# 2026 Botball
# Game Review

KISS INSTITUTE FOR PRACTICAL ROBOTICS

Botball®

Version 1.2 (2/03/2026)

# Contents

# Revision History

Version 1.0 – Initial Draft

Version 1.1 – Update black tape rule and sorting rule, reorganize interference rules, and clarify kit rule 2 about chassis

Version 1.2 – Update DE/ DS Non-Robot Structure Rule: add intentionality. "If a *non-robot structure* **intentionally** enters the vertical projection of their opponent's *side*, then the team will be disqualified for that round."

# Contributors

***Game Design Chair, Timothy Corbly***

***Numerous KIPR staff members and KIPR Community Members***

# Director's Note

Botball Community,

As we step into the 2026 season, I am inspired by how far we have come — and even more excited for where your innovation will take us next. *Stack Attack* challenges us to think beyond the robot and into the systems that keep our world moving.

Automation, artificial intelligence, and logistics are no longer just buzzwords — they are the invisible framework connecting communities and shaping the future of how we live, learn, and recover. Through this year's challenge, your teams will explore the same technologies that power global resilience — the robotics that rebuild after disasters, the algorithms that optimize resource distribution, and the creativity that keeps progress human-centered.

I encourage you to experiment boldly, collaborate deeply, and embrace every challenge as an opportunity to learn something new. The warehouse may be chaotic, but from that chaos comes the spark of innovation that defines Botball.

Let's make 2026 a year of precision, teamwork, and imagination — one crate, one robot, and one brilliant idea at a time.

Respectfully,

KIPR Executive Director

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# This Year's Game

***Stack Attack***
**Innovation on the Frontline of Global Logistics**

Across the world, modern supply chains rely on fleets of autonomous systems to keep communities connected — delivering food, medicine, and materials that sustain life and progress. But this year, a massive global data synchronization glitch has struck. The AI network controlling the world's smart warehouses has gone offline, halting the automated flow of goods and leaving pallets, crates, and packaging scattered in disarray.

With distribution centers overwhelmed and humanity depending on rapid restoration, **Botguy** has been called to action once again. Armed with the latest robotics technology, Botguy and the Botball community are deploying autonomous warehouse robots to restore order to chaos. These agile machines must coordinate under pressure to move, sort, and organize critical supplies while avoiding system interference and maximizing efficiency.

As a Botball engineer, your mission is clear:
**Design, build, and program two autonomous robots** that can manage logistics in a dynamic warehouse environment. Your robots must collect materials, sort and stack crates by type and color, deliver drums to their designated storage points, and return empty packaging bins to the proper stations. The success of your operation will depend on balance — precision versus speed, planning versus adaptability, and autonomy versus collaboration.

Each second of the match represents the heartbeat of a global supply chain waiting to come back online. As the countdown begins, your robots will take the warehouse floor in a race to optimize movement, recover misplaced cargo, and stabilize the flow of resources. The teams that demonstrate the best coordination, creativity, and innovation will lead the charge in reprogramming the future of logistics.

This year's Botball challenge celebrates the real-world applications of AI, automation, and robotics in global infrastructure. It highlights how technology — guided by human ingenuity — can rebuild resilience in systems that connect people and possibilities around the planet.

**Can your robots bring order to the warehouse and help Botguy reboot the world's supply chain?**
The future of automation begins here — in your hands.

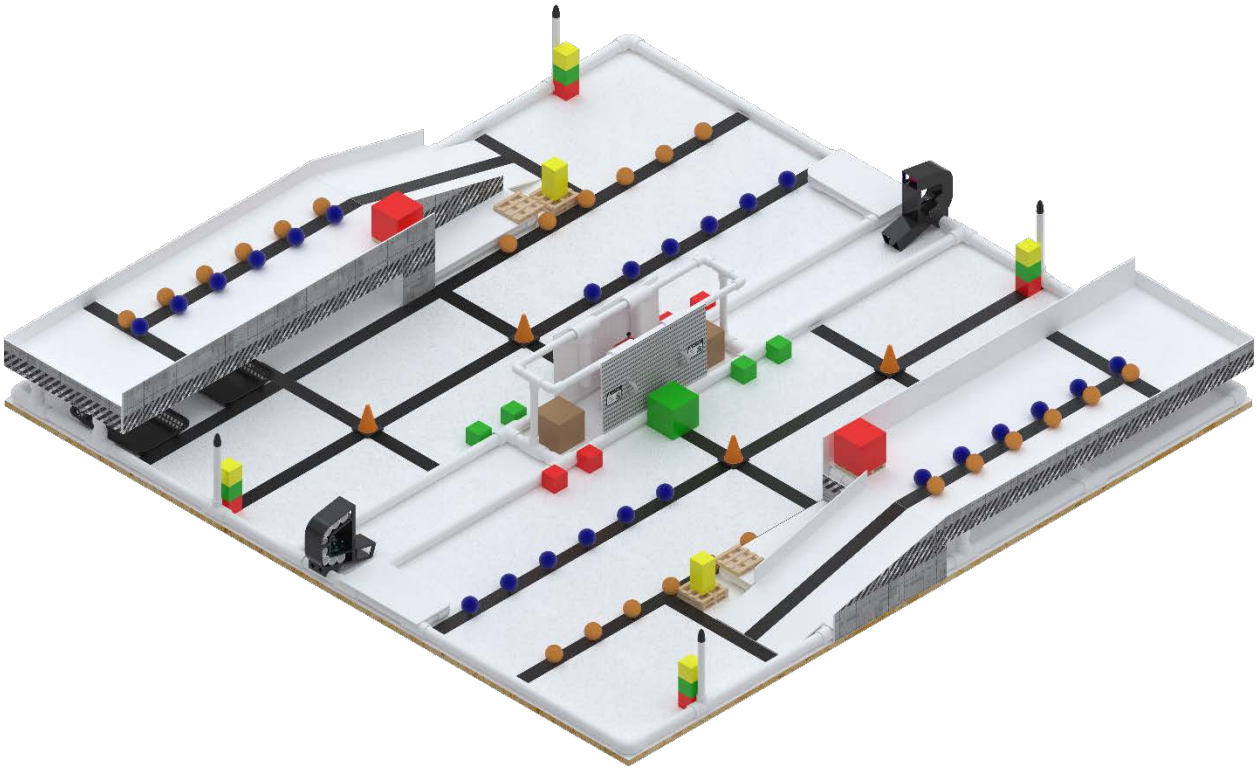

*Figure 1 - Game Overview*

## Game Board Areas

Official game board specifications are on the Team Homebase. All tournament boards and game pieces will fulfill the following specifications within +/- 0.25” per 4’ or up to 1% of the specification.

The game board is composed of two ~4’ x 8’, reusable modules whose surfaces are pebble grain white fiberglass reinforced plastic panel (FRP). A fully assembled game board will be ~8’ x 8’. A panel channel or black or white duct tape is used to close exposed seams where modules abut.

The game board is separated into defined areas for each team.

