4-CHANNEL SQ OPERATION

For Stereo Quadraphonic [SQ] reproduction, you can use an SQ encoded 4-channel stereo record [these are available under several labels, including Columbia], or you can use an FM broadcast of an SQ encoded record [some FM stations are already playing SQ records over the air at special times].

SQ records are played on a conventional stereo record player which should be connected to your existing stereo unit. If any of the FM stations in your area are playing SQ records over the air, simply tune to the particular station on your tuner or receiver [if included in your existing system].

1. Set all controls and switches on the decoder/amplifier and on the existing stereo unit as indicated in the chart headed "A Quick Guide To Operating The Entire 4-Channel System" [refer to "Function" column which describes your desired mode of operation and set controls accordingly]. The MODE switch is, of course, set to the "SQ" position for all SQ-encoded program sources.
2. The speaker volume levels must be set so that the listener heard equal volume from the front and rear set of speakers. Remember, that if the volume from the front speakers is too high, the program will appear to come only from the front speakers. Similarly, if the volume from the rear speakers is too high, the program will appear to come only from the rear speakers. The proper levels will have to be determined by experimentation while listening to SQ program material. When doing so, however, bear in mind that the SQ decoder circuit incorporates logic circuits which will direct the sound toward the front when the program contains center-front performers [such as a vocalist], and toward the rear when the program contains center-back performers. Thus, adjustment of front-to-rear volume balance should be made while playing several selections on an SQ record. With recordings which consist of a large symphony orchestra in a large concert hall, the rear speakers will generally produce "ambience", or the reflected sound heard in the hall. With "pop" recordings, vocalists and certain instruments may be heard mainly in the left or right rear, or mainly in the left or right front, depending on the record. The actual manner in which the program material is distributed over the four channels is, to a great extent, dependent on the manner in which the SQ recording was made.

If the volume from the rear speakers seems too high, you can either increase the volume on the existing [front] stereo unit, or reduce the setting of the VOLUME/BALANCE controls on the decoder/amplifier [to reduce the rear volume].

If the volume from the rear speakers seems too low, you can either decrease the volume on the existing [front] stereo unit, or increase the setting of the VOLUME/BALANCE controls on the decoder/amplifier [to increase rear volume].

In no case should the volume control on the existing stereo unit be set to a position lower than 12 o'clock or higher than 2 o'clock, unless absolutely necessary. A position lower than 12 o'clock will limit the maximum available power for the front

channels, whereas a position higher than 2 o'clock may decrease the signal-to-noise ratio and result in an increase of distortion in the front channels.

Once a proper balance in front-to-rear volume has been achieved, the volume of all four channels can be increased or decreased simultaneously by means of the MASTER control on the decoder/amplifier. This control should have sufficient range to enable you to reduce the volume to zero or increase the volume to an extremely high level if necessary.

3. It should be remembered that all "matrix" 4-channel systems are "encoded" systems. This means that the four channels have been combined into two channels by using a special electronic encoding process known as "matrixing". By a reverse process, these two channels are decoded [unscrambled] in a decoder circuit and presented again as four channels.

   One characteristic of all matrix systems is that a certain amount of "blending" takes place on decoding, so that all speakers produce a small amount of common program. material. Thus, although a particular sound will be heard from the desired speaker, this same sound will in fact be produced by the other speakers, but at a reduced level, of course. This characteristic does not detract from quadraphonic performance, and the listener will still place the origin of the sound source at the desired point. Moreover, a certain amount of such blending actually produces a more natural effect. You should not expect [or want] to hear four totally isolated sounds emanating from four speakers. This would amount to four channel monophonic reproduction. Although, dramatic, this would not produce a realistic musical performance. For instance, you will find that the two channels in most regular stereo recordings usually contain common material. Even if one instrument is heard predominently from one stereo channel, close listening to the other channel, close listening to the other channel will reveal that this same instrument is also present there, though at a reduced level, of course. This was found to be the most musically realistic system of recording stereo. It is, therefore, not unusual to find this characteristic present in stereo quadraphonic reproduction.

DISCRETE 4-CHANNEL STEREO TAPE OPERATION

At the present time, discrete 4-channel stereo program sources are limited to tape. However, any other source providing four separate channels of sound that may become available in the future will fall into the "discrete" category and will therefore be applicable to this section.

All discrete 4-channel program sources must be connected directly to the decoder/amplifier, generally using the DISCRETE input jacks [as in Figs. 1 and 3]. If you are using a tape recorder with monitoring provisions, you may have used the TAPE MON input jacks [as in Fig. 2]. If the tape unit is capable of recording 4-channel in addition to playback, the recorder inputs should be connected to the 4-CH REC OUT jacks.

To play a discrete 4-channel tape, set all controls and switches as indicated in the chart titled "A Guide To Operating The Entire 4-Channel Stereo System" [see Function described as "Discrete 4-CH Stereo Tape"].

Note that if the output of the tape unit is connected to the "Discrete" inputs on the decoder/amplifier, you must set the MODE Switch to "Discrete",and the MON button must be "off". If the output of the tape unit is connected to the TAPE MON inputs on the decoder/amplifier, you must depress the MON button to select the output of the tape unit.

RECORDING AND MONITORING 4-CHANNEL

Figure 2 illustrates the type of connection that is used for a tape recorder with monitoring provision. With this arrangement, the SELECTOR and MODE switches are set in accordance with the type of program source to be recorded in 4-channel. For example, if you intend to record an SQ-encoded record in 4-channel [after it has been decoded], simply set all controls and switches as indicated in the chart for "4-Channel SQ Stereo With a Record Player". The tape recorder will automatically be fed with a decoded 4-channel program from the 4-CH REC OUT jacks. With the MON button in the "off" position during the recording process, the decoded program will also be reproduced directly through the amplifiers in the decoder/amplifier and the existing stereo unit and will be heard through the four speakers in the normal manner. When the MON button is depressed, however, the program heard will be the "monitoring" output of the tape recorder. In other words, what you will actually be hearing is the program taken directly from the tape immediately after it has been recorded. By switching between the "on" and "off" position of the MON button, you will be able to make an immediate comparison between the original and the recorded program.

"DERIVED" 4 —CHANNEL STEREO OPERATION

The amplifier/decoder can also be used to provide "derived" 4-channel stereo sound from regular stereo records, FM or tapes by using either of the "Composer" positions [A or B]. This form of reproduction is called "derived" because the program source used is a conventional 2-channel stereo source that does not contain any specially encoded program material. However, it has been found that even regular 2-channel stereo recordings do contain information which, when extracted and fed to the two rear channels, will provide a new, added dimension to the stereo sound reproduction. This added dimension consists of "ambience".

