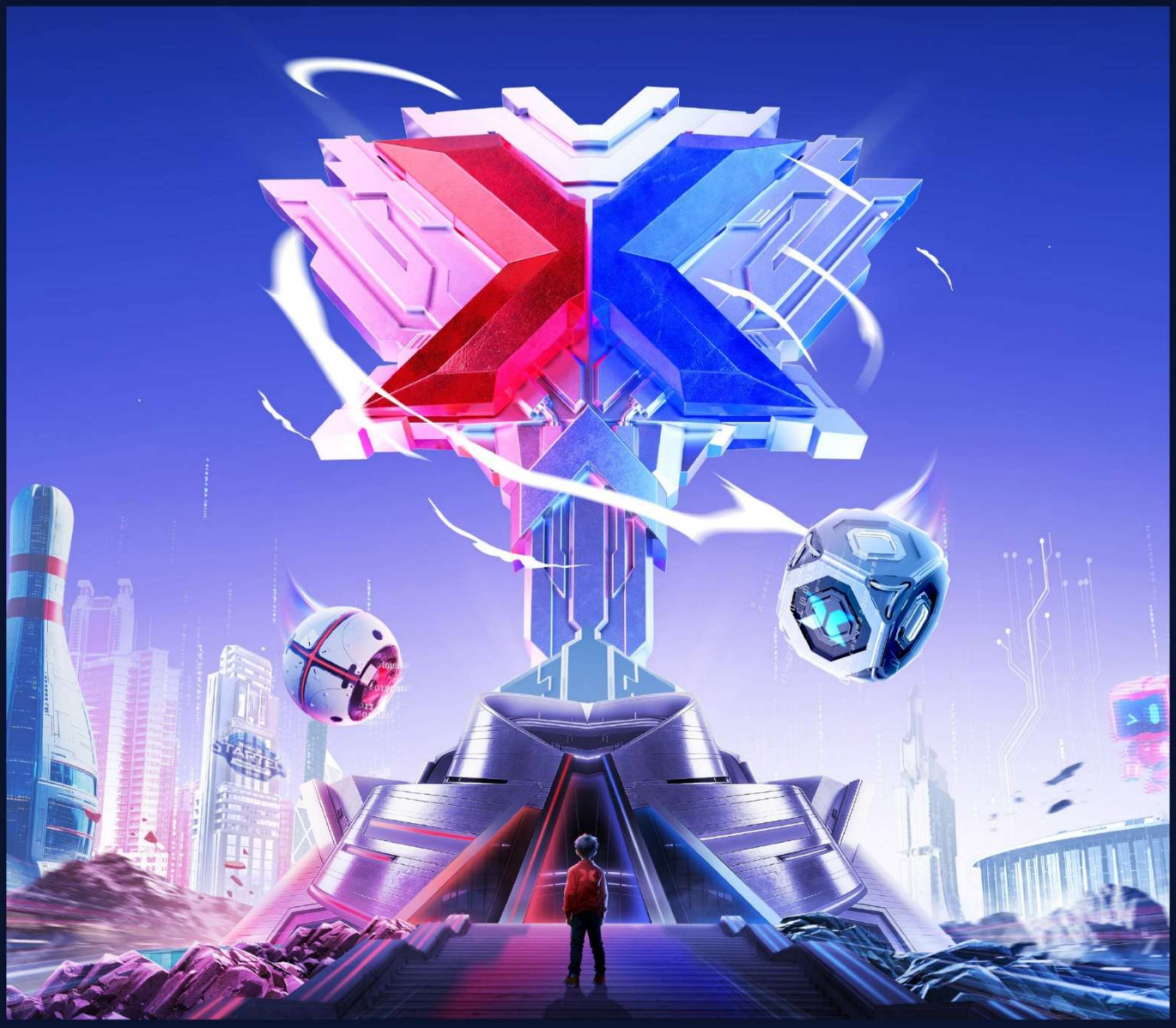
2026

V1.0

MAKEX

ROBOTICS COMPETITION



RULES GUIDE

MakeX Challenge

Creativity · Teamwork · Fun · Sharing

ate	Version	Modifications Record
2025.11	1.0	MakeX Challenge Storm Breaker Rules Guide First Publish.

CONTENTS

1. Introduction

1.1 About MakeX

MakeX is an international robotics competition platform for young people around the world. Originating from China, it is centered on STEAM and engages youth through various forms such as robotics competitions, STEAM carnivals, innovation showcases, and international exchange events. These activities allow participants to experience the joy of creation in practice and inspire their passion for technology.

The MakeX Robotics Competition upholds the spirit of Creativity, Teamwork, Fun, and Sharing, combining challenge and enjoyment. It encourages young people to embrace Science (S), Technology (T), Engineering (E), Arts (A), and Mathematics (M), and to apply this knowledge to real-life situations — exploring boldly and solving problems with creativity and teamwork.

1.2 MakeX Spirit

Creativity: we advocate curiousness and innovation, encouraging all contestants to create unique high-tech works with their talent, and challenge themselves for continuous progress!

Teamwork: we advocate solidarity and friendship, encouraging all contestants to develop a sense of responsibility and enterprising spirit, and sincerely work with their partners for win-win development!

Fun: we encourage contestants to build a positive, healthy mindset in the competition. Enjoy the journey and grow in the process.

Sharing: we encourage contestants to have an open mind as a maker and share their knowledge, responsibility, and joy with everyone, including their teammates and competitors.

MakeX spirit is the cultural cornerstone of the MakeX Robotics Competition. We hope to provide a platform for all contestants, mentors and industry experts to exchange

ideas, study and grow up, and help young people acquire new skills during creation, learn to respect others in teamwork, gain an enjoyable life experience in the competition, take delight in sharing with the society their knowledge and responsibility, and work hard to achieve their grand aspiration of changing the world and creating the future !

1.3 About MakeX Challenge

MakeX Challenge is a highly confrontational competition program for students between the age of 11-18.

This program is very confrontational and enjoyable to watch, and the simple and easy-to-understand rules enhance the overall experience of participation and engagement. The design and construction of bigger robots and programming can better improve the contestants' design abilities and multi-dimensional thinking abilities of advanced robots. Also, the contestants are exercising logical thinking, strategic analysis, communication and cooperation, and improving decision-making abilities in the competition.

2. Competition Application

2.1 Participation Requirements

Participants: Contestants shall participate in a team. The number of contestants is 2-8 for each team, with 1-2 mentor(s).

Age: Team members must be teenagers or children between 11 and 18 (born between January 2, 2008 and December 31, 2015). The mentor must be at least 18 years old.

Team Roles: Everyone in the team can play their respective roles as operator, observer, mechanist, programmer and so on. In each match, one team can only appoint 1 operator and 1 observer to participate, only two team members are allowed to compete in the competing area. The operator is responsible for operating the robot, and the observer is responsible for assisting the operator in observing the status of props and making suggestions.

Identification Symbols: Each team must have a logo, name, and slogan. Teams are encouraged to use uniforms, flags, posters, badges, base decorations, etc. to show the team culture.

2.2 Registration and Application

Contestants and mentors who meet participation requirements can register on the designated competition webpage on the MakeX official website (www.makex.cc/en). Each team should register with one registration form.

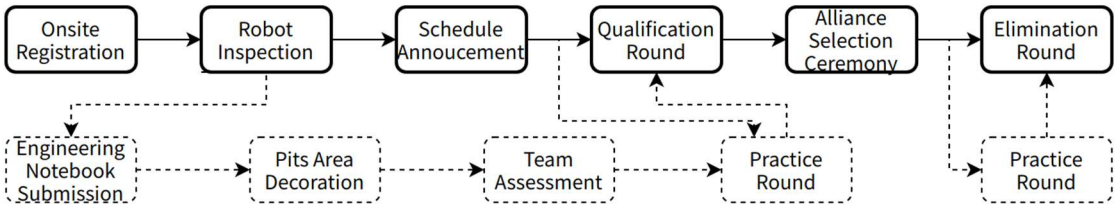
If a participating team wants to change their members before the competition, which leads to inconsistency with the registration information, they should inform the MakeX Robotics Competition Committee in advance to finish re-registration.

For more details about the registration and application, please refer to MakeX Registration & Competition Application Guide

3. Competition Procedure

Participating teams shall pay close attention to related notices and competition guides published before each competition. If there are some updates in the competition guide, the latest rules will be adopted for the competition. MakeX Robotics Competition Committee reserves the rights and final interpretation to amend competition rules and system based on the actual situation of different points races.

The schedule for each competition is determined by the actual situation and generally includes the following procedures.



* Note: The solid line frame refers to the necessary procedure of each match, while the dotted line frame refers to the non-essential procedure. Please keep abreast of updates.

Onsite Registration

When a team arrives at the venue, mentors and contestants should show ID cards or other valid certificates (e.g. passport) for onsite registration and to get the competition pack. Mentors must inform team members about the fire exit, match schedule, competition area, practice area pits area, etc. Onsite registration and robot inspection will be conducted once the match schedule is generated.

Robot Inspection

Teams shall check their robots and self-made props before the competition and complete the "**Appendix 3: Robot Self-Inspection Form**" according to the actual data. Teams that do not fill out the Robot Self-inspection Form in full according to the requirements cannot pass the inspection.

Before the competition, participating teams are obligated to conduct a self-check and

mutual check on their robots and the opposing robots once again. They must promptly rectify any issues before entering the competing area.

Once get in the competing area, malicious complaints are not allowed (refer to 6.2, Operation Rule-R31 for the definition of malicious complaints). Participating teams must raise their hands in response to the referee's instructions to confirm that both robots are in proper condition before starting the match. Without a complaint, on-site inspections of robots are not permitted after this confirmation.

Schedule Announcement

The committee will announce the match schedule at least 30 minutes before the competition starts through online official website and onsite announcement. The schedule includes a match-up chart, match session and specific time, red alliance and blue alliance, etc. If the two rounds of match are too closed, please register at the Result Approval Desk.

Engineering Notebook Submission

Each team is required to submit 1 paper copy of their team's engineering notebook to the MakeX staff at the inspection area. If you are unable to submit the original version, please prepare your paper copy. The engineering notebook will be used as an important basis for the selection of the special awards, and the paper version of the engineering notes will not be returned after submission. Please refer to the pre-match announcements and competition guide for the submission of paper engineering notebooks and awards for each competition. For suggestions on how to write the engineering notebook, please refer to "**Appendix 2: Engineering Notebook Guideline**".

Practice Round

Teams who have finished their robot inspection can participate in the practice round. The schedule will be announced at the entrance in the form of notices, and teams are required to queue in line before the entrance. Not all competitions have a practice round, which can be informed based on the actual situation.

Waiting for the competition

In regular competitions, a waiting area will be designated, and volunteers will announce or post information about the matches awaiting in that area. Participating teams are advised to pay attention to the waiting notifications and proceed to the corresponding waiting area according to the provided schedule.

Qualification Round

Normally, each team is requested to participate in four matches during the qualification round. However, the session of the qualification round may be different based on different competitions. In the qualification round, the red alliance and the blue alliance are matched randomly. Points will be obtained by teams according to the winning or losing situation. It is conducted in the form of alliance confrontation and each team's alliance and the opponents will be allocated randomly.

In each qualification round, the team will receive corresponding points (including win, tie, and loss) regardless of competition type. Three points for a win, one point for a tie, and no point for a loss. The final ranking is based on the sum of win-loss points, and the top-ranking teams will be promoted to the elimination round.

If the team with the same win-loss points, the ranking sequence will be determined according to the following rules:

1) The team with a higher total points differential of all qualification rounds has a higher ranking.

2) If the above conditions are the same, the team with higher total scores among all qualification rounds has a higher ranking.

3) If the above conditions are the same, the team with the highest score of a single round in all qualification rounds has a higher ranking.

4) If the above conditions are the same, teams with the same ranking will play a one-on-one extra match, and those with the highest total points will be the winner.

Alliance Selection Ceremony

In the alliance selection ceremony, promoted teams will select their alliance team in

turn according to their ranking in the qualification round. Alliances that are generated after the ceremony will be the alliances for the elimination round. The alliances will be named “Alliance 1”, “Alliance 2”, “Alliance 3” ..... and so on according to the generated sequence. During this procedure, teams must abide by the following rules:

When being chosen by other teams, promoted teams ranking top 50% can refuse only once, and those teams ranking bottom 50% cannot refuse. If the team is refused by another team, they can continue to choose another team until the alliance is formed.

The promoted teams who are not present before the start of alliance selection are deemed as voluntarily giving up the right to choose an alliance and those who are not present before the end of the alliance selection are considered to be as voluntarily quitting the elimination round. If the promoted teams quit amid the alliance selection ceremony, the promotion places will be given to the following teams according to the ranking in the qualification round.

During the alliance selection ceremony, each team representative will have 30 seconds to make their decision when it is their turn, and if they are not selected within the 30-second time limit, they will lose the right to select and will move on to the next team in order.

The promotion proportion for the 2026 season competition is as follows. However, the promotion quota in different competitions may be different according to the actual situation.

Number of participating teams	Number of promoted teams
97 or more	64
49-96	32
25-48	16
12-24	8

Elimination Round

During the elimination round, the alliances generated in the alliance selection

ceremony will be the opponent (red alliance and blue alliance are automatically matched) according to the competition schedule. The winner will be evaluated by BO3(Best of 3) and the alliance that achieves "two wins" or "one win and two ties" can advance to the next round until the champion, runner-up and second runner-up are elected.

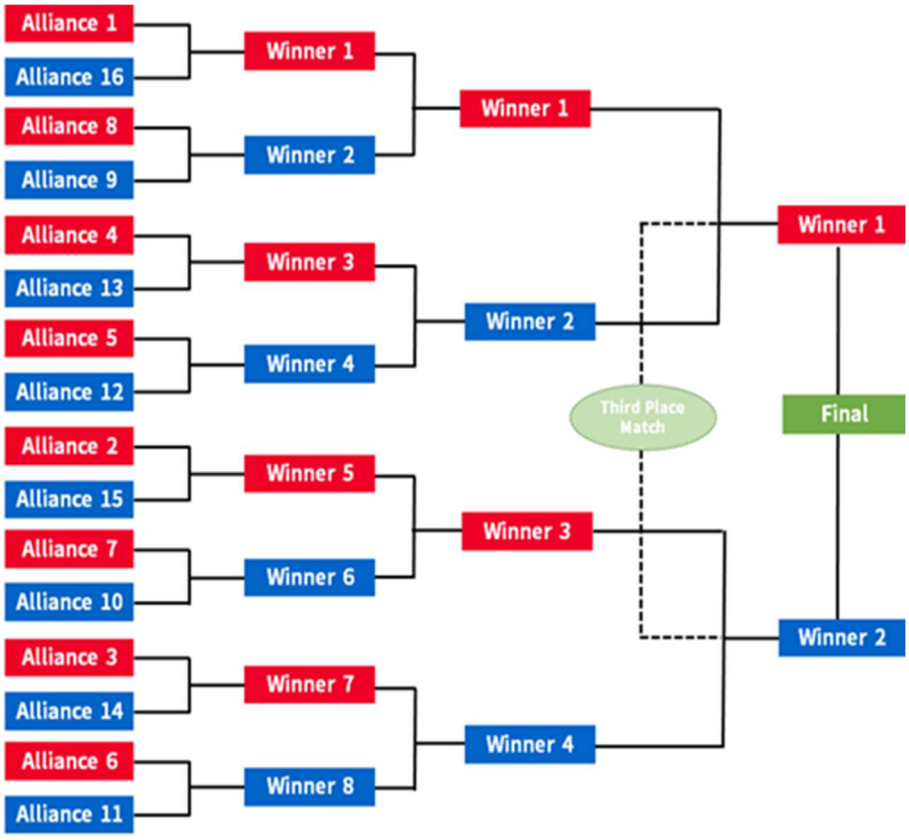
If the two alliances achieve "1 win, 1 loss, 1 tie" or "3 ties" in a BO3, the winning alliance will be decided according to the following rules:

1) If win-loss points are the same, the alliance with a higher total point differential in BO3 has a higher ranking.

2) If the above conditions are the same, the alliance with the highest scores in BO3 has a higher ranking.

3) If the above conditions are the same, alliances will play an extra match until the winner is elected.

Taking the promoted 32 teams as an example, the schedule of the elimination round is as follows:



4. Competition Details

The theme of the 2026 Season MakeX Challenge is "Storm Breaker".

4.1 Introduction

Each single match lasts for 4 minutes and 40 seconds.

MakeX Challenge Storm Breaker is a confrontational competition, among which red and blue alliances for each match, and two teams for each alliance.

Each match comprises four stages: automatic stage, manual stage, modification stage and final stage. The participating teams need to complete the corresponding missions according to the requirements of the competition by automatically controlling the robot through the program or manually manipulating the robot. At the end of the match, the referee calculates the sum of both teams' scores for each mission, and the alliance with the highest score will win the match.

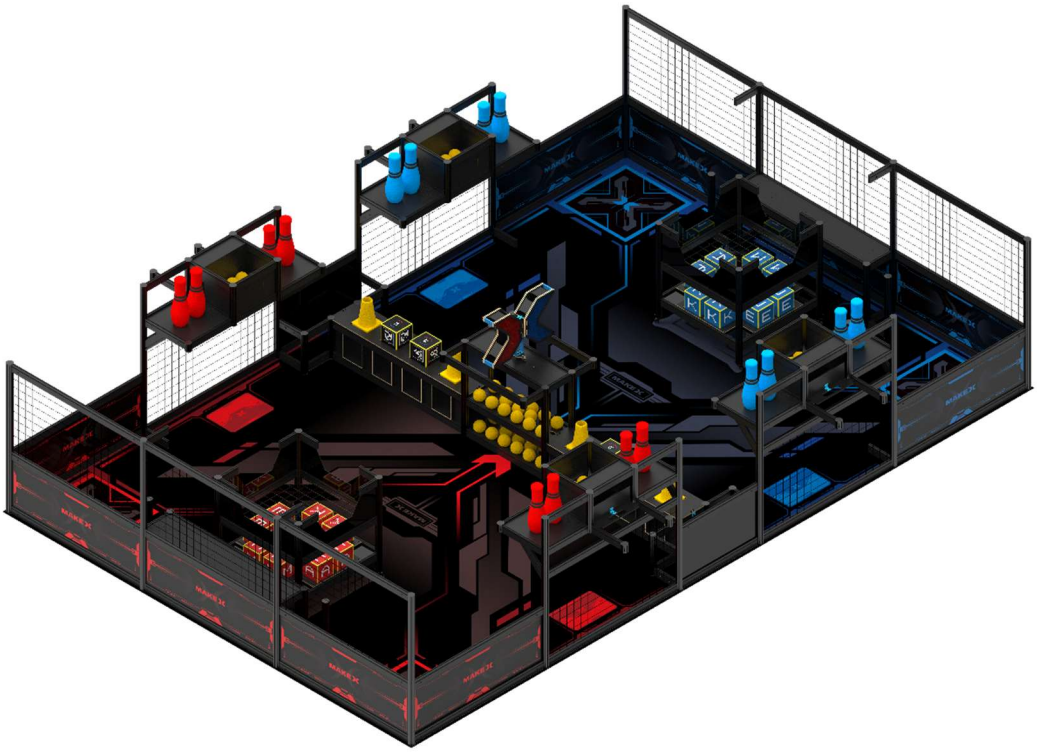


Fig 4.1 Axonometric View of Competition Arena

4.2 Arena

The competition arena of MakeX Challenge Storm Breaker consists of a map and frame. It is a rectangular area with a size of 4655mm*3055mm and the frame's height is 900 mm. The arena mainly consists of the Starting Area, Own Resource Area, Pin Placement Area, Strategy Area, Bonus Cube Exchange Area, Mobile Fortress, Flag Hanging Area, Cone Hanging Area, and Central Resource Area. Due to measurement and wear of field props, the actual product may have a ±5mm deviation from the description.

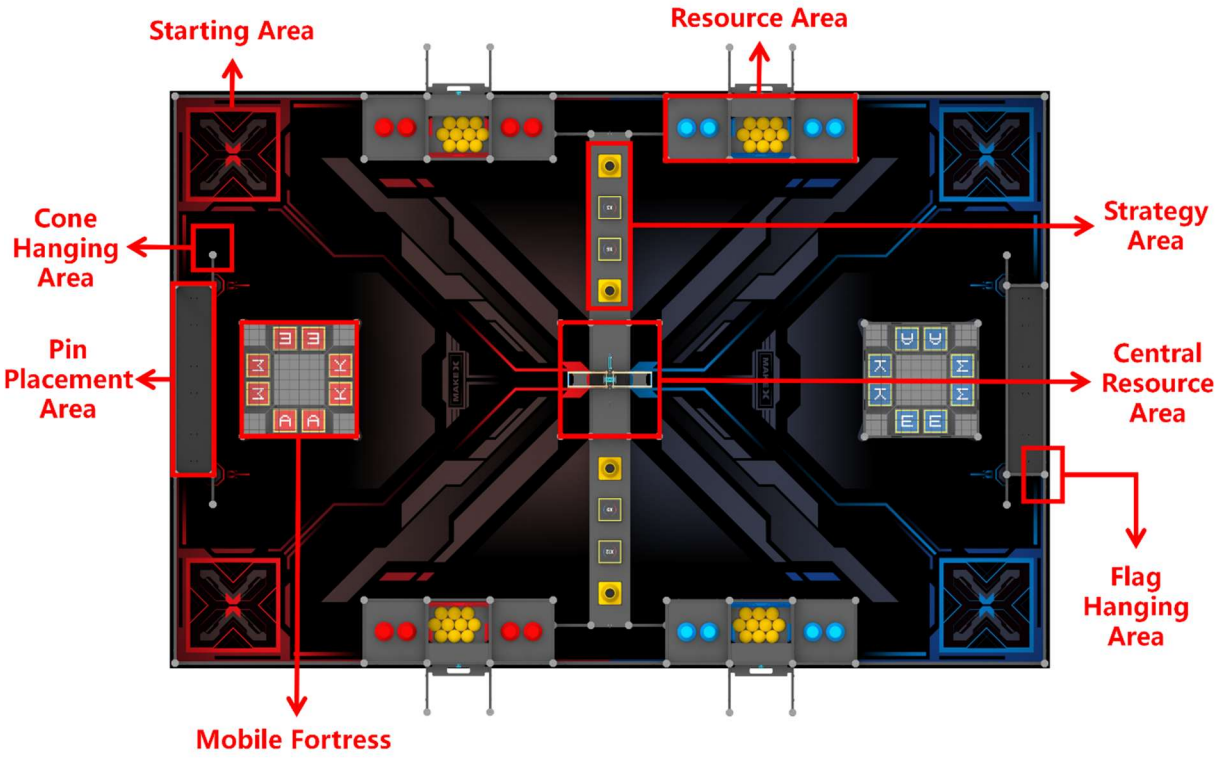


Fig 4.2-1 Top View of Competition Arena

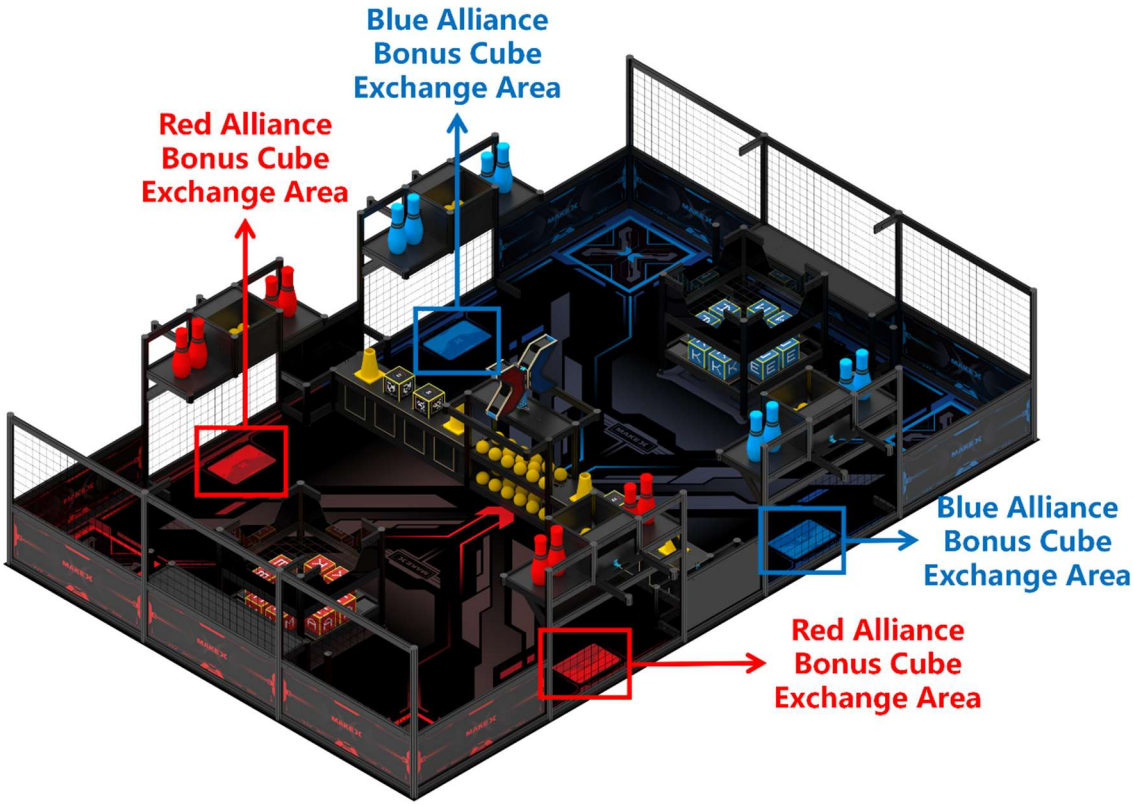


Fig 4.2-2 Bonus Cube Exchange Cube

The arena is evenly divided into the red and blue camps, with the central resource area and strategy area located in the central area. Robots are only allowed to conduct corresponding missions in their respective camp. As shown in the figure below, Red robots and the Red mobile fortress are only allowed to operate within the Red half of the camp, while Blue robots and the Blue mobile fortress are only allowed to operate within the Blue half of the camp.

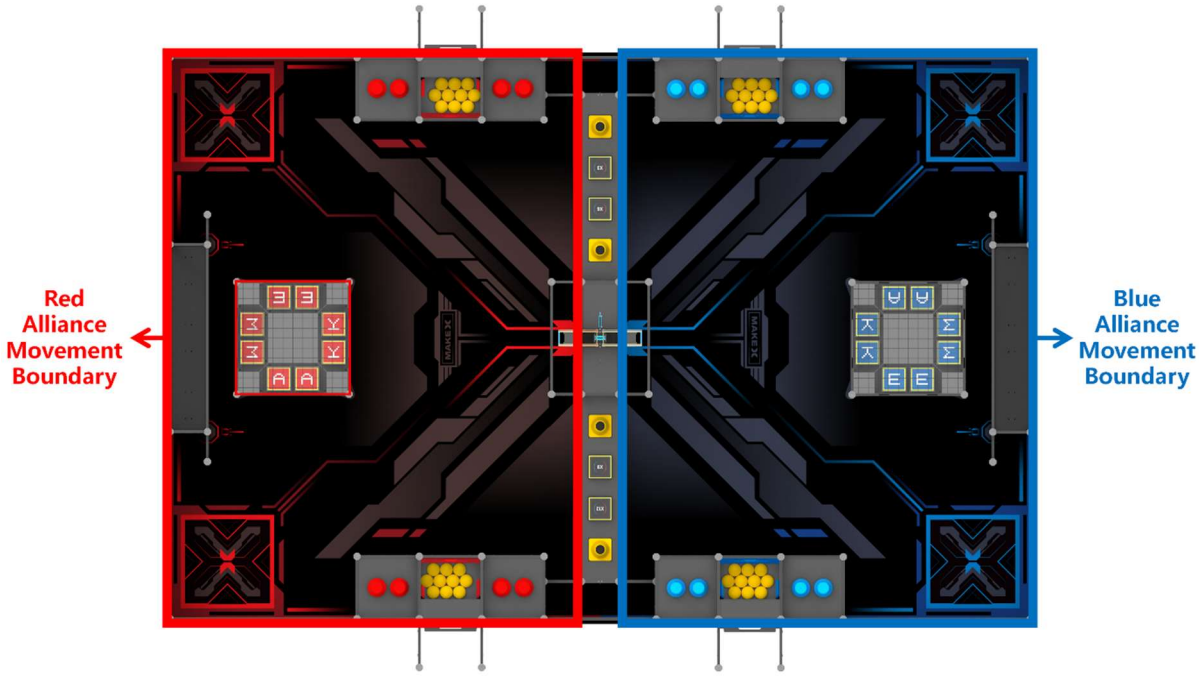


Fig 4.2-3 Robot & Mobile Fortress Movement Boundary

Starting Area

Dimensions: 500mm × 500mm.

