

RC -- Ring Master Challenge Rules

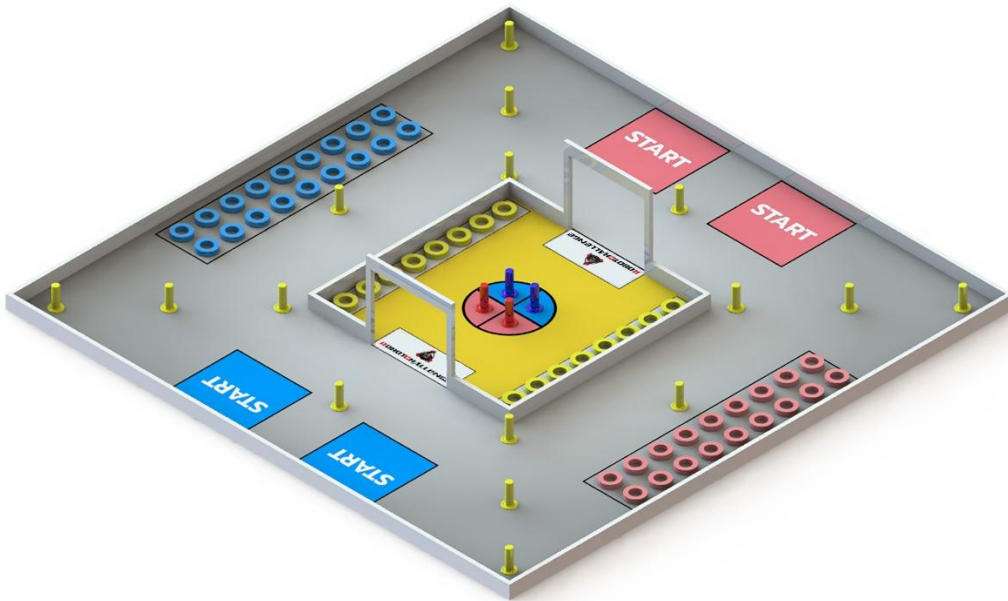
Revised on March 24, 2026

Introduction: The Ring Master Challenge is a robotics competition emphasizing control skills and strategic planning. Teams must place rings onto scoring poles and secure victory through tactical gameplay.

Group

- A. Junior
- B. Senior

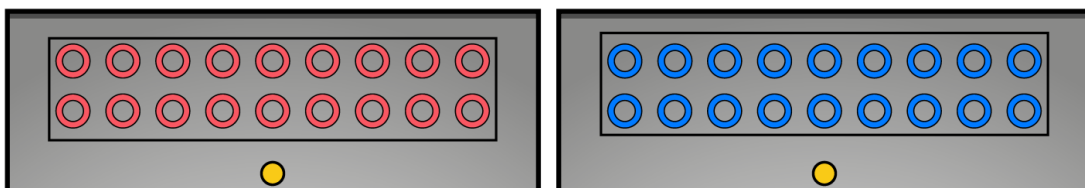
1 Competition Field Specifications



- A. Overall field size: 2m x 2m. Inner Yellow Zone size: 80cm x 80cm.
- B. Field border height: between 5-10cm.
- C. Field surface: Made of vinyl or other smooth material with moderate friction.