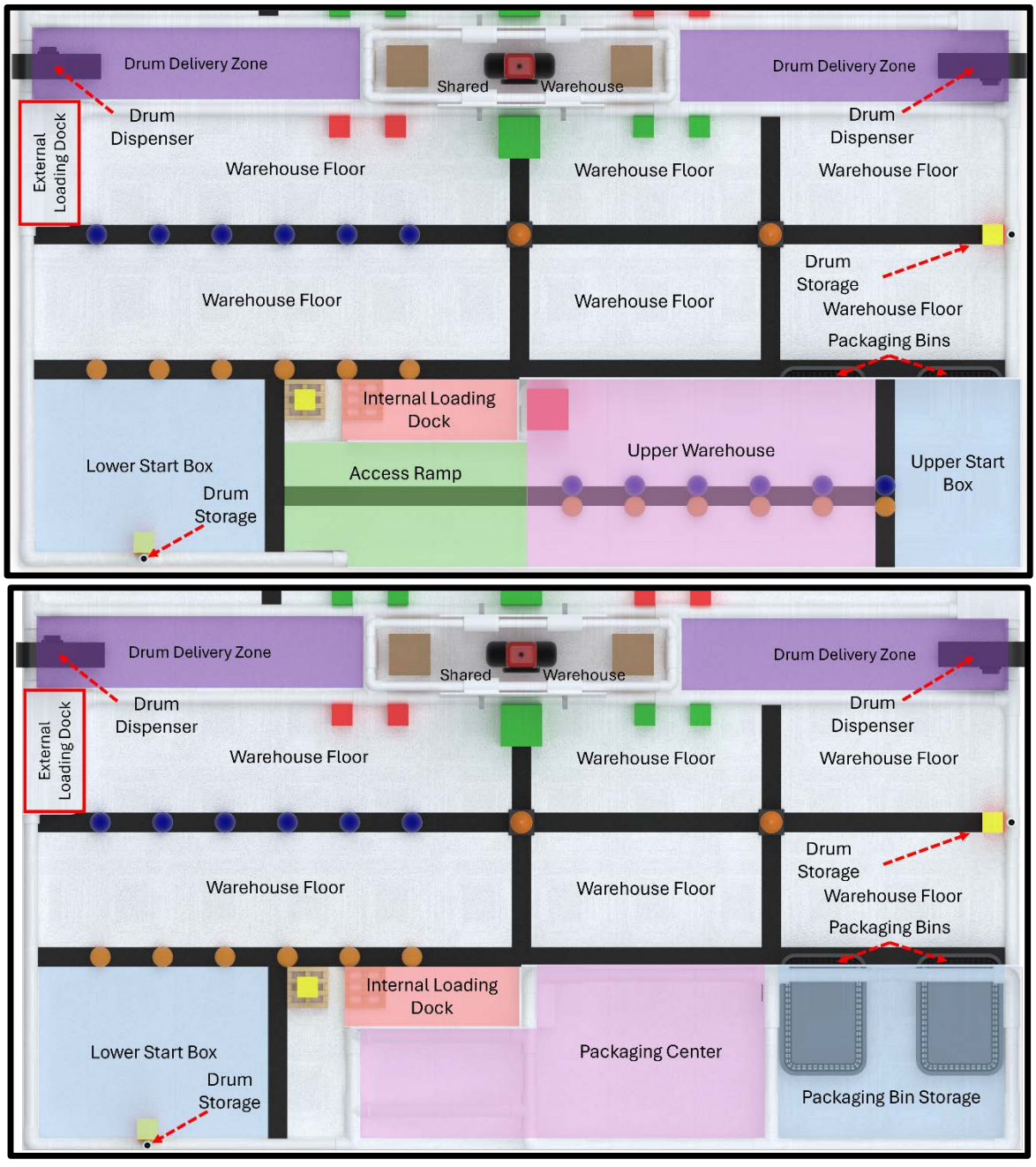


Figure 2 – Game Board Areas Top View and Lower Layer Shown

*Lower Start Box* – The area delineated by the inside edge of the PVC pipes and black tape lines in the bottom left corner of a team's side.

*Upper Start Box* – The area delineated by the inside edge of the corrugated plastic edges and black tape line in the elevated bottom right corner of a team's side.

*Warehouse Floor* – The six areas on the surface of the game table delineated by the inside edge of the PVC pipe and black tape lines, that does not include the *Lower Start Box*, *Packaging Bin Storage, Packaging Center,* and the undefined area next to the *Access Ramp* and *Internal Loading Dock*.

*Upper Warehouse* – The top of the corrugated plastic platform that does not include the *Access Ramp* or the *Upper Start Box*.

*Packaging Material Bins (Packaging Bins)* – The black baskets on the game table that start in the *Packaging Bin Storage*. The baskets will have their short side parallel to the black tape boundary of the *Packaging Bin Storage* and their feet will be flush with the edge of the black tape line meaning their tops will overhang it slightly.

*Packaging Bin Storage* – The area beneath the *Upper Start Box* and *Upper Warehouse* that is delineated by the PVC pipe and black tape lines. This area is in the bottom right corner of the side.

*Packaging Center* – The area beneath the *Access Ramp* and *Upper Warehouse* that is delineated by the PVC pipe and black tape lines. This area is adjacent to the *Packaging Bin Storage*.

*Internal Loading Dock* – The elevated platform that sits next to the *Access Ramp* and the *Upper Warehouse*.

*External Loading Dock* – The elevated platform that sits in the upper left corner of the game table next to the *Drum Delivery Zone*.

*Drum Storage* – The two posts on the edge of the game table. One sits on the bottom edge of the leftmost start box. The other is centered on the black tape line dividing the two rightmost *Warehouse Floor* areas.

*Drum Delivery Zones* – The two shared areas delineated by the inside edges of the PVC pipes in the center of the game table on either side of the *Shared Warehouse* area. This also includes the *Automated Drum Delivery System* on the outside edge of each area. Robots may not touch or hinder the *ADDS*.

*Shared Warehouse Area* – The area delineated by the inside edges of the PVC pipes in the center of the game table. The doors that sit inside this area will start centered and closed towards the middle. A center mark will be placed on the PVC pipe where the doors should meet.

*Access Ramp* – The ramp between the *Lower Start Box* and the *Upper Warehouse*.

# Game Piece

## Scoring Pieces

- 1 – *Botguy*
- 2 – Large Red Crates (*4" Red Cube*)
- 2 – Large Brown Crates (*4" Brown Cube*)
- 2 – Large Green Crates (*4" Green Cube*)
- 4 – Packaging Bins (*Baskets*)
- 4 – Traffic Cones
- 8 – Pallets
- 8 – Small Red Crates (*2" Red Cubes*)
- 8 – Small Yellow Crates (*2" Yellow Cubes*)
- 8 – Small Green Crates (*2" Green Cubes*)
- 16 – Drums (*2" Pink and Blue PVC Pipes*)
- 24 – Orange Packaging Material (*2" Orange Poms*)
- 24 – Blue Packaging Material (*2" Blue Poms*)

