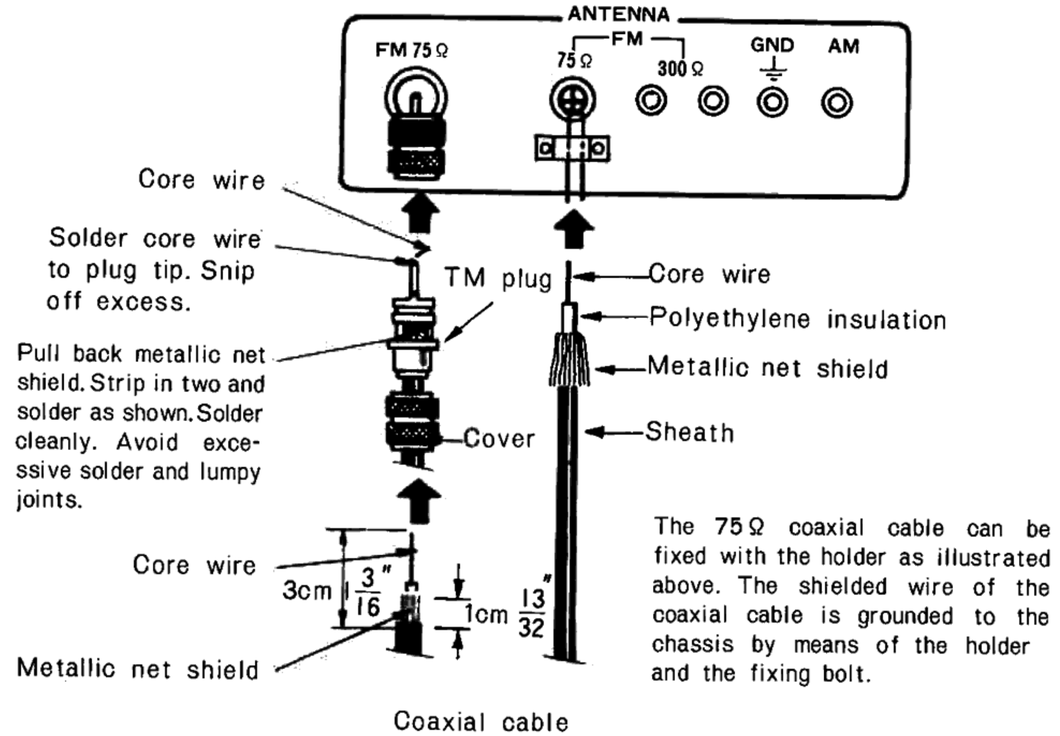
Four terminals are provided for connection to a 300 or 75 ohms FM antenna as shown. (See Figure 3)

For good FM stereo reception, always use the best antenna possible. In areas close to the transmitter, a simple indoor dipole antenna may suffice. It should be remembered, however, that the pickup of reflections (similar to "ghosts" on TV) will result in poor stereo reception.
These reflections must therefore be reduced to a minimum, either by careful orientation of the indoor dipole antenna or, if this will not eliminate them, by using a more directional outdoor type antenna.

In areas a greater distance from the transmitter, the use of an outdoor antenna is highly recommended. These are available in various types. For reception of stations scattered in many directions, a non-directional type antenna will offer better results. When using a directional antenna, always orient it for the best reception of the desired station. The correct position will be indicated by maximum deflection of the Signal meter on your tuner.

Keep FM antennas away from roads. (See Figure 4)

