

# SPARC Match Rules v1.2

If an event chooses to use non-standard rules they will make the alterations clear and publicly available prior to the event.

BotBrawl uses a modified SPARC judging criteria, changes will be clearly highlighted in blue. And a ~~strikethrough~~ will mark off removed rules text

## Pre-Fight Activities:

Before each match, each robot must perform a pre-fight test in the test box. The robot must demonstrate functional drive, and working weapon systems if equipped. If a robot fails the pre-fight test, they may be rescheduled, or a postponement will be used, selection based on event scheduling. Robots who fail the pre-fight test may also opt to enter a fight with a not completely functional robot.

## Bot Load In and Activation:

In arenas where robot power up is possible with the driver not standing on the combat area preference will be given to that method.

- 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 in is as follows:

- Least dangerous robot being activated by someone inside the combat area
- Most dangerous robot being activated by someone inside the combat area
- Least dangerous robot being activated by someone outside the combat area
- Most dangerous robot being activated by someone outside the combat area

The process for activating a robot is as follows:

- The robot is placed in a stable position on the combat area with the drive wheels oriented such that when they come in contact with the combat area the direction of travel will be away from other robots, persons, and entry doors. If the robot has a weapon that is aimable it will be aimed at the wall furthest from the arena entry door.
- Weapon covers are removed.
- Transmitter is turned on.
- Main power is turned on.
- If separated, weapon power is turned on. This applies to both a separate power loop and non-electrical power systems. (ie. pneumatics)
- 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 on or in the combat area.

Once both robots are activated and in their starting squares the arena access point will be closed and a maximum of 20 seconds will be allowed for a brief weapon/drive system test if the drivers desire. No weapon testing of any sort will be allowed prior to the arena door being closed. In the event that the arena is equipped with multiple access doors and each robot is loaded through a separate door the door will be opened to allow load in then shut once the operator is out of the arena.

After this, the referee will ask both drivers if they are ready. Once both drivers have confirmed they are ready, the referee starts the countdown, and the fight will begin.

### **Post Fight Activities:**

At the end of the fight both robots cease movement and if applicable, allow their weapon systems to de-energize. Once the weapon systems have been de-energized the judges may request that one or both robots demonstrate that either their drive or weapon system is still functional.

- Demonstration of drive system functionality will be done by the robot returning to its starting location.
- Demonstration of weapon system functionality will be done by the robot returning to its starting location and briefly applying power to the weapon system to show that it is still operational. The robot will not spin to full speed during this demonstration.

Once this is completed the robot deactivation and load out procedure can 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 as follows:

- Most dangerous bot being deactivated by someone outside the combat area
- Least dangerous bot being deactivated down by someone outside the combat area
- Most dangerous bot being deactivated down by someone inside the combat area
- Least dangerous bot being deactivated down by someone inside the combat area

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 Deactivation Procedure:**

In the event of an emergency (for example: one or more robots on fire) the standard procedure does not apply. The following attempts to address the vast majority of possible situations that are likely to occur:

- One robot is burning and the other is mobile
  - The mobile robot is to move to the wall furthest from the arena entry door and align its drive wheels parallel with the wall. If the robot has an active weapon it is to immediately begin dissipating stored energy (spinning down, release for spring actuated weapons, etc) and if possible, bring it next to or into contact with the wall it is aimed at.
  - Once the working robot is in position the arena marshal will enter the arena and extinguish the fire, then if possible, remove the robot from the arena. ○ The operator of the non-burning robot may then proceed with normal load out procedures.
- One robot is burning and the other is immobile
  - If the immobile robot has an active weapon it is to immediately begin dissipating stored energy. (spinning down, release for spring actuated weapons, etc) If the robot retains some degree of mobility but cannot move in a reliable manner it will attempt to angle itself such that any weapons that are aimable are aimed at the wall furthest from the arena entry door.
  - Once the arena is able to be entered safely the arena marshal will enter the arena and extinguish the fire, then if possible, remove the robot from the arena.
  - The operator of the non-burning robot may then proceed with normal load out procedures.
- Both robots are burning
  - Both robots will, if applicable, immediately attempt to dissipate any stored energy systems and will attempt no other actions.
  - Once the arena is able to be entered safely the arena marshal will enter the arena and extinguish the fire, then if possible, remove both robots from the arena.
- One or more robots are burning during a rumble
  - All mobile, non-burning robots will move to the closest arena wall that is not used to access the arena and begin dissipating stored energy.
  - All immobile robots will immediately begin dissipating stored energy and will perform no other actions unless they are able to rotate such that they are able to angle any aimable weapon systems at the wall furthest from the arena entry door.
  - Once the arena is able to be entered safely the arena marshal will enter the

arena and extinguish the fire, then if possible, remove the robot from the arena.

