

INSTRUCTION MANUAL
MAGNEPLANAR TYMPANI ID

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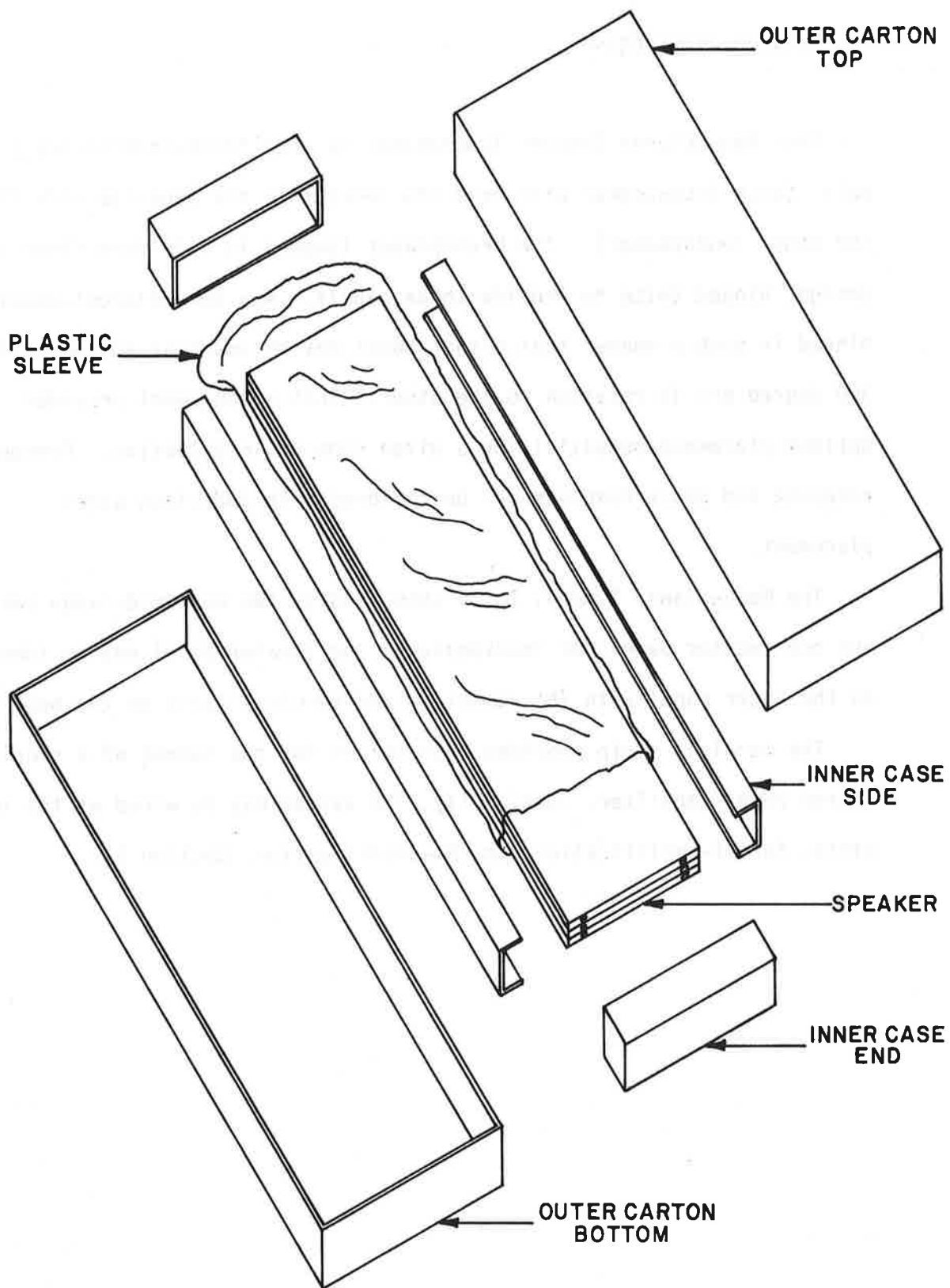
1. Introduction

Congratulations on your purchase. The Magneplanar* Tympani loudspeaker was conceived and designed for perfectionists. One of the most revealing loudspeakers made, the Magneplanar Tympani will provide outstanding music reproduction when used with the finest associated components. Due to the elegant simplicity and ruggedness of the design, the Magneplanar Tympani loudspeaker will give many years of trouble-free service.

