

3. Sumo Robot 500g Auto

Level : Junior / Senior

Index of Sumo Robot Competition

No.	Category	Page
1	Sumo 500g Auto	2

Robot Requirements

No.	Robot Type	Robot Dimensions		Height
		Width	Length	
2.	Sumo 500g Auto	10 cm	10 cm	Unlimited

Sumo Ring (Dohyo)

โครงสร้าง Field Structure	Shikiri Lines	Border Line
สูง (Height) : 2.5 cm เส้นผ่านศูนย์กลาง (Diameter) : 77 cm วัสดุ (Material) : ไม้	Width : 1 cm Length : 10 cm Separation : 10 cm	1.5 cm

Prohibited Actions in Robot Construction

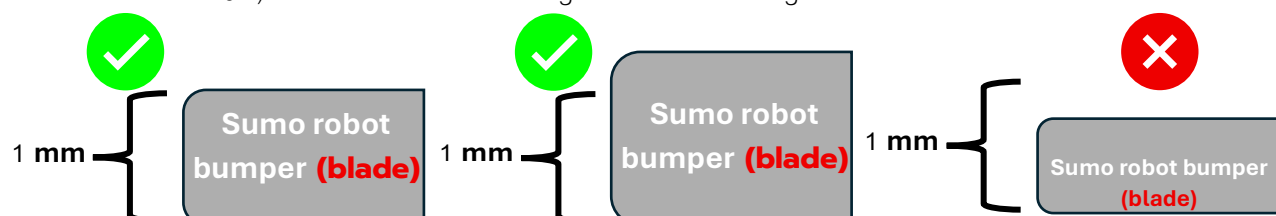
- **Must not** interfere with the opponent's sensors in any way (e.g., emitting infrared light to disrupt opponent sensors, or installing white, light-colored, or reflective parts that cause opponent sensors to malfunction).
- **Must not use** parts or equipment that can damage the Dohyo ring or the overall field (white and black areas), including using wheels coated or treated with oil or lubricating liquids.
- **Must not install** or use equipment containing liquid, starch, powder, or air that can be expelled toward the opponent's robot by any means.
- **Must not use** any equipment that produces flames or combustion during normal operation.
- **Must not use** any equipment capable of shooting, throwing, or projecting parts from the robot toward the opponent.
- **Must not install** or use any devices or tools that anchor the robot to the floor or Dohyo ring (e.g., glue, adhesive rubber, sticky tape, stickers, or special devices providing extra support, friction, or resistance such as jet systems).

Robot Specifications

1. Weight must not exceed 500 grams $\pm 2\%$ (including all parts, batteries, and equipped devices, excluding programming cables and remote control).
2. Dimensions before the match must not exceed Width x Length = 100 mm x 100 mm $\pm 2\%$ (height is unlimited). Robots may separate or expand during the match, but must not shoot, throw, or eject any parts/equipment during competition; otherwise, it will result in an immediate match loss.
3. The robot can be controlled using any circuit board or microcontroller type, and must be programmed to operate fully automatically with no restriction on the number of control boards used. Human communication or control of the robot is strictly prohibited. After the referee gives the start signal for each round, competitors are allowed to press the button on the robot to start its operation only once, and the robot must remain stationary for 5 seconds before moving to fight.
4. Robots can be custom-built or assembled from commercially available parts, provided they do not cause damage to the competition field.
5. Unlimited DC motors of any type/model are permitted, with a maximum total of 4 motors per robot.
6. Must not use parts or equipment that cause damage to the opponent's robot.
7. Battery count, voltage, and current are unlimited, but batteries must clearly display voltage and current labels. Severely degraded, faded-label, leaking, or swollen batteries are strictly prohibited.
8. All robot parts must be securely fastened. If any part falls, breaks, or detaches onto the field during a match, referees will remove it and allow the match to continue. Referees are not responsible for any impact resulting from the removal of detached parts.
9. The Sumo Blade or bottom bumper must not be sharp, styled as a 'blunt knife', and must have a thickness greater than or equal to 1 millimeter.
10. Blades are permitted but must not be sharp or hazardous. If referees or participants suspect sharpness or potential danger, the following inspection criteria apply:

10.1) Preliminary thickness check: Participants run their finger along the bumper edge (must be ≥ 1 mm).

