marantz®

Model SC-7

Handbook of Instructions

MARANTZ CO., INC. 20525 NORDHOFF STREET, CHATSWORTH, CALIFORNIA 91311
A WHOLLY-OWNED SUBSIDIARY OF SUPERSCOPE INC., CHATSWORTH, CALIFORNIA 91311

FOREWORD

Congratulations! Judging by the stereo equipment you now own, you are no amateur when it comes to audio. Nevertheless, we urge you to study these instructions carefully. Our step by step procedures will assure you of receiving maximum enjoyment from the superb performance the Model Sc 7 is capable of giving.

AFTER UNPACKING

The original packing material is specifically designed to protect the unit, and replacement packing material from Marantz is expensive. Therefore, it is advisable to retain all original packing material to prevent damage should you wish to transport or ship the Model Sc 7 in the future (refer to page 16 for repacking and shipping instructions). Be careful that you do not inadvertently throw away or lose the parts packed with the unit.

Please inspect your Stereo Control Console carefully for any signs of shipping damage. Our very strict quality control and professional pride ensure that each preamplifier left the factory in perfect condition. If the unit is damaged or fails to operate, immediately notify your dealer. If the unit was shipped to you directly, notify the transportation company without delay. Only you, the consignee, may institute a claim against the carrier for shipping damage. Save the carton and all packing material as evidence of damage for their inspection. Should assistance be required, the Marantz Company will cooperate fully in assisting your claim. We strongly recommend that you retain a copy of your sales receipt in order to prove date of purchase in case warranty service is required.

ABOUT THIS MANUAL

For convenience, this manual is divided into three parts. The first part covers installation. The second part covers operation. These two parts are written in simple, non-technical terms. The third part provides a more detailed description of the technical features of the Model Sc 7, and will be interesting to read after your system is set up and playing.

To provide a means for readily distinguishing between references to the controls and connection facilities of Model Sc 7 and those of the other system components, **BOLDFACE** type is used for references to the Model Sc 7. Notice that the spelling and abbreviations of all such markings appear exactly as lettered on the front and rear panels of the instrument.

PURCHASER'S RECORD

MODEL NO. _____
(Located on Front of Unit)

SERIAL NO. _____
(Located on Rear of Unit)

Cost _____ Date _____

This information becomes your permanent record of a valuable purchase. It should be filled in promptly then kept in a safe place along with your purchase receipt to be referred to as necessary for insurance purposes or when corresponding with Marantz.

IMPORTANT

WHEN SEEKING WARRANTY SERVICE, IT IS THE RESPONSIBILITY OF THE CONSUMER TO ESTABLISH PROOF AND DATE OF PURCHASE. (YOUR PURCHASE RECEIPT OR INVOICE IS ADEQUATE FOR SUCH PROOF.)

WARNING

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

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PREPARATION FOR USE

In this section of the manual, you will find information about methods of attractively installing your new Marantz preamplifier, and about how to hook up the various wires and cables on the rear panel. We will also offer advice on how to connect your loudspeakers by way of the speaker switching circuitry in the preamplifier.

INSTALLATION METHODS

The Model Sc 7 preamplifier can be installed in three basic ways: In a beautiful walnut veneer cabinet for placement on a table or shelf, in your own cabinetry or custom installation, or using professional rack-mounting handles.

MARANTZ WALNUT VENEER CABINET

An optional walnut veneer cabinet, Model WC-75, may be obtained from your Marantz dealer. The case provides for proper ventilation, and can be placed on furniture or on a bookshelf. Complete instructions for installation are provided with the WC-75.

CUSTOM INSTALLATION

If you wish to install the Model Sc 7 in a custom cabinet, plan its location carefully. Pay close attention to the following requirements:

1. The preamplifier is air cooled. Allow plenty of space between the Model Sc 7, cabinet surfaces, and other components for adequate ventilation.
2. Allow enough room behind the unit to run cables.
3. Because of its weight, the Model Sc 7 cannot be supported by its front panel alone. The chassis should be supported by an internal shelf, a bracket, or similar means. If a solid shelf is used, provide one inch wood spacers at each corner of the chassis to allow the unit to have proper clearance from the shelf.

The opening in the cabinet front will be 16" wide by 5-3/8" high. Since the front panel of the Model Sc 7 is larger than the cutout, it will neatly hide the edges of the cut. Remove the plastic feet from the bottom of the unit and slide it through the opening. If necessary, you may remove the six rubber caps (3 on the right side and 3 on the left side) if you are encountering a tight fit.

RACK ADAPTOR

The optional Marantz RHA-7 Rack Adaptor attaches to the front panel of the Model Sc 7 enabling the unit to be mounted in a standard 19-inch equipment rack. The RHA-7 is black anodized for maximum durability and professional appearance. It is supplied with side support brackets, all necessary hardware, and complete installation instructions.

REAR PANEL CONNECTIONS

Figure 1 shows the location of the input and output jacks on the rear panel. (Front panel controls and jacks will be discussed later).

The stereo pairs of shiny round jacks such as used for the phono inputs are called "RCA phono jacks" and are designed to accommodate shielded audio cables outfitted with "RCA phono plugs". Appropriate cables of various lengths are available at your Marantz dealer. Lengths of up to 25 feet may be used. If it is necessary to purchase cable for your installation, we suggest you first arrange your components in the desired position, and then with a measuring tape determine how much cable will be needed. This will ensure that you don't underestimate the lengths required for a neat, attractive installation.

To avoid confusion, connect one cable at a time between the Model Sc 7 and the other components of your system. This is the safest way to avoid cross-connecting channels or confusing source outputs with inputs.

PHONO INPUT JACKS

The **PHONO 1** jack can be used with either a Moving Magnet (MM) or a Moving Coil (MC) cartridge. The **PHONO 2** jack is dedicated to a MM type cartridge. Connect the turntables as shown in Figure 2.

If a hum is heard when playing records, this is an indication that the record player or its connections are improperly grounded. Connect a separate ground wire from the turntable or record changer frame to the **CHASSIS GROUND** binding post of the Model Sc 7. If this is ineffective, try reversing the polarity of the turntable's power plug.

If hum persists, consult the instruction booklets for the turntable and/or phono cartridge.