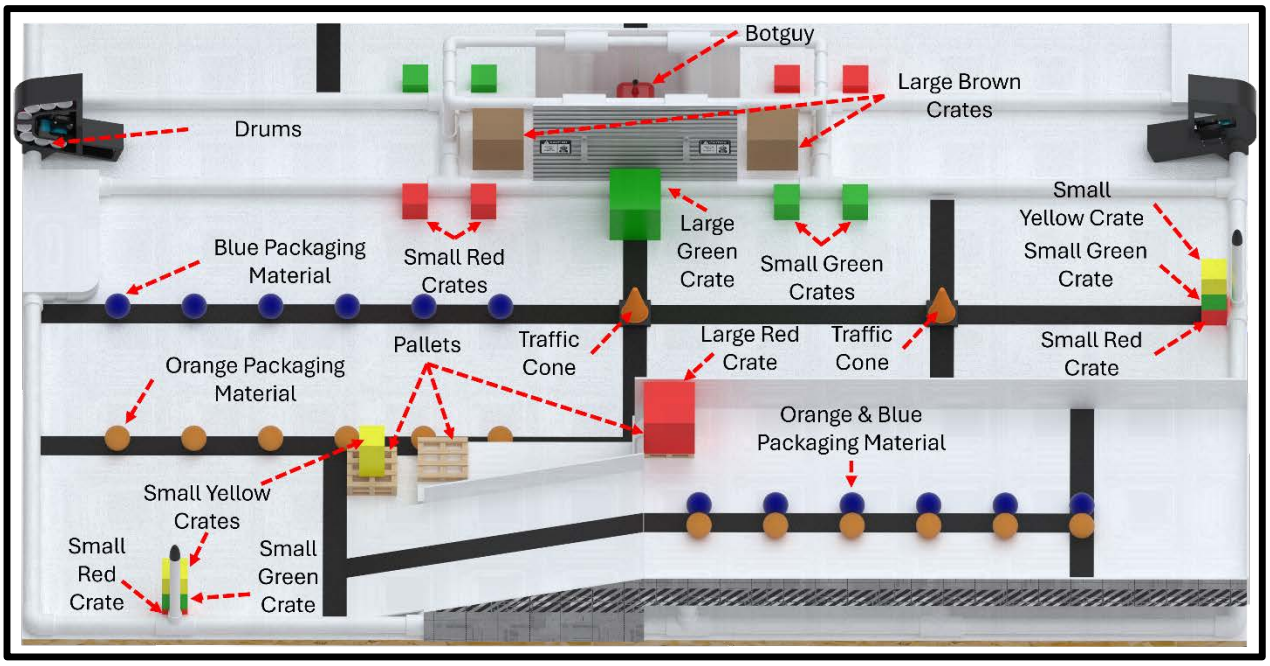


Figure 3 - Game Pieces

## Starting Positions

- *Botguy* – Will be placed in the center of the *Shared Warehouse Area* facing the right side as seen from the audience.
- *Large Red and Green Crates* – Will be randomized between two locations. One will be placed on top of the *Upper Warehouse* on top of a *Pallet*, in the top left corner centered between the inner edges of the *Access Ramp* and *Upper Warehouse*. The other will be centered on the black tape line that is centered on the *Shared Warehouse Area* and will be flush with the outside edge of the *Shared Warehouse Area*.

- *Large Brown Cubes* – Will be placed in the *Shared Warehouse Area* centered between the long edges of PVC boundary and 1" from the short edges of the PVC boundary.
- *Traffic Cones* – Will be roughly centered on the black tape intersections of the black tape line that the *Blue Packaging Material* starts on and the center black tape line that aligns with the center of the *Shared Warehouse Area* and the black tape line centered between the *Packaging Bin Storage* and *Packaging Center*.
- *Pallets* – All *Pallets* will be aligned so that the top boards of the *Pallet* are parallel to the long edge of the side.
    - One will be placed underneath the *4" Red* or *Green Crates* on top of the *Upper Warehouse*.
    - One will be placed on the curved corner of the *Internal Loading Dock* flush with the edges.
    - Two will be placed in a stack on the outside edge of the black tape line that makes the right edge of the *Lower Start Box* and the outer edge of the black tape line that make the lower edge of the *Warehouse*.
- *Small Crates* – Half will be randomized in terms of color and half with known colors and positions.
    - Six randomized cubes will be placed in stacks of three, centered on and flush with the vertical PVC of the *Drum Storage* posts. Each stack will have one of each color.
    - Two yellow cubes will start roughly centered on the stack of two pallets to the right of the *Lower Start Box*.
    - Two red cubes will start flush with the PVC pipe and edges of the T connector that sits between the *Drum Delivery Zones* and the left side of the *Shared Warehouse Area*.
    - Two green cubes will start flush with the PVC pipe and edges of the T connector that sits between the *Drum Delivery Zones* and the right side of the *Shared Warehouse Area*.
- *Pink and Blue Drums* – Eight will be placed in each of the *Automated Drum Delivery Systems*, four pink and four blue each. The order will be randomized. These will be released at 7 second intervals beginning 10 seconds after the game start.
- *Orange and Blue Packaging Material* – Will start in 3 locations:
    - Six pairs of *Orange* and *Blue Packaging Materials* will be placed on the center black tape line in the *Upper Warehouse*. The first pair will start on the intersection of the center black tape line and the *Upper Start Box* black tape line boundary and the be placed every 6" after. The orange poms will be closer to the outside edge of the game table.
    - Six *Orange Packaging Materials* will be placed on the black tape line that boundaries the top edge of the *Lower Start Box*. The first one will be placed 6" to the right of the left outer PVC boundary.
    - Six *Blue Packaging Materials* will be placed on the black tape line that runs along the center of the *Warehouse*. The first one will be placed 6" to the right of the left outer PVC boundary.

| Areas | Itemized Points | | | Multipliers | Totals |
|---|---|---|---|---|---|
| **Lower Start Box** | | | | | |
| Poms | #_____ | X 2 | =_____ | Drum<br>X 2 | |
| Cubes | #_____ | X 5 | =_____ | | |
| Cubes on Pallets | #_____ | X 10 | =_____ | | |
| Drums | #_____ | X 25 | =_____ | Botguy<br>X 2 | |
| Traffic Cone | #_____ | X 50 | =_____ | | |
| Botguy | #_____ | X 100 | =_____ | | |
| | | **Subtotal** | =_____ | | |
| **Upper Start Box** | | | | | |
| Poms | #_____ | X 2 | =_____ | | |
| Cubes | #_____ | X 5 | =_____ | # of Robots<br>X ____ + 2 | |
| Cubes on Pallets | #_____ | X 10 | =_____ | | |
| Drums | #_____ | X 25 | =_____ | | |
| Traffic Cone | #_____ | X 100 | =_____ | | |
| Botguy | #_____ | X 200 | =_____ | | |
| | | **Subtotal** | =_____ | | |
| **Warehouse Floor** | | | | | |
| Unsorted Poms | #_____ | X 1 | =_____ | | |
| Sorted Poms | #_____ | X 5 | =_____ | | |
| Cubes | #_____ | X 1 | =_____ | # of Sorted Pom Sections<br>X _____ | |
| Cubes on Pallets | #_____ | X 10 | =_____ | | |
| Drums | #_____ | X 25 | =_____ | | |
| Botguy | #_____ | X 50 | =_____ | | |
| | | **Subtotal** | =_____ | | |
| **Internal Loading Dock** | | | | | |
| Unsorted Cubes | #_____ | X 10 | =_____ | # of Pallets with Cubes<br>X _____ | |
| Sorted Cubes | #_____ | X 30 | =_____ | | |
| | | **Subtotal** | =_____ | | |
| **Drum Storage** | | | | | |
| 2" PVC Pipes Unsorted | #_____ | X 100 | =_____ | # of Posts<br>X _____ | |
| 2" PVC Pipes Sorted | #_____ | X 200 | =_____ | | |
| | | **Subtotal** | =_____ | | |
| **Packaging Bin** | | | | | |
| Non-matched Poms | #_____ | X 10 | =_____ | Sorted Baskets<br>X _____ + 1 | |
| Matched Poms | #_____ | X 20 | =_____ | | |
| Botguy | #_____ | X 150 | =_____ | Returned Baskets<br>X _____ | |
| | | **Subtotal** | =_____ | | |
| **Upper Warehouse** | | | | | |
| Poms | #_____ | X 2 | =_____ | | |
| Botguy | #_____ | X 200 | =_____ | # of Robots<br>X _____ | |
| Clean Deck | #_____ | X 100 | =_____ | | |
| | | **Subtotal** | =_____ | | |
| **External Loading Dock** | | | | | |
| Unsorted Cubes | #_____ | X 15 | =_____ | # of Pallets with Cubes<br>X _____ + 1 | |
| Sorted Cubes | #_____ | X 45 | =_____ | | |
| | | **Subtotal** | =_____ | | |

