

## “CONTROLLED ROBOTS FOOTBALL” CONTEST RULES

Version **5.0** dated March 18, 2016  
Based on the version 4.1 [robofinist.ru](http://robofinist.ru)

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## 1. General provisions

### 1.1. Field

- 1.1.1. Polygon color is green.
- 1.1.2. Marking line color is white.
- 1.1.3. Polygon material is felt or carpet.
- 1.1.4. Marking line width is 15-20 mm.
- 1.1.5. Walls of the goals are firmly attached to the surface.
- 1.1.6. See the fig. 1. for a sample of the field. Real field may differ from that presented in the figure.

### 1.2. Ball

- 1.2.1. The ball is represented by a standard golf ball.
- 1.2.2. Ball color is orange or pink.
- 1.2.3. Ball diameter is 43 mm.
- 1.2.4. Ball weight is 46 g.

## 2. Requirements to robots

### 2.1. Main specifications

- 2.1.1. In competition participate:
  - 2.1.1.1. 3 robots in each team in the "Football 3x3" category;
  - 2.1.1.2. 5 robots in each team in the "Football 5x5" category;
  - 2.1.1.3. 4 robots in each team in the "Football 4x4" category;

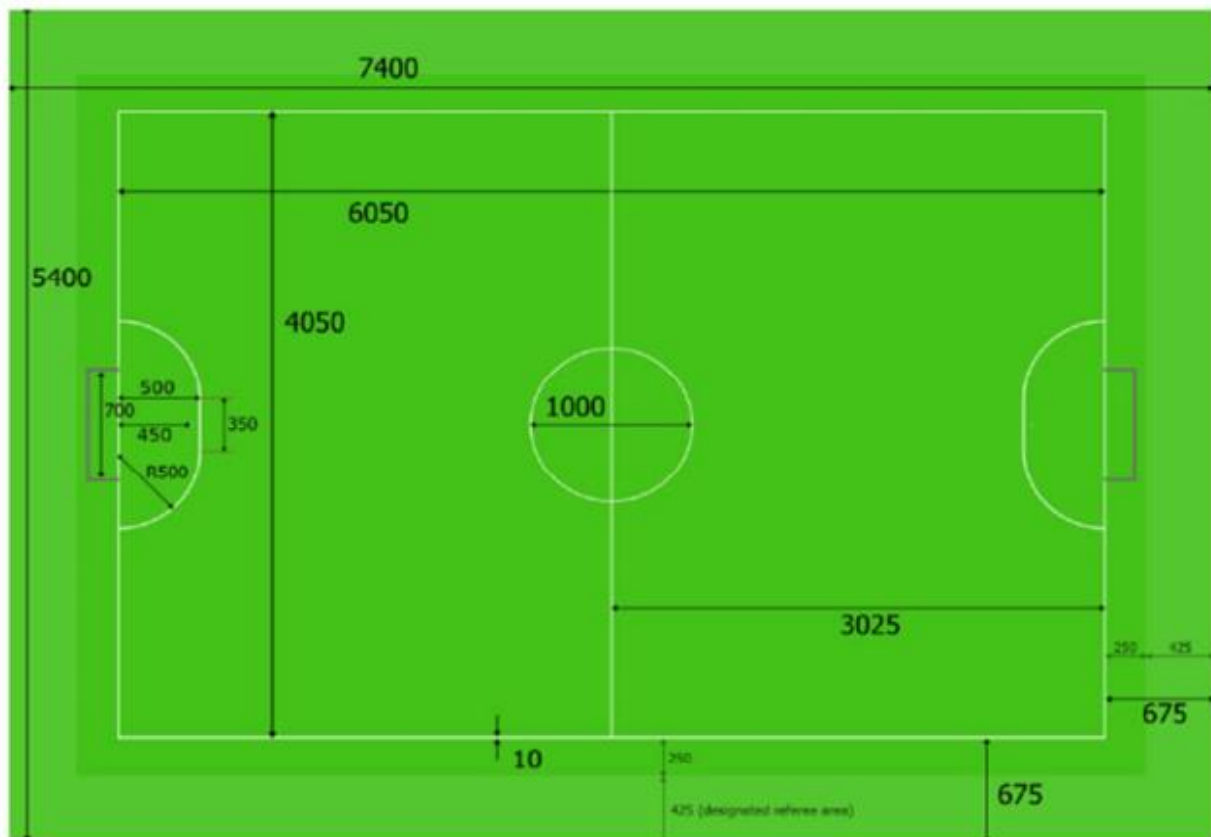


Fig. 1. Field scheme

- 2.1.2. The robot should fit into a vertical cylinder 22 cm in diameter and 22 cm high and be able to perform a strike with its striking mechanism inside such cylinder (see Clause 2.1.12). The size of the robot may not exceed the above-mentioned dimensions during the game.
- 2.1.3. *Null and void*
- 2.1.4. *Null and void*
- 2.1.5. The robot weight is unlimited.
- 2.1.6. Each robot is controlled by one operator.
- 2.1.7. Control must be from the outside via any wireless communication channel. Any wireless control devices may be used.
- 2.1.8. Robots must not shield the ball with their bodies for more than 50%.
- 2.1.9. Each robot must have a vertical flagpole represented by an axle for attachment of a colored flag corresponding to the playing team and robot number.
- 2.1.10. Wires must be connected together and fixed on the robot's body to prevent interference with other robots during the game.
- 2.1.11. Goalkeeper robot must have distinctive features (if allowed by the referee, the robot that came to the goal position in the beginning of the time can be considered as a goalkeeper).
- 2.1.12. Each robot in the team should be equipped with a kicking mechanism. Kicking mechanism is the mechanism that allows the robot in the center of the field, kick the ball outside the center circle, while remaining motionless.
- 2.1.13. Robots must not capture the ball in the process of playing. Capture means covering more than 50% of the ball by the robot's body.

## 2.2. Additional specifications

- 2.2.1. It is recommended to equip robot with the external plastic or carton cylinder cover with the holes for the kicking mechanism.
- 2.2.2. *Null and void*
- 2.2.3. Any additional requirements for robots and teams may be set out in the form of appendices to this Regulation. The list of appendices is given in Section Version 11 of this Regulation.