- If there is time left, the match will be allowed to resume.
- One or more robots are acting erratically/stuck on
  - The operator(s) of the robot(s) will turn off their transmitters to attempt to activate the robots failsafe.
    - If this works then normal load out procedures will resume.
  - In the event that the robot(s) are still acting erratically the robots will be allowed to drain their batteries until they are safe to approach.
  - Should a robot in the arena still be fully functional, no weapon system be active on the malfunctioning robot and all involved operators agree to it the operator of the still working robot may attempt to pin and prop up the malfunctioning robot such that its wheels are no longer in contact with the ground. The operator of the malfunctioning robot will then be allowed to power off their robot. Once powered off they will exit the arena and the robot that was pinning the malfunctioning robot will be allowed to go through normal load out procedures. The malfunctioning robot will then complete its load out procedures

### **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. For sufficiently large or loud arenas there should be a system in place to allow any event official to quickly act to stop the fight either by triggering a notification system or having direct communication with an official that won't be impacted by distance or arena noise.

It is strongly encouraged that there is both an audible (alarm, buzzer, air horn, or similar) and visual (arena lights off, flashing red lights, a deployed curtain, or similar) indication that the fight has been stopped to ensure that competitors are aware of the issue immediately. It is the responsibility of the team to ensure that the driver or another team member is watching and/or listening for these indicators.

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.

Once fighting has ceased the robots will be deactivated. The deactivated robots may be left in place or moved to a safe location in or around the arena until a determination about the status of the fight is made. No work may be done on the bots during this time. The source of the safety issue will then be inspected to determine the appropriate action. Once the issue has been resolved a determination will be made as to whether or not the fight will resume. If possible, the fight will resume from the point where it was paused. If resuming the fight is determined to not be possible due to a safety concern or other issue the fight will be judged up until the point where it was stopped.

The safety of the crowd, competitors, and crew must always be considered when

determining if any additional measures need to be taken beyond resolving the immediate safety issue.

## 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.
  - If desired, a double round robin format can be used where each robot will face each other robot twice. The same criteria is used for determining a winner. Should the results necessitate it, a tie-breaker match may be run to determine which robot places higher.
- Single Elimination
  - This format uses a standard single elimination bracket.
- 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.
- Modified Double Elimination
  - The format is the same as a double elimination bracket however the overall final is treated as single elimination, meaning that if the robot that “wins” the losers bracket will only have to defeat the robot that “wins” the winners bracket a single time to win the overall event.
- Other
  - Any match formats used not described above will be the responsibility of the host event to clearly describe.

## Match Frequency:

Robots weighing between 150g and 6lb All Robots 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.

(Option) The match duration for 150g-6lb robots is 2 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 unstick 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 event's unstick rules. No modifications or repairs are allowed during an unstick.

#### **Additional Un-stick options:**

~~“The Arena is a Hazard” – No un-sticks for a single robot being immobilized due to terrain independent of cause~~

~~“Single un-stick” – Each robot gets one un-stick independent of cause. Only the driver of the stuck robot can call for an un-stick in this situation. With multi-bots, all parts of the multi-bot are only given a single un-stick.~~

~~“Modified single un-stick” (Standard) –~~

Each robot gets one un-stick but only if the opposing robot was not the cause for their immobilization. For example, if a robot gets itself stuck on the arena wall somehow, they would get an unstick. If the robot were placed against the wall in a manner that prevented operation, (ie, rammed into a stuck position, weapon contact causes a stuck position, lifted into position, etc) they would not get an un-stick. The referee will determine if this applies.

Only the driver of the stuck robot can call for an un-stick in this situation. As with “single un-stick” all parts of a multi-bot share a single un-stick.

#### **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.

In the case of multi-bots, the countdown will begin when greater than 75% of the mass of the multi-bot is unable to move. For multi-bots with an even number of robots (2, 4, etc...) and equal weights for each portion the team will identify which are considered to be the heaviest.

In the event of a simultaneous knock-out both robots will be placed in their standard orientation on the combat area by the arena marshal/referee and allowed an attempt to demonstrate controlled movement. If both robots are able to function the match will resume. If one robot is able to function that robot will be declared the winner. If neither robot is able to function the match will go to the judges.

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

### **Death Zones/Push-outs:**

If the arena is equipped with a Death Zone/Pit/Push-out or similar hazard a robot entering this area in a one on one match will result in the end of the match and a loss for the robot that first entered the area. In a rumble any robots entering the area will be eliminated from the rumble and are to cease the operation of weapon systems immediately.

(Option) The death zone may be used as an immobilization zone instead, allowing the robot a chance to attempt to escape while it is being counted out. If the robot is able to escape before being counted out the match will continue as normal.

In the event that both robots enter the death zone simultaneously they will be returned to the combat area and the match will resume. A robot that places its opponent in the death zone must be able to do so without also becoming stuck itself. If it is not able to separate from the other robot this will be treated as simultaneous entry.

### **Pinning/Lifting:**

Any robot pinning, grabbing or lifting their opponent may only continue to pin or lift them for 10 seconds at a time. 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.

### **Arena Weapon:**

The Bot Brawl arena uses a removable Vertical Spinner arena weapon to add damage capability to low damage matches. Before each fight, the current capabilities of both robots' weapons systems will be assessed. The arena weapon will be installed and activated **ONLY** if **BOTH** robots do not have the ability to cause “Significant Damage” as defined in the Judging Criteria.

Ex: Wedge vs Wedge, weapon will be on. Wedge Vs Spinner the weapon will be off.

### **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.