

## Solstice Mass Loaded Transmission Line Tower Speaker Kit

Thank you for purchasing the Solstice speaker kit! With this kit, you don't have to be a seasoned speaker builder to enjoy reference-quality speaker performance. Designed and fine-tuned by expert designer Jeff Bagby, the Solstice speaker features exceptional coherence, low distortion, and fantastic bass extension. The stylish CNC-cut cabinet makes it easy to build a furniture-grade piece that you'll be proud to display.

### Suggested tools and consumables:

Drill	Rag or paper towels
Screwdriver	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)
Wire stripper/crimper	Wrench/pliers

### 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 or binding posts may be substituted with parts of equal or higher quality depending on stock.

### Drivers:



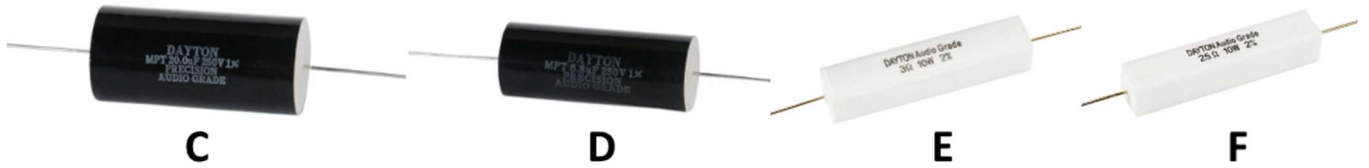
**A**



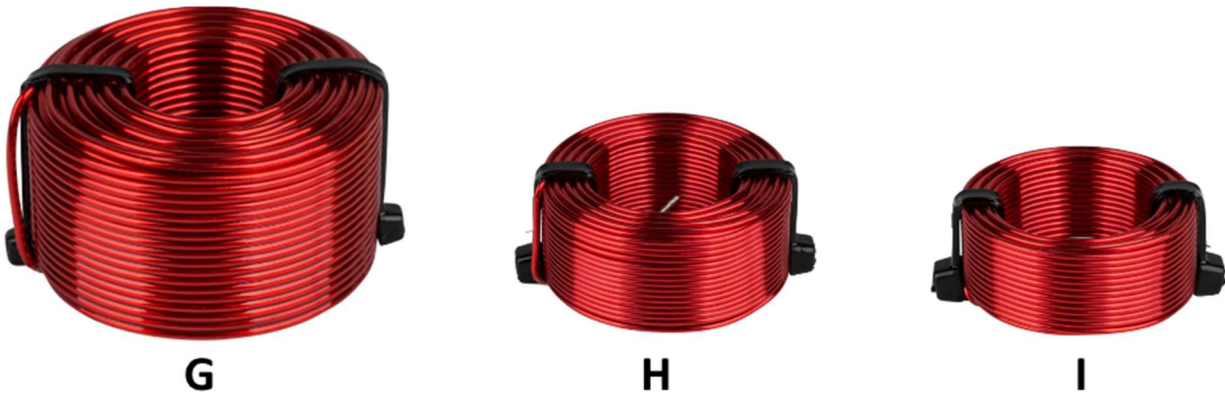
**B**

- A) Morel CAT 308 1-1/8" Soft Dome Tweeter
- B) 2 x Morel TiCW 638Nd Titanium Series Hybrid Cu 6" Woofers 8 Ohm

