# Product: Chinatera Clockwork Wind Up Pink Dog

Original Product

Rendering of Product

Table of Contents

# Visual Analysis

Isometric

- Uses regular rhythm: consistent in using same colors and lines to shape animal
- Uses curved lines,bright and dark colors, organic shapes, has a glossy smooth texture

Right

- Proportions of parts to each other are balanced, contrast in darker pink and lighter pink, emphasis on crank by having white cap on it/sticking out of the dog.
- Uses curved lines,bright and dark colors, organic shapes

Front

- Contrast in colors, uses symmetrical balance, emphasis on the eyes and mouth via color.
- Uses curved lines,bright and dark colors, organic shapes, has glossy/smooth texture

# Functional Analysis

1. What is the purpose or primary function of your product?

Purpose: To entertain little kids.

Primary function: crank wind up key, the dog will start moving forward, tilting its head, and wagging its tail.

2. Isometric pictorial of the product with all components labeled.

3. Hypothesis for how the product operates.

When the white wind-up key is twisted, something inside gets tighter and stores the energy and when the white wind-up key is released, the energy is released and the toy starts moving and shaking.

4. Identify the system inputs, intended product function, and outputs using a Black Box Systems Model.

| INPUTS | PRODUCT FUNCTION | OUTPUTS |
|---|---|---|
| • White wind-up key is twisted<br>• White wind-up key is released | • Energy is stored when the white wind-up key is twisted. Energy is released in the form of the dog moving forward and the head and tail shaking when the white wind-up key is released. | • Dog's wheels roll forward<br>• Dog's head shakes back and forth<br>• Dog's tail shakes back and forth |

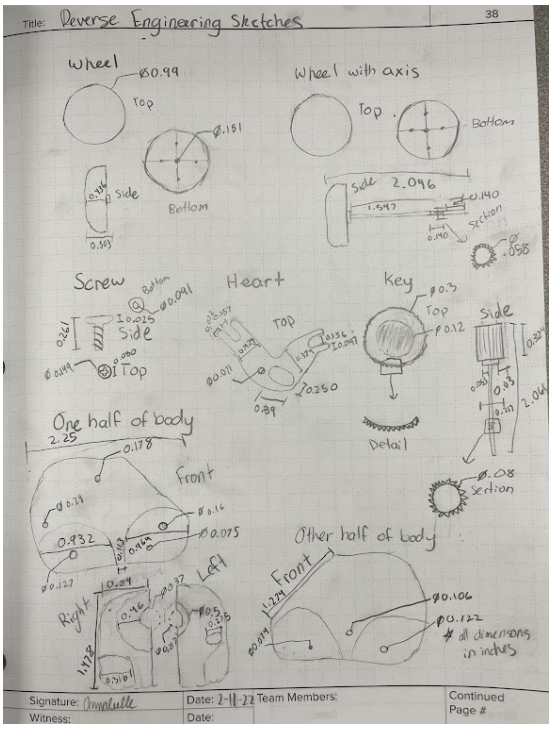
5. Discuss visible mechanical components that you cannot identify because you cannot see the components hidden inside the product.

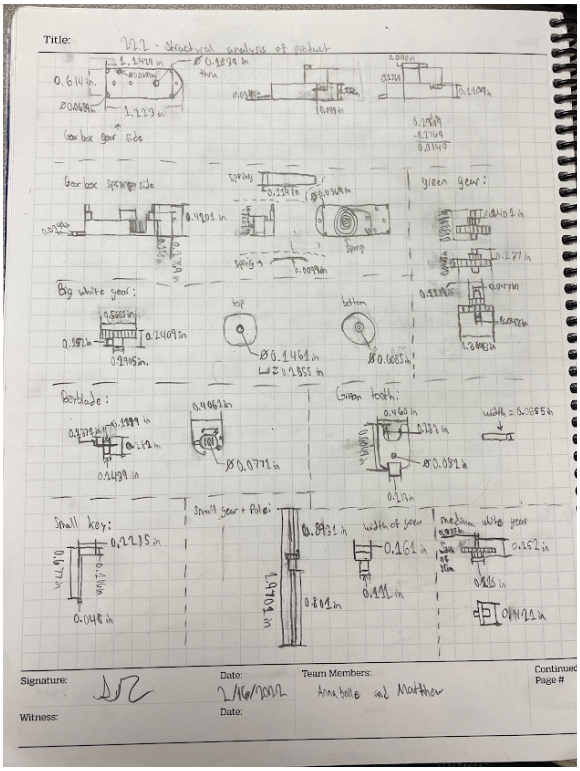
There has to be something inside that stores the energy when the white wind-up key is twisted.

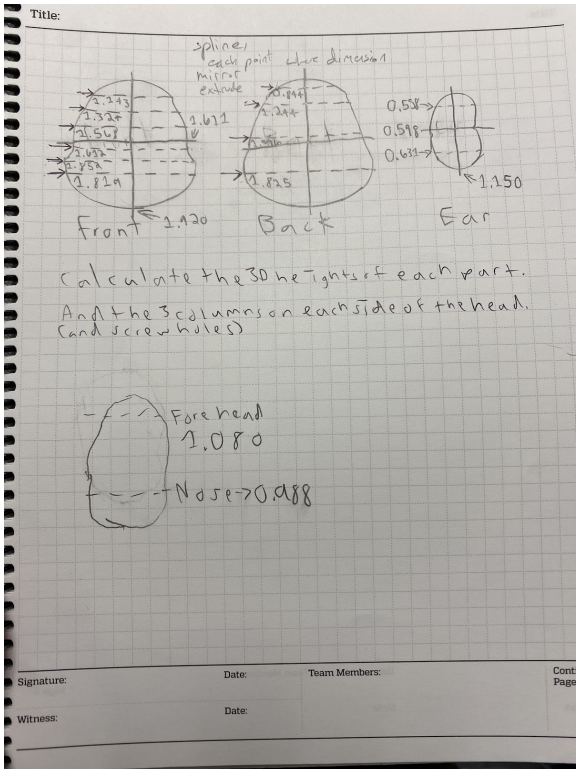
6. What can you not identify about the function of the wind up toy because some components are hidden from plain view?

We can't identify the function of the gearbox inside the wind up dog, since it is hidden inside the components.

# Structural Analysis

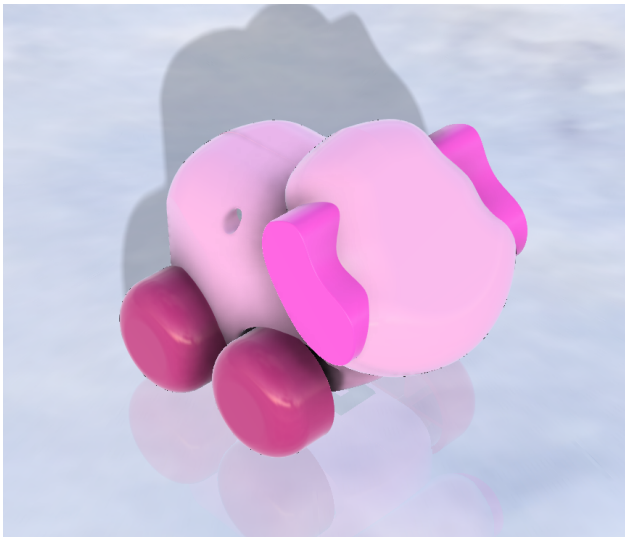


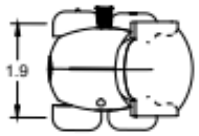



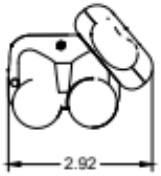



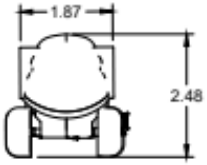
# 3D Model Link, Drawings, Renderings

3D modeled version: https://a360.co/3DEWy6z



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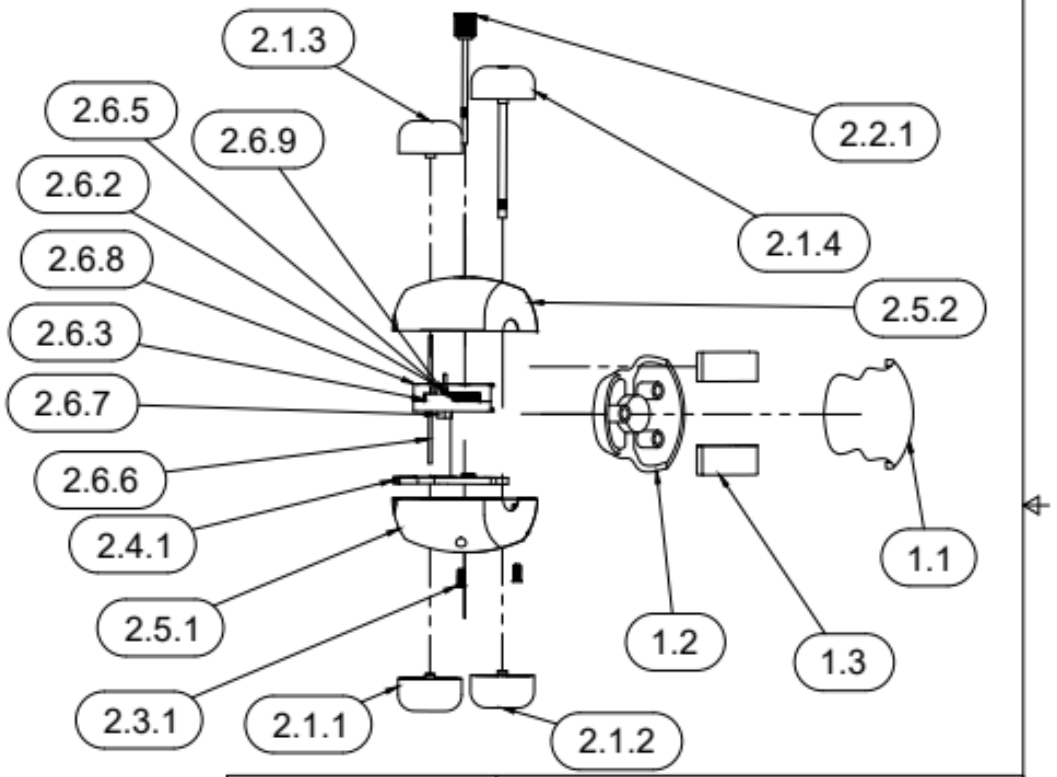
| | TITLE: assembled | | | | |
| APPROVED | SIZE: B | CODE | DWG NO | | REV |
| CHECKED | | | | | |
| DRAWN: czambrowski czambrowski 3/30/2022 | SCALE: 1:2 | WEIGHT | SHEET: 1/2 | | |

| PARTS LIST | | | |
|---|---|---|---|
| ITEM | QTY | PART NUMBER | MATERIAL |
| 1 | 1 | DOG FACE V16 | ABS PLASTIC |
| 1.1 | 1 | COMPONENT1 | ABS PLASTIC |
| 1.2 | 1 | COMPONENT2 | ABS PLASTIC |
| 1.3 | 1 | COMPONENT3 | ABS PLASTIC |
| 2 | 1 | SUBASSEMBLY | |
| 2.1 | 1 | WHEELS | STEEL |
| 2.1.1 | 1 | WHEEL | STEEL |
| 2.1.2 | 1 | WHEEL (1) | STEEL |
| 2.1.3 | 1 | WHEEL (2) | STEEL |
| 2.1.4 | 1 | WHEEL WITH AXIS | STEEL |
| 2.2 | 1 | KEY | |
| 2.2.1 | 1 | KEY | |
| 2.3 | 1 | SCREWS | 60SN40PB |
| 2.3.1 | 2 | SCREW | 60SN40PB |
| 2.4 | 1 | HEART | |
| 2.4.1 | 1 | HEART | ABS PLASTIC |
| 2.4.2 | 1 | COMPONENT2 | |
| 2.5 | 1 | BODY | STEEL |
| 2.5.1 | 1 | COMPONENT1 | STEEL |
| 2.5.2 | 1 | COMPONENT2 | STEEL |
| 2.6 | 1 | SUBASSEMBLY | |
| 2.6.1 | 1 | BEYBLADE | PLASTIC, OPAQUE WHITE |
| 2.6.2 | 1 | BIG WHITE GEAR | ABS PLASTIC |
| 2.6.3 | 1 | GREEN GEAR | ABS PLASTIC |
| 2.6.4 | 1 | GREEN TOOTH | ABS PLASTIC |
| 2.6.5 | 1 | MEDIUM WHITE GEAR | ABS PLASTIC |
| 2.6.6 | 1 | SMALL GEAR ON POLE | |
| 2.6.7 | 1 | SMALL KEY | |
| 2.6.8 | 1 | GEAR BOX HALF + SPRING | |
| 2.6.9 | 1 | GEARBOX HALVE NO SPRING | PLASTIC, OPAQUE BLACK |

