Antweight World Series Rules 2025

1) Definitions

Roller
A robot using wheels or similar full rotation capable component contacting the arena to move.
Non-Roller
Any robot not fitting the Roller definition including Shufflers, Walkers, Hovercrafts,
Non-Traditional Locomotion / NTL
Hereafter referred to as NTL. A robot employing wheels or similar full rotation capable component in a non-traditional way, for example Melty-Brain or Omni wheels. Melty-brain (translational spinner) robots must be able to demonstrate controlled translation. Omni wheeled robots must have the ability to strafe.
Flyer
Any robot that moves through self sustained flight. This type of robot is not allowed.
Cluster Bot
A robot which consists of two or more parts (e.g. two half sized robots/botlets)
Multi-Weapon Bot
A robot which consists of interchangeable weapons.
Arena
The area robots are intended to fight in. A fully enclosed safety cover surrounds the arena.
Pit or **Drop-off**
Gaps or spaces in the arena floor, normally at the edges, that a robot may fall into.

2) Weight

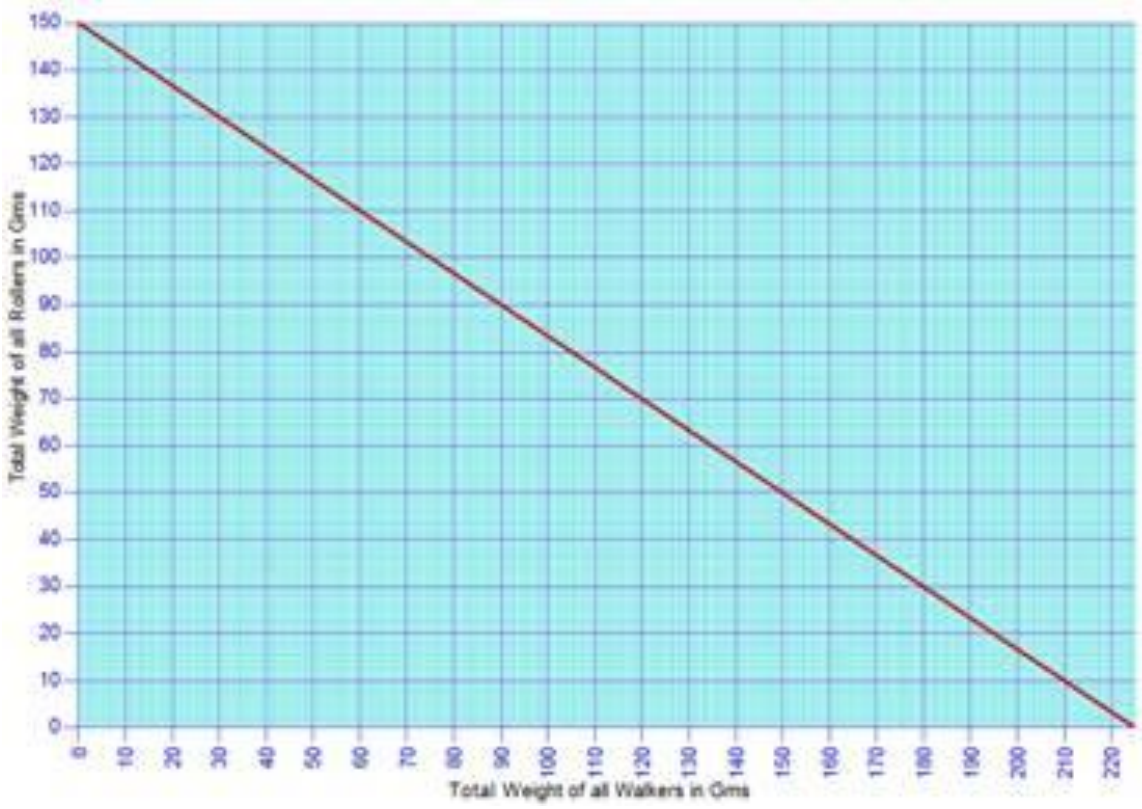
Weight limits
Antweight
Roller: 150g
Non-Roller: 225g
Fleaweight
Roller: 75g
Non-Roller: 113g
Nanoweight
Roller: 25g*
Non-Roller: 38g

