

C-Sharp Bookshelf Speaker Kit

Thank you for purchasing the C-Sharp powered bookshelf speaker kit. This speaker kit was precision cut using CNC machinery for the best possible fit and finish. With a little time and patience, your finished product will provide years of enjoyment. Please follow the following instructions for the best possible results.

The C-Sharp kit is available as a complete kit with knock-down enclosures (part # 300-7043) or a components only kit (part # 300-7045) if you would like to build your own enclosure. If you purchased the components only version of the C-Sharp you can find detailed drawing of the enclosure at the end of this manual and you can begin these instructions on step # 7.

Suggested tools and consumables:

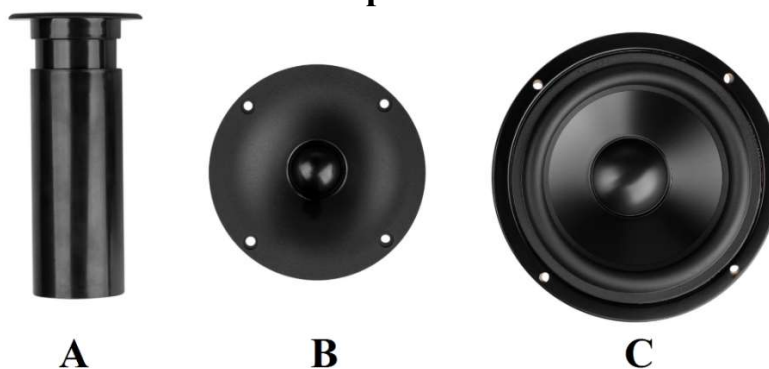
Drill	Rag or paper towels
5/64" drill bit	Solder
Wood clamps (you can never have too many of these)	Soldering iron
Sanding block and/or electric finishing sander	Hot glue gun
Wood glue	Polyurethane glue (Gorilla Glue)
0.11" female disconnect terminal	Cyanoacrylate Adhesive (super glue)
0.205" female disconnect terminal	

Package contents:

First, empty the contents of the package and review parts to ensure everything has been included and is in good condition. If any parts are missing or damaged please contact our customer service department at 1-800-338-0531.

Note: Crossover components may be substituted with parts of equal or higher quality depending on stock.

Components:



A) 1-3/8" ID adjustable port tube

B) Dayton Audio ND25FW-4 1" Soft Dome Neodymium Tweeter with Waveguide

C) Dayton Audio DSA135-8 5" Designer Series Aluminum Cone Woofer



D



E



F



G



H



I

- D)** 2 x 0.25 mH air core inductor – component **L2**
- E)** 2 x 1.40 mH air core inductor – component **L1**
- F)** 2 x 6 ohm resistor – component **R1**
- G)** 4 x 2.0 μ F capacitor – component **C2** and **C3**
- H)** 2 x 5.1 μ F capacitor – component **C1**
- I)** 2 x 6.8 μ F capacitor – component **C4**



J



K



L

- J)** Lepai LP40PA 40W Mini Plate Amplifier and Control Panel
- K)** Gold Insulated 5-Way Binding Post Terminal Cup
- L)** 2 x C-Note & C-Sharp Crossover Printed Circuit Board

Not Shown:

- 25-Pack #6 x 3/4" Pan Head Deep Thread Black Screws
- 10' 16 AWG 2-conductor Power Speaker Wire 1 ft. (Red/Black)

Enclosures:

- M) Front x 2
- N) Mater Back (R etched onto the inside surface) x 1
- O) Master Top (R etched onto the inside surface) x 1
- P) Slave Back x 1
- Q) Slave Top x 1
- R) Bottom x 2
- S) Sides x 4

Enclosure Assembly:

Note: If you purchased the Components Only version of the C-Sharp then the enclosure is not included. You can begin following these instructions on step 7. A detailed drawing of the enclosure is included at the end of this manual.

- 1) First, set the enclosure parts out on a flat level surface and ensure that all pieces are free of dust and debris. Separate the master speaker (with amplifier, right) panels and the slave speaker (no amplifier, left) panels into two separate piles. **Note:** the back and top panels of the master have the letter "R" etched into the inside surface for easy identification. The cutouts on the back panel of the master and slave enclosures are different, but very similar, make sure these do not get mixed up.
- 2) With the back panel of one enclosure lying flat, glue all mating surfaces of the bottom panel and one side panel and secure them to the back panel with clamps so that even pressure is applied to all glued surfaces. Using a damp rag or paper towel wipe away any glue squeeze-out on the outside of the enclosure and inside the rabbeted edge (excess glue on the inside is fine). Allow to dry according to the glue manufacturer's recommendations and remove clamps.



