

2

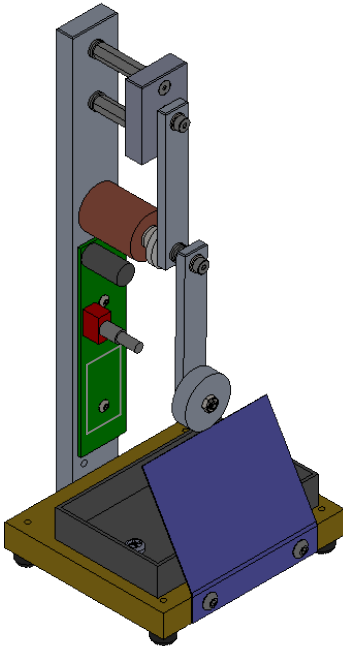
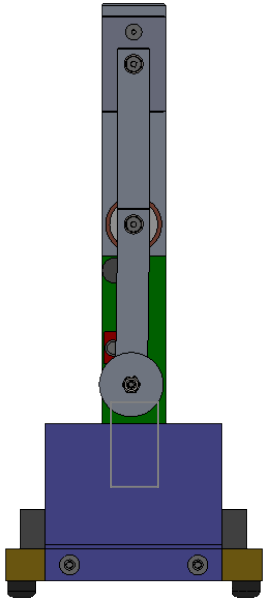
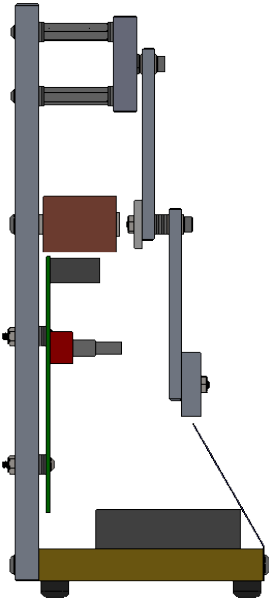
B

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Base		1
2	93135A353	8-32 x 1/2" Nylon bolt	2
3	Plate		1
4	9541K8	Rubber Foot	4
5	1155_battery_holder		1
6	Pillar		1
7	6433	Wire Coil	1
8	TATP-683-13	Coil Mount Pin	1
9	92949A197	8-32 x .75" Stainless BHCS	5
10	PCB_rev_a	Electronics	1
11	90633A005	4-40 Locknut	4
12	bearing_offset		1
13	92949A112	4-40 x 5/8 stainless BCHS	2
14	91780A167	4-40 1" Standoff	2
15	93286A005	4-40 Washer	20
16	92210A112	4-40 x 5/8" Stainless CSHS	3
17	92949A113	4-40 x .75" SCHS	2
18	top_link		1
19	FR144-ZZ	1/8" ID Bearing	4
20	Mass_blank		1
21	bottom_link		1
22	94035A138	4-40 x .75" Shoulder Bolt	1
23	RC22	Magnet	1
24	bearing_spacer_99040A316	Thin Spacer	4
25	94035A517	4-40 x 5/16" Shoulder Bolt	1

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2

1



TITLE:

Double - Pendulum

Designer: Douglas Hutchings

SIZE

DWG. NO.

