AM-FM STEREO RECEIVER

# KR-3090

INSTRUCTION MANUAL


*the sound approach to quality*

KENWOOD

# INTRODUCTION

The purpose of this manual is to acquaint you with the operating features of this unit. 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 through this manual carefully. Knowing how to set up the unit, 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 the unit to meet your special requirements.

## SERIAL NUMBER

Record your SERIAL NUMBER on the spaces designated on the warranty card. You will find the serial number on the back of the unit.

## AFTER UNPACKING

After unpacking, we recommend you inspect and examine the unit for any possible shipping damage. If your unit is damaged or fails to operate, notify your dealer immediately. If your unit was shipped to you directly, notify the shipping company without delay. Only the consignee (the person or company receiving the unit) can file a claim against the carrier for shipping damage.

We recommend you retain the original carton and packing materials to prevent any damage should you transport or ship your unit in the future.

## INSTALLATION PRECAUTIONS

a) Avoid locations subject to direct sunlight.
b) Avoid high or low temperature extremes.
c) Keep the unit away from heat radiating source.
d) Choose stable locations with as little vibration and dust as possible.

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

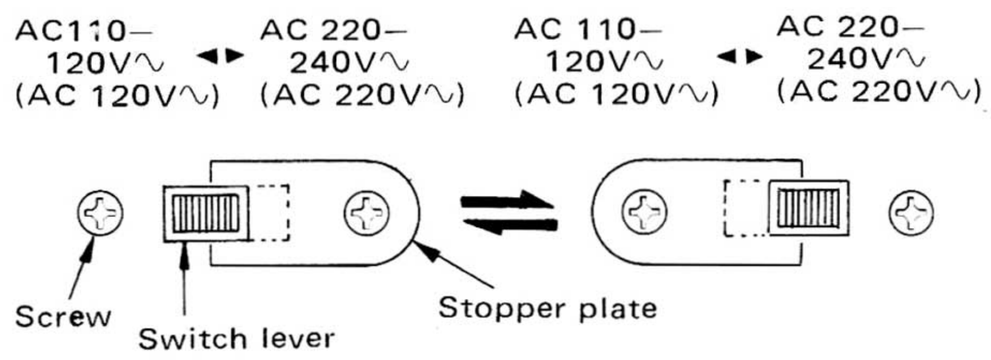
## IMPORTANT!

1. Units shipped to U.S.A. and Canada are designed to operate on 120 volts AC only.
   They are not equipped with an AC Voltage Selector Switch and the following description on such a switch should be disregarded.
2. Units shipped to all other countries are equipped with an AC Voltage Selector Switch on the rear panel. The following description should be carefully read.

## AC VOLTAGE SELECTOR

This unit operates on 110 – 120 volts or 220 – 240 volts AC. The AC Voltage Selector Switch is set to the AC voltage generally available in the country where it is shipped. Before connecting the power cord to your AC outlet, make sure that the setting position of this switch matches your AC voltage. If not, it must be properly changed in accordance with the directions below.

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




1. Remove screw and stopper plate.
2. Slide switch lever to your AC voltage.
3. Lock switch lever with stopper plate and screw.