Ambience is simply a word used for the sound characteristics that define the accoustical properties of any recording location, whether it be a concert hall, club, or a recording studio. It is this particular characteristic which adds "presence" during a live performance.

Ambience consists mainly of reflected sound -- sound components that reach the listener indirectly after having bounced off the surface of walls, ceilings, etc. These sounds are softer, slightly delayed versions of the original direct sound. When a

performance is recorded, these ambient sounds also enter the microphones and are therefore included in most 2-channel stereo recordings.

The Composer circuits can be used to recover these reflected sound components in a conventional stereo recording. When these circuits are in operation, the front speakers will produce the conventional stereo program, but the rear speakers will produce a certain amount of "ambience". The "rear" sounds produced by the two Composer circuits are not identical, though both circuits will recover some of the ambience or acoustics of the recording location. [See "Selection of Decoder Circuits"]. When using 2-channel stereo program material, you should try each circuit and select the one which you feel provides the best overall sound effect.

OPERATING PROCEDURE

Refer to the operating chart supplied and locate the type of "derived" program applicable [under the Function column]. All 2-channel stereo program sources should have been connected to the existing stereo unit, and the SELECTOR switch on the decoder/amplifier will therefore be set to the "Source" position. However, if you found it necessary to connect a 2-channel stereo source directly to the AUX inputs on the decoder/amplifier, as shown by the broken lines in Figure 4, the SELECTOR switch must be set to "AUX".

Note that if you are playing a 2-channel tape on a 4-channel tape recorder or player, you will need the type of connection shown in Figures 1 and 3, using "Y" connectors as indicated. Also, as noted in the chart, the decoder/amplifier MASTER control no longer functions as a master volume control for all four channels when using "Y" connectors,and is set permanently to the 12 o'clock position.

The volume adjustment procedure outlined previously in the section "Initial Control Settings" should have provided you with the proper balance of volume between front and rear speakers. The MODE switch may be set either to COMPOSER A or B for derived 4-channel sound -- simply select the position that you prefer.

SELECTION OF DECODER CIRCUITS

This decoder/amplifier features three different 4-channel decoder circuits -- COMPOSER A, COMPOSER B, and SQ. This choice of circuits assures optimum stereo quadraphonic performance with virtually any type of program source material. This includes regular stereo, encoded [matrixed] 4-channel stereo of various types, plus SQ-encoded program sources.

NOTE: These decoder circuits are not designed for use with monophonic program sources, and such a source will produce a lower output in the rear channels.

Even so, if you wish to listen to a monophonic program source, you can use the COMPOSER A or B circuits. These circuits will provide enhanced sound reproduction

even with a mono source since the signals in the rear channels will have been phase-shifted.

A general description of the performance characteristics of the various circuits follows, including recommendations for the use of each.

COMPOSER A and B POSITIONS

These are both matrix circuits, but having different parameters. By means of one or the other circuit, it is possible to obtain substantial decoding of any matrixed 4-channel record that has been encoded by a system other than SQ. Although SQ records now predominate in the 4-channel category, there are still a certain number of 4-channel records around that have been encoded by other methods. With such a record [or FM stereo broadcast of such a record], try both Composer positions and select the one which provides the best results.

The two Composer positions are also designed to produce "derived" 4-channel stereo from conventional stereo records FM and tapes. Try both positions and use the one which you find produces the most effective results.

In general, the COMPOSER A position will tend to place the listener in the midst of the musical instruments so that he is enveloped with sound, although vocalists or performers on center stage will be presented at the center front. In addition, a substantial amount of ambience is recovered and produced at the rear [provided the stereo program source contains such material].

The COMPOSER B position will present the performance predominently in front of the listener, but with slightly less ambience developed at the rear.

SQ POSITION

This selects a decoder circuit which provides precise 4-channel decoding of all SQ-encoded program sources. Special electronic logic circuits are included which cause vocalists or performers to be presented sharply at the center front or at the center back, in accordance with the manner in which the 4-channel recording was made. The overall effect of this action is an increased front-to-back separation of sounds, providing distinctly separate performers in front of, and behind, the listener.

You may, if you wish, use this position with non-SQ 4-channel matrixed sources or even with conventional stereo sources. However, since the decoder matrix and logic circuits were designed to provide optimum decoding of SQ sources, the effects produced when other sources are used cannot be accurately predicted.

SPEAKER PHASING

In order for any stereo system to be effective; it is important that all speakers be operated in the proper phase [speakers are in phase if all speaker cones move in the same direction when an identical signal is applied to them]. In this case, it is particularly important that phasing be checked since the use of the additional decoder/amplifier may introduce a 180 degree phase change in both rear speakers. Unfortunately, there is no practical way in which this can be determined other than by carrying out a phasing check after the entire 4-channel system is connected.

A detailed procedure for checking the phase of the four speakers in the system follows. These checks consist of a listening test carried out on two speakers at a time -- front left and front right, front right and rear right, and then rear right and rear left.

PRELIMINARY SET-UP

1. For this test, we recommend that you use a stereo program source [FM or a record will prove most convenient]. Do not use a 4-channel discrete source.

2. Set all controls as indicated in the Operating Chart for the type of program source you intend to use. Try to select material with a voice content -- a vocalist if you are using a record, or a newscast if you are using FM.

