

## CONSTRUCTED DEVICES

This policy applies to events that require students to construct a device and bring it to Science Olympiad competitions, either in components or as a completed device. Note that this applies to more than just the traditional “engineering” events — many other events fit this description as well. The words *construct* and *build* are used interchangeably throughout VASO’s policies.

**Construction:** Devices may be constructed *only* by members of the 15-student team, excluding alternates. Mentors (parents, coaches, teachers, hobbyists, etc.) are absolutely prohibited from constructing any part of the device presented for judging, though they are expected to train and oversee team members in the safe and proper usage of tools. Therefore, team members are required to design their device so that *they can build it safely by themselves*. Students who are not comfortable using (or do not have access to) a tool may enlist any other member of their 15-student team who can help.

*Exception:* A hardware store (*not a mentor*) may make a few simple straight cuts in large pieces of lumber.

*Exception:* Mentors may construct items other than the competition device specified by the event rules, such as testing jigs.

**Tournament Tool Usage:** During impound and competition, teams will not be allowed to use power tools. Also, if the Event Supervisor thinks that the competitor is using **any** tool in an unsafe manner, the competitor may be disallowed from using the tool.

**Use of Kits:** Teams are encouraged to design and construct their own customized devices. However, teams are permitted to construct their devices from purchased complete kits **as long as** those complete kits are *substantially* modified. Devices constructed from complete kits will be closely scrutinized to ensure that teams have sufficiently complied with the spirit of the competition by truly designing and constructing their own device.

**Digital Fabrication:** Teams may use 3D printers, laser cutters, CNC mills, and other similar machines to construct all or part of their device. Teams are encouraged to design customized CAD models from scratch, however they are permitted to use CAD files created by people not on their 15-person team as long as either those files or the objects resulting from the fabrication of those files are substantially modified. Teams using digital fabrication techniques must be prepared to answer questions about the origin of their CAD files and their design process. To aid that discussion teams are strongly encouraged to bring renderings of the CAD file before and after their modifications.

*Exception:* Digital fabrication can be used to manufacture parts that are not central to the function like hinges, brackets, supports, etc. and do not need to be accompanied by information about their CAD design.

**Compliance:** A device's builder must be present to operate their device in competition as event supervisors may extensively question the builder(s) on it. Questions may address (but are not limited to) the overall design and construction, the component parts, and how they operate and function in the device. Other students on the team may also be questioned at the discretion of the event supervisor or the appeals committee. If the students cannot answer the questions satisfactorily, then the event supervisor has grounds to believe the students did not construct the device, and the team will be penalized, up to disqualification.

Team coaches ensure and certify that all work presented will comply with this policy. Students will also be asked to sign that they and the students on their 15-person team are the only builders of a device.