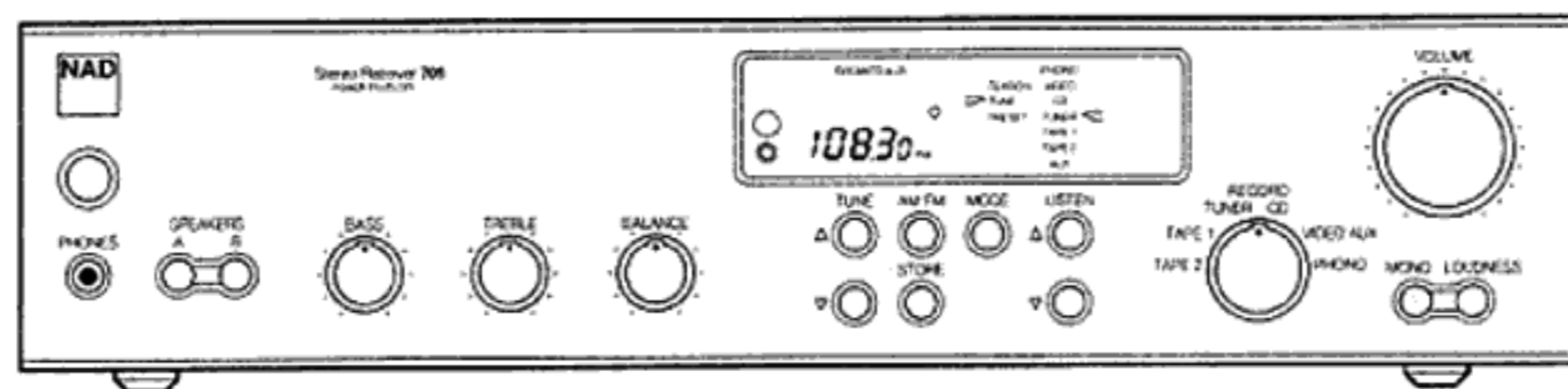


NAD

705

• **OWNER'S MANUAL**



NAD MODEL 705 SPECIFICATIONS

POWER AMPLIFIER SECTION

CONTINUOUS RATED POWER OUTPUT INTO 8 OHMS
(Min. power per channel, 20Hz-20kHz both channels driven,
with no more than rated distortion)

Rated distortion (THD 20 Hz-20 kHz) 0.03%

Clipping power at 8 ohms, 1 kHz 50 W
(maximum continuous power per channel)

IHF dynamic headroom at 8 Ohms +3.5 dB

IHF dynamic power 8 ohm 90W (19.5dBW)
4 ohms 130W (21 dBW)
2 ohms 160W (22 dBW)
15 V/ μ sec

Slew Rate >60

Damping Factor >60

(ref. 8 Ohms, 50 Hz)

THD, SMPTE IM, IHF IM and TIM <0.03%

(from 250mW to rated output)

Input impedance R=20 k Ω ,
C=560 pF

Input sensitivity, 1 kHz 1 V ref. 40 W

Signal/Noise ratio, A-weighted 100 dB ref. 1 W

116 dB ref. 40 W

rated power

8 Hz-90 kHz

(+0, -3 dB)

