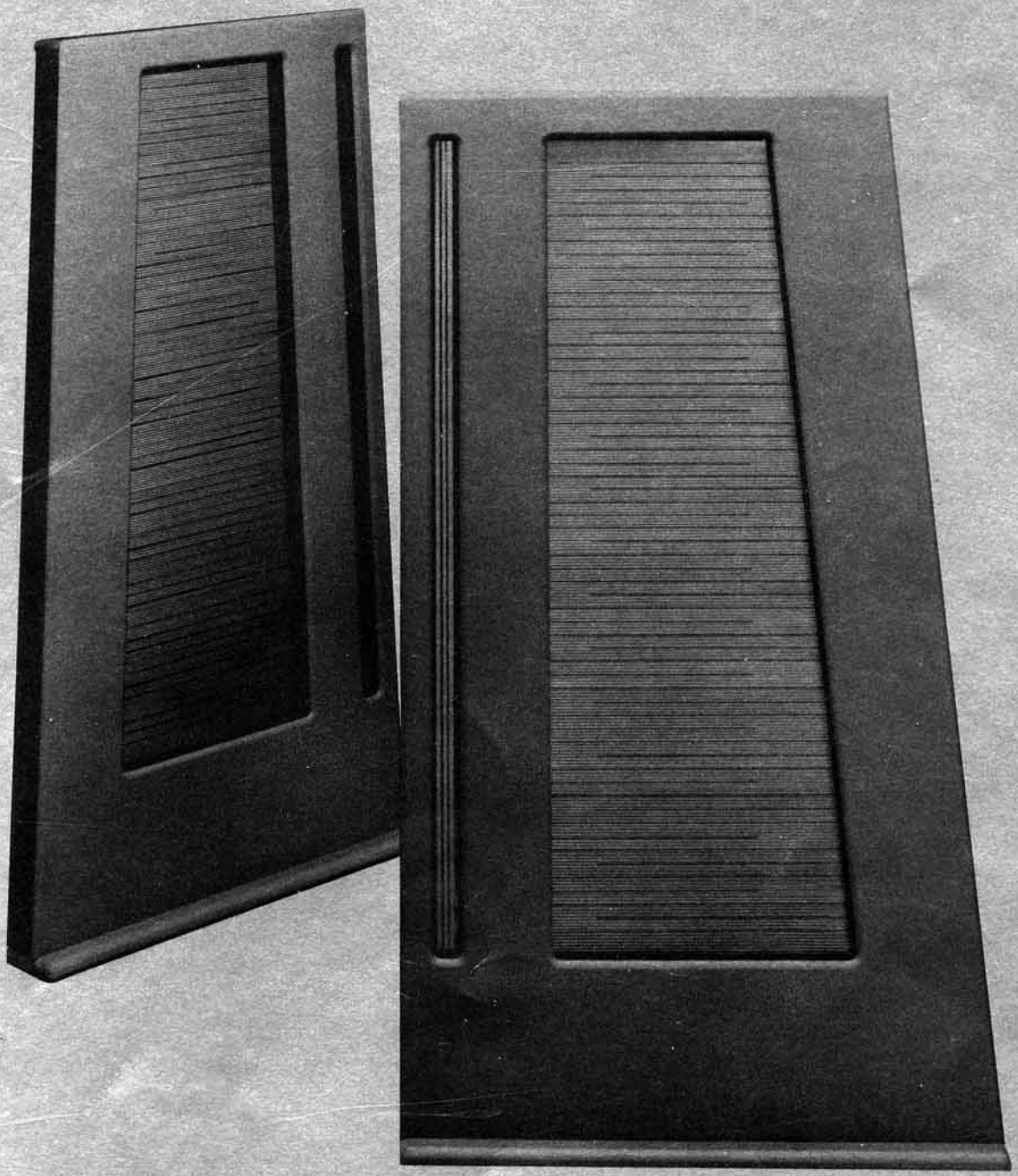
APOGEE ACOUSTICS, INC.

CALIPER



APOGEE ACOUSTICS, INC.

CALIPER

Full Range Ribbon Speaker System

The *"CALIPER"* is a mid-size two way full range ribbon speaker. It provides a unique three dimensional musical experience with outstanding sound stage and exceptionally fine acoustical detail.

The narrow midrange tweeter has been canted to provide both excellent horizontal dispersion as well as real life vertical imaging.

FEATURES:

A trapezoidal woofer ribbon providing transparent deep base.

A unique narrow, canted combination midrange/tweeter ribbon with excellent horizontal and vertical dispersion.

