

APOGEE ACOUSTICS, INC.

DIVA

FULL RANGE RIBBON SPEAKER SYSTEM

OWNER'S MANUAL AND ASSEMBLY INSTRUCTIONS

APOGEE ACOUSTICS, INC.

DIVA FULL RANGE RIBBON SPEAKER

Apogee Acoustics, Inc. is pleased to present the "DIVA", its fifth generation full-sized, full range ribbon speaker. The DIVA incorporates the latest ribbon technology based on four generations of ribbon speaker products. The DIVA is a tall, three element ribbon speaker with separate woofer, midrange and tweeter ribbons.

The DIVA ribbon design provides outstanding sound stage and imaging. The three element ribbon, coupled with seamless passive electronic crossovers, result in an unparalleled clarity and focus over a wide listening area. The excellent sonic impact and dynamics are a result of the ribbon's force over area drive, physical geometry, suspension and fast rise time.

SPECIFICATIONS

<u>Three Element System:</u>	Woofer, Midrange and Tweeter Ribbons.
<u>Frequency Response:</u>	Below 25 Hz to over 25 KHz.
<u>Crossover:</u>	Seamless 6 db per octave slope, externally located in an electronics box. Fine switch adjustment for tweeter, midrange and woofer are located on top of the box.
<u>Amplification:</u>	100* watt stereo amplifier.
<u>Sound Level:</u>	115 db spl at 4 meters.**
<u>Normal Impedance:</u>	3 ohms.
<u>Dimensions:</u>	31"W x 73"H x 3"D.
<u>Weight:</u>	150 pounds per loudspeaker.
<u>Warranty:</u>	Three Year Limited.

* 100 watt RMS output into an eight ohm load and approximately 200 watts into a four ohm load.

** Measured in an 18 foot by 24 foot room with an eight foot ceiling.

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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 effect 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 DIVA full range ribbon speaker system is packaged in three cartons. Before opening the cartons be sure there is no visible sign of damage and the boxes are placed with **PRINTED SIDE UP**. Two large boxes contain the right and left speakers while the third, smaller box contains the electronics box, back braces, instructions and miscellaneous items.

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

Clear an 8 ft. by 8 ft. area near the final speaker location to permit assembly of the speakers. Locate the shipping boxes as shown in Diagram No. 1.

OPENING SMALLER BOX

The first box to be opened should be the smaller box which includes the Tool's and Owner's Manual designation. Open the small box and read the Owner's Manual before proceeding further.

Remove the back braces, associated bolts and tools, the electronics box and the miscellaneous items. Set these items aside for later use in assembling the speaker system.

OPENING OUTER SPEAKER PACKAGING (SEE DIAGRAM NO. 2)

**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.**

Clip and remove the packaging bands from the speaker assembly area before removing the outer shipping covers. This will avoid damage that may be caused by the packaging band metal clips being attracted to the speaker magnets. Take off the top cover of the left speaker. Remove the top inner corrugated cover. Prior to removing the left speaker from its packaging box, orient the speaker so that the speaker cables, which are located at the bottom of the speaker, are facing the right speaker box.

Two people will be required to lift the left speaker out of its packing box and place it on the right speaker packing box.

CAUTION -- BE CAREFUL WHEN LIFTING THE SPEAKER THAT YOUR FINGERS DO NOT COME INTO CONTACT WITH THE AREAS OF THE SPEAKER IN FRONT OF OR IN BACK OF THE RIBBONS. PRESSURE AGAINST THE RIBBONS MAY CAUSE DAMAGE.

Lift the left speaker in its foam wrapper and place it on the right speaker packaging. The bottom and top of the left speaker should overhang the right speaker packaging providing a balanced support. (See Diagram No. 3)

ATTACHMENT OF BASE SUPPORT BRACE TO THE SPEAKER (See Diagram No. 4)

The two base support braces are attached to the back of each speaker by means of four 10/32 by 1 inch long machine screws as shown in Diagram No. 4.

1. Align the two holes of the brace with the two holes located at the bottom area of the back of the speaker.
2. Using the 10/32 by 1 inch bolts from the plastic tool kit, bolt the braces to the speaker. Tighten the screws so that the brace is firmly attached to the speaker.
3. The back braces are laterally stabilized by a flat plate (3 inches wide by 21 inches long). The plate is attached to the back braces with four 10/32 by 1/2 inch bolts. To attach the plate to the braces align the brace and plate holes and bolt the plate to the braces.

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 speaker off the packaging and place on the floor. The forward position of the back brace should touch the floor first. Using the forward toe of the brace as a fulcrum, tip the speaker until it is in the vertical position. See Diagram No. 5

CAUTION -- **BE CAREFUL NOT TO GRIP SPEAKERS IN AREAS WHICH WILL CONTACT WITH THE RIBBONS.**

Repeat the procedure for unpacking, assembling and erecting the right speaker. The right speaker should be erected at the nominal position within the listening room as shown in Diagram No. 6.

PLACING THE SPEAKER IN ROOM (See Diagram No. 7)

Move speakers to the nominal RIGHT and LEFT positions in the room as shown in Diagram No. 6. The speaker may be moved by a series of rotations about the vertical axis of the speaker (See Diagram No. 7). NOTE: The woofer ribbons should be closest to their respective side walls. The tweeter ribbon essentially defines the separation of the speakers. The separation of the speakers should be between 6 1/2 and 8 feet.

SPEAKER PLACEMENT

The DIVA loudspeakers are dipoles and require care and consideration in their placement within the listening room. 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 characteristics and other variables must be considered.

SPEAKER LOCATION WITHIN THE LISTENING ROOM

- . Place DIVA speakers minimally 4 feet to a maximum of 5 1/2 feet from the rear wall. (See Diagram No. 6) Experimentation is advised.
- . Rear wall should have no damping material or very light damping material. Experimentation with degree of damping is advised.
- . Separation of speakers should be approximately 6 1/2 feet to 8 feet; greater or less depending on the width of your room. Experimentation is advised for optimization.
- . Speakers should be placed with virtually no toe-in. Should you desire a gentle toe-in, this should not exceed more than 3/8 inch. The DIVA has exceptional dispersion and focus; stage and imaging is at its best with no toe-in or very gentle toe-in. Never place the DIVA in a position in which the speakers touch the side walls. Allow them to breathe by maintaining at least a distance of 8 inches 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. After the speaker is in approximately the correct position use the leveling bolts to adjust the verticality of the speaker. This will also add stability and improve sonic performance.
- . The verticality of the speaker is measured by use of a carpenter's level and/or a plumb bob referenced to the inside frame of the speakers. The inside frame is located adjacent to the tweeter (See Diagram No. 8). It is on the left side of the tweeter for the right speaker and on the right side of the tweeter for the left speaker.