## Crossover Components:

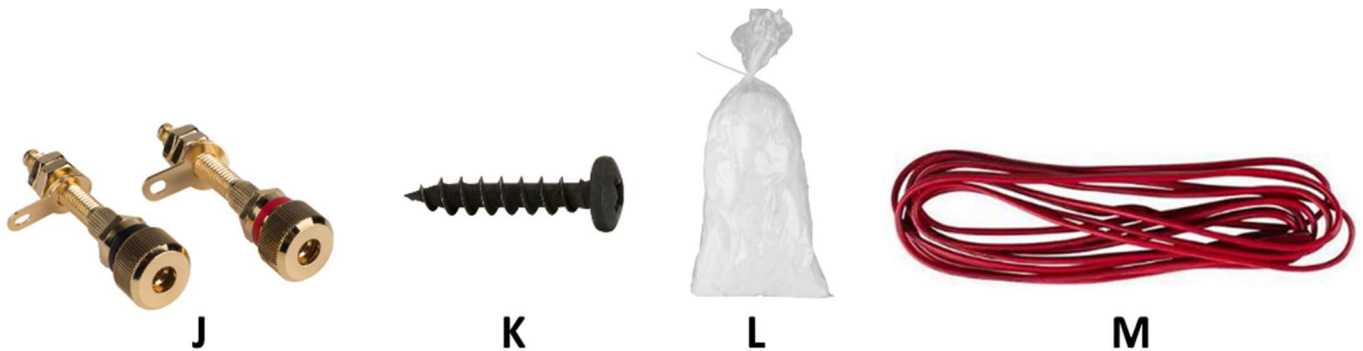


- C) Dayton Audio PMPC-20 20uF 250V Precision Audio Capacitor
- D) Dayton Audio PMPC-6.8 6.8uF 250V Precision Audio Capacitor
- E) Dayton Audio DNR-4 4 Ohm 10W Precision Audio Grade Resistor
- F) Dayton Audio DNR-25 25 Ohm 10W Precision Audio Grade Resistor



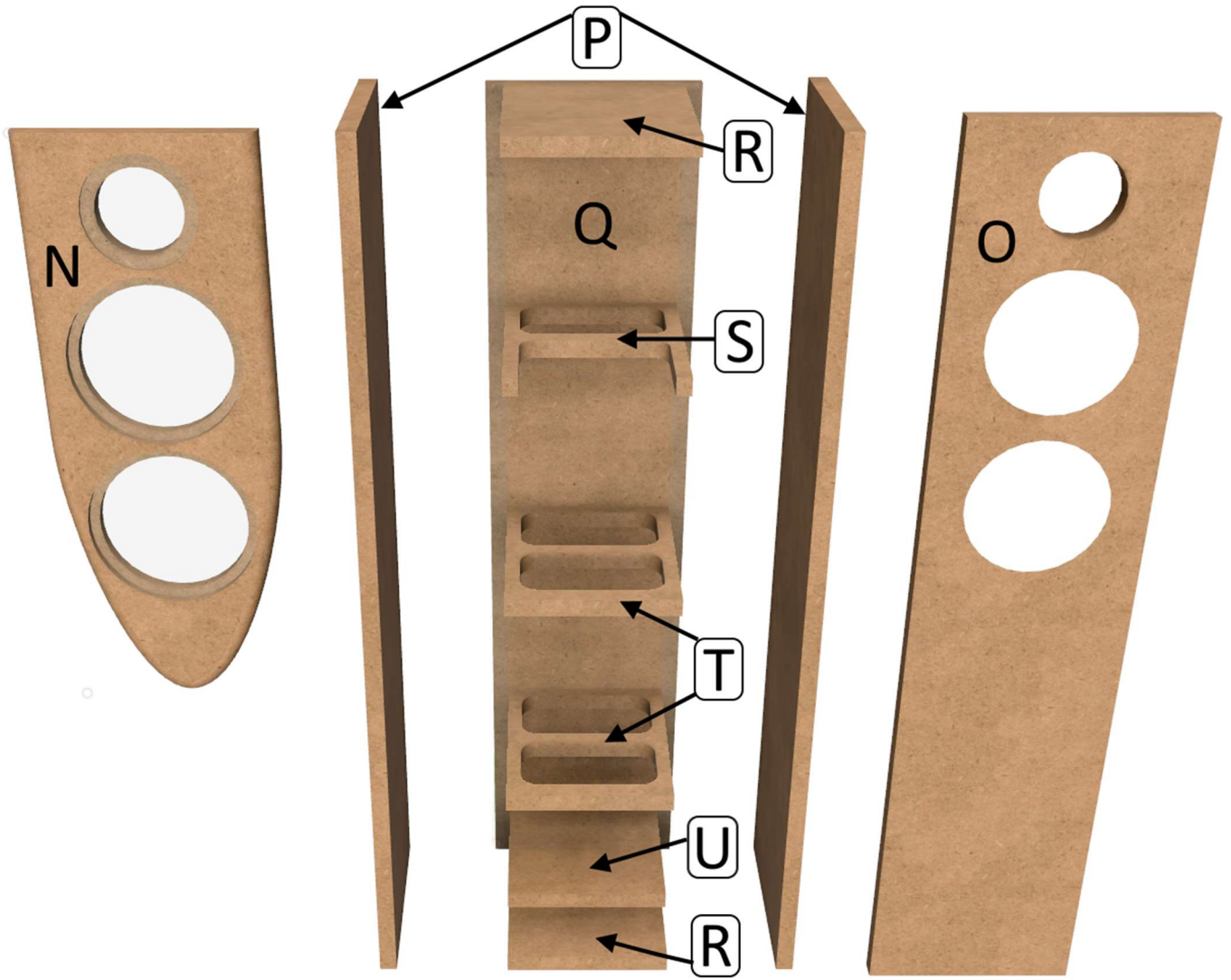
- G) Dayton Audio 1.0mH 14 AWG Perfect Layer Inductor Crossover Coil
- H) Dayton Audio 0.60mH 18 AWG Perfect Layer Inductor Crossover Coil
- I) Dayton Audio 0.20mH 18 AWG Perfect Layer Inductor Crossover Coil