Advanced seamless crossover circuitry for outstanding acoustical detail.

Comparatively small size and attractive architectural design, readily fits into the decor of a wide range of rooms.

Available in Taupe or Grey.

SPECIFICATIONS:

Two Element System:	Midrange/Tweeter and Woofer Ribbons
Frequency Response:	30 hz to over 25 khz
Crossover:	Seamless 6db per Octave
Amplification:	100 watt Stereo Amplifier
Sound Pressure Level:	105db peak at 4 meters "C" Scale weighting using 100 watt Solid State Amplifier. (18′ × 24′ room, 8′ ceiling)
Nominal Impedance:	3 Ohms
Dimensions:	48″ × 24″ × 2″
Weight:	70 lbs. per Speaker
Warranty:	One year limited

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CALIPER

FULL RANGE RIBBON SPEAKER SYSTEM

OWNER'S MANUAL

AND

ASSEMBLY INSTRUCTIONS

35 YORK INDUSTRIAL PARK, RANDOLPH, MASSACHUSETTS 02368 (617) 963-0124

APOGEE ACOUSTICS, INC.

CALIPER

FULL RANGE RIBBON SPEAKERS

The "Caliper" is a mid-sized two way dipole, full range ribbon speaker. It provides a truly unique three dimensional musical experience with outstanding sound stage and exceptionally fine acoustical detail.

The use of ribbon transducers across the audio spectrum provide exceptional sonic qualities in the areas of sonic detail, clarity and transparency in sound stage. The two element woofer and mid-range tweeter ribbons coupled with seamless internal crossovers, provide precise imaging over a wide listening area. The rise time dynamics are consistent with the fastest amplifiers.

The CALIPER features:

- A trapezoidal woofer ribbon providing deep rich transparent base.
- A unique narrow, canted combination mid-range tweeter ribbon with excellent horizontal and vertical dispersion.
- Advanced internal circuitry that provides for both a seamless crossover and improved transducer separation.
- Attractive architectural quality that readily fits into the decor of a wide range of listening rooms.

The CALIPER stands 48 (1.22m) inches high, by approximately 24 (61cm) inches wide and two (6cm) inches deep. It weights seventy pounds per speaker and is available in two colors; grey or taupe.

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SPEAKER SET-UP

APOGEE speaker's performance is affected by the quality and compatibility of the front end equipment such as the turntable, cartridge, electronics, cable and connections. The room acoustics and the placement of the speakers also have an important affect on the quality of the sound. Care in selection of high quality compatible equipment and placement of the speakers within the room will be very rewarding in terms of the sonic quality of your music system.

ASSEMBLY

The CALIPER full range ribbon speaker system is packaged in two cartons. Before opening the cartons be sure there is no visible sign of damage and the boxes are placed with PRINTED SIDE UP.

SETTING UP PACKAGED SPEAKERS WITHIN ROOM (See Diagram No. 1)

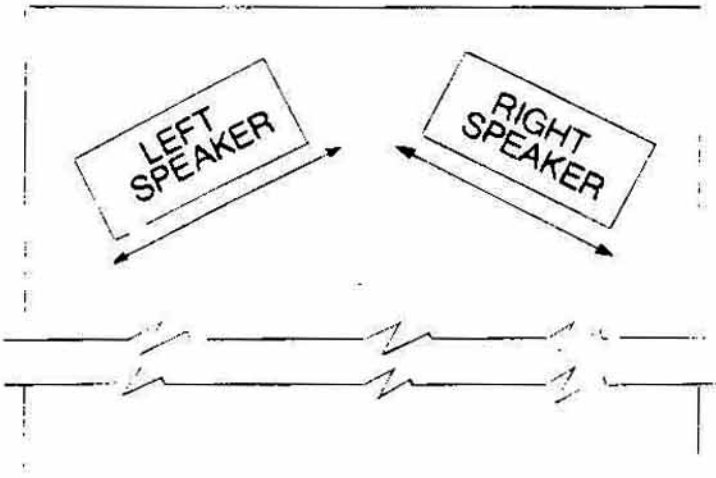
Clear an 8' x 8' area near the final speaker location to permit assembly of the speakers. Locate the shipping boxes as shown in Diagram 1. The right speaker container is oriented on the right side of the room with PRINTED SIDE UP. The left speaker container is oriented in a similar fashion on the left side of the room.

CAUTION -- USE CARE -- DO NOT ALLOW ANY OBJECT TO TOUCH THE RIBBONS!!!

