

MakerBattle Rules and Event Information

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Philosophy of Makerbattle

Core values

At the heart of our Combat Robot Events is a commitment to creating an environment where builders, fans, and families come together to celebrate ingenuity, friendly competition, and the thrill of engineering in action. **Safety** is our top priority—on and off the arena floor. We uphold strict protocols to ensure that every competitor and spectator remains protected, while encouraging responsible innovation and learning. Our events thrive on **Community**: we welcome all ages and experience levels, foster mentorship, and promote collaboration over rivalry. Whether you're a first-time builder or a seasoned veteran, there's a place for you here. Above all, we believe in **Excitement**—from the sparks flying in the arena to the buzz of teams sharing ideas and building friendships, our goal is to ignite passion, curiosity, and pure fun in every participant.

Expectations for all participants

Builders/competitors

Build and compete with integrity, always honoring the intent behind the rules. We value creative design and strategic thinking, but we expect participants to avoid bending the rules or taking unfair advantage of gray areas.

Prioritize safety at every step—set the standard and help others do the same.

Practice safe habits, speak up when something seems off, and work with staff to keep the environment secure for everyone.

Show off your style and enthusiasm, but help us keep things fun and appropriate for a wide audience—especially the next generation of builders.

Our events are designed to welcome and inspire young competitors, so while we encourage passion and creativity, we also ask everyone to help maintain a respectful, family-friendly atmosphere where youth can safely learn, compete, and grow in the sport.

Arrive ready to compete responsibly and in full alignment with the rules.

Doing your homework and knowing the guidelines ensures smoother matches and a better experience for all teams.

Treat everyone—fellow builders, event staff, and spectators—with respect and kindness.

We're all here for the same reason: to build, compete, and have fun. Keep the vibe positive and supportive for everyone involved.

Rules

Bot design rules

Weight requirements

Traditional locomotion

1.0lbs or less in a fight ready condition for a robot that relies on rotational motion of a component in contact with the ground as its method of locomotion around or orientation within the arena. This includes all forms of wheels (round, non-circular, spoked, or offset axis) even if those wheels are parallel or near parallel to the arena floor. It also includes continuous tread, track or belt driven systems. This also includes vertical or near vertical spinning shafts in contact with the ground.

Non-traditional locomotion

Non Traditional Locomotion Systems may not use unpowered rotating objects (wheels, drums, rollers, ball bearings, etc.) as a means of friction reduction with the ground. They are also forbidden from using powered or unpowered wheels or wheel-like design features to ease rotation or to orient their robot within the arena. This requirement applies even when a robot is inverted or in other orientations that differ from their default orientation. There is a .5 lb weight bonus.

Examples of Non Traditional Locomotion Include:

- Shuffling
- Bristle Bots
- Flying Systems
- Gyroscopic Precession
- Torque Reaction
- Jansen Linkages
- Hovercrafts
- Flying bots

Function requirements

Movement

Robots must be able to demonstrate controlled movement at a sufficient speed. Robot mobility will be demonstrated during the robot inspection process.

Weapon systems

Active weapons are not required, but are encouraged!

Modular weapon systems are allowed, but the robot's drive system must remain the same. In the case where a robot is using it's weapon system for

locomotion (Gyroscopic Precession) then it cannot have a modular weapon system. Each module must pass the safety check and weigh-in. All weapons must have a weapon lock.

Safety requirements

Power cut-off

All robots must have a way to turn off power without disassembling the robot and it must completely power off the entire bot, including lights, etc. Power cut-offs must be able to be deactivated within 15 seconds.

Power cut offs must be able to be accessed and actuated with one hand (although competitors are allowed to use both hands during the event).

Battery limitations

Robots must use electrical systems that operate at or less than 25.2 volts - max 6s.

Control systems

All robots must pass a radio fail safe test. Robot controls and communication systems must pass a failsafe test overseen by a Bot Inspector at Bot Inspection in order to compete. In the event of signal loss or transmitter power-down, the bot's drive system must stop within 30 seconds and weapons must come to a complete stop within 60 seconds.

Size requirements

Bots can be no larger than a 28" cube.

Weapon locks

All robots must have a weapon lock that prevents any spinning weapons from moving outside of the cage.

Restrictions

Projectiles are allowed, however - please email us details, a photo, and projectile speed must be below 100mph. Send emails to info@makerspacect.com.

Forbidden bot designs and features - The following are forbidden, although this list is not exhaustive. Features or designs that go against the values and spirit of the event will be disqualified at the sole discretion of MakerpaceCT staff.

Any entanglement devices, such as nets, etc.

Internal combustion engines

Flames of any kind

Heat weapons of any kind, such as heat guns or soldering iron lances.

Inductive systems of any kind

Liquids of any kind

Weapons that purposefully disrupt radio signals

Strobe Lights

Lasers

Tasers & similar electrical discharge weapons

Magnetic systems intended to stick to opponents.

Rocket motors

Weapon systems that target or affect anyone outside of the arena, including bright lights, loud sounds, etc.

Passive objects that are placed by hand into the arena at the start of the match. Any passive object that falls off of the bot during impacts are ok.

Arena fouling systems, defined as any release of items material that are excessively difficult to remove or clean after the match: BBs, gravel, nails shot into floor, food or material prone to rotting or insects.

Any material that is hazardous: strong alkali metals, radioactive materials, corrosive or noxious materials, etc.

Tournament

Arena

Size: 8' x 8' x 6'

Floor: 3/4" plywood coated with paint

Kickplates: 6" inch tall wood, covered by 1/32" thick steel

Window- 1/4" polycarbonate

Structure - Bracket

The tournament is a double-elimination style bracket, with 32 spots.

Referees and infractions

Match rules

Objective

Utilize your robot to disable your opponent's robot by any means allowable by the tournament and design rulesets. The duration of each fight is 2 minutes, if both entrants are still mobile at the end of the 2 minute timer, the winner will be declared by judges' decision. The trapdoor will open for the final 30 seconds of the match.

Match start

The beginning of a fight is signaled by a countdown followed by the words "Fight, Robots, Fight!" Robots must start the fight in their assigned corner of the arena and remain still until the fight starts.

Match Results

Knockout

Any robot that is unable to demonstrate motion will receive a 10 second count-down started by the Referee. If the countdown is completed, the robot will be considered knocked out and the fight ends. If the robot successfully demonstrates any self-propelled motion during the 10 seconds or the robot is directly engaged by their opponent, the count-down ends and the fight continues.

A knockout ends the fight immediately. Any further engagement or attacks may result in disqualification, at the discretion of the referees and MakerspaceCT staff.

If both bots are knocked out at the same time it is considered a double knock out.

If a bot falls or is pushed into the trap door, that bot is considered knocked out immediately, even if the opponent falls in the trapdoor afterwards. If both bots fall in at the same time, as determined by the referees, it is considered a double knock out, and the decision will go to the judges.

Tap out

All competitors have the option to “tap out” of their fight. This immediately ends the fight, giving their opponent the victory. Competitors tap out by tapping on the arena and saying “Tap out” loudly and clearly to the referees. A tap out ends the fight immediately. Any further engagement or attacks may result in disqualification, at the discretion of the referees and MakerspaceCT staff.

Judges decision

If a fight runs the full 2 minutes without a knockout or a tap out, or if the fight is stopped early (in the case of a difficult entanglement or an arena failure) or if a double knock out occurs, the winner of the fight is determined by a panel of judges. Competitors must immediately stop engaging their opponent. The Referee will conduct a functionality check to assess each bot’s drive and weapon systems. The Referee will determine whether the system:

- Appears fully functional
- Appears damaged but operational
- Inoperable or severely damaged

The referee will be determining system functionality at the time of the check. The status of the system at the time the fight ends will not be taken into account.

The winner of the fight will be determined by a panel of judges following the Judging Criteria. The judges’ decision is final and cannot be appealed.

Forfeit

If a bot refuses to fight its opponent, this is a forfeit and is considered a win for the opponent.

Fight stopped

The Referee can stop the fight before the full 2 minutes is over if both bots are stuck together and cannot be easily separated, or there is a safety issue like an arena failure. In this case, the fight will be treated as a Judges’ Decision.

False starts

At the start of the match, all parts of all robots must be completely stationary. Any non-kinetic and internal systems should remain in their unpowered and stationary failsafe states until the fight officially begins.

Systems that utilize springs, onboard air compressors, or other potential-energy based systems are permitted to “charge” their system before the match begins, but the charge systems must be inactive at the beginning of the match.

Any bot component that moves out of its unpowered and stationary failsafe state before the fight starts will be deemed to have committed a false start. If a bot has committed 2 false starts in a single match, that bot is considered knocked out, at the discretion of the referees. If a false start results in contact with the opponent, the offending bot is disqualified.

“Battery!”

In the event that a battery becomes exposed and/or detached from a bot, the referee will shout “Battery!” Bots must immediately stop and weapons must power down. The match will be stopped and the bot with the exposed battery has lost.

Unsticks and disentanglements

During the course of a fight, robots may get flipped or stuck in an orientation such that they cannot demonstrate self-propelled motion. In each match, competitors are entitled to one unstick attempt by the referees. There is no guarantee that an unstick attempt will be successful. Additionally, it is possible that either robot may get damaged or end up in a less favorable position than they started when the unstick was attempted.

The referee will stop the match and bots must remain still and weapons powered down.

Pin

A pin occurs when a robot is actively preventing their opponent from moving. This includes, but is not limited to lifting, grappling, blocking, or forcing against a wall. Pins are used by Judges to help score matches. A pin is a demonstration of control.

A pin is counted as a pin when it is held for 5 seconds but it must not last more than 10 seconds. At the end of the pin, the pinning robot must release their opponent by giving them sufficient space to escape.

Referees will begin an audible 10 count when a pin begins. If the pinning robot does not release the pin *before* the referee says 10, the Judges will disregard the pin.

A pin must consist of both requirements to count in a judges decision:

1. The pin must be held until the referee's count reaches "5".
2. And, the pin must be released and the bots separate and move in different directions (just backing away from the pinned bot briefly before reengaging is not an adequate release).

Hazardous robots and behavior

If the Referee or MakerspaceCT staff deem a robot to be a hazard to the crowd, crew or competitors, or if a robot is inflicting considerable damage to the arena, the Referee may elect to end the fight early. In this case, the winner is determined by judges' decision.

Judging Criteria

Damage and Engagement Criteria Damage - 4 Points

Damage is about what is left at the end of the fight. Judges should note pre-existing damage and ignore it when it comes to rating the level of damage at the end of the match. The exception to this is damage that, if ignored, prevents an entry from reaching the maximum achievable damage grade. Typically this will only apply to drive functionality.

- A Tier: No damage, cosmetic damage, or minor damage to purely ablative* armor
- B Tier: Significant damage to purely ablative* armor, minor damage to mobility systems that do not noticeably hinder movement, damage to structure or armor that does not significantly hinder function.
- C Tier: Damage to the mobility system or weapon system(s) that moderately hinders function, or damage that significantly impairs the function of a robot's structure or armor.
- D Tier: Significant impairment of drive or weapon systems
- E Tier: Significant impairment of drive and weapon systems

			Bot 2			
		A	B	C	D	E

	A	2-2	2-2	3-1	4-0	4-0
Bot 1	B	2-2	2-2	2-2	3-1	4-0
	C	1-3	2-2	2-2	2-2	3-1
	D	0-4	1-3	2-2	2-2	2-2
	E	0-4	0-4	1-3	2-2	2-2

Significant impairment of the weapon is all weapon system elements being rendered non-functional.

For robots that rely on their weapon systems for mobility damage to the weapon system such that it impacts their mobility will be considered damage to both systems.

For robots with independently powered weapons wedges, plows, forks, and other similar elements will be considered part of their structure or armor.

For robots without independently powered weapons whichever feature they attack with will be treated as their weapon system.

*To qualify as “purely ablative” armor an element must be clearly designed to serve the sole purpose of being damaged or destroyed to absorb damage to protect the main structure of the robot. Significant impairment of the drive is classified as crab walking (appears to be translating via one drive side) or worse.

Engagement - 3 points

Engagement is about which robot takes charge of the flow of the match. Robots that score well in engagement will bring the fight to their opponent.

Engagement Examples Actions that positively contribute to engagement

- Attacking the opponent
- Pinning and releasing the opponent
- Getting the opponent stuck/high centered
- Chasing the opponent
- Inverting the opponent if it significantly impacts their ability to engage with the opponent

Actions that negatively contribute to engagement

- Sitting in one area waiting for the opponent to attack
- Fleeing from the opponent

- Performing anything from the positive contribution section to your own entry instead of your opponent

Actions that are neutral with respect to engagement

- Brief disengagements to prepare/reset/spin up your weapon
- Self righting attempts
- Inversion that does not impact a robot's ability to fight
- Missed attacks

A robot being slower should not directly impact its engagement score. Focus on what the robot is doing, not how fast it is doing it.

Engagement Scoring

- 2-1
 - This robot spent a slightly larger portion of the match dictating the flow of the fight
 - Throughout the fight this robot consistently maintained a slight edge on directing the flow of the match
 - This robot had one more complete pin than its opponent.
- 3-0
 - This robot spent most or all of the match dictating the flow of the fight
 - This robot had more complete pins than its opponent

Event rules

Pits

Battery power tools can be used in the pit area, with safety glass on. Each team must come prepared with the tools they might need. Power is provided at the pit tables. Please be tidy and safe in our pit area. The pits is also a place for community building, so please be kind and helpful to fellow competitors. If a repair requires more than a pit area can handle (like making a lot of sparks, etc.) please speak to MakerspaceCT staff about your needs and we will see what we can do.

Bot inspections

Before a robot's first fight at an event, it must pass a bot inspection, during which a Bot Inspector will ensure the bot is in compliance with all design and safety rules. Robots must pass bot inspection before they are able to fight. If the bot has not passed bot inspection before it is due to fight, it will forfeit the match.

The bot inspection process consists of:

- Weapon lock/weapon cover check.

- Checking that sharp edges are adequately covered when not fighting.
- Radio fail-safe testing for weapon and drive systems.
- Demonstration of general design requirements.
 - Active weapon and controlled motion.
 - Switch/removable link operation.
 - Any other functional, weight or design requirements specific to the robot's design or weapon type.
- Multibot segment check.
- Deceleration of any additional weapon modules
- Robot weigh-in (including weapon modules).
- Arena fouling material check.

Robots will not pass bot inspection if they are overweight.

Inspections are at the sole discretion of the referees and MakerspaceCT staff. Decisions are final and cannot be appealed.

Repair/readiness

Competitors have a 15 minute repair time between matches. If a bot is not repaired in 15 minutes, then they forfeit the match. Often there is a chance to rearrange the match schedule to allow for more time between matches, especially in the first half of the tournament. But competitors should not rely on that and should respect the 15 minutes time limit if it needs to be enforced by the referees or MakerspaceCT staff.

Cage load-in procedures

Competitors must arrive at the cage with their bot unpowered and with weapon lock installed. When cage-side, all competitors must follow directions from referees. Bots cannot use their drive or weapons systems at any time when the doors of the cage are open.

After the doors close, referees will direct competitors to demonstrate the functionality of their drive and weapon systems. Robots must display the ability to move within the arena, and they must show that their weapon is at least partially functional. Robots do not need to meet the standards set out by the functionality test at this point, but they must be meaningfully functional.

Safety Rules

Battery charging

- Any time a battery is charging, it must be attended by a builder or team member.
- Any lithium-chemistry battery must be charged using balance leads.

- If a battery catches fire or presents a safety hazard, make the situation as safe as possible and alert MakespaceCT staff immediately.

Weapon locks

A weapon lock is defined as a mechanism or component that will keep your weapon from being dangerous when your robot is not in the cage.

Generally, a weapon lock must be used whenever your robot's weapon system and batteries are installed. Weapon locks may only be removed:

- Immediately before a match
- During the photo portion of bot inspection
- During weight checks
- At the direction of a Referee, Cage Manager, Bot Inspector, or other NHRL safety official.

When your weapon system battery is disconnected or removed, or the weapon system is disassembled to the point of non-functionality, weapon locks are not required. Weapon locks should be installed as quickly as is feasible after final assembly..

While not strictly required, it is best practice that a weapon lock be installed when an assembled robot is left unattended, even if the batteries are not installed.

Bot testing

All robot weapon and drive testing must be done in a test box. Robots may not be driven on the floor of the pits, around the competition venue, or outside the test box, regardless of their weapon status.