SPARC Robot Construction Specifications v1.2

1. Overview and Purpose
   1.1. The SPARC Robot Construction Specifications was created to provide both builders and event organizers with an up to date and easy to implement ruleset.
   1.2. The SPARC Standard Ruleset will call out areas where the rules are often altered by the events and will provide the most frequently used options for easy adaptation.
   1.3. If you choose to utilize the SPARC Robot Construction Specifications and modify the rules to adapt to your event please note specific areas that differ from the standard SPARC rules in section 2.

2. Deviations From Robot Construction Specifications
   2.1. This section is provided as a location to provide a brief outline of where the rules for a specific event differ from the SPARC Robot Construction Specifications.
   2.2. All changes from the baseline SPARC Robot Construction Specifications shall be clearly highlighted to allow easy identification of deviations from the original document. Use a ~~strikethrough~~ to mark off removed rules text

3. General
   3.1. 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.
   3.2. 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.
   3.3. 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.
   3.4. Cardinal Safety Rules: Failure to comply with any of the following rules could result in expulsion or worse, injury and death.
      3.4.1. Radios that do not operate using spread spectrum technology may not be turned on at or near events for any purpose without obtaining the appropriate frequency clip or explicit permission from the event.
      3.4.2. 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 it's safety officials.
      3.4.3. All robots must be able to be FULLY deactivated, which includes power to drive and weaponry, **in under 60 seconds by a manual disconnect**.
      3.4.4. 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. Runaway bots are VERY dangerous.
      3.4.5. 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. Locking devices must be painted in neon orange or another high-visibility color. Locking devices must be clearly capable to stopping, arresting or otherwise preventing harmful motion of the weapon.
      3.4.6. 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.

3.4.7. 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.

4. Weight Classes.

This event offers the listed weight classes in section 4.1. There is a 100% weight bonus for non-wheeled robots (There may be a 50% weight bonus for shufflers or other forms of locomotion which do not fall within the definition of non-wheeled robot - see 5.1.2 for a definition of a non-wheeled robot.)

4.1.

1lb Plastic Class
1lb / 454g
3lb / 1.36kg
12lb / 5.44kg
30lb / 13.61kg
60lb / 27.22kg **Open Air Combat Class**

4.2. **Open Air Combat Classes.** For events where some or all classes compete in an open air environment the following restrictions apply.

4.2.1. Slow spinners are allowed with an absolute maximum tip speed of 20 feet per second and may spin in any direction. The tip speed in feet per second is calculated by this formula: Tip Speed = RPM x Diameter x .00436.

4.2.2. Additionally, any weapon systems that may be capable of tearing off pieces of the opponent (flippers, axes, etc…) must be cleared with the event organizer prior to competing.

4.3. **Plastic Class** The plastic class is intended to be a low cost easily accessible weight class. All primary frame and weapon components that are intended to be structural or come into contact with the opponent must be made of plastic. Small components such as motors, gearboxes, fasteners, batteries, electronics etc may be other than plastic, obviously. Don't get cute and try to strap metal motors to the end of a plastic spinner, that's a dick move. This is intended to be a low-cost entry level weight class tailored to 3d printing. Getting hypercompetitive with composite reinforced plastics or high cost engineering plastics goes against the spirit of the weight class.

5. Mobility

5.1. All robots must have **easily visible and controlled mobility** in order to compete. Methods of mobility include but are not limited to:

5.1.1. Rolling (wheels, tracks or the whole robot)

5.1.2. Non-wheeled: non-wheeled robots have **no** rolling elements in contact with the floor and **no** continuous rolling or cam operated motion in contact with the floor, either directly or via a linkage. Motion is "continuous" if continuous operation of the drive motor(s) produces continuous motion of the robot. Linear-actuated legs and novel non-wheeled drive systems may qualify for this bonus. If you are intending to enter a non-wheeled robot in any event contact the event as soon as possible to determine what if any weight bonus you will qualify for.

