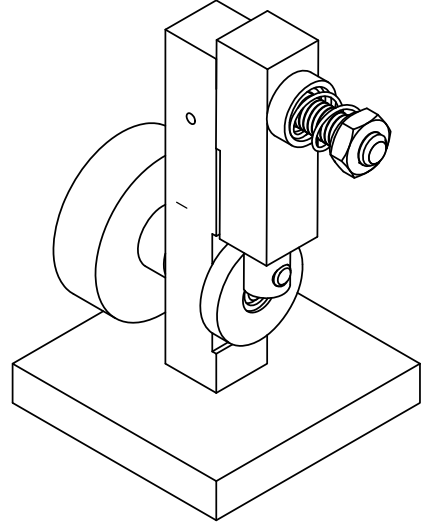



ITEM	DESCRIPTION	QTY
1	BODY	1
2	CYLINDER	1
3	SPRING CUP	1
4**	NUT (10-32)	1
5	STUD	1
6	PISTON	1
7**	PIN (.1250" x 3/8")	1
8	CRANK	1
9	BASE	1
10	FLYWHEEL	1
11	SHAFT	1
12**	SPRING(CUT TO SUIT)	1
13**	SCREW (10-32 FHS)	1
14**	SET SCREW (6-32 x 1/8")	1

**SUPPLIED HARDWARE - DO NOT MANUFACTURE



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: ±1/64 ANGULAR: MACH ± 1/2° ONE PLACE DECIMAL ±0.02 TWO PLACE DECIMAL ±0.01 THREE PLACE DECIMAL ±0.005		NAME	DATE
	DRAWN	GWH	2019
	MFG APPR.	BSD	2019
THIRD ANGLE PROJECTION	INTERPRET GEOMETRIC TOLERANCING PER:	Original Design by Roland Hege	
	MATERIAL		
	FINISH		
	DO NOT SCALE DRAWING		


UNC CHARLOTTE
 The WILLIAM STATES LEE COLLEGE of ENGINEERING

3/8" SQUARE STEAM ENGINE

SIZE	DWG. NO.	REV
A	ASSEMBLY	A

SCALE: 1:1 SHEET 1 OF 11

2

1


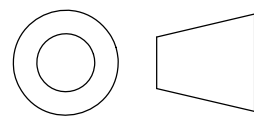
B

B

ITEM	DESCRIPTION	QTY	MATERIAL	ROUGH CUT LENGTH
1	BODY	1	CRS	3/8 X 3/8 X 2 1/4
2	CYLINDER	1	CRS	3/8 X 3/8 X 1 3/8
3	SPRING CUP	1	CRS	N/A - LATHE
4	NUT	1	XXXXX	N/A - STOCK
5	STUD	1	DRILL ROD	∅3/16 X 1 3/8
6	PISTON	1	DRILL ROD	∅1/4 X 1 1/16
7	PIN	1	XXXXX	N/A - STOCK
8	CRANK	1	CRS	N/A - LATHE
9	BASE	1	ALUMINUM	1/4 X 1 5/8 X 1 5/8
10	FLYWHEEL	1	CRS	∅1 X 5/8
11	SHAFT	1	DRILL ROD	∅3/16 X 1 1/8
12	SPRING	1	XXXXX	N/A - STOCK
13	SCREW	1	XXXXX	N/A - STOCK
14	SET SCREW	1	XXXXX	N/A - STOCK

