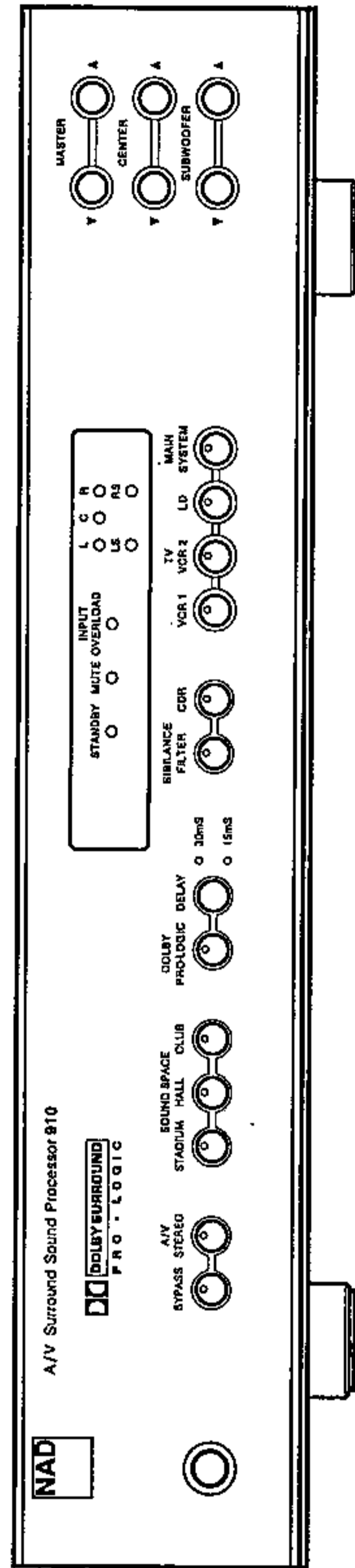


910

- OWNER'S MANUAL
- MANUEL D'INSTALLATION
- BEDIENUNGSANLEITUNG
- MANUAL DEL USUARIO



NAD 910

REAR PANEL CONNECTIONS

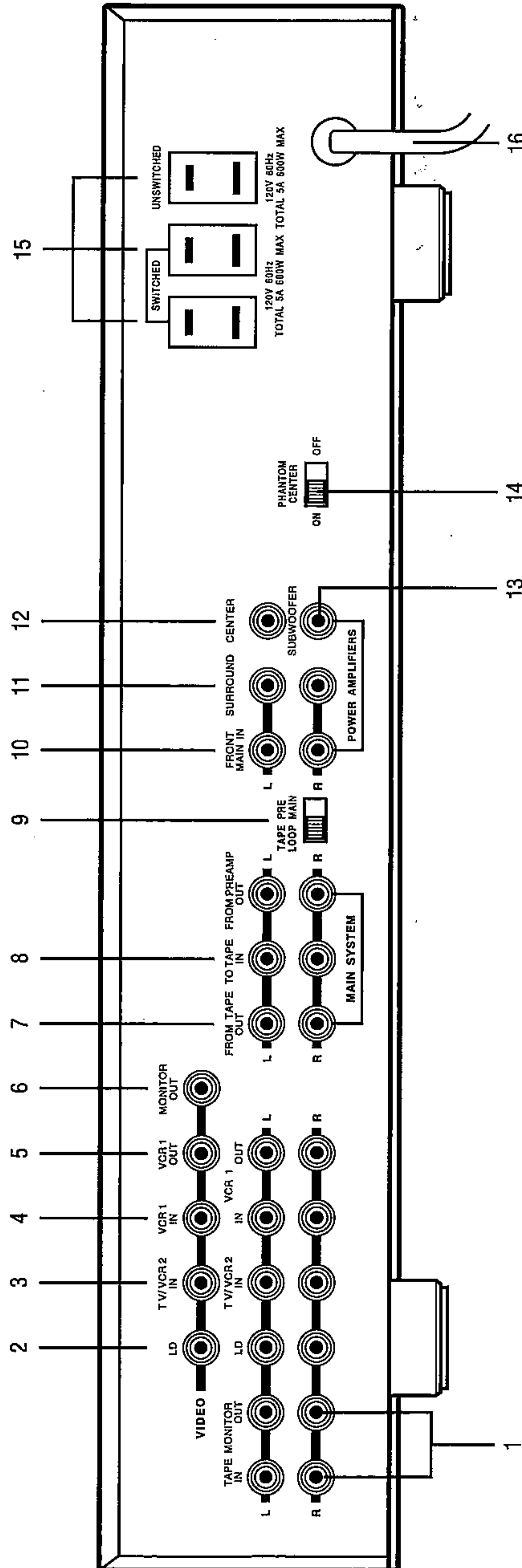
WARNING: TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

ATTENTION:
RISQUE DE CHOC ELECTRIQUE
NE PAS OUVRIR

CAUTION:
RISK OF ELECTRIC SHOCK
DO NOT OPEN

AFIN DEVIATER UN CHOC ELECTRIQUE, ET LES CONSEQUENCES GRAVES QUI POURRAIENT EN RESULTER, TENTEZ PAS D'OUVRIR L'APPAREIL ET DE TOUCHER AUX COMPOSANTS INTERNES SANS LA PRESENCE D'UNE PERSONNE

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 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.

