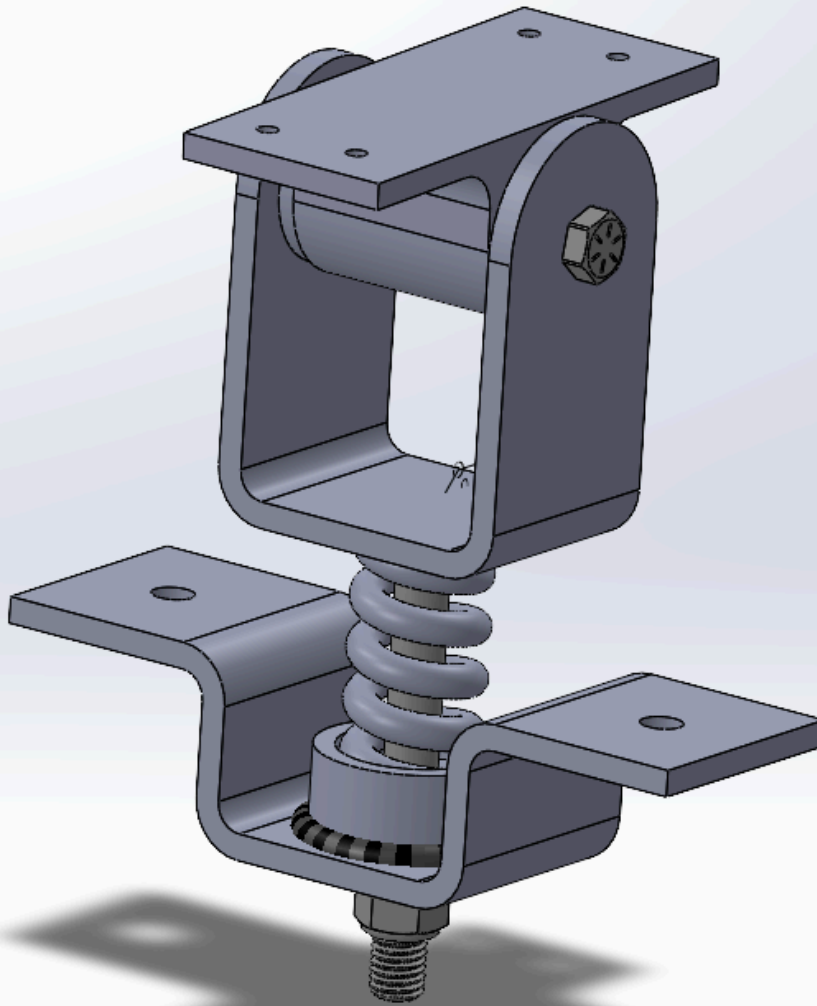
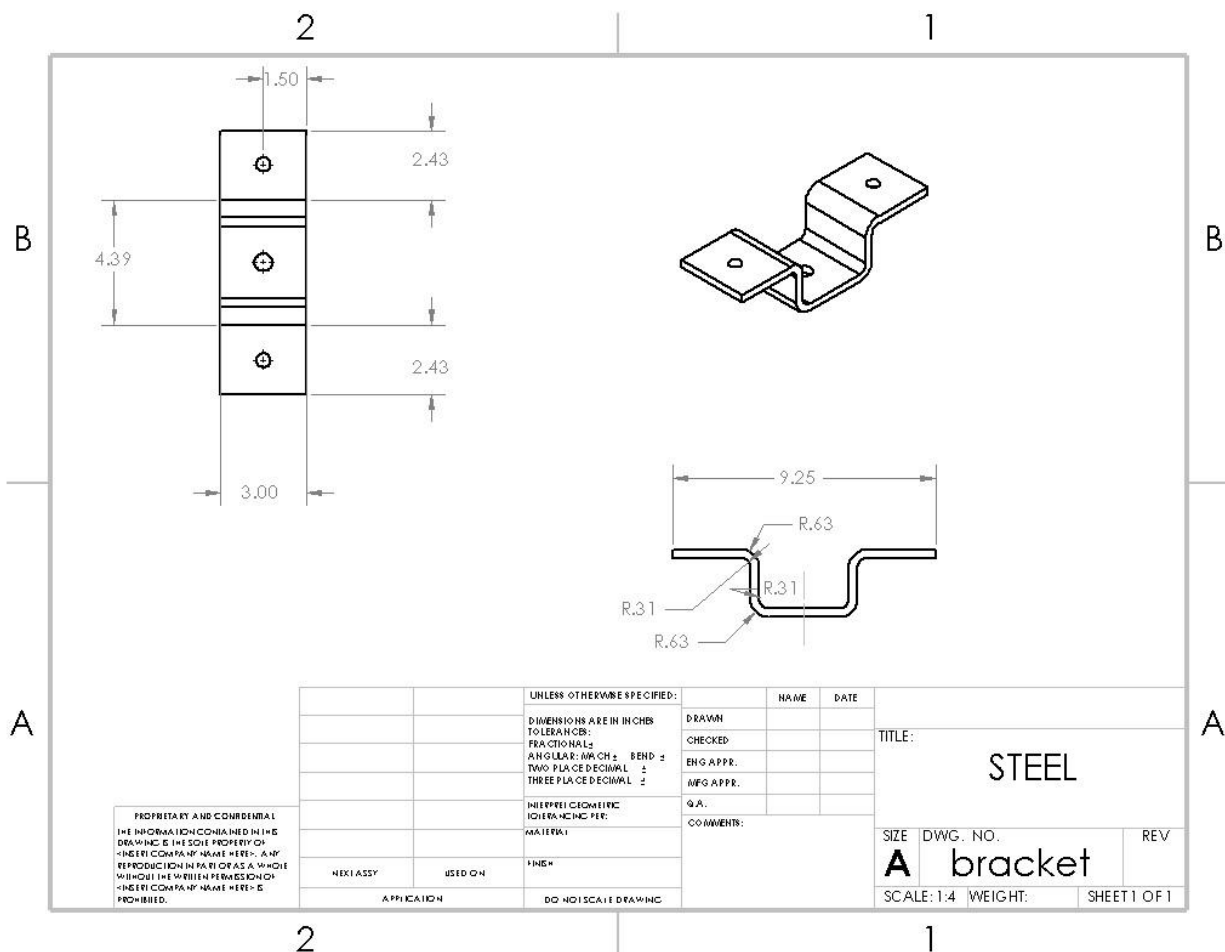