## Wire, Hardware, and Acousta-Stuf:



- J) Dayton Audio BPA-38G HD Binding Post Banana Jack Pair Gold
- K) #6 x 3/4" Pan Head Deep Thread Black Screws 25-Pack
- L) Acousta-Stuf Polyfill 1 lb. Bag Speaker Cabinet Sound Damping Material
- M) 16 AWG 2-conductor Power Speaker Wire 12 ft. (Red/Black)

Enclosure Components:

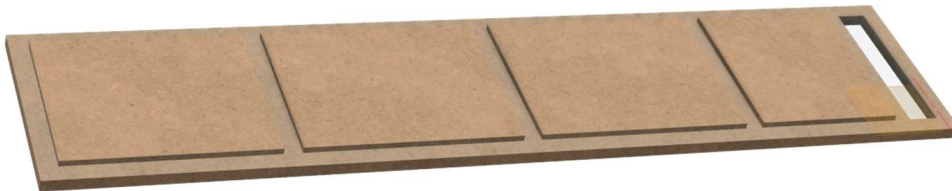


- N) Decorative Second Baffle
- O) Main Baffle
- P) 2 x Sides
- Q) Back
- R) Top and Bottom (identical pieces)
- S) Brace 1
- T) Brace 2 and Brace 3 (identical pieces)
- U) Port

## Enclosure Assembly:

**Note:** Due to the internal bracing you may have difficulty reaching the bottom of the enclosure once assembled. We recommend that you install the binding posts, wired crossover network, and Acousta-Stuf before gluing the baffle in place.

- 1) First, before gluing anything, do a dry fit of the enclosure to familiarize yourself with the parts and assembly. This will also give you a chance to ensure that all pieces have been cut properly.
- 2) Next, set the enclosure parts out on a flat level surface and ensure that all pieces are free of dust and debris.
- 3) Start with the **Back panel (Q)** lying flat with the dadoed side up, as shown.



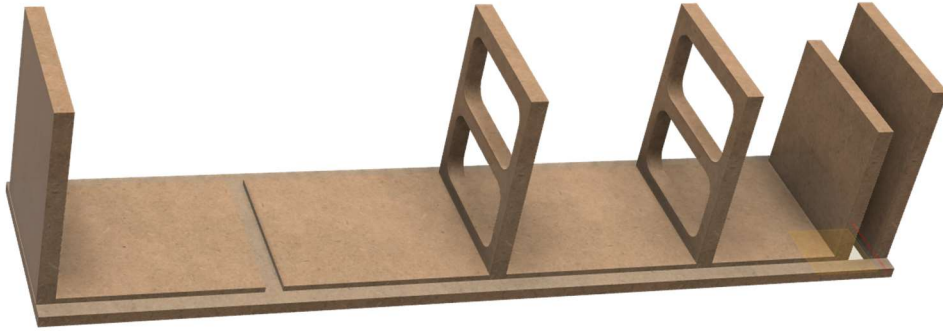
- 4) Apply a small bead of glue to the inside of the rabbeted edges of all joining surfaces of the **Back panel (Q)** and **Top and Bottom panels (R)**. Then set in place applying enough pressure to ensure glue is spread through each joint (some glue squeeze-out can be expected).



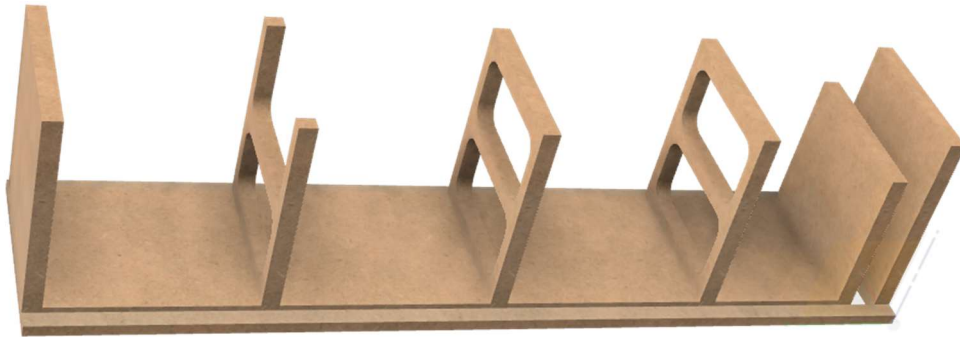
- 5) Apply a small bead of glue to the inside of the rabbeted edges of all joining surfaces of the **Back panel (Q)** and **Port (U)**. Then set in place applying enough pressure to ensure glue is spread through each joint (some glue squeeze-out can be expected).



