UNIVERSITY OF BUCHAREST
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE
DEPARTMENT OF COMPUTER SCIENCE
SPECIALIZATION IN COMPUTERS AND INFORMATION TECHNOLOGY

COMPUTER-AIDED DESIGN PROJECT

SCIENTIFIC COORDINATOR
MIHĂIȚĂ DRĂGAN

STUDENT
MITICĂ BOGDAN-DENIS

BUCHAREST

2023

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GLOCK-19

SCIENTIFIC COORDINATOR
MIHĂIȚĂ DRĂGAN

STUDENT
MITICĂ BOGDAN-DENIS

BUCHAREST

2023

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CONTENT

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MOTIVATION

The Glock-19 is one of the most popular semi-automatic firearms in the world. It is used by law enforcement agencies, security agencies, and civilians worldwide. Due to its innovative design and efficiency.

Therefore, choosing a project in AutoCAD about the Glock-19 can be extremely interesting and useful for those passionate about firearms or for those who want to better understand how this firearm works.

Using the AutoCAD program, we can draw and design all the component parts of the pistol, including the mechanical ones, to understand how they function and interact with each other.

Moreover, such a project can be very useful for students and young engineers who want to learn more about the design and manufacturing process of firearms. Developing such a project can improve 3D design and modeling skills and enhance understanding of the manufacturing process of a complex product.

In conclusion, choosing an AutoCAD project about the Glock-19 can be an excellent choice for better understanding the operation and manufacturing process of this firearm, as well as for developing 3D design and modeling skills.

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USED APPLICATION

This project was developed using the AutoCAD program, created by the American company Autodesk, and used in computer-aided design (CAD).

AutoCAD is a widely used computer-aided design and drafting software solution used in various fields such as engineering, mechanical design, architecture, astronomy, medicine, geography, and others.

The specific file format for AutoCAD is DWG, used for storing and exchanging data between projects. Additionally, AutoCAD also supports the DXF (Drawing eXchange Format) format, which allows compatibility with other programs and platforms.

Through continuous updates, Autodesk adds improvements and innovations to AutoCAD's functionalities, providing users with the ability to create complex and precise models and drawings. The most recent version available is AutoCAD 2024.

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OPERATING PRINCIPLE

The Glock-19 is a semi-automatic firearm, chambered in 9mm cartridges. The operating principle of the Glock-19 is based on the action of recoil force generated by the burning of the powder in the cartridge.

When firing the Glock-19, the cartridge is pushed into the firing chamber, and the firing pin struck by the trigger bar causes the primer to ignite and the powder in the cartridge to burn. The burning powder generates high pressure, which propels the bullet through a rifled barrel towards the desired target.

After the bullet has left the barrel, the recoil force pushes back the gun's slide and compresses the recoil spring. The slide is then unlocked and pulls the spent cartridge case out of the firing chamber.

Meanwhile, a new cartridge is pushed into the firing chamber from a magazine attached to the pistol, preparing for a new firing cycle.

In conclusion, the operating principle of the Glock-19 is based on the action of recoil force generated by the burning of the powder in the cartridge, which propels the bullet through the rifled barrel, unlocks and pulls back the slide, and chambers a new cartridge into the firing chamber.

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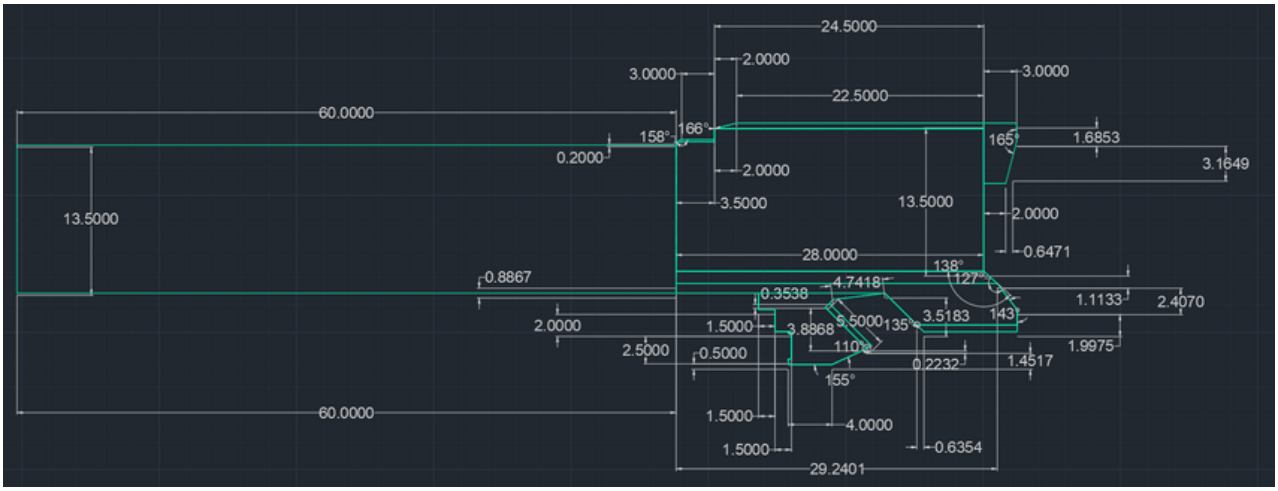
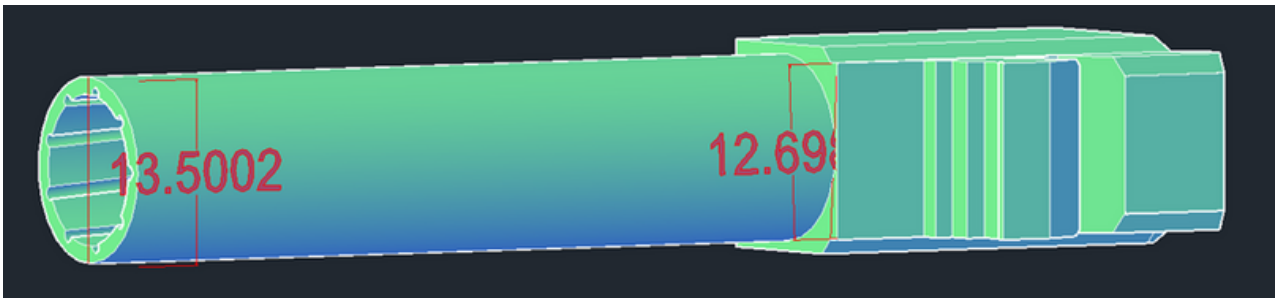
COMPONENTS

BARREL

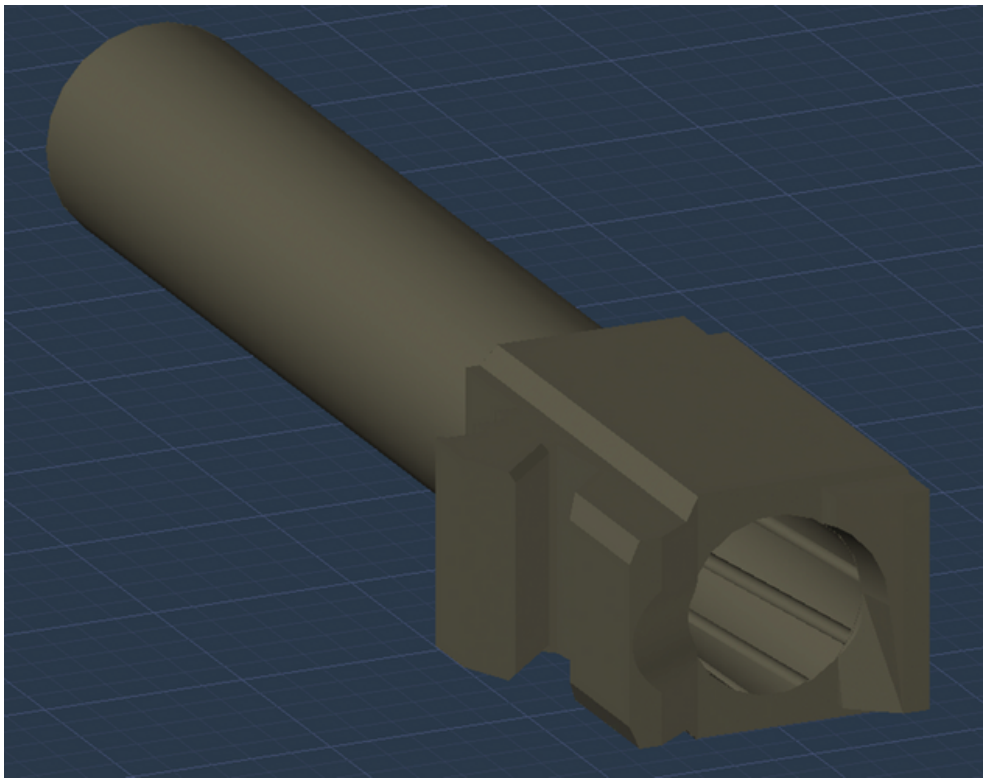
2D Sketch

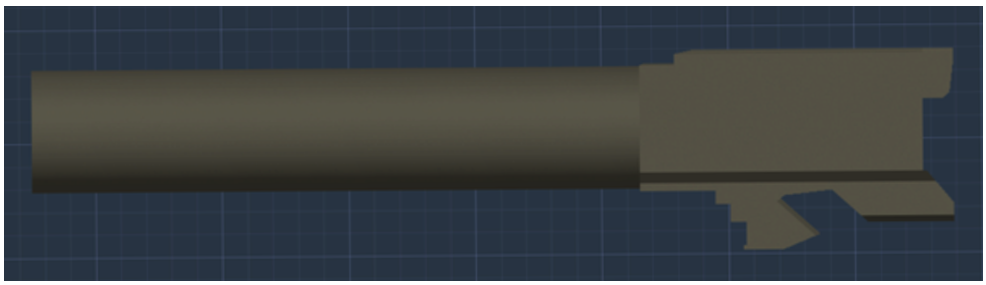




Workflow: To obtain this part, I used the functions: Chamferedge and Subtract, and for the interior cylinder, I used a Helix with a single turn, then with the polar function, I multiplied the body, subsequently applying Subtract.

Final 3D





Material used:

Name: Steel-Cast

Type: Metal

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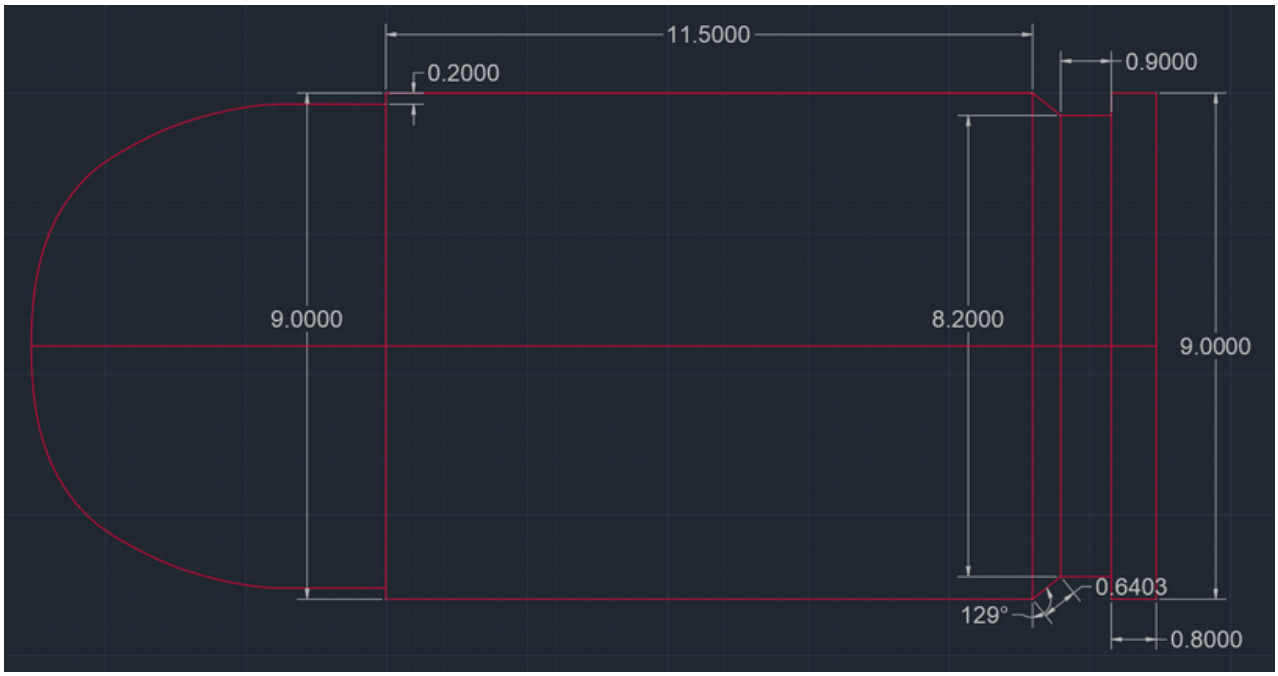
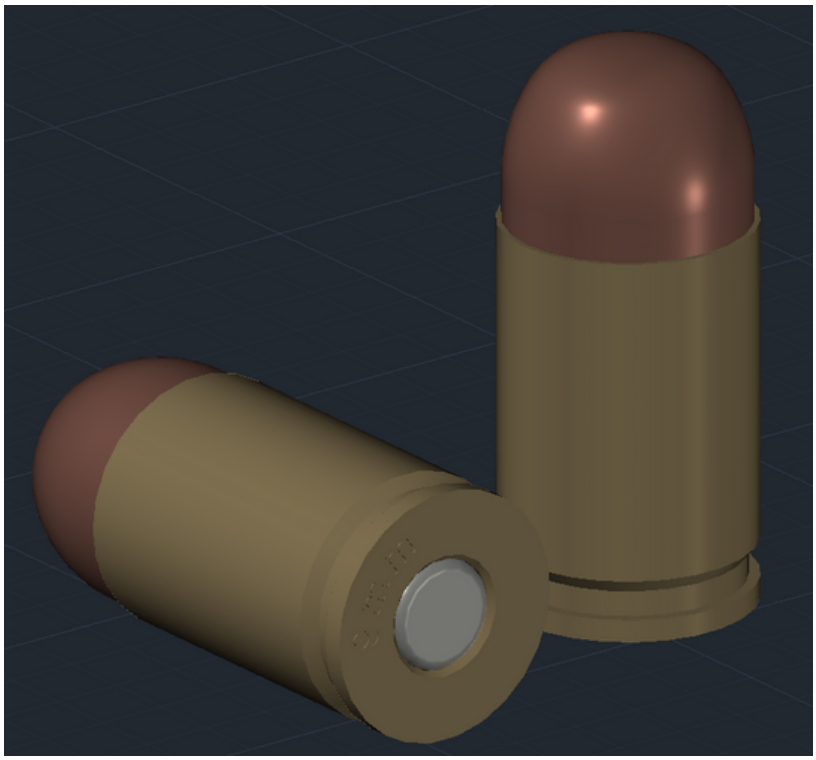
CARTRIDGE

2D Sketch



Final 3D



Material used:

Name: Steel-Cast, Brass-Stain and Copper

Type: Metal

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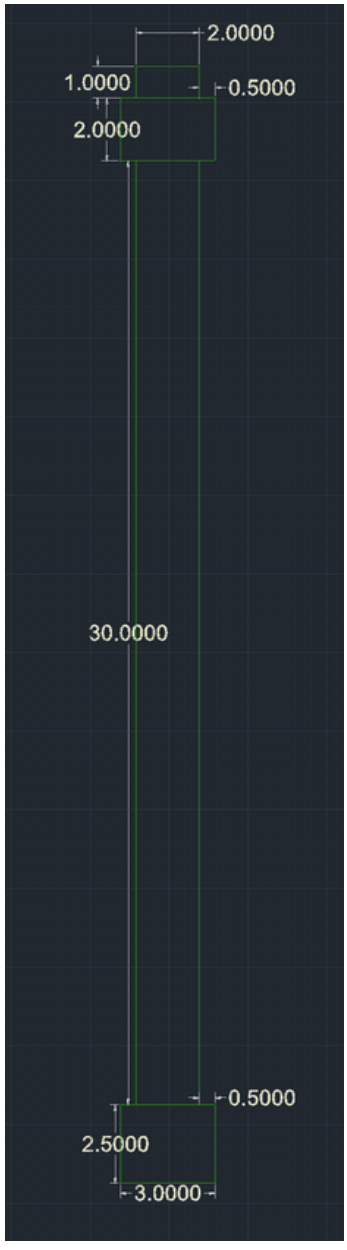
EXTRACTOR DEPRESSOR PLUNGER

2D Sketch



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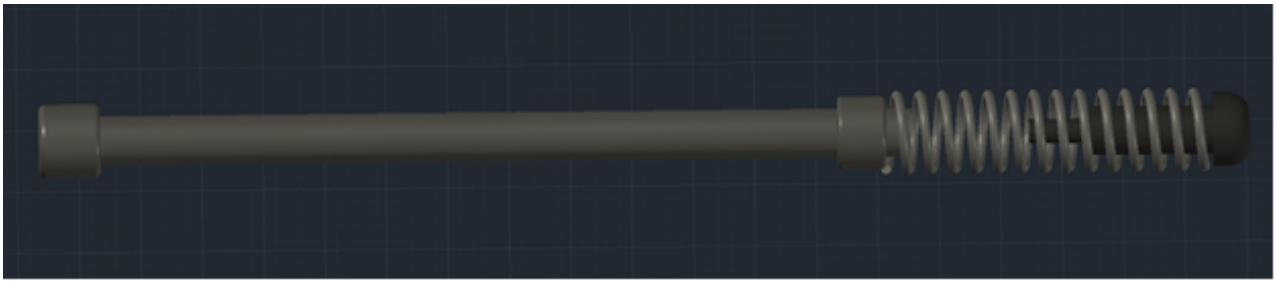

Material used:

Name: Steel-Cast

Type: Metal

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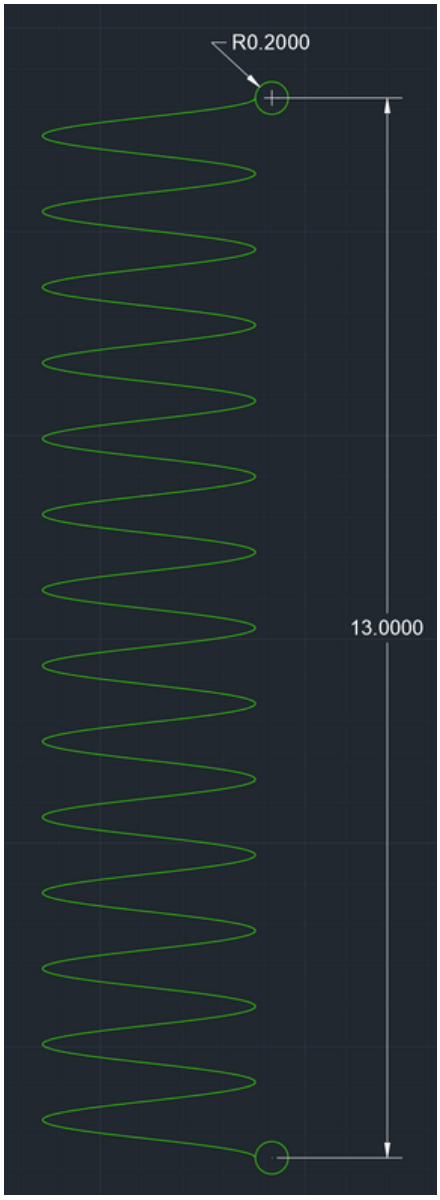
EXTRACTOR DEPRESSOR PLUNGER STRING