10.2) Thickness verification using scientific measuring instruments.



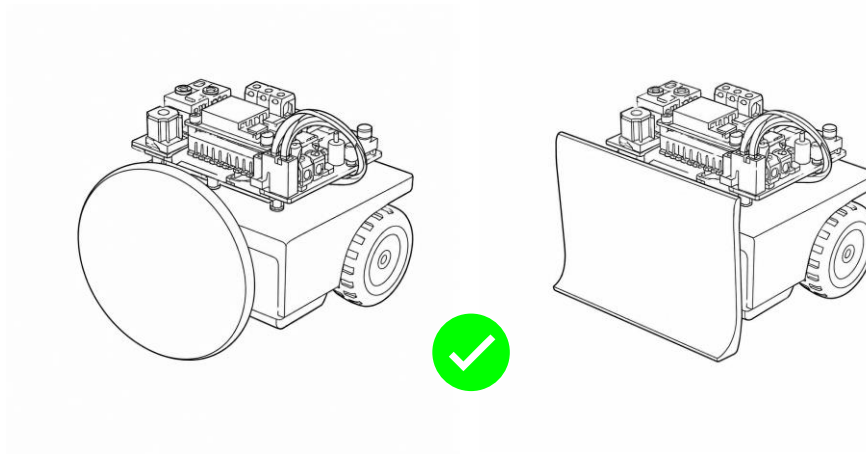
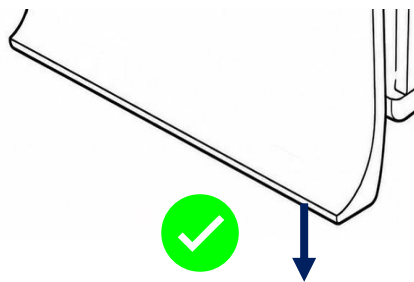
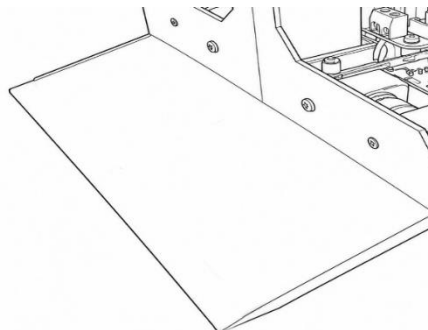


Illustration of robot features



The edges of the bumper must be blunt or unsharpened.



The bumper or blade must be non-sharp.

Competition Rules

1.1. Competition Format

1.1.1. One match consists of 3 rounds, with each round lasting 2 minutes.

1.1.2. The winner of the match is the team that achieves the best score across the 3 rounds, such as winning 2 out of 3 rounds. Winning each round awards **1 Yuko**. If neither team scores before time runs out, the match is considered a draw. If all 3 rounds are completed and no team has achieved 2 Yuko, the referees will make a decision as follows:

- [Case1](#) If both teams have 1 Yuko each (winning one round each) and there is 1 tied round, the team with the lighter weight will be the winner of that match (this case occurs frequently).

- Example:

Round 1: Team A wins

Round 2: Draw

Round 3: Team B wins

Decision: Decided by weighing; the team with the lighter weight will be the winner of that match.

- [Case2](#) If all 3 rounds are a draw, the team with the lighter weight will be the winner of that match (this case rarely occurs).
- [Case3](#) If 2 rounds are a draw and either team wins the remaining 1 round, that team is considered the winner of that match.

- Example:

Round 1: Draw

Round 2: Draw

Round 3: Team A wins

Decision: Team A is the winner of that match.