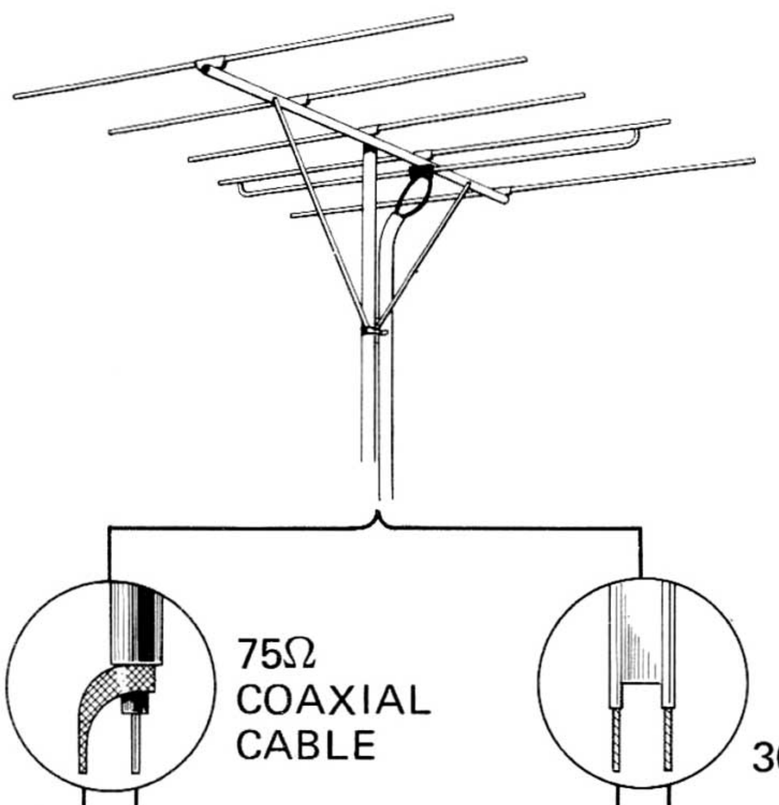
( ) European type

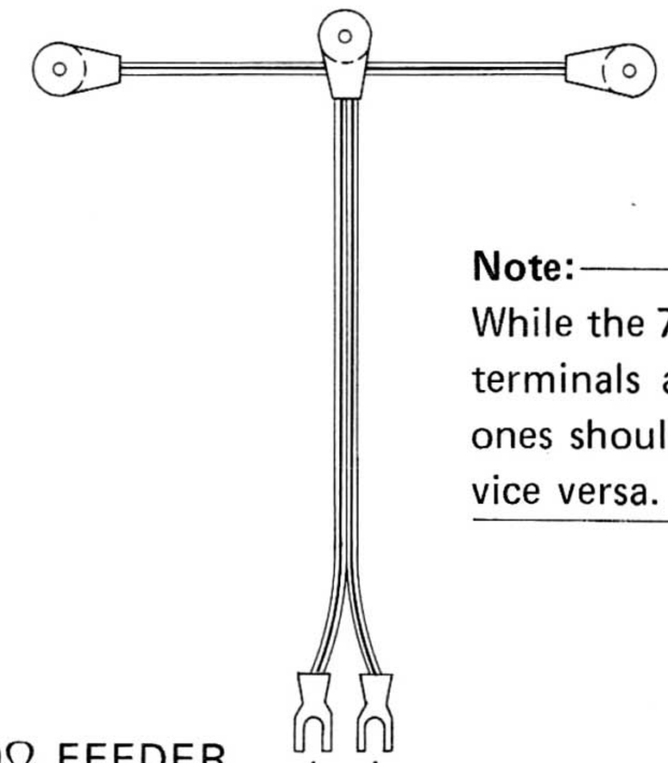
**AC Voltage Selector Switch**

## CLEANING PRECAUTIONS

Do not use volatile liquid such as alcohol, thinner, gasoline, benzine, etc., when cleaning the unit surface. Use silicon cloth or soft dry cloth.