2D Sketch



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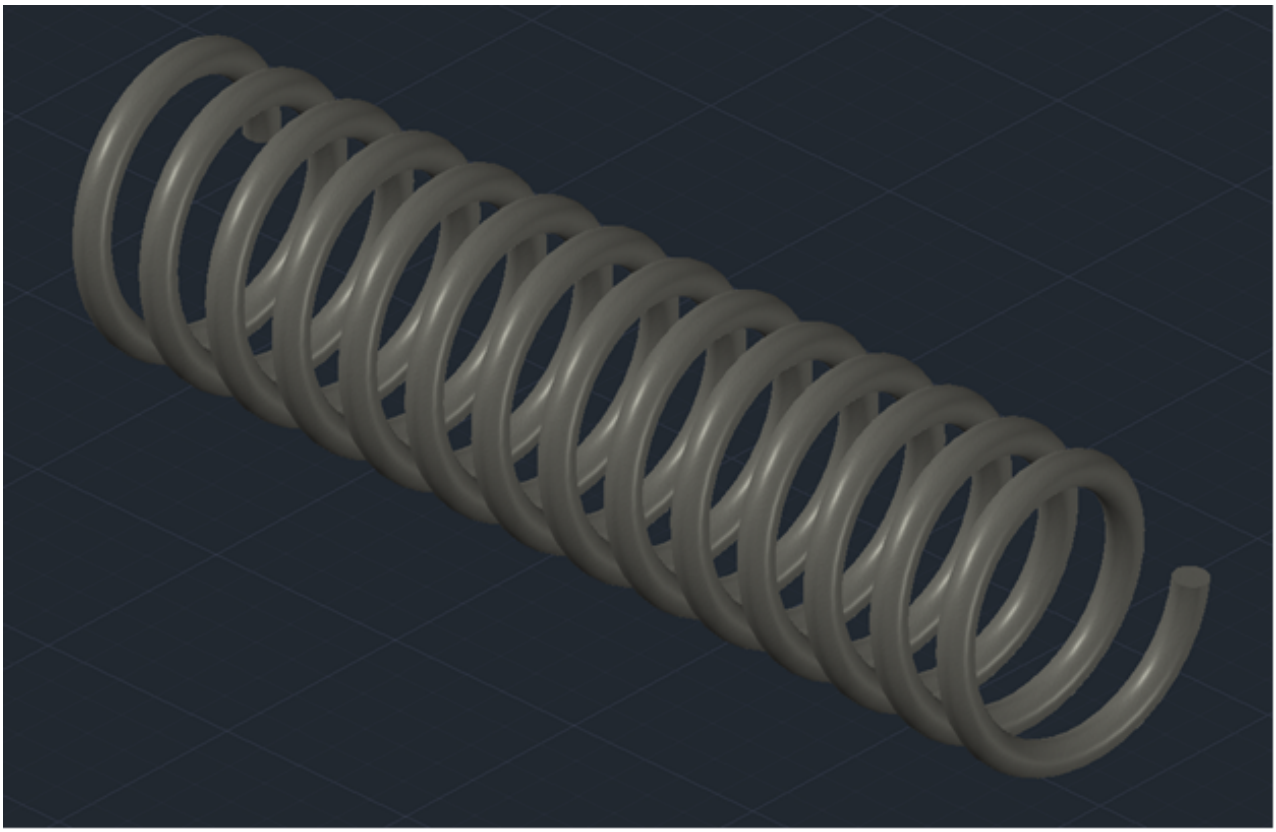
Final 3D



Material used:

Name: Steel-Cast

Type: Metal

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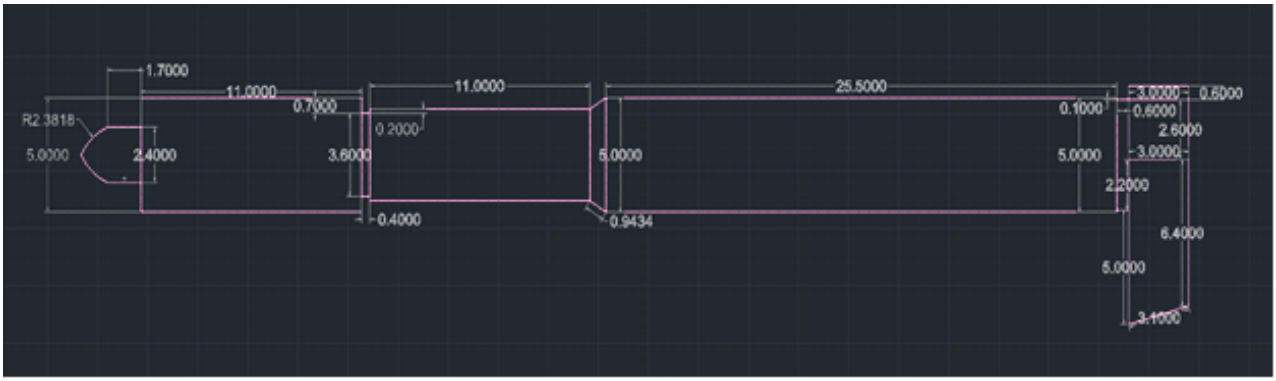
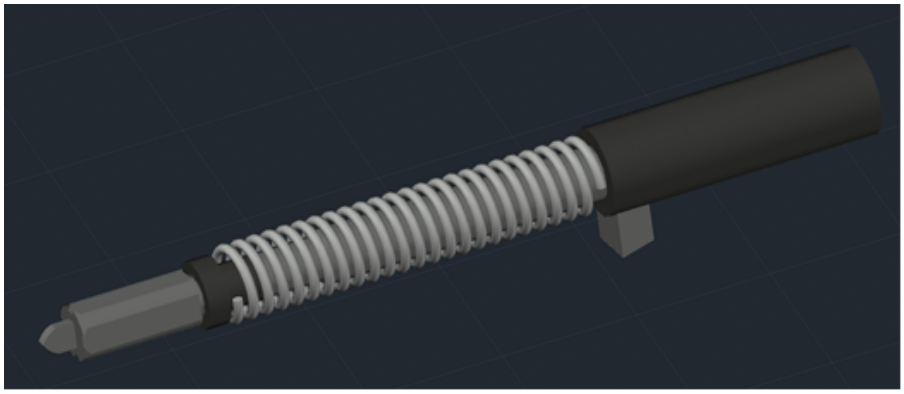
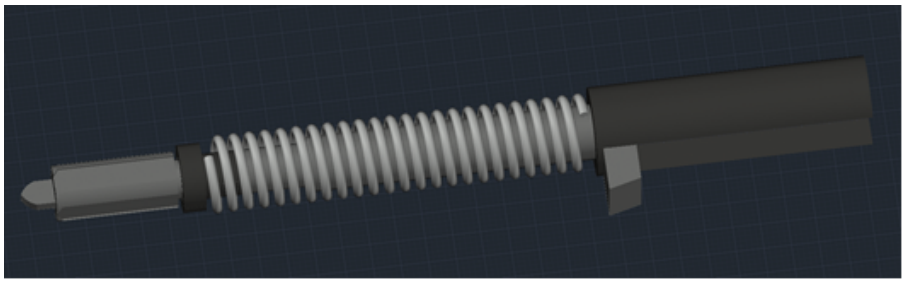
FIRING PIN

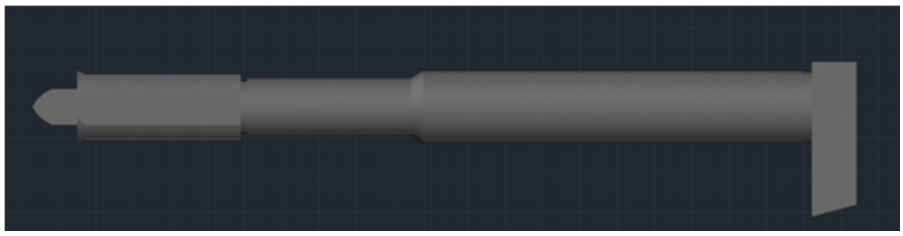
2D Sketch

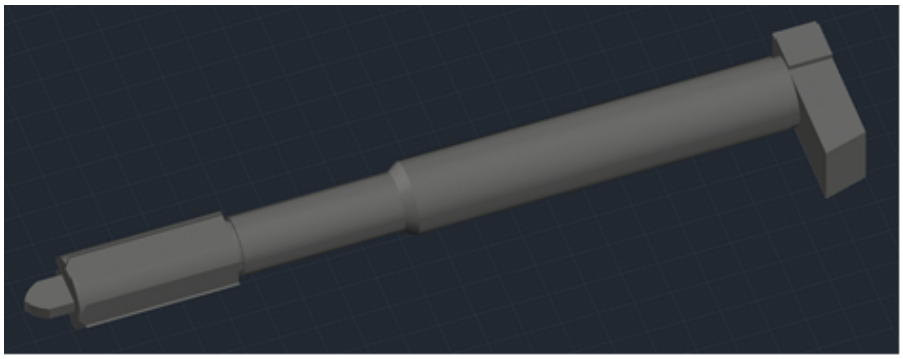


Final 3D









Material used:

Name: Steel-Cast

Type: Metal

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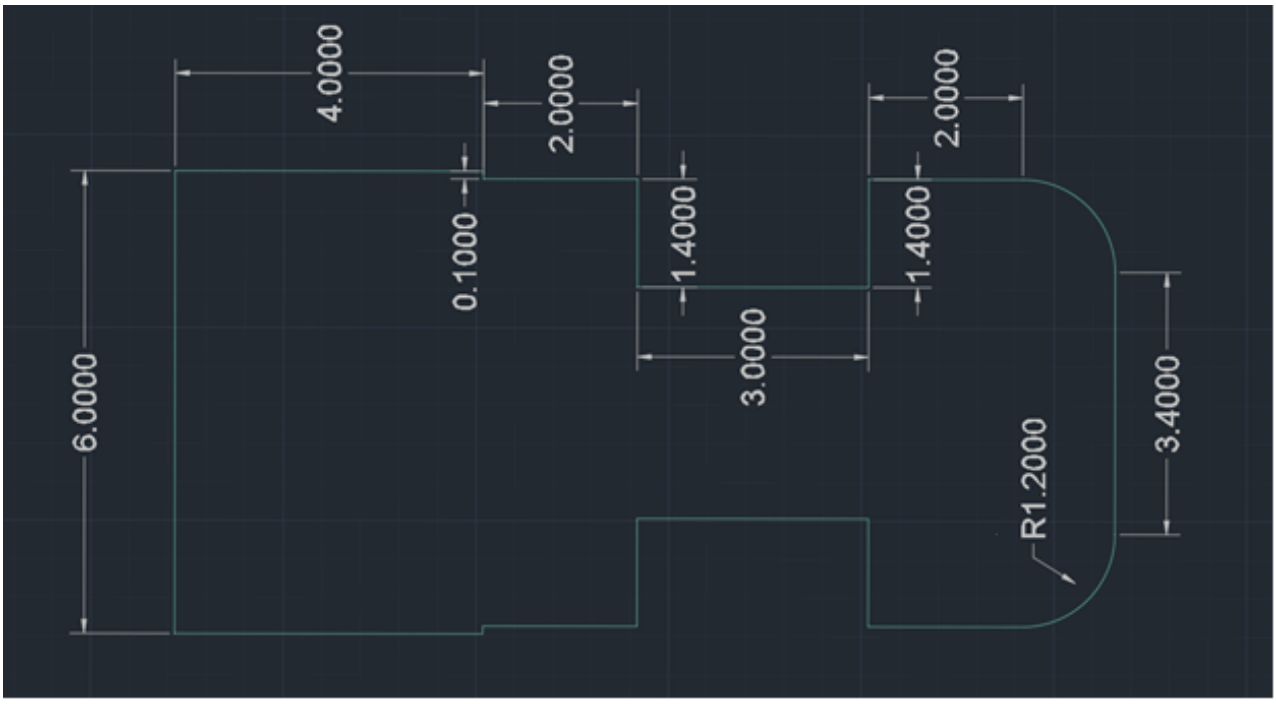
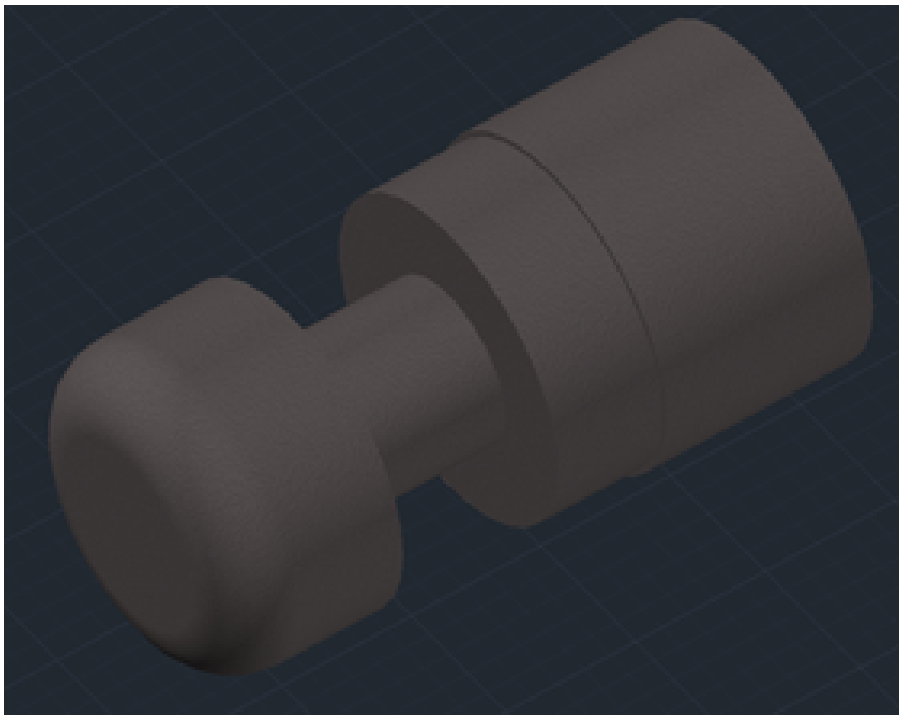
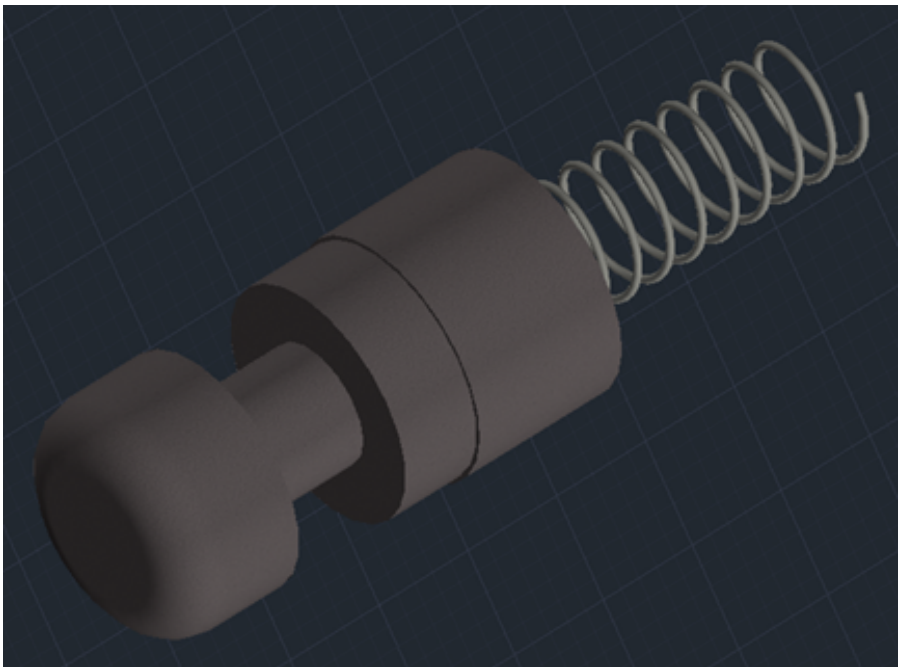
FIRING PIN SAFETY

2D Sketch



Final 3D





Material used:

Name: Steel-Cast

Type: Metal

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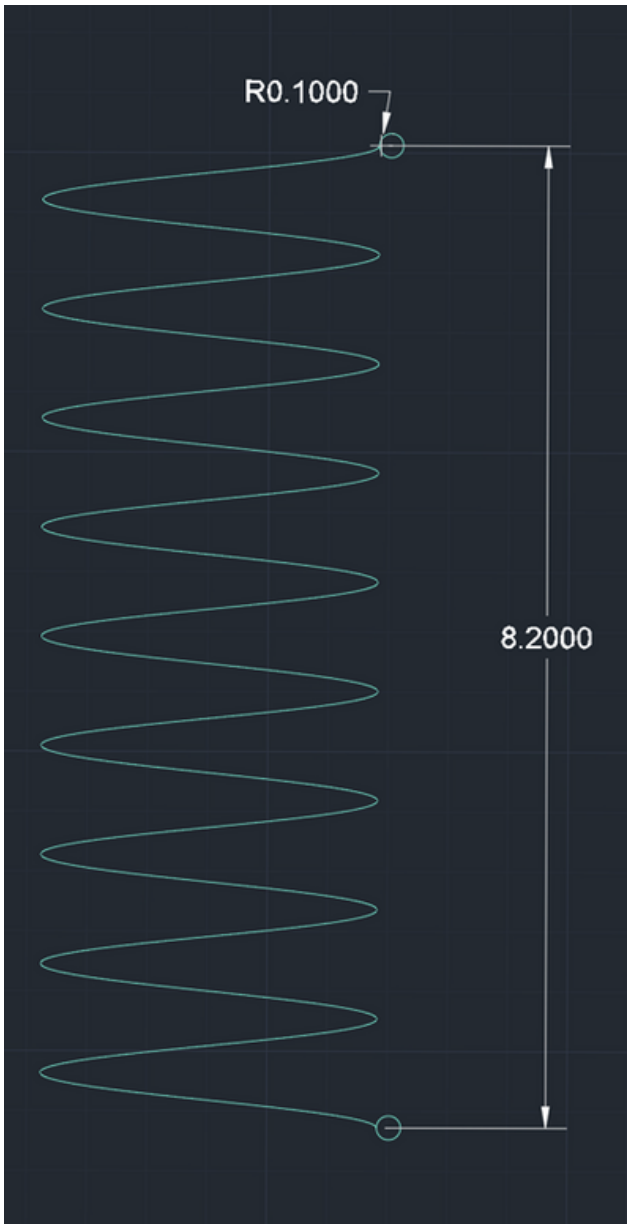
FIRING PIN SAFETY STRING

2D Sketch



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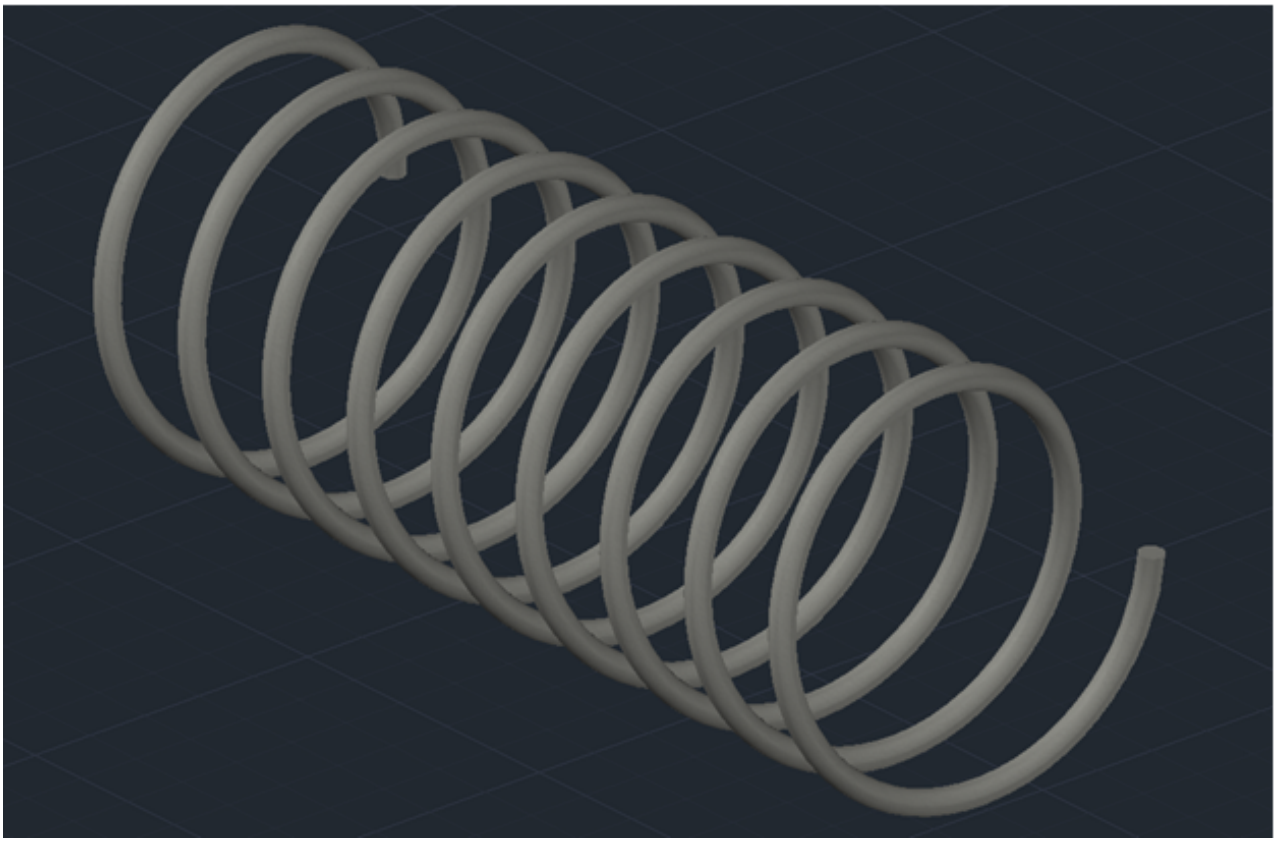
Final 3D



