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# 3 The Game



**FIRST<sup>®</sup>**, the **FIRST<sup>®</sup>** logo, **FIRST<sup>®</sup>** Robotics Competition, **FRC<sup>®</sup>**, **Coopertition<sup>®</sup>**, and **Gracious Professionalism<sup>®</sup>** are registered trademarks, and **Sport for the Mind<sup>™</sup>** and **ULTIMATE ASCENT<sup>SM</sup>** are common law trademarks, of the United States Foundation for Inspiration and Recognition of Science and Technology (**FIRST<sup>®</sup>**). ©2013 **FIRST**. All rights reserved.

Teams playing **ULTIMATE ASCENT<sup>SM</sup>** use their **ROBOTS** to collect and score **DISCS** in a variety of **GOALS**. Teams earn additional points by **CLIMBING** their **ALLIANCE'S PYRAMID** by the end of the **MATCH**. This chapter contains two sections: the first section describes the game and what Teams may expect, and the second section covers the detailed rules by which competitors must abide.

## 3.1 Game Details

Details such as the **FIELD** set up, **MATCH** execution, point values, etc. are defined in this section.

### 3.1.1 MATCH Setup

Before the start of each **MATCH**, the **ARENA** is populated with 118 White **DISCS**, 6 Red **DISCS**, and 6 Blue **DISCS**. **DISCS** are staged as follows:

- A. No more than two (2) or three (3) White **DISCS** may be preloaded in each **ROBOT** by the **TEAM**, depending on the **ROBOT'S** starting position (see [G06](#) for details).
- B. At least ten (10) White **DISCS** are staged on the **FIELD** approximately as illustrated in [Figure 3-1](#).
  - A. Two (2) **DISCS** are centered between the **GUARDRAILS** and 78 in. from the Blue **ALLIANCE WALL** to the center of the **DISC**.
  - B. Two (2) **DISCS** are centered under the Blue **PYRAMID**.
  - C. At least two (2) **DISCS** are placed centrally between the **GUARDRAILS** and along the field **CENTER LINE**.

Any **DISCS** not preloaded in **ROBOTS** per part A above (e.g. the **ROBOT** is preloaded with fewer than three (3) **DISCS**, the **ROBOT** isn't in the **MATCH**, etc.) are placed adjacent to the **DISCS** on the **CENTER LINE**. The non-preloaded **DISCS** are added to each side of the existing pair such that the group of **DISCS** on the **CENTER LINE** is centered. If there is an odd number of **DISCS** staged on the **CENTER LINE**, the extra **DISC** will be placed on the scoring table side of the group.
  - D. Two (2) **DISCS** are centered under the Red **PYRAMID**.
  - E. Two (2) **DISCS** are centered between the **GUARDRAILS** and 78 in. from the Red **ALLIANCE WALL** to the center of the **DISC**.
- C. 6 Red & 45 White **DISCS** are located in the Red **ALLIANCE STATION**.
- D. 6 Blue & 45 White **DISCS** are located in the Blue **ALLIANCE STATION**.

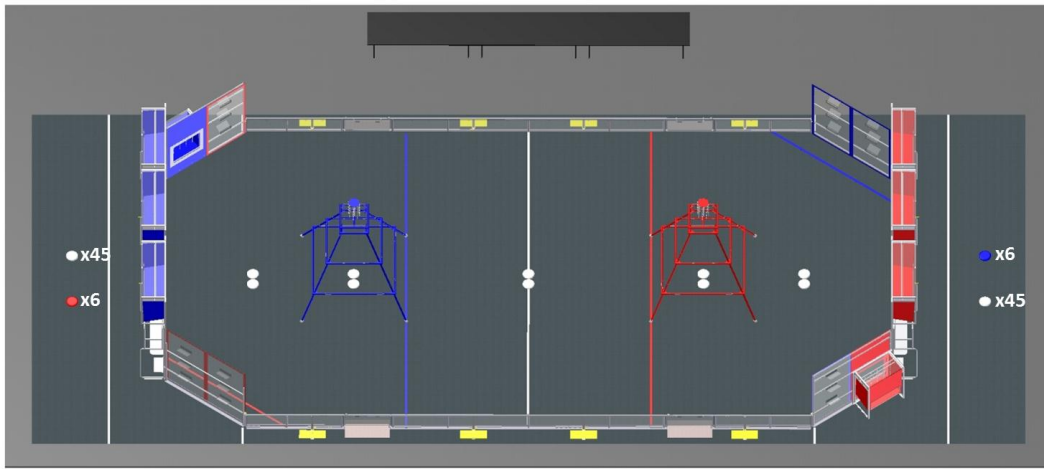


Figure 3-1: Starting Locations for DISCS

### 3.1.2 MATCH Timing

A MATCH is two (2) minutes and fifteen (15) seconds long. The Autonomous (AUTO) Period is the first fifteen (15) seconds of the MATCH. The Teleoperated Period (TELEOP) is the remaining two (2) minutes. Each Period ends when the ARENA timer displays zero (0) seconds.

