

Rhythm Remix Game Manual

1. FIELD:

1.1 GOAL:

1.1.1 High and low goal

- Both goals are shaped as quarter cylinders, with the thinner and taller high goal within the shallower, wider low goal.
- High goals can be scored into from the top or through a slot along its upper rim.
- Each low goal is surrounded by the Stage, a semicircular area with a radius of 148" from the field corner, thus extended 88" past the low goal.
- The goals are equipped with automated sending that counts each ball that passes through it, as well as senses the color to determine whether it is a Beat or Chord.

1.1.2 Goal lighting and ownership

- Each goal is entirely backlit with LEDs, the color of which indicates which team owns that goal
 - During the Intro, the high goal and low goal in each corner will be the same color.
 - When tele-op starts, each high goal switches colors and ownership. This is preceded by a 3 second warning period of 3 purple flashes, during which time points scored in the goal count towards the preceding color of the goal.
- Each goal is rimmed by a 6" strip of bright LEDs, which if lit indicates a Boosted goal.
 - Each alliance will only have one boosted goal at a time between their high and low goal.
 - At the start of the match, one of two Tempos is randomly selected for the match.
 - If the Tempo of the match is randomly determined to be Fast, every 18 balls scored cumulatively into an alliance's low and high goal during tele-op will change the Boosted goal.
 - If the Tempo of the match is randomly determined to be Slow, every 13 balls scored cumulatively into an alliance's low and high goal during tele-op will change the Boosted goal.
 - Balls scored begin counting towards the Tempo 20 seconds into each match.

1.1.3 Goal return system

- Balls that enter the goals are funneled into the goal return system of the adjacent alliance.
 - There are two exits, one at the human player station and the other ejecting the balls directly into the field at a randomized velocity and angle in an upwards arc (this pipe is 6' tall, above maximum robot height/extension limit).
 - Balls that the goal's color sensor determines as Beats when scored have a 50/50 chance of being returned to play through either exit.
 - Balls that the goal's color sensor determines as Chords are funnelled directly to the human player station to be set aside.

1.2 MIXER:

1.2.1 Mixer

- The Mixer is a 10' by 6' area of the floor covered in colored firm rubber as opposed to carpet.
- The Mixer is directly in front of the human player station.

1.2.2 Bridge

- There is a door called a Bridge on the side of the Mixer which is 3' tall and has a 4" gap above the floor, enabling Beats to pass through.
- The Bridge has a pivot point along its top, and only rotates outward (with some in-built restraint) away from the Mixer.

1.3 GAME PIECE:

1.3.1 Beats

- Beats are represented in yellow.
- Beats have a diameter of 4" and are made of foam.

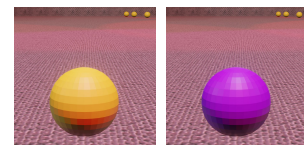
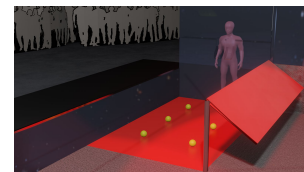
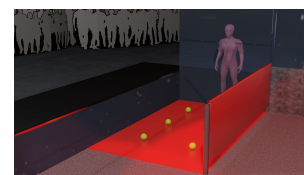
1.3.2 Chords

- Chords are represented in purple.
- Chords have a diameter of 4" and are made of rubber.

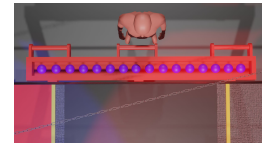
1.4 CHORD DEPOT:

1.4.1 CHORD DEPOT

- Each alliance has one depot of Chords facing the center of the field.



- The depot has handles used to rotate it by the human player, and does not provide for movement other than 100 degrees of rotation towards the field floor.



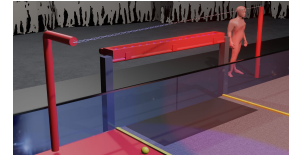
1.4.1 RESTRICTED ZONE

- The 3' by 7' restricted area directly in front of the bonus ball station is floored by firm black rubber rather than carpet, at a thickness of 1" above the ground.

1.5 TRACK:

1.5.1 Poles

- Each Track begins at the 5' L-shaped pole protruding 2' towards the interior of the field.
- The Track ends at a 5' cylindrical pole standing 2' away from the field wall.