Shock Assembly with Spring  
By Ebagnisev Sahiv Lopez-Borja  
Section 74306

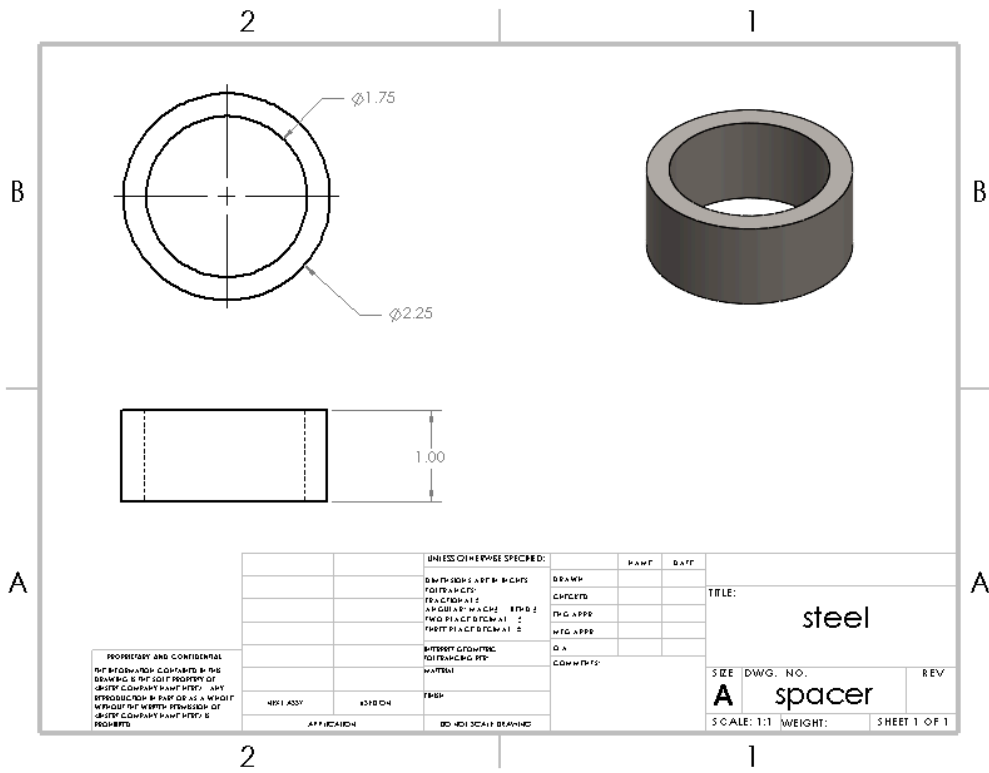


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1	BRACKET	STEEL	1
2	SPACER	STEEL	1
3	SPRING	STEEL	1
4	92141A233	18-8 STAINLESS STEEL WASHER	1
5	USUPPORT	STEEL	1
6	97042A126	18-8 STAINLESS STEEL THREADED ON ONE END STUD	1
7	BUSHING	BRONZE	2
8	PIVOT	STEEL	1
9	91268A655	HIGH-STRENGTH GRADE 8 STEEL HEX HEAD SCREW	1
10	97190A025	MEDIUM-STRENGTH STEEL LOCKNUT	1
11	90630A130	HIGH-STRENGTH STEEL NYLON-INSERT LOCKNUT	1