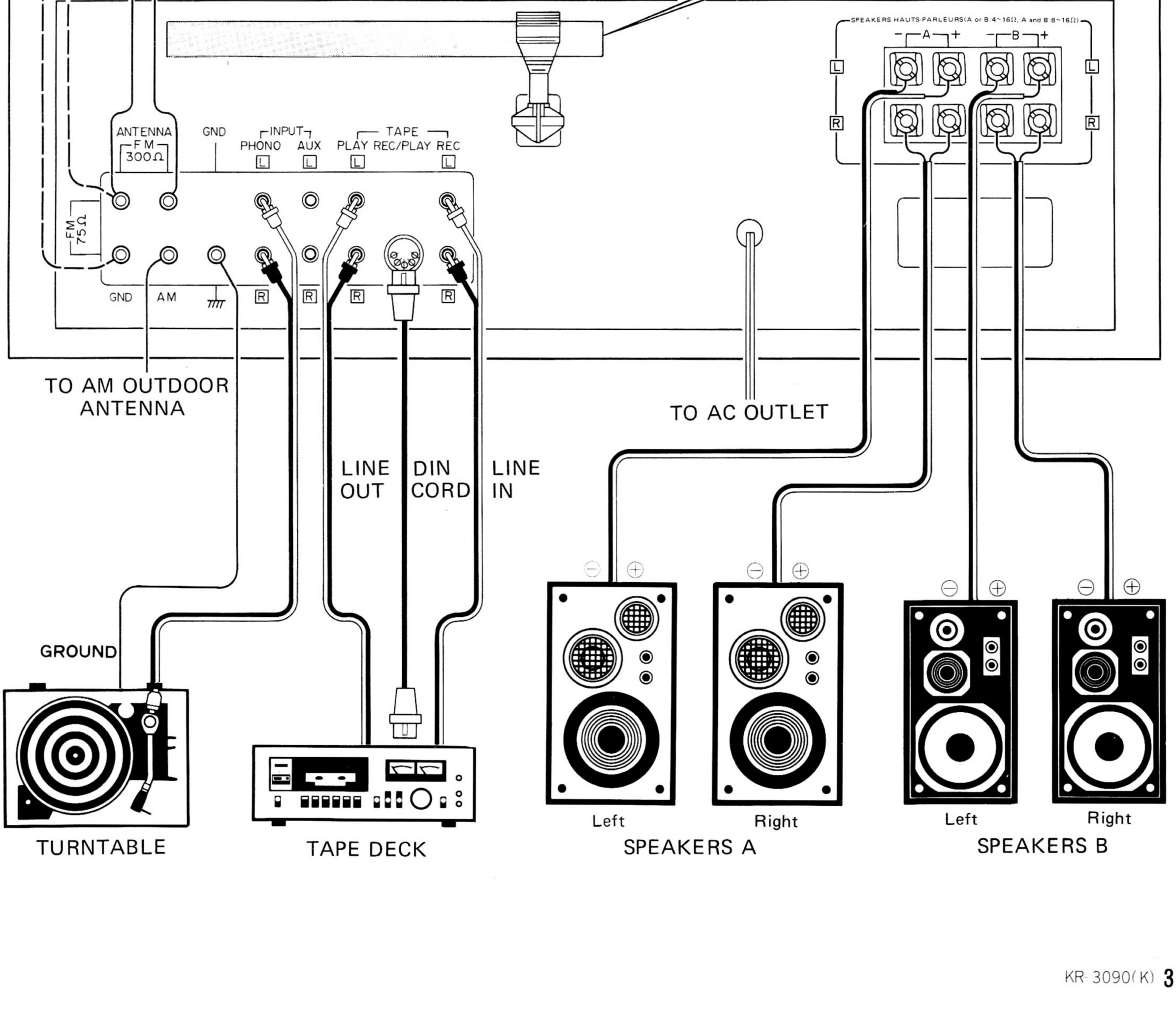
# INTERCONNECTING DIAGRAM




**Note:**
While the 75Ω FM ANTENNA terminals are used, the 300Ω ones should not be used and vice versa.

AM FERRITE BAR ANTENNA
See page 5.



# CONNECTING INSTRUCTIONS

Carry out the connecting instructions, referring to "INTERCONNECTING DIAGRAM" on page 3.

## SPEAKER

In connecting only one pair of speakers, connect the left speaker to [L] and the right speaker to [R] of the SPEAKERS A terminals. Should (+) or (–) of either left or right channel be reversely connected, sounds at the center section will be adversely affected by the lack of separation. When connecting speaker leads to speaker terminals, make sure that bare wires at speaker lead tips do not touch the adjacent terminal. It is recommended that bare wires of individual speaker lead tips are soldered or they are stranded together to eliminate any possibility of short-circuits forming in the speaker connecting network.

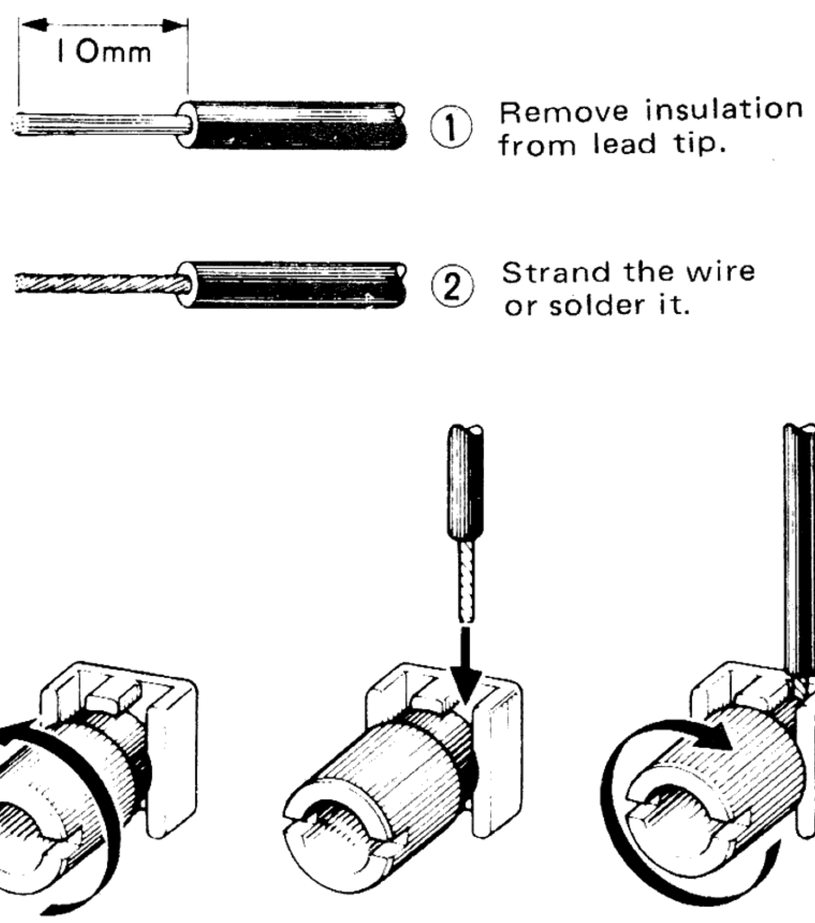
In connecting an additional pair of speakers, connect the left speaker to [L] and the right speaker to [R] of the SPEAKERS B terminals.

