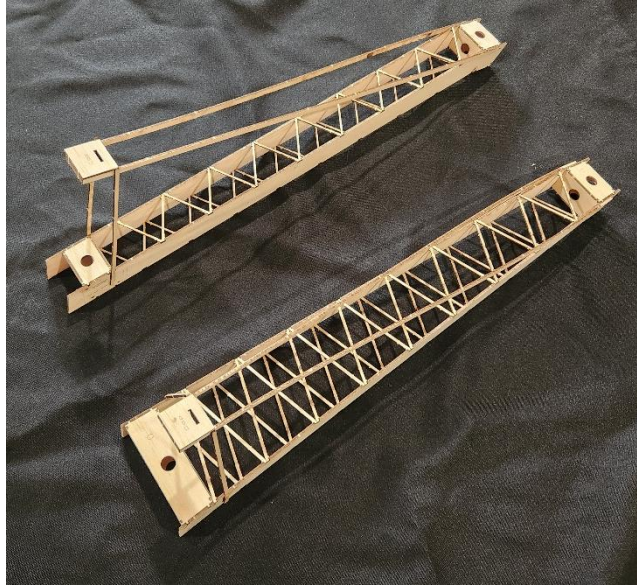


EZ Boomi 2027 C Build Manual

By J&H Aerospace ↗

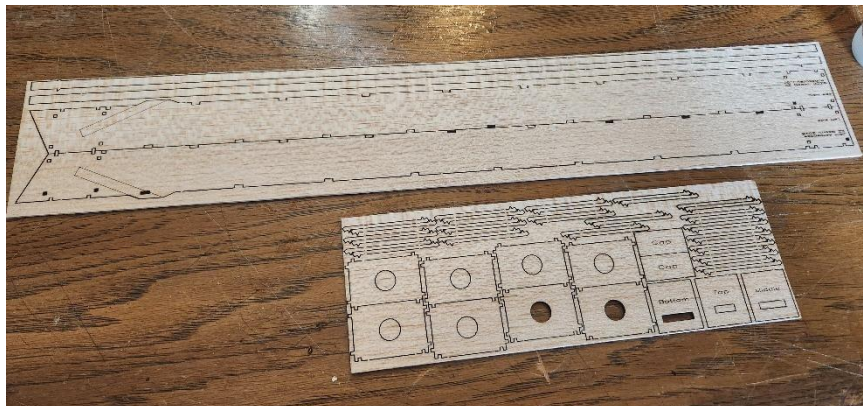
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Self jiggling Boomilever For Science Olympiad Division C



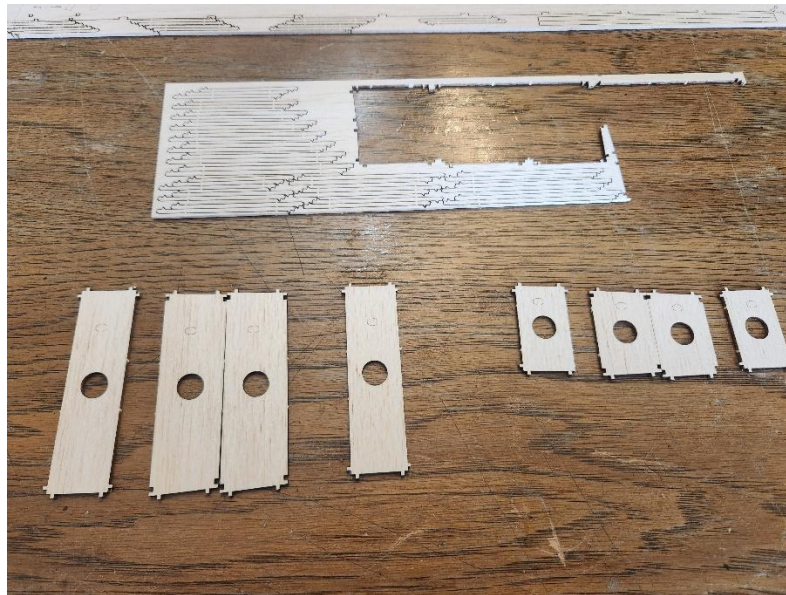
Tools/materials required: CA glue (or Duco/Ambroid/Sigment), razor blades, sandpaper.

Contents: 3 Sheets of 1/16" laser cut balsa parts (B and C cross piece sheets)



Your boomilever is self-jigging, however it does require careful assembly. The following instructions will help you to create an accurate structure. We used CA on our build, however if you use a few weights and gages, you can assemble a lighter device using Duco cement or thinned wood glue.

Carefully separate the Div C end box parts from the parts sheet. Note that these parts are tapered and must be installed so as to match up to the taper of the boom. Be **EXTREMELY** careful to avoid breaking out the cross pieces as you do this. They must be kept in order or you will have a difficult time sorting out their positions. Consider taping the parts sheet to keep them from breaking loose.



Match up a pair of one of each type of box side and test fit them together. Clean out any burrs which prevent a proper fit, and then glue them together perpendicular to each other, making sure to match up the tabs.