HOW TO CONNECT TM COAXIAL CABLE PLUG AND COAXIAL CABLE



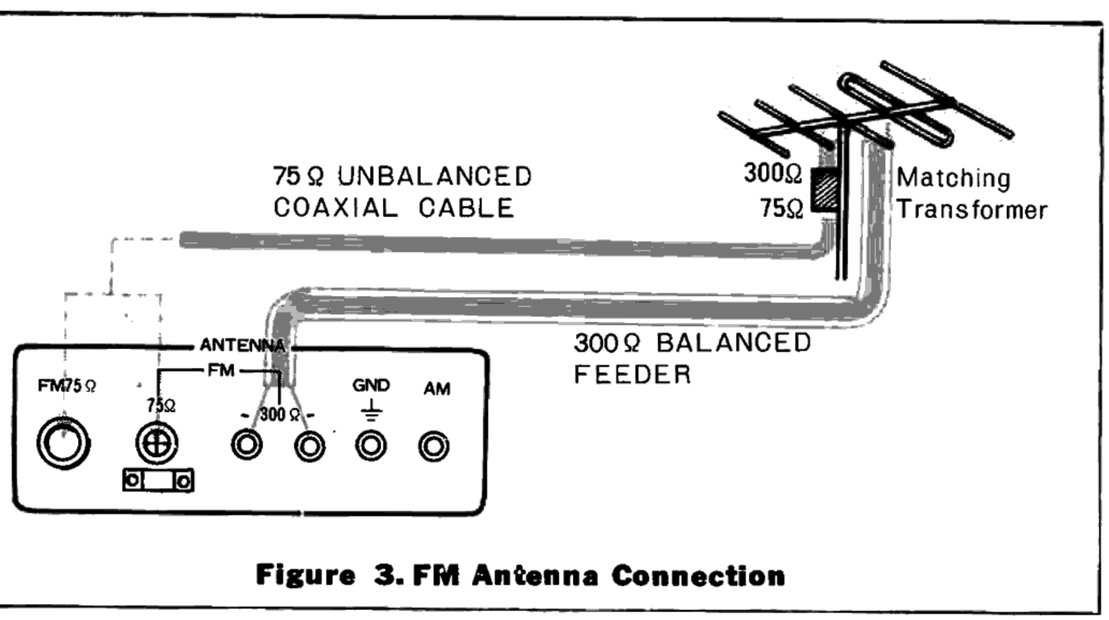


Figure 3. FM Antenna Connection

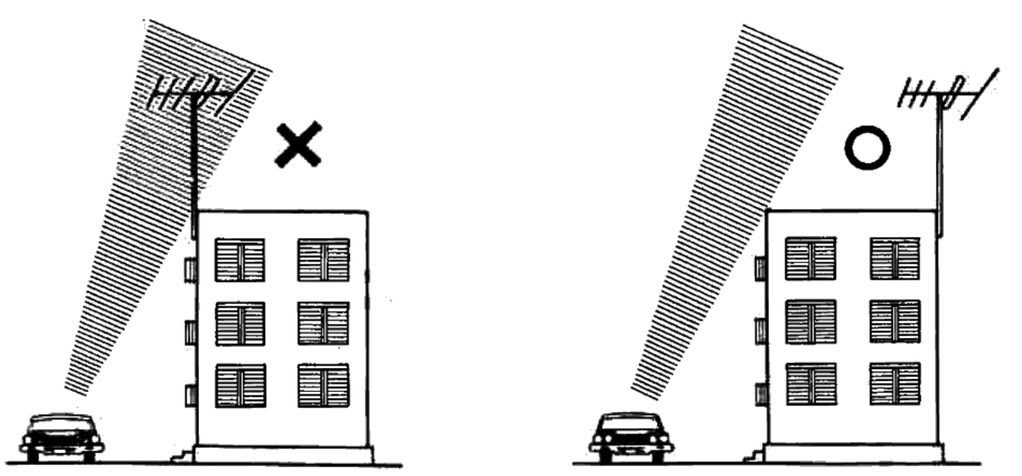


Figure 4. FM Antenna Setting

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CONNECTING YOUR KT-8007

FM MULTIPATH OUT

FM signals radiate in a straight line path like light rays and are reflected as shown in Figure 5 when they encounter obstacles. When a reflected signal and a direct path signal are received simultaneously at the antenna, one affects the other causing what is known as multipath distortion. This adversely affects the quality of reception.

To minimize such distortion, an antenna with good directional properties should be pointed toward the broadcasting station or in the direction in which the least reflected signals are received which would be that point where sound quality is best. However, since the optimum antenna direction is not always that which results in the strongest signal, it is often difficult to obtain correct antenna orientation for minimum distortion merely by observing the MULTIPATH meter or listening to a broadcast.