Frequency response

LINE LEVEL OUTPUTS

Preamp output impedance 220 Ω

Maximum output level 8V

Tape output impedance Source Z+3200 Ω

Multi-Room output impedance 2000 Ω

REMOTE CONTROL

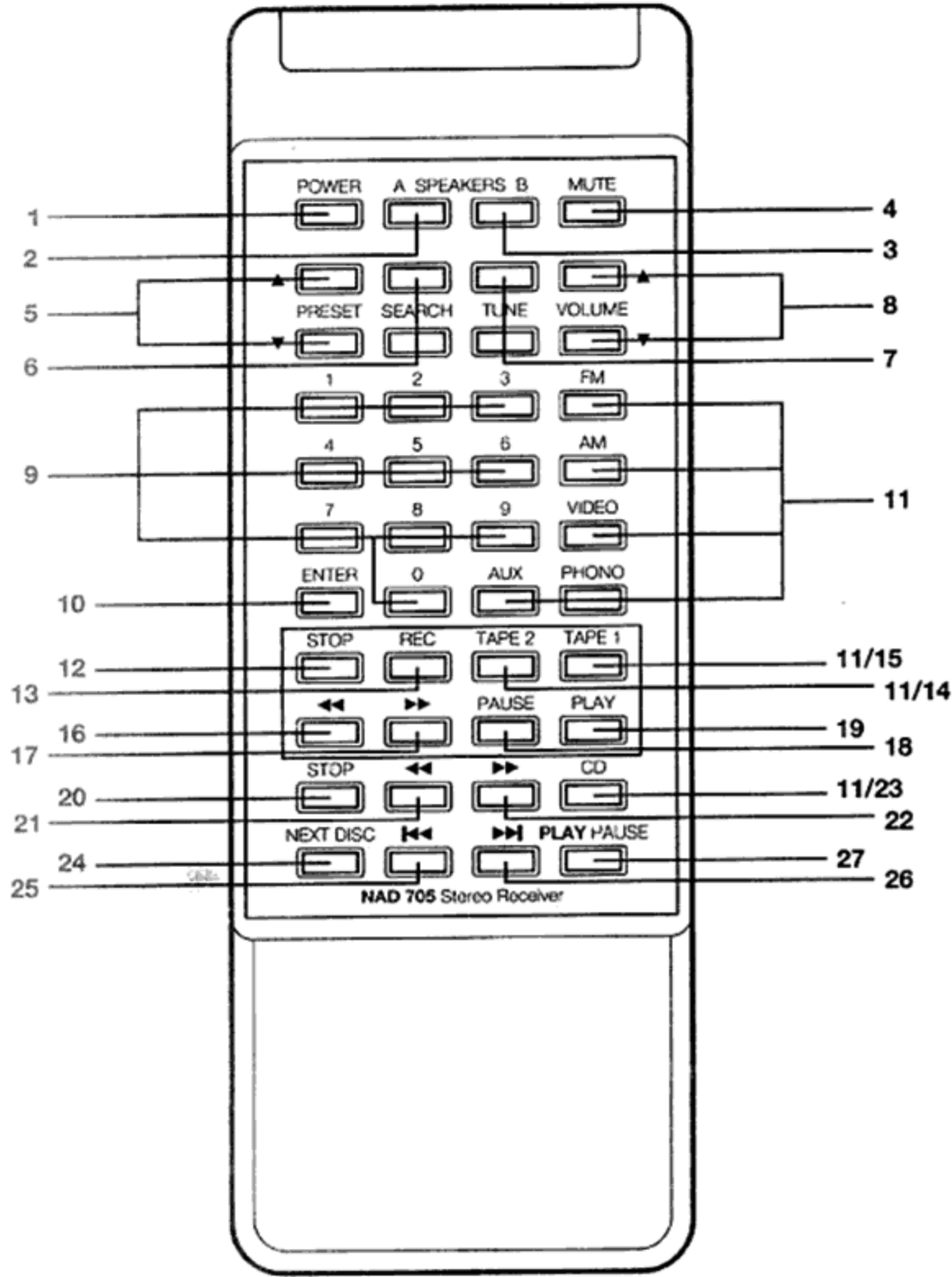


Figure 1

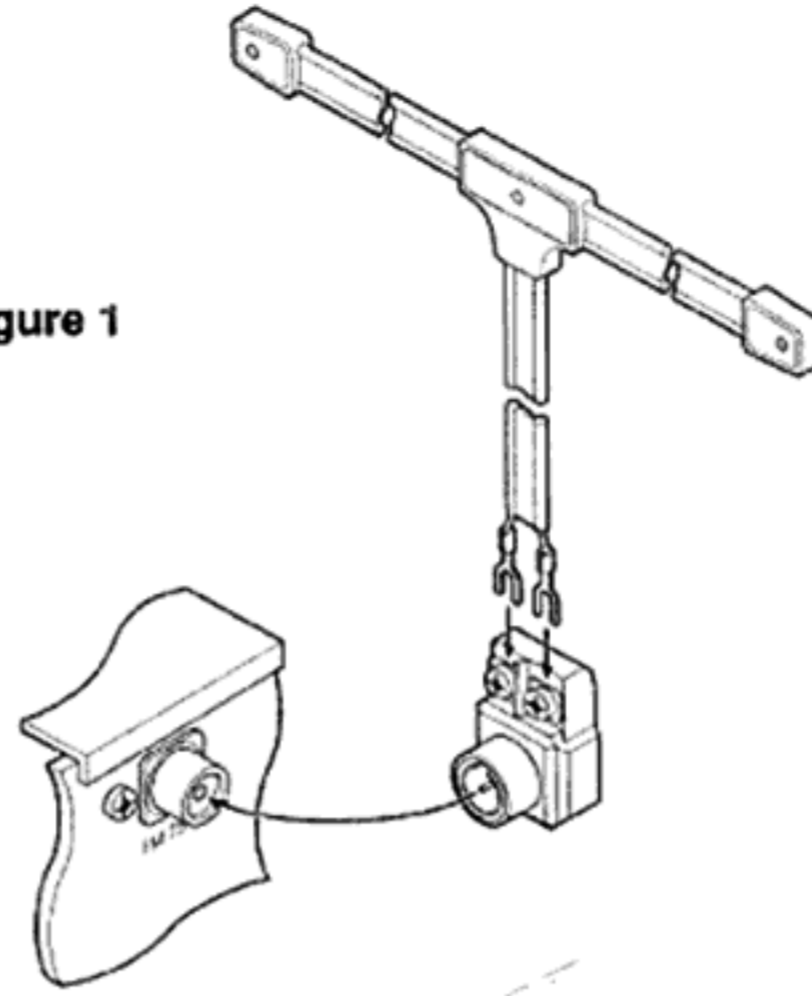


Figure 2

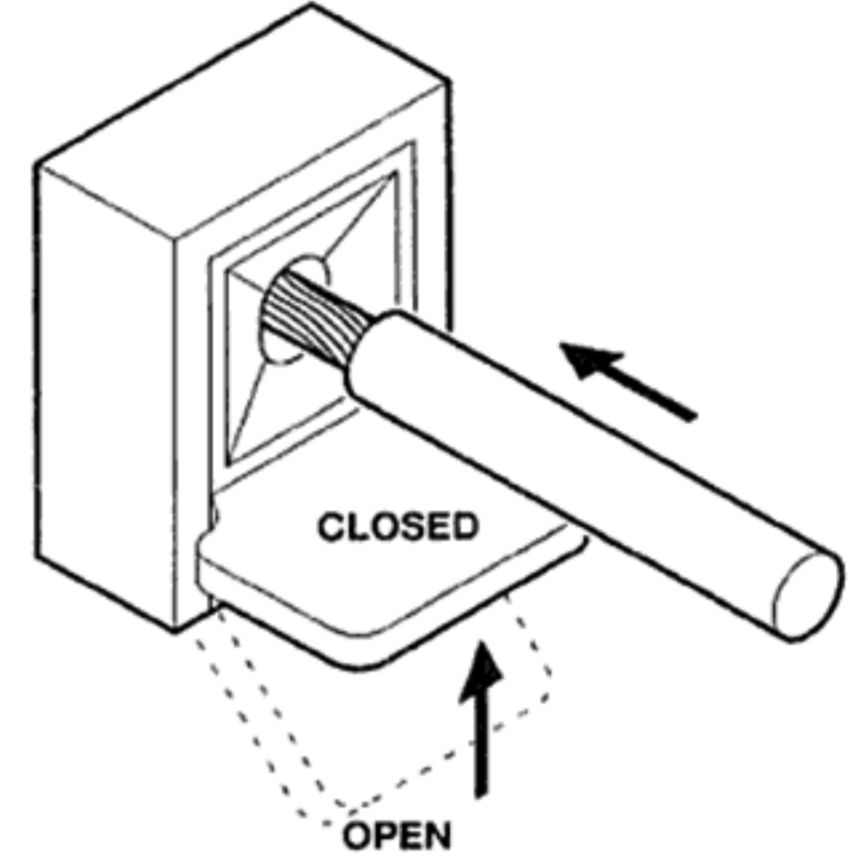


Figure 3

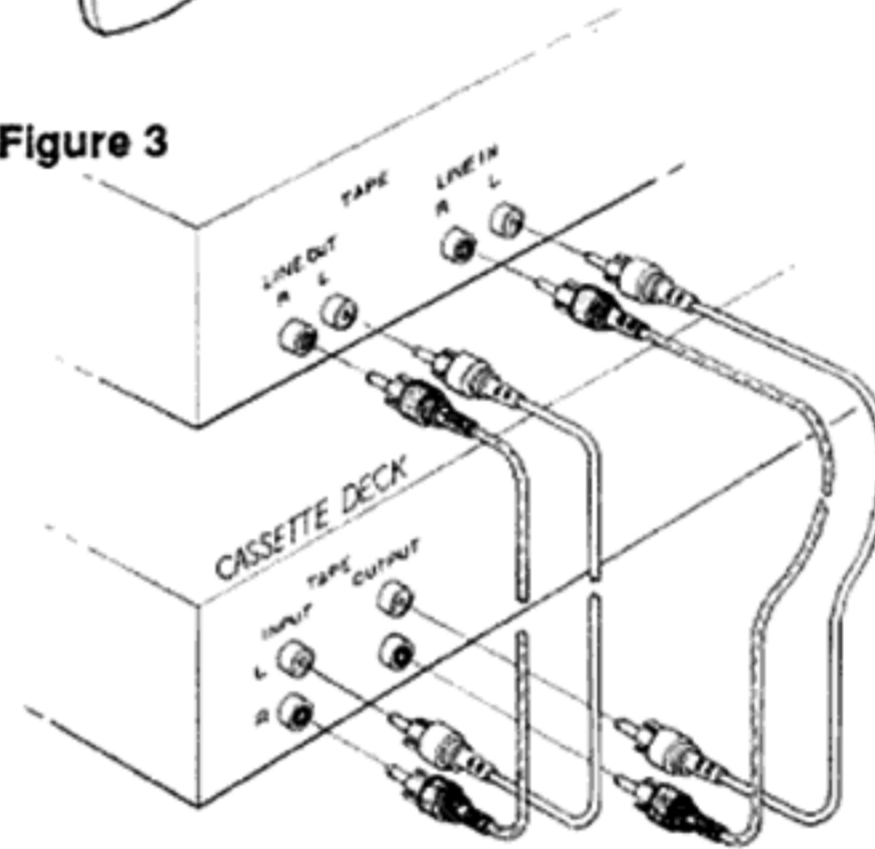
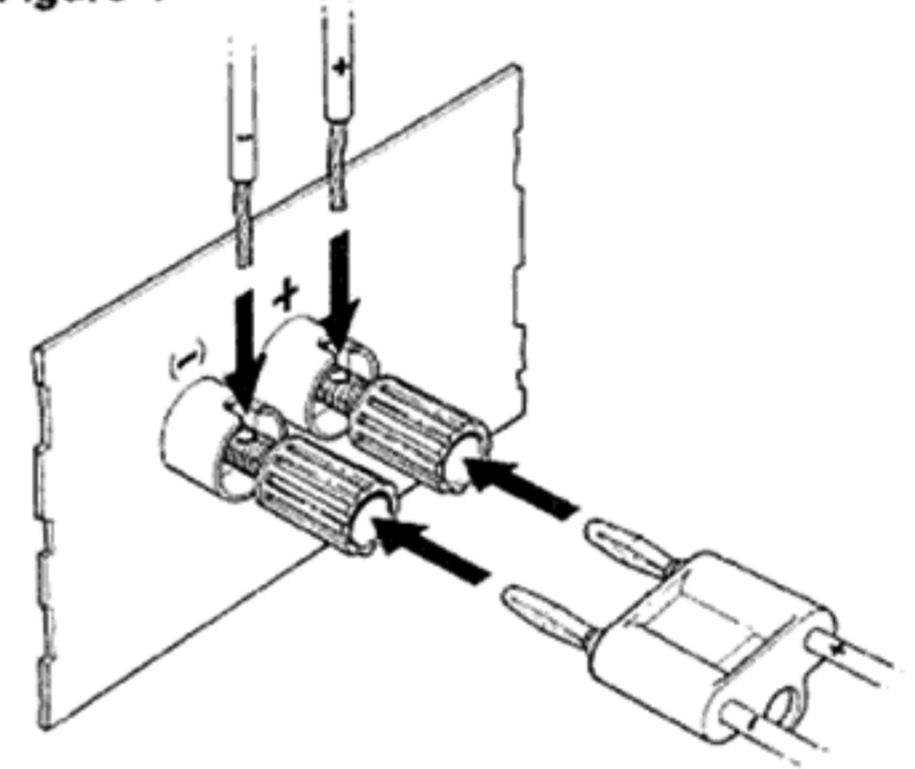