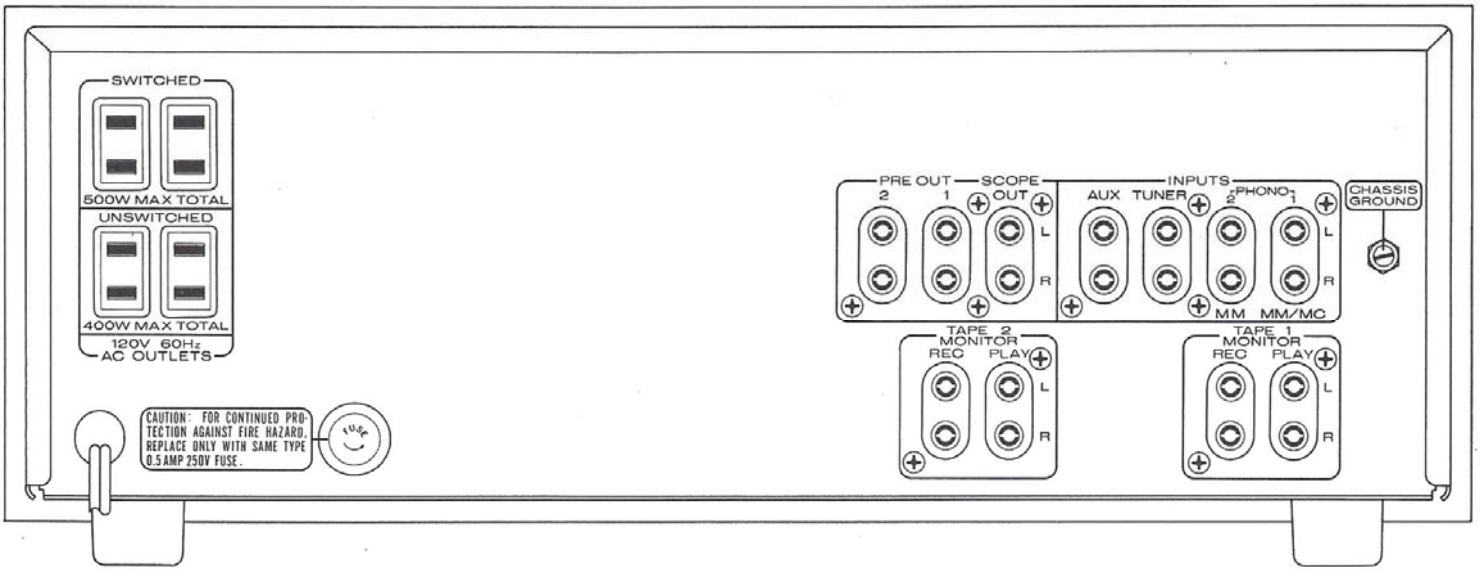

Figure 1. Rear Panel Connection Facilities

TUNER INPUTS

The **TUNER** input jacks are used for connecting the line output of a stereo or monaural AM or FM tuner to the Model Sc 7. Connect the tuner as shown in Figure 2.

AUX INPUTS

The **AUX** (auxiliary) input jacks permit connecting miscellaneous high-level program sources such as tape players with built-in preamplifiers, record players with RIAA equalized line outputs, or additional tuners or receivers.

TAPE 1 MONITOR AND TAPE 2 MONITOR JACKS

The Model Sc 7 can accommodate two tape recorders. The terms **PLAY** and **REC** refer to the input and output of the Model Sc 7. Therefore, the **PLAY** jacks on the Model Sc 7 accept signals from the line outputs of each tape recorder; the **REC** jacks feed signal to the tape recorder's line inputs (see Figure 2).

PRE OUT JACKS

These jacks are the outputs of the Model Sc 7 Stereo Control Console. Connect them to the inputs of your power amplifier.

SCOPE OUTPUTS

If you have a Marantz tuner with a built-in oscilloscope, connect the **SCOPE OUT** from the Sc 7 to the scope inputs on the tuner. You may then use the oscilloscope to evaluate the phasing, balance, and channel separation of any program source.

AC POWER SOURCE CONNECTION

With the **POWER** switch set to the OFF (out) position, plug the AC line cord into an AC outlet providing the proper voltage.

CAUTION

DO NOT PLUG THE MODEL Sc 7 INTO A DC OUTLET AS SERIOUS DAMAGE WILL OCCUR.

AC OUTLETS

Four AC outlets on the rear panel are provided for powering the associated components of your system, such as power amplifiers, tuners, tape recorders, record players, etc. The two **SWITCHED** outlets are controlled by the front panel **POWER** switch. The two **UNSWITCHED** outlets are unaffected by the **POWER** switch. These outlets are for powering a turntable or other components that have their own on-off switch.

CAUTION

DO NOT EXCEED THE MAXIMUM TOTAL POWER RATINGS OF THE AC OUTLETS. THE POWER SWITCH AND OTHER CIRCUITRY IN THE MODEL Sc 7 WOULD SUFFER DAMAGE IF FORCED TO CONDUCT EXCESSIVE CURRENT.