Location: Located at the four corners of the arena.

Quantity: 4 (two starting areas for each red alliance and blue alliance)

Function: The starting area is where robots are placed before and after the competition.

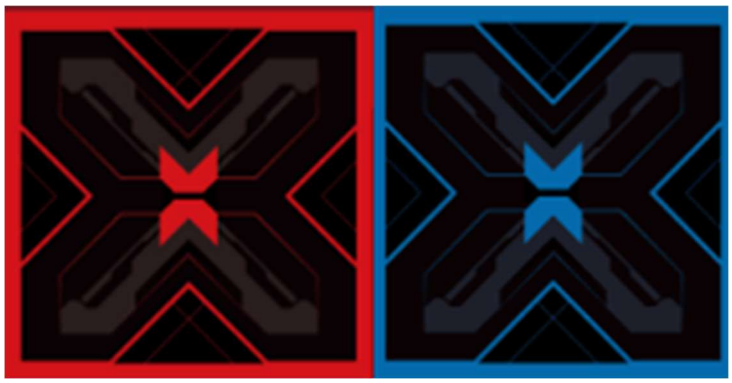


Fig 4.2-4 Starting Area

Own Resource Area

Dimensions: 985mm*318mm*745mm

Location: Located at two sides of the red or bule camp.

Quantity: 4 (two own resource areas for each red alliance and blue alliance)

Function: Each own resource area placed with 4 pins and 10 balls. This area is used for robots to collect pins and balls, and for placing the Bluetooth Controller.

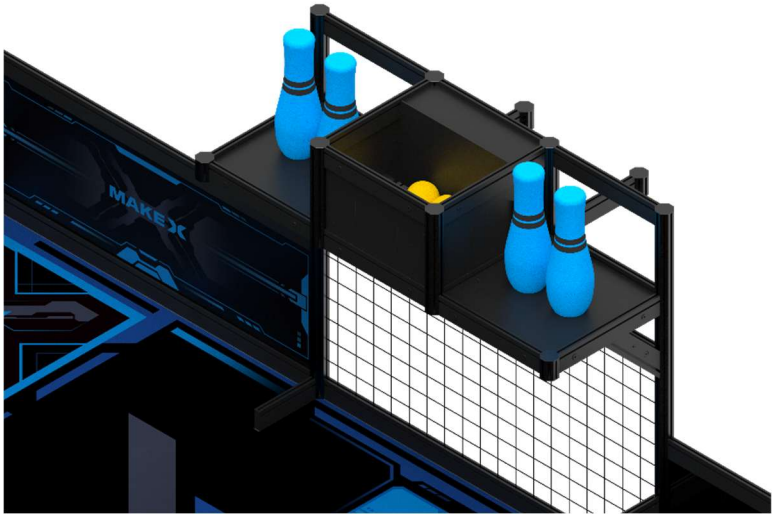


Fig 4.2-5 Own Resource Area

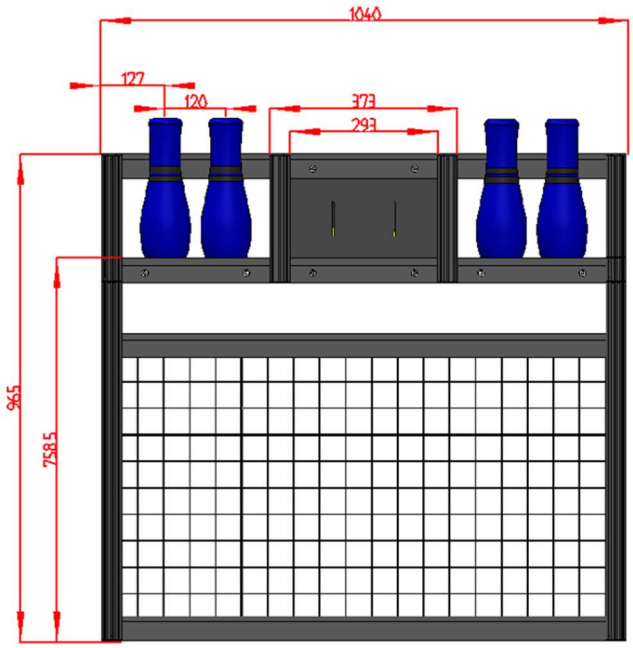


Fig 4.2-6 Size of Own Resource Area

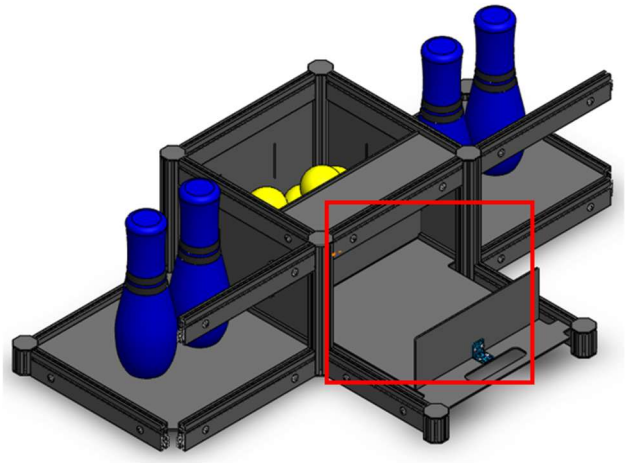


Fig 4.2-7 Bluetooth Controller Placement Area

Pin Placement Area

Dimensions: 995mm*195mm*388mm

Location: Located at the back of the Red and Blue camps.

Quantity: 2 (one pin placement area for each red alliance and blue alliance)

Function: Robots can score points by moving pins from own resource area to pin placement area.

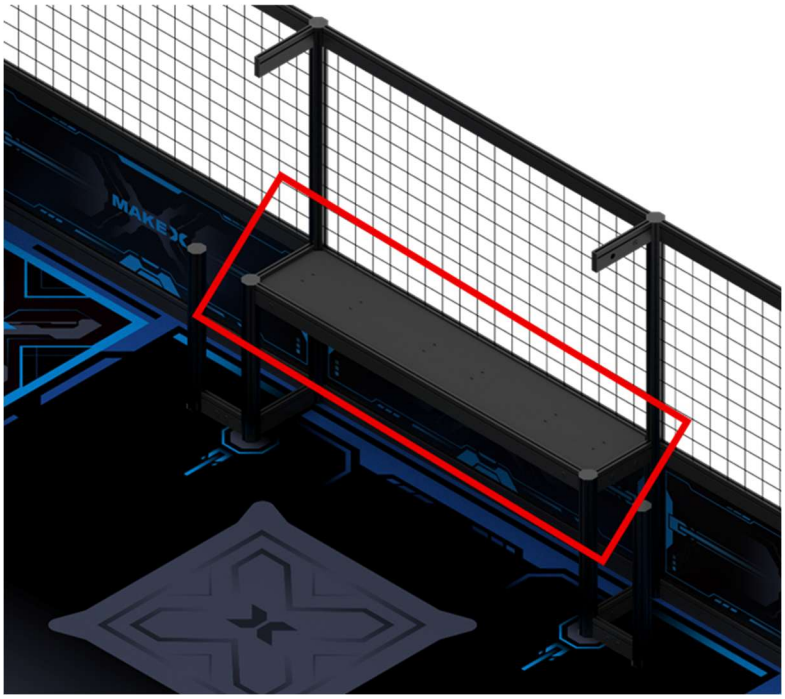


Fig 4.2-8 Pin Placement Area

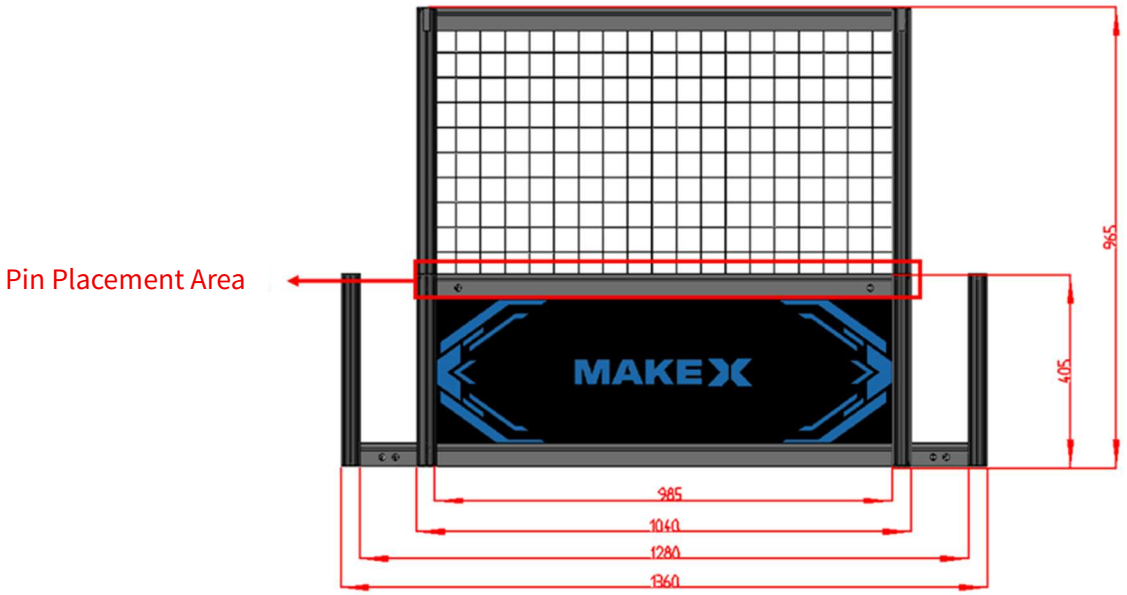


Fig 4.2-9 Size of Pin Placement Area

Flag Hanging Area

Dimensions: 120mm*15mm*961mm

Location: Located above the pin placement areas on both sides of the Red and Blue camps.

Quantity: 4 (two flag hanging areas for each red alliance and blue alliance)

Function: The robot shall hang its team flag onto the flagpole located in the alliance's flag hanging area to earn points.

(The flagpole refers specifically to the horizontal aluminum pole, which is 160 mm in length and is used exclusively for hanging team flags.)

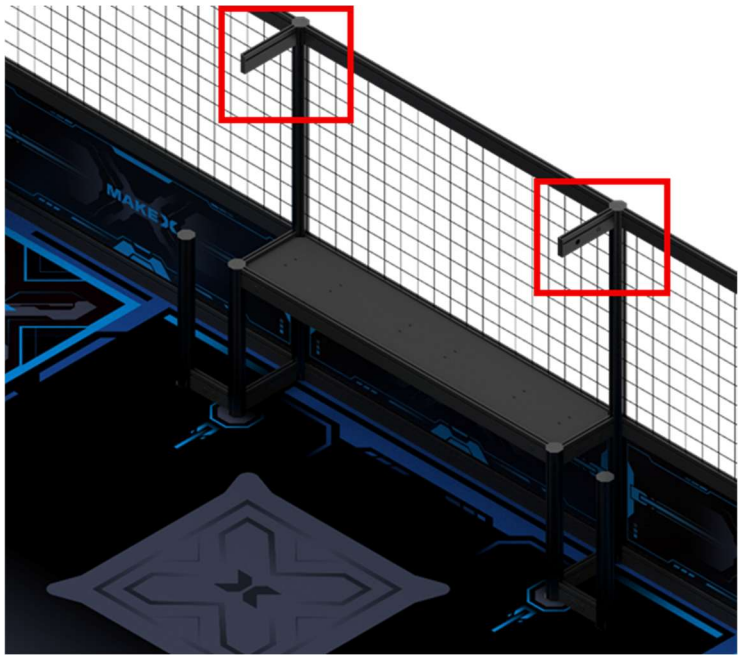


Fig 4.2-10 Flag Hanging Area

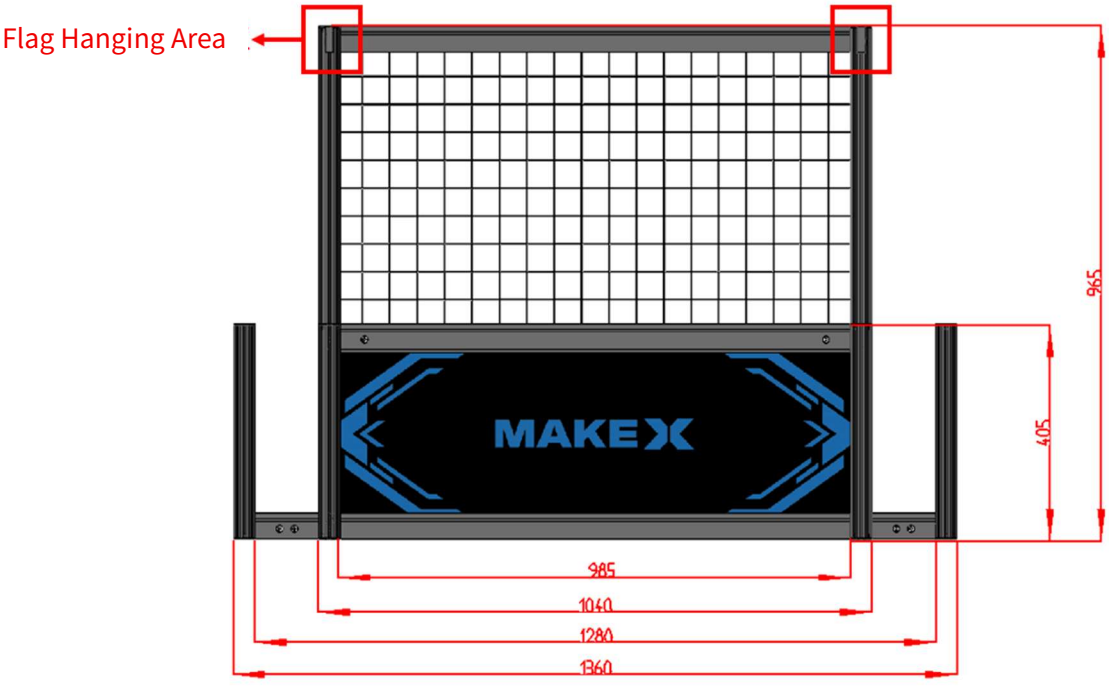


Fig 4.2-11 Size of Flag Hanging Area

Cone Hanging Area

Dimensions: 40mm*405mm

Location: On the left and right sides of the pin placement area .

Quantity: 4 (two cone hanging areas for each red alliance and blue alliance)

Function: Robots can score points by hanging cone in their cone hanging area.

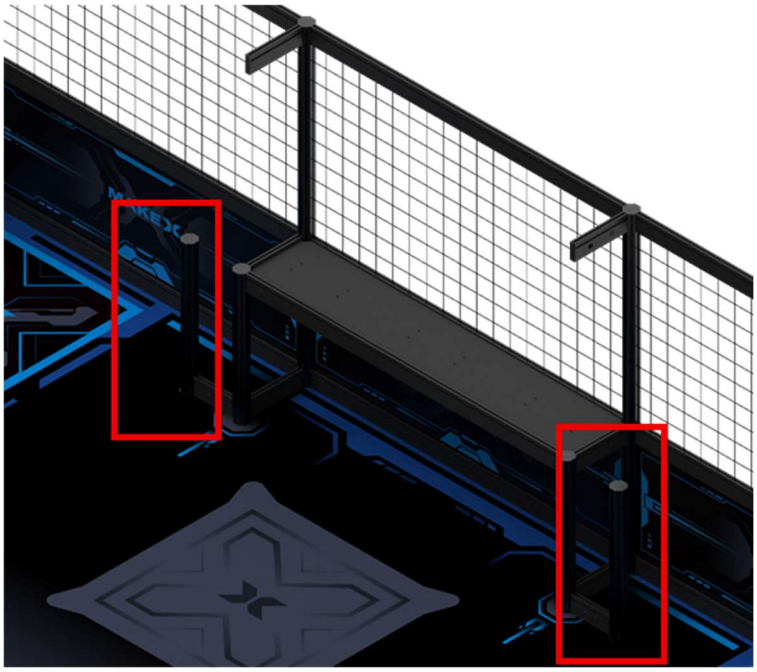


Fig 4.2-12 Cone Hanging Area

Strategy Area

Dimensions: 960mm*215mm*259mm

Location: Located at the center of the arena.

Quantity: 2 (Located on the left and right sides of the X mark)

Function:

- Robots can collect cones from strategy area and place them completely into the cone hanging area located on both sides of the pin placement area to score points.

- Robots can obtain bonus cubes with different values from strategy area and place them into the bonus cube exchange area to gain extra balls.

- Prop cards selected before the match determine the initial positions of the bonus cubes and cones. One of the possible layouts is shown in the figure below.

- Robots can move the letter cubes from the mobile fortress into the channel of strategy area to score points.

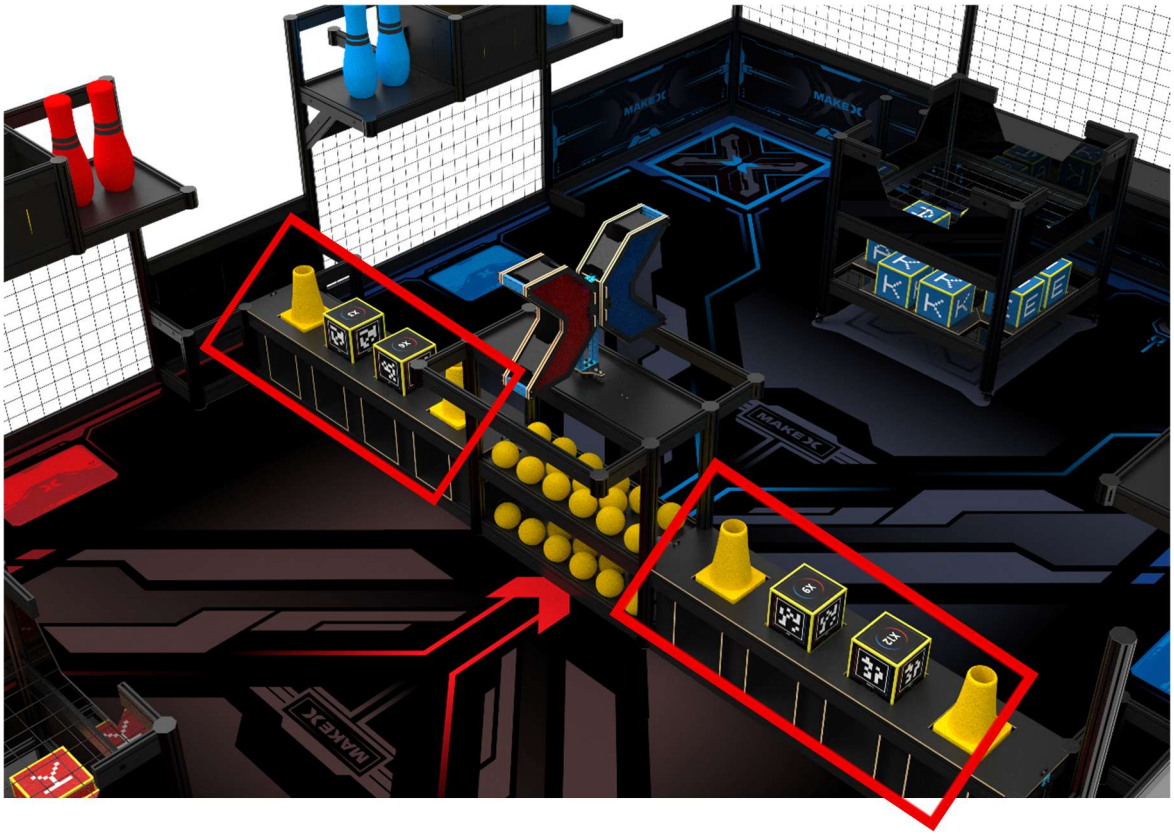


Fig 4.2-13 Strategy Area

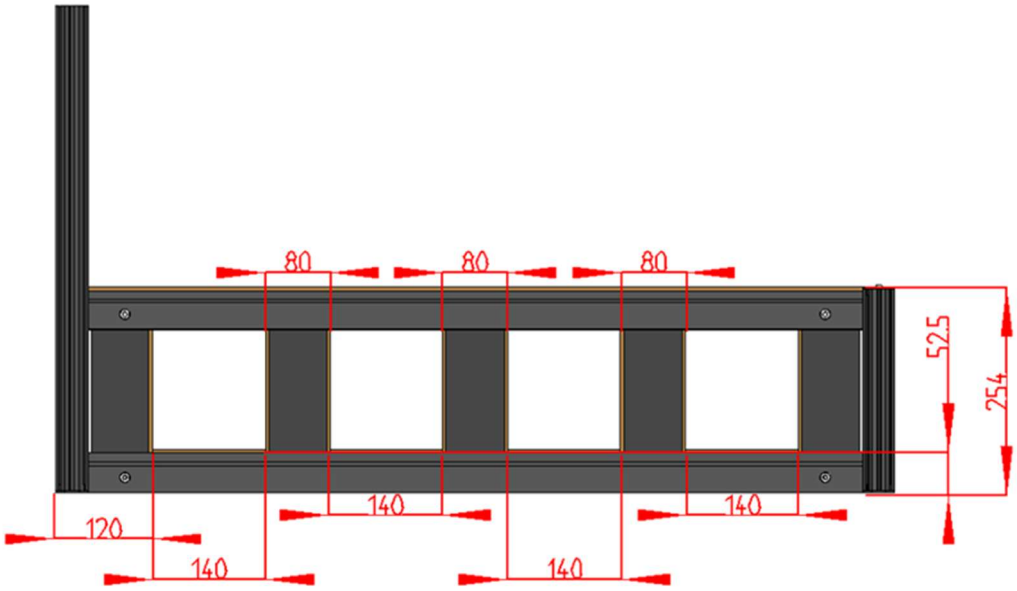


Fig 4.2-14 Size of Strategy Area Channel

Bonus Cube Exchange Area

Dimensions: 318mm*214mm

Location: Located directly below each side's own resource area.

Quantity: 4 (two bonus cube exchange areas for each red alliance and blue alliance)

Function: Robots can place bonus cube into this area to exchange them for different quantities of ball; the bonus cube may be partially or fully placed within this area.

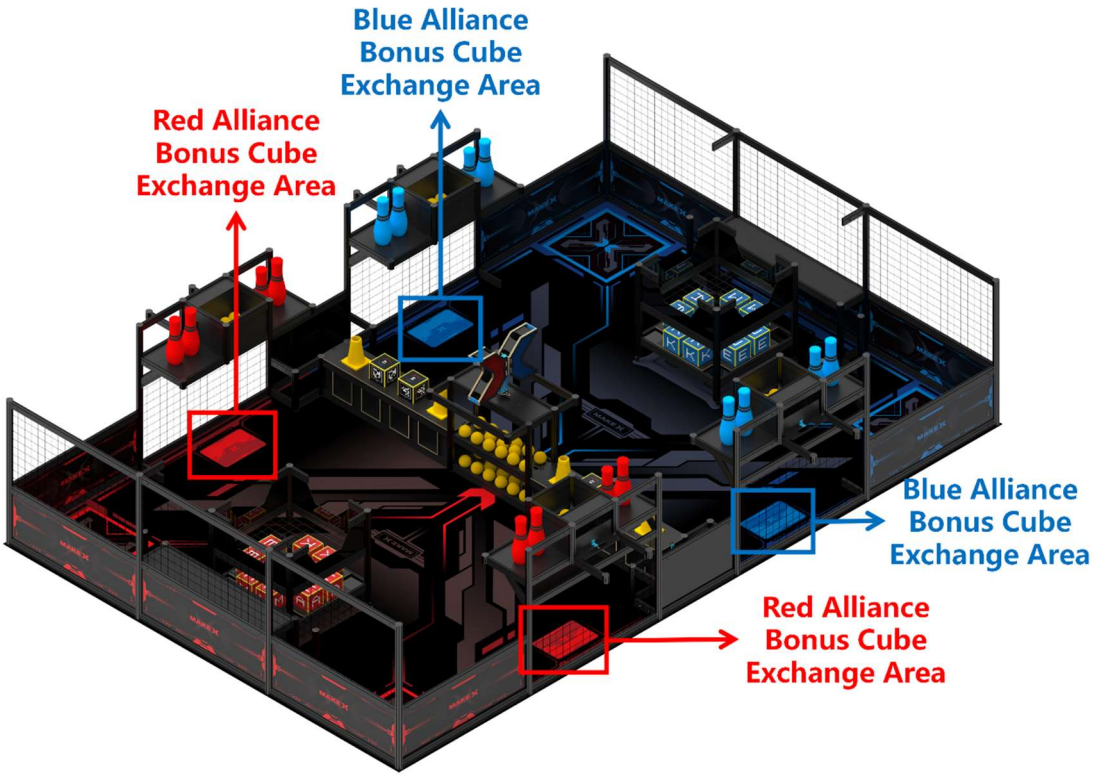


Fig 4.2-15 Bonus Cube Exchange Area

Central Resource Area

Dimensions: 455mm*86 mm*292 mm (excluding the mounting bracket)

Location: Center of the arena.

Quantity: 1

Function:

- Robots can shoot balls to hit the X mark, turning the colored side of the X mark toward their own side to score points.
- Robots can use a clamping mechanism to collect balls located on the upper and lower levels of the Central Resource Area.

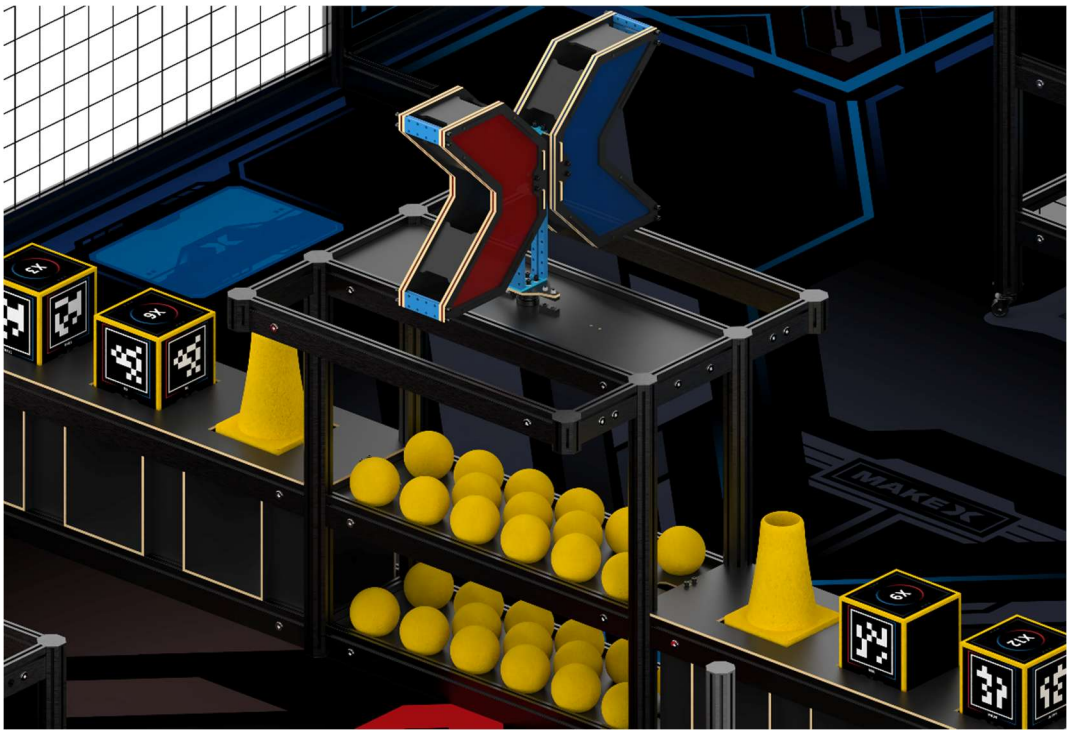


Fig 4.2-16 Central Resource Area

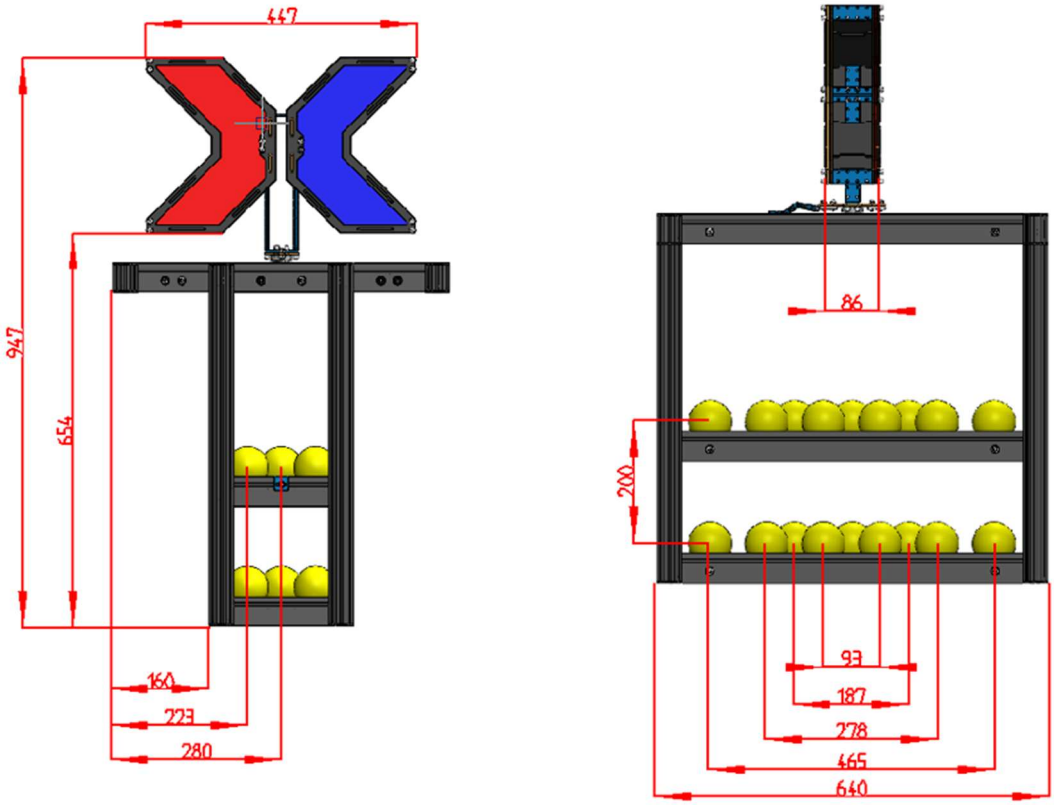


Fig 4.2-17 Size of Central Resource Area

Mobile Fortress

Dimensions: 640mm*640mm*646mm

Location: Inside the Red and Blue camp.

