ROBOFINIST

Corridor Rally

RoboFinist competition Rules

Version 6.0 dated February 10, 2025

1. General Provisions

One team plays one robot.

1.1. Task Description

The distance must be completed along the specified trajectory in a minimum of time.

1.2. Restrictions

A team must meet the following requirements, unless otherwise specified by the Organizing Committee of a particular Event:

- the number of participants in the team is 3 or less (the number of coaches/team managers is not limited)
- the oldest member of the team is 22 years old or less in the year of the competition.

2. Requirements for the Robot

The robot must meet the following requirements:

- length - not more than 500 mm;
- width - not more than 400 mm;
- height - not more than 300 mm;
- weight - not limited.

The robot must not violate these requirements after the start of the race.

The robot must be absolutely autonomous; remote control in any form is prohibited.
The programs run by the robot must be written by the participant(s) only.

Robots must be assembled from individual parts. Pre-built robots and/ or robots with manufacturer pre-installed motion programs, are not eligible for competition.

The design of the robot must ensure the actuating of the «start-finish» system.

The tires and other components of the robot (when off) in contact with the ground must not be capable of lifting and holding an 80 g/m2 A4 sheet for more than 2 seconds.

The robot must be designed as a four-wheeled car with rear-, front- or all-wheel drive and steered front wheels. The steering wheels must not be mounted on the same kinematic axle. The robot's direction of travel must only be changed by turning the steering wheels around the vertical axis of rolling or some axis no farther away than 1 wheel diameter.

A minimum of 10 mm thick protective bumper made of shock-absorbing soft material (foam, polyurethane foam, porous rubber, etc.; inelastic plastic is not allowed) is required on the front of the robot.

3. Specifications of the Field

3.1. Track

The field is a track formed on both sides by boards. At the discretion of the Organizers, there may be some obstacles on the track. In front of the obstacles there are signs warning about approaching an obstacle.

The start-finish line is a 30+/-20mm wide line; the line color is red.

Track Specifications:

- width - 1500 +/- 500 mm;
- surface color - white;
- surface material - arbitrary (optimally - banner fabric);
- surface relief - there may be some irregularities with a height of 50 mm max and an angle of slope of 35 ° max;
- there may be ascents and descents with an angle of slope of less than 20°.

Board Specifications:

- construction - sections composed one after another fixed and stable along the track in the form of an arbitrarily broken line in plan view (view from above);
- material - rigid (wood, plastic, chipboard, etc.)
- height - not less than 150 mm;
- gaps - not more than 100 mm between sections;
- angle between adjacent sections - more than 100 °.

Warning Signs Specifications :

- type of sign - group of lines;
- line color - black;
- color of the interval between the lines is white;

- line width - 50 mm;
- interval in the group of lines is 50 mm;
- line orientation - parallel to each other and perpendicular to the track axis.

3.2. Obstacles

Stop Line

The «Stop Line» obstacle is a 250mm wide black line across the track. The robot must stop completely at this line and only then continue moving. When the robot stopped its projection must not go beyond the black line in the direction of travel. Warning sign for approaching the obstacle is 1 line at a distance of 1m from the obstacle along the longitudinal axis (see Fig.1)

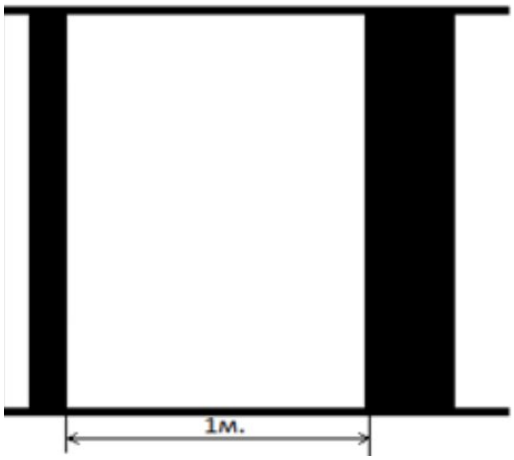

Figure 1. «Stop Line» obstacle

Stones

The «Stones» obstacle (see the «General Competition Rules») is a zone along the width of the track. The height is 25+/-10mm. The length along the track is 1000+/-500 mm. Warning sign for approaching the obstacle is 2 lines at a distance of 1m from the obstacle along the longitudinal axis (see Fig. 2).