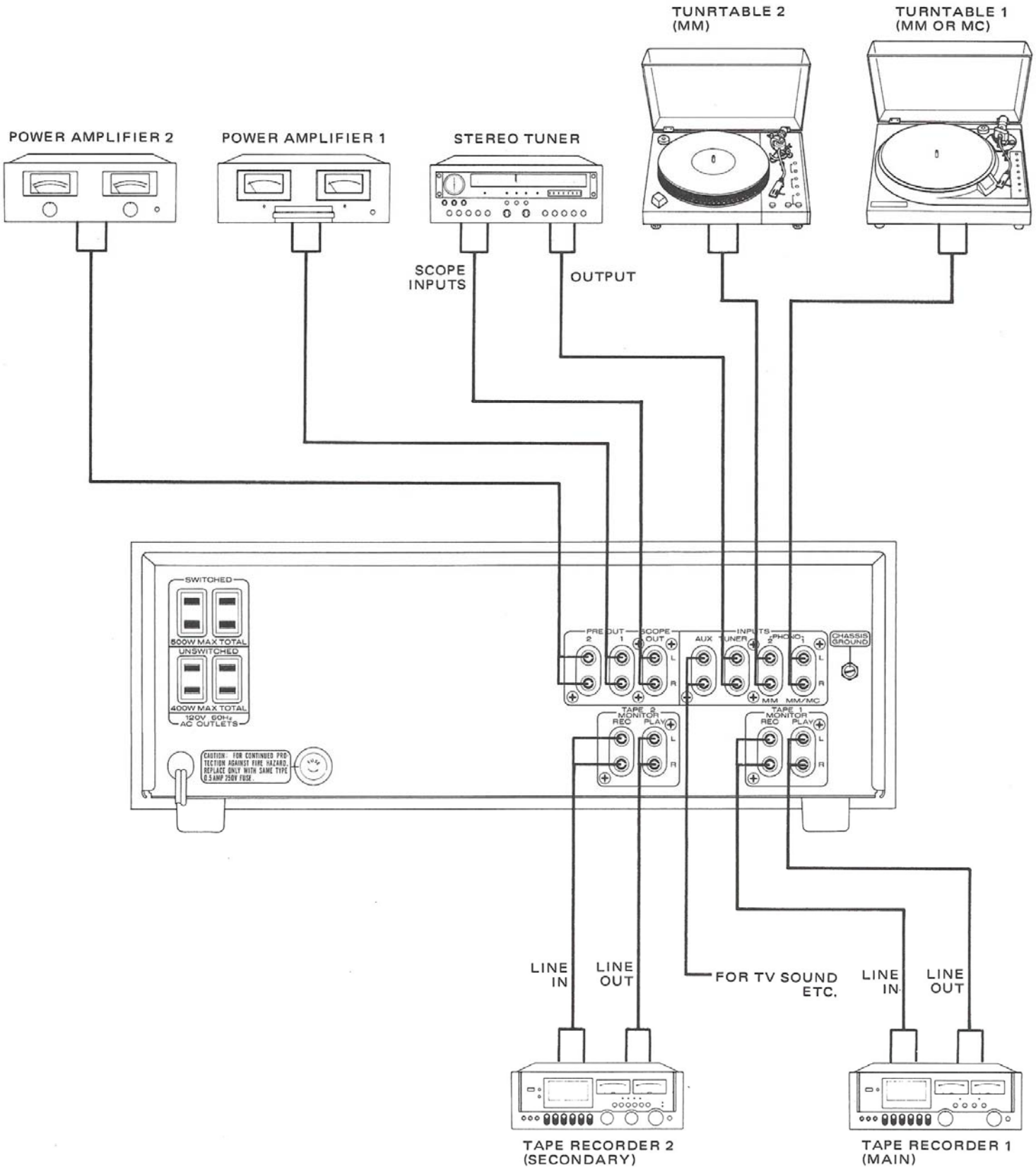

Figure 2. Connection Diagram

OPERATION

This section of the manual will tell you how to operate your new preamplifier. First, a simplified operating procedure will be outlined to get you started. Then, the front panel features will be discussed individually in more detail.

When operating the Model Sc 7 for the first time, please follow the step-by-step instructions in the PRELIMINARY PROCEDURE that follows. After becoming familiar with the Stereo Control Console, you may take full advantage of its many features and operating versatility.

PRELIMINARY PROCEDURE

Connect the program source, power amplifier, and speakers as described in the "PREPARATION FOR USE" section. Then, set the controls and switches as follows:

POWER	OFF (Out)
VOLUME Control	Minimum (fully counterclockwise)
MODE Switch	**STEREO**
BASS, MID, and **TREBLE** Controls	Mid Position
TONE DEFEAT and **TURNOVER** Switches	OFF (Out)
MUTING Switch	OFF (Out)
TAPE MON Switches	OUT
INPUT SELECTOR Switches	Desired Program Source
FILTERS Switches	OUT
RECORD SELECTORS	**OFF**
BALANCE Control	Mid Position
FLAT AMP Switch	**NORMAL**
OUTPUT Switches	OFF (Out)
PHONO 1 SELECTOR	**MM** (Out)

After setting the controls and switches, proceed as follows:

1. Depress the **POWER** switch to the ON (in) position. The pilot light will illuminate indicating that the unit's power is on.

NOTE

A time delay relay will momentarily mute the pre-amplifier output until all circuits have stabilized. Wait for the relay to "click in" before turning up the VOLUME.

2. Depress the **OUTPUT 1** and/or **2** pushswitches.
3. Play the program source (phonograph, tuner, etc.). If tape playback is desired, depress the **TAPE MON 1** or **TAPE MON 2** pushswitch.
4. Adjust the **VOLUME** control on the Sc 7 to the desired listening level.

The following section will explain the remainder of the front panel controls. The controls will be discussed in order of usage with the most commonly used controls discussed first.

MAIN CONTROLS AND SWITCHES

POWER SWITCH

The **POWER** switch, when depressed, supplies AC power to the Model Sc 7 and to the **SWITCHED** outlets on its rear panel.

VOLUME CONTROL

The **VOLUME** control adjusts the level of both output channels simultaneously. It does not affect the **TAPE 1 MONITOR REC** and **TAPE 2 MONITOR REC** jacks.

This control is a detented precision attenuator calibrated in decibels with a tracking accuracy of ±0.5 dB.

INPUT SELECTOR SWITCHES

The **INPUT SELECTOR** switches select any one of four program sources for listening or recording: **PHONO 1 MM/MC, PHONO 2 MM, TUNER,** or **AUX.**

PHONO 1 (MC/MM) SELECTOR SWITCH

When this switch is in the **MM** (OUT) position, a Moving Magnet type cartridge can be connected to the **PHONO 1** jack. When this switch is in the **MC** (IN) position, a Moving Coil type cartridge can be connected to the **PHONO 1** jack.

TAPE MONITOR SWITCHES

When the **TAPE MON 1** or **2** switches are depressed individually, the tape recorder connected to the corresponding **TAPE MONITOR PLAY** jacks can be monitored. Unlike the **INPUT SELECTOR** switches which interlock mechani-

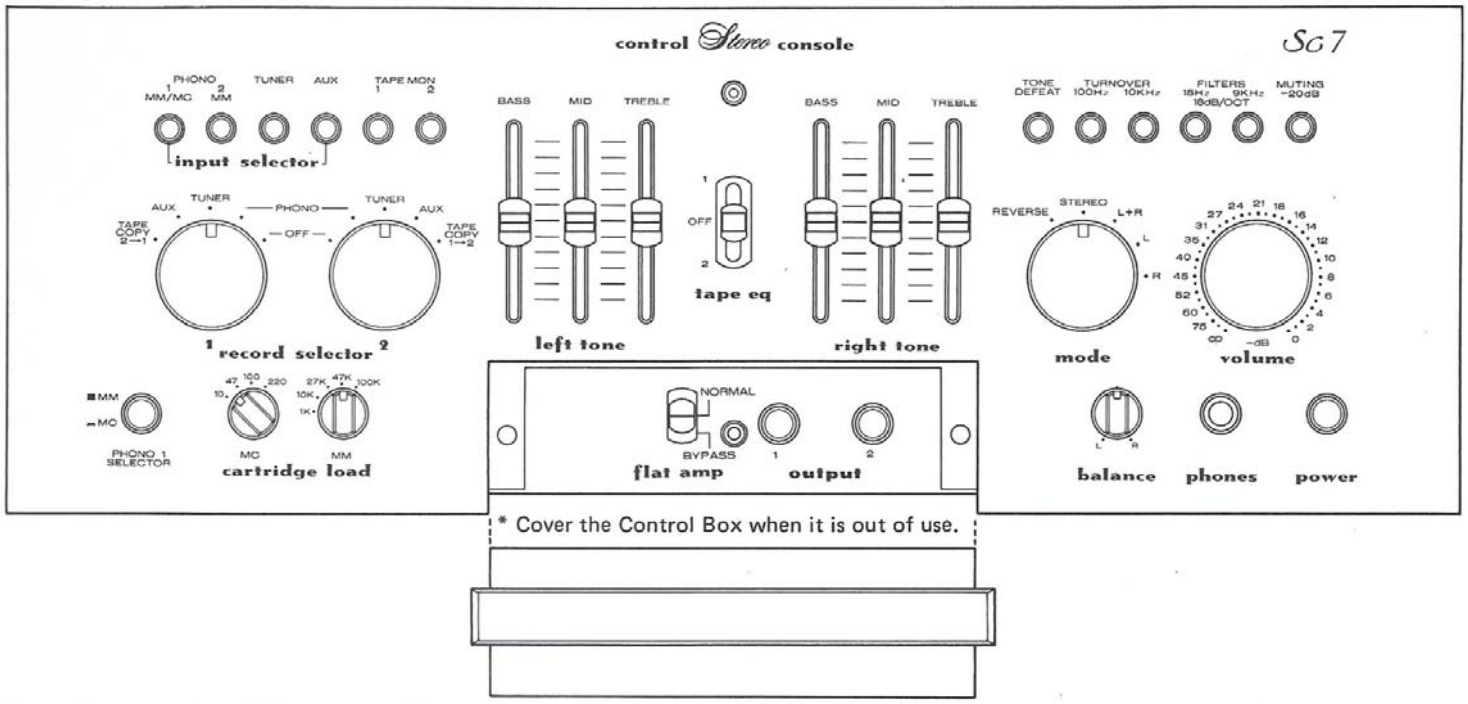

Figure 3. Front Panel Controls and Features

cally, the **TAPE MON** switches interlock electronically, so that only one tape recorder will be heard at a time. If both **TAPE MON** switches are depressed simultaneously, the tape monitoring circuits are muted. This does not harm the Model Sc 7, the recorders, nor the recording in progress. For more information on tape monitoring, see "TAPE MONITORING" page 10.