5.1.3. Shuffling (rotational cam operated legs)

5.1.4. Ground effect air cushions (hovercrafts)

5.1.5. Jumping and hopping

5.1.6. Flying (airfoil using, helium balloons, ornithopters, etc.)

6. Robot control requirements:
   6.1. Tele-operated robots must be radio controlled, or use an approved custom system as described in 6.4.3. Radio controlled robots must use approved ground frequencies, typically 27/49/50/53/75/900/2400 for the United States.
   6.2. Tethered control is not allowed.
   6.3. Pre 1991 non-narrow band radio systems are not allowed.
   6.4. Radio system restrictions for this event with corresponding weight and or weapon restrictions:
      6.4.1. Radio systems that stop all motion in the robot (drive and weapons), when the transmitter loses power or signal, are required for all robots with active weapons or any robot over 12lbs. This may be inherent in the robots electrical system or be part of programmed fail-safes in the radio. Robots 1 lb and less typically will be required to have drive fail-safes.
      6.4.2. All robot radio systems must have a way to change frequencies or coded channels to prevent radio conflicts. Having at least **two** frequencies or coded channels available is **required**. Lack of extra frequencies may result in a forfeit. Digital spread-spectrum radios that use frequency hopping or automatic channel selection qualify under this rule.
      6.4.3. If you are using a home built control system, or a control system not covered here, you must first clear it with the event you plan to attend.
      6.4.4. Toy radio systems are sometimes allowed at events for robots up to 12 lbs with no active weapons.
      6.4.5. RC systems on the AM band are allowed for robots up to 12 lbs with no active weapons.
      6.4.6. All robots that are either: a.) 30 lbs or above or b.) 12 lbs or above with an active weapon MUST use a radio systems on the FM band with PCM, IPD coding, a digitally coded 900 MHz or 2.4GHz system (for example IFI, Spektrum, etc), or an approved custom control system.

7. Autonomous/Semi-Autonomous Robots: Any robot that moves, seeks a target, or activates weapons without human control is considered autonomous. If your robot is autonomous you are required to contact this event before registration.
   7.1. Autonomous robots must have a clearly visible light for each autonomous subsystem that indicates whether or not it is in autonomous mode, e.g. if your robot has two autonomous weapons it should have two "autonomous mode" lights (this is separate from any power or radio indicator lights used).
   7.2. Robots in the 12 pound or under classes are exempt from the remaining rules below, but safe operation, arming, and disarming must be demonstrated in safety inspections.
   7.3. The autonomous functionality of a robot must have the capability of being remotely armed and disarmed. (This does not include internal sensors, drive gyros, or closed loop motor controls.)
      7.3.1. While disarmed, all autonomous functions must be disabled.
      7.3.2. When activated the robot must have no autonomous functions enabled, and all autonomous functions must failsafe to off if there is loss of power or radio signal.
      7.3.3. In case of damage to components that remotely disarm the robot, the robots autonomous functions are required to automatically disarm **within one minute of the match length time** after being armed.

8. Batteries and Power
   8.1. The only permitted batteries are ones that cannot spill or spray any of their contents when damaged or inverted. This means that standard automotive and motorcycle

wet cell batteries are prohibited. Examples of batteries that are permitted: gel cells, Hawkers, NiCads, NiMh, dry cells, AGM, LIon, LiFe, LiPoly, etc. If your design uses a new type of battery, or one you are not sure about please contact the event you're planning to attend.

8.2. All onboard voltages above **48 Volts** require prior approval from this event. (It is understood that a charged battery's initial voltage state is above their nominal rated value)

8.3. All electrical power to weapons and drive systems (systems that could cause potential human bodily injury) must have a manual disconnect that can be activated within **15 seconds** without endangering the person turning it off. (E.g. No body parts in the way of weapons or pinch points.) Shut down must include a **manually** operated mechanical method of disconnecting the main battery power, such as a switch (Hella, Whyachi, etc) or removable link. Relays may be used to control power, but there must also be a mechanical disconnect. Please note that complete shut down time is specified in section 3.4.3.

