# CRBL RULESET

2026-2027

## 1 Design Constraints:

1.1 The weight limit is 2lbs (907 grams.) All robots will be weighed in prior to competing.

1.2 The size limit is 36x36x36cm (45x45x45 studs.)

1.2.1 Robots are allowed to extend outside of the size limit during a match, as long as they fit at the start of the match.

1.3 Unless stated as an exception, all entrants must be made entirely from unmodified LEGO brand parts.

1.4 LEGO brand parts must be official LEGO elements. Cardboard boxes, instructions, and other non-element LEGO items may not be used.

1.5 Because parts often break in combat, damaged parts are not considered modified. Damaged parts are only allowed to be used if they are not used in a way that would not be possible with a brand-new copy.

1.6 In an attempt to reduce friction wear on parts caused by movement within the mechanism of a design, a small amount of plastic-safe lubricant is allowed.

1.7 Due to the discontinuation of the following commonly used components, third-party alternatives are allowed. Third-party alternatives must be indistinguishable from the LEGO equivalent.

1.7.1 Metal train axle (Bricklink part ID: x1687)

1.7.2 Metal hook (Bricklink part ID: 70644)

1.8 Robots are allowed up to 20 grams for aesthetics. These features must be used for the purpose of decorating the robot and cannot be used to benefit the design in any other way. For example, brick-built walls that add an additional layer of armor do not factor into this bonus, aesthetically pleasing or not.

1.8.1 Any opponent may request the removal of any decorations from another design prior to a match if they can explain why the aesthetics will change the outcome of the match.

1.8.2 Stickers are allowed only for the purpose of decorating the robot. Stickers may not be used in any other way, and they may not hold parts together.

1.8.3 Decorations added onto a design that would not fit under the weight limit without this bonus must be approved by the organizer before fights begin.

1.8.4 Paint may be used to color parts.

1.9 The following systems and items are not allowed:

- Magnets
- Anything purposely designed to damage the arena
- Anything designed to interfere with radio signals from an opponent's controller
- Anything designed to cause the need for unsticks
- Glue. Glue may be used to make internal repairs for motors and other electronics, although it is not allowed for holding parts together.

1.9.1 The component "Technic Rotor Blade Large with 3L Liftarm Thick and Groove" (Bricklink part ID #5240) may not be used in a design. This part has been known to cause frequent entanglement and jamming of weapons. Any part that is functionally equivalent and poses a similar risk of entanglement may also be prohibited at the discretion of CRBL staff.

1.10 Any design that is permitted through a "loophole" in the rules and is classified by CRBL staff as unsafe, unsportsmanlike, or destructive to the competition in any way will not be allowed to compete

## 2 Weight Bonuses:

2.1 Robots may build up to 1100 grams if one or more of the following is true:

- The entry is a multibot
- The robot uses non-wheeled drive (crawlers, shufflers, tank treads, etc.)
- The robot drives with mecanum or omnidirectional wheels.
- The robot is powered with only unmodified LEGO brand batteries.

2.2 The CRBL has the right to reject a design from receiving a weight bonus if it is determined that the above criteria is not met.

# 3 Electronics Rules:

3.1 Third-party power sources are allowed if approved prior to the registration deadline.

3.1.1 The following third-party batteries are pre-approved and allowed:

- BuWizz 3.0 battery packs
- Mould King 4.0 and Mould King 6.0 battery packs

3.1.2 Any third-party power source that is not listed above must be approved by CRBL staff prior to the registration deadline. Modified LEGO brand power sources must also gain approval before the registration deadline.

3.2 Third party power sources that are not listed above must meet the following criteria:

- Batteries may not supply a voltage above 12.6 volts.
- All power sources using a Lithium battery must demonstrate that they can be safely balance charged. Balance charging is the only allowed method to recharge Lithium batteries.

3.3 Batteries are not allowed to be exposed in a design. All batteries must be enclosed within a protective casing.

3.4 All unmodified LEGO brand power sources are allowed, and do not need to be preapproved.

3.5 Third-party motors are allowed if approved prior to the registration deadline.

3.5.1 The following third-party motors are pre-approved and allowed:

- Mould King XL, L, M, and servo motors
- Green Gecko XL, L, M, and servo motors
- BuWizz motors and BuWizz Micro motors

3.5.2 Any third-party motor that is not listed above must be approved by CRBL staff prior to the registration deadline. Modified LEGO brand motors must also gain approval before the registration deadline.