## 3. Referee

### 3.1. Authorities of the referees

- 3.1.1. Each match is controlled by the referees which have all the authorities directed to the compliance of the game rules.

### 3.2. General rights and responsibilities

- 3.2.1. Provide the compliance of the game rules.
- 3.2.2. Check the eligibility of the robots' equipment.
- 3.2.3. Provide the absence of the foreigners on the playing field.
- 3.2.4. Only the referees are allowed to walk on the field and touch the robots.
- 3.2.5. Remove all the details fallen out from the robots out of the field.

### 3.3. Rights and responsibilities of the head referee

- 3.3.1. At his own discretion stop the game because of the detected violations.
- 3.3.2. Resume the game after the stop and elimination of the violation.
- 3.3.3. Has a right to take disciplinary actions against violating robots by making a warning or removing the robot from the field.
- 3.3.4. Has a right to consult with other referees about the controversial situations.
- 3.3.5. Makes final decisions during the game

### 3.4. Rights and responsibilities of the assisting referees

- 3.4.1. Control activity of the robots on the field during the game.
- 3.4.2. Notify the main referee about unnoticed violations or other situations on the field.
- 3.4.3. Help in the controversial situations.

### 3.5. Referee's decision

- 3.5.1. Referee's decisions about the facts related to the game moments are considered final.
- 3.5.2. Referee can change his decision before the game is resumed.

### 3.6. Referee's signals

- 3.6.1. During the game referee makes the whistle signals.
- 3.6.2. One whistle during the game means that referee stops the game. Resumption of the game occurs also by one whistle.

3.6.3. Double whistle means end of the time/match.

## 4. Players (operators of robots)

### 4.1. Rights and responsibilities

- 4.1.1. Each robot controlled by only one player.
- 4.1.2. Know the rules of the game.
- 4.1.3. Listen to the referee's signals and commands.
- 4.1.4. Can notice referee about any violation during the game.
- 4.1.5. Must be outside the field behind corresponding goals during the game.
- 4.1.6. It is strictly prohibited for the player to enter the field during the game.
- 4.1.7. The player can touch the robots that are in the game only with the permission of the referee.
- 4.1.8. The player can take the robot in the breaks between periods.

## 5. Game

### 5.1. The aim of the game

- 5.1.1. To score maximum goals during the match

### 5.2. Regulations

- 5.2.1. The game is played according to the Olympic system<sup>1</sup>.
- 5.2.2. The match consists of 2 periods of 3 minutes each one. There is a break between periods of no more than 2 minutes.
- 5.2.3. In the final matches duration of the time is 5 minutes and the break is no longer than 5 minutes.
- 5.2.4. Competition rules provide additional period as the additional game time and bullet series and/or the game in reduced team size if the draw is not allowed.