Adjust the verticality by turning the leveling bolts until good even contact to the floor is made with all four leveling bolts. The pointed end of all bolts should contact the floor. Adjust the speaker verticality to within one quarter of an inch over the 73 inch height of the speaker. (See Diagram No. 8)

CAUTION -- **DO NOT USE METAL OBJECTS THAT
MAY DAMAGE THE SPEAKER BY BEING
PULLED INTO THE RIBBON'S MAGNETIC
FIELD.**

ELECTRICAL CONNECTIONS

There are three recommended amplifier configurations for driving the speakers. The DIVA may be operated utilizing a single stereo amplifier, power bi-amplified [No Active Crossover] and operated bi-amplified with an active crossover. A high quality amplifier with a 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. DO NOT EXCEED A 200 WATT RMS POWER AMPLIFIER RATING.

ELECTRONICS BOX TO SPEAKER WIRING (SEE DIAGRAM NO. 9)

The wiring of the RIGHT speaker to the DIVA Right Electronics box is shown in Diagram No. 9. Simply connect the speaker cable located at the lower back of the speaker to their respective speaker binding posts located on the top of the Right Speaker Electronics Box.

Connections are as shown in Table 1 - SPEAKER TO ELECTRONICS BOX CONNECTIONS.

DIVA ELECTRONICS BOX

The DIVA Electronics Box provides a power level crossover network for the speaker and means of adjusting the response of the woofer, midrange and tweeter ribbons. These adjustments are accomplished by a set of four switches located at the top of the Electronics Box.

The switches should initially all be set in the neutral, N position. From this starting point you may make adjustments in the response of your audio system.

WOOFER LEVEL

The woofer may be reduced in level by switching the woofer switch to the "LO" position.

MIDRANGE LEVEL

The midrange level may be increased by switching the midrange level switch to "HI".

UPPER MIDRANGE LEVEL

The upper midrange area may be increased or decreased by switching to "HI" or "LO" respectively.

TWEETER LEVEL

The tweeter may be increased or decreased by switching to "HI" or "LO" respectively.

DRIVER	SPEAKER CABLE	SPEAKER BINDING POSTS
WOOFER	BLUE	RED
	BLACK	BLACK
MIDRANGE	WHITE	RED
	BLACK	BLACK
TWEETER	RED	RED
	BLACK	BLACK

TABLE 1

SPEAKER TO ELECTRONICS BOX CONNECTIONS

To insure a sound connection, clean the speaker cable lugs before inserting into the binding posts. Torque the binding posts down on the lug. The lugs may be cleaned by damping a clean cotton cloth with electrical cleaning fluid and then wiping the lug thoroughly. Do not over-torque to avoid stripping threads and/or damaging the binding posts.

AMPLIFIER TO SPEAKER WIRING

STEREO AMP OPERATION (BI-WIRED) (See Diagram No. 10)

Two sets of speaker cable are required. Connect the first set from the positive (+) of the amplifier right channel drive to the woofer (RED) amplifier binding posts located at the top of the right speaker electronics box. The negative (-) of the amplifier drive is similarly connected to the woofer (BLACK) amplifier binding post located on top of the right channel speaker electronics box.

The second cable set is connected from the right channel amplifier drive to the right speaker electronics box midrange tweeter amplifier binding posts.

The amplifier's left channel output should be connected to the left speaker electronics box amplifier binding posts. The right and left channel wiring is similar.

POWER BI-AMP OPERATION (See Diagram No. 11)

Two stereo amplifiers or a dual set of mono-amplifiers are required. Connect positive of the woofer amplifier to electronics box woofer RED AMP binding post and negative of woofer amplifier output to woofer BLACK AMP binding post. The amplifier's left channel output connects to the left AMP binding posts and the amplifier's right channel connects to the AMP binding posts.

The midrange tweeter amplifier connects to the electronics box midrange AMP binding posts. The positive output is connected to the electronics box RED AMP binding post and the negative amplifier output is connected to the electronics box BLACK AMP binding posts. The amplifier's left channel output connects to the left electronics box AMP binding posts and the right channel output drives the right electronics box AMP binding posts.

BI-AMP OPERATION WITH AN ACTIVE CROSSOVER (See Diagram No. 12)

The DIVA speaker incorporates provision for operation in the bi-amped mode utilizing an active crossover. The use of the active crossover configuration provides many acoustic benefits to the audio system. The benefits include fine grained tonal balance adjustment, increased headroom and superior woofer and midrange frequency shaping.

Configuration A or Configuration B may be utilized for the bi-amped configuration. The selection of the most satisfactory configuration is based on a number of system considerations such as the amplifier, interconnect and cable characteristics and overall acoustic properties resulting from the selected configuration.

1. Connect crossover between preamp and power amps.
2. Connect preamp output to crossover input. Connect active crossover woofer output to the woofer amp input and active crossover TWT output to mid-range tweeter amp input.

CAUTION

PRIOR TO MAKING POWER AMPLIFIER CONNECTIONS TO THE SPEAKER, INSURE THAT ALL FRONT END CONNECTIONS HAVE BEEN PROPERLY MADE IN FULL ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. PREAMP GAIN SHOULD BE SET LOW AND THEN ADJUSTED TO LISTENING LEVEL.

DO NOT MAKE FRONT END SYSTEM CHANGES WHILE THE POWER IS ON AND SPEAKER CONNECTED. ALL SUCH CHANGES SHOULD BE MADE WITH POWER OFF AND SPEAKER DISCONNECTED.

CONFIGURATION A CONNECTION

3. Connect left channel woofer amplifier output to the terminals labeled "Woofer" of the left AMP Binding Posts of the Electronics Box.
4. Connect the right channel woofer amp output to the terminals labeled "Woofer" of the right AMP Binding Posts of the Electronics Box.
5. Connect the left channel of the midrange tweeter amplifier output to the terminals labeled "Midrange Tweeter" of the left AMP Binding Posts of the Electronics Box.
6. Connect the right channel of the midrange tweeter amplifier output to the terminals labeled "Midrange Tweeter" of the right AMP Binding Posts of the Electronics Box..

Speaker wiring for operation with active crossover will be provided with Apogee's Active Crossover for the DIVA.

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.
2. Do not use vacuum cleaners to clean the speakers.
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 and/or magnetic material away from the speaker to avoid damage.