MODE SWITCH

The five-position **MODE** Selector switch chooses the mode or manner in which the program source signals are reproduced by the stereo system. With the switch set to **REVERSE**, the left and right channels of the program source are transposed, reversing the apparent left-right placement of the stereo program.

When set to **STEREO**, the left channel signal of the program source is applied to the left channel outputs and the right channel signal of the program source is applied to the right channel outputs.

Set to **L + R**, the left and right channel signals of the program source are combined, and the combination (a monaural equivalent of the stereo program) is applied to the left and right speakers. When set to **L**, the left channel signal of the program source is applied to the left and right channel outputs. When set to **R**, the right channel signal of the program source is applied to the left and right channel outputs. These **MODE** switch positions are useful in evaluating stereo separation.

When playing a single channel source such as TV or AM radio, set the switch to either **L** or **R** position or to **L + R** so that the single channel source can be heard through both speakers.

MUTING SWITCH

When this switch is depressed, the output of the preamplifier is decreased by 20 dB (1/10 of its original volume.) This switch is convenient for reducing the volume temporarily while talking on the telephone.

When the switch is released, the volume will be restored to the original level.

This switch is also useful for re-establishing the range of the **VOLUME** control. This allows more precise adjustment of low volume levels.

CAUTION

AFTER THE VOLUME SETTING HAS BEEN INCREASED WITH THE MUTING SWITCH SET AT –20 dB, TURN THE VOLUME DOWN BEFORE RELEASING THE MUTING SWITCH. FAILURE TO DO SO MAY RESULT IN DAMAGE TO YOUR SPEAKERS.

TONE DEFEAT SWITCH

The **TONE DEFEAT** switch allows the audio signal to completely bypass, and therefore not be influenced by, the effects of the tone control circuitry. When the **TONE DEFEAT** switch is set

to "IN", the audio signals bypass the tone control circuitry, assuring a precision "flat" frequency response (assuming no filters are activated). Without having to change the position of the **BASS, MID,** and **TREBLE** controls, their effect can thereby be compared against the true flat signal.

TURNOVER SWITCHES

The **TURNOVER** switches determine the operating characteristics of the **BASS** and **TREBLE TONE** controls, and allow additional flexibility in compensating for room, speaker, and program characteristics. The switches affect the tone controls as follows:

When the **100 Hz TURNOVER** pushswitch is depressed, the frequency at which the **BASS TONE** controls become effective is shifted from 500 Hz to 100 Hz.

When the **10 KHz TURNOVER** pushswitch is depressed, the frequency at which the **TREBLE TONE** controls become effective is shifted from 2 kHz to 10 kHz.

See "Technical Highlights", page 11.

FILTER SWITCHES

Two **FILTER** switches permit suppressing low- or high-frequency noise that may originate at the program source.

The **15 Hz FILTER** pushswitch activates a low frequency filter which reduces signal levels below 15 Hz (see Figure 4). The filter has little or no adverse effect on the system's overall frequency response, because frequencies of 15 Hz and lower are below the range of most program material. The filter will, however, substantially improve system performance when you play phonograph records at a high volume level. A high quality phono cartridge will faithfully reproduce turntable rumble, record cutting lathe rumble, and even the slight warp of a new record in the form of a low frequency (0.5 Hz to 15 Hz) noise. If this noise is allowed to pass through the preamp and amplifier, it may cause excessively large excursions of the woofer cones. These speaker excursions (pulsations) can result in high intermodulation distortion throughout the bass and lower midrange of the program material, and contribute to the overheating and possible failure of the woofers. As unnecessarily high proportion of amplifier power is wasted reproducing these low frequency noise components. Activating the **15 Hz FILTER** prevents this from happening, and allows more power to be made available for the important program frequency range.

When the **9 KHz FILTER** switch is depressed, high frequency noise, such as the hiss associated with noisy FM, poorly recorded tapes, or scratchy phonograph records, will be reduced sharply. The **9 KHz FILTER** should only be used in extremely noise conditions, because it will slightly attenuate high frequency program material. (See Figure 4).

PHONES JACK

This jack accepts headphones utilizing a standard three conductor phone plug. It is internally connected to the power amplifier section through isolation resistors to provide adequate sound level with popular low impedance headphones as well as with high impedance units. Two or more sets of headphones may be used with the aid of "Y" connectors. However, output level will drop as additional headphones are added. The headphone jack output is not affected by the **OUTPUT** switches.

RECORD SELECTOR SWITCHES

See the following section on tape recorders.

TAPE EQ SWITCH

With most preamplifier consoles, any tape recording you make is made without the benefit of the **TONE** and **TURNOVER** controls. The **TAPE EQ** switch, however, allows you to use these controls to make a "modified" recording.

If the desired input you wish to record (such as a turntable, tuner, or even another tape deck) is excessively noisy, you can change the setting of the **TREBLE TONE** control. If it lacks bass, you can boost the bass prior to recording with the **BASS TONE** controls when you use the **TAPE EQ** switch. Most deficiencies in an input signal can be corrected prior to recording when the **TAPE EQ** system is used. Information on how to use the **TAPE EQ** switch is contained in the "Making Modified Tape Recordings" section on page 10.

TONE CONTROLS (LEFT AND RIGHT)

Three **TONE** controls for each output channel, **BASS, MID,** and **TREBLE,** adjust the normally "flat" frequency response of the Model Sc 7 to suit individual listening preference.

The **BASS** control adjusts the low frequency tones, the **MID** control adjusts the middle frequency tones, and the **TREBLE** control adjusts

the high frequency tones.

These controls may be adjusted to compensate for unbalanced room acoustics or any other tonal difference between the left and right channels of the stereo program. The **TONE** controls have no effect on the signals present at the **TAPE 1 MONITOR** or **TAPE 2 MONITOR REC** jacks.

BALANCE CONTROL

The **BALANCE** control may be positioned to the left or right of center for the desired speaker balance. Normally this control should remain in the center (detented) position.

CARTRIDGE LOAD SWITCHES

These two rotary switches allow you to match the resistance of the preamp and phono cables with those of MM (Moving Magnet) or MC (Moving Coil) cartridges for both PHONO 1 (MM/MC) and PHONO 2 (MM) of the Model Sc 7. A "matched" phono system will allow a "flat" frequency response that reproduces exactly what is on the record.