## 6. Game moments

### 6.1. Preparations

- 6.1.1. The die is cast and the winner team chooses to kick off or to pick the field side.
- 6.1.2. In the second period teams change the field sides and attack opposite goals. Teams can agree to not change halves of a field and goals with the consent of the referee.
- 6.1.3. The team whose opponent kicked off in the first period kicks off in the second period.

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<sup>1</sup> In the case of a large number of participants there are qualifying matches hold: each team plays 2 games with the other two teams.

- 6.1.4. During the game there may not be more than 2 robots from one team in the penalty area including the goalkeeper.
- 6.1.5. The team is forfeited if there are no robots of this team at the start of the match / period.

## 6.2. Start

- 6.2.1. At the start of the game the robots must be placed on the corresponding field halves.
- 6.2.2. At the start of the game the ball is placed in the center of the field.
- 6.2.3. Opponents of the team that kicks off should be outside the central circle until the ball is kicked off.
- 6.2.4. The game starts after the whistle of the main referee.
- 6.2.5. The ball is considered in the game if the robot of the team strikes it with its striking mechanism, and if the ball is moving.
- 6.2.6. If the robot striking the ball first touches the ball again before any other robot touches the ball, or the ball leaves the game, such game is stopped, and the opposite team has the right to perform a free strike 2 from the place where the first team touched the ball for the second time.
- 6.2.7. The point scored immediately after the first strike does not count.

## 6.3. Goal kick

- 6.3.1. Is played:
  - 6.3.1.1. if the goalkeeper touches and holds the ball more than 2 seconds and there is the robot of the opponent team in the goalkeeper zone;
  - 6.3.1.2. if the opposite team's robot touched the goalkeeper in the goalkeeper zone and the ball is also in the goalkeeper zone;
  - 6.3.1.3. if the opposite team's robot kicked the ball and it crossed the goal line (or its extension).
- 6.3.2. The ball is placed in the goalkeeper zone.
- 6.3.3. Opposite team's players must move outside the goalkeeper zone by the distance not less than 50 cm.
- 6.3.4. During the goal kick the robot cannot cross the border of the goalkeeper zone with any of its part.
- 6.3.5. After the goal kick the robot may not touch the ball until another robot touches it or the ball leaves the game.
- 6.3.6. After the whistle the ball is kicked off by the goalkeeper or other player.
- 6.3.7. Note: during the attack the ball can immediately leave the goalkeeper zone. In this case the game continues.

## 6.4. Corner kick

- 6.4.1. Corner kick is played if the team's robot was the last to touch the ball which entirely crossed the goal line by land or by air.

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<sup>2</sup> See section 6.5.

- 6.4.2. The ball is placed in the corner closest to the place where the ball crossed the goal line.
- 6.4.3. Opponents are at a distance of not less than 50 cm from the angular sector until the ball is not in play.
- 6.4.4. The ball is considered in action if it was kicked off and moved.

## 6.5. Free kick

- 6.5.1. The free strike is appointed by the referee's whistle in the following situations:
  - 6.5.1.1. the opposite team captures the ball;
  - 6.5.1.2. the opposite team violates the first strike rules (see Clause 6.2.6);
  - 6.5.1.3. the opposite team violates the free strike rules (see Clause 6.5.4).
  - 6.5.1.4. the opposite team violates the penalty strike rules (see Clause 6.7.4).
- 6.5.2. The ball is put to the place where the rules were violated.
- 6.5.3. Then the ball is put into play <sup>3</sup> with the whistle of the referee.
- 6.5.4. If the robot performing a free strike touches the ball again before any other robot touches the ball, or the ball leaves the game, such game is stopped, and the opposite team has the right to perform a free strike from the place where the first team touched the ball for the second time.

## 6.6. Controversial ball

- 6.6.1. In the case of a clinch<sup>4</sup> longer than 5 seconds, referee can decide to play the ball. Then the referee stops the game by the whistle and places the robots and the ball at his own discretion and gives the command to continue.
- 6.6.2. Recommendation to the players: When you stop the game in this situation it is no need to move out distance of not less than 50 cm from the clinch places.