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| | TITLE: assembled | | | | |
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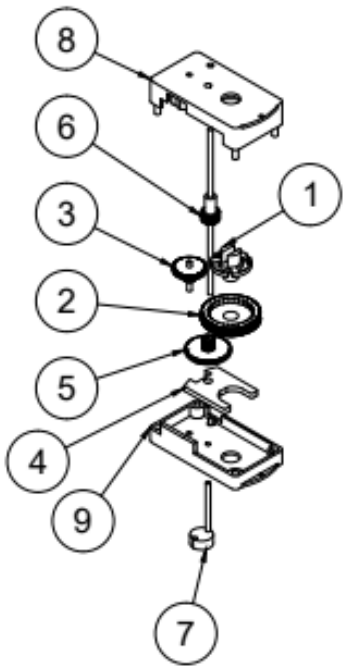
| CHECKED | | | | | |
| DRAWN czambrowski czambrowski 3/30/2022 | SCALE 1.25:2 | WEIGHT | SHEET 2/2 | | |

| PARTS LIST | | | | |
|---|---|---|---|---|
| ITEM | QTY | PART NUMBER | DESCRIPTION | MATERIAL |
| 1 | 1 | BEYBLADE | | PLASTIC, OPAQUE WHITE |
| 2 | 1 | BIG WHITE GEAR | | ABS PLASTIC |
| 3 | 1 | GREEN GEAR | | ABS PLASTIC |
| 4 | 1 | GREEN TOOTH | | ABS PLASTIC |
| 5 | 1 | MEDIUM WHITE GEAR | | ABS PLASTIC |
| 6 | 1 | SMALL GEAR ON POLE | | |
| 7 | 1 | SMALL KEY | | |
| 8 | 1 | GEAR BOX HALF + SPRING | | |
| 9 | 1 | GEARBOX HALVE NO SPRING | | PLASTIC, OPAQUE BLACK |

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| | PROJECT: Pink Dog Reverse AH, RZ, MC | | | |
| | TITLE: Subassembly | | | |
| APPROVED | SIZE: B | CODE | DWG NO | REV |
| CHECKED | | | | |
| DRAWN czarbrowski czarbrowski 4/7/2022 | SCALE: 1:1 | WEIGHT | SHEET 1/1 | |

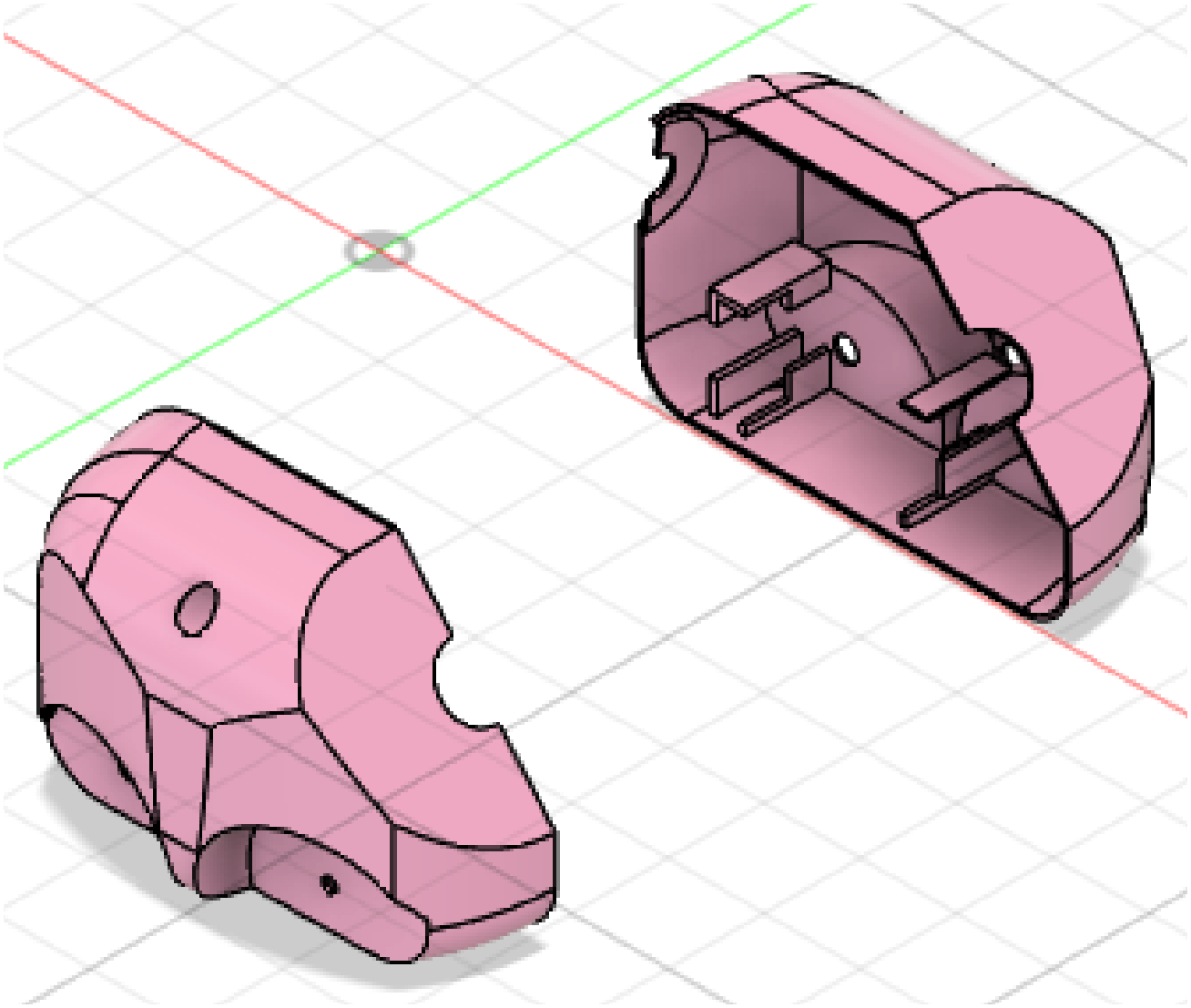
# Discussion

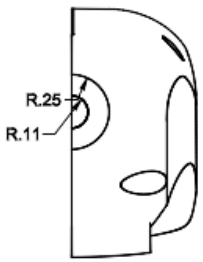
**Quirks in the model:**
The gearbox was too big. The shell of the body was too thin. The body was too small. The gear in the gearbox are most likely not the correct ratio.

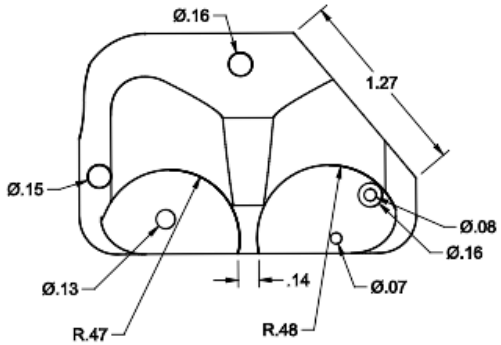
**Ways it may differ from the real product:**
The model doesn't have a tail, neck or a face and the real product does. The size of certain parts are not the same size as the real product. The gearbox does not fit the body of the product and some gears are too big too.

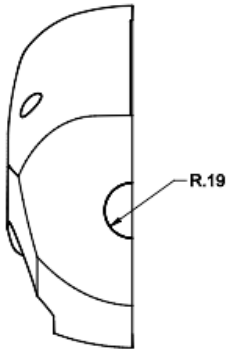
**Next steps given more time:**
Resize the modeled parts to fit the gearbox better. Fix the size of the gearbox and body. Make the tail and part of the head that makes the head wiggle. Also make it so that the product actually has a face, not just a blank canvas.

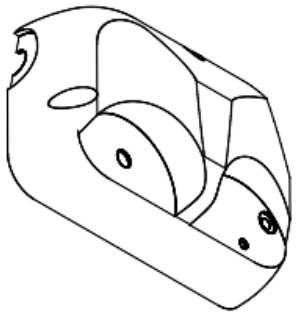
Part Models and Drawings

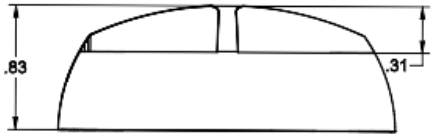


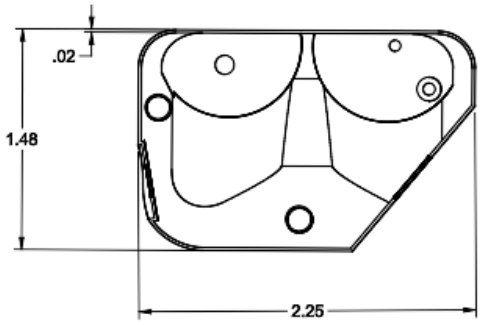


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| | TITLE: Body | | | | |
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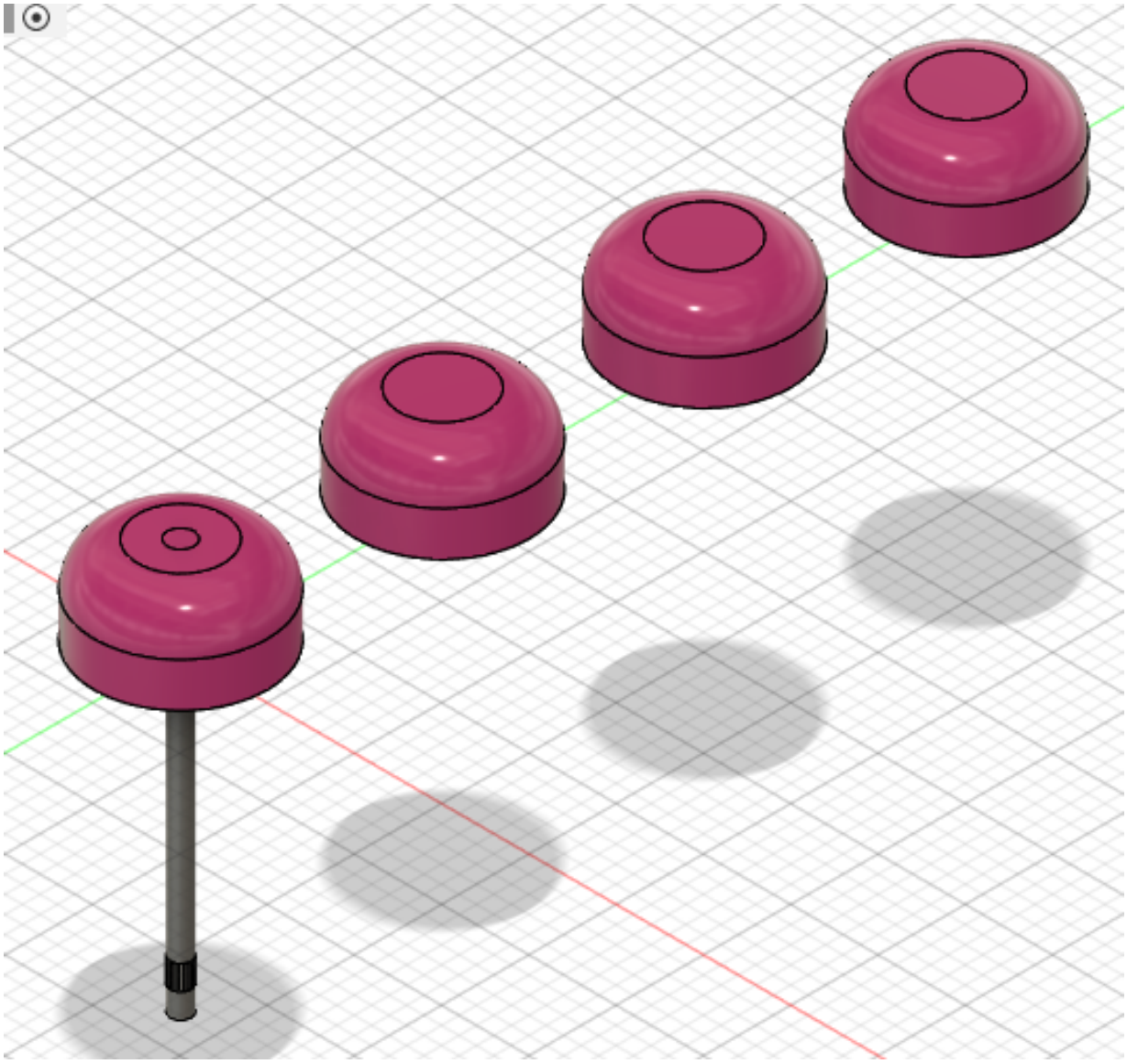