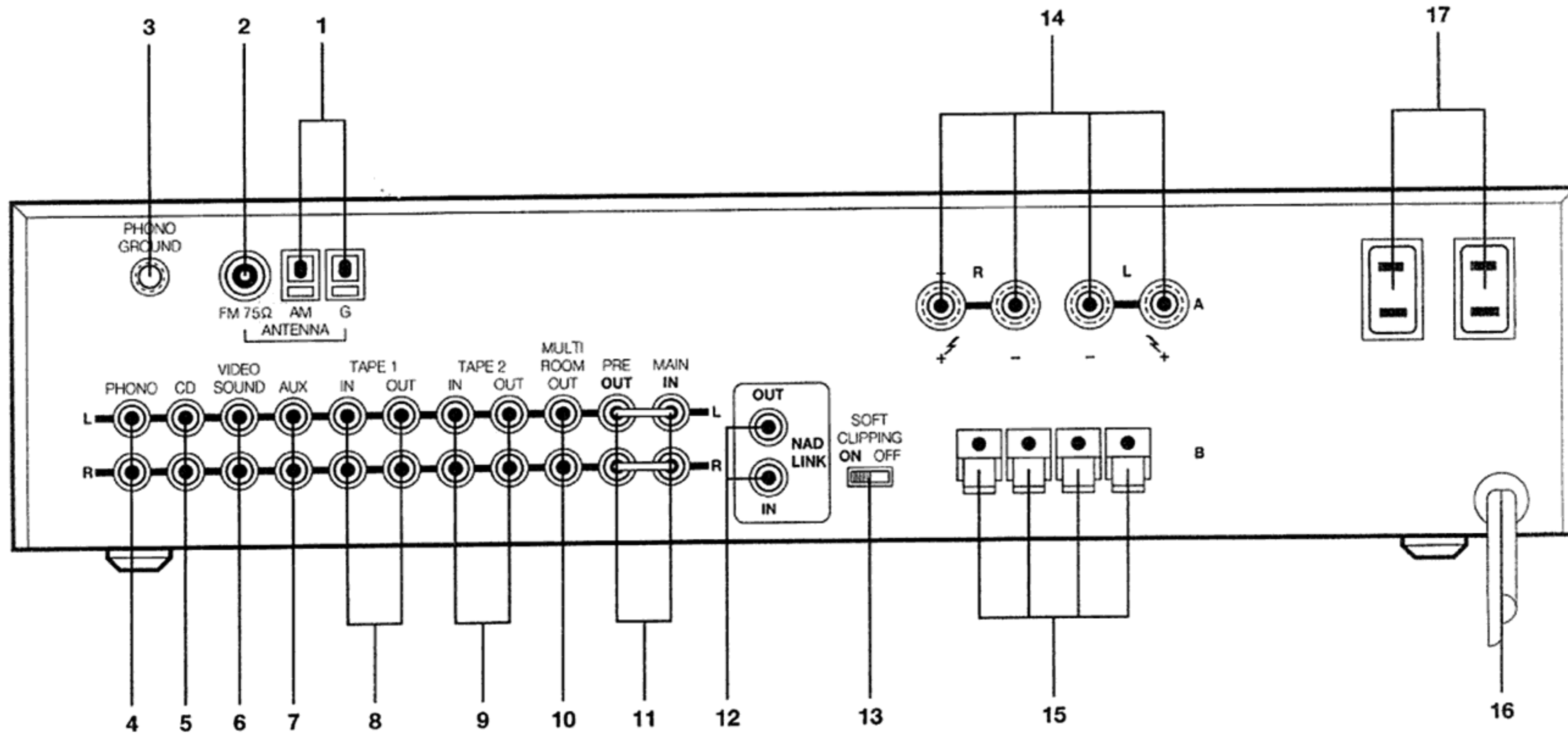
Figure 4





NAD 705

REAR PANEL CONNECTIONS

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



 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.

NAD 705 AM/FM RECEIVER

A NOTE ON INSTALLATION

This unit may be installed on any stable surface. Since its power transformer (near the left-rear corner) generates a magnetic hum field of moderate strength, an LP turntable should not be located directly to its left. The receiver also generates a modest amount of heat and thus requires some ventilation. Do not place it on a rug or other soft surface that it could sink into, obstructing the air inlets on its bottom. Do not allow anything to obstruct the ventilation grille on the top cover.

CAUTION: To prevent a fire or shock hazard, do not permit this product to become wet. If liquid is accidentally spilled on it, immediately shut off its power and unplug the AC power cord. The amplifier should be examined by a service technician before power is applied to it.)

Do not remove the cover, or attempt to modify or repair the receiver yourself. Refer all servicing to a qualified technician.

REAR PANEL CONNECTIONS

1. AM ANTENNA TERMINALS.

An external antenna will be needed for AM reception. For most local broadcasting stations a simple wire up to one meter (three feet) in length will provide ample signal strength, and such a single-wire antenna is included with the receiver. (To use any other wire, strip off 1 cm of insulation from one end, and twist together the exposed wire strands.)

Connect the bare end of the wire to the AM terminal, as follows. Push down the plastic tab below the AM terminal. This opens the small hole in the center of the terminal. Insert the bare wire into the hole and pull the tab back up to its normal horizontal position against the body of the terminal. The terminal will grasp the wire and hold it in place. [Fig. 2]

The remainder of the antenna may be allowed to hang down behind the receiver or may be tacked in place along the rear of a wooden — not metal — shelf. (A metal shelf may interfere with reception. In that case the wire should be stretched out along the wall away from the shelving and tacked in place.) Experiment with the orientation and length.

2. FM ANTENNA INPUT.

The FM antenna input socket is designed to accept a 75-ohm "co-axial" cable. If you want to connect an antenna with a 300-ohm twin-lead wire, use the supplied 300-to-75 ohm "balun" adapter.

Some type of FM antenna must be connected to the receiver. A ribbon-wire "folded dipole" antenna and a balun adapter are included to get you started. When you unfold 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 ceiling. The "vertical" section of the T goes to the antenna input. Connect its two wires to the screw terminals on the balun adapter [Fig. 1]; then plug the balun into the receiver's FM input socket.

3. PHONO GROUND.

If your turntable is equipped with a grounding wire (usually a green wire terminating in a U-shaped spade lug), connect it to this terminal.

If you encounter a persistent low-level hum or buzz in the sound, try reversing the polarity of any AC power plugs in the system. If that doesn't eliminate the hum, connect a wire from the Ground terminal to a true earth-ground, i.e. a copper-plated rod driven several feet into the earth. A cold-water pipe may serve as a substitute electrical ground if the underground pipes are metal rather than plastic.

4. PHONO INPUT.

Plug the audio signal cables from your turntable into these jacks. Observe the colour-coding of the cables or plugs to determine which is for the Left channel (upper jack) and which for the Right (lower jack). Be careful to insert each plug fully into the socket so that the plug's metal skirt fits tightly over the exterior of the socket. If necessary, bend the leaves of the plug's metal skirt slightly inward so as to obtain a tight fit with the socket.

5. CD INPUT.

Connect the audio signal cables from a digital Compact Disc player to these jacks. NOTE: These inputs are for audio signals, not for a CD player's digital-code output.

The input signal will be fed to the Volume control before reaching any active circuitry, so the receiver's circuits cannot be overloaded by high level signals from the CD player.

If you don't have a CD player, any other line-level signal source (such as a spare tape player) may be connected to the CD input.

6. VIDEO SOUND INPUT.

Connect a video-related audio signal here, such as the audio output from a video cassette recorder, laserdisc or CD-I player, camcorder, TV monitor/receiver, or stereo television decoder. Alternatively, any "line-level" audio signal may be connected to the CD input.

7. AUX (AUXILIARY INPUT).

Any "line-level" signal source may be connected here, such as the audio output from a spare tape deck or video product.

8. TAPE 1 IN/OUT.

The tape connections may be used with recorders of all types: cassette, reel-to-reel, DAT, DCC, HiFi VCR, etc. To play tapes, connect a stereo patch cord from the recorder's audio LINE OUT jacks to the TAPE 1 IN jacks of the NAD 705. [Fig. 3.] Observe the colour-coding of the plugs to connect the channels consistently: from the left-channel output of the tape deck to the left-channel input of the 705, and right channel to right input.

To make recordings, connect a stereo patch cord from the TAPE 1 OUT jacks to the recorder's audio LINE IN jacks (not to its digital, video, or microphone inputs).

9. TAPE 2 IN/OUT.

You may use these jacks to connect a second tape recorder of any type. For playback, connect a cable from the recorder's audio LINE OUT jacks to the TAPE 2 IN jacks. For recording, connect a cable from the TAPE 2 OUT jacks to the recorder's audio LINE IN jacks.

For information about copying tapes, or using the TAPE IN/OUT jacks with a signal processor instead of a recorder, see the Appendix.

10. MULTI-ROOM OUTPUT.

The output signal at these jacks is the same signal that you have selected for listening. It is not affected by the volume, balance, or tone controls.

The main purpose of this output is to feed the selected signal to a multi-room controller or a second amplifier connected to loudspeakers in another room. Connect a stereo patch cord from the Multi-Room OUT jacks to a pair of line-level audio input jacks on the controller or other amplifier. If the connecting cable must be longer than 10 meters, use a low-capacitance cable to avoid high-frequency loss.

