

NAD

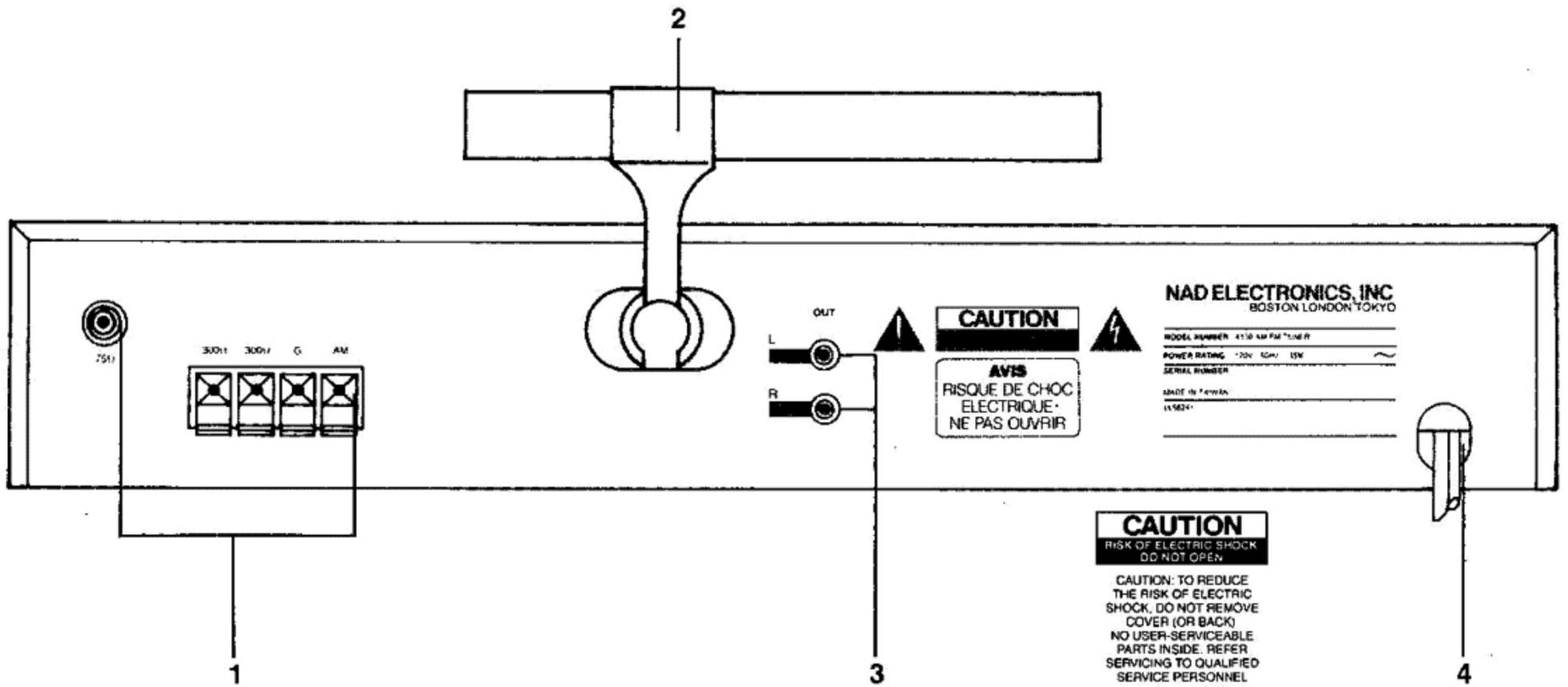
4130

**AM/FM
STEREO TUNER**

**INSTRUCTIONS
FOR INSTALLATION
AND OPERATION**

REAR PANEL

- 1. Antenna terminals.
- 2. AM Rod Antenna.
- 3. Audio Output.
- 4. AC line cord.