## Scoring Rules

1. **Black Tape Rule:** Any game piece touching any (Black Tape), does not score, excluding those scoring via the *Volume Rule*. Robots touching the center black tape line in the *Upper Warehouse* will still count towards the multiplier for the *Upper Warehouse*, but if they are touching the black tape line that forms the boundary between the *Upper Start Box* and the *Upper Warehouse* they will not score.
2. **General Scoring Rule:** A game piece must touch the surface of the scoring area to score, except game pieces following the *Volume Rule*.
3. **Volume Rule:** To score in the *Packaging Bins*, the Bins must touch the surface on your side, and some part of a scoring game piece must break the volume of the scoring area. If two volumes overlap, game pieces will score inside the first volume that they break, rather than the one they score the highest in. To score a 2" PVC Pipe on a *Drum Storage*, the post must break the volume of the pipe.
4. **Sorting Rule:** Cubes and poms are the only game pieces that may be sorted.
    a. Cubes may be sorted with cubes and poms sorted with poms.
        i. Cubes only count as sorted when they are on a pallet
    b. Only cubes may break a cube sort and only poms may break a pom sort.
    c. There must be at least two of the same color of a game piece and only one color on a pallet (cubes), in a basket, or in a scoring area to count as sorted.
    d. Cubes that score on the *Warehouse Floor* do not count towards the number of sorted sections, only poms do.
5. **Matching Rule:** In order for poms to count as matching inside of a basket, there must be an **equal** number of blue and orange poms inside that basket.
6. **Stacking Rule:** A stack must touch the surface of the game table or a *Loading Dock*. The lowest game piece in a stack must be a pallet or a cube and only cubes may be stacked on top of that game piece. All other cubes that touch the topmost surface of the rest of the stack below them will count as part of the same stack. If a game piece is part of multiple stacks it will count as part of the stack that gives the team the most points for a round.
7. **Loading Dock Rule:** A pallet or cube must be **in contact with the topmost surface** of the **Internal Loading Dock** or the **External Loading Dock** to be considered valid on that loading dock.
    a. The pallet or cube must **only** touch the surface of the dock area.
    b. It **may not be supported, lifted, or held in place** by any robot, structure, or other game element. A judge may test this by removing anything around it that may be supporting the cube or pallet.
8. **Upper Warehouse Rule-** To count as a clean deck, all poms must be removed from the upper warehouse.
9. **Packaging Bin Rule:** In order for a *Packaging Bin* to count as returned, it may not touch other game surface areas and must only be touching the surface of the game table in the *Packaging Center*.
10. **Highest Scoring Rule:** A game piece can only score in one scoring area and will be scored as if it is in the highest scoring area, as determined by base score without multipliers. A game piece that acts as a multiplier will only multiply in the area that results in the greatest increase in base points for an area.

11. **Robot Rule:** For the purposes of scoring, a robot is defined minimally as a KIPR Robot Controller with at least two motors connected to it. A robot with 2 controllers counts as a single robot.
12. **Final Scoring Rule:** The score is determined by final object location, not by how it got there. Judges will wait until any scoring objects still in motion have come to rest before scoring a game.
13. **Interference-Spirit of Botball Rule:**

    a. **Intentional Contact:**
    If a robot or any portion of a robot intentionally crosses into the opponent's game area (not neutral areas) and **touches or interferes with an opponent's robot**, that team will be **Disqualified (DSQ)** and lose the match.

    b. **End-of-Game Contact:**
    If a robot is **intentionally touching** the surface of the opponent's side or their scoring areas (not mutual scoring areas) at the end of the game, the opponent will receive a **bonus equal to 25%** of the offending team's total score.

    c. **Game Piece Interference:**
    If a robot **intentionally throws, launches, or pushes game pieces** into the opponent's game area to disrupt **the opponent's robot, movement, or scoring**, that team will be **Disqualified (DSQ)** and lose the match.

    d. Game pieces placed in scoring position on the Exterior Loading Dck may not be intentionally disrupted by the opposing team, or the team will be **Disqualified (DSQ)** and lose the match.

    e. **DE/ DS Non-Robot Structure Rule:** If a *non-robot structure* intentionally enters the vertical projection of their opponent's *side*, then the team will be disqualified for that round. See **Robot Rule** for the definition of a robot. For example, if the non-structure covers the playing field, blocks any vertical space of the field to deny their opponent access, etc.

## Tie Breakers & Special Scoring Conditions

If one team never breaks any border of a *Starting Box*, including the 12" ceiling, then they lose the round. If both teams break the boundary of their *Starting Boxes* and one team's robot does not shut down their motors or does not stop commanding their servos to move at the end, then they lose the round. In the case of a tie score, a team wins if none of the above conditions apply and they are the:

1. Largest number of sorted cubes on the *External Loading Docks*.
2. Largest number of cubes on pallets.
3. Largest number of sorted poms in baskets.
4. Largest number of pipes on *Drum Storage* posts.
5. Largest number of traffic cones scoring in start boxes.
6. Tallest stack of scored cubes.
7. Largest number of *Warehouse Floor Areas* with both pom colors.
8. Botguy in *Upper Start Box*.
9. Botguy in *Lower Start Box*.

10. Team with largest number of different types of objects scoring in *Warehouse Floor Areas*.
11. Fewest number of game pieces on black tape.
12. Team with the robot (defined by the KIPR Robot Controller power switch) closest to *Botguy.* This tie breaker will only be used if a match has already been replayed once.

In the finals of a tournament, tie breakers will not be used to indicate a winner, the match will be replayed until one team scores more points than the other.

