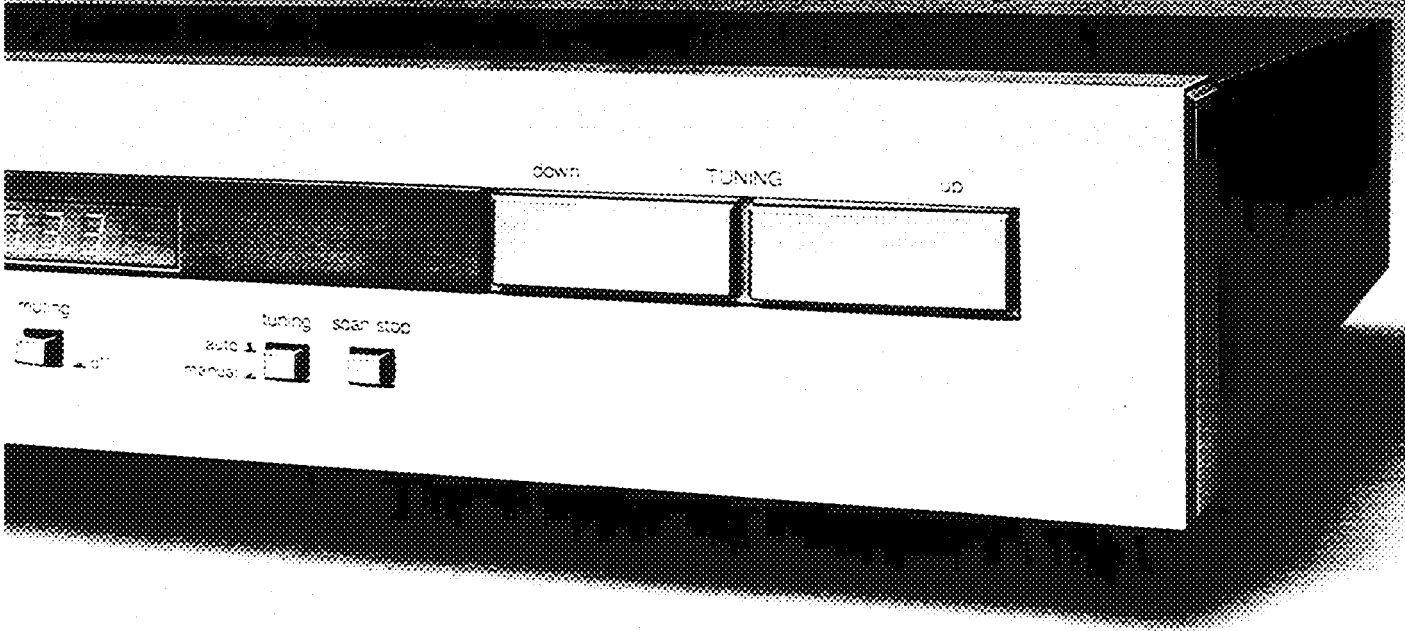


**harman/kardon**

DIGITAL SYNTHESIZED QUARTZ-LOCKED TUNER

# TU615

owner's manual



Your investment in a component high fidelity system indicates you have a more than average interest in music. The fact that your investment includes a Harman Kardon TU615 Digital Synthesized Quartz-locked Tuner shows us your appreciation of uncompromised reproduction of the music you enjoy. Throughout the design and manufacture of this unit, we made every effort to assure it will meet all your expectations. To ensure continuing high performance, read this manual carefully before you connect and operate your TU615.

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

# Features

- Phase lock loop (PLL) digital frequency synthesizer for stabilized reception and easy operation.
- Automatic scanning with short-time holding function for easy tuning to the desired station, and manual scanning for weak signal reception.
- One-touch tuning by PRESET button operation. Up to 6 stations can be memorized for each of the FM and AM bands.
- Memory backup by capacitor to maintain the contents for about 1 week even when the AC cord is disconnected.

- Special design for clear AM reception with excellent selectivity by reduction of beat interference from adjacent channels and marked improvement of interfrequency rejection ratio.
- Adoption of high quality ceramic filters in 3 stages for sonic improvement in FM reception with minimum distortion.
- Improvement of S/N ratio by a microcomputer having phase compensator for outside the audio frequency band.
- Simple slim design laying stress on easy operation.

# General Instructions

## Always use at 120V AC

This unit is designed for use at 120V AC.

Do not connect the unit to an outlet supplying a higher voltage to prevent fire.