### 3.1.3 MATCH Logistics

DISCS that are ejected from gameplay during a MATCH will be placed back in the FIELD by event staff approximately where they left and at the next safe opportunity.

### 3.1.4 Penalty Assignment

Upon a rule violation, FOUL or TECHNICAL FOUL points will immediately be credited to the opposing ALLIANCE. Values are defined in [Table 3-1](#).

Table 3-1: Penalty Point Values

FOUL	3
TECHNICAL FOUL	20

### 3.1.5 Scoring

Points are awarded to ALLIANCES per the details below. Final scores will be assessed five (5) seconds after the

ARENA timer displays zero (0) or when all elements come to rest, whichever event happens first.

### 3.1.5.1 DISC Points

Points are awarded for DISCS SCORED in the GOALS per [Table 3-2](#).

A DISC is considered SCORED in an ALLIANCE’S GOAL if any part of the DISC has crossed through the opening of the GOAL, is in the GOAL at the end of the MATCH, and is not in contact with any ROBOT from that ALLIANCE. GOAL openings are outlined in yellow in [Figure 3-2](#) and [Figure 3-3](#).

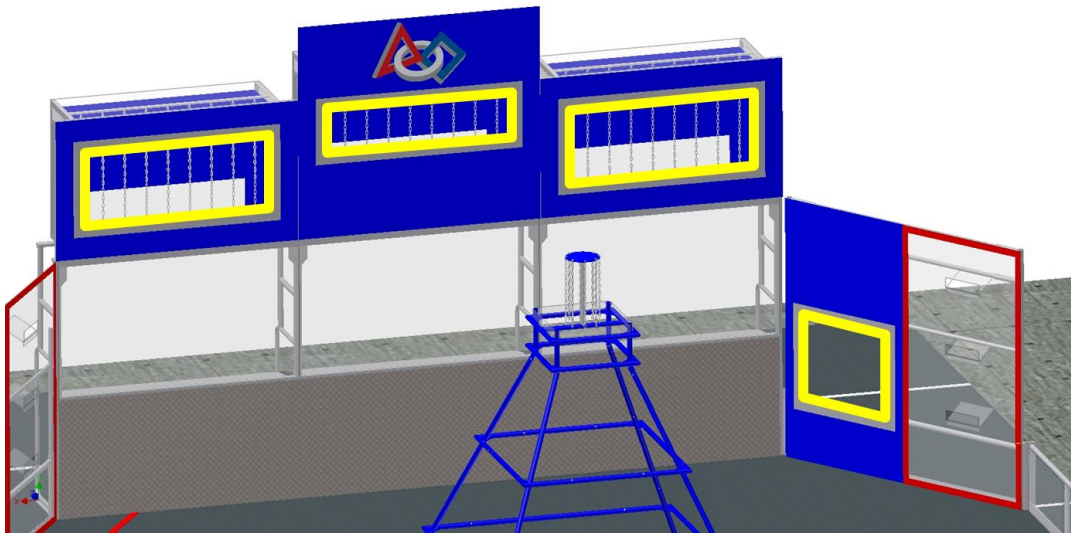


Figure 3-2: LOW, MIDDLE, and HIGH GOAL openings

Additionally, for a DISC to be considered SCORED in an ALLIANCE’S PYRAMID GOAL, it must correspond to the PYRAMID color.