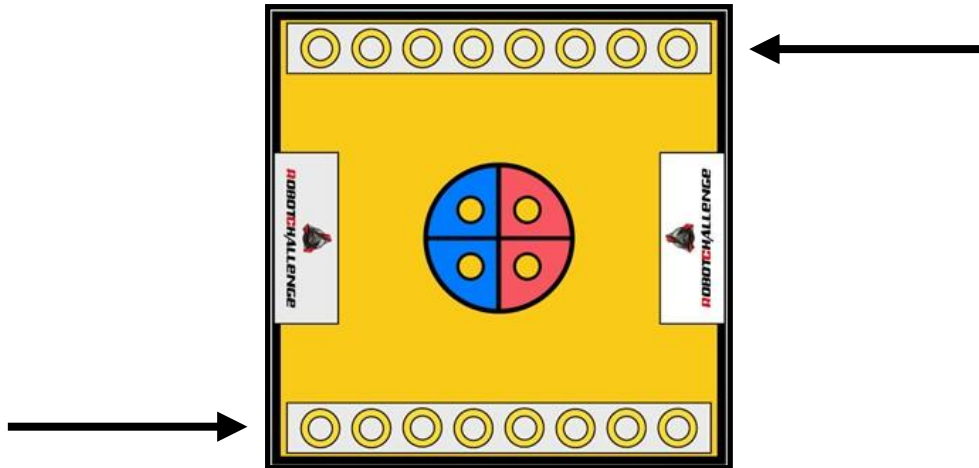
1.1 Field Elements

- A. Red and Blue scoring ring zones are positioned on opposite sides of the field.
- B. Placement rule: 1 ring per position (no stacking allowed).
- C. Arrangement: Organized in 2 rows, 9 rings per row.
- D. Total: 18 rings per color.

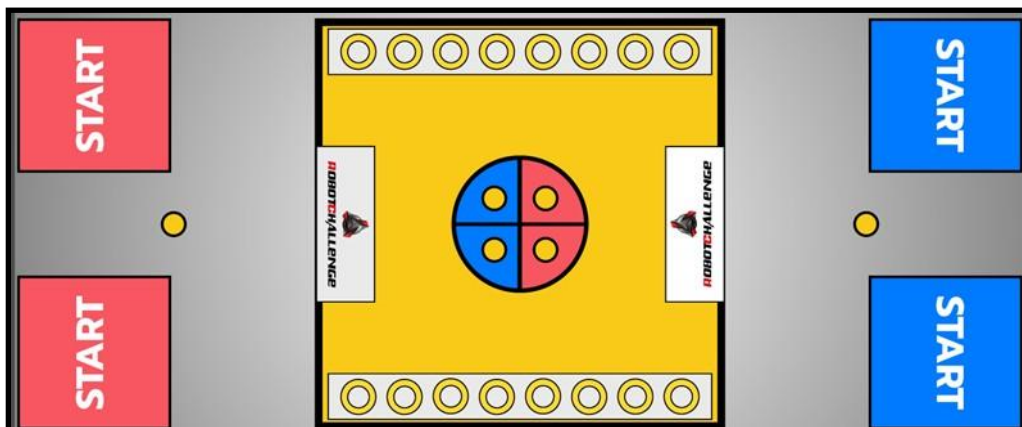


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- E. There are 2 Yellow ring placement zones, located on the left and right sides of the Inner Zone.
- F. Placement rule: 1 ring per position (no stacking allowed).
- G. Arrangement: Organized in 1 row, 8 rings per row, 8 rings per side. Total: 16 Yellow rings.

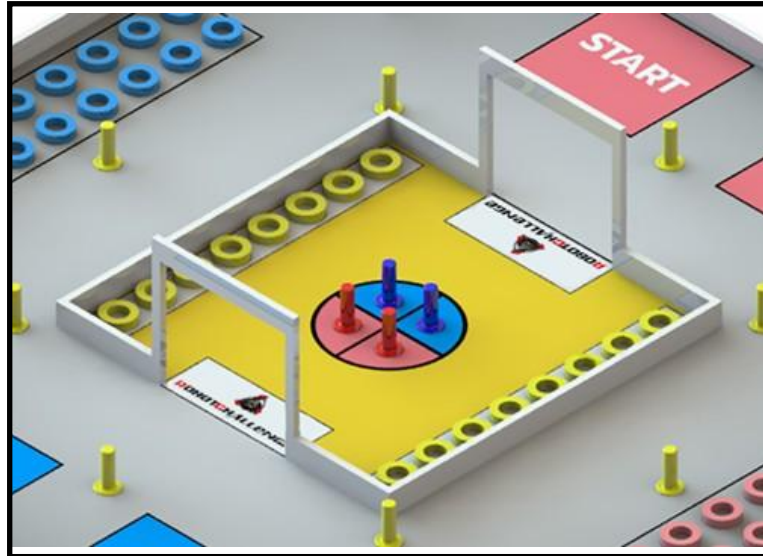


1.2 Robot Starting Zones



- A. Each side has 2 starting positions, each measuring 30cm x 30cm.
- B. There are two starting sides: Red Side and Blue Side.
- C. Both robots must be placed fully within the designated starting zone boundaries.
- D. No part of the robot may extend beyond the start zone lines at the beginning of the match.