## Handle the AC cord carefully

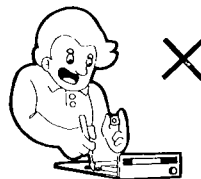
- Always hold the plug when disconnecting the AC cord from the outlet. Pulling at the cord may cause discontinuity.
- If the unit is not used for a prolonged period, disconnect the plug from the outlet.
- Do not place or drop a heavy material such as furniture on the cord. Otherwise, the cord may be damaged to cause fire or shock hazard.



★ Always disconnect the plug from the outlet before making connections with other components.

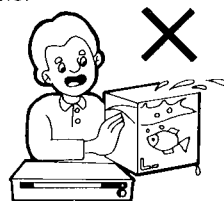
## Do not open the cabinet

To prevent shock hazard or unexpected trouble, do not tamper with internal components for inspection or maintenance. Harman Kardon does not guarantee performance degradation resulting from any modification.



## When water or a metal piece enters the unit

When water, a hair pin or wire accidentally enters the unit, immediately extract the AC plug from the outlet to prevent shock or trouble.



## Carry the unit carefully

Do not mistake the ferrite loopstick AM antenna for a handle. Its bracket cannot support the unit.

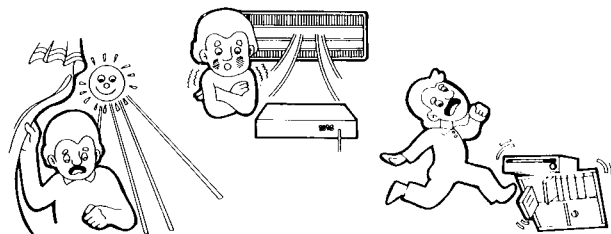
# Locations for Installation

Install the TU615 on a firm level base.

Avoid the following locations;

- Place exposed to direct sunlight or near a heat source
- Place exposed to excessive moisture
- Cold place such as near a cooling air outlet
- Dusty place
- Place exposed to excessive vibration
- Poorly ventilated place

Do not place other components on top of the TU615.



When piling with other components, carefully plan so as not to obstruct heat radiation from a pre-mainamplifier or mainamplifier. Use of a Harman Kardon audio rack is recommended.

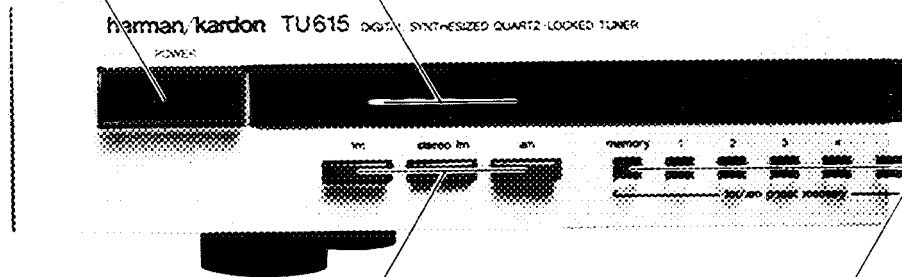
# Components and Their Functions

## 1 POWER SWITCH (POWER)

For power turning on and off.  
When this switch is pressed after AC cord connection to an outlet, the STATION DISPLAY indicates the receiving frequency.