REV

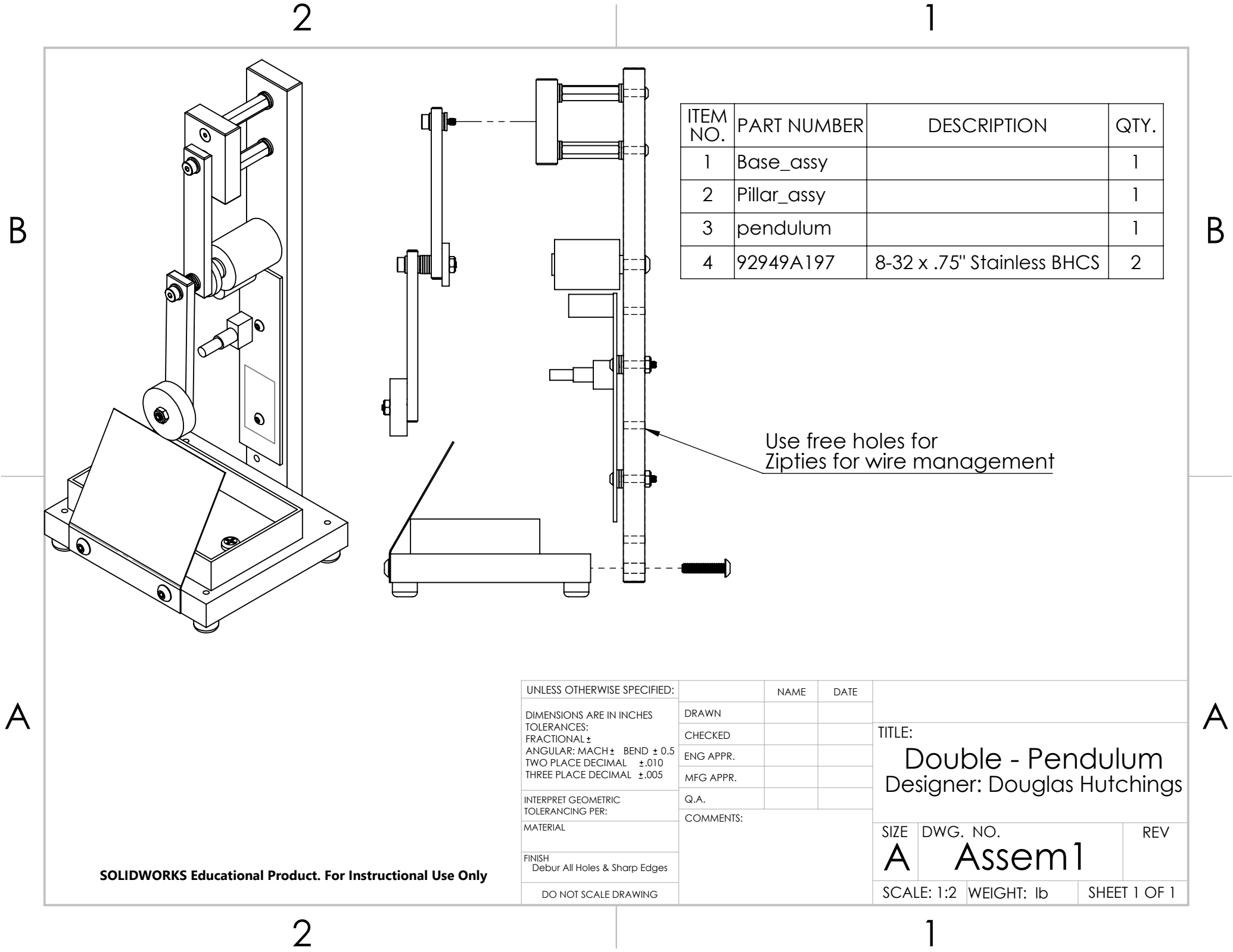
AAssem1-color

SCALE: 1:3

WEIGHT: lb

SHEET 1 OF 1

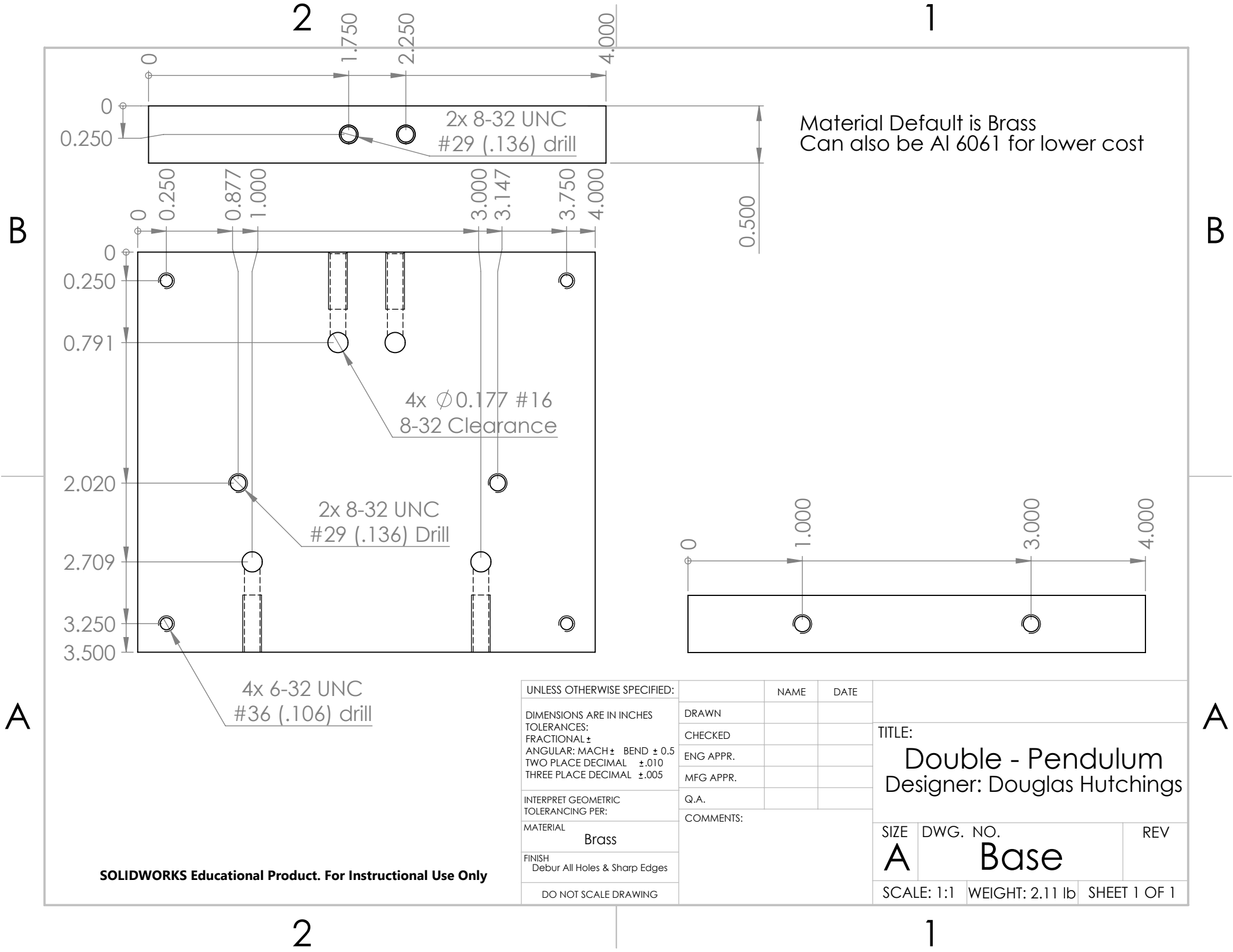
A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Base_assy		1
2	Pillar_assy		1
3	pendulum		1
4	92949A197	8-32 x .75" Stainless BHCS	2

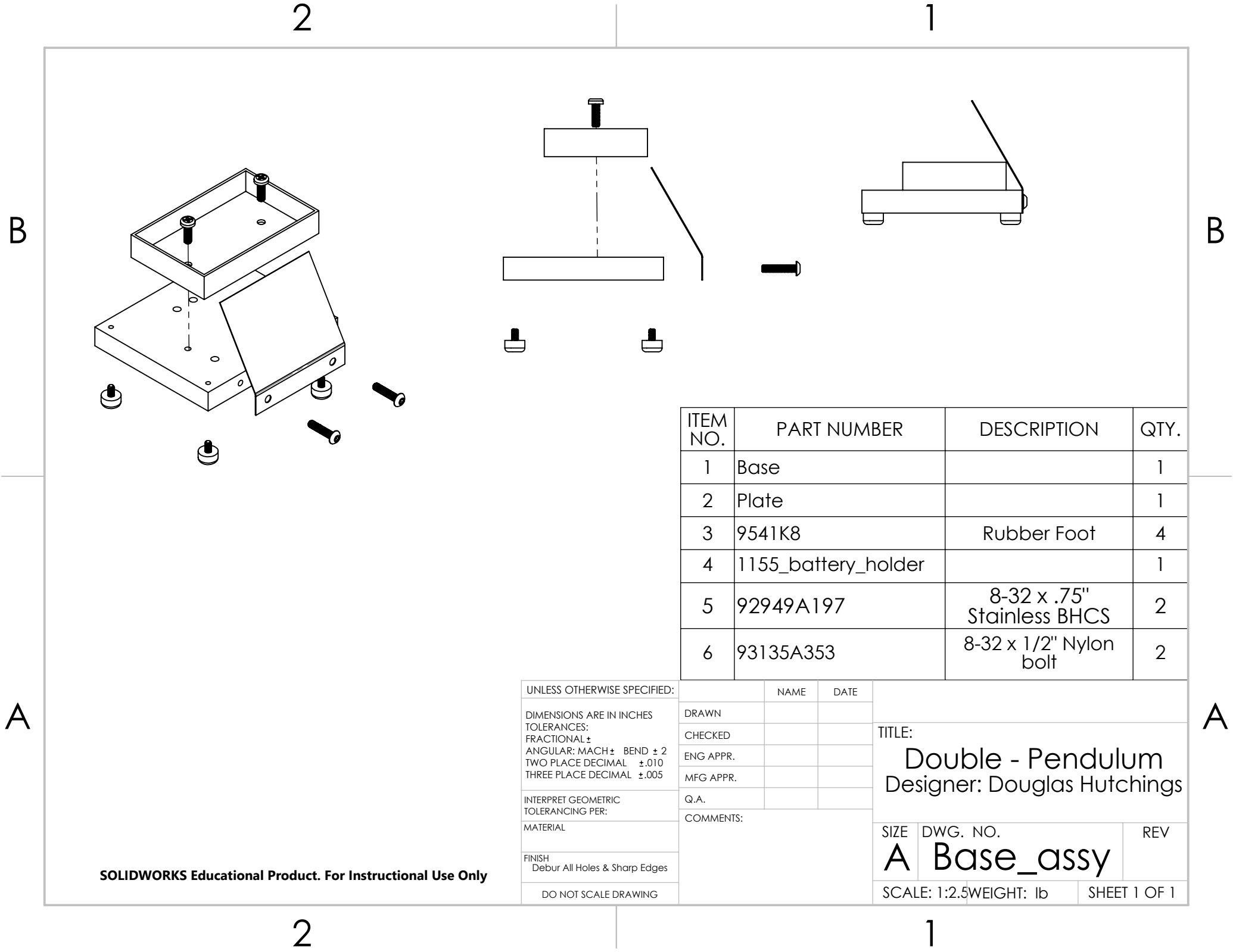
Use free holes for Zipties for wire management