REMOVE ALL OBJECTS FROM SHIRT POCKETS SUCH AS PENS, PENCILS AND LIGHTERS AS THEY MAY FALL FROM POCKETS ONTO RIBBON DRIVERS WHICH CAN CAUSE DAMAGE.

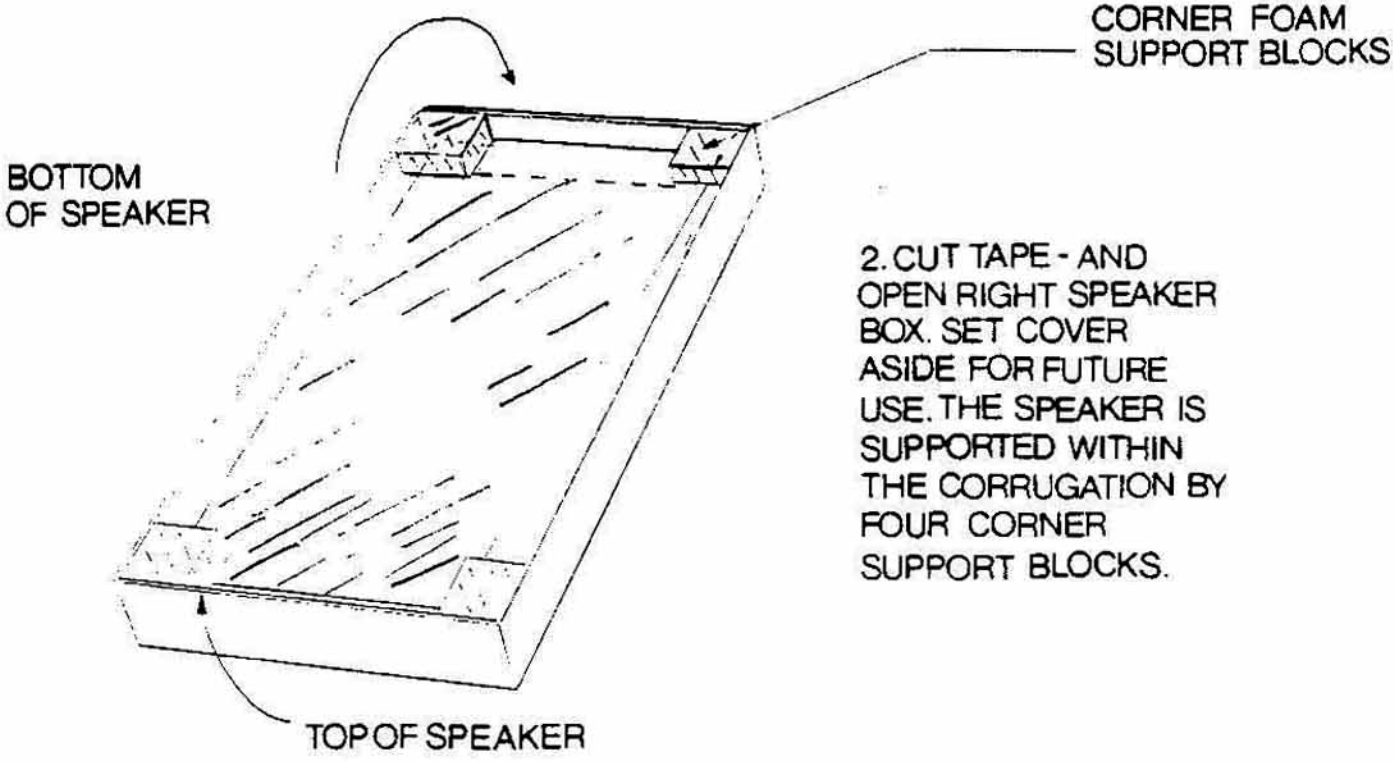
OPENING OUTER SPEAKER PACKAGING (See Diagram No. 2)

The first box to be opened should have Tools and Owner's Manual designation. Remove outer CALIPER packing box. Remove and read OWNER'S MANUAL before proceeding further. Remove tools and base support bracket which are located adjacent to the base of the speaker.



1. PLACE THE BOXED SPEAKERS AS SHOWN IN DIAGRAM NO.1 ABOUT 3 -4 FROM THE BACK WALL. POSITION THE BOXES SO THAT LONG SIDE RUNS IN THE SAME DIRECTION AS THE ARROWS.