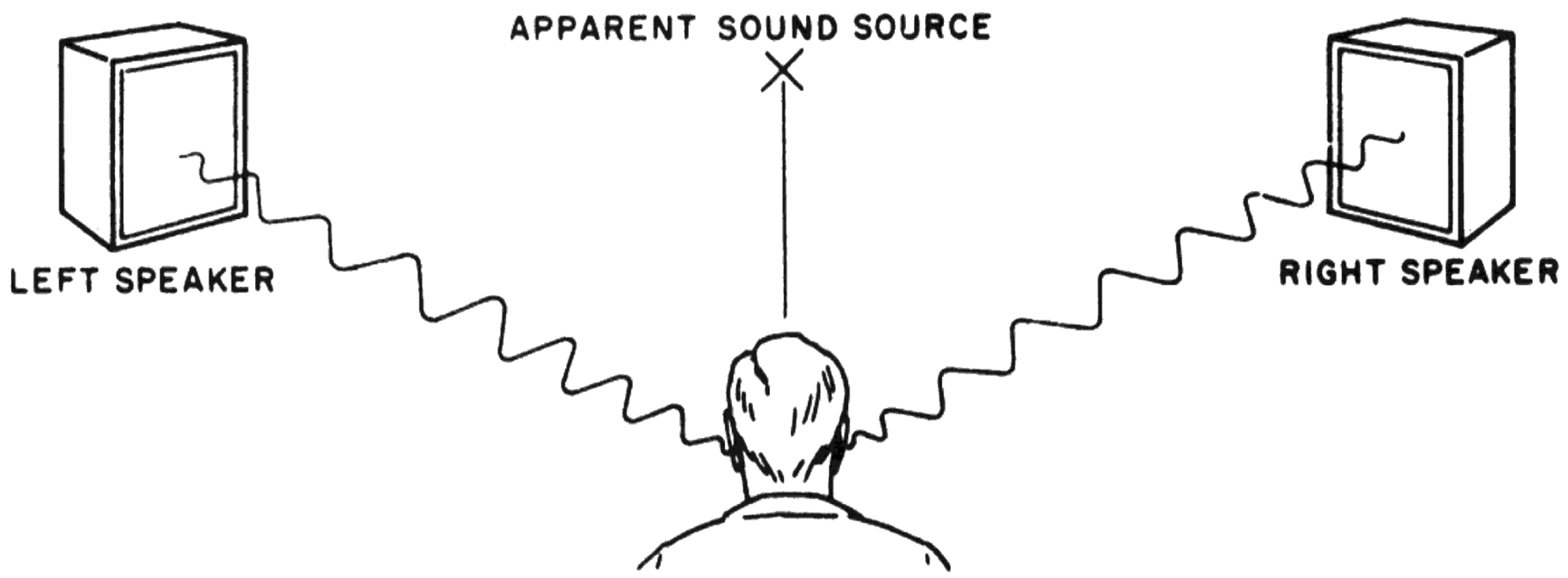
3. Now set the MODE switch on the decoder/amplifier to the 2CH - MONO position. This will result in identical signals being present in the four speakers. Set the MASTER control on the decoder/amplifier to a position which provides a reasonable listening level.

The listening tests that follow are based on the fact that when two speakers produce the same "in phase" sound, the sound will appear to come from a point between the speakers. If the sound is out-of-phase, the sound will not appear to come from any definite location and will be dispersed over an area across both speakers. When carrying out a listening test on any two speakers, they should be separated by a distance of approximately 6 - 10 feet and turned in at an angle to face the listener who should stand about 6 - 10 feet in front of them.

For these listening tests, the help of another person may be required to adjust controls on the equipment, reverse wires at each speaker, etc.

PHASE CHECK 1 - Front Left and Front Right Speakers

Note: If you have previously conducted a speaker phasing test on your existing stereo system and have already determined that the existing speakers [now the "front" ones] are in phase, you can disregard steps 1 through 3.



1. Temporarily, release the MAIN button ["off" position] on the decoder/amplifier so that the rear speakers are silent [if the rear speakers are connected to the MAIN terminals]. If the rear speakers are connected to the REMOTE jacks, release the REM button. Position yourself midway between the front left and right speakers as shown in the diagram above.

2. Adjust VOLUME/BALANCE controls on the existing stereo unit to slightly higher than normal listening level [if necessary]. Make sure that each control is set so that the output from each front speaker is approximately the same. Listen carefully, and try to determine the area from which the sound appears to be coming. If the speakers are "in phase", the sound will seem to come from between the speakers.

3. Have someone reverse the connections at the rear of the right front speaker. Listen carefully to the sound output again after the wires are switched. Repeat this procedure a few times.

   CAUTION: Use extreme care when reversing wires to the speaker terminals -- make sure the wires are not inadvertently shorted together.

When you have the correct or "in phase" connection you will notice that the sound seems to come from an area somewhere between the speakers. If the speakers are not "in phase", however, the sound will not seem to come from any clearly defined area and will appear to be dispersed. When you have determined that the speakers are "in phase", permanently connect the right front speaker wires in the position that produced it.

PHASE CHECK 2 - Front Right and Rear Right Speakers

1. Using the same program source as before, turn down the left channel volume on your existing stereo unit [this leaves the front right speaker active].

2. Depress the MAIN speaker mode button on the decoder/amplifier so that sound is produced by the rear speakers [if rear speakers are connected to the remote jacks, depress the REM button instead].

   Turn down the rear left channel volume by means of the rear VOLUME/BALANCE control [this is the control closest to the front panel]. The only speakers producing sound should be the front right and rear right. Adjust these volumes for approximately equal level [use the rear VOLUME/BALANCE to achieve this balance].

3. Position yourself between these speakers and check for an "in phase" condition as in Phase Check 1. In this case, reverse the wires connected to the rear right speaker if the two speakers appear to be out of phase.