## 2 SIGNAL STRENGTH INDICATOR (signal)

5 LEDs for indication of the receiving signal level. As the signal gets stronger, more LEDs will illuminate.

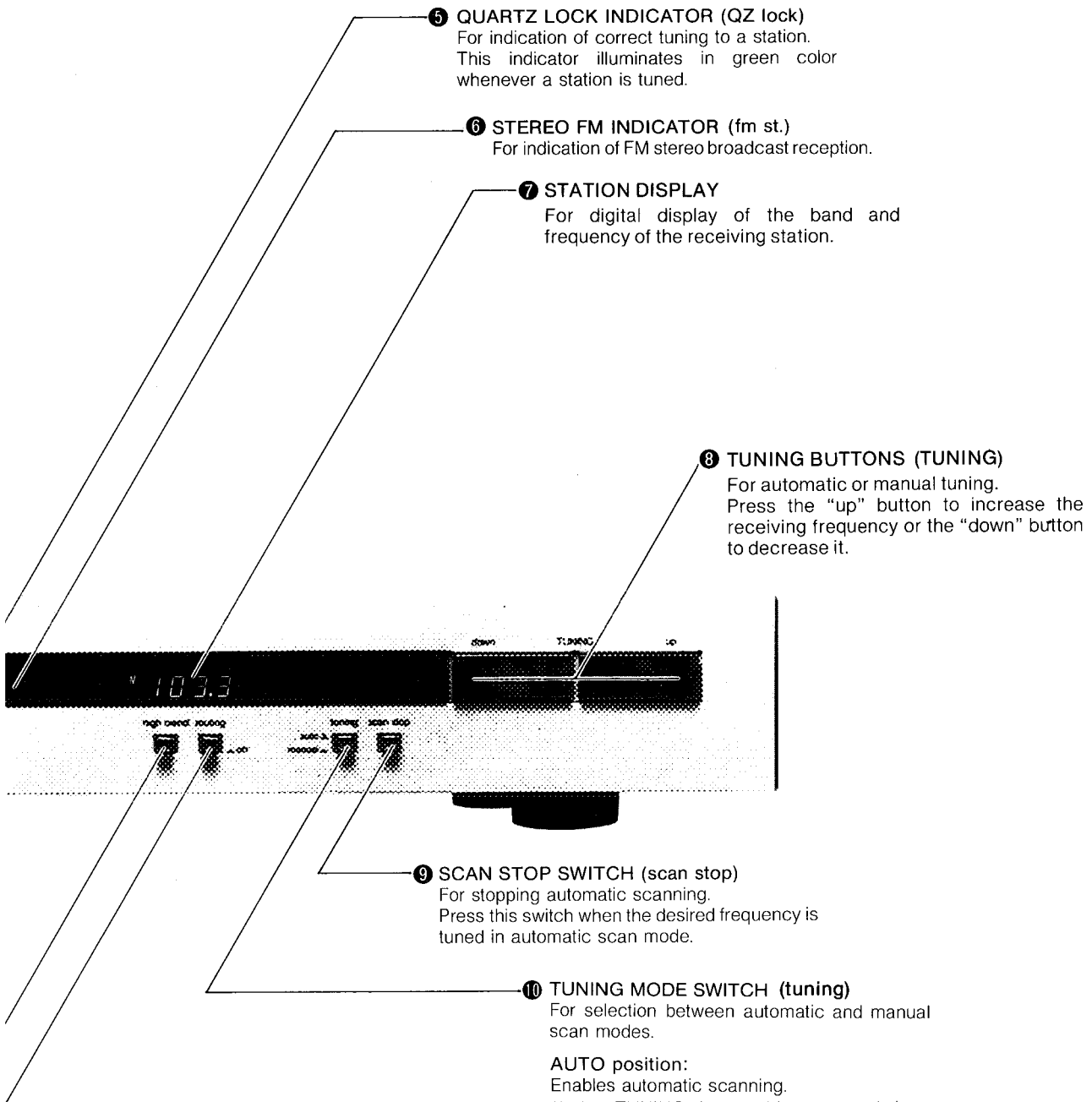


## 3 FUNCTION SELECTORS

- **FM selector (fm)**  
For selection of FM mode.  
Depress this selector to tune to an FM monaural broadcast or a weak FM stereo broadcast.
- **STEREO FM selector (stereo fm)**  
For selection of FM stereo mode.  
Depress this selector to tune to an FM stereo broadcast. The tuner will automatically enter monaural mode when it receives a monaural broadcast.
- **AM selector (am)**  
For selection of AM mode.  
Depress this selector to tune to an AM broadcast.

## 4 FM/AM PRESET MEMORY BUTTONS (fm/am preset memory)

- **MEMORY button (memory)**  
To enable PRESET buttons.  
Press this button to start presetting of a broadcasting station. The button itself illuminates in green color for about 5 seconds.
- **PRESET buttons (1, 2, 3, 4, 5, 6)**  
For memorizing and recalling broadcasting frequencies.  
Press one of these buttons while the MEMORY pushbutton is illuminating. The pressed PRESET button illuminates in green color and the frequency indicated by the STATION DISPLAY is memorized at the position. Each position can memorize one frequency each in the FM and AM bands. The pressed button keeps illuminating until scanning starts. Once a station frequency is memorized, it can be recalled any time the same button is pressed. See Preset Memory Operation for details.



**5 QUARTZ LOCK INDICATOR (QZ lock)**  
 For indication of correct tuning to a station.  
 This indicator illuminates in green color  
 whenever a station is tuned.

**6 STEREO FM INDICATOR (fm st.)**  
 For indication of FM stereo broadcast reception.

**7 STATION DISPLAY**  
 For digital display of the band and  
 frequency of the receiving station.

**8 TUNING BUTTONS (TUNING)**  
 For automatic or manual tuning.  
 Press the "up" button to increase the  
 receiving frequency or the "down" button  
 to decrease it.