2. Packaging

Save all the packaging. If you need to transport the speakers they can be shipped safely only in the original packaging. You may never have to return your loudspeakers, but should the occasion arise, they should not be shipped in any packaging but the original. Should you misplace it, factory packaging may be purchased for return shipment.

* Registered Trademark
Magnepan, Inc.



3. General Description

Your Magneplanar Tympani loudspeaker is supplied as a mirror-image pair (each loudspeaker will have its tweeter on the opposite side from the other loudspeaker). The Magneplanar Tympani is a folding floor screen design, hinged twice to provide three panels. Any two adjacent panels are hinged in such a manner that either panel may be swung at any point in a 360 degree arc in relation to the other. This arrangement provides optimum placement potential for a given room or installation. Frequency response and phase response can be tailored with judicious panel placement.

The Magneplanar Tympani ID is comprised of two bass/mid-range panels and one tweeter panel per loudspeaker. The tweeter panel may be identified as the outer panel with the nameplate and terminal strip on the back side.

The terminal strip provides connections for the output of a single stereo power amplifier. Optionally, the system may be wired at the terminal strips for bi-amplification (see Bi-amplification, Section 8).

4. Magneplanar Tympani ID Specifications*

Frequency Response:

± 3 dB 40 Hz**to 20 kHz

Power Handling:

The unclipped MUSICAL output of a single amplifier with a power rating of 300 watts RMS per channel at 4 ohms (assuming the normal distribution of power in music). Sine wave testing or program material with a large power distribution above 1000 Hz (causing the tweeter diaphragm to melt) will invalidate the warranty. (If desired, the Tympani ID can be protected with a 5 amp normal-blo fuse in the speaker line).

Sensitivity:

10 watts RMS - 500 Hz-93 dB-@6'

Impedance:

4 ohms resistive, essentially no inductive or capacitive reactance.

Internal Crossover:

1100 Hz - 6 dB per octave; May be bi-amplified with 1000 Hz external crossover.

Dimensions:

Two 3-section screens - Each section 72"H x 16"W x 1"D

Shipping Weight:

160 lbs.

* Audio Research Corporation and Magnepan, Inc. reserve the right to modify the performance of any of their products at any time without incurring any liability to do so for existing products.

** New Magneplanar Tympani speakers will not develop their full bass potential. After a month or two of use the bass response will lower approximately 5 Hz or more. At this point the response will stabilize and the speakers rated performance (or better) can be realized. While this 5 Hz or more of increased bass response is important, the most important factors in obtaining good bass response from the Tympani speakers are room size and geometry, wall material, and speaker placement (see Section 6).

5. The Listening Room

The best listening rooms are usually rectangular (approximately 12' x 19' or larger). Best bass response will be achieved if the floor, wall and ceilings are rigid (loose walls or paneling absorb low frequencies).

In any listening room, there are areas of bass cancellation (and re-enforcement) for any given speaker placement. While speaker positioning will affect these areas of cancellation, most often, it is easier and more effective to simply move your favorite listening chair to a more ideal position.