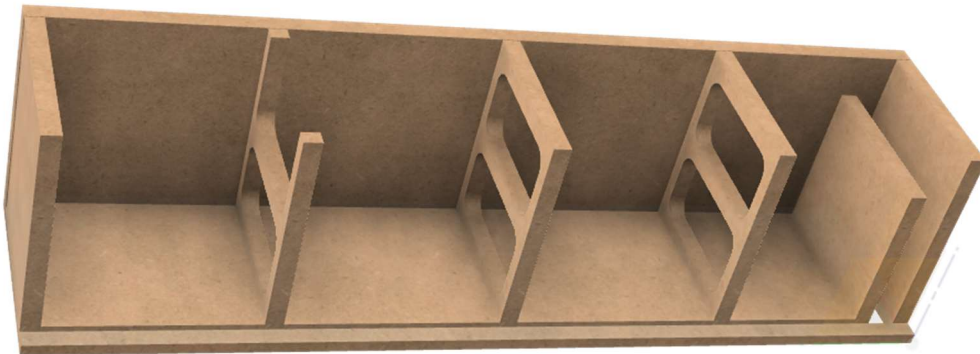
- 6) Apply a small bead of glue to the inside of the dadoed edges and all joining surfaces of the **Back panel (Q)** and **Brace 2 and Brace 3 (T)**. Then set in place applying enough pressure to ensure glue is spread through each joint (some glue squeeze-out can be expected).



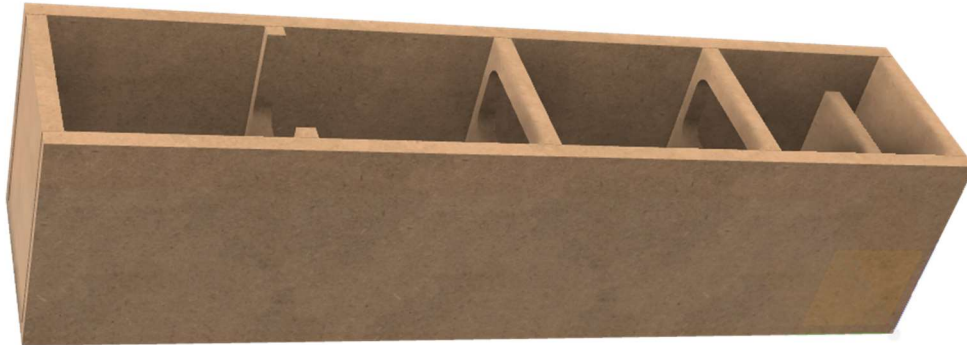
- 7) Apply a small bead of glue to the inside of the dadoed edge and all joining surfaces of the **Back panel (Q)** and **Brace 1 (S)**. Then set in place applying enough pressure to ensure glue is spread through each joint (some glue squeeze-out can be expected).  
**Note:** Ensure that the open end of Brace 1 is pointing away from the back panel (as shown below). This is open to ensure ample clearance for the woofers.



- 8) Apply a small bead of glue to the inside of the rabbeted edge and all joining surfaces of the **Back/Brace assembly** and **one Side panel (P)**. Then set in place applying enough pressure to ensure glue is spread through each joint (some glue squeeze-out can be expected).