8.4. All efforts must be made to protect battery terminals from a direct short and causing a battery fire.

8.5. If your robot uses a grounded chassis you must have a switch capable of disconnecting this ground. ICE robots are excepted from this rule if there is no practical way to isolate their grounding components. You must contact this event for this exception.

8.6. All Robots must have a light easily visible from the outside of the robot that shows its main power is activated.

9. Pneumatics

9.1. Pneumatic systems on board the robot must only employ non-flammable, nonreactive gases (CO2, Nitrogen and air are most common). It is not permissible to use fiber wound pressure vessels with liquefied gasses like CO2 due to extreme temperature cycling.

9.2. You must have a safe and secure method of refilling your pneumatic system.

9.2.1. SPARC recommends the use of standard paintball fill fittings available at many retail outlets and online. For specs see Part#12MPS from Foster, http://www.couplers.com.

9.3. **Exemptions**

9.3.1. Robots **12 lbs and under** and systems with gas storage of **2 fl oz** or less are exempt from the remaining rules in this section **provided that** the maximum actuation pressure is **250 PSI or less** and all components are used within the specifications provided by the manufacturer or supplier. If the specifications aren't available or reliable, then it will be up to the EO to decide if the component is being used in a sufficiently safe manner.

9.3.2. Pneumatic systems with pressures below 100 PSI, small volumes (12-16g CO2 cartridges), single firing applications, or pneumatics used for internal actuation (as opposed to external weaponry) **may** also be exempted from the remaining pneumatic rules. You are required to contact this event if you would like an exception.

9.4. All pneumatic components on board a robot must be securely mounted. Particular attention must be made to pressure vessel mounting and armor to ensure that if ruptured it will not escape the robot. (The terms 'pressure vessel, bottle, and source tank' are used interchangeably)

9.5. All pneumatic components within the robot must be rated or certified for AT LEAST the maximum pressure in that part of the system. You may be required to show rating or certification documentation on ANY component in your system.

9.6. All pressure vessels must be rated for at least 120% of the pressure they are used at and have a current hydro test date. (This is to give them a margin of safety if

damaged during a fight.) If large actuators, lines, or other components are used at pressures **above 250psi** these will also need to be over-rated and are to be pre-approved for this event.

9.7. All primary pressure vessels must have an over pressure device (burst/rupture disk or over pressure 'pop off') set to no more than 130% of that pressure vessels rating. (Most commercially available bottles come with the correct burst assemblies, use of these is encouraged)

9.8. If regulators or compressors are used anywhere in the pneumatic system there must be an (additional) over pressure device downstream of the regulator or compressor set for no more than 130% of the lowest rated component in that part of the pneumatic system.

9.9. All pneumatic systems must have a manual main shut off valve to isolate the rest of the system from the source tank. This valve must be easily accessed for robot de-activation and refilling.

9.10. All pneumatic systems must have a manual bleed valve downstream of the main shut off valve to depressurize the system. This bleed valve must be easily accessed for deactivation. This valve must be left OPEN whenever the robot is not in the arena to ensure the system cannot operate accidentally.

9.10.1. It is **required** to be able to easily bleed all pressure in the robot before exiting the arena. (You may be required to bleed the entire system if it is believed that you have any damaged components.)

9.11. All regulated pneumatic systems must have an appropriate gauge scaled for maximum resolution of the pressure on the low-pressure side of the system. HPA (air, nitrogen, or inert gas) systems must have gauges on both the high AND low-pressure sides of regulators. A gauge or other clear visual indication that the system is charged is strongly recommended for all pneumatic systems. Whether specifically required or not.

9.12. If back check valves are used anywhere in the system you must ensure that any part of the system they isolate can be bled and has an over pressure device.

9.13. Any pneumatic system that does not use a regulator, or employs heaters or pressure boosters, or pressures above 2500psi must be pre-qualified by the event you're planning to attend.

10. Hydraulics

10.1. Robots in the 12 lb class or lighter are exempt from the remaining rules in this section, but good engineering and best practices must be used in all hydraulic systems. **However the pressure for 12 pound or less robots is limited to 250psi and there must be an easy way to determine this pressure.** Contact the event with any questions.