PHASE CHECK 3 - Rear Right and Rear Left Speakers

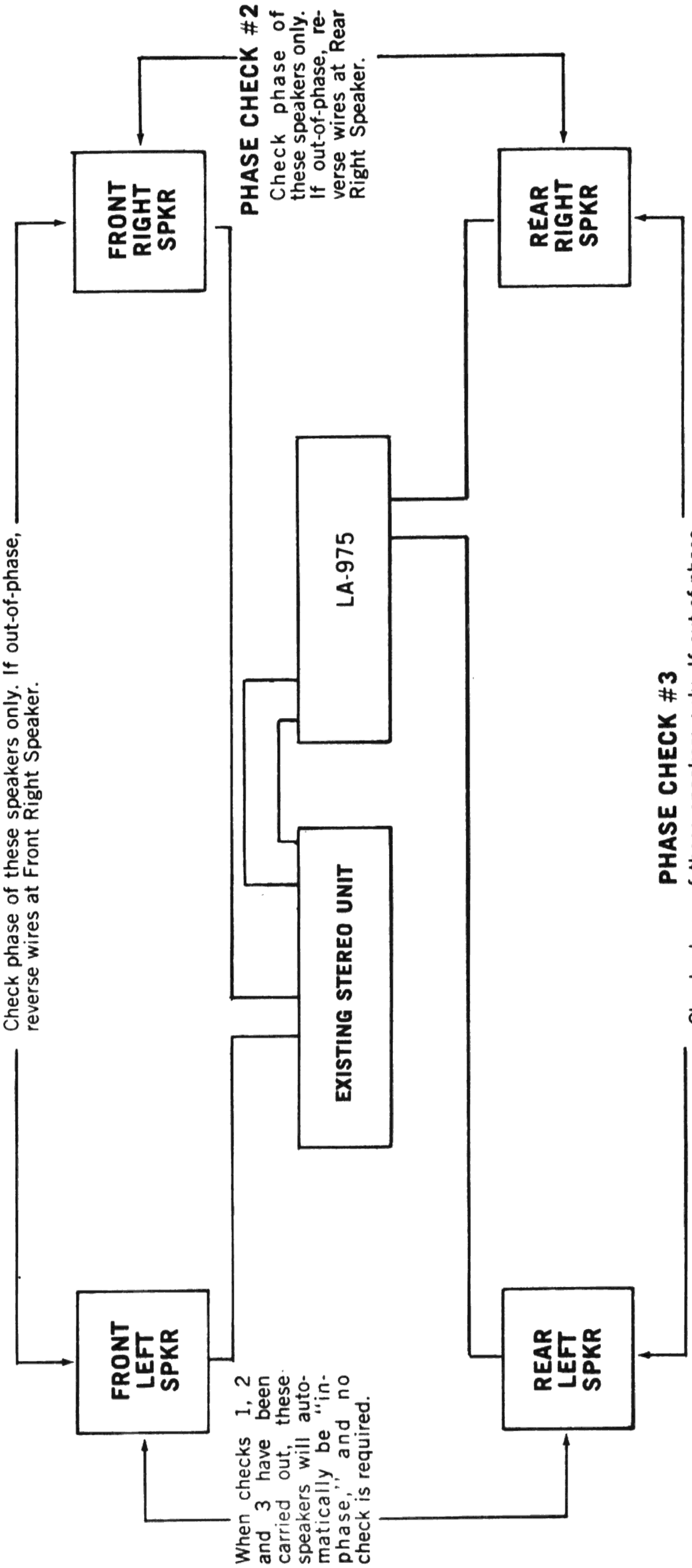
1. Now turn the right channel volume on your existing stereo unit down to zero. Both front speakers should be silent and only the rear right speaker will be active at this time.

2. Increase the right VOLUME/BALANCE control on the decoder/amplifier to the same setting as its companion control. The only active speakers should be the rear left and rear right speakers. Make sure both speakers are producing equal volume.

3. Position yourself between these speakers and check for an "in phase" condition as in Phase Check 1. In this case, reverse the wires connected to the rear left speaker if the two speakers appear to be out of phase.

This completes the phase check of all speakers in the system. It is unnecessary to check the phase of the left rear and left front speakers since these two will automatically be "in phase" if all the other speakers are properly phased.

Proceed to operate the system in the desired mode by returning the various switches and volume controls to their appropriate positions.



4-CHANNEL PHASE CHECKING PROCEDURE

DECODER/AMPLIFIER MAINTENANCE

WARNING: Do not attempt to remove the cover -- there are no user serviceable parts inside this unit. Refer servicing only to a qualified personnel. [See "Returning For Service"].

REPLACING SPEAKER FUSES

The decoder/amplifier is equipped with two speaker fuses [1.5 AMP, 3AG type] on the back panel that offer protection against damage to the output transistors due to a short-circuit or an overload in the rear speaker lines. Failure of a fuse will cause the rear channel in which it is located to become inoperative. If one of the rear speakers stops functioning, therefore, check the fuse in that channel.

To check a fuse, switch the unit off, unscrew the fuse cap and examine the fuse itself. The thin fuse wire within the cartridge should be intact. If it is not, replace the fuse [replacements are supplied initially with the decoder/amplifier, but are also available under Lafayette Stock No. 13-10143]. You should also check for a possible short-circuit in the rear speaker wiring or for any condition that may have caused an overload [if you have connected Main and Remote speakers to each rear channel be sure that all speakers have a rated impedance of at least 8 ohms.

REPLACING THE AC POWER FUSE

If the pilot light fails to come on and the decoder/amplifier is completely inoperative when the power button is depressed, make sure first the AC power cord is plugged into an electrical outlet supplying 105 - 120 volts, 50/60 Hz AC. If this is not the problem, the AC power fuse located on the rear panel of the decoder/amplifier may have failed. To check the fuse, switch the unit off and disconnect the AC power cord from the outlet. Unscrew the AC power fuse cap, and remove the fuse. The small thin fuse wire within the cartridge should be intact. If it is not, replace the fuse with one of the same rating [1.5 AMP 3 AG type], and re-insert into the unit.

WARNING: DO NOT USE A FUSE OF A HIGHER VALUE THAN THE ONE SPECIFIED. ALSO, IF A REPLACEMENT FUSE FAILS AGAIN AFTER INSERTION, RETURN THE DECODER/AMPLIFIER FOR SERVICE.

Replacement 1 1/2 ampere, 3 AG fuses are available under Lafayette Stock Number 13-10143.

INSTRUCTIONS FOR STEREO OPERATION

GENERAL INFORMATION

This section provides detailed instructions for the use of this decoder/amplifier as a conventional stereo unit. Disregard this section if you are using the decoder/amplifier as an "add-on" unit to an existing stereo system.

In order to operate the decoder/amplifier in a regular stereo system, you simply need a stereo program source [record player, tuner, tape recorder, etc.], and two speakers [left and right]. The decoder/amplifier does have a simple built-in adapter circuit which will enable you to enjoy 4-dimensional stereo sound by means of the addition of two more speakers [left and right rear]. This 4-dimensional type of operation should not be confused with SQ, which requires the use of a different and more complex SQ decoder circuit, [also contained in this decoder/amplifier]. The SQ decoder circuit, however, requires the presence of four amplifying channels and since only two amplifying channels are contained in this decoder/amplifier, SQ operation is not possible when the unit is used alone.

Also note that information regarding location, AC power connections, AC convenience outlets and ground connections is to be found at the beginning of this manual under "General Installation".

SPEAKER CONNECTIONS

MAIN SPEAKERS CONNECTIONS

The amplifier can be used conventionally as a stereo unit with only two speakers, one connected to each stereo channel. They should be positioned in front of the listening area and spaced six to eight feet apart. Where greater spacing is more convenient [due to room layout, furnishings, etc.] we suggest you angle the speakers in toward the listening area.

Before actually connecting the speakers to the amplifier, check the speaker cable you are going to use for some sort of marking which distinguishes one conductor from the other. In some cables, one wire is silver-colored, the other copper-colored. In other cases the insulation over one wire may have a raised rib or line on it to differentiate this conductor from the adjacent one. By properly identifying the conductors at each end of a cable, you will be able to make sure that each terminal on a speaker is connected to the proper terminal on the amplifier. This will ensure correct "phasing" of the two speakers.