A

A

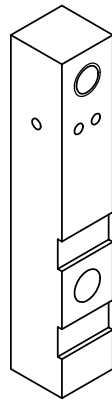
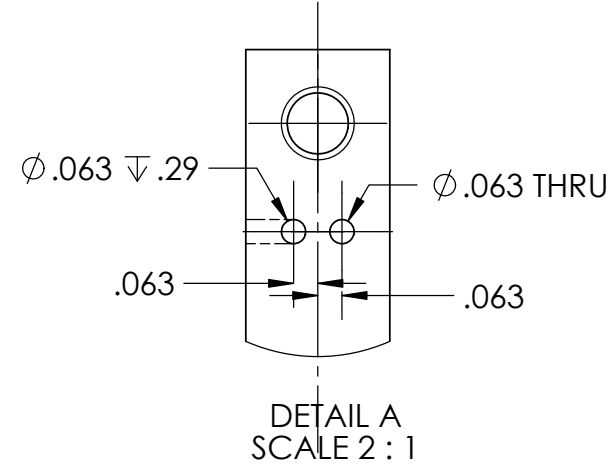
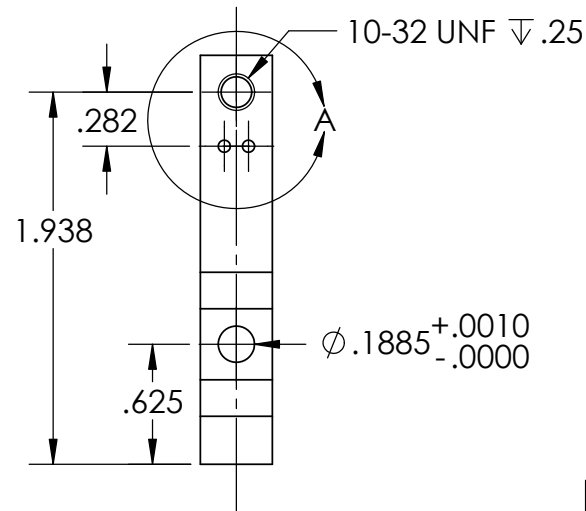
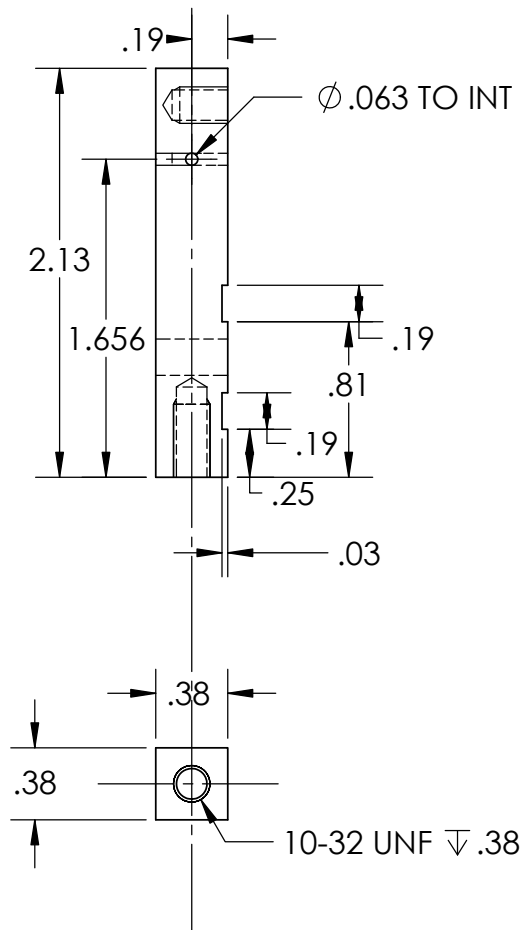
<p>UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/64 ANGULAR: MACH ± 1/2° ONE PLACE DECIMAL ±0.02 TWO PLACE DECIMAL ±0.01 THREE PLACE DECIMAL ±0.005</p>	DRAWN	GWH	2019	 UNC CHARLOTTE <i>The WILLIAM STATES LEE COLLEGE of ENGINEERING</i>		
	MFG APPR.	BSD	2019			
<p>THIRD ANGLE PROJECTION</p> 	<p>INTERPRET GEOMETRIC TOLERANCING PER:</p>		<p>Original Design by Roland Hege</p>	<p>SIZE A</p>	<p>DWG. NO. CUT LIST</p>	<p>REV A</p>
<p>MATERIAL</p>				<p>SCALE: 1:1</p>	<p>SHEET 2 OF 11</p>	
<p>FINISH</p>						
<p>DO NOT SCALE DRAWING</p>						

2

1

B

A



B

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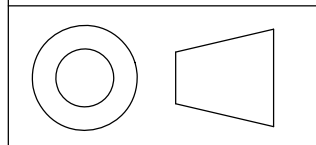
UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL $\pm 1/64$
 ANGULAR: MACH $\pm 1/2^\circ$
 ONE PLACE DECIMAL ± 0.02
 TWO PLACE DECIMAL ± 0.01
 THREE PLACE DECIMAL ± 0.005

	NAME	DATE
DRAWN	GWH	2019
MFG APPR.	BSD	2019


UNC CHARLOTTE
The WILLIAM STATES LEE COLLEGE of ENGINEERING
**3/8" SQUARE
 STEAM ENGINE**

THIRD ANGLE PROJECTION

INTERPRET GEOMETRIC TOLERANCING PER:



MATERIAL	CRS
FINISH	MILL
DO NOT SCALE DRAWING	

Original Design
 by
 Roland Hege

SIZE	DWG. NO.	REV
A	BODY	A
SCALE: 1:1		SHEET 3 OF 11

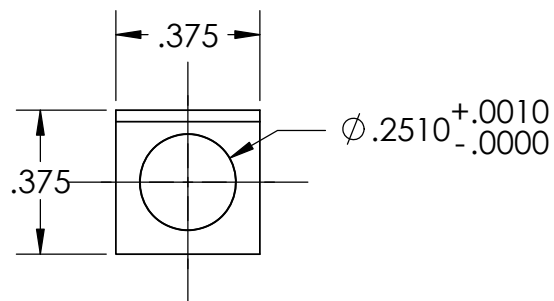
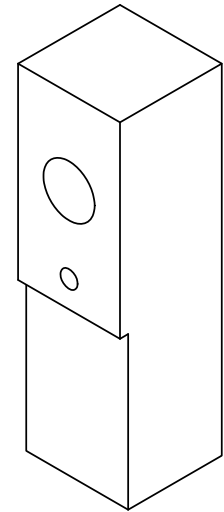
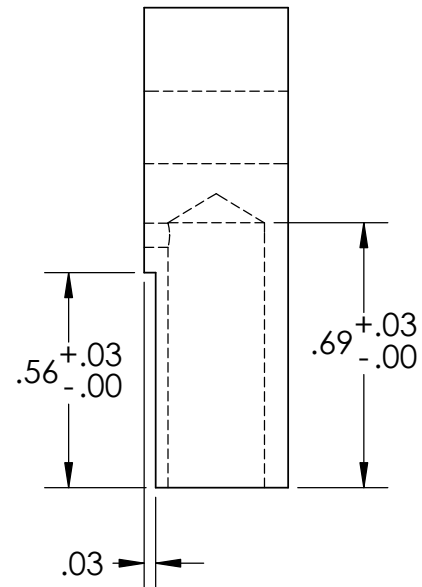
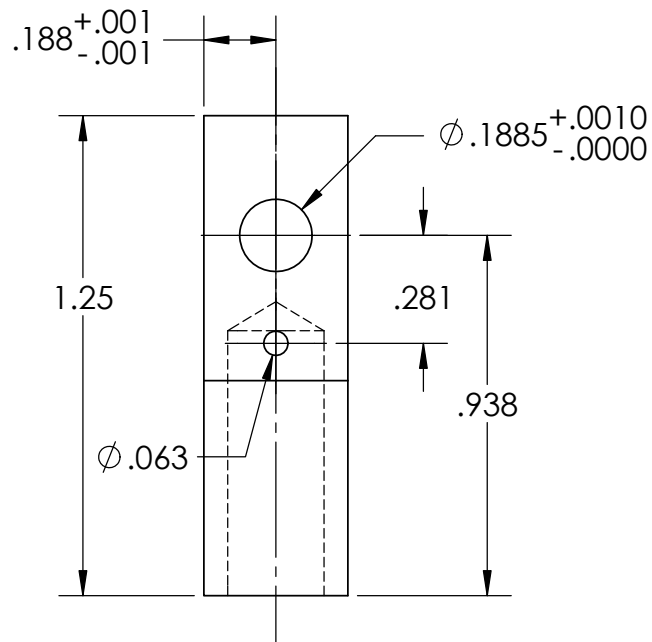
ITEM 1

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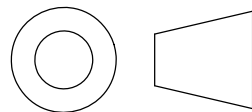


A

A

ITEM 2

THIRD ANGLE PROJECTION



UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL $\pm 1/64$
 ANGULAR: MACH $\pm 1/2^\circ$
 ONE PLACE DECIMAL ± 0.02
 TWO PLACE DECIMAL ± 0.01
 THREE PLACE DECIMAL ± 0.005

INTERPRET GEOMETRIC
TOLERANCING PER:

MATERIAL CRS

FINISH MILL

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	GWH	2019
MFG APPR.	BSD	2019

Original Design
by
Roland Hege



UNC CHARLOTTE

The WILLIAM STATES LEE COLLEGE of ENGINEERING

3/8" SQUARE
STEAM ENGINE

SIZE	DWG. NO.	REV
A	CYLINDER	A
SCALE: 2:1		SHEET 4 OF 11

2

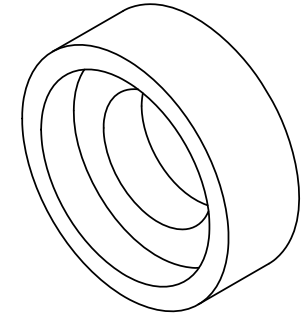
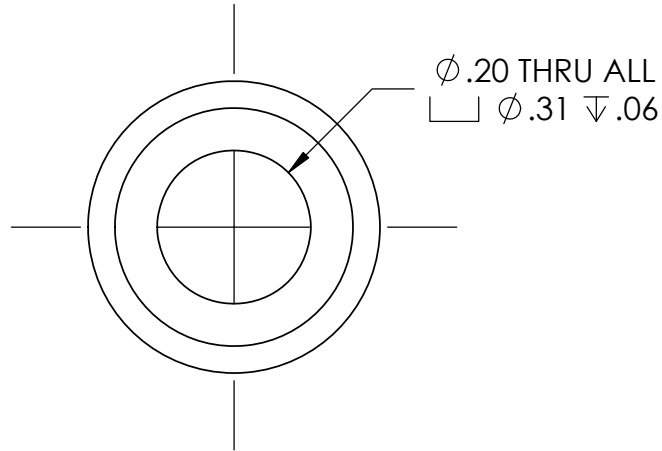
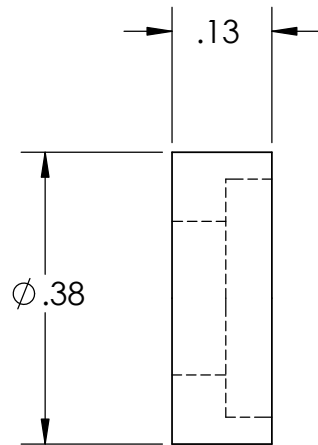
1