# Game Play

## Fair Play and Spirit of Botball

Botball is about the development of **student** skills. Once a team enters the pits with their robots, we require that the **robots not leave the pits** for any purpose until the conclusion of the tournament or suspension of play for the day. Adults are not allowed into the pits, except to help teams carry in equipment as they arrive in the morning. All adults accompanying a team should understand that responsible Botball mentorship **does not include** working on the robot entries or programming the robot entries for the students but **does** allow for appropriate mentor guidance of the team. **Teams hosting a tournament at their school must check their robots into the pit area at least one-hour prior to the start of the seeding rounds.**

**Spirit of Botball:** This is a 100% student-driven experience.

Students know this, and adults know better!

Mentors, parents, adults, or other non-students who wish to actively participate in the construction, programming, testing, or documentation of a robot are invited to participate in other activities such as the KIPR Aerial.

## Filming of Robots

Botball competitions are public events and as such, filming of robots while they are on official game tables in either practice or competition mode is allowed by any member of the public in attendance including parents and other team members.

The use of team members to shield, block, or hinder the public from filming the robots is not allowed and against the Spirit of Botball. Team members are encouraged to observe from the "Pit" side of the competition barriers and not from the public audience side.

For parents, coaches, and other team stakeholders, likewise they should not shield, block, or hinder the public from filming the robots and it is against the Spirit of Botball.

## Team T-Shirts

Botball teams are encouraged to design and wear their own Botball competition t-shirts. Graphics must be family and school appropriate and not explicit or suggestive of inappropriate content. If teams are wanting

to wear their shirts to the table, it is recommended that the shirts contain mostly neutral colors so as not to potentially confuse any cameras on robots at the table.

# Practice

Teams are permitted to send up to 4 team members to the practice tables. Teams will have 3-5 minutes at the table to practice before being asked to wrap up. Teams should reset the table before departing.

Teams are permitted to bring a laptop, tablet, or other programming device to the table to conduct code changes unless otherwise not permitted by KIPR at the tournament. Teams are allowed to bring a mouse to the table to interface with the KIPR Robot Controller. Teams are asked to stay at their practice table and to not go to other tables to observe other team's robots during their practice round.

# Pit Area

Only students are allowed in the Pit Area. All robots and any other kit components must enter from the pit area and cannot be handed to a team over the barrier between the game tables and audience or the Pit Area and audience.

## Entry to the Pit Area

Teams may not hide robots under boxes or sheets or otherwise shield them from viewing once they have entered the pit area.

# On-Deck

## Entry to the On-Deck

Only the current year's kit materials that total up to a single kit are allowed in the on-deck area. The intent is that teams do not bring up multiple sets of robots to the game table to choose which ones they will play. In the event that a robot is swapped while on-deck for another robot, then that team will be disqualified for that round. If this is observed by the on-deck manager, then he or she will inform the Head Judge who will then enforce the disqualification for the round.

## Inspections

Tournaments may have a robot inspection prior to teams entering the on-deck area. This is dependent on KIPR staff or volunteers who are available to execute the process. Inspectors will have a parts list on hand and may reference it as documentation if they determine there is a violation.

The objective is to verify that teams have no illegal parts present on their robot or independent structures. If a team is found to have an illegal part, then a couple of scenarios can play out. If a team has a timeout card available, they may take one to take their robot or independent structure back to their pit to remove the illegal part. If a team does not have a timeout card, then the robot or independent structure with illegal parts will be disqualified for that round. Please see the Timeout Card section for further information.

If any parts were added or modifications made to the robot during the time out period the head-judge may ask to have the robot or independent structures inspected for any parts violation once it re-enters the game table.

In the Spirit of Botball, teams that notice part violations or construction violations on other teams' robots should inform the team or the head judge prior to any competition rounds. Encouraging other teams to challenge part violations prior to or during competition rounds is not in the Spirit of Botball.

## Setup – Before Hands-Off

Up to two students from a team may bring the team's robot(s) to the tournament table and perform the setup. Switching out members at the table is allowed at the discretion of the head judge. If at any point during or after setup, a team is observed with a laptop near the game table and appears to be reprogramming their robot, then the team may be disqualified by the Head Judge. If a wait_for_light function needs to be uncommented or added to code, a student may ask the Head Judge to observe them while it is added back in at the Head Judge's discretion.

Teams will have **90 seconds** to complete their setup and calibration. Teams will place their robot(s) within their *Starting Box* as desired. Teams must position their light sensors to sense the lights that will be on the outside edge of the starting boxes and may not be moveable.

- Starting lights will be attached to the outside edge of the game table alongside the *Starting Box(s)*.
- The light position will stay stationary in one position and teams must adjust their sensor mounts to match the light setup on the game tables during practice runs This will prevent the possibility of non-starts due to moving the light after calibration
- Starting lights must either be aimed at the team's light sensors or at the floor and cannot be aimed so as to disrupt an opponent (judges' ruling).
- Starting lights may **not** break the vertical projection of the board inside its PVC boundary. This is for safety as robots do occasionally break the bulbs if they make contact.
- There are two connected starting lights for each team, so each KIPR Robot Controller can have its own starting light. Both lights will turn on and off at the same time and cannot be controlled individually.
- Teams cannot touch starting lights or any part of the table after Hands-Off.

Teams will greet each other and:

1. Visually inspect each other's robots before calibration. Inspection is limited to a maximum of 1 minute unless a specific part violation challenge (refer to parts challenges under Challenges section) is made. Teams are encouraged to utilize the parts lists provided on the Team Homebase for each of their robots to ensure they won't have a robot's construction challenged. The parts list is also useful as documentation.

2. Teams must notify table judges **before the end of "Hands-Off"** if they believe the table is not set up properly. When both teams are ready, each team positions/activates its robots and then – **Hands-Off**!

If judges determine a team is taking too long to calibrate, then they will issue a warning and set a timer for 60 seconds. A team that is not ready after the 60 seconds may be disqualified from the round. The maximum setup time, which may be extended at judges' discretion, is 90 seconds.

If it is observed by any judge that a team pulled a robot off of the table and swapped the robot out that was not in the on-deck area, then that team will be disqualified by the Head Judge.

## Before the Game Begins – After Hands-Off

Once “Hands-Off” has been declared, the team members will position themselves so as not to block the view of the table by the audience. No part of a team’s robot(s) may leave the *Starting Box(s)* until the round has begun. Movement is okay so long as the *Starting Box(s)* boundary isn’t violated. If a moving violation happens, then the judges will call a fault on the team. Team members may not move the starting lights at any time after hands-off. A judge may move the light to avoid potential damage to a light. Team members may not signal to their robots after “Hands-Off” to start their robots. Team members will be asked to stand on the side of the game table furthest from the audience. If a team member at the table is wearing a shirt with large solid colors that are similar to game pieces on the table, they will be asked to crouch during the round if the robots are using cameras.

Depending on the light coming from outside sources at the tournament, a judge may have team members stand in front of their robot to block incoming light before the round starts to prevent accidental triggering of the light sensors.

## Timeout Card

Each team will be given a single red Timeout Card that is labeled with their team's name and number when they register on-site. Only the team whose name appears on the card may use it. The card can only be used at an on-deck robot inspection if it is being used at the tournament or while that team is at the table before "Hands-Off". While a team is at the table, any time **before** “Hands-Off”, a team may turn in their timeout card and get a 3-minute timeout. The team may spend that time in the pits or at the table, but not to practice at the table. However, the team may practice the starting light sequence. Only a single timeout per team is allowed for the entire tournament. Teams are advised to save their timeout card for the Double Elimination rounds, as Seeding rounds are the best 2 out of 3.