10.2. All hydraulic components onboard a robot must be securely mounted. Particular attention must be made to pump and accumulator mounting and armor to ensure that if ruptured direct fluid streams will not escape the robot.

10.3. All hydraulic components within the robot must be rated or certified for AT LEAST the maximum pressure in that part of the system. You may be required to show rating or certification documentation on ANY component in your system.

10.4. Any accumulators or large reservoir must be rated for at least 120% of the pressure they are used at. (This is to give them a margin of safety if damaged during a fight)

10.5. All hydraulic systems must have an over pressure by pass device set to no more than 130% of the lowest component rating. It must be rated to bypass the full volume of the hydraulic pump.

10.6. All hydraulic systems must have a(n) accessible manual bypass valve(s) to easily render the system harmless.

10.7. All hydraulic systems must have appropriate gauges scaled for maximum resolution of the pressures in that part of the system.
10.8. All hydraulic systems must use non-flammable, non-corrosive fluid and must be designed not to leak when inverted.
10.9. Any hydraulic system using pressure boosters, or pressures above 5000psi (without accumulator) or pressures above 2000psi (with accumulator) must be pre-qualified by the event.
10.10. Please note that some simple low pressure and volume hydraulic systems, like simple braking, may not need to adhere to all the rules above. You are required to contact the event if you would like an exception.

11. Internal Combustion Engines (ICE) and liquid fuels are typically not allowed, however some events/venues do allow them.
    11.1. Fuel and Fuel Lines
        11.1.1. All commercially available grades of automobile or RC hobby fuel are allowed. Alcohol, Nitro-methane, jet fuel and other specialty grades of fuel require prior approval.
        11.1.2. Fuel lines and tanks must be made of high quality materials and all ends must be clamped securely.
        11.1.3. All fuel tanks and lines must be well protected and armored from all sides including moving parts and heat sources inside the robot.
    11.2. Fuel tank volume, on any robot, shall not be greater than the amount required to operate the engine for more than **1 minute longer than the match time** at combat power plus a reasonable pre-match warm-up period. Total fuel volume, including fuel for both ICE and flame weapons (if allowed) may not exceed **20 oz** unless prior approval is granted from this event.
    11.3. The output of any engines connected to weapons or drive systems must be coupled through a clutch which will decouple the motor when it is at idle. (This does not include motors used for generators and hydraulic pumps.)
    11.4. Any engine connected to a weapon **must** be capable of being started while the weapon locking pin is in place (see 3.4.6).
    11.5. All engines must turn off or return to idle at loss of **radio signal** and turn off at loss of radio **receiver power**.
    11.6. All engines must have a method of remotely shutting off.
    11.7. Any robot with liquid fuel and oil must be designed not to leak when inverted. (Minor oil leakage may be tolerated, however if it affects the other robot or becomes a large cleanup issue you may be called and the leaking robot will forfeit.)
    11.8. Use of engines other than standard piston engines (i.e. turbines etc.) require prior approval for any event.

12. Rotational weapons or full body spinning robots are allowed, however:
    12.1. Spinning weapons that can contact the outer arena walls during normal operation must be pre-approved by the event. (Contact with an inner arena curb, or containment wall is allowed and does not require prior permission.)
    12.2. Spinning weapons must come to a full stop within **60 seconds** of the power being removed using a self-contained braking system.

13. Springs and flywheels
    13.1. Springs used in robots in the 12 lbs class or smaller and those loaded simply by the weight of the robot(eg. suspension systems) are excepted from the rules in this section. However safe operation and good engineering are always required.
    13.2. Any large springs used for drive or weapon power must have a way of loading and actuating the spring remotely under the robot's power.

13.2.1. Under no circumstances must a large spring be loaded when the robot is out of the arena or testing area.
13.2.2. Small springs like those used within switches or other small internal operations are excepted from this rule.