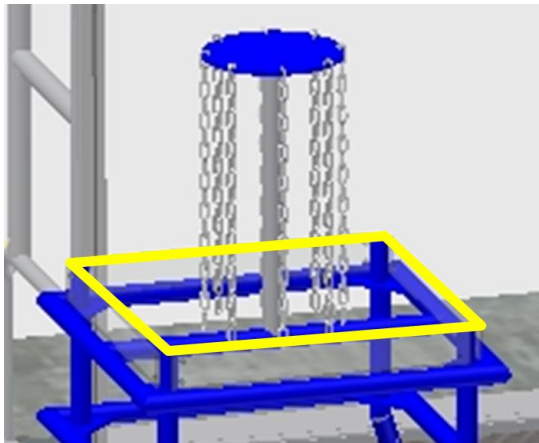


Figure 3-3: PYRAMID GOAL opening

Table 3-2: DISC Point Values

	AUTO	TELEOP
LOW GOAL	2	1
MIDDLE GOAL	4	2

HIGH GOAL	6	3
PYRAMID GOAL	N/A	5

### 3.1.5.2 CLIMB Points

Points are awarded for the highest Level achieved for every ALLIANCE ROBOT that CLIMBS its PYRAMID. The Level to which a ROBOT has CLIMBED is determined by the lowest point of the ROBOT (in relation to the FIELD) at the point in which final scores are assessed per [Section 3.1.5](#). CLIMB point values and Levels are defined in [Figure 3-4](#).

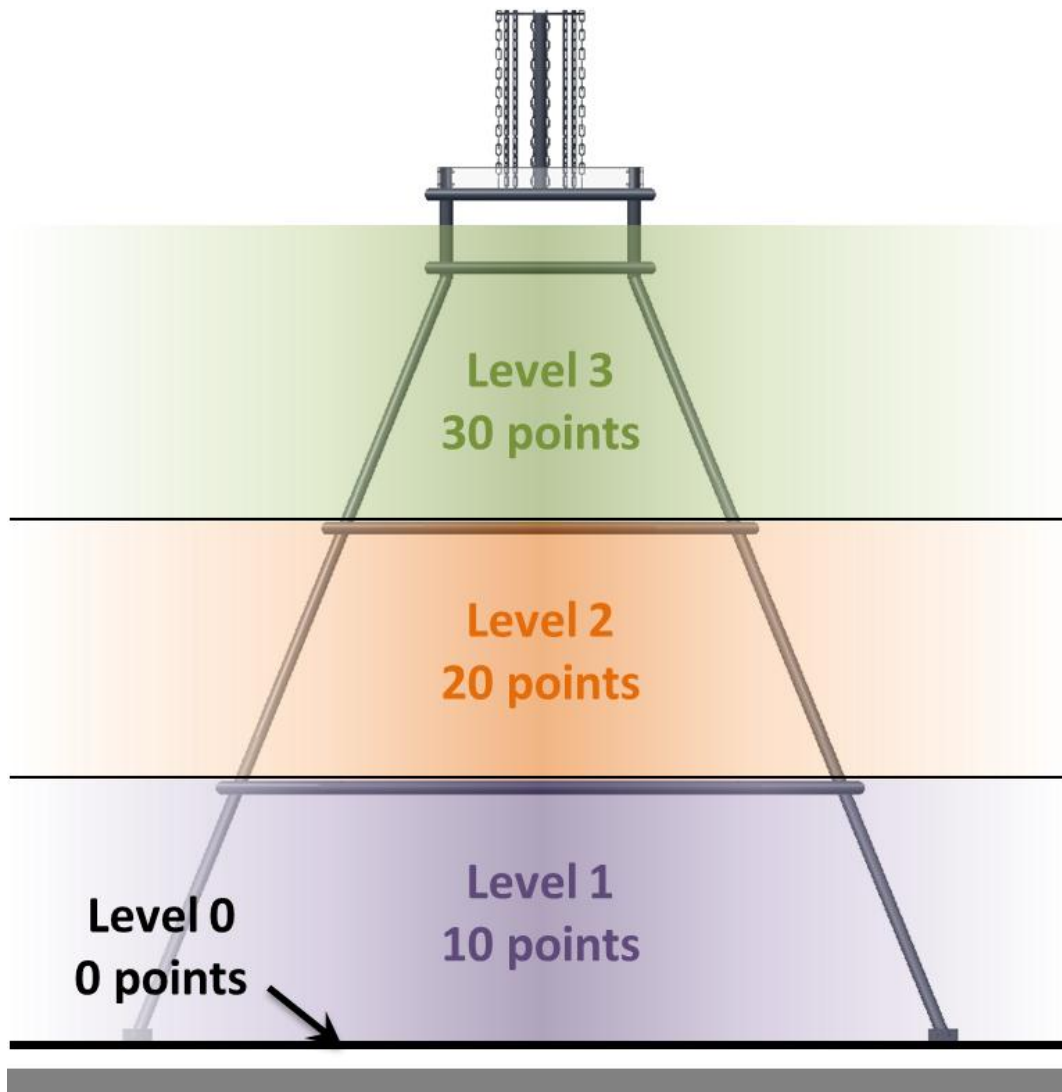


Figure 3-4: PYRAMID Levels

As competition at the *FIRST* Championship is typically different from that during the competition season, *FIRST* may alter the value of CLIMBING at the *FIRST* Championship by up to ten (10) points per Level.