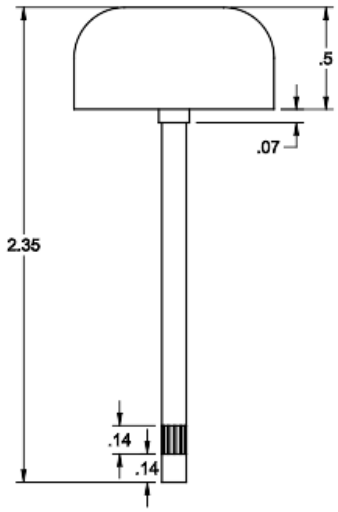


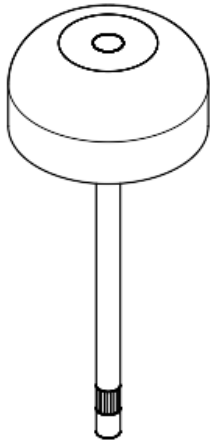

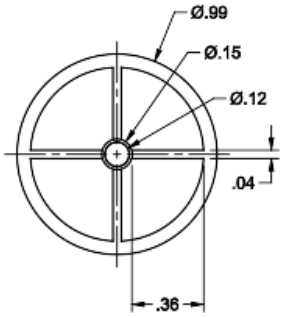


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|---|---|---|---|---|---|
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| | TITLE: Wheels | | | | |
| APPROVED | SIZE: B | CODE | DWG NO | | REV |
| CHECKED | | | | | |
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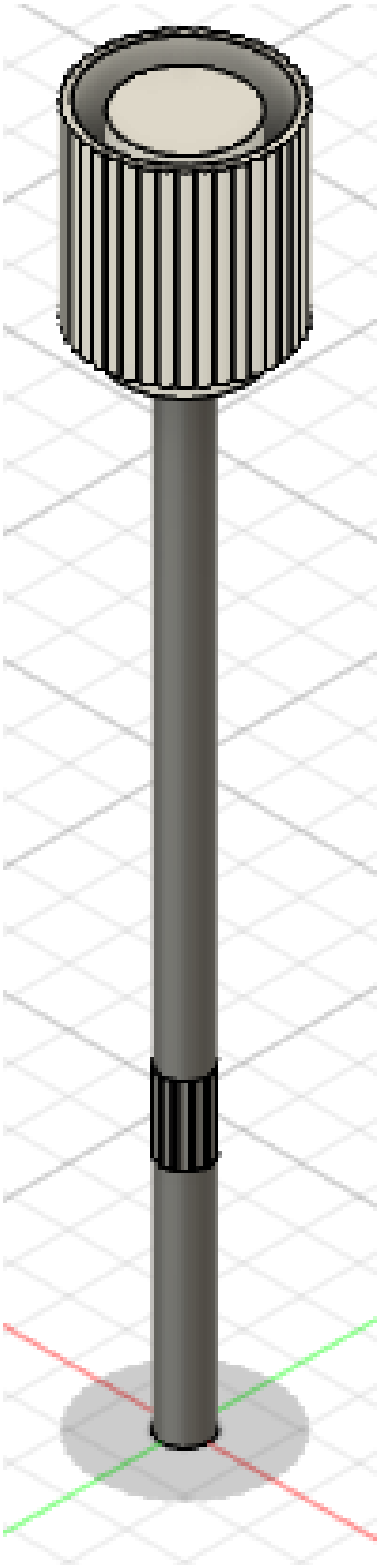

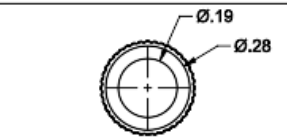


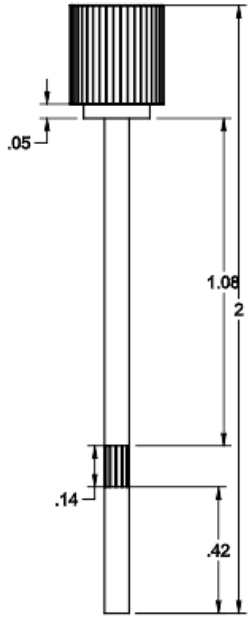


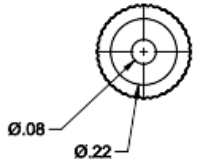


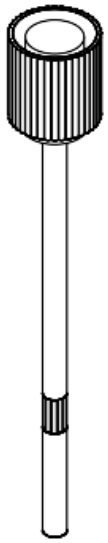

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|---|---|---|---|---|---|
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| | TITLE: Key | | | | |
| APPROVED | SIZE: B | CODE | DWG NO | | REV |
| CHECKED | | | | | |
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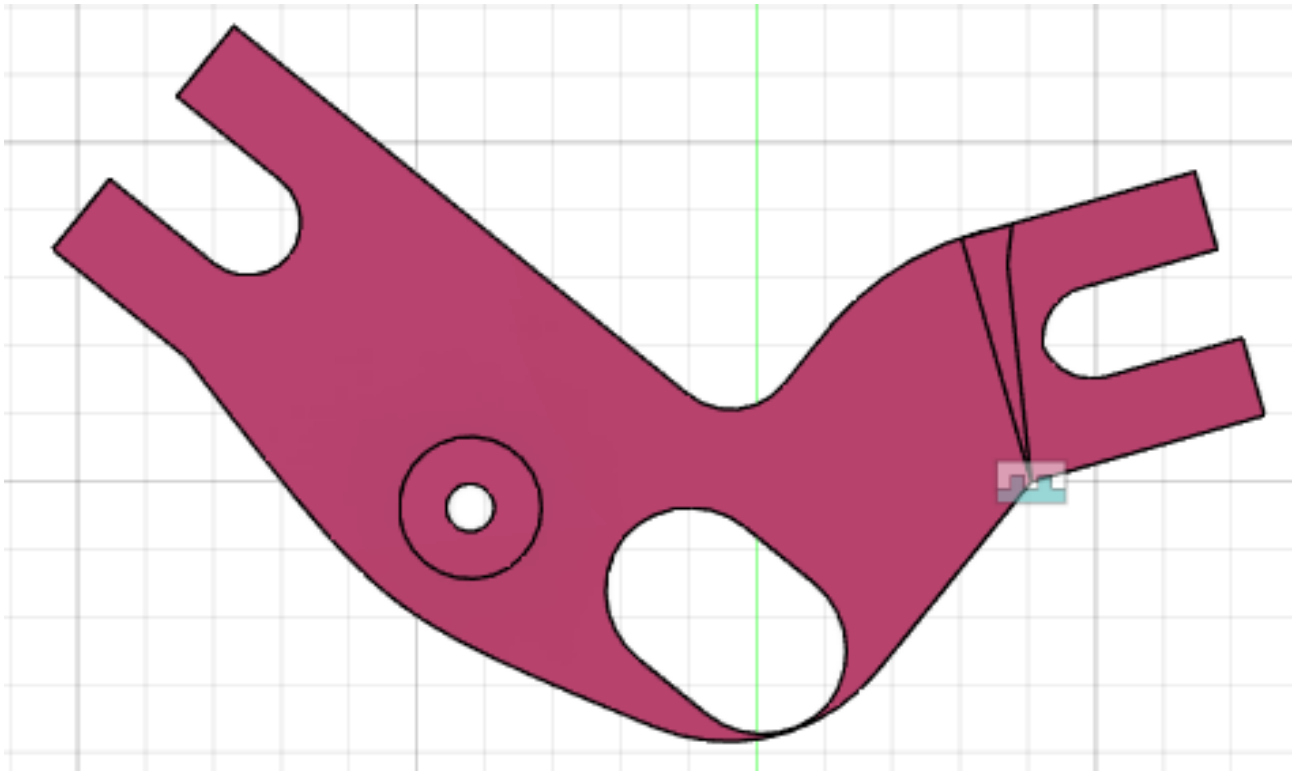