**9 SCAN STOP SWITCH (scan stop)**  
 For stopping automatic scanning.  
 Press this switch when the desired frequency is  
 tuned in automatic scan mode.

**10 TUNING MODE SWITCH (tuning)**  
 For selection between automatic and manual  
 scan modes.

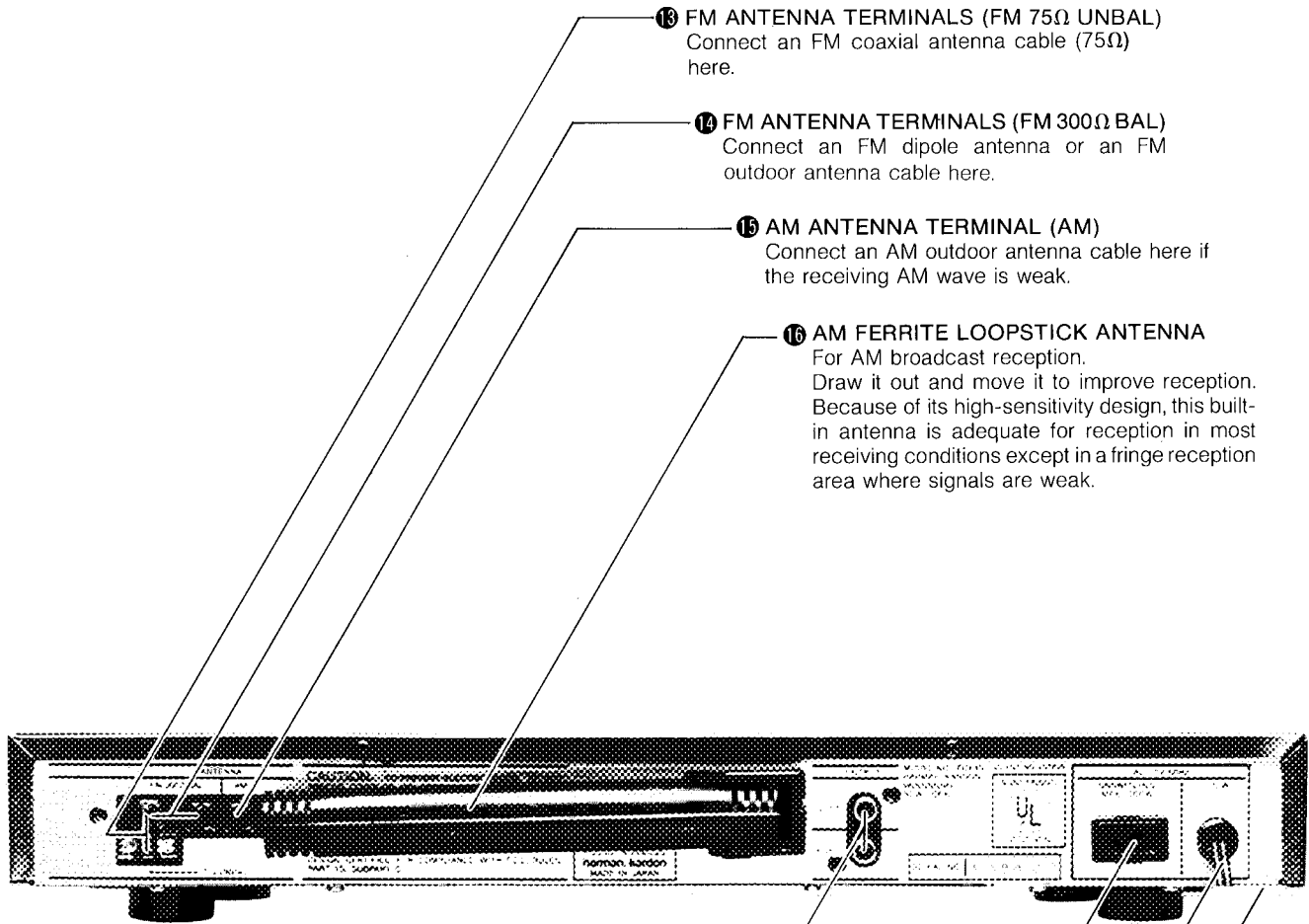
**AUTO position:**  
 Enables automatic scanning.  
 If the TUNING button (down or up) is  
 pressed, automatic frequency counting  
 down or up starts.