Connect the left and right speaker systems to the "-" and "+" terminals marked FRONT/ MAIN SPKRS - RIGHT and LEFT, as shown in Figure 8. If the speakers have coded terminals [for example, one terminal may have a red dot, red insulator, "+" or other identifying mark], try to maintain a consistency in the manner of connections -- in each case, connect the speaker lead from this terminal to the "+" terminals on the unit, as shown. This will ensure that your speakers are connected in phase.

CAUTION: When connecting speakers, make sure that the bare wires at the end of each cable do not touch each other, an adjacent terminal, or the amplifier chassis. Failure to observe this precaution may produce a short-circuit and cause a speaker fuse to blow.

OPTIONAL REMOTE OR REAR SPEAKER CONNECTIONS

Two additional speakers can be connected to the amplifier to serve either as remote [extension] stereo speakers, or as the left and right "rear" speakers in the same room with the two main [front] speakers for 4-Dimensional stereo sound [see Fig. 8].

In either case, the two speakers are connected to the phono-type jacks marked REAR/ REM SPKRS - RIGHT and LEFT. Connections from the speakers to these jacks are made with cables equipped with a phono-type plug at one end and bare wires at the other. Prepared cables of this type [in a set of two] are available from Lafayette under the following stock numbers:

99-00515	15 ft. lengths [set of 2]
99-00457	30 ft. lengths [set of 2]

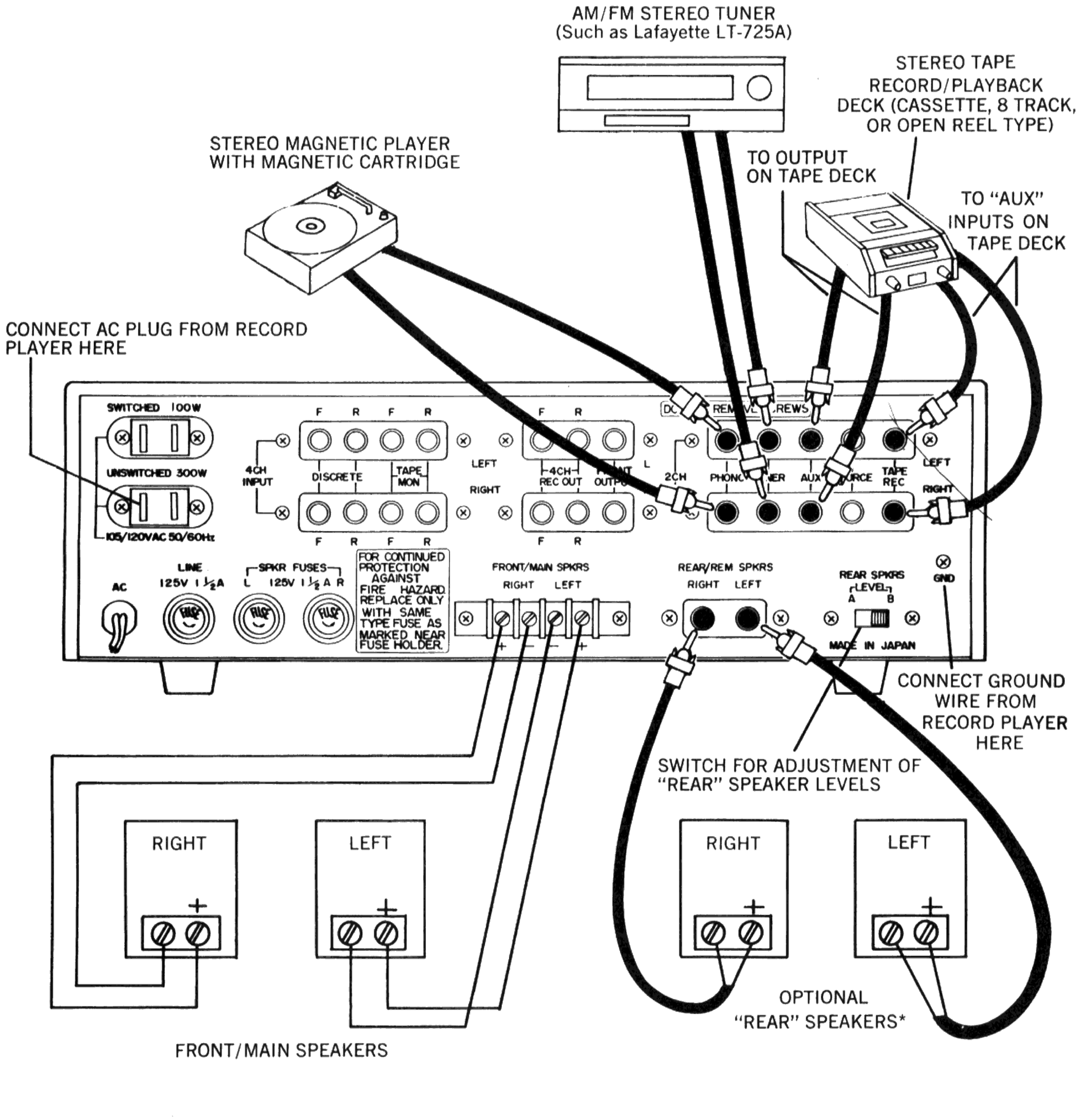
Before making any connections, you should first decide on the actual location of all four speakers so that the required speaker cable lengths can be determined. If you intend to set up a 4-Dimensional stereo system in the room, place the extra speakers at the rear of the listening area as shown in Figure 9.

This diagram, although designed to show the required speaker placement in a full 4-channel discrete or SQ installation, is also applicable to a 4-Dimensional stereo system.

NOTE: Please keep in mind that the terms "front" and "rear", "left" and "right" refer to the speaker locations as seen from the listening position.

When connecting the cables to the two extra speakers, try to maintain a consistency in the manner of connection. For example, if one of the two conductors in the cable is silver-colored, connect this wire to the positive [+] or "marked" terminal on the speaker in both cases. This will ensure that the speakers are wired in phase.

The procedure required when using the two additional speakers in a 4-Dimensional stereo arrangement or as remote speakers is outlined in the section titled "Operating Procedures for Stereo".



*THESE SPEAKERS WILL SERVE AS "REAR" SPEAKERS DURING 4-DIMENSIONAL STEREO OPERATION (4CH BUTTON "ON"), OR AS "REMOTE" SPEAKERS DURING REGULAR STEREO OPERATION (4CH BUTTON "OFF").