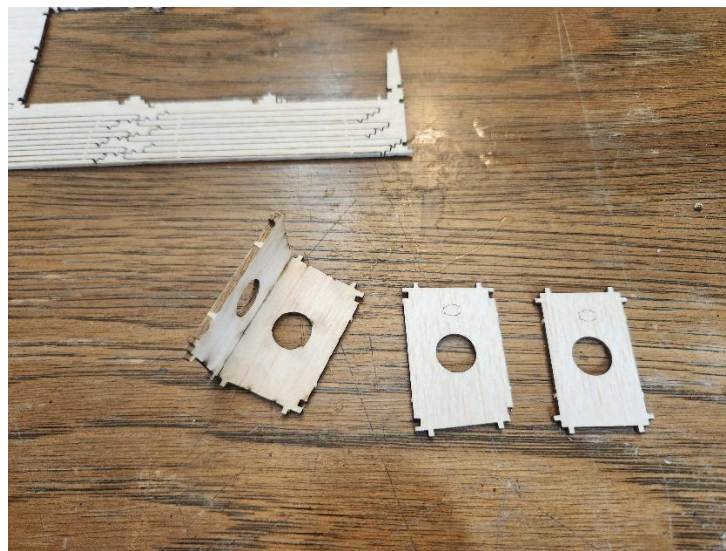


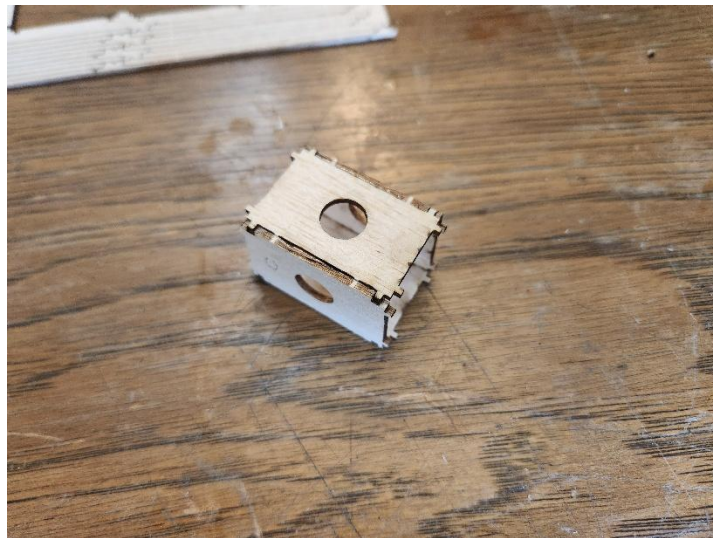
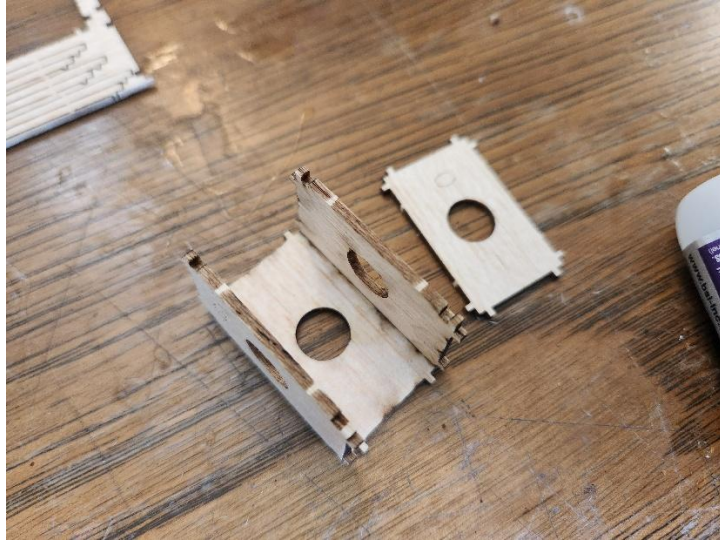
Continue assembling to make the rest of the box.





Assemble a second box using the above steps.