**MANUAL position:**  
 Enables manual scanning.  
 As the TUNING button (down or up) is  
 pushed and released, the receiving  
 frequency decreases or increases in steps.

**11 MUTING SWITCH (muting)**  
 For reduction of interstation noise during  
 scanning through the FM or AM band for a  
 station.  
 To tune to a weak station, depress this switch to  
 invalidate the muting function.

**12 HIGH BLEND SWITCH (high blend)**  
 For reduction of noise in high frequency zone.  
 Depress this switch to receive a weak FM stereo  
 broadcast with minimal noise.

# Components and Their Functions(Rear Panel)



**13** FM ANTENNA TERMINALS (FM 75Ω UNBAL)  
Connect an FM coaxial antenna cable (75Ω) here.

**14** FM ANTENNA TERMINALS (FM 300Ω BAL)  
Connect an FM dipole antenna or an FM outdoor antenna cable here.

**15** AM ANTENNA TERMINAL (AM)  
Connect an AM outdoor antenna cable here if the receiving AM wave is weak.

**16** AM FERRITE LOOPSTICK ANTENNA  
For AM broadcast reception.  
Draw it out and move it to improve reception. Because of its high-sensitivity design, this built-in antenna is adequate for reception in most receiving conditions except in a fringe reception area where signals are weak.

**17** OUTPUT JACKS (OUTPUT)  
Provide fixed stereo outputs. Connect signal cables to tuner (or aux) jacks of your pre-amplifier or pre-mainamplifier.

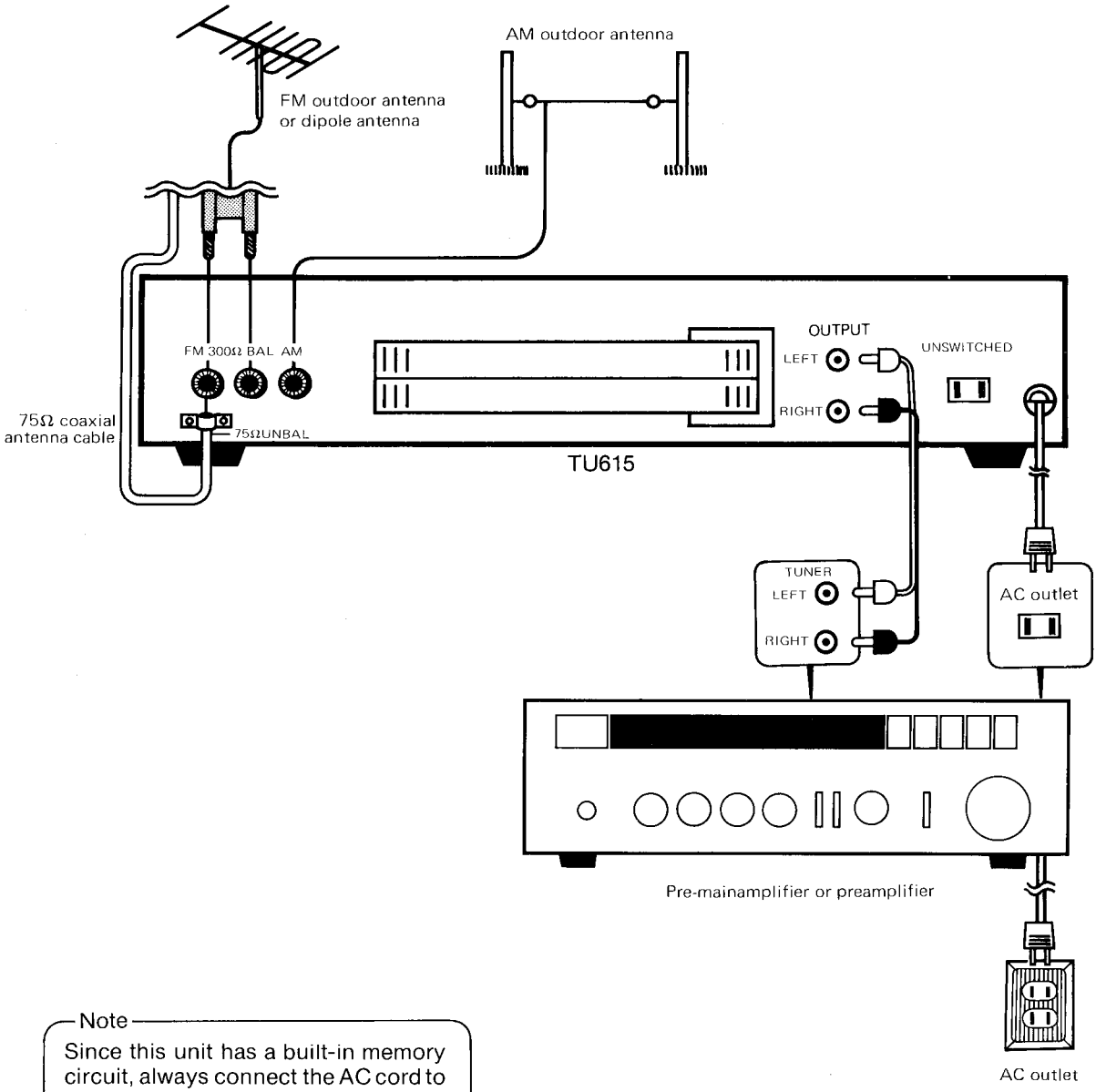
**18** AC CONVENIENCE OUTLET (UNSWITCHED)  
Connect the AC cord of another component here.  
This outlet always provides power regardless of whether the tuner is turned on or not.