1.5.2 Chain

- A link of chain is stretched taut between the two poles.

1.6 ALLIANCE WALL:

1.6.1 Human Player Station

- The human player station is the area directly behind the alliance wall of the Mixer.
- This wall features two curved 5" by 5" prisms. Balls enter from behind the alliance wall, where the entrance is parallel to the ground and 3" away from the wall. This curved path leads to an open square of the alliance wall, 3' above the ground at its bottom.

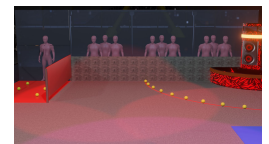


1.6.2 Driver Stations

- Each alliance wall hosts three driver stations, each 5.25' in width and adjacent to each other.

1.6.3 Alliance Station

- The area behind the alliance wall, composed of the human player station, driver stations, and the area directly behind them, is considered the alliance station.



1.7 BOOTH:

1.7.1 Booth

- The 80" by 80" area of the floor is covered in firm rubber corresponding to the alliance that is protected within its boundaries.
- On one side, the Booth is bordered by the 2' tall wall along the length of the field.
- On an adjacent side, the Booth is bordered by the bumps parallel to the width of the field.

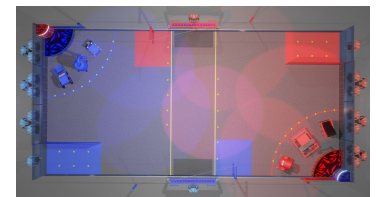


2. MATCH PLAY

2.1 SETUP (00:00)

2.1.1 Beats

- 35 Beats can be staged per alliance (70 total) as follows:
 - Up to 7 Beats can be preloaded per robot.
 - Up to 10 Beats can surround the Stage in an arc.
 - Up to 6 Beats can be placed in the Mixer.
 - Up to 9 Beats can be placed along the bumps bordering a region enclosed by the bonus ball station at the center of the field.
 - Up to 16 Beats can be placed at the floor of the human player station.



2.1.2 Chords

- 19 Chords per alliance (38 total) are staged as follows:
 - Each Depot holds 16 Chords.
 - 3 Chords are placed at the floor of each human player station.

2.1.3 Goals

- Ownership
 - For the first 15 seconds of the match, the high and low goal adjacent to each alliance wall are both owned by the adjacent alliance.
- Boost
 - At the start of each match, both alliances' High Goals are boosted, and remain boosted until the Tempo takes effect 20 seconds after the match begins *and* the threshold defined by the Tempo is reached.

2.1.4 Robots

- Each drive team stages their robot such that its bumpers are between the low goal and the boundaries of the semicircular Stage

- Robots are positioned in the order of red station 1 > blue station 1 > red station 2 > blue station 2 > red station 3 > blue station 3.

2.1.5 Humans

- Drivers, coaches, and human players start in their alliance station behind starting lines taped 3' from their human player/driver stations, and may not interact with any part of the field or robots until after the 15 second Intro.

2.2 DRIVE TEAM

2.2.1 Coach (1 per team)

- Guide/advisor

2.2.2 Technician (1 per team)

- Assists in robot troubleshooting, placing, and removal

2.2.3 Driver (up to 2 per team)

- Human drivers who operate and control the robot

2.2.4 Human Player (2 per alliance)

- Human player 1 stays in the human player station behind their alliance wall and releases balls from the human player station, which they store on the floor of the human player station.
- Human player 2 manually deploys the bonus ball depot and retrieves mini bots during endgame.

2.2.5 Alliance

- Consist of 3 teams each

2.4 POINT VALUES

2.4.1 Goals

	Beat Worth (x1)	Chord Worth (x1)
[Autonomous] High Goal	8 points	None available
[Autonomous] Low Goal	5 points	None available
[Tele-Op] High Goal Boosted	3 points	6 points
[Tele-Op] High Goal Normal	1 point	2 points
[Tele-Op] Low Goal Boosted	3 points	6 points
[Tele-Op] Low Goal Normal	1 point	2 points

2.4.2 Additional Tasks

Moving Past Initiation Line Off Stage During Intro	5 points per robot
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2.4.3 Encore

Attaching a minibot to the start of the chain Track from its Booth	10 points per minibot
Having a minibot reach the center of its track	10 additional points per minibot
Having a human player retrieve a minibot	15 additional points per minibot

2.4.3 Ranking Points

Scoring 19 or more Chords into the high and low goal collectively	1 ranking point per alliance
Earning 60 or more points through minibot tasks	1 ranking point per alliance
Winning a match	2 ranking points
Tieing a match	1 ranking point per alliance

3. GAME RULES

3.1 Intro (00:00-00:15)

G1. During the Intro, stay on your side of the field:

- Robots may not cross the midline of the field during the first 15 seconds of a match.