3.6 Third party motors that are not listed above must meet the following criteria:

- All motors must be contained in a casing identical or nearly identical to that of an official LEGO version.
- No single motor is allowed to exceed a continuous current draw above 3.5 amps while in use.
- Brushless motors are not to be used inside of a design.

3.7 In order to achieve the maximum possible performance out of motors, fuses may be removed from the inside of the motor.

3.8 Third-party adaptors are allowed for connecting wires. Additionally, motors may use custom connectors that do not match the dimensions of connectors provided by LEGO. Connectors may in no way influence the structural integrity of a design.

3.9 Wires are allowed to be shortened or lengthened.

3.10 Any third party or modified electronics that are determined by CRBL staff to be unsafe will not be permitted.

3.11 Third party receivers and controllers are allowed to control a design, and do not need to resemble a LEGO brand model.

# 4 Weapon Rules:

4.1 All entries must have an active weapon. An active weapon is classified as a motorized system designed to damage and/or exhibit control over an opponent in order to win a match.

4.1.1 Static geometry (forks, wedges, walls, spikes, claws, etc.) that are not motorized are allowed, but will not alone fulfill the active weapon requirement. This includes components that are hinged, pulled in place by springs or elastics, or any other non-motorized connection that enables movement.

4.1.2 The primary weapon on a design must be powered separately from the drive.

4.1.2.1 An exception to this rule exists when the primary weapon results in the main method of movement for the design. This includes, but is not limited to gyroscopic forces or vibrations caused by the use of the weapon.

4.1.3 The primary weapon on an entry must be designed for the intent to effectively damage and/or exhibit control over another opponent rather than to fulfill the active weapon requirement at a bare minimum. The organizer has the right to reject any design that does not meet the spirit of the active weapon rule.

4.2 The following weapon types are not allowed:

- Fire
- Liquids
- Heat weapons (excluding friction saws)

- Weapons designed to jam or entangle an opponent's weapon

4.3 Metal parts are allowed in weapons, but they may not be used as a contact point.

4.4 Third-party string and rubber bands are allowed for use in the weapon mechanism. String and rubber bands (LEGO brand or third party) may not be used for other purposes such as holding parts together, creating protective layers outside of the frame, etc.

4.5 Battery packs filled with any batteries are not allowed in the weapon itself.

4.6 Third-party pneumatics are allowed only if the dimensions match those of their LEGO counterparts.

4.6.1 Air ports are allowed to be drilled to custom sizes.

## 5 Multibot rules:

5.1 Multibots are classified as two independent robots registered under the same name.

5.2 Only one robot in a multibot entry must have an active weapon.

5.3 A multibot entry may have no more than two independent robots.

5.4 For a multibot to be knocked out, both robots must be unable to demonstrate controlled movement.

5.5 The difference in weight between robots in a multibot pair must meet a 4:7 ratio. At a minimum, the lighter robot may weigh 400 grams with the heavier robot weighing a maximum of 700 grams. Bots within a multibot entry may weigh anywhere between 400 and 700 grams.

## 6 Safety:

6.1 If a battery becomes exposed, the match is over. The robot that loses its battery loses the match by knockout.

6.2 In the event of any emergency situation, the fight will be immediately stopped and resumed when conditions are made safe. If the fight cannot be resumed for any reason, it will be brought to a judges' decision.

6.3 High-speed weapons are not to be tested outside of the arena. Doing so will result in a warning, and then a ban from the competition if repeated.

6.3.1 Robots are allowed to test high speed weapons inside of the smaller test box.

6.4 Any competitor that aims for and hits a dislodged battery lying on the floor will lose the match and be removed from the competition. This does not include accidental hits.

6.5 The CRBL staff have a right to reject any design that is determined to be unsafe in any way. All electronics that are neither pre-approved nor an unmodified LEGO brand product must gain approval prior to the registration deadline.

6.6 All robots must pass safety before being allowed to compete. This process includes the following:

6.6.1 A weight and size check

6.6.2 A drive and weapon test done inside the arena

## 7 Match rules:

7.1 The match length is two minutes.

7.2 After two minutes, the winner will be announced based off of a judges' decision.

7.3 A match will end early in the event of a knockout if a robot cannot show forward directional movement.

7.3.1 "Crab walking" with only one side of working drive counts as directional movement if the robot can make its way to the opposing robot.

