

# **Final Project: Foosball Table**

*Design, Assembly, and Analysis*

**Course:**

MEMS 202: Computer-Aided Design – Section 1

**Team Members:**

Luis Garcia  
Enrique Garcia  
Alec Garcia  
David Howard

**Date:**

December 4, 2023

Washington University in St. Louis  
McKelvey School of Engineering

## Project Overview

Our project focused on creating a foosball table that blended modern aesthetics with a user-friendly design. The goal was to produce a visually appealing and easy-to-assemble product that enhanced the gaming experience.

## Project Components

The foosball table consists of several essential elements: the playing surface, player rods, players, legs, scoring unit, frame, and cup holders. The frame and playing surface form the structural core, while the rods, legs, and players define the functionality and user interaction.

## Design Choices

We adopted a modular design philosophy that divided the table into manageable subsystems, allowing for simpler assembly and effective organization of responsibilities. While features such as electronic scorekeeping were initially considered, we ultimately prioritized smooth gameplay and mechanical simplicity to maintain ease of use and reliability.

## Individual Contributions

Each team member focused on a different subsystem:

- **Luis Garcia:** Designed the table frame and supervised system integration.
- **Enrique Garcia:** Developed the player rods, led final assembly, and produced documentation.
- **Alec Garcia:** Designed the score counter and the frame mounting interface.
- **David Howard:** Designed the leg supports, player components, and rubber foot features.

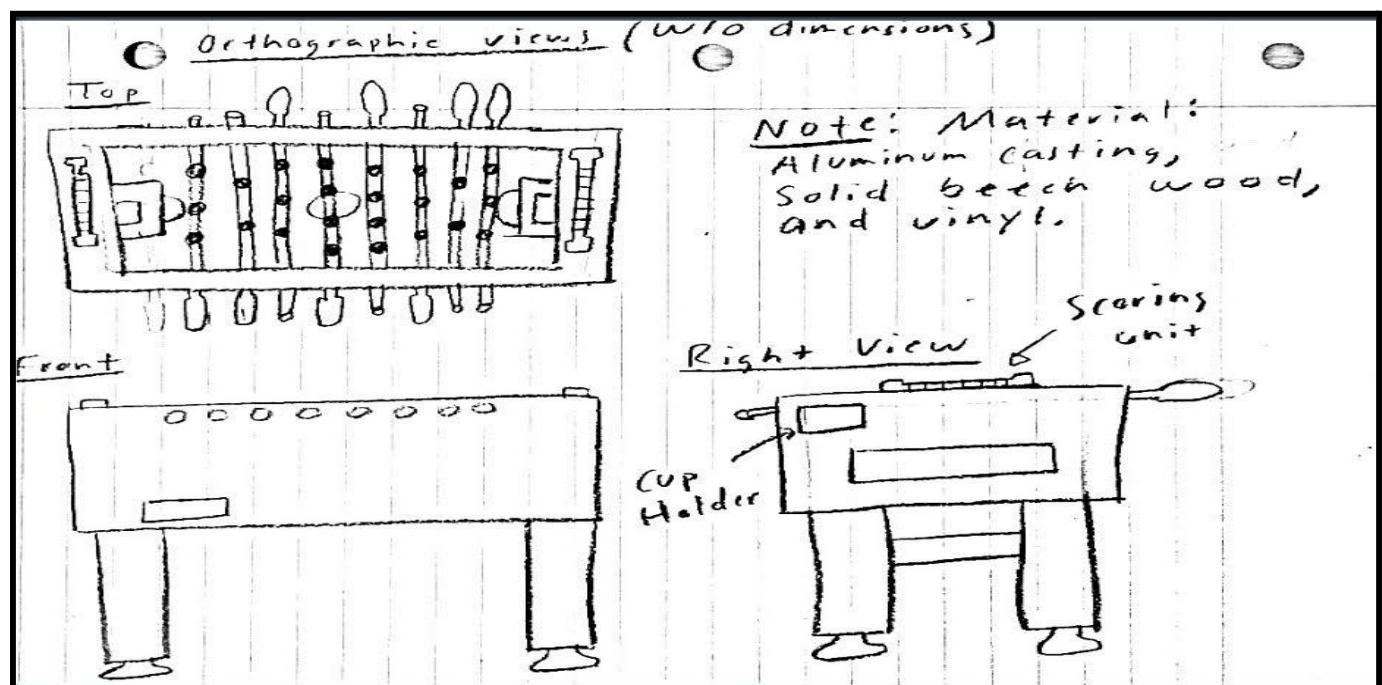
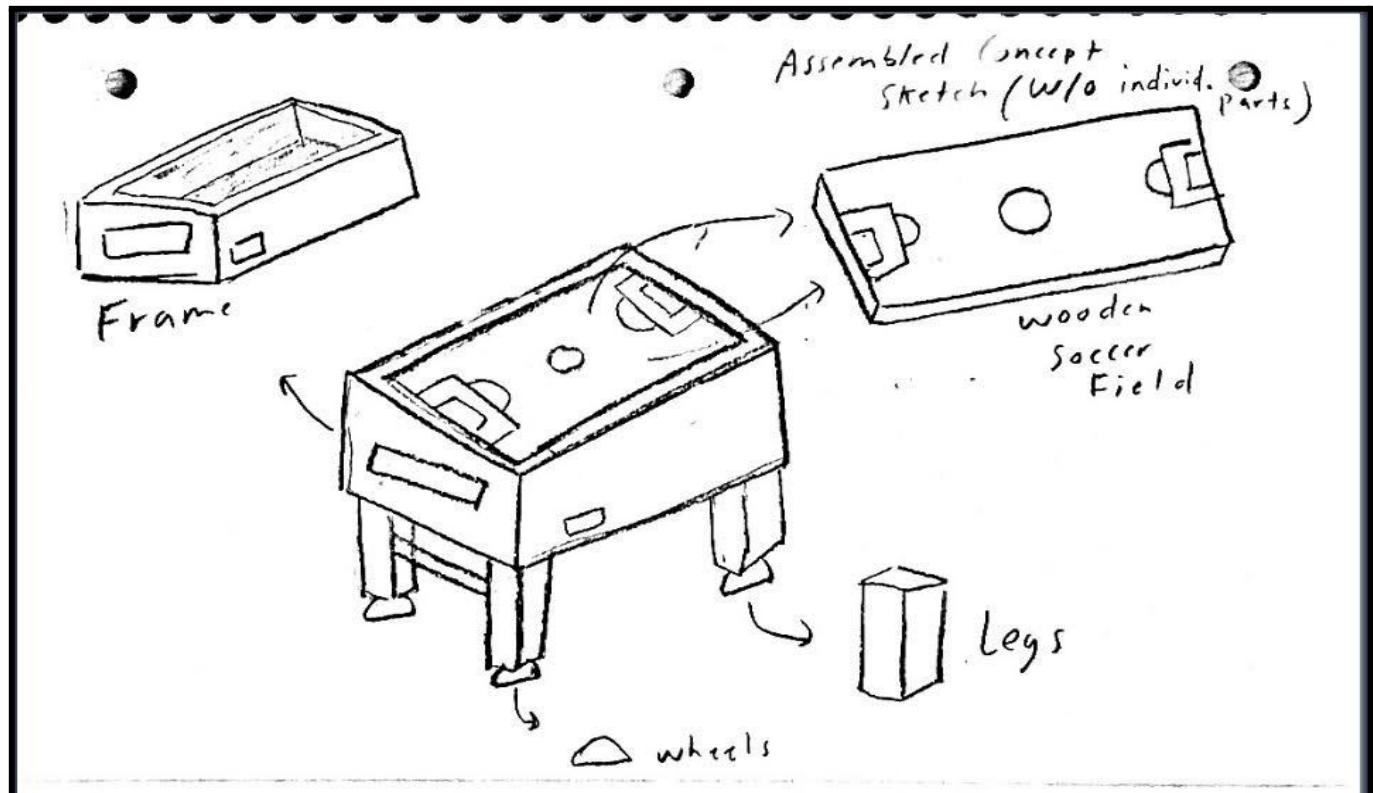
All members collaborated on assembly drawings, concept development, and design evaluation throughout the project.