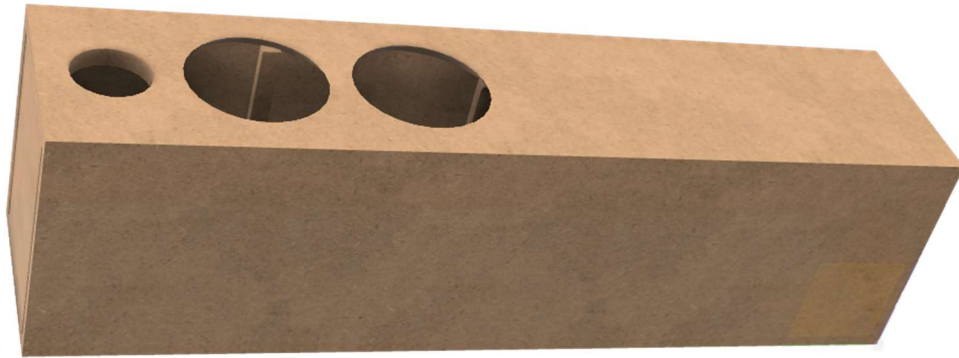
- 9) Apply a small bead of glue to the inside of the rabbeted edge and all joining surfaces of the **Back/Brace assembly** and the **other Side panel (P)**. Then set in place applying enough pressure to ensure glue is spread through each joint (some glue squeeze-out can be expected).



- 10) At this point we recommend clamping this portion of the enclosure and allowing it to dry before continuing. When clamping the enclosure ensure that the **Port, Braces, Top, and Bottom** panels are all perpendicular to the **Back Panel**. Apply ample pressure to ensure glue is spread evenly through each joint (some glue squeeze-out can be expected). Visually inspect all seams to make sure they are all flush and closed tightly, you may need to relocate clamps (or add more clamps) to get a perfect fit.
- 11) Wipe away any glue squeeze-out on the outside of the enclosure with a damp rag or paper towel (excess glue on the inside is fine). Allow to dry according to the glue manufacturer's recommendations and remove clamps.
- 12) This is the best time to layout the binding post location, install the crossovers (see crossover assembly in steps **14-24** below), and add Acousta-Stuf:
- Lay out the **Dayton Audio BPA-38G HD Binding Posts (J)** in a convenient location on the back panel. Make sure that they are located in an open space on the back panel and will not interfere with the bracing. Standard spacing for use with dual banana plugs is 3/4" on center. Drill a 1/4" hole for each binding post. When you are ready to install the binding posts remove all solder lugs, nuts, and washers then tap into place with a mallet or hammer (use a scrap wood block to protect the finish if using a hammer). Secure the binding posts with one nut each and tighten with a 10 mm nut driver or socket.
  - When installing the crossover (see steps **12-24** below for crossover assembly), make sure the wires for the woofers and tweeter are routed to the top of the cabinet so they can be easily reached once the baffles are in place. To connect the input wires to the binding posts, add a lock washer, solder ring terminal (connected to the input wires), lock washer, and then nut. Be sure to observe polarity when making these connections. Tighten each nut with a 10 mm socket. Inspect the wire routing and secure any wires that may be touching the enclosure walls or bracing with cable ties, hot glue, or just wrapped in Acousta-Stuf (or any other damping material).
  - The Acousta-Stuf needs to be teased when you remove it from the package to create a light, fluffy, and consistent texture. Ideally you want to loosely fill the entire enclosure. Make sure that the space below **Brace 3** (bottom brace) is very loosely filled so airflow through the port will not be restricted. Also, make sure there is some open space directly

behind the woofers to allow proper airflow for cooling (you can also easily install the Acousta-Stuf in the top of the enclosure once the cabinet is complete).

- 13) After all wiring and damping materials are installed inside the cabinet, you are ready to install the baffle. Apply a small bead of glue to all joining surfaces of the **Back/Brace assembly** and the **Main Baffle (O)**. Then set in place applying enough pressure to ensure glue is spread through each joint (some glue squeeze-out can be expected). Apply ample pressure with clamps to secure the baffle into place. Visually inspect all seams to make sure they are all flush and closed tightly, you may need to relocate clamps (or add more clamps) to get a perfect fit. Wipe away any glue squeeze-out on the outside of the enclosure with a damp rag or paper towel (excess glue on the inside is fine). Allow to dry according to the glue manufacturer's recommendations and remove clamps.



**Important Note:** Make sure that the side of the baffle with the chamfers around the woofer cutouts is facing the inside of the enclosure.