G2. During the Intro, everything is autonomous:

- Drive team members may not interact with the field or robots, and must stay behind their starting lines

3.2 Beats and Chords

G3. Robot carrying capacity is 7 balls

- A single robot cannot possess (carry, hold, herd, etc.) more than 7 balls at once time, Beats and Chords combined

G4. Keep balls in the field

- Robots may not redirect or shoot Beats or Chords outside of the confines of the field walls

G5. Beats and Chords count when scored

- No matter which alliance scores into a goal, the balls count towards the alliance that owns the goals' points and Tempo

G6. Human players: Deploy all Chords from their Depot at once

- When a human player deploys their chords, the bin must be turned and all Chords emptied at one time.

G7. Human players: Chords must be deployed before the final 30 seconds of each match

- All Chords in the depots of both alliances must be released after the Intro and before the final 30 seconds of each match

G8. Human players: Do not directly manipulate Beats or Chords

- When releasing Chords from their Depot or placing Beats or Chords into the alliance wall opening in the human player station, do not reach into the field or field elements in any way.

G9. Human players: No hoarding Beats

- No more than 16 Beats may be stored behind the alliance wall. If, due to random funneling from the adjacent goal, more are brought to the human player station, a prompt effort must be made to re-enter excess Beats to the field.

G10. Human players: No recycling Chords

- At the start of each match, human players will have 3 Chords placed on a ledge in front of their station. These 3 Chords may be released into the field through the opening in the alliance wall, but any other scored Chords funneled to the human player station through the field return system must be set aside for the rest of the match.

3.2 Endgame (2:00-2:30)

G11. Human players: Retrieve minibots only once they've traveled along the full Track

- In the final 30 seconds of each match, human players may only receive minibots at the end of the Track, once the minibot has reached within 5 inches of the straight pole. Human players may not reach within the field walls. The minibot must be fully out of the field at the match's end, not making contact with the Track or any other field element, to count a retrieval.

G12. Only release minibots during endgame

- Robots may only release minibots from their robots in the final 30 seconds of each match.

G13. Only release minibots from the Booth

- Some part of a robot's frame perimeter must be within the area of the Booth for it to legally release its minibot.

G14. One minibot per robot

- Each robot may release a maximum of one minibot in the final 30 seconds of the match.

G15. Minibots cannot be assisted

- Minibots must travel from 1 end of the Track to another without support/assistance from robots, humans, or other minibots.

3.3 Zone Restrictions

G16. Don't enter the opposing alliance's Mixer

- When any part of a robot's frame perimeter is in the Mixer (10' by 6' floorspace), the alliance of the corresponding color is protected from contact by the opposing alliance.

G17. Don't enter the opposing alliance's Booth

- When any part of its frame perimeter is in the Booth (80" by 80" floorspace), the alliance of the corresponding color is protected from contact by the opposing alliance.

G18. Don't enter the area directly in front of the Chord depot

- Entering the restricted zone (defined in 1.4.1) directly in front of the Chord depot, is not allowed unless pushed in by an opposing alliance.

G19. Only take 7 balls from the Mixer at a time

- A single robot can cause only 7 balls, Chords and Beats combined, to exit the Mixer before re-entering.

G20. No shooting from the Mixer

- A robot cannot shoot Beats or Chords out of their robot while any part of their frame perimeter is in the Mixer.

3.4 Robot Restrictions

R1. Robots must have a frame perimeter of 120" at starting configuration.

R2. Robots may not extend farther than 12" beyond their frame perimeter laterally.

R3. No part of a robot may be higher than 5' 6" from the ground at any time.

R4. Robots must be able to display primarily red or blue bumpers matching their alliance color every match (excluding defined coloring on corners). The team number must be clearly visible on all four sides.

R5. Teams may not extend any part of their robot outside of the field perimeter during the match

4.0 Logo