If your region has on-deck robot inspections and your robot is deemed to have an illegal part **during seeding rounds**, then you may use your time out card to take your robot to the pit to remove the part. If your region has on-deck robot inspections and your robot is deemed to have an illegal part **during double elimination rounds**, then your robot will be disqualified. It is highly recommended that teams carefully and meticulously review the parts on their robot prior to entering the inspection area. It is in the **Spirit of Botball** for teams to notify other teams and/or judges of observed violations by other teams.

If any parts were added or modifications made to the robot during the time out period the head-judge may ask to have the robot inspected for any parts violation once it re-enters the game table. Teams may not trade out robots or bring additional independent structures to the game table during a time out.

## After the Game Begins – Lights On

Once the starting lights have turned on, the round counts unless a judge rules otherwise. At the start of the game, the starting lights turn on and robots are then allowed to leave the *Starting Box*.

The round lasts two minutes (120 seconds). The lighting sequence is:

- 0 seconds: lights turn on; robots can leave starting boxes
- 5 seconds: lights turn off
- 10 seconds: ADDS begins dispensing drums
- 115 seconds: Lights turn back on and blink for five seconds
- 120 seconds: lights turn off; game over; robots must turn off motors and freeze/power down servos

## End of Game

Robots must **stop driving their motors and stop servo motion** by the end of the round or that team will lose the round in all situations except against a team that does not break the boundary of a *Starting Box* (in Seeding, this condition will give a score of 0). Incidental motion from a servo holding a position under load is OK.

Scoring is based on the location of pieces at the end, not how the pieces got there. Scoring takes place when the round has ended and items have come to rest.

If all motion has stopped before 120 seconds, the judges may ask the teams if their robots are done and if so, then they may end the round at that time. Both teams must agree in order for this to end the round.

## Final Scoring and Rulings

If your team does not agree with the score as calculated, then they must immediately notify the table judge(s) **before** leaving the table and **before** any items have been moved on the table. If they do not agree with the table judge's ruling, then they may ask to speak with the Head Judge. The Head Judge will spend no more than 5 minutes on the decision. Teams must initial the score sheet before leaving the table, signifying acceptance of the ruling. If they do not agree with the ruling, the Head Judge can sign for the team to progress the event forward.

There are no instant replays. No external videos will be used for scoring. If a team disagrees with a judge's decision, then **only the two team members at the table** may politely discuss the issue with the table judge and/or head judge. **Issues with the scoring after the teams have signed the score sheet may not be considered.**

The head judge reserves the right to make rulings on specific rules or wording in the game review that will be in effect for the remainder of the tournament.

**Spirit of Botball: Mentors, spectators, and team members should respect teams' and judges' final decisions. A head judge may overrule any previous rule or loophole that they believe to violate the Spirit of Botball.**

## Challenges

Challenges may only come from judges and only the four (two per team) members at the table. Challenges from judges will not disqualify a team from playing the round (i.e. robot height, fitting in start box, obvious part violations). If either team wants to challenge the validity of the robots they are facing, they must bring it to the table judges' attention during the inspection period, and the Head Judge will come over. Teams should bring the list of parts to the table to aid in the inspection. Challenges must be specific. Teams are

encouraged to have a parts list for each robot they bring to the table to minimize the likelihood of a robot's construction being challenged. There is a parts list on the Team Homebase, which can be used to specify which kit parts are allowed to be used for the robots at the table.

The Head Judge is the final arbiter of a challenge and can dismiss what they believe to be spurious or irrelevant challenges. **This includes challenges to robots and or parts that they deem to not provide any competitive advantage or are against the Spirit of Botball to the team.** An Example of against the **Spirit of Botball,** would be a team knowing about the issue and planning to challenge prior to the robot inspection at the game table. If the team knows prior to arriving at the table in the **Spirit of Botball** they will let the other team or a KIPR official know so that the team has the opportunity to correct the issue. Teams determined by the judges to be in safety or performance-changing violation will be given 60 seconds by the judges to make a correction, remove offending pieces, or take the robot off the table; otherwise, the robot must be removed for the round or the team can forfeit. A robot determined before the start of a round to be in a safety or performance-changing violation of the construction rules will not be allowed to play while in that state. A robot ruled to be unsafe for humans will not be allowed to run until modified.

If a team wants to execute a challenge, then they must wager their round. If the team that makes the challenge is correct, then they win the round, and the other team is disqualified for that round. However, if the team that makes the challenge is incorrect or deemed spurious by the Head Judge, they will be disqualified for that round and the other team will win. In the case that both teams wish to make a challenge, the one to approach the judge with the challenge first will be the determining challenge.

If a team notices that another team has a challengeable issue during seeding, another double elimination round, or any other time and is not facing that team, in the Spirit of Botball and fair play, they should inform the Head Judge so that the Head Judge may consult with the team.

## Acknowledgements

The KIPR Robot Controller is a powerful device, but the use of threading can cause unpredictable results, such as the robot not stopping when utilizing the *shutdown in* function. Teams are encouraged to limit their use of threading and to make sure they take precautionary steps to stop their robot within the time limit of the game. If the robot fails to stop moving after the time limit, then it will result in a score of 0 for a Seeding round or a disqualification for a Double Elimination round.

## Seeding Rounds

Seeding rounds take place before Double Elimination. There will be three Seeding rounds. The order in which teams appear in each round is set by tournament software and is the same for each round. In Seeding, a team plays the game unopposed, and the score for both sides counts, where your Seeding Round score is (*the score for your side*) + (*the score for the other side*). Note that Seeding scores are the **sum** of the entire board and **teams are encouraged to cross sides and use the whole board for scoring during Seeding**.

Seed scores of less than 0 will be counted as 0. A team's Seed Score is the average of their best two Seeding rounds. The tableside used by a team for a Seeding round (the side from which the robots will start) is determined when teams arrive at the table and at the judges' discretion for their turn in a Seeding round.

A coach or team member must bring any concerns about the posted seeding round scores to the attention of the Head Judge before the bracketing for the double elimination rounds. Bracketing occurs within ~5 minutes of the completion of the last seeding round. Only math errors or incorrect placement of scores will be accounted for.

## Double Seeding Rounds

Double Seeding will only be played at the Global Conference on Educational Robotics. Double Seeding consists of head-to-head Seeding rounds where teams get as many points as they can while still playing against another team on the table. No scores will be dropped in Double Seeding.

**It is against the "Spirit of Botball" for teams to form coalitions and partnerships with other teams with the goal of collaborating to benefit only one team's score.**

## Double Elimination (DE) Rounds

A team is out of the Double Elimination tournament when it has lost two games. Initial matches are decided by KIPR tournament software using Seeding round scores. As the tournament progresses, the order of matches and table sides for the competing teams are determined using KIPR tournament software. The two teams play each other and the highest score at the end of the game wins, subject to tie breakers and special scoring conditions. The size of Double Elimination scores does not affect ranking, only wins and losses.

During match play, the table judge, through observation, may decide that a robot is guilty of interference, and then disqualify the team for that round.

