

Section
2



Magbot Mayhem The Game

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Section 2 – The Game

2.1 – Overview

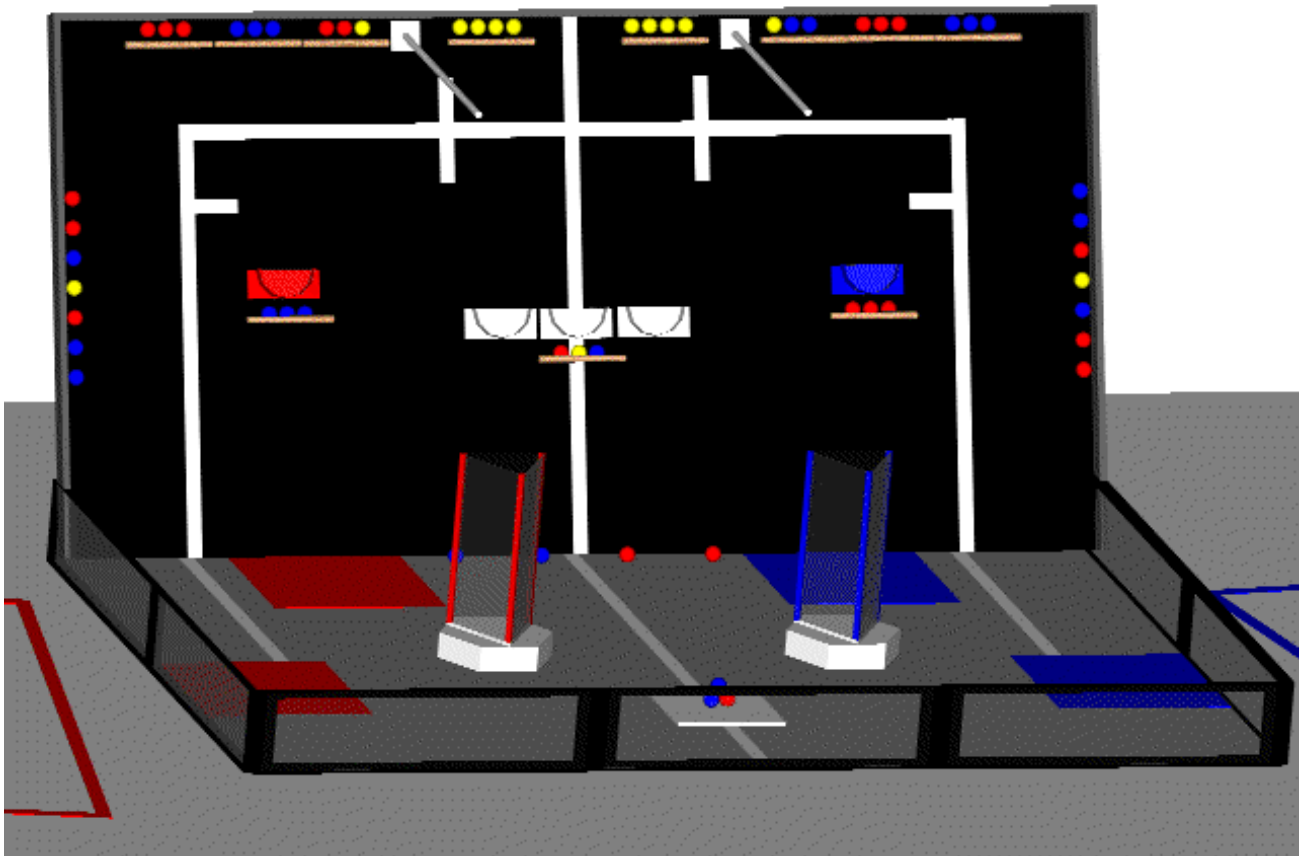
This section describes the CREATE Open game, called *Magbot Mayhem*. It also lists the game definitions and game rules.

2.2 – Game Description and Field Drawings

Matches are played on a field initially set up as illustrated in the figures below. Two teams – one “red” and one “blue” compete in each *match*. The object of the game is to attain a higher score than your opponent by placing *racquetballs* into your colored goals or the neutral (white) goals and by either being *parked* on the *platform* or *hanging* from a rod.