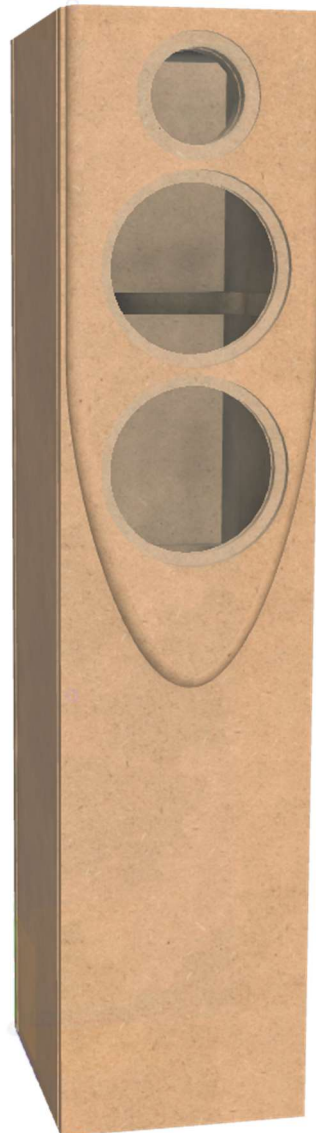
Chamfered cutouts must be inside the enclosure

- 14) You may want to apply your desired finish to the enclosure and **Decorative Second Baffle (N)** now, especially if you want a 2-tone finish (such as a veneered cabinet with a painted Decorative Second Baffle). See the [Solstice product page](#) for finishing ideas or inspiration, you can find many customer submitted images with various finishes in the "Reviews" section.
- 15) Finally, apply a thin layer of glue to the back side of the back side of the **Decorative Second Baffle (N)**. You will want to make sure that the glue is spread very thin and almost completely covers the entire surface, however a little gap around the outside edge is fine since you can expect the glue to spread a little once clamped into place. Then carefully set in place on the **Main Baffle (O)** and apply even pressure to ensure glue is spread through the entire surface. Clamp securely and use a wet cloth or paper towels to wipe away any excess glue that squeezes out. Make sure to protect any finished surfaces from the jaws of the clamps.

**Note:** Depending on the glue, you may find that the glue acts as a lubricant between the two baffles and makes it difficult to keep everything properly aligned (this applies to most wood glues). In this case you can apply a thin layer of table salt to the glued surface to keep the baffle from sliding around. The salt will dissolve and should not compromise the overall strength of the joint.