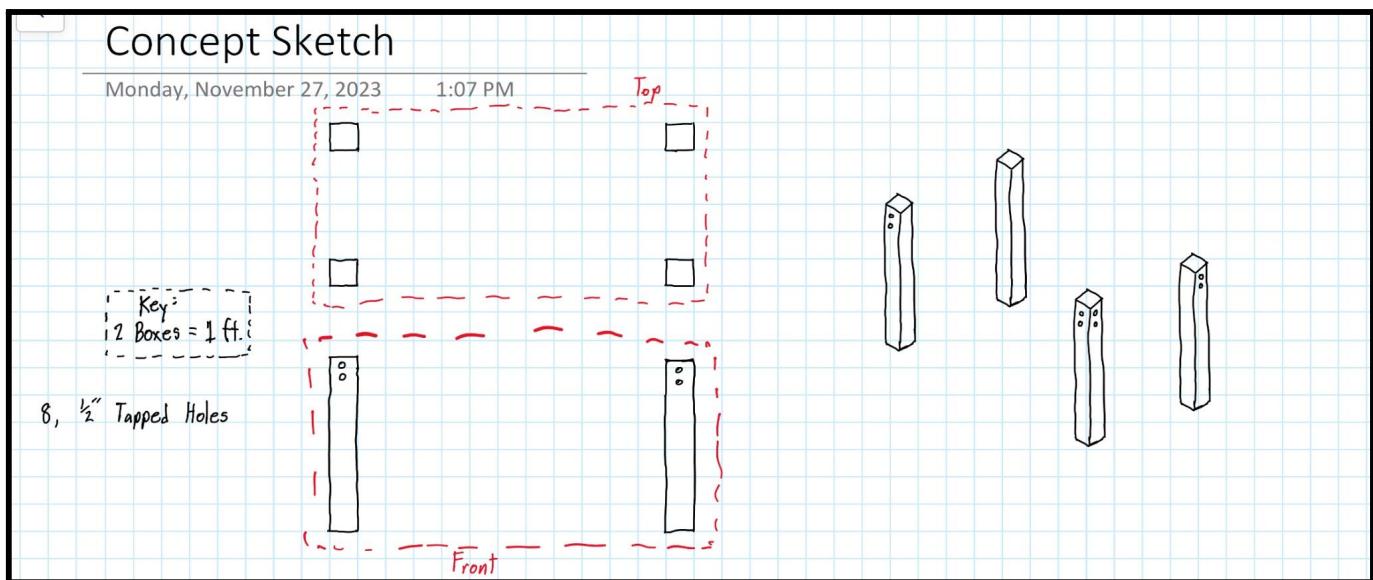
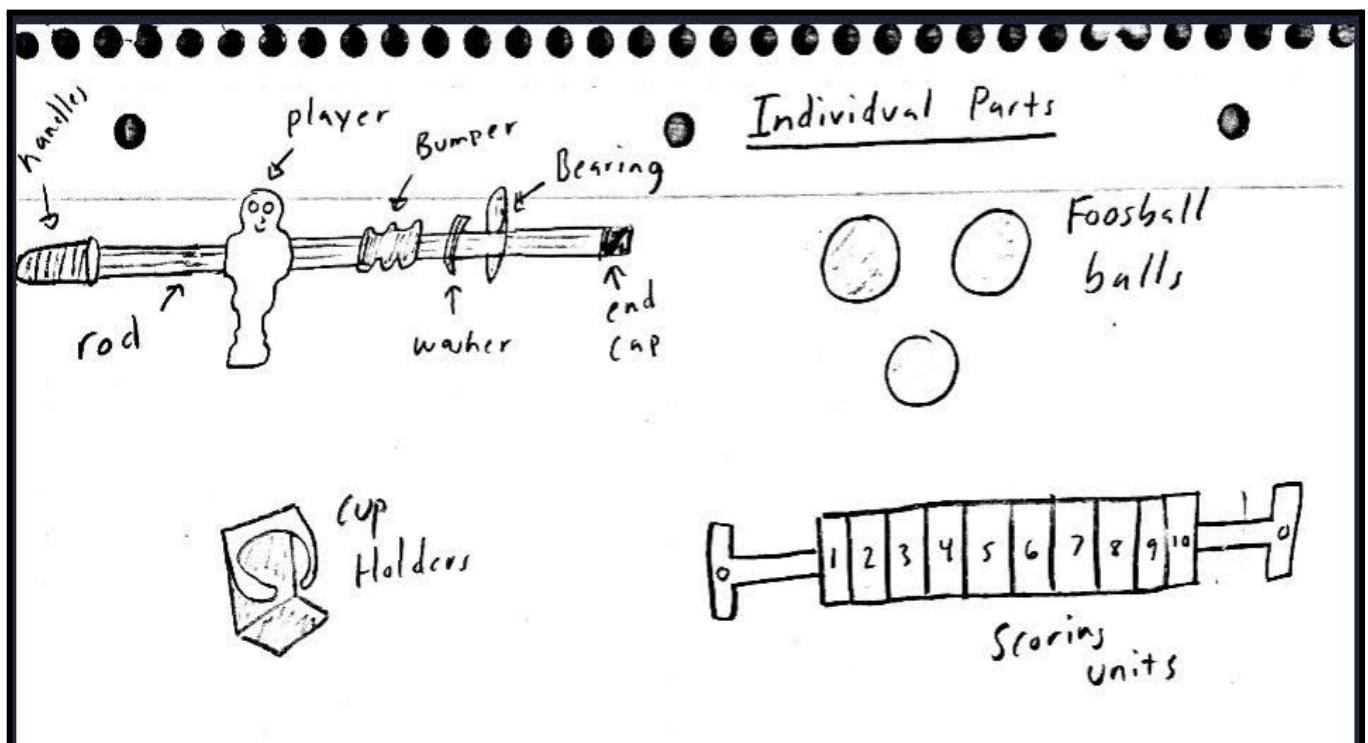
## Challenges and Learnings

The assembly process revealed integration difficulties that stemmed from designing components in isolation early on. Although this approach simplified part development, it made final fit and alignment more challenging. This experience reinforced the importance of systems-level thinking and understanding how individual components interact. Overall, the project provided valuable insight into practical design considerations, tolerance planning, and effective teamwork—skills that will carry forward into future engineering work.