1.3 Entrance Gate



- A. Robots are permitted to enter and exit the Yellow Zone only through the designated Entrance Gate.
- B. Yellow rings may not be removed through the side boundaries.
- C. Red and Blue rings may not be brought in or out through the side boundaries.
- D. Each zone entrance is equipped with an Entrance Gate with dimensions: Width 30cm, Height 30cm.


1.4 Rings



- A. Outer Diameter: 7cm, Inner Hole Diameter: 4cm, Thickness: approx. 2cm.
- B. Material is high-density foam. Each weighs approximately 5-20 grams. Weight is for reference only; actual weight may vary.
- C. All rings are used for placement on scoring poles to accumulate points according to competition rules.
- D. There are three (3) ring colors, as follows:
 - a) Red Ring  – Used by the Red Team. Total: 18 rings.
 - b) Blue Ring  – Used by the Blue Team. Total: 18 rings.



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- c) Yellow Ring  – Shared by both teams, classified as a Bonus Ring. When placed on top of any colored ring on a scoring pole, the points for that pole are multiplied by 2. Total: 16 rings, located within the Yellow Zone.

1.5 Scoring Poles



- A. Base Diameter: 5cm, Base Height: 0.3cm, Pole Diameter: 2.5cm, Total Height: 8cm.
- B. Material is plastic (3D printed). Weight approximately 20 grams each. Weight is for reference only; actual weight may vary.
- C. There are a total of 20 scoring poles on the field: 2 Red Poles, 2 Blue Poles, 16 Yellow Poles.

2 Robot Specifications

2.1 Equipment Requirements

- A. Junior Category: Robots must use plastic building block components. Motors, controllers, and sensors must be part of the building block set.
- B. Senior Category: No restrictions on structural materials, control boards, motors, sensors, or additional attachments.
- C. A robot may carry, grab, or transport a maximum of 2 rings at any one time.
- D. Each robot must clearly display its team color (Red or Blue) during each match.
- E. Maximum of 4 drive motors for movement. Maximum of 4 additional motors for arm or gripper mechanisms.
- F. Maximum operating voltage: 12V.
- G. Robots must move using wheels only. No restrictions on wheel type or drive configuration.
- H. Teams may bring ready-made robots to the competition.
- I. Robots must be controlled exclusively via a wireless remote control system. No restrictions on the type of remote control used.



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- J. Each team is fully responsible for ensuring that their robot complies with all competition rules and technical requirements.

2.2 Size and Weight Limits

- A. Maximum starting dimensions: 25cm x 25cm x 25cm.
- B. Maximum weight: 2000 grams.
- C. Robots are allowed to expand during the match. After expansion, the robot's footprint must not exceed 35cm x 35cm. Height is unrestricted after expansion. The robot must remain as a single unit at all times and may not separate into multiple parts.

3 Competition Rules

3.1 Competition Details

- A. Teams control robots to place rings onto scoring poles, earning points based on the designated value of each pole.
- B. Each competition lasts 5 minutes.
- C. Before the competition starts, all robots must be placed completely within their designated starting zones. No part of the robot may extend beyond the starting zone boundary.
- D. If two or more robots become entangled or physically connected, the referee will instruct the teams to separate them.
- E. If any robot part comes off or malfunctions during the competition, the referee may remove the detached part from the field. The competition will continue, and the timer will not stop.
- F. If a robot becomes immobile or uncontrollable, the referee will instruct the team to remove the malfunctioning robot from the field. The team must remove the robot themselves. The competition continues during this period. Once repairs are complete and competition time remains, the team may re-enter the robot. The robot must be placed at the side boundary on its own side of the field.
- G. Robot retrieval procedure: Participants must raise their hand to request a retrieval. The malfunctioning robot must be removed from the field by the team. Repairs can be performed while the competition continues and the clock does not stop.