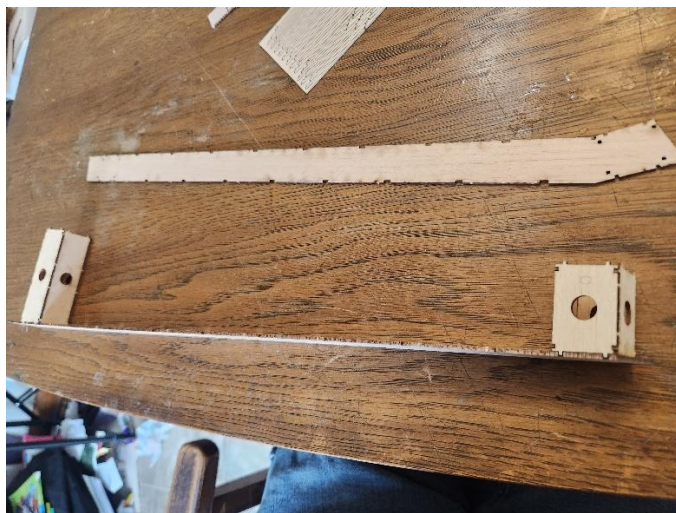
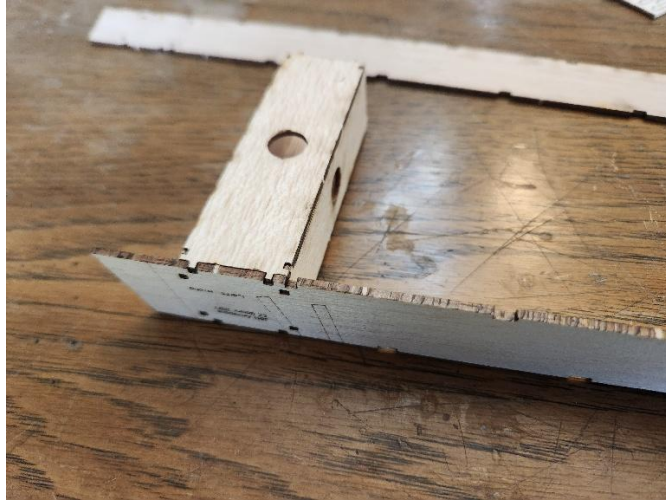


Remove the two boomilever compression section sides from the parts sheet. Clean out all the holes in them to allow proper fitment of the parts.

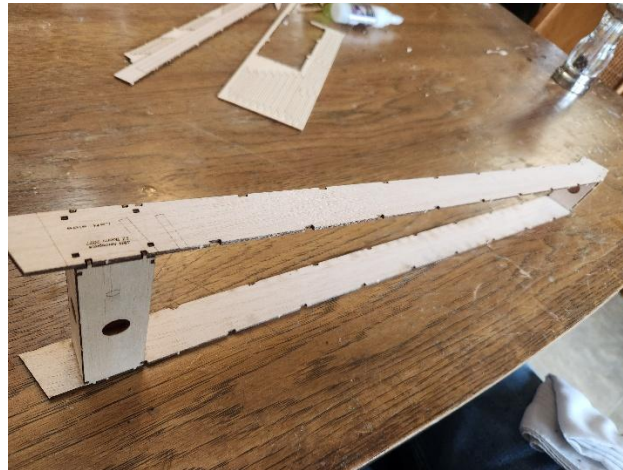


At each end of the compression members, there is a pattern of 4 holes and 4 notches which match up with the end keys of the boxes you just assembled. Carefully test fit the boxes to these patterns on the **blank (non-engraved)** side of a compression member before gluing them in place. Be sure to account for the taper!





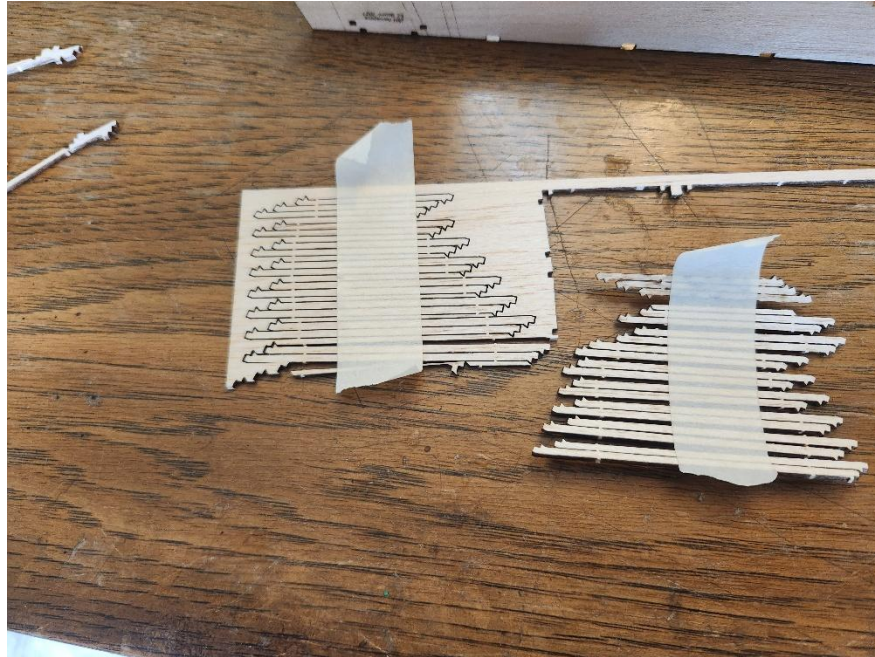
Now carefully attach the other compression member, striving to get it in place as straight as possible.