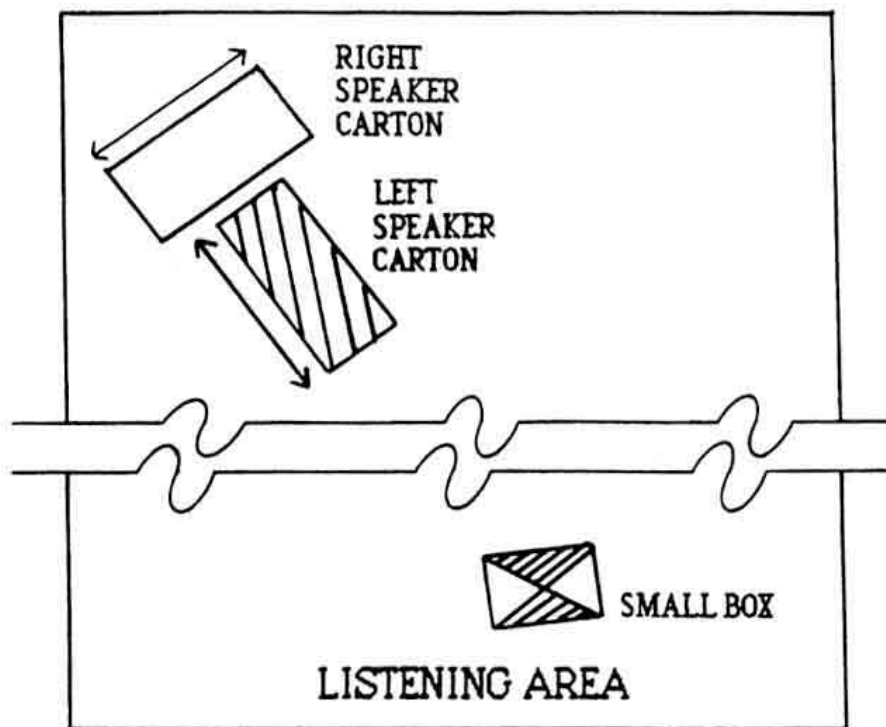
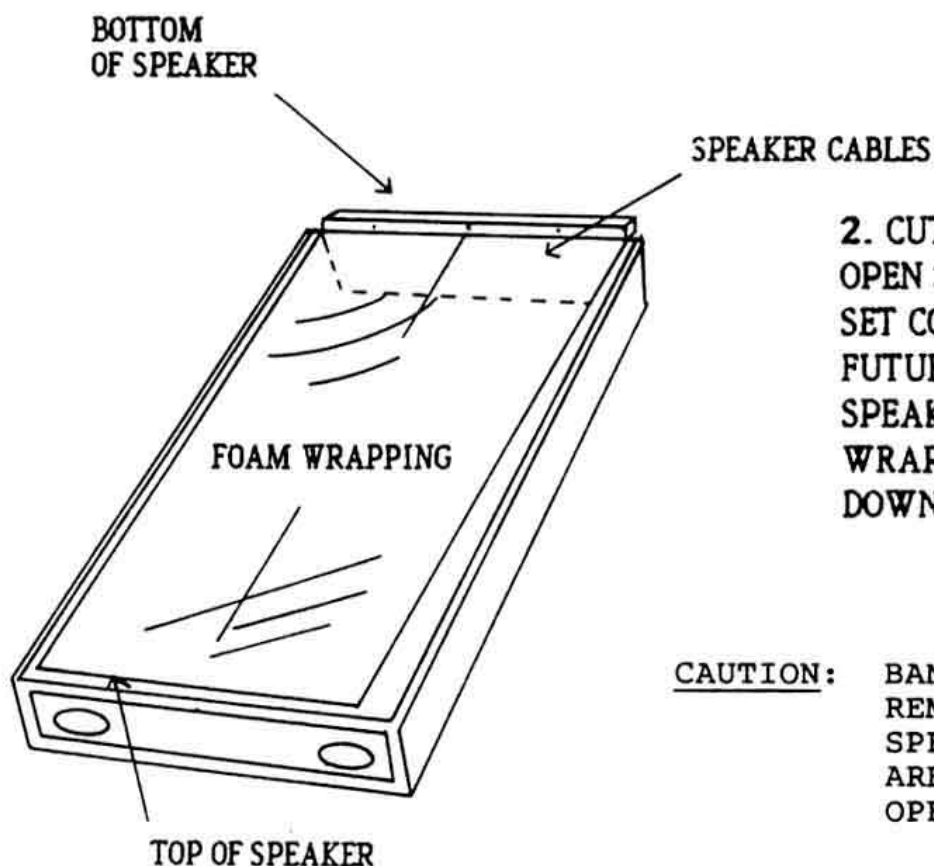


DIAGRAM No. 1

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.



2. CUT BANDS -- AND OPEN SPEAKER BOX. SET COVER ASIDE FOR FUTURE USE. THE SPEAKER IS IN A FOAM WRAPPING -- FACE DOWN.

CAUTION: BANDS SHOULD BE REMOVED FROM SPEAKER ASSEMBLY AREA BEFORE OPENING BOX.

DIAGRAM No. 2

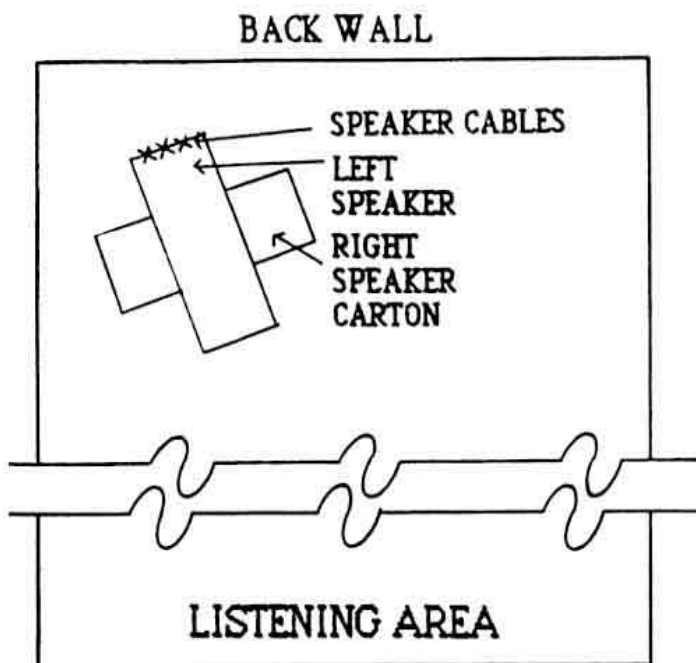


DIAGRAM No. 3

3. REMOVE LEFT SPEAKER WITH FOAM WRAPPER AND PLACE ON TOP OF RIGHT SPEAKER. BOTTOM OF SPEAKER SHOULD FACE BACK WALL OF LISTENING AREA.