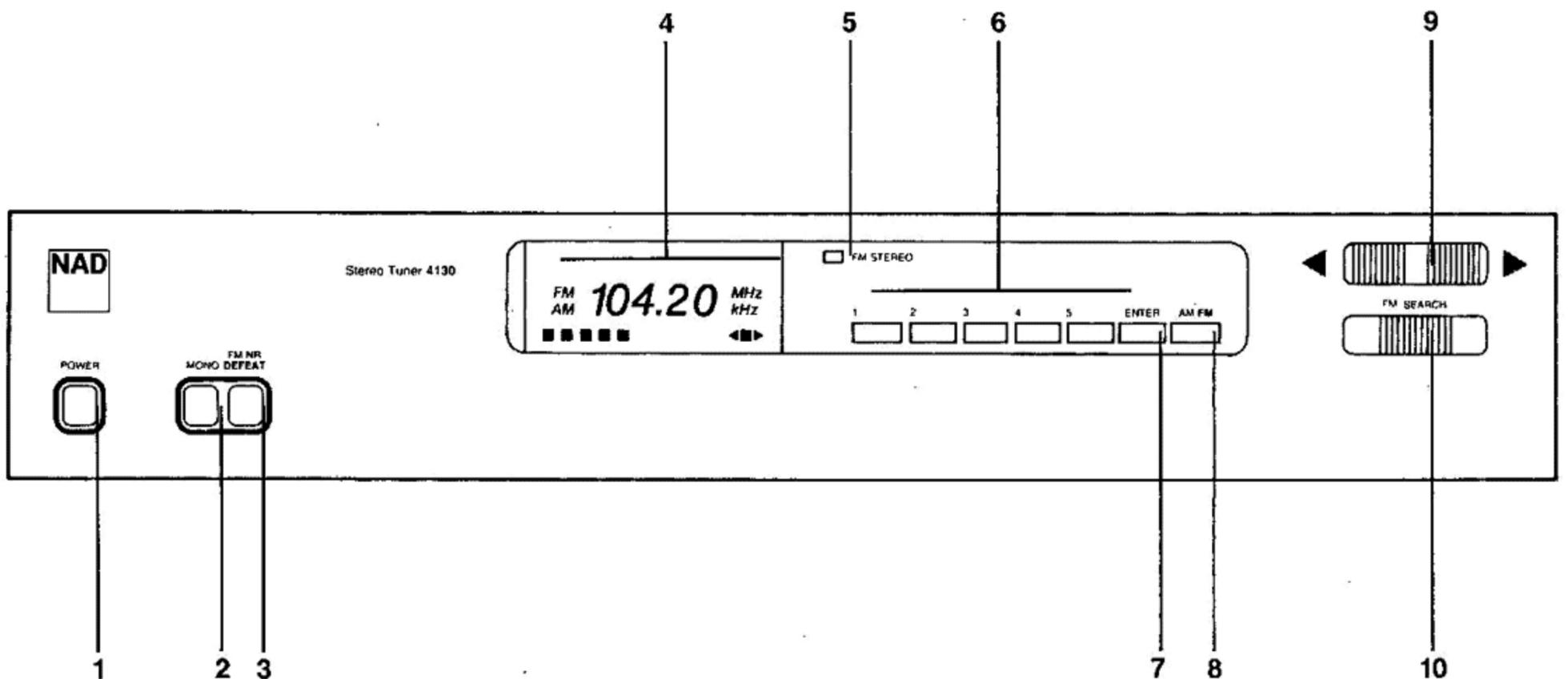


CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

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 LAISSER AUCUNE PARTIE A DECOUVERT.

FRONT PANEL

- 1. Power.
- 2. Mono
- 3. FM NR Defeat.
- 4. Tuning Display.
- 5. FM Stereo Indicator.
- 6. Tuning Pre-sets.
- 7. Enter.
- 8. AM/FM.
- 9. Up/Down Tuning.
- 10. Search Mode (FM only).



REAR PANEL CONNECTIONS

1. ANTENNA TERMINALS

If you are using an external FM antenna with a coaxial cable, it should be connected to the 75-ohm coaxial socket. Other types of antenna wires may be attached to the four antenna terminals.