- 3) Next, glue all mating surfaces of the top panel and the other side panel and secure them in place with clamps so that even pressure is applied to all glued surfaces. Using a damp rag or paper towel wipe away any glue squeeze-out on the outside of the enclosure (excess glue on the inside is fine). Allow to dry according to the glue manufacturer's recommendations and remove clamps.

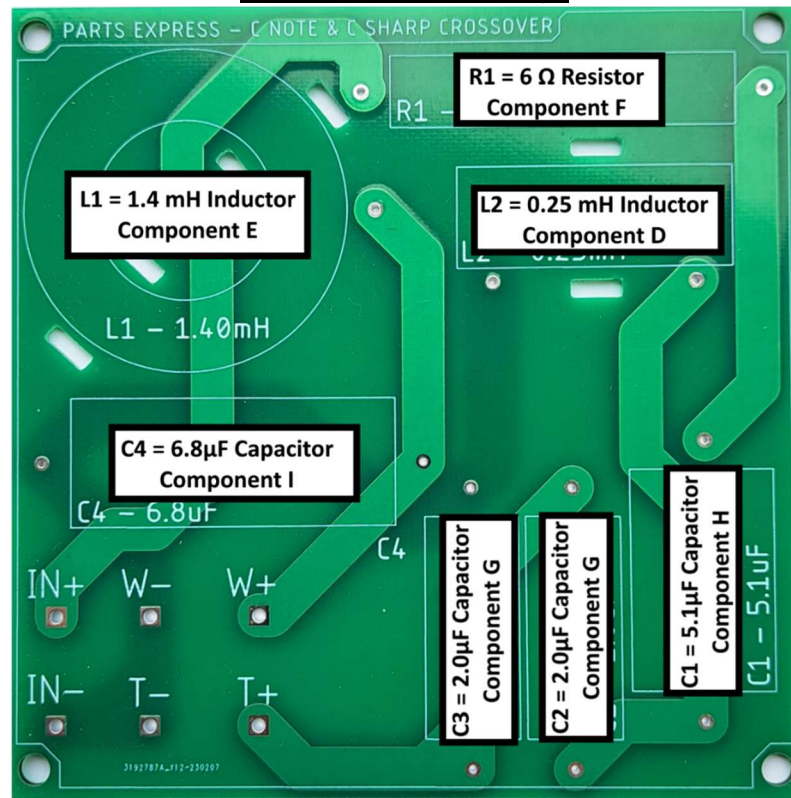


- 4) Finally, apply a thin layer of glue to the front edge of the enclosure. Set the front baffle in place on the glued edge. While ensuring all edges are even and square, position clamps to apply even pressure to all glued surfaces. Wipe away any glue squeeze-out on the outside of the enclosure. At this time double check that all edges are even and square (this cannot be adjusted once the glue is dry). Allow to dry according to the glue manufacturer's recommendations and remove clamps.

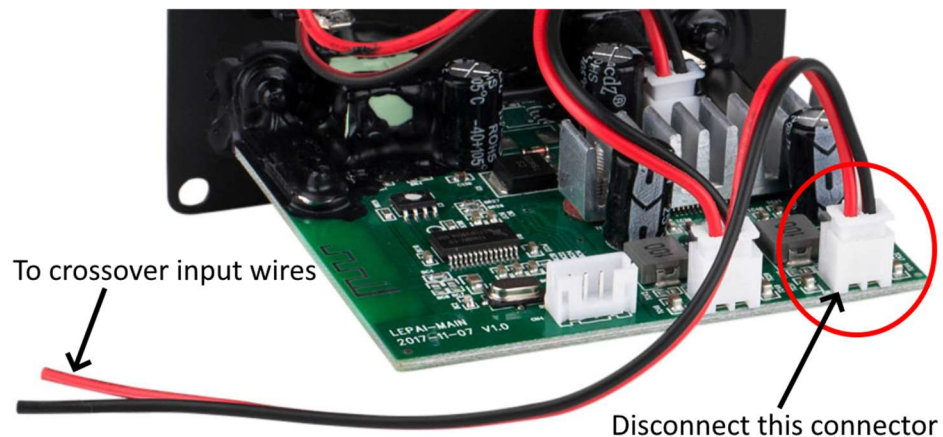


- 5) Repeat steps 2-4 for the other enclosure.
- 6) Sand and finish the enclosures to your liking. See our web page for examples.