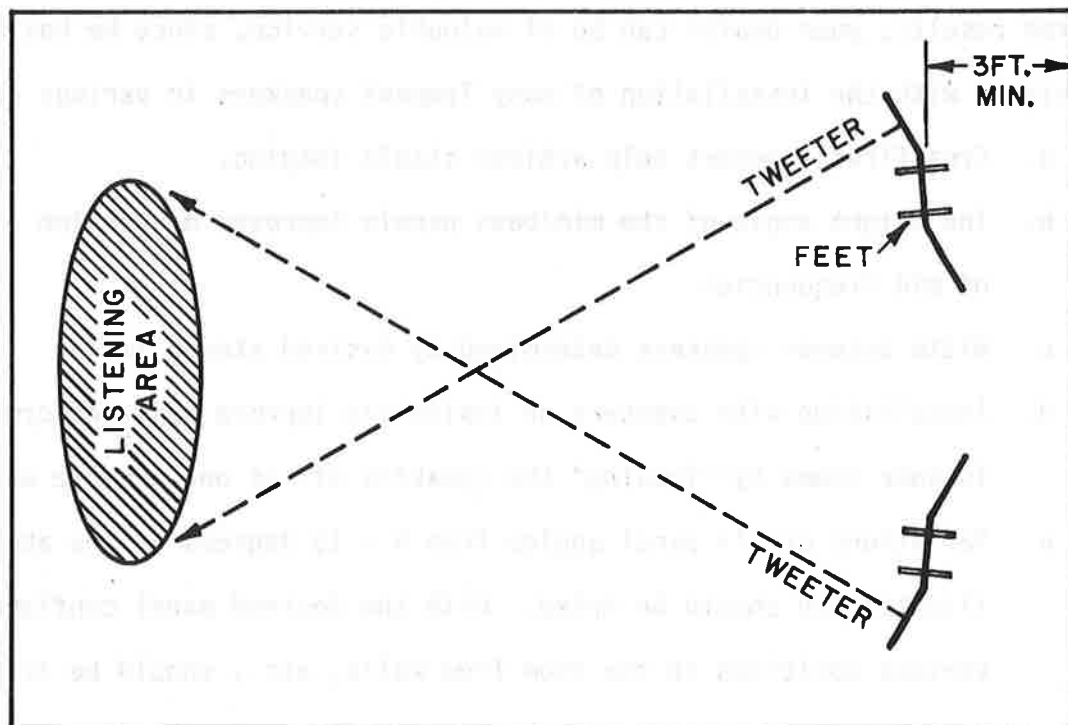
In most installations, the Tympani speaker will give the best results when placed along the short wall (see position guide, Section 6). If the speaker is placed closer to the rear wall than recommended in the diagrams, you may find that the speakers sound better if a damping material is placed on the wall directly behind the speaker (such as cork, drapes, fiberglass, etc.). Additional damping materials may be required to reduce middle and high frequencies if the listening room is overly "bright" or reverberant. Normally, sound absorbing materials placed on one of any two parallel walls is sufficient to correct an overly "bright" room.

6. Speaker Placement

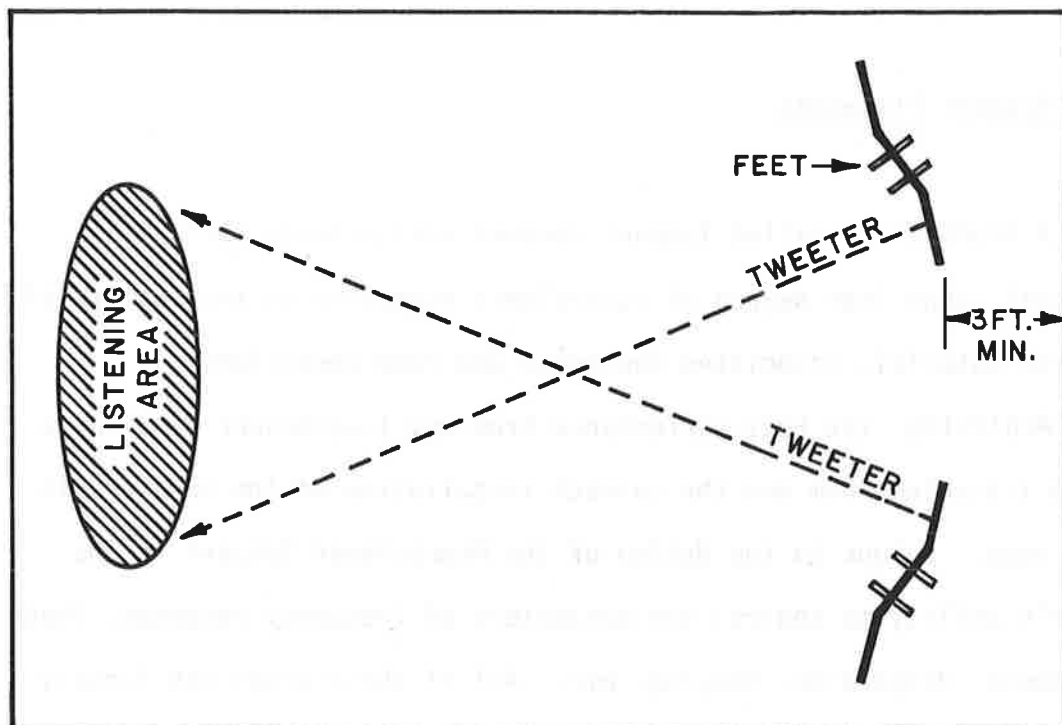
A PROPERLY installed Tympani speaker will provide satisfying, natural sound (the degree of naturalness depending on the quality of source material, associated equipment, and room conditions).