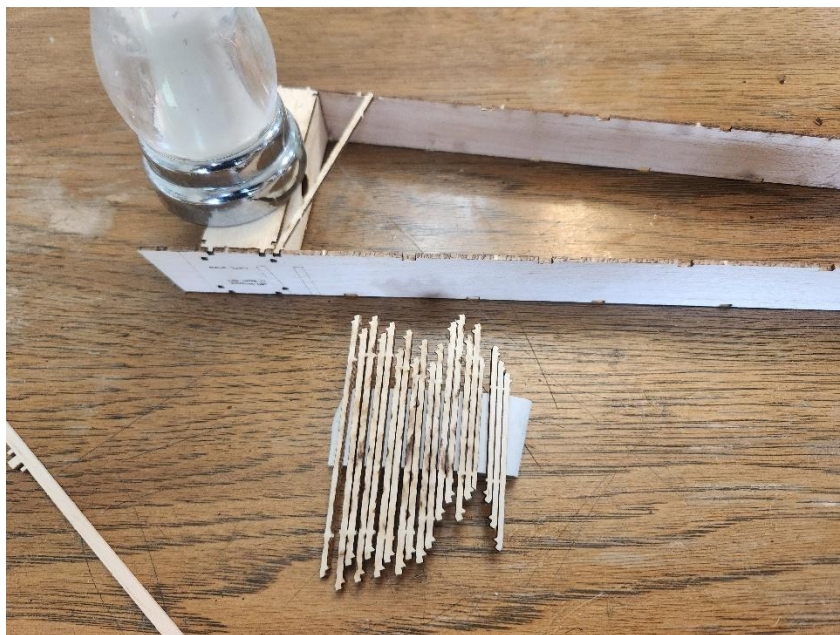
The compression assembly may twist during the above steps, and it will remain sensitive to build errors, so before installing the crossmembers, weigh it down with appropriately heavy objects on a clean, flat surface.

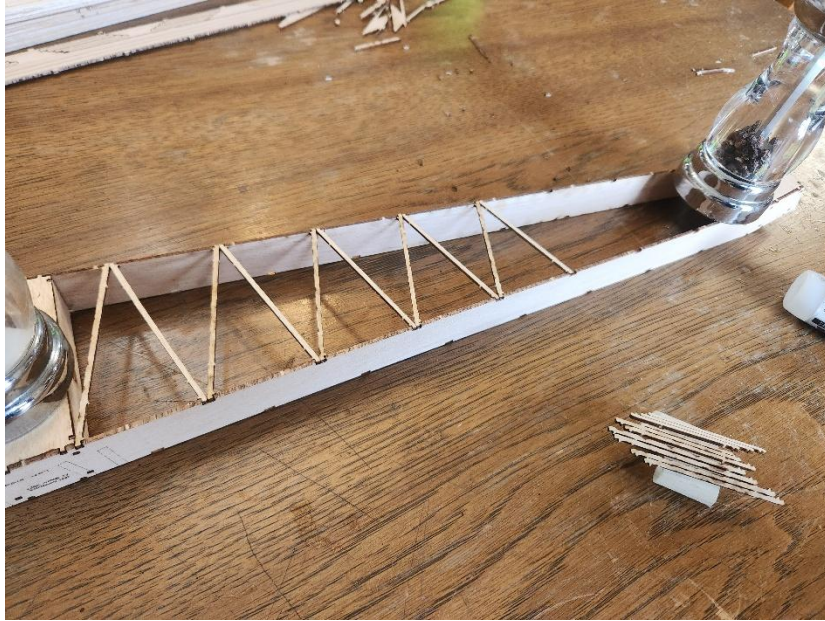


If you have not taped the cross pieces to keep them in order, do so now. Remove one complete set of the crossmembers from the parts sheet, keeping them in order as shown.



The crosspiece assembly arrangement represents a Warren Girder truss system. This means that the cross pieces are all diagonal in orientation to form a series of triangles. Start at one end of the compression assembly and work your way down. Note that except for the end members, all notches are shared between two members. Be careful to avoid getting glue into a notch and blocking the next cross member's installation. The photos below show the installation of the top surface cross members; the bottom members are installed after all of the top members are in place.

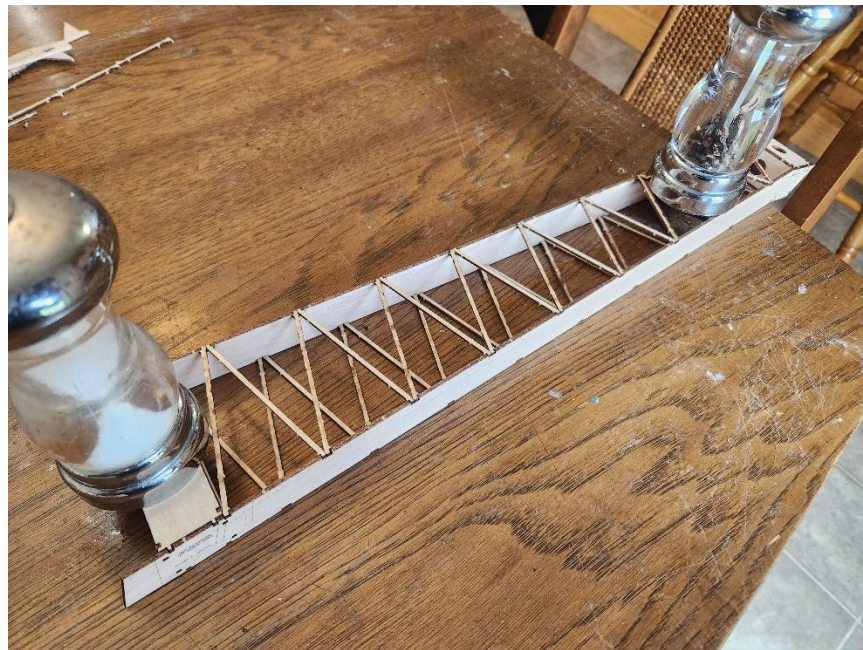




Flip the compression member over and weigh it down again so that the ends are flat on the table to avoid twisting. You will have to hang one end off the table to do this.