DIAGRAM NO.1



2. CUT TAPE - AND OPEN RIGHT SPEAKER BOX. SET COVER ASIDE FOR FUTURE USE. THE SPEAKER IS SUPPORTED WITHIN THE CORRUGATION BY FOUR CORNER SUPPORT BLOCKS.

DIAGRAM NO.2

ATTACHMENT OF BASE SUPPORT BRACE TO SPEAKER (See Diagram No. 3)

The base support brace is attached to the back of the speaker by means of three screws as shown in Diagram 3.

1. Align the three holes of the brace with the three holes located at the bottom area of the back of the speaker.
2. Using the screws from the plastic tool bag, screw the brace to the speaker. (A Phillips Head screwdriver is required). Tighten the screws so that the brace is firmly attached to the speaker. DO NOT OVER TORQUE SCREWS AS THIS WILL STRIP THE SPEAKER WOOD.
3. Screw in the leveler to the back hole of the brace. The rubber foot should be approximately level with the base of the speaker.

CAUTION!!

BEFORE PROCEEDING BE SURE TO CHECK THAT ALL SCREWS ARE TIGHT AND SECURE.

ORIENTING SPEAKER TO UPRIGHT POSITION

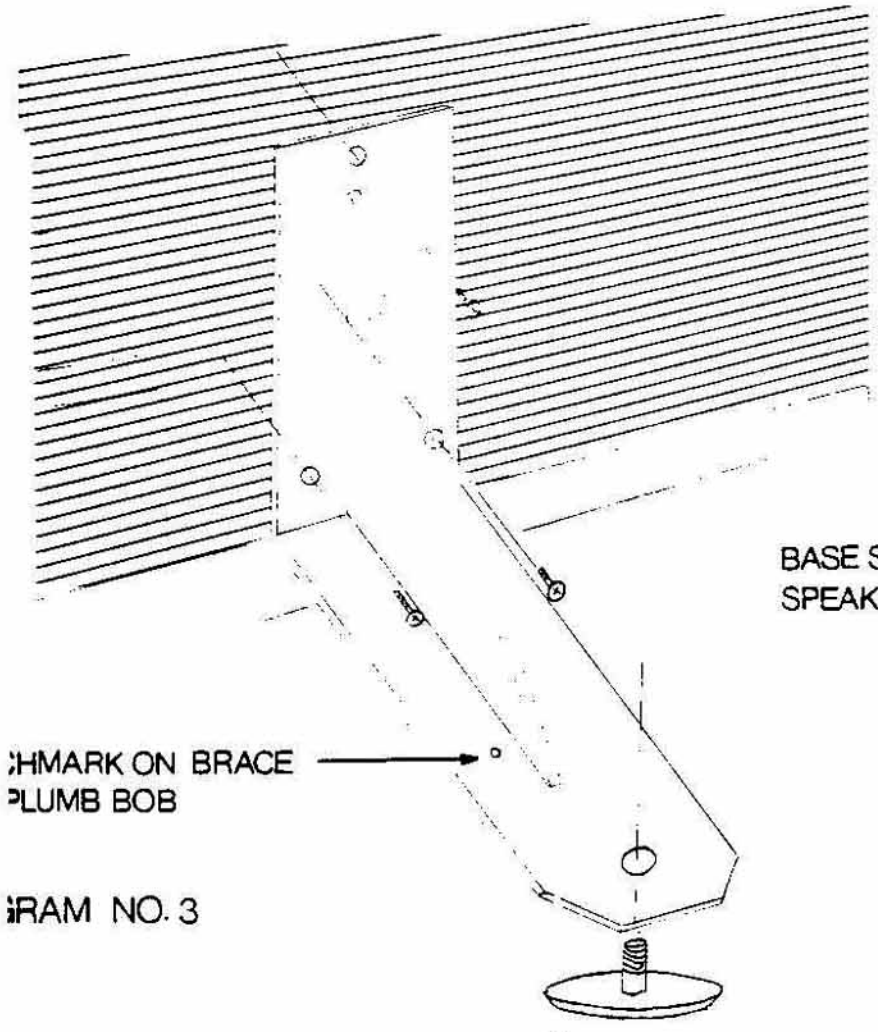
Be sure hands are clean before proceeding. Using two people, lift the bottom of the speaker out of the box and remove foam blocks. One person should then hold the speaker at the top of the speaker while the other person should hold the bottom. Place speakers close to the final location to minimize need for final placement adjustments.

CAUTION!!