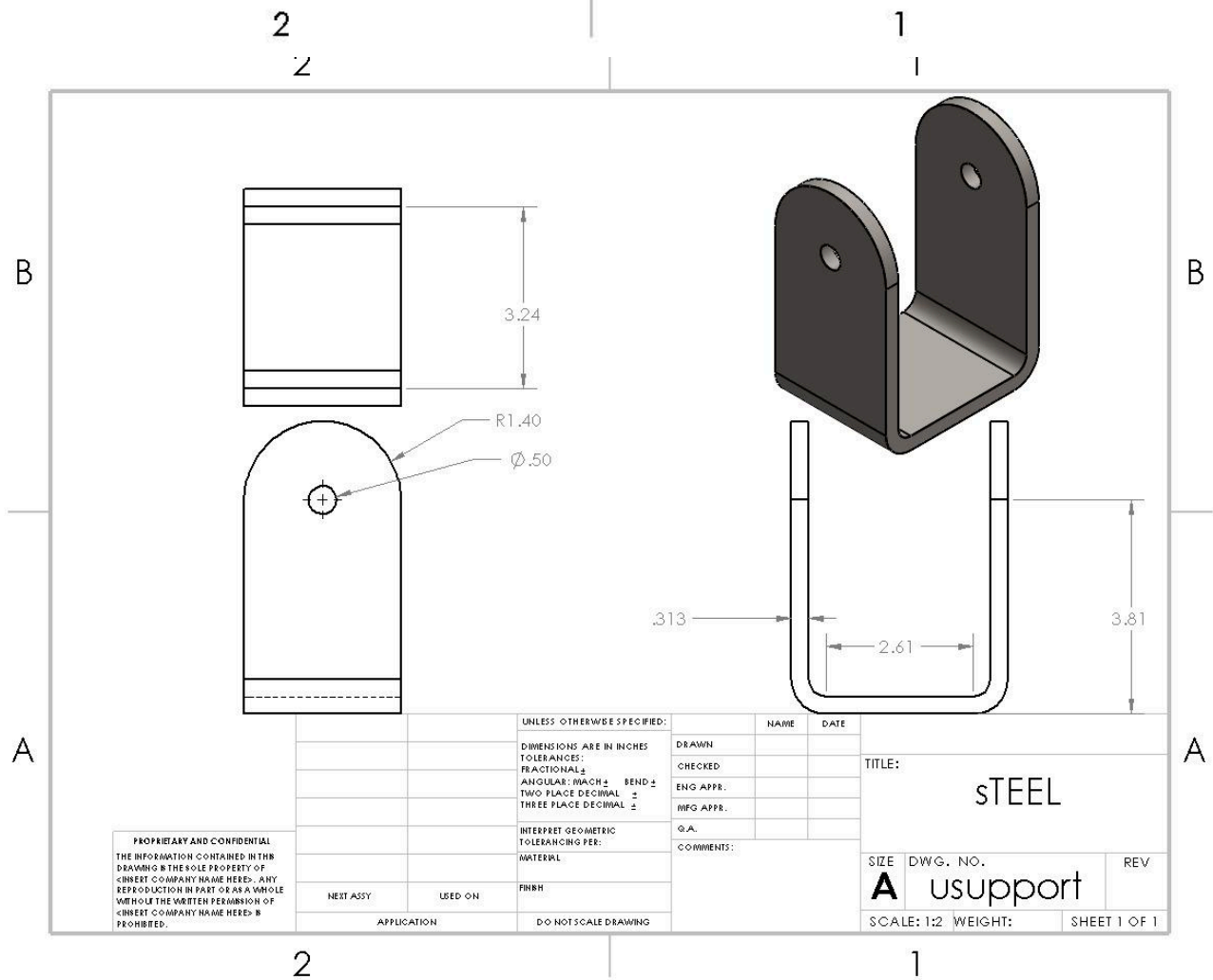
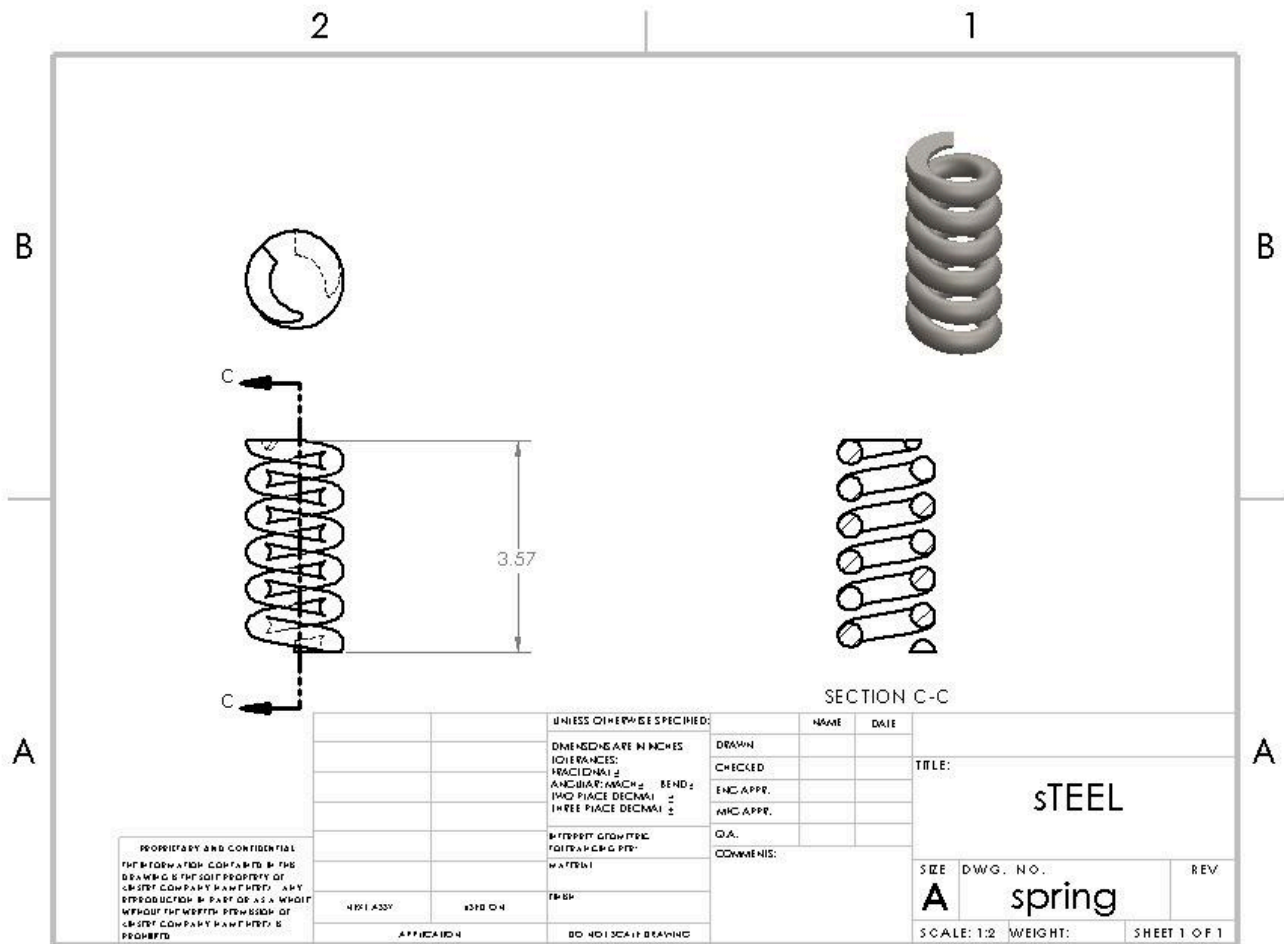
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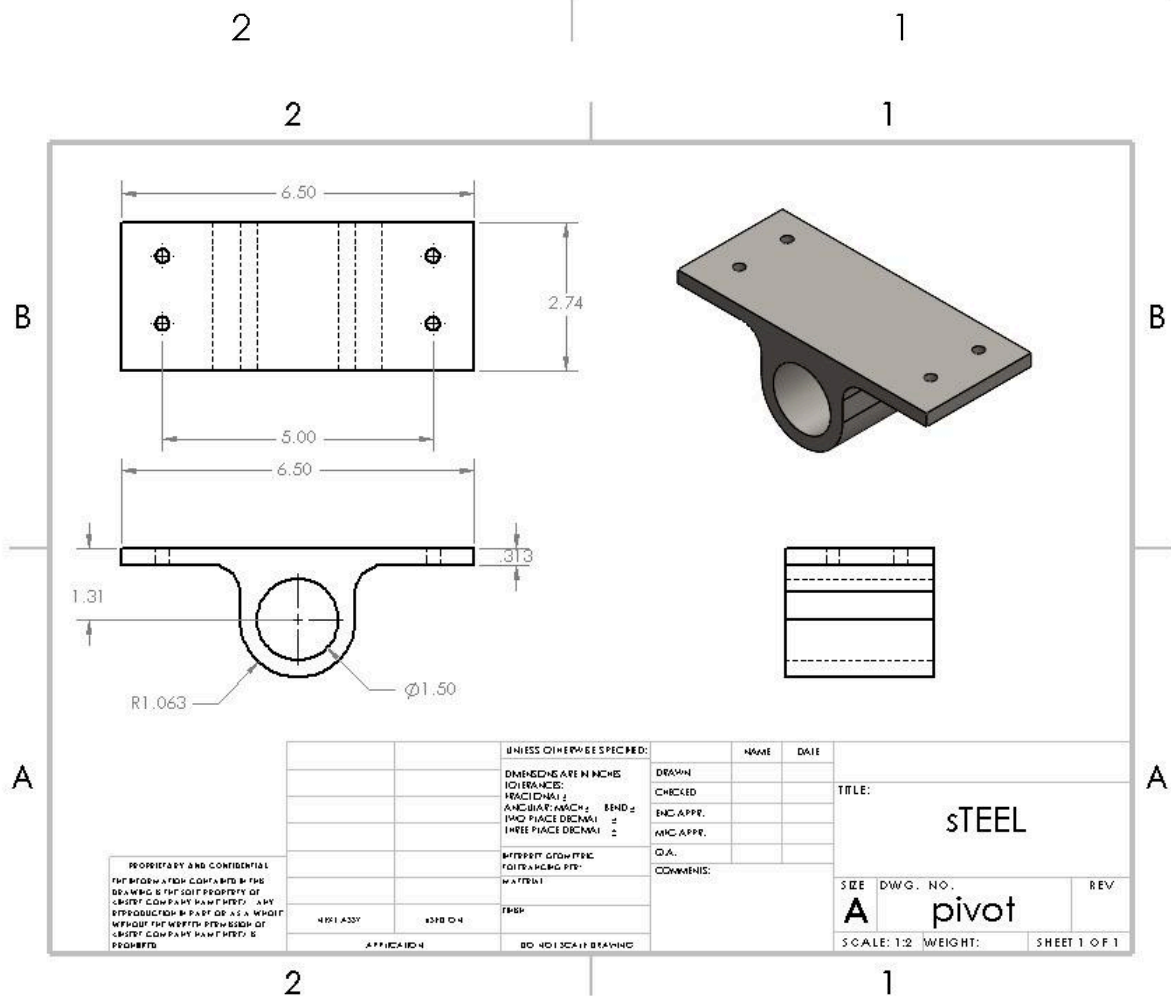