A Moving Magnet cartridge has a magnet connected to the stylus. As the stylus follows the grooves in the record, the magnet follows the movement of the stylus. Coils of wire detect the movement of the magnet and convert them into electrical signals. The magnet has a considerable amount of weight (and therefore inertia) compared to the coils of wire. A Moving Coil cartridge, though, has coils of wire connected to the stylus. The coils of wire (which weigh less than the magnet) allow the cartridge to "track" the record more accurately than a Moving Magnet cartridge.

No damage can occur to either the phono cartridge or the Model Sc-7 at any setting of these controls. If you wish, then, you may adjust the controls for the most pleasing sound.

To set the **CARTRIDGE LOAD** switches, refer to the specification sheet supplied with the cartridge for its rated resistance. Set the **MC** or **MM** switch to that position. If the recommended resistance is between two of the settings, turn the switch to the next higher setting. The great majority of **MM** cartridges have a resistance of 47 kohms. If the information on your cartridge's resistance is unavailable, you may use this setting by turning the **MM** switch to the **47K** position.

FLAT AMP SWITCH

In general, the **FLAT AMP** switch is to remain in the **NORMAL** position. For high-fidelity playback or for checking the equipment, switch it to be **BYPASS** position.

CAUTION

IN THE BYPASS POSITION, VOLUME CONTROL IS ADJUSTABLE BUT THE TONE CONTROL AND FILTERS SWITCH ARE INOPERATIVE.

OUTPUT SWITCHES

The **OUTPUT** switches connects the audio signal to the **PRE OUT 1** and **2** jacks on the rear panel when in the ON position.

USING TAPE RECORDERS WITH YOUR MODEL Sc 7

The Model Sc 7 provides two sets of inputs and outputs for tape recorders: **TAPE 1 MONITOR** and **TAPE 2 MONITOR**. To simplify this discussion, the tape recorder connected to the **TAPE 1 MONITOR** jacks will be referred to as the "MAIN" recorder; the tape recorder connected to **TAPE 2 MONITOR** jacks will be referred to as the "SECONDARY" recorder.

MAKING TAPE RECORDINGS AND DUBS

The two **RECORD SELECTOR** switches select the signal sources to be sent to the two respective tape recorders. The **RECORD SELECTOR 1** switch selects the input to the "MAIN" recorder; the **RECORD SELECTOR 2** switch selects the input to the "SECONDARY" recorder. The **RECORD SELECTOR** switches operate independently from the **INPUT SELECTOR** pushbuttons. They each have five positions:

OFF — In this position, the tape recorders receive audio signals from the source chosen by the **INPUT SELECTOR** pushbuttons. In other words, this is the "normal" position for routine recording and listening.

PHONO — In this position, the audio output from phono 1 can be recorded directly onto the tape. However, if the **PHONO 2 MM INPUT SELECTOR** pushbutton is depressed, the recorder derives its input from phono 2.

TUNER — In this position, the tuner output can be recorded directly onto the tape.

AUX — In this position, the signal source connected to the **AUX** jacks can be recorded directly onto the tape.

TAPE COPY — This is the switch position used for making tape copies. **TAPE COPY 2→1** indicates that tape 2 (the "SECONDARY" recorder) will be copied onto tape 1 (the "MAIN" recorder). **TAPE COPY 1→2** indicates that tape 1 will be copied onto the tape 2 (the "SECONDARY" recorder).

The two **RECORD SELECTOR** switches and the **INPUT SELECTOR** pushbuttons offer a great number of recording/listening combinations. For example, it is possible to make a tape copy while simultaneously listening to a phonograph record. Or, you may wish to record an album on one tape recorder, record a radio program on the other tape recorder, and listen to an auxiliary source at the same time. Of course, you can check the progress of the tape recorders at any time by using the **TAPE MON** switches without affecting the recording process.

NOTE

When both RECORD SELECTOR switches are placed in the TAPE COPY position simultaneously, the outputs to both tape recorders are automatically muted to prevent feedback loops.

CAUTION

When recording from PHONO 1 be careful not to accidentally press the PHONO 2 INPUT SELECTOR, as this will interrupt the program from PHONO 1 MM/MC. Similarly, while recording from PHONO 2 the INPUT SELECTOR must be left in the PHONO 2 position.

TAPE MONITORING

The **TAPE MON** switches operate independently of the **INPUT** and **RECORD SELECTOR** switches. Thus, any tape recorder can be monitored regardless of which input is chosen.

To monitor the "MAIN" or "SECONDARY" recorders, push the **TAPE MON 1** or **2** switch.

NOTE

In the event you wish to make a direct tape to source "A–B" monitoring comparison, place the INPUT SELECTOR to the same source as that selected at the RECORD SELECTOR switches. Then when the TAPE MON switch for that tape recorder is "out", you are monitoring the source. When the TAPE MON switch is "in", you are monitoring the tape.

MAKING MODIFIED TAPE RECORDINGS AND DUBS

The **TAPE EQ** switch can be used to feed input signals (such as a tuner, turntable, or TV sound output) through your Console so that its **TONE** controls may be used to modify the signal prior

to recording. When recording music through the Model Sc 7 onto a tape deck, the **TONE** controls can bring out the highlights in certain musical instruments or voices. For example, you may wish to brighten the sound of an acoustical guitar by increasing the treble response. The TAPE EQ circuitry can be used to correct noisy program conditions before they are recorded onto the tape. "Boominess", ambient noise, and FM hiss can be reduced by the proper setting of the **TONE** controls.

To make a modified tape recording, first set the **RECORD SELECTOR 1** or **RECORD SELECTOR 2** switch as described in the "MAKING TAPE RECORDINGS AND DUBS" section on page 10. Then, turn the **TAPE EQ** switch to position **1** (if recording onto the "MAIN" recorder) or position **2** (if recording onto the "SECONDARY" recorder) and adjust the **TONE** controls for the desired sound. Monitoring may be accomplished by depressing the **TAPE MON 1** pushswitch (to hear the "MAIN" recorder) or the **TAPE MON 2** pushswitch (to hear the "SECONDARY" recorder).

Modified tape copies ("dubs") can also be made. To make a modified dub from one recorder onto another first turn the **RECORD SELECTOR 1** or the **RECORD SELECTOR 2** switch to the appropriate **TAPE COPY** position as described in "MAKING TAPE RECORDINGS AND DUBS" on page 10.

Turn the **TAPE EQ** switch to **1** if you are recording from the "SECONDARY" recorder onto the "MAIN" recorder or to **2** if you are recording from the "MAIN" recorder onto the "SECONDARY" recorder. To monitor the modified tape recording depress the **TAPE MON 1** switch if the **TAPE EQ** switch is in position **1** and depress the **TAPE MON 2** switch if the **TAPE EQ** switch is in position **2**. Now you can adjust the **TONE** controls for the desired sound.

NOTE

While making a modified tape dub you may listen to another source selected on the INPUT SELECTOR pushswitches. Be sure to release the TAPE MON 1 or TAPE MON 2 pushswitch. The TONE controls do not affect the source selected by the INPUT SELECTOR pushswitches when a modified dub is being made.