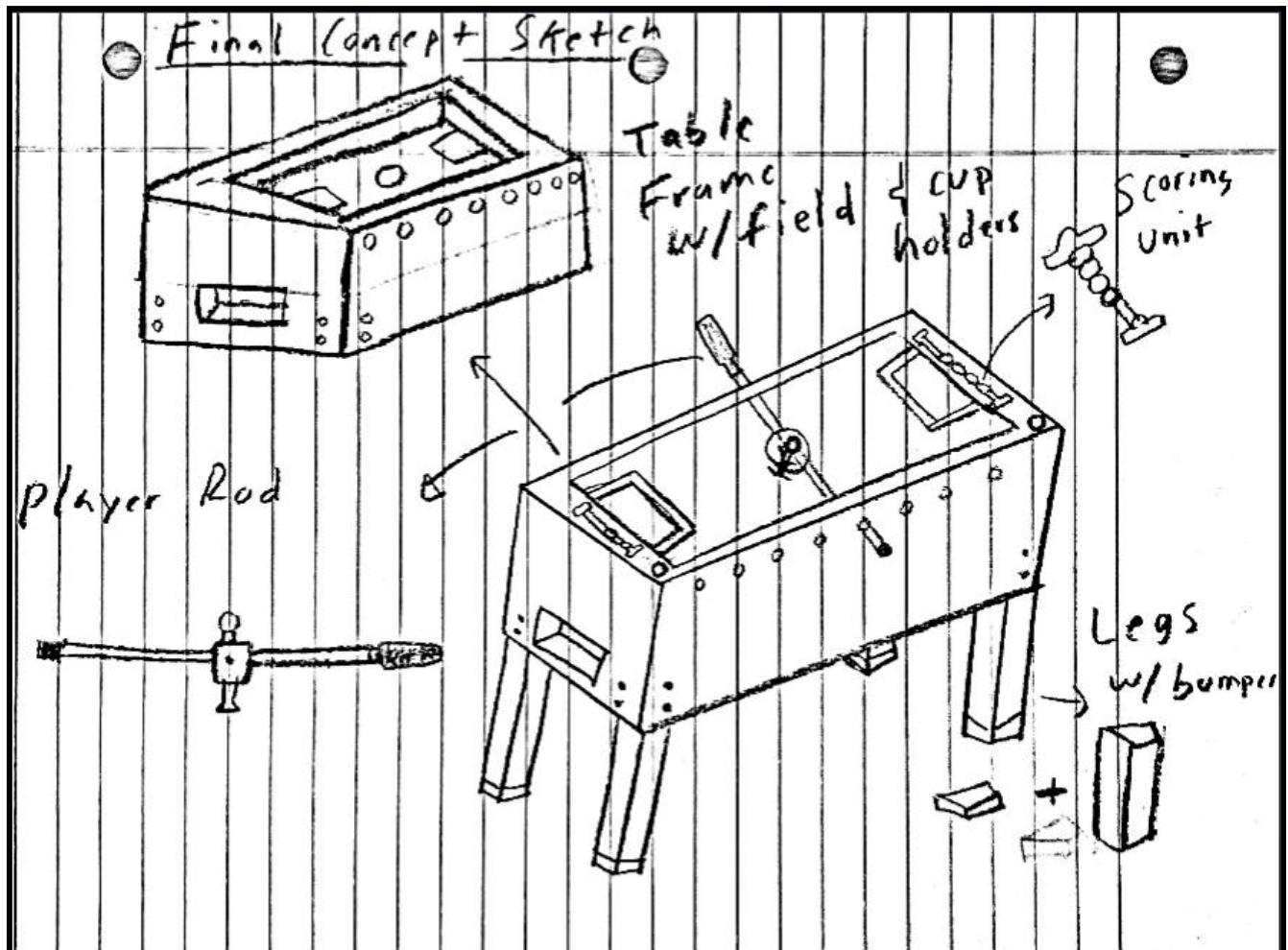
## CONCEPT SKETCHES

### Initial Concept Sketches

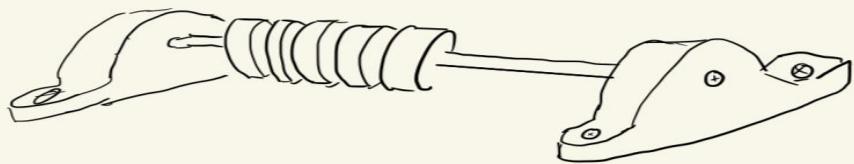




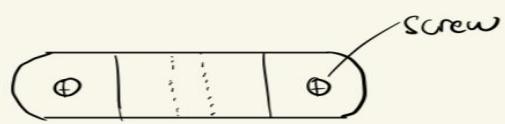
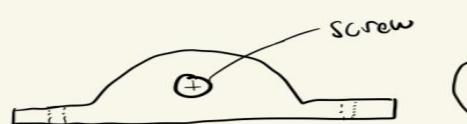
## Final Concept Sketches



## Score Counter



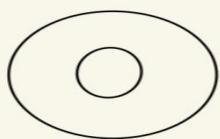
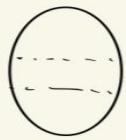
## Individual Parts



base



rod



beads

2

1

	<table border="1"> <thead> <tr> <th>ITEM NO.</th> <th>PART NUMBER</th> <th>DESCRIPTION</th> <th>QTY.</th> </tr> </thead> <tbody> <tr><td>1</td><td>Rod and End Cap</td><td>Foosball Pole and Cap</td><td>8</td></tr> <tr><td>2</td><td>Player</td><td>Foosball Player</td><td>22</td></tr> <tr><td>3</td><td>9546K521</td><td>Neoprene Bumper</td><td>16</td></tr> <tr><td>4</td><td>Scoring Unit</td><td>Foosball Scoring Counter</td><td>2</td></tr> <tr><td>5</td><td>Table Frame</td><td>Foosball Frame</td><td>1</td></tr> <tr><td>6</td><td>Leg</td><td>Foosball Leg</td><td>4</td></tr> <tr><td>7</td><td>Leg Bottom</td><td>Foosball Protective Rubber for leg</td><td>4</td></tr> <tr><td>8</td><td>5909K44</td><td>0.032" Thick Washer for 1/2" Shaft Diameter Needle-Roller Thrust Bearing</td><td>32</td></tr> <tr><td>9</td><td>97065K152</td><td>Foosball Hand Grip</td><td>8</td></tr> <tr><td>10</td><td>93306A921</td><td>Aluminum Hex Head Screw</td><td>16</td></tr> </tbody> </table>			ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	1	Rod and End Cap	Foosball Pole and Cap	8	2	Player	Foosball Player	22	3	9546K521	Neoprene Bumper	16	4	Scoring Unit	Foosball Scoring Counter	2	5	Table Frame	Foosball Frame	1	6	Leg	Foosball Leg	4	7	Leg Bottom	Foosball Protective Rubber for leg	4	8	5909K44	0.032" Thick Washer for 1/2" Shaft Diameter Needle-Roller Thrust Bearing	32	9	97065K152	Foosball Hand Grip	8	10	93306A921	Aluminum Hex Head Screw	16
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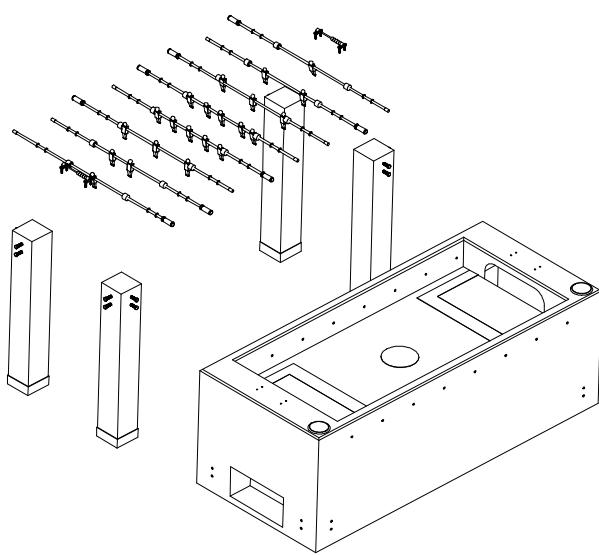
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**Group 13**

TITLE:

**Exploded View**

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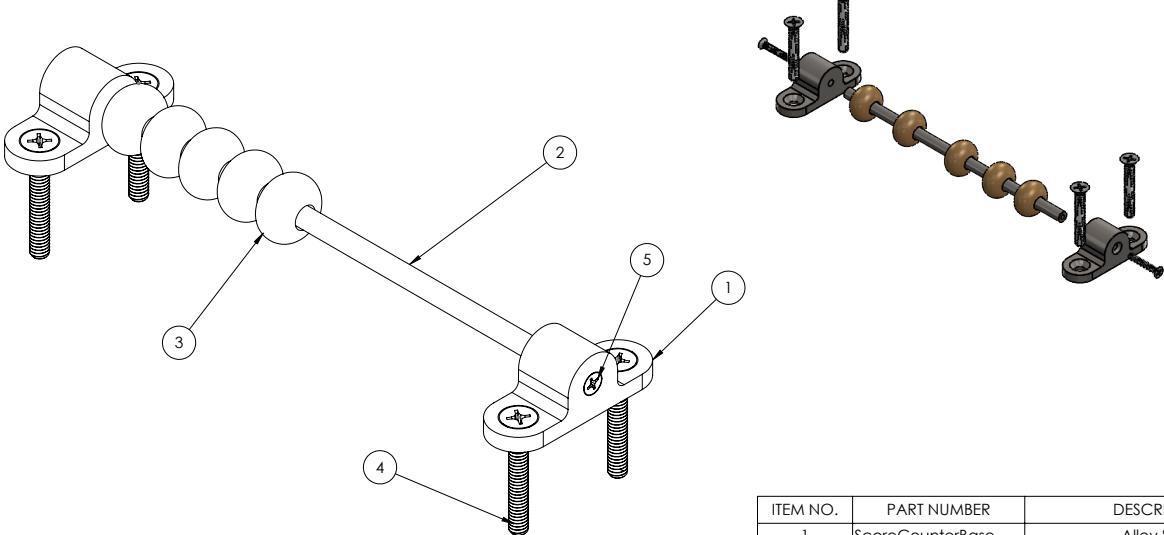
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	ScoreCounterBase	Alloy Steel	2
2	ScoreCounterRod	Alloy Steel	1
3	ScoreCounterBeads	Oak Wood	5
4	90273A299	12-24 X 1-1/2 FLAT HD SCREW 82*	4
5	90273A152	Zinc-Plated Steel Phillips Flat Head Screws	2

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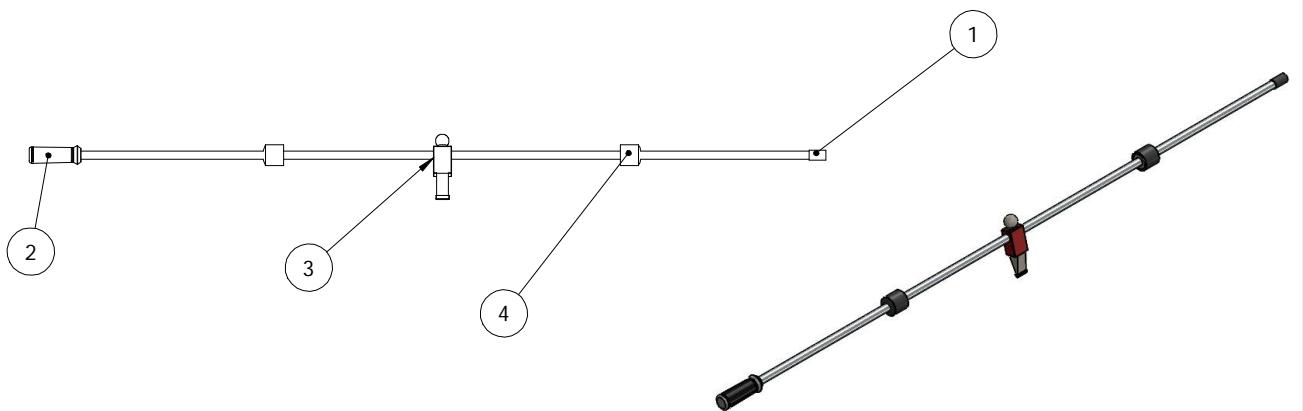
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**Note:** Foosball Rod, Endcap, and the Players were modeled through Solidworks.



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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Rod and End Cap	Foosball Pole with Cap	8
2	97065K152	Foosball Handle Grip	8
3	Player	Foosball Player	22
4	9546K521	Neoprene Bumper	16

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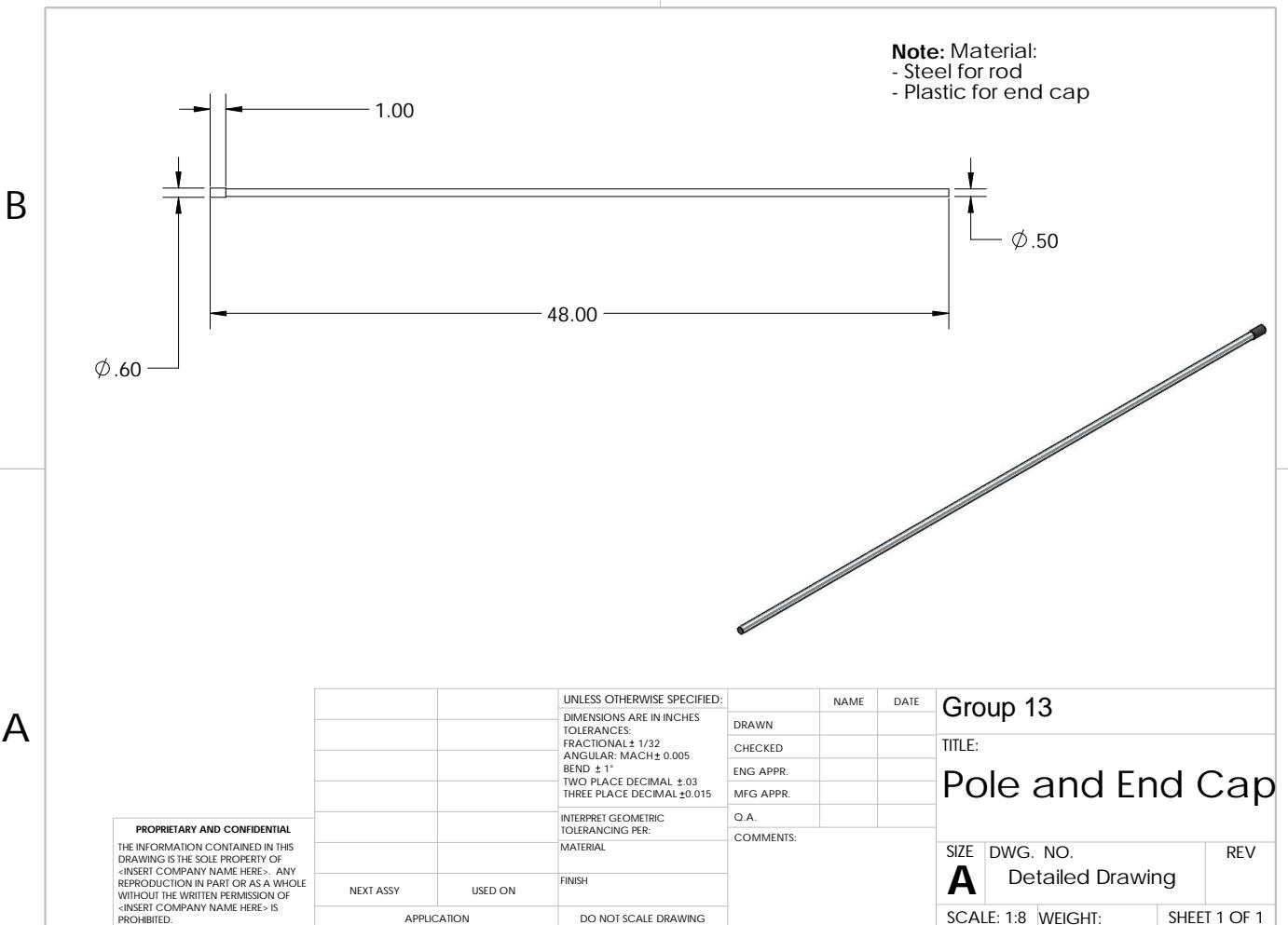
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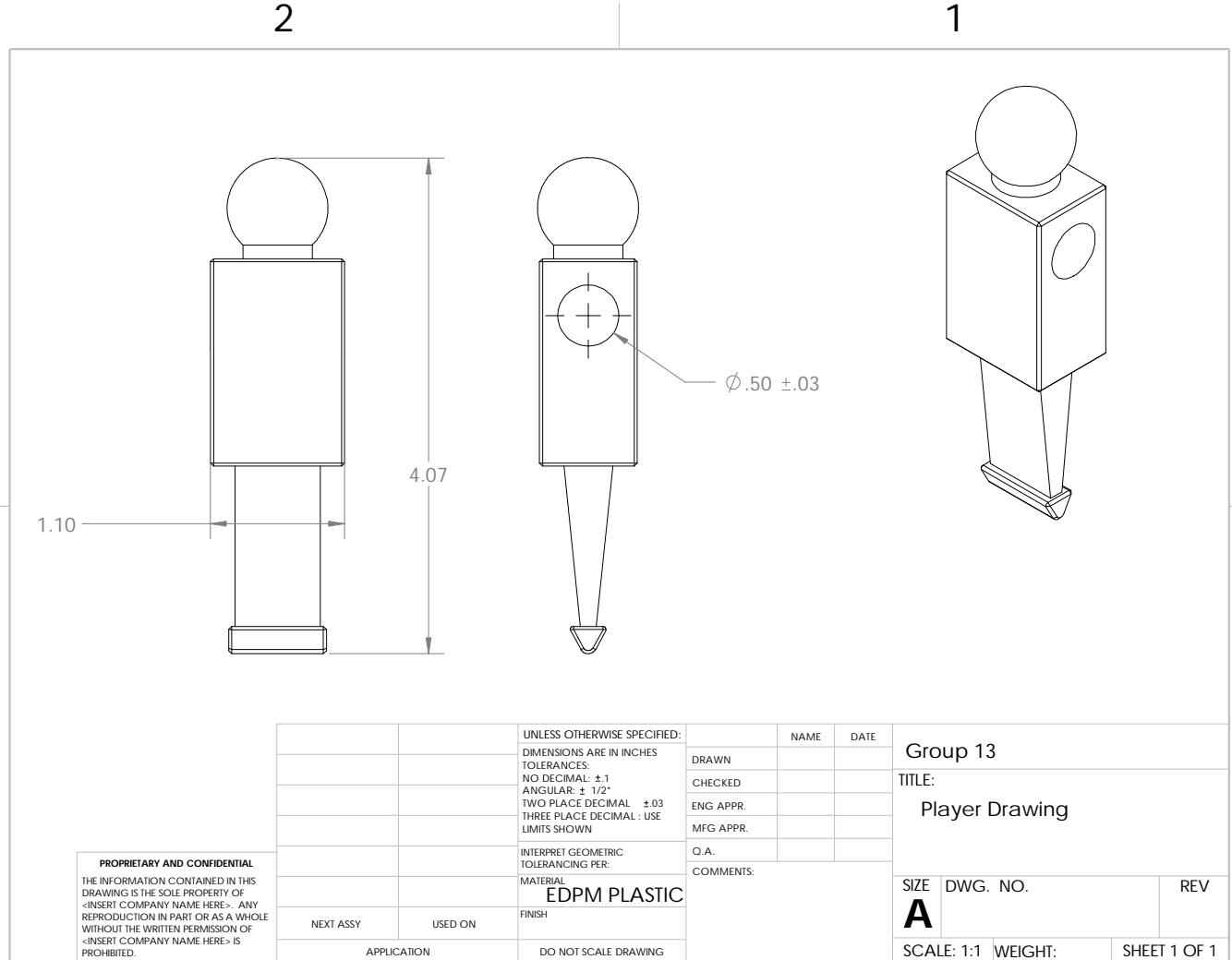