Remove the remaining cross members from the sheet and install them the same way you installed the top surface members.

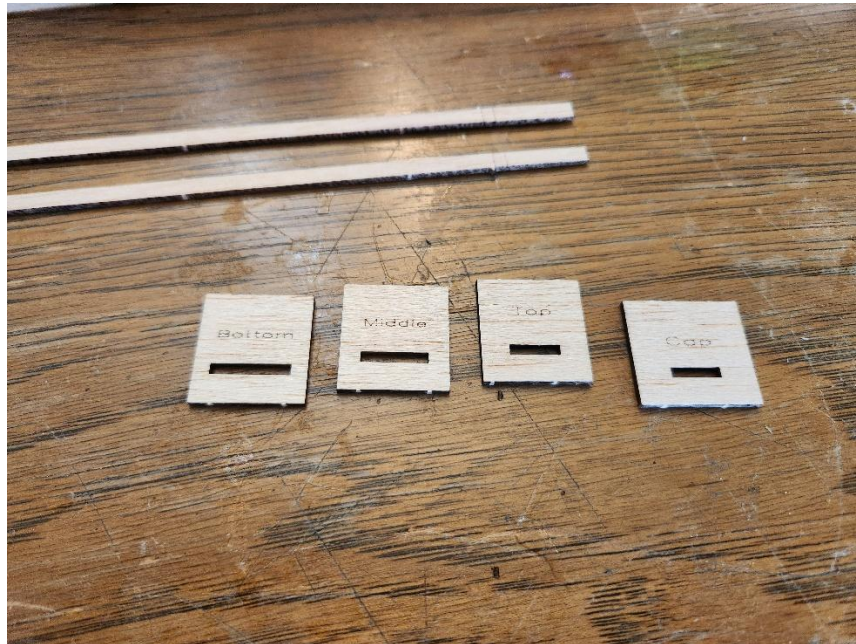


If you have kept the compression member flat on the table during the above process, it will be straight with no bends or twists.

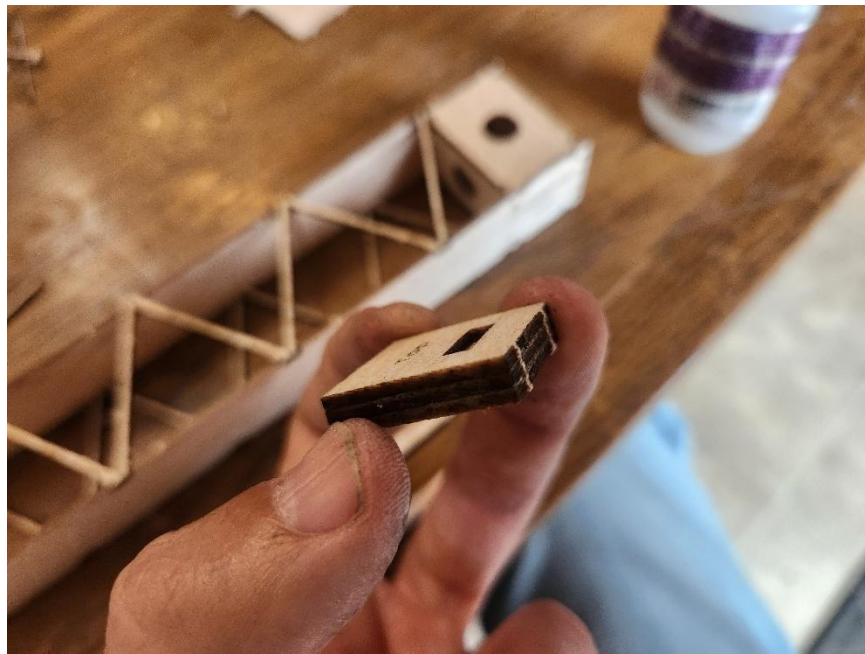
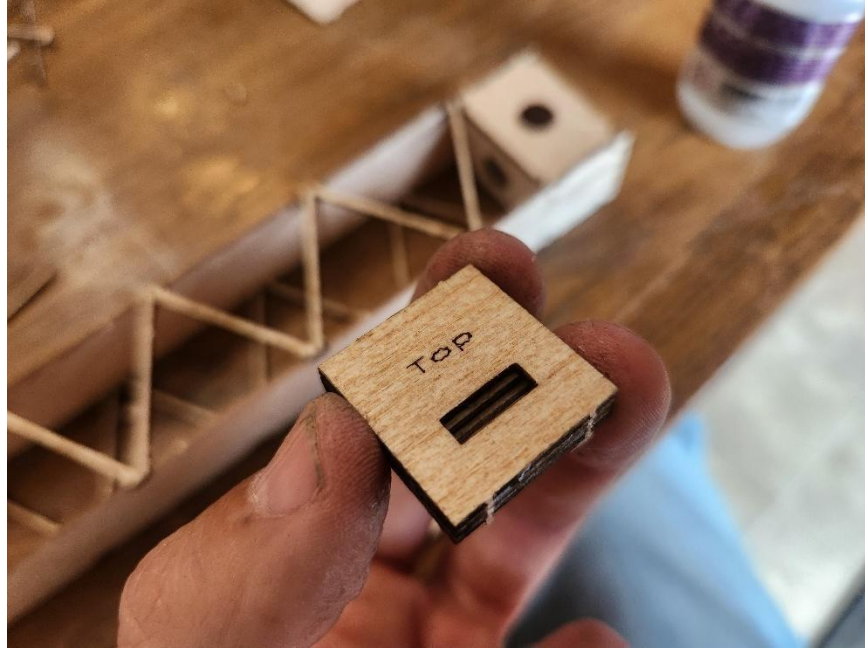
Remove the two tensile members from the parts sheet.