**19** AC CORD  
Connect this cord to the AC convenience outlet of the amplifier or a mains outlet.

**20** ODD (9 kHz)/EVEN (10 kHz) SELECTOR (location on bottom of cabinet)  
For selection of tuning steps between 10 kHz and 9 kHz depending on the AM station broadcasting frequency intervals in your area.  
If AM stations in your area cannot be received, raise the cabinet and change the position of this switch located on the bottom of the cabinet.

# Connections

- Always disconnect the AC cords connected to mains outlets before connections between components.
- Use the attached connection cords. Connect the plugs correctly to left and right channel jacks.
- Insert plugs fully. Imperfect insertion may cause noise or sound reproduction failure.



**Note**  
Since this unit has a built-in memory circuit, always connect the AC cord to the UNSWITCHED AC convenience outlet of your amplifier or a mains outlet.

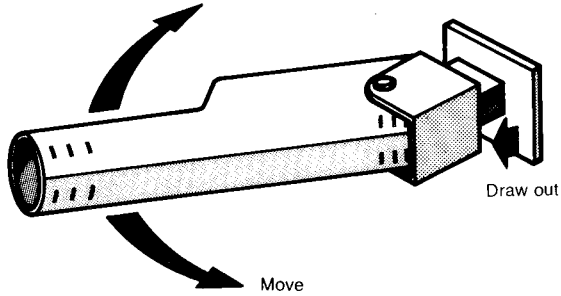
# Antenna Instructions

## AM antenna

The TU615 is equipped with a high-sensitivity ferrite loopstick antenna so that it requires no external antenna for AM reception except in a fringe reception area where signals are weak.

### Ferrite loopstick antenna

Draw out the ferrite loopstick antenna and move it to the position for best reception.



## AM outdoor antenna

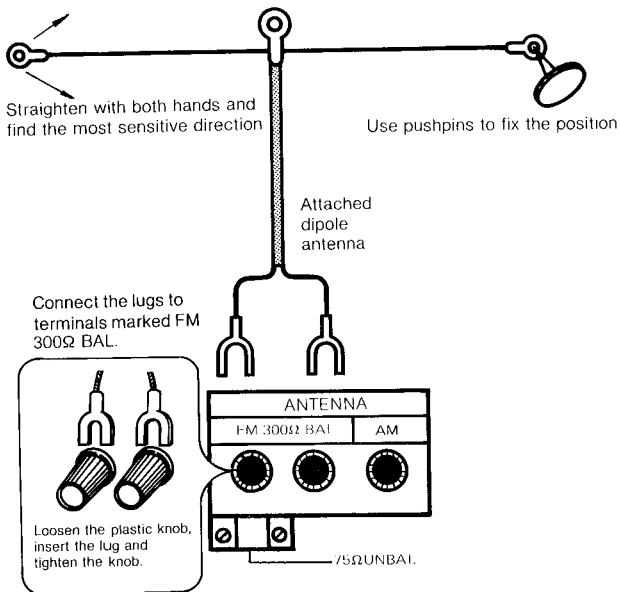
In a fringe reception area where the desired AM broadcast signal is too weak for good reception with the ferrite loopstick antenna, use an AM outdoor antenna.

## FM antenna

Good FM antenna is a must for good reproduction of the excellent sound quality of FM broadcasting.

