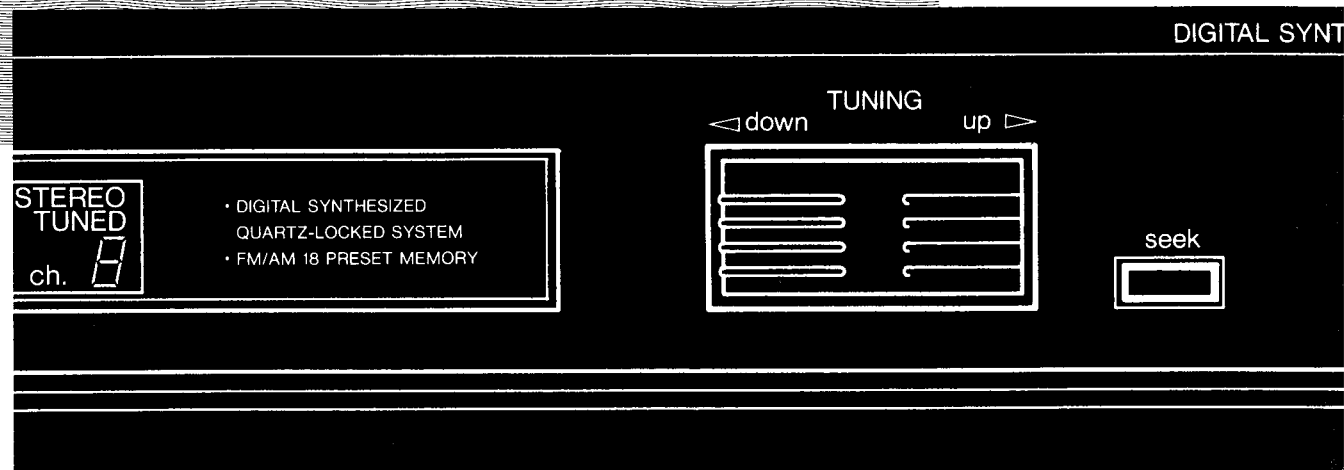


TU909



*Digital Synthesized Quartz-Locked Tuner
Instruction Manual*

Rear Panel Safety Precautions

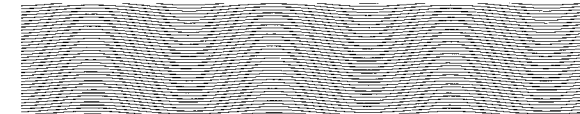


CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

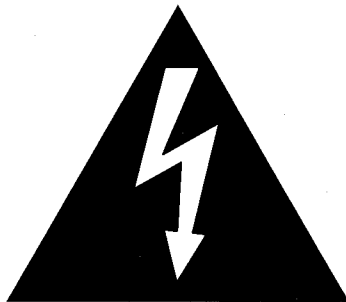
The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.



1. Read instructions — all safety and operation instructions should be read before using the tuner.
2. Retain instructions for future reference.
3. Heed warnings — all warnings on the tuner and in its operations instructions should be adhered to.
4. Follow all instructions.
5. Water and moisture — do not use the tuner around water, for example near a swimming pool, sink or in a wet basement.
6. Ventilation — The tuner should be situated so that its location or position does not interfere with its proper ventilation.



7. Heat — The tuner should be situated away from heat sources such as radiators, fireplaces, stoves, electric popcorn poppers or other appliances that produce heat. Also avoid prolonged contact with direct sunlight and extremely low temperatures.

8. Power sources — The tuner should be connected ONLY to a power supply of 120 volts, 60 cycles.

9. Power cord protection — Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles and the point at which the cord exits from the tuner. Also never pull or stretch the cord.

10. Cleaning — Do not use volatile solvents such as alcohol, gasoline, benzine etc. to clean the tuner cabinet. Use only a clean dry cloth. If you must use a wet cloth, wet only the cloth lightly with water.