The tensile loading saddle requires careful alignment and order of assembly to get the slot to follow correctly through this component. As such, the parts are labeled “top”, “middle”, and “bottom”. The labels should all face the same direction so that the slots are aligned, as shown below.



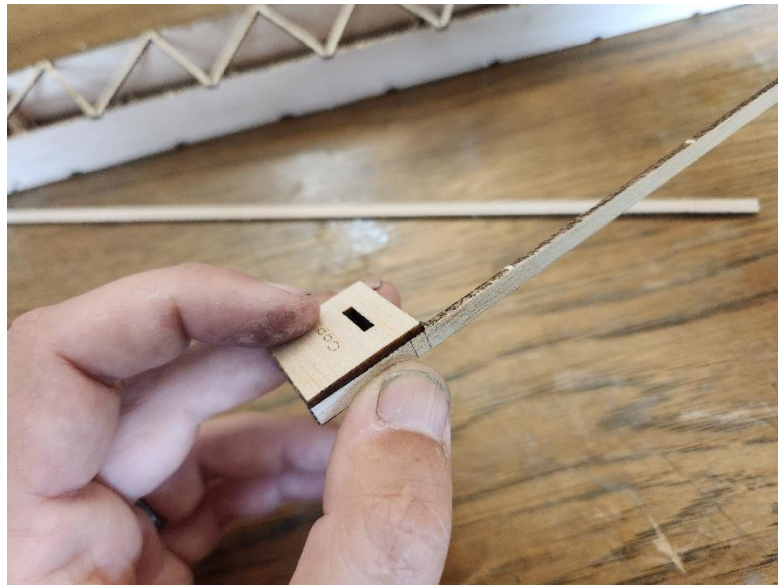




There is a cap which goes atop the tensile member so that additional attachment surface is formed. This part extends out over either side of the loading saddle. Align it very carefully as shown.



The gussets on the tensile members set their alignment in the loading saddle. Make their attachment secure, and make sure they are exactly parallel. Depending upon wood variation, swelling, etc, their slots can allow quite a bit of play. Any play can cause undesired bending loads or unequal loading leading to premature failure.



The engraved attachment lines on the side of the compression member set the bonding location for the tensile members. Note that two sets of lines are used. Use the ones shown below for the Div C standard configuration. While these lines are quite accurate, it is best to jig the entire assembly in place on a Science Olympiad Boomilever loading fixture to get exact alignment. Additionally, assembling in a fixture will allow ignoring the attachment lines in favor of a bonus achieving Boomilever. Regardless of your choice, the attachment must be made with care to ensure exact alignment of both tensile members.