	Roller	NTL	Non-Roller
Bonus Entry	No	Yes	Yes
Weight Bonus	No	No	Yes

b) All parts of a Cluster Bot must all together meet the size and weight limits of the class in which they are competing.

c) Where a Cluster Bot is composed of Roller and Non-Roller parts, then the following formula or graph apply:

Total weight of **Rollers** = **Roller** Limit – ((2/3) * Total weight of **Non-Rollers**)
or
Total weight of **Non-Rollers** = 1.5 * (**Roller** Limit – Total weight of **Rollers**)



3) Size

a) Robots of all weights must sit entirely within a square floor space with an edge length of 150mm, with no overhang allowed at any height.

b) Clusterbots should be measured with all components in the square simultaneously, with no overhang allowed at any height.

c) In all cases, robots should start the match in the configuration used to pass tech check.

d) Robots may only expand from their size limit once a fight has begun, and only if the expansion is instigated by remote control (i.e. not just by being springy). If a robot in a cluster`s expanding is triggered by another cluster part they must start the fight how they fit together in the allotted floor space.

4) Control

a) Robots must have an externally accessible way of being shut down (e.g. a power switch, removable link or battery plug) that can be operated without tools. All power switches etc. must be clearly marked on/off.

b) Radios may use the following frequencies: 27 MHz, 40 MHz, 418 MHz, 433-434 MHz, 868 MHz and 2.45 GHz. All Radios must comply with all relevant rules and regulations.

c) For safety purposes, all weaponry must have the capability of being deactivated by remote control.

d) Failsafe – The robot shall cease all motion when the controlling transmitter is switched off.

5) Weapons

a) The following weapon types are not permitted:

- Glue or sticky pad weapons
- Fluid based weapons (treacle guns, etc.)
- String or entanglement weapons
- Flame based weapons
- The use of electricity as a weapon
- Explosive weapons
- Magnetic/inductive systems
- Heat based may be allowed at the EO discretion
- Saw blades are allowed but must not be of a material that will shatter, final allowance will Be at EO discretion
- Any device designed to distract or interfere with the driver (strobe lighting, high brightness LEDs or loud speakers)

b) Any system involving the use of pressurised gas or liquid is limited to 7 bar.

c) Weapons are not permitted to deliberately detach completely from the robot, but may be partially separated as long as it remains tethered. The tether may not be used as an entanglement weapon.

d) All sharp edges must have protective covers outside the arena. All protective covers are to be made clearly visible.

e) Spinning weapon tip speed must not exceed 600mph.
Calculations must be provided at registration using the following measurements:

Rotation Velocity (rpm) = max cell charge x cell number x motor kv / reduction ratio

Reduction Ratio = output pulley / motor pulley

Tip Speed (mph) = rpm x diameter(mm) x pi x 60/1609344

Online calculator can be found at https://bristolbotbuilders.com/tools/tipspeed/

(Tip speed formulae courtesy of Bristol Bot Builders)

f) Locking bars and other devices intended to prevent accidental weapon movement should be visibly easy to identify in a contrasting colour to the robot, and be fixed in such a way as to prevent accidental removal. Locking devices should be shown to work if required.
Locking bars are mandatory for all spinners, stored energy weapons and any high energy weapons.

6) Power

a) Batteries must not contain liquid acid, or electrolyte, or exceed a maximum of 50 volts.

b) LiPo batteries should not be left unattended whilst charging.
It is recommended to charge exposed LiPo batteries in a LiPo charging bag.
The EO decision is final regarding charging.

7) Arena Rules

a) All battles must take place in an arena, regardless of weapons being used in the battle.

b) Arena doors must be closed before any fight begins, regardless of weapon type.

c) The arena will be a raised platform with an area of at least 750mm square, with 1m square recommended.

d) There must be at least one unwalled gap of 200mm square to allow robots to drop directly into the pit or drop-off that surrounds the arena.

e) Arena safety enclosure (outmost layer) minimum 4mm with a minimum (6mm / 50mm height in any areas where the area floor is adjacent to the safety enclosure. This can be achieved by adding a “kick plate” layer of polycarbonate of at least 2mm if required.