11. Object and liquid entry — Care should be taken so that objects (including excessive dust) do not fall into the unit, and that liquids are not spilled into the inside of the tuner.

12. Abnormal smells — If an abnormal smell or smoke is detected, immediately turn the tuner power OFF and pull out the power cord. Contact your dealer or nearest Harman Kardon Service station.

13. Damage requiring service — The tuner should be serviced by qualified service personnel when:

- A. The power supply cord or the plug have been damaged; or
- B. Objects have fallen, or liquid has been spilled into the tuner; or
- C. The tuner has been exposed to rain; or
- D. The tuner does not appear to operate normally in performance; or
- E. The tuner has been dropped or the cabinet damaged.

14. Servicing — The user should not attempt to service the tuner beyond those means described in this manual. All other servicing should be referred to qualified service personnel.

15.

IMPORTANT SAFETY PRECAUTION FOR AC PLUG

CAUTION: TO PREVENT ELECTRIC SHOCK, DO NOT USE THE TU909's POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

BRANCHEMENT DE LA FICHE SECTEUR

ATTENTION: POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

TU909 Tuner Controls

Thank you for choosing Harman Kardon.

You now own a superb piece of high fidelity equipment. Used properly, it will provide you with thousands of hours of musical enjoyment.

Even if you have experience with high fidelity components, we nevertheless ask you to read and carefully follow the instructions in this manual. It will insure a successful partnership between you and your new Harman Kardon tuner.

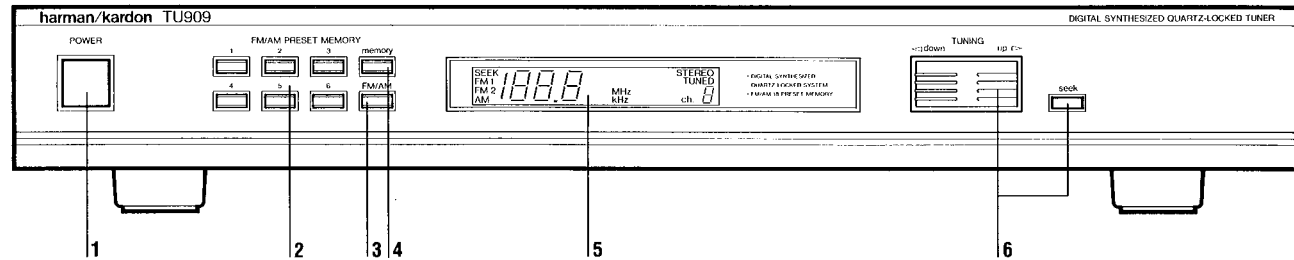


Figure 1 TU909 Front Panel

The following is a short explanation of the operating controls and features on the front panel of your tuner.

1. Power

Beginning on the left hand side is the **POWER** button. It turns the TU909 on and off.

2. FM/AM Presets

The **FM/AM PRESET MEMORY** section is used to set and recall up to 12 FM and 6 AM stations. How can you select 18 stations with just 6 buttons?

3. Band Selection

At the lower right of the numbered presets is a selection button marked **FM/AM**. This selector cycles the operation of the presets from FM 1 (the first 6 FM presets) to FM 2 (the second 6 FM presets) to AM, and then back to FM 1, depending on how many times you press it. In each case, an appropriate indicator lights up in the display.

4. Memory

Above the FM 1/FM 2/AM selector is a **memory** button which is used to enter station memory presets. You do not need to use all of the presets. Full instructions on entering memory presets are in the **Operation** section of this manual.

5. Display

Next to the FM/AM PRESET MEMORY section, is the TU909's LCD display panel. First are indicators for the 3 groups of presets: FM 1, FM 2 and AM. Next is the digital station frequency display. Depending on whether an FM or AM station has been selected it will read in MHz (FM) or kHz (AM). Finally, the panel includes an FM stereo indicator and a digital display that tells you which preset has been selected. Note that it also displays the *second* set of FM presets as 1-6.