Crossover assembly:



- 7) Begin by preparing the input, woofer, midrange, and tweeter wires. Cut one 8" piece of **16 AWG 2-conductor Wire Red/Black (N)** and label this wire "input". Then cut two more 12" pieces of **16 AWG 2-conductor Wire Red/Black (N)** and label these "woofer" and "tweeter".
- 8) Select either crossover for use in the master (right) speaker. Disconnect the 2-pin speaker wire connection from the **Lepai LP40PA amplifier (J)** and reserve this for use in step 12.



- 9) Strip approximately 1/2" of insulation from only one end of each of the wires you cut in **step #7** and make sure the strands are tightly twisted together. Using a soldering iron apply heat to the stripped ends and tin the bare copper as shown below.

Note: When tinning the ends only apply gentle pressure to the wire to prevent flattening the twisted strands. You want the twisted strands to remain round. Also, use just enough solder to flow into the strands holding them together, try to avoid big "blobs" of solder.



- 10) Remove the solder ring terminals from each of the **Binding Posts (P)**. Strip approximately 3/4" of insulation from the other end of the 8" "input" wire and make sure the strands are tightly twisted together. Insert the stripped ends through the small hole in two of the solder ring terminals and fold the wire tightly to secure it to the terminal. Using a soldering iron, apply heat to the terminals and solder the wire and terminal together. See images below.

Note: Make sure the solder flows onto both the wire and the terminal to avoid forming a "blob" on the surface (cold joint).



Wire wrapped through terminals



Wires soldered to terminals

- 11) Prepare the crossover components as follows for easy installation onto the C-Note Crossover Printed Circuit Board:

Capacitors: Straighten out the leads and then bend at a 90° angle about 1/8" from the capacitor.

Inductors: Straighten the leads and be sure that all enamel/insulation is removed where the leads penetrate the crossover board. Enamel can be removed by scraping with a razor or fine grit sandpaper.

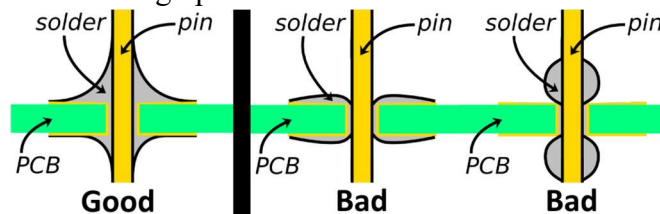
Resistors: Straighten leads and then bend at a 90° angle about 1/8" from the resistor.

- 12) The **C-Sharp Crossover Printed Circuit Board (Q)** is labeled to make it easy to locate and install the corresponding components and cables. Working from one side of the board to the other, insert the leads (or wires) through the corresponding holes in the crossover board and solder into place.

Tips:

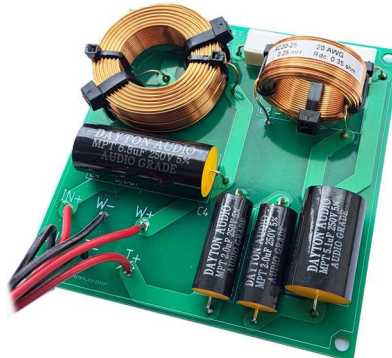
- 1) Elevate the board a couple inches so you will not have to deal with trimming the leads until the crossover is complete.
- 2) Apply a bed of glue beneath each component before placing them on the board to eliminate the possibility of rattles or buzzing from the crossover.
- 3) Notches are cut beside each inductor so you can zip tie them into place to help support their weight and secure them to the crossover board.
- 4) Tin the tip of your soldering iron with a bit of solder before each connection to prep the joint and optimize heat transfer.
- 5) When soldering components to the board, use the side of the soldering iron tip to apply heat to both the solder pad and lead/wire at the same time. This will help ensure that the solder adheres properly.
- 6) If you have difficulty inserting the tinned speaker wires into their corresponding holes, apply heat to the wire while inserting it into the board.
- 7) Clean the tip of your soldering iron often with a wet sponge or brass sponge to remove oxidation. A clean and shiny tip ensures optimal heat transfer for easy soldering.