A ROBOT has CLIMBED its PYRAMID if it contacts the PYRAMID and/or the floor (Level 0) in

- A. sequential order (Level 0, 1, 2, 3) during ascent and
- B. no more than two (2) Levels simultaneously.

If a CLIMB is considered unacceptable (e.g. a ROBOT has touched non-adjacent Levels or more than two (2) Levels at a time), a Referee will indicate a rejected CLIMB by turning the offending ROBOT'S PLAYER STATION LED strings yellow. The ROBOT will be ineligible for CLIMB points unless and until it begins a new CLIMB from the floor, Level 0.

## 3.2 Game Rules

The rules in this section legislate game play and define the consequences for rule violations.

### 3.2.1 Safety

#### 3.2.1.1 G01

Teams may only enter the FIELD if the PLAYER STATION LED strings are green.

*Violation: YELLOW CARD*

#### 3.2.1.2 G02

Teams may not climb on the PYRAMID.

*Violation: YELLOW CARD*

For the purpose of [G02](#), this is the colloquial use of "climb," not the ULTIMATE ASCENT use of "CLIMB."

#### 3.2.1.3 G03

ROBOTS whose operation or design is unsafe are not permitted.

*Violation: FOUL & DISABLED. If the issue is due to design: Re-Inspection.*

An example of unsafe operation would be uncontrolled motion that cannot be stopped by

### 3.2.1.4 G04

After the MATCH, ROBOTS may only be removed from a PYRAMID under the following conditions:

- A. by the TEAM while standing on the floor without special equipment,
- B. unpowered,
- C. and under the supervision of a *FIRST* Technical Advisor (FTA), FTA Assistant, Referee, or Field Supervisor.

Additionally, if any part of the ROBOT is in Level 3, TEAMS are required to attach a *FIRST* supplied belay line, detailed in [Section 2.2.5](#), to their ROBOT to spot a ROBOT while the TEAM removes it from the PYRAMID.

*Violation: YELLOW CARD*

## 3.2.2 Pre-MATCH

### 3.2.2.1 G05

When placed on the FIELD, each ROBOT must be:

- A. in compliance with all ROBOT rules (i.e. have passed Inspection),
- B. confined to its STARTING CONFIGURATION,
- C. fully supported by the floor, and
- D. contacting its PYRAMID.

*Violation: If fix is a quick remedy: the MATCH won't start until all requirements are met. If it is not a quick remedy: the ROBOT will be DISABLED and must be re-Inspected.*

### 3.2.2.2 G06

TEAMS may preload White DISCS in or on the ROBOT before the MATCH.

- A. If the ROBOT is in contact with any carpet outside its AUTO ZONE, the ROBOT may preload up to three (3) DISCS.
- B. Otherwise, the ROBOT may preload up to two (2) DISCS.

*Violation: If the situation is not corrected before the start of the MATCH, TECHNICAL FOUL per extra preloaded DISC in or on the ROBOT.*



### 3.2.2.3 G07

TEAMS may not cause significant or repeated delays to the start of a MATCH.

*Violation: ROBOT will be DISABLED.*

TEAMS are expected to stage their ROBOTS for a MATCH safely and swiftly. TEAM efforts that, either intentionally or unintentionally, delay the start of a MATCH will not be tolerated. Examples of such delays include, but are not limited to:

A. Use of alignment devices such as templates, tape measures, laser pointers, etc. to precisely place and/or align the ROBOT.

B. Late arrival to the FIELD.

C. Being indecisive about where/how to position a ROBOT.

D. Installing BUMPERS, or any ROBOT maintenance or assembly, once on the FIELD.

### 3.2.2.4 G08

TEAMS may not leave items other than ROBOTS on the FIELD prior to or during the MATCH.

*Violation: The MATCH will not start until the situation is corrected.*

### 3.2.2.5 G09

Each TEAM member must be:

- A. in the ALLIANCE STATION and
- B. behind the STARTING LINE.

*Violation: MATCH will not start until the situation is corrected.*

## 3.2.3 General Rules

### 3.2.3.1 G10

Only TEAM members and their ROBOT may report to the ARENA for a MATCH. TEAM members are limited to:

- A. 1 COACH,
- B. 2 DRIVERS, and
- C. 1 FEEDER

*Violation: MATCH will not start until the situation is corrected.*

### 3.2.3.2 G11

The COACH must wear the designated “COACH” button while in the ARENA.