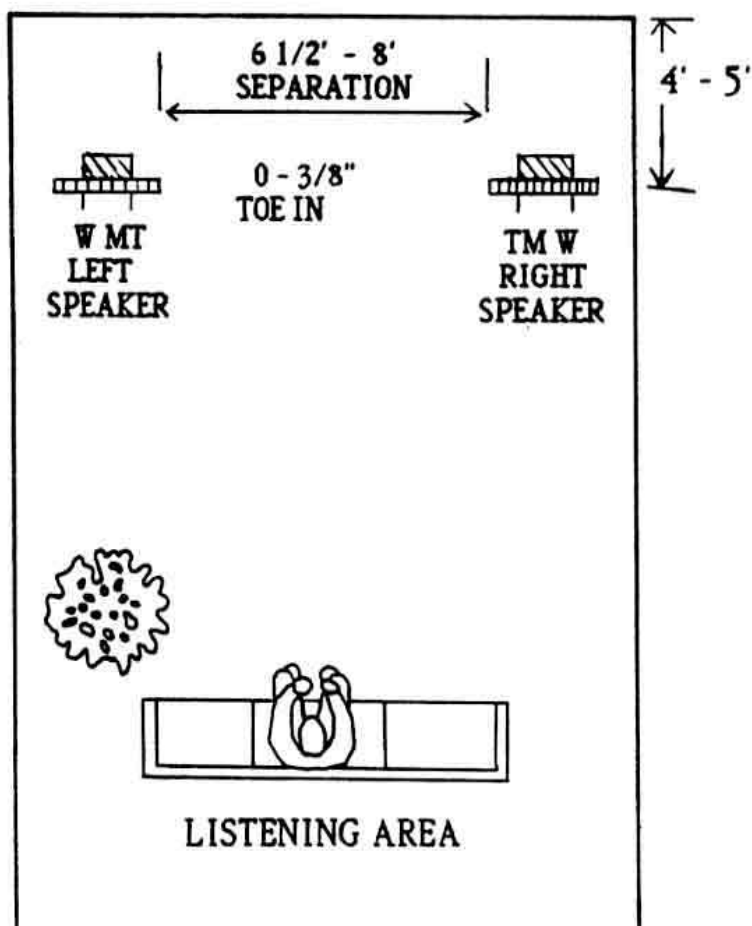


DIAGRAM No. 6

6. SET UP SPEAKERS IN NOMINAL POSITION AS SHOWN IN DIAGRAM. THE LISTENING POSITION DISTANCE SHOULD BE APPROXIMATELY 12' MORE OR LESS DEPENDING ON THE SIZE OF THE ROOM. TUNING THE SPEAKER TO THE ROOM CONSISTS OF LISTENING FOR THE BEST SONIC RESULTS AS A FUNCTION OF SPEAKER AND LISTENING VARIABLES. VARIABLES SHOULD BE CHANGED BY SMALL INCREMENTS (-- 1/2 INCH).

NOTE: THIS DIAGRAM SHOWS NOMINAL RECOMMENDED STARTING SPEAKER LOCATION WITHIN THE LISTENING ROOM.

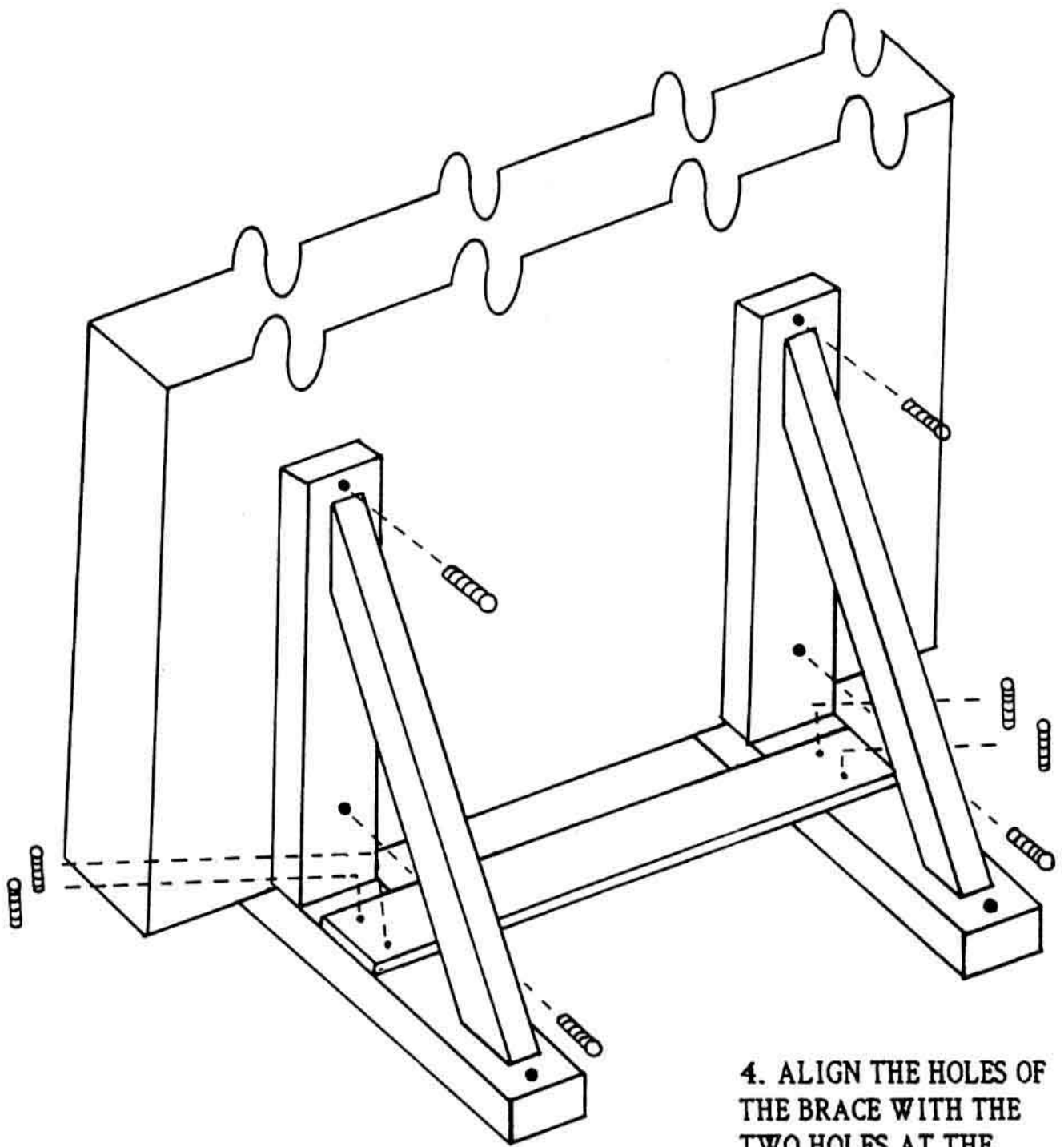


DIAGRAM No. 4

4. ALIGN THE HOLES OF THE BRACE WITH THE TWO HOLES AT THE BOTTOM BACK OF THE SPEAKER. INSERT AND TIGHTEN THE 10/32 x 1 INCH SCREWS TO FIRMLY ATTACH THE BRACES TO THE SPEAKER. ATTACH THE STABILIZING PLATE TO THE BRACES WITH THE 10/32 x 1/2 INCH BOLTS.

CHECK SCREWS AND BOLTS TO ENSURE THEY ARE TIGHT AND SECURE.