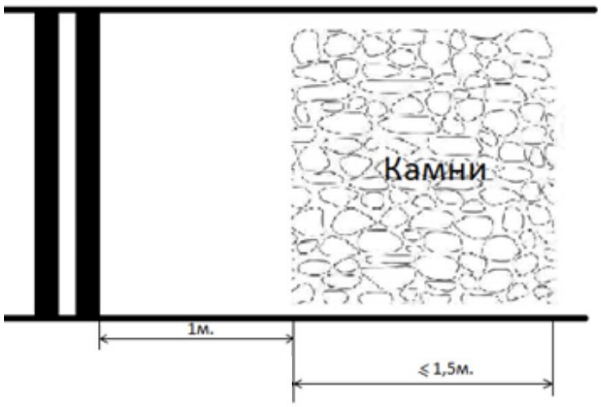

Figure 2. «Stones» obstacle

Flyover Bridge

The «Flyover Bridge» obstacle is a slightly-slope slide with two sloping surfaces. There is a possibility of passing under the obstacle. The angle of ascent and descent is not more than 20°. There are no warning signs for approaching the obstacle.

4. Contest Procedure

Robot starts by crossing the starting-finish line.

Robot finishes after crossing the starting-finish line.

The time taken to complete the task plus the accumulated penalty time are counted.

The track line is configured by the Organizers on the day of the competition.

The number of laps of the rally for each round is decided by the Organizers on the day of the competition.

The competitions are held in two rounds:

- qualification round;
- final round.

4.1 Qualification Round

The robots start one by one, performing qualifying runs.

The duration of the run is 2 minutes.

Robots that have passed by the track within 2 minutes, taking into account the penalty time, are considered to have passed the qualification and are admitted to the next final round.

4.2 Final Round

The teams with the best track time according to the results of qualifying round are qualified for the final. The number of teams taking part in the final is decided by the Organizers on the day of the competition.

Robots compete in pairs according to the Olympic system on the same field. Robots start simultaneously in the same direction of travel.

Pairs are formed on the basis of the qualification round results according to the «best vs. worst» system.

The starting position of the robots in a pair (left or right in the direction of travel) is determined by the Judge by the draw method.

The operator of the team whose robot has taken the higher place according to qualification round results has the right to choose the starting position for his robot in a pair (left or right in the direction of movement).

In case of collision of robots and impossibility to continue movement;

- time stops;
- robots are placed by the operators on the collision line as at the start;
- robots are launched by the operators on the Juge's command, and the countdown of time resumes.

In case of collision of robots in the obstacle area or in the warning sings area, the robots are launched in front of relevant warning signs.

5. Disqualification and penalty

5.1 Penalty

Penalty seconds are charged for the following violations:

- the robot has touched the board of the track - 10 penalty seconds;
- the robot is moving touching the boards - 10 penalty seconds for each meter;
- the robot has not stopped at the «Stop Line» obstacle (the projection of the robot has completely gone beyond the «Stop Line») - 20 penalty seconds;
- the robot has crossed the «Stop Line» obstacle (the robot has stopped at the obstacle and its projection has partially gone beyond the «Stop Line» in the direction of the robot's travel) - 10 penalty seconds.

5.2. Disqualification

In the following cases the robot will be disqualified:

- the robot is non-autonomous (external control of the robot);
- during the attempt the participant has touched the field or the robot;
- the robot does not move for more than 10 seconds;
- the robot does not move in the obstacle area;
- the robot overcomes the obstacle for longer than 15 seconds.

6. Scoring

N/A

7. Procedure for Determining the Winner

The winner of the run is the robot that has spent the least time to pass the track (taking into account the penalty time),

If both robots are disqualified in the final round, the robot that is closer to the finish line is declared the winner of the run.

The winner of the competition is the robot that took first place in the tournament.