Quantity: 2 (one for each red alliance and blue alliance)

Function:

The mobile fortress consists of two levels:

- The upper level serves as the ball throwing area for the opposing alliance.
- The lower level holds letter cubes of the team's own color.

Universal wheels are installed at the base of the mobile fortress, allowing it to move freely within its own alliance area.

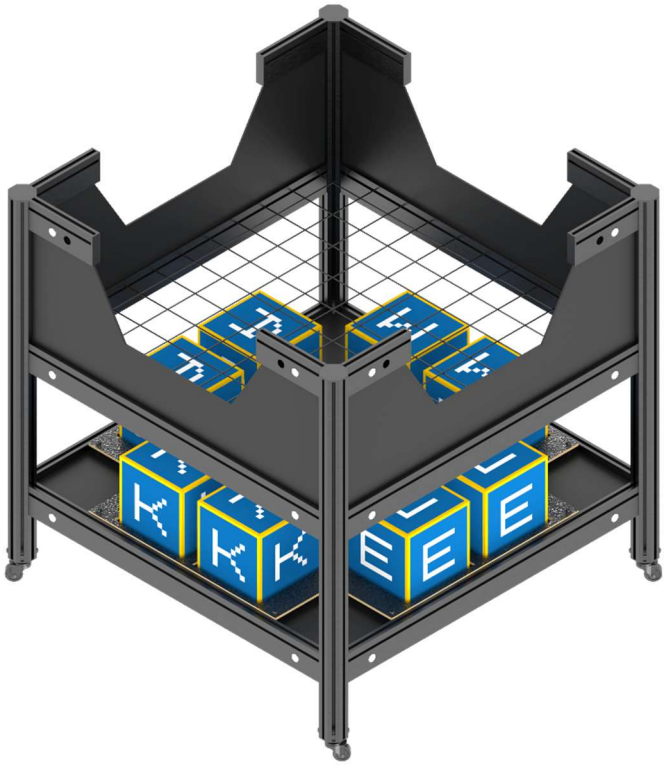


Fig 4.2-18 Mobile Fortress

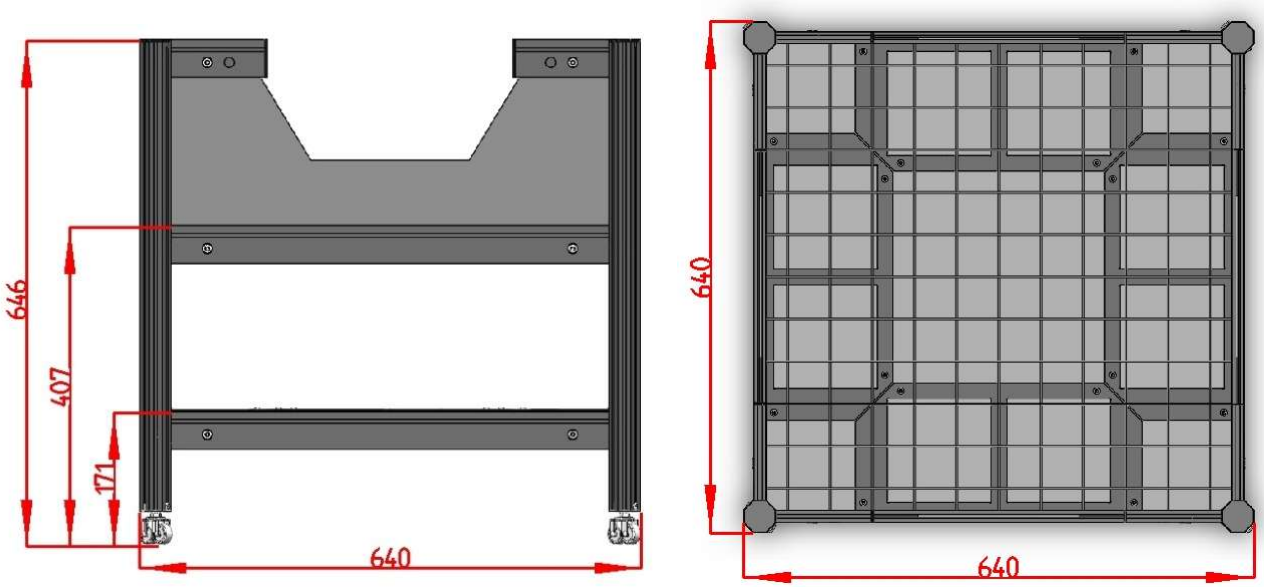


Fig 4.2-19 Mobile Fortress

4.3 Props

The initial position of the props before the match is shown in figure:

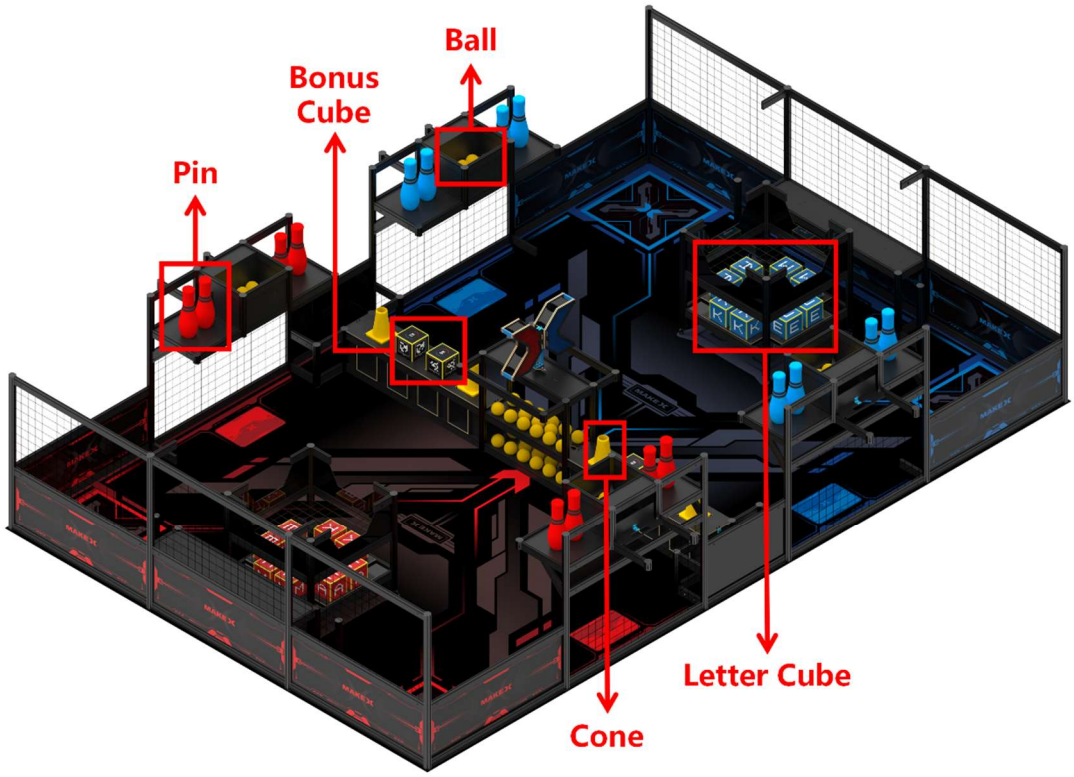


Fig 4.3-1 Arena Prop Placement

Letter Cube

Description: The letter cubes are placed at the bottom of the mobile fortress on the competition field. Each cube is made of EVA material, and there are two cubes for each of the letters “M,” “A,” “K,” and “E.”

Dimensions: 120 mm*120 mm*120 mm cube, with a cross-shaped hole on one side.

(Note: A tolerance of ±5 mm is allowed for this prop.)

Quantity: 16 in total (8 at the bottom of each alliance’s mobile fortress).

Color and Material: Red, Blue, EVA

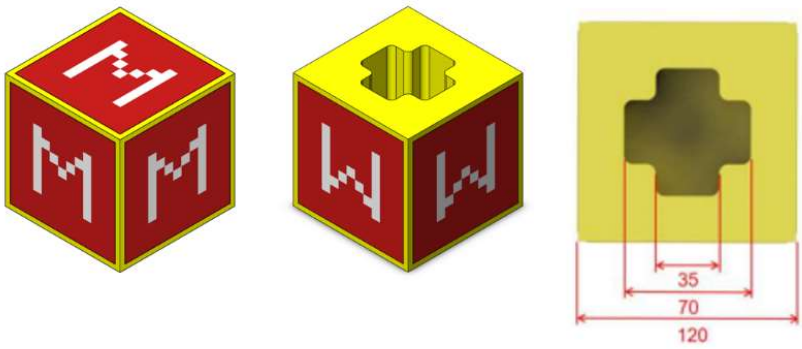


Fig 4.3-2 Letter Cube

Pins

Description: The red/blue pins are placed in their own resource area at each camp.
Dimensions: The height of each pin of 290mm, the diameter of the bottom of each pin is 70mm, and the maximum diameter is 100mm.

Quantity: 16 in total (Each camp has 8 pins)

Color and Material: Red, Blue, EVA

Fig 4.3-3 Blue Pin

Fig 4.3-4 Red Pin

Bonus Cube

Description: Bonus cubes are placed in the strategy area of the competition field. Prop cards selected before the match determine the initial positions of the bonus cubes. The visual labels on the cubes display the numbers “3,” “6,” “9,” and “12,” corresponding to the yellow projectile exchange quantities marked on the top as “X3,” “X6,” “X9,” and “X12.”

These cubes are shared game props used by both alliances during the match.

Dimensions: 120 mm*120 mm*120 mm cube, with a cross-shaped hole on one side.

(Note: A tolerance of ±5 mm is allowed for this prop.)

Quantity: 4

Material: EVA

Fig 4.3-5 Bonus Cube

Cone

Description: The cone is placed in the strategy area of the competition field. Prop cards selected before the match determine the initial positions of the cones. These cones are shared game props used by both alliances during the match.

Dimension: the overall height is 170mm, the pedestal is a square with a side length of 120mm*120mm, a height of 20mm and a rounded corner with a rounded hollow in the center of 80mm in diameter; the upper part is a rounded corner with a diameter of 100mm at the lower bottom and 60mm at the upper bottom with a rounded hollow in the center of 50mm in diameter.

Quantity: 4

Color and Material: Yellow, EVA

Fig 4.3-6 Cone (Front View)

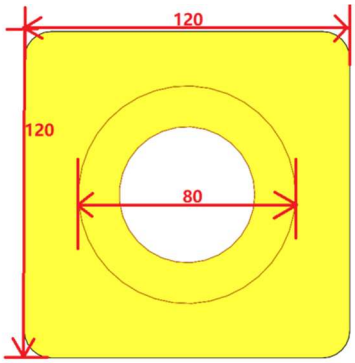


Fig 4.3-7 Cone (Elevation view)

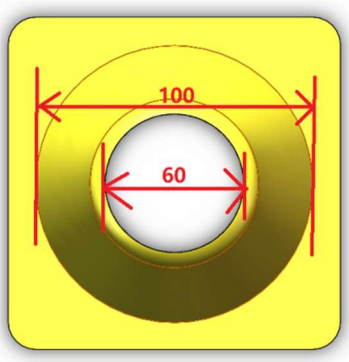


Fig 4.3-8 Cone (Top View)

Ball

Description: Balls are placed in both the red and blue alliances' own resource areas and in the central resource area of the field.

Dimensions: Diameter 70 mm

Quantity: 100 in total

- 20 in each alliance's own resource area
- 15 on each of the upper and lower levels of the central resource area
- 30 extra balls placed outside the field

Color and Material: Yellow, EVA

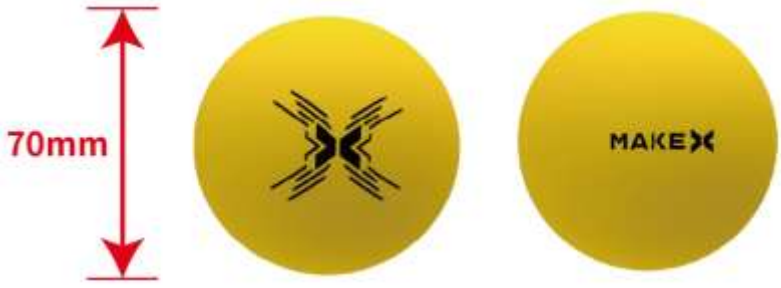


Fig 4.3-5 Bonus Cube

* Note: All arenas and props have certain and reasonable tolerances (±5mm). If there are any objections to the size of the props or other problems, the captain of the alliance can apply for replacement before the match, and the final decision is on the

referee.

4.4 Missions

The competition is divided into four stages: the automatic stage, the manual stage, the modification stage, and the final stage.

The list of missions that can be performed in each stage is as follows:

Stage	Mission Details	Operation Area
Automatic Stage (30 seconds)	(1) Letter Cube Transfer (2) Pin Transfer (3) Cone Transfer (4) X Clash (5) Precision Throwing (6) Bonus Battle	Own Camp
Manual Stage (100 seconds)	(1) Letter Cube Transfer (2) Pin Transfer (3) Cone Transfer (4) X Clash (5) Precision Throwing	Own Camp
Modification Stage (60 seconds)	Modify your own robot	Off-site
Final Stage (90 seconds)	(1) Letter Cube Transfer (2) Pin Transfer (3) Cone Transfer (4) X Clash	Own Camp

	(5) Precision Throwing (6) Team Flag Hanging	

After the Final Stage ends, the referees will calculate the scores based on the status of the scoring props on the field.

The main scoring criteria are described as follows:

Bonus Battle

Operation Stage: Automatic Stage

Missions Details: Robots shall run the automatic program to transfer the bonus cubes from the Strategy Area to their own Bonus Cube Exchange Area within their camp.

There are four bonus cubes placed in the Central Strategy Area.

Each cube has a visual label representing the numbers "3," "6," "9," and "12," and the top of each cube is marked with the corresponding yellow projectile exchange quantities — "X3," "X6," "X9," and "X12." Prop cards selected before the match determine the initial positions of the bonus cubes.

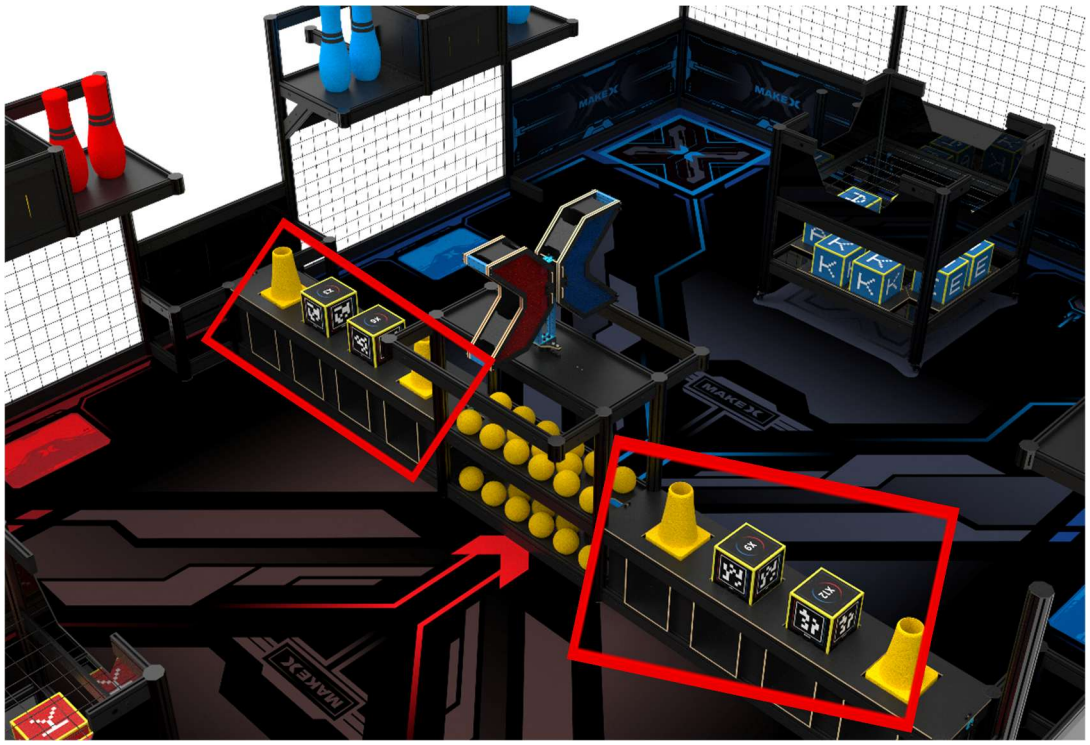


Fig 4.4-1 Strategy Area

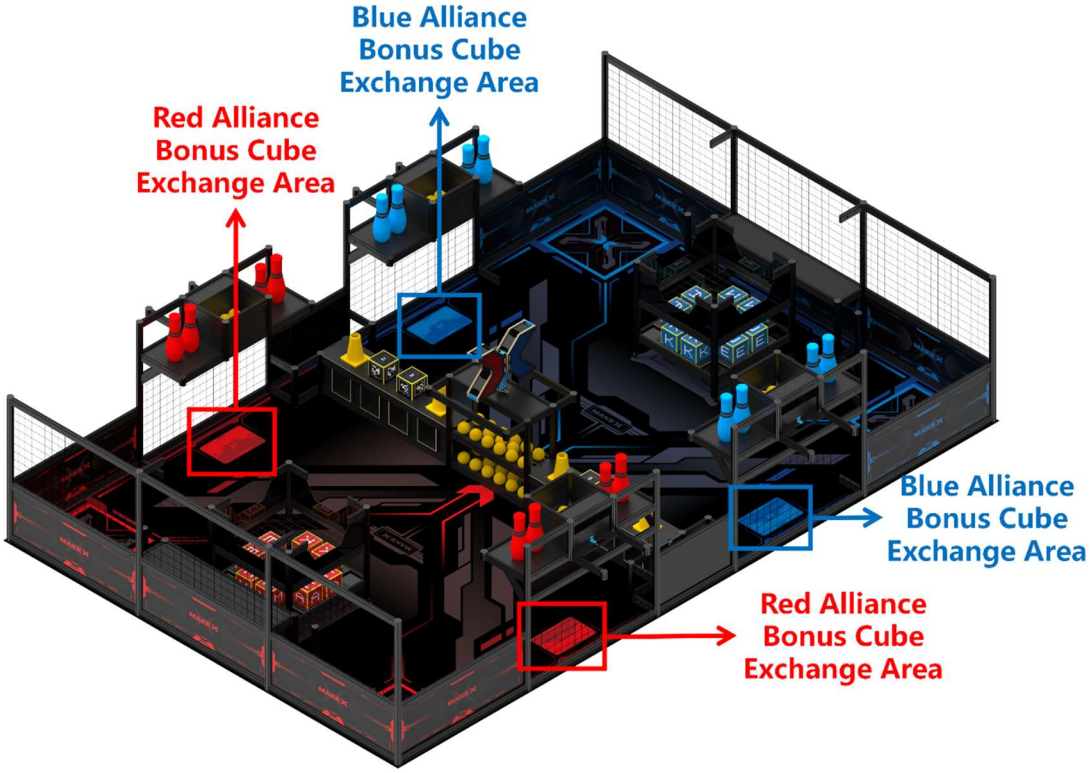


Fig 4.4-2 Bonus Cube Exchange Area

Bonus Cube Exchange Judgement:

At the end of the Automatic Stage:

a. The vertical projection of the bonus cube is partially or completely within the alliance's Bonus Cube Exchange Area.

b. Each Bonus Cube Exchange Area can exchange only one bonus cube.

c. Only one bonus cube may be placed in each Bonus Cube Exchange Area. If more than one bonus cube has its vertical projection partially or completely within the area, all bonus cubes in that area will be considered invalid and no exchange will be granted.

d. The bonus cube must not be in direct or indirect contact with the robot.

e. The bonus cube must not be in direct or indirect contact with any props.

If all the above conditions are met, the bonus cube is considered valid.

Before the Manual Stage begins, the referees will place the corresponding quantity of

balls into each team's own resource area based on the numerical label on the valid bonus cubes.

The markings "X3," "X6," "X9," and "X12" on the bonus cubes represent the quantity of balls that can be exchanged — 3, 6, 9, and 12, respectively.

The exchanged balls can be used during both the Manual Stage and the Final Stage.

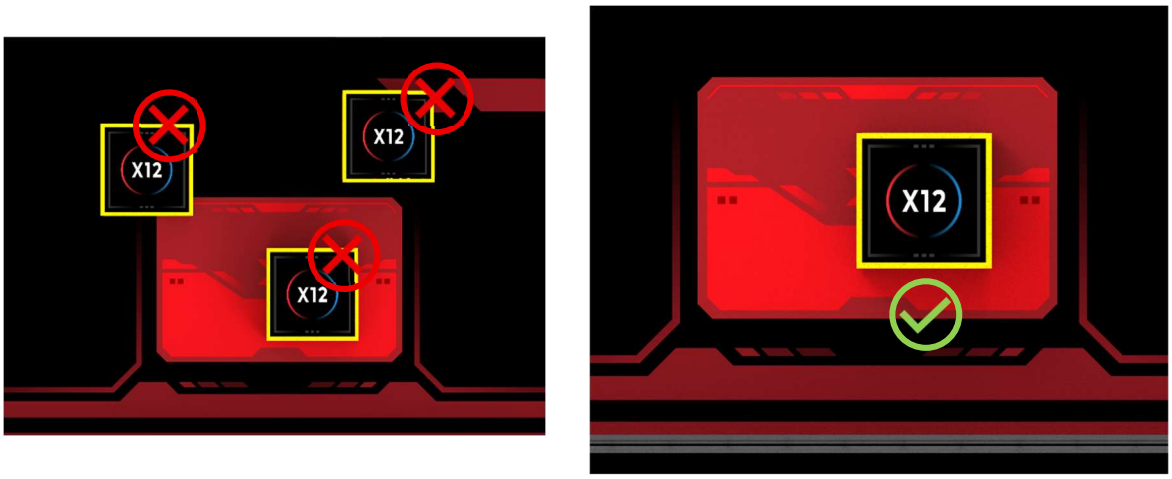


Fig 4.4-3 Bonus Cube Exchange Judgement

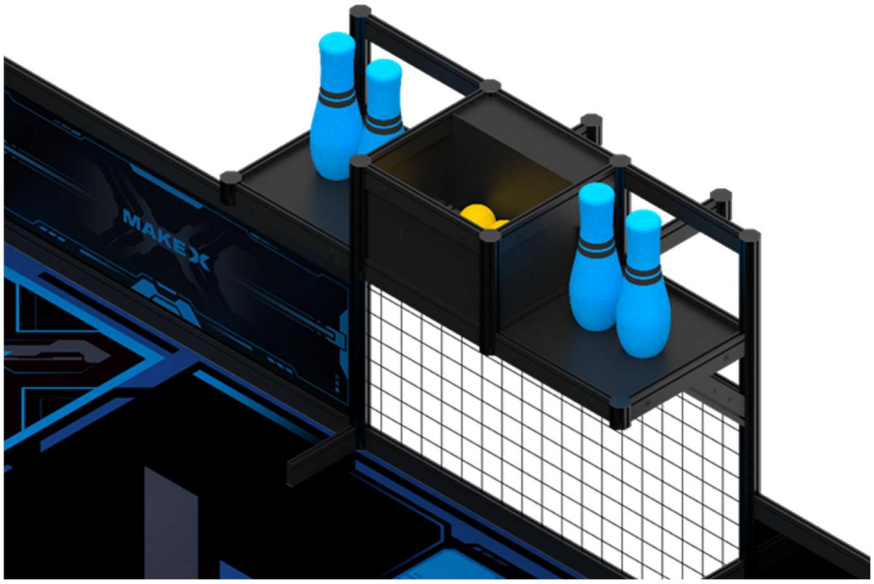


Fig 4.4-4 Own Resource Area

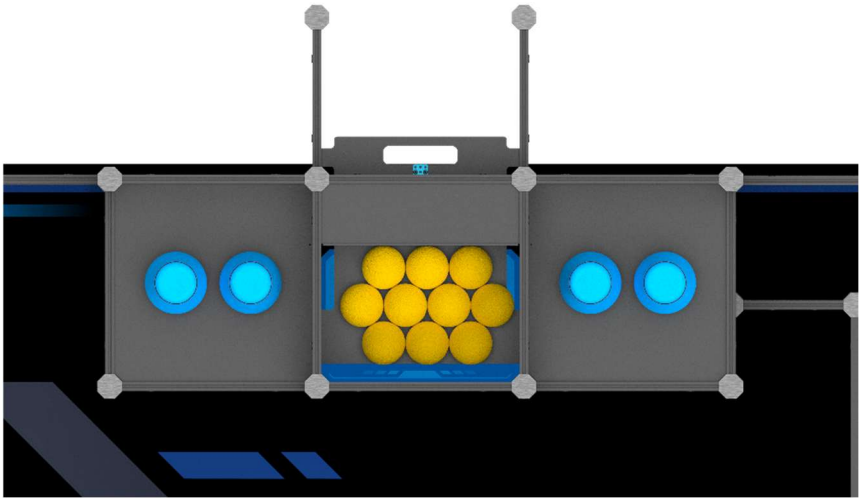


Fig 4.4-5 Own Resource Area (Top View)

Precision Throwing

Operation Stage: Automatic Stage, Manual Stage, Final Stage.

Missions Details: After the Automatic Stage begins, robots may only operate through automatic programs to collect balls from the Central Resource Area and accurately launch them toward the upper area of the opponent's Mobile Fortress to score points.

Once the Manual Stage begins, the observer may remove the barrier from their Own Resource Area to release the balls into the field, while the operator can control the robot to collect balls from either the Central Resource Area or their own field area.