FIGURE 8—USING THE LA-975 AS A STEREO UNIT

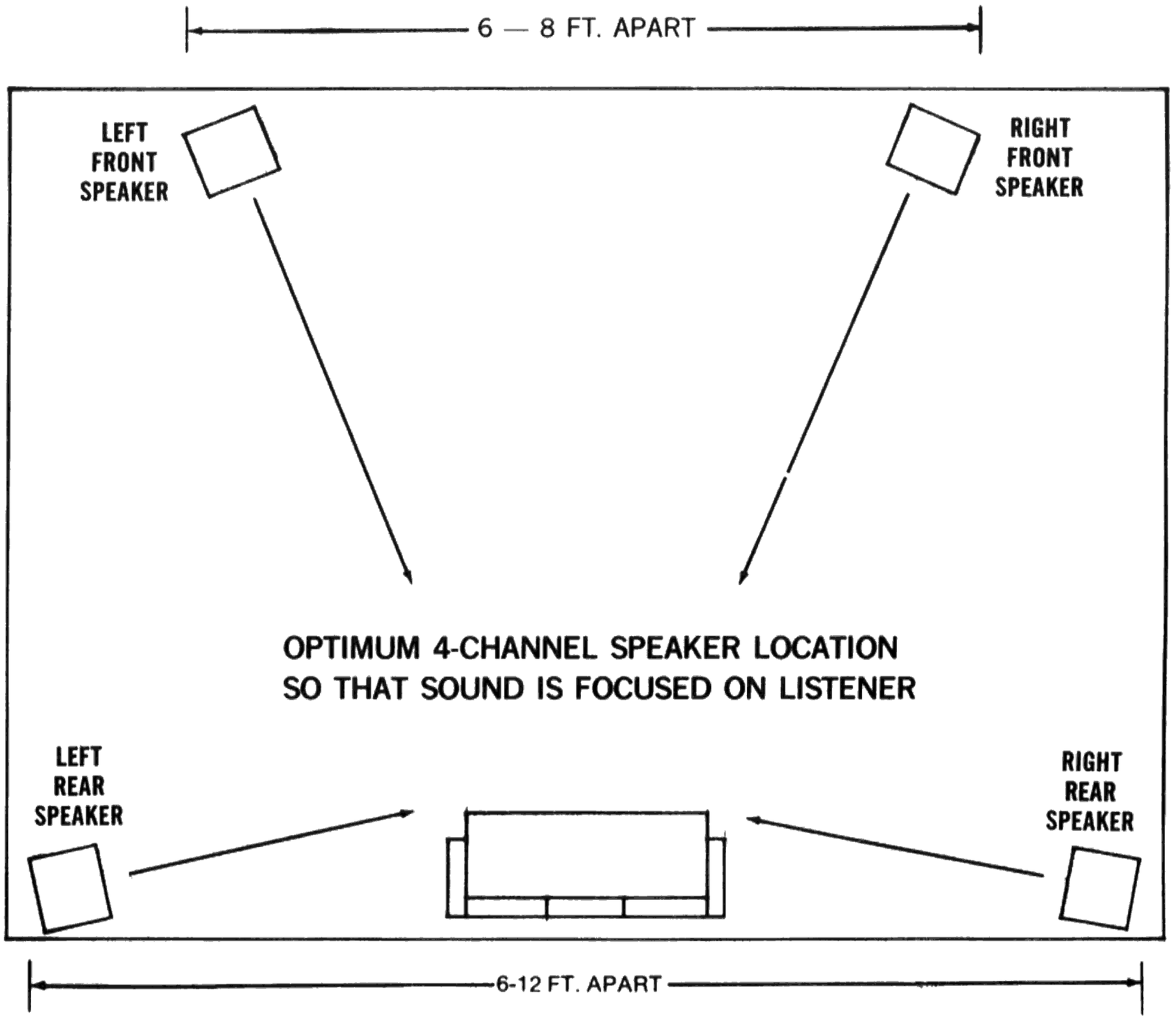


FIGURE 9

CONNECTING A STEREO RECORD PLAYER

The two shielded audio cables from a record changer or turntable are normally terminated with RCA-type phono plugs. The phonograph input jacks on the amplifier are designed to accept this type of plug. To avoid excess hum level and loss in the high frequency tones, the cables from the record player should not exceed 10 feet in length. Figure 8 shows the manner in which a record player is connected. If the record player has a ground wire, connect it to the GND terminal on the amplifier.

Connect the two record player cables to the left and right input jacks on the rear marked PHONO. The front panel Selector Switch has two Phono positions -- MAG and CER. If your record player is equipped with a magnetic cartridge [most players are so equipped], set the Selector to Phono - Mag. If the record player is equipped with a ceramic cartridge, set the Selector to Phono - CER.

CONNECTING AN AM/FM STEREO TUNER

The input jacks designated "TUNER" are for use with AM or FM stereo tuners, FM multiplex adapters, TV receivers and other equipment. Shielded cable completed with phono-type plugs should be used to connect any of these sources to the amplifier.

The output of an FM stereo multiplex tuner should be connected as follows: Connect the tuner's Left channel output to the left channel TUNER input on the amplifier, and the tuner's Right channel output to the right channel TUNER input on the amplifier.

CONNECTING A STEREO TAPE RECORD/PLAYBACK DECK

RECORDING CONNECTIONS

Use the outputs available at the "TAPE REC" jacks on the amplifier -- all programs selected for reproduction through the amplifier are connected to these jacks. Use shielded cables with phono plugs to connect these jacks to the tape recorder "AUX" or "radio" inputs. While recording, the Volume, Bass and Treble controls have no effect on the signals at the "TAPE REC" jacks.

For convenience, a stereo output for recording is also available at the "Front" TAPE OUT jack on the front panel. This jack is designed to accept a standard 1/4" 3-conductor phone plug. If desired, a prewired 6-foot cable, containing a 3-conductor phone plug on one end, and a pair of phono-type plugs on the other, is available from Lafayette Radio Electronics under Stock No. 99-63364.

NOTE: The two sets of tape output jacks [front and rear] cannot be used simultaneously to record on two tape recorders. If you wish to connect a recorder to the front panel jack to record a program, any recorder you may have connected to the rear jacks must be temporarily disconnected.

PLAYBACK CONNECTIONS

Outputs that have already passed through a preamplifying stage in a tape "deck" or tape recorder should be connected to the "AUX" jacks on the amplifier.

STEREO AMPLIFIER CONTROL FUNCTIONS

PUSH BUTTON OPERATION

Some of the switches on this decoder/amplifier are of the push button type. They are set to the "on" position by simply pushing in to lock them into the depressed [in] position. To release a button from the depressed position, push it in momentarily and release -- the button will go into the "out" [off] position.