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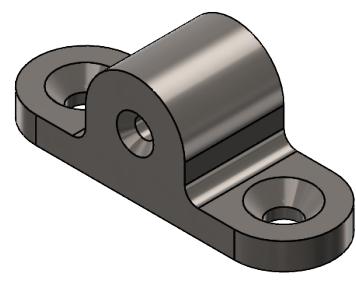
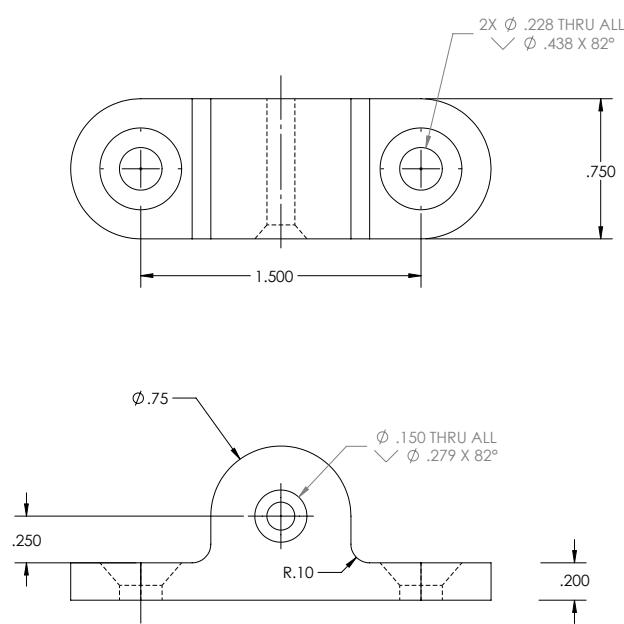
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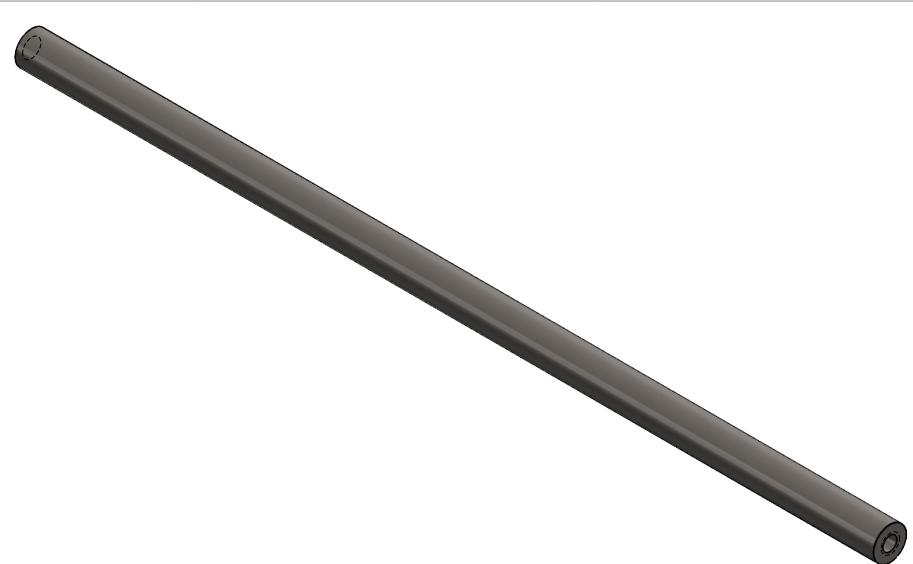
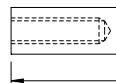
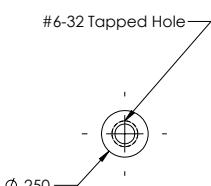
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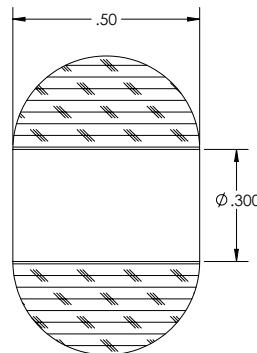
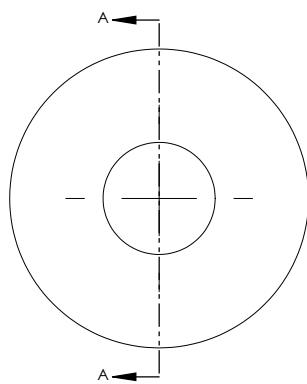
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SECTION A-A