**Note:**

Each speaker impedance should be as below:

i) 4 ohms or more ..... when only one pair of speakers are used,

ii) 8 ohms or more ..... when two pairs of speakers are simultaneously used (A + B).




**Speaker Lead Connection**

**Phasing of the Speakers**

Speaker phasing can be determined in the following manner:

1. Set the SELECTOR switch to "FM-MONO".
2. Adjust the VOLUME control to your desired listening level.
3. If the sound comes directly from the front, the speakers are in phase. If the sound comes from both sides and there is a noticeable loss in low frequencies, the speakers are out of phase. In this case, reverse the leads on one speaker.

## TAPE DECK

### Playback

Connect the left channel output of the tape deck to [L] and the right channel output of the tape deck to [R] of the TAPE PLAY jacks.

### Recording

Connect the left channel input of the tape deck to [L] and the right channel input of the tape deck to [R] of the TAPE REC jacks.

### DIN Connector

If your tape deck is equipped with a DIN connector, connect it to the TAPE REC/PLAY connector with a DIN connecting cord. A DIN connector enables recording and playback with this single cord. The DIN connector corresponds to the TAPE PLAY and TAPE REC jacks. The signal must be controlled with the TAPE switch on the front panel.

**Note:**

While a DIN cord is connected, the TAPE PLAY and TAPE REC jacks should not be used.

## TURNTABLE

Two shielded audio cables from your stereo turntable are normally terminated with phono plugs. Connect the left channel of the turntable to [L] and the right channel to [R] of the INPUT PHONO jacks. If the turntable has a grounding wire, connect it to the unit's GND terminal to avoid hum.

## AUX JACKS

High level INPUT AUX jacks are for miscellaneous sources, such as extra tape decks, TV sound outputs, and other external components.

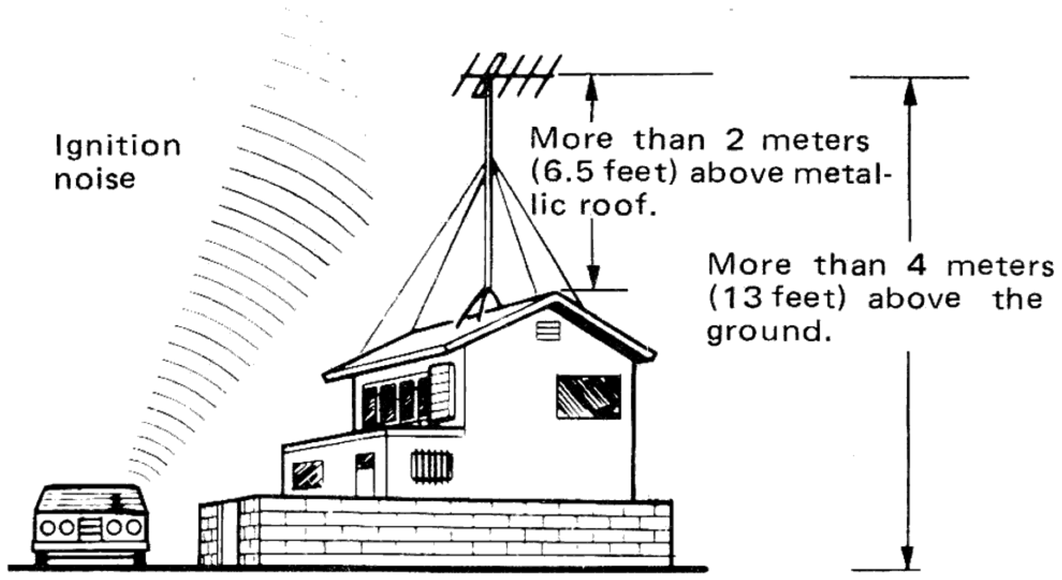
# CONNECTING INSTRUCTIONS

## FM INDOOR ANTENNA

In areas close to the transmitting station, the supplied T-type antenna may suffice. Spread two arms of the antenna horizontally and position them for the best reception, listening to an FM station. The antenna can then be taped to a wall or ceiling and must not be rounded nor folded. It should be remembered, however, that the pickup of reflections (similar to "ghosts" on TV) will result in poor stereo reception. These reflections must be reduced to a minimum, either by careful orientation of the T-type antenna or, if this will not eliminate them, by using a more directional outdoor antenna.