A bonus is awarded to the team that has the most total points at the end of the *autonomous period*.

There are a total of sixty-five (65) *racquetballs* available as scoring objects in the game. Fifty-seven (57) of these *racquetballs* will be found on the field, while four (4) will be available to each team prior to the *match*, one (1) of which will be a bonus ball. Fifteen (15) of the total sixty-five (65) *racquetballs* are *bonus balls*.



2.3 – Game Definitions

Autonomous Period – A twenty (20) second time period in which the *robots* operate and react only to sensor inputs and to commands pre-programmed by the team into the on board *robot* control system. Human control of the *robot* is not permitted at this time.

Ball – See *racquetball*.

Bonus Ball – A yellow *racquetball*.

Coach - A student or adult designated as the team advisor during the match.

Driver - A team member responsible for operating and controlling the *Robot*.

Driver Controlled Period – The 2:00 (two minute) time period in which the *robots* are operated by the *drivers*.

Driver Station – The designated region where the *drivers* and *coach* stand during any match.

Floor Goal – One of the two 27.5” tall, triangular bin shaped structures (one designated red, one designated blue) into which teams can score *racquetballs*.

Goal – Either a *floor goal* or a *wall goal*.

Hanging – A *robot* is considered to be *hanging* when it is in contact with the rod, and no part of the *robot* is in contact with any other playing surface, field element (except *racquetballs*).

Match - A *match* consists of an *autonomous period* followed by a *driver controlled period* for a total time of 2:20 (two minutes, twenty seconds).

Parked – A *robot* is considered to be *parked* when it is in contact with the platform, and no part of the *robot* is in contact with the foam playing surface.

Platform – The 15”x15” 3/4” inch high square located on the horizontal playing field.

Racquetball – A standard regulation *racquetball* that is located on the field to start the match or pre-loaded into the *robots*.

Robot – Anything (which has passed inspection) a team places on the field prior to the start of a *match*.

Scored – A *racquetball* is *scored* in a *goal* if some part of the *ball* is within the two-dimensional space defined by the edges of the *goal*, and not touching a *robot* of the same team.

Note: A *floor goal* extends infinitely perpendicular to the playing field surface within the *goal* boundaries and a *wall goal* extends infinitely parallel to the wall within the *goal* boundaries.

Wall Goal – Any of the semi-cylindrical shaped structures attached to the vertical wall into which teams can score *racquetballs*.

2.4 – Game Rules

2.4.1 – Scoring

- A red or blue *racquetball* that is scored in a neutral *goal* or *goal* of its own color is worth one (1) point for the team of that color. Red or blue *racquetballs* scored in *goals* of the opposing team color are worth zero (0) points.
- A yellow *racquetball* (*bonus ball*) that is scored in a red or blue *goal* is worth five (5) points for the team of that color. A *bonus ball* that is scored in a neutral *goal* is worth zero (0) points.
- A *robot* that is *parked* at the end of the *match* is worth five (5) points for the corresponding team.
- A *robot* that is hanging at the end of the *match* is worth twenty-five (25) points for the corresponding team.

2.4.2 – Scoring in Autonomous Mode

- At the end of the *autonomous period*, the team that has more total points receives a ten (10) point bonus.

2.4.3 – Safety Rules

<S1> If at any time the *robot* operation is deemed unsafe or has damaged the playing field, surface, barriers or *wall*, by the determination of the referees, the offending team may be disqualified. The *robot* will require re-inspection before it may take the field again.

<S2> If a *robot* goes completely out-of-bounds (outside the playing field), it will be disabled for the remainder of the *match*.

Note: The intent is NOT to penalize *robots* for having mechanisms that inadvertently cross the field border during normal game play.

<S3> If a *robot* falls from the *wall* and is no longer able to move the *robot* will remain where it lands and play will continue until the *match* is completed and scored before the *robot* is removed.

2.4.4 – General Game Rules

<G1> At the beginning of a *match*, each *robot* must not exceed a volume of 18 inches wide by 18 inches long by 18 inches tall. An offending *robot* will be removed from the match at the Head Referee's discretion.