The Multi-Room OUT connection can be used to feed the selected signal to an extra tape recorder. Unlike the TAPE 1 or 2 OUT jacks, whose signal is determined by the RECORD selector, the Multi-Room OUT jacks always carry the signal that you have selected for listening.

11. PREAMP OUT / MAIN IN.

For normal operation, leave in place the U-shaped metal jumpers that bridge the PRE-OUT and MAIN-IN jacks. Check to be sure that they are fully inserted into the jacks and that nothing is touching them.

This receiver can be used as the heart of an elaborate sound system. Example: connect the preamp output to a surround-sound decoder, return the decoder's "front" outputs to the Main-In jacks, and use another amplifier for the "rear" signals. See the Appendix for details.

12. NAD LINK IN/OUT.

The NAD Link OUT connector (the upper jack) allows remote-control commands to be relayed from this receiver to other products equipped with a NAD-Link (or compatible) input. To use this option, connect a cable from the receiver's NAD Link OUT socket to the NAD Link IN jack on another product.

The NAD Link IN connector (the lower jack) allows this receiver to be operated by external control signals from a multi-room controller or remote relay system. Connect a cable from the controller to the NAD Link IN jack. Using both IN and OUT connections, remote commands can be "daisy-chained" from one product to the next.

13. SOFT CLIPPING™.

When a receiver is overdriven beyond its specified power output, it normally produces "hard clipping" of the signal with harsh distortion and power-supply buzz as the output transistors saturate. The NAD Soft Clipping circuit gently limits the output waveform and minimizes audible distortion when the amplifier is overdriven. We recommend that it be switched ON whenever you play loud music that might exceed the amplifier's power capacity.

14. "A" SPEAKER TERMINALS.

This receiver is equipped with high current binding-post terminals to connect your main stereo speakers. Use heavy-duty (16-gauge or thicker) stranded wire, especially with 4-ohm loudspeakers.

Connections may be made in either of two ways:

(1) Strip off half-an-inch (1 cm) of insulation from each speaker wire. In each conductor, twist the strand of wire together. Unscrew the knob, insert the bare wire should not be touching the chassis or adjacent terminals.

(2) Install banana plugs on your speaker wires and plug them into the end of each binding post. The terminals are separated by 3/4 inch (19 mm), so they will accept dual-banana plugs. Connect the wires from the left-channel speaker to the (L+) and (L-) terminals and the wires from the right-channel speaker to the (R+) and (R-) terminals in the "A" group (Fig. 4).

Stereo speakers must operate "in phase" with each other in order to produce a focused stereo image and to reinforce rather than cancel each other's output at low frequencies. When connecting speakers, take care that the red (positive) terminal on the receiver is connected to the red (positive) terminal on the loudspeaker, in each channel. Methods of checking for correct phasing are described in the Appendix.

15. "B" SPEAKER TERMINALS.

A second pair of loudspeakers, for example extension speakers located in another room, may be connected to the receiver using the lower row of terminals. The spring-tab "B" terminals are intended for pin connectors or bare-wire connections.

Press the coloured tab below each "B" terminal in order to open up the small hole in the centre of the terminal. Insert the pin connector or bare wire into the hole, and release the tab; the terminal will grasp the wire and hold it in place.

16. AC POWER CORD.

Plug the AC line cord into a "live" wall socket. A green Standby indicator, located at the lower-left corner of the display window, will glow as long as the receiver is plugged in but not switched on.

17. AC OUTLETS (120V models only).

The AC power cords of other stereo components may be plugged into these accessory outlets. The SWITCHED outlet is intended for all-electronic products (e.g. an equalizer or other signal processor), and will be switched on and off by the POWER button on the front panel or the remote control.

The UNSWITCHED outlet should be used to power any device containing a clock timer (such as a VCR), or products involving mechanical operations (a turntable or tape deck). Such products should be turned on and off with their own power switches.

FRONT PANEL CONTROLS

1. POWER.

Press this button to turn on the receiver and any equipment plugged into the SWITCHED convenience outlet on the rear panel. When the receiver is switched ON, the Standby indicator turns off and the display is illuminated.

To switch the power off, press the Power button again.

If the AC power cord is not plugged into a "live" AC socket, the green Standby indicator will not illuminate, and the front-panel and remote-control Power buttons will have no effect.

2. PHONES.

Plug stereo headphones into this 6mm (1/4") socket. If your headphones have only a small 3mm mini phone plug, you can purchase a 1/4" step-up adapter. The PHONES jack will provide proper drive signals for all conventional stereo headphones regardless of their impedance, with just one exception: electrostatic headphones usually are supplied with an adapter unit which must be connected directly to the speaker terminals on the rear panel.

Before plugging any headphones in, turn down the VOLUME control for safety. And when you are not listening to the headphones it is wise to unplug them from the socket. Otherwise, when not wearing the phones you might inadvertently turn up the volume to a high level and feed a dangerously strong signal to the headphones.

3. A/B SPEAKER SELECTOR.

The A and B buttons operate relays that feed the amplifier's output power to the A and B speaker terminals on the rear panel. The status of these relays is shown in the upper-left corner of the display.

Press "A" to switch on or off the speakers connected to the "A" terminals. Press "B" to switch on or off the "B" speakers.

If A and B are both engaged (shown by "SPEAKER A+B" in the display), the amplifier's output power is fed to both sets of speakers in parallel. If A and B are both disengaged, both sets of speakers are silenced.

Thus if you have your main stereo speakers wired to the "A" terminals and a set of extension speakers wired to the "B" terminals, you can choose to hear only the main speakers (A on, B off), only the extension speakers (A off, B on), or both (A+B).

The amplifier's output signal is present at the PHONES jack at all settings of these buttons. When using headphones it normally is advisable to switch the loudspeakers OFF. Then your VOLUME control may freely be used to adjust the loudness level in the headphones with no fear of overdriving the speakers.

If you have connected an adapter unit for electrostatic headphones to the SPEAKERS B terminals, you can use the A/B buttons to select your main stereo speakers (A) or the headphones (B).

4. BASS.

The Bass control adjusts the relative level of low frequencies in the sound. The electrical response of the amplifier is flattest when the control is set in the detent at the 12 o'clock position. Rotation of the knob to the right (clockwise) increases the level of low-frequency sounds, and rotation counter-clockwise decreases their level. Adjust the Bass control to achieve the tonal balance that sounds most natural to you.

At moderate rotations away from center the effect of the Bass control is subtle, because its action is confined to the lowest audible frequencies. Only at large rotations away from center is there a substantial boost or cut at the mid-bass frequencies that are common in music.

5. TREBLE.

The Treble control adjusts the relative level of high frequencies in the sound. The response of the amplifier is flattest when the control is set in the detent at the 12 o'clock position. Rotation of the Treble control to the right (clockwise) increases the level of high-frequency sounds, and rotation counter-clockwise decreases their level. Adjust the Treble control to achieve the tonal balance that sounds most natural to you.

Boosting the Treble increases the brilliance and clarity of details in the sound, but also makes any noise more prominent. Turning down the Treble makes the sound mellower while suppressing hiss and record surface noise; but too much Treble roll-off will produce dull sound.

6. BALANCE.

The Balance control adjusts the relative levels of the left and right channels. A detent at the 12 o'clock position marks the point of equal balance. Rotation of the Balance control to the right (clockwise) decreases the level of the left channel so that only the right channel is heard, thus shifting the sonic image to the right. Rotation to the left shifts the sonic image toward the left speaker.

Adjust the Balance control to produce a natural spread of sound across the space between the speakers, with any monophonic sound (such as a radio announcer's voice) appearing as a phantom image centered midway between them. The Balance control has no effect on recordings being made via the TAPE OUT connections.

7. UP/DOWN TUNING.

Press the Tune Up (\wedge) button to select higher frequencies or higher-numbered presets. Press the Tune Down (\vee) button to select lower frequencies or lower-numbered presets. The effect of the tuning buttons depends on the setting of the Tuning Mode selector.

In the PRESET mode, tapping the Δ button will increase the Preset number. If you are tuned to Preset # 2 and tap the Δ button once, the receiver will tune to Preset # 3. If you press the Δ button and hold it in with continuous pressure, the receiver will scan rapidly through the presets until you release the button. The tuner has a "wrap-around" feature: if you increase the Preset number above 39, it automatically starts over again at Preset # 1.

In the SEARCH mode, tapping the Δ button will cause the receiver to scan rapidly upward in frequency and stop at the next strong signal. The \vee button scans down to the next strong signal.

In the TUNE mode, tapping the \wedge or \vee button will alter the tuning frequency in steps of 0.025 MHz on the FM band. Since only two digits are displayed after the decimal point, the sequence of steps will appear as: 94.10, 94.12, 94.15, 94.17, 94.20, etc.

On the medium-wave AM band the size of each tuning step is 10 kHz in North America, or 9 kHz in Europe.