Material used:

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Type: Metal

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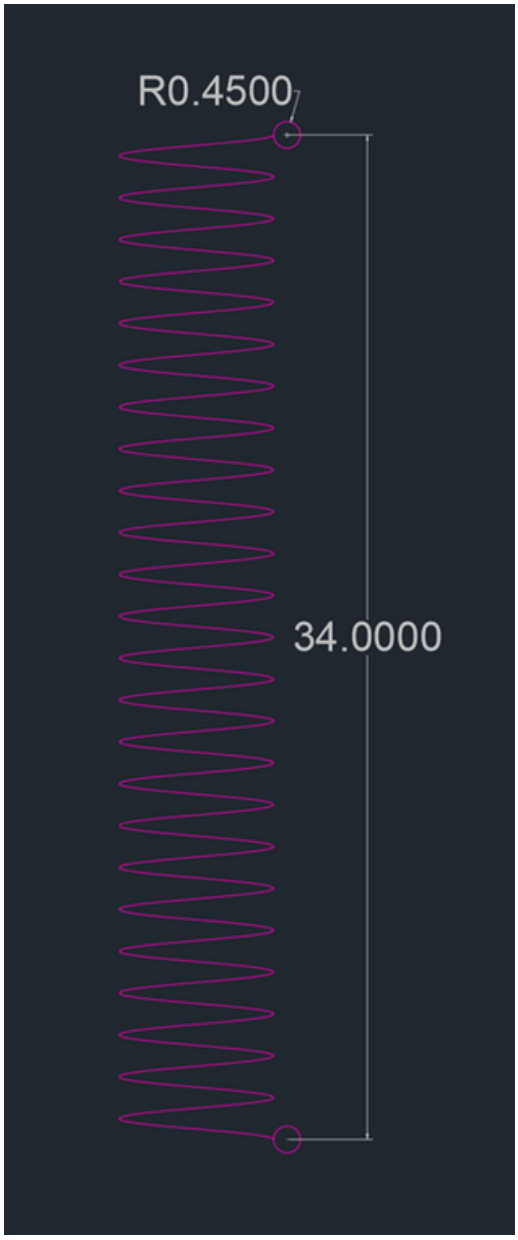
FIRING PIN STRING

2D Sketch



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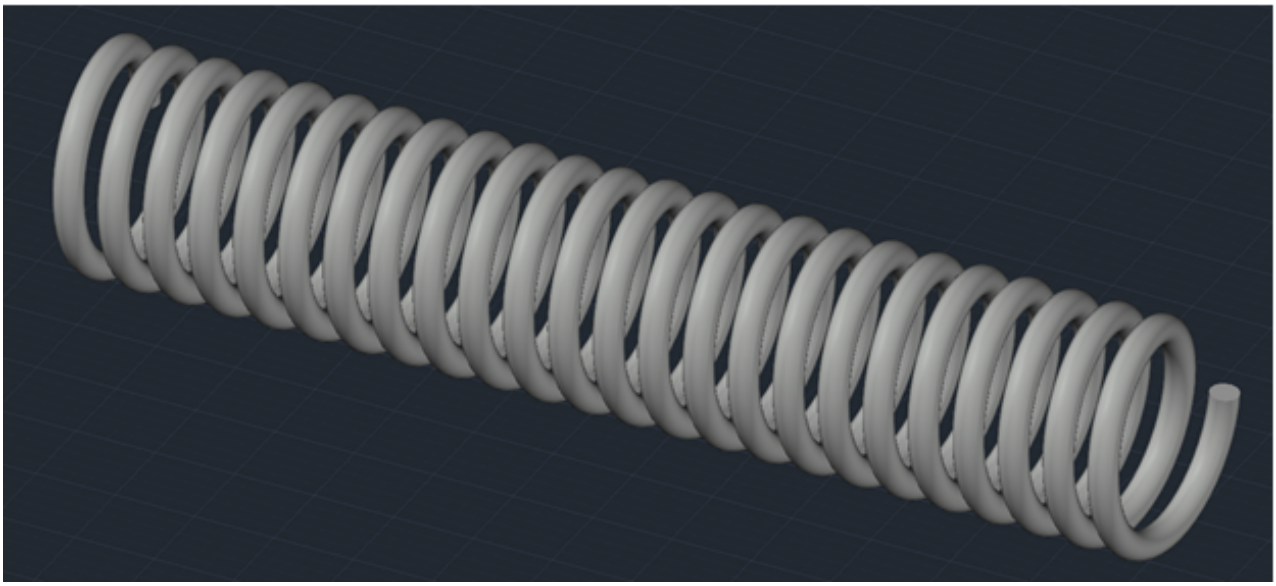
Final 3D



Material used:

Name: Steel-Cast

Type: Metal

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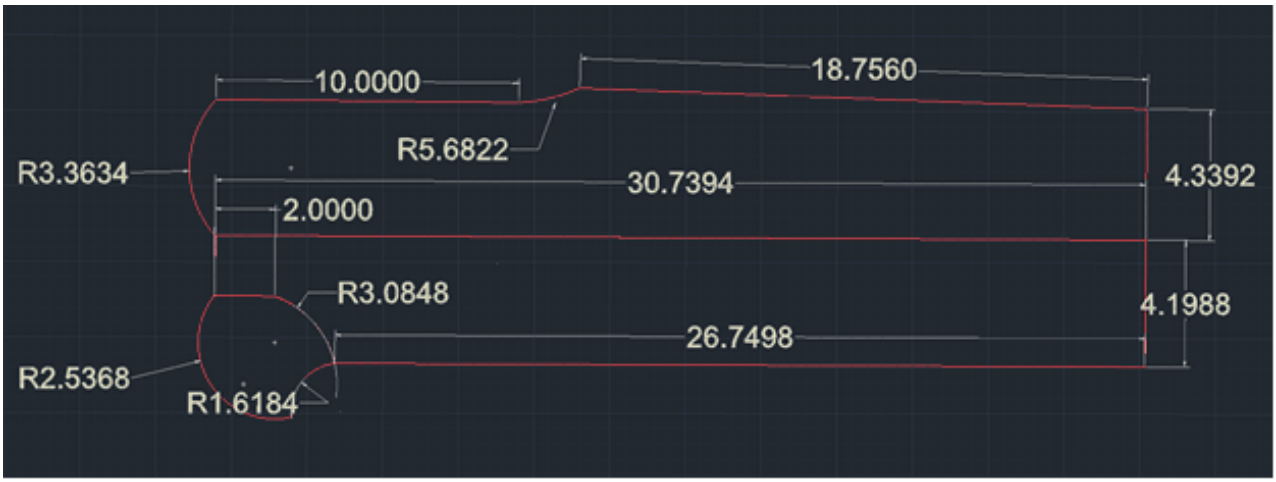
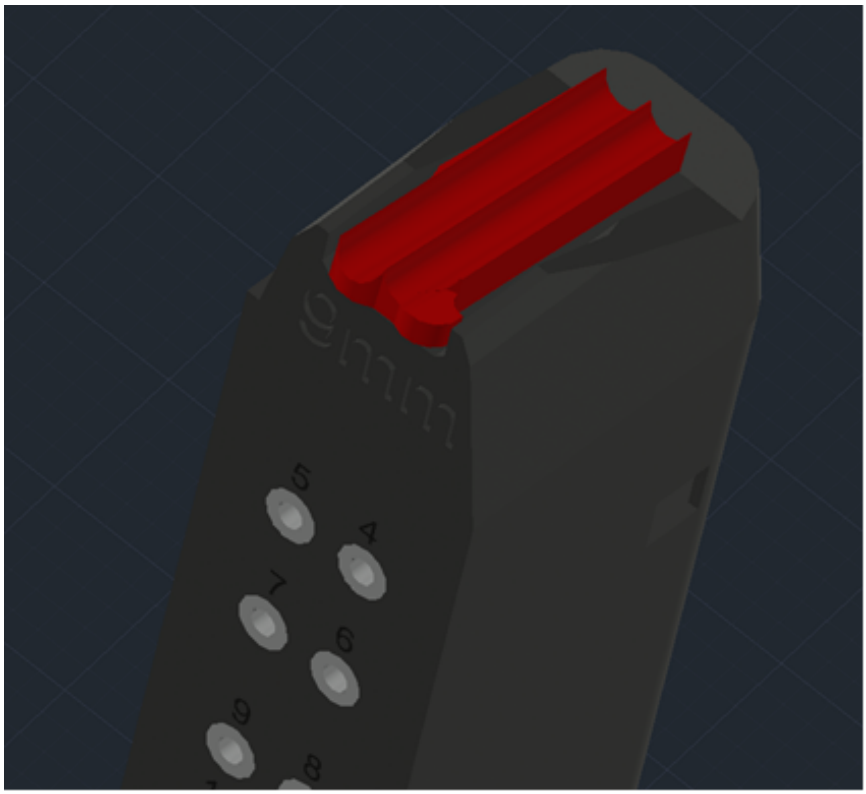
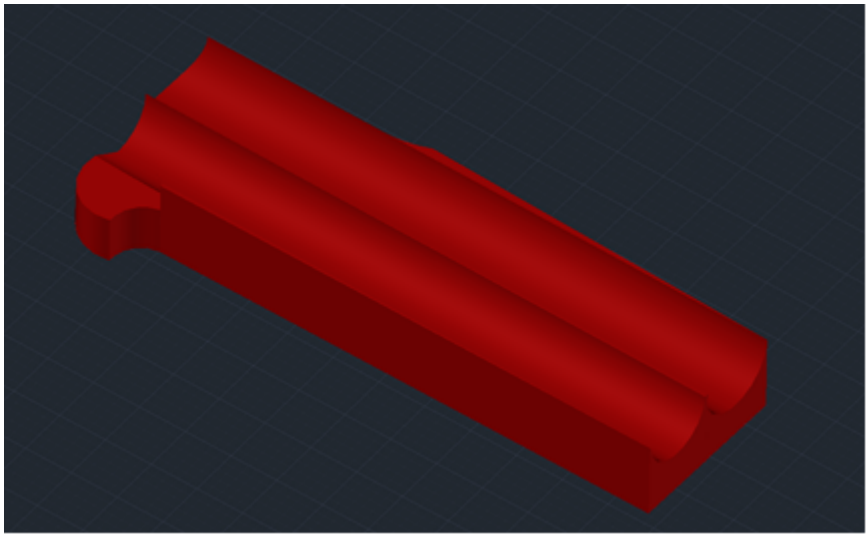
FOLLOWER

2D Sketch



Final 3D





Material used:

Name: High Gloss - Burnt Red

Type: Plastic

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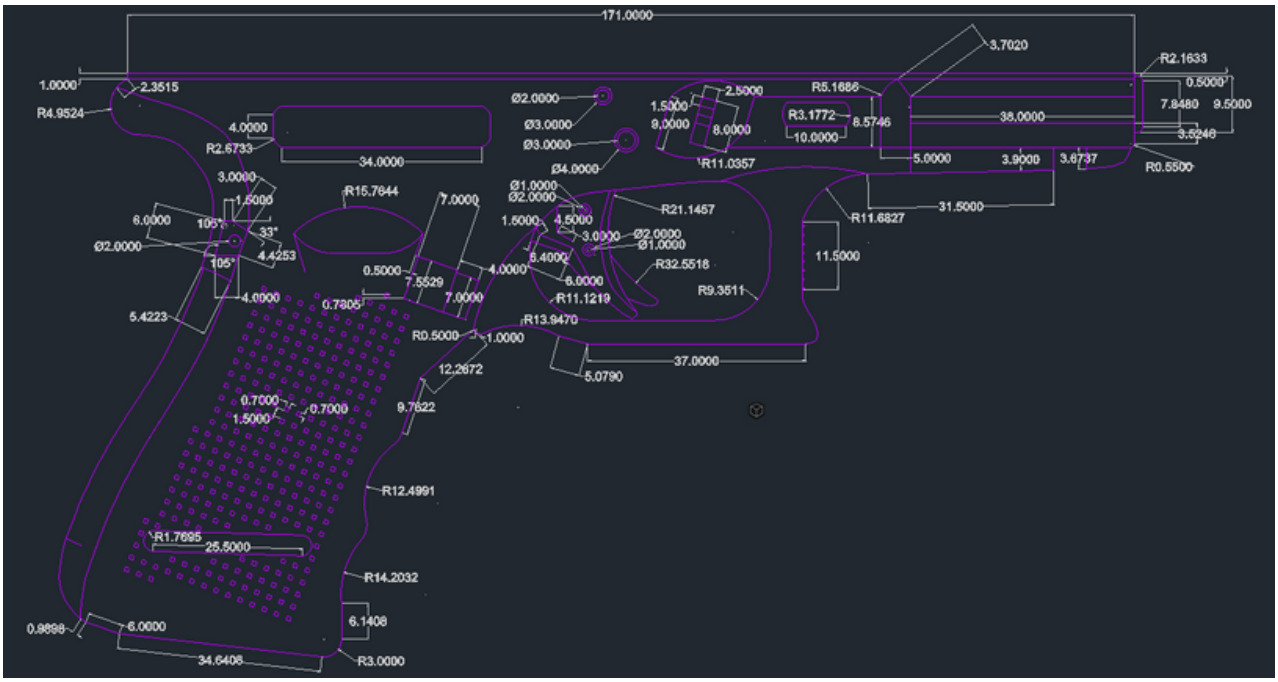
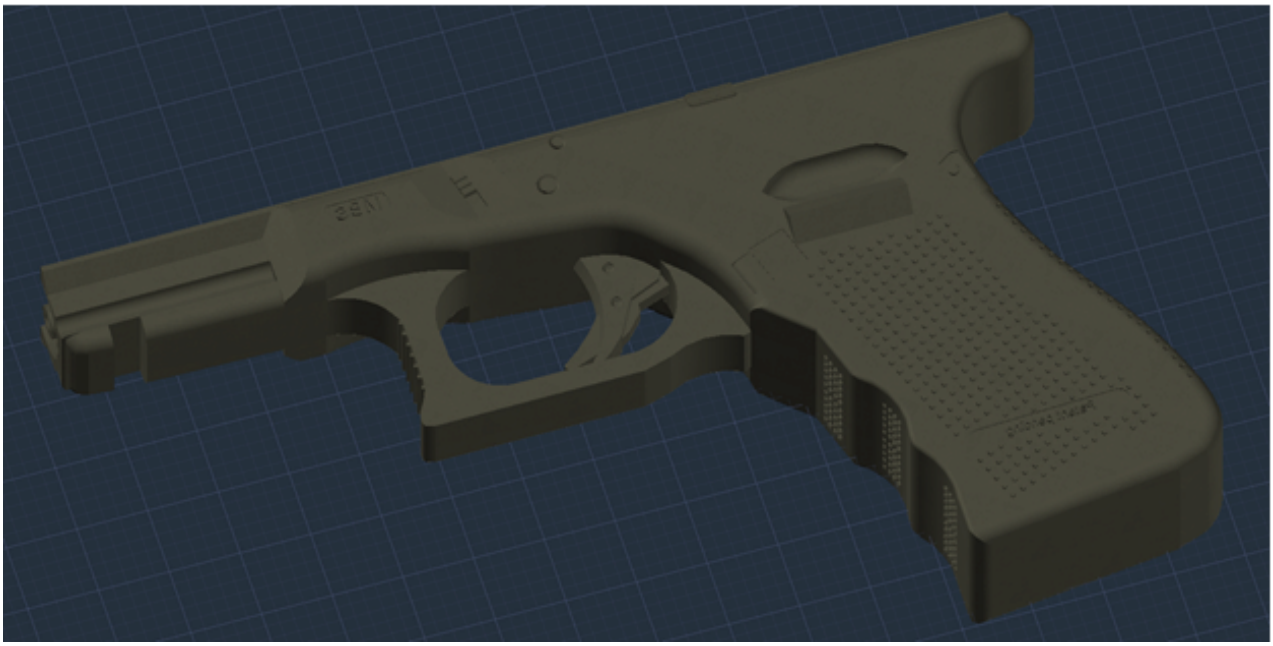
FRAME

2D Sketch



Final 3D



Material used:

Name: Steel-Cast

Type: Metal

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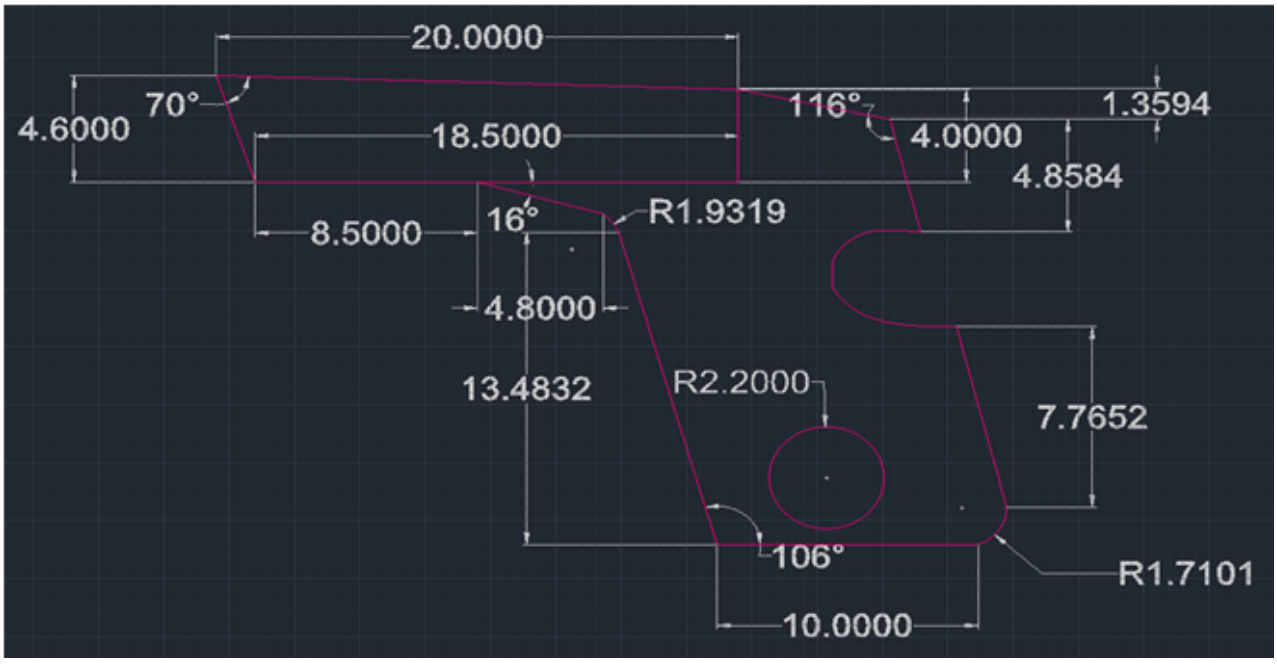
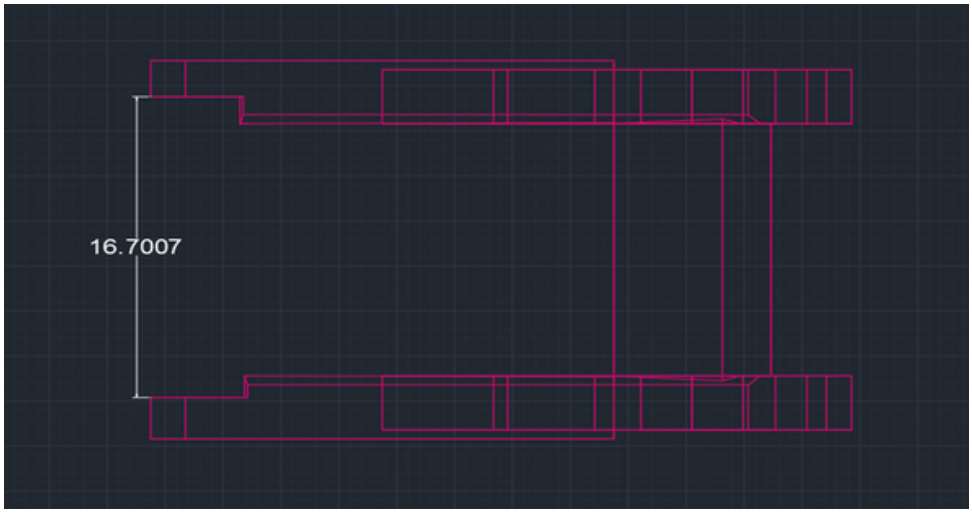
LOCKING BLOCK