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.

FRONT PANEL

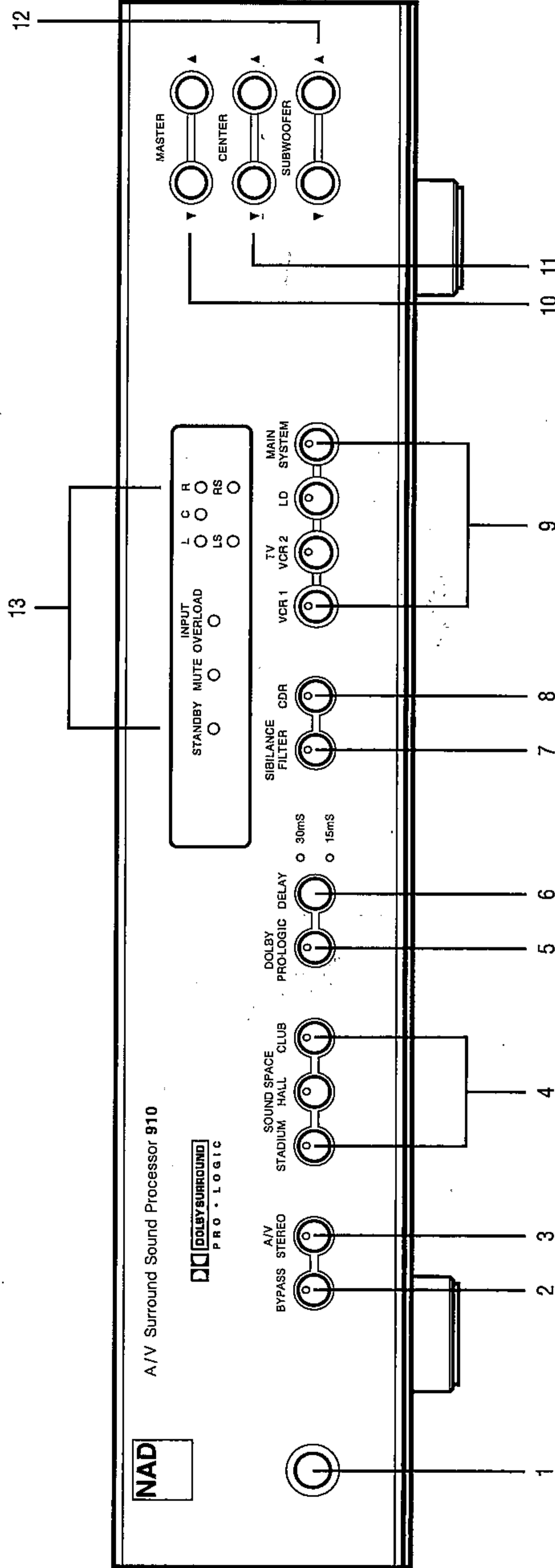