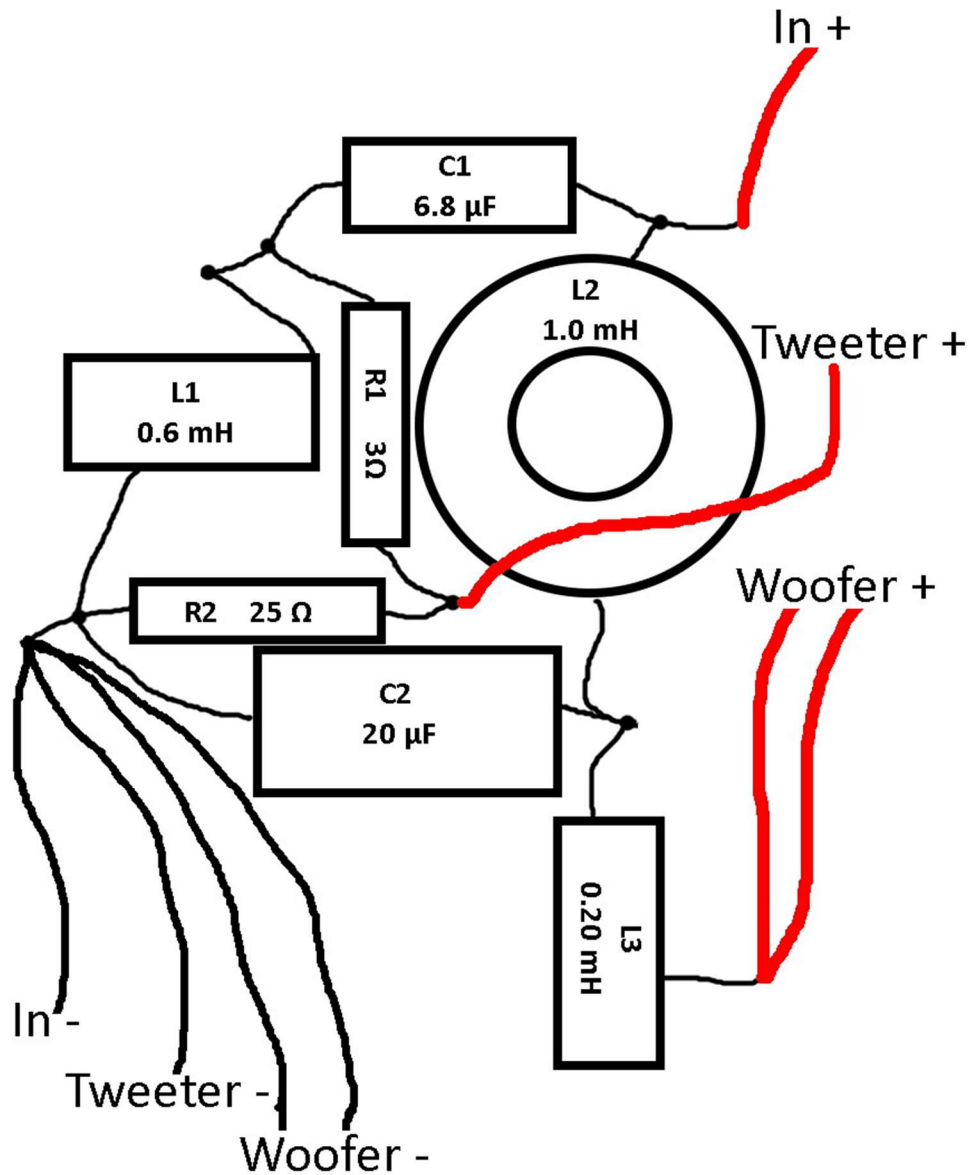


**16)** Allow everything to dry according to the glue manufacturer's recommendations and remove clamps. The enclosure is now complete!





### Crossover Assembly:



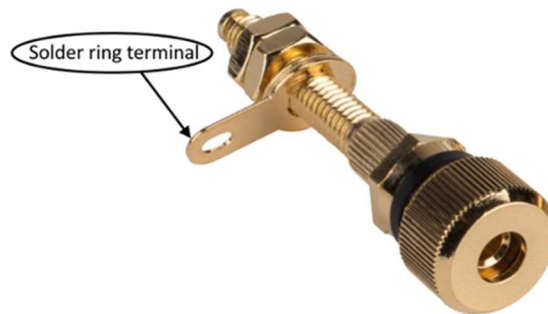
Point-to-Point Wiring Diagram

17) Arrange the components as illustrated in the point-to-point wiring diagram above so the leads can be connected together as shown. Take careful note of the component type and the value of the component.

**Note:** The crossover schematic is provided at the end of this assembly guide.

18) Connect the leads of the components as shown in the diagram by twisting them together or creating interlocking "hooks" with the leads. Double check your layout to ensure all components are in the proper location and connections are correct.

- 19) With a hot soldering iron, apply solder to the connections between components. Heat the junctions evenly and verify that the solder flows into the connections rather than forming a "blob" on the surface (cold joint).
- 20) Cut two pieces of **16 AWG 2-conductor Speaker Wire (Red/Black) (M)** approximately 24" – 26" in length and label both of these wires "woofer". Strip 3/4" – 1" of insulation from one end of each wire. Solder the red wires to the output of the crossover network labeled "Woofer +" in the point-to-point wiring diagram.
- 21) Next cut another piece of **16 AWG 2-conductor Speaker Wire (Red/Black) (M)** approximately 24" – 26" in length and label this wire "tweeter". Strip 3/4" – 1" of insulation from one end of this wire. Solder the red wire to the output of the crossover network labeled "Tweeter +" in the point-to-point wiring diagram.
- 22) Cut one final piece of **16 AWG 2-conductor Speaker Wire (Red/Black) (M)** approximately 12" – 14" in length and label this wire "input". Strip 3/4" – 1" of insulation from one end of this wire. Solder the red wire to the output of the crossover network labeled "Input +" in the point-to-point wiring diagram.
- 23) Solder all the stripped black ends to the negative (-) connection at one time. This connection may require a lot of heat to properly wick the solder, so take your time and be patient when making this connection.
- 24) Finally, remove the nuts and solder ring terminals from the **Dayton Audio HD Binding Posts (J)**. Strip approximately 3/4" of insulation from the other end of the "input" wire and make sure the strands are tightly twisted together. Insert the stripped ends through the small hole in 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.