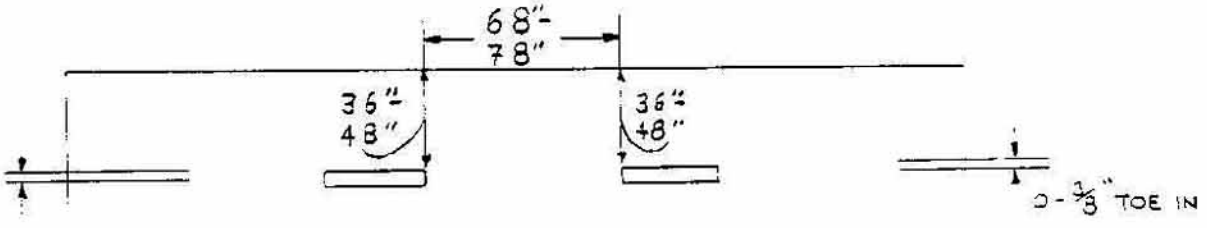
DO NOT TOUCH THE FRONT SPEAKER GRILL AREA TO AVOID DAMAGE TO THE RIBBONS.

PLACING SPEAKER IN ROOM (See Diagram No. 4)

Move speaker to the nominal Right and Left positions in the room as shown in Diagram 4. Speaker may be moved by a series of rotations about the vertical axis of the speaker. Note the woofer ribbons should be closest to their respective side walls and the mid-range ribbons should be approximately six feet apart.



IRAM NO. 3



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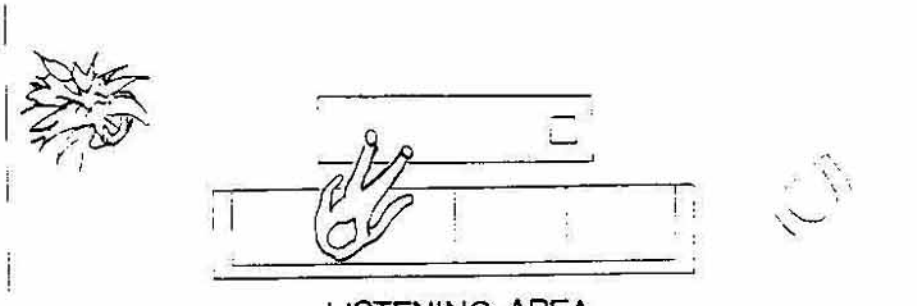


NOTE: THIS DIAGRAM SHOWS RECOMMENDED STARTING SPEAKER LOCATIONS BEFORE POSITIONING ADJUSTMENT.

DIAGRAM NO. 4

SPEAKER PLACEMENT

The CALIPER loudspeakers are dipoles and require care and consideration in their placement. Of course, every listening room has varying room anomalies. Thus experimentation with speaker placement is well advised in order to achieve optimum results for your music enjoyment.