This unit is provided with a MULTIPATH Meter and also MULTIPATH OUT jacks.

HOW TO USE THE MULTIPATH METER

Push in the MULTIPATH Switch and rotate the FM antenna while receiving an FM broadcast. When the antenna is pointed to a certain direction, it will cause maximum deflection of the Multipath Meter. This indicates the point of minimum multipath interference, and therefore the best antenna position for receiving that FM station.

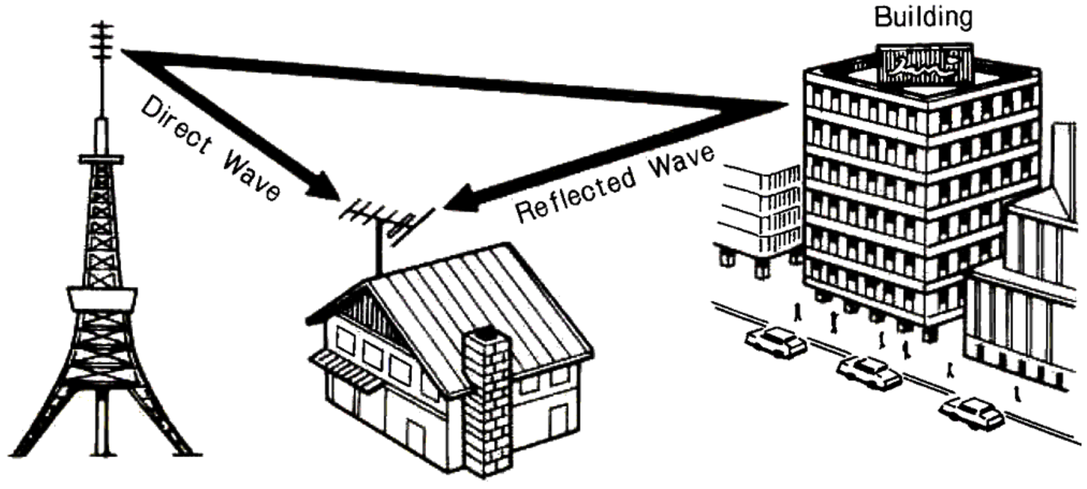
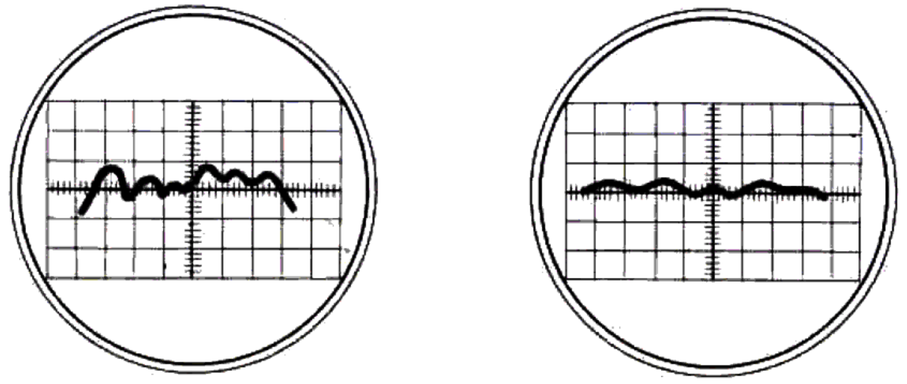


Figure 5. Direct wave and Reflected wave

HOW TO USE THE MULTIPATH JACKS

Those who have a general oscilloscope may connect it to these jack and actually see the incoming wave form. The antenna can then be turned to obtain minimum distortion and best reception.

The vertical amplifier INPUT and the Horizontal amplifier INPUT of the general oscilloscope should be connected to the tuner's MULTIPATH VERT and HOR jacks, respectively. The antenna should be oriented to produce a wave shape as shown in Figure 6 (b). A higher gain antenna with sharper directional properties should be tried if a similar wave form cannot be obtained.