B

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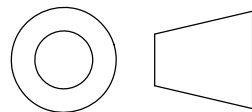
B

A



ITEM 3

THIRD ANGLE PROJECTION



UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL $\pm 1/64$
 ANGULAR: MACH $\pm 1/2^\circ$
 ONE PLACE DECIMAL ± 0.02
 TWO PLACE DECIMAL ± 0.01
 THREE PLACE DECIMAL ± 0.005

INTERPRET GEOMETRIC TOLERANCING PER:

MATERIAL CRS

FINISH MILL

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	GWH	2019
MFG APPR.	BSD	2019

Original Design by Roland Hege


UNC CHARLOTTE
The WILLIAM STATES LEE COLLEGE of ENGINEERING

3/8" SQUARE STEAM ENGINE

SIZE	DWG. NO.	REV
A	SPRING CUP	A

SCALE: 4:1

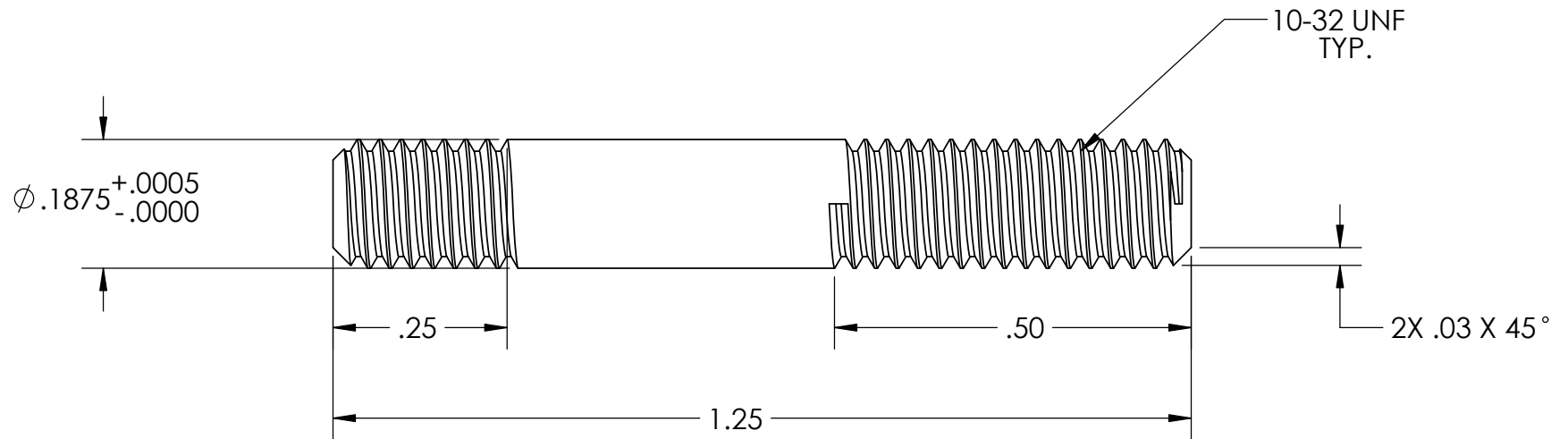
SHEET 5 OF 11

2

1

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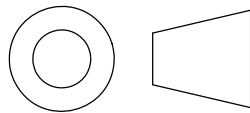


A

A

ITEM 5

THIRD ANGLE PROJECTION




UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL $\pm 1/64$
 ANGULAR: MACH $\pm 1/2^\circ$
 ONE PLACE DECIMAL ± 0.02
 TWO PLACE DECIMAL ± 0.01
 THREE PLACE DECIMAL ± 0.005

INTERPRET GEOMETRIC
TOLERANCING PER:MATERIAL
 $\phi .1875$ DRILL RODFINISH
MILL

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	GWH	2019
MFG APPR.	BSD	2019