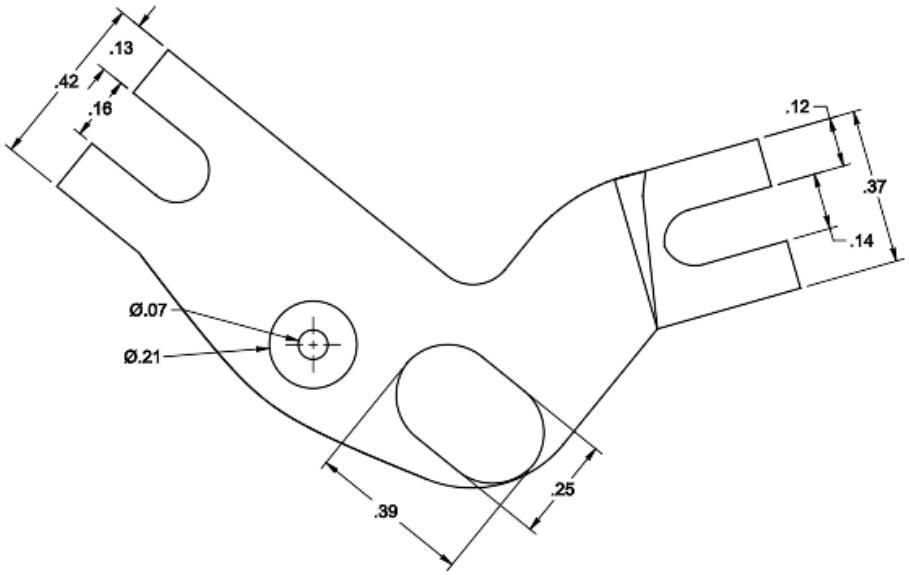


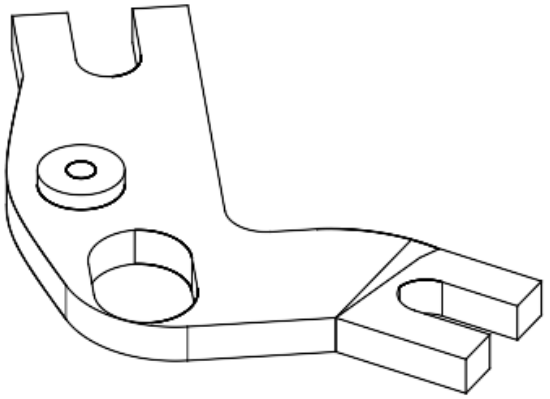

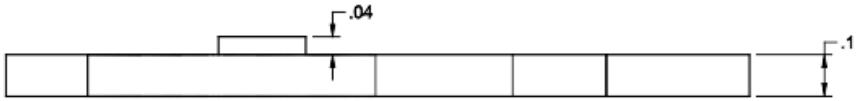


| | | | | |
|---|---|---|---|---|
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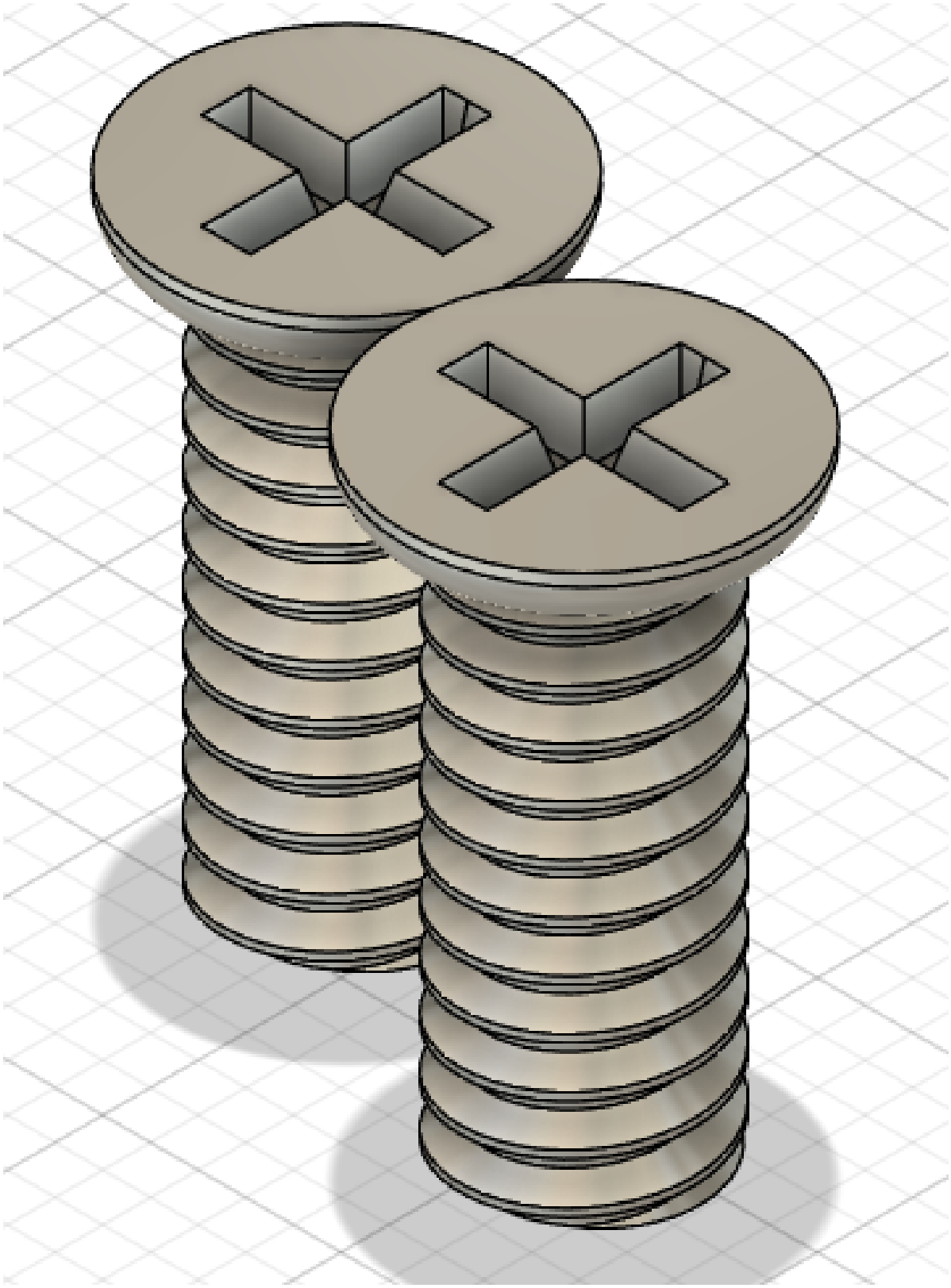
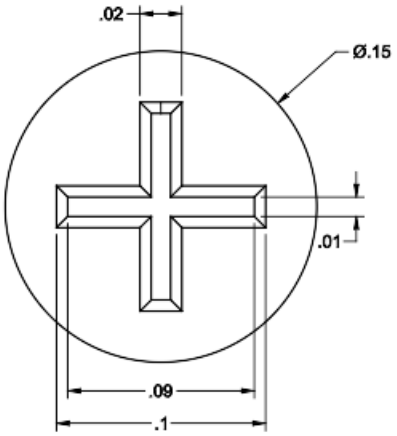
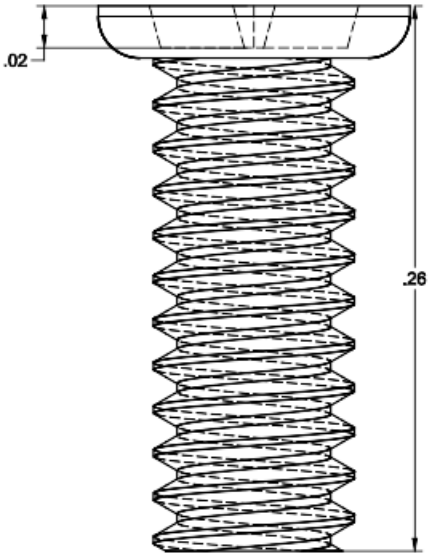
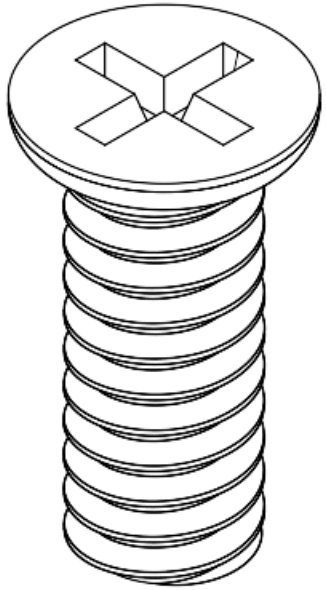
| | TITLE: Heart | | | |
| APPROVED | SIZE: B | CODE | DWG NO | REV |
| CHECKED | | | | |
| DRAWN Annabelle Hazell 3/24/2022 | SCALE 3:1 | WEIGHT | SHEET 1/1 | |





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| CHECKED | | | | | |
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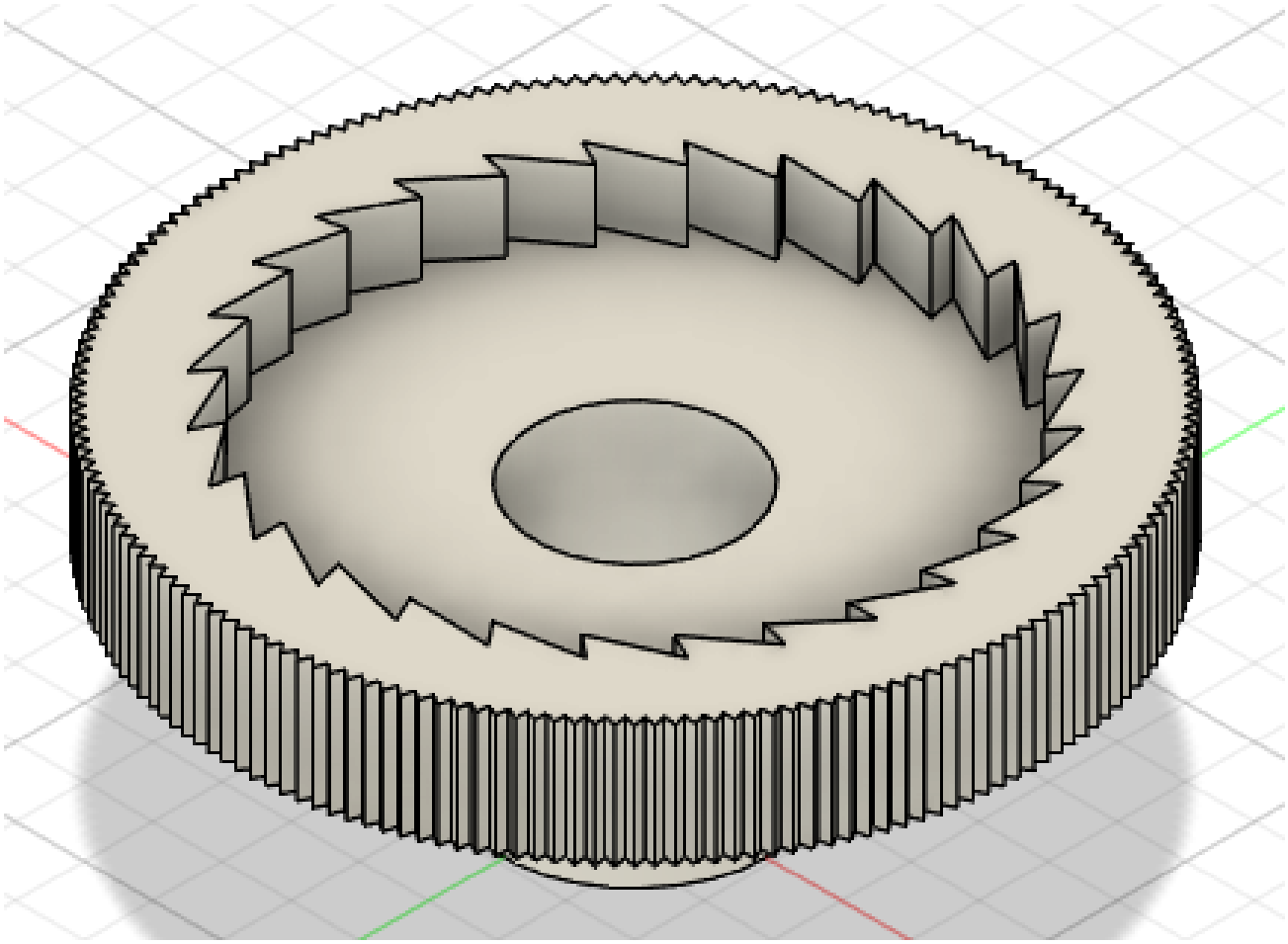