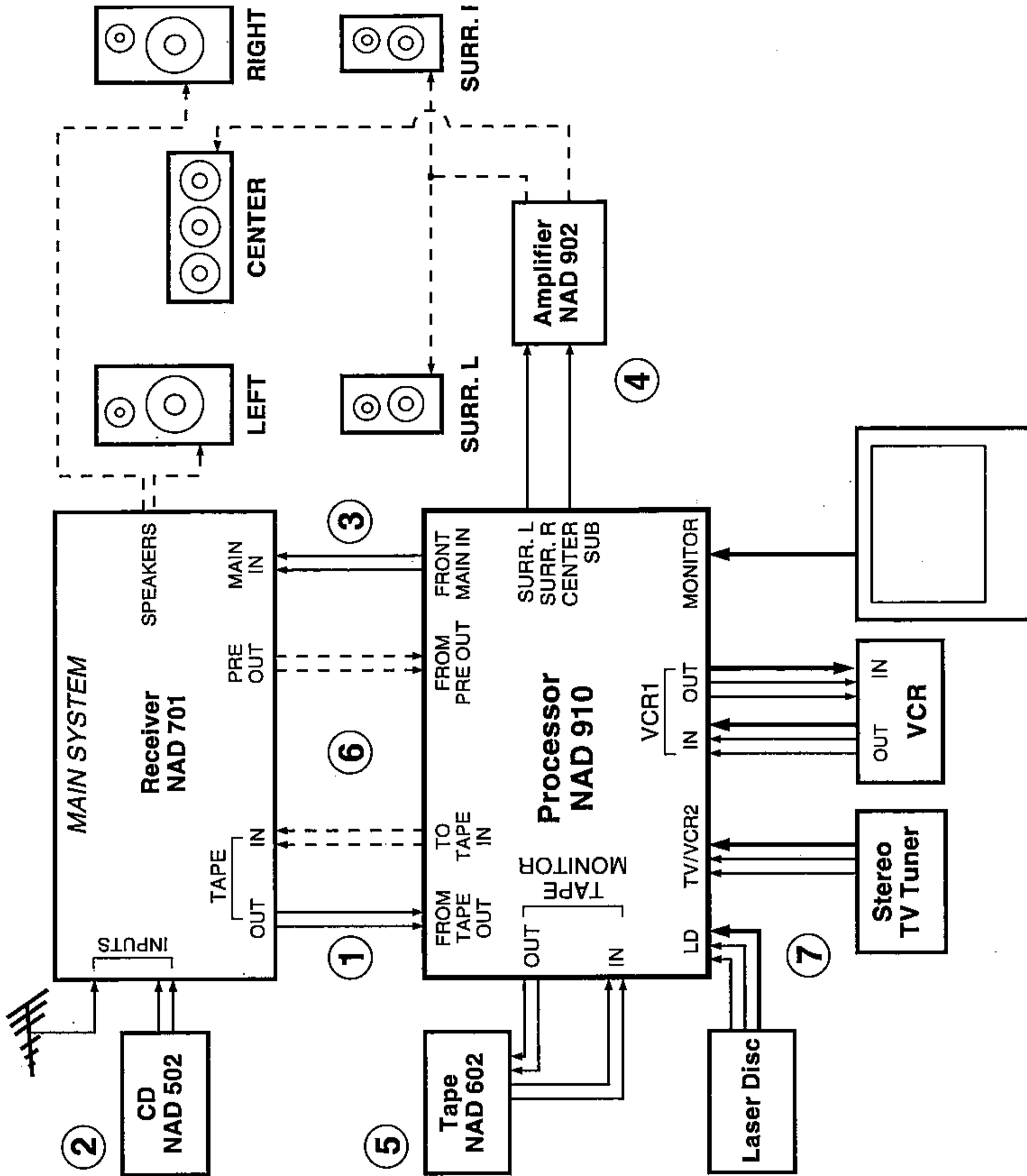
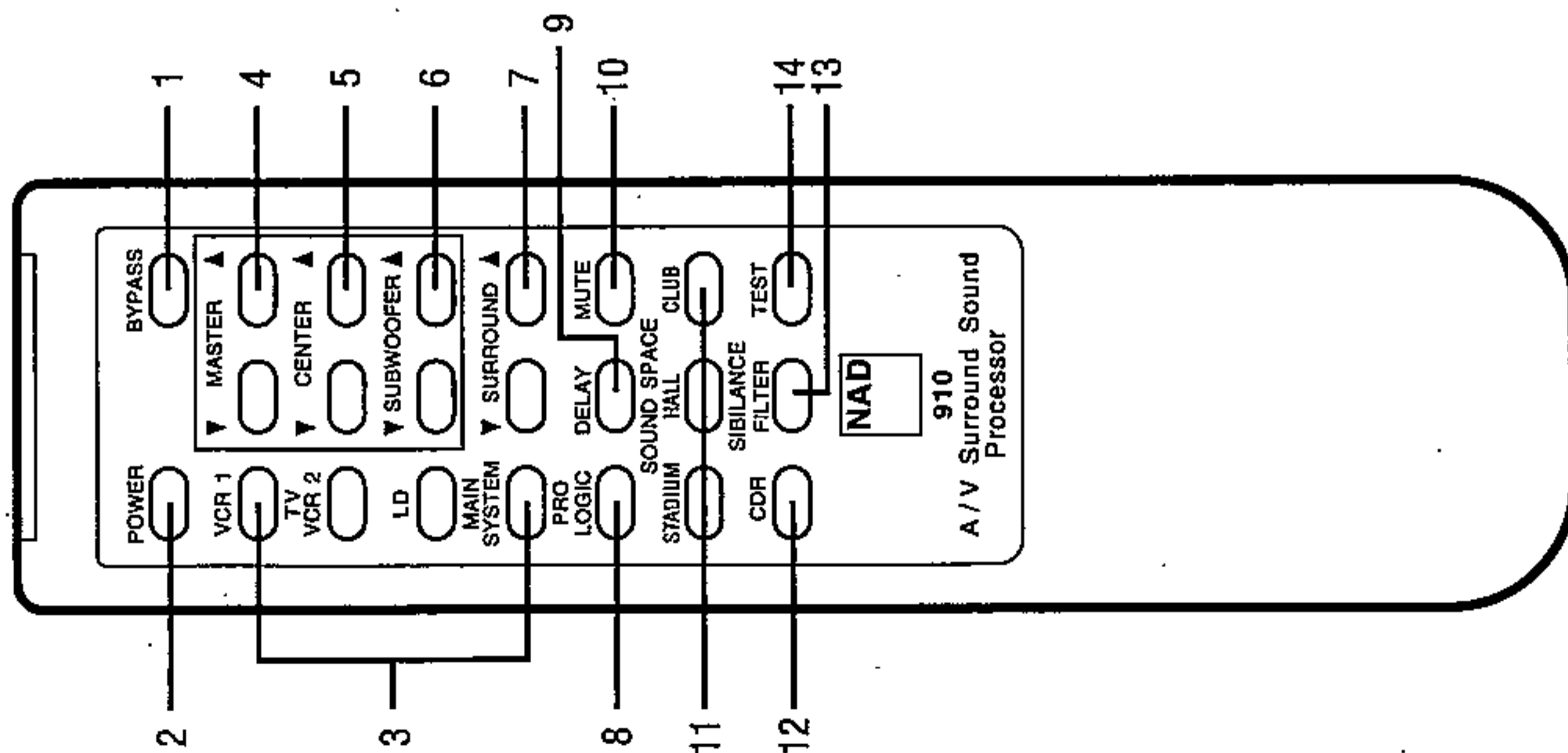


