

Section  
**4**



# The Robot

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# Section 4 – The Robot

## 4.1 – Overview

This chapter provides rules and requirements for the design and construction of your robot. An AIM High robot is a remotely operated vehicle designed and built by a registered AIM High team to perform specific tasks when competing in the AIM High challenge. Prior to competing at each event, all robots will have to pass an inspection. Refer to Appendix A for the Robot Inspection Guidelines and the Inspection Checklist.

## 4.2 – Robot Rules

There are specific rules and limitations that apply to the design and construction of your robot. Please ensure that you are familiar with each of these robot rules before proceeding with robot design.

**<R1>** One robot will be allowed to compete per team. Though it is expected that teams may need to repair their *robot* at the competition, a team is limited to only ONE robot.

- a. It is against the intent of this rule to compete with one robot, while a second robot is being modified or assembled.

**<R2>** Every robot will be required to pass a full inspection before being cleared to compete. This inspection will ensure that all robot rules and regulations are met. Initial inspections will take place during team registration/practice time.

- a. If significant changes are made to a robot, it must be re-inspected before it will be allowed to compete.
- b. All robot configurations must be inspected before being used in competition.
- c. Teams may be requested to submit to random spot-inspections by event personnel. Refusal to submit will result in disqualification.
- d. Referees or inspectors may decide that a robot is in violation of the rules. In this event, the team in violation will be disqualified and the robot will be barred from the playing field until it passes re-inspection.

For more information on the inspection process please refer to Appendix A, Robot Inspection Guidelines.

**<R3>** The following types of mechanisms and components are NOT allowed:

- a. Those that could potentially damage playing field components.
- b. Those that pose an unnecessary risk of entanglement.

**<R4>** Robot construction is constrained to only the parts detailed by type as follows:

- a. CEEN Bot.
  - ◆ Only model 324 Version 2.21 or higher may be used.
  - ◆ Construction of base bot only with the following additions.
  - ◆ Up to six (6) Motors or Servos (Any combination, up to six)
  - ◆ Only one (1) Battery Pack from the Vex Power Pack (Vex P/N: 230-0036) or the battery packs that come with the kits.
  - ◆ One (1) RF receiver
  - ◆ Electrical components found in the VEX-RC “Blue” product line are prohibited
  - ◆ High strength motors are prohibited.
  - ◆ The packaging, manual binders, Styrofoam, cardboard, plastic bags, etc. from the Vex kits are NOT included and CANNOT be used for robot construction. Only the Vex parts themselves are allowed.
- c. Teams may add non-functional decorations from parts not on the above list, provided that these parts do not affect the outcome of the match, and must be in the spirit of the competition.

d. No additional components may be used.

**<R6>** All parts that are used must be tracked through a Bill of Materials (BOM).

**<R7>** During inspections if there is a question about whether something is an official Vex component, a team will be required to provide documentation to an inspector, which proves the component's source. Such types of documentation include receipts, part numbers, or other printed documentation.

**<R8>** No modification of the Vex transmitter is allowed of ANY kind.

**<R9>** Parts may NOT be modified as follows:

- a. Motors, extension cords, sensors, controllers, battery packs, and any other electrical component of the Vex Robotics Design System may NOT be altered from their original state in ANY way.
- b. Welding, soldering, brazing, gluing, or attaching in any way that is not provided within the Vex System will NOT be allowed.
  - i. Mechanical fasteners may be secured using Loctite or a similar thread-locking product. This may be used for securing hardware ONLY.

**<R10>** Robots must display their team number (numerals/alpha only, i.e. "148" or "148-A").

- a. The judges, referees, and announcers must be able to easily identify robots by team number.
- b. Team number must be visible from each side.
- c. The numerals must each be at least three inches high, at least in 3/4-inch stroke width and in a contrasting color from their background. (Team number "license plates" that come with your registration welcome pack can be used in lieu of hand made number cards.)

**<R11>** If crystals are used then the robot receiver must be accessible by competition personnel.

- a. The radio crystal must be easily removed from the robot without any robot disassembly.
- b. The radio crystals will be provided to each team for each match. (If possible crystals may be given to teams at the beginning of a tournament and collected at the end.)