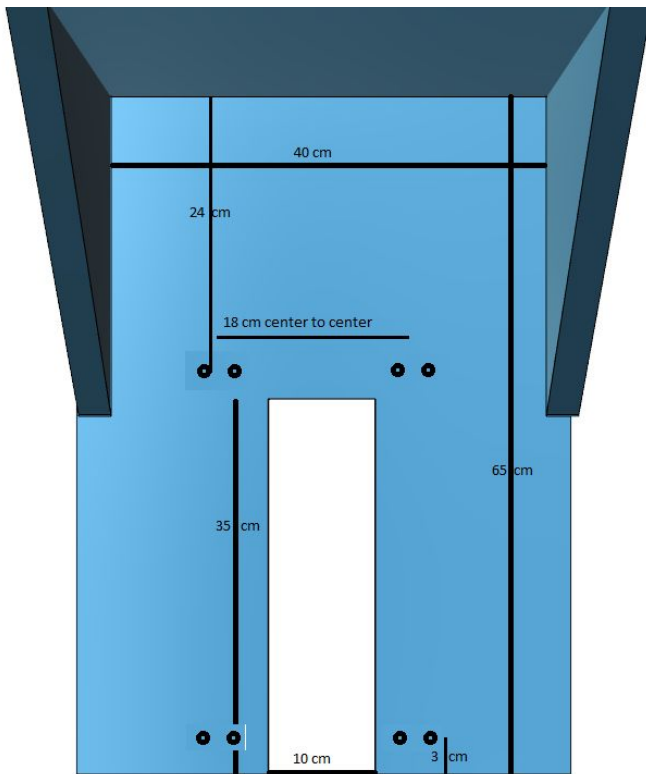


# Science Olympiad Boomilever Platform for the Vernier Structure and Materials Tester (VSMT)

Start with the Boomilever test apparatus slightly wider than specified (30 cm high x 46<sup>1</sup> cm wide). In addition you will need:

- (1) ¾" plywood sheet measuring 70 cm x 46 cm (see footnote 1)
- (2) Corner supports: Triangular brackets, shelving brackets, plywood braces, or building hardware to strengthen the upright test apparatus
- (4) U-Bolts: ¼" x 1 ⅜" x 3.31"
- Wood glue or other appropriate adhesive
- Screws to secure corner supports and attach test apparatus to platform



Cut a rectangular slot in the plywood along the centerline, measuring 10 cm wide and 35 cm long.

Drill (4) pairs of holes for the U-Bolts. Two pair will be at 3 cm from the end, the other pairs will be 24 cm from the test apparatus. These should be 18 cm apart, centered longitudinally.

NOTE: In order to ensure that you can center the platform on the VSMT you may wish to expand these holes to about twice the necessary width "across" the platform. In other words make them ½" x ¼" rather than just a ¼" round hole.

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<sup>1</sup> Measure corner supports and allow for this width in addition to the 40 cm.



Depending on the material you use, the platform and test apparatus may shift the center of mass enough for the VSMT to be unstable. One solution is to attach a simple leg to the back of the test apparatus. Screw a small piece of wood to the back of the apparatus to act as an anchor. Using a C-clamp and a meter stick (or other slender piece of wood) attach the leg so that it provides a “5th leg”.

In order to attach the platform to the VSMT:

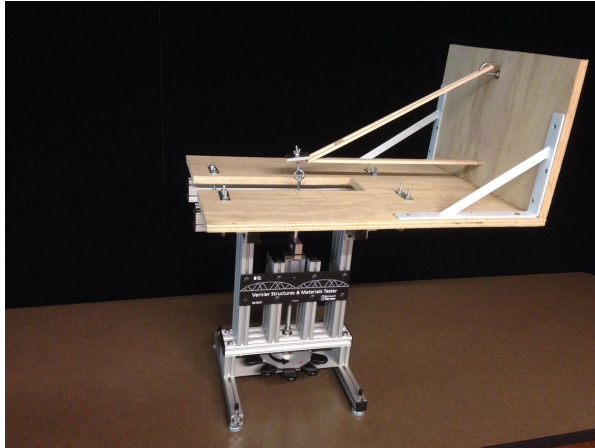
First remove the cross bars from the VSMT.

Then connect the 2 U-Bolts closest to the test apparatus. Slide these onto the support beams.

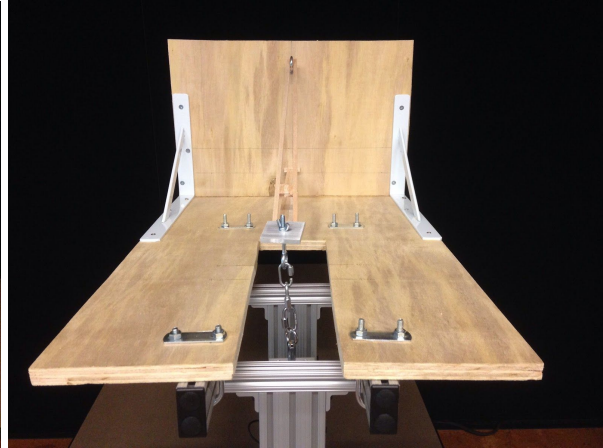
Once this is in place attach the remaining U-Bolts.

You will want to ensure the Boomilever is centered over the load cell of the VSMT. To adjust the position of the platform slightly loosen the nuts holding the U-Bolts and adjust the position of the platform. Secure the nuts to hold the position.

To connect the Boomilever to the VSMT, we used an eye bolt on the load cell, a quick link that connects a length of chain to the eye bolt, and another quick link to attach the other end of the chain to the eye bolt on the Loading Block Assembly. The hardware mentioned in addition to the Loading Block Assembly is part of the VSMT Tackle Kit that comes with the VSMT.



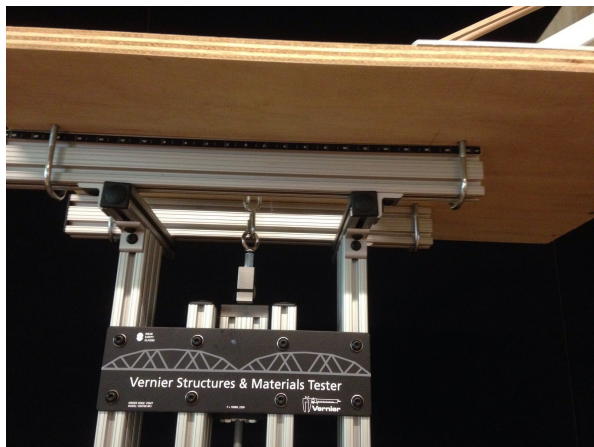
Completed platform and Testing Wall



Center groove provides access to load cell



Shelving brackets as corner braces



U-Bolts securing the platform to the VSMT