2D Sketch





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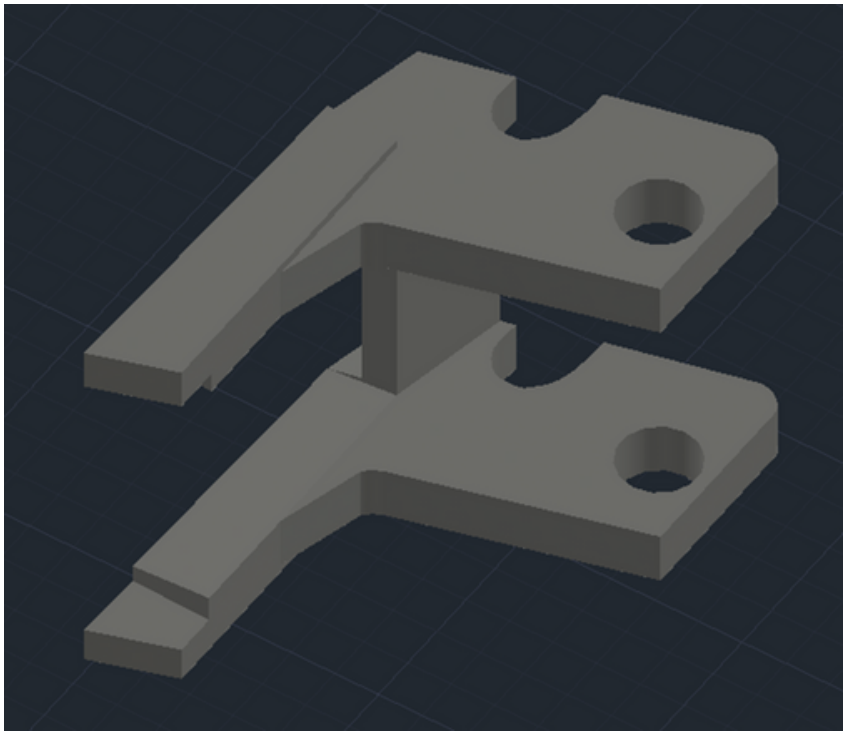

Material used:

Name: Steel-Cast

Type: Metal

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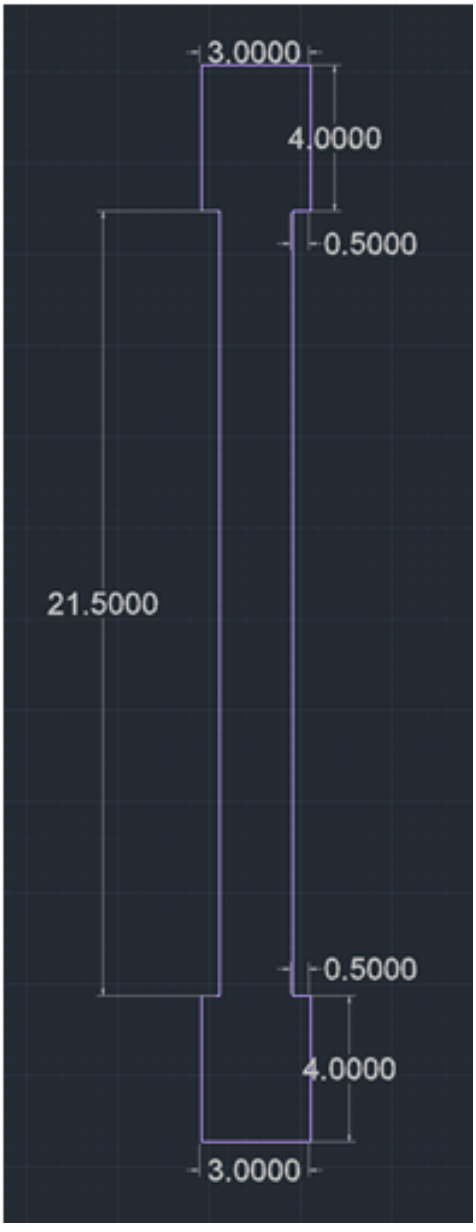
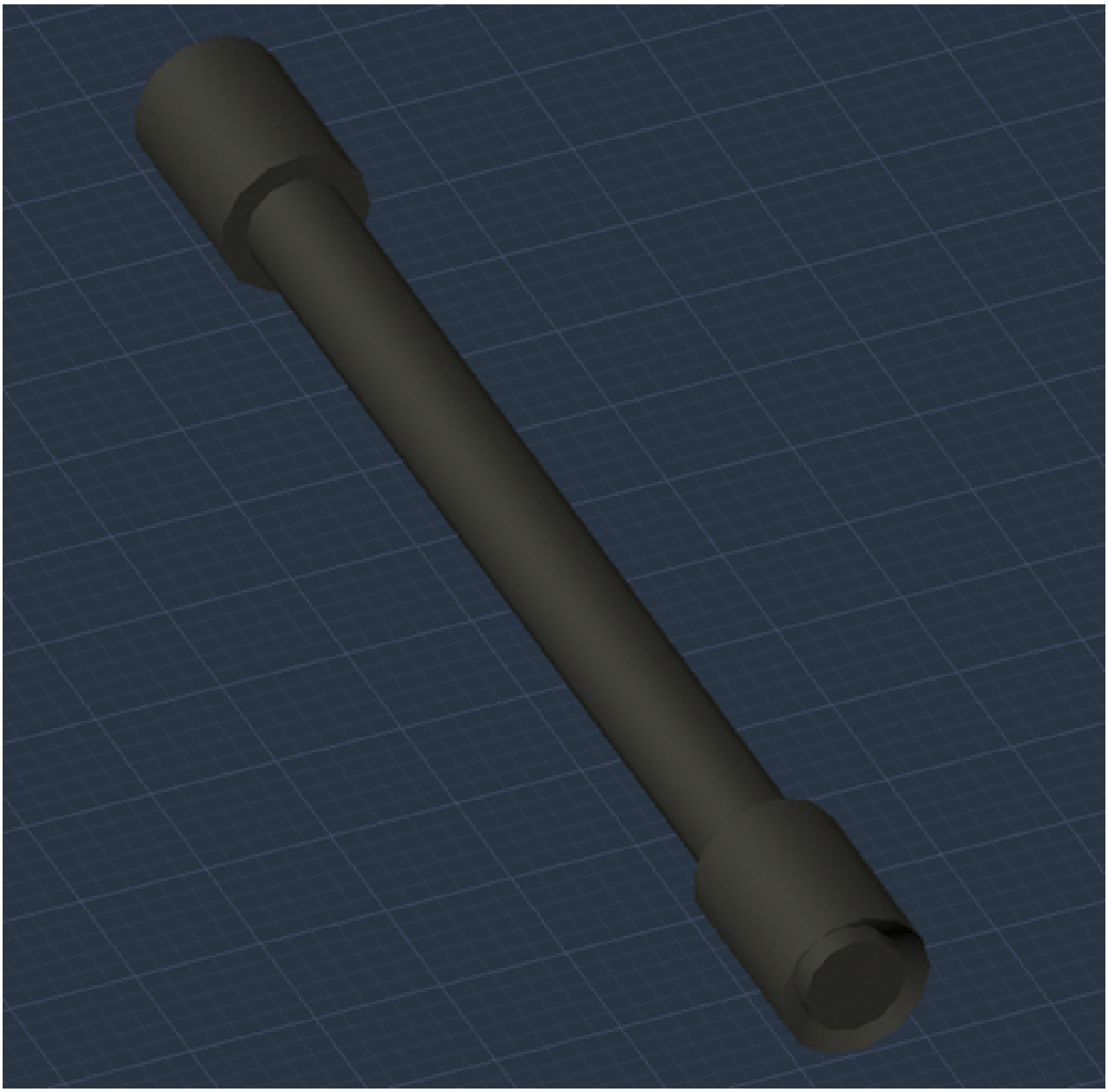
LOCKING BLOCK PIN

2D Sketch



Final 3D



Material used:

Name: Steel-Cast

Type: Metal

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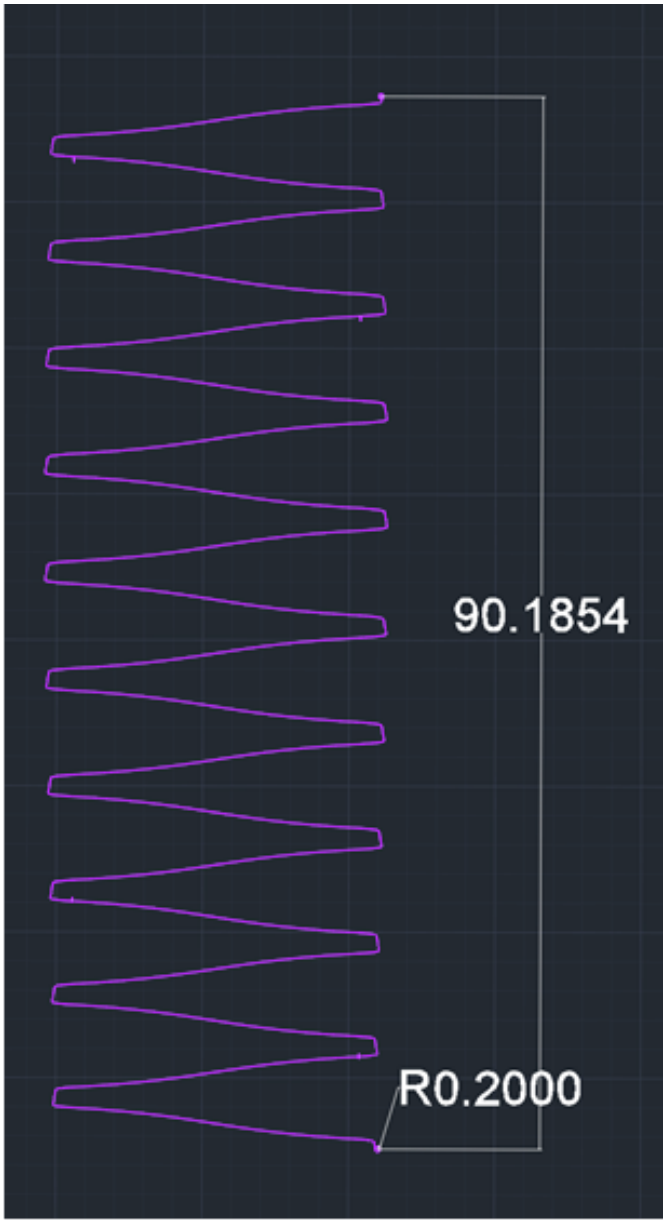
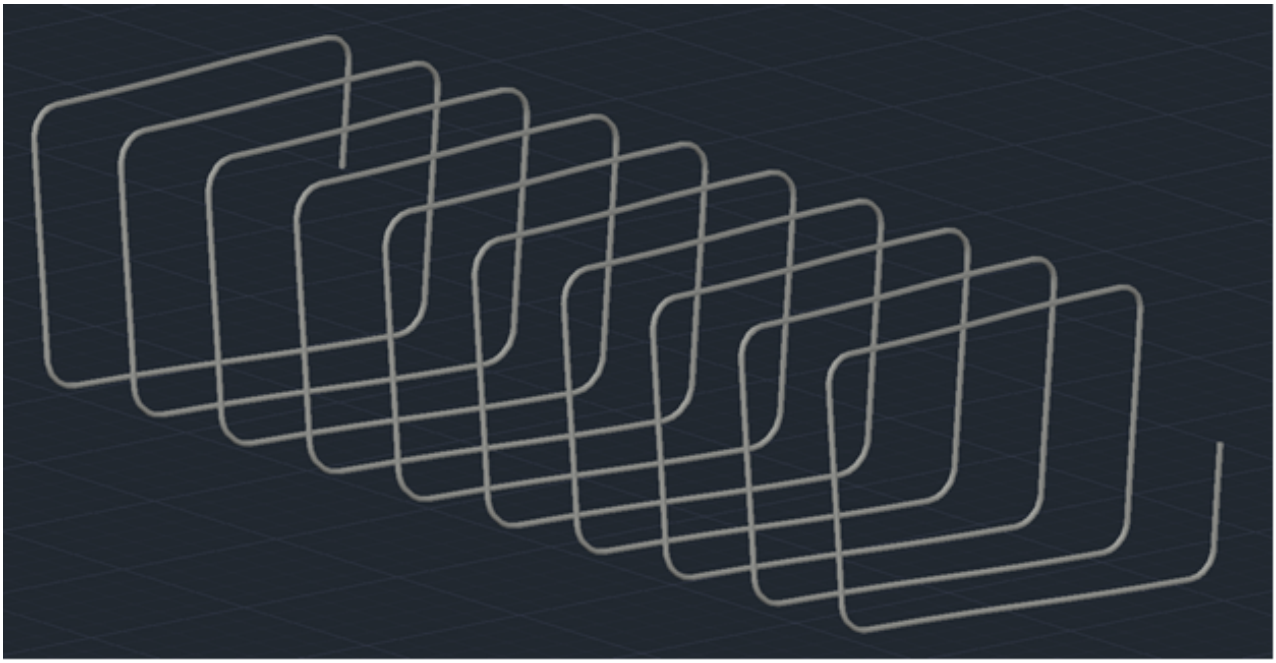
MAGAZINE SPRING

2D Sketch



Workflow: To obtain this part, I applied the Sweep function on a line drawn from the center of the initial 2D shape. I chose the Twist mode at an angle of 360 degrees, then extruded the base shape and used the Intersect function between the two bodies. Subsequently, I applied Explode, then Join to the remaining skeleton. Finally, I added a circle at the base of the arc, to which I applied Sweep.

Final 3D



Material used:

Name: Steel-Cast

Type: Metal

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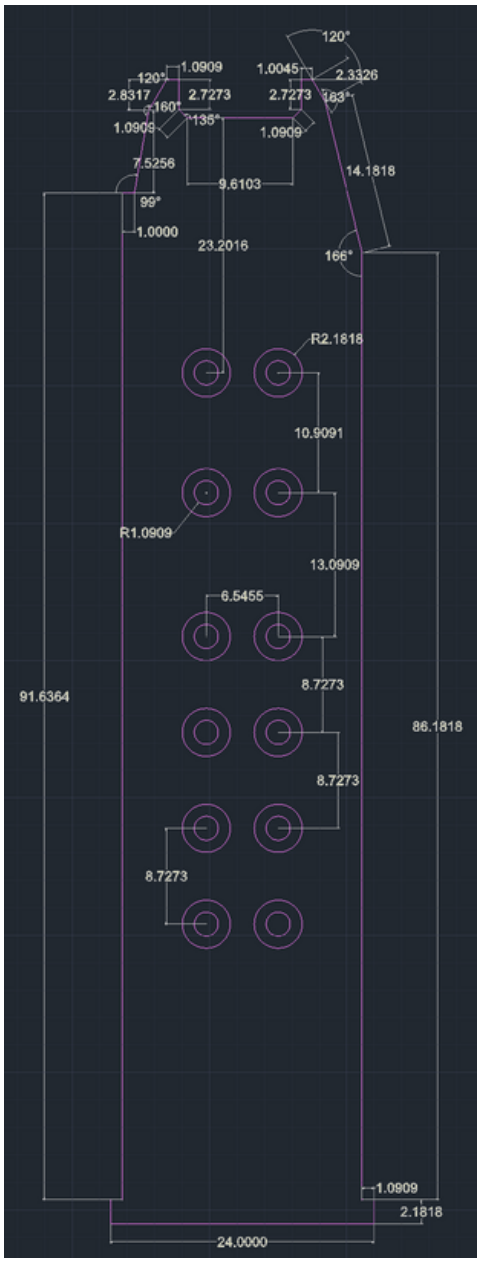
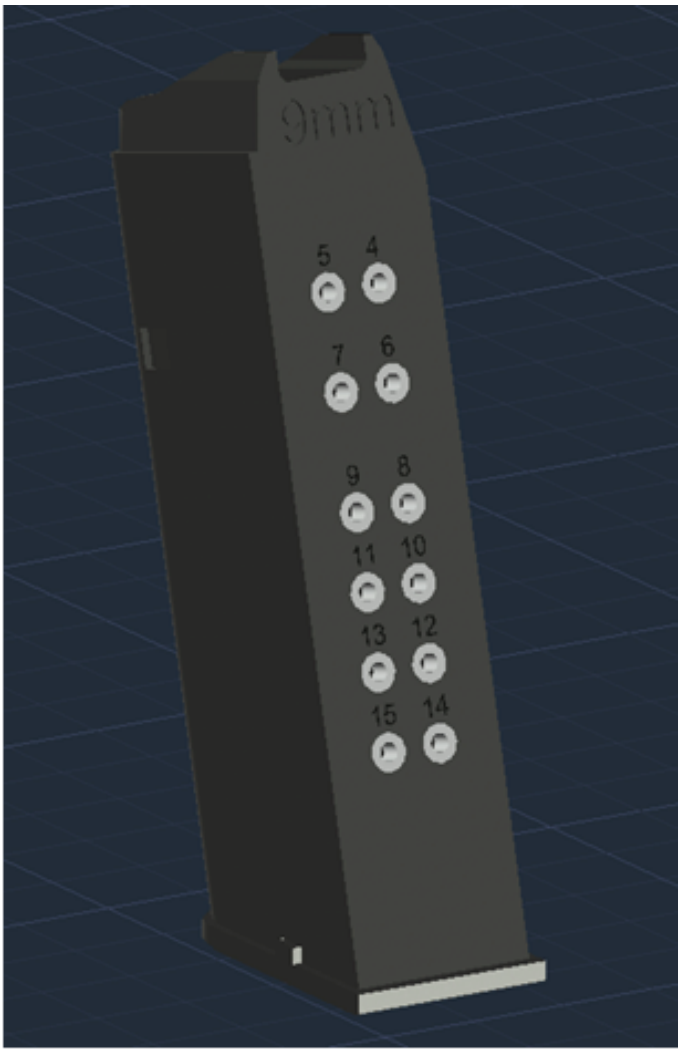
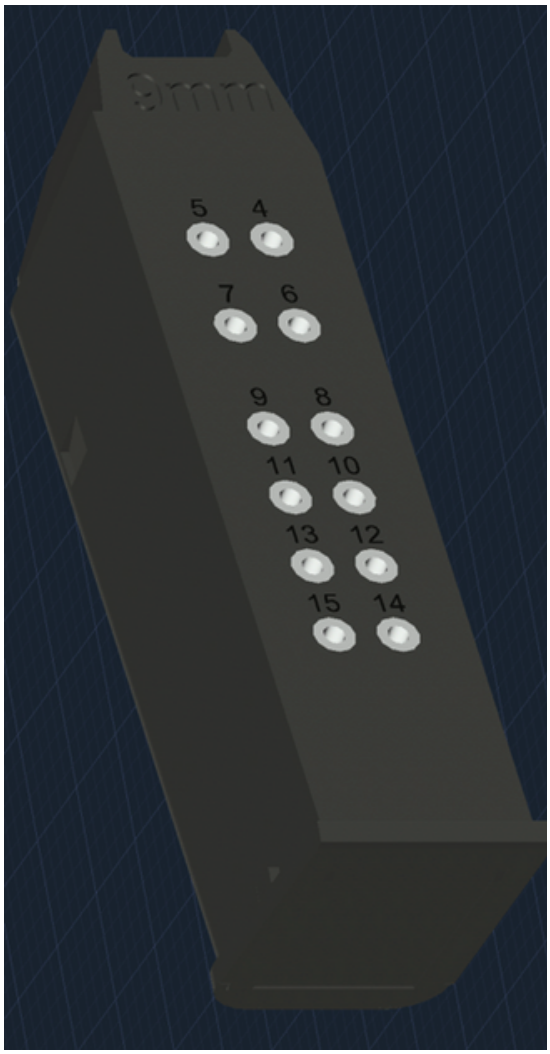
MAGAZINE TUBE

2D Sketch



Final 3D





Material used:

Name: Steel-Cast

Type: Metal

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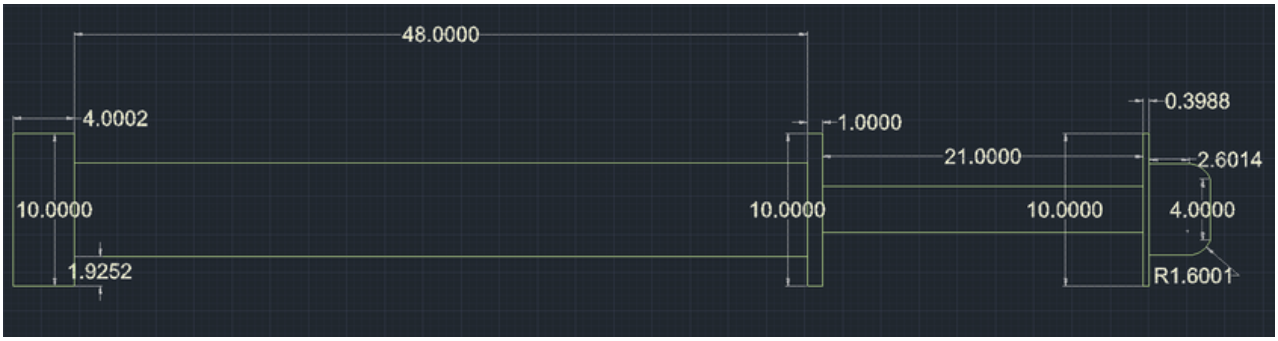
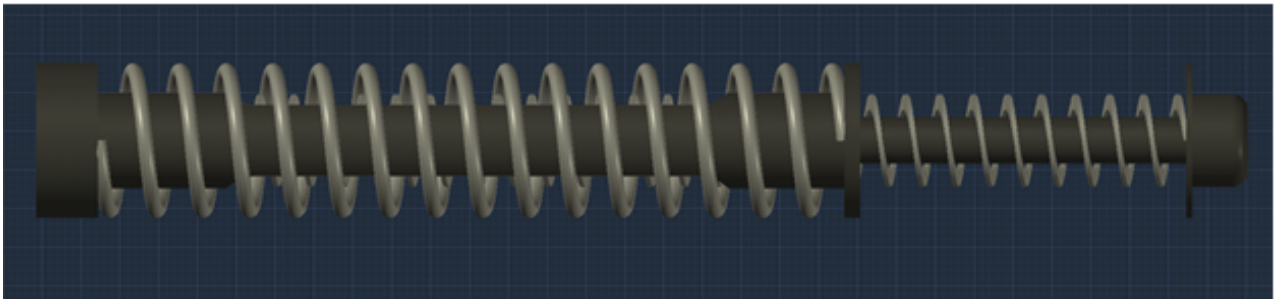
RECOIL SPRING GUIDE ROD

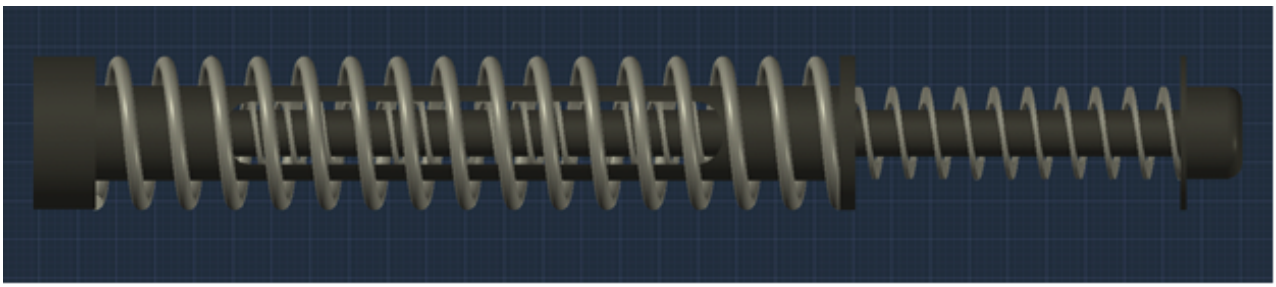
2D Sketch



Workflow: To obtain this part, I first delimited the lengths of the different segments using circles of various sizes. Upon which I applied the Extrude function. The central piece was finalized by composing an assembly, which was then subtracted using the Subtract function. The skeletons of the arcs were created using the Helix function, followed by using the Sweep function with the help of a circle.