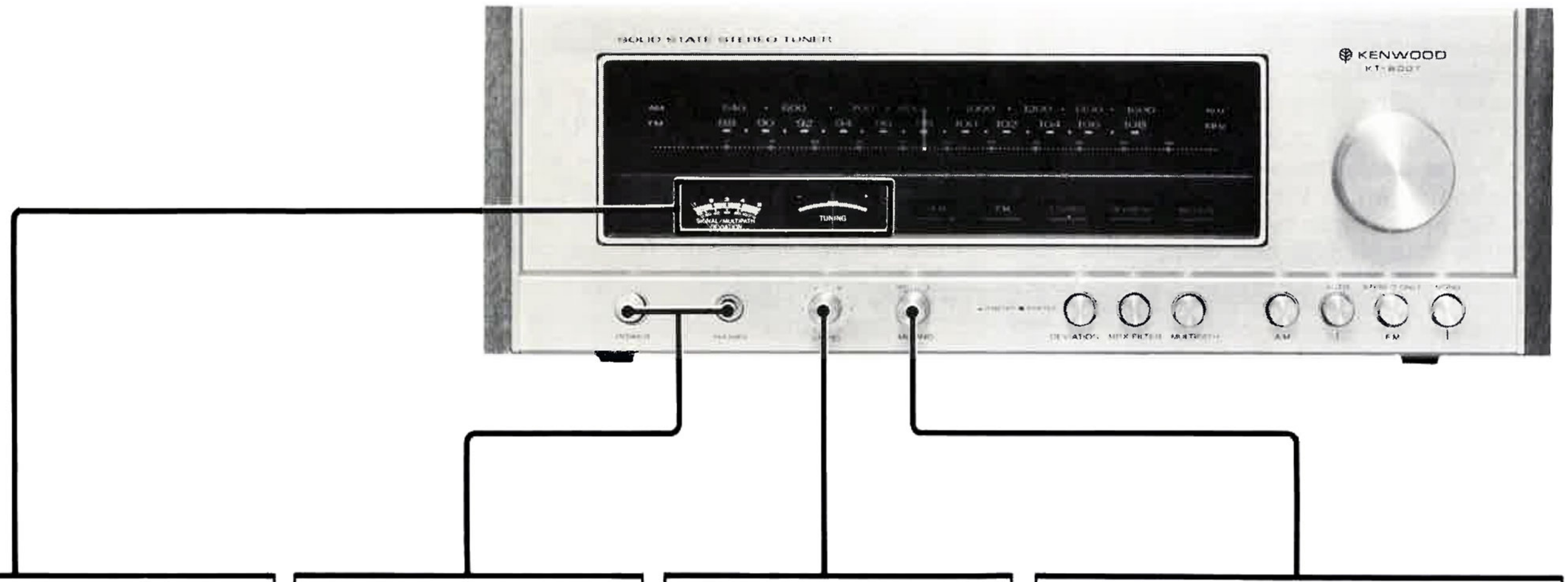


(a)Undesirable Waveform (b)Desirable Waveform

Figure 6. Multipath Waveform

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CONTROLS AND THEIR FUNCTIONS



SIGNAL/MULTIPATH/DEVIATION meter

- **SIGNAL** – Meter indicates signal intensity during this function mode. Maximum deflection indicates best receiving condition.
- **MULTIPATH** – When the MULTIPATH switch is pushed in during reception of an FM broadcast this meter helps to detect FM multipath interference. Antenna direction should then be adjusted for maximum deflection which is the best position for FM reception with minimum distortion.
- **DEVIATION** – When the DEVIATION switch is pushed in, this meter indicates the peak modulation ratio of the FM broadcast.

TUNING meter

This meter is used for precise tuning to the center of an FM channel. Turn the tuning knob until the meter pointer is in the center of the meter scale. This provides maximum separation and minimal distortion.

POWER switch

Push the POWER switch to turn the tuner on. Push it again to turn the tuner off.