FIGURE 1



REMOTE CONTROL



SPECIFICATIONS - NAD 910 A/V SURROUND SOUND PROCESSOR

DOLBY MODE				Controls
Frequency Response	Left/Right Center	20Hz-20kHz -0.5dB		Power
	Surround	-3dB at 100Hz -0.5dB at 20kHz		Bypass
THD (ref. 500mV 1kHz)	Left/Right Center	-1dB at 100Hz -3dB at 6.6kHz		A / V Stereo
	Surround	0.03%		SOUND SPACE
Overload		0.05%		Stadium
		0.3%		Hall
		3V		Club
AV STEREO MODE				Dolby Pro Logic
Frequency Response	Left/Right	20Hz-20kHz -0.5dB		Delay
THD		<0.03%		Sibilance Filter
Overload		3V		CDR
BYPASS MODE				VCR 1
Frequency Response	Left/Right	20Hz-20kHz -0.1dB		TV / VCR 2
THD		<0.005%		LD
Overload (14dB ref. 1V)		5V		Main System
				Master
				Center
				Subwoofer
Remote Control Unit				Physical Specifications
				Dimensions (Width x Height x Depth)
				Net weight
				Shipping weight
				435 x 88 x 302 mm
				4.5 kg
				6 kg

NAD 910 SURROUND SOUND PROCESSOR

WITH DOLBY PRO LOGIC

INSTRUCTIONS FOR INSTALLATION AND OPERATION

TRADEMARK NOTICE: "Dolby" and "Pro Logic" are registered trademarks of Dolby Laboratories Inc. and Dolby Licensing Corporation.

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. Allow sufficient time for complete evaporation to occur before using it again. (If the liquid is anything but water and/or alcohol, the unit 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 unit yourself. Refer all servicing to a qualified technician.

GETTING STARTED — A Quick Setup Guide

INSTALLATION

The Model 910 is designed to provide surround-sound processing for up to three audio/video program sources and for your stereo system's audio sources. Detailed discussions of each rear-panel connection and each operating control are provided in later sections of this user's manual, after this introductory over-view.

Audio/video systems are necessarily complex. The NAD 910 can serve as the heart of a basic surround system or an elaborate home video theater. It can be interconnected to audio and video components in various ways according to your needs. Figure 1 shows a typical wiring diagram for a complete basic surround system. Alternative system connections are described in a separate Appendix.

Each audio-only connection is shown as a double line (representing a stereo audio cable) between two products. Each video connecting cable is represented by a thick line. Thus an A/V (audio/video) connection is shown as a double line for stereo plus a thick line for video. For such a connection you may use either an A/V cable (a three-wire cable consisting of a stereo audio cable molded together with a video cable) or a separate video cable with a stereo audio cable.

In the diagram the direction of signal flow through each wire is indicated by arrow-heads. On the rear panel of the NAD 910 the video input for each A/V

source is directly above the corresponding left and right audio inputs. Each product block in the wiring diagram contains the model number of a representative NAD product. (The Model 910 works well with non-NAD products, too.) For clarity in the diagram, connections are shown on all sides of some product blocks, though of course the actual connections are only on the rear panel of each product.

The numbering of paragraphs in the following discussion corresponds to the circled numbers in the diagram. The following points are discussed in greater detail in the Appendix, along with several alternative wiring arrangements.

(1.) Signals from your main amplifier or receiver, henceforth referred to as the "main system," flow through its Tape Out jacks to the 910 for surround processing.

(2.) Most audio-only sources are connected directly to the inputs of your audio system.

(3.) The 910's Output Selector is set to PRE-MAIN. Processed audio signals emerge from the 910's FRONT MAIN IN jacks and are returned to your stereo amplifier through its Main In jacks. With this connection your main system's volume and tone controls are bypassed, ensuring that the critically important balances among the Left, Right, Center, and Surround speakers will be controlled only by the NAD 910 and cannot be altered accidentally.

(4.) Pro Logic decoding derives Center and Surround signals. The left and right surround signals are identical. Therefore the cost of the playback system can be minimized by using just one channel of a stereo power amplifier to drive both surround speak-

ers. The other channel of the amplifier is used for the Center signal. For further information about choosing and installing the Center and Surround speakers, refer to the Appendix.