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± 0.5 TWO PLACE DECIMAL ±.010 THREE PLACE DECIMAL ±.005 INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL FINISH Debur All Holes & Sharp Edges DO NOT SCALE DRAWING		NAME	DATE	TITLE: Double - Pendulum Designer: Douglas Hutchings SIZE DWG. NO. REV A Assem1
	DRAWN			
	CHECKED			
	ENG APPR.			
	MFG APPR.			
	Q.A.			
	COMMENTS:			
	SCALE: 1:2	WEIGHT: lb	SHEET 1 OF 1	



Material Default is Brass
Can also be Al 6061 for lower cost

UNLESS OTHERWISE SPECIFIED:			NAME	DATE	TITLE: Double - Pendulum Designer: Douglas Hutchings		
DIMENSIONS ARE IN INCHES		DRAWN					
TOLERANCES:		CHECKED					
FRACTIONAL ±		ENG APPR.					
ANGULAR: MACH ± BEND ± 0.5		MFG APPR.					
TWO PLACE DECIMAL ±.010		Q.A.			SIZE		
THREE PLACE DECIMAL ±.005		COMMENTS:			DWG. NO.		REV
INTERPRET GEOMETRIC TOLERANCING PER:					A		
MATERIAL					Base		
FINISH					SCALE: 1:1		
Deburr All Holes & Sharp Edges					WEIGHT: 2.11 lb		SHEET 1 OF 1
DO NOT SCALE DRAWING							

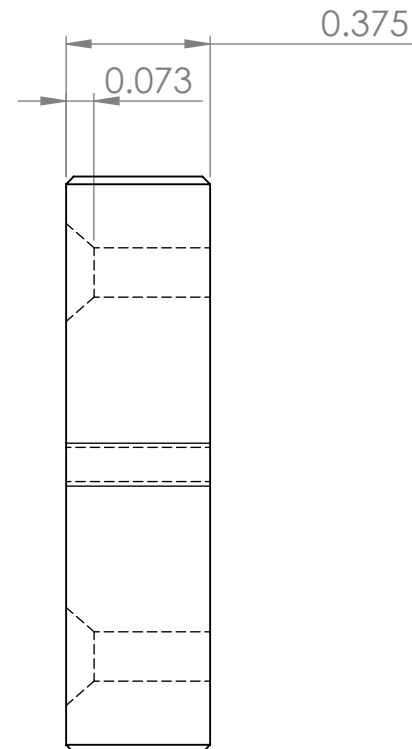
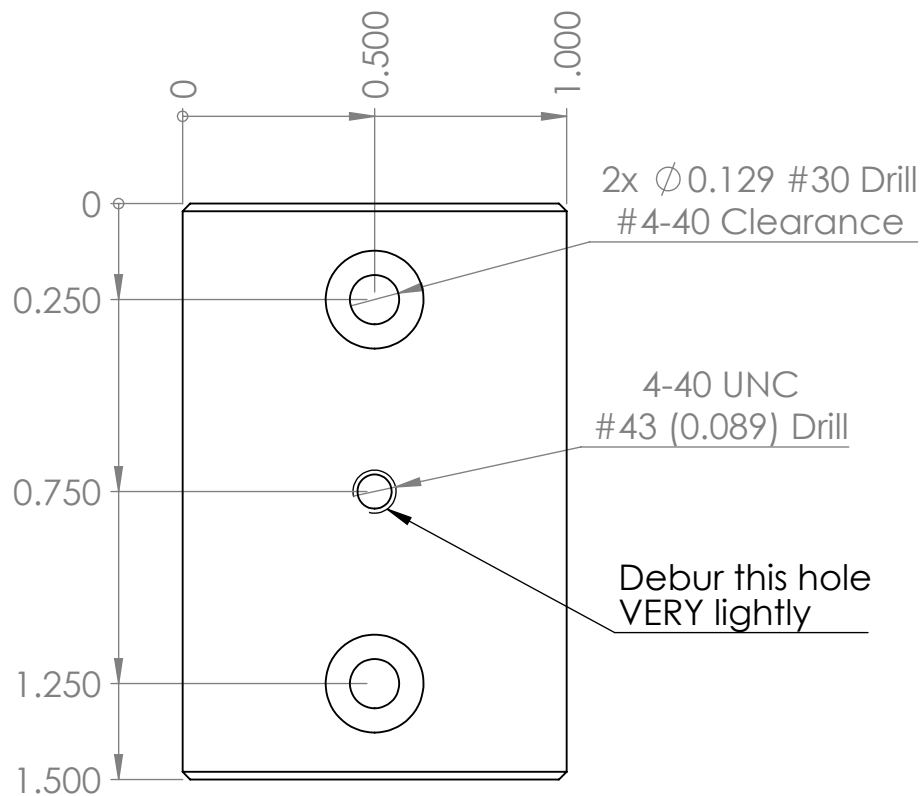


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Base		1
2	Plate		1
3	9541K8	Rubber Foot	4
4	1155_battery_holder		1
5	92949A197	8-32 x .75" Stainless BHCS	2
6	93135A353	8-32 x 1/2" Nylon bolt	2

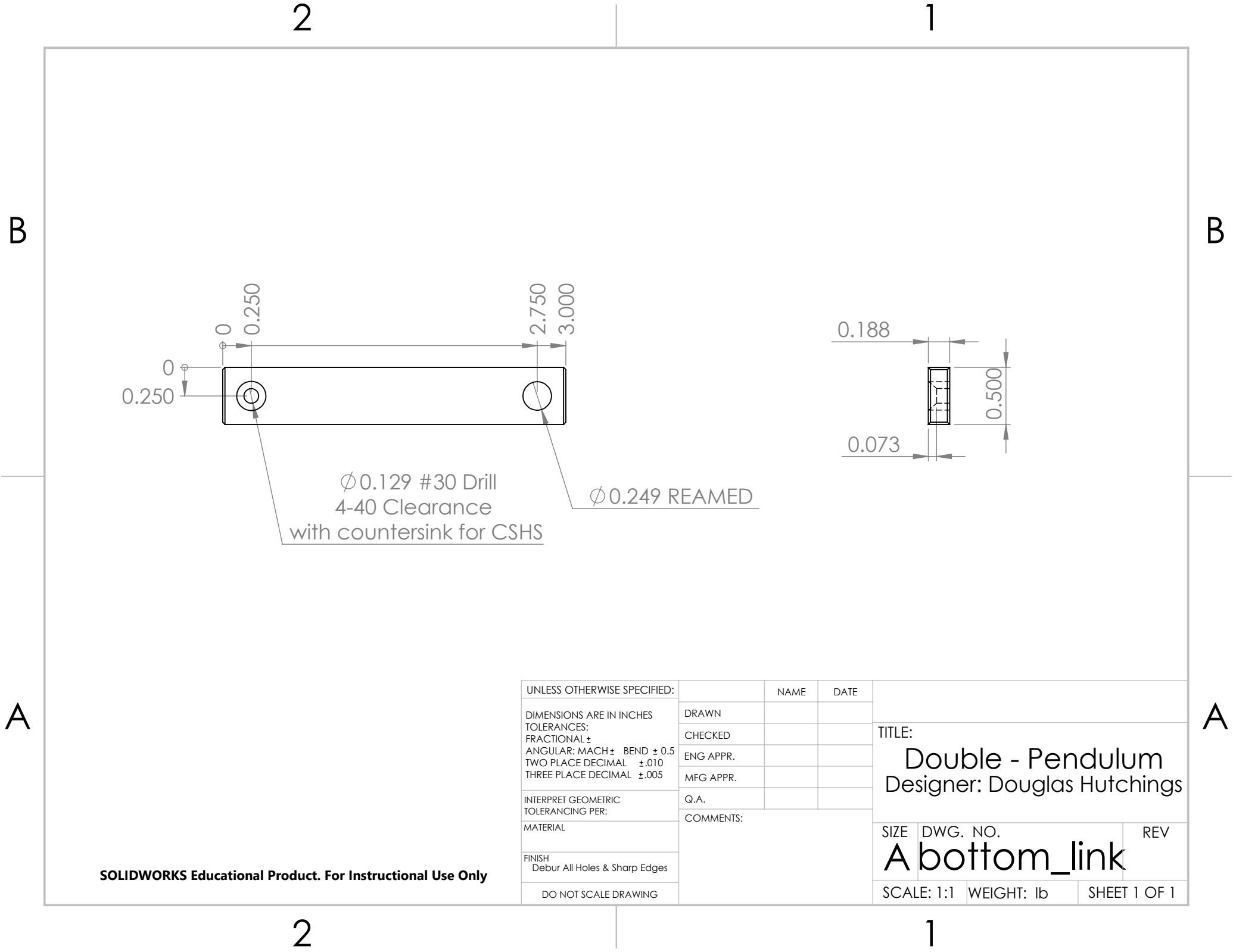
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DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ± 2
TWO PLACE DECIMAL ±.010
THREE PLACE DECIMAL ±.005
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL
FINISH
Debur All Holes & Sharp Edges
DO NOT SCALE DRAWING