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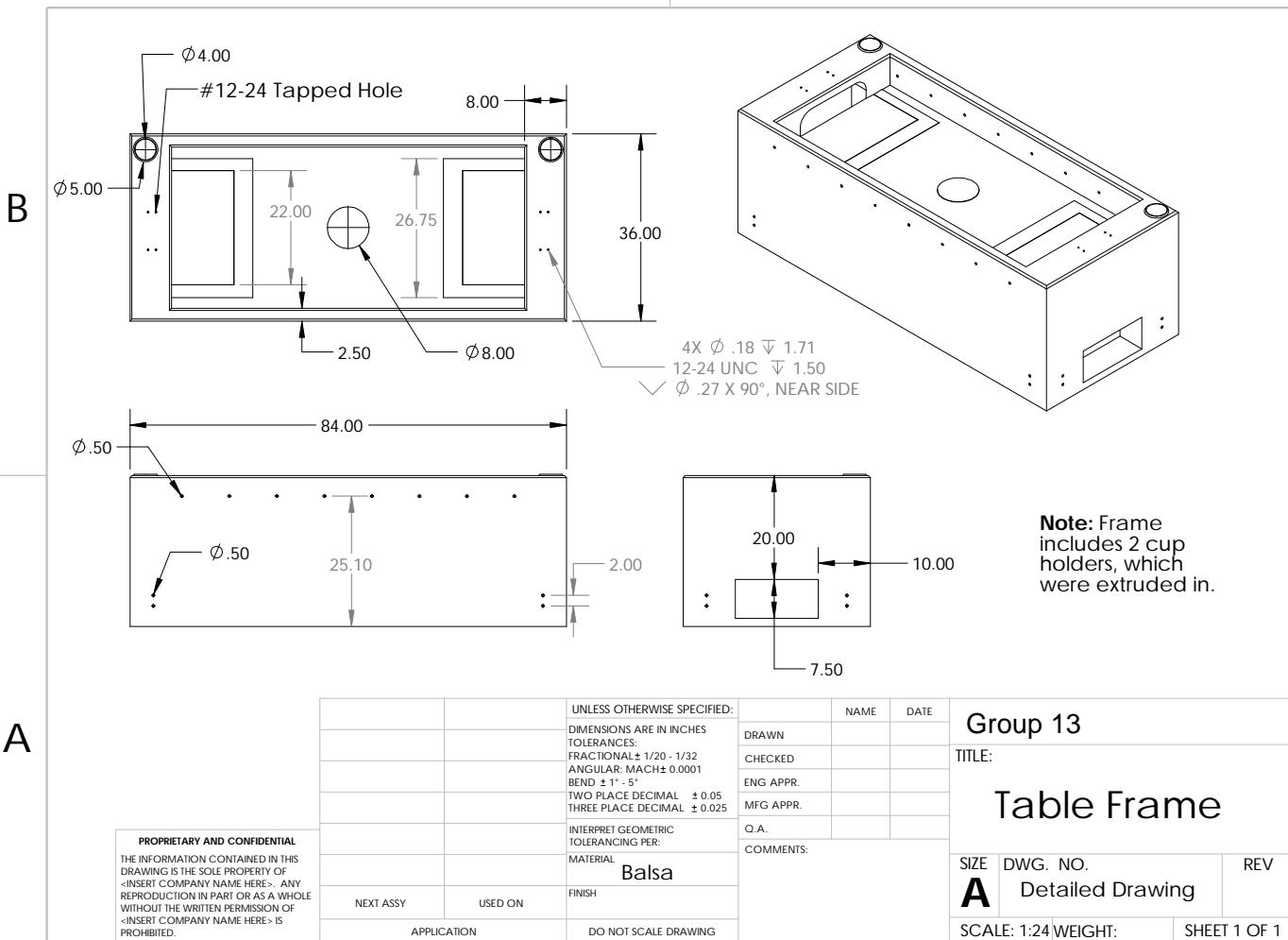
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		Oak Wood					SIZE	DWG. NO.					
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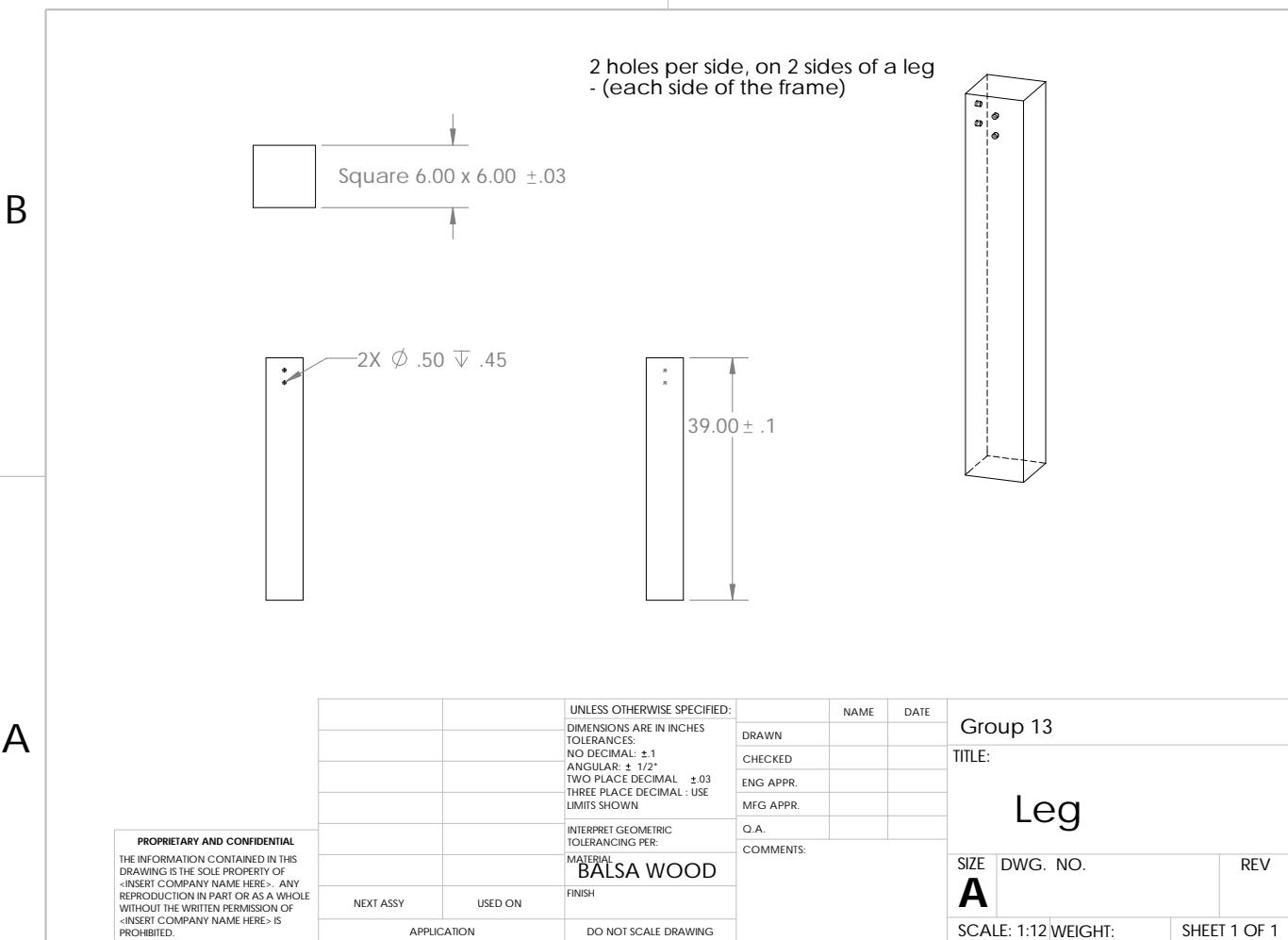