13.3. Any flywheel or similar kinetic energy storing device must not be spinning or storing energy in any way unless inside the arena or testing area.
13.3.1. There must be a way of generating and dissipating the energy from the device remotely under the robot's power.

13.4. All springs, flywheels, and similar kinetic energy storing devices must fail to a safe position on loss of radio contact or power.

14. Forbidden Weapons and Materials. The following weapons and materials are absolutely forbidden from use:
14.1. Weapons designed to cause invisible damage to the other robot. This includes but is not limited to:
14.1.1. Electrical weapons
14.1.2. RF jamming equipment, etc.
14.1.3. RF noise generated by an IC engine. (Please use shielding around sparking components)
14.1.4. EMF fields from permanent or electro-magnets that affect another robot's electronics.
14.1.5. Entangling Weapons or defenses: these are weapons or defenses that can reasonably be expected to stop drive train and/or weapon motion by being wrapped around rotating parts. This includes nets, tapes, strings, and other entangling materials or devices.
14.1.6. Weapons or defenses that that can reasonably be expected to stop combat completely of both (or more) robots.

14.2. Weapons that require significant cleanup, or in some way damages the arena to require repair for further matches. This includes but is not limited to:
14.2.1. Liquid weapons. Additionally a bot may not have liquid that can spill out when the robot is superficially damaged.
14.2.2. Foams and liquefied gasses
14.2.3. Powders, sand, ball bearings and other dry chaff weapons

14.3. Un-tethered Projectiles (see tethered projectile description in Special Weapons section 15.1)

14.4. Heat and fire are forbidden as weapons. This includes, but is not limited to the following:
14.4.1. Heat or fire weapons not specifically allowed in the Special Weapons section (15.2)
14.4.2. Flammable liquids or gases
14.4.3. Explosives or flammable solids such as:
14.4.3.1. DOT Class C Devices
14.4.3.2. Gunpowder / Cartridge Primers
14.4.3.3. Military Explosives, etc.

14.5. Light and smoke based weapons that impair the viewing of robots by an Entrant, Judge, Official or Viewer. (You are allowed to physically engulf your opponent with your robot however.) This includes, but is not limited to the following:
14.5.1. Smoke weapons not specifically allowed in the Special Weapons section (15.3)
14.5.2. Lights such as external lasers above 'class I' and bright strobe lights which may blind the opponent.

14.6. Hazardous or dangerous materials are forbidden from use anywhere on a robot where they may contact humans, or by way of the robot being damaged (within

reason) contact humans. Contact the event you plan to attend if you have a question.

15. Special weapon descriptions allowed at this event:
    15.1. Tethered Projectiles are allowed at this event.
        15.1.1. If allowed tethered projectiles must have a tether or restraining device that stops the projectile and is no longer than 8 feet.
    15.2. Heat and Fire are allowed at this event. The subsequent rules in this section apply when heat and fire are allowed. Flame weapon rules are subject to change to comply with local fire regulations and fire officials.
        15.2.1. Fuel must exit the robot and be ignited as a gas. It cannot leave the robot in a liquid or gelled form or use oxidizers.
        15.2.2. Fuel types allowed are propane and butane, the maximum quantity allowed is 4 fl oz in robots up to 30 lbs, 8 fl oz for robots 60 lbs and above.
        15.2.3. The fuel tank must be as far from the outer armor of the robot as practicable and be protected from heat sources within the robot.
        15.2.4. The ignition system must have a remotely operated shut-off that allows the operator to disable it using the radio control system.
    15.3. Smoke Effects are not allowed at this event.
        15.3.1. Small smoke effects may be used, please contact the event if you plan on using it.

SPARC Match Rules v1.2

The following procedures are a guideline only and not intended to be strictly followed at all times. Robots are chaotic and many situations are up to the event staff's interpretation. Event staff always have the final say in any dispute.

Bot Load In and Activation:

It is advised to activate the robot by not standing in the combat area when possible.

Priority for load in is least dangerous robot activated first followed by most dangerous robot.