	NAME	DATE
DRAWN		
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

TITLE:		
Double - Pendulum		
Designer: Douglas Hutchings		
SIZE	DWG. NO.	REV
A	Base_assy	
SCALE: 1:2.5		WEIGHT: lb
SHEET 1 OF 1		



UNLESS OTHERWISE SPECIFIED:			NAME	DATE	TITLE: Double - Pendulum Designer: Douglas Hutchings		
DIMENSIONS ARE IN INCHES		DRAWN					
TOLERANCES:		CHECKED					
FRACTIONAL ±		ENG APPR.					
ANGULAR: MACH ± BEND ± 0.5		MFG APPR.					
TWO PLACE DECIMAL ±.010					SIZE DWG. NO. REV A Bearing_offset		
THREE PLACE DECIMAL ±.005							
INTERPRET GEOMETRIC TOLERANCING PER:		Q.A.					
MATERIAL		COMMENTS:					
6061-T6 (SS)							
FINISH Debur All Holes & Sharp Edges							
DO NOT SCALE DRAWING					SCALE: 2:1 WEIGHT: 0.05 lb SHEET 1 OF 1		



0.250 0 0.250 2.750 3.000

$\varnothing 0.129$ #30 Drill
4-40 Clearance
with countersink for CSHS

$\varnothing 0.249$ REAMED

0.188 0.073 0.500

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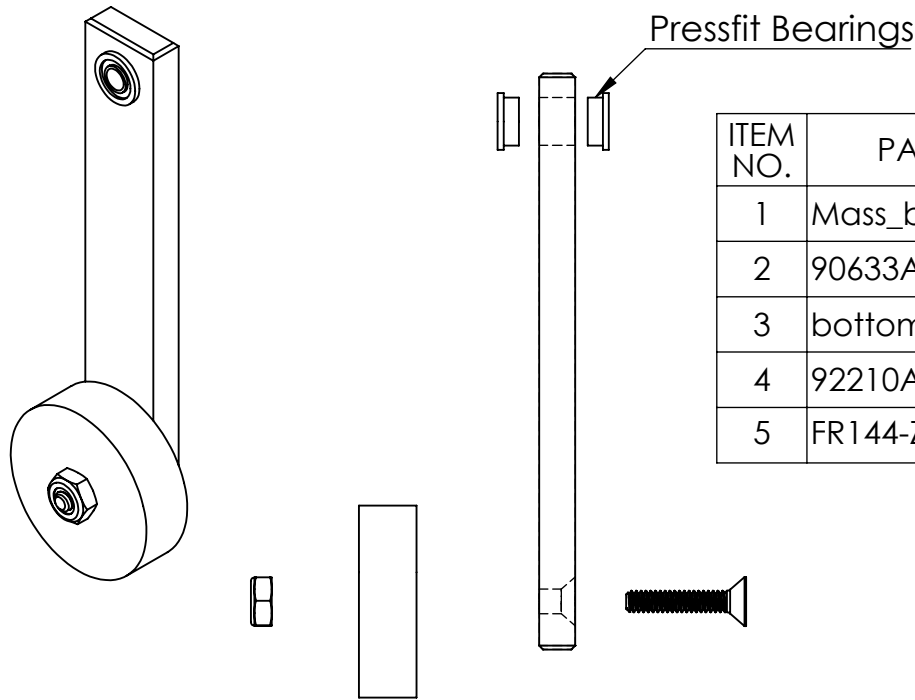
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DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± 0.5 TWO PLACE DECIMAL ±.010 THREE PLACE DECIMAL ±.005	DRAWN					
	CHECKED					
	ENG APPR.					
	MFG APPR.					
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV A bottom_link		
MATERIAL	COMMENTS:					
FINISH Debur All Holes & Sharp Edges						
DO NOT SCALE DRAWING						
				SCALE: 1:1	WEIGHT: lb	SHEET 1 OF 1

B

A

B

A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Mass_blank		1
2	90633A005	4-40 Locknut	1
3	bottom_link		1
4	92210A112	4-40 x 5/8" Stainless CSHS	1
5	FR144-ZZ	1/8" ID Bearing	2

