BoxBots Rules and Principles

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These rules and the idea behind BoxBots are gratefully inspired by the fine folks at Columbia Gadget Works (http://columbiagadgetworks.org/)

BoxBots is about having a good time making stuff and breaking stuff

I founded BoxBots because building a combat robot was my own gateway into maker culture and I wanted to share that experience with others. The BoxBots program gives people access to all the fun of fighting robots without the size of the funding determining the winner. It's about having a good time without breaking the bank.

The rules that follow are to help you understand the basics and outlines of what BoxBots is about, but are not the end all and be all of the program. Our core principles are:

- Have Fun
- Be Creative
- Be Respectful

Just because something is technically within the rules does not mean it will be allowed

These rules can not cover every single concept or idea that you as a builder will have. In the end the judges and officials will have to make a decision of if something is allowed or not. If you have a question if something is allowed or not, please ask! We are here to help you understand and enjoy building your robot.

See you in the Arena.

- Ray Alderman
Founder
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Classes – AMT and Open

All robots will have to fit into the build rules of size, weight, type of weapons allowed, etc. However within the rules, there are two different classes of robot for completion purposes. Depending on the number of robots competing, brackets at fighting events will be broken down by class.

AMT Class

Otherwise known as Stock Class, this is for building a robot based on the BoxBots kit that came with membership in the program. Stock radio, stock motors, stock wheels, stock batteries, etc.

The $40 Upgrade: You are allowed to spend up to $40 to upgrade your stock robot and still be in AMT class. Add an active weapon system, replace the motors, replace the wheels, a bigger battery, add a self-righting mechanism. Any and all changes and upgrades are allowed as long as they are within the build rules and cost under $40. This is in the spirit of BoxBots and the AMT class in that you do not need large amounts of money to compete. The $40 limit is on the honor system but as always open to determination by the judges.

Open Class

Open class is for those who want to use something above and beyond AMT class. You have that $400 radio system? $100 brushless weapon motor? Sexy Swiss built gear motors mated to special 3D printed wheels with extra grip? Go for it as long as it stays inside the stated build rules.

Brackets

In competition, depending on the number of entries in each class we will try and have separate brackets. As always building skill and driving ability will determine the winner most often than not.

Construction

Size and Weight

Robots must fit into a 8"x8"x8" cube

Robots can “unfold” transformer style to take up more space once the fight has begun

Robots must weigh under 22.0 oz (623 grams)

Chassis

The chassis of the robot must be constructed primarily with cardboard.

No two active components may be connected by anything other than cardboard.

Active components include, but are not limited to, motors, servos, actuators, springs, or any device capable of providing torque or motion.

Cardboard for the robot chassis may not be layered with any other material other than cardboard using the approved adhesive.

Materials

Cardboard must be single wall, C-flute or thinner.

You are limited to 288 square inches of cardboard. (12” x 24”)

A maximum of 12” total length of 1" wide “blue” masking tape is allowed on the robot in as many pieces as needed. Used pieces of “blue” tape can be replaced between fights with new tape of the same length.

Duct tape, shipping tape and other types of tape are not allowed.

Adhesive

Hot-melt glue from glue guns and Elmer's-type white glue are the only approved construction adhesives for the cardboard or gluing active components to the cardboard. No epoxies, super glues, etc.

Within an active component other adhesives are allowed, i.e. gluing a new drive shaft to the motor or a servo horn to a servo shaft can be done with super glue

Decoration

Robots are not allowed to be painted.

Vinyl wrap, stickers or anything else that can add strength to the cardboard is not allowed.

Sharpie style markers, pencils and crayons are allowed

Weapons

Safety

All weapons musts be mechanically "safed" when outside the arena.
- Sharp edges must be protected with clearly visible cover,
- Spinning weapons must be physically prevented from rotating
- Actuators for weapons must be locked into closed position

Competitors must be able to deactivate weapons remotely

All weapons must return to a safe state when transmitter signal is lost.

Disallowed Weapons - The following weapon types are not allow in competition:

Intentional entanglement devices including those dropped like caltrops, etc.

Fire based weapons

Intentional explosives

Untethered projectiles

Projectile tethers are limited to 12" from the tip of the projectile to the edge of the robot.

Liquid weapons

Electric discharge weapons

Pneumatics – AKA stored, compressed gasses. On board compressers and pistons are allowed as long as no compressed gas is stored.

Any weapon determined by officials to pose a hazard to the arena or spectators

Electronics

Control

Robots may be radio controlled by an operator or may fight autonomously.

All autonomous robot competitors must be able to shut down the robot remotely.

Radio Control (including the shut down for autonomous robots) will be via a 2.4GHz radio system as provided or approved by BoxBots.

Batteries

Batteries containing liquid acid or liquid electrolyte are not allowed.

Sealed Lead Acid (SLA) batteries are allowed.

Alkaline batteries are allowed.

Lithium-based batteries are allowed, but may have no more than three cells (3S) and may not exceed a capacity of 2200mAh.

Competition Rules

Officials

Prior to competition, at least two impartial officials shall be selected to act as judges. They will inspect all competitors' bots to ensure compliance with the stated regulations and will be responsible for any decisions that may arise during competition.

Interpretation of the rules during the technical inspection of the robot is up to the discretion of the judges.

Format

Bracket

All competitors will be entered into a random bracket at the start of competition.

Competition shall be structured in one-on-one fights, with the winner advancing to the next round.

Winning a Fight - Competitors shall be granted a win under the following conditions:

Their opponent forfeits.

The opponent's bot is unable to move under its own power for twelve continuous seconds.

The judges award victory to a competitor after a fight has reached its time limit.

Time Limit

Each fight shall be limited to three minutes.

Forfeiture

At any time during a fight, a competitor may call out "STOP STOP STOP" to forfeit. The fight will immediately end, and a win will be awarded to their opponent.

Repairs

Winners of a match will be allowed to use up to 144 square inches of cardboard for repairs before their next fight.

Competitors are guaranteed 20 minutes between matches for repairs, charging, etc.

Arena

Size

The arena is 4ft x 4ft wide and roughly 2ft tall.

Construction

The floor is plywood and may be painted with a grit based paint for traction.
The sides are made of polycarbonate 2ft x 4ft, minimum of 3/16” thick
The lower 4" of the arena are a protective molding.
The roof is comprised of hardware cloth with a 3/4" grid pattern.