

HCC Robotica gg
Robot Sumo Regulations
Mini Class
September 1997
Netherlands

Adapted from Japan Robot Sumo Match Committee Rules

Section 1. Definition of the Sumo Match

Article 1.

The match shall be fought by the two teams (one team consisting of one robot with maximum of 2 players, one of which is a leader), according to these Rules for Sumo matches (hereafter called "these Rules"), with each team's robot made by each team (Autonomous Robots) competing to get the effective points (hereafter called Yuhkoh), within the perimeter of the defined Sumo Ring (Dohyou).

Article 2.

The judges will decide which team wins based on the Team's Yuhkoh. Any team contesting the official ruling from the Judge shall be prohibited.

Section 2. Requirements for Ring Area

Article 1.

The Ring Area refers to the Sumo Ring and the space outside the Ring. Anywhere outside this Ring area is called Outer Area.

Article 2.

The Ring shall be in circular shape with its height being 5cm in its diameter 150cm (including the outside of the line that divides the inside of the Ring from its outside.) and **black** in colour.

Article 3.

Shikiri lines (where robots stand at the beginning of the match) are the two parallel lines with 20cm distance between the lines, drawn in the center of the ring. The Shikiri lines are painted in **brown**. 2cm wide and 20cm long.

Article 4.

The Ring shall be marked by a **white** circular line of 5cm thickness. The Ring is within the outside of this circular line.

Article 5.

There should be the space of 100cm wide outside the outer side of the Ring. This space can be of only **Black** colour, and can be of any material or shape, as long as the basic concept of these rules are observed.

Section 3. Specifications for Robots

Article 1.

The following rules are in dead earnest, and it should be noted that HCC Robotica and its affiliations can take no responsibility for injuries or damage incurred or inflicted by this contest to either man, machine, reputations, or floor work. We trust your designs to be whimsical, not dangerous.)

Article 2.

A robot must be in such a size that it can be put in a box of 20cm wide and 20 cm deep. A robot can be of any height.

Article 3.

A robot must not be in such a design that its body will be physically separated into pieces when a match starts. The robot with such a design shall lose the match.

Article 4.

The design to stretch a robot's body or its parts shall be allowed. The machine may expand its dimensions as required, so long as it does not extend past the edge of the competition ring.

Article 5.

The weight of a robot is a maximum of 1000 grams including the attachments and parts.

Article 6.

Autonomous robots may employ any control mechanism.

Article 7.

Autonomous Robots must be so designed that a robot starts operating five seconds after a Remote Control Start signal is pressed.

Article 8.

The robot microprocessor will be limited to 8bit data CPU core **ONLY**. They can be of any manufacturer, any memory size, and any speed.

Section 4. Prohibitive in the design of Sumo Robots

Article 1.

Screws or nuts (each within one cubic centimeter) falling off from a robot's body shall not cause loss of a match.

Article 2.

No robot can use any weapon which involves a combustion process.

Article 3.

Robots cannot use any gravity-assisting devices (i.e.: suction cups, adhesives, or other fastening methods, etc.).

Article 4.

Do not use parts that could break or damage the Ring.

Article 5.

Do not put into a robot's body devices that can store liquid, powder, or air and throw it to the opponent.

Article 6.

Do not use any inflaming devices.

Article 7.

No robot can deposit any fluids, mines, chaff of any sort on the ring surface. No Sumobot can use any slippery, sticky, flammable, explosive, caustic, corrosive, or damaging chemicals in their attack.

Article 8.

Any machine exhibiting tactics which extend beyond the dimensions of the ring that could even remotely harm a human operator, judge, or audience member will be immediately disqualified.

Article 9.

No robot can deliberately damage the ring surface.

Article 10.

Prior to the first competition, each competing team must demonstrate in full all aggressive features used by their Sumobot (such information will be kept confidential by the judges on request).

Article 11.

NO aggressive aspect of a robot must extend beyond the competition boundary. The idea here is to protect the audience, judges, and other human operators from any possible harm. Violators will be immediately disqualified.

Article 12.

No robot may fire projectile weapons of any sort, unless the projectile(s) are chained to the host robot to the judges satisfaction. All projectiles should be either deposited, dropped, scattered, or flicked against the opponent.

Article 13.

All exposed rotating elements on a Sumobot must not exceed 1000 RPM. No rotating element can exceed 1/4 pound (275 grams) in mass. Rotating elements must not be composed of sharp, brittle, or ragged substances which could fly off and damage the crowd.

Article 14.

No Sumobot can use a smoke-screen, or any tactic which deliberately hides the action of the robots from the operators, judges, or audiences view.

Article 15.

No Sumobot can use a "spot welding" tactic by pressing a high-power battery across the opponents conductive surfaces (batteries tend to explode this way).

Article 16.

Any Robot which catches fire will be disqualified. Slight smoking is permissible, so long as it is not a precursor to an explosion.

Article 17.

High traction wheels (i.e.: buzzsaw blades, chains) are prohibited.

Article 18.

You may not electromagnetically interfere with your opponent, or do anything that alters the function of the other robot or its sensors.

Section 5. How to perform Sumo Matches

Article 1.

The contest consists of a series of round-robin matches in which every robot is matched against all other robots. One point is assigned to the winner, zero to the loser. One-half point is assigned to each contestant in a tie.

Article 2.

After all matches, the best score wins. In the event of a tie, an elimination round is played among the tied robots until one winner results)

Article 3.

One match shall consist of 3 games.

Article 4.