## 6.7. Free kick

- 6.7.1. Is played:
  - 6.7.1.1. because of the capturing the ball by the opposite team;
  - 6.7.1.2. after two warnings;
  - 6.7.1.3. due to exceeding of the maximum quantity of players in the goalkeeper zone.
- 6.7.2. The ball is placed at a distance of 50 cm from the goalkeeper zone and put into play by the opponent team with a whistle of the referee.
- 6.7.3. When a team performs a penalty strike, the robots of the opposite team should not be closer to the ball than the robots of the team which performs such strike. If such rule is not violated, the penalty strike is repeated.
- 6.7.4. If the robot performing a penalty strike touches the ball again before any other robot touches the ball, or the ball leaves the game, such game is stopped, and the opposite team has the right to perform a free strike from the place where the first team touched the ball for the second time.

## 6.8. Out

- 6.8.1. Is played if the ball left the field through the side line.

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<sup>3</sup> The rules of putting the ball into play are described in Clause 6.2.5.

<sup>4</sup> Clinch is the situation when the robots fail to move or turn round.

- 6.8.2. The ball is placed in the point where it crossed the line and is kicked off by the opposite team after the referee's whistle.
- 6.8.3. Robot during throwing the ball in cannot cross the lateral line with any of its part.
- 6.8.4. After the throwing in the robot may not touch the ball until another robot touches it or the ball leaves the game.
- 6.8.5. At the moment the ball is thrown in, the opposing team robots may not be closer to the ball closer than robots of the team that throw in.

## 6.9. Goal

- 6.9.1. The goal is considered scored when the ball entirely crosses the goal line and there are no violations from the team that scored.
- 6.9.2. After the goal the ball is placed in the center of the field. The team that missed the goal gets the right to kick off the ball

## 6.10. Robot replacement

- 6.10.1. The robots can be replaced during the game (e.g. if the robot lost connection with the remote control).
- 6.10.2. There is no limit on the number of replacements.
- 6.10.3. Replacement procedure: the player asks the referee to give (remove from the field) the robot that must be replaced by telling its number. Then the new robot enters the field in any place at the field's border.
- 6.10.4. The robot that was removed by player can enter the field again to replace another robot.

## 6.11. Restart

- 6.11.1. Restart of the robot/robots is possible if it lost the connection with the remote control (or the battery is low or other problem) at the beginning of the time or during the game.
- 6.11.2. By the decision of the referee the robot is removed from the field and is given to the operator for recovery. The game is not stopping.

## 6.12. Finish

- 6.12.1. The game is over upon expiry of the time assigned for the match.
- 6.12.2. The game ends because of the forfeit of one of the teams.
- 6.12.3. By the referee's decision, the game may be over ahead of time.

## 7. Additional games

### 7.1. Additional period

- 7.1.1. Additional period is played if the draw is not allowed but happened.
- 7.1.2. The period is played until the first goal, but max. 3 min.



## 7.2. Bullet game

- 7.2.1. Bullet game can be announced by the referee after completing the additional period with no winner identified.
- 7.2.2. Each team plays 3 bullets in turn.
- 7.2.3. One team nominates the goalkeeper and the other nominates the player. First team to play the bullet is the team whose opponent kicked off in the last period.
- 7.2.4. The ball is placed in a white circle at the half with goalkeeper.
- 7.2.5. On the whistle the player tries to score a goal to the goalkeeper.
- 7.2.6. The player has 30 seconds.
- 7.2.7. The game is played
  - 7.2.7.1. until the ball is out of the field ;
  - 7.2.7.2. until the goalkeeper is holding the ball for more than 2 seconds or the opposite team's player touches the goalkeeper;
  - 7.2.7.3. until the goal or the end of the allotted time.
- 7.2.8. The goalkeeper is not allowed to leave the penalty zone.
- 7.2.9. If after the bullet series there's no winner then, by the referee's decision, the teams either play the bullets in turn until the first goal or play "1x1" match. By the referee's decision, the game may be over ahead of time.

## 8. Penalties

### 8.1. Warnings are

- 8.1.1. Imposed for
  - 8.1.1.1. delay the game resuming;
  - 8.1.1.2. damage to the ball or the field;
  - 8.1.1.3. entering the field by the robot operator;
  - 8.1.1.4. attacking (or holding) the goalkeeper in the goalkeeper zone if the ball is outside it;
  - 8.1.1.5. touching the robot on the field by the operator during the game without referee's permission;
  - 8.1.1.6. exceeding the strength of the robots on the field during the game.