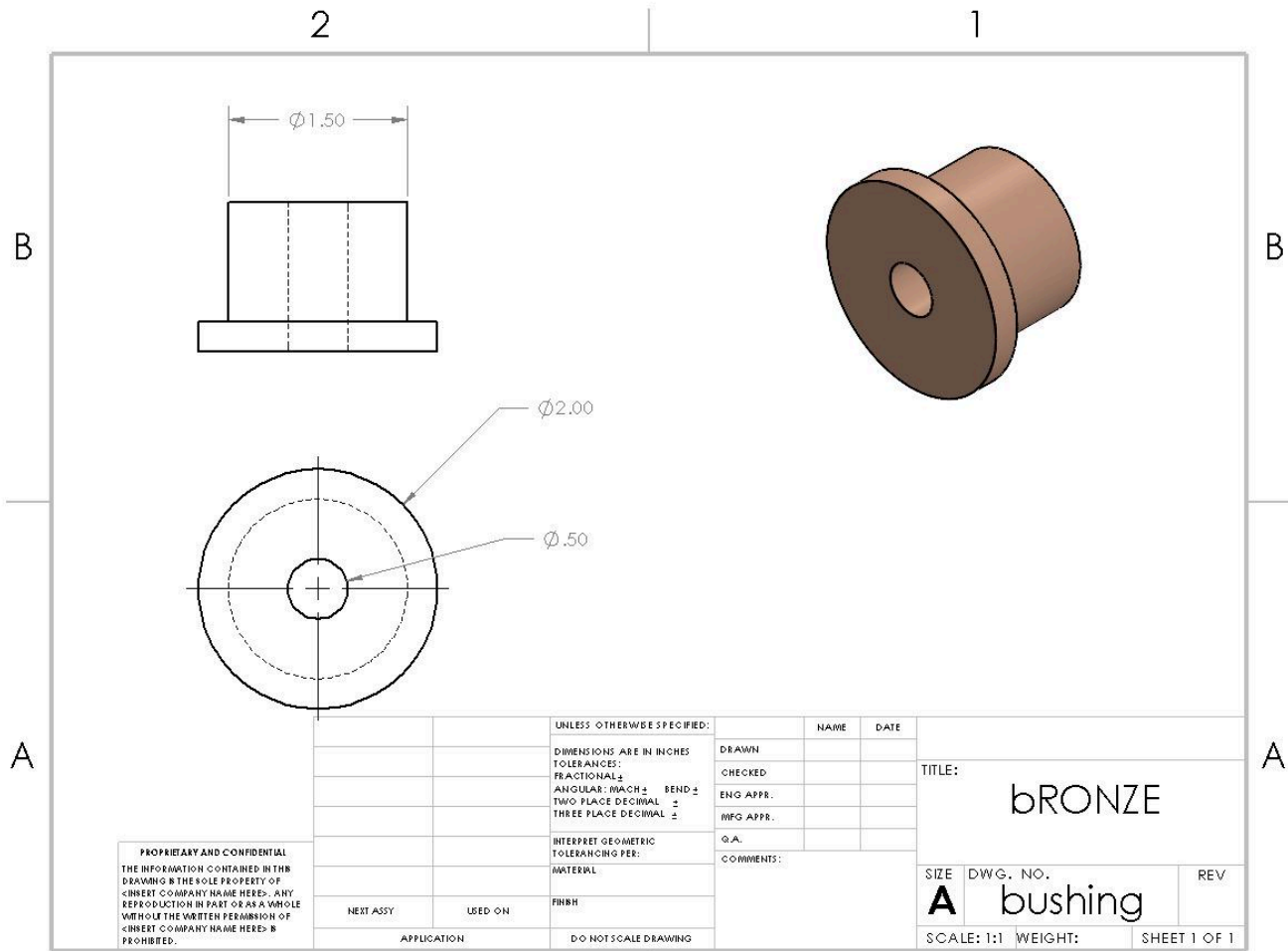
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE:  STEEL	
		DIMENSIONS ARE IN INCHES		DRAWN			
		TOLERANCES:		CHECKED			
		FRACTIONAL ±		ENG APPR.			
		ANGULAR: MATCH ± BEND ±		MFG APPR.			
TWO PLACE DECIMAL ±							
THREE PLACE DECIMAL ±							
INTERPRET GEOMETRIC TOLERANCING PER:		Q.A.					
MATERIAL		COMMENTS:					
NEXT ASSY	USED ON	FINISH		SIZE DWG. NO.		REV	
APPLICATION		DO NOT SCALE DRAWING		A bracket			
				SCALE: 1:4 WEIGHT:		SHEET 1 OF 1	