The process for activating a robot is as follows:

- Robot is placed in a stable position on the combat area pointed away from other robots, persons, and entry doors.
- Weapon covers are removed.
- Transmitter is turned on.
- Power is turned on.
- Weapon locks are removed.
- If the robot is being activated by a person inside the combat area, they then exit the arena, otherwise the robot is driven to the starting square from their power on location.
- No movement or functional testing is permitted while anyone is in the arena.

Once both robots are activated the arena door will be closed and competitors will be allowed a brief weapon/drive system test. **No weapon testing of any sort will be allowed prior to the arena door being closed.**

After this, the referee will ask both drivers if they are ready and the fight will begin.

Bot Deactivation and Load Out:

In arenas where robot power down is possible with the driver not standing on the combat area preference will be given to that method. In the event of an unexpected situation the order in which robots are powered down may be altered by the referee.

- The combat area is defined as the region of the arena where active combat occurs. This would exclude gutters between whatever internal barricade exists in the arena and the arena walls.

Priority for load out is deactivate most dangerous robot first followed by least dangerous, taking into consideration any damage from the fight.

The process for deactivating a robot is as follows:

- Weapon system is disabled. This includes any applicable weapon locks, power cut-off and venting. The exact order of this procedure will be left to the discretion of the builder as differing designs may necessitate different safe shutdown procedures.
- Main power is turned off.

- Transmitter is turned off.
- Weapon covers are reinstalled.
- If the robot is able to be removed from the arena without a cart/assistance it may be removed at this time, otherwise robots will be removed from the arena once all robots have had their weapon locks installed and are powered down.

Emergency Match Stoppage Procedure:

In the event of an arena breach, damage to the arena that renders it unsafe, or any other event that is otherwise judged a safety risk by event staff the match shall immediately be halted.

If a competitor continues to fight after the referee has called for the fight to be stopped they will be disqualified. Repeated infractions will result in removal from the tournament. It is the responsibility of the driver to ensure that they respond promptly to the call to stop fighting.

Match Formats:

- Round Robin (Standard format for classes with 5 or fewer robots entered)
    - Each robot faces each other robot in the weight class a single time. The robot with the greatest number of wins is declared the winner. In the event of a tie, the winner of the match between the two robots is declared the winner. Should more than two bots tie for the win the winner will be determined with a judged rumble.
- Double Elimination (Standard format for classes with 6 or more robots entered)
    - In a double elimination bracket all robots start in the winners bracket. The losing robot in a winners bracket match will move to the losers bracket. The losing robot in a losers bracket match is eliminated from the tournament.
    - In this format, the robot that “wins” the losers bracket will need to defeat the robot that “wins” the winners bracket twice to win the overall event.

Match Frequency:

Robots weighing between 150g and 6lb will be given a minimum of 20 minutes between matches. Robots weighing greater than 6lb will be given a minimum of 30 minutes between matches.

Match Duration:

The standard match duration for 150g-6lb robots is 3 minutes. The standard match duration for robots weighing more than 6lbs is 3 minutes. The standard match duration for a rumble in any weight class is 5 minutes.

Un-sticks:

Matches will be paused to separate robots in the event that they become stuck together in the arena. Robots that become stuck together will be allowed 10 seconds to attempt to separate. If they are not able to do so an un-stick will be called for by the referee. An un-stick can only be called for by the drivers or referee and the referee has the final say on

whether or not the un-stick will be granted based upon the events un-stick rules. No modifications or repairs are allowed during an unstick.

Getting stuck on the arena counts as a knockout. Don't get stuck on the arena.

Knock-outs:

When a robot has ceased moving in a controlled manner but has not tapped out the referee will begin a 10 second countdown. If the robot is unable to demonstrate controlled translational movement before the countdown ends it will be declared the loser by KO. If during this time the robot is able to show controlled translational movement or if the opposing robot attacks it the countdown will cease. This means that a "dead" robot will not be counted out should the opposing robot continue to attack and the match will not end until the match timer expires or one robot taps out.

A bot with one side of its drivetrain disabled will not be counted out if it can demonstrate controlled translational movement. Controlled translational movement is defined as being able to traverse in a manner such that the net movements of the robot are in a linear direction.