### 8.2. Free kick

- 8.2.1. After 2 warnings the team gets free kick in its goals.

### 8.3. Disqualification

- 8.3.1. After 3 warnings one of the robots of the guilty team by the decision of the referee must immediately leave the field until the end of the period.
- 8.3.2. If there are no more robots at the opposing team after the removal, the team gets technical loss.
- 8.3.3. After removing one of the robots of the team all alerts of this command are canceled.

## 9. Winner nomination rules

- 9.1.1. All teams are classified into 2 categories:
  - 9.1.1.1. teams consisting of 3 robots;
  - 9.1.1.2. teams consisting of 5 robots.
  - 9.1.1.3. teams consisting of 4 robots.
- 9.1.2. In each category, the winner is nominated independent of the other two categories.
- 9.1.3. The winner of the match is the team which scored more goals to the opponent team.
- 9.1.4. Scoring points for a match:
  - 9.1.4.1. for each victory, the team scores 3 points.
  - 9.1.4.2. for each draw, the team scores 1 point.
  - 9.1.4.3. for each loss, the team scores 0 points.
- 9.1.5. In the Olympic system (play-off) the team with the maximum number of points for the match moves ahead.
- 9.1.6. During the qualifying matches the points are taken into account to determine the teams that pass to the play-off. Number of teams that pass to the play off is multiple by 4.

## 10. Change Log

### 10.1. Version 5.0.1

- 10.1.1. The wording of Clause 2.1.2 is changed from

*The robot should fit into a vertical cylinder 22 cm in diameter and 22 cm high.  
The robot must not exceed such dimensions during the game.*

to

*The robot should fit into a vertical cylinder 22 cm in diameter and 22 cm high and be able to perform a strike with its striking mechanism inside such cylinder (see Clause 2.1.12). The size of the robot may not exceed the above-mentioned dimensions during the game.*

### 10.2. Version 5.0

- 10.2.1. Version 4.1 is supplemented with Subclauses 2.1.1.3, 2.2.3, 6.2.6, 6.2.7, 6.5.1.1-6.5.1.4, 6.5.4, 6.7.3, 9.1.1.3 and Section 11.
- 10.2.2. Invalidating Subclauses 2.1.3, 2.1.4 and 2.2.2.
- 10.2.3. The wording of Clause 1.2.2 is changed from

*Ball color is orange or pink.*

to

*Ball color is white, orange or pink.*
- 10.2.4. The wording of Clause 2.1.2 is changed from

*On the start robot size must fit to the vertical cylinder of the 22cm diameter.*

to

*The robot should fit into a vertical cylinder 22 cm in diameter and 22 cm high.*

*The robot must not exceed such dimensions during the game.*

10.2.5. The wording of Clause 2.1.9 is changed from

*Each robot must have a vertical flagpole represented by an axle for attachment of a colored flag corresponding to the playing team.*

to

*Each robot must have a vertical flagpole represented by an axle for attachment of a colored flag corresponding to the playing team and robot number.*

10.2.6. The wording of Clause 6.2.5 is changed from

*The ball is considered as kicked off after the first touch with the kicking mechanism of the robot of the team that starts the game.*

to

*The ball is considered in the game if the robot of the team strikes it with its striking mechanism, and if the ball is moving.*

10.2.7. The wording of Clause 6.5.1 is changed from

*Free kick is appointed by the referee's whistle because of the capturing the ball by the opposite team.*

to

*The free strike is appointed by the referee's whistle in the following situations:*

10.2.8. The wording of Clause 7.1.2 is changed from

*This period is played until the first goal.*

to

*The period is played until the first goal, but max. 3 min.*

## 10.3. Version 4.1

10.3.1. To the version 4.0 were added paragraphs 6.3.4, 6.3.5, 6.8.3, 6.8.4 and 6.8.5.

10.3.2. The wording of the paragraph 2.1.12 changed from

*At least one robot per team shall be fitted with kicking mechanism corresponding to the size of the robot.*

to

*Each robot in the team should be equipped with a kicking mechanism. Kicking mechanism is the mechanism that allows the robot in the center of the field, kick the ball outside the center circle, while remaining motionless.*

## **11. List of Appendices to this Regulation**

*Table 1. List of Appendices to Regulation*

<b>No.</b>	<b>Name</b>
1	Mandatory Qualification Events