## FM OUTDOOR ANTENNA

In areas at a greater distance from the transmitting station, the use of an outdoor antenna is highly recommended. Erect it, referring to the figure below. It is available in various types. For reception of stations located 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 the unit.

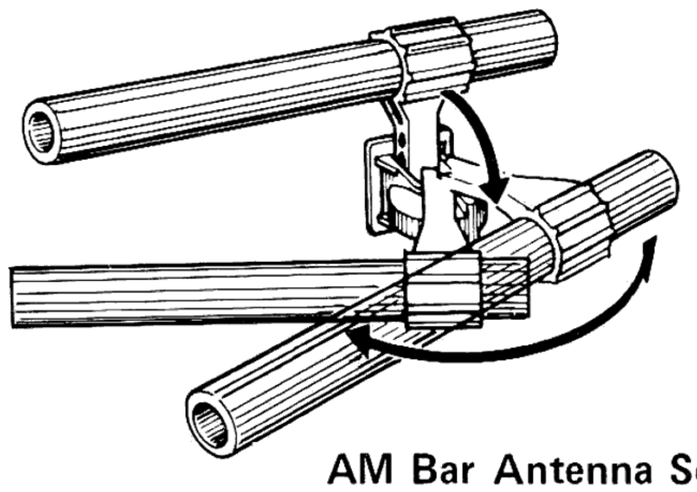



- Keep the antenna away from roads to avoid ignition noise. The coaxial cable will bring better results.
- Keep the antenna at least 2 meters (6.5 feet) distant from ferroconcrete buildings and other antennas.
- Keep the antenna feeder or coaxial cable away from other structure not to touch directly.
- Make the antenna feeder or coaxial cable as short as possible.
- The antenna feeder or coaxial cable must not be folded nor rounded.

**FM Outdoor Antenna Erection**

## AM BAR ANTENNA

Position the ferrite bar antenna for best reception, listening to an AM broadcast. It has high sensitivity and assures optimum AM reception.



Keep the AM ferrite bar antenna away from the rear panel.

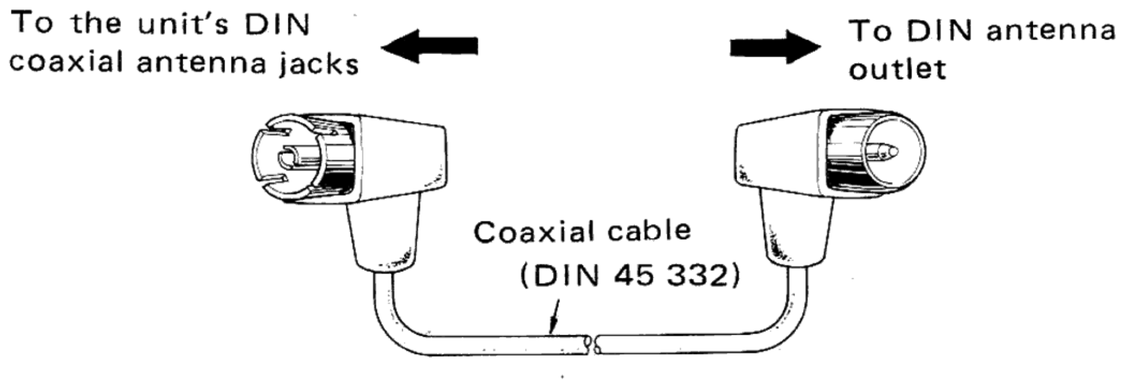
**AM Bar Antenna Setting**

## AM OUTDOOR ANTENNA

In fringe areas or in locations surrounded by ferroconcrete buildings where satisfactory reception can not be obtained with the ferrite bar antenna, an AM outdoor antenna should be erected.

## DIN COAXIAL TYPE ANTENNA JACKS

The jacks are equipped on the rear panel of the unit shipped to a European country. Use a DIN-type antenna connector (shown below) when connecting them to your DIN antenna outlet.