Original Design
by
Roland Hege

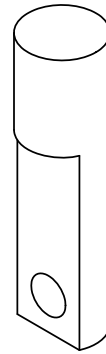
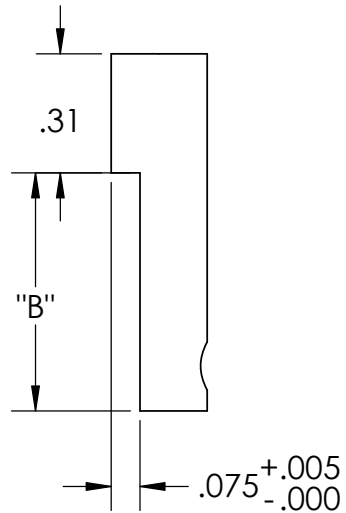
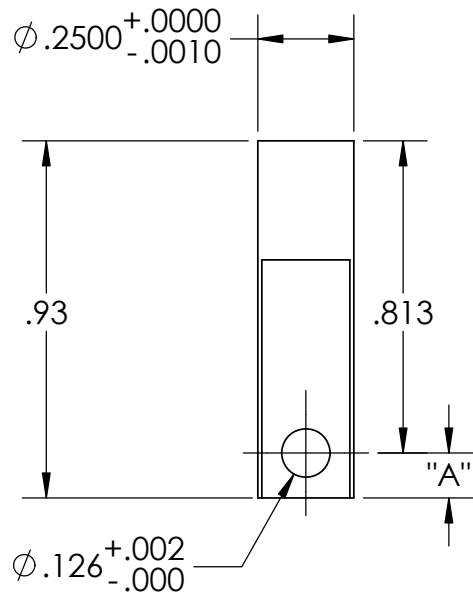
 UNC CHARLOTTE <i>The WILLIAM STATES LEE COLLEGE of ENGINEERING</i>		
3/8" SQUARE STEAM ENGINE		
SIZE A	DWG. NO. STUD	REV A
SCALE: 4:1		SHEET 6 OF 11

2

1

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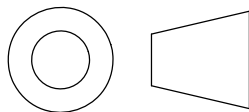


B

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ITEM 6

THIRD ANGLE PROJECTION



UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL $\pm 1/64$
 ANGULAR: MACH $\pm 1/2^\circ$
 ONE PLACE DECIMAL ± 0.02
 TWO PLACE DECIMAL ± 0.01
 THREE PLACE DECIMAL ± 0.005

INTERPRET GEOMETRIC
TOLERANCING PER:MATERIAL
 \varnothing .250 DRILL RODFINISH
MILL

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	GWH	2019
MFG APPR.	BSD	2019

Original Design
by
Roland Hege


UNC CHARLOTTE
The WILLIAM STATES LEE COLLEGE of ENGINEERING

**3/8" SQUARE
STEAM ENGINE**

SIZE	DWG. NO.	REV
A	PISTON	A

SCALE: 2:1

SHEET 7 OF 11

2

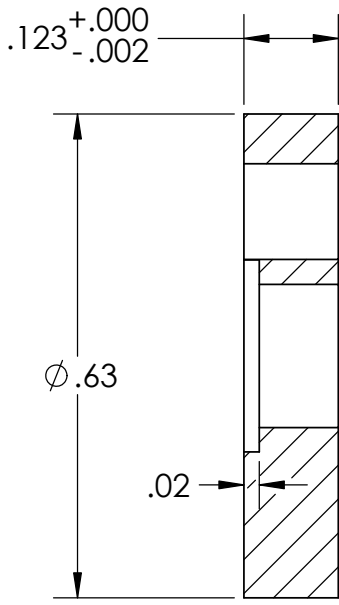
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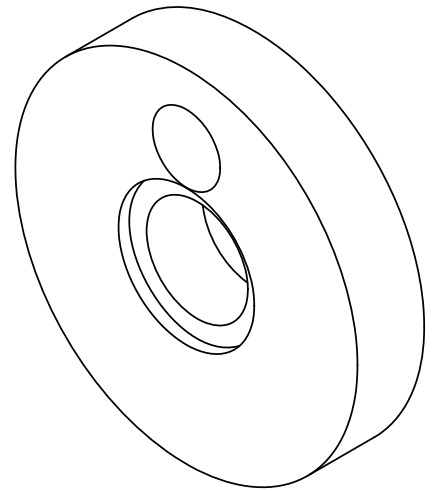
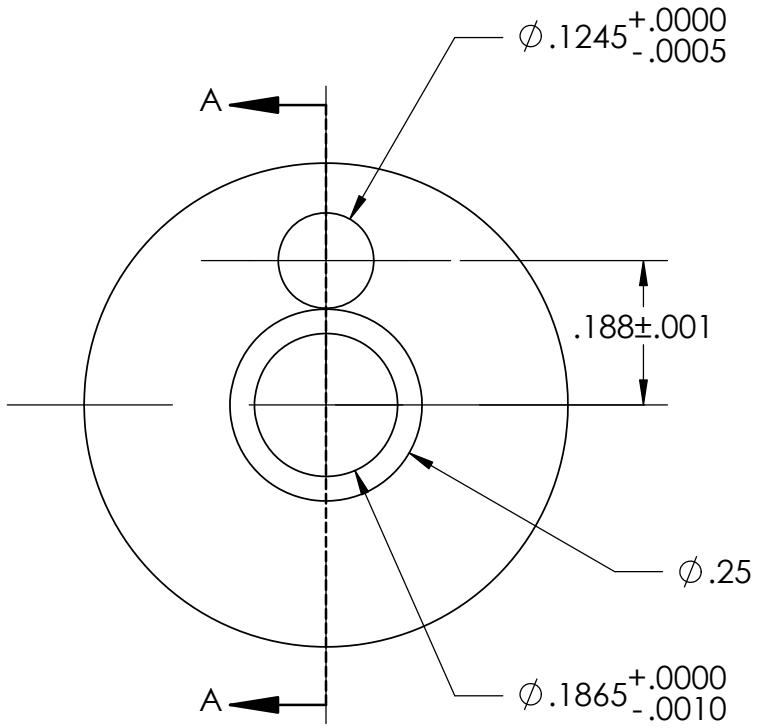
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B