Should the battery of a robot become exposed the match will be halted and the robot with the exposed battery will lose by TKO.

Pinning/Lifting:

Any robot pinning or lifting their opponent may only continue to pin or lift them for about 10 seconds at a time at the referee's judgement. After 10 seconds has elapsed the robot in control must release the opposing robot. If the robot in control is not able to release the opposing robot then the match will be halted and the robots will be separated.

- "Release" is defined as complete physical separation such that both robots are able to freely move away from their current location.
- Refusal to comply with the referee's request to release the opponent when the robots are not stuck together will result in forfeit of the match.

Tapping Out:

At any time during a match the robot operator may choose to tap out. Once an operator has tapped out combat will cease and the opposing robot will be declared the winner.

- Tapping out is done either by informing the referee that you are tapping out verbally or by using a designated tap out button or similar object should one be available.

SPARC Judging Guidelines v1.1

The Judges will be located close enough to the referee/arena marshal that communication will not be hindered by the noise levels typical to a robot combat event.
When a match does not end in the knockout of one of the Combatants the winner shall be determined by a Judges' Decision. In a Judges' Decision the points awarded to the Combatants by the panel of judges are totaled and the robot with the majority of points is declared the winner.

Judges decisions are final.

Judging Guidelines:

Three judges will vote for the winning bot based on equally considered categories of damage, control, and aggression.

Aggression
1 point awarded for aggression will be based on the relative amount of time each robot spends attacking the other. The primary means of scoring this category involves attempting to attack the opponent in a controlled manner, whether or not the attack is successful.

Control
1 point awarded for control will be based on the relative amount of time each robot spends in control of the fight. The primary means of scoring points in this category involves using elements of the robot or arena against the opponent in a manner that doesn't directly involve the weapon system of the robot causing damage. This would include utilizing any arena hazards as the use of active or passive weapon systems on an opponent that don't directly cause damage.

Scoring Damage
1 point awarded for damage will be based on the relative amount of damage dealt by each robot. The primary means of scoring points in this category involves doing non-cosmetic damage to the opposing robot. The severity of the damage done by each robot will be considered by the judges and used to determine the score.

SPARC Tournament Procedures v1.1

Weight Classes:

1lb / 454g – Plastic Antweight
1lb / 454g Antweight
3lb / 1.36kg - Beetleweight
12lb / 5.44kg - Hobbyweight
30lb / 13.61kg - Featherweight
60lb / 27.22kg – Lightweight no spinners

Robot Check-in and Inspection:

At the beginning of the tournament each robot must be checked in and registered in the tournament brackets. Check in will also consist of visual technical inspection to ensure the robot is safe. Weapon stops, sharp edge covers and lithium battery protection will be inspected. If lithium batteries appear inadequately secured and protected from penetration within the robot, the inspector will ask the competitor to modify the robot until deemed adequate. A radio failsafe test will be conducted in the arena or in the pits with wheels up off the ground and weapon transmission disconnected if possible. All robot motion must stop when the radio is turned off.

Weight Verification:

A robot may be re-weighed at any time during a tournament at the request of an event official or judge. In the event that the robot in question is less overweight they will need to be made underweight prior to their next match. If a robot has been modified since its last match the team will be responsible for ensuring that any repairs or modifications done stay within the weight limit. In the event that an event official calls for a re-weigh immediately following a match (prior to either robot returning to the pit area or having any work done to them) the robot will be weighed to confirm that they are within the weight limit. If the robot is overweight it will immediately forfeit the match. If both robots are found to be overweight the original match result will stand and both robots will be required to be brought below the weight limit prior to their next match.

Unsportsmanlike Conduct:

Unsportsmanlike Conduct includes but is not limited to: Post fight contact, sabotage, distraction of opposing robot operators, blatant early movement, etc.

Depending on the severity of unsportsmanlike conduct at the discretion of event staff the person responsible will automatically forfeit the match or even disqualified from the remainder of the tournament.