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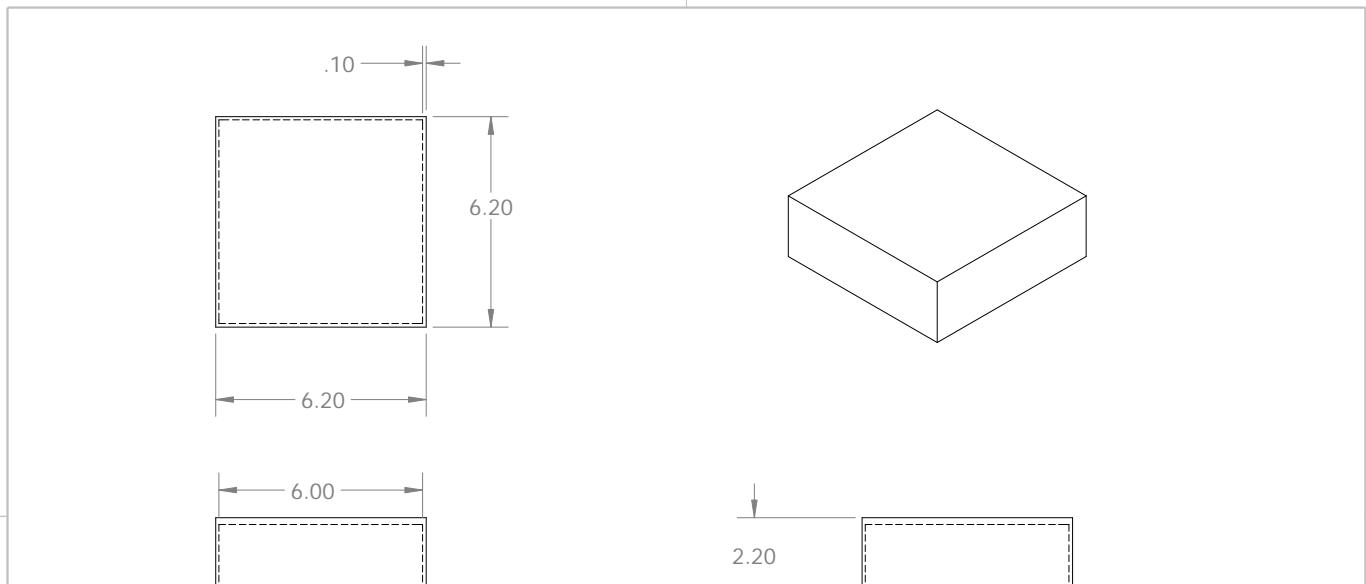
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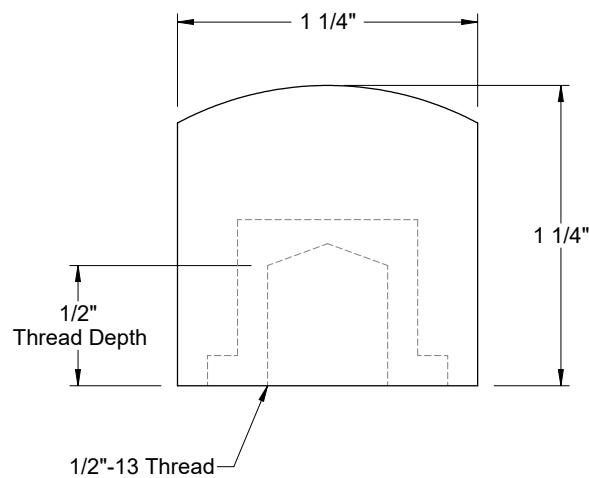
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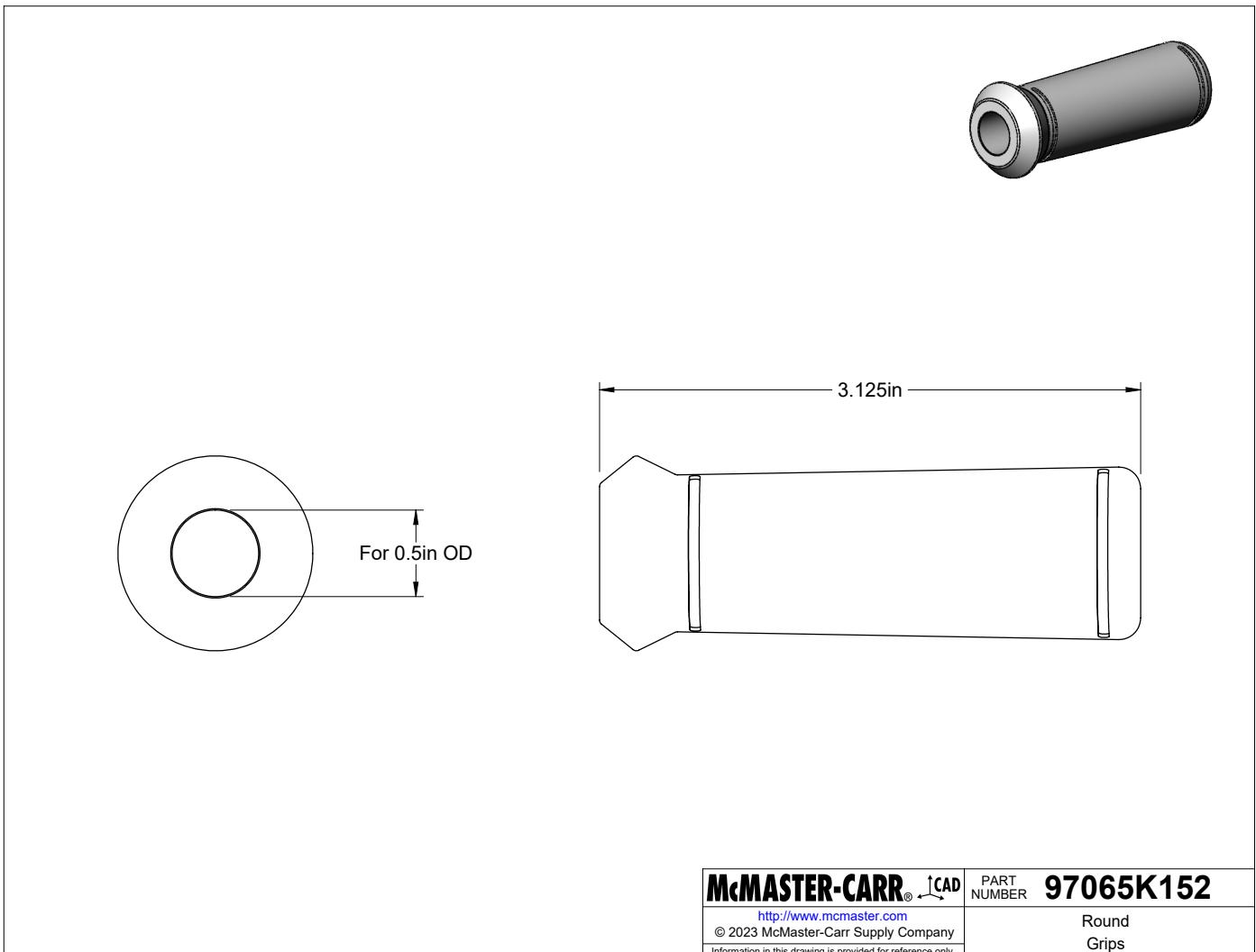
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PART  
NUMBER