*Violation: MATCH will not start until the situation is corrected.*

### 3.2.3.3 G12

ROBOTS may not contact anything outside the FIELD.

*Violation: ROBOT will be DISABLED. However, if it occurs during AUTO, and there is no safety concern, the Head Referee will allow a 10-second grace period at the beginning of TELEOP for the ROBOT to correct the situation.*

### 3.2.3.4 G13

ROBOTS may not intentionally detach or leave parts on the FIELD.

*Violation: TECHNICAL FOUL*

### 3.2.3.5 G14

The following actions are prohibited with regards to interaction with FIELD elements:

- A. grabbing,
- B. grasping
- C. grappling
- D. attaching to,
- E. damaging,
- F. becoming entangled

Actions A-D do not apply to ROBOT interactions with the PYRAMID.

*Violation: FOUL. If the Head Referee determines that further damage is likely to occur, DISABLED. Corrective action (such as eliminating sharp edges, removing the damaging mechanism, and/or re-Inspection) may be required before the ROBOT will be allowed to compete in subsequent MATCHES.*



ROBOTS may push or react against any element of the FIELD.

DISCS are expected to undergo a reasonable amount of wear and tear as they are handled by ROBOTS, such as scratches and occasional marks. ROBOTS that gouge, tear off pieces, or routinely mark DISCS will be considered in violation of G14.

### 3.2.3.6 G15

ROBOTS may not intentionally eject DISCS from gameplay.

*Violation: FOUL per DISC.*

### 3.2.3.7 G16

TEAMS and/or ROBOTS may not employ strategies that use DISCS to either aid or inhibit a ROBOT CLIMB.

*Violation: TECHNICAL FOUL. If the DISC(S) inhibits an opponent's CLIMB attempt, the opponent ROBOT'S ALLIANCE will be granted credit for a Level 3 CLIMB at the end of the MATCH.*

### 3.2.3.8 G17

An ALLIANCE may not put DISCS in their opponents' PYRAMID GOAL.

*Violation: TECHNICAL FOUL per DISC.*

### 3.2.3.9 G18

All Teams must be civil towards other Teams, competition personnel, and event attendees.

*Violation: Potential RED CARD for violations in the ARENA.*

Teams will not receive RED/YELLOW CARDS for off-ARENA actions; however, designated competition personnel will hold them accountable for their off-ARENA actions.

### 3.2.3.10 G18-1

Strategies aimed solely at forcing the opposing ALLIANCE to violate a rule are not in the spirit of FRC and are not allowed. Rule violations forced in this manner will not result in assessment of a penalty on the target ALLIANCE .

*Violation: TECHNICAL FOUL*

## 3.2.4 AUTO Rules

### 3.2.4.1 G19

During AUTO, a ROBOT may not cross the CENTER LINE such that it is no longer in contact with the carpet on its starting half of the FIELD.

*Violation: FOUL. If contact with an opponent ROBOT, TECHNICAL FOUL.*

### 3.2.4.2 G20

During AUTO, TEAMS must remain behind the STARTING LINE.

*Violation: FOUL. If contact with the OPERATOR CONSOLE, TECHNICAL FOUL.*

Exceptions will be made for person or equipment safety situations (e.g. catching a falling OPERATOR CONSOLE).

### 3.2.4.3 G21

During AUTO, any control devices worn or held by the DRIVERS must be disconnected from the OPERATOR CONSOLE and not connected until TELEOP.

*Violation: FOUL*

## 3.2.5 ROBOT Actions

### 3.2.5.1 G22

ROBOT height (as defined in relation to the ROBOT) must be restricted as follows during the MATCH:

- A. If in contact with the carpet in its AUTO ZONE and/or its PYRAMID, ? 84 in.
- B. Otherwise, ? 60 in.

*Violation: FOUL. If continuous or repeated violations, TECHNICAL FOUL.*

### 3.2.5.2 G23

While not in contact with the PYRAMID, a ROBOT'S horizontal dimensions may never exceed a 54 in. diameter vertical cylinder.

*Violation: FOUL. If continuous or repeated violations, TECHNICAL FOUL.*

In other words, a ROBOT must always fit inside a cylinder with a diameter of 54 in. This method for restricting ROBOT size requires extra diligence if a ROBOT'S geometric center shifts as various appendages are extended and retracted.