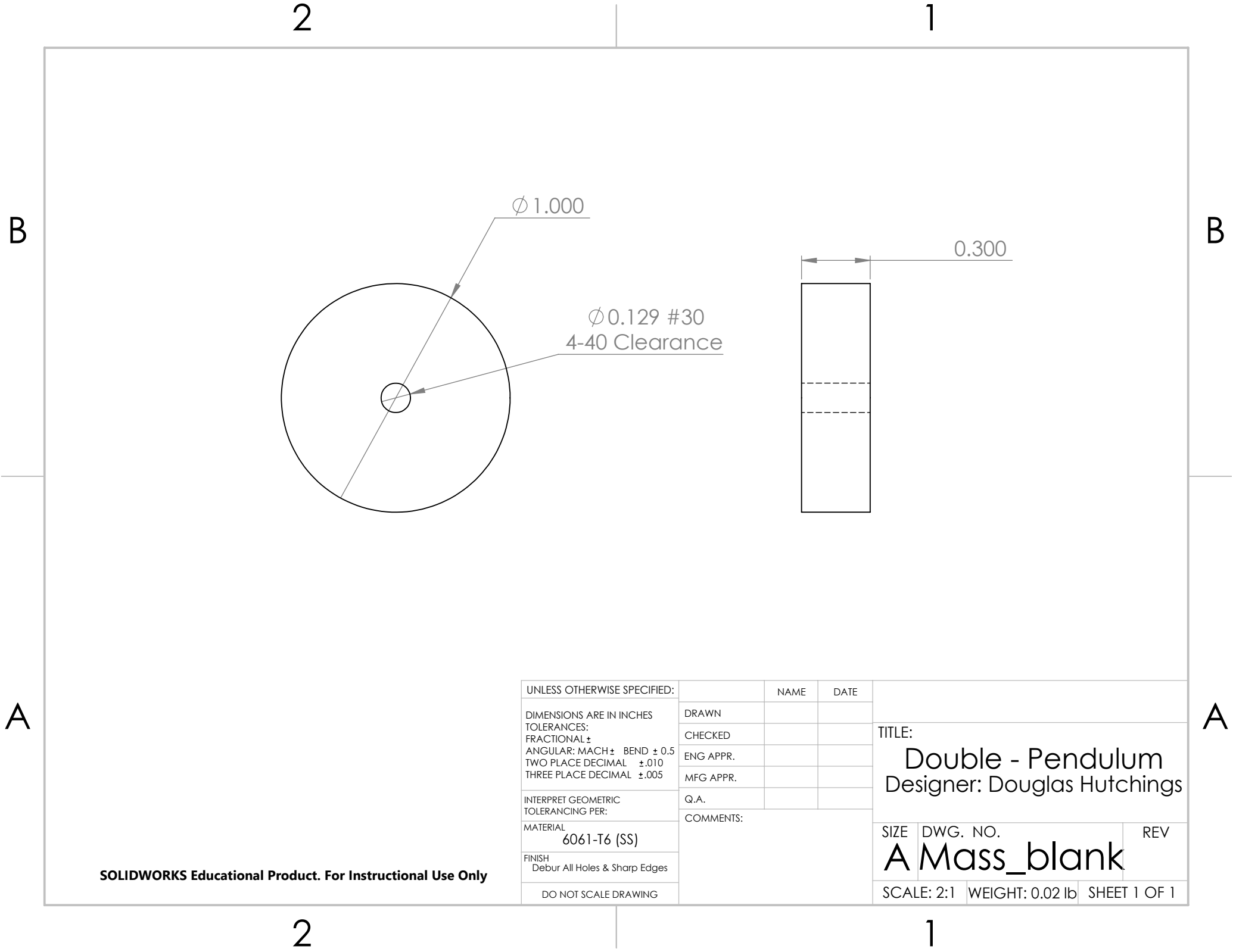
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS
DRAWING IS THE SOLE PROPERTY OF
<INSERT COMPANY NAME HERE>. ANY
REPRODUCTION IN PART OR AS A WHOLE
WITHOUT THE WRITTEN PERMISSION OF
<INSERT COMPANY NAME HERE> IS
PROHIBITED.

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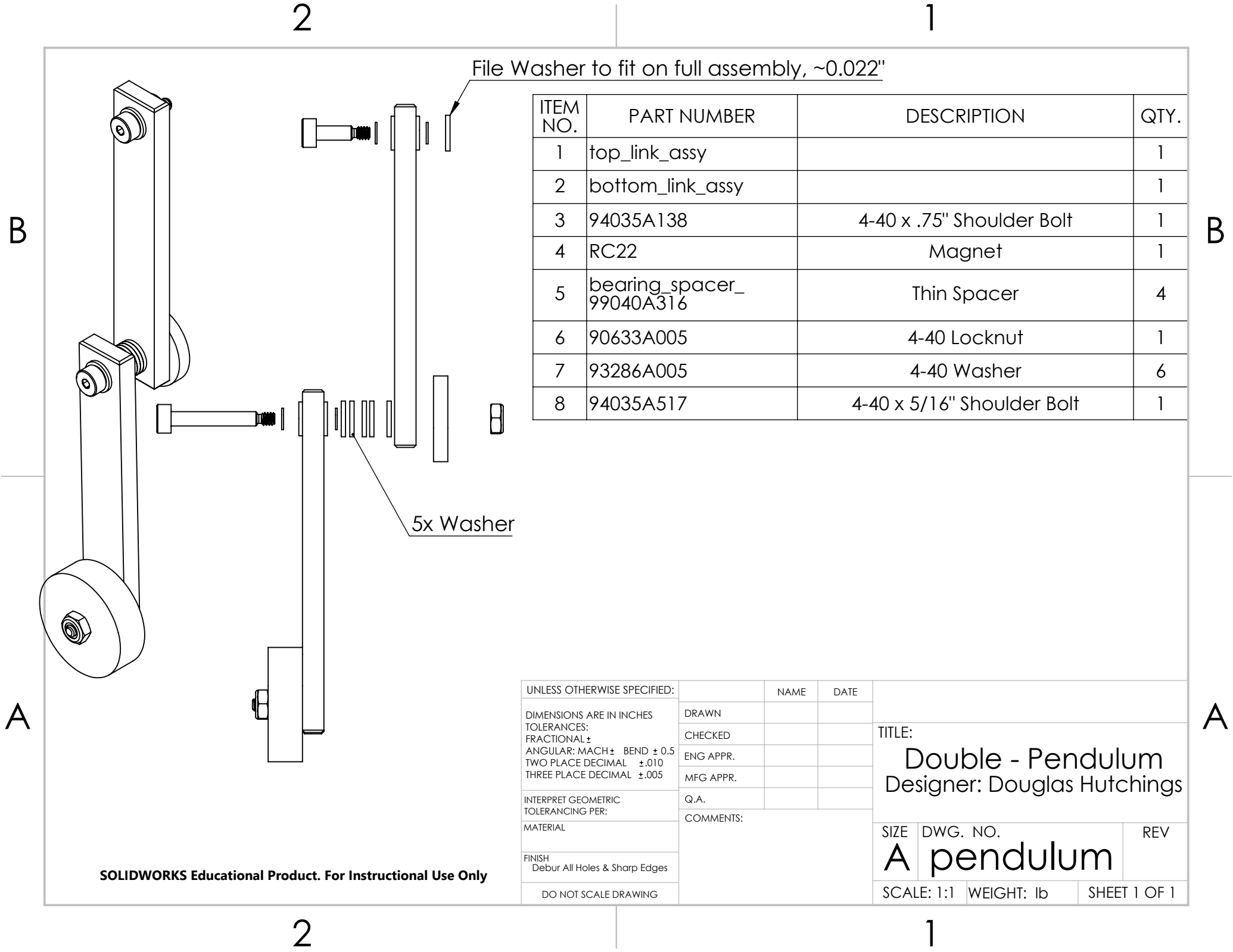
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE:		
		DIMENSIONS ARE IN INCHES		DRAWN				
		TOLERANCES:		CHECKED				
		FRACTIONAL ±		ENG APPR.				
		ANGULAR: MACH ± BEND ±		MFG APPR.				
		TWO PLACE DECIMAL ±		Q.A.		bottom_link_assy		
		THREE PLACE DECIMAL ±		COMMENTS:				
		INTERPRET GEOMETRIC TOLERANCING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