- 13) Carefully inspect each solder point to ensure that the solder has flowed onto the lead/wires and the solder pads. Each solder pad is plated through-hole (PTH) type, so make sure that you inspect the front and back sides of the board. Each connection on the front and back of the board should have solder covering each pad and flowing up the lead/wire. Reheat and correct any bad solder joints.



Trim all excess leads and wire from the back side of the crossover board using flush cutters (preferred) or wire cutters.

- 14) Secure the inductors in place by looping the included black 11" cable ties through the holes provided near each inductor. Tighten cable ties securely and trim off excess.



Final Assembly:

- 15) Insert crossover through woofer hole of both enclosures and glue crossover to the bottom of the enclosure (polyurethane glue, high temperature hot glue gun, or epoxy is recommended). Make sure the crossover with the 2-pin amplifier output connection is installed in the master (right) speaker enclosure. Ensure all crossover components are securely held in place to prevent rattles.

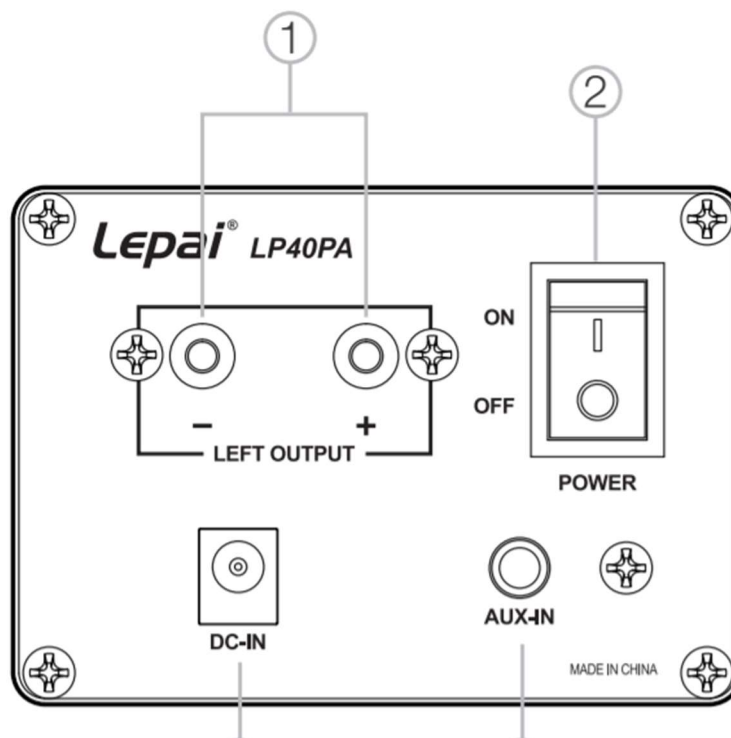


- 16) Port installation is simple. Slide the adjustable end of the port onto the flanged end and glue in place at the desired length using any glue that is acceptable for use on plastic (super glue, plastic cement, hot glue, etc...). Insert the assembled port into the enclosure and screw into place using the included #6 wood screws. The recommended port length is 7". The length can be adjusted to your taste, a shorter port will result in slightly less bottom end with a tighter punch.
- 17) Install the Gold Insulated 5-Way Binding Post Terminal Cup in the slave speaker enclosure using the included #6 wood screws, and connect the input wires from the crossover while observing polarity (positive = red, negative = black)
- 18) Plug one end of the 4-pin control panel data cable into the connector on the back of the control panel (this connector is keyed and will only go in one way, do not try to force the connector into place). Double check that the data cable is long enough to reach from the opening on the top of the master (right) enclosure to the amp cutout in the back (these wires may need to be extended, be careful and extend the wires one at a time to keep from getting them mixed up, if necessary). Press the control panel into the opening in the top of the master (right) speaker enclosure. This should be a tight press fit. This can be glued into place to ensure there are no leaks, but it should not be necessary.