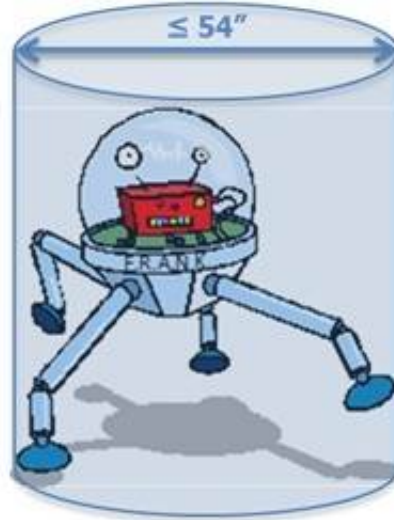


Figure 3-5a: ROBOT inside 54 in. diameter cylinder

### 3.2.5.3 G23-1

While in contact with the PYRAMID, a ROBOT

- A. may not have its horizontal dimensions exceed a 54 in. diameter vertical cylinder relative to the ROBOT and
- B. may not extend any part of itself beyond a vertical plane defined by a perimeter offset from the base of the PYRAMID by 54 in., see Figure 3-5b and Figure 3-5c.

*Violation: FOUL. If continuous or repeated violations, TECHNICAL FOUL.*

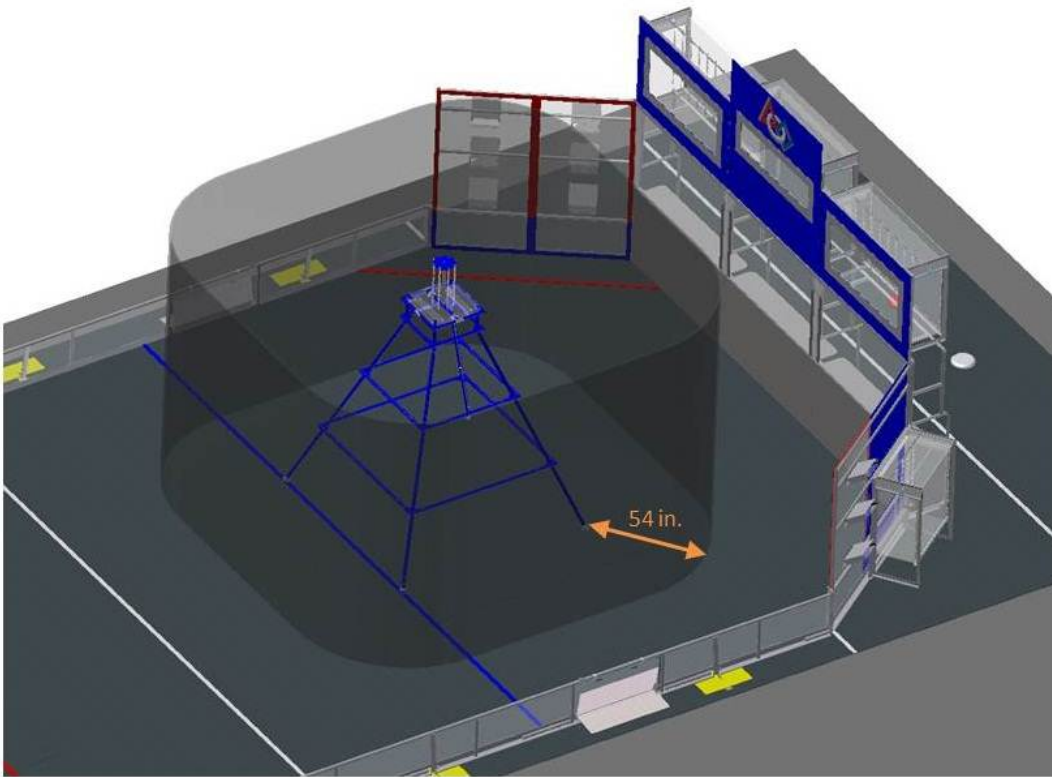
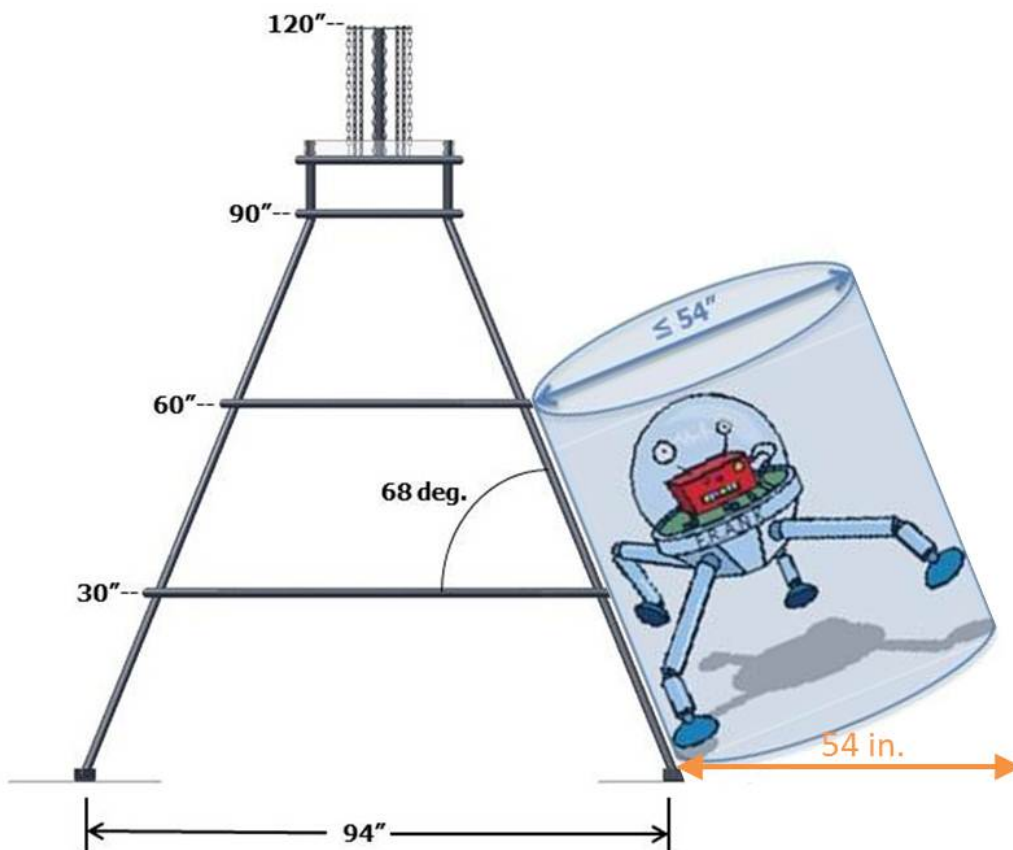