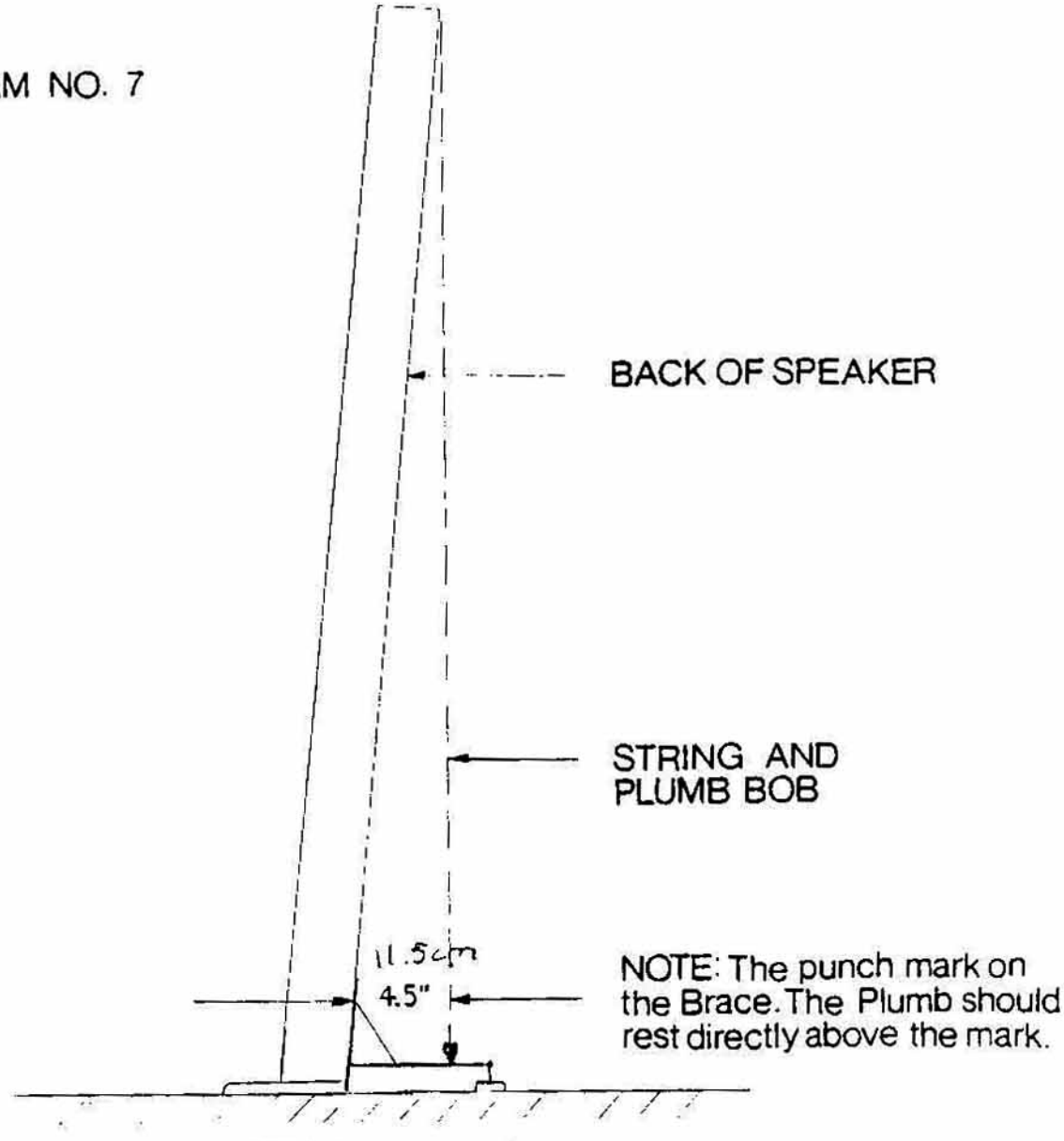
Outlined below are parameters which should be followed; although room size and other variables must be considered.

SPEAKER LOCATION WITHIN THE LISTENING ROOM

- Place CALIPER speakers three to four feet (1 - 1.20 m) from the rear wall (See Diagram 4). Experimentation is advised.
- Rear wall should have no damping material or very light damping material. Experimentation with degree of damping is advised. Our own experience has taught us that too much damping can cause upper mid-range and tweeter suck-out resulting in a somewhat lifeless quality. Corner treatment with acoustical damping material works very well.
- Separation of speakers should be approximately six feet (1.82 m); greater or less depending on the width of your room. Experimentation is advised.
- Speakers should be placed with virtually no toe-in. Should you insist on a gentle toe-in, this should not exceed more than 3/8 inch. The CALIPER has exceptional dispersion and focus; stage and imaging is at its best with no toe-in or very gentle toe-in. Never place the CALIPER in a position in which the speakers touch the side walls. Allow them to breathe by maintaining at least a distance of 8 inches (20.32 cm) from the side walls. This figure will change, however, with respect to room size.
- Placement of speakers on carpeting as opposed to bare floors is preferable. Adjust the leveling feet to provide a tilt-back of approximately five and one-half degrees from the base to the top of the speaker. (See Diagram 7).

To verify the tilt-back angle, using a string with a non-magnetic weight or plumb. Four and one-half inches displacement is equivalent to five and one-half degrees. Note the punch mark on the brace. The plumb should rest directly above the mark.

DIAGRAM NO. 7



CALIPER TILT-BACK

ELECTRICAL CONNECTIONS

There are two recommended amplifier configurations for driving the speakers. The CALIPER may be operated utilizing a single stereo amplifier or operated in a bi-amplified mode. A high quality amplifier with a nominal rating of 100 watts is recommended. More or less power may be utilized depending on the size of the room, damping, construction and desired sonic amplitude levels.

AMPLIFIER TO SPEAKER WIRING

Single Stereo Amplfier Operation

Connect the high end of the amplifier drive to the RED binding Post and the low end to the BLACK Binding Post. Use the shorting bar which APOGEE provides and connect the two RED Binding Posts together. Similarly, use the shorting bar to connect the BLACK Binding Posts together. The shorting bars are readily installed on the Binding Posts by the following procedure. Push the long fingers of the bar onto a Binding Post (do not put finger into the Binding Post hole). Then slide the shorting bar so that the short fingers engage the adjacent Binding Post to be shorted. Be certain to slide the shorting bar to insure full contact with the short finger when the Binding Post is torqued down.