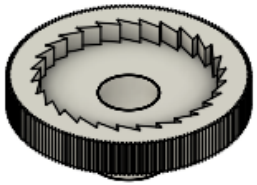

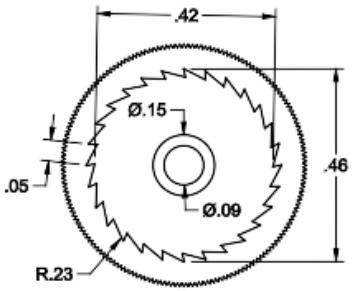


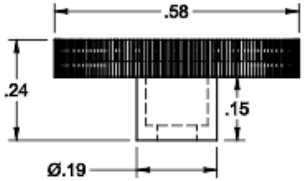


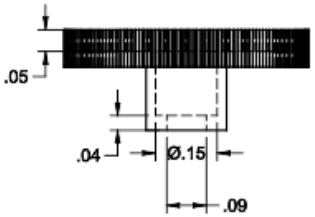


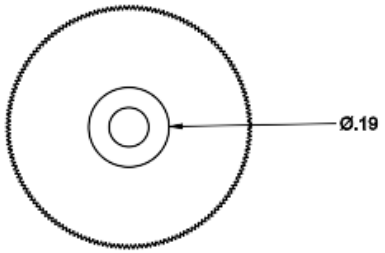


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|---|---|---|---|---|---|
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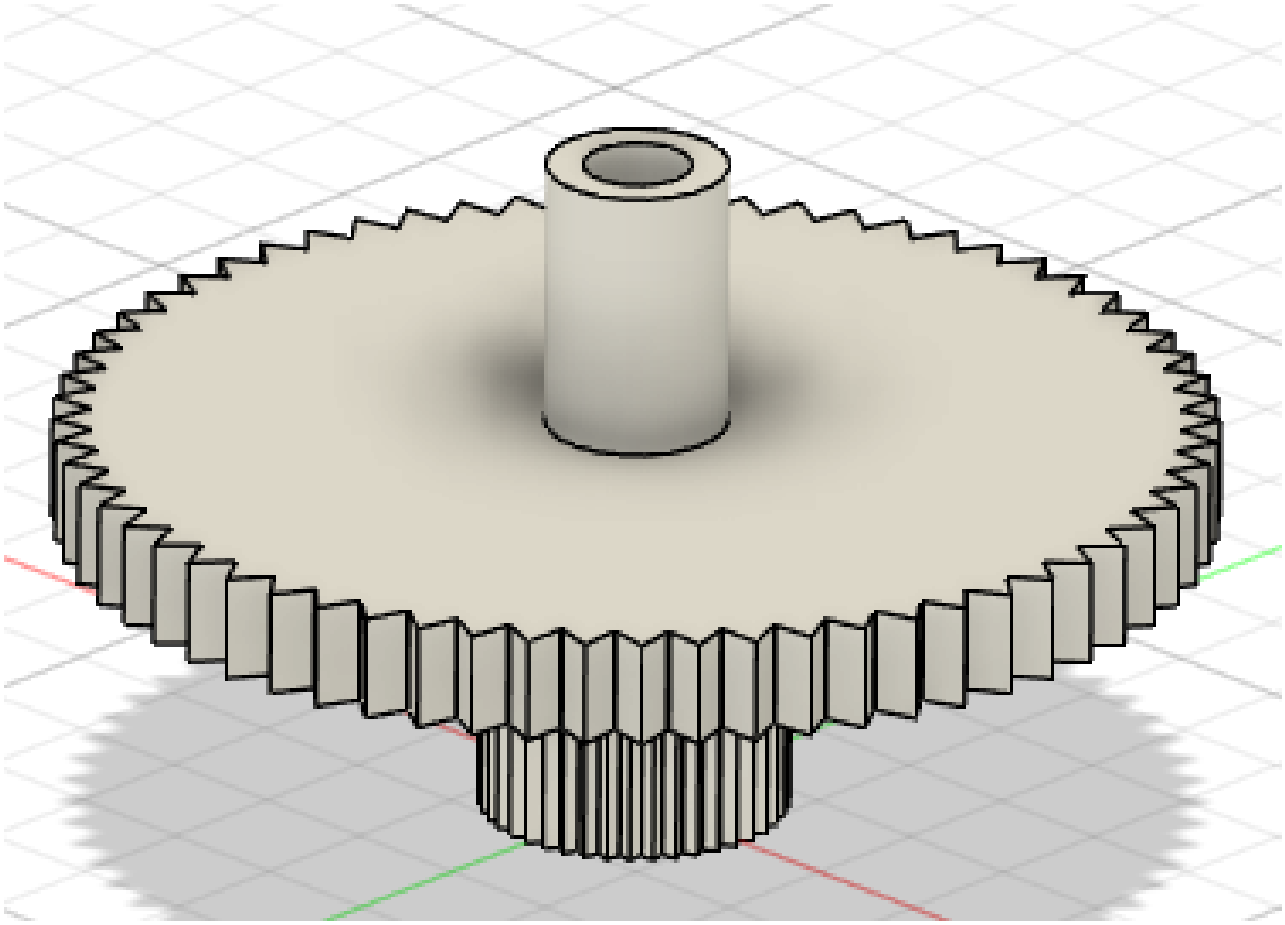
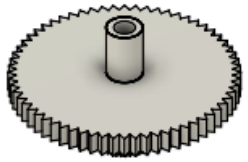
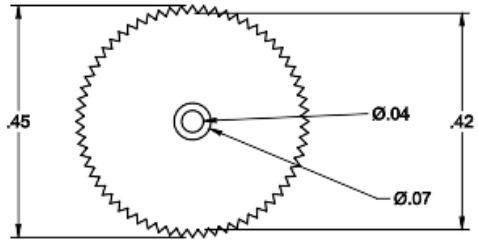
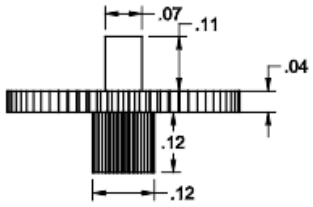
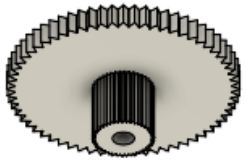
| | TITLE: Big white gear | | | | |
| APPROVED | SIZE | CODE | DWG NO | | REV |
| CHECKED | B | | | | |
| DRAWN cambrowski cambrowski 3/22/2022 | SCALE 4:1 | WEIGHT | | SHEET 1/1 | |

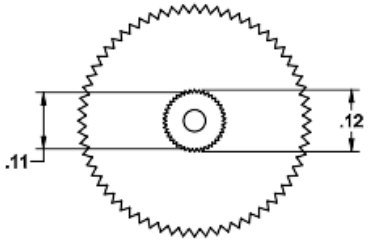




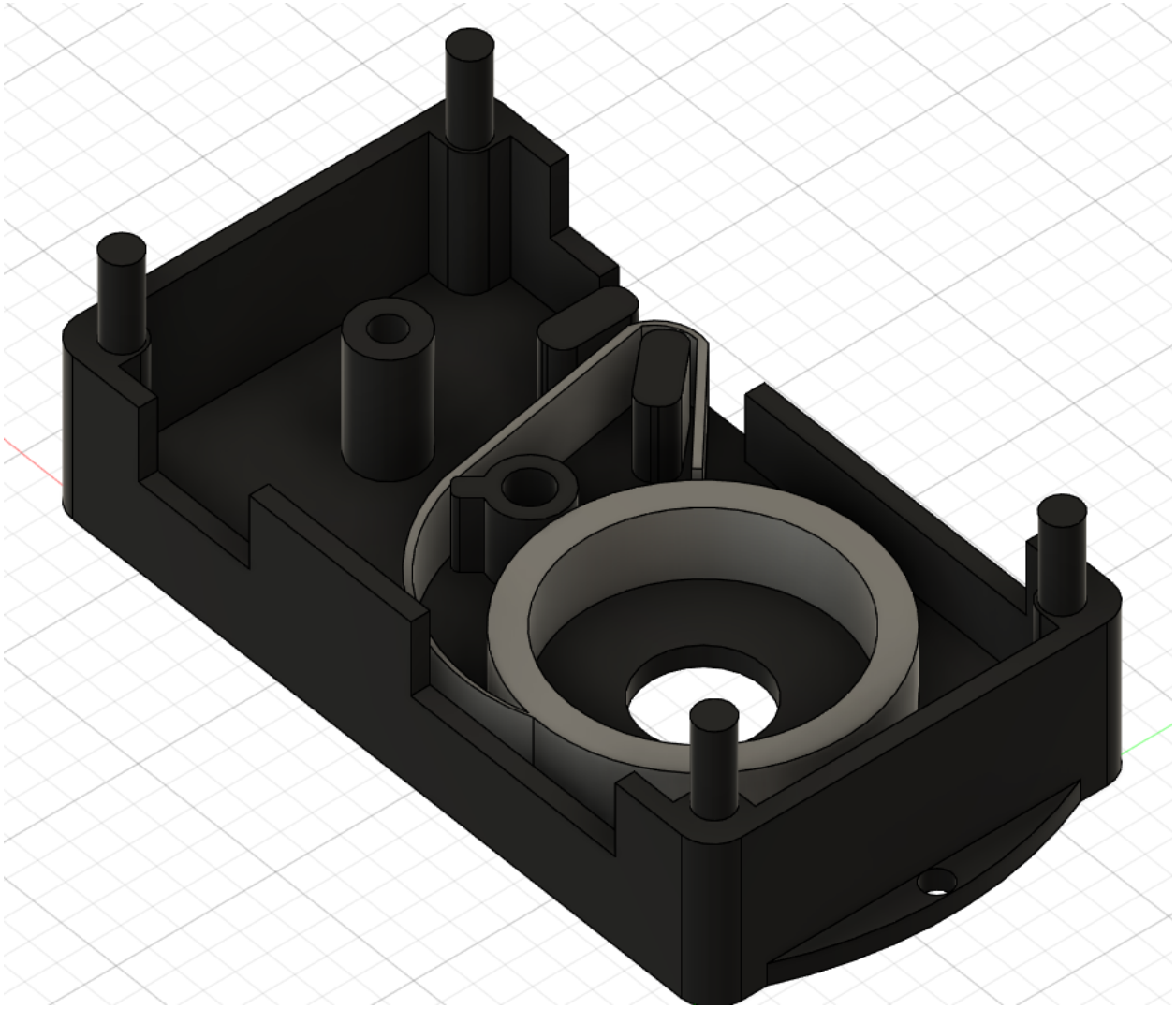


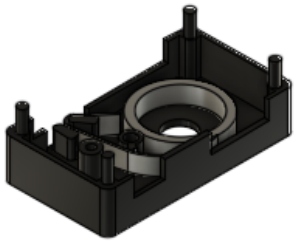



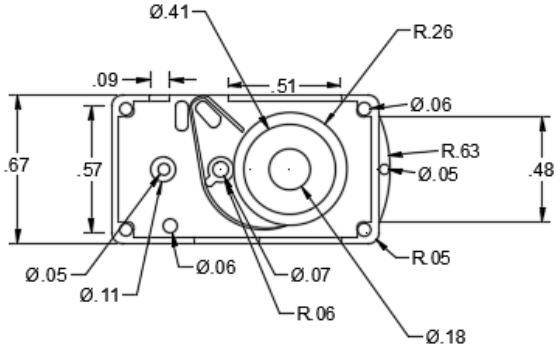



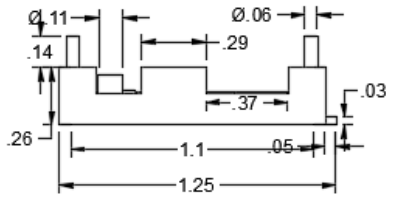



| | | | | | |
|---|---|---|---|---|---|
| | PROJECT: Pink Dog Reverse AH, RZ, MC | | | | |
| | TITLE: medium white gear | | | | |
| APPROVED | SIZE: B | CODE | DWG NO | | REV |
| CHECKED | | | | | |
| DRAWN rzambrowski rzambrowski 3/22/2022 | SCALE 5:1 | WEIGHT | | SHEET 1/1 | |