(5.) Since the 910 uses up the main system's Tape Out jacks, your tape deck is connected to the 910's own Tape Monitor In/Out jacks. Your main system's selected audio signal (Phono, CD, FM) is always fed to the tape deck for possible recording, even when you are listening to an A/V source.

(6.) Two additional connections are shown as dashed lines: the TAPE IN return path and the PRE-AMP OUT path. These are active only in the BYPASS mode, which effectively disconnects the NAD 910 from the system. With the system wiring shown here, tapes are heard only in two-speaker stereo (without surround processing).

(7.) A/V sources are connected directly to the 910. In this example they are a stereo television tuner, a video cassette recorder, and a laserdisc player. The television display is assumed to be a separate video monitor.

SYSTEM CALIBRATION

PRO LOGIC decoding depends on two important factors that are under your control. (1) The timbre of the center and surround speakers must resemble that of your left and right front speakers, as closely as possible. (2) The volume level of the center and surround speakers must be correctly matched to the left and right front channels.

To assist with the latter, the 910 contains a test signal — a shaped noise signal that cycles clockwise from channel to channel around the room. It appears in the Left front speaker, then Center, Right front, the Surround speakers, and back again to Left front. To activate this signal, press the TEST button on the remote control. Select the PRO LOGIC surround mode, and increase the MASTER level until the signal is moderately loud when it appears in the Left and Right front speakers. Then adjust the CENTER level until the noise is equally loud in the center speaker. Finally adjust the SURROUND level (using the remote control) until the surround noise is equally loud.

As the noise signal continues to cycle around the room, fine-tune the CENTER and SURROUND levels until the noise remains at a constant apparent volume level, varying only in direction. Don't expect to achieve a perfect match. Small differences in timbre make it difficult to match loudness precisely, and the timbre of the noise inevitably will vary slightly with direction — both because of loudspeaker differences and because the ear's response is directional.

Press the TEST button again to turn off the noise signal. Play a Dolby Stereo or Dolby Surround encoded laserdisc or videotape, and listen carefully. Fine-tune the setting of CENTER level as follows: if the CENTER level is too low, dialog may not be clear. If the CENTER level is too high, the dialog becomes too loud relative to the music and action sound in the left and right channels, and the sound-stage becomes too narrow and monophonic.

Fine-tune the SURROUND level as follows. The SURROUND level is too high if you constantly hear the surround speakers as sound sources. Occasionally a specific off-screen event or noise may appear to be located where the surround speakers are, but most of the time these speakers should not be heard as identifiable sources: i.e. you should raise the level of the surrounds until their contribution to the sound is obvious, then turn their level back down until you no longer hear them, and stop. At that level they make a subliminal contribution to greater realism without falsifying the presentation.

The same rules apply in the ambient-surround modes (Stadium, Hall, Club), but you must judge the center and surround levels entirely by ear. When you use the PRO LOGIC mode, use the TEST signal to re-establish exact balances again.

REAR PANEL CONNECTIONS

In this section the connections and controls on the rear panel are discussed in order from left to right (as viewed from the rear). For the A/V inputs (LD, TV/VCR2, VCR1) each video connector is directly above the corresponding audio jacks.

Pay attention to the color codes of plugs and sockets when making connections. Video connectors usually are yellow. With stereo audio connections the right channel plug usually is red, while the left channel plug is either white or black.

1. TAPE MONITOR IN/OUT.

The 910 A/V Surround processor uses up a set of TAPE In/Out connections in your main stereo system. The TAPE MONITOR In/Out connections on the 910 are intended to replace those Tape sockets. If you must disconnect a tape deck, graphic equalizer, or other device from your system's TAPE jacks in order to install the 910, you can connect the displaced recorder or other device to the TAPE MONITOR jacks on the 910.

The 910's TAPE MONITOR OUT jacks are always connected to your stereo system's TAPE OUT jacks. You can always record your audio system's selected input signal, even when you are listening to a different A/V source chosen by the 910's input selector.

NOTE: To hear the playback signal at TAPE MONITOR IN, engage the BYPASS mode. The playback signal from tape is returned directly to your audio system without being processed by the 910. If you want to hear tapes with surround processing, the tape deck must be connected to a different input — one of the A/V inputs, your main system's AUXiliary input, or another Tape circuit that is "earlier" in the signal path (the TAPE 2 input on current NAD equipment).

2. INPUT FROM LD (LASERDISK PLAYER).

Connect audio/video cables from a laserdisc player here. Plug one end of a stereo audio cable into the Left (white) and Right (red) sockets, and connect one end of a video cable (with yellow plugs) into the video socket directly above them. At the other end of each cable, connect the stereo audio cable to the laserdisc player's line-level Audio Out jacks, and connect the video cable to its composite Video Out socket.

3. INPUT FROM TV OR VCR2.

Use these jacks to connect A/V cables from a television tuner, stereo television set, or TV stereo decoder. On a stereo television set the line-level Audio Out and Video Out jacks may be identified as "Out to VCR" connections.