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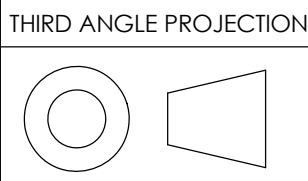
SECTION A-A



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ITEM 8



UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 FRACTIONAL $\pm 1/64$
 ANGULAR: MACH $\pm 1/2^\circ$
 ONE PLACE DECIMAL ± 0.02
 TWO PLACE DECIMAL ± 0.01
 THREE PLACE DECIMAL ± 0.005

	NAME	DATE
DRAWN	GWH	2019
MFG APPR.	BSD	2019


UNC CHARLOTTE
The WILLIAM STATES LEE COLLEGE of ENGINEERING

**3/8" SQUARE
STEAM ENGINE**

INTERPRET GEOMETRIC TOLERANCING PER:
 MATERIAL CRS
 FINISH MILL
 DO NOT SCALE DRAWING

Original Design
by
Roland Hege

SIZE	DWG. NO.	REV
A	CRANK	A

SCALE: 4:1 SHEET 8 OF 11

2

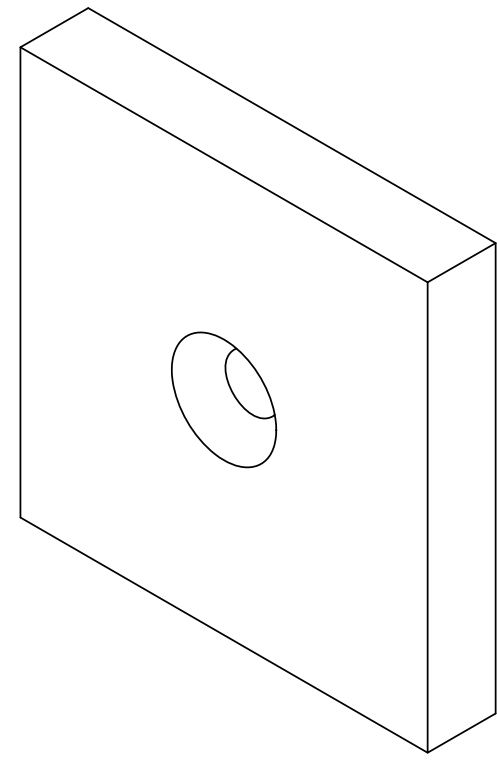
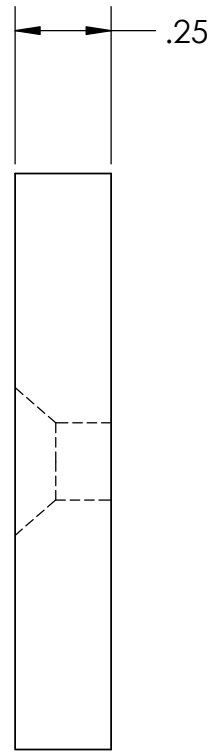
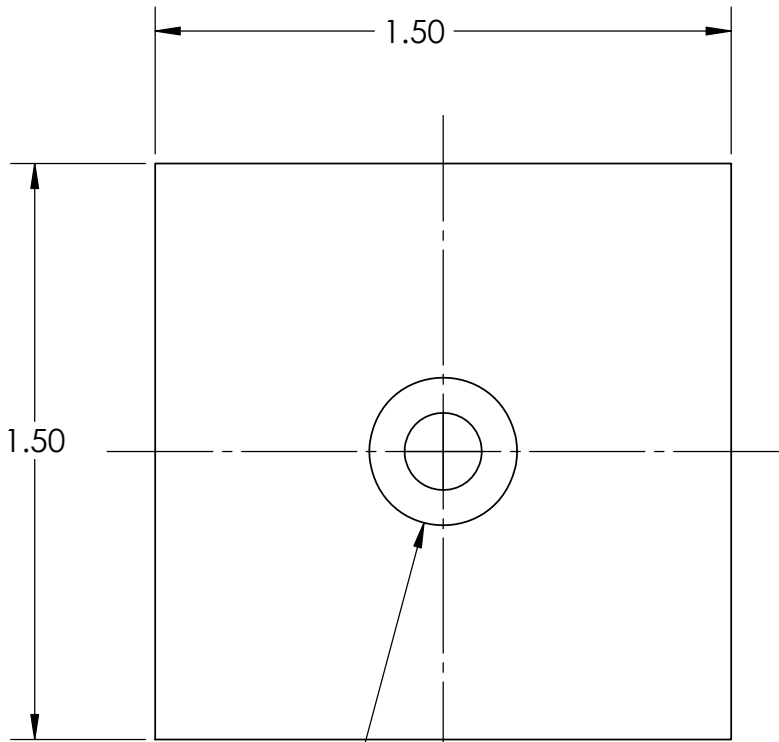
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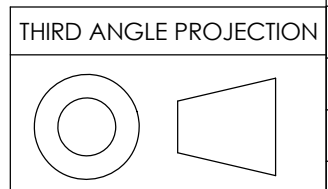