TECHNICAL SECTION

TECHNICAL HIGHLIGHTS

ACTIVE 15 Hz AND 9 kHz FILTER NETWORKS

The design of the active filter networks is based on the philosophy that an audio noise filter should eliminate as much noise as possible without adversely affecting the desired program material. To that end, the filters in the Model Sc-7 provide a sharp rolloff at relatively unobtrusive points in the frequency spectrum. The Active Filter Networks consist of cascaded filter components at the input of a non-inverting, unity gain filter amplifier having minimum insertion loss. Associated switches place the appropriate filter components in the amplifier feedback circuit for 18 dB per octave roll off at 15 Hz and/or 9 kHz. Characteristic curves for the Active Filter Networks are shown in Figure 4. Frequency response through the network is flat when the filters are deactivated.

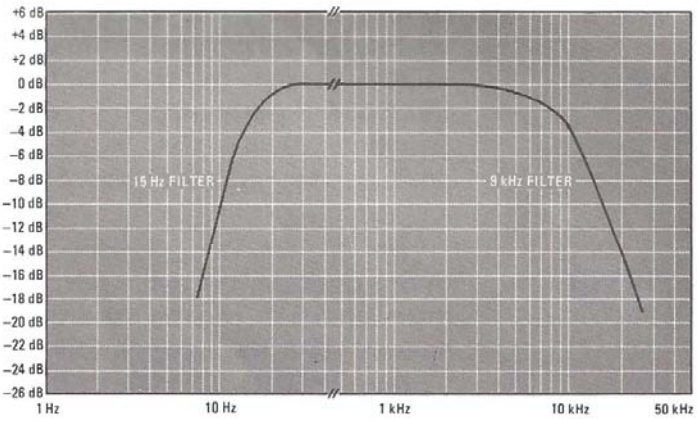

Figure 4. Filter Characteristics

MC HEAD AMPLIFIER

In the **PHONO 1 MM/MC** position of the **INPUT SELECTOR** switch, the Moving Coil (MC) Amplifier is switched into the PHONO 1 circuit. This high performance amplifier, which uses an ultra-low noise FET (Field Effect Transistor), provides a gain of 20 dB and results in a sensitivity of 200μV at the **PHONO 1 INPUT** jacks.

PHONO PREAMPLIFIER

The phono preamplifier is an RIAA equalized fully complementary amplifier utilizing 2 ultra-low noise FET's (Field Effect Transistors) and 12 low noise, high-speed bipolar transistors.

The input stage is unique in that it consists of 2 FET's in a differential amplifier configuration with a bipolar current source with no input capacitor, allowing direct coupling between the MM cartridge and the differential amp. The signal is then fed into a complementary push-pull second stage and then into a 2 stage complementary emitter follower output circuit. The second emitter follower stage uses bipolar power transistors in full class A operation to drive the RIAA feedback network and the tape outputs.

The **CARTRIDGE LOAD** switch, located at the head of the MM phono preamplifier, selects the correct load resistance to match the MM cartridge being used for either the **PHONO 1** or **PHONO 2** position of the **INPUT SELECTOR** switch.

Precision components were selected to ensure precise RIAA compensation in the negative feedback loop from 20 Hz to 20 kHz. Gain for the phono preamplifier is set at 37.5 dB @ 1 kHz.

TONE CONTROL/TURNOVER NETWORK

The band of audio frequencies to which the human ear is most sensitive is the midrange.

Conveniently enough, most speaker systems and most listening environments faithfully reproduce midrange frequencies. On the other hand, the reproduction of the low bass and high treble regions are considerably influenced by room acoustics and speaker design.

To provide flexibility in coping with these conditions, the **TURNOVER** switches shift the frequency locus (turnover points) for the **BASS** and **TREBLE** controls. This allows the bass and treble response to be adjusted with minimum influence on the critical midrange frequencies.

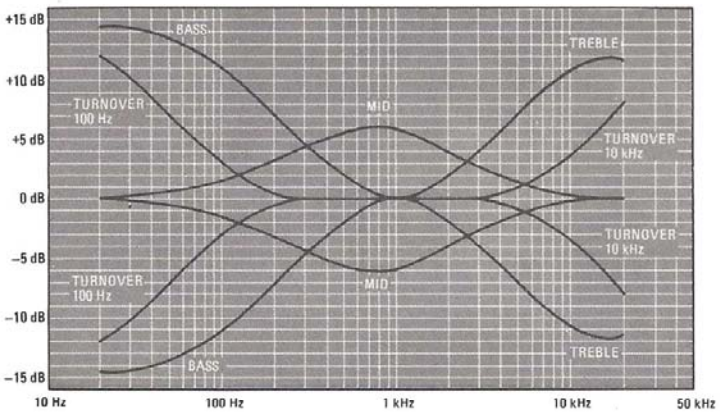

Figure 5. Tone Control Characteristics

The turnover frequency designations (100 Hz and 10 kHz) refer to the lower and upper limits of the band of midrange frequencies which would not be affected by the **BASS** or **TREBLE** controls.