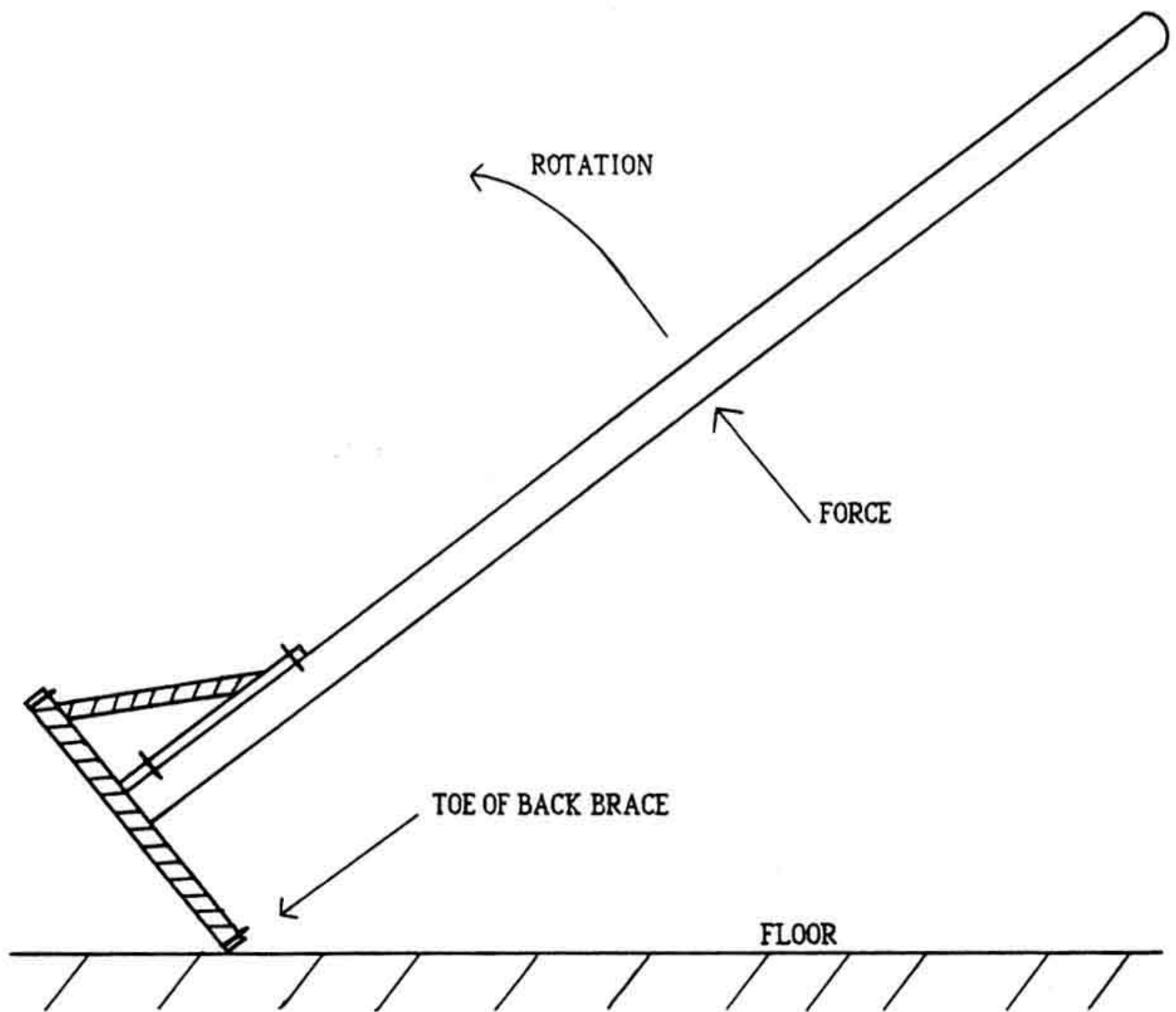


DIAGRAM No. 5

5. UTILIZING TWO ADULTS, LIFT THE SPEAKER OFF THE PACKING BOX AND PLACE THE TOE OF THE BACK BRACE ON THE FLOOR. ROTATE THE SPEAKER TO A VERTICLE POSITION. THE SPEAKER IS THEN SUPPORTED BY THE BACK BRACE.