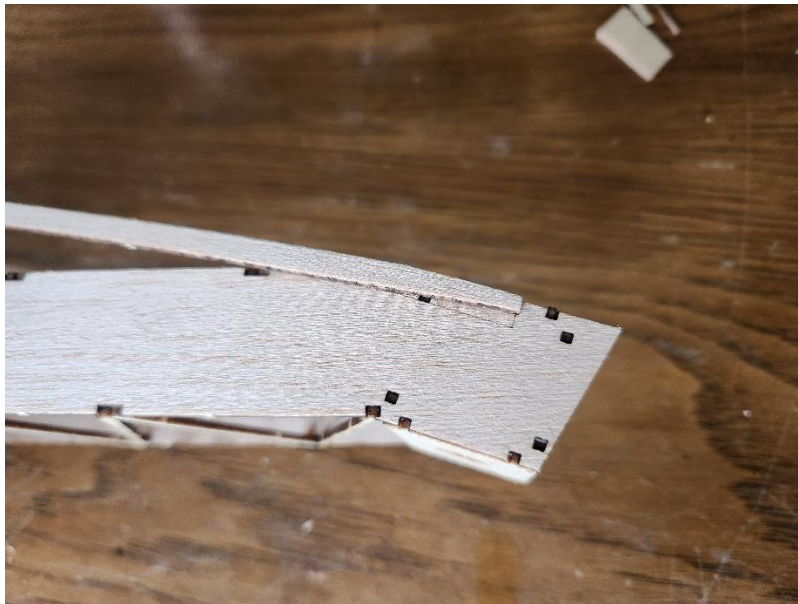


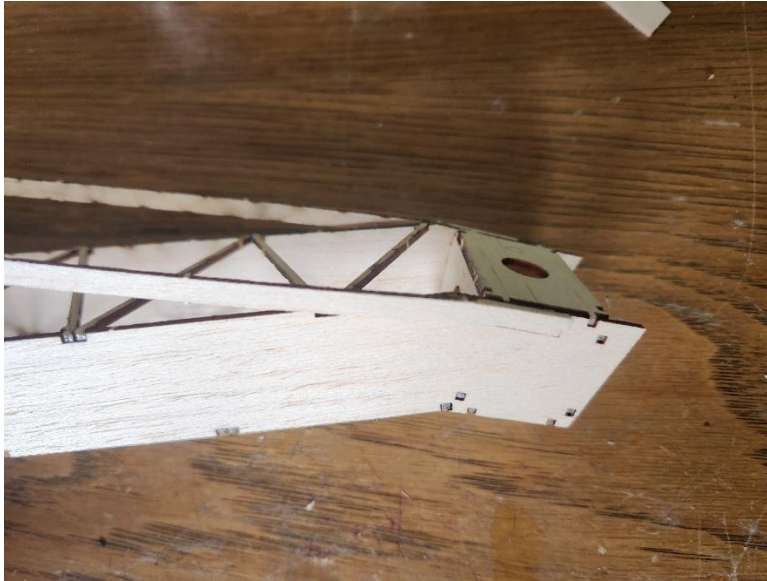
Div C Bonus configuration:

Trim the end of the tensile member along the diagonal engrave line

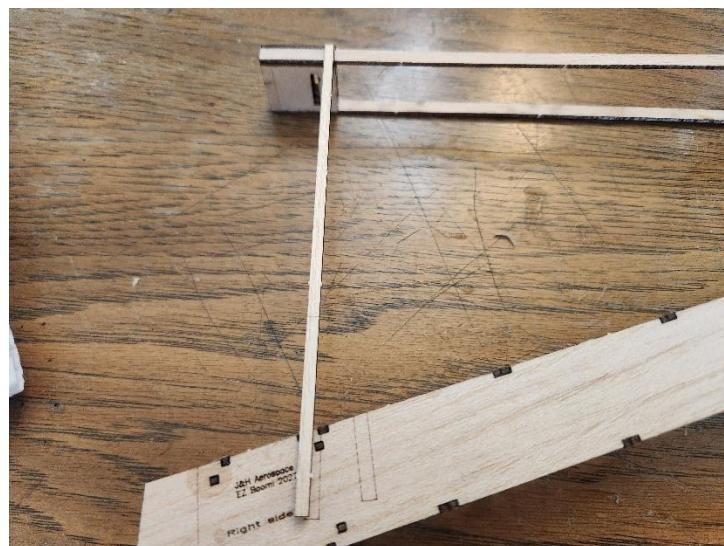


Install the tensile member on the loading block end according to the second set of engrave lines as shown, being very careful to line it up correctly.

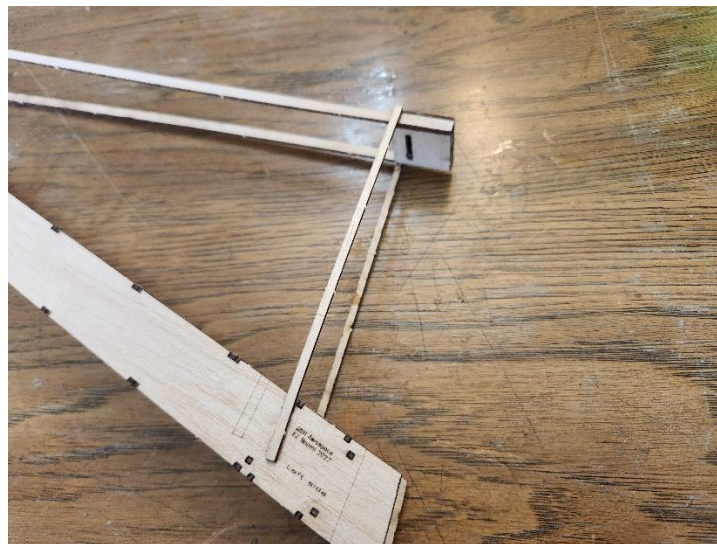
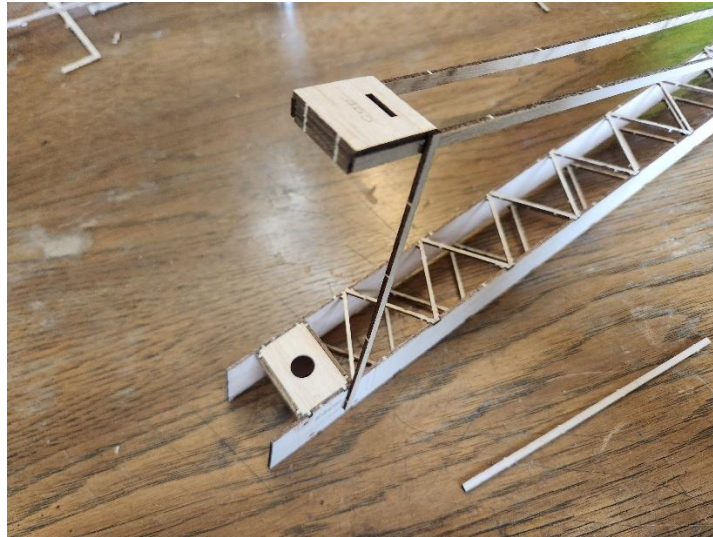