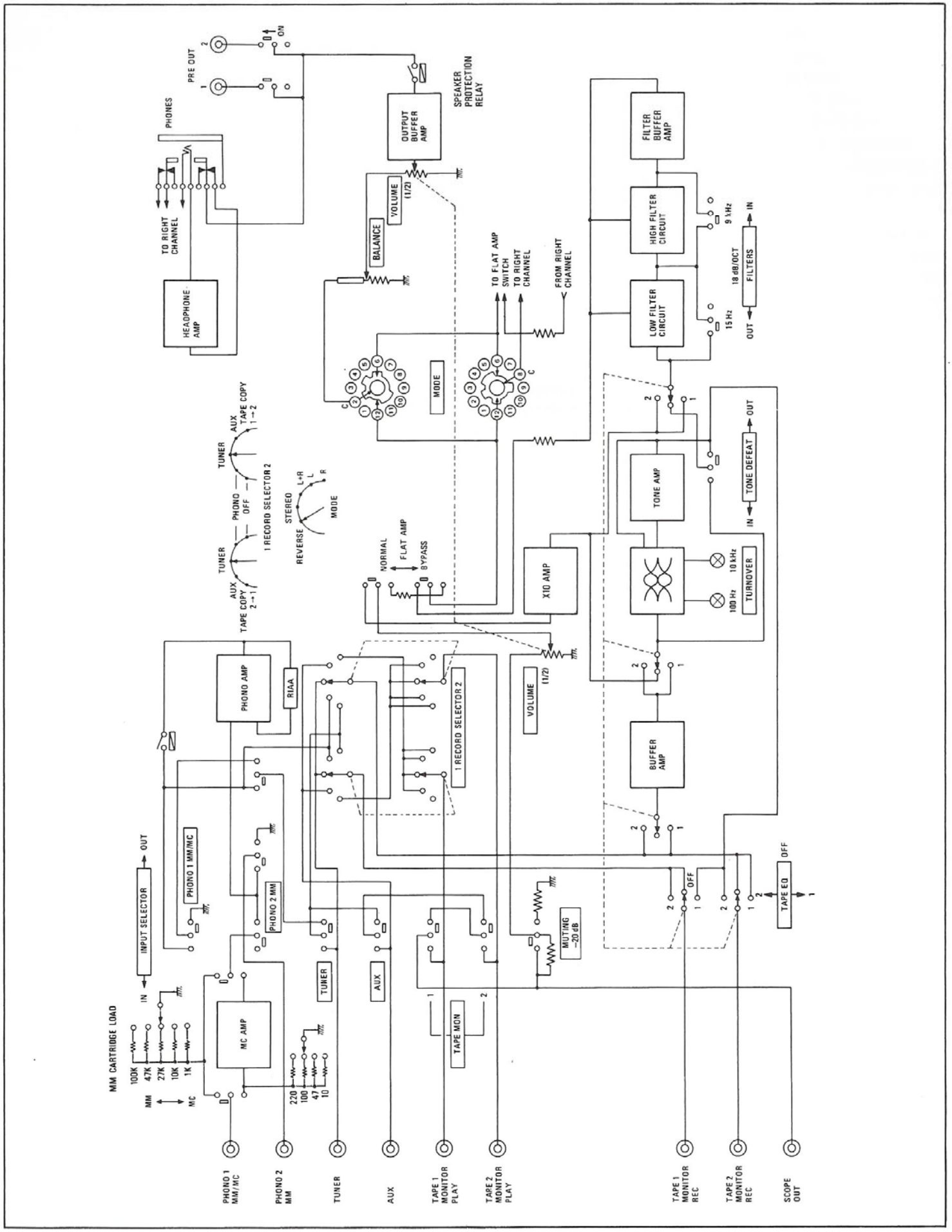

Figure 6. Functional Block Diagram

SYSTEM OPERATION

Figure 6 is a functional block diagram of the Model Sc 7 left audio channel, showing the principal circuit elements and signal routing paths. Since the left and right channels are identical and process audio signals simultaneously, only the left channel will be discussed in the following paragraphs.

High- and low-level inputs (program sources) are selected by the **INPUT SELECTOR** pushswitches and routed in accordance with signal level. When low level sources are selected (**PHONO 1** or **PHONO 2**) the **INPUT SELECTOR** pushswitch routes the input signal to the **CARTRIDGE LOAD** switches and then to the MC Head Amp and the Phono Amplifier and selects the proper equalization. The output of the Phono Amplifier is then returned to the **INPUT SELECTOR** pushswitches where it is handled as another high level input.

High level input signals (**TUNER, AUX**, or the output of the Phono Amplifier) are applied to the **TAPE MONITOR OUT, SCOPE OUT** jacks, and to the **TAPE MON** switches.

The **TAPE MON** switches select between the **INPUT SELECTOR** switches output and the signal available at either the **TAPE 1 MONITOR PLAY** or **TAPE 2 MONITOR PLAY** jacks. The signal is sent to the **SCOPE OUT** jacks and to the **MUTING** pushswitch. The output of the **MUTING** circuitry is fed to one gang of the 4-gang (two per channel) **VOLUME** control. Next is the **FLAT AMP** switch which allows the signal to be processed by the tone control stages or completely bypass this circuitry (thereby eliminating any distortion introduced by these stages).

If the **FLAT AMP** switch is set to **NORMAL,** the signal is sent to a x10 amplifier to boost the signal for **TONE CONTROL/TURNOVER** circuitry. A **TONE AMP** stage boosts bass, mid, and treble signals when their respective tone controls are moved into the upper half of their range. The output of the **TONE CONTROL/TURNOVER** stage is presented to one gang of the **TAPE EQ** switch. The **TAPE EQ** switching circuitry allows the **TONE** and **TURNOVER** controls to modify the signal sent to the **TAPE 1 MONITOR REC** or the **TAPE 2 MONITOR REC** jacks. The signal that will be sent to the tape recorders (whether for Tape EQ or regular recording) is determined by their respective **RECORD SELECTOR** switch.

The signal is then presented to the 18 dB per octave Butterworth low filter and Bessel-derived high filter. 18 dB per octave filters were specified so that the effects of the filters could be concentrated on those parts of the audio band which at times need filtering. When 6 dB or 12 dB per octave filters are used, they tend to "cut into" the portion of the audio band where filtering is not desired. They must do this in order to be effective at the frequencies where filtering is required. However, with an 18 dB per octave low filter, a lower frequency hinge point can be used for the filter. The result is less adverse effect on the desired band of frequencies. The same result is true with an 18 dB per octave high filter.

The Bessel-derived high filter used in the Model Sc 7 is a completely new design not yet used in other audio components. The major benefit inherent in its design is its ability to eliminate overshoot on transient material, thus eliminating the "ringing" effect of other filter designs. In addition, the Bessel filter has linear phase characteristics. The total result is much cleaner, more natural filtering action. The output of the **FILTERS** is then routed to the **MODE** switch.
If the **FLAT AMP** switch is set to the **BYPASS** position, the signal is routed directly from the **VOLUME** control to the **MODE switch.** Unlike the **TONE DEFEAT** switch, which bypasses only the **TONE CONTROL/TURNOVER** circuitry and **TONE AMP**, the **BYPASS** position completely bypasses the x10 Amp, **TONE CONTROL/TURNOVER** circuitry and its **TONE AMP**, and the low and high filter circuits and their **FILTER AMP.** Since this circuitry is then out of the signal path, the absolute minimum amount of phase shift and distortion is assured.

The signal is then routed to the **MODE** switch. The **MODE** switch determines the manner in which the left and right channel signals of the program source are presented to the Model Sc 7, **LEFT** channel only, **RIGHT** channel only, two-channel **STEREO, STEREO REVERSE,** or **L + R** (left and right channels combined). The signal selected by the **MODE** switch is then routed to the **BALANCE** control. The **BALANCE** control adjusts the relative signal level of the left and right channels by attenuating the level of one channel while maintaining the level of the other. From the **BALANCE** control, the signal is routed to the other gang of the **VOLUME** control.

The output of the **VOLUME** control feeds the **OUTPUT BUFFER AMP** whose job is to present a constant impedance to the **PRE OUT** jacks irregardless of the influence of the **VOLUME** and **BALANCE** controls and any of the preceeding circuitry. The **SPEAKER PROTECTION RELAY** remains open (disconnected) for a few

seconds after initial turn-on. This allows the circuitry of the Sc-7 and all the input equipment to stabilize before applying signal to the **PRE OUT** jacks.

When the **SPEAKER PROTECTION RELAY** closes, signal is applied to the **PRE OUT 1** and **2** jacks and also to the **HEADPHONE AMP.**

MAINTENANCE

CLEANING

The satin black anodized finish of the knobs and heavy aluminum front panel will last indefinitely with proper care and cleaning. NEVER use scouring pads, steel wool, scouring powders, or harsh chemical agents, such as lye solution. These will mar the finish. Clean with a soft, lint-free cloth or cotton swab slightly dampened with a mild solution of detergent and water.

FUSE REPLACEMENT

In the event the fuse blows out, replace it ONLY with a fuse of the same type and rating. Replacement with a fuse of a higher rating or slower action will not protect the unit and will void the warranty.
The unit power should be switched OFF before replacing the fuse. Should the replacement fuse blow out within a short period of time after the unit is turned on, the unit should be taken to an authorized service facility.