The team who received two "Yuhkoh" points first, within the time limit, shall win the match. When the time limit is reached, and one of the teams has received only one Yuhkoh point, the team with the one Yuhkoh point shall win.

Article 5.

When the match is not won by either team within the time limit, the extended match shall be fought during which the team who receives the first Yuhkoh point shall win - sudden death.

Article 6.

However, the winner/loser of the match may be decided by judges or there can be a rematch.

Article 7.

The judges may bar from the contest any machines which they feel pose a real threat or damage to spectators or the contest ring. As well, any judge may stop a trial at any time, if it appears to that judge that a danger to spectators or site is imminent.

Section 6. How to Start, Stop, Resume, End a Match

Article 1. *Start*

With the chief judge's instructions, the two teams bow in the Outer Ring and go into the Ring Area, place a robot on or behind the Shikiri line or the imaginary extended Shikiri line. (A robot or a part of a robot may not be placed beyond the Shikiri line toward the opponent.)

Article 2. *Stop, Resume*

The match stops and resumes when a judge announces so.

Article 3. *End*

The match ends when the chief judge announces so. The two teams bring the robots out of the Ring Area, and bow.

Section 7. Length of Time for a Match

Article 1. *Time of Match*

One Match will be fought for 3 minutes, starting and ending by the chief judge's announcements.

Article 2.

An extended match shall be for 3 minutes.

Article 3.

The following are not included in the time of the Match:

- A. The time elapsed after the chief judge announces Yuhkoh and before the match resumes. 30 seconds shall be the standard before the match resumes.
- B. The time elapsed after a judge announces to stop the match and before the match resumes.

Section 8. Yuhkoh (Scoring)

Article 1.

One Yuhkoh point shall be given when you have legally forced the body of your opponent's robot completely out of the ring, touching the outer space of the ring. Partially doesn't qualify.

Article 2.

A Yuhkoh point is also given in the following cases:

- A. Your opponent's robot has completely traveled outside the ring on its own reasons.
- B. Either of the above takes place at the same time that the End of the Match is announced.

Article 3.

When a robot has fallen on the Ring or in similar conditions. Yuhkoh will not be counted and the match continues.

Article 4.

When judge's decision is called for to decide the winner, the following points will be taken into consideration:

- A. Technical merits in movement and operation of a robot.
- B. Penalty points during the match.
- C. Attitude of the players during the match.

Article 5.

The match shall be stopped and a rematch shall start when:

- A. Both robots are in clinch and stop movement for 30 seconds, or move in the same orbit for 30 seconds.
- B. Both robots move or stop for 30 seconds without touching each other. If one robot stops its movement for 30 seconds, he shall be considered not having the will to fight, and the opponent shall receive a Yuhkoh.
- C. Both robots, at the same instance, touch the space outside the Ring.

Section 9. Violations

Article 1.

If the players perform the deeds as described in Sect.4, Sect.8/Art.2, Sect.8/Art.3, the players shall be declared as violating the rules.

Article 2.

The player utters insulting words to the opponent or to the judges, or write insulting words on the body of a robot, for the same effect.

Article 3.

A player enters into the Ring during the match, except when the player does so to bring the robot out of the Ring upon the chief judge's announcement of Yuhkoh or stopping the match.

Article 4.

To enter the Ring means a part of the player's body is in the Ring, or a player puts any mechanical kits into the Ring to support his/her body.

Article 5.

Performs the following deeds:

- A. Demand to stop the match without appropriate reasons.
- B. Take more than 30 seconds before resuming the match.
- C. Do or say that which should disgrace the fairness of the match.

Section 10. Penalties

Article 1.

Those who violate the rules with the deeds described in **Sect.4** and **Sect.8/Art.2** shall lose the match. The judge shall give two Yuhkoh points to the opponent and order the violator to clear out. The violator is not honoured with any rights.

Article 2.

Each occasion of the violations described in **Sect.8/Art.3** shall be accumulated. Two of these violations shall give one Yuhkoh to the opponent.

Article 3.

The violations described in **Sect.8/Art.3** shall be accumulated throughout one match.

Section 11. Injuries and Accidents during the Match

Article 1. Request to stop the match

A player can request to stop the game when his/her robot had an accident and the game cannot continue.

Article 2. Unable to continue the match

When the game cannot continue due to robot's accident, or who requests to stop the game, shall be declared as a loser.

Article 3. Time required to handle injury/accident

Whether the game should continue in case of injury or accident shall be decided by the judges and the Committee members. The decision process shall take no longer than five minutes.

Article 4. Yuhkoh given to the player who cannot continue

The winner decided based on **Sect.10/Art.2** shall gain two Yuhkoh points. The loser who already gained one Yuhkoh point is recorded as such. When the situation under **Sect.10/Art.2** takes place during an extended match, the winner shall gain one Yuhkoh point.

Section 12. Declaring Objections

Article 1.

No objections shall be declared against the judges' decisions.

Article 2.

The lead player can declare objections to the *Committee* before the match is over, if there are any doubts in exercising these rules.

Section 13. Requirements for Identifications for Robots

Article 1. *Identifications for Robots*

Identifications for robots shall be at the teams discretion. In order to promote the goodwill of the competition the contestants can paint their robot in their own style.

Section 14. Miscellaneous

Article 1. *Flexibility of Rules*

As long as the concept and fundamentals of the rules are observed, the rules shall be so flexible that they will be able to encompass the changes in the number of players and of the contents of matches.

Article 2. *Change in Rules*

Any change to or obsolescence of these rules shall be decided by the General Committee Meeting based on the Sumo Match Committee Rules.

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