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ITEM 9



UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	GWH	2019
TOLERANCES:	MFG APPR.	BSD	2019
FRACTIONAL $\pm 1/64$			
ANGULAR: MACH $\pm 1/2^\circ$			
ONE PLACE DECIMAL ± 0.02			
TWO PLACE DECIMAL ± 0.01			
THREE PLACE DECIMAL ± 0.005			
INTERPRET GEOMETRIC TOLERANCING PER:	Original Design by Roland Hege		
MATERIAL ALUMINUM			
FINISH MILL			
DO NOT SCALE DRAWING			

<p>UNC CHARLOTTE The WILLIAM STATES LEE COLLEGE of ENGINEERING</p>		
<p>3/8" SQUARE STEAM ENGINE</p>		
SIZE	DWG. NO.	REV
A	BASE	A
SCALE: 2:1	SHEET 9 OF 11	

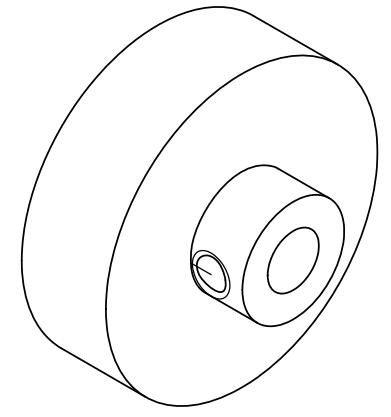
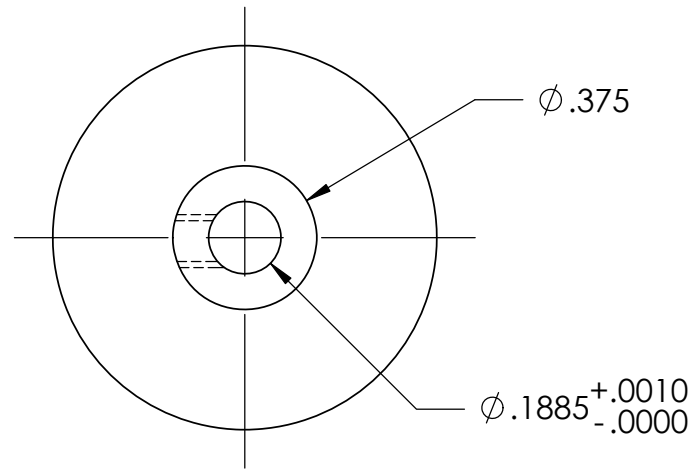
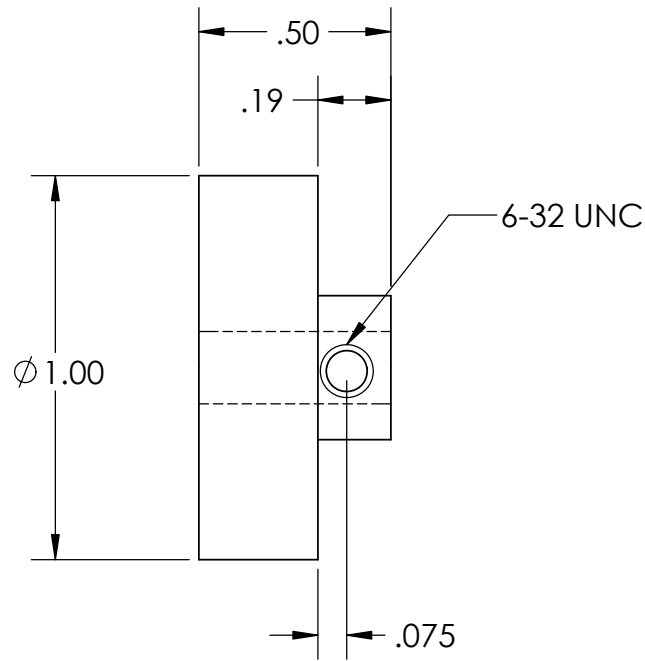
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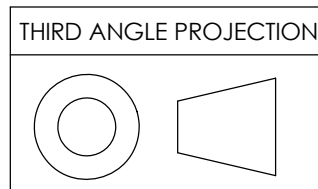
A