# Alliance Matches

## Logistics

At selected tournaments, if a team is eliminated from the Double Elimination tournament before the Finals of Double Elimination play, then that team may sign up to play in Alliance Matches. Alliance Matches will pair up two teams to play the game collaboratively with the goal of scoring the most points. Each team will bring one robot to the table to run simultaneously. The teams will place their robots in any of the *Starting Boxes* (i.e. both on the same side or split between the two sides).

## Scoring

Alliance rounds will follow all of the same scoring rules as a regular Seeding round. The total Alliance score is (*Your side's score*) + (*Ally side's score*). The Alliance team with the highest combined score from a single run will win the Alliance Tournament. Alliance matches will be conducted until tournament officials suspend play (usually when the final Double Elimination rounds are near complete).

# Tiered Rounds

## Logistics

At selected tournaments, if there are enough teams, then there might be a chance of breaking out the Double Elimination rounds into multiple tiers. The objective is to play against teams with similar performing robots. The number of tiers being used at any tournament will not be released to the teams or coaches prior to the release of the actual brackets.

# Virtual Tournaments

Virtual Tournaments will require the team to have a competition game board that meets requirements, access to the internet and two cameras (one static to show the game board and one mobile for robot inspection and judges scoring questions) to participate. Some exceptions to rules related to game board setup may be accommodated by the head judge.

# Construction Rules

The official construction rules for the 2026 Botball Game consist of the latest revision of this 2026 Botball Game Review document and any updated game rules posted on the FAQ. Posts on the 2026 FAQ in the Game Rules Question area will be used to update the document and provide notice of any rule changes or adjustments.

## Kit Rules

1. Sensors from the 2020-25 kit may be used so long as they don't exceed the type or number in the 2026 kit.
2. KIPR Metal Parts Chassis – Only the current steel chassis (not the older, smaller aluminum chassis) will be allowed in robot construction. This does not exclude chassis' built out of other parts in the kit or 3D printed chassis.
3. Robots may be constructed out of any or all of this year's kit parts except: the boxes, bags, wrapping or packing material, the chargers, download cables, wrenches, screwdriver and color stickers. Materials supplied at the workshop for creating your game board (e.g., Botguy, poms, etc.) are not part of the kit and cannot be used on your entry. The included camera is the only USB device that may be plugged into a robot during the game. **Consult the official parts lists for allowable kit parts!**
4. Small removable mounting dots/strips such as those produced by Glue Dots, UGlu and/or Scotch Brand Restickable Dots/Strips, blue tack (acquired at team's expense) may be used for construction purposes. They may not be exposed for sticking things otherwise in any manner. In particular, this means you may **not** use your mounting dots/strips to contact the game board, game elements, or the other team's entry. **Note that neither hot melt glue nor any other adhesives, other than removable mounting dots/strips, are allowed in robot construction.**
    a. Mounting dots/strips are available at stores such as Home Depot, and online from vendors such as Amazon.
5. Wire management:
    a. Tape (no game piece colors) may be used for managing and/or labelling wires. It may not be used for construction or structural purposes.
    b. Twist ties may be used for managing wires. They may not be used for construction or structural purposes.
6. Judges may require excessive adhesive to be removed. Teams should always try to come up with a mechanical means for construction and only resort to using adhesive methods as a last resort.
7. Supplied servo accessories such as grommets, screws, washers, etc. may only be used to mount pieces to the servo horn.
8. Servos and motors may be mounted to structural pieces using the supplied machine screws.
9. Teams may trim the connector potting material as needed to ease insertion or mounting of sensors. Damaged pieces will be replaced at the team's expense.
10. Plastic servo horns may be trimmed as desired. Damaged pieces will be replaced at the team's expense.
11. Teams are allowed to add the following pieces to their entry:
    a. Up to 100cm of thread, string or fishing line (maximum diameter 1mm, **non-metallic only**) may be used as desired except for offensive measures such as entanglement and

entrapment.

b. Paper (maximum 20#) so long as all the pieces can be taken from the **same single** standard US letter-sized (8.5" X 11") or A4-sized (210mm x 297mm) sheet. See rule 13.

c. Standard 3/16" thick foam board **or** corrugated plastic as long as all the pieces can be taken from the **same single** standard US letter-sized or **#1**, A4 footprint. See rule 13.

d. Up to 10 standard office rubber bands of maximum size #19 may be used (#19 is 3.5" x 1/16" x 1/32").

e. Up to 10 Paper Clips, smooth, metal (between 1" and 1 ½" in length). Paper clips can be bent in any fashion but cannot be cut, broken or plugged into any wire or robot controller.

f. Coins, up to 250 grams (~100 U.S. pennies) to be used as a counterweight only. Please be prepared to prove that it is within the legal weight limit if necessary. Coins may be rolled in wrappers, paper, or tape (up to two rolls) to make it easier to weigh.

12. If the team's entry uses paper and/or foam core board or corrugated plastic and it appears to be more than allowable or is hard for the head judge to determine the amount used, then the head judge **MAY** ask to see their template showing how the material being used was cut out of **ONE** 8.5" X 11" (or A4) paper sheet and one 8.5" X 11" (or A4) 3/16" foam core or corrugated plastic sheet. The paper/foam core board or corrugated plastic may only be held in place through the use of other kit parts (including removable mounting dots/strips detailed above if used as allowed for other kit parts). **Paper and foam core board or corrugated plastic may only be black or white; only grayscale may be used for printing including official logos for sponsors of your team, or QR codes.**

13. Rubber bands may not be glued or melted. Rubber bands may be cut, but only a total of ten whole rubber bands **or** ten cut rubber bands may be used on a team's entry. For any combination having both whole and cut rubber bands, the limit is 10.

14. **The light sensors in the kit DO NOT require a light guide unless there is a lot of direct sunlight in the room.** Soda straws, paper, electrical tape and/or foil may be used as light guides for sensors (light guides may be shielded by using tape, but not in a fashion that is for structural purposes or for manipulation). Light guide materials are in addition to the allowable parts.

15. Teams are not allowed to shield robot sensors externally to their official entry (i.e., teams are not allowed to stand between their robots and the audience to keep the robots from sensing the audience). Teams should orient and calibrate the sensors on their robot appropriately so that this is not an issue. Teams using cameras may request that anyone whose attire includes significant color markings closely matching game object colors stand well back from the table.

16. Teams are limited to ten (10) 4" white zip ties (included in the kit), and they may be used for any purpose. You may replace damaged ties with ones of equivalent size (black or white).

17. Lego parts cannot be physically modified. **Threading axle holes with screws will be allowed as an exception to this rule.**

18. Metal parts may not be cut or broken to a smaller size. Only **straps and plates** as listed in the kit may be bent if desired. **Brackets cannot be bent**.

    a. If the **edges** of metal parts have sharp edges or burs, they may be sanded or filed until smooth.

    b. Metal surfaces may be sanded to reduce friction.

    c. Warning: At tournaments KIPR will not provide replacements for metal parts that have been

altered or damaged. Replacements may be purchased from the online Botball Store.