In order to make connections to the four antenna terminals, remove any connectors that may be fitted on the antenna wires. Strip off 1 cm of insulation from each wire, and in each conductor twist together the exposed wire strands.

Press down the spring-loaded plastic tab below the appropriate terminal, and hold it down while inserting the wire. Insert the bared wire into the small hole in the terminal, and release the tab. The terminal will grasp the wire and hold it in place.

AM Antenna. Since the tuner is equipped with a ferrite rod antenna, no external antenna will be needed for satisfactory reception of most local broadcasting stations. But if you wish to improve reception of distant AM stations, attach a long-wire outdoor antenna to the AM terminal. As its name implies, a "long-wire" antenna is a simple, straight wire whose length may be anything from a few feet up to about 100 feet (30 meters), mounted parallel to the earth and as high as is convenient.

In some cases the effectiveness of a long-wire antenna will be improved by connecting a second wire from the Ground (G) terminal to a true earth-ground, i.e. a copper-plated rod driven several feet into the earth. A substitute electrical ground may also prove effective: a cold-water pipe, a steam radiator, or the third hole of a modern electrical wall socket.

FM Antennas. An antenna must be connected to the tuner for effective reception of stereo FM broadcasts. A ribbon-wire "folded dipole" antenna is included to get you started. When you stretch out the ribbon-wire antenna you will note that it is in the form of a T. The "crossbar" portion of the T should be stretched out horizontally and tacked in place—on a wall, on the back of a cabinet, or on the floor. The "vertical" section of the T goes to the tuner's antenna terminals. Connect its two wires to the two 300Ω input terminals.

In view of the exceptional sensitivity of NAD tuner circuits, you may find that the ribbon-wire dipole antenna is all you need for reception of strong local stations. But it is not very efficient at rejecting "multipath" and other forms of FM interference, and it cannot easily be rotated to optimize its pickup pattern for best reception of stations in different directions. Therefore, in most cases you should use a better antenna. The recommended options, in order of increasing cost, are as follows:

(1) A basic "rabbit-ears" indoor TV antenna without auxiliary coils or tuning switches. Electrically, such an antenna is just another dipole (similar to the ribbon-wire antenna) with its tuned elements made of solid metal, but with the advantage that it can be rotated. Stretch out each of its two arms to a length of 30 inches (75 cm), and orient them horizontally or at a shallow angle less than 45 degrees upward. The ribbon wire emerging from the antenna's base should be connected to the tuner's two 300Ω terminals in

place of the supplied ribbon-wire antenna. Now, for each station in turn, after you tune the station you can rotate the antenna for best reception.

(2) A more elaborate rabbit-ears indoor TV antenna with a tuning switch. This type of antenna does NOT have greater sensitivity than the simpler rabbit-ears unit, so if your problem is that the signals you want to receive are weak (as shown on the signal-strength meter), then an outdoor antenna is the only effective solution. But in cities and in large buildings where signals are strong but are contaminated by reflected "multipath" signals that interfere with good reception, the tuning switch on an elaborate indoor antenna may improve reception by reducing the interference.

(3) An electrically tuned indoor antenna, such as the Technics Wing or B.I.C. Beam Box. Again, such antennas usually do not provide any advantage over the simplest type of "rabbit-ears" unit for receiving weak signals. But where strong signals are contaminated with interference, the antenna's aiming and tuning controls can reject the interference and yield cleaner reception.

(4) An outdoor antenna. Even the finest indoor antenna, no matter how elaborate, cannot fully exploit the capabilities of a good FM tuner. For the lowest noise, minimum distortion, and largest choice of well-received broadcasts, an outdoor antenna is the best complement to a fine tuner.

