

**Official Game Manual**

# Introduction and Objective

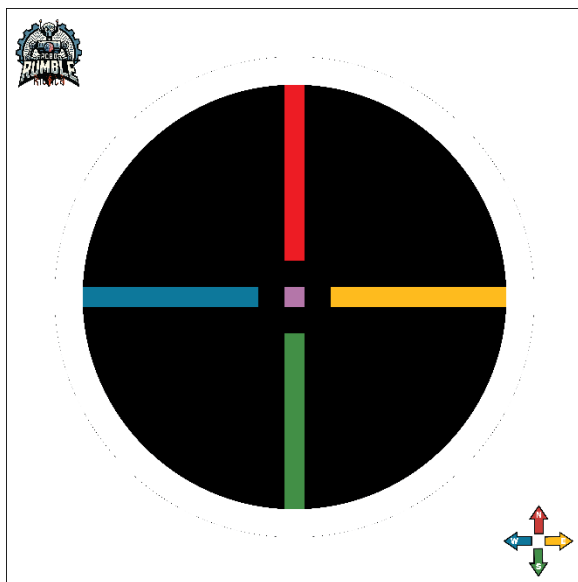
Robo Rumble Rivals is a robotics competition where two robots face off with the goal of defeating its opponent. Each Robo Rumble Rivals match has up to 3 rounds. A robot loses a round if it becomes disabled, stops moving, loses a component, leaves the battle circle, or crosses the vertical plane of any edge of the game mat (or touches a wall of the official tournament table). Robots can be built by individuals or by teams of up to 3 players.

## Game Components

Any type of robotics kits can be used to play; however Official LEGO Robotics kits must be used in competitions, including LEGO Mindstorms EV3 kits, LEGO Spike Prime kits, or newer. The robots can be equipped with a maximum of 1 hub, 4 motors, 2 colour sensors, 1 distance sensor (required), and 1 touch sensor.

The official Robo Rumble Rivals game pieces include:

1 – Game Mat, Board, or Table



1 – Flip Coin



1 – Colour Die (10 sided)



1 – Directional Die (10 sided)



# **Game Rules**

## **Robot Restrictions**

The robot must begin each match within a maximum starting configuration of 20 cm × 20 cm × 20 cm (approximately 8" × 8" × 8") and must not exceed a maximum weight of 750 grams (approximately 1.65 lbs). During operation, the robot may extend up to 10 cm beyond its initial dimensions in any direction, resulting in a total allowable footprint of 30 cm × 30 cm × 30 cm at full extension.

Robots must be autonomous, meaning that they cannot be controlled during a match using a tablet, laptop, or by any other means. Robots are programmed prior to the match and should have multiple programs to account for any situation.

Each robot must have a distance sensor mounted, regardless of whether it is used in the programming, to indicate the front of the robot. The distance sensor direction must be fixed – and cannot swivel.

## **Match Format**

Each Robo Rumble Rivals match has up to 3 rounds. Teams are awarded 2 points for a win, 1 point for a draw, and 0 points for a loss. The first team to reach 3 points wins the match. If both teams reach 3 points at the same time, the match results in a draw. Each round is limited to 2 minutes, after which time the round results in a draw if no clear winner is established.

## **Starting a Round – Coin Flip**

A match is started by the referee flipping the Robo Rumble Rivals coin. In non-tournament situations, the team with the youngest player gets to make the first call. In tournament play, the team that calls the coin flip will be predetermined. Depending on the situation, one team will be asked to call heads (Mastermind Youth brain logo) or Tails (Robo Rumble Rivals logo) when the coin is flipped in the air. If the robot is being managed by a team, one representative from that team must be selected to make the call. If the team fails to make a clear call when the coin is flipped in the air, the coin flip will be repeated, this time asking the other team to call it. The team that wins the coin flip goes second for the dice roll.

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## **Starting a Round – Rolling the Dice**

After the coin flip, the referee will roll the colour die. The first robot must be placed directly on the corresponding colour on the board or inside the corresponding quadrant depending on the die result. Once the robot is set, the first team backs away from the table and the referee rolls the colour die for the second team. The second team places their robot to match the corresponding colour. If the same colour is rolled for both teams, the colour die must be re-rolled for the 2<sup>nd</sup> team until a different colour is rolled. The robots can face any direction unless Championship Variant is being played.

When the 2<sup>nd</sup> team is placing their robot, they must not touch the robot on the field. If the 1<sup>st</sup> robot is touched, even accidentally, a foul can be assessed (see Fouls and Penalties).

Once the robots are set in place, the position of the robots cannot be moved. If a robot is moved by any team, a foul can be assessed (see Fouls and Penalties).

For any subsequent rounds, the teams will alternate calling the coin flip.