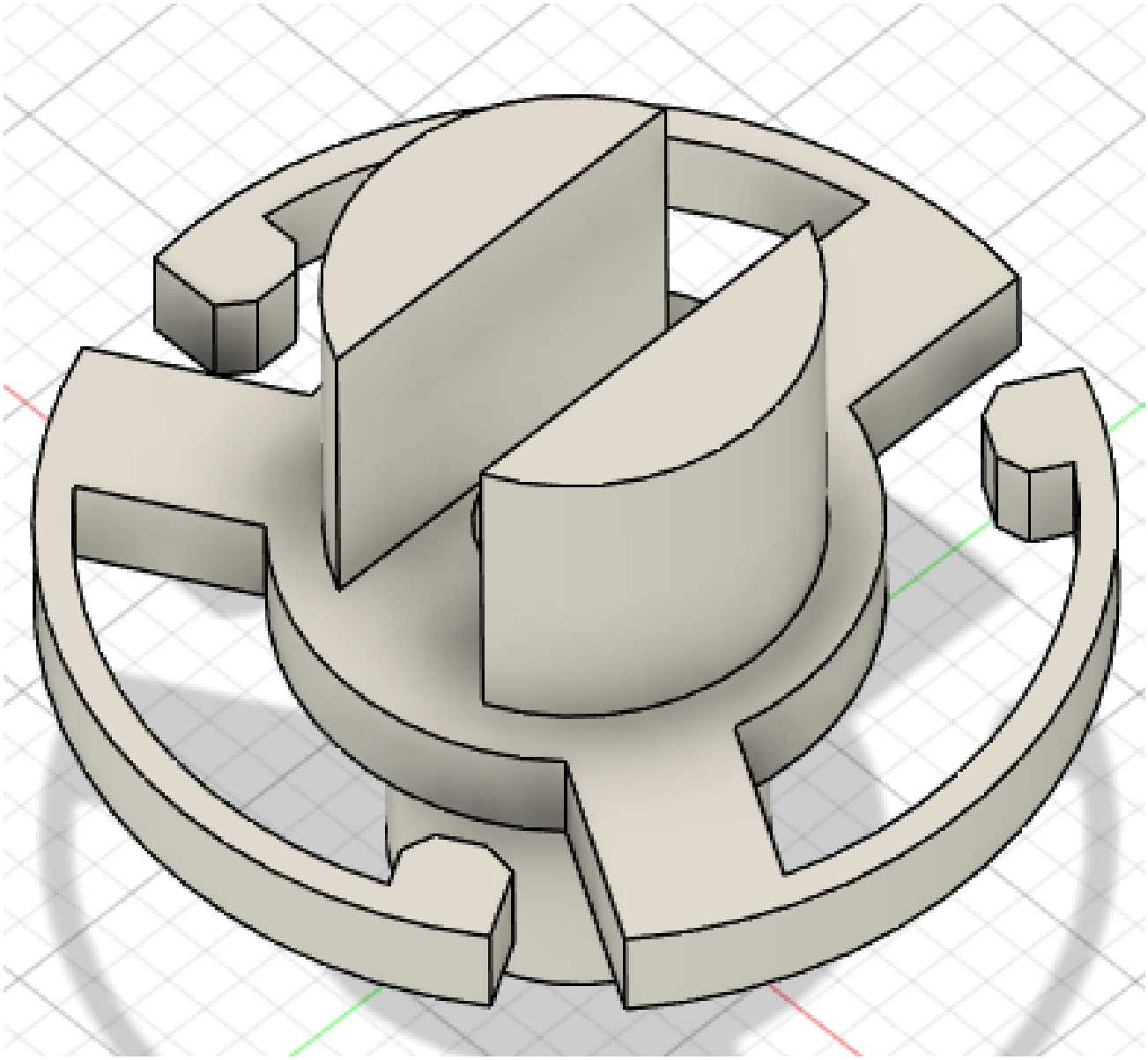


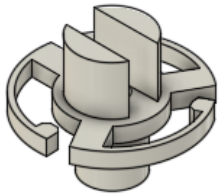


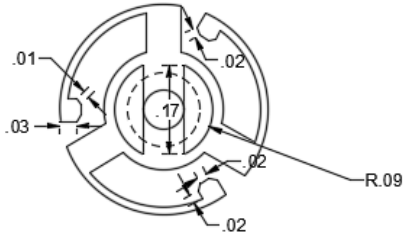


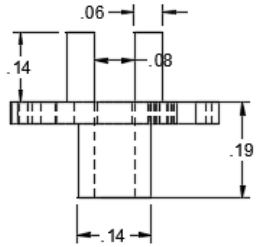



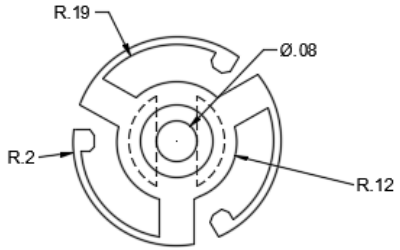

| | | | | | |
|---|---|---|---|---|---|
| | PROJECT: Pink Dog Reverse AH, RZ, MC | | | | |
| | TITLE: gear box half + spring | | | | |
| APPROVED | SIZE: B | CODE | DWG NO | | REV |
| CHECKED | | | | | |
| DRAWN [redacted] 3/22/2022 | SCALE 2:1 | WEIGHT | | SHEET 1/1 | |



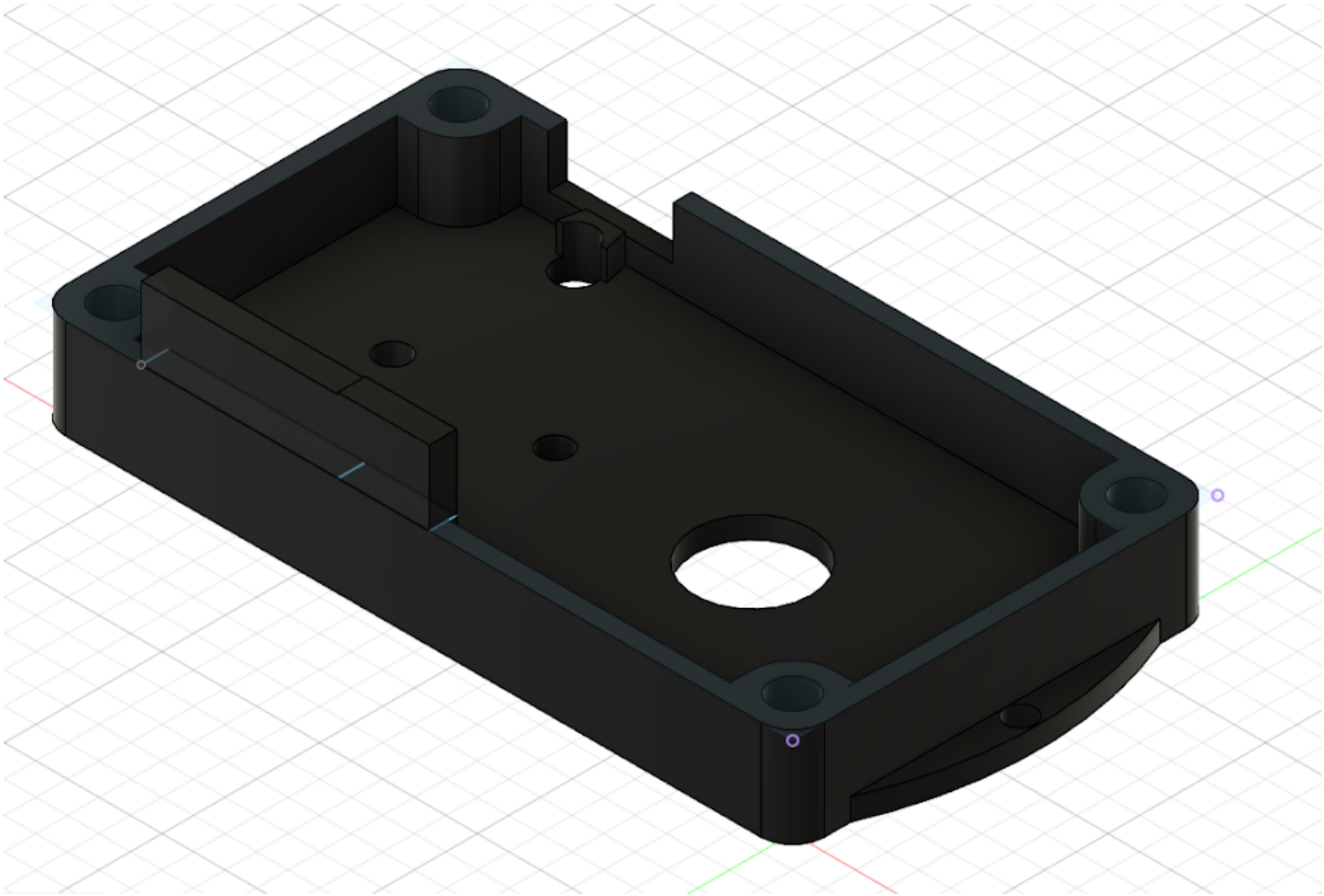


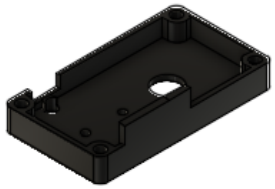


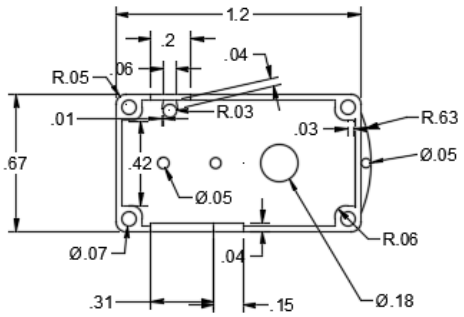



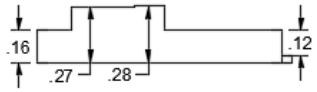




| | | | | | |
|---|---|---|---|---|---|
| | PROJECT: IED Zambrowski | | | | |
| | TITLE: beyblade | | | | |
| APPROVED | SIZE: B | CODE | DWG NO | | REV |
| CHECKED | | | | | |
| DRAWN [redacted] 3/14/2022 | SCALE 5:1 | WEIGHT | | SHEET 1/1 | |