Achieving the best performance from any loudspeaker requires a good listening room and the correct installation of the speakers in the room. Unique to the design of the Magneplanar Tympani is the user's ability to control the parameters of frequency response, phase response, dispersion, imaging, etc. All of these areas can largely be affected by simply changing the position of the speakers and the individual panel angles. Such versatility can be used OR ABUSED.

Standard Installation



Reversed Tweeter Installation



The speaker placement diagrams shown above are intended as a guide. As a general guide, these suggested installations will work in most listening rooms. The exact placement will vary for each room. Only a certain amount of experimentation will reveal the best positioning for your listening room. In the event you are unable to achieve the desired results, your dealer can be of valuable service, since he has had experience with the installation of many Tympani speakers in various rooms.

- a. Crossfired tweeters help achieve stable imaging.
 - b. The slight angle of the mid/bass panels improves dispersion of mid frequencies.
 - c. Width between speakers determined by desired stereo image.
 - d. Installation with tweeters on inside can improve bass performance in some rooms by "loading" the speakers off of one or more walls.
 - e. Variations of all panel angles from 5 - 15 degrees of the above illustration should be tried. With the desired panel configuration, various positions in the room from walls, etc., should be tried.
- When a desired position in the room is found, further experimentation with panel configuration will optimize the speaker installation.

7. Speaker Connection and Tweeter Phasing

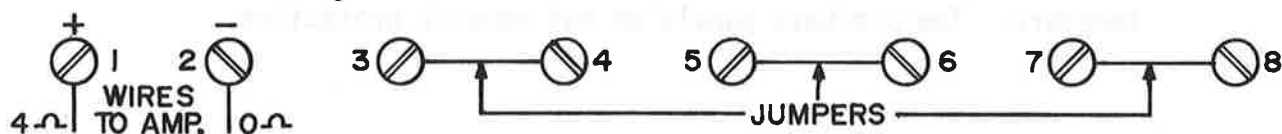
The Tympani ID can be properly connected by referring to the diagrams below, or by referring to the instructions on the terminal strip plate of each tweeter. The Tympani ID is a 4 ohm loudspeaker. If you are using an amplifier with output transformer taps, use the "0" and "4" taps. When separate amplifiers are used for bi-amplification, the two sections remain 4 ohms.

Since the Magneplanar Tympani ID is a 4 ohm loudspeaker, some power losses are possible when wire of too small a diameter is used for a given length. For instance, 20 feet of two-conductor #22 gauge speaker wire will yield only 75-85 watts from a 100 watt amplifier (150-170 watts from a 200 watt amplifier). This can result in as much as a 25% power loss!

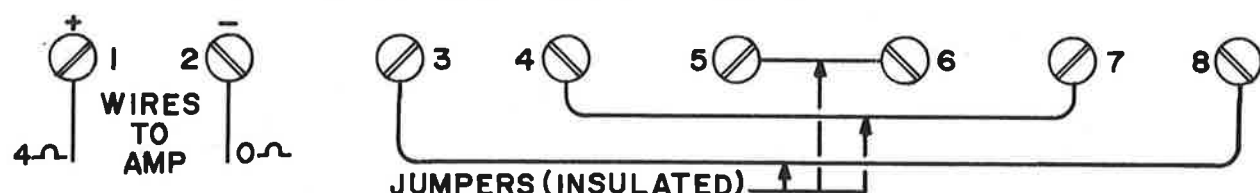
We recommend a MINIMUM of #18 gauge wire (the smaller the number, the larger the wire) for runs up to 20 feet. #16 gauge or larger is recommended for wire lengths of 20 feet or longer.