*Championship Variant – Both the colour and directional dice are rolled simultaneously after the coin flip. The front of the robot must face the direction that is indicated on the directional die, per the compass on the game board.*

## **Starting a Round – Selecting Programs and Pressing Start**

Once the robots are placed, the teams can choose their desired program by selecting it on the robot. When both teams have selected their programs, one representative from each team will get ready to press the start button on their robot. The referee will say 3, 2, 1, FIGHT! The robot start button must be pressed as the referee says FIGHT! After the players start their robots, they must back away from the gameboard to not interfere with the table or the robot's sensors during the round.

If a team presses their button before or after the referee says fight, a foul can be assessed (see Fouls and Penalties).

## **The 5 Second Rule**

Robots must be programmed with a 5 second wait time to give teams ample time to back away from the table and for referee(s) to get into position place to assess the round.

## **The Progressing Rule**

If neither robot seems to be progressing towards defeating the other at any time during a round, the referee will start a 10-second count. If during the count progression seems to be made, the count will stop. If progression stops again during the round the referee will start a new 10-second count. If the referee reaches 10 before progression is resumed, the round will end in a draw.

## **The Recovery Rule**

If a robot is close to being defeated during a round, but has a viable chance of recovery, the referee will count to 10 before stopping the match. This includes if a robot is flipped but not immobilized or if it stops moving. If the robot recovers, the referee stops counting and the round continues. If the referee reaches 10 before the robot recovers, the round will be awarded to the robot that is not immobilized.

## **Throwing in the Towel**

At any time during a round, either team can end a match if they feel their robot has a chance of being damaged, or for any reason at all, which results in the team forfeiting the round. This can be done by clearly telling the referee that you would like to stop the match, physically reaching in and turning your robot off, or by physically throwing a soft towel onto the game field. Towels must be dry, official Robo Rumble Rivals branded towels.

## **Tournament Play**

Robo Rumble Rivals tournaments are broken up into two sections: Qualification matches and Playoff matches. Robots are inspected before both the Qualification and Playoff rounds.

During qualifications, the schedule is randomly set, and each team will have a set number of matches. At the end of the qualification section, teams are ranked by wins, then points, to determine the playoff schedule. Depending on the size of the tournament, all teams could make the playoffs.

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Playoff matches proceed the same as Qualification matches except for the Finals. The Finals proceeds as a best of three match event.

## **Tournament Progression**

There are two types of tournaments, Qualifying Tournaments and Championship Tournaments. Qualifying Tournaments occur during the season, and Championship Tournaments are always held at the end of the season. The top 3 teams from each Qualifying Tournament are automatically eligible to participate in the Championship Tournament.

In the event that team(s) qualify for the Championship Tournament at multiple Qualifying Tournaments, additional spot(s) will be opened to other team(s) to compete at the Championship Tournament. The team(s) with the highest season points will earn their spot to compete.

In the Championship Tournament, 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place will be awarded.

## **Fouls and Penalties**

The following rules pertain to fouls and penalties which can be assessed by referees and other tournament officials. Failure to comply could result in forfeit of rounds, matches, and even ejection from tournaments based on tournament officials' discretion:

- i. Premature touching or altering robot position after placement is set is not permitted
- ii. Pushing or leaning on a game board before a match can result in a forfeit of the round. Interfering with the game board during a match can result in a forfeit of the entire match.
- iii. When called to the field for a match, teams have 1 minute to arrive with their robot. The referee will count to 60 and if the team does not come to the table, the round will be forfeit and the referee will count again for the next round.
- iv. Teams have 30 seconds if a robot becomes disassembled or needs to be adjusted between rounds. The referee will count to 30 and if the team is not able to finish in that time, they can choose to proceed as is or to forfeit the next round.
- v. Only official LEGO parts are to be used during tournament play.
- vi. Stored mechanical energy is prohibited (ie. springs, bands, etc.)

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- vii. Robots and mechanisms cannot be designed to permanently damage or break other robots, game board, or other equipment
- viii. Bullying, taunting, name calling, etc. will not be tolerated at a tournament and can result in forfeit of rounds, matches, or ejection from tournament at the tournament official's discretion.

## **How to Win at Robo Rumble Rivals**

### **Use Your Sensors!**

LEGO Robotics kits are equipped with sensors that can be used to add intelligence to your robots. For example, the colours on the game board serve the purpose of robot placement, but they can also be used to sense where your robot is (and when it may be in danger) so that it can be programmed to react to these situations.

### **Maintain a Good Attitude**

The game is designed such that any team can beat any team with a certain amount of luck. Remember that all teams will have poor luck for both positioning and directional placement. Take pride in creating solutions for as many situations as possible. Finally, don't dwell on your mistakes, learn from them so that your next round, match, or tournament is even better!