If you don't have a stereo television receiver, or if your stereo TV lacks audio and video outputs, use these connections with a second VCR, a camcorder, or other A/V source.

4. INPUT FROM VCR1.

Use these jacks to connect A/V cables from a stereo VCR. Connect a stereo audio cable from the 910's VCR1 IN jacks to the AUDIO OUT sockets on the VCR, and connect a video cable from VCR1 IN to the VCR's VIDEO OUT socket.

5. OUTPUT TO VCR1.

This connection is optional. The A/V input that is chosen by the 910's Input Selector (TV/VCR2, LD, or Main System) is automatically fed to these output jacks for recording. Connect A/V cables from the VCR1 OUT jacks on the 910 to the line-level AUDIO IN and VIDEO IN jacks on your stereo VCR (VCR1).

To copy a program from a laserdisc or a second VCR, select the desired source on the 910 and then use the controls of VCR1 to record from its Line Input. (In some older VCRs the Line Input is automatically selected when cables are plugged into the Audio and Video inputs; in that case the cables must be unplugged from the VCR's Audio and Video inputs when you want to record from the VCR's own tuner.)

6. OUTPUT TO VIDEO MONITOR.

Connect a video cable from MONITOR OUT to a video input jack on your video monitor or television set. That input may be labeled EXTERNAL VIDEO IN or VCR VIDEO IN. Select that input on the television set's control panel.

7. FROM TAPE OUT.

This is the main audio input to the 910. Connect one end of a stereo audio cable to the left (white) and right (red) FROM TAPE OUT sockets on the 910. Connect the other end of the cable to the OUT TO TAPE jacks of your stereo preamp, amplifier, or receiver. If your system has more than one set of Tape connections, use the connections that are farthest "downstream" in the amplifier's signal path — the last connections that the signal passes through before it reaches the volume and tone controls. In current NAD models this is TAPE 1. (In case of doubt, obtain advice from your dealer.)

If your main system has EXTERNAL PROCESSOR connections, use EXT.PROC.OUT instead of TAPE OUT. This will leave the TAPE connections free for use with tape recorders.

8. TO TAPE IN.

Connect a stereo audio cable from these jacks to your main system's TAPE IN connections. (If your system has EXTERNAL PROCESSOR connections, connect to EXT.PROC.IN rather than TAPE IN.) Engage the main system's Tape Monitor or External Processor switch, as appropriate.

The signal at these jacks depends on the settings of BYPASS and the Output Selector. BYPASS selects the playback signal from TAPE MONITOR IN. When BYPASS is off and the Output Selector is set to TAPE LOOP, the 910's left/right Front output signal is returned to these jacks.

9. OUTPUT SELECTOR (TAPE LOOP / PRE-MAIN).

This switch selects whether the 910's processed Front output signal is returned to your main system via its Tape loop or via its Preamp-Out/Main-In connections. The switch also affects the BYPASS mode.

The normal setting of this switch is PRE-MAIN. (Slide the switch to the right, as seen from behind the 910.) With this setting the 910's processed left/right output signal emerges from its FRONT MAIN IN jacks and will go directly to a power amplifier stage, bypassing your main system's volume and tone controls. In the BYPASS mode the main system's

Preamp-Out/Main-In connection is restored, and the playback signal from TAPE MONITOR IN is selected for listening.

The alternate setting of this switch is TAPE LOOP. (Slide the switch to the left, as seen from behind the 910.) With this setting the 910's processed Front output signal emerges from its TO TAPE IN jacks and is returned to the main system through its Tape loop. The main system's volume and tone controls operate normally. BYPASS disconnects the surround processing and returns the playback signal from TAPE MONITOR IN to the main system.

10. OUTPUT TO FRONT MAIN IN.

When the Output Selector is set to PRE-MAIN, these jacks carry the stereo Front output signal. Connect a stereo audio cable from these jacks to the input of the power amplifier that is connected to your main stereo speakers.

When the Output Selector is set to TAPE LOOP, there is no signal at the FRONT MAIN IN jacks.

11. OUTPUT TO SURROUND AMPLIFIER.

These jacks carry the delayed and processed surround (side/rear) signal. Connect a stereo cable from the left and right SURROUND jacks to the main input of the amplifier that will drive your surround speakers. Connect your surround speakers to that amplifier's speaker terminals.

The left and right surround outputs are identical. Therefore a single amplifier channel can be used to amplify the surround signal; then both left and right surround speakers would be connected to that channel's speaker terminals.

12. OUTPUT TO CENTER-CHANNEL AMPLIFIER.

This connection is optional. (See the discussion of the Center speaker in the Appendix.) To use it, connect a single audio cable (or one channel of a stereo cable) from the CENTER output to the main input of the amplifier that is used to drive the center speaker. Since you are using an actual center speaker, set the PHANTOM CENTER switch to OFF.