Some positions of the speaker panels may put the tweeter acoustically out of phase with respect to the mid-range. This may be checked by playing a 1000 Hz tone and reversing the tweeter phasing. The tweeter and mid-range are in phase when the tone is loudest. Refer to diagrams A and B below.

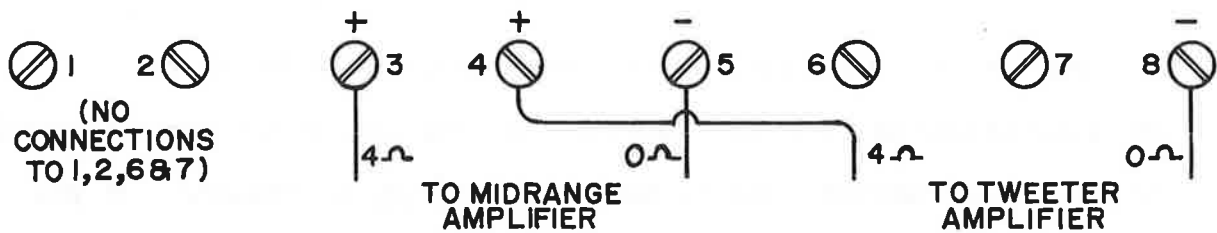
A. Normal single amplifier hook-up



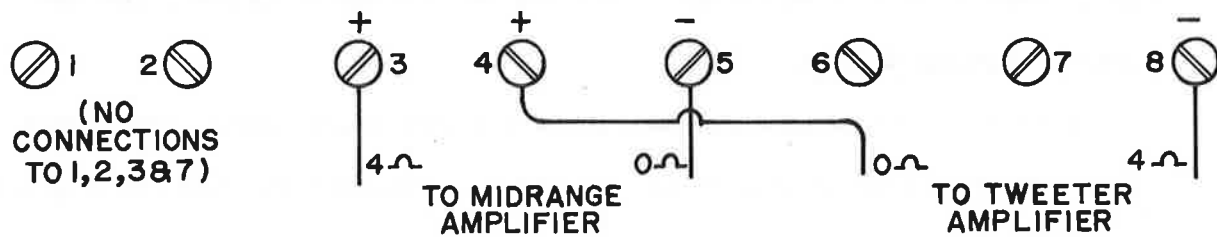
Reversed phase, single amplifier hook-up



B. Normal bi-amplified hook-up



Reversed phase bi-amplified hook-up



Fusing

The Tympani ID tweeter may be fused by replacing jumpers 3-4 or 7-8 with a 2.5 amp (or less) normal blow fuse when the speaker is used with a single amplifier. When bi-amplifying, simply install the fuse in line with the tweeters. The mid/bass panels do not require protection.

8. Bi-amplification

For those perfectionists seeking the highest definition, the Magneplanar Tympani ID may be bi-amplified (for proper connection, see Section 7).

Bi-amplification provides:

- a. Increased dynamic range: Obviously two amplifiers can produce more power. Although twice as much power will only provide 3 dB more SPL, the additional "headroom" is often the little extra needed to make a sound system "come alive", PROVIDED the quality of the amplifiers used is not reduced. Rarely will a bi-amplified system with two low quality amplifiers outperform a high quality single amplifier system.
- b. Reduced distortion: When a single amplifier system is overdriven by low frequencies, high frequency distortion components are produced (a "buzzing" or "tearing" sound) which is passed through the speaker's internal crossover to the tweeter. These high frequency distortion components are significantly reduced in a bi-amplified system since the treble amplifier is unaffected when the bass amplifier is momentarily overdriven.
- c. Increased definition: Through the use of more ideal crossover points and slopes, most speaker systems will provide higher musical definition through bi-amplification (Dynamic woofers are noticeably tighter and cleaner when bi-amplified).

If you are a music lover with little interest in the technical aspects of a music system, we would like to assure you that bi-amplification is not as complicated as it might seem. Your Audio Research dealer can assist you in selecting the proper crossover frequency and components to bi-amplify your speakers. Once this has been done, it is simply a matter of attaching a few more wires and adjusting the balance of the system to your satisfaction.