3.1.1 Violations and Penalties

- A. If a team causes an opponent's ring to fall off a scoring pole, a -10 point penalty will be applied.
- B. If a team deliberately attempts to remove an opponent's ring from a pole, the

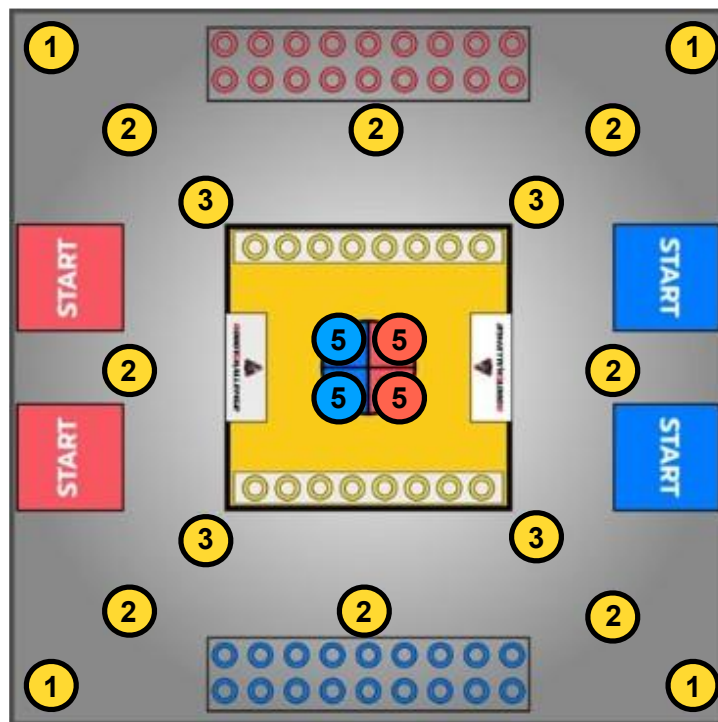
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team will receive a yellow card and a -30 point penalty.

- C. If a team deliberately collides with or obstructs an opponent, the team will receive a yellow card and a -30 point penalty.
- D. If a team damages field components, including barriers, poles, or rings, the team will receive a yellow card and a -30 point penalty.
- E. If such behavior continues deliberately, the team will receive a red card and be disqualified from the competition.
- F. If a team receives two yellow cards, it results in a red card, and one member must leave the competition area.
- G. Unsportsmanlike conduct will result in immediate disqualification.

3.1.2 Scoring System

- A. Each scoring pole has a designated point value as specified in the official standard field layout.



Pole 1 = 1 point

Pole 2 = 2 points

Pole 3 = 3 points

Center Poles (Red and Blue) = 5 points.

Only rings matching the designated color of that pole can be placed on it.







- B. Scores are calculated only at the end of the 5-minute competition.
- C. Rings must be securely fitted onto the pole to count. Rings that have fallen off or are no longer correctly seated on the pole due to tilting will not be scored.

3.1.3 Ring Placement Rules

- A. A maximum of 4 rings can be placed on each scoring pole.
- B. If more than 4 rings are placed on a pole, any excess rings will not be considered for scoring.
- C. Rings placed on the field surface or not correctly fitted onto the pole will not count for points.

