robotex18

WATER RALLY RULES

Allar Aasjoe

+372 53467363
Allar.aasjoe@robotex.ee

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1 Introduction

The aim of the competition is to simulate the immersive nature of the boat race. The aim is to complete as many laps as possible in given time and collect as many points as possible.

2 The Field

1. The water layer that covers the surface of the field is at least 10 cm deep.
2. The height of the barrier from the water level is at least 10 cm. The barriers can be made of transparent material.
3. The water temperature is from +10 to +40 ^{0}C.
4. The trajectory of the track is curved and closed.
5. The cross section of the track may be rectangular or with rounded edges.
6. The width of the track is at least 60 cm.
7. There may be crossings on the track, that must be crossed straight.
8. There may be simple obstacles like buoys, walls or dividers on the field. They are placed in a way that prevents the robot to complete the course by moving along the walls. Touching the buoys and walls is not forbidden and their location is not predetermined.
9. There may be rapids created with compressed air on the field. In a single location there may be up to 4 nozzles with a tip diameter of 4 mm. The nozzles are fixed to the bottom of the field and their height is up to 40 mm.

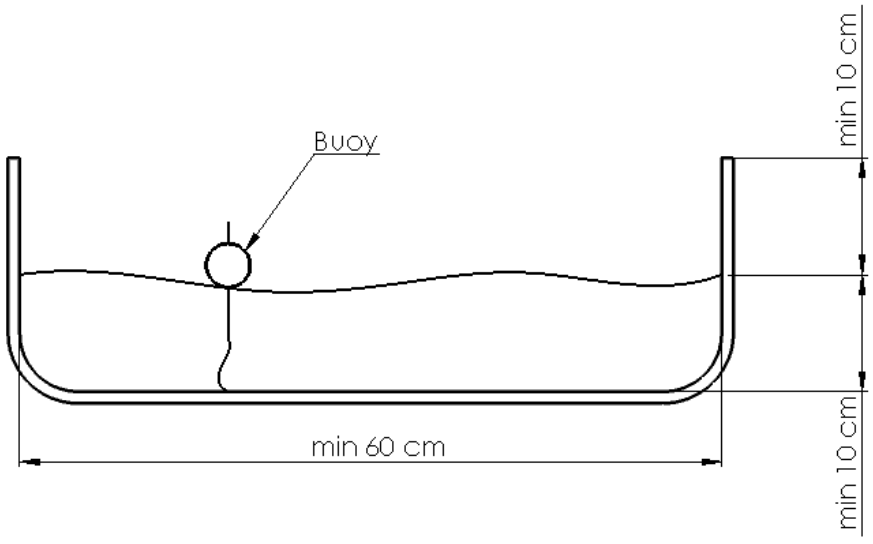

Figure 1: The cross section of a sample field

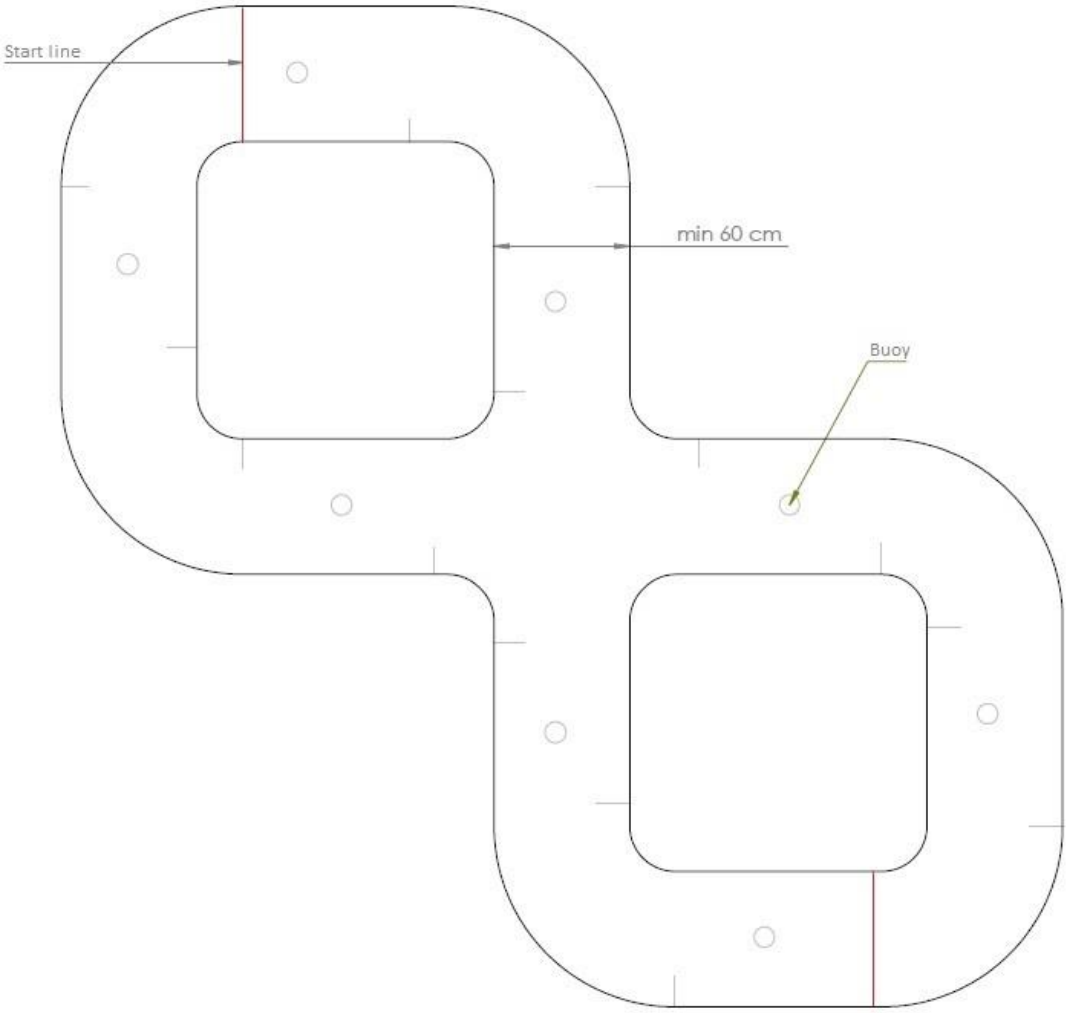

Figure 2: Sample field from above

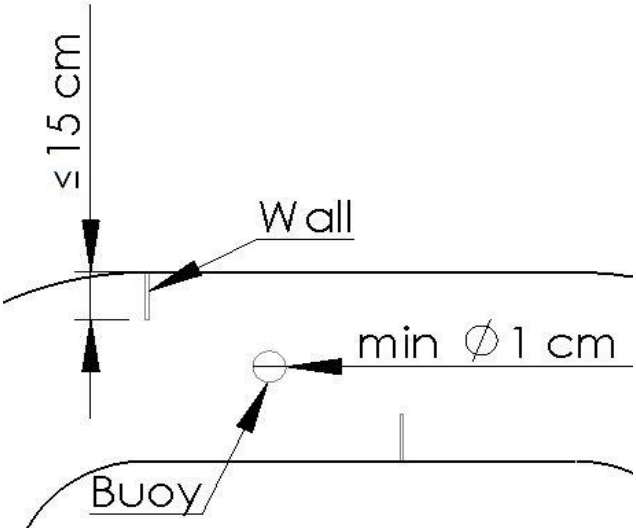

Figure 3: Obstacles of sample field

3 The Robot

1. The robot must be autonomous.
2. The robot must swim or float.
3. The maximum dimensions of the robot are 35 x 25 x 35 cm (length x width x heigth) and the mass can be up to 2 kg.
4. The robot is allowed to dive under the water.
5. The robot is not allowed:
    - to drive at the bottom or use wheels, crawlers or other equipment for moving at the bottom;
    - to damage the field and endanger the spectators;
    - to emit gases, hazardous and contaminating fluids (such as oil) or dust;
    - to intentionally ram or drown other robots;
    - to use another robot for moving;
    - to intentionally consume and discharge water out of the field;
    - to reach over the edges of the pool;
    - to exit the pool.
6. The robot must have a start and stop button or a remote control.