After successfully collecting balls, the robot must accurately launch them toward the upper area of the opponent's Mobile Fortress to score points.

Initial State: Each red and blue alliance camp contains two Own Resource Areas, with 10 balls placed in each. The Central Resource Area contains 30 balls in total. Each red and blue alliance camp has one Mobile Fortress.

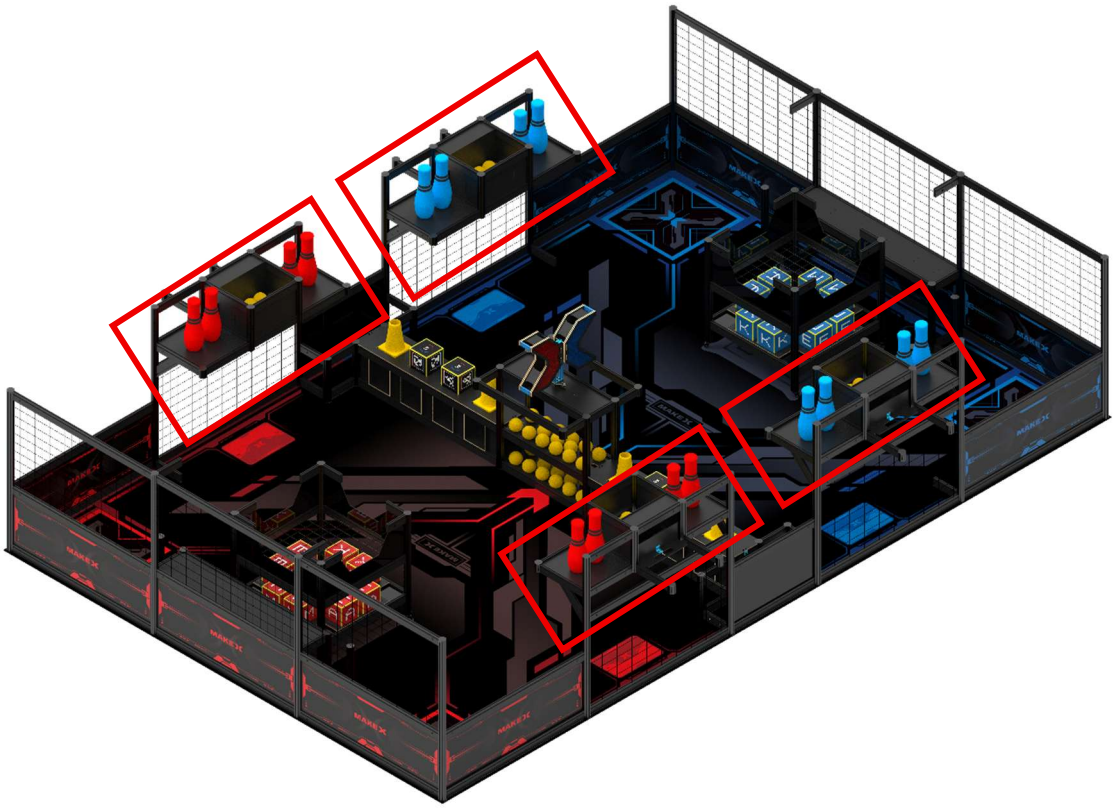


Fig 4.4-6 Initial Position of the Own Resource Area

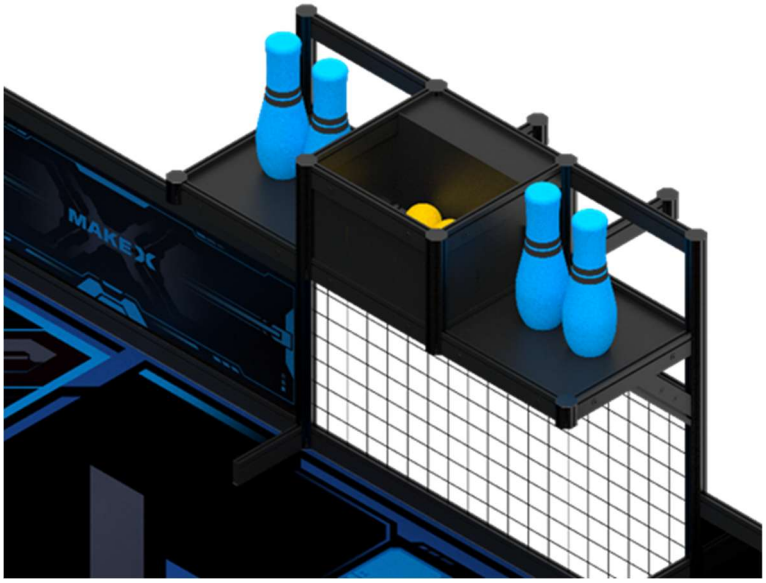


Fig 4.4-7 Own Resource Area

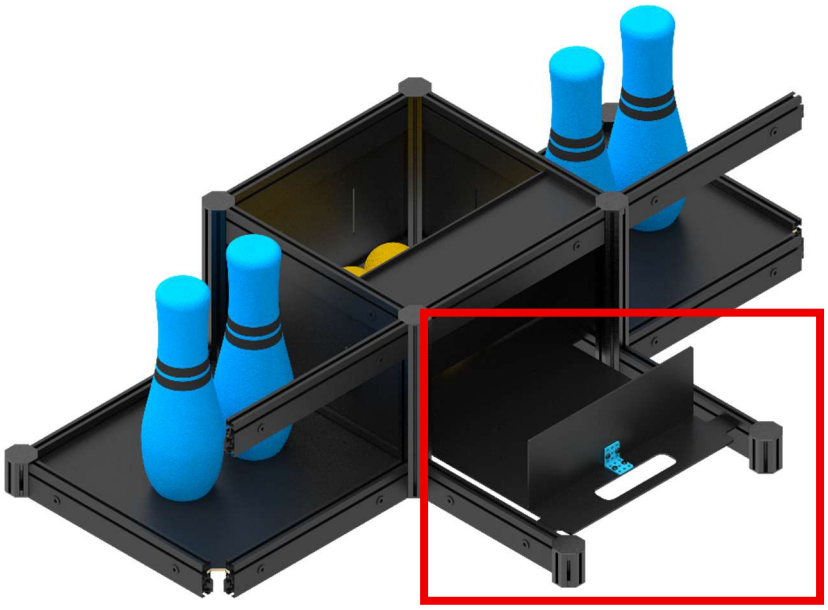


Fig 4.4-8 Baffle of Own Resource Area

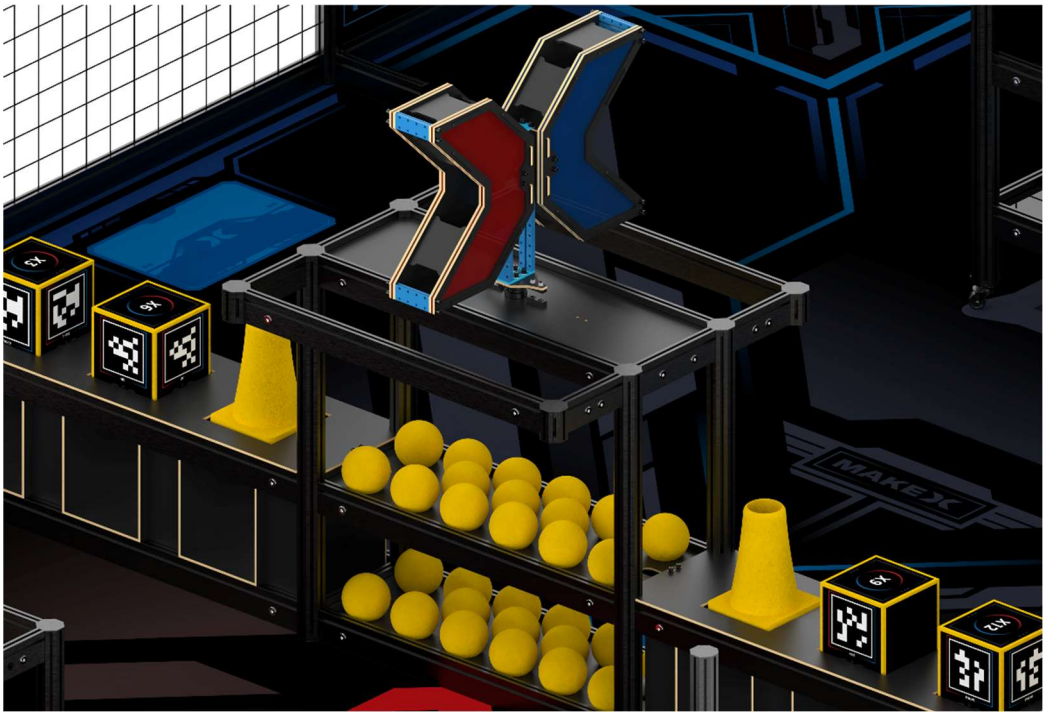


Fig 4.4-9 Central Resource Area

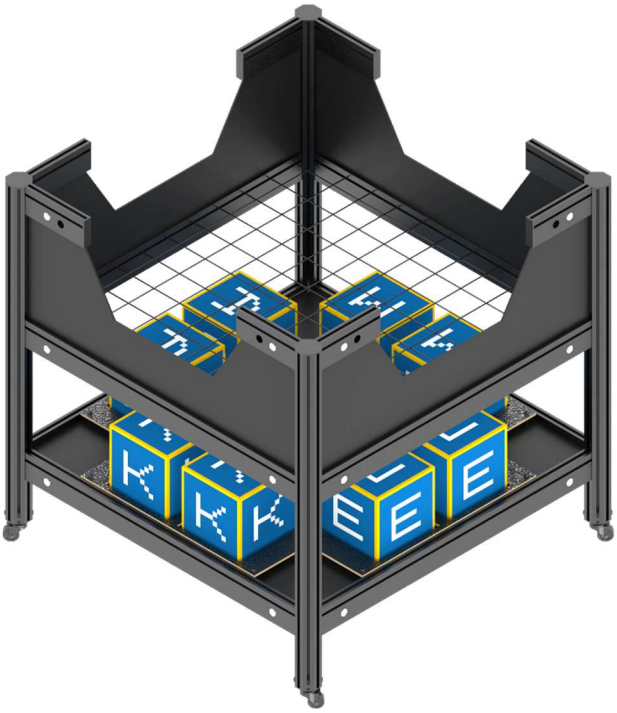


Fig 4.4-10 Mobile Fortress

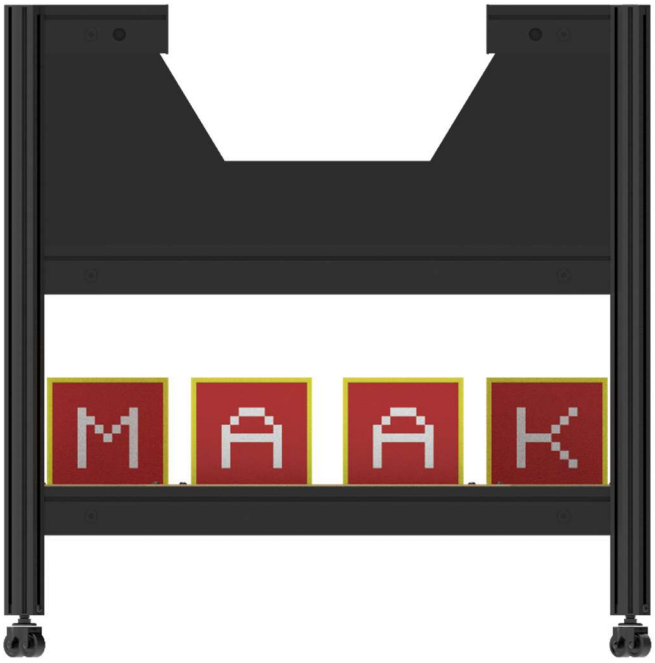


Fig 4.4-11 Mobile Fortress (Front View)

Mission Scoring: Each time a ball is successfully launched into the upper zone of the opponent's mobile fortress, the alliance will be awarded 10 points.

Scoring Criteria: A score is awarded when the vertical projection of the ball is entirely contained within the upper zone of the opponent's mobile fortress.

If this condition is met, the ball is considered a valid scoring ball for the corresponding alliance.

Letter Cube Transfer

Operation Stage: Automatic Stage, Manual Stage, Final Stage.

Missions Details: Remove the letter cubes located at the bottom of own mobile fortress, and completely place them into the channel within the strategy area.

Initial State: Eight letter cubes are positioned at the bottom of own mobile fortress.

Among them, there are two cubes labeled "M", two cubes labeled "A", two cubes labeled "K", and two cubes labeled "E".

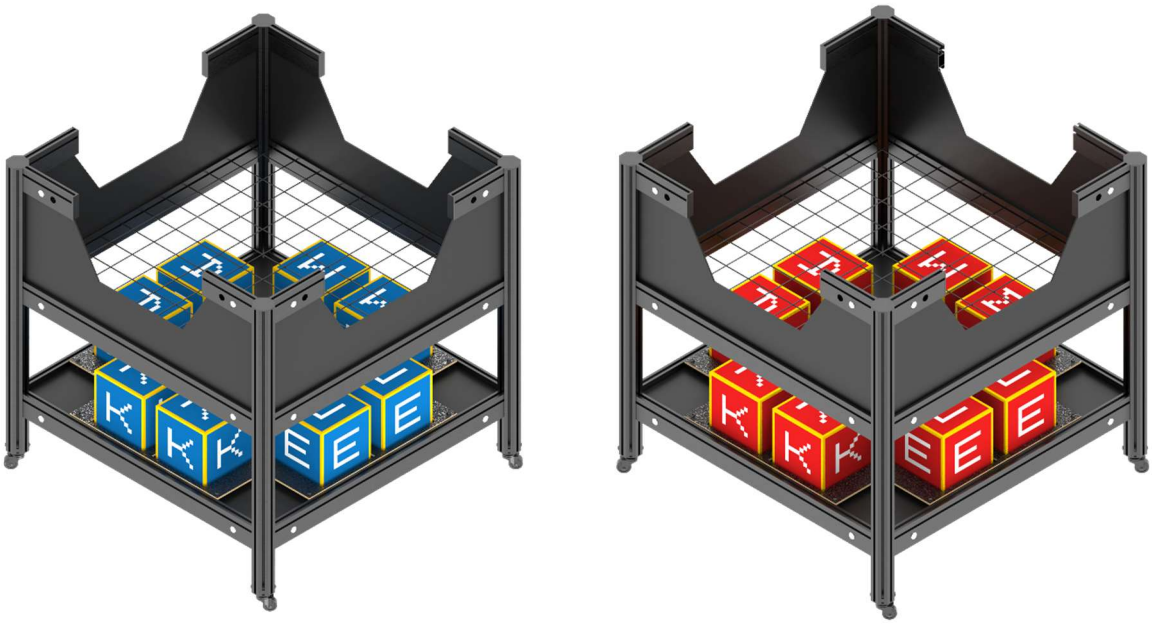


Fig 4.4-12 Mobile Fortress

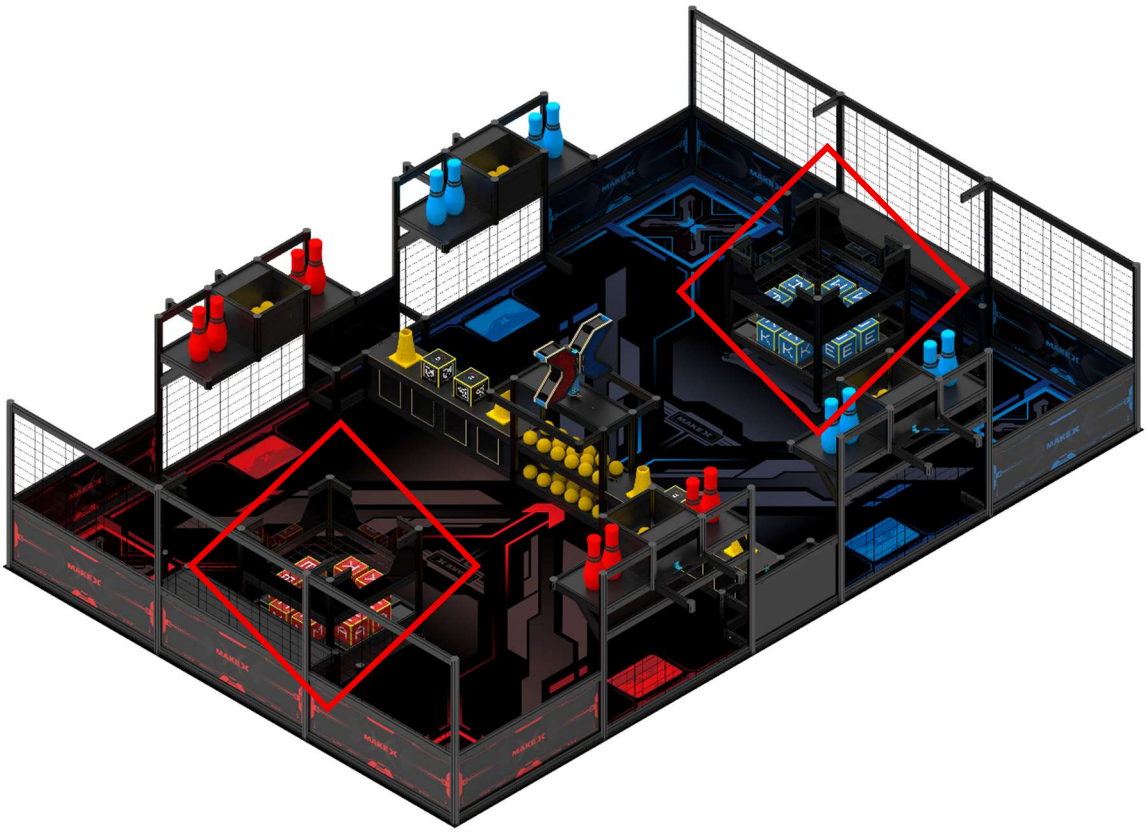


Fig 4.4-13 Initial State of Mobile Fortress

Mission Scoring: Each letter cube successfully transferred into the channel within the strategy area will earn 30 points.

Scoring Criteria: At scoring time, a letter cube will be considered valid for scoring if all of the following conditions are met:

a. The vertical projection of the letter cube is partially or completely within the channel of the strategy area;

b. The letter cube is not in direct contact with the field map;

c. The letter cube is not be in direct or indirect contact with any robot belonging to the same alliance.

d. The letter cubes shall not be in direct contact with any other scoring props located outside the Strategy Area Channel. If a letter cube is in contact with a scoring prop

whose vertical projection is partially or entirely within the Strategy Area Channel, the validity of the letter block that has entered the channel shall not be affected. However, if the scoring prop in contact with the letter cube has its vertical projection completely outside the Strategy Area Channel, the letter block shall be considered invalid.

If all the above conditions are satisfied, the corresponding letter cube will be counted for score.

Fig 4.4-14 Letter Cube Scoring Criteria

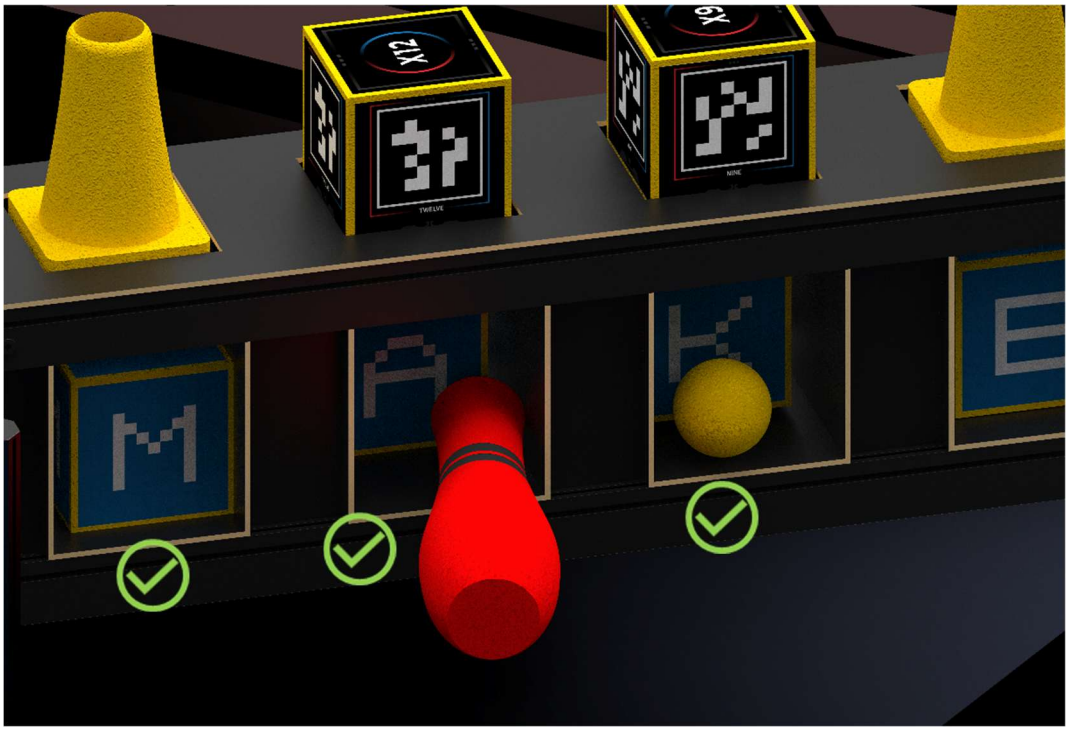


Fig 4.4-15 Letter Cube Scoring Criteria

MAKEX Challenge: At the scoring time:

a. The alliance has completed the channel filling on one side of the central strategy area, with the letter cubes arranged in the order “M”, “A”, “K”, “E” from outside to inside from the alliance’s perspective, and all four letter cubes are in valid scoring states;

b. Only the order of the letters is required; the orientation (angle) of the letters does not affect the scoring determination;

c. The orientation of the “X” mark does not affect the scoring determination;

d. If all of the above conditions are satisfied, the challenge is considered successfully completed. Successful completion on one side earns an additional 50 points; Successful completion on both sides earns an additional 100 points.

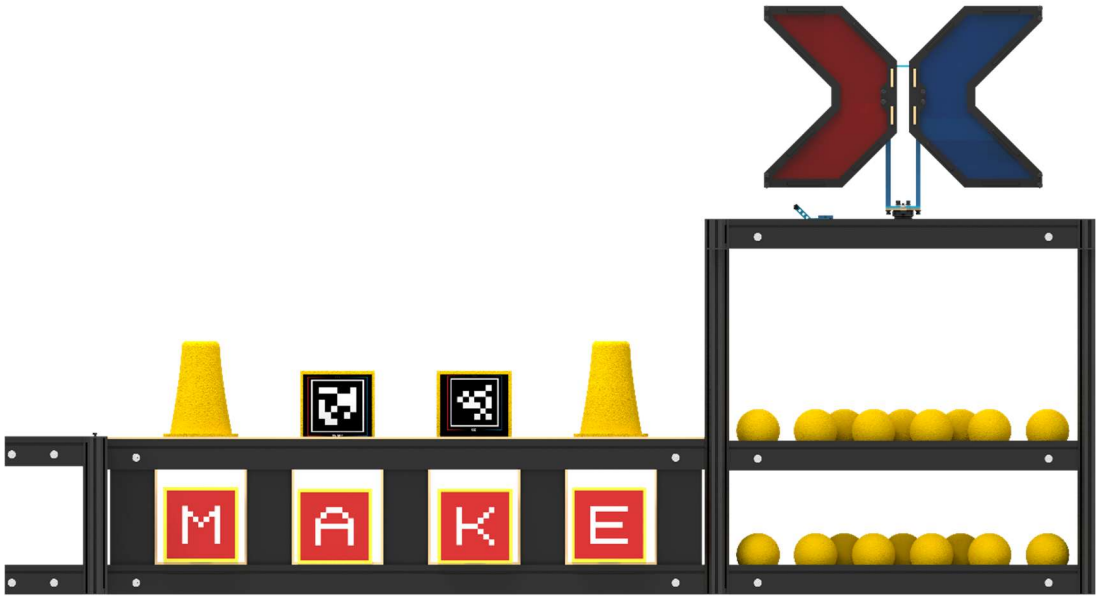


Fig 4.4-16 MAKEX Challenge Scoring State (Red Alliance View)

Pin Transfer

Operation Stage: Automatic Stage, Manual Stage, Final Stage.

Missions Details: The robot shall transfer the pins of its alliance color from own resource area to either alliance camp or the pin placement area.

Initial State: At the beginning of the match, both the red and blue alliances each have eight alliance-colored pins placed in their own resource area. Four pins are positioned on the right side of the alliance camp, and four pins are positioned on the left side of the alliance camp.

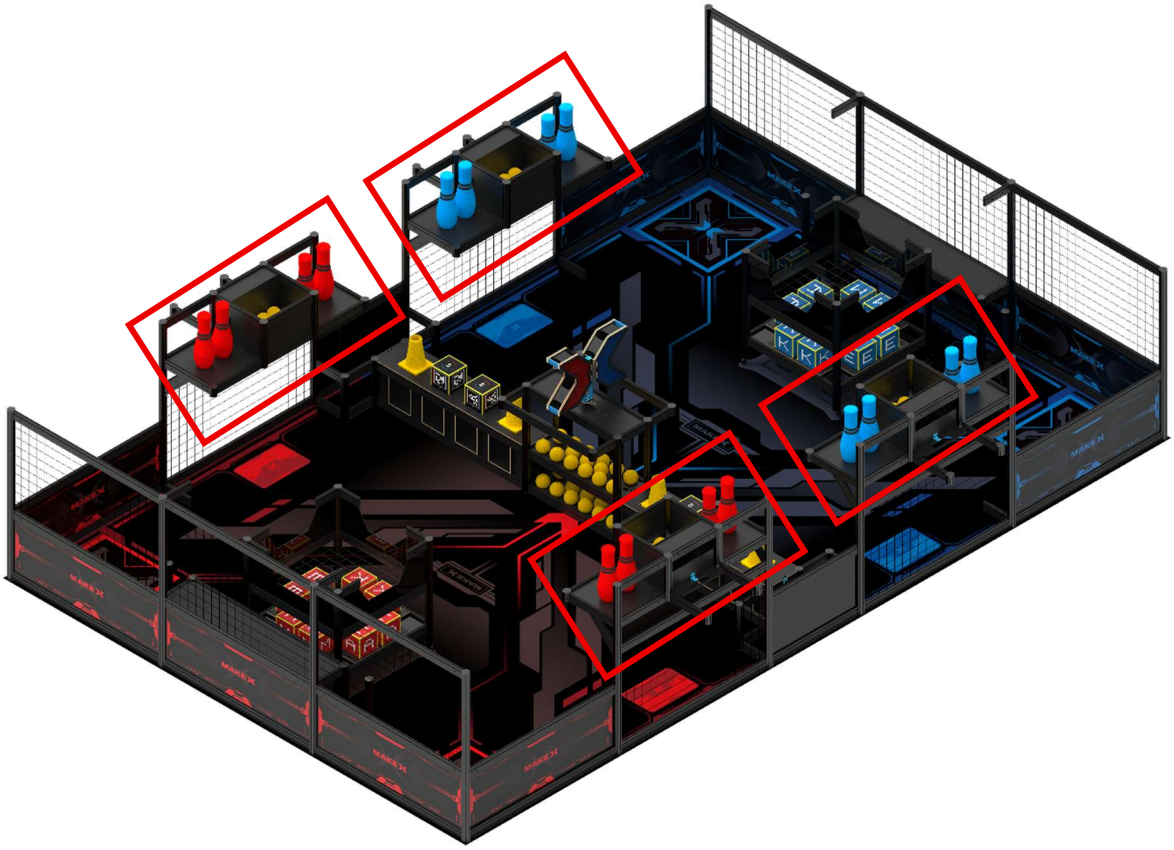


Fig 4.4-17 Own Resource Area

Mission Scoring: Each time a pin of the alliance color is successfully transferred into the alliance field or into the alliance's pin placement area, points are awarded as follows:

a. If the pin has completely left the alliance's own resource area, 10 points are awarded.

b. If the pin is placed non-upright (lying down or tilted) in the pin placement area, 20 points are awarded.

c. If the pin is placed upright in the pin placement area, 30 points are awarded.