Figure 3-5b: Offset Plane from PYRAMID Base



#### 3.2.5.4 G24

ROBOTS may not actively control more than four (4) DISCS at any one time.

*Violation: FOUL per extra DISC*

Moving or positioning a DISC to gain advantage is considered “active control.”

Examples of “active control” include

- A. “carrying” (holding DISCS in or on the ROBOT),
- B. “herding” (intentionally pushing or impelling DISCS to a desired location or direction), and
- C. “trapping” (pressing one or more DISCS against a FIELD element in an attempt to shield them).

Examples of DISC interaction that are not “active control” are

- D. “bulldozing” (inadvertently coming in contact with DISCS that happen to be in the path of the ROBOT as it moves about the FIELD) and
- E. “deflecting” (being hit by a propelled DISC that bounces or rolls off the ROBOT).

A DISC that becomes unintentionally lodged on a ROBOT will be considered actively controlled by the ROBOT. It is important to design your ROBOT so that it is impossible to inadvertently or intentionally control more than four (4) DISCS at a time.

#### 3.2.5.5 G25

ROBOTS on the same ALLIANCE may not blockade the FIELD in an attempt to stop the flow of the MATCH. This rule has no effect on individual ROBOT-ROBOT interaction.

*Violation: TECHNICAL FOUL*

#### 3.2.5.6 G26

ROBOTS may not intentionally fall down or tip over to block the FIELD.

*Violation: TECHNICAL FOUL*

#### 3.2.5.7 G27

ROBOTS may not contact or otherwise interfere with their opponents' PYRAMID. Inconsequential contact will not be penalized.

*Violation: TECHNICAL FOUL. If an opponent's CLIMB is affected,*

*A. RED CARD, and*

*B. Each affected opponent ROBOT will be granted credit for a Level 3 CLIMB at the end of the MATCH.*

## 3.2.6 ROBOT-ROBOT Interaction

### 3.2.6.1 G28

Strategies aimed at the destruction or inhibition of ROBOTS via attachment, damage, tipping, or entanglement of ROBOTS are not in the spirit of the FRC and are not allowed.

*Violation: TECHNICAL FOUL and YELLOW CARD*

For example, use of wedge-like MECHANISM to flip ROBOTS would be considered a violation of G28.

### 3.2.6.2 G29

Deliberate or damaging contact with an opponent ROBOT on or inside its FRAME PERIMETER is not allowed.