Final 3D





Material used:

Name: Steel-Cast

Type: Metal

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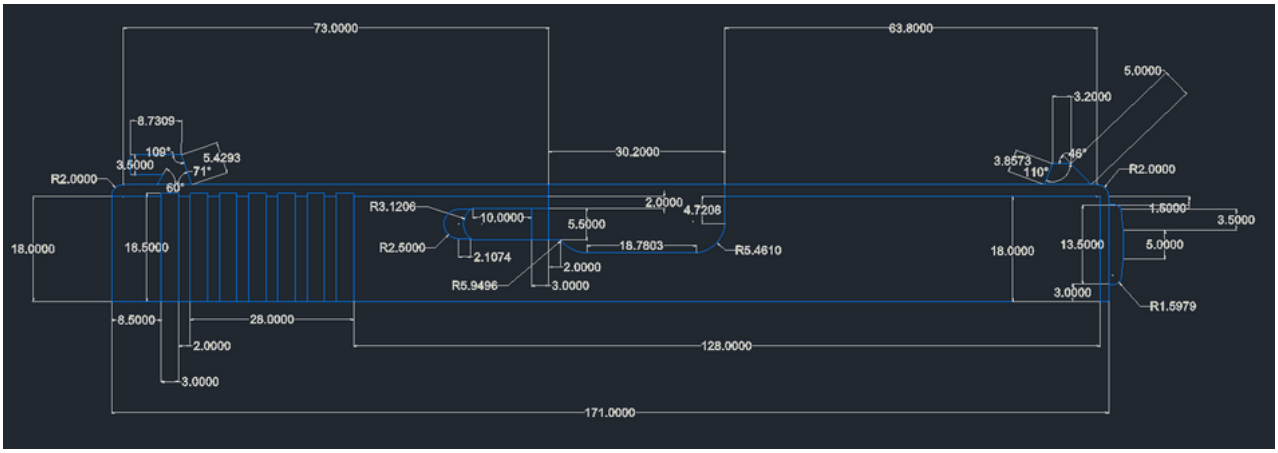
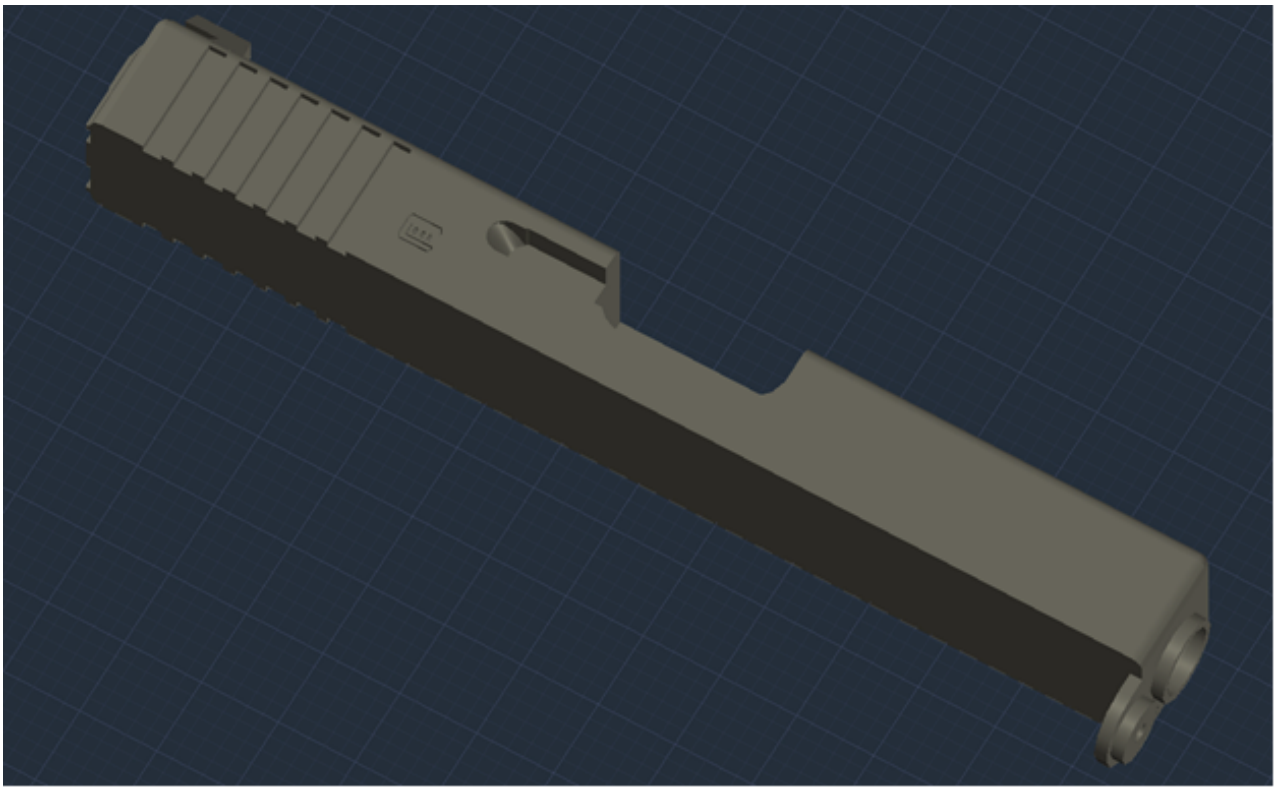
SIDE

2D Sketch



Final 3D



Material used:

Name: Steel-Cast

Type: Metal

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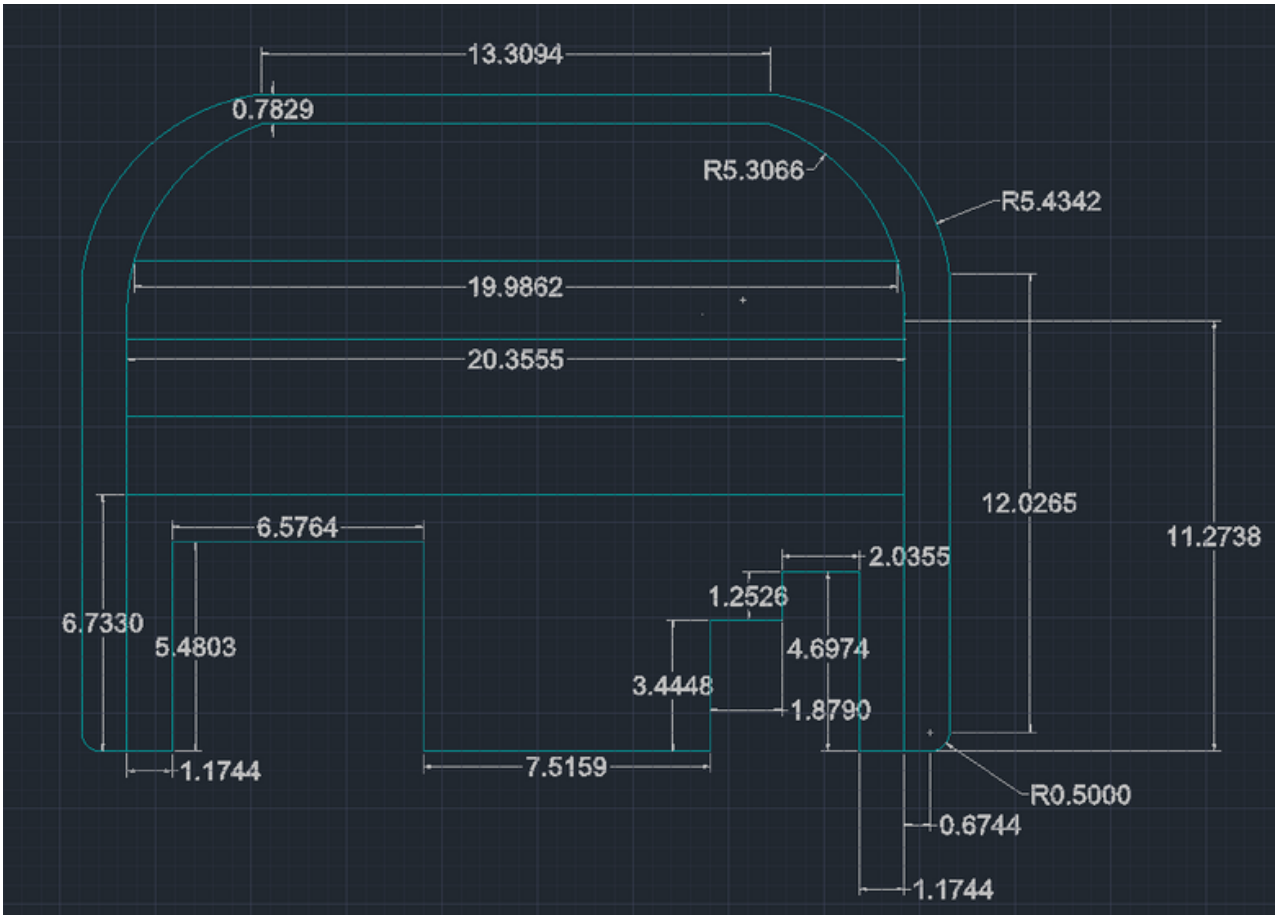
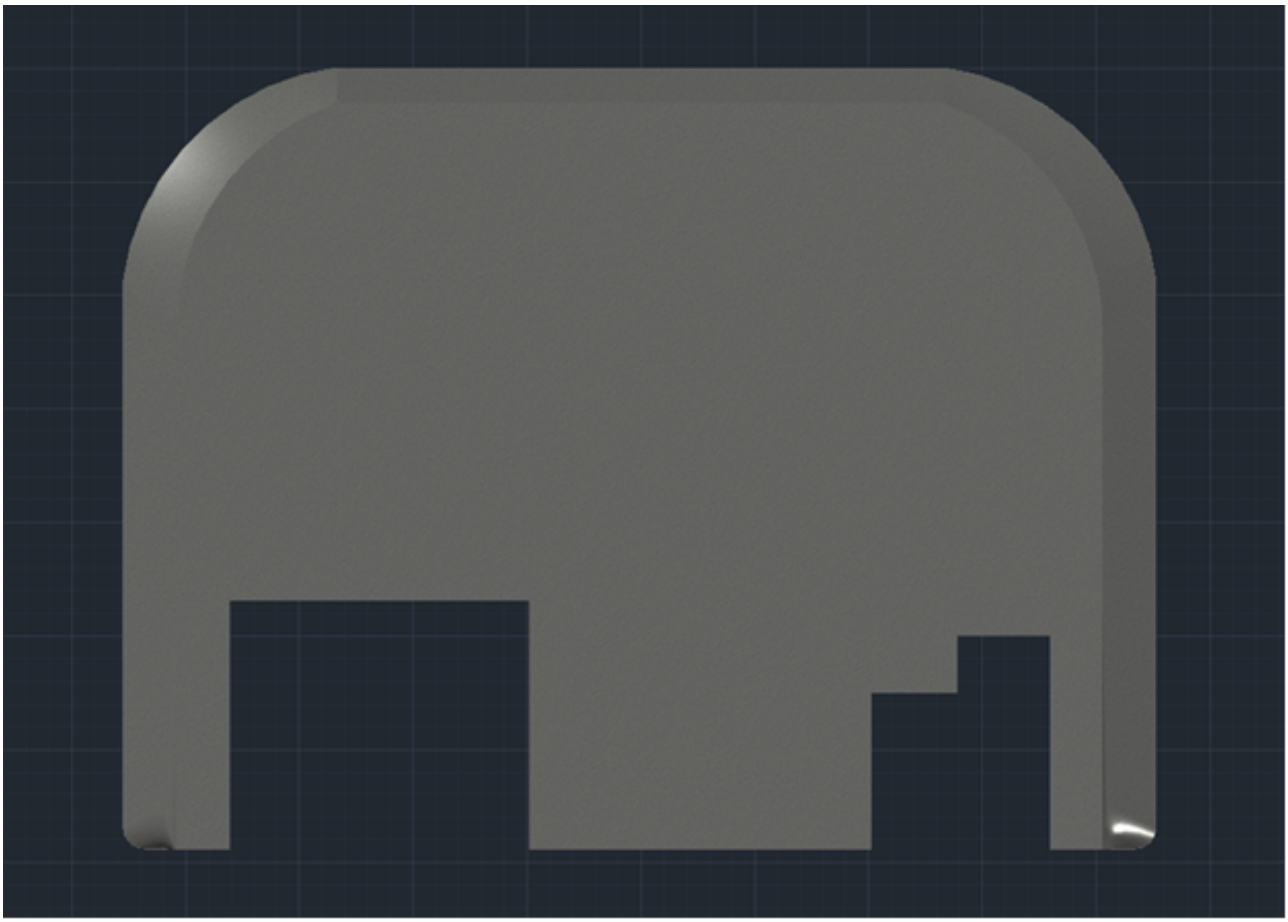
SIDE COVER PLATE

2D Sketch



Workflow: This piece was obtained by dividing it into two parts, to which I applied the Loft function to join them.

Final 3D



Material used:

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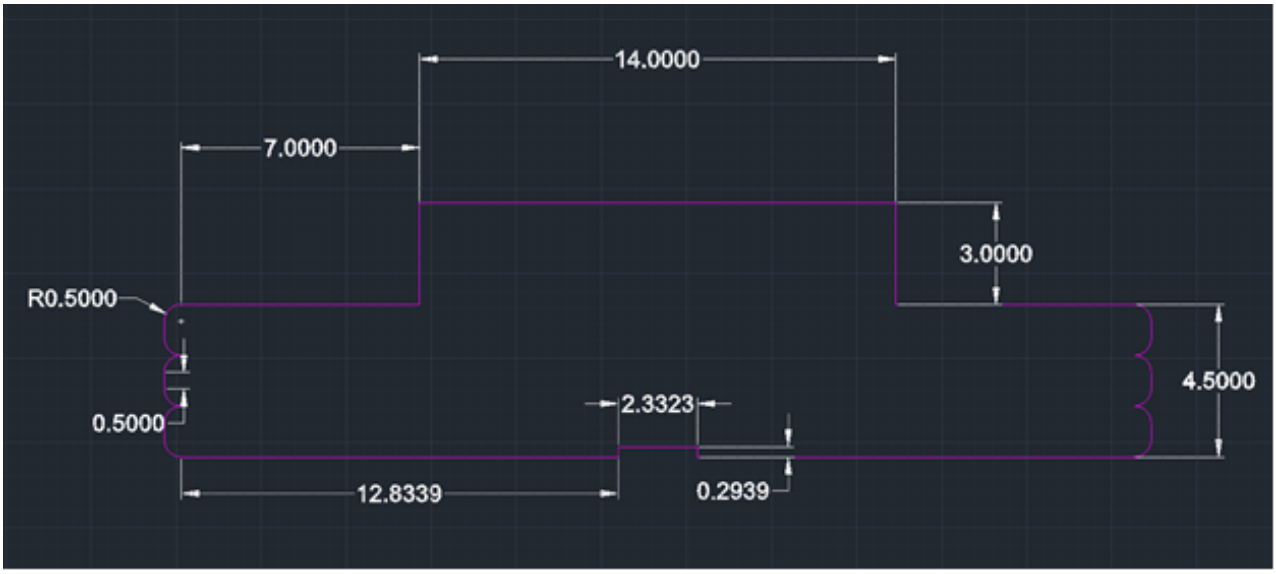
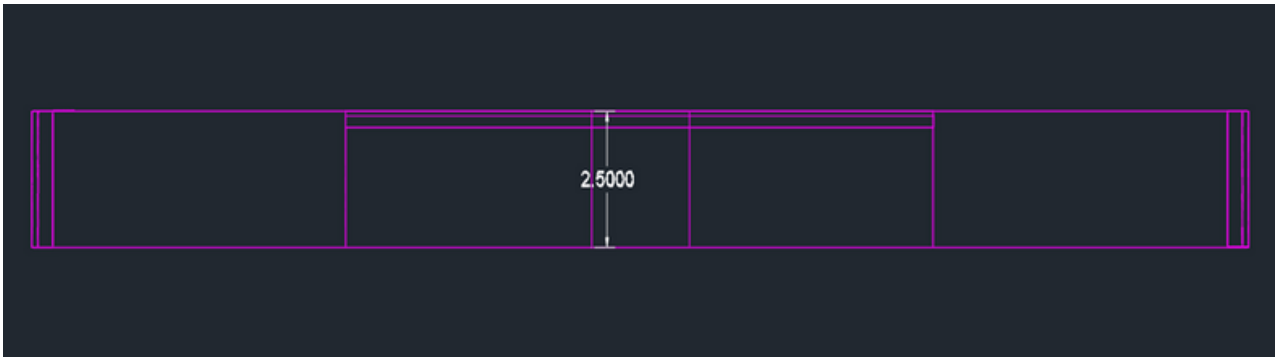
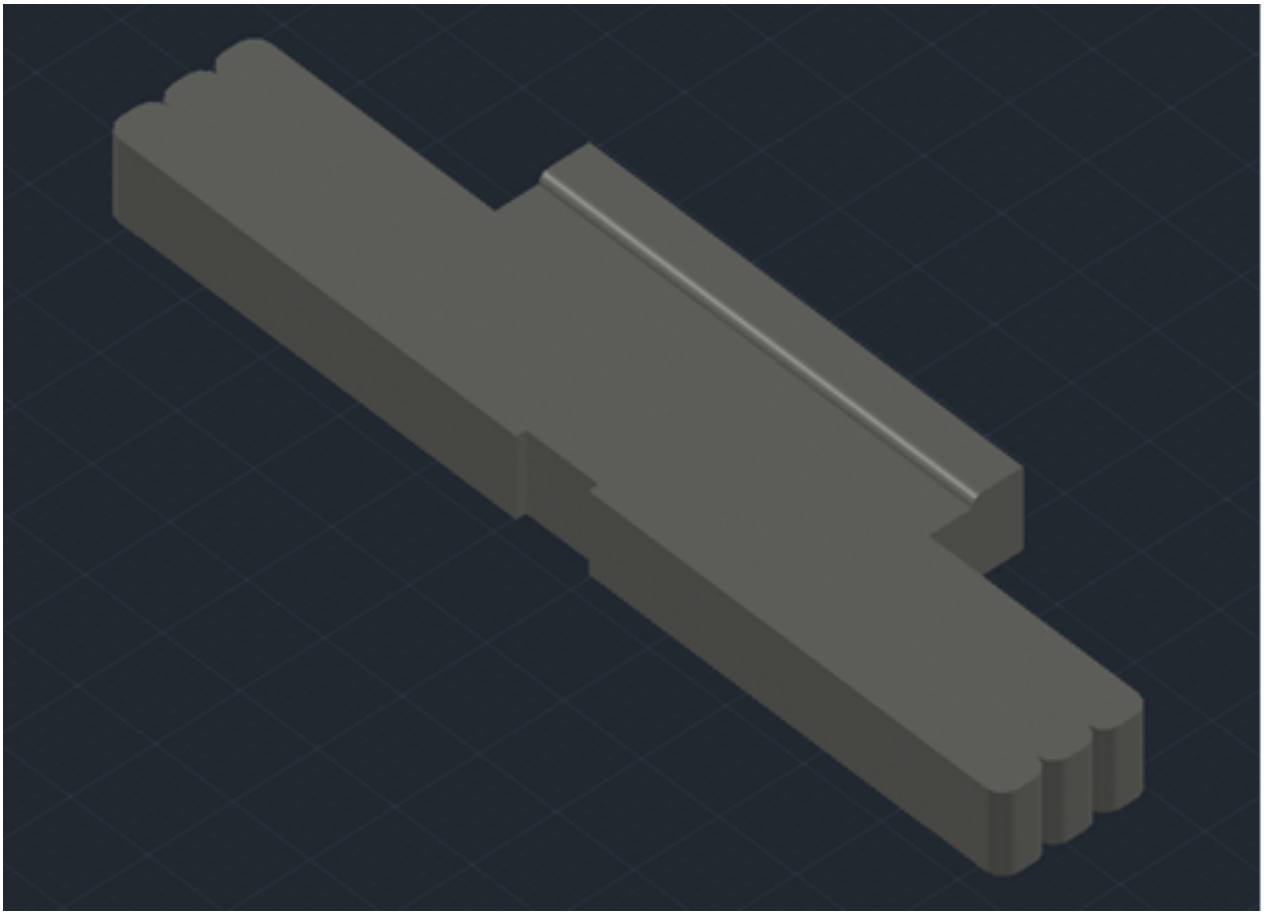
SLIDE LOCK