Scoring Criteria:

At the scoring time, a pin is considered valid for scoring if the following conditions are

met:

a. The pin has completely left the alliance's own resource area, its vertical projection is entirely within the alliance field, and it is in direct contact with the field map, 10 points are awarded.

b. The pin is non-upright within the pin placement area, and its vertical projection is partially or completely within the placement area, 20 points are awarded.

c. The pin is upright within the pin placement area, in direct contact only with the baseplate of the placement area, and not touching any aluminum profiles or wire mesh, 30 points are awarded.

d. The pin has no direct or indirect contact with any robot.

e. The pin shall not be in direct contact with any other scoring props except for other pins.

If all applicable conditions above are satisfied, the pin is considered valid, and the corresponding score is awarded.

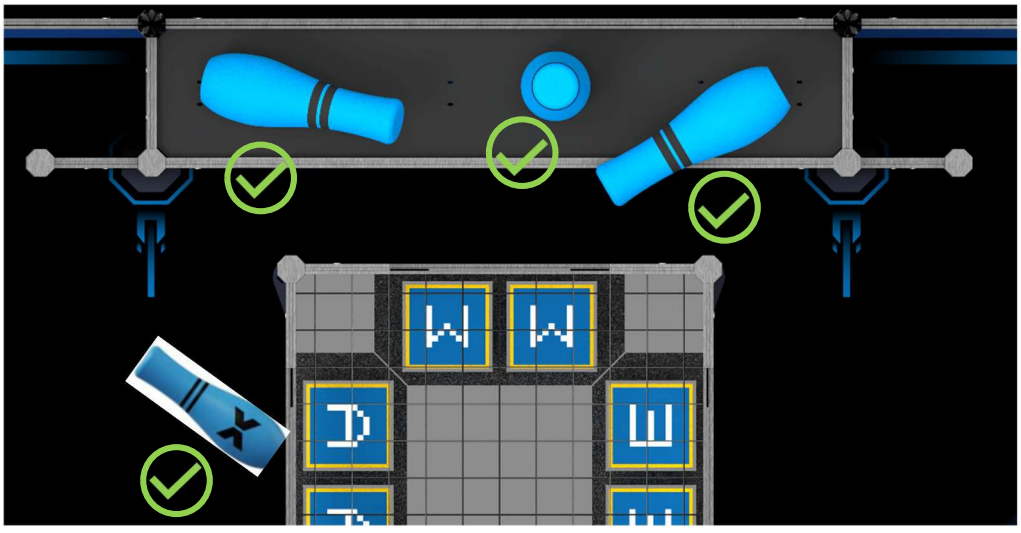


Fig 4.4-18 Transfer Pin Scoring State

Transfer Cone

Operation Stage: Automatic Stage, Manual Stage, Final Stage.

Missions Details: The robot shall transfer the cones located in the strategy area to the cone hanging area within own alliance camp.

Initial State: A total of four cones are placed in the strategy area. Prop cards selected before the match determine the initial positions of the cones.

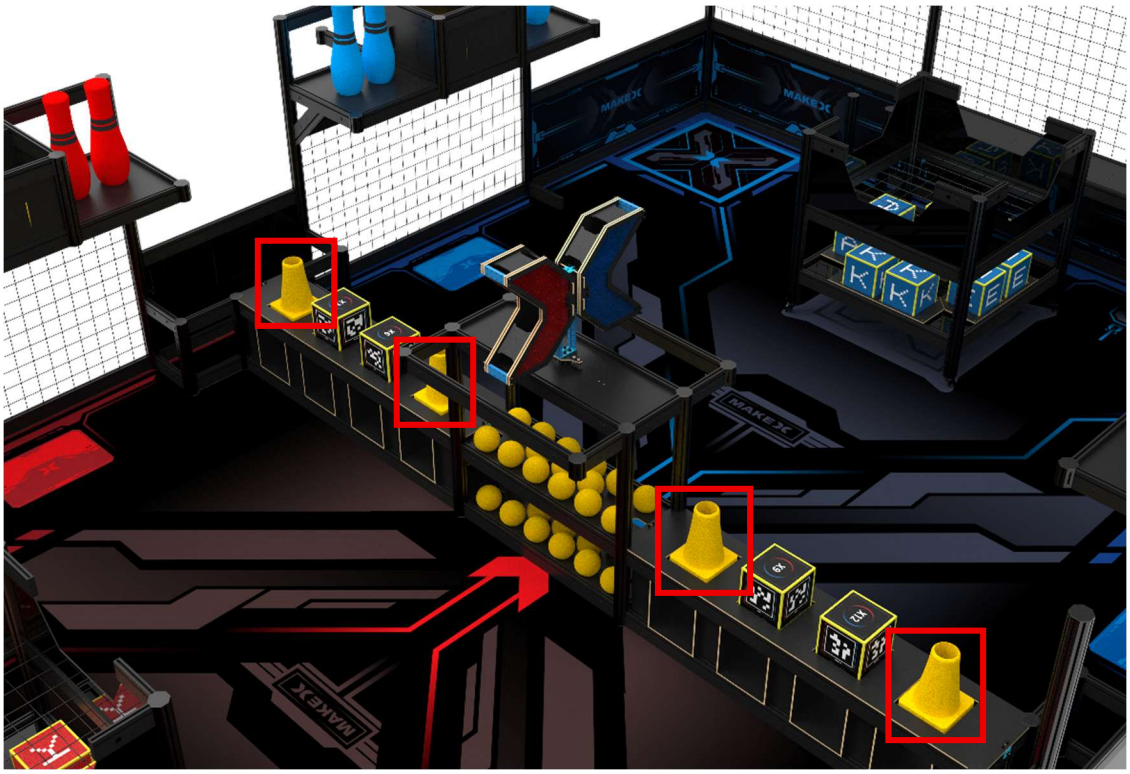


Fig 4.4-19 Strategy Area

Mission Scoring: Each cone successfully transferred from the strategy area to the cone hanging area within the alliance camp is worth 30 points.

Scoring Criteria: At the scoring time, a cone is considered valid for scoring if the following conditions are met:

a. The cone is completely suspended on the alliance's cone hanging area, and has no direct or indirect contact with any robot;

b. The cone is not in direct contact with any other scoring props except for other cones;

c. The cone may be hung upright or inverted — both orientations are acceptable.

If all the above conditions are satisfied, the corresponding cone will be counted for score.

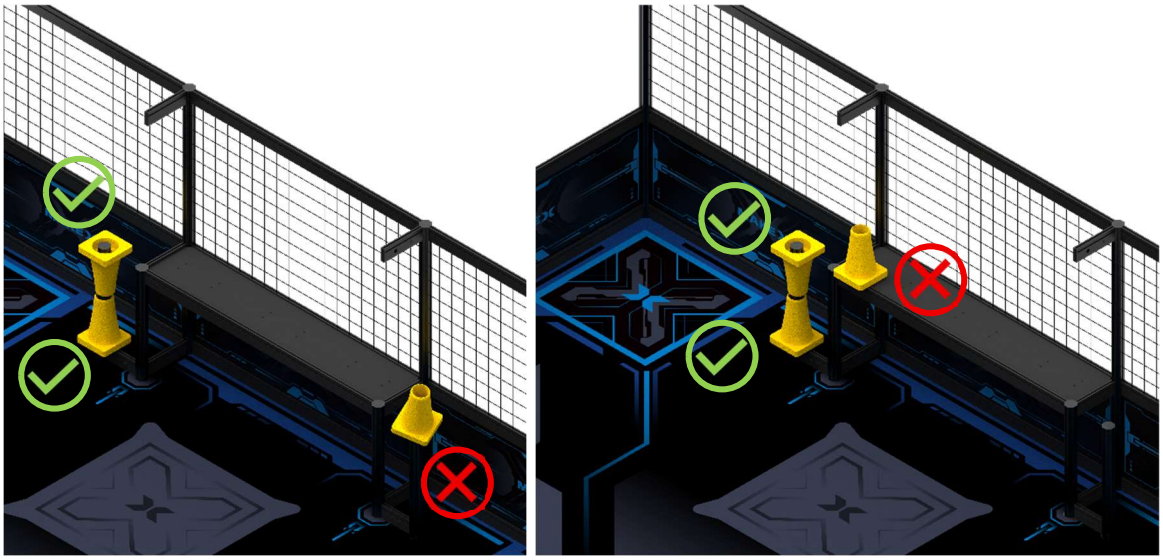


Fig 4.4-20 Transfer Cone Scoring State

X Clash

Operation Stage: Automatic Stage, Manual Stage, Final Stage.

Missions Details: The robot shall launch balls to hit the X-mark located at the center of the field, causing the colored face of the X-mark to rotate toward its own alliance.

Initial State: The X-mark is at the center of the field. At the beginning of the match, its initial orientation is as illustrated below: the red side points toward the Red Alliance's camp, while the blue side points toward the Blue Alliance's camp.

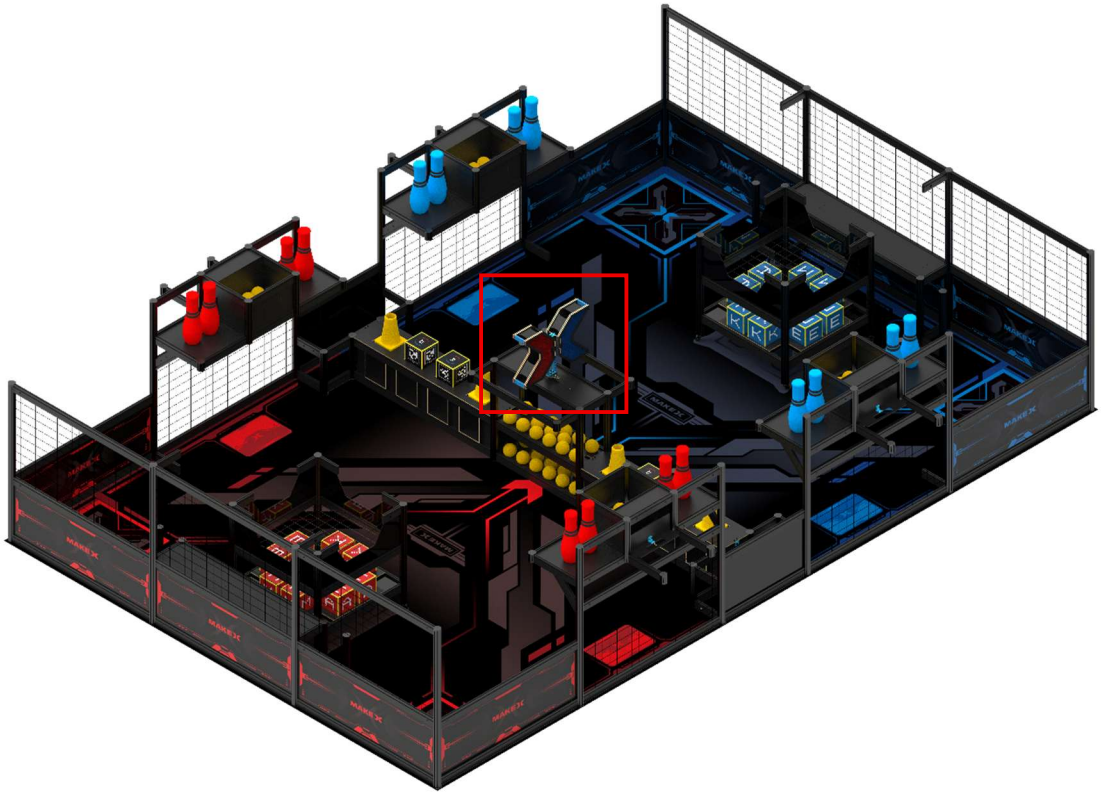


Fig 4.4-21 Initial State of X Mark

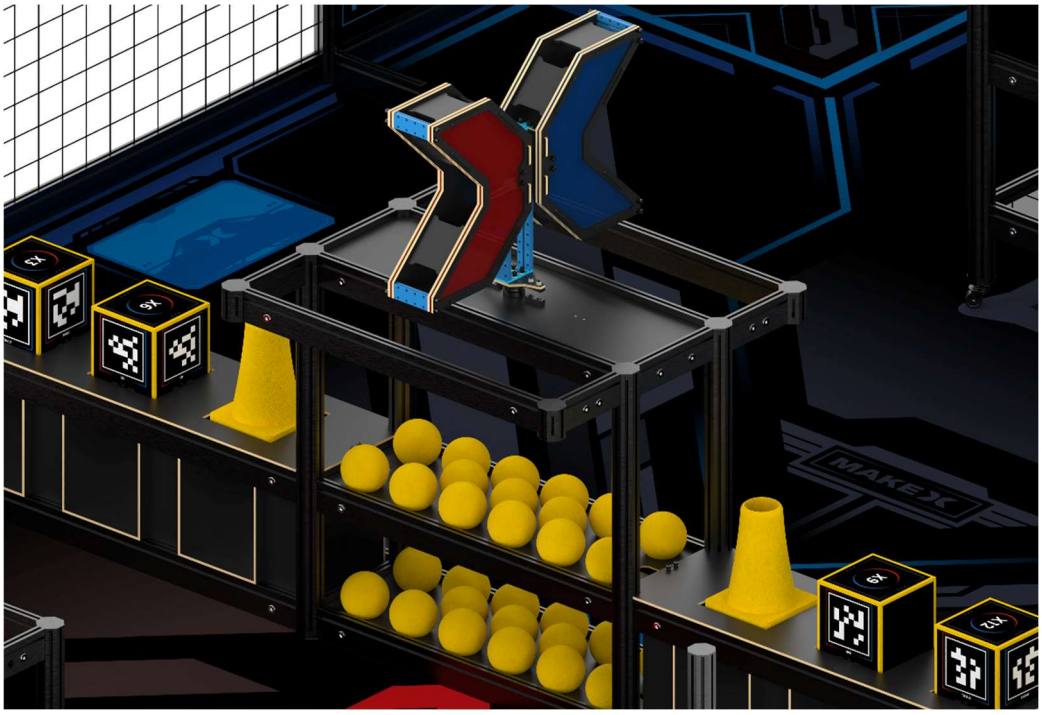


Fig 4.4-22 X Mark

Mission Scoring: Successfully flipping the X-mark so that its colored face is oriented toward the alliance's camp is worth 30 points.

Scoring Criteria: At the scoring time, the X-mark is considered valid for scoring if the following conditions are met:

a. The colored face of the X-mark is oriented toward the alliance's field;

b. The X-mark has no direct or indirect contact with any robot of the same alliance.

If all the above conditions are satisfied, the corresponding X-mark will be counted for score.

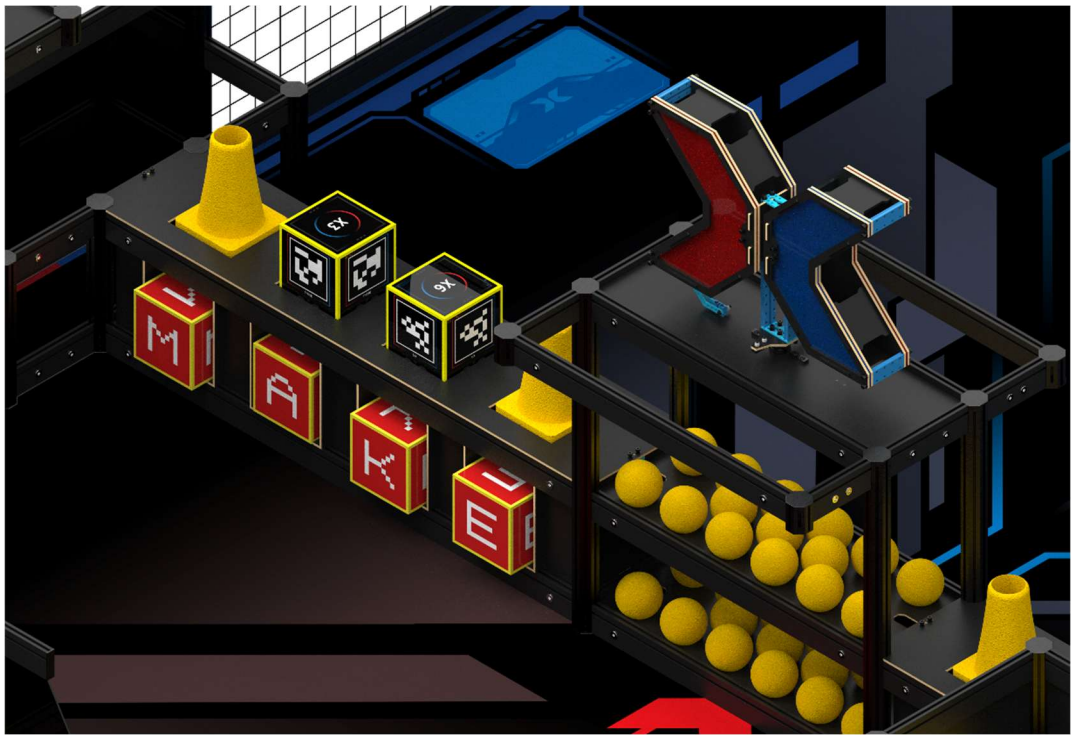


Fig 4.4-23 X-mark Oriented Toward the Red Alliance's Field

Team Flag Hanging

Operation Stage: Final Stage.

Missions Details: The robot shall hang its team flag onto the flagpole located in the alliance's flag hanging area within its own camp. Each robot is allowed to carry only one flag into the camp per match.

Initial State: The flag hanging areas are located at the rear side of both alliances' camps.

Mission Scoring: Each team flag successfully hung onto the flagpole in the flag hanging area is worth 50 points.

Scoring Criteria: At scoring time, a flag is considered valid for scoring if the following conditions are met:

a. The flag is hung on the flagpole, the flag surface is naturally unfolded, the flag with no contact with the ground or any robot;

b. Each flagpole is allowed to hold only one flag, and the flag must be in contact only with the flagpole.

c. The flag complies with the specifications for team flag, which require that the flag surface must include the team's name, and that the team's name must correspond to the participating team itself. Flags displaying or using another team's name are not permitted.

d. If the flag does not meet the specifications for team flag or if contact with other objects (except for the flagpole), it shall be regarded as an invalid hanging.

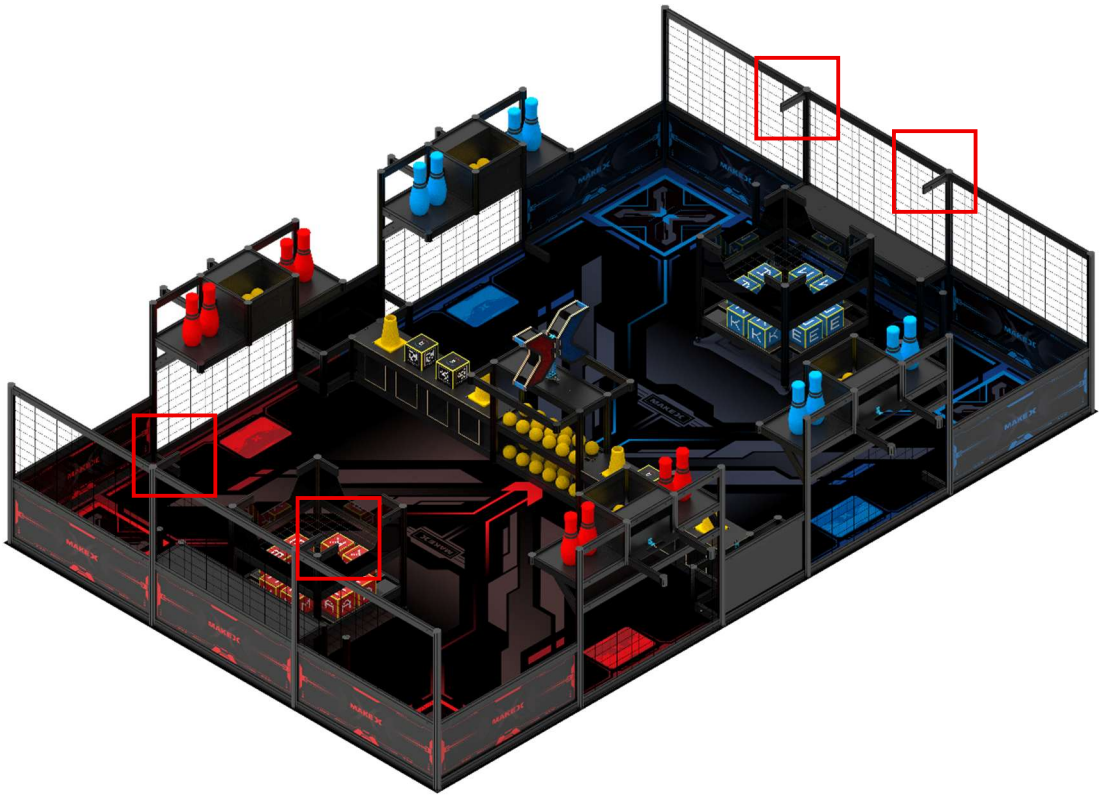


Fig 4.4-24 Team Flag Hanging Area

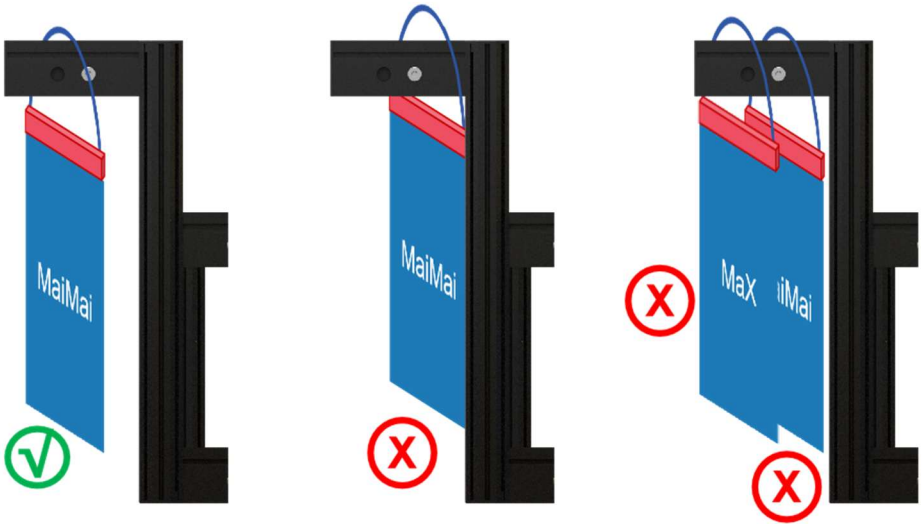
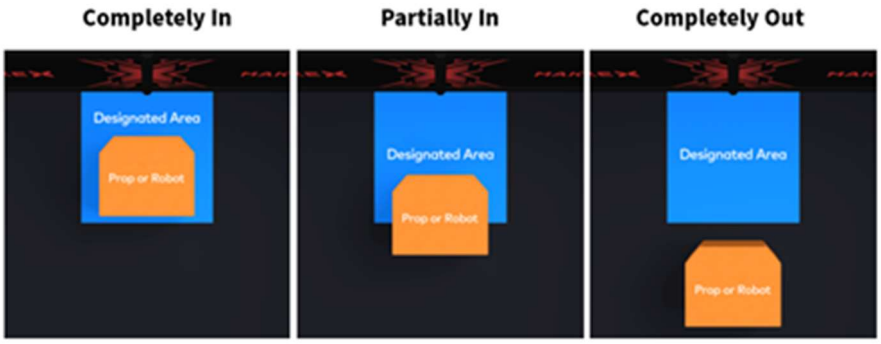


Fig 4.4-25 Flag Hanging State

Boundary State Judgement

During the match, if there is any uncertainty about the position of the robot (or props) and designated boundary, the following state judgement can be explained:



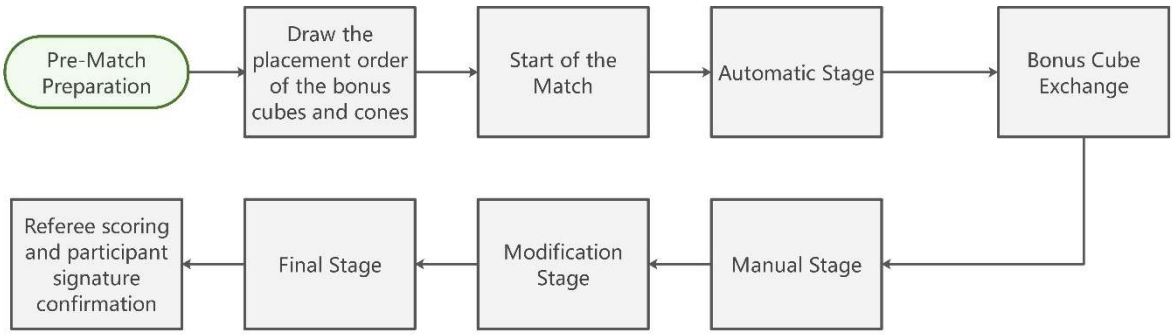
4.5 Scoring Explanation

The final score of the match is determined by the final static state of the scoring prop after the match. Competition missions, scoring props and their corresponding points are as follows. After the competition, the referee calculates the sum of the scores of each mission, and the alliance with the higher score will be the winner.

Scoring Props	Details of Scoring Props	Single Prop's point	Maximum Quantity	Maximum Point
Ball	Ball entering the upper area of the opponent's mobile fortress	10/each	100	1000
Letter Cube	Letter cube placed into the channel within the strategy area	30/each	8	240
MakeX	Four letter cubes on	50/each	2	100

Challenge	one side of the strategy area arranged from outside to inside in the order “M", “A”, “K”, “E”			
Pin	Valid pin standing upright in the pin placement area	30/each	4	120
	Valid pin non-upright in the pin placement area	20/each	4	80
	Valid pin within the alliance camp, in direct contact with the map	10/each	4	40
Cone	Cone suspended in the alliance’s cone hanging area	30/each	4	120
X-mark	X-mark with its colored face oriented toward the alliance’s field	30/each	1	30
Team Flag	Valid flag hung on the flagpole in the alliance’s flag hanging area	50/each	2	100

4.6 Single Match Flow



Pre-Match Preparation

Before a single match, contestants are required to check if their robots comply with the rule requirement and if the power management module has been installed correctly and works properly in the inspection area.

After entering the field, both alliances shall check whether the arena and props are placed in a standard way and whether the robots of both alliances are in a standard way. After cross-checking and approval, please follow the referee's instructions and wait for the competition to start.

Drawing the Placement Order of Bonus Cubes and Cones

A representative shall draw a prop card to determine the placement order of the four cones and four bonus cubes. Participants must place these items in their initial positions according to the card drawn. The referee will then inspect and confirm that all props are placed correctly.

During the drawing of the props card and the placement of props, participants are not allowed to touch the robots. If a participant touches a robot during this process, that robot will not be permitted to leave the starting area during the automatic stage.

Refer to *[Appendix 8: Prop Cards]*, which presents six sample layouts showing the initial positions of cones and bonus cubes.

The Prop Cards used in the 2026 MakeX Challenge Storm Breaker shall include but are not limited to the forms displayed in *[Appendix 8: Prop Cards]*.

Start of the Match

Contestants are not allowed to contact the robot after the referee's instruction to start the competition.

Automatic Stage

The automatic stage lasts for 30 seconds.

To ensure competition fairness, robots in the starting area are required to power off. After the countdown of the automatic stage, the operator shall turn on the robot and the robot can run the preset automatic program.

Bonus Cube Exchange

The bonus cube exchange does not take up match time.

After the automatic stage ends, if there are valid bonus cube s in the bonus exchange area, the team must apply to the referee to obtain the corresponding number of balls. These balls shall be placed in the team’s resource area above the bonus exchange area. After the exchange, the used bonus cubes may be removed from the arena.

Once the bonus exchange is completed, the match proceeds to the manual control stage. Each team has only one opportunity to perform a bonus exchange during the entire match, and only one bonus cube can be exchanged in each exchange area.

Manual Stage

The manual stage lasts for 100 seconds.

After the automatic stage ends, there is a preparation period before the manual stage begins. After the 5-second countdown by the referee, the 100-second manual stage begins. In the manual stage, the operator can control the robot with a Bluetooth controller.

During the Manual Stage, the Observer may pull the barrier of their own Resource Area once, at any chosen moment, to release balls into their side of the field. Throughout the entire match, the observer is granted only one opportunity to pull the barrier.

Before the end of the manual stage, the referee will give a 5-second countdown reminder. After the countdown, the competition will move on to the modification stage.

Modification Stage

The modification stage lasts for 60 seconds.