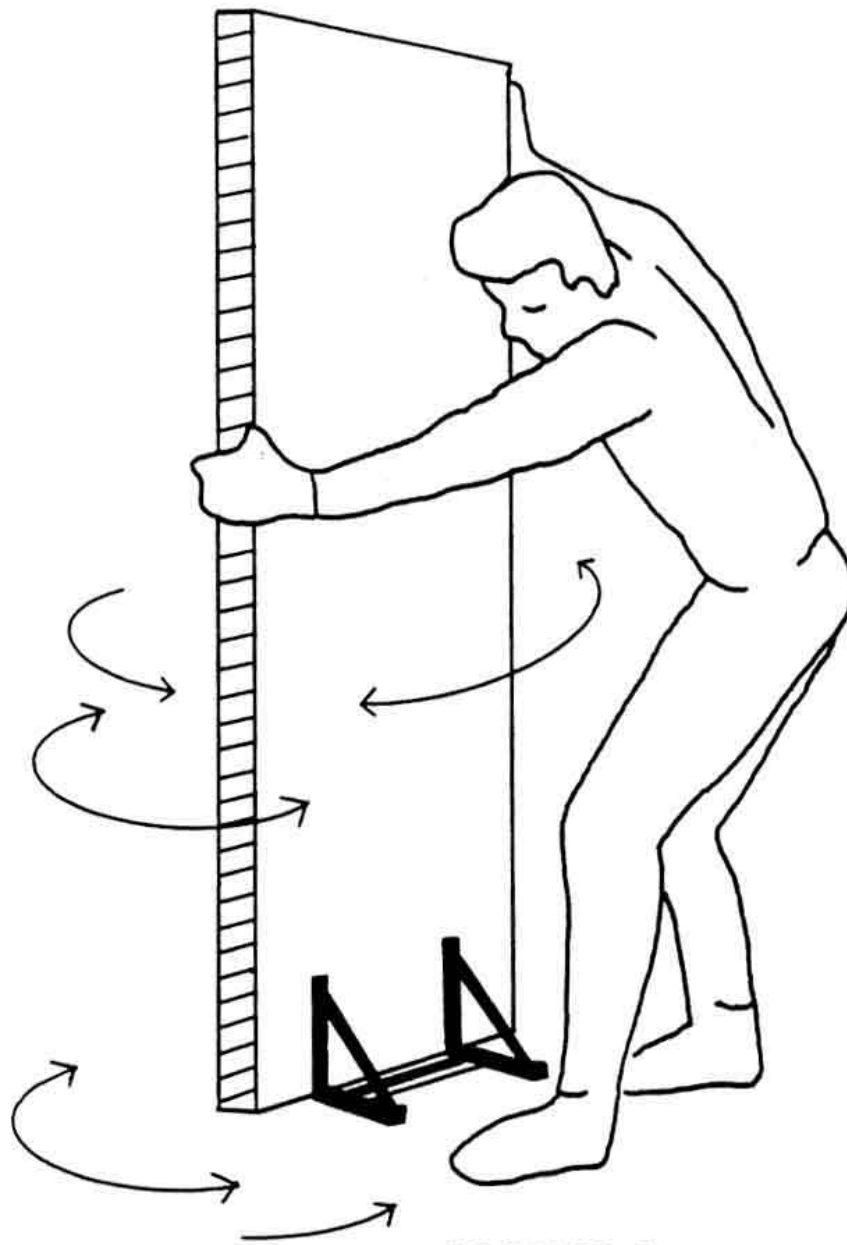
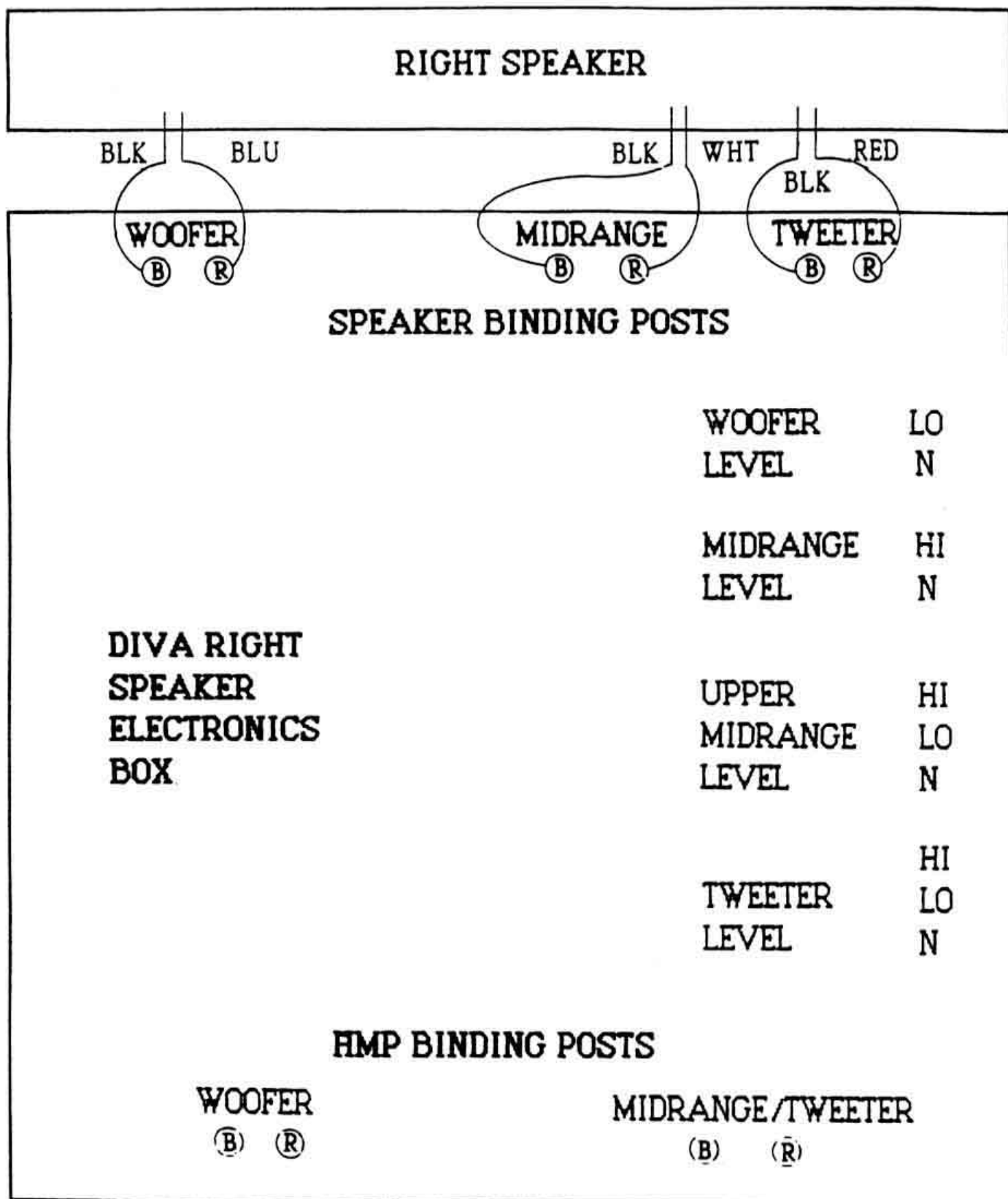


DIAGRAM No. 7

PIVOTING INTO POSITION

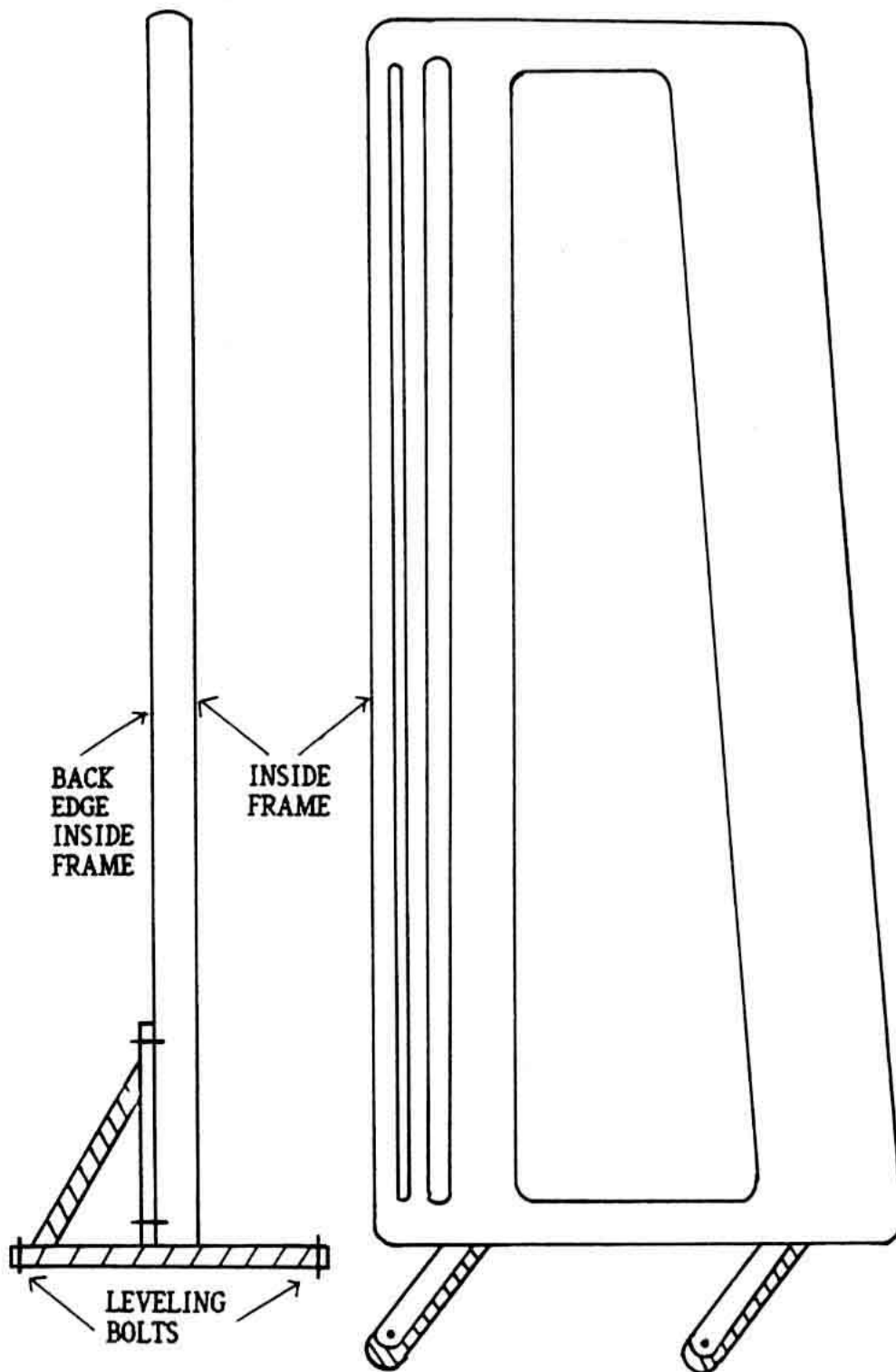
**ALWAYS KEEP ONE HAND
HALFWAY DOWN OR
LOWER.**

