

RC -- Remote Shooting

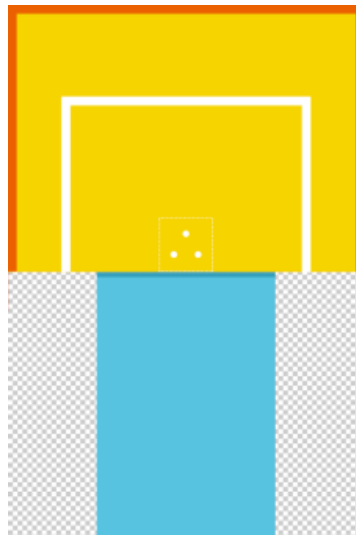
Rules Revised on 2024.10.14

Introduction: Teams determine their own starting area. The robot's first departure must start within the starting area, the field border. Teams remotely control the robot to sequentially reach each shooting area, adjust the shooting position autonomously, and complete the shots within the specified time.

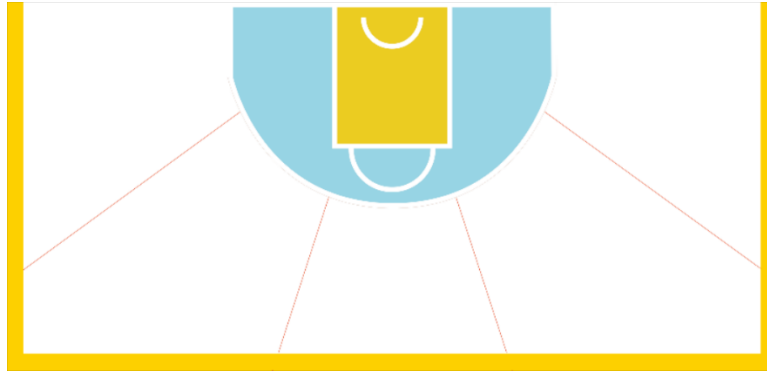
- A. Junior
- B. Senior

1. Field Setup

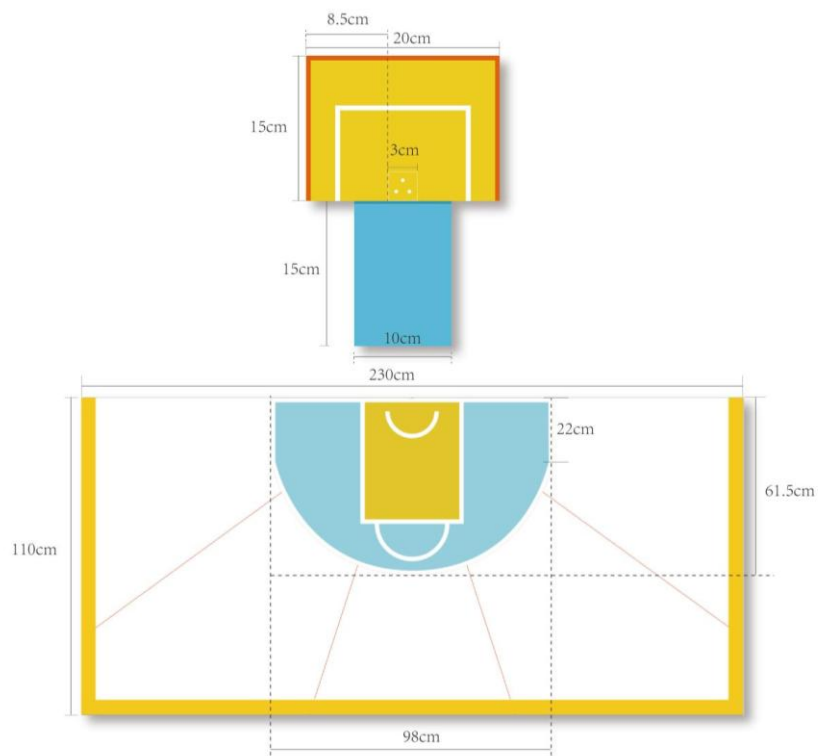
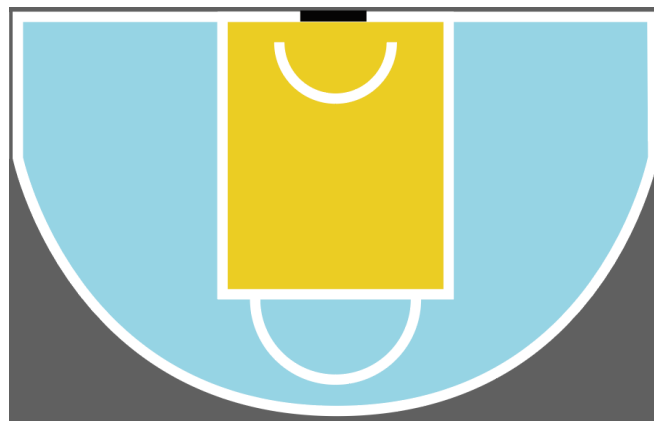
- A. The field consists of the backboard and hoop, field fabric, and the central area floor panel.
- B. The backboard material is PVC. The hoop includes a net. The part below the hoop is outside the net to gather the balls that go in. The net dimensions and externally items are subject to the announcement at the event site. The backboard is perpendicular to the floor panel. The hoop is perpendicular to the backboard. Outer diameter: 13cm (± 2 cm), Inner diameter: 12cm (± 2 cm). Distance from the central area floor panel: 15cm (± 2 cm). Backboard example:



- C. The field fabric material is knife-coated fabric. After placing the central area floor panel and the hoop and net on the field fabric, it is divided into five shooting areas. Field fabric example:



- D. The central area floor panel material is PVC. The floor panel height is limited to within 3cm. The floor panel is based on a semicircle, modified referencing the three-point line proportions of a basketball court. Central area floor panel: Field dimensions reference ($\pm 2\text{cm}$).