## 3D Print Rules

1. Only PLA or PETG may be used to print parts.
    a. Parts must be printed using a grayscale-colored PLA or PETG material.
    b. PLA or PETG material must only contain PLA or PETG.
    c. PLA or PETG must be printed and not in its raw unprinted form.
2. The number of 3D printed parts may not exceed 6 total between both robots at the table.
    a. A part is a single static piece.
    b. If parts are connected by material with the intent of skirting this rule then they will not be allowed.
    c. If there are moving parts in a 3D printed assembly, each movable part counts towards the 6 total parts. Examples include, a chain with 10 links in one print would still count as 10 parts, two or more parts tethered by a piece of material will be counted as two or more parts.
    d. Only 6 3D printed parts for use on the robot may be brought to the On-Deck area, excluding the required duplicate identical copies for measurement and any jigs being used for positioning the robots.
3. A single part cannot exceed the print volume of an Ender 3 V3 SE. The print volume of an Ender 3 V3 SE is 220 mm x 220 mm x 250 mm.
    a. If using a part on a robot, a second identical copy of the part may be required for judges to check the measurements. If a second identical copy of the part cannot be provided to the judge, the robot it is attached to may be disqualified for the round.
    b. A second identical copy of the part may be needed for onsite presentations.
    c. A box for measuring parts will be provided throughout both practice and tournament for teams to check part dimensions.
    d. At tournaments, judges may have a box of the correct dimensions that a part must fit in.
4. A STL file must be submitted for each part that may be in use on a robot prior to the tournament.
    a. The STL file(s) for regional tournaments must be submitted during the 3rd period of documentation for the region.
        i. Teams will be asked to show proof of STL file submission to the judge at the table if they are using a 3D printed part outside of the KIPR parts lists.
    b. STL files will be released to the whole Botball community on the team home base after the last regional tournament and after GCER.
    c. STL files specifically provided by KIPR **from the parts lists** do not need to be submitted.
    d. STL files previously submitted in other years should be attributed but still sent into KIPR during documentation for regionals.
5. 3D printing of jigs or other objects to assist in positioning robots in the start box is highly encouraged
    a. These parts will not count towards the part limit if they are not being used on the robots.

6. The surface of 3D printed parts may be sanded to smooth edges or hide print lines.
7. The head judge may deny the use of a 3D printed part, at their discretion, based factors of safety or inappropriateness.
8. No 3D printing will be permitted at the event.

# Robot Logistics

1. Each robot if named can only have a name (G-rated) approved by an adult team leader before the tournament.
2. Multiple processors (such as two KIPR robot controllers) may exist on a single robot.
    a. You may only use the Wombat controllers.
3. It is not necessary to use all the parts in a kit.
4. The *Starting Box* is 12" tall. A starting box is defined by the **interior edge** of the PVC and the **interior edge** of the black tape around the perimeter of the starting box.
5. All elements of a team's entry must be within the volume of a *Starting Box* at game start. A robot may not cross over the boundary between two *Starting Boxes* at the start.
6. After the game starts, robots are allowed to expand in size.
7. **While not always necessary,** starting light sensors may be shielded as demonstrated in the workshop slides and in the construction rules and neither sensor nor shielding may extend outside the *Starting Box*.
8. All independent structures not under computer control should be clearly marked with the team's number. Maximum label size is 1" diameter (Avery #5410), or you may use permanent marker directly on the structure. Teams may only run robots with their team number on them.
9. Robot teams can have a maximum of 4 independent structures on the game table at a time
    a. A team's entry, including any supplied game pieces, must fit in the *Starting Box* **without any external restraint** at game start (the *Starting Box* floor and border PVC is not an external restraint).
    b. Each structure must be large enough so that it does not, in the judge's opinion, constitute a jamming or entanglement hazard.
    c. Examples of structures include: robots, barricades, detachable baskets, etc.
    d. A team's entry can contain as many robots up to the structures limit as can be constructed from the parts in a single kit.
    e. Items intentionally ejected from a robot count as structures (judges judge intention); there are special rules regarding projectiles, discussed later.
10. No electrical modifications may be made to any KIPR robot controller, any sensors, or any motors, except for substitution of batteries with one approved by KIPR.
11. No wire extensions may be used except those provided in the kit.
12. Offensive entanglement strategies that involve a robot and/or independent structure are not in line with the **Spirit of Botball** and may be subject to disqualification as determined by the Head Judge.

## Safety

1. Human & Robot Safety:
    a. No untethered robot-launched projectiles, other than game pieces on your side, are allowed.
    b. No tethered projectiles containing metal pieces are allowed.
    c. No metal pieces or wires are to be used in effectors that move or rotate at high speed.
    d. No metal protrusions are to be used that are likely to cause electrical or safety risks for other robots (including arms and projectiles).
    e. Judges will determine how safe a robot is. Teams may alert judges to a potential safety or entanglement hazard, but judges will interpret whether or not a robot is safe, needs to be modified, or is not allowed to run.
2. Electrical tape, either black or white, may be used to cover metal pieces that are deemed to otherwise be a safety risk to robots or humans. Judges might require this to be done at the game table. Note that tape is not allowed to be used for structural purposes.
3. If the Head Judge decides that a robot is not considered safe, then the robot will not be allowed to run until it has been modified or it will be removed from the table.

## External Communication

1. No external communications (e.g., IR, Bluetooth, wireless, or semaphores) may be used during tournament play with the exception of robot to robot.
2. Teams found to be programming a robot while at the table or in the on-deck area during rounds, excluding during the use of a timeout, will receive a DQ for the round.
3. The USB cables & chargers may not be used during game table tournament play.
4. Communication between robots for your team's entry is allowed.
5. Your robot controller may have WiFi turned on or off at the tournament.
6. Any teams found in violation of any communication hacking or tampering with another team's robots or equipment is in violation of the "Spirit of Botball" and may be disqualified from the rest of the tournament.

Teams found in violation of any communication rule may be disqualified from the tournament at the discretion of the Head Judge.

# Overall Winner Calculations

A team's overall score is calculated as the sum of their Seeding, Double Elimination, and Documentation scores. The overall score is between 0 and 3 for regional tournaments and between 0 and 4 for GCER. Documentation scores at GCER will only include the Onsite Documentation score.

## Documentation Scoring Formula

$$DocScore = \frac{2}{10}(Period1Doc\%) + \frac{2}{10}(Period2Doc\%) + \frac{2}{10}(Period3Doc\%) + \frac{4}{10}(OnsiteDoc\%)$$

## Seeding Scoring Formula

$$SeedScore = \frac{3}{4}\left(\frac{n - SeedRank + 1}{n}\right) + \frac{1}{4}\left(\frac{TeamAverageSeedScore}{MaxTournamentSeedScore}\right)$$

## Double Elimination Bracket Scoring Formula

$$DoubleEliminationScore = \left(\frac{n - DERank + 1}{n}\right)$$

## Double Seeding Scoring Formula (GCER Only)

$$DoubleSeedScore = \frac{2}{3}\left(\frac{n - DoubleSeedRank + 1}{n}\right) + \frac{1}{3}\left(\frac{TeamAverageDoubleSeedScore}{MaxTournamentDoubleSeedScore}\right)$$

Note: For all formulas n = Number of Teams at Tournament or in bracket
Note #2: Weighting of brackets and number of brackets will be released at GCER