### Near a station where the wave is strong

In an area near a station where the field intensity is sufficiently high or in a suburban area characterized with less noise, use the dipole antenna supplied with the unit.



### Fringe reception area or behind a mountain or large building where the wave is weak

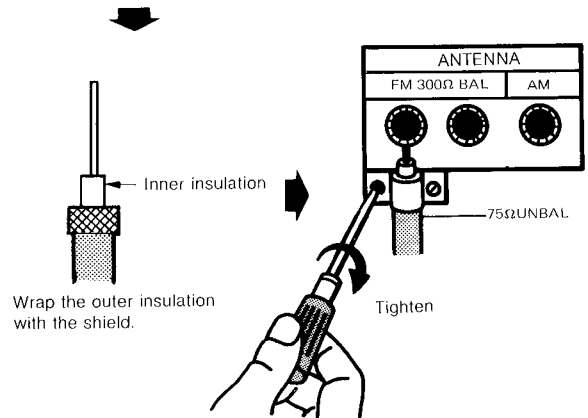
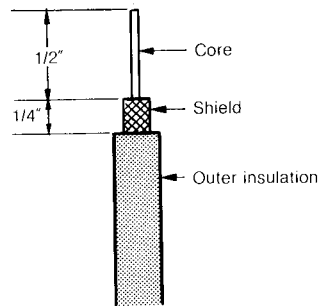
Use an FM outdoor antenna (for low field intensity) having 5 or more elements.

Because of the high directivity, sure reception of FM wave is possible even in a city area characterized with multipath caused by many large buildings.

If your outdoor antenna uses a 300Ω parallel feeder cable, connect the cable in the same way as explained for dipole antenna connection.

In an area characterized with heavy traffic or if the distance to the outdoor antenna is long, use a 75Ω coaxial antenna cable.

Connect the coaxial cable as follows:



## Recommended locations for FM outdoor antenna installation

1. A place enabling direct reception of FM outdoor without hindrance by a building.
2. A place off from a road to prevent sensing of automobile ignition noises.
3. A place at least 2m off from a metal roof, concrete building or TV antenna.
4. Normally the antenna shall be at least 4m above the ground and directed correctly to the transmitting antenna of the broadcasting station.

If high-quality reception is desired, use an FM outdoor antenna having a few elements.

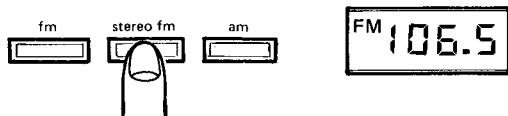


# Operation Procedure

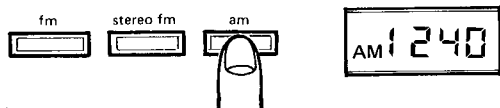
## Automatic tuning method

Automatic tuning is convenient when the frequency of the desired station is not remembered or when checking the program being broadcasted by each station.

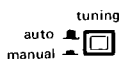
1. Turn the volume control knob of your amplifier to the minimum level and press the POWER switch of this unit to on.
2. Depress the STEREO FM selector to listen to an FM broadcasting station. The STATION DISPLAY automatically displays FM band and the receiving frequency.



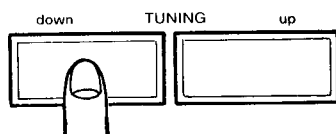
Depress the AM selector to listen to an AM broadcasting station. The STATION DISPLAY automatically displays AM band and the receiving frequency.



3. Place the TUNING MODE switch at its AUTO position.



4. Give a light push to the TUNING button to start tuning. Push the "up" button to tune to a station whose broadcasting frequency is higher than the displayed frequency, or the "down" button to tune to a station whose broadcasting frequency is lower than the displayed frequency.



When a broadcasting wave is sensed, scanning is held for about 4 seconds.



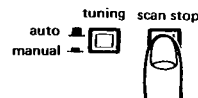
When a wave is sensed, the QUARTZ LOCK indicator and SIGNAL STRENGTH indicator illuminate. As the signal gets stronger, more LEDs will illuminate.



The FM STEREO indicator illuminates when an FM stereo broadcast is received.



5. Press the SCAN STOP switch while scanning is held. To restart automatic scanning, press the TUNING "down" or "up" button.



6. Turn the volume control knob of the amplifier to a desired level.
7. Adjust the tone control knobs of the amplifier as desired.
8. When a weak FM stereo broadcast is received, depress the HIGH BLEND switch to reduce the noise.