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- E. The competition balls have a diameter of 4cm (± 0.3 cm). 3 balls are placed in each of the five shooting areas. The exact placement positions of the balls are subject to the announcement at the event site.

2. Robot Requirements

- A. The robot's control core and structural parts are not restricted. The robot must not damage the field. The robot is limited to two controllers, one remote control, one the robot. The main robot controller's power supply voltage is 7.4V-DC (lithium polymer battery), battery capacity must not exceed 1000mAh. The total number of external sensors used by the robot is not limited, but the total must not exceed 4. The total number of actuators used by the robot is not limited, but the total must not exceed 4.
- B. Robot dimensions: 20cm \times 20cm. Height and weight are not limited. The shooter is allowed to expand after startup. The robot's shooter length must not exceed 30cm. During operation, the robot must not drop any parts.
- C. Teams complete the design and construction of the robot outside the field. Once the robot passes inspection and enters the field, no further modifications are allowed. If a robot fails inspection, one modification opportunity is given, with a time limit of 10 minutes timed by the referee. If the robot still fails inspection after the time ends, the team is disqualified.

3. Competition Rules

- A. Each team has two rounds of shooting. Each round lasts a maximum of 150 seconds. If the team does not finish within the time limit, the referee stops them, and the assistant referee stops the timer.
- B. Each team plays two rounds, with a break between rounds. If a team completes shooting in all five areas within 150 seconds, the timer stops when the last ball is shot. The referee records the team's time and score. If a team does not finish shooting in all five areas within 150 seconds, the referee stops the team, and records the team's score.
- C. **Teams freely choose the shooting area to start from. For the robot's first departure, it must be placed the field border. After preparations are complete, signal the referee. The referee counts down 3, 2, 1, blows the whistle. The assistant referee starts the timer. Team members use the remote control to remotely operate the robot to depart. In any shooting area, determine the shooting position and complete the shots within that area. After completing shots in a certain area, use the remote control to remotely operate the robot to move to the next shooting area, and proceed**



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with shooting in other areas sequentially.

- D. When the robot shoots, its vertical projection must be completely within the shooting area, must not touch the lines, and must not be on top of the central area floor panel. The vertical projection of the entire robot is subject to this restriction, including the expanded shooter.
- E. The robot is allowed to touch the field borders during operation. The robot is allowed to briefly touch the central area floor panel with parts of its body, but the entire robot must not touch the central area floor panel. No part of the robot may touch the backboard or the hoop.
- F. Once the robot fully reaches a certain shooting area, it is allowed to pick up the balls from that area. Teams decide when to place the balls for shooting. They are allowed to place the balls before the robot starts, or after the robot adjusts its shooting position. If balls placed before the robot starts fall during operation, they can be picked up and placed again by the team.
- G. The robot has a total of 15 shot attempts, 3 shot attempts per area. Each ball has only 1 shooting attempt.
- H. Observe competition etiquette. Treat all participating participants amicably and respect the referees' decisions. Serious arguments, fights, or other misconduct may result in disqualification. The final score is subject to the referee's decision, and the referee holds the right of final interpretation.

4. Scoring Criteria

- A. The team's score is the primary criterion for final ranking, and the time used is the secondary criterion. Total possible score: 150 points. Total possible time: 150 seconds.
- B. Each ball successfully shot into the hoop scores 10 points. If a team completes shooting within the time limit, the referee records the score and the actual time used. If a team does not complete shooting within the time limit, the referee records the score and sets the time used to 150 seconds.
- C. The sum of the scores from two rounds constitutes the final score. If team scores are tied, the team with the higher single-round score ranks higher. If single-round scores are tied, the team with the shorter time used ranks higher.



5. Score Table

Judge Item	Value	Points	Score
Area 1 Valid Balls		10	
Area 2 Valid Balls		10	
Area 3 Valid Balls		10	
Area 4 Valid Balls		10	
Area 5 Valid Balls		10	
Total Score			
Remaining Time			

6. Statement of Objections

- A. No objections shall be raised against the referee's decision.
- B. In the event of any misunderstanding during the execution of these rules, the team captain may raise an objection with the referee.

7. Flexibility of Rules

- A. These rules shall be sufficiently flexible to accommodate changes in the number of participants and the competition content, provided that the concepts and fundamentals of these rules are adhered to.

8. Liability

- A. Participating teams are always responsible for the safety of their robots and for any accidents caused by their team members or machines.
- B. RobotChallenge Organization and organizing personnel shall not be held responsible for any accidents caused by participating teams or their equipment.