9. Cleaning of Speaker Fabric

Smudges on the fabric of the Tympani speaker can be successfully removed with the proper use of K2R cleaner without leaving a ring around the area cleaned. (K2R is available at most supermarkets or variety stores).

1. Use light, repeated applications of K2R cleaner.
2. Allow the cleaner to dry thoroughly after each application.
3. Brush lightly and blow the residual powder from the fabric.

Your dealer can supply replacement speaker fabrics which can be easily installed in the event the fabric is damaged or soiled beyond repair.

10. If You Should Need Service

In the unlikely event that you should need service for your Tympani loudspeakers, we recommend that you contact your dealer. He is experienced in providing service and can assist you if the speakers must be returned to the factory.

If it is determined that your speakers must be returned to the factory for repair, ship your speakers (freight prepaid) to:

Magnepan, Inc.
1124 First Street
White Bear Lake, Minnesota 55110

Include a packing slip or letter describing the nature of the problem, plus other necessary information as listed in the warranty or service contract.

PASSIVE CROSSOVER

MODEL PC-3

INSTRUCTION MANUAL

audio research corporation

2843 TWENTY-SIXTH AVENUE SOUTH
MINNEAPOLIS, MINNESOTA 55406

INTRODUCTION

Congratulations on your purchase. The model PC-3 is a 2-way, 6 dB per octave passive crossover network designed and factory preset for use ONLY with Audio Research model D-100 power amplifiers and Tympani ID loudspeakers. A bi-amplified system will provide increased dynamic range, lower distortion, and higher definition than is possible with a single power amplifier system of equal power.

The totally passive design of the PC-3 ensures negligible distortion under static and dynamic conditions and has an insertion loss of only 3 dB. The circuitry employed includes compensating networks to preserve high frequency transmission characteristics of the treble channels. High quality construction and exclusive use of precision metal film resistors and polystyrene capacitors are also features of the PC-3.

PACKAGING

Save All The Packaging - Your Audio Research component is a precision electronic instrument and should be properly cartoned any time shipment is made. You may never have occasion to return it to the factory for service, but if such should be necessary, or other occasion to ship it occurs, the original packaging may save your investment from unnecessary damage or delay.

INSTALLATION

Packaged with the PC-3 are (4) adhesive backed plastic feet. Install the feet by lifting them from the "carrier", locating, and pressing them into place near the corners of the bottom or side surface of the enclosure. This option permits vertical or horizontal use and subsequent cable positioning.