A roof-mounted antenna has three fundamental advantages. First, its large size yields better sensitivity (pulling in a stronger signal from the desired station) and a narrower directional pattern for more effective rejection of multipath reflections arriving from other directions. Second, its location on a roof or tall mast places it above many sources of interference—passing cars and buses, other buildings, etc. Third, the strength of received FM signals is directly proportional to the height of any antenna above the ground.

If you already have an outdoor television antenna, using a splitter to extract FM signals from it may produce excellent results. However, many TV antennas are deliberately designed to be relatively weak at FM frequencies in order to minimize potential interference with TV signals at nearby frequencies (Channel 6 in the U.S.). You may be able to use a splitter to extract FM signals from an apartment building's master TV antenna system, but usually this yields poor results because many master antenna systems have "traps" to stop FM signals.

The best choice is a directional FM-only antenna, mounted as high above ground as is practical, and separated by at least two meters (7 feet) from other antennas, vertically and horizontally. If desired stations are located in different directions (more than 90 degrees apart), the antenna should be mounted on a rotor for aiming. Brand names of good FM antennas in the U.S. include Jerrold, Finco, Wineguard, Antennacraft, and Archer (Radio Shack).

Use shielded lead-in cable rather than plain "twin-lead" wire, both to minimize interference and to preserve strong signals during years of weathering. The cable may be either 75-ohm coaxial or a shielded 300-ohm type. Disconnect any indoor antenna before connecting the cable from the outdoor antenna.

If you are using a 75-ohm coaxial antenna cable that lacks a connector, you may attach its center conductor to



The lightning flash with arrowhead, within an equilateral triangle, is intended to alert the user of 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 of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

either 300Ω antenna terminal and connect the cable shield to the ground (G) antenna terminal. This unbalanced connection provides the required 75Ω impedance for the cable. But the 300Ω antenna terminals are connected to the FM tuner circuit through an internal "balun" transformer. The 75Ω coaxial socket is wired directly to the tuner circuit, bypassing the balun transformer, so to obtain the best possible sensitivity, the coaxial cable should be connected to the 75Ω socket.

If you install an outdoor antenna yourself, observe these important CAUTIONS:

1. Do not mount the antenna close to electric power lines. Plan the installation so that the antenna mast cannot accidentally touch power lines, either while you are installing it or later.
2. Include a lightning arrestor in the installation, to protect both yourself and the tuner circuit from potential danger during electrical storms.

2. AM ROD ANTENNA

The ferrite rod antenna provides effective reception of local medium-wavelength AM radio stations. The rod is mounted on a pivot. For best reception, swing it away from the metal chassis of the unit.

3. AUDIO OUTPUT

Connect a stereo patch cord from the Left and Right output jacks to the corresponding Tuner input jacks on your amplifier.

4. AC LINE CORD

Plug the AC line cord into a Switched outlet on your amplifier, or into any AC wall outlet that provides the correct power-line voltage.

FRONT PANEL CONTROLS

1. POWER

Depress this button to switch on the power. The frequency display will illuminate when the power is on. To switch the power off, press the button again and release it.

In many installations it may be more convenient to leave the tuner's POWER switch permanently engaged, letting the tuner be turned on and off by a "switched" convenience outlet on your amplifier.

If you prefer, you may plug the tuner's AC line cord into an Unswitched outlet or directly into a wall socket, and leave it permanently turned on. The tuner's power consumption is very low, so the cost of leaving it always on would be only a few dollars per year; and the useful life of the tuner would not be shortened by leaving it on.

2. MONO

The MONO button disables the stereo FM circuits in the tuner.

Normally the tuner receives monophonic FM transmissions in mono and automatically switches on its multiplex decoding circuits when a stereo FM broadcast is received (as shown by the FM STEREO indicator). But when a very weak FM stereo signal is received, it may be excessively noisy because of the multiplex encoding technique used for stereo broadcasting. In that case, depress the MONO button to lock the tuner in the mono mode, in order to obtain consistently quieter and cleaner sound.

Remember to disengage the MONO button when you re-tune to a stronger signal. As long as the MONO button is engaged, no broadcasts can be received in stereo.