The amplifier's left channel output should be connected to the left speaker Binding Posts and the right channel amplifier output should be connected to the right speaker Binding Posts.

Bi-Wiring Single Stereo Amplifier Operation

The bi-wired configuration affords significant sonic benefits. Two sets of speaker cable are required. Connect the first cable set from the high end of the amplifier drive to the right RED Binding Post. The low end of the amplifier is connected to the right BLACK Binding Post. The second cable set is connected in a similar fashion from the same amplifier terminals to the right speaker's left Binding Post. No shorting bars should be used. This wiring arrangement provides a separate cable set for the operation of the woofer and the operation of the mid-range tweeter.

The amplifier's left channel output should be connected to the left speaker Binding Posts and the right channel amplifier output should be connected to the right speaker Binding Posts (Refer to Diagram No. 5).

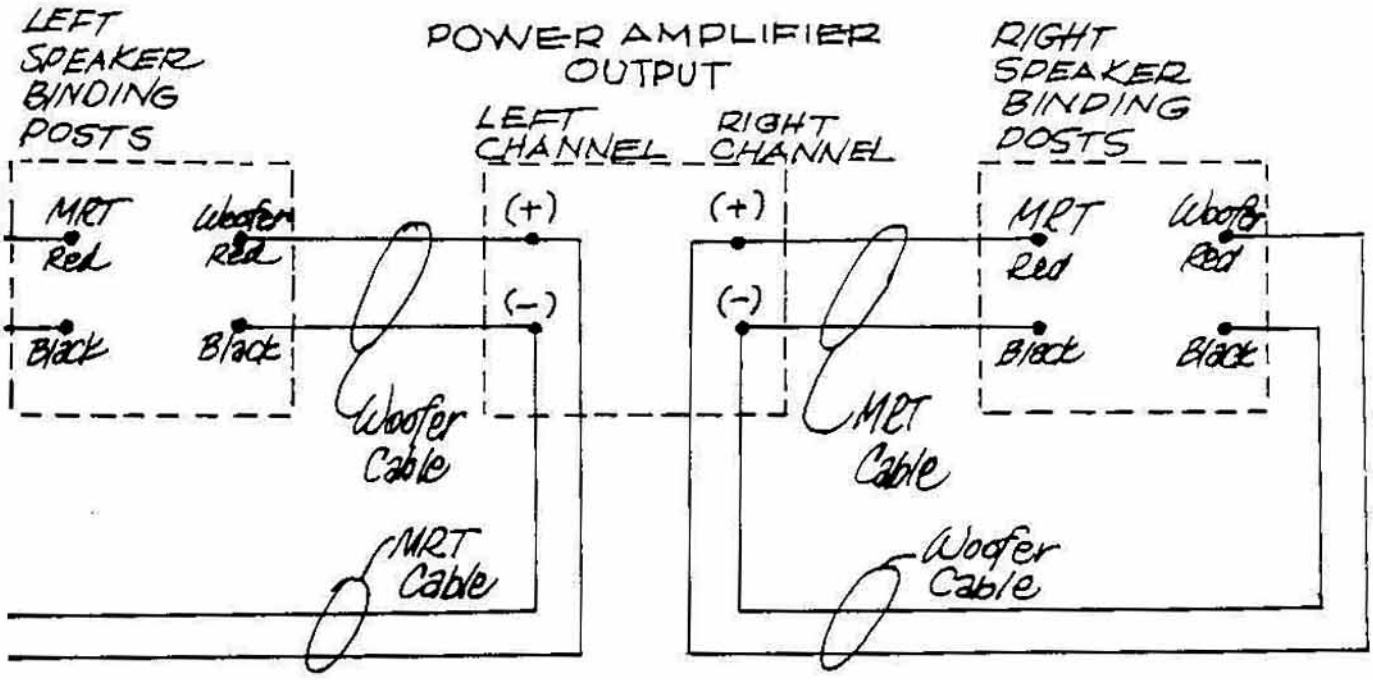
Bi-Amp Operation

Two stereo amplifiers or a dual set of mono-amplifiers are required. Connect high end of the woofer amplifier to speaker RED Binding Post (right side) and low end of woofer amplifier output to speaker BLACK Binding Post (right side). No shorting bars should be used. The amplifier's left channel output connects to the left speaker and the amplifier's right channel output connects to the right speaker.