8) Combat Rules

a) Battles will last for two minutes. The judges will decide the winner of any battle that has not ended after the time limit.

b) A robot that falls off the arena and touches the bottom of the pit or drop-off has lost. If a robot bounces into and out of the pit or drop-off without touching the bottom (or robot or component already within the pit or drop-off) the fight may continue.

c) When any robot is immobile or lacks controlled motion (lacking the ability to engage) then a judge will start a 10 second count down after which the robot will have lost if it is unable to restore controlled motion. Contact between an immobile robot and an opponent will reset the count. If a robot is counted out the immobilisation is retrospectively considered to have applied at the start of the count (For cases where a robot may leave the arena while their opponent is being counted out).

d) At any time in a fight, a robot may surrender, in which case they will have lost (The roboteer may clearly shout stop).

e) Robots may hold or pin each other for a maximum of 20 seconds. The judge will give a verbal warning for the contestants to disengage. If they are unable to do so the battle will be paused and the robots separated where they are. The battle will then recommence immediately.

f) Outside manipulation, including physical contact with the arena or parts, is not permitted during the contest (they may be manipulated by a judge during a pause in the battle, as described in the previous rule).

g) A Cluster Bot will have lost when all of its Bot-lets have been eliminated

h) If a robot leaves the arena after the battle has started but before the robots have made contact the battle is to be restarted. A maximum of 2 restarts is allowed per robot.

i) The Aggressor Rule – If two robots fall into a pit or drop-off at the same time ending the fight, where one bot can be clearly identified as the aggressor to this action, the aggressor is judged to have won. Otherwise consider under rule 8j (normally this occurs where one robot is pushing the other, reactions from spinning weaponry hits are not considered under 8i).

j) If opposing robots have left the arena simultaneously (and cannot be decided under rule 8i) then the fight will be paused, the robots involved placed immediately back in their start positions (Without repairs) and the fight restarted. If a robot is unable to continue it will be judged to have lost, if both robots are unable to continue the judges will decide the winner.

k) Common Sense Winner – If a robot damages another robot, rendering it completely incapable of continuing to fight in any manner (Such as loss of power or no method of any movement), but the damaging robot falls into a pit or drop-off as a result of the attack, as long as the damaging robot is capable of continuing to fight, then the judges may award the damaging robot the win at their discretion.

j) Exposed Lipo Rule - If at any time during the fight a lipo battery becomes exposed, the fight will end immediately with the affected robot being deemed to have lost the fight.

9) Competition Guidelines

a) Contestants must obey the event organiser at all times, or be disqualified. Event organisers have final say on any issues raised at an event.

b) There shall be 3 neutral judges identified before each battle. If a contestant has an objection to one or more of the judges, then they shall make it clear before the match begins. The event organisers will then decide if the complaint is valid.

c) Before competition commences, each robot will be checked by the event organisers to ensure that a minimum of the following rules are complied with before being allowed to compete: weight, size, power link/switch, failsafe, sharp edges, locking bar.

d) In the case of Multi-weapon Bots, if any configuration is a spinner (or heated element if allowed by the EO) this must be tech checked to confirm failsafe. In all cases the heaviest configuration must be declared at Tech Check and the roboteer must ensure its weight is checked prior to using it in a battle.

e) All teams must be self-contained in terms of driver, transmitter, robots, i.e. these cannot be shared with another team. Cluster Bots may use additional drivers from other teams but must comply with all other parts of this rule.

f) Robots should only be handled by the robots' team or event organisers, judges or marshals. It is the driver's responsibility to ensure their robot is safe and all weapons are inactive before retrieval, robot power off and locking bars fitted before moving away from the arena.

g) A robot must be placed in the arena when called to fight within five minutes of being called by the event organiser (this is a maximum limit, contestants are encouraged to be ready to fight as soon as possible). Robots failing to be ready within this time may be judged to have lost the fight. EO discretion may be used.

h) Robots must only be operated inside the arena with the exception of normal testing for functionality on a bench. Spinning or otherwise dangerous weaponry must only be tested inside an arena or designated test box, with the doors closed.

i) Non-combatants must not touch the arena and keep back from it during battles.

j) A LiPo bag or similarly suitable container must be readily available by the arena during each fight. The container/bag must be large enough to contain the robots.

k) A team may enter a maximum of four robots of which three may be Rollers and one NTL, Non-Roller or Cluster. (Where robot numbers require limiting it is recommended that the number of Rollers a team may enter is reduced first over Non-Rollers or Clusters, this is an EO decision but should be borne in mind when entering a team).

l) Random checks may be made before any fight to ensure rule compliance, no reason needs to be given.

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