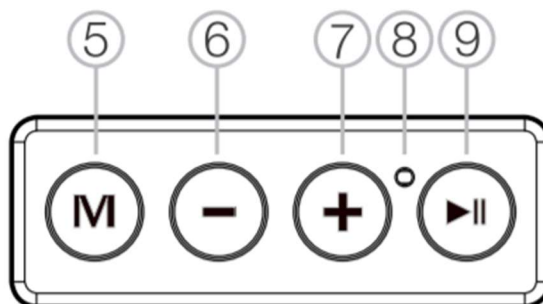
- 19) Set the included gasket in place on the back of the LP40PA plate amplifier. Position the LP40PA amplifier module near the simplifier cutout in the back of the master (right) speaker. Plug the 2-pin speaker wire connection and the 4-pin control panel data cable into the appropriate connectors on the LP40PA amplifier board (these connectors are keyed and will only go in one way, do not try to force the connector into place).
- 20) Insert the LP40PA plate amplifier into the cutout in the back of the master (right) speaker keeping the screw holes in the gasket lined up with the screw holes in the amplifier plate. Using 4 of the included #6 wood screws, screw the amplifier securely into place just until tight, being careful not to strip out the holes (a power drill is not recommended).
- 21) In both enclosures, connect tweeter wires to tweeter terminals while observing polarity and set tweeters in place. Using a screwdriver, secure the tweeters with using the included #6 wood screws, just until tight, being careful not to strip out the holes (a power drill is not recommended).
- 22) In both enclosures, connect woofer wires to woofer terminals while observing polarity and set woofer in place. Using a screwdriver, secure woofer with using the included #6 wood screws, just until tight, being careful not to strip out the holes (a power drill is not recommended).
- 23) You are now ready to enjoy your finished C-Sharp powered speaker system.



LP40PA Plate Amplifier Operating Manual:



Front View of Amplifier



Control Panel

AMP PANEL

1. Output for left speaker
2. Power switch
3. Power input
4. Auxiliary input

REAR PANEL

5. Mode
6. Press - Volume Down / Hold - Skip Back
7. Press - Volume Up / Hold - Skip Forward
8. LED status indicator
9. Play/Pause

AMPLIFIER AND CONTROL PANEL INSTALLATION

The plate amp panel requires a cutout 2.75" x 1.75" (70 x 45 mm) with at least 2.625" (67 mm) depth. Mount the plate to your right speaker cabinet, and connect the included output leads to the terminals of your speaker or crossover network, observing correct polarity.

The control panel requires a cutout approximately 2.6" x 0.79" with at least 1" depth. The control panel is press-fit, and uses no mounting hardware. Different materials will have various degrees of "give" or resistance to the pressure fit of the panel. Therefore, you may wish to cut a test hole(s) in a piece of scrap material to ensure a proper fit, and only cut the hole in your finished cabinet once this has been determined.

Connect the control panel to the amp panel using the included leads, then press the control panel into place.

CONNECTING YOUR SPEAKERS

With the power turned OFF, use high quality wire for the connection between the right and left speakers. For distances up to 10 feet, conventional 18AWG wire is acceptable. For longer runs, heavier wire should be used. For proper performance please observe correct polarity.

BLUETOOTH CONNECTION

Turn the power switch ON. The speaker will enter pairing mode, and the LED indicator will flash blue quickly. Open the Bluetooth menu on your device and select "LP40PA". You will hear two beeps when pairing is complete, and the LED will remain solid blue.