3.1.4 Red Team Poles

- A. These poles are designated for the red team.
- B. Each red team pole is worth 5 points. Only red rings and yellow rings (bonus rings) are eligible to score on these poles. Blue rings on these poles are considered invalid and will not score.
- C. Red Pole Scoring Criteria:

No.	Ring Placement	Scoring Method	Score
1		Red Team Ring – 1 piece	5
2		Same color stacked → Upper ring is not counted	5
3		Yellow placed on Red → ×2	10
4		Yellow stacked on Yellow → No additional multiplier	10
5		×2 from the first layer + additional Red on top → No additional points added	10
6		×2 from the top layer + repeated Yellow-on-Red → No additional points added	10
7		×2 applied based on the topmost ring	10
8		Red placed on Yellow	5
9		Only Yellow placed on Red is counted as ×2	10
10		×2 from Yellow-on-Red + additional Red on top → No additional points added	10
11		✗ Wrong team color	0
12		✗ Wrong team color	0

3.1.5 Blue Team Poles

- A. These poles are designated for the blue team.
- B. Each blue team pole is worth 5 points. Only blue rings and yellow rings (bonus rings) are eligible to score on these poles. Red rings on these poles are considered invalid and will not score.
- C. Blue Pole Scoring Criteria:



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No.	Ring Placement	Scoring Method	Score
1		Blue Team Ring – 1 piece	5
2		Same color stacked → Upper ring is not counted	5
3		Yellow placed on Blue → *2	10
4		Yellow stacked on Yellow → No additional multiplier	10
5		*2 from the first layer + additional Blue on top → No additional points added	10
6		*2 applied based on the topmost ring	10
7		*2 applied based on the topmost ring	10
8		Blue placed on Yellow	5
9		Only Yellow placed on Blue is counted as *2	10
10		*2 from Yellow-on-Blue + additional Blue on top → No additional points added	10
11		✗ Wrong team color	0
12		✗ Wrong team color	0

3.1.6 Yellow Poles



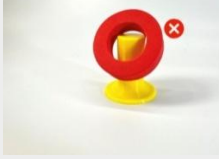

- A. Shared Scoring Poles.
- B. Shared Scoring Poles may be used for scoring by both teams.
- C. Each pole carries a different base point value – 1, 2, or 3 points – as indicated on the official field layout.
- D. Rings of all colors may be placed on this pole.
- E. This pole is used to create "score combinations" and activate special multipliers (score x2) according to the ring scoring rules.
- F. Scoring on this pole is determined by the order of ring placement (from bottom to top).
- G. When a Yellow Ring is placed on top of any colored ring, the total score for that pole is multiplied by 2.
- H. If a Yellow Ring is placed on top of another Yellow Ring, no additional multiplier will be applied.
- I. Concept of the Yellow Pole: The Yellow Pole is considered a "Bonus Pole." It serves as a central scoring opportunity where both teams can strategically create high-value combinations and maximize multipliers during the match.
- J. **Scoring Principle - Case A: "Starting with team-colored rings from both teams first."**

No.	Ring Placement	Scoring Method	Score
1		Single Red Ring → Scores according to the pole value	Red + 3
2		Single Blue Ring → Scores according to the pole value	Blue + 3
3		Yellow placed on Red → *2	Red + 6
4		Yellow placed on Blue → *2	Blue + 6
5		Yellow on Red (*2) + additional Yellow on top → No additional multiplier	Red + 6
6		Yellow on Blue (*2) + additional Yellow on top → No additional multiplier	Blue + 6
7		Blue placed on Red → Blue Team scores according to the pole value	Blue + 3
8		Red placed on Blue → Red Team scores according to the pole value	Red + 3
9		Blue on Red + Yellow on Blue → *2	Blue + 6
10		Red on Blue + Yellow on Red → *2	Red + 6
11		Yellow on Red (*2) + Blue placed on Yellow → Not counted	Red + 6
12		Yellow on Blue (*2) + Red placed on Yellow → Not counted	Blue + 6
13		Yellow on Red + Yellow on Blue (*2) Multiplier (*2) applied based on the topmost ring	Blue + 6
14		Yellow on Blue + Yellow on Red (*2) Multiplier (*2) applied based on the topmost ring	Red + 6