2D Sketch





Final 3D



Material used:

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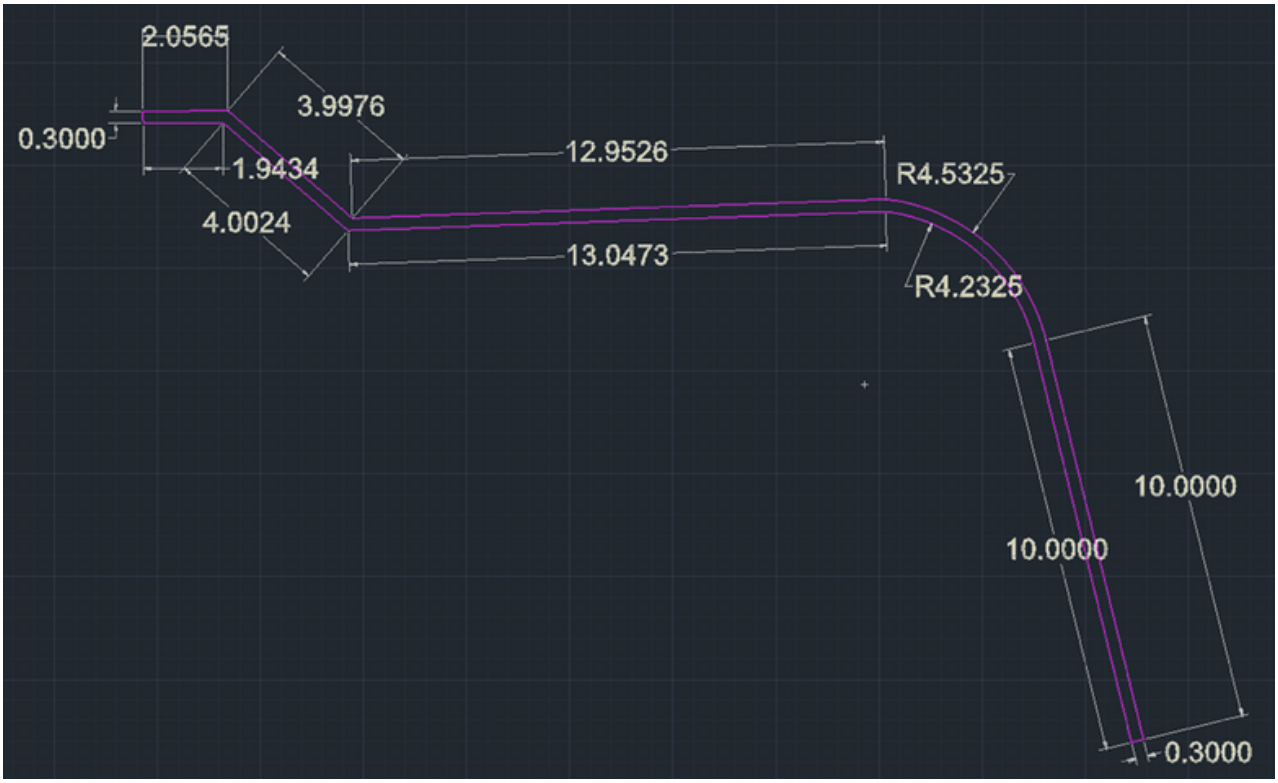
SLIDE LOCK SPRING

2D Sketch



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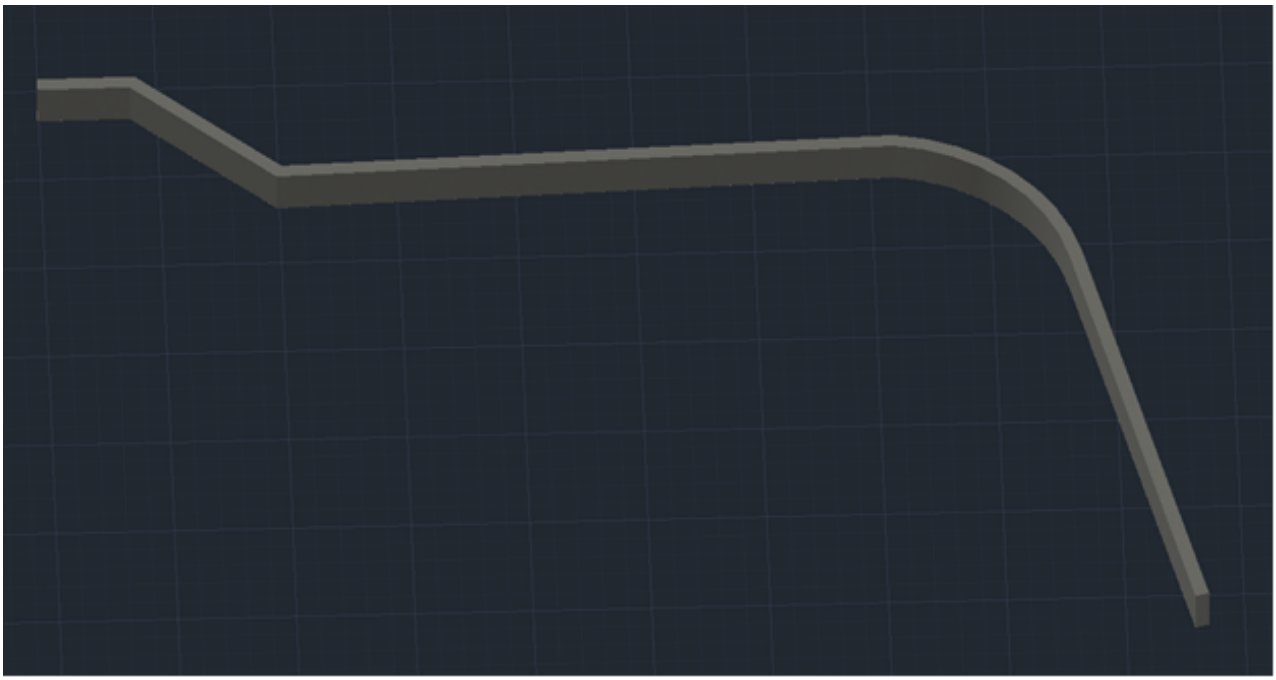

Material used:

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Type: Metal

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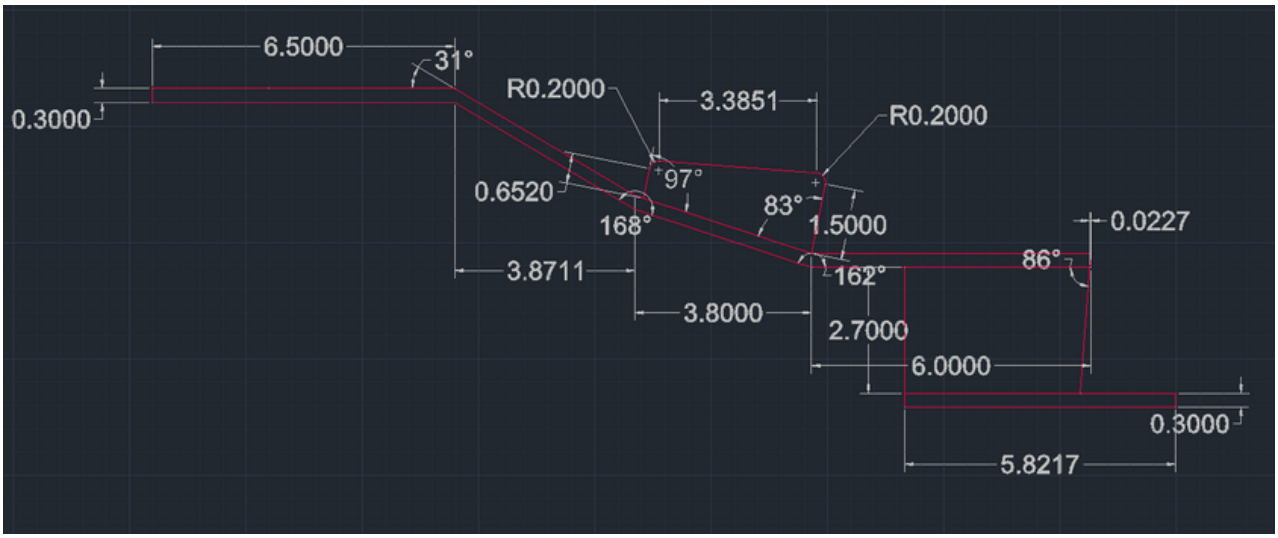
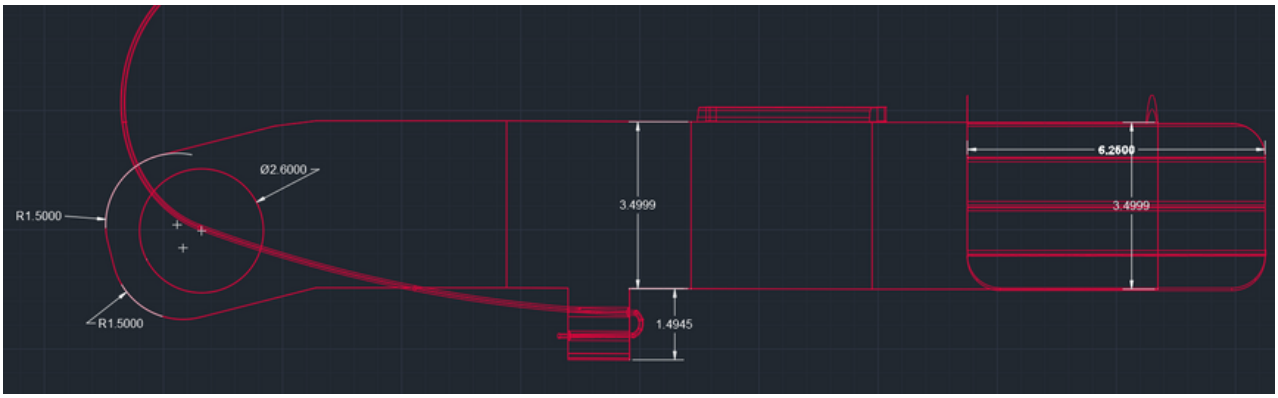
SIDE STOP LEVEL

2D Sketch





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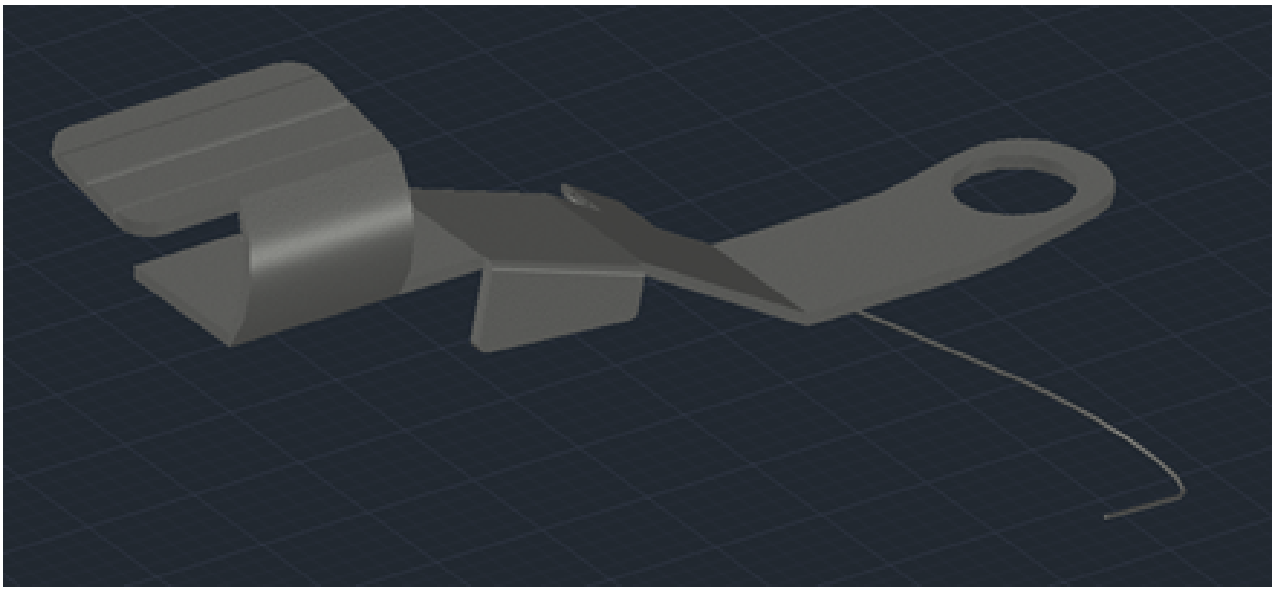

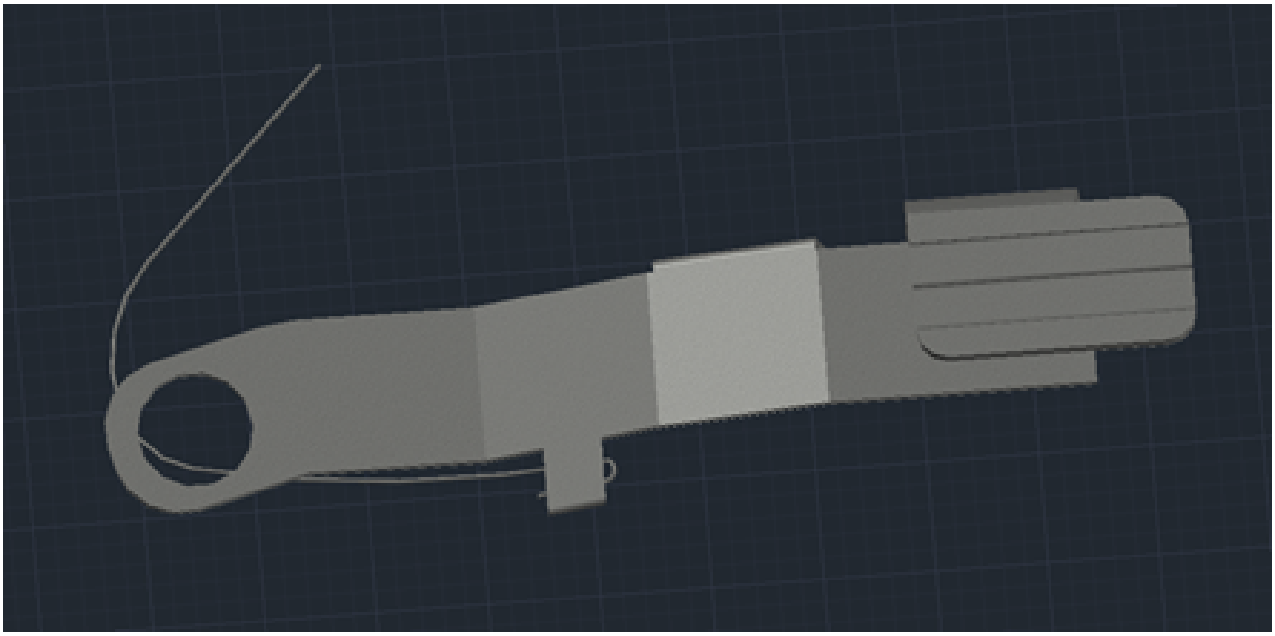

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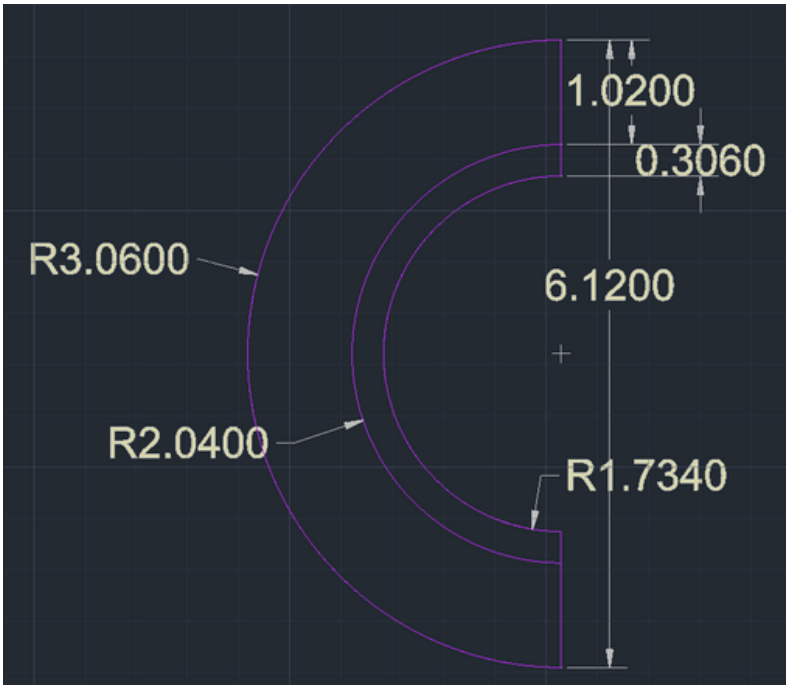
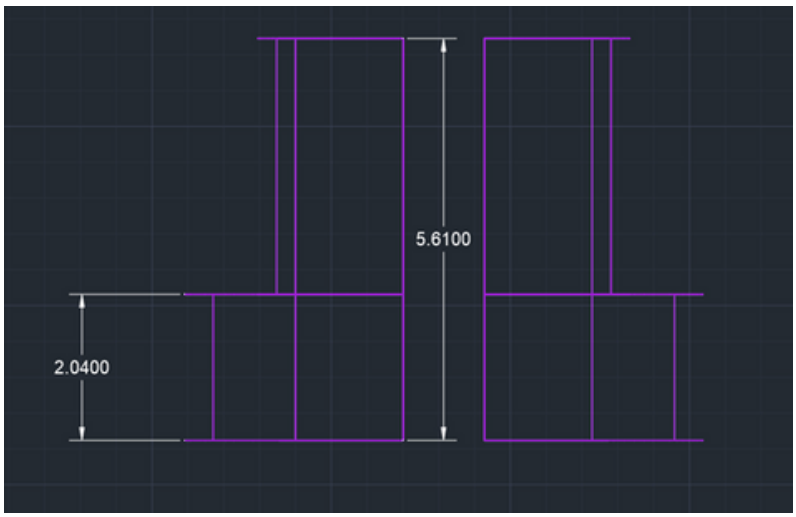
SPRING CUPS