If you hold a Tuning button down with continuous pressure rather than tapping it, the circuit pauses briefly and then scans rapidly up or down in frequency (or preset number) until the button is released.

To tune a broadcast signal, select the TUNE mode by pressing the MODE button; then press continuously on the \wedge or \vee button until the tuned frequency is close to the desired broadcast frequency. Fine-tune in small increments by tapping either Tuning button. If you know the exact frequency of the broadcast station, simply tune to that frequency. If you don't know the exact frequency, tune to the vicinity of the correct frequency and adjust the tuning until the center-tune indicator glows. When tuning a weak signal that is only a few tuning steps away from a powerful signal, you may reduce interference by tuning slightly off from the station's center frequency, in the direction away from the stronger signal.

8. AM/FM SELECT.

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).

9. STORE PRESET.

Use either the search or tune modes described above to select a station (either from the remote control or the front panel). The current preset number selected will now flash on the display. Use the tune up/down buttons to change this to the required preset number for the station selected. Press Store for a second time to enter the selected station into the selected preset number.

To illustrate this procedure, suppose you want your first three presets to be stations at 90.3, 92.5 and 94.1 MHz. For this example, we assume that you use the numeric keypad on the remote control to tune each station.

YOU PRESS THESE BUTTONS/THE DISPLAY SHOWS

9	9
0	9 0
3	_ 9 0 3
ENTER	90.30
STORE	01 (flashing)
STORE	_ 01 (blanked)
9	9
2	9 2
5	_ 9 2 5
ENTER	92.50
STORE	01 (flashing)
TUNE Δ	02 (flashing)
STORE	_ 02 (blanked)
9	9
4	9 4
1	_ 9 4 1
ENTER	94.10
STORE	02 (flashing)
TUNE Δ	03 (flashing)
STORE	_ 03 (blanked)

The result of this process is that Preset 1 is 90.3, Preset 2 is 92.5, and Preset 3 is 94.1.

10. TUNING MODE.

Tap the Mode button repeatedly to select one of three tuning modes: Tune, Preset, Search.

In the TUNE mode you can tune station frequencies directly by pressing the Δ (Up) or ∇ (Down) tuning button — or by entering a frequency on the remote control's numeric keypad.

In the PRESET mode, tapping the Δ or ∇ tuning button advances to the next higher- or lower-numbered preset.

In the SEARCH (auto-seek) mode, tapping the Δ or ∇ tuning button causes the receiver to scan rapidly up or down in frequency and stop at the next station.

If you press one of the up/down SEARCH, TUNE, or PRESET buttons on the remote control, the receiver selects the corresponding mode.

11. LISTEN (CHOOSE INPUT FOR LISTENING).

These up/down pushbuttons cycle through the seven inputs listed on the display to select the source that you will hear. Alternatively, you may select an input directly using the remote control.

When you press the Up or Down LISTEN button the entire list of choices is illuminated on the display, and the current input is indicated by a pointer. After a few seconds most of the display goes blank, while the name of the selected input remains lit.

These pushbuttons, and the remote control, select only the input for listening. Selection of an input for recording is made by the RECORD knob.

Select the TAPE 1 or TAPE 2 input to hear recorded tapes.

These settings also allow you to "monitor" tape recordings as they are being made.

12. RECORD (CHOOSE INPUT FOR RECORDING).

This rotary selector determines which input signal is fed to the TAPE 1 and 2 OUTPUTs for recording. It is substantially independent of the LISTEN selector, allowing you to record from one input while listening to a different source. For example if you set the RECORD selector to CD, you can copy a CD onto tape (for later playback in the car), while listening to an FM broadcast or other source.

At most settings of the RECORD selector, the chosen input signal is fed to both the TAPE 1 and TAPE 2 connections for recording. But when TAPE 1 is selected, it is fed only to TAPE 2 OUT. When TAPE 2 is selected, it is fed only to TAPE 1. This arrangement allows tapes to be copied from one recorder to the other, but avoids feeding a tape recorder's output back to its own input (which could cause a feedback squeal).

The signal chosen by the RECORD selector is not affected by the Volume, Balance, Bass, or Treble control.

When you set the RECORD selector to VIDEO/AUX, normally the VIDEO SOUND input is selected for recording. If you want to record from the AUX input, you must set the RECORD selector to VIDEO/AUX and also select the AUX input using the Up/Down LISTEN buttons or the remote control.

After setting the RECORD selector to choose any input signal for recording, you may use the remote control or the Up/Down LISTEN buttons to select TAPE 1 or 2 for listening. This allows you to hear the signal through the recorder's electronics, and then to check the playback of the recording. (Exception: If you are recording from the AUX input, the LISTEN selector must remain at AUX.)

If you have connected a graphic equalizer or other signal-processor (instead of a tape deck) to either set of TAPE IN/OUT jacks, the RECORD selector chooses which input signal is fed to the processor. Then, using the remote control or LISTEN buttons, you can choose the input from TAPE 1 or 2 (as appropriate) to hear the processed signal.

13. MONO.

The MONO button blends the two stereo channels together to produce monophonic sound. The blend minimizes noise in old monophonic LP records and in weakly received stereo FM broadcasts. This button must be OUT for normal stereo listening.

14. LOUDNESS COMPENSATION.

This button engages a "loudness compensation" circuit which, at low-to-medium settings of the Volume control, boosts the bass response of the amplifier in order to compensate for the human ear's diminished sensitivity to low-frequency sounds at low loudness levels. The circuit also provides a slight treble boost to overcome the "masking" of subtle high-frequency details by background noise.

Instead of using this button, you may prefer to use the Bass and Treble controls to obtain the tonal balance that sounds most natural to you, after setting the volume level that you want.

15. VOLUME.

The Volume control adjusts the overall loudness level of the sound. It does not affect the signals fed to the TAPE OUT or MULTI-ROOM OUT jacks.

16. DISPLAY.

- 1. LISTEN pointer.** Indicates the currently-selected input for listening.
- 2. LISTEN menu.** When you select a different input or broadcast frequency the entire display illuminates to show the menu of choices. After a few seconds the list of inputs and Mode options turns off, and only the selected input is displayed. When you select the Tuner input the frequency, preset number, and signal-strength and tuning indicators are shown.
- 3. Tuning Mode.** Indicates whether the Search, Tune, or Preset mode is active.
- 4. Soft Clipping.** Glows when the Soft Clipping switch (on the rear panel) is ON.
- 5. Speaker.** Indicates whether you have selected speakers A, B, or A+B. If speakers A and B are both disengaged, this area of the display is blank.
- 6. Mute.** Glows when the MUTE button on the remote control has been pressed to silence the speakers. For normal listening, press the MUTE button again to bypass the muting circuit.
- 7. Protection.** This indicator signifies that the receiver has shut off the speakers to protect itself. Switch off the power, allow the receiver to cool for a few minutes, switch it back on, and press SPEAKERS A and/or B to reconnect the speakers. If the problem recurs, inspect the speaker wiring for a short-circuit. For more information, see the Appendix.
- 8. Signal strength.** The number of illuminated bars increases with the strength of the received signal. If only one or two bars illuminate, the signal is too weak for noise-free reception. Strong signals are indicated by five to seven illuminated bars. If fewer than four bars are illuminated when you are correctly tuned to a station, you are not getting all of the noise-quieting that the tuner is capable of. Use a larger antenna (or increase its height) to pull in a stronger signal.
- 9. Remote receiver.** This lens and detector receive the infrared command codes from the remote-control handset. There should be a clear line-of-sight path from the handset to the detector.
- 10. Remote/Standby.** This green LED glows briefly when any remote-control command is received. When the Power is switched off, this LED glows steadily as a Standby indicator, showing that the receiver is ready to receive a turn-on command.
- 11. Tuning status.** When the Tuner input is chosen from the LISTEN menu, the numeric display shows the broadcast band (AM or FM) and the frequency to which the receiver is tuned. The STEREO indicator illuminates when a stereo FM broadcast is received and decoded by the tuner's multiplex circuit.
- 12. Tuning indicator.** This is a three-part indicator. The open circle glows when the receiver is correctly tuned to the center of an FM station's broadcasting channel (where distortion is lowest). The centre-tune indicator is flanked by triangular pointers that glow when the tuning frequency is within an FM station's channel but not at its center. The pointer shows the direction that the tuning should be shifted — right (to a higher frequency) or left (to a lower frequency). On the AM band, simply tune for maximum signal strength.

- 13. Preset.** Shows the current preset number, from 1 to 35.

REMOTE CONTROL

Since the 705 remote is a multi-product controller, its buttons are arranged by product category.