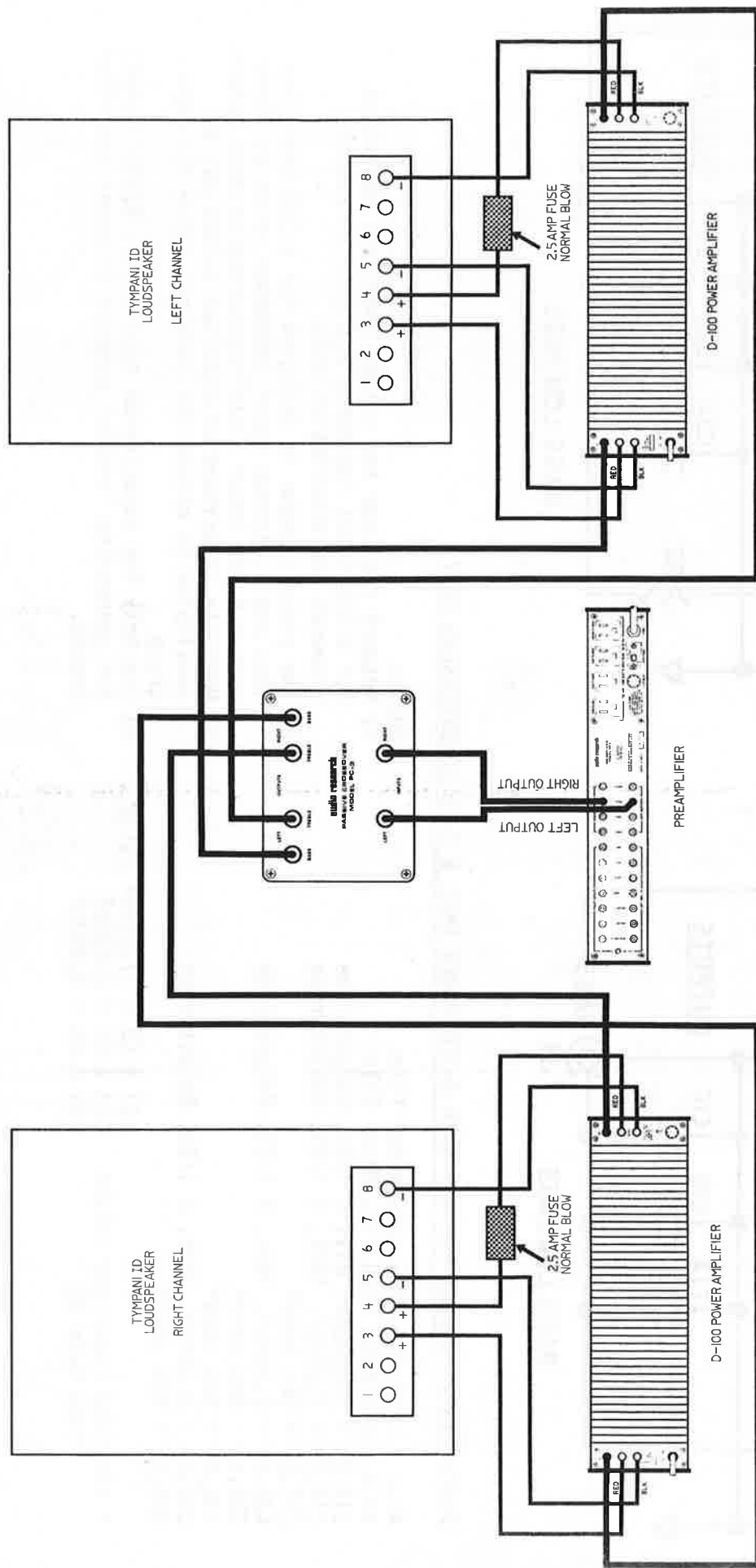
Connect the PC-3 into the system as shown in the "preferred connection" wiring diagram. Note that it is desirable (for improved bass performance) to use a power amplifier for each channel rather than one for bass and the other for treble exclusively.

IMPORTANT - Use only low capacitance type audio cables (50 pf total or less) for optimum performance when connecting the "treble" channel PC-3 outputs to the power amplifiers. Make certain that speaker wiring is properly phased as shown in the diagram. Refer to the speaker and power amplifier instruction manuals for a more comprehensive discussion of speaker phasing, placement, and wiring, etc.

OPERATION

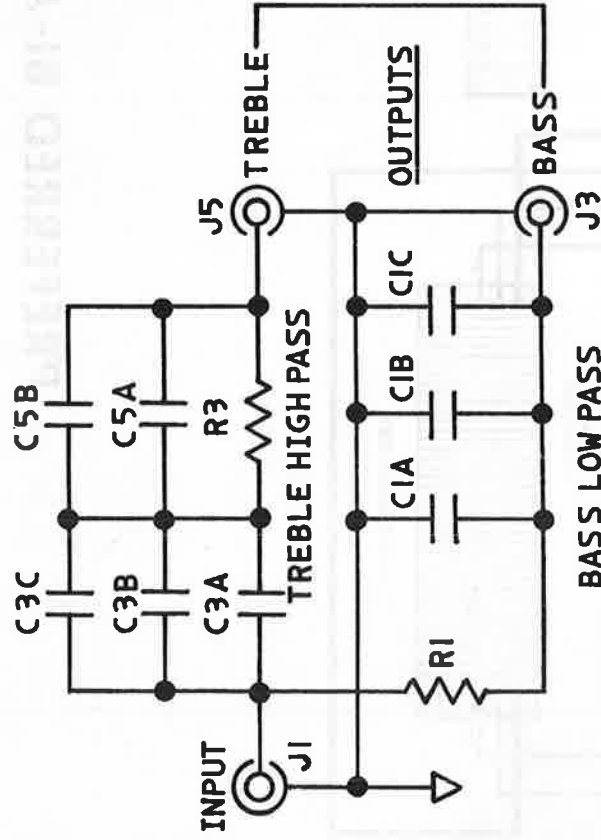
Once installed, the PC-3 is ready for use. There are no internal adjustments necessary for proper operation.