13. OUTPUT TO SUBWOOFER AMPLIFIER.

Motion-picture sound tracks often contain more deep-bass energy than music recordings. The 910's dedicated subwoofer output combines the bass from the left and right channels below about 80 Hz. Frequencies above 80 Hz are rolled off at a rate of 12 dB per octave. To reproduce the full impact of the low bass, connect a cable from this socket to an amplifier that is driving a subwoofer.

14. PHANTOM CENTER ON/OFF.

If you are using an actual center speaker, set this switch to OFF.

If you are using left and right stereo speakers without a center speaker, move this switch to ON. The Phantom Center mode is an aspect of Dolby Pro Logic decoding. The signals that normally would be directed to the center channel, such as dialog and on-screen action noises in motion picture soundtracks, will be added equally to the front-left and front-right channels.

For more information, see the discussion of the Center speaker in the Appendix.

15. AC CONVENIENCE 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 amplifier) 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 such as a turntable or tape deck). Such products should be turned on and off with their own power switches.

16. AC POWER CORD.

Plug the AC line cord into a "live" wall socket. An amber Standby indicator in the display window glows as long as the 910 is plugged in but is not switched on.

FRONT PANEL CONTROLS

Most of the front-panel control buttons contain a miniature LED that glows green or amber when that button is selected.

1. POWER ON/OFF.

Press this button to turn on the 910 and any equipment plugged into the SWITCHED convenience outlet on the rear panel (120V version only). When the Model 910 is switched ON, the Standby indicator turns off and small indicators glow to identify the selected input, surround mode, and delay.

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

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

2. BYPASS.

BYPASS takes the 910 out of the circuit, so that your stereo system behaves as it did before the 910 was installed. Specifically, BYPASS restores the connection Preamp-Out to Main-In, and it connects the playback signal from TAPE MONITOR IN to your amplifier's Tape In.

In the BYPASS mode the surround, center, and subwoofer outputs are muted.

3. A/V STEREO.

This button disengages all surround processing and passes straight stereo signals through the 910. It is particularly useful when you want to hear an A/V source (such as a television news program or interview) without surround sound.

4. AMBIENCE MODE (STADIUM, HALL, CLUB).

These three buttons select non-Dolby surround processing modes that reproduce the "ambience" that occurs in concert environments — i.e. the impression of space that is created by delayed reflections. This processing works in two ways: it extracts hidden

ambience cues that are contained in recordings, and it synthesizes ambience electronically by delaying sounds and modifying their timbre. The ambience signals are reproduced through all five speakers (left, center, right, and both surrounds).

5. DOLBY PRO LOGIC.

Use this process for the most accurate playback of most film soundtracks as well as those television broadcasts or audio recordings that were produced with Dolby Surround encoding. Correct Center and Surround levels must be established using the TEST mode.

6. DELAY SELECT.

Press this button to change the setting of the time-delay that is used for surround processing. There are two delay choices: 15ms and 30ms.

7. SIBILANCE FILTER ON/OFF.

This button engages a filter that reduces the strength of the highest frequencies in the sound (above 7 kHz). Press the button once to engage the filter; press again to remove the filter from the signal path. A small amber indicator in the button glows when the filter is engaged.

The purpose of this filter is to diminish high-frequency distortion (in the original signal) that becomes doubly annoying when the surround decoding causes it to "splatter" into all channels. The most common such distortion is excess sibilance — the exaggerated "S" sound that occurs when a microphone is too close to a performer's mouth. This filter is also useful when playing laserdiscs with overly bright highs.

Remember to switch off the sibilance filter when playing recordings with highs that sound smooth and natural.

8. CDR (CONTROLLED DYNAMIC RANGE) ON/OFF.

The CDR button activates a special circuit that reduces the excessively wide dynamic range of some CDs, laserdiscs, video tapes, and broadcasts.

9. INPUT SELECT (VCR1, TV/VCR2, LD, MAIN SYSTEM).

Press one of these buttons to select the input signal. These four buttons are interlocked; pressing one disengages the others.

10. MASTER VOLUME UP/DOWN.

The Master Volume control adjusts the overall loudness level of the sound from all channels, while maintaining the balances between them. It does not affect the signals fed to the TAPE MONITOR OUT or VCR1 OUT jacks. Press the Master Level Up (^) to increase the overall level; press Master Level Down (v) to decrease the overall volume level.

Use Master Volume, rather than your usual Volume control, to make day-to-day adjustments of loudness. Any other volume control will alter the important balance between your main, center, and surround speakers, and you would have to use the TEST mode to re-establish that balance.

When the 910 is first turned on, the MASTER level control automatically re-sets to a low level.

11. CENTER LEVEL UP/DOWN.

This control affects the relative volume level of the Center speaker. The initial adjustment of Center level should be made with the aid of the TEST signal.

In the PHANTOM CENTER mode the CENTER level control has no effect.

12. SUBWOOFER LEVEL UP/DOWN.

These buttons increase (^) or decrease (v) the relative volume level of the subwoofer signal. If you are using the subwoofer output, adjust this control to balance the strength of low-frequency sounds relative to midrange tones.

This control has no effect on the level of bass in the Left and Right Front signals.