Wire wrapped through terminals



Wires soldered to terminals

### **Final Assembly:**

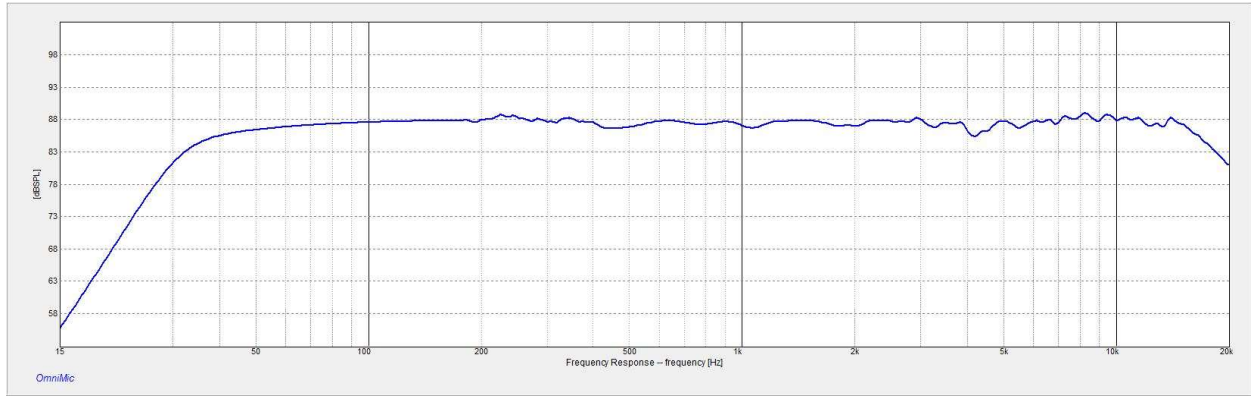
**Note:** We recommend that you temporarily wire everything up at this point to ensure all parts (crossovers and drivers) are performing properly.

- 25)** At this point we recommend that the binding posts, crossover, and Acousta-Stuf is already installed. If not, please refer to step **12** above before continuing.
- 26)** Connect the wires labeled "woofer" to the 2 **Morel TiCW 638Nd 6" Woofers (B)** using solder or crimp on solderless disconnect terminals. Carefully set the woofers into place and use six **#6 x 3/4" Pan Head Deep Thread Black Screws (K)** to secure the drivers (a power drill is not recommended).
- 27)** Connect the wires labeled "tweeter" to the **Morel CAT 308 1-1/8" Soft Dome Tweeter (A)** using solder or crimp on solderless disconnect terminals. Carefully set the tweeter into place and use three **#6 x 3/4" Pan Head Deep Thread Black Screws (K)** to secure the driver (a power drill is not recommended).

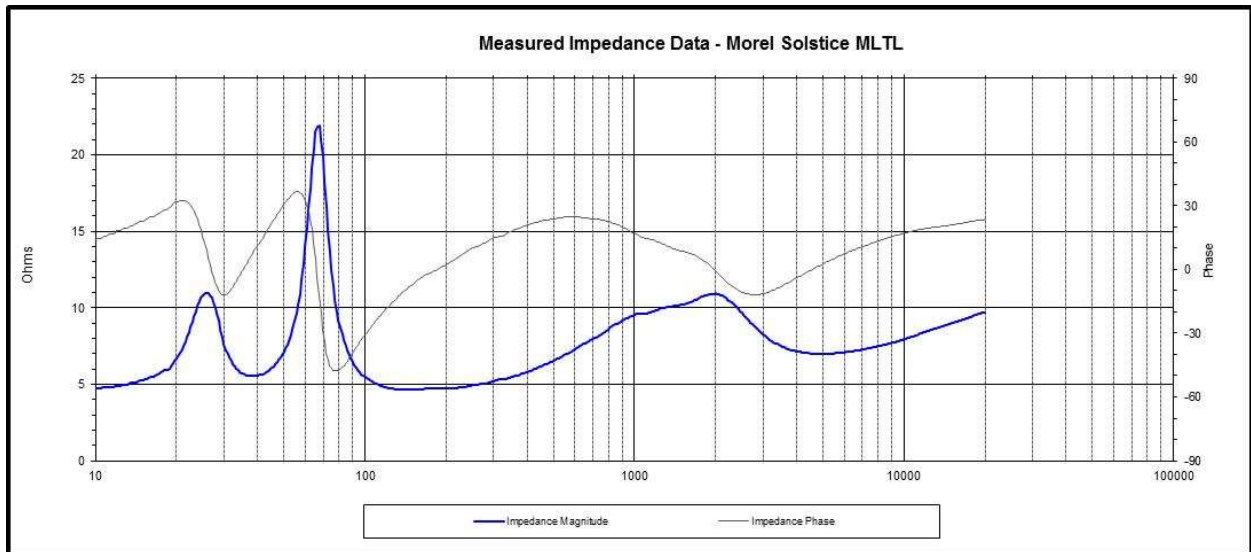
**You are now ready to enjoy your finished Solstice Tower speaker!**



### Solstice On-Axis Frequency Response:



### Solstice Final Impedance:



### Solstice Crossover Schematic:

