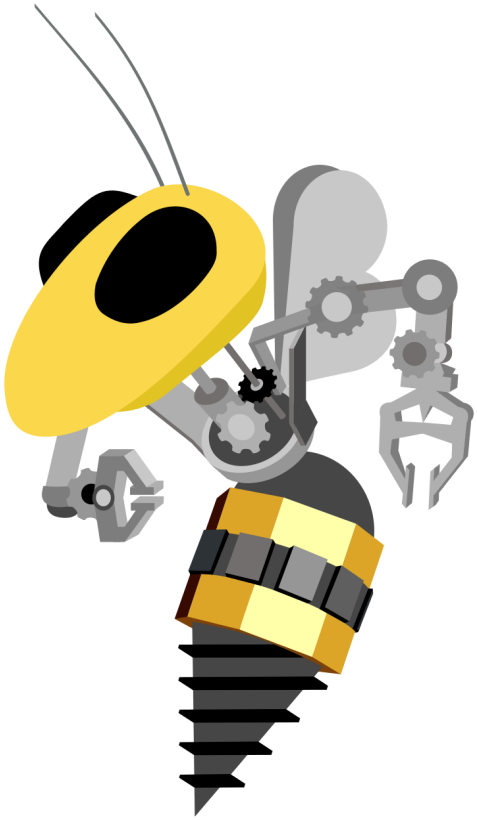
3lb Combat Robot Competition Rules



RoboJackets

Last Revision: 7/11/2025

Contact ryan.deangioletti@robojackets.org for clarifications

Contents

Introduction

The contents outlined in this document serve to promote a safe and exciting public display for competitors. Competitors are expected to follow the outlined rules. The robot design rules draw inspiration from NHRL's rules and Robot Fighting League to motivate safety, aggression, and creativity.

General Information:

a. All participants build and operate robots at their own risk. Combat robotics is inherently dangerous. There is no amount of regulation that can encompass all the dangers involved. Please take care to not hurt yourself or others when building, testing and competing.

b. This rule set is designed for adjustment by each event depending on its safety concerns.

c. If you have a robot or weapon design that does not fit within the categories set forth in these rules or is in some way ambiguous or borderline, please contact the event organizer. Safe innovation is always encouraged, but surprising the event staff with your brilliant exploitation of a loophole may cause your robot to be disqualified before it ever competes.

d. Each team will be allocated space in a “pit” area to perform repairs or preparation on their robot.

e. Testing of robots must ONLY occur in the test box prepared by RoboJackets. Failure to comply will result in forfeiture of all future matches.

f. Compliance with all event rules is mandatory. It is expected that competitors stay within the rules and procedures of their own accord and do not require constant policing.

g. Each event has safety inspections. It is at their sole discretion that your robot is allowed to compete. As a builder you are obligated to disclose all operating principles and potential dangers to the inspection staff.

h. Cardinal Safety Rules: Failure to comply with any of the following rules could result in expulsion or worse, injury and death.

    1. Radios may not be turned on at or near events for any purpose without obtaining the appropriate frequency clip or explicit permission from the event.

    2. Proper activation and deactivation of robots is critical. Robots must only be activated in the arena, testing areas, or with expressed consent of the event and its safety officials.

    3. All robots must be able to be FULLY deactivated, which includes power to drive and weaponry, in under 60 seconds by a manual disconnect.

    4. All robots not in an arena or official testing area must be raised or blocked up in a manner so that their wheels or legs cannot cause movement if the robot were turned on.

5. Locking devices: Moving weapons that can cause damage or injury must have a clearly visible locking device in place at all times when not in the arena
6. Weapon locking pins must be in place when weapon power is applied during a robot's power-on procedure. This includes all powered weapons regardless of the power source or weight class.
7. It is expected that all builders will follow basic safety practices during work on the robot at your pit station. Please be alert and aware of your pit neighbors and people passing by.

Spirit of the Competition

To ensure each fight is interesting to the audience and so that students are continuously testing their engineering prowess, each robot must contain an active weapon and must be able to disable the opposing robot. The event organizer and RoboJackets officers have complete discretion to disqualify robots based on the effectiveness of their weapons.

Please contact the event organizer about any questions you have.

Robot Rules

Weight

All robots must be at or below the maximum weight listed at the start of each fight. Additional weight allowances listed below may be allotted to entries that meet the criteria.

Weight Bonuses:

a. Non-Traditional Locomotion: +1.5 pounds

b. Multibot: +1 pound

Only one weight bonus can be used per robot entree

Non-Traditional Locomotion Bonus

Any robot that falls outside the definition of a “Traditional Motion System” qualifies for the Non-Traditional Motion Bonus. Traditional Motion Systems is classified as a robot that relies on rotational motion of a component in contact with the ground as its method of locomotion around the arena. This includes all forms of wheels (round, non-circular, spoked, or offset axis) as well as continuous tread, track or belt driven systems. This also includes any robot that uses unpowered rotating objects (wheels, drums, rollers, ball bearings, etc.) as a means of friction reduction with the ground.

Multibot Bonus

Competitors with multiple independent robots fighting under a single name may qualify for the Multibot Bonus. To qualify, the heaviest robot can not weigh more than 4 lbs / n (where n is the number of robots under a single name). Each bot in a Multibot must have independent active control and an active weapon capable of influencing the fight.

Batteries and Power

Bots must have an easily accessible master power cutoff in the form of a switch or removable link. The power cutoff must be accessible without disassembling the robot in any way. All electrical power to weapons and drive systems (systems that could cause potential human bodily injury) must have a manual disconnect switch (with proper DC amp and voltage rating) that can be activated within 15 seconds without endangering the person turning it off. The communication system must properly failsafe whenever a loss of signal occurs.

Battery charging must be done safely! Safe charging practices:

a. Inspect batteries for damage or puffiness before charging.

b. A team member must be present while a battery is charging.

c. Balance charge leads must be used for any OTS battery that has them.

d. Set an appropriate charge rate for your battery.

e. Keep a liposafe bag or sand bucket nearby while charging.

Weapons

All entrants must have an active weapon. An active weapon is defined as a weapon or mechanism that operates independently from the robot's drivetrain or means of locomotion.

"Meltybrains" (bots that can show controlled movement while spinning at rapid speeds), "Gyro Walkers" (bots that use spinning masses or weapons to generate inertia to induce translational motion), and "Bristle Bots" (bots that use vibrations from a spinning mass for locomotion) are exempt from this rule.

"Thwackbots" (robots which use momentum created by the robot's drivetrain to "actuate" an otherwise unpowered weapon) do not qualify as having an active weapon.

No weapons will be allowed to be pre-loaded prior to the start of the match. Springs must start in the free position, spinners must be completely stationary, etc. until the countdown to the match has finished. However, air tanks may be pre-compressed prior to the start of the match.

Design Restrictions

a. Fabric, foam, and other ablative armor is allowed. However, ablative armor must not be designed in such a way that it presents a likely entanglement risk. Any item that can potentially entangle another robot must be

approved by the event organizer.

b. Entanglement devices are not permitted. An entanglement device is defined as a component, subsystem or armor configuration that is designed to be entangled in the rotational or moving parts of an opponent. Liquids expelled from the robot are not permitted.

c. Flamethrowers are not allowed in this competition.

d. Electrical and shock weapons are not allowed in this competition.

e. Robots that obstruct visibility through the production of fog or smoke are not allowed in this competition.

f. Robots that may result in harm to those outside the cage are not allowed in this competition. This includes, but is not limited to: lasers, bright or strobing lights, or excessively loud noises.

g. Permanent magnets and electromagnets are permitted as long as they are not used offensively. Be warned however, that our arena floor is wood. Builders using magnets for non-standard purposes should contact the event organizer before the tournament.

h. No robot can ground any electric circuit off of its frame.

Safety

As part of the check in process, robots must complete a safety checklist before competing in any fights. Safety checks may be performed in our testing box, or in our main arena. If you are unable to perform your safety check in the testing box (for example, Meltybrains may have problems demonstrating motion), you may request to perform safety in the main arena.

Weapon and Locomotion Check

You will be asked to demonstrate your robot's weapon and locomotion.

a. Robots must be able to demonstrate controlled motion
b. Robots must be able to demonstrate an effective (capable of damaging/lifting another robot) active weapon
    1. This determination is at the safety inspectors discretion.
    2. For borderline cases, an object representing a 3lb robot will be used. Your robot must be able to demonstrate an effective active weapon on the object. However, this determination is still at the discretion of the safety inspectors.

Weapon Locks

Each robot must have a weapon lock that is able to contain the robot's active weapon. Weapon locks are required during loading and unloading into the ring or test boxes. Robots that don't use a weapon lock are a hazard to everyone and are not allowed.

During safety, you must demonstrate your robot's weapon lock to the safety inspector.

Robot Control Systems

Robot controls and communication systems must pass a failsafe test. 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.

All robots and Multibots must have a dedicated receiver(s). RC systems are preferred, other communication systems that are not a bound RC system should contact the event organizer before the event to ensure your communication system is allowed.

Autonomously controlled robots are allowed, but they must still retain a radio control module that can remotely activate and deactivate the robot.