- a. Alignment devices (templates, tape measures, lasers, etc.) that are not part of the *robot* may NOT be used to assist with the positioning of the *robot*.

<G2> Each team shall include up to two (2) *drivers* and one(1) *coach*.

<G3> During a *match*, the *drivers* and *coach* must remain in their *driver' station*.

<G4> *Balls* that leave the playing field are considered out of play. These *balls* will not be returned to the field for that match.

<G5> *Drivers* and *coaches* are prohibited from making intentional contact with any game or field object. The first instance of intentional contact will result in a warning, with any following instances resulting in a disqualification.

<G6> During a *match*, *robots* may be remotely operated only by the *drivers* and/or by software running in

the on board control system. If a *coach* touches his/her team's controls anytime during a *match*, the *robot* will be disabled and the team disqualified for that match.

<G7> Scores will be calculated for all *matches* immediately after the *match* when all objects on the field come to rest.

<G8> *Robots* may not intentionally detach parts during any *match*, or leave mechanisms on the field. If a detached component or mechanism prevents scoring the team will be disqualified. Multiple infractions may result in disqualification from the entire competition.

<G9> Strategies aimed solely at the destruction, damage, tipping over, or entanglement of *robots* are not in the spirit of the CREATE Open and are not allowed. However, *Magbot Mayhem* is a highly interactive contract game. **Horizontal Playing Field:** Some tipping, entanglement and damage may occur as a part of normal game play. If the tipping, entanglement, or damage is ruled to be intentional, the offending team may be disqualified from that *match*. Repeated offenses could result in a team being disqualified from the remainder of the competition. **Vertical Playing Field:** No tipping, entanglement, blocking (with contact) or pushing is allowed on the vertical wall. Any tipping, entanglement, blocking with contact or pushing ruled intentional will result in the offending team being disqualified from that *match*. Repeated offenses could result in a team being disqualified from the remainder of the competition. The only exception to this "vertical wall no touch" rule will be at the end of the game (last thirty (30) seconds) as *robots* vie for position on the hanging rods. Some contact is acceptable as long as the intent is not to push the opposing *robot* off the wall or rod.

<G10> *Robots* must be designed to permit easy removal of *balls* from any grasping mechanism without requiring that the *robot* have power after the *match*.

<G11> Horizontal field tolerances may vary by as much as +/-1". Vertical field tolerances may vary as much as +/-1" in all areas except the following: a) The metal wall panels may not have more than a 1/4" gap between panels, b) The metal panels may not have more than 1/8" rise/dip where the panels adjoin, c) No portion of the wall may bow out from the regular plane of the wall, over any 18" square section, by more than 1/8". Teams must design their *robots* accordingly.

<G12> A *robot* cannot pin (inhibit the movement of an opposing *robot* while in contact with one or more field elements) an opposing *robot* for more than five (5) seconds and not at all on the wall. If a referee determines this rule to be violated, the offending *robot* will be disabled for the match.

2.4.5 – Magbot Mayhem Specific Game Rules

<SG1> At the beginning of each *match*, each *robots* must be placed such that they are touching one of the colored *driver station* tiles.

<SG2> Prior to the start of each *match*, each team will have seven (4) racquetballs (one *bonus ball* and 3 regular *balls*) available to preload into their *robots*. A *robot* may have 0-4 *balls* preloaded.

- a. A *racquetball* is considered to be legally preloaded if it is touching the *robot* and not touching any part of the playing field or game objects.

<SG3> A *ball* is not considered scored if it is being touched by the *robot* on a team of the same color at the conclusion of either period.

<SG4> A *robot* may not intentionally cross the center line on the wall during the *autonomous* portion of the match and for the first thirty (30) seconds of the *operator controlled* portion of the match. Any part of the *robot* which touches the center line is considered over the line. A warning will be issued by the referee for the first violation. Subsequent violations may result in disqualification. If a *robot* accidentally (as determined by the judges) crosses over the center line during the *autonomous period* their first move in the *operator controlled period* must be to immediately retreat to their own side