2D Sketch





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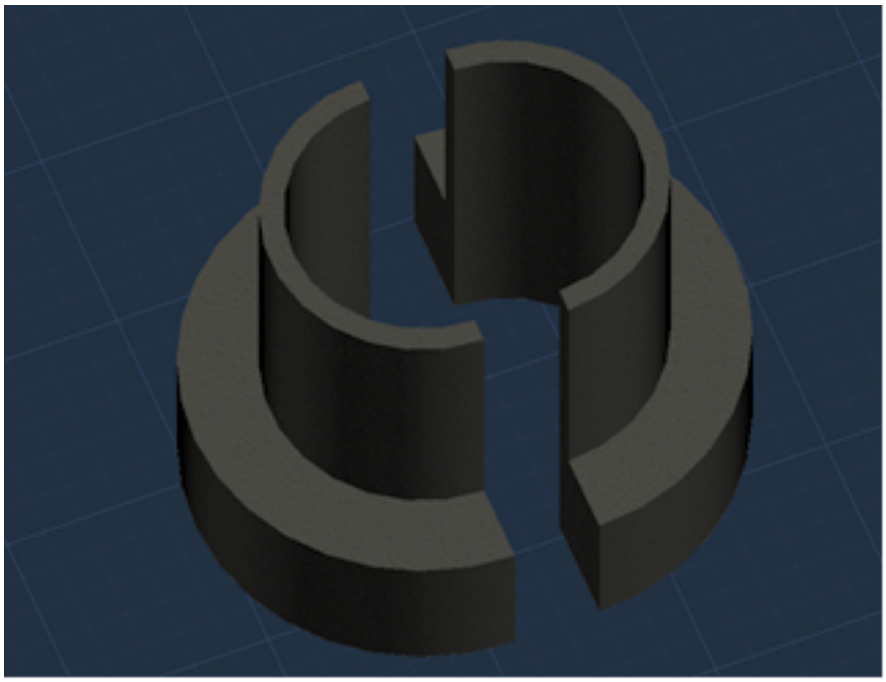

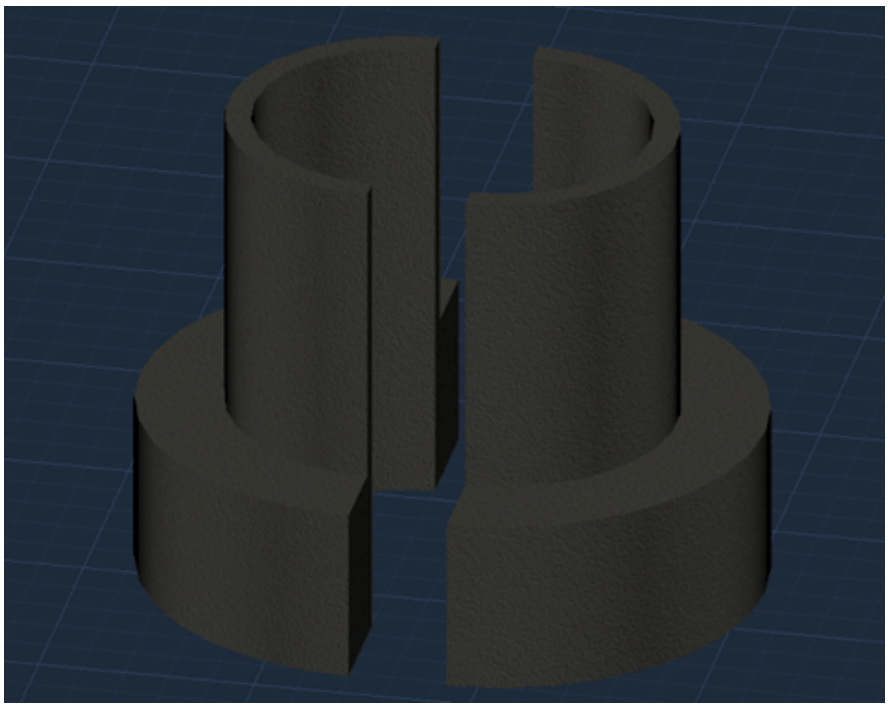

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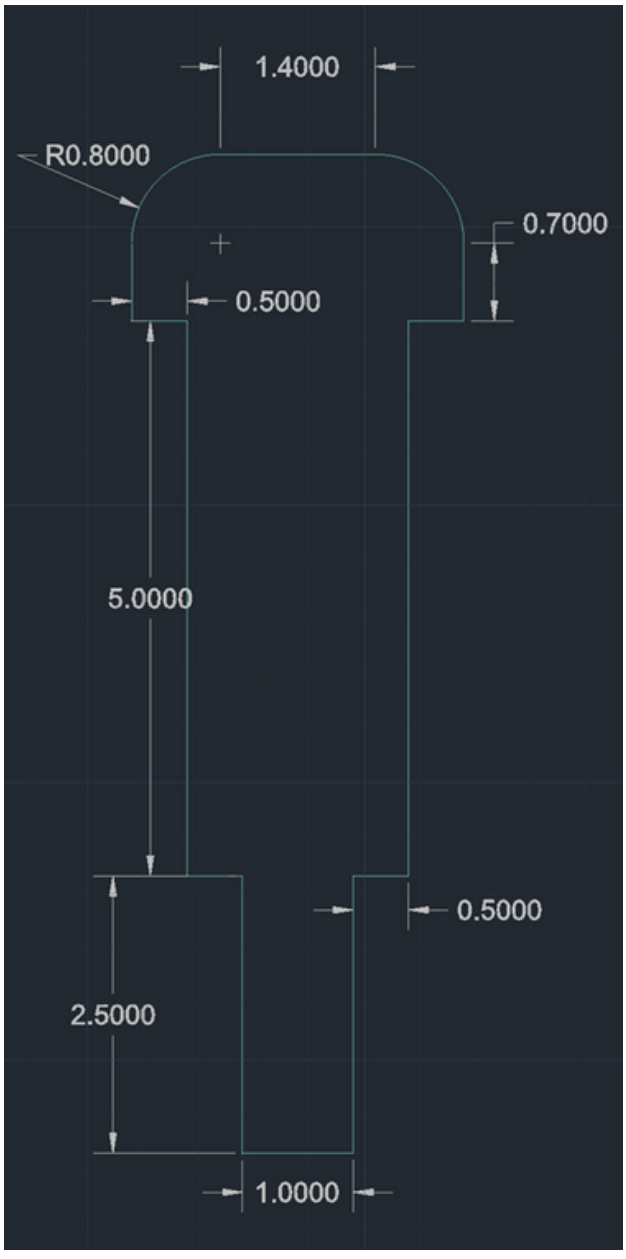
SPRING LOADED BEARING

2D Sketch



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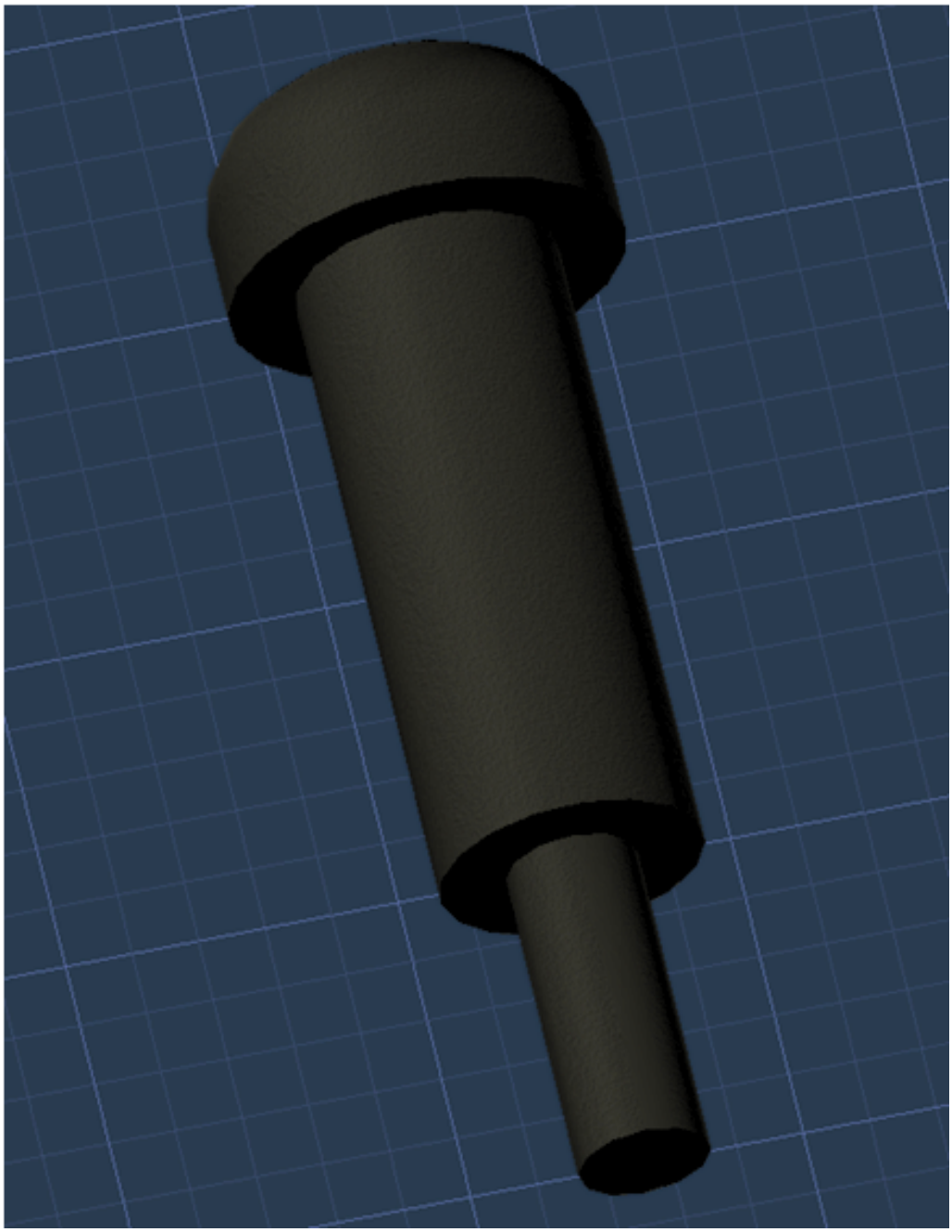

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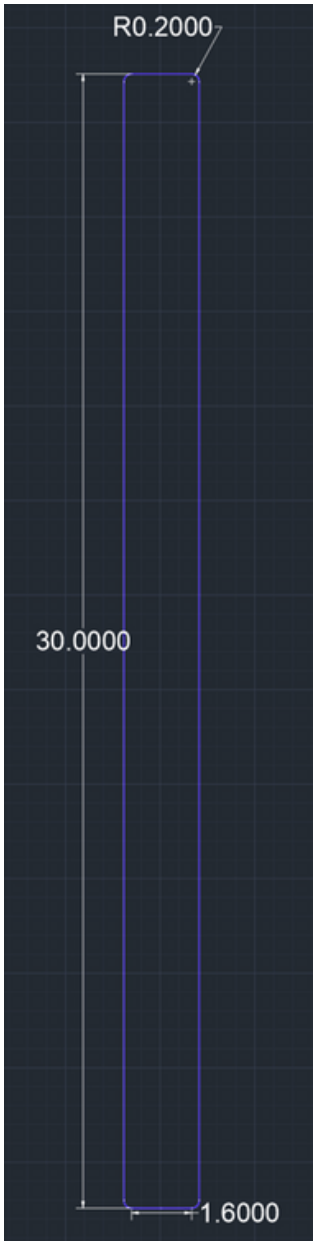
TRIGGER HOUSING PIN

2D Sketch



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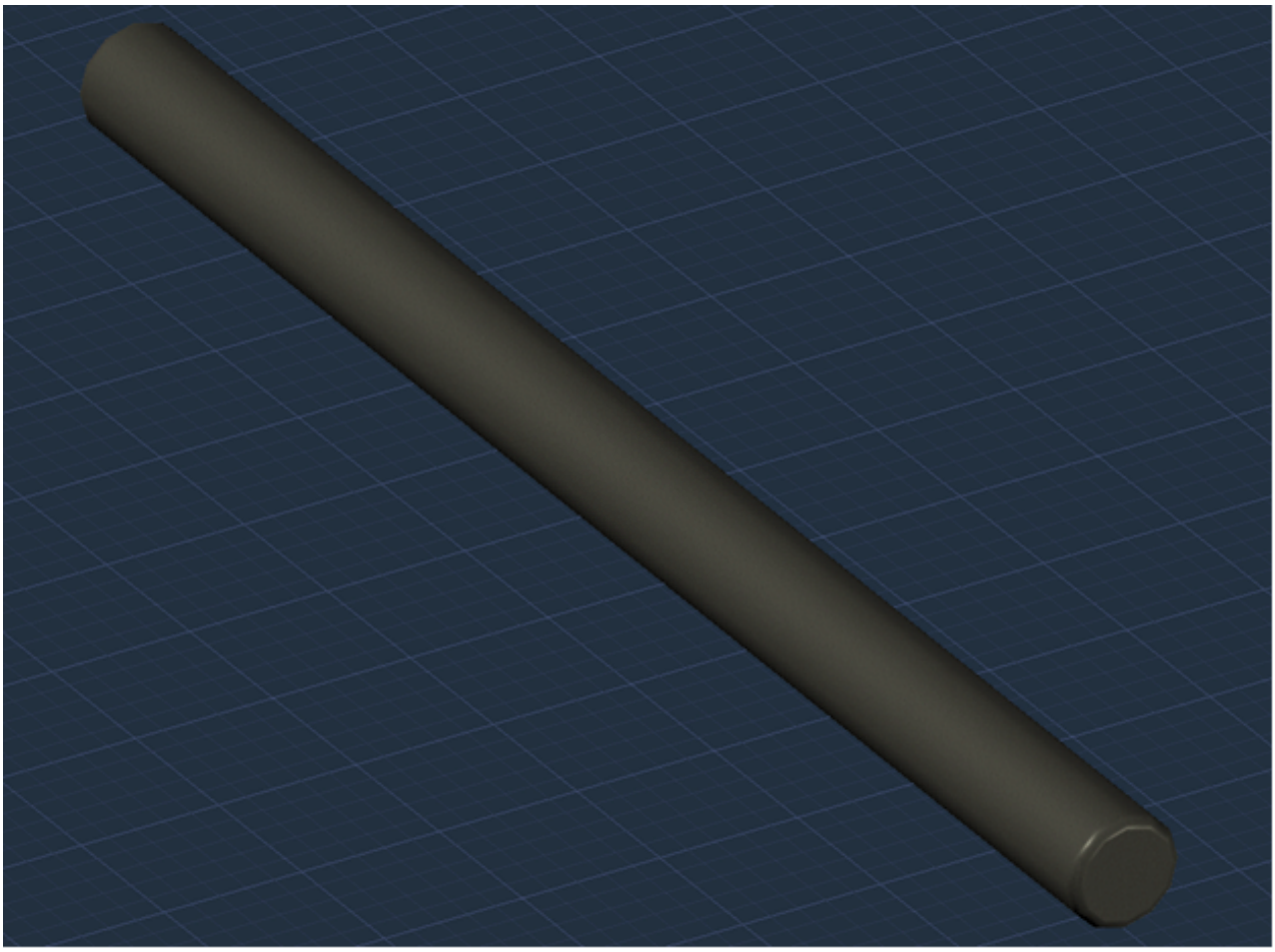
Final 3D



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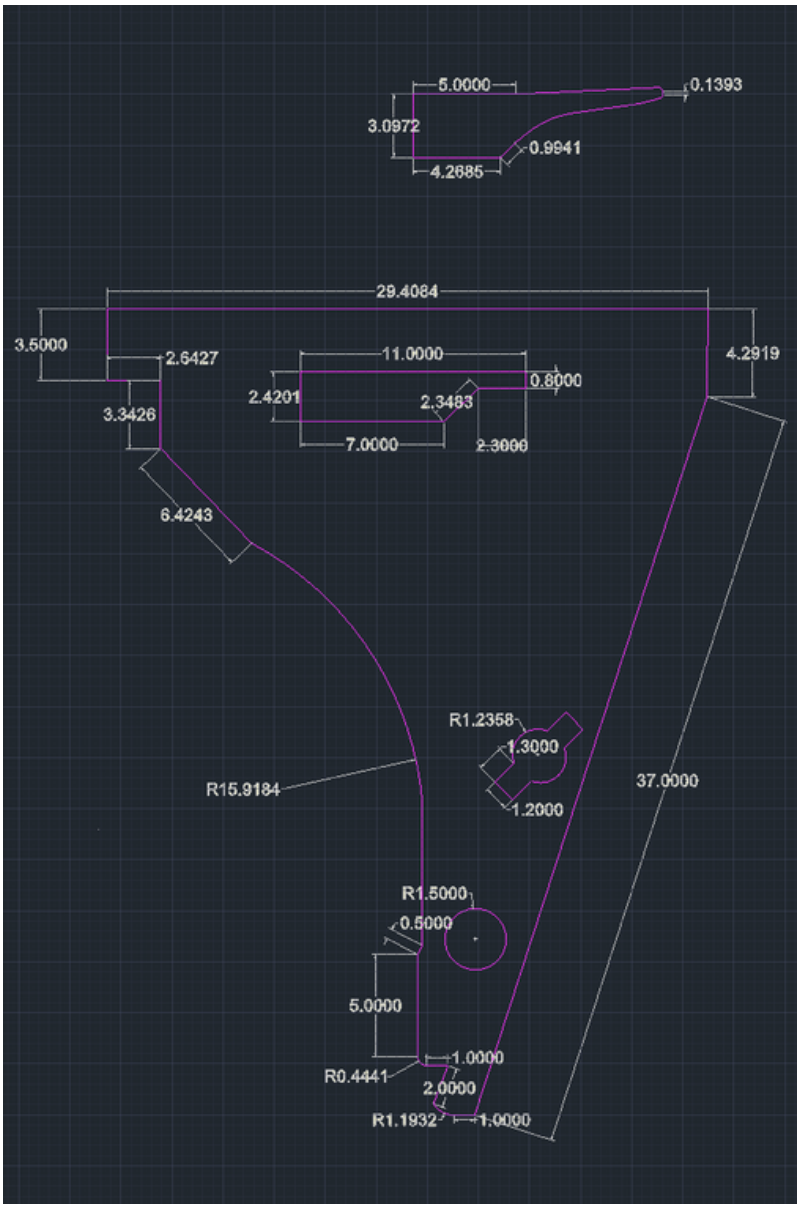
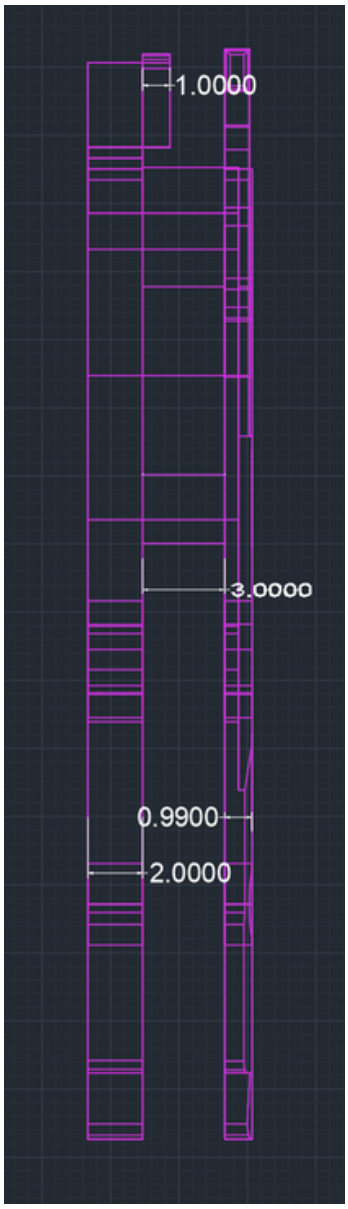
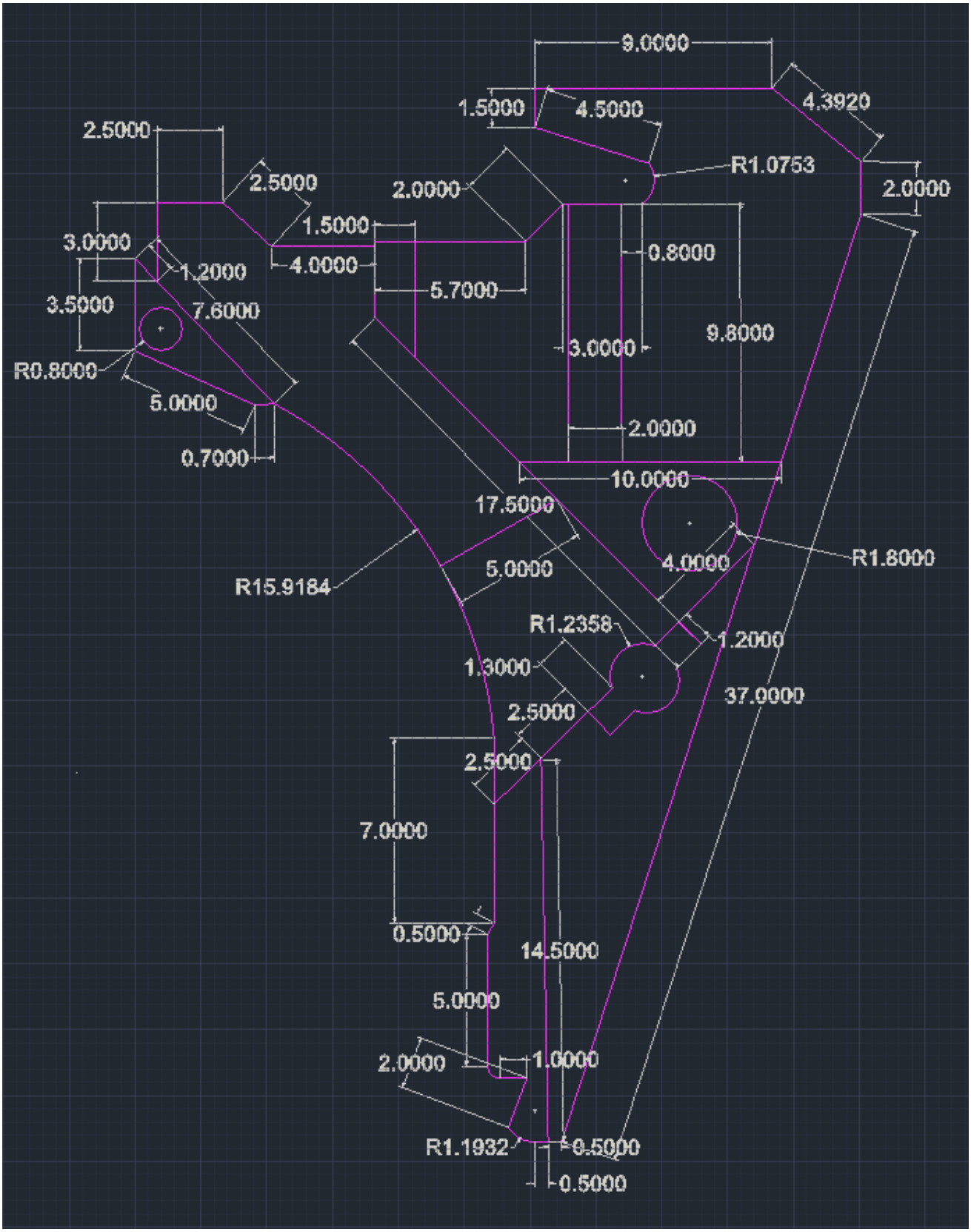
TRIGGER MECHANISM HOUSING

