

# Mini Sumo

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## The robot aims to push its opponent out of the ring.

### 1. Contest description

Two robots compete on a circular ring. When the match is started, they try to push one another out of the ring. If a robot or any part of it touches the ground outside of the ring, the robot loses. This applies also in case any part falls off the robot and is pushed by the opponent out of the ring or falls off the ring by itself. Based on the number of participating robots, competing groups may be set. The contest is organized in rounds; number of groups, rounds and number of matches in a round will depend on the Robotic Day time conditions and number of participating robots.

### 2. Robot

The robot is fully autonomous and must not be dangerous or excessively annoying.

Since the start, any intervention is forbidden as well as any kind of connection with external devices until the end of the match. The robots may be started locally as well as remotely; later during the match no connection is allowed.

**Robot parameters:** weight max 1 kg, size max 15(l)x15(w) cm, the height is not limited. After the start, it may voluntarily deploy and change its size. It may also voluntarily turn and roll and it may split in any number of independent parts.

The robot may be built only from one of the allowed construction sets in accordance with the "Construction Kits" category (see below). The list of approved kits is available at <http://roboticday.org/2020/rules/2020-ConstructionKits>.

The robot must not be aggressive or destructive. Any robot action shall not induce damage of the opponent or other equipment (e.g. the ring). The robot may not exhale or gush any liquid, gas, smoke or fire, may not soil the ring or the opponent and its edges may not be sharp. The robot may not throw or fire anything and may not use anything to prevent the opponent to move. It is not allowed to lift the opponent up.

The robot must always keep contact with the ring. If the robot splits, there must be always at least one part in contact with the ring. The robot may use flying or hovering parts (navigation, camera etc.) but it must be possible for the opponent to perform the winning action (push the robot off the ring).

It is not allowed to use any technology to change the weight of the robot or to attach the robot to the ring. During the homologation, following adhesion test will be performed: the robot will be laid on a sheet of paper. It will pass the test, if this paper stays on the ground when the robot is lifted with its adhesion technologies turned on.

As part of the homologation, the robot shall show it wins over a non-moving robot.

The teams will also provide at least 2 photographs/images and 2 paragraphs of text describing the robot/team in electronic form for publishing purposes prior arrival to the competition (via the registration application).

### 3. Ring

The ring is a flat circular disc with the diameter of 77 cm. It is mat black. Its edge is glossy white (2.5 cm wide edge). The surface is monolithic and there are no hummocks which could affect robot movement. In the centre of the ring, there are two brown starting lines, 1 cm wide and 10 cm long. They are 10 cm apart.

### 4. Match start

Before the match, both robots are placed on the ring behind their start lines. For the first play between two robots in a round, a toss is used to decide which should be placed first. In consecutive matches, the winner of previous match is placed first (in case of a match draw, a toss will be used to set the order). After placing the robot, it must not be moved, its configuration (software as well as hardware) must not be changed, and no information is allowed to be passed to the robot.

On a referee command, the match is started. The robots must wait at least 5 seconds before they start moving. During that time all people must leave the area marked around the playing field.

### 5. Power of officials and liability

If a robot or a participant violates the rules, the referee may disqualify them from the race. He may also disqualify the participant or the robot for further races.

No objections against the decisions of the referee or the organizers are allowed.

The organizers may change the rules without prior notice, e.g. based on number of participants, local conditions etc.

The participants are responsible for their robots and their safety and will be liable for all damages caused by them, their robots or their equipment.

The organizers will not be under any circumstances held liable or responsible for any accidents of the participants or any damages caused by the participants, their robots or their equipment.

# Construction Kits

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## Build the robot fully using a construction kit for any of the Robotic Day competitions

### 1. Contest description

These rules describe details for those Robotic Day competitions where the "Construction Kit" category is organized. The "Construction Kit" rules shall be considered as addition to the basic rules released for the Robotic Day contests. Their individual rules remain valid as they are. Should there be exceptions, they will be published on the competition web pages.

### 2. Construction kit selection

The participants may only use one of the approved construction kits (from now on: The Kit). Examples include, but are not limited to: Lego Mindstorms (any version), Fischertechnik, Merkur, Meccano, and m-Bitbeam. However, The Kit used shall not be a single-purpose robot building kit, i.e. there must be nontrivial freedom in building the robot. The organizers have the right to approve/reject a Kit from registration; list of approved Kits is available on the competition website <http://roboticday.org/2020/rules/2020-ConstructionKits>.

### 3. Parts and modules selection

The main parts of a robot defined for the purposes of this competition are:

- Mechanical structure
- Actuation
- Sensory
- Control

If the producer produces parts or certifies other producers to produce parts from any of the above mentioned categories, everything used from such category must be officially made or certified by that producer. If the producer does not make or certify anything in a part category, the robot builders are in this category free to use whatever else.

The selection of parts for the mechanical structure is determining for describing which Kit is the robot build of.

### 4. Own and altered parts

It is allowed to use own mechanical parts under the following conditions:

- The part is fully functionally and dimensionally same as an existing kit part.
- The part will be manufactured using the same material as the original one or using replacement material in this way: originally iron part may be made of aluminium or its alloys, of plastic or of wood, aluminium part may be made of plastic or wood and plastic or wooden part of wood or plastic.
- The team will notify the organizers about such part and provide reference to the original one (by email to [kits@roboticday.org](mailto:kits@roboticday.org)) well before the competition so that the compatibility can be checked.

If the rules allow using RC servos, it is also possible to use servos altered for continual rotation.

Other alterations of parts are generally not allowed.

### 5. Exceptions

The "Construction kit" category is held for pupils and students up to secondary schools (ISCED 0-3). There may be also older people such as teachers or parents in the team but such people must not participate on the robot development, they are to supervise the team as "non-playing" or "honorary" captains and mainly care about the young team members in terms of safety and well-being.

It is allowed to participate for the students of the last year of their secondary education even if they have already passed the leaving exams and officially finished their secondary education under the condition they were in a "studying state" earlier this year.

### 6. Exceptions

The restrictions do not apply to the emergency switch neither to the remote control; these two components are fully defined by the respective competition rules (and therefore they may be built of whichever parts).

The organizers may issue specific exceptions and loosen or more specify the restrictions. Such amendments will be published on the competition web pages.

### 7. Contests management

If conditions allow, the construction kit robots will play separately from the standard robots. If the number of robots passing the homologations is low, the organizers may merge the construction kit category with the standard one; in such case, the best construction kit robot will be announced in addition to the overall results.