4 The Competition

1. Maximum of three robots compete at the same time.
2. There are two start lines on the track (see Figure 2). Which one of those two will be used for the start and and the direction of the start will be drawn right before the start of the race.
3. The winner of the race is the robot, that earns more points.
4. The time of one race is 5 minutes.
5. The robot can start moving 5 seconds after the referees start signal.
6. If the robot starts moving before the appointed time (see above), it will be considered as a false start.
7. The robot that makes a false start receives a warning. In case of two consecutive false starts, the robot will get 0 points.
8. A robot that has completed the race or made a false start will be removed from the field by the representative of the team by the order of the referee.

9. If the race has stopped (for example, all robots are still for 15 seconds), the referee has the right to give an order to the representative of the team to remove the robot preventing the movement.
10. The robot that prevents movement is placed in the same spot after 10 seconds.
11. Upon the violation of the rules, the referee may disqualify the robot and order the representative of the team to remove the robot from the track.
12. The maximum number of members in one team is 3.
13. If a robot stumbles or sinks during the competition and does not prevent other robots from moving, then the representative of the team has the right to decide whether the robot:
    a. is left in place;
    b. is returned to the starting line.
14. If a robot is stuck, the team has the right to ask that the robot be placed back on the starting line. Given permission, a team member may do so without disrupting other robots or participants.
15. If the robot is placed on the starting line during the race for whatever reason, one point will be subtracted from the points earned so far.
16. Only one team member may be closer to the track than 2 meters and that member is considered the team's representative.
17. The team's representative has the right to remove the robot from the race.
18. If the races end in a draw, the winner will be determined by an additional trial.
19. The additional trial is won by the robot that earns the most points in 1 minute. An additional trial is only held between robots that earned the same amount of points. The starting positions of the trial are drawn by lots.
20. The time is measured using a stopwatch.

4.1 Counting the laps

1. A full lap is defined as covering the full path of the 8-shaped track, during which both of the start lines on the track are crossed, and the crossing on the track is crossed straight twice. You can not do a mistake during the lap for it to count as a full lap.
2. The start of a full lap is when the robot crosses one of the start lines.
3. The robot can cover the laps in freely chosen direction.
4. The direction of a lap will be stated at the moment the robot crosses the start line.
5. During a trial the laps will be completed in different directions.
6. A full lap is completed when the robot crosses again the same start line from which the beginnig of the lap was fixed.

4.2 Earning points

1. Robot will earn a point, when crossing on the track is crossed straight. NB! Before rhe robot can earn another point for the crossing, it must cross one of the start lines before.
2. Robot earns a bonus point for a full lap (In total the robot will earn 3 points for a full lap).

4.3 Mistake

1. Mistake is a situation, where the robot does not cross the crossing straight, but turns left, right or back.
2. When the robot does a mistake, it will earn minus one point.

5 Organizing

1. The robot must be registered before the competition. The registration process includes technical inspection of the robot, marking the robot with a number sticker, and drawing the order of participation.
2. The technical inspection must be passed by the time set by the organizers.
3. The organizers do their best to ensure the possibility of trying out the track before the competition.
4. For the better counting of laps, every team is given a coloured flag that has to be attached to the robot in a visible way.
5. The current score is displayed next to the track.
6. All questions and problems that may arise during the competition, are solved by the referee.
7. The final decision regarding any appeals is made by the referee and/or the organizers. All complaints must be reported to the referee during the match or right after the ending of the match. Complaints filed later will not be accepted. The final decision regarding any disputes or inconsistencies, is always made by the referee.

6 Changes and cancellations in the rules

Changes and cancellations made to the rules are adopted by the main organiser of the competition, according to the regulations of the regulatory committee of the competition.