Measuring the Box

NFFS SO Education Committee, Fall 2025

This presentation is designed to assist those serving as Event Supervisors for the Science Olympiad Helicopter event (either B or C division) in organizing their timing team(s). Intended mainly for an ES with little or no previous experience in this event, it builds on many years of observations by experienced supervisors who have extensive knowledge of indoor flying events.

3.d. The helicopter, in its flight configuration, must fit fully into a team-provided Measurement Box without a lid/cover.

i. The external dimensions of the Measurement Box must fit within a right, rectangular prism of 32.0cm x 24.0cm x 47.0cm, including any external protuberances on the lidless box.

The rectangular prism defined by the dimensions in part i. can have any orientation.

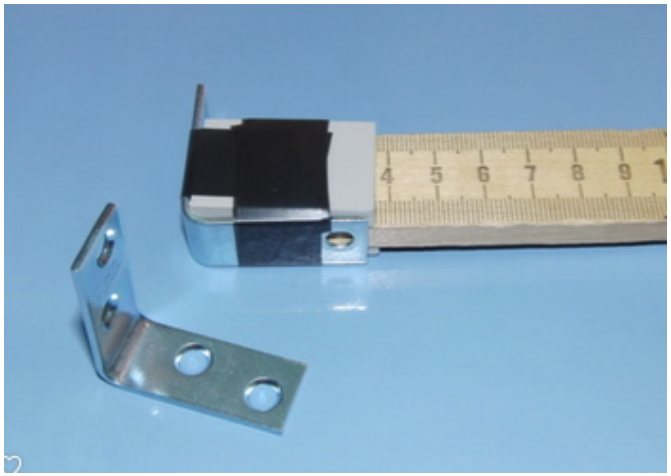
Each measured exterior dimension must include external features such as handles, hinges, and reinforcing rims such as those found on many plastic storage boxes.

Accurately measuring the box, particularly one that is very close to the maximum allowed, is very important. The last thing you want to do is to approve a slightly too large box that runs a risk of being penalized at a future tournament. An out of spec box results in a construction violation, which puts a team in tier 2 of the scoring, a very serious penalty!

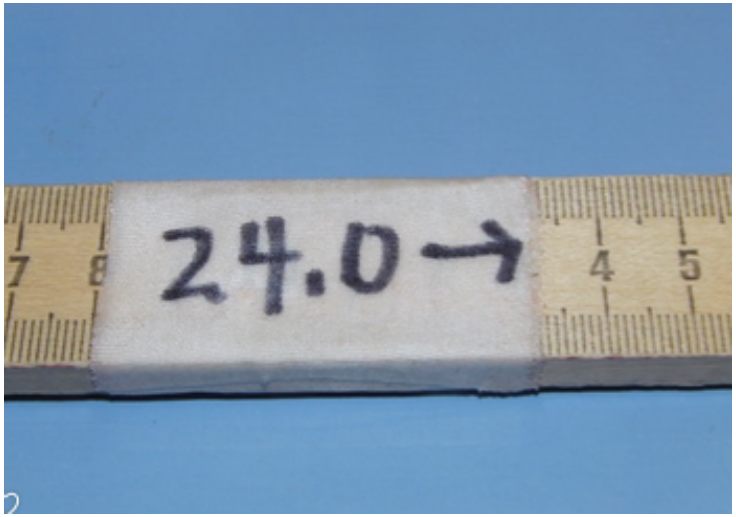
It may seem obvious to use a meter stick to measure the box, but if a box is very close to the maximum allowed by the rules, making sure that the zero end of the stick is exactly at one end while reading the other end can be quite difficult.

Shown below is one solution. A metal corner brace, available at a hardware store, is taped to the end of the stick. A piece of scrap material acts as a shim to account for the fact that the brace is wider than the thickness of the stick. With this, you can hook the part that sticks out over the end of the box, and hold it firmly in place while reading the other end.

If you are a SO coach, and you explain to your helicopter or bridge students what you are doing, they can probably make something like this for you using balsa wood, and eliminate the need for the corner brace.



Another thing you can do that will make the box measurement easier is to use some tape with marked dimensions near to the three measurements, as shown below for the 24.0 cm dimension. In the majority of cases, this will be the height of the box, measured from the table surface to the top edge. If you installed an end stop at the end of the stick, per the previous slide, don't forget to left the box slightly and put the metal edge under it to ensure an accurate measurement.



Other things to keep in mind:

1. If any of the measurements are very close to the maximum allowed, be sure to measure the other side of the box to make sure that it is not very slightly too large.

2. If any of the measurements are very close to the maximum allowed, caution the students that they might want to be a bit more conservative, particularly if the box is assembled with tape, which might loosen over time.

3. The rules specify that “external protuberances” count toward the measurement, so be sure to include things like hinges, handles, and molded edges like the ones seen on many plastic storage boxes.

4. Lids: All permanent parts of the box must be within the measurement limits. This includes any attached lid. A removable lid may be removed before measurement

5. Irregular boxes: some boxes may bulge out in the middle, or may be longer on one side than the other. A box such as a shortened 10 ream paper box may meet the rule at some places but not others.

Oversized boxes:

You may choose to allow modifications to the box for teams with box violations. However, once they start the check-in process they cannot receive outside help or materials, and may not leave the competition area. Therefore they must repair with whatever they brought.

An ES *may* choose to have packing tape, cardboard, scissors, and knives available for team use, but this is not required, and probably should not be done at higher level competitions such as State. If such is provided, be sure to have plenty on hand to make it fair for all teams.