Competition Info

a. Next Event: RoboJackets 3lb Tournament Fall 2025

b. Date: October 25th, 2025, fights starting at 11:00 am

c. Location: Cypress Theater, 351 Ferst Dr Nw, Atlanta GA, 30332 (Room 1110)

d. Event Organizer: Ryan De Angioletti, ryan.deangioletti@robojackets.org

Tournament Format

The RoboJackets 3lb tournament is a double-elimination bracket where each robot weighs 3 lbs or less. However this format may change depending on expected interest, and venue availability, but we will do our best to guarantee each competitor a minimum of 2 matches (more wins = more matches).

Matches will be 3 minutes in length unless a robot is deemed "inoperable" (cannot demonstrate translational movement) for 10 seconds, a driver taps out, or a robot's batteries are left exposed.

a. Translational movement is defined as the robot being able to make a movement or series of movements that lead to linear motion. A robot rotating around an immobilized drive wheel is not considered to demonstrate translational movement; though, if the robot is able to translate to another

position, the robot is considered to demonstrate linear motion. This decision falls under the discretion of the referee.

b. A driver is allowed to “tap out” and forfeit a match at any time.

c. A battery is considered exposed if the battery is no longer within the confines of the robot's outer shell and easily within striking distance of an opponent's weapon. Examples of this include batteries that are touching the ground and being dragged behind a robot and a robot who's entire shell has been removed, leaving the battery exposed. The decision to end a match like this is at the discretion of the referee.

The winner of the match can be decided in 4 ways.

a. The opposing robot is "knocked out" by ceasing all motion for 10 seconds. A verbal warning from the referee will be given to the driver to show any translational movement. If the robot is unable to translate in a controlled manner, a 10 second countdown will be started. At this point, if the robot regained translational motion, the countdown stops. If the opponent interferes during the countdown, the countdown will be restarted.

b. If the referee ends the match due to an exposed battery, the match is given to the robot without the exposed battery. In the event that both bots have exposed batteries,

the match will go to the judges.

c. If a driver taps out, the win is handed to the opponent.

d. The match reaches the 3 minute time limit and the panel of judges decide the winner.

Judge's Decisions Scoring Criteria

If both robots are still operable after the duration of the match, the match will be determined by the vote of 3 judges. Judges will consider the damage inflicted per robot, how the robots controlled the match, and the aggression of each robot.

Power on Procedure

Failure to comply with any of these rules could result in forfeiture of the match. Drivers should follow the procedure listed below, and **CANNOT ADVANCE TO THE NEXT STEP WITHOUT THE VERBAL COMMAND** of the cage-side referee.

a. The robot must NOT be operated for any reason prior to the beginning of the match except in designated testing areas.

b. The competing robots will be placed in the arena with the manual disconnect switch(es) OFF.

c. Drivers will set their controllers/transmitters aside where they will not be disturbed, turned ON, with all sticks/switches/throttles zeroed.

d. Drivers will turn their robots on.

e. Drivers will remove their weapon lock. Drivers will vacate the area around the arena door.

f. The cage-side referee will close and secure the cage.

g. AFTER the cage is secured, and the cage-side referee gives the all clear, drivers may pick up their controllers, test functionality, and proceed to their designated corners.

    1. Each driver may request one power cycle per match, before a match begins.

    2. Each driver may request one 20 minute delay per tournament, before a match begins.

Power off Procedure

Drivers should follow the procedure listed below when powering off their robot after a match. Sometimes however, robots with electrical or battery damage may not be safe to handle, and be prepared to cooperate with the cage-side referees instructions.

a. If possible, drivers will drive their robots towards the arena doors, and position their weapons away from the door. Drivers are encouraged to push their opponents towards the door if they are unable.

b. Drivers will set their controllers/transmitters aside where they will not be disturbed, turned ON, with all sticks/switches/throttles zeroed.

c. The cage-side referee will open the arena doors.

d. After the all clear is given by the cage-side referee, drivers will insert their weapon locks into their robots.

e. Drivers will then power down their robots using the manual disconnect switch(es).

General Regulations

a. One robot may only “hold” another for 10 seconds.

    1. Holding includes pinning, grasping, clamping, and immobilizing the opponent in any way. This includes utilizing the arena and any debris.

    2. The cage-side referee will begin counting to 10 to signify the hold.

    3. The controlling robot must release the hold before the end of the 10 second count.

    4. The controlling robot must allow the other robot a means of escape, providing both proper clearance and time. This is at the discretion of the cage-side referee. If the release is not satisfactory, the cage-side referee may issue a warning or forced forfeit depending on the severity and repetition of this action.

b. If two bots become entangled, with no means of untangling each other, the match will pause temporarily. Follow the cage-side referee’s instructions.

c. Each robot is allowed one unstick per match. Competitors may not attempt to unstick their robots themselves through

the use of unprompted by the cage-side referee slamming or kicking the arena. Follow the cage-side referee's instructions.