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		UNLESS OTHERWISE SPECIFIED:			NAME	DATE	TITLE:  steel	
NEXT ASSY	USED ON	DIMENSIONS ARE IN INCHES		DRAWN				
		TOLERANCES:		CHECKED				
		FRACTIONAL ±		ENG APPR.				
		ANGULAR: MATCH ± BEND ±		MFG APPR.				
APPLICATION		INTERPRET GEOMETRIC TOLERANCING PER:		Q.A.		SIZE DWG. NO.	REV	
		MATERIAL		COMMENTS:		A spacer		
		FINISH				SCALE: 1:1 WEIGHT:	SHEET 1 OF 1	
		DO NOT SCALE DRAWING						





# Appendix

## Fasteners List All fasteners were taken from McMaster-Carr

Part Number	Part Description	Material
97190A025	Medium-Strength Steel Locknut  Thread Size 1/2"-13 Width 3/4" Height 7/16"	Steel
90630A130	High-Strength Steel Nylon-Insert Locknut  Thread Size 5/8"-11 Width 15/16" Height 3/4"	Steel
91268A655	High-Strength Grade 8 Steel Hex Head Screw  Thread Size 1/2"-13 Head Width 3/4" Head Height 5/16"	Steel
97042A126	18-8 Stainless Steel Threaded on One End Stud  Thread Size 5/8"-11 Length 5 1/2" Thread Length 1 1/2" Shaft Length 4" Shaft Diameter 5/8"	Steel
92141A233	18-8 Stainless Steel Washer  For Screw Size 11/16" ID 0.750" OD 1.500" Thickness 0.055" to 0.069"	Stainless Steel

# Shock Assembly Project Report

## Introduction

This project focused on building a shock assembly using a set of given parts and a spring that I had to create from scratch without any dimensions or guidelines. The task required a mix of trial and error, creative problem-solving, and hands-on assembly work. Along the way, I tackled challenges like fitting everything together, selecting fasteners from McMaster-Carr, and fine-tuning the design for proper functionality.

## Process and Steps

### 1. Getting Started

I began by examining the provided parts—bracket, spacer, U-support, bushing, and pivot—to figure out how they fit together. By piecing them together, I started to see their relationships and functionality. Although some dimensions were hard to read, the overall geometry helped me confirm my thoughts and calculations.

### 2. Modeling the Components

I modeled all the parts in AutoCAD (except the spring) and began assembling them virtually. During this step, I noticed small misalignments and imperfections that needed fixing. I worked through a few iterations to get everything to fit properly, making adjustments as I went. Once satisfied, I moved on to sourcing fasteners.

### 3. Finding Fasteners

I used McMaster-Carr to find the right fasteners for the assembly. The website was well-organized, making it easy to browse and select the parts I needed. However, my initial calculations didn't match up perfectly with what I had in mind, so I had to revisit some of my earlier work. After some adjustments, the assembly came together nicely.

### 4. Designing the Spring

Creating the spring was a unique challenge since I had no guidelines for size or dimensions. I started with a rough guess of about three inches in length and picked a thickness that seemed appropriate. While the spring itself came together fairly easily, attaching it to the assembly was another story. The design I had didn't work well with the spring, so I decided to start over from scratch. On the second attempt, everything fit as it should.

### 5. Adding Degrees of Freedom

The final step was figuring out the rotation range for the moving parts. Based on the reference video, I calculated that the rotating piece needed to move between 270 and 345 degrees. After making this adjustment, the assembly was complete and functional.

## Conclusion

This project was a great learning experience, blending creativity, problem-solving, and real-world tools like McMaster-Carr. While there were plenty of challenges—like recalculating fastener fits, redesigning the assembly to include the spring, and troubleshooting along the way—it was rewarding to see everything come together.

Overall, the project offered a deeper appreciation for how precise design work and real-world resources connect. Despite the setbacks, it was satisfying to build something functional from the ground up and figure out solutions to the unexpected hurdles along the way.