**DIN-Type Antenna Connector**

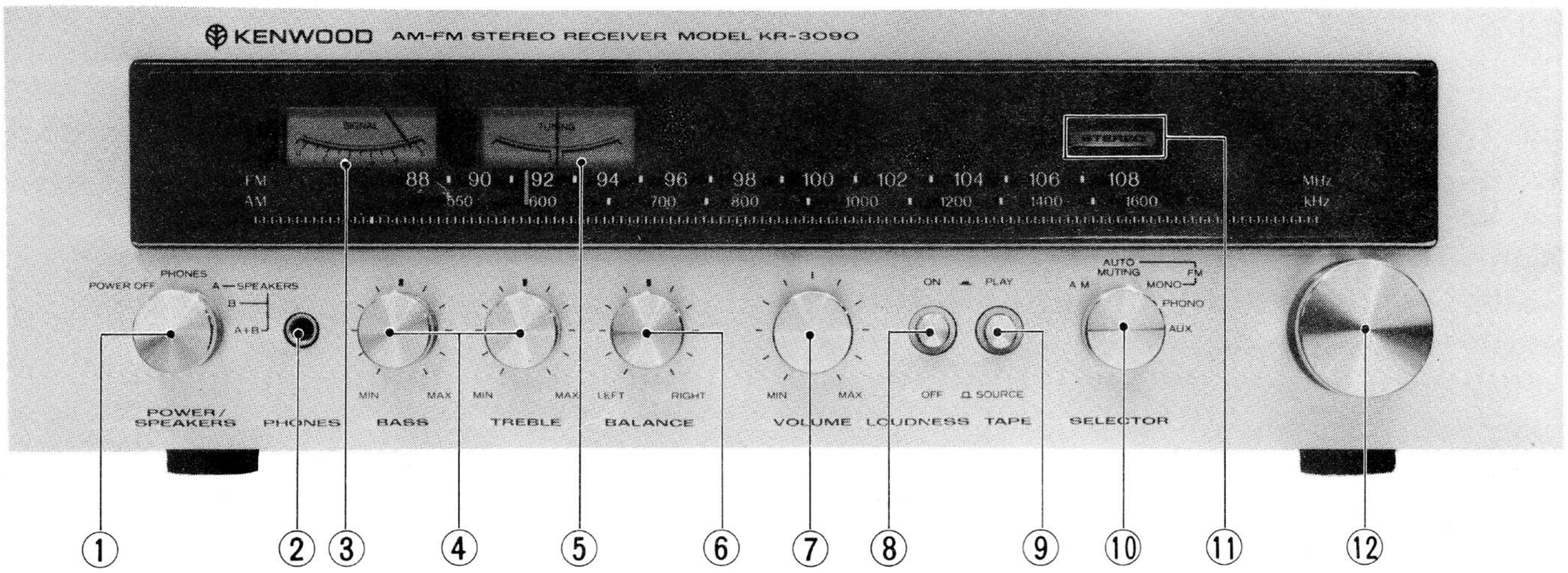
## AC OUTLET

The AC outlet on the rear panel can be used to supply power to other components such as a turntable, tape deck, etc. Never connect here any equipment whose power consumption exceeds the capacity of each outlet.

- SWITCHED – This is 100 watts maximum in capacity and is controlled by the POWER switch on the front panel.
- UNSWITCHED – This is 200 watts maximum in capacity and is available at all times.

**Note:** Units shipped to European countries are not equipped with AC outlets.

# CONTROLS AND FUNCTIONS




## ① POWER/SPEAKERS switch

**POWER OFF** – The unit is turned off.

**PHONES** – The unit is turned on and the dial scale is lit. Headphones can be used and speakers are silenced.

**A** – Speakers connected to the SPEAKERS A terminals are listened.

**B** – Speakers connected to the SPEAKERS B terminals are listened.

**A+B** – Speakers connected to the SPEAKERS A and B terminals are listened simultaneously.

## ② PHONES jack

Insert a stereo headphone plug into this jack for private listening.

## ③ SIGNAL meter

This meter indicates signal strength of FM or AM.

## ④ BASS and TREBLE controls

Tone is flat in the center position (bold mark).

**BASS** – Low frequencies are increased when this control is turned clockwise, and decreased counterclockwise.

**TREBLE** – High frequencies are increased when this control is turned clockwise, and decreased counterclockwise.

## ⑤ TUNING meter

This meter indicates FM tuning conditions.

## ⑥ BALANCE control

This control adjusts unequal volumes in left and right channels. Turn it from center position toward left when accentuating left channel and conversely.

## ⑦ VOLUME control

This control adjusts simultaneously volumes in left and right channels.

## ⑧ LOUDNESS switch

This switch boosts bass tones at low listening levels. Our ears have less sensitivity to low frequencies at low listening levels and this switch compensates for this deficiency. Use the "OFF" position when listening at normal and high levels.

## ⑨ TAPE switch

**SOURCE** – The source signal is heard and recorded.

**PLAY** – A tape deck connected to the TAPE jacks is played back. Also, the recording in this tape deck is monitored.

**Note:**

Be sure to set the TAPE switch to "SOURCE" when not operating the tape deck.

## ⑩ SELECTOR switch

**AM** – AM broadcast is reproduced.

**FM-AUTO MUTING** – FM broadcast is reproduced in stereo or mono. Automatic switching operates between stereo and mono signals. Also, interstation noise on FM band is silenced and weak signal may be silenced.