7.4 If both robots become incapacitated at the same time, a double knockout will occur and the winner will be declared by the judges.

7.5 If a robot is hit out of the inner playing area, a knockout countdown will take place.

7.6 During a rumble, all but one of the robots must be incapacitated for a knockout victory to occur.

7.7 If two robots become stuck in a way in which they cannot separate for 10 seconds, the match will be paused for a manual unstick. This differs from pins and grapples where one robot holds another intentionally for a limited time.

7.7.1 During an unstick, all weapons must be stopped and controllers must be placed on top of the arena.

7.7.2 Officials may request the removal of certain parts after an unstick to prevent the robots from getting stuck later in the match.

7.7.3 If a competitor moves during an unstick or uses their weapon, they will forfeit the match.

7.8 There will be only one manual unstick per match. If another unstick is required, the match will go to a judges' decision.

7.9 A competitor is allowed to hold a pin for 10 seconds. A pin occurs when a robot holds an opponent against the wall or in any other stationary position. After 10 seconds, the pin must be released and the robot must be driven towards the center of the arena.

7.10 A competitor is allowed to grapple for 20 seconds. A grapple occurs when one robot maintains complete control over another while driving around. After 20 seconds, the opponent must be released.

7.11 A driver may not intentionally hold a pin or grapple to extend a knockout countdown. Doing so will cancel the count out.

7.11.1 If a design attacks an opponent or engages to free it from a stuck position during a countdown, the countdown will be canceled. If the immobilized robot still cannot drive after 5 seconds of this cancellation, the countdown will be restarted and will only stop if the design can demonstrate controlled motion.

7.12 A robot must not leave its starting square or power its weapon during the countdown to begin the match. Doing so will result in a false start, in which the match will be restarted.

7.13 A match reset may occur if a robot does not function properly at the beginning of a match, and the referee is made aware within 5 seconds of the start of the fight. In this case, the builder will be granted 2 minutes to resolve any issues, and then the match will be restarted.

7.13.1 Only one match reset may be granted throughout an event.

7.13.2 It is the responsibility of the driver to immediately inform the referee.

7.14 Competitors are allowed to tap out/forfeit a match in order to save time on repairs.

7.15 Attacking an opponent after the end of a match will result in a forfeit loss.

## 8 Judging:

8.1 When a fight goes to a judges' decision, judges will declare a winner using a 17-point system. This is composed of 7 points for weapon effect, 5 points for aggression, and 5 points for control.

8.1.1 Weapon effect: How effective the primary weapon of a design was in determining the outcome of the match. This includes damage caused to the

opponent, as well as grabbing, flipping or throwing a design. Self-inflicted damage will count against a design.

8.1.2 Aggression: How often a robot engages with the opponent. This includes intentional use of the primary weapon, followed by engagement such as ramming into a design if the weapon is damaged or disabled. Continuing a match by unsticking an opponent caught in a position where it is unable to drive will weigh heavily in this category.

8.1.3 Control: How well a robot controls the pace and tempo of the match. This includes, but is not limited to, pinning, grappling, and putting the opponent in positions where it cannot drive normally.

8.2 In a close match, judges may request to inspect the damage on each robot before they are picked up by the driver.

8.3 All judges' decisions are final.

8.4 Competitors are not allowed to judge matches they were in.

## 9 Liability:

9.1 By entering the competition, the builder acknowledges that:

- Opponents and event staff are not responsible for damage caused to their design. There is yet to be a CRBL event where parts have not broken.
- The safe handling of a design outside of the arena is the responsibility of the builder.
- All robots must pass safety before being allowed to compete.
- Event organizers may remove any competitor for unsafe conduct or any behavior that is destructive to the convention.
- Fights will be filmed and uploaded onto YouTube, and robot drivers may be seen on camera. The footage will not be edited to hide or remove faces from the video.
- All robots must be approved no later than 2 weeks prior to the event to ensure that they meet the design criteria and to provide enough time for a tournament bracket to be made. Robots submitted later may be left as reserves.


For questions regarding the CRBL ruleset, please email us at outwork.robotics@gmail.com