SELECTOR SWITCH

This switch is used to select any stereo program source connected to the inputs of the amplifier [record player, tuner, tape recorder, etc].

MODE SWITCH

Only two positions of this switch are used -- 2 CH MONO or STEREO. Simply set to STEREO for proper reproduction of stereo program sources.

SELECTOR SWITCH

Set to the position which selects the connected input program source.

MASTER VOLUME

Set to "12 o'clock" and leave in this position permanently.

VOLUME-BALANCE CONTROLS

Used to adjust volume from left and right speakers individually or simultaneously.

MODE

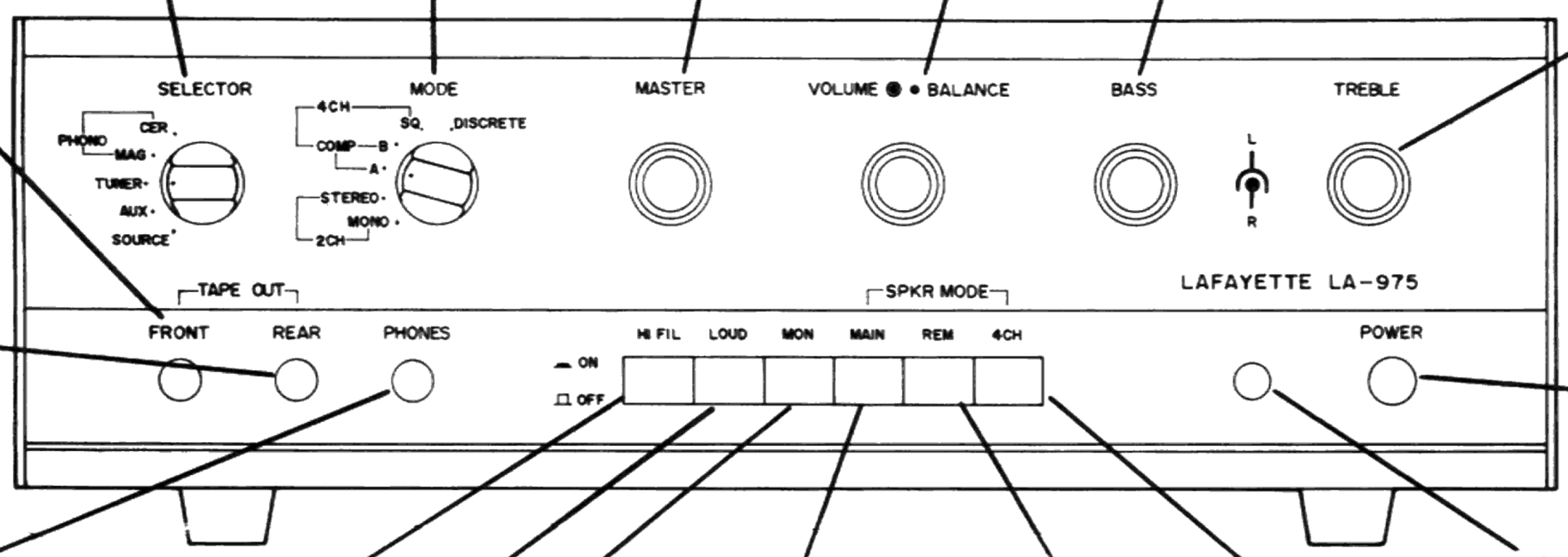
Use 2 CH positions only -- STEREO in most cases.

BASS CONTROLS

Used to provide individual control of each "rear" channel [low frequency tonal adjustment].

FRONT TAPE OUT JACK

3-Conductor phone jack for temporary connection of a stereo tape recorder.



TREBLE CONTROLS

Used to provide individual control of each "rear" channel [high frequency tonal adjustment].

REAR TAPE OUT JACK

Not used.

AC POWER SWITCH

Depress to switch unit on.

PHONES JACK

For headphone listening to the stereo program.

AC POWER INDICATOR

Lights when unit is switched on.

MAIN BUTTON

Selects the "front" speakers during 4-Dimensional stereo operation, or main speakers during regular stereo operation. [See Fig. 8].

HI FIL BUTTON

Used to reduce any high frequency noise that may be present [record scratch, FM or AM static, tape hiss, etc].

4 CH BUTTON

Switches in an adapter circuit for 4-Dimensional sound. Used when "rear" speakers are connected in addition to front speakers. [See Fig. 8].

REM BUTTON

Selects "rear" speakers during 4-Dimensional stereo operation, or remote speakers during regular stereo operation.

MON BUTTON

Selects the monitoring output of a stereo tape recorder connected to the "Front" TAPE MON inputs.

LOUD BUTTON

Provides a more realistic tonal quality at low listening levels.

DESCRIPTION OF CONTROLS WHEN UNIT IS USED ALONE AS A STEREO AMPLIFIER

FIGURE 10

MASTER CONTROL

This control serves as a Master volume control only when the unit is used as an "add-on" to an existing stereo system. When the unit is used alone as a conventional stereo amplifier, the MASTER control should be set to approximately 12 o'clock and left there permanently.

NOTE: The MASTER control is in series with the VOLUME/BALANCE controls and will therefore affect overall volume. If the suggested 12 o'clock setting of the MASTER control results in insufficient volume even when the VOLUME/BALANCE controls are in a high volume position you can compensate by increasing the MASTER control setting to 1 or even 2 o'clock.

VOLUME BALANCE CONTROLS

These are concentrically arranged volume controls which are used to adjust the volume of the left and right channels [see MASTER control also]. They may be adjusted individually to increase or decrease the volume of either channel, or adjusted simultaneously for both channels. The control closest to the front panel adjusts the volume of the left channel, while the other control adjusts the right channel.

BASS CONTROLS

These are dual concentric friction-type controls which permits the bass [low] tones of both channels to be adjusted simultaneously. These controls may also be operated individually by holding one knob firmly and rotating the other. When the indicator lines on these knobs are set to the center or 12 o'clock position, response is normal [flat frequency response] and the amplifier reproduces all input frequencies equally. Clockwise rotation [from center] increases the bass and counter-clockwise rotation decreases it. The control closest to the front panel adjusts the left channel, while the other control adjusts the right channel.

TREBLE CONTROLS

These controls operate in the same way as the Bass controls except that they provide adjustment of the treble [high] tones.