K. Scoring Principle - Case B: "Starting with a Yellow ring."

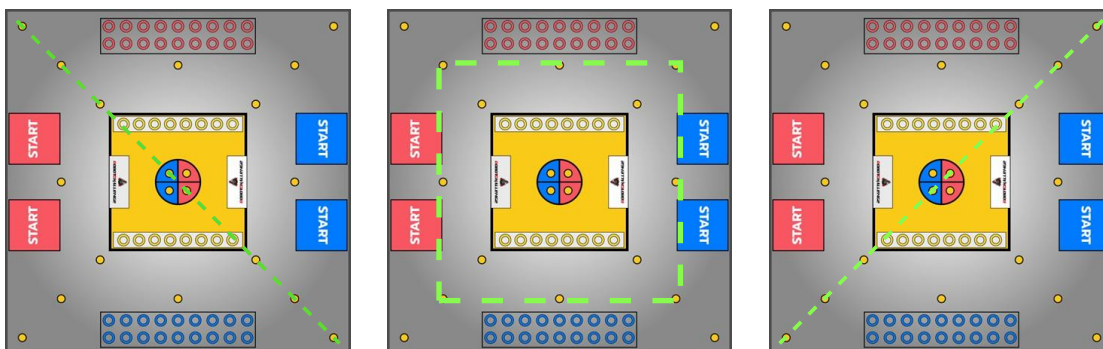
No.	Ring Placement	Scoring Method	Score
1		Single Yellow Ring → No points (no multiplier applied).	0
2		Red placed on Yellow → Red Team scores according to the pole value (no multiplier).	Red + 3
3		Blue placed on Yellow → Blue Team scores according to the pole value (no multiplier).	Blue + 3
4		Yellow placed on Red → *2	Red + 6
5		Yellow placed on Blue → *2	Blue + 6
6		Blue placed on Red → Blue Team scores according to the pole value.	Blue + 3
7		Red placed on Blue → Red Team scores according to the pole value.	Red + 3
8		Only Yellow placed on Blue is counted as *2.	Blue + 6
9		Only Yellow placed on Red is counted as *2.	Red + 6
10		Only Yellow placed on Blue is counted as *2.	Blue + 6
11		Only Yellow placed on Red is counted as *2.	Red + 6

L. Other Ring Scoring Scenarios

Example Image	Scenario Description	Scoring Team
	<p>More than 4 rings placed -> Only 4 rings will be counted. Each scoring pole may hold a maximum of 4 rings. Any rings placed beyond this limit will not be considered for scoring.</p>	<p>Red Team</p>
	<p>Three Blue Rings stacked together. Each pole carries only one base point value, regardless of the number of rings placed. For example, if the pole is worth 3 points, the Blue Team will receive 3 points only for that pole (not multiplied by the number of same-color rings).</p>	<p>Blue Team</p>
	<p>If the Red Team places a ring improperly or the ring is not securely seated on the pole, the placement is considered unsuccessful and will not be counted for scoring.</p>	<p>Neither team scores</p>
	<p>If a Red Ring is at the bottom and a Blue Ring is placed improperly on top, the Blue Team's placement is considered unsuccessful and will not be counted.</p>	<p>Red Team</p>

3.1.7 Winning via “Endgame Mode”

- A. A team achieves Endgame by placing rings in one of the following patterns: diagonal pattern, or square pattern.
- B. All yellow poles involved in the Endgame pattern must be fully scored by that team. Once confirmed, the referee will immediately stop the competition and declare that team the winner.





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3.1.8 Competition Termination

The competition ends under any of the following conditions:

- A. A team successfully achieves Endgame;
- B. The 5-minute competition time expires;
- C. A team voluntarily requests to end the competition.

3.1.9 Tiebreaker

- A. If the competition ends in a tie during regulation time, the winner will be determined by the following priorities:
 - a) Team with more 5-point poles;
 - b) Team with more 3-point poles;
 - c) Team with more 2-point poles;
 - d) Team with more 1-point poles.
- B. If all criteria are still the same, tied teams in the knockout stage will play an additional competition.