**9546K521**

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Neoprene  
Bumper



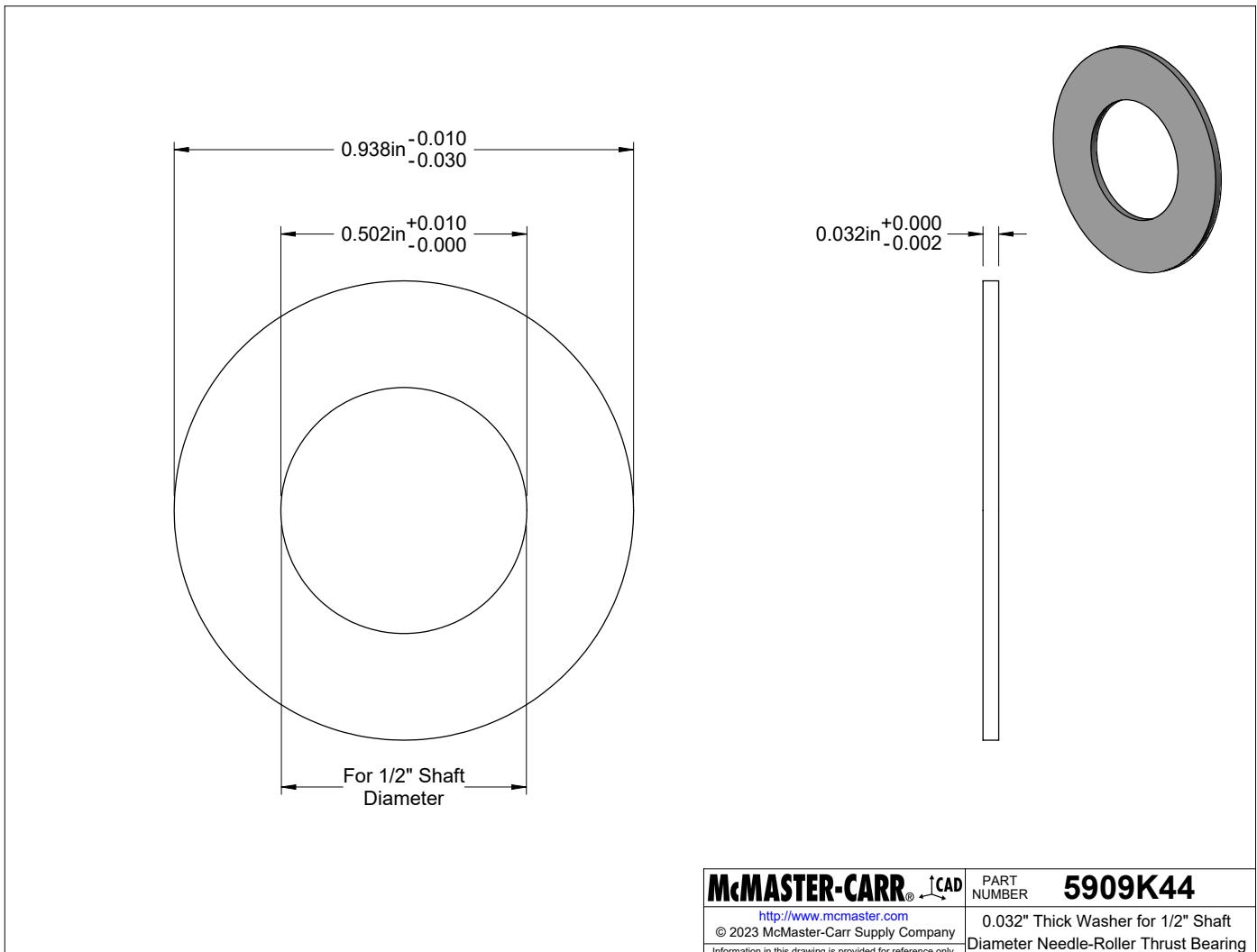
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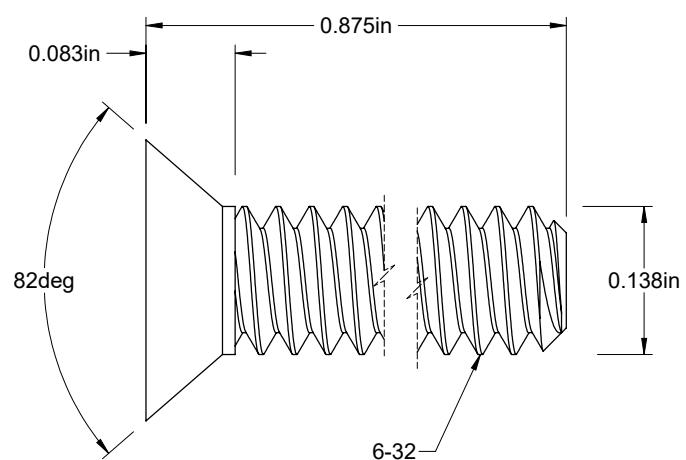
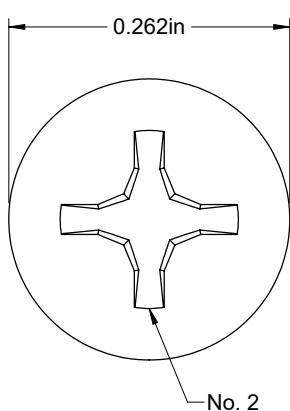
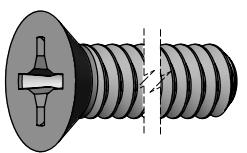
Information in this drawing is provided for reference only.

PART NUMBER **97065K152**

Round  
Grips



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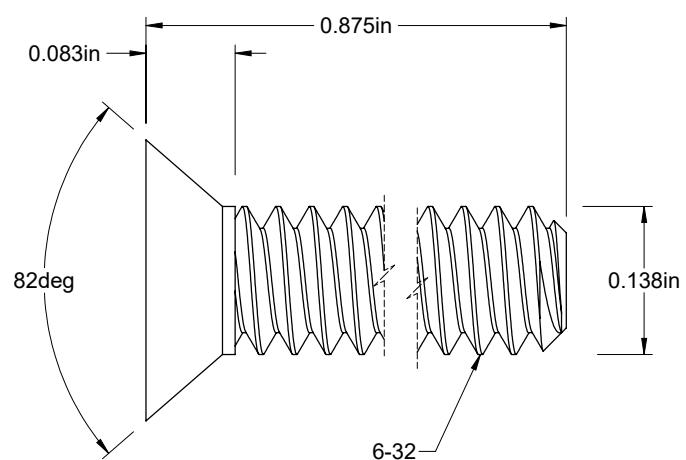
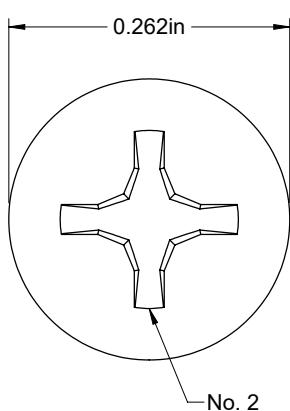
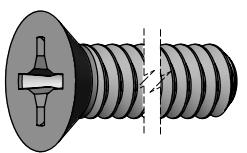
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PART  
NUMBER **90273A152**

Zinc-Plated Steel Phillips  
Flat Head Screws



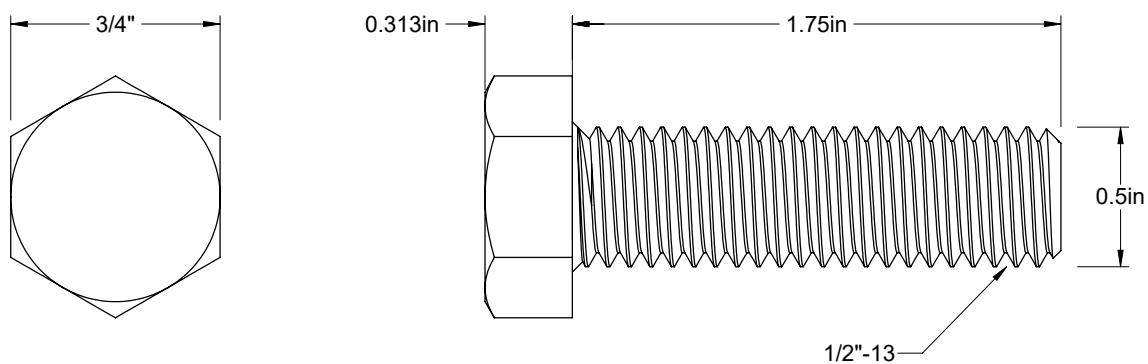
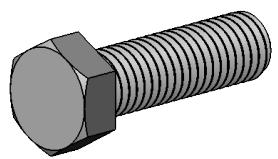
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PART  
NUMBER **90273A152**

Zinc-Plated Steel Phillips  
Flat Head Screws



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PART  
NUMBER **93306A921**

Aluminum Hex  
Head Screw