2D Sketch



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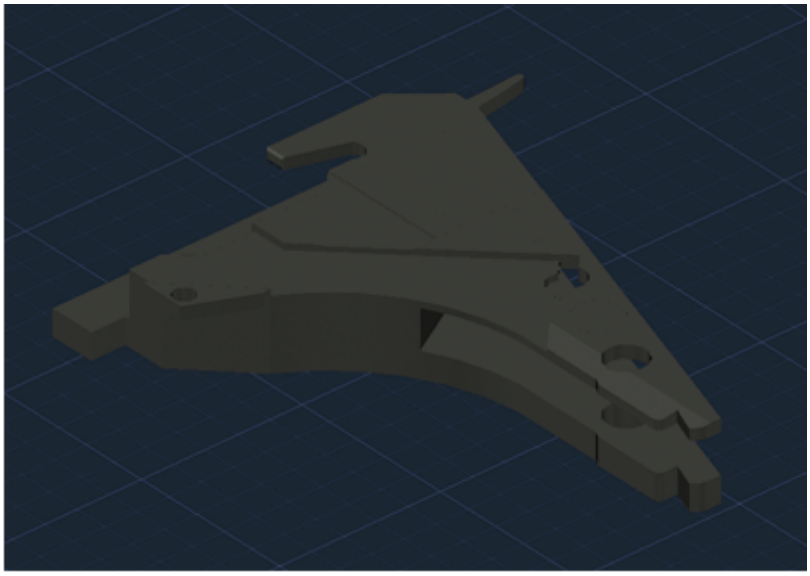
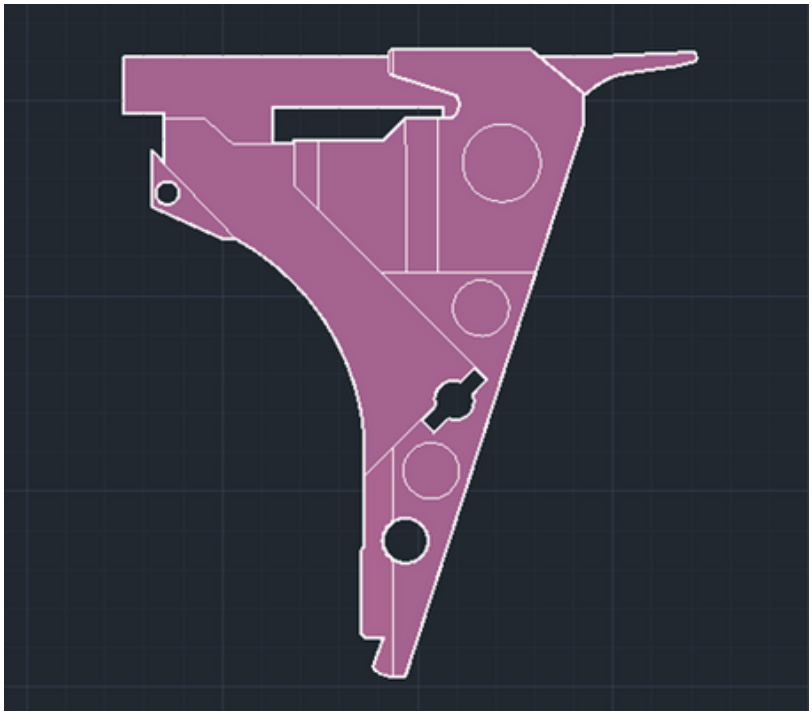
Final 3D





Material used:

Name: Steel-Cast

Type: Metal

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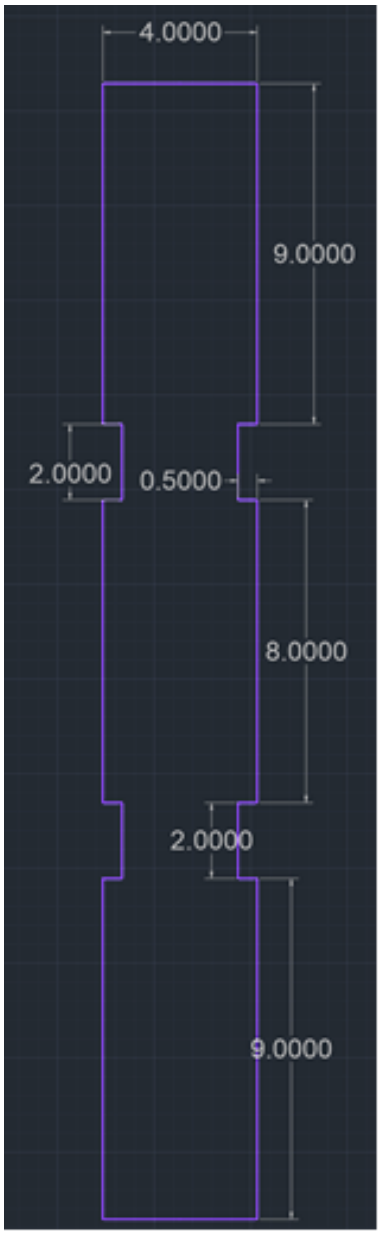
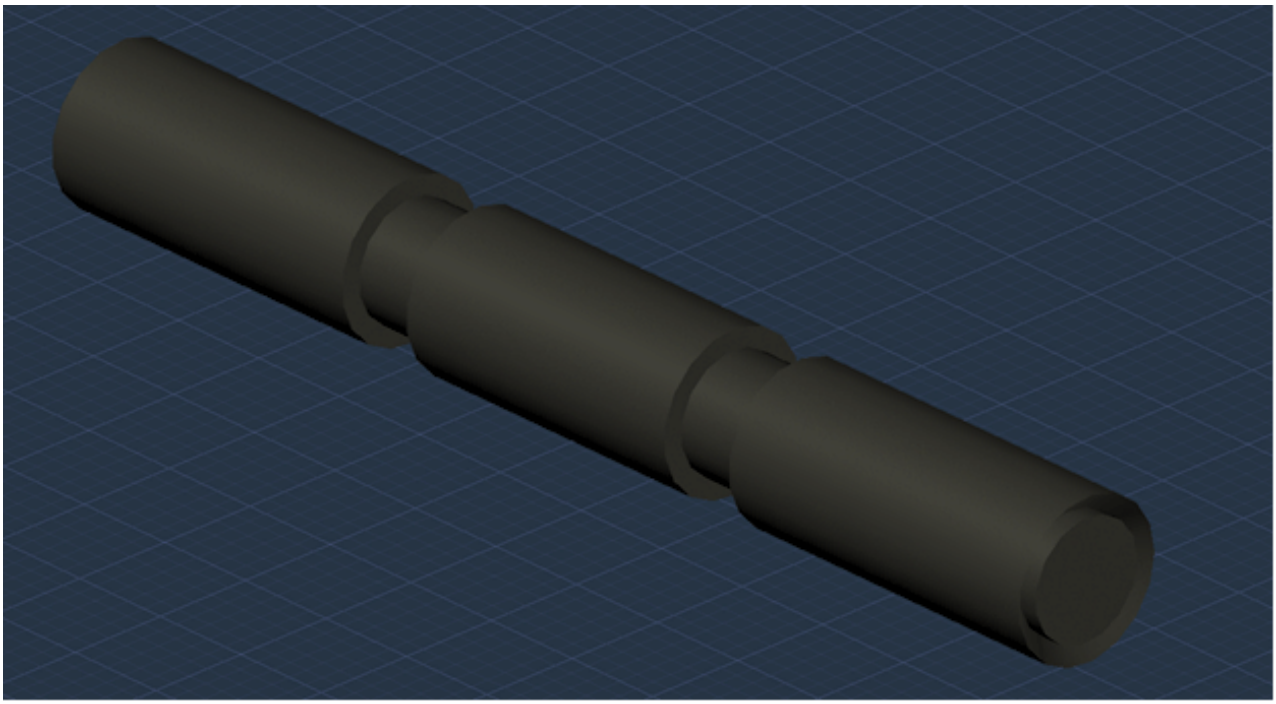
DEPARTMENT OF COMPUTER SCIENCE
SPECIALIZATION IN COMPUTERS AND INFORMATION TECHNOLOGY

TRIGGER PIN

2D Sketch



Final 3D



Material used:

Name: Steel-Cast

Type: Metal

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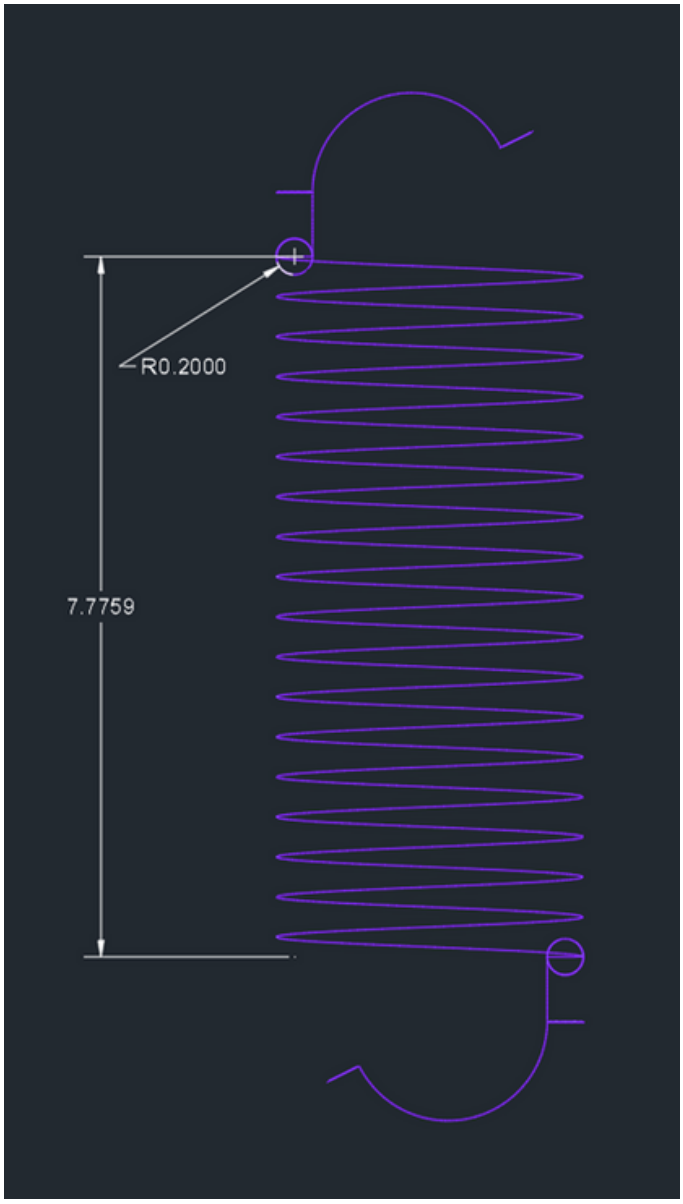
SPECIALIZATION IN COMPUTERS AND INFORMATION TECHNOLOGY

TRIGGER SPRING

2D Sketch



Final 3D

Material used:

Name: Steel-Cast

Type: Metal

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DEPARTMENT OF COMPUTER SCIENCE
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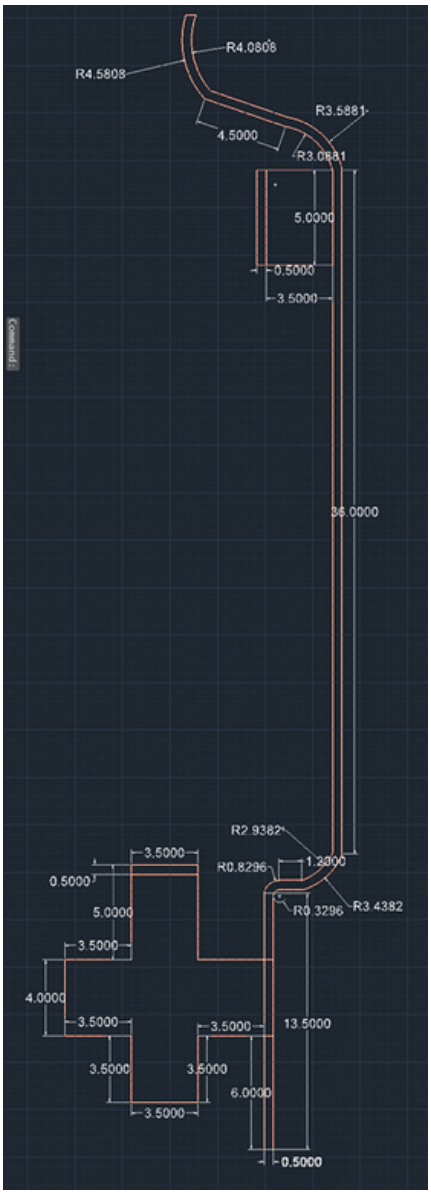
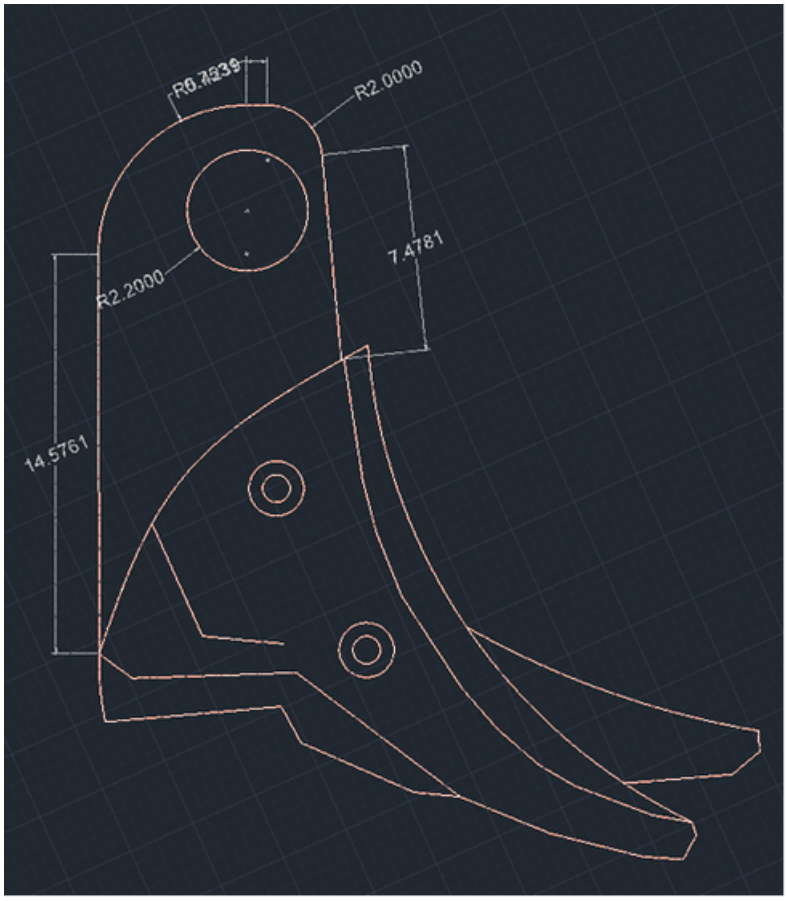
TRIGGER WITH TRIGGER BAR

2D Sketch





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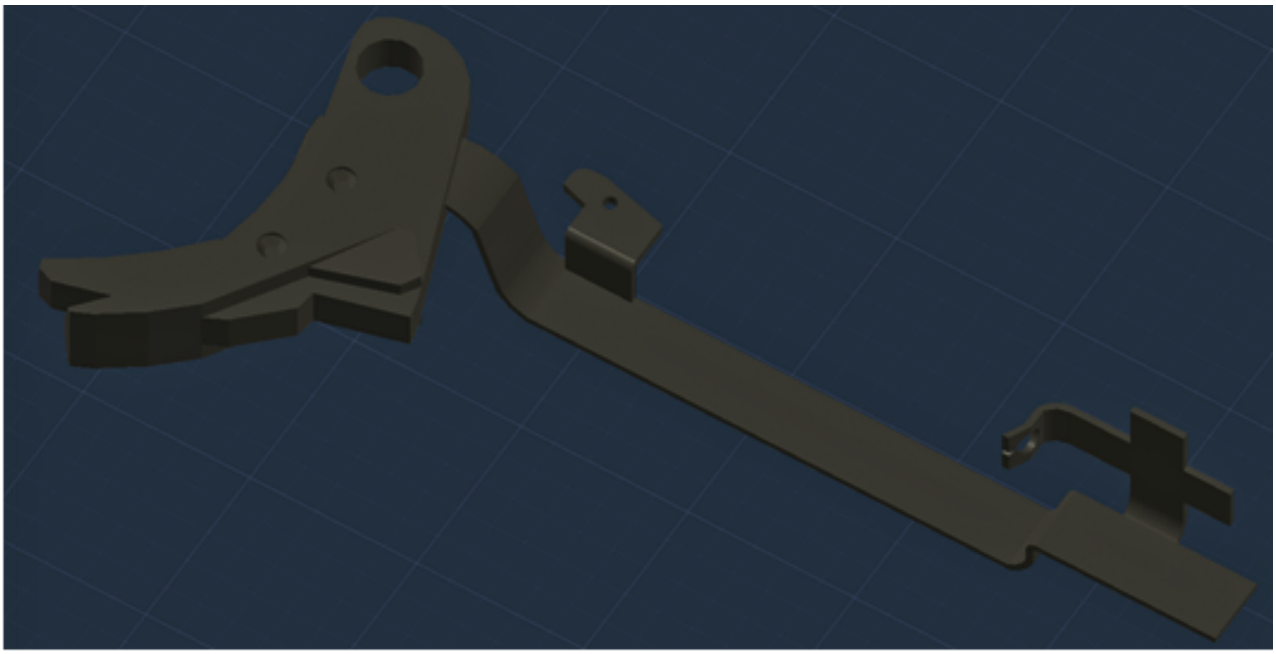

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GLOCK-19

3D Render

BIBLIOGRAPHY

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https://us.glock.com/en/learn/brand/history

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