6. Up, Down and Seek Tuning

The large square **TUNING** buttons and the smaller one to their right marked **seek** work together to select stations from FM and AM broadcast bands. The **seek** button determines the action of the large **up** and **down TUNING** buttons.

When the **seek** button is pushed, the tuner's circuitry is in SEEK mode, and the word "SEEK" will light up in the LCD display area. Pressing either the **up** or **down TUNING** buttons causes the tuner to scan across the broadcast band "seeking" (and stopping at) the next strong signal. In the SEEK mode, the scanning circuit will automatically jump to the opposite end of the tuning band and begin searching again.

When the **seek** button is pushed again (**MANUAL**), the **up** and **down TUNING** buttons function much like a tuning knob on a simple radio. Pushing **UP** moves "up" the FM or AM broadcast bands; **DOWN** tunes "down". This allows you to locate weak or adjacent stations which might be skipped over while in the SEEK mode.

When you reach the top or bottom limit of either band, you must press the opposite direction button to begin moving back across the broadcast band.

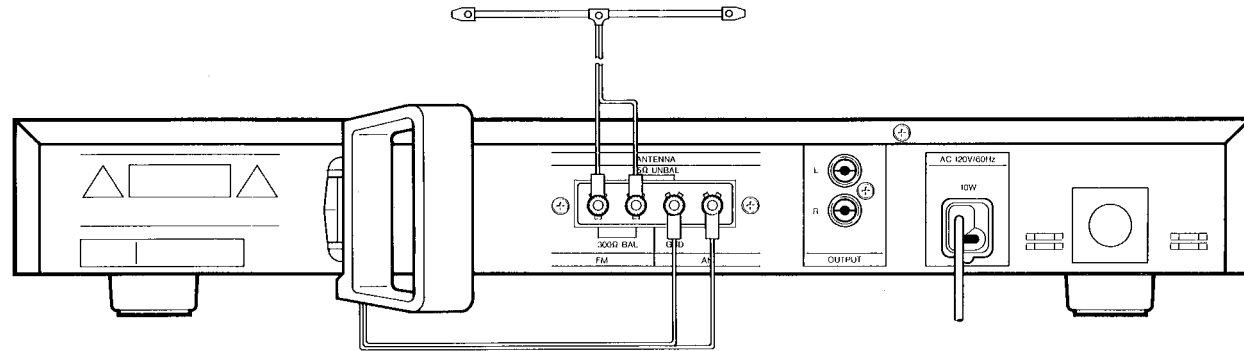


Figure 2 TU909 Rear Panel

Packing and Paperwork

Save all packing material from your new tuner. While the box is quite large, and may be a nuisance to store, it is essential for shipping if you move or should the unit ever need repair.

Also be sure to fill out the customer profile card and save your sales receipt in a safe place. It is necessary to establish the date on which your warranty begins, and as proof of ownership in the event of something drastic such as fire or theft.

Placement

The TU909 is fully shielded and may be placed on top of or under other stereo components, provided that its 3/8" "feet" provide sufficient clearance for the cooling needs of the component below.

Output Connections

First make sure that the tuner and all other components are switched off.

Connect the **OUTPUT** terminals to the **TUNER** input terminals on your amplifier, taking care to match right and left plugs with the right and left input sockets on the amplifier. Common practice is to treat the red plug as right, and the grey (or black or white) plug as left.

Antenna Connections

Depending on the type of antenna connector, attach your FM antenna to either the terminals marked **300Ω BAL** or **75Ω UNBAL** on the chassis back. The flexible dipole FM antenna supplied with your tuner should be sufficient for reception of most stations.

If you are adding an external AM antenna, connect a ground wire to the terminal marked **GND** next to the **300Ω BAL**.

NOTE: Rooftop antenna mast should be grounded directly to the earth ground using 10-gauge or heavier wire, stand-off insulators and a metal stake. The FM antenna should then be connected to the ground mast via an antenna discharge unit.