The modification stage begins after the end of the manual stage. Contestants are allowed to remove their robots (the vertical projections of the robots must be partially or completely in the starting area.) out of the arena and modify them. There are specifications for the length and width of the modified robot, and the height is not limited. **(Please refer to 6.3 Modification Rules for the specifications.)**

During the final 30 seconds of the enhancement modification stage, the competition system will issue a notification. As the modification stage approaches its end, there will be a 10-second countdown. Before the countdown concludes, contestants must return their robots to the starting area (partially or completely). If, after the countdown ends, a participating team has not returned their robot to the starting area (partially or completely), the team's robot will be disabled during the modification stage. Once the robot is partially or completely placed in the starting area, if there are any acquired benefit resources, the team must request approval from the referee and partially or completely place the selected resources into their starting area.

Final Stage

The final stage lasts for 90 seconds.

After a five-second countdown, the final stage begins and the operator can control the robot with a Bluetooth controller. At the end of the final stage, the competition will have a five-second countdown by referees. After the end of the match, the operator is required to stop controlling the robot place the Bluetooth controller in the storage basket and stay out of the arena.

Referee Scoring and Participant's Signature Confirmation

The referee will count the scores after the competition. If there is no objection to the

competition, the captains of both alliances must confirm the match's result. If there is any doubt about the result, the captain of the alliance may appeal to the referee without signing the score sheet and write down the appeal in the remark column.

After the confirmation of the results, contestants shall actively assist the referee to restore the props and leave the competition area with their robots and Bluetooth controller in an orderly manner.

5. Technical Specifications

5.1 Specification for Robot Construction

The specification for robot construction provides a fair and safe competition standard for all teams and the committee encourages teams to make innovative designs of their robots on the prerequisites of meeting these specifications. The committee encourages teams to conduct hardware construction and software programming on the premise of observing the specifications. During the competition, it is a must for robots to abide by the specifications. Any robot that violates the specifications will be required to be modified. Those who commit serious offense will be punished for canceling the results or disqualification.

Robot Mechanical Specification

T01. The size specification of the robot is: before the modification stage: 500mm (length)*500mm (width)*700mm (height); After modification: 500mm (length) x 500mm (width), and with unlimited height. The length and width of robot are defined before the competition, without redefinition after the competition. When measuring the robot size, the flexible material on it should not be affected by external forces. (The flexible material includes but not limited to rolled strip, tape, foam block, etc.).

	Requirements	Details
Maximum Initial Size	500 mm (Length) 500 mm (Width)	1.The height should not exceed 700 mm and the vertical projection of the robot shall not exceed

	700 mm (Height)	the square area of 500 x 500 mm. 2.Before the modification stage, the robot's size must comply with the requirement of maximum initial size. 3.The team should show the maximum size of the robot during the inspection.
Maximum Modified Size	500 mm (Length) 500 mm (Width) Unlimited (Height)	1.There is no limitation on height and the vertical projection of the robot on the arena shall not exceed the rectangular area of 500 x 500 mm. 2. After the modification stage, the robot's size must comply with the requirement of the maximum modified size. 3. The team should show the maximum size of the robot during the inspection.

T02. The maximum net weight of the robot (during any time of the competition) shall not exceed 10 kg, including the weight of battery, all parts of the robot and excluding team flag.

T03. The robot must have a symbol with the team number or team name, with a single character higher than 3.5cm and a light background color so that the team can be clearly identified during the competition; if the symbol does not meet the requirements, the robot won't able to pass the inspection.

T04. Driving system: The main-board and moving robot chassis, including wheels, tracks or other mechanism structure that bring the robot into direct contact with the ground and move it over a flat field surface. For stationary robots or robots without a moving mechanism, the structure in direct contact with the ground is considered the driving system.

T05. Each team is only allowed to participate in competition with one robot. Teams may modify other structures of their robots during the Modification stage but cannot

modify the driving system. If a team modifies the driving system, the team is considered to be using another robot and will be penalize by disqualification.

T06. If the replacement of some component because of its broken (e.g., wheel damage, motor failure, main-board failure, etc.), is not considered as the replacement of the driving system.

T07. The parts can be lubricated with lubricant, but contestants should protect the arena from lubricant leaking.

T08. The following robot's parts that may cause danger are forbidden:

(1) Sharp angle;

(2) Oil pressure parts or hydraulic parts;

(3) Switches or contacts containing mercury;

(4) Parts that will conduct electrical current from robots to the arena;

(5) Parts that tend to develop connections with other robots, such as hook-shaped parts and other parts;

(6) Other dangerous parts as determined by the referees.

T09. The following hazardous materials are forbidden:

(1) Flammable and explosive gases;

(2) Materials containing liquids or gelatinous substances (except for glues and lubricants used in prescribed and small quantities);

(3) Materials that may cause arena contamination, such as sand, ink, etc.;

(4) Materials made from animal tissue;

(5) Materials that may cause danger as determined by referees.

T10. Equipment with high performance that infringes the competition fairness is prohibited, it must be operated with the following performance indicators:

Equipment	Component	Specification	Note
Motor& Servo	DC Motor	● 25 DC Motor Rated Voltage：6V Rated Rotation Speed：50&200RPM ● 37 DC Motor Rated Voltage: 12V Rated Rotation Speed：50&200RPM ● 180 DC Gear Motor Operating Voltage: 5V DC No-Load Speed: 119 RPM ± 10% Locked-Rotor Torque: 5.5 kg • cm	The total amount of Motor ≤13 Total amount of servo≤6 The total amount of brush-less motor≤2 It is forbidden to change the mechanical structure and electrical layout of any motor or servo. Only changes to the external wire length are allowed, provided that such modifications do not alter the motor's performance in any way.
	Brush-less Motor	2823/2824 Brush-less Motor Rated Voltage: 10000 mA MAX Rated Rotation Speed: 7300 rpm	
	Encoder Motor	180 Smart Encoder Motor Rated Voltage: 12V No-load Speed: 580±10%RPM Reduction Ratio: 39:43	
	Smart Servo	MS-12A Smart Servo Working Voltage: DC6V~12.6V	

		Torque: 12kgf.cm	

Robot Electronic Specification

T11. Except for the laser sighting device, each robot can only be equipped with one battery, and the battery must be fixed inside the robot. The battery is prohibited from colliding with and separating from the robot.

T12. If the team use a laser sighting device on their robot, the power of the laser sighting device should be less than or equal to 5mW (below Grade 3 a/R), and at most one laser sight for one robot.

T13. The battery cables shall be intact without cracks, breakages and metal wires. There must be an electrical isolation between power supply lines and robot structures.

T14. Electronic equipment with high performance that infringes competition fairness is prohibited, it must be operated with the following performance indicators:

System	Module	Specification	Note
Power System	Li-Po Battery	● 3S Li-Po Battery Output Voltage: 11.1V Discharge Rate: 25-30c Battery capacity: 4200mAh	
Main-board System	Main-board	● Processor: High-Performance M7 Processor ATSAMS70N20A-ANSTM32F030CCT6 Co-processor Working Voltage: 6V ~ 13V (The minimum input voltage of the motor is required to meet the requirement of the motor's working voltage)	Allowed to use Raspberry Pi 3 Model B+ at the same time

		Communication Ports and Protocols: Serial Port /mBuild Protocol	
Sensor System	Vision Sensor	Viewing Angle: 90 degrees Effective Focal Length: 3.05±5%mm Identification Speed: <60 frames/seconds Method of Power Supply: 3.7V Lithium Battery or mBuild Power Module Power Consumption Range: 1-2W	Type and quantity are not limited. It is forbidden for robots to use any sensors that will interfere with the perception ability of other robots
Wireless Control System	Bluetooth Controller	Bluetooth Version: Support 4.0+ Distance of Remission: 20m Working Current: ≤25mA Transmit Power: 4dBm Transmit Data: Data packets within 100ms can be acquired by Bluetooth devices (low latency) Battery: Two No.5 AA Dry Batteries Supported Platform: macOS / Windows	● During the competition, one Bluetooth controller is available for one team; ● The Bluetooth module shall connect with the Nova Pi mainboard

	Bluetooth Module	Bluetooth Version: BT4.0 Band Range: 2402~2480MHz Antenna Gain: 1.5dBi Energy Consumption Grade: ≤4dBm Working Current: 15mA	It is forbidden to use any form of wireless control device to communicate with robots other than the official Bluetooth controller, including but not limited to any artificially triggered sensors

T15. Except for the buzzer embedded in the motor and main board, robots are not allowed to be equipped with any other electrical sound equipment. Except for indicator lights built into main controllers and sensors that comply with technical specifications, light sources used in conjunction with sensors, and laser targeting devices that comply with technical specifications, robots may use RGB LED lights up to 5V (inclusive) for decoration or status display, provided they do not interfere with the operations of other teams.

T16. Teams are allowed to self-construct or procure mechanical parts. It is suggested to use complete commercial product components with low integration, such as hinges, sprockets, roller chains and pulleys, etc. It is not allowed to use highly integrated complete commercial products, including but not limited to multi-DOF manipulators or mechanical hand.

5.2 Specification for Team Flag

T17. The specifications for the team flag are as below:

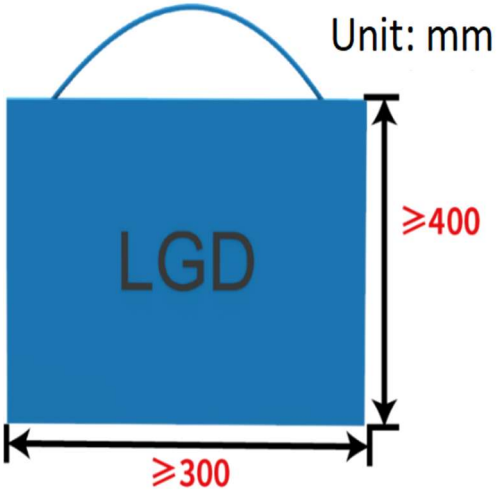


Fig 5.2-1. The Size of Flag

- The structure and shape of the flag should be referred to as the Fig5.2-1. It must be a regular-shaped flag; Shaped flags cannot be produced and used.
- The team flag shall consist of a flag surface and suspension components; a flagpole can be voluntarily added to the suspension components.
- The flag surface material shall be fabric, paper, or other flexible materials, and it must be a rectangular whole flag, with a size no less than 400 mm (length) x 300mm (width). It cannot be cut or shaped irregularly. The content of the flag must include the "team name," and the team name must be the official name of the participating team. No other team names may be marked or used on the flag.
- The flagpole portion of the suspension components may use rigid materials. If a flagpole is used, it may be made of rigid materials, but the length of the flagpole must be equal to the length of the side it is hanging from, and the cross-sectional dimensions of the flagpole must be smaller than 10mm x 10mm.
- Irregular flagpoles or additional unusual weights of the suspension components are not allowed, otherwise, the self-made prop will be deemed non-compliant and considered an invalid scoring prop. The overall dimensions must not exceed 400mm (length) x 10mm (width) x 10mm (height).
- The committee encourages teams to draw personalized patterns or words on the flag, which calls for positive content reflecting the competition theme and spirit,

without showing words or pictures related to the MakeX Robotics Competition Committee.

6. Competition Rules

6.1 Penalty

The penalty actions are categorized into four sections: "Safety Rules," "Participant Behavior Rules," "Operation Rules," and "Special Suspension."

During the Qualification Stage, penalties and penalty escalations are applied on a per-team basis. In other words, during this stage, if any team within an alliance receives a warning or point deduction, only that specific team will be subject to the corresponding penalty constraints. The other team within the same alliance will still have its own separate penalties and escalation opportunities, and the competition will proceed as normal.

During the Elimination Stage, penalties and penalty escalations are applied on an alliance-wide basis. This means that if any team within an alliance receives a warning or point deduction during this stage, both teams in the alliance will be subject to the corresponding penalty constraints. The exception is for suspension directives, which are handled on a per-team basis and penalized or constrained according to the specific circumstances.

Warning

E01. The referee issues a warning to the team regarding their violation and requires the team to immediately cease the offending behavior. If the violation significantly impacts the fairness of the competition, the referee may pause the match as necessary and restore it to its pre-match state.

Violation

E02. The referee shall impose a penalty on any team that commits a rule violation. The offending team will receive a 20-point deduction for the first offense. If the same

violation is committed again, an additional 120 points will be deducted.

Suspension

E03. The referee issues a suspension to ask the robot to stop its action. The Referee is entitled to suspend robots according to the actual situation in the arena. The contestants shall ask the referee to suspend the robot while encountering robot malfunction or uncontrollably.

When special suspension is involved: the following two situations apply.

1. Malicious complaint: In a single match, it is prohibited for contestants to make malicious complaints against the opposing team.

   After entering the competing area, if the complaining team confirms the need to raise a complaint with the referee, and the referee verifies and determines that the complained-about team has not committed any actual rule violations, the complaining team will be deemed to have made a malicious complaint. The robot of the offending team will be suspended.

2. During the Match, it is prohibited to directly contact any robot that is travelling or in motion on the field or any scoring props carried by the robot in motion. The referee has the right to determine whether this behavior affects the personal safety of the participating team members, and to sentence the offending team to immediately suspend the robot, and at the same time, the referee may decide whether or not to remove the suspended robot from the field based on the actual situation.

Disqualify for the Single Match

E04. The referee will disqualify the participating team from this match for serious violations, and the team's robot will be immediately suspended from further participation in this match, and the results of this match will be nullified, but will not affect other matches. If this penalty is triggered by a team in the qualification stage, it will not affect the results of the alliance's teammates. If this happens in the elimination round, the alliance will receive the penalty.

Disqualify for the Entire Competition

E05. The robot will be suspended immediately and the team cannot participate in the competition and the following competition, all results will be disqualified. The team will lose the opportunity to continue to participate in the competition and the right to award.

6.2 Safety Rules

Damage or Contamination of the Field

R01. If the field becomes contaminated by a robot, the robot shall be deemed unsafe. Throughout the match, robots are strictly prohibited from using double-sided tape, glue, or any other adhesive materials to secure or fix field elements.

R02. During the match, robots must not intentionally climb or collide with the field boundaries or the central barrier. Robots shall not cause the Mobile Fortress to tilt or collapse in any form.

- Tilt: The Mobile Fortress is considered tilted if, due to external force, it loses its original horizontal posture and any of its wheels leaves the field surface.
- Collapse: The Mobile Fortress is considered collapsed if it loses balance and all four wheels leave the field surface, resulting in the structure being unable to maintain an upright position.
- A violating robot will be disqualified from the current match.
- If the referee determines that the action was unintentional and did not cause the projectiles (in the upper zone) or cubes (in the lower zone) of the Mobile Fortress to fall, no penalty will be applied.
- If the Mobile Fortress tilts or collapses at any time during the match, the referee has the right to pause the match and restore the Mobile Fortress to its upright position.

Damage to Other Robots

R03. Throughout the entire event, including the match, standby, and debugging

periods, it is strictly forbidden to damage or destroy another team's robot in any way.

If the referee team or event committee, through on-site observation, video review, or post-match inspection, confirms that a team has engaged in damaging another robot, the act shall be deemed a confirmed violation.

- The violating team will be disqualified from the entire event.
- In serious cases, the organizing committee reserves the right to record the incident and such behavior may affect the team's eligibility to participate in future MakeX competitions.

Using Banned Materials

R04. The following hazardous materials or dangerous structures embedded in robots are forbidden, such as:

(1) Flammable gases, fire or smoke generating equipment, hydraulic oil or hydraulic parts, switches or contacts containing liquid mercury (mercury);

(2) Hazardous Substances (e.g., Lead);

(3) Materials that may cause arena contamination, such as sand and other objects that may be scattered during competition;

(4) Materials that develop connections with other robots;

(5) Materials with sharp edges that may cause injury.

(6) Materials made from animal tissue (for health and legal consideration).

(7) Materials containing liquids or gelatinous substances (except for glues and lubricants).

(8) Parts that can conduct electrical current from robots to any other parts in the arena.

- The violating robot will be disqualified from the current match.
- If the team wishes to continue participating, the robot must be repaired or modified to comply with the rules and pass a reinspection by the referee

before rejoining the competition.

- If the same team commits two violations, all of its match results for the event will be annulled.

Other Unsafe Factors

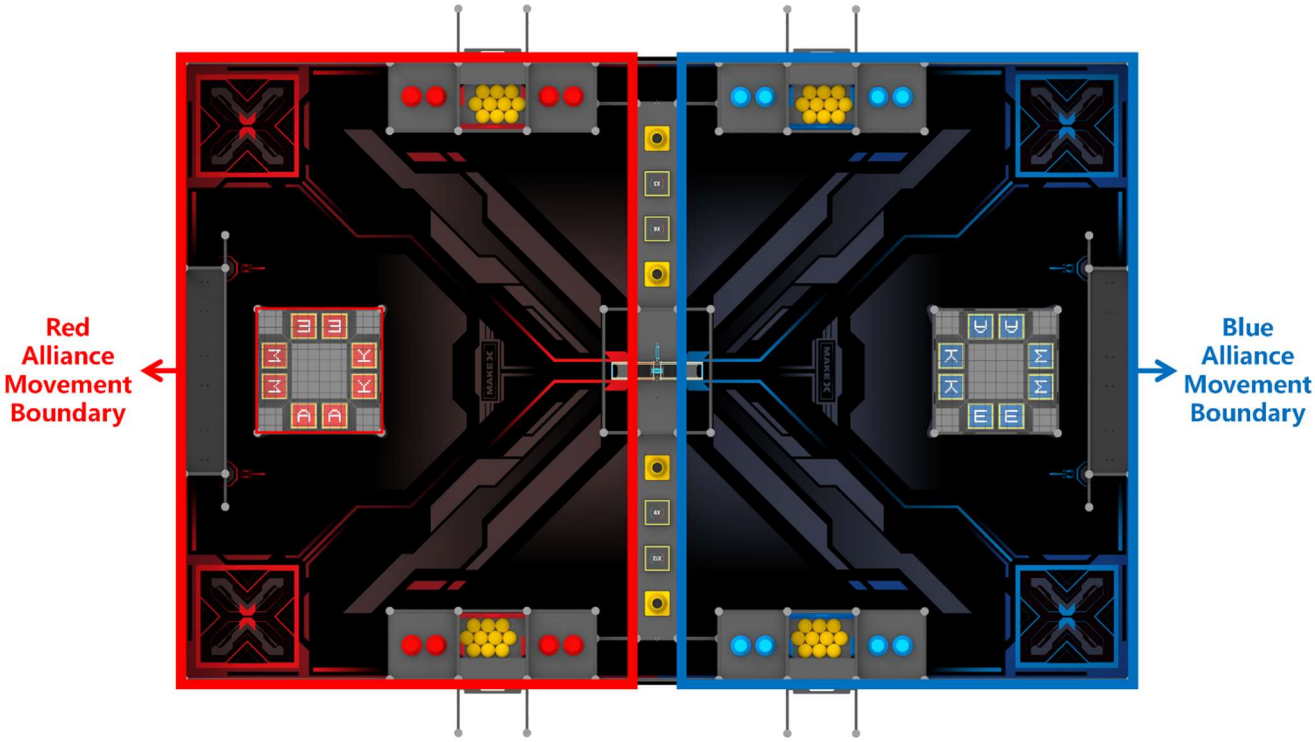
R05. The referee reserves the right to make an independent judgment regarding the safety of any specific robot.

- The violating robot will be disqualified from the current match.
- If the team wishes to continue competing, the robot must be modified or repaired to meet safety requirements and pass a reinspection by the referee before re-entering the competition.
- If the same team commits two safety violations, all match results for the event will be annulled.

Robot or Mobile Fortress Leaving the Field Boundary

R06. Except during the modification stage, no part of a robot's vertical projection may extend beyond the field boundary or its designated robot operation area. Throughout the entire match, no part of the Mobile Fortress may extend beyond the field boundary or its designated movement area.

- On the first occurrence, the referee will issue a verbal warning and begin a 3-second countdown. The robot or Mobile Fortress must return to its own area within 3 seconds.
- Failure to do so will result in a violation penalty, and the offending team will receive a 20-point deduction.
- **If the same violation occurs again, the offending team will receive a 120-point deduction.**



- **Fig 6.2-1. Robot or Mobile Fortress Movement Boundary**

6.3 Participant Behavior Rules

Participant Requirements

R07. One operator and one observer for each team. Each alliance includes two operators and two observers, and one of them is selected to be the captain of the alliance.

R08. It is not allowed for a third person as a substitution for on-arena players during the match. Operators are responsible for controlling the robot in each match. The operator and the observer can freely switch their roles during the match.

R09. Contestants shall tie up their long hair during competition preparation, robot debugging and on-field matches. Toe-bearing shoes are forbidden.

R10. Contestants shall wear goggles during the competition.

- The offending team must immediately make corrections and undergo

reinspection. If the team refuses to comply after the referee's warning or if the violation is deemed severe, the team will be disqualified from the current match, but may continue to participate in other matches.

Contestants' Standing Position

R11. Contestants shall stand in a certain range as shown in the following figure (the size of the operating area is subject to actual conditions)

- The offending team must return to its own area within 3 seconds, during which the referee will give a verbal countdown reminder. If the team fails to return in time on the first occurrence, it will receive a 20-point deduction. If the same violation occurs again, a 120-point deduction will be imposed.

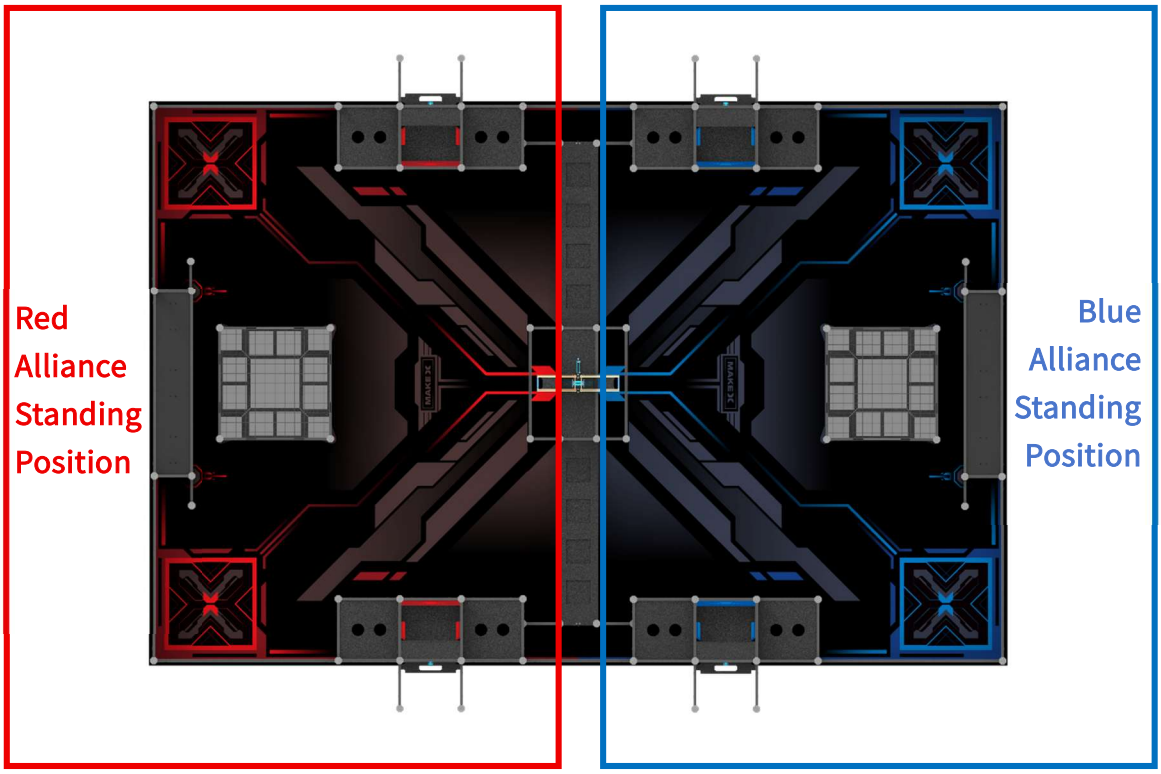


Fig6.2-2 Standing Position of Operating Area

Can't Arrival the Arena on Time

R12. Teams shall arrive on time. Teams that do not show up in the competing area over 5 minutes, will be treated as giving up this match voluntarily. If the whole competition schedule is delayed, please refer to the specific notice.

- The offending team will be disqualified from the current match and prohibited

from participating in it, but this does not affect other matches.

Starting the Match Prematurely

R13. Robots must not be activated before the referee announces the start of the match.

- If a team commits a violation, the offending team will receive a 20-point deduction.
- If the same violation occurs again, the offending robot will be suspended from the match.
- Any score advantage gained from the violation will be rendered invalid, and the field should be restored to its original state as much as possible before restarting that phase of the match.

Delayed End of the Competition

R14. After the end of the automatic stage, manual stage and final stage, the operator shall stop controlling the robot or stop the robot's operation program (except for the motion caused by inertia).

- The offending team will be penalized with a 20-point deduction.
- If the delay in ending the match provides the team with a competitive advantage, the referee shall invalidate the gained score and restore the field to its original state as much as possible.

Using a Banned Electronic Device

R15. During the competition, it is not allowed for contestants to use electronic communication devices (mobile phone, transceiver, computer, wireless network devices, etc.) to get in contact with the offsite people.

- The offending team must immediately cease usage and make corrections.
  If the team refuses to comply after the referee’s warning, the offending team will be disqualified from the current match and prohibited from continuing in that round, but this does not affect other matches.

Rules of Elimination Round

R16. During the BO3 match in the elimination round, after the end of each match, each alliance has 5 minutes to debug their robot and cannot do overtime.

- Teams that exceed the time limit will be disqualified from the current round and prohibited from participating in it, but this does not affect other rounds.

Malicious Complaints

R17. During a match, it is prohibited for contestants to make malicious complaints against the opposing team.

- After entering the competition field, if a team raises a complaint and, upon verification and judgment by the referee, it is determined that the accused team committed no violation, the complaining team will be deemed to have made a malicious complaint.
- The offending robot will be suspended from the current match.

Impolite Behavior

R18. During the competition, all participants must demonstrate a positive competitive spirit, showing respect toward alliance partners, opponents, and referees. Any impolite or inappropriate behavior—including but not limited to malicious complaints, mockery, verbal abuse, or physical altercations—is strictly prohibited.

- The offending team must immediately correct the behavior.
- If the team refuses to comply after the referee's warning, the team will be disqualified from the current match.
- In severe cases, the team will be disqualified from the entire event, and the organizing committee reserves the right to record the incident, which may affect the team's eligibility to participate in future official MakeX competitions.

6.4 Operation Rules

Using Bluetooth Controller in Automatic Stage

R19. Bluetooth controller shall be connected with the robot before the match. During the automatic stage, the blue-tooth controller shall be placed outside the arena;

contestants are only allowed to pick up their blue-tooth controller after the automatic stage; after the manual stage, contestants must stop controlling their robot immediately.

- If a robot fails to complete its autonomous program or does not remain stationary before the end of the automatic stage, the offending team will receive a 20-point deduction.
- Any score advantage gained from the violation will be rendered invalid, and the field should be restored to its original state as much as possible.
- Movements caused by mechanical inertia are exempt. The referee shall determine the violation based on the robot's actual movement status at the end of the stage.
- If a team directly operates or connects a Bluetooth controller during the automatic stage, the offending robot will be suspended from the match. In severe cases, the team will be disqualified from the current match.
- The referee may decide whether the match should restart depending on the situation.

Operating Suspended Robot

R20. The operator is not allowed to control the robot after the robot is suspended.

- The team will be disqualified from the current match.

Robot's Left-Behind Components

R21. During the match, a robot must not detach any parts (i.e., components separated from the main body and no longer under control) or leave mechanical devices on the field. This rule does not apply to minor non-structural parts (e.g., screws) or parts detached due to collisions caused by opposing robots or direct contact from other robots.

- The offending team will receive a 20-point deduction.
- If the same violation occurs again, the offending robot will be suspended from

the match.

Non-Compliant Robot Specifications

R22. The robot's size at the start of the match, as verified by both teams and the referee during pre-match inspection, shall be considered the qualified competition state. Once both teams confirm readiness, no appeals regarding robot size will be accepted after the match. Throughout the match, the robot's size, weight, and other parameters must comply with competition specifications. Exceptions apply only when non-human factors—such as impacts from opposing robots or field elements—cause deformation or size changes beyond limits.