1.1.3. The competition will follow a **double-elimination** format, meaning a team is eliminated from the match after losing twice. Winning teams advance to the next match, continuing with a knockout format until the champion, 1st runner-up, and 2nd runner-up are determined as announced by the organizers.

Double Elimination is a tournament format where competitors must lose two matches to be eliminated from the competition, differing from single elimination where participants are eliminated immediately after a single loss. Competitors who lose their first match are moved to the "losers' bracket" and get a second chance.

Key Features:

Two Brackets: The competition is divided into two brackets: a winners' bracket for winners and a losers' bracket for those who have lost.

Second Chance: Losing in the winners' bracket does not result in immediate elimination; instead, teams drop down to the losers' bracket to find a way back to the finals.

Elimination: Competitors are officially eliminated from the competition only after losing for the second time (i.e., a loss in the losers' bracket).

The Finals: The double-elimination finals are decided by a matchup between the Winners Bracket champion and the Losers Bracket champion, with the Winners Bracket champion holding an advantage.

Winning Conditions:

- **Winners Bracket Champion:** Winning the final match makes them the champion immediately.
- **Losers Bracket Champion:** Winning the first match triggers a "bracket reset," requiring them to play the Winners Bracket champion a second time to determine the overall champion.

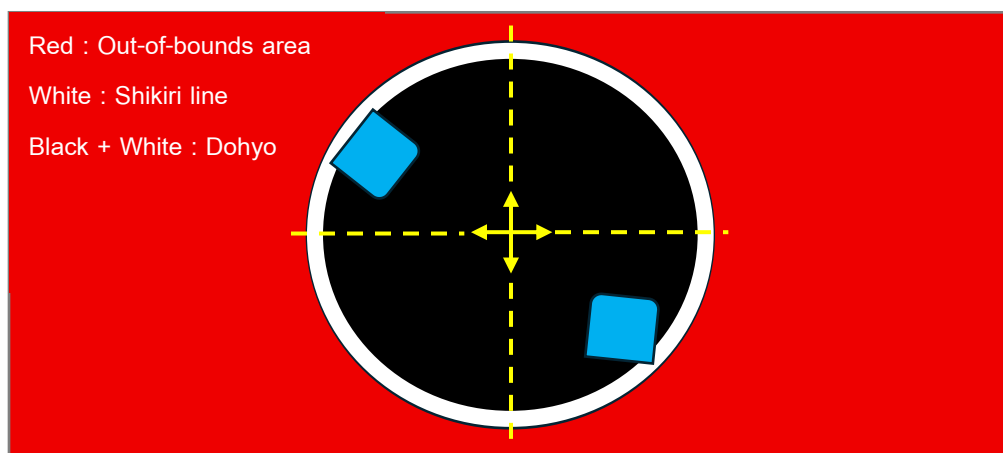
Advantages: This format offers more flexibility, gives competitors a chance to recover from a defeat, ensures fairer competition, and reduces the risk posed by a single mistake.

*** If the upper bracket team loses in the finals, a second match will take place.**

1.2. Start of Competition / Restart / End of Competition

1.2.1 Upon the referee's signal, contestants must report to the field together, with 20–30 seconds

1.2.2 provided for preparation. The referee will toss boundary markers onto the competition field. The boundary markers divide the field into 4 sections, with the robots placed on opposite sides within the designated areas, and at least one part of the robot must touch/overlap with the Shikiri line (white line), as shown in the example image.