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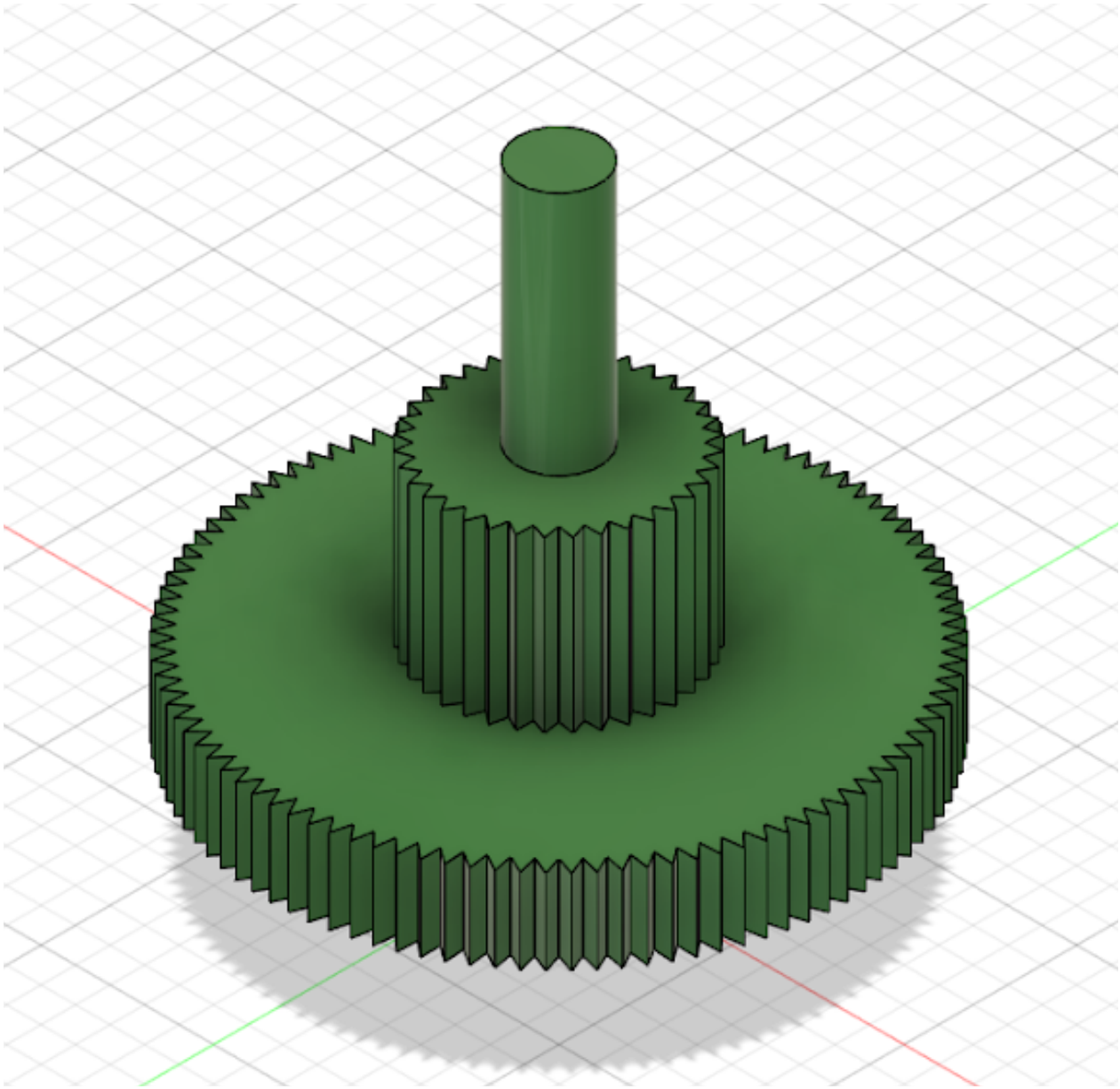
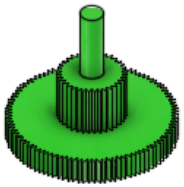
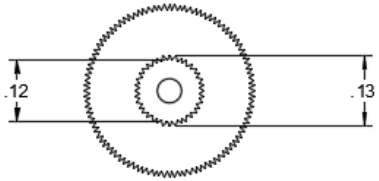
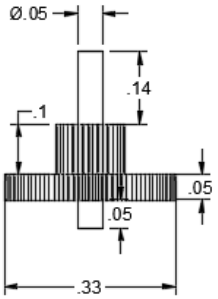
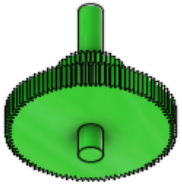
|---|---|---|---|---|---|
| | PROJECT: Pink Dog Reverse AH, RZ, MC | | | | |
| | TITLE: gearbox halve no spring | | | | |
| APPROVED | SIZE: B | CODE | DWG NO | | REV |
| CHECKED | | | | | |
| DRAWN 3/22/2022 | SCALE 2:1 | WEIGHT | SHEET 1/1 | | |

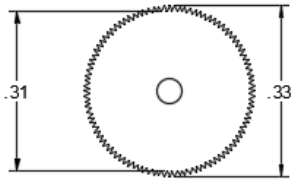




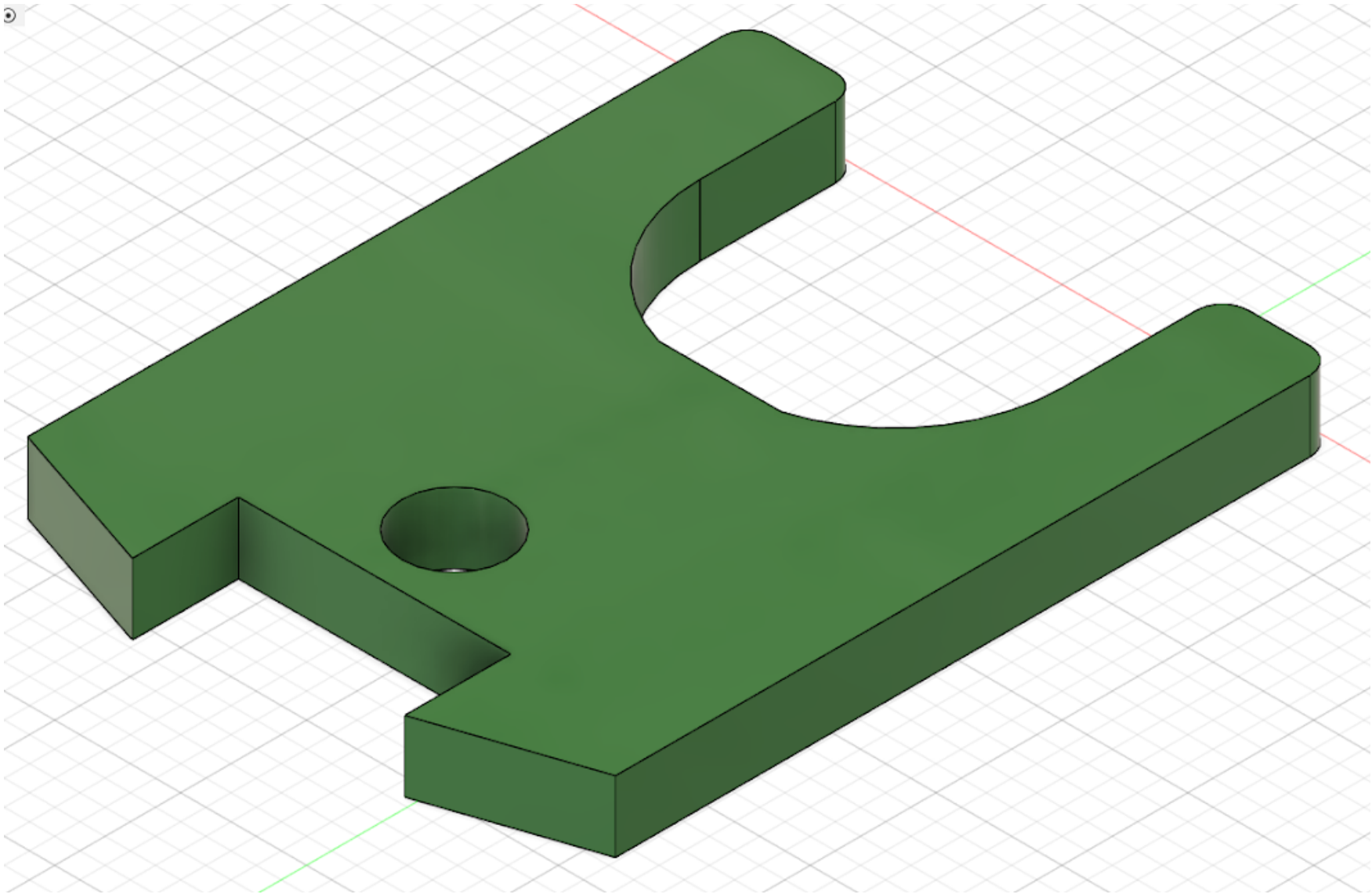


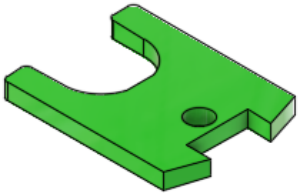



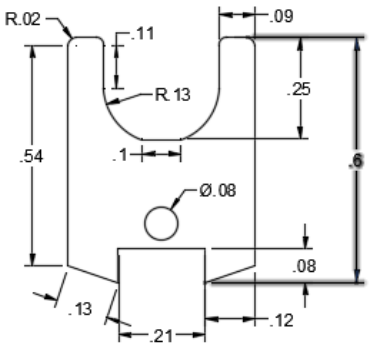



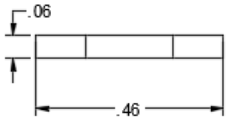



| | | | | | |
|---|---|---|---|---|---|
| | PROJECT: Pink Dog Reverse AH, RZ, MC | | | | |
| | TITLE: green gear | | | | |
| APPROVED | SIZE: B | CODE | DWG NO | | REV |
| CHECKED | | | | | |
| DRAWN [illegible] 3/22/2022 | SCALE: 5:1 | WEIGHT | | SHEET: 1/1 | |

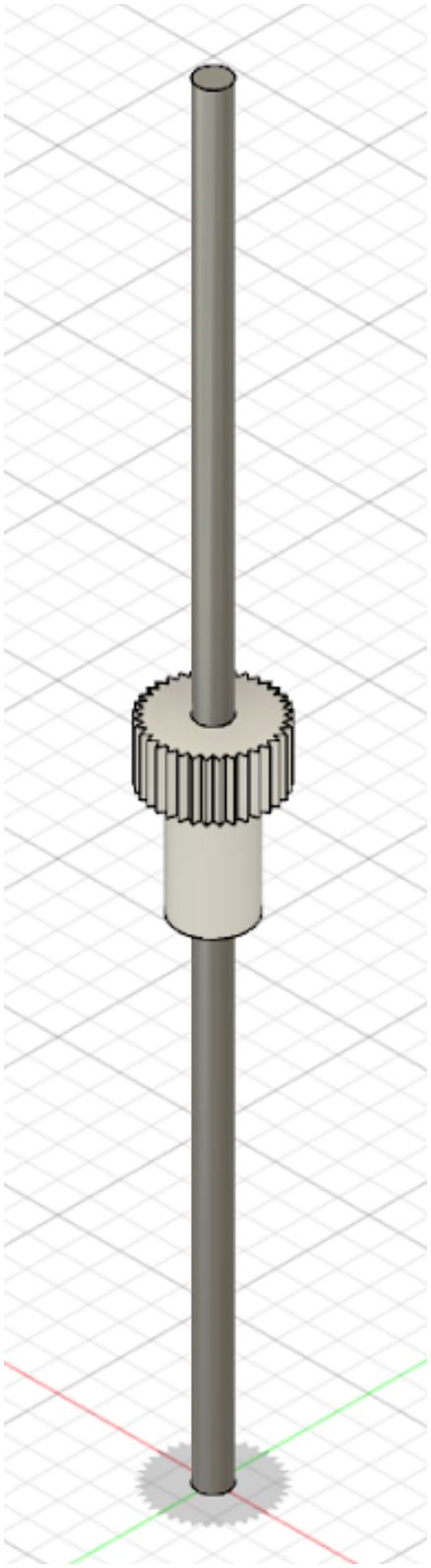


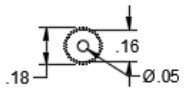


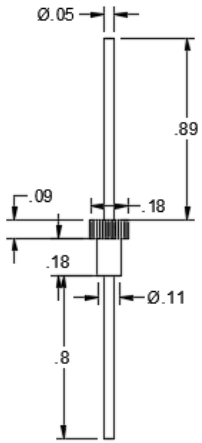



| | | | | | |
|---|---|---|---|---|---|
| | PROJECT: Pink Dog Reverse AH, RZ, MC | | | | |
| | TITLE: green tooth | | | | |
| APPROVED | SIZE: B | CODE | DWG NO | | REV |
| CHECKED | | | | | |
| DRAWN [redacted] 3/22/2022 | SCALE: 4:1 | WEIGHT | | SHEET: 1/1 | |