2

1

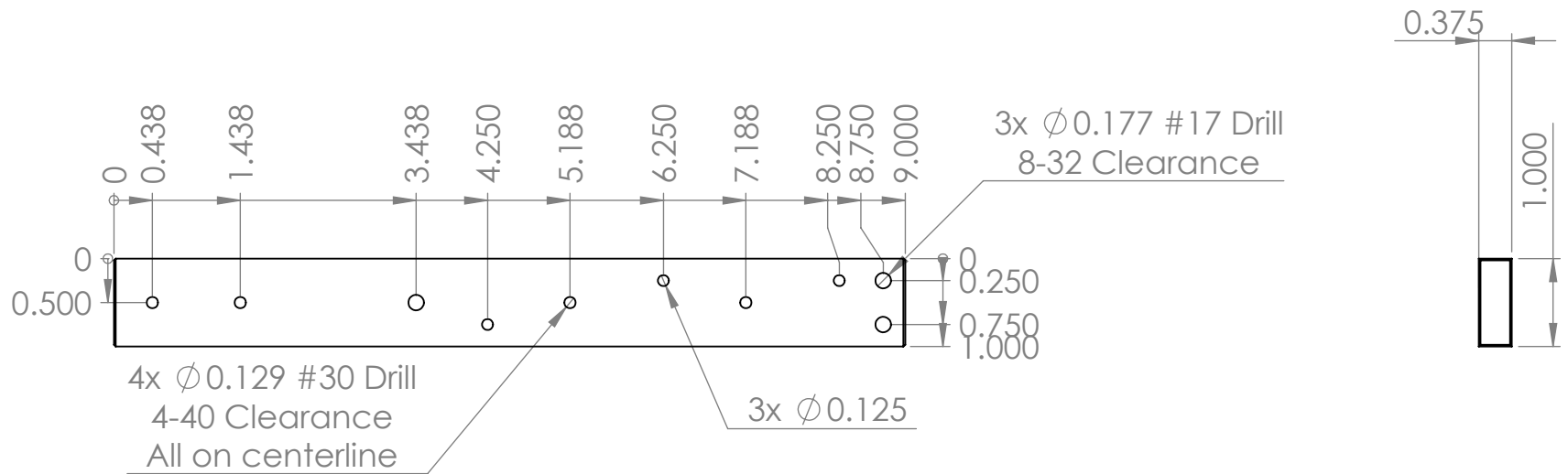


UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Double - Pendulum Designer: Douglas Hutchings		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± 0.5 TWO PLACE DECIMAL ±.010 THREE PLACE DECIMAL ±.005	DRAWN					
	CHECKED					
	ENG APPR.					
	MFG APPR.					
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV A Mass_blank		
MATERIAL 6061-T6 (SS)	COMMENTS:					
FINISH Debur All Holes & Sharp Edges						
DO NOT SCALE DRAWING						
				SCALE: 2:1	WEIGHT: 0.02 lb	SHEET 1 OF 1

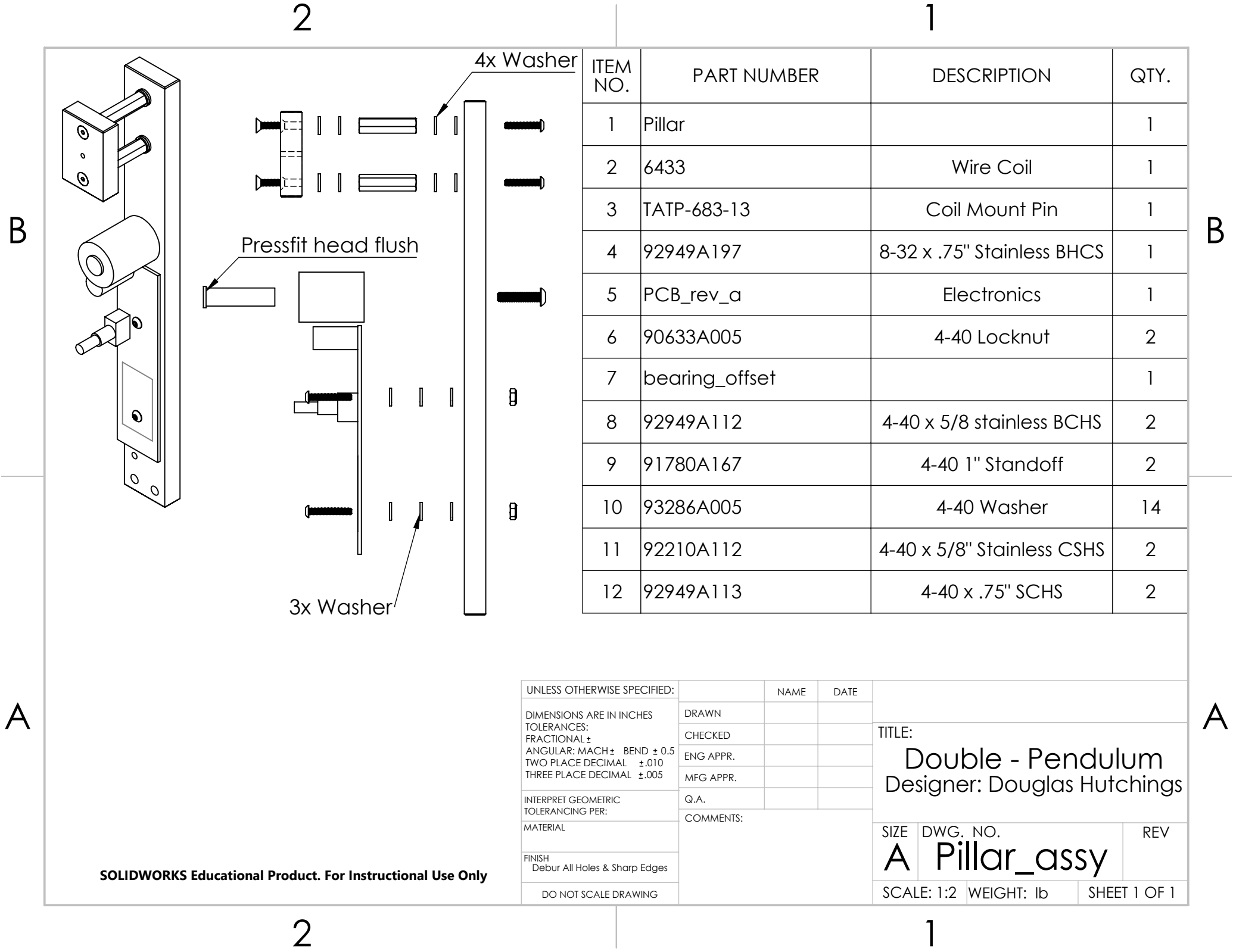


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	top_link_assy		1
2	bottom_link_assy		1
3	94035A138	4-40 x .75" Shoulder Bolt	1
4	RC22	Magnet	1
5	bearing_spacer_99040A316	Thin Spacer	4
6	90633A005	4-40 Locknut	1
7	93286A005	4-40 Washer	6
8	94035A517	4-40 x 5/16" Shoulder Bolt	1

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Double - Pendulum Designer: Douglas Hutchings		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± 0.5 TWO PLACE DECIMAL ±.010 THREE PLACE DECIMAL ±.005	DRAWN					
	CHECKED					
	ENG APPR.					
	MFG APPR.					
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV A pendulum		
MATERIAL	COMMENTS:					
FINISH Debur All Holes & Sharp Edges						
DO NOT SCALE DRAWING						
				SCALE: 1:1	WEIGHT: lb	SHEET 1 OF 1