**FM-MONO** – FM broadcast is reproduced in mono. Use this position when receiving weak signal, and broadcast will be enjoyed with less noise. Meantime, weak signals silenced in the "FM-AUTO MUTING" position can be received, as the case may be.

**PHONO** – A turntable connected to the INPUT PHONO jacks is operated.

**AUX** – A source connected to the INPUT AUX jacks is heard.

## ⑪ STEREO indicator

This indicator lights while the SELECTOR switch is set to "FM-AUTO MUTING" and FM stereo broadcast is received.

## ⑫ TUNING knob

This knob selects FM or AM station desired.

# OPERATING INSTRUCTIONS

Prior to turning on the unit, set each control and switch as below:

- TAPE ——► "SOURCE"
- LOUDNESS ——► "OFF"
- VOLUME ——► "MIN"
- BALANCE ——► Center Position
- TREBLE ——► Center Position
- BASS ——► Center Position

Then, turn on the unit and set the SPEAKERS switch to "PHONES", "A", "B" or "A + B" in accordance with the item to be operated.

## FM RECEPTION

1. Set the SELECTOR switch to "FM-AUTO MUTING".
2. Turn the TUNING knob to select your station desired. Best reception is available when the SIGNAL meter pointer deflects to the extreme right and the TUNING meter pointer is exactly in the center of the scale.
3. Adjust the volume and the tonality.

## AM RECEPTION

1. Set the SELECTOR switch to "AM".
2. Turn the TUNING knob to select your station desired. Best reception is available when the SIGNAL meter pointer deflects to the extreme right.
3. Adjust the volume and the tonality.

## TAPE DECK

### Playback

1. Set the TAPE switch to "PLAY". The SELECTOR switch can be in any position.
2. Operate the tape deck. Adjust the volume and the tonality.

### Monitoring

If you use the unit with 3-head type tape decks, you can check the sound quality of the recording by momentarily comparing the recorded sound with the source sound as follows:

- Set the TAPE switch to "PLAY" to monitor the recorded sound.
- Set the TAPE switch to "SOURCE" to monitor the source sound before recorded.

### Recording

1. Set the SELECTOR switch to your program source desired.
2. Set the selected program source (component) in operation.
3. Operate the tape deck. Recording level should be adjusted with its volume control.

**Note:**

Recording is not affected by the unit's control and switch such as VOLUME, BASS, TREBLE and LOUDNESS.

### Tape-To-Tape Dubbing (Duplicating)

The dubbing can be easily made with two tape decks.

1. Set the SELECTOR switch to "AUX".
2. Connect the outputs of a tape deck to the AUX jacks and load a recorded tape as the program source on it. Operate the tape deck.
3. Operate the tape deck connected to the TAPE jacks. Recording level should be adjusted with its volume control.

## TURNTABLE

1. Set the SELECTOR switch to "PHONO".
2. Operate the turntable.
3. Adjust the volume and the tonality.

## AUX JACKS

1. Set the SELECTOR switch to "AUX".
2. Operate the component connected.
3. Adjust the volume and the tonality.

# BEFORE ASKING SERVICE

When the unit does not operate as desired, it is often considered to have a trouble. In most cases, however, this is attributable to improper connecting of cord, lead, feeder, etc., and/or improper setting of switch and control.
Re-check your unit before asking service, referring to the table below.

| | SYMPTOM | CORRECTION |
|---|---|---|
| AM | Continuous low frequency buzz. Most noticeable at night on weak signal stations. Poor AM reception. | Erecting an outdoor antenna (about 10 meters/33 feet) and securing good ground conditions can reduce interference considerably. Complete elimination is difficult. |
| | Continuous high frequency whine increases at night. | Turn off TV. (Neighboring TV set may also be the cause). Impossible to eliminate from the unit side. |
| FM | Continuous hiss or buzzing interference with broadcast. Becomes louder during stereo. | Erect FM outdoor antenna if only indoor T-type is used. An antenna with more than five elements is necessary if you are located at a considerable distance from the transmitting station. |
| | Occasional sharp buzzing or crackling noise. More noticeable on weak signals. | Caused by automobile ignition. Erect FM outdoor antenna as far away from roads as practicable. |
| | FM automatic circuit fails to respond to stereo broadcast. | Incoming signal extremely weak. Erect FM outdoor antenna. |
| AM, FM or Turntable | No illumination and no sound though POWER switch is on. | Check power plug connection |
| | No sound from left and right. | Check connections from the unit output to speakers. Set VOLUME control to appropriate level. Always set TAPE switch to "SOURCE" when not using tape decks. |
| | Sound only from one side. | Check the unit output and speakers connections. Adjust BALANCE control. |
| Turntable | No sound from left and right or sound only from one side. | See that turntable output cord is firmly plugged into the unit input. |
| | Sound audible but background hum occurs. | Keep turntable output cord away from AC cords. Choose cord paths which keep hum at a minimum. Twist left and right turntable output cords together. Reverse turntable AC plug connections. Connect turntable groundwire to GND terminal. |
| | Howling noise occurs when volume is raised or bass response is increased. | Increase distance between turntable and speakers. Choose speaker locations carefully. Remember, loose flooring induces howling. |