The quality of your FM and AM reception is directly proportional to the quality of the antenna you use. If you live in a "problem" area or are simply interested in better reception, please refer to **APPENDIX I** in this manual.

After checking all connections one final time, you're ready to turn on your new tuner and begin enjoying its convenient features and great sonic performance.

A good habit to get into is to **FIRST** power up your tuner (if not connected to your amplifier's switched convenience receptacle). Then turn on your amplifier. This will protect your speakers and ears from turn-on thumps (transients).

Setting FM and AM Presets

Being able to recall your favorite stations is an extremely convenient feature. The TU909 will "remember" the last station preset that you were listening to and tune to that station when you turn the tuner back on.

You can add or change presets any time you want. There is no "right" or "wrong" way to use presets. Some people only set a couple of them. Others assign a station to every one. There are, however, several common approaches which you might consider. You might **1)** rank stations in order of how often you listen to them, assigning preset 1 to your most listened-to station; or **2)** give stations preset numbers that correspond to their position on the AM or FM dial, with a station "low on the dial" occupying a low preset number, etc.

To set a preset:

1. Press **FM/AM** selector to choose the broadcast and preset "bank".
2. Tune in a station you wish to preset using the **TUNING up & down** buttons and tuning **seek** selector.
3. When the station is tuned in as well as possible, press the **memory** button.
4. You have eight seconds in which to press a preset button. Push one of them. The appropriate channel (preset) number will light on the display. If you had previously set that particular preset number with another station, the old preset will be erased.

5. Repeat this procedure for any other FM or AM presets you wish to add at this time.

Cleaning

When cleaning your tuner, avoid direct use of dusting sprays, abrasive cleaners or caustics (such as dilute ammonia window cleaning solutions). Use only a mild soap and water solution, applied to a soft cloth, rather than sprayed directly onto the tuner.

The Role of Your Antenna

While it may seem obvious that an antenna is critical to good reception, it is not often given sufficient consideration. The results can be significantly reduced tuner performance (a classic example of "garbage in, garbage out"). The question of just how elaborate an antenna installation you need can be determined by considering the following:

1. **How good is reception in your area?** If you live in an area with a moderate number of strong FM and AM stations, you may not need as large an antenna as you would if you live in a rural area or an urban area with many adjacent stations.
2. **Are you interested in receiving weak or distant stations?** Some very interesting programming (ethnic, classical, college formats, for example) is often on stations with very low transmitting power. Or you may simply live in an area far removed from *all* stations. If so, you should consider a more elaborate antenna installation.
3. **Is stereo separation, bandwidth and freedom from interference critical?** If you often tape broadcasts, or own a system where you can hear critical differences in broadcast quality, investing in a better antenna can increase the overall fidelity of many stations.
4. **Does your living environment allow a large antenna, either indoor or outdoor?** Sometimes space, physical layout (such as living in an apartment house) or even city ordinances can affect your decision in this respect.
5. **Do you have access to FM through a TV cable system?** The benefits of using commercial cable as a high-quality FM source are many and you should investigate this option if it is available.

In general, the higher the antenna, the better it will perform. Radio waves travel better in straight lines from the transmitter, and if your antenna is free and clear of obstructions, it will perform better and you will enjoy greater signal strength.

Indoor FM Antennas

An indoor antenna, such as the one included with your new tuner will work well if you enjoy good “line of sight” with the area’s FM transmitters or live in the upper stories of a building. Remember, however, that indoor antennas cannot provide height and may be prone to receiving interference from cars on the street or small appliances in the kitchen.

If you are satisfied with the performance of an indoor antenna (or are limited in this respect), your first choice is the half-wave dipole antenna included with the TU909. It will work well in many situations and can be used until you decide whether or not you need a more extensive antenna system. Because it is basically bi-directional, it may be prone to interference or may limit your ability to “fine tune” certain stations that are not on its axis.

