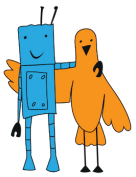
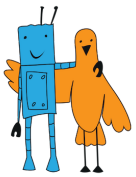


ROBOFINIST

«ARKANOID» CONTEST RULES

*Version **2.0** dated August 23, 2019*



1. General Provisions

The match is held between the two teams. One team plays one robot.

1.1. Task Description

The robot needs to get the ball into the opponent's goal using the video signal from the camera fixed above the field.

2. Requirements for the Robot

Requirements for the Robot:

- length - not more than 250 mm;
- width - not more than 250 mm;
- height - not more than 250 mm;
- weight - not more than 3 kg.

The robot must be controlled by a remote computer via any wireless communication channel. Operator control is prohibited.

The robot must be equipped with a kicking mechanism to kick the ball. The kicking mechanism must have only one structural element that is in contact with the ball and that must not change shape during the hit. The kicking mechanism must be driven remotely by the control computer.

The robot must contact the ball with the kicking mechanism only.

The robot must not be able to hold the ball in any way.

3.Specifications of the Field

3.1 Field

The field is a square-shaped playground limited by rigidly fixed boards (see Fig. 1). The field has a symmetrical transverse protuberance in the center. On the opposite sides of the field there are rails for robots moving.

Field Specifications:

- length - 1500 mm;
- width - 1500 mm;
- height of the boards - not less than 100 mm;

- wall thickness - not less than 10 mm;
- height of protuberance - 50+/-20 mm;
- shape of the longitudinal section of the protuberance is uniform curvilinear, with a smooth transition to the base of the field, optionally parabolic, elliptical;
- field color - white.

The rail is a square section rigidly fixed on the longitudinal boards of the field.

Rail Specifications:

- cross-section size - square with a side of 20 mm;
- height above the field - 100 mm;
- distance to the board of the field - 100 mm;
- material - metal;

Ball Specifications (optionally golf ball):

- color - red;
- diameter - 43 mm;
- weight - 46 g.