- Notes:
1. For weak wave reception, depress the MUTING switch because weak signals are cut with noise by the muting function. To receive a weak wave, however, manual tuning is recommended.
  2. If the "down" (or "up") TUNING button is kept pressed, continuous scanning occurs. Release the switch before the desired frequency is reached.
  3. When the receiving frequency reaches the lower or upper limit, the frequency automatically returns to the upper or lower limit, respectively.
  4. When fading (intermittent reception of a weak wave) continues for several seconds during automatic tuning, the automatic tuning stop circuit is operated to stop automatic scanning. If the station is not the desired one, push the "up" or "down" TUNING button to restart automatic scanning. If the station is the desired one press the SCAN STOP switch.

## Notes

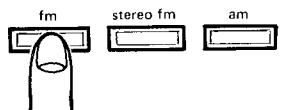
- No sound is heard for some time after the POWER switch is pressed to on. This is the period for circuit stabilization and is not a failure.
- After the POWER switch is pressed to on, the frequency of the station received at the time of power off is displayed irrespective of whether the station is a preset one or not.

# Operation Procedure

## Manual tuning method

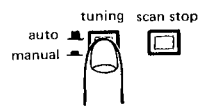
Manual tuning is used when the frequency of the desired station is passed in automatic tuning mode because of the broadcasting wave is weak.

1. Turn the volume control knob of your amplifier to the minimum level and press the POWER switch of this unit to on.
2. Depress the FM selector to listen to an FM broadcasting station. The STATION DISPLAY automatically displays FM band and the receiving frequency.

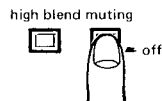


Depress the AM selector to listen to an AM broadcasting station. The STATION DISPLAY automatically displays AM band and the receiving frequency.

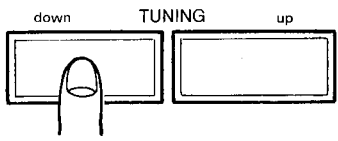
3. Depress the TUNING MODE switch to its MANUAL position.



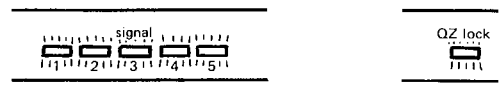
4. Depress the MUTING switch to invalidate the muting function. The noise specific to the FM is heard.



5. Give light pushes to the TUNING button in frequency changing steps. Push the "up" button to tune to a station whose broadcasting frequency is higher than the displayed frequency or the "down" button to tune to a station whose broadcasting frequency is lower than the displayed frequency.



In either upward or downward direction, frequency scanning proceeds in 0.2 MHz steps in FM reception and 10 kHz steps in AM reception. The perfect tuning is obtained when the QUARTZ LOCK indicator illuminates and the greatest number of LEDs of the SIGNAL STRENGTH indicator illuminate.



6. Adjust the sound volume and tone as desired.

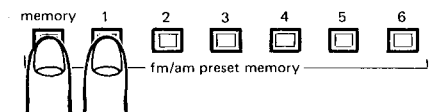
- Notes:
1. If the TUNING "down" or "up" button is kept pressed, continuous scanning occurs. Release the switch before the desired frequency is reached, and give light pushes to the button until correct tuning is indicated by the QUARTZ LOCK indicator.
  2. When the receiving frequency reaches the lower or upper limit, the frequency automatically returns to the upper or lower limit, respectively.

## Preset memory tuning method

In this method, a broadcasting station preset by the memory function is tuned by simple pressing of the FUNCTION selector and a PRESET button without operating the TUNING button. Up to 6 stations can be preset for each of FM and AM broadcasting bands.

## Preset memory operation

1. Tune to the broadcasting station to be memorized according to the Automatic or Manual tuning method.
2. Push the MEMORY button. The button illuminates in green color for about 5 seconds. While this button is illuminating, push one of the PRESET buttons numbered 1 through 6. The button illuminates and presetting of the station is completed.



3. To cancel a memorized station and preset a new station at that number, tune to the frequency of the new station and operate as described in step 2 above. The old memory is automatically cleared, and the new station is memorized.

Note: The memory contents are protected for about 1 week by a backup capacitor even when the AC cord is disconnected.

If the memory contents are cleared, perform presetting again to regain the memory contents.

## Maintenance

When the unit gets dirty, wipe it with a soft dry cloth. If heavily contaminated, wipe it with a soft cloth soaked with mild soapy water and then wipe with a dry cloth. Never use alcohol, thinner, benzine or other volatile agent since the painting may be damaged.