# SPECIFICATIONS

## AMPLIFIER SECTION

**Power Output**

**26 watts* per channel, minimum RMS both channels driven, at 8 ohms from 20 to 20,000 Hz with no more than 0.1% total harmonic distortion.**

**Both Channel Driven** . . . . . 27 + 27 watts 8 ohms at 1,000 Hz
30 + 30 watts 4 ohms at 1,000 Hz
**Dynamic Power Output** . . . . . 100 watts 4 ohms
**Total Harmonic Distortion** . . . 0.1% at rated power into 8 ohms
0.05% at 1 watt into 8 ohms
**Intermodulation Distortion (60 Hz : 7 kHz 4 : 1)** . . . 0.1% at rated power into 8 ohms
0.05% at 1 watt into 8 ohms
**Power Bandwidth** . . . . . 10 Hz to 50,000 Hz
**Damping Factor** . . . . . 40 at 8 ohms
**Speaker Impedance** . . . . . Accept 4 ohms to 16 ohms
**Input Sensitivity/Impedance/Signal to Noise Ratio (IHF A Curve)**
**Phono** . . . . . 2.5 mV/50 k ohms/ 77 dB
**AUX** . . . . . 150 mV/45 k ohms/100 dB
**Tape** . . . . . 150 mV/45 k ohms/100 dB
**Maximum Input Level for Phono** 160 mV (RMS), T.H.D. 0.1% at 1,000 Hz
**Output Level/Impedance** . . . .
**Tape REC (Pin)** . . . . . 150 mV / 100 ohms
**(DIN)** . . . . . 30 mV / 80 k ohms
**Frequency Response**
**Phono** . . . . . RIAA standard curve ±0.5dB
**AUX & Tape** . . . . . 20 Hz to 50,000 Hz +0.5dB −1.0dB
**Tone Control**
**Bass** . . . . . ±8 dB at 100 Hz
**Treble** . . . . . ±8 dB at 10 kHz
**Loudness Control (−30 dB)** . . +10 dB at 100 Hz

## FM TUNER SECTION (IHF)

**Usable Sensitivity** . . . . . 11.2 dBf (2.0 μV)
**50 dB Quieting Sensitivity**
**Mono** . . . . . 15.6 dBf (3.3 μV)
**Stereo** . . . . . 36.1 dBf (35 μV)
**Signal to Noise Ratio at 65 dBf**
**Mono** . . . . . 76 dB
**Stereo** . . . . . 72 dB
**Total Harmonic Distortion**
**Mono** . . . . . 0.2%
**Stereo** . . . . . 0.3%
**Frequency Response** . . . . . 20 Hz to 15,000 Hz +1.0 dB −2.0 dB
**Capture Ratio** . . . . . 1.5 dB
**Image Response Ratio** . . . . . 60 dB
**Spurious Response Ratio** . . . . 75 dB
**IF Response Ratio** . . . . . 90 dB
**Alternate Channel Selectivity** . . 54 dB
**AM Suppression Ratio** . . . . . 55 dB
**Stereo Separation Ratio** . . . . . 43 dB at 1,000 Hz
35 dB at 50 Hz to 10,000 Hz
**Sub Carrier Product Ratio** . . . 40 dB
**Antenna Impedance** . . . . . 300 ohms balanced & 75 ohms unbalanced
**FM Frequency Range** . . . . . 88 MHz to 108 MHz

## AM SECTION

**Usable Sensitivity** . . . . . 20 μV
**Signal to Noise Ratio** . . . . . 50 dB
**Image Rejection** . . . . . 50 dB
**Selectivity** . . . . . 35 dB

## GENERAL

**Power Consumption** . . . . . 240 watts at full power
**AC Outlet** . . . . . Switched 1, Unswitched 1
**Dimensions** . . . . . W 18-7/16" (468 mm)
H 5-1/2" (140 mm)
D 13-11/16" (348 mm)
**Weight (Net)** . . . . . 16.5 lb (7.5 kg)
**(Gross)** . . . . . 18.7 lb (8.4 kg)

* Measured pursuant to Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifier in U.S.A.

**Note:** Kenwood follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

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