HI FIL BUTTON [HI FILTER]

This button, when in the "on" [depressed] position, will switch in a high frequency filter that will remove any of the high frequency noises [hiss and scratch] sometimes encountered in older records. When exceptionally noisy reception is encountered on AM or FM, the switch may be used to provide a reduction in the noise. Unless such noises are disturbing, however, this button should be left in the "off" [out] position to permit the full reproduction of the high frequencies.

LOUD BUTTON [LOUDNESS]

This button, when in the "on" [depressed] position, will switch in special tonal compensation for low volume listening. Such compensation is necessary because a natural peculiarity of the ear causes it to have a reduced sensitivity to low and high tones when music is played at low volume. This switch will emphasize these tones and thus restore full body and brilliance to the music. At normal or high sound levels, set the "LOUD" button to the "OFF" position to prevent an excessive amount of bass or boominess from occuring.

MON BUTTON [MONITOR]

Depressing this button will select any monitoring source connected to the "Front" TAPE MON input jacks on the amplifier, and will do this without disturbing the reproduction of the original program source [that may be connected to any of the 2 CH input jacks].

This feature is designed for use with tape recorders having monitoring facilities. Such a recorder provides a special output taken from the tape while it is actually being recorded, and thus offers a means of checking the recording process.

By depressing the MON button, you can hear this monitoring output without disturbing the recording source.

SPKR MODE

There are three buttons under this designation -- MAIN, REM and 4 CH.

The MAIN button, when depressed, selects the left and right channel speakers connected to the main speaker terminals. If you are using rear speakers for 4-Dimensional Stereo, the MAIN button will select the "front" speakers in the system.

The REM button, when depressed, selects any speakers connected to the Rear/Remote output jacks. If these speakers are being employed as remote [extension] speakers in another area, the REM button is the only button that need be depressed. If the speakers connected to the Rear/Remote output jacks are being used as "rear" speakers for 4-Dimensional stereo reproduction, the 4 CH button must also be depressed to switch in the adapter circuit in the output of the amplifier.

NOTE: The two-position slide switch at the rear of amplifier marked REAR SPKRS is part of the adapter circuit and permits a slight change in rear speaker volume level [A is maximum, B provides a reduction].

POWER BUTTON

To switch the amplifier on, push this button into the depressed position. To switch off, push the button in momentarily and release -- this will cause it to move into the released [off] position.

When the amplifier is switched on, the pilot light on the front panel should come on, indicating that AC power has been applied.

CAUTION: Before depressing the power button, make sure that the VOLUME/BALANCE controls are set to a low volume position and that speakers are connected and appropriate Speaker Mode button depressed.

PHONES JACK

This jack provides a stereo output for headphones. For private listening, release the REM and MAIN Speaker Mode buttons.

TAPE OUT JACKS [FRONT AND REAR]

In addition to the 2 CH - TAPE REC jacks provided on the rear of the amplifier for permanent connections to a stereo tape recorder, there is also a Front tape output jack on the front panel which may be used for temporary connection to the input of a stereo tape recorder. Simultaneous connections to the tape output jacks on the front and rear panels of the amplifier [so that two tape recorders are connected] are not recommended since this may result in a lowering of the signal level at all jacks.

NOTE: The output at the "Front" TAPE OUT jack is controlled by the position of the FUNCTION Selector which will determine the type of output that will be produced at this jack [mono or stereo]. However, the output at the 2 CH TAPE REC jacks on the rear of the amplifier is not affected by the position of the FUNCTION switch.

A special 5 ft. adapter cable, with a 3-conductor stereo phono plug at one end and two RCA phono plugs [L and R] at the other, is available under LAFAYETTE Stock Number 99-63364. This cable will permit connection of the Front tape output jack to the high level inputs on most stereo tape recorders equipped with RCA phono jacks.

OPERATING PROCEDURES FOR STEREO

Before attempting to operate the stereo system, we urge you to check the following:

1. Make sure that at least two speakers have been connected to the FRONT/MAIN left and right speaker output terminals on the unit.

2. Make sure the POWER button is in the "OFF" position first, then connect the AC power cord to an electrical outlet supplying 105 - 120 volts, 50/60 Hz, AC.

Refer to the chart titled "A Guide to Operating The Unit As a Stereo Amplifier", and set all operating controls and switches to the positions indicated for the particular type of operation desired.

When the POWER button is depressed, the pilot light will come on, indicating that the unit is ready for operation. Select your program source [Phono, Tuner, Aux, etc.], and adjust VOLUME/BALANCE controls for desired volume from the speakers.

As indicated in the stereo operating chart, the MASTER control should be set permanently in the 12 or 1 o'clock position.

OPERATING IN THE 4-DIMENSIONAL STEREO MODE
(Using The Built-in 4-Channel Adapter)

This unit includes a built-in adapter that will provide 4-Dimensional stereo sound from any conventional stereo program. This includes stereo tapes, FM stereo broadcasts, stereo records, etc. In order to enjoy this extra-dimensional sound, you must use four speakers -- two connected to the FRONT/MAIN SPKR terminals, and two connected to the REAR/REM SPKR jacks, as indicated in Figure 8. The built-in adapter circuit will "derive" the two additional channels of sound for the rear speakers -- not artificially, but by a unique system of "ambience recovery".

In order for the system to provide optimum results it is important that all speakers be operated in the proper phase [speakers are in phase if all speaker cones move in the same direction when an identical signal is applied to them].

If all speakers used were equipped with coded terminals and if you made all connections correctly when wiring them to the unit [as indicated in the section dealing with speaker connections], you can assume that all speakers are in proper phase. However, if you have any doubts, you can use the procedure outlined at the end of this section for checking the phase of the four speakers in the system.

A rear panel slide switch will allow you to make a slight adjustment of the sound levels from the rear speakers so as to produce best results. The procedure for setting up the system in 4-Dimensional stereo is as follows:

1. Initially, set the REAR SPKRS LEVEL switch at the rear of the amplifier to the "A" position [maximum rear level] and depress the "Main" SPKR MODE button only. The system will now operate as a conventional 2-channel stereo system.

2. Operate the unit in the normal stereo mode, selecting the desired stereo program source only the front speakers will produce sound at this point.

3. Increase VOLUME/BALANCE controls to desired listening level from the front speakers [the MASTER control is set to the 12 o'clock position permanently]. Now depress the REM and 4 CH buttons. The system is now operating in the 4-Dimensional mode and sound should be produced by all four speakers.

IMPORTANT: Best results occur when the two channels of the original stereo program are kept "balanced". This means that the two VOLUME/BALANCE