AUX CONNECTION

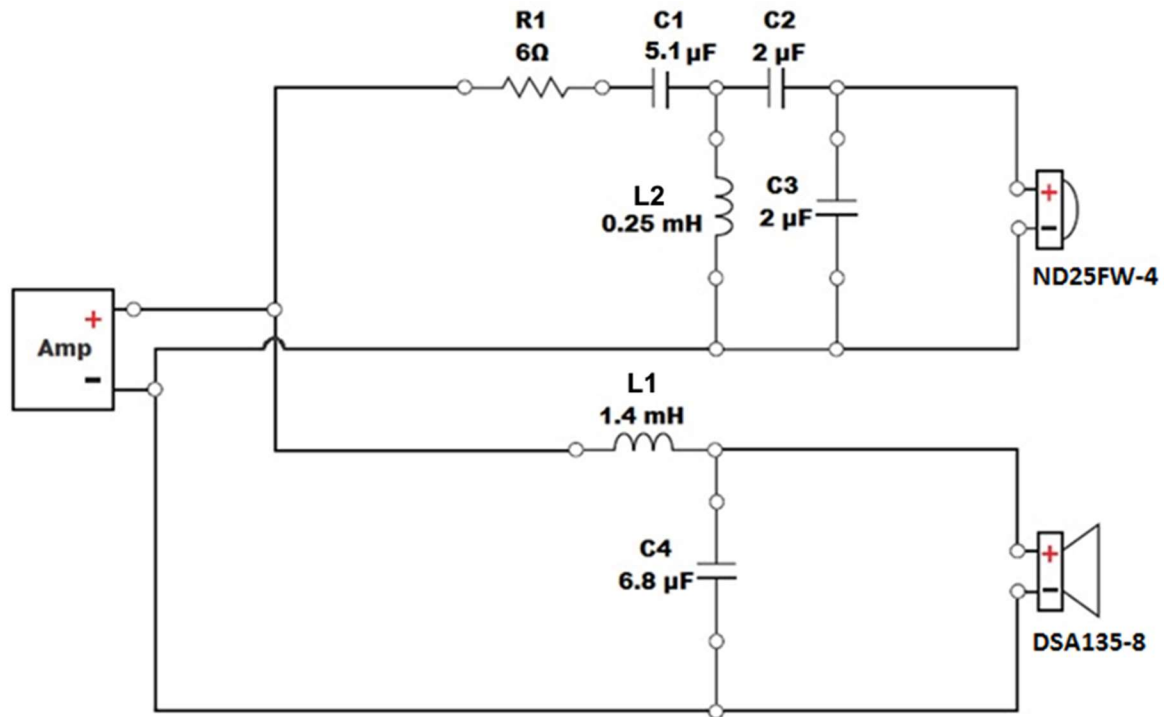
Plug your device into the AUX jack on the right speaker using a 3.5 mm stereo cable (not included). The LED indicator will light solid red to indicate AUX connection.

PLEASE NOTE: for the best sound quality in Bluetooth or AUX mode, we recommend that your device's volume level be set no higher than 90%.

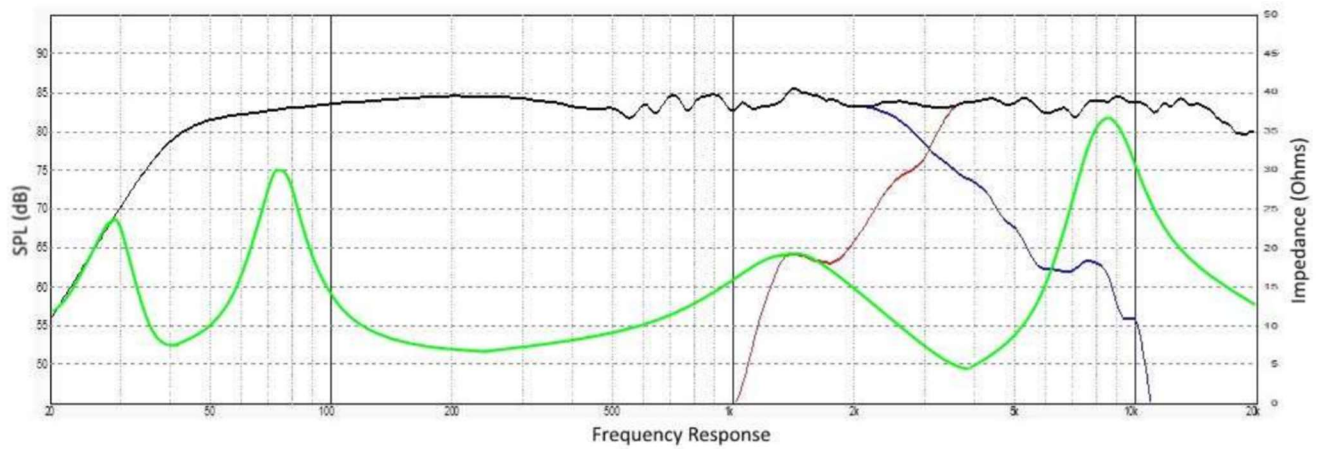
SPECIFICATIONS

Power Output:	20W x 2 RMS; 40W x 2 peak
Minimum impedance:	4 ohms
Power input:	18VDC, 2A (AC adapter included)
Frequency response:	20 - 20,000 Hz
THD + N:	<0.7%
Bluetooth version:	4.2
Bluetooth range:	Up to 30 meters