- 1.2.3 The robot can be controlled using any circuit board or microcontroller type, and must be programmed to operate fully automatically with no restriction on the number of control boards used. Human communication or control of the robot is strictly prohibited. After the referee gives the start signal for each round, competitors are allowed to press the button on the robot to start its operation only once, and the robot must remain stationary for 5 seconds before moving to fight.
- 1.2.4 From the second round onwards, the team that won the previous round must place their robot on the field overlapping the Shikiri line first, facing any side of the robot toward the opponent. Afterwards, the team that lost the previous round will place their robot on the field.
- 1.2.5 After submitting the robot for inspection, contestants cannot perform any further repairs until it is their turn to compete (with a 20–30 second preparation time). In the top 8 round, contestants are allowed to repair their robots only within the competition area; bringing in any equipment from external individuals is strictly prohibited.
- 1.2.6 The competition may only be stopped and restarted upon an official announcement by the referee.
- 1.2.7 The competition officially ends when the head referee makes the announcement, and contestants are required to remove their robots from the field

1.3. Yuko Scoring

- 1.3.1 A score of 1 Yuko is awarded when:
 - One side manages to cause any part of the opponent's robot to touch the area outside the Dohyo, which is the out-of-bounds area. The side that achieves this first receives 1 Yuko.
 - When any part of the opponent's robot touches the area outside the Dohyo by itself, 1 Yuko is awarded to the opposing side.
 - After pressing the button once and 5 seconds have passed, if one of the robots fails to operate or shows no progress in movement for 5 seconds, the team whose robot is still moving wins.
 - When Team A places their robot on the competition field and movement occurs before the referee gives the signal to press start on the timer, Team B will win immediately.
- 1.3.2 If the robot is still on the Shikiri line, it is not yet considered a score, and the match shall continue.
- 1.3.3 The match will stop when:
 - Both robots grapple or lock together and there is no movement for 5 seconds (a draw).
 - If both robots touch the area outside the Dohyo and it is impossible to clearly determine who touched it first, the referee will order a rematch.

1.4. Rule Violations

1.4.1. Contestants who insult or look down upon the opponent, whether through verbal communication or physical gestures, will receive a warning exceeding 1 time (if a second instance occurs, it will result in an immediate forfeit for that match, making the other team the winner instantly).

1.4.2. Throwing or bringing any parts or equipment into the competition field area will result in an immediate match forfeit.

1.4.3. Changing the robot during the competition will result in immediate disqualification from the game, awarding 2 Yukos to the opposing team to declare them the winner.

1.4.4. Contestants leaving the competition area without notifying the referees or without staff accompanying them outside: Exceeding 1 warning (if a second instance occurs, it will result in an immediate match forfeit).

1.4.5. Communication or guidance from external individuals who are not contestants, or external individuals disturbing the referees or contestants during the match: Exceeding 1 warning (if a second instance occurs, the team under the supervision of that individual will be immediately forfeited for that match).

1.4.6. Contestants taking the robot out of the competition area during the match:

1.4.6.1. In case the robot is taken out of the area and an external person helps repair it or interacts with it:

- Result in a forfeit for the match the contestant is about to compete in, awarding 2 Yukos to the opponent as the winner.
- After being forfeited for the upcoming match, result in immediate disqualification from the competition.

1.4.6.2. In case the robot is taken out of the area without any external person helping to repair it or any interaction, such as repairing the robot independently outside the area:

- Receive 1 warning (if a second instance occurs, result in immediate disqualification from the competition).

1.5. Penalties

1.5.1. Contestants who violate the rules and regulations in clause 1.4 will be immediately forfeited for that match, with 2 Yukos instantly awarded to the opposing team, or they will be immediately disqualified from the game. The offender has no right to protest.

1.5.2. Contestants who cause damage to the competition field will be immediately disqualified from the competition.

1.5.3. Contestants who display inappropriate behavior regarding the awards received or cause physical, verbal, or mental harm to the referees will be immediately disqualified from the competition, and the next ranked team will be promoted to receive that award instead.

1.5.4. Team supervisors who cause physical, verbal, or mental harm to the referees or disrupt the judging committee will have all teams under their supervision immediately disqualified and forfeited, even if they have already won an award ranking.

1.5.5. If a team supervisor is involved in any wrongdoing, all teams under their supervision will be immediately disqualified from the competition under these rules.

1.5.6. **The decision of the committee is final and cannot be contested after the completion of the competition in that category.**