Due to the angled contact point of the compression structure, a pair of tension stringers are needed to ensure no slippage occurs, which would cause instantaneous failure. Install the stringers as shown, using the alignment marks on the tensile unit and the sides of the compression section. Be sure to use the marks closer to the end of the compressive section, as the other marks are for the C Bonus version.



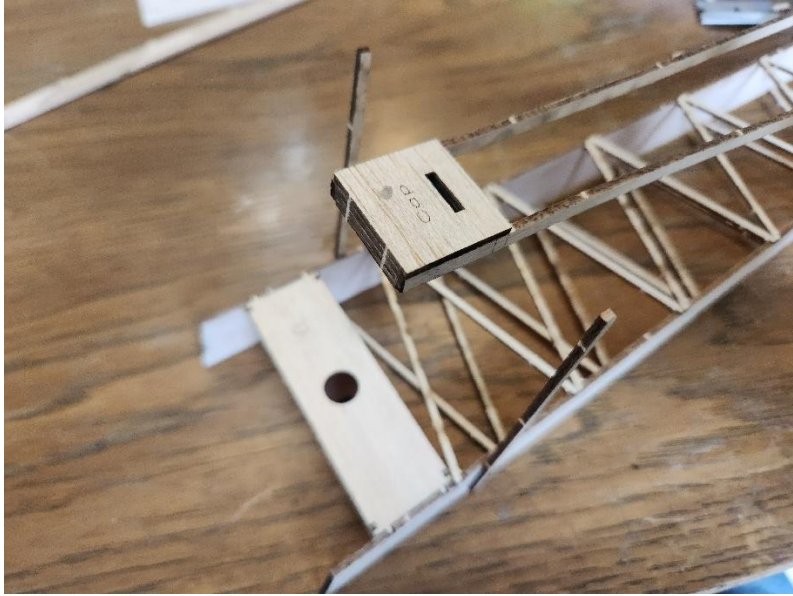
Note that you may have to crack the stringers to meet the tensile member; glue it as needed to accommodate this curvature.



Div C Bonus version:

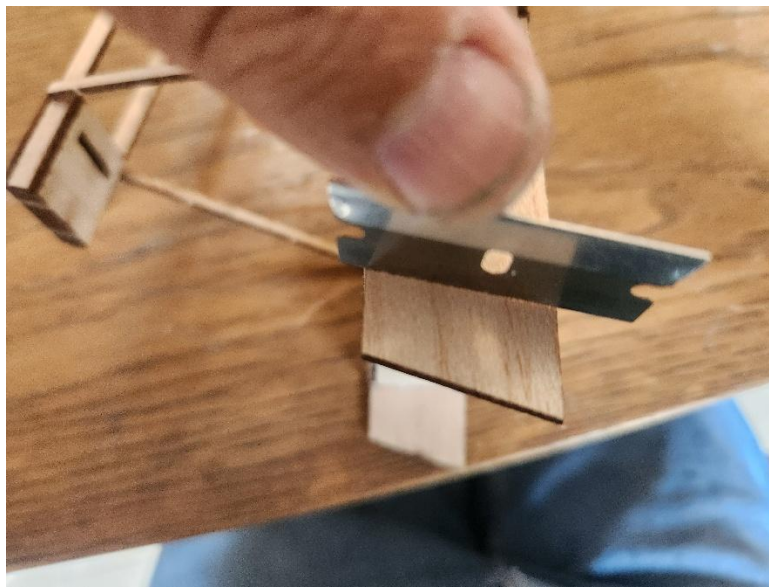
You'll need to trim the stringers as shown. They will have to be cracked over to meet the tensile member.







Trim the compressive base along the engrave lines.





Congratulations! Your 2026 EZ Boomi is complete! We strongly recommend building multiple boomilevers and testing their load bearing capacity before competition. Even if you break the first one, you can use it to set an proof-load to test the others to a designed load so as to ensure that you have competitive devices for competition use.