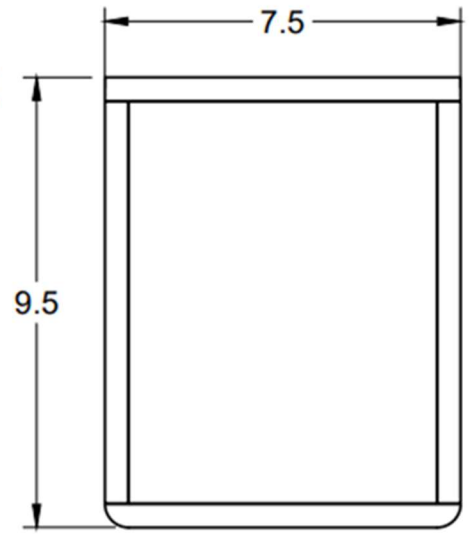
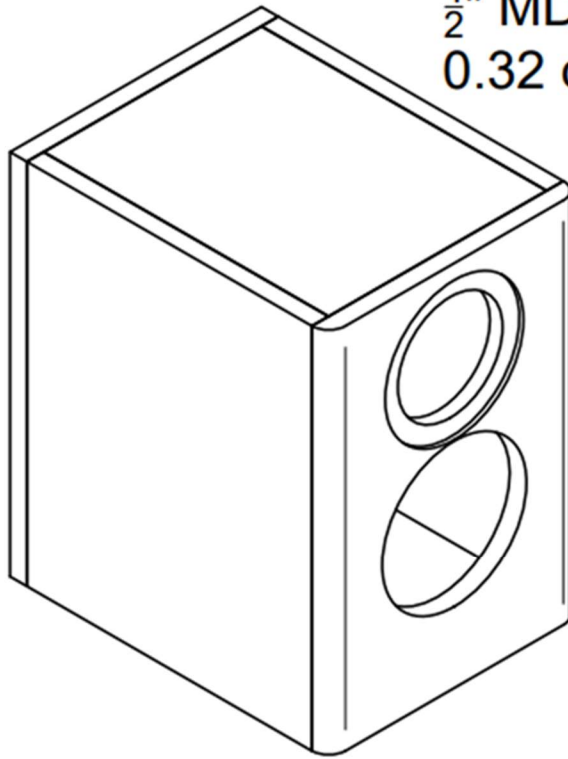
C-Note Crossover Schematic:



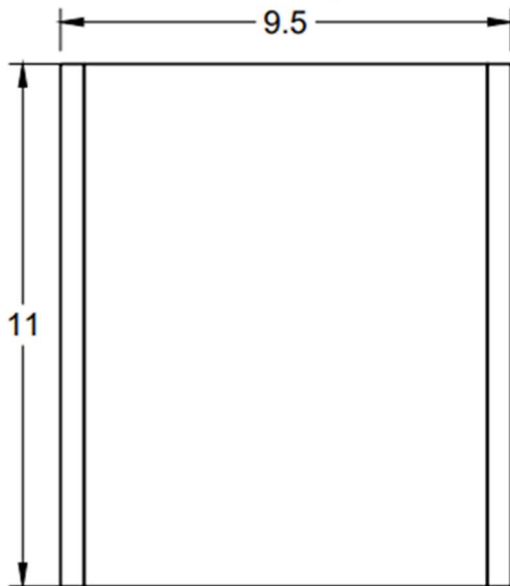
Measured Frequency Response with Impedance:



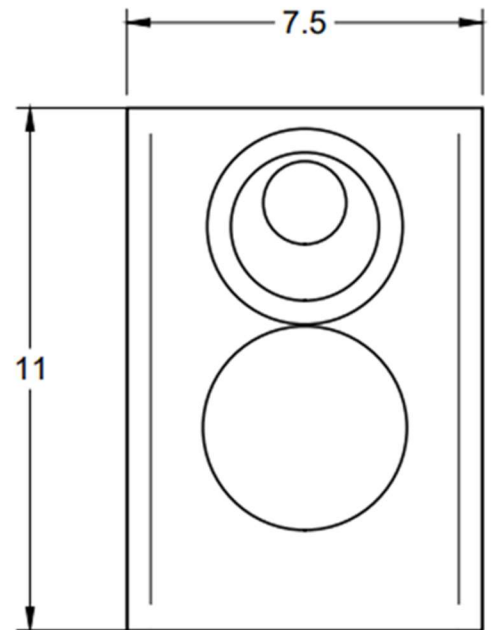
$\frac{1}{2}$ " MDF
0.32 cubic feet



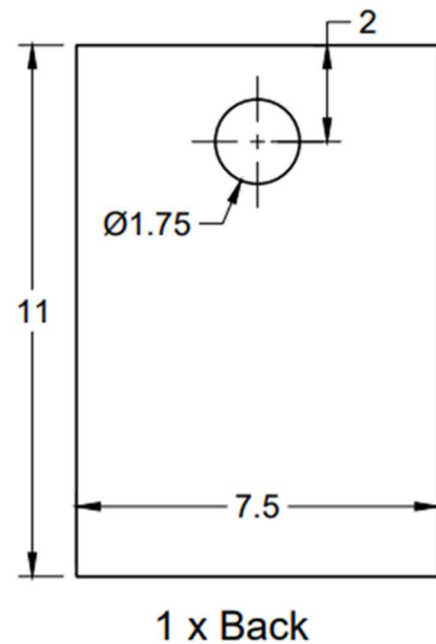
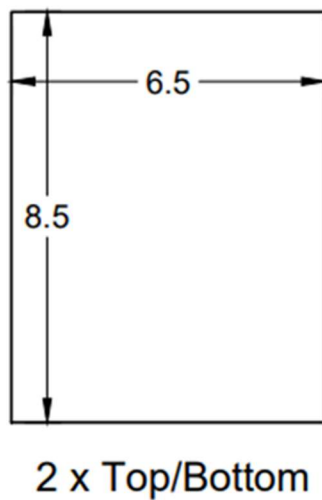
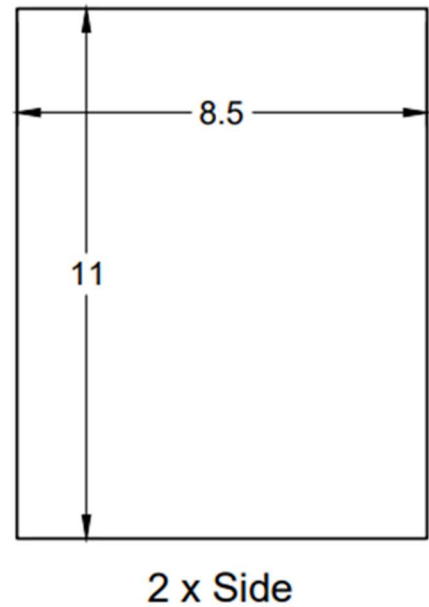
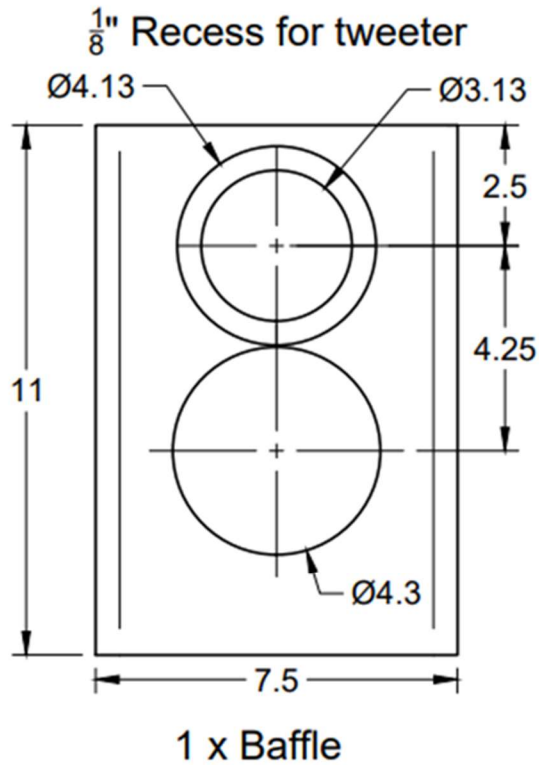
Top/Bottom



Left/Right



Front



Amplifier Installation (Master): A 1-3/4" H x 2-3/4" W cutout is required to install the amplifier module. Make sure that the amplifier is located where it will not interfere with the crossover.

Control Module Installation (Master): A 25/32" H x 2-19/32" W cutout is required to install the control module.

Binding Post Terminal Cup Installation (Slave): A 2-1/8" H x 2-7/8" W cutout is required for the terminal cup.