13. DISPLAY.

The indicators in this display are identified by numbers in the accompanying diagram, as follows.

(1) Infrared sensor. This is the location of the sensor that receives remote-control commands. If this window accidentally becomes obstructed or covered by cloth or paper, the remote control will not work.

(2) Remote control indicator. This indicator glows briefly when a remote-control command is being received. If the 910 fails to respond to remote commands, check this indicator. If it does not glow when the remote control is aimed directly at the 910, you may need to replace the batteries in the handset.

(3) Standby. This indicator glows amber when the 910 is plugged into AC power but is switched off, awaiting a turn-on command from the remote control.

(4) Mute. This indicator glows when the sound has been turned off by the MUTE button on the remote control. To restore the sound, press the MUTE button again.

(5) Input Overload. This indicator glows when high-level peaks in the signal are so strong that they may overload the PRO LOGIC decoder. For the best sound, reduce the output level of the signal source until this indicator turns off.

(6) Channel identifiers. When you press the TEST button on the remote control, a special noise signal circulates around the room, moving from channel to channel at two-second intervals. These channel indicators glow to identify the channels as the test signal moves from channel to channel, in the following order: Left front (L), Center (C), Right front (R), Right Surround (RS), Left Surround (LS), and back again to Left front. (As mentioned earlier, the Left Surround and Right Surround signals are identical, so the LS and RS indicators glow at the same time.) When you install the surround system, adjust the Center and Surround volume levels until the noise remains at a constant loudness as it circulates from

channel to channel. Also observe the apparent direction of the noise, to make sure that it corresponds to the directions shown on this indicator. This is a handy way to identify an accidental wiring error in the system.

If the Surround noise signal seems to be biased toward one side of the room rather than coming from all around and behind you, try experimenting with the placement and aiming of the surround speakers. Try moving the louder surround speaker farther away from you, or aim it away to scatter its sound more effectively, thus distributing the surround sound more evenly around the room.

REMOTE CONTROL

The included remote control allows you to operate most of the processor's functions from the comfort of your chair or from virtually anywhere in the room. Except as described below, each button on the remote control performs the same function as the corresponding button on the front panel of the 910.

The remote control operates by emitting a digitally coded beam of infrared light through the small window in the top end of the handset. Aim this window toward the Model 910 while pressing the buttons on the handset. There must be a clear line-of-sight path from the handset to the infrared sensor located in the 910's display window. If the display window is obstructed, the player may not respond to remote commands. Remote-control operation may also be impaired if the front of the 910 is exposed to direct sunlight or a bright incandescent light.

The remote control contains two features that are not on the 910 itself, TEST and MUTE.

1. **Bypass.** Effectively removes the 910 from the signal path.
2. **Power On/Off.** Press to switch on the power. Press again to switch off the power, leaving the 910 in Standby mode.
3. **Input Select (VCR1, TV/VCR2, LD, Main System).** Press the button that corresponds to the input you want to use.
4. **Master Volume Up/Down.** Press to increase (^) or reduce (v) the overall volume level.
5. **Center Level Up/Down.** Press to increase (^) or reduce (v) the relative level of the center channel.
6. **Subwoofer Level Up/Down.** Press to increase (^) or reduce (v) the relative strength of the low frequencies that are reproduced by a subwoofer.
7. **Surround Level Up/Down.** Press to increase (^) or reduce (v) the relative level of the surround signal. In ambient-surround modes this is the most critical adjustment. The surround level

should be high enough to provide an impression of spaciousness, but not so high that you hear the surround speakers as obvious sources of sound.

8. **Dolby Pro Logic.** Press this button to decode programs that were Dolby Surround encoded.

9. **Delay select.** Press this button to alternate between the two available delay settings, 15ms or 30ms.

10. **Mute.** Press this button to temporarily silence all sound (for example, when you need to answer the telephone). Press this button again to un-mute the sound and restore the previous volume level.

11. **Ambience Mode (Stadium, Hall, Club).** These buttons select three ambient-surround modes.

12. **CDR (Controlled Dynamic Range) On/Off.** Engage the CDR circuit to reduce the dynamic contrast between soft and loud sounds.

13. **Sibilance Filter On/Off.** Engage the sibilance filter to reduce excessively bright high frequencies.

14. **Test.** Press this button to switch on the circulating noise signal that is used to match the relative loudness of the left, right, center, and surround channels. Press the TEST button again to turn off the test signal and resume normal listening.

INSTALLING AND REPLACING BATTERIES

The remote control requires two 1.5-volt AA-size (i.e. type R6 or LR6) cells. Alkaline cells are recommended, to obtain maximum operating life.

To open the battery compartment, press down the spring-tab on the back of the remote control unit, and pull off the cover of the battery compartment. Install fresh cells, orienting them as shown on the diagram molded into base of the compartment, and replace the cover.

In some cases, poor operation may be caused by corrosion or fingerprint oil on the battery contacts. Remove both cells, rub the metal contacts at both ends of each cell with a clean cloth or a pencil eraser, and re-install the cells, being careful to orient them correctly.