IN CASE OF DIFFICULTY

Should you experience difficulties when operating your system for the first time, and you have followed the procedure outlined in the "Preliminary Procedure", use of the following data will help you correct or isolate the problem. If these hints fail to remedy the situation, refer the prob-

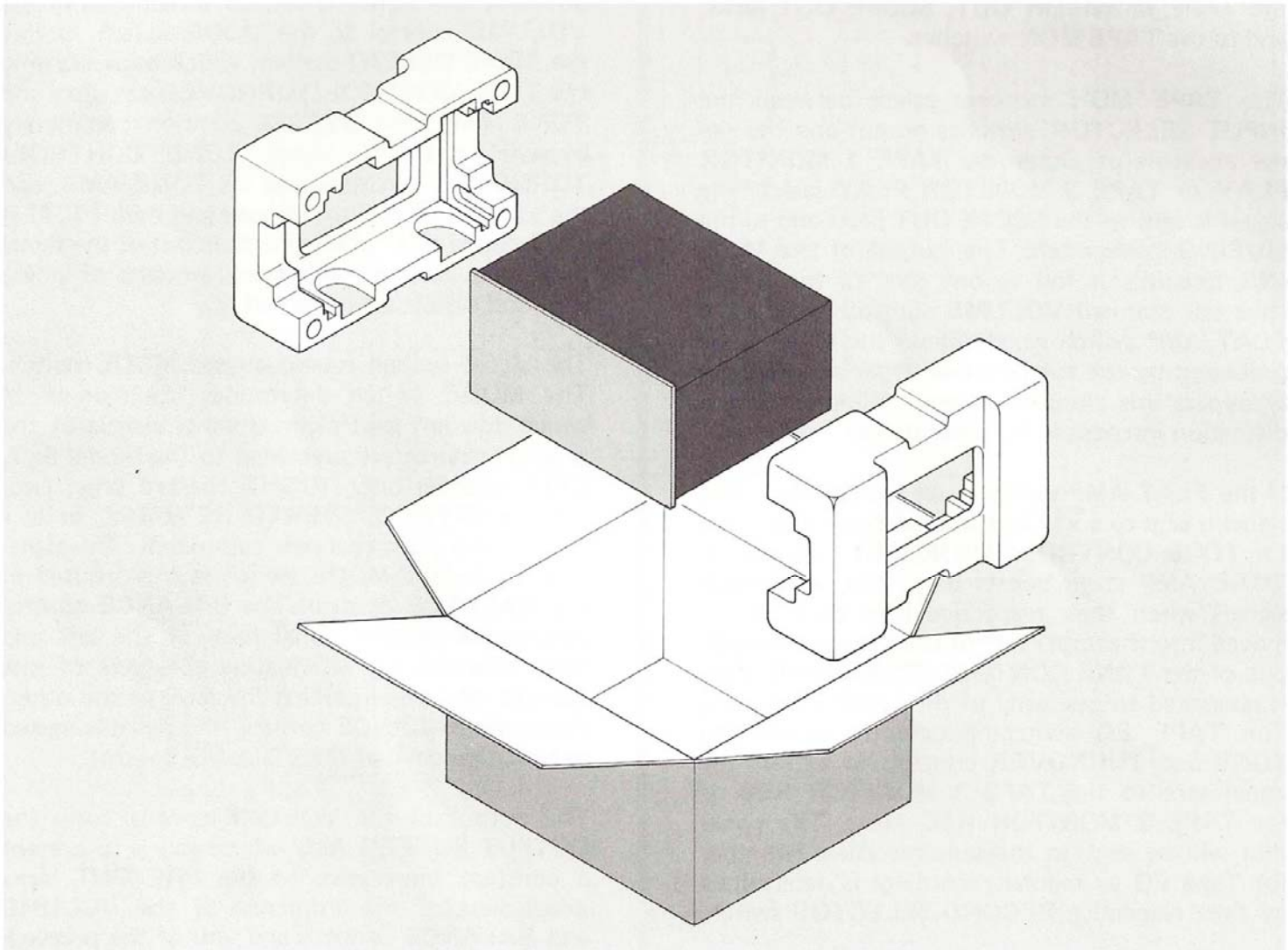

Figure 7. Repacking Illustration

lem to your nearest authorized service facility.

Preamplifier does not operate, and pilot lamp does not illuminate.

1. Make sure power cord is properly connected.
2. Check AC line fuse; replace if necessary (the unit should be OFF when replacing fuse).

Preamplifier does not operate, but pilot lamp is on.

1. Check settings of controls such as **SELECTOR, TAPE MON, OUTPUT** switches, **VOLUME**, etc.
2. Turn **MODE** switch to **REVERSE**. If opposite speaker becomes inoperative, either the input equipment or the cables connecting it to the preamplifier are at fault.
3. Turn off system power and transpose (left for right) the cables connecting the power amplifier at the **PRE OUT** terminals. If the same speaker remains inoperative when turned back on, either the amplifier, cable, or speaker is at fault.

Loud hum in phono.

1. Check to see that phono plugs and jacks are clean and properly connected.
2. Try connecting turntable ground wire (usually colored green) to **CHASSIS GROUND** post on rear panel of preamplifier.
3. If ground wire is already connected, try disconnecting it.
4. Make sure phono cartridge is wired properly and making good contact with terminals in tone arm.

Tone controls don't work.

1. Release **TONE DEFEAT** pushswitch.

REPAIRS

Only the most competent and qualified service technicians should be allowed to service the Model Sc 7. The Marantz Company and its factory-trained warranty station personnel have the knowledge and special equipment needed for repair and calibration of this precision instrument.

In the event of difficulty, call the toll free telephone number listed on the back of the Warranty to obtain the name and address of the Marantz Authorized Service Station nearest your home or business. In many cases, the dealer where you purchased your Marantz unit will be equipped to provide service.

REPACKING FOR SHIPMENT

Should it become necessary to repack your Model Sc 7 for shipment to the factory, to an authorized service station, or elsewhere, please observe the following precautions:

a. Do not ship the unit installed in its accessory walnut cabinet; remove the unit from the cabinet before packing.
b. Pack the unit carefully, using the original material as shown in Figure 7.
   PLEASE NOTE that if you have discarded, lost, or damaged the packing material, new packing material may be obtained by writing to the Marantz Technical Services Department. The carton, its fillers, and packing instructions will be returned to you at a nominal charge.
c. Ship via a reputable carrier (do not use Parcel Post) and obtain a shipping receipt from the carrier.
d. Insure the unit for its full value.
e. Be sure to include your return address on the shipping label.

NOTES:

The Sound of Marantz
is the compelling warmth of a Stradivarius.
It is a dancing flute, a haughty bassoon
and the plaintive call of a lone French horn.
The Sound of Marantz is the sound of beauty,
and Marantz equipment is designed to bring you
the subtle joy of its delight.
Wonderful adventures in sound await you
when you discover that the Sound of Marantz
is the sound of music at its very best.

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