The mid-range tweeter amplifier connects to the speaker Binding Post on the left side of the nameplate. The high end output is connected to the speaker RED Binding Post and the low end amplifier output is connected to the speaker BLACK Binding Post. The amplifier's left channel output connects to the left speaker and the right channel output drives the right speaker (Refer to Diagram No. 6).

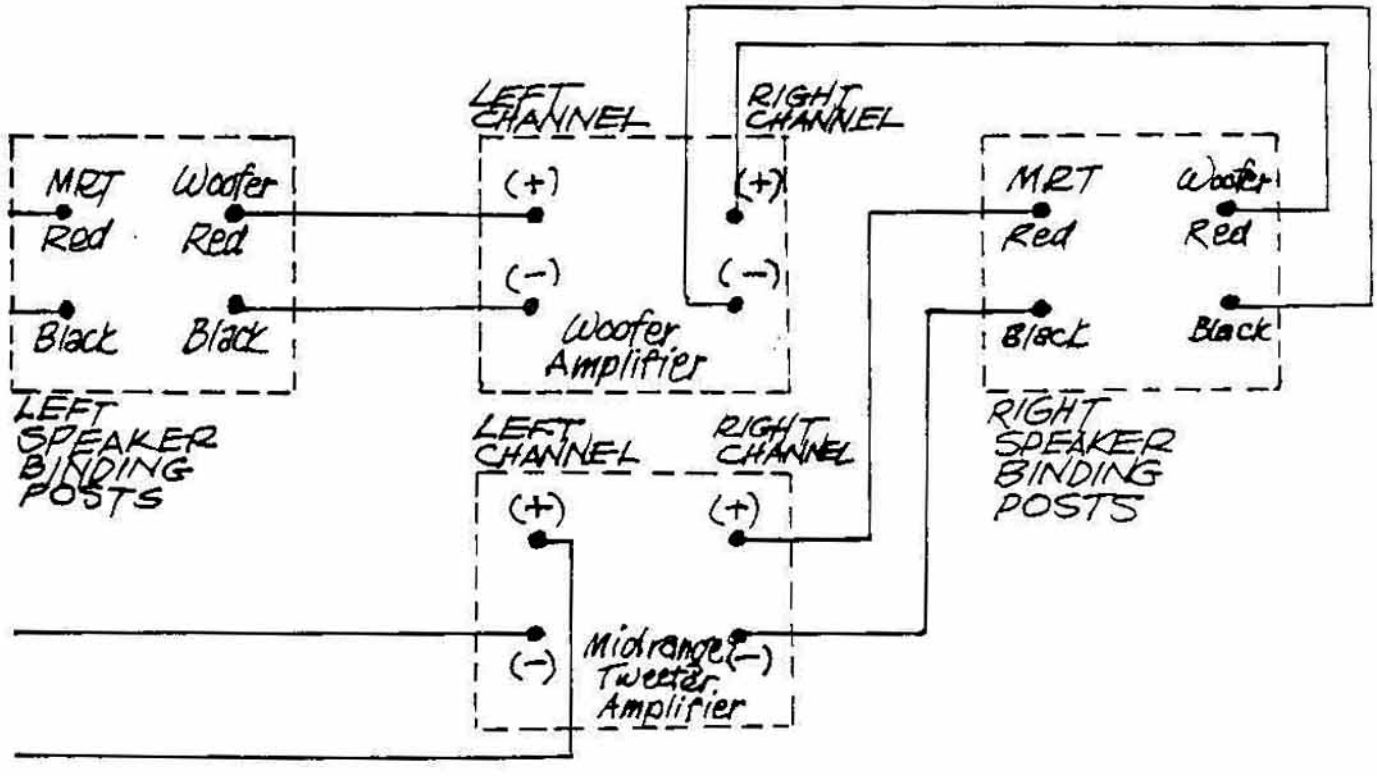
GENERAL CAUTIONARY NOTES

1. Do not turn power on to amplifier and/or amplifiers before double checking to verify the correctness of all system wiring. Be sure all connections are clean and tightly secured.
2. Do not use vacuum cleaners to clean the speaker.
3. Front cover may be cleaned by use of sponge or damp cloth and a mild detergent.
4. Grill cloth may be cleaned by gentle use of a feather duster.
5. Keep any objects containing steel away from the speaker to avoid damage.



BI-WIRED STEREO AMPLIFIER OPERATION

IRAM NO.5



BI-AMPLIFIED OPERATION

IRAM NO.6