3.2 Competition Format

- A. Teams are automatically grouped for round-robin group stage competitions, advancing to knockout rounds. Each competition lasts 5 minutes. Scores are tallied at the end. The winning team receives 3 points, tied teams receive 1 point each, and the losing team receives 0 points. After the group stage, the top 2 teams from each group advance to the knockout stage based on group rankings.
- B. If teams are tied in points for qualification ranking, a group playoff will be held.
 - a) Determine qualification slots based on head-to-head results between tied teams;
 - b) If head-to-head results cannot determine qualification, a playoff competition is required (refer to 3.3);
 - c) In the knockout stage, each competition also lasts 5 minutes. The winning team advances to the next round;
 - d) There are no ties in the knockout stage. Refer to 3.1.9 for determining the winner.

3.3 Group Playoff

- A. Each playoff competition lasts 1 minute.
- B. Both teams may only use rings of their own color.
- C. Robots can carry a maximum of two rings at a time.
- D. The first team to place 5 rings on their own team's colored scoring poles wins



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(maximum 4 rings per scoring pole).

- E. Criterion: The robot must not be in contact with the scoring poles or rings after completion.
- F. If time expires and neither team has completed the objective, the winner is determined by the number of rings placed; the team with more rings wins.
- G. If the number of rings placed is the same:
 - a) The team that first placed 3 rings wins;
 - b) The team that first placed 2 rings wins;
 - c) The team that first placed 1 ring wins.
- H. Both teams' robots must enter through their own colored gate and must not interfere with the opponent's actions. Any violation results in an immediate loss.

4 Disputes and Protests

- I. The decisions of the referees are final and binding. No objections to the referee's decisions will be entertained.
- J. During the enforcement of the rules, if there is any misunderstanding, the team captain may raise a question with the referee.

5 Flexibility of Rules

- A. These rules are intended to be flexible enough to adapt to changes in the number of participants and the content of the competition, provided that the core concepts and fundamentals are respected.

6 Liability

- A. Participating teams are always responsible for the safety of their robots and for any accidents caused by their team members or robots.
- B. The RobotChallenge Organizing Committee and its personnel shall not be held liable for any accidents caused by participating teams or their equipment.



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Appendix 1: Knockout Stage Score Sheet

Knockout Stage Score Sheet						
Scoring Item	Value	Red Team		Blue Team		
		Team ID:		Team ID:		
		Multiplier/Value	Score	Multiplier/Value	Score	
Red Pole 1	5	x1	x2	/		
Red Pole 2	5	x1	x2	/		
Blue Pole 1	5	/		x1	x2	
Blue Pole 2	5	/		x1	x2	
1-point - Yellow Pole	1	x1	x2	x1	x2	
1-point - Yellow Pole	1	x1	x2	x1	x2	
1-point - Yellow Pole	1	x1	x2	x1	x2	
1-point - Yellow Pole	1	x1	x2	x1	x2	
2-point - Yellow Pole	2	x1	x2	x1	x2	
2-point - Yellow Pole	2	x1	x2	x1	x2	
2-point - Yellow Pole	2	x1	x2	x1	x2	
2-point - Yellow Pole	2	x1	x2	x1	x2	
2-point - Yellow Pole	2	x1	x2	x1	x2	
2-point - Yellow Pole	2	x1	x2	x1	x2	
2-point - Yellow Pole	2	x1	x2	x1	x2	
2-point - Yellow Pole	2	x1	x2	x1	x2	
2-point - Yellow Pole	2	x1	x2	x1	x2	
3-point - Yellow Pole	3	x1	x2	x1	x2	
3-point - Yellow Pole	3	x1	x2	x1	x2	
3-point - Yellow Pole	3	x1	x2	x1	x2	
3-point - Yellow Pole	3	x1	x2	x1	x2	
Causing Opponent's Ring to Fall	-10					
Yellow Card Count	-30					
Total Score						
End Game Achieved		Yes	No		Yes	No