*Violation: TECHNICAL FOUL*

High speed accidental collisions may occur during the MATCH and are expected. ROBOTS extend elements outside of the FRAME PERIMETER at their own risk; no penalties will be assigned for contact between two such extended elements.

A ROBOT with an element outside its FRAME PERIMETER may be penalized under this rule if it appears they are using that element to purposefully contact another ROBOT inside its FRAME PERIMETER. Regardless of intent, a ROBOT with an element outside its FRAME PERIMETER that causes damage to another ROBOT inside of its FRAME PERIMETER will be penalized.

### 3.2.6.3 G30

Regardless of who initiates the contact, a ROBOT may not contact an opponent ROBOT



- A. contacting its PYRAMID or
- B. touching the carpet in its LOADING ZONE.

*Violation: FOUL. If purposeful or consequential, TECHNICAL FOUL. If an opponent's CLIMB is affected, each affected opponent ROBOT will be granted credit for a Level 3 CLIMB at the end of the MATCH.*

#### 3.2.6.4 G31

An ALLIANCE may not pin an opponent ROBOT for more than five (5) seconds. A ROBOT will be considered pinned until the ROBOTS have separated by at least six (6) ft. The pinning ROBOT(S) must then wait for at least three (3) seconds before attempting to pin the same ROBOT again. Pinning is transitory through other objects.

*Violation: TECHNICAL FOUL*

If the pinned ROBOT chases the pinning ROBOT upon retreat, the pinning ROBOT will not be penalized per G31, and the pin will be considered complete.

#### 3.2.6.5 G32

Fallen (i.e. tipped over) ROBOTS attempting to right themselves (either by themselves or with assistance from an ALLIANCE partner) have one (1) ten (10)-second grace period per fallen ROBOT in which the fallen ROBOT may not be contacted by an opposing ROBOT.

This protection lasts for either ten (10) seconds or until the protected ROBOT has completed the righting operation, whichever comes first.

*Violation: If inadvertent, FOUL. If intentional, TECHNICAL FOUL.*

Once the 10-second grace period for righting a fallen ROBOT has expired, opposing ROBOTS may interact with a fallen ROBOT with no FOUL assessed as long as G28 is not violated (as applied to the fallen over ROBOT).

#### 3.2.6.6 G33

A ROBOT may only be supported (fully or partially) by another ROBOT if one of the ROBOTS is in contact with a PYRAMID.

*Violation: If extended, strategic, or repeated, TECHNICAL FOUL.*

## 3.2.7 Human Actions

### 3.2.7.1 G34

Only FEEDERS may touch DISCS. Inadvertent or inconsequential contact by others will not be penalized.

*Violation: FOUL*

### 3.2.7.2 G35

DISCS may be fed onto the FIELD only under the following circumstances:

- A. during TELEOP through the FEEDER SLOTS for any DISCS and
- B. during the last thirty (30) seconds of TELEOP over the FEEDER STATIONS for Red and Blue DISCS.

*Violation: FOUL*

### 3.2.7.3 G36

During the MATCH, TEAMS must be within their ALLIANCE STATION. Exceptions will be granted for inadvertent or inconsequential infractions and in cases concerning safety.

*Violation: FOUL*

### 3.2.7.4 G37

TEAMS may not extend any body part into the FIELD or contact any ROBOT at any time during the MATCH.

*Violation: TECHNICAL FOUL*

### 3.2.7.5 G38

During a MATCH, the ROBOT shall be operated solely by the DRIVERS of that TEAM.

*Violation: TECHNICAL FOUL*

Exceptions may be made before a MATCH for major conflicts, e.g. religious holidays, major testing, transportation issues, etc.

### 3.3 Revision History

Date	Section	Change
1/8/13	3.1.5.2	Added detail on when CLIMB points are assessed
1/8/13	3.2.1	Corrected Section reference in G04
1/8/13	3.2.6	Added provision for awarding CLIMB points if opponent CLIMB is affected
1/8/13	3.1.5.2	Corrected Section reference
1/11/13	3.2.1	Added "After the MATCH" and "while standing on the floor without special equipment"
1/11/13	3.2.3	Added G18-1
1/15/13	3.2.5	Added "While not in contact with the PYRAMID,"
1/15/13	3.2.5	Added Rule G23-1
2/19/13	3.2.7	Added requirement of only Red and Blue DISCS being thrown.
3/5/13	3.2.3	Modified text to refine verbiage around violation of Rule.
3/5/13	3.2.5	Modified text to refine verbiage around violation of Rule.
3/5/13	3.2.6	Modified text to refine verbiage around violation of Rule.