The next choice is a pair of “rabbit ears” like the ones often used with television sets. While they have some of the same drawbacks as a flexible dipole, “rabbit ears” are easier to adjust manually for a given station. Make sure that they are not equipped with an FM trap, which would remove the FM signal from TV stations received.

The best possible indoor antenna is a table top model specially designed for FM reception. There are many brands on the market including some powered designs, and models with manual fine-tuning adjustments. Check with your Harman Kardon dealer for advice on which is most appropriate for your needs and budget.

Outdoor FM Antennas

Properly set up, an outdoor FM antenna can provide significantly better reception than any indoor design. Options range from simple, omni-directional dipoles to elaborate directional designs with rotators that can give you the best possible reception of any given station.

If you are plagued by severe localized noise and multipath interference, you should consider a directional Yagi-style antenna if possible. Consult with your Harman Kardon dealer or a local radio/television supply shop, since this decision must be made on the basis of your individual area.

Feedline Considerations

Just as the cables used to connect your system contribute to its sound quality, so the feedlines running from your antenna to your new tuner play an important part in good reception.

300Ω twin lead-in is inexpensive and has relatively low signal losses (1.25dB per 100 ft. at 100MHz), but if improperly installed, can act as an antenna itself, picking up unwanted signals. It also suffers signal losses when it becomes wet. Twin lead should be routed to avoid gutters, electrical wiring, pipes and other metal objects.

75Ω coaxial cable is more expensive and has slightly higher signal losses (3.5dB per 100 ft. at 100MHz) but is far less prone to external noise, interference and weather, due to its shielding and design. You will need to use a matching transformer at the antenna end.

Note to CATV system Installer:

This reminder is provided to call the CATV system installer’s attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Checking these possibilities first may save you time and effort getting your unit serviced. Your Harman Kardon dealer will also be able to answer questions and help you discover the problem.

The LCD display area does not illuminate.

1. The tuner is not plugged into the wall socket.
2. The wall socket or extension cord is faulty. Check for poor connections and/or blown fuse.

No sound.

1. Poor connections to amplifier. Check and correct if necessary.
2. The amplifier selector is not set to TUNER.
3. The antenna connection is loose. Check and correct if necessary.
4. Check your amplifier instruction book for possible faults with the amplifier.

Warranty and Service

If you have followed the suggestions in this manual and are reasonably sure that your tuner requires service, call the Harman Kardon dealer from which you purchased your TU909. It is important that service be carried out only by a designated Harman Kardon Service agent to insure both proper service and to comply with the terms of the TU909 Limited Warranty.

Remember to keep your sales slip or receipt in a safe place since you will be required to show it for service during the duration of the Limited Warranty.

TU909 Specifications

FM SECTION

Usable FM Sensitivity, Mono:	11.2dBf
50dB Quieting Sensitivity, Stereo:	38.2dBf
FM S/N Ratio (65dBf) — Mono:	80dB
Stereo:	72dB
Capture Ratio:	1.5dB
Alternate Channel Selectivity:	70dB
Adjacent Channel Selectivity:	5dB
IF Rejection:	80dB
AM Rejection, 45dBf:	45dB
Image Rejection:	45dB
Spurious Response Rejection:	75dB
THD (65dBf, 1kHz) — Mono:	0.15%
Stereo:	0.2%
Stereo Separation (65dBf) 1kHz:	40dB

AM SECTION

AM Sensitivity (External Antenna):	15 μ V
AM Alternate Channel Selectivity:	50dB
AM Image Rejection:	40dB
AM IF Rejection:	60dB
AM Signal-to-Noise:	53dB

DIMENSIONS

Width x Height x Depth:	17-3/8" x 2-11/16" x 14-5/8" (443 x 68 x 372 mm)
Weight:	10 lbs. (4.5kg)

All features and specifications subject to change without notice.

harman/kardon

A Harman International Company
240 Crossways Park West
Woodbury, NY 11797