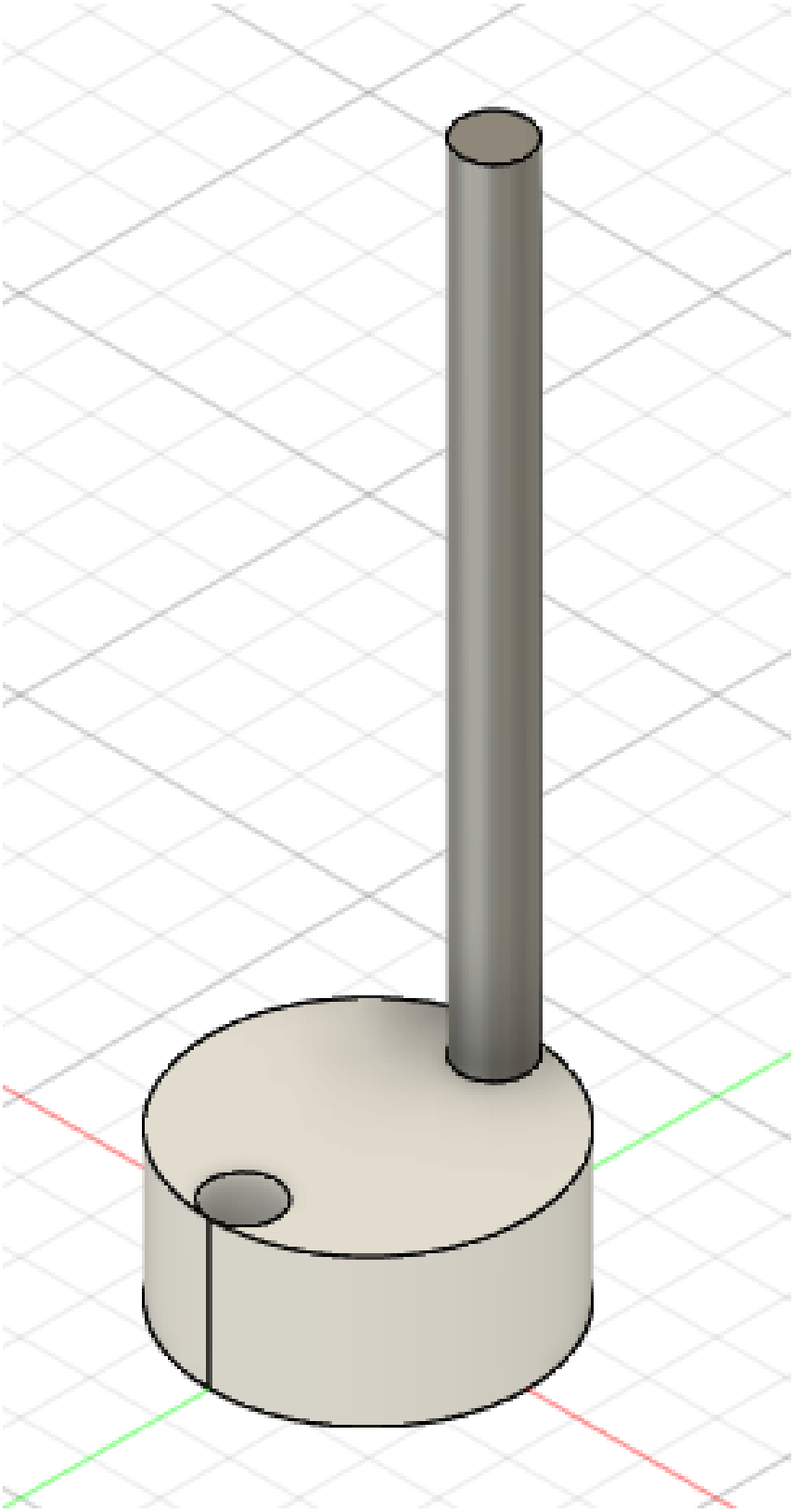


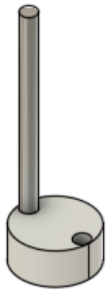


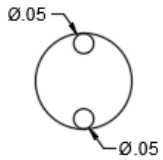





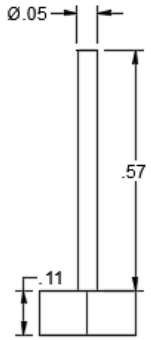
| | | | | | |
|---|---|---|---|---|---|
| | PROJECT: Pink Dog Reverse AH, RZ, MC | | | | |
| | TITLE: small gear on pole | | | | |
| APPROVED | SIZE: B | CODE | DWG NO | | REV |
| CHECKED | | | | | |
| DRAWN [illegible] 3/22/2022 | SCALE 1:1 | WEIGHT | | SHEET 1/1 | |









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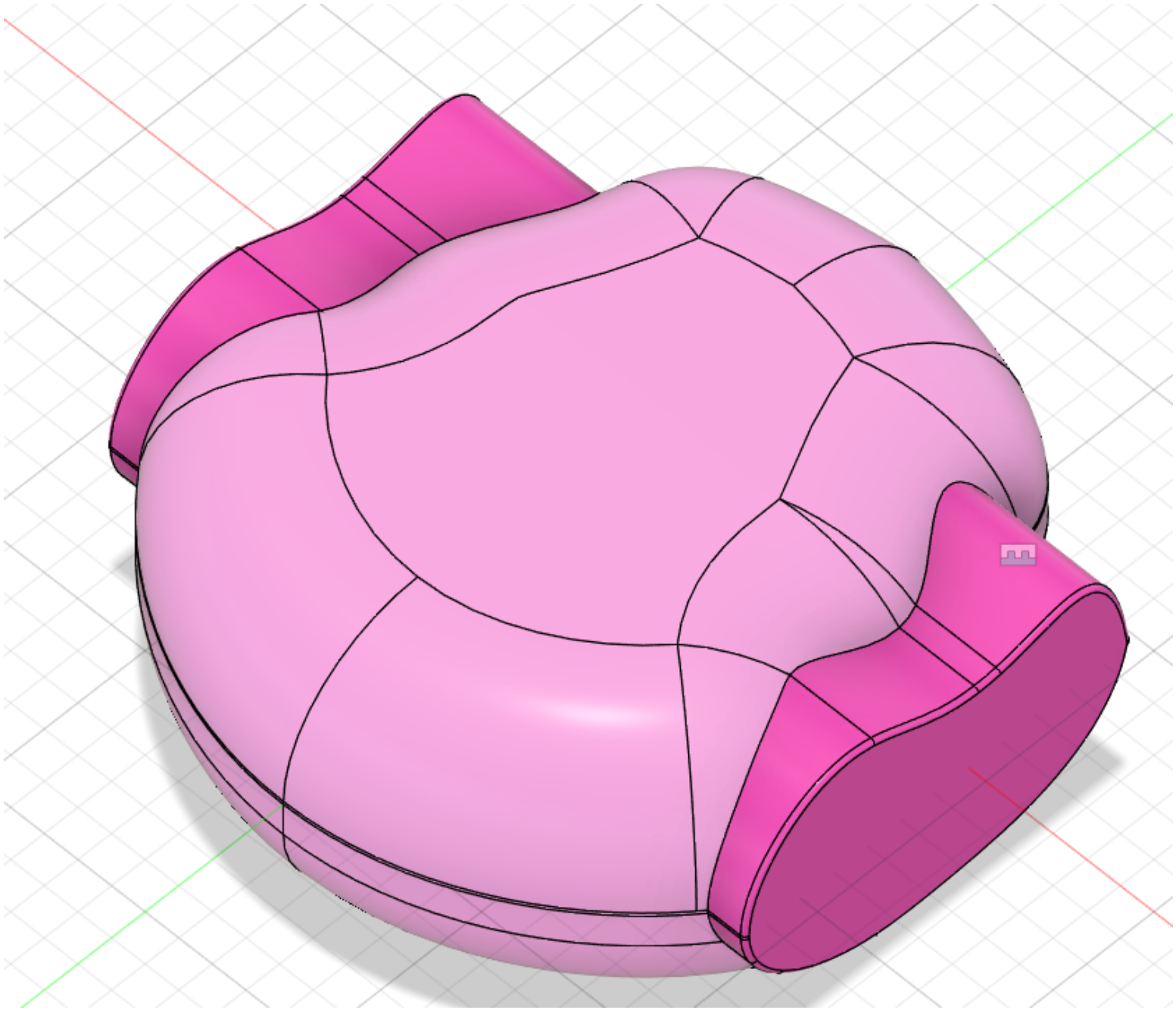
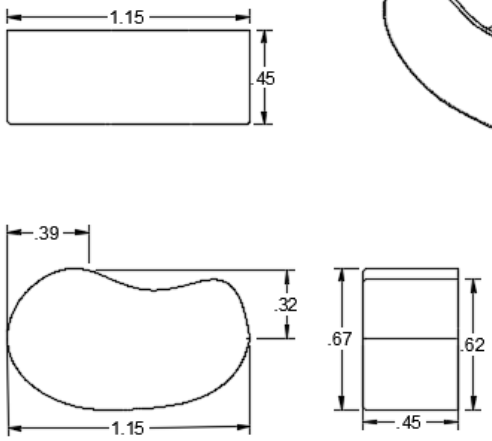
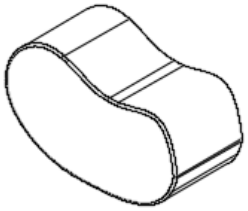
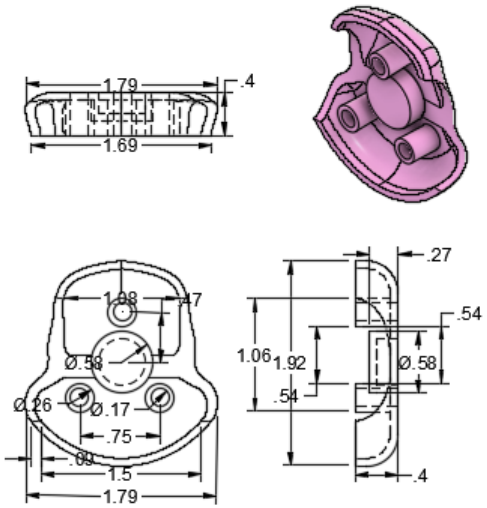
|---|---|---|---|---|
| | PROJECT: Pink Dog Reverse AH, RZ, MC | | | |
| | TITLE: Small Key | | | |
| APPROVED | SIZE: B | CODE | DWG NO | REV |
| CHECKED | | | | |
| DRAWN [illegible] 3/24/2022 | SCALE 4:1 | WEIGHT | SHEET 1/1 | |



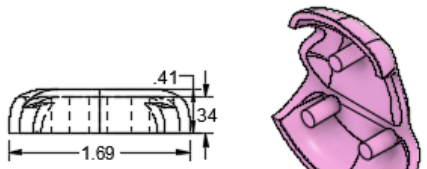


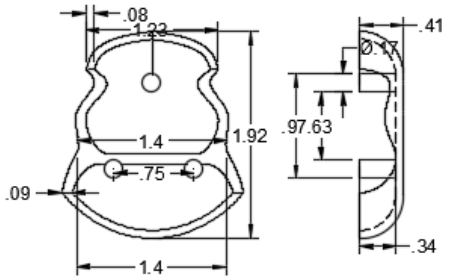
| | | | | | |
|---|---|---|---|---|---|
| | PROJECT: Pink Dog Reverse AH, RZ, MC | | | | |
| | TITLE: Dog Face v16 | | | | |
| APPROVED | SIZE | CODE | DWG NO | | REV |
| CHECKED | B | | | | |
| DRAWN Matthew Caputo 4/4/2022 | SCALE 2:1 | WEIGHT | | SHEET 1/1 | |




| | | | | | |
|---|---|---|---|---|---|
| | PROJECT: Pink Dog Reverse AH, RZ, MC | | | | |
| | TITLE: Dog Face v16 | | | | |
| APPROVED | SIZE: B | CODE | DWG NO | | REV |
| CHECKED | | | | | |
| DRAWN Matthew Caputo 4/1/2022 | SCALE 1:1 | WEIGHT | | SHEET 1/1 | |









| | | | | |
|---|---|---|---|---|
| | PROJECT: Pink Dog Reverse AH, RZ, MC | | | |
| | TITLE: Dog Face v16 | | | |
| APPROVED | SIZE: B | CODE | DWG NO | REV |
| CHECKED | | | | |
| DRAWN Matthew Caputo 3/30/2022 | SCALE 1:1 | WEIGHT | SHEET 1/1 | |