3. FM NR DEFEAT

The tuner contains an FM Noise Reduction circuit that automatically reduces noise in weak FM stereo signals

by reducing the stereo separation. As the received signal becomes weaker and the stereo subcarrier becomes noisier, the circuit automatically reduces the contribution of the stereo subcarrier to the final sound, obtaining the best practical compromise between quieting and subjective image breadth. Even with maximum noise reduction, the circuit maintains enough channel separation to produce a stereo image that is appreciably wider and more spacious than mono.

For normal operation of the circuit, leave the button OUT. The FM noise-reduction circuit operates only on those weak stereo FM signals that would be noisy without it. It does not affect the reception of strong signals.

If you want to turn off the noise-reduction and restore full stereo separation, press the FM NR DEFEAT button. You may not hear an obvious difference when this button is pressed, since most broadcast signals are strong enough to disengage the circuit automatically.

4. TUNING DISPLAY

The digital display shows the broadcast frequency that the receiver is tuned to.

FM center-tuning. The center tuning indicator, at the bottom of the display window, is a bar between two triangular pointers (arrows). When the receiver is slightly mistuned one of the triangular pointers glows to show the direction in which the tuning should be changed; i.e., if the arrow points to the right, the right-hand portion of the Up/Down Tuning rocker should be tapped to increase the tuning frequency slightly. When an FM station is correctly tuned, the triangular pointers will vanish and the center-tune bar will glow.

5. FM STEREO INDICATOR

This LED illuminates when a stereo FM broadcast is being received and decoded by the tuner's multiplex decoder circuit. Note that if the MONO button is engaged, all broadcasts will be received in mono.

If an FM station is broadcasting only in mono, or if a stereo broadcast signal is too weak for reasonably noise-free reception in stereo, then the tuner will automatically switch into the mono mode, and this light will not illuminate. Also, if you have mis-tuned away from the center of a station's broadcast channel, the stereo decoding circuits may not lock onto the signal and it may be received only in mono.

6. TUNING PRE-SETS

You can store the frequencies of ten favorite stations (5 FM and 5 AM) in these pre-sets, using the ENTER button. Then, to tune those stations from day to day, just press the appropriate pre-set button.

The pre-sets preserve their frequency assignments when the power is switched off, or when the AC line cord is unplugged, for a period of at least two weeks. Thus you can re-arrange your stereo system, or move the equipment from room to room, without losing the pre-set frequencies. But if you leave the power off for a month or more, you may have to re-program the tuning pre-sets.

7. ENTER

This button engages the Memory Enter mode. Use this mode to enter the frequencies of your favorite stations in the ten pre-sets (five pre-sets on the FM band and another group of five pre-sets on AM). The procedure is as follows.

1. Decide which station you want to assign to each pre-set. On each band you may arrange the stations in any order that you find convenient (or easy to remember): alphabetical (1 = WABC, 2 = WCBS, 3 = WNYC . . .), numerical (1 = BBC1, 2 = BBC2 . . .), or in order of increasing frequency (1 = 89.7, 2 = 90.9, 3 = 95.3, etc.). If you are not certain of the frequencies of the stations, check the

station/frequency directory in a local newspaper or broadcasting guide.

2. Select the FM or AM band, as appropriate. Using the Up/Down Tuning control, manually tune to the first station on your list. Press the ENTER button, then press Pre-set #1 to store the first station in the tuner's memory.

NOTE: After you press ENTER, you will have approximately ten seconds to store a station in one of the pre-sets. After that interval, the ENTER mode will automatically de-activate.

3. Tune to the second station on your list. Press the ENTER button and, within ten seconds, press Pre-set #2 to store the second station.

4. Tune to the third station on your list, press ENTER, and press Pre-set #3 to store the station. Continue in this manner with any other stations that you want to store in the remaining pre-sets. Then switch to the other tuning band (FM or AM) and repeat the process for the second set of five pre-sets.