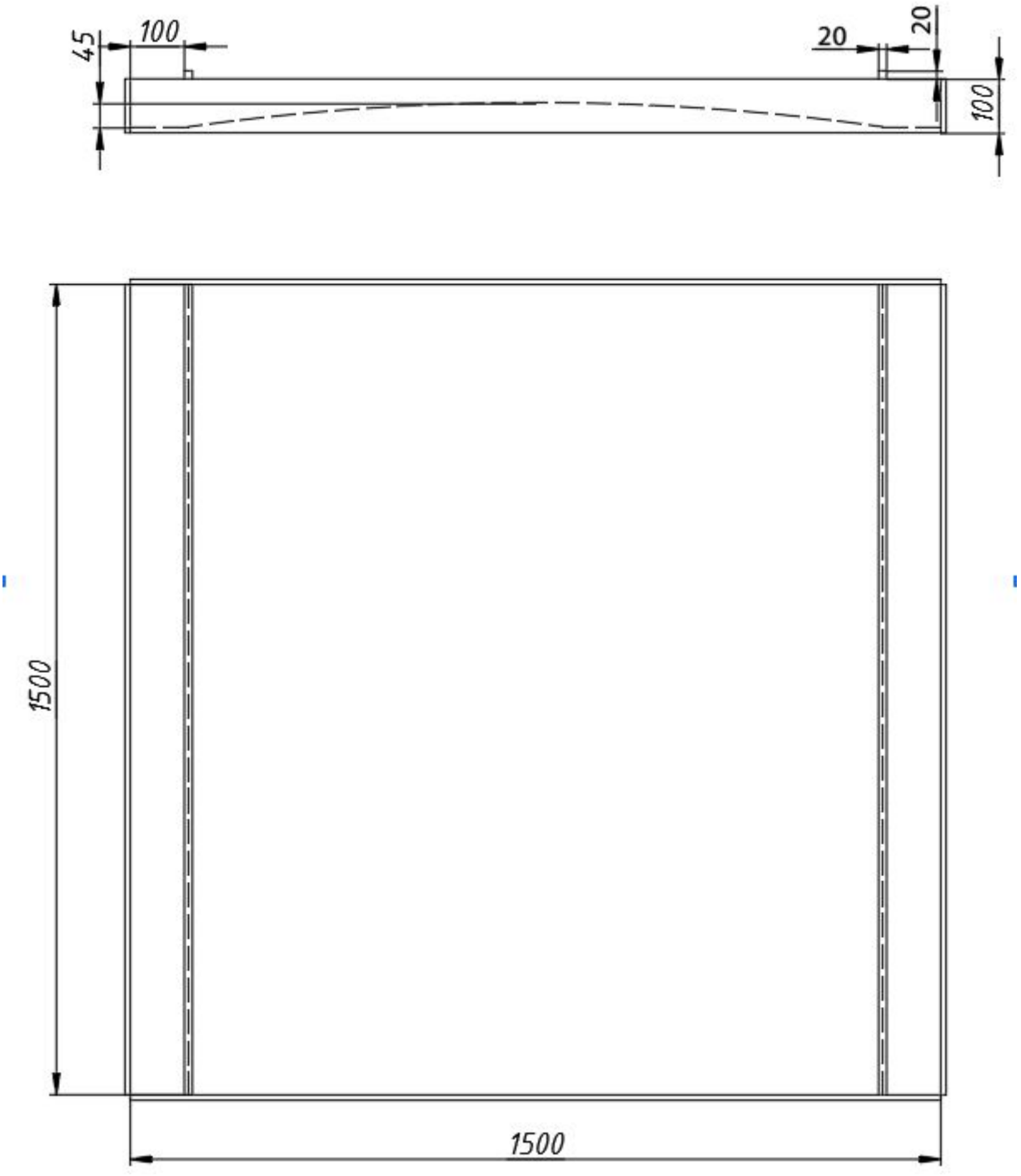


Figure 1. Field

3.2 Additional Equipment

Webcams:

- placement - on a beam mounted along the longitudinal axis of the field at a height of 2000+/-200 mm;
- viewing direction - vertically downwards;
- connection - via USB port to the participant's computer;
- camera field of view:
  - captures the entire field;
  - image of the field occupies not less than 80% on the short side of the frame;

If desired, the participant may additionally install his/her own digital camera, provided that it does not limit the view of the main cameras and does not interfere with the movement of the ball or robot.

4. Contest Procedure

Competitions are held according to the all-play-all or Olympic systems (see the “General Competition Rules”).

4.1 Preparation

Before the match starts, the referee draws lots for the right to choose the side of the field to install the robot. The opposing team chooses the side to kick the ball into play.

Operators place the robots on rails by themselves.

4.2 Match

The match consists of 2 rounds.

The duration of the round is 5 minutes. The duration of the break between rounds is 3 minutes. By agreement of the teams, the break time can be reduced. In the second round, the robots change ends.

At the beginning of the round, the ball is kicked into play from the centre to the side determined by the draw. Each subsequent kick-off shall be in the opposite direction to the direction of the previous kick-off.

The ball is kicked into play after each goal, dispossession or holding on to the ball.

A goal will be scored if after a kick:

- the ball touches the opposite board;

- the ball stops between the opposite board and the nearest rail;

Holding on to the ball - the robot touches the ball for more than 5 consecutive seconds.

Dispossession - the ball has stopped so that the robots cannot kick it in the direction of the opponent.

5. Disqualification

In the following cases the robot will be disqualified:

- the robot is non-autonomous (the human is in control of the robot);
- a team member touched the field or the robot without the referee's permission during the match;
- at the start of the match the team did not come to the field.

In case of disqualification, the opponent's robot wins the match with the score 7:0.

6. Scoring

The team is awarded 1 point for each goal.

7. Procedure for Determining the Winner

The robot with the highest score is declared the winner of the match. If the number of points is equal, a draw is declared.

If it is necessary to determine the winner of the match when the points are equal, the time of the match is extended until any of the opponents opens the lead.

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