PHONES jack

For listening through stereo headphones, connect the plug of the headphones to the Headphones Jack.
The exclusive, built-in amplifier allows you to enjoy AM and FM programs without the need for using an external amplifier.
It is suggested that a stereo headphones having 4 to 16 ohms of impedance be used.
Use the control to adjust the level of the headphones located on the rear panel

LEVEL (volume) control

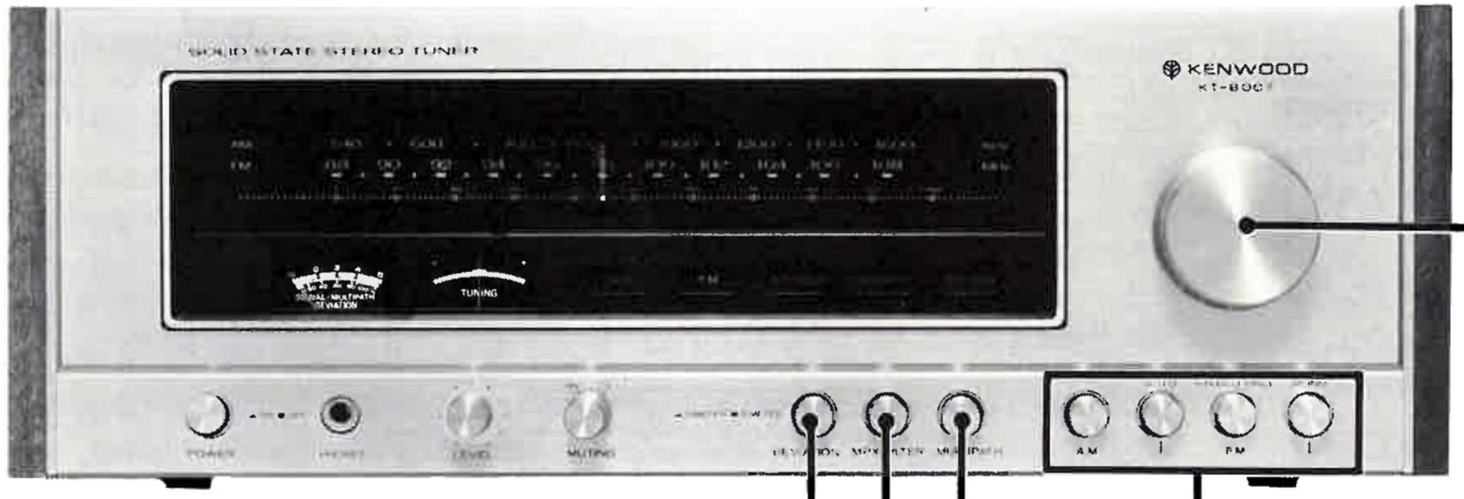
This knob adjusts the output level of the tuner.
Turn clockwise to increase. Adjust this control in accordance with the gain of your component amplifier.
Output level of the TAPE REC jacks and phones jack are not affected by the LEVEL control.

MUTING Switch

This switch silences interstation noise on the FM band. Position 1 completely eliminates this noise. This switch may also erase signals of weak and distant FM stations, so it should be turned OFF when you wish to tune in such stations.
If you wish to listen only to clear and strong FM stations and have no need to receive distortion-prone weak and distant FM stations, set this Muting switch to Position 2. This will completely eliminate all weak and distant stations. The MUTING indicator will light up whenever this switch is set to Positions 1 or 2.

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CONTROLS AND THEIR FUNCTIONS



TUNING knob

The TUNING knob selects the desired AM or FM station signal. Adjust it for maximum deflection of the SIGNAL meter as you listen to the sound output from the speaker. For FM broadcasts also, observe the TUNING meter to achieve good reception.

DEVIATION switch

The SIGNAL/MULTIPATH/DEVIATION meter functions as a Deviation meter when the DEVIATION switch is pushed in. It functions only during reception of an FM broadcast.
The DEVIATION lamp lights when this switch is pushed in.
(See page 11).

MPX FILTER switch

Unlike FM monaural reception, high frequency noise may sometimes be encountered when receiving FM stereophonic broadcasts.
The MPX FILTER in this tuner effectively cuts such noises. This switch has nothing to do with monaural reception.