RECEIVER CONTROLS

1. **Power.** This button duplicates the function of the green Power On/Off button on the front of the receiver. Press to switch on the power. Press again to switch off the power, leaving the receiver in Standby mode.
2. **Speakers A.** Press to engage or disengage the "A" speakers.
3. **Speakers B.** Press to engage or disengage the "B" speakers.
4. **Mute.** Press to shut off the sound temporarily, when you want to answer the telephone for example. (A little sound may still be audible.) Press MUTE again to restore the sound to its previous volume level.
5. **Preset Up/Down.** Skips to the next higher or lower numbered preset station.
6. **Search Up/Down.** Auto-seek tuning; scans up or down in frequency and stops at the next strong station.
7. **Tune Up/Down.** Tunes up or down in frequency by small steps. These buttons also alter the preset number when you are storing frequencies in the presets.
8. **Volume Up/Down.** These buttons activate a small motor to rotate the receiver's Volume control.
9. **Numeric Keypad (0 to 9).** Press these buttons to enter a preset number or a tuning frequency. Then press ENTER to tell the receiver that you have completed your selection. The tuning logic recognizes two-digit entries as preset numbers and 3 to 5 digit numbers as broadcast frequencies. If the entry is invalid (e.g. a preset number above 39), the tuned frequency will not change.
10. **Enter.** Press this button to complete a numeric keypad entry.
11. **Input Select (FM, AM, Video, Phono, Aux, Tape 1, Tape 2, CD).** These white buttons select the input for listening.

TAPE RECORDER CONTROLS

(These buttons operate the corresponding functions on certain NAD tape recorders. Contact your NAD dealer to learn whether a particular model responds to these commands.)

12. **Stop.**
13. **Rec (Recording).**
14. **Tape 2.** Selects the receiver's Tape 2 input for listening.
15. **Tape 1.** Selects the receiver's Tape 1 input for listening.
16. **<< (Rewind).**
17. **>> (Fast Forward).**
18. **Pause.**
19. **Play.**

CD PLAYER CONTROLS

The following buttons operate the corresponding functions on certain NAD compact disc players. Contact your NAD dealer to learn whether a particular model responds to these commands.

20. **Stop.**
21. **<< (Scan Back).**
22. **>> (Scan Forward).**
23. **CD.** Selects the receiver's CD input for listening.
24. **Next Disc.** Selects the next disc in a CD changer.
25. **|<< (Skip Back).**
26. **>>| (Skip Forward).**
27. **Play/Pause.**

BATTERIES.

Batteries must be installed before the remote control can be used. In the future, if the receiver does not respond to remote commands, the batteries may be weak and should be replaced. The unit requires two 1.5-volt AA-size (or R6) penlight cells. Alkaline cells are recommended, for maximum operating life.

To open the battery compartment, press the small release lever between the ribbed areas on the back of the handset. When installing fresh AA cells, take care to orient them as shown on the diagram within the compartment.

APPENDIX: ELICITING THE BEST PERFORMANCE FROM THE NAD 705

STORING STATION FREQUENCIES IN THE TUNING PRESETS.

(1) Decide which station you want to assign to each of the thirty-nine presets. (You don't have to use them all.) You may arrange the stations in any order that you find easy to remember or convenient to use. For example the arrangement may be alphabetical (1 = WABC, 2 = WCBS, 3 = WNYC ...), numerical (1 = BBC1, 2 = BBC2, ...), in order of increasing frequency (1 = 89.7, 2 = 90.9, 3 = 92.3, etc), or in groups by format (for example 1-5 news, 6-9 classical, 10-15 jazz, 16-19 country, 20-30 rock, 31-39 dance).

(2) Select the FM or AM band.

(3) Tune to the first station on your list, by pressing the up/down tuning buttons or by entering the station frequency via the numeric keypad on the remote control. If you are not certain of the frequency, check the station/frequency directory in a local newspaper or broadcasting guide.

Press STORE to store the displayed frequency in the tuner's memory. The tuner will display 01 (flashing). Press STORE again to register the stored frequency as Pre-set 01.

(4) Tune to the second station on your list. Press STORE to store that frequency in memory. The tuner will display 01 (flashing), the last preset selected. Press TUNE \wedge to advance the preset number. When it displays 02 (flashing), press STORE to complete the second pre-set.

(5) Tune to the third station on your list, press STORE to store the frequency in memory, press TUNE \wedge to select Pre-set 03, and press STORE again to complete the third entry.

Incidentally, if you make a mistake or change your mind, it is not necessary to re-program the pre-sets in sequence. You can re-program any pre-set as follows: tune to the desired frequency, press STORE, press TUNE \wedge or \vee to select the preset number that you want to re-program, and press STORE again.

The pre-sets preserve their frequency assignments forever, even if the AC power cord is unplugged. Thus you can rearrange your stereo system, or move the equipment from room to room, without losing the pre-set frequencies. But if you move to a new town and want to enter a totally different set of station frequencies, first clear the memory.

TO CLEAR THE MEMORY.

The following procedure will erase all frequencies from the presets.

1. Press the POWER button and hold it in.
2. While continuing to press the POWER button, press STORE for 2 seconds.
3. Release the STORE button.
4. Release the POWER button.

TO CHANGE THE AM TUNING STEP.

When tuning on the AM medium-wave band, the frequency changes by increments of 10 kHz in North America or 9 kHz in Europe. The following procedure toggles the tuning circuit between these settings.

1. Press the MODE button and hold it in.
2. While continuing to press MODE, press the TUNE \wedge (Up) button.
3. Release the TUNE \wedge button.
4. Release the MODE button.

ANTENNAS FOR BETTER RECEPTION.

A ribbon-wire "dipole" antenna may provide adequate reception of strong FM signals. But such an antenna 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. In most cases you can improve reception by using 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). But since its tuned elements are made of metal rods, it can easily 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 balun adapter's screw terminals in place of the simple 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 any noisy, 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 reception, the tuning switch on an elaborate indoor antenna may reduce the interference.

(3) An electrically tuned indoor antenna. Again, such antennas may 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 may 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, least 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. Its large size yields better sensitivity (pulling in a stronger signal from the desired station). Its narrower directional pattern yields more effective rejection of multipath reflections arriving from other directions. Its location on a roof or tall mast places it above many sources of interference — passing cars and buses, other buildings, etc. And the strength of received FM signals is directly proportional to the height of antenna above 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 designed to be relatively weak at FM frequencies. You could use a splitter to extract FM signals from an apartment building's master antenna system, but this will yield poor results if the system has a "trap" 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) vertically or horizontally from any other antenna. 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 from the receiver before connecting the outdoor antenna.

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 fall into contact with 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.

USING A LONG-WIRE ANTENNA FOR BETTER AM (MEDIUM-WAVE) RECEPTION.

To improve reception of distant AM stations, attach a long-wire outdoor antenna to the AM terminal. A "long-wire" antenna is a 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.

The effectiveness of a long-wire antenna may 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, such as a cold water pipe, may also prove effective.

MAKING SURE THAT YOUR SPEAKERS ARE IN PHASE.

Stereo speakers should operate in phase with each other in order to provide a good stereo image and to reinforce rather than cancel each other's output at low frequencies. If your speakers are easily moved, their phasing can easily be checked. Make the connections to both speakers, place the speakers face-to-face only a few inches apart, play some music, and listen. Then swap the connection of the two wires at the back of ONE speaker, and listen again. The connection which produces the fullest, boomiest bass output is the correct one. Connect the wires securely to the speaker terminals, being careful not to leave any loose strands of wire that might touch the wrong terminal and create a partial short-circuit. Then move the speakers to their intended locations.

If the speakers cannot easily be set face-to-face, phasing must rely on the "polarity" of the connecting wires. Note that the **SPEAKERS** terminals on the amplifier are color coded: in each channel the red terminal has positive "+" polarity and the black terminal is negative "-". The terminals at the rear of the speakers are also marked for polarity, either via red and black connectors or by labels: "+", 1, or 8 ohms for positive, "-", 0, or G for negative. As a general rule the positive (red) terminal on the amplifier should be connected to the positive terminal of the speaker, in each channel.

To facilitate this, the two conductors comprising the speaker wire in each channel are different, either in the color of the wire itself (copper vs. silver) or in the presence of a small ridge or rib pattern on the insulation of one conductor. Use this pattern to establish consistent wiring to both speakers of a stereo pair. Thus if you connect the copper colored wire (or ribbed insulation) to the red amplifier terminal in the Left channel, do the same in the Right channel. At the other end of the wire, if you connect the copper colored wire (or the ribbed insulation) to the red or positive terminal on the left-channel speaker, do the same at the right-channel speaker.

If a second pair of speakers is located near the first pair in the same room and will be played simultaneously, then they must be correctly phased with respect to the first pair as well as with each other. But if the second pair of speakers is located away from the first pair (in another room, for example) or will not be played at the same time as the first pair, then their phasing need not be match that of the first pair. As with any stereo speakers, the second pair still must be in phase with each other.

COPYING TAPE RECORDINGS.

