1 Field Elements

Figure 1-1: Game Pieces
- White Indicator Cube
- Blue Indicator Cube
- Red Indicator Cube
- Large Baggage
- Small Baggage

Figure 1-2: Approach Indicator

Figure 1-3: Control Tower

Figure 1-4: Stowage

Figure 1-5: Loading Station
2 Zones & Markings, Match Set Up

Zones & Markings

**Auto Line:** One of two white tape lines spanning the width of the field, located 13.5' from each Alliance Wall to the near edge of the tape.

**Center Line:** A line of black tape that diagonally bisects the length of the Field.

**Center Zone:** An infinitely tall volume defined by the two Auto Lines, not including the Auto Lines.

**Communication Zone:** An approx 5 ft wide, 6 ft deep infinitely tall volume with a triangular base bounded by the Control Tower and Alliance colored tape. The Communication Zone includes Alliance colored tape.

**Initiation Line:** One of two tape lines, in each Alliance's color, spanning the width of the field, located 4 ft from the face of the Alliance Wall to the near edge of the tape.

**Loading Zone:** Protected zone spanning the space between an Alliance Wall and an Alliance's Initiation Line.

**Stowage Zone:** An 18” deep, infinitely tall volume that is bounded by the Stowage, the Auto Line, the Guardrail, and Alliance colored tape. The Stowage Zone includes Alliance Colored Tape.

Set Up

Sixty (60) Transmissions, ninety-two (92) Baggage, and sixteen (16) Indicator Cubes are staged as follows:

A. six (6) Transmissions on each Alliance's Initiation Line, spaced 35” apart
B. six (6) alternating Baggage placed 1ft. apart along the Guardrail between each Alliance's Auto and Initiation Lines, starting on the Auto Line
C. twenty-four (24) Transmissions in each Alliance Station, divided between Loading Stations
D. twenty (20) Small Baggage & twenty (20) Large Baggage in each Alliances Station, divided evenly between Loading Stations
E. eight (8) white & eight (8) Alliance colored Indicator Cubes in each Alliance Station, divided evenly between Loading Stations
F. each of the three (3) teams may preload up to one (1) Transmission and one (1) Small or Large Baggage in their Robot, such that they are fully and solely supported by that Robot
G. unused Baggage and Transmissions will be evenly divided between the Alliance's two (2) Loading Stations
3 Scoring & Ranking

<table>
<thead>
<tr>
<th>Awarded For</th>
<th>Auto</th>
<th>Teleop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross the infinite vertical volume created by the corresponding Alliance's Auto Line any time before the end of Auto (per Robot)</td>
<td>4</td>
<td>-</td>
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<tr>
<td>Transmission</td>
<td></td>
<td></td>
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<tr>
<td>Scored in Low Goal</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Scored in Mid Goal</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Scored in High Goal</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Baggage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scored Large Baggage</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Scored Small Baggage</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Indicator Cube</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scored Indicator Cube in coordinating color</td>
<td>-</td>
<td>4</td>
</tr>
</tbody>
</table>

**Control Tower Scoring**

Alliances generate points by scoring Transmissions into one of four (4) openings on their side of the Control Tower. To be considered scored a Transmission must fully pass through the High, Mid, or Low Goal, activating the sensors located on the inside of the goal. Lights around each goal indicate progress toward the Establish Communication Ranking Point.

**Stowage Scoring**

Alliances generate points by placing Baggage into their Alliance’s Stowage. To be considered scored, Baggage must be fully supported by only the Stowage and/or Stowage Net.

**Ranking Points**

Ranking Points (RP) are units credited to a Team based on their Alliance’s performance in Qualification and Elimination Matches. Ranking Points are awarded to each eligible Team at the completion of each Qualification or Elimination Match:

a. Transmitting twice into each of the four Alliance goals located on the Control Tower earns the Alliance one (1) Establish Communication Ranking Point.

b. Populating the correct 4 Cube pattern on the Approach Indicator earns the Alliance one (1) Approach Indicator Pattern Ranking Point during Qualification Matches or a 40 point bonus during Elimination Matches.

**Approach Indicator Scoring**

Alliances generate points by placing Indicator Cubes into one of four (4) openings in the Approach Indicator. To be considered scored, Indicator Cubes must be the correct color indicated by flashing LEDs surrounding each scoring position, fully supported by the Approach Indicator, and activate the sensor located inside the goal. Lights around each scoring position indicate progress toward the Approach Indicator Pattern Ranking Point.
**Game Rules**

G1. Know your Robot setup. When placed on the Field for a Match, each Robot must be:
   A. confined to its Starting Configuration,
   B. positioned such that it is touching the infinite vertical volume created by the corresponding Alliance’s Initiation Line, and
   C. fully and solely supporting no more than one (1) Transmission and one (1) Large or Small Baggage.

G2. During Auto, no defense. During Auto, no defense. During Auto, a Robot’s Bumpers may not break the plane of the Centerline. violation: FOUL.

G3. No full court shots. A Robot whose Bumpers are not fully contained in the Center Zone may not launch Transmissions. violation: TECH FOUL per Transmission.

G4. No Throwing Baggage. A Robot whose Bumpers do not break the vertical plane of the Stowage Zone may not launch Baggage. violation: TECH FOUL per Baggage.

G5. Give opponents some space. An opponent Robot may not contact a Robot whose Bumpers are intersecting its Communication Zone, Stowage Zone, or Loading Zone, regardless of who initiates contact. violation: TECH FOUL per instance.

G6. During the Endgame, don’t touch Robots in their Loading Zone. During the Endgame, a Robot may not contact, either directly or transitively, an opponent Robot whose Bumpers are breaking the plane of their Loading Zone. violation: TECH FOUL.

G7. During the Endgame, don’t mess with the opponent’s Approach Indicator or Cubes. During the Endgame, a Robot may not contact, either directly or transitively, the opponent’s Approach Indicator or Indicator Cubes. violation: TECH FOUL.

G8. Tall Robots not allowed. Robot height, as measured when it’s resting normally on a flat floor, may not exceed 40 in. above the carpet during the Match. violation: TECH FOUL.

**Pre-Match Rules**

H1. Transmissions and Baggage through Loading Stations only. Transmissions and Baggage may only be introduced to the Field.
   A. during Teleop,
   B. by a Driver or Human Player, and
   C. through the Loading Station.
   violation: FOUL.

H2. Don’t Touch Indicator Cubes until it’s time. Indicator Cubes may only be introduced to the Field.
   A. during Endgame,
   B. by a Driver or Human Player, and
   C. through the Loading station.
   violation: TECH FOUL. If strategic, YELLOW CARD.

H3. Human Players and game pieces stay in their Loading Stations. Human Players, Transmissions, Baggage, and Indicator Cubes may not move between Loading Stations at any point before or during a Match. violation: FOUL. If strategic, RED CARD.

**Robot Rules**

R1. In the Starting Configuration no part of the Robot shall extend outside the vertical projection of the Frame Perimeter.

R2. A Robot’s Starting Configuration may not have a Frame Perimeter greater than 120 in. and may not be more than 40 in. tall.

R3. Robots may not extend more than 16 in. beyond their Frame Perimeter.

R4. The Robot weight must not exceed 120 lbs., excluding Bumpers and battery.