- The offending team will be disqualified from the current match.

Illegal Removal of Field Elements

R23. Robots must not intentionally throw or move any field elements other than projectiles into the opponent's field or outside the arena. Balls that leave the field through normal motion are exempt from this rule. Elements knocked out of the field by the opponent's actions do not incur a penalty, but any scoring elements leaving the field will be considered invalid for scoring.

- First offense: 20-point deduction.
- Repeated offense: 120-point deduction.
- Any scoring element removed from the field becomes invalid and may not be placed back into the field.

Illegal Contact with the X Mark

R24. Robots may not directly or indirectly touch the X Marker during the match.

Its state may only be changed by shooting projectiles, not by any other means.

If this occurs, the referee shall pause the match and restore the X Marker to its original position.

- First offense: 20-point deduction.
- Repeated offense: 120-point deduction.

Illegal Removal of Upper Area of Mobile Fortress

R25. Robots are strictly prohibited from removing scoring elements that have entered their own Mobile Fortress upper area. The referee may pause the match to restore the original state of the fortress before resuming play. Any score advantage gained through this behavior shall be invalidated.

- First offense: 20-point deduction.
- Repeated offense: 120-point deduction.

Illegal Entering the Strategy Area Channel

R26. Throughout the entire match, no part of the robot is allowed to enter the Strategy Area Channel. The referee may pause the match if necessary and resume it after restoring the Strategy Area Channel to its original state as much as possible. Any scoring advantage gained by the violating team due to this action shall be invalidated.

- First offense: 20-point deduction.
- Repeated offense: 120-point deduction.

Restricting Opponent Robot Movement

R27. Robots may not obstruct or restrict the movement of opposing alliance robots or prevent them from interacting with field elements.

- The referee will issue a verbal countdown warning; the robot must disengage within 3 seconds.
- Failure to comply within 3 seconds will result in a 20-point deduction for the first offense, and a 120-point deduction for repeated violations.

Illegal Contact

R28. Except during the Reinforcement Modification Phase, participants are not allowed to directly or indirectly touch their robot during the match.

R29. Except as permitted during the Reinforcement Modification Phase, participants must not touch or move any field elements—including projectiles, red/blue bottles, red/blue letter cubes, bonus cubes, or cones.

At the end of the match, participants must immediately put down the controller, step back, and avoid any contact with the field frame or elements. If illegal contact alters the match outcome, the referee shall invalidate the affected score and restore the field to its original state.

- First offense: 20-point deduction.
- Repeated offense: 120-point deduction.
- Any scoring elements touched illegally become invalid and must be removed from the field.

Illegal Robot Loading or Removal

R30. During the Modification Stage, robots must be partially or fully inside their own starting area before being allowed to modify or resume competition.

Two robots cannot occupy the same starting area simultaneously for modification or restart. Outside of this phase, robots must not be removed from the field at any time. The vertical projection of the robot base will be used to determine compliance.

- The offending robot will be suspended from the match immediately.

Mentoring in Violation

R31. Throughout the match, no individuals other than team members (including but not limited to parents, mentors, or teachers) may enter the competition area or provide coaching or guidance in any form.

- First offense: 20-point deduction.
- The referee may increase the penalty, up to and including disqualification from the current match, depending on severity.

Off-Arena Contact

R32. During the match, participants are not allowed to make contact with any external individuals or spectators, including passing parts, controllers, or other materials.

- The offending team will be disqualified from the current match.

Bonus Resources Not Placed in the Team's Resource Area

R33. Before the start of the Manual Stage, teams that have obtained bonus balls must place them inside their own Resource Area. After the Manual Stage begins, any unredeemed bonus balls will become invalid and cannot be exchanged.

6.5 Modification Rules

The Robot Not in the Starting Area Before the Modification Stage

R34. At the end of the Manual Stage, the robot needs to be taken out from the Starting Area (partially or completed in the starting area) for modifications. In case the robot is not inside the Starting Area (Partially or Completely In), it will not be allowed to conduct any operations during the Modification Stage.

- The offending robot will be suspended from the match immediately.

Modify Outside the Designated Area

R35. The team can only modify the robot after the vertical projection of the robot is completely out of the arena. Modification cannot be conducted when the robot is lifted just above the Arena.

- The offending robot will be suspended from the match immediately.

Changing the State of Arena Elements

R36. When taking the robot out of the arena, contestants are not allowed to contact those scoring props that have no contact with the robot or change the state of scoring props.

R37. When taking the robot out of the arena, the robot cannot carry any scoring props except for the balls. The other scoring props shall be placed in the arena nearby. If the alteration of field elements affects the match score, the referee shall invalidate the affected score and restore the field to its original state as much as possible.

- The offending team will receive a 20-point deduction.
- Any scoring elements touched illegally will be immediately invalidated, must be removed from the field, and may not be placed back.

The Robot Not Inside the Starting Area Before the End of the Modification Stage

R38. The robot shall be placed in its own Starting Area before the end of the Modification Stage. The robot must not begin modification while being lifted off the ground or suspended above the field.

- The offending robot will be suspended from the match immediately.

The Modified Robot Failed to Match the Check-in Status

R39. After the Modification Stage, robots must meet all competition requirements as defined in the rules.

- The offending robot will be suspended from the match immediately.

7. Appeal and Arbitration

7.1 Results Confirmation

Results Confirmation

When a single match ends, captains of both teams need to confirm the results with the referees and then sign the scoring sheet. Both teams shall not have any objection to the results of this single match after their signatures. If there is an error regarding the points calculation for each item on the paper scoring sheet, it will be corrected and confirmed by the resulting approval staff when checking the results; other result-related issues will not be dealt with, and the signed results will be valid.

Dispute Settlement

If the team has any objections to the results and the referee's explanation, they can refuse to sign the score sheet. Instead, they need to write clearly about the situation in the remarks part of the result form. The committee will only deal with appeals related to the reasons stated in the remark column of the paper scoring sheet.

7.2 Appeal Procedure and Valid Appeal Period

Appeal Procedure

Appeals should be lodged within the “valid appeal period” by the prescribed

procedure and follow the civil participation spirit. The captain of the team needs to fill in the Appeal Form and then cooperate with the Arbitration Commission to investigate the actual situation. Both sides will be required to arrive at the designated place if the Arbitration Commission requires. During the investigation, the captain of the appeal team must be present, and only captains or contestants of both teams can be present. The Arbitration Commission has the right to communicate with the team alone, avoiding the mentor, the parents of the contestants, their relatives, or friends. The appellant should express facts clearly and objectively, not over-emotionally.

Valid Appeal Period

Normally, the appeal should be lodged within 30 minutes after the end of the competition. Please check the Program Brochure for a specific effective appeal period before the competition. The appellant and the respondent must be present at the designated place on time.

Appeal Response

Normally, the Arbitration Commission responds to the appeal after the end of the competition on the same day or before the start of the competition on the next day.

7.3 Invalid Appeal

Overdue Appeal

Appeals that are not lodged within the "valid appeal period" will be considered invalid and inadmissible. If the appellant fails to be present on time or leaves without any reason during the investigation, the appeal will be considered invalid. If the respondent fails to be present on time, the Arbitration Commission will directly determine the arbitration result and render it as a final result.

Unauthorized Personnel in Appeals

Only registered team members are eligible to submit appeals.

Appeals submitted by non-participants will not be accepted.

If unauthorized personnel (including parents, mentors, or other individuals)

participate in the arbitration process without permission from the committee, the team involved will receive a formal warning.

If the team fails to comply after multiple warnings, it will be disqualified from the competition.

Unclear or Emotional Appeals

If the appealing party is unable to clearly or calmly express the appeal due to emotional reasons, making it impossible for the Arbitration Committee to understand the facts or continue the investigation, the committee will issue a warning to the team.

If the team fails to comply after multiple warnings, it will be disqualified from the competition.

Uncivil Appeal

Both parties involved in an appeal must maintain courteous and respectful conduct.

Aggressive actions or inappropriate language of any kind are strictly prohibited.

If a team fails to comply after multiple warnings, it will be disqualified from the competition.

7.4 Arbitration Procedure

Arbitration Procedure

The Arbitration Commission consists of the chief referee, the arbitration consultant, and the competition technical director. The Arbitration Commission is responsible for accepting the appeals and conducting arbitration investigations, to ensure the smooth progress of the competition and the fairness and justice of the competition results. The playback videos and photographs of any competition may be inaccurate due to the shooting angle, which is only used as reference but not arbitration evidence.

Arbitration Results

The arbitration results can be divided into “maintaining the original result of the match” or “re-match”, and the two teams shall not appeal again. If the arbitration result is a "re-match", the two teams shall have a re-match according to the time and arena

stipulated in the Appeal Form. If either team fails to reach the arena within 5 minutes after the beginning of the match, the team shall be deemed to quit the match.

Additional Remarks

The Arbitration Commission determines the final arbitration result, and neither side shall dispute the result of the appeal anymore.

8. Statement

MakeX Robotics Competition Committee reserves the final interpretation of *the 2026 MakeX Challenge Storm Breaker Rules Guide.*

8.1 Rules Explanation

To ensure fair competition and high-quality competition experience, the MakeX Robotics Competition Committee has the right to update and complement this Rules Guide regularly, and issue and implement the latest version before the competition.

During the competition, all matters not stated in the Rules Guide shall be decided by the referee team.

This Rules Guide is the basis for refereeing, and the referee team has the right to adjudication during the competition.

8.2 Disclaimer

All contestants in the MakeX Robotics Competition shall fully understand that safety is the most important issue for the sustainable development of the MakeX Robotics Competition. To protect the rights and interests of all contestants and organizers, according to relevant laws and regulations, all contestants registered for the 2024 MakeX Robotics Competition, shall acknowledge and abide by the following safety provisions:

(1) Contestants shall take adequate safety precautions when constructing the robots, and all parts used for constructing the robots shall be purchased from

legal manufacturers.

(2) Contestants shall ensure that the structural design of the robots takes into account the convenience of the inspection and actively cooperate with the host of the competition.

(3) When modifying and using the parts with potential safety hazards for the robots, it must conform to the national laws, regulations, and quality & safety standards. Those operations shall be manufactured and operated by persons with relevant professional qualifications.

(4) During the competition, the teams shall ensure that all the actions such as construction, testing, and preparation will not do harm to their team and other teams, referees, staff, audiences, equipment, and arenas.

(5) In the process of construction and competition, if any action that may violate the national laws, regulations, or standards occur, all consequences will be borne by the contestants themselves.

The competition kits and parts sold and provided by the supporter, MakeX Robotics Competition Committee, shall be used according to the instructions. MakeX Robotics Competition Committee will not be responsible for any injury or loss of property caused by improper use.

The official language for MakeX is Chinese. English or other language translations are prepared to facilitate the team's preparation process. All documents translated into English are for reference only.

8.3 Copyright Declaration

Appendix 1. Awards and Annual Points

In the 2026 season, according to the scale of the competition and the number of teams, the competition will be classified into Points Race/Regional Competition, National Competition, International/Intercontinental Competition, and World Championship. In the MakeX Challenge Storm Breaker competition, teams can obtain points based on the number of wins, ties and losses in the match. Each team can voluntarily sign up for all kinds of Points Race all year round to accumulate annual points. The accumulation of annual points is based on the Team Number.

In a single-point race, teams can obtain annual points based on the winning points in the qualification round and elimination rounds.

Competition Type	Rounds	Win	Tie	Loss
Points Race/Regional Competition	Qualification	5	2	1
	Elimination (Best of 3)	10	/	2
National Competition	Qualification	10	4	2
	Elimination (Best of 3)	20	/	4
International/ Intercontinental Competition	Qualification	15	6	3
	Elimination (Best of 3)	30	/	6

Teams that have won the champion, runner-up, second runner-up and other awards can obtain additional annual points. For the details of the award list, please refer to **the MakeX Awards Guide.**

Category	Awards	Regional /Points Race	National	International/ Intercontinental
Special Award	Champion	15	30	45
	Runner-up	10	20	30

	Second runner-up	5	10	15
	Innovative Design Award	-	5	10
	Engineering Notebook Award	-	5	10
Comprehensive Award	Outstanding Mentor Award	-	-	-
	Promotion Ambassador Award	-	5	10
	Technology Sharing Award	-	5	10
	MakeX Spirit Award	-	-	10

For example, team X20000 obtains the champion in one Points Race, and all the results show as below.

Qualification Round 1	Qualification Round 2	Qualification Round 3	Qualification Round 4	Annual Points from Qualification Round=13
Win (5)	Loss (1)	Tie (2)	Win (5)	
Top Eight Battle	Semi-final	Final		Annual Points from Elimination Round=30
Win (10)	Win (10)	Win (10)		

The total annual points that team X20000 obtains = 13+30+15 = 58.

Appendix 2. Engineering Notebook Guideline

***Instruction:**

1. The value of an engineering notebook: It helps the team establish files and record the whole learning process. Therefore, it is necessary to record engineering notebooks during the entire preparation for the competition.

2. Engineering notebook submission: Teams can use online documents or handwriting. No matter which way to use it, each team must submit a paper version onsite.

Paper engineering notebook: As the Challenge programs require the assessment process, one copy of the paper version shall be submitted by each team to the judges onsite. If there is no assessment process (Starter & Explorer), each team will need to submit one copy of the paper version to the staff at the inspection area. Teams that cannot submit the original engineering notebook should prepare their copies.

3. An engineering notebook will be required for the evaluation of all technical awards. Please refer to the Competition Guide for the evaluation criteria.

Basic Requirements for Cover

The team's name, team number, and competition program must appear on the cover of the engineering notebook.

Basic Requirements for Contents

1. **Clear content**

Creating content brings convenience for the judges to review and quickly find the corresponding section.

2. **Process records (Required)**

Every improvement of the robots should be recorded from prototype design, construction, to the debugging. Keep pictures of all manuscripts, design drawings, calculation processes, circuit diagrams, etc., and insert them into the engineering notebook in the form of pictures.

1) Schedule of robot building progress

2) Design inspiration/sketch

3) Technical principle (it can be disassembled into different parts)

4) Production step by step (with clear pictures)

5) Problems encountered and solutions

Examples of problems:

What technical failures did you encounter? Why did you fail? How did you solve the problems finally?

What efforts have you made for the robots? What improvements have been achieved?

Does your project progress schedule go as planned? What accidents or delays have occurred? How to fix it?

Have there been any disputes among the team members and how to settle them in the end?

3. Projects summary

1) The structure and function of the project (with pictures and text enclosed)

2) The technical innovations of the project

3) Competition strategies for scoring and defense

4. Team introduction

1) A brief biography of each team member and their role on the team

2) Culture displaying (logo, team flag, slogan, posters, T-shirt, etc.)

3) Excellent achievements sharing (Stories)

5. Feelings and other things you want to share (optional)

1) Achievement in the competition (Technical)

2) Growth in the competition (Spiritual)

3) Suggestions for competition

Appendix 3 Robot Self-Check Form

MakeX Challenge Storm Breaker
Robot Self-Check Form

Please follow the requirements of the self-checklist and check the box if your robot meets the requirements. And submit the signed self-checklist during the inspection day. Thanks for your cooperation.

Team Number: _____ Team Name: _____
Mentor Name: _____
Actual attended Team Member: _____

1. Basic Information
Power Management Module Bit Code: _____ (A 4-bit code consists of numbers and an alphabet, eg: 004C)
Robot Size: Length_____mm, Wide_____ mm, Height _____ mm. (Robot size should not exceed: length 500mm, width 500mm, height 700mm. Please measure your robot and fill in the maximum extension size)
Robot Weight: _____kg (Should not exceed 10kg)
Self-made Flag: Length_____ mm, Wide_____ mm (Flag surface is no less than 400mm(length)* 300mm(wide). The flag surface is made of flexible materials, and the flagpole is allowed to use hard materials)
2. Equipment
Quantity of DC motor & Encoder motor (37DC Motor&180 Smart Encoder Motor) ≤ 13 ☐**Yes** **Servos (MS-12A) ≤ 6** ☐**Yes** **Brush-less Motor (2823/2824 Brush-less Motor) ≤ 2** ☐**Yes**
Quantity of Bluetooth controller: 1 ☐**Yes** **Wireless control: Bluetooth version: BT4.0** ☐**Yes**
Name and parameters of battery: (3S Li-Po Battery, Output Voltage: 11.1V **Discharge Rate: 25-30c, Battery capacity: 4200mAh)** ☐**Yes** **Quantity of battery is one.** ☐**Yes**

3. Others			
SN	**Items**	**Specific Requirements**	**Meet Requirement**
1	Dangerous Structure	The robot's structure that may harm people is required to ensure safety protection during robot handling and transporting.	▢Meet Requirement
2	Competition Area Destruction	Competition area destruction is prohibited in the process of robot loading, unloading and transporting.	▢Meet Requirement
3	High-power Equipment	High-power equipment is not available during the assembling and operation of the robot.	▢Meet Requirement
4	Unsafe Energy Storage Equipment	Please keep safe while using energy storage devices (spring).	▢Meet Requirement
5	Banned Material	Robots are not allowed to use the flammable gases, pyrotechnic equipment, hydraulic components, mercury-containing components, exposed hazardous materials, unsafe counterweights, designs that may cause entanglement and competition delays, sharp edges and angles, materials containing liquids or gelatinous substances, and any part that the electric current on the robot may be conducted to the competition area.	▢Meet Requirement
6	Personal Safety	Contestants shall wear goggles; long hairs shall be tied up; contestants are prohibited from wearing toe-baring shoes to enter the competition area.	▢Yes
7	Luminous/Acoustic Sensor	Excluding the built-in buzzer of the motor and main control unit, the robot is not allowed to use any electronic sound-producing devices. Aside from the indicator lights of the main control and sensors that comply with technical specifications, light sources used in conjunction with sensors, and laser aiming devices that meet technical specifications,	▢Yes

		the robot may use RGB LED lights with a voltage of 5V or below (including 5V) for decoration or status display, provided they do not interfere with the operation of other teams. If a laser aiming device modified from a teaching laser pointer requires separate power, only the built-in paired battery (such as AA batteries) may be used, and it must not supply energy to the robot's power system. For uncommon laser aiming devices, please provide the corresponding model and parameters for verification.	
8	Self-Customized Parts and Accessories	Self-customized parts can be used: plates, profiled materials, 3D printing pieces, metals, wood, plastics, rubber, magnets; Usage requirements for auxiliary materials: It is allowed to use the ropes, cables, wires, springs, rubber bands, leather hoses, surgical tubing, punched sheets, injection molded products; It can use commercial product components with low integration instead of higher integration.	▢Yes
9	Wrap the Sharp Structure	The exposed sharp edges of the robots have to be wrapped with sponge strips.	▢Yes
10	Detachment/Shedding	Detachment of the robot and its component is forbidden during the competition.	▢Yes
11	Interference	It is prohibited to interfere with the electronics and sensors of other robots.	▢Yes
12	Team Number	Team number's printing font should be Microsoft YaHei, black bold, 130 font sizes, and the background should be in light color.	▢Yes
13	Engineering Notebook Submission	Submitting project notebook containing robot control source code before the competition.	▢Yes
14	Contaminating Competition	The lubricant and other materials used by robots shall not contaminate the arena or other robots.	▢Yes

	Area		

Our team has checked our own robot according to the self-check form has filled in the actual data on this form and submitted it to the MakeX Robotics Committee. We promise that we will participate in the competition in the above state and will report any changes in time. During the competition, if the robot does not comply with the requirement or our team uses any in-compliance robot, the competition result will be disqualified and all responsibilities will be taken by the team without objection.

Team Leader/Mentor Signature:

Date：

Appendix 4 MakeX Challenge Score Sheet

MAKEX ROBOTICS COMPETITION

2026 MakeX Challenge Storm Breaker --Scoring Sheet

Competition Info: Qualification Round☐ / Elimination Round ☐___ (Arena) No.___ (Session)

Team Registration	Match Points					Winner
Red Alliance	Red Alliance Score & Quantity			Blue Alliance Score & Quantity		
Team 1 (No.) :	30pts/each		X Mark 30pts/each		30pts/each	Red Alliance
Team 2 (No.) :	50pts/each		Team Flag 50pts/each		50pts/each	
	30pts/each		Cones 30pts/each		30pts/each	
Blue Alliance	30pts/each		Upright pins 30pts/each		30pts/each	
Team 1 (No.) :	20pts/each		Non-upright pins 20pts/each		20pts/each	
Team 2 (No.) :	10pts/each		Pins contact map 10pts/each		10pts/each	
	30pts/each		Letter Cubes 30pts/each		30pts/each	Blue Alliance
	50pts/each		MakeX Challenge 50pts/each		50pts/each	
	10pts/each		Balls 10pts/each		10pts/each	
			Penalty			
			Total Points			

Captain of Red Alliance	Captain of Blue Alliance	Remark
(Please confirm the scoring results and sign here)	*(Please confirm the scoring results and sign here)*	*(If there's any disagreement about the results, please write down the situation clearly and sign here.)*
Referee Signature	**Referee Signature**	
(Please confirm the scoring results and sign here)	*(Please confirm the scoring results and sign here)*	

Appendix 5 Instructions for Li-Po Battery

To ensure the safety of the Li-Po battery, each team should designate a person to supervise the usage of the battery and to inform the teammates about the safety instructions for the Li-Po battery. The following issues should be noted while using Li-Po battery:

- Please use the Li-Po battery while ensuring that you carefully read and understand the safety instructions.
- Safely charging and discharging.
- It is required to use the specified charger for the Li-Po battery provided by the manufacturer, as well as read the instructions for the charger carefully. In case of emergencies to be dealt with, please ensure that someone is nearby during charging. Please do not overcharge or overcharge. It will be deemed overcharged if the voltage of a single battery cell is over 4.2v, and less than 3.0v is over-discharged. Overcharge may cause the explosion of the Li-Po battery, while over-discharge can easily damage the battery and shorten its service life.
- Please check the battery's voltage and electricity quantity carefully before charging or using it.
- Please charge the battery at 0-45 ℃.
- Safe storage
- The battery cell cannot be overheated at any time. When the temperature of the battery cell is as high as 60℃, there will be potential safety hazards, even burning.
- In the process of charging, the battery is not required to be closed or placed directly on flammable materials (paper, plastic, etc.). If conditions permit, it is best to charge it in a fire-proof safe box.
- Please do not put batteries near liquids, open fires or heaters. Place batteries out of reach by kids.

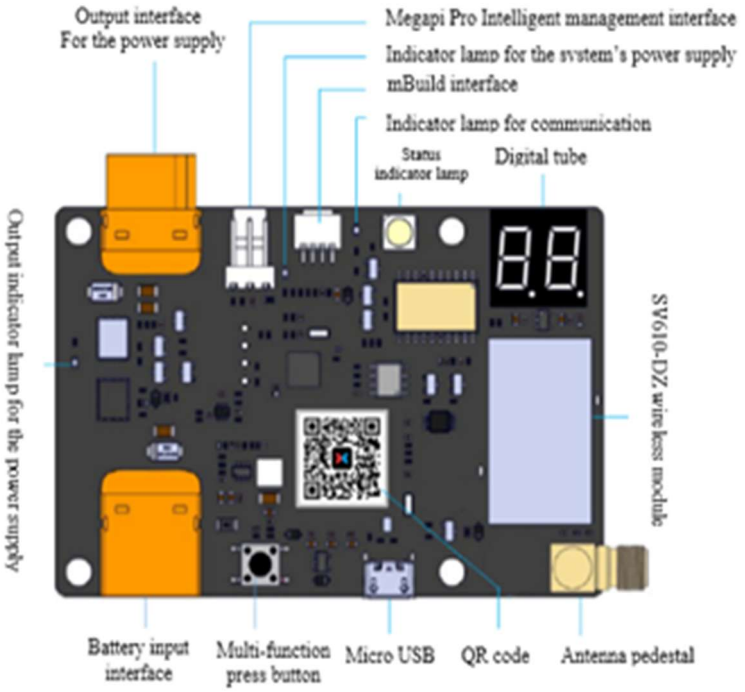
- Please do not detach and restructure the batteries arbitrarily or change their wiring, do not assemble the batteries privately. The following behaviors are deemed as dangerous: detach and restructure the old battery cells, or restructure one of the detached battery cells with another restructured one (It can easily cause short-circuit combustion without the particular assembly instrument).
- If a occurs collision during the competition, please take out the battery. Please carefully check the state of the battery and connector. (Note: Batteries may be overheated with high temperatures.)
- Do not spill electrolytes on the eyes or skin. In case it spills inadvertently, please wash it with clean water immediately. In case it is serious, please seek medical care immediately.
- No short circuit is allowed (positive and negative poles are connected).
- Do not directly contact the leaked battery.
- For batteries that have not been used for a long time, please ensure a charge-discharge activation within 3 months to maintain stability.
- During the storage and transportation of Li-Po batteries, please place them in special fire-proof safety bags or safety boxes.

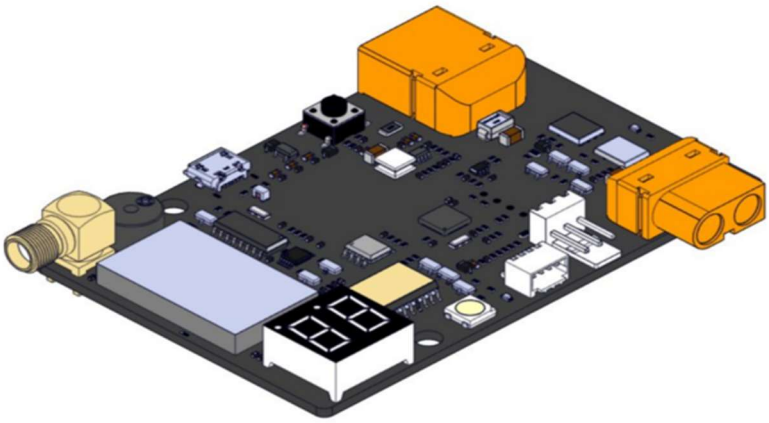
Appendix 6 Power Management Module

Introduction of Power Management Module

The power management module is used in coordination with the main board (NovaPi), which is a necessary electronic device to participate in the competitions of the 2024-2025 Season Ultimate Winner and Ultimate Warrior.

Module Size: 85mm(length) x 56mm(width) x 11.5mm(height);





Working Voltage: 6V - 12V;

On-board LED Lamp

LED Lamp includes an indicator lamp for power output, an indicator lamp for system power and an indicator lamp for communication

- **Indicator Lamp for Power Output:** The red indicator lamp is always on when having power output, and goes off when the power is disconnected.
- **Indicator Lamp for System Power:** The red indicator lamp for system power is always on when the module is working.
- **Indicator Lamp for Communication:** The blue indicator for lamp communication flashes when the module updates its firmware.

Indicator Lamp for Status (RGB Lamp)

Indicator lamp for status mainly includes four statuses: power off, red, green and blue.

- **Power Off:** The Bluetooth module is detected after the power management module is powered on. The RGB lamp is powered off when the Bluetooth module cannot be detected.
- **Red:** After a normal power-on, click the button and the RGB lamp flashes red once;
- **Green:** In the manual stage;
- **Blue:** In the automatic stage.

Digital Tube

The two-digit digital tube is mainly used to display the current channel and an abnormal state of the wireless communication module.

- In the normal state, the channel number of the current wireless communication module is displayed by the two-digit digital tube. The channel number of the wireless communication module is 1~40, so that the number displayed by the digital tube is 1~40. If the current channel is 16 channels, the two-digit digital tube displays the number "16".
- The power management module will detect the wireless communication module when it is powered on. If the wireless communication module cannot be detected, the 2-digit digital tube will display the letter "Er", meaning error.

- When the battery is low powered, the two-digit digital tube displays the symbol "-" and the current channel number alternately.

Buzzer

The buzzer will send the sounds of reminding and warning.

- The buzzer will shortly buzz when the module is normally powered on and be detected, together with the wireless communication module is online;
- When the power management module is reset, the buzzer will sound for 2 seconds;
- When the wireless communication module cannot be detected after power-on, the buzzer rings three times continuously.

Operation of Power Management Module

Multi-function Button

Multifunctional button has four modes: reset, click, double-click and long-press.