MULTIPATH switch

The SIGNAL/MULTIPATH/DEVIATION meter functions as a multipath meter when the MULTIPATH switch is pushed in. Tune in an FM stereo station, depress the MULTIPATH switch and adjust the antenna direction for maximum deflection of the MULTIPATH meter. This indicates the best antenna position which offers the least multipath interference. This adjustment should be made only when an FM stereo broadcast is being received. The MULTIPATH meter does not function when an FM monaural or AM broadcast is being received.

SELECTOR switch

- **AM** – For AM reception.
- **FM AUTO** – For reception of both FM monaural and stereo signals. Automatic switching is performed between FM monaural and stereo sources. When an FM stereo broadcast is tuned in, the STEREO indicator lights up.
- **FM STEREO ONLY** – Use this position to select only FM stereo broadcasts. FM monaural broadcasts will not be heard.
- **FM MONO** – For FM monaural reception. When reception is noisy for very weak stereo signals from distant stations, it is recommended that the SELECTOR switch is set to FM MONO and the broadcast is received monophonically.

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OPERATING INSTRUCTIONS

AM-FM TUNING HINTS

(1) Refer to the diagram on page 4 and examine the connections of the AM-FM antenna, amplifier, speakers, source, etc.

(2) Set the VOLUME control of the amplifier to the minimum position and turn on the power switch. Then press the POWER switch of the KT-8007 on. (If the KT-8007 is connected to the SWITCHED outlet of the amplifier and is already switched on, it can be switched on and off only with the POWER switch of the amplifier.)

(3) On the amplifier's side, set the input selector switch to the TUNER position.

(4) Set the LEVEL control of the KT-8007 to MAXIMUM (Turn clockwise to increase) and listen to your desired broadcast (AM or FM AUTO).

(5) If you listen to the AM broadcast, set the SELECTOR switch to the AM position and turn the TUNING knob until the SIGNAL meter shows a maximum deflection at a certain tuning point. Stop turning the TUNING knob at the maximum point. Turn the VOLUME control of the amplifier gradually to increase the gain, and you will be able to hear the AM broadcast.

(6) To receive FM broadcasts, set the SELECTOR switch to the FM AUTO position. As you turn the TUNING knob, the SIGNAL meter will deflect when a station is received. Tune in the broadcast until the pointer of the TUNING meter settles at the center of the scale (at a point where distortion becomes minimal). Turn the VOLUME control of the amplifier clockwise gradually until the FM station is heard at a suitable level.

(7) The LEVEL control on the front panel of the KT-8007 is used to adjust this tuner's output level to that of other sources that may be connected to an amplifier. For example, this control is adjusted so that speaker volume will be the same when an amplifier's Input Selector switched back and forth between PHONO and TUNER.

NOTES:

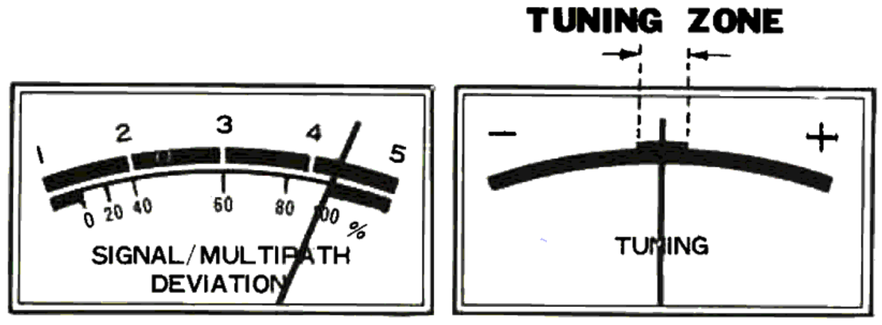
- Avoid placing this tuner on top of an amplifier. These components should be arranged side by side to avoid adverse effects that can be caused by excessive heat from amplifier operation at high outputs for a long period of time or from improper ventilation. For this reason, also avoid placing amplifiers in a closed box.

- Make it a point to press only one selector button switch at a time. The program source that is selected will be shown by the indicator lamp on the front panel if and when two or more buttons are pressed at the same time accidentally.

- FM MPX FILTER circuit blends a part of high frequency in to sub channel and cuts noise without affecting the main channel and frequency response so that FM stereo broadcasts can be received clearly. It slightly reduces high frequency separation.