A

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	GWH	2019
TOLERANCES:	MFG APPR.	BSD	2019
FRACTIONAL: $\pm 1/64$			
ANGULAR: MACH $\pm 1/2^\circ$			
ONE PLACE DECIMAL ± 0.02			
TWO PLACE DECIMAL ± 0.01			
THREE PLACE DECIMAL ± 0.005			


UNC CHARLOTTE
The WILLIAM STATES LEE COLLEGE of ENGINEERING

3/8" SQUARE STEAM ENGINE



INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL CRS
FINISH MILL
DO NOT SCALE DRAWING

Original Design
by
Roland Hege

SIZE A	DWG. NO. FLYWHEEL	REV A
SCALE: 2:1		SHEET 10 OF 11

ITEM 10

2

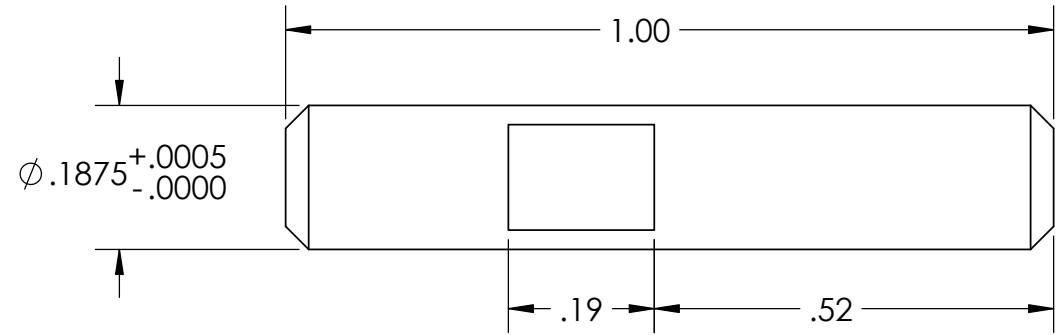
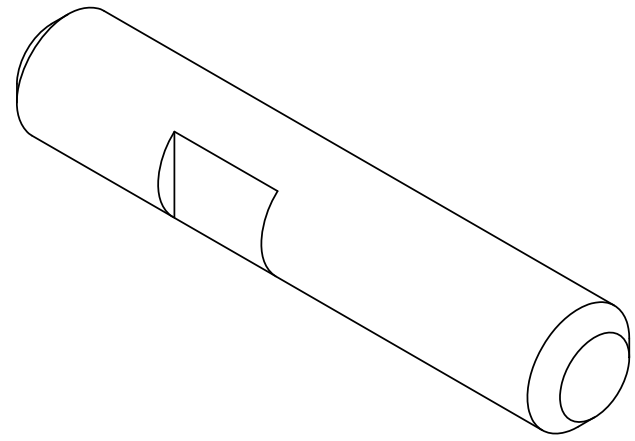
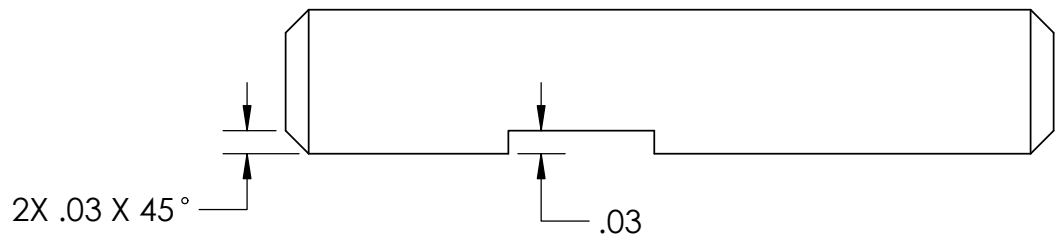
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2

1

B

B



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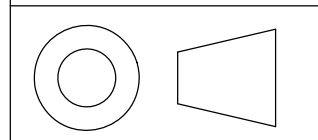
A

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/64$ ANGULAR: MACH $\pm 1/2^\circ$ ONE PLACE DECIMAL ± 0.02 TWO PLACE DECIMAL ± 0.01 THREE PLACE DECIMAL ± 0.005	DRAWN	GWH	2019
	MFG APPR.	BSD	2019


UNC CHARLOTTE
The WILLIAM STATES LEE COLLEGE of ENGINEERING

3/8" SQUARE STEAM ENGINE

THIRD ANGLE PROJECTION



INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL $\phi .1875$ DRILL ROD
FINISH MILL
DO NOT SCALE DRAWING

Original Design
by
Roland Hege

SIZE A	DWG. NO. SHAFT	REV A
SCALE: 4:1		SHEET 11 OF 11

ITEM 11

2

1