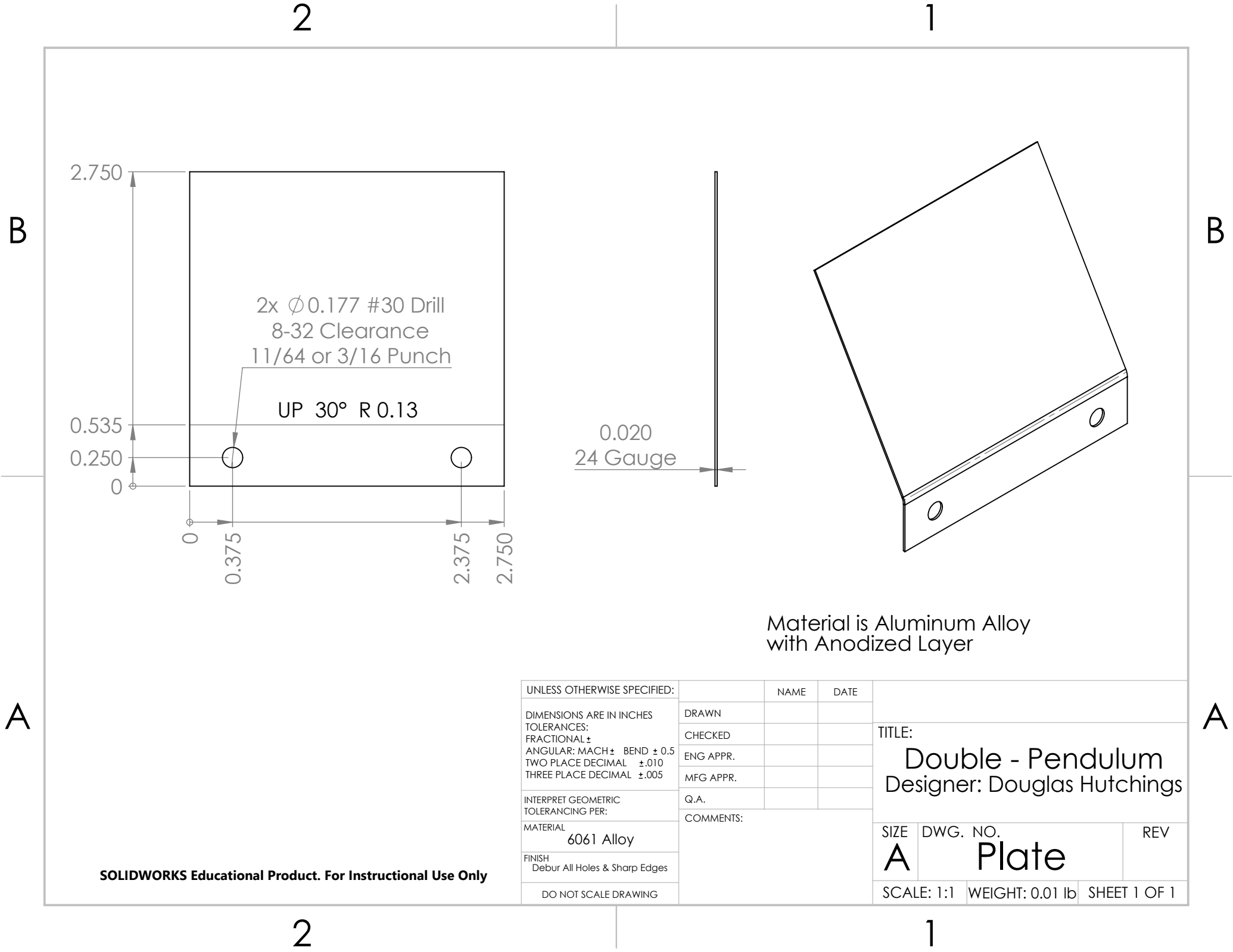


UNLESS OTHERWISE SPECIFIED:			NAME	DATE	TITLE: Double - Pendulum Designer: Douglas Hutchings		
DIMENSIONS ARE IN INCHES		DRAWN					
TOLERANCES:		CHECKED					
FRACTIONAL ±		ENG APPR.					
ANGULAR: MACH ± BEND ± 0.5		MFG APPR.			SIZE DWG. NO. REV A Pillar		
TWO PLACE DECIMAL ±.010		Q.A.					
THREE PLACE DECIMAL ±.005		COMMENTS:			SCALE: 1:2 WEIGHT: 0.32 lb SHEET 1 OF 1		
INTERPRET GEOMETRIC TOLERANCING PER:							
MATERIAL							
6061-T6 (SS)							
FINISH Debur All Holes & Sharp Edges							
DO NOT SCALE DRAWING							



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Pillar		1
2	6433	Wire Coil	1
3	TATP-683-13	Coil Mount Pin	1
4	92949A197	8-32 x .75" Stainless BHCS	1
5	PCB_rev_a	Electronics	1
6	90633A005	4-40 Locknut	2
7	bearing_offset		1
8	92949A112	4-40 x 5/8 stainless BCBS	2
9	91780A167	4-40 1" Standoff	2
10	93286A005	4-40 Washer	14
11	92210A112	4-40 x 5/8" Stainless CSHS	2
12	92949A113	4-40 x .75" SCHS	2

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Double - Pendulum Designer: Douglas Hutchings	
DIMENSIONS ARE IN INCHES		DRAWN			
TOLERANCES:		CHECKED			
FRACTIONAL ±		ENG APPR.			
ANGULAR: MACH ± BEND ± 0.5		MFG APPR.			
TWO PLACE DECIMAL ±.010		Q.A.		SIZE DWG. NO. REV	
THREE PLACE DECIMAL ±.005		COMMENTS:		A Pillar_assy	
INTERPRET GEOMETRIC TOLERANCING PER:				SCALE: 1:2 WEIGHT: 1b SHEET 1 OF 1	
MATERIAL					
FINISH Debur All Holes & Sharp Edges					
DO NOT SCALE DRAWING					



