



«LINE FOLLOWER» CONTEST RULES

Version **4.2** dated November 25, 2015

Based on the¹ robofinist.ru version

Contents

1. Categories of competitions	1
2. Specifications of the field and lines	2
3. Robot	2
4. Contest procedure	3
5. Scoring	3
6. Disagreement with the result	4
7. Change Log	4

1. Categories of competitions

- 1.1. "Line follower" competitions are held in four categories, dividing into them by two criteria²:
 - 1.1.1. line nature – "Line for intermediates" and "Narrow line follower" categories. For more information see paragraph 2.3-2.5;
 - 1.1.2. restrictions on the material for robots building – "Premier League" and "Educational kits" categories. For more information see paragraph 3.4.
- 1.2. One robot cannot simultaneously (i.e. within one competition) participate in the "Premier League" and "Educational constructions" categories of the same line.
- 1.3. Title «Narrow line» is the same that «Robotchallenge line ».
- 1.4. The organizers of the competitions may create an additional category for beginners ("Line Follower for Beginners"). The technical limits for the field and robots (see Clauses 2.3 and 3.1) in this category meet the respective limits set for "Line Followers for Intermediates: Educational Constructions".
- 1.5. One robot within the framework of one competition cannot participate in Line Follower for Beginners and any other category of Line Follower competitions described in this Regulation at the same time.

¹ See section 7.

² There are the following four categories: "Line follower for intermediates: Premier League", "Line follower for intermediates: Educational constructions", "Narrow line follower: Premier League" and "Narrow line follower: Educational constructions".



2. Specifications of the field and lines

- 2.1. Polygon color is white.
- 2.2. Line color is black.
- 2.3. Table 1 shows the characteristics of the line for intermediates and for narrow line.

Table 1. Specifications of lines

Specifications	Type of line	
	Line for intermediates	Narrow line
Line width	50 mm	15 mm
Radius of curvature ³	not less than 300 mm	not less than 75 mm

- 2.4. There are additional restrictions for "Line for intermediates" categories:
 - 2.4.1. Start and finish lines are marked in yellow.
- 2.5. There are additional restrictions for "Narrow line follower" categories:
 - 2.5.1. Follower line begins in the start area and ends at the finish area. Starting and ending point of the line should be clearly highlighted with transverse line.
 - 2.5.2. It should be 10 cm area between start and finish lines. This area is crossed by the line.
 - 2.5.3. The line should not cross itself at any point.
 - 2.5.4. Slides and studs are possible, but adjacent areas of the line shall be located at a distance of not less than 15 cm when measured from the center of each line area.
 - 2.5.5. The minimum distance at which the line should approach the end of the competitive field must be at least 15 cm when measured from the center line.
 - 2.5.6. There can be angles of not less than 90 degrees.

3. Robot

- 3.1. Restrictions on physical specifications of robots are given in table 2.
- 3.2. The robot must be fully autonomous after the start. Otherwise, the robot may be disqualified.
- 3.3. Ready robots that do not require building, such as Polulu 3pi, SumoBot by Parallax, Sumovor by Solarboticss etc. having ready algorithms for passing lines, are not allowed to participate in the competition.
- 3.4. Robots acting in "Educational kits" categories shall be built of educational constructions.
 - 3.4.1. Educational constructions include the construction sets produced by Lego, Fischertechnik, VEX, Huna, TRIK, Robotics.

³ It is meant the radius of curvature at any point of the line.



- 3.4.2. Any manually fabricated or 3D printed plastic parts can be used to construct robots. Any electronic hardware may be used only from the education construction set.

Table 2. Robots specifications

Specifications	Type of line	
	Line for intermediates	Narrow line
Size	not more than 40 x 40 cm	not more than 30 x 30 cm
Weight	not more than 10 kg	not more than 7.5 kg

4. Contest procedure

- 4.1. Heats time is counted from the moment of crossing the start line by the robot until the moment of crossing the finish line by the robot.
- 4.2. Robot crosses the line when its front part touches or crosses the line.
- 4.3. In order to complete one attempt the robot is given the following time:
- 4.3.1. 1 minute when participating in the "Line follower for the intermediates" categories;
- 4.3.2. 3 minutes when participating in the "Narrow line follower" categories;
- 4.4. Time of attempts should be fixed with electronic gates or by referee with the stopwatch depending on the availability of the equipment. In any case fixed time shall be final.
- 4.5. As soon as the robot crosses the start line, it should remain completely autonomous. Otherwise it will be disqualified.
- 4.6. Robot, wandering on the contest field should be disqualified.
- 4.7. It is counted that the robot left the competitive field, when any wheel, leg or caterpillar of the robot is completely off the field.
- 4.8. The robot is considered to have left the line, when no part of it is above the line. The robot length in this case is measured by the wheelbase.
- 4.8.1. The robot that left the line when participating in the "Narrow line follower" categories, should return to the line in the place where it left the line or at any earlier (already passed) point of the route.
- 4.8.2. The line may be left only tangentially from the outside, provided the length of the section which the robot passes tangentially does not exceed three lengths of the robot body.
- 4.9. If the robot cut the trajectory area, it should be disqualified.

5. Scoring

- 5.1. Robot of the competition participant starts and finishes on the same start position. Pair heats can be held upon mutual agreement of the participants. Each team has



no more than 2 attempts (their exact number to be determined by the jury on the competition date) in order to complete the distance. The best time among the attempts counts.

- 5.2. The winner will be the team that used less time for completing the distance.
- 5.3. If one of the robots when passing the distance withdraws and prevents another robot to continue moving, then the heats is repeated.
- 5.4. If the robot when passing the distance repeatedly obstructs the opponent, it may be disqualified from the heats by a decision of the referee.

6. Disagreement with the result

- 6.1. Objections to the decisions of the referees are not accepted.
- 6.2. If you violate any of these rules of the competitions, captain or team leader may submit a complaint to the Organizing Committee or personally to the referee before the contest end.

7. Change Log

- 7.1. Version 4.2 of this regulation is changed in terms of Clause 3.4.1 related to educational kits.
- 7.2. Version 4.1 of this regulation is changed in terms of Clause 1.3 and 1.4-1.5 to enable the competitions in Line Follower for Beginners category.
- 7.3. Version 4.0 of the present regulations is created on the base of version 3.1 of the "Line follower" competition rules and version 1.0 of the "RobotChallenge Line follower" competition rules. Paragraph 3.4. is based on paragraphs 3.6.4 and 3.6.5 of the version 1.2 of "General competition rules» for robotics.