If you want to copy a recording from one tape deck to another, the recorder that will make the copy should be connected to the **TAPE 2 IN/OUT** jacks as described in the section on rear-panel connections. The machine containing the original "source" tape should be connected to the **TAPE 1 IN/OUT** jacks. Use the **RECORD** switch to select the **TAPE 1** input signal for recording. If you also use the **LISTEN** buttons on the receiver (or the **Input Select** buttons on the remote control) to select **TAPE 1**, you can hear the signal from the source deck.

But if you use the **LISTEN** buttons or the remote control to select **TAPE 2**, you will hear the signal after it has passed through the copying recorder's electronics. (In some recorders the input signal is heard only when the **Record** button is pressed.) Adjust the recording level on the copying recorder, and make the recording.

You may alter these arrangements if you wish. To copy from **TAPE 2** to **TAPE 1**, set the **RECORD** selector to the source machine (**TAPE 2**) and use the **LISTEN** selector to hear the copying machine (**TAPE 1**). To copy the soundtrack from a video onto an audio tape, set **RECORD** to **VIDEO/AUX**, then check the recording by listening to **Tape 1** or **2** as appropriate.

A note about copying: Tape copying is a convenience intended for personal use. If you copy commercially-produced recordings and sell or give away the copies, you may be violating the copyright or the property rights of the producer of the recording.

CONNECTING A SIGNAL PROCESSOR TO PRE-OUT AND MAIN-IN.

The amplifier contains two independent sections or stages: the control preamplifier (including the phono preamp and most front-panel controls), and the power amplifier (which provides the power to drive loudspeakers). In normal operation the preamp and power amp are connected together via factory-installed U-shaped metal jumpers that bridge the PRE-OUT and MAIN-IN jacks. Check to be sure that they are fully inserted into the jacks and that nothing is touching them.

By removing the metal jumpers (after first switching OFF the POWER), you can connect various signal-processing accessories in the path between preamp and power amp: an equalizer, a surround-sound processor, a stereo image enhancer, an electronic crossover, etc. To use a signal processor, connect a stereo patch cord from the PRE-OUT jacks to the processor's line-level input jacks, and a second patch cord from the processor's output jacks to the amplifier's MAIN-IN jacks.

If you remove the metal jumpers, save them in case you may want to disconnect the signal processor and return to normal operation at a later time. If the jumpers should be lost, a conventional stereo patch cord can be used to connect PRE-OUT to MAIN-IN in each channel.

PROCESSOR CHAINING.

A stereo system often contains both the basic elements (disc player, tuner/amplifier, tape deck, speakers) and assorted signal-processing accessories that may exceed in number the available places in the circuit where they can be connected. It then becomes necessary to connect two or more processors in series in a single processing chain, either in a "tape monitor" loop or between the preamp and power amp. It may not be obvious in what order the processors should be connected for best results. The following sketches outline a suggested order for processor chaining, either in a tape-monitor loop or between preamp and power amp.

Normally, each processor in the TAPE IN/OUT chain will have its own set of "Tape" input/output jacks, to which the next processor in the chain is connected. Each unit in the PREAMP OUT chain is assumed to have an "off" or "bypass" mode which allows signals to pass through without processing when desired.

The outline shown here is not the only practical ordering of equipment. You could, for instance, have an equalizer in the TAPE IN/OUT loop, at approximately the same position in the chain as the dynamic noise filter. And the ordering of the dynamic expander, equalizer, and stereo image enhancer in the PREAMP OUT chain is arbitrary. You may want to experiment to find which arrangement yields the most satisfying results.

WHY 12 O'CLOCK IS NOT ALWAYS THE BEST BALANCE SETTING.

Ideally the detented centre position of the Balance control would be the normal setting. But several common circumstances may cause unequal balance, requiring an off-center setting of the Balance control to restore the most uniform spread of stereo sound between the speakers. These include unequal output from the two channels of the phono cartridge, different acoustical environments around the two loudspeakers, or simply a listening position that is closer to one speaker than to the other. (In general, for the best stereo imaging, your chair should be at precisely the same distance from both speakers.)

Recordings often contain small errors in channel balance, typically no more than 2 dB; but this is enough to degrade stereo imaging. Small compensating changes in the setting of the Balance control can significantly improve the apparent depth and stability of the stereo image.

WIRING EXTRA SPEAKERS FOR AMBIENCE.

A useful option for the SPEAKERS B terminals is to connect a second pair of speakers wired for "ambience recovery," enhancing the apparent spaciousness of stereo recordings. Locate a pair of small loudspeakers along the side walls of the listening room, slightly behind the main listening area and as far as possible to the left and right. Often it is useful to aim such speakers upward or toward the rear, so that their sound reflects randomly off the walls before reaching you.

From the (L+) red terminal in the "B" group, connect a single wire to the positive terminal of the left-rear speaker. Connect a similar wire from the (R+) red terminal to the positive terminal of the right-rear speaker. Make no connection to the black (L-) and (R-) terminals on the amplifier; instead, connect a wire from the negative terminal of the left-rear speaker to the negative terminal of the right-rear speaker. Thus wired, these rear speakers receive the left-minus-right "difference" portion of the composite stereo signal.

If you have connected speakers this way, engage SPEAKERS B when you want to hear spatially enhanced surround-sound stereo. Disengage SPEAKERS B to return to conventional two-speaker stereo.

A NOTE ON OVERLOAD PROTECTION.

Because NAD amplifiers sound so clean and musical when driven beyond their nominal power ratings and when used to drive low-impedance loudspeakers, you may be tempted to stress your amplifier beyond its design capacity. It can safely and cleanly drive complex speaker impedances with wide-range musical signals whose peak level is 100 watts or more, but it may overheat if called upon to deliver high power CONTINUOUSLY into a low impedance.

Thus you may play music at volume levels that cause the brief transient peaks and climaxes in music to exceed the amplifier's rated power by a considerable margin. (With Soft Clipping the music will continue to sound good at those high peak levels.) But if you overdrive the amplifier continuously rather than only on peaks, the output transistors may overheat.

This is particularly likely if you try to drive two pairs of speakers, or speakers having a very low impedance, at high volume levels. Severe abuse of this type could cause the receiver to shut off the sound to protect itself. If the output transistors overheat, if an improper d.c. voltage appears at the speaker terminals, or if excessive current flows through the output transistors (because of a too-low speaker impedance or an accidental short-circuit in the speaker wiring), the PROTECTION indicator will illuminate and the output relays will disengage, silencing the speakers. (However, headphones may still be used.)

If this should occur, switch off the receiver for a few minutes and allow the output stage to cool. If overheating was the fault, the receiver will operate normally when it is turned back on. But if the PROTECTION indicator remains lit and the speakers remain silent, the receiver should be returned to the dealer for service.

IN CASE OF DIFFICULTY: A TROUBLE-SHOOTING GUIDE

No sound.

Power not turned on.

Power cord unplugged, or plugged into dead outlet. (To check the AC outlet, plug in an electric lamp.)

Inoperative input selected (e.g. CD input selected with no CD playing).

Tape 1 or 2 selected with no tape playing.

MUTE button pressed. (Press MUTE again to resume normal listening.)

SPEAKERS A and B both disengaged.

Internal fuse blown; return product to dealer for service.

No sound in one channel.

Balance control turned full-left or full-right.

Loudspeaker connecting wire pulled loose. Check all connections, both at speakers and at the receiver.

Pre-Out/Main-In jumper pulled out, missing, or making contact with any metal object.

Connecting cable pulled loose or making poor contact in socket. Rotate plugs in sockets to restore contact.

Short-circuit in a defective connecting cable. Wiggle all cables, especially where they enter plugs.

Dirty contact in a switch. Exercise front-panel switches to restore clean wiping contact.

Loud buzz and Hum.

Connecting cable pulled partially out of its socket.

Defective connecting cable.

Low-frequency hum in phono.

Turntable grounding wire not connected.

Ground-loop hum. Install polarized AC plugs properly in polarized wall sockets (in which one slot is longer than the other). Try reversing any non-polarized plugs in their sockets, to find the orientation that yields the least hum.

Turntable located too close to the receiver (especially to its left). Locate the turntable to the right of the receiver.

Phono cables routed too close to the receiver's power transformer (at left-rear).

Phono plugs making poor contact in socket. (Also check any phono plugs in the turntable base.)

Hum in tape Playback

Tape deck located too close to receiver (on top of it).

Tape deck located too close to television set.

Plugs making poor contact in sockets.

Distorted reception of FM stations.

"Multipath" reception. Rotate antenna to find the orientation that provides best reception. (This may vary from station to station.) Raise the height of the antenna. If your building has steel-frame or steel-reinforced concrete construction, move your FM antenna outside, and use a shielded 75-ohm coaxial lead-in cable. If all else fails, switch to Mono reception.

Whistle or buzz in AM or FM.

Video game, computer, or computerized game operating nearby.

Noise only on AM: static due to electric motors or fluorescent lights. Minimize by tuning to a strong station, or install an outdoor antenna.

