

## LEGO Line Straight Sprint Rule

**Introduction:** The robot has passed the pre-competition examination and will compete for the fastest speed along the track with a straight line of more than 9 meters.

**Group:** ≤ Grade 4

Rule revision v4-2024.01.30

Revision 1.2.F Participating teams can bring finished robots to the competition, and the referee will check the use of robot equipment before the competition.

Revision 2.4.A competition debugging time is 30 minutes

Rule Revision v3-2022.1.5

Revision 4 Added reference map of the field

Rule Revision v2-2021.10.17

Revise 3.2 Violation Rule for Collision with Adjacent Robot .  
cancel the test event and change the debugging time to 60 minutes.

Rule Revision v1-2020.08.04

Creation of Event Rules

## 1 Robot requirements

### 1.1 Size and weight limitations

- A. The size of the robot is < 20 cm long, < 20 cm wide and < 20 cm high, and it can be smoothly loaded into the standard inspection container.
- B. Robot weight < 1.5KG.
- C. Robots must pass the check before the competition. If the size or weight exceeds the standard, They will have 5 minutes to modify the structure. If they still fail to pass the inspection, they will be check. During this period, the referee will time the stopwatch.

### 1.2 Requirements for robot equipment

- A. The robot must be made by Lego and the version is not limited.
- B. The use of Lego gyroscopes is restricted. Limit the number of LEGO Drive Motors < 3.
- C. Only the rubber band that binds the robot can be a third-party device, and the rubber band can not be used for other functions.
- D. Lego controllers are allowed to be powered by ordinary No.5 alkaline dry batteries, but the power supply structure is not allowed to be modified, and the use of special batteries such as 14500 lithium batteries is prohibited. E. The referee has the right to decide whether all parts used are allowed in the game.
- E. The referee reserves the right to determine whether all components used are allowed in the competition.
- F. Participating teams can bring finished robots to the competition, and the referee will check the use of robot equipment before the competition.

## 2 The rules of the game

### 2.1 Standards for competition fields

- A. The total length of the straight line of the competition field is 9 m-12 m.
- B. The track area is white, the track is black line, and the line width is 15 mm.
- C. There are at least three tracks in the competition field.

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- D. The starting area of the competition will be equipped with light control switches, and all robots will start the competition at the same time in the way of light control. A finish area and finish timing will be set up at the competition field.

## 2.2 Automatic control

- A. The start mode of the competition is light control start, so the tail of each robot needs to be equipped with sensors to ensure the reception of light control signals, and the body needs to be within the size of the inspection. In addition, the light control position is announced on site, and each team needs to debug the sensor position on site.
- B. When the light control switch is turned on, the robot must keep running completely autonomously. During the driving period, the team members must not touch the robot, otherwise they will be disqualified. Team members need to wait for the robot at the end, and when the robot crosses the end, they can pick up the robot manually.
- C. The starting light is fixed on the ground of the site, and the starting light is about 4-6 cm away from the starting area of the robot.

## 2.3 Time Limit

- A. Each team has a maximum of 1 minute to complete the match along the line. Teams that do not complete the match within the time limit will be scored as 01:00:01 minutes.

## 2.4 Competition process

- A. The debugging time of the competition is 60 minutes. During the debugging period, there will be a constant starting light as the debugging equipment. Debugging ends and the system enters the check-in isolation.
- B. During the competition, each team will have 2 rounds of timing competition, and the best results of the 2 rounds will be used as the final ranking results.
- C. According to the best results of all teams in two rounds, the final ranking will be obtained.

## 3 Violation

### 3.1 Off-line

- A. The overall vertical projection of the robot is off the black line of the track, which is regarded as off-line, and the record of this round is 01:00:01.
- B. Off-line decides the decision, and the referee has the sole authority to decide.

### 3.2 Collision next door robot

- A. If the robot is off the line and collides with the robot on the next track, causing the robot on the next track to be off the line or affecting the results, the results will be handled according to the following two situations:
- If such a violation occurs in the first round, the robot will be disqualified and unable to participate in the second round. The results of the two rounds are 01:00:01.
  - If this violation occurs in the second round, the first round score will be cancelled, and the score of the two rounds will be 01:00:01.
- B. A robot that is hit by an offending robot and affects the competition.
- If the race is successfully completed, record the results.
  - If you are knocked off the line, you will get a chance to make up the match.

### 3.3 Illegal operation

- A. During the competition, if the robot is picked up in the field without the permission of the referee, it will be disqualified.
- B. During the competition, trampling on the competition ground will be disqualified.

4 Venue Reference