2x $\phi 0.177$ #30 Drill
8-32 Clearance
11/64 or 3/16 Punch

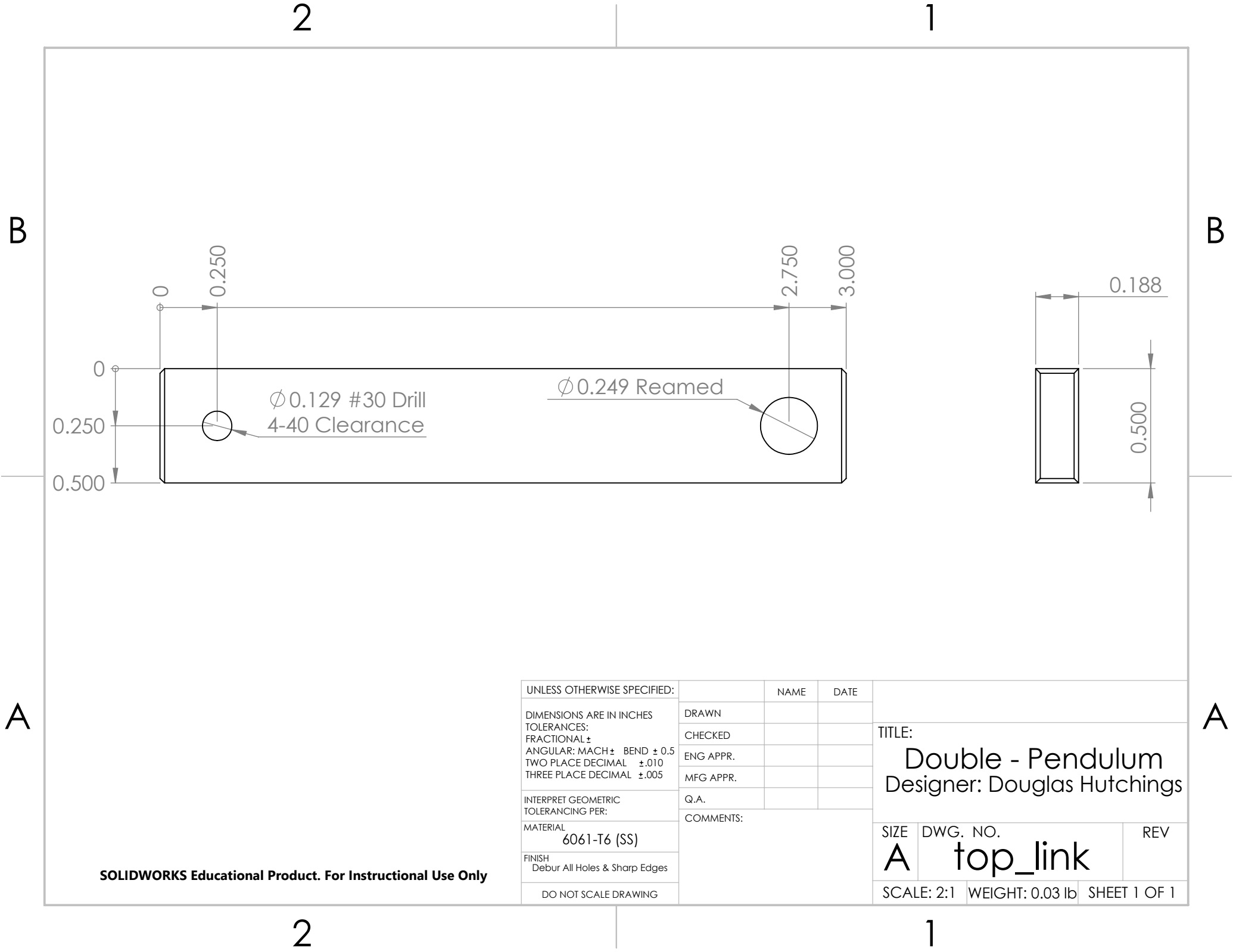
UP 30° R 0.13

0.020
24 Gauge

Material is Aluminum Alloy
with Anodized Layer

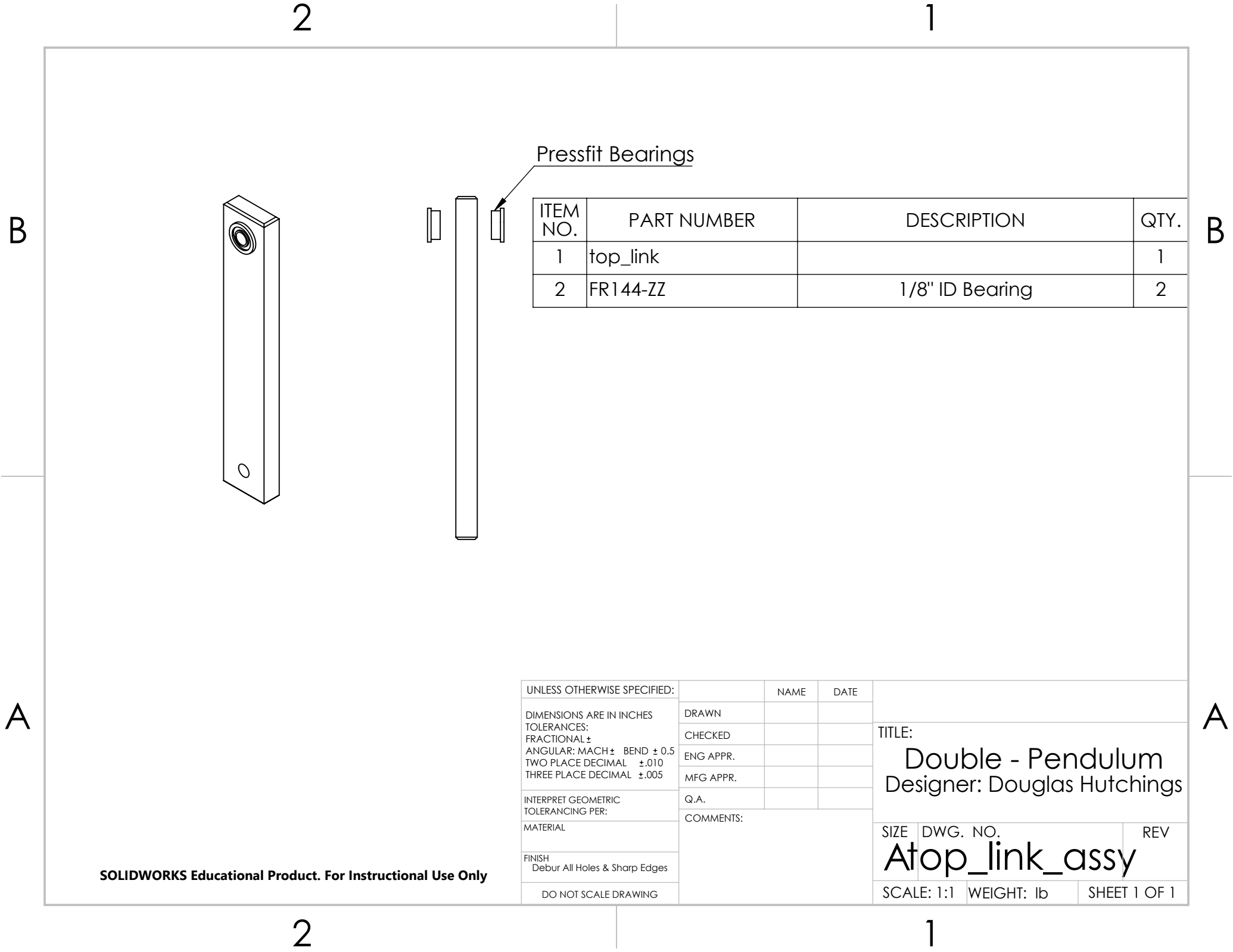
UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Double - Pendulum Designer: Douglas Hutchings		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± 0.5 TWO PLACE DECIMAL ±.010 THREE PLACE DECIMAL ±.005		DRAWN				
		CHECKED				
		ENG APPR.				
		MFG APPR.				
INTERPRET GEOMETRIC TOLERANCING PER:		Q.A.		SIZE DWG. NO. REV A Plate		
MATERIAL		COMMENTS:				
6061 Alloy				SCALE: 1:1 WEIGHT: 0.01 lb SHEET 1 OF 1		
FINISH Debur All Holes & Sharp Edges						
DO NOT SCALE DRAWING						

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UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Double - Pendulum Designer: Douglas Hutchings			
DIMENSIONS ARE IN INCHES		DRAWN					
TOLERANCES:		CHECKED					
FRACTIONAL ±		ENG APPR.					
ANGULAR: MACH ± BEND ± 0.5		MFG APPR.		SIZE DWG. NO. REV A top_link			
TWO PLACE DECIMAL ±.010		Q.A.					
THREE PLACE DECIMAL ±.005		COMMENTS:					
INTERPRET GEOMETRIC TOLERANCING PER:					SCALE: 2:1 WEIGHT: 0.03 lb SHEET 1 OF 1		
MATERIAL							
6061-T6 (SS)							
FINISH Debur All Holes & Sharp Edges							
DO NOT SCALE DRAWING							

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Pressfit Bearings

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	top_link		1
2	FR144-ZZ	1/8" ID Bearing	2

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Double - Pendulum Designer: Douglas Hutchings		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± 0.5 TWO PLACE DECIMAL ±.010 THREE PLACE DECIMAL ±.005		DRAWN				
		CHECKED				
		ENG APPR.				
		MFG APPR.				
INTERPRET GEOMETRIC TOLERANCING PER:		Q.A.		SIZE DWG. NO. REV Atop_link_assy		
MATERIAL		COMMENTS:				
FINISH Debur All Holes & Sharp Edges						
DO NOT SCALE DRAWING						
		SCALE: 1:1		WEIGHT: lb		SHEET 1 OF 1

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