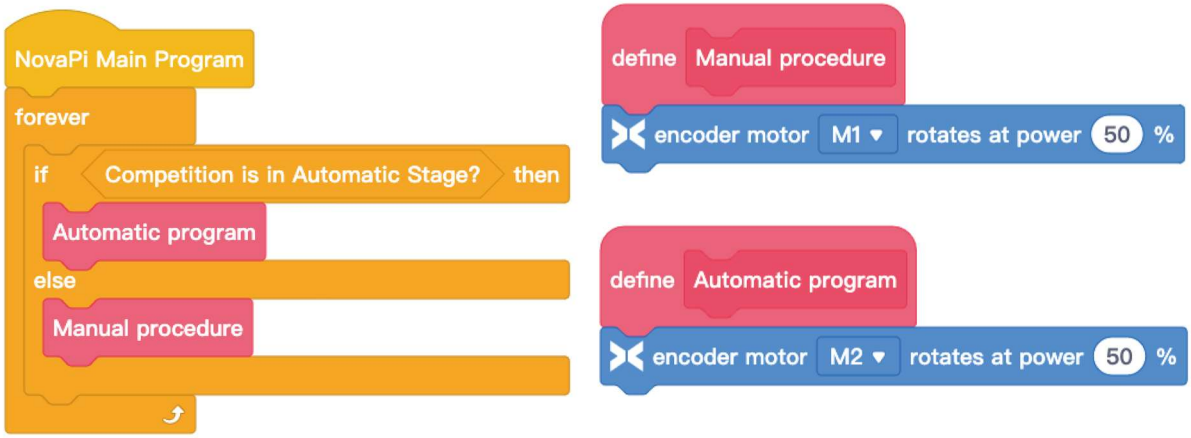
- **Reset：** Firstly, press the multi-function button and meanwhile insert the Li-Po battery into the power management module. The power management module restores the default configuration parameters. The buzzer sounds for 2 seconds and the digital tube displays the number "20";
- **Click:** Click the multi-function button once, the power management module reports the Bluetooth module UID once, and the RGB lamp flashes red once.
- **Double Click:** Double click the multi-function button once, the power management module will delay 3 seconds and switch between the automatic program and manual program (It can be observed whether the state switch is successful through the RGB indicator, the RGB blue lamp is always on during automatic stage, the RGB green lamp is always on during manual stage, and the RGB lamp flashes during the delayed switching). Double click is only valid when the Bluetooth module is the defaulted to "20" channel (It is only valid when the digital tube displays the number "20");
- **Long Press:** Long press the multi-function button (2-3 sec.) to switch the output state of the power supply. That is if the current power is disconnected,

the power will connect after long pressing and its indicator lamp becomes red. If the power connects, the power will disconnect after long pressing and its indicator lamp powers off.

Starting Signal Identification Code of Automatic Program

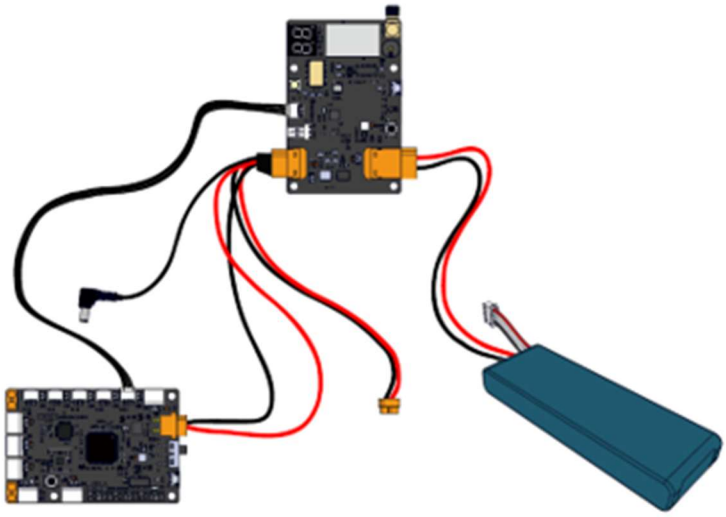
In automatic stage, the competition system sends relevant instructions to the power management module of the robot, so as to shield the controller signal and start the automatic program of the robot. In order to start the automatic program on the mainboard normally, it is necessary to insert a fixed code into the program to identify the instructions to start the automatic program sent by the competition system.

(Please put the program in manual stage and automatic stage into the corresponding positions.)



Installation Manual

- The power management module is a necessary electronic component for the competition. Please make sure that it is securely fixed, and cables are tightly connected. For protection, it is suggested to use an acrylic box of power management module;
- The data cables leading to the mainboard must be connected firmly as follows:



- Adjust the position of the antenna to prevent it from interfering with the movement of other motion devices, and try to avoid the antenna exposed to metal materials;
- The power management module must be fixed on the surface of the robot and be accessible to scan (power management module ID);
- The following operations are not allowed at any stage after the start of the competition, especially during the modification stage:
    a. The replacement of Li-Po battery or re-unplugging and re-plugging of the Li-Po battery.
    b. Press the reset button of the power management module (any operation of the power management module is prohibited).

- When the competition is finished, the robot needs to be re-powered by itself, and the power supply can be restored by unplugging and plugging the Li-Po battery;
- The power management module corresponds to the teams' information in the competition system one by one. Please do not replace that module without authorization. If it needs to be replaced, please contact the staff. Any problems caused by the unauthorized replacement of the power module shall be borne by the team.

Appendix 7 Supplementary Explanation of Competition Procedure

Engineering Notebook Submission

MakeX Robotics Competition Committee encourages teams to record engineering notes, and excellent notes will be an important basis for the team's award evaluation. The submission of paper engineering notebook and award setting based on pre-match notice and program brochure. Generally speaking, the submission of paper engineering notes is necessary in medium and large-scale events, which will serve as an important basis for the award evaluation. Please refer to **Appendix 2 Engineering Notebook Guideline**.

Pits Area Decoration

Each team has its own space in the pits area, where teams can decorate their space to make their teams known to people, and participate in the award evaluation. Teams can rest and debug robots in the pits area, and please keep the area clean and tidy. The suggestions are as follows:

6. **Display Content (provided by teams)**

(1) Team Flag

(2) HD Images (3-4 copies)

(3) Team Introduction (no more than 200 words)

(4) Peripheral Display (if any)

7. **Display Form**

Team Poster/Roll Up Banner + Team Flag + Team Peripheral (if any) + Team Members/Teachers' Onsite Suggestion

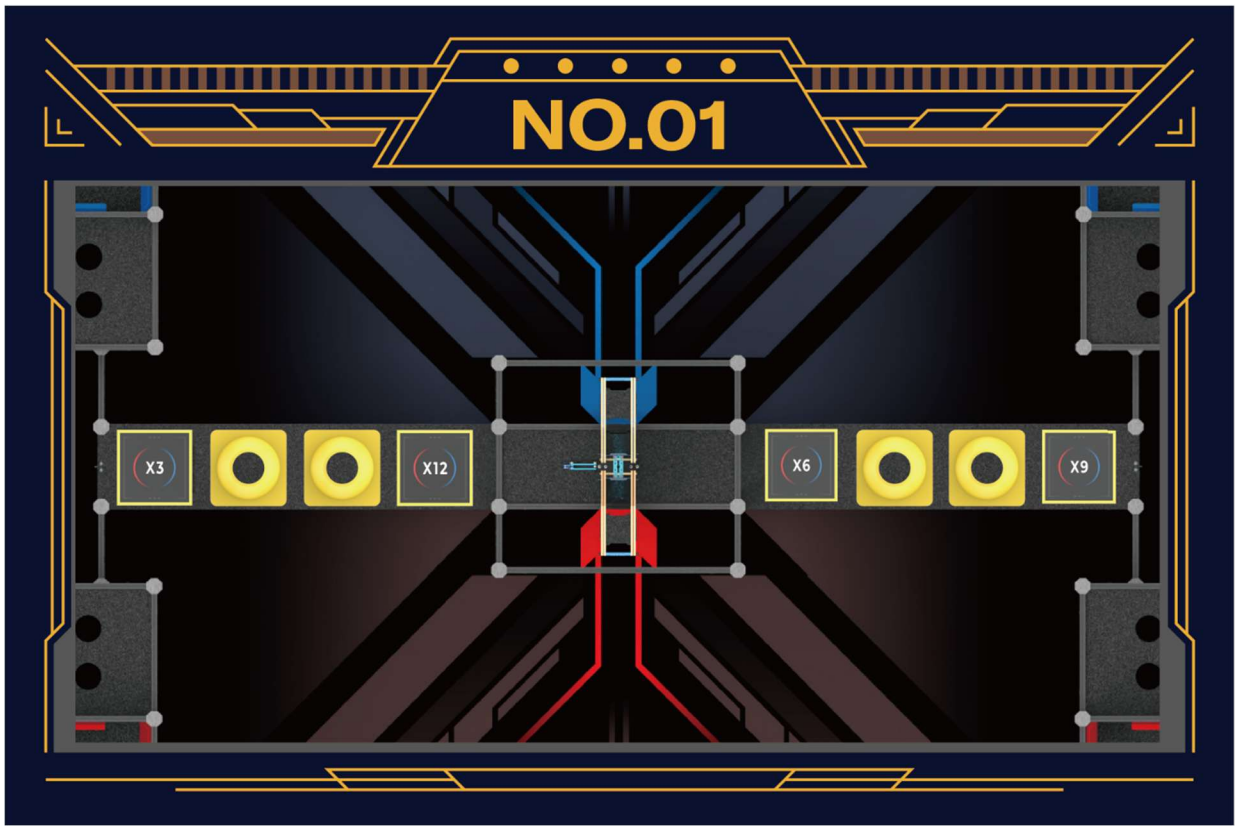
Practice Round

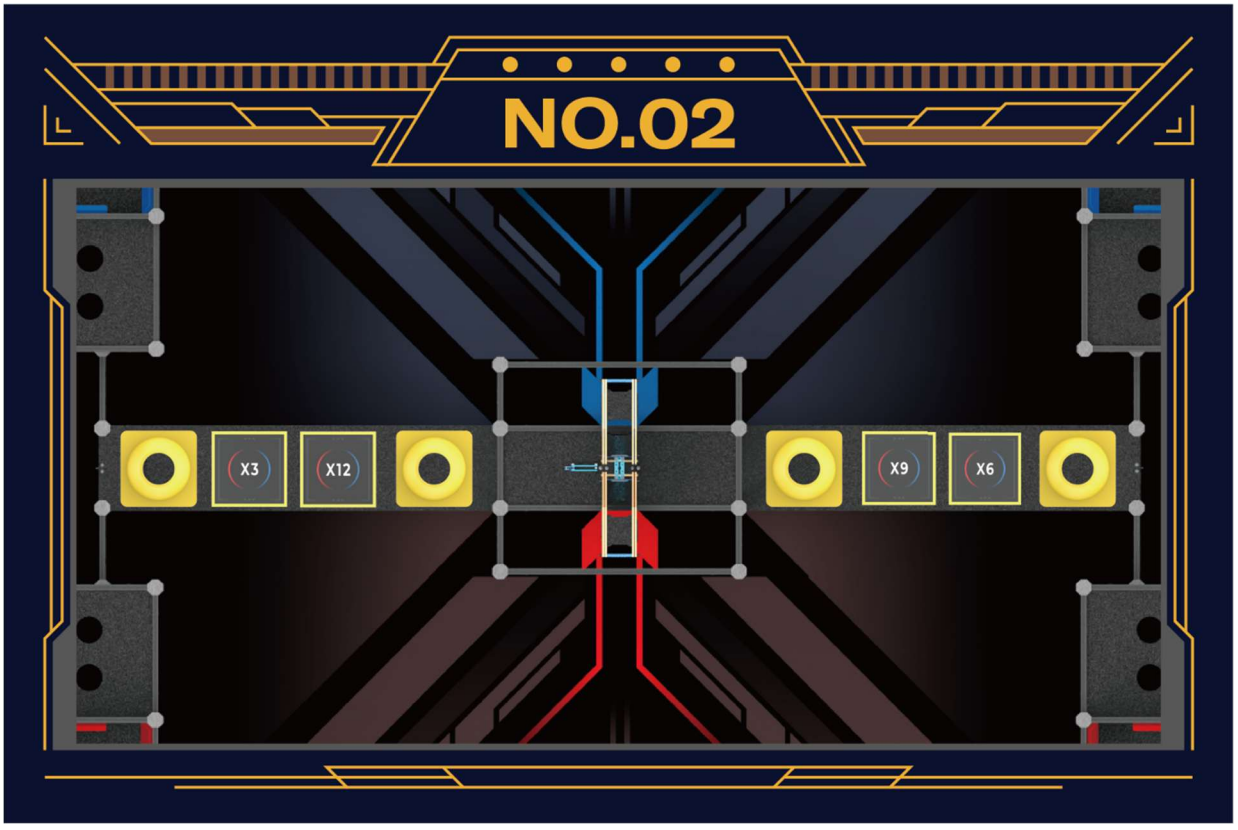
Teams who have finished their robot inspection can participate in practice round. The schedule will be announced at the entrance in form of notices, and teams are required to queue in line before entrance. Not all competitions have a practice round, which can be informed based on actual situation.

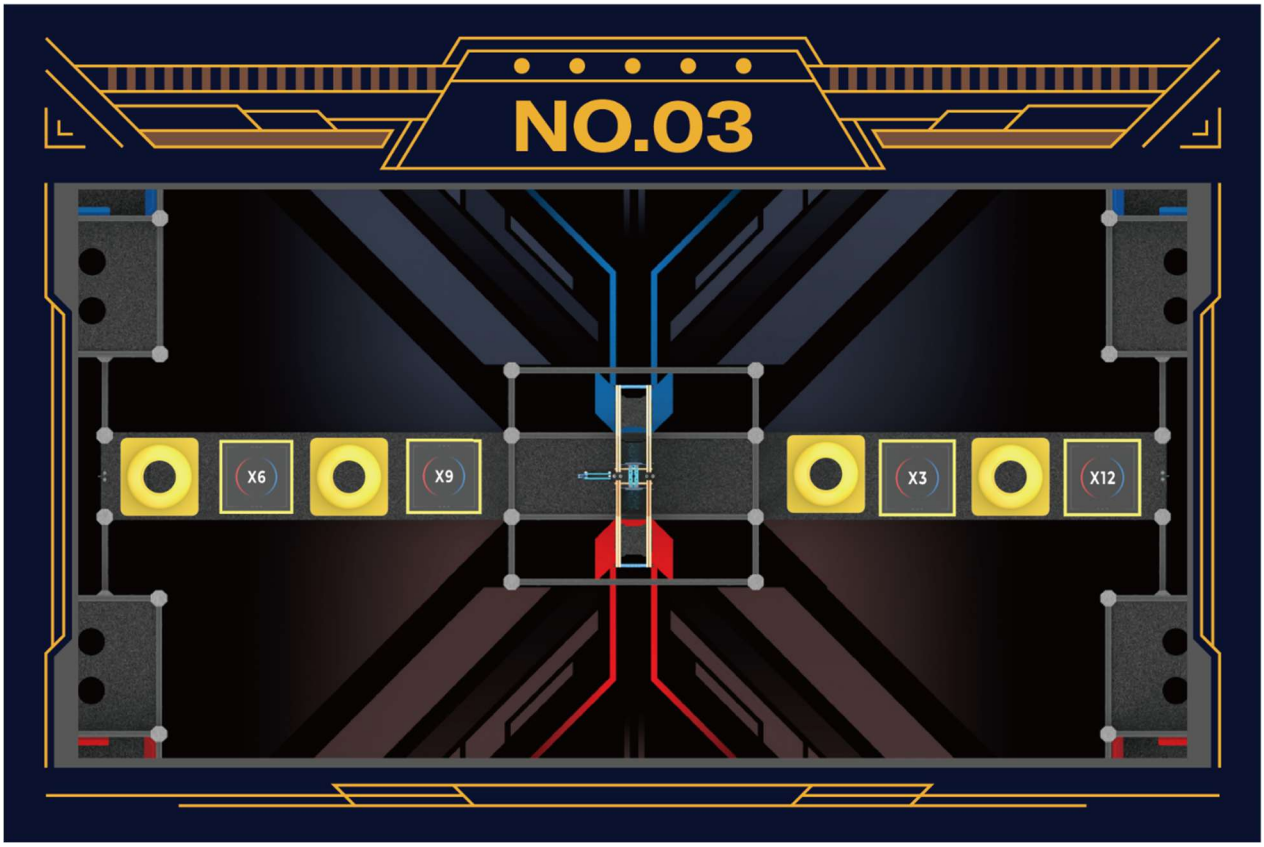
Team Assessment

MakeX encourages contestants to master theoretical knowledge of robots as well as develop their creativity and skills of making robots by participating in the competition. By the method of Q&A and onsite problem-solving, the assessment with 10 minutes will be conducted to examine students' knowledge of robots. In this procedure, all team members must participate together except their mentors. Each team should attend the assessment on time, with 1 copy of the engineering notebook and the robot. The assessment, with its aim to examine students' knowledge of robot, will be conducted in three aspects, including basic robotics theory, machinery and programming as well as innovation. The judges will ask questions or require an onsite operation demonstration. In a regular points race, teams can obtain different score (5, 3, 2, 0) based on their onsite performance grade (S, A, B, C). The assessment result will be announced on the MakeX official website after the qualification round. Teams obtaining zero point in the assessment procedure will not be able to enter the elimination round. The assessment score will be adjusted accordingly for different grade of point races.

Appendix 8 Prop Cards



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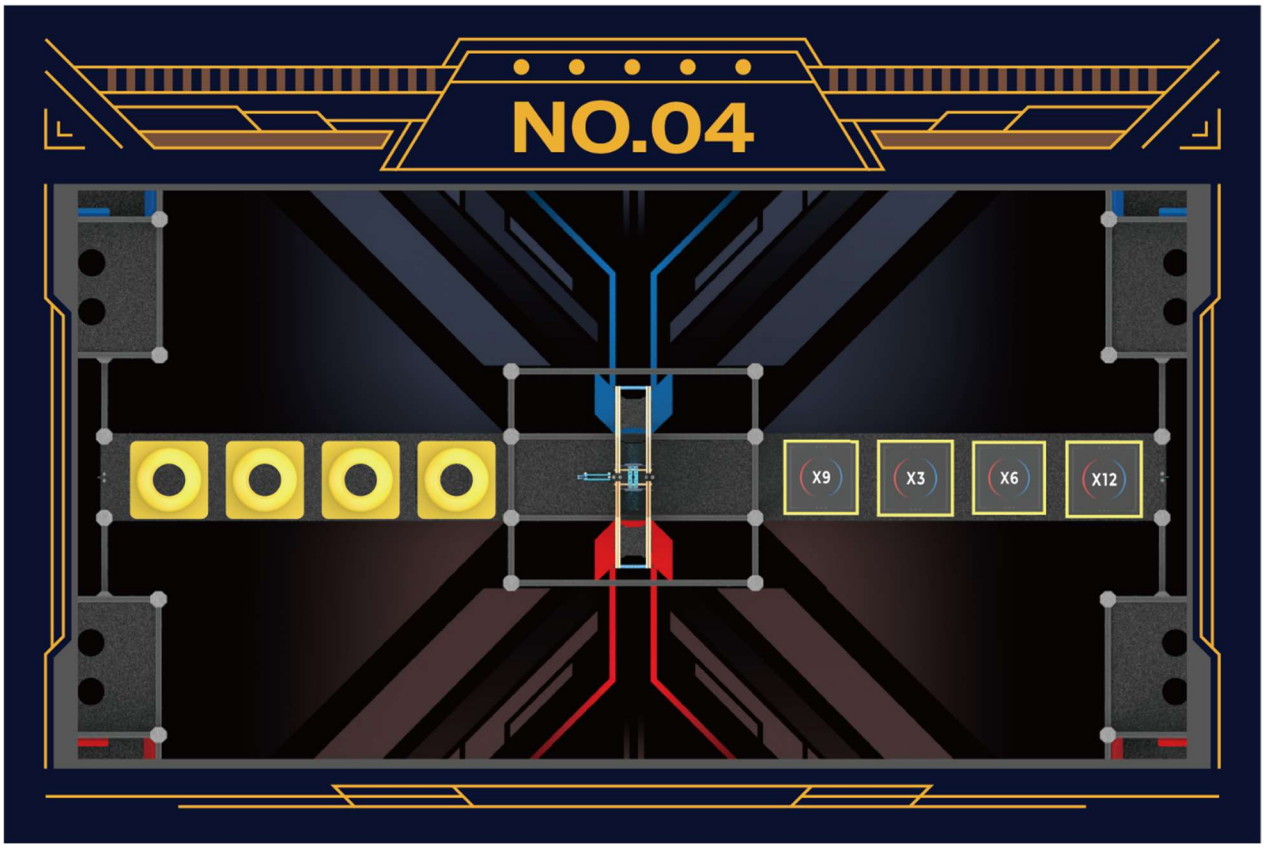
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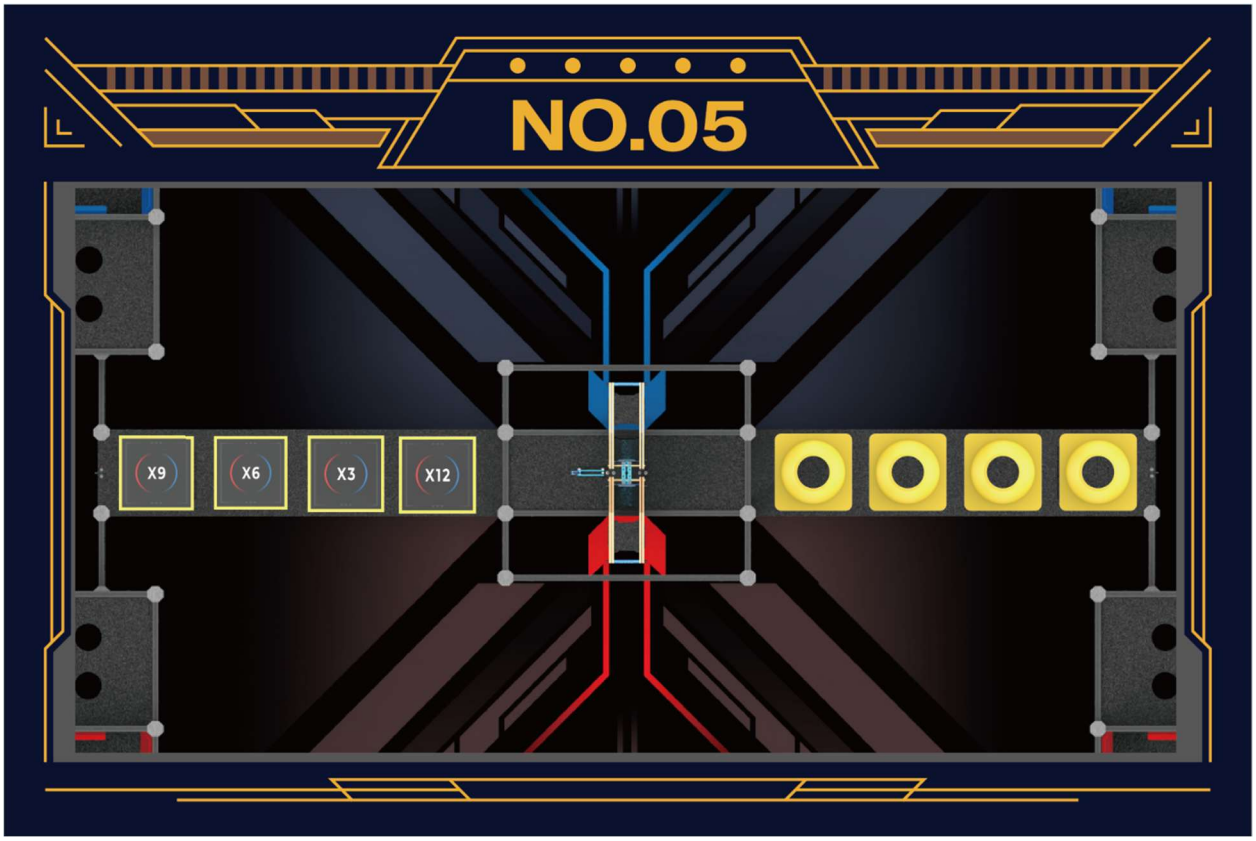
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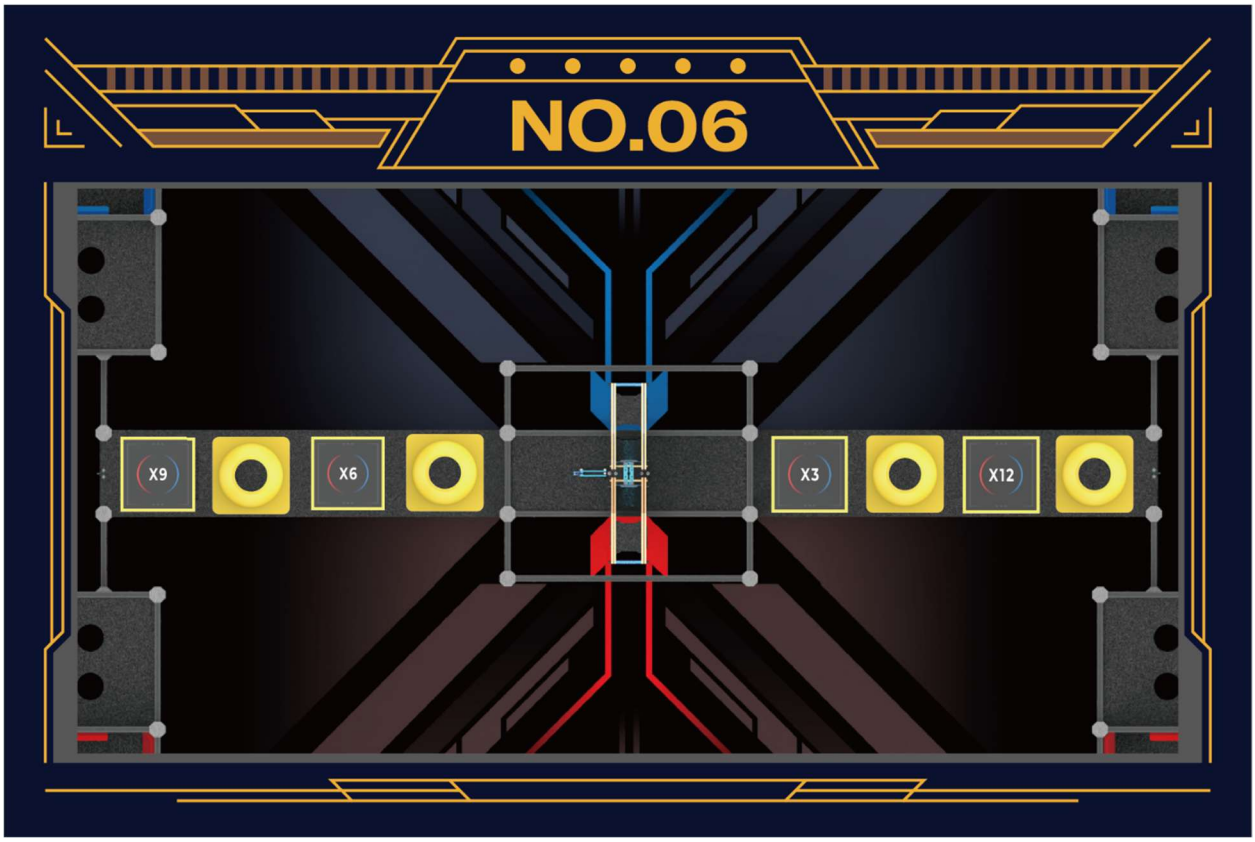
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Appendix 9 Competition Resources

Competition resources include but are not limited to official resources provided by the committee, such as Competition Guide, Equipment Instructions, Rules Videos, etc.

The contestants are obliged to keep abreast of the update of competition resources before the competition, and any problems caused by the contestants' failure to keep abreast of the updates shall be borne by the contestants themselves. All official competition resources will be updated in MakeX Website.

MakeX Robotics Competition Committee will revise and improve the Rules Guide with the progress of the competition and the new version will be announced in MakeX Website. The contestants and mentors can download the latest version in MakeX Website.

MakeX Website Download https://www.makex.cc/en/information/download.

MakeX Official Website: https://www.makex.cc/en.

Any Feedback & Question Please Sent to:

makex_overseas@makeblock.com

Online link for the MakeX Challenge Storm Breaker Building Instructions (scan the QR code):

Download Scoring Sheet and Prop Cards (scan the QR code):

MAKEX

Official Website：https://www.makex.cc/en
Official Email：makex_overseas@makeblock.com