Incidentally, if you make a mistake or change your mind, it is not necessary to re-program all five pre-sets in sequence. You can re-program any pre-set simply by tuning to the desired frequency, pressing ENTER, and pressing the pre-set that you want to re-program.

After you finish programming the pre-sets, you may wish to post your list of stations and associated pre-set numbers nearby for reference.

CAUTION: In day-to-day operation, be careful not to press the ENTER button by accident. Doing so will activate the ENTER mode, and if you then press any of the pre-set buttons you will unintentionally re-program that pre-set. You would then have to manually re-tune to the station you wanted, and re-ENTER it into the pre-set. If you accidentally press ENTER, you can force the circuit to back out of the ENTER mode by briefly switching to the other tuning band (e.g., from FM to AM and back), or by tapping the Tuning rocker.

FAST SCAN. The ENTER button also serves as an "accelerator" for the Up/Down Tuning rocker. If you press both the ENTER button and the Tuning rocker, the tuner will scan up or down in frequency approximately three times faster than normal, moving through the entire tuning band in a few seconds. As you approach the frequency you want, simply take your finger off the ENTER button and the Tuning scan will revert to its normal speed. (This use of the Tuning rocker keeps the tuner out of the ENTER mode.)

The usual caution applies, however: if you stop the tuning scan but continue to press the ENTER button, the tuner will go into the ENTER mode. Then if you press any of the station pre-sets within ten seconds, you will re-program that pre-set.

8. AM/FM

This button switches between the two tuning bands: FM or medium-wave AM. The digital tuning display shows the tuned frequency in MHz (for FM) or kHz (for AM).

The tuning circuit has a "last station selected" memory. When you switch between tuning bands, the circuit automatically re-tunes the last station that you were tuned to when you previously used that band.

9. UP/DOWN TUNING

The Up/Down Tuning control is a "rocker" switch that allows you to tune up and down the AM or FM radio spectrum. Depress the right-hand section of the rocker in order to tune to higher frequencies, or the left-hand section to tune to lower frequencies.

When the Tuning rocker is pressed momentarily, the tuned frequency shifts up or down by one step, unless SEARCH has been engaged. (If SEARCH is engaged, the tuner will scan in a station-by-station mode rather than in fixed tuning steps.)

In North America the size of this tuning step is 10 kHz on the AM band. In Europe and elsewhere the tuning step is 9 kHz on AM. In either case the tuning step for the FM band is 0.05 MHz. Each time the Tuning rocker is tapped, the tuned frequency will shift up or down by this minimum tuning increment, as shown on the digital frequency display.

If the Tuning rocker is held down with continuous pressure rather than just tapped, the tuning pauses briefly and then scans rapidly up or down in frequency.

Thus, to manually tune a station, the procedure is to press continuously on either side of the Tuning rocker until the tuned frequency is close to the desired broadcast frequency, and then fine-tune by tapping the Tuning rocker until the digital frequency display exactly matches the station's broadcast frequency as listed in a local newspaper or broadcasting guide. If you know the exact broadcast frequency, simply set the tuner to that frequency. If you know only the approximate frequency, tune to the vicinity of the station and then fine-tune for best sound. On FM, fine-tune until the center-tune indicator (between the triangular off-tune indicators) is illuminated.

10. SEARCH MODE (FM ONLY)

When the SEARCH button is engaged, the tuner scans in a station-by-station mode rather than in small frequency increments. When the Up/Down Tuning rocker is tapped, the tuner scans up or down in frequency and automatically stops at the next station whose signal is strong enough for good reception.

If you want to tune to a weak station, or if you want to fine-tune the tuner manually, disengage the SEARCH mode (button OUT), allowing the Up/Down Tuning rocker to tune in small increments.

NAD ELECTRONICS
BOSTON/LONDON/TOKYO

NOTE: Some NAD components are equipped with dual or multi-voltage transformers (which is indicated on the back panel). If you wish to change the voltage, please bring your unit to an authorized NAD service technician for internal conversion.