- When reception is noisy for very weak stereo signals from distant stations, it is recommended that the SELECTOR switch be set to FM MONO and the broadcast received monophonically.

- Line voltage fluctuations may cause the TUNING meter pointer to shift slightly from the exact center position. There is no need to retune as long as the pointer remains within the tuning zone as shown in Figure 7.



Signal/Multipath/Deviation Meter FM Precision Tuning Meter

Figure 7.

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MAINTENANCE

ABOUT DEVIATION

The Deviation Meter is very handy for "air-checking" FM reception conditions and for tape recording FM broadcasts. Used in conjunction with the VU meter of the tape deck, it helps to prevent distortion that is caused by excessive input recording levels.

The Deviation Meter indicates the frequency deviation of an FM broadcast and degree of modulation in terms of ±75 kHz deviation at 100% modulation, and thus its swing pattern differs from that of the VU meter whose characteristics are closer to human hearing patterns and does not respond as well to pulse type and high frequency sounds. For ordinary music and sounds, best recording condition will be obtained if the recording level adjustment is made according to the average values of the two meters as shown in the table below.

It may be necessary to alter, to a certain extent, the level settings indicated in the table below depending on the type of tape used, also on the dynamic range handling capacity of the tape deck and/or the modulation degree of the broadcast being received.

Deviation Meter Indication (%)	100	80	60	40	20
VU Meter Indication (VU)	0	–2	–4.5	–8	–14

CONCERNING TRANSISTORS

Transistors differ fundamentally from radio vacuum tubes and require special attention to ensure their full performance capabilities. Given proper care, transistors will provide years of practically trouble-free performance.

(a) Avoid locations subject to direct sunlight.
(b) Avoid high or low temperature extremes.
(c) Keep the tuner away from heat-radiating sources.

GROUND

Although broadcasts can be received without a ground connection, it is recommended that a good ground connection be made to a buried grounding rod or water pipe to reduce interference and ensure safety. Never use a gas pipe for a ground connection, however.

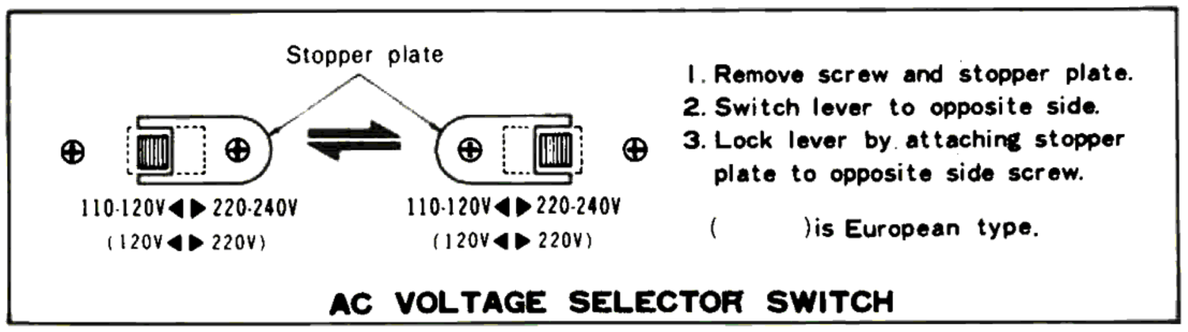
AC VOLTAGE SELECTION

The KT-8007 operates on 110 ~ 120 volt AC or 220 ~ 240 volt AC. The AC Voltage Selector Switch on the rear panel is set to the voltage that prevails in the area to which the tuners are shipped. Before operating this tuner make sure that the position of the AC Voltage Selector Switch matches your line voltage. If not, it must be changed to the proper setting.

To change, first disconnect the AC line cord. Then remove the stopper plate and slide the AC Voltage Switch to the opposite side. Then reattach the stopper plate to the other side.

NOTE:

Our warranty does not cover damage caused by excessive line voltage due to improper setting of the AC Voltage Selector Switch.



AC VOLTAGE SELECTOR SWITCH

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TROUBLE SHOOTING

INDICATIONS

In initially installing this tuner, improper connections may result in one of the following indications of trouble. Their possible causes and corrective measures are listed below to facilitate installation.