**NEVER MOVE UNIT
WITHOUT BRACKET IN
PLACE.**



DIVA RIGHT SPEAKER ELECTRONICS BOX CONNECTIONS TO SPEAKERS

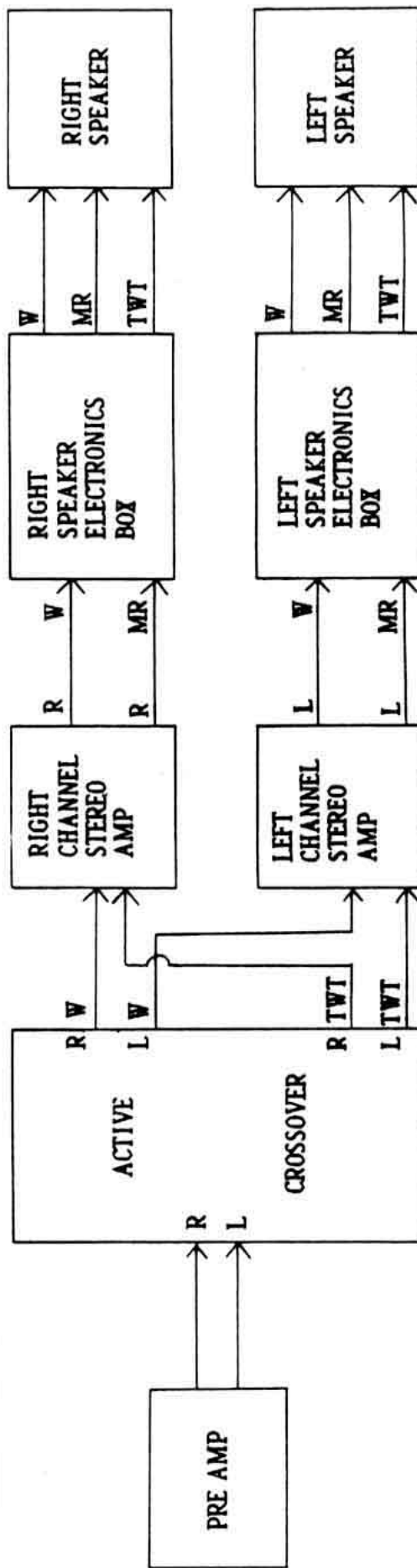
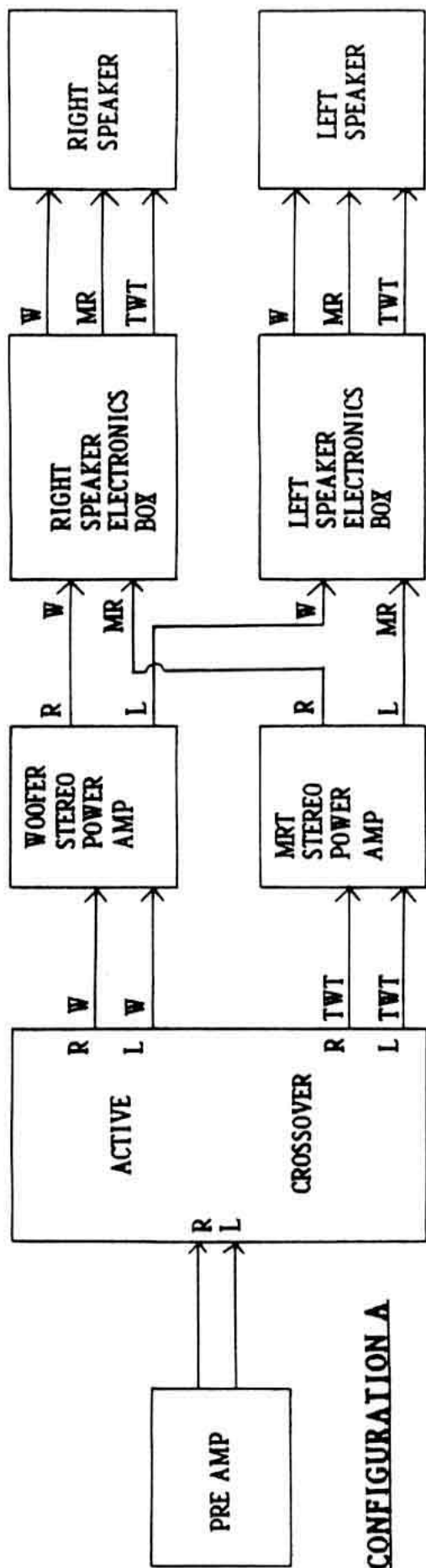
DIAGRAM No. 9



9. ROTATE LEVELING BOLTS TILL POINTS ARE WELL COUPLED TO THE FLOOR. ADJUST THE LEVELING BOLTS TILL THE INSIDE FRAME BACK EDGE IS VERTICLE.

VERTICALITY MAY BE DETERMINED BY USE OF A CARPENTER'S LEVEL AND/OR A PLUMB BOB.