It is recommended that the PC-3 "inputs" be connected to a high quality preamplifier such as an Audio Research model SP-4 or one capable of driving a varying impedance load. The input impedance of the PC-3 (when terminated with D-100's and 50 pf output cables - driven with typical 6' 200 pf audio cables) is 45 K ohms at 20 Hz and decreases to 7.5 K ohms at 20 KHz.

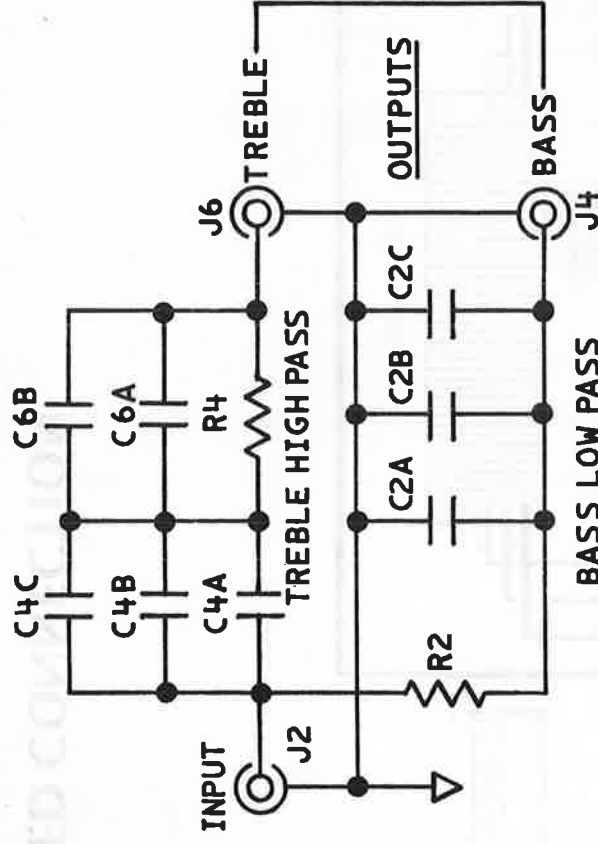


PREFERRED BI-AMPLIFIED CONNECTION

LEFT CHANNEL



RIGHT CHANNEL



PARTS LIST: VALUES FOR USE WITH D-100 POWER AMPS & T-ID LOUDSPEAKERS ONLY

R1,2 = 12.7K, 1/4W, 1%, Metal Film
 R3,4 = 4.64K, 1/4W, 1%, Metal Film
 C1A,2A = 15,000pf, 63V, 2 1/2%, Polystyrene
 C1B,2B = 2,200pf, 160V, 2 1/2%, Polystyrene
 C1C,2C = Not used*
 C3A,4A = 2,200pf, 160V, 2 1/2%, Polystyrene
 C3B,4B = Not used*
 C3C,4C = Not used*
 C5A,6A = 3,300pf, 160V, 2 1/2%, Polystyrene
 C5B,6B = Not used*

* Combined capacitor values
 (see Note 3)

{ C1 & C2 = 17,200pf
 C3 & C4 = 2,200pf
 C5 & C6 = 3,300pf

NOTES:

- 1) Network topology and values shown are optimized for D-100 input impedance and T-ID frequency response characteristics only.
- 2) The circuit shown is designed for a 3dB insertion loss and a minimum input impedance of 5K at 40KHz with a D-100 input "load" connected to each output.
- 3) Multiple capacitors of assorted values may be paralleled to obtain the combined value for each group.
- 4) Use only low capacitance type cables (<50pf total) for connecting "treble" outputs to power amplifier inputs.

MODEL PC-3 PASSIVE CROSSOVER SCHEMATIC