Occurs only during AM reception	Cause	Correction
Continuous low frequency buzz. Most noticeable at night on weak signal stations. Poor AM reception.	Interference from electrical appliances or atmospherics. In ferroconcrete buildings or in areas remote from the broadcasting station.	Erecting a 10 meter outdoor antenna and securing good ground conditions should reduce interference considerably. Complete elimination is difficult. An outdoor antenna necessary.
Continuous high frequency whine which increases at night.	TV interference. 10 kHz beat interference from adjacent AM station.	Turn TV off. (Neighboring TV set may also be cause.) Impossible to eliminate from tuner side. This is one disadvantage of the AM broadcast system. Use High Filter to cut off high frequency interference amplifier side.
Intermittent buzzing or sharp crackling noise.	Lightning interference. Interference from fluorescent lamps. AC plug connection.	Usually unavoidable in certain areas. Occurs when lamps are on and cannot be helped. Try reversing AC plug connections. Occurs only on certain stations due to high voltage power line and cannot be helped in many areas.
Interference from amateur stations.	Called BCI, this interference results from neighboring amateur stations. (Also occurs on FM)	Consult interfering station operator or authorities concerned.
Occurs only during FM reception	**Cause**	**Correction**
Continuous hiss or buzzing interference with broadcast. Becomes louder during stereo.	Incoming signal too weak at ANT terminal.	Erect outdoor FM antenna if only indoor dipole antenna is used. A 5 or 7 element antenna is necessary if you are located at a considerable distance from the broadcasting station.
Occasional sharp buzzing or crackling noise.	Automobile ignition noise. More noticeable on weak signals.	Erect outdoor FM antenna as far away from roads as practicable.
Weak right channel response when listening to LEFT only test FM Stereo broadcast.	Called crosstalk, a very slight response is normal.	It is not a sign of trouble. It cannot be reduced to zero.
FM Automatic Circuit fails to respond to stereo broadcast.	Incoming signal is exceptionally weak.	Erect an FM outdoor antenna.

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KT-8007 SPECIFICATIONS

FM TUNER SECTION

Usable Sensitivity (IHF)	1.5 μV
Quieting Slope	3 μV 55 dB, 10 μV 65 dB, 50 μV 73 dB
Frequency Response	50 Hz ~ 15 kHz + 0 dB ~ −1.3 dB
Harmonic Distortion	0.15% Mono (at 400 Hz 100% modulation)
	0.2% Stereo (at 400 Hz 100% modulation)
Signal to Noise Ratio	75 dB at 1 mV input
Image Rejection	100 dB
Selectivity (IHF ALT channel)	100 dB
IF Rejection	100 dB
Spurious Signal Rejection	110 dB
AM Suppression	65 dB
Capture Ratio	1 dB
Stereo Separation	47 dB at 1,000 Hz
	38 dB at 10,000 Hz
Subcarrier Suppression	65 dB
Antenna Impedance	300 ohms Balanced & 75 ohms unbalanced

AM TUNER SECTION

Usable Sensitivity (IHF)	13 μV
Signal To Noise Ratio	50 dB at 1 mV input
Image Rejection	70 dB
Selectivity (IHF)	35 dB
IF Rejection	70 dB
Antenna	Built-in ferrite bar antenna, External antenna terminals

OUTPUT VOLTAGE

FM (at 400 Hz 100% modulation)	1.5 V
AM (at 400 Hz 30% modulation)	0.15 V
Multi-path Output V & H	0.13V, V 30 k ohms, H 130 k ohms

GENERAL

Switches	SELECTOR, AM, FM AUTO,
	FM STEREO ONLY, FM MONO
Others	Muting 1.2, Deviation, Multipath, MPX Filter,
	Output Level
Power Consumption	25 watts
Dimensions	W : 17-1/8" (435 mm)
	H : 6-3/16" (157 mm)
	D : 11-13/16" (300 mm)
Weight	19.6 lbs (8.9 kg)

NOTE: Any of the specifications given here may be changed or modified without notice.

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NOTES

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