RIGHT SPEAKER
DIAGRAM No. 8



NOTE:

R - RIGHT CHANNEL

L - LEFT CHANNEL

W - WOOFER

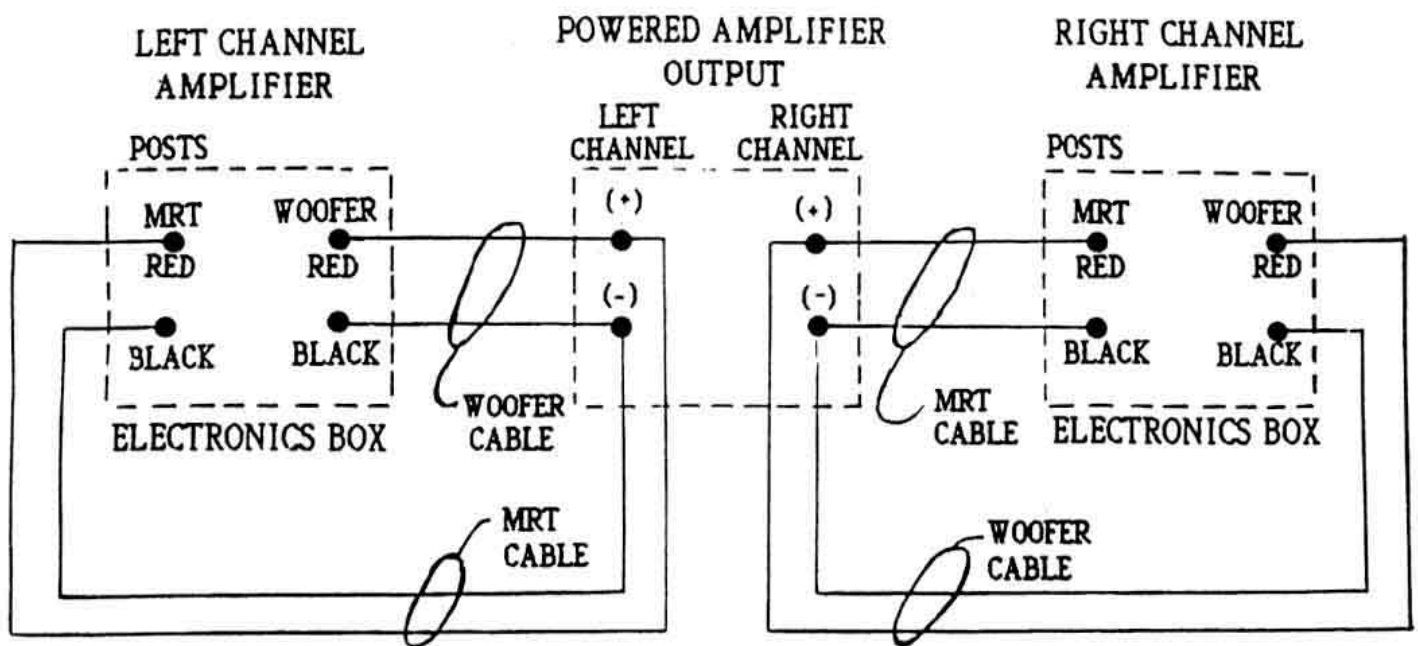
MR - MIDRANGE

NOTE:

INPUT LINE

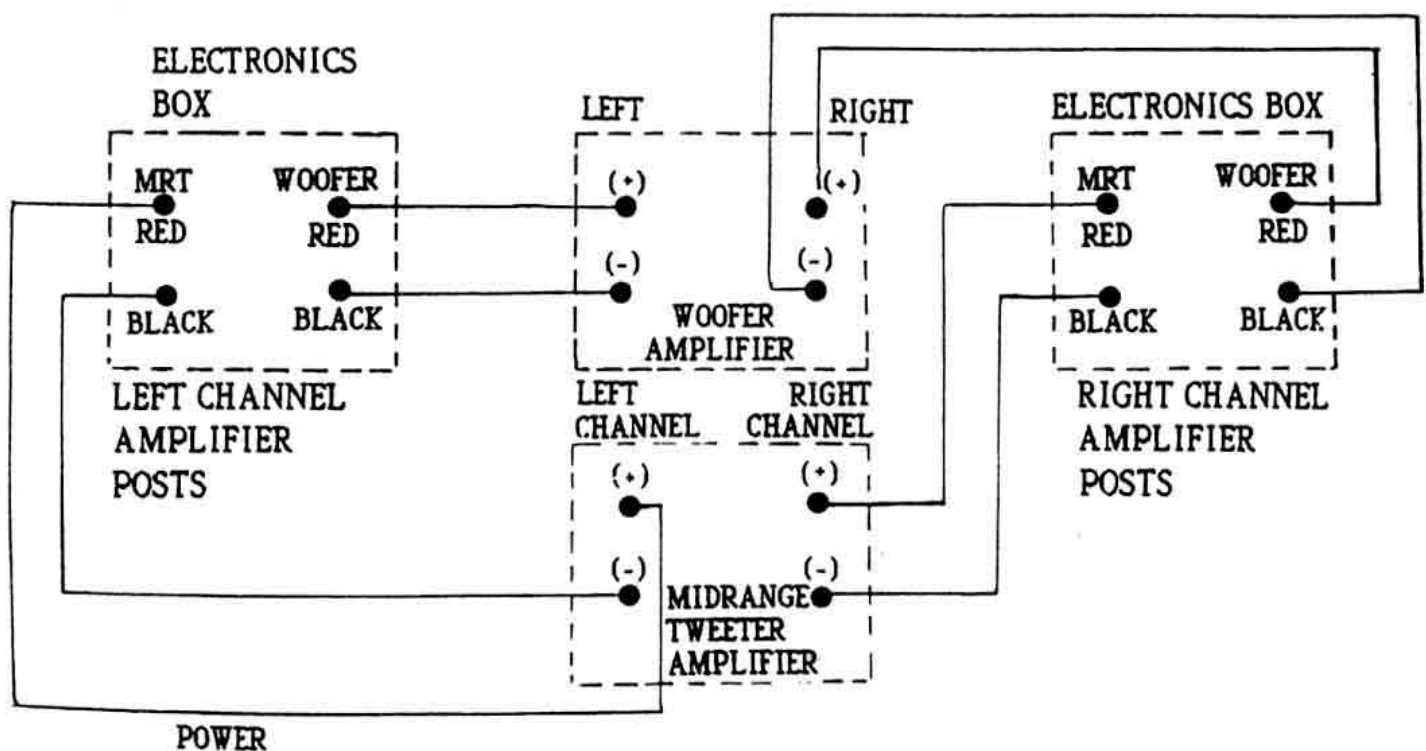
OUTPUT LINE

DIAGRAM No. 12



BI-WIRED AMPLIFIER OPERATION

DIAGRAM No. 10



BI-AMPLIFIED OPERATION

DIAGRAM No. 11