Weak bass; diffuse stereo imaging.

Speakers wired out of phase. Swap connections at the back of ONE speaker.

Remote control does not work.

Signal not received. Aim handset toward receiver. Be sure that the line of sight from the handset to the receiver is not obstructed by clothing, paper, or furniture.

Weak batteries. Replace batteries in handset.

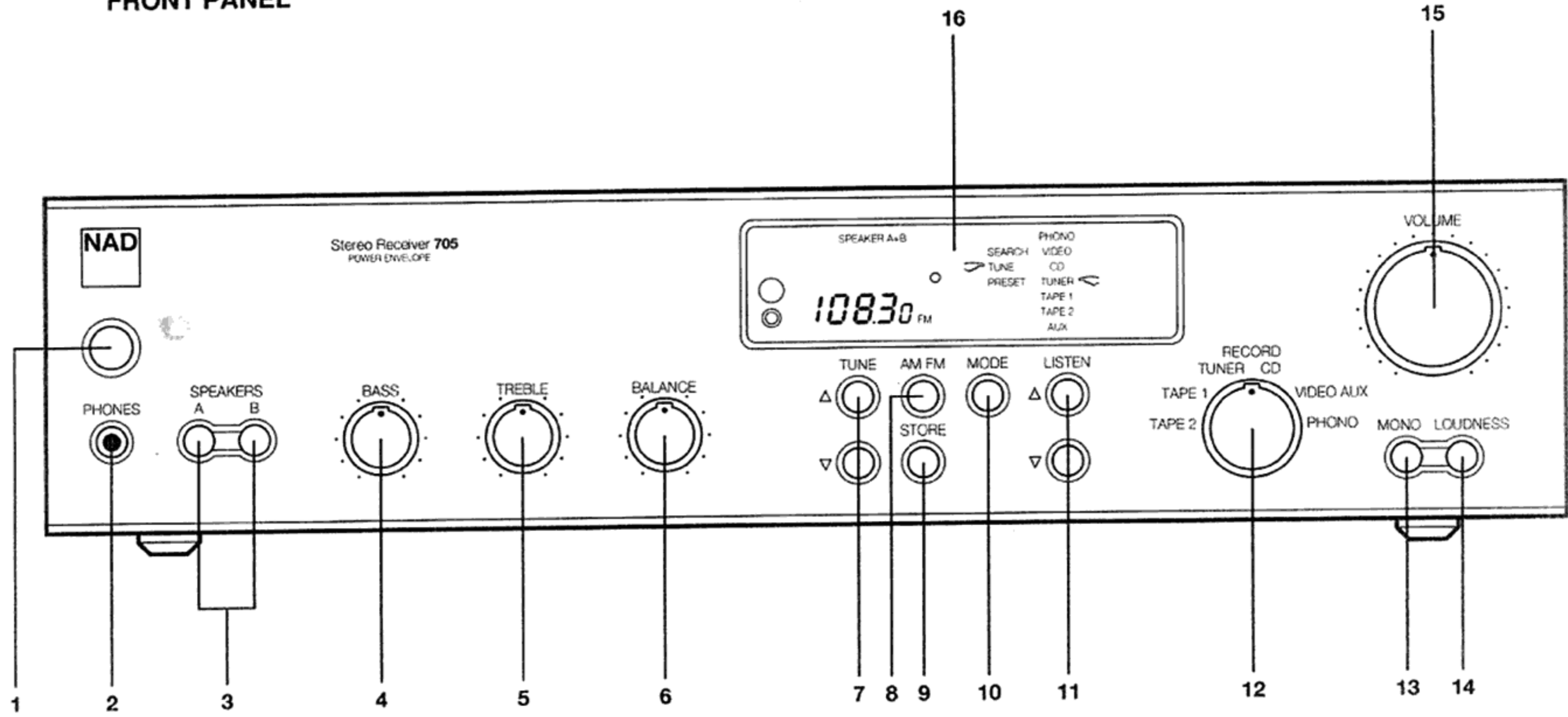
Batteries installed backward. Check the installation of the batteries in the handset.

Battery contacts dirty or corroded. Remove batteries from handset and wipe their contacts. Also clean the metal contact surfaces in the battery compartment, and replace the batteries.

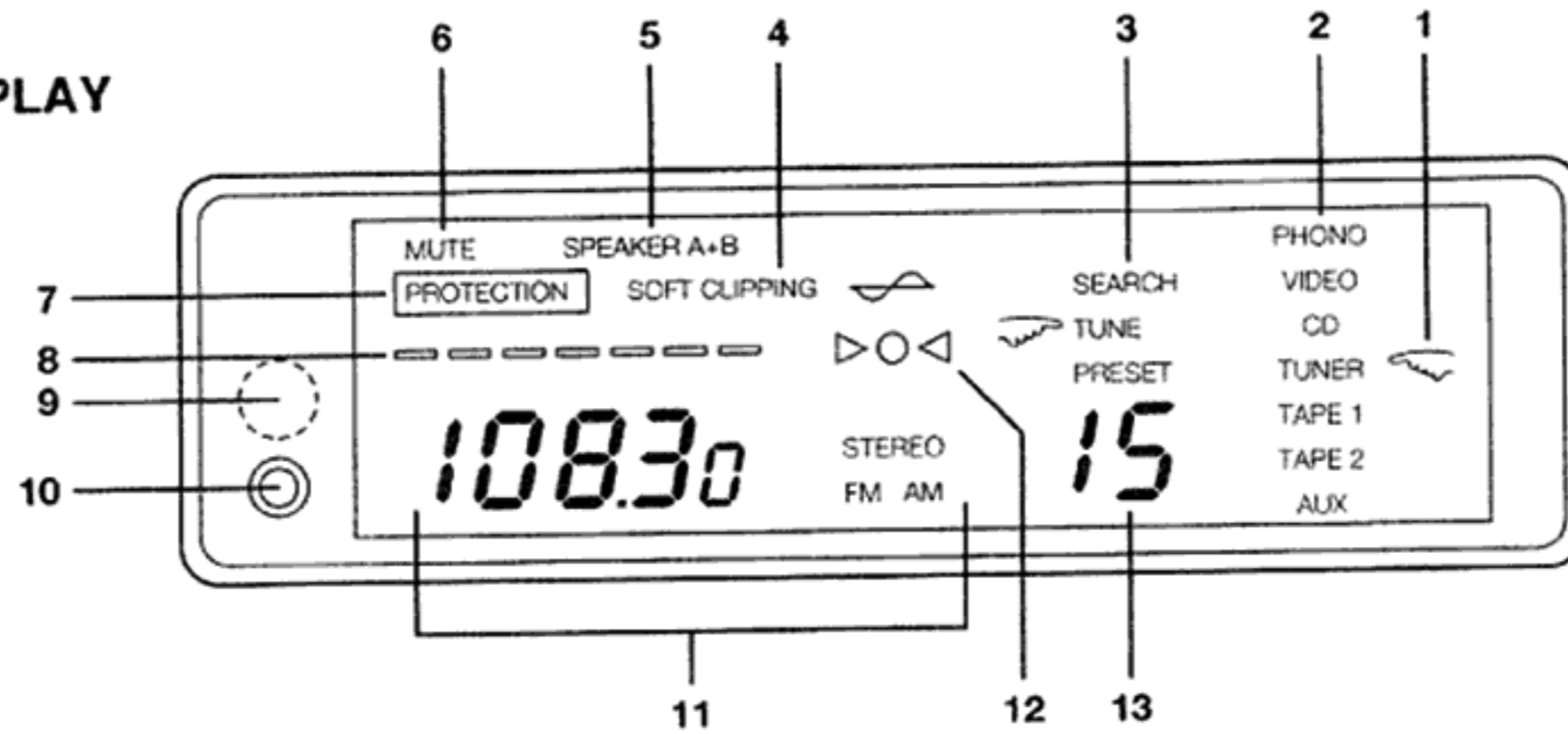
NAD ELECTRONICS
LONDON

PRINTED IN CHINA

FRONT PANEL



DISPLAY



CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARISED) 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 EN LAISSER AUCUNE PARTIE FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

NOTE: Some NAD products 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 authorised NAD service technician for internal conversion.

ATTENTION: Quelques pièces NAD sont munies de transformateurs à double ou à multi-voltage (indiqué au panneau arrière). Si vous voulez changer le voltage, veuillez apporter votre appareil au fournisseur de NAD pour le transformer.

NOTA: Ciertos componentes de NAD están dotados de transformadores de doble tensión o de varias tensiones (lo que se indica en el panel posterior). Si se desea cambiar la tensión, sírvanse llevar el aparato a un técnico autorizado por NAD para su conversión interna.

Note to CATV system Installer: This reminder is provided to call to CATV installer's attention to Article 820-40 of the NEC, which 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.